Surface Mount Polymer PTC
Automotive Grade, High Operating Temperature
PAT Series, 1206 Size

Features:

- AEC-Q200 Rev-D 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:

- 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

Ordering Code:

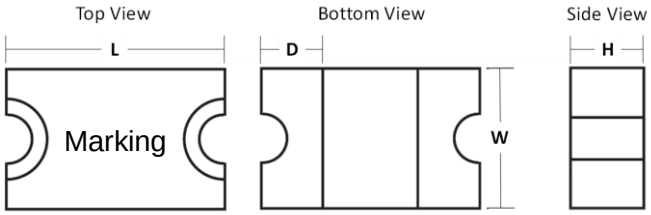
PAT 1206–016
(1) (2) (3)

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

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.
PAT1206-010 **PAT1206-016** **PAT1206-020** **PAT1206-035**	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)
PAT1206-050 **PAT1206-075**	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 +125°C

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 R_1 Max. (Ω) [1]
	Hold (I_H)	Trip (I_T)			Current (A)	Time (sec)			
PAT1206-010	0.10	0.50	30	20	2.50	1.50	0.9	1.00	7.50
PAT1206-016	0.16	0.80	30	20	8.00	0.10	0.9	0.70	6.00
PAT1206-020	0.20	1.00	30	20	8.00	0.10	0.9	0.60	5.00
PAT1206-035	0.35	1.75	30	20	8.00	0.10	0.9	0.40	2.60
PAT1206-050	0.50	2.50	16	20	8.00	0.10	0.9	0.17	1.60
PAT1206-075	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.

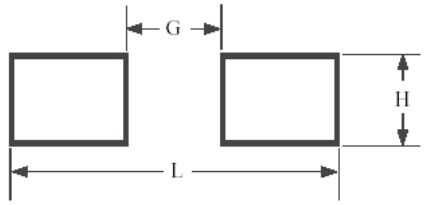
Packaging and Marking Information:

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

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

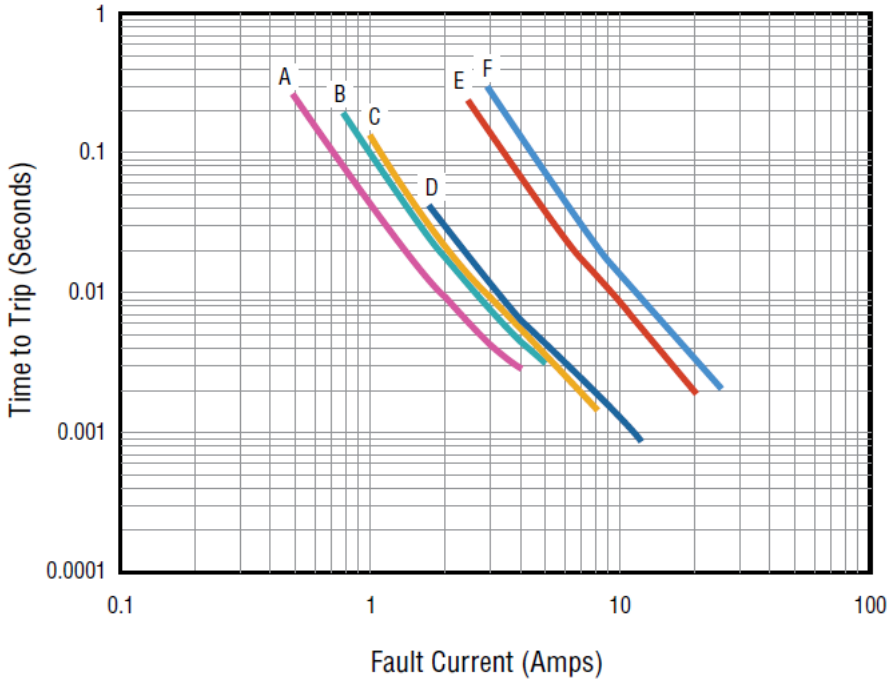
Part Number	Ambient temperature									
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C	125°C
PAT1206-010	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.03
PAT1206-016	0.23	0.21	0.19	0.16	0.14	0.13	0.12	0.11	0.09	0.04
PAT1206-020	0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.11	0.05
PAT1206-035	0.51	0.46	0.41	0.35	0.31	0.28	0.26	0.23	0.20	0.09
PAT1206-050	0.73	0.66	0.58	0.50	0.44	0.41	0.37	0.34	0.28	0.14
PAT1206-075	1.09	0.98	0.87	0.75	0.66	0.61	0.56	0.50	0.42	0.20

Recommended Foot Print Dimensions:



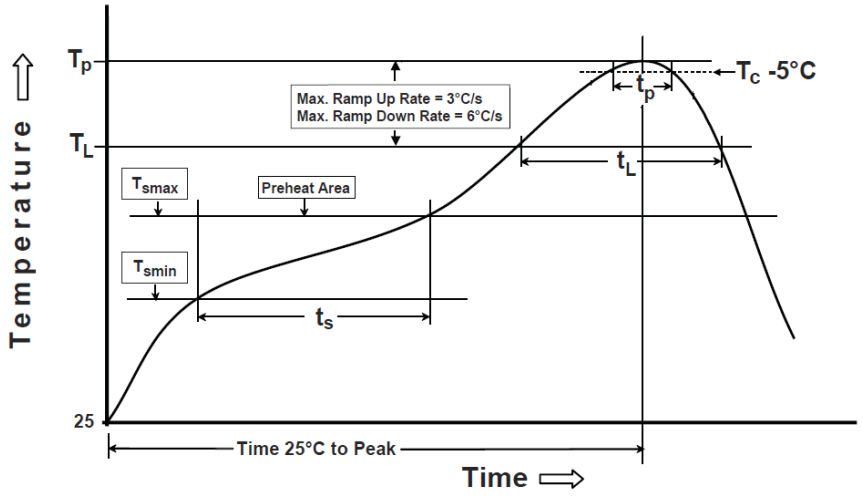
G (mm)	H (mm)	L (mm)
2.0±0.1	1.6±0.1	4.0±0.1

Typical Time to Trip (@ 23˚C):



A- PAT1206-010
B- PAT1206-016
C- PAT1206-020
D- PAT1206-030
E- PAT1206-050
F- PAT1206-075

Recommended Reflow Soldering Profile:



Profile Feature	Pb-Free Assembly
Preheat/Soak	
Temperature Min (T_{smin})	150°C
Temperature Max(T_{smax})	200°C
Time(t_s) from (T_{smin} to T_{smax})	60~180 seconds
Ramp-uprate (T_L to T_p)	3°C/second max.
Liquidous temperature(T_L)	217°C
Time(t_L) maintained above T_L	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:

- PAT1206 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.