



## 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: 1.75~7.50A**
- (e) **Maximum Voltage: 6V<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>
						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
FSMD700-1210RZ	7.00	14.00	6	100	1.2	35.00	2.00	0.001	0.008
FSMD750-1210RZ	7.50	15.00	6	100	1.2	37.50	2.00	0.001	0.007

I<sub>H</sub>=Hold current-maximum current at which the device will not trip at 23°C still air.

I<sub>T</sub>=Trip current-minimum current at which the device will always trip at 23°C still air.

V<sub>MAX</sub>=Maximum voltage device can withstand without damage at it rated current.(I<sub>MAX</sub>)

I<sub>MAX</sub>= Maximum fault current device can withstand without damage at rated voltage (V<sub>MAX</sub>).

P<sub>d</sub>=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

R<sub>MIN</sub>=Minimum device resistance at 23°C prior to tripping.

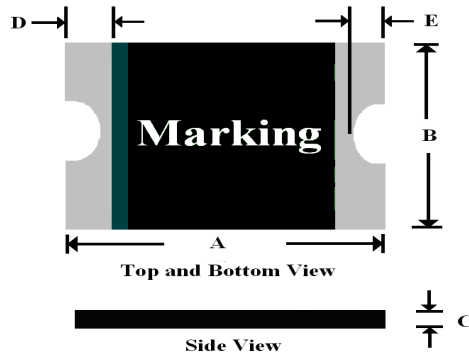
R<sub>1MAX</sub>=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

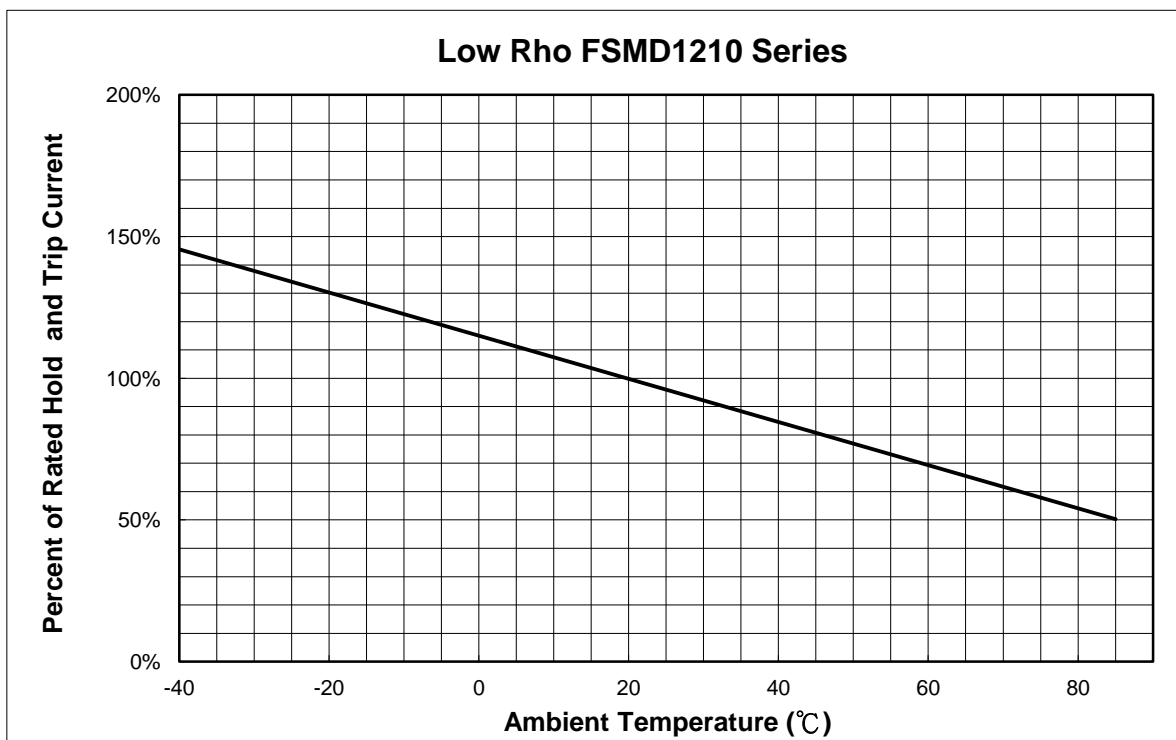


### 4. FSMD Product Dimensions (Millimeters)



Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
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
FSMD700-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
FSMD750-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45

### 5. Thermal Derating Curve

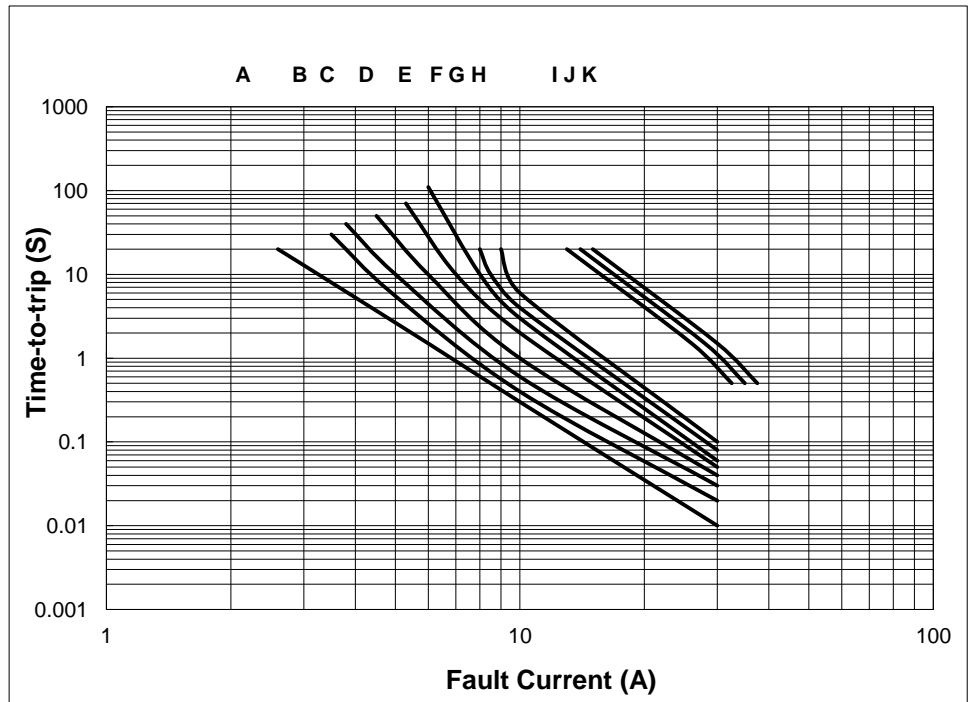


NOTE : Specification subject to change without notice.



### 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
- J = FSMD700-1210RZ
- K = FSMD750-1210RZ



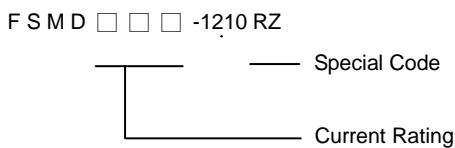
### 7. Material Specification

Terminal pad material: Pure Tin

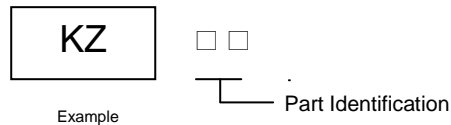
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

### 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
- DZ = FSMD700-1210RZ
- EZ = FSMD750-1210RZ

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



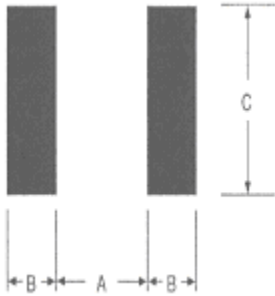
-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

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



### 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

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

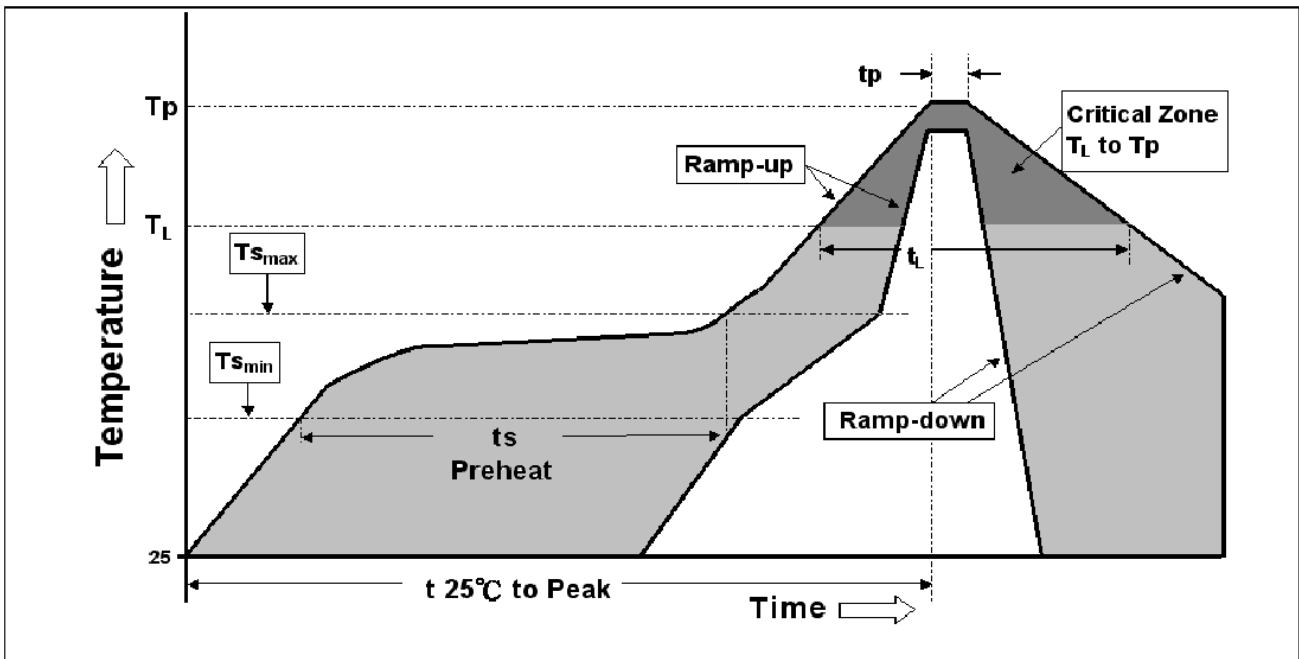
- ※ Due to "Lead Free" nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.
- 1. Recommended max past thickness > 0.25mm.
- 2. Devices can be cleaned using standard methods and aqueous solvent.
- 3. Rework use standard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

### Reflow Profile



NOTE : Specification subject to change without notice.