



## Features

- Surface Mount SMC package
- Standoff Voltage: 12 to 58 volts
- Power Dissipation: 3000 watts
- RoHS compliant\*
- AEC-Q101 compliant\*\*
- Typical temperature coefficient:  $\Delta V_{BR} = 0.1\% \times V_{BR} @ 25^\circ C \times \Delta T$

## Applications

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

## SMLJ-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 the flat configuration minimizes roll away.

### Additional Information

Click these links for more information:



### Agency Recognition

Description	
UL	File Number: <a href="#">E153537</a>

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

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation ( $T_P = 1$ ms) (Note 1,2)	$P_{PK}$	3000	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	$I_{FSM}$	300	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  $T_A = 25^\circ C$  per Pulse Derating Curve.
2. Mounted on 5.0 mm<sup>2</sup> (0.03 mm thick) copper pads to each terminal.
3. 8.3 ms Single Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

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

\*\*"Q" part number suffix for automotive and other applications requiring appropriate AEC-Q101 compliance.

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# SMLJ-Q Transient Voltage Suppressor Diode Series

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

Unidirectional De-vice		Bidirectional Device		Breakdown Voltage $V_{BR}$ (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{RWM}$	Maximum Clamping Voltage @ $I_{pp}$ (10/1000 $\mu\text{s}$ )	Maximum Peak Pulse Current (10/1000 $\mu\text{s}$ )	Maximum Clamping Voltage @ $I_{pp}$ (8/20 $\mu\text{s}$ )	Maximum Peak Pulse Current (8/20 $\mu\text{s}$ )
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ $I_T$ (mA)	$V_{RWM}$ (Volts)	$I_R$ ( $\mu\text{A}$ )	$V_c$ (V)	$I_{pp}$ (A)	$V_c$ (V)	$I_{pp}$ (A)
SMLJ12A-Q	HEEQ	SMLJ12CA-Q	IEEQ	13.3	14.7	1	12	2	19.9	150.60	25.90	754.00
SMLJ13A-Q	HEGQ	SMLJ13CA-Q	IEGQ	14.4	15.9	1	13	2	21.5	139.40	28.00	697.50
SMLJ14A-Q	HEKQ	SMLJ14CA-Q	IEKQ	15.6	17.2	1	14	2	23.2	129.40	30.20	646.50
SMLJ15A-Q	HEMQ	SMLJ15CA-Q	IEMQ	16.7	18.5	1	15	2	24.4	123.00	31.70	615.00
SMLJ16A-Q	HEPQ	SMLJ16CA-Q	IEPQ	17.8	19.7	1	16	2	26.0	115.40	33.80	577.00
SMLJ17A-Q	HERQ	SMLJ17CA-Q	IERQ	18.9	20.9	1	17	2	27.6	106.60	35.90	543.50
SMLJ18A-Q	HETQ	SMLJ18CA-Q	IETQ	20.0	22.1	1	18	2	29.2	102.80	38.00	513.50
SMLJ20A-Q	HEVQ	SMLJ20CA-Q	IEVQ	22.2	24.5	1	20	2	32.4	92.60	42.10	463.00
SMLJ22A-Q	HEXQ	SMLJ22CA-Q	IEXQ	24.4	26.9	1	22	2	35.5	84.40	46.20	422.50
SMLJ24A-Q	HEZQ	SMLJ24CA-Q	IEZQ	26.7	29.5	1	24	2	38.9	77.20	50.60	385.50
SMLJ26A-Q	HFEQ	SMLJ26CA-Q	IFEQ	28.9	31.9	1	26	2	42.1	71.20	54.70	356.50
SMLJ28A-Q	HFGQ	SMLJ28CA-Q	IFGQ	31.1	34.4	1	28	2	45.4	66.00	59.00	330.50
SMLJ30A-Q	HKFQ	SMLJ30CA-Q	IFKQ	33.3	36.8	1	30	2	48.4	62.00	62.90	310.00
SMLJ33A-Q	HFMQ	SMLJ33CA-Q	IFMQ	36.7	40.6	1	33	2	53.3	56.20	69.30	281.50
SMLJ36A-Q	HFPQ	SMLJ36CA-Q	IFPQ	40.0	44.2	1	36	2	58.1	51.60	75.50	258.00
SMLJ40A-Q	HFRQ	SMLJ40CA-Q	IFRQ	44.4	49.1	1	40	2	64.5	46.40	83.90	232.50
SMLJ43A-Q	HFTQ	SMLJ43CA-Q	IFTQ	47.8	52.8	1	43	2	69.4	43.20	90.20	216.00
SMLJ45A-Q	HFVQ	SMLJ45CA-Q	IFVQ	50.0	55.3	1	45	2	72.7	41.20	94.50	206.50
SMLJ48A-Q	HFXQ	SMLJ48CA-Q	IFXQ	53.3	58.9	1	48	2	77.4	38.80	100.60	194.00
SMLJ51A-Q	HFZQ	SMLJ51CA-Q	IFZQ	56.7	62.7	1	51	2	82.4	36.40	107.10	182.00
SMLJ54A-Q	HGEQ	SMLJ54CA-Q	IGEQ	60.0	66.3	1	54	2	87.1	34.40	113.20	172.00
SMLJ58A-Q	HGGQ	SMLJ58CA-Q	IGGQ	64.4	71.2	1	58	2	93.6	32.00	121.70	160.50

### Notes:

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

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Users should verify actual device performance in their specific applications.

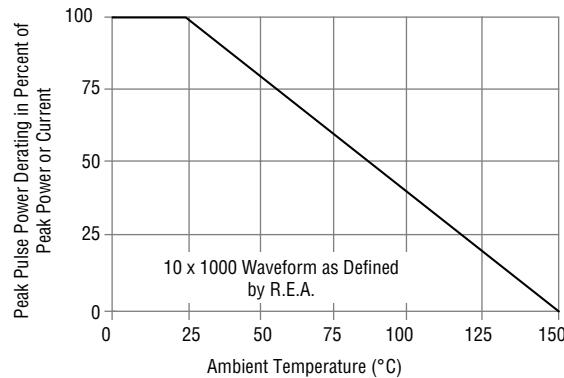
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# SMLJ-Q Transient Voltage Suppressor Diode Series

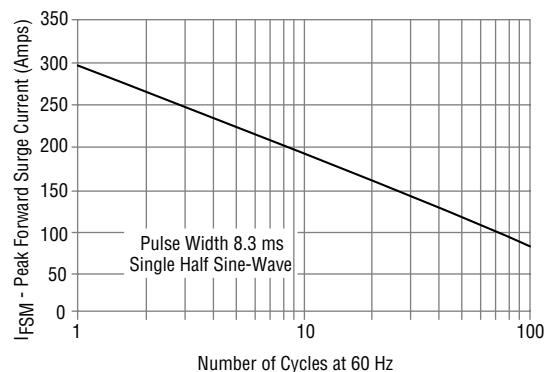
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## Performance Graphs

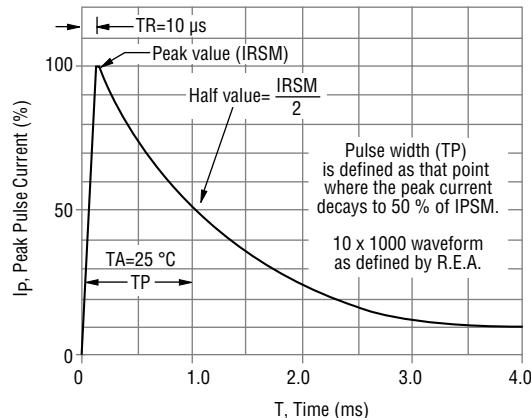
### Peak Pulse Power Derating Curve



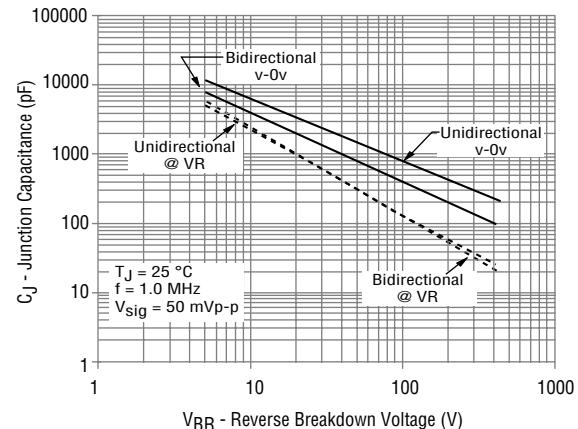
### Maximum Non-Repetitive Surge Current



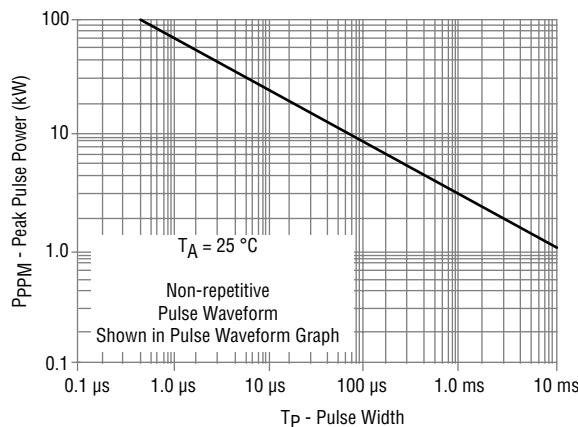
## Pulse Waveform



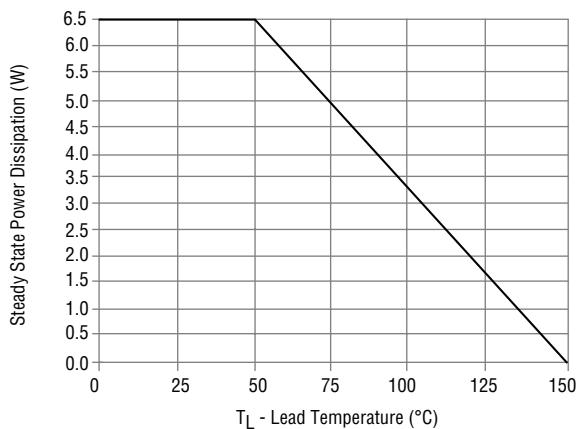
## Typical Junction Capacitance



## Pulse Rating Curve



## Steady State Power Derating Curve



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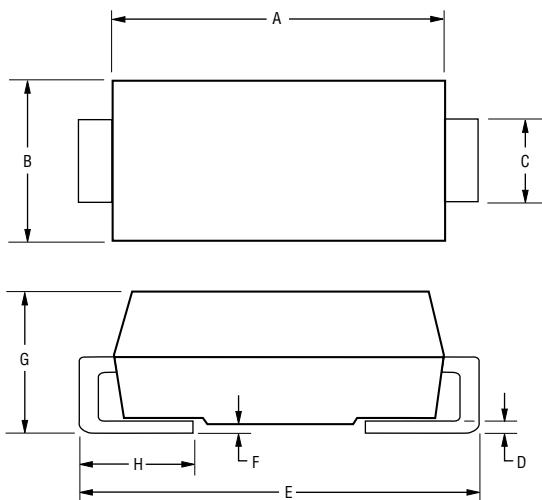
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# SMLJ-Q Transient Voltage Suppressor Diode Series

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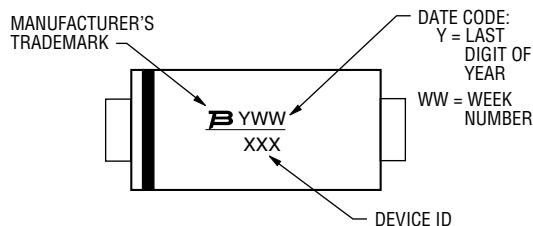
## Product Dimensions



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	0.203 MAX. (0.008)
G	2.00 - 2.62 (0.079 - 0.103)
H	0.76 - 1.52 (0.030 - 0.060)

DIMENSIONS: MM  
(INCHES)

## Typical Part Marking

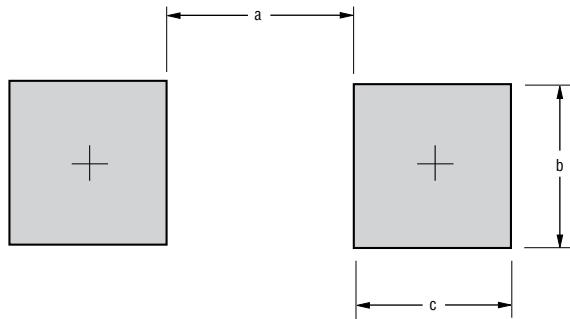


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## Recommended Footprint



Dimension	SMC (DO-214AB)
a (Max.)	<u>4.69</u> (0.185)
b (Min.)	<u>3.07</u> (0.121)
c (Min.)	<u>1.52</u> (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

## How to Order

SMLJ 12 CA - Q

Package \_\_\_\_\_

SMJL = 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 Suffix \_\_\_\_\_

Q = AEC-Q101 Compliant, 13-inch Reel  
QH = AEC-Q101 Compliant, 7-inch Reel

## Environmental Specifications

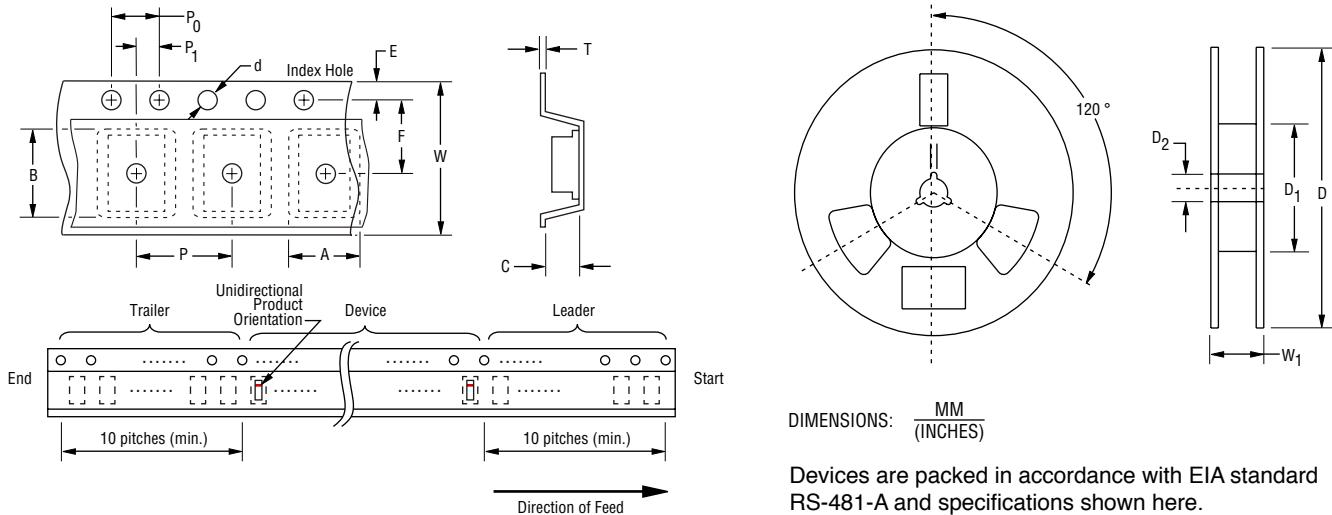
Moisture Sensitivity Level ..... 1  
ESD Classification (HBM) ..... 3B

# SMLJ-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).



Item	Symbol	SMC (DO-214AB)	
		7-Inch Reel	13-Inch Reel
Carrier Width	A	$6.0 \pm 2.0$ (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	$1.75 \pm 0.10$ (0.069 ± 0.004)	
Punch Hole Position	F	$7.50 \pm 0.10$ (0.295 ± 0.004)	
Punch Hole Pitch	P	$8.00 \pm 0.10$ (0.315 ± 0.004)	
Sprocket Hole Pitch	P <sub>0</sub>	$4.00 \pm 0.10$ (0.157 ± 0.004)	
Embossment Center	P <sub>1</sub>	$2.00 \pm 0.10$ (0.079 ± 0.004)	
Overall Tape Thickness	T	$0.30 \pm 0.10$ (0.012 ± 0.004)	
Tape Width	W	$16.00 \pm 0.30$ (0.630 ± 0.012)	
Reel Width	W <sub>1</sub>	$22.4$ (0.882) MAX.	
Quantity per Reel	--	500	3000

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