

# TVS - 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

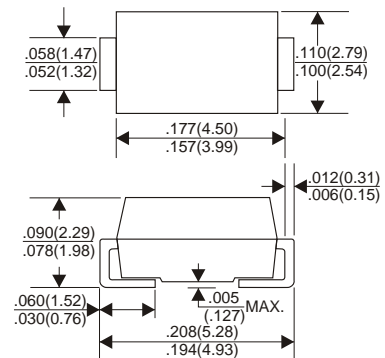
- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end except Bidirectional
- \* Mounting position: Any
- \* Weight: 0.063 grams

## 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

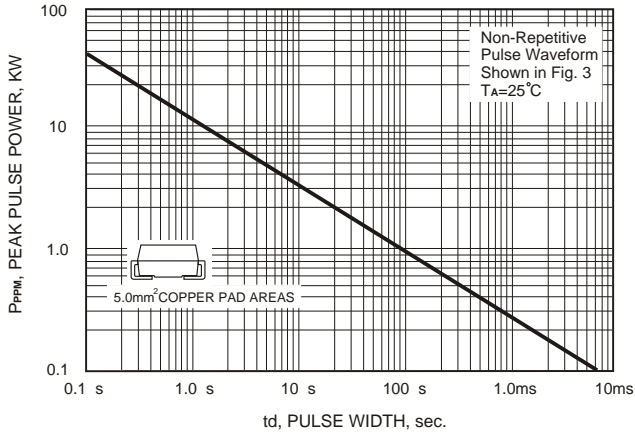


FIG.2-PULSE DERATING CURVE

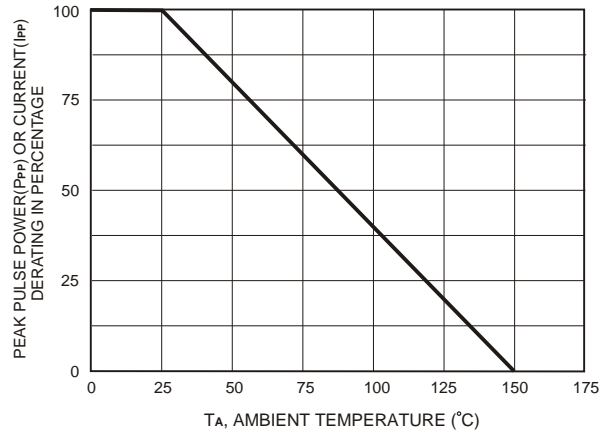


FIG.3-PULSE WAVE FORM

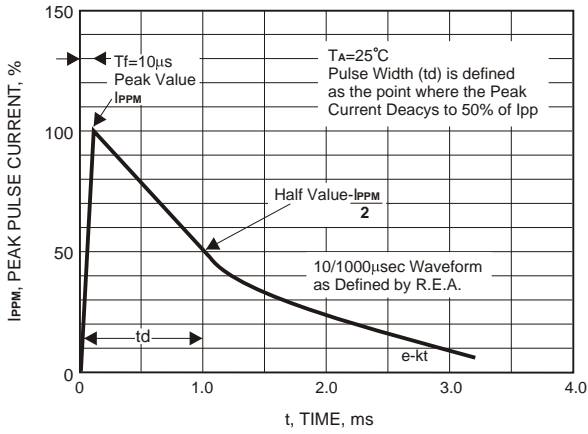


FIG.4-TYPICAL JUNCTION CAPACITANCE

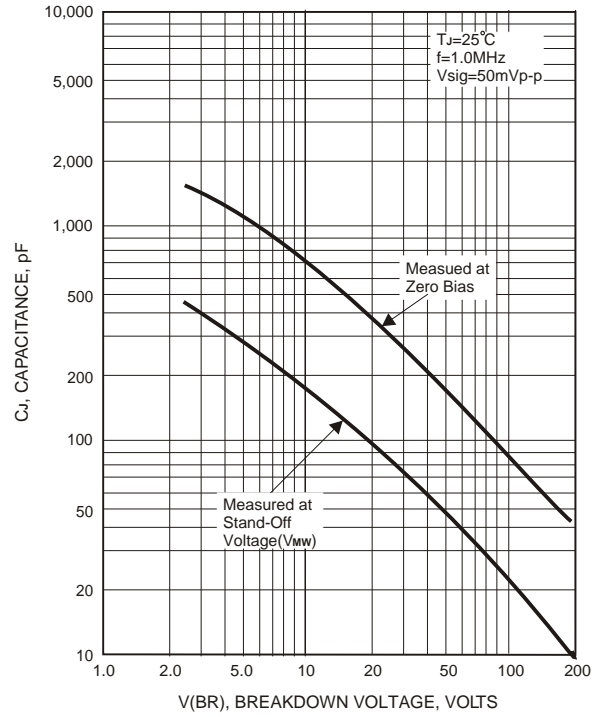
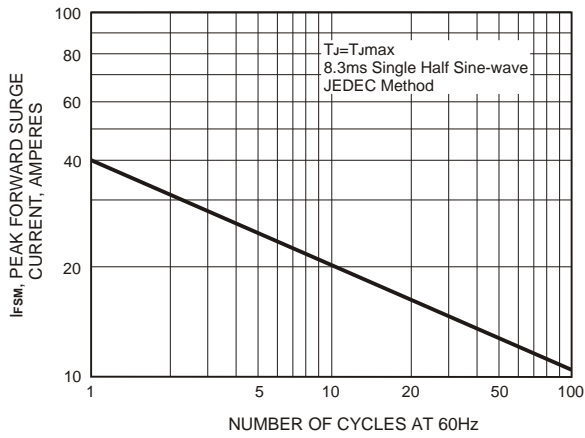


FIG.5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



# 400 Watt Surface Mount TVS



PART NUMBER ADD C FOR BI- DIRECTIONAL See Note 1	REVERSE STAND-OFF VOLTAGE VRWM (V)	BREAKDOWN VOLTAGE VBR (V) MIN. @IT	BREAKDOWN VOLTAGE VBR (V) MAX. @IT	TEST CURRENT IT (mA)	MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V)	PEAK PULSE CURRENT Ipp (A)	REVERSE LEAKAGE @ VRWM IR(μA)	MARKING CODE	
								UNI	BI
SMAJ5.0(C)	5.0	6.40	7.30	10	9.6	41.6	800	AD	ADP
SMAJ5.0(C)A	5.0	6.40	7.00	10	9.2	43.5	800	AE	AEP
SMAJ6.0(C)	6.0	6.67	8.15	10	11.4	35.1	800	AF	AFP
SMAJ6.0(C)A	6.0	6.67	7.37	10	10.3	38.8	800	AG	AGP
SMAJ6.5(C)	6.5	7.22	8.82	10	12.3	32.5	500	AH	AHP
SMAJ6.5(C)A	6.5	7.22	7.98	10	11.2	35.7	500	AK	AKP
SMAJ7.0(C)	7.0	7.78	9.51	10	13.3	30.1	200	AL	ALP
SMAJ7.0(C)A	7.0	7.78	8.60	10	12.0	33.3	200	AM	AMP
SMAJ7.5(C)	7.5	8.33	10.3	1	14.3	28.0	100	AN	ANP
SMAJ5.0(C)A	7.5	8.33	8.21	1	12.9	31.0	100	AP	APP
SMAJ8.0(C)	8.0	8.89	10.9	1	15.0	26.5	50	AQ	AQP
SMAJ8.0(C)A	8.0	8.89	9.83	1	13.6	29.4	50	AR	ARP
SMAJ8.5(C)	8.5	9.44	11.5	1	15.9	25.1	10	AS	ASP
SMAJ8.5(C)A	8.5	9.44	10.4	1	14.4	27.7	10	AT	ATP
SMAJ9.0(C)	9.0	10.0	12.2	1	16.9	23.6	5	AU	AUP
SMAJ9.0(C)A	9.0	10.0	11.1	1	15.4	26.0	5	AV	AVP
SMAJ10(C)	10	11.1	13.6	1	18.8	21.1	5	AW	AWP
SMAJ10(C)A	10	11.1	12.3	1	17.0	23.5	5	AX	AXP
SMAJ11(C)	11	12.2	14.9	1	20.1	20.0	5	AY	AYP
SMAJ11(C)A	11	12.2	13.5	1	18.2	22.0	5	AZ	AZP
SMAJ12(C)	12	13.3	16.3	1	22.0	18.1	5	BD	BDP
SMAJ12(C)A	12	13.3	14.7	1	19.9	20.1	5	BE	BEP
SMAJ13(C)	13	14.4	17.6	1	23.8	16.8	5	BF	BFP
SMAJ13(C)A	13	14.4	15.9	1	21.5	18.6	5	BG	BGP
SMAJ14(C)	14	15.6	19.1	1	25.8	15.5	5	BH	BHP
SMAJ14(C)A	14	15.6	17.2	1	23.2	17.2	5	BK	BKP
SMAJ15(C)	15	16.7	20.4	1	26.9	14.8	5	BL	BLP
SMAJ15(C)A	15	16.7	18.5	1	24.4	16.4	5	BM	BMP
SMAJ16(C)	16	17.8	21.8	1	28.8	13.8	5	BN	BNP
SMAJ16(C)A	16	17.8	19.7	1	26.0	15.3	5	BP	BPP
SMAJ17(C)	17	18.9	23.1	1	30.5	13.1	5	BQ	BQP
SMAJ17(C)A	17	18.9	20.9	1	27.6	14.5	5	BR	BRP
SMAJ18(C)	18	20.0	24.4	1	32.2	12.4	5	BS	BSP
SMAJ18(C)A	18	20.0	22.1	1	29.2	13.7	5	BT	BTP
SMAJ20(C)	20	22.2	27.1	1	35.8	11.1	5	BU	BUP
SMAJ20(C)A	20	22.2	24.5	1	32.4	12.3	5	BV	BVP
SMAJ22(C)	22	24.4	29.8	1	39.4	10.1	5	BW	BWP
SMAJ22(C)A	22	24.4	26.9	1	35.5	11.2	5	BX	BXP
SMAJ24(C)	24	26.7	32.6	1	43.0	9.3	5	BY	BYP
SMAJ24(C)A	24	26.7	29.5	1	38.9	10.3	5	BZ	BZP
SMAJ26(C)	26	28.9	35.3	1	46.6	8.6	5	CD	CDP
SMAJ26(C)A	26	28.9	31.9	1	42.1	9.5	5	CE	CEP
SMAJ28(C)	28	31.1	38.0	1	50.0	8.0	5	CF	CFP
SMAJ28(C)A	28	31.1	34.4	1	45.4	8.8	5	CG	CGP
SMAJ30(C)	30	33.3	40.7	1	53.5	7.5	5	CH	CHP
SMAJ30(C)A	30	33.3	36.8	1	48.4	8.3	5	CK	CKP
SMAJ33(C)	33	36.7	44.9	1	59.0	6.8	5	CL	CLP
SMAJ33(C)A	33	36.7	40.6	1	53.3	7.5	5	CM	CMP
SMAJ36(C)	36	40.0	48.9	1	64.3	6.2	5	CN	CNP
SMAJ36(C)A	36	40.0	44.2	1	58.1	6.9	5	CP	CPP
SMAJ40(C)	40	44.4	54.3	1	71.4	5.6	5	CQ	CQP
SMAJ40(C)A	40	44.4	49.1	1	64.5	6.2	5	CR	CRP
SMAJ43(C)	43	47.8	58.4	1	76.7	5.2	5	CS	CSP
SMAJ43(C)A	43	47.8	52.8	1	69.4	5.7	5	CT	CTP
SMAJ45(C)	45	50.0	61.1	1	80.3	5.0	5	CU	CUP
SMAJ45(C)A	45	50.0	55.3	1	72.7	5.5	5	CV	CVP
SMAJ48(C)	48	53.3	65.1	1	85.5	4.7	5	CW	CWP
SMAJ48(C)A	48	53.3	58.9	1	77.4	5.2	5	CX	CXP
SMAJ51(C)	51	56.7	69.3	1	91.1	4.4	5	CY	CYP
SMAJ51(C)A	51	56.7	62.7	1	82.4	4.9	5	CZ	CZP
SMAJ54(C)	54	60.0	73.3	1	96.3	4.2	5	RD	RDP
SMAJ54(C)A	54	60.0	66.3	1	87.1	4.6	5	RE	REP
SMAJ58(C)	58	64.4	78.7	1	103	3.9	5	RF	RFP
SMAJ58(C)A	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(C)	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(C)	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(C)	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(C)	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(C)	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(C)	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(C)	90	100	122	1	160	2.5	5	RW	RWP
SMAJ90(C)A	90	100	111	1	146	2.7	5	RX	RXP
SMAJ100(C)	100	111	136	1	179	2.2	5	RY	RYP
SMAJ100(C)A	100	111	123	1	162	2.5	5	RZ	RZP
SMAJ110(C)	110	122	149	1	196	2.0	5	SD	SDP
SMAJ110(C)A	110	122	135	1	177	2.3	5	SE	SEP
SMAJ120(C)	120	133	163	1	214	1.9	5	SF	SFP
SMAJ120(C)A	120	133	147	1	193	2.0	5	SG	SGP
SMAJ130(C)	130	144	176	1	231	1.7	5	SH	SHP
SMAJ130(C)A	130	144	159	1	209	1.9	5	SK	SKP
SMAJ150(C)	150	167	204	1	268	1.5	5	SL	SLP
SMAJ150(C)A	150	167	185	1	243	1.6	5	SM	SMP
SMAJ160(C)	160	178	218	1	287	1.4	5	SN	SNP
SMAJ160(C)A	160	178	197	1	259	1.5	5	SP	SPP
SMAJ170(C)	160	189	231	1	304	1.3	5	SQ	SQP
SMAJ170(C)A	170	189	209	1	275	1.4	5	SR	SRP