

Surface Mount Polymer PTC

PAS1812 Series (Automotive Grade, 1812 Size)

Features:

- Automotive grade with AEC-Q200 qualification
- Resettable over-current protection
- Small size of 1812
- Fast time-to-trip
- IEC 60730-1:2010 standard compliance
- Compatible with Pb and Pb-free solder reflow profiles

Product Identification:

PAS 1812 - 110 - 24 F

(1) (2) (3) (4) (5)

- Series Code:** Surface Mount Polymer PTC
- Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- Current Rating Code:** 110 - 1.10A
- Voltage Rating Code:** 24 - 24V
- Identification Code**

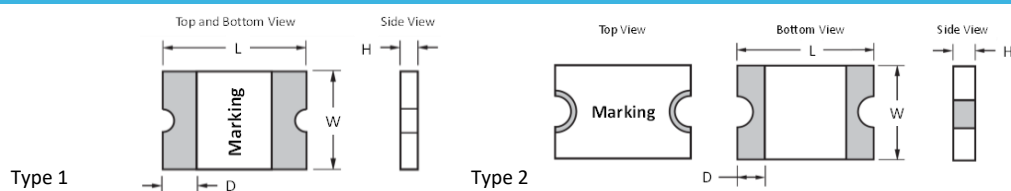
Applications:

- 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
- Overcurrent and overtemperature protection of automotive electronics

Agency Approval:

- UL file number: E355716
- TUV certification number: R50371842, R50371875 and R50385152.
- Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J.

Shape and 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)	4.73 (0.186)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.10 (0.043)	0.30 (0.012)
PAS1812-050 PAS1812-075 PAS1812-075-24	1	4.37 (0.172)	4.73 (0.186)	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)	4.83 (0.190)	3.07 (0.121)	3.41 (0.134)	0.40 (0.016)	0.85 (0.033)	0.30 (0.012)
PAS1812-110-16	1	4.37 (0.172)	4.73 (0.186)	3.07 (0.121)	3.41 (0.134)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)
PAS1812-075-33F PAS1812-110-24F	2	4.37 (0.172)	4.73 (0.186)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-150-12	1	4.37 (0.172)	4.73 (0.186)	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)	4.83 (0.190)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)
PAS1812-250-16F PAS1812-260-16F	2	4.37 (0.172)	4.73 (0.186)	3.07 (0.121)	3.41 (0.134)	0.70 (0.028)	1.60 (0.063)	0.30 (0.012)

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Ordering Information:

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 Re- flow Resistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PAS1812-010	0.10	0.30	60	40	0.5	1.50	0.8	0.70	15.00	✓	✓
PAS1812-014	0.14	0.30	60	40	1.5	0.2	0.8	0.40	6.50	✓	✓
PAS1812-020	0.20	0.40	30	80	6.0	0.1	0.8	0.40	6.00	✓	✓
PAS1812-020-60	0.20	0.40	60	40	1.5	0.2	0.8	0.40	6.00	✓	✓
PAS1812-030	0.30	0.60	30	10	8.0	0.10	0.8	0.30	3.00	✓	✓
PAS1812-050	0.50	1.00	15	100	8.0	0.2	0.8	0.15	1.00	✓	✓
PAS1812-050-30F	0.50	1.00	30	40	8.0	0.20	0.8	0.150	1.30	✓	✓
PAS1812-075	0.75	1.50	13.2	100	8.0	0.20	0.8	0.11	0.45	✓	✓
PAS1812-075-24	0.75	1.50	24	40	8.0	0.20	0.8	0.11	0.45	✓	✓
PAS1812-075-33F	0.80	1.50	33	20	8.0	0.20	1.4	0.110	0.400		
PAS1812-110-16	1.10	2.20	16	100	8.0	0.30	0.8	0.04	0.21	✓	✓
PAS1812-110-24F	1.10	2.20	24	20	8.0	0.50	0.8	0.06	0.18	✓	✓
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	0.12	✓	✓
PAS1812-250-16F	2.50	5.00	16	100	8.0	5.0	1.2	0.015	0.10	✓	✓
PAS1812-260-16F	2.60	5.00	16	100	8.0	5.0	1.2	0.015	0.050	✓	✓

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.

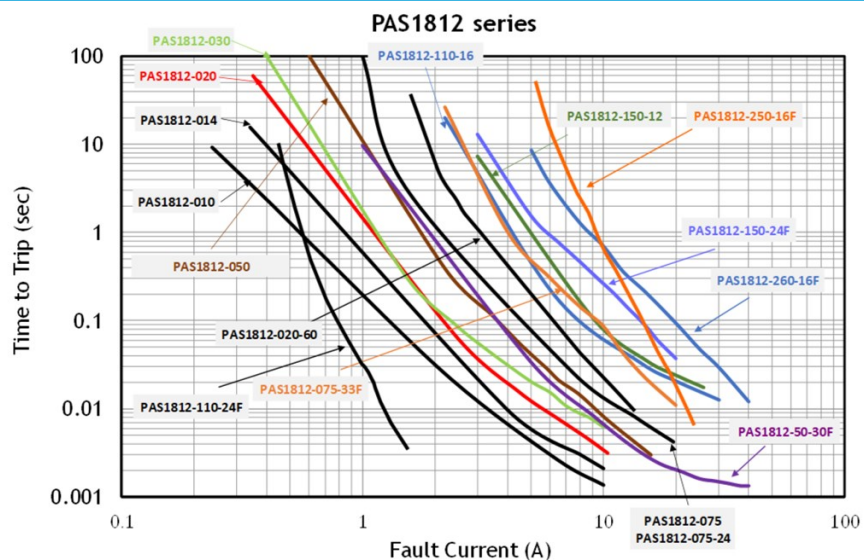
Temperature De-rating:

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	0.20	0.17	0.14	0.12	0.10	0.09	0.08	0.06
PAS1812-020	0.30	0.27	0.23	0.20	0.17	0.15	0.13	0.12	0.09
PAS1812-020-60	0.29	0.26	0.23	0.20	0.17	0.15	0.13	0.11	0.08
PAS1812-030	0.46	0.40	0.36	0.30	0.26	0.22	0.20	0.18	0.14
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
PAS1812-075-33F	1.16	1.03	0.90	0.75	0.63	0.56	0.49	0.42	0.32
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
PAS1812-150-12	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
PAS1812-250-16F	3.90	3.42	2.96	2.50	2.24	1.98	1.85	1.29	0.94
PAS1812-260-16F	3.50	3.20	3.00	2.60	2.30	2.15	2.00	1.85	1.63

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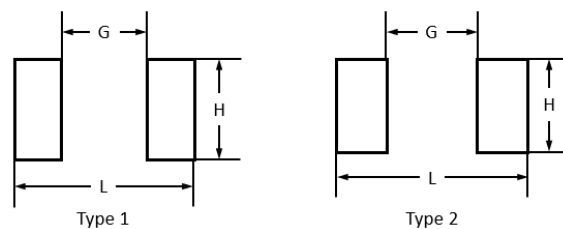
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Typical Time to Trip (@ 23°C):



Recommended Land Pattern:

Chip Size	1812		Unit
Type	1	2	-
G	2.7±0.1	2.9±0.1	mm
H	3.2±0.1	2.95±0.1	mm
L	5.7±0.1	6.1±0.1	mm



Packaging and Marking:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PAS1812-010	No marking	1,500
PAS1812-014		
PAS1812-020		
PAS1812-020-60		
PAS1812-030		
PAS1812-050/-30F		2,000
PAS1812-075		
PAS1812-075-24/-33F		
PAS1812-110-16		
PAS1812-110-24F		1,500
PAS1812-150-12		1,500
PAS1812-150-24F		1,500
PAS1812-250-16F		1,500
PAS1812-260-16F		2,000

Operating Temperature Range:

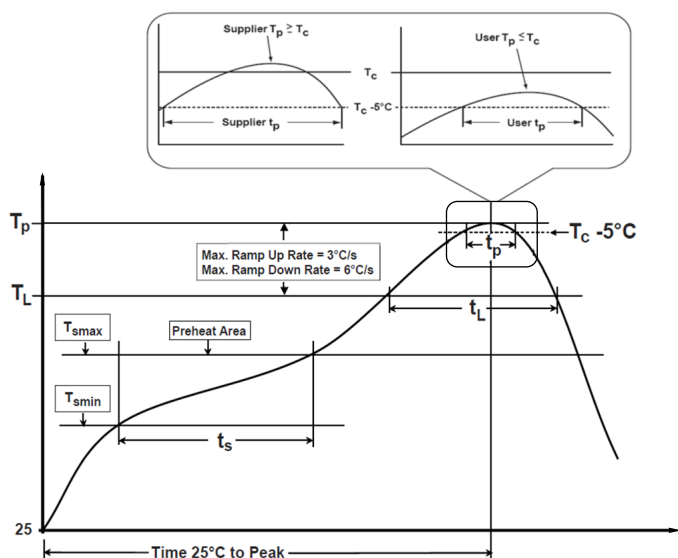
- 40°C ~ +85°C (with de-rating)

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Recommended 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 60~180 seconds
Ramp-up rate (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)	20~40 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:

- PAS1812 series 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.

Disclaimer

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