

# MDE Semiconductor, Inc.

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## 5.0 SMDJ SERIES

### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-5.0 TO 170 Volts 5000 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

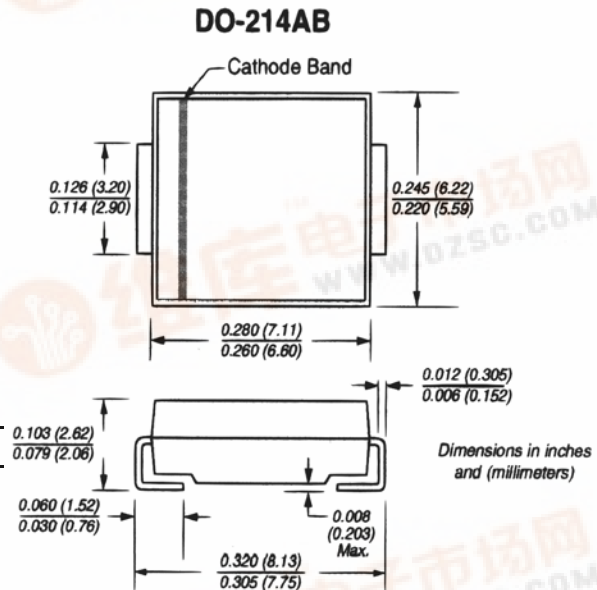
Case: JEDEC DO214AB. Molded plastic over glass passivated junction

Terminals: Solder plated, solderable per MIL-STD-750, Method 2026

Polarity: Color band denoted positive end (cathode) except Bidirectional

Standard Packaging: 16mm tape (EIA STD RS-481)

Weight: 0.007 ounces, 0.021 grams



Dimensions in inches and (millimeters)

#### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types 5.0SMDJ5.0 thru types 5.0SMDJ170 (e.g. 5.0SMDJ5.0C, 5.0SMDJ170CA)  
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)	$P_{PPM}$	Minimum 5000	Watts
Peak Pulse Current of on 10/1000 $\mu$ s waveform (Note 1, Fig 3)	$I_{PPM}$	SEE TABLE 1	Amps
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method)(Note2, 3)	$I_{FSM}$	400	Amps
Operatings and Storage Temperature Range	$T_J, T_{STG}$	-55 +150	°C

NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_a=25^\circ\text{C}$  per Fig.2.
2. Mounted on 8.0mm x 8.0mm Copper Pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle=4 pulses per minutes maximum.

Certified RoHS Compliant

UL File # E223026

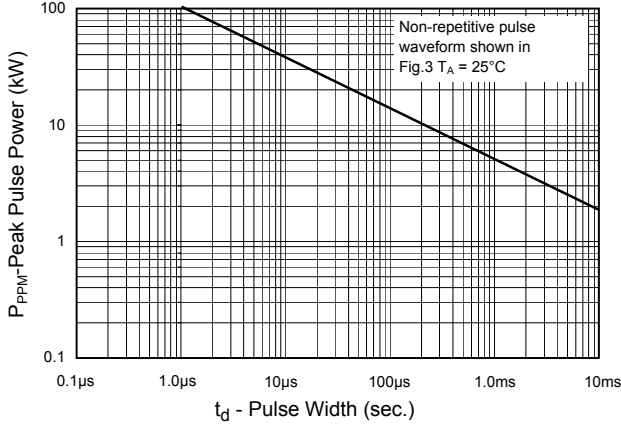


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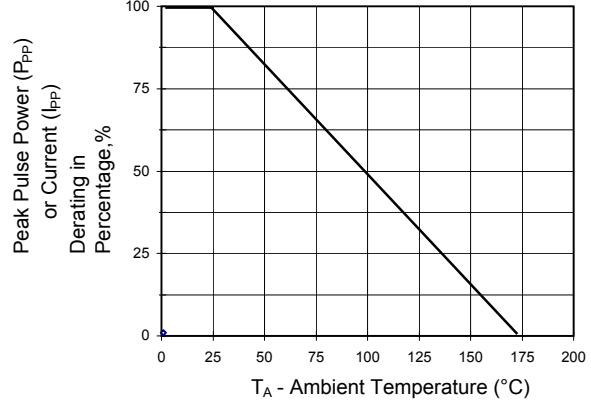
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## RATING AND CHARACTERISTIC CURVES 5.0SMDJ SERIES

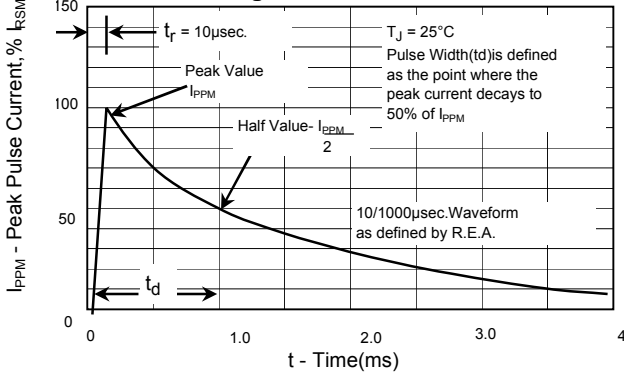
**Fig. 1 - Peak Pulse Power Rating Curve**



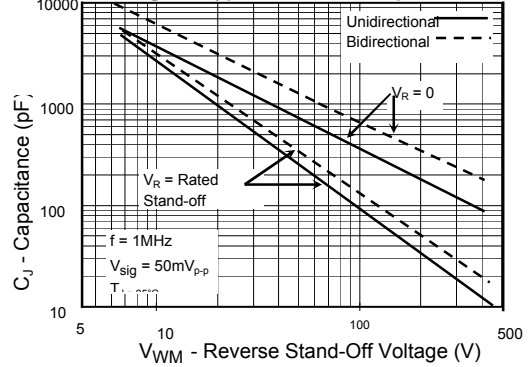
**Fig.2 - Pulse Derating Curve**



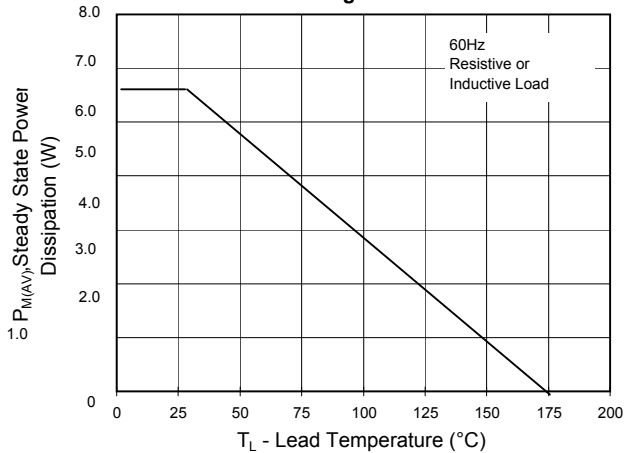
**Fig.3 - Pulse Waveform**



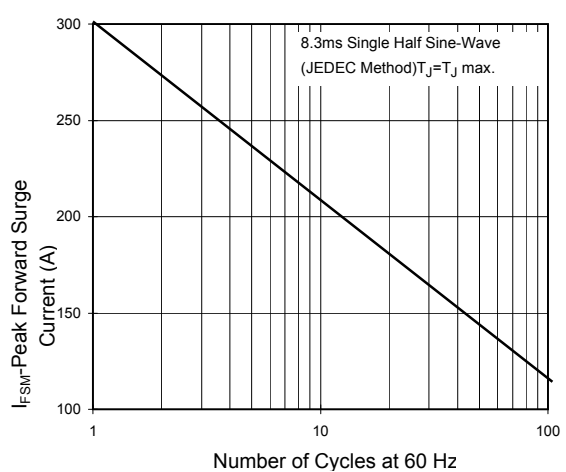
**Fig. 4 - Typical Junction Capacitance**



**Fig. 5 - Steady State Power Derating Curve**



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



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## 5000 Watt Surface Mount TVS

UNI-POLAR	BI-POLAR	DEVICE MARKING CODE		REVERSE STANDOFF VOLTAGE $V_{RWM}$ (V)	BREAKDOWN VOLTAGE $V_{BR}$ (V) MIN. @ $I_T$	BREAKDOWN VOLTAGE $V_{BR}$ (V) MAX. @ $I_T$	TEST CURRENT ( $I_T$ ) mA	MAXIMUM CLAMPING VOLTAGE @ $I_{PP}$ $V_C$ (V)	PEAK PULSE CURRENT $I_{PP}$ (A)	REVERSE LEAKAGE @ $V_{RWM}$ $I_R$ ( $\mu$ A)
		UNI	BI							
5.0SMDJ11A	5.0SMDJ11CA	5PEN	5BEN	11.0	12.20	13.50	10	18.2	275.0	800
5.0SMDJ12A	5.0SMDJ12CA	5PEP	5BEP	12.0	13.30	14.70	10	19.9	252.0	800
5.0SMDJ13A	5.0SMDJ13CA	5PEQ	5BEQ	13.0	14.40	15.90	10	21.5	233.0	500
5.0SMDJ14A	5.0SMDJ14CA	5PER	5BER	14.0	15.60	17.20	10	23.2	216.0	200
5.0SMDJ15A	5.0SMDJ20CA	5PES	5BES	15.0	16.70	18.50	1	24.4	205.0	100
5.0SMDJ16A	5.0SMDJ20CA	5PET	5BET	16.0	17.80	19.70	1	26.0	193.0	50
5.0SMDJ17A	5.0SMDJ20CA	5PEU	5BEU	17.0	18.90	20.90	1	27.6	181.0	20
5.0SMDJ18A	5.0SMDJ20CA	5PEV	5BEV	18.0	20.00	22.10	1	29.2	172.0	10
5.0SMDJ20A	5.0SMDJ20CA	5PEW	5BEW	20.0	22.20	24.50	1	32.4	155.0	5
5.0SMDJ22A	5.0SMDJ22CA	5PEX	5BEX	22.0	24.40	26.90	1	35.5	141.0	5
5.0SMDJ24A	5.0SMDJ24CA	5PEZ	5BEZ	24.0	26.70	29.50	1	38.9	129.0	5
5.0SMDJ26A	5.0SMDJ26CA	5PFE	5BFE	26.0	28.90	31.90	1	42.1	119.0	5
5.0SMDJ28A	5.0SMDJ28CA	5PFG	5BFG	28.0	31.10	34.40	1	45.4	110.0	5
5.0SMDJ30A	5.0SMDJ30CA	5PFK	5BFK	30.0	33.30	36.80	1	48.4	103.0	5
5.0SMDJ33A	5.0SMDJ33CA	5PFM	5BFM	33.0	36.70	40.60	1	53.3	93.9	5
5.0SMDJ36A	5.0SMDJ36CA	5PFP	5BFP	36.0	40.00	44.20	1	58.1	86.1	5
5.0SMDJ40A	5.0SMDJ40CA	5PFR	5BFR	40.0	44.40	49.10	1	64.5	77.6	5
5.0SMDJ43A	5.0SMDJ43CA	5PFT	5BFT	43.0	47.80	52.80	1	69.4	72.1	5
5.0SMDJ45A	5.0SMDJ45CA	5PFV	5BFV	45.0	50.00	55.30	1	72.7	68.8	5
5.0SMDJ48A		5PFX		48.0	53.30	58.90	1	77.4	64.7	5
5.0SMDJ51A		5PFZ		51.0	56.70	62.70	1	82.4	60.7	5
5.0SMDJ54A		5PGE		54.0	60.00	66.30	1	87.1	57.5	5
5.0SMDJ58A		5PGG		58.0	64.40	71.20	1	93.6	53.5	5
5.0SMDJ60A		5PGK		60.0	66.70	73.70	1	96.8	51.7	5
5.0SMDJ64A		5PGM		64.0	71.10	78.60	1	103.0	48.6	5
5.0SMDJ70A		5PGP		70.0	77.80	86.00	1	113.0	44.3	5
5.0SMDJ75A		5PGR		75.0	83.30	92.10	1	121.0	41.4	5
5.0SMDJ78A		5PGT		78.0	86.70	95.80	1	126.0	39.7	5
5.0SMDJ85A		5PGV		85.0	94.40	104.00	1	137.0	36.5	5
5.0SMDJ90A		5PGX		90.0	100.00	111.00	1	146.0	34.3	5
5.0SMDJ100A		5PGZ		100.0	111.00	123.00	1	162.0	30.9	5
5.0SMDJ110A		5PHE		110.0	122.00	135.00	1	177.0	28.3	5
5.0SMDJ120A		5PHG		120.0	133.00	147.00	1	193.0	26.0	5
5.0SMDJ130A		5PHK		130.0	144.00	159.00	1	209.0	24.0	5
5.0SMDJ150A		5PHM		150.0	167.00	185.00	1	243.0	20.6	5
5.0SMDJ160A		5PHP		160.0	178.00	197.00	1	259.0	19.3	5
5.0SMDJ170A		5PHR		170.0	189.00	209.00	1	275.0	18.2	5

For bidirectional type having  $V_{RWM}$  of 10 volts and less, the IR limit is double.

For parts without A , the VBR is  $\pm 10\%$

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