

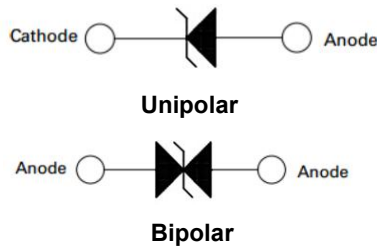
## SMAJ5.0A THRU SMAJ300CA SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR



### Features

- Glass Passivated Die Construction
- 400W Peak Pulse Power Dissipation
- 5.0V- 300V Standoff Voltage
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Case Material has UL Flammability Classification Rating 94V-0
- ROHS Compliant
- All SMC Parts are Traceable to the Wafer Lot
- Additional testing can be offered upon request
- "-A" suffix is for Automotive qualified

### Circuit Diagram



### Mechanical Data

- Case: SMA Low Profile Molded Plastic
- Terminals: Solder Plated , Solderable per MIL-STD 750, Method 2026
- Polarity: Color band denotes cathode except Bipolar
- Mounting Position: Any
- Weight: 0.064 grams (approx.)

### Maximum Ratings and Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A = 25^\circ\text{C}$ by 10x1000 $\mu\text{s}$ Waveform (Fig.2)(Note 1, 2)	$P_{PPM}$	400	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave ( Fig.7),(Note 3)	$I_{FSM}$	40	A
Power Dissipation on Infinite Heat Sink at $T_A = 50^\circ\text{C}$	$P_{M(AV)}$	3.3	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	30	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	120	$^\circ\text{C/W}$

- Notes:**
1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2.
  2. Mounted on 5.0mm<sup>2</sup> copper pads to each terminal.
  3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.

**Electrical Characteristics@T<sub>A</sub>=25° C unless otherwise specified**

UNI-POLAR	BI-POLAR	DEVICE MARKING CODE		REVERSE STANDOFF VOLTAGE V <sub>RWM</sub> (V)	BREAKDOWN VOLTAGE V <sub>BR</sub> (V) MIN. @ I <sub>T</sub>	BREAKDOWN VOLTAGE V <sub>BR</sub> (V) MAX. @ I <sub>T</sub>	TEST CURRENT (I <sub>T</sub> ) mA	MAXIMUM CLAMPING VOLTAGE @I <sub>PP</sub> V <sub>C</sub> (V)	PEAK PULSE CURRENT I <sub>PP</sub> (A)	REVERSE LEAKAGE @ V <sub>RWM</sub> I <sub>R</sub> (μA)
		UNI	BI							
SMAJ5.0A	SMAJ5.0CA	AE	WE	5.00	6.40	7.00	10	9.2	43.5	800
SMAJ6.0A	SMAJ6.0CA	AG	WG	6.00	6.67	7.37	10	10.3	38.8	800
SMAJ6.5A	SMAJ6.5CA	AK	WK	6.50	7.22	7.98	10	11.2	35.7	500
SMAJ7.0A	SMAJ7.0CA	AM	WM	7.00	7.78	8.60	10	12.0	33.3	200
SMAJ7.5A	SMAJ7.5CA	AP	WP	7.50	8.33	9.21	1	12.9	31.0	100
SMAJ8.0A	SMAJ8.0CA	AR	WR	8.00	8.89	9.83	1	13.6	29.4	50
SMAJ8.5A	SMAJ8.5CA	AT	WT	8.50	9.44	10.40	1	14.4	27.8	20
SMAJ9.0A	SMAJ9.0CA	AV	WV	9.00	10.00	11.10	1	15.4	26.0	10
SMAJ10A	SMAJ10CA	AX	WX	10.00	11.10	12.30	1	17.0	23.5	5
SMAJ11A	SMAJ11CA	AZ	WZ	11.00	12.20	13.50	1	18.2	22.0	5
SMAJ12A	SMAJ12CA	BE	XE	12.00	13.30	14.70	1	19.9	20.1	5
SMAJ13A	SMAJ13CA	BG	XG	13.00	14.40	15.90	1	21.5	18.6	5
SMAJ14A	SMAJ14CA	BK	XK	14.00	15.60	17.20	1	23.2	17.2	5
SMAJ15A	SMAJ15CA	BM	XM	15.00	16.70	18.50	1	24.4	16.4	5
SMAJ16A	SMAJ16CA	BP	XP	16.00	17.80	19.70	1	26.0	15.4	5
SMAJ17A	SMAJ17CA	BR	XR	17.00	18.90	20.90	1	27.6	14.5	5
SMAJ18A	SMAJ18CA	BT	XT	18.00	20.00	22.10	1	29.2	13.7	5
SMAJ20A	SMAJ20CA	BV	XV	20.00	22.20	24.50	1	32.4	12.3	5
SMAJ22A	SMAJ22CA	BX	XX	22.00	24.40	26.90	1	35.5	11.3	5
SMAJ24A	SMAJ24CA	BZ	XZ	24.00	26.70	29.50	1	38.9	10.3	5
SMAJ26A	SMAJ26CA	CE	YE	26.00	28.90	31.90	1	42.1	9.5	5
SMAJ28A	SMAJ28CA	CG	YG	28.00	31.10	34.40	1	45.4	8.8	5
SMAJ30A	SMAJ30CA	CK	YK	30.00	33.30	36.80	1	48.4	8.3	5
SMAJ33A	SMAJ33CA	CM	YM	33.00	36.70	40.60	1	53.3	7.5	5
SMAJ36A	SMAJ36CA	CP	YP	36.00	40.00	44.20	1	58.1	6.9	5
SMAJ40A	SMAJ40CA	CR	YR	40.00	44.40	49.10	1	64.5	6.2	5
SMAJ43A	SMAJ43CA	CT	YT	43.00	47.80	52.80	1	69.4	5.8	5
SMAJ45A	SMAJ45CA	CV	YV	45.00	50.00	55.30	1	72.7	5.5	5
SMAJ48A	SMAJ48CA	CX	YX	48.00	53.30	58.90	1	77.4	5.2	5
SMAJ51A	SMAJ51CA	CZ	YZ	51.00	56.70	62.70	1	82.4	4.9	5
SMAJ54A	SMAJ54CA	RE	ZE	54.00	60.00	66.30	1	87.1	4.6	5
SMAJ58A	SMAJ58CA	RG	ZG	58.00	64.40	71.20	1	93.6	4.3	5
SMAJ60A	SMAJ60CA	RK	ZK	60.00	66.70	73.70	1	96.8	4.1	5
SMAJ64A	SMAJ64CA	RM	ZM	64.00	71.10	78.60	1	103.0	3.9	5
SMAJ70A	SMAJ70CA	RP	ZP	70.00	77.80	86.00	1	113.0	3.5	5
SMAJ75A	SMAJ75CA	RR	ZR	75.00	83.30	92.10	1	121.0	3.3	5
SMAJ78A	SMAJ78CA	RT	ZT	78.00	86.70	95.80	1	126.0	3.2	5
SMAJ85A	SMAJ85CA	RV	ZV	85.00	94.40	104.00	1	137.0	2.9	5
SMAJ90A	SMAJ90CA	RX	ZX	90.00	100.00	111.00	1	146	2.7	5
SMAJ100A	SMAJ100CA	RZ	ZZ	100.00	111.00	123.00	1	162	2.5	5
SMAJ110A	SMAJ110CA	SE	VE	110.00	122.00	135.00	1	177	2.3	5
SMAJ120A	SMAJ120CA	SG	VG	120.00	133.00	147.00	1	193	2.1	5
SMAJ130A	SMAJ130CA	SK	VK	130.00	144.00	159.00	1	209	1.9	5
SMAJ150A	SMAJ150CA	SM	VM	150.00	167.00	185.00	1	243	1.6	5
SMAJ160A	SMAJ160CA	SP	VP	160.00	178.00	197.00	1	259	1.5	5
SMAJ170A	SMAJ170CA	SR	VR	170.00	189.00	209.00	1	275	1.5	5
SMAJ180A	SMAJ180CA	ST	VT	180.00	201.00	222.00	1	292	1.4	5
SMAJ220A	SMAJ220CA	SX	VX	220.00	246.00	272.00	1	356	1.1	5
SMAJ300A	SMAJ300CA	TE	UE	300.00	335.00	371.00	1	486	0.8	5

For bidirectional type having VRWM of 10 volts and less, the IR limit is double.  
For parts without A (VBR is + 10% and VC is 5% higher than with A parts).

## Ratings and Characteristics Curves

Figure 1 - TVS Transients Clamping Waveform

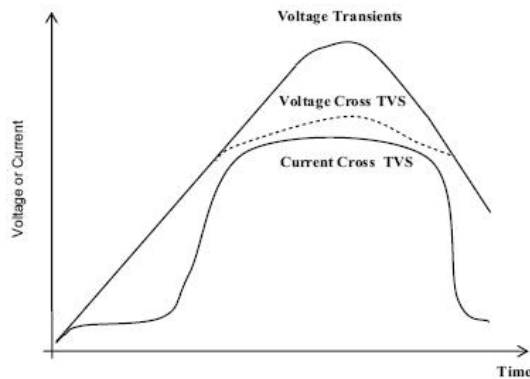


Figure 2 - Peak Pulse Power Rating Curve

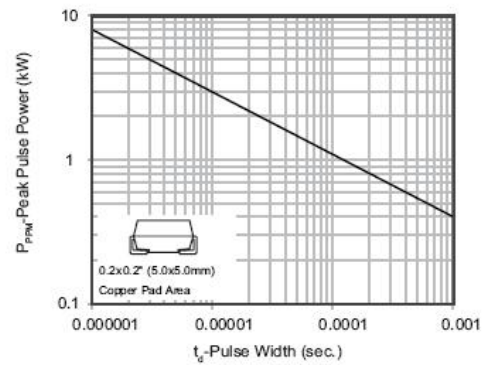


Figure 3 - Pulse Derating Curve

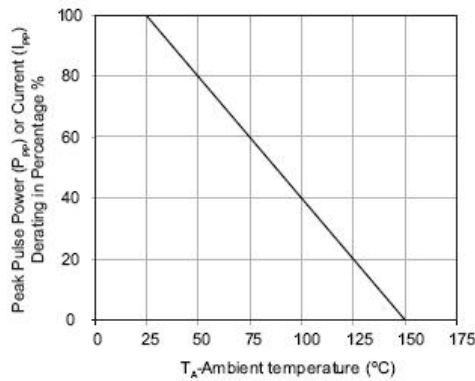


Figure 4 - Pulse Waveform

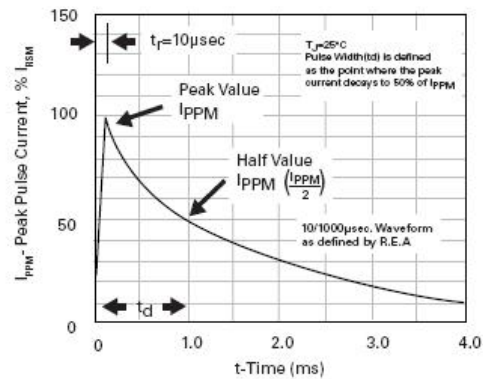


Figure 5 - Typical Junction Capacitance

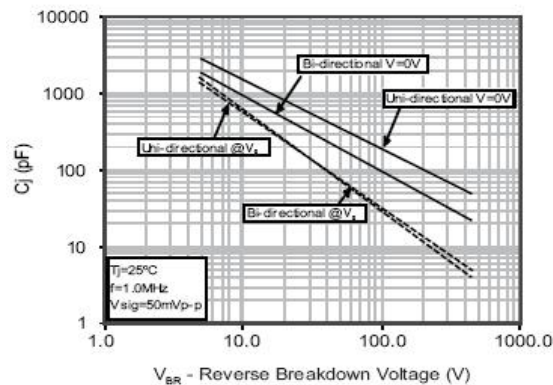
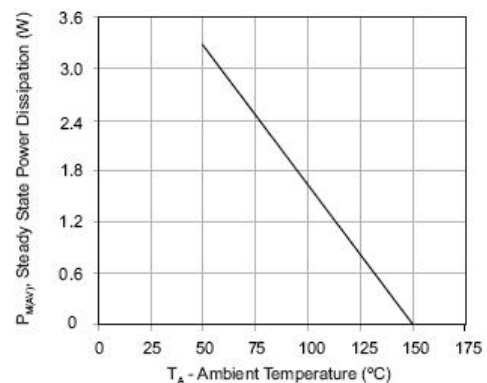
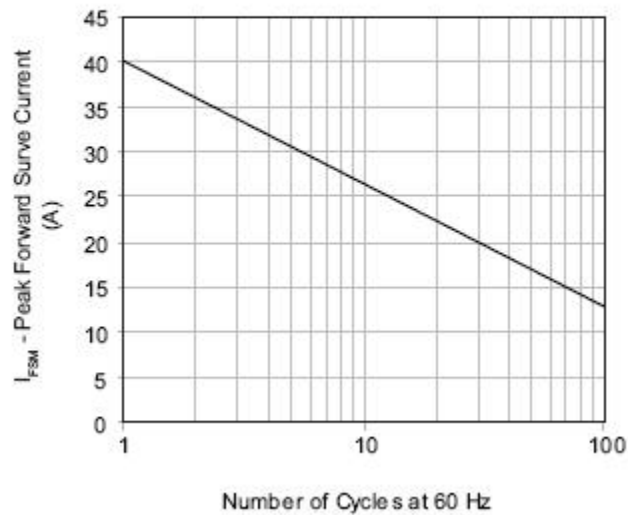


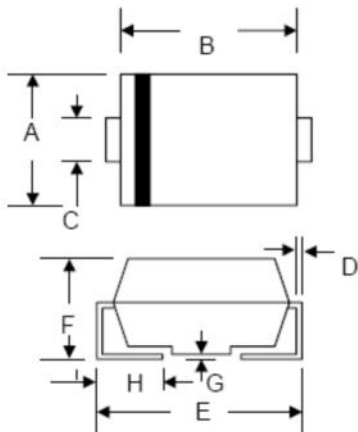
Figure 6 - Steady State Power Dissipation Derating Curve



**Figure 7 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**



## Mechanical Dimensions SMA



SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.40	2.84	0.094	0.112
B	3.99	4.75	0.157	0.187
C	1.05	1.70	0.041	0.067
D	0.15	0.51	0.006	0.020
E	4.80	5.66	0.189	0.223
F	1.90	2.95	0.075	0.116
G	0.05	0.203	0.002	0.008
H	0.76	1.52	0.030	0.600

## Ordering Information

Device	Package	Shipping
SMAJ5.0A THRU SMAJ300CA	SMA (Pb-Free)	5000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

## Marking Diagram

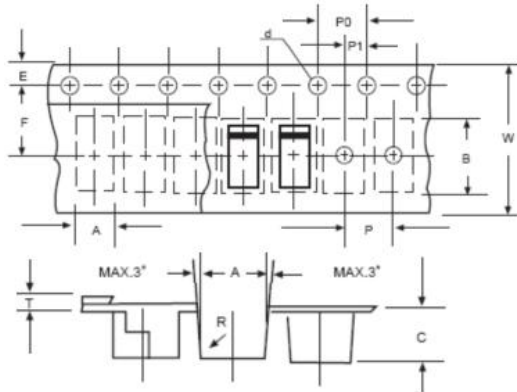


Where XXXXX is YYWWL

AE/WE = Marking code  
YY = Year  
WW = Week  
L = Lot Number

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

**Carrier Tape Specification SMA**



SYMBOL	Millimeters	
	Min.	Max.
A	2.97	3.17
B	5.70	5.90
C	2.32	2.52
d	1.40	1.60
E	1.40	1.60
F	5.60	5.70
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
T	0.25	0.35
W	11.80	12.20

**DISCLAIMER:**

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC - Sangdest Microelectronics (Nanjing) Co., Ltd sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC - Sangdest Microelectronics (Nanjing) Co., Ltd be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC - Sangdest Microelectronics (Nanjing) Co., Ltd assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC - Sangdest Microelectronics (Nanjing) Co., Ltd be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC - Sangdest Microelectronics (Nanjing) Co., Ltd.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC - Sangdest Microelectronics (Nanjing) Co., Ltd.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..