SINLOON®

**PPTC 高分子正溫度系數可覆式保險絲**
**Voltage Range: 8V - 60V**

**FSMD1210 Series**
**PPTC SMD Resettable Fuse**

☐ **Application:**
All high-density boaeds

☐ **Approval**

☐ **Feature:**
Small surface mount, Solid state
Faster time to trip than standard SMD devices
Lower resistance than standsrd SMD devices

☐ **Rated:**
Operation Current: 50mA ~ 750mA
Maximum Voltage: 8V ~ 60V
Temperature Range: -40℃ to 85℃

**Figure:**

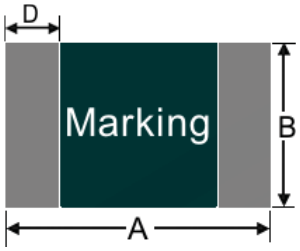

☐ **Ordering Information**
Example: FSMD005-60V-1210

| Part No. 1210 | Current | Voltage | Reel Tape | Quantity | |
|---|---|---|---|---|---|
| FSMD005 | 0.05A | 60V | Φ185mm | 3K/Reel | 180K/Cts |
| FSMD010 | 0.10A | 60V | Φ185mm | 3K/Reel | 180K/Cts |
| FSMD020 | 0.20A | 30V | Φ185mm | 3K/Reel | 180K/Cts |
| FSMD035 | 0.35A | 20V | Φ185mm | 4K/Reel | 240K/Cts |
| FSMD050 | 0.50A | 16V | Φ185mm | 4K/Reel | 240K/Cts |
| FSMD075 | 0.75A | 8V | Φ185mm | 4K/Reel | 240K/Cts |

☐ **Part Marking System**
Example: FSMD005


☐ **Dimension**
Unit: mm

| Part Number | A | | B | | C | | D |
|---|---|---|---|---|---|---|---|
| 1210 | Min | Max. | Min | Max. | Min | Max. | Min |
| FSMD005 | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.15 | 0.25 |
| FSMD010 | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.15 | 0.25 |
| FSMD020 | 3.00 | 3.43 | 2.35 | 2.80 | 0.40 | 0.85 | 0.25 |
| FSMD035 | 3.00 | 3.43 | 2.35 | 2.80 | 0.40 | 0.85 | 0.25 |
| FSMD050 | 3.00 | 3.43 | 2.35 | 2.80 | 0.30 | 0.75 | 0.25 |
| FSMD075 | 3.00 | 3.43 | 2.35 | 2.80 | 0.30 | 0.70 | 0.25 |







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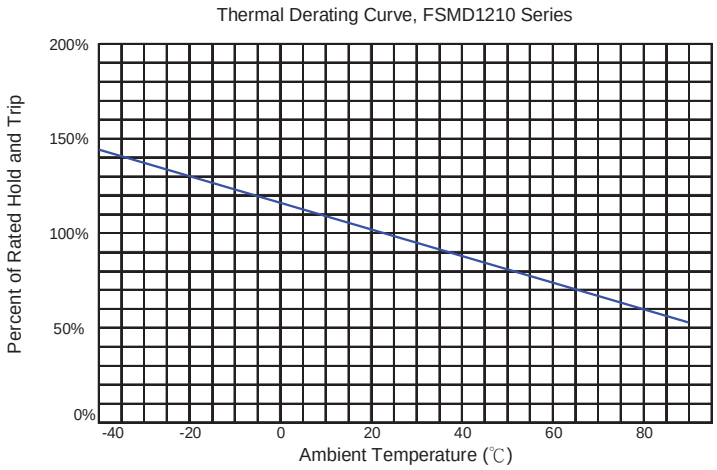
## ☐ Electrical Characteristics (23℃)

| Part Number | Hold Current | Trip Current | Rated Voltage | Max Current | Typical Power | Max. Time to Trip | | Resistance Tolerance | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Current | Time | $R_{MIN}$ | $R1_{Max}$ |
| 1210 | HI | IT | $V_{MAX}$,$V_{AC}$ | $I_{MAX}$, | Pd. | Amp | Sec | Ω | Ω |
| FSMD005 | 0.05A | 0.15A | 60V | 10A | 0.6W | 0.3 | 1.5 | 3.6 | 50.0 |
| FSMD010 | 0.10A | 0.25A | 60V | 10A | 0.6W | 0.5 | 1.5 | 1.6 | 15.0 |
| FSMD020 | 0.20A | 0.40A | 30V | 10A | 0.6W | 8.0 | 0.02 | 0.8 | 5.0 |
| FSMD035 | 0.35A | 0.70A | 20V | 40A | 0.6W | 8.0 | 0.2 | 0.32 | 1.3 |
| FSMD050 | 0.50A | 1.00A | 16V | 40A | 0.6W | 8.0 | 0.10 | 0.25 | 0.9 |
| FSMD075 | 0.75A | 1.50A | 8V | 40A | 0.6W | 8.0 | 0.10 | 0.13 | 0.4 |

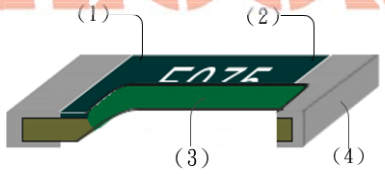
◆ $I_H$: Hold current maximum current at which the device will not trip at 23℃ still air.
◆ $I_T$: Trip current minimum current at which the device will always trip at 23℃ still air.
◆ V max : Maximum voltage device can withstand without damage at is rated current.(I max)
◆ I max: Maximum fault current 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: 100% Tin.

## ☐ Thermal Derating Curve




## ☐ Construction & Materials

(1) Insulation gaps were etched on both sides of the foils of PPTC chips & were covered by solder mask.
(2) Solder mask with white texts printed on it.
(3) PPTC chips made of special formulated conductive polymer.
(4) Outer termination pure SN plated Cu

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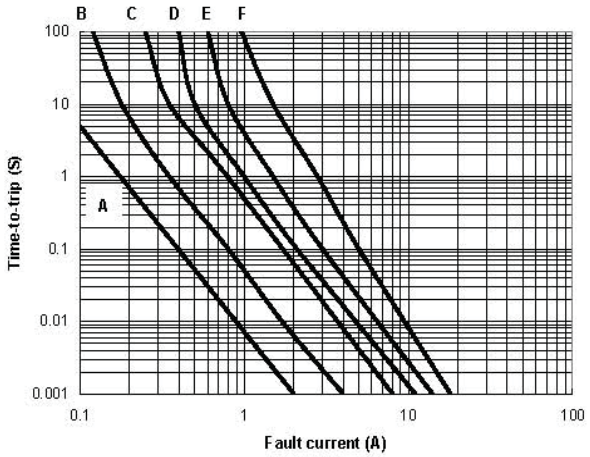
## ☐ Typical Time to Trip at 23℃

FSMD-1210 Series
A: FSMD005
B: FSMD010
C: FSMD020
D: FSMD035
E: FSMD050
F: FSMD075

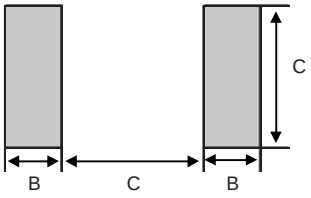



## ☐ Pad Layouts, Solder Reflow and Rework Recommendstions

The dimension in the table below provide the recommended pad layous for each FSMD-1210 device.

### Pad nominal dimensions (mm)

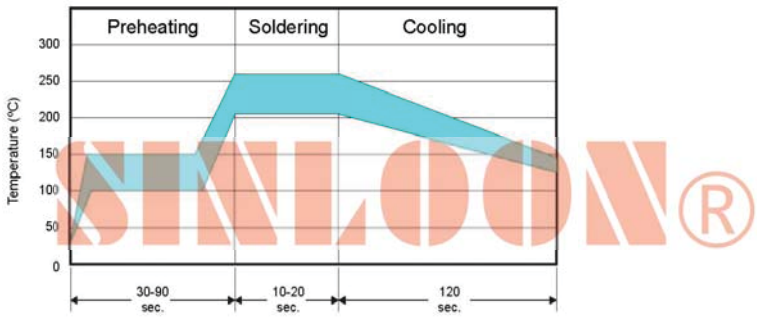
| Part No. 1210 | A | B | C |
|---|---|---|---|
| FSMD005 | 2.00 | 1.00 | 2.80 |
| FSMD010 | 2.00 | 1.00 | 2.80 |
| FSMD020 | 2.00 | 1.00 | 2.80 |
| FSMD035 | 2.00 | 1.00 | 2.80 |
| FSMD050 | 2.00 | 1.00 | 2.80 |
| FSMD075 | 2.00 | 1.00 | 2.80 |




### 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 reflow methods; IR , vapor phase oven, hot air oven.
2. The FSMD1210 Series are suitable for use with wave-solder application methods.
3. Recommended maximum paste thickness is 0.25mm.
4. Devices can be cleaned using standard industry methods and solvents.




### CAUTION:

If reflow temperatures exceed the recommended Profile, devices may not meet the performance requirements.
Rework: Use standard industry practices.

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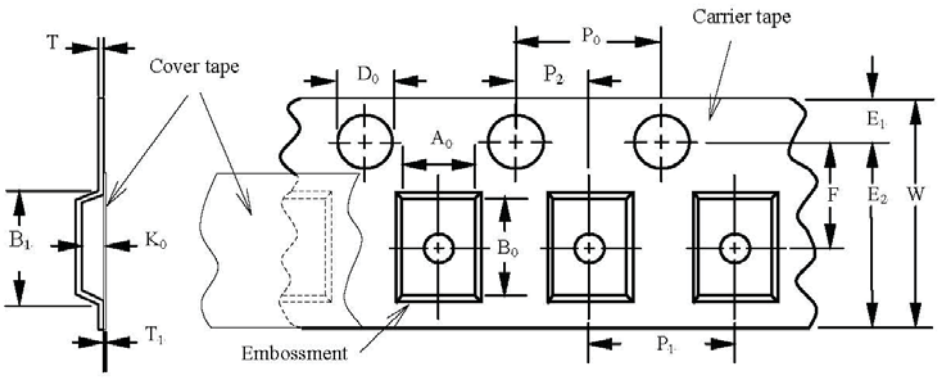
## ☐ Tape & Reel Packaging Specification per EIA481-1

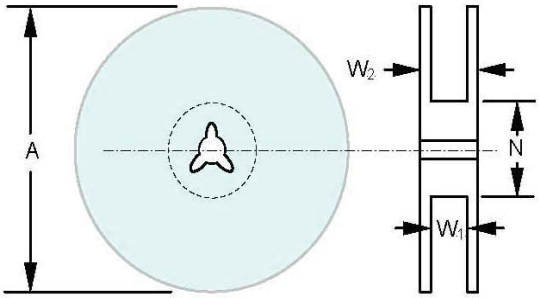
Unit mm

| Tape Reel | Diminsion |
|---|---|
| W | 8.0±0.3 |
| $P_0$ | 4.0±0.1 |
| $P_1$ | 4.0±0.1 |
| $P_2$ | 2.0±0.05 |
| $A_0$ | 2.95±0.1 |
| $B_0$ | 3.58±0.1 |
| $B_{1\ Max}$ | 4.35 |
| $D_0$ | 1.5±0.1 |
| F | ..5±0.05 |
| $E_1$ | 1.75±0.1 |
| $E_{2\ Min.}$ | 6.25 |
| $T_{Max}$ | 0.6 |
| $T_{1\ Max}$ | 0.1 |
| $K_0$ | 0.8±0.1 |




## Parameter as EIA481-1 (mm)

| | |
|---|---|
| $A_{Max}$ | 185 |
| $N_{Min}$ | 50 |
| $W_1$ | 8.4+1.5/-0 |
| $W_{2\ Max.}$ | 14.4 |




**WARNING:**

◆ Devices may not meet specifications if reflow temperatures exceed the recommended profile.
◆ Operation beyond maximum ratings or improper use may result in device damage and possible electrical arcing, flaming or explosion.
◆ The devices may not meet specified ratings if storage conditions exceeded 40°C and 70% relative humidity.
◆ The devices are intended to protect against occasional over-current or over-temperature fault conditions and should not be used when there are repeated fault conditions or prolonged trip events.
◆ The devices should not be placed under pressure or installed in spaces that would prevent thermal expansion due to any prohibition of thermal expansion of the devices might result improper protection of fault conditions.
◆ MAYLOON reserves the right to change any information or specification within this data book without notice.



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