

Features

- Surface Mount SMC package
- Standoff Voltage: 12 to 58 volts
- Power Dissipation: 1500 watts
- RoHS compliant*
- AEC-Q101 compliant**

Applications

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

SMCJ-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 58 V. Typical fast response times are less than 1.0 picosecond from 0 V to Breakdown Voltage.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle with standard pick and place equipment and their 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}	1500	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	200	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. Mounted on 5.0 mm² (0.03 mm thick) copper pads to each terminal.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

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Asia-Pacific:

Tel: +886-2 2562-4117 • Email: asiacus@bourns.com

Europe:

Tel: +36 88 885 877 • Email: eurocus@bourns.com

The Americas:

Tel: +1-951 781-5500 • Email: americus@bourns.com

www.bourns.com



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

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

**"Q" part number suffix indicates AEC-Q101 compliance.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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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)
SMCJ12A-Q	GEEQ	SMCJ12CA-Q	BEEQ	13.3	14.7	1	12	1	19.9	75.4	25.9	377.0
SMCJ13A-Q	GEGQ	SMCJ13CA-Q	BEGQ	14.4	15.9	1	13	1	21.5	69.8	28.0	349.0
SMCJ14A-Q	GEKQ	SMCJ14CA-Q	BEKQ	15.6	17.2	1	14	1	23.2	64.7	30.2	323.5
SMCJ15A-Q	GEMQ	SMCJ15CA-Q	BEMQ	16.7	18.5	1	15	1	24.4	61.5	31.7	307.5
SMCJ16A-Q	GEPQ	SMCJ16CA-Q	BEPQ	17.8	19.7	1	16	1	26	57.7	33.8	288.5
SMCJ17A-Q	GERQ	SMCJ17CA-Q	BERQ	18.9	20.9	1	17	1	27.6	54.4	35.9	272.0
SMCJ18A-Q	GETQ	SMCJ18CA-Q	BETQ	20.0	22.1	1	18	1	29.2	51.4	38.0	257.0
SMCJ20A-Q	GEVQ	SMCJ20CA-Q	BEVQ	22.2	24.5	1	20	1	32.4	46.3	42.1	231.5
SMCJ22A-Q	GEXQ	SMCJ22CA-Q	BEXQ	24.4	26.9	1	22	1	35.5	42.3	46.2	211.5
SMCJ24A-Q	GEZQ	SMCJ24CA-Q	BEZQ	26.7	29.5	1	24	1	38.9	38.6	50.6	193.0
SMCJ26A-Q	GFEQ	SMCJ26CA-Q	BFEQ	28.9	31.9	1	26	1	42.1	35.7	54.7	178.5
SMCJ28A-Q	GFGQ	SMCJ28CA-Q	BFGQ	31.1	34.4	1	28	1	45.4	33.1	59.0	165.5
SMCJ30A-Q	GFKQ	SMCJ30CA-Q	BFKQ	33.3	36.8	1	30	1	48.4	31	63	155
SMCJ33A-Q	GFMQ	SMCJ33CA-Q	BFMQ	36.7	40.6	1	33	1	53.3	28.1	69.3	141.0
SMCJ36A-Q	GFPQ	SMCJ36CA-Q	BFPQ	40	44.2	1	36	1	58.1	25.9	75.5	129.5
SMCJ40A-Q	GFRQ	SMCJ40CA-Q	BFRQ	44.4	49.1	1	40	1	64.5	23.3	83.9	116.5
SMCJ43A-Q	GFTQ	SMCJ43CA-Q	BFTQ	47.8	52.8	1	43	1	69.4	21.7	90.2	108.5
SMCJ45A-Q	GFVQ	SMCJ45CA-Q	BFVQ	50	55.3	1	45	1	72.7	20.6	94.5	103.0
SMCJ48A-Q	GFXQ	SMCJ48CA-Q	BFXQ	53.3	58.9	1	48	1	77.4	19.4	100.6	97.0
SMCJ51A-Q	GFZQ	SMCJ51CA-Q	BFZQ	56.7	62.7	1	51	1	82.4	18.2	107.1	91.0
SMCJ54A-Q	GGEQ	SMCJ54CA-Q	BGEQ	60	66.3	1	54	1	87.1	17.3	113.2	86.5
SMCJ58A-Q	GGGQ	SMCJ58CA-Q	BGGQ	64.4	71.2	1	58	1	93.6	16.1	121.7	80.5

Notes:

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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

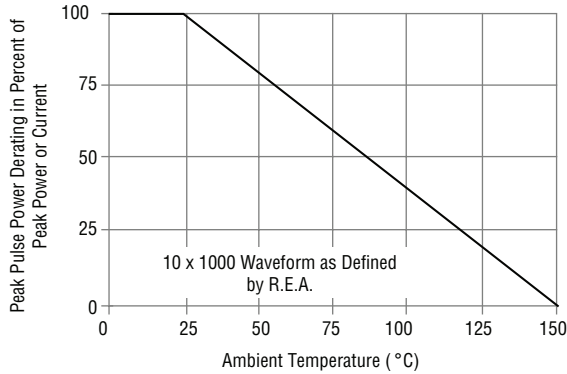
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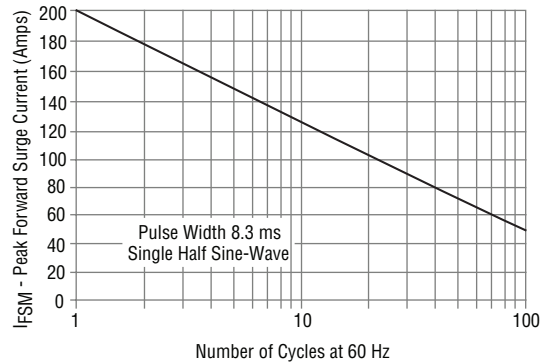
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Performance Graphs

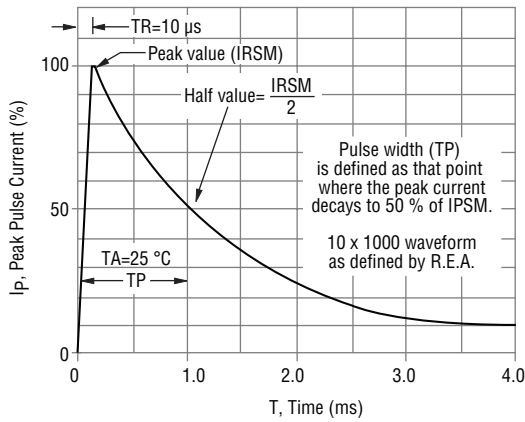
Peak Pulse Power Derating Curve



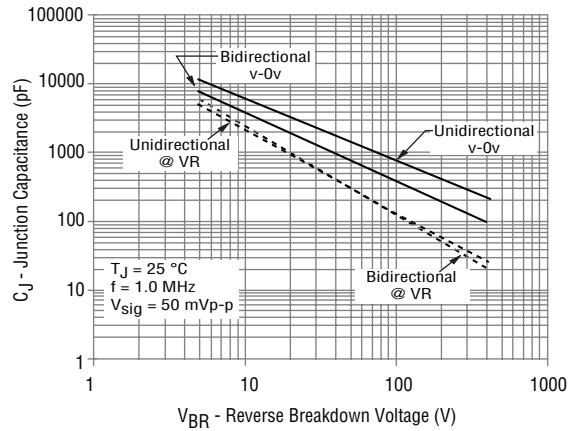
Maximum Non-Repetitive Surge Current



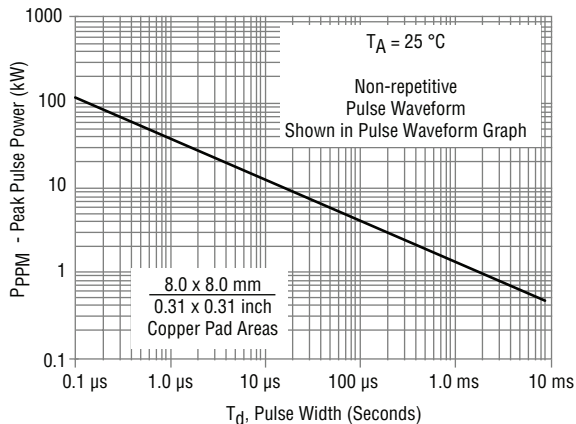
Pulse Waveform



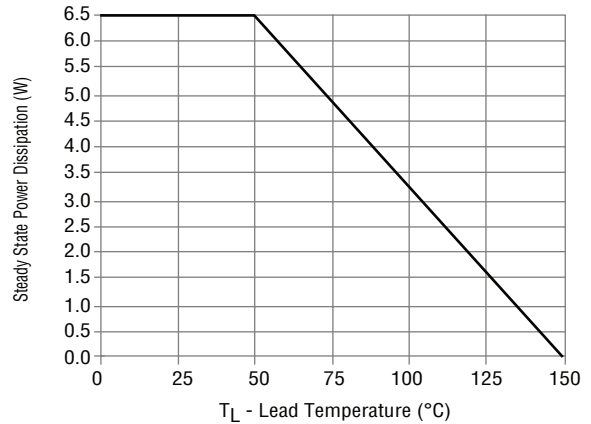
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



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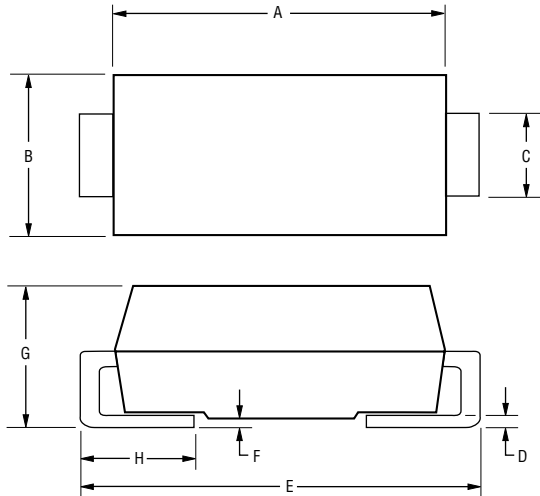
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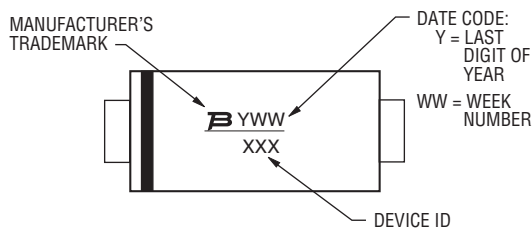
Product Dimensions



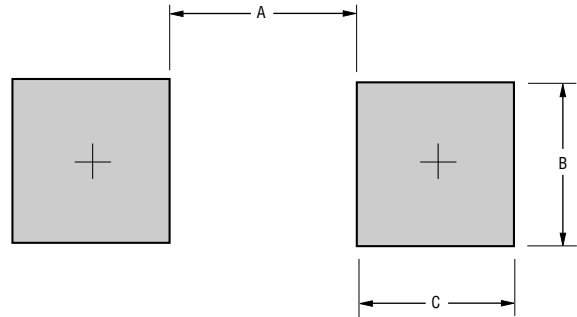
Dimension	SMC (DO-214AB)
A	$\frac{6.60 - 7.11}{(0.260 - 0.280)}$
B	$\frac{5.59 - 6.22}{(0.220 - 0.245)}$
C	$\frac{2.90 - 3.20}{(0.115 - 0.125)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.012)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.203}{(0.008)}$ MAX.
G	$\frac{2.00 - 2.62}{(0.079 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

Typical Part Marking



Recommended Footprint



Dimension	SMC (DO-214AB)
A (Max.)	$\frac{4.69}{(0.185)}$
B (Min.)	$\frac{3.07}{(0.121)}$
C (Min.)	$\frac{1.52}{(0.060)}$

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

Physical Specifications

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

How to Order

Package SMCJ 12 CA - Q
 SMCJ-Q = SMC/DO-214AB
 Working Peak Reverse Voltage 2 = 12 V_{RWM} (Volts)
 Suffix A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device
 AEC-Q101 Suffix Q = AEC-Q101 Compliant, 13-inch Reel
QH = AEC-Q101 Compliant, 7-inch Reel

Environmental Specifications

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

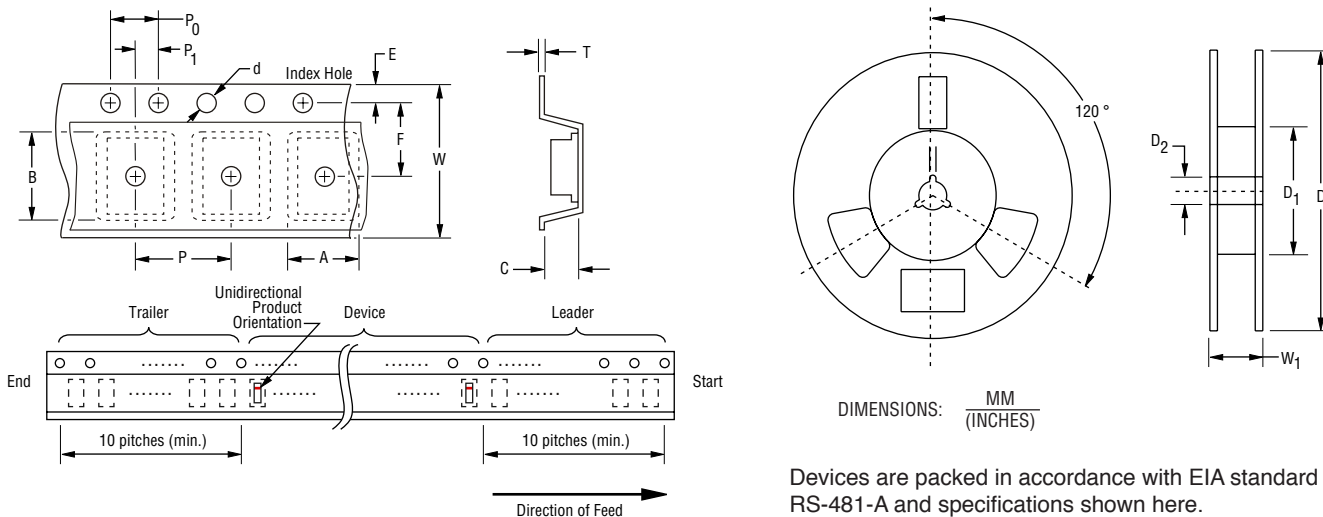
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Packaging Information

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	SMC (DO-214AB)	
		7-Inch Reel	13-Inch Reel
Carrier Width	A	$\frac{6.0 \pm 2.0}{(0.236 - 0.079)}$	
Carrier Length	B	$\frac{8.3 \pm 0.20}{(0.327 \pm 0.008)}$	
Carrier Depth	C	$\frac{2.5 \pm 0.20}{(0.098 \pm 0.008)}$	
Sprocket Hole	d	$\frac{1.50 \pm 0.10}{(0.059 \pm 0.004)}$	
Reel Outside Diameter	D	$\frac{178}{(7.008)}$	$\frac{330}{(12.992)}$
Reel Inner Diameter	D ₁	$\frac{50.0}{(1.969)}$ MIN.	
Feed Hole Diameter	D ₂	$\frac{13.0 + 0.50/-0.20}{(0.512 + 0.020/-0.008)}$	
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 ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	
Embossment Center	P ₁	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$	
Overall Tape Thickness	T	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$	
Tape Width	W	$\frac{16.00 \pm 0.30}{(0.630 \pm 0.012)}$	
Reel Width	W ₁	$\frac{22.4}{(0.882)}$ MAX.	
Quantity per Reel	--	500	3000

REV. 03/20

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