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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



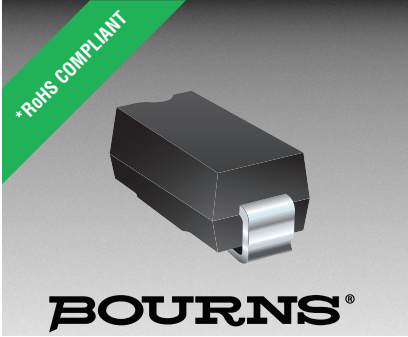
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## Features

- Surface Mount SMC package
- Standoff Voltage: 12 to 58 volts
- Power Dissipation: 3000 watts
- RoHS compliant\*
- 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

# 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.

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

| Parameter  | Symbol    | Value       | Unit             |
|--|-----------|-------------|------------------|
| Minimum Peak Pulse Power Dissipation ( $T_P = 1\text{ ms}$ ) (Note 1,2)  | $P_{PK}$  | 3000        | Watts            |
| Peak Forward Surge Current<br>8.3 ms Single Half Sine Wave Superimposed on Rated Load<br>(JEDEC Method) (Note 3) | $I_{FSM}$ | 300         | Amps             |
| Operating Temperature Range  | $T_J$     | -55 to +150 | $^\circ\text{C}$ |
| Storage Temperature Range  | $T_{STG}$ | -55 to +150 | $^\circ\text{C}$ |

1. Non-repetitive current pulse, per Pulse Waveform graph and derated above  $T_A = 25\text{ }^\circ\text{C}$  per Pulse Derating Curve.
2. Mounted on  $5.0\text{ mm}^2$  (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).

# BOURNS®

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\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

# SMLJ-Q Transient Voltage Suppressor Diode Series

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

| Unidirectional Device |              | Bidirectional Device |              | Breakdown Voltage V <sub>BR</sub> (Volts) |      |                       | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V <sub>RWM</sub> | Maximum Reverse Voltage @ I <sub>RSM</sub> | Maximum Reverse Surge Current |
|-----------------------|--------------|----------------------|--------------|---|------|-----------------------|------------------------------|--|--|-------------------------------|
| Part Number           | Part Marking | Part Number          | Part Marking | Min.                                      | Max. | @ I <sub>T</sub> (mA) | V <sub>RWM</sub> (Volts)     | I <sub>R</sub> (μA)                        | V <sub>RSM</sub> (Volts)                   | I <sub>RSM</sub> (Amps)       |
| SMLJ12A-Q             | HEEQ         | SMLJ12CA-Q           | IEEQ         | 13.3                                      | 14.7 | 1                     | 12                           | 2  | 19.9                                       | 150.60                        |
| SMLJ13A-Q             | HEGQ         | SMLJ13CA-Q           | IEGQ         | 14.4                                      | 15.9 | 1                     | 13                           | 2  | 21.5                                       | 139.40                        |
| SMLJ14A-Q             | HEKQ         | SMLJ14CA-Q           | IEKQ         | 15.6                                      | 17.2 | 1                     | 14                           | 2  | 23.2                                       | 129.40                        |
| SMLJ15A-Q             | HEMQ         | SMLJ15CA-Q           | IEMQ         | 16.7                                      | 18.5 | 1                     | 15                           | 2  | 24.4                                       | 123.00                        |
| SMLJ16A-Q             | HEPQ         | SMLJ16CA-Q           | IEPQ         | 17.8                                      | 19.7 | 1                     | 16                           | 2  | 26.0                                       | 115.40                        |
| SMLJ17A-Q             | HERQ         | SMLJ17CA-Q           | IERQ         | 18.9                                      | 20.9 | 1                     | 17                           | 2  | 27.6                                       | 106.60                        |
| SMLJ18A-Q             | HETQ         | SMLJ18CA-Q           | IETQ         | 20.0                                      | 22.1 | 1                     | 18                           | 2  | 29.2                                       | 102.80                        |
| SMLJ20A-Q             | HEVQ         | SMLJ20CA-Q           | IEVQ         | 22.2                                      | 24.5 | 1                     | 20                           | 2  | 32.4                                       | 92.60                         |
| SMLJ22A-Q             | HEXQ         | SMLJ22CA-Q           | IEXQ         | 24.4                                      | 26.9 | 1                     | 22                           | 2  | 35.5                                       | 84.40                         |
| SMLJ24A-Q             | HEZQ         | SMLJ24CA-Q           | IEZQ         | 26.7                                      | 29.5 | 1                     | 24                           | 2  | 38.9                                       | 77.20                         |
| SMLJ26A-Q             | HFEQ         | SMLJ26CA-Q           | IFEQ         | 28.9                                      | 31.9 | 1                     | 26                           | 2  | 42.1                                       | 71.20                         |
| SMLJ28A-Q             | HFGQ         | SMLJ28CA-Q           | IFGQ         | 31.1                                      | 34.4 | 1                     | 28                           | 2  | 45.4                                       | 66.00                         |
| SMLJ30A-Q             | HFQK         | SMLJ30CA-Q           | IFKQ         | 33.3                                      | 36.8 | 1                     | 30                           | 2  | 48.4                                       | 62.00                         |
| SMLJ33A-Q             | HFMQ         | SMLJ33CA-Q           | IFMQ         | 36.7                                      | 40.6 | 1                     | 33                           | 2  | 53.3                                       | 56.20                         |
| SMLJ36A-Q             | HFPQ         | SMLJ36CA-Q           | IFPQ         | 40.0                                      | 44.2 | 1                     | 36                           | 2  | 58.1                                       | 51.60                         |
| SMLJ40A-Q             | HFRQ         | SMLJ40CA-Q           | IFRQ         | 44.4                                      | 49.1 | 1                     | 40                           | 2  | 64.5                                       | 46.40                         |
| SMLJ43A-Q             | HFTQ         | SMLJ43CA-Q           | IFTQ         | 47.8                                      | 52.8 | 1                     | 43                           | 2  | 69.4                                       | 43.20                         |
| SMLJ45A-Q             | HFVQ         | SMLJ45CA-Q           | IFVQ         | 50.0                                      | 55.3 | 1                     | 45                           | 2  | 72.7                                       | 41.20                         |
| SMLJ48A-Q             | HFXQ         | SMLJ48CA-Q           | IFXQ         | 53.3                                      | 58.9 | 1                     | 48                           | 2  | 77.4                                       | 38.80                         |
| SMLJ51A-Q             | HFZQ         | SMLJ51CA-Q           | IFZQ         | 56.7                                      | 62.7 | 1                     | 51                           | 2  | 82.4                                       | 36.40                         |
| SMLJ54A-Q             | HGEQ         | SMLJ54CA-Q           | IGEQ         | 60.0                                      | 66.3 | 1                     | 54                           | 2  | 87.1                                       | 34.40                         |
| SMLJ58A-Q             | HGGQ         | SMLJ58CA-Q           | IGGQ         | 64.4                                      | 71.2 | 1                     | 58                           | 2  | 93.6                                       | 32.00                         |

**Notes:**

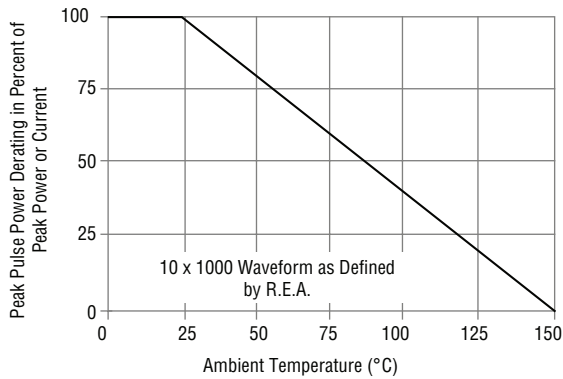
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.

# SMLJ-Q Transient Voltage Suppressor Diode Series

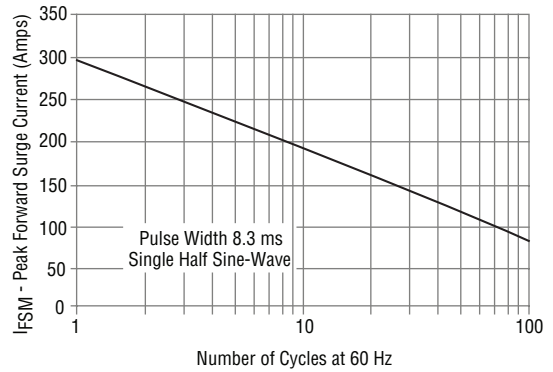
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## Performance Graphs

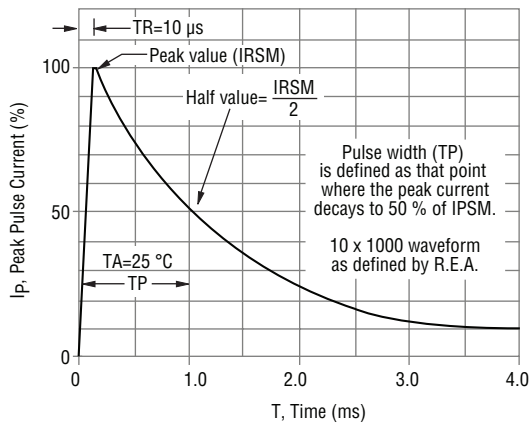
### Peak Pulse Power Derating Curve



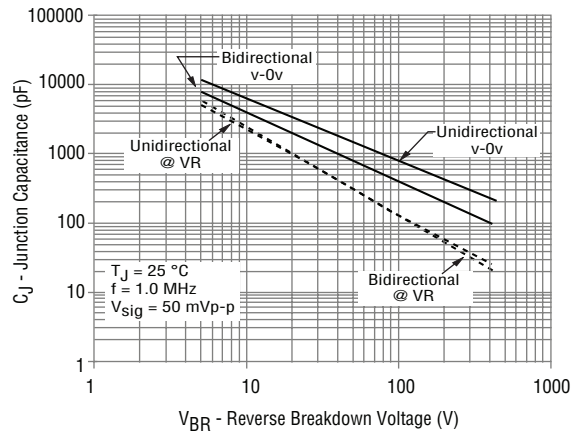
### Maximum Non-Repetitive Surge Current



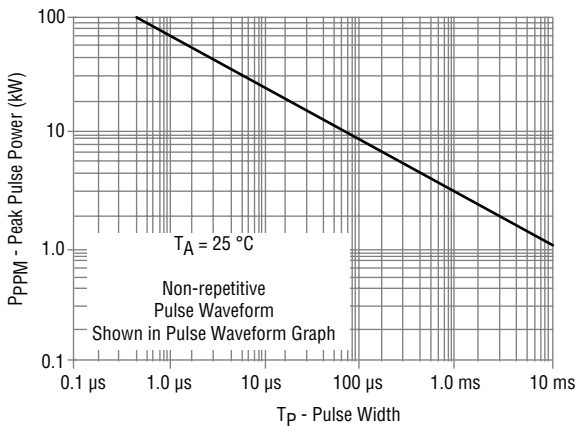
### Pulse Waveform



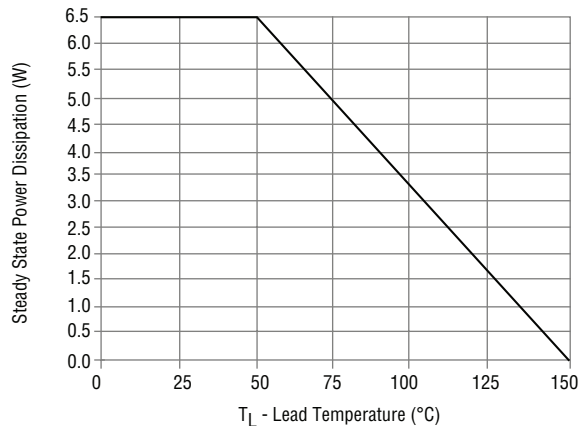
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



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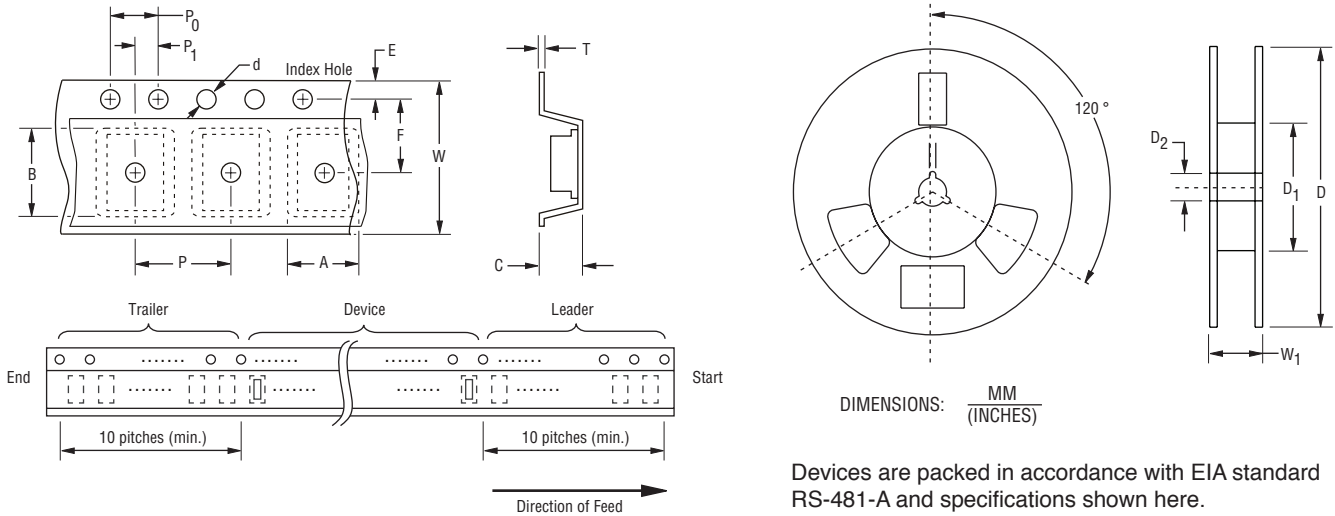


# SMLJ-Q Transient Voltage Suppressor Diode Series

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## Packaging Information

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



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              | $6.0 \pm 2.0$<br>(0.236 - 0.079)                   |                        |
| Carrier Length         | B              | $8.3 \pm 0.20$<br>(0.327 ± 0.008)                  |                        |
| Carrier Depth          | C              | $2.5 \pm 0.20$<br>(0.098 ± 0.008)                  |                        |
| Sprocket Hole          | d              | $1.50 \pm 0.10$<br>(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              | $1.75 \pm 0.10$<br>(0.069 ± 0.004)                 |                        |
| Punch Hole Position    | F              | $7.50 \pm 0.10$<br>(0.295 ± 0.004)                 |                        |
| Punch Hole Pitch       | P              | $8.00 \pm 0.10$<br>(0.315 ± 0.004)                 |                        |
| Sprocket Hole Pitch    | P <sub>0</sub> | $4.00 \pm 0.10$<br>(0.157 ± 0.004)                 |                        |
| Embossment Center      | P <sub>1</sub> | $2.00 \pm 0.10$<br>(0.079 ± 0.004)                 |                        |
| Overall Tape Thickness | T              | $0.30 \pm 0.10$<br>(0.012 ± 0.004)                 |                        |
| Tape Width             | W              | $16.00 \pm 0.30$<br>(0.630 ± 0.012)                |                        |
| Reel Width             | W <sub>1</sub> | $\frac{22.4}{(0.882)}$ MAX.                        |                        |
| Quantity per Reel      | --             | 500  | 3000                   |

REV. 02/18

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