

## DATA SHEET

### TRANSIENT VOLTAGE SUPPRESSOR – SMAJ SERIES

#### FEATURE

- ✧ For surface mounted applications in order to optimize board space.
- ✧ Low profile package.
- ✧ Built-in strain relief.
- ✧ Glass passivated junction.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ Repetition Rate (duty cycle):0.01%.
- ✧ Fast response time: typically less than 1.0ps from 0 Volts to  $V_{BR}$  for unidirectional types.
- ✧ Typical  $I_R$  less than  $1\mu A$  above 10V.
- ✧ High Temperature soldering: 260°C/10 seconds at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-O.



SMA/DO-214AC

#### MECHANICAL DATE

- ✧ Case: JEDEC DO214AC. Molded plastic over glass passivated junction.
- ✧ Terminal: Solder plated, solderable per MIL-STD-750, Method 2026.
- ✧ Polarity: Color band denoted positive end (cathode) except Bidirectional.
- ✧ Standard Packaging: 12mm tape (EIA STD RS-481).
- ✧ Weight: 0.002 ounce, 0.061 grams.

#### DEVICES FOR BIPOLAR APPLICATION

For bidirectional use C or CA suffix for types SMAJ5.0 thru types SMAJ440 (e.g.SMAJ5.0CA, SMAJ440CA), electrical characteristics apply in both directions.

#### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

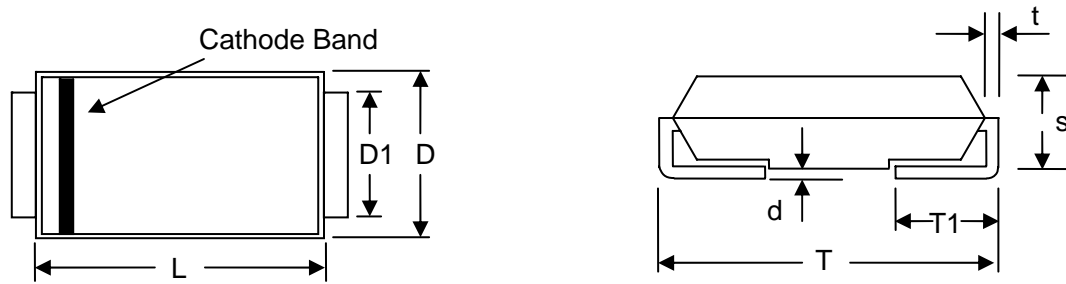
RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000 $\mu s$ waveform (Note 1, 2, FIG.1).	$P_{PPM}$	Minimum 400	Watts
Peak Pulse Current of on 10/1000 $\mu s$ waveform (Note 1, FIG.3).	$P_{M(AV)}$	See Table 1	Amps
Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note2,3)	$I_{FSM}$	40	Amps
Operating junction and Storage Temperature Range.	$T_J, T_{STG}$	-55 to +175	°C

Notes: 1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ C$  per Fig. 2.

2. Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal.

3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

**PACKAGE DIMENSIONS**



**SMA/DO-214AC**

Item	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	3.99	4.50	0.157	0.177
D	2.54	2.79	0.100	0.110
D1	1.25	1.65	0.049	0.065
T	4.93	5.28	0.194	0.208
T1	0.78	1.52	0.030	0.060
d	-	0.203	-	0.008
s	1.98	2.29	0.078	0.090
t	0.152	0.305	0.006	0.012

**ELECTRICAL CHARACTERISTICS**

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @IT	Breakdown Voltage @IT	Test Current	Maximum Clamping Voltage @IPP	Peak Pulse Current	Reverse Leakage @VRWM
UNI-POLAR	BI-POLAR	UNI	BI	VRWM(V)	VBR MIN.(V)	VBR MAX.(V)	IT(mA)	VC(V)	IPP(A)	IR(μA)
SMAJ5.0A	SMAJ5.0CA	HE/AE	TE/WE	5.0	6.40	7.00	10	9.2	43.5	800
SMAJ6.0A	SMAJ6.0CA	HG/AG	TG/WG	6.0	6.67	7.37	10	10.3	38.8	800
SMAJ6.5A	SMAJ6.5CA	HK/AK	TK/WK	6.5	7.22	7.98	10	11.2	35.7	500
SMAJ7.0A	SMAJ7.0CA	HM/AM	TM/WM	7.0	7.78	8.60	10	12.0	33.3	200
SMAJ7.5A	SMAJ7.5CA	HP/AP	TP/WP	7.5	8.33	9.21	1	12.9	31.0	100
SMAJ8.0A	SMAJ8.0CA	HR/AR	TR/WR	8.0	8.89	9.83	1	13.6	29.4	50
SMAJ8.5A	SMAJ8.5CA	HT/AT	TT/WT	8.5	9.44	10.40	1	14.4	27.8	20
SMAJ9.0A	SMAJ9.0CA	HV/AV	TV/WV	9.0	10.00	11.10	1	15.4	26.0	10
SMAJ10A	SMAJ10CA	HX/AX	TX/WX	10.0	11.10	12.30	1	17.0	23.5	5
SMAJ11A	SMAJ11CA	HZ/AZ	TZ/WZ	11.0	12.20	13.50	1	18.2	22.0	5
SMAJ12A	SMAJ12CA	IE/BE	UE/XE	12.0	13.30	14.70	1	19.9	20.1	5
SMAJ13A	SMAJ13CA	IG/BG	UG/XG	13.0	14.40	15.90	1	21.5	18.6	5
SMAJ14A	SMAJ14CA	IK/BK	UK/XK	14.0	15.60	17.20	1	23.2	17.2	5
SMAJ15A	SMAJ15CA	IM/BM	UM/XM	15.0	16.70	18.50	1	24.4	16.4	5
SMAJ16A	SMAJ16CA	IP/BP	UP/XP	16.0	17.80	19.70	1	26.0	15.4	5
SMAJ17A	SMAJ17CA	IR/BR	UR/XR	17.0	18.90	20.90	1	27.6	14.5	5
SMAJ18A	SMAJ18CA	IT/BT	UT/XT	18.0	20.00	22.10	1	29.2	13.7	5
SMAJ20A	SMAJ20CA	IV/BV	UV/XV	20.0	22.20	24.50	1	32.4	12.3	5

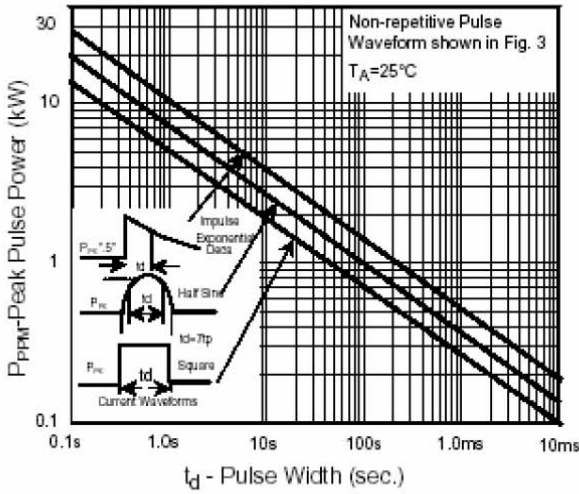
**ELECTRICAL CHARACTERISTICS**

Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @IT	Breakdown Voltage @IT	Test Current	Maximum Clamping Voltage @IPP	Peak Pulse Current	Reverse Leakage @VRWM
UNI-POLAR	BI-POLAR	UNI	BI	VRWM(V)	VBR MIN.(V)	VBR MAX.(V)	IT(mA)	VC(V)	IPP(A)	IR(μA)
SMAJ22A	SMAJ22CA	IX/BX	UX/XX	22.0	24.40	26.90	1	35.5	11.3	5
SMAJ24A	SMAJ24CA	IZ/BZ	UZ/XZ	24.0	26.70	29.50	1	38.9	10.3	5
SMAJ26A	SMAJ26CA	JE/CE	VE/YE	26.0	28.90	31.90	1	42.1	9.5	5
SMAJ28A	SMAJ28CA	JG/CG	VG/YG	28.0	31.10	34.40	1	45.4	8.8	5
SMAJ30A	SMAJ30CA	JK/CK	VK/YK	30.0	33.30	36.80	1	48.4	8.3	5
SMAJ33A	SMAJ33CA	JM/CM	VM/YM	33.0	36.70	40.60	1	53.3	7.5	5
SMAJ36A	SMAJ36CA	JP/CP	VP/YP	36.0	40.00	44.20	1	58.1	6.9	5
SMAJ40A	SMAJ40CA	JR/CR	VR/YR	40.0	44.40	49.10	1	64.5	6.2	5
SMAJ43A	SMAJ43CA	JT/CT	VT/YT	43.0	47.80	52.80	1	69.4	5.8	5
SMAJ45A	SMAJ45CA	JV/CV	VV/YV	45.0	50.00	55.30	1	72.7	5.5	5
SMAJ48A	SMAJ48CA	JX/CX	VX/YX	48.0	53.30	58.90	1	77.4	5.2	5
SMAJ51A	SMAJ51CA	JZ/CZ	VZ/YZ	51.0	56.70	62.70	1	82.4	4.9	5
SMAJ54A	SMAJ54CA	RE	WE/ZE	54.0	60.00	66.30	1	87.1	4.6	5
SMAJ58A	SMAJ58CA	RG	WG/ZG	58.0	64.40	71.20	1	93.6	4.3	5
SMAJ60A	SMAJ60CA	RK	WK/ZK	60.0	66.70	73.70	1	96.8	4.1	5
SMAJ64A	SMAJ64CA	RM	WM/ZM	64.0	71.10	78.60	1	103.0	3.9	5
SMAJ70A	SMAJ70CA	RP	WP/ZP	70.0	77.80	86.00	1	113.0	3.5	5
SMAJ75A	SMAJ75CA	RR	WR/ZR	75.0	83.30	92.10	1	121.0	3.3	5
SMAJ78A	SMAJ78CA	RT	WT/ZT	78.0	86.70	95.80	1	126.0	3.2	5
SMAJ85A	SMAJ85CA	RV	WV/ZV	85.0	94.40	104.00	1	137.0	2.9	5
SMAJ90A	SMAJ90CA	RX	WX/ZX	90.0	100.00	111.00	1	146.0	2.7	5
SMAJ100A	SMAJ100CA	RZ	WZ/ZZ	100.0	111.00	123.00	1	162.0	2.5	5
SMAJ110A	SMAJ110CA	SE	XE/VE	110.0	122.00	135.00	1	177.0	2.3	5
SMAJ120A	SMAJ120CA	SG	XG/VG	120.0	133.00	147.00	1	193.0	2.1	5
SMAJ130A	SMAJ130CA	SK	XK/VK	130.0	144.00	159.00	1	209.0	1.9	5
SMAJ150A	SMAJ150CA	SM	XM/VM	150.0	167.00	185.00	1	243.0	1.6	5
SMAJ160A	SMAJ160CA	SP	XP/VP	160.0	178.00	197.00	1	259.0	1.5	5
SMAJ170A	SMAJ170CA	SR	XR/VR	170.0	189.00	209.00	1	275.0	1.5	5
SMAJ180A	SMAJ180CA	ST	YT/VT	180.0	201.00	222.00	1	292.0	1.4	5
SMAJ190A	SMAJ190CA	SV/SU	YV/YU	190.0	209.00	243.20	1	308.0	1.3	5
SMAJ200A	SMAJ200CA	SX/SV	YX	200.0	224.00	247.00	1	324.0	1.2	5
SMAJ210A	SMAJ210CA	SZ/SW	YZ/YW	210.0	231.00	268.80	1	340.0	1.2	5
SMAJ220A	SMAJ220CA	GE	ZE/VX	220.0	246.00	272.00	1	356.0	1.1	5
SMAJ250A	SMAJ250CA	SZ	VZ	250.0	279.00	309.00	1	405.0	1.0	5
SMAJ300A	SMAJ300CA	TE	UE	300.0	335.00	371.00	1	486.0	0.8	5
SMAJ350A	SMAJ350CA	TG	UG	350.0	391.00	432.00	1	567.0	0.7	5
SMAJ400A	SMAJ400CA	TK	UK	400.0	447.00	494.00	1	648.0	0.6	5
SMAJ440A	SMAJ440CA	TM	UM	440.0	492.00	543.00	1	713.0	0.6	5

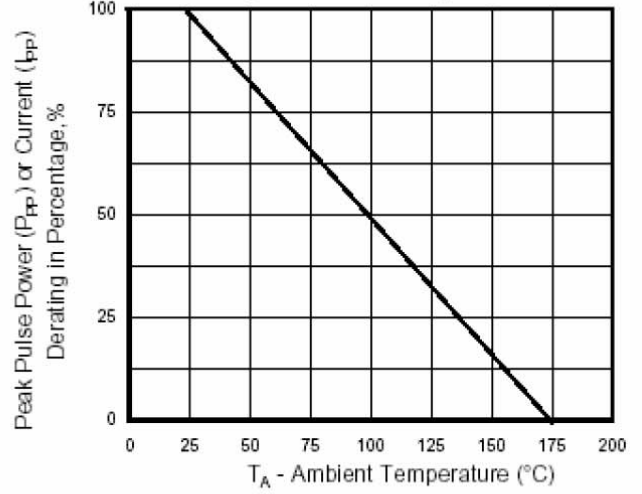
Notes: For bidirectional type having  $V_{RWM}$  of 10 volts and less, the  $I_R$  limit is double.

**RATINGS AND CHARACTERISTIC CURVES** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

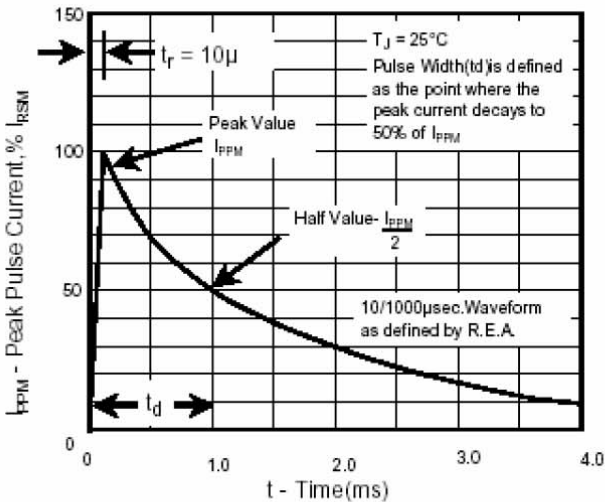
**Fig.1 - Peak Pulse Power Rating Curve**



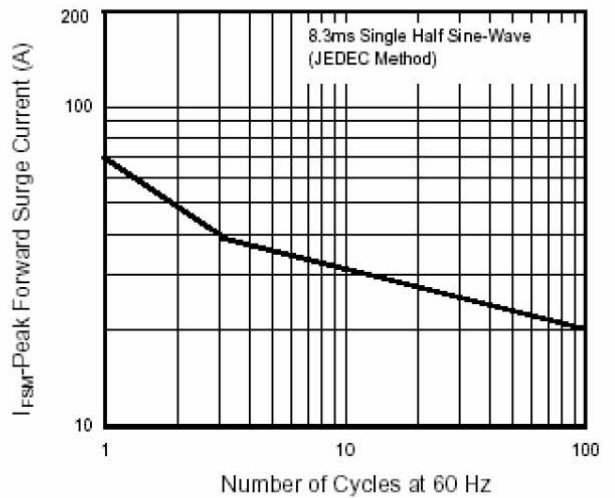
**Fig.2-Power Derating Curve**



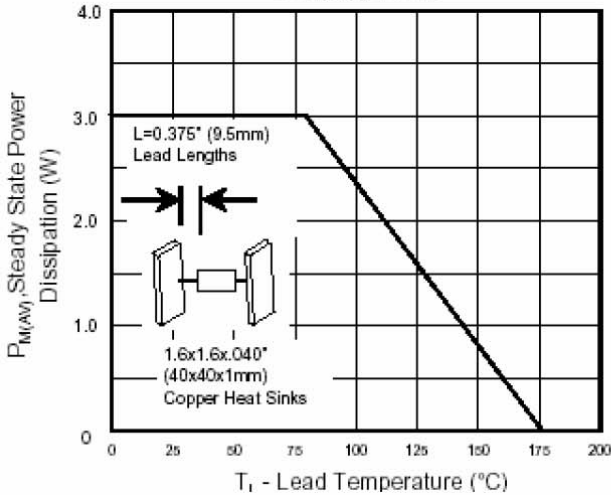
**Fig.3 - Pulse Waveform**



**Fig.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**



**Fig. 5 - Steady State Power Derating Curve**



**Fig. 6 - Capacitance**

