

# MDE Semiconductor, Inc.

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

## SMAJ SERIES

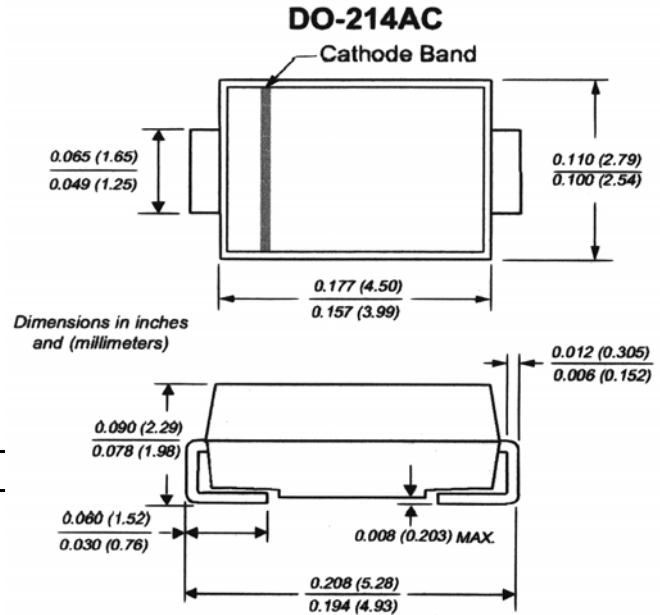
### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-5.0 TO 170 Volts 400 Watt Peak Pulse Power

#### 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 DO214AC. 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: 0.002 ounces, 0.064 grams)



#### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types SMAJ5.0 thru types SMAJ170 (e.g. SMAJ5.0C, SMAJ170CA)  
 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)	Pppm	Minimum 400	Watts
Peak Pulse Current of on 10/1000 $\mu$ s waveform (Note 1, Fig 3)	Ippm	SEE TABLE 1	Amps
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method)(Note2, 3)	IFSM	40	Amps
Operatings and Storage Temperature Range	Tj, Tstg	-55 +150	°C

#### NOTES:

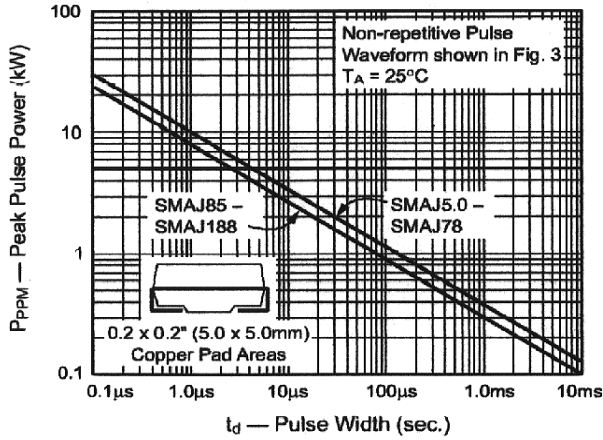
1. Non-repetitive current pulse, per Fig.3 and derated above Ta=25 °C per Fig.2.
2. Mounted on Copper Pad area of 0.8x0.8" (20x20mm) per Fig.5.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle=4 pulses per minutes maximum.

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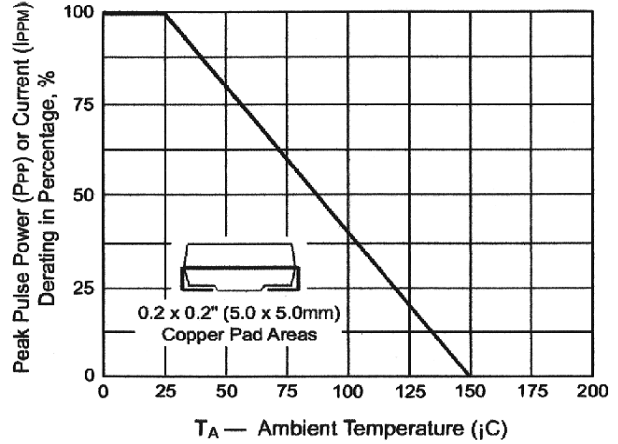
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## RATING AND CHARACTERISTIC CURVES SMAJ SERIES

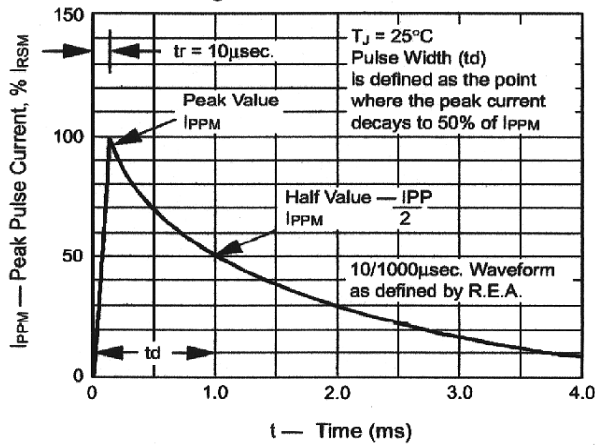
**Fig. 1 – Peak Pulse Power Rating Curve**



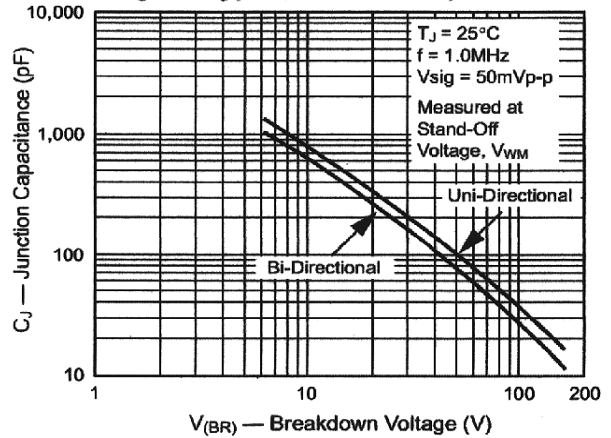
**Fig. 2 – Pulse Derating Curve**



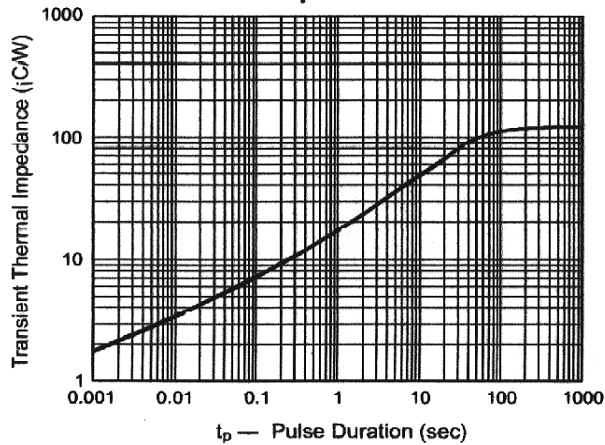
**Fig. 3 – Pulse Waveform**



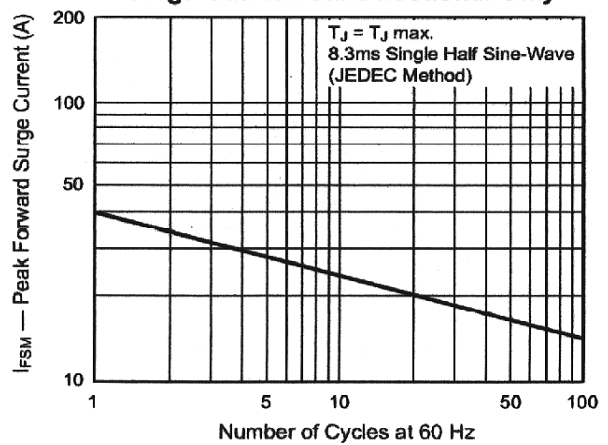
**Fig. 4 – Typical Junction Capacitance**



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



**Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**



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## 400 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)
SMAJ5.0	AD	WD	5.00	6.40	7.30	10	9.6	41.7	800
SMAJ5.0A	AE	WE	5.00	6.40	7.00	10	9.2	43.5	800
SMAJ6.0	AF	WF	6.00	6.67	8.15	10	11.4	35.1	800
SMAJ6.0A	AG	WG	6.00	6.67	7.37	10	10.3	38.8	800
SMAJ6.5	AH	WH	6.50	7.22	8.82	10	12.3	32.5	500
SMAJ6.5A	AK	WK	6.50	7.22	7.98	10	11.2	35.7	500
SMAJ7.0	AL	WL	7.00	7.78	9.51	10	13.3	30.1	200
SMAJ7.0A	AM	WM	7.00	7.78	8.60	10	12.0	33.3	200
SMAJ7.5	AN	WN	7.50	8.33	10.20	1	14.3	28.0	100
SMAJ7.5A	AP	WP	7.50	8.33	9.21	1	12.9	31.0	100
SMAJ8.0	AQ	WQ	8.00	8.89	10.90	1	15.0	26.7	50
SMAJ8.0A	AR	WR	8.00	8.89	9.83	1	13.6	29.4	50
SMAJ8.5	AS	WS	8.50	9.44	11.50	1	15.9	25.2	20
SMAJ8.5A	AT	WT	8.50	9.44	10.40	1	14.4	27.8	20
SMAJ9.0	AU	WU	9.00	10.00	12.20	1	16.9	23.7	10
SMAJ9.0A	AV	WV	9.00	10.00	11.10	1	15.4	26.0	10
SMAJ10	AW	WW	10.00	11.10	13.60	1	18.8	21.3	5
SMAJ10A	AX	WX	10.00	11.10	12.30	1	17.0	23.5	5
SMAJ11	AY	WY	11.00	12.20	14.90	1	20.1	19.9	5
SMAJ11A	AZ	WZ	11.00	12.20	13.50	1	18.2	22.0	5
SMAJ12	BD	XD	12.00	13.30	16.30	1	22.0	18.2	5
SMAJ12A	BE	XE	12.00	13.30	14.70	1	19.9	20.1	5
SMAJ13	BF	XF	13.00	14.40	17.60	1	23.8	16.8	5
SMAJ13A	BG	XG	13.00	14.40	15.90	1	21.5	18.6	5
SMAJ14	BH	XH	14.00	15.60	19.10	1	25.8	15.5	5
SMAJ14A	BK	XK	14.00	15.60	17.20	1	23.2	17.2	5
SMAJ15	BL	XL	15.00	16.70	20.40	1	26.9	14.9	5
SMAJ15A	BM	XM	15.00	16.70	18.50	1	24.4	16.4	5
SMAJ16	BN	XN	16.00	17.80	21.80	1	28.8	13.9	5
SMAJ16A	BP	XP	16.00	17.80	19.70	1	26.0	15.4	5
SMAJ17	BQ	XQ	17.00	18.90	23.10	1	30.5	13.1	5
SMAJ17A	BR	XR	17.00	18.90	20.90	1	27.6	14.5	5
SMAJ18	BS	XS	18.00	20.00	24.40	1	32.2	12.4	5
SMAJ18A	BT	XT	18.00	20.00	22.10	1	29.2	13.7	5
SMAJ20	BU	XU	20.00	22.20	27.10	1	35.8	11.2	5
SMAJ20A	BV	XV	20.00	22.20	24.50	1	32.4	12.3	5
SMAJ22	BW	XW	22.00	24.40	29.80	1	39.4	10.2	5
SMAJ22A	BX	XX	22.00	24.40	26.90	1	35.5	11.3	5
SMAJ24	BY	XY	24.00	26.70	32.60	1	43.0	9.3	5
SMAJ24A	BZ	XZ	24.00	26.70	29.50	1	38.9	10.3	5
SMAJ26	CD	YD	26.00	28.90	35.30	1	46.6	8.6	5
SMAJ26A	CE	YE	26.00	28.90	31.90	1	42.1	9.5	5
SMAJ28	CF	YF	28.00	31.10	38.00	1	50.1	8.0	5
SMAJ28A	CG	YG	28.00	31.10	34.40	1	45.4	8.8	5
SMAJ30	CH	YH	30.00	33.30	40.70	1	53.5	7.5	5
SMAJ30A	CK	YK	30.00	33.30	36.80	1	48.4	8.3	5
SMAJ33	CL	YL	33.00	36.70	44.90	1	59.0	6.8	5
SMAJ33A	CM	YM	33.00	36.70	40.60	1	53.3	7.5	5

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SMAJ36	CN	YN	36.00	40.00	48.90	1	64.3	6.2	5
SMAJ36A	CP	YP	36.00	40.00	44.20	1	58.1	6.9	5
SMAJ40	CQ	YQ	40.00	44.40	54.30	1	71.4	5.6	5
SMAJ40A	CR	YR	40.00	44.40	49.10	1	64.5	6.2	5
SMAJ43	CS	YR	43.00	47.80	58.40	1	76.7	5.20	5
SMAJ43A	CT	YT	43.00	47.80	52.80	1	69.4	5.8	5
SMAJ45	CU	YU	45.00	50.00	61.10	1	80.3	5.0	5
SMAJ45A	CV	YV	45.00	50.00	55.30	1	72.7	5.5	5
SMAJ48	CW	YW	48.00	53.30	65.20	1	85.5	4.7	5
SMAJ48A	CX	YX	48.00	53.30	58.90	1	77.4	5.2	5
SMAJ51	CY	YY	51.00	56.70	69.30	1	91.1	4.4	5
SMAJ51A	CZ	YZ	51.00	56.70	62.70	1	82.4	4.9	5
SMAJ54A	RD	ZD	54.00	60.00	73.30	1	96.3	4.2	5
SMAJ54A	RE	ZE	54.00	60.00	66.30	1	87.1	4.6	5
SMAJ58	RF	ZF	58.00	64.40	78.70	1	103.0	3.9	5
SMAJ58A	RG	ZG	58.00	64.40	71.20	1	93.6	4.3	5
SMAJ60	RH	ZH	60.00	66.70	81.50	1	107.0	3.7	5
SMAJ60A	RK	ZK	60.00	66.70	73.70	1	96.8	4.1	5
SMAJ64	RL	ZL	64.00	71.10	86.90	1	114.0	3.5	5
SMAJ64A	RM	ZM	64.00	71.10	78.60	1	103.0	3.9	5
SMAJ70	RN	ZN	70.00	77.80	95.10	1	125.0	3.2	5
SMAJ70A	RP	ZP	70.00	77.80	86.00	1	113.0	3.5	5
SMAJ75	RQ	ZQ	75.00	83.30	102.00	1	134.0	3.0	5
SMAJ75A	RR	ZR	75.00	83.30	92.10	1	121.0	3.3	5
SMAJ78	RS	ZS	78.00	86.70	106.00	1	139.0	2.9	5
SMAJ78A	RT	ZT	78.00	86.70	95.80	1	126.0	3.2	5
SMAJ85	RU	ZU	85.00	94.40	115.00	1	151.0	2.0	5
SMAJ85A	RV	ZV	85.00	94.40	104.00	1	137.0	2.2	5
SMAJ90	RW	ZW	90.00	100.00	122.00	1	160	1.9	5
SMAJ90A	RX	ZX	90.00	100.00	111.00	1	146	2.1	5
SMAJ100	RY	ZY	100.00	111.00	136.00	1	179	1.7	5
SMAJ100A	RZ	ZZ	100.00	111.00	123.00	1	162	1.9	5
SMAJ110	SD	VD	110.00	122.00	149.00	1	196	1.5	5
SMAJ110A	SE	VE	110.00	122.00	135.00	1	177	1.7	5
SMAJ120	SF	VF	120.00	133.00	163.00	1	214.0	1.4	5
SMAJ120A	SG	VG	120.00	133.00	147.00	1	193	1.6	5
SMAJ130	SH	VH	130.00	144.00	176.00	1	230	1.3	5
SMAJ130A	SK	VK	130.00	144.00	159.00	1	209	1.4	5
SMAJ150	SL	VL	150.00	167.00	204.00	1	268	1.1	5
SMAJ150A	SM	VM	150.00	167.00	185.00	1	243	1.2	5
SMAJ160	SN	VN	160.00	178.00	218.00	1	287	1	5
SMAJ160A	SP	VP	160.00	178.00	197.00	1	259	1.2	5
SMAJ170	SQ	VQ	170.00	189.00	231.00	1	304.0	0.99	5
SMAJ170A	SR	VR	170.00	189.00	209.00	1	275	1.09	5

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