

#### **Features**

- RoHS compliant\*
- Surface Mount SMC package
- Standoff Voltage: 5.0 to 495 volts
- Power Dissipation: 1500 watts

### **Applications**

- IEC 61000-4-2 ESD (Min. Level 4)
- IEC 61000-4-4 EFT
- IEC 61000-4-5 Surge

# **SMCJ Transient Voltage Suppressor Diode Series**

#### **General Information**

The markets of portable communications, computing and video equipment are challenging the semiconductor industry to develop increasingly smaller electronic components.

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 495 V and Breakdown Voltage up to 550 V. Typical fast response times are less than 1.0 picosecond for unidirectional devices and less than 5.0 picoseconds for bidirectional devices from 0 V to Minimum Breakdown Voltage.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle with standard pick and place equipment and their flat configuration minimizes roll away.

#### **Agency Recognition**

Description					
UL	File Number: E153537				

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

Parameter	Symbol	Value	Unit	
Minimum Peak Pulse Power Dissipation (Tp = 1 ms) (Note 1	P <sub>PK</sub>	1500	Watts	
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Loa (JEDEC Method) (Note 3)	I <sub>FSM</sub>	200	Amps	
Steady State Power Dissipation @ TL = 75 °C	P <sub>M(AV)</sub>	5.0	Watts	
Maximum Instantaneous Forward Voltage @ I <sub>PP</sub> = 100 A SMCJ5.0A ~ SMCJ90A SMCJ100A ~ SMCJ495A		V <sub>F</sub>	3.5 5.0	Volts
Operating Temperature Range	TJ	-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.
- 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

#### Europe:

Tel: +36 88 885 877 • Email: eurocus@bourns.com

#### The Americas:

Tel: +1-951 781-5500 • Email: americus@bourns.com

#### www.bourns.com

How to Order

SMCJ 5.0 CA - H

Package
SMCJ = SMC/DO-214AB

Working Peak Reverse Voltage
5.0 = 5.0 V<sub>RWM</sub> (Volts)

Suffix

A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device
Reel
(blank) = 13 inch reel
-H = 7 inch reel



WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

# **SMCJ Transient Voltage Suppressor Diode Series**

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

Unidired Devi		Bidirectiona	I Device		down Vo		Working Peak Reverse Voltage	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Clamping Voltage @ I <sub>pp</sub> (10/1000 μs)	Maximum Peak Pulse Current (10/1000 μs)	Maximum Clamping Voltage @ Ipp (8/20 µs)	Maximum Peak Pulse Current (8/20 μs)
Part No.	Marking	Part No.	Marking	Min.	Max.	@ I <sub>T</sub> (mA)	V <sub>RWM</sub> (V)	I <sub>R</sub> (μ <b>A</b> )	V <sub>C</sub> (V)	I <sub>pp</sub> (A)	V <sub>C</sub> (V)	I <sub>pp</sub> (A)
SMCJ5.0A	GDE	SMCJ5.0CA	BDE	6.40	7.00	10	5	800	9.2	163	12	815
SMCJ6.0A	GDG	SMCJ6.0CA	BDG	6.67	7.37	10	6	800	10.3	145.7	13.4	728.5
SMCJ6.5A	GDK	SMCJ6.5CA	BDK	7.22	7.98	10	6.5	500	11.2	134	15	670
SMCJ7.0A	GDM	SMCJ7.0CA	BDM	7.78	8.60	10	7	200	12	125	16	625
SMCJ7.5A	GDP	SMCJ7.5CA	BDP	8.33	9.21	1	7.5	100	12.9	116.3	16.8	581.5
SMCJ8.0A	GDR	SMCJ8.0CA	BDR	8.89	9.83	1	8	50	13.6	110.3	17.7	551.5
SMCJ8.5A SMCJ9.0A	GDT GDV	SMCJ8.5CA SMCJ9.0CA	BDT BDV	9.44	10.4 11.1	1	8.5	20 10	14.4 15.4	104.2 97.4	18.7 20.0	521.0 487.0
SMCJ10A	GDX	SMCJ9.0CA SMCJ10CA	BDX	11.1	12.3	1	9 10	5	15.4	88.3	20.0	487.0
SMCJ11A	GDZ	SMCJ11CA	BDZ	12.2	13.5	1	11	1	18.2	82.5	23.7	412.5
SMCJ12A	GEE	SMCJ11CA	BEE	13.3	14.7	1	12	1	19.9	75.4	25.7	377.0
SMCJ13A	GEG	SMCJ13CA	BEG	14.4	15.9	1	13	1	21.5	69.8	28.0	349.0
SMCJ14A	GEK	SMCJ14CA	BEK	15.6	17.2	1	14	1	23.2	64.7	30.2	323.5
SMCJ15A	GEM	SMCJ15CA	BEM	16.7	18.5	1	15	1	24.4	61.5	31.7	307.5
SMCJ16A	GEP	SMCJ16CA	BEP	17.8	19.7	1	16	1	26	57.7	33.8	288.5
SMCJ17A	GER	SMCJ17CA	BER	18.9	20.9	1	17	1	27.6	54.4	35.9	272.0
SMCJ18A	GET	SMCJ18CA	BET	20.0	22.1	1	18	1	29.2	51.4	38.0	257.0
SMCJ20A	GEV	SMCJ20CA	BEV	22.2	24.5	1	20	1	32.4	46.3	42.1	231.5
SMCJ22A	GEX	SMCJ22CA	BEX	24.4	26.9	1	22	1	35.5	42.3	46.2	211.5
SMCJ24A	GEZ	SMCJ24CA	BEZ	26.7	29.5	1	24	1	38.9	38.6	50.6	193.0
SMCJ26A	GFE	SMCJ26CA	BFE	28.9	31.9	1	26	1	42.1	35.7	54.7	178.5
SMCJ28A	GFG	SMCJ28CA	BFG	31.1	34.4	1	28	1	45.4	33.1	59.0	165.5
SMCJ30A	GFK	SMCJ30CA	BFK	33.3	36.8	1	30	1	48.4	31	63	155
SMCJ33A	GFM	SMCJ33CA	BFM	36.7	40.6	1	33	1	53.3	28.1	69.3	141.0
SMCJ36A	GFP	SMCJ36CA	BFP	40	44.2	1	36	1	58.1	25.9	75.5	129.5
SMCJ40A	GFR	SMCJ40CA	BFR	44.4	49.1	1	40	1	64.5	23.3	83.9	116.5
SMCJ43A	GFT	SMCJ43CA	BFT	47.8	52.8	1	43	1	69.4	21.7	90.2	108.5
SMCJ45A	GFV	SMCJ45CA	BFV	50	55.3	1	45	1	72.7	20.6	94.5	103.0
SMCJ48A	GFX	SMCJ48CA	BFX	53.3	58.9	1	48	1	77.4	19.4	100.6	97.0
SMCJ51A	GFZ GGE	SMCJ51CA SMCJ54CA	BFZ	56.7	62.7	1	51	1	82.4	18.2	107.1	91.0
SMCJ54A SMCJ58A	GGG	SMCJ54CA SMCJ58CA	BGE BGG	60 64.4	66.3 71.2	1	54 58	1	87.1 93.6	17.3 16.1	113.2 121.7	86.5 80.5
SMCJ60A	GGK	SMCJ60CA	BGK	66.7	73.7	1	60	1	96.8	15.5	121.7	77.5
SMCJ64A	GGM	SMCJ64CA	BGM	71.1	78.6	1	64	1	103	14.6	133.9	73.0
SMCJ70A	GGP	SMCJ70CA	BGP	77.8	86.0	1	70	1	113	13.3	146.9	66.5
SMCJ75A	GGR	SMCJ75CA	BGR	83.3	92.1	1	75	1	121	12.4	157.3	62.0
SMCJ78A	GGT	SMCJ78CA	BGT	86.7	95.8	1	78	1	126	11.9	163.8	59.5
SMCJ85A	GGV	SMCJ85CA	BGV	94.4	104	1	85	1	137	11	178	55
SMCJ90A	GGX	SMCJ90CA	BGX	100	111	1	90	1	146	10.3	189.8	51.5
SMCJ100A	GGZ	SMCJ100CA	BGZ	111	123	1	100	1	162	9.3	210.6	46.5
SMCJ110A	GHE	SMCJ110CA	BHE	122	135	1	110	1	177	8.4	230.1	42.5
SMCJ120A	GHG	SMCJ120CA	BHG	133	147	1	120	1	193	7.9	250.9	39.0
SMCJ130A	GHK	SMCJ130CA	BHK	144	159	1	130	1	209	7.2	271.7	36.0
SMCJ150A	GHM	SMCJ150CA	BHM	167	185	1	150	1	243	6.2	315.9	31.0
SMCJ160A	GHP	SMCJ160CA	BHP	178	197	1	160	1	259	5.8	336.7	29.0
SMCJ170A	GHR	SMCJ170CA	BHR	189	209	1	170	1	275	5.5	357.5	27.5
SMCJ180A	GHT	SMCJ180CA	BHT	201	222	1	180	1	292	5.1	379.6	25.5
SMCJ200A	GHV	SMCJ200CA	BHV	224	247	1	200	1	324	4.6	421.2	23.0
SMCJ220A	GHX	SMCJ220CA	BHX	246	272	1	220	1	356	4.2	462.8	21.0
SMCJ250A	GHZ	SMCJ250CA	BHZ	279	309	1	250	1	405	3.7	526.5	18.5
SMCJ300A	GJE	SMCJ300CA	BJE	335	371	1	300	1	486	3.1	631.8	15.5
SMCJ350A	GJG	SMCJ350CA	BJG	391	432	1	350	1	567	2.6	737.1	13.0
SMCJ400A SMCJ408A	GJK 408A	SMCJ400CA SMCJ408CA	BJK	447 456	494	1	400 408	1 1	648	2.3	842.4	11.5
SMCJ408A SMCJ440A	GJM	SMCJ408CA SMCJ440CA	408CA BJM	492	504 543	1	440	1	658 713	2.3	855.4 926.9	11.4 10.5
SMCJ495A	495A	SMCJ495CA	495CA	522.5	577.5	1	495	1	760	2.0	988.0	9.9
Notes:	700A	CIVIOU-FOUCK	7000A	JLL.U	0,7.0	_ '	100	'	, , , ,	2.0	. 555.6	0.0

3. For bidirectional devices with a  $\rm V_{\mbox{\scriptsize R}}$  of 10 volts or less, the  $\rm I_{\mbox{\scriptsize R}}$  limit is double.

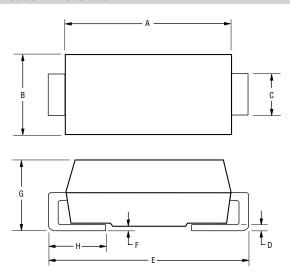
<sup>1.</sup> Suffix 'A' denotes a 5 % tolerance unidirectional device.

<sup>2.</sup> Suffix 'CA' denotes a 5 % tolerance bidirectional device.

Specifications are subject to change without notice.

# **SMCJ Transient Voltage Suppressor Diode Series**

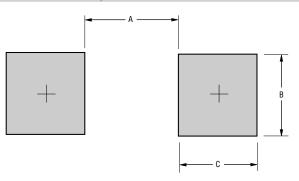
#### **Product Dimensions**



Dimension	SMC (DO-214AB)		
А	6.60 - 7.11		
	(0.260 - 0.280)		
В	5.59 - 6.22		
Ь	(0.220 - 0.245)		
С	2.90 - 3.20		
C	(0.115 - 0.125)		
D	0.15 - 0.31		
	(0.006 - 0.012)		
Е	7.75 - 8.13		
	(0.305 - 0.320)		
F	0.05 - 0.202		
F	(0.002 - 0.008)		
G	2.00 - 2.62		
	(0.079 - 0.103)		
Н	0.76 - 1.52		
	(0.030 - 0.060)		

MM (INCHES) DIMENSIONS:

#### **Recommended Footprint**



Dimension	SMC (DO-214AB)
A (Max)	4.69
A (Max.)	(0.185)
D (Min )	3.07
B (Min.)	(0.121)
C (Min )	1.52
C (Min.)	(0.060)

MM (INCHES) DIMENSIONS:

### **Physical Specifications**

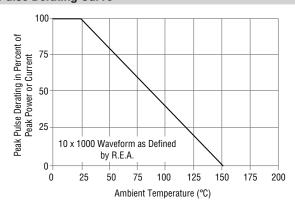
Case ......Molded plastic per UL Class 94V-0 Polarity..... Cathode band indicates unidirectional device No cathode band indicates bidirectional device Weight ......0.21 grams

# **SMCJ Transient Voltage Suppressor Diode Series**

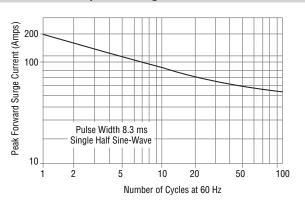
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#### **Rating & Characteristic Curves**

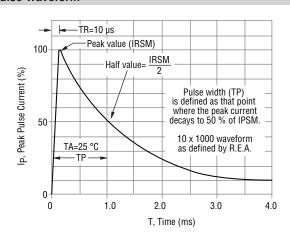
#### **Pulse Derating Curve**



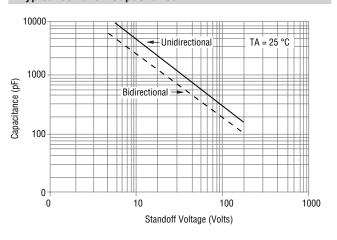
#### **Maximum Non-Repetitive Surge Current**



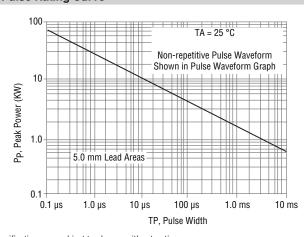
#### **Pulse Waveform**



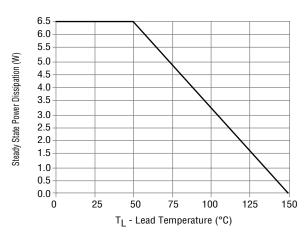
#### **Typical Junction Capacitance**



#### **Pulse Rating Curve**



**Steady State Power Derating Curve** 

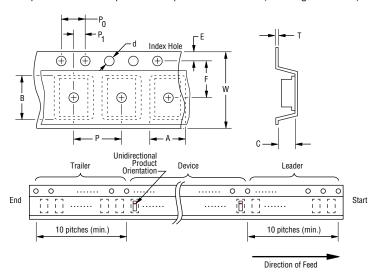


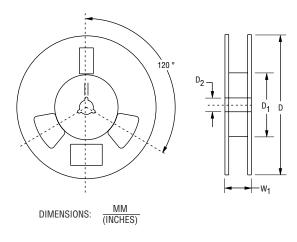
Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

#### **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	А	$\frac{6.0 \pm 2.0}{(0.236 - 0.079)}$		
Carrier Length	В	$\frac{8.3 \pm 0.20}{(0.327 \pm 0.008)}$		
Carrier Depth	С	$\frac{2.5 \pm 0.20}{(0.098 \pm 0.008)}$		
Sprocket Hole	d	$\frac{1.50 \pm 0.10}{(0.059 \pm 0.004)}$		
Reel Outside Diameter	D	<u>178</u> (7.008)	330 (12.992)	
Reel Inner Diameter	D <sub>1</sub>	50.0 (1.969) MIN.		
Feed Hole Diameter	D <sub>2</sub>	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	Р	$\frac{8.00 \pm 0.10}{(0.315 \pm 0.004)}$		
Sprocket Hole Pitch	P <sub>0</sub>	4.00 ± 0.10 (0.157 ± 0.004)		
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$		
Overall Tape Thickness	Т	$\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$		
Tape Width	w	$\frac{16.00 \pm 0.30}{(0.630 \pm 0.012)}$		
Reel Width	W <sub>1</sub>	22.4 (0.882) MAX.		
Quantity per Reel		500 3,000		

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Largest Supplier of Electrical and Electronic Components

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LAB1 70F122AI-RC 74F396AP-RC 83A1D-B28-J10 PCW1J-B24-KAB502 9230-56-RC PWR221T-30-1R00F PWR263S-20-20R0F H
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