

 <b>FUZETEC TECHNOLOGY CO., LTD.</b>	<b>NO.</b>	<b>PQ18-01E</b>		
	<b>Product Specification and Approval Sheet</b>	<b>Version</b>	<b>C1</b>	<b>Page</b>

## Surface Mountable PTC Resettable Fuse: FSMD1206 Series

### 1. Summary

- (a) **RoHS Compliant & Halogen Free**
- (b) **Applications: All high-density boards**
- (c) **Product Features: Small surface mountable, Solid state, Faster time to trip than standard SMD devices, Lower resistance than standard SMD devices**
- (d) **Operation Current: 0.05A~2.0A**
- (e) **Maximum Voltage: 6V~60V<sub>DC</sub>**
- (f) **Temperature Range : -40°C to 85°C**

### 2. Agency Recognition

UL : File No. E211981  
 C-UL: File No. E211981  
 TÜV: File No. R50090556

### 3. Electrical Characteristics (23°C)

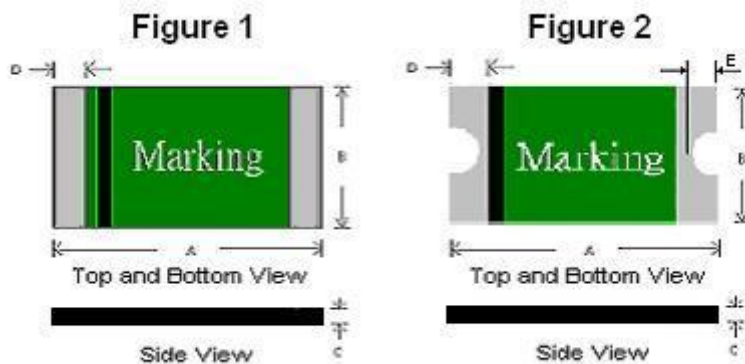
Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I <sub>H</sub> , A	I <sub>T</sub> , A	V <sub>MAX</sub> , VDC	I <sub>MAX</sub> , A	P <sub>d</sub> , W	Current	Time	R <sub>MIN</sub>	R <sub>1MAX</sub>
	I <sub>H</sub> , A	I <sub>T</sub> , A	V <sub>MAX</sub> , VDC	I <sub>MAX</sub> , A	P <sub>d</sub> , W	Amp	Sec	Ohms	Ohms
FSMD005-1206	0.05	0.15	60	10	0.4	0.25	1.50	3.60	50.00
FSMD005-1206-R	0.05	0.15	60	100	0.4	0.25	1.50	3.60	50.00
FSMD010-1206	0.10	0.25	60	10	0.4	0.50	1.00	1.60	15.00
FSMD010-1206-R	0.10	0.25	60	100	0.4	0.50	1.00	1.60	15.00
FSMD012-1206	0.12	0.39	48	100	0.6	1.00	0.20	1.40	6.50
FSMD012-1206-R	0.12	0.39	48	100	0.6	1.00	0.20	1.40	6.50
FSMD016-1206	0.16	0.45	48	100	0.6	1.00	0.30	1.10	5.00
FSMD016-1206-R	0.16	0.45	48	100	0.6	1.00	0.30	1.10	5.00
FSMD020-1206	0.20	0.40	30	100	0.4	8.00	0.10	0.600	2.500
FSMD020-1206-R	0.20	0.40	30	100	0.4	8.00	0.10	0.600	2.500
FSMD025-1206	0.25	0.50	16	100	0.6	8.00	0.08	0.550	2.300
FSMD025-1206-R	0.25	0.50	16	100	0.6	8.00	0.08	0.550	2.300
FSMD025-24-1206-R	0.25	0.50	24	100	0.6	8.00	0.08	0.550	2.300
FSMD035-1206	0.35	0.75	16	100	0.4	8.00	0.10	0.300	1.200
FSMD035-1206-R	0.35	0.75	16	100	0.4	8.00	0.10	0.300	1.200
FSMD035-30-1206R	0.35	0.75	30	100	0.6	8.00	0.10	0.300	1.200
FSMD050-1206	0.50	1.00	8	100	0.4	8.00	0.10	0.150	0.700
FSMD050-1206-R	0.50	1.00	8	100	0.4	8.00	0.10	0.150	0.700
FSMD050-24-1206R	0.50	1.00	24	100	0.6	8.00	0.10	0.150	0.750
FSMD075-1206R	0.75	1.50	6	100	0.6	8.00	0.20	0.090	0.290
FSMD075-16-1206R	0.75	1.50	16	100	0.6	8.00	0.20	0.090	0.290
FSMD100-1206R	1.00	1.80	6	100	0.6	8.00	0.30	0.055	0.210
FSMD110-1206R	1.10	2.20	6	100	0.8	8.00	0.30	0.040	0.180
FSMD150-1206R	1.50	3.00	6	100	0.8	8.00	1.00	0.040	0.120
FSMD200-1206R	2.00	3.50	6	100	0.8	8.00	1.50	0.018	0.080

NOTE : Specification subject to change without notice.



$I_H$ =Hold current-maximum current at which the device will not trip at 23°C still air.  
 $I_T$ =Trip current-minimum current at which the device will always trip at 23°C still air.  
 $V_{MAX}$ =Maximum voltage device can withstand without damage at it rated current.( $I_{MAX}$ )  
 $I_{MAX}$ = Maximum fault current device can withstand without damage at rated voltage ( $V_{MAX}$ ).  
 $P_d$ =Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.  
 $R_{MIN}$ =Minimum device resistance at 23°C prior to tripping.  
 $R_{1MAX}$ =Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.  
 Termination pad characteristics  
 Termination pad materials: Pure Tin

### 4. FSMD Product Dimensions (Millimeters)

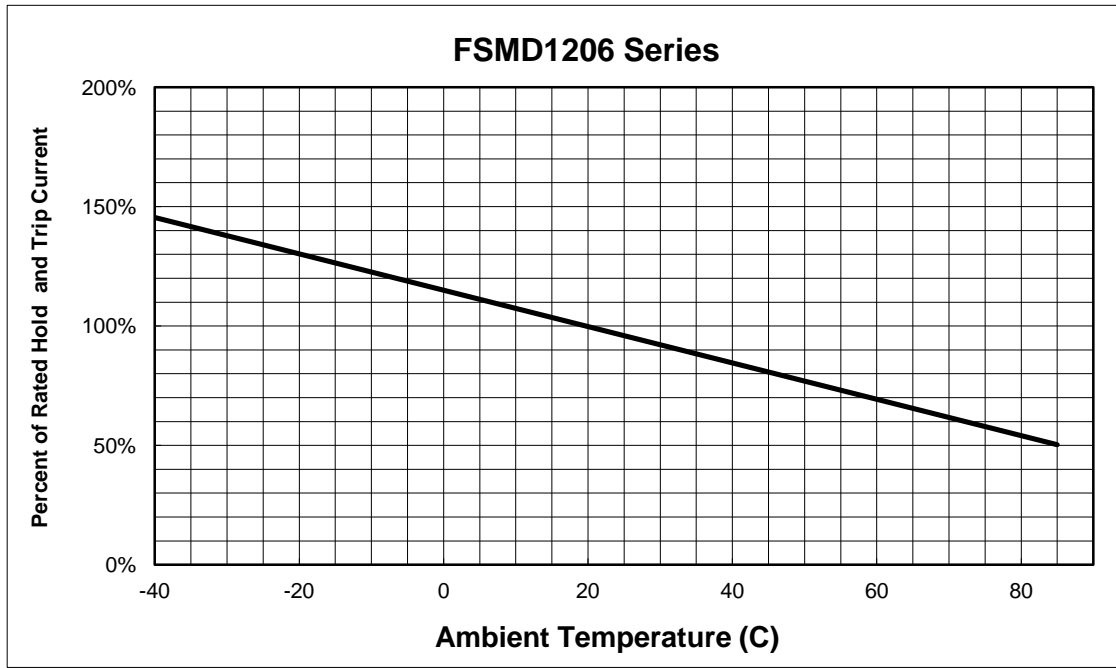


Part Number	Figure	A		B		C		D		E	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSMD005-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
FSMD005-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD010-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
FSMD010-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD012-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
FSMD012-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD016-1206	1	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	—	—
FSMD016-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
FSMD020-1206	1	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	—	—
FSMD020-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
FSMD025-1206	1	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	—	—
FSMD025-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
FSMD025-24-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.75	0.10	0.75	0.10	0.45
FSMD035-1206	1	3.00	3.50	1.50	1.80	0.30	0.75	0.10	0.75	—	—
FSMD035-1206-R	2	3.00	3.50	1.50	1.80	0.30	0.75	0.10	0.75	0.10	0.45
FSMD035-30-1206R	2	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45
FSMD050-1206	1	3.00	3.50	1.50	1.80	0.25	0.55	0.10	0.75	—	—
FSMD050-1206-R	2	3.00	3.50	1.50	1.80	0.25	0.55	0.10	0.75	0.10	0.45
FSMD050-24-1206R	2	3.00	3.50	1.50	1.80	0.90	1.30	0.25	0.75	0.10	0.45
FSMD075-1206R	2	3.00	3.50	1.50	1.80	0.45	1.25	0.25	0.75	0.10	0.45
FSMD075-16-1206R	2	3.00	3.50	1.50	1.80	0.45	1.25	0.25	0.75	0.10	0.45
FSMD100-1206R	2	3.00	3.50	1.50	1.80	0.45	1.00	0.25	0.75	0.10	0.45
FSMD110-1206R	2	3.00	3.50	1.50	1.80	0.45	1.00	0.25	0.75	0.10	0.45
FSMD150-1206R	2	3.00	3.50	1.50	1.80	0.80	1.40	0.25	0.75	0.10	0.45
FSMD200-1206R	2	3.00	3.50	1.50	1.80	0.85	1.60	0.25	0.75	0.10	0.45

NOTE : Specification subject to change without notice.

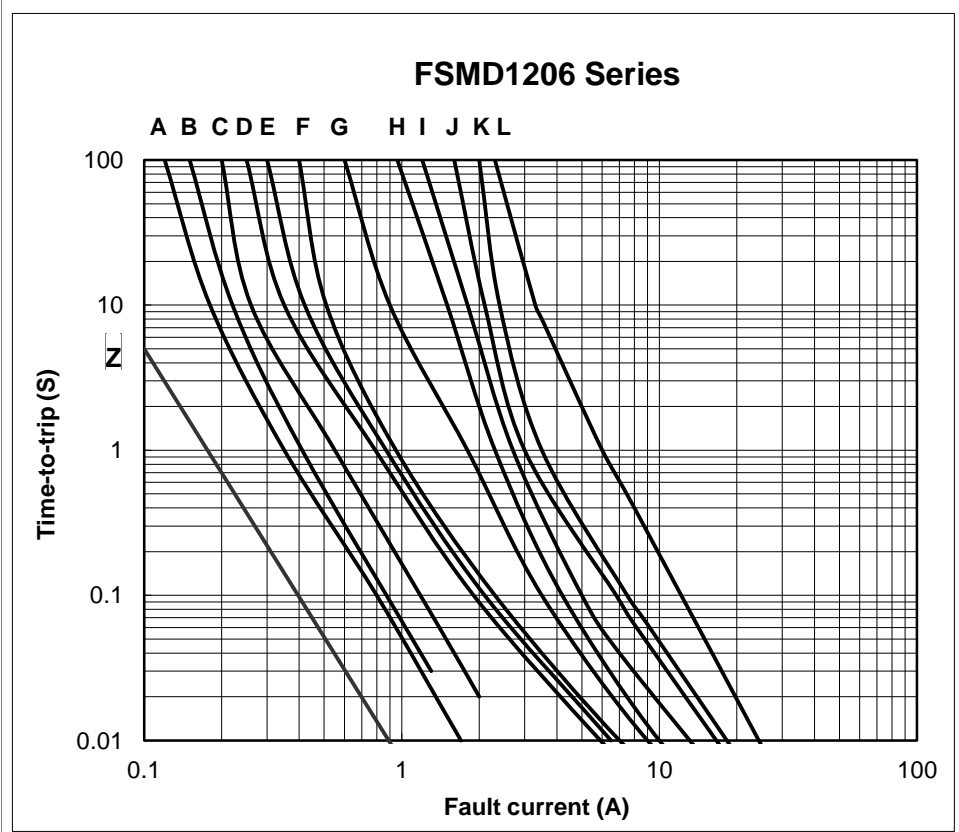


### 5. Thermal Derating Curve



### 6. Typical Time-To-Trip at 23°C

- Z=FSMD005-1206 / -R
- A=FSMD010-1206 / -R
- B=FSMD012-1206 / -R
- C=FSMD016-1206 / -R
- D=FSMD020-1206 / -R
- E=FSMD025-1206 / -R
- 025-24-1206-R
- F=FSMD035-1206 / -R
- 035-60-1206R
- G=FSMD050-1206 / -R/  
FSMD050-24-1206R
- H=FSMD075-1206R /  
075-16-1206R
- I=FSMD100-1206R
- J=FSMD110-1206R
- K=FSMD150-1206R
- L=FSMD200-1206R



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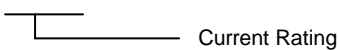
## 7. Material Specification

Terminal pad material: Pure Tin

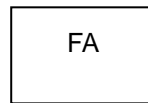
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

## 8. Part Numbering and Marking System

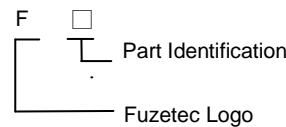
### Part Numbering System

F S M D □ □ □ - 1206 R  


### Part Marking System



Example

F □  


FZ = FSMD005-1206-R  
 FA = FSMD010-1206-R  
 FJ = FSMD012-1206-R  
 FK = FSMD016-1206-R  
 FB = FSMD020-1206-R  
 FL = FSMD025-1206-R  
 FP = FSMD025-24-1206-R  
 FC = FSMD035-1206-R  
 FM = FSMD035-30-1206R  
 FD = FSMD050-1206-R  
 FN = FSMD050-24-1206R  
 FE = FSMD075-1206R  
 FO = FSMD075-16-1206R  
 FF = FSMD100-1206R  
 FG = FSMD110-1206R  
 FH = FSMD150-1206R  
 FI = FSMD200-1206R

**Warning:** -Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.



-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

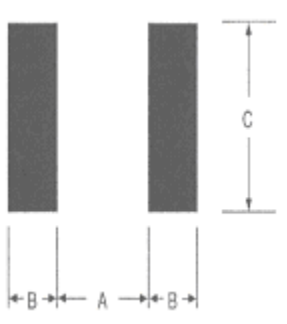
-Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.

**NOTE :** Specification subject to change without notice.



### 9. Pad Layouts 、 Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each FSMD1206 device



Pad dimensions (millimeters)			
Device	A Nominal	B Nominal	C Nominal
All 1206 Series	2.00	1.00	1.90

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C/second max.
Preheat :	
Temperature Min (T <sub>smin</sub> )	150 °C
Temperature Max (T <sub>smax</sub> )	200 °C
Time (t <sub>smin</sub> to t <sub>smax</sub> )	60-180 seconds
Time maintained above:	
Temperature(T <sub>L</sub> )	217 °C
Time (t <sub>L</sub> )	60-150 seconds
Peak/Classification Temperature(T <sub>p</sub> ) :	260 °C
Time within 5°C of actual Peak :	
Temperature (t <sub>p</sub> )	20-40 seconds
Ramp-Down Rate :	6 °C/second max.
Time 25 °C to Peak Temperature :	8 minutes max.

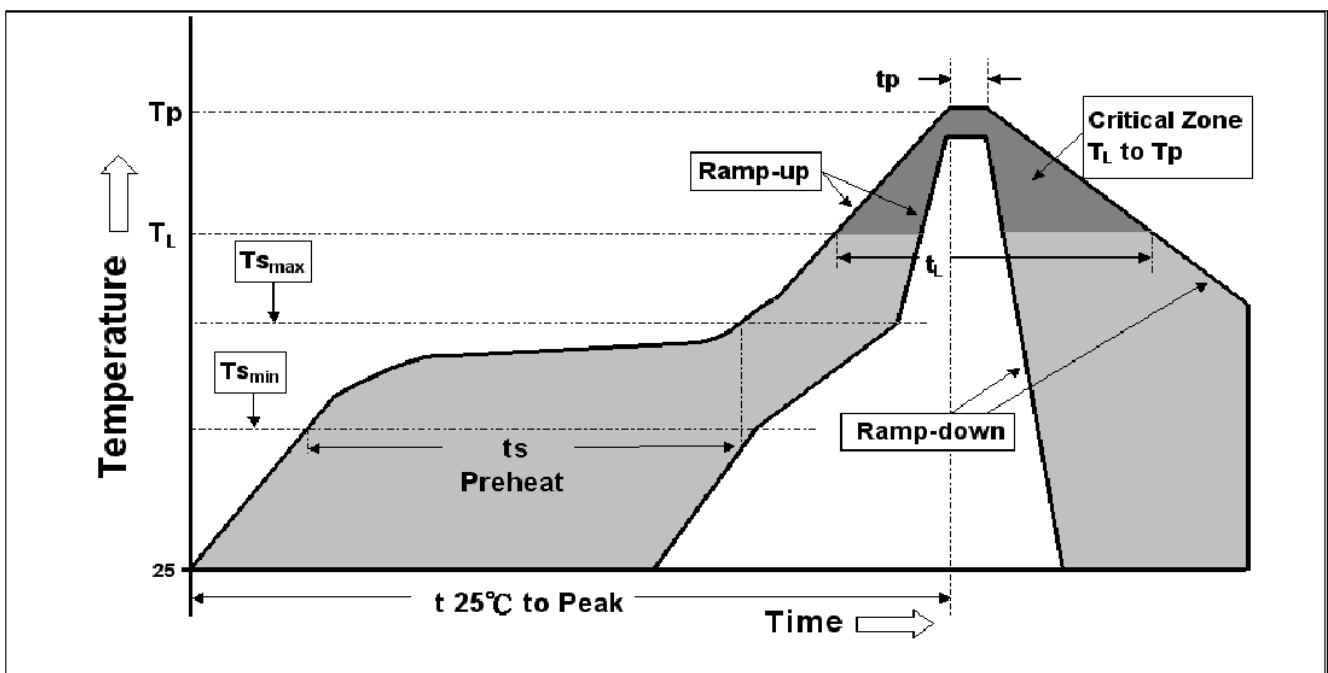
#### Solder reflow

- ※ Due to "Lead Free" nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.
- 1. Recommended max past thickness > 0.25mm.
- 2. Devices can be cleaned using standard methods and aqueous solvent.
- 3. Rework use standard industry practices.
- 4. Storage Environment : < 30°C / 60%RH

#### Caution:

- 1. If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- 2. Devices are not designed to be wave soldered to the bottom side of the board.

Note 1: All temperatures refer to of the package, measured on the package body surface.



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