AEM®
INNOVATIVE CIRCUIT PROTECTION

Automotive Grade
Surface-Mount Resettable Fuse

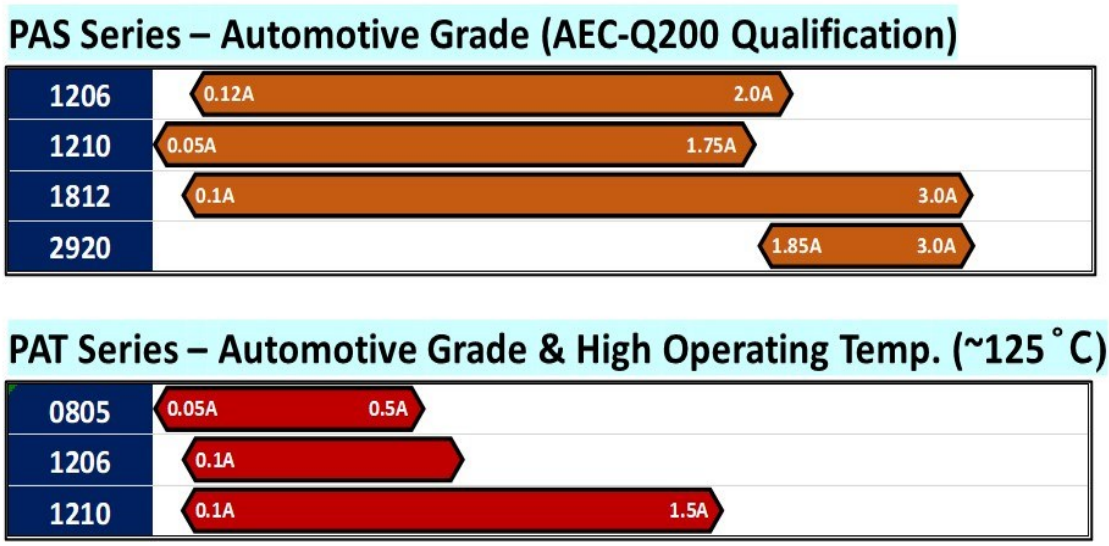
- AEC-Q200 qualified
- IATF16949 certified

Website: **www.aemchina.com & www.aemcomponents.com**

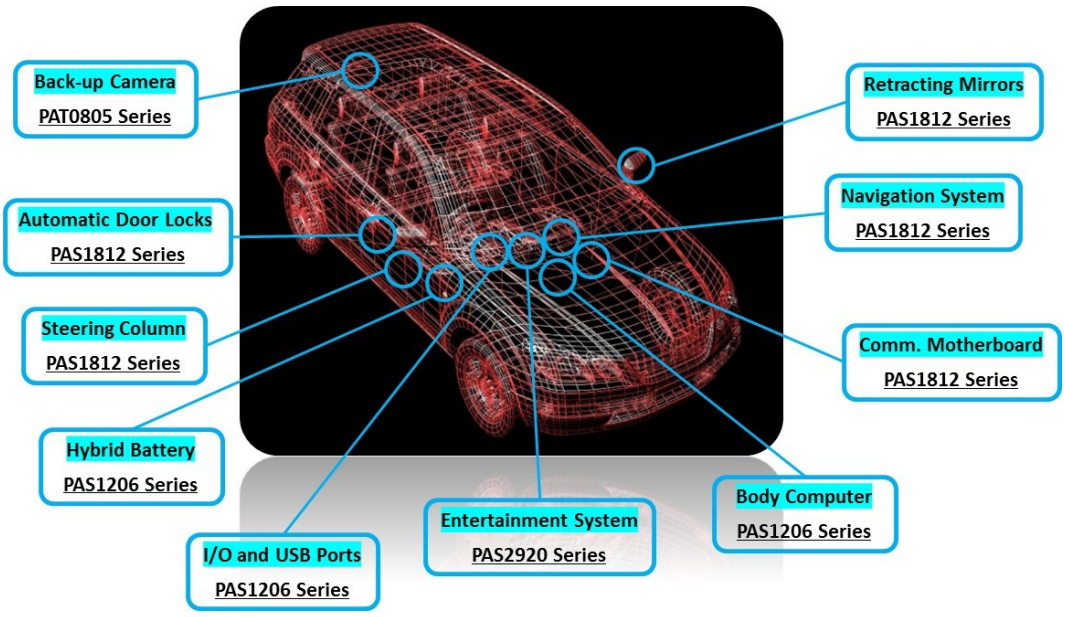
Q-FLEX
www.q-flex.fi info@q-flex.fi
+358 2 4894 500

Automotive Grade Surface Mount Polymer PTC

Product Size & Current Range:



Applications:



Automotive Grade Surface Mount Polymer PTC

PAS Series vs. Vehicle Voltage System:

System	1206	1210	1812	2920
48V			0.1A/60V 0.14A/60V 0.2A/60V	
24V	0.12A/30V 0.16A/30V 0.2A/30V	0.05A/30V 0.1A/30V 0.2A/30V	0.2A/30V 0.3A/30V 0.75A/24V 1.1A/24V 1.5A/24V	1.85A/33V 2.6A/24V 3A/24V
12V	0.35A/16V 0.5A/13.2V	0.5A/13.2V	0.5A/15V 0.75A/13.2V 1.1A/16V 1.5A/12V 2.6A/16V	

PAT Series vs. Vehicle Voltage System:

System	0805	1206	1210
24V		0.1A/30V 0.16A/30V 0.2A/30V 0.35A/30V	0.1A/30V 0.16A/30V 0.2A/30V 0.35A/30V 0.5A/30V
12V	0.05A/16V 0.1A/16V 0.16A/16V 0.2A/16V 0.35A/16V 0.5A/12V	0.5A/16V 0.75A/12V	0.75A/16V 1.1A/16V 1.25A/12V 1.5A/12V

Automotive Grade Surface Mount Polymer PTC

Features:

PAS Series

- AEC-Q200 Rev-C stress test qualification
- Resettable over-current protection
- Fast time-to-trip
- RoHS compliant
- Halogen free

PAT Series

- AEC-Q200 Rev-C stress test qualification
- Operating temperature range up to 125°C
- Low thermal derating factor
- Higher hold currents at elevated temperature
- RoHS compliant
- Halogen free

Applications:

PAS Series

- Electronic control unit (ECU) I/O and trace protection
- Heating ventilation and cooling (HVAC) control circuit and I/O protection
- Battery management system
- Telematics, infotainment and navigations systems
- Battery packs
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments

PAT Series

- Protection of automotive circuitry including engine control modules
- Overcurrent surge protection of electronic equipment required to operate at high operating temperature ranges
- Resettable fault protection of general electronic equipment

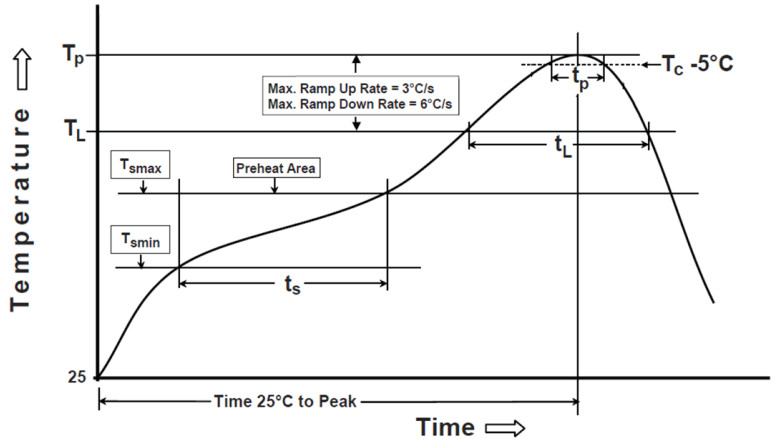
Quick Index:

Series	Size	Current (A)	Page
PAS	1206	Hold (I_H): 0.12, 0.16, 0.20, 0.25, 0.35, 0.50, 0.75, 1.10, 1.50, 2.00	5
		Trip (I_T): 0.29, 0.37, 0.40, 0.46, 0.50, 0.75, 1.00, 1.50, 2.20, 3.00, 4.00	
PAS	1210	Hold (I_H): 0.05, 0.10, 0.20, 0.35, 0.50, 0.75, 1.10, 1.50, 1.75	9
		Trip (I_T): 0.15, 0.30, 0.40, 0.75, 1.00, 1.50, 2.20, 3.00, 3.50	
PAS	1812	Hold (I_H): 0.10, 0.14, 0.20, 0.30, 0.50, 0.75, 1.10, 1.25, 1.50, 1.60, 2.00, 2.50, 2.60, 3.00	13
		Trip (I_T): 0.30, 0.34, 0.40, 0.60, 1.00, 1.50, 2.20, 2.50, 2.80, 3.00, 4.00, 5.00	
PAS	2920	Hold (I_H): 1.85, 2.60, 3.00	19
		Trip (I_T): 3.70, 5.00, 5.20	
PAT	0805	Hold (I_H): 0.05, 0.10, 0.16, 0.20, 0.35, 0.50	22
		Trip (I_T): 0.25, 0.50, 0.80, 1.00, 1.75, 2.00	
PAT	1206	Hold (I_H): 0.10, 0.16, 0.20, 0.35, 0.50, 0.75	24
		Trip (I_T): 0.50, 0.80, 1.00, 1.75, 2.50, 3.00	
PAT	1210	Hold (I_H): 0.10, 0.16, 0.20, 0.35, 0.50, 0.75, 1.10, 1.25, 1.50	26
		Trip (I_T): 0.50, 0.80, 1.00, 1.75, 2.50, 3.75, 4.50, 5.50	

Automotive Grade Surface Mount Polymer PTC

Soldering Temperature Profile:

* Recommended Temperature Profile for Reflow Soldering



Profile Feature	Pb-Free Assembly
Preheat/Soak Temperature Min (T_{smin}) Temperature Max(T_{smax}) Time(t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60~120 seconds
Ramp-uprate (T_L to T_p)	3°C/second max.
Liquidous temperature(T_L) Time(t_L) maintained above T_L	217°C 60~150 seconds
Peak package body temperature (T_p)	260°C
Time (t_p)*within 5°C of the specified classification temperature (T_c)	30 seconds *
Ramp-down rate (T_p to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum	

Note:
Polymer PTC cannot be wave soldered. Please contact AEM for hand soldering recommendations.
If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
Compatible with Pb and Pb-free solder reflow profiles.
Excess solder may cause a short circuit, especially during hand soldering.

Caution:
Operation beyond the rated voltage or current may result in rupture electrical arcing or flame.

Warning:

Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
The devices are intended for protection against occasional over-current or over-temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices.
Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal and mechanical procedures for electronic components.
Operation in circuit with a large inductance can generate a circuit voltage (L di/dt) above the rated voltage of the PPTC device.

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1206 Size

Ordering Code:

PAS 1206—035—16 F
(1) (2) (3) (4) (5)

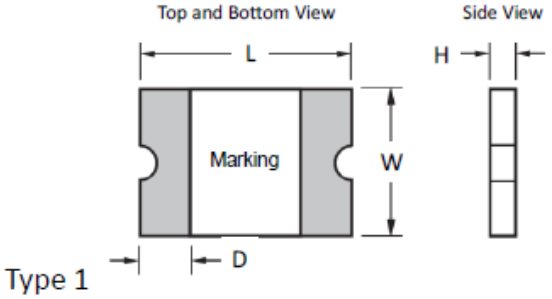
(1) Series code
(2) Size code
(3) Current rating code 035: 0.35A
(4) Voltage rating code 16: 16V
(5) Identification code

Agency Approval:

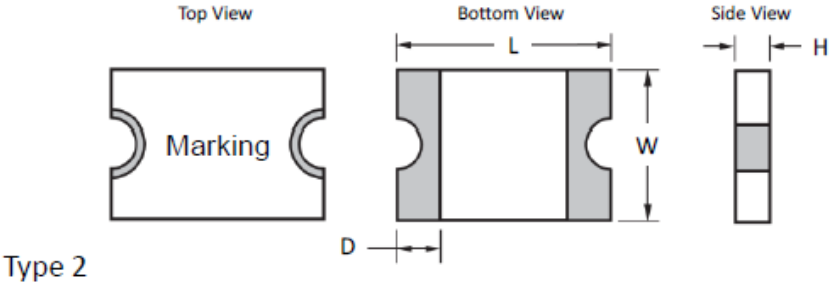
UL file number: E355716

TüV certification number: R50371842, R50371875 and R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J.

Product Dimensions:



Type 1



Type 2

Part Number	Type	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
		Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAS1206-012	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.10 (0.043)	0.25 (0.010)
PAS1206-016 PAS1206-020	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PAS1206-020-30F PAS1206-025F	2	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.85 (0.033)	0.25 (0.010)
PAS1206-035	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PAS1206-035-16F	2	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.85 (0.033)	0.25 (0.010)
PAS1206-050	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PAS1206-075 PAS1206-110 PAS1206-150	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
PAS1206-200	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.60 (0.063)	0.25 (0.010)

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1206 Size

Product Dimensions:

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS1206-012	0.12	0.29	30	10	1.0	0.20	0.4	1.35	8.50
PAS1206-016	0.16	0.37	30	10	1.0	0.30	0.6	1.20	4.50
PAS1206-020	0.20	0.46	24	10	1.0	0.60	0.6	0.60	2.60
PAS1206-020-30F	0.20	0.40	30	60	1.0	0.60	0.6	0.60	3.30
PAS1206-025F	0.25	0.50	16	20	8.0	0.08	0.6	0.45	2.30
PAS1206-035	0.35	0.75	6	100	8.0	0.10	0.6	0.30	1.20
PAS1206-035-16F	0.35	0.75	16	20	3.5	0.14	0.6	0.30	1.40
PAS1206-050	0.50	1.00	13.2	100	8.0	0.10	0.4	0.15	0.70
PAS1206-075	0.75	1.50	6	100	8.0	0.10	0.4	0.10	0.40
PAS1206-110	1.10	2.20	6	100	8.0	0.10	0.6	0.06	0.20
PAS1206-150	1.50	3.00	6	100	8.0	0.30	0.6	0.03	0.13
PAS1206-200	2.00	4.00	6	100	8.0	1.00	0.7	0.02	0.085

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Packaging and Marking Information:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PAS1206-012	0	3,000
PAS1206-016	1	
PAS1206-020	2	
PAS1206-020-30F	2	
PAS1206-025F	C	
PAS1206-035	3	
PAS1206-035-16F	3	
PAS1206-050	4	
PAS1206-075	5	
PAS1206-110	6	
PAS1206-150	8	
PAS1206-200	A	

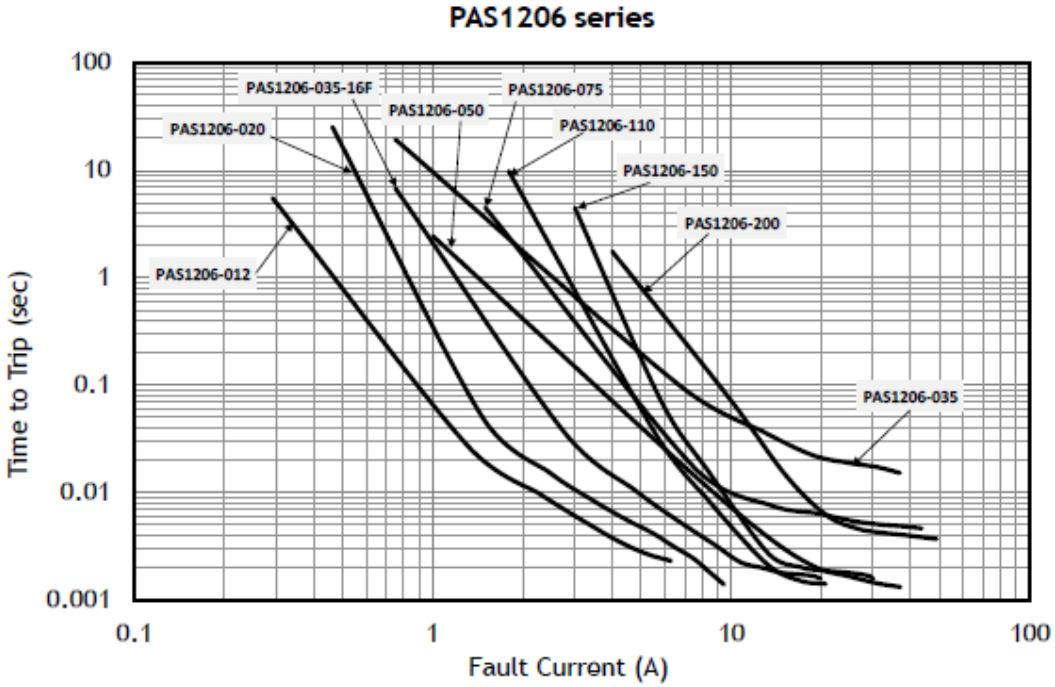
Automotive Grade Surface Mount Polymer PTC

PAS Series, 1206 Size

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS1206-012	0.19	0.17	0.15	0.12	0.11	0.10	0.09	0.08	0.07
PAS1206-016	0.24	0.21	0.19	0.16	0.14	0.13	0.11	0.10	0.09
PAS1206-020	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.11
PAS1206-020-30F	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.10
PAS1206-025F	0.39	0.35	0.31	0.25	0.23	0.21	0.18	0.16	0.13
PAS1206-035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PAS1206-035-16F	0.58	0.51	0.44	0.35	0.31	0.28	0.24	0.21	0.16
PAS1206-050	0.76	0.68	0.59	0.50	0.44	0.40	0.35	0.32	0.26
PAS1206-075	1.11	1.00	0.85	0.75	0.67	0.61	0.52	0.50	0.42
PAS1206-110	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
PAS1206-150	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
PAS1206-200	2.88	2.61	2.28	2.00	1.80	1.66	1.51	1.39	1.19

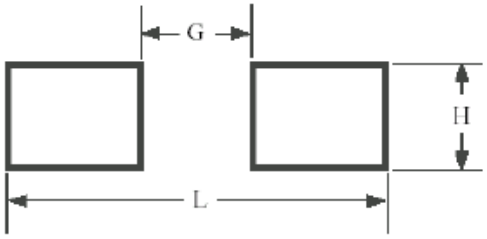
Typical Time to Trip (@ 23˚C):



Automotive Grade Surface Mount Polymer PTC

PAS Series, 1206 Size

Recommended Foot Print Dimensions:



G (mm)	H (mm)	L (mm)
2.0±0.1	1.6±0.1	4.0±0.1

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1210 Size

Ordering Code:

PAS 1210—175 F
(1) (2) (3) (4)

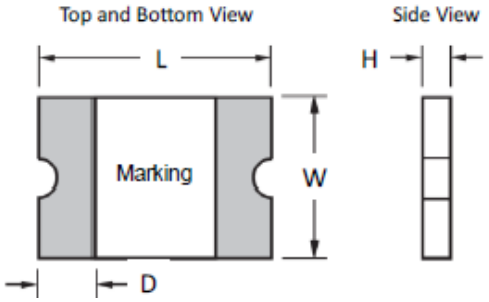
(1) Series code
(2) Size code
(3) Current rating code 175: 1.75A
(4) Identification code

Agency Approval:

UL file number: E355716

TüV certification number: R50371797, R50371842 and R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAS1210-005 PAS1210-010 PAS1210-020	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.80 （0.031）	1.10 （0.043）	0.30 （0.012）
PAS1210-035 PAS1210-050 PAS1210-075 PAS1210-110	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.55 （0.022）	0.85 （0.033）	0.25 （0.010）
PAS1210-150 PAS1210-175F	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	1.80 (0.071)	0.40 （0.016）	0.85 （0.033）	0.25 （0.010）

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1210 Size

Product Dimensions:

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS1210-005	0.05	0.15	30	10	0.25	1.50	0.6	2.80	50.0
PAS1210-010	0.10	0.30	30	10	0.50	0.60	0.6	0.80	15.0
PAS1210-020	0.20	0.40	30	10	8.0	0.20	0.6	0.40	5.0
PAS1210-035	0.35	0.75	6	40	8.0	0.20	0.6	0.18	0.90
PAS1210-050	0.50	1.00	13.2	40	8.0	0.10	0.6	0.18	0.90
PAS1210-075	0.75	1.50	6	40	8.0	0.10	0.6	0.07	0.45
PAS1210-110	1.10	2.20	6	40	5.0	1.00	0.6	0.05	0.21
PAS1210-150	1.50	3.00	6	40	5.0	1.00	0.6	0.03	0.11
PAS1210-175F	1.75	3.50	6	40	8.0	1.00	0.7	0.02	0.09

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Packaging and Marking Information:

Part Number	Part Marking*	Tape & Reel Quantity (piece)
PAS1210-005	0 w	3,000
PAS1210-010	1 w	
PAS1210-020	2 w	
PAS1210-035	3 w	
PAS1210-050	4 w	
PAS1210-075	5 w	
PAS1210-110	6 w	
PAS1210-150	8 w	
PAS1210-175F	9 w	

* 9w □ 9 = 1.85A; w = Week code (w=Y □ week 49~50)

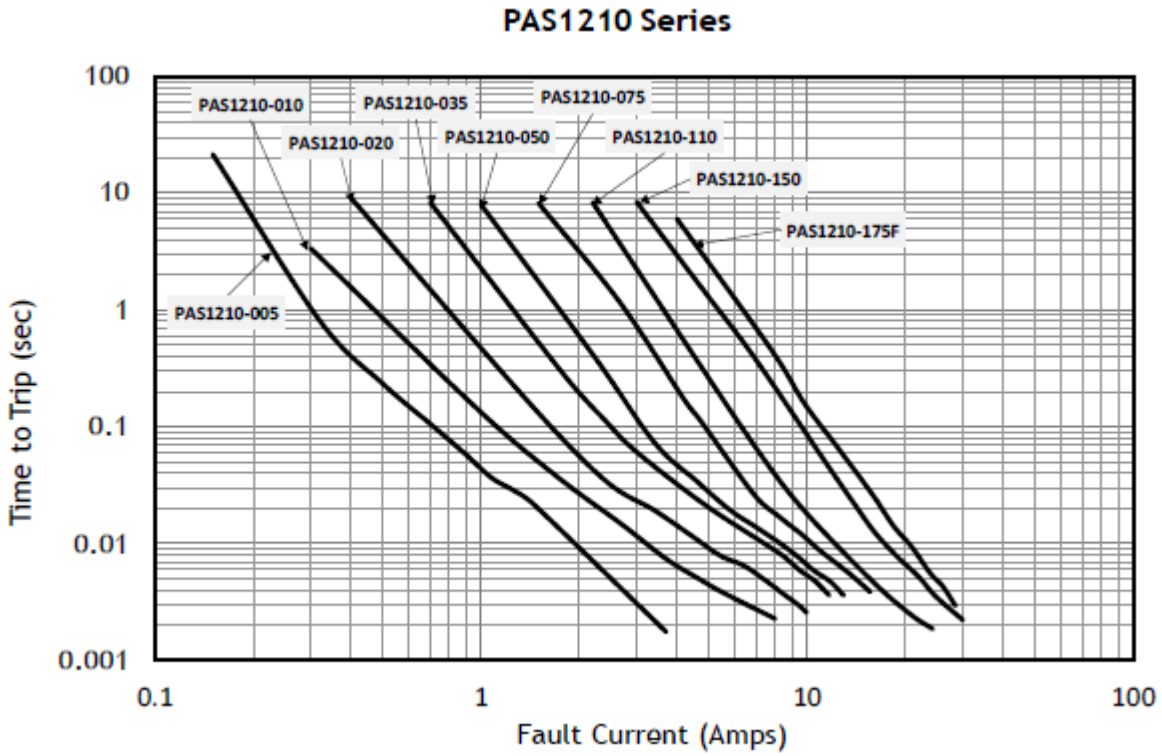
Automotive Grade Surface Mount Polymer PTC

PAS Series, 1210 Size

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS1210-005	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
PAS1210-010	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
PAS1210-020	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.12	0.10
PAS1210-035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PAS1210-050	0.76	0.66	0.58	0.50	0.42	0.38	0.35	0.29	0.23
PAS1210-075	1.10	0.97	0.86	0.75	0.64	0.58	0.55	0.47	0.39
PAS1210-110	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
PAS1210-150	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
PAS1210-175F	2.80	2.45	2.10	1.75	1.55	1.45	1.35	1.25	1.10

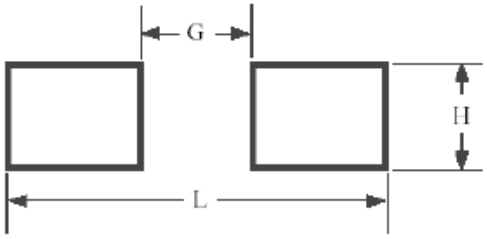
Typical Time to Trip (@ 23˚C):



Automotive Grade Surface Mount Polymer PTC

PAS Series, 1210 Size

Recommended Foot Print Dimensions:



G (mm)	H (mm)	L (mm)
1.8±0.1	2.8±0.1	3.8±0.1

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1812 Size

Ordering Code:

PAS 1812—110—24 F
(1) (2) (3) (4) (5)

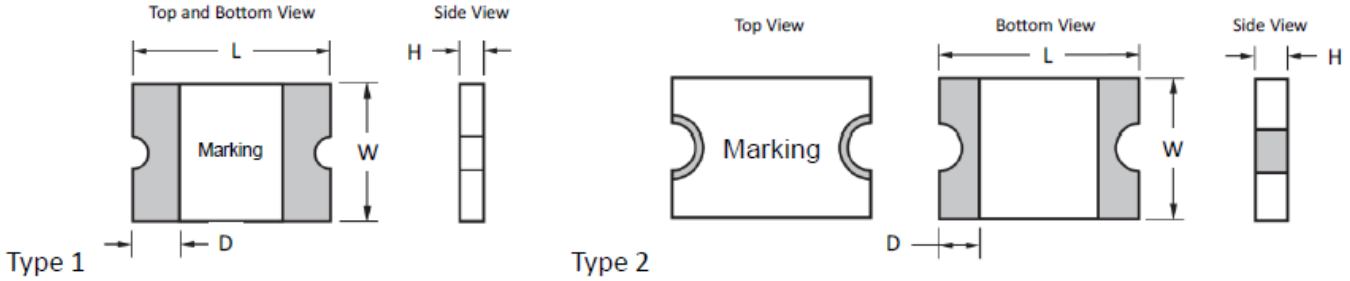
(1) Series code
(2) Size code
(3) Current rating code 110: 1.1A
(4) Voltage rating code 24: 24V
(5) Identification code

Agency Approval:

UL file number: E355716

TüV certification number: R50371797, R50371842, R50371875 and R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J

Product Dimensions:



Part Number	Type	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
		Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAS1812-010 PAS1812-014 PAS1812-020 PAS1812-020-60 PAS1812-030	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.10 (0.043)	0.30 (0.012)
PAS1812-050	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-050-30F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.40 (0.016)	0.85 (0.033)	0.30 (0.012)
PAS1812-075 PAS1812-075-24	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-110 PAS1812-110-16	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.45 (0.018)	0.85 (0.033)	0.30 (0.012)
PAS1812-110-24F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-125 PAS1812-150 PAS1812-150-12	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-150-24F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-160 PAS1812-200	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-250-16F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-260	1	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.48 (0.019)	0.85 (0.033)	0.30 (0.012)
PAS1812-260-16F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-300F	2	4.37 (0.172)	4.37 (0.172)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1812 Size

Product Dimensions:

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS1812-010	0.10	0.30	60	40	0.5	1.50	0.8	0.700	15.00
PAS1812-014	0.14	0.34	60	40	1.5	0.15	0.8	0.400	6.50
PAS1812-020	0.20	0.40	30	80	6.0	0.06	0.8	0.400	6.00
PAS1812-020-60	0.20	0.40	60	40	1.5	0.15	0.8	0.400	6.00
PAS1812-030	0.30	0.60	30	10	8.0	0.10	0.8	0.300	3.00
PAS1812-050	0.50	1. 00	15	100	8.0	0.15	0.8	0.150	1.00
PAS1812-050-30F	0.50	1.00	30	40	8.0	0.15	0.8	0.150	1.00
PAS1812-075	0.75	1.50	13.2	100	8.0	0.20	0.8	0.110	0.450
PAS1812-075-24	0.75	1.50	24	40	8.0	0.20	0.8	0.110	0.450
PAS1812-110	1.10	2.20	6	100	8.0	0.30	0.8	0.040	0.210
PAS1812-110-16	1.10	2.20	16	100	8.0	0.30	0.8	0.040	0.210
PAS1812-110-24F	1.10	2.20	24	20	8.0	0.50	0.8	0.060	0.180
PAS1812-125	1.25	2.50	6	100	8.0	0.40	0.8	0.035	0.140
PAS1812-150	1.50	3.00	6	100	8.0	0.50	0.8	0.030	0.120
PAS1812-150-12	1.50	3.00	12	100	8.0	0.50	0.8	0.030	0.120
PAS1812-150-24F	1.50	3.00	24	20	8.0	1.50	1.0	0.035	0.120
PAS1812-160	1.60	2.80	8	100	8.0	2.0	0.8	0.020	0.099
PAS1812-200	2.00	4.00	8	40	8.0	3.0	0.8	0.015	0.080
PAS1812-250-16F	2.50	5.00	16	100	8.0	5.0	1.2	0.015	0.100
PAS1812-260	2.60	5.20	6	100	8.0	5.0	0.8	0.015	0.080
PAS1812-260-16F	2.60	5.00	16	100	8.0	5.0	1.2	0.015	0.050
PAS1812-300F	3.00	5.00	6	100	8.0	5.0	1.2	0.010	0.040

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1812 Size

Packaging and Marking Information:

Part Number	Tape & Reel Quantity (piece)
PAS1812-010	1,500
PAS1812-014	
PAS1812-020	
PAS1812-020-60	
PAS1812-030	
PAS1812-050	2,000
PAS1812-050-30F	
PAS1812-075	
PAS1812-075-24	
PAS1812-110	
PAS1812-110-16	
PAS1812-110-24F	1,500
PAS1812-125	2,000
PAS1812-150	
PAS1812-150-12	
PAS1812-150-24F	1,500
PAS1812-160	2,000
PAS1812-200	
PAS1812-250-16F	1,500
PAS1812-260	2,000
PAS1812-260-16F	1,500
PAS1812-300F	1,500

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1812 Size

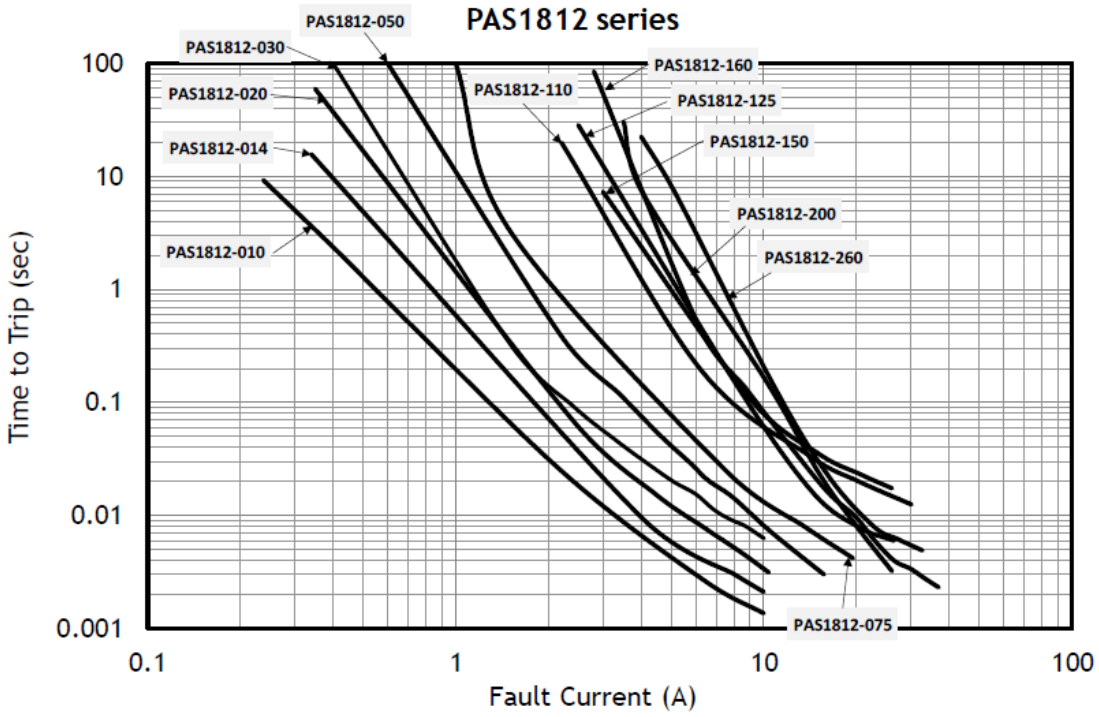
Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS1812-010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
PAS1812-014	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
PAS1812-020	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
PAS1812-020-60	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
PAS1812-030	0.44	0.39	0.35	0.30	0.26	0.23	0.21	0.18	0.15
PAS1812-050	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
PAS1812-050-30F	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.25
PAS1812-075	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PAS1812-075-24	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PAS1812-110	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PAS1812-110-16	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PAS1812-110-24F	2.00	1.70	1.40	1.10	0.95	0.88	0.80	0.73	0.61
PAS1812-125	1.80	1.63	1.43	1.25	1.08	0.99	0.91	0.81	0.68
PAS1812-150	2. 17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PAS1812-150-12	2.17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PAS1812-150-24F	2.10	1.90	1.70	1.50	1.25	1.13	1.00	0.88	0.69
PAS1812-160	2.30	2.20	1.90	1.60	1.45	1.30	1.15	1.03	0.91
PAS1812-200	3.08	2.71	2.35	2.00	1.80	1.60	1.50	1.40	1.25
PAS1812-250-16F	3.90	3.42	2.96	2.50	2.24	1.98	1.85	1.29	0.94
PAS1812-260	4.00	3.52	3.06	2.60	2.34	2.08	1.95	1.39	1.04
PAS1812-260-16F	3.50	3.20	3.00	2.60	2.30	2.15	2.00	1.85	1.63
PAS1812-300F	4.68	4.10	3.67	3.00	2.69	2.50	2.22	1.55	1.13

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1812 Size

Typical Time to Trip (@ 23˚C):



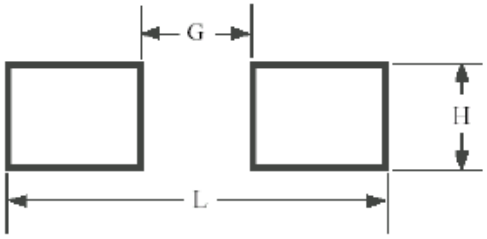
Environmental Test:

Item No.	Test Item	Test Condition
1	Pre-and-Post stress electrical test	-40°C, 25°C and 85°C
4	Temperature cycling	-40 and 85°C, 1000 cycles
6	Moisture resistance	Cycled 25°C to 65°C, 80-100% RH, 24 hrs./cycle. 10 cycles
7	Biased humidity	1000 hrs., 85°C, 85% RH, biased
8	Operational life	1000 hrs., 85℃ with rated power on and off repeatedly
9	External visual	Per individual specification sheets
10	Physical dimension	Per individual specification sheets
12	Resistance to solvents	MIL STD 202 and aqueous wash chemical
13	Mechanical shock	1/2 sine shock pulse, 1500g peak
14	Vibration	5g, 20 mins, 36 cycles, 10-2K Hz
15	Resistance to solder heat	MIL STD 202, 215°C for 3 heating cycles
16	Thermal shock	-40 to 85°C, 300 cycles
17	ESD	Air discharge mode 25KV
18	Solderability	J-STD-002B 215, 235 and 260 'C
19	Electrical characterization	Per spec
20	Flammability	UL-94 V0
21	Board flex	2 mm deflection min
22	Terminal strength (SMD)	1.8Kg, 60 sec
31	Short circuit fault current durability	30V 80A, power on and off for 25 cycles
32	Fault current durability	30V 1.2A, power on and off for 350 cycles
33	End-of-life mode verification	30V 1.2A, power on and off for 1750 cycles
34	Jump start endurance	26V (fixed), power on and off for 3cycles
35	Load dump endurance	Per ISO-7637-2 pulse 5a, Vs=87V, Ri = 4 ohm, Td = 400 ms, 10 pulse

Automotive Grade Surface Mount Polymer PTC

PAS Series, 1812 Size

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	2.7±0.1	3.2±0.1	5.7±0.1
2	2.9±0.1	1.95±0.1	6.1±0.1

Automotive Grade Surface Mount Polymer PTC

PAS Series, 2920 Size

Ordering Code:

PAS 2920—300—24 F
(1) (2) (3) (4) (5)

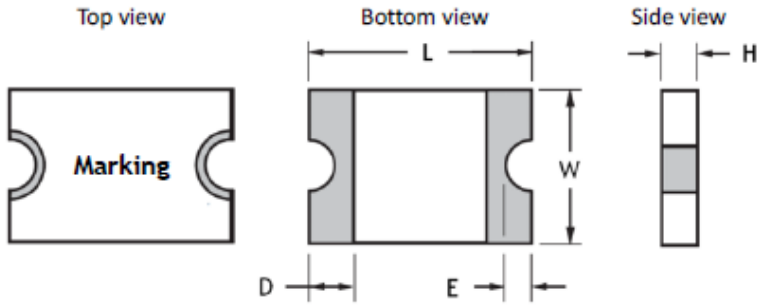
(1) Series code
(2) Size code
(3) Current rating code 300: 3.0A
(4) Voltage rating code 24: 24V
(5) Identification code

Agency Approval:

UL file number: E355716

TüV certification number: R50385152. Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)	E mm (inches	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
PAS2920-185-33F PAS2920-260F	6.73 (0.265)	7.98 (0.312)	4.80 (0.189)	5.44 (0.214)	0.75 （0.030）	1.60 （0.063）	0.30 （0.012）	0.25 (0.010)	2.00 (0.079)
PAS2920-300F	6.73 (0.265)	7.98 (0.312)	4.80 (0.189)	5.44 (0.214)	0.35 （0.014）	0.85 （0.033）	0.30 （0.012）	0.25 (0.010)	2.00 (0.079)
PAS2920-300-24F	6.73 (0.265)	7.98 (0.312)	4.80 (0.189)	5.44 (0.214)	0.75 （0.030）	1.60 （0.063）	0.30 （0.012）	0.25 (0.010)	2.00 (0.079)

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAS2920-185-33F	1.85	3.70	33	40	8.0	2.5	1.50	0.045	0.150
PAS2920-260F	2.60	5.20	24	20	8.0	5.0	1.50	0.020	0.075
PAS2920-300F	3.00	5.00	6	40	8.0	20.0	1.50	0.015	0.048
PAS2920-300-24F	3.00	5.20	24	20	8.0	5.0	1.50	0.020	0.075

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Grade Surface Mount Polymer PTC

PAS Series, 2920 Size

Packaging and Marking Information:

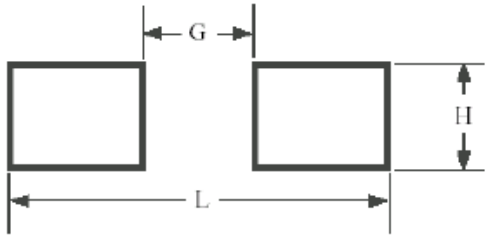
Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAS2920-185-33F	9w	3,000
PAS2920-260F	Ew	
PAS2920-300F	Fw	
PAS2920-300-24F	Jw	

* 9w □ 9 = 1.85A; w = Week code (w=Y □ week 49~50)

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PAS2920-185-33F	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
PAS2920-260F	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.30
PAS2920-300F	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
PAS2920-300-24F	4.00	3.55	3.20	3.00	2.50	2.25	2.15	1.85	1.50

Recommended Foot Print Dimensions:

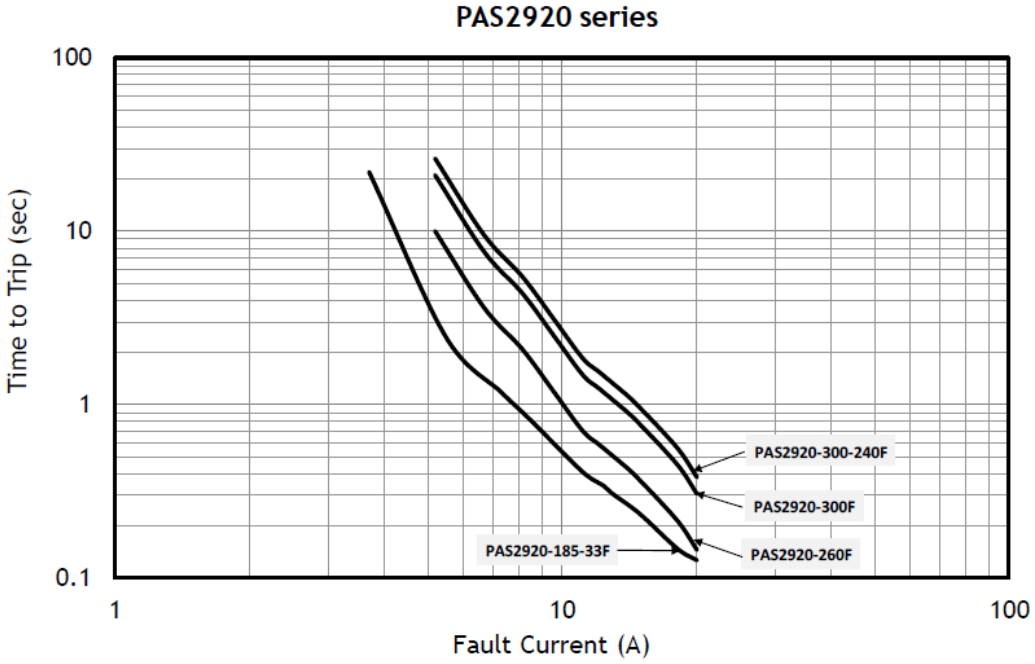


Type	G (mm)	H (mm)	L (mm)
1	4.6±0.1	5.3±0.1	8.6±0.1

Automotive Grade Surface Mount Polymer PTC

PAS Series, 2920 Size

Typical Time to Trip (@ 23˚C):



Environmental Test:

Item No.	Test Item	Test Condition
1	Pre-and-Post stress electrical test	-40°C, 25°C and 85°C
4	Temperature cycling	-40 and 85°C, 1000 cycles
6	Moisture resistance	Cycled 25°C to 65°C, 80-100% RH, 24 hrs./cycle. 10 cycles
7	Biased humidity	1000 hrs., 85°C, 85% RH, biased
8	Operational life	1000 hrs., 85℃ with rated power on and off repeatedly
9	External visual	Per individual specification sheets
10	Physical dimension	Per individual specification sheets
12	Resistance to solvents	MIL STD 202 and aqueous wash chemical
13	Mechanical shock	1/2 sine shock pulse, 1500g peak
14	Vibration	5g, 20 mins, 36 cycles, 10-2K Hz
15	Resistance to solder heat	MIL STD 202, 215°C for 3 heating cycles
16	Thermal shock	-40 to 85°C, 300 cycles
17	ESD	Air discharge mode 25KV
18	Solderability	J-STD-002B 215, 235 and 260 'C
19	Electrical characterization	Per spec
20	Flammability	UL-94 V0
21	Board flex	2 mm deflection min
22	Terminal strength (SMD)	1.8Kg, 60 sec
31	Short circuit fault current durability	30V 80A, power on and off for 25 cycles
32	Fault current durability	30V 1.2A, power on and off for 350 cycles
33	End-of-life mode verification	30V 1.2A, power on and off for 1750 cycles
34	Jump start endurance	26V (fixed), power on and off for 3cycles
35	Load dump endurance	Per ISO-7637-2 pulse 5a, Vs=87V, Ri = 4 ohm, Td = 400 ms, 10 pulse

Automotive Grade Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 0805 Size

Ordering Code:

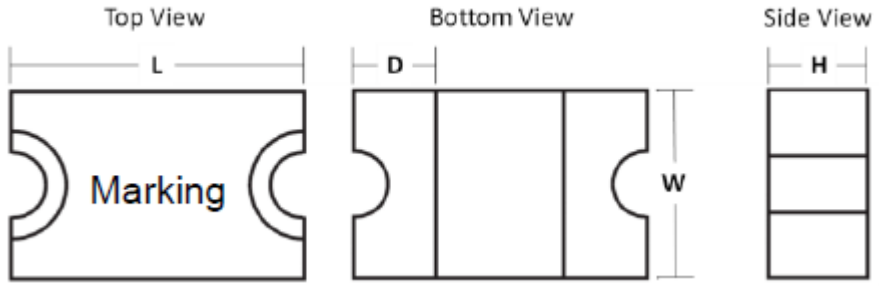
PAT 0805—010 KF
(1) (2) (3) (4)

(1) Series code
(2) Size code
(3) Current rating code 010: 0.1A
(4) Identification code

Agency Approval:

Pending.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAT0805-005KF ~ PAT0805-016KF	2.00 (0.097)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.40 （0.016）	0.80 （0.031）	0.25 （0.010）
PAT0805-020KF ~ PAT0805-050KF	2.00 (0.097)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.60 （0.024）	1.20 （0.047）	0.25 （0.010）

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAT0805-005KF	0.05	0.25	16	40	0.50	1.50	0.9	1.50	50.0
PAT0805-010KF	0.10	0.50	16	40	2.50	1.50	0.9	1.00	7.50
PAT0805-016KF	0.16	0.80	16	40	8.00	0.10	0.9	0.70	6.00
PAT0805-020KF	0.20	1.00	16	40	8.00	0.10	0.9	0.50	5.00
PAT0805-035KF	0.35	1.75	16	40	8.00	0.10	0.9	0.25	3.00
PAT0805-050KF	0.50	2.00	12	40	8.00	0.10	1.0	0.12	1.60

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Grade Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 0805 Size

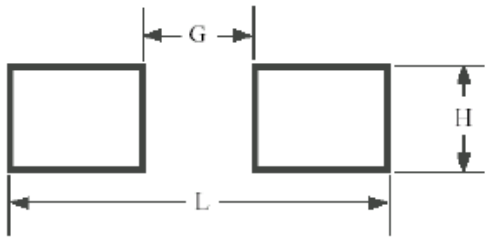
Packaging and Marking Information:

Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAT0805-005KF	C	3,000
PAT0805-010KF	D	
PAT0805-016KF	I	
PAT0805-020KF	K	
PAT0805-035KF	H	
PAT0805-050KF	L	

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT0805-005KF	0.07	0.07	0.06	0.05	0.04	0.04	0.04	0.03	0.03	0.01
PAT0805-010KF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT0805-016KF	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT0805-020KF	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT0805-035KF	0.51	0.40	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT0805-050KF	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	1.2±0.1	1.5±0.1	3.2±0.1

Automotive Grade Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1206 Size

Ordering Code:

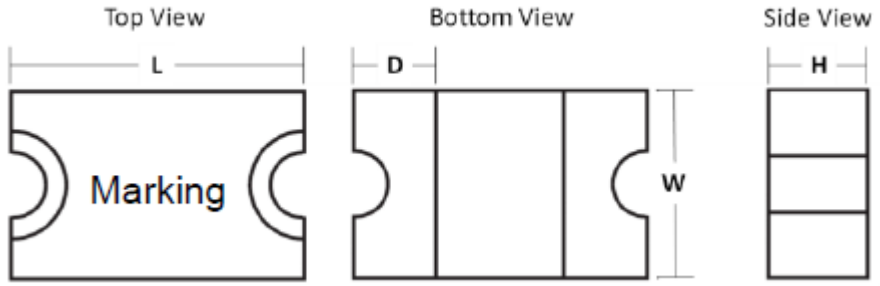
PAT	1206—016	KF
(1)	(2) (3)	(4)

(1) Series code
(2) Size code
(3) Current rating code 016: 0.16A
(4) Identification code

Agency Approval:

Pending.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAT1206-010KF~ PAT1206-035KF	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 （0.016）	0.85 （0.033）	0.25 （0.010）
PAT1206-050KF PAT1206-075KF	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.60 （0.024）	1.20 （0.047）	0.25 （0.010）

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAT1206-010KF	0.10	0.50	30	20	2.50	1.50	0.9	1.00	7.50
PAT1206-016KF	0.16	0.80	30	20	8.00	0.10	0.9	0.70	6.00
PAT1206-020KF	0.20	1.00	30	20	8.00	0.10	0.9	0.60	5.00
PAT1206-035KF	0.35	1.75	30	20	8.00	0.10	0.9	0.40	2.60
PAT1206-050KF	0.50	2.50	16	20	8.00	0.10	0.9	0.17	1.60
PAT1206-075KF	0.75	3.00	12	40	8.00	5.00	1.2	0.08	0.70

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Grade Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1206 Size

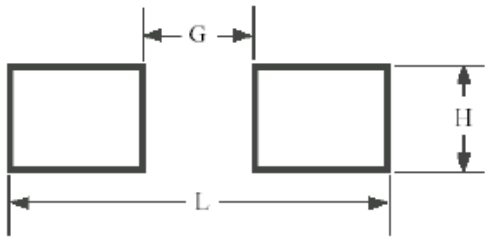
Packaging and Marking Information:

Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAT1206-010KF	B	3,000
PAT1206-016KF	D	
PAT1206-020KF	N	
PAT1206-035KF	F	
PAT1206-050KF	H	
PAT1206-075KF	L	

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT1206-010KF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT1206-016KF	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT1206-020KF	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT1206-035KF	0.51	0.40	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT1206-050KF	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14
PAT1206-075KF	1.09	0.98	0.87	0.75	0.66	0.61	0.56	0.50	0.42	0.20

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	2.0±0.1	1.6±0.1	4.0±0.1

Automotive Grade Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1210 Size

Ordering Code:

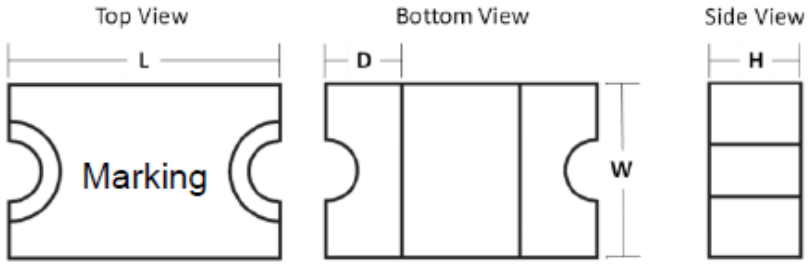
PAT	1210—016	KF
(1)	(2) (3)	(4)

(1) Series code
(2) Size code
(3) Current rating code 016: 0.16A
(4) Identification code

Agency Approval:

Pending.

Product Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PAT1210-010KF~ PAT1210-050KF	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.40 （0.016）	0.85 （0.033）	0.30 （0.012）
PAT1210-075KF	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.60 （0.024）	1.20 （0.047）	0.30 （0.012）
PAT1210-110KF~ PAT1210-150KF	3.00 (0.118)	3.43 (0.135)	2.35 (0.093)	2.80 (0.110)	0.80 (0.031)	1.60 (0.063)	0.30 （0.012）

Typical Ratings and Characteristics (@ 23˚C):

Operating temperature: -40 to +85℃

Part Number	Current (A)		V Max (Vdc)	I Max (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R1 Max. (Ω) 1
	Hold (IH)	Trip (IT)			Current (A)	Time (Sec)			
PAT1210-010KF	0.10	0.50	30	20	2.50	1.50	1.0	1.00	7.50
PAT1210-016KF	0.16	0.80	30	20	8.00	0.10	1.0	0.70	6.00
PAT1210-020KF	0.20	1.00	30	20	8.00	0.10	1.0	0.60	5.00
PAT1210-035KF	0.35	1.75	30	20	8.00	0.10	1.0	0.40	2.20
PAT1210-050KF	0.50	2.50	30	20	8.00	0.10	1.0	0.30	1.60
PAT1210-075KF	0.75	3.75	16	20	8.00	5.00	1.0	0.10	1.00
PAT1210-110KF	1.10	5.50	16	20	8.00	5.00	1.0	0.06	0.50
PAT1210-125KF	1.25	3.75	12	40	8.00	5.00	1.5	0.03	0.30
PAT1210-150KF	1.50	4.50	12	40	8.00	5.00	1.5	0.025	0.25

1. The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Automotive Grade Surface Mount Polymer PTC

High Operating Temperature, PAT Series, 1210 Size

Packaging and Marking Information:

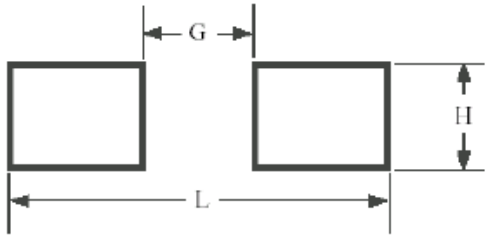
Part Number	Part Marking *	Tape & Reel Quantity (piece)
PAT1210-010KF	B w	3,000
PAT1210-016KF	D w	
PAT1210-020KF	E w	
PAT1210-035KF	F w	
PAT1210-050KF	K w	
PAT1210-075KF	L w	
PAT1210-110KF	N w	2,000
PAT1210-125KF	P w	
PAT1210-150KF	S w	

* B w →B = 0.10A; w = Week code (w=Y →week 49~50)

Thermal De-rating Hold Current (A) at Ambient Temperature (23°C):

Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT1210-010KF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT1210-016KF	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT1210-020KF	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT1210-035KF	0.51	0.40	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT1210-050KF	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14
PAT1210-075KF	1.09	0.98	0.87	0.75	0.66	0.61	0.56	0.50	0.42	0.20
PAT1210-110KF	1.60	1.44	1.26	1.10	0.97	0.89	0.81	0.74	0.62	0.30
PAT1210-125KF	1.81	1.64	1.45	1.25	1.10	1.01	0.93	0.84	0.70	0.34
PAT1210-150KF	2.18	1.97	1.74	1.50	1.32	1.22	1.11	1.01	0.84	0.41

Recommended Foot Print Dimensions:



Type	G (mm)	H (mm)	L (mm)
1	1.8±0.1	2.8±0.1	3.8±0.1

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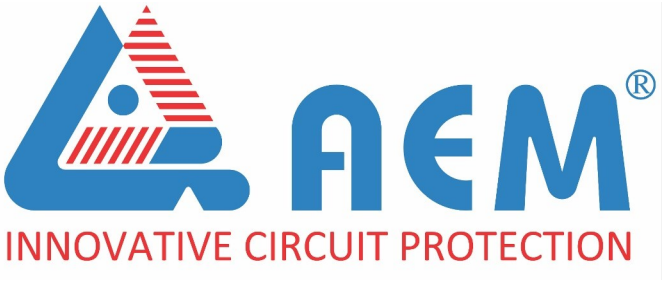

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