

## Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Uni-directional and Bi-directional
- 3000W peak pulse power capability with a 10/1000 $\mu$ s waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260°C/10 s at terminals
- Meets MSL level 1



DO-214AB (SMC)

## Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.



Bi-directional



Uni-directional

## Mechanical Data

**Case:** DO-214AB (SMC)

Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant

**Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

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

## Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Power Dissipation with a 10/1000 $\mu$ s Waveform <sup>1,2</sup>	P <sub>PPM</sub>	3000	W
Peak Pulse Current, with a 10/1000 $\mu$ s Waveform <sup>1</sup>	I <sub>PPM</sub>	See Next Table	A
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave, Uni-directional Only <sup>3</sup>	I <sub>FSM</sub>	300	A
Power Dissipation, on Infinite Heatsink @ T <sub>L</sub> =75°C <sup>2</sup>	P <sub>D</sub>	6.5	W
Maximum Instantaneous Forward Voltage @ 100A, Uni-Directional Only <sup>4</sup>	V <sub>FM</sub>	3.5/5.0	V
Typical Thermal Resistance Junction to Ambient <sup>5</sup>	R <sub><math>\theta</math>JA</sub>	75	°C/W
Typical Thermal Resistance Junction to Lead	R <sub><math>\theta</math>JL</sub>	15	
Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25°C per Fig.2.
2. Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal.
3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
4. V<sub>F</sub>=3.5V Max for devices of V<sub>BR</sub>≤220V, and V<sub>F</sub>=5.0V Max for devices of V<sub>BR</sub>>220V.
5. Mounted on minimum recommended pad layout.

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage			Maximum Reverse Leakage	Reverse Stand-off Voltage	Peak Pulse Current	Maximum Clamping Voltage
		V <sub>BR</sub> @ I <sub>T</sub>			I <sub>R</sub> <sup>3</sup> @ V <sub>RWM</sub>	V <sub>RWM</sub>	I <sub>PP</sub> <sup>2</sup>	V <sub>C</sub> @ I <sub>PP</sub>
		Min	Max	I <sub>T</sub> <sup>1</sup>				
		V	V	mA	µA	V	A	V
GSMDJ5.0A	GSMDJ5.0CA <sup>4</sup>	6.4	7.07	10	1000	5	326.09	9.2
GSMDJ6.0A	GSMDJ6.0CA	6.67	7.37	10	1000	6	291.26	10.3
GSMDJ6.5A	GSMDJ6.5CA	7.22	7.98	10	500	6.5	267.86	11.2
GSMDJ7.0A	GSMDJ7.0CA	7.78	8.6	10	200	7	250.0	12
GSMDJ7.5A	GSMDJ7.5CA	8.33	9.21	1	100	7.5	232.56	12.9
GSMDJ8.0A	GSMDJ8.0CA	8.89	9.83	1	50	8	220.59	13.6
GSMDJ8.5A	GSMDJ8.5CA	9.44	10.4	1	25	8.5	208.33	14.4
GSMDJ9.0A	GSMDJ9.0CA	10	11.1	1	10	9	194.81	15.4
GSMDJ10A	GSMDJ10CA	11.1	12.3	1	5	10	176.47	17
GSMDJ11A	GSMDJ11CA	12.2	13.5	1	5	11	164.84	18.2
GSMDJ12A	GSMDJ12CA	13.3	14.7	1	5	12	150.75	19.9
GSMDJ13A	GSMDJ13CA	14.4	15.9	1	5	13	139.53	21.5
GSMDJ14A	GSMDJ14CA	15.6	17.2	1	5	14	129.31	23.2
GSMDJ15A	GSMDJ15CA	16.7	18.5	1	5	15	122.95	24.4
GSMDJ16A	GSMDJ16CA	17.8	19.7	1	5	16	115.38	26
GSMDJ17A	GSMDJ17CA	18.9	20.9	1	5	17	108.7	27.6
GSMDJ18A	GSMDJ18CA	20	22.1	1	5	18	102.74	29.2
GSMDJ19A	GSMDJ19CA	21.1	23.3	1	5	19	97.47	30.8
GSMDJ20A	GSMDJ20CA	22.2	24.5	1	5	20	92.59	32.4
GSMDJ22A	GSMDJ22CA	24.4	26.9	1	5	22	84.51	35.5
GSMDJ24A	GSMDJ24CA	26.7	29.5	1	5	24	77.12	38.9
GSMDJ26A	GSMDJ26CA	28.9	31.9	1	5	26	71.26	42.1
GSMDJ28A	GSMDJ28CA	31.1	34.4	1	5	28	66.08	45.4
GSMDJ30A	GSMDJ30CA	33.3	36.8	1	5	30	61.98	48.4
GSMDJ33A	GSMDJ33CA	36.7	40.6	1	5	33	56.29	53.3
GSMDJ36A	GSMDJ36CA	40	44.2	1	5	36	51.64	58.1
GSMDJ40A	GSMDJ40CA	44.4	49.1	1	5	40	46.51	64.5
GSMDJ43A	GSMDJ43CA	47.8	52.8	1	5	43	43.23	69.4
GSMDJ45A	GSMDJ45CA	50	55.3	1	5	45	41.27	72.7
GSMDJ48A	GSMDJ48CA	53.3	58.9	1	5	48	38.76	77.4
GSMDJ51A	GSMDJ51CA	56.7	62.7	1	5	51	36.41	82.4
GSMDJ54A	GSMDJ54CA	60	66.3	1	5	54	34.44	87.1

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage			Maximum Reverse Leakage	Reverse Stand-off Voltage	Peak Pulse Current	Maximum Clamping Voltage
		V <sub>BR</sub> @ I <sub>T</sub>			I <sub>R</sub> <sup>3</sup> @ V <sub>RWM</sub>	V <sub>RWM</sub>	I <sub>PP</sub> <sup>2</sup>	V <sub>C</sub> @ I <sub>PP</sub>
		Min	Max	I <sub>T</sub> <sup>1</sup>				
		V	V	mA	μA	V	A	V
GSMDJ58A	GSMDJ58CA	64.4	71.2	1	5	58	32.05	93.6
GSMDJ60A	GSMDJ60CA	66.7	73.7	1	5	60	30.99	96.8
GSMDJ64A	GSMDJ64CA	71.1	78.6	1	5	64	29.13	103.0
GSMDJ70A	GSMDJ70CA	77.8	86.0	1	5	70	26.6	113.0
GSMDJ75A	GSMDJ75CA	83.3	92.1	1	5	75	24.79	121.0
GSMDJ78A	GSMDJ78CA	86.7	95.8	1	5	78	23.81	126.0
GSMDJ80A	GSMDJ80CA	88.8	97.6	1	5	80	23.15	129.6
GSMDJ85A	GSMDJ85CA	94.4	104.0	1	5	85	21.90	137.0
GSMDJ90A	GSMDJ90CA	100.0	111.0	1	5	90	20.55	146.0
GSMDJ100A	GSMDJ100CA	111.0	123.0	1	5	100	18.52	162.0
GSMDJ110A	GSMDJ110CA	122.0	135.0	1	5	110	16.95	177.0
GSMDJ120A	GSMDJ120CA	133.0	147.0	1	5	120	15.54	193.0
GSMDJ130A	GSMDJ130CA	144.0	159.0	1	5	130	14.35	209.0
GSMDJ140A	GSMDJ140CA	155.0	171.0	1	5	140	13.23	226.8
GSMDJ150A	GSMDJ150CA	167.0	185.0	1	5	150	12.35	243.0
GSMDJ160A	GSMDJ160CA	178.0	197.0	1	5	160	11.6	259.0
GSMDJ170A	GSMDJ170CA	189.0	209.0	1	5	170	10.91	275.0
GSMDJ180A	GSMDJ180CA	200.0	220.0	1	5	180	10.29	291.6
GSMDJ190A	GSMDJ190CA	211.0	232.0	1	5	190	9.75	307.8
GSMDJ200A	GSMDJ200CA	224.0	247.0	1	5	200	9.26	324.0
GSMDJ220A	GSMDJ220CA	246.0	272.0	1	5	220	8.43	356.0
GSMDJ250A	GSMDJ250CA	279.0	309.0	1	5	250	7.41	405.0
GSMDJ300A	GSMDJ300CA	335.0	371.0	1	5	300	6.17	486.0
GSMDJ350A	GSMDJ350CA	391.0	432.0	1	5	350	5.29	567.0
GSMDJ400A	GSMDJ400CA	447.0	494.0	1	5	400	4.63	648.0
GSMDJ440A	GSMDJ440CA	492.0	543.0	1	5	440	4.21	713.0
GSMDJ250A	GSMDJ250CA	279.0	309.0	1	5	250	7.41	405.0
GSMDJ300A	GSMDJ300CA	335.0	371.0	1	5	300	6.17	486.0
GSMDJ350A	GSMDJ350CA	391.0	432.0	1	5	350	5.29	567.0
GSMDJ400A	GSMDJ400CA	447.0	494.0	1	5	400	4.63	648.0
GSMDJ440A	GSMDJ440CA	492.0	543.0	1	5	440	4.21	713.0

Note:

1. Pulse test: tp≤50ms, pulse test: tp≤50ms.
2. Surge current waveform per Fig.3 and derated per Fig.2.
3. For bi-directional types having V<sub>RWM</sub> of 10V and less, the I<sub>R</sub> limit is doubled.
4. For the bi-directional GSMDJ5.0CA, the maximum V<sub>BR</sub> is 7.25V.

## Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted)

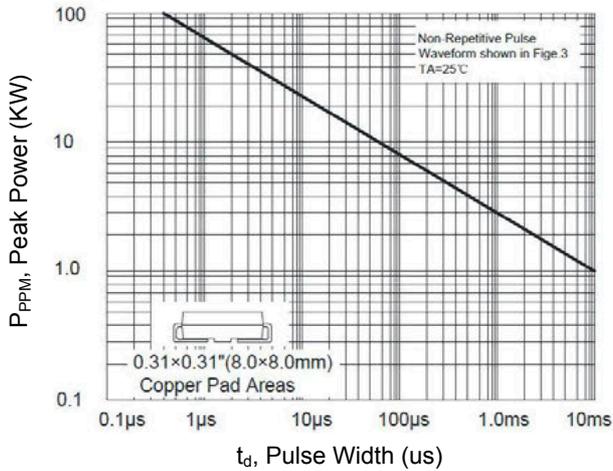


Figure 1. Peak Pulse Power Rating Curve

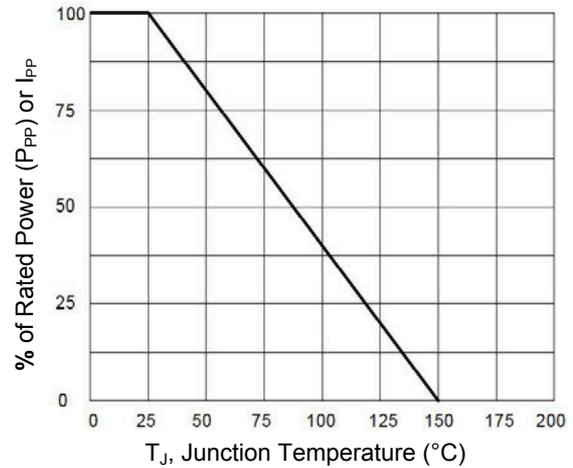


Figure 2. Power or Current Vs. Initial Junction Temperature

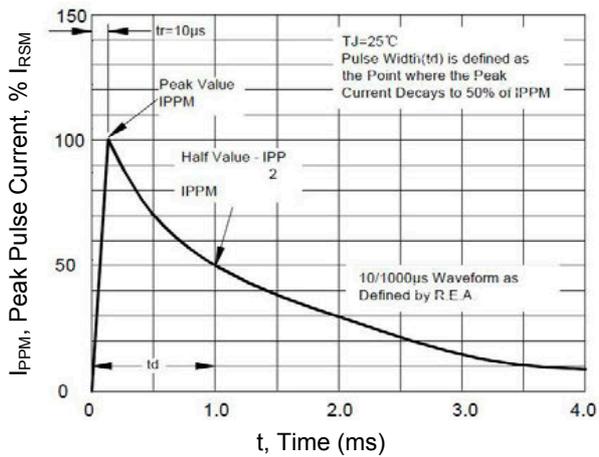


Figure 3. Pulse Waveform

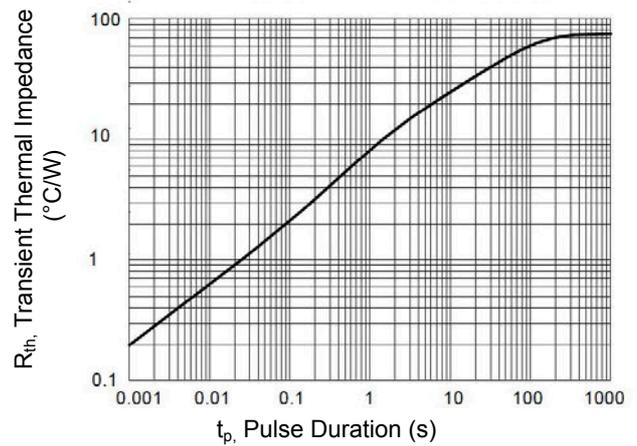


Figure 4. Typical Transient Thermal Impedance

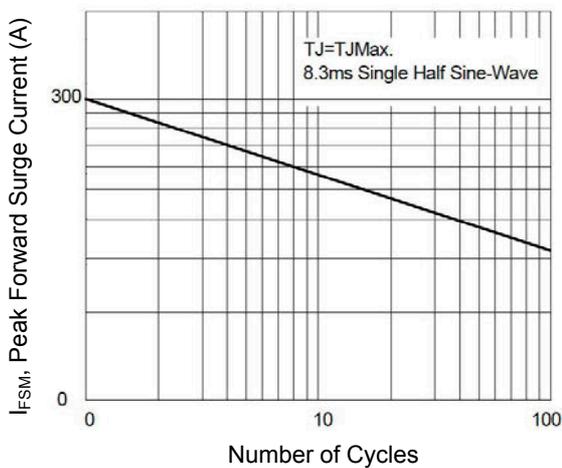


Figure 5. Maximum Non-Repetitive Surge Current

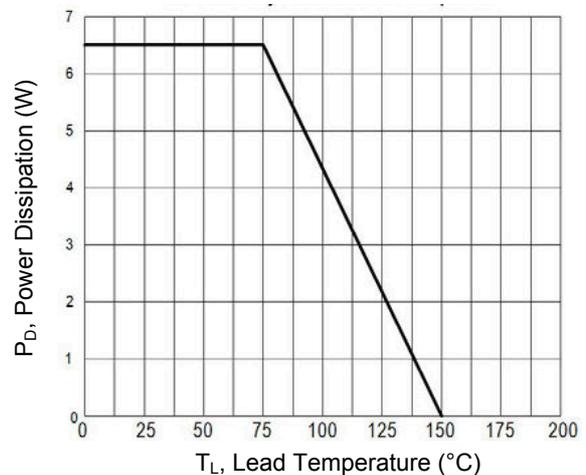
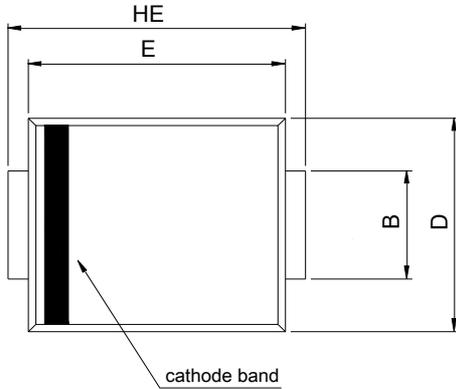
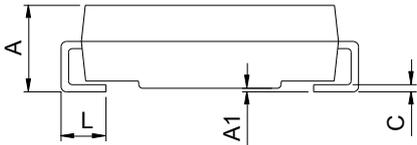


Figure 6. Steady State Power Dissipation

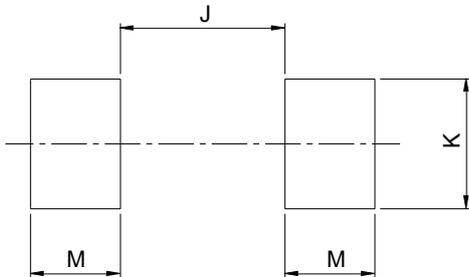
## Package Outline Dimensions DO-214AB (SMC)



SMC (DO-214AB)				
DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.00	2.62	0.079	0.103
A1	0.00	0.20	0.000	0.008
B	2.90	3.20	0.114	0.126
C	0.15	0.31	0.006	0.012
D	5.58	6.22	0.220	0.245
E	6.60	7.15	0.260	0.281
HE	7.75	8.15	0.305	0.321
L	0.76	1.60	0.030	0.063



## Recommended Pad Layout



SMC Recommended Pad Layout (Reference ONLY)				
DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	-	4.60	-	0.181
K	3.20	-	0.126	-
M	2.00	-	0.079	-