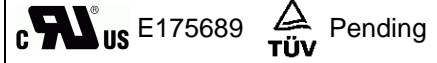




ECE —
The Name You Can Trust!

SURFACE MOUNT PTC SM (1210) MODEL



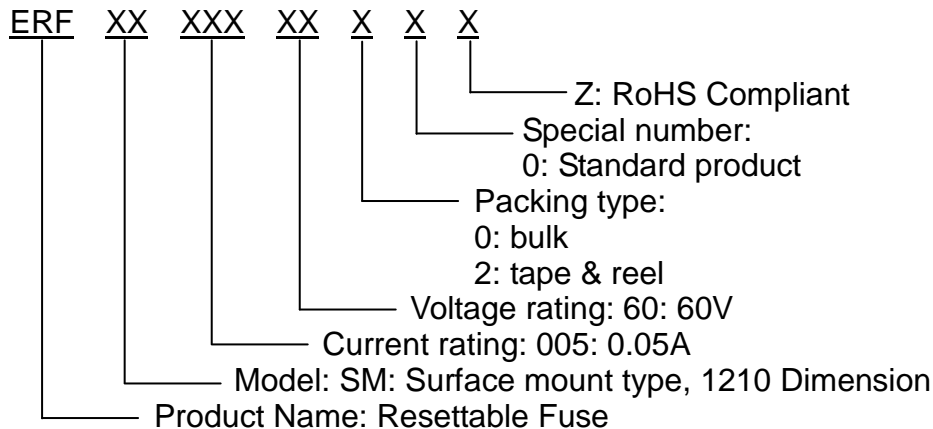
■ FEATURES

- 1210 Dimension, surface mount, solid state
- Faster time to trip than standard SMD devices
- Lower resistance than standard SMD devices
- Operation current: 50mA~2.00A
- Maximum voltage: 6V~60Vdc
- Temperature range: -40°C to 85°C
- Tape and reel available on most models

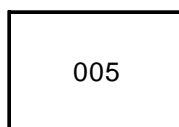
■ APPLICATIONS

- ◆ Almost anywhere there High-density boards is a low voltage power supply and a load to be protected including:
 - Computers & peripherals
 - General electronics
 - Automotive applications

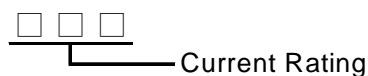
■ PART NUMBERING SYSTEM



■ Marking system



Example





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■ Electrical characteristics(23°C)

| Part Number | Hold Current | Trip Current | Rated Voltage | Max Current | Typical Power | Max time to trip | | Resistance Tolerance | |
|-------------|--------------------|--------------------|------------------------------------|----------------------|--------------------|------------------|------|----------------------|-------------------|
| | | | | | | Current | Time | R _{MIN} | R _{1MAX} |
| | I _H , A | I _T , A | V _{MAX} , V _{dc} | I _{MAX} , A | P _d , W | Amp | Sec | Ω | Ω |
| SM005-60 | 0.05 | 0.15 | 60 | 10 | 0.60 | 0.25 | 1.50 | 3.60 | 50.00 |
| SM010-60 | 0.10 | 0.25 | 60 | 10 | 0.60 | 0.50 | 1.50 | 1.60 | 15.00 |
| SM020-30 | 0.20 | 0.40 | 30 | 10 | 0.60 | 8.00 | 0.02 | 0.80 | 5.00 |
| SM035-16 | 0.35 | 0.70 | 16 | 40 | 0.60 | 8.00 | 0.20 | 0.32 | 1.30 |
| SM050-16 | 0.50 | 1.00 | 16 | 40 | 0.60 | 8.00 | 0.10 | 0.25 | 0.90 |
| SM075-08 | 0.75 | 1.50 | 8 | 40 | 0.60 | 8.00 | 0.10 | 0.13 | 0.40 |
| SM075-24 | 0.75 | 1.50 | 24 | 40 | 0.60 | 8.00 | 0.10 | 0.13 | 0.40 |
| SM110-06 | 1.10 | 2.20 | 6 | 100 | 0.80 | 8.00 | 0.30 | 0.06 | 0.21 |
| SM150-06 | 1.50 | 3.00 | 6 | 100 | 0.80 | 8.00 | 0.50 | 0.04 | 0.11 |
| SM175-06 | 1.75 | 4.00 | 6 | 100 | 0.80 | 8.00 | 0.60 | 0.02 | 0.08 |
| SM200-06 | 2.00 | 4.00 | 6 | 100 | 0.80 | 8.00 | 1.00 | 0.015 | 0.007 |

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 rated current.

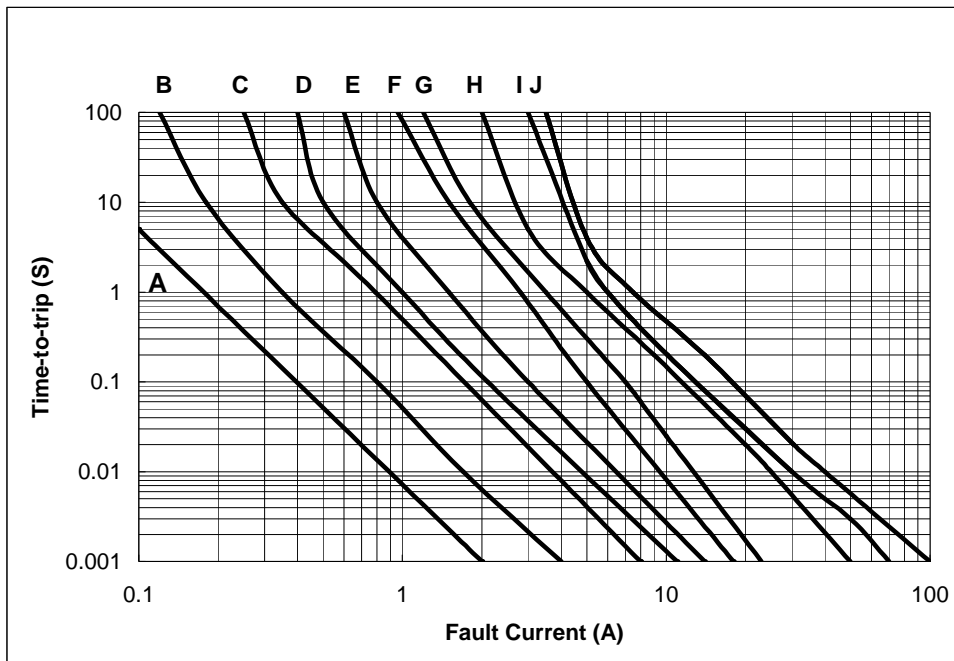
I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V max).

P_d=Typical power dissipated from device when in the tripped state in 23°C still air environment.

R_{MIN}=Minimum device resistance at 23°C.

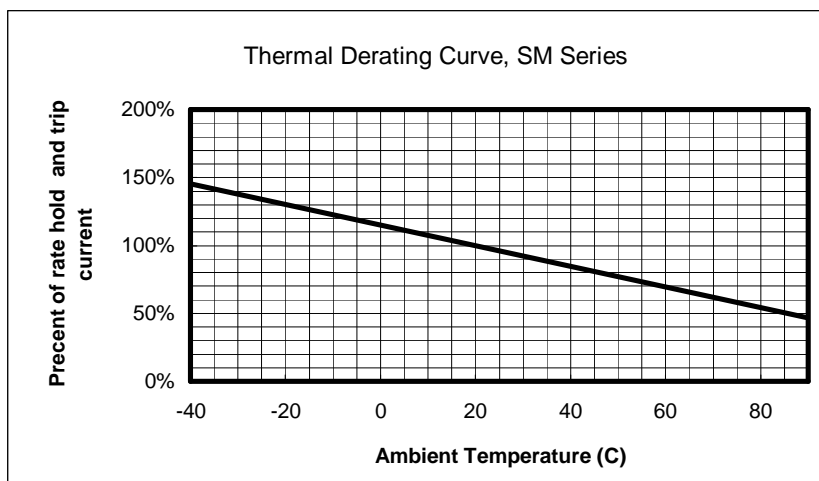
R_{1MAX}=Maximum device resistance at 23°C 1 hour after tripping .

■ Typical time-to-trip-at 23°C



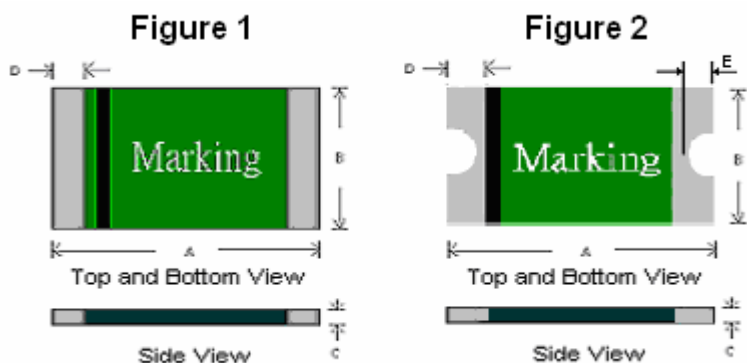
A=SM005
B=SM010
C=SM020
D=SM035
E=SM050
F=SM075
G=SM110
H=SM150
I=SM175
J=SM200

Thermal Derating Curve



SM Product Dimensions (UNIT: mm)

| PART NUMBER | Figure | A | | B | | C | | D | | E | |
|-------------|--------|------|------|------|------|------|------|------|------|-------|-------|
| | | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| SM005-60 | 1 | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.15 | 0.25 | 0.75 | ----- | ----- |
| SM010-60 | 1 | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.15 | 0.25 | 0.75 | ----- | ----- |
| SM020-30 | 1 | 3.00 | 3.43 | 2.35 | 2.80 | 0.40 | 0.85 | 0.25 | 0.75 | ----- | ----- |
| SM035-16 | 1 | 3.00 | 3.43 | 2.35 | 2.80 | 0.40 | 0.80 | 0.25 | 0.75 | ----- | ----- |
| SM050-16 | 1 | 3.00 | 3.43 | 2.35 | 2.80 | 0.30 | 0.75 | 0.25 | 0.75 | ----- | ----- |
| SM075-08 | 1 | 3.00 | 3.43 | 2.35 | 2.80 | 0.30 | 0.70 | 0.25 | 0.75 | ----- | ----- |
| SM075-24 | 2 | 3.00 | 3.43 | 2.35 | 2.80 | 0.90 | 1.30 | 0.25 | 0.75 | 0.10 | 0.45 |
| SM110-06 | 2 | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| SM150-06 | 2 | 3.00 | 3.43 | 2.35 | 2.80 | 0.50 | 0.90 | 0.25 | 0.75 | 0.10 | 0.45 |
| SM175-06 | 2 | 3.00 | 3.43 | 2.35 | 2.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |
| SM200-06 | 2 | 3.00 | 3.43 | 2.35 | 2.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |

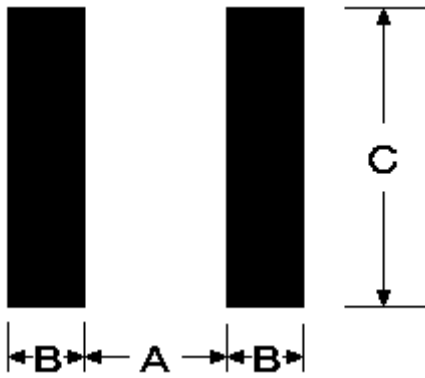


Standard Package for Reference

| | | | | | | | |
|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| P/N | Reel/Tape | P/N | Reel/Tape | P/N | Reel/Tape | P/N | Reel/Tape |
| SM005-60 | 3.0K | SM035-16 | 4.0K | SM075-24 | 3.0K | SM175-06 | 3.0K |
| SM010-60 | 3.0K | SM050-16 | 4.0K | SM110-06 | 3.0K | SM200-06 | 3.0K |
| SM020-30 | 3.0K | SM075-08 | 4.0K | SM150-06 | 3.0K | | |

■ Pad Layouts and Soldering Reflow Recommendations

The dimension in the table below provide the recommended pad layout for each surface mount device



| Pad dimensions(millimeters) | | | |
|-----------------------------|-----------|-----------|-----------|
| Device | A Nominal | B Nominal | C Nominal |
| SL MODEL | 5.10 | 2.30 | 5.60 |
| SD/RSD MODEL | 3.45 | 1.78 | 3.50 |
| SM/RSM MODEL | 2.00 | 1.00 | 2.80 |
| SN/RSN MODEL | 2.00 | 1.00 | 1.90 |
| SR/RSR MODEL | 1.20 | 1.00 | 1.50 |
| SS/RSS MODEL | 0.80 | 0.60 | 0.80 |

■ SOLDERING REFLOW (LEAD FREE)

- 1.Suggested reflow methods: IR, vapor phase oven, hot air oven.
- 2.Recommended maximum paste thickness is 0.25mm.
- 3.Devices are not designed to wave soldered to the bottom side of the board.

■ CAUTION

If reflow temperatures exceed the recommended standard, devices may not be able to meet the performance requirements.

