

# Surface Mount Polymer PTC

## PMS Series, 1206 Size



### **Features:**

- Resettable over-current protection
- Small size of 1206
- Fast time-to-trip
- RoHS compliant
- Halogen free

### **Applications:**

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

### **Ordering Code:**

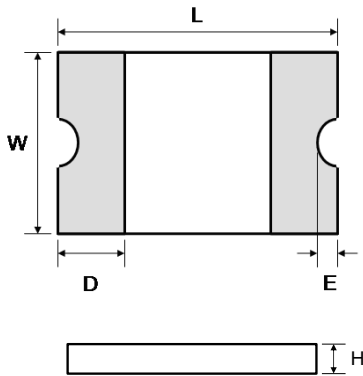
**PMS 1206-020-30**

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

- (1) Series code
- (2) Size code
- (3) Current rating code  
020: 0.2A
- (4) Voltage rating code  
30: 30V

### **Agency Approval:**

Recognized under the components program of UL.  
File number: E355716

**Product Dimensions:**


| Part Number    | L (mm)<br>Max. | W (mm)<br>Max. | H (mm)<br>Max. | D (mm)<br>Min. | E (mm)<br>Min. |
|----------------|----------------|----------------|----------------|----------------|----------------|
| PMS1206-005    | 3.50           | 1.80           | 1.10           | 0.15           | 0.10           |
| PMS1206-010    | 3.50           | 1.80           | 1.10           | 0.15           | 0.10           |
| PMS1206-012    | 3.50           | 1.80           | 1.10           | 0.15           | 0.10           |
| PMS1206-020    | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-020-30 | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-025    | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-025-24 | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-035    | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-035-13 | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-035-16 | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-035-24 | 3.50           | 1.80           | 0.90           | 0.15           | 0.10           |
| PMS1206-050    | 3.50           | 1.80           | 0.85           | 0.15           | 0.10           |
| PMS1206-050-13 | 3.50           | 1.80           | 0.85           | 0.15           | 0.10           |
| PMS1206-050-16 | 3.50           | 1.80           | 0.85           | 0.15           | 0.10           |
| PMS1206-075    | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-075-13 | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-075-16 | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-100    | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-100-13 | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-100-16 | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-110    | 3.50           | 1.80           | 0.80           | 0.15           | 0.10           |
| PMS1206-150    | 3.50           | 1.80           | 1.20           | 0.15           | 0.10           |
| PMS1206-200    | 3.50           | 1.80           | 1.20           | 0.15           | 0.10           |

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

✧ Operating temperature: -40 to +85°C

| Part Number    | Current (A)            |                        | V <sub>Max</sub><br>(Vdc) | I <sub>Max</sub><br>(A) | Max. Time to Trip<br>(sec) |            | Typical<br>Power<br>(Pd, W) | Resistance<br>Min. (Ω) | One Hours<br>Post Reflow<br>Resistance R <sub>1</sub><br>Max. (Ω) <sup>1</sup> | UL<br>Certification |
|----------------|------------------------|------------------------|---------------------------|-------------------------|----------------------------|------------|-----------------------------|------------------------|--|---------------------|
|                | Hold (I <sub>H</sub> ) | Trip (I <sub>T</sub> ) |                           |                         | Current<br>(A)             | Time (sec) |                             |                        |  |                     |
| PMS1206-005    | 0.05                   | 0.15                   | 60                        | 100                     | 0.25                       | 1.50       | 0.4                         | 3.60                   | 50.00  |                     |
| PMS1206-010    | 0.10                   | 0.25                   | 60                        | 100                     | 0.5                        | 1.00       | 0.4                         | 1.60                   | 15.00  |                     |
| PMS1206-012    | 0.12                   | 0.29                   | 60                        | 100                     | 0.5                        | 1.00       | 0.4                         | 1.60                   | 15.00  |                     |
| PMS1206-020    | 0.20                   | 0.40                   | 24                        | 100                     | 8.0                        | 0.08       | 0.6                         | 0.35                   | 2.500  |                     |
| PMS1206-020-30 | 0.20                   | 0.40                   | 30                        | 100                     | 8.0                        | 0.08       | 0.6                         | 0.35                   | 2.500  |                     |
| PMS1206-025    | 0.25                   | 0.50                   | 16                        | 100                     | 8.0                        | 0.08       | 0.6                         | 0.35                   | 2.500  | √                   |
| PMS1206-025-24 | 0.25                   | 0.50                   | 24                        | 100                     | 8.0                        | 0.08       | 0.6                         | 0.35                   | 2.500  |                     |
| PMS1206-035    | 0.35                   | 0.75                   | 6                         | 100                     | 8.0                        | 0.10       | 0.6                         | 0.25                   | 1.300  | √                   |
| PMS1206-035-13 | 0.35                   | 0.75                   | 13.2                      | 100                     | 8.0                        | 0.10       | 0.6                         | 0.25                   | 1.300  |                     |
| PMS1206-035-16 | 0.35                   | 0.75                   | 16                        | 100                     | 8.0                        | 0.10       | 0.6                         | 0.25                   | 1.300  |                     |
| PMS1206-035-24 | 0.35                   | 0.75                   | 24                        | 100                     | 8.0                        | 0.10       | 0.6                         | 0.25                   | 1.300  |                     |
| PMS1206-050    | 0.50                   | 1.00                   | 6                         | 100                     | 8.0                        | 0.10       | 0.6                         | 0.15                   | 0.700  | √                   |
| PMS1206-050-13 | 0.50                   | 1.00                   | 13.2                      | 100                     | 8.0                        | 0.10       | 0.6                         | 0.15                   | 0.700  |                     |
| PMS1206-050-16 | 0.50                   | 1.00                   | 16                        | 100                     | 8.0                        | 0.10       | 0.6                         | 0.15                   | 0.700  |                     |
| PMS1206-075    | 0.75                   | 1.50                   | 6                         | 100                     | 8.0                        | 0.20       | 0.6                         | 0.090                  | 0.500  | √                   |
| PMS1206-075-13 | 0.75                   | 1.50                   | 13.2                      | 100                     | 8.0                        | 0.20       | 0.6                         | 0.090                  | 0.500  |                     |
| PMS1206-075-16 | 0.75                   | 1.50                   | 16                        | 100                     | 8.0                        | 0.20       | 0.6                         | 0.090                  | 0.500  |                     |
| PMS1206-100    | 1.00                   | 1.80                   | 6                         | 100                     | 8.0                        | 0.30       | 0.6                         | 0.055                  | 0.270  | √                   |
| PMS1206-100-13 | 1.00                   | 1.80                   | 13.2                      | 100                     | 8.0                        | 0.30       | 0.6                         | 0.055                  | 0.270  |                     |
| PMS1206-100-16 | 1.00                   | 1.80                   | 16                        | 100                     | 8.0                        | 0.30       | 0.6                         | 0.055                  | 0.270  |                     |
| PMS1206-110    | 1.10                   | 2.20                   | 6                         | 100                     | 8.0                        | 0.30       | 0.6                         | 0.050                  | 0.250  | √                   |
| PMS1206-150    | 1.50                   | 3.00                   | 6                         | 100                     | 8.0                        | 1.00       | 0.8                         | 0.040                  | 0.130  | √                   |
| PMS1206-200    | 2.00                   | 3.50                   | 6                         | 100                     | 8.0                        | 1.50       | 0.8                         | 0.018                  | 0.080  |                     |

<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.

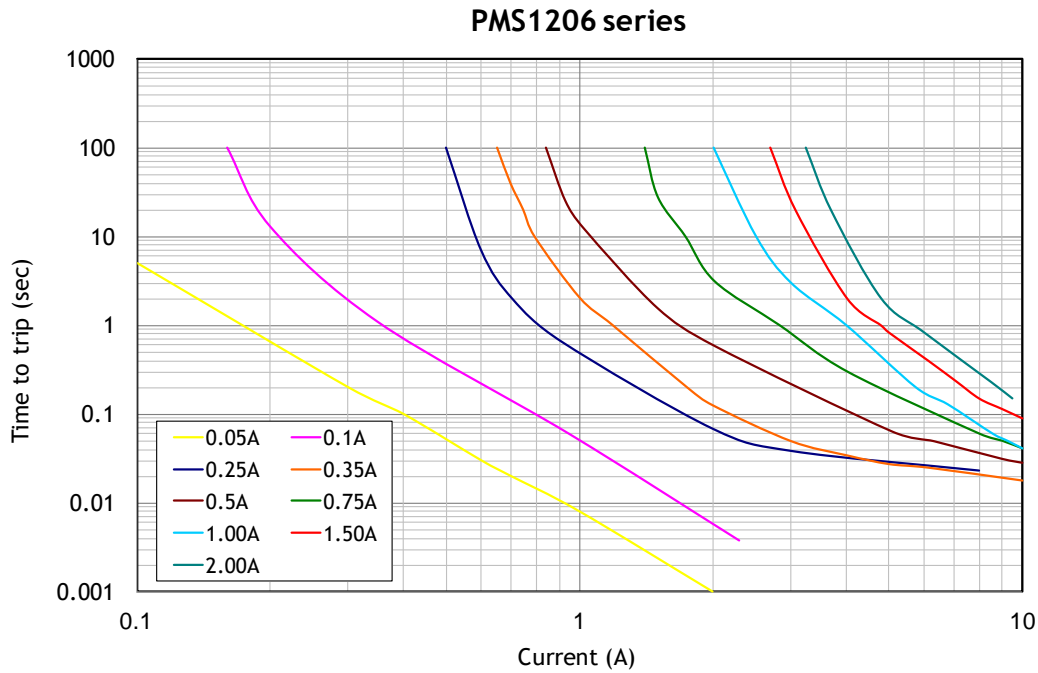
### Packaging and Marking Information:

| Part Number    | Part Marking | Tape & Reel Quantity (piece) |
|----------------|--------------|------------------------------|
| PMS1206-005    | αZ           | 3,500                        |
| PMS1206-010    | αN           |                              |
| PMS1206-012    | αN           |                              |
| PMS1206-020    | αA           | 5,000                        |
| PMS1206-020-30 | αA           |                              |
| PMS1206-025    | αA           |                              |
| PMS1206-025-24 | αA           |                              |
| PMS1206-035    | αB           |                              |
| PMS1206-035-13 | αB           |                              |
| PMS1206-035-16 | αB           |                              |
| PMS1206-035-24 | αB           |                              |
| PMS1206-050    | αF           |                              |
| PMS1206-050-13 | αF           |                              |
| PMS1206-050-16 | αF           |                              |
| PMS1206-075    | αG           |                              |
| PMS1206-075-13 | αG           |                              |
| PMS1206-075-16 | αG           | 3,500                        |
| PMS1206-100    | αH           | 5,000                        |
| PMS1206-100-13 | αH           | 3,500                        |
| PMS1206-100-16 | αH           |                              |
| PMS1206-110    | αH           | 5,000                        |
| PMS1206-150    | αI           | 3,000                        |
| PMS1206-200    | αK           | 3,500                        |

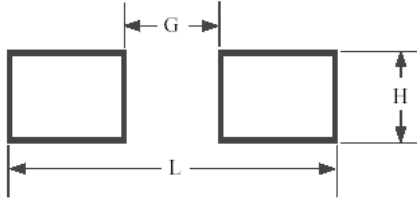
### Thermal De-rating Hold Current (A) at Ambient Temperature (25°C):

| Part Number    | Ambient temperature |       |       |       |        |       |       |       |        |
|----------------|---------------------|-------|-------|-------|--------|-------|-------|-------|--------|
|                | -40°C               | -20°C | 0°C   | 25°C  | 40°C   | 50°C  | 60°C  | 70°C  | 85°C   |
| PMS1206-005    | 0.074               | 0.066 | 0.058 | 0.050 | 0.0425 | 0.038 | 0.035 | 0.030 | 0.0275 |
| PMS1206-010    | 0.15                | 0.13  | 0.12  | 0.10  | 0.085  | 0.075 | 0.07  | 0.06  | 0.055  |
| PMS1206-012    | 0.18                | 0.16  | 0.14  | 0.12  | 0.10   | 0.09  | 0.08  | 0.07  | 0.065  |
| PMS1206-020    | 0.30                | 0.26  | 0.23  | 0.20  | 0.17   | 0.15  | 0.14  | 0.12  | 0.11   |
| PMS1206-020-30 | 0.30                | 0.26  | 0.23  | 0.20  | 0.17   | 0.15  | 0.14  | 0.12  | 0.11   |
| PMS1206-025    | 0.37                | 0.33  | 0.29  | 0.25  | 0.22   | 0.20  | 0.17  | 0.15  | 0.12   |
| PMS1206-025-24 | 0.37                | 0.33  | 0.29  | 0.25  | 0.22   | 0.20  | 0.17  | 0.15  | 0.12   |
| PMS1206-035    | 0.50                | 0.45  | 0.40  | 0.35  | 0.30   | 0.27  | 0.24  | 0.21  | 0.15   |
| PMS1206-035-13 | 0.50                | 0.45  | 0.40  | 0.35  | 0.30   | 0.27  | 0.24  | 0.21  | 0.15   |
| PMS1206-035-16 | 0.50                | 0.45  | 0.40  | 0.35  | 0.30   | 0.27  | 0.24  | 0.21  | 0.15   |
| PMS1206-035-24 | 0.50                | 0.45  | 0.40  | 0.35  | 0.30   | 0.27  | 0.24  | 0.21  | 0.15   |
| PMS1206-050    | 0.71                | 0.64  | 0.57  | 0.50  | 0.42   | 0.39  | 0.35  | 0.31  | 0.25   |
| PMS1206-050-13 | 0.71                | 0.64  | 0.57  | 0.50  | 0.42   | 0.39  | 0.35  | 0.31  | 0.25   |
| PMS1206-050-16 | 0.71                | 0.64  | 0.57  | 0.50  | 0.42   | 0.39  | 0.35  | 0.31  | 0.25   |
| PMS1206-075    | 1.14                | 1.01  | 0.88  | 0.75  | 0.65   | 0.59  | 0.54  | 0.49  | 0.41   |
| PMS1206-075-13 | 1.14                | 1.01  | 0.88  | 0.75  | 0.65   | 0.59  | 0.54  | 0.49  | 0.41   |
| PMS1206-075-16 | 1.14                | 1.01  | 0.88  | 0.75  | 0.65   | 0.59  | 0.54  | 0.49  | 0.41   |
| PMS1206-100    | 1.45                | 1.31  | 1.15  | 1.00  | 0.84   | 0.77  | 0.69  | 0.61  | 0.48   |
| PMS1206-100-13 | 1.45                | 1.31  | 1.15  | 1.00  | 0.84   | 0.77  | 0.69  | 0.61  | 0.48   |
| PMS1206-100-16 | 1.45                | 1.31  | 1.15  | 1.00  | 0.84   | 0.77  | 0.69  | 0.61  | 0.48   |
| PMS1206-110    | 1.60                | 1.45  | 1.30  | 1.10  | 0.95   | 0.80  | 0.72  | 0.66  | 0.55   |
| PMS1206-150    | 2.18                | 1.94  | 1.72  | 1.50  | 1.28   | 1.17  | 1.06  | 0.96  | 0.77   |
| PMS1206-200    | 2.88                | 2.63  | 2.34  | 2.00  | 1.74   | 1.58  | 1.42  | 1.17  | 0.93   |

### Typical Time to Trip (@ 25°C):



### Recommended Foot Print Dimensions:

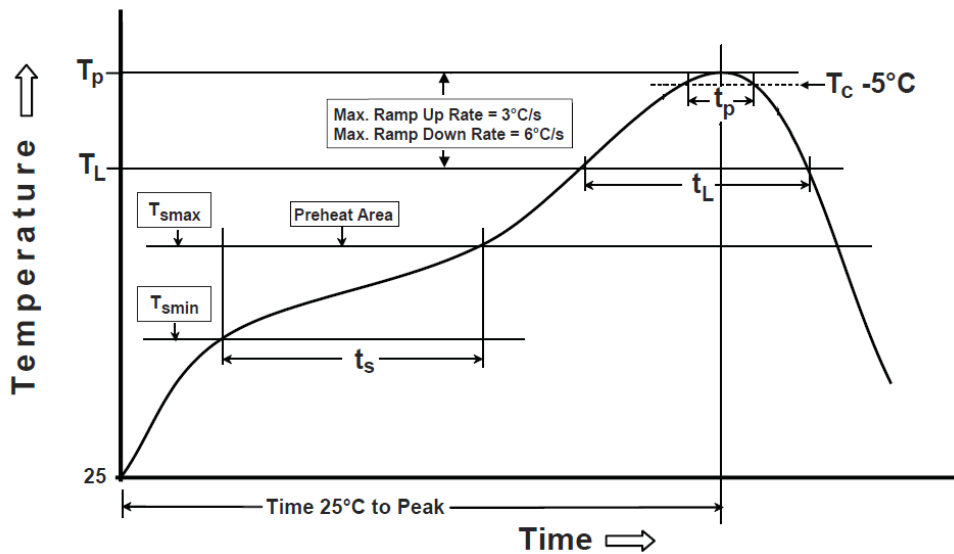


| G (mm) | H (mm) | L (mm) |
|--------|--------|--------|
| 1.8    | 1.8    | 3.8    |

### 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:



| 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:

- PMS1206 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.

**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.