

 FUZETEC TECHNOLOGY CO., LTD.	NO.	PQ18-01ER		
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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_{DC}~60V_{DC}**
- (f) **Temperature Range : -40°C to 85°C**

2. Agency Recognition

UL : E211981
 C-UL: *E211981
 TÜV: R50090556

*Note: FSMD075-16-1206R · FSMD200-1206R · C-UL Pending.

3. Electrical Characteristics (23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	Current	Time	R _{MIN}	R _{1MAX}
						A	Sec	Ohms	Ohms
FSMD005-1206-R	0.05	0.15	60	10	0.4	0.25	1.50	3.600	50.000
FSMD010-1206-R	0.10	0.25	60	10	0.4	0.50	1.00	1.600	15.000
FSMD012-1206-R	0.12	0.39	48	10	0.6	1.00	0.20	1.400	6.500
FSMD016-1206-R	0.16	0.45	48	10	0.6	1.00	0.30	1.100	5.000
FSMD020-1206-R	0.20	0.40	30	10	0.4	8.00	0.10	0.600	2.500
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	40	0.6	8.0	0.08	0.550	2.300
FSMD035-1206-R	0.35	0.75	16	40	0.4	8.00	0.10	0.300	1.200
FSMD035-30-1206R	0.35	0.75	30	40	0.6	8.00	0.10	0.300	1.200
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

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.

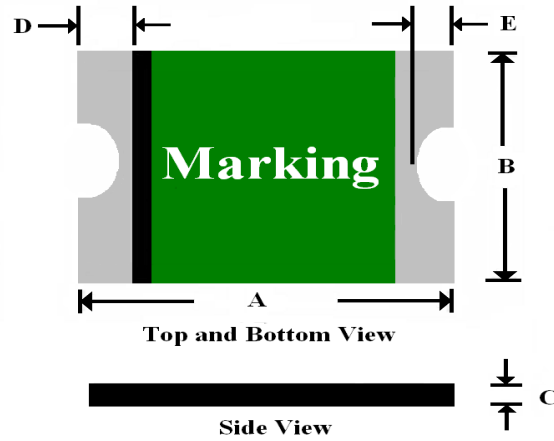
Termination pad characteristics

Termination pad materials: Pure Tin

NOTE : Specification subject to change without notice.



4. FSMD Product Dimensions (Millimeters)

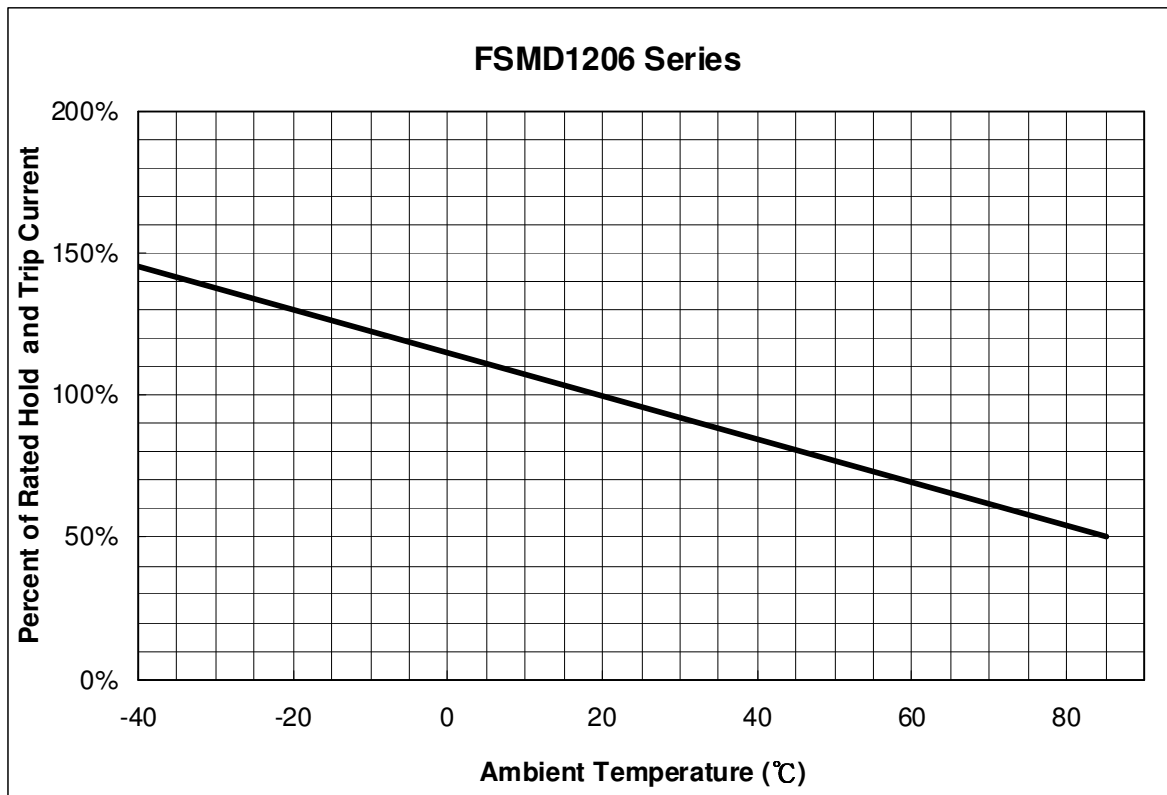


Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSMD005-1206-R	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD010-1206-R	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD012-1206-R	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD016-1206-R	3.00	3.50	1.50	1.80	0.45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

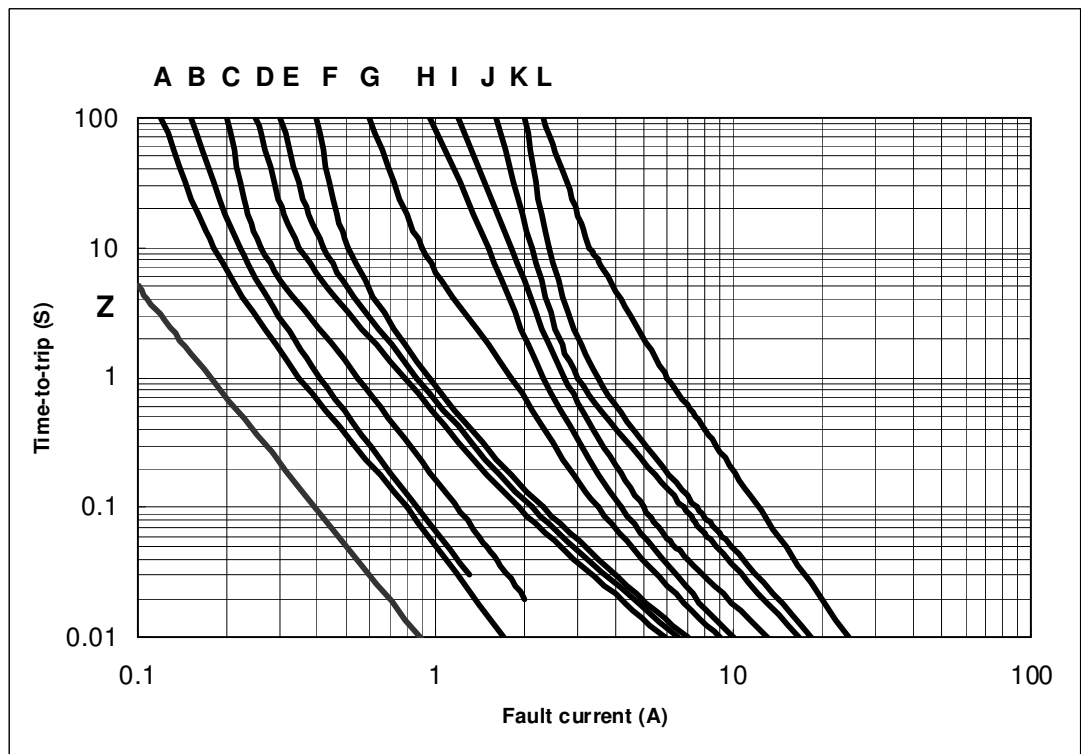


5. Thermal Derating Curve



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/
050-24-1206R
- H= FSMD075-1206R /
075-16-1206R
- I= FSMD100-1206R
- J= FSMD110-1206R
- K= FSMD150-1206R
- L= FSMD200-1206R



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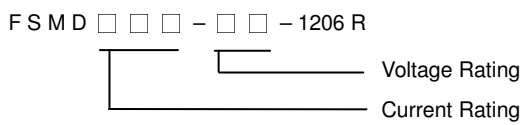
7. Material Specification

Terminal pad material: Pure Tin

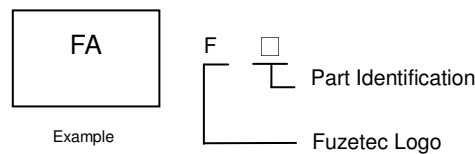
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

8. Part Numbering and Marking System

Part Numbering System



Part Marking System



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.



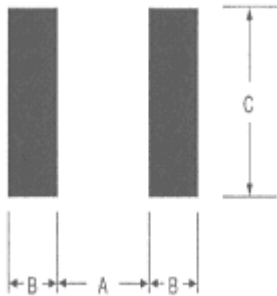
-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

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



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 _{smax} to T _p)	3 °C/second max.
Preheat :	
Temperature Min (T _{smin})	150 °C
Temperature Max (T _{smax})	200 °C
Time (t _{smin} to t _{smax})	60-180 seconds
Time maintained above:	
Temperature(T _L)	217 °C
Time (t _L)	60-150 seconds
Peak/Classification Temperature(T _p) :	260 °C
Time within 5°C of actual Peak :	
Temperature (t _p)	20-40 seconds
Ramp-Down Rate :	6 °C/second max.
Time 25 °C to Peak Temperature :	8 minutes max.

Solder reflow

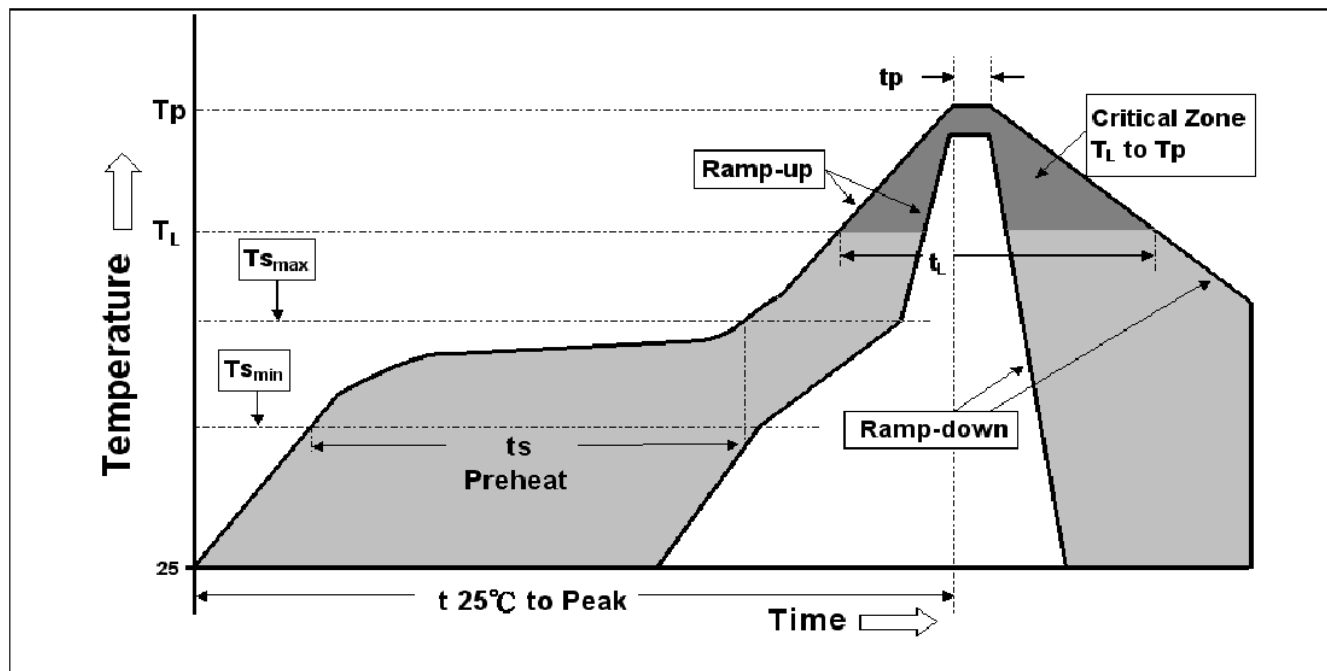
- ⌘ Due to "Lead Free" nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.
- 1. Recommended max past thickness > 0.25mm.
- 2. Devices can be cleaned using standard methods and aqueous solvent.
- 3. Rework use standard 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.

Reflow Profile



NOTE : Specification subject to change without notice.