



## Features

- RoHS compliant\* and halogen free\*\*
- Surface mount SMC package
- Standoff voltage: 12 to 43 volts
- Peak Pulse Power: 5000 watts
- AEC-Q101 compliant\*\*\*

## Applications

- Protection of power buses
- Protection of I/O interfaces
- Overvoltage transient protection
- Automotive
  - Entertainment applications
  - Comfort applications
- Telecom, computer, industrial and consumer electronics applications

# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series

## General Information

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 V up to 43 V and Breakdown Voltage up to 52.8 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.

## Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T <sub>p</sub> = 1 ms) (Note 1,2)	P <sub>PK</sub>	5000	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3,4)	I <sub>FSM</sub>	300	Amps
Steady State Power Dissipation @ TL = 50 °C	P <sub>M(AV)</sub>	6.5	Watts
Maximum Instantaneous Forward Voltage @ I <sub>PP</sub> = 100 A (For Unidirectional Units Only)	V <sub>F</sub>	5	Volts
Operating Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above T<sub>A</sub> = 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.

# BOURNS®

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## How to Order

**5.0SMDJ 12 CA - Q**

Package \_\_\_\_\_  
5.0SMDJ = SMC/DO-214AB

Working Peak Reverse Voltage \_\_\_\_\_  
12 = 12 V<sub>RWM</sub> (Volts)

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

AEC-Q101 Compliant Suffix \_\_\_\_\_  
Q = AEC-Q101 Compliant, 3000 pcs. per 13-inch Reel  
QH = AEC-Q101 Compliant, 500 pcs. per 7-inch Reel

\* 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.

\*\*\* Q suffix for automotive and other applications requiring appropriate AEC-Q101 compliance for electronic limiters.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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## 5.0SMDJ-Q Transient Voltage Suppressor Diode Series

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### Electrical Characteristics (@ $T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Unidirectional Device		Bidirectional Device		Breakdown Voltage $V_{BR}$ (Volts)			Reverse Standoff Voltage	Maximum Reverse Leakage @ $V_{RWM}$	Maximum Clamping Voltage @ $I_{PP}$	Peak Pulse Current
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ $I_T$ (mA)	$V_{RWM}$ (V)	$I_R$ ( $\mu\text{A}$ )	$V_C$ (V)	$I_{PP}$ (A)
5.0SMDJ12A-Q	5PEPQ	5.0SMDJ12CA-Q	5BEPQ	13.3	14.7	1	12	2	19.9	252.0
5.0SMDJ13A-Q	5PEQQ	5.0SMDJ13CA-Q	5BEQQ	14.4	15.9	1	13	2	21.5	233.0
5.0SMDJ14A-Q	5PERQ	5.0SMDJ14CA-Q	5BERQ	15.6	17.2	1	14	2	23.2	216.0
5.0SMDJ15A-Q	5PESQ	5.0SMDJ15CA-Q	5BESQ	16.7	18.5	1	15	2	24.4	205.0
5.0SMDJ16A-Q	5PETQ	5.0SMDJ16CA-Q	5BETQ	17.8	19.7	1	16	2	26.0	193.0
5.0SMDJ17A-Q	5PEUQ	5.0SMDJ17CA-Q	5BEUQ	18.9	20.9	1	17	2	27.6	181.0
5.0SMDJ18A-Q	5PEVQ	5.0SMDJ18CA-Q	5BEVQ	20.0	22.1	1	18	2	29.2	172.0
5.0SMDJ20A-Q	5PEWQ	5.0SMDJ20CA-Q	5BEWQ	22.2	24.5	1	20	2	32.4	155.0
5.0SMDJ22A-Q	5PEXQ	5.0SMDJ22CA-Q	5BEXQ	24.4	26.9	1	22	2	35.5	141.0
5.0SMDJ24A-Q	5PEZQ	5.0SMDJ24CA-Q	5BEZQ	26.7	29.5	1	24	2	38.9	129.0
5.0SMDJ26A-Q	5PFEQ	5.0SMDJ26CA-Q	5BFEQ	28.9	31.9	1	26	2	42.1	119.0
5.0SMDJ28A-Q	5PFGQ	5.0SMDJ28CA-Q	5BFGQ	31.1	34.4	1	28	2	45.4	110.0
5.0SMDJ30A-Q	5PFKQ	5.0SMDJ30CA-Q	5BFKQ	33.3	36.8	1	30	2	48.4	103.0
5.0SMDJ33A-Q	5PFMQ	5.0SMDJ33CA-Q	5BFMQ	36.7	40.6	1	33	2	53.3	93.9
5.0SMDJ36A-Q	5PFPQ	5.0SMDJ36CA-Q	5BFPQ	40.0	44.2	1	36	2	58.1	86.1
5.0SMDJ40A-Q	5PFRQ	5.0SMDJ40CA-Q	5BFRQ	44.4	49.1	1	40	2	64.5	77.6
5.0SMDJ43A-Q	5PFTQ	5.0SMDJ43CA-Q	5BFTQ	47.8	52.8	1	43	2	69.4	72.1

Notes:

1. 'Q' suffix denotes AEC-Q101 compliance.

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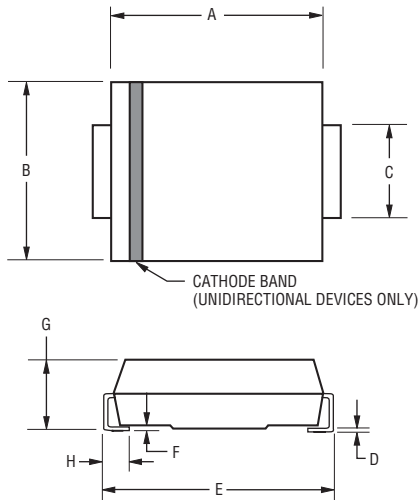
Users should verify actual device performance in their specific applications.

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# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series



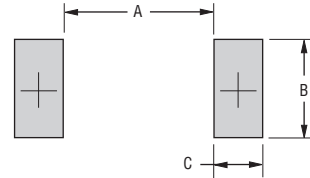
## Product Dimensions



Dimension	SMC (DO-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.90 - 3.20}{(0.114 - 0.126)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.112)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.05 - 0.20}{(0.002 - 0.008)}$
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Recommended Footprint



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

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Physical Specifications

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

## Environmental Specifications

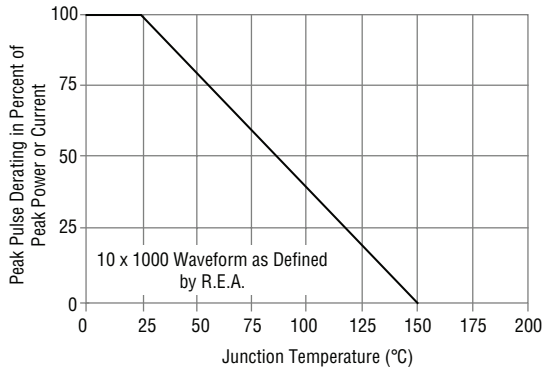
Moisture Sensitivity Level.....1  
 ESD Classification (HBM)..... 3B

# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series

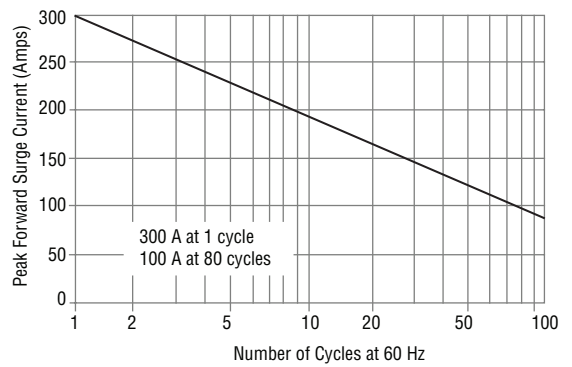


## Rating & Characteristic Curves

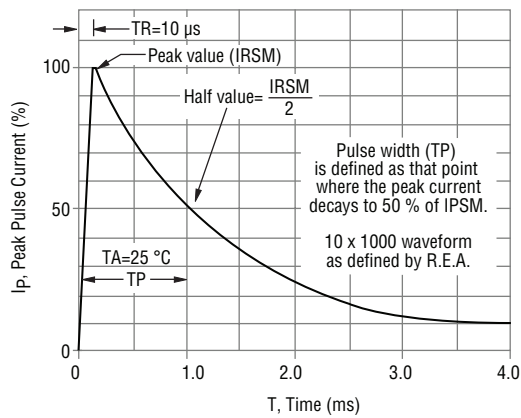
### Pulse Derating Curve



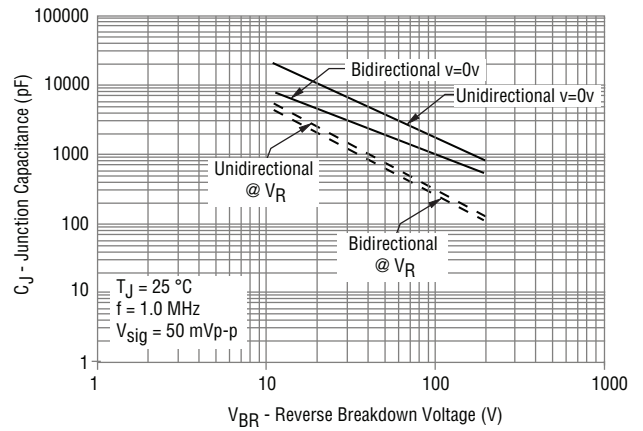
### Maximum Non-Repetitive Surge Current



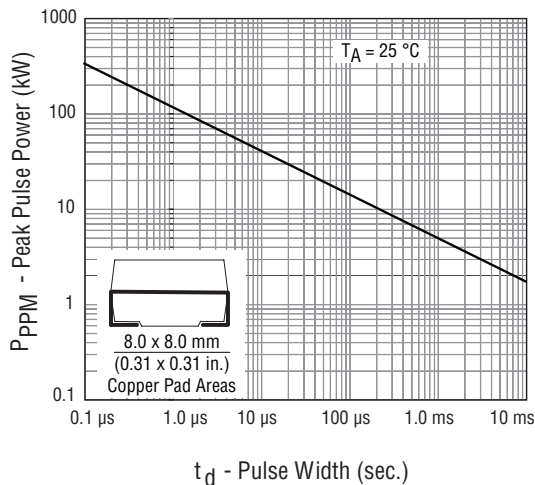
### Pulse Waveform



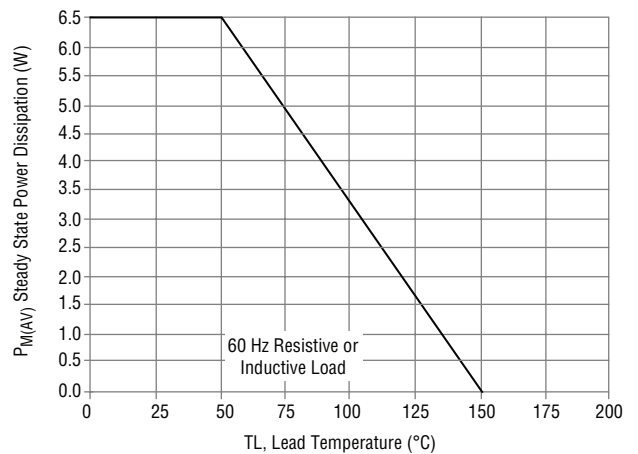
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



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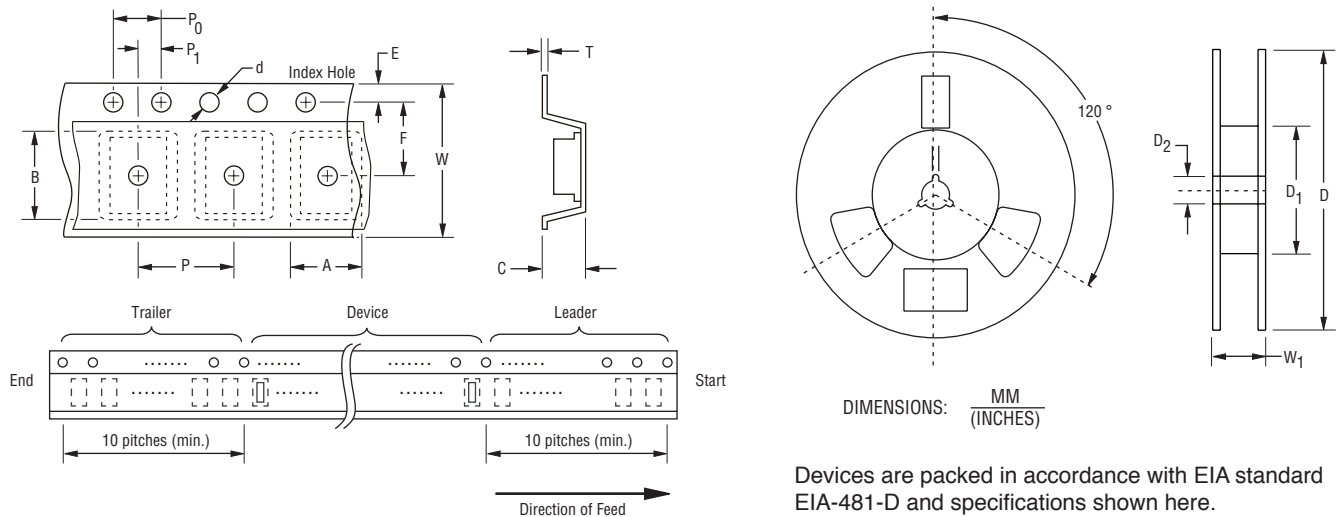
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# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series

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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 EIA-481-D and specifications shown here.

Item	Symbol	SMC (DO-214AB)	
		7-Inch Reel	13-Inch Reel
Carrier Width	A	$6.0 \pm 0.20$ (0.236 ± 0.079)	
Carrier Length	B	$8.3 \pm 0.20$ (0.327 ± 0.008)	
Carrier Depth	C	$2.5 \pm 0.20$ (0.098 ± 0.008)	
Sprocket Hole	d	$1.50 \pm 0.10$ (0.059 ± 0.004)	
Reel Outside Diameter	D	$\frac{178}{(7.008)}$	$\frac{330}{(12.992)}$
Reel Inner Diameter	D <sub>1</sub>	$\frac{50.0}{(1.969)}$ MIN.	
Feed Hole Diameter	D <sub>2</sub>	$\frac{13.0 + 0.50/-0.20}{(0.512 + 0.020/-0.008)}$	
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	
Punch Hole Position	F	$\frac{7.50 \pm 0.10}{(0.295 \pm 0.004)}$	
Punch Hole Pitch	P	$\frac{8.00 \pm 0.10}{(0.315 \pm 0.004)}$	
Sprocket Hole Pitch	P <sub>0</sub>	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$	
Overall Tape Thickness	T	$0.30 \pm 0.10$ (0.012 ± 0.004)	
Tape Width	W	$\frac{16.00 \pm 0.30}{(0.630 \pm 0.012)}$	
Reel Width	W <sub>1</sub>	$\frac{22.4}{(0.882)}$ MAX.	
Quantity per Reel	--	500	3,000

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