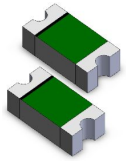
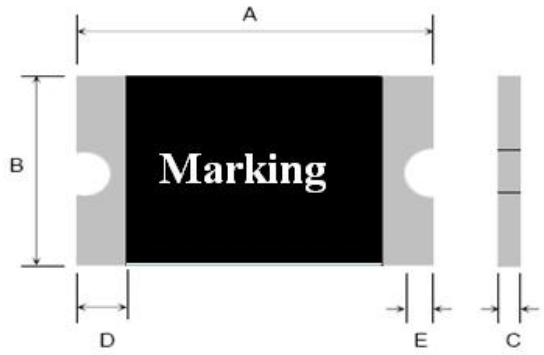
## Features:

- ✧ RoHS Compliant & Halogen Free
- ✧ faster tripping, 1206 Dimension, Surface mountable, Solid state
- ✧ Operation Current: 0.05A~2.00A
- ✧ Maximum Voltage: 6V~60Vdc
- ✧ Operating Temperature: -40℃ TO 85℃



## Product Dimensions




Pig.1

Terminal pad materials :Tin-Plated Nickle-copper
Terminal pad solderability : Meets EIA specification RS 186-9E and ANSI/J-STD-002 Category 3.

Unit : mm

| Model | Marking | A | | B | | C | | D | E |
|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | Min | Max | Min | Max | Min | Min |
| SMD1206P005TF | JZ | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| SMD1206P010TF | JN | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| SMD1206P010TF/33 | JN | 3.00 | 3.50 | 1.50 | 1.80 | 0.50 | 1.10 | 0.15 | 0.10 |
| SMD1206P012TF | JN | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| SMD1206P016TF | JF | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| SMD1206P020TF | JF | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| SMD1206P025TF | JF | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| SMD1206P030TF | JB | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| SMD1206P035TF | JB | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| SMD1206P050TF | JG | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |

| Model | Marking | A | | B | | C | | D | E |
|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | Min | Max | Min | Max | Min | Min |
| SMD1206P050TF/13.2 | JG | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| SMD1206P050TF/15 | JG | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| SMD1206P050TF/24 | JG | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| SMD1206P075TF | JA | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| SMD1206P075TF/13.2 | JA | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| SMD1206P075TF/16 | JA | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.30 | 0.15 | 0.10 |
| SMD1206P100TF | JH | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| SMD1206P100TF/16 | JH | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 1.30 | 0.15 | 0.10 |
| SMD1206P110TF | JH | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 1.30 | 0.15 | 0.10 |
| SMD1206P110TF/13.2 | JH | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| SMD1206P150TF | JI | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.50 | 0.15 | 0.10 |
| SMD1206P200TF | JK | 3.00 | 3.50 | 1.50 | 1.80 | 0.70 | 1.70 | 0.15 | 0.10 |

Thermal Derating Chart-IH（A）

| Model | Maximum ambient operating temperatures（℃） | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | -40 | -20 | 0 | 25 | 40 | 50 | 60 | 70 | 85 |
| SMD1206P005TF | 0.09 | 0.08 | 0.06 | 0.05 | 0.04 | 0.036 | 0.033 | 0.029 | 0.02 |
| SMD1206P010TF | 0.18 | 0.16 | 0.12 | 0.1 | 0.08 | 0.072 | 0.066 | 0.058 | 0.04 |
| SMD1206P010TF/33 | 0.18 | 0.16 | 0.12 | 0.1 | 0.08 | 0.072 | 0.066 | 0.058 | 0.04 |
| SMD1206P012TF | 0.216 | 0.192 | 0.144 | 0.12 | 0.096 | 0.086 | 0.079 | 0.070 | 0.048 |
| SMD1206P016TF | 0.288 | 0.256 | 0.192 | 0.16 | 0.128 | 0.115 | 0.106 | 0.093 | 0.064 |
| SMD1206P020TF | 0.31 | 0.26 | 0.22 | 0.20 | 0.18 | 0.16 | 0.15 | 0.13 | 0.07 |
| SMD1206P025TF | 0.37 | 0.33 | 0.29 | 0.25 | 0.22 | 0.20 | 0.17 | 0.15 | 0.12 |
| SMD1206P030TF | 0.444 | 0.396 | 0.348 | 0.30 | 0.264 | 0.24 | 0.204 | 0.18 | 0.144 |
| SMD1206P035TF | 0.50 | 0.45 | 0.40 | 0.35 | 0.30 | 0.27 | 0.24 | 0.21 | 0.15 |
| SMD1206P050TF | 0.71 | 0.64 | 0.57 | 0.50 | 0.42 | 0.39 | 0.35 | 0.31 | 0.25 |
| SMD1206P050TF/13.2 | 0.71 | 0.64 | 0.57 | 0.50 | 0.42 | 0.39 | 0.35 | 0.31 | 0.25 |
| SMD1206P050TF/15 | 0.71 | 0.64 | 0.57 | 0.50 | 0.42 | 0.39 | 0.35 | 0.31 | 0.25 |
| SMD1206P050TF/24 | 0.639 | 0.576 | 0.513 | 0.50 | 0.378 | 0.351 | 0.315 | 0.279 | 0.225 |
| SMD1206P075TF | 1.14 | 1.01 | 0.88 | 0.75 | 0.65 | 0.59 | 0.54 | 0.49 | 0.41 |
| SMD1206P100TF | 1.45 | 1.31 | 1.15 | 1.00 | 0.84 | 0.77 | 0.69 | 0.61 | 0.48 |
| SMD1206P100TF/16 | 1.305 | 1.179 | 1.035 | 1.00 | 0.756 | 0.693 | 0.621 | 0.549 | 0.432 |
| SMD1206P110TF | 1.305 | 1.179 | 1.035 | 1.00 | 0.756 | 0.693 | 0.621 | 0.549 | 0.432 |
| SMD1206P110TF/13.2 | 1.595 | 1.441 | 1.265 | 1.10 | 0.924 | 0.847 | 0.759 | 0.671 | 0.528 |
| SMD1206P150TF | 2.18 | 1.94 | 1.72 | 1.50 | 1.28 | 1.17 | 1.06 | 0.96 | 0.77 |
| SMD1206P200TF | 2.60 | 2.44 | 2.35 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.10 |

Electrical Characteristic

| Model | Vmax | Imax | Ihold | Itrip | Time to trip | | R25 | |
|---|---|---|---|---|---|---|---|---|
| | | | @25°C | @25°C | Current | Time | $Ri_{min}$ | $R1_{max}$ |
| | (Vdc) | (A) | (A) | (A) | (A) | (Sec) | (Ω) | (Ω) |
| SMD1206P005TF | 60.0 | 100 | 0.05 | 0.15 | 0.25 | 1.50 | 3.600 | 50.000 |
| SMD1206P010TF | 60.0 | 100 | 0.10 | 0.25 | 0.5 | 1.00 | 1.600 | 15.000 |
| SMD1206P010TF/33 | 33.0 | 100 | 0.10 | 0.25 | 0.5 | 1.00 | 1.600 | 15.000 |
| SMD1206P012TF | 30 | 100 | 0.12 | 0.29 | 1.00 | 0.20 | 1.350 | 10.00 |
| SMD1206P016TF | 30 | 100 | 0.16 | 0.37 | 1.00 | 0.30 | 1.000 | 4.50 |
| SMD1206P020TF | 24.0 | 100 | 0.20 | 0.46 | 8.0 | 0.08 | 0.350 | 3.500 |
| SMD1206P025TF | 16.0 | 100 | 0.25 | 0.50 | 8.0 | 0.08 | 0.350 | 2.500 |
| SMD1206P030TF | 16.0 | 100 | 0.30 | 0.65 | 8.0 | 0.10 | 0.250 | 2.00 |
| SMD1206P035TF | 6.0 | 100 | 0.35 | 0.75 | 8.0 | 0.10 | 0.250 | 1.300 |
| SMD1206P050TF | 6.0 | 100 | 0.50 | 1.00 | 8.0 | 0.10 | 0.150 | 0.700 |
| SMD1206P050TF/13.2 | 13.2 | 100 | 0.50 | 1.00 | 8.0 | 0.10 | 0.150 | 0.700 |
| SMD1206P050TF/15 | 15 | 100 | 0.50 | 1.00 | 8.0 | 0.10 | 0.150 | 0.750 |
| SMD1206P050TF/24 | 24 | 100 | 0.50 | 1.00 | 8.0 | 0.10 | 0.150 | 0.750 |
| SMD1206P075TF | 8.0 | 100 | 0.75 | 1.50 | 8.0 | 0.20 | 0.090 | 0.500 |
| SMD1206P075TF/13.2 | 13.2 | 100 | 0.75 | 1.50 | 8.0 | 0.20 | 0.090 | 0.500 |
| SMD1206P075TF/16 | 16 | 100 | 0.75 | 1.50 | 8.0 | 0.20 | 0.090 | 0.500 |
| SMD1206P100TF | 13.2 | 100 | 1.00 | 1.80 | 8.0 | 0.30 | 0.055 | 0.270 |
| SMD1206P100TF/16 | 16 | 100 | 1.00 | 1.80 | 8.0 | 0.30 | 0.055 | 0.330 |
| SMD1206P110TF | 8.0 | 100 | 1.10 | 1.80 | 8.0 | 0.30 | 0.050 | 0.230 |
| SMD1206P110TF/13.2 | 13.2 | 100 | 1.10 | 1.80 | 8.0 | 0.30 | 0.055 | 0.270 |
| SMD1206P150TF | 8.0 | 100 | 1.50 | 3.00 | 8.0 | 1.00 | 0.040 | 0.130 |
| SMD1206P200TF | 6.0 | 100 | 2.00 | 3.50 | 8.0 | 1.0 | 0.018 | 0.080 |

## Test Procedures And Requirements

| Test | Test Conditions | Accept/Reject Criteria |
|---|---|---|
| Resistance | In still air @ 25℃ | $R_{min} \leq R \leq R_{max}$ |
| Time to Trip | Specified current，$V_{max}$，25℃ | Tmaximum Time to Trip |
| Hold Current | 30min，at $I_H$ | No trip |
| Trip Cycle Life | Vmax，Imax，100cycles | No arcing or burning |
| Trip Endurance | Vmax，1 hours | No arcing or burning |

## Physical Characteristics and Environmental Specifications

Physical Characteristics

| | |
|---|---|
| Terminal materials : | Tin-Plated Nickle-copper |
| Soldering zone | Meets EIA specification RS 186-9E and ANSI/J-STD-002 Category 3. |

Environmental Specifications

| Test | Conditions | Resistance Change |
|---|---|---|
| Passive aging | 85℃,1000hours | ±10% |
| Humidity aging | 85℃/85%RH.1000 hours | ±5% |
| Thermal shock | MIL-STD-202,Method 107G +85℃/-40℃,20times | -30% typical resistance change |
| Solvent Resistance | MIL-STD-202,Method 215 | no change |
| Vibration | ML-STD-883C,Test Condition A | No chage |

## Electrical Specifications:

$I_{hold}$ = Hold Current. Maximum current device will not trip in 25°C still air.

$I_{trip}$ = Trip Current. Minimum current at which the device will always trip in 25°C still air.

$V_{max}$ = Maximum operating voltage device can withstand without damage at rated current (Imax).

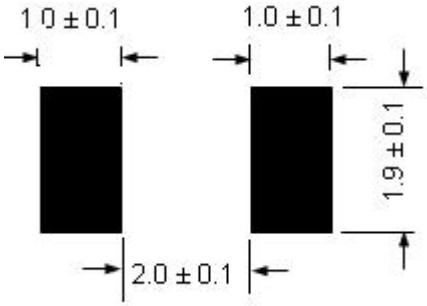
$I_{max}$ = Maximum fault current device can withstand without damage at rated voltage (Vmax).

Pd=Maximum power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

$Ri_{min/max}$ = Minimum/Maximum device resistance prior to tripping at 25°C.

$R1_{max}$ = Maximum device resistance is measured one hour post reflow.

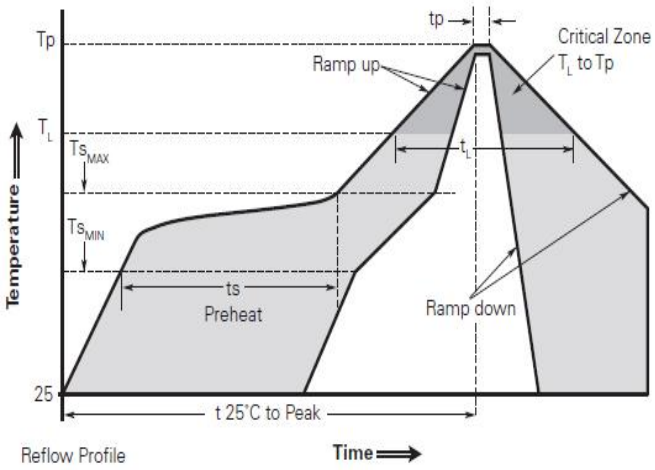
## Recommended pad layout (mm)




## Solder reflow conditions

| Profile Feature | Pb-Free Assembly |
|---|---|
| **Average ramp up rate ($Ts_{MAX}$ to Tp)** | 3°C/second max. |
| **Preheat** | |
| • Temperature min. ($Ts_{MIN}$) | 150°C |
| • Temperature max. ($Ts_{MAX}$) | 200°C |
| • Time ($ts_{MIN}$ to $ts_{MAX}$) | 60-120 seconds |
| **Time maintained above:** | |
| • Temperature ($T_L$) | 217°C |
| • Time ($t_L$) | 60-150 seconds |
| **Peak/Classification temperature (Tp)** | 260°C |
| **Time within 5°C of actual peak temperature** | |
| Time (tp) | 30 seconds max. |
| **Ramp down rate** | 3°C/second max. |
| **Time 25°C to peak temperature** | 8 minutes max. |

**Note:** All temperatures refer to topside of the package, measured on the package body surface.



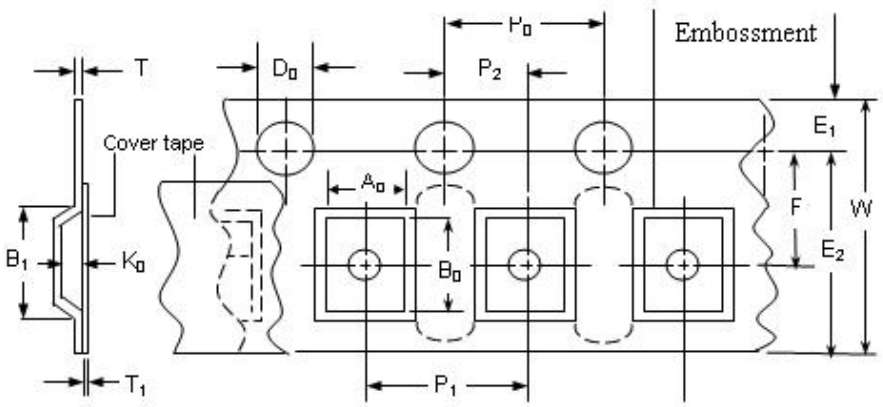

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Recommended maximum paste thickness is 0.25mm (0.010inch).
- Devices can be cleaned using standard industry methods and solvents.
- Soldering temprature profile meets RoHs leadfree process.

Notes: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements

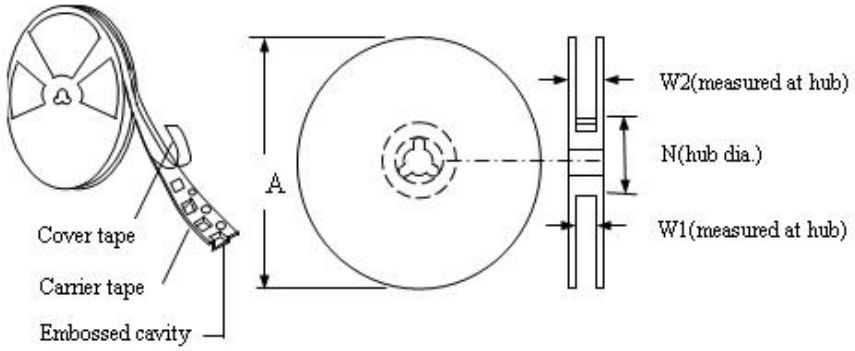
## Tape Specification And Reel Dimensions

| Coverning Specifications EIA 481-1(Unit:mm) | |
|---|---|
| W | 8.15 +0.15/-0.3 |
| $P_0$ | 4.0 ± 0.10 |
| $P_1$ | 4.0± 0.10 |
| $P_2$ | 2.0 ± 0.05 |
| $A_0$ | 1.95 ± 0.10 |
| $B_0$ | 3.65 ± 0.10 |
| $D_0$ | 1.55± 0.05 |
| F | 3.50± 0.05 |
| $E_1$ | 1.75 ± 0.10 |
| T | 0.20± 0.10 |
| Leader min. | 390 |
| Trailer min. | 160 |
| Reel Dimensions | |
| A | 178±1.0 |
| N | 59±1 |
| $W_1$ | 8.5+1.0/-0.2 |
| $W_2$ | 12.0±1 |

**EIA Tape Component Dimentions**




**EIA Reel Dimentions**




## Packaging Quantity

| Model | Quantity | Model | Quantity |
|---|---|---|---|
| SMD1206P005TF | 3500 | SMD1206P050TF/24 | 3500 |
| SMD1206P010TF | 3500 | SMD1206P075TF | 5000 |
| SMD1206P010TF/33 | 3500 | SMD1206P075TF/13.2 | 5000 |
| SMD1206P012TF | 3500 | SMD1206P075TF/16 | 3500 |
| SMD1206P016TF | 5000 | SMD1206P100TF | 3500 |
| SMD1206P020TF | 5000 | SMD1206P100TF/16 | 3500 |
| SMD1206P025TF | 5000 | SMD1206P110TF | 5000 |
| SMD1206P030TF | 5000 | SMD1206P110TF/13.2 | 3500 |
| SMD1206P035TF | 5000 | SMD1206P150TF | 3500 |
| SMD1206P050TF | 5000 | SMD1206P200TF | 3500 |
| SMD1206P050TF/13.2 | 5000 | | |
| SMD1206P050TF/15 | 5000 | | |

## Storage

The maximum ambient temperature shall not exceed 38℃. Storage temperatures higher than 38℃ could result in the deformation of packaging materials. The maximum relative humidity recommended for storage is 60%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components. Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present

## WARNING

• Use PPTC beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
• PPTC are intended for protection against occasional over current or over temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
• Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
• Use PPTC with a large inductance in circuit will generate a circuit voltage (L di/dt) above the rated voltage of the PPTC.
• Avoid impact PPTC device its thermal expansion like placed under pressure or installed in limited space.
• Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices.PPTC SMD can be cleaned by standard methods.
• Requests that customers comply with our recommended solder pad layouts and recommended reflow profile. Improper board layouts or reflow profilecould negatively impact solderability performance of our devices.