SMD0805 Surface Mount PTC Devices

R.O.C. Patent#415624

- The SMD0805 Series, a polymer-based Positive Temperature Coefficient (PTC) device to protect electrical circuits against overcurrent conditions with resettable feature, is fully compatible with current industrial standards.
- The new designed SMD0805 Series provides surface mount overcurrent protection with superior performance.
- Application: The SMD0805 Series is ideal for computers and peripherals and can be applied to almost anywhere there is a low voltage power supply and a load to be protected.
- The solder plated termination is designed to meet or exceed solderability specifications and provide excellent solder joint inspectability.
- Agency Approval: UL/CSA File No. E201431
  TÜV Certificate # R9956421

ELECTRICAL CHARACTERISTICS

Part Number	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approval
						Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)	
SMD0805P010TS	0.10	0.30	15	40	0.5	0.50	1.50	1.000	3.500	6.000	UL/CSA/TÜV
SMD0805P020TS	0.20	0.50	9	40	0.5	8.00	0.02	0.650	2.000	3.500	UL/CSA/TÜV
SMD0805P035TS	0.35	0.75	6	40	0.5	8.00	0.10	0.250	0.750	1.200	UL/CSA/TÜV
SMD0805P050TS	0.50	1.00	6	40	0.5	8.00	0.10	0.150	0.500	0.850	UL/CSA/TÜV

Note: I_{hold} = Hold current: maximum current device will pass without tripping in 20℃ still air.

I_{trip} = Trip current: minimum current at which the device will trip in 20℃ 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 20℃ 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 20℃ measured one hour after tripping or reflow soldering of 260℃ for 20 sec.

All products may be followed by suffix TF

Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

Recognitions: UL, CSA, TÜV recognized.

◎Specifications are subject to change without notice.

Polytronics Technology Corp
REGISTERED TO QS9000, TL9000
ISO9001 (version 2000), and ISO 14001
CERTIFICATE NO.A8727 and A10971

03/28/2003

How to Select a Polymer PTC fuse:

(1) Determine the following operating parameters for the circuits:
  (A) Normal Operating Current (I hold)
  (B) Maximum Circuit Voltage (V max)
  (C) Maximum Interrupt Current (I max)
  (D) Normal Operating Temperature (min℃/max℃)
(2) Select the device form factor and dimension suitable for the application:
  Surface Mount Device (SMD Series)
  Radial Leaded Device (RLD Series)
  Axial Leaded Strap Device (STD Series)
  Other Custom-designed Device (Disc/Chip)
(3) Compare the maximum ratings for V max and I max of the PTC device with the circuit in application and make sure that the circuit's requirement does not exceed the device ratings.
(4) Check that the PTC device's trip time (time-to-trip) will protect the circuit.
(5) Verify that the circuit operating temperatures are within the PTC device's normal operating temperature range.
(6) Verify the performance and suitability of the chosen PTC device in the application.

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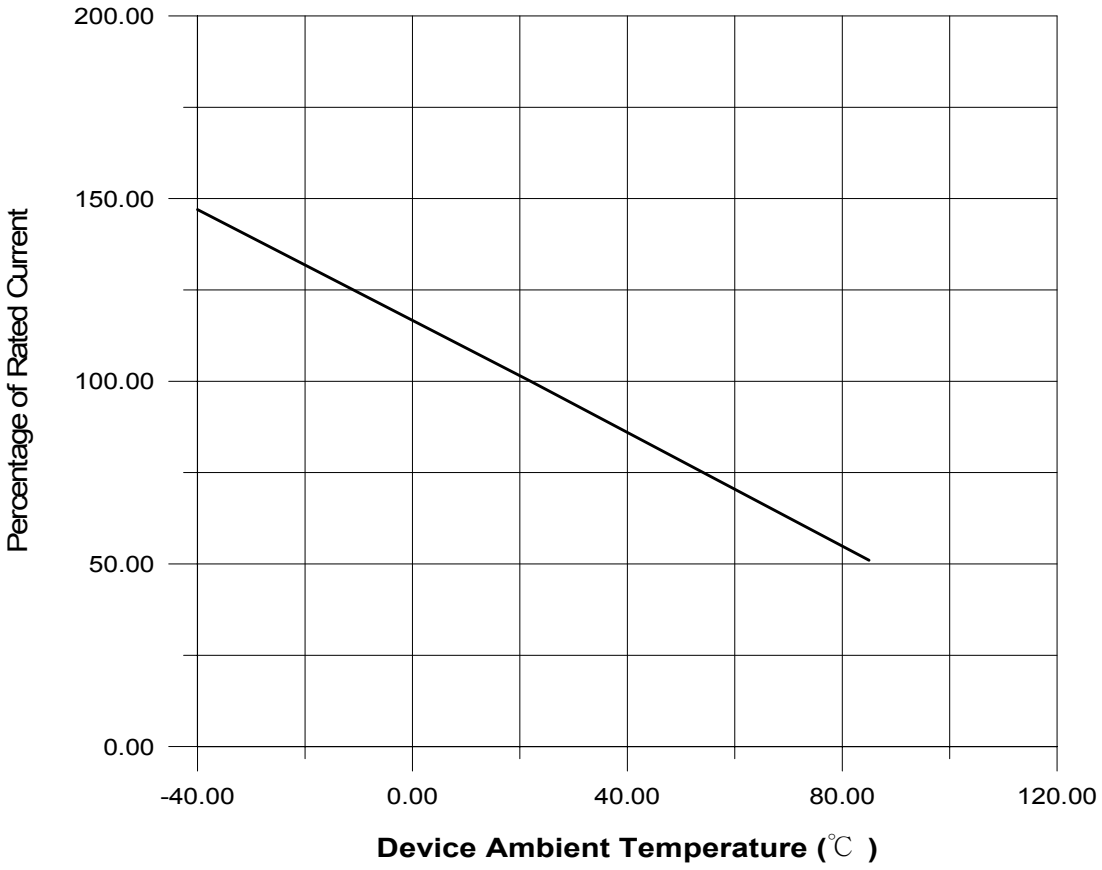
THERMAL DERATING CURVE FOR SMD0805 SERIES



THERMAL DERATING CHART FOR SMD0805 SERIES – Ihold (Amps)

Model	Ambient Operation Temperature								
	-40℃	-20℃	0℃	23℃	40℃	50℃	60℃	70℃	85℃
SMD0805P010TS	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
SMD0805P020TS	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
SMD0805P035TS	0.47	0.44	0.39	0.35	0.30	0.27	0.24	0.20	0.14
SMD0805P050TS	0.68	0.62	0.55	0.50	0.40	0.37	0.33	0.29	0.23

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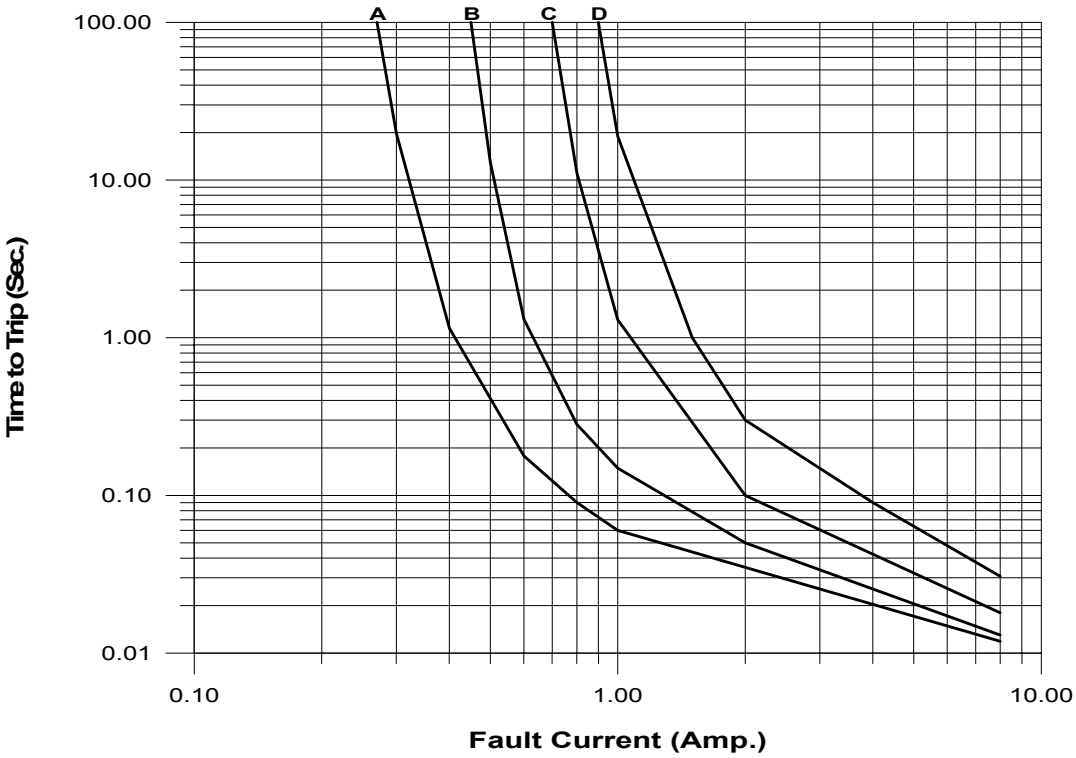
AVERAGE TIME-CURRENT CURVE FOR SMD0805 SERIES



A:SMD0802P010TS
B:SMD0805P020TS
C:SMD0805P035TS
D:SMD0805P050TS

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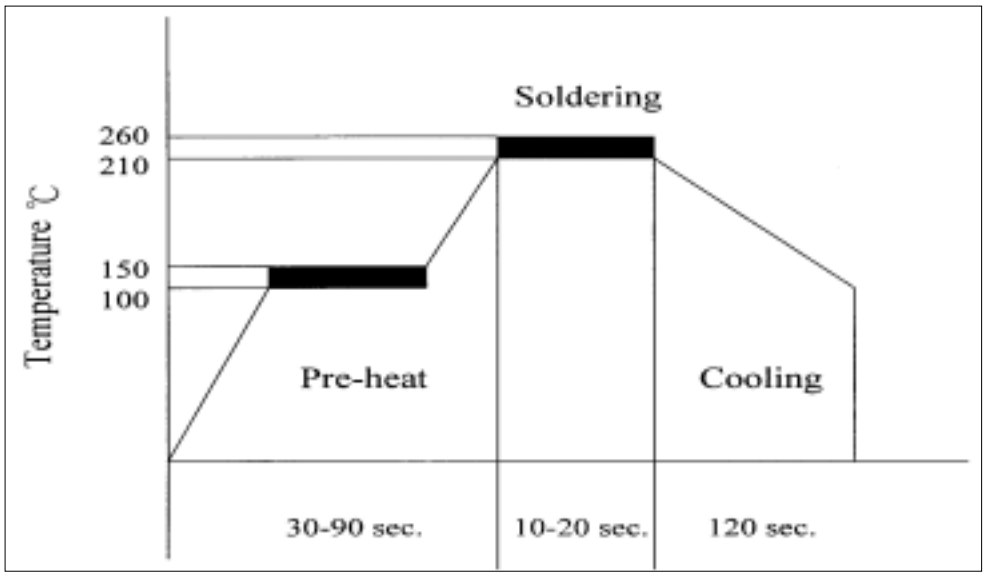
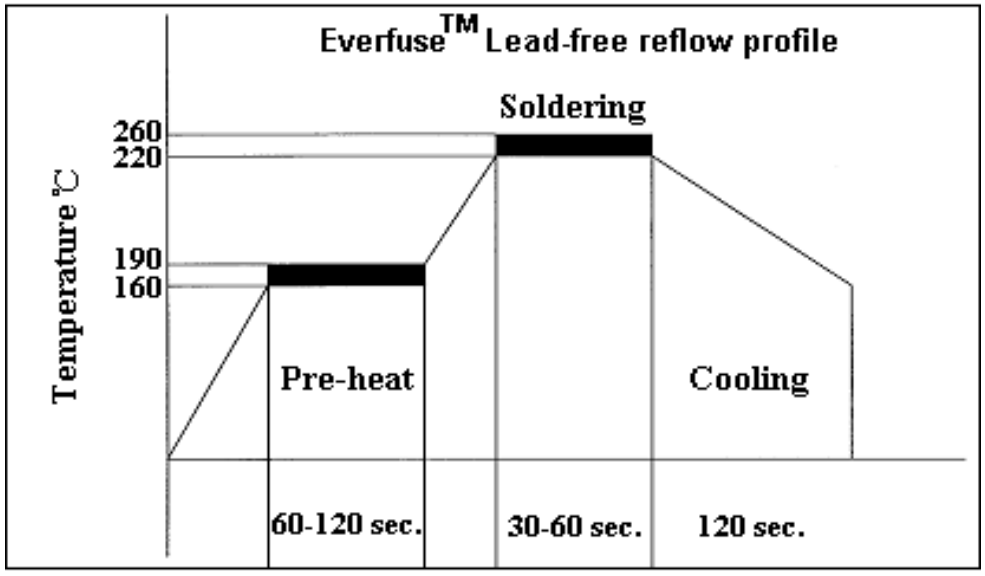
SOLDER REFLOW





- Recommended reflow methods: IR, vapor phase oven, hot air oven, N_2 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 (0.010 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.

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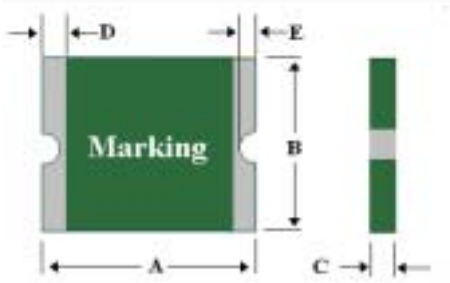
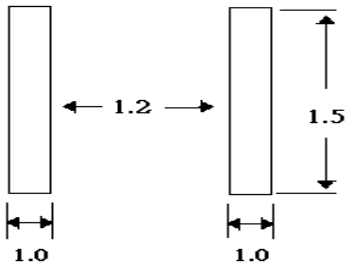
FIGURE



SOLDER PAD LAYOUTS

(Dimension in mm)



PHYSICAL DIMENSIONS (mm)

Part Number	A		B		C		D	E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
SMD0805P010TS	2.00	2.20	1.20	1.50	0.55	1.00	0.10	0.20	0.45
SMD0805P020TS	2.00	2.20	1.20	1.50	0.55	1.00	0.10	0.20	0.45
SMD0805P035TS	2.00	2.20	1.20	1.50	0.45	0.75	0.10	0.20	0.45
SMD0805P050TS	2.00	2.20	1.20	1.50	0.75	1.25	0.10	0.20	0.45

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ENVIRONMENTAL SPECIFICATIONS

Operating/Storage Temperature	-40℃ to +85℃	
Maximum Device Surface Temperature in Tripped State	125℃	
Passive Aging	+85℃, 1000 hours	±5% typical resistance change
Humidity Aging	+85℃, 85%R.H. 1000 hours	±5% typical resistance change
Thermal Shock	MIL-STD-202 Method 107G +85℃/-40℃ 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

PHYSICAL SPECIFICATIONS

Terminal Material	Gold-Plated Copper or Solder-Plated Copper (Solder Material: 63/37 SnPb or Tin(Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3.
Packaging	8 mm tape on 7 inch reel per EIA-481-1 (equivalent to IEC286, part 3) 3000 devices per reel for P050TS, others : 4000 devices per reel

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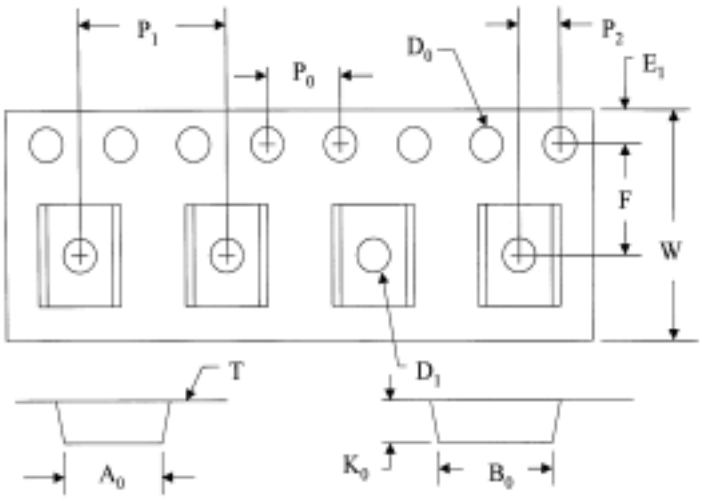
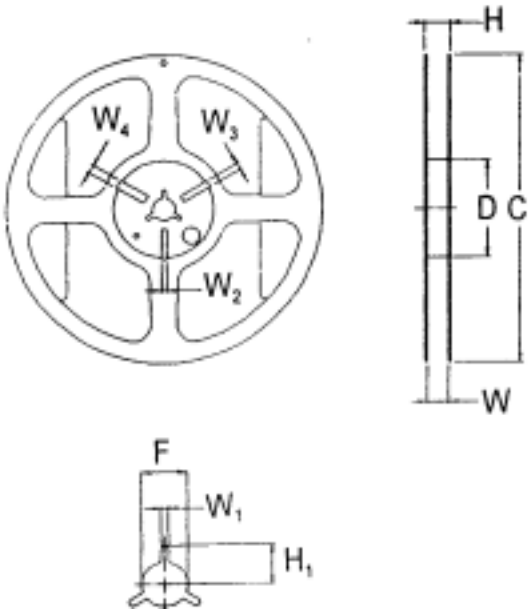
TAPE SPECIFICATIONS: EIA-481-1

	P010-P35	P050
W	8.0+/-0.10	8.0+/-0.10
F	3.5+/-0.05	3.5+/-0.05
E_1	1.75+/-0.10	1.75+/-0.10
D_0	1.55+/-0.05	1.55+/-0.05
D_1	1.0 (min)	1.0 (min)
P_0	4.0+/-0.10	4.0+/-0.10
P_1	4.0+/-0.10	4.0+/-0.10
P_2	2.0+/-0.05	2.0+/-0.05
A_0	1.45+/-0.10	1.42+/-0.10
B_0	2.30+/-0.10	2.24+/-0.10
T	0.25+/-0.10	0.20+/-0.10
K_0	0.74+/-0.10	1.04+/-0.10
Leader min.	390	390
Trailer min.	160	160

(mm)



REEL DIMENSIONS : EIA-481-1



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

(mm)

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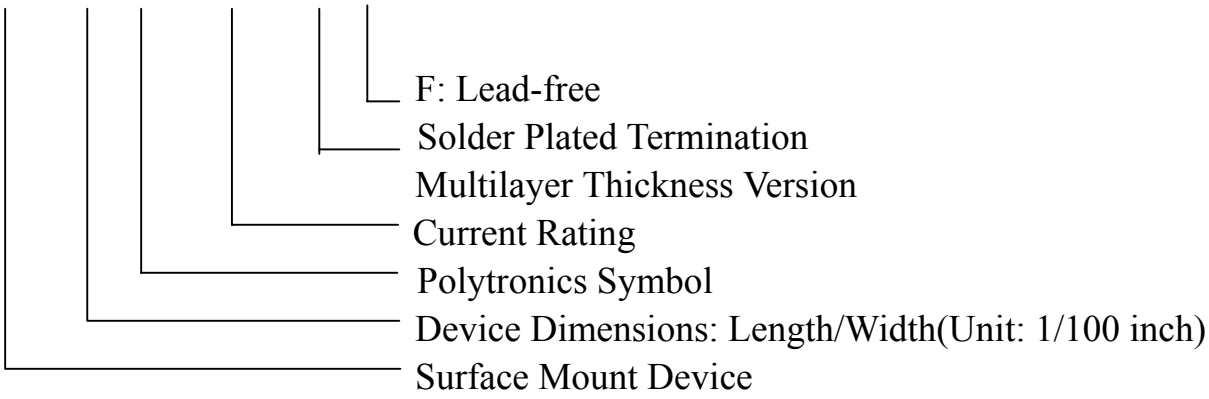
PART NUMBERING SYSTEM

SMD 0805 P □□□ TS / F



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