

 FUZETEC TECHNOLOGY CO., LTD.	NO.	PQ19-01ER		
	Product Specification and Approval Sheet	Version	A1	Page

Surface Mountable PTC Resettable Fuse: FSMD1210 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~2.00A**
- (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	A	Sec	Ohms	Ohms
FSMD005-1210-R	0.05	0.15	60	100	0.60	0.25	1.50	3.600	50.000
FSMD010-1210-R	0.10	0.25	60	100	0.60	0.50	1.50	1.600	15.000
FSMD020-1210-R	0.20	0.40	30	100	0.60	8.00	0.02	0.800	5.000
FSMD035-1210-R	0.35	0.70	16	100	0.60	8.00	0.20	0.320	1.300
FSMD050-1210-R	0.50	1.00	16	100	0.60	8.00	0.10	0.250	0.900
FSMD075-1210-R	0.75	1.50	8	100	0.60	8.00	0.10	0.130	0.400
FSMD075-24-1210R	0.75	1.50	24	100	0.60	8.00	0.10	0.130	0.400
FSMD110-1210R	1.10	2.20	8	100	0.80	8.00	0.30	0.060	0.210
FSMD110-16-1210R	1.10	2.20	16	100	0.80	8.00	0.30	0.060	0.210
FSMD150-1210R	1.50	3.00	6	100	0.80	8.00	0.50	0.040	0.110
FSMD175-1210R	1.75	4.00	6	100	0.80	8.00	0.60	0.020	0.080
FSMD200-1210R	2.00	4.00	6	100	0.80	8.00	1.00	0.015	0.070

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.

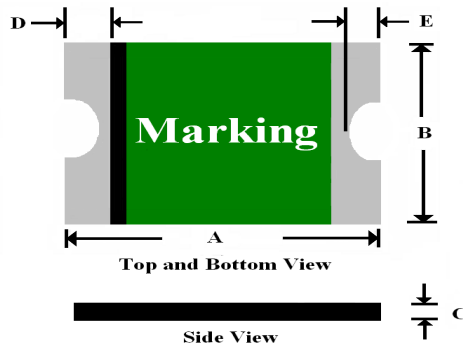
R_{1MAX}=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

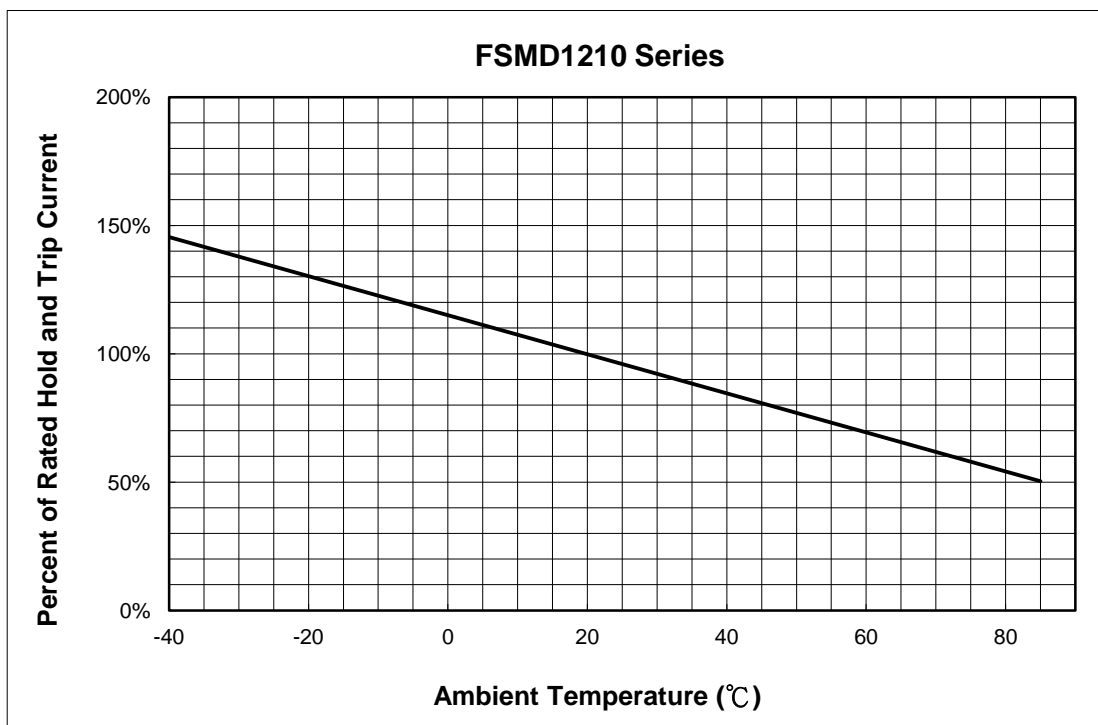


4. FSMD Product Dimensions (Millimeters)



Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSMD005-1210-R	3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	0.10	0.45
FSMD010-1210-R	3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	0.10	0.45
FSMD020-1210-R	3.00	3.43	2.35	2.80	0.40	0.85	0.25	0.75	0.10	0.45
FSMD035-1210-R	3.00	3.43	2.35	2.80	0.40	0.80	0.25	0.75	0.10	0.45
FSMD050-1210-R	3.00	3.43	2.35	2.80	0.30	0.75	0.25	0.75	0.10	0.45
FSMD075-1210-R	3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	0.10	0.45
FSMD075-24-1210R	3.00	3.43	2.35	2.80	0.80	1.20	0.25	0.75	0.10	0.45
FSMD110-1210R	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
FSMD110-16-1210R	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
FSMD150-1210R	3.00	3.43	2.35	2.80	0.50	0.90	0.25	0.75	0.10	0.45
FSMD175-1210R	3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45
FSMD200-1210R	3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45

5. Thermal Derating Curve

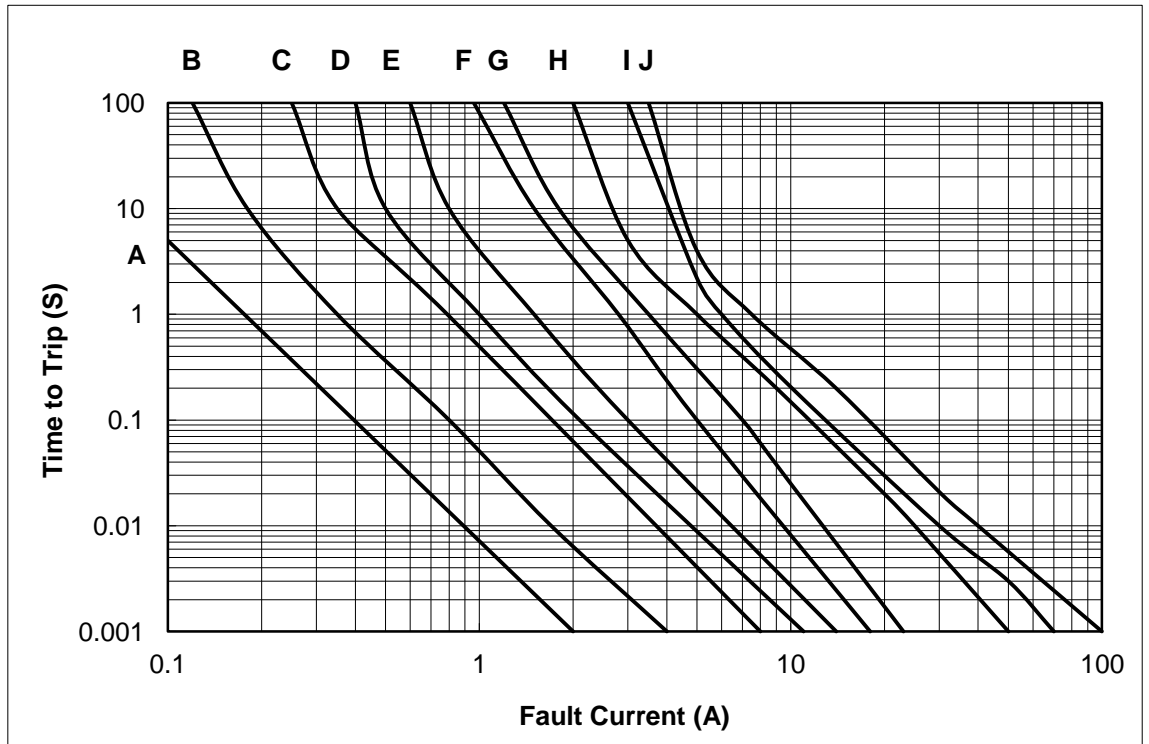


NOTE : Specification subject to change without notice.



6. Typical Time-To-Trip at 23°C

- A =FSMD005-1210 -R
- B =FSMD010-1210 -R
- C =FSMD020-1210 -R
- D =FSMD035-1210 -R
- E =FSMD050-1210 -R
- F =FSMD075-1210 -R / 075-24-1210R
- G =FSMD110-1210R / 110-16-1210R
- H =FSMD150-1210R
- I =FSMD175-1210R
- J =FSMD200-1210R



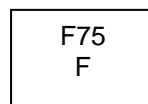
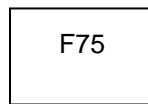
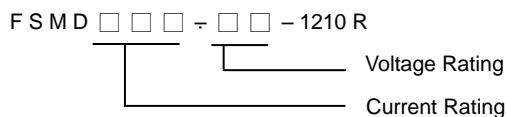
7. Material Specification

Terminal pad material: Pure Tin

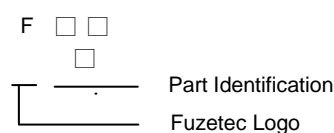
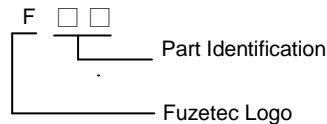
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

8. Part Numbering and Marking System

Part Numbering System



Part Marking System



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



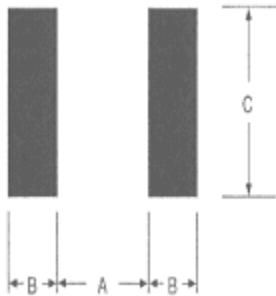
-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

-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 FSMD1210 device



Pad dimensions (millimeters)			
Device	A Nominal	B Nominal	C Nominal
All 1210 Series	2.00	1.00	2.80

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

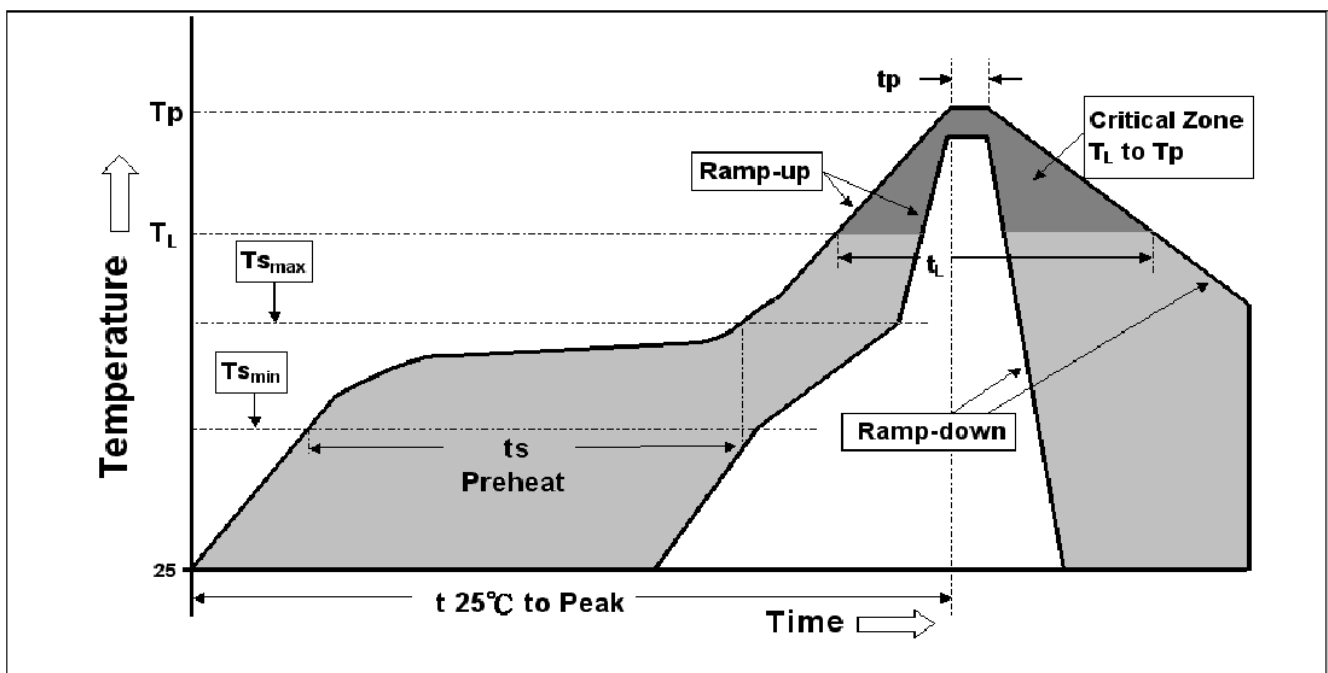
- ※ Due to “Lead Free” nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.
- 1. Recommended max past thickness > 0.25mm.
- 2. Devices can be cleaned using standard methods and aqueous solvent.
- 3. Rework use standard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

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