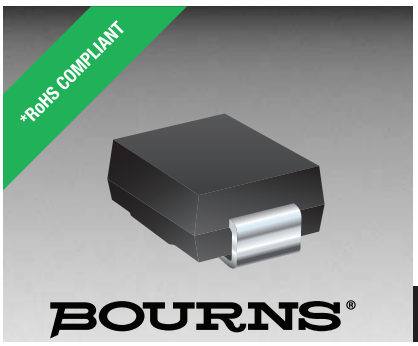
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Features

- RoHS compliant* and halogen free**
- Surface mount SMC package
- Standoff voltage: 5 to 170 volts
- Peak Pulse Power: 5000 watts
- Typical temperature coefficient: ΔV_{BR} = 0.1 % x VBR @ 25 °C x ΔT

5.0SMDJ Transient Voltage Suppressor Diode Series

General Information

Portable communications, computing and video equipment manufacturers are challenging the semiconductor industry to develop increasingly higher power density circuit protection components.

Bourns offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package DO-214AB (SMC) size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 5 V up to 170 V and Breakdown Voltage up to 209 V. Typical fast response times are less than 1.0 ps from 0 V to Breakdown Voltage.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle with standard pick and place equipment and the flat configuration minimizes roll away.

Agency Recognition

Description	
UL	File Number: E153537

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T_p = 1 ms) (Note 1,2)	P_{PK}	5000	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3,4)	I_{FSM}	300	Amps
Steady State Power Dissipation @ TL = 50 °C	$P_{M(AV)}$	6.5	Watts
Maximum Instantaneous Forward Voltage @ I_{PP} = 100 A (For Unidirectional Units Only)	V_F	5	Volts
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 25 °C per Pulse Derating Curve.
2. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).
4. Mounted on 8.0 mm x 8.0 mm copper pad area to each terminal.

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How to Order

5.0SMDJ 12 CA - H

Package
5.0SMDJ = SMC/DO-214AB

Working Peak Reverse Voltage
12 = 12 V_{RWM} (Volts)

Suffix
A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device

Reel
(Blank) = 13-inch Reel
-H = 7-inch Reel

WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
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5.0SMDJ Transient Voltage Suppressor Diode Series

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Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Unidirectional Device		Bidirectional Device		Breakdown Voltage V_{BR} (Volts)			Reverse Standoff Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Clamping Voltage @ I_{pp} (10/1000 μs)	Maximum Peak Pulse Current (10/1000 μs)	Maximum Clamping Voltage @ I_{pp} (8/20 μs)	Maximum Peak Pulse Current (8/20 μs)
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_C (V)	I_{pp} (A)	V_C (V)	I_{pp} (A)
5.0SMDJ5.0A	5RDE	5.0SMDJ5.0CA	5DDE	6.40	7.00	10	5.0	1050	9.2	543.6	12.0	4077.0
5.0SMDJ6.0A	5RDG	5.0SMDJ6.0CA	5DDG	6.67	7.37	10	6.0	1050	10.3	485.5	13.4	3641.3
5.0SMDJ6.5A	5RDK	5.0SMDJ6.5CA	5DDK	7.22	7.98	10	6.5	750	11.2	446.5	14.6	3348.8
5.0SMDJ7.0A	5PDM	5.0SMDJ7.0CA	5DDM	7.78	8.60	10	7.0	300	12.0	416.8	15.6	3126.0
5.0SMDJ7.5A	5PDP	5.0SMDJ7.5CA	5DDP	8.33	9.21	1	7.5	150	12.9	387.7	16.8	2907.8
5.0SMDJ8.0A	5PDR	5.0SMDJ8.0CA	5DDR	8.89	9.83	1	8.0	70	13.6	367.7	17.7	2757.8
5.0SMDJ8.5A	5PDT	5.0SMDJ8.5CA	5DDT	9.44	10.40	1	8.5	30	14.4	347.3	18.7	2604.8
5.0SMDJ9.0A	5PDV	5.0SMDJ9.0CA	5DDV	10.00	11.10	1	9.0	12	15.4	324.8	20.0	2436.0
5.0SMDJ10A	5PDX	5.0SMDJ10CA	5DDX	11.10	12.30	1	10.0	6	17.0	294.2	22.1	2206.5
5.0SMDJ11A	5PDZ	5.0SMDJ11CA	5DDZ	12.20	13.50	1	11.0	2	18.2	274.8	23.7	2061.0
5.0SMDJ12A	5PEP	5.0SMDJ12CA	5BEP	13.30	14.70	1	12.0	2	19.9	252.0	25.9	1890.0
5.0SMDJ13A	5PEQ	5.0SMDJ13CA	5BEQ	14.40	15.90	1	13.0	2	21.5	233.0	28.0	1747.5
5.0SMDJ14A	5PER	5.0SMDJ14CA	5BER	15.60	17.20	1	14.0	2	23.2	216.0	30.2	1620.0
5.0SMDJ15A	5PES	5.0SMDJ15CA	5BES	16.70	18.50	1	15.0	2	24.4	205.0	31.7	1537.5
5.0SMDJ16A	5PET	5.0SMDJ16CA	5BET	17.80	19.70	1	16.0	2	26.0	193.0	33.8	1447.5
5.0SMDJ17A	5PEU	5.0SMDJ17CA	5BEU	18.90	20.90	1	17.0	2	27.6	181.0	35.9	1357.5
5.0SMDJ18A	5PEV	5.0SMDJ18CA	5BEV	20.00	22.10	1	18.0	2	29.2	172.0	38.0	1290.0
5.0SMDJ20A	5PEW	5.0SMDJ20CA	5BEW	22.20	24.50	1	20.0	2	32.4	155.0	42.1	1162.5
5.0SMDJ22A	5PEX	5.0SMDJ22CA	5BEX	24.40	26.90	1	22.0	2	35.5	141.0	46.2	1057.5
5.0SMDJ24A	5PEZ	5.0SMDJ24CA	5BEZ	26.70	29.50	1	24.0	2	38.9	129.0	50.6	967.5
5.0SMDJ26A	5PFE	5.0SMDJ26CA	5BFE	28.90	31.90	1	26.0	2	42.1	119.0	54.7	892.5
5.0SMDJ28A	5PFG	5.0SMDJ28CA	5BFG	31.10	34.40	1	28.0	2	45.4	110.0	59.0	825.0
5.0SMDJ30A	5PFK	5.0SMDJ30CA	5BFK	33.30	36.80	1	30.0	2	48.4	103.0	62.9	772.5
5.0SMDJ33A	5PFM	5.0SMDJ33CA	5BFM	36.70	40.60	1	33.0	2	53.3	93.9	69.3	704.3
5.0SMDJ36A	5PFP	5.0SMDJ36CA	5BFP	40.00	44.20	1	36.0	2	58.1	86.1	75.5	645.8
5.0SMDJ40A	5PFR	5.0SMDJ40CA	5BFR	44.40	49.10	1	40.0	2	64.5	77.6	83.9	582.0
5.0SMDJ43A	5PFT	5.0SMDJ43CA	5BFT	47.80	52.80	1	43.0	2	69.4	72.1	90.2	540.8
5.0SMDJ45A	5PFV	5.0SMDJ45CA	5BFV	50.00	55.30	1	45.0	2	72.7	68.8	94.5	516.0
5.0SMDJ48A	5PFX	5.0SMDJ48CA	5BFX	53.30	58.90	1	48.0	2	77.4	64.7	100.6	485.3
5.0SMDJ51A	5PFZ	5.0SMDJ51CA	5BFZ	56.70	62.70	1	51.0	2	82.4	60.7	107.1	455.3
5.0SMDJ54A	5RGE	5.0SMDJ54CA	5BGE	60.00	66.30	1	54.0	2	87.1	57.5	113.2	431.3
5.0SMDJ58A	5PGG	5.0SMDJ58CA	5BGG	64.40	71.20	1	58.0	2	93.6	53.5	121.7	401.3
5.0SMDJ60A	5PGK	5.0SMDJ60CA	5BGK	66.70	73.70	1	60.0	2	96.8	51.7	125.8	387.8
5.0SMDJ64A	5PGM	5.0SMDJ64CA	5BGM	71.10	78.60	1	64.0	2	103.0	48.6	133.9	364.5
5.0SMDJ70A	5PGP	5.0SMDJ70CA	5BGP	77.80	86.00	1	70.0	2	113.0	44.3	146.9	332.3
5.0SMDJ75A	5PGR	5.0SMDJ75CA	5BGR	83.30	92.10	1	75.0	2	121.0	41.4	157.3	310.5
5.0SMDJ78A	5PGT	5.0SMDJ78CA	5BGT	86.70	95.80	1	78.0	2	126.0	39.7	163.8	297.8
5.0SMDJ85A	5PGV	5.0SMDJ85CA	5BGV	94.40	104.00	1	85.0	2	137.0	36.5	178.1	273.8
5.0SMDJ90A	5PGX			100.00	111.00	1	90.0	2	146.0	34.3	189.8	257.3
5.0SMDJ100A	5PGZ			111.00	123.00	1	100.0	2	162.0	30.9	210.6	231.8
5.0SMDJ110A	5PHE			122.00	135.00	1	110.0	2	177.0	28.3	230.1	212.3
5.0SMDJ120A	5PHG			133.00	147.00	1	120.0	2	193.0	26.0	250.9	195.0
5.0SMDJ130A	5PHK			144.00	159.00	1	130.0	2	209.0	24.0	271.7	180.0
5.0SMDJ150A	5PHM			167.00	185.00	1	150.0	2	243.0	20.6	315.9	154.5
5.0SMDJ160A	5PHP			178.00	197.00	1	160.0	2	259.0	19.3	336.7	144.8
5.0SMDJ170A	5PHR			189.00	209.00	1	170.0	2	275.0	18.2	357.5	136.5

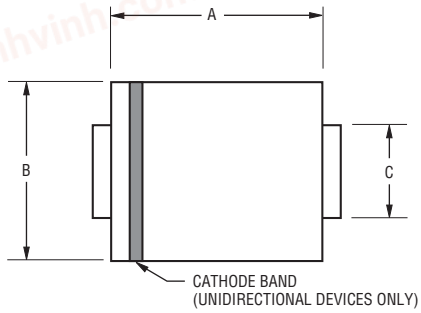
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5.0SMDJ Transient Voltage Suppressor Diode Series

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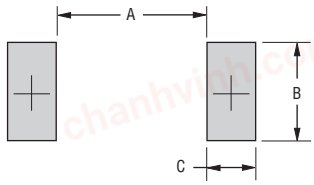
Product Dimensions



Dimension	SMC (DO-214AB)
A	6.60 - 7.11 (0.260 - 0.280)
B	5.59 - 6.22 (0.220 - 0.245)
C	2.90 - 3.20 (0.114 - 0.126)
D	0.15 - 0.31 (0.006 - 0.012)
E	7.75 - 8.13 (0.305 - 0.320)
F	0.05 - 0.20 (0.002 - 0.008)
G	2.01 - 2.62 (0.080 - 0.103)
H	0.76 - 1.52 (0.030 - 0.060)

DIMENSIONS: MM / (INCHES)

Recommended Footprint



Dimension	SMC (DO-214AB)
A (Max.)	4.69 (0.185)
B (Min.)	3.07 (0.121)
C (Min.)	1.53 (0.060)

DIMENSIONS: MM / (INCHES)

Physical Specifications

Encapsulation.....Molded plastic per UL Class 94V-0
Polarity..... Cathode band indicates unidirectional device
No cathode band indicates bidirectional device

Environmental Specifications

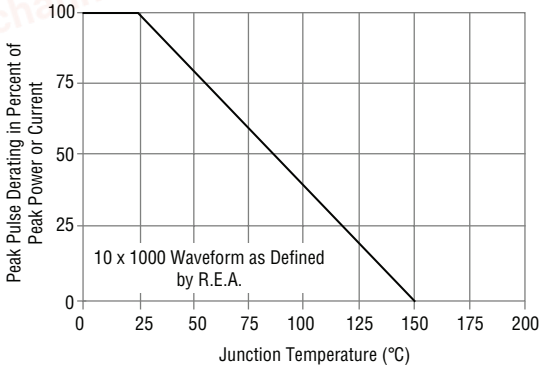
Moisture Sensitivity Level.....1
ESD Classification (HBM)..... 3B

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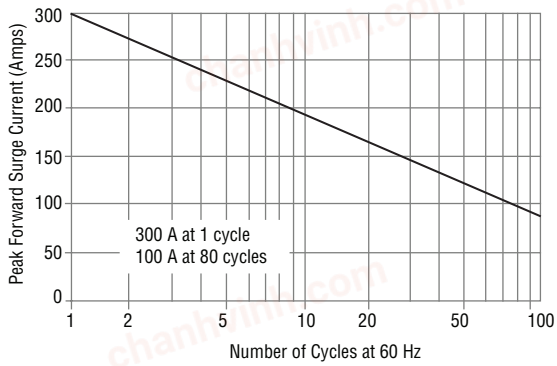
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Rating & Characteristic Curves

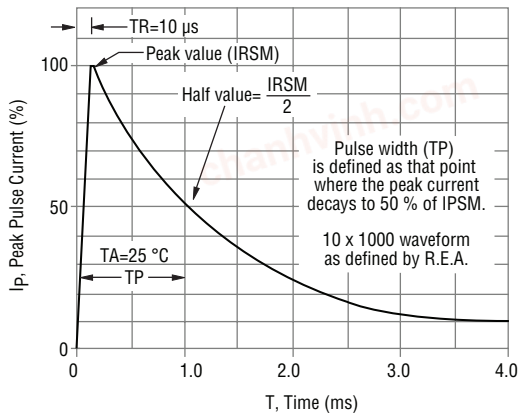
Pulse Derating Curve



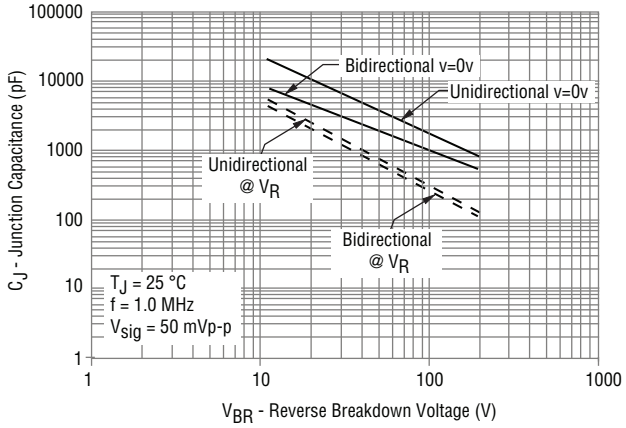
Maximum Non-Repetitive Surge Current



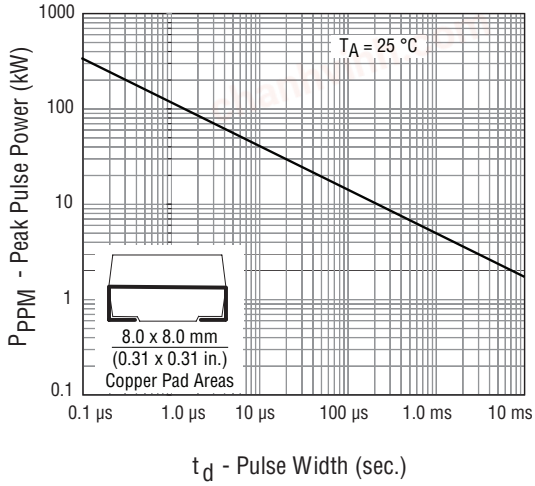
Pulse Waveform



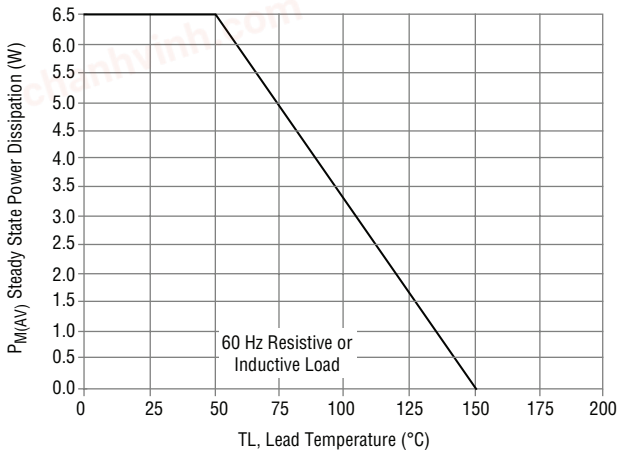
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve

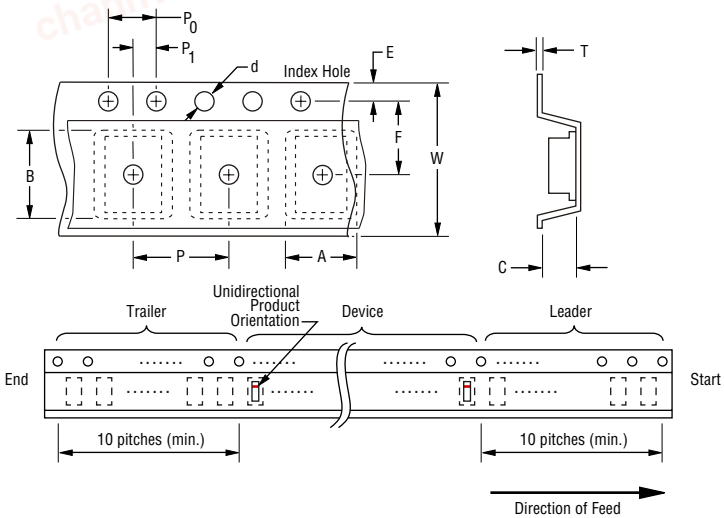


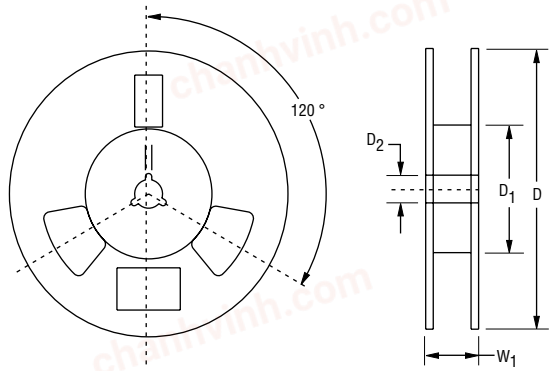
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Packaging Information

The product will be dispensed in tape and reel format (see diagram below).





DIMENSIONS: MM / (INCHES)

Devices are packed in accordance with EIA standard EIA-481-D and specifications shown here.

Item	Symbol	SMC (DO-214AB)	
		7-Inch Reel	13-Inch Reel
Carrier Width	A	6.0 ± 0.20 (0.236 ± 0.079)	
Carrier Length	B	8.3 ± 0.20 (0.327 ± 0.008)	
Carrier Depth	C	2.5 ± 0.20 (0.098 ± 0.008)	
Sprocket Hole	d	1.50 ± 0.10 (0.059 ± 0.004)	
Reel Outside Diameter	D	178 (7.008)	330 (12.992)
Reel Inner Diameter	D_1	50.0 (1.969) MIN.	
Feed Hole Diameter	D_2	13.0 +0.50/-0.20 (0.512 +0.020/-0.008)	
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)	
Punch Hole Position	F	7.50 ± 0.10 (0.295 ± 0.004)	
Punch Hole Pitch	P	8.00 ± 0.10 (0.315 ± 0.004)	
Sprocket Hole Pitch	P_0	4.00 ± 0.10 (0.157 ± 0.004)	
Embossment Center	P_1	2.00 ± 0.10 (0.079 ± 0.004)	
Overall Tape Thickness	T	0.30± 0.10 (0.012 ± 0.004)	
Tape Width	W	16.00 ± 0.30 (0.630 ± 0.012)	
Reel Width	W_1	22.4 (0.882) MAX.	
Quantity per Reel	--	500	3,000

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