

# SMAJ SERIES

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSORS



### FEATURES

- \* For surface mount application
- \* Built-in strain relief
- \* Excellent clamping capability
- \* Low profile package
- \* Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- \* Typical  $I_R$  less than  $1\mu A$  above 10V
- \* High temperature soldering guaranteed:  $260^{\circ}C$  / 10 seconds at terminals

### MECHANICAL DATA

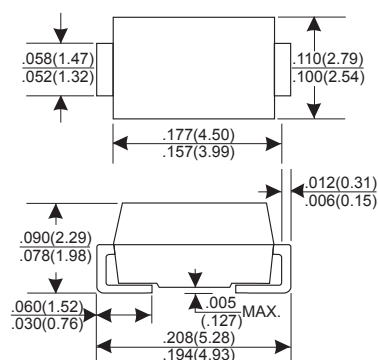
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end except Bidirectional
- \* Mounting position: Any
- \* Weight: 0.063 grams

### VOLTAGE RANGE

5.0 to 170 Volts

400 Watts Peak Power

#### DO-214AC(SMA)



Dimensions in inches and (millimeters)

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating  $25^{\circ}C$  ambient temperature unless otherwise specified.  
Single phase half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

RATINGS	SYMBOL	VALUE	UNITS
Peak Power Dissipation at $T_A=25^{\circ}C$ , $T_P=1ms$ (NOTE 1)	$P_{PK}$	Minimum 400	Watts
Peak Forward Surge Current at 8.3ms Single Half Sine-Wave superimposed on rated load (JEDEC method) (NOTE 3)	$I_{FSM}$	40	Amps
Maximum Instantaneous Forward Voltage at 25.0A for Unidirectional only	$V_F$	3.5	Volts
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}C$

#### NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above  $T_A=25^{\circ}C$  per Fig. 2.
2. Mounted on Copper Pad area of  $5.0mm^2$  (.013mm Thick) to each terminal.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

## DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C or CA Suffix for types SMAJ5.0 thru SMAJ170.
2. Electrical characteristics apply in both directions.

## RATING AND CHARACTERISTIC CURVES (SMAJ SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

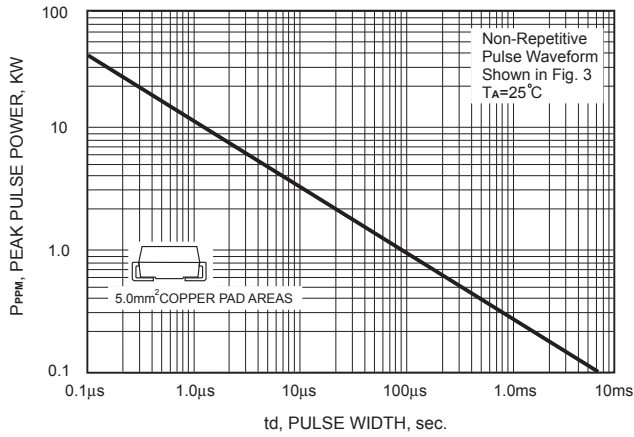


FIG.2-PULSE DERATING CURVE

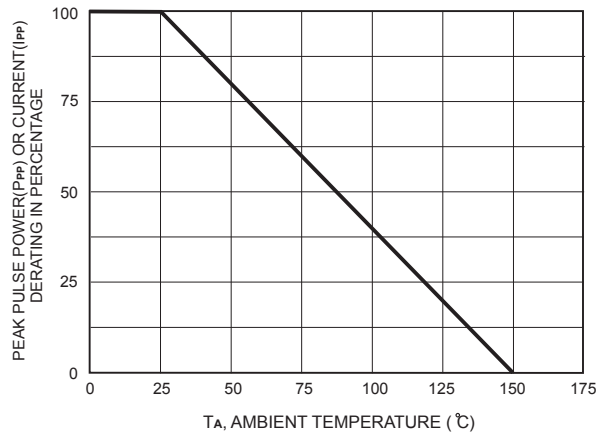


FIG.3-PULSE WAVE FORM



FIG.4-TYPICAL JUNCTION CAPACITANCE

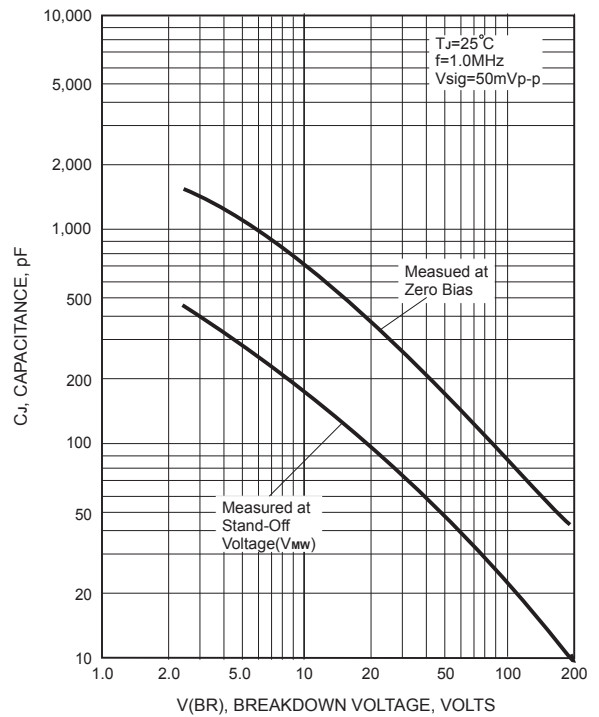
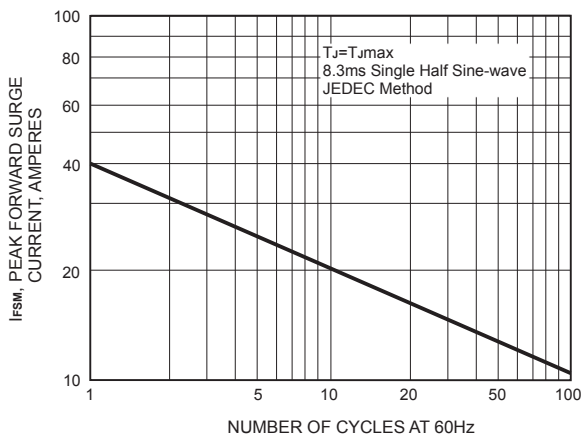


FIG.5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



# 400 Watt Surface Mount TVS

PART NUMBER ADD C FOR BI- DIRECTIONAL	REVERSE STAND-OFF VOLTAGE VRWM (V)	BREAKDOWN VOLTAGE VBR (V)		TEST CURRENT IT (mA)	MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V)	PEAK PULSE CURRENT Ipp (A)	REVERSE LEAKAGE @ VRWM IR(µA)	MARKING CODE	
		MIN. @IT	MAX. @IT					UNI	BI
See Note 1									
SMAJ5.0A	5.0	6.40	7.30	10	9.6	41.6	800	AD	ADP
SMAJ5.0CA	5.0	6.40	7.00	10	9.2	43.5	800	AE	AEP
SMAJ6.0A	6.0	6.67	8.15	10	11.4	35.1	800	AF	AFP
SMAJ6.0CA	6.0	6.67	7.37	10	10.3	38.8	800	AG	AGP
SMAJ6.5A	6.5	7.22	8.82	10	12.3	32.5	500	AH	AHP
SMAJ6.5CA	6.5	7.22	7.98	10	11.2	35.7	500	AK	AKP
SMAJ7.0A	7.0	7.78	9.51	10	13.3	30.1	200	AL	ALP
SMAJ7.0CA	7.0	7.78	8.60	10	12.0	33.3	200	AM	AMP
SMAJ7.5A	7.5	8.33	10.3	1	14.3	28.0	100	AN	ANP
SMAJ5.0CA	7.5	8.33	8.21	1	12.9	31.0	100	AP	APP
SMAJ8.0A	8.0	8.89	10.9	1	15.0	26.5	50	AQ	AQP
SMAJ8.0CA	8.0	8.89	9.83	1	13.6	29.4	50	AR	ARP
SMAJ8.5A	8.5	9.44	11.5	1	15.9	25.1	10	AS	ASP
SMAJ8.5CA	8.5	9.44	10.4	1	14.4	27.7	10	AT	ATP
SMAJ9.0A	9.0	10.0	12.2	1	16.9	23.6	5	AU	AUP
SMAJ9.0CA	9.0	10.0	11.1	1	15.4	26.0	5	AV	AVP
SMAJ10A	10	11.1	13.6	1	18.8	21.1	5	AW	AWP
SMAJ10CA	10	11.1	12.3	1	17.0	23.5	5	AX	AXP
SMAJ11A	11	12.2	14.9	1	20.1	20.0	5	AY	AYP
SMAJ11CA	11	12.2	13.5	1	18.2	22.0	5	AZ	AZP
SMAJ12A	12	13.3	16.3	1	22.0	18.1	5	BD	BDP
SMAJ12CA	12	13.3	14.7	1	19.9	20.1	5	BE	BEP
SMAJ13A	13	14.4	17.6	1	23.8	16.8	5	BF	BFP
SMAJ13CA	13	14.4	15.9	1	21.5	18.6	5	BG	BGP
SMAJ14A	14	15.6	19.1	1	25.8	15.5	5	BH	BHP
SMAJ14CA	14	15.6	17.2	1	23.2	17.2	5	BK	BKP
SMAJ15A	15	16.7	20.4	1	26.9	14.8	5	BL	BLP
SMAJ15CA	15	16.7	18.5	1	24.4	16.4	5	BM	BMP
SMAJ16A	16	17.8	21.8	1	28.8	13.8	5	BN	BNP
SMAJ16CA	16	17.8	19.7	1	26.0	15.3	5	BP	BPP
SMAJ17A	17	18.9	23.1	1	30.5	13.1	5	BQ	BQP
SMAJ17CA	17	18.9	20.9	1	27.6	14.5	5	BR	BRP
SMAJ18A	18	20.0	24.4	1	32.2	12.4	5	BS	BSP
SMAJ18CA	18	20.0	22.1	1	29.2	13.7	5	BT	BTP
SMAJ20A	20	22.2	27.1	1	35.8	11.1	5	BU	BUP
SMAJ20CA	20	22.2	24.5	1	32.4	12.3	5	BV	BVP
SMAJ22A	22	24.4	29.8	1	39.4	10.1	5	BW	BWP
SMAJ22CA	22	24.4	26.9	1	35.5	11.2	5	BX	BXP
SMAJ24A	24	26.7	32.6	1	43.0	9.3	5	BY	BYP
SMAJ24CA	24	26.7	29.5	1	38.9	10.3	5	BZ	BZP
SMAJ26A	26	28.9	35.3	1	46.6	8.6	5	CD	CDP
SMAJ26CA	26	28.9	31.9	1	42.1	9.5	5	CE	CEP
SMAJ28A	28	31.1	38.0	1	50.0	8.0	5	CF	CFP
SMAJ28CA	28	31.1	34.4	1	45.4	8.8	5	CG	CGP
SMAJ30A	30	33.3	40.7	1	53.5	7.5	5	CH	CHP
SMAJ30CA	30	33.3	36.8	1	48.4	8.3	5	CK	CKP
SMAJ33A	33	36.7	44.9	1	59.0	6.8	5	CL	CLP
SMAJ33CA	33	36.7	40.6	1	53.3	7.5	5	CM	CMP
SMAJ36A	36	40.0	48.9	1	64.3	6.2	5	CN	CNP
SMAJ36CA	36	40.0	44.2	1	58.1	6.9	5	CP	CPP
SMAJ40A	40	44.4	54.3	1	71.4	5.6	5	CQ	CQP
SMAJ40CA	40	44.4	49.1	1	64.5	6.2	5	CR	CRP
SMAJ43A	43	47.8	58.4	1	76.7	5.2	5	CS	CSP
SMAJ43CA	43	47.8	52.8	1	69.4	5.7	5	CT	CTP
SMAJ45A	45	50.0	61.1	1	80.3	5.0	5	CU	CUP
SMAJ45CA	45	50.0	55.3	1	72.7	5.5	5	CV	CVP
SMAJ48A	48	53.3	65.1	1	85.5	4.7	5	CW	CWP
SMAJ48CA	48	53.3	58.9	1	77.4	5.2	5	CX	CXP
SMAJ51A	51	56.7	69.3	1	91.1	4.4	5	CY	CYP
SMAJ51CA	51	56.7	62.7	1	82.4	4.9	5	CZ	CZP
SMAJ54A	54	60.0	73.3	1	96.3	4.2	5	RD	RDP
SMAJ54CA	54	60.0	66.3	1	87.1	4.6	5	RE	REP
SMAJ58A	58	64.4	78.7	1	103	3.9	5	RF	RFP
SMAJ58CA	58	64.4	71.2	1	93.6	4.3	5	RG	RGP

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		MIN. @IT	MAX. @IT					UNI	BI
See Note 1									
SMAJ60 A	60	66.7	81.5	1	107	3.7	5	RH	RHP
SMAJ60 C A	60	66.7	73.7	1	96.8	4.1	5	RK	RKP
SMAJ64 A	64	71.1	86.4	1	114	4.5	5	RL	RLP
SMAJ64 C A	64	71.1	78.6	1	103	3.9	5	RM	RMP
SMAJ70 A	70	77.8	95.1	1	125	3.2	5	RN	RNP
SMAJ70 C A	70	77.8	86.0	1	113	3.5	5	RP	RPP
SMAJ75 A	75	83.3	102	1	134	3.0	5	RQ	RQP
SMAJ75 C A	75	83.3	92.1	1	121	3.3	5	RR	RRP
SMAJ78 A	78	86.7	106	1	139	2.9	5	RS	RSP
SMAJ78 C A	78	86.7	95.8	1	126	3.2	5	RT	RTP
SMAJ85 A	85	94.4	115	1	151	2.6	5	RU	RUP
SMAJ85 C A	85	94.4	104	1	137	2.9	5	RV	RVP
SMAJ90 A	90	100	122	1	160	2.5	5	RW	RWP
SMAJ90 C A	90	100	111	1	146	2.7	5	RX	RXP
SMAJ100 A	100	111	136	1	179	2.2	5	RY	RYP
SMAJ100 C A	100	111	123	1	162	2.5	5	RZ	RZP
SMAJ110 A	110	122	149	1	196	2.0	5	SD	SDP
SMAJ110 C A	110	122	135	1	177	2.3	5	SE	SEP
SMAJ120 A	120	133	163	1	214	1.9	5	SF	SFP
SMAJ120 C A	120	133	147	1	193	2.0	5	SG	SGP
SMAJ130 A	130	144	176	1	231	1.7	5	SH	SHP
SMAJ130 C A	130	144	159	1	209	1.9	5	SK	SKP
SMAJ150 A	150	167	204	1	268	1.5	5	SL	SLP
SMAJ150 C A	150	167	185	1	243	1.6	5	SM	SMP
SMAJ160 A	160	178	218	1	287	1.4	5	SN	SNP
SMAJ160 C A	160	178	197	1	259	1.5	5	SP	SPP
SMAJ170 A	160	189	231	1	304	1.3	5	SQ	SQP
SMAJ170 C A	170	189	209	1	275	1.4	5	SR	SRP