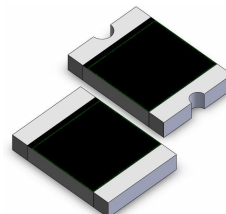


PTC Fuse SM1812R series

Description :

The SM1812R series PTC provides surface mount over-current protection for applications where space is at a premium and resettable protection is desired. (PTC) device to protect electrical circuits against overcurrent conditions with resettable feature, is fully compatible with current industrial standards.

Appearance:



Applicable :

- PC motherboard - plug and play protection
- Mobile phones - battery and port protection
- Game console port protection
- USB peripherals
- Disk drive
- PDA/digital cameras
- Power ports
- General electronics

Packaging :



Part Number	Component Package	Quantity	Packaging
SM1812R	1812	1500 PCS	Tape & Reel

Tape & Reel packaging per EIA481-1

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% typica
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		

Agency Approval and Environmental Compliance

Regulation	Standard
	2002/95/EC
	EN14582

Electrical Characteristics (TA= 25 °C unless otherwise noted)

Part Number	Hold Current	Trip Current	Rated Voltage	Max Current	Typical Power	Maximum Time To Trip		Resistance	
	I_{Hold} (A)	I_{Trip} (A)	V_{Max} (V _{DC})	I_{Max} (A)	P_d (W)	Current (A)	Time (sec.)	R_{Min} (Ω)	R_{1Max} (Ω)
SM1812R010A	0.10	0.30	30.0	100	0.8	0.5	1.50	0.750	15.000
SM1812R014A	0.14	0.34	60.0	100	0.8	1.50	0.15	0.650	6.000
SM1812R020A	0.20	0.40	30.0	100	0.8	8.00	0.02	0.350	5.000
SM1812R030A	0.30	0.60	30.0	100	0.8	8.00	0.10	0.250	3.000
SM1812R050A15	0.50	1.00	15.0	100	0.8	8.00	0.15	0.150	1.000
SM1812R050A33	0.50	1.00	33.0	100	0.8	8.00	0.15	0.150	1.000
SM1812R050A60	0.50	1.00	60.0	100	0.8	8.00	0.15	0.150	1.400
SM1812R075A	0.75	1.50	13.2	100	0.8	8.00	0.20	0.090	0.450
SM1812R110A08	1.10	2.20	8.0	100	0.8	8.00	0.30	0.050	0.250
SM1812R110A16	1.10	2.20	16.0	100	0.8	8.00	0.30	0.050	0.250
SM1812R125A	1.25	2.50	16.0	100	0.8	8.00	0.40	0.050	0.140
SM1812R150A08	1.50	3.00	8.0	100	0.8	8.00	0.50	0.040	0.160
SM1812R150A16	1.50	3.00	16.0	100	0.8	8.00	0.50	0.040	0.160
SM1812R160A	1.60	2.80	8.0	100	0.8	8.00	1.00	0.030	0.130
SM1812R200A	2.00	4.00	8.0	100	0.8	8.00	2.00	0.020	0.100
SM1812R260A	2.60	5.00	8.0	100	0.8	8.00	2.50	0.015	0.050
SM1812R300A	3.00	5.00	8.0	100	0.8	8.00	4.00	0.012	0.040
SM1812R350A	3.50	6.00	6.0	100	2.0	10.00	4.00	0.008	0.030

I_{Hold} : Hold Current. Maximum current device will not trip in 25°C still air.

I_{Trip} : Trip Current. Minimum current at which the device will always trip in 25°C still air.

V_{Max} : Maximum operating 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 dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R_{Min} : Minimum device resistance prior to tripping at 25°C

R_{1Max} : Maximum device resistance is measured one hour post reflow.

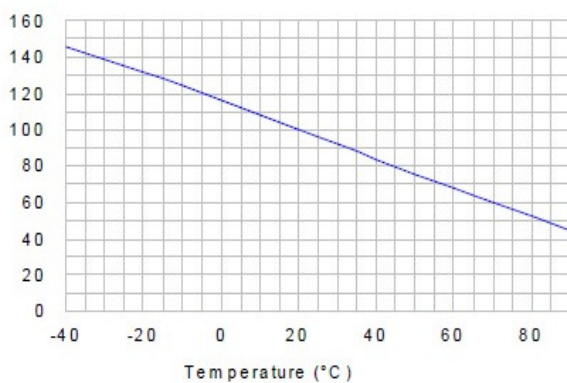
CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

Thermal Derating Chart

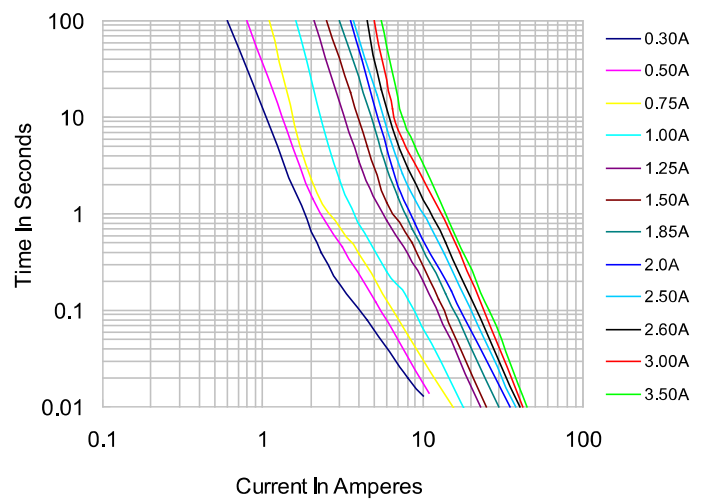
Recommended Hold Current(A) at Ambient Temperature(°C)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SM1812R010A	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
SM1812R014A	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
SM1812R020A	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
SM1812R030A	0.44	0.39	0.35	0.30	0.26	0.23	0.21	0.18	0.15
SM1812R050A15	0.59	0.57	0.55	0.50	0.45	0.43	0.35	0.30	0.23
SM1812R050A33	0.59	0.56	0.55	0.50	0.45	0.42	0.35	0.30	0.22
SM1812R050A60	0.59	0.55	0.55	0.50	0.44	0.43	0.34	0.29	0.21
SM1812R075A	1.10	0.99	0.87	0.75	0.63	0.57	0.49	0.45	0.35
SM1812R110A08	1.60	1.45	1.28	1.10	0.92	0.83	0.71	0.66	0.52
SM1812R110A16	1.59	1.44	1.27	1.10	0.92	0.82	0.70	0.64	0.50
SM1812R125A	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53
SM1812R150A08	2.30	2.05	1.77	1.50	1.23	1.09	0.95	0.82	0.61
SM1812R150A16	2.28	2.03	1.75	1.50	1.21	1.07	0.93	0.79	0.58
SM1812R160A	2.10	1.96	1.88	1.60	1.26	1.12	0.98	0.84	0.63
SM1812R200A	2.88	2.61	2.25	2.00	1.80	1.66	1.45	1.09	0.80
SM1812R260A	3.90	3.42	2.96	2.60	2.33	2.07	1.94	1.35	1.00
SM1812R300A	4.15	3.76	3.46	3.00	2.55	2.28	2.01	1.61	1.33
SM1812R350A	4.84	4.39	4.04	3.50	2.98	2.66	2.35	1.88	1.55

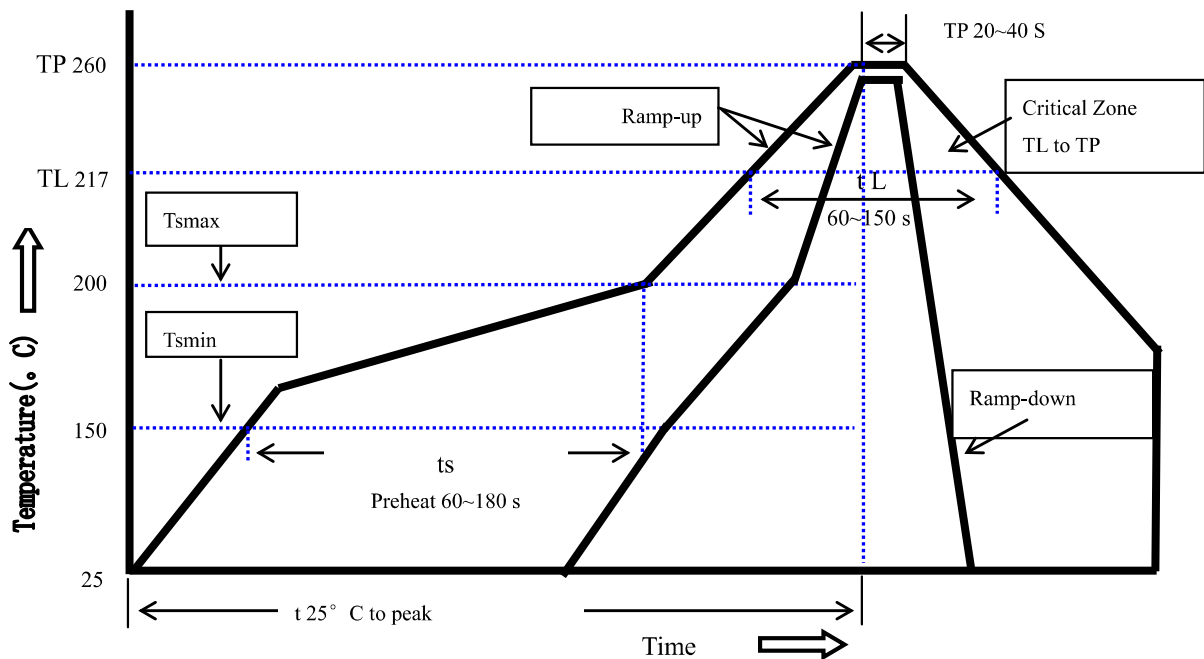
Thermal Derating Curve



Average Time-Current Curve



Soldering Parameters



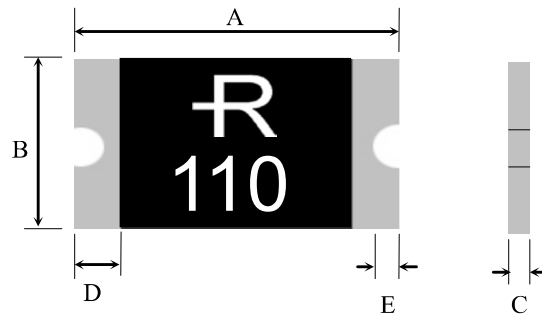
Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (TS max to TP)	3°C/ second max.
Preheat:	
Temperature Min (TS min)	150°C
Temperature Max (TS max)	200°C
Time(TSmin to TS max)	60-180 seconds
Time maintained above:	
Temperature(TL)	217°C
Time (TL)	60-150 seconds
Peak/Classification Temperature(TP):	260°C
Ramp-down Rate:	6°C/ second max.
Time 25°C to Peak Temperature	8 minutes max.
Note: All temperatures refer to of the package, measured on the package body surface.	

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

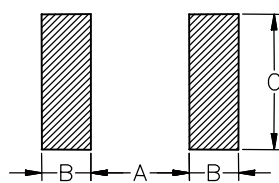
Recommended maximum paste thickness is 0.25mm

Devices can be cleaned using standard industry methods and solvents.

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

Physical Dimensions(mm.)


Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SM1812R010A	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
SM1812R014A	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
SM1812R020A	4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25
SM1812R030A	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
SM1812R050A15	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SM1812R050A33	4.37	4.73	3.07	3.41	0.70	1.30	0.30	0.25
SM1812R050A60	4.37	4.73	3.07	3.41	1.10	1.80	0.30	0.25
SM1812R075A	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SM1812R110A08	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SM1812R110A16	4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
SM1812R125A	4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
SM1812R150A08	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.25
SM1812R150A16	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.25
SM1812R160A	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.25
SM1812R200A	4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25
SM1812R260A	4.37	4.73	3.07	3.41	0.70	1.50	0.30	0.25
SM1812R300A	4.37	4.73	3.07	3.41	0.70	1.50	0.30	0.25
SM1812R350A	4.37	4.73	3.07	3.41	0.70	1.50	0.30	0.25

Recommended Pad Layout


1812

Dimensions	Inches	Millimeters
	Nominal	Nominal
A	0.1358	3.45
B	0.0700	1.78
C	0.1377	3.50

Warning

- Please read this specification before use the product.
- Using of this product must be sure to follow the requirement of this specification ,operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and flame.
- PPTC resettable fuses are intended for occasional over current protection. Application for repeated over current condition or prolonged trip are not anticipated.
- Please avoid contact of PPTC resettable fuses with chemical solvent. Prolonged contact will damage the device performance.
- You are requested not to use our product deviating from the agreed specifications.