

Positive Temperature Coefficient (PTC) Datasheet

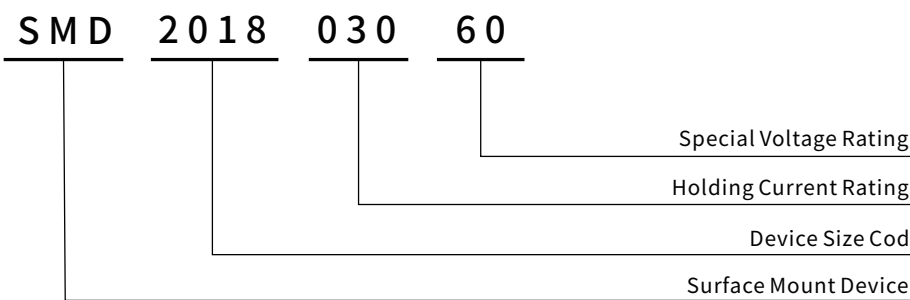
Features

- I Hold: 0.1~5.0A
- Fast responding to fault current
- Size 2018 / 5.0*4.5mm
- Low resistance
- Low profile
- RoHS compliant & Lead-Free & Halogen Free

Applications

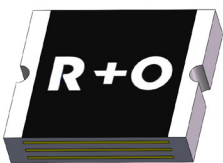
- USB hubs, ports and peripherals
- Computer, Mobile phones, Multimedia
- General electronics
- Disk drives
- Game machines, Portable electronics, Battery
- Plug and play protection for motherboards and peripherals

Part Number Code

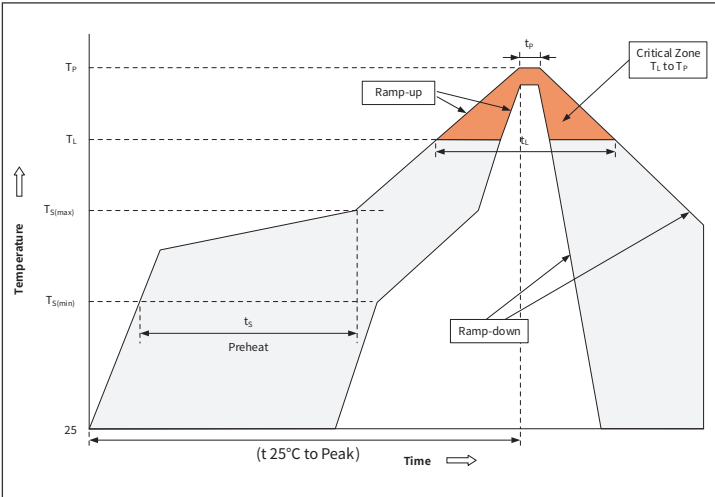


I Hold
0.1A to 5.0A

SMD2018



Recommended Soldering Conditions



Profile Feature		Pb-Free Assembly
Pre-heat	Temperature Min (T _{S(min)})	+150°C
	Temperature Max(T _{S(max)})	+200°C
	Time (Min to Max) (t ₅)	60-180 secs.
Average ramp up rate (Liquid us Temp (T _L) to peak)		3°C /sec. Max
T _{S(max)} to T _L - Ramp-up Rate		3°C /sec. Max
Reflow	Temperature(T _L)(Liquid us)	+217°C
	Temperature(t ₁)	60-150 secs.
Peak Temp (T _P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t _p)		20-40secs
Ramp-down Rate		6°C /sec. Max
Time 25°C to Peak Temp (T _P)		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)

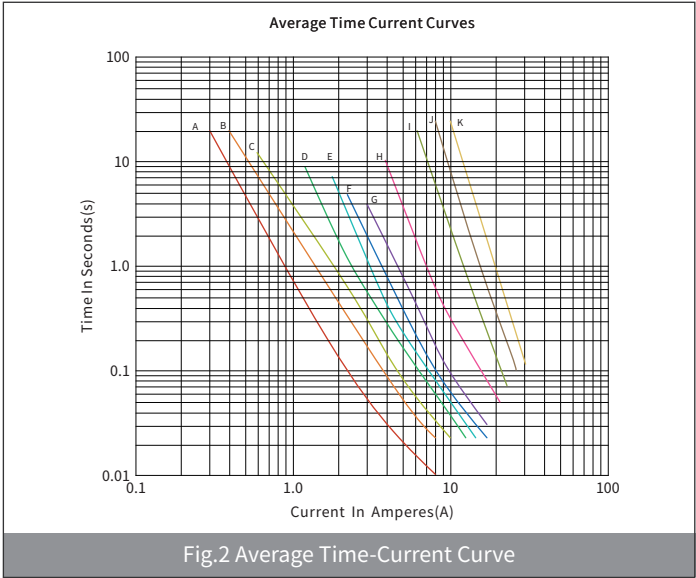
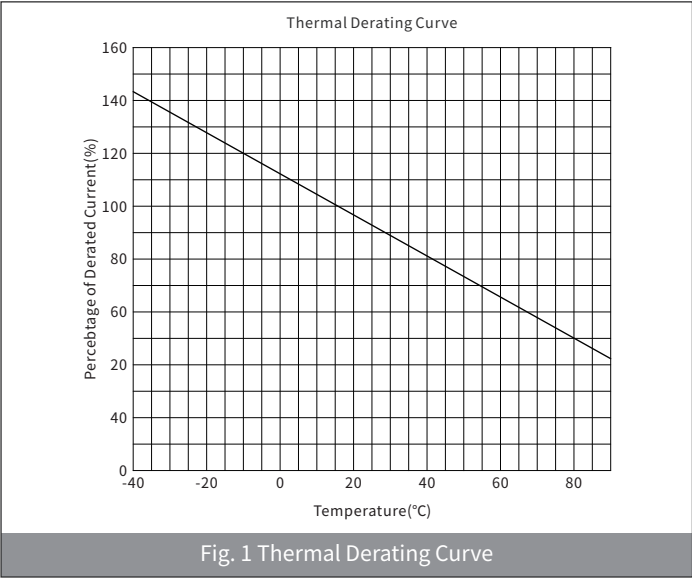
Part Number	Marking	I _{hold}	I _{trip}	V _{max}	I _{max}	P _{dtyp}	Max. Time-to-trip		R _{i min}	R _{1 max}
		(A)	(A)	(V)	(A)	(W)	(A)	(S)	(Ω)	(Ω)
SMD2018-010-60	01	0.10	0.30	60	10	0.9	0.50	1.50	1.600	10.000
SMD2018-020-60	02	0.20	0.40	60	10	0.9	1.50	3.00	1.000	7.500
SMD2018-030-60	03	0.30	0.60	60	10	1.2	1.50	3.00	0.50	2.30
SMD2018-050-60	05	0.55	1.20	60	10	1.2	2.50	3.00	0.20	1.00
SMD2018-075-60	07	0.75	1.50	60	10	1.2	8.00	0.30	0.11	0.63
SMD2018-100-15	10	1.10	2.20	15	35	1.2	8.00	0.40	0.06	0.36
SMD2018-100-33	10	1.10	2.20	33	35	1.2	8.00	0.40	0.06	0.36
SMD2018-150-15	15	1.50	3.00	15	35	1.2	8.00	0.80	0.05	0.17
SMD2018-200-10	20	2.00	4.00	10	35	1.2	8.00	2.40	0.03	0.10
SMD2018-260-24	26	2.60	5.00	24	40	1.6	8.00	5.00	0.025	0.075
SMD2018-300-16	30	3.00	5.00	16	40	1.6	8.00	10.00	0.015	0.048
SMD2018-400-6	40	4.00	8.00	6	40	1.6	25.00	25.00	0.008	0.035
SMD2018-500-6	50	5.00	10.00	6	40	2.0	25.00	25.00	0.005	0.025

● 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: SMD2018-010 B: SMD2018-020 C: SMD2018-030 D: SMD2018-050 E: SMD2018-075
F: SMD2018-110 G: SMD2018-150 H: SMD2018-200 I: SMD2018-300 J: SMD2018-400
K: SMD2018-500

● 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
SMD2018-010	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
SMD2018-020	0.32	0.28	0.23	0.20	0.16	0.14	0.12	0.11	0.07
SMD2018-030	0.48	0.42	0.35	0.30	0.24	0.21	0.17	0.15	0.10
SMD2018-050	0.87	0.77	0.67	0.55	0.46	0.41	0.36	0.31	0.23
SMD2018-075	1.19	1.05	0.91	0.75	0.61	0.54	0.47	0.41	0.32
SMD2018-100	1.71	1.52	1.32	1.00	0.94	0.84	0.74	0.64	0.50
SMD2018-150	2.38	2.10	1.82	1.50	1.27	1.13	0.99	0.85	0.64
SMD2018-200	2.95	2.65	2.35	2.00	1.74	1.59	1.44	1.29	0.98
SMD2018-260	3.82	3.46	3.06	2.60	2.24	2.03	1.82	1.60	1.26
SMD2018-300	4.40	3.96	3.52	3.00	2.65	2.43	2.20	1.96	1.59
SMD2018-400	6.04	5.36	4.68	4.00	3.36	3.01	2.65	2.33	1.79
SMD2018-500	7.29	6.57	5.86	5.00	4.38	4.02	3.66	3.26	2.66

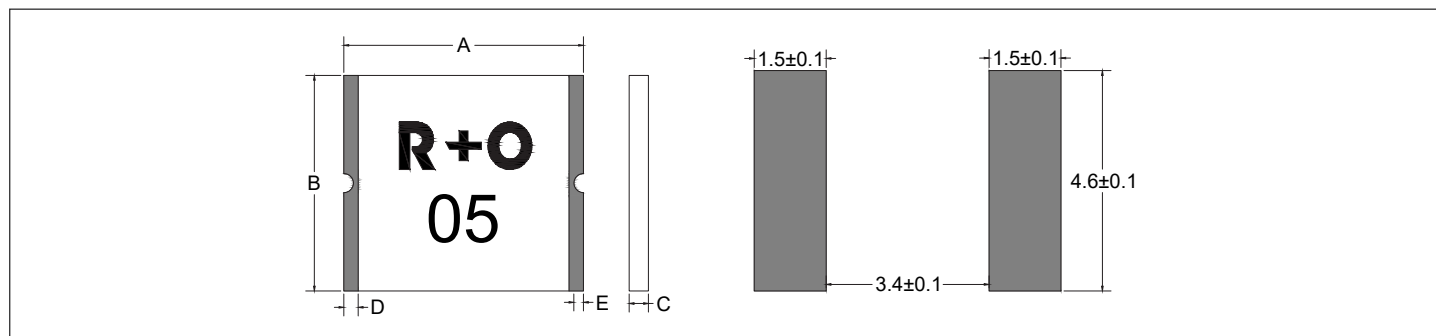
● Environmental Specifications

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 Numbe	DELIVERY MODE	MPQ(PCS)
SMD2018	5.0*4.5	SMD2018-100-XX SMD2018-150-15 SMD2018-200-10	7" REEL	2,500
		Others	7" REEL	1,500

● Physical Dimensions & Recommended Pad Layout



Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD2018-010-60	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-020-60	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-030-60	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-050-60	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-075-60	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-100-15	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-100-33	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-150-15	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-200-10	4.72	5.44	4.22	4.93	0.50	1.20	0.30	0.25
SMD2018-260-24	4.72	5.44	4.22	4.93	0.60	1.40	0.30	0.25
SMD2018-300-16	4.72	5.44	4.22	4.93	0.60	1.40	0.30	0.25
SMD2018-400-6	4.72	5.44	4.22	4.93	0.80	1.60	0.30	0.25
SMD2018-500-6	4.72	5.44	4.22	4.93	1.00	1.60	0.30	0.25

● 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.