

Description

The SMAJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



Features

- 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 1.0ps from 0 Volts to V_{BR} min

Maximum Ratings And Electrical Characteristics

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A=25^{\circ}\text{C}$ by 10x1000 μs waveform (Fig.1)(Note 1), (Note 2)	P_{PPM}	400	W
Power Dissipation on infinite heat sink at $T_A=50^{\circ}\text{C}$	$P_{M(AV)}$	3.3	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I_{FSM}	40	A
Maximum Instantaneous Forward Voltage at 25A for Unidirectional only (Note 4)	V_F	3.5V/5	V
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-65 to 150	$^{\circ}\text{C}$
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	30	$^{\circ}\text{C/W}$
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	120	$^{\circ}\text{C/W}$

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A=25^{\circ}\text{C}$ per Fig. 2.
2. Mounted on 5.0x5.0mm copper pad to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.
4. $V_F < 3.5\text{V}$ for $V_{BR} \leq 200\text{V}$ and $V_F < 6.5\text{V}$ for $V_{BR} \geq 201\text{V}$.

Description of Part Number

TVS 管的型号由三部分组成：系列名+电压值+单/双向符号（例如 SMAJ5.0CA）

1、系列名 代表不同的峰值脉冲功率和封装形式

- ① SMAJ、SMBJ、SMCJ、SMDJ 表示贴片封装：分别代表的峰值脉冲功率为 400W、600W、1500W 和 3000W；
- ② 其它系列名表示同轴引线封装：P4KE 为 400W、P6KE 为 600W、1.5KE 为 1500W，SA 为 500W、3KP 为 3000W，其余类推（型号名 KP 或 KPA 前面的数字表示 kW 数）。

2、系列名后的数字 代表击穿电压标称值或反向断态电压值

- ① P4KE、P6KE、1.5KE 系列中代表击穿电压标称值（ V_{BR} ）；
- ② 其它系列中代表反向断态电压值（ V_{RWM} ）。

3、A 表示单向，CA 表示双向。

Rating And Characteristic Curves

Figure 1 - Peak Pulse Power Rating

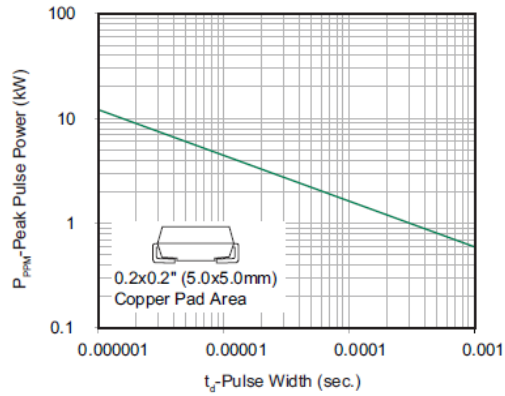


Figure 2 - Pulse Derating Curve

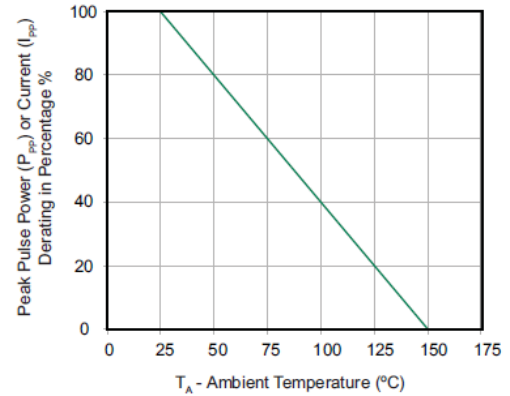


Figure 3 - Pulse Waveform

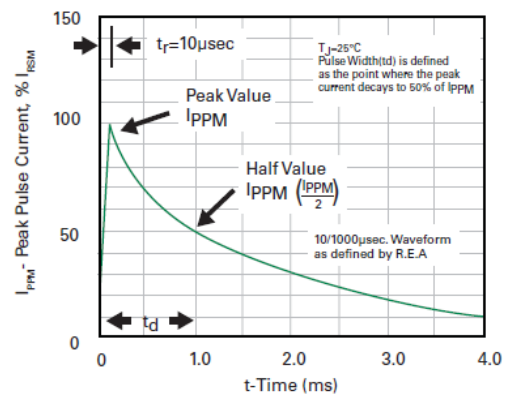


Figure 4 - Typical Junction Capacitance

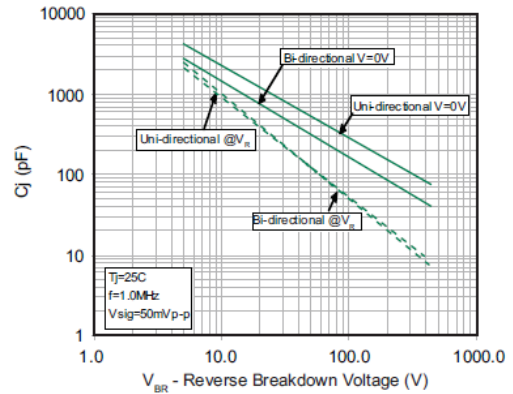


Figure 5 - Steady State Power Dissipation Derating Curve

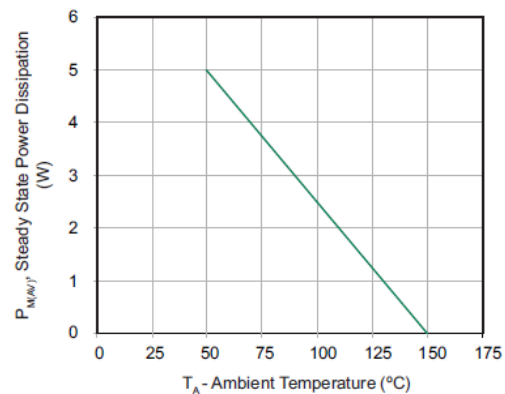
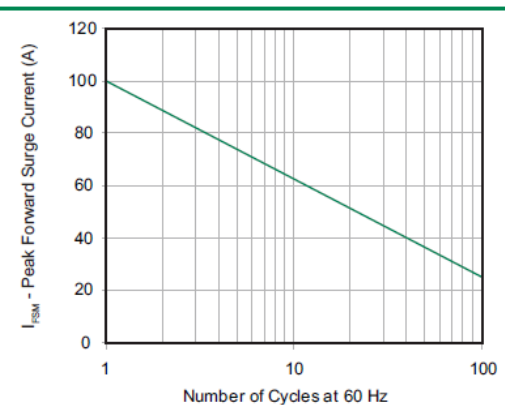


Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



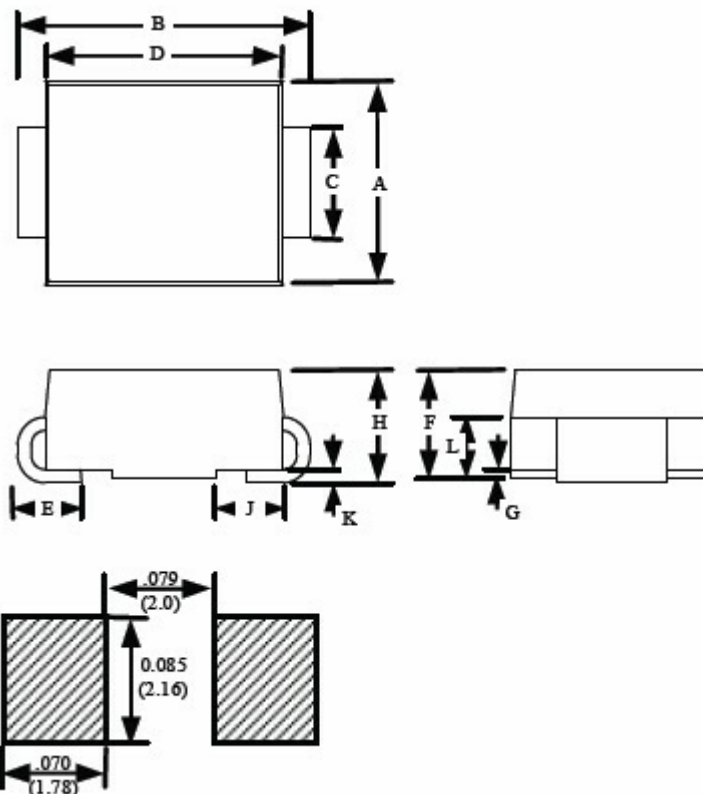
Maximum Ratings And Electrical Characteristics

Type Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage@It		Test Current	Maximum Clamping Voltage@Ipp	Peak Pulse Current	Reverse Leakage @Vrwm
(UNI)	(BI)	(UNI)	(BI)	Vrwm(V)	Vbr min.(V)	Vbr max.(V)	It(mA)	Vc(V)	Ipp(A)	Ir(μ A)
SMAJ5.0A	SMAJ5.0CA	HE	TE	5.0	6.40	7.25	10	9.2	43.5	800
SMAJ6.0A	SMAJ6.0CA	HG	TG	6.0	6.67	7.67	10	10.3	38.8	800
SMAJ6.5A	SMAJ6.5CA	HK	TK	6.5	7.22	8.30	10	11.2	35.7	500
SMAJ7.0A	SMAJ7.0CA	HM	TM	7.0	7.78	8.95	10	12.0	33.3	200
SMAJ7.5A	SMAJ7.5CA	HP	TP	7.5	8.33	9.58	1	12.9	31.0	100
SMAJ8.0A	SMAJ8.0CA	HR	TR	8.0	7.89	10.23	1	13.6	29.4	50
SMAJ8.5A	SMAJ8.5CA	HT	TT	8.5	9.44	10.82	1	14.4	27.8	20
SMAJ9.0A	SMAJ9.0CA	HV	TV	9.0	10.00	11.50	1	15.4	26.0	10
SMAJ10A	SMAJ10CA	HX	TX	10.0	11.10	12.80	1	17.0	23.5	5
SMAJ11A	SMAJ11CA	HZ	TZ	11.0	12.20	14.00	1	18.2	22.0	1
SMAJ12A	SMAJ12CA	IE	UE	12.0	13.30	15.30	1	19.9	20.1	1
SMAJ13A	SMAJ13CA	IG	UG	13.0	14.40	16.50	1	21.5	18.6	1
SMAJ14A	SMAJ14CA	IK	UK	14.0	15.60	17.90	1	23.2	17.2	1
SMAJ15A	SMAJ15CA	IM	UM	15.0	16.70	19.20	1	24.4	16.4	1
SMAJ16A	SMAJ16CA	IP	UP	16.0	17.80	20.50	1	26.0	15.4	1
SMAJ17A	SMAJ17CA	IR	UR	17.0	18.90	21.70	1	27.6	14.5	1
SMAJ18A	SMAJ18CA	IT	UT	18.0	20.00	23.30	1	19.2	13.7	1
SMAJ20A	SMAJ20CA	IV	UV	20.0	22.20	25.50	1	32.4	12.3	1
SMAJ22A	SMAJ22CA	IX	UX	22.0	24.40	28.00	1	35.5	11.3	1
SMAJ24A	SMAJ24CA	IZ	UZ	24.0	26.70	30.70	1	38.9	10.3	1
SMAJ26A	SMAJ26CA	JE	VE	26.0	28.90	33.20	1	42.1	9.5	1
SMAJ28A	SMAJ28CA	JG	VG	28.0	31.10	35.80	1	45.4	8.8	1
SMAJ30A	SMAJ30CA	JK	VK	30.0	33.30	38.30	1	48.4	8.3	1
SMAJ33A	SMAJ33CA	JM	VM	33.0	36.70	42.20	1	53.3	7.5	1
SMAJ36A	SMAJ36CA	JP	VP	36.0	40.00	46.00	1	58.1	6.9	1
SMAJ40A	SMAJ40CA	JR	VR	40.0	44.40	51.10	1	64.5	6.2	1
SMAJ43A	SMAJ43CA	JT	VT	43.0	47.80	54.90	1	69.4	5.8	1
SMAJ45A	SMAJ45CA	JV	VV	45.0	50.00	57.50	1	72.7	5.5	1
SMAJ48A	SMAJ48CA	JX	VX	48.0	53.30	61.30	1	77.4	5.2	1
SMAJ51A	SMAJ51CA	JZ	VZ	51.0	56.70	65.20	1	82.4	4.9	1
SMAJ54A	SMAJ54CA	RE	WE	54.0	60.00	69.00	1	87.1	4.6	1
SMAJ58A	SMAJ58CA	RG	WG	58.0	64.40	74.10	1	93.6	4.3	1
SMAJ60A	SMAJ60CA	RK	WK	60.0	66.70	76.70	1	96.8	4.1	1
SMAJ64A	SMAJ64CA	RM	WM	64.0	71.10	81.80	1	103.0	3.9	1
SMAJ70A	SMAJ70CA	RP	WP	70.0	77.80	89.50	1	113.0	3.5	1
SMAJ75A	SMAJ75CA	RR	WR	75.0	83.30	95.80	1	121.0	3.3	1
SMAJ78A	SMAJ78CA	RT	WT	78.0	86.70	99.70	1	126.0	3.2	1
SMAJ85A	SMAJ85CA	RV	WV	85.0	94.40	108.20	1	137.0	2.9	1

SMAJ90A	SMAJ90CA	RX	WX	90.0	100.00	115.50	1	146.0	2.7	1
SMAJ100A	SMAJ100CA	RZ	WZ	100.0	111.00	128.00	1	162.0	2.5	1
SMAJ110A	SMAJ110CA	SE	XE	110.0	122.00	140.50	1	177.0	2.3	1
SMAJ120A	SMAJ120CA	SG	XG	120.0	133.00	153.00	1	193.0	2.1	1
SMAJ130A	SMAJ130CA	SK	XK	130.0	144.00	165.50	1	209.0	1.9	1
SMAJ150A	SMAJ150CA	SM	XM	150.0	167.00	192.50	1	243.0	1.6	1
SMAJ160A	SMAJ160CA	SP	XP	160.0	178.00	205.00	1	259.0	1.5	1
SMAJ170A	SMAJ170CA	SR	XR	170.0	189.00	217.50	1	275.0	1.5	1
SMAJ180A	SMAJ180CA	ST	XT	180.0	201.00	230.40	1	292.0	1.4	1
SMAJ200A	SMAJ200CA	SX	XX	200.0	224.00	256.00	1	324.0	1.2	1
SMAJ220A	SMAJ220CA	ZE	YE	220.0	264.00	281.60	1	356.0	1.1	1
SMAJ250A	SMAJ250CA	ZG	YG	250.0	279.00	309.00	1	405.0	1.0	1
SMAJ300A	SMAJ300CA	ZK	YK	300.0	335.00	371.00	1	486.0	0.8	1
SMAJ350A	SMAJ350CA	ZM	YM	350.0	391.00	432.00	1	567.0	0.7	1
SMAJ400A	SMAJ400CA	ZP	YP	400.0	447.00	494.00	1	648.0	0.6	1
SMAJ440A	SMAJ440CA	ZR	YR	440.0	492.00	543.00	1	713.0	0.6	1

For bidirectional type having V_{RWM} of 10 volts and less, the I_R limit is double.
For parts without A (V_{BR} is $\pm 10\%$ and V_C is 5% higher than with A parts).

Dimensions



SMA

Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.098	0.114	2.50	2.90
B	0.188	0.208	4.80	5.28
C	0.055	0.062	1.40	1.60
D	0.157	0.181	4.00	4.60
E	0.030	0.060	0.76	1.52
F	0.078	0.096	2.00	2.44
H	0.080	0.104	2.051	2.643

Summary of Packing Options

Package Type	Description	Packing Quantity	Industry Standard
DO-214AC 	Embossed Carrier Reel Pack	2000 PCS	EIA RS-481