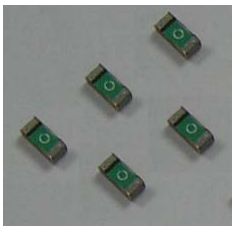
LP-NSM *series* ***Surface-mount devices***

Features



- ✧ Very small size of 1206
- ✧ Fast tripping resettable circuit protection
- ✧ Surface mount packaging for automated assembly
- ✧ Agency recognition: UL、CSA、TUV

Applications:

- Computer
- Portable electronics
- Multimedia

Game machines
Telephony and broadband
Mobile phones

Automotive
Industrial controls
Battery

Product Dimensions in Millimeters(Inches)

Size 3216mm/1206mils

Part number	A Max.	B Max.	C Max.	D Min.	E Min.	Figures for Dimension
LP-NSM012	3.50(0.138)	1.80(0.071)	0.85(0.033)	0.10(0.004)	0.20(0.008)	S2
LP-NSM016	3.50(0.138)	1.80(0.071)	0.85(0.033)	0.10(0.004)	0.20(0.008)	S2
LP-NSM020	3.50(0.138)	1.80(0.071)	0.85(0.033)	0.10(0.004)	0.20(0.008)	S2
LP-NSM035	3.50(0.138)	1.80(0.071)	0.85(0.033)	0.10(0.004)	0.20(0.008)	S2
LP-NSM050	3.50(0.138)	1.80(0.071)	0.85(0.033)	0.10(0.004)	0.20(0.008)	S2
LP-NSM075	3.50(0.138)	1.80(0.071)	1.30(0.051)	0.10(0.004)	0.20(0.008)	S2
LP-NSM110	3.50(0.138)	1.80(0.071)	1.30(0.051)	0.10(0.004)	0.20(0.008)	S2
LP-NSM150	3.50(0.138)	1.80(0.071)	1.80(0.071)	0.10(0.004)	0.20(0.008)	S2

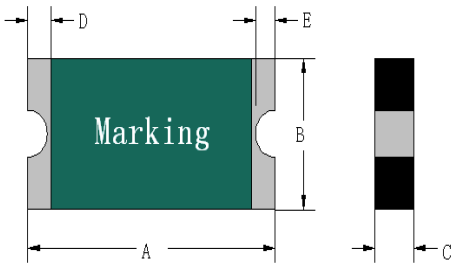


Figure S2

Electrical Characteristic

Part number	I_H	I_T	V_{max}	I_{max}	T_{trip}		R_{min}	R_{1max}
	(A)	(A)	(V)	(A)	Current (A)	Time(S)	(Ω)	(Ω)
LP-NSM012	0.125	0.29	30	20	1.0	0.20	1.500	6.000
LP-NSM016	0.16	0.37	30	20	1.0	0.30	1.200	4.500
LP-NSM020	0.20	0.40	16	40	8.0	0.05	0.600	2.500
LP-NSM035	0.35	0.75	6	40	8.0	0.10	0.300	1.200
LP-NSM050	0.50	1.00	6	40	8.0	0.10	0.150	0.700
LP-NSM075	0.75	1.50	6	40	8.0	0.20	0.100	0.290
LP-NSM110	1.10	1.80	6	40	8.0	3.00	0.055	0.210
LP-NSM150	1.50	3.00	6	40	8.0	1.00	0.040	0.120

I_H=Hold current: maximum current at which the device will not trip at 25℃ still air.

I_T=Trip current: minimum current at which the device will always trip at 25℃ still air.

V_{max}=Maximum voltage device can withstand without damage at rated current.

I_{max}=Maximum fault current device can withstand without damage at rated voltage.

T_{trip}=Maximum time to trip(s) at assigned current.

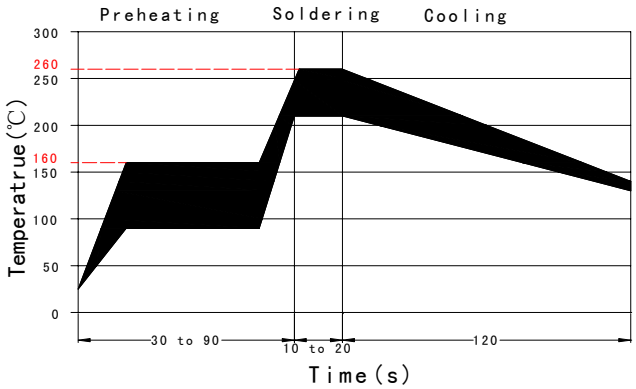
R_{min}=Minimum device resistance at 25℃ prior to tripping.

R_{1max}=Maximum device resistance measured in the nontripped state 1 hour post reflow.

Test Procedures And Requirements

Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @ 25℃	$R_{min} \leqslant R \leqslant R_{max}$
Time to Trip	Specified current, V_{max}, 25℃	T≤maximum Time to Trip
Hold Current	30min, at I_H	No trip
Trip Cycle Life	V_{max}, I_{max}, 100cycles	No arcing or burning
Trip Endurance	V_{max}, 24hours	No arcing or burning

Solder Reflow Recommendations



Solder Pad Layouts

Part number	A	B	C
	(mm)	(mm)	(mm)
LP-NSM012	1.80	1.00	1.80
LP-NSM016	1.80	1.00	1.80
LP-NSM020	1.80	1.00	1.80
LP-NSM035	1.80	1.00	1.80
LP-NSM050	1.80	1.00	1.80
LP-NSM075	1.80	1.00	1.80
LP-NSM110	1.80	1.00	1.80
LP-NSM150	1.80	1.00	1.80

* Recommended reflow methods: IR, Vapor phase oven, hot air oven, wave solder.
* Devices can be cleaned using standard industry methods and solvents.

Shanghai Wayon Thermo/Electro Materials Co.,Ltd. Tel: 86-21- 50320161 58995165 Fax: 86-21-50320266
4th Floor, No.201, New Jinqiao Road, Shanghai 201206,China E-mail: market@way-on.com Http://www.way-on.com

Note:

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

2 Devices are not designed to be wave soldered to the bottom side of the board.

Effectivity: Reference documents shall be the issue in effect on the date of invitation for bid.

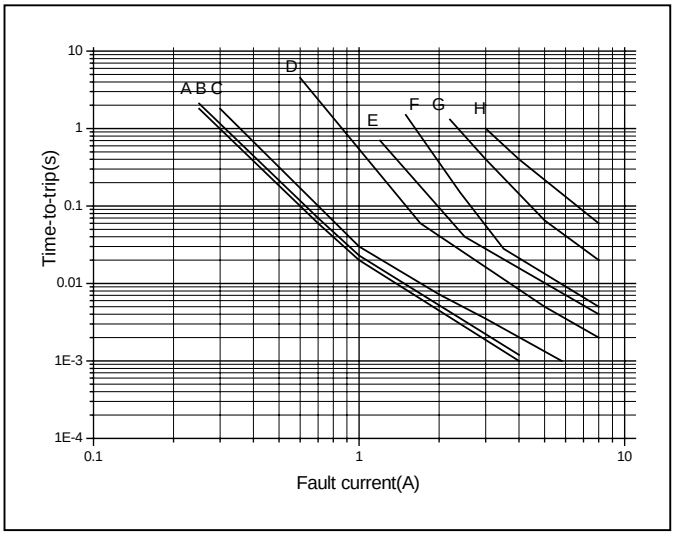
Caution: Operation beyond the rated voltage or current may result in rupture electrical arcing or flame.

Thermal Derating Chart-I_H(A)

Part number	Maximum ambient operating temperatures(℃)								
	-40	-20	0	25	40	50	60	70	85
LP-NSM012	0.19	0.16	0.14	0.125	0.10	0.09	0.08	0.07	0.04
LP-NSM016	0.25	0.20	0.18	0.16	0.14	0.12	0.11	0.09	0.06
LP-NSM020	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.13	0.07
LP-NSM035	0.51	0.46	0.39	0.35	0.30	0.27	0.26	0.20	0.16
LP-NSM050	0.77	0.64	0.56	0.50	0.45	0.40	0.35	0.32	0.23
LP-NSM075	1.12	1.01	0.88	0.75	0.66	0.58	0.53	0.46	0.33
LP-NSM110	1.61	1.44	1.27	1.10	0.94	0.85	0.77	0.63	0.48
LP-NSM150	2.21	1.97	1.72	1.50	1.27	1.11	1.00	0.89	0.69

Typical Time-to-trip Curves at 25℃

LP-NSM Series
A = LP-NSM012
B = LP-NSM016
D = LP-NSM035
E = LP-NSM050
F = LP-NSM075
G = LP-NSM110
H = LP-NSM150



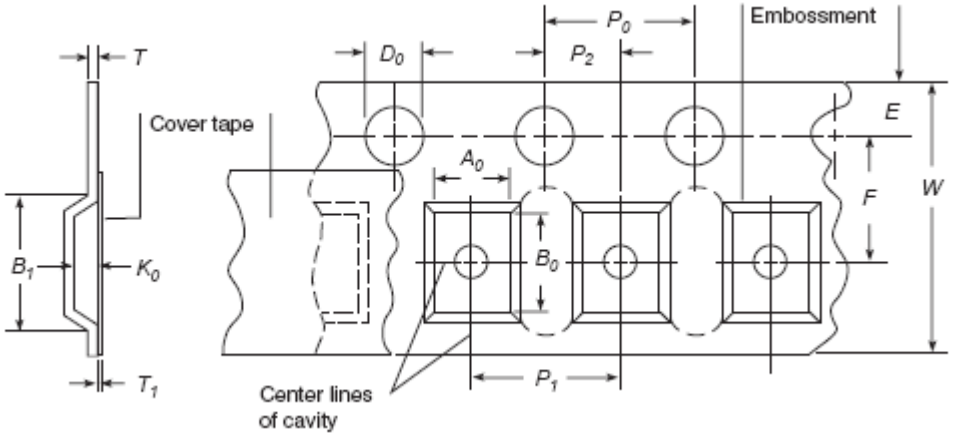
Packaging and Marking Information

Part number	Tape & Reel Quantity	Tape spc code	Part Marking	Recommended Pad Layout Figures[mm(In.)]			Agency Recognition
				Dimension A(Nom.)	Dimension B(Nom.)	Dimension C(Nom.)	
LP-NSM012	4000	1206A	P	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA
LP-NSM016	4000	1206A	T	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA

LP-NSM020	4000	1206A	C	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA
LP-NSM035	4000	1206A	W	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA
LP-NSM050	4000	1206A	A	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA
LP-NSM075	4000	1206A	Y	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA
LP-NSM110	4000	1206A	O	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA
LP-NSM150	4000	1206A	N	1.80(0.071)	1.00(0.041)	1.80(0.071)	UL,CSA

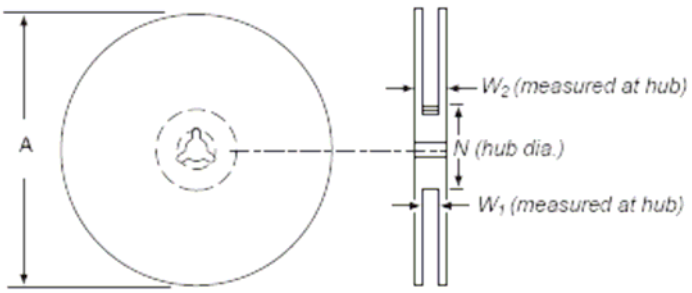
Tape Specification And Reel Dimensions

Tape spc code	W	P0	P1	P2	A	B	D	F	E	T	K
1206(A)	8.00± 0.20	4.00± 0.10	4.00± 0.10	2.00± 0.05	1.77± 0.10	3.40 ± 0.10	1.55 ± 0.05	3.50± 0.10	1.75± 0.10	0.22± 0.05	1.04± 0.10



Reel Dimensions

Tape spc code	A	N	W1	W2
1206(A)	180+0/-1.5	60+1/-0	9.0+1/-0	13.0+1/-0



Storage

The maximum ambient temperature shall not exceed 40℃. Storage temperatures higher than 40℃ could result in the deformation of packaging materials. The maximum relative humidity recommended for storage is 70%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components. Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.

WARNING:

- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- The devices are intended for protection against occasional overcurrent or overtemperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic,thermal and mechanical procedures for electronic components.
- Operation in circuit with a large inductance can generate a circuit voltage (L di/dt) above the rated voltage of the PolySwitch resettable device.