



# SMAJ SERIES

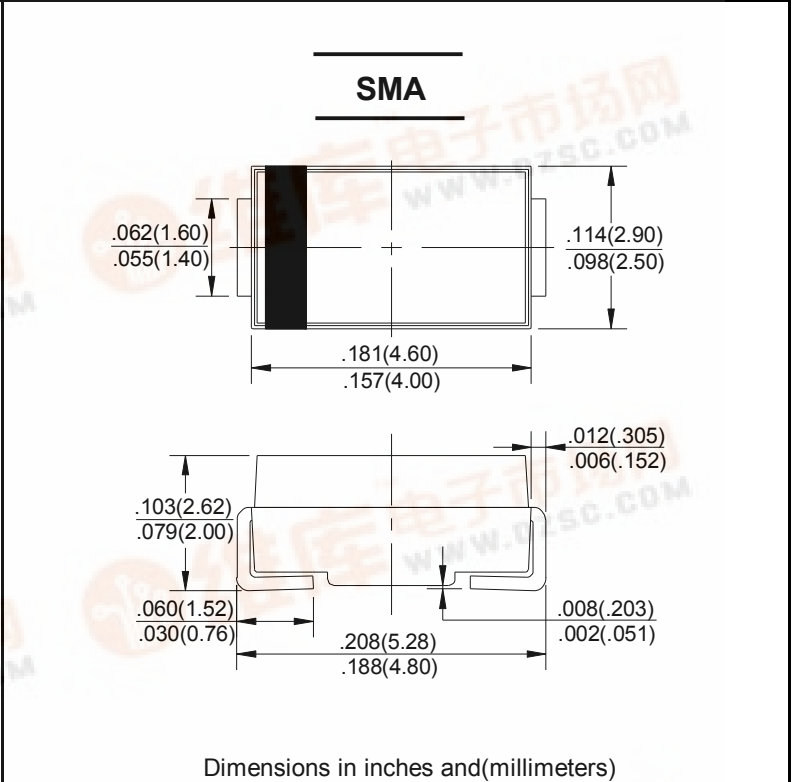
<b>SURFACE MOUNT UNIDIRECTIONAL AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS</b>	<b>REVERSE VOLTAGE - 5.0 to 170 Volts POWER DISSIPATION - 400 Watts</b>
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**FEATURES**

- Rating to 200V VBR
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL recognition 94V-0
- Typical IR less than 1 $\mu$ A above 10V
- Fast response time: typically less than 1.0ns for Uni-direction, less than 5.0ns for Bi-direction, from 0 Volts to BV min

**MECHANICAL DATA**

- Case : Molded Plastic
- Polarity: by cathode band denotes uni-directional device  
none cathode band denotes bi-directional device
- Weight : 0.002 ounces, 0.053 grams



**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

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

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Peak Power Dissipation at T <sub>A</sub> =25 $^{\circ}$ C TP=1ms (NOTE1,2)	P <sub>PK</sub>	Minimum 400	WATTS
Peak Forward Surge Current 8.3ms Single Half Sine-Wave Super Imposed on Rated Load (JEDEC Method)	I <sub>FSM</sub>	40	AMPS
Steady State Power Dissipation at T <sub>L</sub> =75 $^{\circ}$ C	P <sub>M(AV)</sub>	1.0	WATTS
Maximum Instantaneous Forward Voltage at 35A for Unidirectional Devices Only (NOTE3)	V <sub>F</sub>	3.5	VOLTS
Operating Temperature Range	T <sub>J</sub>	-55 to + 150	$^{\circ}$ C
Storage Temperature Range	T <sub>STG</sub>	-55 to + 175	$^{\circ}$ C

NOTES: 1. Non-repetitive current pulse ,per Fig. 3 and derated above T<sub>A</sub>=25 $^{\circ}$ C per Fig. 1.  
2. Thermal Resistance junction to Lead.  
3. 8.3ms single half-wave duty cycle=4 pulses per minutes maximum (uni-directional units only).



# RATING AND CHARACTERISTIC CURVES SMAJ SERIES



FIG.1-PULSE DERATING CURVE

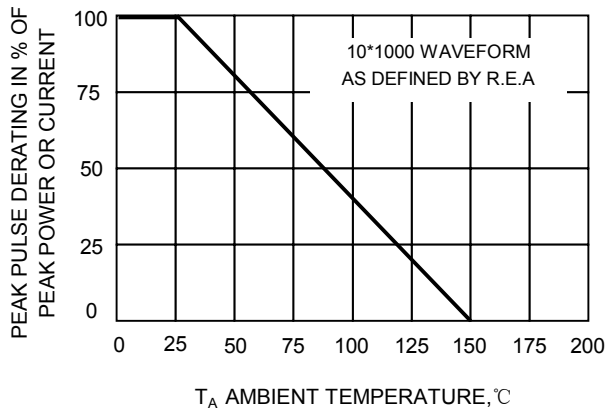


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

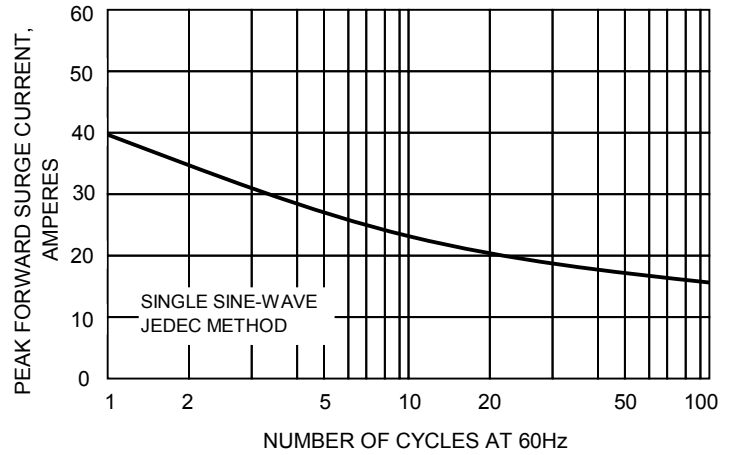


FIG.3-PULSE WAVEFORM

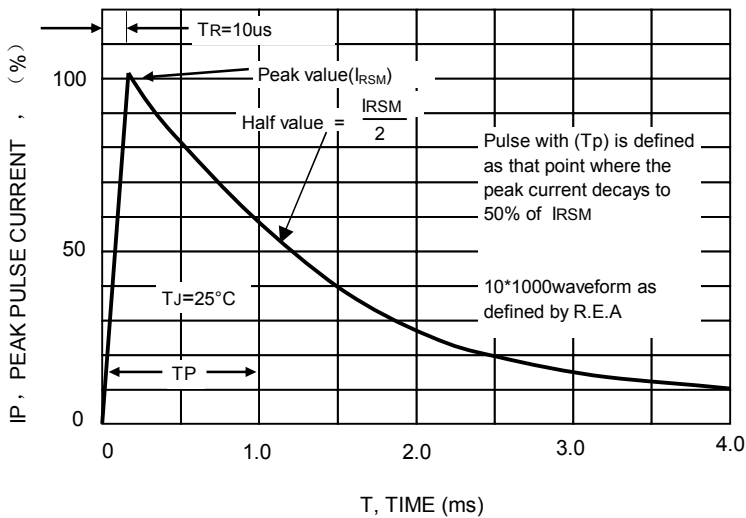


FIG.4-TYPICAL JUNCTION CAPACITANCE

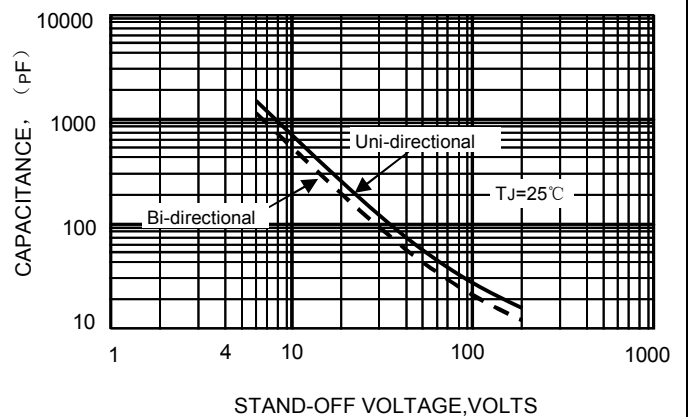


FIG.5-PULSE RATING CURVE

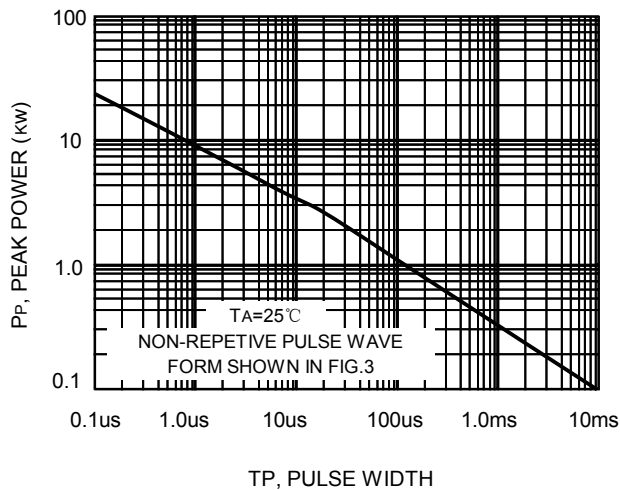
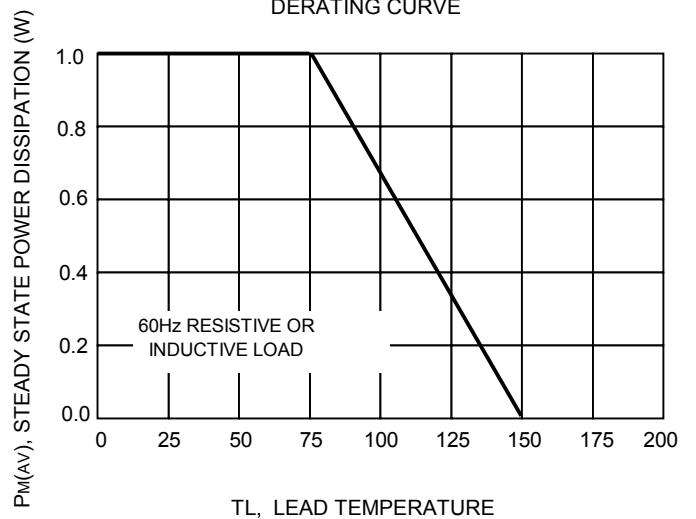


FIG.6-STEADY STATE POWER DERATING CURVE





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Device Uni-directional	Device Bi-directional	Device Marking code		Working Peak Reverse Voltage V <sub>RWM</sub> (volts)	Breakdown Voltage VBR Volts			Maximum Reverse Voltage at I <sub>RSM</sub> (Clamping Voltage) V <sub>RSM</sub> (volts)	Maximum Reverse Surge Current I <sub>RSM</sub> (Amps)	Maximum Reverse Leakage at V <sub>RWM</sub> I <sub>R</sub> (µA)
		(UNI)	(BI)		Min(V)	Max(V)	@ I <sub>T</sub> (mA)			
SMAJ5.0	SMAJ5.0C	HD	TD	5.0	6.40	7.30	10	9.6	41.6	800/1600
SMAJ5.0A	SMAJ5.0CA	HE	TE	5.0	6.40	7.00	10	9.2	43.5	800/1600
SMAJ6.0	SMAJ6.0C	HF	TF	6.0	6.67	8.15	10	11.4	35.1	800/1600
SMAJ6.0A	SMAJ6.0CA	HG	TG	6.0	6.67	7.37	10	10.3	38.8	800/1600
SMAJ6.5	SMAJ6.5C	HH	TH	6.5	7.22	8.82	10	12.3	32.5	500/1000
SMAJ6.5A	SMAJ6.5CA	HK	TK	6.5	7.22	7.98	10	11.2	35.7	500/1000
SMAJ7.0	SMAJ7.0C	HL	TL	7.0	7.78	9.51	10	13.3	30.1	200/400
SMAJ7.0A	SMAJ7.0CA	HM	TM	7.0	7.78	8.60	10	12.0	33.3	200/400
SMAJ7.5	SMAJ7.5C	HN	TN	7.5	8.33	10.30	1.0	14.3	28.0	100/200
SMAJ7.5A	SMAJ7.5CA	HP	TP	7.5	8.33	9.21	1.0	12.9	31.0	100/200
SMAJ8.0	SMAJ8.0C	HQ	TQ	8.0	8.89	10.90	1.0	15.0	26.5	50/100
SMAJ8.0A	SMAJ8.0CA	HR	TR	8.0	8.89	9.83	1.0	13.6	29.4	50/100
SMAJ8.5	SMAJ8.5C	HS	TS	8.5	9.44	11.50	1.0	15.9	25.1	10/20
SMAJ8.5A	SMAJ8.5CA	HT	TT	8.5	9.44	10.40	1.0	14.4	27.7	10/20
SMAJ9.0	SMAJ9.0C	HU	TU	9.0	10.00	12.20	1.0	16.9	23.6	5/10
SMAJ9.0A	SMAJ9.0CA	HV	TV	9.0	10.00	11.10	1.0	15.4	26.0	5/10
SMAJ10	SMAJ10C	HW	TW	10.0	11.10	13.60	1.0	18.8	21.2	5/10
SMAJ10A	SMAJ10CA	HX	TX	10.0	11.10	12.30	1.0	17.0	23.5	5/10
SMAJ11	SMAJ11C	HY	TY	11.0	12.20	14.90	1.0	20.1	20.0	5.0
SMAJ11A	SMAJ11CA	HZ	TZ	11.0	12.20	13.50	1.0	18.2	22.0	5.0
SMAJ12	SMAJ12C	ID	UD	12.0	13.30	16.30	1.0	22.0	18.1	5.0
SMAJ12A	SMAJ12CA	IE	UE	12.0	13.30	14.70	1.0	19.9	20.1	5.0
SMAJ13	SMAJ13C	IF	UF	13.0	14.40	17.60	1.0	23.8	16.8	5.0
SMAJ13A	SMAJ13CA	IG	UG	13.0	14.40	15.90	1.0	21.5	18.6	5.0
SMAJ14	SMAJ14C	IH	UH	14.0	15.60	19.10	1.0	25.8	15.5	5.0
SMAJ14A	SMAJ14CA	IK	UK	14.0	15.60	17.20	1.0	23.2	17.2	5.0
SMAJ15	SMAJ15C	IL	UL	15.0	16.70	20.40	1.0	26.9	14.8	5.0
SMAJ15A	SMAJ15CA	IM	UM	15.0	16.70	18.50	1.0	24.4	16.4	5.0
SMAJ16	SMAJ16C	IN	UN	16.0	17.80	21.80	1.0	28.8	13.8	5.0
SMAJ16A	SMAJ16CA	IP	UP	16.0	17.80	19.70	1.0	26.0	15.3	5.0
SMAJ17	SMAJ17C	IQ	UQ	17.0	18.90	23.10	1.0	30.5	13.1	5.0
SMAJ17A	SMAJ17CA	IR	UR	17.0	18.90	20.90	1.0	27.6	14.5	5.0
SMAJ18	SMAJ18C	IS	US	18.0	20.00	24.40	1.0	32.2	12.4	5.0
SMAJ18A	SMAJ18CA	IT	UT	18.0	20.00	22.10	1.0	29.2	13.7	5.0
SMAJ20	SMAJ20C	IU	UU	20.0	22.20	27.10	1.0	35.8	11.1	5.0
SMAJ20A	SMAJ20CA	IV	UV	20.0	22.20	24.50	1.0	32.4	12.3	5.0
SMAJ22	SMAJ22C	IW	UW	22.0	24.40	29.80	1.0	39.4	10.1	5.0
SMAJ22A	SMAJ22CA	IX	UX	22.0	24.40	26.90	1.0	35.5	11.2	5.0
SMAJ24	SMAJ24C	IY	UY	24.0	26.70	32.60	1.0	43.0	9.3	5.0
SMAJ24A	SMAJ24CA	IZ	UZ	24.0	26.70	29.50	1.0	38.9	10.3	5.0
SMAJ26	SMAJ26C	JD	VD	26.0	28.90	35.30	1.0	46.6	8.6	5.0
SMAJ26A	SMAJ26CA	JE	VE	26.0	28.90	31.90	1.0	42.1	9.5	5.0
SMAJ28	SMAJ28C	JF	VF	28.0	31.10	38.00	1.0	50.0	8.0	5.0
SMAJ28A	SMAJ28CA	JG	VG	28.0	31.10	34.40	1.0	45.4	8.8	5.0
SMAJ30	SMAJ30C	JH	VH	30.0	33.30	40.70	1.0	53.5	7.5	5.0
SMAJ30A	SMAJ30CA	JK	VK	30.0	33.30	36.80	1.0	48.4	8.3	5.0
SMAJ33	SMAJ33C	JL	VL	33.0	36.70	44.90	1.0	59.0	6.8	5.0
SMAJ33A	SMAJ33CA	JM	VM	33.0	36.70	40.60	1.0	53.3	7.5	5.0

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		(UNI)	(BI)		Min(V)	Max(V)	@ IT(mA)			
SMAJ36	SMAJ36C	JN	VN	36.0	40.0	48.9	1.0	64.3	6.2	5.0
SMAJ36A	SMAJ36CA	JP	VP	36.0	40.0	44.2	1.0	58.1	6.9	5.0
SMAJ40	SMAJ40C	JQ	VQ	40.0	44.4	54.3	1.0	71.4	5.6	5.0
SMAJ40A	SMAJ40CA	JR	VR	40.0	44.4	49.1	1.0	64.5	6.2	5.0
SMAJ43	SMAJ43C	JS	VS	43.0	47.8	58.4	1.0	76.7	5.2	5.0
SMAJ43A	SMAJ43CA	JT	VT	43.0	47.8	52.8	1.0	69.4	5.7	5.0
SMAJ45	SMAJ45C	JU	VU	45.0	50.0	61.1	1.0	80.3	5.0	5.0
SMAJ45A	SMAJ45CA	JV	VV	45.0	50.0	55.3	1.0	72.7	5.5	5.0
SMAJ48	SMAJ48C	JW	VW	48.0	53.3	65.1	1.0	85.5	4.7	5.0
SMAJ48A	SMAJ48CA	JX	VX	48.0	53.3	58.9	1.0	77.4	5.2	5.0
SMAJ51	SMAJ51C	JY	VY	51.0	56.7	69.3	1.0	91.1	4.4	5.0
SMAJ51A	SMAJ51CA	JZ	VZ	51.0	56.7	62.7	1.0	82.4	4.9	5.0
SMAJ54	SMAJ54C	RD	WD	54.0	60.0	73.3	1.0	96.3	4.2	5.0
SMAJ54A	SMAJ54CA	RE	WE	54.0	60.0	66.3	1.0	87.1	4.6	5.0
SMAJ58	SMAJ58C	RF	WF	58.0	64.4	78.7	1.0	103.0	3.9	5.0
SMAJ58A	SMAJ58CA	RG	WG	58.0	64.4	71.2	1.0	93.6	4.3	5.0
SMAJ60	SMAJ60C	RH	WH	60.0	66.7	81.5	1.0	107.0	3.7	5.0
SMAJ60A	SMAJ60CA	RK	WK	60.0	66.7	73.7	1.0	96.8	4.1	5.0
SMAJ64	SMAJ64C	RL	WL	64.0	71.1	86.4	1.0	114.0	3.5	5.0
SMAJ64A	SMAJ64CA	RM	WM	64.0	71.1	78.6	1.0	103.0	3.9	5.0
SMAJ70	SMAJ70C	RN	WN	70.0	77.8	95.1	1.0	125.0	3.2	5.0
SMAJ70A	SMAJ70CA	RP	WP	70.0	77.8	86.0	1.0	113.0	3.5	5.0
SMAJ75	SMAJ75C	RQ	WQ	75.0	83.3	102.0	1.0	134.0	3.0	5.0
SMAJ75A	SMAJ75CA	RR	WR	75.0	83.3	92.1	1.0	121.0	3.3	5.0
SMAJ78	SMAJ78C	RS	WS	78.0	86.7	106.0	1.0	139.0	2.9	5.0
SMAJ78A	SMAJ78CA	RT	WT	78.0	86.7	95.8	1.0	126.0	3.2	5.0
SMAJ85	SMAJ85C	RU	WU	85.0	94.4	115.0	1.0	151.0	2.6	5.0
SMAJ85A	SMAJ85CA	RV	WV	85.0	94.4	104.0	1.0	137.0	2.9	5.0
SMAJ90	SMAJ90C	RW	WW	90.0	100.0	122.0	1.0	160.0	2.5	5.0
SMAJ90A	SMAJ90CA	RX	WX	90.0	100.0	111.0	1.0	146.0	2.7	5.0
SMAJ100	SMAJ100C	RY	WY	100.0	111.0	136.0	1.0	179.0	2.2	5.0
SMAJ100A	SMAJ100CA	RZ	WZ	100.0	111.0	123.0	1.0	162.0	2.5	5.0
SMAJ110	SMAJ110C	SD	XD	110.0	122.0	149.0	1.0	196.0	2.0	5.0
SMAJ110A	SMAJ110CA	SE	XE	110.0	122.0	135.0	1.0	177.0	2.3	5.0
SMAJ120	SMAJ120C	SF	XF	120.0	133.0	163.0	1.0	214.0	1.9	5.0
SMAJ120A	SMAJ120CA	SG	XG	120.0	133.0	147.0	1.0	193.0	2.0	5.0
SMAJ130	SMAJ130C	SH	XH	130.0	144.0	176.0	1.0	231.0	1.7	5.0
SMAJ130A	SMAJ130CA	SK	XK	130.0	144.0	159.0	1.0	209.0	1.9	5.0
SMAJ150	SMAJ150C	SL	XL	150.0	167.0	204.0	1.0	268.0	1.5	5.0
SMAJ150A	SMAJ150CA	SM	XM	150.0	167.0	185.0	1.0	243.0	1.6	5.0
SMAJ160	SMAJ160C	SN	XN	160.0	178.0	218.0	1.0	287.0	1.4	5.0
SMAJ160A	SMAJ160CA	SP	XP	160.0	178.0	197.0	1.0	259.0	1.5	5.0
SMAJ170	SMAJ170C	SQ	XQ	170.0	189.0	231.0	1.0	304.0	1.3	5.0
SMAJ170A	SMAJ170CA	SR	XR	170.0	189.0	209.0	1.0	275.0	1.4	5.0

NOTE: For bidirectional use C or CA suffix for types SMAJ5.0 thru types SMAJ170(ex. SMAJ5.0C, SMAJ170CA).

Electrical characteristics apply in both directions.

The later codes(/TD thru /XR) denote by bidirectional material.