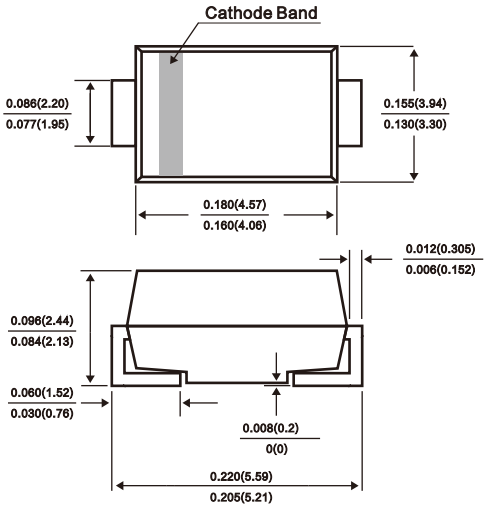
FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 600 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3 or P/NHM3

SMB(DO-214AA)



Dimensions in inches and (millimeters)

MECHANICAL DATA

Case: SMB (DO-214AA)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade
Base P/NHE3 - RoHS-compliant and AEC-Q101 qualified
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: for uni-directional types the band denotes cathode end, no marking on bi-directional types

PRIMARY CHARACTERISTICS	
V_{BR} (bi-directional)	6.4 V to 231 V
V_{BR} (uni-directional)	6.4 V to 231 V
V_{WM}	5.0 V to 188 V
P_{PPM}	600 W
I_{FSM} (uni-directional only)	100 A
T_J max.	150 °C
Polarity	Uni-directional, bi-directional
Package	SMB (DO-214AA)

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional devices use CA suffix (e.g. SMBJ10CA).
Electrical characteristics apply in both directions.

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation with a 10/1000 µs waveform (1)(2) (fig. 1)	P_{PPM}	600	W
Peak pulse current with a 10/1000 µs waveform (1)	I_{PPM}	See next table	A
Peak forward surge current 8.3 ms single half sine-wave uni-directional only (2)	I_{FSM}	100	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2

(2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

DEVICE TYPE MODIFIED "J" BEND LEAD	DEVICE MARKING CODE		BREAKDOWN VOLTAGE V_{BR} AT I_T (1) (V)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (μA) (3)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (A) (2)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} $_C$ (V)
	UNI	BI	MIN.	MAX.					
SMBJ5.0A(CA)	KE	KE	6.40	7.07	10	5.0	800	65.2	9.2
SMBJ6.0A(CA)	KG	KG	6.67	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
SMBJ6.8A(CA)	8A	8C	6.45	7.14	10	5.80	1000	57.1	10.5
SMBJ7.0A(CA)	KM	KM	7.78	8.60	10	7.0	200	50.0	12.0
SMBJ7.5A(CA)	KP	AP	8.33	9.21	1.0	7.5	100	46.5	12.9
SMBJ8.0A(CA)	KR	AR	8.89	9.83	1.0	8.0	50	44.1	13.6
SMBJ8.5A(CA)	KT	AT	9.44	10.4	1.0	8.5	20	41.7	14.4
SMBJ9.0A(CA)	KV	AV	10.0	11.1	1.0	9.0	10	39.0	15.4
SMBJ10A(CA)	KX	AX	11.1	12.3	1.0	10	5.0	35.3	17.0
SMBJ11A(CA)	KZ	KZ	12.2	13.5	1.0	11	5.0	33.0	18.2
SMBJ12A(CA)	LE	BE	13.3	14.7	1.0	12	5.0	30.2	19.9
SMBJ13A(CA)	LG	LG	14.4	15.9	1.0	13	1.0	27.9	21.5
SMBJ14A(CA)	LK	BK	15.6	17.2	1.0	14	1.0	25.9	23.2
SMBJ15A(CA)	LM	BM	16.7	18.5	1.0	15	1.0	24.6	24.4
SMBJ16A(CA)	LP	LM	17.8	19.7	1.0	16	1.0	23.1	26.0
SMBJ17A(CA)	LR	LR	18.9	20.9	1.0	17	1.0	21.7	27.6
SMBJ18A(CA)	LT	BT	20.0	22.1	1.0	18	1.0	20.5	29.2
SMBJ20A(CA)	LV	LV	22.2	24.5	1.0	20	1.0	18.5	32.4
SMBJ22A(CA)	LX	BX	24.4	26.9	1.0	22	1.0	16.9	35.5
SMBJ24A(CA)	LZ	BZ	26.7	29.5	1.0	24	1.0	15.4	38.9
SMBJ26A(CA)	ME	CE	28.9	31.9	1.0	26	1.0	14.3	42.1
SMBJ28A(CA)	MG	MG	31.1	34.4	1.0	28	1.0	13.2	45.4
SMBJ30A(CA)	MK	CK	33.3	36.8	1.0	30	1.0	12.4	48.4
SMBJ33A(CA)	MM	CM	36.7	40.6	1.0	33	1.0	11.3	53.3
SMBJ36A(CA)	MP	CP	40.0	44.2	1.0	36	1.0	10.3	58.1
SMBJ40A(CA)	MR	CR	44.4	49.1	1.0	40	1.0	9.3	64.5
SMBJ43A(CA)	MT	CT	47.8	52.8	1.0	43	1.0	8.6	69.4
SMBJ45A(CA)	MV	MV	50.0	55.3	1.0	45	1.0	8.3	72.7
SMBJ48A(CA)	MX	MX	53.3	58.9	1.0	48	1.0	7.8	77.4
SMBJ51A(CA)	MZ	MZ	56.7	62.7	1.0	51	1.0	7.3	82.4
SMBJ54A(CA)	NE	NE	60.0	66.3	1.0	54	1.0	6.9	87.1
SMBJ58A(CA)	NG	NG	64.4	71.2	1.0	58	1.0	6.4	93.6
SMBJ60A(CA)	NK	NK	66.7	73.7	1.0	60	1.0	6.2	96.8
SMBJ64A(CA)	NM	NM	71.1	78.6	1.0	64	1.0	5.8	103
SMBJ70A(CA)	NP	NP	77.8	86.0	1.0	70	1.0	5.3	113
SMBJ75A(CA)	NR	NR	83.3	92.1	1.0	75	1.0	5.0	121
SMBJ78A(CA)	NT	NT	86.7	95.8	1.0	78	1.0	4.8	126
SMBJ85A(CA)	NV	NV	94.4	104	1.0	85	1.0	4.4	137
SMBJ90A(CA)	NX	NX	100	111	1.0	90	1.0	4.1	146
SMBJ100A(CA)	NZ	NZ	111	123	1.0	100	1.0	3.7	162
SMBJ110A(CA)	PE	PE	122	135	1.0	110	1.0	3.4	177
SMBJ120A(CA)	PG	PG	133	147	1.0	120	1.0	3.1	193
SMBJ130A(CA)	PK	PK	144	159	1.0	130	1.0	2.9	209
SMBJ150A(CA)	PM	PM	167	185	1.0	150	1.0	2.5	243
SMBJ160A(CA)	PP	PP	178	197	1.0	160	1.0	2.3	259
SMBJ170A(CA)	PR	PR	189	209	1.0	170	1.0	2.2	275
SMBJ188A(CA)	PS	PS	209	231	1.0	188	1.0	2.0	328

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) Surge current waveform per fig. 3 and derate per fig. 2

(3) For bi-directional types having V_{WM} of 10 V and less, the I_D limit is doubled

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

(5) For the bi-directional SMBJ5.0CA, the maximum V_{BR} is 7.25 V

(6) V_F = 3.5 V max. at I_F = 50 A (uni-directional only)

(+) Underwriters laboratory recognition for the classification of protectors (QVGQ2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices

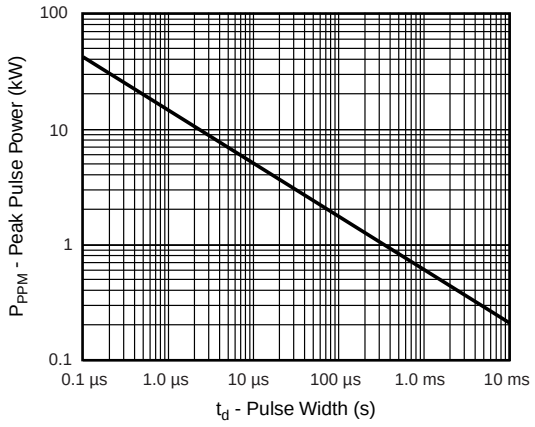


Fig. 1 - Peak Pulse Power Rating Curve

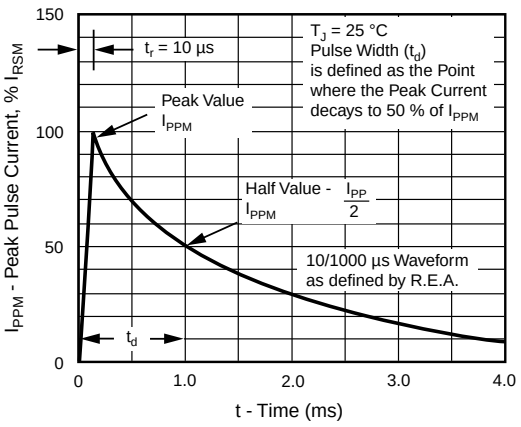


Fig. 3 - Pulse Waveform

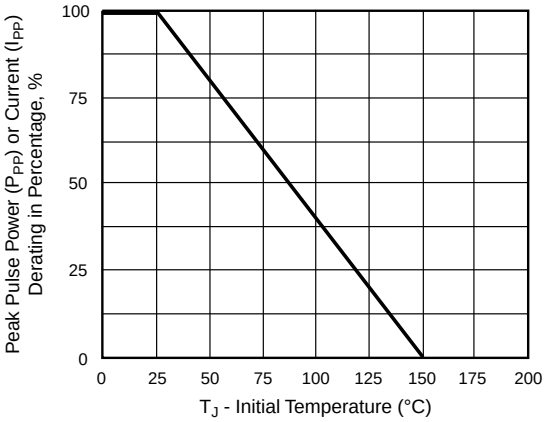


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

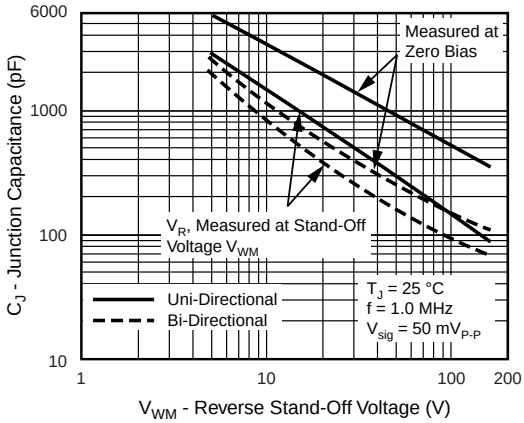


Fig. 4 - Typical Junction Capacitance

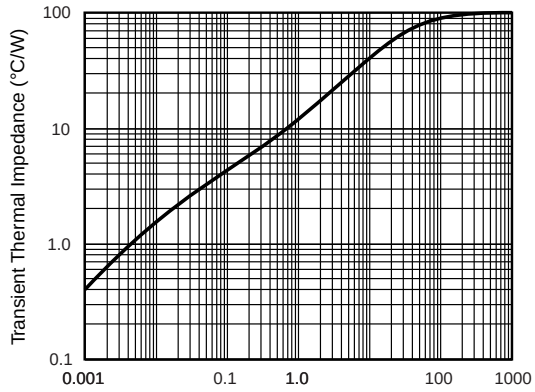


Fig. 5 - Typical Transient Thermal Impedance

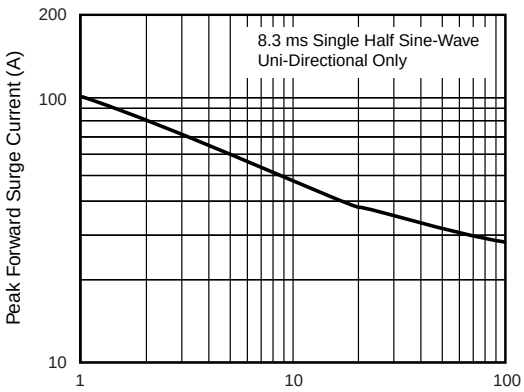


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current

ORDERING INFORMATION

Order Code	Package	Baseqty	Deliverymode
UMW SMBJxxA	SMB	750	Tape and reel
UMW SMBJxxCA	SMB	750	Tape and reel