THE DATASHEET OF

SMCJ6.5A



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.

Additional Information

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Agency Recognition

Description	
UL	File Number: E153537

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}	1500	Watts
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 3)		I_{FSM}	200	Amps
Steady State Power Dissipation @ TL = 75 °C		$P_{M(AV)}$	5.0	Watts
Maximum Instantaneous Forward Voltage @ I_{PP} = 100 A (For Unidirectional Units Only)	SMCJ5.0A ~ SMCJ90A SMCJ100A ~ SMCJ495A	V_F	3.5 5.0	Volts
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. Thermal Resistance Junction to Lead.
3. 8.3 ms Single Half-Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

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How to Order

SMCJ 5.0 CA - H

Package
SMCJ = SMC/DO-214AB

Working Peak Reverse Voltage
5.0 = 5.0 V_{RWM} (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

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
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Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Unidirectional Device		Bidirectional Device		Breakdown Voltage V_{BR} (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Clamping Voltage @ I_{pp} (10/1000 μs)	Maximum Peak Pulse Current (10/1000 μs)	Maximum Clamping Voltage @ I_{pp} (8/20 μs)	Maximum Peak Pulse Current (8/20 μs)
Part No.	Marking	Part No.	Marking	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_C (V)	I_{pp} (A)	V_C (V)	I_{pp} (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	GDT	SMCJ8.5CA	BDT	9.44	10.4	1	8.5	20	14.4	104.2	18.7	521.0
SMCJ9.0A	GDV	SMCJ9.0CA	BDV	10.0	11.1	1	9	10	15.4	97.4	20.0	487.0
SMCJ10A	GDX	SMCJ10CA	BDX	11.1	12.3	1	10	5	17	88.3	22.1	441.5
SMCJ11A	GDZ	SMCJ11CA	BDZ	12.2	13.5	1	11	1	18.2	82.5	23.7	412.5
SMCJ12A	GEE	SMCJ12CA	BEE	13.3	14.7	1	12	1	19.9	75.4	25.9	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	SMCJ51CA	BFZ	56.7	62.7	1	51	1	82.4	18.2	107.1	91.0
SMCJ54A	GGE	SMCJ54CA	BGE	60	66.3	1	54	1	87.1	17.3	113.2	86.5
SMCJ58A	GGG	SMCJ58CA	BGG	64.4	71.2	1	58	1	93.6	16.1	121.7	80.5
SMCJ60A	GGK	SMCJ60CA	BGK	66.7	73.7	1	60	1	96.8	15.5	125.8	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	GJK	SMCJ400CA	BJK	447	494	1	400	1	648	2.3	842.4	11.5
SMCJ408A	408A	SMCJ408CA	408CA	456	504	1	408	1	658	2.3	855.4	11.4
SMCJ440A	GJM	SMCJ440CA	BJM	492	543	1	440	1	713	2.1	926.9	10.5
SMCJ495A	495A	SMCJ495CA	495CA	522.5	577.5	1	495	1	760	2.0	988.0	9.9

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_R of 10 volts or less, the I_R limit is double.

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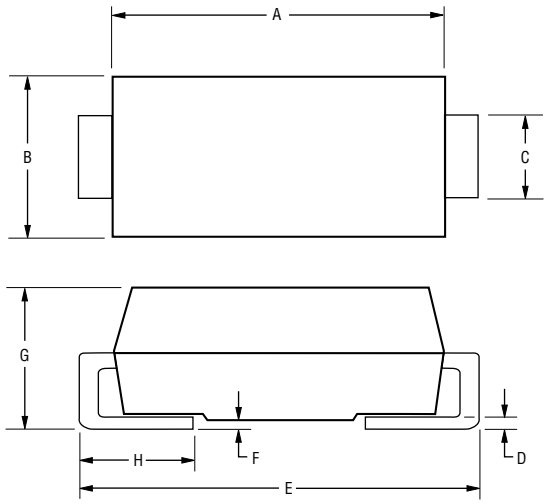
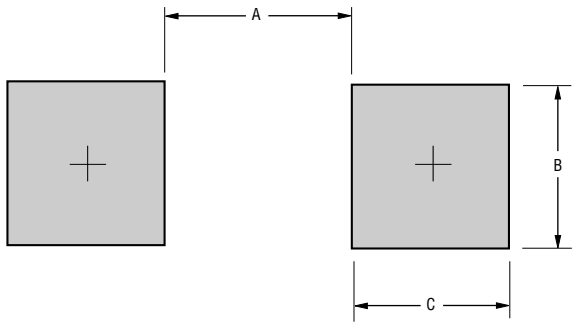
Product Dimensions



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

DIMENSIONS: MM (INCHES)

Recommended Footprint



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

DIMENSIONS: MM (INCHES)

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

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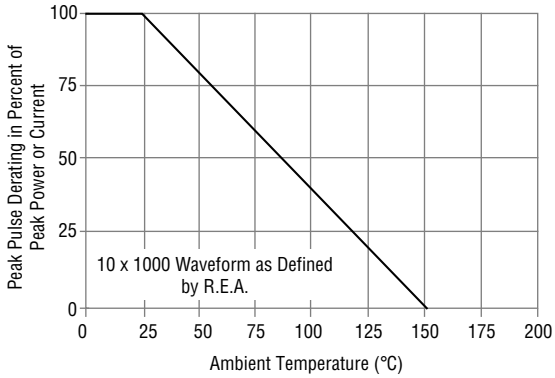
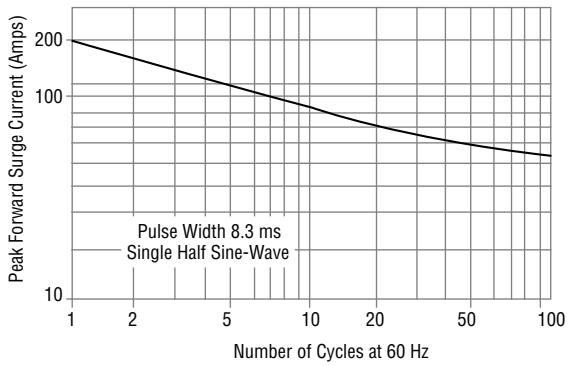
Rating & Characteristic Curves

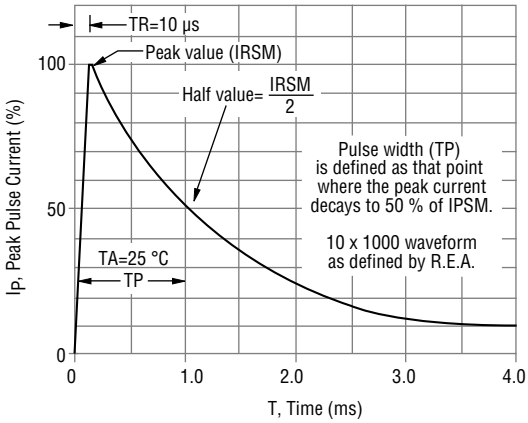
Pulse Derating Curve



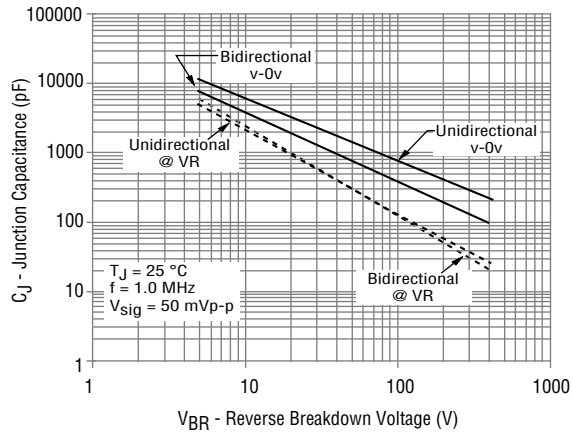
Maximum Non-Repetitive Surge Current



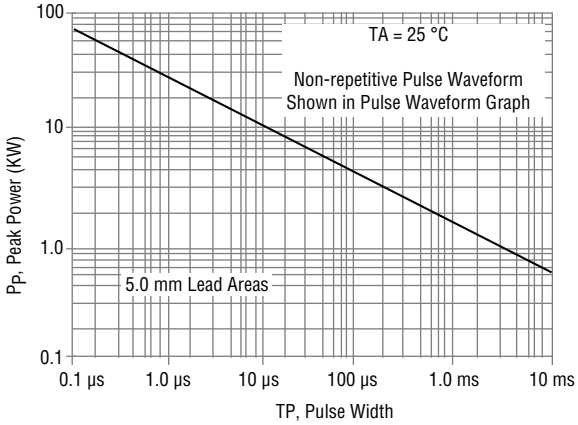
Pulse Waveform



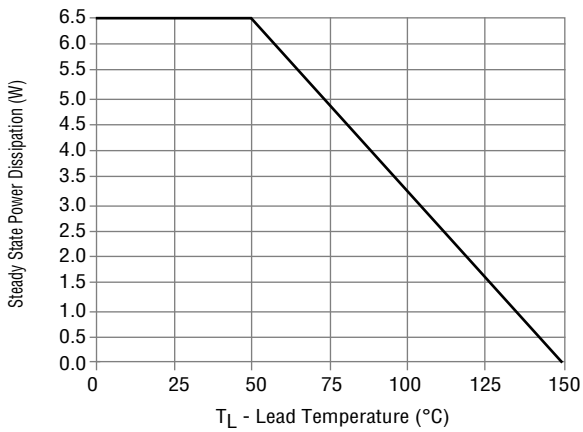
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



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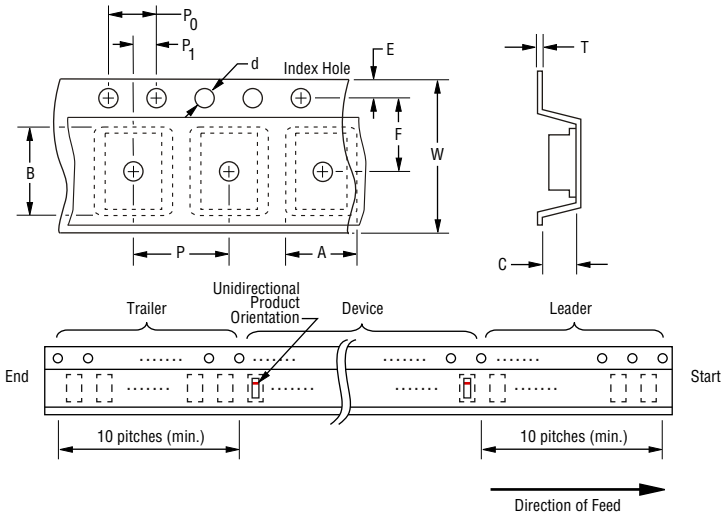
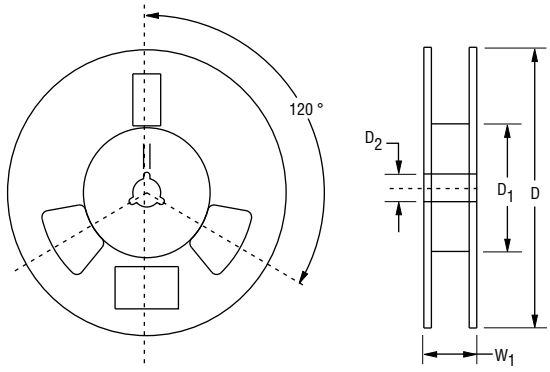
Packaging Information

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





DIMENSIONS: MM / (INCHES)

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 ± 2.0 (0.236 - 0.079)	
Carrier Length	B	8.3 ± 0.20 (0.327 ± 0.008)	
Carrier Depth	C	2.5 ± 0.20 (0.098 ± 0.008)	
Sprocket Hole	d	1.50 ± 0.10 (0.059 ± 0.004)	
Reel Outside Diameter	D	178 (7.008)	330 (12.992)
Reel Inner Diameter	D_1	50.0 (1.969) MIN.	
Feed Hole Diameter	D_2	13.0 +0.50/-0.20 (0.512 +0.020/-0.008)	
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)	
Punch Hole Position	F	7.50 ± 0.10 (0.295 ± 0.004)	
Punch Hole Pitch	P	8.00 ± 0.10 (0.315 ± 0.004)	
Sprocket Hole Pitch	P_0	4.00 ± 0.10 (0.157 ± 0.004)	
Embossment Center	P_1	2.00 ± 0.10 (0.079 ± 0.004)	
Overall Tape Thickness	T	0.30 ± 0.10 (0.012 ± 0.004)	
Tape Width	W	16.00 ± 0.30 (0.630 ± 0.012)	
Reel Width	W_1	22.4 (0.882) MAX.	
Quantity per Reel	--	500	3,000

REV. 09/20

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- Bourns Inc. Information

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