SM1206A Series

METAL OXIDE VARISTORS

Features



- EIA size:1206
- Variable capacitance
- Operating voltage: 3.3Vdc ~385Vdc
- High surge suppress capability
- Bidirectional and symmetrical V/I characteristics
- Multilayer ceramic construction technology
- RoHS & Halogen Free (HF) compliant
- Operating temperature range: -40℃ ~ +85℃
- Storage temperature range: -40℃ ~ +125℃

Applications

- Used to Help Achieve Electromagnetic Compliance of End Products
- Provides On-Board Transient Voltage Protection for ICs, CMOS and MOSFET
- Suppression of Inductive Switching or Other Transient Events Such as EFT and Surge Voltage at the Circuit Board.
- Protection of Components and Circuits Sensitive to ESD Transients Occurring on Power supplies, Control and Signal Lines.

Part Number Code

S	M	1	2	0	6	A	1	8	0	K
LOGO			Packaging: 1206			Standard	Varistor Voltage: 18V			Tolerance: K: 10%

SM1206A5R0K
SM1206A8R0K
SM1206A120K
SM1206A180K
SM1206A240K
SM1206A270K
SM1206A300K
SM1206A330K
SM1206A360K
SM1206A390K
SM1206A420K
SM1206A470K
SM1206A530K
SM1206A560K
SM1206A600K
SM1206A680K
SM1206A760K
SM1206A820K
SM1206A900K
SM1206A950K
SM1206A101K
SM1206A121K
SM1206A151K
SM1206A201K
SM1206A241K
SM1206A271K
SM1206A391K
SM1206A431K
SM1206A471K

Electrical Characteristics

Type Number	Varistor Voltage	Max. Allowable Voltage		Max. Energy (10/1000μs)	Max. Clamping Voltage (8/20μs)		Withstanding Surge Current (8/20μs)
	V_{1mA}(V)	V_{AC}(V)	V_{DC}(V)	(J)	I_P(A)	V_C(V)	I(A)
SM1206A5R0K	4~6	2	3.3	0.5	5	13.2	100
SM1206A8R0K	6.7~10.1	4	5.6	0.5	5	22	100
SM1206A120K	10.8~16.2	6	9	0.5	5	35	100
SM1206A180K	16.8~21	11	14	0.5	5	46	100
SM1206A240K	21.6~27	14	18	0.5	5	59	100
SM1206A270K	26.4~33	17	22	0.5	5	72	100
SM1206A300K	28.8~36	18	24	0.5	5	79	100
SM1206A330K	31.2~39	20	26	0.5	5	85	100
SM1206A360K	33.6~42	21	28	0.5	5	92	100
SM1206A390K	36~45	25	30	0.5	5	99	100
SM1206A420K	39.6~49.5	28	33	0.5	5	108	100
SM1206A470K	45.6~57	30	38	0.5	5	125	100
SM1206A530K	50.4~63	32	42	0.5	5	138	100
SM1206A560K	54~67.5	35	45	0.5	5	148	100
SM1206A600K	57.6~72	37	48	0.5	5	158	100
SM1206A680K	67.2~84	40	56	0.5	5	184	100
SM1206A760K	72~90	43	60	0.5	5	198	100
SM1206A820K	78~97.5	47	65	0.5	5	214	100
SM1206A900K	81.6~102	49	68	0.5	5	224	100
SM1206A950K	90~112.5	50	75	0.5	5	247	100
SM1206A101K	102~127.5	60	85	0.5	5	280	100
SM1206A121K	120~150	67	100	0.5	5	330	100
SM1206A151K	135~165	75	110	0.5	5	360	100
SM1206A201K	180~220	115	150	0.5	5	395	100
SM1206A241K	216~264	150	200	0.5	5	415	80
SM1206A271K	243~297	175	225	0.5	5	475	80
SM1206A391K	351~429	250	320	0.4	5	650	/
SM1206A431K	387~473	275	350	0.4	5	710	/
SM1206A471K	423~517	300	385	0.4	5	775	/

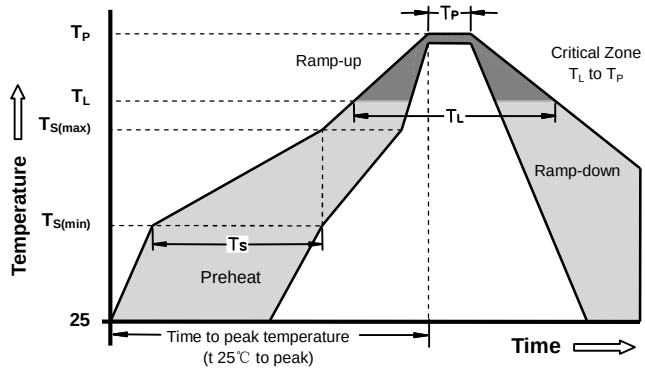
Environmental Performance

Item	Specifications	Test Condition
Bias Humidity	V_V / V_V≤±10%	90%RH, 40ºC, Working Voltage, 1000 hrs
Thermal Shock	V_V / V_V≤±10%	-40ºC to 85ºC,30min.cycle,5 cycles
Full Load Voltage	V_V / V_V≤±10%	Working Voltage,85ºC,1000 hrs

General Technical Data

Operating Temperature		-40~+85 ℃
Storage Temperature		-40~+125 ℃
Response Time		<1ns
Solderability		245±5 ℃, 3±1sec
Solder leach resistance		260±5 ℃,10±1sec
Taping Package Storage Condition	Storage Temperature	5~40℃
	Relative Humidity	To 65%
	Storage Time	12 Months max

Soldering Parameters - Reflow Soldering (Surface Mount Devices)



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

Precaution for soldering

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.
Do not give heat shock over 100°C in the process of soldering. We recommend to take preheating and gradual cooling

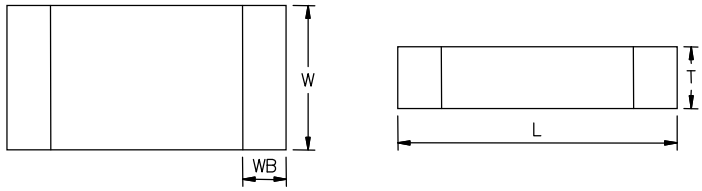
Soldering gun procedure

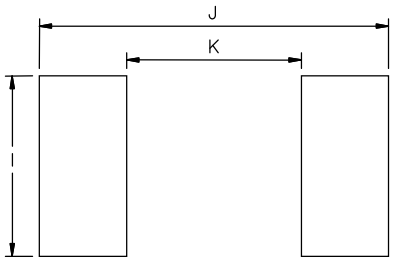
Note the follows, in case of using solder gun for replacement.
1)The tip temperature must be less than 280 for the period within 3 seconds by using soldering gun under 30W
2) The soldering gun tip shall not touch this product directly.

Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.

Dimensions

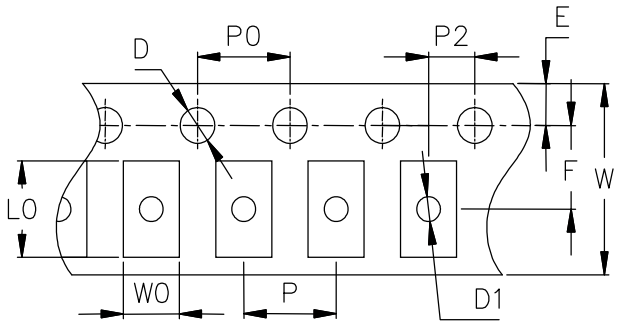




Recommended Soldering Pad Layout

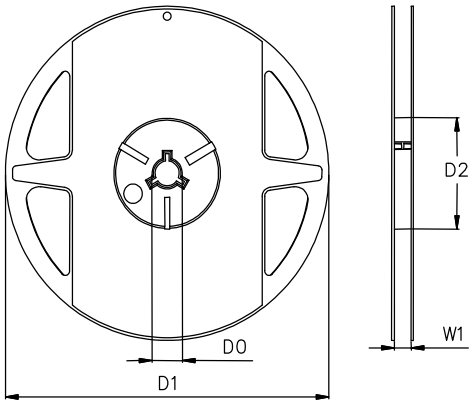
Symbol	Millimeters	Inches
L	3.20±0.30	0.126±0.012
W	1.60±0.30	0.063±0.012
$T_{max.}$	1.90	0.075
WB	0.50±0.20	0.02±0.008
I	2.0	0.079
J	4.0	0.157
K	2.0	0.079

Taping and Reel Specifications



Symbol	Millimeters	Inches
W	8.00±0.20	0.315±0.008
E	1.75±0.10	0.069±0.004
F	3.50±0.05	0.138±0.002
D	1.55±0.05	0.061±0.002
D1	Φ1.00±0.05	Φ0.039±0.002
P	4.00±0.10	0.157±0.004
P0	4.00±0.05	0.157±0.002
P2	2.00±0.05	0.079±0.002
L0	3.90±0.10	0.154±0.004
W0	2.35±0.10	0.093±0.004

Packing Specifications



Symbol	Millimeters	Inches
D0	13.0±0.2	0.512±0.008
D1	178±2.0	7.008±0.079
D2	Φ60.0±0.5	Φ2.362±0.02
W1	9.25±0.5	0.364±0.02

Taping Specifications

There Shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the heat of taping.

Quantity of products in the taping package

SIZE EIA (EIAJ)	SM1206A201/241/271/391/431/471K	SM1206A Series Other
Standard Packing Quantity (PCS/reel)	2000	3000