SMD1206L Series

ROHS

Surface Mount Resettable PTCs

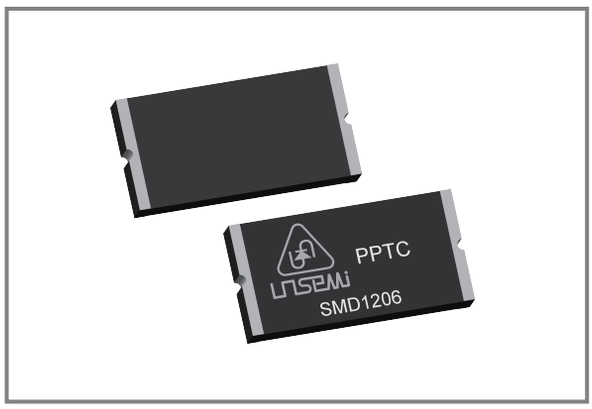
www.unsemi.com.tw

Description

The SMD1206L 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, 1206L 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)
SMD1206-150L	UD	1.5	3.0	6.0	50.0	0.8	8.0	5.0	0.010	0.065
SMD1206-150L /12V	UD	1.5	3.0	12.0	50.0	0.8	8.0	5.0	0.010	0.065
SMD1206-175L	UE	1.75	3.5	6.0	50.0	0.8	8.0	5.0	0.010	0.060
SMD1206-175L /12V	UE	1.75	3.5	12.0	50.0	0.8	8.0	5.0	0.010	0.060
SMD1206-200L	UM	2.0	4.0	6.0	50.0	0.8	8.0	5.0	0.008	0.040
SMD1206-200L /12V	UM	2.0	4.0	12.0	50.0	0.8	8.0	5.0	0.008	0.040
SMD1206-260L	UP	2.6	5.2	6.0	50.0	0.8	8.0	5.0	0.004	0.026
SMD1206-260L /12V	UP	2.6	5.2	12.0	50.0	0.8	8.0	5.0	0.004	0.026
SMD1206-300L	UL	3.0	6.0	6.0	50.0	0.8	15.0	2.0	0.004	0.020
SMD1206-300L /12V	UL	3.0	6.0	12.0	50.0	0.8	15.0	2.0	0.004	0.020
SMD1206-350L	UR	3.5	7.0	6.0	50.0	1.0	17.5	2.0	0.004	0.018
SMD1206-350L /12V	UR	3.5	7.0	12.0	50.0	1.0	17.5	2.0	0.004	0.018
SMD1206-380L	US	3.8	7.6	6.0	50.0	1.0	19.0	2.0	0.004	0.016
SMD1206-380L /12V	US	3.8	7.6	12.0	50.0	1.0	19.0	2.0	0.004	0.016
SMD1206-400L	UT	4.0	8.0	6.0	50.0	1.0	20.0	2.0	0.004	0.014
SMD1206-400L /12V	UT	4.0	8.0	12.0	50.0	1.0	20.0	2.0	0.004	0.014
SMD1206-450L	UW	4.5	9.0	6.0	50.0	1.0	22.5	2.0	0.002	0.012
SMD1206-450L /12V	UW	4.5	9.0	12.0	50.0	1.0	22.5	2.0	0.002	0.012
SMD1206-500L	UY	5.0	10.0	6.0	50.0	1.0	25.0	2.0	0.002	0.011
SMD1206-500L /12V	UY	5.0	10.0	12.0	50.0	1.0	25.0	2.0	0.002	0.011
SMD1206-550L	U3	5.5	11.0	6.0	50.0	1.2	27.5	2.0	0.002	0.010
SMD1206-550L /12V	U3	5.5	11.0	12.0	50.0	1.2	27.5	2.0	0.002	0.010
SMD1206-600L	U4	6.0	12.0	6.0	50.0	1.2	30.0	2.0	0.002	0.009

Electrical Parameters

SMD1206-600L /12V	U4	6.0	12.0	12.0	50.0	1.2	30.0	2.0	0.002	0.009
SMD1206-650L	U5	6.5	13.0	6.0	50.0	1.2	32.5	2.0	0.001	0.009
SMD1206-650L /12V	U5	6.5	13.0	12.0	50.0	1.2	32.5	2.0	0.001	0.009
SMD1206-700L	U6	7.0	14.0	6.0	50.0	1.2	35.0	2.0	0.001	0.008
SMD1206-700L /12V	U6	7.0	14.0	12.0	50.0	1.2	35.0	2.0	0.001	0.008
SMD1206-750L	U7	7.5	15.0	6.0	50.0	1.2	37.5	2.0	0.001	0.007
SMD1206-750L / 12V	U7	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)								
SMD1206-150L	2.01	1.77	1.62	1.50	1.22	1.12	1.04	0.87	0.61
SMD1206-150L /12V	2.01	1.77	1.62	1.50	1.22	1.12	1.04	0.87	0.61
SMD1206-175L	2.34	2.05	1.89	1.75	1.44	1.31	1.20	1.00	0.72
SMD1206-175L /12V	2.34	2.05	1.89	1.75	1.44	1.31	1.20	1.00	0.72
SMD1206-200L	2.68	2.33	2.15	2.00	1.66	1.49	1.37	1.15	0.80
SMD1206-200L /12V	2.68	2.33	2.15	2.00	1.66	1.49	1.37	1.15	0.80
SMD1206-260L	3.49	3.05	2.82	2.60	2.15	1.93	1.78	1.49	1.04
SMD1206-260L /12V	3.49	3.05	2.82	2.60	2.15	1.93	1.78	1.49	1.04
SMD1206-300L	4.03	3.51	3.26	3.00	2.49	2.23	2.06	1.71	1.20
SMD1206-300L /12V	4.03	3.51	3.26	3.00	2.49	2.23	2.06	1.71	1.20
SMD1206-350L	4.70	4.10	3.80	3.50	2.90	2.60	2.40	2.00	1.40
SMD1206-350L /12V	4.70	4.10	3.80	3.50	2.90	2.60	2.40	2.00	1.40
SMD1206-380L	6.40	4.85	4.25	3.80	3.20	2.80	2.49	2.05	1.43
SMD1206-380L /12V	6.40	4.85	4.25	3.80	3.20	2.80	2.49	2.05	1.43
SMD1206-400L	6.74	5.11	4.47	4.00	3.37	2.95	2.62	2.16	1.51
SMD1206-400L /12V	6.74	5.11	4.47	4.00	3.37	2.95	2.62	2.16	1.51
SMD1206-450L	6.85	5.92	5.47	4.50	3.73	3.34	3.00	2.35	1.55
SMD1206-450L /12V	6.85	5.92	5.47	4.50	3.73	3.34	3.00	2.35	1.55
SMD1206-500L	7.30	6.34	5.66	5.00	4.42	3.85	3.47	3.12	2.38
SMD1206-500L /12V	7.30	6.34	5.66	5.00	4.42	3.85	3.47	3.12	2.38
SMD1206-550L	8.03	6.97	6.32	5.50	4.86	4.24	3.82	3.43	2.62
SMD1206-550L /12V	8.03	6.97	6.32	5.50	4.86	4.24	3.82	3.43	2.62
SMD1206-600L	8.46	7.60	6.75	6.00	5.15	4.35	4.00	3.55	2.86
SMD1206-600L /12V	8.46	7.60	6.75	6.00	5.15	4.35	4.00	3.55	2.86
SMD1206-650L	9.17	8.23	7.31	6.50	5.58	4.60	4.33	3.73	3.10
SMD1206-650L /12V	9.17	8.23	7.31	6.50	5.58	4.60	4.33	3.73	3.10
SMD1206-700L	9.87	8.87	7.88	7.00	6.01	4.96	4.67	4.01	3.34
SMD1206-700L /12V	9.87	8.87	7.88	7.00	6.01	4.96	4.67	4.01	3.34
SMD1206-750L	10.58	9.50	8.44	7.50	6.44	5.31	5.00	4.30	3.58
SMD1206-750L /12V	10.58	9.50	8.44	7.50	6.44	5.31	5.00	4.30	3.58

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	V_{MAX}, 1 hour	No arcing or burning

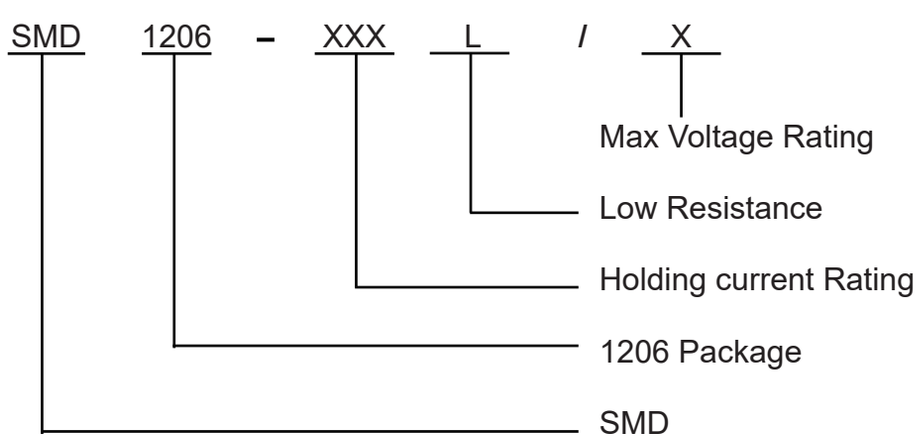
Physical Characteristics

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

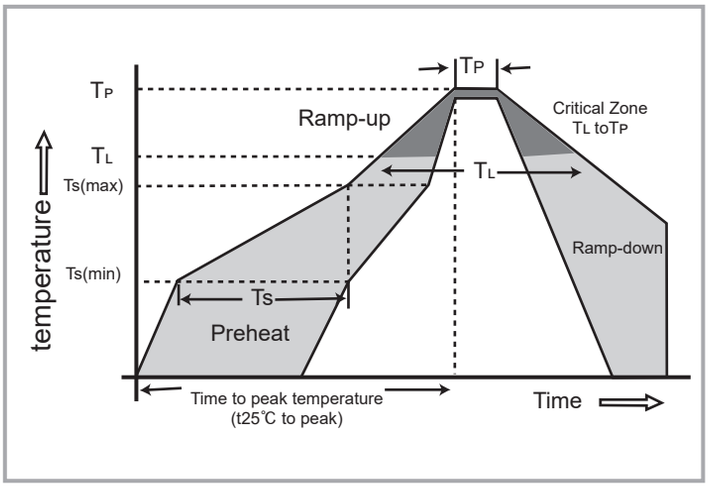
Environmental Specifications

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

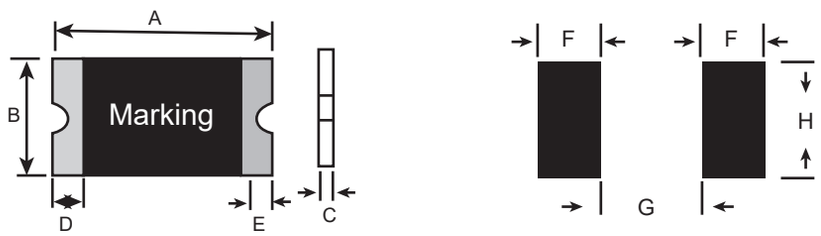
Caution:

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.
SMD1206-150L	3.00	3.50	1.50	1.80	0.30	0.70	0.15	0.10
SMD1206-150L /12V	3.00	3.50	1.50	1.80	0.30	0.70	0.15	0.10
SMD1206-175L	3.00	3.50	1.50	1.80	0.30	0.70	0.15	0.10
SMD1206-175L /12V	3.00	3.50	1.50	1.80	0.30	0.70	0.15	0.10
SMD1206-200L	3.00	3.50	1.50	1.80	0.30	0.70	0.15	0.10
SMD1206-200L /12V	3.00	3.50	1.50	1.80	0.30	0.70	0.15	0.10
SMD1206-260L	3.00	3.50	1.50	1.80	0.40	1.00	0.15	0.10
SMD1206-260L /12V	3.00	3.50	1.50	1.80	0.40	1.00	0.15	0.10
SMD1206-300L	3.00	3.50	1.50	1.80	0.40	1.20	0.15	0.10
SMD1206-300L /12V	3.00	3.50	1.50	1.80	0.40	1.20	0.15	0.10
SMD1206-350L	3.00	3.50	1.50	1.80	0.40	1.20	0.15	0.10
SMD1206-350L /12V	3.00	3.50	1.50	1.80	0.40	1.20	0.15	0.10
SMD1206-380L	3.00	3.50	1.50	1.80	0.40	1.20	0.15	0.10
SMD1206-380L /12V	3.00	3.50	1.50	1.80	0.40	1.20	0.15	0.10
SMD1206-400L	3.00	3.50	1.50	1.80	0.50	1.20	0.15	0.10
SMD1206-400L /12V	3.00	3.50	1.50	1.80	0.50	1.20	0.15	0.10
SMD1206-450L	3.00	3.50	1.50	1.80	0.50	1.40	0.15	0.10
SMD1206-450L /12V	3.00	3.50	1.50	1.80	0.50	1.40	0.15	0.10
SMD1206-500L	3.00	3.50	1.50	1.80	0.50	1.40	0.15	0.10
SMD1206-500L /12V	3.00	3.50	1.50	1.80	0.50	1.40	0.15	0.10
SMD1206-550L	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-550L /12V	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-600L	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-600L /12V	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-650L	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-650L /12V	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-700L	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-700L /12V	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-750L	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10
SMD1206-750L /12V	3.00	3.50	1.50	1.80	0.60	1.60	0.15	0.10

Layout Dimensions Unit: mm

Part Number	F	G	H
	Normal Value	Normal Value	Normal Value
SMD1206L Series	1.0 ± 0.1	2.0 ± 0.1	1.9 ± 0.1

Ordering Information

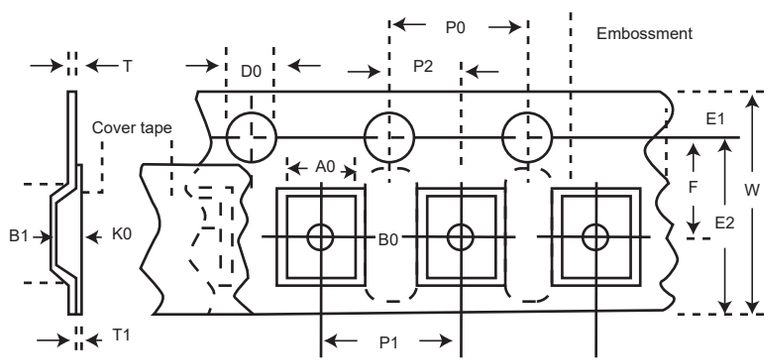
Part Number	Quantity
SMD1206-150L -- SMD1206-450L	3,500 pcs/Reel
SMD1206-500L -- SMD1206-750L	3,500 pcs/Reel
//	//
//	//

Tape Specification and Reel Specifications

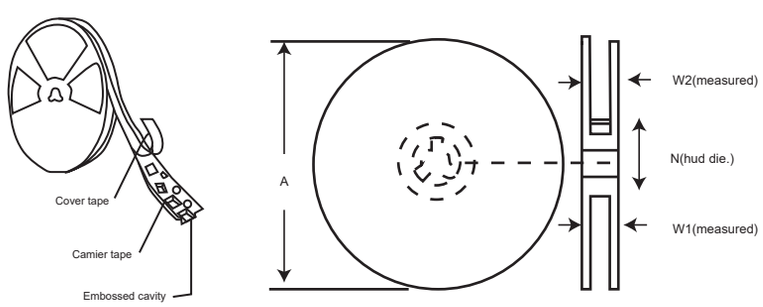
Coverning Specifications EIA 481-1(Unit:mm)	
W	8.00±0.10
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.05
A0	0.95±0.10
B0	1.85±0.10
D0	1.55±0.05
F	3.50±0.05
E1	1.75±0.10
T	0.20±0.02
Leader min.	390
Traile min.	160

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



優恩半導體 UNSEMI

ROHS

Disclaimer

UNSEMI RESERVES THE RIGHT TO MAKE CHANGE ON OUR PRODUTS , PRODUCTS SPECIFICATION AND DATA WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

UN SEMICONDUCTOR LIMITED its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “UNSEMI”)does not give any representations or warranties for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

In no event shall UNSEMI be liable for any indirect, incidental, punitive, special or consequential damages (including any and all implied warranties, warranties of fitness for particular purpose, non-infringement and merchantability.) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Statements regarding the suitability of products for certain types of applications are based on UNSEMI knowledge of typical requirements that are often placed on UNSEMI products in generic applications. Such statements are not binding, statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify UNSEMI's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Unless otherwise agreed in writing, UNSEMI product is not designed, authorized or warranted to be suitable for use in medical life-saving, or life-sustaining application , nor in applications where failure or malfunction of a UNSEMI product can reasonably be expected to result in personal injury, death or severe property or environmental damage. UNSEMI and its suppliers accept no liability for inclusion or use of UNSEMI products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

All referenced brands, product names, service names and trademarks are the property of their respective owners.