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|  FUZETEC TECHNOLOGY CO., LTD. | NO. | PQ04-44E | | |
| | Product Specification and Approval Sheet | Version | A1 | Page |

Surface Mountable PTC Resettable Fuse: Low Rho FSMD1812 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: 1.40A~6.00A**
- (e) **Maximum Voltage: 6V_{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)

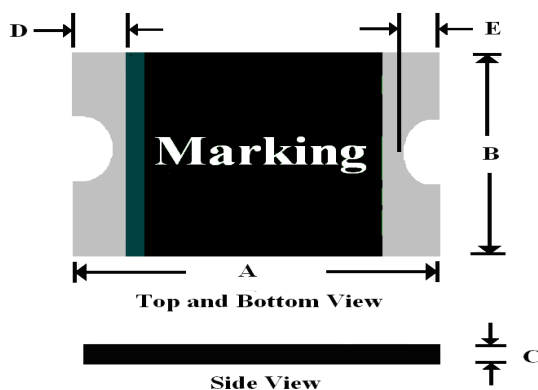
| Part Number | Hold Current | Trip Current | Rated Voltage | Max Current | Typical Power | Max Time to Trip | | Resistance | |
|------------------|--------------------|--------------------|------------------------|----------------------|--------------------|------------------|------|------------------|-------------------|
| | 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 |
| FSMD140RZ | 1.40 | 3.60 | 6 | 100 | 1.0 | 8.0 | 3.00 | 0.0100 | 0.0350 |
| FSMD190RZ | 1.90 | 4.90 | 6 | 100 | 1.0 | 8.0 | 5.00 | 0.0030 | 0.0250 |
| FSMD270RZ | 2.70 | 6.20 | 6 | 100 | 1.0 | 13.5 | 3.00 | 0.0030 | 0.0230 |
| FSMD300RZ | 3.00 | 7.00 | 6 | 100 | 1.0 | 15.0 | 2.00 | 0.0030 | 0.0220 |
| FSMD370RZ | 3.70 | 9.10 | 6 | 100 | 1.0 | 18.5 | 2.00 | 0.0030 | 0.0180 |
| FSMD500RZ | 5.00 | 10.00 | 6 | 100 | 1.0 | 25.0 | 2.00 | 0.0015 | 0.0140 |
| FSMD600RZ | 6.00 | 12.00 | 6 | 100 | 1.0 | 30.0 | 3.00 | 0.0010 | 0.0100 |

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 post trip.
 Termination pad characteristics
 Termination pad materials: Pure Tin

NOTE : Specification subject to change without notice.

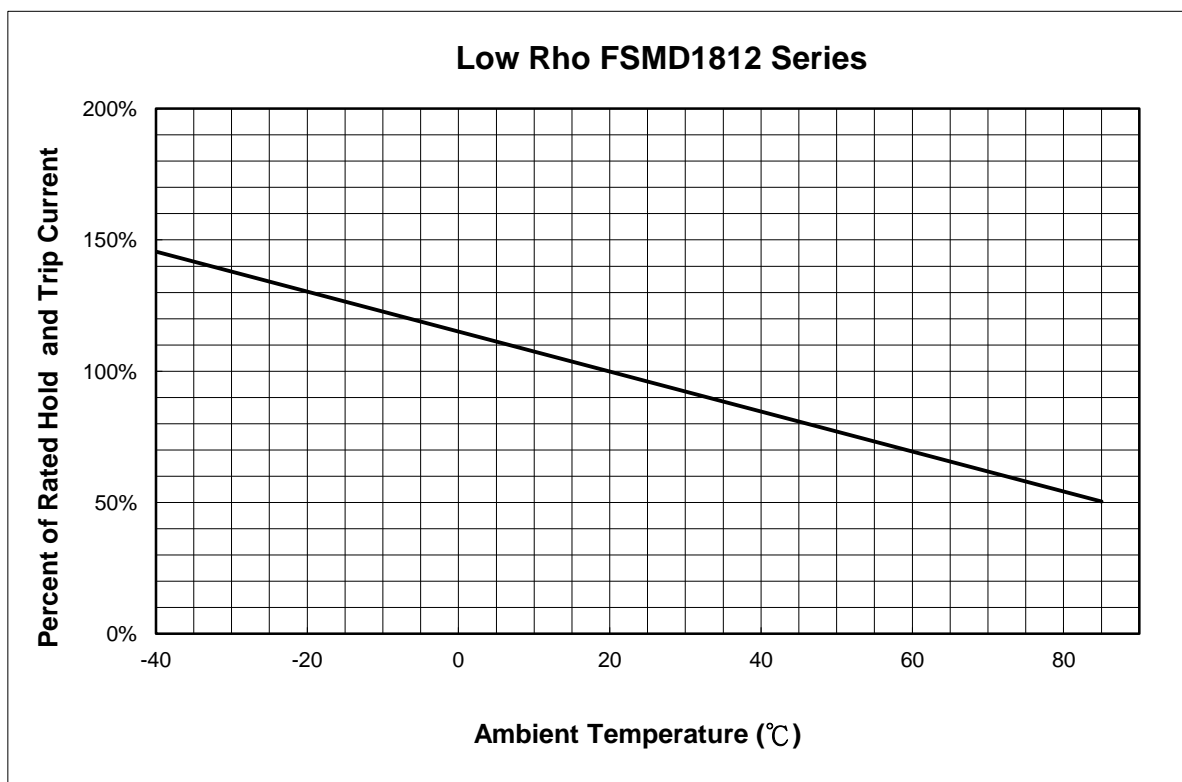
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4. FSMD Product Dimensions (Millimeters)



| Part Number | A | | B | | C | | D | | E | |
|-------------|------|------|------|------|------|------|------|------|------|------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| FSMD140RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.70 | 0.25 | 0.95 | 0.25 | 0.65 |
| FSMD190RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.70 | 0.25 | 0.95 | 0.25 | 0.65 |
| FSMD270RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.70 | 0.25 | 0.95 | 0.25 | 0.65 |
| FSMD300RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.70 | 0.25 | 0.95 | 0.25 | 0.65 |
| FSMD370RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.70 | 0.25 | 0.95 | 0.25 | 0.65 |
| FSMD500RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 0.70 | 0.25 | 0.95 | 0.25 | 0.65 |
| FSMD600RZ | 4.37 | 4.73 | 3.07 | 3.41 | 0.30 | 1.00 | 0.25 | 0.95 | 0.25 | 0.65 |

5. Thermal Derating Curve

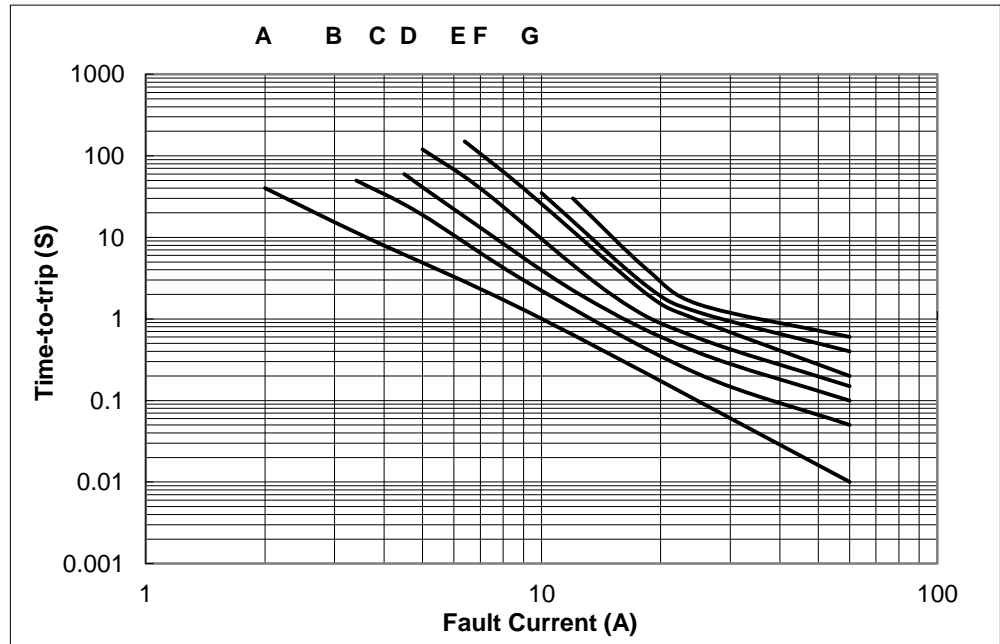


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6. Typical Time-To-Trip at 23°C

- A = FSMD140RZ
- B = FSMD190RZ
- C = FSMD270RZ
- D = FSMD300RZ
- E = FSMD370RZ
- F = FSMD500RZ
- G = FSMD600RZ



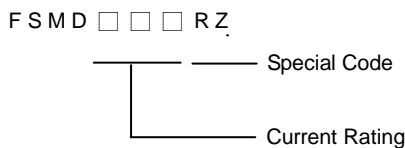
7. Material Specification

Terminal pad material: Pure Tin

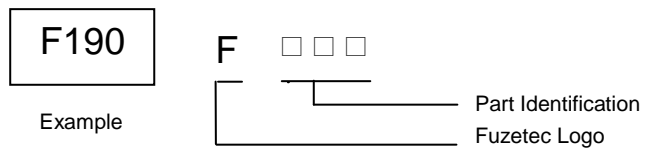
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

8. Part Numbering and Marking System

Part Numbering System



Part Marking System



- F14Z= FSMD140RZ
- F190= FSMD190RZ
- F27Z= FSMD270RZ
- F30Z= FSMD300RZ
- F37Z= FSMD370RZ
- F50Z= FSMD500RZ
- F60Z= FSMD600RZ

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.

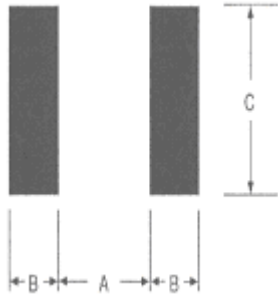


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9. Pad Layouts 、 Solder Reflow and Rework Recommendations

The dimension in the table below provide the recommended pad layout for each Low Rho FSMD1812 device



| Pad dimensions (millimeters) | | | |
|------------------------------|-----------|-----------|-----------|
| Device | A Nominal | B Nominal | C Nominal |
| All FSMD1812 Series | 3.45 | 1.78 | 3.50 |

| 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

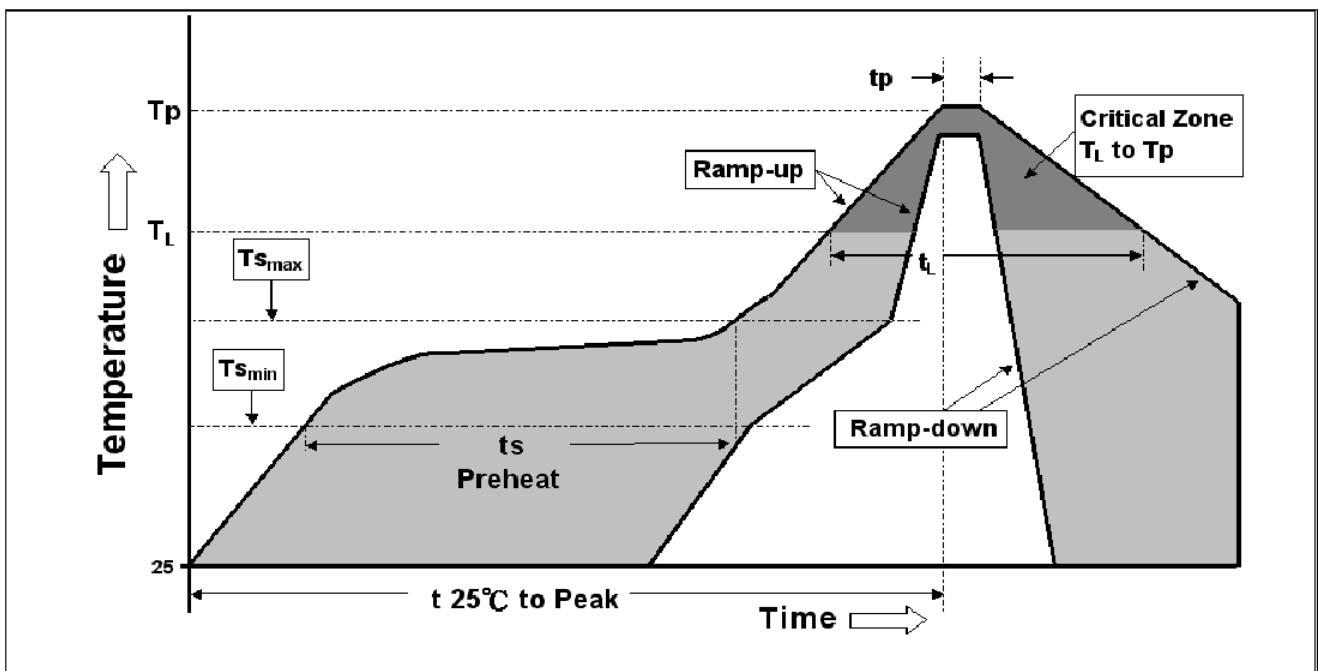
- ※ Due to “Lead Free” nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.
- 1. Recommended max past thickness > 0.25mm.
- 2. Devices can be cleaned using standard methods and aqueous solvent.
- 3. Rework use standard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