Low Rho TSMD1210 Series

Summary

- **RoHS Compliant & Halogen Free**
- **Applications: All high-density boards**
- **Product Features: Small surface mountable , Solid state , Faster time to trip than standard SMD devices, Lower resistance than standard SMD devices**
- **Operation Current: 1.75A~6.50A**
- **Maximum Voltage: 6V**
- **Temperature Range : -40℃ to 85℃**

Agency Recognition

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

Note :
TSMD400-1210RZ and TSMD650-1210RZ UL In Process.
TSMD260-1210RZ~TSMD650-1210RZ C-UL In Process.

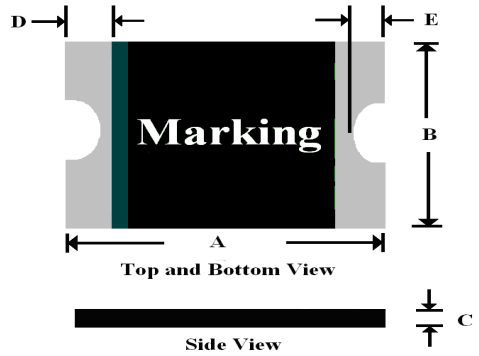
Electrical Characteristics (23℃)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Max Time to Trip		Resistance	
						Current	Time	RMIN	R1MAX
	IH, A	IT, A	VMAX, VDC	IMAX, A	Pd, W	A	Sec	Ohms	Ohms
TSMD175-1210RZ	1.75	3.50	6	100	1.0	8.00	2.50	0.006	0.040
TSMD200-1210RZ	2.00	4.90	6	100	1.0	8.00	3.00	0.005	0.024
TSMD260-1210RZ	2.60	5.00	6	100	0.8	8.00	4.00	0.003	0.020
TSMD300-1210RZ	3.00	6.00	6	100	0.8	15.00	2.00	0.003	0.020
TSMD350-1210RZ	3.50	7.00	6	100	1.0	17.50	2.00	0.003	0.018
TSMD380-1210RZ	3.80	8.00	6	100	1.0	8.00	5.00	0.002	0.016
TSMD400-1210RZ	4.00	8.00	6	100	1.0	8.00	5.00	0.002	0.016
TSMD450-1210RZ	4.50	9.00	6	100	1.0	22.50	2.00	0.001	0.014
TSMD650-1210RZ	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℃still air.
I_T=Trip current-minimum current at which the device will always trip at 23℃ 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℃ still air environment.
R_{MIN}=Minimum device resistance at 23℃ prior to tripping.
$R1_{MAX}$=Maximum device resistance at 23℃ measured 1 hour post trip.
Termination pad characteristics
Termination pad materials: Pure Tin

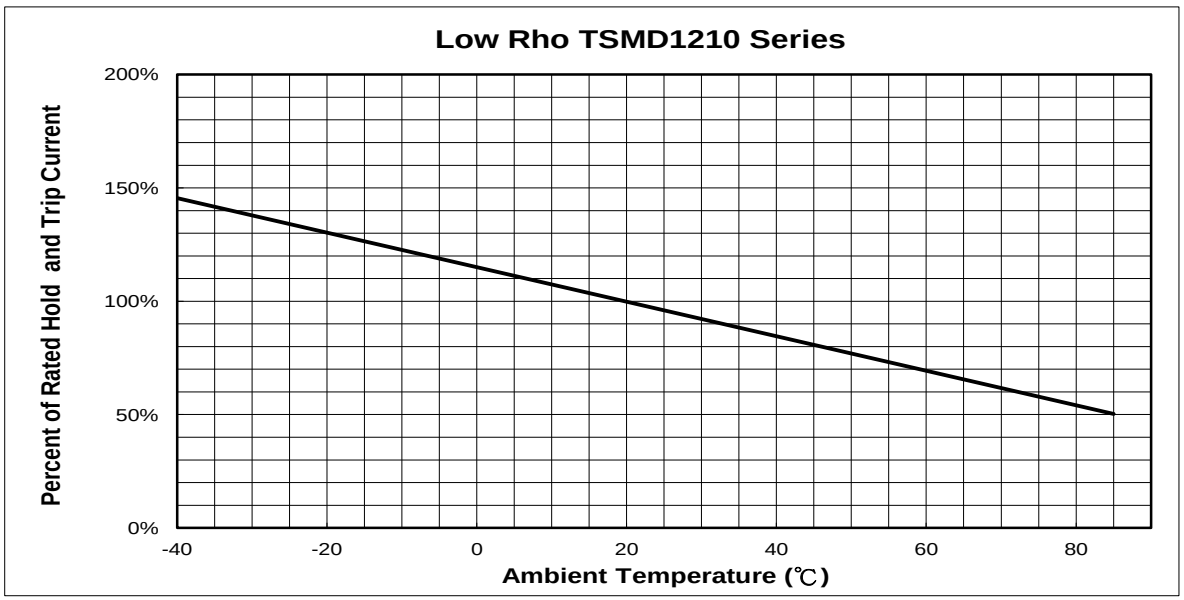
NOTE : Specification subject to change without notice.

TSMD Product Dimensions (Millimeters)



Part Number	A		B		C		D		E	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
TSMD175-1210RZ	3.00	3.43	2.35	2.80	0.40	0.75	0.25	0.75	0.10	0.45
TSMD200-1210RZ	3.00	3.43	2.35	2.80	0.40	0.75	0.25	0.75	0.10	0.45
TSMD260-1210RZ	3.00	3.43	2.35	2.80	0.40	0.75	0.25	0.75	0.10	0.45
TSMD300-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
TSMD350-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
TSMD380-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
TSMD400-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
TSMD450-1210RZ	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
TSMD650-1210RZ	3.00	3.43	2.35	2.80	0.60	1.40	0.25	0.75	0.10	0.45

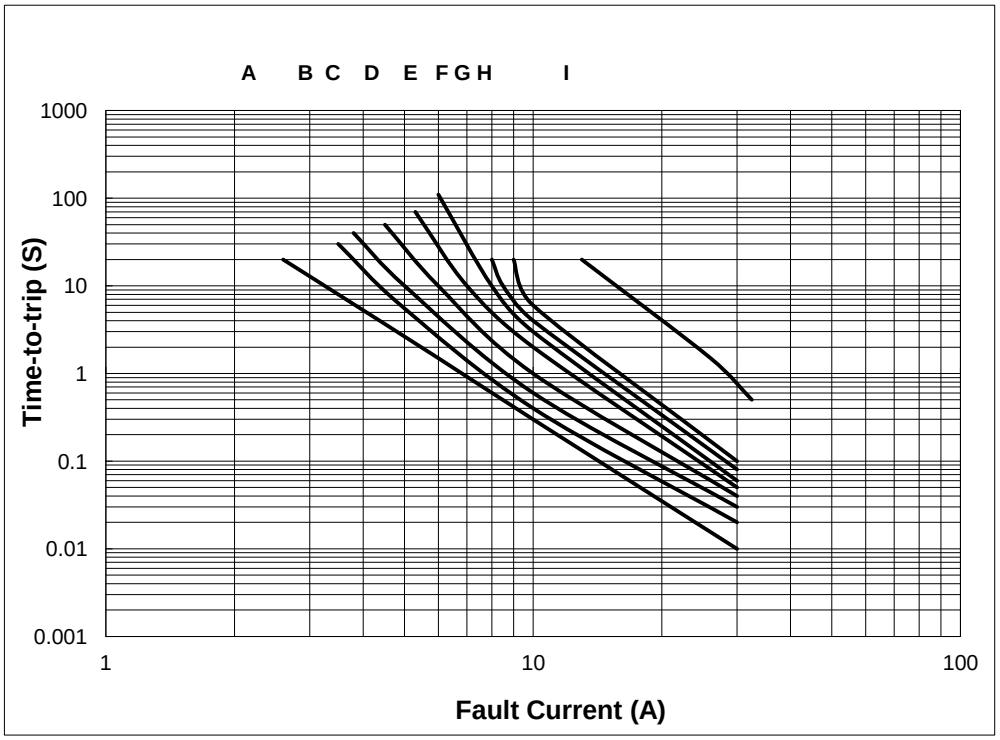
Thermal Derating Curve



NOTE : Specification subject to change without notice.

Typical Time-To-Trip at 23℃

A=TSMD175-1210RZ
B=TSMD200-1210RZ
C=TSMD260-1210RZ
D=TSMD300-1210RZ
E=TSMD350-1210RZ
F=TSMD380-1210RZ
G=TSMD400-1210RZ
H=TSMD450-1210RZ
I=TSMD650-1210RZ



NOTE : Specification subject to change without notice.

Material Specification

Terminal pad material: Pure Tin

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

Part Numbering and Marking System

Part Numbering System

T S M D □ □ □ -1210 RZ

- Special Code
- Current Rating

Part Marking System

KZ □ □

Example

- Part Identification

KZ = TSMD175-1210RZ
MZ = TSMD200-1210RZ
QZ = TSMD260-1210RZ
SZ = TSMD300-1210RZ
VZ = TSMD350-1210RZ
WZ = TSMD380-1210RZ
XZ = TSMD400-1210RZ
YZ = TSMD450-1210RZ
CZ = TSMD650-1210RZ

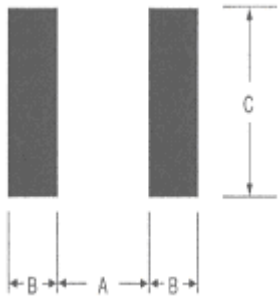
Warning: -Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.

-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.

Pad Layouts、Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each Low Rho TSMD1210 device



Pad dimensions (millimeters)			
Device	A Nominal	B Nominal	C Nominal
All TSMD1210 Series	2.00	1.00	2.80

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Tsmax to Tp)	3 ℃/second max.
Preheat : Temperature Min (Tsmin) Temperature Max (Tsmax) Time (tsmin to tsmax)	 150 ℃ 200 ℃ 60-180 seconds
Time maintained above: Temperature(T_L) Time (t_L)	 217 ℃ 60-150 seconds
Peak/Classification Temperature(Tp) :	260 ℃
Time within 5℃ of actual Peak : Temperature (tp)	 20-40 seconds
Ramp-Down Rate :	6 ℃/second max.
Time 25 ℃ to Peak Temperature :	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℃ / 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