



# THE DATASHEET OF SMA6J36CA





## Features

- Surface Mount SMA package
- Standoff Voltage: 5 to 130 volts
- Power Dissipation: 600 watts
- RoHS compliant\*
- AEC-Q101 compliant\*\*

## Applications

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

# SMA6J-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-214AC (SMA) size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 5 V up to 130 V. Typical fast response times are less than 1.0 picosecond from 0 V to Breakdown Voltage.

Bourns® Chip Diodes 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:



### 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>  | 600         | Watts |
| Peak Forward Surge Current<br>8.3 ms Single Half Sine Wave Superimposed on Rated Load<br>(JEDEC Method) (Note 3) | I <sub>FSM</sub> | 40          | Amps  |
| 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. Mounted on 5.0 mm<sup>2</sup> (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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\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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

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# SMA6J-Q Transient Voltage Suppressor Diode Series

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

| 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 No.              | Marking | Part No.             | Marking | Min.                                      | Max.  | @ I <sub>T</sub> (mA) | V <sub>RWM</sub> (V)         | I <sub>R</sub> (μA)                        | V <sub>RSM</sub> (V)                       | I <sub>RSM</sub> (A)          |
| SMA6J5.0A-Q           | 6HEQ    | SMA6J5.0CA-Q         | 6TEQ    | 6.40                                      | 7.00  | 10                    | 5.0                          | 800  | 9.2  | 65.3                          |
| SMA6J6.0A-Q           | 6HGQ    | SMA6J6.0CA-Q         | 6TGQ    | 6.67                                      | 7.37  | 10                    | 6.0                          | 800  | 10.3                                       | 58.3                          |
| SMA6J6.5A-Q           | 6HKQ    | SMA6J6.5CA-Q         | 6TKQ    | 7.22                                      | 7.98  | 10                    | 6.5                          | 500  | 11.2                                       | 53.6                          |
| SMA6J7.0A-Q           | 6HMQ    | SMA6J7.0CA-Q         | 6TMQ    | 7.78                                      | 8.60  | 10                    | 7.0                          | 200  | 12.0                                       | 50.0                          |
| SMA6J7.5A-Q           | 6HPQ    | SMA6J7.5CA-Q         | 6TPQ    | 8.33                                      | 9.21  | 1.0                   | 7.5                          | 100  | 12.9                                       | 46.6                          |
| SMA6J8.0A-Q           | 6HRQ    | SMA6J8.0CA-Q         | 6TRQ    | 8.89                                      | 9.83  | 1.0                   | 8.0                          | 50   | 13.6                                       | 44.2                          |
| SMA6J8.5A-Q           | 6HTQ    | SMA6J8.5CA-Q         | 6TTQ    | 9.44                                      | 10.4  | 1.0                   | 8.5                          | 20   | 14.4                                       | 41.7                          |
| SMA6J9.0A-Q           | 6HVQ    | SMA6J9.0CA-Q         | 6TVQ    | 10.0                                      | 11.1  | 1.0                   | 9.0                          | 10   | 15.4                                       | 39.0                          |
| SMA6J10A-Q            | 6HXQ    | SMA6J10CA-Q          | 6TXQ    | 11.1                                      | 12.3  | 1.0                   | 10                           | 5  | 17.0                                       | 35.3                          |
| SMA6J11A-Q            | 6HZQ    | SMA6J11CA-Q          | 6TZQ    | 12.2                                      | 13.5  | 1.0                   | 11                           | 1.0  | 18.2                                       | 33.0                          |
| SMA6J12A-Q            | 6IEQ    | SMA6J12CA-Q          | 6UEQ    | 13.3                                      | 14.7  | 1.0                   | 12                           | 1.0  | 19.9                                       | 30.2                          |
| SMA6J13A-Q            | 6IGQ    | SMA6J13CA-Q          | 6UGQ    | 14.4                                      | 15.9  | 1.0                   | 13                           | 1.0  | 21.5                                       | 28.0                          |
| SMA6J14A-Q            | 6IKQ    | SMA6J14CA-Q          | 6UKQ    | 15.6                                      | 17.2  | 1.0                   | 14                           | 1.0  | 23.2                                       | 25.9                          |
| SMA6J15A-Q            | 6IMQ    | SMA6J15CA-Q          | 6UMQ    | 16.7                                      | 18.5  | 1.0                   | 15                           | 1.0  | 24.4                                       | 24.6                          |
| SMA6J16A-Q            | 6IPQ    | SMA6J16CA-Q          | 6UPQ    | 17.8                                      | 19.7  | 1.0                   | 16                           | 1.0  | 26.0                                       | 23.1                          |
| SMA6J17A-Q            | 6IRQ    | SMA6J17CA-Q          | 6URQ    | 18.9                                      | 20.9  | 1.0                   | 17                           | 1.0  | 27.6                                       | 21.8                          |
| SMA6J18A-Q            | 6ITQ    | SMA6J18CA-Q          | 6UTQ    | 20.0                                      | 22.1  | 1.0                   | 18                           | 1.0  | 29.2                                       | 20.6                          |
| SMA6J20A-Q            | 6IVQ    | SMA6J20CA-Q          | 6UVQ    | 22.2                                      | 24.5  | 1.0                   | 20                           | 1.0  | 32.4                                       | 18.6                          |
| SMA6J22A-Q            | 6IXQ    | SMA6J22CA-Q          | 6UXQ    | 24.4                                      | 26.9  | 1.0                   | 22                           | 1.0  | 35.5                                       | 16.9                          |
| SMA6J24A-Q            | 6IZQ    | SMA6J24CA-Q          | 6UZQ    | 26.7                                      | 29.5  | 1.0                   | 24                           | 1.0  | 38.9                                       | 15.5                          |
| SMA6J26A-Q            | 6JEQ    | SMA6J26CA-Q          | 6VEQ    | 28.9                                      | 31.9  | 1.0                   | 26                           | 1.0  | 42.1                                       | 14.3                          |
| SMA6J28A-Q            | 6JGQ    | SMA6J28CA-Q          | 6VGQ    | 31.1                                      | 34.4  | 1.0                   | 28                           | 1.0  | 45.4                                       | 13.3                          |
| SMA6J30A-Q            | 6JKQ    | SMA6J30CA-Q          | 6VKQ    | 33.3                                      | 36.8  | 1.0                   | 30                           | 1.0  | 48.4                                       | 12.4                          |
| SMA6J33A-Q            | 6JMQ    | SMA6J33CA-Q          | 6VMQ    | 36.7                                      | 40.6  | 1.0                   | 33                           | 1.0  | 53.3                                       | 11.3                          |
| SMA6J36A-Q            | 6JPQ    | SMA6J36CA-Q          | 6VPQ    | 40.0                                      | 44.2  | 1.0                   | 36                           | 1.0  | 58.1                                       | 10.4                          |
| SMA6J40A-Q            | 6JRQ    | SMA6J40CA-Q          | 6VRQ    | 44.4                                      | 49.1  | 1.0                   | 40                           | 1.0  | 64.5                                       | 9.3                           |
| SMA6J43A-Q            | 6JTB    | SMA6J43CA-Q          | 6VTQ    | 47.8                                      | 52.8  | 1.0                   | 43                           | 1.0  | 69.4                                       | 8.7                           |
| SMA6J45A-Q            | 6JVQ    | SMA6J45CA-Q          | 6VVQ    | 50.0                                      | 55.3  | 1.0                   | 45                           | 1.0  | 72.7                                       | 8.3                           |
| SMA6J48A-Q            | 6JXQ    | SMA6J48CA-Q          | 6VXQ    | 53.3                                      | 58.9  | 1.0                   | 48                           | 1.0  | 77.4                                       | 7.8                           |
| SMA6J51A-Q            | 6JZQ    | SMA6J51CA-Q          | 6VZQ    | 56.7                                      | 62.7  | 1.0                   | 51                           | 1.0  | 82.4                                       | 7.3                           |
| SMA6J54A-Q            | 6KEQ    | SMA6J54CA-Q          | 6WEQ    | 60.0                                      | 66.3  | 1.0                   | 54                           | 1.0  | 87.1                                       | 6.9                           |
| SMA6J58A-Q            | 6KGQ    | SMA6J58CA-Q          | 6WGQ    | 64.4                                      | 71.2  | 1.0                   | 58                           | 1.0  | 93.6                                       | 6.5                           |
| SMA6J60A-Q            | 6KKQ    | SMA6J60CA-Q          | 6WKQ    | 66.7                                      | 73.7  | 1.0                   | 60                           | 1.0  | 96.8                                       | 6.2                           |
| SMA6J64A-Q            | 6KMQ    | SMA6J64CA-Q          | 6WMQ    | 71.1                                      | 78.6  | 1.0                   | 64                           | 1.0  | 103.0                                      | 5.9                           |
| SMA6J70A-Q            | 6KPQ    | SMA6J70CA-Q          | 6WPQ    | 77.8                                      | 86.0  | 1.0                   | 70                           | 1.0  | 113.0                                      | 5.3                           |
| SMA6J75A-Q            | 6KRQ    | SMA6J75CA-Q          | 6WRQ    | 83.3                                      | 92.1  | 1.0                   | 75                           | 1.0  | 121.0                                      | 5.0                           |
| SMA6J78A-Q            | 6KTQ    | SMA6J78CA-Q          | 6WTQ    | 86.7                                      | 95.8  | 1.0                   | 78                           | 1.0  | 126.0                                      | 4.8                           |
| SMA6J85A-Q            | 6KVQ    | SMA6J85CA-Q          | 6WVQ    | 94.4                                      | 104.0 | 1.0                   | 85                           | 1.0  | 137.0                                      | 4.4                           |
| SMA6J90A-Q            | 6KXQ    | SMA6J90CA-Q          | 6WXQ    | 100.0                                     | 111.0 | 1.0                   | 90                           | 1.0  | 146.0                                      | 4.1                           |
| SMA6J100A-Q           | 6KZQ    |                      |         | 111.0                                     | 123.0 | 1.0                   | 100                          | 1.0  | 162.0                                      | 3.7                           |
| SMA6J110A-Q           | 6LEQ    |                      |         | 122.0                                     | 135.0 | 1.0                   | 110                          | 1.0  | 177.0                                      | 3.4                           |
| SMA6J120A-Q           | 6LGQ    |                      |         | 133.0                                     | 147.0 | 1.0                   | 120                          | 1.0  | 193.0                                      | 3.1                           |
| SMA6J130A-Q           | 6LKQ    |                      |         | 144.0                                     | 159.0 | 1.0                   | 130                          | 1.0  | 209.0                                      | 2.9                           |

- Notes:
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
  2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
  3. For bidirectional devices with a V<sub>RWM</sub> of 10 volts or less, the I<sub>R</sub> limit is double.

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# SMA6J-Q Transient Voltage Suppressor Diode Series



## Performance Graphs

### Peak Pulse Power Rating



### Pulse Derating Curve



### Pulse Waveform



### Typical Junction Capacitance



### Steady State Power Derating Curve



### Maximum Non-repetitive Forward Surge Current



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# SMA6J-Q Transient Voltage Suppressor Diode Series



## Product Dimensions



| Dimension | SMA (DO-214AC)                        |
|-----------|---------------------------------------|
| A         | $\frac{3.99 - 4.50}{(0.157 - 0.177)}$ |
| B         | $\frac{2.54 - 2.79}{(0.100 - 0.110)}$ |
| C         | $\frac{1.25 - 1.65}{(0.049 - 0.065)}$ |
| D         | $\frac{0.15 - 0.31}{(0.006 - 0.012)}$ |
| E         | $\frac{4.93 - 5.28}{(0.194 - 0.208)}$ |
| F         | $\frac{0.203}{(0.008)}$ MAX.          |
| G         | $\frac{1.98 - 2.29}{(0.078 - 0.090)}$ |
| H         | $\frac{0.76 - 1.52}{(0.030 - 0.060)}$ |

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

## Typical Part Marking



## Recommended Footprint



| Dimension | SMA (DO-214AC)         |
|-----------|------------------------|
| A (Max.)  | $\frac{2.70}{(0.106)}$ |
| B (Min.)  | $\frac{2.10}{(0.083)}$ |
| C (Min.)  | $\frac{1.27}{(0.050)}$ |

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 SMA6J 5.0 CA - Q  
 SMA6J = 600 W, SMA/DO-214AC  
 Working Peak Reverse Voltage 5.0 - 130 = 5.0 - 130 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

## Environmental Specifications

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

# SMA6J-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         | SMA (DO-214AC)                             |
|------------------------|----------------|--|
|                        |                | 13-Inch Reel                               |
| Carrier Width          | A              | $\frac{2.90 \pm 0.20}{(0.114 \pm 0.008)}$  |
| Carrier Length         | B              | $\frac{5.50 \pm 0.20}{(0.217 \pm 0.008)}$  |
| Carrier Depth          | C              | $\frac{2.26 \pm 0.20}{(0.089 \pm 0.008)}$  |
| Sprocket Hole          | d              | $\frac{1.50 \pm 0.10}{(0.061 \pm 0.004)}$  |
| Reel Outside Diameter  | D              | $\frac{330}{(12.992)}$                     |
| Reel Inner Diameter    | D <sub>1</sub> | $\frac{50.0}{(1.969)}$ MIN.                |
| Feed Hole Diameter     | D <sub>2</sub> | $\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$  |
| Sprocket Hole Position | E              | $\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$  |
| Punch Hole Position    | F              | $\frac{5.50 \pm 0.05}{(0.217 \pm 0.002)}$  |
| Punch Hole Pitch       | P              | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$  |
| Sprocket Hole Pitch    | P <sub>0</sub> | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$  |
| Embossment Center      | P <sub>1</sub> | $\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$  |
| Overall Tape Thickness | T              | $\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$  |
| Tape Width             | W              | $\frac{12.00 \pm 0.30}{(0.472 \pm 0.012)}$ |
| Reel Width             | W <sub>1</sub> | $\frac{18.4}{(0.724)}$ MAX.                |
| Quantity per Reel      | --             | 5,000                                      |

REV. 10/20

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