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Features

- RoHS compliant* and halogen free**
- DO-214AA (SMB) package
- Standoff Voltage: 12 to 85 volts
- Power Dissipation: 1500 watts
- Typical temperature coefficient: DVBR = 0.1 % x VBR @ 25 °C x DT

Applications

- IEC 61000-4-2 ESD (Min. Level 4)
- IEC 61000-4-4 EFT
- IEC 61000-4-5 Surge

1.5SMBJ Transient Voltage Suppressor Diode Series

General Information

Manufacturers of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

Bourns offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package DO-214AA (SMB) size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 12 V up to 85 V and Breakdown Voltage up to 104 V. Typical fast response times are less than 1.0 picosecond from 0 V to Minimum 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.

Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

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}	1500	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I_{FSM}	100	Amps
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. 8 mm x 8 mm copper pad on each terminal.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

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How to Order

1.5SMBJ 12 CA - H

Package
1.5SMBJ = SMB/DO-214AA

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.
** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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1.5SMBJ 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)			Working Peak Reverse 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 No.	Marking	Part No.	Marking	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_C (V)	I_{PP} (A)	V_C (V)	I_{PP} (A)
1.5SMBJ12A	GEE	1.5SMBJ12CA	BEE	13.30	14.70	1	12.0	1.0	19.9	75.4	25.9	377.0
1.5SMBJ13A	GEG	1.5SMBJ13CA	BEG	14.40	15.90	1	13.0	1.0	21.5	69.8	28.0	349.0
1.5SMBJ14A	GEK	1.5SMBJ14CA	BEK	15.60	17.20	1	14.0	1.0	23.2	64.7	30.2	323.5
1.5SMBJ15A	GEM	1.5SMBJ15CA	BEM	16.70	18.50	1	15.0	1.0	24.4	61.5	31.7	307.5
1.5SMBJ16A	GEP	1.5SMBJ16CA	BEP	17.80	19.70	1	16.0	1.0	26.0	57.7	33.8	288.5
1.5SMBJ17A	GER	1.5SMBJ17CA	BER	18.90	20.90	1	17.0	1.0	27.6	54.4	35.9	272.0
1.5SMBJ18A	GET	1.5SMBJ18CA	BET	20.00	22.10	1	18.0	1.0	29.2	51.4	38.0	257.0
1.5SMBJ20A	GEV	1.5SMBJ20CA	BEV	22.20	24.50	1	20.0	1.0	32.4	46.3	42.1	231.5
1.5SMBJ22A	GEX	1.5SMBJ22CA	BEX	24.40	26.90	1	22.0	1.0	35.5	42.3	46.2	211.5
1.5SMBJ24A	GEZ	1.5SMBJ24CA	BEZ	26.70	29.50	1	24.0	1.0	38.9	38.6	50.6	193.0
1.5SMBJ26A	GFE	1.5SMBJ26CA	BFE	28.90	31.90	1	26.0	1.0	42.1	35.7	54.7	178.5
1.5SMBJ28A	GFG	1.5SMBJ28CA	BFG	31.10	34.40	1	28.0	1.0	45.4	33.1	59.0	165.5
1.5SMBJ30A	GFK	1.5SMBJ30CA	BFK	33.30	36.80	1	30.0	1.0	48.4	31.0	62.9	155.0
1.5SMBJ33A	GFM	1.5SMBJ33CA	BFM	36.70	40.60	1	33.0	1.0	53.3	28.2	69.3	141.0
1.5SMBJ36A	GFP	1.5SMBJ36CA	BFP	40.00	44.20	1	36.0	1.0	58.1	25.9	75.5	129.5
1.5SMBJ40A	GFR	1.5SMBJ40CA	BFR	44.40	49.10	1	40.0	1.0	64.5	23.3	83.9	116.5
1.5SMBJ43A	GFT	1.5SMBJ43CA	BFT	47.80	52.80	1	43.0	1.0	69.4	21.7	90.2	108.5
1.5SMBJ45A	GFV	1.5SMBJ45CA	BFV	50.00	55.30	1	45.0	1.0	72.7	20.6	94.5	103.0
1.5SMBJ48A	GFX	1.5SMBJ48CA	BFX	53.30	58.90	1	48.0	1.0	77.4	19.4	100.6	97.0
1.5SMBJ51A	GFZ	1.5SMBJ51CA	BFZ	56.70	62.70	1	51.0	1.0	82.4	18.2	107.1	91.0
1.5SMBJ54A	GGE	1.5SMBJ54CA	BGE	60.00	66.30	1	54.0	1.0	87.1	17.3	113.2	86.5
1.5SMBJ58A	GGG	1.5SMBJ58CA	BGG	64.40	71.20	1	58.0	1.0	93.6	16.1	121.7	80.5
1.5SMBJ60A	GGK			66.70	73.70	1	60.0	1.0	96.8	15.5	125.8	77.5
1.5SMBJ64A	GGM			71.10	78.60	1	64.0	1.0	103.0	14.6	133.9	73.0
1.5SMBJ70A	GGP			77.80	86.00	1	70.0	1.0	113.0	13.3	146.9	66.5
1.5SMBJ75A	GGR			83.30	92.10	1	75.0	1.0	121.0	12.4	157.3	62.0
1.5SMBJ78A	GGT			86.70	95.80	1	78.0	1.0	126.0	11.9	163.8	59.5
1.5SMBJ85A	GGV			94.40	104.00	1	85.0	1.0	137.0	11.0	178.1	55.0

Notes:
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.

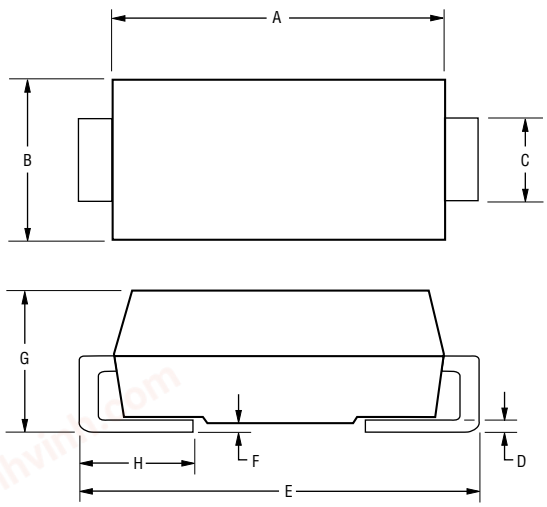
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1.5SMBJ Transient Voltage Suppressor Diode Series

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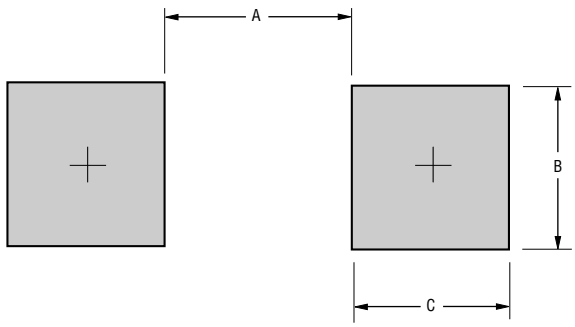
Product Dimensions



Dimension	SMB (DO-214AA)
A	4.06 - 4.57 (0.160 - 0.180)
B	3.30 - 3.94 (0.130 - 0.155)
C	1.95 - 2.20 (0.077 - 0.087)
D	0.15 - 0.31 (0.006 - 0.012)
E	5.21 - 5.59 (0.205 - 0.220)
F	0.05 - 0.203 (0.002 - 0.008)
G	2.13 - 2.44 (0.080 - 0.103)
H	0.76 - 1.52 (0.030 - 0.060)

DIMENSIONS: MM (INCHES)

Recommended Footprint



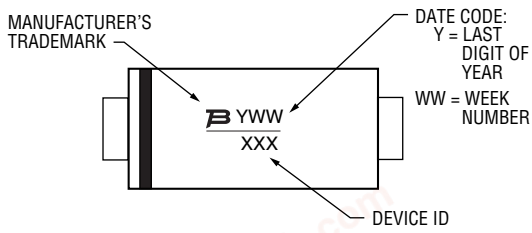
Dimension	SMB (DO-214AA)
A (Max.)	2.69 (0.106)
B (Min.)	2.10 (0.083)
C (Min.)	1.27 (0.050)

DIMENSIONS: MM (INCHES)

Physical Specifications

Case .....Molded plastic per UL Class 94V-0
Polarity..... Cathode band indicates unidirectional device
No cathode band indicates bidirectional device
Weight .....0.093 grams

Typical Part Marking

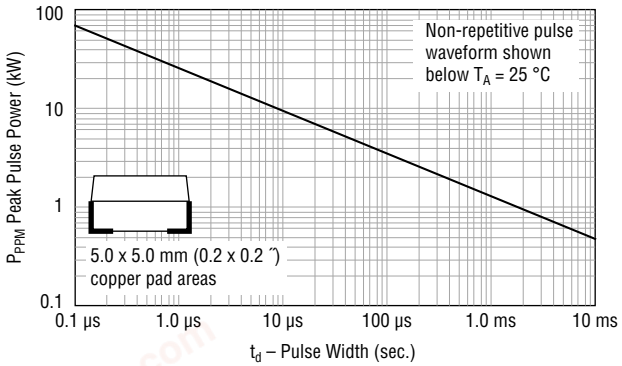


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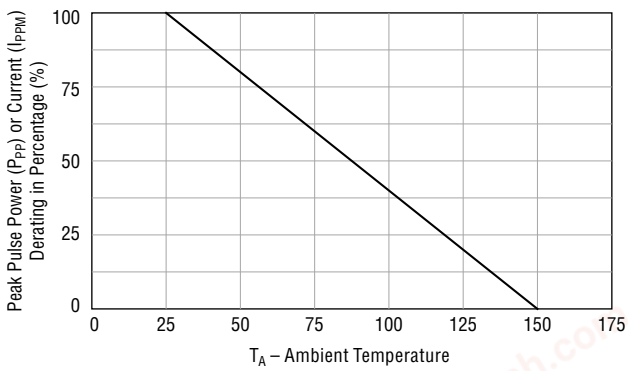
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Rating & Characteristic Curves

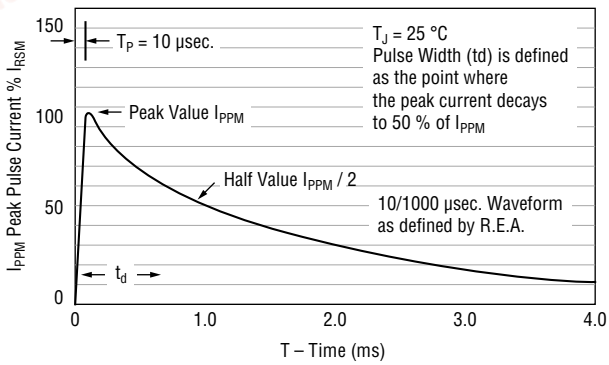
Peak Pulse Power



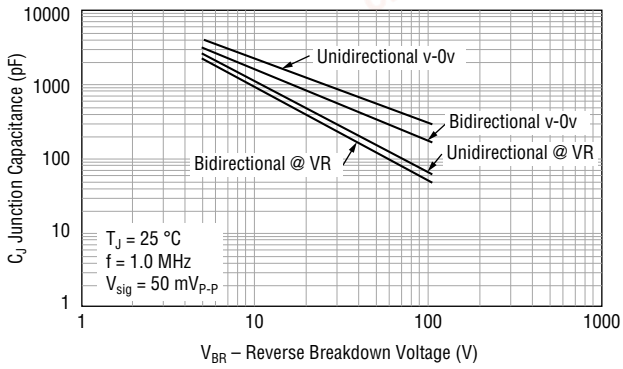
Pulse Derating Curve



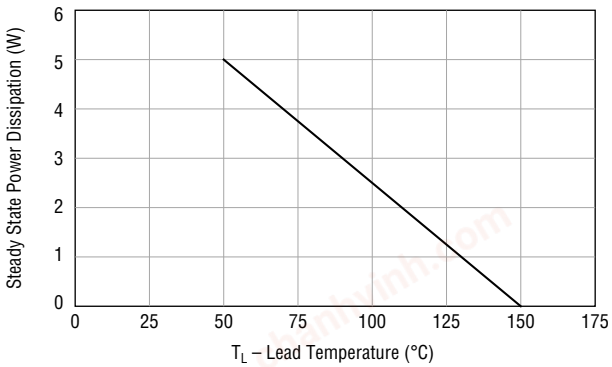
Pulse Waveform



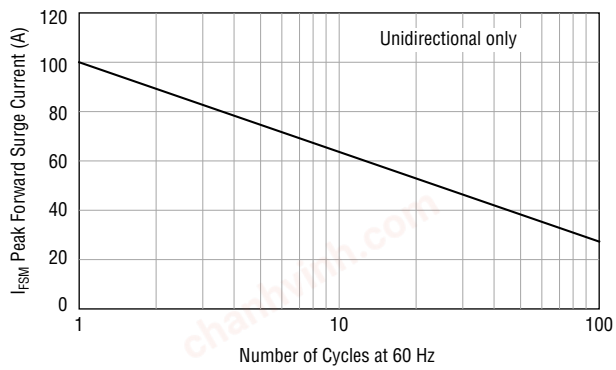
Typical Junction Capacitance



Steady State Power Derating Curve



Maximum Non-repetitive Forward Surge Current

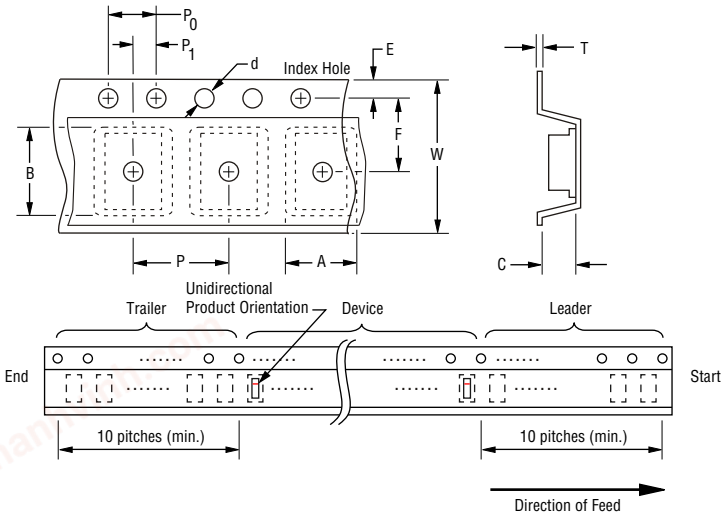


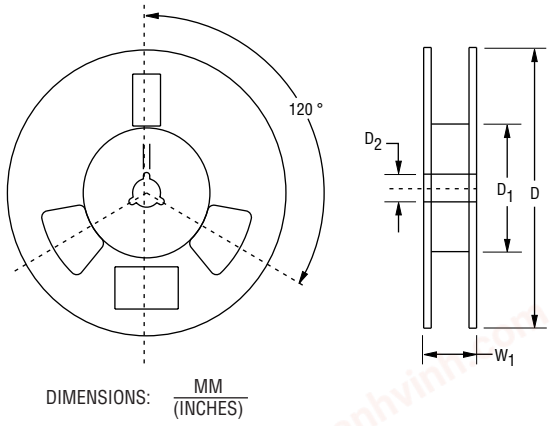
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Packaging Information

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





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

Item	Symbol	SMB (DO-214AA)	
		7 Inch Reel	13 Inch Reel
Carrier Width	A	3.67 ± 0.20 (0.144 ± 0.008)	
Carrier Length	B	5.60 ± 0.20 (0.220 ± 0.008)	
Carrier Depth	C	2.57 ± 0.20 (0.101 ± 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 ± 0.20 (0.512 ± 0.008)	
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)	
Punch Hole Position	F	5.50 ± 0.05 (0.217 ± 0.002)	
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 ± 0.05 (0.079 ± 0.002)	
Overall Tape Thickness	T	0.30 ± 0.10 (0.012 ± 0.004)	
Tape Width	W	12.00 ± 0.30 (0.472 ± 0.012)	
Reel Width	W_1	18.4 (0.724) MAX.	
Quantity per Reel	--	500	3,000

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