

# Surface Mount Polymer PTC

## PMS Series, 1210 Size

### Features:

- Resettable over-current protection
- Small size of 1210
- Fast time-to-trip
- RoHS compliant
- Halogen free

### Applications:

- Battery packs
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments

### Ordering Code:

#### PMS 1210-150-13

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

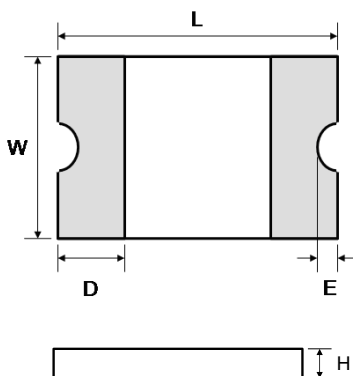
- (1) Series code  
 (2) Size code  
 (3) Current rating code  
     150: 1.5A  
 (4) Voltage rating code  
     13: 13.2Vdc

### Agency Approval:

Recognized under the components program of UL.

File number: E355716

### Product Dimensions:



Part Number	L (mm) Max.	W (mm) Max.	H (mm) Max.	D (mm) Min.
PMS1210-005	3.43	2.80	0.80	0.30
PMS1210-005-60	3.43	2.80	0.80	0.30
PMS1210-010	3.43	2.80	0.80	0.30
PMS1210-020	3.43	2.80	0.80	0.30
PMS1210-025	3.43	2.80	0.80	0.30
PMS1210-035	3.43	2.80	0.80	0.30
PMS1210-035-13	3.43	2.80	0.80	0.30
PMS1210-035-24	3.43	2.80	0.80	0.30
PMS1210-050	3.43	2.80	0.80	0.30
PMS1210-050-06	3.43	2.80	0.80	0.30
PMS1210-050-24	3.43	2.80	0.80	0.30
PMS1210-075	3.43	2.80	0.80	0.30
PMS1210-075-13	3.43	2.80	0.80	0.30
PMS1210-075-24	3.43	2.80	0.80	0.30
PMS1210-100	3.43	2.80	0.80	0.30
PMS1210-110	3.43	2.80	0.80	0.30
PMS1210-110-13	3.43	2.80	0.80	0.30
PMS1210-150	3.43	2.80	0.80	0.30
PMS1210-150-13	3.43	2.80	0.80	0.30
PMS1210-175	3.43	2.80	0.80	0.30
PMS1210-200	3.43	2.80	1.20	0.30

## Typical Ratings and Characteristics (@ 25°C):

✧ Operating temperature: -40 to +85°C

Part Number	Current (A)		V <sub>Max</sub> (Vdc)	I <sub>Max</sub> (A)	Max. Time to Trip (sec)		Typical Power (Pd, W)	Resistance Min. (Ω)	One Hours Post Reflow Resistance R <sub>1</sub> Max. (Ω) <sup>1</sup>	UL Certification
	Hold (I <sub>H</sub> )	Trip (I <sub>T</sub> )			Current (A)	Time (sec)				
PMS1210-005	0.05	0.15	30	100	0.25	1.50	0.6	2.800	50.00	√
PMS1210-005-60	0.05	0.15	60	100	0.25	1.50	0.6	2.800	50.00	
PMS1210-010	0.10	0.30	30	100	0.50	0.60	0.6	0.800	15.00	√
PMS1210-020	0.20	0.40	30	100	8.0	0.02	0.6	0.400	5.00	
PMS1210-025	0.25	0.50	30	100	8.0	0.02	0.6	0.500	4.500	
PMS1210-035	0.35	0.75	6	100	8.0	0.20	0.6	0.200	1.300	√
PMS1210-035-13	0.35	0.75	13.2	100	8.0	0.20	0.6	0.200	1.300	
PMS1210-035-24	0.35	0.75	24	100	8.0	0.20	0.6	0.200	1.300	
PMS1210-050	0.50	1.00	13.2	100	8.0	0.10	0.6	0.180	0.900	√
PMS1210-050-06	0.50	1.00	6	100	8.0	0.10	0.6	0.180	0.900	√
PMS1210-050-24	0.50	1.00	24	100	8.0	0.10	0.6	0.180	0.900	
PMS1210-075	0.75	1.50	6	100	8.0	0.10	0.6	0.070	0.400	√
PMS1210-075-13	0.75	1.50	13.2	100	8.0	0.10	0.6	0.070	0.400	
PMS1210-075-24	0.75	1.50	24	100	8.0	0.10	0.6	0.070	0.400	
PMS1210-100	1.00	1.80	6	100	8.0	0.30	0.6	0.055	0.230	
PMS1210-110	1.10	2.20	6	100	8.0	0.30	0.6	0.050	0.210	√
PMS1210-110-13	1.10	2.20	13.2	100	8.0	0.30	0.6	0.050	0.210	
PMS1210-150	1.50	3.00	6	100	8.0	0.50	0.6	0.030	0.110	√
PMS1210-150-13	1.50	3.00	13.2	100	8.0	0.50	0.6	0.030	0.110	
PMS1210-175	1.75	3.50	6	100	8.0	0.60	0.8	0.020	0.080	√
PMS1210-200	2.00	4.00	6	100	8.0	1.00	0.8	0.015	0.070	

<sup>1</sup> 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:

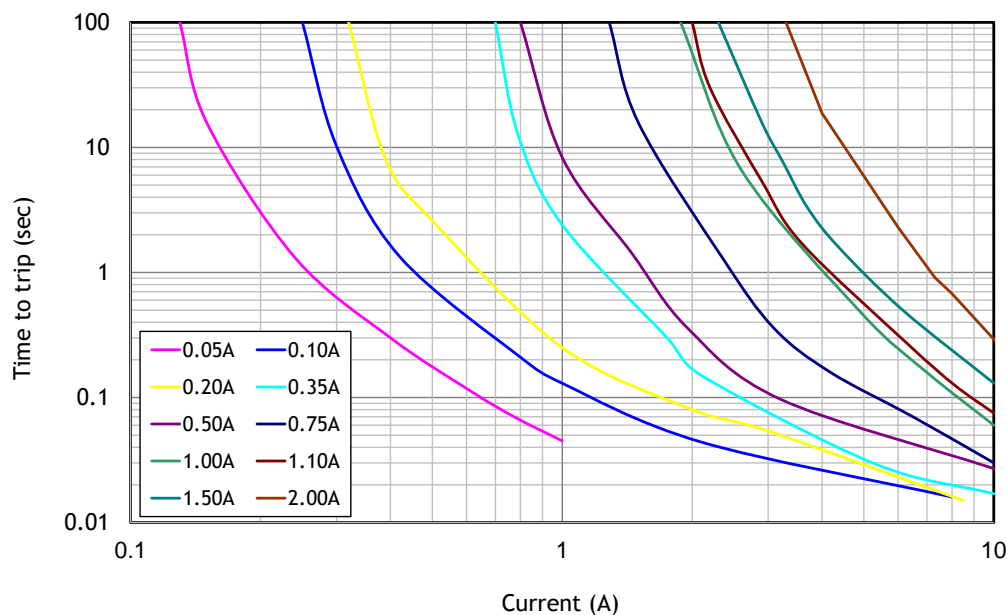
Part Number	Part Marking	Tape & Reel Quantity (piece)
PMS1210-005	αA	4,500
PMS1210-005-60	αA	
PMS1210-010	αB	
PMS1210-020	αC	
PMS1210-025	αC	
PMS1210-035	αD	
PMS1210-035-13	αD	
PMS1210-035-24	αD	4,000
PMS1210-050	αF	
PMS1210-075	αG	
PMS1210-050-06	αF	
PMS1210-050-24	αF	
PMS1210-075-13	αG	
PMS1210-075-24	αG	
PMS1210-100	αH	4,500
PMS1210-110	αH	
PMS1210-150	αL	
PMS1210-150-13	αL	
PMS1210-175	αN	
PMS1210-200	αS	

### Thermal De-rating Hold Current (A) at Ambient Temperature (25°C):

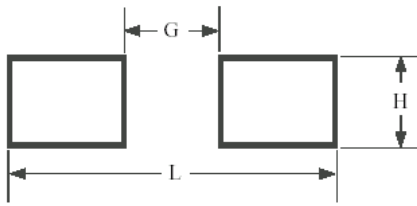
Part Number	Ambient temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
PMS1210-005	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
PMS1210-005-60	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
PMS1210-010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
PMS1210-020	0.29	0.26	0.22	0.20	0.16	0.14	0.13	0.11	0.08
PMS1210-025	0.34	0.31	0.28	0.25	0.21	0.19	0.17	0.15	0.12
PMS1210-035	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
PMS1210-035-13	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
PMS1210-035-24	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
PMS1210-050	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
PMS1210-050-06	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
PMS1210-050-24	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
PMS1210-075	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
PMS1210-075-13	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
PMS1210-075-24	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
PMS1210-100	1.54	1.35	1.18	1.00	0.76	0.67	0.53	0.45	0.31
PMS1210-110	1.69	1.48	1.29	1.10	0.88	0.76	0.65	0.57	0.43
PMS1210-110-13	1.69	1.48	1.29	1.10	0.88	0.76	0.65	0.57	0.43
PMS1210-150	2.13	1.92	1.71	1.50	1.26	1.14	1.01	0.89	0.71
PMS1210-150-13	2.13	1.92	1.71	1.50	1.26	1.14	1.01	0.89	0.71
PMS1210-175	2.54	2.30	2.02	1.75	1.47	1.33	1.18	1.05	0.86
PMS1210-200	2.90	2.63	2.31	2.00	1.68	1.52	1.35	1.20	0.98

### Typical Time to Trip (@ 25°C):

PMS1210 series

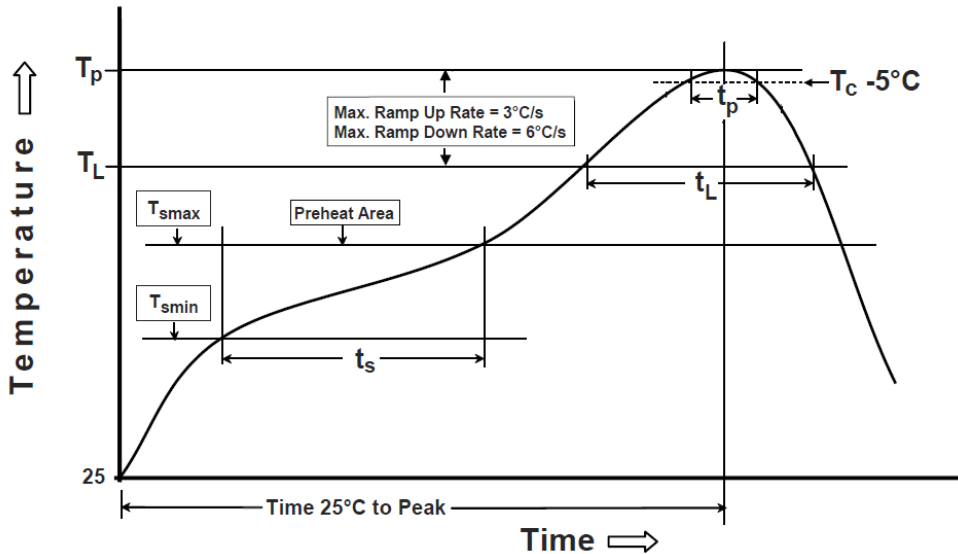


### Recommended Foot Print Dimensions:



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

### Recommended Reflow Soldering Profile:



Profile Feature	Pb-Free Assembly
<b>Preheat/Soak</b>	
Temperature Min ( $T_{smin}$ )	150°C
Temperature Max( $T_{smax}$ )	200°C
Time( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	60~120 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 ( $T_c$ )	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:

- PMS1210 series cannot be wave soldered. Please contact AEM for hand soldering recommendations.
- Storage conditions : 40°C max, 70% R.H. Devices may not meet specified performance if storage conditions are exceed.
- 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.

### Environmental Specifications:

Test	Conditions
Passive aging	+85°C, 1000hrs
Humidity aging	+85°C,85%R.H., 168 hours
Thermal shock	+85°C to -40°C, 20 times
Resistance to solvent	MIL-STD-202, Method 215
Vibration	MIL-STD-202, Method 201
Ambient operating conditions: -40°C to +85°C	
Maximum surface temperature of the device in the tripped state is 125°C	
In case of special use, please contact our engineer	

### Recommended Reflow Soldering Profile:

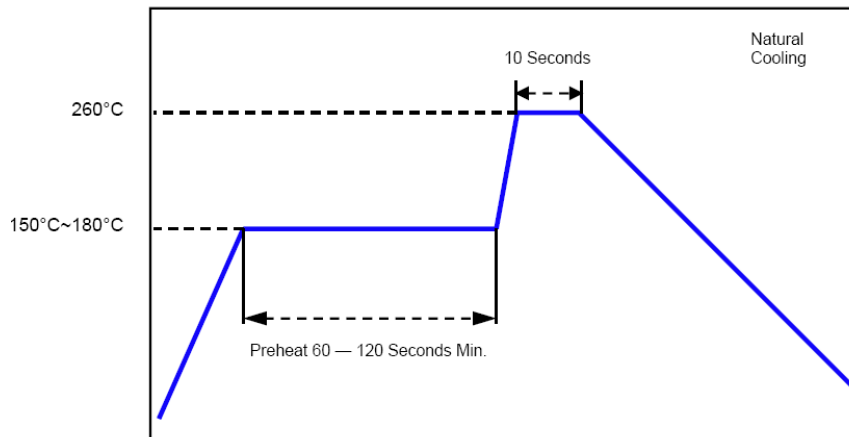


Fig. 3 Recommended reflow soldering profile

1. Recommended reflow methods: IR, hot air oven, nitrogen oven.
2. Recommended maximum paste thickness: 0.25mm (0.010 inch).
3. Devices can be cleaned using standard industry methods and solvents.
4. Soldering temperature and time should not exceed the recommended conditions.

**Note:** If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

**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.