

Surface Mount Polymer PTC

PBS0603 Series (Standard, 0603 Size)

Features:

- Resettable over-current protection
- Small size of 0603
- Fast time-to-trip

Applications:

- Mobile Phones-Battery and Port Protection
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments
- USB Port protection
- HDMI 1.4 Source protection

Product Identification:

PBS 0603 - 035 F

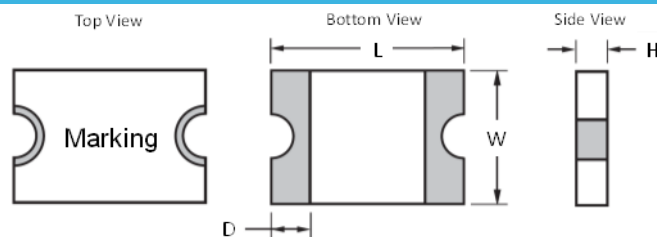
(1) (2) (3) (4)

- (1) **Series Code:** Surface Mount Polymer PTC
- (2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- (3) **Current Rating Code:** 035 - 0.35A
- (4) **Identification Code**

Agency Approval:

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

Shape and Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PBS0603-010F							
PBS0603-020F	1.45	1.85	0.65	1.05	0.30	0.65	0.20
PBS0603-025F	(0.057)	(0.073)	(0.026)	(0.041)	(0.012)	(0.026)	(0.008)
PBS0603-035F							
PBS0603-050F	1.45	1.85	0.65	1.05	0.65	1.00	0.20
	(0.057)	(0.073)	(0.026)	(0.041)	(0.026)	(0.039)	(0.008)

Surface Mount Polymer PTC

PBS0603 Series (Standard, 0603 Size)

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 Reflow Resistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS0603-010F	0.10	0.30	15	40	0.5	1.00	0.50	0.900	6.000	✓	✓
PBS0603-020F	0.20	0.50	9	40	1.0	0.60	0.50	0.550	3.500	✓	✓
PBS0603-025F	0.25	0.75	6	40	8.0	0.10	0.50	0.200	1.400	✓	✓
PBS0603-035F	0.35	0.75	6	40	8.0	0.10	0.50	0.200	1.400	✓	✓
PBS0603-050F	0.50	1.00	6	40	8.0	0.10	0.50	0.100	0.800	✓	✓

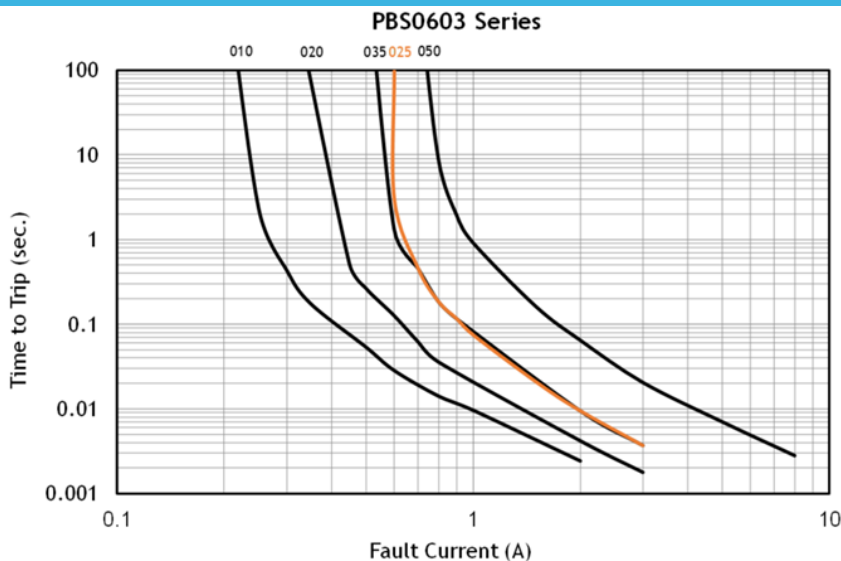
¹ The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

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
PBS0603-010F	0.13	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
PBS0603-020F	0.27	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
PBS0603-025F	0.32	0.29	0.27	0.25	0.21	0.18	0.16	0.14	0.10
PBS0603-035F	0.47	0.41	0.38	0.35	0.29	0.26	0.24	0.20	0.14
PBS0603-050F	0.67	0.59	0.54	0.50	0.41	0.37	0.34	0.29	0.20

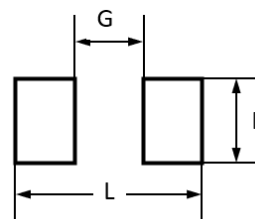
Surface Mount Polymer PTC PBS0603 Series (Standard, 0603 Size)

Typical Time to Trip (@ 23°C):



Recommended Land Pattern:

Chip Size	0603	Unit
G	0.8±0.1	mm
H	1.0±0.1	mm
L	2.2±0.1	mm



Packaging and Marking:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PBS0603-010F		5,000
PBS0603-020F	I	6,000
PBS0603-025F	+	
PBS0603-035F	•	
PBS0603-050F	-	4,000

Operating Temperature Range:

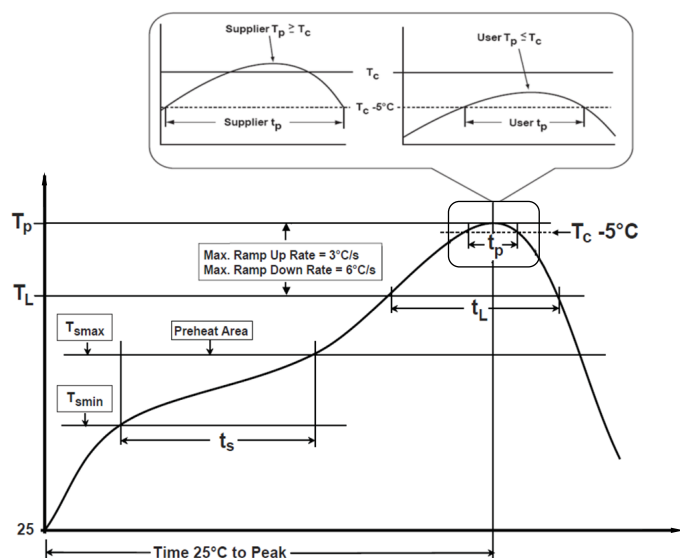
- 40°C ~ +85°C (with de-rating)

Surface Mount Polymer PTC

PBS0603 Series (Standard, 0603 Size)

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:

- PBS0603 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com

Surface Mount Polymer PTC

PBS0805 Series (Standard, 0805 Size)

Features:

- Resettable over-current protection
- Small size of 0805
- Fast time-to-trip
- Symmetrical design
- Low profile

Applications:

- Mobile phones - Battery and port protection
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments
- HDMI 1.4 Source protection

Product Identification:

PBS 0805 - 035 F

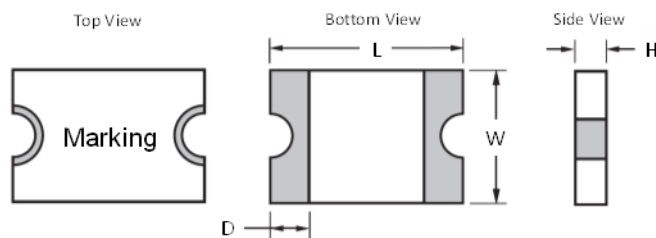
(1) (2) (3) (4)

- (1) **Series Code:** Surface Mount Polymer PTC
- (2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- (3) **Current Rating Code:** 035 - 0.35A
- (4) **Identification Code**

Agency Approval:

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

Shape and Dimensions:



Part Number	L mm (inches)		W mm (inches)		H mm (inches)		D mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PBS0805-010F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.48 (0.019)	0.85 (0.033)	0.20 (0.008)
PBS0805-010-24F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.48 (0.019)	0.85 (0.033)	0.20 (0.008)
PBS0805-020F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.48 (0.019)	0.85 (0.033)	0.20 (0.008)
PBS0805-035F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.48 (0.019)	0.85 (0.033)	0.20 (0.008)
PBS0805-050F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.48 (0.019)	0.85 (0.033)	0.20 (0.008)
PBS0805-075F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.75 (0.030)	1.25 (0.049)	0.20 (0.008)
PBS0805-110F	2.00 (0.079)	2.30 (0.091)	1.20 (0.047)	1.50 (0.059)	0.75 (0.030)	1.25 (0.049)	0.20 (0.008)

Surface Mount Polymer PTC

PBS0805 Series (Standard, 0805 Size)

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 Reflow Re- sistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS0805-010F	0.10	0.30	15	40	0.5	1.5	0.5	1.00	7.50	✓	✓
PBS0805-010-24F	0.10	0.30	24	80	0.5	1.5	0.5	1.00	7.50		
PBS0805-020F	0.20	0.50	9	40	8.0	0.02	0.5	0.650	3.50	✓	✓
PBS0805-035F	0.35	0.75	6	40	8.0	0.10	0.5	0.250	1.20	✓	✓
PBS0805-050F	0.50	1.00	6	40	8.0	0.10	0.5	0.150	0.900	✓	✓
PBS0805-075F	0.75	1.50	6	40	8.0	0.20	0.6	0.090	0.350	✓	✓
PBS0805-110F	1.10	2.20	6	40	8.0	0.30	0.6	0.060	0.210	✓	✓

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.

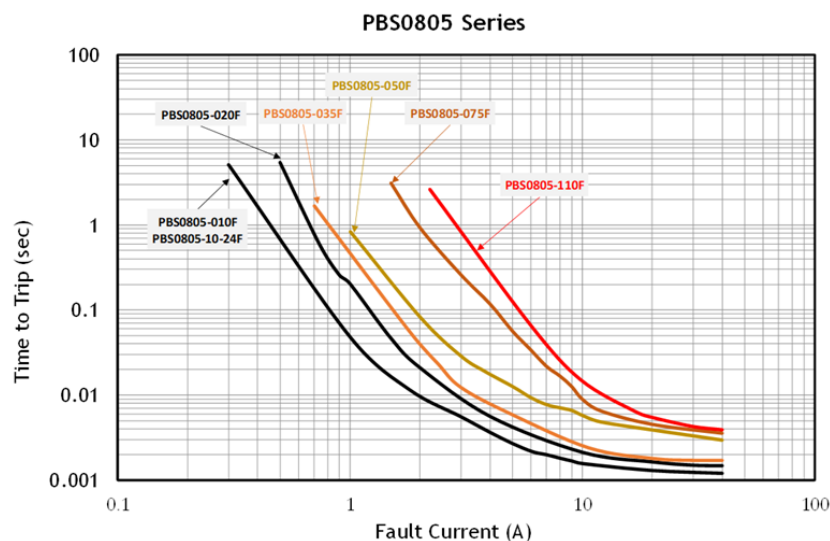
Temperature De-rating:

Part Number	Ambient temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
PBS0805-010F	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
PBS0805-010-24F	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
PBS0805-020F	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
PBS0805-035F	0.47	0.44	0.39	0.35	0.30	0.27	0.24	0.20	0.14
PBS0805-050F	0.68	0.62	0.55	0.50	0.40	0.37	0.33	0.29	0.23
PBS0805-075F	1.00	0.90	0.79	0.75	0.63	0.57	0.53	0.42	0.35
PBS0805-110F	1.45	1.35	1.20	1.10	0.92	0.84	0.75	0.65	0.52

Surface Mount Polymer PTC

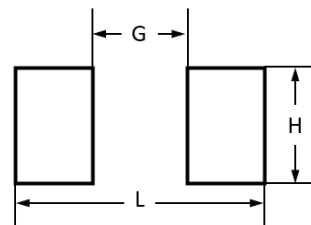
PBS0805 Series (Standard, 0805 Size)

Typical Time to Trip (@ 23°C):



Recommended Land Pattern:

Chip Size	0805	Unit
G	1.2±0.1	mm
H	1.5±0.1	mm
L	3.2±0.1	mm



Packaging and Marking:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PBS0805-010F	1	3,000
PBS0805-010-24F	1	
PBS0805-020F	2	
PBS0805-035F	3	
PBS0805-050F	4	
PBS0805-075F	5	
PBS0805-110F	6	

Operating Temperature Range:

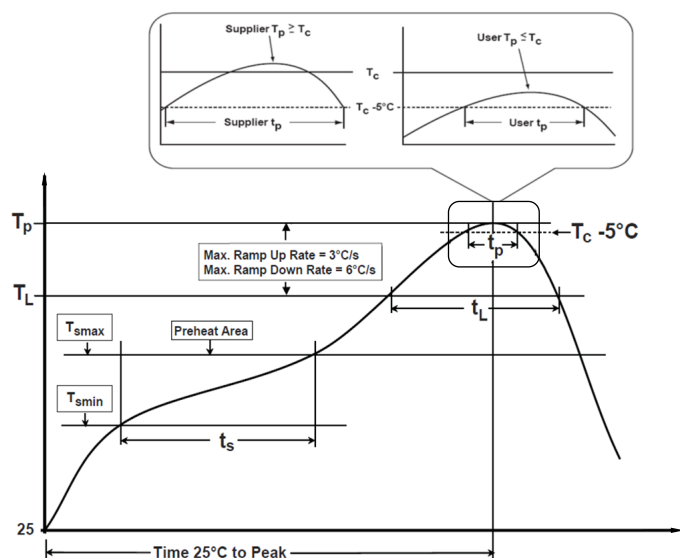
- 40°C ~ +85°C (with de-rating)

Surface Mount Polymer PTC

PBS0805 Series (Standard, 0805 Size)

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:

- PBS0805 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com

Surface Mount Polymer PTC

PBS1206 Series (Standard, 1206 Size)

Features:

- Resettable over-current protection
- Small size of 1206
- Fast time-to-trip

Applications:

- Mobile phones - Battery and port protection
- Portable electronic devices
- Industrial controls
- Multimedia-PDAs
- Digital cameras
- USB port protection - USB 2.0, 3.0 & OTG
- HDMI 1.4 Source protection
- PC motherboards - Plug and Play protection
- Telecom & broadband instruments
- Game console port protection

Product Identification:

PBS 1206 - 035 - 16 F

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

(1) **Series Code:** Surface Mount Polymer PTC

(2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)

(3) **Current Rating Code:** 035 - 0.35 A

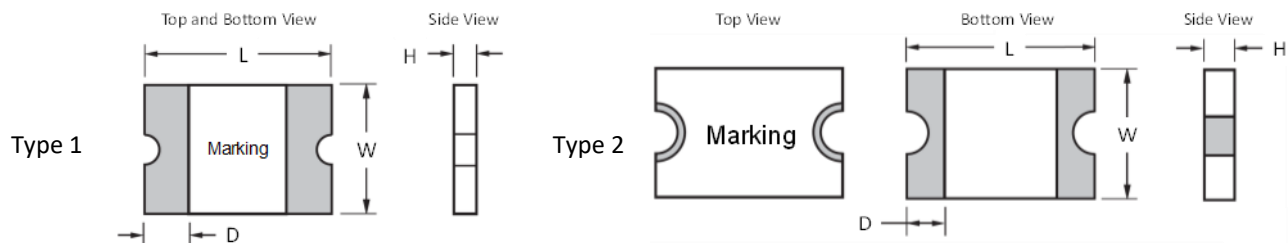
(4) **Voltage Rating Code:** 16: 16 V DC

(5) **Identification Code**

Agency Approval:

- UL file number: E355716
- TUV certification number: 50371842, 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.
PBS1206-012	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.10 (0.043)	0.25 (0.010)
PBS1206-016 PBS1206-020	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PBS1206-020-30F PBS1206-025F	2	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)
PBS1206-035	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PBS1206-035-16F	2	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)
PBS1206-050	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
PBS1206-075 PBS1206-110	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
PBS1206-125-8F	2	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.6 (0.024)	1.10 (0.043)	0.25 (0.010)
PBS1206-150	1	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
PBS1206-200	1	3.00 (0.118)	3.50 (0.138)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.60 (0.063)	0.25 (0.010)

Surface Mount Polymer PTC

PBS1206 Series (Standard, 1206 Size)

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 Reflow Resistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS1206-012	0.12	0.29	30	10	1.0	0.20	0.6	1.35	8.50	✓	✓
PBS1206-016	0.16	0.37	30	10	1.0	0.30	0.6	0.7	6.00	✓	✓
PBS1206-020	0.20	0.46	24	10	1.0	0.60	0.6	0.60	2.60	✓	✓
PBS1206-020-30F	0.20	0.40	30	60	1.0	0.60	0.6	0.60	3.30	✓	✓
PBS1206-025F	0.25	0.50	16	20	8.0	0.08	0.6	0.45	2.30	✓	✓
PBS1206-035	0.35	0.75	6	100	8.0	0.10	0.6	0.30	1.20	✓	✓
PBS1206-035-16F	0.35	0.75	16	20	3.5	0.14	0.6	0.30	1.40	✓	✓
PBS1206-050	0.50	1.00	13.2	100	8.0	0.10	0.6	0.15	0.70	✓	✓
PBS1206-075	0.75	1.50	6	100	8.0	0.10	0.6	0.10	0.40	✓	✓
PBS1206-110	1.10	2.20	6	100	8.0	0.2	0.6	0.06	0.20	✓	✓
PBS1206-125-8F	1.25	2.5	8	100	8.0	0.2	0.6	0.04	N/A	✓	✓
PBS1206-150	1.50	3.00	6	100	8.0	0.30	0.6	0.03	0.13	✓	✓
PBS1206-200	2.00	4.00	6	100	8.0	1.00	0.6	0.02	0.085	✓	✓

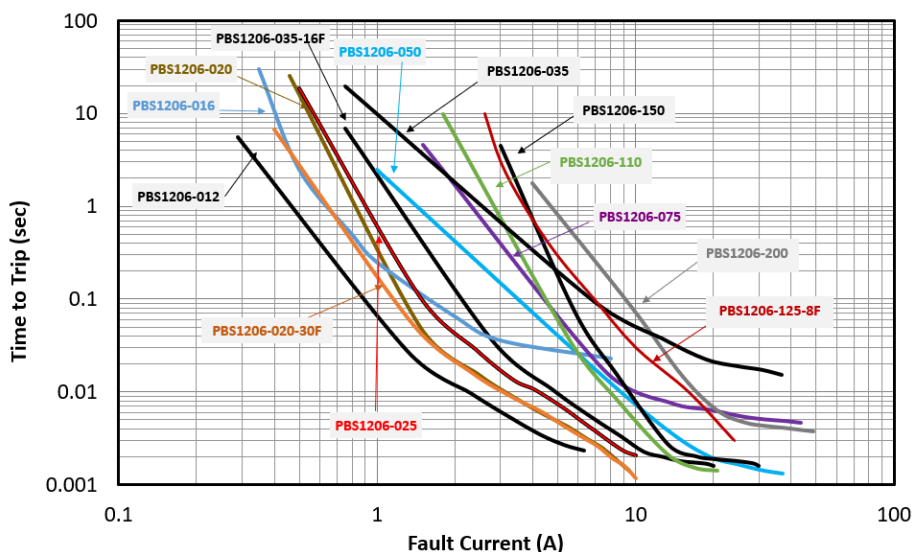
¹ The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

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
PBS1206-012	0.19	0.17	0.15	0.12	0.11	0.10	0.09	0.08	0.07
PBS1206-016	0.21	0.20	0.18	0.16	0.14	0.13	0.12	0.11	0.09
PBS1206-020	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.11
PBS1206-020-30F	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.10
PBS1206-025F	0.39	0.35	0.31	0.25	0.23	0.21	0.18	0.16	0.13
PBS1206-035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PBS1206-035-16F	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PBS1206-050	0.76	0.68	0.59	0.50	0.44	0.40	0.35	0.32	0.26
PBS1206-075	1.11	1.00	0.85	0.75	0.67	0.61	0.52	0.50	0.42
PBS1206-110	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
PBS1206-125-8F	1.84	1.66	1.47	1.25	1.11	1.02	0.91	0.82	0.69
PBS1206-150	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
PBS1206-200	2.88	2.61	2.28	2.00	1.80	1.66	1.51	1.39	1.19

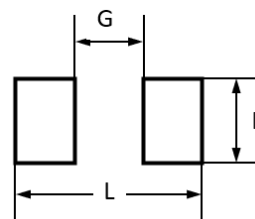
Surface Mount Polymer PTC
PBS1206 Series (Standard, 1206 Size)

Typical Time to Trip (@ 23°C):



Recommended Land Pattern:

Chip Size	1206	Unit
G	2.0±0.1	mm
H	1.6±0.1	mm
L	4.0±0.1	mm



Packaging and Marking:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PBS1206-012	<u>0</u>	3,000
PBS1206-016	<u>1</u>	
PBS1206-020	<u>2</u>	
PBS1206-020-30F	2	
PBS1206-025F	C	
PBS1206-035	<u>3</u>	
PBS1206-035-16F	3	
PBS1206-050	<u>4</u>	
PBS1206-075	<u>5</u>	
PBS1206-110	<u>6</u>	
PBS1206-125-8F	<u>7</u>	
PBS1206-150	<u>8</u>	
PBS1206-200	<u>A</u>	

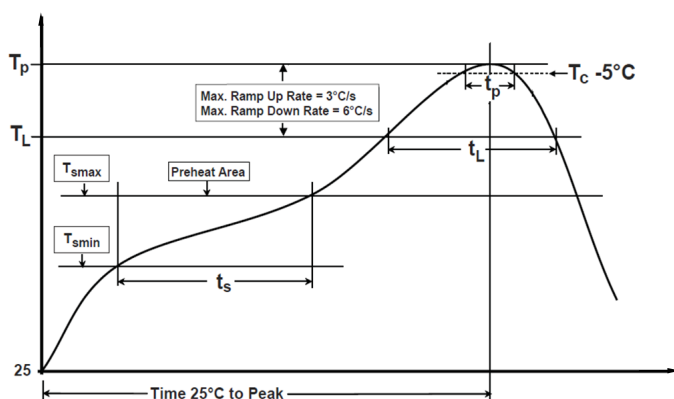
Operating Temperature Range:

- 40°C ~ + 85°C (with de-rating)

Surface Mount Polymer PTC

PBS1206 Series (Standard, 1206 Size)

Soldering Temperature Profile:



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)	20-40seconds *
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:

- PBS1206 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028
Fax: 86-512-6258-0018
Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100
Fax: 1-858-481-1123
Email: sales@aemcomponents.com

Surface Mount Polymer PTC

PBS1210 Series (Standard, 1210 Size)

Features:

- Resettable over-current protection
- Small size of 1210
- Fast time-to-trip

Product Identification:

PBS 1210 - 175 F

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

- (1) **Series Code:** Surface Mount Polymer PTC
- (2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- (3) **Current Rating Code:** 175 - 1.75A
- (4) **Identification Code**

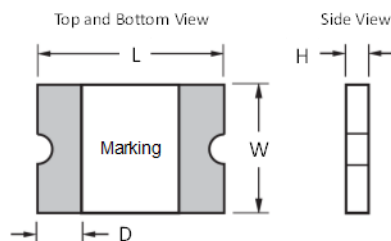
Applications:

- Battery packs
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments
- HDMI 1.4 Source protection
- IEEE 1394 ports

Agency Approval:

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

Shape and Dimensions:



Part Number	L		W		H		D
	mm (inches)		mm (inches)		mm (inches)		mm (inches)
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
PBS1210-005	3.00	3.43	2.35	2.80	0.80	1.10	0.30
PBS1210-010	(0.118)	(0.135)	(0.093)	(0.110)	(0.031)	(0.043)	(0.012)
PBS1210-020							
PBS1210-035	3.00	3.43	2.35	2.80	0.55	0.85	0.30
PBS1210-050	(0.118)	(0.135)	(0.093)	(0.110)	(0.022)	(0.033)	(0.012)
PBS1210-075							
PBS1210-110							
PBS1210-150	3.00	3.43	2.35	2.80	0.40	0.85	0.30
PBS1210-175F	(0.118)	(0.135)	(0.093)	(0.110)	(0.016)	(0.033)	(0.012)

Surface Mount Polymer PTC

PBS1210 Series (Standard, 1210 Size)

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 Reflow Re- sistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS1210-005	0.05	0.15	30	10	0.25	1.5	0.6	2.800	50.00	✓	✓
PBS1210-010	0.10	0.30	30	10	0.50	0.60	0.6	0.800	15.00	✓	✓
PBS1210-020	0.20	0.40	30	10	8.0	0.20	0.6	0.400	5.000	✓	✓
PBS1210-035	0.35	0.75	6	40	8.0	0.20	0.6	0.200	1.300	✓	✓
PBS1210-050	0.50	1.00	13.2	40	8.0	0.10	0.6	0.180	0.900	✓	✓
PBS1210-075	0.75	1.50	6	40	8.0	0.10	0.6	0.070	0.450	✓	✓
PBS1210-110	1.10	2.20	6	40	5.0	1.0	0.6	0.050	0.210	✓	✓
PBS1210-150	1.50	3.00	6	40	5.0	1.0	0.6	0.030	0.110	✓	✓
PBS1210-175F	1.75	3.50	6	40	8.0	1.0	0.7	0.020	0.080	✓	✓

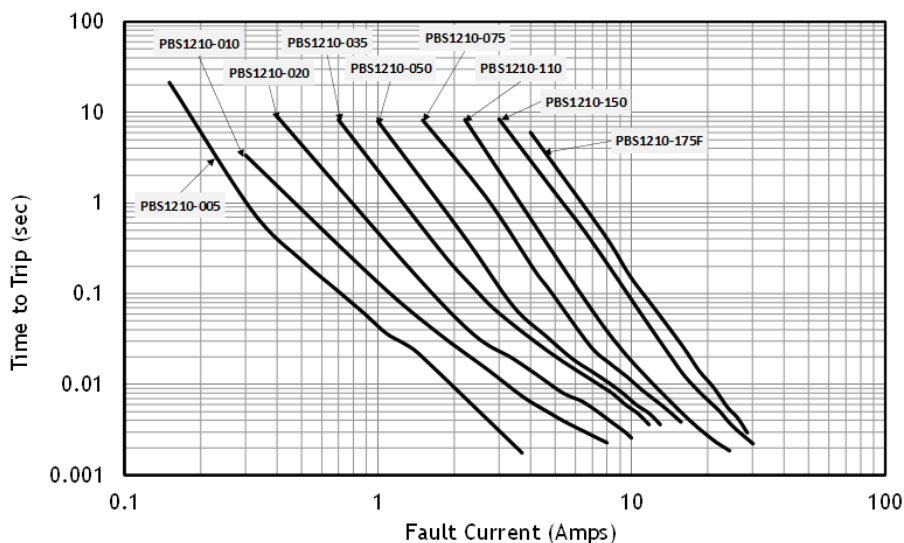
¹ The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

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
PBS1210-005	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
PBS1210-010	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
PBS1210-020	0.32	0.28	0.24	0.20	0.18	0.16	0.14	0.12	0.10
PBS1210-035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
PBS1210-050	0.76	0.66	0.58	0.50	0.42	0.38	0.35	0.29	0.23
PBS1210-075	1.10	0.97	0.86	0.75	0.64	0.58	0.55	0.47	0.39
PBS1210-110	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
PBS1210-150	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
PBS1210-175F	2.80	2.45	2.10	1.75	1.55	1.45	1.35	1.25	1.10

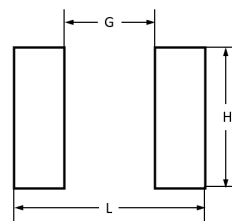
Surface Mount Polymer PTC PBS1210 Series (Standard, 1210 Size)

Typical Time to Trip (@ 23°C):



Recommended Land Pattern:

Chip Size	1210	Unit
G	1.8±0.1	mm
H	2.8±0.1	mm
L	3.8±0.1	mm



Packaging and Marking:

Part Number	Part Marking	Tape & Reel Quantity (piece)
PBS1210-005	0 w	3,000
PBS1210-010	1 w	
PBS1210-020	2 w	
PBS1210-035	3 w	
PBS1210-050	4 w	
PBS1210-075	5 w	
PBS1210-110	6 w	
PBS1210-150	8 w	
PBS1210-175F	9 w	

Operating Temperature Range:

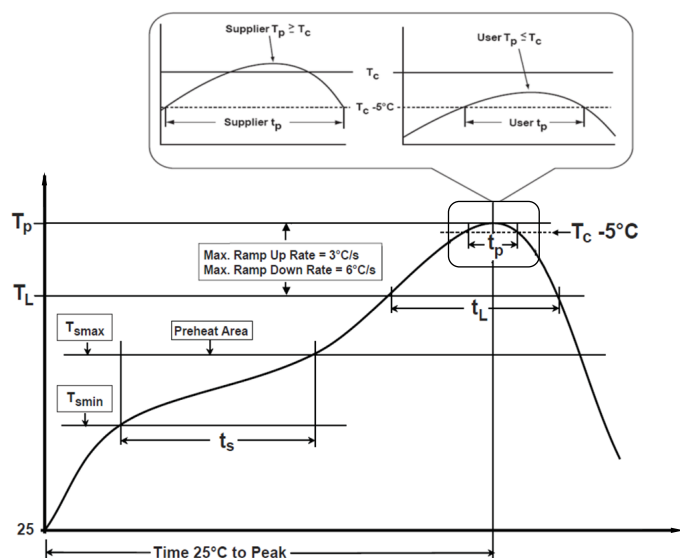
- 40°C ~ + 85°C (with de-rating)

Surface Mount Polymer PTC

PBS1210 Series (Standard, 1210 Size)

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:

- PBS1210 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com

Surface Mount Polymer PTC

PBS1812 Series (Standard, 1812 Size)

Features:

- Resettable over-current protection
- Small size of 1812
- Fast time-to-trip
- Compatible with Pb and Pb-free solder reflow profiles

Applications:

- Battery packs
- Portable electronic devices
- Industrial controls & Multi-media
- Game machines
- Telecom & broadband instruments
- PC Motherboards
- Point-of-sale (POS) equipment
- PCMCIA cards & USB Port protection-US

Product Identification:

PBS 1812 - 110 24 F

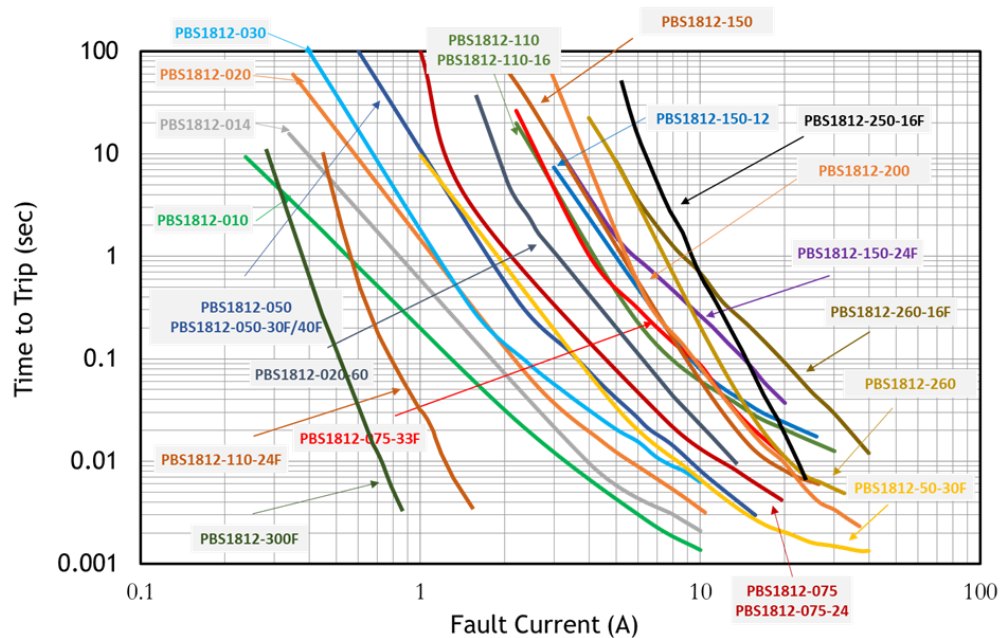
(1) (2) (3) (4) (5)

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

Agency Approval:

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

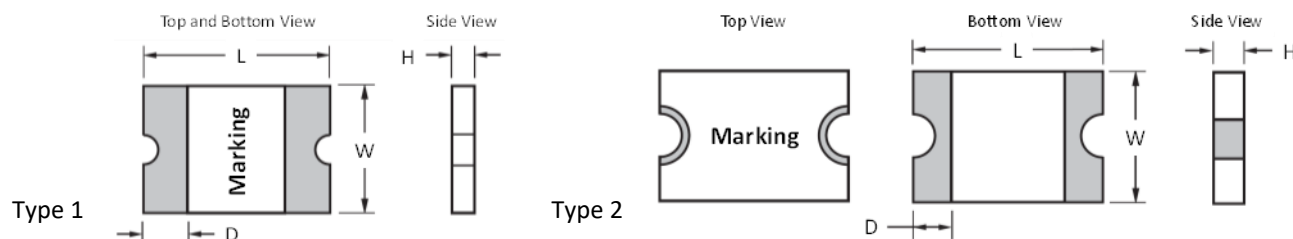
Typical Time to Trip (@ 23°C):



Surface Mount Polymer PTC

PBS1812 Series (Standard, 1812 Size)

Shape and Dimensions:



Part Number	Type	L		W		H		D
		mm (inches)		mm (inches)		mm (inches)		mm (inches)
		Min.	Max.	Min.	Max.	Min.	Max.	Min.
PBS1812-010 PBS1812-014 PBS1812-020 PBS1812-020-60 PBS1812-030	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)
PBS1812-050	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)
PBS1812-050-30F PBS1812-050-40F	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)
PBS1812-075 PBS1812-075-24	1	4.37 (0.172)	4.73 (0.186)	3.07 (0.121)	3.41 (0.134)	0.55 (0.016)	0.85 (0.033)	0.30 (0.012)
PBS1812-110 PBS1812-110-16	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)
PBS1812-075-33F PBS1812-110-24F	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)
PBS1812-150 PBS1812-150-12	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)
PBS1812-150-24F	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)
PBS1812-200	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)
PBS1812-250-16F PBS1812-260-16F	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)
PBS1812-260	1	4.37 (0.172)	4.73 (0.186)	3.07 (0.121)	3.41 (0.134)	0.48 (0.019)	0.85 (0.033)	0.30 (0.012)
PBS1812-300F	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)

Surface Mount Polymer PTC

PBS1812 Series (Standard, 1812 Size)

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 Reflow Resistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS1812-010	0.10	0.30	60	40	0.5	1.50	0.8	0.700	15.00	✓	✓
PBS1812-014	0.14	0.30	60	40	1.5	0.20	0.8	0.400	6.50	✓	✓
PBS1812-020	0.20	0.40	30	80	6.0	0.10	0.8	0.400	6.00	✓	✓
PBS1812-020-60	0.20	0.40	60	40	1.5	0.20	0.8	0.400	6.00	✓	✓
PBS1812-030	0.30	0.60	30	10	8.0	0.10	0.8	0.300	3.00	✓	✓
PBS1812-050	0.50	1.00	15	100	8.0	0.20	0.8	0.150	1.00	✓	✓
PBS1812-050-30F	0.50	1.00	30	40	8.0	0.20	0.8	0.150	1.30	✓	✓
PBS1812-050-40F	0.50	1.00	40	20	8.0	0.20	0.8	0.150	1.30		
PBS1812-075	0.75	1.50	13.2	100	8.0	0.20	0.8	0.110	0.450	✓	✓
PBS1812-075-24	0.75	1.50	24	40	8.0	0.20	0.8	0.110	0.450	✓	✓
PBS1812-075-33F	0.80	1.50	33	20	8.0	0.20	1.4	0.110	0.400		
PBS1812-110	1.10	2.20	6	100	8.0	0.30	0.8	0.040	0.210	✓	✓
PBS1812-110-16	1.10	2.20	16	100	8.0	0.30	0.8	0.040	0.210	✓	✓
PBS1812-110-24F	1.10	2.20	24	20	8.0	0.50	0.8	0.060	0.180	✓	✓
PBS1812-150	1.50	3.00	6	100	8.0	0.50	0.8	0.030	0.120	✓	✓
PBS1812-150-12	1.50	3.00	12	100	8.0	0.50	0.8	0.030	0.120	✓	✓
PBS1812-150-24F	1.50	3.00	24	20	8.0	1.50	1.0	0.030	0.120	✓	✓
PBS1812-200	2.00	4.00	8	40	8.0	3.0	0.8	0.020	0.080	✓	✓
PBS1812-250-16F	2.50	5.00	16	100	8.0	5.0	1.2	0.015	0.100	✓	✓
PBS1812-260-16F	2.60	5.00	16	100	8.0	5.0	1.2	0.015	0.050	✓	✓
PBS1812-260	2.60	5.20	6	100	8.0	5.0	0.8	0.015	0.080	✓	✓
PBS1812-300F	3.00	5.00	6	100	8.0	5.0	1.2	0.010	0.040	✓	

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.

Surface Mount Polymer PTC

PBS1812 Series (Standard, 1812 Size)

Temperature De-rating:

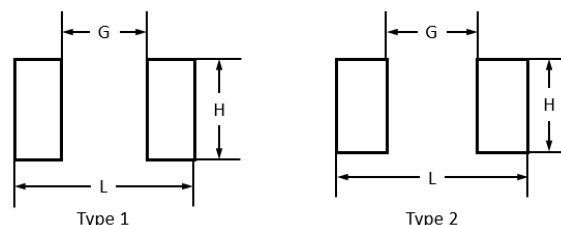
Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PBS1812-010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
PBS1812-014	0.23	0.20	0.17	0.14	0.12	0.10	0.09	0.08	0.06
PBS1812-020	0.30	0.27	0.23	0.20	0.17	0.15	0.13	0.12	0.09
PBS1812-020-60	0.29	0.26	0.23	0.20	0.17	0.15	0.13	0.11	0.08
PBS1812-030	0.46	0.40	0.36	0.30	0.26	0.22	0.20	0.18	0.14
PBS1812-050	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
PBS1812-050-30F	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.25
PBS1812-050-40F	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.25
PBS1812-075	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PBS1812-075-24	1.15	1.01	0.88	0.75	0.65	0.60	0.55	0.49	0.43
PBS1812-075-33F	1.16	1.03	0.90	0.75	0.63	0.56	0.49	0.42	0.32
PBS1812-110	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PBS1812-110-16	1.59	1.43	1.26	1.10	0.95	0.87	0.80	0.71	0.60
PBS1812-110-24F	2.00	1.70	1.40	1.10	0.95	0.88	0.80	0.73	0.61
PBS1812-150	2.17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PBS1812-150-12	2.17	1.95	1.72	1.50	1.30	1.18	1.09	0.97	0.82
PBS1812-150-24F	2.10	1.90	1.70	1.50	1.25	1.13	1.00	0.88	0.69
PBS1812-200	3.08	2.71	2.35	2.00	1.80	1.60	1.50	1.40	1.25
PBS1812-250-16F	3.90	3.42	2.96	2.50	2.24	1.98	1.85	1.29	0.94
PBS1812-260-16F	3.50	3.20	3.00	2.60	2.30	2.15	2.00	1.85	1.63
PBS1812-260	3.40	3.16	2.90	2.60	2.32	2.18	2.00	1.90	1.69
PBS1812-300F	4.13	3.75	3.33	3.00	2.70	2.54	2.35	2.22	1.98

Surface Mount Polymer PTC

PBS1812 Series (Standard, 1812 Size)

Recommended Land Pattern:

Chip Size	1812		Unit
	1	2	
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)
PBS1812-010	No marking	1,500
PBS1812-014		
PBS1812-020		
PBS1812-020-60		
PBS1812-030		
PBS1812-050		2,000
PBS1812-050-30F/40F		
PBS1812-075		
PBS1812-075-24/33F		
PBS1812-110		
PBS1812-110-16		1,500
PBS1812-110-24F		
PBS1812-150		2,000
PBS1812-150-12		
PBS1812-150-24F		1,500
PBS1812-200		
PBS1812-250-16F		1,500
PBS1812-260-16F		
PBS1812-260		2,000
PBS1812-300F		

Operating Temperature Range:

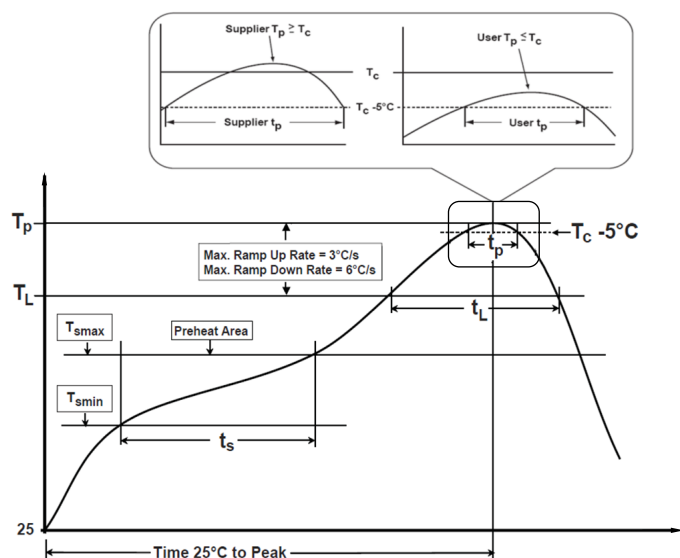
- 40°C ~ +85°C (with de-rating)

Surface Mount Polymer PTC

PBS1812 Series (Standard, 1812 Size)

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:

- PBS1812 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com

Surface Mount Polymer PTC

PBS2018 Series (Standard, 2018 Size)

Features:

- Resettable over-current protection
- Fast time-to-trip
- Very low profile
- High voltage

Applications:

- Battery packs
- Portable electronic devices
- Industrial controls
- Multimedia
- Game machines
- Telecom & broadband instruments
- Power Over Ethernet (IEEE 802.3 af) port protection

Product Identification:

PBS 2018 - 260 - 24 F

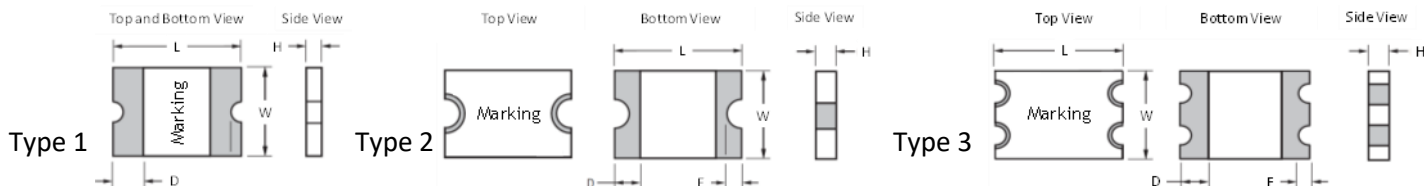
(1) (2) (3) (4)

- (1) **Series Code:** Surface Mount Polymer PTC
- (2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- (3) **Current Rating Code:** 260 - 2.6A
- (4) **Voltage Rating Code:** 24 - 24V DC
- (5) **Identification Code**

Agency Approval:

- UL file number: E355716
- TUV certification number: R50371875.
- 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)	E mm (inches)	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
PBS2018-050	1	4.72 (0.186)	5.44 (0.214)	4.22 (0.166)	4.93 (0.194)	0.79 (0.031)	1.09 (0.043)	0.30 (0.012)	NA	NA
PBS2018-100-33F	2	4.72 (0.186)	5.44 (0.214)	4.22 (0.166)	4.93 (0.194)	0.70 (0.028)	1.25 (0.049)	0.30 (0.012)	0.25 (0.010)	0.70 (0.028)
PBS2018-200	1	4.72 (0.186)	5.44 (0.214)	4.22 (0.166)	4.93 (0.194)	0.55 (0.022)	0.85 (0.033)	0.30 (0.012)	NA	NA

Surface Mount Polymer PTC

PBS2018 Series (Standard, 2018 Size)

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 Reflow Resistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS2018-050	0.55	1.20	60	10	2.5	3.0	0.9	0.200	1.00	✓	✓
PBS2018-100-33F	1.10	2.20	33	40	8.0	0.5	1.4	0.060	0.40	✓	
PBS2018-200	2.00	4.00	10	40	8.0	2.4	1.1	0.030	0.100		

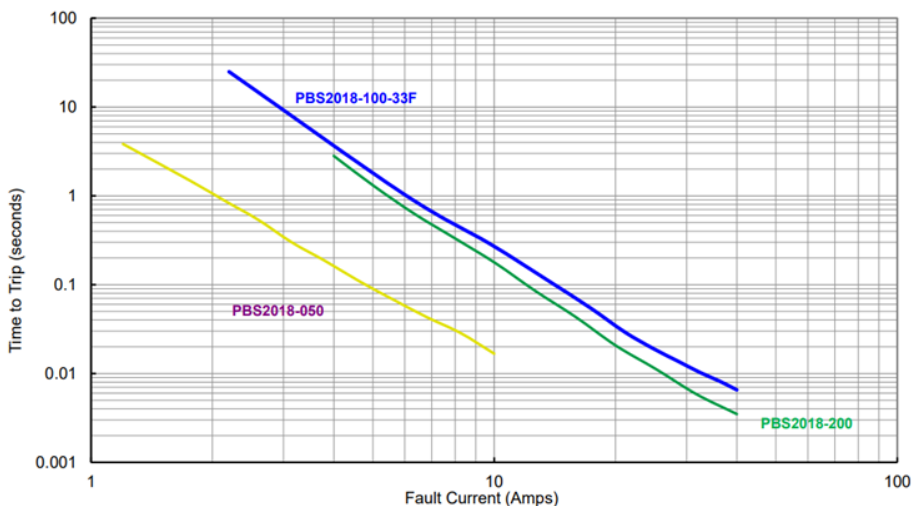
¹ The max resistance of one-hour post reflow is a reference value. The value may change a little according to reflow conditions and soldering state.

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
PBS2018-050	0.87	0.77	0.67	0.55	0.46	0.41	0.36	0.31	0.23
PBS2018-100-33F	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
PBS2018-200	2.95	2.65	2.35	2.00	1.74	1.59	1.44	1.29	1.06

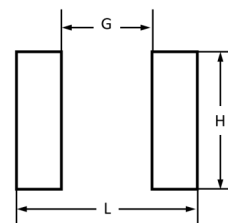
Surface Mount Polymer PTC PBS2018 Series (Standard, 2018 Size)

Typical Time to Trip (@ 23°C):



Recommended Land Pattern:

Chip Size	2018	Unit
G	3.15±0.1	mm
H	4.90±0.1	mm
L	6.35±0.1	mm



Packaging and Marking:

Part Number	Type	Part Marking	Tape & Reel Quantity (piece)
PBS2018-050	1	50yw	
PBS2018-100-33F	2	6w	
PBS2018-200	1	20yw	

Type 1: 50yw → 50 = 0.50A; y = Year code (y=7 → 2017); w = Week code (w=Y → week 49~50)

Type 2: 6w → 6 = 1.1A; w = Week code (w=Y → week 49~50)

Type 3: Dw → D = 2.6A; w = Week code (w=Y → week 49~50)

Operating Temperature Range:

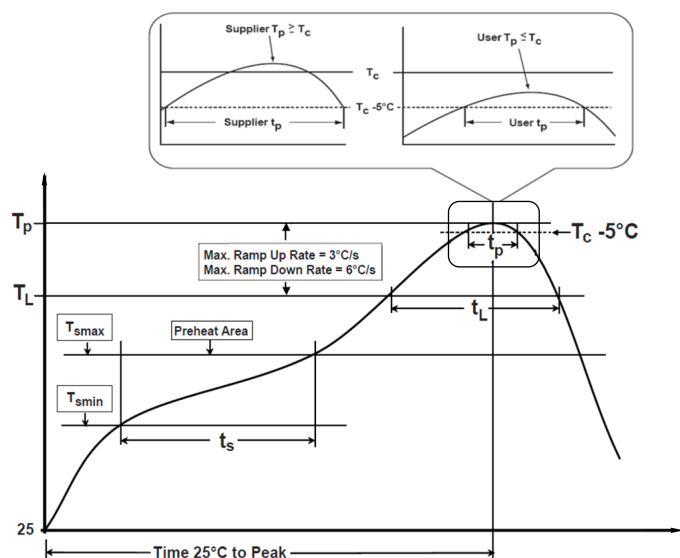
- 40°C ~ +85°C (with de-rating)

Surface Mount Polymer PTC

PBS2018 Series (Standard, 2018 Size)

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 $5^\circ C$ 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:

- PBS2018 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com

Surface Mount Polymer PTC

PBS2920 Series (Standard, 2920 Size)

Features:

- Resettable over-current protection
- Fast time-to-trip
- Low profile

Product Identification:

PBS 2920 - 300 24 F

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

- (1) **Series Code:** Surface Mount Polymer PTC
- (2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- (3) **Current Rating Code:** 300 - 3.0A
- (4) **Voltage Rating Code:** 24 - 24V DC
- (5) **Identification Code**

Applications:

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

Agency Approval:

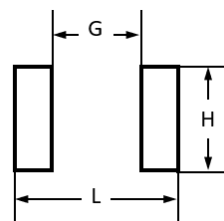
- UL file number: E355716
- TUV certification number: R50371875.
- Tested for EN60738-1: 2006+A1; EN60738-1:2008; EN60730-1: 2011 clause 15, 17 and Annex J

Operating Temperature Range:

- -40°C ~ + 85°C (with de-rating)

Recommended Land Pattern:

Chip Size	2920	Unit
G	4.6±0.1	mm
H	5.5±0.1	mm
L	8.6±0.1	mm



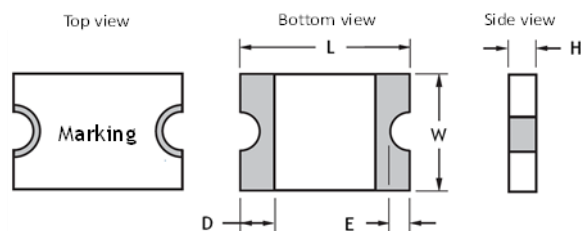
Packaging and Marking:

Part Number	Tape & Reel Quantity (piece)	Part Number	Tape & Reel Quantity (piece)
PBS2920-075F PBS2920-110F PBS2920-125F PBS2920-150F PBS2920-185F PBS2920-260-06F PBS2920-300F PBS2920-330F	6,000	PBS2920-125-33F PBS2920-150-33F PBS2920-185-24F PBS2920-185-33F PBS2920-200F PBS2920-200-24F PBS2920-260F PBS2920-260-16F PBS2920-300-16F PBS2920-300-24F PBS2920-330-12F PBS2920-330-16F PBS2920-330-24F PBS2920-400-16F PBS2920-500-16F PBS2920-600-12F	4,000

Surface Mount Polymer PTC

PBS2920 Series (Standard, 2920 Size)

Shape and Dimensions:



Part Number	L		W		H		D	E	
	mm (inches)		mm (inches)		mm (inches)		mm (inches)	mm (inches)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
PBS2920-125-33F									
PBS2920-150-33F									
PBS2920-185-24F									
PBS2920-185-33F									
PBS2920-200F									
PBS2920-200-24F									
PBS2920-260F									
PBS2920-260-16F	6.73	7.98	4.80	5.44	0.75	1.60	0.30	0.25	2.00
PBS2920-300-16F	(0.265)	(0.312)	(0.189)	(0.214)	(0.030)	(0.063)	(0.012)	(0.010)	(0.079)
PBS2920-300-24F									
PBS2920-330-12F									
PBS2920-330-16F									
PBS2920-330-24F									
PBS2920-400-16F									
PBS2920-500-16F									
PBS2920-600-12F									
PBS2920-075F									
PBS2920-110F									
PBS2920-125F									
PBS2920-150F	6.73	7.98	4.80	5.44	0.35	0.85	0.30	0.25	2.00
PBS2920-185F	(0.265)	(0.312)	(0.189)	(0.214)	(0.014)	(0.033)	(0.012)	(0.010)	(0.079)
PBS2920-260-06F									
PBS2920-300F									
PBS2920-330F									

Surface Mount Polymer PTC

PBS2920 Series (Standard, 2920 Size)

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 Reflow Resistance R ₁ Max. (Ω) ¹	Agency Approval	
	Hold (I _H)	Trip (I _T)			Current (A)	Time (sec)				UL	TUV
PBS2920-075F	0.75	1.5	30	40	8.0	0.3	1.5	0.15	1.00	✓	✓
PBS2920-110F	1.1	2.2	33	40	8.0	0.5	1.5	0.07	0.41	✓	✓
PBS2920-125F	1.25	2.5	15	40	8.0	2.0	1.5	0.05	0.25	✓	✓
PBS2920-125-33F	1.25	2.5	33	40	8.0	2.0	1.5	0.055	0.25	✓	✓
PBS2920-150F	1.5	3.0	15	40	8.0	2.0	1.5	0.05	0.23	✓	✓
PBS2920-150-33F	1.5	3.0	33	40	8.0	2.0	1.5	0.05	0.23	✓	✓
PBS2920-185F	1.85	3.7	15	40	8.0	2.0	1.5	0.045	0.15	✓	✓
PBS2920-185-24F	1.85	3.7	24	40	8.0	2.5	1.5	0.045	0.15	✓	✓
PBS2920-185-33F	1.85	3.70	33	40	8.0	2.50	1.5	0.045	0.150	✓	✓
PBS2920-200F	2.0	4.0	15	40	8.0	5.0	1.5	0.035	0.125	✓	✓
PBS2920-200-24F	2.0	4.0	24	40	8.0	5.0	1.5	0.035	0.125	✓	✓
PBS2920-260F	2.60	5.20	24	20	8.0	5.0	1.5	0.020	0.075	✓	✓
PBS2920-260-06F	2.6	5.0	6	40	8.0	10.0	1.5	0.020	0.075	✓	✓
PBS2920-260-16F	2.6	5.2	16	40	8.0	5.0	1.5	0.020	0.075	✓	✓
PBS2920-300F	3.0	5.0	6	40	8.0	20.0	1.5	0.015	0.048	✓	✓
PBS2920-300-16F	3.0	5.0	16	40	8.0	15.0	1.5	0.015	0.048	✓	✓
PBS2920-300-24F	3.0	5.2	24	40	8.0	15.0	1.5	0.015	0.075	✓	✓
PBS2920-330F	3.3	5.5	6	40	8.0	15.0	2.0	0.010	0.055	✓	✓
PBS2920-330-12F	3.3	5.5	12	40	8.0	15.0	2.0	0.010	0.055	✓	✓
PBS2920-330-16F	3.3	5.5	16	40	8.0	15.0	2.0	0.010	0.055	✓	✓
PBS2920-330-24F	3.3	5.5	24	40	8.0	15.0	2.0	0.010	0.055	✓	✓
PBS2920-400-16F	4.0	8.0	16	40	20.0	4.0	1.5	0.005	0.040	✓	✓
PBS2920-500-16F	5.0	10	16	40	20	5.0	1.5	0.005	0.025	✓	✓
PBS2920-600-12F	6.0	12	12	50	30	2.0	2.0	0.004	0.020	✓	✓

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.

Surface Mount Polymer PTC

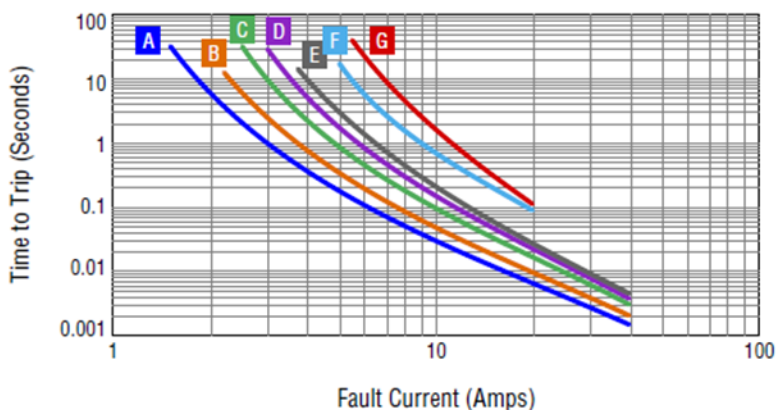
PBS2920 Series (Standard, 2920 Size)

Temperature De-rating:

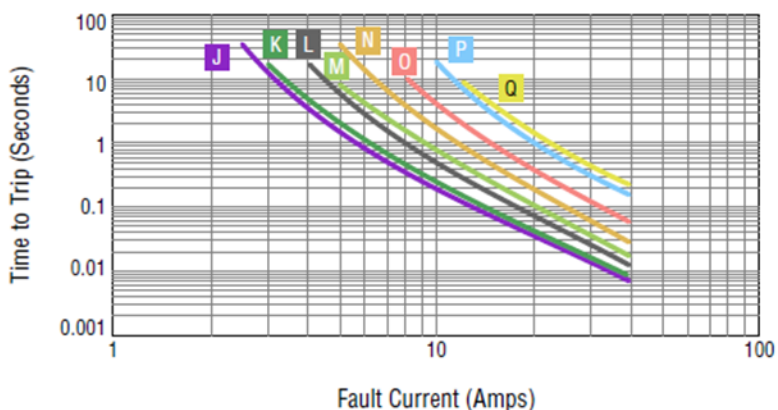
Part Number	Ambient temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
PBS2920-075F	1.10	1.01	0.89	0.75	0.63	0.56	0.50	0.44	0.34
PBS2920-110F	1.61	1.47	1.30	1.10	0.92	0.83	0.73	0.64	0.50
PBS2920-125F	1.83	1.68	1.48	1.25	1.05	0.94	0.83	0.73	0.56
PBS2920-125-33F	1.83	1.68	1.48	1.25	1.05	0.94	0.83	0.73	0.56
PBS2920-150F	2.19	2.01	1.77	1.50	1.26	1.13	0.99	0.87	0.68
PBS2920-150-33F	2.19	2.01	1.77	1.50	1.26	1.13	0.99	0.87	0.68
PBS2920-185F	2.70	2.48	2.18	1.85	1.55	1.39	1.22	1.07	0.83
PBS2920-185-24F	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
PBS2920-185-33F	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
PBS2920-200F	2.92	2.68	2.36	2.00	1.68	1.50	1.32	1.16	0.90
PBS2920-200-24F	2.92	2.68	2.36	2.00	1.68	1.50	1.32	1.16	0.90
PBS2920-260F	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.30
PBS2920-260-06F	3.80	3.48	3.07	2.60	2.18	1.95	1.72	1.51	1.17
PBS2920-260-16F	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.30
PBS2920-300F	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
PBS2920-300-16F	4.38	4.02	3.54	3.00	2.52	2.25	1.98	1.74	1.35
PBS2920-300-24F	4.00	3.55	3.20	3.00	2.50	2.25	2.15	1.85	1.50
PBS2920-330F	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
PBS2920-330-12F	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
PBS2920-330-16F	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
PBS2920-330-24F	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
PBS2920-400-16F	5.84	5.36	4.72	4.00	3.36	3.00	2.64	2.32	1.80
PBS2920-500-16F	7.30	6.70	5.90	5.00	4.20	3.75	3.30	2.90	2.25
PBS2920-600-12F	8.76	8.04	7.08	6.00	5.04	4.50	3.96	3.48	2.70

Surface Mount Polymer PTC
PBS2920 Series (Standard, 2920 Size)

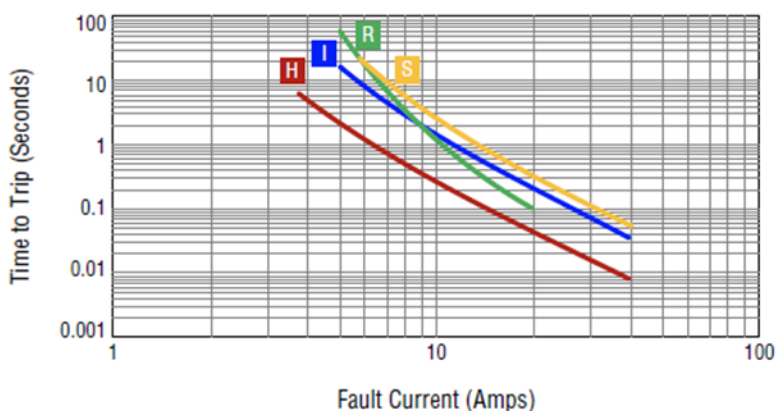
Typical Time to Trip (@ 23°C):



- A-PBS2920-075F
- B-PBS2920-110F
- C-PBS2920-125F
- D-PBS2920-150F
- E-PBS2920-185F
- F-PBS2920-260-06F
- G-PBS2920-330F
- H-PBS2920-185-24F&PBS2920-185-33F



- I-PBS2920-300-24F
- J--PBS2920-125-33F
- K-PBS2920-150-33F
- L-PBS2920-200F&PBS2920-200-24F
- M-PBS2920-260F&PBS2920-260-16F
- N-PBS2920-300-16F
- O-PBS2920-400-16F
- P-PBS2920-500-16F
- Q-PBS2920-600-12F



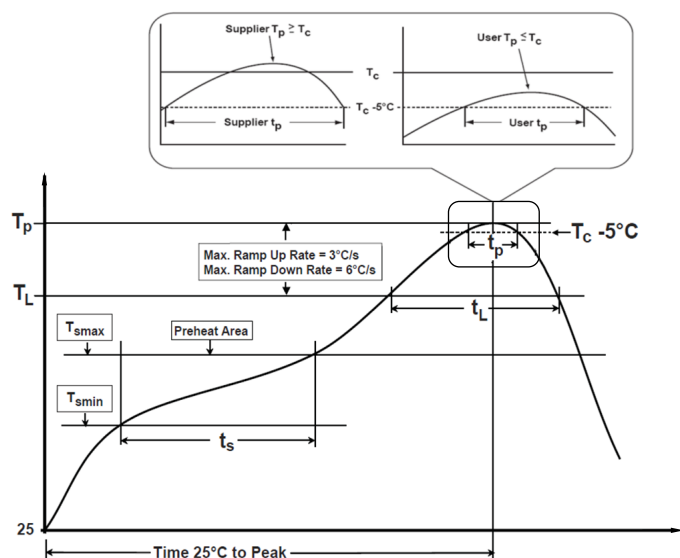
- R-PBS2920-300F
- S-PBS2920-330-12F&PBS2920-330-16F
- &PBS2920-330-24F

Surface Mount Polymer PTC

PBS2920 Series (Standard, 2920 Size)

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:

- PBS2920 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.

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com