



# Positive Thermal Coefficient

**SMD0805 Series**

## Positive Thermal Coefficient - SMD0805 Series

### Description

The 0805 series provides miniature surface mount resettable overcurrent protection with holding current from 0.05A to 1.25A. This series is suitable for ultra portable applications where space is at a premium and the device current is low.



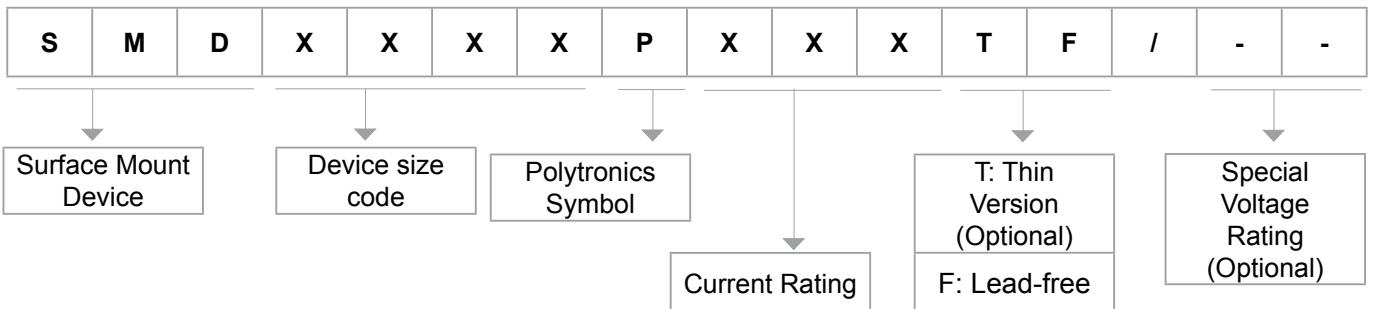
### Features

- I(hold): 0.05~1.25A
- 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

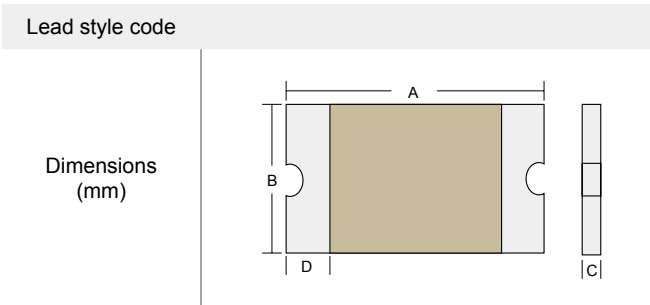
### Applications

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

### Product Name



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Type Number	I <sub>hold</sub>	I <sub>trip</sub>	Maximum Time To Trip		V <sub>max</sub>	I <sub>max</sub>	P <sub>d typ</sub>	R <sub>min</sub>	R <sub>1max</sub>	Package	Package Dimensions (mm)							
			Current A	Time (Sec.)							A		B		C		D	
											min	max	min	max	min	max	min	max
SMD0805P005TF	0.05	0.2	0.5	1.5	15	100	0.5	2	10	0805	2	2.2	1.2	1.5	0.4	1	0.2	
SMD0805P010TF	0.1	0.3	0.5	1.5	15	100	0.5	1	6	0805	2	2.2	1.2	1.5	0.4	1	0.2	
SMD0805P020TF	0.2	0.5	8	0.02	9	100	0.5	0.65	3.5	0805	2	2.2	1.2	1.5	0.4	1	0.2	
SMD0805P035TF	0.35	0.75	8	0.1	6	100	0.5	0.25	1.2	0805	2	2.2	1.2	1.5	0.3	0.8	0.2	
SMD0805P035TF/12	0.35	0.75	8	0.1	12	100	0.5	0.25	1.2	0805	2	2.2	1.2	1.5	0.35	0.8	0.2	
SMD0805P050TF	0.5	1	8	0.1	6	100	0.5	0.15	0.85	0805	2	2.2	1.2	1.5	0.3	0.6	0.2	
SMD0805P050TF /12	0.5	1	8	0.1	12	100	0.5	0.15	0.85	0805	2	2.2	1.2	1.5	0.35	0.8	0.2	
SMD0805P050TF /16	0.5	1	8	0.1	16	100	0.5	0.15	0.85	0805	2	2.2	1.2	1.5	0.5	1	0.2	
SMD0805P050TF /24	0.5	1	8	0.1	24	100	0.5	0.15	0.85	0805	2	2.2	1.2	1.5	0.5	1	0.2	
SMD0805P075TF	0.75	1.5	8	0.2	6	40	0.6	0.09	0.385	0805	2	2.2	1.2	1.5	0.4	1	0.2	
SMD0805P075TF/12	0.75	1.5	8	0.2	12	40	0.6	0.09	0.385	0805	2	2.2	1.2	1.5	0.5	1	0.2	
SMD0805P100TF	1	1.95	8	0.3	6	100	0.6	0.06	0.23	0805	2	2.2	1.2	1.5	0.5	1.1	0.2	
SMD0805P100TF/12	1	1.95	8	0.3	12	100	0.6	0.06	0.23	0805	2	2.2	1.2	1.5	0.7	1.2	0.2	
SMD0805P110TF	1.1	2.2	8	0.3	6	100	0.6	0.06	0.21	0805	2	2.2	1.2	1.5	0.5	1.2	0.2	
SMD0805P110TF/12	1.1	2.2	8	0.3	12	100	0.6	0.06	0.21	0805	2	2.2	1.2	1.5	0.7	1.2	0.2	
SMD0805P125TF	1.25	2.5	8	0.6	6	100	1.5	0.03	0.14	0805	2	2.2	1.2	1.5	0.9	1.4	0.2	

I<sub>hold</sub> = Hold current: maximum current device will pass without tripping in 25°C still air.

I<sub>trip</sub> = Trip current: minimum current at which the device will trip in 25 °C still air.

V<sub>max</sub> = Maximum voltage device can withstand without damage at rated current (I<sub>max</sub>)

I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>)

P<sub>d typ</sub> = Typical power dissipated from device when in the tripped state at 25 °C still air.

R<sub>min</sub> = Minimum resistance of device in initial (un-soldered) state.

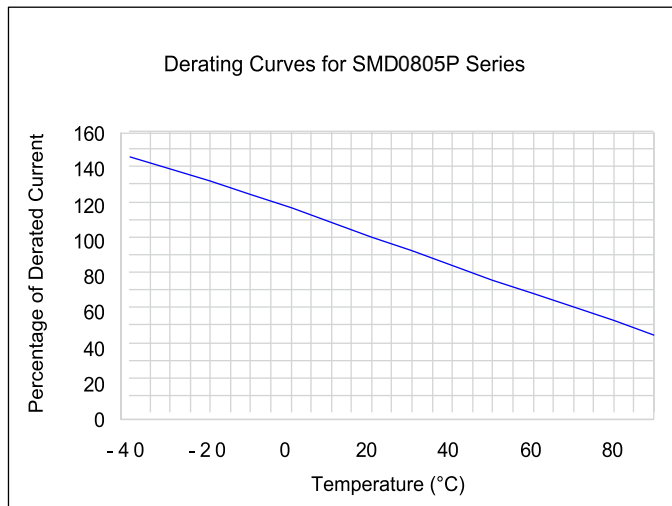
R<sub>1max</sub> = Maximum resistance of device at 25 °C measured one hour after tripping or reflow soldering of 260 °C for 20 sec.

## Positive Thermal Coefficient - SMD0805 Series

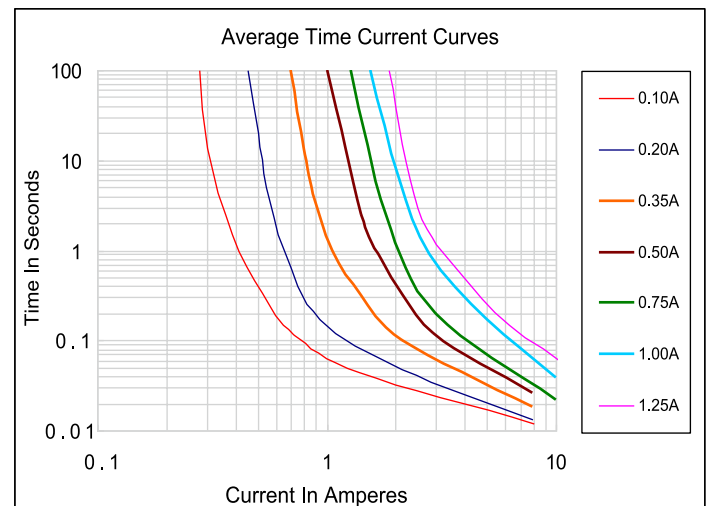
**Thermal Derating Chart Recommended Hold Current (A) at Ambient Temperature (°C)**

Part Number	-40°C	-20°C	0°C	25°C	40°C	50 °C	60°C	70°C	85°C
SMD0805P005TF	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
SMD0805P010TF	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.05
SMD0805P020TF	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
SMD0805P035TF	0.47	0.41	0.38	0.35	0.29	0.26	0.24	0.20	0.14
SMD0805P035TF/12	0.47	0.41	0.38	0.35	0.29	0.26	0.24	0.20	0.14
SMD0805P050TF	0.68	0.59	0.54	0.50	0.41	0.37	0.34	0.29	0.20
SMD0805P050TF/12	0.68	0.59	0.54	0.50	0.41	0.37	0.34	0.29	0.20
SMD0805P050TF/16	0.68	0.59	0.54	0.50	0.41	0.37	0.34	0.29	0.20
SMD0805P050TF/24	0.68	0.59	0.54	0.50	0.41	0.37	0.34	0.29	0.20
SMD0805P075TF	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD0805P075TF/12	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD0805P100TF	1.35	1.25	1.10	1.00	0.82	0.74	0.65	0.55	0.42
SMD0805P100TF/12	1.35	1.25	1.10	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	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53

### Thermal Derating Curve

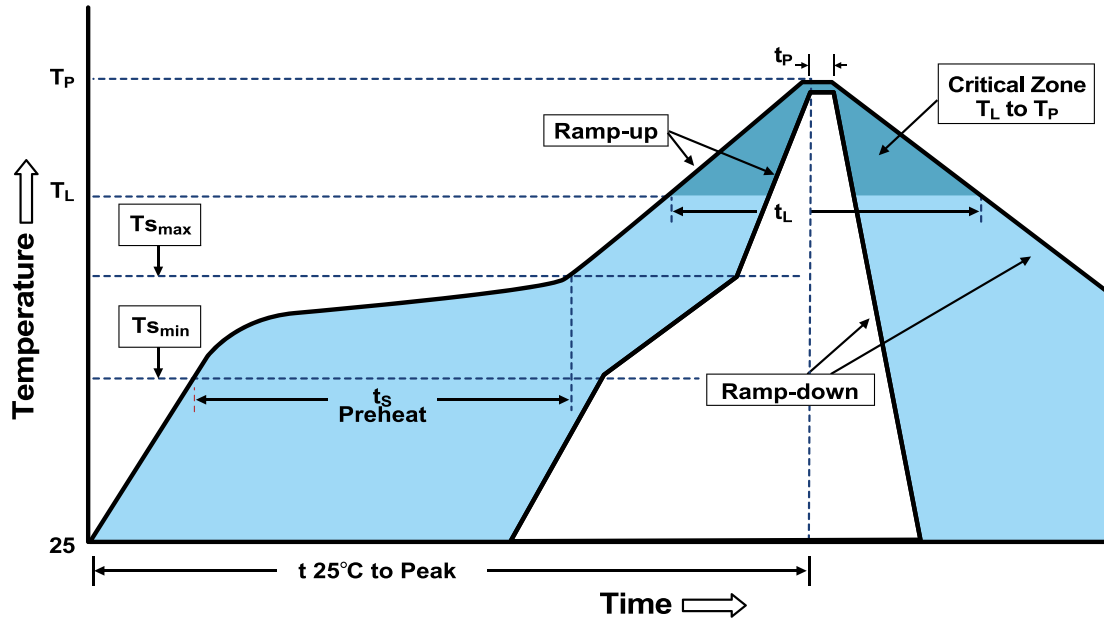


### Average Time-Current Curve



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### Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ( $T_{S_{max}}$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S_{min}}$ )	150°C
-Temperature Max ( $T_{S_{max}}$ )	200°C
-Time ( $T_{S_{min}}$ to $T_{S_{max}}$ )	60-180 seconds
Time maintained above:	
-Temperature ( $T_L$ )	217°C
-Time ( $t_L$ )	60-150 seconds
Peak Temperature ( $T_P$ )	260°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	8 minutes max.
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.

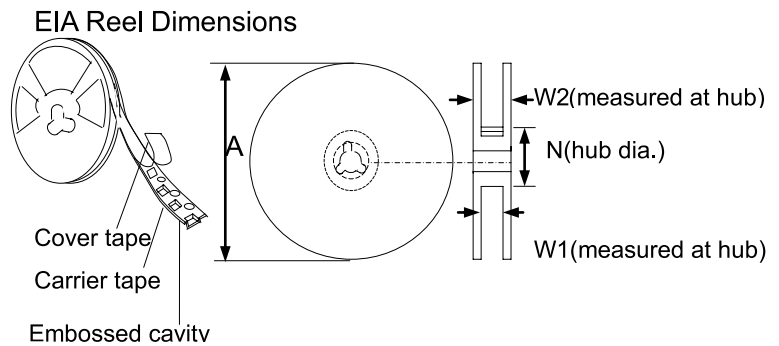
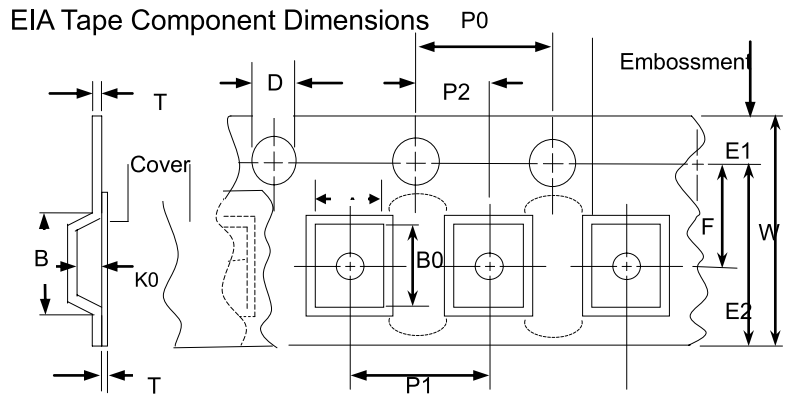
Note 1: All temperatures refer to the top side of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

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### Tape and Reel Specifications

Governing Specifications	EIA 481-1
W	8.15 ± 0.3
P0	4.0 ± 0.10
P1	4.0 ± 0.10
P2	2.0 ± 0.05
A0	1.95 ± 0.10
B0	3.40 ± 0.10
B1max.	4.35
D0	1.50 + 0.1, -0
F	3.5 ± 0.05
E1	1.75 ± 0.10
E2min.	6.25
T	0.6
T1max.	0.1
K0	1.04 ± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	60
W1	9 ± 0.5
W2	12.6 ± 0.5



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### Environmental Specifications

Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change

Ambient operating conditions : - 40 °C to +85 °C

Maximum surface temperature of the device in the tripped state is 125 °C

### Packaging

Part Number	Halogen Free	Packaging Option	Quantity	Quantity & Packaging Codes
SMD0805P005TF	Yes	Tape and Reel	5000	YR
SMD0805P010TF	Yes	Tape and Reel	5000	YR
SMD0805P020TF	Yes	Tape and Reel	5000	YR
SMD0805P035TF	Yes	Tape and Reel	5000	YR
SMD0805P035TF/12	Yes	Tape and Reel	5000	YR
SMD0805P050TF	Yes	Tape and Reel	5000	YR
SMD0805P050TF /12	Yes	Tape and Reel	4000	YR
SMD0805P050TF /16	Yes	Tape and Reel	4000	YR
SMD0805P050TF /24	Yes	Tape and Reel	4000	YR
SMD0805P075TF	Yes	Tape and Reel	4000	YR
SMD0805P075TF/12	Yes	Tape and Reel	4000	YR
SMD0805P100TF	Yes	Tape and Reel	4000	YR
SMD0805P100TF/12	Yes	Tape and Reel	4000	YR
SMD0805P110TF	Yes	Tape and Reel	4000	YR
SMD0805P110TF/12	Yes	Tape and Reel	4000	YR
SMD0805P125TF	Yes	Tape and Reel	40000	YR

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