



## Features

- RoHS compliant\* and halogen free\*\*
- Surface mount SMC package
- Standoff voltage: 5 to 170 volts
- Peak Pulse Power: 5000 watts
- AEC-Q101 compliant\*\*\*
- UL Recognized

## Applications

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

# 5.0SMDJ-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 5 V up to 170 V and Breakdown Voltage up to 189 V. Typical fast response times are less than 1.0 ps 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.

### Agency Recognition

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

### 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>	5000	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3,4)	I <sub>FSM</sub>	300	Amps
Steady State Power Dissipation @ TL = 50 °C	P <sub>M(AV)</sub>	6.5	Watts
Maximum Instantaneous Forward Voltage @ I <sub>PP</sub> = 100 A (For Unidirectional Units Only)	V <sub>F</sub>	5	Volts
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. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).
4. Mounted on 8.0 mm x 8.0 mm copper pad area to each terminal.

# BOURNS®

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### How to Order

	5.0SMDJ 12 CA - Q
Package _____	
5.0SMDJ = 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 Compliant Suffix _____	
Q = AEC-Q101 Compliant, 3000 pcs. per 13-inch Reel	
QH = AEC-Q101 Compliant, 500 pcs. per 7-inch Reel, 3 Reels per Box	



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

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

\*\* Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

\*\*\* Q suffix for automotive and other applications requiring appropriate AEC-Q101 compliance for electronic limiters.

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# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series

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

Unidirectional Device		Bidirectional Device		Breakdown Voltage V <sub>BR</sub> (Volts)			Reverse Standoff Voltage	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Clamping Voltage @ I <sub>PP</sub>	Peak Pulse Current
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I <sub>T</sub> (mA)	V <sub>RWM</sub> (V)	I <sub>R</sub> (μA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)
5.0SMDJ5.0A-Q	5RDEQ	5.0SMDJ5.0CA-Q	5DDEQ	6.40	7.00	10	5.0	1050	9.2	543.6
5.0SMDJ6.0A-Q	5RDGQ	5.0SMDJ6.0CA-Q	5DDGQ	6.67	7.37	10	6.0	1050	10.3	485.5
5.0SMDJ6.5A-Q	5RDKQ	5.0SMDJ6.5CA-Q	5DDKQ	7.22	7.98	10	6.5	750	11.2	446.5
5.0SMDJ7.0A-Q	5PDMQ	5.0SMDJ7.0CA-Q	5DDMQ	7.78	8.60	10	7.0	300	12.0	416.8
5.0SMDJ7.5A-Q	5PDPQ	5.0SMDJ7.5CA-Q	5DDPQ	8.33	9.21	1	7.5	150	12.9	387.7
5.0SMDJ8.0A-Q	5PDRQ	5.0SMDJ8.0CA-Q	5DDRQ	8.89	9.83	1	8.0	70	13.6	367.7
5.0SMDJ8.5A-Q	5PDTQ	5.0SMDJ8.5CA-Q	5DDTQ	9.44	10.40	1	8.5	30	14.4	347.3
5.0SMDJ9.0A-Q	5PDVQ	5.0SMDJ9.0CA-Q	5DDVQ	10.00	11.10	1	9.0	12	15.4	324.8
5.0SMDJ10A-Q	5PDXQ	5.0SMDJ10CA-Q	5DDXQ	11.10	12.30	1	10.0	6	17.0	294.2
5.0SMDJ11A-Q	5PDZQ	5.0SMDJ11CA-Q	5DDZQ	12.20	13.50	1	11.0	2	18.2	274.8
5.0SMDJ12A-Q	5PEPQ	5.0SMDJ12CA-Q	5BEPQ	13.30	14.70	1	12.0	2	19.9	252.0
5.0SMDJ13A-Q	5PEQQ	5.0SMDJ13CA-Q	5BEQQ	14.40	15.90	1	13.0	2	21.5	233.0
5.0SMDJ14A-Q	5PERQ	5.0SMDJ14CA-Q	5BERQ	15.60	17.20	1	14.0	2	23.2	216.0
5.0SMDJ15A-Q	5PESQ	5.0SMDJ15CA-Q	5BESQ	16.70	18.50	1	15.0	2	24.4	205.0
5.0SMDJ16A-Q	5PETQ	5.0SMDJ16CA-Q	5BETQ	17.80	19.70	1	16.0	2	26.0	193.0
5.0SMDJ17A-Q	5PEUQ	5.0SMDJ17CA-Q	5BEUQ	18.90	20.90	1	17.0	2	27.6	181.0
5.0SMDJ18A-Q	5PEVQ	5.0SMDJ18CA-Q	5BEVQ	20.00	22.10	1	18.0	2	29.2	172.0
5.0SMDJ20A-Q	5PEWQ	5.0SMDJ20CA-Q	5BEWQ	22.20	24.50	1	20.0	2	32.4	155.0
5.0SMDJ22A-Q	5PEXQ	5.0SMDJ22CA-Q	5BEXQ	24.40	26.90	1	22.0	2	35.5	141.0
5.0SMDJ24A-Q	5PEZQ	5.0SMDJ24CA-Q	5BEZQ	26.70	29.50	1	24.0	2	38.9	129.0
5.0SMDJ26A-Q	5PFEQ	5.0SMDJ26CA-Q	5BFEQ	28.90	31.90	1	26.0	2	42.1	119.0
5.0SMDJ28A-Q	5PFGQ	5.0SMDJ28CA-Q	5BFGQ	31.10	34.40	1	28.0	2	45.4	110.0
5.0SMDJ30A-Q	5PFKQ	5.0SMDJ30CA-Q	5BFKQ	33.30	36.80	1	30.0	2	48.4	103.0
5.0SMDJ33A-Q	5PFMQ	5.0SMDJ33CA-Q	5BFMQ	36.70	40.60	1	33.0	2	53.3	93.9
5.0SMDJ36A-Q	5PFPQ	5.0SMDJ36CA-Q	5BFPQ	40.00	44.20	1	36.0	2	58.1	86.1
5.0SMDJ40A-Q	5PFRQ	5.0SMDJ40CA-Q	5BFRQ	44.40	49.10	1	40.0	2	64.5	77.6
5.0SMDJ43A-Q	5PFTQ	5.0SMDJ43CA-Q	5BFTQ	47.80	52.80	1	43.0	2	69.4	72.1
5.0SMDJ45A-Q	5PFVQ	5.0SMDJ45CA-Q	5BFVQ	50.00	55.30	1	45.0	2	72.7	68.8
5.0SMDJ48A-Q	5PFXQ	5.0SMDJ48CA-Q	5BFXQ	53.30	58.90	1	48.0	2	77.4	64.7
5.0SMDJ51A-Q	5PFZQ	5.0SMDJ51CA-Q	5BFZQ	56.70	62.70	1	51.0	2	82.4	60.7
5.0SMDJ54A-Q	5RGEQ	5.0SMDJ54CA-Q	5BGEQ	60.00	66.30	1	54.0	2	87.1	57.5
5.0SMDJ58A-Q	5PGGQ	5.0SMDJ58CA-Q	5BGGQ	64.40	71.20	1	58.0	2	93.6	53.5
5.0SMDJ60A-Q	5PGKQ	5.0SMDJ60CA-Q	5BGKQ	66.70	73.70	1	60.0	2	96.8	51.7
5.0SMDJ64A-Q	5PGMQ	5.0SMDJ64CA-Q	5BGMQ	71.10	78.60	1	64.0	2	103.0	48.6
5.0SMDJ70A-Q	5PGPQ	5.0SMDJ70CA-Q	5BGPQ	77.80	86.00	1	70.0	2	113.0	44.3
5.0SMDJ75A-Q	5PGRQ	5.0SMDJ75CA-Q	5BGRQ	83.30	92.10	1	75.0	2	121.0	41.4
5.0SMDJ78A-Q	5PGTQ	5.0SMDJ78CA-Q	5BGTQ	86.70	95.80	1	78.0	2	126.0	39.7
5.0SMDJ85A-Q	5PGVQ	5.0SMDJ85CA-Q	5BGVQ	94.40	104.00	1	85.0	2	137.0	36.5

Continued on next page

Note:

- 'Q' suffix denotes AEC-Q101 compliance.

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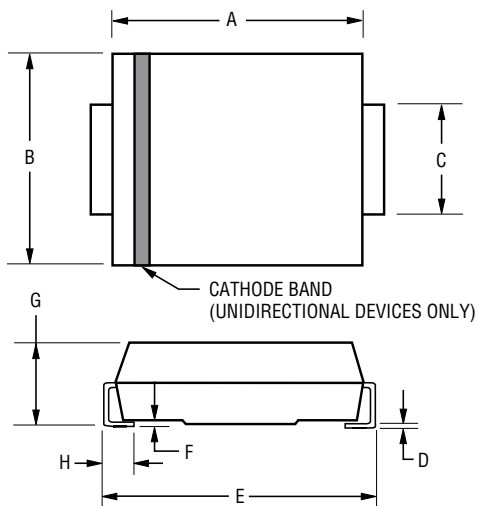
# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series



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

Unidirectional Device		Bidirectional Device		Breakdown Voltage V <sub>BR</sub> (Volts)			Reverse Standoff Voltage	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Clamping Voltage @ I <sub>PP</sub>	Peak Pulse Current
Part Number	Part Marking	Part Number	Part Marking	Min.	Max.	@ I <sub>T</sub> (mA)	V <sub>RWM</sub> (V)	I <sub>R</sub> (μA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)
5.0SMDJ90A-Q	5PGXQ			100.00	111.00	1	90.0	2	146.0	34.3
5.0SMDJ100A-Q	5PGZQ			111.00	123.00	1	100.0	2	162.0	30.9
5.0SMDJ110A-Q	5PHEQ			122.00	135.00	1	110.0	2	177.0	28.3
5.0SMDJ120A-Q	5PHGQ			133.00	147.00	1	120.0	2	193.0	26.0
5.0SMDJ130A-Q	5PHKQ			144.00	159.00	1	130.0	2	209.0	24.0
5.0SMDJ150A-Q	5PHMQ			167.00	185.00	1	150.0	2	243.0	20.6
5.0SMDJ160A-Q	5PHPQ			178.00	197.00	1	160.0	2	259.0	19.3
5.0SMDJ170A-Q	5PHRQ			189.00	209.00	1	170.0	2	275.0	18.2

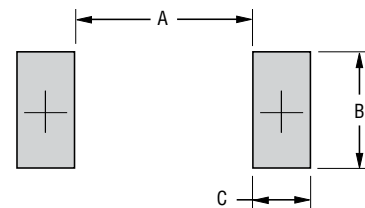
### Product Dimensions



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	$\frac{2.90 - 3.20}{(0.114 - 0.126)}$
D	$\frac{0.15 - 0.31}{(0.006 - 0.012)}$
E	$\frac{7.75 - 8.13}{(0.305 - 0.320)}$
F	$\frac{0.20}{(0.008)}$ MAX.
G	$\frac{2.01 - 2.62}{(0.080 - 0.103)}$
H	$\frac{0.76 - 1.52}{(0.030 - 0.060)}$

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

### Recommended Footprint



Dimension	SMC (DO-214AB)
A (Max.)	$\frac{4.69}{(0.185)}$
B (Min.)	$\frac{3.07}{(0.121)}$
C (Min.)	$\frac{1.53}{(0.060)}$

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

### Physical Specifications

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

### Environmental Specifications

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

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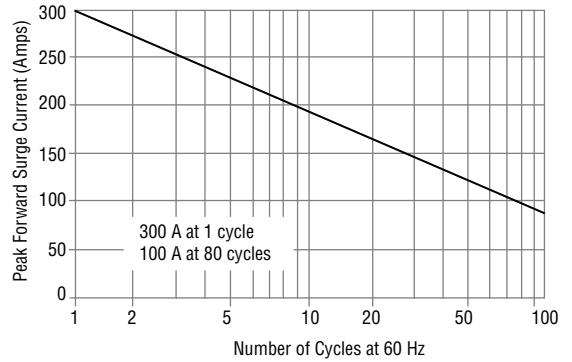


## Rating & Characteristic Curves

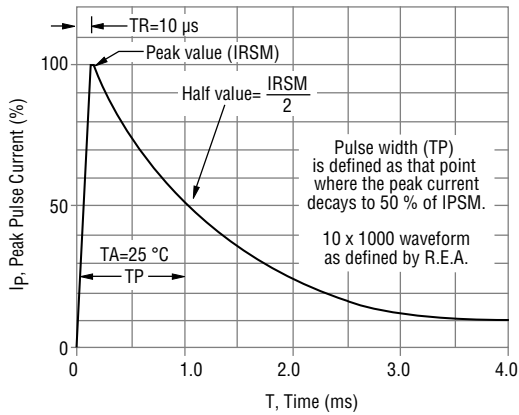
### Pulse Derating Curve



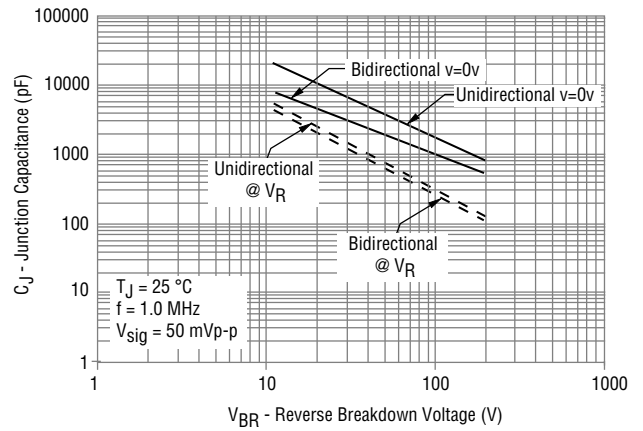
### Maximum Non-Repetitive Surge Current



### Pulse Waveform



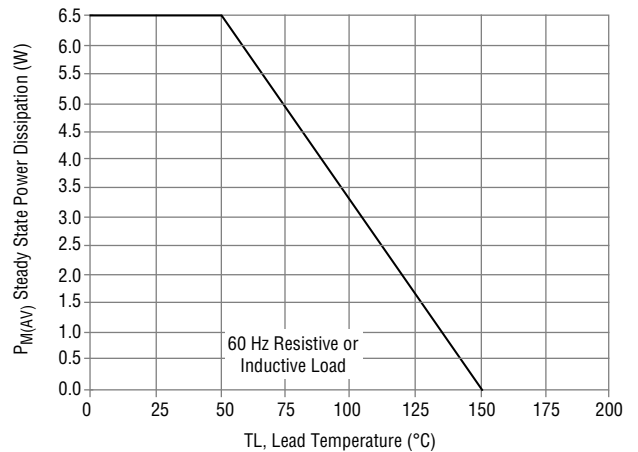
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



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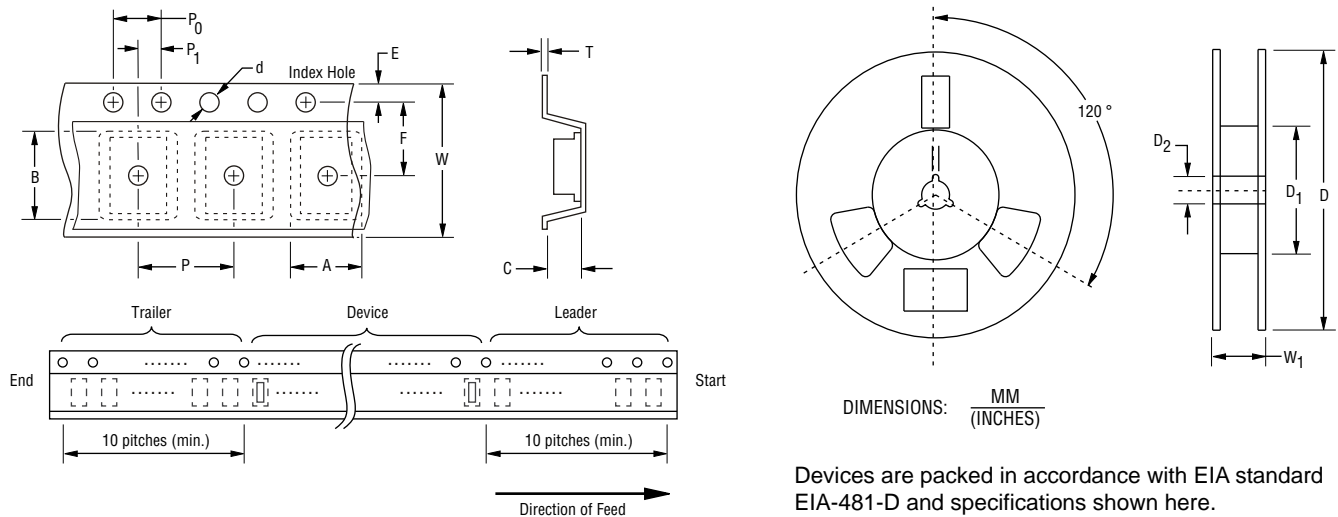
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# 5.0SMDJ-Q Transient Voltage Suppressor Diode Series

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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 EIA-481-D and specifications shown here.

Item	Symbol	SMC (DO-214AB)	
		7-Inch Reel	13-Inch Reel
Carrier Width	A	$6.0 \pm 0.20$ (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	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	
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 <sub>0</sub>	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$	
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 <sub>1</sub>	$\frac{22.4}{(0.882)}$ MAX.	
Quantity per Reel	--	500	3,000

REV. 09/19

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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.

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Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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