PTC - SMD1812 series

Performance Specification

Model	V_{max} (V dc)	I_{max} (A)	I_{hold} @25°C (A)	I_{trip} @25°C (A)	P_d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	$R I_{min}$ (Ω)	$R1_{max}$ (Ω)
SMD1812R010SF	30.0	100	0.10	0.30	0.8	0.5	1.50	0.750	15.000
SMD1812R014SF	60.0	100	0.14	0.34	0.8	1.5	0.15	0.650	6.000
SMD1812R020SF	30.0	100	0.20	0.40	0.8	8.0	0.02	0.350	5.000
SMD1812R030SF	30.0	100	0.30	0.60	0.8	8.0	0.10	0.250	3.000
SMD1812R050SF	15.0	100	0.50	1.00	0.8	8.0	0.15	0.150	1.000
SMD1812R050SF33V	33.0	100	0.50	1.00	0.8	8.0	0.15	0.150	1.000
SMD1812R050SF60V	60.0	100	0.50	1.00	0.8	8.0	0.15	0.150	1.400
SMD1812R075SF	13.2	100	0.75	1.50	0.8	8.0	0.20	0.090	0.450
SMD1812R110SF	8.0	100	1.10	2.20	0.8	8.0	0.30	0.050	0.250
SMD1812R110SF16V	16.0	100	1.10	2.20	0.8	8.0	0.30	0.050	0.250
SMD1812R125SF	16.0	100	1.25	2.50	0.8	8.0	0.40	0.050	0.140
SMD1812R150SF	8.0	100	1.50	3.00	0.8	8.0	0.50	0.040	0.160
SMD1812R150SF16V	16.0	100	1.50	3.00	0.8	8.0	0.50	0.040	0.160
SMD1812R160SF	8.0	100	1.60	2.80	0.8	8.0	1.00	0.030	0.130
SMD1812R200SF	8.0	100	2.00	4.00	0.8	8.0	2.00	0.020	0.100
SMD1812R260SF	8.0	100	2.60	5.00	0.8	8.0	2.50	0.015	0.050
SMD1812R300SF	8.0	100	3.00	5.00	0.8	8.0	4.00	0.012	0.040
SMD1812R350SF	6.0	100	3.50	6.00	2.0	10.0	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 (Imax).

I max = Maximum fault current device can withstand without damage at rated voltage (V max).

Pd = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

Ri min/max = Minimum/Maximum device resistance prior to tripping at 25°C.

R1max = Maximum device resistance is measured one hour post reflow.

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

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		

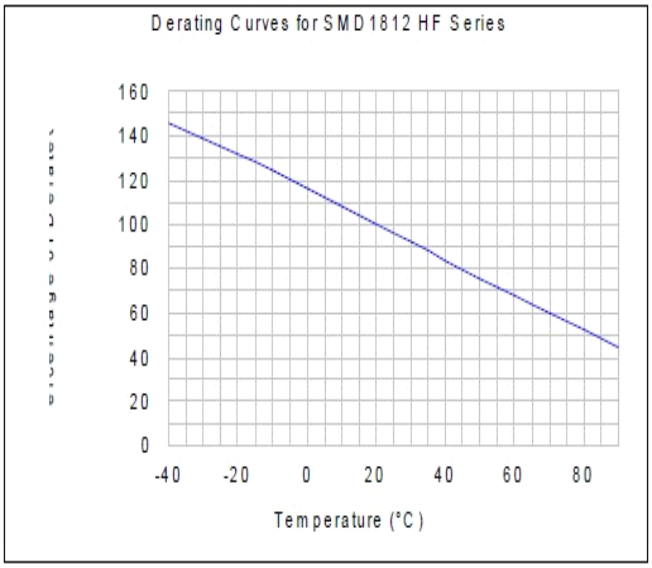
PTC - SMD1812 series

Thermal Derading Chart

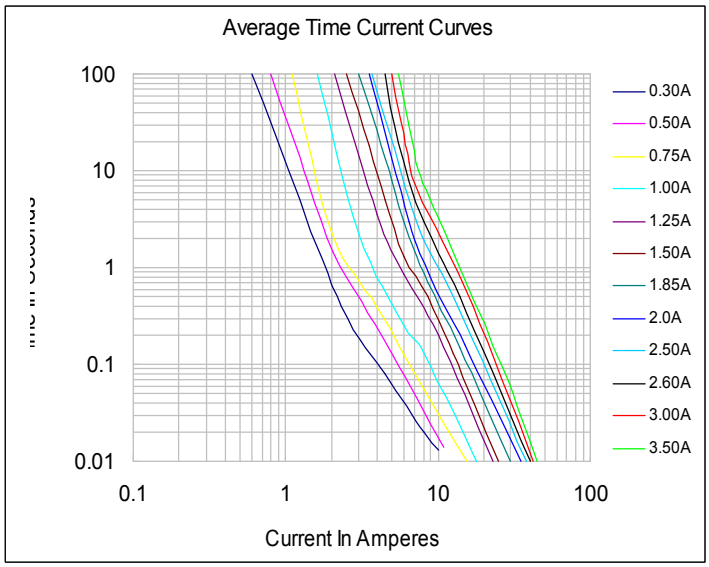
Recommended Hold Current(A) at Ambient Temperature(°C)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD1812R010SF	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
SMD1812R014SF	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
SMD1812R020SF	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
SMD1812R030SF	0.44	0.39	0.35	0.30	0.26	0.23	0.21	0.18	0.15
SMD1812R050SF	0.59	0.57	0.55	0.50	0.45	0.43	0.35	0.30	0.23
SMD182R075SF	1.10	0.99	0.87	0.75	0.63	0.57	0.49	0.45	0.35
SMD1812R110SF	1.60	1.45	1.28	1.10	0.92	0.83	0.71	0.66	0.52
SMD1812R110SF16V	1.59	1.44	1.27	1.10	0.92	0.82	0.70	0.64	0.50
SMD1812R125SF	2.00	1.75	1.52	1.25	1.00	0.95	0.90	0.75	0.53
SMD1812R150SF	2.30	2.05	1.77	1.50	1.23	1.09	0.95	0.82	0.61
SMD1812R150SF16V	2.28	2.03	1.75	1.50	1.21	1.07	0.93	0.79	0.58
SMD1812R160SF	2.10	1.96	1.88	1.60	1.26	1.12	0.98	0.84	0.63
SMD1812R200SF	2.88	2.61	2.25	2.00	1.80	1.66	1.45	1.09	0.80
SMD1812R260SF	3.90	3.42	2.96	2.60	2.33	2.07	1.94	1.35	1.00
SMD1812R300SF	4.15	3.76	3.46	3.00	2.55	2.28	2.01	1.61	1.33
SMD1812R350SF	4.84	4.39	4.04	3.50	2.98	2.66	2.35	1.88	1.55

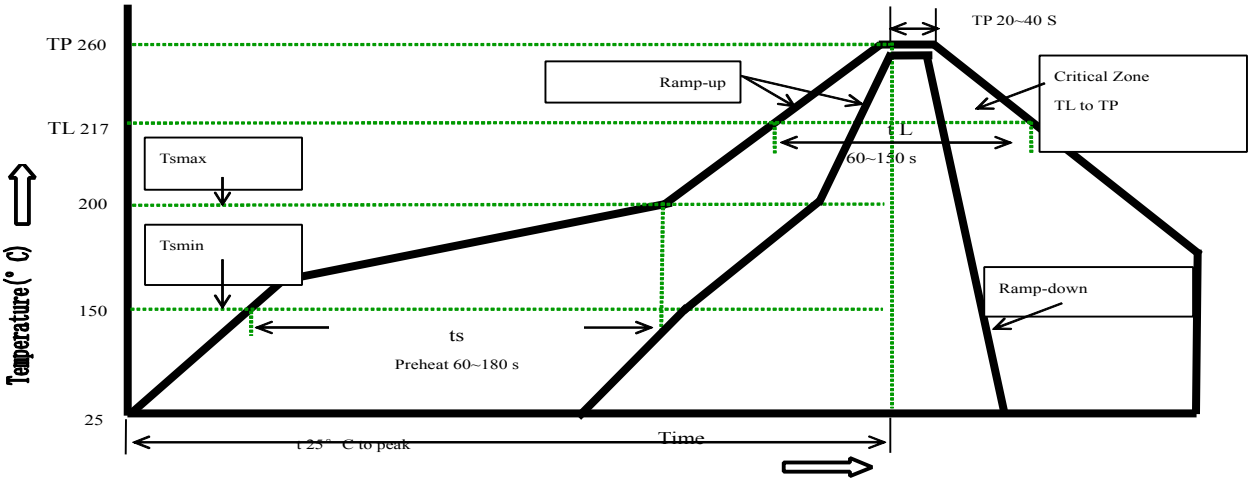
Thermal Derating Curve



Average Time-Current Curve



Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate(Ts max to T p)	3℃/second mac.
Preheat	
-Temperature Min(Ts min)	150℃
-Temperature Max(Ts max)	200℃
-Time(Ts min to Ts max)	60~180 seconds
Time maintained above:	
-Temperature(TL)	217℃
-Time(tL)	60~150 seconds
Peak Temperature(Tp)	260℃
Ramp-Down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max
Storage Condition	0℃~35℃,≤70%RH

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

Recommended maximum paste thickness is 0.25mm

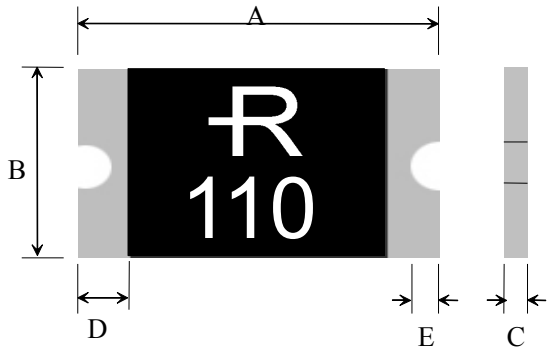
Devices can be cleaned using standard industry methods and solvents.

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.

PTC - SMD1812 series

Physical Dimensions(mm.)



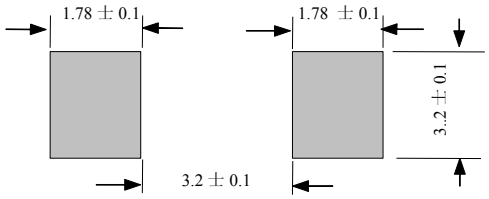
Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD1812R010SF	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
SMD1812R014SF	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
SMD1812R020SF	4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25
SMD1812R030SF	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
SMD1812R050SF	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SMD1812R050SF33V	4.37	4.73	3.07	3.41	0.70	1.30	0.30	0.25
SMD1812R050SF60V	4.37	4.73	3.07	3.41	1.10	1.80	0.30	0.25
SMD182R075SF	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SMD1812R110SF	4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
SMD1812R110SF16V	4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
SMD1812R125SF	4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
SMD1812R150SF	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.25
SMD1812R150SF16V	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.25
SMD1812R160SF	4.37	4.73	3.07	3.41	0.40	1.20	0.30	0.25
SMD1812R200SF	4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25
SMD1812R260SF	4.37	4.73	3.07	3.41	0.50	1.50	0.30	0.25
SMD1812R300SF	4.37	4.73	3.07	3.41	0.50	1.50	0.30	0.25
SMD1812R350SF	4.37	4.73	3.07	3.41	0.50	1.50	0.30	0.25

Termination Pad Characteristics

Terminal pad materials：Tin-plated Nickel-Copper

Terminal pad solder ability：Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3.

Recommended Pad Layout (mm.)

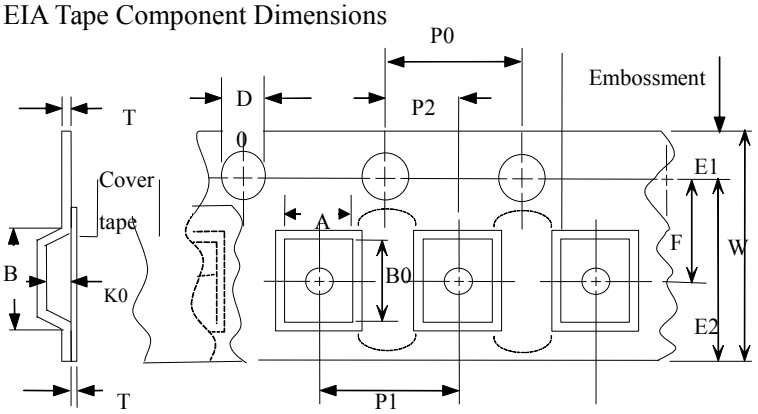


PTC - SMD1812 series

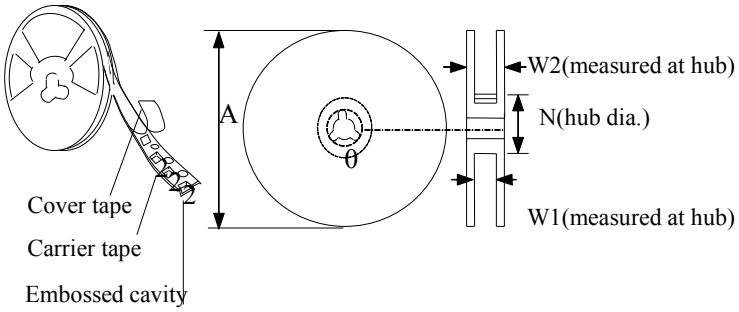
Tape And Reel Specifications (mm)

Governing Specifications	EIA 481-1
W	12 ± 0.3
P0	4.0 ± 0.10
P1	8.0 ± 0.10
P2	2.0 ± 0.05
A0	3.5 ± 0.10
B0	5.1 ± 0.10
B1max.	5.9
D0	1.50 + 0.1, -0
F	5.5 ± 0.05
E1	1.75 ± 0.10
E2min.	10.25
T	0.6
T1max.	0.1
K0	0.9 ± 0.1
Leader min.	390
Trailer min.	160
Reel Dimensions	
A max.	178
N min.	60
W1	12.4 ± 0.5
W2	18.4

EIA Tape Component Dimensions



EIA Reel Dimensions



Storage And Handling

· Storage conditions：40°C max, 70% R.H.

· Devices may not meet specified performance if storage conditions are exceeded.

Part Number System

SMD 1812 R □□□ S F □□ V

- V — special voltage Rating(Optional)
- F — Lead-Free
- S — Tin-plated Nickel-Copper
- □□□ — Holding Current Rating
- R
- 1812 — Device Dimensions: Length/width(Unit:1/100 inch) Size 4532 mm / 1812 inch
- SMD — Surface Mount Device