



**THE DATASHEET OF
SMA6J20A**





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_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Minimum Peak Pulse Power Dissipation (T _P = 1 ms) (Note 1,2)	P _{PK}	600	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	40	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).

BOURNS®

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

EMEA: 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.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

SMA6J-Q Transient Voltage Suppressor Diode Series

BOURNS®

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted) - Continued

Unidirectional Device		Bidirectional Device		Breakdown Voltage V _{BR} (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V _{RWM}	Maximum Reverse Voltage @ I _{RSM}	Maximum Reverse Surge Current
Part No.	Marking	Part No.	Marking	Min.	Max.	@ I _T (mA)	V _{RWM} (V)	I _R (μA)	V _{RSM} (V)	I _{RSM} (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	6JTQ	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_{RWM} of 10 volts or less, the I_R limit is double.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

SMA6J-Q Transient Voltage Suppressor Diode Series



Performance Graphs

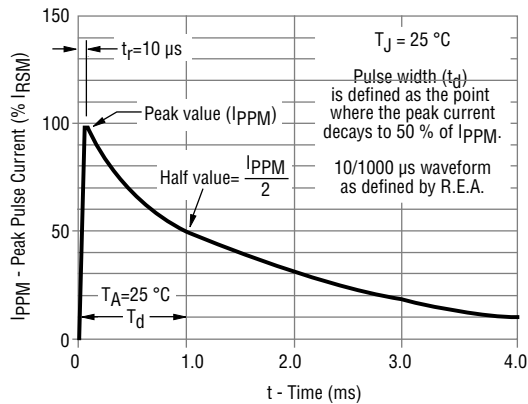
Peak Pulse Power Rating



Pulse Derating Curve



Pulse Waveform



Typical Junction Capacitance



Steady State Power Derating Curve



Maximum Non-repetitive Forward Surge Current



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

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_{RWM} (Volts)

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

AEC-Q101 Suffix
 Q = AEC-Q101 Compliant, 13-inch Reel

Environmental Specifications

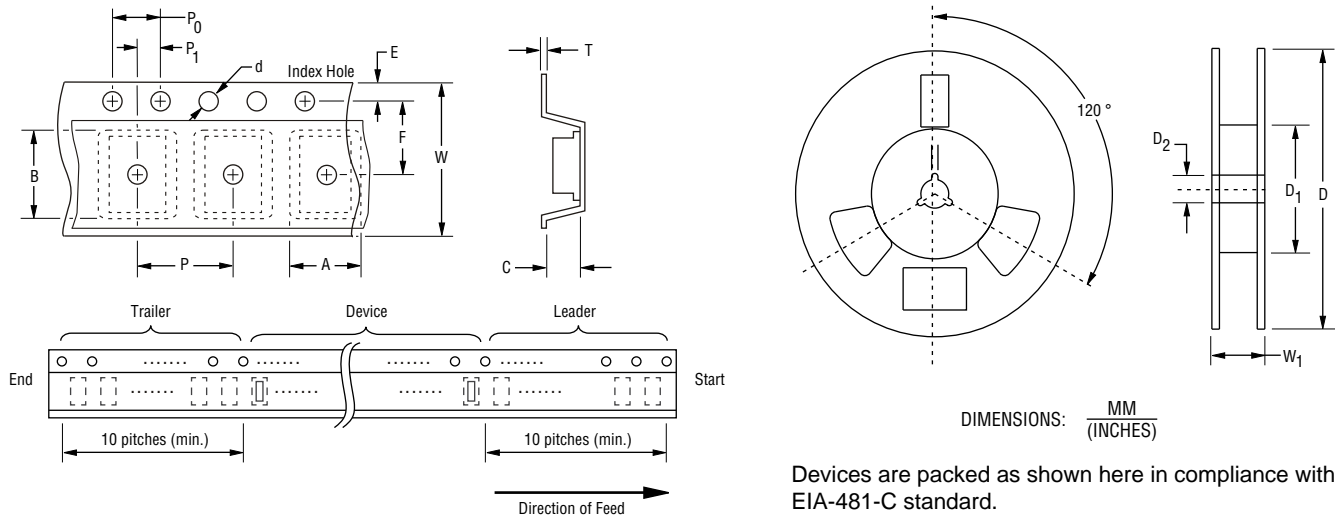
Moisture Sensitivity Level..... 1
 ESD Classification (HBM).....3B

SMA6J-Q Transient Voltage Suppressor Diode Series

BOURNS®

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 ₁	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D ₂	$\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$
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 ₀	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P ₁	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
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 ₁	$\frac{18.4}{(0.724)}$ MAX.
Quantity per Reel	--	5,000

REV. 10/20

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

This legal disclaimer applies to purchasers and users of Bourns® products manufactured by or on behalf of Bourns, Inc. and its affiliates (collectively, “Bourns”).

Unless otherwise expressly indicated in writing, Bourns® products and data sheets relating thereto are subject to change without notice. Users should check for and obtain the latest relevant information and verify that such information is current and complete before placing orders for Bourns® products.

The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions, and statements regarding the suitability of products for certain types of applications are based on Bourns’ knowledge of typical requirements in generic applications. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to (i) the combination of the Bourns® product with other components in the user’s application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Users should always verify the actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments regarding the amount of additional test margin to design into their device or application to compensate for differences between laboratory and real world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., ISO/TS 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet the requirements of such industry standard or particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or applications.

Bourns® products are not recommended, authorized or intended for use in nuclear, lifesaving, life-critical or life-sustaining applications, nor in any other applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any Bourns® products in such unauthorized applications might not be safe and thus is at the user’s sole risk. Life-critical applications include devices identified by the U.S. Food and Drug Administration as Class III devices and generally equivalent classifications outside of the United States.

Bourns expressly identifies those Bourns® standard products that are suitable for use in automotive applications on such products’ data sheets in the section entitled “Applications.” Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard products in an automotive application might not be safe and thus is not recommended, authorized or intended and is at the user’s sole risk. If Bourns expressly identifies a sub-category of automotive application in the data sheet for its standard products (such as infotainment or lighting), such identification means that Bourns has reviewed its standard product and has determined that if such Bourns® standard product is considered for potential use in automotive applications, it should only be used in such sub-category of automotive applications. Any reference to Bourns® standard product in the data sheet as compliant with the AEC-Q standard or “automotive grade” does not by itself mean that Bourns has approved such product for use in an automotive application.

Bourns® standard products are not tested to comply with United States Federal Aviation Administration standards generally or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aircraft or space applications. Bourns expressly identifies Bourns® standard products that are suitable for use in aircraft or space applications on such products’ data sheets in the section entitled “Applications.” Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard product in an aircraft or space application might not be safe and thus is not recommended, authorized or intended and is at the user’s sole risk.

The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the above provisions applicable to Bourns® standard products shall also apply to such Bourns® custom products.

Users shall not sell, transfer, export or re-export any Bourns® products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or missiles, nor shall they use Bourns® products or technology in any facility which engages in activities relating to such devices. The foregoing restrictions apply to all uses and applications that violate national or international prohibitions, including embargos or international regulations. Further, Bourns® products and Bourns technology and technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes. Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party not eligible to receive U.S. commodities, software, and technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability for special, punitive, consequential, incidental or indirect damages or lost revenues or lost profits, and (ii) any and all implied warranties, including implied warranties of fitness for particular purpose, non-infringement and merchantability.

For your convenience, copies of this Legal Disclaimer Notice with German, Spanish, Japanese, Traditional Chinese and Simplified Chinese bilingual versions are available at:

Web Page: <http://www.bourns.com/legal/disclaimers-terms-and-policies>

PDF: <http://www.bourns.com/docs/Legal/disclaimer.pdf>

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View SMA6J20A on WIN SOURCE](#)

 [Bourns Inc. Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management