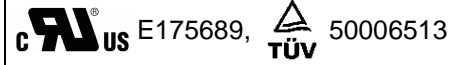




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## SURFACE MOUNT PTC SD (1812) MODEL



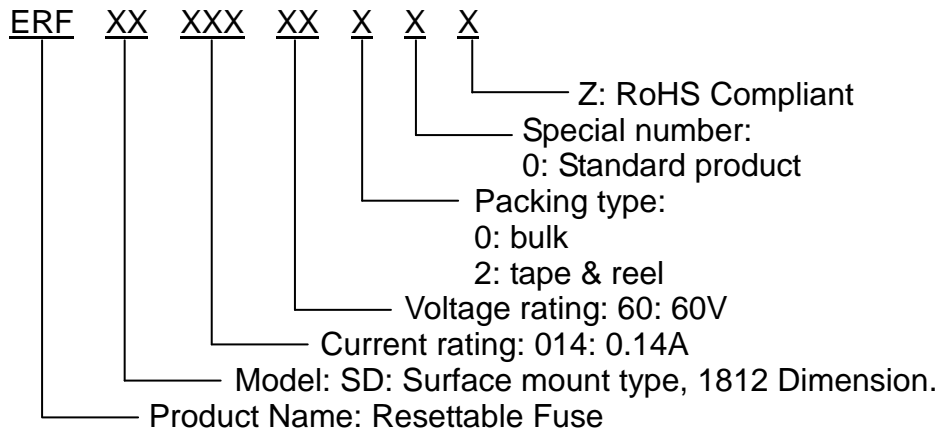
### ■ FEATURES

- Mini surface mount, solid state
- Faster time to trip than standard SMD devices
- Lower resistance than standard SMD devices
- Operation current: 100mA~3.0A
- Maximum voltage: 6V~60Vdc
- Temperature range: -40°C to 85°C
- Tape and reel available on most models

### ■ APPLICATIONS

- ◆ Almost anywhere there High-density boards is a low voltage power supply and a load to be protected including:
  - Computers & peripherals
  - General electronics
  - Automotive applications

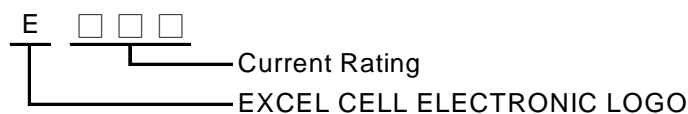
### ■ PART NUMBERING SYSTEM



### ■ Marking system



Example





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## ■ Electrical characteristics(23°C)

Part Number	Hold Current	Trip Current	Rated Voltage	Maximum Current	Typical Power	Max. Time to trip		Resistance Tolerance	
						R <sub>MIN</sub>	R <sub>1MAX</sub>		
	I <sub>H</sub> , A	I <sub>T</sub> , A	V <sub>MAX</sub> , V <sub>dc</sub>	I <sub>MAX</sub> , A	P <sub>d</sub> , W	Amp	Sec	Ω	Ω
SD010-60	0.10	0.30	60	10	0.8	8.0	<0.02	1.600	15.00
SD014-60	0.14	0.30	60	100	0.8	8.0	0.008	1.200	6.500
SD020-30	0.20	0.40	30	100	0.8	8.0	0.02	0.800	5.000
SD020-60	0.20	0.40	60	40	0.8	8.0	0.02	0.800	5.000
SD030-30	0.30	0.60	30	100	0.8	8.0	0.10	0.200	1.750
SD035-16	0.35	0.70	16	100	0.8	8.0	0.10	0.320	1.500
SD035-30	0.35	0.70	30	100	0.6	8.0	0.10	0.320	1.500
SD050-16	0.50	1.00	16	100	0.8	8.0	0.15	0.150	1.000
SD050-30	0.50	1.00	30	100	0.8	8.0	0.15	0.150	1.000
SD075-16	0.75	1.50	16	100	0.8	8.0	0.20	0.110	0.450
SD075-24	0.75	1.50	24	40	1.0	8.0	0.20	0.110	0.290
SD075-33	0.75	1.50	33	40	1.0	8.0	0.20	0.110	0.400
SD110-08	1.10	2.20	8	100	0.8	8.0	0.30	0.040	0.210
SD110-16	1.10	1.95	16	100	0.8	8.0	0.50	0.040	0.180
SD110-24	1.10	2.20	24	100	1.0	8.0	0.50	0.060	0.200
SD125-06	1.25	2.50	6	40	0.8	8.0	0.40	0.050	0.140
SD125-16	1.25	2.50	16	100	0.8	8.0	0.40	0.500	0.140
SD150-06	1.50	3.00	6	100	0.8	8.0	0.50	0.040	0.110
SD150-12	1.50	3.00	12	100	1.0	8.0	0.50	0.040	0.110
SD150-24	1.50	3.00	24	100	1.0	8.0	1.50	0.040	0.120
SD160-06	1.60	3.20	6	100	0.8	8.0	0.50	0.030	0.100
SD160-12	1.60	3.20	12	100	1.0	8.0	1.00	0.030	0.100
SD160-16	1.60	3.20	16	100	1.0	8.0	1.00	0.030	0.100
SD190-06	1.90	4.90	6	100	1.0	8.0	5.00	0.003	0.025
SD200-08	2.00	3.50	8	100	1.0	8.0	2.00	0.020	0.070
SD260-06	2.60	5.00	6	100	1.0	8.0	2.50	0.015	0.047
SD260-13	2.60	5.00	13.2	100	1.3	8.0	5.00	0.015	0.050
SD260-16	2.60	5.00	16	100	1.3	8.0	5.00	0.015	0.050
SD300-06	3.00	5.00	6	100	1.0	8.0	4.00	0.012	0.040

I<sub>H</sub>=Hold current-maximum current at which the device will not trip at 23°C still air.

I<sub>T</sub>=Trip current-minimum current at which the device will always trip at 23°C still air.

V<sub>MAX</sub>=Maximum voltage device can withstand without damage at rated current.

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

P<sub>d</sub>=Typical power dissipated from device when in the tripped state in 23°C still air environment.

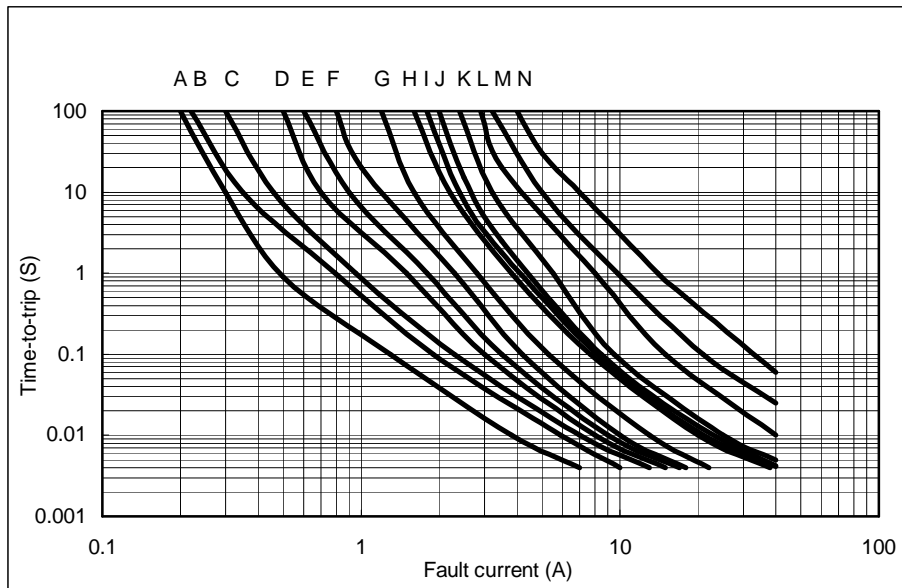
R<sub>MIN</sub>=Minimum device resistance at 23°C.

R<sub>1MAX</sub>=Maximum device resistance at 23°C 1 hour after tripping .



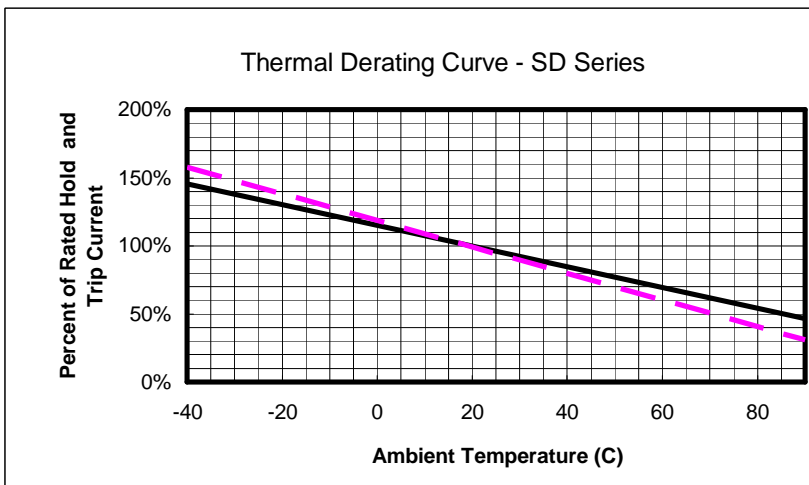
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## ■ Typical time-to-trip-at 23°C



- A=SD010
- B=SD014
- C=SD020
- D=SD030
- E=SD035
- F=SD050
- G=SD075
- H=SD110
- I=SD125
- J=SD150
- K=SD160
- L=SD200
- M=SD260
- N=SD300

## ■ Thermal Derating Curve



- SD 075, 110, 125,  
150, 160, 200,  
260, 300
- - - SD 010, 014, 020,  
030, 035, 050

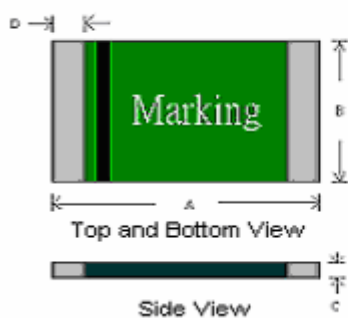
## ■ Standard Package for Reference

P/N	Reel/Tape	P/N	Reel/Tape	P/N	Reel/Tape	P/N	Reel/Tape
SD010-60	2.0K	SD050-30	2.0K	SD125-16	1.5K	SD260-06	2.0K
SD014-60	2.0K	SD075-16	2.0K	SD150-06	2.0K	SD260-13	1.5K
SD020-30	2.0K	SD075-24	1.5K	SD150-12	2.0K	SD260-16	1.5K
SD020-60	2.0K	SD075-33	1.5K	SD150-24	2.0K	SD300-06	1.5K
SD030-30	2.0K	SD110-08	2.0K	SD160-06	2.0K		
SD035-16	2.0K	SD110-16	2.0K	SD160-12	2.0K		
SD035-30	2.0K	SD110-24	1.5K	SD160-16	2.0K		
SD050-16	2.0K	SD125-06	2.0K	SD200-08	2.0K		

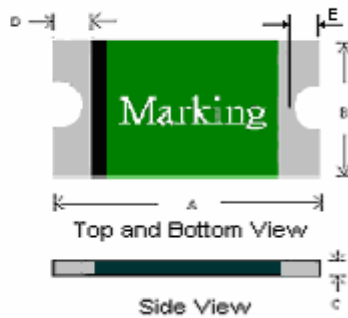
■ **SD Product Dimensions (UNIT: mm)**

Part Number	A		B		C		D		E		Figure
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
SD010-60	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	-----	-----	1
SD014-60	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	-----	-----	1
SD020-30	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	-----	-----	1
SD020-60	4.37	4.73	3.07	3.41	0.60	0.90	0.30	0.95	0.25	0.65	2
SD030-30	4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	0.25	0.65	2
SD035-16	4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	-----	-----	1
SD035-30	4.37	4.73	3.07	3.41	0.40	0.70	0.30	0.95	0.25	0.65	2
SD050-16	4.37	4.73	3.07	3.41	0.35	0.65	0.30	0.95	-----	-----	1
SD050-30	4.37	4.73	3.07	3.41	0.45	0.75	0.30	0.95	0.25	0.65	2
SD075-16	4.37	4.73	3.07	3.41	0.35	0.65	0.30	0.95	-----	-----	1
SD075-24	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2
SD075-33	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2
SD110-08	4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	-----	-----	1
SD110-16	4.37	4.73	3.07	3.41	0.25	0.90	0.30	0.95	-----	-----	1
SD110-24	4.37	4.73	3.07	3.41	0.80	1.30	0.25	0.95	0.25	0.65	2
SD125-06	4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	-----	-----	1
SD125-16	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.95	0.25	0.65	2
SD150-06	4.37	4.73	3.07	3.41	0.25	0.55	0.30	0.95	-----	-----	1
SD150-12	4.37	4.73	3.07	3.41	0.60	1.10	0.25	0.95	0.25	0.65	2
SD150-24	4.37	4.73	3.07	3.41	0.60	1.55	0.25	0.95	0.25	0.65	2
SD160-06	4.37	4.73	3.07	3.41	0.25	0.90	0.30	0.95	-----	-----	1
SD160-12	4.37	4.73	3.07	3.41	0.60	1.35	0.25	0.95	0.25	0.65	2
SD160-16	4.37	4.73	3.07	3.41	0.60	1.35	0.25	0.95	0.25	0.65	2
SD200-08	4.37	4.73	3.07	3.41	0.55	1.20	0.25	0.95	0.25	0.65	2
SD260-06	4.37	4.73	3.07	3.41	0.55	1.20	0.25	0.95	0.25	0.65	2
SD260-13	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2
SD260-16	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2
SD300-06	4.37	4.73	3.07	3.41	0.80	1.55	0.25	0.95	0.25	0.65	2

**Figure 1**

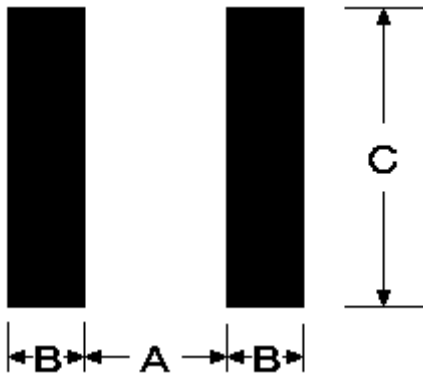


**Figure 2**



## ■ Pad Layouts and Soldering Reflow Recommendations

The dimension in the table below provide the recommended pad layout for each surface mount device



Pad dimensions(millimeters)			
Device	A Nominal	B Nominal	C Nominal
SL MODEL	5.10	2.30	5.60
SD/RSD MODEL	3.45	1.78	3.50
SM/RSM MODEL	2.00	1.00	2.80
SN/RSN MODEL	2.00	1.00	1.90
SR/RSR MODEL	1.20	1.00	1.50
SS/RSS MODEL	0.80	0.60	0.80

## ■ SOLDERING REFLOW (LEAD FREE)

- 1.Suggested reflow methods: IR, vapor phase oven, hot air oven.
- 2.Recommended maximum paste thickness is 0.25mm.
- 3.Devices are not designed to wave soldered to the bottom side of the board.

## ■ CAUTION

If reflow temperatures exceed the recommended standard, devices may not be able to meet the performance requirements.

