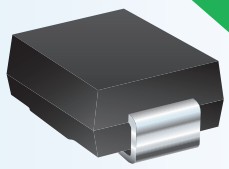
BOURNS®

5.0SMDJ-R SERIES

Transient Voltage Suppressor Diodes



*RoHS COMPLIANT & **HALOGEN FREE

Features

- Surface mount SMC package
- Standoff voltage: 12 to 30 volts
- Peak pulse power: 5000 watts
- Typical temperature coefficient: $\Delta V_{BR} = 0.1\ \% \times V_{BR} @ 25\ °C \times \Delta T$
- RoHS compliant* and halogen free**

Applications

- Portable communications
- Computing and video equipment

Sustainability

- Recyclable ESD-safe packaging
- ISO 14001, low-impact energy
- Responsibly sourced and produced

Product Overview

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 12 to 30 V and Breakdown Voltage up to 36.8 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.

Maximum Ratings (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation (T_P = 1 ms) (Note 1)	P_{PPM}	5000	Watts
Peak Pulse Current with a 10/1000 µs Waveform	I_{PPM}	See Electrical Characteristics Chart	Amps
Peak Forward Surge Current (Note 2) 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I_{FSM}	300	Amps
Steady State Power Dissipation @ T_L = 50 °C	$P_{M(AV)}$	6.5	Watts
Maximum Instantaneous Forward Voltage @ I_{PP} = 100 A (Note 2)	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. Forward surge current and forward voltage are only applicable to unidirectional models.
3. 8.3 ms Single Sine Wave duty cycle = 4 pulses maximum per minute.

Agency Recognitiion

UL	File Number: E153537

Contact Information

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* 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.
Specifications are subject to change without notice.

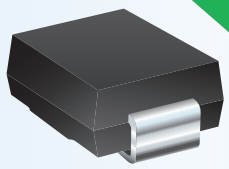
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Transient Voltage Suppressor Diodes



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

Unidirectional Device		Bidirectional Device		Breakdown Voltage V_{BR} (V)			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 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)
5.0SMDJ12A-R	5PEP	5.0SMDJ12CA-R	5BEP	13.3	14.7	1	12.0	2	19.9	251.3	25.7	1382.2
5.0SMDJ13A-R	5PEQ	5.0SMDJ13CA-R	5BEQ	14.4	15.9	1	13.0	2	21.5	232.6	27.8	1279.3
5.0SMDJ14A-R	5PER	5.0SMDJ14CA-R	5BER	15.6	17.2	1	14.0	2	23.2	215.5	30.0	1185.3
5.0SMDJ15A-R	5PES	5.0SMDJ15CA-R	5BES	16.7	18.5	1	15.0	2	24.4	204.9	31.5	1127.0
5.0SMDJ16A-R	5PET	5.0SMDJ16CA-R	5BET	17.8	19.7	1	16.0	2	26.0	192.3	33.6	1057.7
5.0SMDJ17A-R	5PEU	5.0SMDJ17CA-R	5BEU	18.9	20.9	1	17.0	2	27.6	181.2	35.7	996.6
5.0SMDJ18A-R	5PEV	5.0SMDJ18CA-R	5BEV	20.0	22.1	1	18.0	2	29.2	171.2	37.7	941.6
5.0SMDJ20A-R	5PEW	5.0SMDJ20CA-R	5BEW	22.2	24.5	1	20.0	2	32.4	154.3	41.9	848.7
5.0SMDJ22A-R	5PEX	–	–	24.4	26.9	1	22.0	2	35.5	140.8	45.9	774.4
5.0SMDJ24A-R	5PEZ	–	–	26.7	29.5	1	24.0	2	38.9	128.5	50.3	706.8
5.0SMDJ26A-R	5PFE	–	–	28.9	31.9	1	26.0	2	42.1	118.8	54.4	653.4
5.0SMDJ28A-R	5PFG	–	–	31.1	34.4	1	28.0	2	45.4	110.1	58.7	605.6
5.0SMDJ30A-R	5PFK	–	–	33.3	36.8	1	30.0	2	48.4	103.3	62.5	568.2

Notes:
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.

How to Order

5.0SMDJ 13 CA - R

Package
5.0SMDJ= SMC/DO-214AB

Working Peak Reverse Voltage
12 = 12 V_{RWM} (Volts)
.
.
.
30 = 30 V_{RWM} (Volts)

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

Reel
-R = 3,000 pcs. per 13-inch reel

Specifications are subject to change without notice.
Users should verify actual device performance in their specific applications.

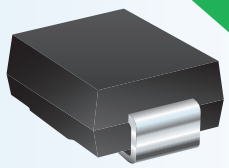
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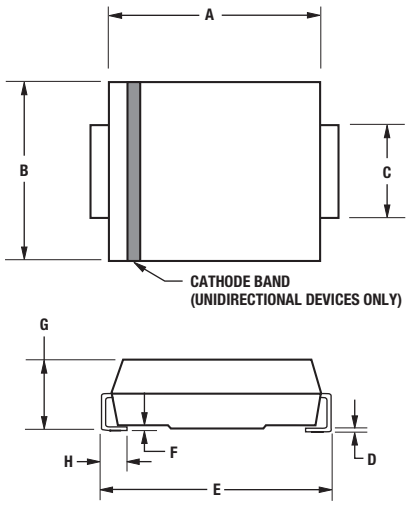
5.0SMDJ-R SERIES

Transient Voltage Suppressor Diodes



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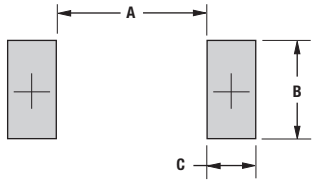
Product Dimensions



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	2.00 - 2.62 (0.079 - 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.)	1.52 (0.060)

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

Environmental Specifications

Moisture Sensitivity Level 1

ESD Classification (HBM) 3B

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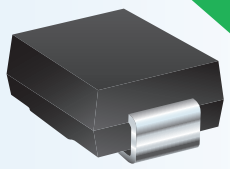
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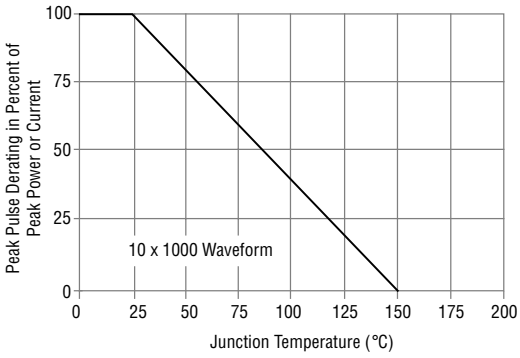
Transient Voltage Suppressor Diodes



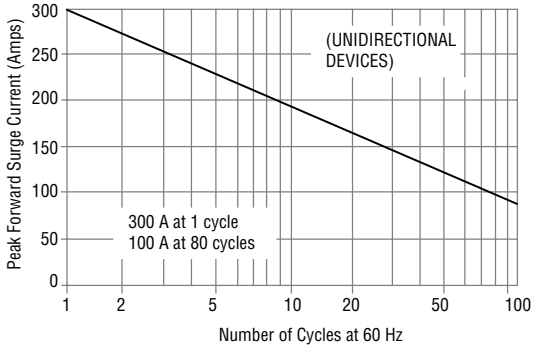
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Rating & Characteristic Curves

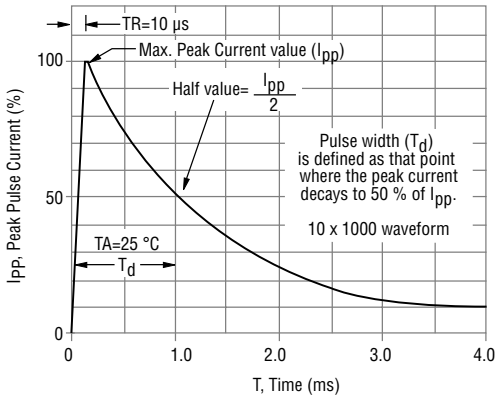
Pulse Derating Curve



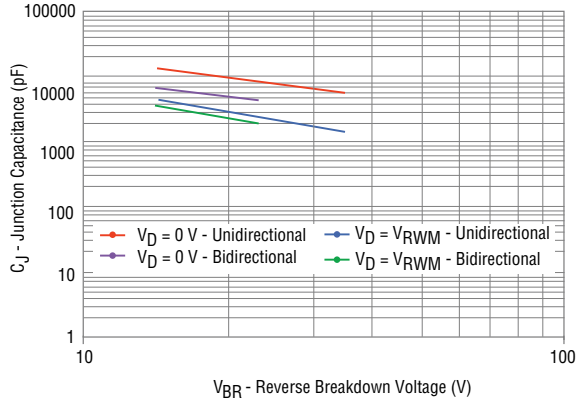
Maximum Non-Repetitive Surge Current



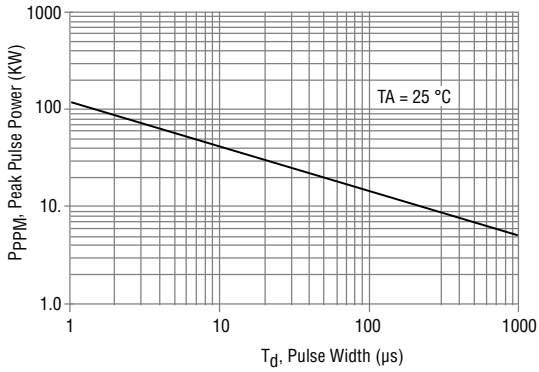
Pulse Waveform



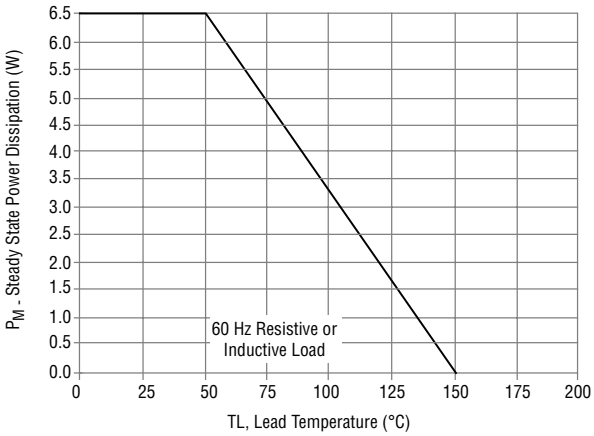
Typical Junction Capacitance



Pulse Derating Curve (Typical)



Steady State Power Derating Curve



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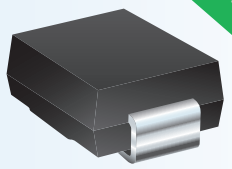
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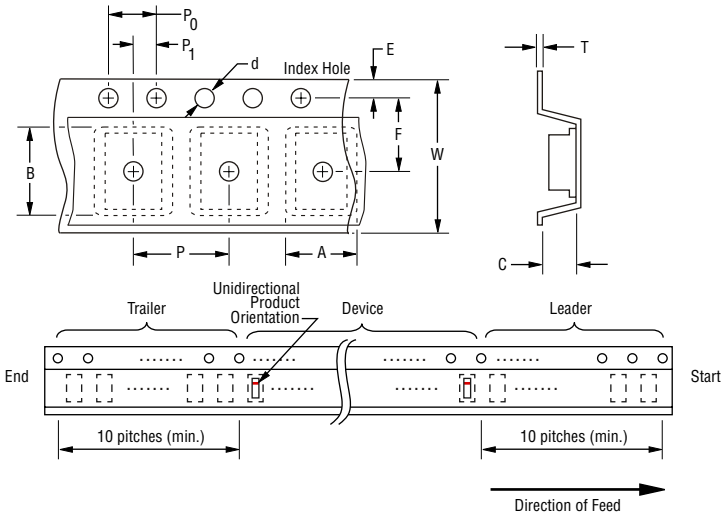
Transient Voltage Suppressor Diodes

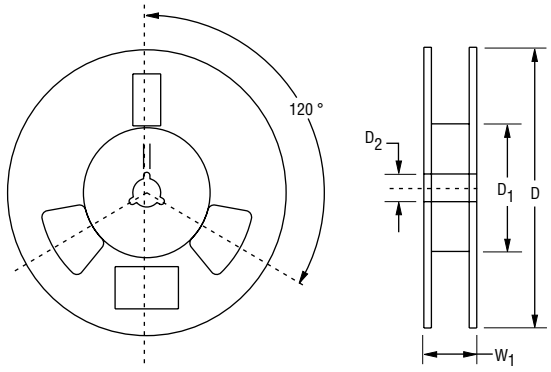


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Packaging Specifications

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	SMC (DO-214AB) 13-Inch Reel
Carrier Width	A	6.0 ± 2.0 (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	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	--	3,000

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- Bourns considers implantable/invasive devices and devices/procedures designed as life-supporting or life-sustaining by the U.S. Food and Drug Administration or equivalent organizations outside of the United States as "life-critical" medical applications. Bourns expressly identifies those Bourns® standard products that are suitable for use in typical medical applications that are not life-critical in its publication entitled "Bourns Medical Grade Component Guide."

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