TRR®

TVS: SMAJ5.0A(CA) thru SMAJ440A(CA)

Glass Passivated TVS

Features

- For surface mounted applications in order to optimize board space
- Low profile space
- Glass passivated chip
- Low inductance
- Excellent clamping capability
- Very fast response time
- Typical I_D less than 1μA at V_{WM}
- 400 W peak pulse power capability with a 10/1000 μs waveform

RoHS COMPLIANT

SMA (DO – 214AC)

Mechanical Date

- **Case:** JEDEC DO-214AC molded plastic body over glass passivated chip
- **Terminals:** Solder plated, solderable per MIL-STD-750 Method 2026
- **Polarity:** For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation

Major Ratings and Characteristics

P_{PPM}	**400 W**
V_{RRM}	**5 V to 440 V**
I_{FSM}	**40 A**
T_j **max.**	**150 °C**

Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g.SMAJ10C, SMAJ10CA). Electrical characteristics apply in both directions.

Maximum Ratings & Thermal Characteristics

(T_A = 25 °C unless otherwise noted)

Items	Symbol	Value	UNIT
Peak pulse power dissipation with a 10/1000μs waveform (see fig. 1)	P_{PPM}	400	W
Peak pulse current with a waveform (see fig. 3 , single pulse)	I_{PPM}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave uni-directional only	I_{FSM}	40	A
Typical thermal resistance, junction to ambient(1)	$R_{\theta JA}$	120	°C / W
Typical thermal resistance, junction to lead(1)	$R_{\theta JL}$	30	°C / W
Operating junction and storage temperature range	T_J,T_{STG}	–55 to +150	℃

Note 1: Mounted on P.C.B. with 0.2 x 0.2” (5.0 x 5.0mm) copper pad areas.

Electrical Characteristics

T_A =25℃ unless otherwise noted

Device Type	Marking Code		Breakdown Voltage at I_T (2) $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at V_{WM} (4)	Maximum Peak Pulse Surge Current (3)	Maximum Clamping Voltage at I_{PPM}
UNI	UNI	BI	Min	Max	I_T (mA)	V_{WM} (V)	I_D (μA)	I_{PPM} (A)	V_C (V)
SMAJ5.0A/CA	AE	WE	6.4	7	10	5	800	43.5	9.2
SMAJ6.0A/CA	AG	WG	6.67	7.37	10	6	800	38.8	10.3
SMAJ6.5A/CA	AK	WK	7.22	7.98	10	6.5	500	35.7	11.2
SMAJ7.0A/CA	AM	WM	7.78	8.6	10	7	200	33.3	12
SMAJ7.5A/CA	AP	WP	8.33	9.21	1	7.5	100	31	12.9
SMAJ8.0A/CA	AR	WR	8.89	9.83	1	8	50	29.4	13.6
SMAJ8.5A/CA	AT	WT	9.44	10.4	1	8.5	20	27.8	14.4
SMAJ9.0A/CA	AV	WV	10	11.1	1	9	10	26.0	15.4
SMAJ10A/CA	AX	WX	11.1	12.3	1	10	5	23.5	17
SMAJ11A/CA	AZ	WZ	12.2	13.5	1	11	1	22	18.2
SMAJ12A/CA	BE	XE	13.3	14.7	1	12	1	20.1	19.9
SMAJ13A/CA	BG	XG	14.4	15.9	1	13	1	18.6	21.5
SMAJ14A/CA	BK	XK	15.6	17.2	1	14	1	17.2	23.2
SMAJ15A/CA	BM	XM	16.7	18.5	1	15	1	16.4	24.4
SMAJ16A/CA	BP	XP	17.8	19.7	1	16	1	15.4	26
SMAJ17A/CA	BR	XR	18.9	20.9	1	17	1	14.5	27.6
SMAJ18A/CA	BT	XT	20	22.1	1	18	1	13.7	29.2
SMAJ20A/CA	BV	XV	22.2	24.5	1	20	1	12.3	32.4
SMAJ22A/CA	BX	XX	24.4	26.9	1	22	1	11.3	35.5
SMAJ24A/CA	BZ	XZ	26.7	29.5	1	24	1	10.3	38.9
SMAJ26A/CA	CE	YE	28.9	31.9	1	26	1	9.5	42.1
SMAJ28A/CA	CG	YG	31.1	34.4	1	28	1	8.8	45.4
SMAJ30A/CA	CK	YK	33.3	36.8	1	30	1	8.3	48.4
SMAJ33A/CA	CM	YM	36.7	40.6	1	33	1	7.5	53.3
SMAJ36A/CA	CP	YP	40	44.2	1	36	1	6.9	58.1
SMAJ40A/CA	CR	YR	44.4	49.1	1	40	1	6.2	64.5
SMAJ43A/CA	CT	YT	47.8	52.8	1	43	1	5.8	69.4
SMAJ45A/CA	CV	YV	50.0	55.3	1	45	1	5.5	72.7
SMAJ48A/CA	CX	YX	53.3	58.9	1	48	1	5.2	77.4
SMAJ51A/CA	CZ	YZ	56.7	62.7	1	51	1	4.9	82.4
SMAJ54A/CA	RE	ZE	60	66.3	1	54	1	4.6	87.1
SMAJ58A/CA	RG	ZG	64.4	71.2	1	58	1	4.3	93.6
SMAJ60A/CA	RK	ZK	66.7	73.7	1	60	1	4.1	96.8
SMAJ64A/CA	RM	ZM	71.1	78.6	1	64	1	3.9	103
SMAJ70A/CA	RP	ZP	77.8	86.0	1	70	1	3.5	113
SMAJ75A/CA	RR	ZR	83.3	92.1	1	75	1	3.3	121
SMAJ78A/CA	RT	ZT	86.7	95.8	1	78	1	3.2	126
SMAJ85A/CA	RV	ZV	94.4	104	1	85	1	2.9	137
SMAJ90A/CA	RX	ZX	100	111	1	90	1	2.7	146

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Electrical Characteristics

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Device Type	Marking Code		Breakdown Voltage at I_T (2) $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at V_{WM} (4)	Maximum Peak Pulse Surge Current (3)	Maximum Clamping Voltage at I_{PPM}
UNI	UNI	BI	Min	Max	I_T (mA)	V_{WM} (V)	I_D (μA)	I_{PPM} (A)	V_C (V)
SMAJ100A/CA	RZ	ZZ	111	123	1	100	1	2.5	162
SMAJ110A/CA	SE	VE	122	135	1	110	1	2.3	177
SMAJ120A/CA	SG	VG	133	147	1	120	1	2.1	193
SMAJ130A/CA	SK	VK	144	159	1	130	1	1.9	209
SMAJ150A/CA	SM	VM	167	185	1	150	1	1.6	243
SMAJ160A/CA	SP	VP	178	197	1	160	1	1.5	259
SMAJ170A/CA	SR	VR	189	209	1	170	1	1.5	275
SMAJ180A/CA	ST	VT	201	222	1	180	1	1.4	292
SMAJ200A/CA	SV	VV	224	247	1	200	1	1.2	324
SMAJ220A/CA	SX	VX	246	272	1	220	1	1.1	356
SMAJ250A/CA	SZ	VZ	279	309	1	250	1	1.0	405
SMAJ300A/CA	TE	UE	335	371	1	300	1	0.8	486
SMAJ350A/CA	TG	UG	391	432	1	350	1	0.7	567
SMAJ400A/CA	TK	UK	447	494	1	400	1	0.6	648
SMAJ440A/CA	TM	UM	492	543	1	440	1	0.6	713

Note 2: Pulse test : Tp ≦ 50ms.

Note 3: Surge current waveform Per Fig. 3 and derate Per Fig. 2.

Note 4: For bi-directional types with V_{WM} of 10 V and less, the I_D limit is doubled

Note 5: V_F = 3.5 V at I_F = 25 A (uni-directional only)

Characteristic Curves

(T_A=25 ℃ unless otherwise noted)

Fig. 1 -- Peak Pulse Power Rating Cure

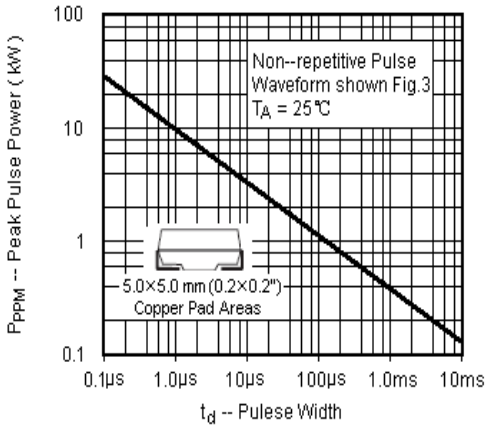


Fig.2--Pulse Derating Cure

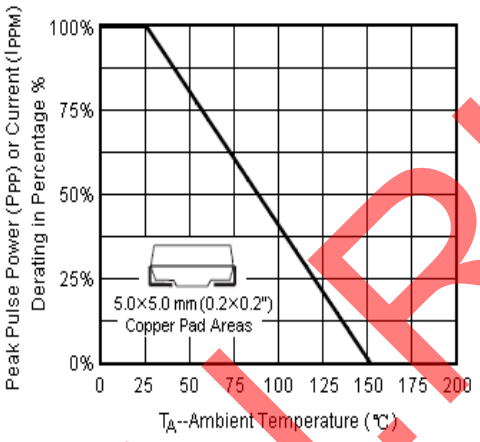


Fig. 3 -- Pulse Waveform

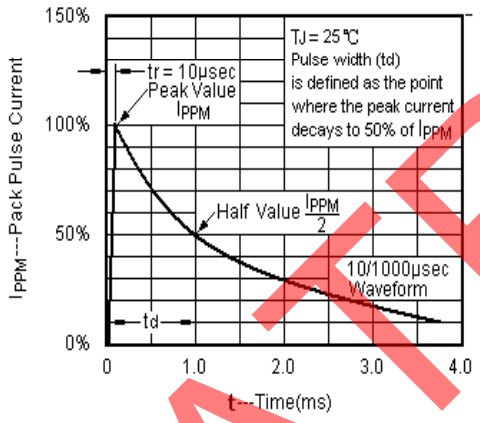


Fig. 4 -- Typical Junction Capacitance

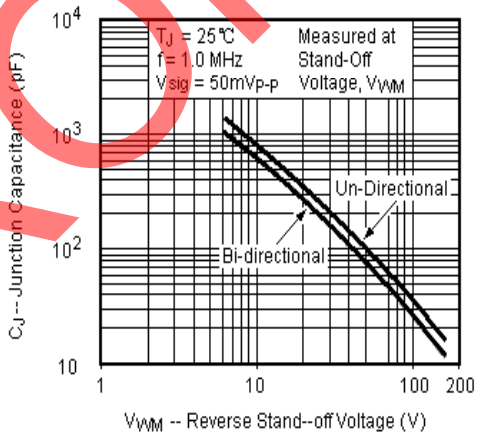


Fig. 5 – Typical Tansient Thermal Impedance

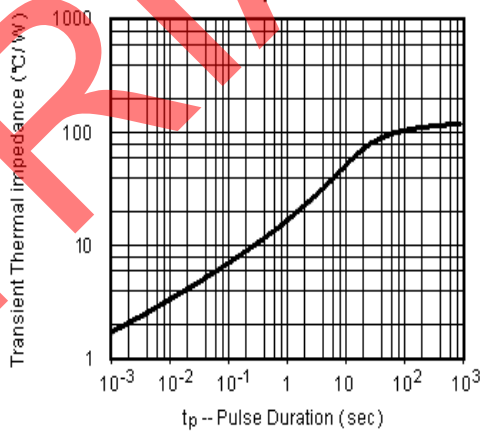
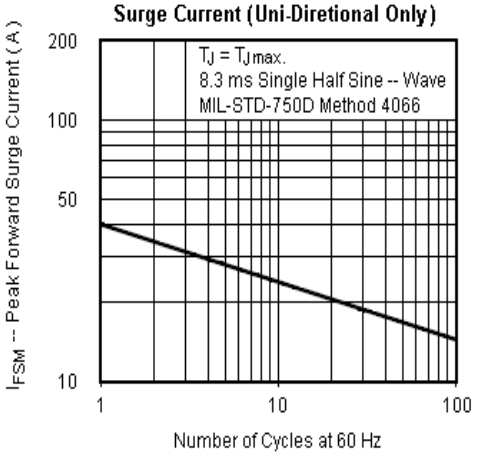


Fig. 6 -- Maximum Non-Repetitive Forward Surge Current (Uni-Diretional Only)



Package Outline