

 <b>FUZETEC TECHNOLOGY CO., LTD.</b>	<b>NO.</b>	<b>PQ19-01ER</b>		
	<b>Product Specification and Approval Sheet</b>	<b>Version</b>	<b>A2</b>	<b>Page</b>

## 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<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>
	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	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<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.

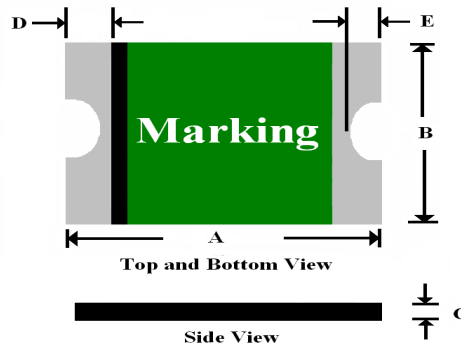
R<sub>1MAX</sub>=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

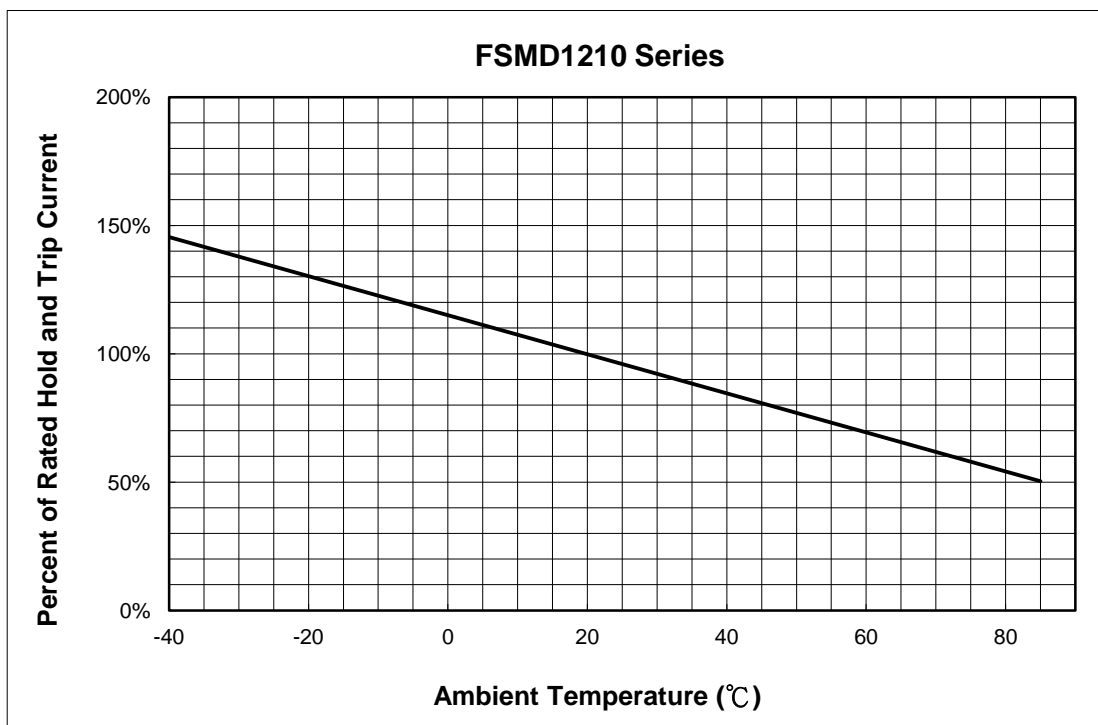


**4. FSMD Product Dimensions (Millimeters)**



Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
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**



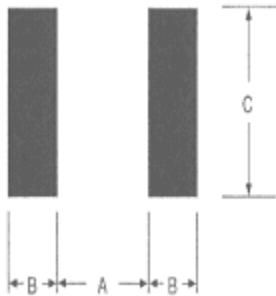
NOTE : Specification subject to change without notice.





### 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
<b>Average Ramp-Up Rate (T<sub>smax</sub> to T<sub>p</sub>)</b>	3 °C/second max.
<b>Preheat :</b>	
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
<b>Time maintained above:</b>	
Temperature(T <sub>L</sub> )	217 °C
Time (t <sub>L</sub> )	60-150 seconds
<b>Peak/Classification Temperature(T<sub>p</sub>) :</b>	260 °C
<b>Time within 5°C of actual Peak :</b>	
Temperature (t <sub>p</sub> )	20-40 seconds
<b>Ramp-Down Rate :</b>	6 °C/second max.
<b>Time 25 °C to Peak Temperature :</b>	8 minutes max.

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

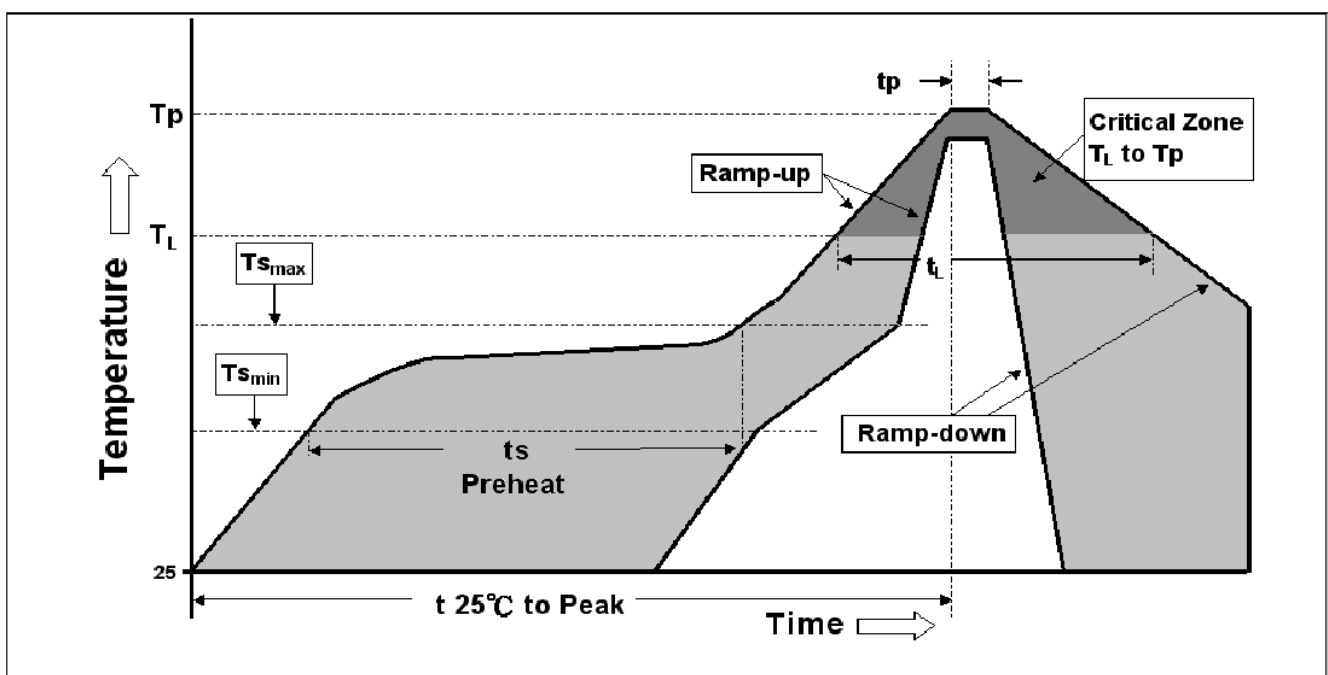
#### Solder reflow

- ※ 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.

#### Reflow Profile



NOTE : Specification subject to change without notice.

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