

## »Performance Specification

Model	I-hold	I-trip	Vmax	Imax	Pd typ	Max. Time to trip		R0 min	R1max
						Current	Time		
	(A)	(A)	(Vdc)	(A)	(W)	(A)	(Sec.)	(Ohm)	(Ohm)
SMD1210-005/30N	0.05	0.15	30.00	10.00	0.60	0.25	1.50	2.80	50.00
SMD1210-005/60N	0.05	0.15	60.00	10.00	0.60	0.25	1.50	2.80	50.00
SMD1210-010/30N	0.10	0.30	30.00	10.00	0.60	0.50	1.50	1.50	15.00
SMD1210-010/60N	0.10	0.30	60.00	10.00	0.60	0.50	1.50	1.50	15.00
SMD1210-020/24N	0.20	0.40	24.00	10.00	0.60	8.00	0.02	0.80	5.00
SMD1210-020/30N	0.20	0.40	30.00	10.00	0.60	8.00	0.02	0.80	5.00
SMD1210-035/6N	0.35	0.70	6.00	100.00	0.60	8.00	0.20	0.25	1.30
SMD1210-035/24N	0.35	0.70	24.00	40.00	0.60	8.00	0.20	0.25	1.30
SMD1210-035/30N	0.35	0.70	30.00	40.00	0.60	8.00	0.20	0.20	1.50
SMD1210-035/30SN	0.35	0.70	30.00	40.00	0.60	8.00	0.20	0.25	1.30
SMD1210-050/13.2N	0.50	1.00	13.20	100.00	0.60	8.00	0.10	0.18	0.90
SMD1210-050/16N	0.50	1.00	16.00	100.00	0.60	8.00	0.10	0.18	0.90
SMD1210-050/24N	0.50	1.00	24.00	100.00	0.60	8.00	0.10	0.18	0.90
SMD1210-050/30N	0.50	1.00	30.00	40.00	0.60	8.00	0.15	0.18	1.00
SMD1210-075/6N	0.75	1.50	6.00	100.00	0.60	8.00	0.10	0.10	0.45
SMD1210-075/13.2N	0.75	1.50	13.20	100.00	0.60	8.00	0.10	0.10	0.45
SMD1210-075/16N	0.75	1.50	16.00	100.00	0.60	8.00	0.10	0.10	0.45
SMD1210-075/24N	0.75	1.50	24.00	100.00	0.60	8.00	0.10	0.10	0.45
SMD1210-110/8N	1.10	2.20	8.00	100.00	0.60	8.00	0.10	0.05	0.21
SMD1210-110/12N	1.10	2.20	12.00	100.00	0.60	8.00	0.10	0.05	0.21
SMD1210-110/16N	1.10	2.20	16.00	100.00	0.60	8.00	0.10	0.05	0.21
SMD1210-110/16SN	1.10	2.20	16.00	100.00	0.60	8.00	0.10	0.05	0.21
SMD1210-110/24N	1.10	2.20	24.00	100.00	0.60	8.00	0.10	0.05	0.21
SMD1210-150/6N	1.50	3.00	6.00	100.00	0.80	8.00	0.30	0.03	0.11
SMD1210-150/8N	1.50	3.00	8.00	100.00	0.80	8.00	0.30	0.03	0.11
SMD1210-150/12N	1.50	3.00	12.00	100.00	0.80	8.00	0.30	0.03	0.11
SMD1210-150/16N	1.50	3.00	16.00	100.00	0.80	8.00	0.30	0.03	0.11
SMD1210-175/6N	1.75	3.50	6.00	100.00	0.80	8.00	0.60	0.02	0.09
SMD1210-175/12N	1.75	3.50	12.00	100.00	0.80	8.00	0.60	0.02	0.09
SMD1210-175/16N	1.75	3.50	16.00	100.00	0.80	8.00	0.60	0.02	0.09
SMD1210-200/6N	2.00	4.00	6.00	100.00	0.80	8.00	1.00	0.015	0.090
SMD1210-200/12N	2.00	4.00	12.00	100.00	0.80	8.00	1.00	0.015	0.090
SMD1210-200/16N	2.00	4.00	16.00	100.00	0.80	8.00	1.00	0.015	0.090

I-hold: Holding Current: maximum current at which the device will not trip in 25°C still air.

I-trip: Tripping Current: minimum current at which the device will trip in 25°C still air.

Vmax: Maximum voltage device can withstand without damage at rated current(Imax).

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

Pd typ: Typical power dissipated from device when in the tripped state at 25°C still air.

R0 min: Minimum resistance of device in initial (un-soldered) state.

R1 max: Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

## »Environmental Specifications

Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85 °C, 1000 hours ; ±5 % typical resistance change
Humidity Aging	+85 °C, 85 % R.H. 1000 hours; ±5 % typical resistance change
Thermal Shock	MIL-STD-202, Method 107; +85 °C to -40 °C, 20 times;-30 % typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 ; No change
Vibration	MIL-STD-883, Method 2007, Condition A; No change
Moisture Sensivity Level	Level 1, J-STD-020
Storage Conditions	+40 °C Max. 70% RH Max. Packed in original packaging.

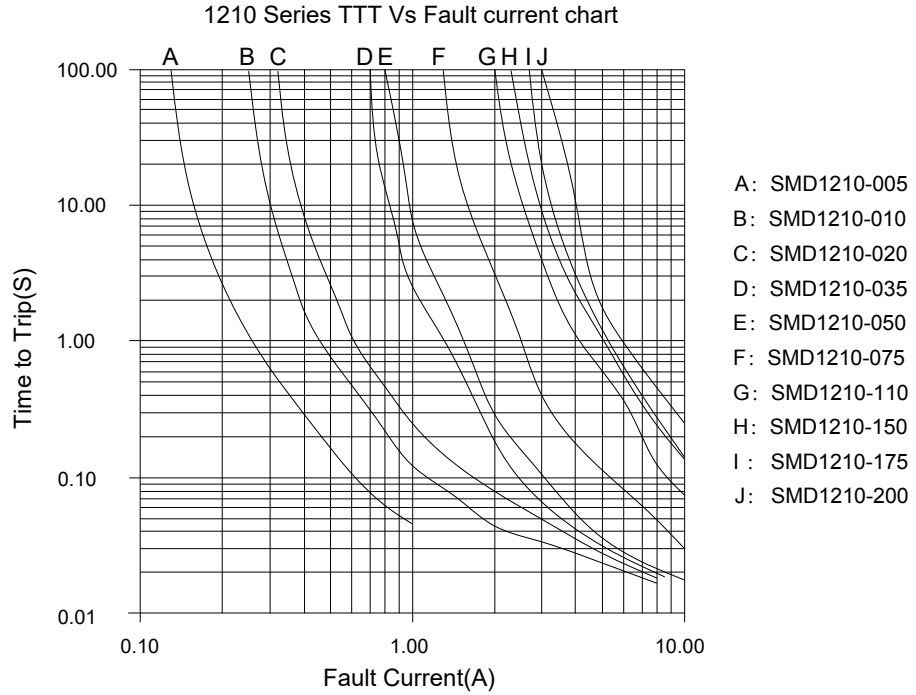
## »Test Procedures And Requirements

No.	Test	Test Conditions	Accept/Reject Criteria
1	R0 min	Resistance measurement at 25°C	$R0min \leq R \leq R1max$
2	R1 max	Resistance measurement one hour after post trip	$R0min \leq R \leq R1max$
3	I-hold	Hold rated current 1800 second without trip, @ 25°C	No trip
4	I-trip	Device must trip within 900 second under rated current, @25°C	Trip
5	Max. time to trip	At specified current, 25°C	$T \leq \text{max. time to trip (seconds)}$
6	Trip Cycle Life	$V_{max}$ , $I_{max}$ , 100 cycles	No arcing or burning
7	Trip Endurance	$V_{max}$ , $I_{max}$ 24 hours	No arcing or burning
8	Solderability	ANSI/J-STD-002	95 % min. coverage

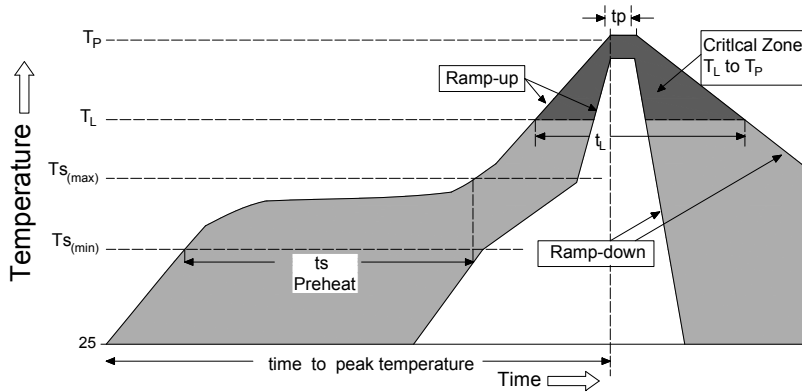
**»Thermal Derating Chart** Recommended Hold Current(A) at Ambient Temperature(°C)

Model	Ambient Operating Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD1210-005/30N	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
SMD1210-005/60N	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
SMD1210-010/30N	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.04
SMD1210-010/60N	0.16	0.14	0.12	0.10	0.08	0.07	0.06	0.05	0.04
SMD1210-020/24N	0.29	0.26	0.22	0.20	0.16	0.14	0.13	0.11	0.08
SMD1210-020/30N	0.29	0.26	0.22	0.20	0.16	0.14	0.13	0.11	0.08
SMD1210-035/6N	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210-035/24N	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210-035/30N	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210-035/30SN	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210-050/13.2N	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210-050/16N	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210-050/24N	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210-050/30N	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210-075/6N	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210-075/13.2N	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210-075/16N	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210-075/24N	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210-110/8N	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210-110/12N	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210-110/16N	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210-110/16SN	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210-110/24N	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210-150/6N	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
SMD1210-150/8N	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
SMD1210-150/12N	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
SMD1210-150/16N	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
SMD1210-175/6N	2.45	2.22	2.01	1.75	1.45	1.26	1.10	0.98	0.80
SMD1210-175/12N	2.45	2.22	2.01	1.75	1.45	1.26	1.10	0.98	0.80
SMD1210-175/16N	2.45	2.22	2.01	1.75	1.45	1.26	1.10	0.98	0.80
SMD1210-200/6N	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10
SMD1210-200/12N	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10
SMD1210-200/16N	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

»Typical time to trip at 25°C



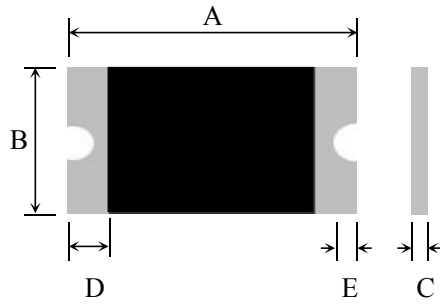
»Soldering Parameters



Profile Feature		Pb-Free Assembly
Average Ramp-Up Rate ( $T_{S(max)}$ to $T_P$ )		3°C/second max
Pre Heat:	Temperature Min ( $T_{S(min)}$ )	150°C
	Temperature Max ( $T_{S(max)}$ )	200°C
	Time (Min to Max) ( $t_s$ )	60 – 180 secs
Time Maintained Above:	Temperature ( $T_L$ )	217°C
	Temperature ( $t_L$ )	60 – 150 seconds
Peak / Classification Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max.

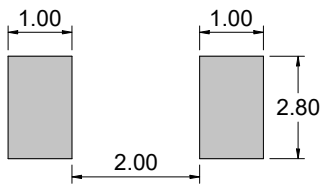
- ◆All temperature refer to topside of the package, measured on the package body surface
- ◆If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements
- ◆Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead
- ◆Recommended maximum paste thickness is 0.25mm (0.010inch)
- ◆Devices can be cleaned using standard industry methods and solvents

»Physical Dimensions(mm)



Model	A		B		C		D		E
	Min	Max	Min	Max	Min	Max	Min	Max	Min
SMD1210-005/30N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-005/60N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-010/30N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-010/60N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-020/24N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-020/30N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-035/6N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-035/24N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-035/30N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-035/30SN	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-050/13.2N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-050/16N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-050/24N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-050/30N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-075/6N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-075/13.2N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-075/16N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-075/24N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-110/8N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-110/12N	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-110/16N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-110/16SN	3.00	3.43	2.35	2.80	0.35	0.85	0.25	0.75	0.10
SMD1210-110/24N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-150/6N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-150/8N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-150/12N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-150/16N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-175/6N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-175/12N	3.00	3.43	2.35	2.80	0.85	1.25	0.25	0.75	0.10
SMD1210-175/16N	3.00	3.43	2.35	2.80	0.85	1.25	0.25	0.75	0.10
SMD1210-200/6N	3.00	3.43	2.35	2.80	0.65	1.15	0.25	0.75	0.10
SMD1210-200/12N	3.00	3.43	2.35	2.80	0.85	1.25	0.25	0.75	0.10
SMD1210-200/16N	3.00	3.43	2.35	2.80	0.85	1.25	0.25	0.75	0.10

»Recommended Pad Layout (mm)&Physical Specifications

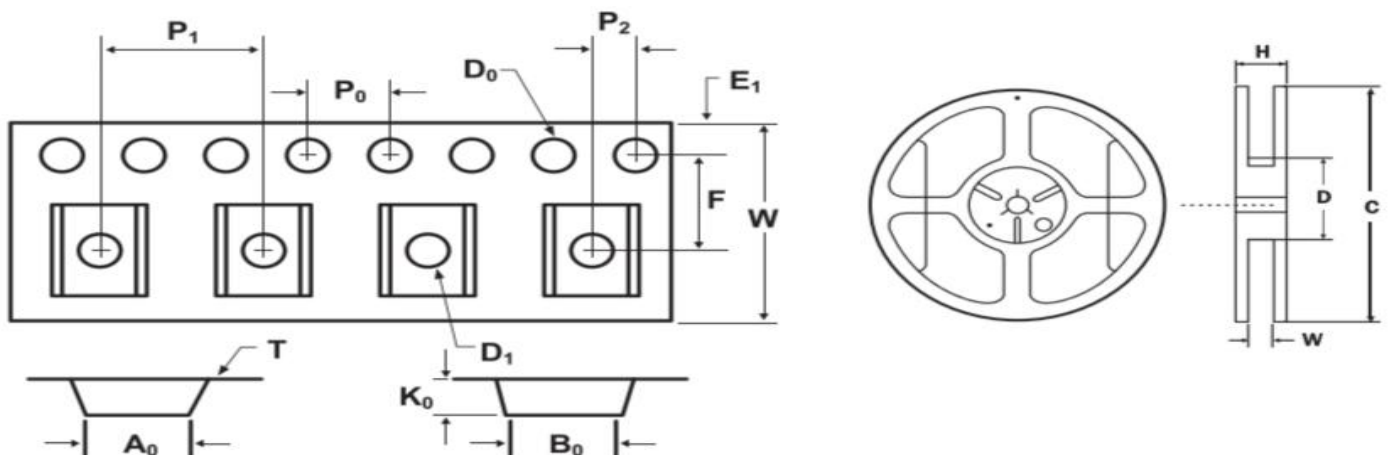


Terminal Material	Tin-Plated Nickel-Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3.

»Tape And Reel Specifications (mm)&Packaging quantity

TAPE SPECIFICATIONS: EIA-481-1 (mm)	
Item	SMD1210-035/6N SMD1210-035/24N SMD1210-005/30N SMD1210-005/60N
	SMD1210-035/30SN SMD1210-050/13.2N SMD1210-010/30N SMD1210-010/60N
	SMD1210-050/16N SMD1210-050/24N SMD1210-020/24N SMD1210-020/30N
	SMD1210-075/6N SMD1210-075/13.2N SMD1210-035/30N SMD1210-050/30N
	SMD1210-075/16N SMD1210-110/8N SMD1210-075/24N SMD1210-110/16N
	SMD1210-110/12N SMD1210-110/16SN SMD1210-110/24N SMD1210-150/6N
	SMD1210-150/8N SMD1210-150/12N
	SMD1210-150/16N SMD1210-175/6N
	SMD1210-175/12N SMD1210-175/16N
	SMD1210-200/6N SMD1210-200/12N
	SMD1210-200/16N
	W
F	3.50±0.05
E1	1.75±0.10
D0	1.55±0.05
D1	1.00 min
P0	4.0±0.10
P1	4.0±0.10
P2	2.0±0.05
A0	3.00±0.10
B0	3.50±0.10
T	0.25±0.05
K0	0.85±0.10
Leader	390mm
Trailer	160mm
Q'ty	4,000pcs/Reel

REEL DIMENSIONS: EIA-481-1 (mm)	
C	Ø178±1.0
D	Ø60.2±0.5
W	9.0±1.5
H	11.0±0.5



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