



# SMAJ SERIES

Surface Mount Transient Voltage Suppressor

## Features

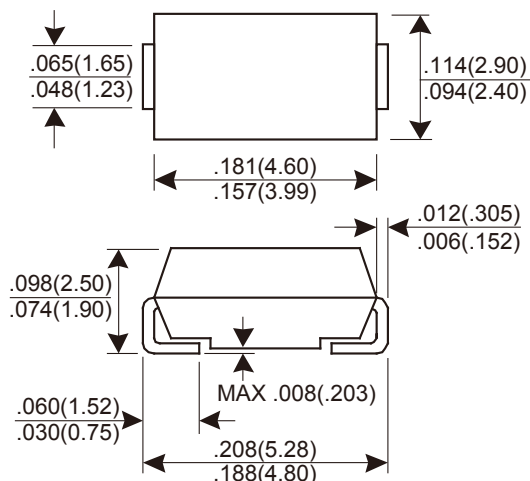
- ★ High reliability application and automotive grade AEC-Q101 qualified
- ★ 400W peak pulse power capability at 10/1000 $\mu$ s waveform, repetition rate (duty cycles):0.01%
- ★ Low leakage
- ★ Excellent clamping capability
- ★ Very fast response time
- ★ RoHS compliant
- ★ IEC-61000-4-2 ESD 30kV(Air), 30kV(Contact)
- ★ ESD protection of data lines in accordance with IEC 61000-4-2
- ★ EFT protection of data lines in accordance with IEC 61000-4-4

## Mechanical Data

- ★ Case: Molded plastic, SMA/DO-214AC
- ★ Epoxy: UL 94V-0 rate flame retardant
- ★ Terminals: Solderable per MIL-STD-750, method 2026
- ★ Polarity: Color band denotes cathode end
- ★ Part no. with suffix "-A" means AEC-Q101 qualified

**Working Voltage 6.5 to 440 V**  
**Peak Pulse Power 400W**

## SMA/DO-214AC



Dimensions in inches and (millimeters)

## MAXIMUM RATINGS AND THERMAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$  unless otherwise noted

PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation with a 10/1000 $\mu$ s waveform (Note 1,2)	$P_{PPM}$	400	W
Peak forward surge current, 8.3 ms single half sine-wave (Note 3)	$I_{FSM}$	40	A
Power dissipation on infinite heatsink at $T_L=75^\circ\text{C}$	$P_D$	1.0	W
Maximum instantaneous forward voltage at 50A for unidirectional only (Note 4)	$V_F$	3.5 / 5.0	V
Typical thermal resistance junction to ambient	$R_{\theta JA}$	120	$^\circ\text{C/W}$
Typical thermal resistance junction to lead	$R_{\theta JL}$	30	$^\circ\text{C/W}$
Operating junction temperature range ( $V_R \leq 78\text{V}$ )	$T_J$	-65 to +175	$^\circ\text{C}$
Operating junction temperature range ( $V_R > 78\text{V}$ )	$T_J$	-65 to +150	$^\circ\text{C}$
Storage temperature range	$T_{STG}$	-65 to +175	$^\circ\text{C}$

NOTES : (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2

(2) Mounted on copper pad area of 0.2" x 0.2" (5.0 x 5.0mm) to each terminal

(3) Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

(4)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$

# SMAJ SERIES

Electrical Characteristics( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R@V_{RWM}$ ( $\mu\text{A}$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}$ (A)	Maximum Clamping Voltage $V_C@I_{PP}$ (V)
		Uni	Bi	Min (V)	Max (V)	$I_T$ (mA)				
SMAJ6.5A		AK		7.22	7.98	10	500	6.5	35.71	11.2
SMAJ7.0A		AM		7.78	8.60	10	200	7.0	33.33	12.0
SMAJ7.5A		AP		8.33	9.21	1	100	7.5	31.01	12.9
SMAJ8.0A		AR		8.89	9.83	1	50	8.0	29.41	13.6
SMAJ8.5A	SMAJ8.5CA	AT	WT	9.44	10.4	1	10	8.5	27.78	14.4
SMAJ9.0A	SMAJ9.0CA	AV	WV	10.0	11.1	1	5	9.0	25.97	15.4
SMAJ10A	SMAJ10CA	AX	WX	11.1	12.3	1	5	10	23.53	17.0
SMAJ11A	SMAJ11CA	AZ	WZ	12.2	13.5	1	1	11	21.98	18.2
SMAJ12A	SMAJ12CA	BE	XE	13.3	14.7	1	1	12	20.10	19.9
SMAJ13A	SMAJ13CA	BG	XG	14.4	15.9	1	1	13	18.60	21.5
SMAJ14A	SMAJ14CA	BK	XK	15.6	17.2	1	1	14	17.24	23.2
SMAJ15A	SMAJ15CA	BM	XM	16.7	18.5	1	1	15	16.39	24.4
SMAJ16A	SMAJ16CA	BP	XP	17.8	19.7	1	1	16	15.38	26.0
SMAJ17A	SMAJ17CA	BR	XR	18.9	20.9	1	1	17	14.49	27.6
SMAJ18A	SMAJ18CA	BT	XT	20.0	22.1	1	1	18	13.70	29.2
SMAJ20A	SMAJ20CA	BV	XV	22.2	24.5	1	1	20	12.35	32.4
SMAJ22A	SMAJ22CA	BX	XX	24.4	26.9	1	1	22	11.27	35.5
SMAJ24A	SMAJ24CA	BZ	XZ	26.7	29.5	1	1	24	10.28	38.9
SMAJ26A	SMAJ26CA	CE	YE	28.9	31.9	1	1	26	9.50	42.1
SMAJ28A	SMAJ28CA	CG	YG	31.1	34.4	1	1	28	8.81	45.4
SMAJ30A	SMAJ30CA	CK	YK	33.3	36.8	1	1	30	8.26	48.4
SMAJ33A	SMAJ33CA	CM	YM	36.7	40.6	1	1	33	7.50	53.3
SMAJ36A	SMAJ36CA	CP	YP	40.0	44.2	1	1	36	6.88	58.1
SMAJ40A	SMAJ40CA	CR	YR	44.4	49.1	1	1	40	6.20	64.5
SMAJ43A	SMAJ43CA	CT	YT	47.8	52.8	1	1	43	5.76	69.4
SMAJ45A	SMAJ45CA	CV	YV	50.0	55.3	1	1	45	5.50	72.7
SMAJ48A	SMAJ48CA	CX	YX	53.3	58.9	1	1	48	5.17	77.4
SMAJ51A	SMAJ51CA	CZ	YZ	56.7	62.7	1	1	51	4.85	82.4
SMAJ54A	SMAJ54CA	RE	ZE	60.0	66.3	1	1	54	4.59	87.1
SMAJ58A	SMAJ58CA	RG	ZG	64.4	71.2	1	1	58	4.27	93.6
SMAJ60A	SMAJ60CA	RK	ZK	66.7	73.7	1	1	60	4.13	96.8
SMAJ64A	SMAJ64CA	RM	ZM	71.1	78.6	1	1	64	3.88	103.0
SMAJ70A	SMAJ70CA	RP	ZP	77.8	86.0	1	1	70	3.54	113.0
SMAJ75A	SMAJ75CA	RR	ZR	83.3	92.1	1	1	75	3.31	121.0
SMAJ78A	SMAJ78CA	RT	ZT	86.7	95.8	1	1	78	3.17	126.0
SMAJ85A	SMAJ85CA	RV	ZV	94.4	104	1	1	85	2.92	137.0
SMAJ90A	SMAJ90CA	RX	ZX	100	111	1	1	90	2.74	146.0
SMAJ100A	SMAJ100CA	RZ	ZZ	111	123	1	1	100	2.47	162.0
SMAJ110A	SMAJ110CA	SE	VE	122	135	1	1	110	2.26	177.0
SMAJ120A	SMAJ120CA	SG	VG	133	147	1	1	120	2.07	193.0
SMAJ130A	SMAJ130CA	SK	VK	144	159	1	1	130	1.91	209.0
SMAJ150A	SMAJ150CA	SM	VM	167	185	1	1	150	1.65	243.0
SMAJ160A	SMAJ160CA	SP	VP	178	197	1	1	160	1.54	259.0
SMAJ170A	SMAJ170CA	SR	VR	189	209	1	1	170	1.45	275.0
SMAJ180A	SMAJ180CA	ST	VT	200	220	1	1	180	1.37	291.6
SMAJ200A	SMAJ200CA	SW	VW	224	247	1	1	200	1.23	324.0
SMAJ220A	SMAJ220CA	SX	VX	246	272	1	1	220	1.12	356.0
SMAJ250A	SMAJ250CA	SZ	VZ	279	309	1	1	250	0.99	405.0
SMAJ300A	SMAJ300CA	DE	HE	335	371	1	1	300	0.82	486.0
SMAJ350A	SMAJ350CA	DG	HG	391	432	1	1	350	0.71	567.0
SMAJ400A	SMAJ400CA	DK	HK	447	494	1	1	400	0.62	648.0
SMAJ440A	SMAJ440CA	DM	HM	492	543	1	1	440	0.56	713.0

Suffix "A" denotes 5% tolerance device.

Add suffix "CA" after part number to specify Bi-directional devices.

For Bi-directional type having  $V_R$  of 10 volts and less, the  $I_R$  limit is double.

# RATINGS AND CHARACTERISTICS CURVES SMAJ SERIES

Fig.1 - Peak Pulse Power Rating Curve

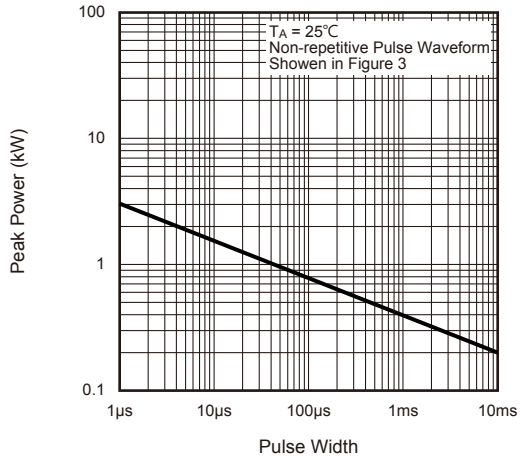


Fig.2 - Pulse Derating Curve

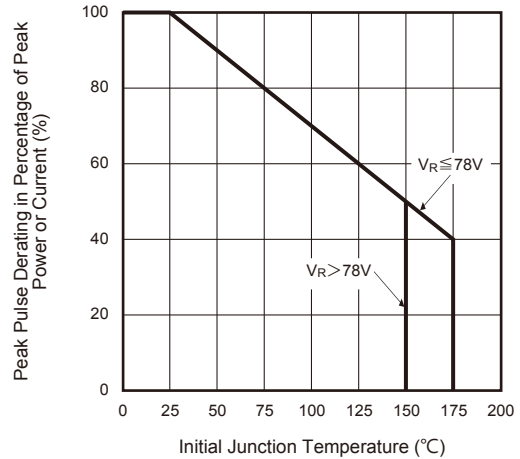


Fig.3 - Pulse Waveform

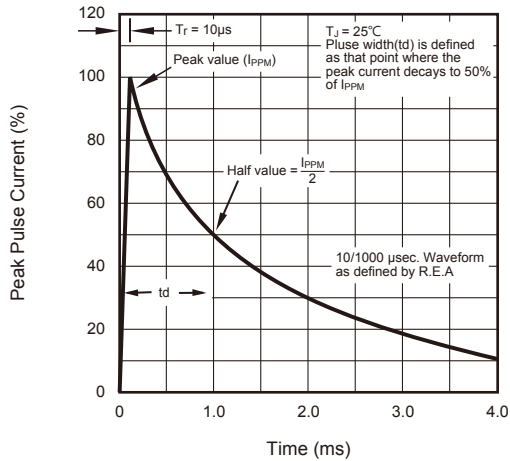


Fig.4 - Typical Junction Capacitance

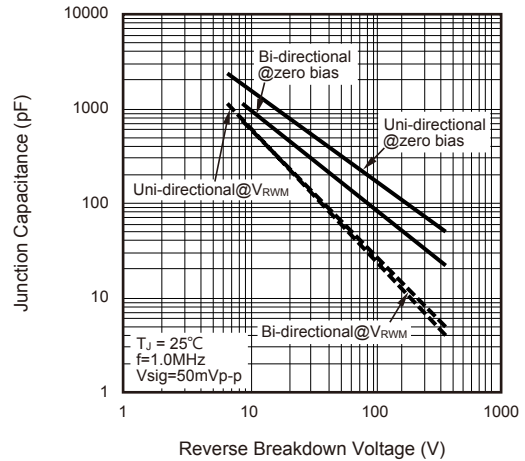


Fig.5 - Steady State Power Derating Curve

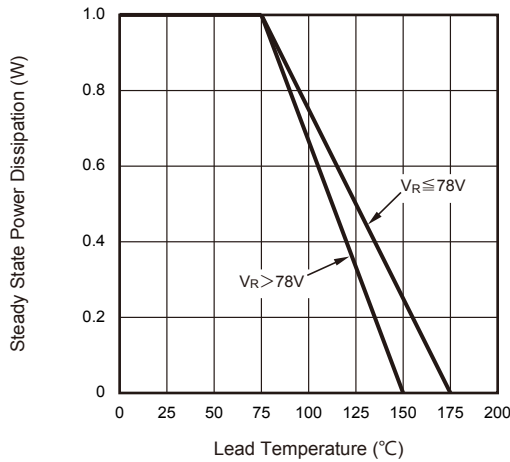


Fig.6 - Maximum Non-Repetitive Surge Current

