

 FUZETEC TECHNOLOGY CO., LTD.	NO.	PQ19-22E		
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Surface Mountable PTC Resettable Fuse: Low Rho 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: 1.75~6.50A**
- (e) **Maximum Voltage: 6VDC**
- (f) **Temperature Range : -40°C to 85°C**

2. Agency Recognition

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

*Note: FSMD450-1210RZ~FSMD650-1210RZ UL and C-UL In Process.

3. Electrical Characteristics (23°C)

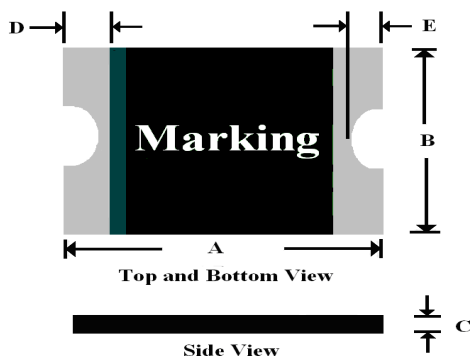
Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
	I _H , A	I _T , A	V _{MAX} , VDC	I _{MAX} , A	Pd, W	Current	Time	R _{MIN}	R _{1MAX}
						A	Sec	Ohms	Ohms
FSMD175-1210RZ	1.75	3.50	6	100	1.0	8.00	2.50	0.006	0.040
FSMD200-1210RZ	2.00	4.90	6	100	1.0	8.00	3.00	0.005	0.024
FSMD260-1210RZ	2.60	5.00	6	100	0.8	8.00	4.00	0.003	0.020
FSMD300-1210RZ	3.00	6.00	6	100	0.8	15.00	2.00	0.003	0.020
FSMD350-1210RZ	3.50	7.00	6	100	1.0	17.50	2.00	0.003	0.018
FSMD380-1210RZ	3.80	8.00	6	100	1.0	8.00	5.00	0.002	0.016
FSMD400-1210RZ	4.00	8.00	6	100	1.0	8.00	5.00	0.002	0.016
FSMD450-1210RZ	4.50	9.00	6	100	1.0	22.50	2.00	0.001	0.014
FSMD650-1210RZ	6.50	13.00	6	100	1.2	32.50	2.00	0.001	0.009

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}).
 Pd=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 post trip.
 Termination pad characteristics
 Termination pad materials: Pure Tin

NOTE : Specification subject to change without notice.

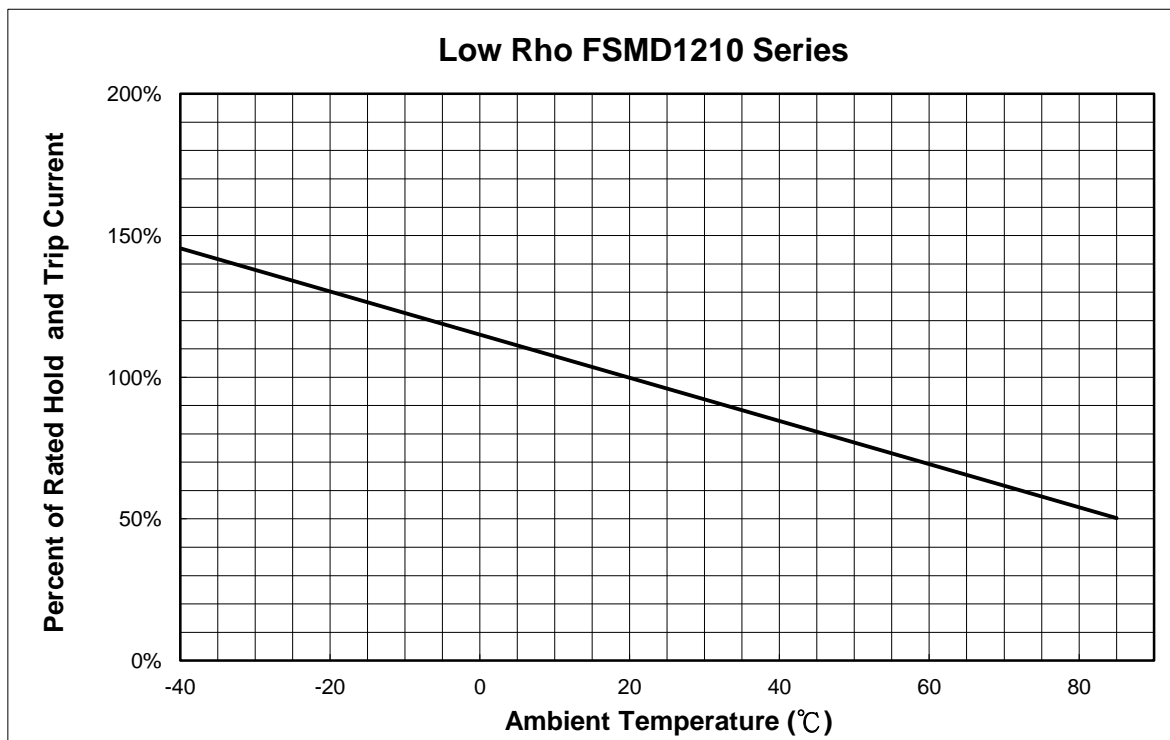
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4. FSMD Product Dimensions (Millimeters)



Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSMD175-1210RZ	3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	0.10	0.45
FSMD200-1210RZ	3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	0.10	0.45
FSMD260-1210RZ	3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	0.10	0.45
FSMD300-1210RZ	3.00	3.43	2.35	2.80	0.30	1.00	0.25	0.75	0.10	0.45
FSMD350-1210RZ	3.00	3.43	2.35	2.80	0.30	1.00	0.25	0.75	0.10	0.45
FSMD380-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
FSMD400-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
FSMD450-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
FSMD650-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45

5. Thermal Derating Curve

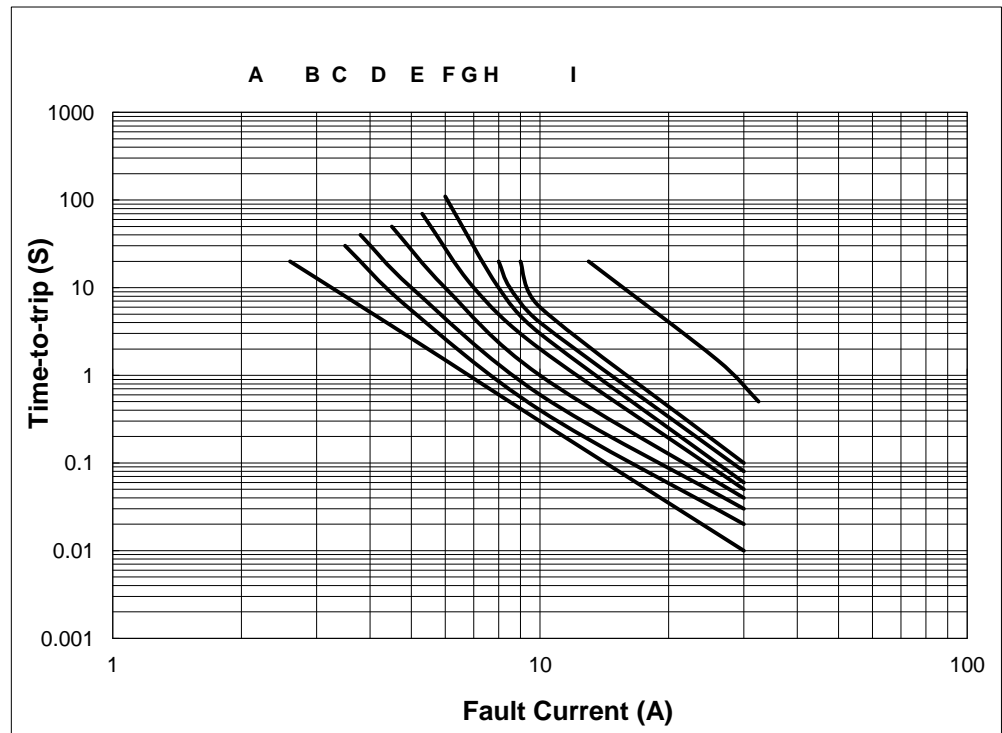


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6. Typical Time-To-Trip at 23°C

- A=FSMD175-1210RZ
- B=FSMD200-1210RZ
- C=FSMD260-1210RZ
- D=FSMD300-1210RZ
- E=FSMD350-1210RZ
- F=FSMD380-1210RZ
- G=FSMD400-1210RZ
- H=FSMD450-1210RZ
- I=FSMD650-1210RZ



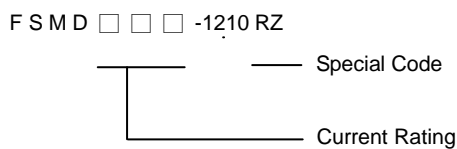
7. Material Specification

Terminal pad material: Pure Tin

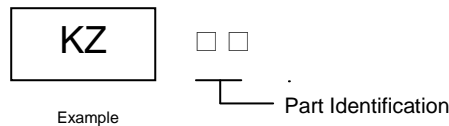
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

8. Part Numbering and Marking System

Part Numbering System



Part Marking System



- KZ = FSMD175-1210RZ
- MZ = FSMD200-1210RZ
- QZ = FSMD260-1210RZ
- SZ = FSMD300-1210RZ
- VZ = FSMD350-1210RZ
- WZ = FSMD380-1210RZ
- XZ = FSMD400-1210RZ
- YZ = FSMD450-1210RZ
- CZ = FSMD650-1210RZ

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.

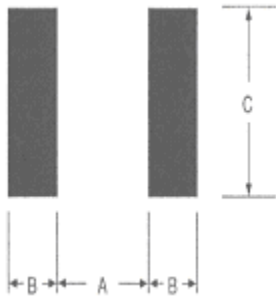
-Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.

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9. Pad Layouts 、 Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each Low Rho FSMD1210 device



Pad dimensions (millimeters)

Device	A Nominal	B Nominal	C Nominal
All FSMD1210 Series	2.00	1.00	2.80

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

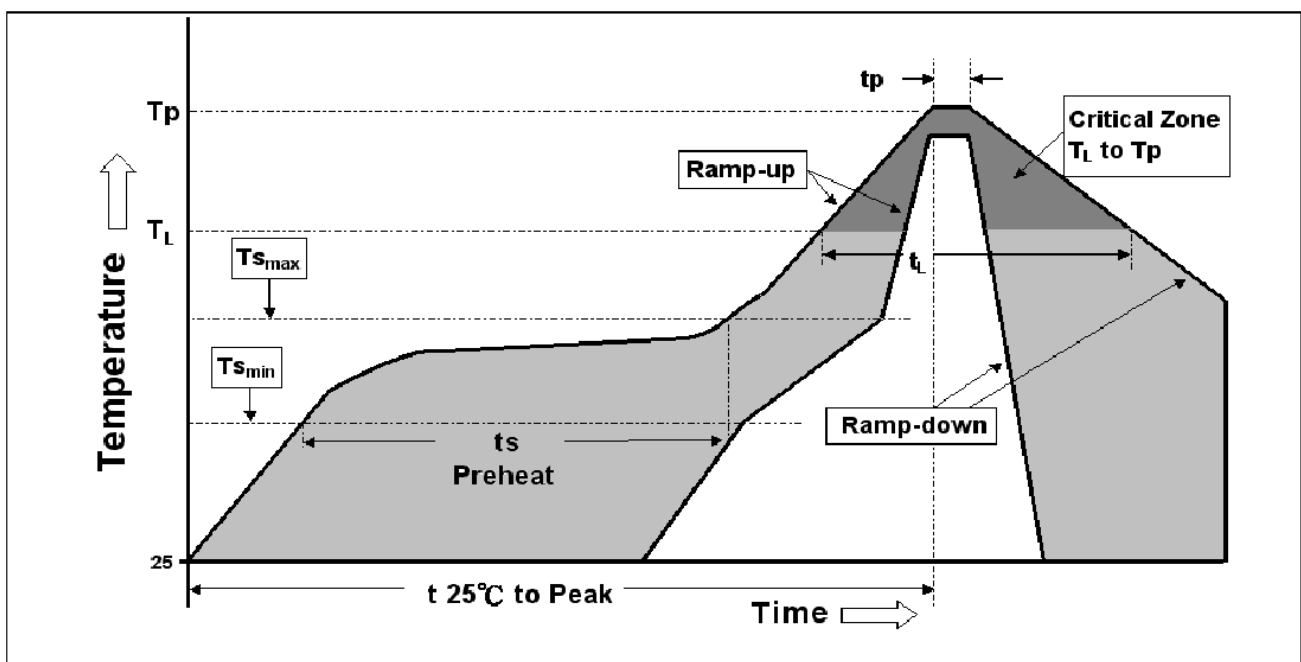
Caution:

- 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.

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.

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

Reflow Profile



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