

# SWITCH

ISO14001 · ISO9001 · IATF16949



**SALECOM.**  
ELECTRONICS CO., LTD.

**Q-FLEX**

**CHILY<sup>®</sup> INALWAYS**

Toggle Switches - Rocker Switches - Pushbutton Switches - Slide Switches - DIP Switches - Tact Switches  
Key Switches - Sealed Switches - SMT Switches (Surface mounting terminal) - Power Rocker Switches - Illuminated Switches - Micro Switches  
搖柄開關 - 翹板開關 - 按鍵開關 - 滑動開關 - 指撥開關 - 觸動開關 - 電源開關 - SMT型系列開關 - 防水型系列開關 - 帶燈開關 - 微動開關





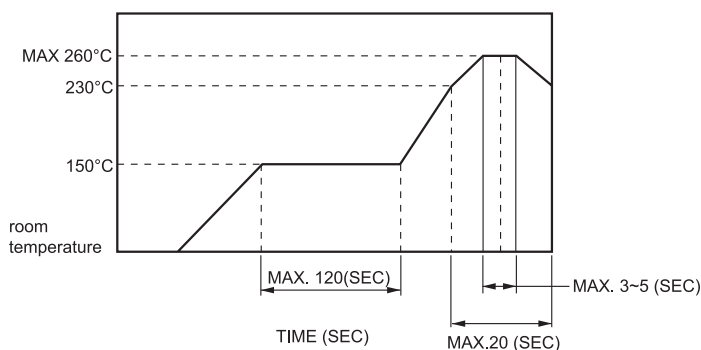
## PRODUCT CERTIFICATE TABLE

Series	Approval	RoHS Compliant	REACH Compliant	cULus	UL15	CQC	IP67	IP68
<b>Toggle Switches</b>	T60 / T61	•	•	•	•			•
	T70-T	•	•					
	NE80-T	•	•	•	•	•	•	
	ES30-T	•	•					
	ES40-T	•	•	•	•		•	
	UT	•	•					
	T80-T	•	•	•	•	•		
	T90-T	•	•	•	•	•	•	
<b>Rocker Switches</b>	TS40-T	•	•	•	•	•		
	NE80-R	•	•	•	•	•	•	
	ES40-R	•	•	•	•		•	
	UR	•	•					
	T80-R	•	•	•	•	•		
	T90-R	•	•	•	•	•		
	TS40-R	•	•	•	•	•		
	T60-R	•	•	•	•			
<b>Pushbutton Switches</b>	R70	•	•					
	IR90	•	•	•	•			
	E80-P	•	•					
	ES40-P	•	•	•	•		•	
	T80-L	•	•	•	•			
	T90-L	•	•	•	•			
	T80-P	•	•	•	•			
	TS30-P	•	•					
	TS40-P	•	•	•	•			
	EPS	•						
	R18	•						
<b>Slide Switches</b>	807	•						
	WP	•						
	SP86	•						
	250	•	•					
	T80-S	•	•	•	•	•		
	TS40-S	•	•	•	•			
	ES40-S	•	•				•	
<b>Dip Switches</b>	SS30	•	•				•	
	DS, DA, DP	•	•					
	NDI, DM	•	•					
	RH, RV, RM	•	•					
<b>Rotary Switches</b>	R7	•	•					
	TQ	•	•					
<b>Tact Switches</b>	WTD	•	•					
	WTM	•	•				•	
	WTML	•	•					
	SPL6	•	•					
	SPL-10	•	•					
	ELTS(*)-2	•	•					
	ELTS(*)-6	•	•				•	
	ELTS(*)-3	•	•					
	ELTSM-4	•	•					
	ELTSK-5	•	•					
DTR	•	•						
<b>Key Switches</b>	LT	•	•					
<b>Micro Switches</b>	MS	•		•	•	•		

INDEX  
TOGGLE  
ROCKER  
SLIDE  
PUSH BUTTON / MICRO  
DIP / ROTARY  
KEY / TACT

### LEAD-FREE SOLDERING CONDITIONS:

#### REFLOW SOLDERING



### HAND SOLDERING

Soldering Temperature	MAX.350°C
Continuous Soldering Time	MAX.3 seconds

## Toggle Switches

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### T60 / T61 Series

Sealed Toggle Switches  
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### NE80-T Series

Sealed Toggle Switches  
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### UT Series

Sealed Ultra-miniature Toggle Switches  
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### ES40-T Series

Sealed Sub-miniature Toggle Switches  
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### T70-T Series

Toggle Switches  
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### T90-T / T80-T Series

Miniature Toggle Switches  
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Sealed Sub-miniature Toggle Switches  
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### TS40-T Series

Sub-miniature Toggle Switches  
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## Rocker Switches

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Sealed Rocker & Paddle Switches  
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### ES40-R Series

Sealed Sub-miniature Rocker Switches  
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### TS40-R Series

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### R70 Series

Power Rocker Switches  
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### T90-R / T80-R Series

Miniature Rocker & Paddle Switches  
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### UR Series

Sealed Ultraminiature Rocker Switches  
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### T60-R Series

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### IR90 Series

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## Slide Switches

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Slide Switches  
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### ES40-S Series

Sealed Sub-miniature Slide Switches  
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### 250 Series

Miniature Slide Switches  
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### SL-2 Series

Sub-miniature Slide Switches  
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### SS30 Series

Sealed Sub-miniature Slide Switches  
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### TS40-S Series

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### SL-A Series

Sub-miniature Slide Switches  
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### SHM Series

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## Pushbutton Switches / Micro Switches

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Sealed Snap-Acting Momentary Pushbutton Switches  
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### T90-L / T80-L Series

Alternated Action Pushbutton Switches  
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Micro-miniature Pushbutton Switches  
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### R18 Series

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### T80-P Series

Snap-Acting Momentary Pushbutton Switches  
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### ES40-P Series

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### TS40-P Series

Sub-miniature Pushbutton Switches  
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### 807 Series

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**EPS12/13 Series**  
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**SP86 Series**  
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**WPM(S) Series**  
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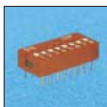


**MS1 Series**  
Subminiature Micro Switches  
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**MS2 Series**  
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**NDI(R)**  
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**DM(R)**  
SMT type Dip Switches  
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Washable Tact Switches 10 x 10  
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**WTML Series**  
Illuminated Tact Switches 10 x 10  
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**SPL6 Series**  
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**SPL-10 Series**  
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**ELTSHW / ELTSJW / ELTSMW**  
Washable Tact Switches 6.2 x 6.3  
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**ELTS-2 / ELTS-6 Series**  
Tact Switches 12 x 12 / 6.2 x 6.2  
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Thinner Type Tact Switches  
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**ELTSX-6 Series**  
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Tact Switches 3.5 x 6.0  
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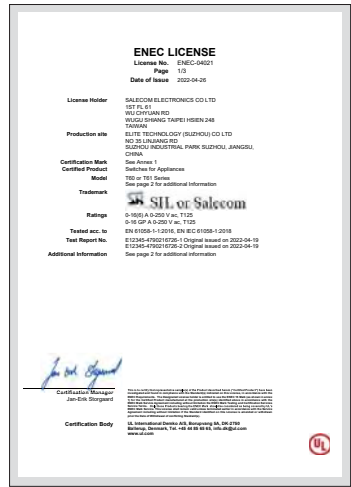
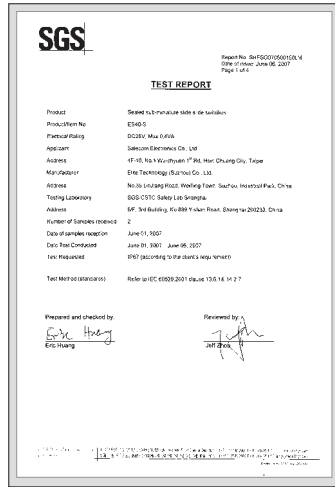
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**ELTSK-5 Series**  
SMT Tact Switches 5.2 x 5.2  
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Quality System : ISO9001:2015, ISO14001:2015, IATF16949:2016
Safety Approval : UL, cUL, CQC, ENEC
Sealed Test : IP67, IP68



Technical drawing showing multiple views of a switch component with various dimensions and material specifications.



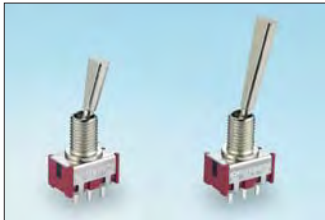
INDEX TOGGLE ROCKER SLIDE PUSH BUTTON / MICRO DIP / ROTARY KEY / TACT



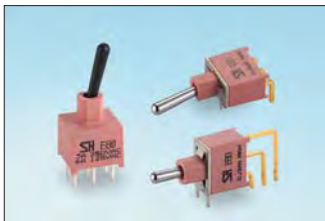
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IP68



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### SPECIFICATIONS

CONTACT RATING: 16 A, 250 V AC  
16(6) A, 250 V AC

ELECTRIC LIFE: 10,000 cycles  
CONTACT RESISTANCE: 30 mΩ max. (initial)  
INSULATION RESISTANCE: 1,000 MΩ min. 500VDC  
DIELECTRIC STRENGTH: 2,500 VAC/ 1 min.  
OPERATING TEMPERATURE: -40°C to +85°C



IP68

### How do you build the switches you need!!

T 6 0 1 3 - [ ] - T 1 E D [ ] - 1 6 - [ ] - H

Switch Function				Locking		Terminal		Rating		RoHS code
T6013	On-Non-On	SP	STEP	/	NO Locking	S	Screw	/	none	ROHS Compliant
T6013A	On-Non- MOM	SP	STEP	A	in 3 position			16	16(6)A/250VAC	
T6014	On-Off-On	SP	STEP	D	out of center			<b>Agency approval</b>		
T6014A	MOM-Off-MOM	SP	STEP	G	keyway side			/	Standard	
T6014B	On-Off-MOM	SP	STEP	<b>Actuator</b>		<b>Contact Material</b>		2P	Two terminal	
T6023	On-Non-On	DP	STEP	T1	Round	NON	No plated	2P2	Two terminal	
T6023A	On-Non-MOM	DP	STEP	U1	Metal flatted				without #1	
T6024	On-Off-On	DP	STEP	U5	Yellow plastic flatted				without #3	
T6024A	MOM-Off-MOM	DP	STEP	<b>Bushing</b>						
T6024B	On-Off-MOM	DP	STEP	E	Standard					
T6043	On-Non-On	4P	STEP							
T6043A	On-Non-MOM	4P	STEP							
T6044	On-Off-On	4P	STEP							
T6044A	MOM-Off-MOM	4P	STEP							
T6044B	On-Off-MOM	4P	STEP							

T 6 1 1 3 - [ ] - T 1 E D [ ] - 1 6 - [ ] - H

Switch Function				Locking		Terminal		Rating		RoHS code
T6113	On-Non-On	SP	FLAT	/	NO Locking	B	Solder lug	/	none	ROHS Compliant
T6113A	On-Non- MOM	SP	FLAT	A	in 3 position	D	Quick connect	16	16(6)A/250VAC	
T6114	On-Off-On	SP	FLAT	D	out of center	S1	Terminal with screw	<b>Agency approval</b>		
T6114A	MOM-Off-MOM	SP	FLAT	G	keyway side			/	Standard	
T6114B	On-Off-MOM	SP	FLAT	<b>Actuator</b>		<b>Contact Material</b>		2P	Two terminal	
T6123	On-Non-On	DP	FLAT	T1	Round	Q	Silver plated	2P2	Two terminal	
T6123A	On-Non-MOM	DP	FLAT	U1	Metal flatted	M	Nickel plated		without #1	
T6124	On-Off-On	DP	FLAT	U5	Yellow plastic flatted				without #3	
T6124A	MOM-Off-MOM	DP	FLAT	<b>Bushing</b>						
T6124B	On-Off-MOM	DP	FLAT	E	Standard					
T6143	On-Non-On	4P	FLAT							
T6143A	On-Non-MOM	4P	FLAT							
T6144	On-Off-On	4P	FLAT							
T6144A	MOM-Off-MOM	4P	FLAT							
T6144B	On-Off-MOM	4P	FLAT							

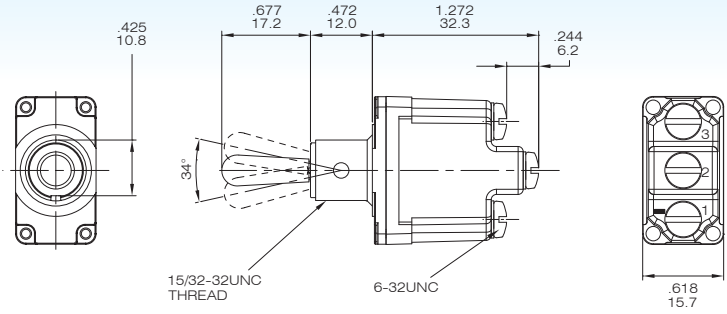




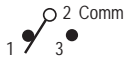
### SPDT



Model No.	Switching position		
T6013	ON	none	ON
T6013A	ON	none	(ON)
T6014	ON	OFF	ON
T6014A	(ON)	OFF	(ON)
T6014B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



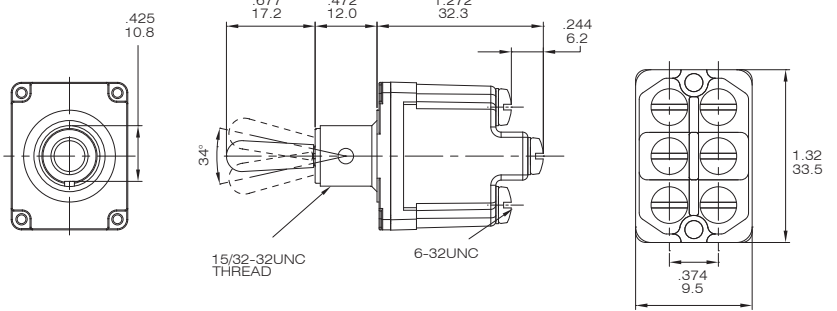
### T601X-T1ES-X-H



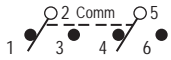
### DPDT



Model No.	Switching position		
T6023	ON	none	ON
T6023A	ON	none	(ON)
T6024	ON	OFF	ON
T6024A	(ON)	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4



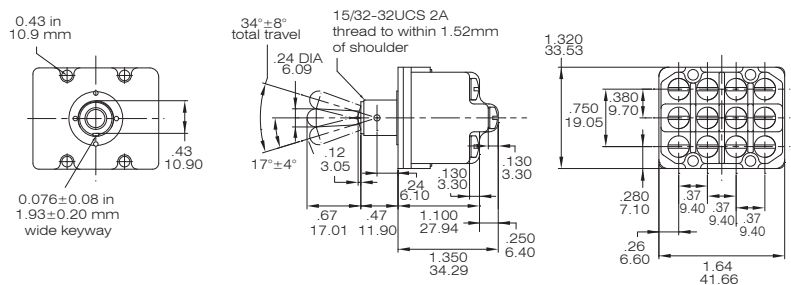
### T602X-T1ES-X-H



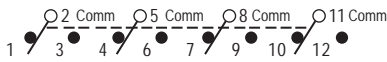
### 4PDT



Model No.	Switching position		
T6043	ON	none	ON
T6043A	ON	none	(ON)
T6044	ON	OFF	ON
T6044A	(ON)	OFF	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	open	2-1,5-4 8-7,11-10



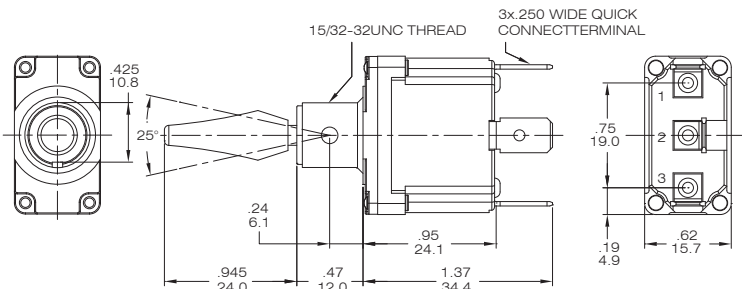
### T604X-T1ES-X-H



### SPDT



Model No.	Switching position		
T6113	ON	none	ON
T6113A	ON	none	(ON)
T6114	ON	OFF	ON
T6114A	(ON)	OFF	(ON)
T6114B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



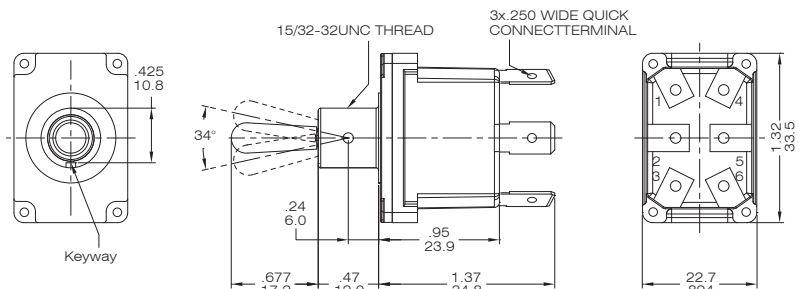
### T6113-UIED-H



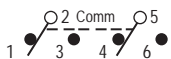
### DPDT



Model No.	Switching position		
T6123	ON	none	ON
T6123A	ON	none	(ON)
T6124	ON	OFF	ON
T6124A	(ON)	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4



### T6124-TIED-H





### SPECIFICATIONS

CONTACT RATING: 16 A, 250 V AC  
16(6) A, 250 V AC

ELECTRIC LIFE: 10,000 cycles

CONTACT RESISTANCE: 20 mΩ max. (initial)

INSULATION RESISTANCE: 200 MΩ min. 500VDC

DIELECTRIC STRENGTH: 1,500 VAC/ 1 min.

OPERATING TEMPERATURE: -40°C to +85°C



IP65

### How do you build the switches you need!!

T 6 1 1 3 - [ ] - T C [ ] [ ] [ ] - 1 6 - [ ] - H

Switch Function		
T6113	On-Non-On	SP
T6113A	On-Non- MOM	SP
T6114	On-Off-On	SP
T6114A	MOM-Off-MOM	SP
T6114B	On-Off-MOM	SP

Locking	
/	NO Locking
A	in 3 position
D	out of center
G	keyway side

Actuator		
waterproof	TC	Round
	TC1	Long Round
Not waterproof	TCB	Round/Black
	C	Round

Bushing	
E	Standard
EB	Standard/Black

Rating	
/	none
16	16(6)A/250VAC

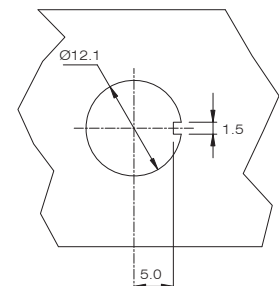
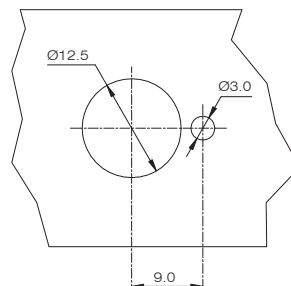
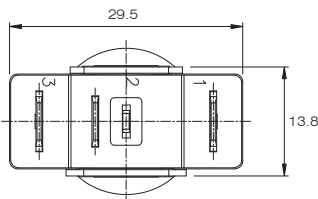
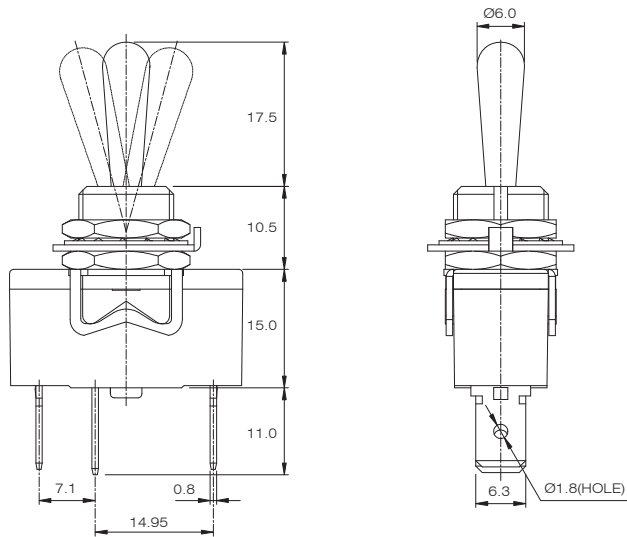
Terminal	
B	solder lug
D	quick connect
S1	Terminal with screw

Agency approval	
/	Standard
2P	Two terminal
2P2	Two terminal

Contact Material	
NON	No plated
Q	Silver plated

RoHS code	
ROHS Compliant	

Model No.	Switching position		
T6113	ON	none	ON
T6113A	ON	none	(ON)
T6114	ON	OFF	ON
T6114A	(ON)	OFF	(ON)
T6114B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



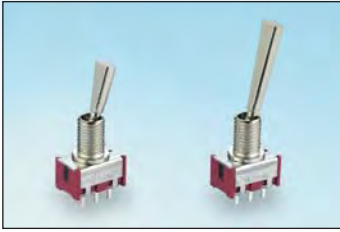
PANEL LAYOUT

T611X-TCED



# T70-T

# Toggle Switches



### SPECIFICATIONS

CONTACT RATING: 0.1A 30 VDC (Q terminal)  
 ELECTRIC LIFE: 10,000 cycles  
 CONTACT RESISTANCE: 30 mΩ max. (initial)  
 INSULATION RESISTANCE: 100 MΩ min. 500VDC, 0.5 mA  
 DIELECTRIC STRENGTH: 1,000 VAC/ 1 min.  
 OPERATING TEMPERATURE: -30°C to +85°C

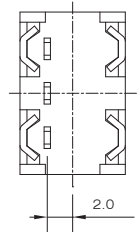
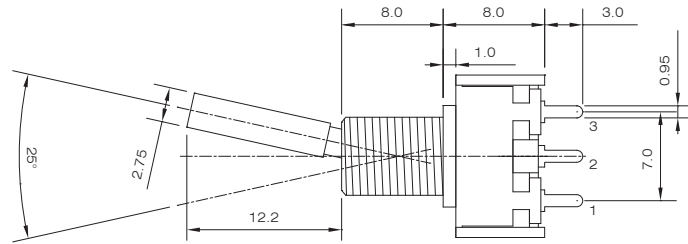
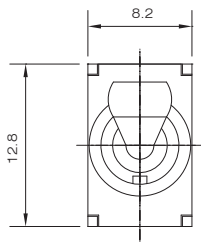
### MATERIALS

CASE - Nylon(UL94V-0)  
 ACTUATOR - Copper alloy, nickel plated/ chrome plated  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver plated

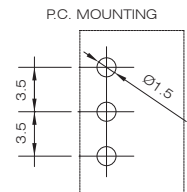
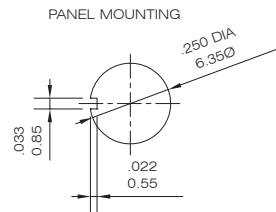
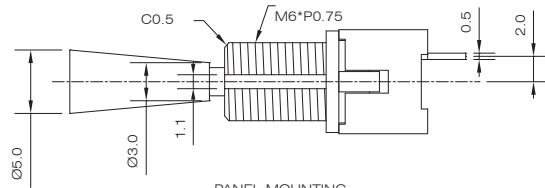
How do you build the switches you need!!

T 7 0 1 3 - U H C Q -

Switch Function		Actuator		Bushing		Termination		Contact Material		RoHS code	
T7013	SP on-none-on	U	Standard	H	Thd (std. type)	C	P.C	Q	Silver plated	H = RoHS Compliant	
T7013A	SP on-none-(on)	U1	Short	H2	Metric						
T7014	SP on-off-on										
T7014A	SP (on)-off-(on)										
T7014B	SP on-off-(on)										
T7011	DP on-none-on										
T7011A	DP on-none-(on)										
T7012	DP on-off-on										
T7012A	DP (on)-off-(on)										
T7012B	DP on-off-(on)										



Model No.	Switching position		
T7013	ON	None	ON
T7013A	ON	None	(ON)
T7014	ON	OFF	ON
T7014A	(ON)	OFF	(ON)
T7014B	ON	OFF	(ON)
Term. Comm	2-3	OPEN	2-1



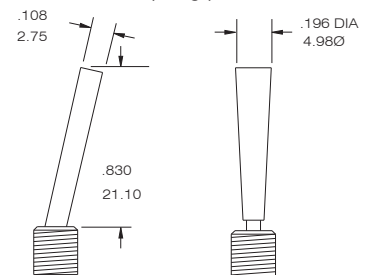
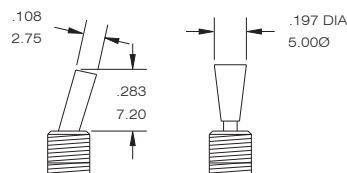
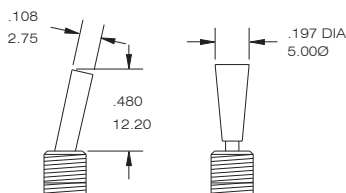
T7013 - UHCQ

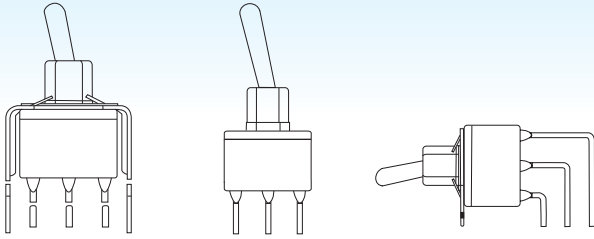
### Actuator Option

U (standard)

U1 (short)

U2 (long)





## SPECIFICATIONS

CONTACT RATING: 6A @125 VAC or 28 VDC (Q terminal)  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE -Glass filled nylon 6/6 or nylon 4/6 (UL94V-0)  
 ACTUATOR - Copper alloy, chrome plated with internal o-ring standard  
 SWITCH SUPPORT - Copper alloy or steel, tin plated  
 CONTACT AND TERMINAL- Copper alloy, silver or gold plated  
 TERMINAL SEAL: Epoxy

**IP67 protection degree**

How do you build the switches you need!!

The straight type, please see the (A) ;

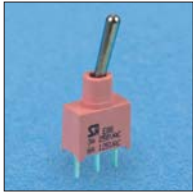
The right angle P.C terminals, please see the (B)

(A) **NE8013** - **S** **E** **C** **Q** - **S20** - **T1** - **2** -

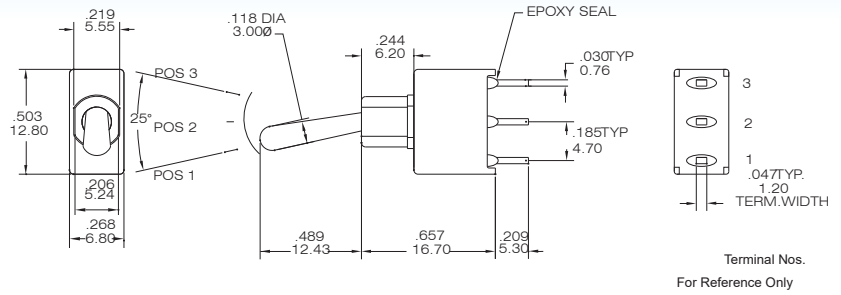
Switch Function		Actuator		Bushing		Contact Material		Actuator Cap		RoHS code
NE8013	SP on-none-on	S	12.43	N	(std. ) non-thd. 6.15	Q	silver plated	(none)		H = RoHS Compliant
NE8013A	SP on-none-(on)	T	7.30	E	thd. 8.89	R	gold plated	T1	10.58 (for actuator S)	
NE8014	SP on-off-on	<b>Esd protection actuator</b>		<b>Termination</b>		G	gold over silver	T2	7.56 ( for actuator T)	
NE8014A	SP (on)-off-(on)	P1	(black) 12.43	B	solder lug	K	tin plated	<b>Cap color</b>		
NE8014B	SP on-off-(on)	P11	(white) 12.43	C	P.C 1.27width	<b>Vertical support Bracket</b>		0	transparent	
NE8011	DP on-none-on	P19	(silver) 12.43	D	Quick connect	(none)		1	white	
NE8011A	DP on-none-(on)	P2	(black) 7.30	D1	wire wrap	S20	11.68	2	black	
NE8012	DP on-off-on	P21	(white) 7.30	D3	wire wrap	S25	16.00	3	red	
NE8012A	DP (on)-off-(on)	P29	(silver) 7.30			S35	11.68	4	orange	
NE8012B	DP on-off-(on)					S40	16.00	5	yellow	
<b>3 way position switches</b>						V20	snap-in 11.68	6	green	
NE812	DP on-on-on					V25	snap-in 16.00	7	blue	
						V35	snap-in 11.68			
						V40	snap-in 16.00			

(B) **NE8019L** - **T** **N** **Q** - **T2** - **2** -

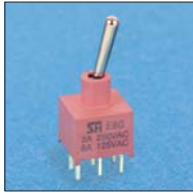
Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator		Bushing		Contact Material		Cap color		RoHS code
NE8019	NE8019L	SP on-none-on	S	12.43	N	(std) non-thd	6.15	0	transparent	H = RoHS Compliant	
NE8019A	NE8019LA	SP on-none-(on)	T	7.30	<b>Actuator Cap</b>		(none)	1	white		
NE8020	NE8020L	SP on-off-on	<b>Esd protection actuator</b>		<b>Termination</b>		<b>Vertical support Bracket</b>		2	black	
NE8020A	NE8020LA	SP (on)-off-(on)	P1	(black) 12.43	B	solder lug	(none)	3	red		
NE8020B	NE8020LB	SP on-off-(on)	P11	(white) 12.43	C	P.C 1.27width	S20	11.68	4	orange	
NE8021	NE8021L	DP on-none-on	P19	(silver) 12.43	D	Quick connect	S25	16.00	5	yellow	
NE8021A	NE8021LA	DP on-none-(on)	P2	(black) 7.30	D1	wire wrap	S35	11.68	6	green	
NE8022	NE8022L	DP on-off-on	P21	(white) 7.30	D3	wire wrap	S40	16.00	7	blue	
NE8022A	NE8022LA	DP (on)-off-(on)	P29	(silver) 7.30			V20	snap-in 11.68			
NE8022B	NE8022LB	DP on-off-(on)					V25	snap-in 16.00			
<b>3 way position switches</b>								V35	snap-in 11.68		
NE822	NE822L	DP on-on-on					V40	snap-in 16.00			



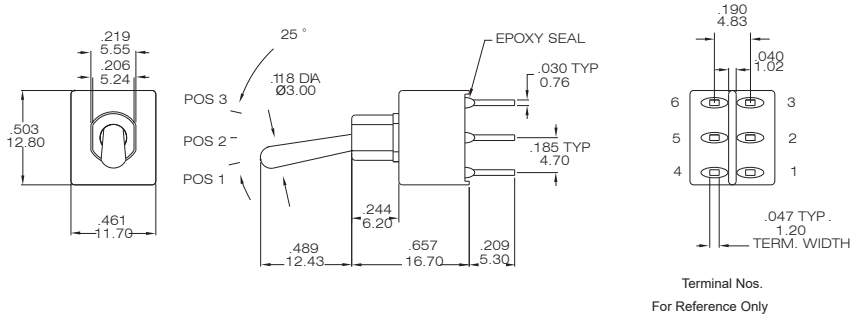
Model No.	Switching position		
NE8013	ON	none	ON
NE8013A	ON	none	(ON)
NE8014	ON	OFF	ON
NE8014A	(ON)	OFF	(ON)
NE8014B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



NE8013 - SNCQ

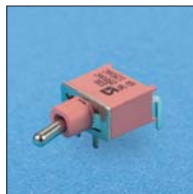


Model No.	Switching position		
NE8011	ON	none	ON
NE8011A	ON	none	(ON)
NE8012	ON	OFF	ON
NE8012A	(ON)	OFF	(ON)
NE8012B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NE812	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

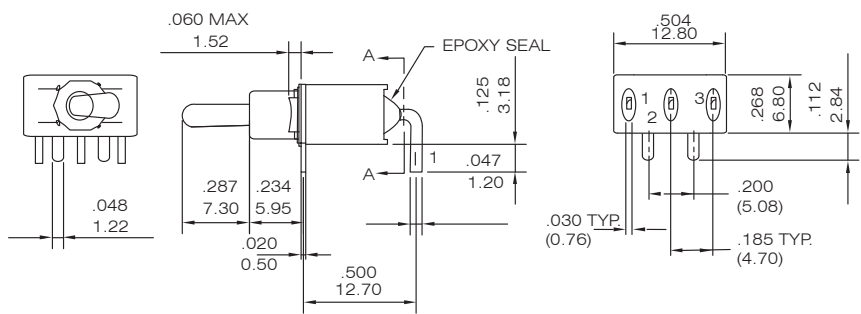


NE8011 - SNCQ

Please see page A10 to know more about NE812 (3-way Switches)



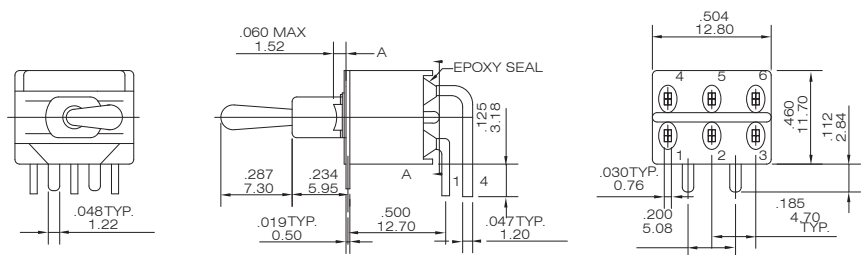
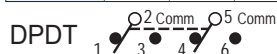
Model No.	Switching position		
NE8019	ON	none	ON
NE8019A	ON	none	(ON)
NE8020	ON	OFF	ON
NE8020A	(ON)	OFF	(ON)
NE8020B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



NE8019 - TNQ

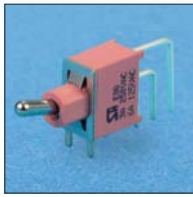


Model No.	Switching position		
NE8021	ON	none	ON
NE8021A	ON	none	(ON)
NE8022	ON	OFF	ON
NE8022A	(ON)	OFF	(ON)
NE8022B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NE822	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

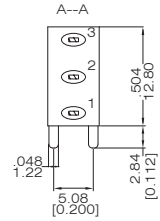
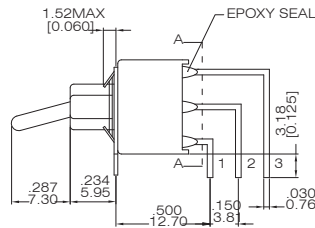
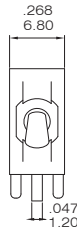


NE8021 - TNQ

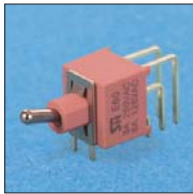
Please see page A10 to know more about NE822 (3-way Switches)



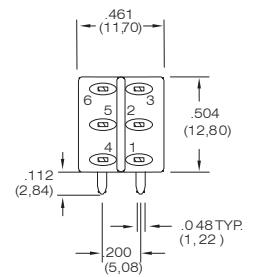
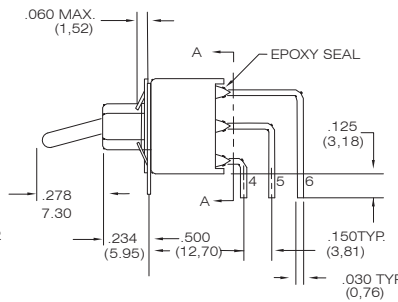
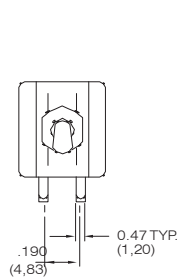
Model No.	Switching position		
NE8019L	ON	none	ON
NE8019LA	ON	none	(ON)
NE8020L	ON	OFF	ON
NE8020LA	(ON)	OFF	(ON)
NE8020LB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



### NE8019L - TNQ



Model No.	Switching position		
NE8021L	ON	none	ON
NE8021LA	ON	none	(ON)
NE8022L	ON	OFF	ON
NE8022LA	(ON)	OFF	(ON)
NE8022LB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NE822L	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

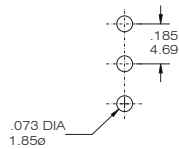


### NE8021L - TNQ

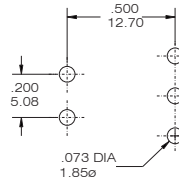
Please see page A10 to know more about NE822L ( 3-way Switches)

## P.C.B MOUNTING DIMENSIONS

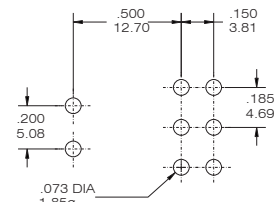
#### NE8013-NE8014B



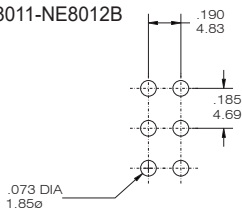
#### NE8019-NE8020B



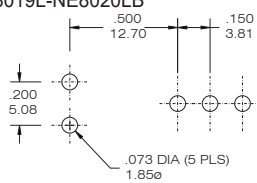
#### NE8021-NE8022B



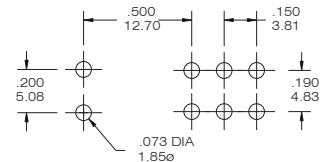
#### NE8011-NE8012B



#### NE8019L-NE8020LB

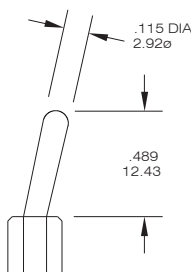


#### NE8021L-NE8022LB

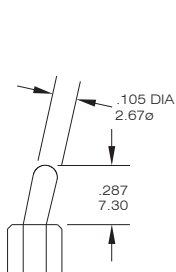


## Actuator Option

#### S (STD)

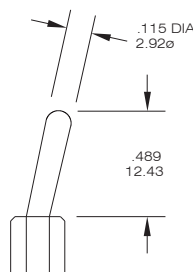


#### T (STD)

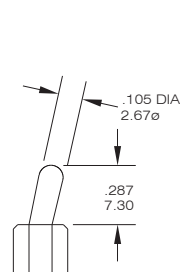


### PLASTIC TOGGLE

#### P1



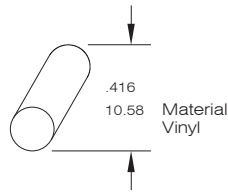
#### P2



code	description
P1/P2	black(std.)
P11/P21	white
P19/P29	silver

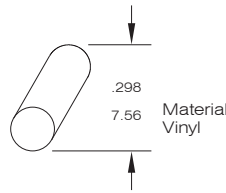
## Toggle Cap Option

T1



For actuator "S" only

T2

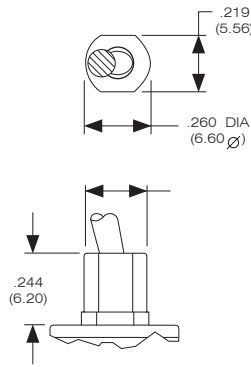


For actuator "T"

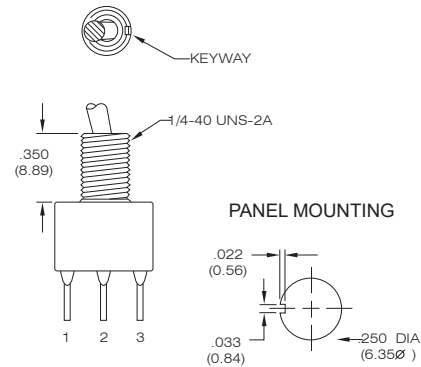
code	color
0	transparent
1	white
2	black
3	red
4	orange
5	yellow
6	green
7	blue

## Bushing Option

N (std)

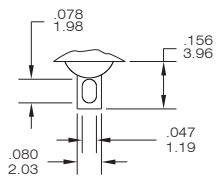


E



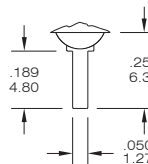
## TERMINAL OPTION

B SOLDER LUG



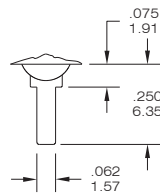
THK 0.76 (.030)

C PRINTED CIRCUIT



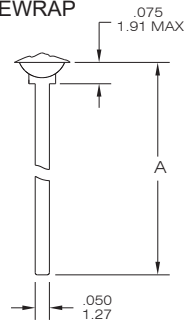
THK 0.76 (.030)

D QUICK CONNECT



THK 0.76 (.030)

WIREWRAP



THK 0.76 (.030)

CODE	"A" dimension
D1	.750 (19.05)
D3	.425 (10.8)

## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	6 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 6 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

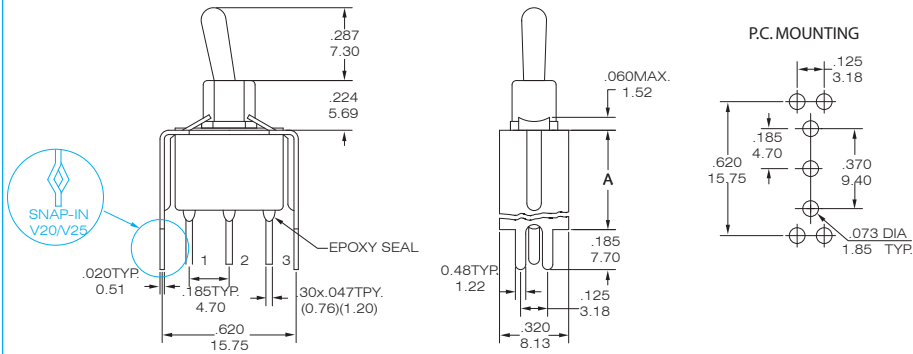
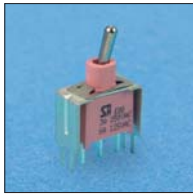
\* THE K option is only for some special item. Please inquire first when you need the "K" option



## VERTICAL SUPPORT BRACKET OPTION

( only apply the straight type terminal -page A04. Please build the terminal option is "c" code)

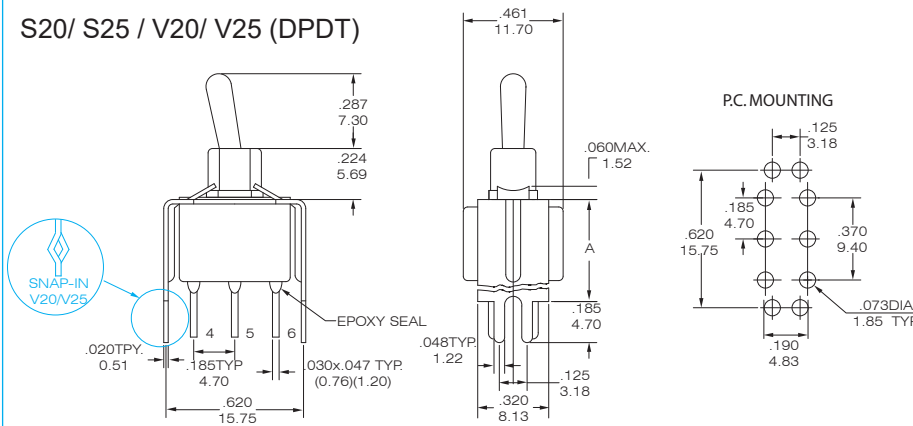
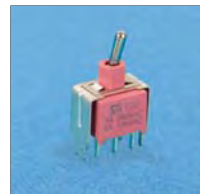
### S20/ S25 / V20/ V25 (SPDT)



NE8013 - TNCQ-S20(S25)

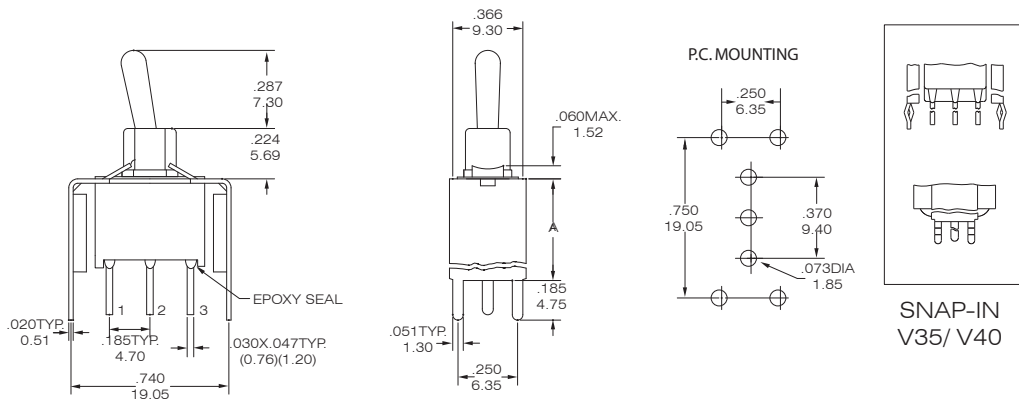
option Code	A dimension
S20/V20	.460 11.68
S25/V25	.630 16.00
V20/V25 : the snap-in type	

### S20/ S25 / V20/ V25 (DPDT)



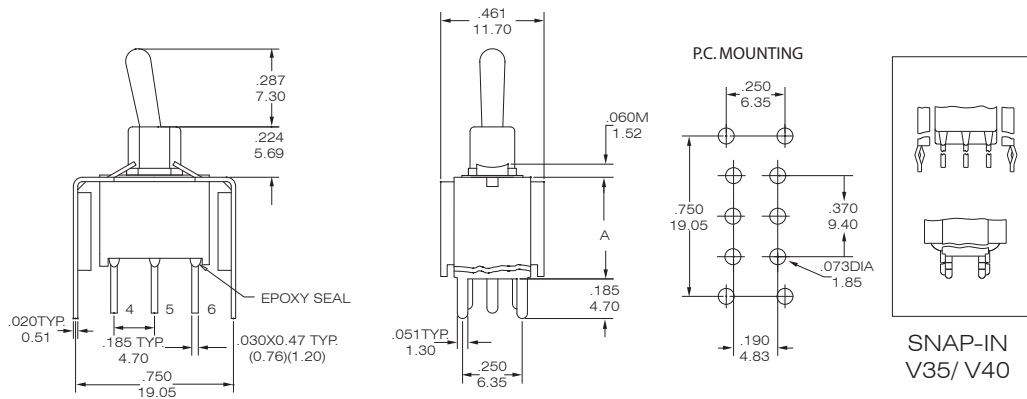
NE8011 - TNCQ-S20(S25)

option Code	A dimension
S35/V35	.460 11.68
S40/V40	.630 16.00
V35/V40 : the snap-in type	



NE8013 - TNCQ-S35(S40)

option Code	A dimension
S35/V35	.460 11.68
S40/V40	.630 16.00
V35/V40 : the snap-in type	



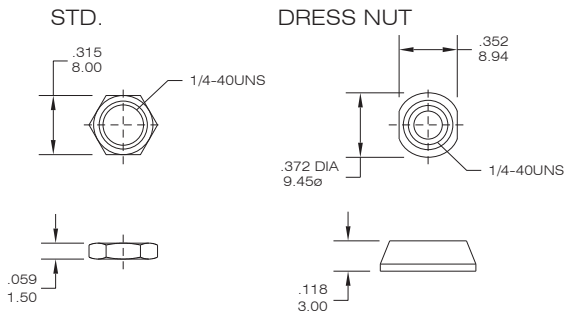
NE8011 - TNCQ-S35(S40)



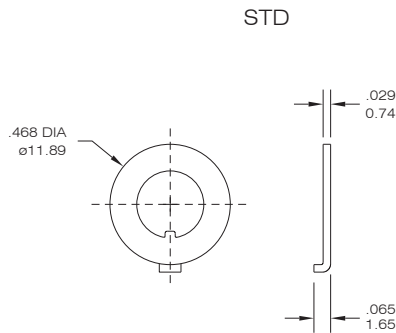


## The hardware of NE80-T toggle switches (only for E bushing)

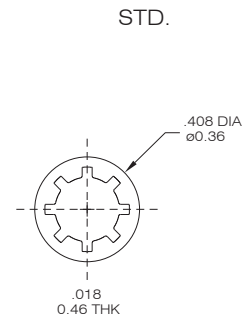
### NUT



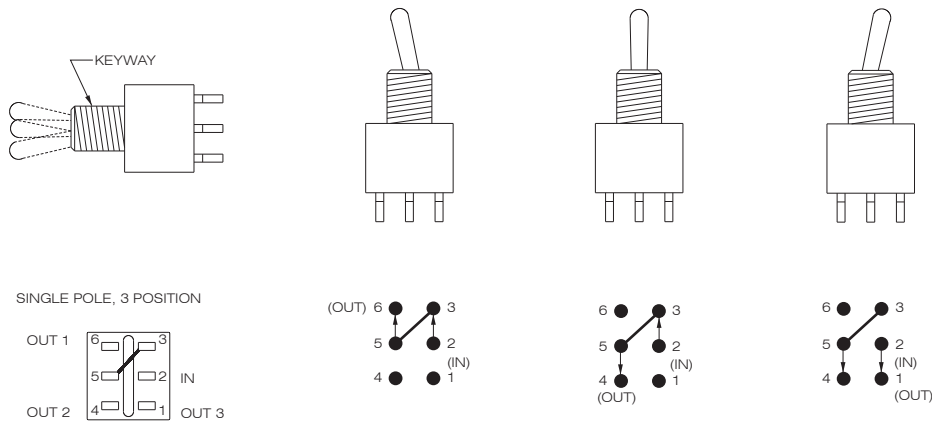
### LOCKING RING



### LOCK WASHER



## The information of 3-way toggle switches

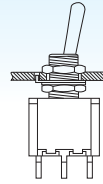
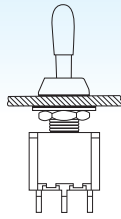
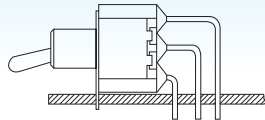
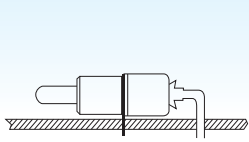


## SP3T



# T90-T

# Miniature Toggle Switches



## SPECIFICATIONS

CONTACT RATING: 6A @125 VAC or 28 VDC (Q contact)  
 LIFE CYCLE: 10,000 make-and-break cycles  
 CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +120°C

## MATERIALS

CASE - diallyl phthalate ( DAP )  
 TOGGLE HANDLE - Copper alloy, chrome plated  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - copper alloy, silver or gold plated

## How do you build the switches you need!!

(A) T 9 0 1 3 - S E C Q - E - S 2 0 - T 1 - 2 -

Switch Function		Actuator		Bushing		Termination		Vertical support Bracket		Cap color		
T9013	SP on-none-on	S	10.41	E	(STD)	8.89	B	solder lug	(none)	0	transparent	
T9013A	SP on-none-(on)	T	5.08	M	(non-thd)	8.89	C	P.C 1.27width	S20	11.68	1	white
T9014	SP on-off-on	X	13.97	K	(metric)	8.89	D	Quick connect	S25	16.00	2	black
T9014A	SP (on)-off-(on)	W	21.34	F	(non-thd)	7.10	D1	wire wrap(19.05)	S35	11.68	3	red
T9014B	SP on-off-(on)	V	16.26	N	(non-thd)	7.10	D3	wire wrap(10.8)	S40	16.00	4	orange
T9011	DP on-none-on	<b>Flatted toggle</b>		G		7.52			V20	snap-in 11.68	5	yellow
T9011A	DP on-none-(on)	U	11.43	G1	(non-thd)	7.52	<b>Contact Material</b>		V25	snap-in 16.00	6	green
T9012	DP on-off-on	U1	7.20	H	(non-thd)	8.00	Q	silver plated	V35	snap-in 11.68	7	blue
T9012A	DP (on)-off-(on)	<b>Large15/32 bushing</b>		H1	(long)	9.60	R	gold plated	V40	snap-in 16.00		
T9012B	DP on-off-(on)	Z	11.68	J1	(non-thd)	9.60	G	gold over silver	<b>Actuator Cap/ Rubber hood Sealing</b>			
T9301	3P on-none-on	Z1	17.45	L	(splash-proof)	7.47	K	tin plated	(none)			
T9303	3P on-none-(on)	Z3	antirotation (17.45)	<b>none</b>			<b>Epoxy seal</b>		<b>Rubber hood</b>			
T9305	3P on-off-on	Z4	antirotation (11.68)	the actuator: Z/Z1/Z3/Z4/LK/LK1 No requirement to choose the bushing unless the splash proof (L) ZL/Z1L/LKL/LK1L and the non-thd (N) LKN/LK1N			(none)	none seal	E1	for E Bushing		
T9307	3P on-off-(on)	<b>Locking Lever</b>					E	epoxy seal	E2	for Z/Z1 Bushing		
T9401	4P on-none-on	LK	Round top						E3	for Z/Z1 Bushing		
T9403	4P on-none-(on)	LK1	Flat top						K1	for K bushing		
T9405	4P on-off-on								<b>Actuator Cap</b>			
T9407	4P (on)-off-(on)								T1	10.58 (for actuator S)		
T9409	4P on-off-(on)								T2	7.56 ( for actuator T)		
<b>3 way position switches</b>												
T912	SP3T on-on-on											
T912A	SP3T (on)-on-(on)											
T912B	SP3T on-on-(on)											
T945	DP3T on-on-on											
T947	DP3T (on)-on-(on)											
T949	DP3T on-on-(on)											

**RoHS code**  
H = RoHS Compliant

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



# T90-T

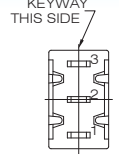
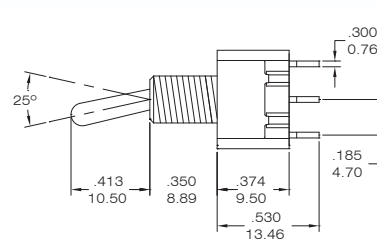
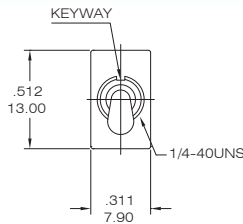
## Miniature Toggle Switches (Straight Type)



### SPDT



Model No.	Switching position		
T9013	ON	none	ON
T9013A	ON	none	(ON)
T9014	ON	OFF	ON
T9014A	(ON)	OFF	(ON)
T9014B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

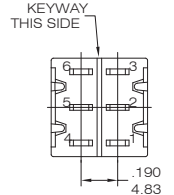
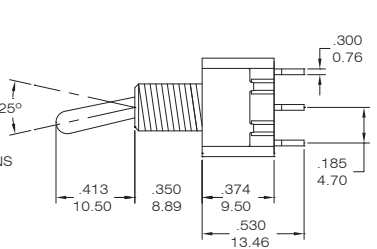
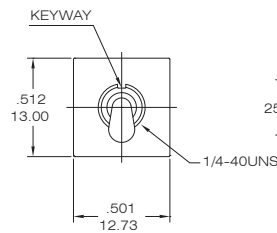


T9013 - SEBQ

### DPDT



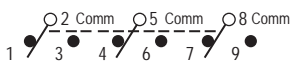
Model No.	Switching position		
T9011	ON	none	ON
T9011A	ON	none	(ON)
T9012	ON	OFF	ON
T9012A	(ON)	OFF	(ON)
T9012B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
T912	ON	ON	ON
T912A	(ON)	ON	(ON)
T912B	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



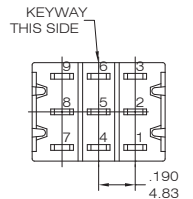
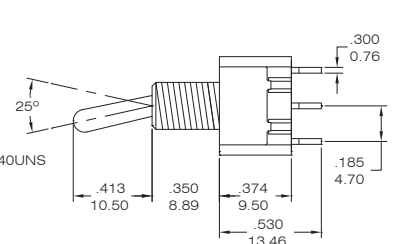
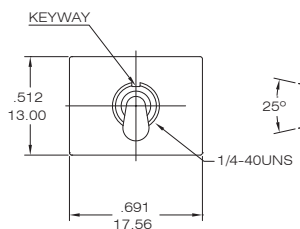
T9011 - SEBQ

Please see page A20 to know more about T912 (3-way Switches)

### 3PDT



Model No.	Switching position		
T9301	ON	none	ON
T9303	ON	none	(ON)
T9305	ON	OFF	ON
T9307	(ON)	OFF	(ON)
T9309	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9	open	2-1,5-4 8-7

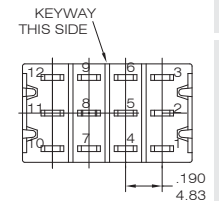
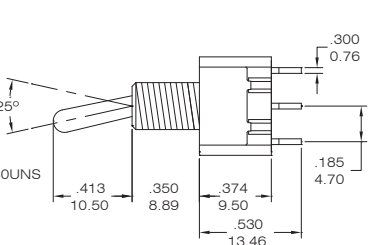
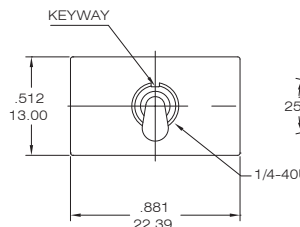


T9301- SEBQ

### 4PDT



Model No.	Switching position		
T9401	ON	none	ON
T9403	ON	none	(ON)
T9405	ON	OFF	ON
T9407	(ON)	OFF	(ON)
T9409	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	open	2-1,5-4 8-7,11-10
3 way switches (DP3T)			
T945	ON	ON	ON
T947	(ON)	ON	(ON)
T949	ON	ON	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5-4 8-9,11-10	2-1,5-4 8-7,11-10



T9401 - SEBQ

Please see page A20 to know more about T945 (3-way Switches)

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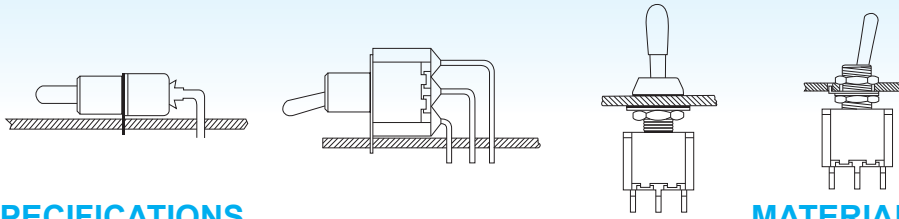
SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

Actuator / Bushing / Terminal / Contact Material Option please see the page A17 ~ A19



SPECIFICATIONS

CONTACT RATING: 5A @125 VAC or 28 VDC (Q contact)
LIFE CYCLE: 40,000 make-and-break cycles
CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC,100 mA
INSULATION RESISTANCE: 1,000 MΩ min.
DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.
OPERATING TEMPERATURE: -30°C to +85°C

MATERIALS

CASE - diallyl phthalate ( DAP )
TOGGLE HANDLE - Copper alloy, chrome plated
BUSHING - Copper alloy, nickel plated
HOUSING - Stainless Steel
CONTACT AND TERMINAL - copper alloy, silver or gold plated

How do you build the switches you need!!

The straight type, please see the (A) ;

The right angle P.C terminals, please see the (B)

(A) T 8 0 1 3 - S E C Q - E - S 2 0 - T 1 - 2

Table with columns: Switch Function, Actuator, Bushing, Termination, Vertical support Bracket, Cap color, RoHS code. Includes sub-sections for 3 way position switches and Locking Lever.

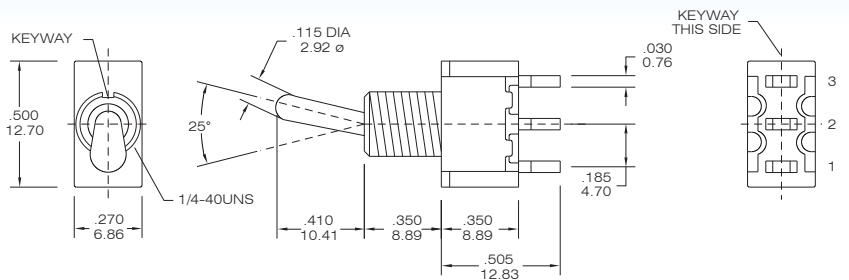
(B) T 8 0 1 9 L - T N Q - E - S - T 2 - 2

Table with columns: Horizon Right Angle, Vertical Right Angle, Switches Function, Actuator, Bushing, Contact Material, Actuator Cap, Epoxy seal, Support Bracket type, Cap color, RoHS code.

## SPDT



Model No.	Switching position		
T8013	ON	none	ON
T8013A	ON	none	(ON)
T8014	ON	OFF	ON
T8014A	(ON)	OFF	(ON)
T8014B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

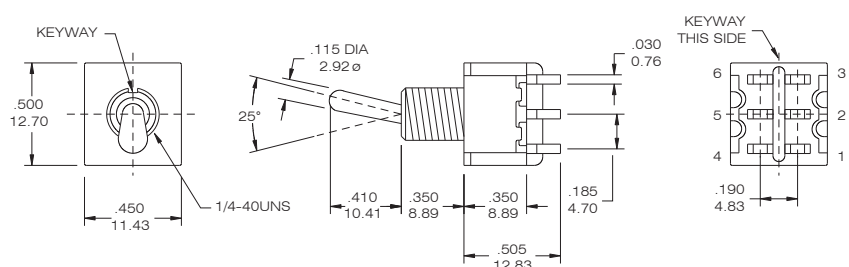


T8013 - SEBQ

## DPDT



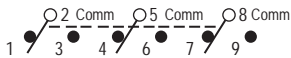
Model No.	Switching position		
T8011	ON	none	ON
T8011A	ON	none	(ON)
T8012	ON	OFF	ON
T8012A	(ON)	OFF	(ON)
T8012B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
T812	ON	ON	ON
T812A	(ON)	ON	(ON)
T812B	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



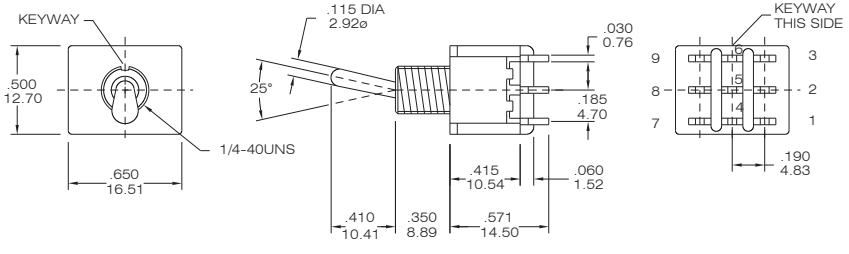
T8011 - SEBQ

Please see page A20 to know more about T812 (3-way Switches)

## 3PDT



Model No.	Switching position		
T8301	ON	none	ON
T8303	ON	none	(ON)
T8305	ON	OFF	ON
T8307	(ON)	OFF	(ON)
T8309	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9	open	2-1,5-4 8-7

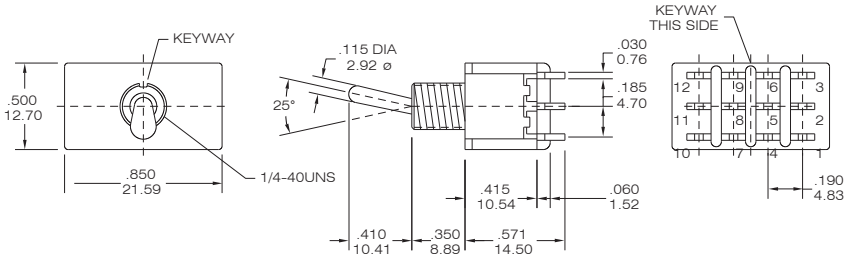


T8301- SEBQ

## 4PDT



Model No.	Switching position		
T8401	ON	none	ON
T8403	ON	none	(ON)
T8405	ON	OFF	ON
T8407	(ON)	OFF	(ON)
T8409	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	open	2-1,5-4 8-7,11-10
3 way switches (DP3T)			
T845	ON	ON	ON
T847	(ON)	ON	(ON)
T849	ON	ON	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5-4 8-9,11-10	2-1,5-4 8-7,11-10



T8401 - SEBQ

Please see page A20 to know more about T845 (3-way Switches)



## FEATURE

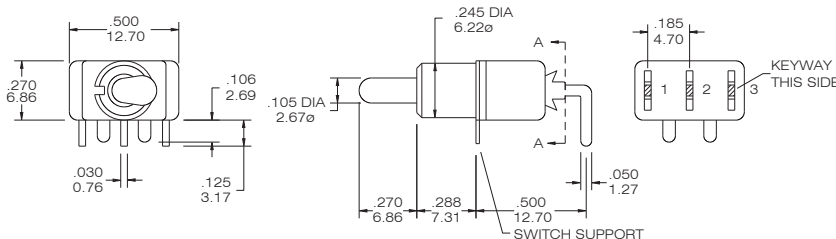
The T80-T series P.C.B Mounted Toggle Switches - Right Angle Type - are specially designed for P.C. Boards . Easy to mount and install securely with a vertical support rack . The toggle operates in the same direction as the print connectors . Customers' specifications of pitch are acceptable.

## HORISON RIGHT ANGLE

### SPDT



Model No.	Switching position		
T8019	ON	none	ON
T8019A	ON	none	(ON)
T8020	ON	OFF	ON
T8020A	(ON)	OFF	(ON)
T8020B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

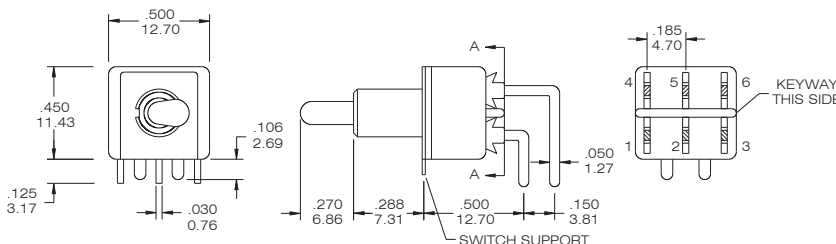


T8019 - TNQ

### DPDT



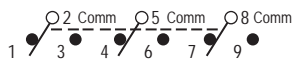
Model No.	Switching position		
T8021	ON	none	ON
T8021A	ON	none	(ON)
T8022	ON	OFF	ON
T8022A	(ON)	OFF	(ON)
T8022B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
T822	ON	ON	ON
T822A	(ON)	ON	(ON)
T822B	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



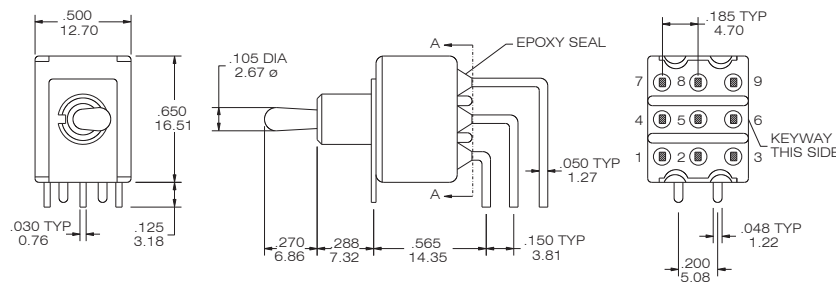
T8021 - TNQ

Please see page A20 to know more about T822 ( 3-way Switches)

### 3PDT



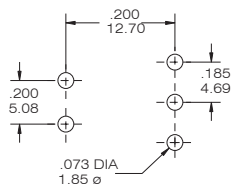
Model No.	Switching position		
T8301P(A)	ON	none	ON
T8303P(A)	ON	none	(ON)
T8305P(A)	ON	OFF	ON
T8307P(A)	(ON)	OFF	(ON)
T8309P(A)	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
	8-9		8-7



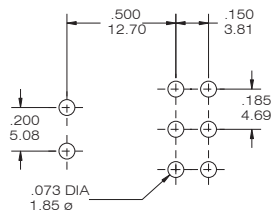
T8301P(A)- TNQ

## P.C.B MOUNTING DIMENSIONS

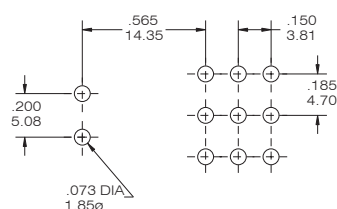
FOR T8019-T8020B



FOR T8021-T8022B



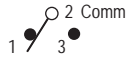
FOR T8301P(A)-T8309P(A)



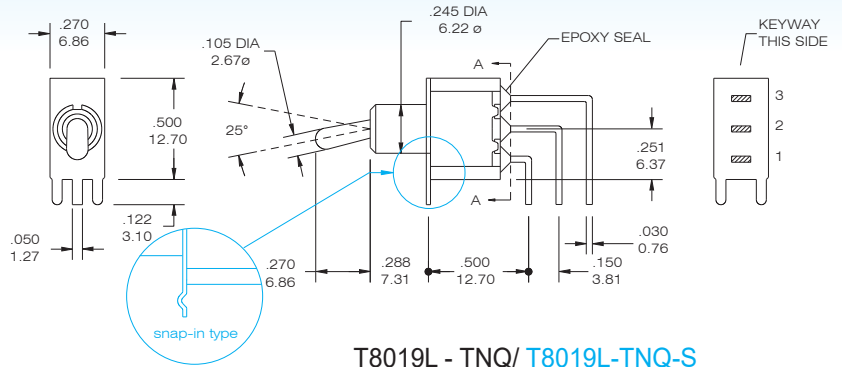


## VERTICAL RIGHT ANGLE

### SPDT



Model No.	Switching position		
T8019L	ON	none	ON
T8019LA	ON	none	(ON)
T8020L	ON	OFF	ON
T8020LA	(ON)	OFF	(ON)
T8020LB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

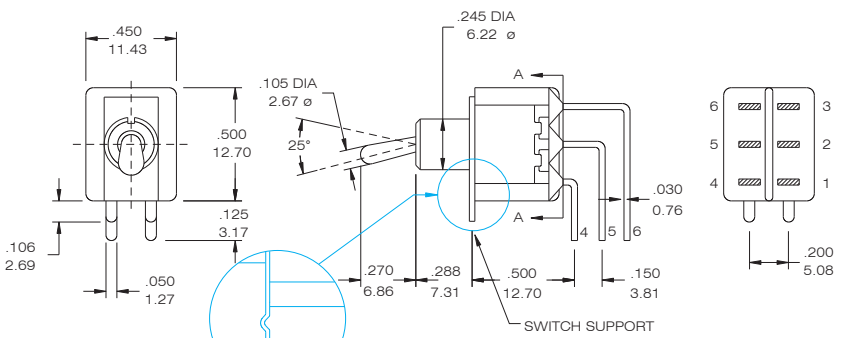


T8019L - TNQ/ T8019L-TNQ-S

### DPDT



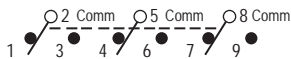
Model No.	Switching position		
T8021L	ON	none	ON
T8021LA	ON	none	(ON)
T8022L	ON	OFF	ON
T8022LA	(ON)	OFF	(ON)
T8022LB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
T822L	ON	ON	ON
T822LA	(ON)	ON	(ON)
T822LB	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



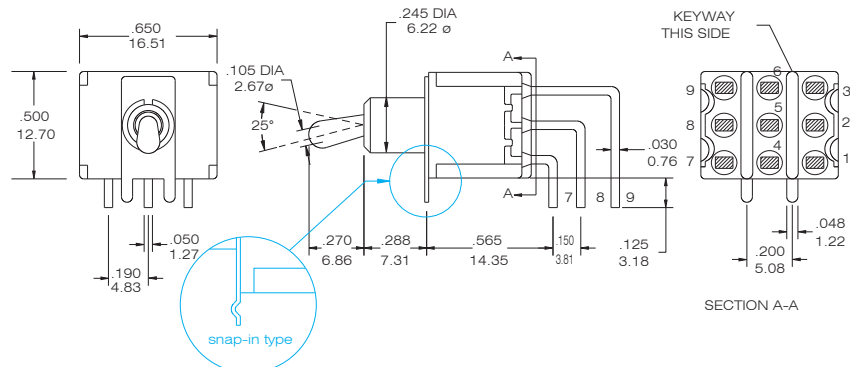
T8021L - TNQ/ T8021L-TNQ-S

Please see page A20 to know more about T822L ( 3-way Switches)

### 3PDT



Model No.	Switching position		
T8301P	ON	none	ON
T8303P	ON	none	(ON)
T8305P	ON	OFF	ON
T8307P	(ON)	OFF	(ON)
T8309P	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9	open	2-1,5-4 8-7

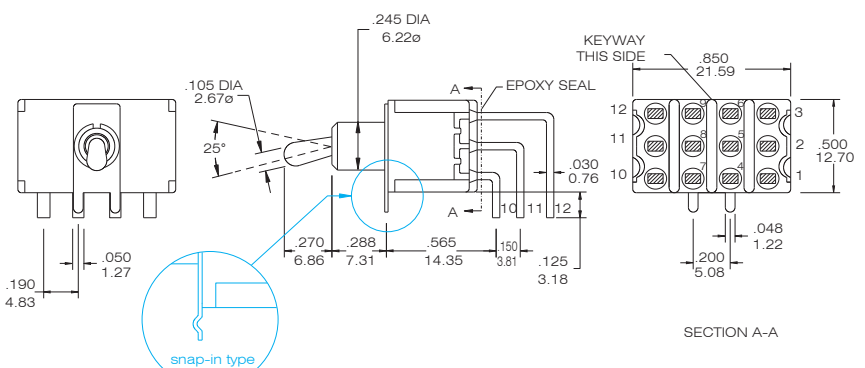


T8301P- TNQ/ T8301P-TNQ-S

### 4PDT



Model No.	Switching position		
T8401P	ON	none	ON
T8403P	ON	none	(ON)
T8405P	ON	OFF	ON
T8407P	(ON)	OFF	(ON)
T8409P	ON	OFF	(ON)
Term. Comm.	2,3,5,6 8-9,11-12	open	2,1,5,4 8-7,11-10
3 way switches (DP3T)			
T845P	ON	ON	ON
T847P	(ON)	ON	(ON)
T849P	ON	ON	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5,4 8-9,11-10	2-1,5,4 8-7,11-10

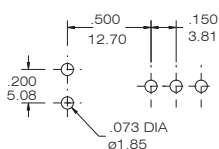


T8401P- TNQ/ T8401P-TNQ-S

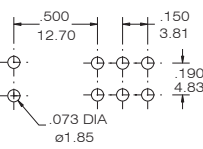
Please see page A20 to know more about T845P ( 3-way Switches)

### P.C.B MOUNTING DIMENSIONS

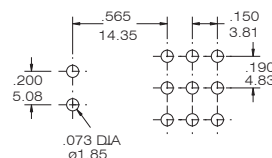
FOR T8019L-T8020LB



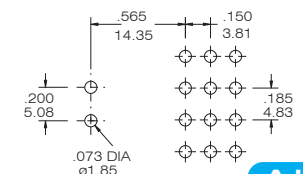
FOR T8021L-T8022LB



FOR T8301P-T8309P



FOR T8401P-T8409P





# T80-T

# Miniature Toggle Switches



## Actuator Option

S (STD)

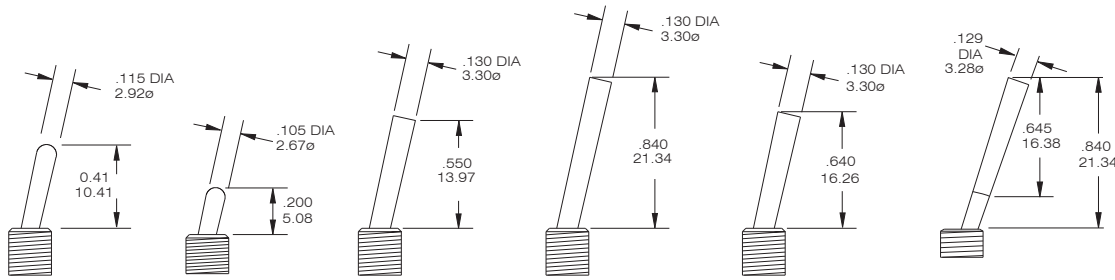
T (STD)

X LONG

W LONG

V LONG

Y PLASTIC



Y HANDLE COLOR NO.	COLOR
1	White
2	Black(std.)
3	Red

the height of actuator is with bushing "E". It will be difference with other bushing option

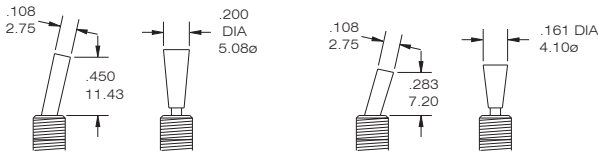
Now the available color is "2". If you need the others, please inquire first.

### Flatted Actuator ( ONLY APPLY "H""H1""H2" BUSHING)

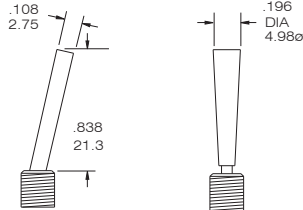
### Locking Lever

U (standard)

U1 ( short )

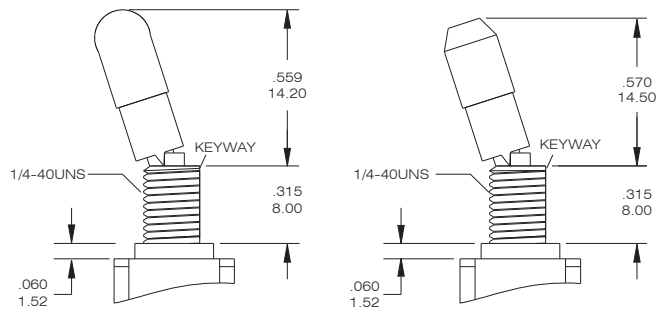


U2 ( long )



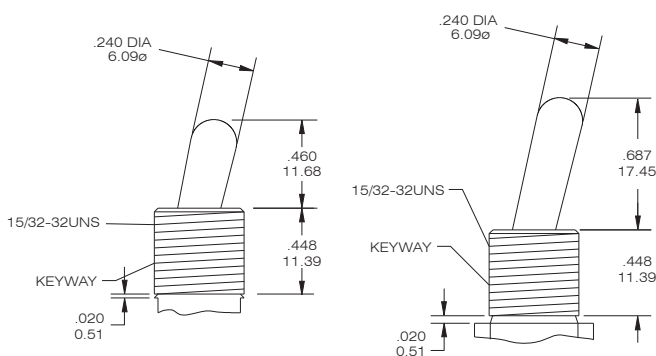
LK (round top)

LK1 (flat top)



Z LARGE TOGGLE  
Z4 ANTIROTATION

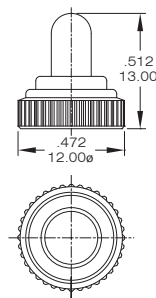
Z1 LARGE TOGGLE  
Z3 ANTIROTATION



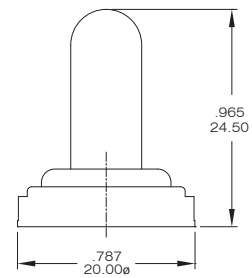
Bushing Option Code not required unless  
(1) splashproof bushing ordered, choose the bushing code " L ".  
(2) non-thread ordered, choose the bushing code " N " .

Bushing Option Code not required unless  
(1) " L " splashproof bushing ordered --LKL / LK1L  
(2) non-thread ordered, choose the bushing code " N " -- LKN / LK1N

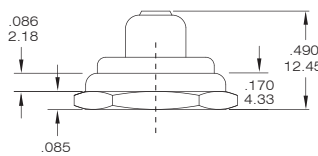
## Rubber Hood Sealing



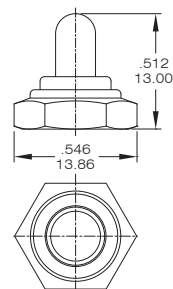
K1=METRIC  
E1=INCH  
E1=L=INCH



E2 for the large toggle  
(15/32-32UNS)



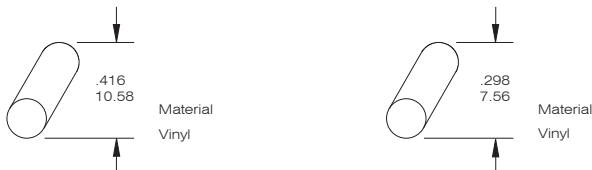
E3 for the large toggle  
(15/32-32UNS)



E8

T1 for actuator "S" only

T2 for actuator "T"



code	color	code	color	code	color	code	color
0	transparent	1	white	2	black	3	red
4	orange	5	yellow	6	green	7	blue

### Toggle Cap Option

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

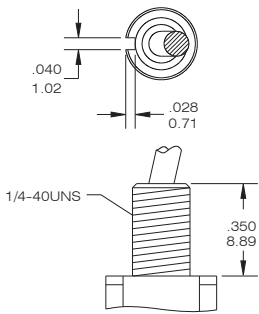
KEY / TACT



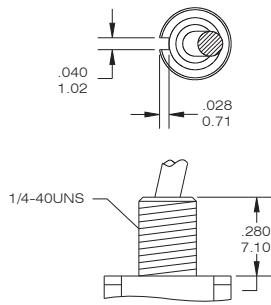


## Bushing Option

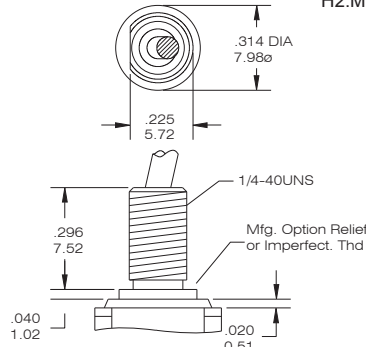
**E THD STD. TYPE  
M NON-THD**



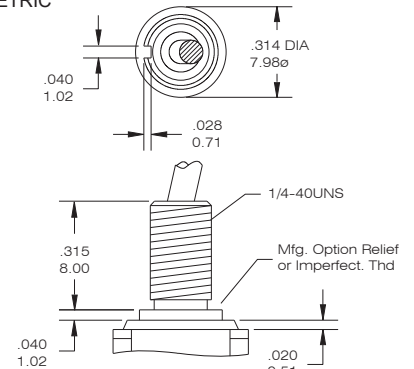
**F THD.  
N NON-THD**



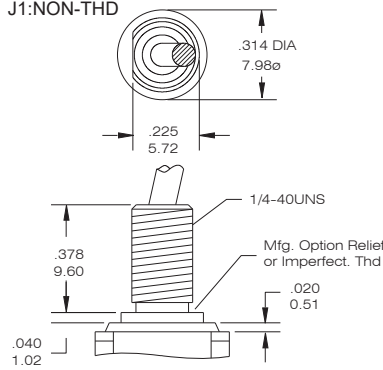
**HIGH TORQUE  
G: THD STD. TYPE  
G1: NON-THD**



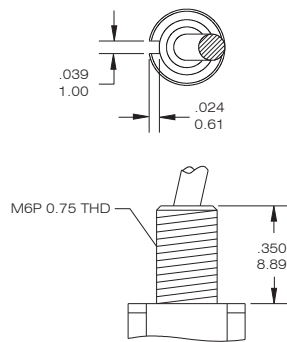
**HIGH TORQUE  
H: THD STD. TYPE  
H1: NON-THD  
H2: METRIC**



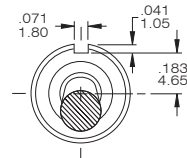
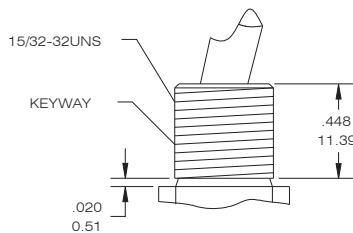
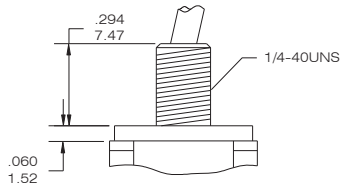
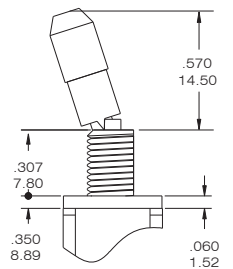
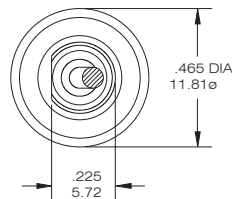
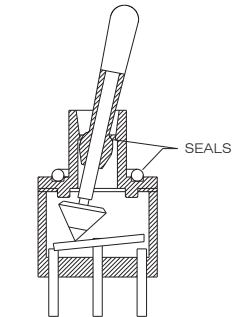
**LONG  
J: THD STD. TYPE  
J1: NON-THD**



**K METRIC**



## Splash water proof Solution L SPLASH-PROOF



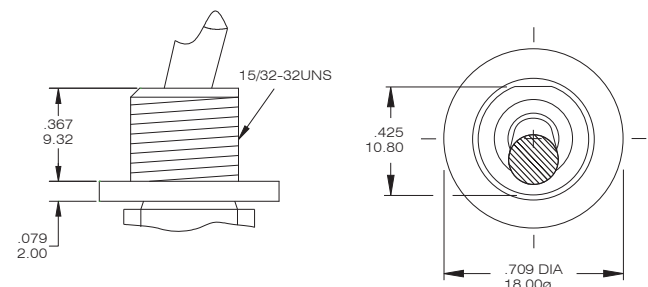
### Panel Mounting

#### 1/4 IN. BUSHING

#### METRIC BUSHING

#### 15/32 IN. BUSHING

## W SPLASH-PROOF

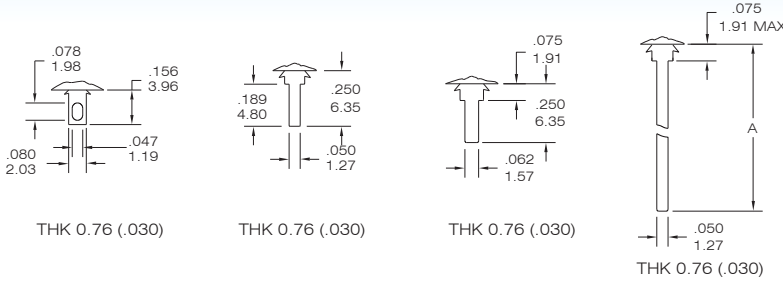




## TERMINAL OPTION (ONLY FOR THE STRAIGHT TYPE T8013~T8401)

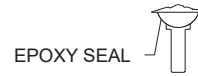
## TERMINAL SEAL OPTION

B SOLDER LUG C PRINTED CIRCUIT D QUICK CONNECT WIREWRAP



CODE	"A"dimension
D1	.750 (19.05)
D3	.425 (10.8)

E TERMINAL SEAL



## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	5 A @ 125 V AC or 28 V DC; 3 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 5 A @ 125V AC or 28 VDC; 3 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

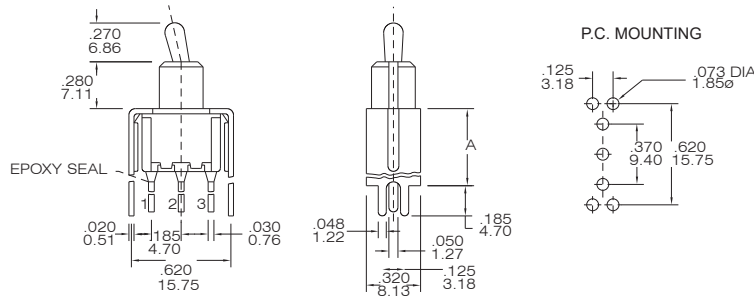
\* The K option is only for some special item. Please inquire first when you need the "K" option

## VERTICAL SUPPORT BRACKET OPTION

( only apply the straight type terminal -page A14. Please build the terminal option "c" code)

SPDT

S20/S25/V20/V25



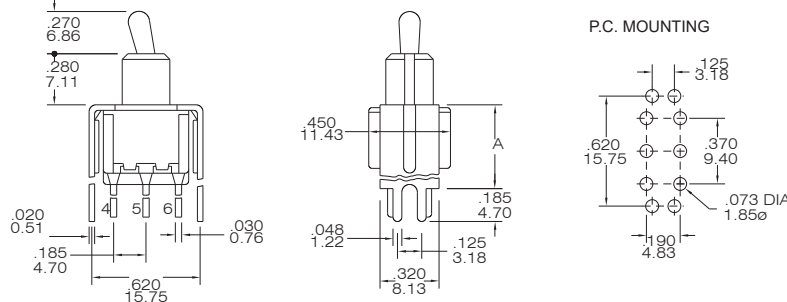
T8013 - TNCQ-S20(S25)

CODE	"A"dimension
S20/V20	.460 (11.68)
S25/V25	.630 (16.00)

V20/V25 : the snap-in type

DPDT

S20/S25/V20/V25



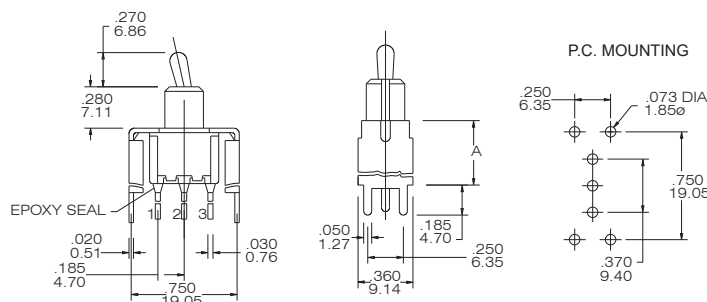
T8011 - TNCQ-S20(S25)

CODE	"A"dimension
S20/V20	.460 (11.68)
S25/V25	.630 (16.00)

V20/V25 : the snap-in type

SPDT

S35/S40/V35/V40



T8013 - TNCQ-S35(S40)

CODE	"A"dimension
S35/V35	.460 (11.68)
S40/V40	.630 (16.00)

V35/V40 : the snap-in type



# T80-T

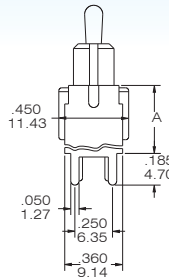
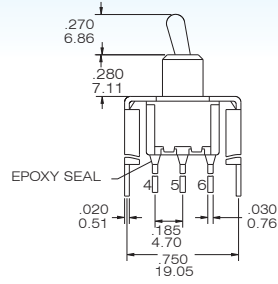
# Miniature Toggle Switches



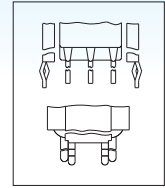
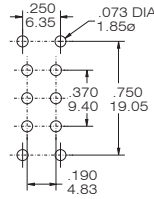
S35 / S40/ V35/V40



DPDT



P.C. MOUNTING



SNAP-IN  
V35/ V40

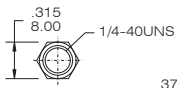
CODE	"A" dimension
S35/V35	.460 (11.68)
S40/V40	.630 (16.00)
V35/V40 : the snap-in type	

T8011 - TNCQ-S35(S40)

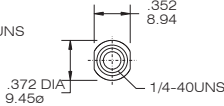
## The hardware of T80-T TOGGLE SWITCHES

NUT

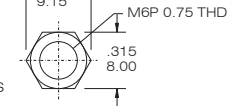
STD.



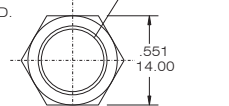
DRESS NUT



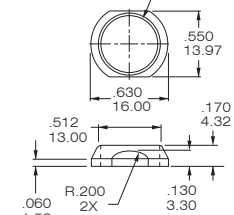
METRIC NUT



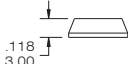
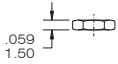
STD. FOR Z Z1



DRESS NUT FOR Z Z1

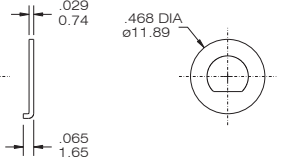
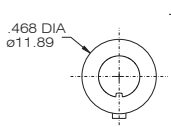


KNURLED NUT

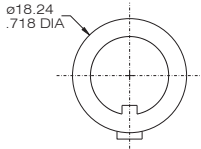


LOCKING RING

STD.

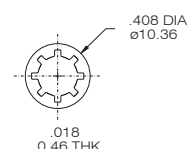


STD. FOR Z Z1

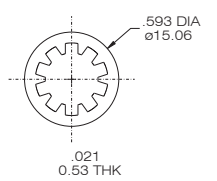


LOCK WASHER

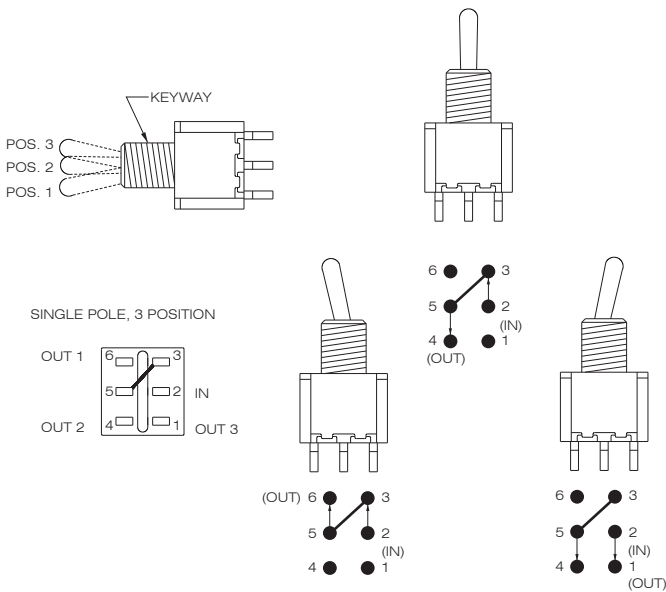
STD.



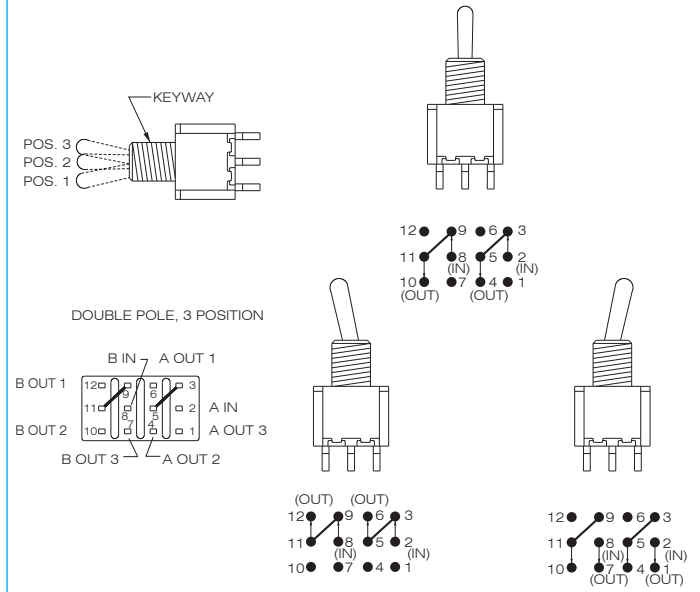
STD. FOR Z Z1



## The information of 3-way toggle switches



SP3T



DP3T

## FEATURE

1. Sealed construction
2. Ultraminiature size
3. High temperature materials (UL 94V-0)

## SPECIFICATIONS

CONTACT RATING: max 0.4 VA max @ 28 VDC  
Min . 1  $\mu$  A /20 mVDC

LIFE CYCLE: 10,000 make-and-break cycles

CONTACT RESISTANCE: 100 m $\Omega$  max. initial @2-4 VDC, 100 mA

INSULATION RESISTANCE: 500 M $\Omega$  min.

DIELECTRIC STRENGTH: 250 VAC, 50 Hz for the duration of 1 minute.

OPERATING TEMPERATURE: -20°C to +85°C

M1



## MATERIALS

CASE - nylon 4/6

ACTUATOR - nylon

BASE - nylon 4/6

TERMINAL - Copper alloy, gold-plated or tin plated

CONTACT - Copper alloy, silver plated

LOOP SEALING - rubber

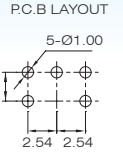
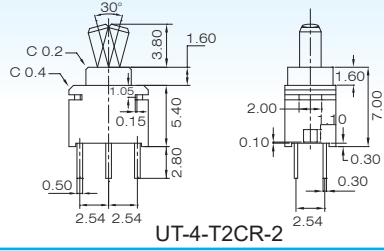
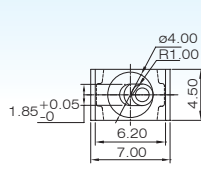
## How do you modify the switches you need!!

U T - 4 - T 2 C K - 2 - -

Switches Function		Actuator		Termination		Contact Material		Actuator color		Case color	
UT-4	SP on-none-on	T2	3.80	C	PC (straight type)	R	gold plated (std.)	1	white	□	: white (std.)
UT-4A	SP on-off-on			S	PC (snap-in type)			2	black	2	: black
UT-5	DP on-none-on			H	horizon						
UT-5A	DP on-off-on			V	vertical						
				M	SMT (only for SP)						
				M1	SMT						
										<b>RoHS code</b>	
										H = RoHS Compliant	



Model No.	Switching position		
UT-4	ON	none	ON
UT-4A	ON	OFF	ON
Term. Comm.	2-3	open	2-1

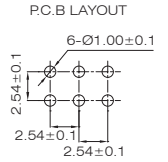
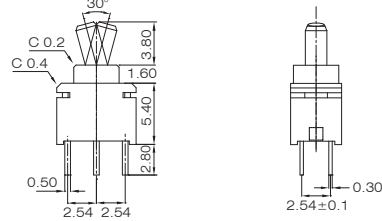
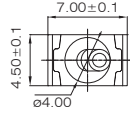


SPDT 2 Comm

UT-4-T2CR-2



Model No.	Switching position		
UT-5	ON	none	ON
UT-5A	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4

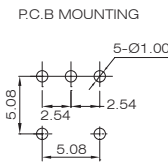
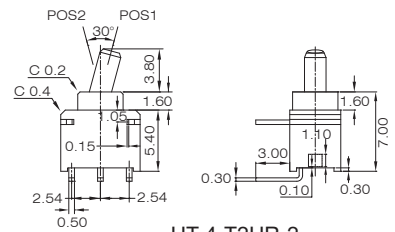
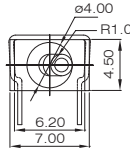


DPDT 2 Comm 5 Comm

UT-5-T2CR-2



Model No.	Switching position		
UT-4	ON	none	ON
UT-4A	ON	OFF	ON
Term. Comm.	2-3	open	2-1

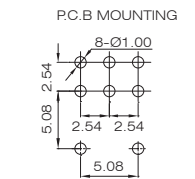
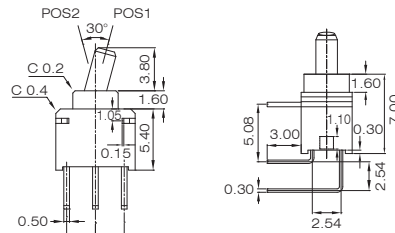
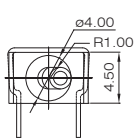


SPDT 2 Comm

UT-4-T2HR-2



Model No.	Switching position		
UT-5	ON	none	ON
UT-5A	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4

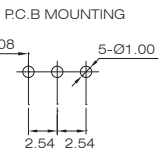
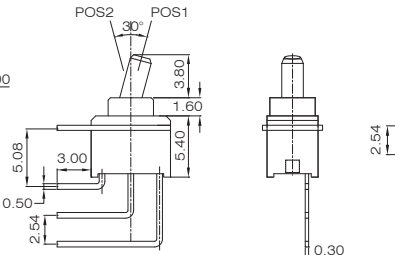
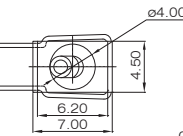


DPDT 2 Comm 5 Comm

UT-5-T2HR-2



Model No.	Switching position		
UT-4	ON	none	ON
UT-4A	ON	OFF	ON
Term. Comm.	2-3	open	2-1

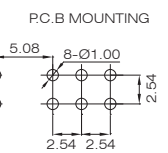
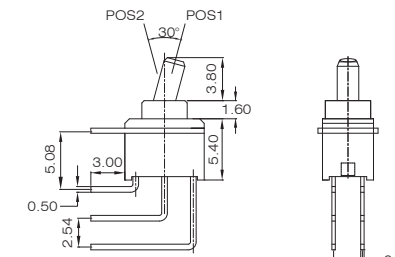
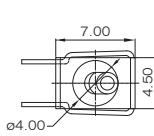


SPDT 2 Comm

UT-4-T2VR-2



Model No.	Switching position		
UT-5	ON	none	ON
UT-5A	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4

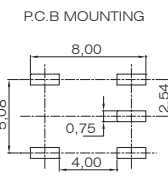
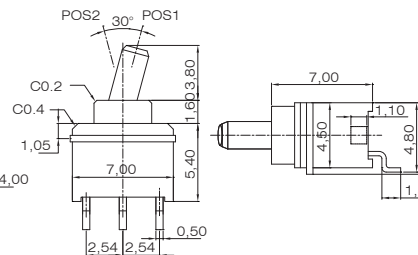
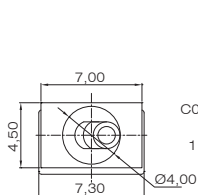


DPDT 2 Comm 5 Comm

UT-5-T2VR-2



Model No.	Switching position		
UT-4	ON	none	ON
UT-4A	ON	OFF	ON
Term. Comm.	2-3	open	2-1



SPDT 2 Comm

UT-4-T2MR-2

**FEATURE**

1. Metal Bushing
2. Sealed construction available
3. DPDT / 2.54 mm pitch

**SPECIFICATIONS**

CONTACT RATING: max 0.4 VA max @ 48 V AC or DC  
 Min . 1  $\mu$  A /20 mV AC or DC

LIFE CYCLE: 10,000 make-and-break cycles

CONTACT RESISTANCE: 50 m $\Omega$  max. initial @2-4 VDC, 100 mA

INSULATION RESISTANCE: 500 M $\Omega$  min.

DIELECTRIC STRENGTH: 500 V RMS @ sea level.

OPERATING TEMPERATURE: -30°C to +85°C

**MATERIALS**

Actuator - Copper alloy, chrome plated, internal o-ring seal are available

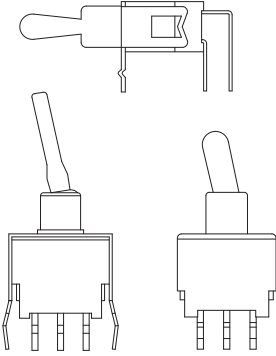
Bushing and Housing - Stainless Steel

CASE - glass filled nylon 4/6, flame retardant heat stabilized (UL94V-0 )

CONTACT -- phosphor bronze gold-plated over nickel plated

TERMINAL - phosphor bronze tin plated over nickel plated

TERMINAL SEAL - Epoxy


**How do you modify the switches you need!!**

E T - 4 - T 2 C K - A 5 S - T 4 - 3 -

Switches Function			Actuator		Contact Material		Toggle cap		RoHS code	
<b>washable</b>	<b>Non-washable</b>		<b>T2</b>	6.10	<b>K</b>	(std) gold / tin	<b>T4</b>	6.60	H = RoHS Compliant	
<b>ET-4</b>	<b>ETN-4</b>	SP on-none-on	<b>U</b>	flat 10.00	<b>R</b>	gold plated	<b>color</b>		<b>1</b>	white
<b>ET-4A</b>	<b>ETN-4A</b>	SP on-off-on	<b>Termination</b>		<b>Vertical support Bracket</b>		<b>2</b>	black	<b>3</b>	red
<b>ET-4I</b>	<b>ETN-4I</b>	SP on-off-(on)	<b>C</b>	P.C	<b>(none)</b>	Vertical bracket				
<b>ET-5</b>	<b>ETN-5</b>	DP on-none-on	<b>C1</b>	P.C	<b>A5S</b>					
<b>ET-5A</b>	<b>ETN-5A</b>	DP on-off-on	<b>H</b>	horizon						
<b>ET-5I</b>	<b>ETN-5I</b>	DP on-off-(on)	<b>V</b>	vertical						

\* Vertical right angle type is on pending. For further information, please inquire our office.



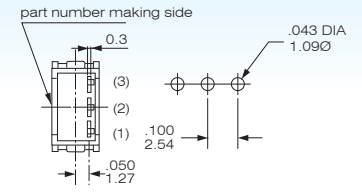
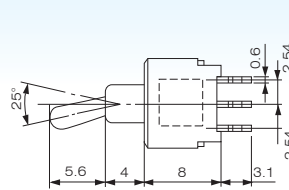
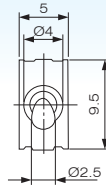
# ES30-T

## Sub-Miniature Toggle Switches (washable)



SPDT

Model No.	Switching position		
ET-4	ON	none	ON
ET-4A	ON	OFF	ON
ET-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



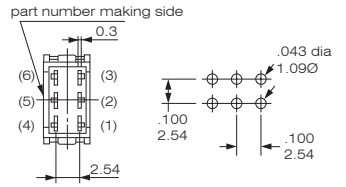
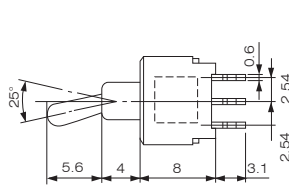
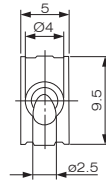
ET-4-T2CK

PC MOUNTING



DPDT

Model No.	Switching position		
ET-5	ON	none	ON
ET-5A	ON	OFF	ON
ET-5I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4



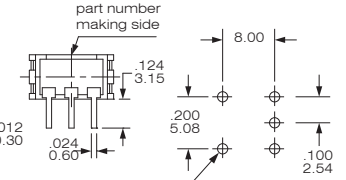
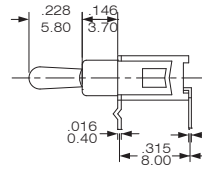
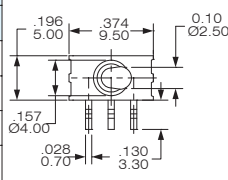
ET-5-T2CK

PC MOUNTING



SPDT

Model No.	Switching position		
ET-4	ON	none	ON
ET-4A	ON	OFF	ON
ET-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



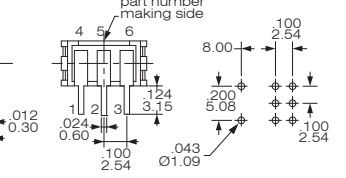
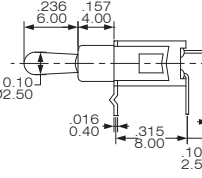
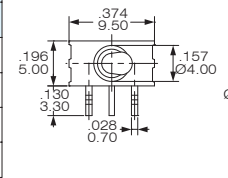
ET-4-T2HK

PC MOUNTING



DPDT

Model No.	Switching position		
ET-5	ON	none	ON
ET-5A	ON	OFF	ON
ET-5I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4



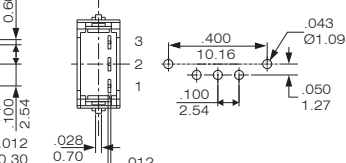
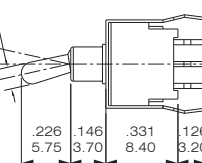
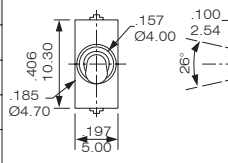
ET-5-T2HK

PC MOUNTING



SPDT

Model No.	Switching position		
ET-4	ON	none	ON
ET-4A	ON	OFF	ON
ET-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

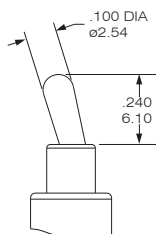


ET-4-T2CK-A5S

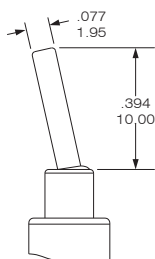
PC MOUNTING

### Actuator Option

T2

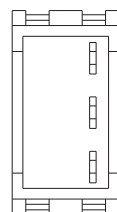


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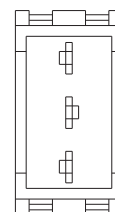


### P.C Terminal Option

C



C1



The bottom view of switch

### Toggle cap option

T4



code	color
1	white
2	black
3	red



## FEATURE

1. Sealed construction - internal actuator o-ring and epoxy terminal seal standard
2. Carry the IP67 approvals
3. The ESD protection available - Anti-static plastic actuator -9000 V DC static resistance between toggle and terminal.
4. Surface mounting (SMT)
5. Tape and Reel package



## SPECIFICATIONS

CONTACT RATING: R- 0.4 VA max @ 20 V AC or DC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.

### ESD Resistant Option :

P2 insulating actuator only: 9,000 VDC min. @ sea level, actuator to terminals.

DEGREE OF PROTECTION : IP67

OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE and BUSHING - glass filled nylon 4/6, flame retardant heat stabilized (UL94V-0)

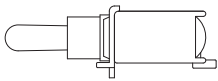
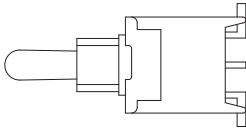
Actuator - Copper alloy, chrome plated, internal o-ring seal standard with all actuators

P2 / the anti-static actuator: Nylon 4/6, black standard(UL 94V-0)

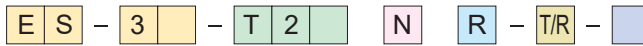
CONTACT AND TERMINAL - Copper alloy, silver or gold plated

SWITCH SUPPORT - Copper alloy, tin-plated

TERMINAL SEAL - Epoxy



## How do you build the switches you need!!



Switches Function	
ES-3	SP on-none-on
ES-3B	SP on-none-(on)
ES-3A	SP on-off-on
ES-3H	SP (on)-off-(on)
ES-3I	SP on-off-(on)

Actuator	
T1	10.16
T2	Std. 6.10
T3	8.13
T4	13.97
T5	3.5

Terminal	
(none)	std
N	backward
M	backward

Contact Material	
Q	silver plated
R	gold plated
G	gold over silver
K	gold / tin

RoHS code
H = RoHS Compliant

ESD protection actuator	
P1	(black) 10.16
P11	(white) 10.16
P2	(std - black) 6.10
P21	(white) 6.10

Package	
(none)	polly bag
T/R	tape & reel

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



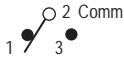


# ES40-T

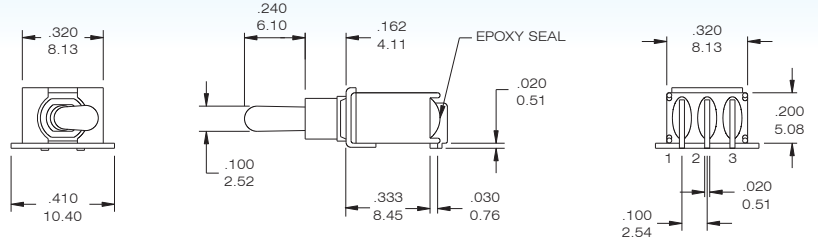
# Sealed SMT Sub-Miniature Toggle Switches



## SPDT



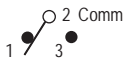
Model No.	Switching position		
ES-3	ON	none	ON
ES-3A	ON	OFF	ON
ES-3B	ON	None	(ON)
ES-3H	(ON)	OFF	(ON)
ES-3I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



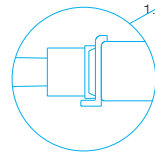
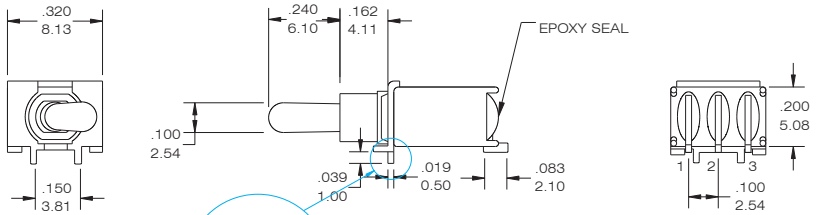
ES-3 - T2R

## The M & N terminal type

## SPDT



Model No.	Switching position		
ES-3	ON	none	ON
ES-3A	ON	OFF	ON
ES-3B	ON	None	(ON)
ES-3H	(ON)	OFF	(ON)
ES-3I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



without positioning pings  
ES-3-T2NR

ES-3 - T2 MR

## Actuator Option

**PLASTIC TOGGLE**

T1

T2

T3

T4

T5

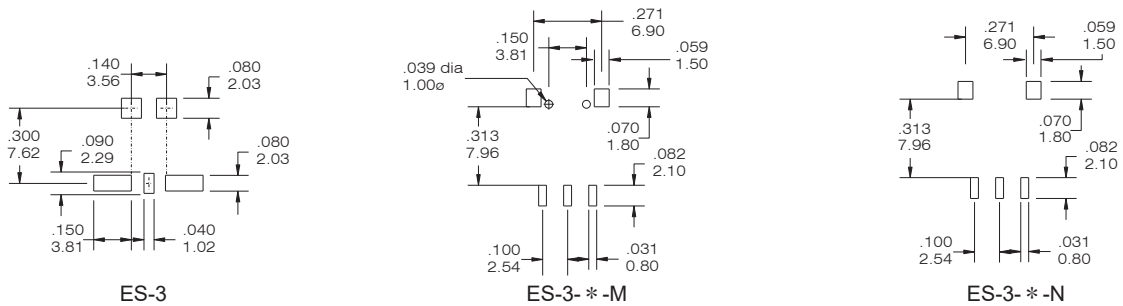
P1

P2

code	description
P1/P2	black(std.)
P11/P21	white

Material Nylon 4/6 (UL 94V-0), black std.  
Static resistance: 9,000V DC min. @sea level, actuator to terminals

## THE P.C.B MOUNTING



## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

## FEATURE

1. Sealed construction - internal actuator o-ring and epoxy terminal seal standard
2. Carry the IP67 approvals
3. The ESD protection available - Anti-static plastic actuator -9000 V DC static resistance between toggle and terminal.

## SPECIFICATIONS

CONTACT RATING: R- 0.4 VA max @ 20 V AC or DC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.

### ESD Resistant Option :

P2 insulating actuator only: 9,000 VDC min. @ sea level, actuator to terminals.

DEGREE OF PROTECTION: IP67

OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

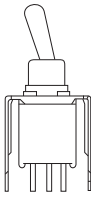
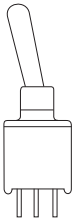
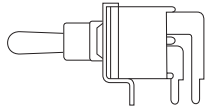
CASE and BUSHING - glass filled nylon 6/6, flame retardant heat stabilized (UL94V-0)

Actuator - Copper alloy, chrome plated, internal o-ring seal standard with all actuators  
 P2 / the anti-static actuator: Nylon 4/6, black standard (UL 94V-0)

CONTACT AND TERMINAL - Copper alloy, silver or gold plated

SWITCH SUPPORT - Copper alloy, tin-plated

TERMINAL SEAL - Epoxy



**IP 67 protection degree**

## How do you build the switches you need!!

The ES-4 / ES-5, please see the (A) ;

The ES-6/ES-7/ES-8/ES-9, please see the (B)

(A) **E S - 4 - P 2 C R - A 5 -**

Switch Function		Actuator		Termination	Contact Material	Vertical support Bracket	RoHS code
ES-4	SP on-none-on	T1	Std. 10.16	C (std) P.C	Q silver plated	(none) A5 straight type A5S (std.) snap-in type	H = RoHS Compliant
ES-4B	SP on-none-(on)	T2	Std. 6.10		R gold plated		
ES-4A	SP on-off-on	T3	8.13	G gold over silver			
ES-4H	SP (on)-off-(on)	T4	13.97	K gold / tin			
ES-4I	SP on-off-(on)	T5	3.5				
ES-5	DP on-none-on	<b>ESD protection actuator</b>					
ES-5B	DP on-none-(on)	P1	(black) 10.16				
ES-5A	DP on-off-on	P11	(white) 10.16				
ES-5H	DP (on)-off-(on)	P2	(std - black) 6.10				
ES-5I	DP on-off-(on)	P21	(white) 6.10				

(B) **E S - 6 - T 2 R - S -**

Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator	Contact Material	Support Bracket type
ES-6	ES-8	SP on-none-on	T1 10.16	Q silver plated	S (std.) Snap-in type (none) straight type
ES-6B	ES-8B	SP on-none-(on)	T2 Std. 6.10	R gold plated	
ES-6A	ES-8A	SP on-off-on	T3 8.13	G gold over silver	
ES-6H	ES-8H	SP (on)-off-(on)	T4 13.97	K gold / tin	
ES-6I	ES-8I	SP on-off-(on)	T5 3.5		
ES-7	ES-9	DP on-none-on	<b>ESD protection actuator</b>		
ES-7B	ES-9B	DP on-none-(on)	P1 (black) 10.16		
ES-7A	ES-9A	DP on-off-on	P11 (white) 10.16		
ES-7H	ES-9H	DP (on)-off-(on)	P2 (std - black) 6.10		
ES-7I	ES-9I	DP on-off-(on)	P21 (white) 6.10		

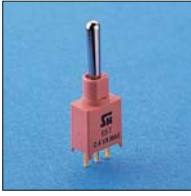


# ES40-T

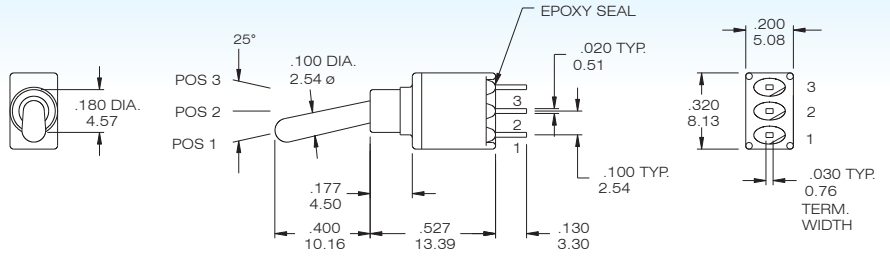
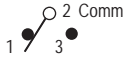
# Sealed Sub-Miniature Toggle Switches



## SPDT

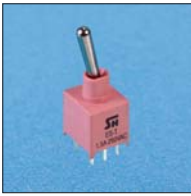


Model No.	Switching position		
ES-4	ON	none	ON
ES-4A	ON	OFF	ON
ES-4B	ON	None	(ON)
ES-4H	(ON)	OFF	(ON)
ES-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

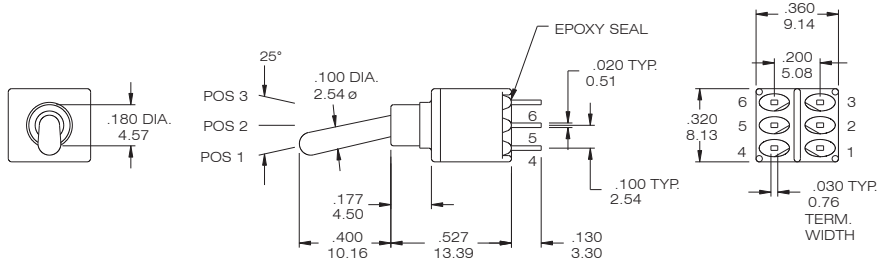


ES-4- T1CR

## DPDT

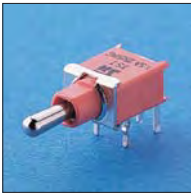


Model No.	Switching position		
ES-5	ON	none	ON
ES-5A	ON	OFF	ON
ES-5B	ON	None	(ON)
ES-5H	(ON)	OFF	(ON)
ES-5I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4

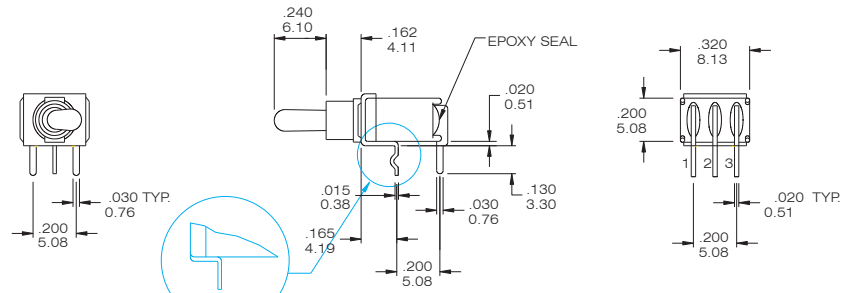
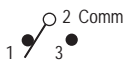


ES-5- T1CR

## SPDT

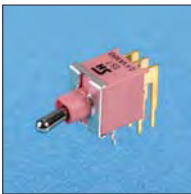


Model No.	Switching position		
ES-6	ON	none	ON
ES-6A	ON	OFF	ON
ES-6B	ON	None	(ON)
ES-6H	(ON)	OFF	(ON)
ES-6I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

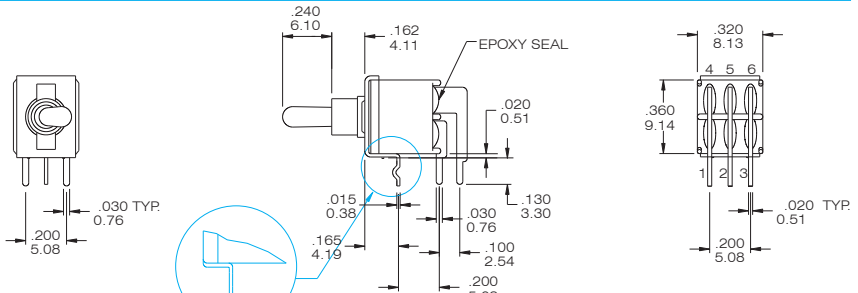


ES-6- T2R-S

## DPDT



Model No.	Switching position		
ES-7	ON	none	ON
ES-7A	ON	OFF	ON
ES-7B	ON	None	(ON)
ES-7H	(ON)	OFF	(ON)
ES-7I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4

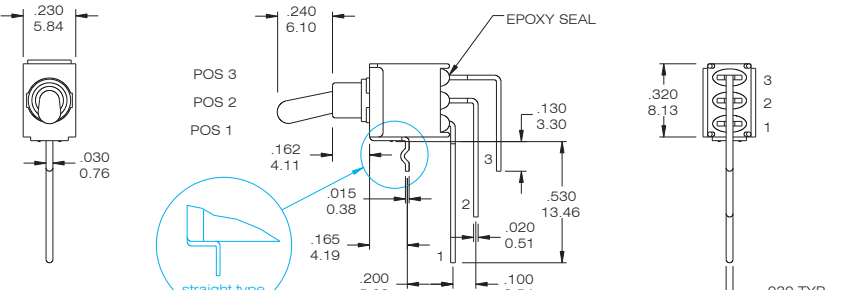
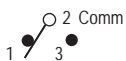


ES-7- T2R-S

## SPDT

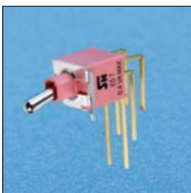


Model No.	Switching position		
ES-8	ON	none	ON
ES-8A	ON	OFF	ON
ES-8B	ON	None	(ON)
ES-8H	(ON)	OFF	(ON)
ES-8I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

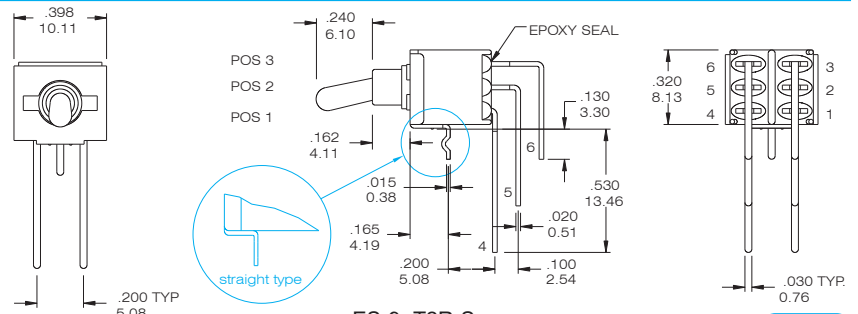


ES-8- T2R-S

## DPDT



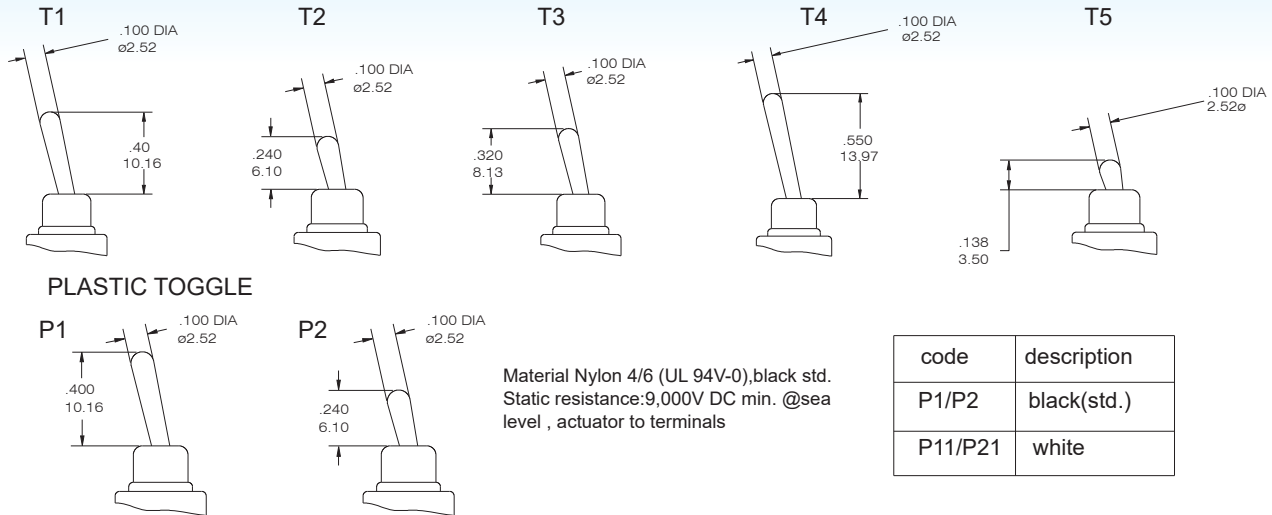
Model No.	Switching position		
ES-9	ON	none	ON
ES-9A	ON	OFF	ON
ES-9B	ON	None	(ON)
ES-9H	(ON)	OFF	(ON)
ES-9I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4



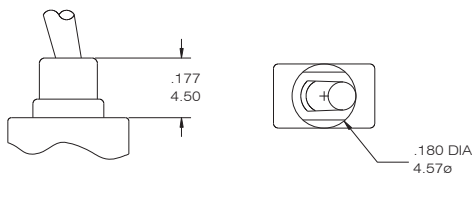
ES-9- T2R-S



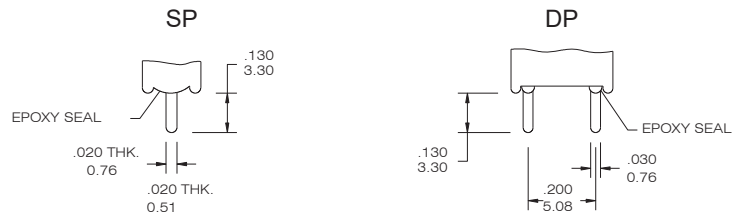
## Actuator Option



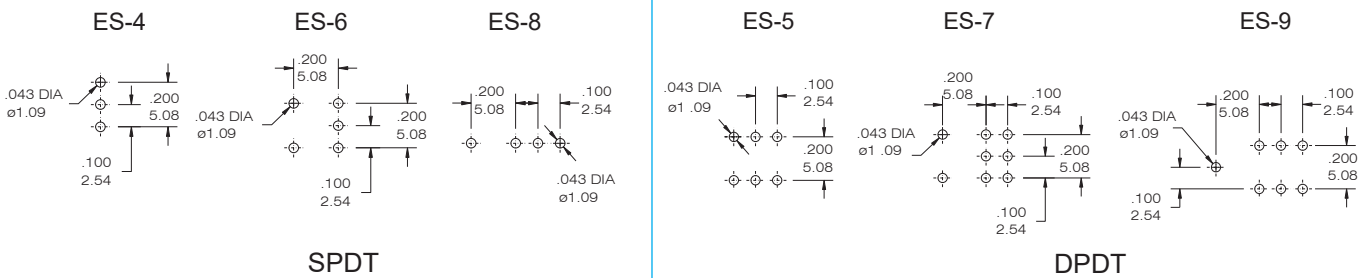
## Bushing dimension



## Terminal dimension



## P.C.B Mounting Dimension



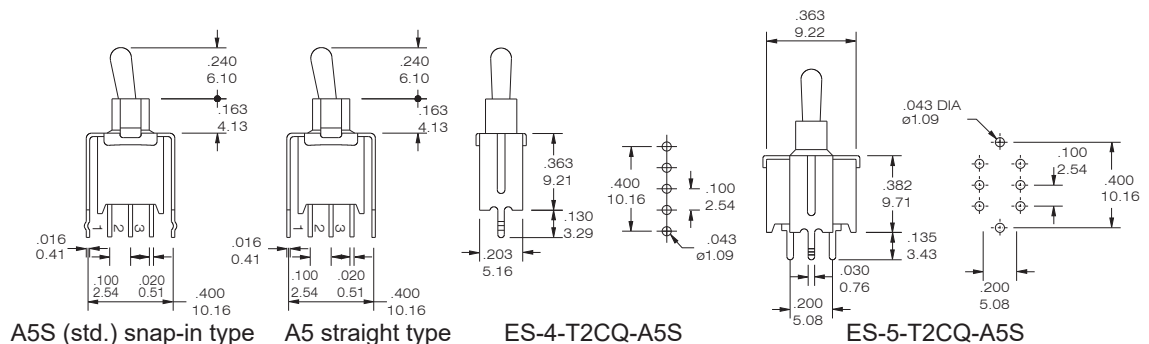
## CONTACT MATERIAL OPTIONS

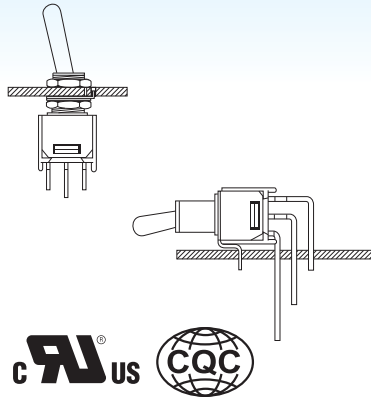
CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* The "K" option is only for some special item. Please inquire first when you need the "K" option

## VERTICAL SUPPORT BRACKET OPTION

### A5





## SPECIFICATIONS

CONTACT RATING: 3A @125 VAC or 28 VDC (Q Contact)  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE - diallyl phthalate ( DAP )  
 TOGGLE HANDLE - Copper alloy, chrome plated  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin-plated

**How do you build the switches you need!!**

The TS-4 / TS-5, please see the (A) ;

The TS-6/TS-7/TS-8/TS-9, please see the (B)

(A) **TS - 4 - S E B Q - E - A 5 - T 3 - 2 -**

Switch Function		Actuator	Bushing	Termination	Vertical support Bracket	Cap color
TS-4	SP on-none-on	For Bushing E/E1/F/F1	The 10-48 uns thread	B solder lug	(none)	1 white
TS-4B	SP on-none-(on)	S 9.40	E (std.) flat 5.59	C P.C	A5 straight type	2 black
TS-4A	SP on-off-on	T 5.33	F key-way 5.59	D wire wrap	A5S snap-in type	3 red
TS-4H	SP (on)-off-(on)	U 7.37	Non-thread		A6 straight type	5 yellow
TS-4I	SP on-off-(on)	For Bushing G/G1/J/J1	E1 flat 5.59		A6S snap-in type	6 green
TS-5	DP on-none-on	V 10.41	F1 key-way 5.59	<b>Contact Material</b>		7 blue
TS-5B	DP on-none-(on)	X 5.59	1/4-40 uns thread	Q silver plated	<b>Actuator Cap/ Rubber hood Sealing</b>	
TS-5A	DP on-off-on	<b>Locking Lever</b>	G flat 7.87	R gold plated	<b>Actuator Cap</b>	
TS-5H	DP (on)-off-(on)	LK Round top	J key-way 6.60	G gold over silver	T3 9.40 (actuator S/V)	<b>RoHS code</b>
TS-5I	DP on-off-(on)	LK1 Flat top	Non-thread	K tin plated	T4 6.60 (actuator U)	H = RoHS Compliant
TS-5C	DP on-on-on		G1 flat 7.87	<b>Epoxy seal</b>	<b>Rubber Hood</b>	
			J1 key-way 6.60	(none) none seal	E1 for bushing G/J	
			<b>None</b>	E epoxy seal	E7 for bushing E/F	
			The actuator LK/LK1 No requirement to choose the bushing, unless the non-thd LKN / LK1N			

(B) **TS - 6 - T E 1 Q - E - S - T 3 - 5 -**

Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator	Bushing	Contact Material	Actuator Cap
TS-6	TS-8	SP on-none-on	For Bushing E/E1/F/F1	The 10-48 uns thread	Q silver plated	(none)
TS-6B	TS-8B	SP on-none-(on)	S 9.40	E flat 5.59	R gold plated	T3 9.40 (actuator S/V)
TS-6A	TS-8A	SP on-off-on	T 5.33	F key-way 5.59	G gold over silver	T4 6.60 (actuator U)
TS-6H	TS-8H	SP (on)-off-(on)	U 7.37	Non-thread	K gold / tin	
TS-6I	TS-8I	SP on-off-(on)	For Bushing G/G1/J/J1	E1 (std.) flat 5.59	<b>Epoxy seal</b>	
TS-7	TS-9	DP on-none-on	V 10.41	F1 key-way 5.59	(none) none seal	<b>Cap color</b>
TS-7B	TS-9B	DP on-none-(on)	X 5.59	1/4-40 uns thread	E epoxy seal	1 white
TS-7A	TS-9A	DP on-off-on		G flat 7.87		2 black
TS-7H	TS-9H	DP (on)-off-(on)		J key-way 6.60	<b>Bracket type</b>	3 red
TS-7I	TS-9I	DP on-off-(on)		Non-thread	(none) std. Straight	5 yellow
TS-7C	TS-9C	DP on-on-on		G1 flat 7.87	S Snap-in type	6 green
	TS-82	SP on-none-on		J1 key-way 6.60		7 blue
	TS-82B	SP on-none-(on)				
	TS-82A	SP on-off-on				
	TS-82H	SP (on)-off-(on)				
	TS-82I	SP on-off-(on)				
						<b>RoHS code</b>
						H = RoHS Compliant



# TS40-T

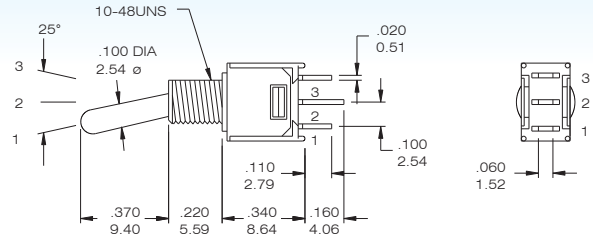
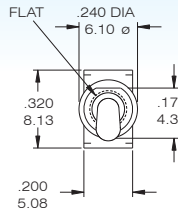
# Sub-miniature Toggle Switches



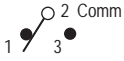
## SPDT



Model No.	Switching position		
TS-4	ON	none	ON
TS-4A	ON	OFF	ON
TS-4B	ON	None	(ON)
TS-4H	(ON)	OFF	(ON)
TS-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



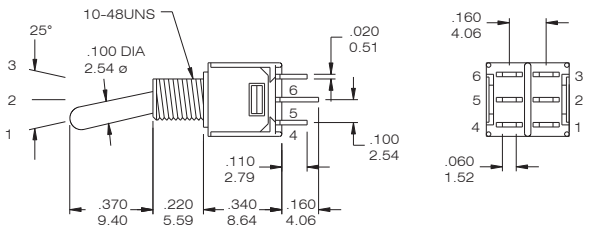
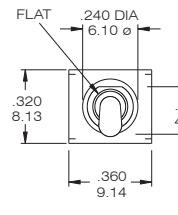
TS-4 - SEBQ



## DPDT



Model No.	Switching position		
TS-5	ON	none	ON
TS-5A	ON	OFF	ON
TS-5B	ON	None	(ON)
TS-5H	(ON)	OFF	(ON)
TS-5I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
TS-5C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



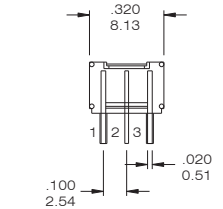
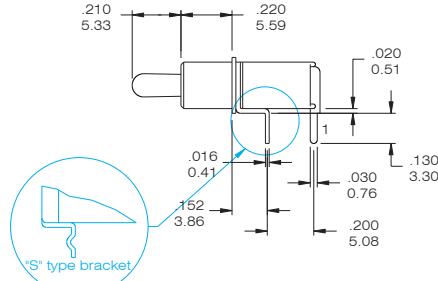
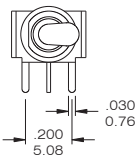
TS-5 - SEBQ



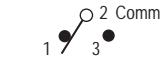
## SPDT



Model No.	Switching position		
TS-6	ON	none	ON
TS-6A	ON	OFF	ON
TS-6B	ON	None	(ON)
TS-6H	(ON)	OFF	(ON)
TS-6I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



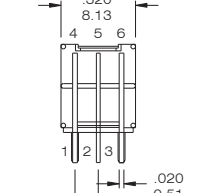
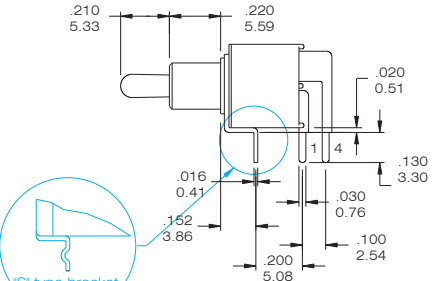
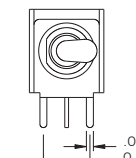
TS-6 - TE1Q / TS-6-TE1Q-S



## DPDT



Model No.	Switching position		
TS-7	ON	none	ON
TS-7A	ON	OFF	ON
TS-7B	ON	None	(ON)
TS-7H	(ON)	OFF	(ON)
TS-7I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
TS-7C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



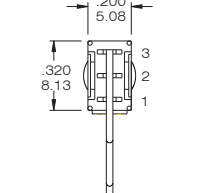
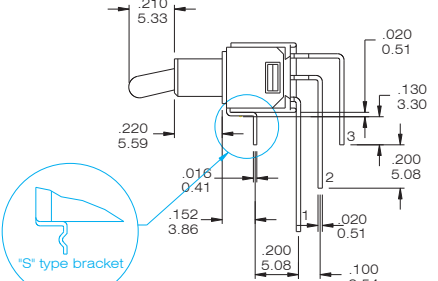
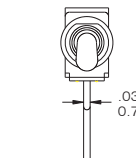
TS-7 - TE1Q / TS-7-TE1Q-S



## SPDT



Model No.	Switching position		
TS-8	ON	none	ON
TS-8A	ON	OFF	ON
TS-8B	ON	None	(ON)
TS-8H	(ON)	OFF	(ON)
TS-8I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



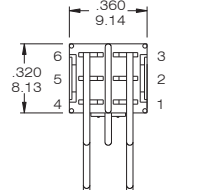
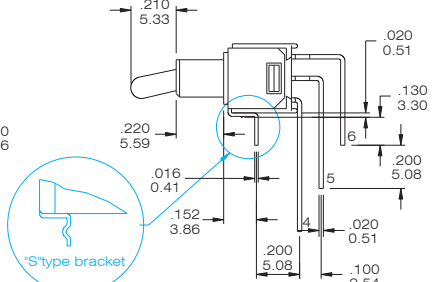
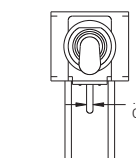
TS-8 - TE1Q / TS-8-TE1Q-S



## DPDT



Model No.	Switching position		
TS-9	ON	none	ON
TS-9A	ON	OFF	ON
TS-9B	ON	None	(ON)
TS-9H	(ON)	OFF	(ON)
TS-9I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
TS-9C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



TS-9 - TE1Q / TS-9-TE1Q-S



## A-3I

The dimensions in the catalogue and website are for reference only, not suitable for formal acknowledgement.

INDEX

TOGGLE

ROCKER

SLIDE

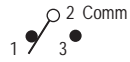
PUSH BUTTON / MICRO

DIP / ROTARY

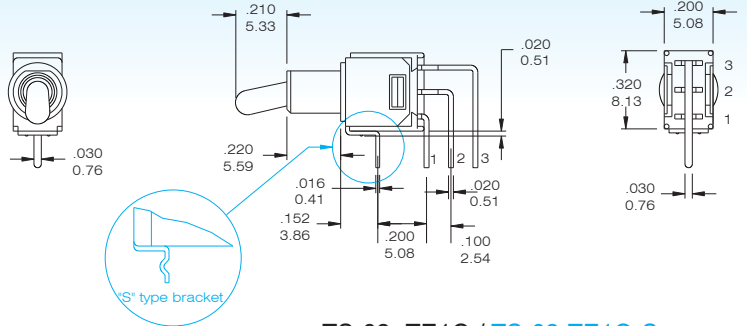
KEY / TACT



SPDT



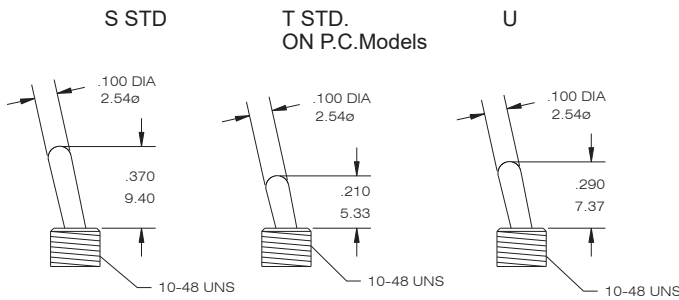
Model No.	Switching position		
TS-82	ON	none	ON
TS-82A	ON	OFF	ON
TS-82B	ON	None	(ON)
TS-82H	(ON)	OFF	(ON)
TS-82I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



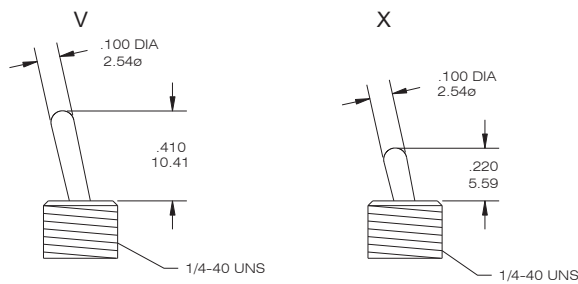
TS-82- TE1Q / TS-82-TE1Q-S

## Actuator Option

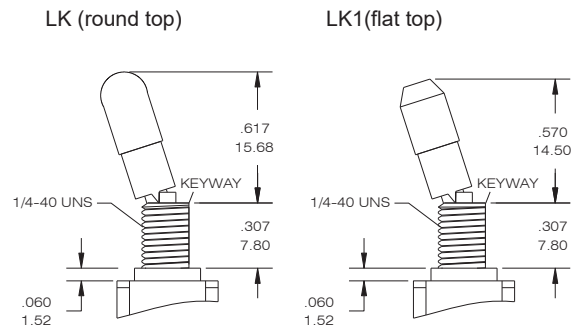
only applied for the bushing (E/E1/F/F1)



only applied for the bushing (G/G1/J/J1)



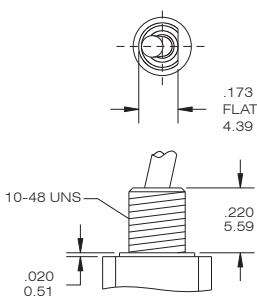
Locking Lever



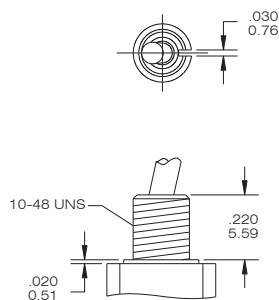
Bushing Option Code not required unless non-thread ordered, choose the bushing code "N" -- LKN / LK1N

## Bushing Option

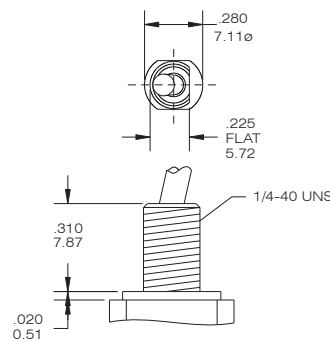
E THD. STD.  
E1 NON THD.  
(STD. ON P.C.Model)



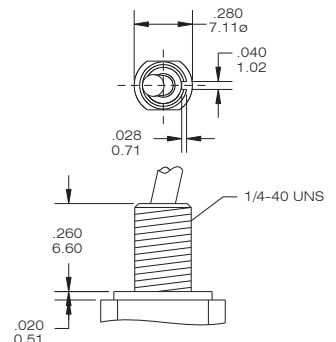
F THD  
F1 NON THD



G THD  
G1 NON THD

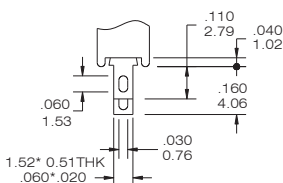


J THD  
J1 NON THD

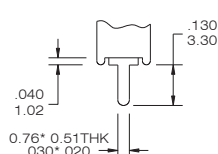


## TERMINAL OPTION ( ONLY FOR THE TS-4 / TS-5 )

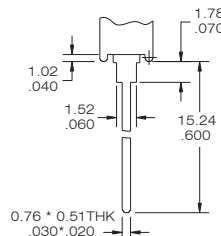
B Solder Lug(STD)



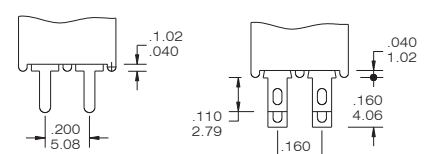
C PRINTED CIRCUIT



D Wire Wrap



DPDT



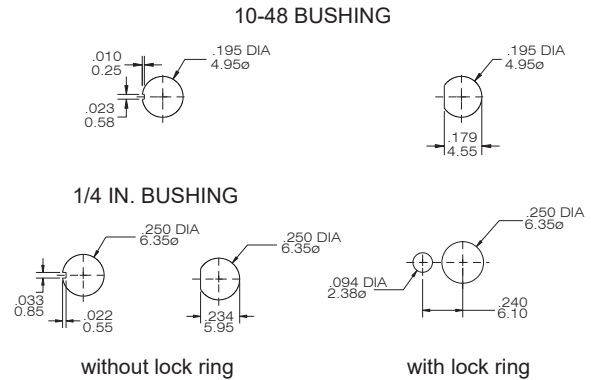
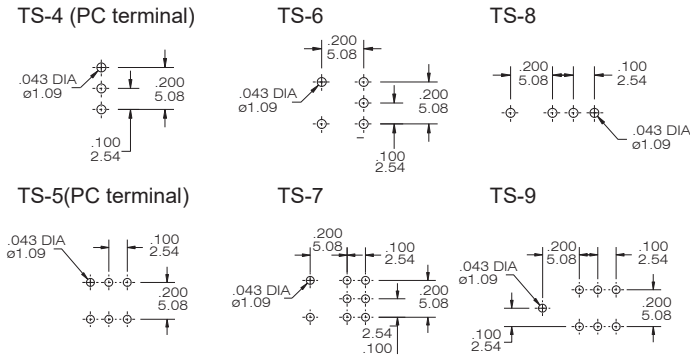
## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 125V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 125V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

### P.C.B MOUNTING DIMENSION

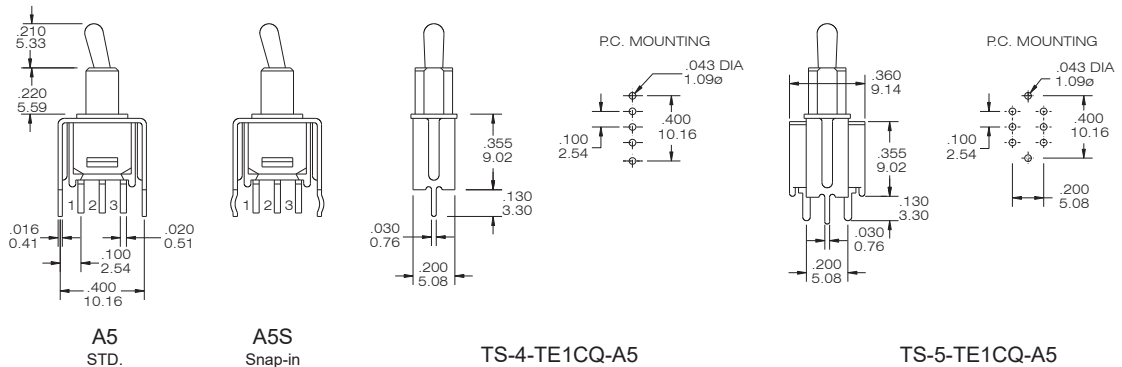
### PANEL MOUNTING DIMENSION



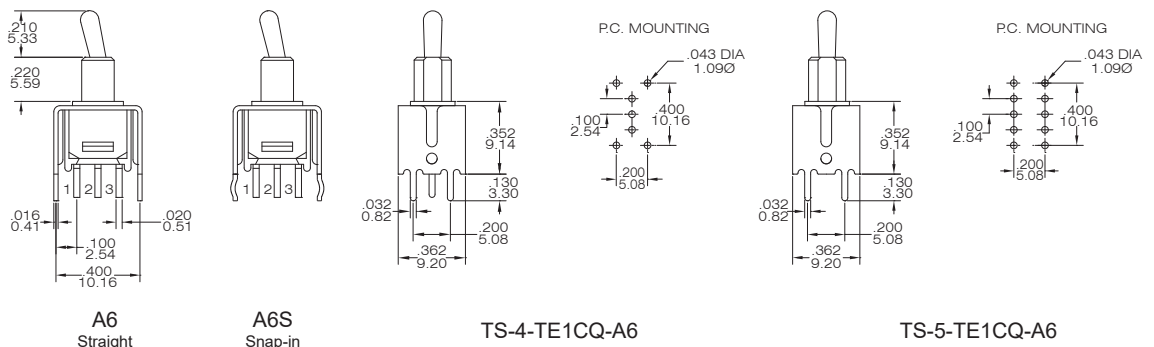
### VERTICAL SUPPORT BRACKET OPTION

only for the TS-4/TS-5. If you need the vertical support bracket, please build the terminal option - "C" code

#### A5/ A5S



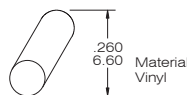
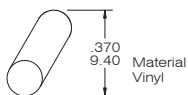
#### A6/ A6S



### Toggle Cap Option

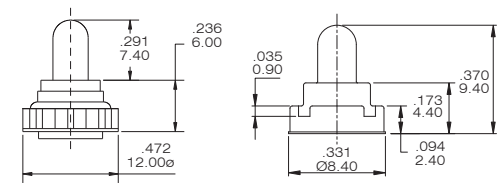
T3 for actuator "S" and "V"

T4 for actuator "U"



code	color	code	color
1	white	5	yellow
2	black	6	green
3	red	7	blue

### Rubber Hood Sealing



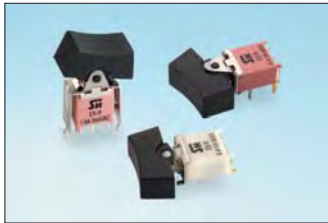




NE80-R Sealed Miniature Rocker and Paddle Switches .....B01



T90-R Miniature Rocker and Paddle Switches .....B05  
T80-R Miniature Rocker and Paddle Switches .....B07



ES40-R SMT Type Rocker Switches .....B15  
Sealed Sub-miniature Rocker Switches .....B17



UR Sealed Ultraminiature Rock Switches .....B20



TS40-R Sub-miniature Rocker Switches .....B21



T60-R Rocker Switches .....B24



R70 Power Rocker Switches .....B25



IR90 Power Rocker Switches .....B26



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TOGGLE

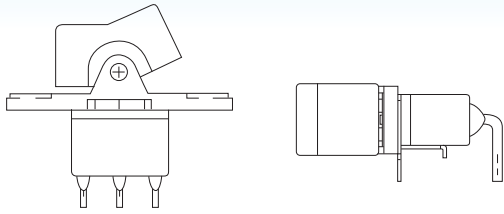
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



## SPECIFICATIONS

CONTACT RATING: 6A @125 VAC or 28 VDC ( Q terminal)  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE & BUSHING- Glass filled nylon 6/6 or nylon 4/6 (UL94V-0)  
 ACTUATOR - Nylon, black standard, internal o-ring  
 seal standard with all actuators  
 SWITCH SUPPORT- Copper alloy or steel, tin plated  
 CONTACT AND TERMINAL- Copper alloy, silver or gold plated  
 TERMINAL SEAL- Epoxy



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TOGGLE

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SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

How do you build the switches you need!!

The straight terminal type, please see the (A) ;

The right angle P.C terminals, please see the (B)

(A) **N E R 8 0 1 5** - **R 1 1** - **2** - **C** **Q** - **S 2 0** -

Switches Function		Actuator	Actuator Color	Making	Contact Material	Vertical support Bracket
NER8015	SP on-none-on	R11	1 white	(none) No marking	Q silver plated	(none) S20 11.68
NER8015A	SP on-none-(on)	R21	2 black(std)	1	R gold plated	
NER8016	SP on-off-on	P13	3 red	2	G gold over silver	RoHS code H = RoHS Compliant
NER8016A	SP (on)-off-(on)	P23	4 orange		K tin plated	
NER8016B	SP on-off-(on)		5 yellow			
NER8017	DP on-none-on		6 green			
NER8017A	DP on-none-(on)		7 blue			
NER8018	DP on-off-on		9 gray			
NER8018A	DP (on)-off-(on)					
NER8018B	DP on-off-(on)					
<b>3 way position switches</b>				<b>Termination</b>		
NER818	SP3T on-on-on		now the available is code "1/2/3". The other please inquire first	B solder lug C P.C 1.27width D Quick connect D1 wire wrap 19.05 D3 wire wrap 10.8		

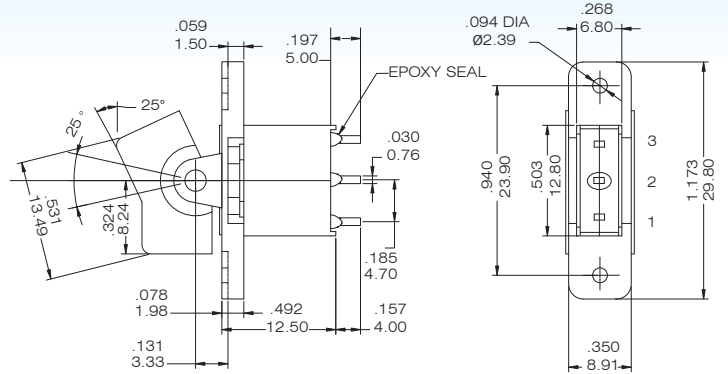
(B) **N E R 8 0 1 5 P** - **R 1 1** - **2** - **Q** -

Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator	Actuator Color	Contact Material	RoHS code
NER8015P	NER8015L / NER8013L	SP on-none-on	R11	1 white	Q silver plated	H = RoHS Compliant
NER8015PA	NER8015LA / NER8013LA	SP on-none-(on)	R21	2 black(std)	R gold plated	
NER8016P	NER8016L / NER8014L	SP on-off-on	P13	3 red	G gold over silver	RoHS code H = RoHS Compliant
NER8016PA	NER8016LA / NER8014LA	SP (on)-off-(on)	P23	4 orange	K tin plated	
NER8016PB	NER8016LB / NER8014LB	SP on-off-(on)		5 yellow		
NER8017P	NER8017L / NER8011L	DP on-none-on		6 green		
NER8017PA	NER8017LA / NER8011LA	DP on-none-(on)		7 blue		
NER8018P	NER8018L / NER8012L	DP on-off-on		9 gray		
NER8018PA	NER8018LA / NER8012LA	DP (on)-off-(on)				
NER8018PB	NER8018LB / NER8012LB	DP on-off-(on)				
<b>3 way position switches</b>						
NER818P / NER818L / NER812L		SP3T on-on-on	The right angle type cannot have frame.	now the available is code "1/2/3". The other please inquire first		
				<b>Making</b>		
				(none) No marking		
				1		
				2		

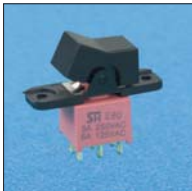


SPDT  
1 2 Comm 3

Model No.	Switching position		
NER8015	ON	none	ON
NER8015A	ON	none	(ON)
NER8016	ON	OFF	ON
NER8016A	(ON)	OFF	(ON)
NER8016B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

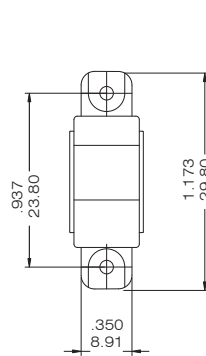


NER8015- R11-2-BQ



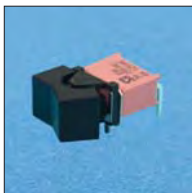
DPDT  
1 2 Comm 3 4 5 Comm 6

Model No.	Switching position		
NER8017	ON	none	ON
NER8017A	ON	none	(ON)
NER8018	ON	OFF	ON
NER8018A	(ON)	OFF	(ON)
NER8018B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NER818	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



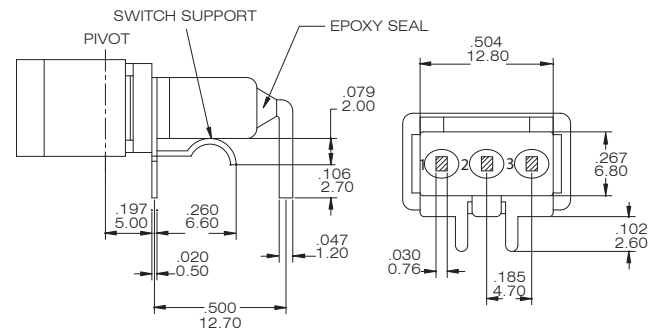
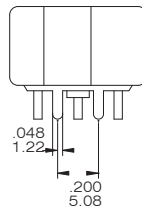
NER8017- R11-2-BQ

Please see page B14 to know more about NER818 (3-way Switches)

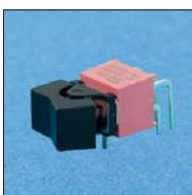


SPDT  
1 2 Comm 3

Model No.	Switching position		
NER8015P	ON	none	ON
NER8015PA	ON	none	(ON)
NER8016P	ON	OFF	ON
NER8016PA	(ON)	OFF	(ON)
NER8016PB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

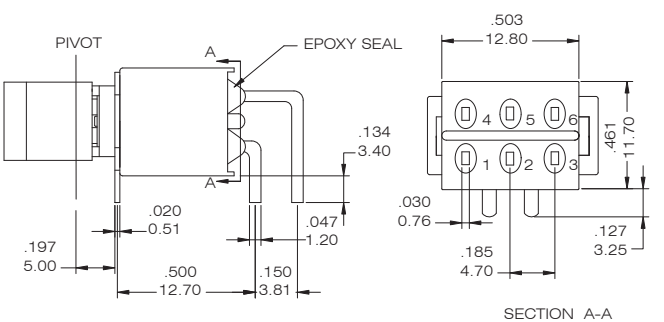
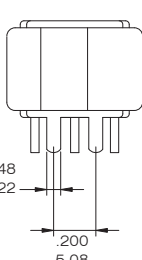


NER8015P - R11-2-Q



DPDT  
1 2 Comm 3 4 5 Comm 6

Model No.	Switching position		
NER8017P	ON	none	ON
NER8017PA	ON	none	(ON)
NER8018P	ON	OFF	ON
NER8018PA	(ON)	OFF	(ON)
NER8018PB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NER818P	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



NER8017P - R11-2-Q

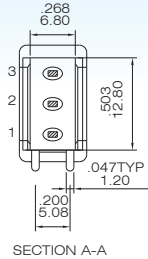
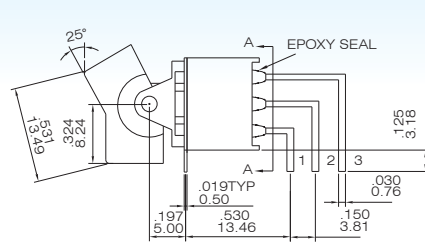
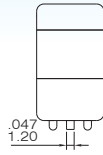
Please see page B14 to know more about NER818P (3-way Switches)



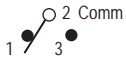
### SPDT



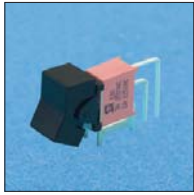
Model No.	Switching position		
NER8015L	ON	none	ON
NER8015LA	ON	none	(ON)
NER8016L	ON	OFF	ON
NER8016LA	(ON)	OFF	(ON)
NER8016LB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



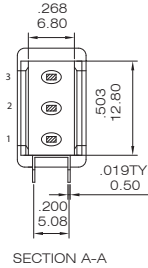
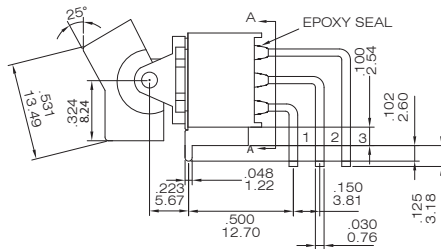
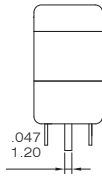
### NER8015L- R11-2-Q



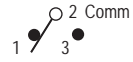
### SPDT



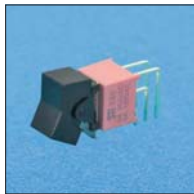
Model No.	Switching position		
NER8013L	ON	none	ON
NER8013LA	ON	none	(ON)
NER8014L	ON	OFF	ON
NER8014LA	(ON)	OFF	(ON)
NER8014LB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



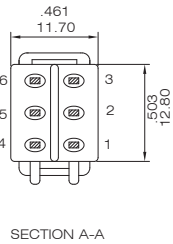
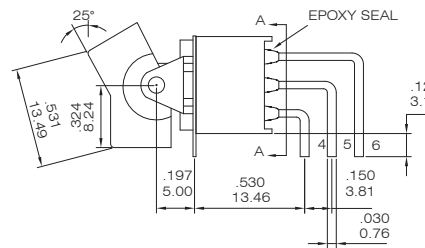
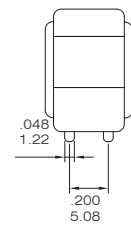
### NER8013L- R11-2-Q



### DPDT



Model No.	Switching position		
NER8017L	ON	none	ON
NER8017LA	ON	none	(ON)
NER8018L	ON	OFF	ON
NER8018LA	(ON)	OFF	(ON)
NER8018LB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NER818L	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

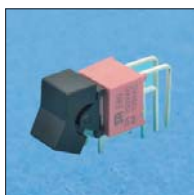


### NER8017L - R11-2-Q

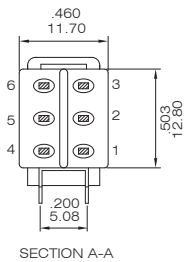
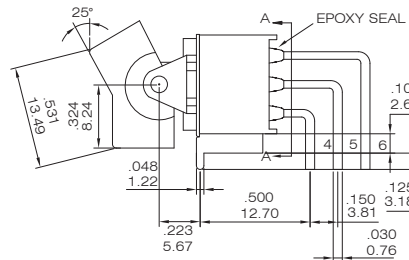
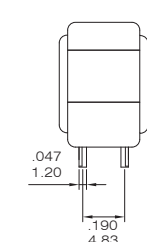
Please see page B14 to know more about NER818L (3-way Switches)



### DPDT



Model No.	Switching position		
NER8011L	ON	none	ON
NER8011LA	ON	none	(ON)
NER8012L	ON	OFF	ON
NER8012LA	(ON)	OFF	(ON)
NER8012LB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches			
NER812L	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

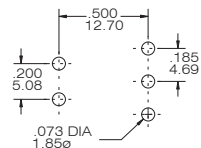


### NER8011L - R11-2-Q

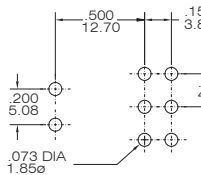
Please see page B14 to know more about NER812L (3-way Switches)



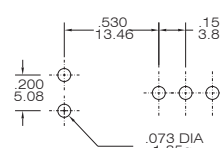
#### FOR NER8015P-NER8016PB



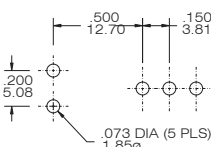
#### FOR NER8017P-NER8018PB



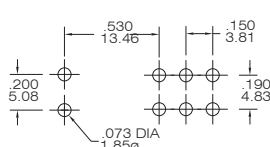
#### FOR NER8015L-NER8016LB



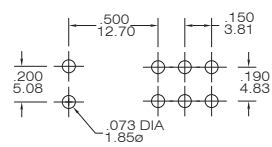
#### FOR NER8013L-NER8014LB



#### FOR NER8017L-NER8018LB



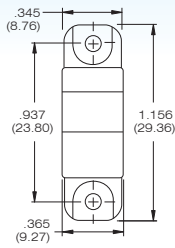
#### FOR NER8011L-NER8012LB



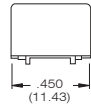
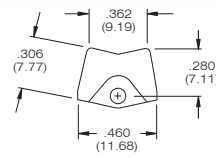
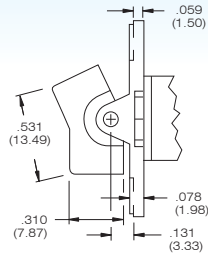


## Actuator Option

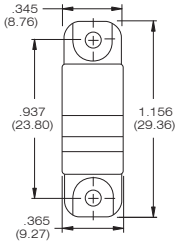
R11



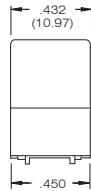
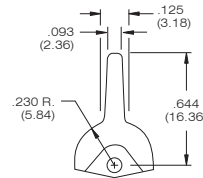
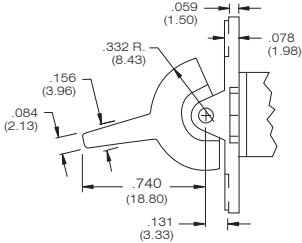
R21



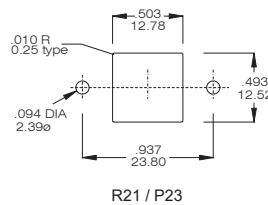
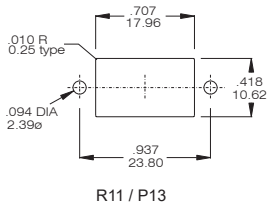
P13



P23

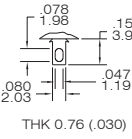


## Panel Mounting

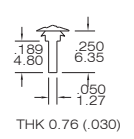


## Terminal Option (only for straight type NER8015~NER8018)

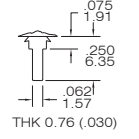
B SOLDER LUG



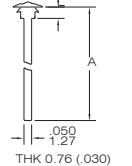
C PRINTED CIRCUIT



D QUICK CONNECT



WIREWRAP



CODE	"A" dimension
D1	.750 (19.05)
D3	.425 (10.8)

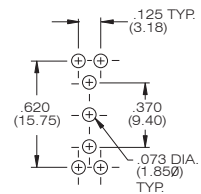
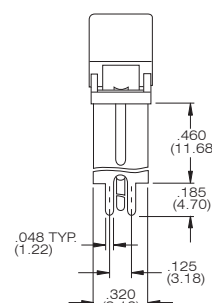
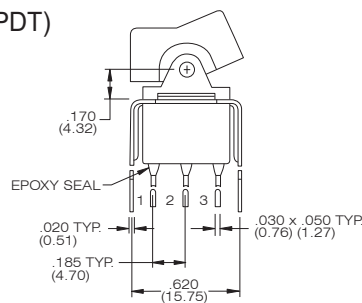
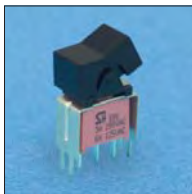
## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	6 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 6 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

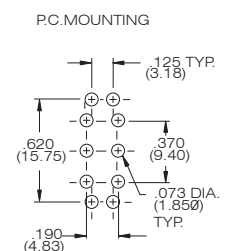
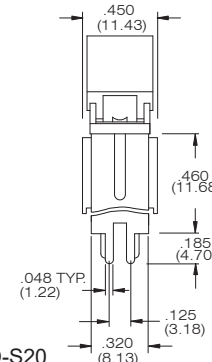
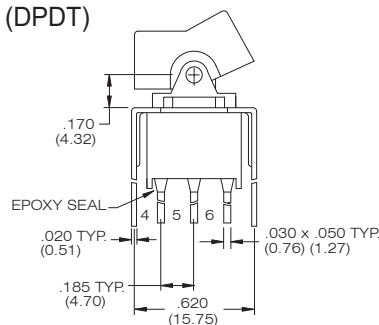
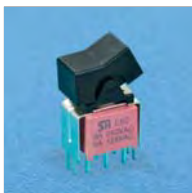
## VERTICAL SUPPORT BRACKET ( only apply the straight type terminal: page B02 )

S20 (SPDT)

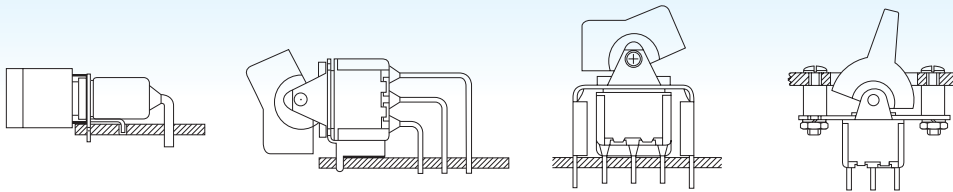


NER8015-R11-2-CQ-S20

S20 (DPDT)



NER8017 - R11-2-CQ-S20



## SPECIFICATIONS

CONTACT RATING: 6A @125 VAC or 28 VDC ( Q terminal)  
 LIFE CYCLE: 10,000 make-and-break cycles  
 CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +120°C

## MATERIALS

CASE - diallyl phthalate ( DAP )  
 Actuator - ABS, black standard.  
 Frame - Nylon (UL 94V-0), black  
 BUSHING - Copper alloy or Zinc, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated

## How do you build the switches you need!!

(A) R9015 - R11 - 2 - C Q - E - S20 -  

Switches Function		
R9015	SP	R9017 DP on-none-on
R9015A	SP	R9017A DP on-none-(on)
R9016	SP	R9018 DP on-off-on
R9016A	SP	R9018A DP (on)-off-(on)
R9016B	SP	R9018B DP on-off-(on)
R9301V	3P	R9401V 4P on-none-on
R9303V	3P	R9403V 4P on-none-(on)
R9305V	3P	R9405V 4P on-off-on
R9307V	3P	R9407V 4P (on)-off-(on)
R9309V	3P	R9409V 4P on-off-(on)
3 way position switches		
R918	SP3T	on-on-on
R918A	SP3T	(on)-on-(on)
R918B	SP3T	on-on-(on)
R945V	DP3T	on-on-on
R947V	DP3T	(on)-on-(on)
R949V	DP3T	on-on-(on)

Actuator
R11
R21
P13
P23
R15
R17
R12
R22
R32
P14
P24
P34

Actuator Color
1 white
2 black(std)
3 red
4 orange
5 yellow
6 green
7 blue
9 gray

Frame Color
1 white
2 black
3 red

Termination
B solder lug
C P.C 1.27width
D Quick connect
D1 wire wrap 19.05
D3 wire wrap 10.8

Contact Material
Q silver plated
R gold plated
G gold over silver
K tin plated

Epoxy seal
(none) none seal
E epoxy seal

Vertical support Bracket
(none)
S20 11.68
S25 16.00
S35 11.68
S40 16.00
V20 snap-in 11.68
V25 snap-in 16.00
V35 snap-in 11.68
V40 snap-in 16.00

RoHS code
H = RoHS Compliant

INDEX

TOGGLE

ROCKER

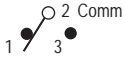
SLIDE

PUSH BUTTON / MICRO

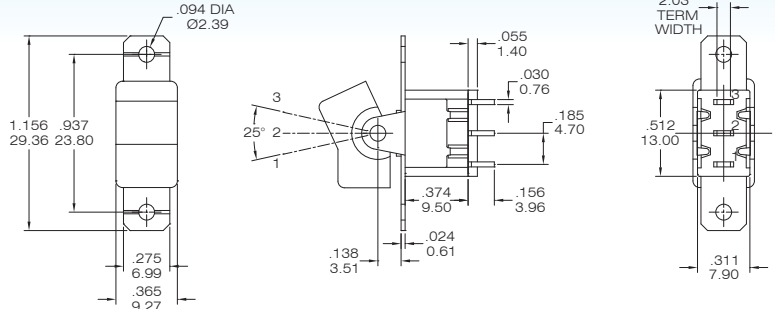
DIP / ROTARY

KEY / TACT

### SPDT



Model No.	Switching position		
R9015	ON	none	ON
R9015A	ON	none	(ON)
R9016	ON	OFF	ON
R9016A	(ON)	OFF	(ON)
R9016B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

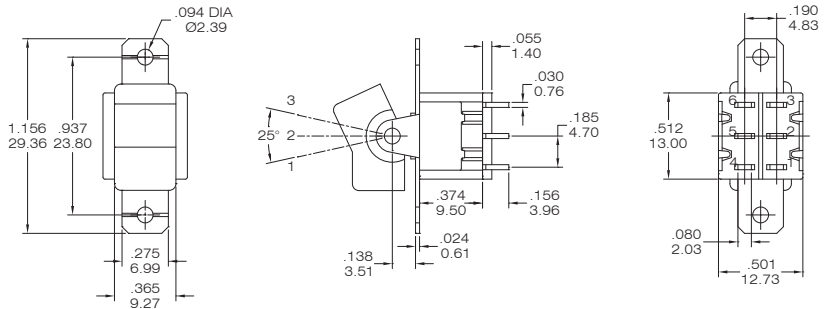


R9015 - R11-2-BQ

### DPDT



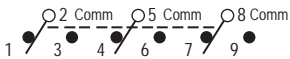
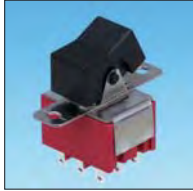
Model No.	Switching position		
R9017	ON	none	ON
R9017A	ON	none	(ON)
R9018	ON	OFF	ON
R9018A	(ON)	OFF	(ON)
R9018B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
R918	ON	ON	ON
R918A	(ON)	ON	(ON)
R918B	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



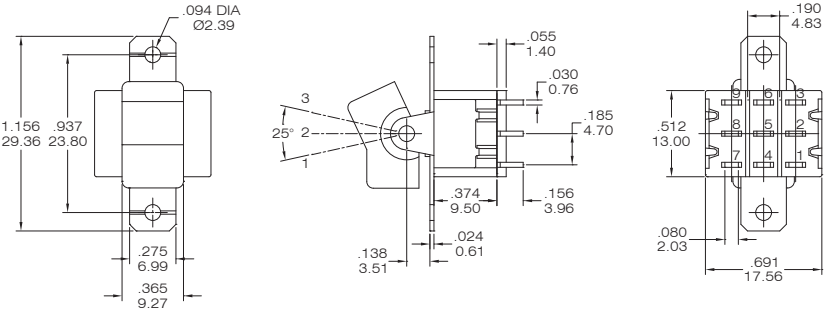
R9017 - R11-2-BQ

Please see page B14 to know more about R918 (3-way Switches)

### 3PDT

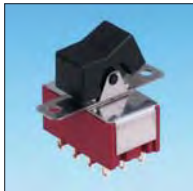


Model No.	Switching position		
R9301V	ON	none	ON
R9303V	ON	none	(ON)
R9305V	ON	OFF	ON
R9307V	(ON)	OFF	(ON)
R9309V	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9	open	2-1,5-4 8-7

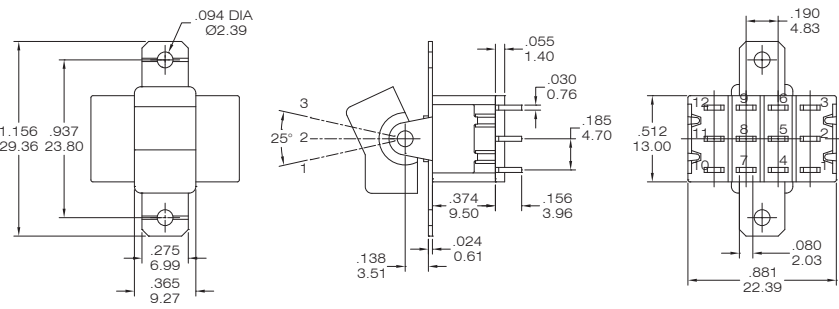


R9301V- R11-2-BQ

### 4PDT



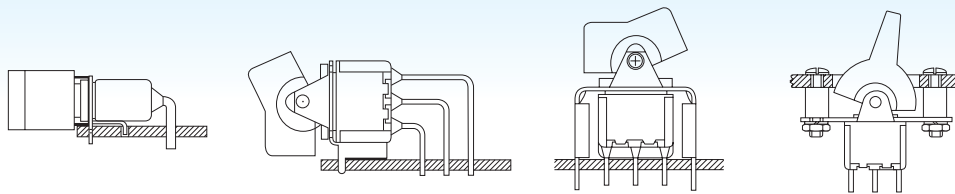
Model No.	Switching position		
R9401V	ON	none	ON
R9403V	ON	none	(ON)
R9405V	ON	OFF	ON
R9407V	(ON)	OFF	(ON)
R9409V	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	open	2-1,5-4 8-7,11-10
3 way switches (DP3T)			
R945V	ON	ON	ON
R947V	(ON)	ON	(ON)
R949V	ON	ON	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5-4 8-9,11-10	2-1,5-4 8-7,11-10



R9401V -R11-2-BQ

Please see page B14 to know more about R945V (3-way Switches)

Actuator / Color / Terminal / Contact Material Option please see the page B11 ~ B13



## SPECIFICATIONS

CONTACT RATING: 5A @125 VAC or 28 VDC ( Q terminal)  
 LIFE CYCLE: 40,000 make-and-break cycles  
 CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE - diallyl phthalate ( DAP )  
 Actuator - Nylon, black standard.  
 Frame - Nylon, black  
 BUSHING - Copper alloy or Zinc, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated

## How do you build the switches you need!!

The straight terminal type, please see the (A) ;

The right angle P.C terminals, please see the (B)

(A) R 8 0 1 5 - R 1 1 - 2 - C Q - E - S 2 0 -  

Switches Function			Actuator	Actuator Color	Frame Color	Termination	Vertical support Bracket	
R8015	SP	R8017 DP on-none-on	R11	1 white	1 white	B solder lug	(none)	
R8015A	SP	R8017A DP on-none-(on)	R21	2 black(std)	2 black	C P.C 1.27width	S20 11.68	
R8016	SP	R8018 DP on-off-on	P13	3 red	3 red	D Quick connect	S25 16.00	
R8016A	SP	R8018A DP (on)-off-(on)	P23	4 orange	<b>Marking</b> (none) No marking 1  I 2  - 3  S/R 4  II/OI 5	D1 wire wrap 19.05	S35 11.68	
R8016B	SP	R8018B DP on-off-(on)	R15	5 yellow		D3 wire wrap 10.8	S40 16.00	
R8301V	3P	R8401V 4P on-none-on	R17	6 green		<b>Contact Material</b>		V20 snap-in 11.68
R8303V	3P	R8403V 4P on-none-(on)	R19	7 blue		Q silver plated	V25 snap-in 16.00	
R8305V	3P	R8405V 4P on-off-on	R12	8 gray		R gold plated	V35 snap-in 11.68	
R8307V	3P	R8407V 4P (on)-off-(on)	R22		G gold over silver	V40 snap-in 16.00		
R8309V	3P	R8409V 4P on-off-(on)	P14		K tin plated	<b>RoHS code</b>		
<b>3 way position switches</b>			P24			H = RoHS Compliant		
R818		SP3T on-on-on	P34			<b>Epoxy seal</b>		
R818A		SP3T (on)-on-(on)				(none) none seal		
R818B		SP3T on-on-(on)				E epoxy seal		
R845V		DP3T on-on-on						
R847V		DP3T (on)-on-(on)						
R849V		DP3T on-on-(on)						

(B) R 8 0 1 5 P - R 1 1 - 2 - Q - E - S -  

Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator	Actuator Color	Contact Material	RoHS code
R8015P	R8015L / R8013L	SP on-none-on	R11	1 white	Q silver plated	H = RoHS Compliant
R8015PA	R8015LA / R8013LA	SP on-none-(on)	R21	2 black(std)	R gold plated	
R8016P	R8016L / R8014L	SP on-off-on	R17	3 red	G gold over silver	
R8016PA	R8016LA / R8014LA	SP (on)-off-(on)	R19	4 orange	K tin plated	
R8016PB	R8016LB / R8014LB	SP on-off-(on)	P13	5 yellow	<b>Epoxy seal</b>	
R8017P	R8017L / R8011L	DP on-none-on	P23	6 green	(none) none seal	
R8017PA	R8017LA / R8011LA	DP on-none-(on)		7 blue	E epoxy seal	
R8018P	R8018L / R8012L	DP on-off-on		8 gray	<b>Support Bracket type</b>	
R8018PA	R8018LA / R8012LA	DP (on)-off-(on)			(none) std.	
R8018PB	R8018LB / R8012LB	DP on-off-(on)			S snap-in type	
R8301P(A)	R8301L	3P on-none-on				
R8303P(A)	R8303L	3P on-none-(on)				
R8305P(A)	R8305L	3P on-off-on				
R8307P(A)	R8307L	3P (on)-off-(on)				
R8309P(A)	R8309L	3P on-off-(on)				
	R8401L	4P on-none-on				
	R8403L	4P on-none-(on)				
	R8405L	4P on-off-on				
	R8407L	4P (on)-off-(on)				
	R8409L	4P on-off-(on)				
<b>3 way position switches</b>						
R818P/R818L/ R812L		SP3T on-on-on				
R818PA/R818LA/R812LA		SP3T (on)-on-(on)				
R818PB/R818LB/R812LB		SP3T on-on-(on)				
R845L		DP3T on-on-on				
R847L		DP3T (on)-on-(on)				
R849L		DP3T on-on-(on)				



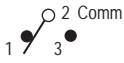
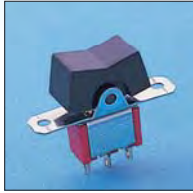


# T80-R (UL1054)

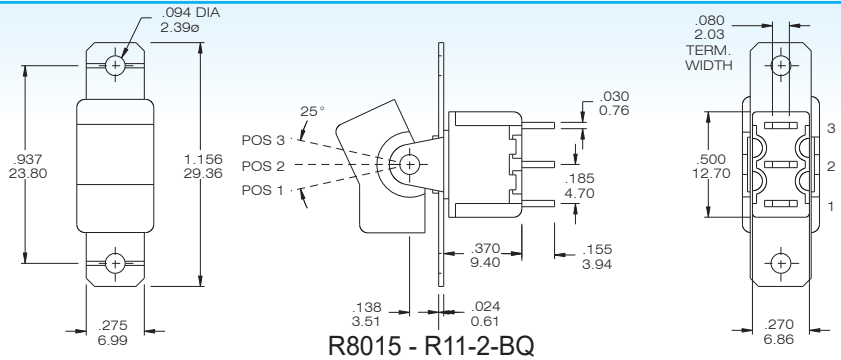
# Miniature Rocker and Paddle Switches (Straight Type)



## SPDT



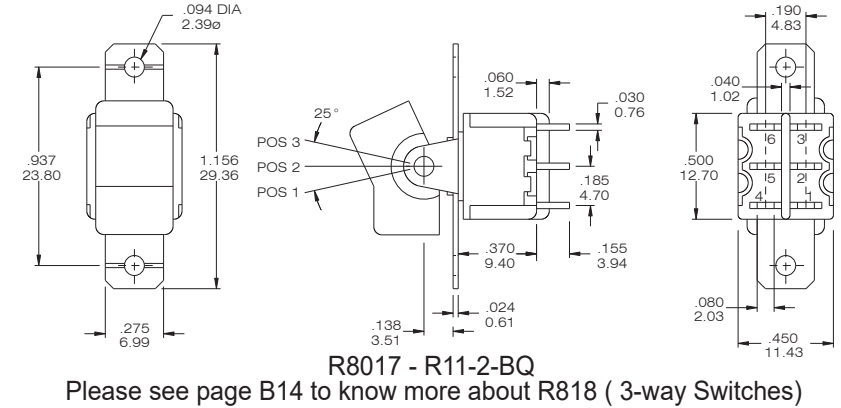
Model No.	Switching position		
R8015	ON	none	ON
R8015A	ON	none	(ON)
R8016	ON	OFF	ON
R8016A	(ON)	OFF	(ON)
R8016B	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



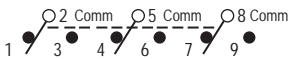
## DPDT



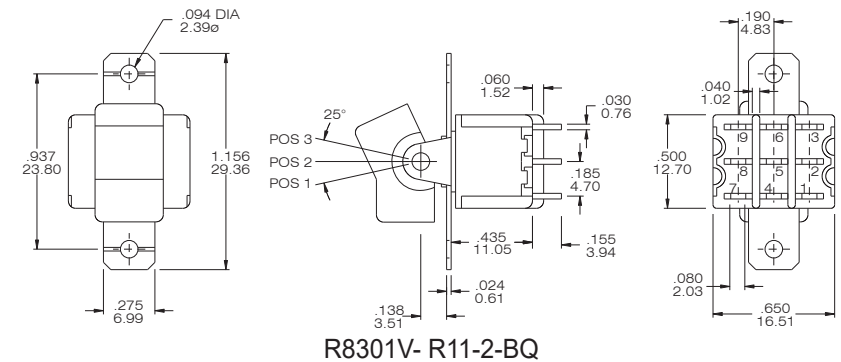
Model No.	Switching position		
R8017	ON	none	ON
R8017A	ON	none	(ON)
R8018	ON	OFF	ON
R8018A	(ON)	OFF	(ON)
R8018B	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
<b>3 way switches (SP3T)</b>			
R818	ON	ON	ON
R818A	(ON)	ON	(ON)
R818B	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



## 3PDT



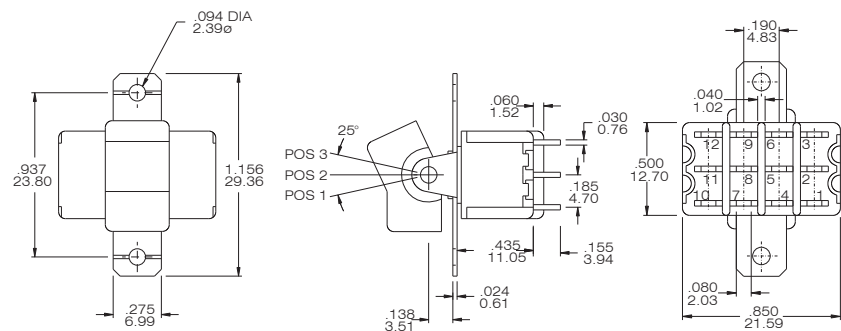
Model No.	Switching position		
R8301V	ON	none	ON
R8303V	ON	none	(ON)
R8305V	ON	OFF	ON
R8307V	(ON)	OFF	(ON)
R8309V	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9	open	2-1,5-4 8-7



## 4PDT

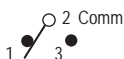


Model No.	Switching position		
R8401V	ON	none	ON
R8403V	ON	none	(ON)
R8405V	ON	OFF	ON
R8407V	(ON)	OFF	(ON)
R8409V	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	open	2-1,5-4 8-7,11-10
<b>3 way switches (DP3T)</b>			
R845V	ON	ON	ON
R847V	(ON)	ON	(ON)
R849V	ON	ON	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5,4 8-9,11-10	2-1,5-4 8-7,11-10

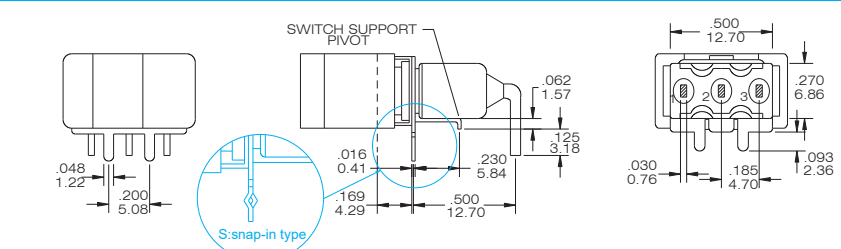


## HORISON RIGHT ANGLE

## SPDT



Model No.	Switching position		
R8015P	ON	none	ON
R8015PA	ON	none	(ON)
R8016P	ON	OFF	ON
R8016PA	(ON)	OFF	(ON)
R8016PB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

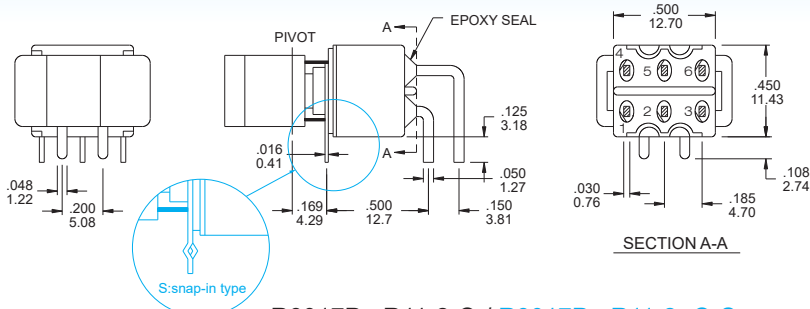


## HORISON RIGHT ANGLE

### DPDT



Model No.	Switching position		
R8017P	ON	none	ON
R8017PA	ON	none	(ON)
R8018P	ON	OFF	ON
R8018PA	(ON)	OFF	(ON)
R8018PB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
R818P	ON	ON	ON
R818PA	(ON)	ON	(ON)
R818PB	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



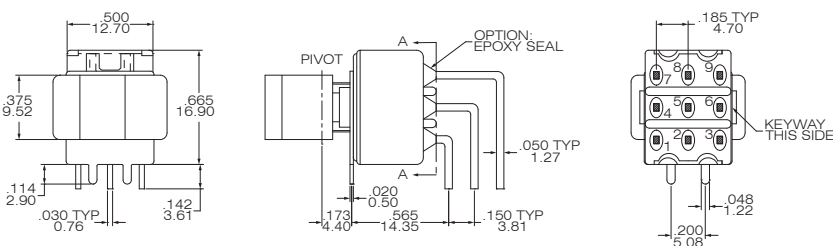
R8017P - R11-2-Q / R8017P - R11-2 -Q-S

Please see page B14 to know more about R818P ( 3-way Switches)

### 3PDT



Model No.	Switching position		
R8301P(A)	ON	none	ON
R8303P(A)	ON	none	(ON)
R8305P(A)	ON	OFF	ON
R8307P(A)	(ON)	OFF	(ON)
R8309P(A)	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
	8-9		8-7



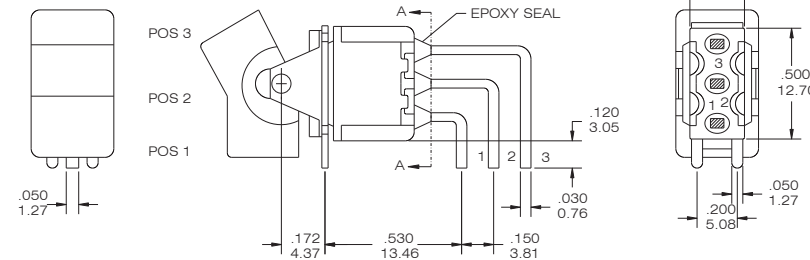
R8301P(A)- R11-2-Q

## VERTICAL RIGHT ANGLE

### SPDT



Model No.	Switching position		
R8015L	ON	none	ON
R8015LA	ON	none	(ON)
R8016L	ON	OFF	ON
R8016LA	(ON)	OFF	(ON)
R8016LB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

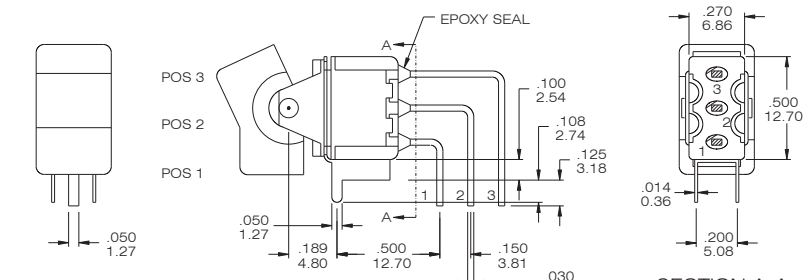


R8015L - R11-2-Q

### SPDT



Model No.	Switching position		
R8013L	ON	none	ON
R8013LA	ON	none	(ON)
R8014L	ON	OFF	ON
R8014LA	(ON)	OFF	(ON)
R8014LB	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

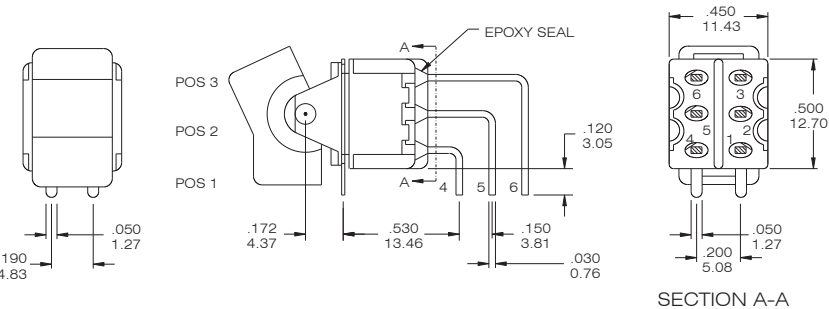


R8013L- R11-2-Q

### DPDT



Model No.	Switching position		
R8017L	ON	none	ON
R8017LA	ON	none	(ON)
R8018L	ON	OFF	ON
R8018LA	(ON)	OFF	(ON)
R8018LB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
R818L	ON	ON	ON
R818LA	(ON)	ON	(ON)
R818LB	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



R8017L - R11-2-Q

Please see page B14 to know more about R818L (3-way Switches)

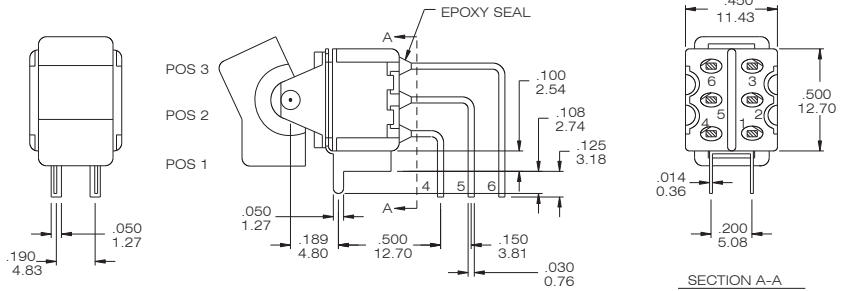


## VERTICAL RIGHT ANGLE PAGE

### DPDT



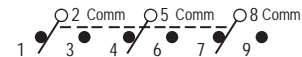
Model No.	Switching position		
R8011L	ON	none	ON
R8011LA	ON	none	(ON)
R8012L	ON	OFF	ON
R8012LA	(ON)	OFF	(ON)
R8012LB	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
R812L	ON	ON	ON
R812LA	(ON)	ON	(ON)
R812LB	ON	ON	(ON)
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



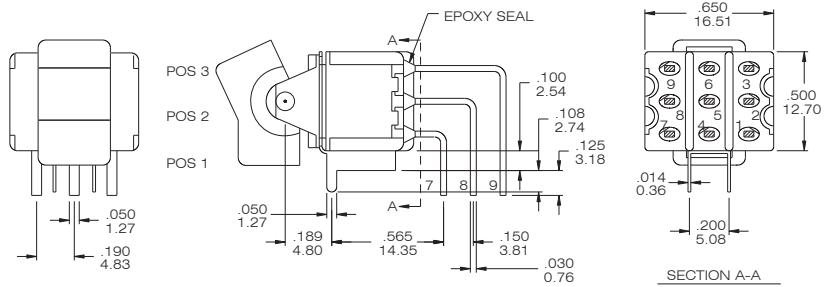
R8011L - R11-2-Q

Please see page B14 to know more about R812L ( 3-way Switches)

### 3PDT

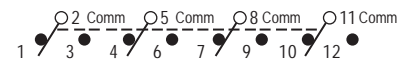


Model No.	Switching position		
R8301L	ON	none	ON
R8303L	ON	none	(ON)
R8305L	ON	OFF	ON
R8307L	(ON)	OFF	(ON)
R8309L	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9	open	2-1,5-4 8-7

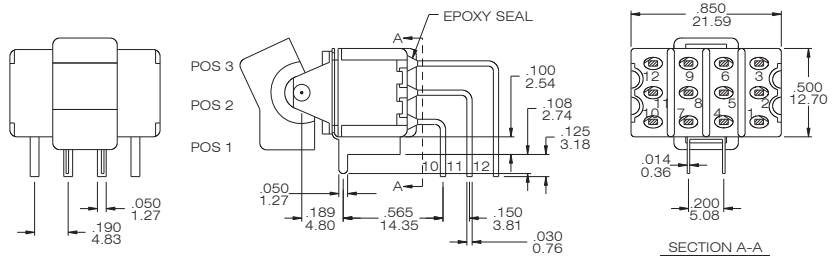


R8301L- R11-2-Q

### 4PDT



Model No.	Switching position		
R8401L	ON	none	ON
R8403L	ON	none	(ON)
R8405L	ON	OFF	ON
R8407L	(ON)	OFF	(ON)
R8409L	ON	OFF	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	open	2-1,5-4 8-7,11-10
3 way switches (DP3T)			
R845L	ON	ON	ON
R847L	(ON)	ON	(ON)
R849L	ON	ON	(ON)
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5-4 8-9,11-10	2-1,5-4 8-7,11-10



R8401L - R11-2-Q

Please see page B14 to know more about R845L( 3-way Switches)

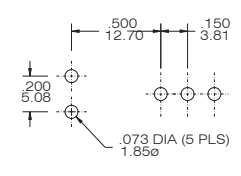
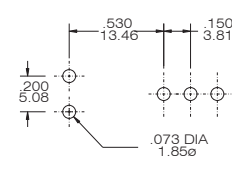
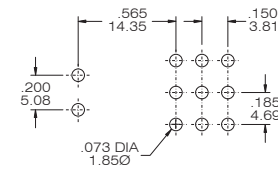
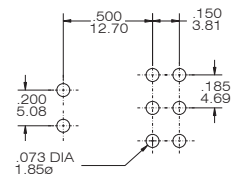
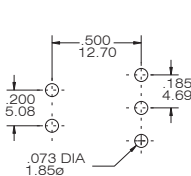
FOR R8015P-R8016P

FOR R8017P-R8018P

FOR R8301P(A)-R8309P(A)

FOR R8015L-R8016L

FOR R8013L-R8014L

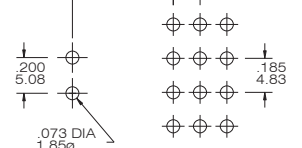
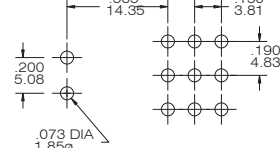
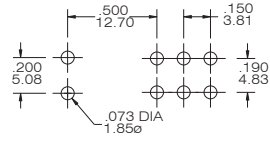
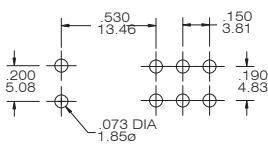


FOR R8017L-R8018L

FOR R8011L-R8012L

FOR R8301L-R8309L

FOR R8401L-R8409L





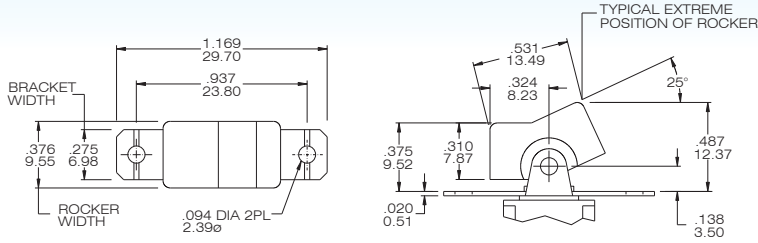
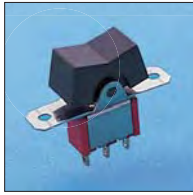
# T80-R

# Miniature Rocker and Paddle Switches

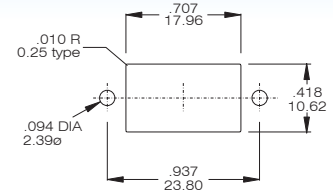


## Actuator Option(PANEL REAR MOUNT) only for the straight type (Page B08)

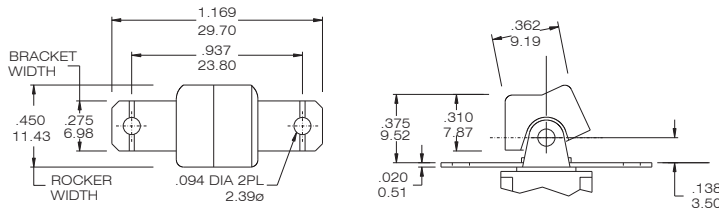
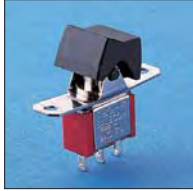
R11



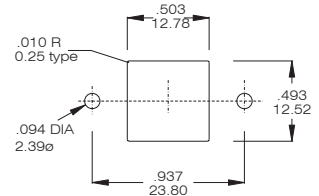
PANELMOUNTING



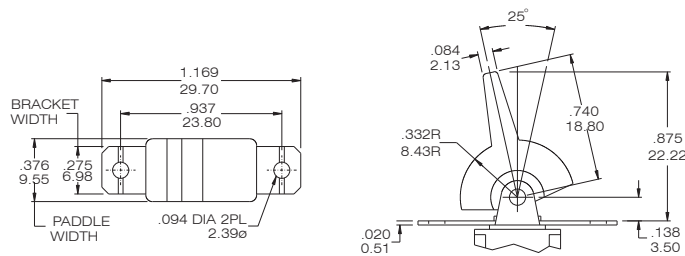
R21



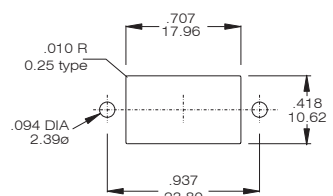
PANELMOUNTING



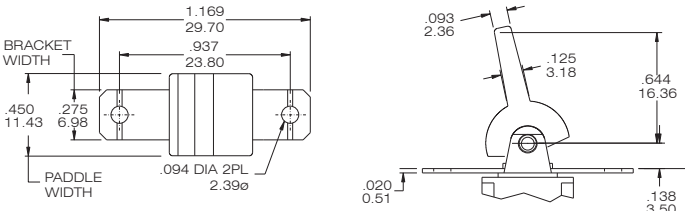
P13



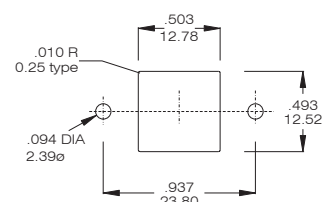
PANELMOUNTING



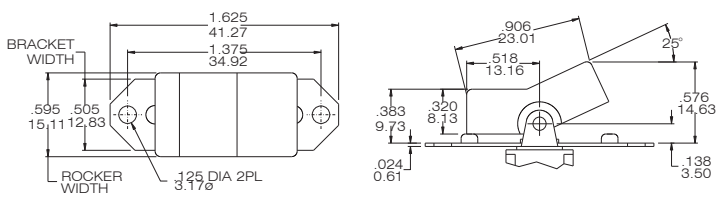
P23



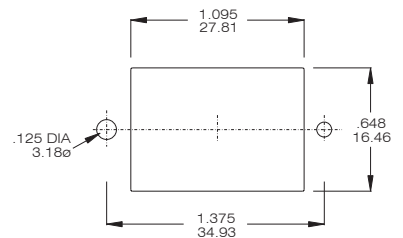
PANELMOUNTING



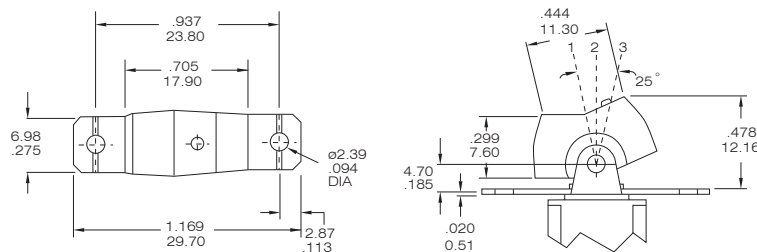
R15



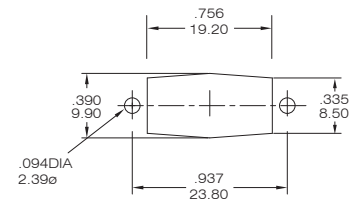
PANELMOUNTING



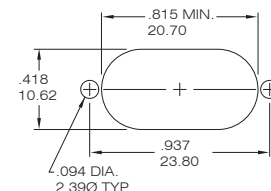
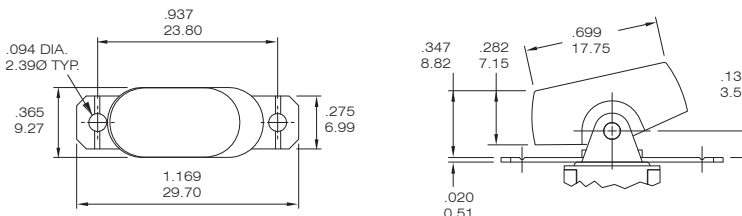
R17



PANELMOUNTING



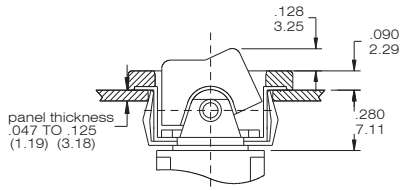
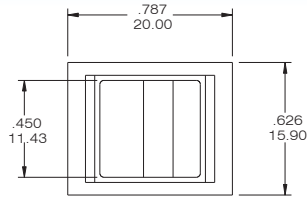
R19



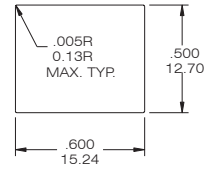


## Actuator Option(SNAP-IN FRONT MOUNT) only for the straight type (Page B08)

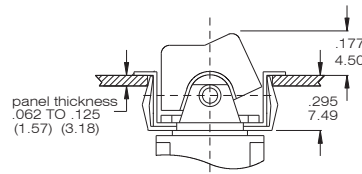
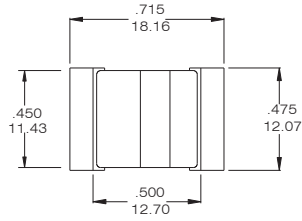
### R12



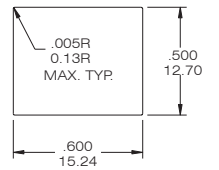
### PANEL MOUNTING



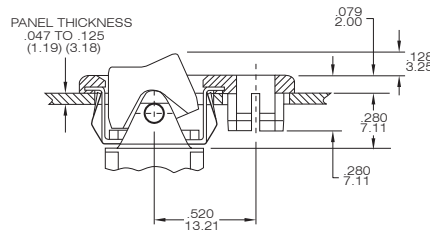
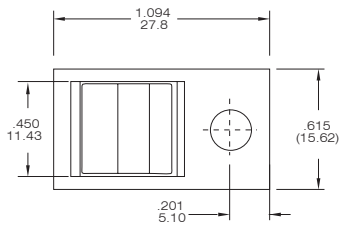
### R22



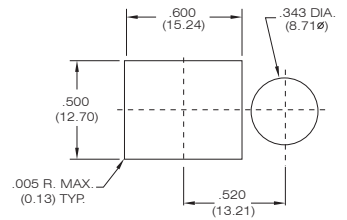
### PANEL MOUNTING



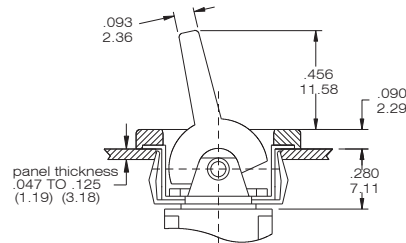
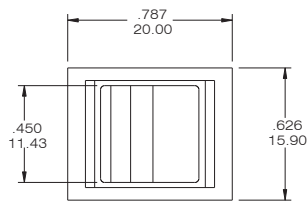
### R32



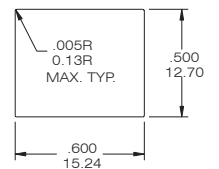
### PANEL MOUNTING



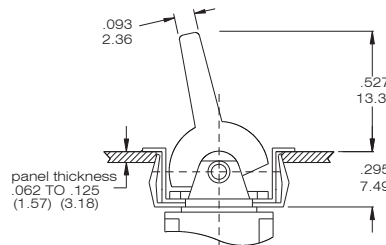
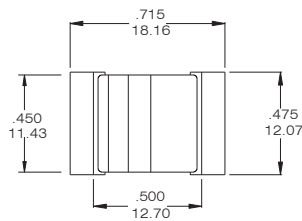
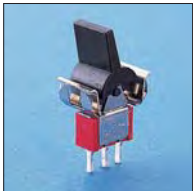
### P14



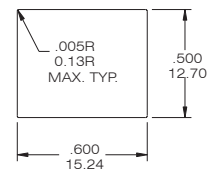
### PANEL MOUNTING



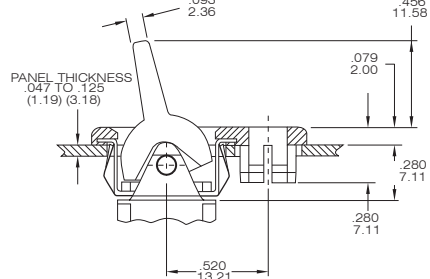
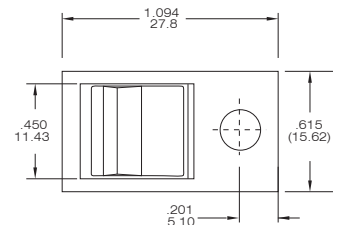
### P24



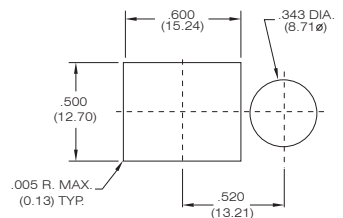
### PANEL MOUNTING



### P34



### PANEL MOUNTING



INDEX

TOGGLE

ROCKER

SLIDE

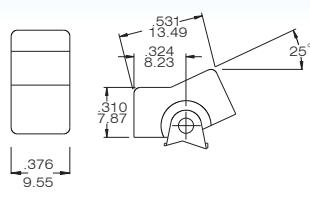
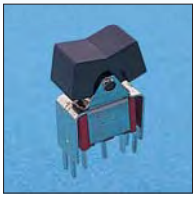
PUSH BUTTON / MICRO

DIP / ROTARY

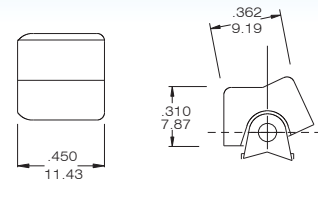
KEY / TACT

## Actuator Option (P.C.B MOUNT)

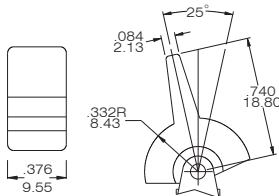
R11



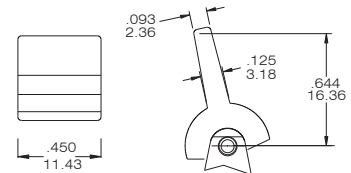
R21



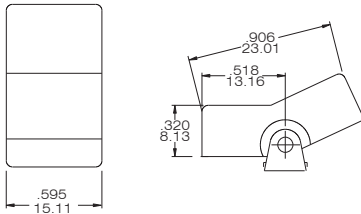
P13



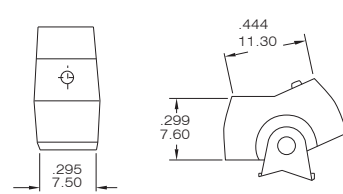
P23



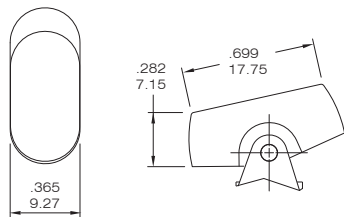
R15



R17



R19



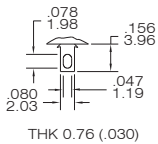
### Actuator Color Option

ACTUATOR AND FRAME COLORS					
1	White	4	Orange	7	Blue
2	Black(Std.)	5	Yellow	9	Gray
3	Red	6	Green		

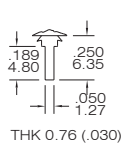
### TERMINAL OPTION (ONLY FOR THE STRAIGHT TYPE R8015~R8401)

### TERMINAL SEAL OPTION

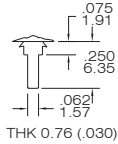
B SOLDER LUG



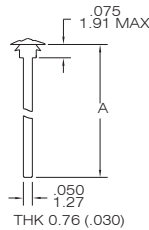
C PRINTED CIRCUIT



D QUICK CONNECT



WIREWRAP



CODE	"A" dimension
D1	.750 (19.05)
D3	.425 (10.8)

E TERMINAL SEAL



## CONTACT MATERIAL OPTIONS

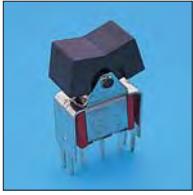
CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	5 A @ 125 V AC or 28 V DC; 3 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 5 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

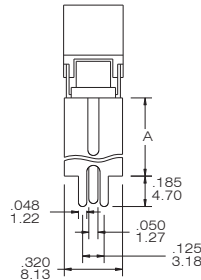
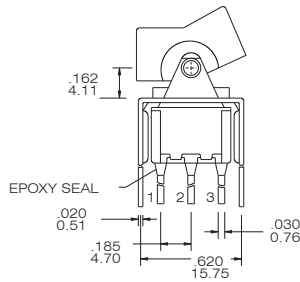
## VERTICAL SUPPORT BRACKET OPTION

(only apply the straight type terminal -page B08. Please build the terminal option is "c" code)

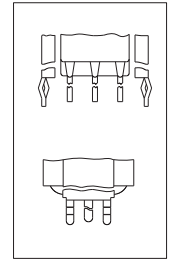
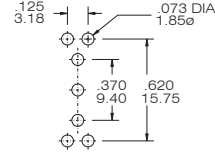
S20 / S25/ V20/V25



SPDT



P.C. MOUNTING

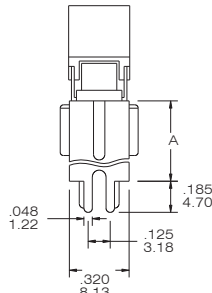
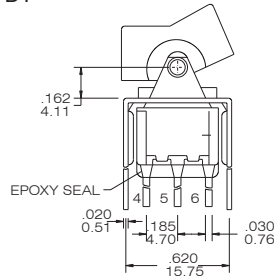


SNAP-IN  
V20/ V25

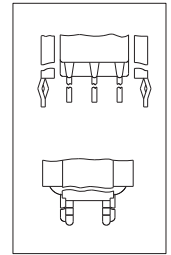
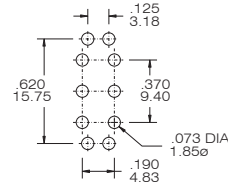
R8015-R11-2-CQ-S20(S25)

option Code	A dimension
S20/V20	.460 11.68
S25/V25	.630 16.00
V20/V25 : the snap-in type	

DPDT



P.C. MOUNTING



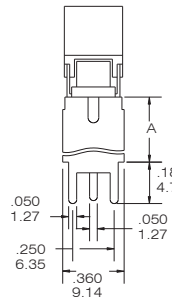
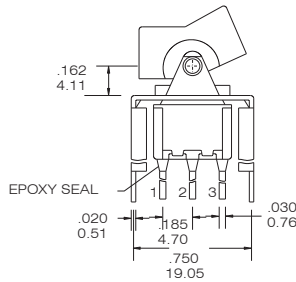
SNAP-IN  
V20/ V25

R8017 - R11-2-CQ-S20(S25)

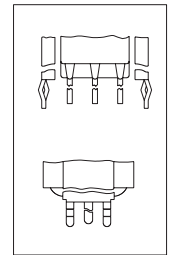
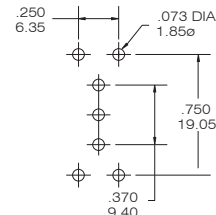
S35/S40 V35/V40



SPDT



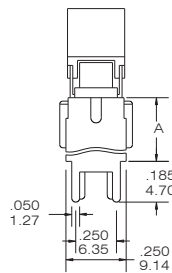
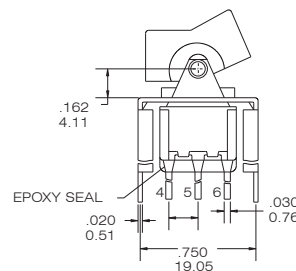
P.C. MOUNTING



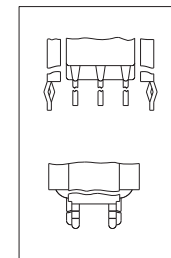
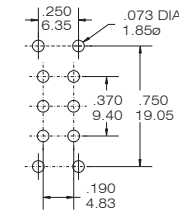
SNAP-IN  
V35/ V40

R8015-R11-2-CQ-S35(S40)

DPDT



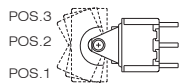
P.C. MOUNTING



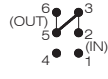
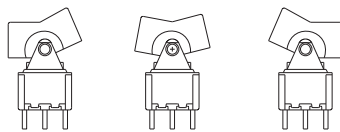
SNAP-IN  
V35/ V40

R8017-R11-2-CQ-S35(S40)

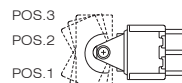
## The information of 3-way rocker switches



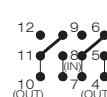
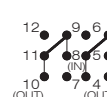
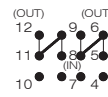
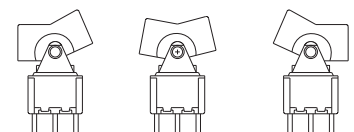
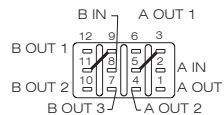
SINGLE POLE, 3 POSITION



SP3T



DOUBLE POLE, 3 POSITION



DP3T



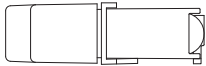
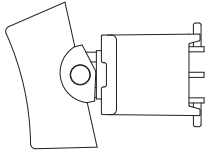
## FEATURES

1. Sealed construction - internal actuator o-ring and epoxy terminal seal standard
2. IP67 protection Degree
3. Surface mounting (SMT)



## SPECIFICATIONS

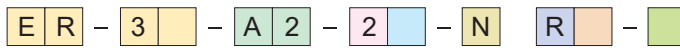
CONTACT RATING: R- 0.4 VA max @ 20 V AC or DC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 DEGREE OF PROTECTION: IP67  
 OPERATING TEMPERATURE: -30°C to +85°C



## MATERIALS

CASE and BUSHING - glass filled nylon PA6T G30, flame retardant heat stabilized (UL94V-0)  
 Actuator - Nylon, black standard. Internal o-ring seal standard with all actuator.  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin-plated  
 TERMINAL SEAL - Epoxy

## How do you build the switches you need!!

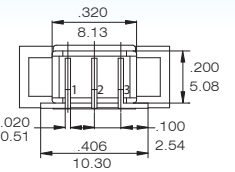
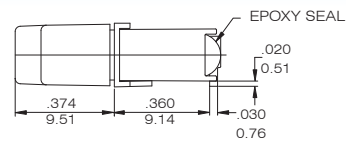


Switches Function		Actuator		Actuator Color		Contact Material		Package	
ER-3	SP on-none-on	A1	Std. 7.62	1	white	Q	silver plated	(none)	polly bag
ER-3B	SP on-none-(on)	A2	Std. 5.84	2	(std.) black	R	gold plated	T/R	tape & reel
ER-3A	SP on-off-on			3	Red	G	gold over silver		
ER-3H	SP (on)-off-(on)					K	gold / tin		
ER-3I	SP on-off-(on)								
				<b>Marking</b>				<b>RoHS code</b>	
				(none) No marking				H = RoHS Compliant	
				1					
				2					
				<b>Terminal</b>					
				(none) std					
				N backward					
				M backward					





Model No.	Switching position		
ER-3	ON	none	ON
ER-3A	ON	OFF	ON
ER-3B	ON	None	(ON)
ER-3H	(ON)	OFF	(ON)
ER-3I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

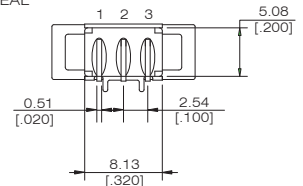
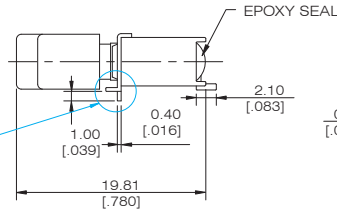
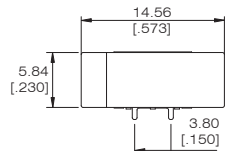


ER-3-A2-2-R

### The M&N terminal type



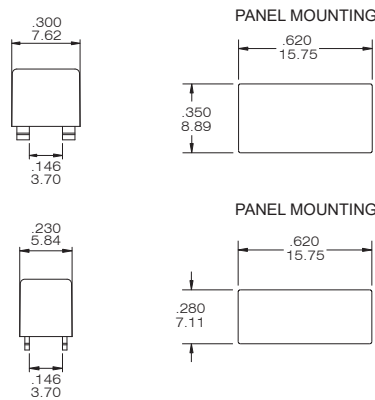
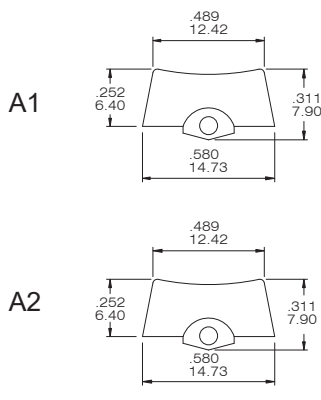
Model No.	Switching position		
ER-3	ON	none	ON
ER-3A	ON	OFF	ON
ER-3B	ON	None	(ON)
ER-3H	(ON)	OFF	(ON)
ER-3I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1



without positioning pins  
ER-3-A2-2-NR

ER-3-A2-2-MR

### Actuator Option

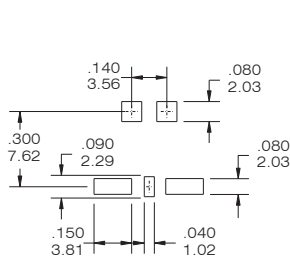


### Actuator Color Option

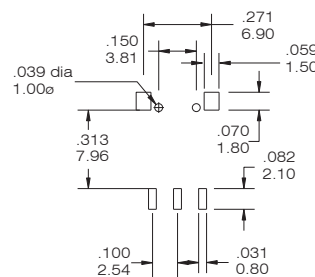
Code	Color
1	white
2	Black(std.)
3	Red

Other colors. custom actuator marking available consult factory.

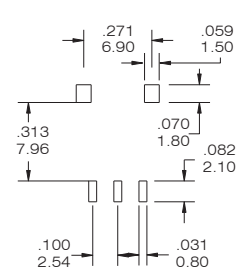
### THE P.C.B MOUNTING



ER-3-A \*



ER-3-A \*-M



ER-3-A \*-N

### CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

## FEATURES

1. Sealed construction - internal actuator o-ring and epoxy terminal seal standard
2. IP67 protection Degree

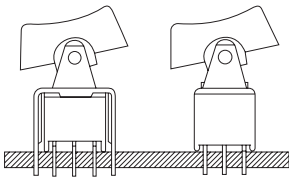
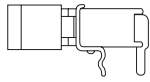


## SPECIFICATIONS

CONTACT RATING: R- 0.4 VA max @ 20 V AC or DC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 DEGREE OF PROTECTION: IP67  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE and BUSHING - glass filled nylon 6/6, flame retardant heat stabilized (UL94V-0)  
 Actuator - Nylon, black standard. Internal o-ring seal standard with all actuator.  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin-plated  
 TERMINAL SEAL - Epoxy



How do you build the switches you need!!

The ER-4 / ER-5, please see the (A) ;

The ER-6/ER-7/ER-8/ER-9, please see the (B)

(A) **E** **R** - **4** - **A2** - **2** - **C** **R** - **A5S** -

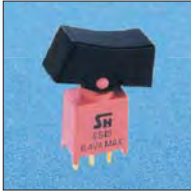
Switches Function		Actuator		Actuator Color		Contact Material		RoHS code	
ER-4	SP on-none-on	A1	Std. for SP 7.62	1	white	Q	silver plated	H = RoHS Compliant	
ER-4B	SP on-none-(on)	A2	Std. for SP 5.84	2	(std.) black	R	gold plated		
ER-4A	SP on-off-on	A3	5.71	3	Red	G	gold over silver	H = RoHS Compliant	
ER-4H	SP (on)-off-(on)	R1	Std. for DP 7.62	<b>Marking</b> (none) No marking 1 2		K	gold / tin		
ER-4I	SP on-off-(on)	R2	Std. for DP 5.84			<b>Termination</b> C (std) P.C		<b>Vertical support Bracket</b> (none) A5S (std.) snap-in type A5 straight type	
ER-5	DP on-none-on								
ER-5B	DP on-none-(on)								
ER-5A	DP on-off-on								
ER-5H	DP (on)-off-(on)								
ER-5I	DP on-off-(on)								
ER-5C	DP on-on-on								

(B) **E** **R** - **6** - **A2** - **2** - **R** - **S** -

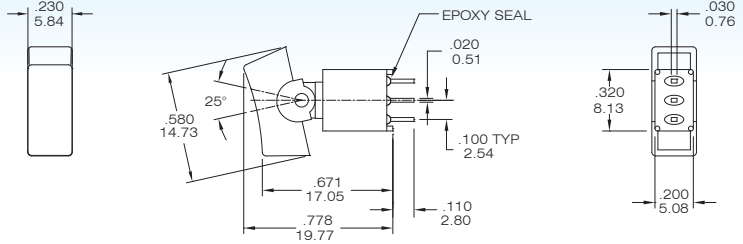
Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator		Actuator Color		Support Bracket	
ER-6	ER-8	SP on-none-on	A1	Std. for SP 7.62	1	white	S	(std.) snap-in type straight type
ER-6B	ER-8B	SP on-none-(on)	A2	Std. for SP 5.84	2	(std.) black	(none)	
ER-6A	ER-8A	SP on-off-on	A3	5.71	3	Red		<b>RoHS code</b> H = RoHS Compliant
ER-6H	ER-8H	SP (on)-off-(on)	R1	Std. for DP 7.62	<b>Marking</b> (none) No marking 1 2			
ER-6I	ER-8I	SP on-off-(on)	R2	Std. for DP 5.84			<b>Contact Material</b> Q silver plated R gold plated G gold over silver K gold / tin	
ER-7	ER-9	DP on-none-on						
ER-7B	ER-9B	DP on-none-(on)						
ER-7A	ER-9A	DP on-off-on						
ER-7H	ER-9H	DP (on)-off-(on)						
ER-7I	ER-9I	DP on-off-(on)						
ER-7C	ER-9C	DP on-on-on						



### SPDT



Model No.	Switching position		
ER-4	ON	none	ON
ER-4A	ON	OFF	ON
ER-4B	ON	None	(ON)
ER-4H	(ON)	OFF	(ON)
ER-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

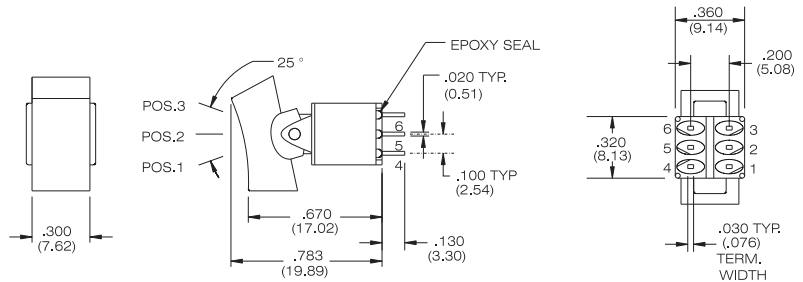


ER-4-A2-2-CR

### DPDT

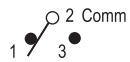
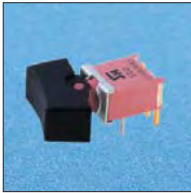


Model No.	Switching position		
ER-5	ON	none	ON
ER-5A	ON	OFF	ON
ER-5B	ON	None	(ON)
ER-5H	(ON)	OFF	(ON)
ER-5I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
ER-5C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

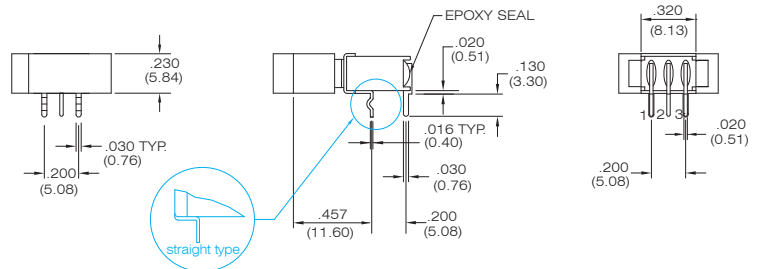


ER-5-R1-2-CR

### SPDT

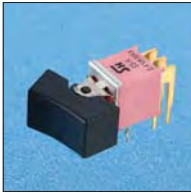


Model No.	Switching position		
ER-6	ON	none	ON
ER-6A	ON	OFF	ON
ER-6B	ON	None	(ON)
ER-6H	(ON)	OFF	(ON)
ER-6I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

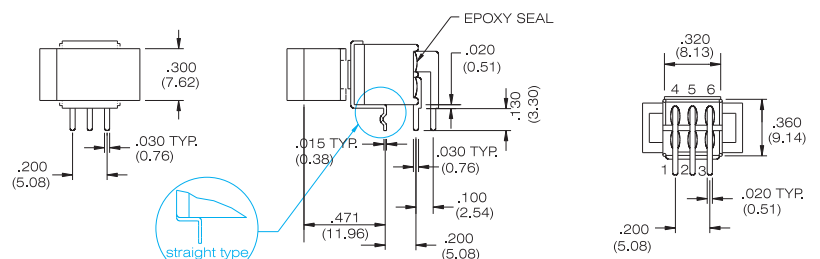


ER-6-A2-2-R-S / ER-6-A2-2-R

### DPDT

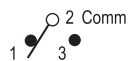
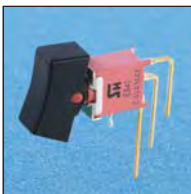


Model No.	Switching position		
ER-7	ON	none	ON
ER-7A	ON	OFF	ON
ER-7B	ON	None	(ON)
ER-7H	(ON)	OFF	(ON)
ER-7I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
ER-7C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

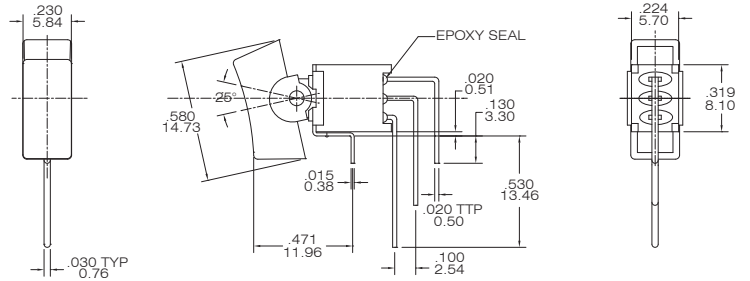


ER-7-R1-2-R-S / ER-7-R1-2-R

### SPDT

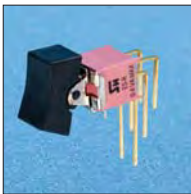


Model No.	Switching position		
ER-8	ON	none	ON
ER-8A	ON	OFF	ON
ER-8B	ON	None	(ON)
ER-8H	(ON)	OFF	(ON)
ER-8I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

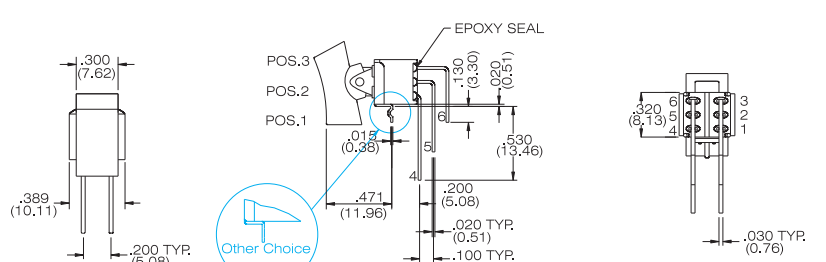


ER-8-A2-2-R-S / ER-8-A2-2-R

### DPDT



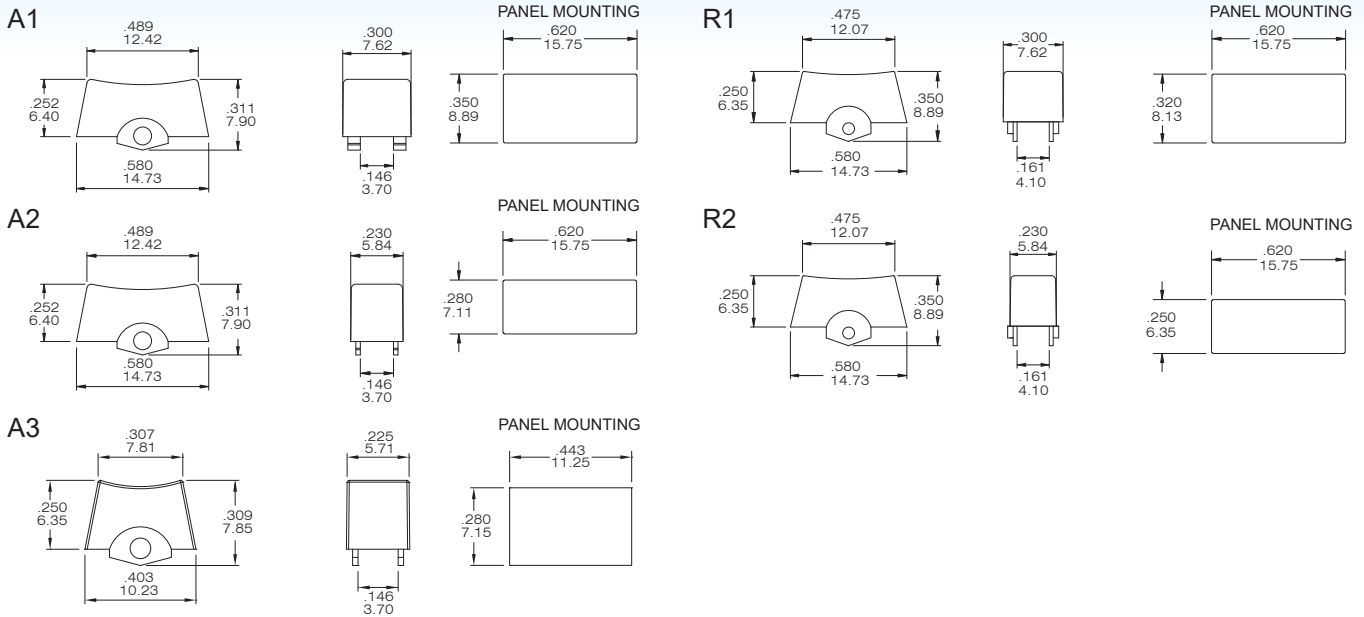
Model No.	Switching position		
ER-9	ON	none	ON
ER-9A	ON	OFF	ON
ER-9B	ON	None	(ON)
ER-9H	(ON)	OFF	(ON)
ER-9I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
ER-9C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



ER-9-R1-2-R-S / ER-9-R1-2-R



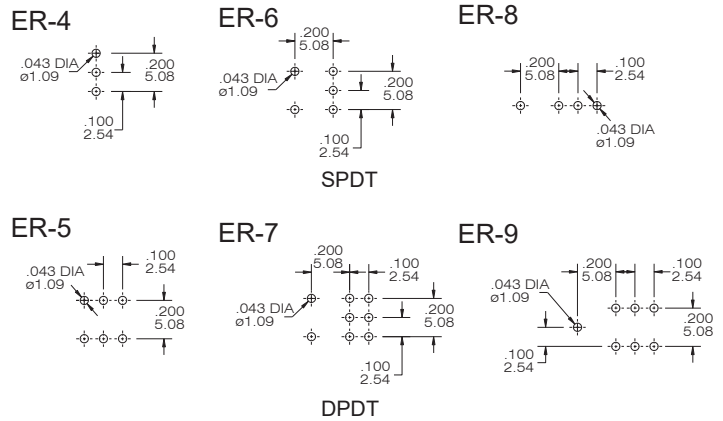
## Actuator Option



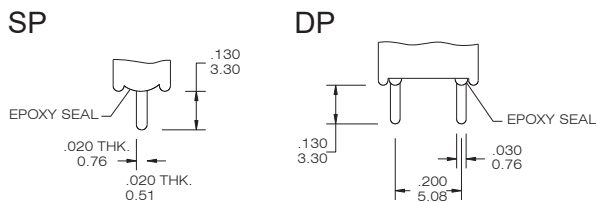
## Actuator Color Option

Code	Color
1	white
2	Black(std.)
3	Red

## THE P.C.B MOUNTING



## TERMINAL OPTION (ER-4 / ER-5)

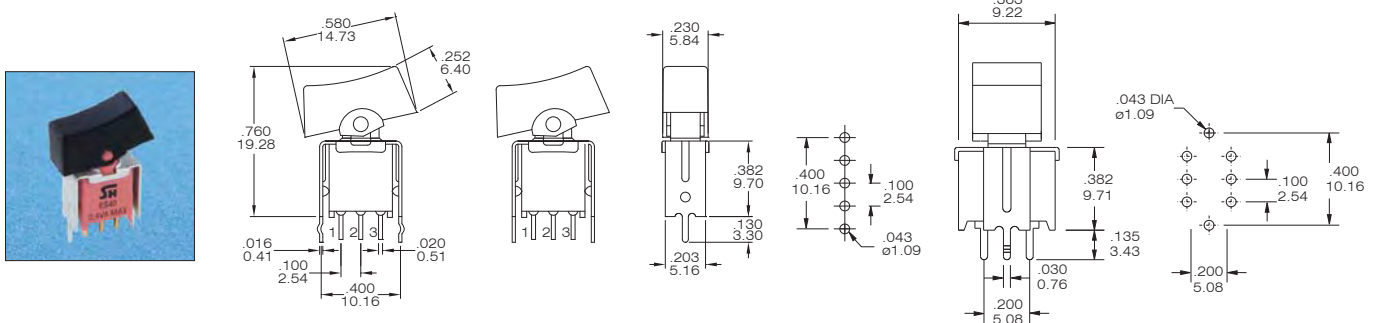


## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plate over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 120V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

## VERTICAL SUPPORT BRACKET OPTION





**SPECIFICATIONS**

CONTACT RATING: max 0.4 VA max @ 28 VDC  
Min. 1 μ A /20 mVDC

LIFE CYCLE: 10,000 make-and-break cycles

CONTACT RESISTANCE: 100 mΩ max. initial @2-4 VDC,100 mA

INSULATION RESISTANCE: 500 MΩ min.

DIELECTRIC STRENGTH: 250 VAC, 50 Hz for the duration of 1 minute.

OPERATING TEMPERATURE: -20°C to +85°C

**MATERIALS**

CASE - nylon 4/6

ACTUATOR - nylon

BASE - nylon 4/6

TERMINAL - Copper alloy, gold-plated or tin plated

CONTACT - Copper alloy, silver plated

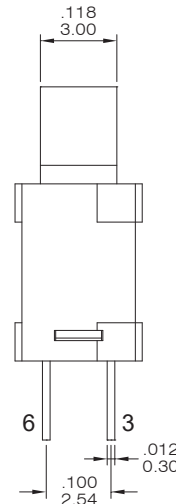
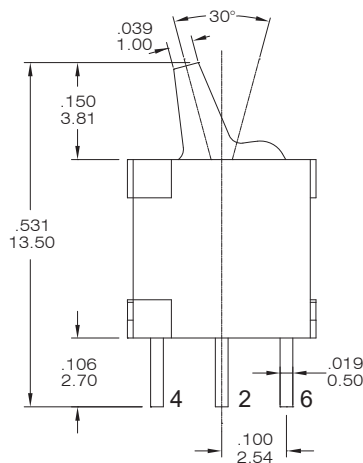
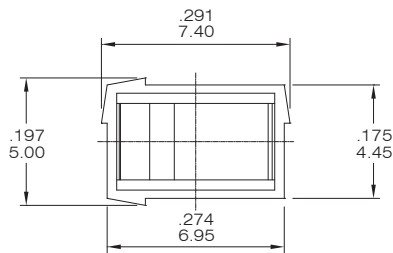
LOOP SEALING - rubber

**How do you modify the switches you need!!**

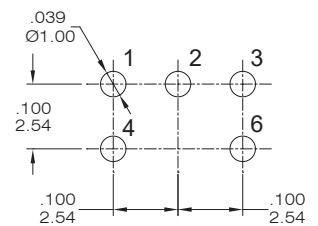


Switches Function		Actuator		Termination		Contact Material		Actuator color		Case code	
UR-4	SP on-none-on	R1	Lever	C	PC (straight type)	R	gold plated (STD.)	9	gray	2	black
				H	horizon	K	gold / tin plated				
				V	vertical						
<b>RoHS code</b>											
H = RoHS Compliant											

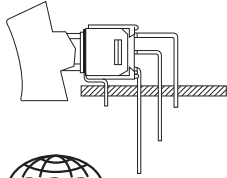
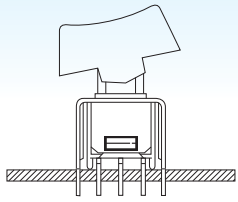
Model No.	Switching position		
	UR-4	ON	none
Term. Comm.	2-3	open	2-1



**P.C.B LAYOUT**



UR-4-R1CR-9-2



## SPECIFICATIONS

CONTACT RATING: Q: 3A @125 VAC or 28 VDC ( Q: terminal option)  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE - diallyl phthalate ( DAP )(UL94V-0)  
 ACTUATOR- Nylon, black standard  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin-plated

## How do you build the switches you need!!

The RS-4 / RS-5 , please see the (A) ;

The RS-6/RS-7/RS-8/RS-9, please see the (B)

(A) **RS** - **4** - **R1** - **2** - **C** **Q** - **E** - **A5S** -

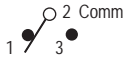
Switches Function		Actuator	Actuator Color	Termination	Epoxy seal	RoHS code
RS-4	SP on-none-on	R1 7.62 width	1 white	B solder lug	(none) none seal	H = RoHS Compliant
RS-4B	SP on-none-(on)	R2 5.84 width	2 Black	C P.C	E epoxy seal	
RS-4A	SP on-off-on	R3 5.76 width	3 Red	D wire wrap		
RS-4H	SP (on)-off-(on)		The other color is available for special inquires			
RS-4I	SP on-off-(on)		<b>Marking</b>			
RS-5	DP on-none-on		(none) No marking	<b>Contact Material</b>	<b>Vertical support Bracket</b>	
RS-5B	DP on-none-(on)		1	Q silver plated	(none)	
RS-5A	DP on-off-on		2	R gold plated	A5 straight type	
RS-5H	DP (on)-off-(on)		3	G gold over silver	A5S snap-in type	
RS-5I	DP on-off-(on)		4	K gold / tin	A6 straight type	
RS-5C	DP on-on-on		5		A6S snap-in type	
			6			
			7			

(B) **RS** - **6** - **R2** - **2** - **Q** - **E** - **S** -

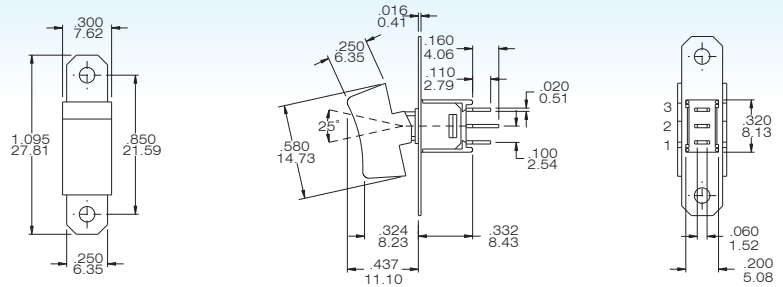
Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator	Contact Material	Epoxy seal	RoHS code
RS-6	RS-8	SP on-none-on	R1 7.62 width	Q silver plated	(none) none seal	H = RoHS Compliant
RS-6B	RS-8B	SP on-none-(on)	R2 5.84 width	R gold plated	E epoxy seal	
RS-6A	RS-8A	SP on-off-on	R3 5.76 width	G gold over silver		
RS-6H	RS-8H	SP (on)-off-(on)		K gold / tin		
RS-6I	RS-8I	SP on-off-(on)			<b>Support Bracket</b>	
RS-7	RS-9	DP on-none-on	<b>Actuator Color</b>		(none) std. straight	
RS-7B	RS-9B	DP on-none-(on)	1 white		S snap-in type	
RS-7A	RS-9A	DP on-off-on	2 Black			
RS-7H	RS-9H	DP (on)-off-(on)	3 Red			
RS-7I	RS-9I	DP on-off-(on)	The other color is available for special inquires			
RS-7C	RS-9C	DP on-on-on	<b>Marking</b>			
			(none) No marking			
			1			
			2			
			3			
			4			
			5			
			6			
			7			



### SPDT

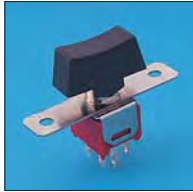


Model No.	Switching position		
RS-4	ON	none	ON
RS-4A	ON	OFF	ON
RS-4B	ON	None	(ON)
RS-4H	(ON)	OFF	(ON)
RS-4I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

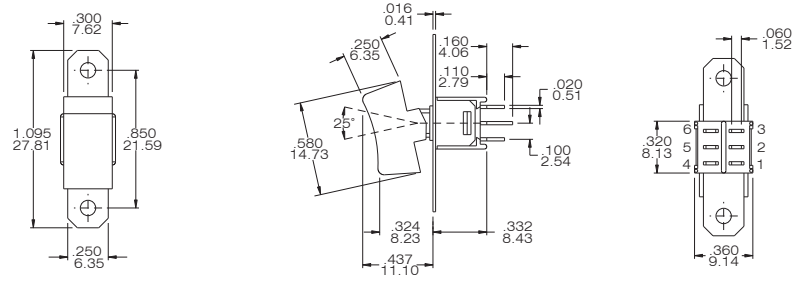


RS-4 - R1-2-BQ

### DPDT

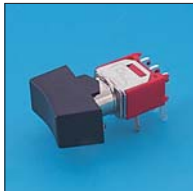


Model No.	Switching position		
RS-5	ON	none	ON
RS-5A	ON	OFF	ON
RS-5B	ON	None	(ON)
RS-5H	(ON)	OFF	(ON)
RS-5I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
RS-5C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

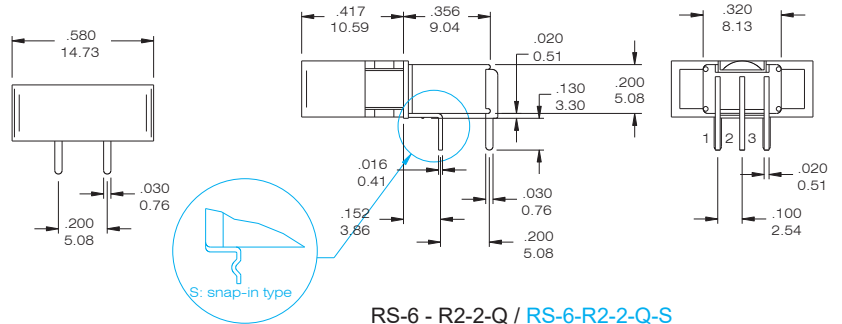


RS-5 - R1-2-BQ

### SPDT



Model No.	Switching position		
RS-6	ON	none	ON
RS-6A	ON	OFF	ON
RS-6B	ON	None	(ON)
RS-6H	(ON)	OFF	(ON)
RS-6I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

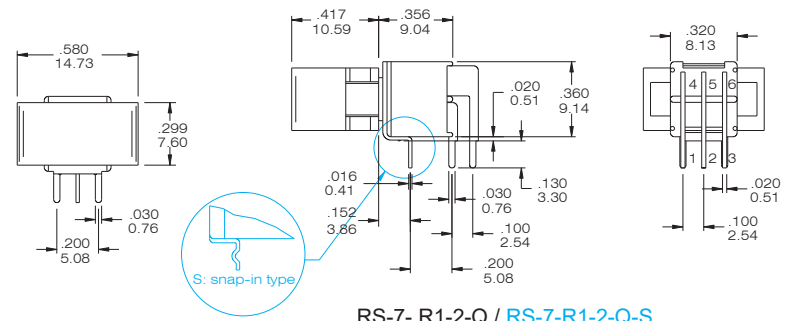


RS-6 - R2-2-Q / RS-6R2-2-Q-S

### DPDT



Model No.	Switching position		
RS-7	ON	none	ON
RS-7A	ON	OFF	ON
RS-7B	ON	None	(ON)
RS-7H	(ON)	OFF	(ON)
RS-7I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
RS-7C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4

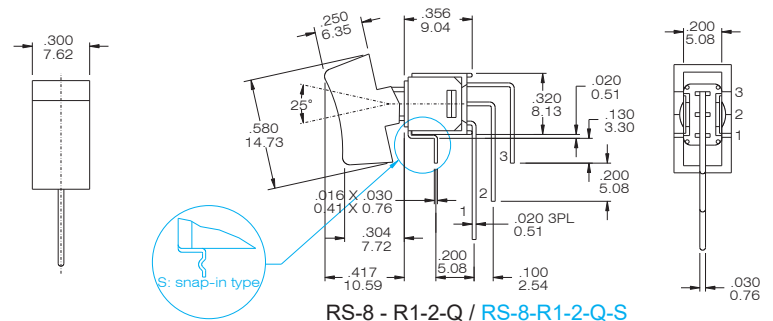


RS-7 - R1-2-Q / RS-7R1-2-Q-S

### SPDT



Model No.	Switching position		
RS-8	ON	none	ON
RS-8A	ON	OFF	ON
RS-8B	ON	None	(ON)
RS-8H	(ON)	OFF	(ON)
RS-8I	ON	OFF	(ON)
Term. Comm.	2-3	open	2-1

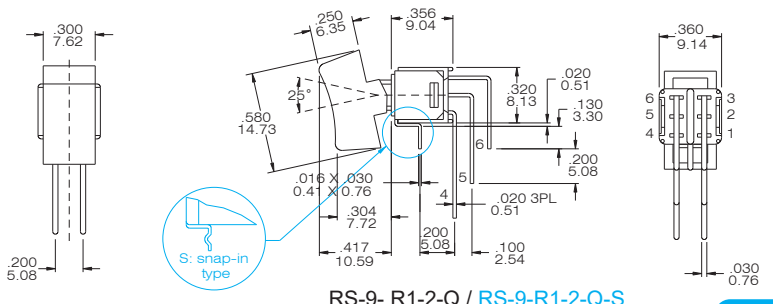


RS-8 - R1-2-Q / RS-8R1-2-Q-S

### DPDT



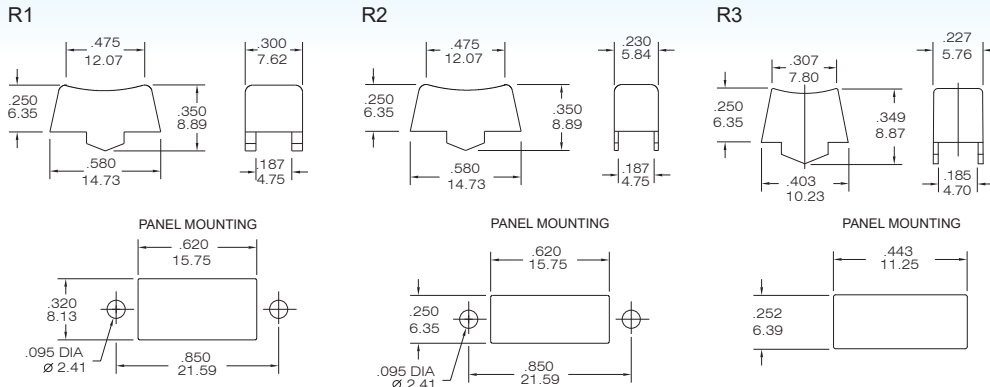
Model No.	Switching position		
RS-9	ON	none	ON
RS-9A	ON	OFF	ON
RS-9B	ON	None	(ON)
RS-9H	(ON)	OFF	(ON)
RS-9I	ON	OFF	(ON)
Term. Comm.	2-3,5-6	open	2-1,5-4
3 way switches (SP3T)			
RS-9C	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



RS-9 - R1-2-Q / RS-9R1-2-Q-S



## Actuator Option



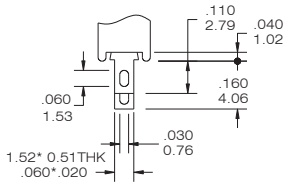
## Actuator Color Option

Code	Color
1	White
2	Black(std.)
3	Red

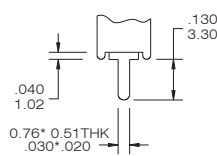
Other colors, customized actuator marking available consult factory.

## TERMINAL OPTION (ONLY FOR THE RS-4/RS-5)

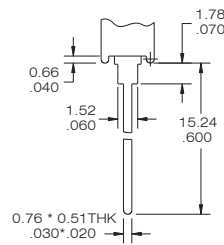
### B Solder Lug(STD)



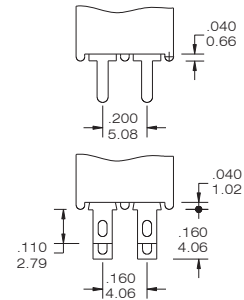
### C PRINTED CIRCUIT



### D Wire Wrap



### DPDT

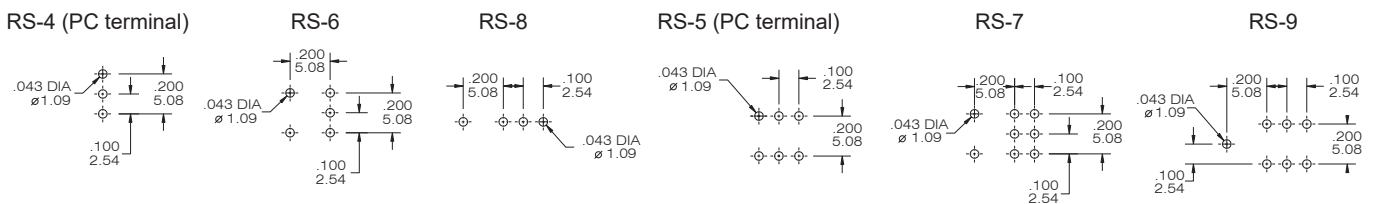


## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 125V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 125V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

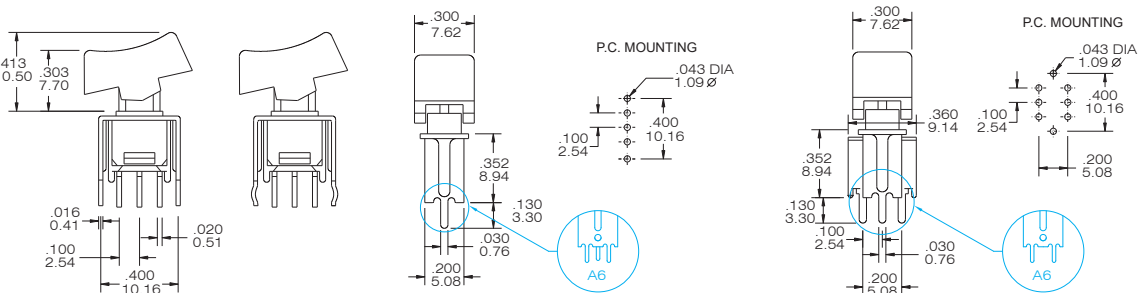
## P.C.B MOUNTING DIMENSION



## VERTICAL SUPPORT BRACKET OPTION

only for the RS-4/RS-5 . If you need the vertical support bracket , please build the terminal option is "C" code

### A5/ A5S



A5 (STD.)  
A6

A5S (Snap-in)  
A6S (Snap-in)

RS-4-R1-2-CQ-A5 / RS-4-R1-2-CQ-A6

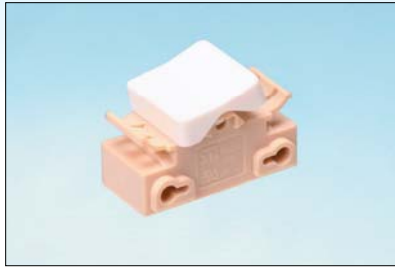
RS-5-R1-2-CQ-A5 / RS-5-R1-2-CQ-A6





# T60-R

## Rocker Switches



### SPECIFICATIONS

CONTACT RATING: 3A @125 VAC or 250 VAC  
6A @250 VAC

ELECTRICAL LIFE: 10,000 cycles

CONTACT RESISTANCE: 30 mΩ max. initial

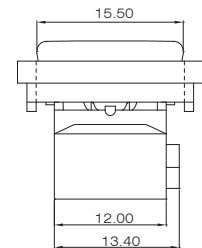
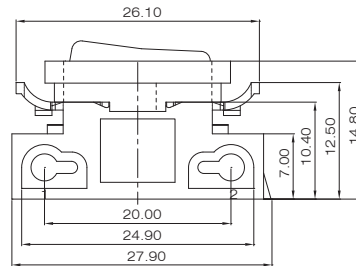
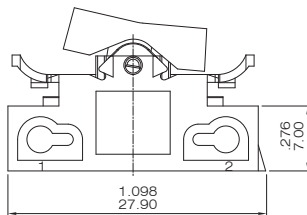
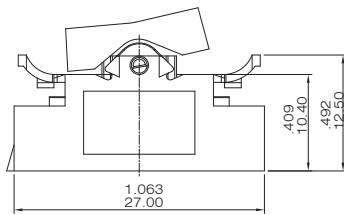
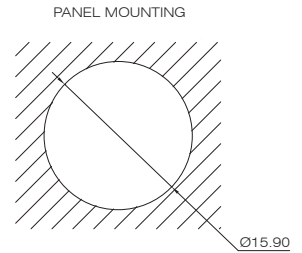
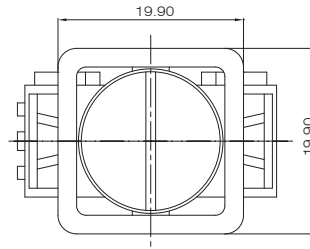
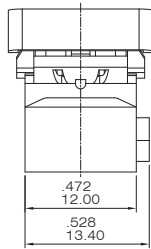
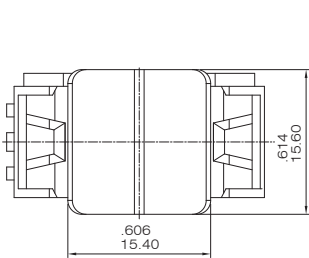
INSULATION RESISTANCE: 100 MΩ min. 500VDC

DIELECTRIC STRENGTH: 1,500 VAC / 1 min.

OPERATING TEMPERATURE: -20°C to +85°C



### DIMENSIONS



R6010-R50-1-06

R6010-R51-1-S50-1-06

### HOW TO ORDER

R6010 - R50 - 2  T - S50 - 2 - 06 -  - H

- Switch Function:  
R6010: SPST
- Actuator:  
50 = Squareness  
51= Roundness  
52= Long strip  
53= Toggle form  
54= Ø20 Roundness
- Actuator Color:  
1= White  
2= Black  
3= Red
- Actuator Marking:  
1= ○ |  
2= ○ -
- T: Hot stamping

- RoHS compliant
- Degrees of temperature:  
 =T85  
T = T125  
H =T150  
G = T200
- Ratings:  
06=6A 250VAC
- Frame Color:  
1= White  
2= Black  
3= Red
- Frame:  
(none)  
S50

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

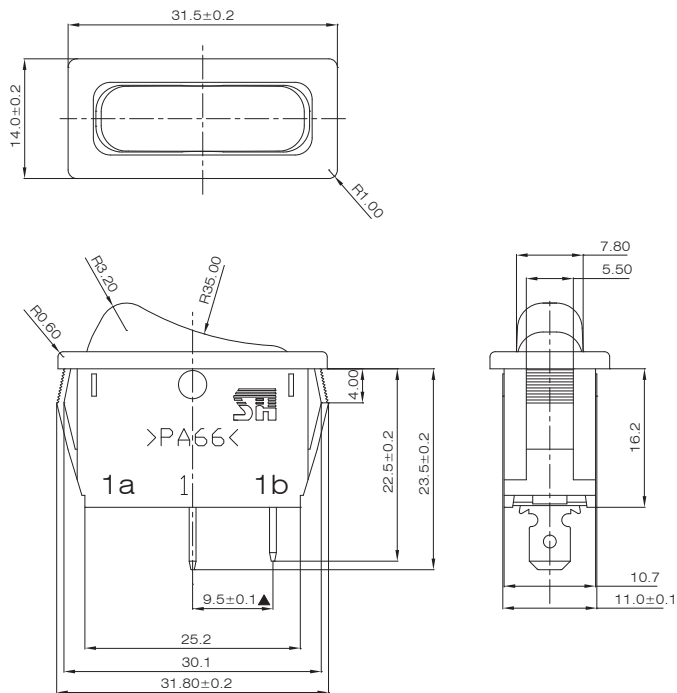
KEY / TACT



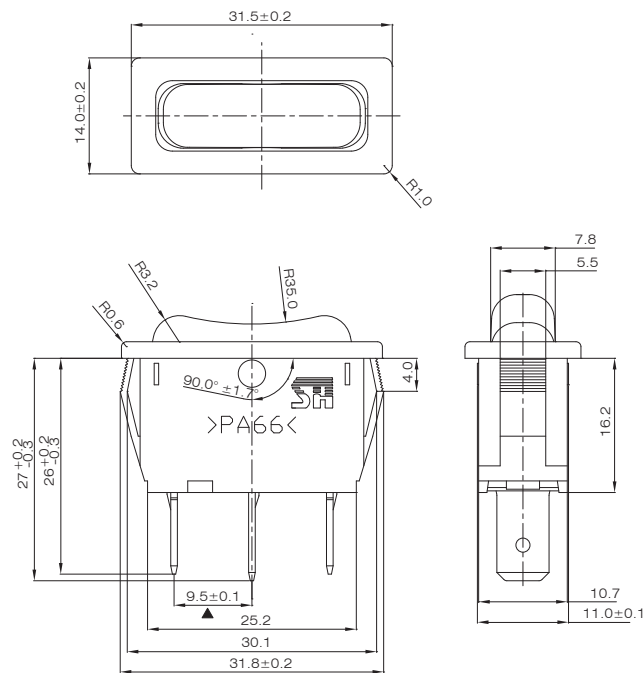
### SPECIFICATIONS

- CONTACT RATING: 4.5A 28VDC
- ELECTRIC LIFE: 10,000 cycles
- CONTACT RESISTANCE: 30 mΩ max. (initial)
- INSULATION RESISTANCE: 100 MΩ min. 500VDC
- DIELECTRIC STRENGTH: 1,000VAC/ 1 min.
- OPERATING TEMPERATURE: 0°C to +55°C

### Dimensions



R7015-2-D1Q-P45-2P



R7016-2-DQ-P45

### How To Order

R7015 - 2 [ ] - D Q - P45 - [ ] - H

- Switch Function  
R7015 = On-Non-On  
R7015A = On-Non-MOM  
R7016 = On-Off-On  
R7016A = MOM-Off-MOM  
R7016B = On-Off-MOM
- Actuator Color  
1 = white  
2 = black  
3 = red  
4 = orange
- Marking  
Non = Std  
1 = 0 |  
2 = 0 -

- ROHS Compliant
- Agency approval  
Non = Standard  
2P = Two terminal
- Ratings  
P45 = 4.5A, 28VDC
- Contact Material  
Non = No plated  
Q = Silver plated  
R = Gold plated
- Terminal  
B = solder lug  
C = PC lug  
D = Quick connect

**JS-606Q SERIES (D.P Mini Rocker Switch)**
**SPECIFICATIONS**

1. Rating: 10A 125 VAC/6A 250 VAC
2. Contact resistance: 30 mΩ(max.)
3. Insulation resistance: DC 500V 100MΩ(Min)
4. Dielectric strength: 1500 VAC/ 1minute
5. Safety approval:

JS-606Q – – – –

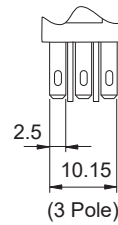
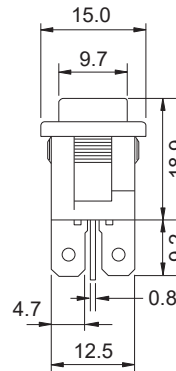
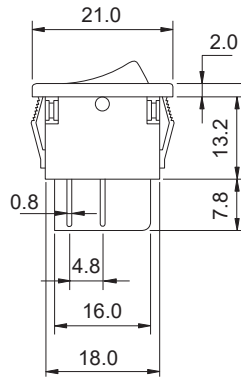
Circuit		
B1	3P	ON-ON
B2	6P	
C1	3P	ON-OFF-ON
C2	6P	
C3	9P	
D1	2P	(ON)-OFF
D2	4P	
E1	2P	ON-(OFF)
E2	4P	
F1	3P	(ON)-ON
F2	6P	
H1	3P	ON-OFF-(ON)
H2	6P	

Color Rocker/Housing	
B	Black
W	White
I	Ivory
H	Gray
S	Slate Gray

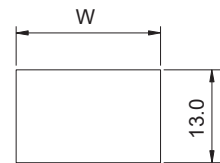
Stamp					
1	2	3	4	5	6

RoHS code
H = RoHS Compliant

( )....Momentary

**JS-606Q-C2-B/B-6**


W	Panel Thickness
19.2	0.75-1.25
19.4	1.25-2.0
19.8	2.0-3.0


**JS-606Q-E2-S/S-1**

**JS-606Q-H2-W/W-1**

**JS-606Q-H2-S/S-1**

**JS-606Q-C2-H/H-1**


## JS-606 (S.P rocker switch) / JS-606P (DP. rocker switch)

### SPECIFICATIONS

- Rating: K/ 6A 125VA/3A 250VAC (UL~CSA)  
H/ 10A 125VAC/ 6A 250VAC (UL-KEMA)  
L/ 5A 125VAC  
T/ 16A 125VAC/10A 250VAC T105
- CONTACT RESISTANCE: 30 mΩ(max)
- Insulation resistance: DC 500V 100MΩ(Min)
- Dielectric strength: 1,000 VAC/ 1minute.
- Safety approval:

### MATERIALS

- Housing Nylon #66 (UL 94V-2)
- Rocker Nylon #66 (UL 94V-2)
- Terminal: Copper alloy Sn or Ag Plated
- Contact: Ag-cd-O alloy
- Spring: Music wire

(A)

Model	Circuit	Terminal	Color Rocker/Housing	Stamp	Rating	RoHS code
JS-606	<b>JS-606</b>		B Black W White R Red G Green I Ivory H Gray S Slate Gray Y Yellow	1	K 6A	H = RoHS Compliant
	A	2P ON-OFF		2	H 10A	
	B	3P ON-ON		3	L 5AL	
	C	3P ON-OFF-ON		4	T 16A	
	D	2P (ON)-OFF		5		
	E	2P ON-(OFF)		6		
	F	3P (ON)-ON		7		
	I	2P indicator		8		
	L	4P with led		9		
	AL	3P illuminated		10		
JS-606P	<b>JS-606P</b>			11		
	A	4P ON-OFF		12		
	B	6P ON-ON		13		
	C	6P ON-OFF-ON		14		
	D	4P (ON)-OFF		15		
	E	4P ON-(OFF)		16		
	F	6P (ON)-ON				
	AA	4P double ON-OFF				
	AB	5P ON-OFF ON-ON				
	BB	6P double ON-ON				
AI	4P ON-OFF with INDICATOR					

Stamp:  
Apply for JS-606

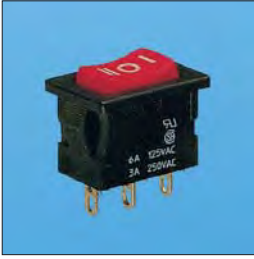
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Apply for JS-606P

1	2	3	4	5	6	7	8	9	10	11	12	13

## JS-606

JS-606C-S-R/B-6-□



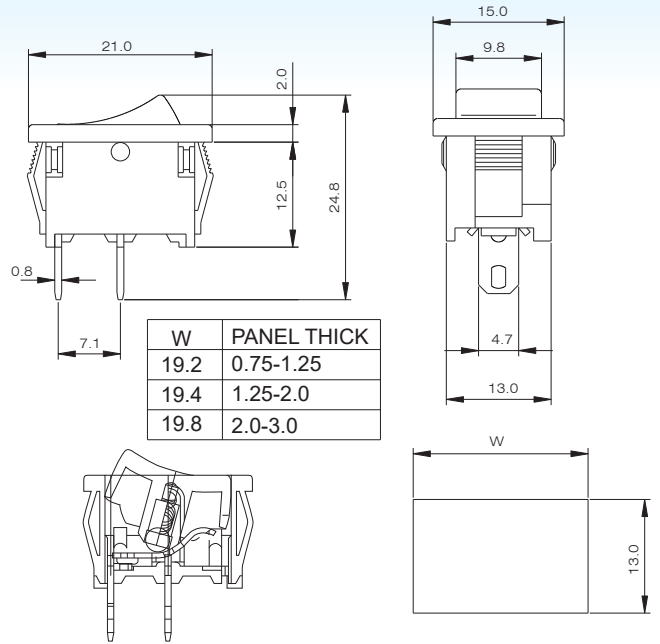
JS-606B-R-B/B-1-□



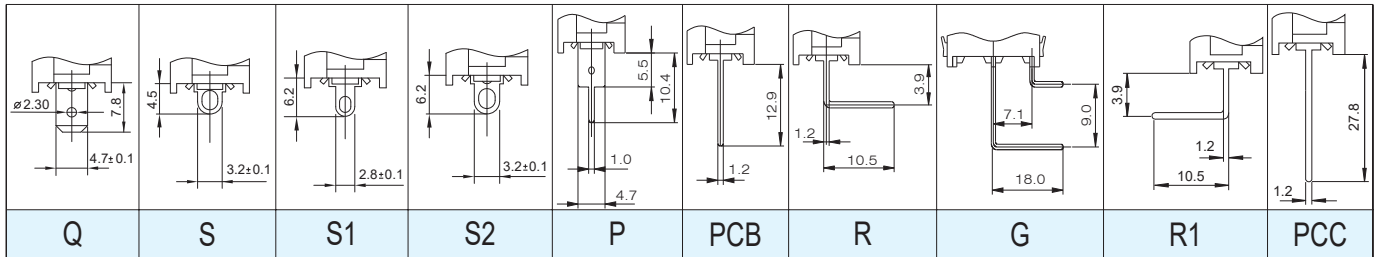
JS-606A-G-B/B-3-□



JS-606I-Q-G/B-1-□



### TERMINAL OPTION:



## JS-606P

JS-606PA-R-B/B-4-□



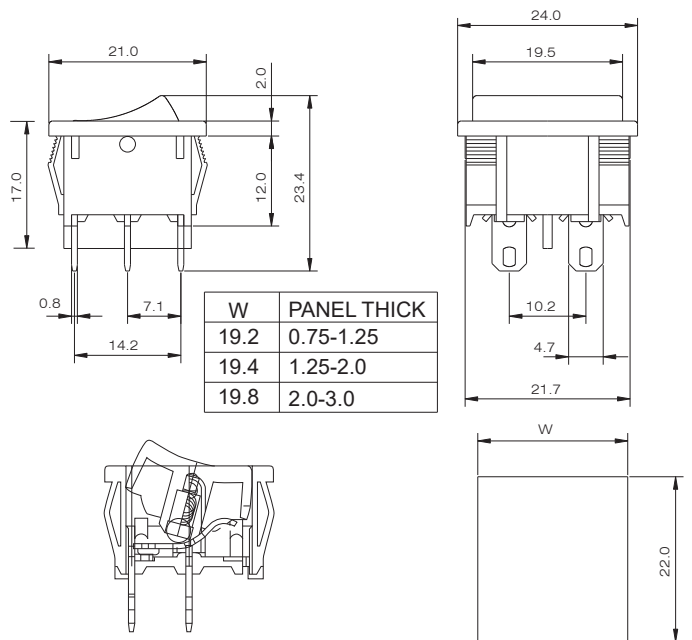
JS-606PAA-Q-B/B-1-□



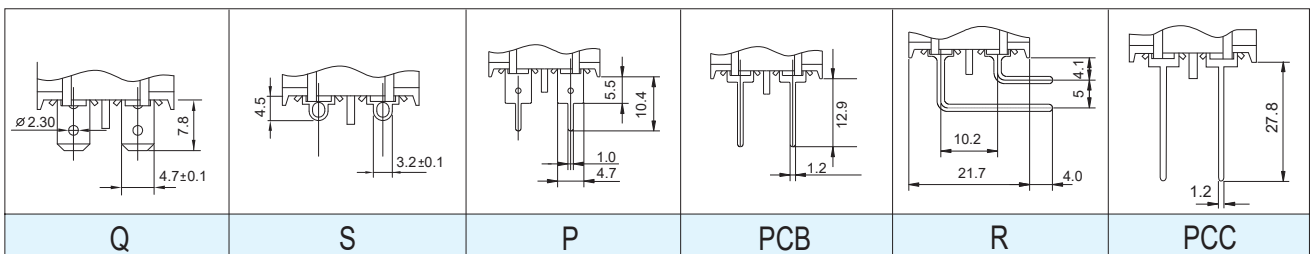
JS-606PB-P-O/B-6-□



JA-606PAI-Q-R/B-2-□



### TERMINAL OPTION:



## JS-608 SERIES

### SPECIFICATIONS

1. Rating: 10A 125/250 VAC  
16A 250 VAC
2. Contact resistance: 30 mΩ(max.)
3. Insulation resistance: DC 500V 100MΩ(Min)
4. Dielectric strength: 2000 VAC/ 1minute
5. Safety approval:

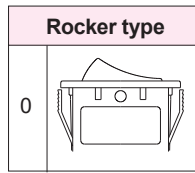
### MATERIALS

1. Housing Nylon #66 UL 94V-2
2. Rocker: Nylon #66UL 94V-2
3. Terminal: Copper alloy Sn or Ag Plated
4. Contactor: Ag-cd-O alloy
5. Spring: Music wire

JS-608 -

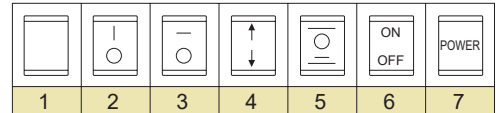
Mounting hole	
R	22x28m/m
F	22x30m/m

Circuit	
A	4P ON-OFF
B	6P ON-ON
C	6P ON-OFF-ON
D	4P (ON)-OFF
F	6P (ON)-ON
G	6P (ON)-OFF-(ON)
H	6P ON-OFF-(ON)
AL	4P illuminated
BL	6P illuminated



Color Rocker/Housing	
B	Black
W	White
R	Red
I	Ivory
G	Green
H	Gray
Y	Yellow

#### Stamp



#### RoHS code

H = RoHS Compliant

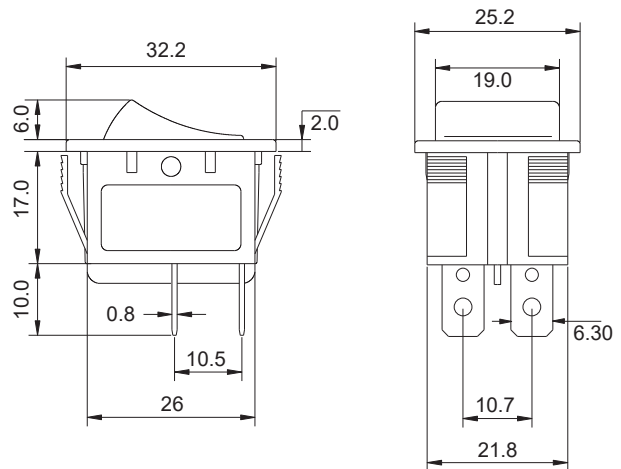
JS-608RA-O-B/ B-2



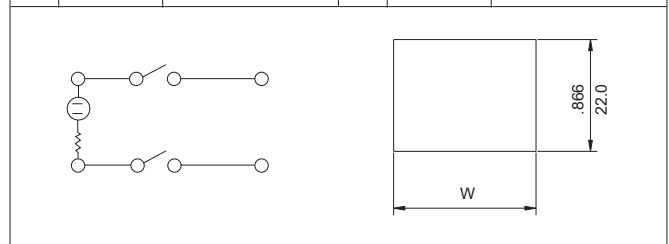
JS-608FG-O-R/ W-4

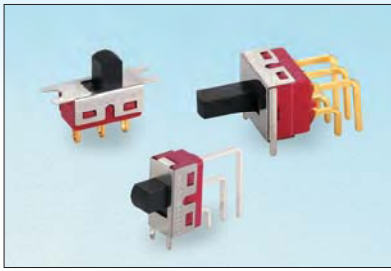


JS-608RAL-O-R/ W-2



R	W	PANEL THICKNESS	F	W	PANEL THICKNESS
	28.0	0.75~1.25		30.0	0.75~1.25
	28.2	1.25~2.0		30.2	1.25~2.0
	28.5	2.0~3.0		30.5	2.0~3.0





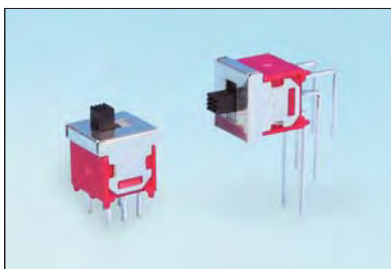
T80-S Slide Switches.....C01



SS30 Sealed Sub-miniature Side Switches.....C05



ES40-S Sealed Sub-miniature Slide Switches .....C07



TS40-S Sub-miniature Slide Switches.....C09



250 Miniature Slide Switches.....C11



SL Sub-miniature Slide Switches.....C13



SHM Mini Slide Switches .....C15



INDEX

TOGGLE

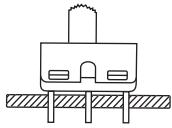
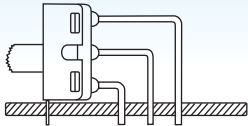
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



## SPECIFICATIONS

CONTACT RATING: 6A @125 VAC or 28 VDC  
3A @250 VAC

LIFE CYCLE: 30,000 make-and-break cycles

CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA

INSULATION RESISTANCE: 1,000 MΩ min.

DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.

OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE - diallyl phthalate ( DAP )

SLIDE HANDLE - Nylon

HOUSING - Stainless Steel

CONTACT AND TERMINAL - Copper alloy, silver or gold plated

How do you build the switches you need!!

The straight type , please see the (A) ;

The right angle P.C terminals, please see the (B)

(A) T S - 1 3 - A 1 - 2 - C Q - E - S 2 0 -

Switches Function		Actuator		Actuator color		Termination		Contact Material		Vertical support Bracket	
TS-13	SPDT on-none-on	A1	5.08	1	white	B	solder lug	Q	silver plated	(none)	
TS-13A	SPDT on-none-mom	A2	7.35	2	black (std.)	C	P.C	R	gold plated	S20	8.89 (SPDT)
TS-14	SPDT on-off-on	A3	9.40	9	gray	D	Quick connect	G	gold over silver	S20	10.16 (DPDT)
TS-11	DPDT on-none-on	A4	3.60			D1	wire wrap 19.05			S25	13.74 (SPDT)
TS-12	DPDT on-off-on	A5	5.08			D3	wire wrap 10.8				
		A6	12.32								
		A7	4.20								
		Wide Actuator									
		S1	5.08								
				Epoxy seal							
		(none)	none seal								
		E	epoxy seal								
				RoHS code							
				H = RoHS Compliant							

(B) T S - 1 3 P - A 1 - 2 - Q - E -

Horizon Right Angle	Vertical Right Angle	Switches Function	Actuator		Actuator color		Contact Material		RoHS code	
TS-13P	TS-13L	SPDT on-none-on	A1	4.72	1	white	Q	silver plated	H = RoHS Compliant	
TS-13PA	TS-13LA	SPDT on-none-mom	A2	6.96	2	black	R	gold plated		
TS-14P	TS-14L	SPDT on-off-on	A3	8.96	9	gray	G	gold over silver		
TS-11P	TS-11L	DPDT on-none-on	A4	3.30						
TS-12P	TS-12L	DPDT on-off-on	A5	4.72						
			A6	11.92						
			Wide Actuator							
			S1	4.72						
					Epoxy seal					
			(none)	none seal						
			E	epoxy seal						



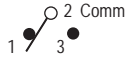
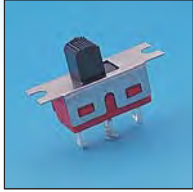


# T80-S

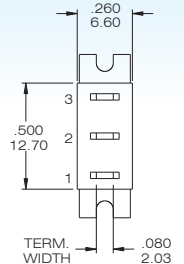
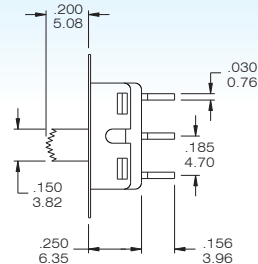
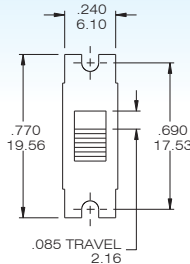
# Slide Switches



## SPDT



Model No.	Switching position		
TS-13	ON	NONE	ON
TS-13A	(ON)	NONE	ON
TS-14	ON	OFF	ON
Term. Comm.	2-1	open	2-3

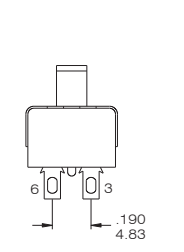
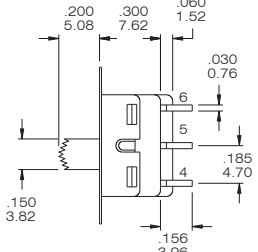
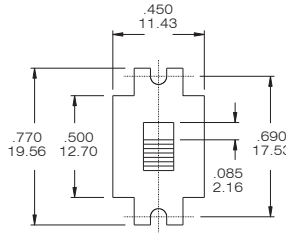


TS-13-A1-2-BQ

## DPDT



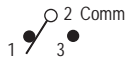
Model No.	Switching position		
TS-11	ON	NONE	ON
TS-12	ON	OFF	ON
Term. Comm.	2-1	5-4	open 2-3 5-6



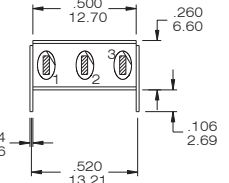
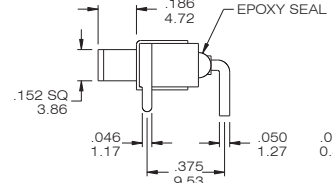
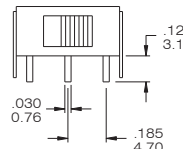
TS-11-A1-2-BQ

## HORISON RIGHT ANGLE

## SPDT

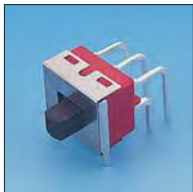


Model No.	Switching position		
TS-13P	ON	NONE	ON
TS-13PA	(ON)	NONE	ON
TS-14P	ON	OFF	ON
Term. Comm.	2-1	open	2-3

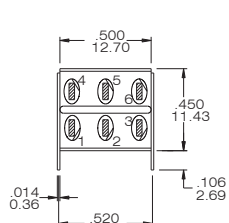
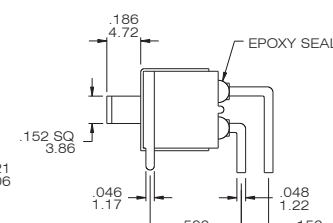
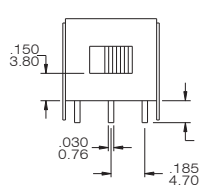


TS-13P-A1-2-Q(-E)

## DPDT



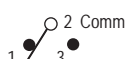
Model No.	Switching position		
TS-11P	ON	NONE	ON
TS-12P	ON	OFF	ON
Term. Comm.	2-1	5-4	open 2-3 5-6



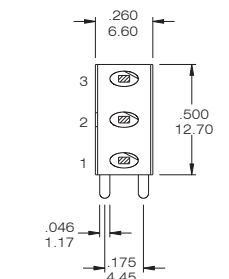
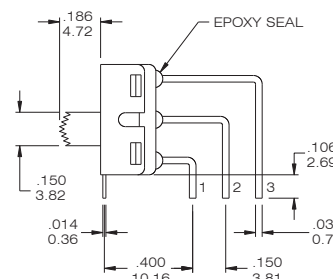
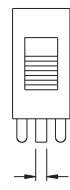
TS-11P-A1-2-Q(-E)

## VERTICAL RIGHT ANGLE

## SPDT



Model No.	Switching position		
TS-13L	ON	NONE	ON
TS-13LA	(ON)	NONE	ON
TS-14L	ON	OFF	ON
Term. Comm.	2-1	open	2-3

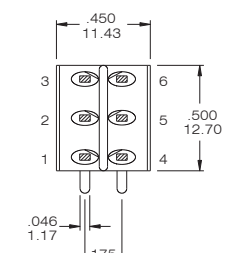
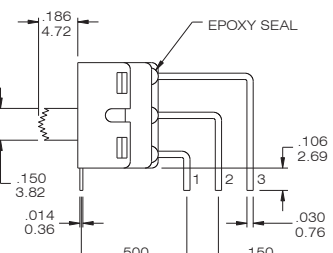
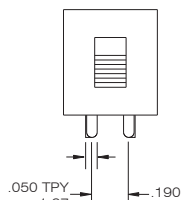


TS-13L-A1-2-Q(-E)

## DPDT

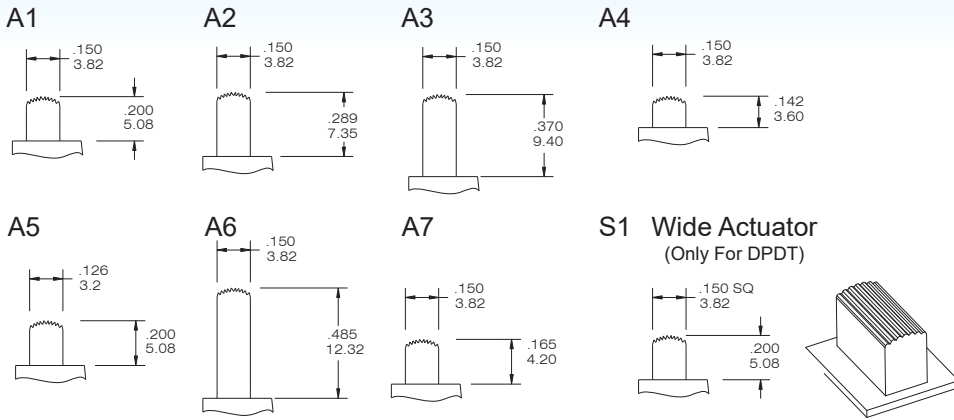


Model No.	Switching position		
TS-11L	ON	NONE	ON
TS-12L	ON	OFF	ON
Term. Comm.	2-1	5-4	open 2-3 5-6



TS-11L-A1-2-Q(-E)

## Actuator Option



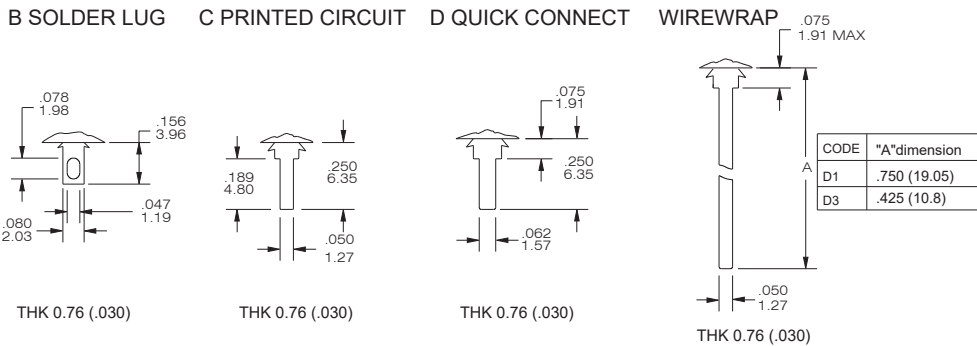
• the height of actuator is for the straight type. It will be shorter while applying in Right Angle type

## Actuator Color

COLOR NO.	COLOR
1	white
2	black
9	gray

## TERMINAL OPTION

## Terminal Seal Option



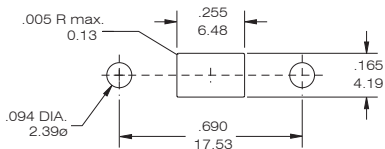
## E TERMINAL SEAL



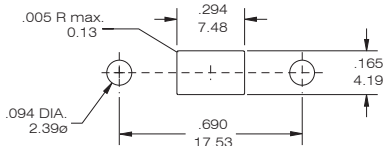
## PANEL MOUNTING DIMENSION

## THE P.C.B MOUNTING

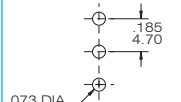
TS-11/TS-13



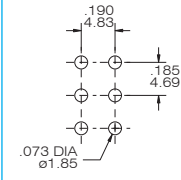
TS-12 / TS-14



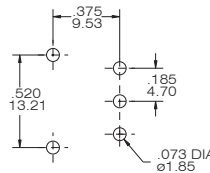
TS-13/TS-14



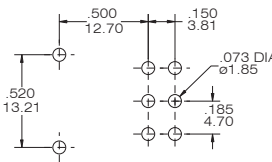
TS-11/TS-12



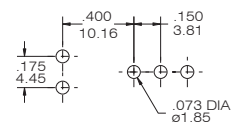
TS-13P/TS-14P



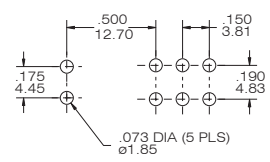
TS-11P/TS-12P



TS-13L/TS-14L



TS-11L/TS-12L



## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	6 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 6 A @ 125V AC or 28 V DC; 3 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option



T80-S

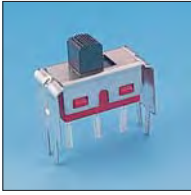
Slide Switches



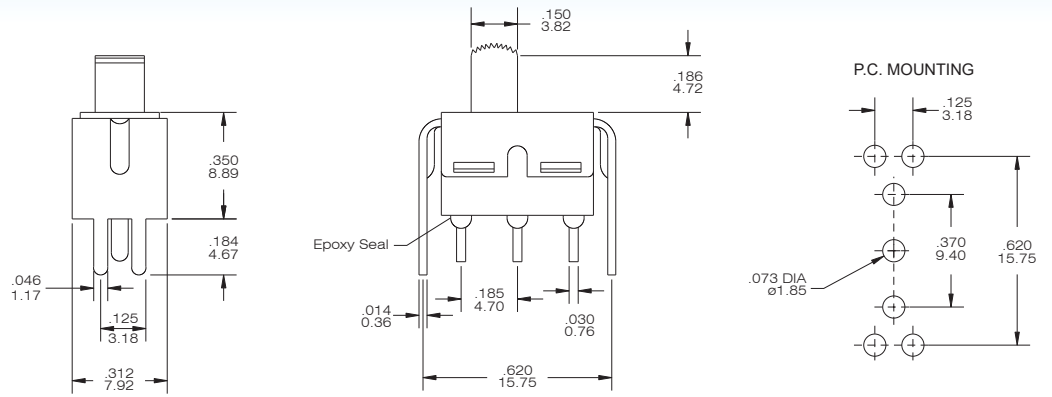
VERTICAL SUPPORT BRACKET OPTION

( only apply the straight type terminal - Please modify the terminal option is "c" code)

S20



SPDT

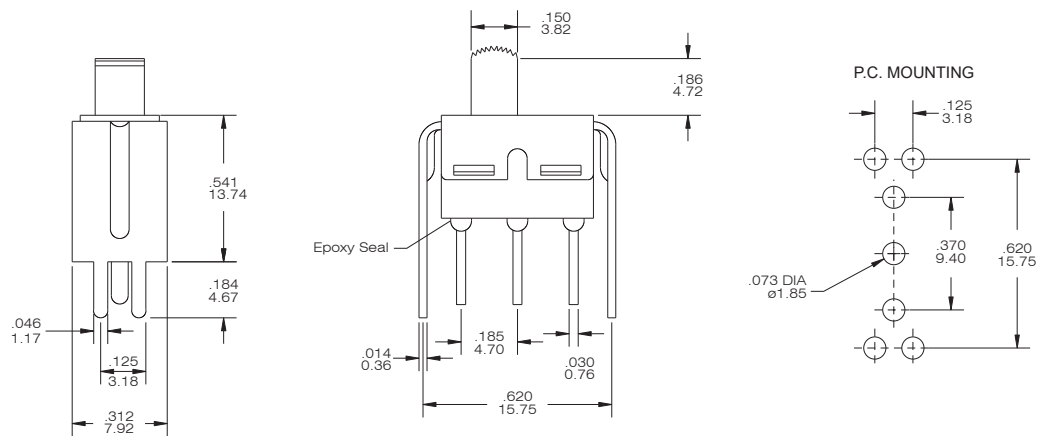


TS-13-A1-2-CQ-S20

S25



SPDT

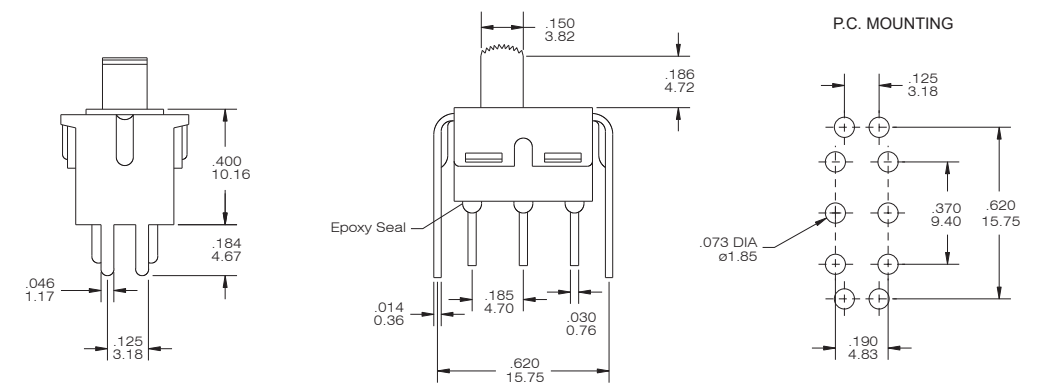


TS-13-A1-2-CQ-S25

S20



DPDT



TS-11-A1-2-CQ-S20

INDEX

TOGGLE

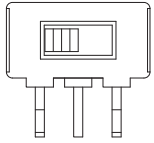
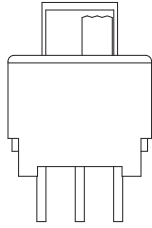
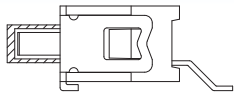
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



### SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @20V AC or DC max.  
 LIFE CYCLE: 40,000 make-and-break cycles  
 CONTACT RESISTANCE: 50 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE: nylon 6/6  
 ACTUATOR: nylon 6/6  
 BASE: nylon 6/6  
 TERMINAL: Copper alloy, gold plated  
 CONTACT: Copper alloy, silver plated  
 SWITCH SUPPORT: Copper alloy, tin plated  
 SLIDE BUTTON: POM  
 WATERPROOF COVER: Silica gel

### How do you build the switches you need!!

SS - 4 - C K - -

Switch Function		Termination		Contact Material		Package Style		RoHS code
SS-4	SP on-none-on	C	P.C	K	(std) gold / tin plated	(none)	bag or box	H = RoHS Compliant
SS-4A	SP on-off-on	H	horizon	R	gold plated	T/R	tape & reel	
SS-5	DP on-none-on							
SS-5A	DP on-off-on	M	SMT					



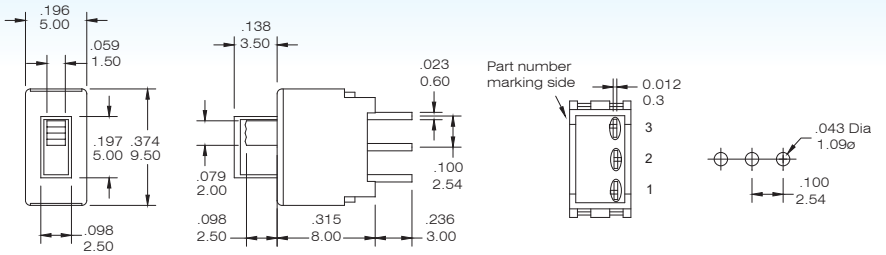
# SS30

# Sealed Sub-miniature Slide Switches



SPDT  
1 2 Comm 3

Model No.	Switching position		
SS-4-C	ON	none	ON
SS-4A-C	ON	OFF	ON
Term. Comm.	2-3	open	2-1

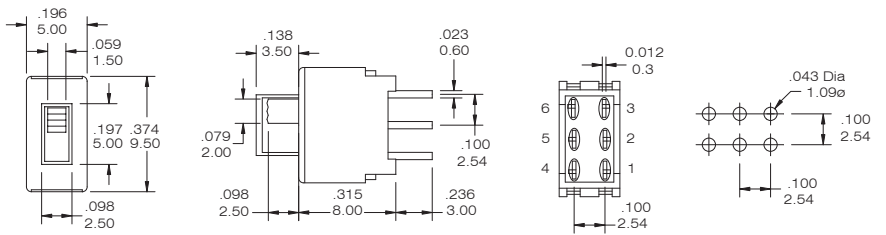


SS-4-CK



DPDT  
1 2 Comm 3 4 5 Comm 6

Model No.	Switching position		
SS-5-C	ON	none	ON
SS-5A-C	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4

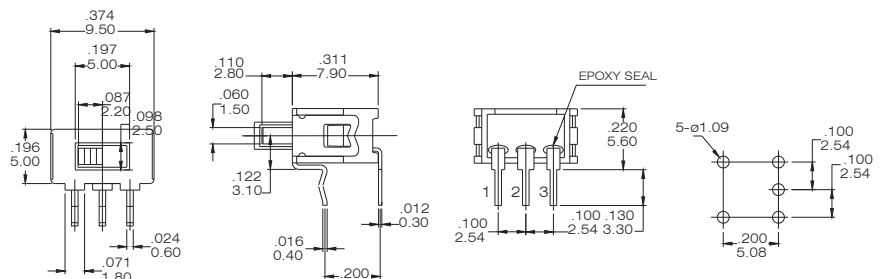


SS-5-CK

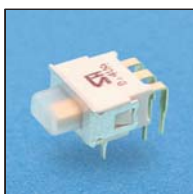


SPDT  
1 2 Comm 3

Model No.	Switching position		
SS-4-H	ON	none	ON
SS-4A-H	ON	OFF	ON
Term. Comm.	2-3	open	2-1

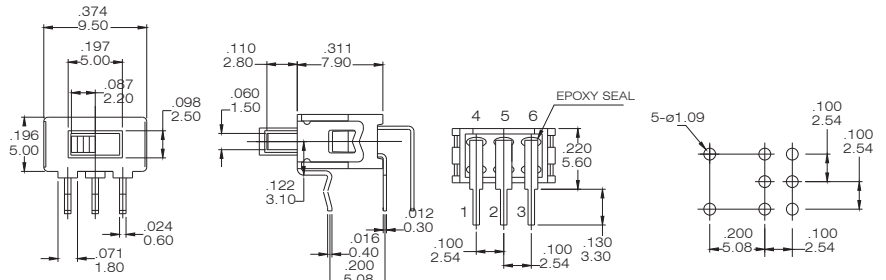


SS-4-HK

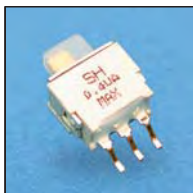


DPDT  
1 2 Comm 3 4 5 Comm 6

Model No.	Switching position		
SS-5-H	ON	none	ON
SS-5A-H	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4

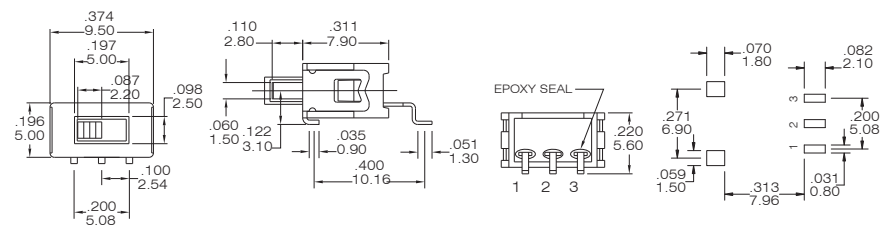


SS-5-HK



SPDT  
1 2 Comm 3

Model No.	Switching position		
SS-4-M	ON	none	ON
SS-4A-M	ON	OFF	ON
Term. Comm.	2-3	open	2-1

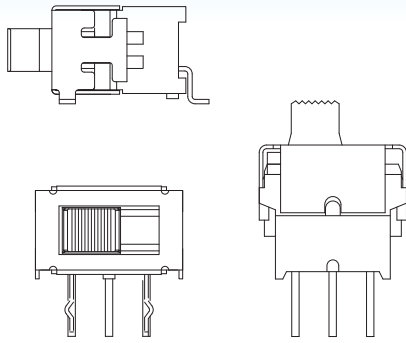


SS-4-MK

## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
K	Brass, gold plated	Copper alloy, tin plated	0.4VA MAX @ 20 VAC or VDC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

The dimensions in the catalogue and website are for reference only, not suitable for formal acknowledgment.



### SPECIFICATIONS

CONTACT RATING: 0.4 VA max. @28VDC max.  
 LIFE CYCLE: 10,000 make-and-break cycles  
 CONTACT RESISTANCE: 100 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 100 MΩ min.  
 DIELECTRIC STRENGTH: 500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE and BASE - Nylon  
 ACTUATOR - Nylon  
 TERMINAL - Copper alloy, gold plated  
 CONTACT - Copper alloy, silver plated  
 SWITCH SUPPORT - Copper alloy, tin plated

### How do you build the switches you need!!

E S - 4 S - C K - -

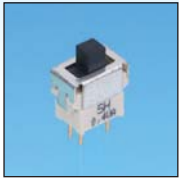
Switch Function		Termination		Contact Material		Package Style		RoHS code
ES-4S	SP on-none-on	C	P.C	K	(std) gold tin plated	(none)	bag or box	H = RoHS Compliant
ES-4AS	SP on-off-on	H	horizon	R	gold plated	T/R	tape & reel	
ES-5S	DP on-none-on	V	vertical					
ES-5AS	DP on-off-on	M	SMT					

\* Vertical right angle type is on pending. For further information, please inquire our office.

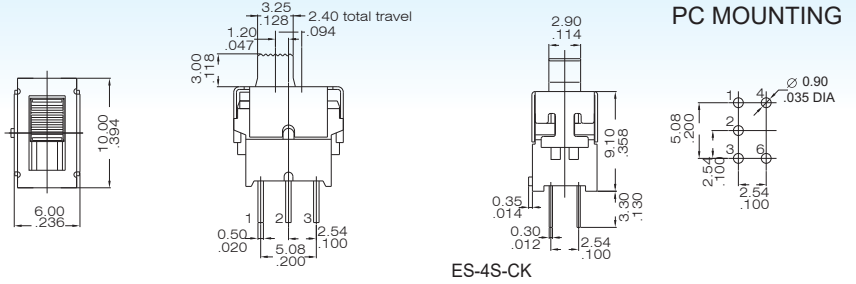


# ES40-S

## Sealed Sub-miniature Slide Switches



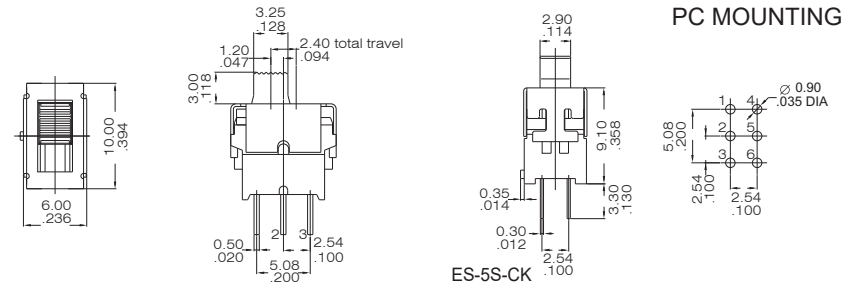
Model No.	Switching position		
ES-4S-C	ON	none	ON
ES-4AS-C	ON	OFF	ON
Term. Comm.	2-3	open	2-1



SPDT



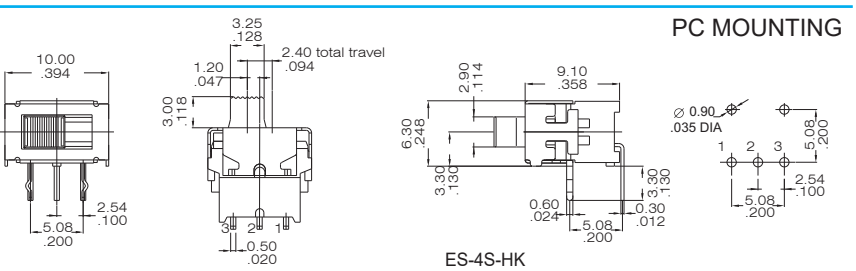
Model No.	Switching position		
ES-5S-C	ON	none	ON
ES-5AS-C	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4



DPDT



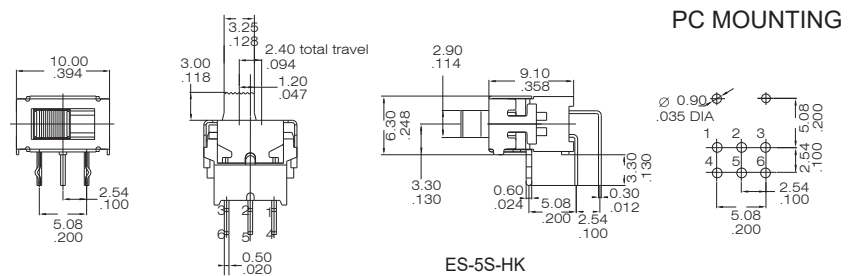
Model No.	Switching position		
ES-4S-H	ON	none	ON
ES-4AS-H	ON	OFF	ON
Term. Comm.	2-3	open	2-1



SPDT



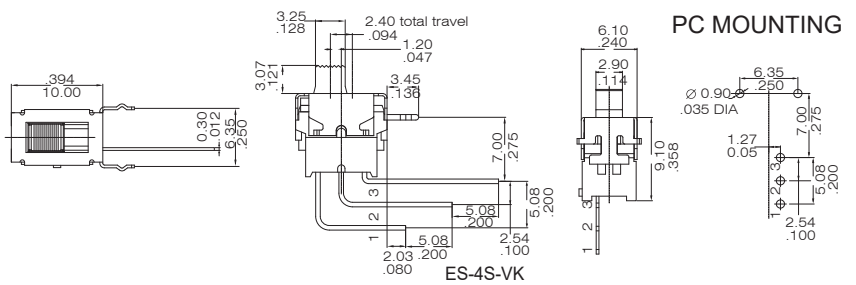
Model No.	Switching position		
ES-5S-H	ON	none	ON
ES-5AS-H	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4



DPDT



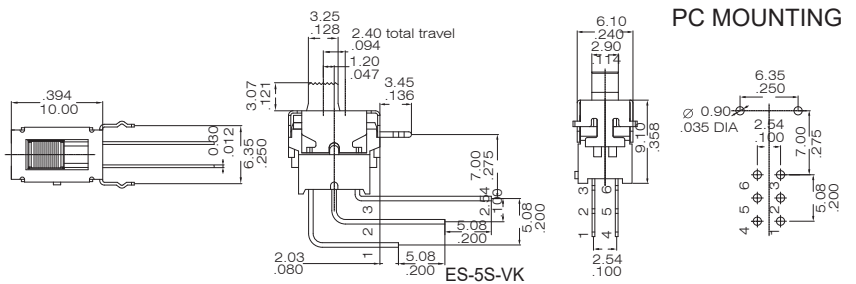
Model No.	Switching position		
ES-4S-V	ON	none	ON
ES-4AS-V	ON	OFF	ON
Term. Comm.	2-3	open	2-1



SPDT



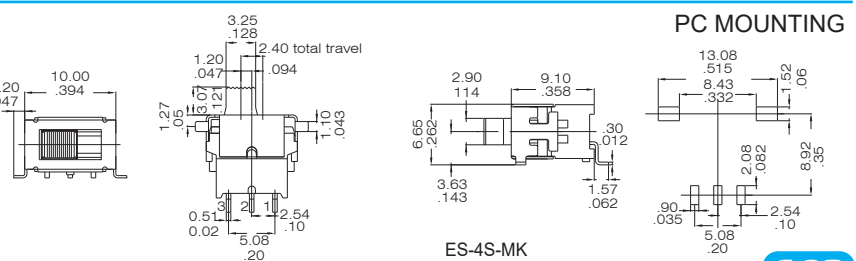
Model No.	Switching position		
ES-5S-V	ON	none	ON
ES-5AS-V	ON	OFF	ON
Term. Comm.	2-3,5-6	open	2-1,5-4



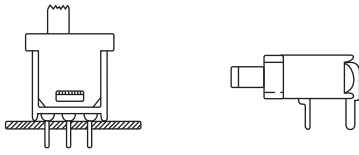
DPDT



Model No.	Switching position		
ES-4S-M	ON	none	ON
ES-4AS-M	ON	OFF	ON
Term. Comm.	2-3	open	2-1



SPDT



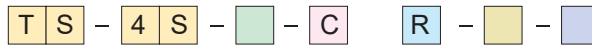
## SPECIFICATIONS

CONTACT RATING: Q: 3A @125 VAC or 28 VDC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

## MATERIALS

CASE - diallyl phthalate ( DAP )  
 SLIDE HANDLE -Nylon  
 HOUSING -Brass, tin plated  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin plated

## How do you build the switches you need!!



Switch Function	
TS-4S	SP on-none-on
TS-4AS	SP on-off-on
TS-5S	DP on-none-on
TS-5AS	DP on-off-on
TS-6S	SP on-none-on
TS-6AS	SP on-off-on
TS-7S	DP on-none-on
TS-7AS	DP on-off-on
TS-8S	SP on-none-on
TS-8AS	SP on-off-on
TS-9S	DP on-none-on
TS-9AS	DP on-off-on

Actuator	
(none)	3.10(std.)
A2	4.70

Termination	
C	P.C (only for TS-4(A)S and TS-5(A)S)

Contact Material	
Q	silver plated
R	gold plated
G	gold over silver
K	gold / tin

Epoxy Seal	
(none)	none seal
E	epoxy seal

RoHS code
H = RoHS Compliant





# TS40-S

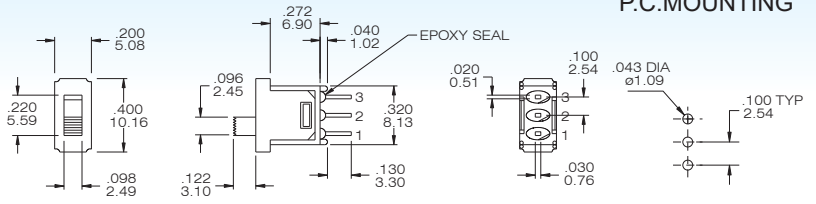
# Sub-Miniature Slide Switches



## SPDT



Model No.	Switching position		
TS-4S	ON	NONE	ON
TS-4AS	ON	OFF	ON
Term. Comm.	2-3	open	2-1

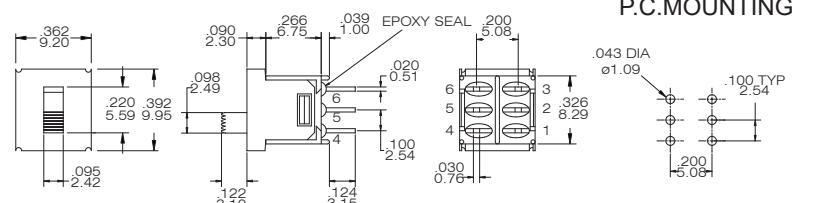


TS-4S-CQ

## DPDT



Model No.	Switching position		
TS-5S	ON	NONE	ON
TS-5AS	ON	OFF	ON
Term. Comm.	2-3	open	2-1

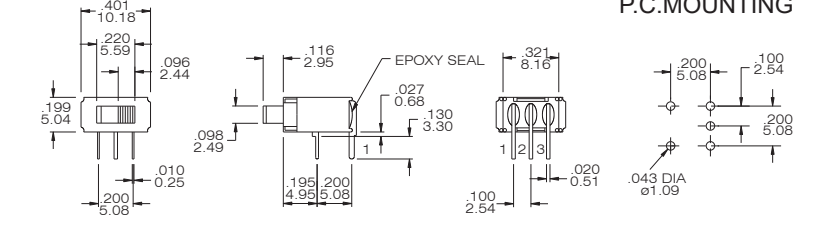


TS-5S-CQ

## SPDT



Model No.	Switching position		
TS-6S	ON	NONE	ON
TS-6AS	ON	OFF	ON
Term. Comm.	2-3	open	2-1

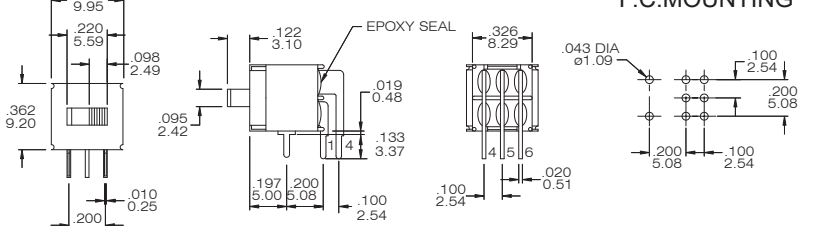


TS-6S-Q

## DPDT



Model No.	Switching position		
TS-7S	ON	NONE	ON
TS-7AS	ON	OFF	ON
Term. Comm.	2-3	open	2-1

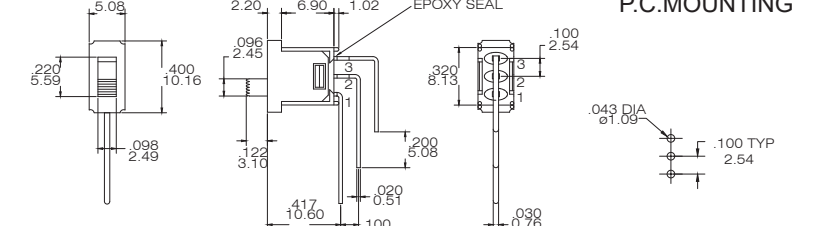


TS-7S-Q

## SPDT



Model No.	Switching position		
TS-8S	ON	NONE	ON
TS-8AS	ON	OFF	ON
Term. Comm.	2-3	open	2-1

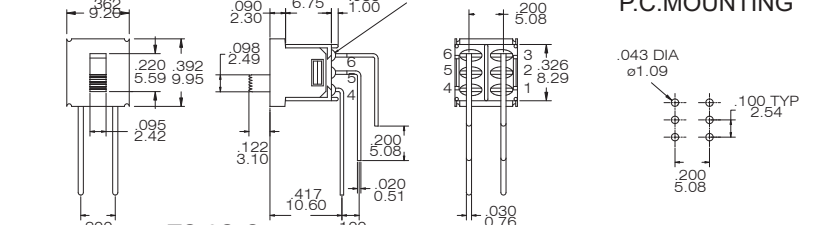


TS-8S-Q

## DPDT



Model No.	Switching position		
TS-9S	ON	NONE	ON
TS-9AS	ON	OFF	ON
Term. Comm.	2-3	open	2-1



TS-9S-Q

## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 125V AC or 28 V DC; 1.5 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over silver plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 3 A @ 125V AC or 28 V DC; 1.5 A @ 250 VAC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

INDEX

TOGGLE

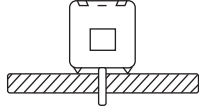
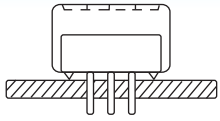
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



**SPECIFICATIONS**

CONTACT RATING: Q: 3A @120 VAC or 28 VDC  
 ELECTRICAL LIFE: 10,000 cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1000 VAC/1 min.  
 OPERATING TEMPERATURE: -30°C to +85°C

**MATERIALS**

CASE: PBT with glass fiber, flame retardant, heat stabilized (UL94-V0)  
 HOUSING: POM/PA66, flame retardant, heat stabilized (UL94-HB)  
 ACTUATOR: PA66, flame retardant, heat stabilized (UL94-HB)  
 CONTACTS & TERMINALS: Copper alloy, silver plated  
 TERMINAL SEAL: Epoxy

How do you build the switches you need!!

H 2 5 1 A - Q - 3 E -

Actuator Type
H : High (2.80)
F : Flush
S : Side

Switch Function	
251	SPDT on-none-on
253	SPDT on-off-on
502	DPDT on-none-on
506	DPDT on-off-on

Terminal Pitch	
A	2.54
B	5.08

Contact	
Q	silver
R	gold

Epoxy seal	
(none)	none seal
3E	epoxy seal

RoHS code
H = RoHS Compliant

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

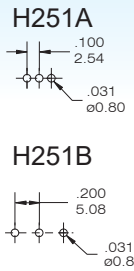
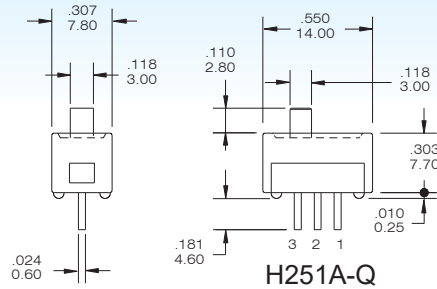
DIP / ROTARY

KEY / TACT

### SPDT



		Switching position		
Model No.	spacing			
H251A	2.54	ON	NONE	ON
H253A	2.54	ON	OFF	ON
H251B	5.08	ON	NONE	ON
H253B	5.08	ON	OFF	ON
Term. Comm.		2-3	open	2-1

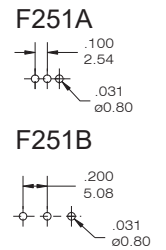
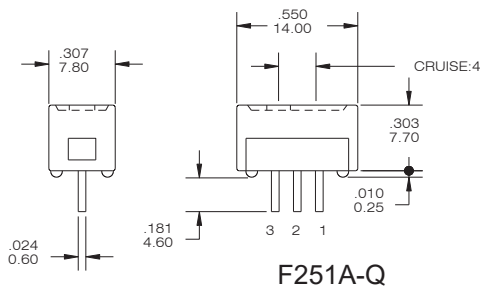


H251A-Q

### SPDT



		Switching position		
Model No.	spacing			
F251A	2.54	ON	NONE	ON
F253A	2.54	ON	OFF	ON
F251B	5.08	ON	NONE	ON
F253B	5.08	ON	OFF	ON
Term. Comm.		2-3	open	2-1

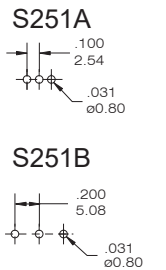
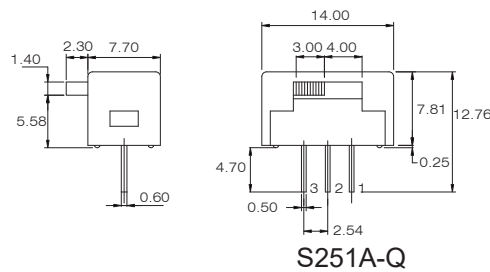


F251A-Q

### SPDT



		Switching position		
Model No.	spacing			
S251A	2.54	ON	NONE	ON
S253A	2.54	ON	OFF	ON
S251B	5.08	ON	NONE	ON
S253B	5.08	ON	OFF	ON
Term. Comm.		2-3	open	2-1

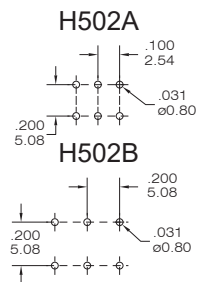
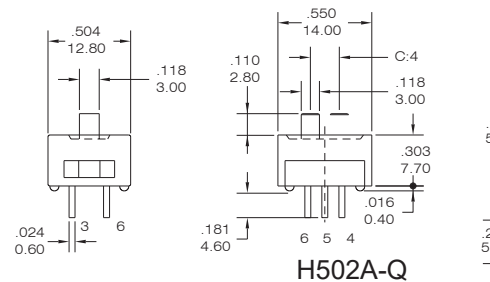


S251A-Q

### DPDT

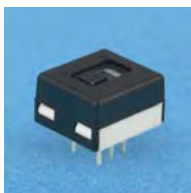


		Switching position		
Model No.	spacing			
H502A	2.54	ON	NONE	ON
H506A	2.54	ON	OFF	ON
H502B	5.08	ON	NONE	ON
H506B	5.08	ON	OFF	ON
Term. Comm.		2-3, 5-6	open	2-1, 5-4

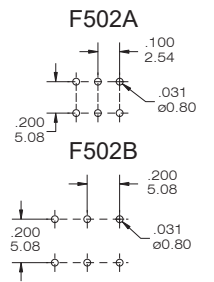
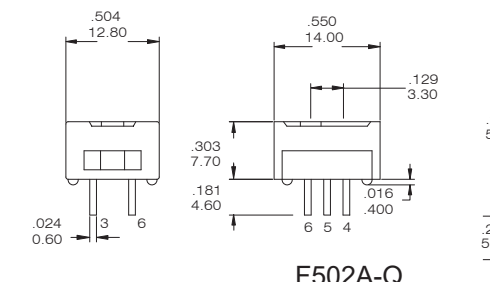


H502A-Q

### DPDT



		Switching position		
Model No.	spacing			
F502A	2.54	ON	NONE	ON
F506A	2.54	ON	OFF	ON
F502B	5.08	ON	NONE	ON
F506B	5.08	ON	OFF	ON
Term. Comm.		2-3, 5-6	open	2-1, 5-4

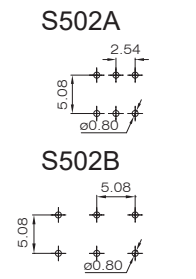
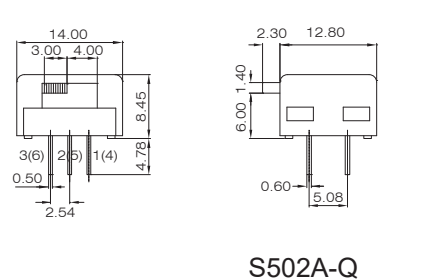


F502A-Q

### DPDT



		Switching position		
Model No.	spacing			
S502A	2.54	ON	NONE	ON
S506A	2.54	ON	OFF	ON
S502B	5.08	ON	NONE	ON
S506B	5.08	ON	OFF	ON
Term. Comm.		2-3, 5-6	open	2-1, 5-4



S502A-Q

## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	3 A @ 120V AC or 28 V DC; 1 A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX


**SPECIFICATIONS**

CONTACT RATING: 2A, 125VAC; 1A, 250VAC  
 ELECTRICAL LIFE: 10,000 cycles  
 CONTACT RESISTANCE: 20mΩ max.(initial)  
 INSULATION RESISTANCE: 100MΩ min. 500VDC  
 DIELECTRIC STRENGTH: 500VAC/1 min.  
 OPERATING TEMPERATURE: -10°C to +70°C

**MATERIALS**

Bottom: Bakelite Board  
 Actuator: nylon  
 Shell: SPCC tin-plated  
 Terminal and Contact: C1100 1/2H, silver plated

INDEX

TOGGLE

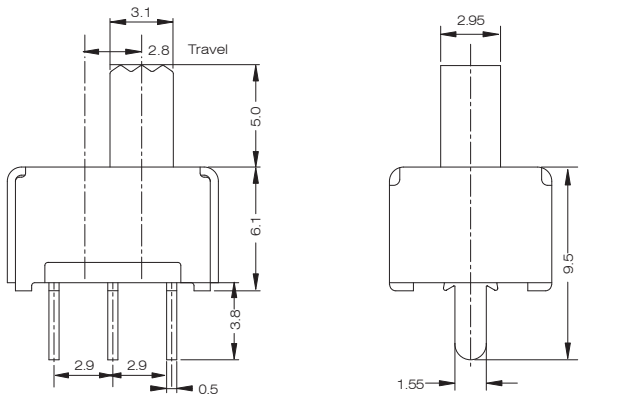
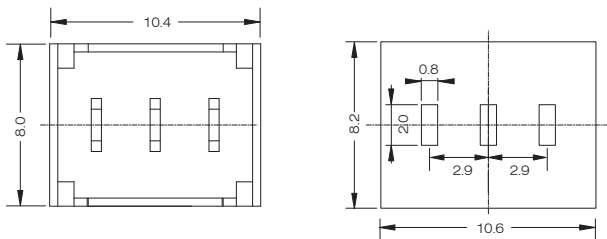
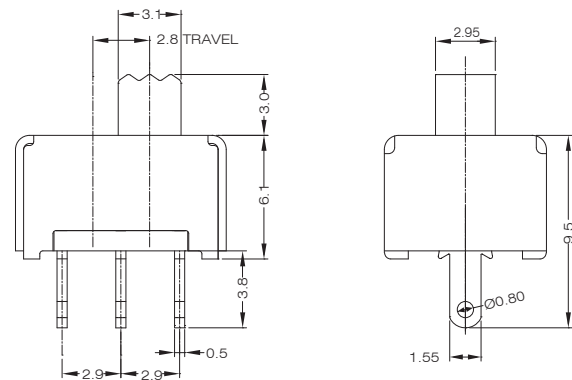
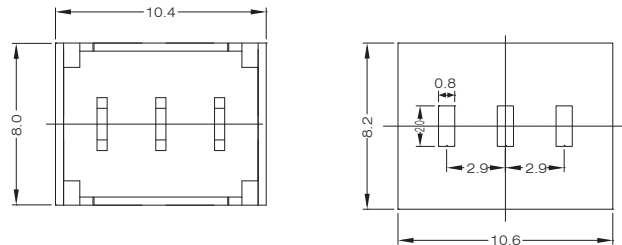
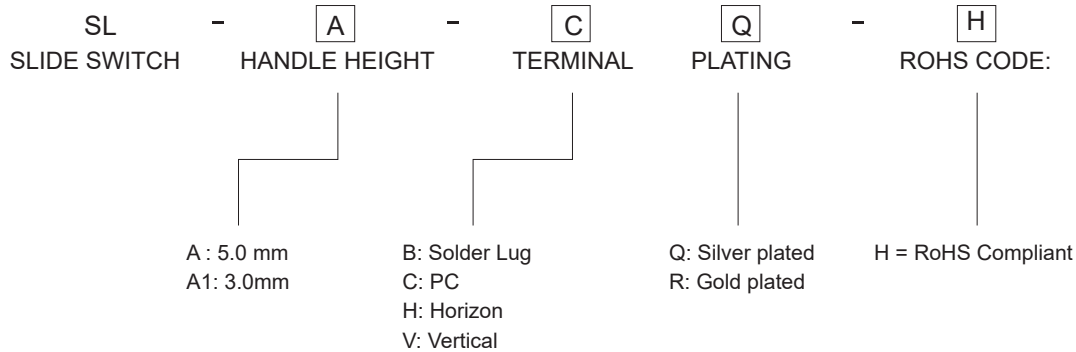
ROCKER

**SLIDE**

PUSH BUTTON / MICRO

DIP / ROTARY

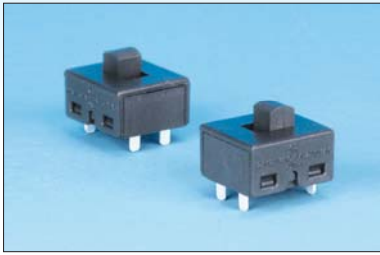
KEY / TACT


**PCB layout**

**SL-A-C-H**

**PCB layout**

**SL-A1-B-H**
**HOW TO ORDER**




SL

# Sub-Miniature Slide Switches



## SPECIFICATIONS

CONTACT RATING: 12A 125 VAC ; 6A 250VAC T105  
 ELECTRICAL LIFE: 10,000 cycles  
 CONTACT RESISTANCE: 50 mΩ max. (initial)  
 INSULATION RESISTANCE: 100 MΩ min.  
 DIELECTRIC STRENGTH: Terminal-Enclosure 1,500VAC  
 Terminal-Polarities 500VAC  
 OPERATING TEMPERATURE: -10°C to +105°C

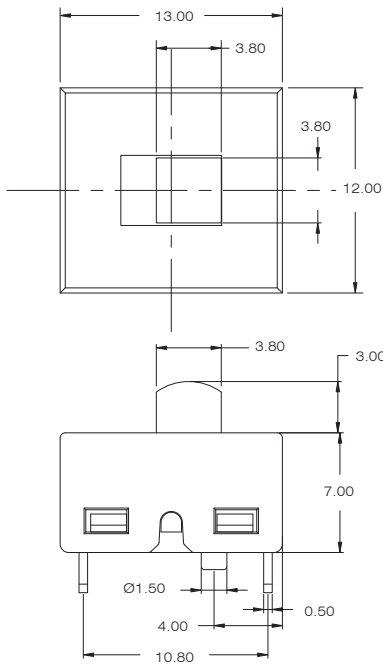


## MATERIALS

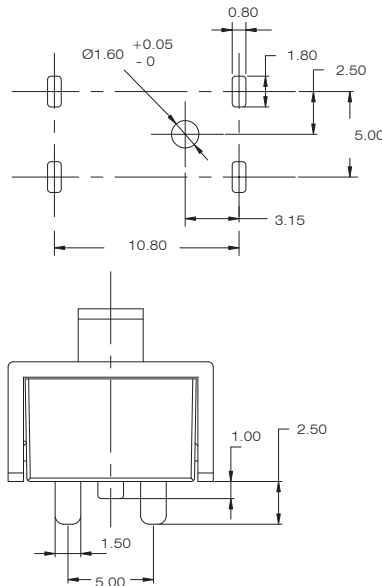
HOUSING: PA9T Black  
 ACTUATOR AND COVER: PA66 Black  
 TERMINAL AND LEVER: C2680 1/2H, silver plated  
 Contact: Silver alloy  
 Spring: SWP  
 Slide button: PTFE



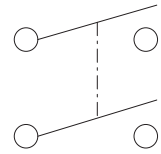
## DIMENSIONS



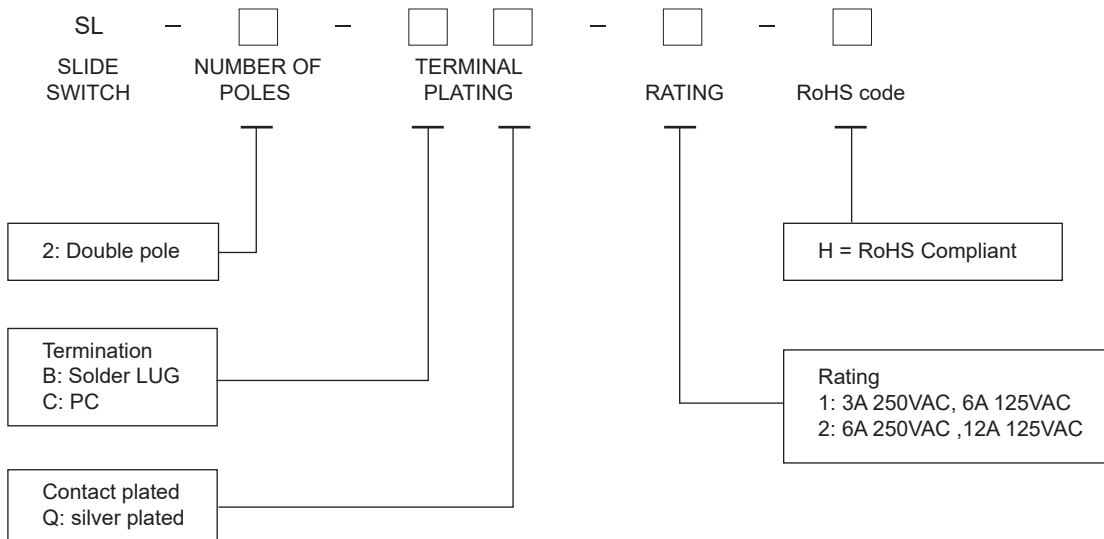
PCB Layout



Circuit

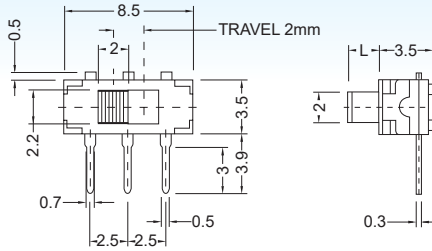


## HOW TO ORDER



INDEX TOGGLE ROCKER SLIDE PUSH BUTTON / MICRO DIP / ROTARY KEY / TACT

## SHM-1260 SERIES



1. Rating: DC6V 0.3A
2. Circuit: 1P2T
3. Timing: Non-Shorting
4. Travel: 2mm
5. Operating Force: 200±100gf

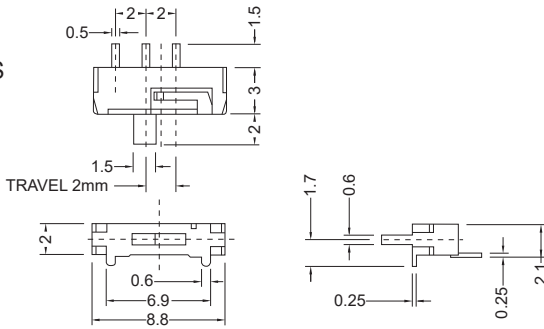
Model No.	Knob"L"
SHM-1260	2.0mm

INDEX

TOGGLE

ROCKER

## SHM-1270 SERIES

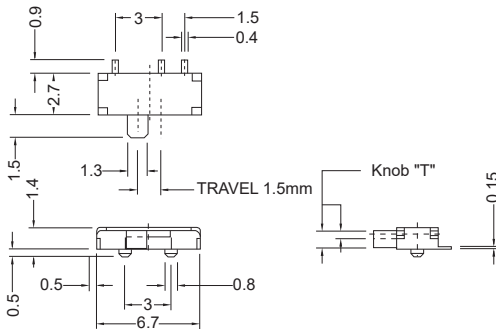


1. Rating: DC6V 0.3A
2. Circuit: 1P2T
3. Timing: Non-Shorting
4. Travel: 2mm
5. Operating Force: 150±100gf

Model No.	Description
SHM-1270	lock with embossing cover
SHM-1270N	lock without embossing cover
SHM-1270R	non lock with embossing cover
SHM-1270RN	non lock without embossing cover

SLIDE

## SHM-1290AN SHM-1290BN

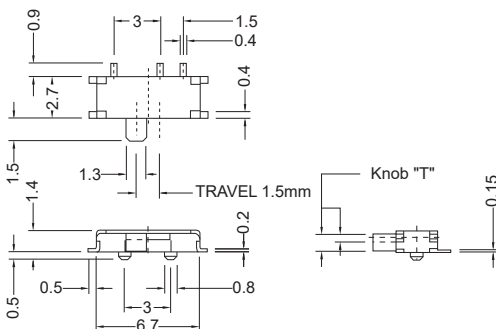


1. Rating: DC4V 0.3A
2. Circuit: 1P2T
3. Timing: Non-Shorting
4. Travel: 1.5mm
5. Operating Force: 150±100gf

Model No.	Knob"T"
SHM-1290AN	0.4mm
SHM-1290BN	1.1mm

PUSH BUTTON / MICRO

## SHM-1290AP SHM-1290BP

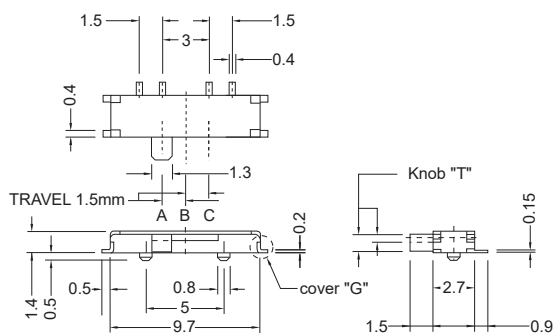


1. Rating: DC4V 0.3A
2. Circuit: 1P2T
3. Timing: Non-Shorting
4. Travel: 1.5mm
5. Operating Force: 150±100gf

Model No.	Knob"T"
SHM-1290AP	0.4mm
SHM-1290BP	1.1mm

KEY / TACT

## SHM-1300 SERIES



1. Rating: DC4V 0.3A
2. Circuit: 1P3T
3. Timing: Non-Shorting
4. Travel: 1.5mm + 1.5mm
5. Operating Force: A→B, C→B =150±100gf  
B→A, B→C =200±150gf

Model No.	Knob"T"	cover" G"
SHM-1300AN	0.4mm	NO
SHM-1300BN	1.1mm	NO
SHM-1300AP	0.4mm	YES
SHM-1300BP	1.1mm	YES



E80-P Sealed Snap-Acting Momentary Push Button Switches.D01



T80-P Snap-Acting Momentary Push Button Switches .....D05  
T90-L Alternate Action and Momentary Pushbutton Switches .....D09  
T80-L Alternate Action and Momentary Pushbutton Switches .....D12



ES40-P Surface Mount (SMD) Pushbutton Switches .....D17  
Sealed Sub-miniature Pushbutton Switches .....D19  
(IP67)



TS40-P Sub-miniature Pushbutton Switches .....D23  
Lock Pushbutton Switches .....D27



TS30-P Microminiature Pushbutton Switches .....D22  
R 18 Pushbutton Switches .....D29



EPS11 Pushbutton Switches .....D31



EPS12 Pushbutton Switches .....D32  
EPS13 Metal Pushbutton Switches .....D33



SP86 Illuminated Snap Acting Pushbutton Switches .....D34



MS Micro Switches .....D37



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DIP / ROTARY

KEY / TACT

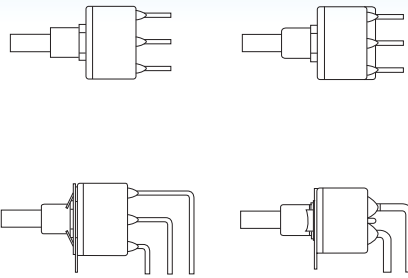


### SPECIFICATIONS

CONTACT RATING: 1A @120 VAC or 28 VDC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,000 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE & BUSHING - Glass filled nylon 6/6 or nylon 4/6 (UL94V-0)  
 PLUNGER - Glass filled nylon or glass filled polyester (UL94V-0), with internal o-ring seal standard  
 SWITCH SUPPORT - Copper alloy or steel, tin plated  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 TERMINAL SEAL - Epoxy



### How do you build the switches you need!!

The straight type, please see the (A);

The right angle P.C terminals, please see the (B)

(A) **N E 8 7 0 1 - C V 1 - 2 - N - C Q - S 2 0 -**

Switches Function		Cap		Cap color		Bushing		Contact Material		RoHS code
NE8701	SPDT on-mon	none	(none)	1	white	E	Thd. Key-way 8.89	Q	silver plated	H = RoHS Compliant
NE8702	DPDT on-mon	CV	5.08	2	black	N	Non-thd/key-way 6.35	R	gold plated	
		CV1	7.70	3	red			G	gold over silver	
		CV2	9.53	4	orange					
		CV4	dress nut	5	yellow					
		CV6	9.80	6	green					
				7	blue					
				9	gray					
						Termination				
						B	solder lug	Vertical support Bracket		
						C	P.C 1.27width	(none)		
								S20	11.68	
								V20	snap-in 11.68	

(B) **N E 8 7 0 1 - A 4 - C V 1 - 2 - N - Q -**

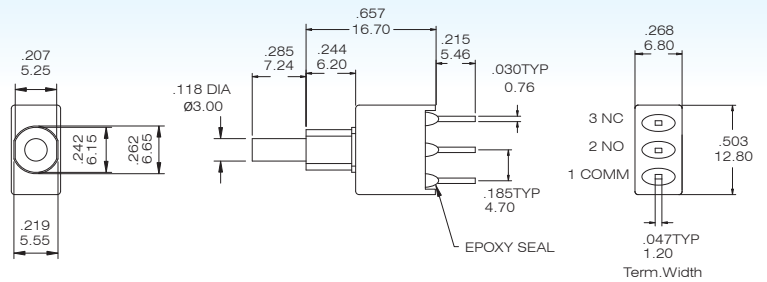
Switches Function		Right Angle		Cap		Cap color		Bushing		RoHS code
NE8701	SPDT on-mon	A4	Horizon	none	(none)	1	white	N	(Std.) non-thd/key-way	H = RoHS Compliant
NE8702	DPDT on-mon	A5	Vertical	CV	5.08	2	black			
				CV1	7.70	3	red			
				CV2	9.53	4	orange			
				CV6	9.80	5	yellow			
						6	green			
						7	blue			
						9	gray			
								Contact Material		
								Q	silver plated	
								R	gold plated	
								G	gold over silver	





### SPDT

Model No.	Switching position	
NE8701	on	mom
Term. Comm.	1-3	1-2

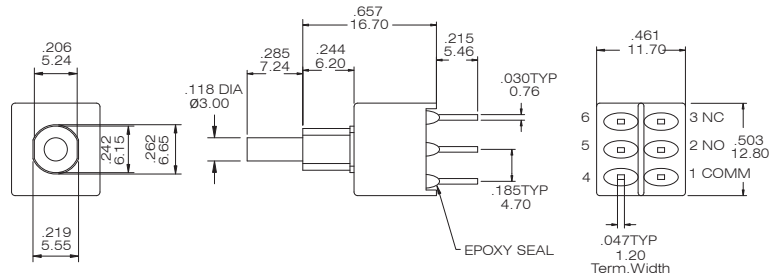
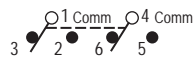


NE8701-NCQ

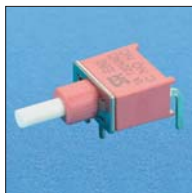


### DPDT

Model No.	Switching position	
NE8702	on	mom
Term. Comm.	1-3 4-6	1-2 4-5

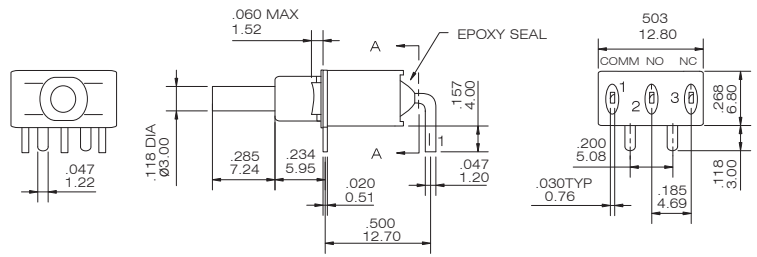


NE8702-NCQ

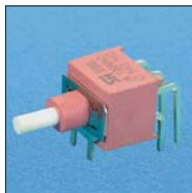


### SPDT

Model No.	Switching position	
NE8701-A4	on	mom
Term. Comm.	1-3	1-2

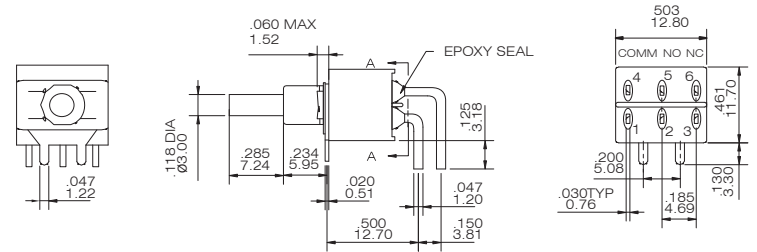


NE8701-A4-NQ

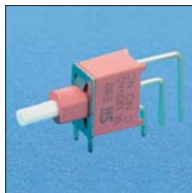


### DPDT

Model No.	Switching position	
NE8702-A4	on	mom
Term. Comm.	1-3 4-6	1-2 4-5

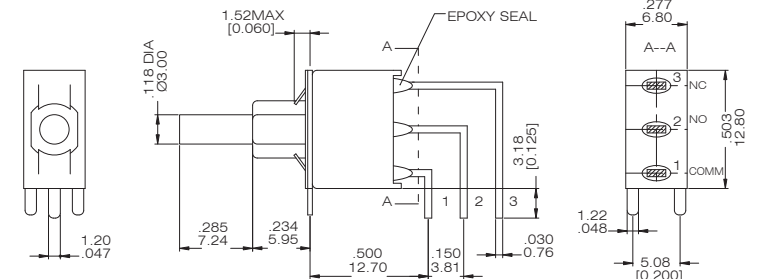


NE8702-A4-NQ

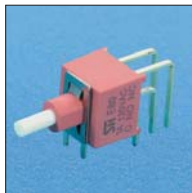


### SPDT

Model No.	Switching position	
NE8701-A5	on	mom
Term. Comm.	1-3	1-2

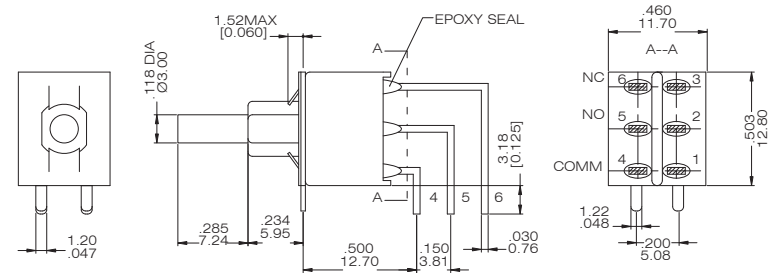


NE8701-A5-NQ



### DPDT

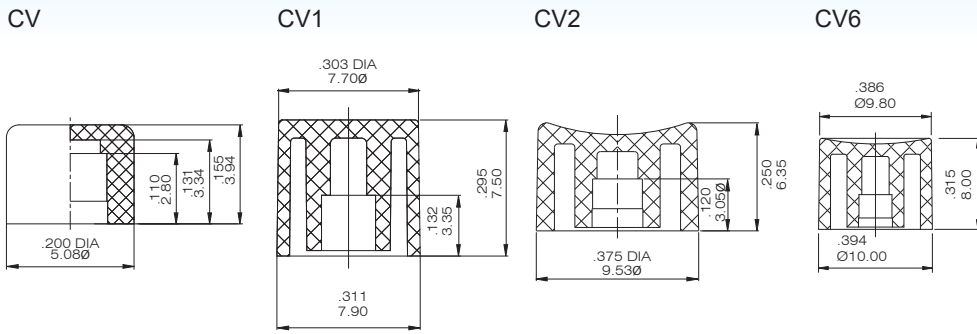
Model No.	Switching position	
NE8702-A5	on	mom
Term. Comm.	1-3 4-6	1-2 4-5



NE8702-A5-NQ



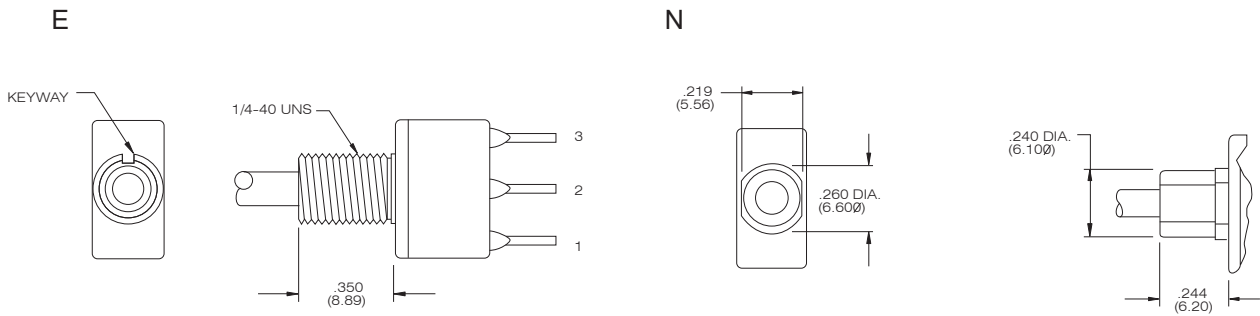
### Cap Option



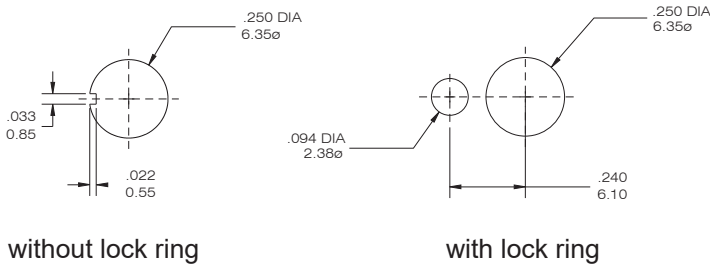
### Cap color Option

CAP & ACTUATOR OPTIONS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

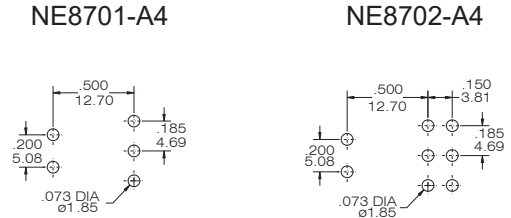
### Bushing Option



### Panel mounting Dimension



### P.C.B. mounting Dimension



### TERMINAL OPTION (only for the straight type)

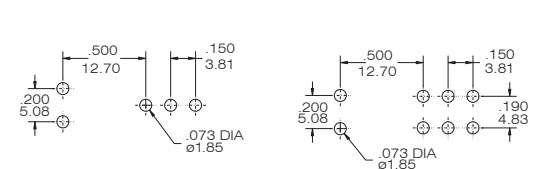
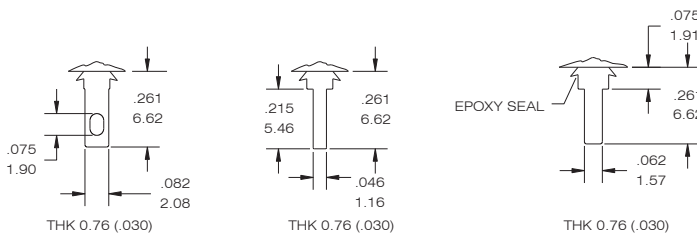
B STD

C PRINTED CIRCUIT

D QUICK CONNECT

NE8701-A5

NE8702-A5



### CONTACT MATERIAL OPTION

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	1A @ 120V AC or 28 V DC;
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4 VA MAX @ 20V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 1 A @ 120V AC or 28 V DC;



# E80-P

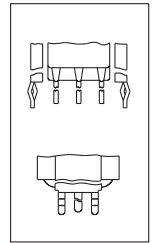
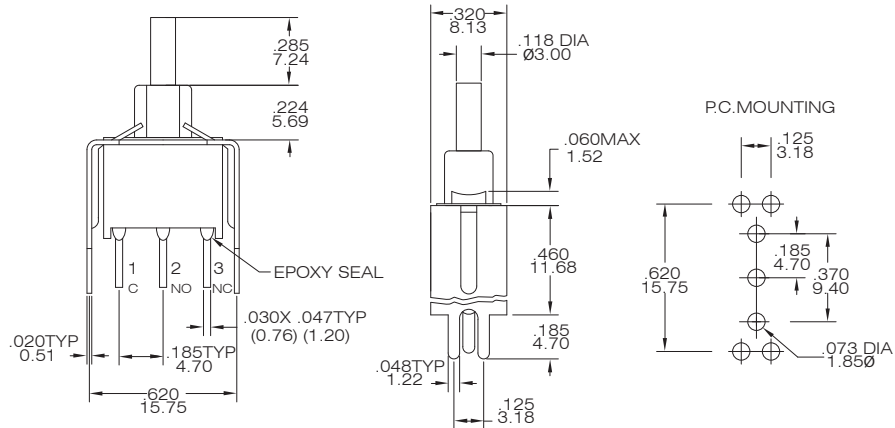
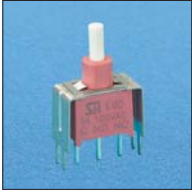
# Sealed Snap-Acting Momentary Pushbutton Switches



## VERTICAL SUPPORT BRACKET OPTION

(only apply the straight type terminal. Please build the terminal option is "C" code)

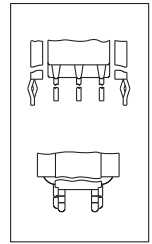
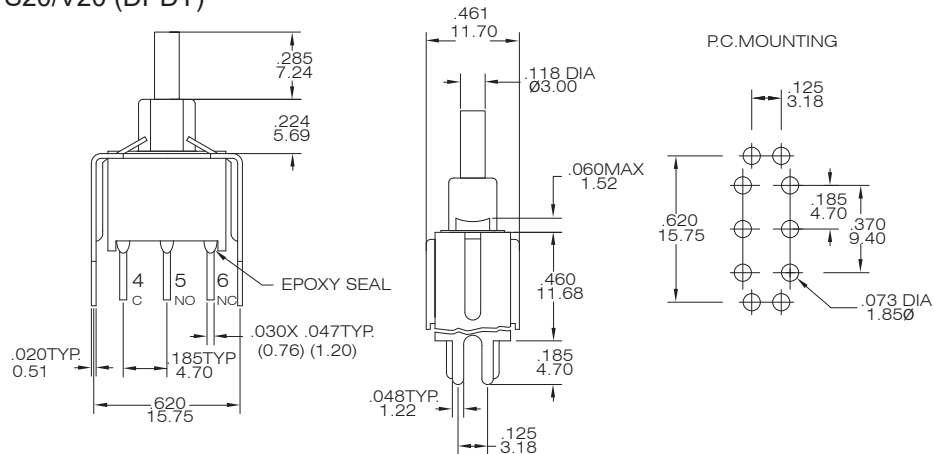
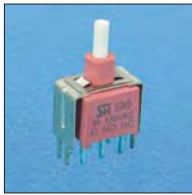
### S20/V20 (SPDT)



SNAP-IN V 20

NE8701-NCQ-S20

### S20/V20 (DPDT)

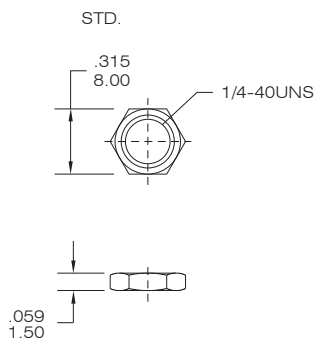


SNAP-IN V 20

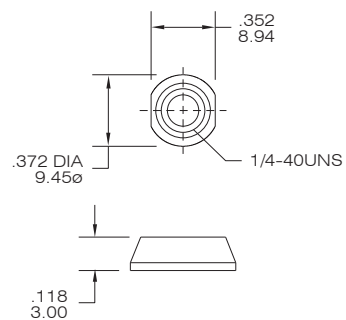
NE8702-NCQ-S20

## The hard ware of E80-P push button switches

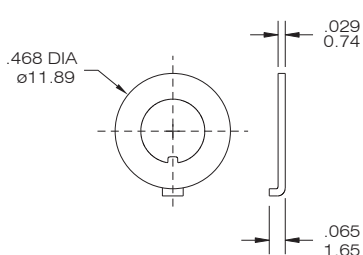
### NUT



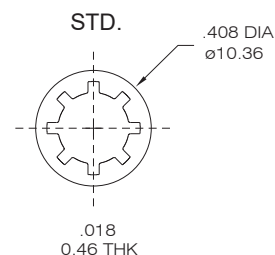
### DRESS NUT

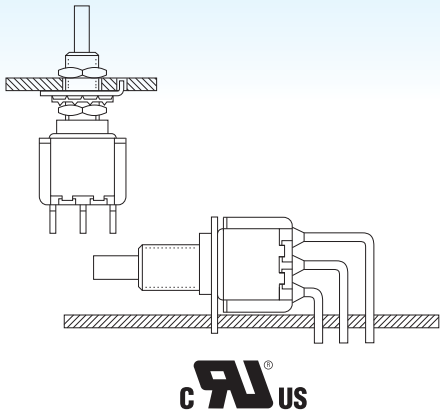


### LOCKING RING



### LOCK WASHER





### SPECIFICATIONS

CONTACT RATING: 1A @125 VAC or 28 VDC  
 LIFE CYCLE: 50,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,000 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE - diallyl phthalate ( DAP )  
 PLUNGER - Glass filled nylon or glass filled polyester (UL94V-0)  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated

How do you build the switches you need!!

The straight type, please see the (A);

The right angle P.C terminals, please see the (B)

(A) P 8 7 0 1 - C V 1 - 2 - C R - E - S 2 0 - -

Switches Function		Cap or Actuator		Cap color		Bushing			Epoxy seal		Vertical support Bracket	
P8701	SPDT on-mom	none	(none)	1	white	F	thd /key-way	7.37	E	epoxy seal	(none)	
P8702	DPDT on-mom	CV	5.08	2	black	N	non-thd /key-way	7.37			S20	11.68
		CV1	7.70	3	red	F4	thd /key-way	6.35			V20	snap-in 11.68
		CV2	9.53	4	orange	N4	non-thd /key-way	6.35			<b>Rubber hood</b>	
		CV4	dress nut	5	yellow	E	thd /key-way	8.89			E4	for thd. bushing
		CV6	9.80	6	green	E4	thd/key-way	7.87			<b>RoHS code</b>	
		F22A	With frame	7	blue	F8	thd /flat	7.37			H = RoHS Compliant	
		F32A	With frame and LED	8	gray	N8	non-thd /flat	7.37				
				9	gray	F9	thd /flat	6.35				
						N9	non-thd /flat	6.35				
				<b>Frame Color</b>		<b>Termination</b>						
				1	white	B	solder lug					
				2	black	C	P.C 1.27width					
				3	red	D	Quick connect					
				<b>Marking</b>		<b>Contact Material</b>						
				(none)	No marking	Q	silver plated					
				K		R	gold plated					
						G	gold over silver					

(B) P 8 7 0 1 - A 4 - C V 1 - 2 - R - E - S -

Switches Function		Right Angle		Cap		Cap color		Bushing			Contact Material	
P8701	SPDT on-mom	A4	Horizon	none	(none)	1	white	F	thd /key-way	7.37	Q	silver plated
P8702	DPDT on-mom	A5	Vertical	CV	5.08	2	black	N	non-thd /key-way	7.37	R	gold plated
				CV1	7.70	3	red	F4	thd /key-way	6.35	G	gold over silver
				CV2	9.53	4	orange	N4	non-thd /key-way	6.35	<b>Epoxy seal</b>	
				CV6	9.80	5	yellow	E	thd /key-way	8.89	E	epoxy seal
						6	green	E4	thd/key-way	7.87	<b>Support Bracket</b>	
						7	blue	F8	thd /flat	7.37	(none)	std.
						8	gray	N8	non-thd /flat	7.37	S	snap-in type
						9	gray	F9	thd /flat	6.35	<b>RoHS code</b>	
								N9	non-thd /flat	6.35	H = RoHS Compliant	



# T80-P

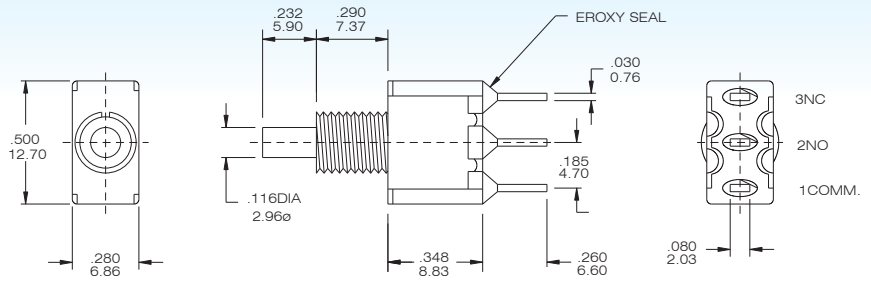
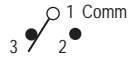
# Snap Acting Momentary Pushbutton Switches



## SPDT



Model No.	Switching position	
P8701	on	Mom
Term. Comm.	1-3	1-2

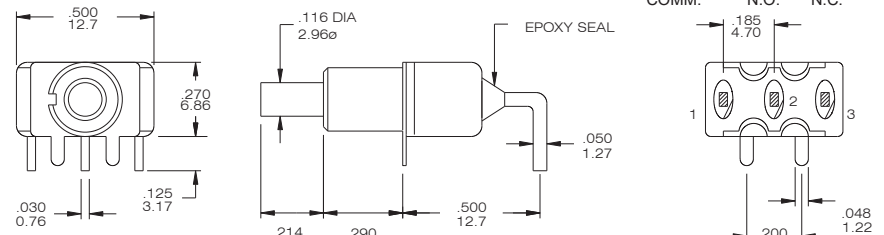
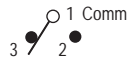


P8701-FBR-E

## SPDT

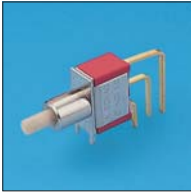


Model No.	Switching position	
P8701-A4	on	Mom
Term. Comm.	1-3	1-2

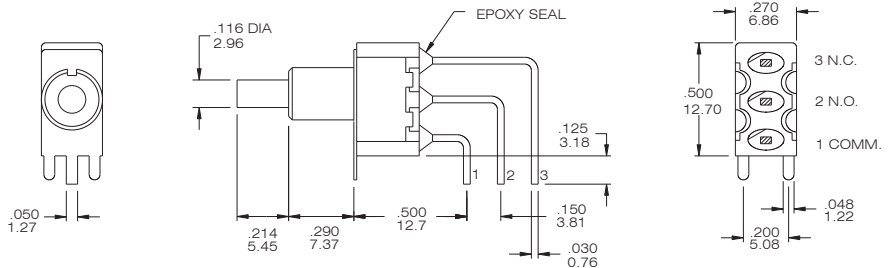
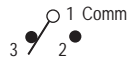


P8701-A4-NR-E

## SPDT



Model No.	Switching position	
P8701-A5	on	Mom
Term. Comm.	1-3	1-2

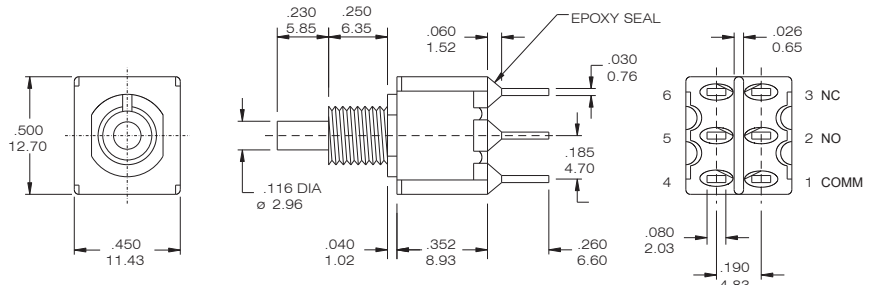


P8701-A5-NR-E

## DPDT



Model No.	Switching position	
P8702	on	Mom
Term. Comm.	1-3 4-6	1-2 4-5

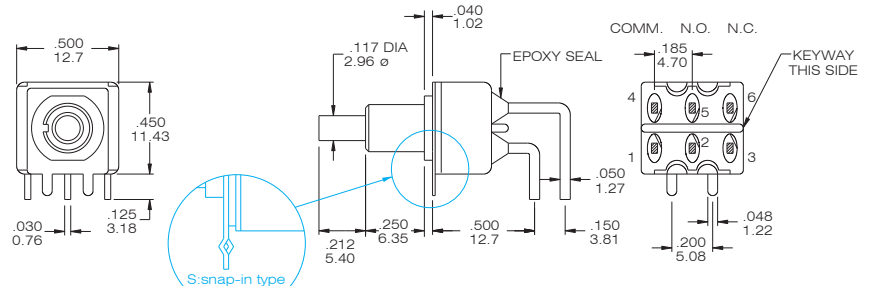


P8702-F4BR-E

## DPDT



Model No.	Switching position	
P8702-A4	on	Mom
Term. Comm.	1-3 4-6	1-2 4-5

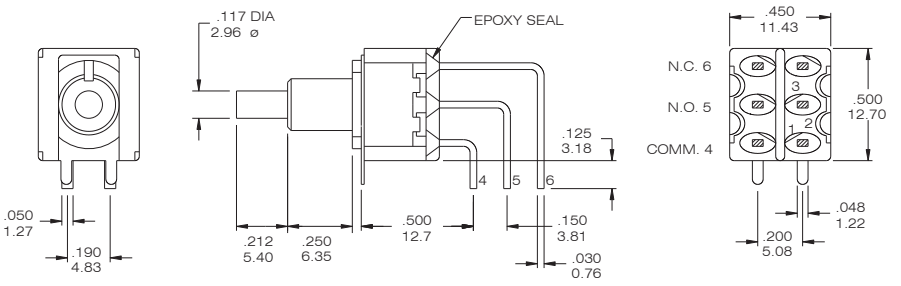


P8702-A4-N4R-E/ P8702- A4-N4R-E-S

## DPDT



Model No.	Switching position	
P8702-A5	on	Mom
Term. Comm.	1-3 4-6	1-2 4-5



P8702-A5-N4R-E



# T80-P

# Snap Acting Momentary Pushbutton Switches



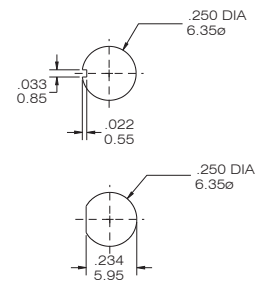
## Cap and Actuator Option

## Cap color Option

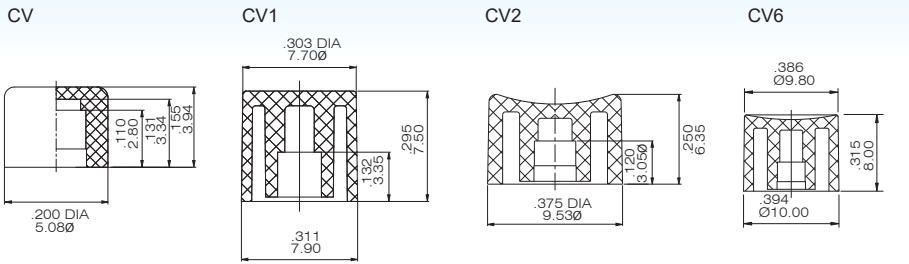
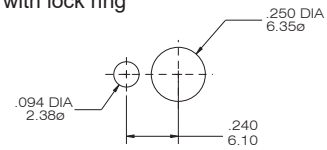
CAP & ACTUATOR OPTIONS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

## Panel Mounting

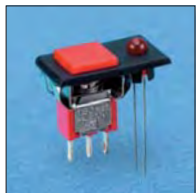
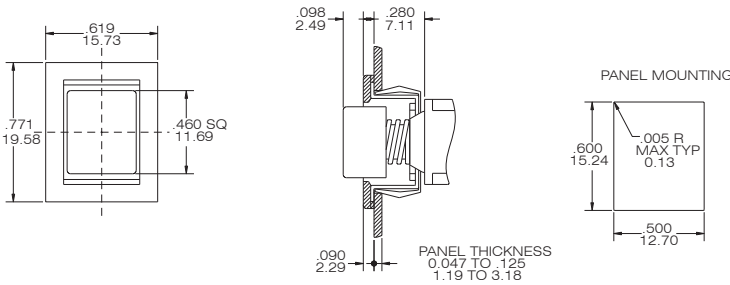
without lock ring



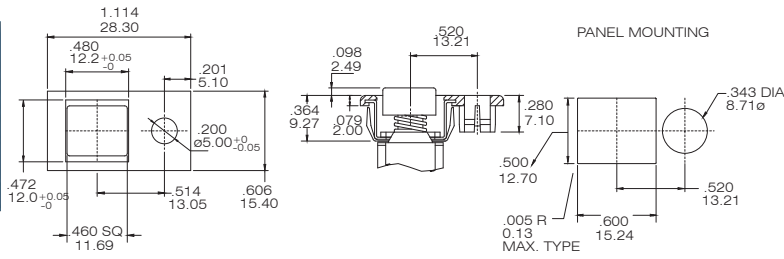
with lock ring



F22A

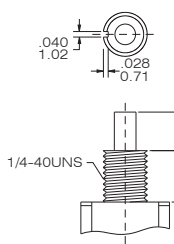


F32A

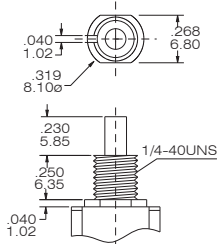


## Bushing Option

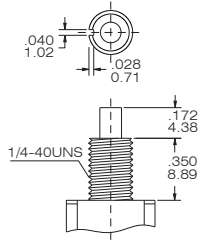
F thd.  
N non-thd.  
(only for SPDT)



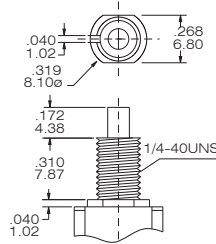
F4 thd.  
N4 non-thd.



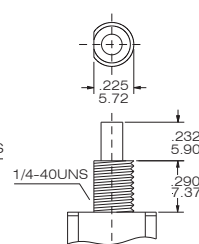
E thd.  
(only for SPDT)



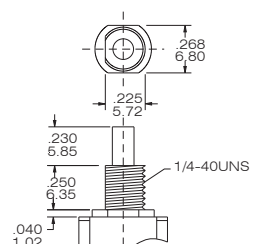
E4 thd.



F8 thd.  
N8 non-thd.  
(only for SPDT)



F9 thd.  
N9 non-thd.

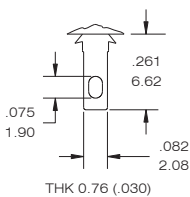


## TERMINAL OPTION (ONLY FOR THE STRAGHT TYPE)

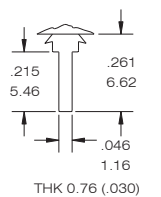
## TERMINAL SEAL OPTION

## RUBBER HOOD

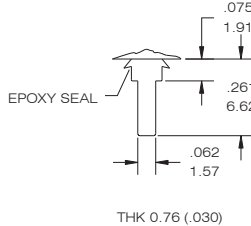
B STD



C PRINTED CIRCUIT



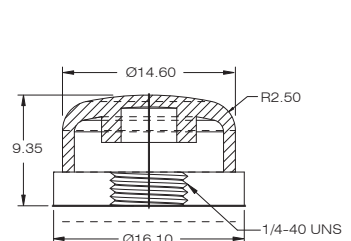
D QUICK CONNECT



E TERMINAL SEAL



E4





# T80-P

# Snap Acting Momentary Pushbutton Switches



## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	1A @ 125V AC or 28 V DC;
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4 VA MAX@ 20V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 1 A @ 125V AC or 28 V DC;

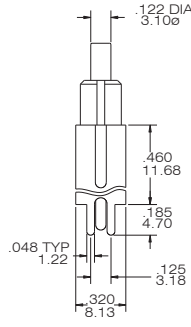
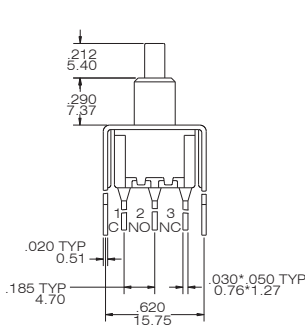
## VERTICAL SUPPORT BRACKET OPTION

(only apply the straight type terminal-Please modify the terminal option is "c" code)

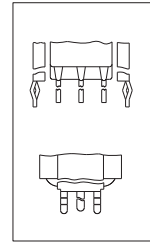
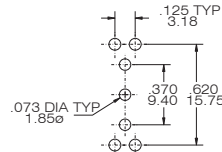
### S20/V20



### SPDT



### P.C. MOUNTING



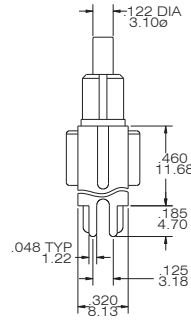
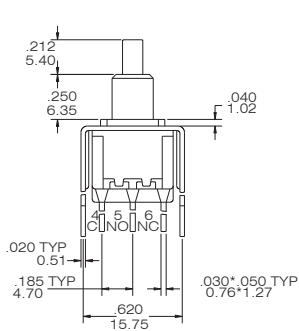
### SNAP-IN V 20

### P8701-NCR-E-S20

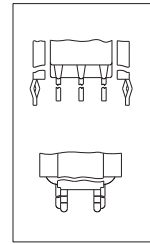
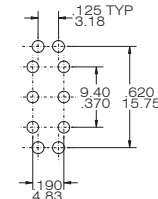
### S20/V20



### DPDT



### P.C. MOUNTING



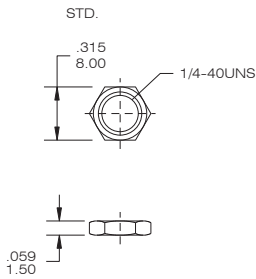
### SNAP-IN V 20

### P8702-N4CR-E-S20

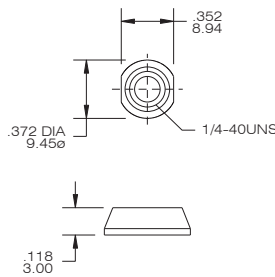
## The hard ware of T80-P push button switches

## The P.C.B mounting Dimension

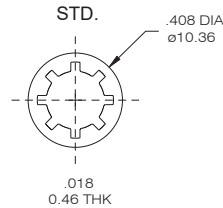
### NUT



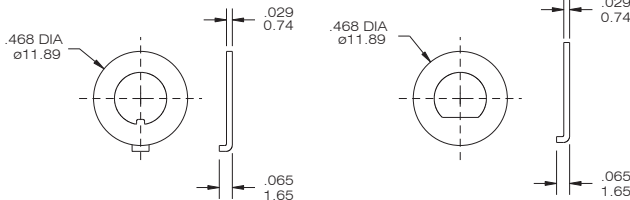
### DRESS NUT



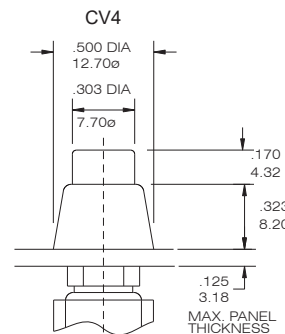
### LOCK WASHER



### LOCKING RING

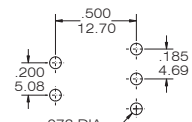


### DRESS NUT & CAP

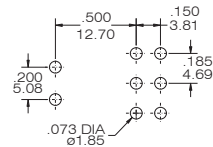


To order dress nut only.

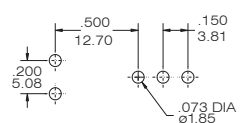
### P8701-A4



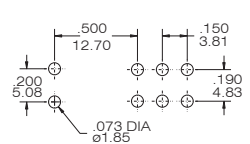
### P8702-A4

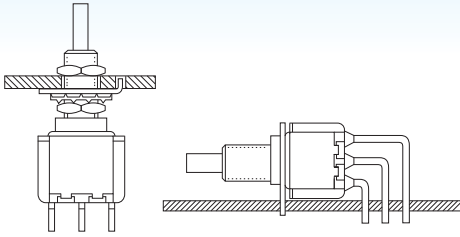


### P8701-A5



### P8702-A5





### SPECIFICATIONS

CONTACT RATING: 6A @125 VAC or 28 VDC  
3A @ 250VAC

LIFE CYCLE: 50,000 make-and-break cycles

CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA

INSULATION RESISTANCE: 1,000 MΩ min.

DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.

OPERATING TEMPERATURE: -30°C to +120°C

### MATERIALS

CASE - diallyl phthalate ( DAP )

PLUNGER - Glass filled nylon or glass filled polyester

BUSHING - Copper alloy, nickel plated

HOUSING - Stainless Steel

CONTACT AND TERMINAL - Copper alloy, silver or gold plated

### How do you build the switches you need!!

(A) **L 9 6 0 1** - **C V 1** - **2** - **E** **B** **R** - **E** - **S 2 0** -

Switches Function		Cap or Actuator		Cap color		Bushing		Epoxy seal		Vertical support Bracket	
L9601	SPDT on-on	none	(none)	1	white	E	Thd /key-way(Std.)	(none)	none seal	(none)	
L9602	DPDT on-on	CV	5.08	2	black	M	Non-thd / key-way	E	epoxy seal	S20	11.68
L9603	SPDT on-mom	CV1	7.70	3	red	F	Thd / flat			S25	16.00
		CV2	9.53	4	orange	N	Non-thd /flat			S35	11.68
		CV4	dress nut	5	yellow					S40	16.00
		F22A	With frame	6	green	<b>Termination</b>				V20	snap-in 11.68
				7	blue	B	solder lug			V25	snap-in 16.00
				8	gray	C	P.C 1.27width			V35	snap-in 11.68
				9	gray	D	Quick connect			V40	snap-in 16.00
						D1	wire wrap 19.05			<b>RoHS code</b>	
						D3	wire wrap 10.8			H = RoHS Compliant	
						<b>Contact Material</b>					
						Q	silver plated				
						R	gold plated				
						G	gold over silver				

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT





# T90-L

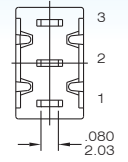
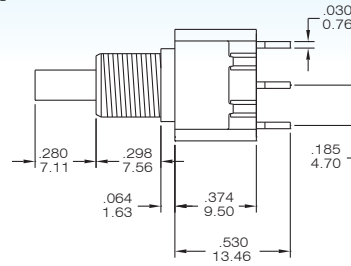
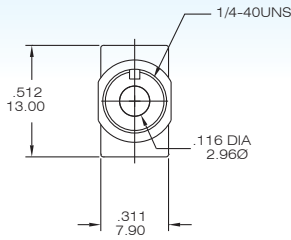
## Alternate Action and Momentary Pushbutton Switches



### SPDT



Model No.	Switching position	
L9601	on	on
L9603	on	mom
Term. Comm.	2-3	2-1

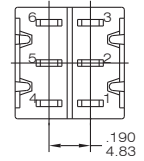
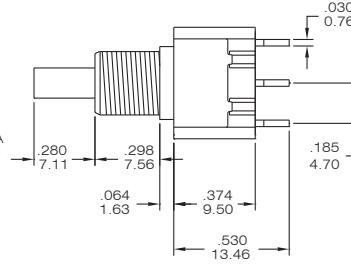
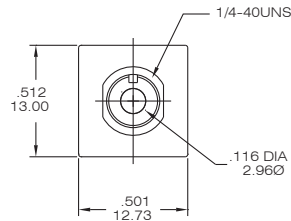


L9601-EBR-E

### DPDT



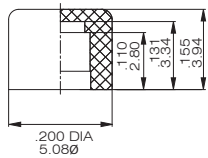
Model No.	Switching position	
L9602	on	on
Term. Comm.	2-3 5-6	2-1 5-4



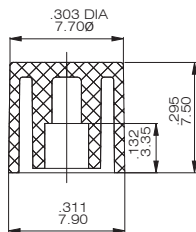
L9602-EBR-E

### Cap and Actuator Option

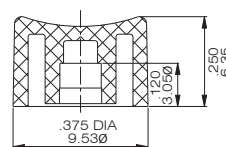
CV



CV1

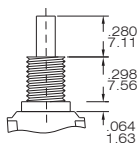


CV2

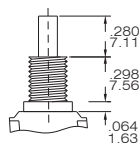


CAP & ACTUATOR OPTIONS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

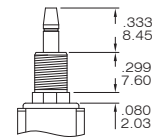
### Plunger Option



(none) STD.  
Plunger material:  
Glass filled nylon or  
glass filled polyester.



M  
Plunger material:  
Copper alloy,  
chrome plated.



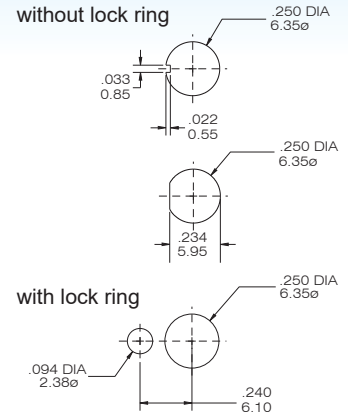
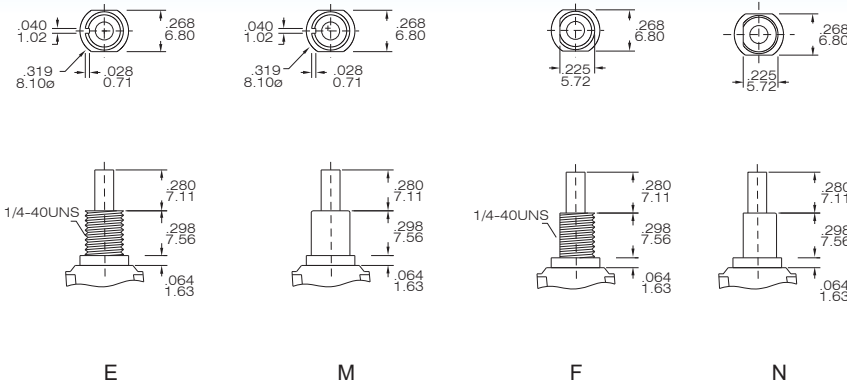
M1 Snap - fitting  
Plunger material:  
Copper alloy,  
chrome plated.





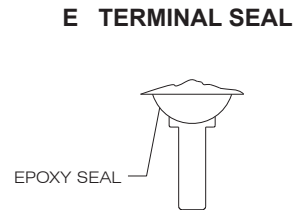
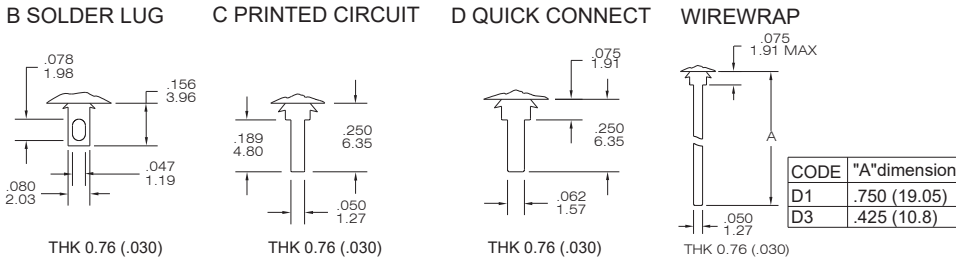
### Bushing Option

### Panel Mounting



### Terminal Option

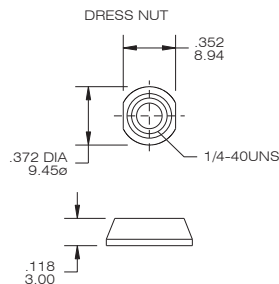
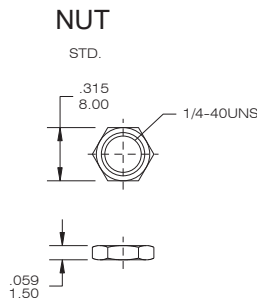
### Terminal Seal Option



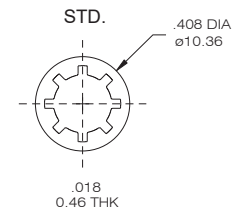
### Contact Material Options

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	6A @ 125VAC or 28 VDC ; 3A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4 VA MAX@ 20VAC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 VAC or DC MAX or 6A @ 125VAC or 28 VDC ; 3A @ 250 VAC

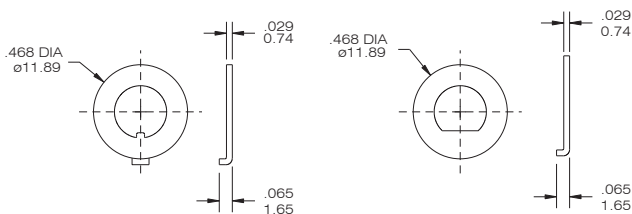
### The hard ware of T90-L push button switches



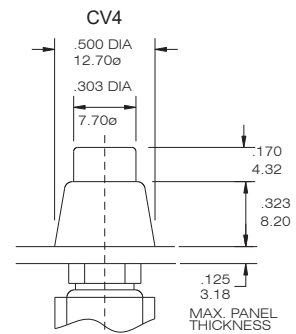
### LOCK WASHER



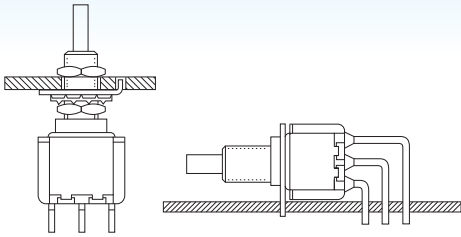
### LOCKING RING



### DRESS NUT & CAP



To order dress nut only.



**SPECIFICATIONS**

CONTACT RATING: 6A @125 VAC or 28 VDC  
3A @ 250VAC

LIFE CYCLE: 50,000 make-and-break cycles

CONTACT RESISTANCE: 10 mΩ max. initial @2-4 VDC, 100 mA

INSULATION RESISTANCE: 1,000 MΩ min.

DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.

OPERATING TEMPERATURE: -30°C to +85°C

**MATERIALS**

CASE - diallyl phthalate ( DAP )

PLUNGER - Glass filled nylon or glass filled polyester

BUSHING - Copper alloy, nickel plated

HOUSING - Stainless Steel

CONTACT AND TERMINAL - Copper alloy, silver or gold plated

How do you build the switches you need!!

The straight type please see the (A) ;

The right angle P.C.B termination, please see the (B)

(A) L 8 6 0 1 - C V 1 - 2 - E B R - E - S 2 0 -

Switches Function		Cap or Actuator		Cap color		Bushing		Epoxy seal		Vertical support Bracket	
L8601	SPDT on-on	none	(none)	1	white	E	Thd /key-way(Std.)	(none)	none seal	(none)	
L8602	DPDT on-on	CV	5.08	2	black	M	Non-thd / key-way	E	epoxy seal	S20	11.68
L8603	SPDT on-mom	CV1	7.70	3	red	F	Thd / flat			S25	16.00
		CV2	9.53	4	orange	N	Non-thd /flat			S35	11.68
		CV4	dress nut	5	yellow					S40	16.00
		CV5	9.90	6	green					V20	snap-in 11.68
		CV6	9.80	7	blue					V25	snap-in 16.00
		F22A	With frame	8	gray					V35	snap-in 11.68
		F32A	With frame and LED	9						V40	snap-in 16.00

Termination	
B	solder lug
C	P.C 1.27width
D	Quick connect
D1	wire wrap 19.05
D3	wire wrap 10.8

Frame Color	
1	white
2	black
3	red

Plunger	
(none)	STD.
M	Metal
M1	Metal (Snap - fitting)

Contact Material	
Q	silver plated
R	gold plated
G	gold over silver

RoHS code	
H = RoHS Compliant	

(B) L 8 6 0 1 P - C V 1 - 2 - M R - E -

Horizon Right Angle	Vertical Right Angle	Switches Function	Cap		Cap color		Bushing		Epoxy seal	
L8601P	L8601L	SPDT on-on	none	(none)	1	white	M	Non thd./ key-way	(none)	none seal
L8602P	L8602L	DPDT on-on	CV	5.08	2	black	N	Non Thd / flat	E	epoxy seal
L8603P	L8603L	SPDT on-mom	CV1	7.70	3	red	E	Thd /key-way		
			CV2	9.53	4	orange	F	Thd / flat		
			CV5	9.90	5	yellow				
			CV6	9.80	6	green				

Contact Material	
Q	silver plated
R	gold plated
G	gold over silver

Plunger	
(none)	STD.
M	Metal
M1	Metal (Snap - fitting)

Support Bracket type	
(none)	std. straight type
S	snap-in type

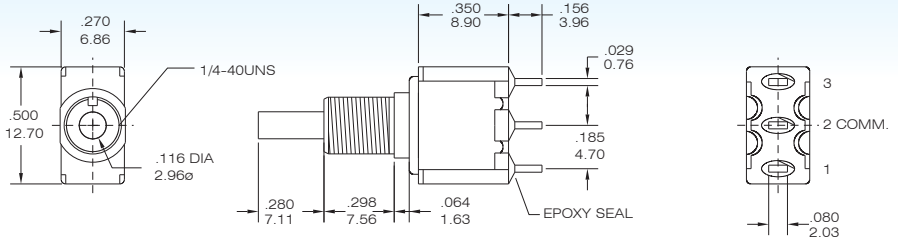
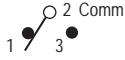
RoHS code	
H = RoHS Compliant	



### SPDT



Model No.	Switching position	
L8601	on	on
L8603	on	mom
Term. Comm.	2-3	2-1

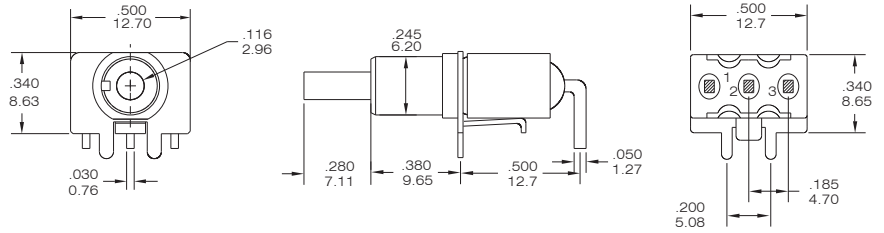
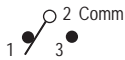


L8601-EBR-E

### SPDT



Model No.	Switching position	
L8601P	on	on
L8603P	on	mom
Term. Comm.	2-3	2-1

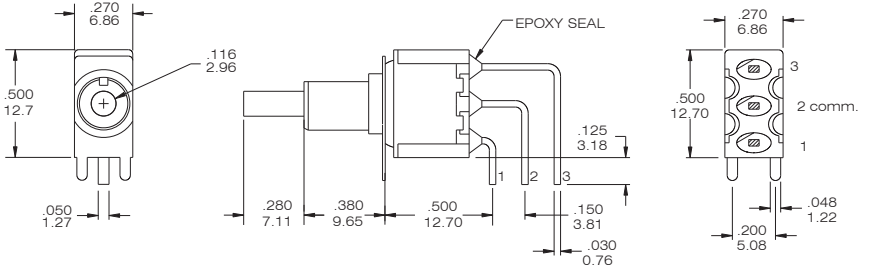
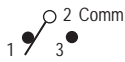


L8601P-MR-E

### SPDT



Model No.	Switching position	
L8601L	on	on
L8603L	on	mom
Term. Comm.	2-3	2-1

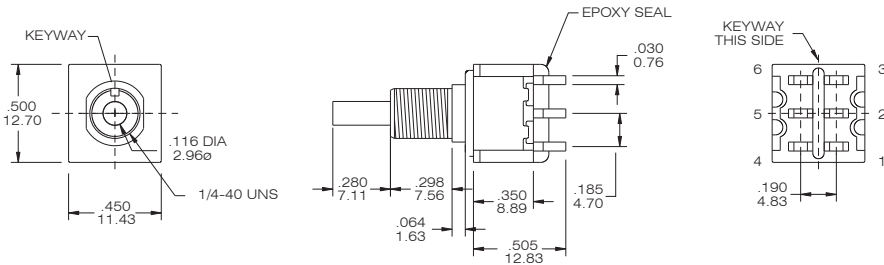


L8601L-MR-E

### DPDT



Model No.	Switching position	
L8602	on	on
Term. Comm.	2-3 5-6	2-1 5-4

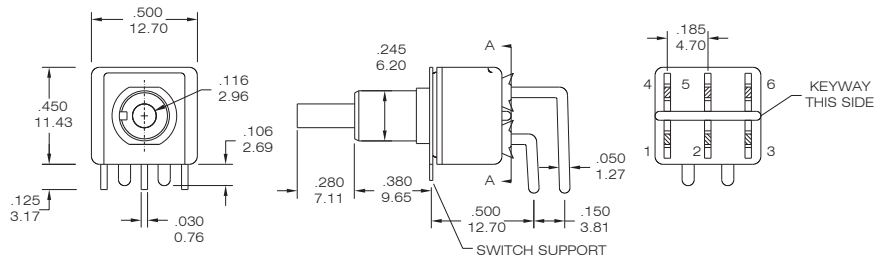


L8602-EBR-E

### DPDT



Model No.	Switching position	
L8602P	on	on
Term. Comm.	2-3 5-6	2-1 5-4

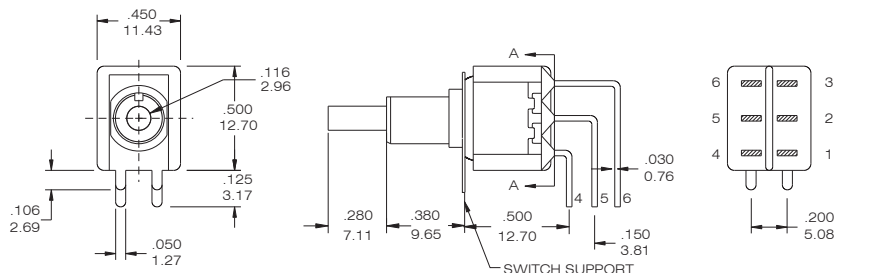


L8602P-MR-E

### DPDT



Model No.	Switching position	
L8602L	on	on
Term. Comm.	2-3 5-6	2-1 5-4



L8602L-MR-E

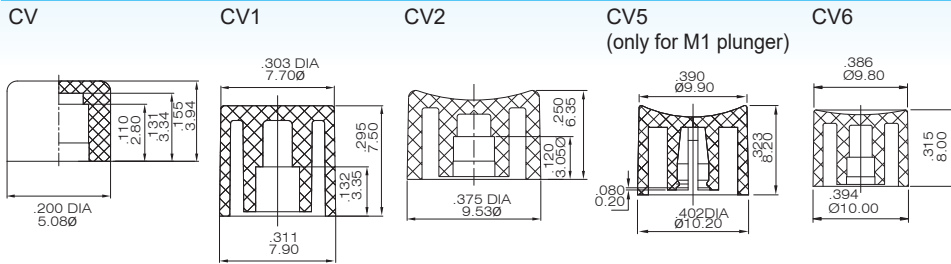


# T80-L

## Alternate Action and Momentary Pushbutton Switches



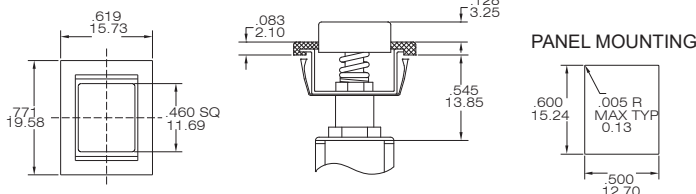
### Cap and Actuator Option



F22A



F32A

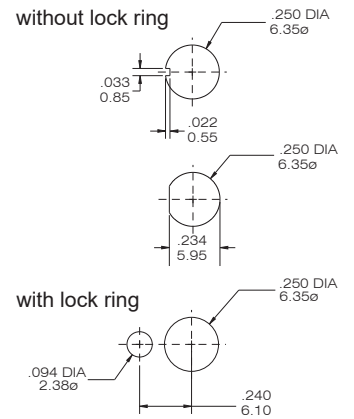


L860 \* -F22A- \* -BR-E

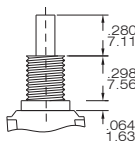
L860 \* -F32A- \* -BR-E

CAP & ACTUATOR OPTIONS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

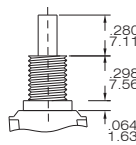
### Panel Mounting



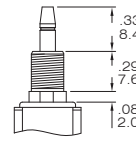
### Plunger Option



(none) STD.  
Plunger material:  
Glass filled nylon or  
glass filled polyester.



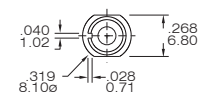
M  
Plunger material:  
Copper alloy,  
chrome plated.



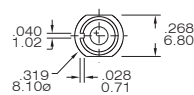
M1 Snap - fitting  
Plunger material:  
Copper alloy,  
chrome plated.



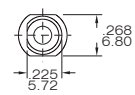
### Bushing Option



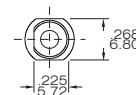
E



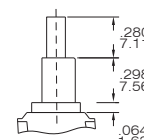
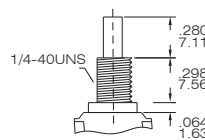
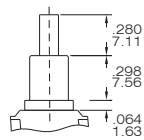
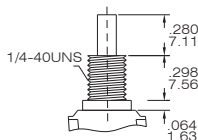
M



F



N





# T80-L

## Alternate Action and Momentary Pushbutton Switches



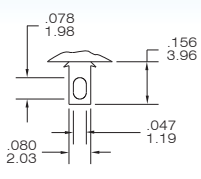
### TERMINAL OPTION (ONLY FOR THE STRAIGHT TYPE L8601~L8602)

B SOLDER LUG

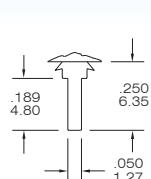
C PRINTED CIRCUIT

D QUICK CONNECT

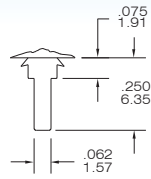
WIREWRAP



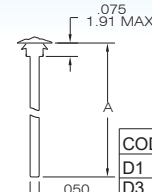
THK 0.76 (.030)



THK 0.76 (.030)



THK 0.76 (.030)



THK 0.76 (.030)

CODE	"A" dimension
D1	.750 (19.05)
D3	.425 (10.8)

### TERMINAL SEAL OPTION

E TERMINAL SEAL



EPOXY SEAL

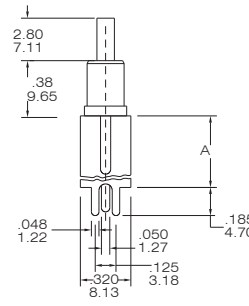
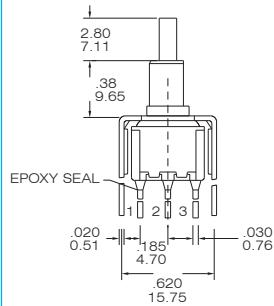
### CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	6A @ 125VAC or 28 VDC ; 3A @ 250 VAC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4 VA MAX @ 20VAC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 VAC or DC MAX or 6A @ 125VAC or 28 VDC ; 3A @ 250 VAC

### VERTICAL SUPPORT BRACKET OPTION

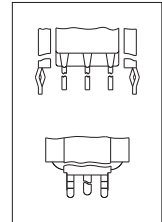
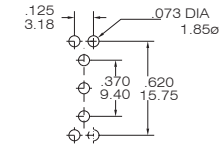
(only apply the straight type terminal . Please choose the terminal option in "c" code)

S20 / S25 / V20 / V25



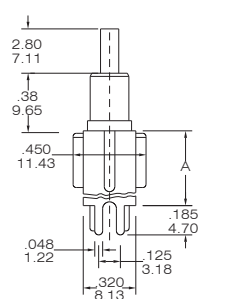
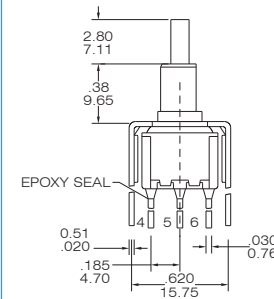
L8601-MR-E-S20(S25)

P.C. MOUNTING



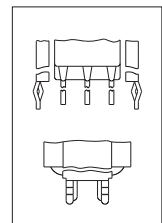
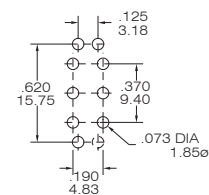
SNAP-IN V20/ V25

option Code	A dimension
S20/V20	.460
S25/V25	11.68
S25/V25	.630
V20/V25: the snap-in type	



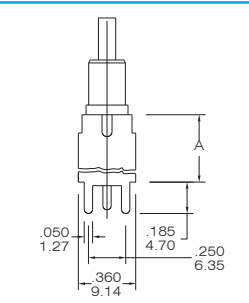
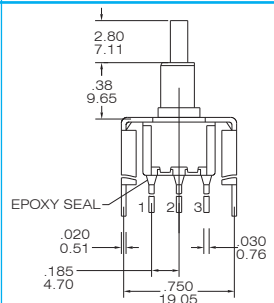
L8602-MR-E-S20(S25)

P.C. MOUNTING



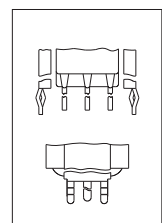
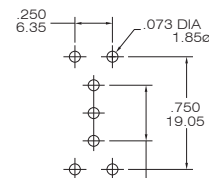
SNAP-IN V20/ V25

S35 / S40 / V35 / V40



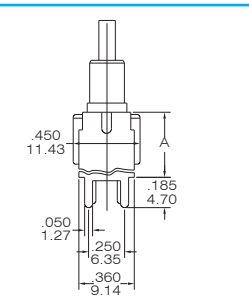
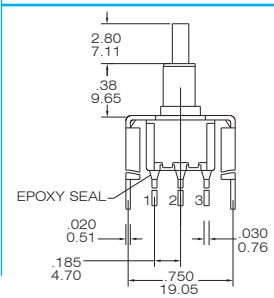
L8601-MR-E-S35(S40)

P.C. MOUNTING



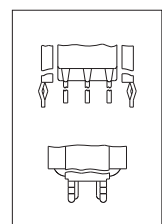
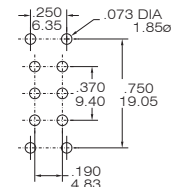
SNAP-IN V35/ V40

option Code	A dimension
S35/V35	.460
S35/V35	11.68
S40/V40	.630
S40/V40	16.00
V35/V40 : the snap-in type	



L8602-MR-E-S35(S40)

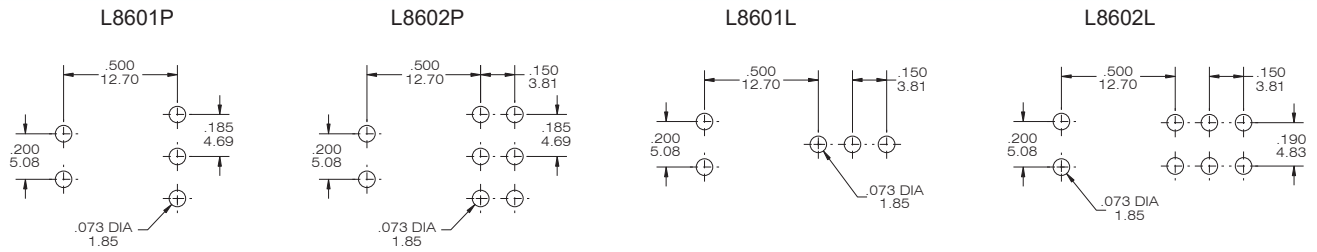
P.C. MOUNTING



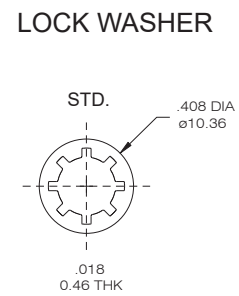
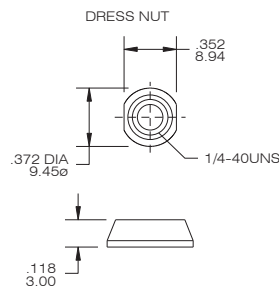
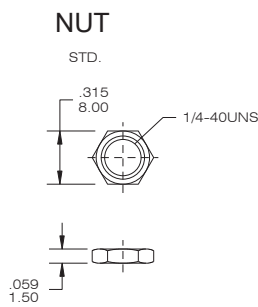
SNAP-IN V35/ V40



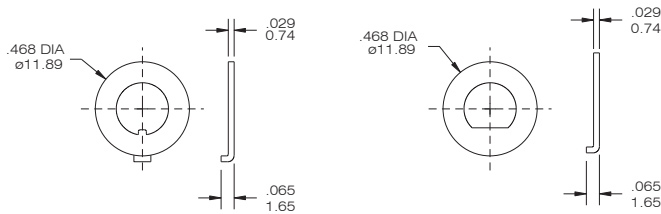
### The P.C.B mounting Dimensions



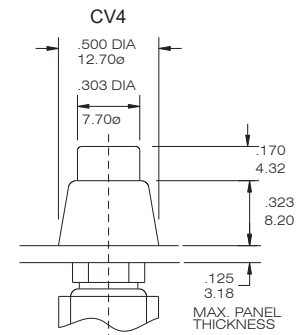
### The hard ware of T80-L push button switches



### LOCKING RING



### DRESS NUT & CAP



To order dress nut only.



### FEATURES:

1. Sealed construction - internal actuator o-ring and epoxy terminal seal standard
2. Carry the IP67 approvals
3. Surface mounting (SMT)
4. Tape and Reel package

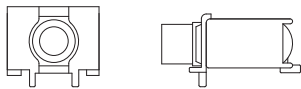
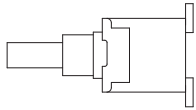


### SPECIFICATIONS

CONTACT RATING: R- 0.4 VA max @ 20 V AC or DC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 DEGREE OF PROTECTION: IP67  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE and BUSHING - glass filled nylon 4/6, flame retardant heat stabilized (UL94V-0)  
 PLUNGER - Thermoplastic polyester or glass filled nylon (UL94V-0)  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin plated  
 TERMINAL SEAL - Epoxy



### How do you modify the switches you need!!

(A) E S - 2 0 - C V - 1 -     R - T/R -  

Switches Function		
ES-20	SPST	off-mom. Sideward terminal
ES-20A	SPDT	on-mom. Sideward terminal
ES-26	SPST	off-mom. Backward terminal
ES-26A	SPDT	on-mom. Backward terminal
ES-27	SPST	off-mom. Backward terminal
ES-27A	SPDT	on-mom. Backward terminal

Cap	
CV	5.08
CV1	7.62

Cap color	
1	white
2	black
3	red
4	orange
5	yellow
6	green
7	blue
9	gray

Plunger	
(none)	5.46(std.)
SP	3.00
FP	flush type

Contact Material	
Q	silver plated
R	gold plated
G	gold over silver
K	gold / tin

Package	
(none)	polly bag
T/R	tape & reel

RoHS code	
H = RoHS Compliant	

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT





# ES40-P

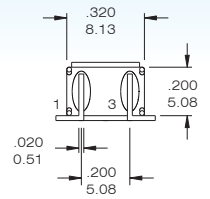
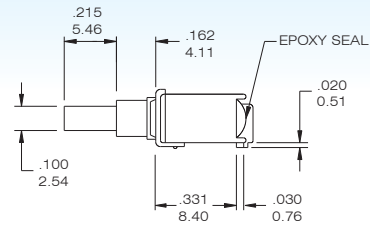
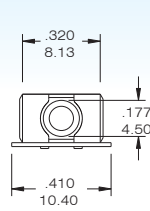
## Sealed SMT Sub-Miniature Push button Switches



### SPST

Model No.	Switching position	
ES-20	Off	Mom
Term. Comm.	open	1-3

SCHEMATIC



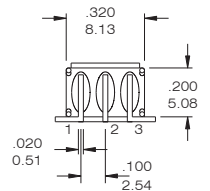
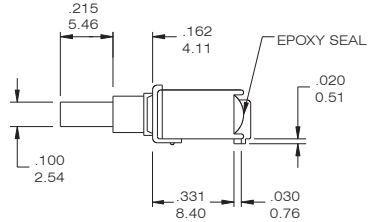
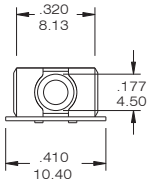
ES-20- R



### SPDT

Model No.	Switching position	
ES-20A	On	Mom
Term. Comm.	2-1	2-3

SCHEMATIC



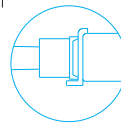
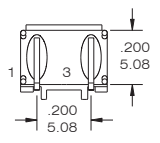
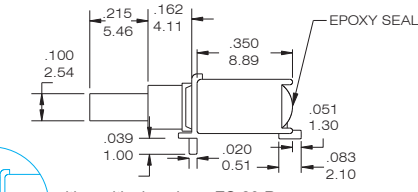
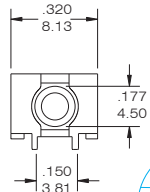
ES-20A- R



### SPST

Model No.	Switching position	
ES-26	Off	Mom
ES-27	Off	Mom
Term. Comm.	open	1-3

SCHEMATIC



with positioning pings: ES-26-R  
without positioning pings: ES-27-R

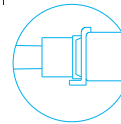
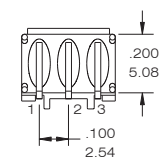
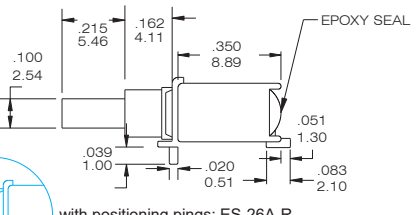
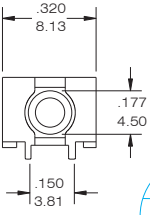
ES-26-R / ES-27-R



### SPDT

Model No.	Switching position	
ES-26A	On	Mom
ES-27A	On	Mom
Term. Comm.	2-1	2-3

SCHEMATIC

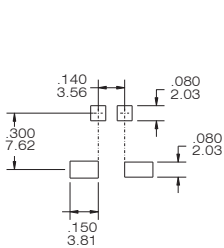


with positioning pings: ES-26A-R  
without positioning pings: ES-27A-R

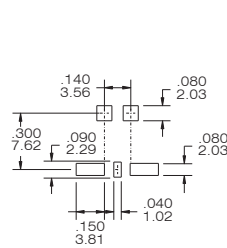
ES-26A-R / ES-27A-R

Cap and Actuator Option / Cap color Option / Plunger Option please see the page D19

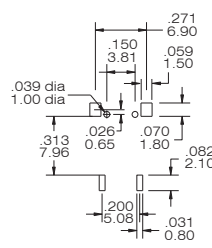
### THE P.C.B MOUNTING



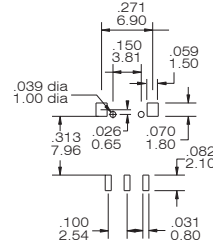
ES-20



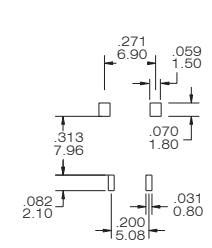
ES-20A



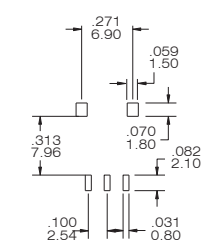
ES-26



ES-26A



ES-27



ES-27A

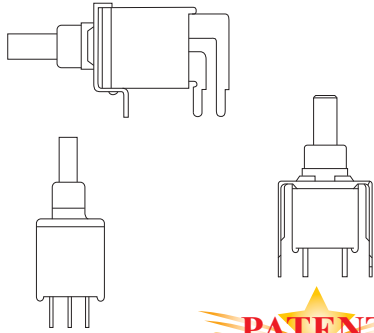
### CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	1 A @ 120V AC or 28 V DC;
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 1 A @ 120V AC or 28 V DC;
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX



### FEATURES:

1. Sealed construction - internal plunger o-ring and epoxy terminal seal standard
2. Carry the IP67 approvals



**PATENT**  
**IP67 approvals**

### SPECIFICATIONS

CONTACT RATING: R- 0.4 VA max @ 20 V AC or DC  
 LIFE CYCLE: 30,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 DEGREE OF PROTECTION: IP67  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE and BUSHING - glass filled nylon 6/6, flame retardant heat stabilized (UL94V-0)  
 PLUNGER - Thermoplastic polyester or glass filled nylon (UL94V-0)  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin plated  
 TERMINAL SEAL - Epoxy

### How do you build the switches you need!!

The ES-21 / ES-22 (straight terminal type ), please see the (A) ;

The ES-21A/ES-21B/ES-22A/ES-22B, (Right angle type )please see the (B)

(A) ES - 21 - CV - 1 - C R - A5S -

Switches Function		Cap		Cap color		Plunger		Terminal		Vertical support Bracket	
ES-21	SPST off-mom.	CV	5.08	1	white	(none)	5.46(std.)	C	(std) P.C	(none)	
ES-22	SPDT on-mom.	CV1	7.62	2	black	SP	3.00			A5S	std. snap-in type
				3	red	FP	flush type			A5	straight type
				4	orange			<b>Contact Material</b>		<b>RoHS code</b>	
				5	yellow			Q	silver plated	H = RoHS Compliant	
				6	green			R	gold plated		
				7	blue			G	gold over silver		
				9	gray			K	gold / tin		

(B) ES - 21A - CV - 2 - R - S -

Horizon Right Angle	Vertical Right Angle	Switches Function	Cap		Cap color		Plunger		Support Bracket Option	
ES-21A	ES-21B	SPST off-mom.	CV	5.08	1	white	(none)	5.46(std.)	S	(std.) snap-in type
ES-22A	ES-22B	SPDT on-mom.	CV1	7.62	2	black	SP	3.00		
					3	red	FP	flush type	<b>RoHS code</b>	
					4	orange			H = RoHS Compliant	
					5	yellow				
					6	green				
					7	blue				
					9	gray				
								<b>Contact Material</b>		
								Q	silver plated	
								R	gold plated	
								G	gold over silver	
								K	gold / tin	



# ES40-P

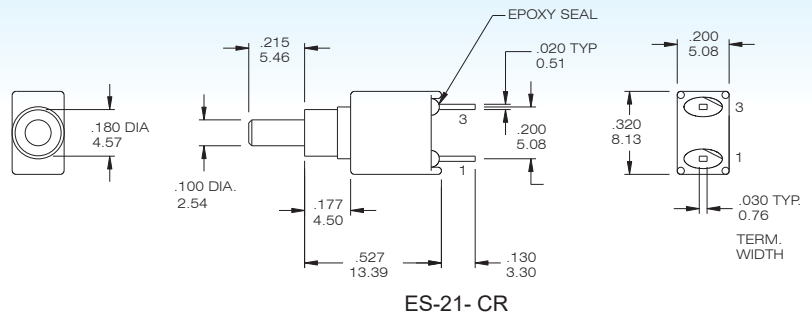
## Sealed Sub-Miniature Push button Switches



### SPST



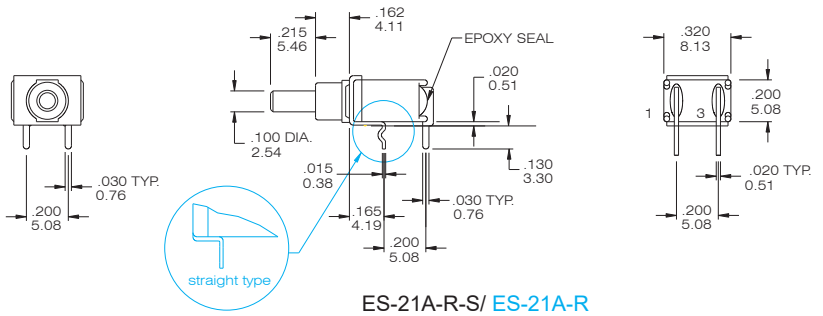
Model No.	Switching position	
ES-21	Off	Mom
Term. Comm.	open	1-3



### SPST



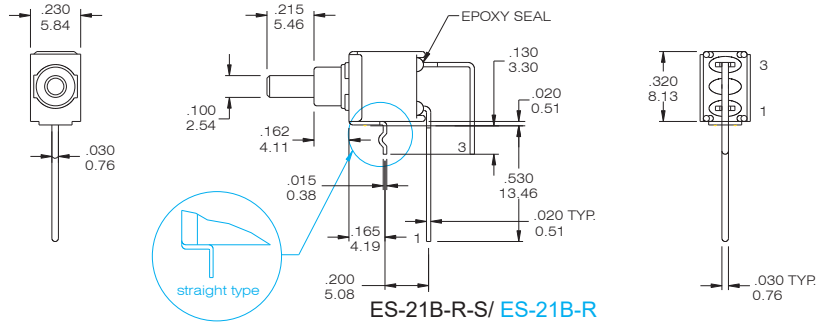
Model No.	Switching position	
ES-21A	Off	Mom
Term. Comm.	open	1-3



### SPST



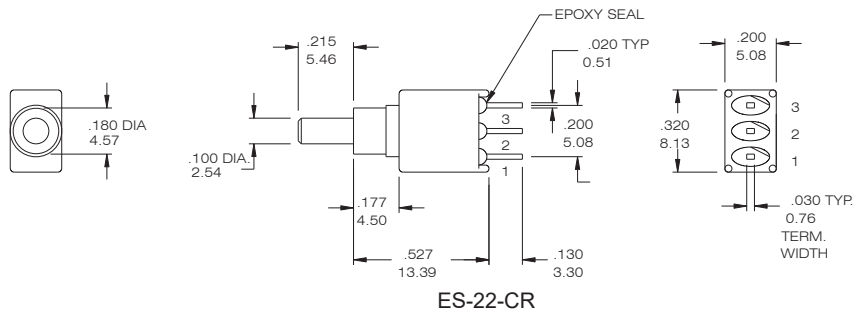
Model No.	Switching position	
ES-21B	Off	Mom
Term. Comm.	open	1-3



### SPDT



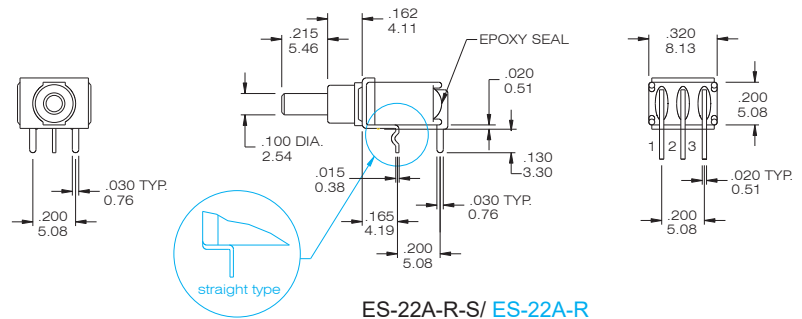
Model No.	Switching position	
ES-22	On	Mom
Term. Comm.	2-1	2-3



### SPDT



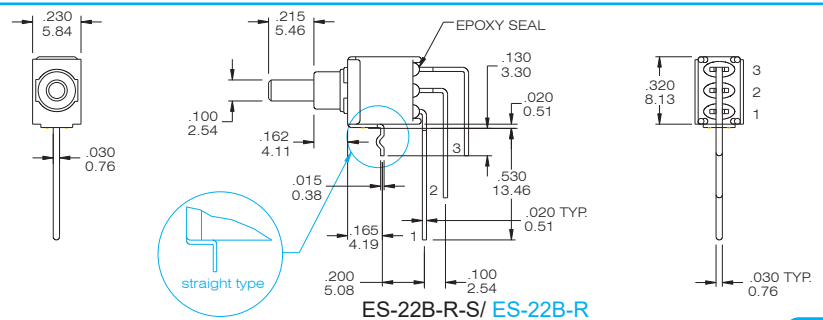
Model No.	Switching position	
ES-22A	On	Mom
Term. Comm.	2-1	2-3



### SPDT



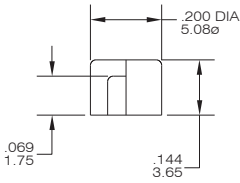
Model No.	Switching position	
ES-22B	On	Mom
Term. Comm.	2-1	2-3



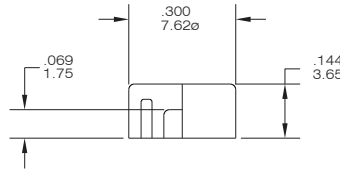


## Cap Option

CV



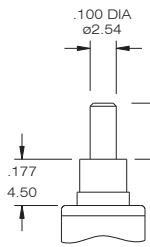
CV1



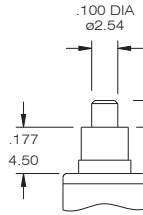
## Cap color Option

CAP & ACTUATOR OPTIONS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

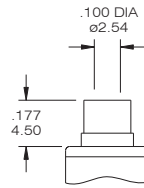
## The Plunger Option



(none) std.



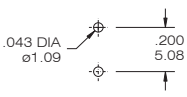
SP



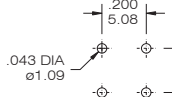
FP flush type

## The P.C.B MOUNTING

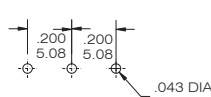
ES-21



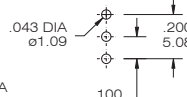
ES-21A



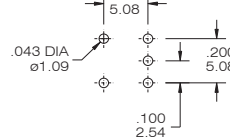
ES-21B



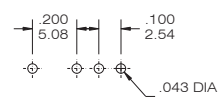
ES-22



ES-22A



ES-22B



## CONTACT MATERIAL OPTIONS

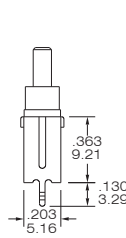
CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	1 A @ 120V AC or 28 V DC;
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 1 A @ 120V AC or 28 V DC;
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

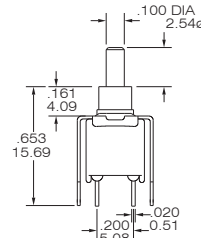
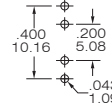
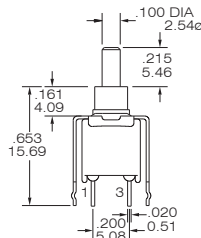
## VERTICAL SUPPORT BRACKET OPTION

only for the ES-21/ES-22 .

A5S

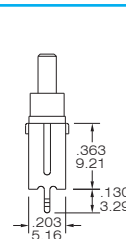


ES-21-CR-A5S (std.) snap-in type

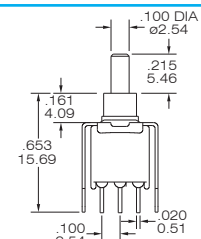
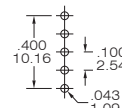
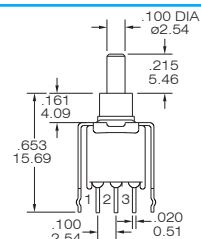


A5 straight type

A5S



ES-22-CR-A5S (std.) snap-in type



A5 straight type



## SPECIFICATIONS

CONTACT RATING: Q: 500mA @120 VAC or 28 VDC  
 ELECTRICAL LIFE: 6,000 make-and-break cycles at full load  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to 85°C

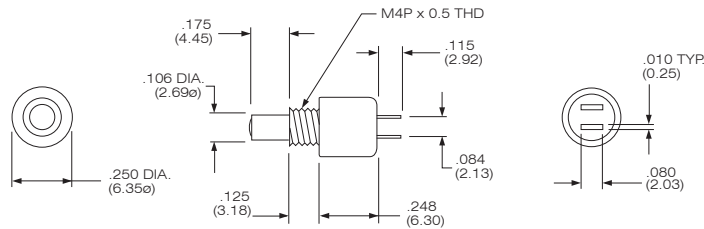
## MATERIALS

Base - diallyl phthalate ( DAP ) (UL94V-0)  
 Plunger - Glass filled Nylon(UL94V-0)  
 Bushing - Copper alloy, nickel plated  
 CONTACT AND TERMINAL - Copper alloy, silver plated

## How do you build the switches you need!!

T S - 3 1 - Z R - E - 2 - [ ]

Switch Type		Terminal	Contact material	Epoxy seal		Plunger color		RoHS code
TS-31	SPST short	Z	Q silver plated	(none)	none seal	1	White	H = RoHS Compliant
TS-32	SPST long	C	R gold plated G Gold over silver	E	terminal seal	2	Black	

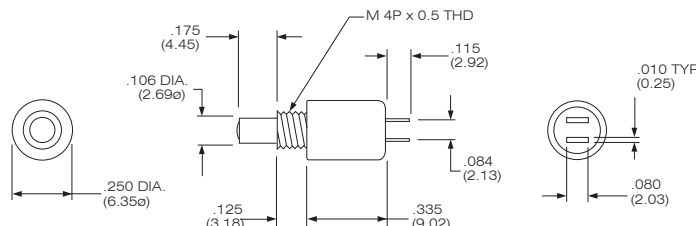


TS-31-ZR-E-2

MODEL NO.	SWITCH FUNCTION	
	POS. 1	POS. 2
TS-31	OFF	MOM.

Schematic:

N.O.  
 Total Travel: .040 (1.02) typ.  
 Actuation Force: 5 OZ. (140g) typ.  
 MOM = Momentary



TS-32-ZR-E-2

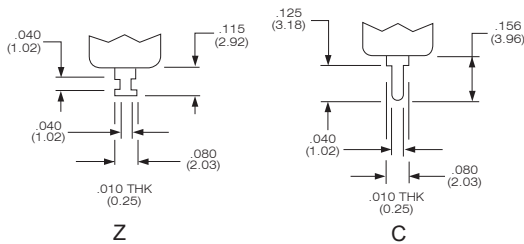
MODEL NO.	SWITCH FUNCTION	
	POS. 1	POS. 2
TS-32	OFF	MOM.

Schematic:

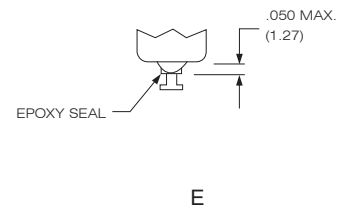
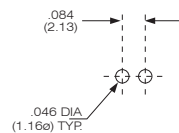
N.O. w/Overtravel  
 Total Travel: .059 (1.50)  
 Overtravel: .024 (0.61) typ.  
 Actuation Force: 6.25 OZ. (177g) typ.  
 MOM = Momentary

## TERMINAL OPTION

## TERMINAL SEAL OPTION

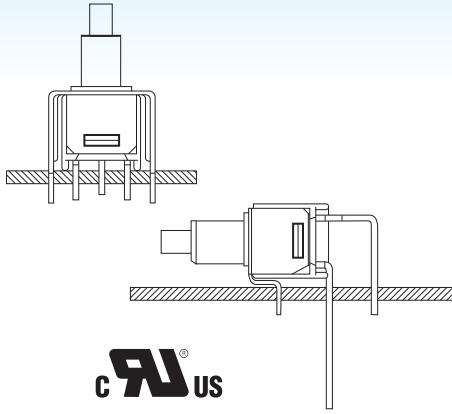


## PCB LAYOUT



## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	500mA @ 120 V AC or 28 V DC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 500mA @ 120 V AC or 28 V DC



### SPECIFICATIONS

CONTACT RATING: Q: 1A @120 VAC or 28 VDC  
 LIFE CYCLE: 50,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial @2-4 VDC, 100 mA  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE - diallyl phthalate ( DAP )  
 PLUNGER - thermoplastic polyester  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin plated

**How do you build the switches you need!!**

The TS-21 / TS-22, please see the (A) ;

The TS-21A/TS-21B/TS-22A/TS-22B, please see the (B)

(A) T S - 2 1 - C V - 2 -     S B Q - E - A 5 -  

<b>Switches Function</b>		<b>Cap or Actuator</b>		<b>Cap color</b>		<b>Plunger</b>		<b>Termination</b>		<b>Vertical support Bracket</b>	
TS-21	SPST off-mom.	(none)	none	1	white	(none)	std.	B	solder lug	(none)	(std)straight type snap-in type
TS-22	SPDT on-mom.	CV	5.08	2	black	FP	flush type	C	P.C	A5	
		CV1	7.62	3	red	<b>Bushing</b>		D	wire wrap	A5S	
		F22A	With frame	4	orange	S	10-48 thd.(FLAT) 5.59	<b>Contact Material</b>		<b>RoHS code</b>	
				5	yellow	U	none thd.(FLAT) 5.59	Q	silver plated	H = RoHS Compliant	
				6	green	T	none thd.(ROUND) 5.59	R	gold plated		
				7	Blue	V	1/4-40 thd. 7.87	G	gold over silver		
				8	Gray	V1	none thd. 7.87	K	gold / tin		
				9	Gray	S9	flush	<b>Epoxy seal</b>			
								(none)	none seal		
								E	epoxy seal		

(B) T S - 2 1 A - C V 1 - 2 -     U Q - E -    

<b>Horizon Right Angle</b>		<b>Vertical Right Angle</b>		<b>Switches Function</b>		<b>Cap</b>		<b>Plunger</b>		<b>Epoxy seal</b>	
TS-21A		TS-21B		SPST off-mom.	(none)	none	(none)	std.	(none)	none seal	Std. straight type snap-in type
TS-22A		TS-22B		SPDT on-mom.	CV	5.08	FP	flush type	E	epoxy seal	
					CV1	7.62	<b>Bushing</b>		<b>Support Bracket</b>		H = RoHS Compliant
							S	10-48 thd.(FLAT) 5.59	(none)		
							U	none thd.(FLAT) 5.59	<b>RoHS code</b>		
							T	none thd.(ROUND) 5.59	H = RoHS Compliant		
							S9	flush			
							<b>Contact Material</b>				
							Q	silver plated			
							R	gold plated			
							G	gold over silver			
							K	gold / tin			



# TS40-P

# Sub-Miniature Push button Switches

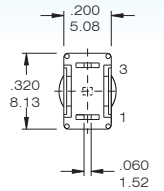
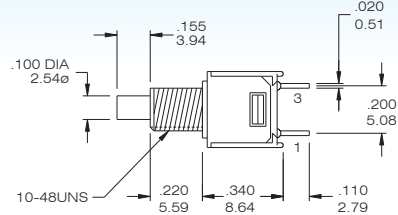
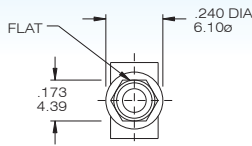


## SPST



Model No.	Switching position	
TS-21	Off	Mom
Term. Comm.	open	1-3

SCHEMATIC



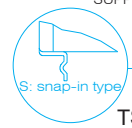
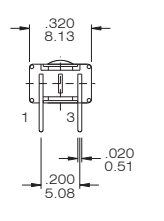
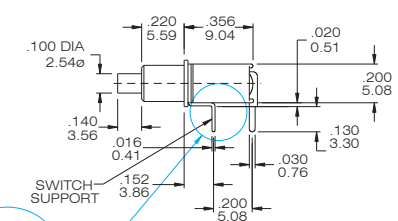
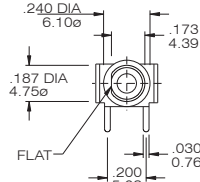
## TS-21- SBQ

## SPST



Model No.	Switching position	
TS-21A	Off	Mom
Term. Comm.	open	1-3

SCHEMATIC



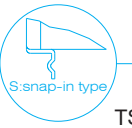
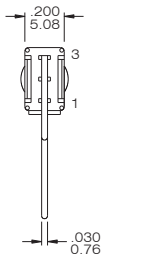
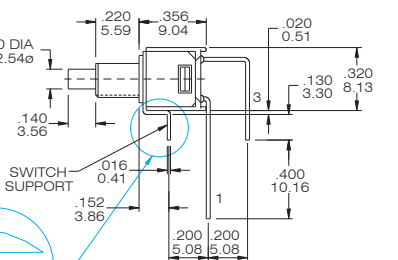
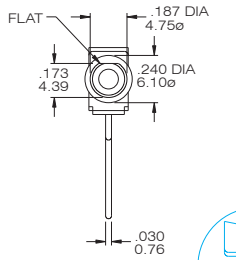
## TS-21A- UQ / TS-21A-UQ-S

## SPST



Model No.	Switching position	
TS-21B	Off	Mom
Term. Comm.	open	1-3

SCHEMATIC



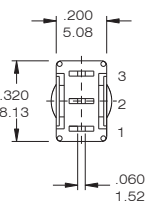
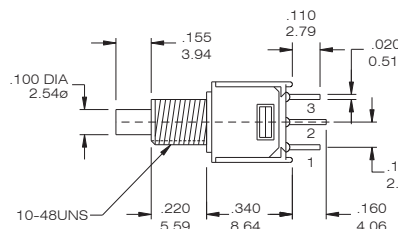
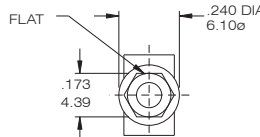
## TS-21B- UQ / TS-21B-UQ-S

## SPDT



Model No.	Switching position	
TS-22	On	Mom
Term. Comm.	2-1	2-3

SCHEMATIC



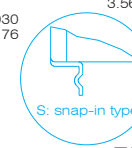
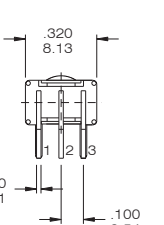
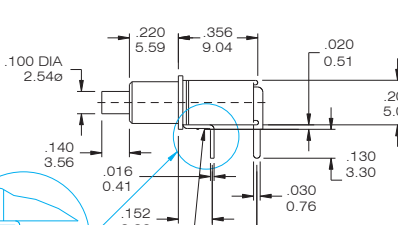
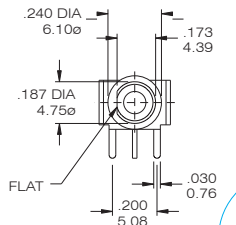
## TS-22- SBQ

## SPDT



Model No.	Switching position	
TS-22A	On	Mom
Term. Comm.	2-1	2-3

SCHEMATIC



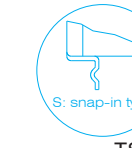
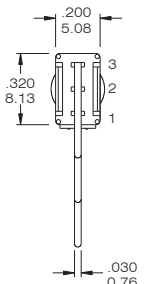
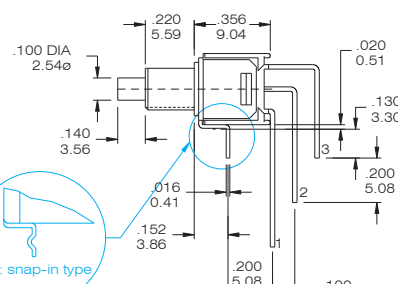
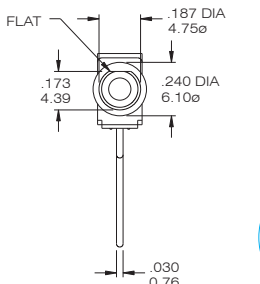
## TS-22A- UQ / TS-22A-UQ-S

## SPDT



Model No.	Switching position	
TS-22B	On	Mom
Term. Comm.	2-1	2-3

SCHEMATIC



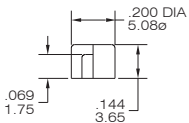
## TS-22B- UQ / TS-22B-UQ-S



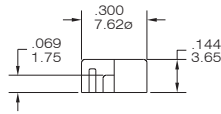
## Cap and Actuator Option

## Cap color Option

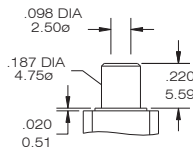
CV



CV1

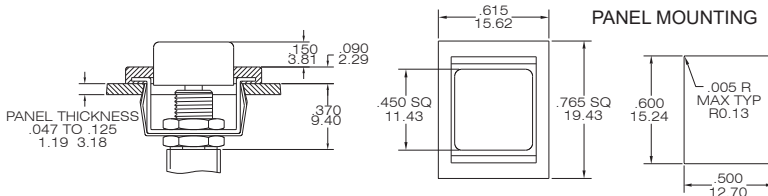


Plunger:  
FP flush type



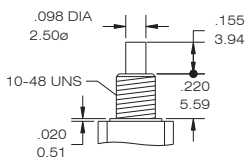
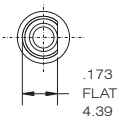
CAP & ACTUATOR OPTIONS	
1	White
2	Black(Std.)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

F22A

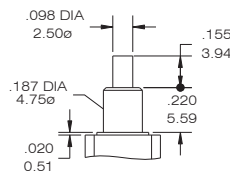
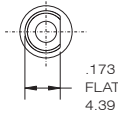


## Bushing Option

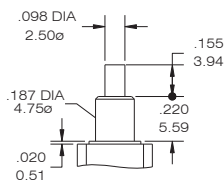
S



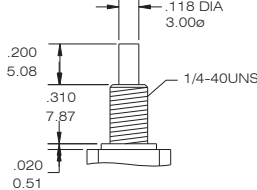
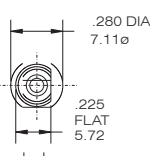
U



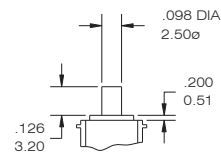
T



V : Thd.  
V1 : Non Thd.



S9



## TERMINAL OPTION ( ONLY FOR THE TS-21 / TS-22 )

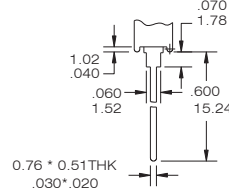
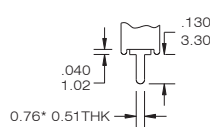
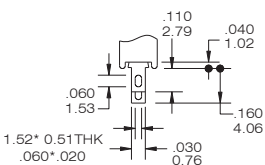
## Terminal Seal Option

B Solder Lug(STD)

C PRINTED CIRCUIT

D Wire Wrap

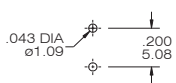
-E Terminal Seal



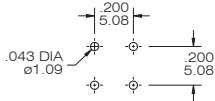
## P.C.B MOUNTING DIMENSION

## PANEL MOUNTING DIMENSION

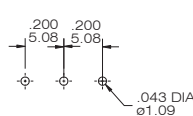
TS-21 (PC terminal)



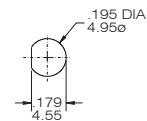
TS-21A



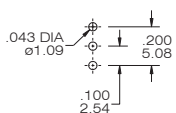
TS-21B



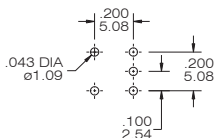
10-48 BUSHING



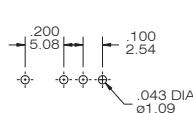
TS-22 (PC terminal)



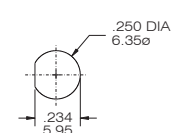
TS-22A



TS-22B



1/4 IN. BUSHING







## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	1A @ 120V AC or 28 V DC
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 V AC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 V AC or DC MAX or 1A @ 120V AC or 28 V DC
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

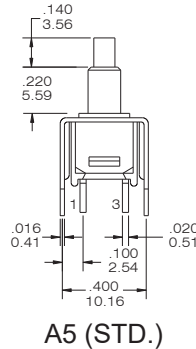
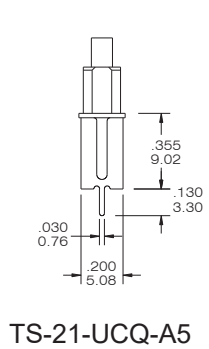
## VERTICAL SUPPORT BRACKET OPTION

Only for the TS21/TS22 . If you need the vertical support bracket , Choose the terminal option in "C" code

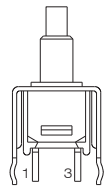
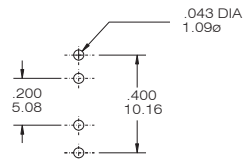
A5/ A5S



SPST



P.C. MOUNTING

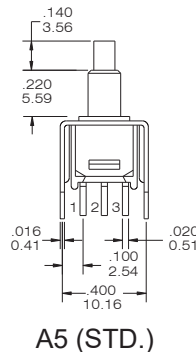
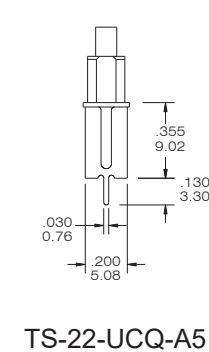


A5S (Snap-in)

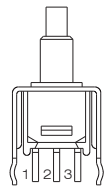
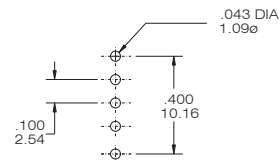
A5/ A5S



SPDT



P.C. MOUNTING



A5S (Snap-in)

INDEX

TOGGLE

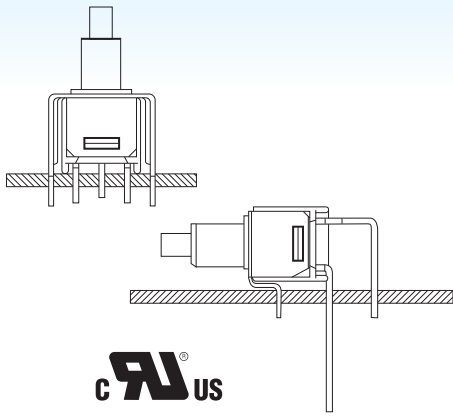
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT



### SPECIFICATIONS

CONTACT RATING: Q: 1.5A @250 VAC or 28 VDC  
 LIFE CYCLE: 6,000 make-and-break cycles  
 CONTACT RESISTANCE: 20 mΩ max. initial  
 INSULATION RESISTANCE: 1,000 MΩ min.  
 DIELECTRIC STRENGTH: 1,500 V RMS @ sea level.  
 OPERATING TEMPERATURE: -30°C to +85°C

### MATERIALS

CASE - diallyl phthalate ( DAP )  
 PLUNGER - Nylon  
 BUSHING - Copper alloy, nickel plated  
 HOUSING - Stainless Steel  
 CONTACT AND TERMINAL - Copper alloy, silver or gold plated  
 SWITCH SUPPORT - Copper alloy, tin plated

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

## How do you build the switches you need!!

The TL-22 , please see the (A) ;

The TL-22A/TL-22B, please see the (B)

(A) TL - 22 - S C Q - E - A5 -

Switches Function		Bushing		Termination		Epoxy seal		Vertical support Bracket	
TL-22	SPDT on-on	S	10-48 thd.(FLAT)	C	P.C	(none)	none seal	(none)	(std)straight type
		U	none thd.(FLAT)			E	epoxy seal	A5	snap-in type
		T	none thd.(ROUND)					A5S	
				Contact Material				<b>RoHS code</b>	
				Q	silver plated			H = RoHS Compliant	
				R	gold plated				
				G	gold over silver				
				K	gold / tin				

(B) TL - 22 A - U Q - E - -

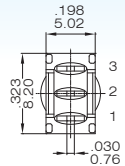
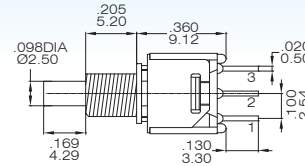
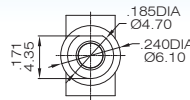
Horizon Right Angle	Vertical Right Angle	Switches Function	Bushing		Contact Material		Epoxy seal		
TL-22A	TL-22B	SPDT on-on	S	10-48 thd.(FLAT)	Q	silver plated	(none)	none seal	
			U	none thd.(FLAT)	R	gold plated	E	epoxy seal	
			T	none thd.(ROUND)	G	gold over silver			
					K	gold / tin			
						Support Bracket			
						(none)	Std. straight type		
						S	snap-in type		
						RoHS code			
						H = RoHS Compliant			



### SPDT



Model No.	Switching position	
TL-22	On	On
Term. Comm.	2-1	2-3

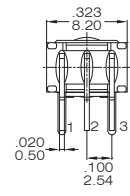
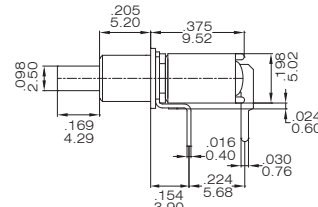
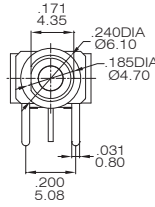


TL-22- SCQ

### SPDT



Model No.	Switching position	
TL-22A	On	On
Term. Comm.	2-1	2-3

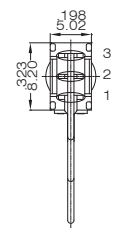
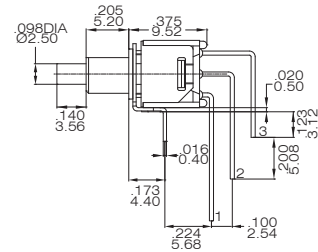
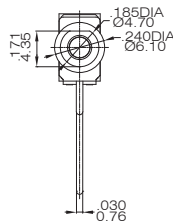


TL-22A-UQ

### SPDT



Model No.	Switching position	
TL-22B	On	On
Term. Comm.	2-1	2-3

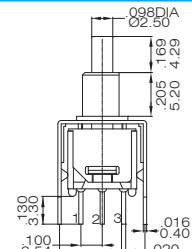
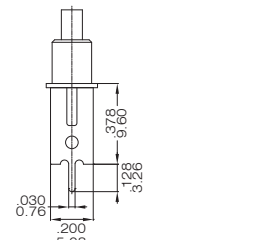
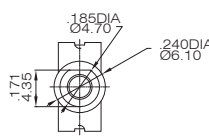


TL-22B- UQ

### SPDT



Model No.	Switching position	
TL-22-A5	On	On
Term. Comm.	2-1	2-3

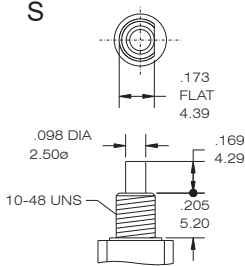


TL-22-UCQ-A5

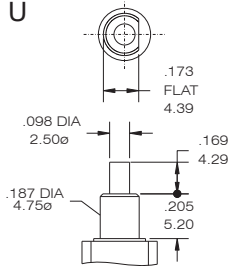
## Bushing Option

## Terminal Seal Option

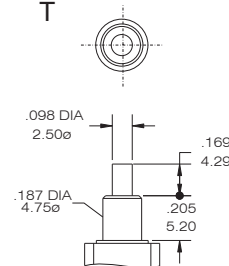
S



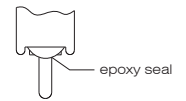
U



T



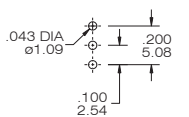
-E Terminal Seal



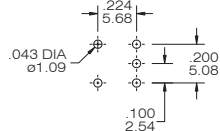
## P.C.B MOUNTING DIMENSION

## PANEL MOUNTING DIMENSION

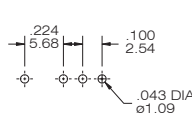
TL-22 (PC terminal)



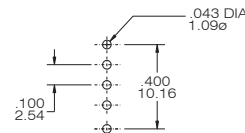
TL-22A



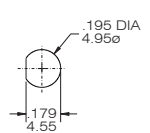
TL-22B



TL-22-A5



10-48 BUSHING



## CONTACT MATERIAL OPTIONS

CODE	CONTACT MATERIAL	TERMINAL MATERIAL	RATING
Q	Silver plated	Silver plated	1.5 A @ 250VAC or 28 VDC;
R	Gold plated over nickel plated	Gold plated over nickel plated	0.4VA MAX @ 20 VAC or DC MAX
G	Gold plated over silver plated	Gold plated over silver plated	0.4 VA MAX @ 20 VAC or DC MAX or 1.5 A @ 250 VAC or 28 VDC;
K	Gold plated over nickel plated	Tin over nickel plated	0.4VA MAX @ 20 V AC or DC MAX

\* THE K option is only for some special item. Please inquire first when you need the "K" option

## SPECIFICATIONS

CONTACT RESISTANCE: 30mΩ max  
 INSULATION RESISTANCE: DC 500V 100MΩ min  
 DIELECTRIC STRENGTH: AC 1000V 1 minute  
 ELECTRICAL LIFE: 5,000 cycles min  
 MECHANICAL LIFE: 10,000 cycles min  
 TERMINAL MATERIAL: Copper alloy,  
 silver or gold plated

## BUTTON COLOR CHART:

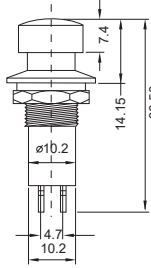
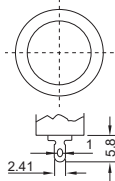
COLOR NO.	COLOR	COLOR NO.	COLOR
1	White	5	Yellow
2	Black	6	Green
3	Red (Std.)	7	Blue

\*RoHS Compliant: Please add a code "H" to part number.  
 For example: R18-25A-3-H

### 3A 125V AC



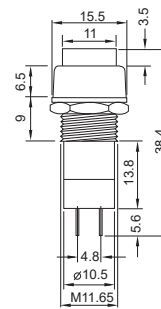
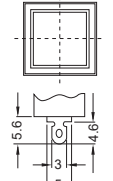
Model No.	TYPE
R18-21A	ON-OFF
R18-21B	OFF-(ON)
R18-21C	ON-(OFF)



### 3A 125V AC



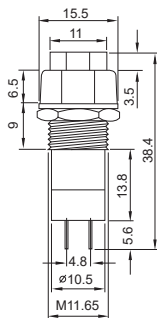
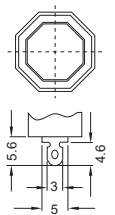
Model No.	TYPE
R18-23A	ON-OFF
R18-23B	OFF-(ON)
R18-23C	ON-(OFF)



### 3A 125V AC



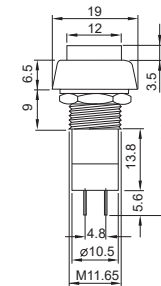
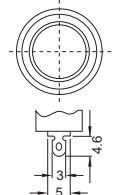
Model No.	TYPE
R18-24A	ON-OFF
R18-24B	OFF-(ON)



### 3A 125V AC



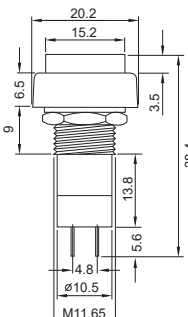
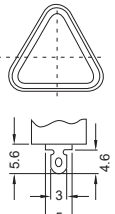
Model No.	TYPE
R18-25A	ON-OFF
R18-25B	OFF-(ON)
R18-25C	ON-(OFF)



### 3A 125V AC



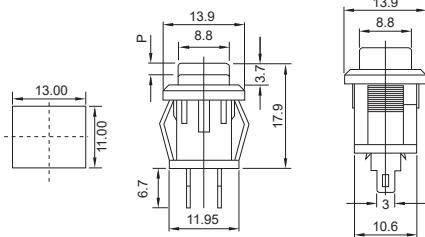
Model No.	TYPE
R18-26A	ON-OFF
R18-26B	OFF-(ON)



### 1A 125V AC



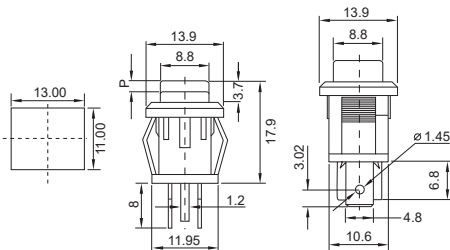
Model No.	TYPE
R18-27A	OFF-(ON)
R18-27B	ON-(OFF)



### 1A 125V AC



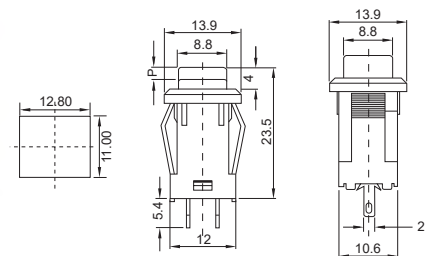
Model No.	TYPE
R18-28A	OFF-(ON)



### 3A 125V AC



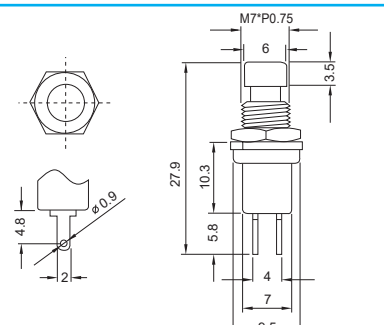
Model No.	TYPE
R18-27C	ON-OFF



### 1A 125V AC



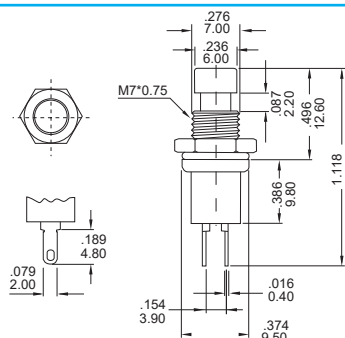
Model No.	TYPE
R18-29A	OFF-(ON)
R18-29C	ON-OFF



### 1A 125V AC



Model No.	TYPE
R18-29B	ON-(OFF)



## SPECIFICATIONS

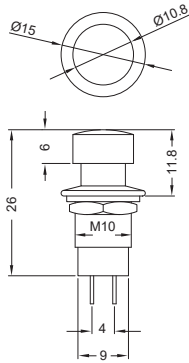
CONTACT RESISTANCE: DC 5V 1A 30mΩ max  
 INSULATION RESISTANCE: DC 500V 100MΩ min  
 DIELECTRIC STRENGTH: AC 500V 1 minute  
 ELECTRICAL LIFE: 5,000 cycles  
 MECHANICAL LIFE: 10,000 cycles  
 OPERATION FORCE: 500 ± 150g

## SPECIFICATIONS

INSULATION RESISTANCE : >100mΩ DC250V  
 WITH VOLTAGE : AC250V 1 minute  
 CONTACT RESISTANCE : <50mΩ  
 SOLDERING TEMPER. : 250°C max. 3 sec  
 MECHANICAL LIFE : 100,000 cycles  
 ELECTRICAL LIFE : 10,000 cycles  
 OPERATION FORCE : 160 ± 80g  
 MODELS: 807\*-H : Non-Lock  
 809\*-H : Lock with click sound

\*RoHS Compliant: Please add a code "H" to part number. For example: 807-H

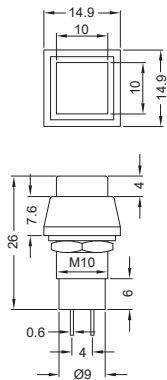
S18-21



Model No.	TYPE
S18-21A	ON-OFF
S18-21B	OFF-(ON)

1A 125V AC

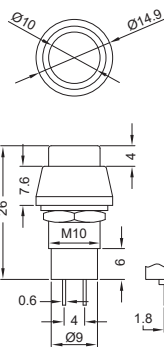
S18-23



Model No.	TYPE
S18-23A	ON-OFF
S18-23B	OFF-(ON)

1A 125V AC

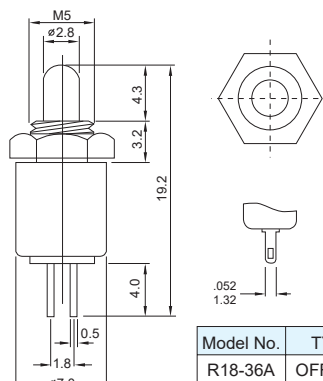
S18-25



Model No.	TYPE
S18-25A	ON-OFF
S18-25B	OFF-(ON)

1A 125V AC

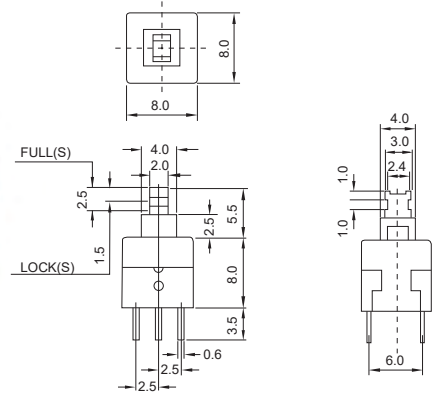
R18-36A



Model No.	TYPE
R18-36A	OFF-(ON)

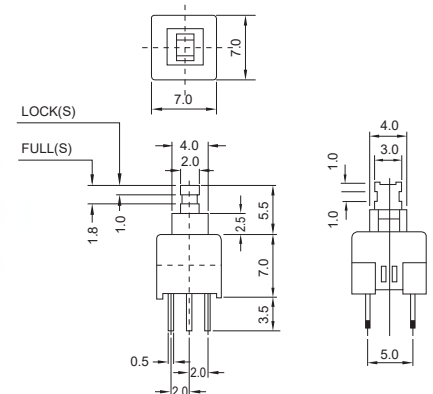
0.5A 125V AC

807 / 809



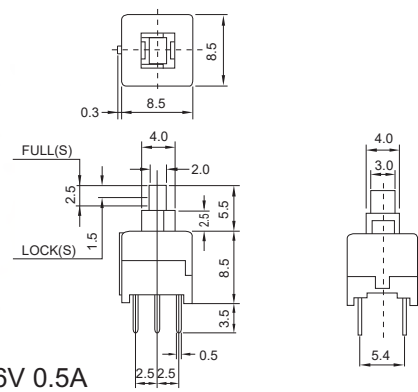
DC 30V 0.1A

807A / 809A



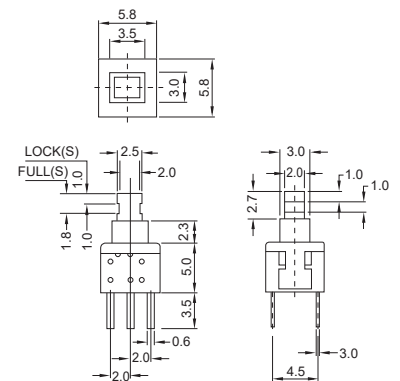
DC 30V 0.1A

807B / 809B



DC 30V 0.3A, DC 16V 0.5A

807C / 809C



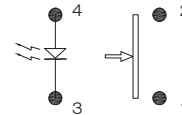
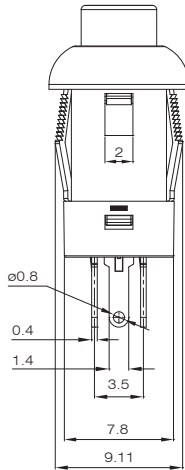
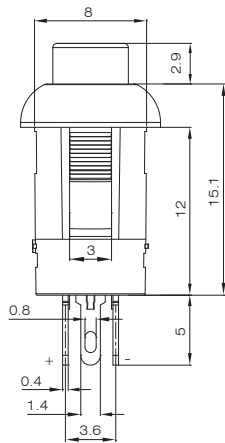
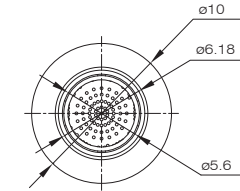
DC 30V 0.1A



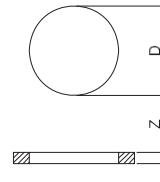
### SPECIFICATIONS

CONTACT RATING: 0.2A, 36 VDC  
 ELECTRICAL LIFE: 50,000 cycles  
 CONTACT RESISTANCE: 50 mΩ max. (initial)  
 INSULATION RESISTANCE: 100 MΩ min. 500 VDC  
 DIELECTRIC STRENGTH: 500 VAC/1 min.  
 OPERATING TEMPERATURE: 0°C to +85°C

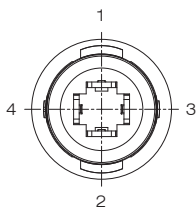
### DIMENSIONS



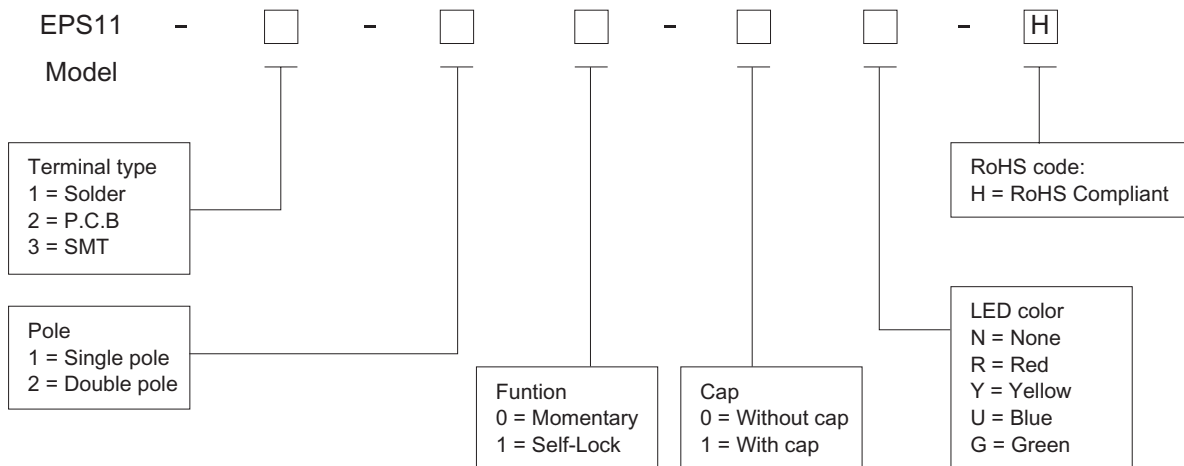
CIRCUIT



CUT-OUT



### HOW TO ORDER





## SPECIFICATIONS

CONTACT RATING: 400mA@32VACMAX/100mA@50VDCMAX/  
125mA@125VACMAX

OPERATING LIFE: 500,000 cycles

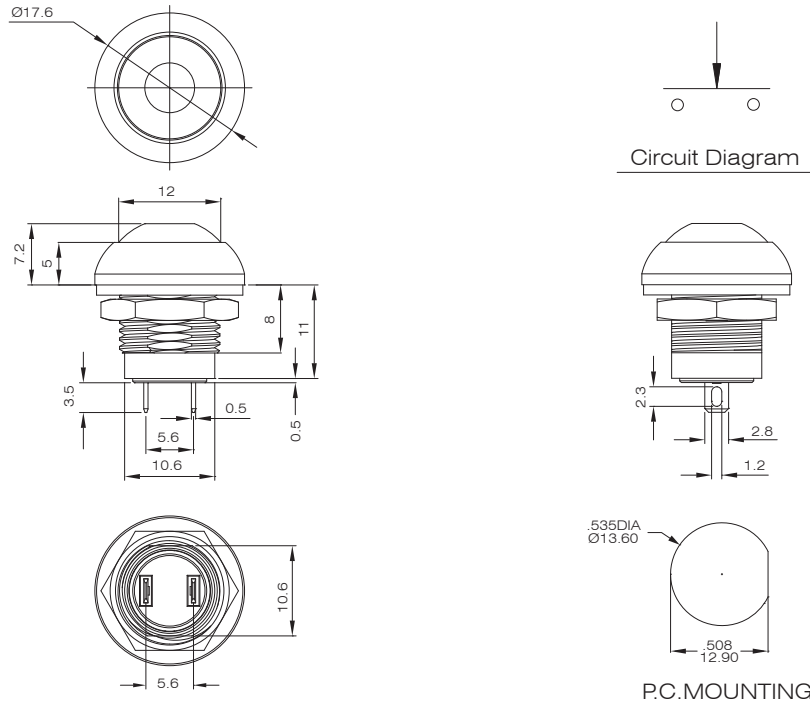
CONTACT RESISTANCE: 50 mΩ max.

INSULATION RESISTANCE: 1000 MΩ min. 500 VDC

DIELECTRIC STRENGTH: 1000 VAC/1 min.

OPERATING TEMPERATURE: -40°C to +85°C

## DIMENSIONS



Without LED

PC MOUNTING

## HOW TO ORDER

EPS12 - 11 M - B1 - 2 - BR - D3 - A3 - E - H

Switch Function	
11	2P
13	3P

Operation type	
M	Reset
Z	With lock
I	Indicator lamp

Body type	
B1	Round
D1	Square

Body color	
2	Black

Terminal	
B	Solder lug
D	Quick connect
S	Screw

Contact material	
Q	Silver plated
R	Gold plated
G	Gold over silver

RoHS Compliant	
----------------	--

Epoxy	
/	None seal (STD.)
E	Epoxy seal

Cap color	
2	Black
3	Red
4	Orange
6	Green
7	Blue
9	Gray

Cap type	
A	Flat (STD.)
H	High Button (Only for w/o LED type)

LED Color	
1	White
3	Red

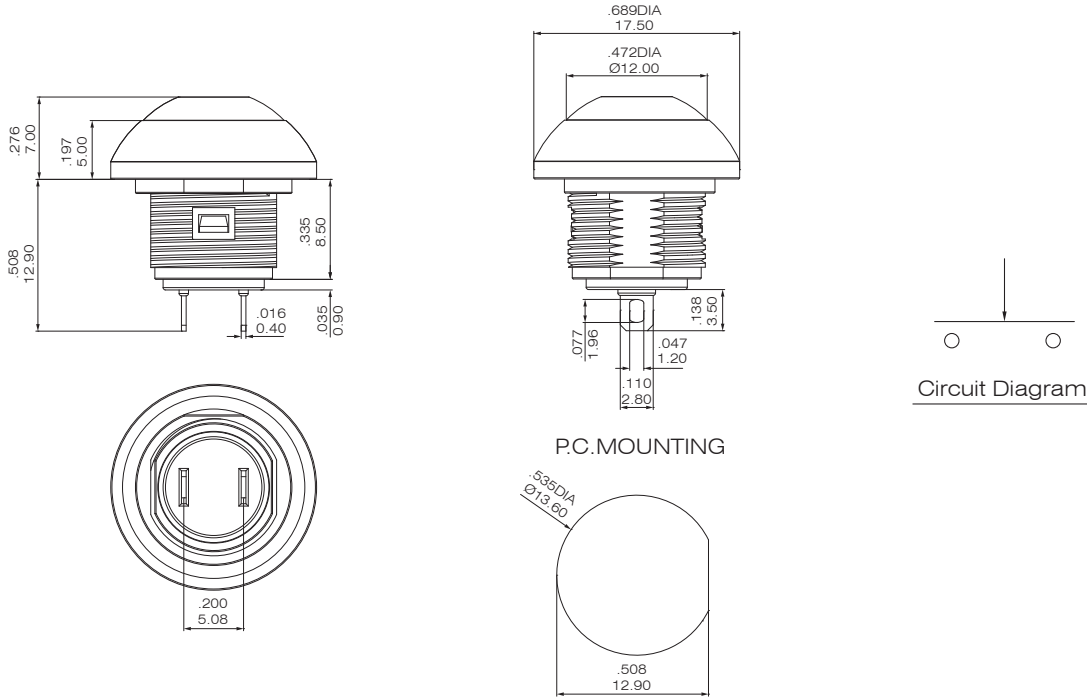
LED type	
/	No LED
D	Point luminescence



### SPECIFICATIONS

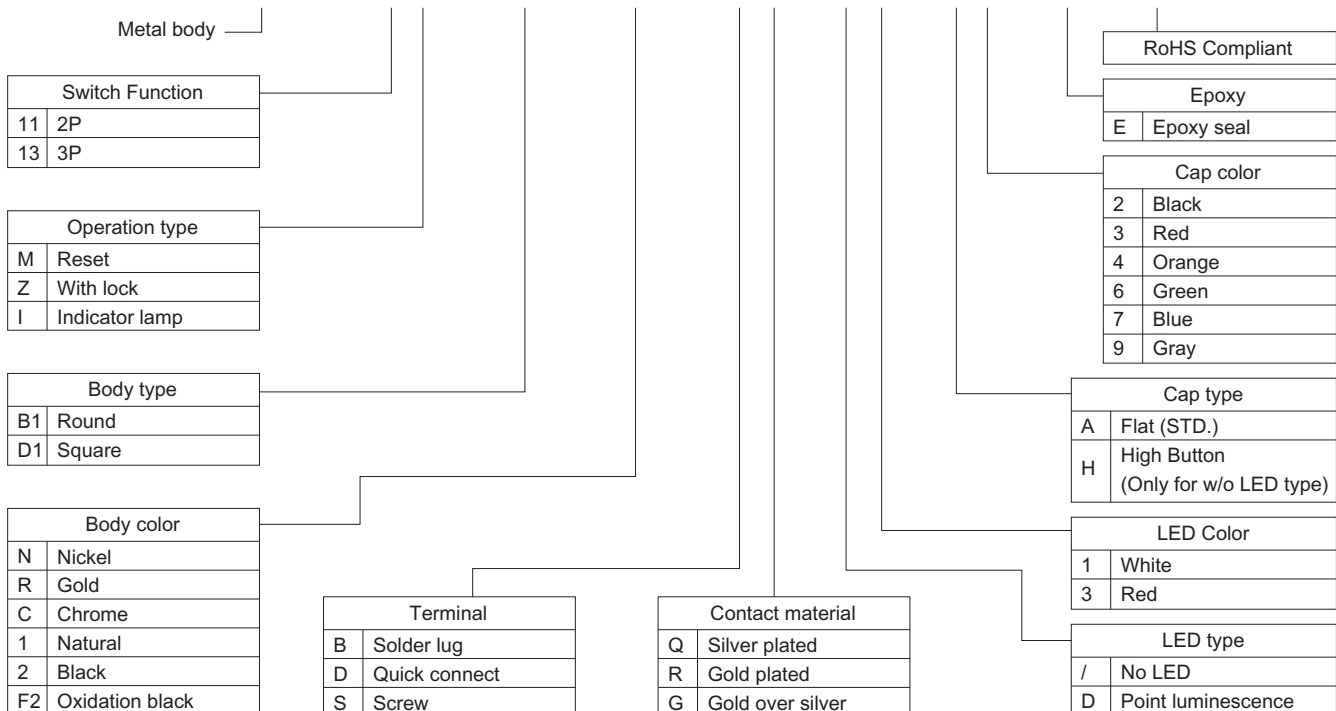
CONTACT RATING: 500mA@48VACMAX/200mA@50VDCMAX/  
200mA@250VACMAX  
ELECTRICAL LIFE: 500,000 cycles  
CONTACT RESISTANCE: 50 mΩ max.  
INSULATION RESISTANCE: 1000 MΩ min. 500 VDC  
DIELECTRIC STRENGTH: 1500 VAC/1 min.  
OPERATING TEMPERATURE: -40 °C to +85 °C

### DIMENSIONS



### HOW TO ORDER

EPS13 - 11 M - B1 - F2 - B R - D 3 - A 3 - E - H







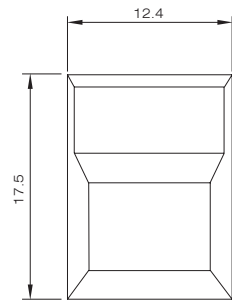
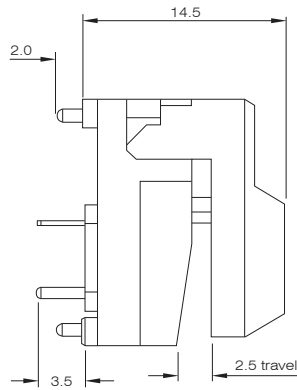
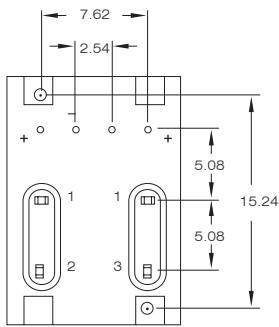
SP86

# Illuminated Snap Acting Pushbutton Switch

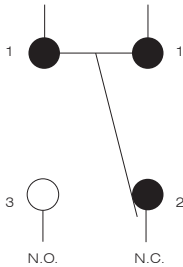


## SPECIFICATIONS

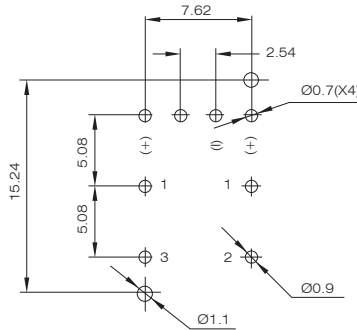
CIRCUIT	: SPDT
CURRENT RATING	: 12mA
VOLTAGE RATING	: 24 VDC
TEST VOLTAGE	: 150V
CONTACT RESISTANCE	: 50 mΩ Max (initial)
INSULATION RESISTANCE	: 100 MΩ min.
OPERATING FORCE	: 170gf ± 50gf
TOTAL TRAVEL	: 2.5mm ± 0.5mm
OPERATING LIFE	: 1, 000,000 cycles min.
SOLDER SPECIFICATION	: 260°C for 3 seconds
FUNCTION	: Momentary
OPERATING TEMPERATURE	: -10°C ~ +60°C



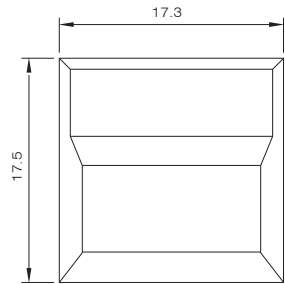
(SP86-A)



SPDT CONTACT CONFIGURATION



P.C.B. Mounting Holes

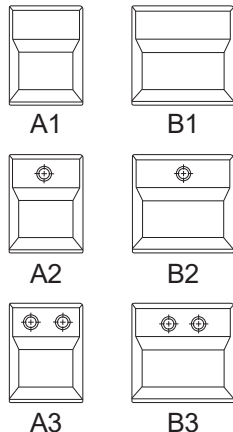


(SP86-B)

## HOW TO ORDER

S P 8 6

### CAP STYLES



### CAP COLORS

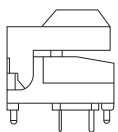
- 1 = RED
- 2 = YELLOW
- 3 = GREEN
- 4 = WHITE
- 5 = BLACK
- 6 = ORANGE
- 7 = BLUE
- 9 = GREY

### LEFT LED

- #### LED COLORS
- 0 = WITHOUT LED
  - 1 = RED
  - 2 = YELLOW
  - 3 = GREEN
  - 7 = BLUE

### RIGHT LED

RoHS code  
H = RoHS Compliant



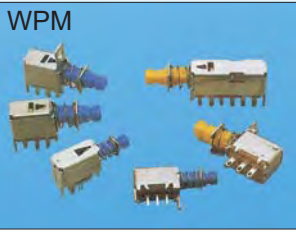


WP

# WPM / WPMS SERIES Mini Pushbutton Switch



WPM



## SPECIFICATIONS

RATING: 30V DC, 0.3A

CONTACT RESISTANCE: 50mΩ max. (WPM), 30mΩ max. (WPMS)

INSULATION RESISTANCE: 500V DC-100MΩ min

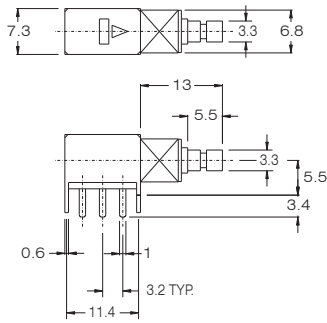
WITH STANDARD VOLTAGE: 500V AC-1minute

LIFE CYCLE: 10,000 cycles

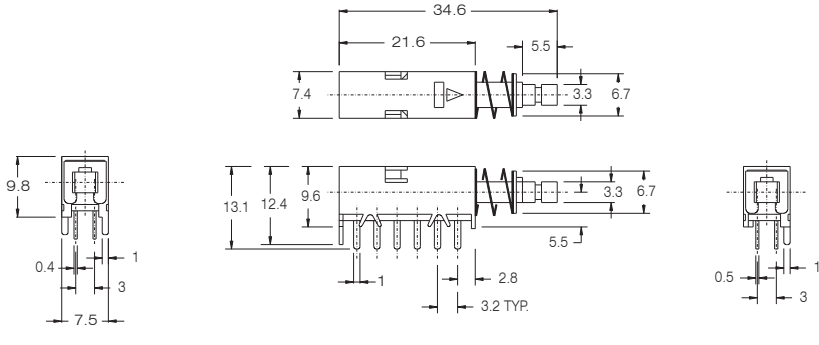
OPERATING TEMPERATURE RANG: -20°C~+70°C

## POLE

2 POLE

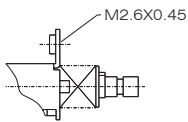


4 POLE

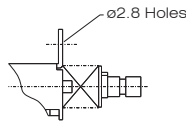


## FRAME TYPE

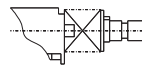
M Type



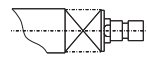
H Type



B Type



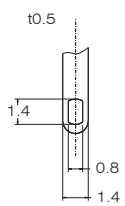
S Type



## TERMINAL TYPE

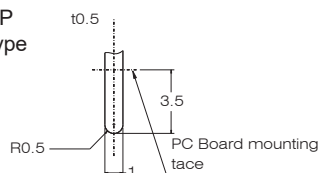
Terminal for lead wiring

W Type

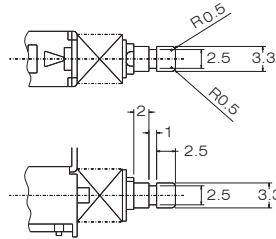


Terminal for printed circuit

P Type



Shaft end style



OPERATION:

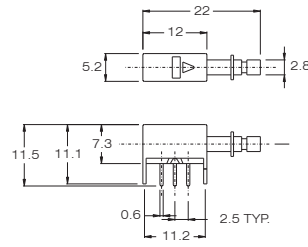
L = LOCK

N = NON LOCK

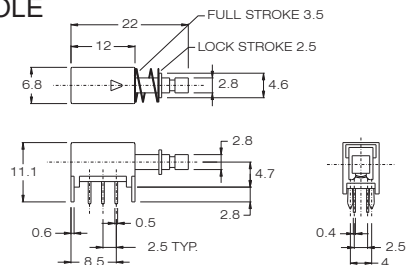
WPMS



POLE  
1 POLE



2 POLE



## HOW TO ORDER

SERIES

FRAME

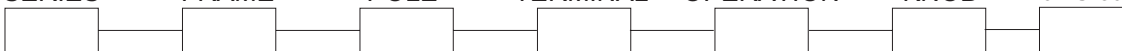
POLE

TERMINAL

OPERATION

KNOB

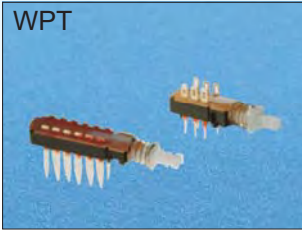
RoHS code



H = RoHS Compliant

**WP**

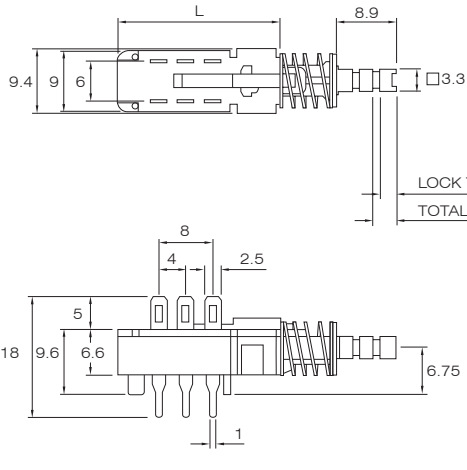
# WPT SERIES Pushbutton Switch



## SPECIFICATIONS

RATING: AC 0.2A/125V DC 1A/25V  
 CONTACT RESISTANCE: 40mΩ max  
 INSULATION RESISTANCE: 100MΩ min at 500V DC  
 OPERATING FORCE: 350 ± 150gf (2P2T~8P2T)  
                           600 ± 150gf (10P2T, 16P2T)  
 OPERATING TEMPERATURE RANGE: -20°C ~ +70°C  
 OPERATING LIFE: 10,000 cycles.

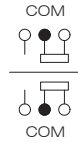
## DIMENSION



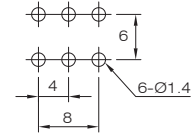
POLE	2	4	6	8	10	16
L(mm)	24.5	36.5	48.5	60.5	72.5	108.5

LOCK TRAVEL 2.5 mm  
 TOTAL TRAVEL 4 mm

## SCHEMATIC

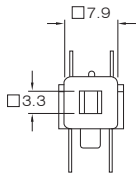


## P.C.B. LAYOUT

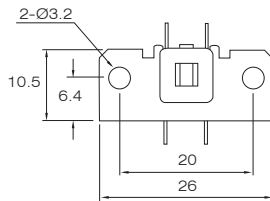


## FRAME TYPE

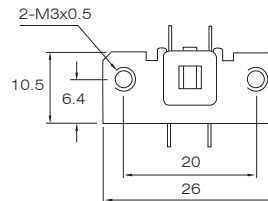
### S TYPE



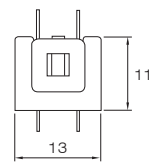
### H TYPE



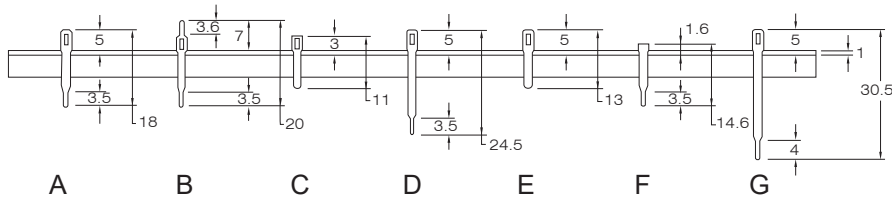
### M TYPE



### C TYPE



## TERMINAL TYPE



OPERATION	L: LOCK	IL: INTERLOCK	TIMING	S: SHORTING	TRAVEL	2: 2.5mm
	N: NONLOCK			N: NONSHORTING		4: 4mm

## HOW TO ORDER



H = RoHS Compliant

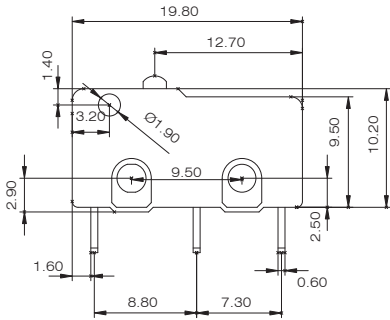


### SPECIFICATIONS

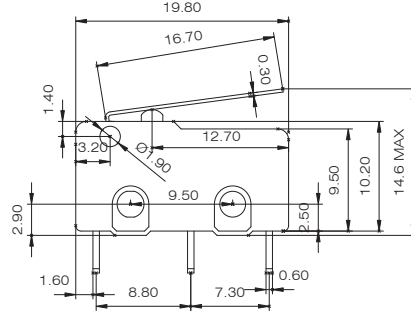
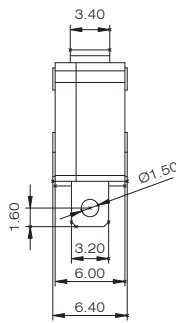
CONTACT RATING: 10A 125/250VAC  
 6(3)A 125/250VAC  
 ELECTRICAL LIFE: 10,000 cycles  
 CONTACT RESISTANCE: 50 mΩ max. (initial)  
 INSULATION RESISTANCE: 100 MΩ min.  
 DIELECTRIC STRENGTH: 1000V between contacts  
 1500V between contact and shell  
 OPERATING TEMPERATURE: -40°C to +85°C



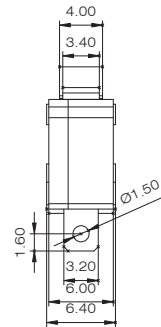
### DIMENSIONS



MS1-D\*T1-B1

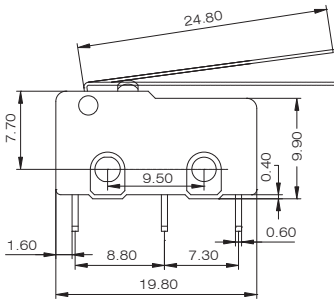


MS1-D\*T1-B2

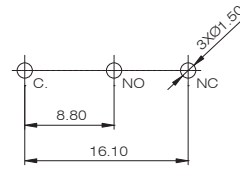
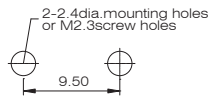
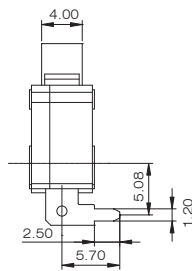


### Mounting hole dimensions

### Contact configuration



MS1-D\*T1-R6



For PCB terminal



### HOW TO ORDER

MS1 - □ □ □ □ - □ □ - □

Micro switch

- 1) circuit arrangement  
 D : SPDT  
 O : SPST(NO : normal open)  
 C : SPST(NC : normal close)
- 2) Ratings Level  
 A : 0.1A    125/250V AC  
 B : 1A      125/250V AC  
 C : 3A      125/250V AC  
 D : 6A      125/250V AC  
       6(2)A    125/250V AC  
 E : 10A     125/250V AC  
       6(3)A    125/250V AC
- 3) Temperature Level  
 T1 : 85°C

- RoHS Code  
 H = RoHS compliant
- 5) Operation type:  
 0 : Push-button H=1.4mm  
 1 : Push-button H=1.1mm  
 2 : Lever1  
 3 : Lever2  
 4 : Lever3  
 5 : Lever5  
 6 : Lever6
- 4) Terminal type  
 B : Solder terminal  
 C : PCB terminal  
 R : Right side PCB terminal

INDEX TOGGLE ROCKER SLIDE PUSH BUTTON / MICRO DIP / ROTARY KEY / TACT



MS2

# Miniature Micro Switches



## SPECIFICATIONS

CONTACT RATING: 16A 125/250VAC  
16(4)A 125/250VAC

ELECTRICAL LIFE: 10,000 cycles

CONTACT RESISTANCE: 50 mΩ max. (initial)

INSULATION RESISTANCE: 2MΩ min. between contacts

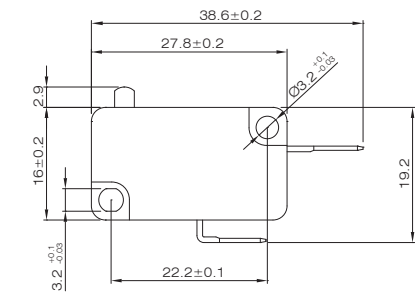
7MΩ min. between contact and actuator

DIELECTRIC STRENGTH: 1500V between contacts

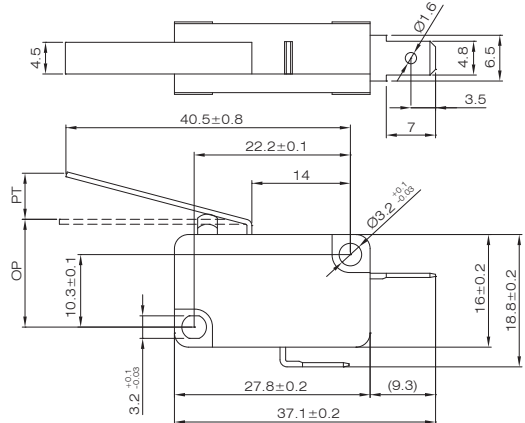
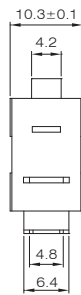
3000V between contact and shell

OPERATING TEMPERATURE: -40°C to +85°C

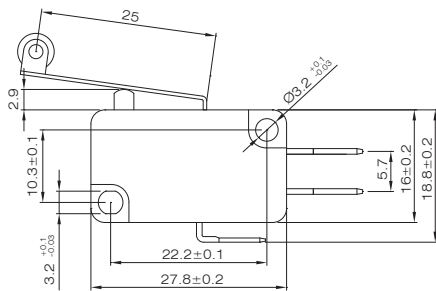
## DIMENSIONS



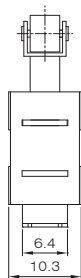
MS2-CXT1-E1



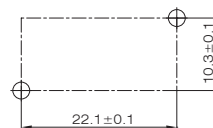
MS2-CXT1-E3



MS2-CXT1-D5



Mounting hole dimensions



Contact configuration



## HOW TO ORDER

MS2 -       -  -

Micro switch

1) circuit arrangement  
D : SPDT  
O : SPST(NO : normal open)  
C : SPST(NC : normal close)

2) Ratings Level  
G : 10A 125/250V AC  
10(4) 125/250V AC  
H : 16A 125/250V AC  
16(4)A 125/250V AC  
I : 10(8)A 125/250V AC  
K : 5A 40V DC

3) Temperature Level  
T1 : 85°C

RoHS Code  
H = RoHS compliant

6) Operation force  
 : Standard operation force

5) Actuator type  
1. Standard plunger  
2. Short plunger  
3. Long plunger  
4. Long plunger  
5. Long roller  
6. R type  
7. Roller & Bending

4) Terminal type  
B: Solder terminal (T=0.8mm)  
C: Left side PCB terminal (T=0.8mm)  
D: #250 Series (T=0.8mm)  
E: #187 Series (T=0.8mm)  
F: Right side PCB terminal (T=0.8mm)  
G: #250 Series (T=0.5mm)  
H: #187 Series (T=0.5mm)



# NOTE

INDEX

TOGGLE

ROCKER

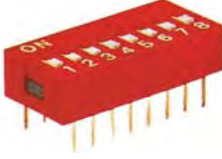

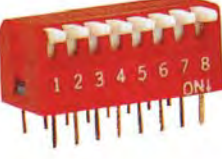
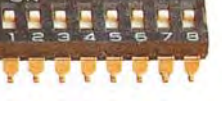
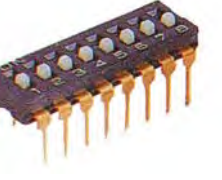
SLIDE





PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

Area with horizontal lines for notes.

SPECIFICATIONS	PAGE
<p><b>DS, DSR</b></p>  <p>Slide/2-10, 12Pos.</p>	E01
<p><b>DA</b></p>  <p>Right angle/2-10, 12Pos.</p>	E01
<p><b>DP, DPL</b></p>  <p>Piano/2-10, 12Pos.</p>	E01
<p><b>DM, DMR</b></p>  <p>Surface mounting/1-10, 12Pos.</p>	E03
<p><b>NDI, NDIR</b></p>  <p>Machine insertable/1-10, 12Pos.</p>	E03

SPECIFICATIONS	PAGE
<p><b>R7</b></p>  <p>Rotary / 7x7 / 10, 16 Pos.</p>	E05
<p><b>RH</b></p>  <p>Rotary / 10x10 / Through Hole</p>	E07
<p><b>RV</b></p>  <p>Rotary / 10x10 / Right Angle</p>	E07
<p><b>RM</b></p>  <p>Rotary / 10x10 / S.M.T.</p>	E07

**SPECIFICATIONS**

CONTACT RATING: 25mA @24 VDC (switching Rating)  
 100mA @50VDC(non-switching Rating)  
 ELECTRICAL LIFE:2,000 operations min. @ 24VDC,25mA  
 CONTACT RESISTANCE: 50 mΩ max. initial  
 INSULATION RESISTANCE: 100 MΩ min. at 500 VDC  
 DIELECTRIC STRENGTH: 500 V AC /1 min  
 OPERATION FORCE: 400 gf max. (DP series)  
 1000 gf max. (DS & DA series)  
 STORAGE TEMPERATURE: -40°C to 85°C  
 CIRCUIT: SPST

**MATERIALS**

COVER: UL94V-0 PBT, Thermoplastic(Red.Black.Blue)  
 BASE: UL94V-0 PBT, Thermoplastic(Black)  
 ACTUATOR: UL94V-0 PBT, Thermoplastic(white)  
 CONTACT PLATING: Gold plating over nickel  
 TOP SEAL: Polyester film  
 POTTING MATERIAL: Epoxy

INDEX

TOGGLE

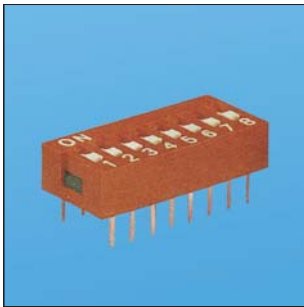
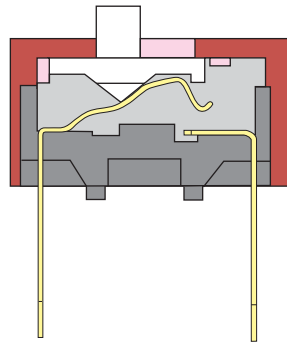
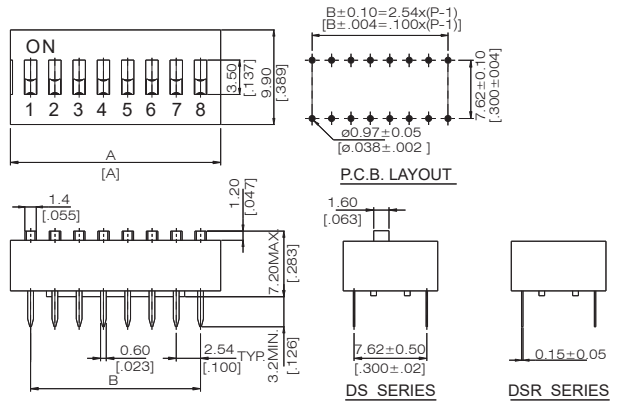
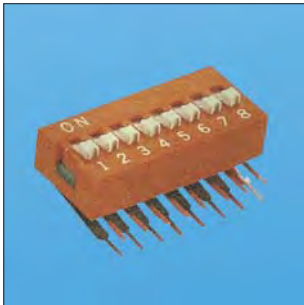
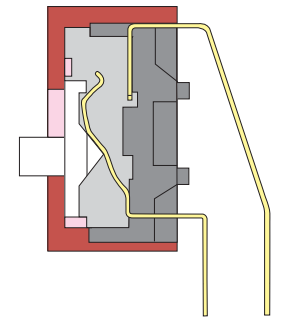
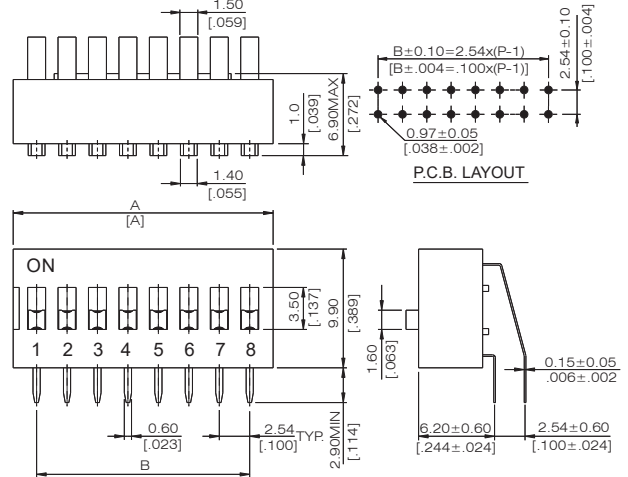
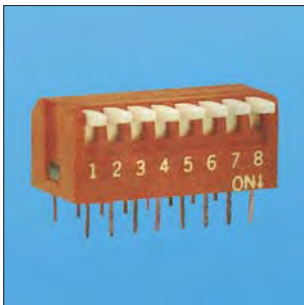
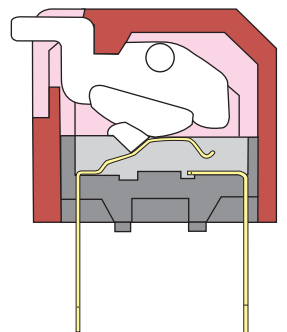
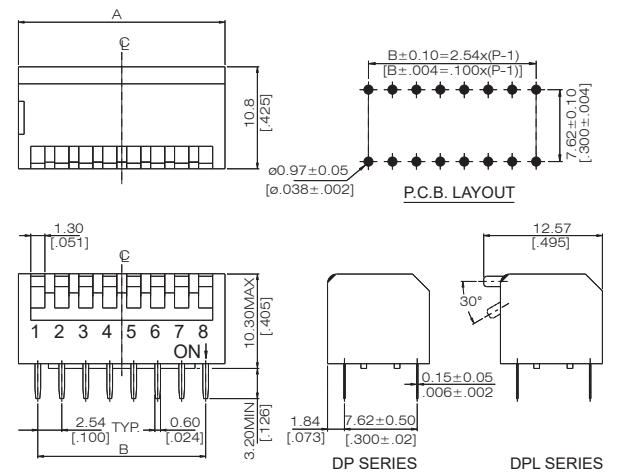
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

**DS,DSR SERIES  
 SLIDE TYPE DIP SWITCH**

**CONTACT SYSTEM**

**DIMENSIONS**

**DA SERIES  
 RIGHT ANGLE TYPE DIP SWITCH**

**CONTACT SYSTEM**

**DIMENSIONS**

**DP,DPL SERIES  
 PIANO TYPE DIP SWITCH**

**CONTACT SYSTEM**

**DIMENSIONS**


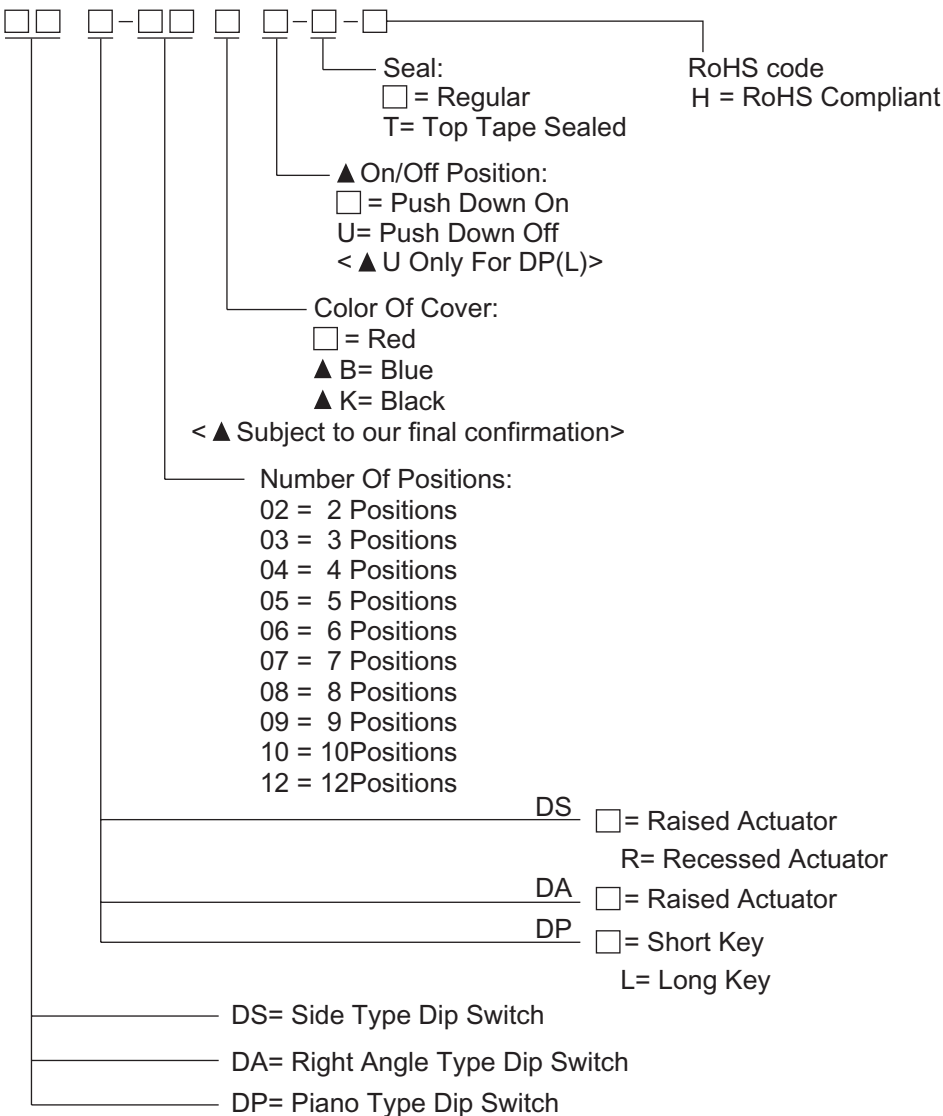


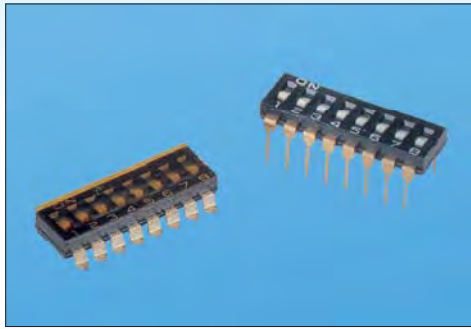
**SOLDERING AND CLEANING PROCESSES**

- △ Keep all switch contacts in their "OFF" position for all operations.
- △ WAVE SOLDERING: Recommended solder temperature at 500°F (260°C) max 5 seconds.
- △ HAND SOLDERING: Use a soldering iron of 30 Watts or less, controlled at 350°C approximately 5 seconds.
- △ Care should be exercised so that flux from the upper part of the printed circuit board does not adhere to the switch.
- △ Do not clean the switch body except with top tape sealed type, which can only spray of cleaning method from top s/w.

**MODELS**

DS - 12 DSR - 12	DA - 12	DP - 12 DPL - 12	12	31.84[1.254]	27.94[1.100]
DS - 10 DSR - 10	DA - 10	DP - 10 DPL - 10	10	26.76[1.054]	22.86[.900]
DS - 09 DSR - 09	DA - 09	DP - 09 DPL - 09	09	24.22[.954]	20.32[.800]
DS - 08 DSR - 08	DA - 08	DP - 08 DPL - 08	08	21.68[.854]	17.78[.700]
DS - 07 DSR - 07	DA - 07	DP - 07 DPL - 07	07	19.14[.754]	15.24[.600]
DS - 06 DSR - 06	DA - 06	DP - 06 DPL - 06	06	16.60[.654]	12.70[.500]
DS - 05 DSR - 05	DA - 05	DP - 05 DPL - 05	05	14.06[.554]	10.16[.400]
DS - 04 DSR - 04	DA - 04	DP - 04 DPL - 04	04	11.52[.454]	7.62[.300]
DS - 03 DSR - 03	DA - 03	DP - 03 DPL - 03	03	8.98[.354]	5.08[.200]
DS - 02 DSR - 02	DA - 02	DP - 02 DPL - 02	02	6.44[.254]	2.54[.100]
PROD. NO.			NO.OF POS.	DIM. A (DP,DPL)	DIM. B (DS,DSR,DA)
SCHEMATIC(TYP.)					
 (2,3,4,5,6,7,8,9,10,12, POS AVAIL)					

**HOW TO ORDER**



**FEATURES**

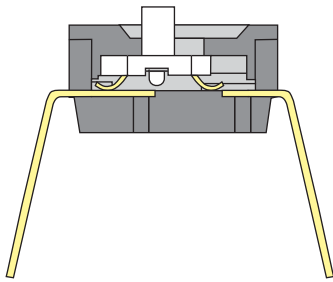
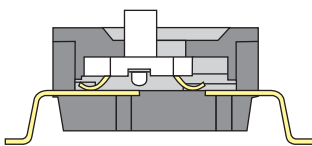
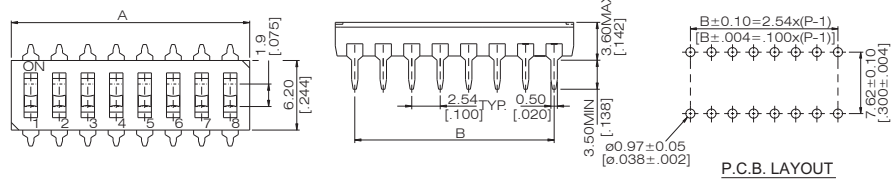
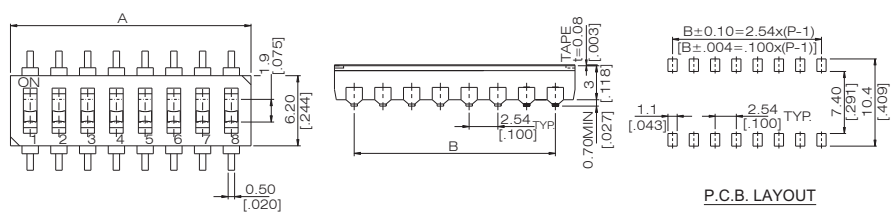
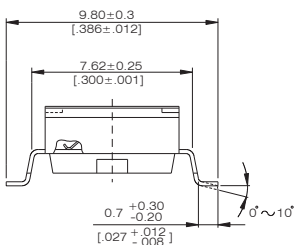
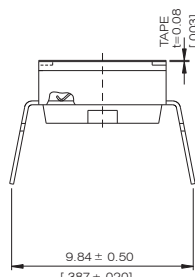
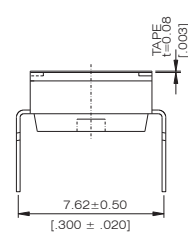
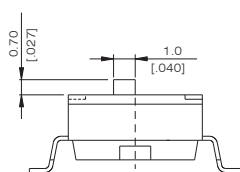
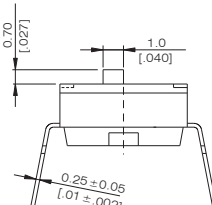
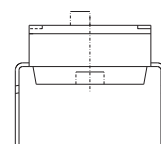
1. Splay terminals allow for automatic insertion by IC insertion machine.
2. Straight terminals are available for manual insertion.
3. Insert molding of terminals and ultrasonic welding improve flux proofness and enable flux washing in whole by top tape sealing.
4. NDI series (raised actuator) and NDIR series (recessed actuator) available for different purposes.
5. Double contacts offers high reliability.
6. Vapor phase solderable, IR-reflow solderable.

**SPECIFICATIONS**

CONTACT RATING: 25mA @24 VDC (switching Rating)  
 100mA @50VDC(non-switching Rating)  
 ELECTRICAL LIFE:2000 operations min. @ 24VDC,25mA  
 CONTACT RESISTANCE: 50 mΩ max. initial  
 INSULATION RESISTANCE: 100 MΩ min. at 500 VDC  
 DIELECTRIC STRENGTH: 500 V AC /1 min  
 OPERATION FORCE: 1000 gf max  
 STORAGE TEMPERATURE: -40°C to 85°C  
 CIRCUIT: SPST

**MATERIALS**

COVER: UL94V-0 PPS, Thermoplastic(Black)  
 BASE: UL94V-0 PPS, Thermoplastic(Black)  
 ACTUATOR: UL94V-0 Nylon, Thermoplastic(white)  
 CONTACT PLATING: Gold plating over nickel  
 TERMINAL PLATING: Gold plated

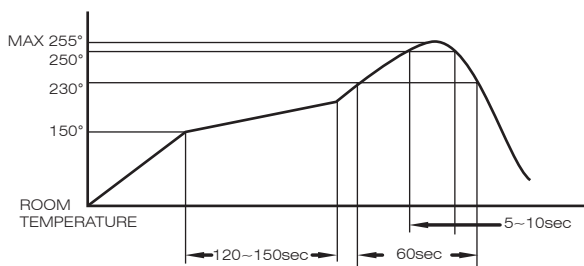
**CONTACT SYSTEM OF NDI(R) & DM(R) SERIES**

**NDI(R) SERIES**

**DM(R) SERIES**
**DIMENSIONS**
**NDI(R)**

**P.C.B. LAYOUT**
**DM(R)**

**P.C.B. LAYOUT**
**TERMINAL TYPE**

**DMR SERIES**

**NDIR - □□ S**

**NDIR - □□ H**

**DM SERIES**

**NDI - □□ S**

**NDI - □□ H**

General Tolerance: ±0.2mm(±0.008")



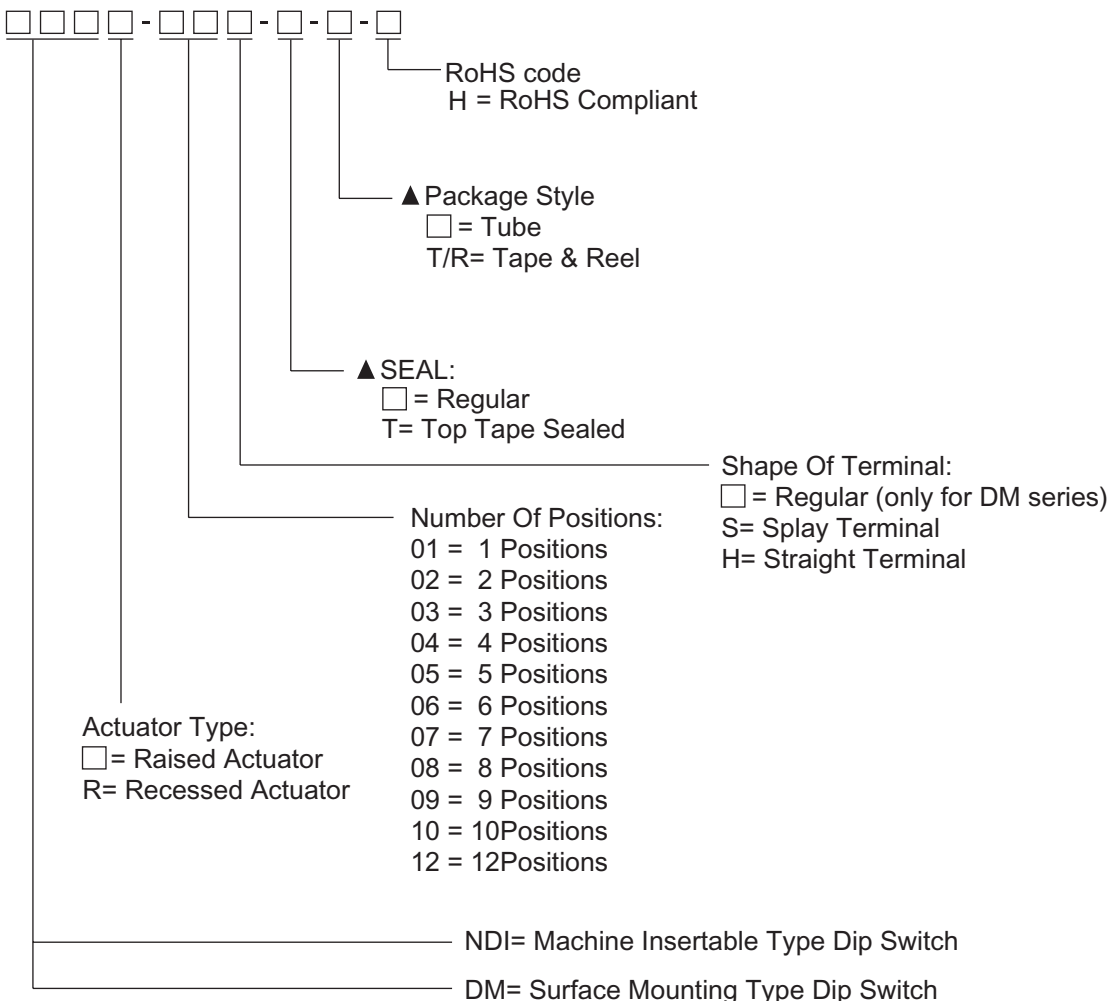
## SOLDERING AND CLEANING PROCESSES

- △ Keep all switch contacts in their "OFF" position for all operations.
- △ WAVE SOLDERING: Recommended solder temperature at 500°F (260°C) max. 5 seconds. For through hole type.
- △ HAND SOLDERING: Use a soldering iron of 30 Watts controlled at 350°C approximately 5 seconds. while applying solder.



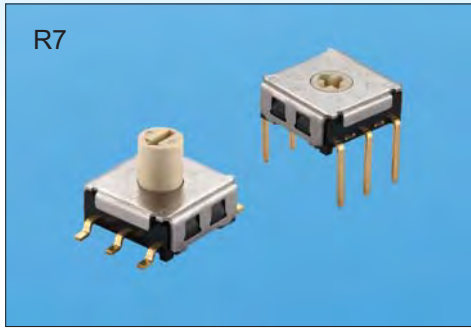
- △ Reflow Temperature Profile.
- △ Care should be exercised so that flux from the upper part of the printed circuit board does not adhere to the switch.
- △ Do not clean the switch body except with top tape sealed type, which can only spray of cleaning method from top s/w.

## HOW TO ORDER



## MODELS

DM - 12 DMR - 12	NDI - 12 NDIR - 12	12	31.42[1.237]	27.94[1.100]
DM - 10 DMR - 10	NDI - 10 NDIR - 10	10	26.34[1.037]	22.86[.900]
DM - 09 DMR - 09	NDI - 09 NDIR - 09	9	23.80[.937]	20.32[.800]
DM - 08 DMR - 08	NDI - 08 NDIR - 08	8	21.26[.837]	17.78[.700]
DM - 07 DMR - 07	NDI - 07 NDIR - 07	7	18.72[.737]	15.24[.600]
DM - 06 DMR - 06	NDI - 06 NDIR - 06	6	16.18[.637]	12.70[.500]
DM - 05 DMR - 05	NDI - 05 NDIR - 05	5	13.64[.537]	10.16[.400]
DM - 04 DMR - 04	NDI - 04 NDIR - 04	4	11.10[.437]	7.62[.300]
DM - 03 DMR - 03	NDI - 03 NDIR - 03	3	8.56[.337]	5.08[.200]
DM - 02 DMR - 02	NDI - 02 NDIR - 02	2	6.02[.237]	2.54[.100]
DM - 01 DMR - 01	NDI - 01 NDIR - 01	1	3.48[.137]	—
PROD. NO.		NO.OF POS.	DIM. A	DIM. B
SCHEMATIC(TYP.)				
(1,2,3,4,5,6,7,8,9,10,12, POS AVAIL)				



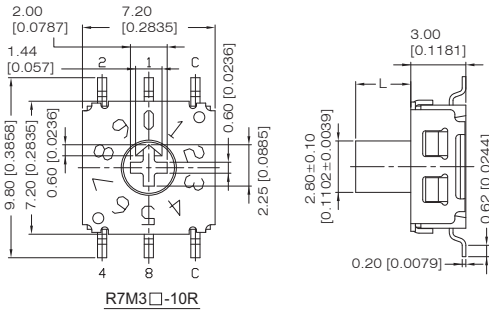
## SPECIFICATIONS

CONTACT RATING: 24VDC, 25mA (switching Rating)  
 50VDC, 100mA (non-switching Rating)  
 ELECTRICAL LIFE: 10,000 cycles.  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 100MΩ min. at 100 VDC  
 DIELECTRIC STRENGTH: 250V AC/1 minute  
 OPERATION FORCE: 200gf.cm max  
 OPERATING TEMPERATURE: -30°C to +80°C

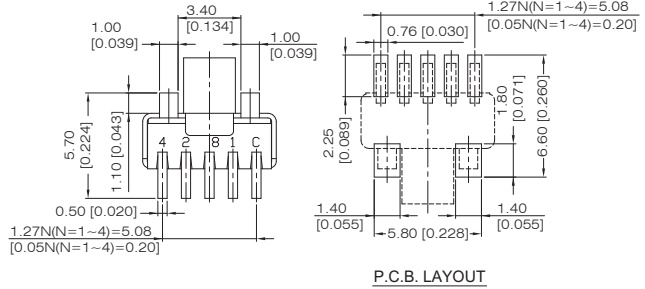
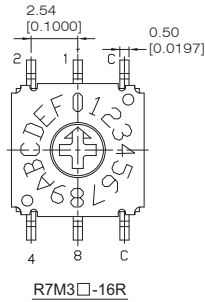
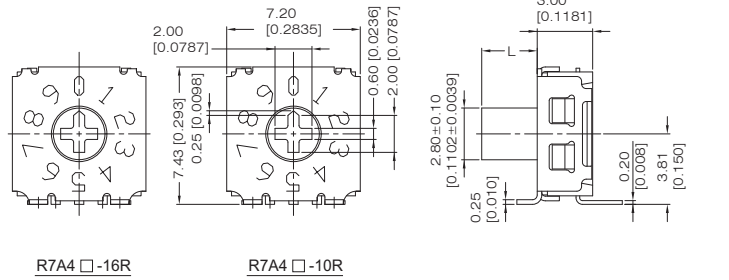


## DIMENSIONS

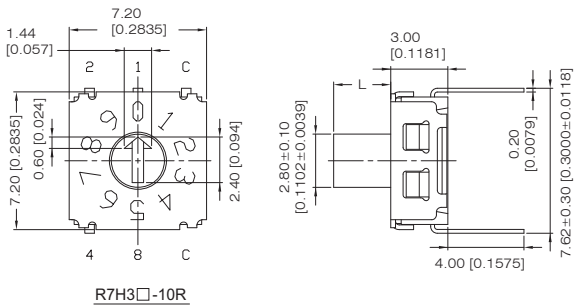
### R7M3



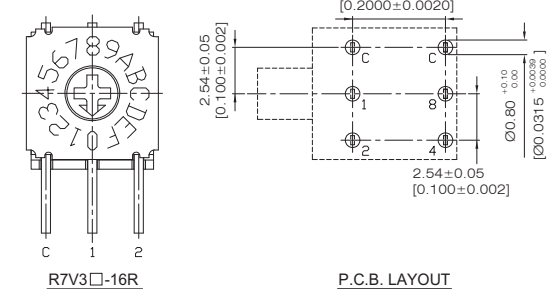
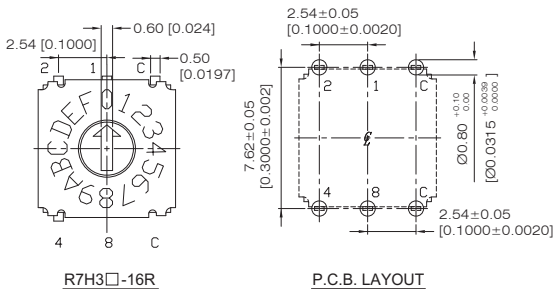
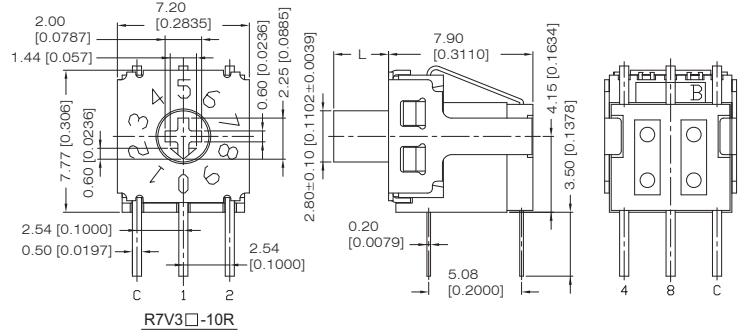
### R7A4



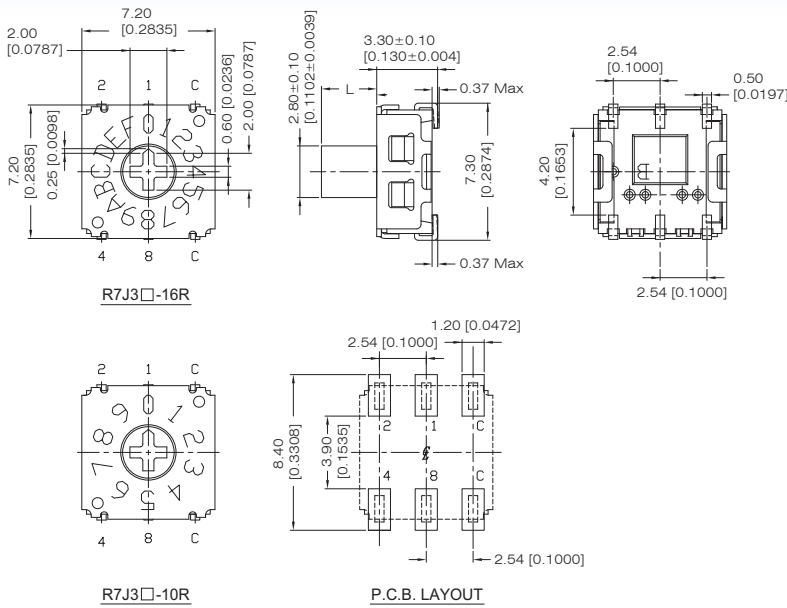
### R7H3



### R7V3



## R7J3



TYPE	POSITION □□R	CODE			
		1	2	4	8
10 STEP	0	●	●	●	●
	1	○	○	●	●
	2	●	○	●	●
	3	○	○	●	●
	4	●	●	○	●
	5	○	●	○	●
	6	●	○	○	●
	7	○	○	○	●
	8	●	○	●	○
	9	○	●	●	○
16 STEP	A	●	○	●	○
	B	○	○	●	○
	C	●	●	○	○
	D	○	●	○	○
	E	●	○	○	○
	F	○	○	○	○

CIRCUIT CHART

PART NO.	L
R7 □□ -10R □	0
R7 □□ -16R □	
R7 □□ H -10R □	3.00 [0.1181]
R7 □□ H -16R □	

## HOW TO ORDER

R7 □ □ □ - □ □ R □ □ - □ - H

RoHS Code:  
H = RoHS Compliant

Package:  
B = Tube  
T/R = Tape & Reel

□ = Without Ground Terminal  
G = With Ground Terminal (S.M.T Only)

A = Cross-head Actuator  
B = Flat-head Actuator

R = Real Codes

Number Of Steps:  
10 = 10 Steps  
16 = 16 Steps

Actuator Type:  
□ = Recessed Actuator  
H = High Actuator (3.0 mm)

Number Of Terminals:  
3 = 3x3  
4 = 4x1

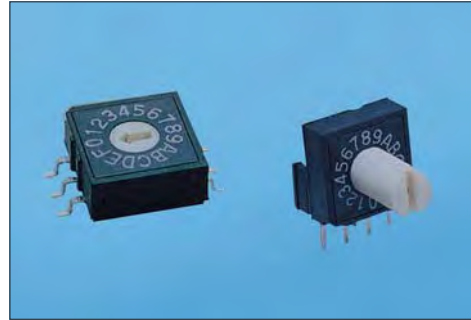
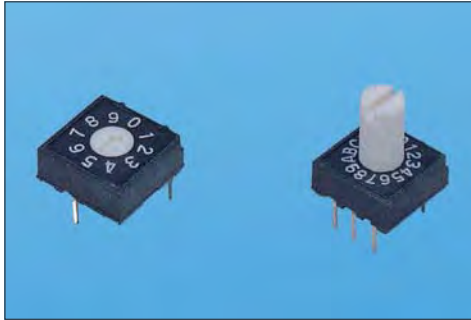
Termination Type:  
M = S.M.T  
H = Through Hole  
V = Right Angle  
A = S.M.T Right Angle (4x1 Only)  
J = S.M.T (3x3 Only)

Rotary Type 7x7

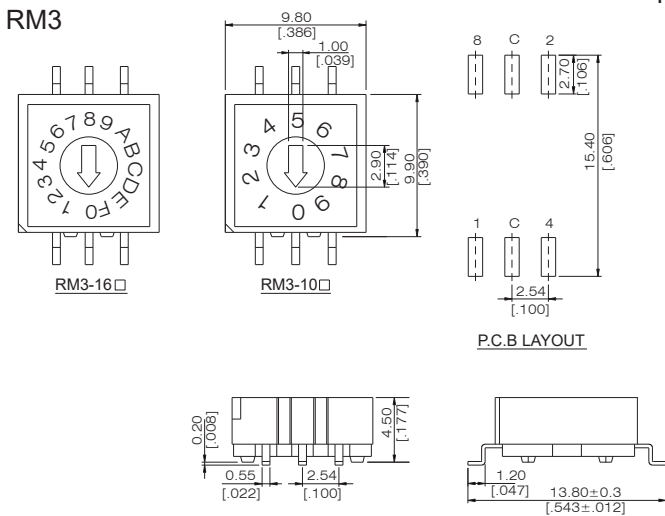
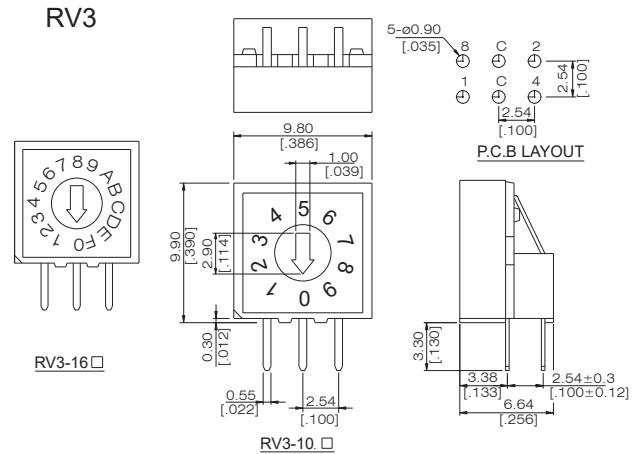
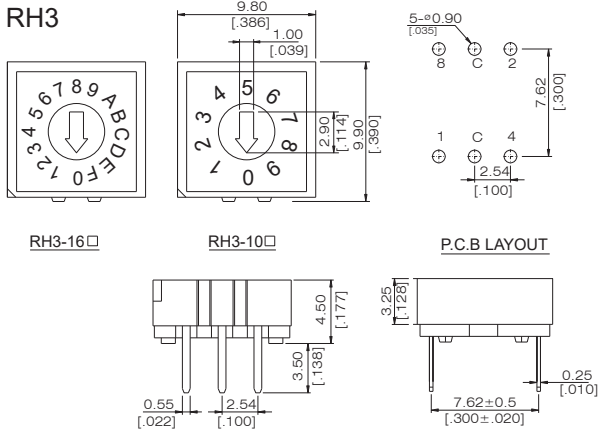
## SPECIFICATIONS

CONTACT RATING: 24VDC, 25mA (switching Rating)  
 50VDC, 100mA (non-switching Rating)  
 ELECTRICAL LIFE: 20,000 cycles.  
 CONTACT RESISTANCE: 100 mΩ max. (initial)  
 INSULATION RESISTANCE: 100 MΩ min. at 250 VDC  
 DIELECTRIC STRENGTH: 250 VAC / 1 minute

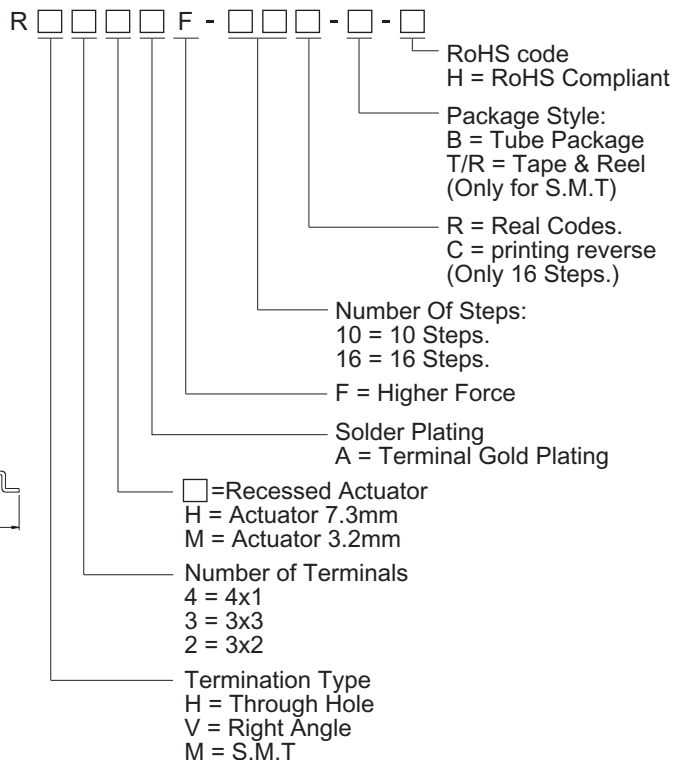
OPERATION FORCE: 400gf.cm max  
 OPERATING TEMPERATURE: -25°C to +80°C  
 STORAGE TEMPERATURE: -40°C to 85°C  
 SOLDERABILITY: 260±5°C, 5±1 sec.  
 SOLDER RESISTANCE: Automatic Soldering



## DIMENSIONS



## HOW TO ORDER



SERIES	PAGE	SERIES	PAGE
<b>LT1</b> 	F01	<b>SPL6</b>  Illuminated	F11
<b>LT2</b> 	F02	<b>SPL-10</b>  Illuminated (10 x 10)	F16
<b>LT4</b> 	F03	<b>ELTS*W-6</b>  Washable (6.2 x 6.3)	F17
<b>LT5</b> 	F04	<b>ELTS(*)-6</b>  6.2 x 6.2	F19
<b>DTR</b>  6.5 x 6.5, 8.4 x 8.4	F05	<b>ELTS(*)-2</b>  12 x 12	F19
<b>DTR</b>  12 x 12	F06	<b>ELTS(G)L, F-6</b>  Thinner (6.2 x 6.3)	F22
<b>TQ</b>  Washable (10 x 10)	F07	<b>ELTSMC-6</b>  SPDT (6.2 x 6.4)	F23
<b>WTD</b>  Washable (12 x 12)	F08	<b>ELTSX-6</b>  SMT (6.2 x 6.2)	F24
<b>WTM</b>  Washable (10 x 10)	F09	<b>ELTS(*)3</b>  Regular, SMT (3.5 x 6.0, 7 x 2.5)	F25
<b>WTML</b>  Illuminated (10 x 10)	F09	<b>ELTSM-4, ELTSK-5</b>  SMT (4.5 x 4.5, 5.2 x 5.2)	F27

INDEX

TOGGLE

ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

**SPECIFICATIONS**

CONTACT RATING: 100mA max, 42 VAC/DC  
 MECHANICAL LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max. (initial)  
 INSULATION RESISTANCE: 1,000MΩ min.  
 DIELECTRIC STRENGTH: 2,000VAC  
 OPERATION FORCE: 3N ± 0.75N max

**MATERIALS**

SWITCH HOUSING: PBT/PA46 (UL94 V-0)  
 TRANSPARENT ACTUATOR: PC (UL94 V-0)  
 ACTUATOR: ABS  
 CONTACT: Stainless, Au version tin-plated  
 TERMINALS: Brass, Au version tin-plated  
 TERMINAL SEAL: Epoxy



INDEX

TOGGLE

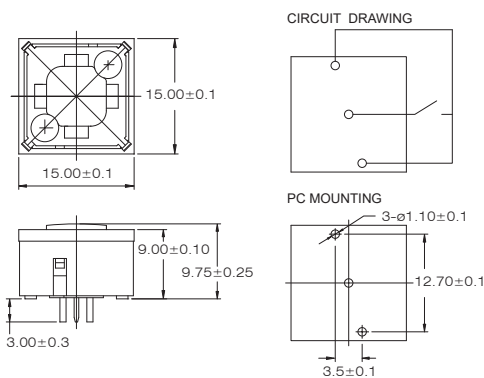
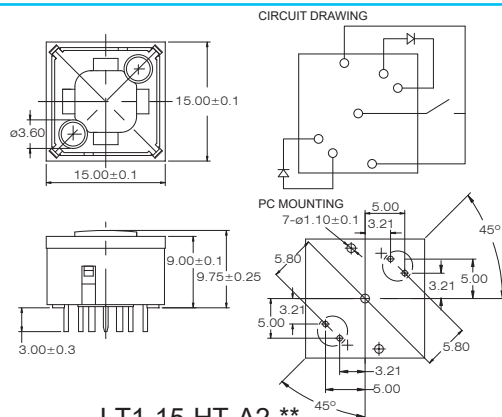
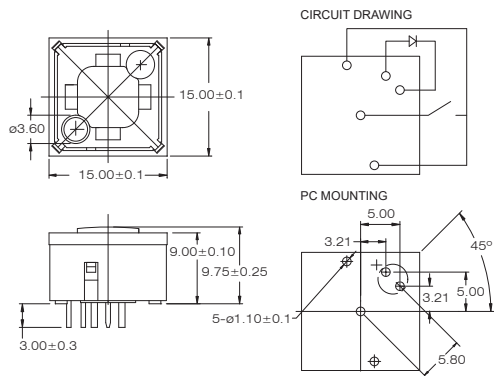
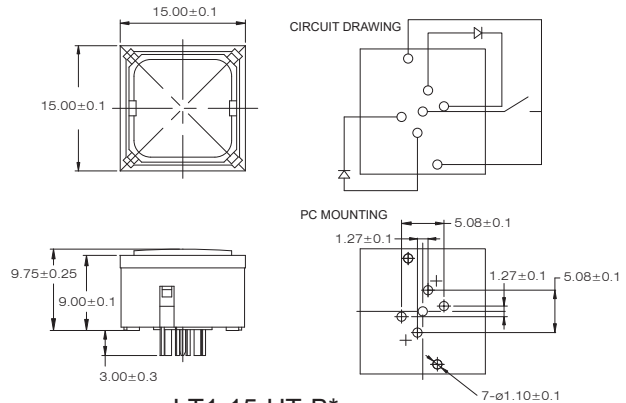
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT


**LT1-15-HT-A0**

**LT1-15-HT-A2\*\***

**LT1-15-HT-A1\***

**LT1-15-HT-B\***
**HOW TO ORDER**

LT1 - 19 - HT - A0 -  -  -  -

LT1 Series  
 Size: 19: 19 x 19mm  
 15: 15 x 15mm

HT material:  
 = none  
 HT= High temperature

Actuator:  
 Transparent actuator

LED quantity:  
 0 : no LED  
 1 : one LED  
 2 : two LED

LED Color:  
 1 : white  
 3 : red  
 5 : yellow  
 6 : green  
 7 : blue

RoHS code:  
 H: RoHS Compliant

Contact material:  
 : Au version tin-plated  
 Q : silver plated

Another LED Color:  
 1 : white  
 3 : red  
 5 : yellow  
 6 : green  
 7 : blue

LT1 - 19 - HT - B1 -  -  /  -  -  -

LT1 Series  
 Size: 19: 19 x 19mm  
 15: 15 x 15mm

HT material:  
 HT= High temperature

Actuator:  
 Color panel actuator

Actuator color:  
 1 : white  
 3 : red  
 5 : yellow  
 6 : green  
 7 : blue

RoHS code:  
 H : RoHS Compliant

Contact material:  
 : Au version tin-plated  
 Q : silver plated

Another LED Color:  
 =standard  
 1 : white 3 : red  
 5 : yellow 6 : green  
 7 : blue

LED color:  
 =standard  
 1 : white 3 : red  
 5 : yellow 6 : green 7 : blue

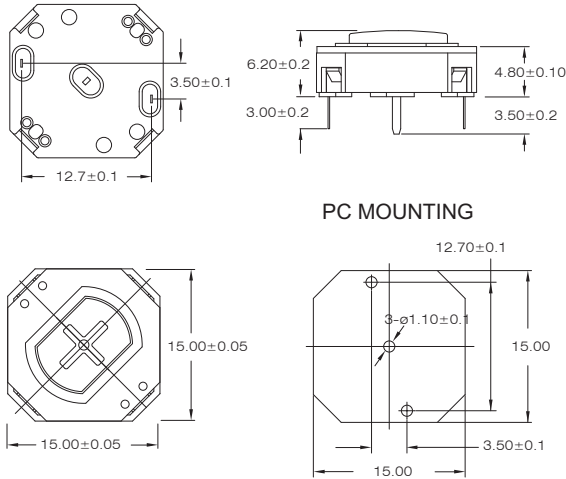
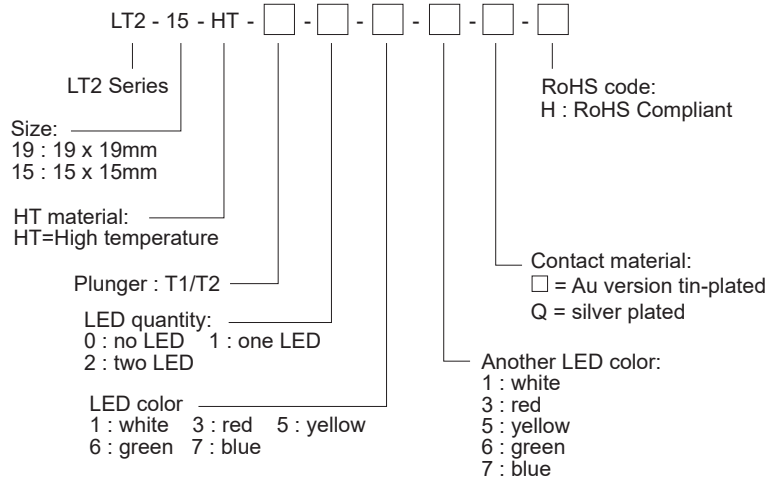
LED quantity:  
 = standard (the actuator is as same as the color of LED)  
 0 : no LED  
 1 : one LED  
 2 : two LED (the actuator is not as same as the color of LED)



**LT2**

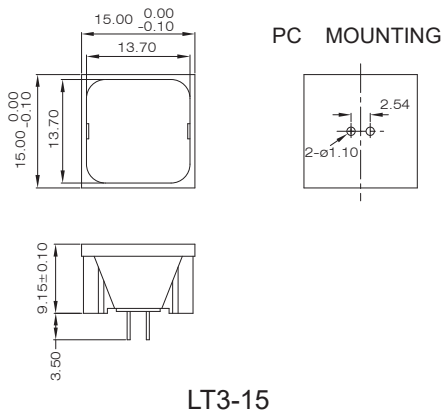
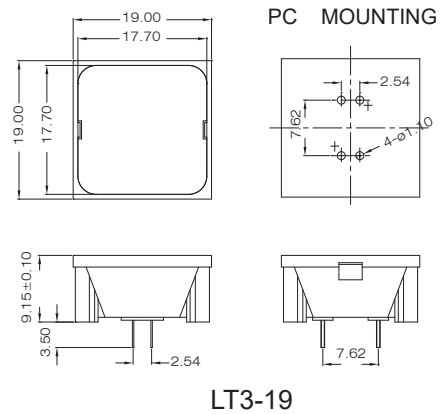
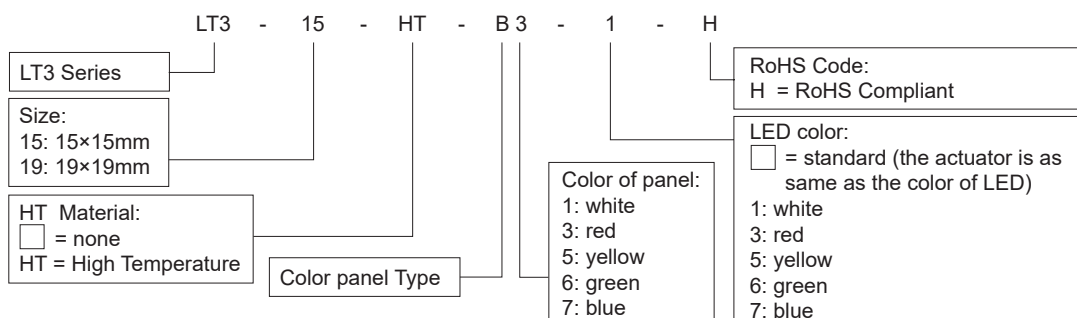
**SPECIFICATIONS**

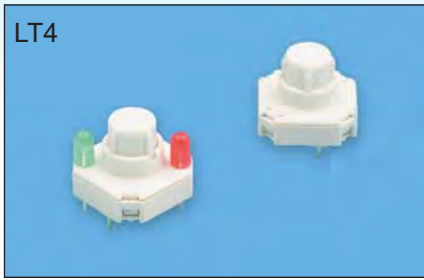
**CONTACT RATING:** 100mA, 42VAC / DC  
**MECHANICAL LIFE:** 1,000,000 cycles  
**CONTACT RESISTANCE:** 100mΩ max. (initial)  
**INSULATION RESISTANCE:** 1,000MΩ min.  
**DIELECTRIC STRENGTH:** 2,000VAC  
**OPERATION FORCE:** 3N±0.75N max.


**PC MOUNTING**
**HOW TO ORDER**

**LT3**

**SPECIFICATIONS**

**DIMENSIONS:** 15 x 15 mm, 19 x 19 mm  
**OVERALL HEIGHT:** 9.7 mm  
**ILLUMINATION:** Fully illuminated 1 LED  
**WAVE SOLDERING:** 240°C max.


**LT3-15**

**LT3-19**
**HOW TO ORDER**


**LT4**

**SPECIFICATIONS**

CONTACT RATING: 100mA, 42VAC/DC  
 MECHANICAL LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 1,000MΩ min.  
 DIELECTRIC STRENGTH: 1,500VAC  
 OPERATING TEMPERATURE: -25°C to +70°C

INDEX

TOGGLE

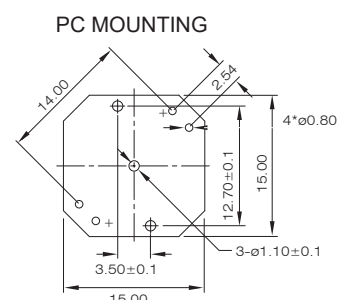
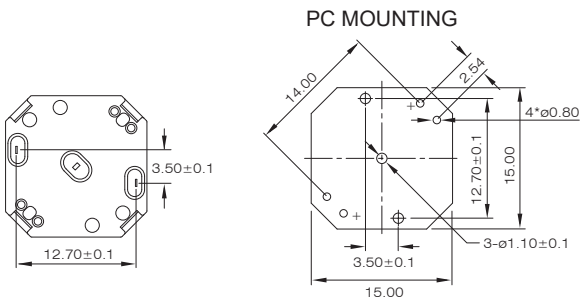
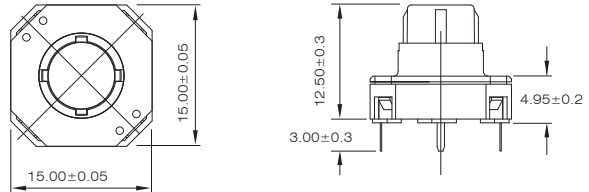
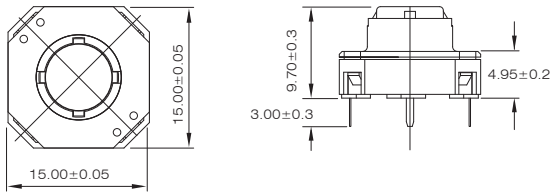
ROCKER

SLIDE

PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT


**LT4-15-HT-1**
**LT4-15-HT-2**
**HOW TO ORDER**

LT4 - 15 - HT - □ - □ - □ - □ - □ - □

LT Series

size:

19: 19×19mm

15: 15×15mm

HT Material:

HT = HIGH Temperature

Height:

1: 9.7 mm

2: 12.5 mm

RoHS CODE:

H =RoHS Compliant

Another LED Color:

1:white

3: red

5: yellow

6: green

7: blue

LED Color:

1:white

3: red

5: yellow

6: green

7: blue

LED quantity:

0: no LED

1: one LED

2: two LED

LED Size :

A: φ 3mm LED

B: 2mm LED

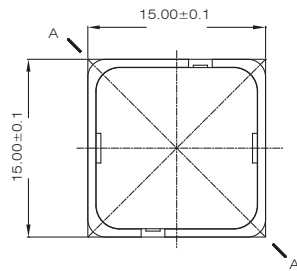
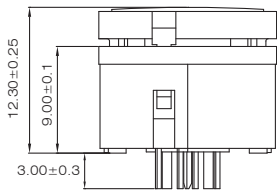
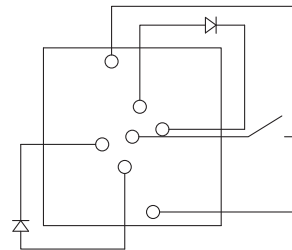
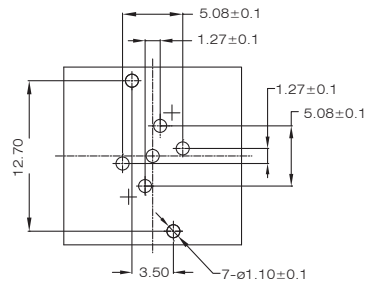
**LT5**


### SPECIFICATIONS

CONTACT RATING: 100mA max, 42 VAC/DC  
 MECHANICAL LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max. (initial)  
 INSULATION RESISTANCE: 1,000MΩ min.  
 DIELECTRIC STRENGTH: 2,000VAC  
 OPERATION FORCE: 3N ± 0.75N max

### MATERIALS

SWITCH HOUSING: PBT/PA46 (UL94 V-0)  
 TRANSPARENT ACTUATOR: PC (UL94 V-0)  
 ACTUATOR: ABS  
 CONTACT: Stainless, Au version tin-plated  
 TERMINALS: Brass, Au version tin-plated  
 TERMINAL SEAL: Epoxy


**CIRCUIT DRAWING**

**PC MOUNTING**


### HOW TO ORDER

LT5 - 15 - HT - B 1 -  -  /  -  -

LT Series

Size:  
 15: 15×15mm  
 19: 19×19mm

HT Material:  
 = none  
 HT = HIGH Temperature

Actuator:  
 Color panel Actuator

Actuator color:  
 1: white  
 3: red  
 5: yellow  
 6: green  
 7: blue

LED quantity:  
 = standard  
 (the actuator is as same as the color of LED)  
 0: no LED  
 1: one LED  
 2: two LED  
 (the actuator is not as same as the color of LED)

Another LED color:  
 = standard  
 1: white 3: red  
 5: yellow 6: green  
 7: blue  
 66L: pure green high lightness

LED color:  
 = standard  
 1: white 3: red  
 5: yellow 6: green  
 7: blue  
 66L: pure green high lightness

RoHS CODE:  
 H = RoHS Compliant

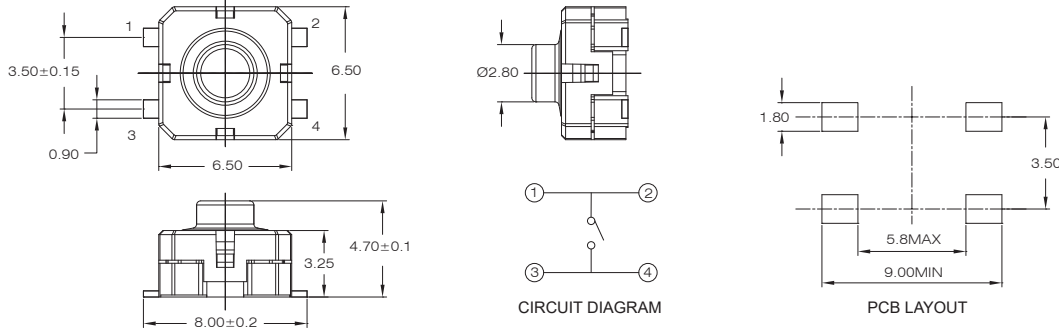
Contact material:  
 = Au version tin- plated  
 Q = silver plated

## DTR-6



### SPECIFICATIONS

CONTACT RATING: AC/DC 12 V, 50mA  
 MECHANICAL LIFE: 300,000 cycles  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 10MΩ min. 100VDC  
 DIELECTRIC STRENGTH: 500VAC/1 min.  
 OPERATING TEMPERATURE: -40°C to +90°C



DTR-6-X-4-M

### HOW TO ORDER

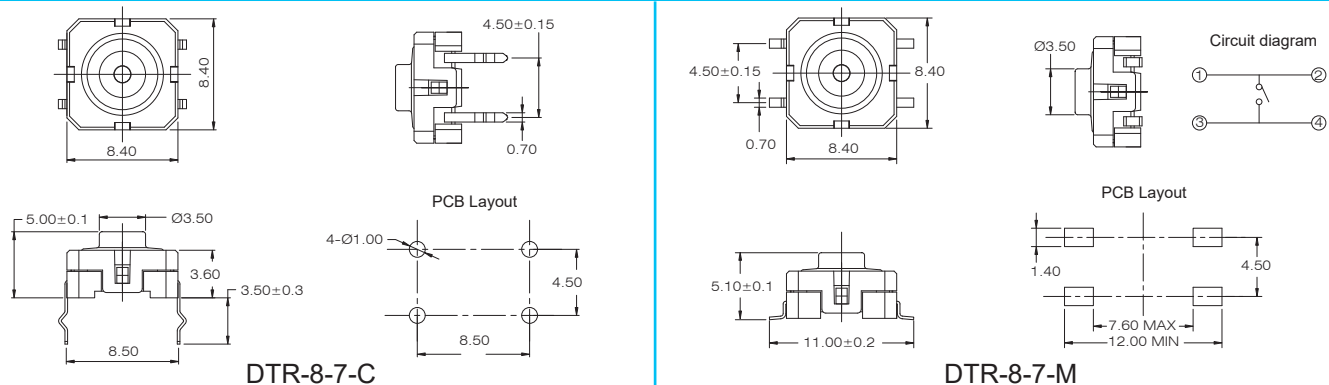
DTR -  -  -  -  -  -  -   
 DUSTPROOF TACT SWITCH SIZE OPERATION FORCE HEIGHT TERMINAL PACKAGE RoHS code:  
 6 = 6.5 x 6.5  
 12 = 3N (ACTUATOR color: BLUE)  
 13 = 4N (ACTUATOR color: ORANGE)  
 14 = 6N (ACTUATOR color: GREEN)  
 4 = 4.75mm  
 C = P.C type Ag-Plating  
 M = SMT type Ag-Plating  
 H = RoHS Compliant  
 = Standard: Tube  
 T/R = Tape & Reel

## DTR-8



### SPECIFICATIONS

CONTACT RATING: AC/DC 42 V, 100mA  
 MECHANICAL LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 1,000MΩ min. 100VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min.  
 OPERATING TEMPERATURE: -40°C to +80°C



DTR-8-7-C

DTR-8-7-M

### HOW TO ORDER

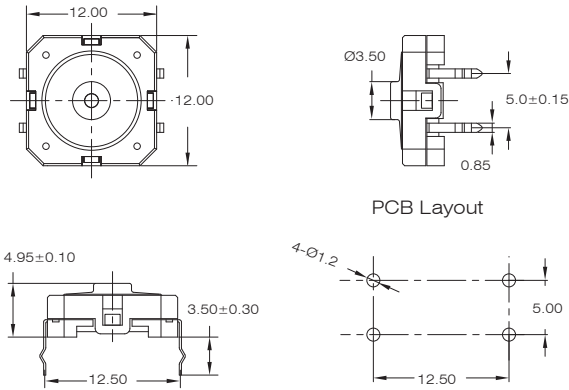
DTR -  -  -  -  -  -  -   
 DUSTPROOF TACT SWITCH SIZE OPERATION FORCE HEIGHT TERMINAL CAP PACKAGE RoHS code:  
 8 = 8.4x8.4  
 7 = 250 gf  
 = 5.00mm  
 = 6.60mm  
 C = P.C TYPE  
 C1 = P.C TYPE  
 M = SMT TYPE  
 Plunger:  
 = without plunger  
 T1 = Total height 9.75  
 T2 = Total height 12.55  
 H = RoHS Compliant  
 = standard: Tube  
 T/R = Tape & Reel

DTR-12

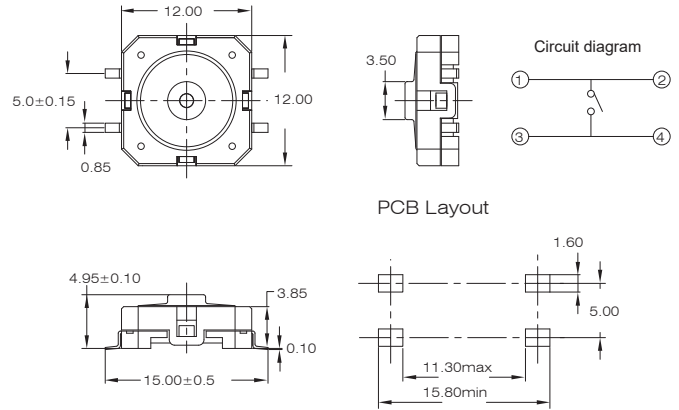


### SPECIFICATIONS

CONTACT RATING: AC/DC 42 V, 100mA  
 MECHANICAL LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 1,000MΩ min. 100VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min.  
 OPERATING TEMPERATURE: -40°C to +80°C



DTR-12-X-C



DTR-12-X-M

### HOW TO ORDER

DTR -  -  -  -  -  -  -  -  -

DUSTPROOF TACT SWITCH    SIZE    OPERATION FORCE    HEIGHT    TERMINAL    CAP    PACKAGE    SEALED    RoHS code:

12 = 12 x 12

6 = 360gf  
8 = 680gf  
9 = 970gf

= 4.95mm  
1 = 6.30mm

C = P.C Gold  
C1 = P.C1 Gold  
M = SMT Gold  
CQ = P.C Silver  
C1Q = P.C1 Silver  
MQ = SMT Silver

Plunger :  
T1 = Total Height 9.7  
T2 = Total Height 12.5

= standard: Tube  
T/R =Tape & Reel

H : RoHS Compliant  
(none)= Transparent / non Sealed  
1E = Transparent/Sealed  
2E = Black/Sealed  
3E = Red/Sealed

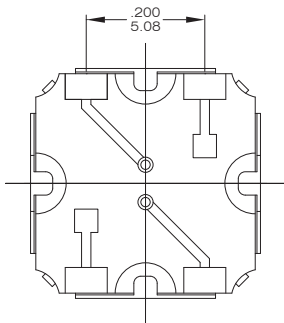
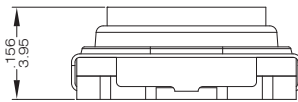
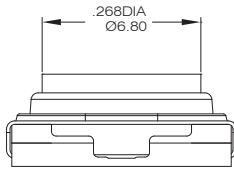
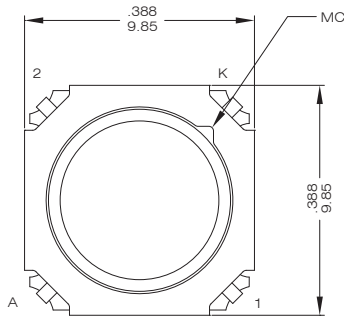
TQ4



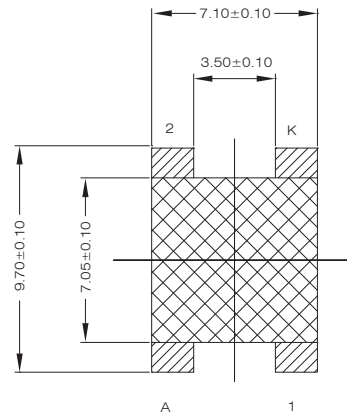
### SPECIFICATIONS

CONTACT RATING: DC 28V, 50mA  
 OPERATION LIFE: 500,000 cycles  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 500MΩ min. 250VDC  
 DIELECTRIC STRENGTH: 500VAC/ 1 min.  
 OPERATING TEMPERATURE: -40°C to +95°C

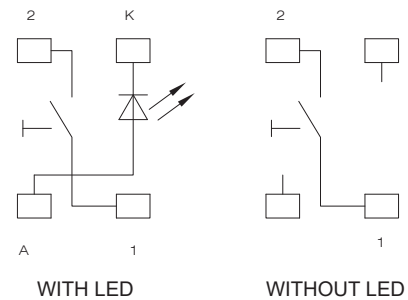
### DIMENSIONS



### PCB LAYOUT



### CIRCUIT



TQ4-10-H

### HOW TO ORDER

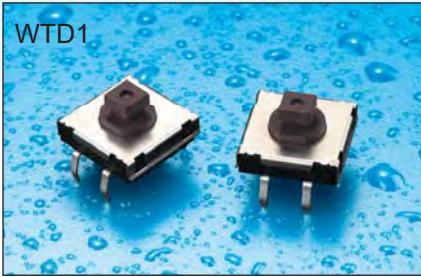
TQ4 - 10 -  -  - H -  - T/R  
 Size 10\*10      Operation force      LED color      RoHS code      Top material      Reel package

TQ2 = PCB with half hole  
 TQ4 = PCB without half hole

8 = 680gf  
 10 = 500gf  
 13 = 400gf

= Without LED  
 H = Conforming to automobile standards  
 1 = Warm White  
 1A = Cold White  
 3 = Red  
 4 = Orange  
 5 = Yellow  
 6 = Green  
 7 = Blue  
 36 = Red & Green  
 66L = Pure Green Highlight

None = Plastic  
 SI = Silicon

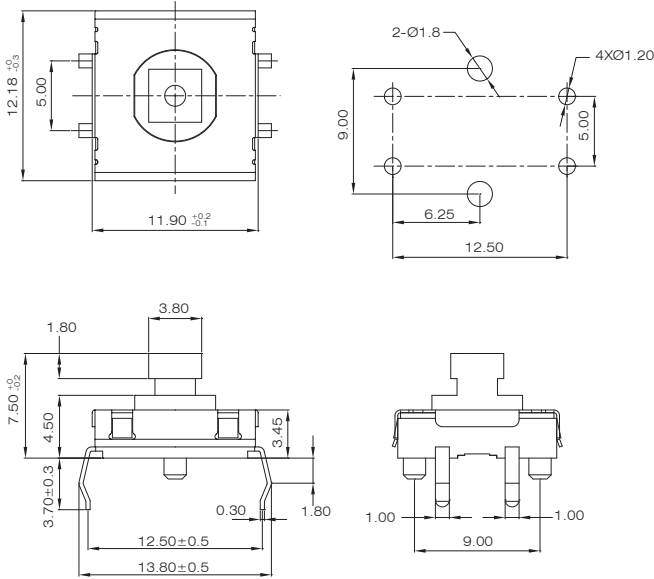


### SPECIFICATIONS

- CONTACT RATING: DC5~24V, 1~50mA
- OPERATION LIFE: 3,000,000 cycles
- CONTACT RESISTANCE: 100mΩ max. (initial)
- INSULATION RESISTANCE: 100MΩ min. 500VDC
- DIELECTRIC STRENGTH: 500VAC/ 1 min
- OPERATING TEMPERATURE: -25°C to +70°C (No ice)

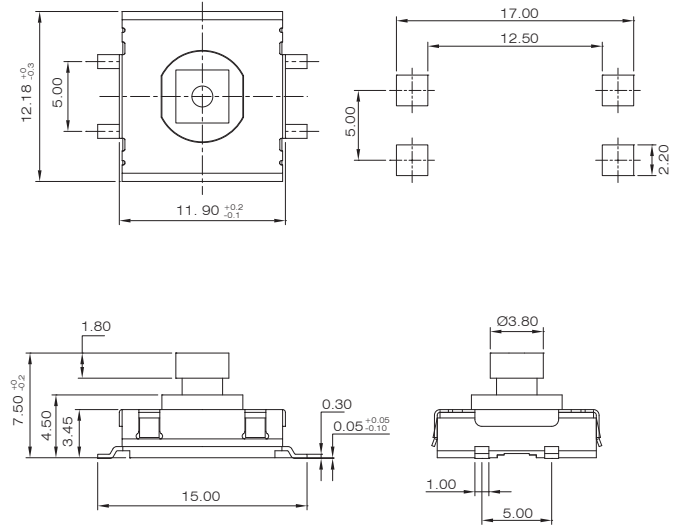
### DIMENSIONS

P.C.B LAYOUT



WTD1-12-X-5-S8-CQ-H

P.C.B LAYOUT



WTD2-12-X-5-S8-MQ-H

### HOW TO ORDER

WTD  - 12 -  -  -   -   -

WATERPROOF TOUCH SWITCH    SIZE    OPERATION FORCE    HEIGHT    HANDLE SHAPE    COLOR    TERMINAL    CONTACT MATERIAL    RoHS CODE

1=Base with column  
2= Base without column

3 = 260gf  
4 = 200gf  
5 = 350gf

1 = 4.3mm  
5 = 7.5mm

S = Square  
R = Round

3 = Red  
8 = Brown

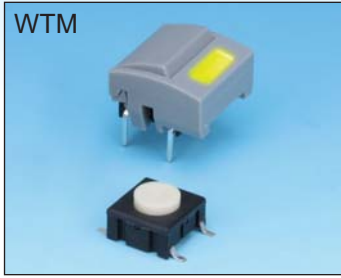
H = RoHS Compliant

Q = Silver Plated

C = P.C Type  
M = SMT Type



WTM



WTML



## SPECIFICATIONS



- CONTACT RATING: 50mA, 24 VDC
- ELECTRIC LIFE: 10,000,000 cycles
- CONTACT RESISTANCE: 50mΩ max. (initial)
- INSULATION RESISTANCE: 10MΩ min. 100VDC
- DIELECTRIC STRENGTH: 250VAC/ 1 min.
- OPERATION TEMPERATURE: -40°C to +160°C (non-illuminated)  
-40°C to +85°C (illuminated)

INDEX

TOGGLE

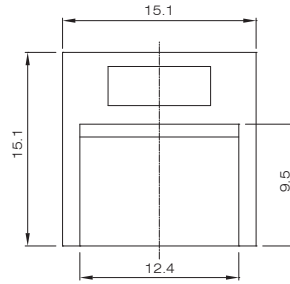
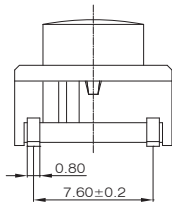
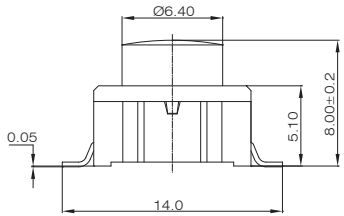
ROCKER

SLIDE

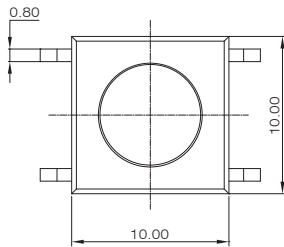
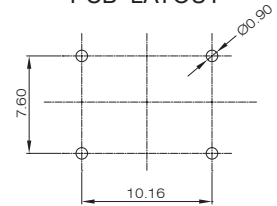
PUSH BUTTON / MICRO

DIP / ROTARY

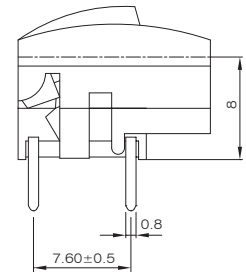
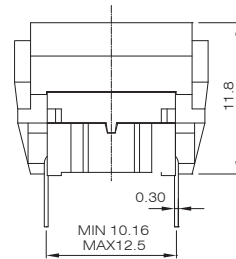
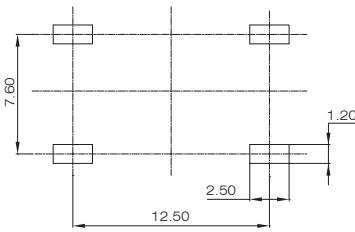
KEY / TACT



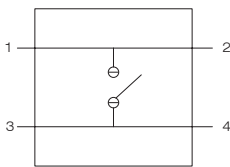
PCB LAYOUT



PCB LAYOUT



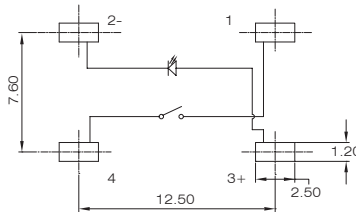
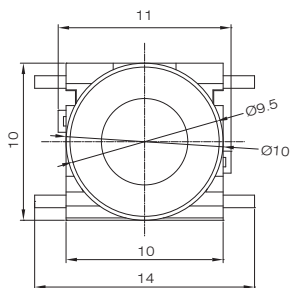
CIRCUIT



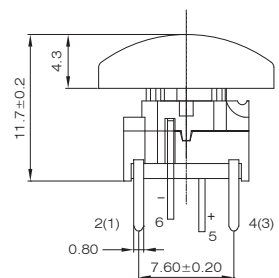
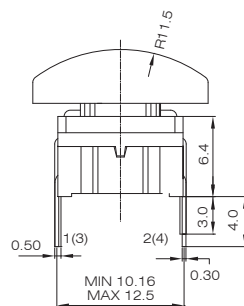
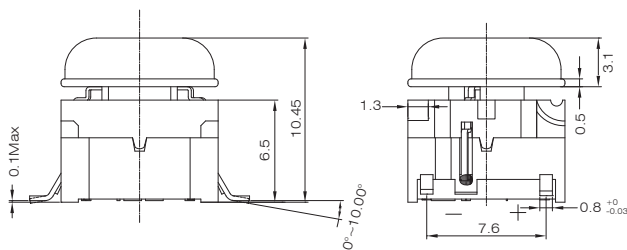
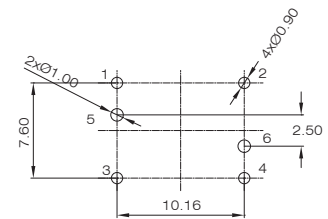
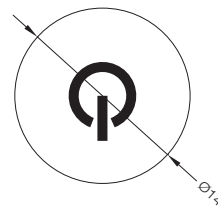
WTM-10-2-M

WTML1-10-1-C-T2

PCB layout and Circuit Diagram



PCB LAYOUT



WTML2-10-4-M-X-G-0

WTML1-10-3-C-X-B-2-51





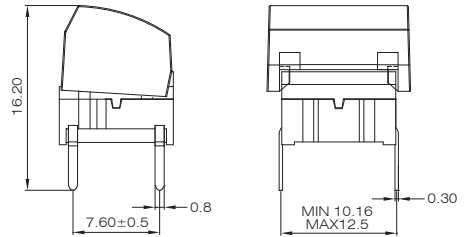
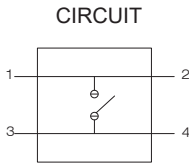
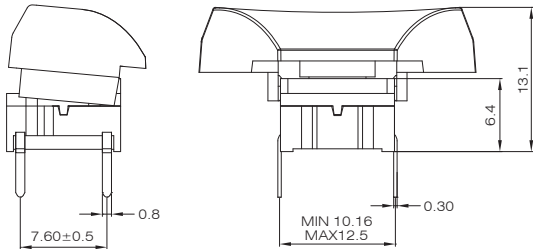
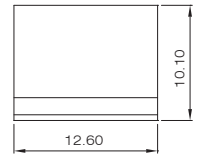
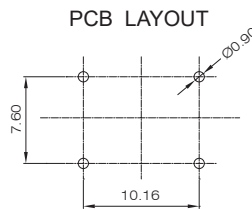
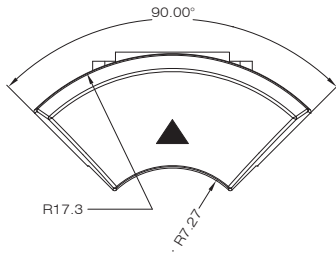
# WTM(L)

## Illuminated Washable Tact Switches



### SPECIFICATIONS

- CONTACT RATING: 50mA, 24 VDC
- ELECTRIC LIFE: 10,000,000 cycles
- CONTACT RESISTANCE: 50mΩ max. (initial)
- INSULATION RESISTANCE: 10MΩ min. 100VDC
- DIELECTRIC STRENGTH: 250VAC/ 1 min.
- OPERATION TEMPERATURE: -40°C to +160°C (non-illuminated)  
-40°C to +85°C (illuminated)



WTML1-10-1-C-S-2-50

WTML1-10-1-C-Q1-9

### HOW TO ORDER

WTM  - 10 -  -  -  -  -  -  /  -   - H - S004

Switch Design Code	
/	Standard body/ flat cover
L1	Standard body/ stepped cover
2	New body/ flat cover
L2	New body/ stepped cover

High (without cap)	
1	6.4
2	8.0
3	10.4
4	8.7

Handle color (WTM/WTM2)	
/	Black
1	White
3	Red

Handle color (WTML1/WTML2)	
/	White
2	Black

Terminal	
M	SMT Type
C	PC Type

LED color	
/	none
1	White
3	Red
5	Yellow
5C	Yellow (height 3mm)
6	Green
7	Blue

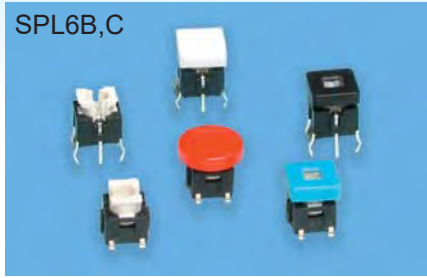
Cap	
/	Without cap
B	φ 14
G	φ 10
S	Fan cap
T1	Support without hole
T2	Support with hole
Q1	Fan without Filter
Q2	Fan with Filter

Cap color/Support color	
0	transparent
1	White
2	Black
7	Blue
9	Gray

Operation Life	
10,000,000 cycles	

RoHS	
H	RoHS Compliant

Cap pattern	
/	None
50	Silk screen ▲
50C	laser carving ▲
51	Silk screen Ⓞ
51C	laser carving Ⓞ
52	Silk screen OK



## SPECIFICATIONS

CIRCUIT: SPST  
 CONTACT RATING: 50mA  
 VOLTAGE RATING: 12VDC  
 DIELECTRIC WITH STANDING VOLTAGE: 250 VAC for 1 minute  
 CONTACT RESISTANCE: 100mΩ max. (initial)  
 INSULATION RESISTANCE: 100MΩ min.  
 OPERATION LIFE: 1,000,000 cycles min.  
 SOLDERING SPECIFICATION: 260°C for 3 seconds

INDEX

TOGGLE

ROCKER

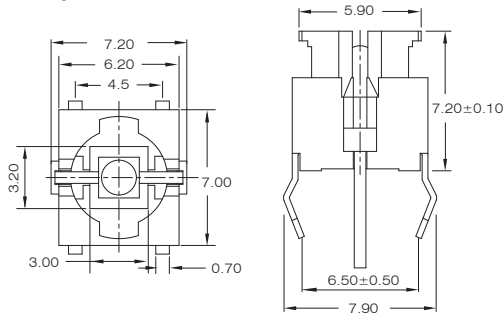
SLIDE

PUSH BUTTON / MICRO

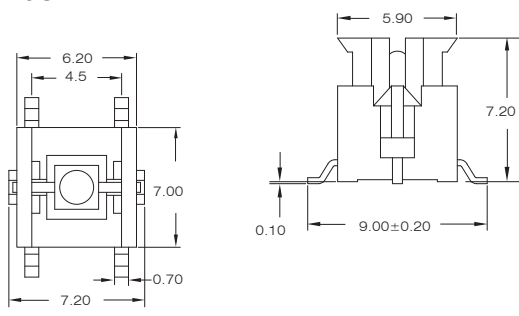
DIP / ROTARY

KEY / TACT

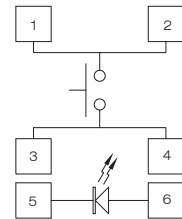
### SPL6B



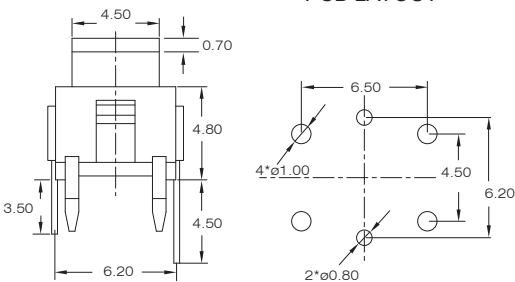
### SPL6C



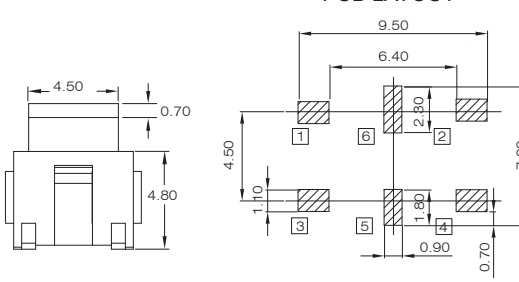
### CIRCUIT DIAGRAM



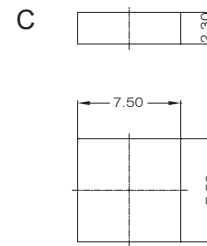
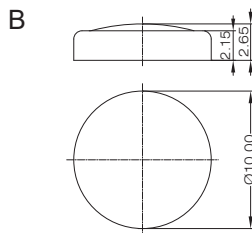
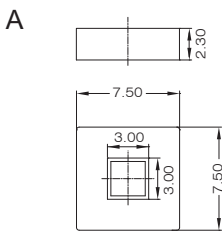
### PCB LAYOUT



### PCB LAYOUT



## CAP OPTION



## HOW TO ORDER

SPL6

SWITCH OPERATION    FORCE    LED COLOR/ KINDS    Frame/ Color    CAP MODEL    CAP COLOR    PACKAGE STYLE    RoHS CODE    CLARITY BOTTOM

B = Regular Type  
 B1= DIP Type (LED pitch differs from B Type)  
 C = SMT Type  
 C1= SMT Type (LED outward)  
 C2= SMT Type (LED outward, Lead pitch 10.0, total height 7.8)

Operation Force  
 1= 100gf  
 2= 160gf  
 12= 180gf  
 3= 260gf

X = without led  
 1 = WHITE  
 3 = RED  
 36 = RED \ GREEN  
 4 = ORANGE  
 5 = YELLOW  
 56 = YELLOW \ GREEN  
 6 = GREEN  
 63 = GREEN \ RED  
 66 = PURE GREEN  
 7 = BLUE  
 73 = BLUE \ RED  
 74 = BLUE \ ORANGE

2= BLACK  
 9= GREY

= Without Frame  
 1 = With Frame

= NORMAL  
 L = HIGHLIGHT  
 N = ADD ZENER

= without cap  
 A=   
 B=   
 C=   
 D= with film

= bag  
 T/R = Tape & Reel

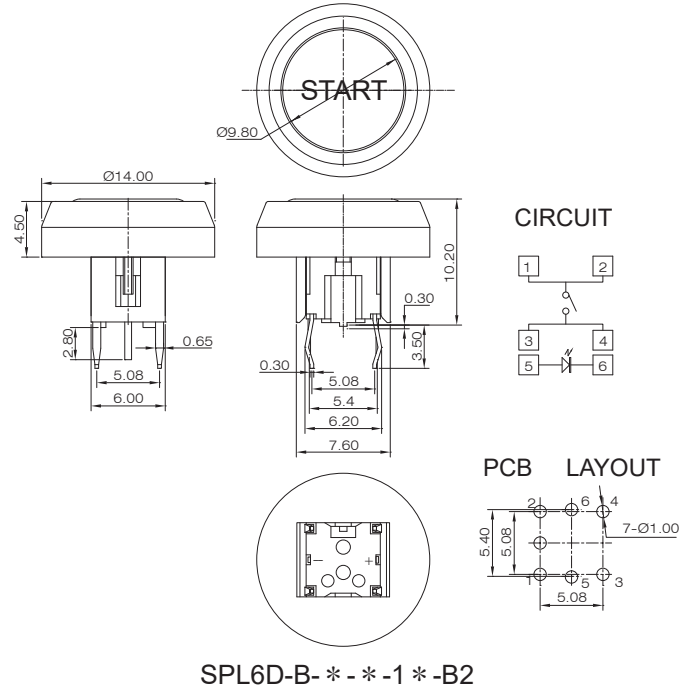
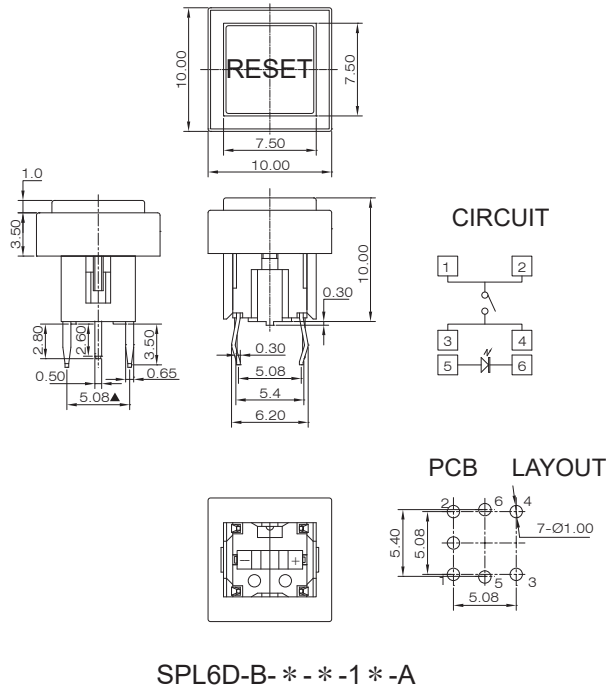
1 = WHITE  
 2 = BLACK  
 3 = RED  
 5 = YELLOW  
 6 = GREEN  
 7 = BLUE

H=RoHS Compliant  
 0=CLARITY BOTTOM



## SPECIFICATIONS

- CIRCUIT: SPST
- CONTACT RATING: 50mA
- VOLTAGE RATING: 12VDC
- DIELECTRIC WITH STANDING VOLTAGE: 250VAC for 1 minute
- CONTACT RESISTANCE: 100Ω max.(initial)
- INSULATION RESISTANCE: 100MΩ min.
- OPERATION LIFE: 300,000 cycles
- SOLDERING SPECIFICATION: 260°C for 5 seconds



## HOW TO ORDER

SPL6D

Switch    Terminal    Operation / Stem Force    LED / Kinds Color    Frame / Color    Cap Type    Color    Cap Pattern    RoHS Code

6\*6 Illuminated tact switch

B = DIP Type  
C = SMT Type

1 = 100gf  
2 = 160 gf  
3 = 260 gf

= Round  
A = Square

= Without LED  
1 = White LED  
3 = Red LED  
4 = Orange LED  
5 = Yellow LED  
6 = Green LED  
7 = Blue LED  
57 = Yellow Blue LED  
75 = Blue yellow LED

= NORMAL  
N=ADD ZENER

= Without Frame  
1 = With Frame

2 = Black  
9 = Grey

= Without Cap  
A = Square  
A1 = Square (With Hole)  
B = Round (7mm)  
B1 = Round (8mm)  
B2 = Round (10mm)

1 = White  
2 = Black  
3 = Red  
9 = Grey

H = RoHS Compliant

= none  
A = RESET  
B = (Cathode is on the left.)  
B1 = (90° Cathode is on the left.)  
B2 = (180° Cathode is on the left.)  
B3 = (270° Cathode is on the left.)  
C =   
D = START  
E =   
F =   
G = ESC



### SPECIFICATIONS

CIRCUIT: SPST  
 CONTACT RATING: 50mA  
 VOLTAGE RATING: 12VDC  
 DIELECTRIC WITH STANDING VOLTAGE: 250 VAC for 1 minute  
 CONTACT RESISTANCE: 100mΩ max. (initial)  
 INSULATION RESISTANCE: 100MΩ min.  
 OPERATION LIFE: 1,000,000 cycles min.  
 SOLDERING SPECIFICATION: 260°C for 3 seconds

INDEX

TOGGLE

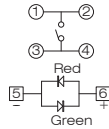
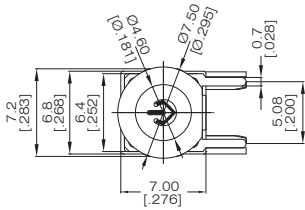
ROCKER

SLIDE

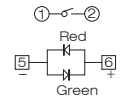
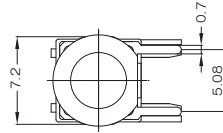
PUSH BUTTON / MICRO

DIP / ROTARY

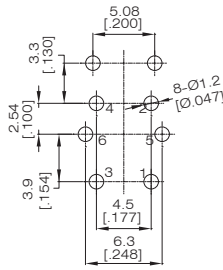
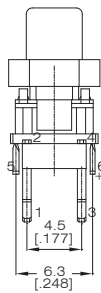
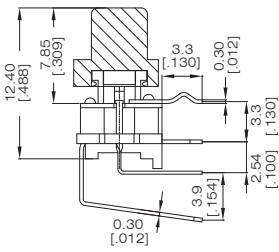
KEY / TACT



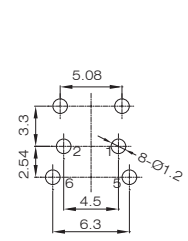
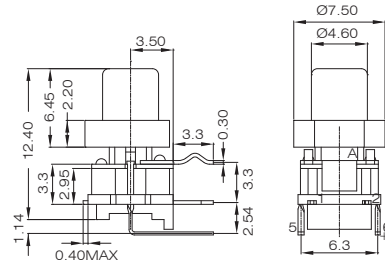
CIRCUIT



CIRCUIT



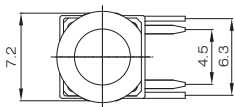
PCB LAYOUT



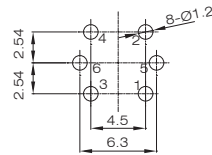
PCB LAYOUT

SPL6BL-2-XX-B-X-B-H

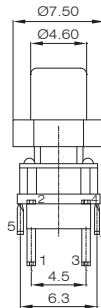
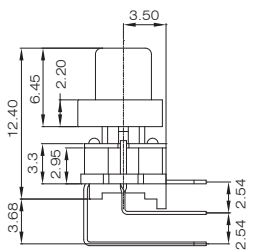
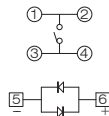
SPL6BL1-2-XX-B-0-H



PCB LAYOUT



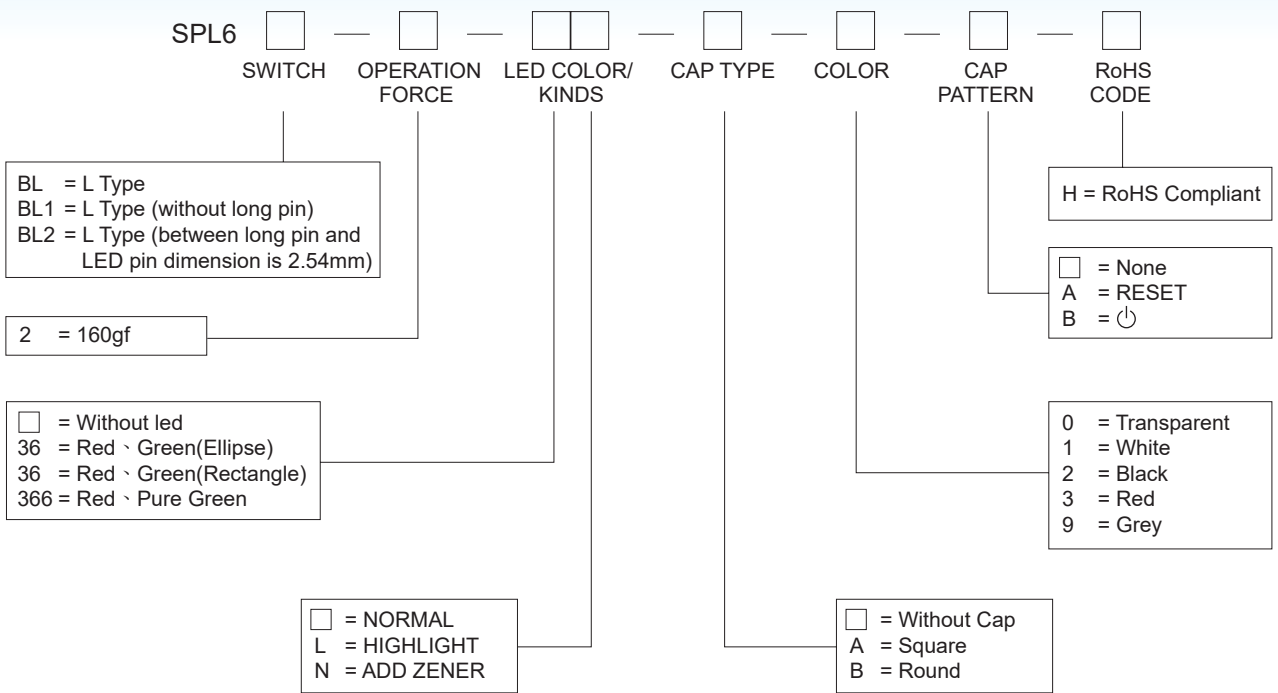
CIRCUIT



SPL6BL2-2-XX-B-0-H



## HOW TO ORDER



- INDEX
- TOGGLE
- ROCKER
- SLIDE
- PUSH BUTTON / MICRO
- DIP / ROTARY
- KEY / TACT



## SPECIFICATIONS

CIRCUIT: SPST  
 CONTACT RATING: 10mA  
 VOLTAGE RATING: 12VDC  
 DIELECTRIC WITH STANDING VOLTAGE: 250VAC for 1 minute  
 CONTACT RESISTANCE: 500Ω max.(initial)  
 INSULATION RESISTANCE: 100MΩ min.  
 OPERATION LIFE: 100,000 cycles  
 SOLDERING SPECIFICATION: 260°C for 3 seconds

**CONDUCTIVE RUBBER CONTACT**

INDEX

TOGGLE

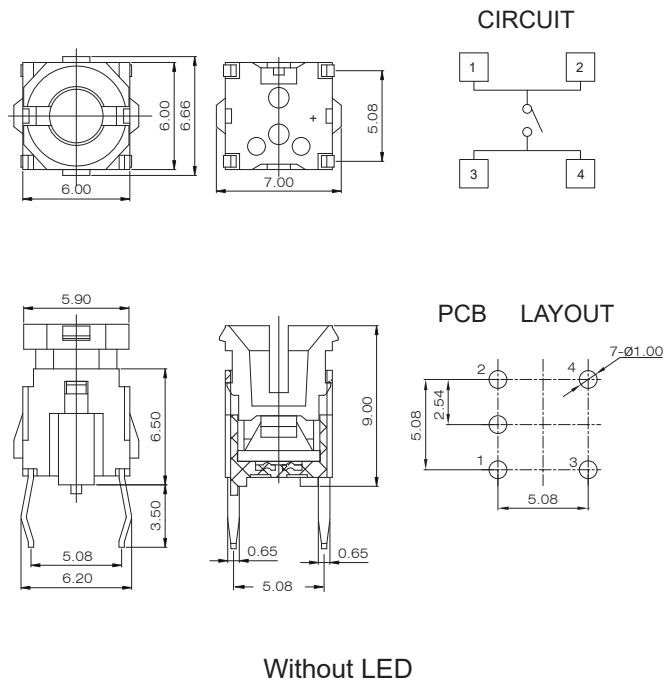
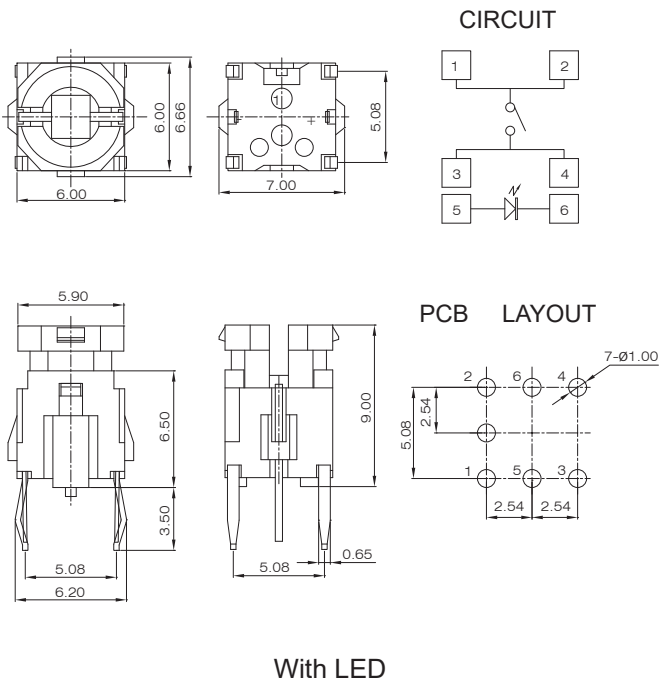
ROCKER

SLIDE

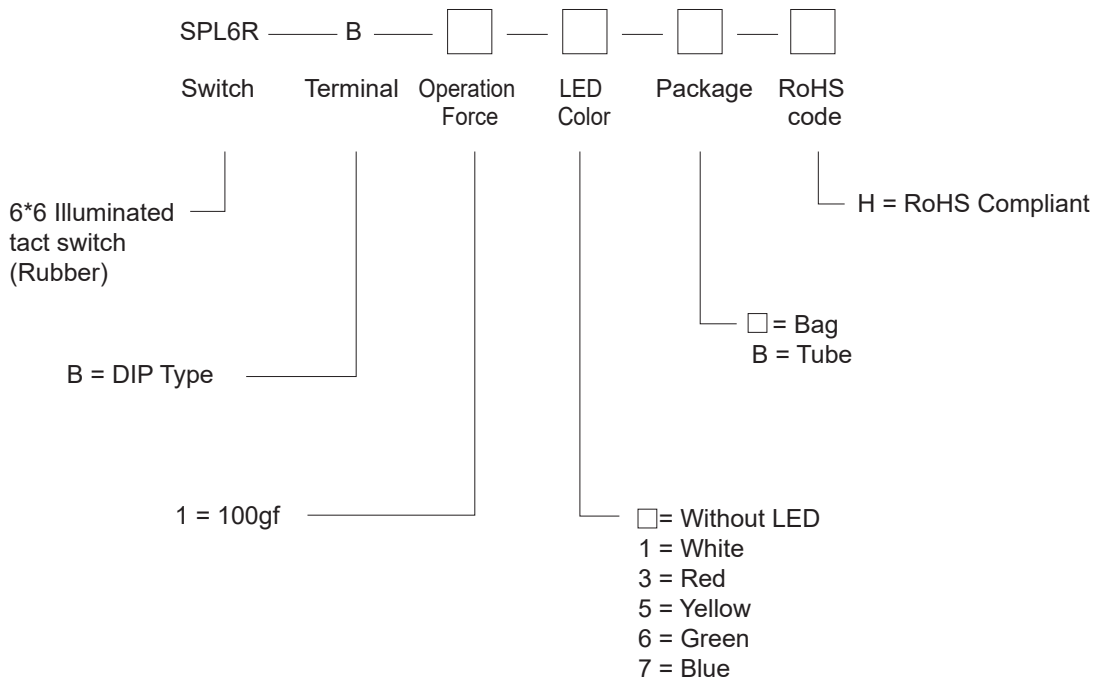
PUSH BUTTON / MICRO

DIP / ROTARY

KEY / TACT

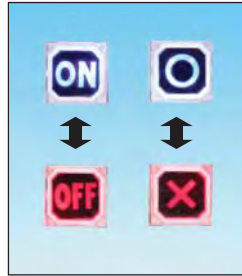


## HOW TO ORDER

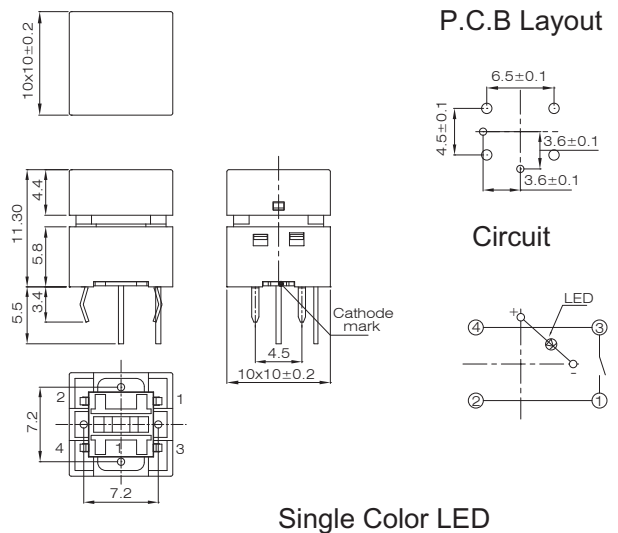
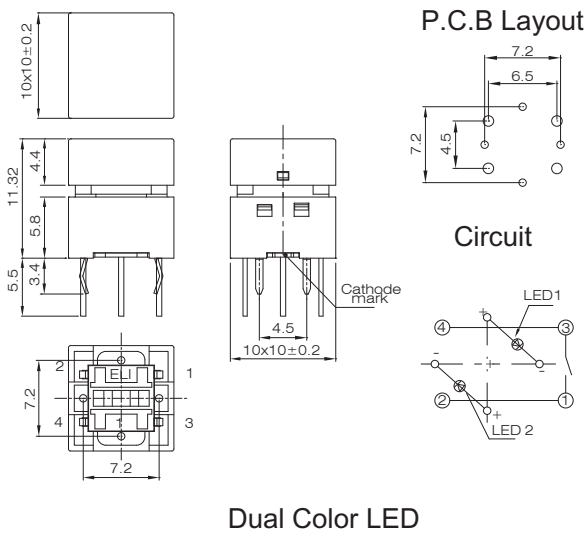


**FEATURE**

1. Performing the text variations by LED colors.
2. Long operation life, above 1,000,000 times.
3. Sealed construction, dust-proof type.


**SPECIFICATIONS**

CONTACT RATING: 50mA, 24VDC  
 OPERATION LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max.(initial)  
 INSULATION RESISTANCE: 100MΩ min.  
 DIELECTRIC STRENGTH: 500VAC  
 OPERATING TEMPERATURE: -25°C to +70°C

**DIMENSION**

**HOW TO ORDER**

SPL — 10 —  —  —  /  —  —  —

Cap Size 10\*10

Operation Force

No. of LEDs

LED 1 color

LED 2 color

Cap Style and Content

RoHS code

- 1 = 100gf
- 2 = 160 gf
- 3 = 260 gf

- = Without LED
- 1 = 1
- 2 = 2

- = Without LED
- 1 = White
- 3 = Red
- 4 = Orange
- 5 = Yellow
- 6 = Green
- 7 = Blue

- = Without LED
- 1 = White
- 3 = Red
- 4 = Orange
- 5 = Yellow
- 6 = Green
- 7 = Blue

H = RoHS Compliant

No content	
0 = Transparent	
1 = White	
2 = Black	
3 = Red	
5 = Yellow	
6 = Green	
7 = Blue	
M1 = Matte white cover (The Number is optional)	

Have Text Combination	
Text Combination	Color
F1 = " OFF "+" ON "	36
	37
F2 = " 切 "+" 入 "	36
	37
F4 = " X "+" O "	36
	37
F6 = " ↑ "	/
F7 = " △ "+" △ "	36
	37

**SPECIFICATIONS**

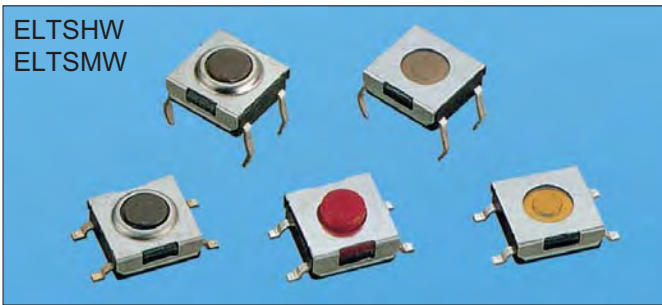
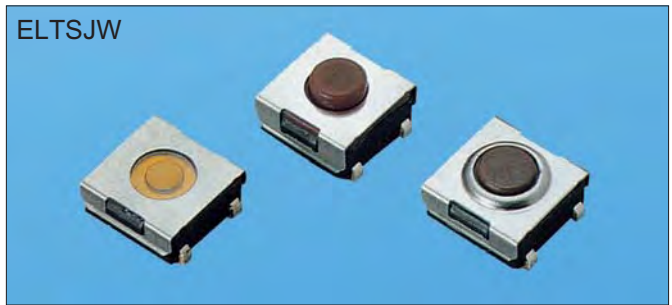
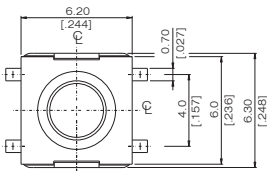
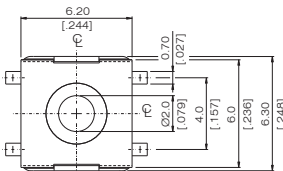
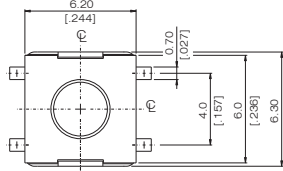
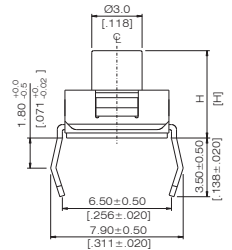
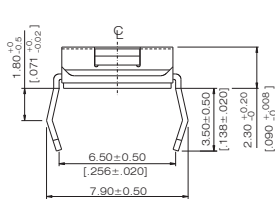
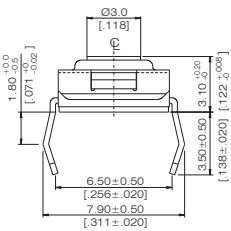
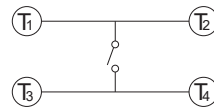
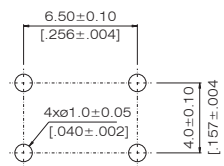
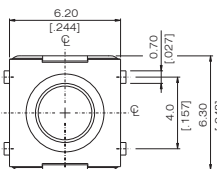
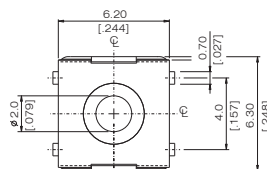
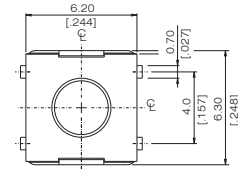
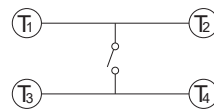
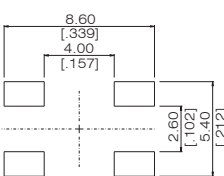
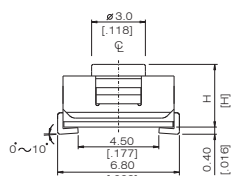
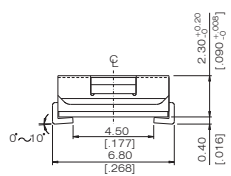
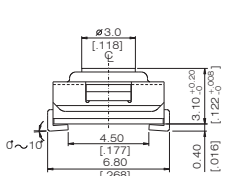
ELECTRICAL LIFE : 500,000 cycles min, for  
 ELTS□W-69, 67, 65, 64  
 100,000 cycles min. for  
 ELTS□W-66, 68

CONTACT RESISTANCE: 100mΩ max  
 INSULATION RESISTANCE: 100MΩ min. 500VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min  
 OPERATION FORCE:  
 360±90gf, Transparent(T), ELTS□W-65,67,69  
 260±70gf, Red(R), ELTS□W-64, 65, 67, 69  
 180±50gf, Brown(N), ELTS□W-64, 65, 67, 69  
 160±50gf, Brown(N), ELTS□W-66  
 160±50gf, Silver(S), ELTS□W-68  
 STORAGE TEMPERATURE: -30°C to +80°C

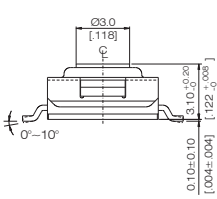
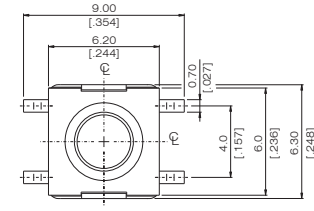
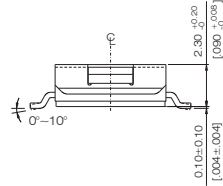
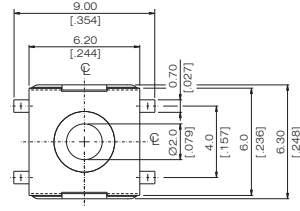
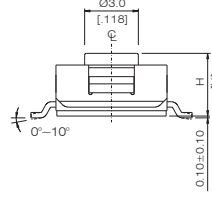
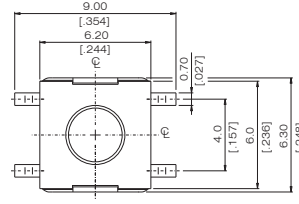
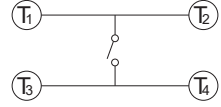
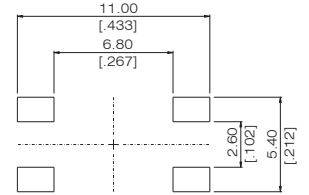
**MATERIALS**

COVER - Stainless steel.  
 BASE - UL94V-0 Nylon High-Temp. Thermoplastic(Black)  
 CONTACT DISC - Phosphor bronze with silver cladding  
 TERMINAL - Brass with silver cladding

ITEM NO.	ELTSMW-66N ELTSHW-66N	ELTSMW-68S ELTSHW-68S	ELTS(H)MW-69,67,65,64N (R) 69, 67T
STEM	High- Temp. Thermoplastic Nylon UL 94V-0 Color: Brown(N), 160gf	None	None
ADHESIVE TAPE	Resin-based	Resin-Based	None
METAL STEM	Brass with Nickel plated	Brass with Nickel Plated Color: Silver (S), 160gf	None
SEALED RUBBER	None	None	Silicone Rubber

**ELTSHW  
ELTSMW**

**ELTSJW**

**DIMENSIONS**
**ELTSHW-66**

**ELTSHW-68**

**ELTSHW-69,67,65,64**

**CIRCUIT**

**P.C.B. LAYOUT**

**ELTSJW-66**

**ELTSJW-68**

**ELTSJW-69,67,65,64**

**CIRCUIT**

**P.C.B. LAYOUT**




**P.C.B. LAYOUT**
**ELTSMW-66**

**ELTSMW-68**

**ELTSMW-69,67,65,64**

**CIRCUIT**

**P.C.B. LAYOUT**

**HOW TO ORDER**
**ELTS □ W - □ □ □ - □ □**

RoHS code  
H = RoHS Compliant

Package Style:  
□ = Bulk  
B = Tube  
T/R = Tape & Reel

Color of Stem For Operating Force:  
N= Brown, 160gf (66N),  
180gf (69N, 67N, 65N, 64N)  
S= Salmon, 160gf (68S)  
R= Red, 260gf (69R, 67R, 66R, 65R, 64R)  
T= Transparent, 360gf (69T, 67T, 65T)

Dimension H:  
64= 4.5mm (N, R)      67= 5.2mm (N, R, T)  
65= 3.5mm (N, R, T)    68= 2.3mm (S)  
66= 3.1mm (N)          69= 3.8mm (N, R, T)

H= Through Hole Terminals  
M= Surface Mounting Terminals  
J = J Type Surface Mounting

**SPECIFICATIONS**

RATING: 50mA, 12VDC

 ELECTRICAL LIFE: 100,000 cycles (ELTS)  
 1,000,000 cycles (ELTS)

Please inquire our office

CONTACT RESISTANCE: 100mΩ max

INSULATION RESISTANCE: 100MΩ min. 500VDC

DIELECTRIC STRENGTH: 250VAC/1 min

OPERATION FORCE: 100gf, 160gf, 260gf, 320gf, 520gf

STORAGE TEMPERATURE: -30°C to +80°C

CONTACT ARRANGEMENT: 1 pole 1 throw

**MATERIALS**

COVER - Stainless steel or SPCC

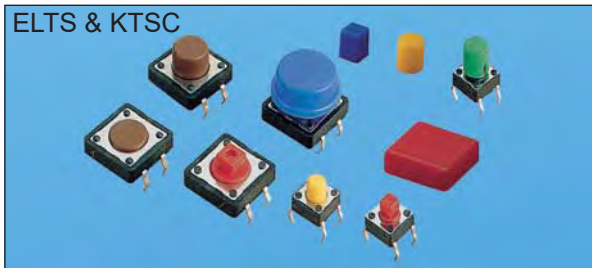
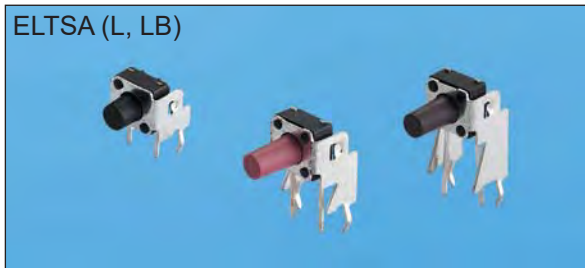
BASE - UL94V-0 Nylon Thermoplastic(Black)

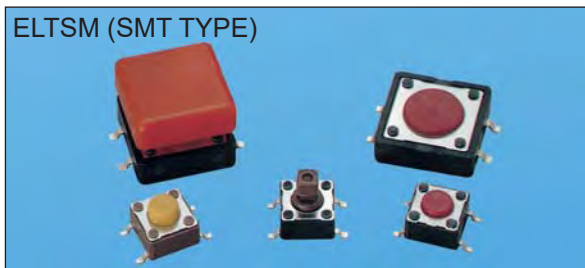
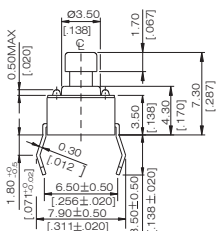
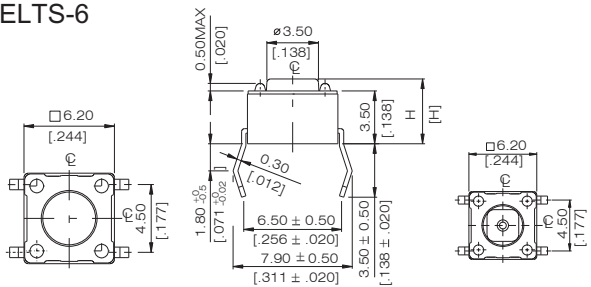
STEM - UL94V-0 Nylon Thermoplastic

CONTACT DISC - Phosphor bronze or stainless steel with silver cladding

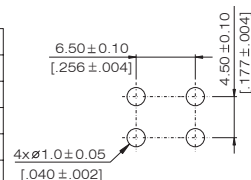
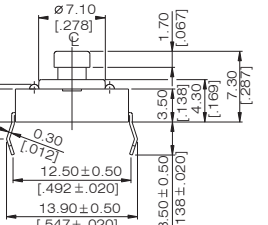
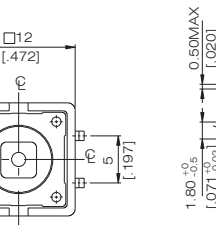
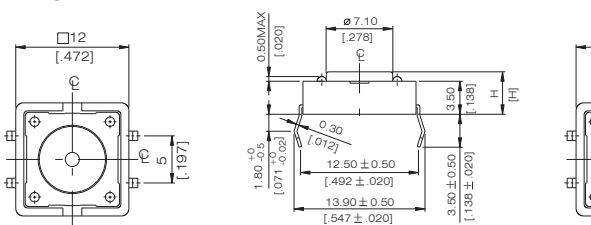
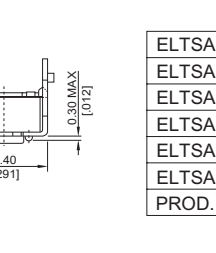
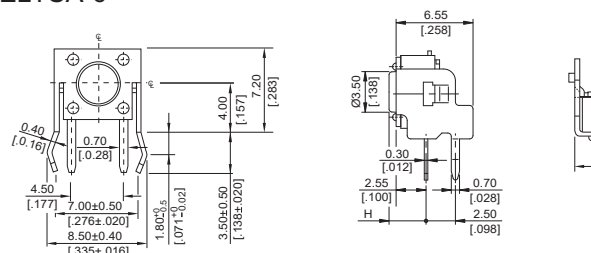
TERMINAL - Brass with silver cladding

CAP - Thermoplastic ABS

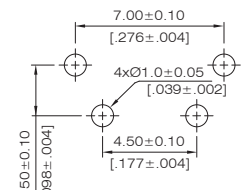
**ELTS & KTSC**

**ELTSA (L, LB)**

**ELTSG (GROUND TERMINAL TYPE)**

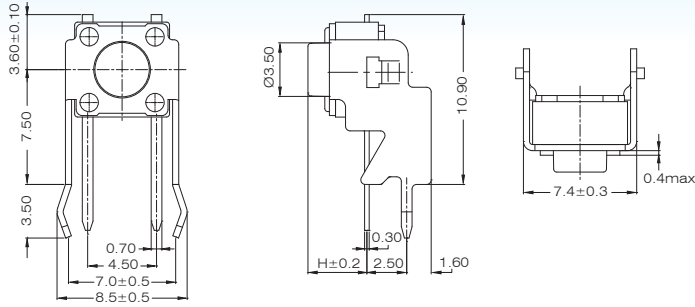
**ELTSM (SMT TYPE)**

**ELTS-6**


ELTS - 66	□	13.0[.512]
ELTS - 65	□	9.5[.374]
ELTS - 644	□	7.3(SQ)[.287]
ELTS - 63	□	7.0[.275]
ELTS - 62	□	5.0[.197]
ELTS - 61	□	4.3[.169]
PROD. NO.		H

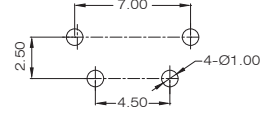
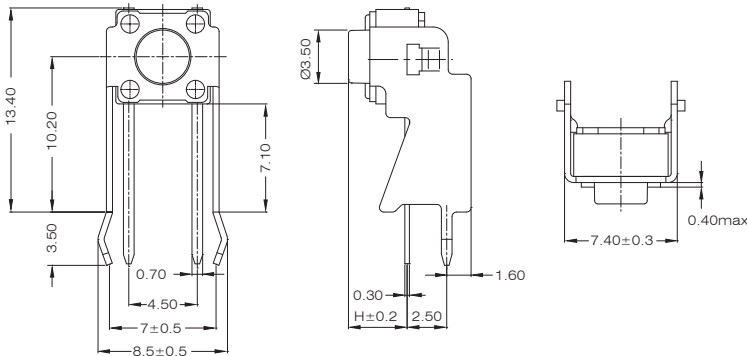

**ELTS-2**

**ELTSA-6**


ELTSA - 66	□	11.85[.467]
ELTSA - 65	□	8.35[.329]
ELTSA - 644	□	6.15(SQ)[.242]
ELTSA - 63	□	5.85[.230]
ELTSA - 62	□	3.85[.152]
ELTSA - 61	□	3.15[.124]
PROD. NO.		H

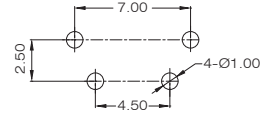
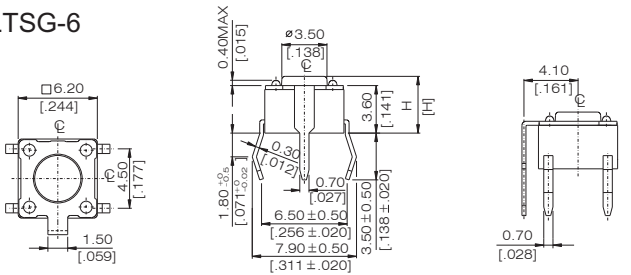


**ELTSAL-6**


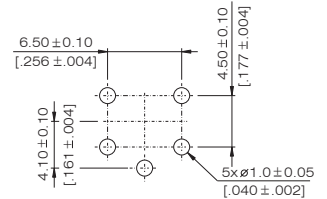
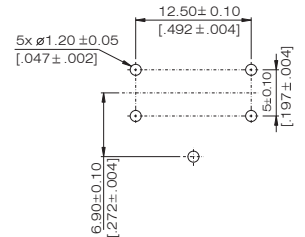
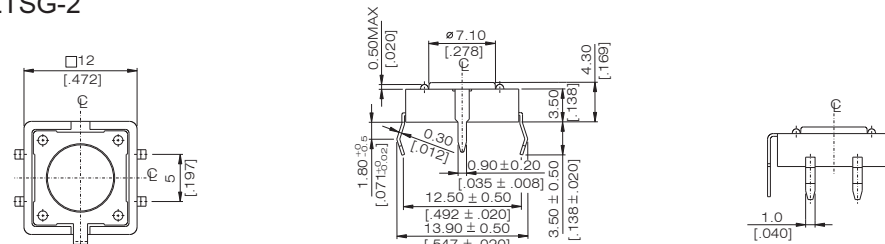
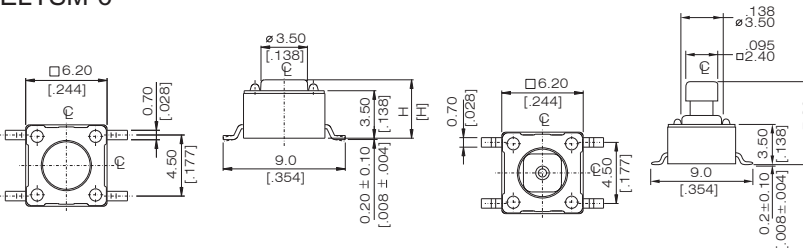
ELTSAL-66	□	11.85[.467]
ELTSAL-65	□	8.35[.329]
ELTSAL-63	□	5.85[.230]
ELTSAL-62	□	3.85[.152]
ELTSAL-61	□	3.15[.124]
PROD.	NO.	H


**ELTSALB-6**


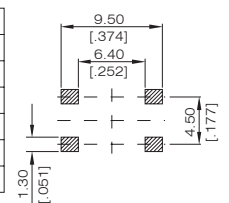
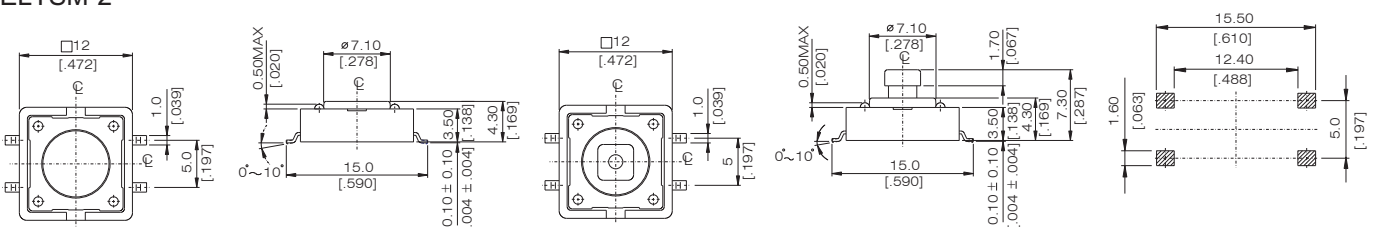
ELTSALB-66	□	11.85[.467]
ELTSALB-65	□	8.35[.329]
ELTSALB-63	□	5.85[.230]
ELTSALB-62	□	3.85[.152]
ELTSALB-61	□	3.15[.124]
PROD.	NO.	H


**ELTSG-6**


ELTSG - 66	□	13.0[.512]
ELTSG - 65	□	9.5[.374]
ELTSG - 644	□	7.3(SQ)[.287]
ELTSG - 63	□	7.0[.275]
ELTSG - 62	□	5.0[.197]
ELTSG - 61	□	4.3[.169]
PROD.	NO.	H


**ELTSG-2**

**ELTSM-6**


ELTSM - 66	□	13.0[.512]
ELTSM - 65	□	9.5[.374]
ELTSM - 644	□	7.3(SQ)[.287]
ELTSM - 63	□	7.0[.275]
ELTSM - 62	□	5.0[.197]
ELTSM - 61	□	4.3[.169]
PROD.	NO.	H


**ELTSM-2**


**HOW TO ORDER**INDEX  
TOGGLE  
ROCKER  
SLIDE  
PUSH BUTTON / MICRO  
DIP / ROTARY  
KEY / TACT

ELTS □ □ - □ □ □ □ - □ - □

RoHS code  
H= RoHS CompliantPackage Style <Only For ELTSM>:  
B= Tube  
T/R=Tape & ReelOther Operation Force:  
□ = Regular O. F.  
K= 100gf                    N= 160gf  
Y= 520gf                   R= 260gf  
                                     S= 320gfColor of Stem (Regular Operation Force):  
▲ K=Black (100gf)           N=Brown (160gf)  
▲ Y= Yellow (520gf)        G=Gray (160gf)  
S=Salmon (320gf)         R=Red (260gf)

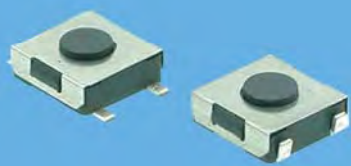
&lt;▲12x12, K, Y Unavailable&gt;

Dimension H:

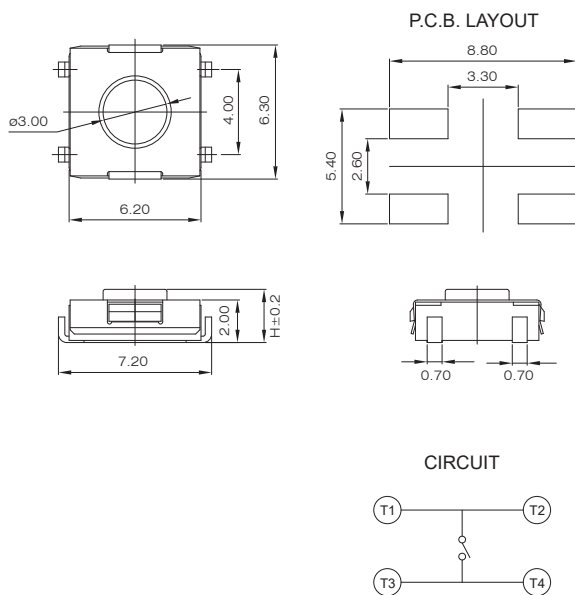
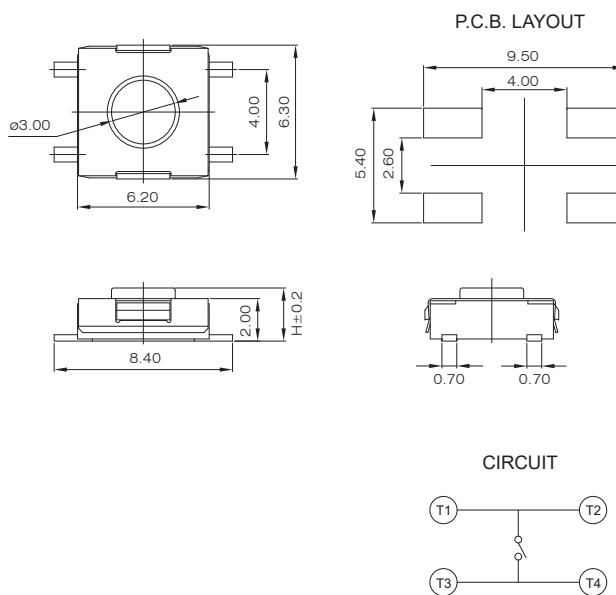
CODE	ELTS-6	ELTSM-6	ELTSG2	ELTS-2
	ELTSA-6 ELTSAL-6 ELTSALB-6	ELTSM-6 ELTSG-6		ELTSM-2
▲(SQ.)x2.4mm	1 3.15 mm 2 3.85 mm 3 5.85 mm 44 6.15 mm 5 8.35 mm 6 11.85 mm	4.3 mm 5.0 mm 7.0 mm 7.3 mm 9.5 mm 13.0 mm	1 4.3 mm 4 7.3 mm (SQ.) x3.8 mm	4.3 mm 7.3 mm (SQ.) x3.8 mm 8.5mm

\*If you need the other height option, please inquire our office

Prod Size:  
6= 6.2x6.2 mm  
▲2= 12x12 mm  
<▲12x12 ELTSA/ ELTSAL/ ELTSALB Unavailable>□ = None Post  
  
□ = Regular Type Tactile Switch  
A/ AL /ALB = Right Angle Type Tactile Switch  
G= With Ground Terminal Type Tactile Switch  
M= SMT Type Tactile SwitchEL = 100,000 cycles  
EH = 1,000,000 cycles (only 6.2x6.2mm, 100gf, 160gf, 260gf, available)

**ELTS(G)L, F-6**

**SPECIFICATIONS**

RATING: 50mA, 12VDC  
 ELECTRICAL LIFE: 1,000,000 cycles  
 CONTACT RESISTANCE: 100mΩ max  
 INSULATION RESISTANCE: 100MΩ min. 500VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min  
 OPERATION FORCE: 100gf, 160gf, 260gf

**DIMENSIONS**
**ELTSL-6**

**ELTSF-6**

**HOW TO ORDER**

ELTS   - 6   -  -

**Prod. Series**  
 = Without ground terminal  
 = With ground terminal

**Terminal style**  
 L = With L S.M.T  
 F = With F S.M.T

**Total Height H**  
 0 = 2.0mm  
 1 = 2.5mm  
 2 = 3.1mm

**Color Of Stem For Operating Force**  
 K = black, 100g  
 N = brown, 160g  
 R = red, 260g

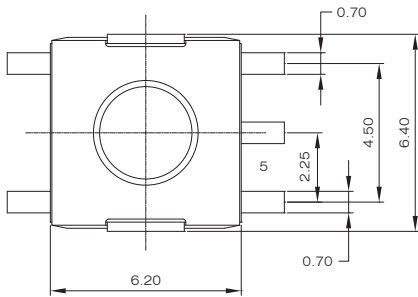
H = RoHS Compliant

**Package Style**  
 = bulk  
 T/R = Tape & Reel  
 B = Tube

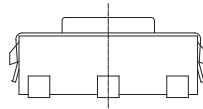
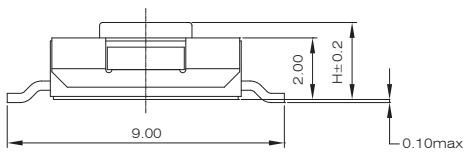
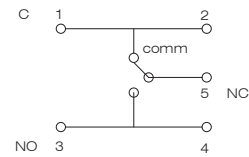
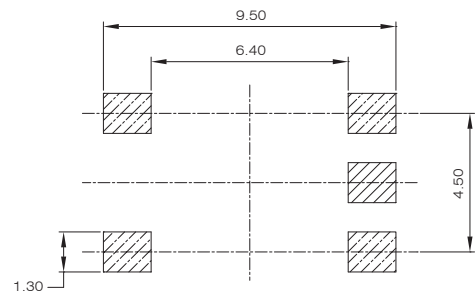
**ELTSMC**

**SPECIFICATIONS**

RATING: 50mA, 12VDC  
 ELECTRICAL LIFE: 100,000 cycles  
 CONTACT RESISTANCE: 100mΩ max  
 INSULATION RESISTANCE: 100MΩ min. 250VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min  
 OPERATION FORCE: 100gf, 160gf, 260gf

**DIMENSION**


ELTSMC-62	3.1
ELTSMC-61	2.5
PROD. NO.	H

**CIRCUIT**

**P.C.B LAYOUT**

**HOW TO ORDER**

ELTSMC - 6 1 - K □ - □ - H

Function:  
SPDT, ON-ON

Height:  
1 = 2.5mm  
2 = 3.1mm

Color of stem for operation force (standard type):  
K = Black 100g  
N = Brown 160g  
R = Red 260g

Operation force: (non-standard type)  
□ = Regular type  
K = 100g  
N = 160g  
R = 260g

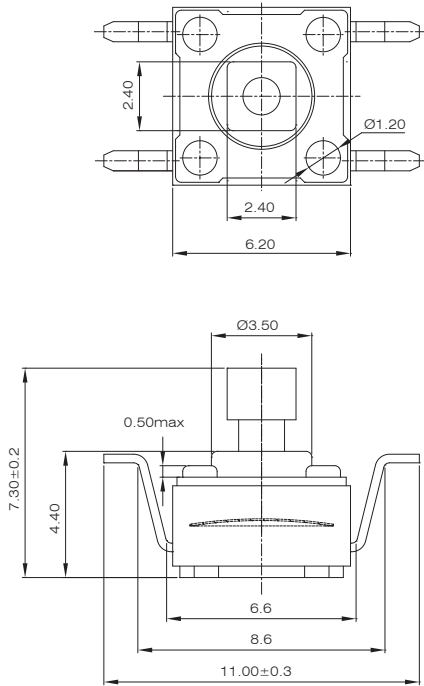
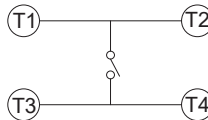
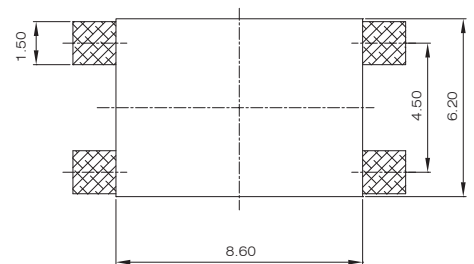
H= RoHS compliant

Package style:  
□ = Bag  
T/R = Tape & Reel

**ELTSX**

**SPECIFICATIONS**

RATING: 50mA, 12VDC  
 ELECTRIC LIFE: 100,000 cycles  
 CONTACT RESISTANCE: 100Ω max.  
 INSULATION RESISTANCE: 100MΩ min. 500VDC  
 DIELECTRIC STRENGTH: 500VAC/1 min.  
 OPERATION FORCE: 100gf, 160gf, 260gf

**DIMENSION**

**CIRCUIT**

**P.C.B. LAYOUT**

**HOW TO ORDER**

ELTSX - 6      1      K      □ - B - H

SMT Type Tactile Switch

Prod Size:  
6 = 6.2 x 6.2 mm

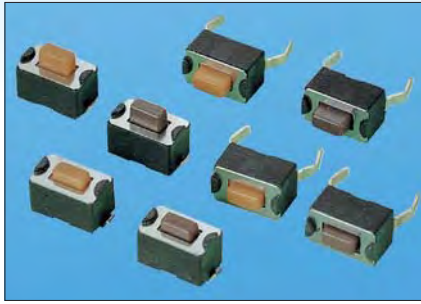
Dimension H:  
1: 4.3mm  
2: 5.0mm  
3: 7.0mm  
44: 7.3mm  
5: 9.5mm  
6: 13.0mm

Color Of Stem For Operation Force(standard)  
 K=Black, (100gf)    N=Brown, (160gf)  
 Y=Yellow, (520gf)    G=Gray, (160gf)  
 S=Salmon, (320gf)    R=Red, (260gf)

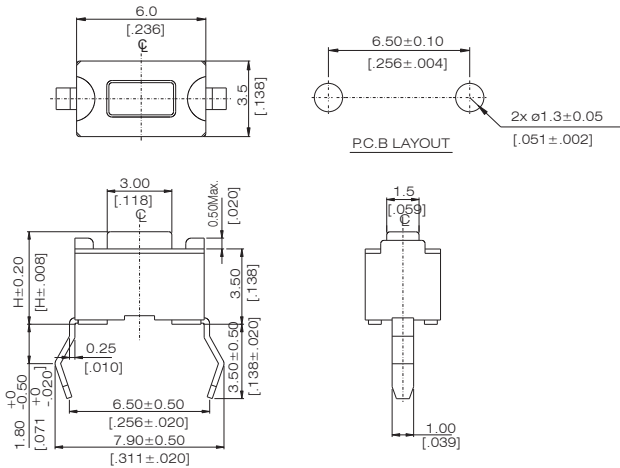
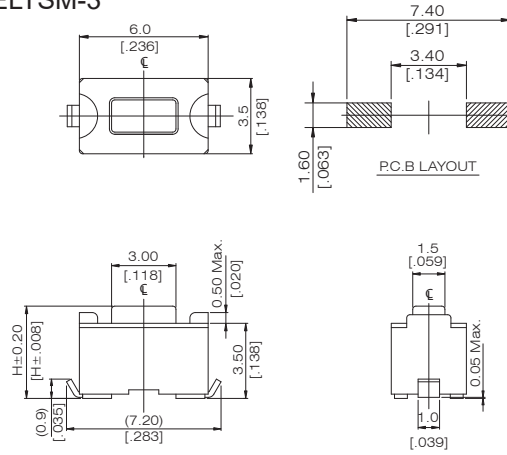
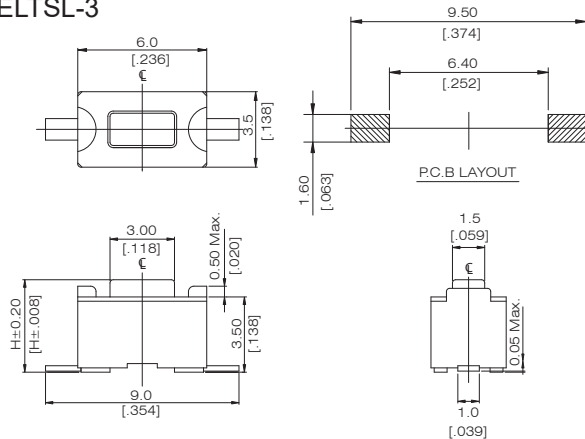
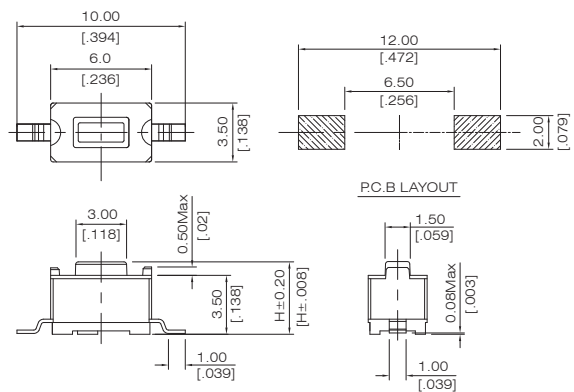
RoHS compliant

Package style  
B = Tube  
T/R = Tape & Reel

□ = Regular Type:  
 K = 100gf    N = 160gf  
 Y = 520gf    R = 260gf  
 S = 320gf


**SPECIFICATIONS**

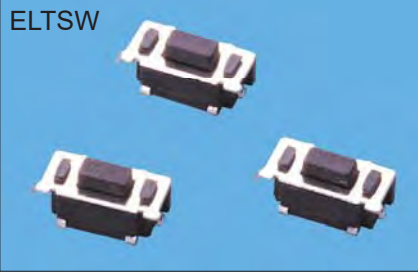
**RATING:** 50mA, 12VDC  
**ELECTRICAL LIFE:** 50,000 cycles for 160gf, 320gf,  
 30,000 cycles for 260gf, 520gf  
**CONTACT RESISTANCE:** 100mΩ max  
**INSULATION RESISTANCE:** 100MΩ min. 500VDC  
**DIELECTRIC STRENGTH:** 250VAC/1 min  
**OPERATION FORCE :** 160gf, 260gf, 320gf, 520gf  
**STORAGE TEMPERATURE:** -30°C to +80°C

**DIMENSIONS**
**ELTS-3**

**ELTSM-3**

**ELTSL-3**

**ELTSF-3**

**CIRCUIT**

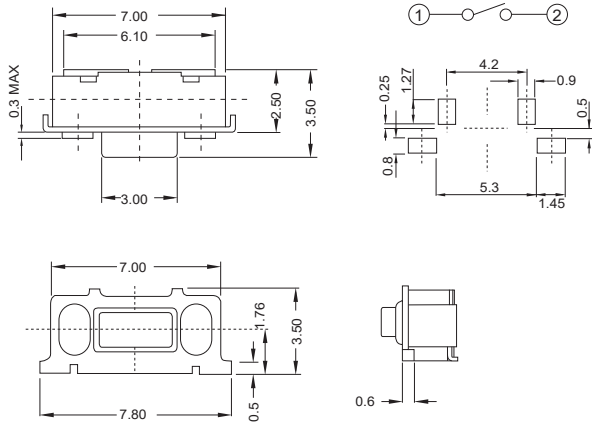
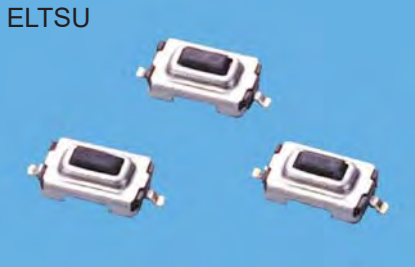
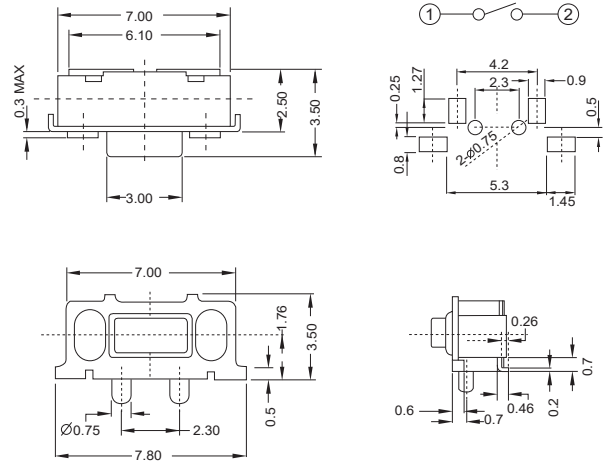
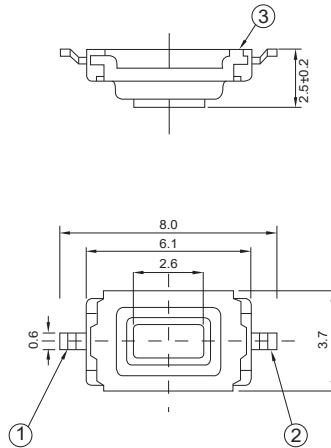
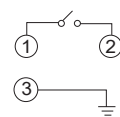
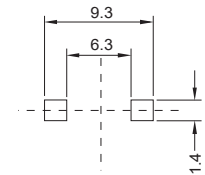
**HOW TO ORDER**

ELTS □ - □ □ □ - □ □ □  
 □ : Through Hole  
 M : S.M.T/J-bend outward  
 L : S.M.T/Flat  
 F : S.M.T/Gull-wing  
 RoHS code  
 H= RoHS Compliant  
 Package:  
 □ : Bag (THT Only)  
 B : Tube Package  
 T/R: Tape & Reel  
 Prod. SIZE: 3= 3.5 X 6  
 Dimension H:  
 1= 4.3mm  
 2= 5.0mm  
 Operating Force:  
 N= 160gf  
 R= 260gf  
 S= 320gf  
 Y= 520gf




**SPECIFICATIONS**

RATING: 50mA, 12VDC  
 ELECTRICAL LIFE: 30,000~50,000 cycles  
 CONTACT RESISTANCE: 100mΩ max  
 INSULATION RESISTANCE: 100MΩ min. 100VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min  
 OPERATION FORCE: 260 ± 70g (only for ETSU-3)  
                           160 ± 50g  
 STORAGE TEMPERATURE: -30°C to +80°C  
 CONTACT ARRANGEMENT: 1 pole 1 throw

**DIMENSION**
**ELTSW-31**

**ELTSW-31\*S**

**ELTSU-31**

**Circuit Diagram**

**P.C.B Layout**

**HOW TO ORDER**

ELTS  — 3 1   —  —

Package Style:  
 T/R: Tape & Reel

: None pilot  
 S : Base with pilot (only for ELTSW-3)

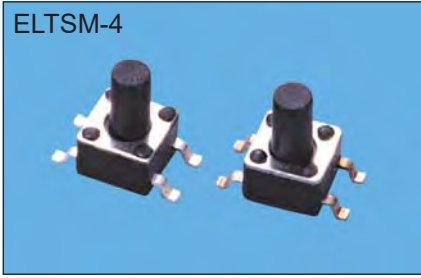
Operation Force:  
 N = 160g  
 R = 260g (only for ELTSU-3)

Dimension H:

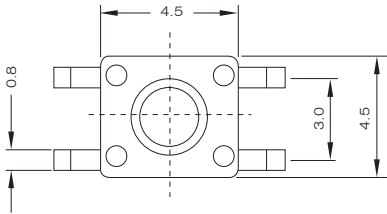
Code	ELTSU-3	ELTSW-3
1	2.5	3.5

U = Surface Mounting Type  
 W = Slide Push Type

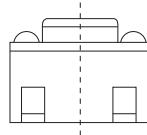
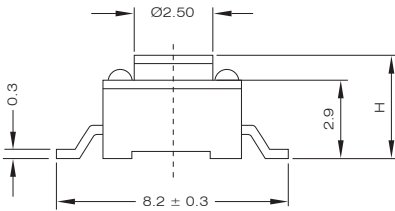
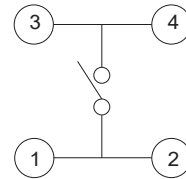
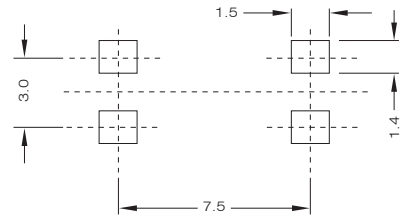
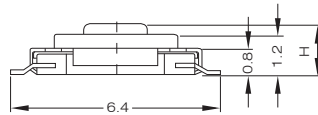
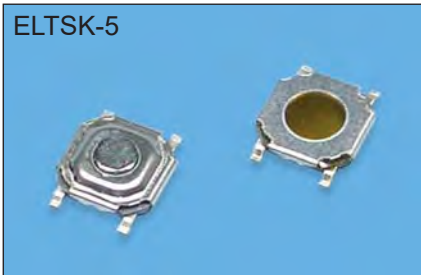
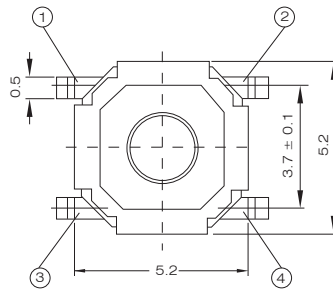
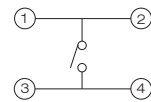
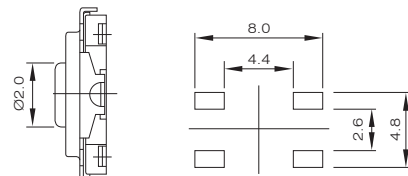
RoHS code  
 H= RoHS Compliant

**ELTSM-4**

**SPECIFICATIONS**

RATING: 50mA, 12VDC  
 ELECTRICAL LIFE: 30,000~50,000 cycles  
 CONTACT RESISTANCE: 500mΩ max  
 INSULATION RESISTANCE: 100MΩ min. 100VDC  
 DIELECTRIC STRENGTH: 250VAC/1 min  
 OPERATION FORCE: 260 ± 70g  
                           160 ± 50g  
 STORAGE TEMPERATURE: -30°C to +80°C  
 CONTACT ARRANGEMENT: 1 pole 1 throw

**DIMENSION**


Model No.	H
ELTSM-41	3.8
ELTSM-433	7.0

**Circuit Diagram**

**P.C.B Layout**

**ELTSK-5**

**Circuit Diagram**

**P.C.B Layout**

**HOW TO ORDER**

 ELTS  —    —  — 

 Package Style:  
 T/R: Tape & Reel

 RoHS code  
 H= RoHS Compliant

 Operation Force:  
 N = 160g  
 R = 260g

Dimension H:

Code	ELTSM-4	ELTSK-5
1	3.8	0.8
2		1.5
33	7.0	

 M = Surface Mounting Type  
 K = Slim type

 Prod Size: 4 = 4.5 x 4.5  
 5 = 5.2 x 5.2



### Korea Distributor

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Fax: 82-2-6679-2668  
E-mail: hyungho@hyungho.co.kr

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### Israel Distributor

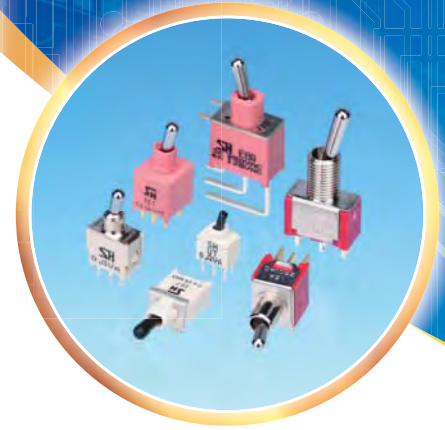
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FAX: 0755-27094094  
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E-mail: honghan@eli-switch.com



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