

# MDE Semiconductor, Inc.

78-150 Calle Tampico, Unit 210, La Quinta, CA. U.S.A. 92253 Tel: 760-564-8656 • Fax: 760-564-2414

## SMBJ SERIES

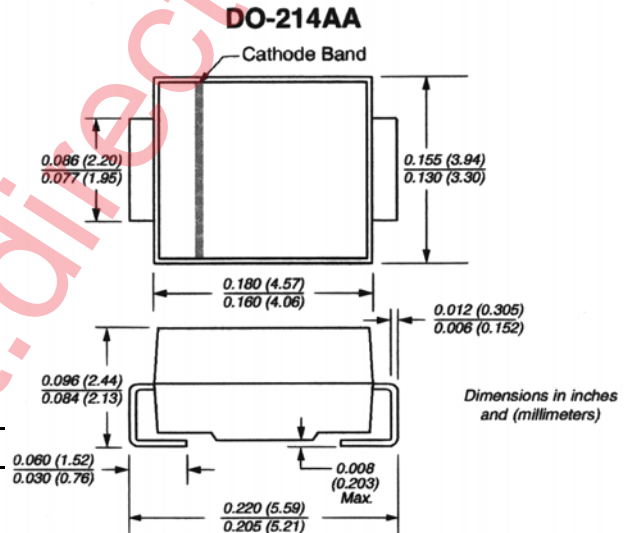
### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-5.0 TO 170 Volts 600 Watt Peak Pulse Power

#### FEATURES

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition rate (duty cycle):0.01%
- Fast response time: typically less than 1.0 ps from 0 volts to BV for unidirectional types
- Typical IR less than 1 $\mu$ A above 10V
- High temperature soldering:  
250°C/10 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability Classification 94 V-O

#### MECHANICAL DATA

Case: JEDEC DO214AA. Molded plastic over glass passivated junction  
Terminals: Solder plated, solderable per MIL-STD-750, Method 2026  
Polarity: Color band denoted positive end (cathode) except Bidirectional  
Standard Packaging: 12mm tape (EIA STD RS-481)  
Weight: 0.003 ounces, 0.093 grams)



#### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types SMBJ5.0 thru types SMBJ170 (e.g. SMBJ5.0C, SMBJ170CA)  
Electrical characteristics apply in both directions.

#### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (NOTE 1, 2, Fig.1)	P <sub>ppm</sub>	Minimum 600	Watts
Peak Pulse Current of on 10/1000 $\mu$ s waveform (Note 1, Fig 3)	I <sub>ppm</sub>	SEE TABLE 1	Amps
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method)(Note2, 3)	I <sub>FSM</sub>	100	Amps
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 +150	°C

#### NOTES:

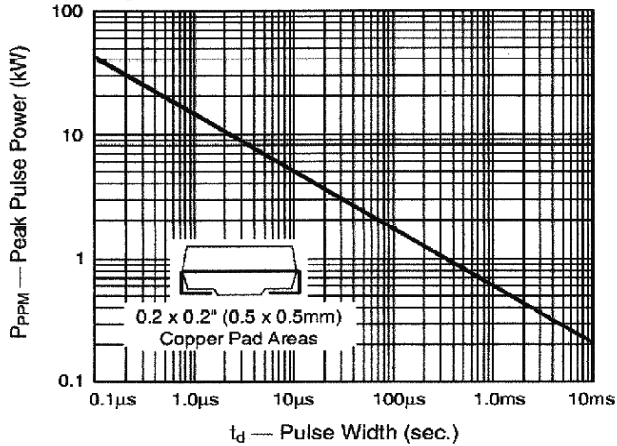
1. Non-repetitive current pulse, per Fig.3 and derated above Ta=25 °C per Fig.2.
2. Mounted on Copper Pad area of 0.8x0.8" (20x20mm) per Fig.5.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle=4 pulses per minutes maximum.

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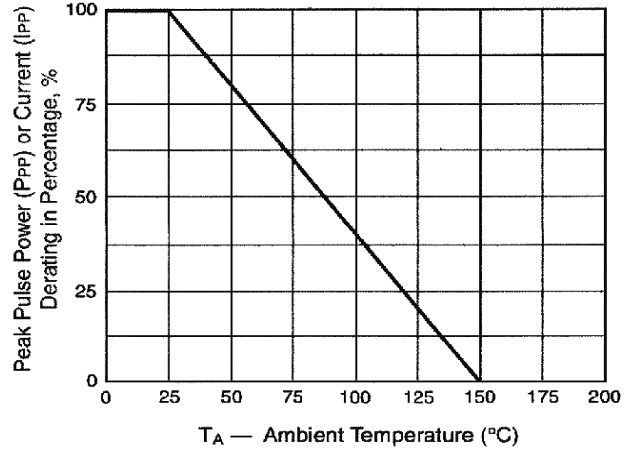
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## RATING AND CHARACTERISTIC CURVES SMBJ SERIES

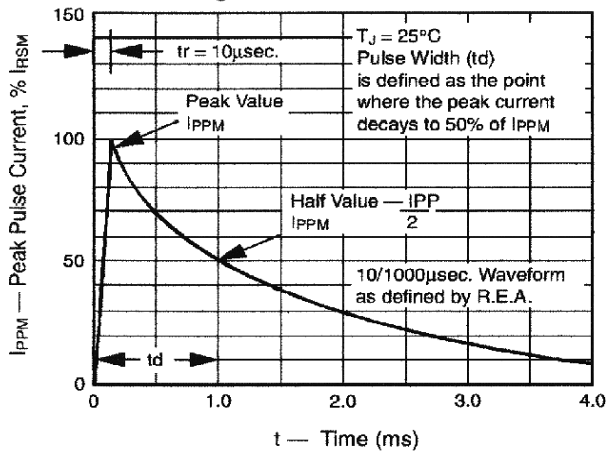
**Fig. 1 – Peak Pulse Power Rating Curve**



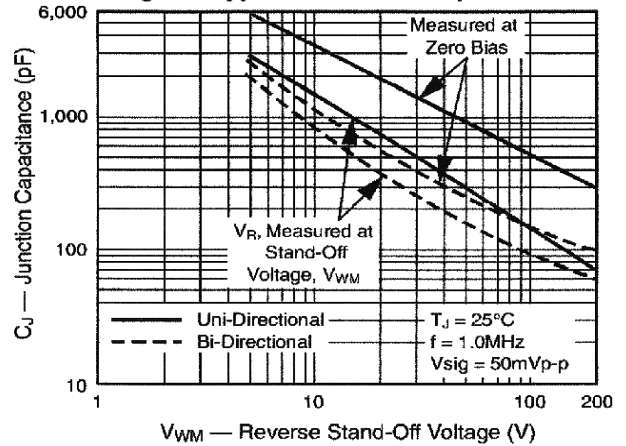
**Fig. 2 – Pulse Derating Curve**



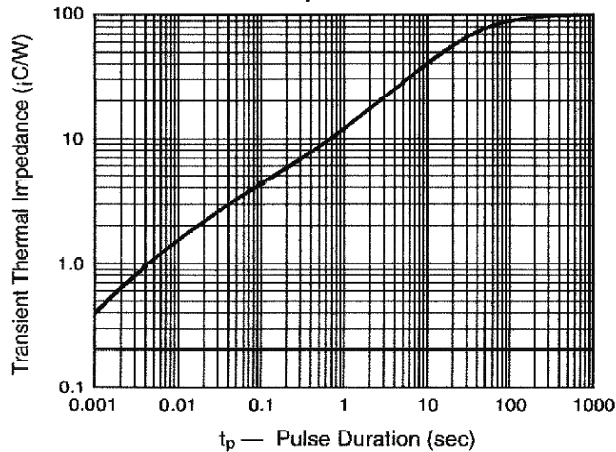
**Fig. 3 – Pulse Waveform**



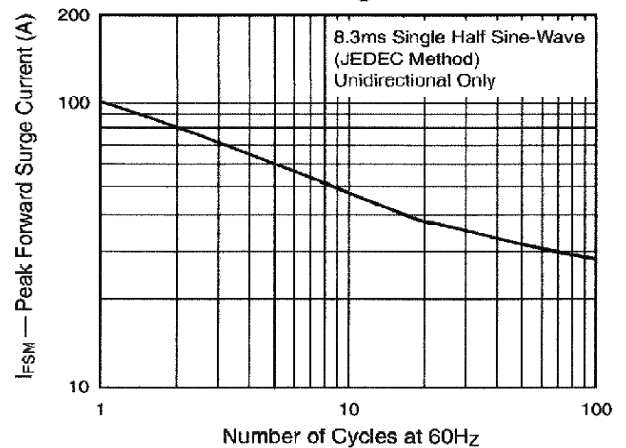
**Fig. 4 – Typical Junction Capacitance**



**Fig. 5 – Typical Transient Thermal Impedance**



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



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## 600 Watt Surface Mount TVS

UNI-DIRECTIONAL PART NUMBER	DEVICE MARKING CODE UNI-POLAR	DEVICE MARKING CODE BI-POLAR	REVERSE STANDOFF VOLTAGE VRWM (V)	BREAKDOWN VOLTAGE VBR (V) MIN. @ IT	BREAKDOWN VOLTAGE VBR (V) MAX. @ IT	TEST CURRENT (It) mA	MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V)	PEAK PULSE CURRENT Ipp (A)	REVERSE LEAKAGE @ VRWM IR (μA)
SMBJ5.0	KD	AD	5.00	6.40	7.30	10	9.6	62.5	800
SMBJ5.0A	KE	AE	5.00	6.40	7.00	10	9.2	65.3	800
SMBJ6.0	KF	AF	6.00	6.67	8.15	10	11.4	52.7	800
SMBJ6.0A	KG	AG	6.00	6.67	7.37	10	10.3	58.3	800
SMBJ6.5	KH	AH	6.50	7.22	8.82	10	12.3	48.8	500
SMBJ6.5A	KK	AK	6.50	7.22	7.98	10	11.2	53.6	500
SMBJ7.0	KL	AL	7.00	7.78	9.51	10	13.3	45.2	200
SMBJ7.0A	KM	AM	7.00	7.78	8.60	10	12.0	50.0	200
SMBJ7.5	KN	AN	7.50	8.33	10.20	1	14.3	42.0	100
SMBJ7.5A	KP	AP	7.50	8.33	9.21	1	12.9	46.6	100
SMBJ8.0	KQ	AQ	8.00	8.89	10.90	1	15.0	40.0	50
SMBJ8.0A	KR	AR	8.00	8.89	9.83	1	13.6	44.2	50
SMBJ8.5	KS	AS	8.50	9.44	11.50	1	15.9	37.8	20
SMBJ8.5A	KT	AT	8.50	9.44	10.40	1	14.4	41.7	20
SMBJ9.0	KU	AU	9.00	10.00	12.20	1	16.9	35.6	10
SMBJ9.0A	KV	AV	9.00	10.00	11.10	1	15.4	39.0	10
SMBJ10	KW	AW	10.00	11.10	13.60	1	18.8	32.0	5
SMBJ10A	KX	AX	10.00	11.10	12.30	1	17.0	35.3	5
SMBJ11	KY	AY	11.00	12.20	14.90	1	20.1	29.9	5
SMBJ11A	KZ	AZ	11.00	12.20	13.50	1	18.2	33.0	5
SMBJ12	LD	BD	12.00	13.30	16.30	1	22.0	27.3	5
SMBJ12A	LE	BE	12.00	13.30	14.70	1	19.9	30.2	5
SMBJ13	LF	BF	13.00	14.40	17.60	1	23.8	25.3	5
SMBJ13A	LG	BG	13.00	14.40	15.90	1	21.5	28.0	5
SMBJ14	LH	BH	14.00	15.60	19.10	1	25.8	23.3	5
SMBJ14A	LK	BK	14.00	15.60	17.20	1	23.2	25.9	5
SMBJ15	LL	BL	15.00	16.70	20.40	1	26.9	22.3	5
SMBJ15A	LM	BM	15.00	16.70	18.50	1	24.4	24.6	5
SMBJ16	LN	BN	16.00	17.80	21.80	1	28.8	20.9	5
SMBJ16A	LP	BP	16.00	17.80	19.70	1	26.0	23.1	5
SMBJ17	LQ	BQ	17.00	18.90	23.10	1	30.5	19.7	5
SMBJ17A	LR	BR	17.00	18.90	20.90	1	27.6	21.8	5
SMBJ18	LS	BS	18.00	20.00	24.40	1	32.2	18.7	5
SMBJ18A	LT	BT	18.00	20.00	22.10	1	29.2	20.6	5
SMBJ20	LU	BU	20.00	22.20	27.10	1	35.8	16.8	5
SMBJ20A	LV	BV	20.00	22.20	24.50	1	32.4	18.6	5
SMBJ22	LW	BW	22.00	24.40	29.80	1	39.4	15.3	5
SMBJ22A	LX	BX	22.00	24.40	26.90	1	35.5	16.9	5
SMBJ24	LY	BY	24.00	26.70	32.60	1	43.0	14.0	5
SMBJ24A	LZ	BZ	24.00	26.70	29.50	1	38.9	15.5	5
SMBJ26	MD	CD	26.00	28.90	35.30	1	46.6	12.9	5
SMBJ26A	ME	CE	26.00	28.90	31.90	1	42.1	14.3	5
SMBJ28	MF	CF	28.00	31.10	38.00	1	50.1	12.0	5
SMBJ28A	MG	CG	28.00	31.10	34.40	1	45.4	13.3	5
SMBJ30	MH	CH	30.00	33.30	40.70	1	53.5	11.3	5
SMBJ30A	MK	CK	30.00	33.30	36.80	1	48.4	12.4	5
SMBJ33	ML	CL	33.00	36.70	44.90	1	59.0	10.2	5
SMBJ33A	MM	CM	33.00	36.70	40.60	1	53.3	11.3	5

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SMBJ36	MN	CN	36.00	40.00	48.90	1	64.3	9.4	5
SMBJ36A	MP	CP	36.00	40.00	44.20	1	58.1	10.4	5
SMBJ40	MQ	CQ	40.00	44.40	54.30	1	71.4	8.4	5
SMBJ40A	MR	CR	40.00	44.40	49.10	1	64.5	9.3	5
SMBJ43	MS	CR	43.00	47.80	58.40	1	76.7	7.83	5
SMBJ43A	MT	CT	43.00	47.80	52.80	1	69.4	8.7	5
SMBJ45	MU	CU	45.00	50.00	61.10	1	80.3	7.5	5
SMBJ45A	MV	CV	45.00	50.00	55.30	1	72.7	8.3	5
SMBJ48	MW	CW	48.00	53.30	65.20	1	85.5	7.1	5
SMBJ48A	MX	CX	48.00	53.30	58.90	1	77.4	7.8	5
SMBJ51	MY	CY	51.00	56.70	69.30	1	91.1	6.6	5
SMBJ51A	MZ	CZ	51.00	56.70	62.70	1	82.4	7.3	5
SMBJ54A	ND	DD	54.00	60.00	73.30	1	96.3	6.3	5
SMBJ54A	NE	DE	54.00	60.00	66.30	1	87.1	6.9	5
SMBJ58	NF	DF	58.00	64.40	78.70	1	103.0	5.9	5
SMBJ58A	NG	DG	58.00	64.40	71.20	1	93.6	6.5	5
SMBJ60	NH	DH	60.00	66.70	81.50	1	107.0	5.6	5
SMBJ60A	NK	DK	60.00	66.70	73.70	1	96.8	6.2	5
SMBJ64	NL	DL	64.00	71.10	86.90	1	114.0	5.3	5
SMBJ64A	NM	DM	64.00	71.10	78.60	1	103.0	5.9	5
SMBJ70	NN	DN	70.00	77.80	95.10	1	125.0	4.8	5
SMBJ70A	NP	DP	70.00	77.80	86.00	1	113.0	5.3	5
SMBJ75	NQ	DQ	75.00	83.30	102.00	1	134.0	4.5	5
SMBJ75A	NR	DR	75.00	83.30	92.10	1	121.0	5.0	5
SMBJ78	NS	DS	78.00	86.70	106.00	1	139.0	4.4	5
SMBJ78A	NT	DT	78.00	86.70	95.80	1	126.0	4.8	5
SMBJ85	NU	DU	85.00	94.40	115.00	1	151.0	4.0	5
SMBJ85A	NV	DV	85.00	94.40	104.00	1	137.0	4.4	5
SMBJ90	NW	DW	90.00	100.00	122.00	1	160.0	3.8	5
SMBJ90A	NX	DX	90.00	100.00	111.00	1	146.0	4.1	5
SMBJ100	NY	DY	100.00	111.00	136.00	1	179.0	3.4	5
SMBJ100A	NZ	DZ	100.00	111.00	123.00	1	162.0	3.7	5
SMBJ110	PD	ED	110.00	122.00	149.00	1	196.0	3.1	5
SMBJ110A	PE	EE	110.00	122.00	135.00	1	177.0	3.4	5
SMBJ120	PF	EF	120.00	133.00	163.00	1	214.0	2.8	5
SMBJ120A	PG	EG	120.00	133.00	147.00	1	193.0	3.1	5
SMBJ130	PH	EH	130.00	144.00	176.00	1	230.0	2.6	5
SMBJ130A	PK	EK	130.00	144.00	159.00	1	209.0	2.9	5
SMBJ150	PL	EL	150.00	167.00	204.00	1	268.0	2.3	5
SMBJ150A	PM	EM	150.00	167.00	185.00	1	243.0	2.5	5
SMBJ160	PN	EN	160.00	178.00	218.00	1	287.0	2.1	5
SMBJ160A	PP	EP	160.00	178.00	197.00	1	259.0	2.3	5
SMBJ170	PQ	EQ	170.00	189.00	231.00	1	304.0	2.0	5
SMBJ170A	PR	ER	170.00	189.00	209.00	1	275.0	2.2	5

For Bidirectional type having Vrwm of 10volts and less, the IR limit is double.