SMD1210L Series

ROHS

Surface Mount Resettable PTCs

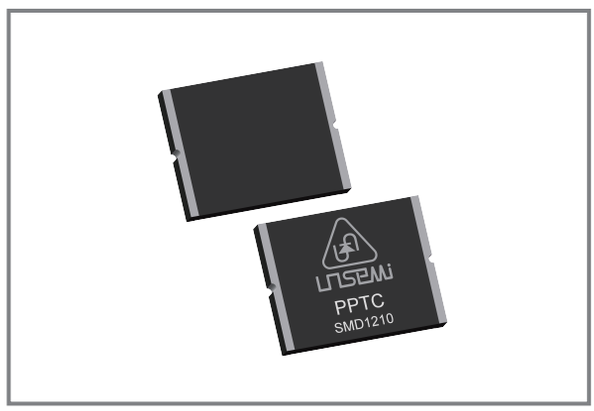
www.unsemi.com.tw

Description

The SMD1210L Series PTC provides surface mount over-current protection for applications where space is at a premium and reset table protection is desired.

Features

- RoHS compliant, Lead-Free and Halogen-Free
- Faster tripping, 1210L Dimension
- Compact design saves board space
- Compatible with high temperature solders
- Agency recognition: UL
- Low-profile



Applicable

- Battery PCM
- PDAs & Charger, Analog & digital line card
- Digital cameras
- General electronics
- USB peripherals
- Power ports

Electrical Parameters

Part Number	Marking	I hold (A)	I trip (A)	V max (Vdc)	I max (A)	Pdtyp. (W)	Maximum Time To Trip		Resistance	
							Current (A)	Time (Sec.)	R min (Ω)	R 1max (Ω)
SMD1210-150L	UC	1.5	3.0	6.0	50.0	0.8	8.0	2.0	0.010	0.060
SMD1210-150L /12V	UC	1.5	3.0	12.0	50.0	0.8	8.0	2.0	0.010	0.060
SMD1210-175L	UA	1.75	3.5	6.0	50.0	0.8	8.0	2.0	0.010	0.040
SMD1210-175L /12V	UA	1.75	3.5	12.0	50.0	0.8	8.0	2.0	0.010	0.040
SMD1210-190L	UD	1.9	3.8	6.0	50.0	0.8	8.0	3.0	0.006	0.037
SMD1210-190L /12V	UD	1.9	3.8	12.0	50.0	0.8	8.0	3.0	0.006	0.037
SMD1210-200L	UB	2.0	4.0	6.0	50.0	0.8	8.0	3.0	0.006	0.035
SMD1210-200L /12V	UB	2.0	4.0	12.0	50.0	0.8	8.0	3.0	0.006	0.035
SMD1210-260L	UL	2.6	5.2	6.0	50.0	0.8	13.0	2.0	0.003	0.025
SMD1210-260L /12V	UL	2.6	5.2	12.0	50.0	0.8	13.0	2.0	0.003	0.025
SMD1210-300L	UE	3.0	6.0	6.0	50.0	0.8	15.0	2.0	0.003	0.020
SMD1210-300L /12V	UE	3.0	6.0	12.0	50.0	0.8	15.0	2.0	0.003	0.020
SMD1210-350L	UO	3.5	7.0	6.0	50.0	0.8	17.5	2.0	0.002	0.018
SMD1210-350L /12V	UO	3.5	7.0	12.0	50.0	0.8	17.5	2.0	0.002	0.018
SMD1210-380L	UI	3.8	7.6	6.0	50.0	0.8	19.0	2.0	0.002	0.016
SMD1210-380L /12V	UI	3.8	7.6	12.0	50.0	0.8	19.0	2.0	0.002	0.016
SMD1210-400L	UR	4.0	8.0	6.0	50.0	0.8	20.0	2.0	0.002	0.014
SMD1210- 400L /12V	UR	4.0	8.0	12.0	50.0	0.8	20.0	2.0	0.002	0.014
SMD1210-450L	UQ	4.5	9.0	6.0	50.0	1.0	22.5	2.0	0.001	0.013
SMD1210-450L /12V	UQ	4.5	9.0	12.0	50.0	1.0	22.5	2.0	0.001	0.013
SMD1210-500L	UP	5.0	10.0	6.0	50.0	1.0	25.0	2.0	0.001	0.012
SMD1210-500L /12V	UP	5.0	10.0	12.0	50.0	1.0	25.0	2.0	0.001	0.012
SMD1210-550L	UH	5.5	11.0	6.0	50.0	1.0	27.5	2.0	0.001	0.011

Electrical Parameters

SMD1210-550L /12V	UH	5.5	11.0	12.0	50.0	1.0	27.5	2.0	0.001	0.011
SMD1210-600L	UT	6.0	12.0	6.0	50.0	1.2	30.0	2.0	0.001	0.010
SMD1210-600L /12V	UT	6.0	12.0	12.0	50.0	1.2	30.0	2.0	0.001	0.010
SMD12 10-650L	UZ	6.5	13.0	6.0	50.0	1.2	32.5	2.0	0.001	0.009
SMD1210-650L /12V	UZ	6.5	13.0	12.0	50.0	1.2	32.5	2.0	0.001	0.009
SMD1210-700L	UX	7.0	14.0	6.0	50.0	1.2	35.0	2.0	0.001	0.008
SMD1210-700L /12V	UX	7.0	14.0	12.0	50.0	1.2	35.0	2.0	0.001	0.008
SMD1210-750L	UV	7.5	15.0	6.0	50.0	1.2	37.5	2.0	0.001	0.007
SMD1210-750L /12V	UV	7.5	15.0	12.0	50.0	1.2	37.5	2.0	0.001	0.007

I hold= Hold current: maximum current device will pass without tripping in 25°C still air.
I trip= Trip current: minimum current at which the device will trip in 25°C still air.
V max= 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)
Pdtyp.= Power dissipated from device when in the tripped state at 25°C still air.
R min= Minimum resistance of device in initial (un-soldered) state.
R max= Maximum resistance of device in initial (un-soldered) state.
R 1max= Maximum resistance of device at 25°C measured one hour after tripping.

Temperature Rerating Chart- I hold (A)

Part Number	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
	Hold Current (A)								
SMD1210-150L	2.25	2.00	1.75	1.50	1.33	1.15	1.05	0.93	0.70
SMD1210-150L /12V	2.25	2.00	1.75	1.50	1.33	1.15	1.05	0.93	0.70
SMD1210-175L	2.55	2.33	2.02	1.75	1.53	1.35	1.23	1.07	0.85
SMD1210-175L /12V	2 55	2.33	2.02	1.75	1.53	1.35	1.23	1.07	0.85
SMD1210-190L	2.81	2.53	2.20	1.90	1.67	1.47	1.34	1.17	0.91
SMD1210-190L /12V	2.81	2.53	2.20	1.90	1.67	1.47	1.34	1.17	0.91
SMD1210-200L	2.96	2.67	2.32	2.00	1.76	1.55	1.41	1.23	0.96
SMD1210-200L /12V	2.96	2.67	2.32	2.00	1.76	1.55	1.41	1.23	0.96
SMD1210-260L	3.85	3.47	3.02	2.60	2.29	2.01	1.84	1.59	1.25
SMD1210-260L /12V	3.85	3.47	3.02	2.60	2.29	2.01	1.84	1.59	1.25
SMD1210-300L	4.44	4.00	3.48	3.00	2.64	2.32	2.12	1.84	1.44
SMD1210-300L /12V	4.44	4.00	3.48	3.00	2.64	2.32	2.12	1.84	1.44
SMD1210-350L	5.18	4.67	4.06	3.50	3.08	2.71	2.47	2.15	1.68
SMD1210-350L /12V	5.18	4.67	4.06	3.50	3.08	2.71	2.47	2.15	1.68
SMD1210-380L	5.62	5.07	4.41	3.80	3.34	2.94	2.68	2.33	1.82
SMD1210-380L /12V	5.62	5.07	4.41	3.80	3.34	2.94	2.68	2.33	1.82
SMD1210-400L	5.92	5.33	4.64	4.00	3.52	3.09	2.83	2.45	1.92
SMD1210-400L /12V	5.92	5.33	4.64	4.00	3.52	3.09	2.83	2.45	1.92
SMD1210-450L	6.66	6.00	5.22	4.50	3.96	3.48	3.17	2.76	2.16
SMD1210-450L /12V	6.66	6.00	5.22	4.50	3.96	3.48	3.17	2.76	2.16
SMD1210-500L	7.40	6.67	5.80	5.00	4.40	3.87	3.53	3.07	2.40
SMD1210-500L /12V	7.40	6.67	5.80	5.00	4.40	3.87	3.53	3.07	2.40
SMD1210-550L	8.14	7.34	6.38	5.50	4.84	4.26	3.88	3.38	2.64
SMD1210-550L /12V	8.14	7.34	6.38	5.50	4.84	4.26	3.88	3.38	2.64
SMD1210-600L	8.65	7.91	6.93	6.00	5.23	4.45	4.00	3.63	2.85
SMD1210-600L /12V	8.65	7.91	6.93	6.00	5.23	4.45	4.00	3.63	2.85
SMD1210-650L	9.20	8.45	7.45	6.50	5.60	4.65	4.30	3.89	3.00
SMD1210-650L /12V	9.20	8.45	7.45	6.50	5.60	4.65	4.30	3.89	3.00
SMD1210-700L	9.84	9.00	7.95	7.00	5.96	4.95	4.50	4.16	3.20
SMD1210-700L /12V	9.84	9.00	7.95	7.00	5.96	4.95	4.50	4.16	3.20
SMD1210-750L	10.5	9.65	8.50	7.50	6.40	5.30	4.80	4.45	4.42
SMD1210-750L /12V	10.5	9.65	8.50	7.50	6.40	5.30	4.80	4.45	4.42

Test Procedures and Requirement

Test Item	Test Conditions	Accept/Reject Criteria
Initial Resistance	In still air at 25°C	$R_{MIN} \le R \le R1_{MAX}$
Time to Trip	Specified current, V_{MAX}, 25°C	T ≤ Maximum Time to Trip
Hold Current	30min, at IH, 25°C	No trip
Trip Endurance	VMAx, 1 hour	No arcing or burning

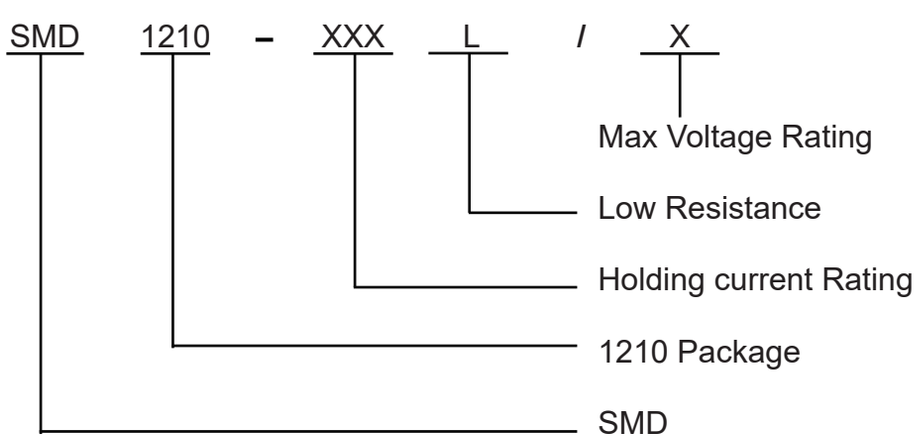
Physical Characteristics

Terminal Materials	Tin-Plated Nickle-copper
Soldering Zone	Meets EIA specification RS 186-9E and ANSIJ-STD-002 Category 3.
Moisture Sensitivity	Level 2a, per IPCJEDEC J-STD 020C

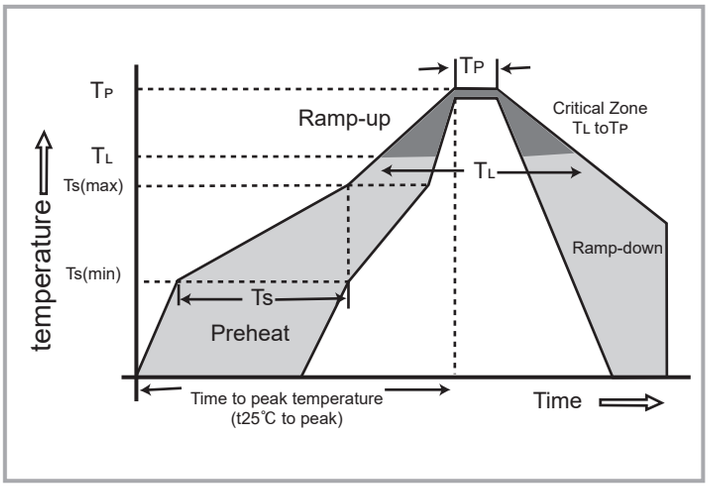
Environmental Specifications

Test Item	Test Conditions	Resistance Change
Passive Aging	85°C,1000 hours	±10% typical
Humidity Aging	85°C/85%RH.100 hours	±5% typical
Thermal Shock	MIL-STD 202,Method 107G +85°C/-40°C ,20 times	-30% typical
Solvent Resistance	MIL-STD-202,Method 215	No change
Vibration	ML-STD-883C,Method 2007.1,Test Condition A	No change

Part Numbering System



Soldering Parameters



- Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free.
- Devices are not designed to be wave soldered to the bottom side of the board.
- Recommended maximum paste thickness is 0.25mm(0.010inch).
- Devices can be cleaned using standard industry methods and solvents.
- Soldering temperature profile meets RoHs lead free process.

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

Reflow Condition		Lead–free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (T_s)	60 -120 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (T_s)	60 -150 Seconds
Peak Temperature (T_P)		260 +0/-5°C
Time within 5°C of actual peak Temperature (T_P)		30 Seconds
Ramp-down Rate		3°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		260°C

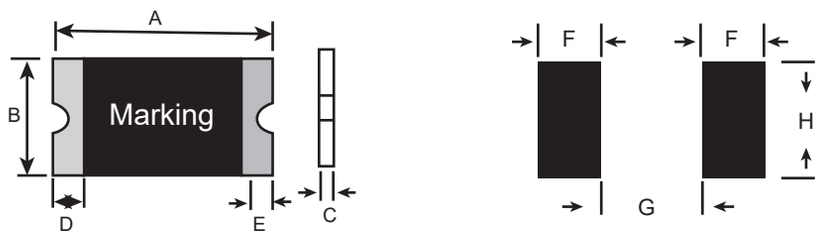
Caution:

1、If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements

2、Operation beyond the specified rating may result in damage and possible arcing and flame.

3、PPTC are intended for protection against occasional over current or over temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.

Dimensions Unit: mm



Part Number	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
SMD1210-150L	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-150L /12V	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-175L	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-175L /12V	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-190L	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-190L /12V	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-200L	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-200L /12V	3.0	3.43	2.35	2.8	0.3	0.7	0.25	0.10
SMD1210-260L	3.0	3.43	2.35	2.8	0.4	1.0	0.25	0.10
SMD1210-260L /12V	3.0	3.43	2.35	2.8	0.4	1.0	0.25	0.10
SMD1210-300L	3.0	3.43	2.35	2.8	0.4	1.0	0.25	0.10
SMD1210-300L /12V	3.0	3.43	2.35	2.8	0.4	1.0	0.25	0.10
SMD1210-350L	3.0	3.43	2.35	2.8	0.4	1.2	0.25	0.10
SMD1210-350L /12V	3.0	3.43	2.35	2.8	0.4	1.2	0.25	0.10
SMD1210-380L	3.0	3.43	2.35	2.8	0.4	1.2	0.25	0.10
SMD1210-380L /12V	3.0	3.43	2.35	2.8	0.4	1.2	0.25	0.10
SMD1210-400L	3.0	3.43	2.35	2.8	0.5	1.2	0.25	0.10
SMD1210-400L /12V	3.0	3.43	2.35	2.8	0.5	1.2	0.25	0.10
SMD1210-450L	3.0	3.43	2.35	2.8	0.5	1.4	0.25	0.10
SMD1210-450L /12V	3.0	3.43	2.35	2.8	0.5	1.4	0.25	0.10
SMD1210-500L	3.0	3.43	2.35	2.8	0.5	1.4	0.25	0.10
SMD1210-500L /12V	3.0	3.43	2.35	2.8	0.5	1.4	0.25	0.10
SMD1210-550L	3.0	3.43	2.35	2.8	0.5	1.4	0.25	0.10
SMD1210-550L /12V	3.0	3.43	2.35	2.8	0.5	1.4	0.25	0.10
SMD1210-600L	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-600L /12V	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-650L	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-650L /12V	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-700L	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-700L /12V	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-750L	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10
SMD1210-750L /12V	3.0	3.43	2.35	2.8	0.5	1.6	0.25	0.10

Layout Dimensions Unit: mm

Part Number	F	G	H
	Normal Value	Normal Value	Normal Value
SMD1210L Series	1.0 ± 0.1	2.0 ± 0.1	2.5 ± 0.1

Ordering Information

Part Number	Quantity
SMD1210-150L -- SMD1210-450L	4,000 pcs/Reel
SMD1210-500L -- SMD1210-750L	3,000 pcs/Reel
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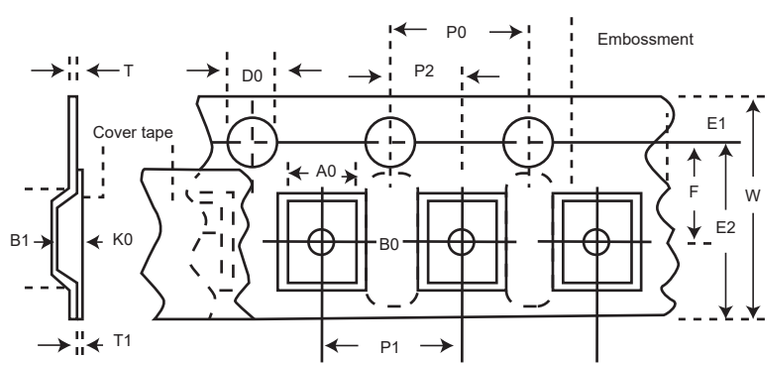
Tape Specification and Reel Specifications

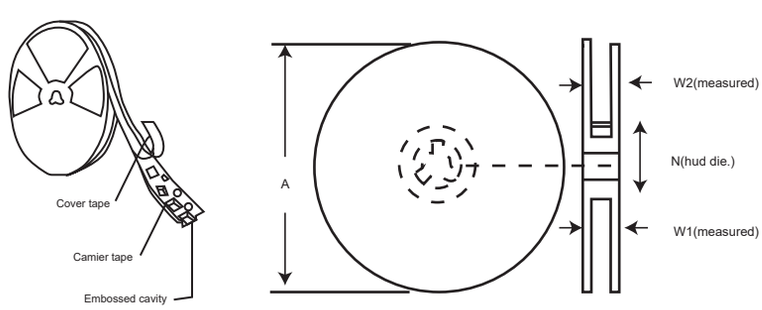
Coverning Specifications EIA 481-1(Unit:mm)	
W	8.00±0.10
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.05
A0	0.95±0.10
B0	1.85±0.10
D0	1.55±0.05
F	3.50±0.05
E1	1.75±0.10
T	0.20±0.02
Leader min.	390
Traile min.	160

Reel Dimensions	
A	178±1.0
N	59±1.0
W1	8.5 + 1.0/-0.2
W2	12.0±1.0

ELA Tape Component Dimentions



EIA Reel Dimentions



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