

SMD0805 Series

Positive Thermal Coefficient (PTC)



Description

The 0805 series provides miniature surface mount resettable Over-current protection with holding current from 0.05A to 1.50A. This series is suitable for ultraportable applications where space is at a premium and the device current is low.

Features

- * I(hold):0.05~1.50A
- * Very high voltage surge capabilities
- * Available in lead-free version
- * Fast response to fault current
- * RoHS compliant, Lead-Free and Halogen-Free
- * Low resistance
- * Compact design saves board space
- * Compatible with high temperature solders

Device Schematic



Applications

- * USB peripherals
- * PDAs/digital cameras
- * Disk drives
- * Game console port protection
- * CD-ROMs
- * protection
- * General electronics
- * Plug and play protection for motherboards and peripherals
- * Disk drives
- * Set-top-box and HDMI
- * Mobile Internet Device (MID).
- * Mobile phones -battery and port protection

Ordering Information

| Model | Quantity |
|---------------------------------|----------|
| SMD0805P005TF~ SMD0805P050TF/24 | 5000PCS |
| SMD0805P050TF/12,075TF,075TF/12 | 4000PCS |
| SMD0805P100TF ~ SMD0805P150TF | 3000PCS |

Performance Specification

| Type Number | I_{hold} | I_{trip} | V_{max} | Max. Time to Trip | | I_{max} | P_d typ | $R_{i min}$ | $R_{1 max}$ |
|------------------|------------|------------|-----------------|-------------------|-------------|-----------|-----------|-------------|-------------|
| | A | A | V _{DC} | Current A | T_{max} S | A | W | Ω | Ω |
| SMD0805P005TF | 0.05 | 0.30 | 15 | 0.5 | 1.50 | 30 | 0.5 | 1.50 | 20 |
| SMD0805P010TF | 0.10 | 0.30 | 15 | 0.5 | 1.50 | 30 | 0.5 | 0.75 | 6 |
| SMD0805P020TF | 0.20 | 0.50 | 9 | 8 | 0.02 | 30 | 0.5 | 0.50 | 3.5 |
| SMD0805P020TF/12 | 0.20 | 0.50 | 12 | 8 | 0.02 | 30 | 0.5 | 0.50 | 3.5 |
| SMD0805P020TF/16 | 0.20 | 0.50 | 16 | 8 | 0.02 | 30 | 0.5 | 0.50 | 3.5 |
| SMD0805P035TF | 0.35 | 0.75 | 6 | 8 | 0.10 | 30 | 0.5 | 0.20 | 1.2 |
| SMD0805P035TF/12 | 0.35 | 0.75 | 12 | 8 | 0.10 | 30 | 0.5 | 0.20 | 1.2 |
| SMD0805P050TF | 0.50 | 1.00 | 6 | 8 | 0.10 | 30 | 0.5 | 0.10 | 0.85 |
| SMD0805P050TF/12 | 0.50 | 1.00 | 12 | 8 | 0.10 | 30 | 0.5 | 0.10 | 0.85 |
| SMD0805P050TF/16 | 0.50 | 1.00 | 16 | 8 | 0.10 | 30 | 0.5 | 0.10 | 0.85 |
| SMD0805P050TF/24 | 0.50 | 1.00 | 24 | 8 | 0.10 | 30 | 0.5 | 0.10 | 0.85 |
| SMD0805P075TF | 0.75 | 1.50 | 6 | 8 | 0.20 | 35 | 0.6 | 0.07 | 0.385 |
| SMD0805P075TF/12 | 0.75 | 1.50 | 12 | 8 | 0.20 | 35 | 0.6 | 0.07 | 0.385 |
| SMD0805P100TF | 1.00 | 1.95 | 6 | 8 | 0.30 | 35 | 0.6 | 0.04 | 0.23 |
| SMD0805P100TF/12 | 1.00 | 1.95 | 12 | 8 | 0.30 | 35 | 0.6 | 0.04 | 0.23 |
| SMD0805P110TF | 1.10 | 2.20 | 6 | 8 | 0.30 | 35 | 0.6 | 0.035 | 0.21 |
| SMD0805P110TF/12 | 1.10 | 2.20 | 12 | 8 | 0.30 | 35 | 0.6 | 0.035 | 0.21 |
| SMD0805P125TF | 1.25 | 2.50 | 6 | 8 | 0.60 | 35 | 1.5 | 0.025 | 0.14 |
| SMD0805P150TF | 1.50 | 3.00 | 6 | 8 | 0.50 | 35 | 1.0 | 0.015 | 0.13 |

V_{max} = Maximum operating 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}).

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.

P_d = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

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

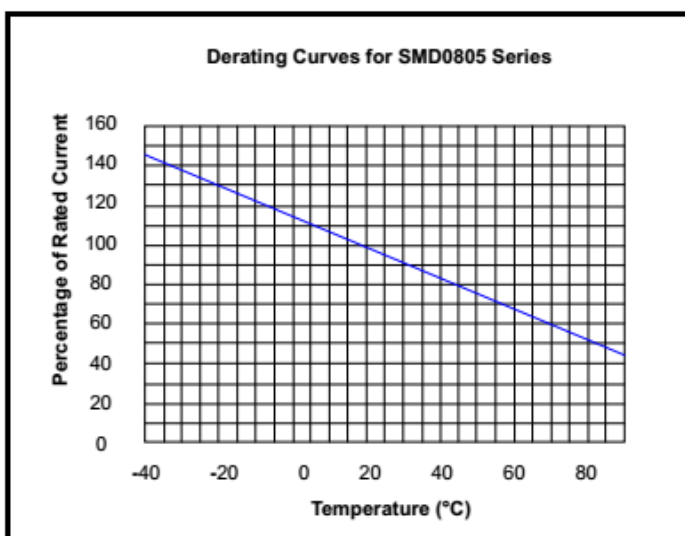
$R_{1 max}$ = Maximum device resistance is measured one hour post reflow.

SMD0805 Series

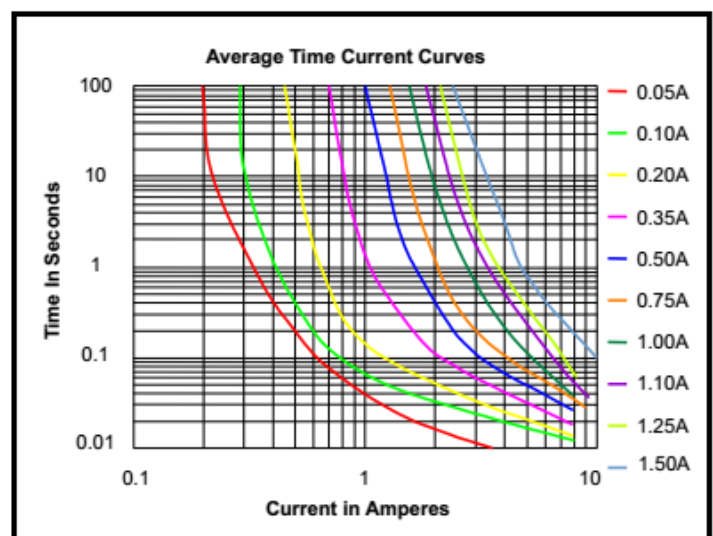
Thermal Derating Chart-Ih (A)

| Part Number | Ambient Operation Temperature | | | | | | | | |
|------------------|-------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|
| | -40 °C | -20 °C | 0 °C | 25 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| SMD0805P005TF | 0.07 | 0.06 | 0.055 | 0.05 | 0.04 | 0.035 | 0.03 | 0.025 | 0.015 |
| SMD0805P010TF | 0.14 | 0.12 | 0.11 | 0.1 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| SMD0805P020TF | 0.28 | 0.25 | 0.23 | 0.20 | 0.17 | 0.14 | 0.12 | 0.10 | 0.07 |
| SMD0805P020TF/12 | 0.28 | 0.25 | 0.23 | 0.20 | 0.17 | 0.14 | 0.12 | 0.10 | 0.07 |
| SMD0805P020TF/16 | 0.28 | 0.25 | 0.23 | 0.20 | 0.17 | 0.14 | 0.12 | 0.10 | 0.07 |
| SMD0805P035TF | 0.47 | 0.44 | 0.39 | 0.35 | 0.30 | 0.27 | 0.24 | 0.20 | 0.14 |
| SMD0805P035TF/12 | 0.47 | 0.44 | 0.39 | 0.35 | 0.30 | 0.27 | 0.24 | 0.20 | 0.14 |
| SMD0805P050TF | 0.68 | 0.62 | 0.55 | 0.50 | 0.40 | 0.37 | 0.33 | 0.29 | 0.23 |
| SMD0805P050TF/12 | 0.68 | 0.62 | 0.55 | 0.50 | 0.40 | 0.37 | 0.33 | 0.29 | 0.23 |
| SMD0805P050TF/16 | 0.68 | 0.62 | 0.55 | 0.50 | 0.40 | 0.37 | 0.33 | 0.29 | 0.23 |
| SMD0805P050TF/24 | 0.68 | 0.62 | 0.55 | 0.50 | 0.40 | 0.37 | 0.33 | 0.29 | 0.23 |
| SMD0805P075TF | 1.00 | 0.90 | 0.79 | 0.75 | 0.63 | 0.57 | 0.53 | 0.41 | 0.34 |
| SMD0805P075TF/12 | 1.00 | 0.90 | 0.79 | 0.75 | 0.63 | 0.57 | 0.53 | 0.41 | 0.34 |
| SMD0805P100TF | 1.35 | 1.25 | 1.15 | 1.00 | 0.82 | 0.74 | 0.65 | 0.55 | 0.42 |
| SMD0805P100TF/12 | 1.35 | 1.25 | 1.15 | 1.00 | 0.82 | 0.74 | 0.65 | 0.55 | 0.42 |
| SMD0805P110TF | 1.45 | 1.35 | 1.20 | 1.10 | 0.92 | 0.84 | 0.75 | 0.65 | 0.52 |
| SMD0805P110TF/12 | 1.45 | 1.35 | 1.20 | 1.10 | 0.92 | 0.84 | 0.75 | 0.65 | 0.52 |
| SMD0805P125TF | 1.65 | 1.53 | 1.36 | 1.25 | 1.05 | 0.95 | 0.85 | 0.74 | 0.59 |
| SMD0805P150TF | 1.98 | 1.84 | 1.63 | 1.50 | 1.26 | 1.14 | 1.02 | 0.88 | 0.71 |

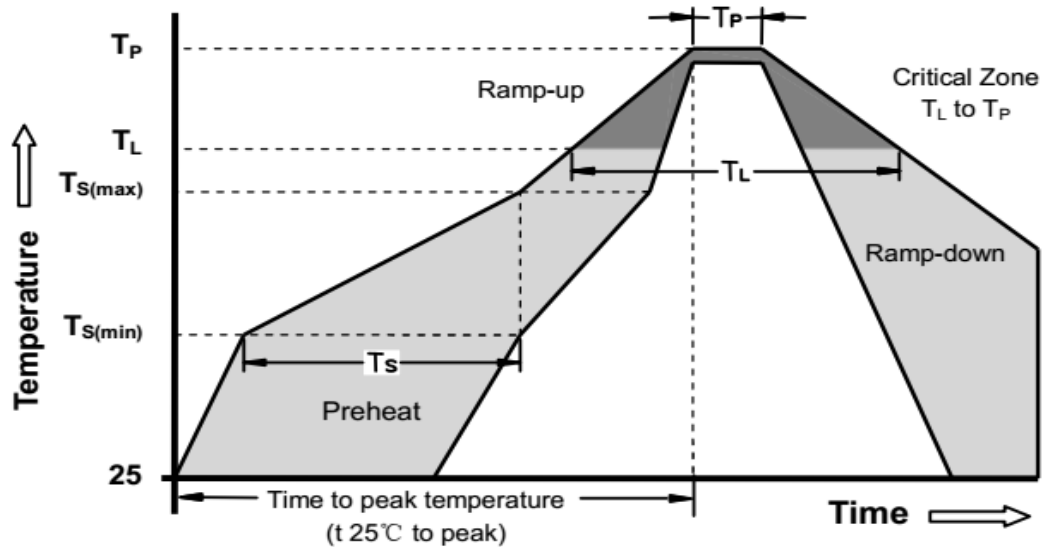
Thermal Derating Curve



Average Time-Current Curve



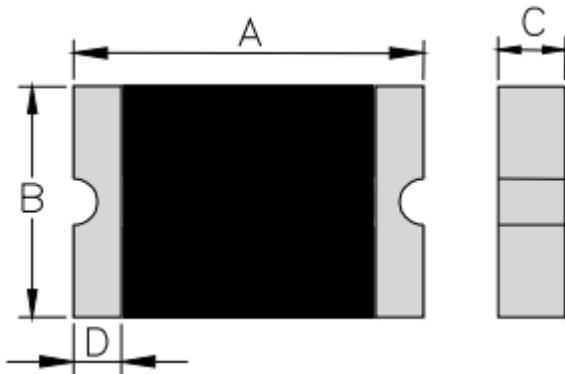
Soldering Parameters



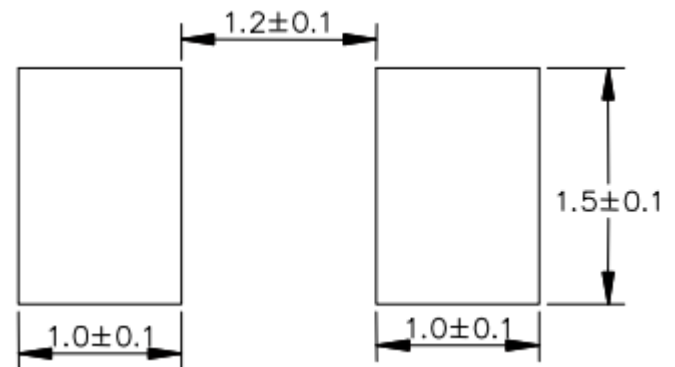
| | | |
|--|-----------------------------------|--------------------|
| Reflow Condition | | Pb - Free assembly |
| Pre Heat | -Temperature Min ($T_{s(min)}$) | 150°C |
| | -Temperature Max ($T_{s(max)}$) | 200°C |
| | - Time (min to max) (t_s) | 60 -180 Seconds |
| Average ramp up rate (Liquids Temp T_L) to peak | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | - Temperature (T_L) (Liquids) | 217°C |
| | - Time (min to max) (t_s) | 60 -150 Seconds |
| Peak Temperature (T_P) | | 260 +0/-5°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 (T_P) | | 8 minutes Max |
| Do not exceed | | 260°C |

Positive Thermal Coefficient

Average Time Current (mm)



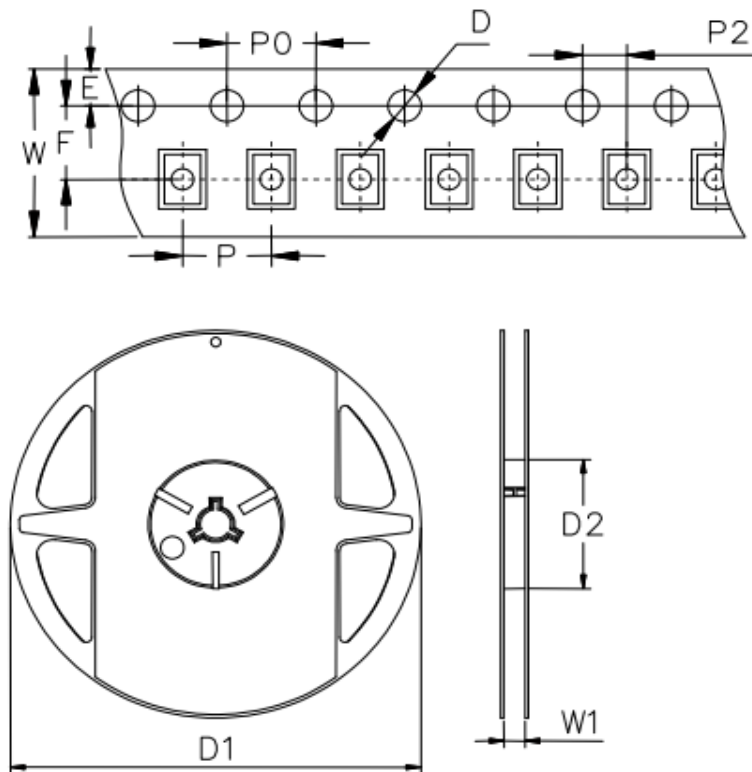
Recommended Pad Layout (mm)



Dimensions

| Type Number | Package Dimensions (mm) | | | | | | | Package Dimensions (in) | | | | | | |
|------------------|-------------------------|-----|-----|-----|------|-----|-----|-------------------------|-------|-------|-------|-------|-------|-------|
| | A | | B | | C | | D | A | | B | | C | | D |
| | min | max | min | max | min | max | min | min | max | min | max | min | max | min |
| SMD0805P005TF | 2 | 2.2 | 1.2 | 1.5 | 0.4 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.016 | 0.039 | 0.008 |
| SMD0805P010TF | 2 | 2.2 | 1.2 | 1.5 | 0.4 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.016 | 0.039 | 0.008 |
| SMD0805P020TF | 2 | 2.2 | 1.2 | 1.5 | 0.35 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.014 | 0.039 | 0.008 |
| SMD0805P020TF/12 | 2 | 2.2 | 1.2 | 1.5 | 0.35 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.014 | 0.039 | 0.008 |
| SMD0805P020TF/16 | 2 | 2.2 | 1.2 | 1.5 | 0.35 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.014 | 0.039 | 0.008 |
| SMD0805P035TF | 2 | 2.2 | 1.2 | 1.5 | 0.35 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.014 | 0.039 | 0.008 |
| SMD0805P035TF/12 | 2 | 2.2 | 1.2 | 1.5 | 0.35 | 1.0 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.014 | 0.039 | 0.008 |
| SMD0805P050TF | 2 | 2.2 | 1.2 | 1.5 | 0.30 | 1.1 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.012 | 0.043 | 0.008 |
| SMD0805P050TF/12 | 2 | 2.2 | 1.2 | 1.5 | 0.30 | 1.1 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.012 | 0.043 | 0.008 |
| SMD0805P050TF/16 | 2 | 2.2 | 1.2 | 1.5 | 0.5 | 1.1 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.02 | 0.043 | 0.008 |
| SMD0805P050TF/24 | 2 | 2.2 | 1.2 | 1.5 | 0.5 | 1.1 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.02 | 0.043 | 0.008 |
| SMD0805P075TF | 2 | 2.2 | 1.2 | 1.5 | 0.4 | 1.3 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.016 | 0.051 | 0.008 |
| SMD0805P075TF/12 | 2 | 2.2 | 1.2 | 1.5 | 0.4 | 1.3 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.016 | 0.051 | 0.008 |
| SMD0805P100TF | 2 | 2.2 | 1.2 | 1.5 | 0.5 | 1.3 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.02 | 0.051 | 0.008 |
| SMD0805P100TF/12 | 2 | 2.2 | 1.2 | 1.5 | 0.5 | 1.3 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.02 | 0.051 | 0.008 |
| SMD0805P110TF | 2 | 2.2 | 1.2 | 1.5 | 0.5 | 1.3 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.02 | 0.051 | 0.008 |
| SMD0805P110TF/12 | 2 | 2.2 | 1.2 | 1.5 | 0.5 | 1.3 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.02 | 0.051 | 0.008 |
| SMD0805P125TF | 2 | 2.2 | 1.2 | 1.5 | 1.0 | 1.5 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.039 | 0.059 | 0.008 |
| SMD0805P150TF | 2 | 2.2 | 1.2 | 1.5 | 1.0 | 1.5 | 0.2 | 0.079 | 0.087 | 0.047 | 0.059 | 0.039 | 0.059 | 0.008 |

Taping and Reel Specifications



| Symbol | Millimeters | Inches |
|----------------|-------------|-------------|
| W | 8±0.3 | 0.315±0.012 |
| P | 4±0.1 | 0.157±0.004 |
| P0 | 4±0.1 | 0.157±0.004 |
| P2 | 2±0.05 | 0.079±0.002 |
| F | 3.5±0.05 | 0.138±0.002 |
| E | 1.75±0.1 | 0.069±0.004 |
| D | 1.55±0.05 | 0.061±0.002 |
| D1(max) | 178 | 7.007 |
| D2(min) | 60 | 2.362 |
| W1 | 9.0±0.5 | 0.354±0.02 |

