

Surface Mount Polymer PTC PMS Series, 1812 Size



Features:

- Resettable over-current protection
- Small size of 1812
- Fast time-to-trip
- RoHS compliant
- Halogen free

Applications:

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

Ordering Code:

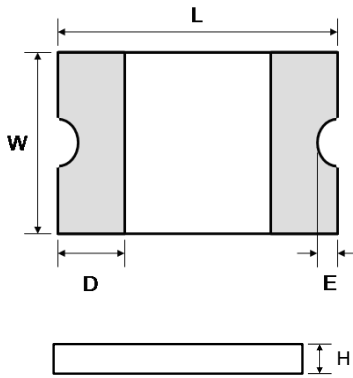
PMS 1812-150-16

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

- (1) Series code
- (2) Size code
- (3) Current rating code
150: 1.5A
- (4) Voltage rating code
16: 16V

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. | E (mm) Min. |
|----------------|----------------|----------------|----------------|----------------|----------------|
| PMS1812-010 | 4.73 | 3.41 | 1.00 | 0.30 | 0.25 |
| PMS1812-010-60 | 4.73 | 3.41 | 1.00 | 0.30 | 0.25 |
| PMS1812-014 | 4.73 | 3.41 | 1.00 | 0.30 | 0.25 |
| PMS1812-020 | 4.73 | 3.41 | 1.30 | 0.30 | 0.25 |
| PMS1812-020-60 | 4.73 | 3.41 | 1.30 | 0.30 | 0.25 |
| PMS1812-030 | 4.73 | 3.41 | 1.00 | 0.30 | 0.25 |
| PMS1812-030-60 | 4.73 | 3.41 | 1.00 | 0.30 | 0.25 |
| PMS1812-050 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-050-24 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-050-33 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-075 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-075-24 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-075-33 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-110 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-110-16 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-110-24 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-125 | 4.73 | 3.41 | 1.30 | 0.30 | 0.25 |
| PMS1812-150 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-150-13 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-150-16 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-150-24 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-160 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-160-13 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-160-16 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-200 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-200-13 | 4.73 | 3.41 | 0.90 | 0.30 | 0.25 |
| PMS1812-260 | 4.73 | 3.41 | 1.30 | 0.30 | 0.25 |
| PMS1812-300 | 4.73 | 3.41 | 1.30 | 0.30 | 0.25 |
| PMS1812-350 | 4.73 | 3.41 | 1.30 | 0.30 | 0.25 |
| PMS1812-375 | 4.73 | 3.41 | 1.80 | 0.30 | 0.25 |

Typical Ratings and Characteristics (@ 25°C):

✧ Operating temperature: -40 to +85°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 | UL Certification |
|----------------|------------------------|------------------------|---------------------------|-------------------------|----------------------------|------------|-----------------------------|------------------------|--|---------------------|
| | Hold (I _H) | Trip (I _T) | | | Current (A) | Time (sec) | | | | |
| PMS1812-010 | 0.10 | 0.30 | 30 | 100 | 0.5 | 1.50 | 0.8 | 0.750 | 15.0 | √ |
| PMS1812-010-60 | 0.10 | 0.30 | 60 | 100 | 0.5 | 1.50 | 0.8 | 0.750 | 15.0 | |
| PMS1812-014 | 0.14 | 0.34 | 60 | 100 | 1.5 | 0.15 | 0.8 | 0.650 | 6.00 | |
| PMS1812-020 | 0.20 | 0.40 | 30 | 100 | 8.0 | 0.02 | 0.8 | 0.350 | 5.00 | |
| PMS1812-020-60 | 0.20 | 0.40 | 60 | 100 | 8.0 | 0.02 | 0.8 | 0.350 | 5.00 | |
| PMS1812-030 | 0.30 | 0.60 | 30 | 100 | 8.0 | 0.10 | 0.8 | 0.250 | 3.00 | |
| PMS1812-030-60 | 0.30 | 0.60 | 60 | 100 | 8.0 | 0.10 | 0.8 | 0.250 | 3.00 | |
| PMS1812-050 | 0.50 | 1.00 | 15 | 100 | 8.0 | 0.15 | 0.8 | 0.150 | 1.00 | √ |
| PMS1812-050-24 | 0.50 | 1.00 | 24 | 100 | 8.0 | 0.15 | 0.8 | 0.150 | 1.00 | |
| PMS1812-050-33 | 0.50 | 1.00 | 33 | 100 | 8.0 | 0.15 | 0.8 | 0.150 | 1.00 | |
| PMS1812-075 | 0.75 | 1.50 | 13.2 | 100 | 8.0 | 0.20 | 0.8 | 0.090 | 0.450 | √ |
| PMS1812-075-24 | 0.75 | 1.50 | 24 | 100 | 8.0 | 0.20 | 0.8 | 0.090 | 0.450 | |
| PMS1812-075-33 | 0.75 | 1.50 | 33 | 100 | 8.0 | 0.20 | 0.8 | 0.090 | 0.450 | |
| PMS1812-110 | 1.10 | 2.20 | 8 | 100 | 8.0 | 0.30 | 0.8 | 0.050 | 0.250 | √ |
| PMS1812-110-16 | 1.10 | 2.20 | 16 | 100 | 8.0 | 0.30 | 0.8 | 0.050 | 0.250 | |
| PMS1812-110-24 | 1.10 | 2.20 | 24 | 100 | 8.0 | 0.30 | 0.8 | 0.050 | 0.250 | |
| PMS1812-125 | 1.25 | 2.50 | 16 | 100 | 8.0 | 0.40 | 0.8 | 0.050 | 0.140 | |
| PMS1812-150 | 1.50 | 3.00 | 8 | 100 | 8.0 | 0.50 | 0.8 | 0.040 | 0.160 | √ |
| PMS1812-150-13 | 1.50 | 3.00 | 13.2 | 100 | 8.0 | 0.50 | 0.8 | 0.040 | 0.160 | |
| PMS1812-150-16 | 1.50 | 3.00 | 16 | 100 | 8.0 | 0.50 | 0.8 | 0.040 | 0.160 | |
| PMS1812-150-24 | 1.50 | 3.00 | 24 | 100 | 8.0 | 0.50 | 0.8 | 0.040 | 0.160 | |
| PMS1812-160 | 1.60 | 2.80 | 8 | 100 | 8.0 | 1.00 | 0.8 | 0.030 | 0.130 | √ |
| PMS1812-160-13 | 1.60 | 2.80 | 13.2 | 100 | 8.0 | 1.00 | 0.8 | 0.030 | 0.130 | |
| PMS1812-160-16 | 1.60 | 2.80 | 16 | 100 | 8.0 | 1.00 | 0.8 | 0.030 | 0.130 | |
| PMS1812-200 | 2.00 | 4.00 | 8 | 100 | 8.0 | 2.00 | 0.8 | 0.020 | 0.100 | √ |
| PMS1812-200-13 | 2.00 | 4.00 | 13.2 | 100 | 8.0 | 2.00 | 0.8 | 0.020 | 0.100 | |
| PMS1812-260 | 2.60 | 5.00 | 8 | 100 | 8.0 | 2.50 | 0.8 | 0.015 | 0.050 | √ |
| PMS1812-300 | 3.00 | 5.00 | 8 | 100 | 8.0 | 4.00 | 0.8 | 0.012 | 0.040 | |
| PMS1812-350 | 3.50 | 6.00 | 6 | 100 | 10.0 | 4.00 | 2.0 | 0.008 | 0.030 | |
| PMS1812-375 | 3.75 | 7.00 | 6 | 100 | 12.0 | 4.00 | 2.0 | 0.007 | 0.028 | |

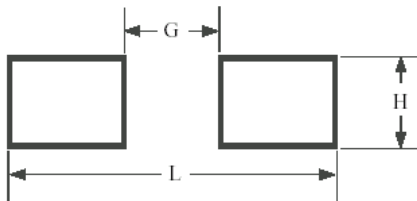
¹ The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

Packaging and Marking Information:

| Part Number | Part Marking | Tape & Reel Quantity (piece) |
|----------------|--------------|------------------------------|
| PMS1812-010 | α010 | 1,500 |
| PMS1812-010-60 | α010 | |
| PMS1812-014 | α014 | |
| PMS1812-020 | α020 | |
| PMS1812-020-60 | α020 | |
| PMS1812-030 | α030 | |
| PMS1812-030-60 | α030 | |
| PMS1812-050 | α050 | |
| PMS1812-050-24 | α050 | |
| PMS1812-050-33 | α050 | |
| PMS1812-075 | α075 | |
| PMS1812-075-24 | α075 | |
| PMS1812-075-33 | α075 | |
| PMS1812-110 | α110 | |
| PMS1812-110-16 | α110 | |
| PMS1812-110-24 | α110 | |
| PMS1812-125 | α125 | |
| PMS1812-150 | α150 | |
| PMS1812-150-13 | α150 | |
| PMS1812-150-16 | α150 | |
| PMS1812-150-24 | α150 | |
| PMS1812-160 | α160 | |
| PMS1812-160-13 | α160 | |
| PMS1812-160-16 | α160 | |
| PMS1812-200 | α200 | |
| PMS1812-200-13 | α200 | |
| PMS1812-260 | α260 | |
| PMS1812-300 | α300 | |
| PMS1812-350 | α350 | |
| PMS1812-375 | α375 | |

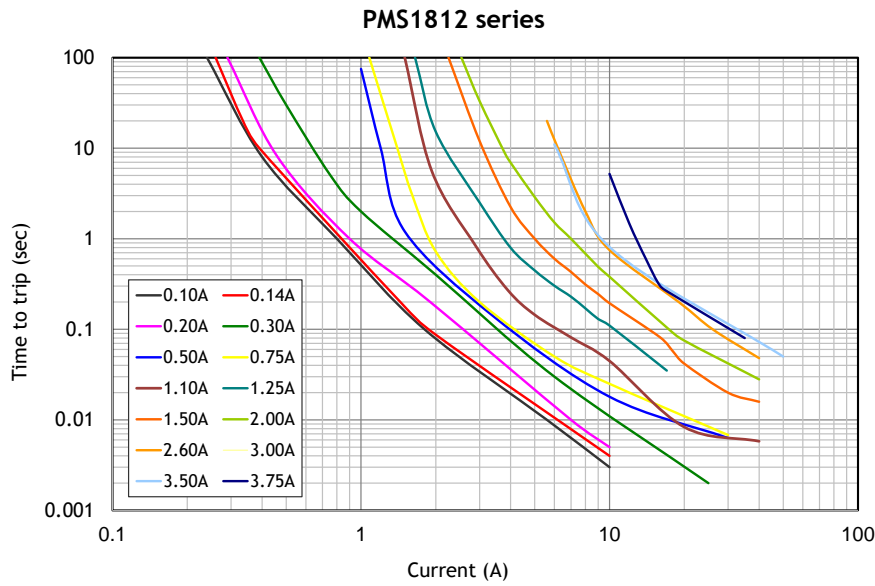
Thermal De-rating Hold Current (A) at Ambient Temperature (25°C):

| Part Number | Ambient temperature | | | | | | | | |
|----------------|---------------------|-------|------|------|------|------|------|------|------|
| | -40°C | -20°C | 0°C | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| PMS1812-010 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| PMS1812-010-60 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| PMS1812-014 | 0.23 | 0.19 | 0.17 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.06 |
| PMS1812-020 | 0.29 | 0.26 | 0.23 | 0.20 | 0.17 | 0.15 | 0.14 | 0.12 | 0.10 |
| PMS1812-020-60 | 0.29 | 0.26 | 0.23 | 0.20 | 0.17 | 0.15 | 0.14 | 0.12 | 0.10 |
| PMS1812-030 | 0.44 | 0.39 | 0.35 | 0.30 | 0.26 | 0.23 | 0.21 | 0.18 | 0.15 |
| PMS1812-030-60 | 0.44 | 0.39 | 0.35 | 0.30 | 0.26 | 0.23 | 0.21 | 0.18 | 0.15 |
| PMS1812-050 | 0.59 | 0.57 | 0.55 | 0.50 | 0.45 | 0.43 | 0.35 | 0.30 | 0.23 |
| PMS1812-050-24 | 0.59 | 0.57 | 0.55 | 0.50 | 0.45 | 0.43 | 0.35 | 0.30 | 0.23 |
| PMS1812-050-33 | 0.59 | 0.57 | 0.55 | 0.50 | 0.45 | 0.43 | 0.35 | 0.30 | 0.23 |
| PMS1812-075 | 1.10 | 0.99 | 0.87 | 0.75 | 0.63 | 0.57 | 0.49 | 0.45 | 0.35 |
| PMS1812-075-24 | 1.10 | 0.99 | 0.87 | 0.75 | 0.63 | 0.57 | 0.49 | 0.45 | 0.35 |
| PMS1812-075-33 | 1.10 | 0.99 | 0.87 | 0.75 | 0.63 | 0.57 | 0.49 | 0.45 | 0.35 |
| PMS1812-110 | 1.60 | 1.45 | 1.28 | 1.10 | 0.92 | 0.83 | 0.71 | 0.66 | 0.52 |
| PMS1812-110-16 | 1.60 | 1.45 | 1.28 | 1.10 | 0.92 | 0.83 | 0.71 | 0.66 | 0.52 |
| PMS1812-110-24 | 1.60 | 1.45 | 1.28 | 1.10 | 0.92 | 0.83 | 0.71 | 0.66 | 0.52 |
| PMS1812-125 | 2.00 | 1.75 | 1.52 | 1.25 | 1.00 | 0.95 | 0.90 | 0.75 | 0.53 |
| PMS1812-150 | 2.30 | 2.05 | 1.77 | 1.50 | 1.23 | 1.09 | 0.95 | 0.82 | 0.61 |
| PMS1812-150-13 | 2.30 | 2.05 | 1.77 | 1.50 | 1.23 | 1.09 | 0.95 | 0.82 | 0.61 |
| PMS1812-150-16 | 2.30 | 2.05 | 1.77 | 1.50 | 1.23 | 1.09 | 0.95 | 0.82 | 0.61 |
| PMS1812-150-24 | 2.30 | 2.05 | 1.77 | 1.50 | 1.23 | 1.09 | 0.95 | 0.82 | 0.61 |
| PMS1812-160 | 2.40 | 2.15 | 1.88 | 1.60 | 1.26 | 1.12 | 0.98 | 0.84 | 0.63 |
| PMS1812-160-13 | 2.40 | 2.15 | 1.88 | 1.60 | 1.26 | 1.12 | 0.98 | 0.84 | 0.63 |
| PMS1812-160-16 | 2.40 | 2.15 | 1.88 | 1.60 | 1.26 | 1.12 | 0.98 | 0.84 | 0.63 |
| PMS1812-200 | 2.88 | 2.61 | 2.25 | 2.00 | 1.80 | 1.66 | 1.45 | 1.09 | 0.80 |
| PMS1812-200-13 | 2.88 | 2.61 | 2.25 | 2.00 | 1.80 | 1.66 | 1.45 | 1.09 | 0.80 |
| PMS1812-260 | 3.90 | 3.42 | 2.96 | 2.60 | 2.33 | 2.07 | 1.94 | 1.35 | 1.00 |
| PMS1812-300 | 4.15 | 3.76 | 3.46 | 3.00 | 2.55 | 2.28 | 2.01 | 1.61 | 1.33 |
| PMS1812-350 | 5.04 | 4.57 | 3.94 | 3.50 | 3.15 | 2.91 | 2.54 | 1.91 | 1.40 |
| PMS1812-375 | 5.45 | 4.94 | 4.36 | 3.75 | 3.14 | 2.83 | 2.54 | 2.25 | 1.82 |

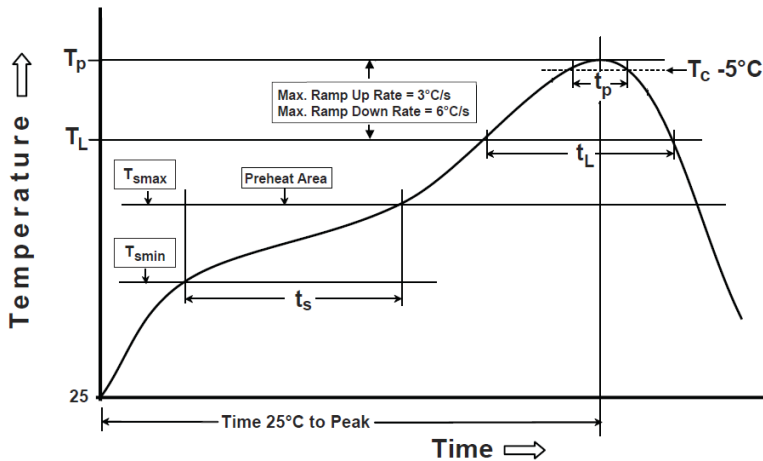
Recommended Foot Print Dimensions:


| G (mm) | H (mm) | L (mm) |
|--------|--------|--------|
| 3.15 | 3.25 | 6.01 |

Typical Time to Trip (@ 25°C):



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}) | 60~120 seconds |
| Ramp-up rate (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:

- PMS1206 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.

Do not use this product in any Automotive Power train or Safety equipment such as ECU, ABS systems, or Battery Pack, Battery Management System, Battery Charger for Electric Vehicles and Plug-in Hybrid Vehicles. Only AEM products clearly described as "for Automotive Use" on its catalog can be used for automobile applications such as Power train and Safety equipment.