# Surface Mountable PTC Resettable Fuse: FSMD005-150-R

## 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: 50mA
(e) Maximum Voltage: 150VAC
(f) Temperature Range : -40℃ to 85℃

## 2. Agency Recognition

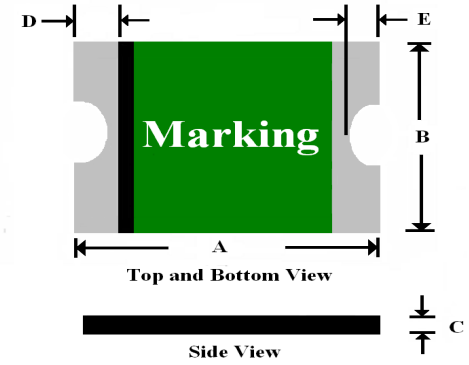
UL: File No. E211981
C-UL: File No. E211981
TÜV: In Process

## 3. Electrical Characteristics (23℃)

| Part Number | Hold Current | Trip Current | Rated Voltage | Max Current | Typical Power | Typical Time to Trip | | Resistance | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Current | Time | $R_{MIN}$ | $R1_{MAX}$ |
| | $I_H$, A | $I_T$, A | $V_{MAX}$, $V_{AC}$ | $I_{MAX}$, A | Pd, W | A | Sec | Ohms | Ohms |
| FSMD005-150-R | 0.05 | 0.15 | 150 | 10 | 0.8 | 0.50 | 0.65 | 3.00 | 40.00 |

$I_H$=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 after tripping or reflow soldering of 260℃ for 20 seconds.
Termination pad characteristics
Termination pad materials: Pure Tin

## 4. FSMD Product Dimensions (Millimeters)

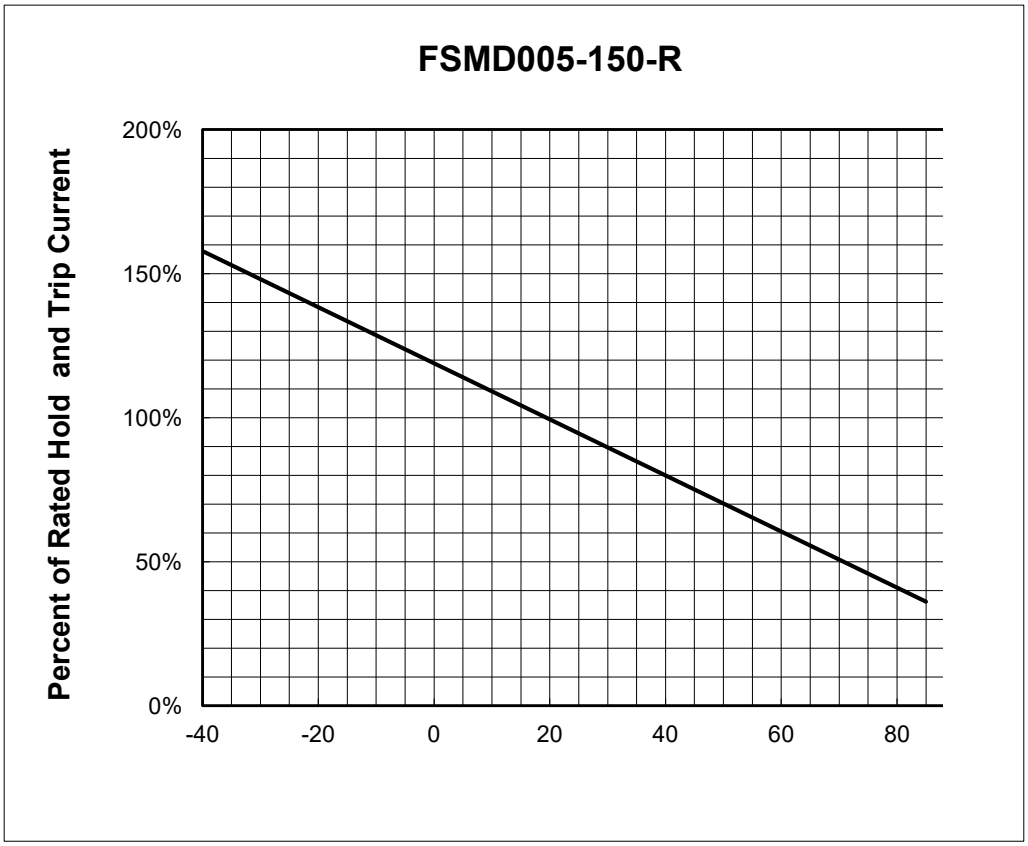



| Part Number | A | | B | | C | | D | | E | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| FSMD005-150-R | 4.37 | 4.73 | 3.07 | 3.41 | 1.10 | 1.40 | 0.30 | 0.95 | 0.25 | 0.65 |

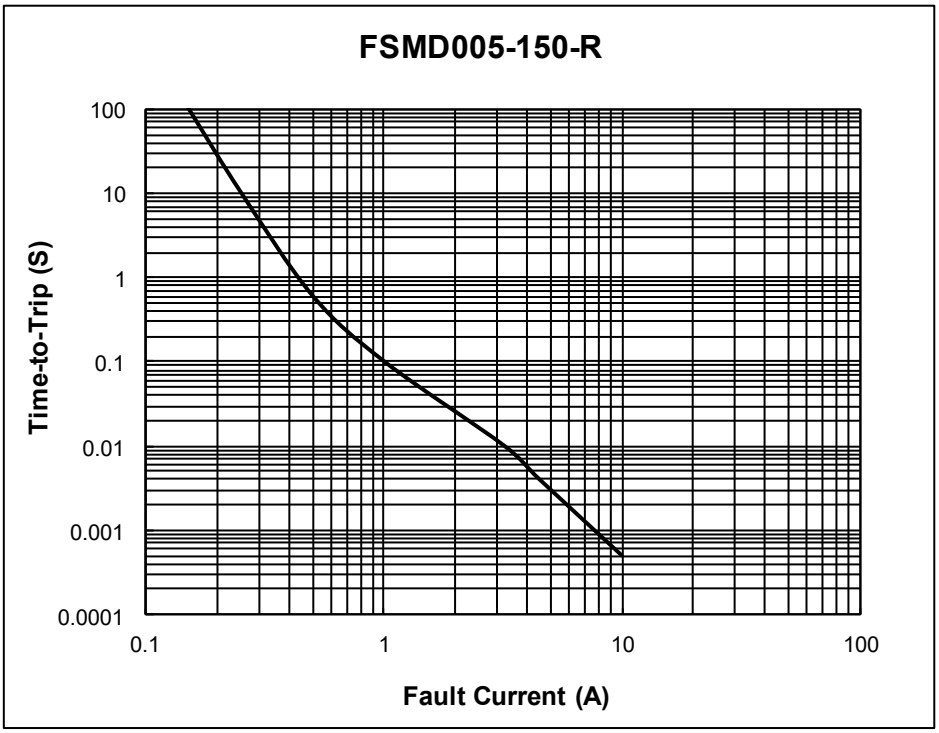
**NOTE : Specification subject to change without notice.**

2016/1/25

## 5. Thermal Derating Curve




## 6. Typical Time-To-Trip at 23℃

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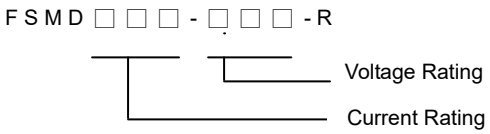
## 7. Material Specification

Terminal pad material: Pure Tin

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

## 8. Part Numbering

### Part Numbering System




FZ
150

Example

### Part Marking System

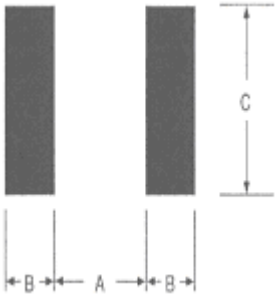

**Warning:** -Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.

-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 FSMD1812 device




| Pad dimensions (millimeters) | | | |
|---|---|---|---|
| Device | A Nominal | B Nominal | C Nominal |
| FSMD005-150-R | 3.45 | 1.78 | 3.50 |

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

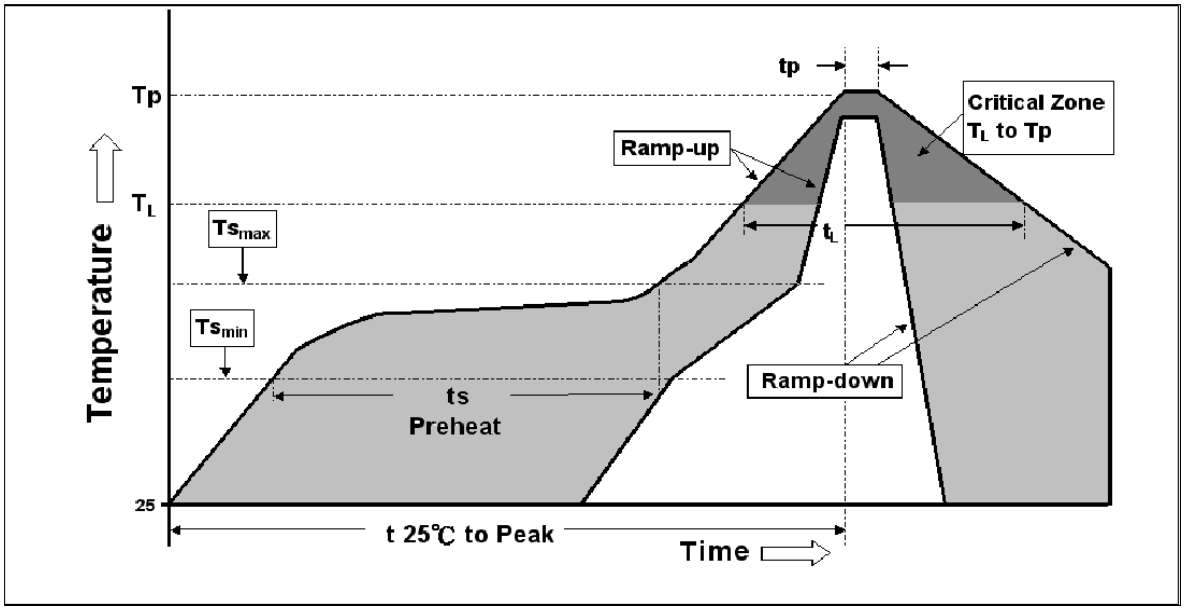
※ Due to “Lead Free” nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.

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

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