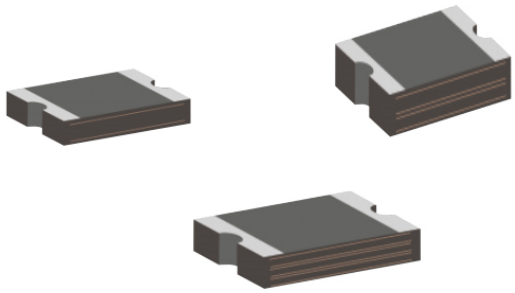
SMD1206P Series

POSITIVE THERMAL COEFFICIENT(PTC)

Description

The 1206 series provides miniature surface mount over-current protection with holding current from 0.05A to 3.5A. This series is suitable for wide range of applications in modern electronics where space is limited.



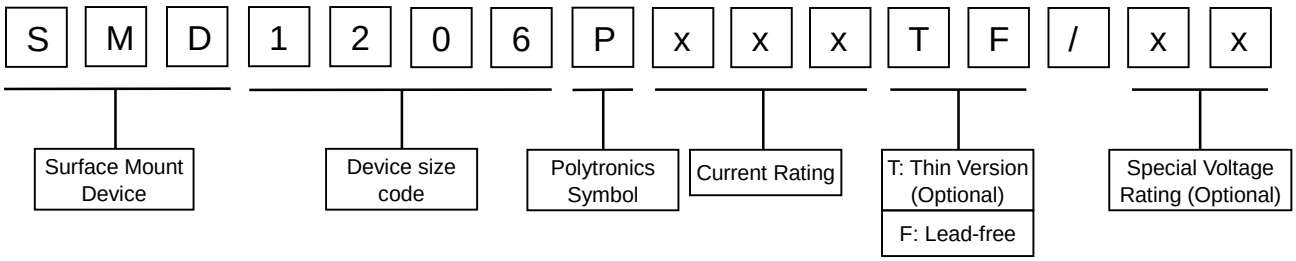
Features

- I(hold): 0.05~3.5A
- 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

Applications

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

Part Number Code



Environmental Specifications

Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @ 25℃	$R_{min} \leq R \leq R_{max}$
Time to Trip	Specified current，V_{max}，25℃	T≤maximum Time to Trip
Hold Current	30min，at I_H	No trip
Trip Cycle Life	Vmax，Imax，100cycles	No arcing or burning
Trip Endurance	Vmax，1 hours	No arcing or burning

Physical Characteristics and Environmental Specifications

Terminal materials :	Tin-Plated Nickle-copper	
Soldering zone	Meets EIA specification RS 186-9E and ANSI/J-STD-002 Category 3.	
Environmental Specifications		
Test	Conditions	Resistance Change
Passive aging	85℃,1000hours	±10%
Humidity aging	85℃/85%RH.1000 hours	±5%
Thermal shock	MIL-STD-202,Method 107G +85℃/-40℃,20times	-30% typical resistance change
Solvent Resistance	MIL-STD-202,Method 215	no change
Vibration	ML-STD-883C,Test Condition A	No change

Electrical Characteristic

Part Number	V_{Max}	I_{Max}	I_{Hold}	I_{Trip}	Maximum Time-to-trip		R25	
	(Vdc)	(A)	(A)	(A)	Current (A)	Time (Sec)	R_{Min} (Ω)	$R1_{Max}$ (Ω)
nSMD005	60.0	100	0.05	0.15	0.25	1.50	3.600	50.000
nSMD010	60.0	100	0.10	0.25	0.5	1.00	1.600	15.000
nSMD010-33	33.0	100	0.10	0.25	0.5	1.00	1.600	15.000
nSMD012	30	100	0.12	0.29	1.00	0.20	1.350	10.00
nSMD016	30	100	0.16	0.37	1.00	0.30	1.200	4.50
nSMD020	24.0	100	0.20	0.46	8.0	0.08	0.350	3.500
nSMD025	16.0	100	0.25	0.50	8.0	0.08	0.350	2.700
nSMD030	16.0	100	0.30	0.65	8.0	0.10	0.250	2.00
nSMD035	16.0	100	0.35	0.75	8.0	0.10	0.250	1.300
nSMD050	6.0	100	0.50	1.00	8.0	0.10	0.150	0.700
nSMD050-13.2	13.2	100	0.50	1.00	8.0	0.10	0.150	0.700
nSMD050-16	16	100	0.50	1.00	8.0	0.10	0.150	0.750
nSMD050-24	24	100	0.50	1.00	8.0	0.10	0.150	0.750
nSMD050-30	0.3	100	0.50	1.00	8.0	0.10	0.150	1.00
nSMD075	6.0	100	0.75	1.50	8.0	0.20	0.090	0.500
nSMD075-13.2	13.2	100	0.75	1.50	8.0	0.20	0.090	0.500
nSMD075-16	16	100	0.75	1.50	8.0	0.20	0.090	0.500
nSMD100	6.0	100	1.00	1.80	8.0	0.30	0.055	0.270
nSMD100-13.2	13.2	100	1.00	1.80	8.0	0.30	0.055	0.270
nSMD100-16	16	100	1.00	1.80	8.0	0.30	0.055	0.330
nSMD110	8.0	100	1.10	1.80	8.0	0.30	0.050	0.230
nSMD150	6.0	100	1.50	3.00	8.0	1.00	0.040	0.130
nSMD200	6.0	100	2.00	3.50	8.0	1.0	0.018	0.080

V_{max} = Maximum operating voltage vice can withstand without damage at rated current (Imax).

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

I_{hold} = Hold Current. Maximum current device will not trip in 25°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 25°C still air.

P_d = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

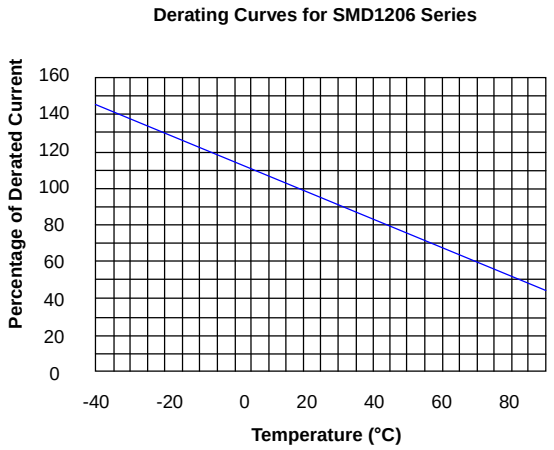
$Ri_{min/max}$ = Minimum/Maximum device resistance prior to tripping at 25°C.

$R1_{max}$ = Maximum device resistance is measured one hour post reflow.

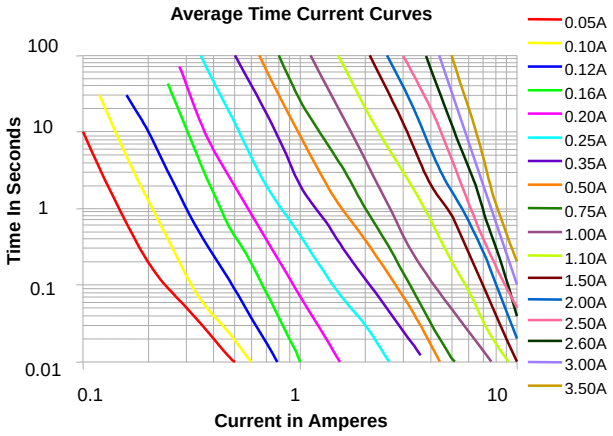
Thermal Derating Chart-I_H (A)

Part Number	Maximum ambient operating temperatures (℃)								
	-40	-20	0	25	40	50	60	70	85
nSMD005	0.09	0.08	0.06	0.05	0.04	0.036	0.033	0.029	0.02
nSMD010	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
nSMD010-33	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
nSMD012	0.216	0.192	0.144	0.12	0.096	0.086	0.079	0.070	0.048
nSMD016	0.288	0.256	0.192	0.160	0.128	0.115	0.106	0.093	0.064
nSMD020	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.13	0.07
nSMD025	0.37	0.33	0.29	0.25	0.22	0.20	0.17	0.15	0.12
nSMD030	0.444	0.396	0.348	0.30	0.264	0.24	0.204	0.18	0.144
nSMD035	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
nSMD050	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
nSMD050-13.2	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
nSMD050-16	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
nSMD050-24	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
nSMD050-30	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
nSMD075	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
nSMD100	1.45	1.31	1.15	1.00	0.84	0.77	0.69	0.61	0.48
nSMD100-13.2	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
nSMD100-16	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
nSMD110	1.595	1.441	1.265	1.10	0.924	0.847	0.759	0.671	0.528
nSMD150	2.18	1.94	1.72	1.50	1.28	1.17	1.06	0.96	0.77
nSMD200	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

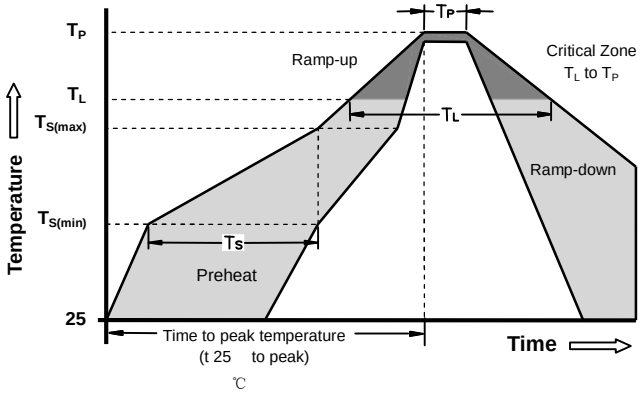
Thermal Derating Curve



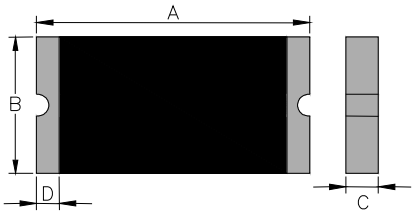
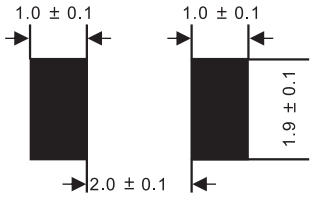
Average Time-Current Curve



Soldering Parameters



Reflow Condition		Pb - 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 -180 Seconds
Average ramp up rate (Liquids Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquids)	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)		20 - 40 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		260°C

Lead style code	Recommended Pad Layout (mm.)
	

Dimensions

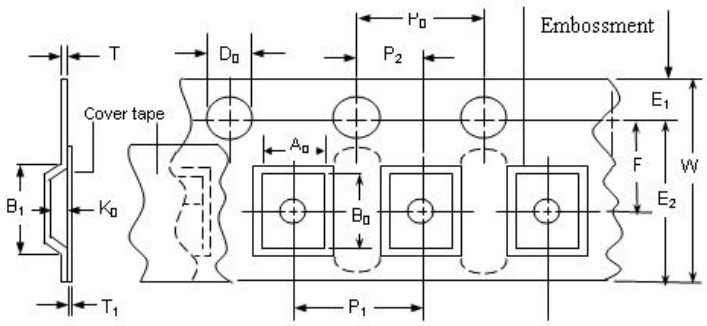
Unit : mm

Part Number	Marking	A		B		C		D	E
		Max	Min	Max	Min	Max	Min	Min	Min
nSMD005	JZ	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
nSMD010	JN	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
nSMD010-33	JN	3.00	3.50	1.50	1.80	0.50	1.10	0.15	0.10
nSMD012	JN	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
nSMD016	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
nSMD020	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
nSMD025	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
nSMD030	JB	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
nSMD035	JB	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
nSMD050	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
nSMD050-13.2	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
nSMD050-16	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
nSMD050-24	JG	3.00	3.50	1.50	1.80	0.35	1.20	0.15	0.10
nSMD050-30	JG	3.00	3.50	1.50	1.80	0.35	1.20	0.15	0.10
nSMD075	JA	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
nSMD075-13.2	JA	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
nSMD075-16	JA	3.00	3.50	1.50	1.80	0.60	1.30	0.15	0.10
nSMD100	JH	3.00	3.50	1.50	1.80	0.40	0.80	0.15	0.10
nSMD100-13.2	JH	3.00	3.50	1.50	1.80	0.40	1.30	0.15	0.10
nSMD100-16	JH	3.00	3.50	1.50	1.80	0.40	1.30	0.15	0.10
nSMD110	JH	3.00	3.50	1.50	1.80	0.40	0.80	0.15	0.10
nSMD150	JI	3.00	3.50	1.50	1.80	0.60	1.50	0.15	0.10
nSMD200	JK	3.00	3.50	1.50	1.80	0.70	1.70	0.15	0.10

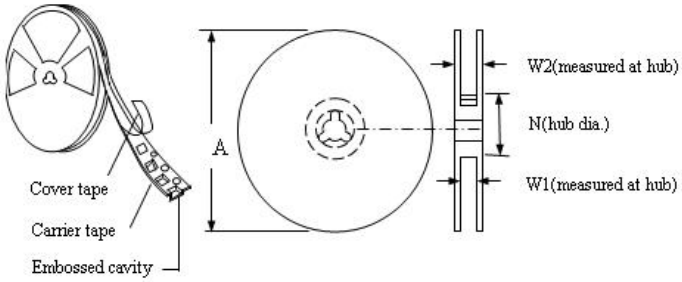
Covering Specifications EIA 481-1(Unit:mm)	
W	8.15 +0.15/-0.3
P_0	4.0 ± 0.10
P_1	4.0± 0.10
P_2	2.0 ± 0.05
A_0	1.95 ± 0.10
B_0	3.65 ± 0.10
D_0	1.55± 0.05
F	3.50± 0.05
E_1	1.75 ± 0.10
T	0.20± 0.10
Leader min.	390
Trailer min.	160

Reel Dimensions	
A	178±1.0
N	59±1
W_1	8.5+1.0/-0.2
W_2	12.0±1

EIA Tape Component Dimentions



EIA Reel Dimentions



Packaging Quantity

Quantity	3500		5000	
Part Number	nSMD005	nSMD075-16	nSMD016	nSMD050-13.2
	nSMD010	nSMD100-13.2	nSMD020	nSMD050-16
	nSMD010-33	nSMD100-16	nSMD025	nSMD075
	nSMD012	nSMD150	nSMD030	nSMD075-13.2
	nSMD050-24	nSMD200	nSMD035	nSMD100
	nSMD050-30		nSMD050	nSMD110