

APPROVAL SHEET

MODEL NO.: _____

CUSTOMER:

CUSTOMER'S APPROVAL:

AUTHORIZED SIGNATURE/STAMP

DATE

MANUFACTURER:



Submitted by:

Approved by:

Date:

SMD1210 HF Series Surface Mount PTC Devices

Performance Specification

Model	Marking	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)	R _{1max} (Ω)
SMD1210R005SF	RA	30.0	100	0.05	0.15	0.6	0.25	1.50	2.800	50.000
SMD1210R010SF	R1	30.0	100	0.10	0.30	0.6	0.50	0.60	0.800	15.000
SMD1210R020SF	R2	30.0	100	0.20	0.40	0.6	8.0	0.02	0.400	5.000
SMD1210R035SF	R3	6.0	100	0.35	0.75	0.6	8.0	0.20	0.200	1.300
SMD1210R035SF16v	R3	16.0	100	0.35	0.75	0.6	8.0	0.20	0.200	1.300
SMD1210R050SF	R5	13.2	100	0.50	1.00	0.6	8.0	0.10	0.180	0.900
SMD1210R050SF24v	R5	24.0	100	0.50	1.00	0.6	8.0	0.10	0.180	0.900
SMD1210R075SF	R7	6.0	100	0.75	1.50	0.6	8.0	0.10	0.070	0.400
SMD1210R075SF16v	R7	16.0	100	0.75	1.50	0.6	8.0	0.10	0.070	0.400
SMD1210R110SF	R0	6.0	100	1.10	2.20	0.6	8.0	0.30	0.050	0.210
SMD1210R150SF	RX	6.0	100	1.50	3.00	0.6	8.0	0.50	0.030	0.110
SMD1210R150SF12v	RX	12.0	100	1.50	3.00	0.6	8.0	0.50	0.030	0.110
SMD1210R175SF	RY	6.0	100	1.75	3.50	0.8	8.0	0.60	0.020	0.080
SMD1210R200SF	RZ	6.0	100	2.00	4.00	0.8	8.0	1.00	0.015	0.070
SMD1210R260SF	R—	6.0	100	2.60	5.20	0.8	8.0	2.00	0.010	0.060

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}).

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.

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

R_{i min/max} = Minimum/Maximum 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.

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		

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Agency Approval and Environmental Compliance

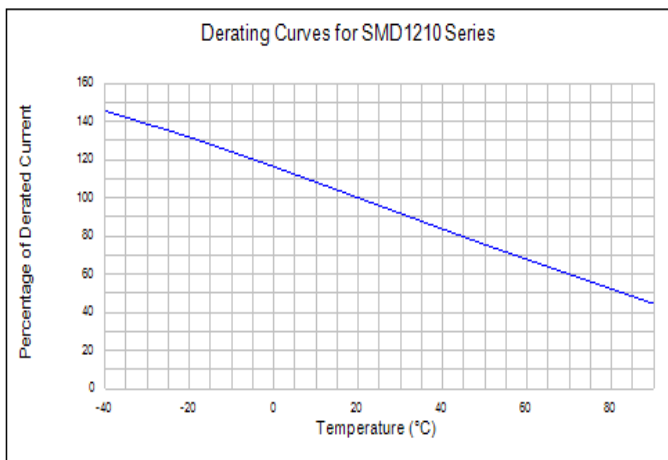
Agency	File Number	Regulation	Standard
UL	pending		2002/95/EC
TUV	pending		EN14582

Thermal Derating Chart

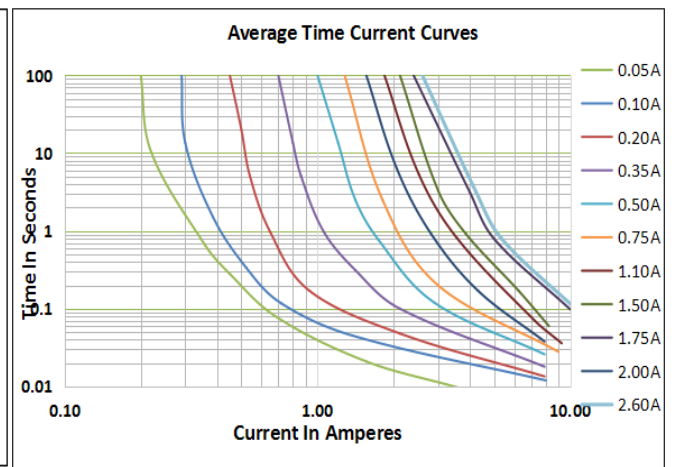
Recommended Hold Current(A) at Ambient Temperature(°C)

Model	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD1210R005SF	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
SMD1210R010SF	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.03
SMD1210R020SF	0.29	0.26	0.22	0.20	0.16	0.14	0.13	0.11	0.08
SMD1210R035SF	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210R050SF	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210R075SF	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210R110SF	1.69	1.48	1.29	1.10	0.88	0.76	0.65	0.57	0.43
SMD1210R150SF	2.13	1.92	1.71	1.50	1.26	1.14	1.01	0.89	0.71
SMD1210R175SF	2.54	2.30	2.02	1.75	1.47	1.33	1.18	1.05	0.86
SMD1210R200SF	2.90	2.63	2.31	2.00	1.68	1.52	1.35	1.20	0.98
SMD1210R260SF	3.43	3.22	2.93	2.60	2.23	2.03	1.87	1.57	1.35

Thermal Derating Curve

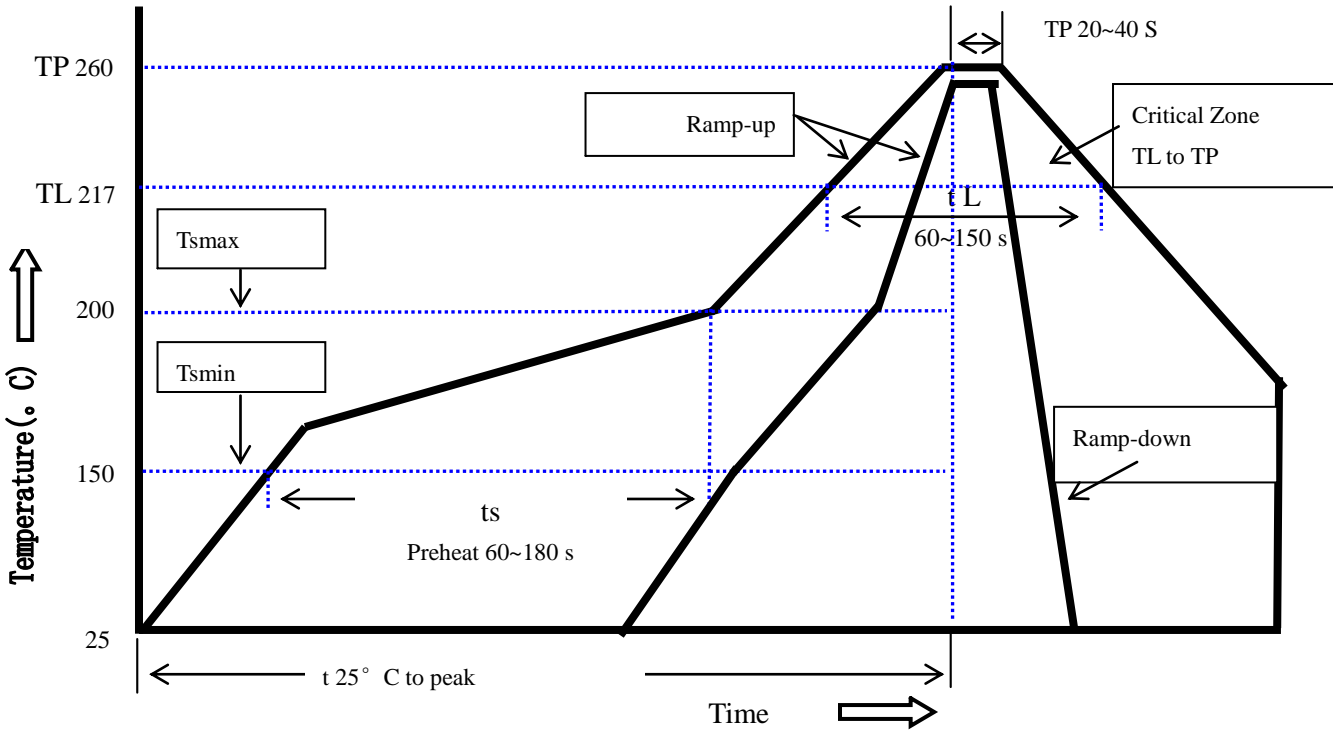


Average Time-Current Curve



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Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate(Ts max to T p)	3°C/second max.
Preheat	
-Temperature Min(Ts min)	150°C
-Temperature Max(Ts max)	200°C
-Time(Ts min to Ts max)	60~180 seconds
Time maintained above:	
-Temperature(TL)	217°C
-Time(tL)	60~150 seconds
Peak Temperature(Tp)	260°C
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max
Storage Condition	0°C~35°C,30%~60%RH

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

Recommended maximum paste thickness is 0.25mm

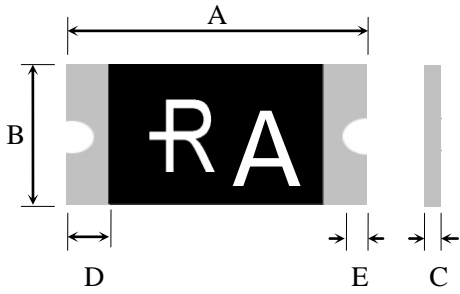
Devices can be cleaned using standard industry methods and solvents.

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.

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Physical Dimensions(mm.)



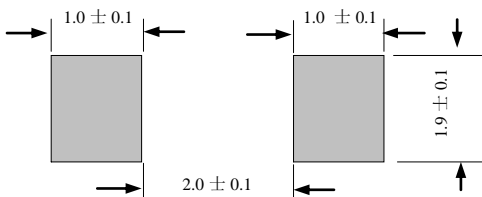
Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
SMD1210R005SF	3.00	3.50	2.35	2.80	0.60	1.20	0.30	0.10
SMD1210R005SF60V	3.00	3.50	2.35	2.80	0.60	1.20	0.30	0.10
SMD1210R010SF	3.00	3.50	2.35	2.80	0.60	1.20	0.30	0.10
SMD1210R010SF60V	3.00	3.50	2.35	2.80	0.60	1.20	0.30	0.10
SMD1210R020SF	3.00	3.50	2.35	2.80	0.50	1.10	0.30	0.10
SMD1210R020SF60V	3.00	3.50	2.35	2.80	0.50	1.10	0.30	0.10
SMD1210R035SF	3.00	3.50	2.35	2.80	0.50	1.10	0.30	0.10
SMD1210R035SF16V	3.00	3.50	2.35	2.80	0.50	1.10	0.30	0.10
SMD1210R050SF	3.00	3.50	2.35	2.80	0.50	1.10	0.30	0.10
SMD1210R075SF	3.00	3.50	2.35	2.80	0.50	1.10	0.30	0.10
SMD1210R110SF	3.00	3.50	2.35	2.8	0.50	1.10	0.30	0.10
SMD1210R150SF	3.00	3.50	2.35	2.80	0.50	1.20	0.30	0.10
SMD1210R175SF	3.00	3.50	2.35	2.80	0.80	1.40	0.30	0.10
SMD1210R200SF	3.00	3.50	2.35	2.80	0.80	1.40	0.30	0.10
SMD1210R260SF	3.00	3.50	2.35	2.80	1.00	1.60	0.30	0.10

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.)



Packaging Quantity

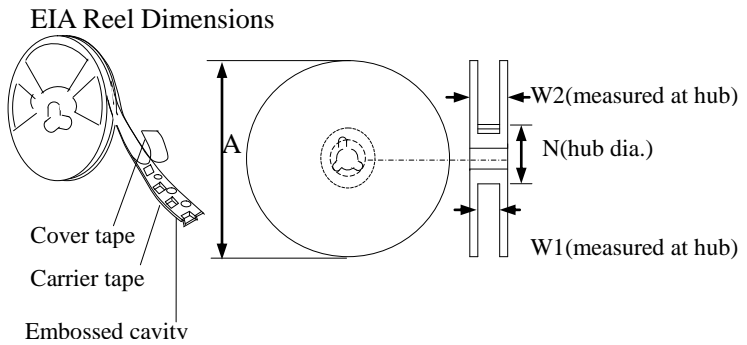
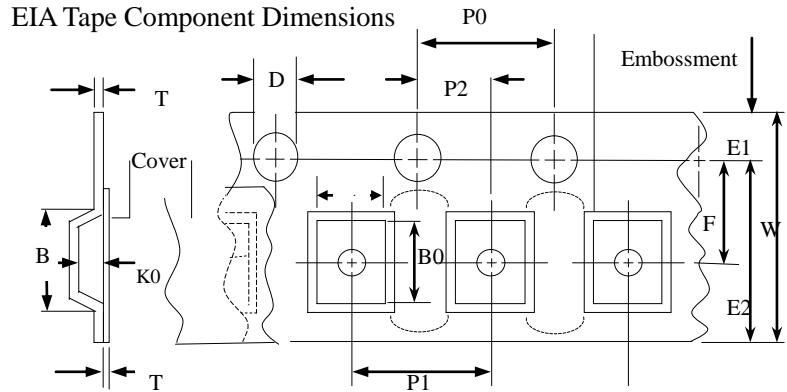
Part Number	Quantity
SMD1210	4000 pcs/reel

Tape & reel packaging per EIA481-1

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Tape And Reel Specifications (mm)

Governing Specifications		EIA 481-1
W		8.15 ± 0.2
P0		4.0 ± 0.10
P1		4.0 ± 0.10
P2		2.0 ± 0.05
A0		2.82 ± 0.10
B0		3.52 ± 0.10
B1max.		4.35
D0		1.50 + 0.1, -0
F		3.5 ± 0.05
E1		1.75 ± 0.10
E2min.		6.25
T		0.6
T1max.		0.1
K0		1.04 ± 0.1
Leader min.		390
Trailer min.		160
Reel Dimensions		
A max.		178
N min.		60
W1		9 ± 0.5
W2		12.6 ± 0.5



Storage And Handling

· Storage conditions: 35°C max, 30%~60% R.H.

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

Part Number System

SMD 1210 R □□□ S F □□ V

