

**SURFACE MOUNT
UNIDIRECTIONAL AND BIDIRECTIONAL
TRANSIENT VOLTAGE SUPPRESSORS**

STAND-OFF VOLTAGE - **5.0** to **170** Volts
POWER DISSIPATION - **400** WATTS

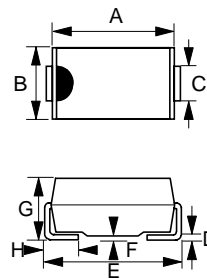
FEATURES

- Rating to 200V VBR
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL flammability classification 94V-O
- Typical IR less than 1uA 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, 0.064 gram

SMA



SMA		
DIM.	MIN.	MAX.
A	4.06	4.57
B	2.29	2.92
C	1.27	1.63
D	0.15	0.31
E	4.83	5.59
F	0.05	0.20
G	2.01	2.62
H	0.76	1.52
All Dimensions in millimeter		

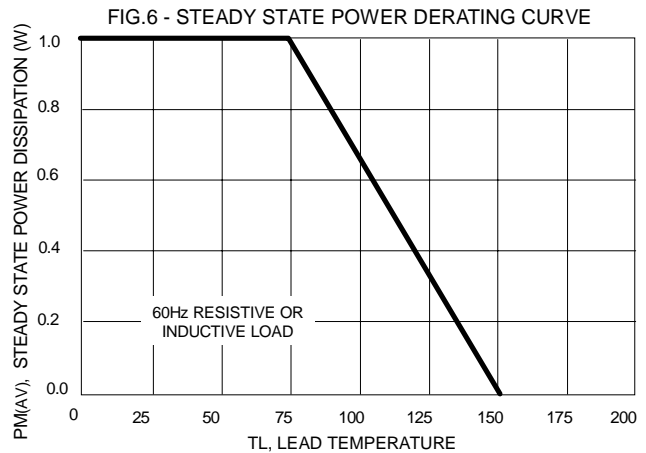
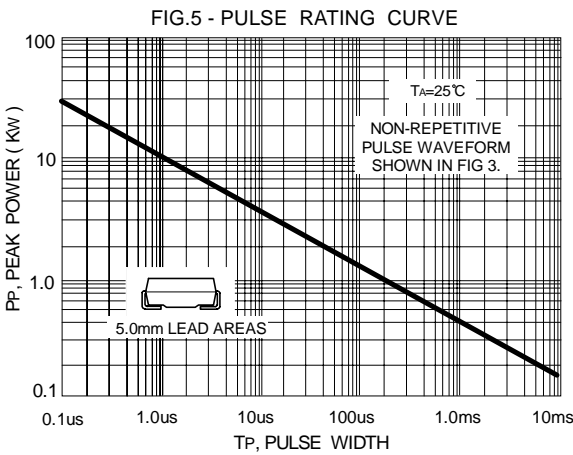
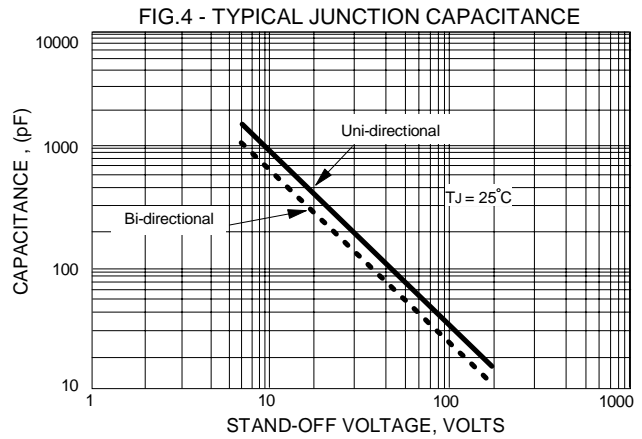
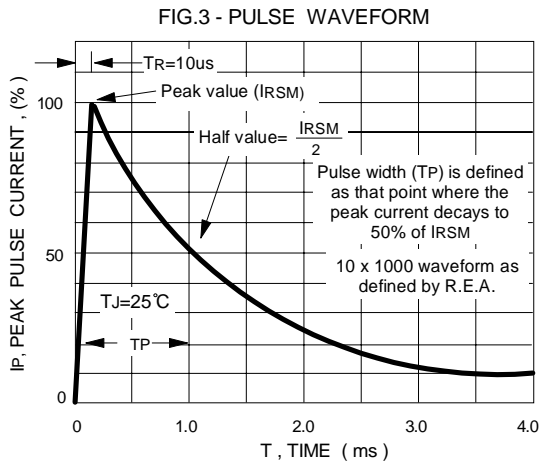
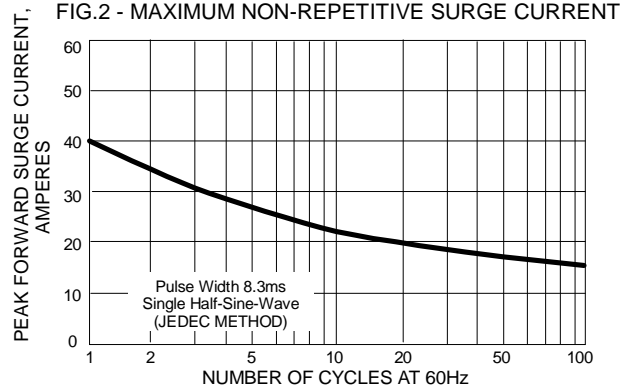
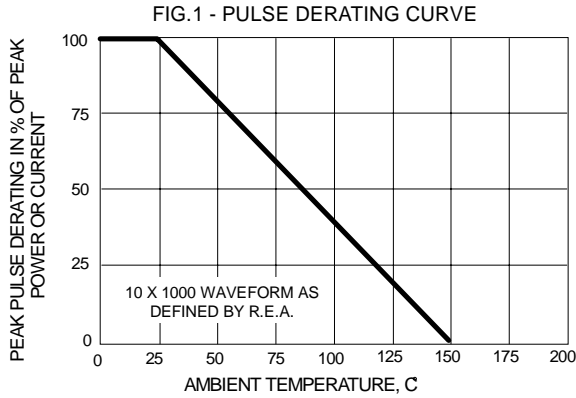
MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%

CHARACTERISTICS	SYMBOLS	VALUE	UNIT
PEAK POWER DISSIPATION AT $T_A = 25^\circ\text{C}$, $T_P = 1\text{ms}$ (Note 1,2)	PPK	Minimum 400	WATTS
Peak Forward Surge Current 8.3ms single half sine-wave super imposed on rated load (Note 3) (JEDEC METHOD)	IFSM	40	AMPS.
Steady State Power Dissipation at $T_L = 75^\circ\text{C}$	PM(AV)	1.0	WATTS
Maximum Instantaneous forward voltage at 35A for unidirectional devices only	V _F	3.5	Volts
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

NOTES : 1. Non-repetitive current pulse, per fig. 3 and derated above $T_A = 25^\circ\text{C}$ per fig.1.
2. Thermal Resistance junction to Lead
3. 8.3ms single half-sine wave duty cycle= 4 pulses maximum per minute (unidirectional units only).

REV. 4, 12-Jan-2004, KSIA02



Device Uni-directional	Device Bi-directional	Device Marking code		Working Peak Reverse Voltage VRWM(Volts)	Breakdown voltage VBR Volts			Maximum Reverse Voltage at IRSM (Clamping Voltage) VRSM(VOLTS)	Maximum Reverse Surge Current IRSM(Amps)	Maximum Reverse Leakage at VRWM IR (uA)
		(UND)	(BI)		Min.	Max.	@IT(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	10.3	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	10.9	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	11.5	1.0	15.9	25.1	10 / 20
SMAJ8.5A	SMAJ8.5CA	HT	TT	8.5	9.44	10.4	1.0	14.4	27.7	10 / 20
SMAJ9.0	SMAJ9.0C	HU	TU	9.0	10.0	12.2	1.0	16.9	23.6	5 / 10
SMAJ9.0A	SMAJ9.0CA	HV	TV	9.0	10.0	11.1	1.0	15.4	26.0	5 / 10
SMAJ10	SMAJ10C	HW	TW	10	11.1	13.6	1.0	18.8	21.2	5 / 10
SMAJ10A	SMAJ10CA	HX	TX	10	11.1	12.3	1.0	17.0	23.5	5 / 10
SMAJ11	SMAJ11C	HY	TY	11	12.2	14.9	1.0	20.1	20.0	5.0
SMAJ11A	SMAJ11CA	HZ	TZ	11	12.2	13.5	1.0	18.2	22.0	5.0
SMAJ12	SMAJ12C	ID	UD	12	13.3	16.3	1.0	22.0	18.1	5.0
SMAJ12A	SMAJ12CA	IE	UE	12	13.3	14.7	1.0	19.9	20.1	5.0
SMAJ13	SMAJ13C	IF	UF	13	14.4	17.6	1.0	23.8	16.8	5.0
SMAJ13A	SMAJ13CA	IG	UG	13	14.4	15.9	1.0	21.5	18.6	5.0
SMAJ14	SMAJ14C	IH	UH	14	15.6	19.1	1.0	25.8	15.5	5.0
SMAJ14A	SMAJ14CA	IK	UK	14	15.6	17.2	1.0	23.2	17.2	5.0
SMAJ15	SMAJ15C	IL	UL	15	16.7	20.4	1.0	26.9	14.8	5.0
SMAJ15A	SMAJ15CA	IM	UM	15	16.7	18.5	1.0	24.4	16.4	5.0
SMAJ16	SMAJ16C	IN	UN	16	17.8	21.8	1.0	28.8	13.8	5.0
SMAJ16A	SMAJ16CA	IP	UP	16	17.8	19.7	1.0	26.0	15.3	5.0
SMAJ17	SMAJ17C	IQ	UQ	17	18.9	23.1	1.0	30.5	13.1	5.0
SMAJ17A	SMAJ17CA	IR	UR	17	18.9	20.9	1.0	27.6	14.5	5.0
SMAJ18	SMAJ18C	IS	US	18	20.0	24.4	1.0	32.2	12.4	5.0
SMAJ18A	SMAJ18CA	IT	UT	18	20.0	22.1	1.0	29.2	13.7	5.0
SMAJ20	SMAJ20C	IU	UU	20	22.2	27.1	1.0	35.8	11.1	5.0
SMAJ20A	SMAJ20CA	IV	UV	20	22.2	24.5	1.0	32.4	12.3	5.0
SMAJ22	SMAJ22C	IW	UW	22	24.4	29.8	1.0	39.4	10.1	5.0
SMAJ22A	SMAJ22CA	IX	UX	22	24.4	26.9	1.0	35.5	11.2	5.0
SMAJ24	SMAJ24C	IY	UY	24	26.7	32.6	1.0	43.0	9.3	5.0
SMAJ24A	SMAJ24CA	IZ	UZ	24	26.7	29.5	1.0	38.9	10.3	5.0
SMAJ26	SMAJ26C	JD	VD	26	28.9	35.3	1.0	46.6	8.6	5.0
SMAJ26A	SMAJ26CA	JE	VE	26	28.9	31.9	1.0	42.1	9.5	5.0
SMAJ28	SMAJ28C	JF	VF	28	31.1	38.0	1.0	50.0	8.0	5.0
SMAJ28A	SMAJ28CA	JG	VG	28	31.1	34.4	1.0	45.4	8.8	5.0
SMAJ30	SMAJ30C	JH	VH	30	33.3	40.7	1.0	53.5	7.5	5.0
SMAJ30A	SMAJ30CA	JK	VK	30	33.3	36.8	1.0	48.4	8.3	5.0
SMAJ33	SMAJ33C	JL	VL	33	36.7	44.9	1.0	59.0	6.8	5.0
SMAJ33A	SMAJ33CA	JM	VM	33	36.7	40.6	1.0	53.3	7.5	5.0

Device Uni-directional	Device Bi-directional	Device Marking code		Working Peak Reverse Voltage VRWM(Volts)	Breakdown voltage VBR Volts			Maximum Reverse Voltage at IRSM (Clamping Voltage) VRSM(VOLTS)	Maximum Reverse Surge Current IRSM(Amps)	Maximum Reverse Leakage at VRWM IR (uA)
		(UNI)	(BI)		Min.	Max.	@IT(mA)			
SMAJ36	SMAJ36C	JN	VN	36	40.0	48.9	1.0	64.3	6.2	5.0
SMAJ36A	SMAJ36CA	JP	VP	36	40.0	44.2	1.0	58.1	6.9	5.0
SMAJ40	SMAJ40C	JQ	VQ	40	44.4	54.3	1.0	71.4	5.6	5.0
SMAJ40A	SMAJ40CA	JR	VR	40	44.4	49.1	1.0	64.5	6.2	5.0
SMAJ43	SMAJ43C	JS	VS	43	47.8	58.4	1.0	76.7	5.2	5.0
SMAJ43A	SMAJ43CA	JT	VT	43	47.8	52.8	1.0	69.4	5.7	5.0
SMAJ45	SMAJ45C	JU	VU	45	50.0	61.1	1.0	80.3	5.0	5.0
SMAJ45A	SMAJ45CA	JV	VV	45	50.0	55.3	1.0	72.7	5.5	5.0
SMAJ48	SMAJ48C	JW	VW	48	53.3	65.1	1.0	85.5	4.7	5.0
SMAJ48A	SMAJ48CA	JX	VX	48	53.3	58.9	1.0	77.4	5.2	5.0
SMAJ51	SMAJ51C	JY	VY	51	56.7	69.3	1.0	91.1	4.4	5.0
SMAJ51A	SMAJ51CA	JZ	VZ	51	56.7	62.7	1.0	82.4	4.9	5.0
SMAJ54	SMAJ54C	RD	WD	54	60.0	73.3	1.0	96.3	4.2	5.0
SMAJ54A	SMAJ54CA	RE	WE	54	60.0	66.3	1.0	87.1	4.6	5.0
SMAJ58	SMAJ58C	RF	WF	58	64.4	78.7	1.0	103.0	3.9	5.0
SMAJ58A	SMAJ58CA	RG	WG	58	64.4	71.2	1.0	93.6	4.3	5.0
SMAJ60	SMAJ60C	RH	WH	60	66.7	81.5	1.0	107.0	3.7	5.0
SMAJ60A	SMAJ60CA	RK	WK	60	66.7	73.7	1.0	96.8	4.1	5.0
SMAJ64	SMAJ64C	RL	WL	64	71.1	86.4	1.0	114	3.5	5.0
SMAJ64A	SMAJ64CA	RM	WM	64	71.1	78.6	1.0	103	3.9	5.0
SMAJ70	SMAJ70C	RN	WN	70	77.8	95.1	1.0	125	3.2	5.0
SMAJ70A	SMAJ70CA	RP	WP	70	77.8	86.0	1.0	113	3.5	5.0
SMAJ75	SMAJ75C	RQ	WQ	75	83.3	102	1.0	134	3.0	5.0
SMAJ75A	SMAJ75CA	RR	WR	75	83.3	92.1	1.0	121	3.3	5.0
SMAJ78	SMAJ78C	RS	WS	78	86.7	106	1.0	139	2.9	5.0
SMAJ78A	SMAJ78CA	RT	WT	78	86.7	95.8	1.0	126	3.2	5.0
SMAJ85	SMAJ85C	RU	WU	85	94.4	115	1.0	151	2.6	5.0
SMAJ85A	SMAJ85CA	RV	WV	85	94.4	104	1.0	137	2.9	5.0
SMAJ90	SMAJ90C	RW	WW	90	100	122	1.0	160	2.5	5.0
SMAJ90A	SMAJ90CA	RX	WX	90	100	111	1.0	146	2.7	5.0
SMAJ100	SMAJ100C	RY	WY	100	111	136	1.0	179	2.2	5.0
SMAJ100A	SMAJ100CA	RZ	WZ	100	111	123	1.0	162	2.5	5.0
SMAJ110	SMAJ110C	SD	XD	110	122	149	1.0	196	2.0	5.0
SMAJ110A	SMAJ110CA	SE	XE	110	122	135	1.0	177	2.3	5.0
SMAJ120	SMAJ120C	SF	XF	120	133	163	1.0	214	1.9	5.0
SMAJ120A	SMAJ120CA	SG	XG	120	133	147	1.0	193	2.0	5.0
SMAJ130	SMAJ130C	SH	XH	130	144	176	1.0	231	1.7	5.0
SMAJ130A	SMAJ130CA	SK	XK	130	144	159	1.0	209	1.9	5.0
SMAJ150	SMAJ150C	SL	XL	150	167	204	1.0	268	1.5	5.0
SMAJ150A	SMAJ150CA	SM	XM	150	167	185	1.0	243	1.6	5.0
SMAJ160	SMAJ160C	SN	XN	160	178	218	1.0	287	1.4	5.0
SMAJ160A	SMAJ160CA	SP	XP	160	178	197	1.0	259	1.5	5.0
SMAJ170	SMAJ170C	SQ	XQ	170	189	231	1.0	304	1.3	5.0
SMAJ170A	SMAJ170CA	SR	XR	170	189	209	1.0	275	1.4	5.0

NOTE :

- 1) Suffix 'A ' denotes 5% tolerance device, no suffix denotes 10 % tolerance device.
- 2) Add suffix 'C 'or ' CA ' after part number to specify Bi-directional devices.
- 3) For Bi-Directional devices having VR of 10 volts and under, the IR limit is double .
- 4) For Uni-directional devices VF max=3.5v at if=35 A ,0.5 sine wave of 8.3 msec .pulse width.