

Description

The SMD0805 Series PTC provides surface mount overcurrent protection for applications where space is at a premium and resettable protection is desired.

Features

- RoHS compliant, lead-free and halogen-free
- Fast response to fault currents
- Compact design saves board space
- Low resistance
- Low-profile
- Compatible with high temperature solders

Applications

- USB peripherals
- Disk drives
- CD-ROMs
- Plug and play protection for motherboards and peripherals
- Mobile phones - battery and port protection
- Disk drives
- PDAs / digital cameras
- Game console port protection

Electrical Characteristics

| Type Number | I_{hold} | I_{trip} | V_{max} | I_{max} | P_d max. | Maximum Time To Trip | | Resistance | |
|---------------|------------|------------|------------|-----------|---------------|----------------------|----------------|---------------------------|----------------------------|
| | (A) | (A) | $V_{(dc)}$ | (A) | (W) | Current (A) | Time (Sec.) | R_{min} (Ω) | R_{1max} (Ω) |
| SMD0805P010TF | 0.10 | 0.30 | 15 | 100 | 0.5 | 0.50 | 1.50 | 1.000 | 6.000 |
| SMD0805P020TF | 0.20 | 0.50 | 9 | 100 | 0.5 | 8.00 | 0.02 | 0.650 | 3.500 |
| SMD0805P035TF | 0.35 | 0.75 | 6 | 100 | 0.5 | 8.00 | 0.10 | 0.250 | 1.200 |
| SMD0805P050TF | 0.50 | 1.00 | 6 | 100 | 0.5 | 8.00 | 0.10 | 0.150 | 0.850 |
| SMD0805P075TF | 0.75 | 1.500 | 6 | 40 | 0.6 | 8.00 | 0.20 | 0.090 | 0.350 |
| SMD0805P100TF | 1.00 | 1.95 | 6 | 40 | 0.6 | 8.00 | 0.30 | 0.060 | 0.210 |
| SMD0805P110TF | 1.10 | 2.00 | 6 | 100 | 0.8 | 8.00 | 0.10 | 0.050 | 0.160 |

I_{hold} = Hold current: maximum current device will pass without tripping in 23°C still air.

I_{trip} = Trip current: minimum current at which the device will trip in 23°C still air.

V_{max} = Maximum voltage device can withstand without damage at rated current (I_{max})

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

P_d = Power dissipated from device when in the tripped state at 23°C still air.

R_{min} = Minimum resistance of device in initial (un-soldered) state.

R_{typ} = Typical resistance of device in initial (un-soldered) state.

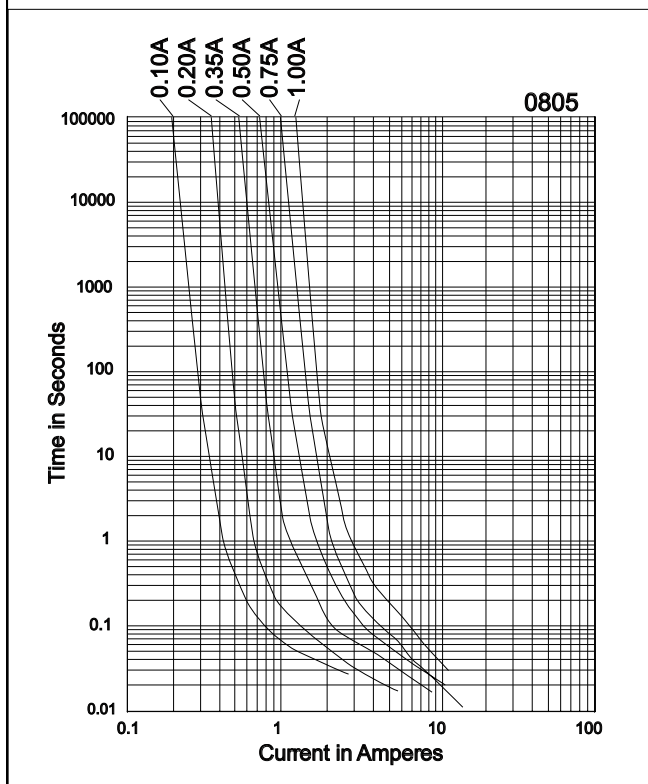
R_{1max} = Maximum resistance of device at 23°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.



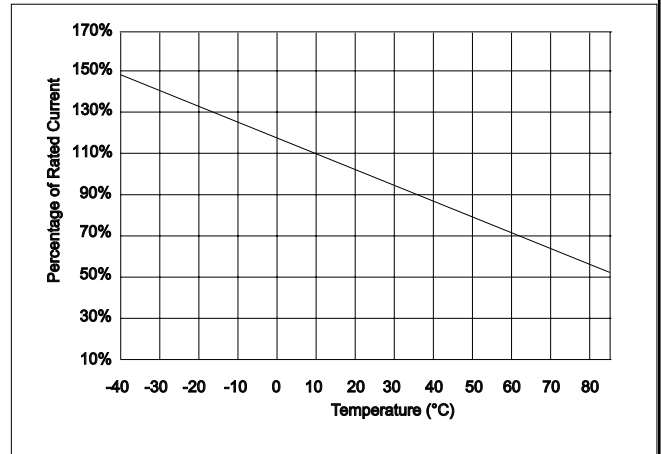
Temperature Derating

| Part Number | Ambient Operation Temperature | | | | | | | | |
|-------------|-------------------------------|-------|------|------|------|------|------|------|------|
| | -40°C | -20°C | 0°C | 23°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| 0805P010 | 0.14 | 0.12 | 0.11 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| 0805P020 | 0.28 | 0.25 | 0.23 | 0.20 | 0.17 | 0.14 | 0.12 | 0.10 | 0.07 |
| 0805P035 | 0.47 | 0.44 | 0.39 | 0.35 | 0.30 | 0.27 | 0.24 | 0.20 | 0.14 |
| 0805P050 | 0.68 | 0.62 | 0.55 | 0.50 | 0.40 | 0.37 | 0.33 | 0.29 | 0.23 |
| 0805P075 | 1.00 | 0.90 | 0.79 | 0.75 | 0.63 | 0.57 | 0.53 | 0.41 | 0.34 |
| 0805P100 | 1.35 | 1.25 | 1.10 | 1.00 | 0.82 | 0.74 | 0.65 | 0.55 | 0.42 |

Average Time Current Curves



Temperature Derating Curve



The average time current curves and Temperature Derating curve performance is affected by a number of variables, and these curves provided as guidance only. Customer must verify the performance in their application.

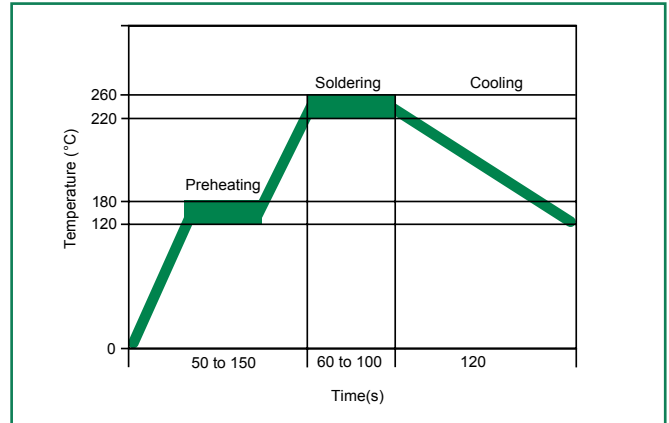


Soldering Parameters

| | |
|--------------------------------|------------------|
| Condition | Reflow |
| Peak Temp/ DurationTime | 260°C / 10 Sec |
| Time above liquids (TAL) 220°C | 60 Sec ~ 100 Sec |
| Preheat 120°C~ 180°C | 50 Sec ~ 150 Sec |
| Storage Condition | 0°C~35°C, ≤70%RH |

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N₂ environment for lead-free
- Recommended maximum paste thickness is 0.25mm (0.010 inch)
- Devices can be cleaned using standard industry methods and solvents.

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



Physical Specifications

| | |
|--------------------|---|
| Terminal Material | Solder-Plated Copper (Solder Material: Matte Tin (Sn)) |
| Lead Solderability | Meets EIA Specification RS186-9E, ANSI/J-STD-002, Category 3 |

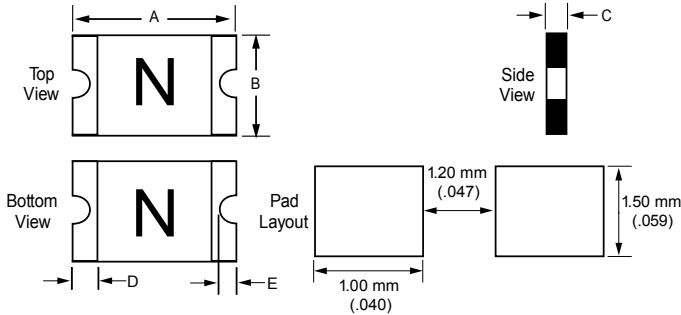
Environmental Specifications

| | |
|--|--|
| Operating/Storage Temperature | -40°C to +85°C |
| Maximum Device Surface Temperature in Tipped State | 125°C |
| Passive Aging | +85°C, 1000 hours -/+5% typical resistance change |
| Humidity Aging | +85°C, 85%, R.H., 1000 hours -/+5% typical resistance change |
| Thermal Shock | MIL-STD-202, Method 107G +85°C/-40°C 20 times -30% typical resistance change |
| Solvent Resistance | MIL-STD-202, Method 215 No change |
| Vibration | MIL-STD-883C, Method 2007.1, Condition A No change |
| Moisture Sensitivity Level | Level 1, J-STD-020C |



Dimensions

MARKING CODE VARIES
WITH AMPERAGE RATING
(See Electrical Characteristic Table)
SHOWN IS 1.0AMP RATING



| Type Number | A | B | C | D | E |
|---------------|-----|-----|------|------|------|
| | mm | mm | mm | mm | mm |
| SMD0805P010TF | 2.2 | 1.5 | 1.0 | 0.55 | 0.45 |
| SMD0805P020TF | 2.2 | 1.5 | 1.0 | 0.55 | 0.45 |
| SMD0805P035TF | 2.2 | 1.5 | 0.75 | 0.55 | 0.45 |
| SMD0805P050TF | 2.2 | 1.5 | 1.25 | 0.55 | 0.45 |
| SMD0805P075TF | 2.2 | 1.5 | 1.25 | 0.55 | 0.45 |
| SMD0805P100TF | 2.2 | 1.5 | 1.80 | 0.55 | 0.45 |

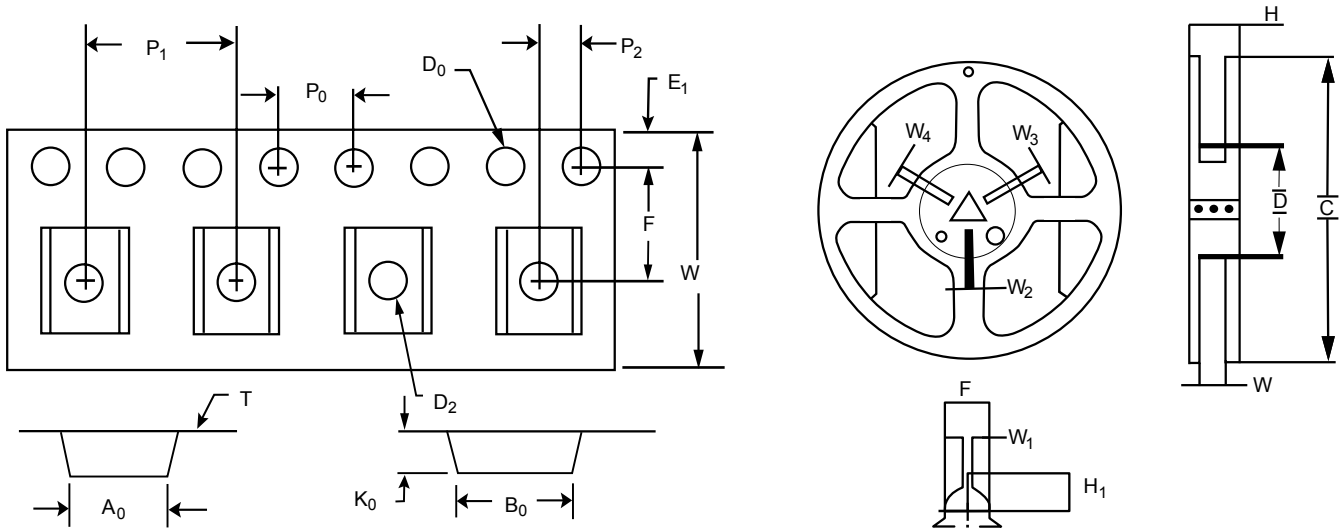
Tape and Reel Specifications

| TAPE SPECIFICATIONS: EIA-481-1 (mm) | | | | |
|-------------------------------------|----------------------------------|-------------|-------------|-------------|
| | 0805L010 0805L020 0805L035 | 0805L050 | 0805L075 | 0805L100 |
| W | 8.0+/-0.10 | 8.0+/-0.10 | 8.0+/-0.10 | 8.0+/-0.10 |
| F | 3.5+/-0.05 | 3.5+/-0.05 | 3.5+/-0.05 | 3.5+/-0.05 |
| E ₁ | 1.75+/-0.10 | 1.75+/-0.10 | 1.75+/-0.10 | 1.75+/-0.10 |
| D ₀ | 1.55+/-0.05 | 1.55+/-0.05 | 1.55+/-0.05 | 1.55+/-0.05 |
| D ₁ | 1.0 (min) | 1.0 (min) | 1.0 (min) | 1.0 (min) |
| P ₀ | 4.0+/-0.10 | 4.0+/-0.10 | 4.0+/-0.10 | 4.0+/-0.10 |
| P ₁ | 4.0+/-0.10 | 4.0+/-0.10 | 4.0+/-0.10 | 4.0+/-0.10 |
| P ₂ | 2.0+/-0.05 | 2.0+/-0.05 | 2.0+/-0.05 | 2.0+/-0.05 |
| A ₀ | 1.45+/-0.10 | 1.42+/-0.10 | 1.65+/-0.10 | 1.65+/-0.10 |
| B ₀ | 2.30+/-0.10 | 2.24+/-0.10 | 2.35+/-0.10 | 2.35+/-0.10 |
| T | 0.25+/-0.10 | 0.20+/-0.10 | 0.20+/-0.10 | 0.25+/-0.10 |
| K ₀ | 0.9+/-0.10 | 1.04+/-0.10 | 1.05+/-0.10 | 1.50+/-0.10 |
| Leader min. | 390 | 390 | 390 | 390 |
| Trailer min. | 160 | 160 | 160 | 160 |

| REEL DIMENSIONS: EIA-481-1 (mm) | |
|------------------------------------|-------------|
| H | 12.0+/-0.05 |
| W | 9.0+/-0.5 |
| D | Ø60+0.5 |
| F | Ø13.0+/-0.2 |
| C | Ø178+/-1.0 |
| H ₁ | 11+/-0.5 |
| W ₁ | 2.2+/-0.5 |
| W ₂ | 3.0+0.5 |
| W ₃ | 4.0+0.5 |
| W ₄ | 5.5+0.5 |



Tape and Reel Specifications



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