

## Description

The 1210 series provides miniature surface mount resettable overcurrent protection with holding current from 0.05A to 2.0A. This series is suitable for wide range of applications in modern electronics where space limited.

## Features

- \* I(hold):0.05~2.0A
- \* Very high voltage surge capabilities
- \* Available in lead-free version
- \* Fast response to fault current
- \* RoHS compliant, Lead-Free and Halogen-Free
- \* Low resistance
- \* Compact design saves board space
- \* Compatible with high temperature solders

## Application

- \* USB peripherals
- \* Disk drives
- \* CD-ROMs
- \* General electronics
- \* Disk drives
- \* Set-top-box and HDMI
- \* Mobile Internet Device (MID)
- \* PADs/digital cameras
- \* Game console port protection
- \* Plug and play protection for motherboards and peripherals
- \* Mobile phones-battery and port protection

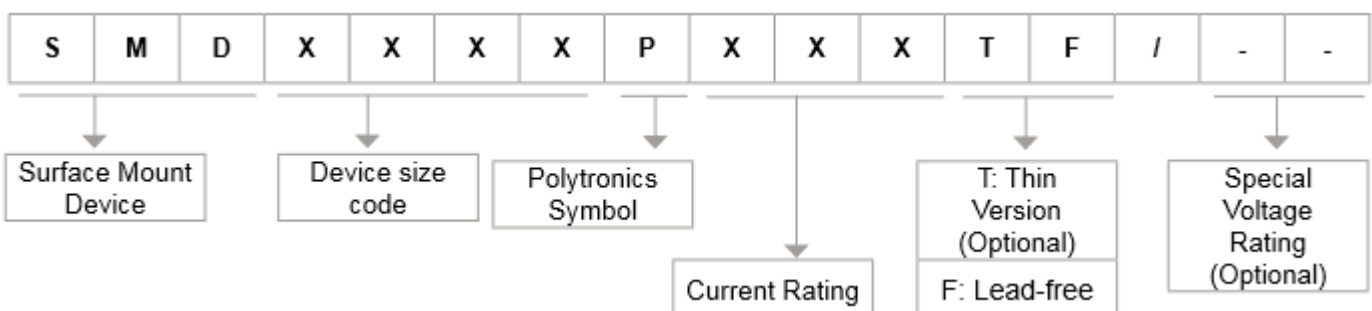
## Device Diagram



## Ordering Information

Part Number	Quantity	Packaging Option
SMD1210	4000PCS	Tape & Reel

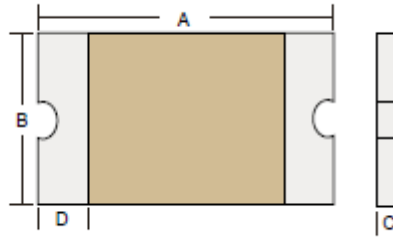
## Product Name



# SMD1210 Series

## Lead style code

Dimensions  
(mm)



Type Number	I <sub>hold</sub>	I <sub>trip</sub>	Maximum Time To Trip		V <sub>max</sub>	I <sub>max</sub>	P <sub>d</sub> type	R <sub>min</sub>	R <sub>1max</sub>	Package	Package Dimensions (mm)						
	A	A	Current A	Time (Sec.)	VDC	A	W	Ω	Ω		A		B		C		D
	min	max	min	max	min	max	min	max	min		max	min	max	min	max		
SMD1210P005TF	0.05	0.15	0.25	1.5	30	100	0.6	2.8	50	1210	3	3.43	2.35	2.8	0.3	0.8	0.3
SMD1210P010TF	0.1	0.3	0.5	0.6	30	100	0.6	0.8	15	1210	3	3.43	2.35	2.8	0.3	0.8	0.3
SMD1210P020TF	0.2	0.4	8.0	0.2	30	100	0.6	0.4	5	1210	3	3.43	2.35	2.8	0.3	0.8	0.3
SMD1210P035TF	0.35	0.75	8.0	0.2	6	100	0.6	0.2	1.3	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P035TF/16	0.35	0.75	8.0	0.2	16	100	0.6	0.2	1.3	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P050TF	0.5	1.0	8.0	0.1	13.2	100	0.6	0.18	0.9	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P050TF/24	0.5	1.0	8.0	0.1	24	100	0.6	0.18	0.9	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P075TF	0.75	1.5	8.0	0.1	6	100	0.6	0.07	0.4	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P075TF/16	0.75	1.5	8.0	0.1	16	100	0.6	0.07	0.4	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P100TF	1.0	2.2	8.0	0.3	13.2	100	0.6	0.05	0.21	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P110TF	1.1	2.2	8.0	0.3	6	100	0.6	0.05	0.21	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P110TF/16	1.1	2.2	8.0	0.3	16	100	0.6	0.05	0.21	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P150TF	1.5	3.0	8.0	0.5	6	100	0.8	0.03	0.11	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P150TF/16	1.5	3.0	8.0	0.5	6	100	0.8	0.03	0.11	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P175TF	1.75	3.6	8.0	0.6	6	100	0.8	0.02	0.08	1210	3	3.43	2.35	2.8	0.3	1	0.3
SMD1210P200TF	2.0	4.0	8.0	1.0	6	100	0.8	0.015	0.07	1210	3	3.43	2.35	2.8	0.3	1	0.3

1) I<sub>hold</sub>=Hold current: maximum current device will pass without tripping in 25°C still air.

2) I<sub>trip</sub>=Trip current: minimum current at which the device will trip in 25°C still air.

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

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

5) P<sub>d</sub> type=Typical power dissipated from device when in the tripped state at 25°C still air.

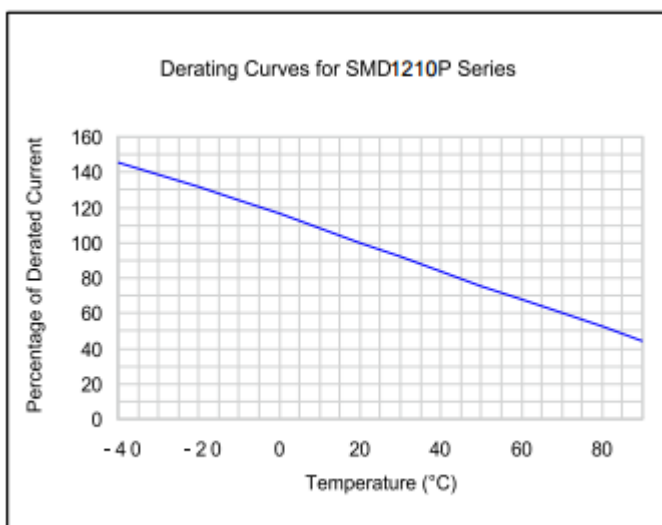
6) R<sub>min</sub>=Minimum resistance of device in initial (un-soldered) state.

7) R<sub>1max</sub>=Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

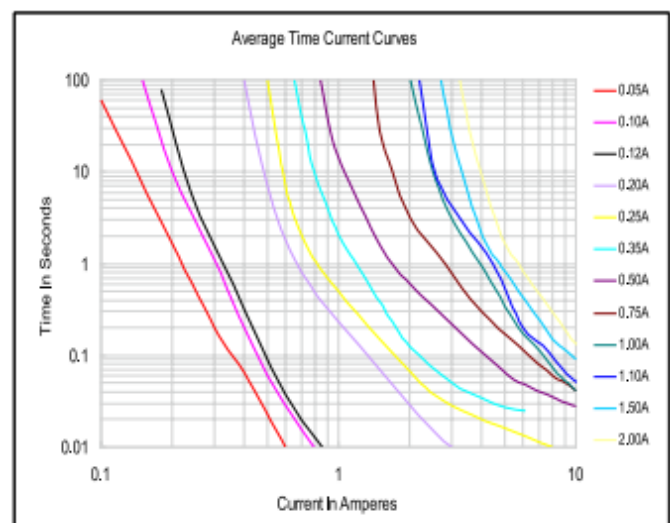
# SMD1210 Series

## Thermal Derating Chart-IH(A) Recommended Hold Current (A) at Ambient Temperature (°C)

Type Number	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
SMD1210P005TF	0.08	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.02
SMD1210P010TF	0.16	0.14	0.11	0.10	0.08	0.07	0.06	0.05	0.05
SMD1210P020TF	0.29	0.26	0.22	0.20	0.16	0.14	0.13	0.11	0.08
SMD1210P035TF	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210P035TF/16	0.47	0.45	0.40	0.35	0.33	0.28	0.24	0.21	0.18
SMD1210P050TF	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210P050TF/24	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
SMD1210P075TF	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210P075TF/16	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
SMD1210P100TF	1.69	1.48	1.29	1.00	0.88	0.76	0.65	0.57	0.43
SMD1210P110TF	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210P110TF/16	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
SMD1210P150TF	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
SMD1210P150TF/16	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65
SMD1210P175TF	2.45	2.22	2.01	1.75	1.45	1.26	1.10	0.98	0.80
SMD1210P200TF	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

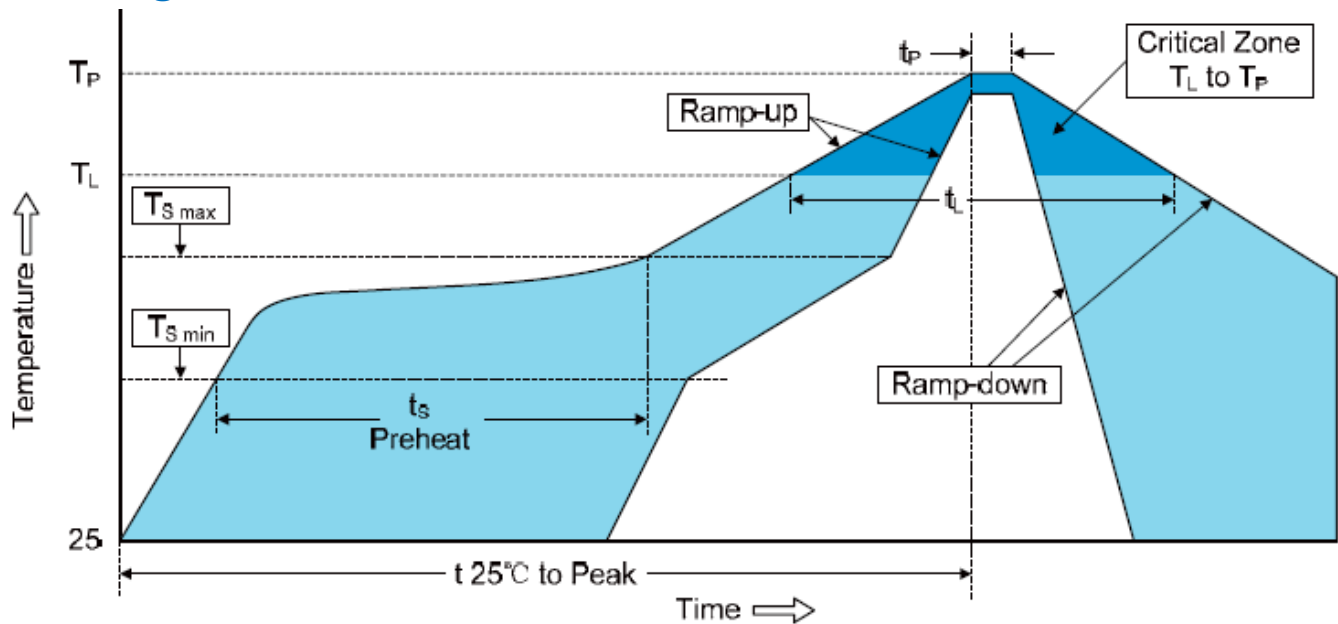


**Thermal Derating Curve**



**Average Time - Current Curve**

## Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_{S\ max}$ to $T_p$ )	3°C/second max.
Preheat -Temperature Min ( $T_{S\ min}$ ) -Temperature Max ( $T_{S\ max}$ ) -Time (min to max) ( $T_{S\ min}$ to $T_{S\ max}$ )	150°C 200°C 60-180 seconds
Time maintained above: -Temperature ( $T_L$ ) -Time ( $t_l$ )	217°C 60-150 seconds
Peak Temperature ( $T_p$ )	260°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	8 minutes max.
Storage Condition	0°C ~35°C, ≤70%RH

- Recommended reflow methods: IR, vapor phase oven, hot air oven, N<sub>2</sub> environment for lead-free
- Recommended maximum paste thickness is 0.25mm (0.010 inch)
- Device can be cleaned using standard industry methods and solvents.

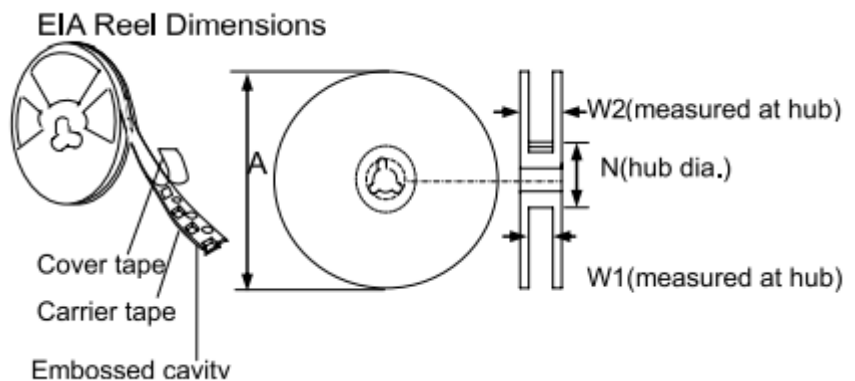
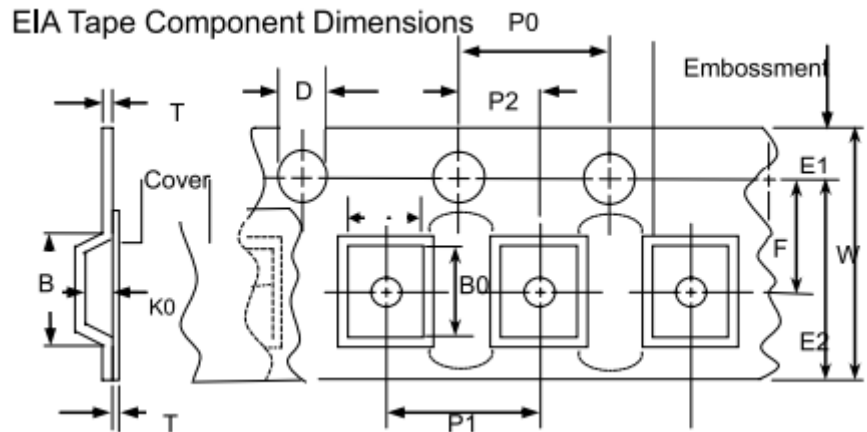
Note 1: All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

# SMD1210 Series

## Tape and Reel Specifications

Governing Specifications	EIA481-1
W	8.15 ±0.3
P0	4.0 ±0.10
P1	4.0 ±0.10
P2	2.0 ±0.05
A0	1.95 ±0.10
B0	3.40 ±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

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