TVS: SMBJ5.0(CA) thru SMBJ440A(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}
- 600 W peak pulse power capability with a 10/1000 μs waveform
- Component in accordance to RoHS 2002/95/1 and WEEE 2002/96/EC

SMB (DO – 214AA)

Mechanical Date

- **Case:** JEDEC DO-214AA 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}	**600 W**
V_{RRM}	**5 V to 440 V**
I_{FSM}	**100 A**
T_j max.	**150 °C**

Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g.SMBJ10C, SMBJ10CA). 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}	600	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}	100	A
Typical thermal resistance, junction to ambient(1)	$R_{\theta JA}$	100	°C / W
Typical thermal resistance, junction to lead(1)	$R_{\theta JL}$	20	°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 pads to each terminal.

TVS: SMBJ5.0(CA) thru SMBJ440A(CA)

Glass Passivated TVS

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)
SMBJ5.0A/CA	KE	AE	6.40	7	10	5.0	800	65.3	9.2
SMBJ6.0A/CA	KG	AG	6.70	7.37	10	6.0	800	58.3	10.3
SMBJ6.5A/CA	KK	AK	7.22	7.98	10	6.5	500	53.6	11.2
SMBJ7.0A/CA	KM	AM	7.78	8.60	10	7.0	200	50.0	12.0
SMBJ7.5A/CA	KP	AP	8.33	9.21	1	7.5	100	46.6	12.9
SMBJ8.0A/CA	KR	AR	8.89	9.83	1	8.0	50	44.2	13.6
SMBJ8.5A/CA	KT	AT	9.44	10.40	1	8.5	20	41.7	14.4
SMBJ9.0A/CA	KV	AV	10.0	11.1	1	9.0	10	39.0	15.4
SMBJ10A/CA	KX	AX	11.1	12.3	1	10	5	35.3	17.0
SMBJ11A/CA	KZ	AZ	12.2	13.5	1	11	5	33.0	18.2
SMBJ12A/CA	LE	BE	13.3	14.7	1	12	5	30.2	19.9
SMBJ13A/CA	LG	BG	14.4	15.9	1	13	1	28.0	21.5
SMBJ14A/CA	LK	BK	15.6	17.2	1	14	1	25.8	23.2
SMBJ15A/CA	LM	BM	16.7	18.5	1	15	1	24.6	24.4
SMBJ16A/CA	LP	BP	17.8	19.7	1	16	1	23.1	26.0
SMBJ17A/CA	LR	BR	18.9	20.9	1	17	1	21.8	27.6
SMBJ18A/CA	LT	BT	20.0	22.1	1	18	1	20.6	29.2
SMBJ20A/CA	LV	BV	22.2	24.5	1	20	1	18.6	32.4
SMBJ22A/CA	LX	BX	24.4	26.9	1	22	1	16.9	35.5
SMBJ24A/CA	LZ	BZ	26.7	29.5	1	24	1	15.5	38.9
SMBJ26A/CA	ME	CE	28.9	31.9	1	26	1	14.3	42.1
SMBJ28A/CA	MG	CG	31.1	34.4	1	28	1	13.3	45.4
SMBJ30A/CA	MK	CK	33.3	36.8	1	30	1	12.4	48.4
SMBJ33A/CA	MM	CM	36.7	40.6	1	33	1	11.3	53.3
SMBJ36A/CA	MP	CP	40.0	44.2	1	36	1	10.4	58.1
SMBJ40A/CA	MR	CR	44.4	49.1	1	40	1	9.3	64.5
SMBJ43A/CA	MT	CT	47.8	52.8	1	43	1	8.7	69.4
SMBJ45A/CA	MV	CV	50.0	55.3	1	45	1	8.3	72.7
SMBJ48A/CA	MX	CX	53.3	58.9	1	48	1	7.8	77.4
SMBJ51A/CA	MZ	CZ	56.7	62.7	1	51	1	7.3	82.4
SMBJ54A/CA	NE	DE	60.0	66.3	1	54	1	6.9	87.1
SMBJ58A/CA	NG	DG	64.4	71.2	1	58	1	6.5	93.6
SMBJ60A/CA	NK	DK	66.7	73.7	1	60	1	6.2	96.8
SMBJ64A/CA	NM	DM	71.1	78.6	1	64	1	5.9	103
SMBJ70A/CA	NP	DP	77.8	86.0	1	70	1	5.3	113
SMBJ75A/CA	NR	DR	83.3	92.1	1	75	1	5.0	121
SMBJ78A/CA	NT	DT	86.7	95.8	1	78	1	4.8	126
SMBJ85A/CA	NV	DV	94.4	104	1	85	1	4.4	137
SMBJ90A/CA	NX	DX	100	111	1	90	1	4.1	146

Electrical Characteristics

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)
SMBJ100A/CA	NZ	DZ	111	123	1	100	1	3.7	162
SMBJ110A/CA	PE	EE	122	135	1	110	1	3.4	177
SMBJ120A/CA	PG	EG	133	147	1	120	1	3.1	193
SMBJ130A/CA	PK	EK	144	159	1	130	1	2.9	209
SMBJ150A/CA	PM	EM	167	185	1	150	1	2.5	243
SMBJ160A/CA	PP	EP	178	197	1	160	1	2.3	259
SMBJ170A/CA	PR	ER	189	209	1	170	1	2.2	275
SMBJ180A/CA	PT	ET	201	222	1	180	1	2.1	292
SMBJ188A/CA	PB	EB	209	231	1	188	1	2.0	304
SMBJ200A/CA	PV	EV	224	247	1	200	1	1.9	324
SMBJ220A/CA	PX	EX	246	272	1	220	1	1.7	356
SMBJ250A/CA	PZ	EZ	279	309	1	250	1	1.5	405
SMBJ300A/CA	QE	FE	335	371	1	300	1	1.3	486
SMBJ350A/CA	QG	FG	391	432	1	350	1	1.1	567
SMBJ400A/CA	QK	FK	447	494	1	400	1	0.9	648
SMBJ440A/CA	QM	FM	492	543	1	440	1	0.9	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 = 50 A (uni-directional only)

Characteristic Curves (T_A=25 ℃ unless otherwise noted)

Fig. 1-- Peak Pulse Power Rating Cure

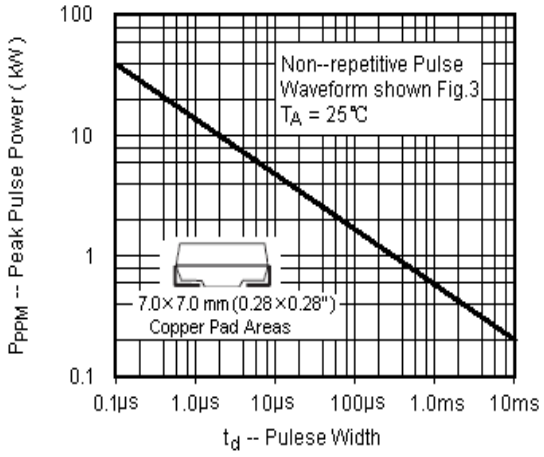


Fig.2--Pulse Derating Cure

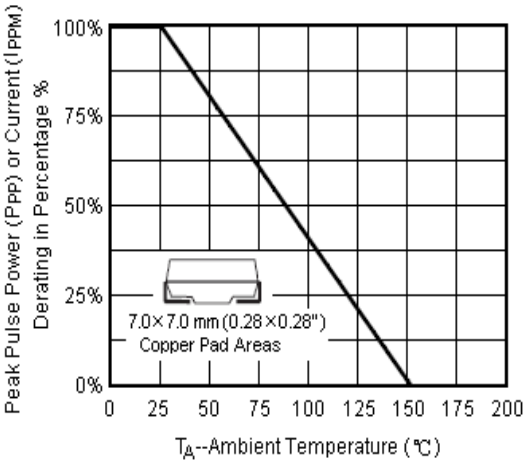


Fig. 3--Pulse Waveform

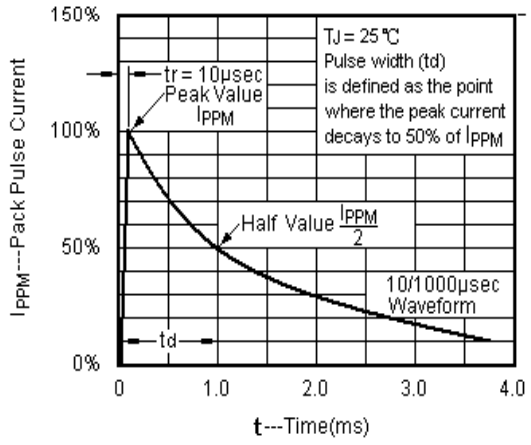


Fig. 4 -- Typical Junction Capacitance

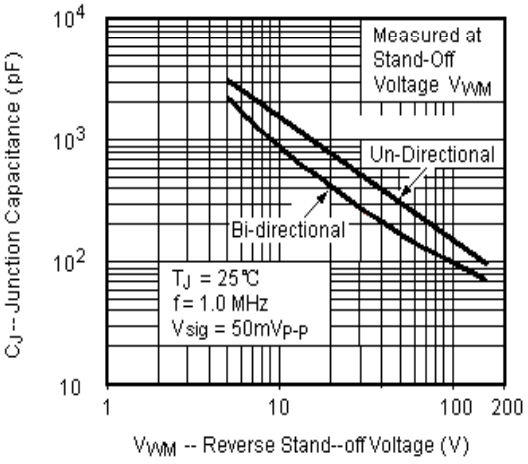


Fig. 5 – Typical Tansient Thermal Impedance

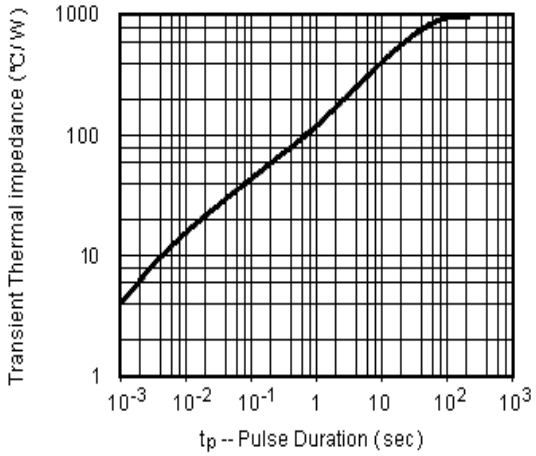
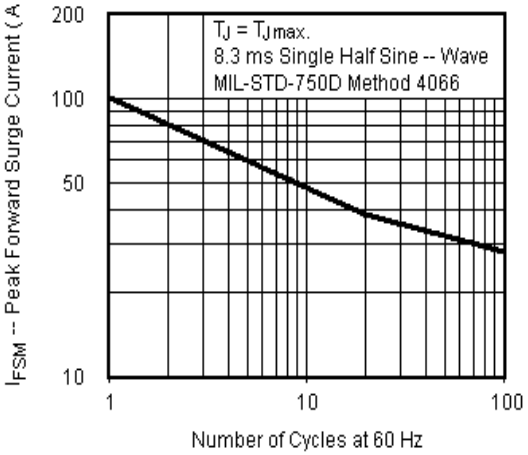
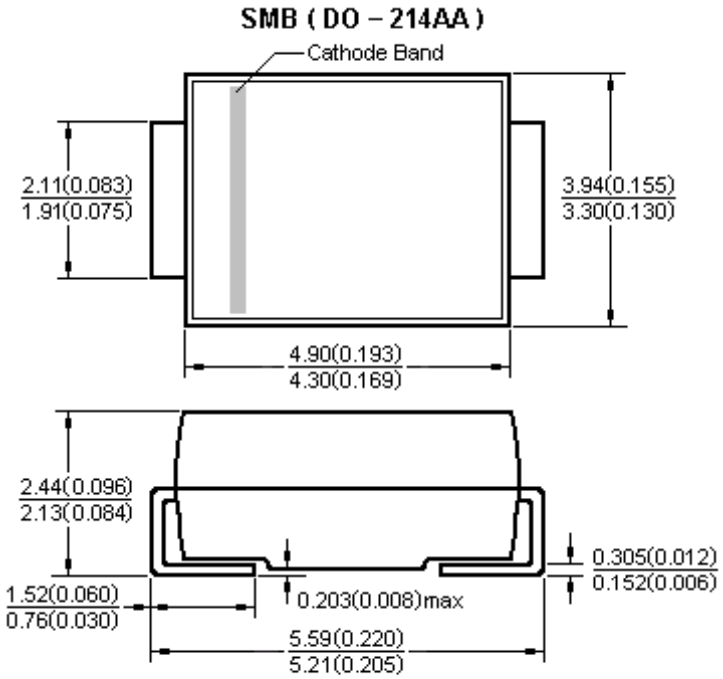


Fig. 6 -- Maximum Non-Repetitive Forward Surge Current (Uni-Diretional Only)



Package Outline



Dimensions in millimeters and (inches)

- TRR is registered trademark of Zhejiang TRR Microelectronics Inc.. Zhejiang TRR Microelectronics Inc. reserves the right to make changes to any product in this specification without notice.
- Zhejiang TRR Microelectronics Inc. does not assure any liability arising out of the applications or use of any product described in this specification.
- Zhejiang TRR Microelectronics Inc. advises customers to obtain the latest version of the device information before placing orders to verify that the required information is current.