

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

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_{DC}**
- (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)

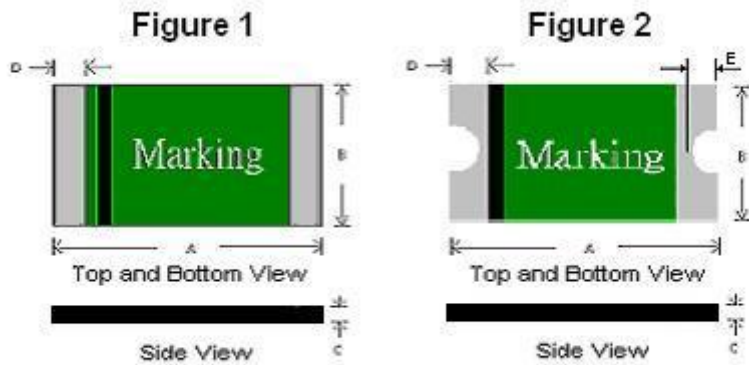
Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	Current	Time	R _{MIN}	R _{1MAX}
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	P _d , W	Amp	Sec	Ohms	Ohms
FSMD005-1206	0.05	0.15	60	10	0.4	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)

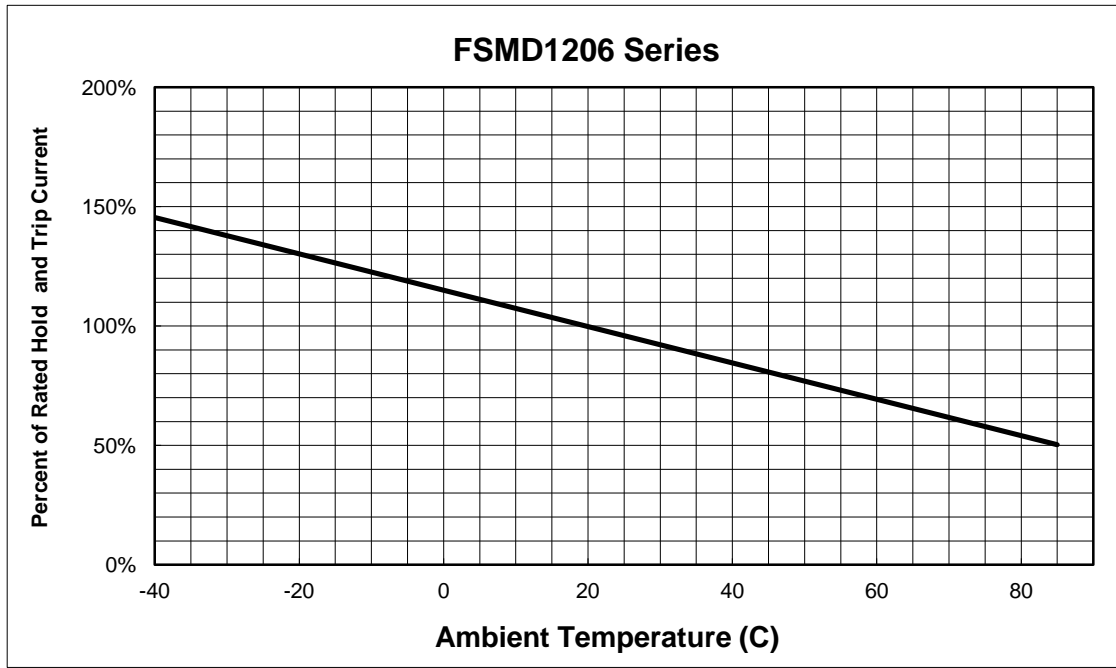


Part Number	Figure	A		B		C		D		E	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSMD005-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
FSMD005-1206-R	2	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	0.10	0.45
FSMD010-1206	1	3.00	3.50	1.50	1.80	0.45	0.85	0.10	0.75	—	—
FSMD010-1206-R	2	3.00	3.50	1.50	1.80	0.45	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.

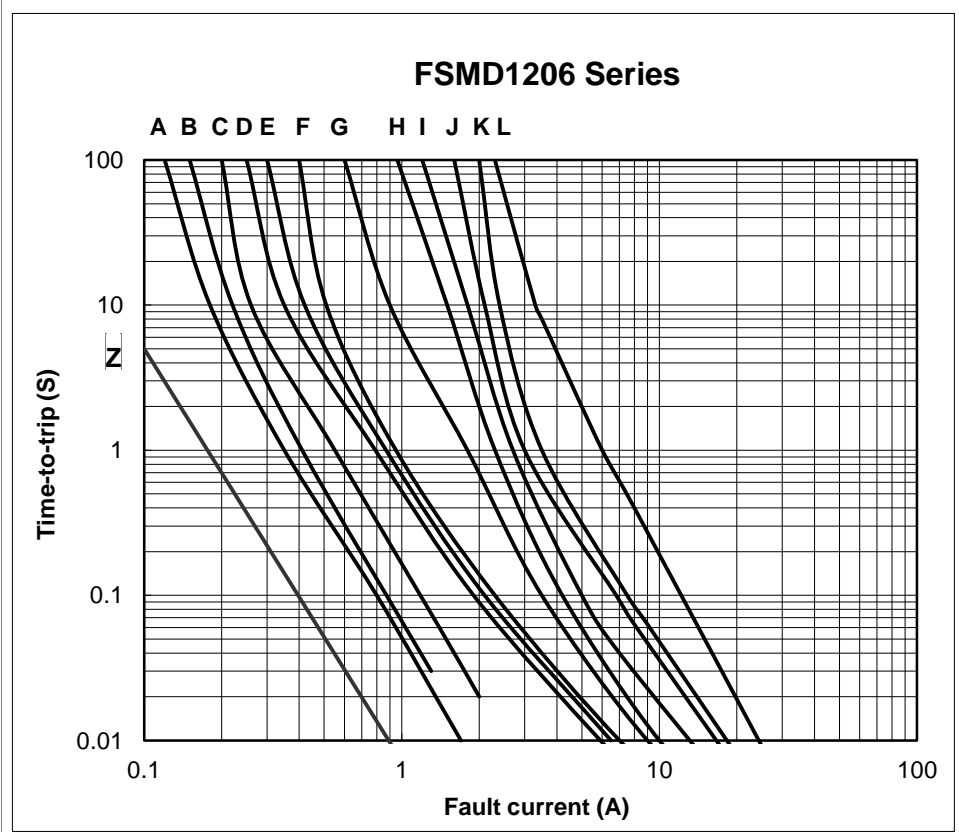


5. Thermal Derating Curve



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



NOTE : Specification subject to change without notice.



7. Material Specification

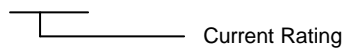
Terminal pad material: Pure Tin

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

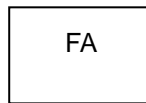
8. Part Numbering and Marking System

Part Numbering System

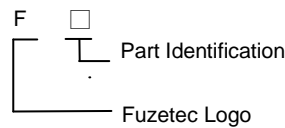
F S M D □ □ □ - 1206 R



Part Marking System



Example



- 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.



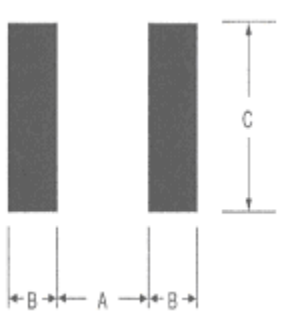
-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

-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.

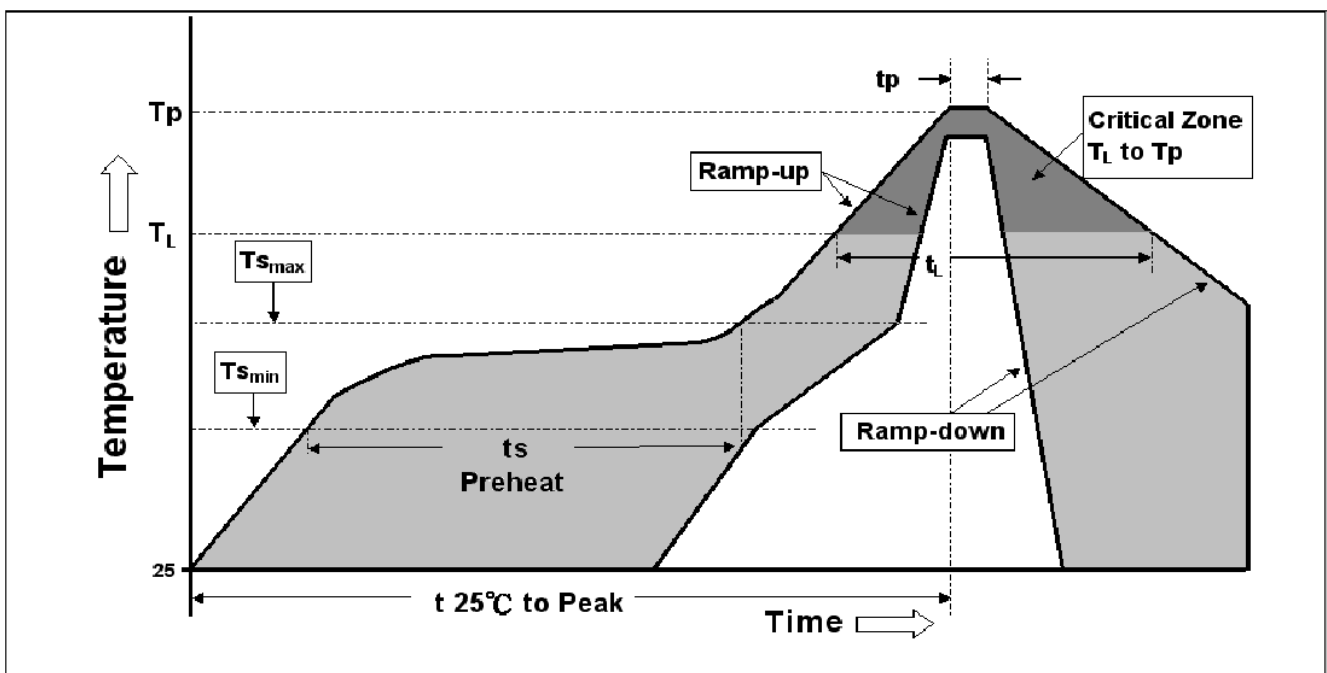
Solder reflow

- ※ 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.



NOTE : Specification subject to change without notice.

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