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|  FUZETEC TECHNOLOGY CO., LTD. | NO. | PQ18-01ER | | |
| | Product Specification and Approval Sheet | Version | 9 | Page |

Surface Mountable PTC Resettable Fuse: FSMD1206 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~2.0A**
- (e) **Maximum Voltage: 6V_{DC}~60V_{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} |
| | | | | | | A | Sec | Ohms | Ohms |
| FSMD005-1206-R | 0.05 | 0.15 | 60 | 10 | 0.4 | 0.25 | 1.50 | 3.600 | 50.000 |
| FSMD010-1206-R | 0.10 | 0.25 | 60 | 10 | 0.4 | 0.50 | 1.00 | 1.600 | 15.000 |
| FSMD012-1206-R | 0.12 | 0.39 | 48 | 100 | 0.6 | 1.00 | 0.20 | 1.400 | 6.500 |
| FSMD016-1206-R | 0.16 | 0.45 | 48 | 100 | 0.6 | 1.00 | 0.30 | 1.100 | 5.000 |
| FSMD020-1206-R | 0.20 | 0.40 | 30 | 100 | 0.4 | 8.00 | 0.10 | 0.600 | 2.500 |
| FSMD025-1206-R | 0.25 | 0.50 | 16 | 100 | 0.6 | 8.00 | 0.08 | 0.550 | 2.300 |
| FSMD025-24-1206-R | 0.25 | 0.50 | 24 | 40 | 0.6 | 8.0 | 0.08 | 0.550 | 2.300 |
| FSMD035-1206-R | 0.35 | 0.75 | 16 | 100 | 0.4 | 8.00 | 0.10 | 0.300 | 1.200 |
| FSMD035-30-1206R | 0.35 | 0.75 | 30 | 40 | 0.6 | 8.00 | 0.10 | 0.300 | 1.200 |
| FSMD050-1206-R | 0.50 | 1.00 | 8 | 100 | 0.4 | 8.00 | 0.10 | 0.150 | 0.700 |
| FSMD050-24-1206R | 0.50 | 1.00 | 24 | 100 | 0.6 | 8.00 | 0.10 | 0.150 | 0.750 |
| FSMD075-1206R | 0.75 | 1.50 | 6 | 100 | 0.6 | 8.00 | 0.20 | 0.090 | 0.290 |
| FSMD075-16-1206R | 0.75 | 1.50 | 16 | 100 | 0.6 | 8.00 | 0.20 | 0.090 | 0.290 |
| FSMD100-1206R | 1.00 | 1.80 | 6 | 100 | 0.6 | 8.00 | 0.30 | 0.055 | 0.210 |
| FSMD110-1206R | 1.10 | 2.20 | 6 | 100 | 0.8 | 8.00 | 0.30 | 0.040 | 0.180 |
| FSMD150-1206R | 1.50 | 3.00 | 6 | 100 | 0.8 | 8.00 | 1.00 | 0.040 | 0.120 |
| FSMD200-1206R | 2.00 | 3.50 | 6 | 100 | 0.8 | 8.00 | 1.50 | 0.018 | 0.080 |

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 after tripping or reflow soldering of 260°C for 20 seconds.

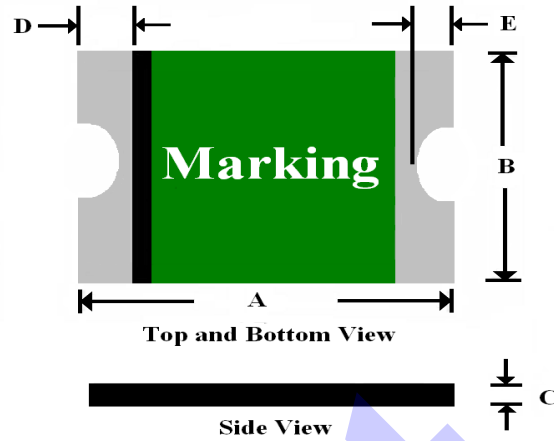
Termination pad characteristics

Termination pad materials: Pure Tin

NOTE : Specification subject to change without notice.



4. FSMD Product Dimensions (Millimeters)

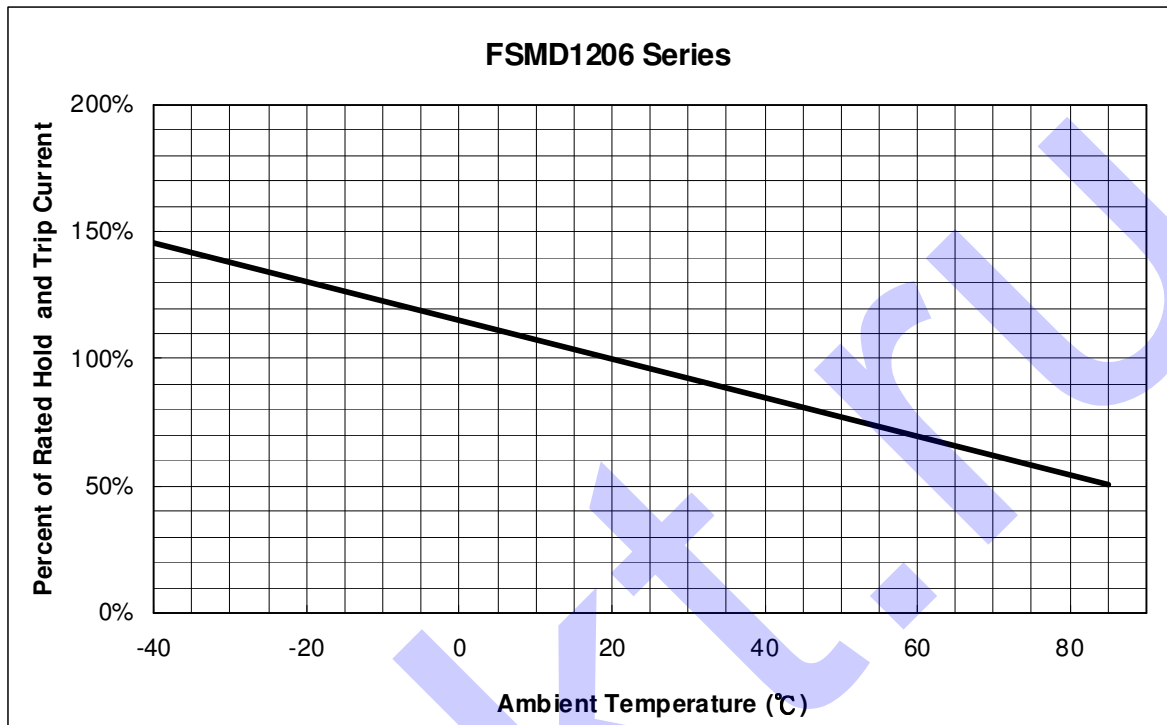


| Part Number | A | | B | | C | | D | | E | |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| FSMD005-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD010-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD012-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD016-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD020-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD025-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD025-24-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD035-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD035-30-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.90 | 1.30 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD050-1206-R | 3.00 | 3.50 | 1.50 | 1.80 | 0.25 | 0.55 | 0.10 | 0.75 | 0.10 | 0.45 |
| FSMD050-24-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.90 | 1.30 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD075-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.25 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD075-16-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.25 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD100-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD110-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD150-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |
| FSMD200-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.85 | 1.60 | 0.25 | 0.75 | 0.10 | 0.45 |

NOTE : Specification subject to change without notice.

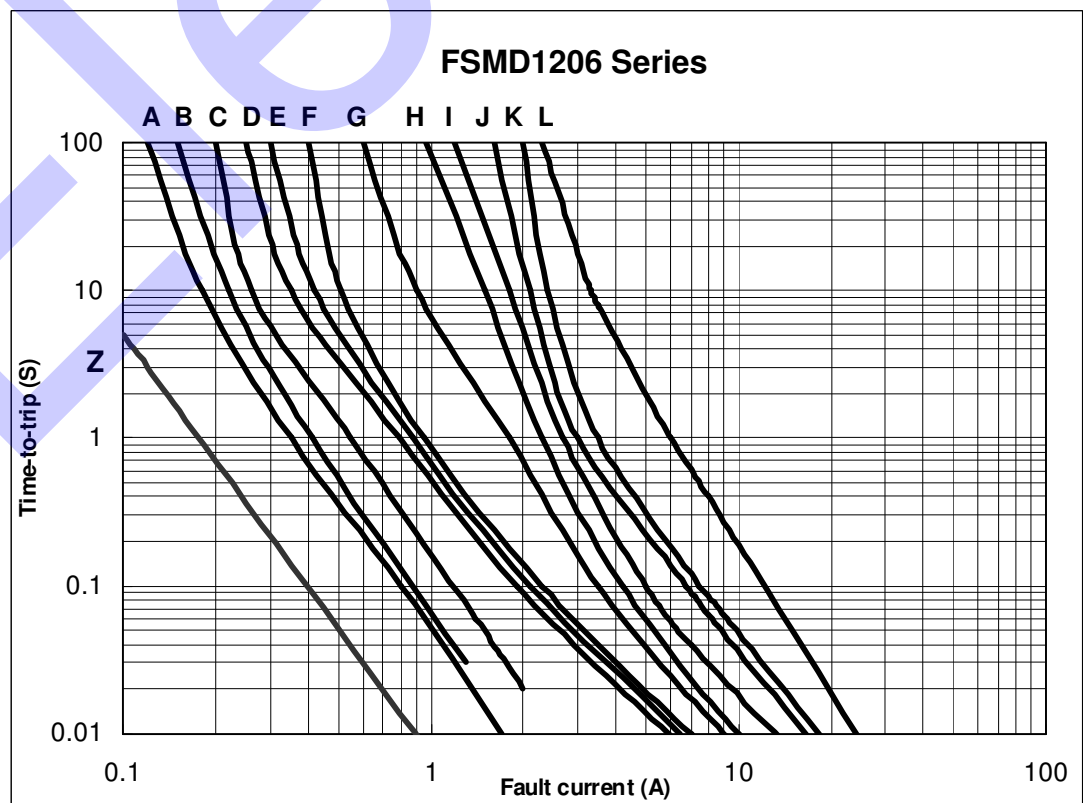


5. Thermal Derating Curve



6. Typical Time-To-Trip at 23°C

- Z= FSMD005-1206-R
- A= FSMD010-1206-R
- B= FSMD012-1206-R
- C= FSMD016-1206-R
- D= FSMD020-1206-R
- E= FSMD025-1206-R / 025-24-1206-R
- F= FSMD035-1206-R / 035-60-1206R
- G= FSMD050-1206-R / 050-24-1206R
- H= FSMD075-1206R / 075-16-1206R
- I= FSMD100-1206R
- J= FSMD110-1206R
- K= FSMD150-1206R
- L= FSMD200-1206R



NOTE : Specification subject to change without notice.



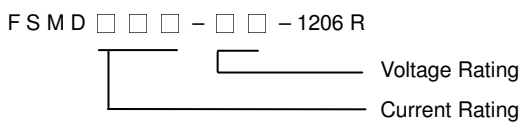
7. Material Specification

Terminal pad material: Pure Tin

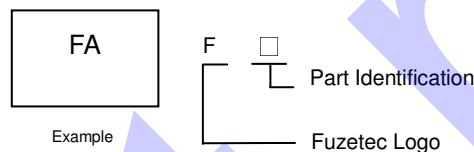
Soldering characteristics: Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

8. Part Numbering and Marking System

Part Numbering System



Part Marking System



- FZ = FSMD005-1206-R
- FA = FSMD010-1206-R
- FJ = FSMD012-1206-R
- FK = FSMD016-1206-R
- FB = FSMD020-1206-R
- FL = FSMD025-1206-R
- FP = FSMD025-24-1206-R
- FC = FSMD035-1206-R
- FM = FSMD035-30-1206R
- FD = FSMD050-1206-R
- FN = FSMD050-24-1206R
- FE = FSMD075-1206R
- FO = FSMD075-16-1206R
- FF = FSMD100-1206R
- FG = FSMD110-1206R
- FH = FSMD150-1206R
- FI = FSMD200-1206R

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



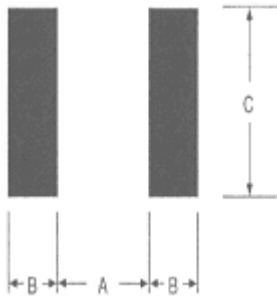
-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.

-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 FSMD1206 device



| Pad dimensions (millimeters) | | | |
|------------------------------|-----------|-----------|-----------|
| Device | A Nominal | B Nominal | C Nominal |
| All 1206 Series | 2.00 | 1.00 | 1.90 |

| 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

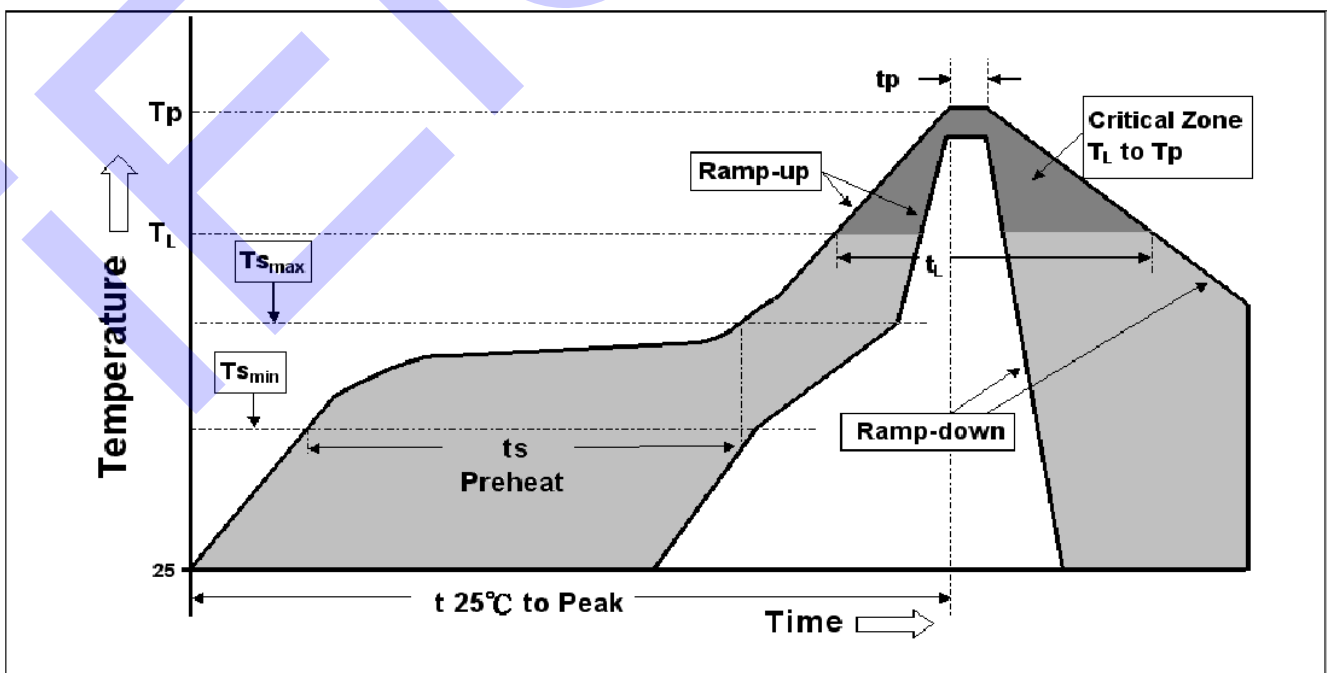
- ※ Due to "Lead Free" nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.
- 1. Recommended max past thickness > 0.25mm.
- 2. Devices can be cleaned using standard methods and aqueous solvent.
- 3. Rework use standard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