

Positive Temperature Coefficient (PTC) Datasheet

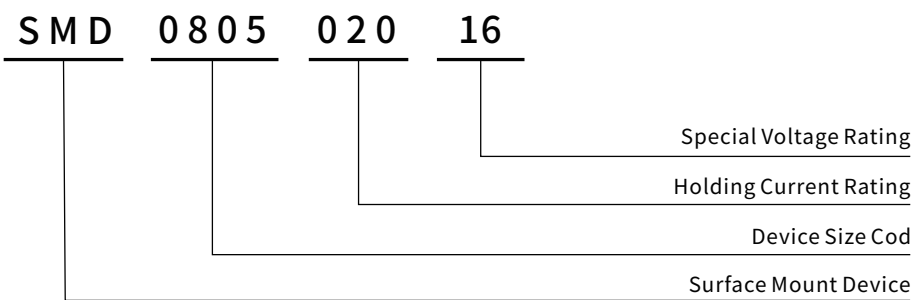
Features

- I Hold: 0.02~1.5A
- Fast responding to fault current
- Size 0805 / 2.0*1.2mm
- Low resistance
- Low profile
- RoHS compliant & Lead-Free & Halogen Free

Applications

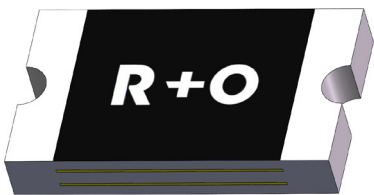
- USB hubs, ports and peripherals
- Computer, Mobile phones, Multimedia
- General electronics
- Disk drives
- Game machines, Portable electronics, Battery
- Plug and play protection for motherboards and peripherals

Part Number Code

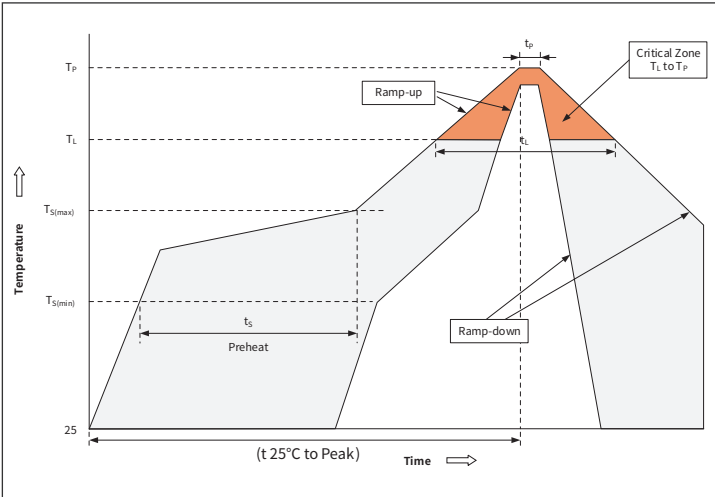


I Hold
0.02A to 1.5A

SMD0805



Recommended Soldering Conditions



Profile Feature		Pb-Free Assembly
Pre-heat	Temperature Min (Ts(min))	+150°C
	Temperature Max(Ts(max))	+200°C
	Time (Min to Max) (t5)	60-180 secs.
Average ramp up rate (Liquid us Temp (Tl) to peak)		3°C /sec. Max
Ts(max) to Tl - Ramp-up Rate		3°C /sec. Max
Reflow	Temperature(Tl)(Liquid us)	+217°C
	Temperature(t1)	60-150 secs.
Peak Temp (Tp)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (tp)		20-40secs
Ramp-down Rate		6°C /sec. Max
Time 25°C to Peak Temp (Tp)		8 min. Max
Do not exceed		+260°C

Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.

Recommended maximum paste thickness is 0.25mm.

Devices can be cleaned using standard industry methods and solvents.

Note 1: All temperature refer to topside 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.

● Electrical Characteristics (Ta=25°C Unless otherwise specified)

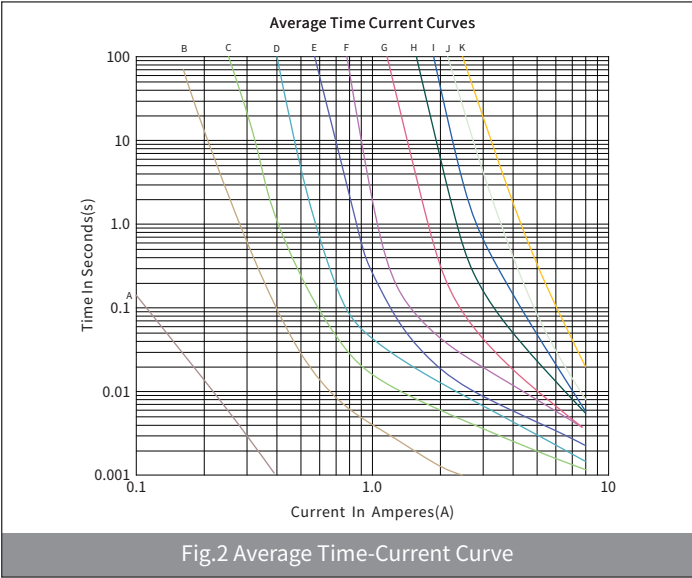
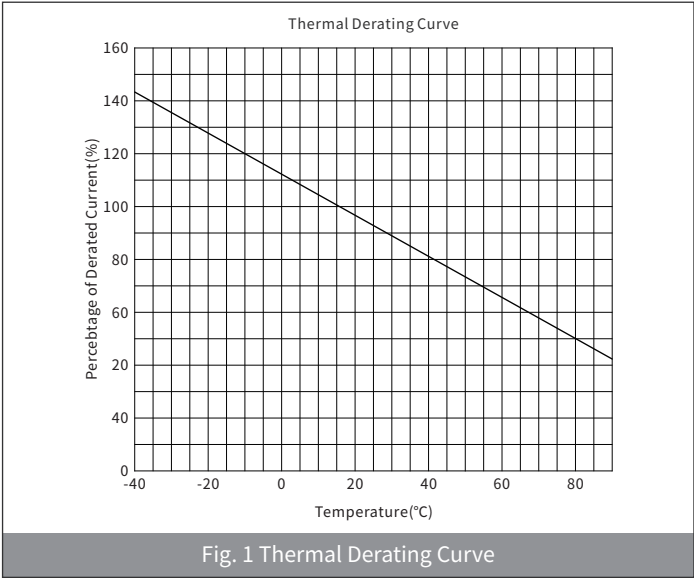
Part Number	Marking	I _{hold}	I _{trip}	V _{max}	I _{max}	P _{dtyp}	Max. Time-to-trip		R _i min	R ₁ max
		(A)	(A)	(V)	(A)	(W)	(A)	(S)	(Ω)	(Ω)
SMD0805-002-60	B	0.02	0.06	60	40	0.5	0.1	1.5	12	70
SMD0805-005-16	E	0.05	0.15	16	40	0.5	0.5	1.5	1.5	20
SMD0805-005-24	E	0.05	0.15	24	40	0.5	0.5	1.5	1.5	20
SMD0805-005-30	E	0.05	0.15	30	40	0.5	0.5	1.5	1.5	20
SMD0805-005-33	E	0.05	0.15	33	40	0.5	0.5	1.5	1.5	20
SMD0805-005-60	E	0.05	0.15	60	40	0.5	0.5	1.5	1.5	20
SMD0805-010-15	H	0.1	0.3	15	40	0.5	1.5	0.5	0.75	6
SMD0805-010-24	H	0.1	0.3	24	40	0.5	1.5	0.5	0.75	6
SMD0805-010-33	H	0.1	0.3	33	40	0.5	1.5	0.5	0.75	6
SMD0805-020-9	K	0.2	0.5	9	40	0.5	8	0.02	0.5	3.5
SMD0805-020-16	K	0.2	0.5	16	40	0.5	8	0.02	0.5	3.5
SMD0805-020-24	K	0.2	0.5	24	40	0.5	8	0.02	0.5	3.5
SMD0805-020-30	K	0.2	0.5	30	40	0.5	8	0.02	0.5	3.5
SMD0805-035-6	M	0.35	0.75	6	40	0.5	8	0.1	0.2	1.2
SMD0805-035-12	M	0.35	0.75	12	40	0.5	8	0.1	0.2	1.2
SMD0805-035-24	M	0.35	0.75	24	40	0.5	8	0.1	0.2	1.2
SMD0805-050-6	N	0.5	1	6	40	0.5	8	0.1	0.1	0.85
SMD0805-050-12	N	0.5	1	12	40	0.5	8	0.1	0.1	0.85
SMD0805-050-15	N	0.5	1	15	40	0.5	8	0.1	0.1	0.85
SMD0805-050-16	N	0.5	1	16	40	0.5	8	0.1	0.1	0.85
SMD0805-050-24	N	0.5	1	24	40	0.5	8	0.1	0.1	0.85
SMD0805-075-6	P	0.75	1.5	6	40	0.6	8	0.2	0.07	0.39
SMD0805-075-12	P	0.75	1.5	12	40	0.6	8	0.2	0.07	0.39
SMD0805-100-6	Q	1	2	6	40	0.6	8	0.3	0.04	0.27
SMD0805-100-12	Q	1	2	12	40	0.6	8	0.3	0.04	0.27
SMD0805-110-6	R	1.1	2	6	40	0.6	8	0.3	0.035	0.23
SMD0805-125-6	T	1.25	2.5	6	40	1.5	8	0.6	0.025	0.14
SMD0805-150-6	U	1.5	3	6	40	1.0	8	0.5	0.015	0.13

● Vocabulary

- I_{hold} = Hold current: maximum current device will pass without tripping in 25°C still air.
- I_{trip} = Trip current: minimum current at which the device will trip in 25°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_{dtyp} = Typical power dissipated from device when in the tripped state at 25°C still air.
- R_{min} = Minimum resistance of device in initial (un-soldered) state.
- R_{1max} = Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

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

● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



Note: Fig.2 Average Time-Current Curve
A: SMD0805-002 B: SMD0805-005 C: SMD0805-010 D: SMD0805-020
E: SMD0805-035 F: SMD0805-050 G: SMD0805-075 H: SMD0805-100
I: SMD0805-110 J: SMD0805-125 K: SMD0805-150

● Thermal Derating Chart

Part Number	Ambient operating temperature hold current(Ihold)								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD0805-002	0.030	0.027	0.024	0.020	0.017	0.016	0.014	0.012	0.010
SMD0805-005	0.070	0.060	0.055	0.050	0.040	0.035	0.030	0.025	0.015
SMD0805-010	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
SMD0805-020	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
SMD0805-035	0.47	0.44	0.39	0.35	0.30	0.27	0.24	0.20	0.14
SMD0805-050	0.68	0.62	0.55	0.50	0.40	0.37	0.33	0.29	0.23
SMD0805-075	1.00	0.90	0.79	0.75	0.63	0.57	0.53	0.41	0.34
SMD0805-100	1.35	1.25	1.15	1.00	0.82	0.74	0.65	0.55	0.42
SMD0805-110	1.45	1.35	1.20	1.10	0.92	0.84	0.75	0.65	0.52
SMD0805-125	1.65	1.53	1.36	1.25	1.05	0.95	0.85	0.74	0.59
SMD0805-150	1.98	1.84	1.63	1.50	1.26	1.14	1.02	0.88	0.71

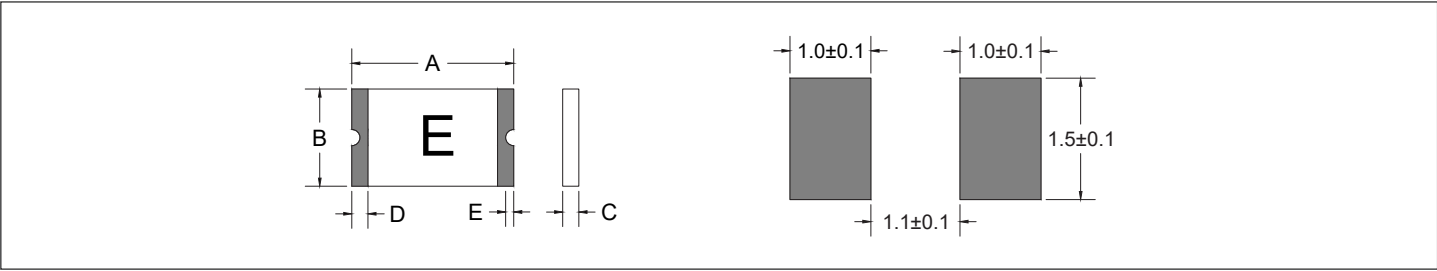
● Environmental Specifications

Operating / Storage temperature:	-40°C to +85°C
Passive Aging :	+85°C , 1000 hours
Humidity Aging :	+85°C , 85%R.H. 168 hours
Thermal Shock :	MIL-STD-202, Method 107G ; +85°C /-40°C 20 times
Solvent Resistance:	MIL-STD-202, Method 215 No change
Vibration:	MIL-STD-202,Method 201 No change
Maximum Device Surface Temperature in Tripped State :	125°C
Storage Conditions:	Light-proof, Hermetically Sealed, Moisture-proof

● Ordering Information

PACKAGE	SIZE(mm)	Part Number	DELIVERY MODE	MPQ(PCS)
SMD0805	2.0×1.2	SMD0805-002-60 SMD0805-005-XX SMD0805-010-XX SMD0805-020-XX SMD0805-035-6 SMD0805-035-12	7"REEL	5,000
		SMD0805-035-24 SMD0805-050-12 SMD0805-050-15 SMD0805-050-16 SMD0805-050-24 SMD0805-075-XX SMD0805-100-XX SMD0805-110-XX	7"REEL	4,000
		SMD0805-125-6 SMD0805-150-6	7"REEL	3,500

● Physical Dimensions & Recommended Pad Layout



Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD0805-002-60	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-005-16	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-005-24	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-005-30	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-005-33	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-005-60	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-010-15	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-010-24	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-010-33	2.00	2.20	1.20	1.50	0.40	0.90	0.20	0.10
SMD0805-020-9	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-020-16	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-020-24	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-020-30	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-035-6	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-035-12	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-035-24	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-050-6	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-050-12	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10

● Physical Dimensions & Recommended Pad Layout

Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD0805-050-12	2.00	2.20	1.20	1.50	0.35	0.80	0.20	0.10
SMD0805-050-15	2.00	2.20	1.20	1.50	0.50	1.10	0.20	0.10
SMD0805-050-16	2.00	2.20	1.20	1.50	0.50	1.10	0.20	0.10
SMD0805-050-24	2.00	2.20	1.-20	1.50	0.50	1.10	0.20	0.10
SMD0805-075-6	2.00	2.20	1.20	1.50	0.50	1.00	0.20	0.10
SMD0805-075-12	2.00	2.20	1.20	1.50	0.50	1.00	0.20	0.10
SMD0805-100-6	2.00	2.20	1.20	1.50	0.70	1.20	0.20	0.10
SMD0805-100-12	2.00	2.20	1.20	1.50	0.70	1.20	0.20	0.10
SMD0805-110-6	2.00	2.20	1.20	1.50	0.70	1.20	0.20	0.10
SMD0805-125-6	2.00	2.20	1.20	1.50	0.70	1.50	0.20	0.10
SMD0805-150-6	2.00	2.20	1.20	1.50	0.70	1.50	0.20	0.10

● Warning

- Users shall independently assess the suitability of these devices for each of their applications.
- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire.
- These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration.
- Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the prolonged of these PPTC devices.
- These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses.
- Circuits with inductance may generate a voltage ($L di/dt$) above the rated voltage of the PPTC device.