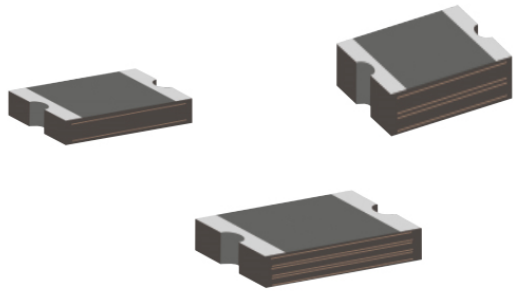
SMD1206P Series

POSITIVE THERMAL COEFFICIENT(PTC)

Description

The 1206 series provides miniature surface mount over-current protection with holding current from 0.05A to 2.0A. This series is suitable for wide range of applications in modern electronics where space is 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

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

S	M	D	1	2	0	6	P	x	x	x	T	F	/	x	x

- SMD: Surface Mount Device
- 1206: Device size code
- P: Polytronics Symbol
- xxx: Current Rating
- T: Thin Version (Optional)
- F: Lead-free
- xx: Special Voltage Rating (Optional)

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)
SMD1206P005TF	60.0	100	0.05	0.15	0.25	1.50	3.600	50.000
SMD1206P010TF	60.0	100	0.10	0.25	0.5	1.00	1.600	15.000
SMD1206P010TF/33	33.0	100	0.10	0.25	0.5	1.00	1.600	15.000
SMD1206P012TF	30	100	0.12	0.29	1.00	0.20	1.350	10.00
SMD1206P016TF	30	100	0.16	0.37	1.00	0.30	1.200	4.50
SMD1206P020TF	24.0	100	0.20	0.46	8.0	0.08	0.350	3.500
SMD1206P025TF	16.0	100	0.25	0.50	8.0	0.08	0.350	2.700
SMD1206P030TF	16.0	100	0.30	0.65	8.0	0.10	0.250	2.00
SMD1206P035TF	16.0	100	0.35	0.75	8.0	0.10	0.250	1.300
SMD1206P050TF	6.0	100	0.50	1.00	8.0	0.10	0.150	0.700
SMD1206P050TF/13.2	13.2	100	0.50	1.00	8.0	0.10	0.150	0.700
SMD1206P050TF/16	16	100	0.50	1.00	8.0	0.10	0.150	0.750
SMD1206P050TF/24	24	100	0.50	1.00	8.0	0.10	0.150	0.750
SMD1206P050TF/30	30	100	0.50	1.00	8.0	0.10	0.150	1.00
SMD1206P075TF	6.0	100	0.75	1.50	8.0	0.20	0.090	0.500
SMD1206P075TF/13.2	13.2	100	0.75	1.50	8.0	0.20	0.090	0.500
SMD1206P075TF/16	16	100	0.75	1.50	8.0	0.20	0.090	0.500
SMD1206P100TF	6.0	100	1.00	1.80	8.0	0.30	0.055	0.270
SMD1206P100TF/13.2	13.2	100	1.00	1.80	8.0	0.30	0.055	0.270
SMD1206P100TF/16	16	100	1.00	1.80	8.0	0.30	0.055	0.330
SMD1206P110TF	8.0	100	1.10	1.80	8.0	0.30	0.050	0.230
SMD1206P150TF	6.0	100	1.50	3.00	8.0	1.00	0.040	0.130
SMD1206P200TF	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.

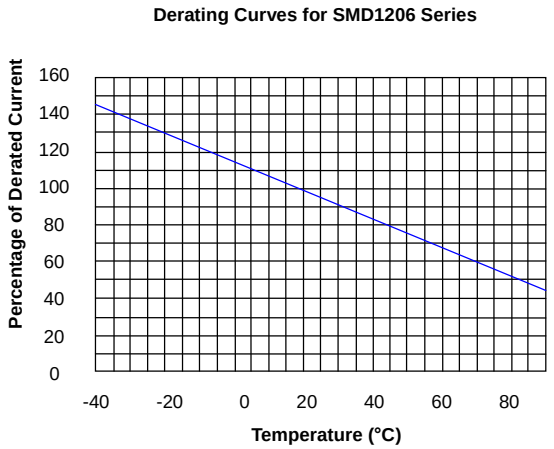
$Ri_{min/max}$ = Minimum/Maximum device resistance prior to tripping at 25°C.

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

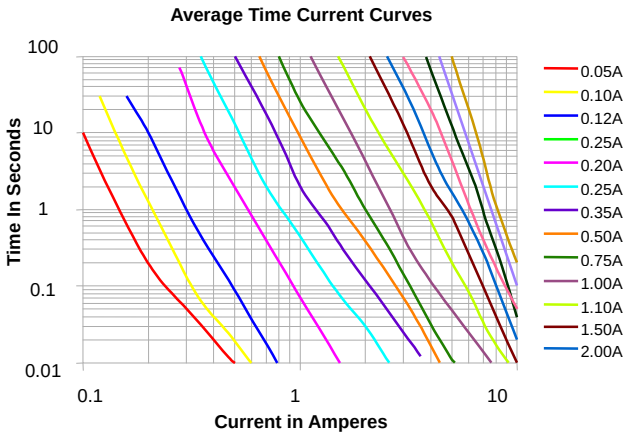
Thermal Derating Chart-I_H (A)

Part Number	Maximum ambient operating temperatures (℃)								
	-40	-20	0	25	40	50	60	70	85
SMD1206P005TF	0.09	0.08	0.06	0.05	0.04	0.036	0.033	0.029	0.02
SMD1206P010TF	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
SMD1206P010TF/33	0.18	0.16	0.12	0.1	0.08	0.072	0.066	0.058	0.04
SMD1206P012TF	0.216	0.192	0.144	0.12	0.096	0.086	0.079	0.070	0.048
SMD1206P016TF	0.288	0.256	0.192	0.160	0.128	0.115	0.106	0.093	0.064
SMD1206P020TF	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.13	0.07
SMD1206P025TF	0.37	0.33	0.29	0.25	0.22	0.20	0.17	0.15	0.12
SMD1206P030TF	0.444	0.396	0.348	0.30	0.264	0.24	0.204	0.18	0.144
SMD1206P035TF	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
SMD1206P050TF	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
SMD1206P050TF/13.2	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
SMD1206P050TF/16	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
SMD1206P050TF/24	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
SMD1206P050TF/30	0.639	0.576	0.513	0.50	0.378	0.351	0.315	0.279	0.225
SMD1206P075TF	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
SMD1206P100TF	1.45	1.31	1.15	1.00	0.84	0.77	0.69	0.61	0.48
SMD1206P100TF/13.2	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
SMD1206P100TF/16	1.305	1.179	1.035	1.00	0.756	0.693	0.621	0.549	0.432
SMD1206P110TF	1.595	1.441	1.265	1.10	0.924	0.847	0.759	0.671	0.528
SMD1206P150TF	2.18	1.94	1.72	1.50	1.28	1.17	1.06	0.96	0.77
SMD1206P200TF	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

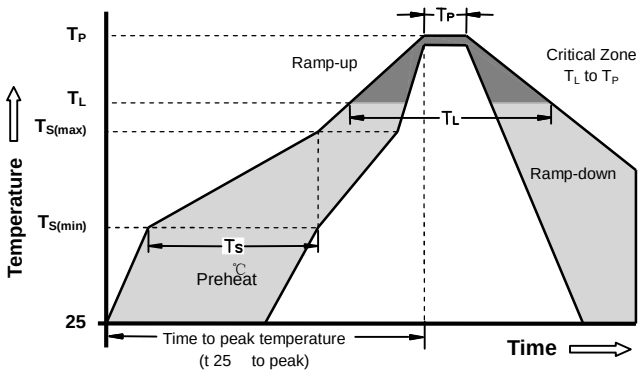
Thermal Derating Curve



Average Time-Current Curve

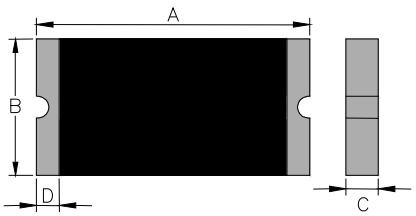
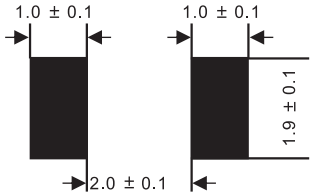


Soldering Parameters



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

Recommended pad layout (mm)

Lead style code	Recommended Pad Layout (mm.)
	

Product Dimensions

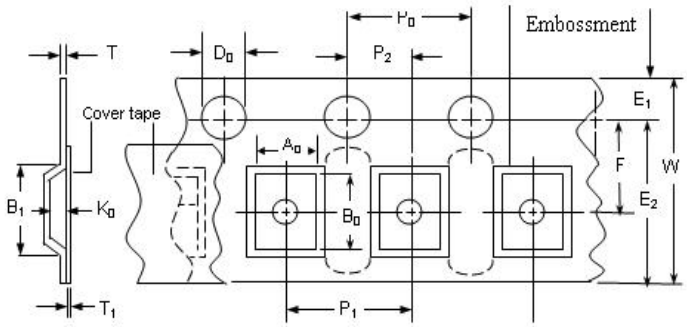
Unit : mm

Part Number	Marking	A		B		C		D	E
		Max	Min	Max	Min	Max	Min	Min	Min
SMD1206P005TF	JZ	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
SMD1206P010TF	JN	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
SMD1206P010TF/33	JN	3.00	3.50	1.50	1.80	0.50	1.10	0.15	0.10
SMD1206P012TF	JN	3.00	3.50	1.50	1.80	0.60	1.10	0.15	0.10
SMD1206P016TF	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
SMD1206P020TF	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
SMD1206P025TF	JF	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
SMD1206P030TF	JB	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
SMD1206P035TF	JB	3.00	3.50	1.50	1.80	0.40	0.90	0.15	0.10
SMD1206P050TF	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
SMD1206P050TF/13.2	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
SMD1206P050TF/16	JG	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
SMD1206P050TF/24	JG	3.00	3.50	1.50	1.80	0.35	1.20	0.15	0.10
SMD1206P050TF/30	JG	3.00	3.50	1.50	1.80	0.35	1.20	0.15	0.10
SMD1206P075TF	JA	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
SMD1206P075TF/13.2	JA	3.00	3.50	1.50	1.80	0.35	0.85	0.15	0.10
SMD1206P075TF/16	JA	3.00	3.50	1.50	1.80	0.60	1.30	0.15	0.10
SMD1206P100TF	JH	3.00	3.50	1.50	1.80	0.40	0.80	0.15	0.10
SMD1206P100TF/13.2	JH	3.00	3.50	1.50	1.80	0.40	1.30	0.15	0.10
SMD1206P100TF/16	JH	3.00	3.50	1.50	1.80	0.40	1.30	0.15	0.10
SMD1206P110TF	JH	3.00	3.50	1.50	1.80	0.40	0.80	0.15	0.10
SMD1206P150TF	JI	3.00	3.50	1.50	1.80	0.60	1.50	0.15	0.10
SMD1206P200TF	JK	3.00	3.50	1.50	1.80	0.70	1.70	0.15	0.10

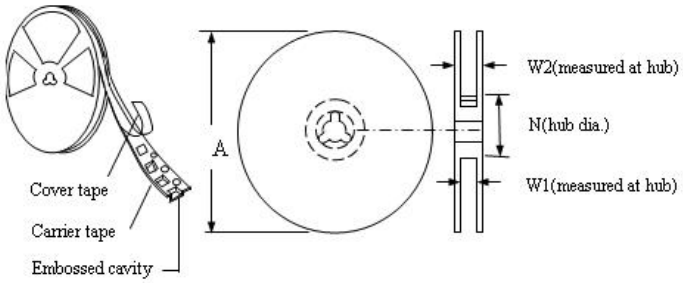
Taping and Reel Specifications

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	SMD1206P005TF	SMD1206P075TF/16	SMD1206P016TF	SMD1206P050TF/13.2
	SMD1206P010TF	SMD1206P100TF/13.2	SMD1206P020TF	SMD1206P050TF/16
	SMD1206P010TF/33	SMD1206P100TF/16	SMD1206P025TF	SMD1206P075TF
	SMD1206P012TF	SMD1206P150TF	SMD1206P030TF	SMD1206P075TF/13.2
	SMD1206P050TF/24	SMD1206P200TF	SMD1206P035TF	SMD1206P100TF
	SMD1206P050TF/30		SMD1206P050TF	SMD1206P110TF