Features

- RoHS compliant* and halogen free**
- Surface Mount SMC package
- Breakdown Voltage: 6.8 to 550 volts
- Peak Pulse Power: 1500 watts
- Typical temperature coefficient: $\Delta V_{BR} = 0.1\ \% \times V_{BR} @ 25\ °C \times \Delta T$

Applications

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

1.5SMC 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 Breakdown Voltages from 6.8 V 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

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

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
Maximum Instantaneous Forward Voltage @ I_{PP} = 100 A (For Unidirectional Units Only)	1.5SMC6.8A ~ 1.5SMC200A 1.5SMC220A ~1.5SMC550A	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

1.5SMC 6.8 CA - H

Series
1.5SMC = SMC/DO-214AB

Breakdown Voltage
6.8 to 550 = 6.8 to 550 V_{BD}

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.
** 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.

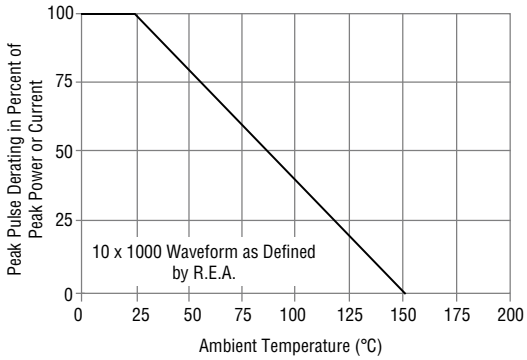
Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

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)
1.5SMC6.8A	6V8A	1.5SMC6.8CA	6V8C	6.45	7.14	10	5.8	1000	10.5	144.8	13.7	724.0
1.5SMC7.5A	7V5A	1.5SMC7.5CA	7V5C	7.13	7.88	10	6.4	500	11.3	134.5	14.7	672.5
1.5SMC8.2A	8V2A	1.5SMC8.2CA	8V2C	7.79	8.61	10	7.02	200	12.1	125.6	15.7	628.0
1.5SMC9.1A	9V1A	1.5SMC9.1CA	9V1C	8.65	9.5	1	7.78	50	13.4	113.4	17.4	567.0
1.5SMC10A	10A	1.5SMC10CA	10C	9.5	10.5	1	8.55	10	14.5	104.8	18.9	524.0
1.5SMC11A	11A	1.5SMC11CA	11C	10.5	11.6	1	9.4	5	15.6	97.4	20.3	487.0
1.5SMC12A	12A	1.5SMC12CA	12C	11.4	12.6	1	10.2	5	16.7	91	22	455
1.5SMC13A	13A	1.5SMC13CA	13C	12.4	13.7	1	11.1	1	18.2	83.5	23.7	417.5
1.5SMC15A	15A	1.5SMC15CA	15C	14.3	15.8	1	12.8	1	21.2	71.7	27.6	358.5
1.5SMC16A	16A	1.5SMC16CA	16C	15.2	16.8	1	13.6	1	22.5	67.6	29.3	338.0
1.5SMC18A	18A	1.5SMC18CA	18C	17.1	18.9	1	15.3	1	25.2	60.3	32.8	301.5
1.5SMC20A	20A	1.5SMC20CA	20C	19	21	1	17.1	1	27.7	54.9	36.0	274.5
1.5SMC22A	22A	1.5SMC22CA	22C	20.9	23.1	1	18.8	1	30.6	49.7	39.8	248.5
1.5SMC24A	24A	1.5SMC24CA	24C	22.8	25.2	1	20.5	1	33.2	45.8	43.2	229.0
1.5SMC27A	27A	1.5SMC27CA	27C	25.7	28.4	1	23.1	1	37.5	40.5	48.8	202.5
1.5SMC30A	30A	1.5SMC30CA	30C	28.5	31.5	1	25.6	1	41.4	36.7	53.8	183.5
1.5SMC33A	33A	1.5SMC33CA	33C	31.4	34.7	1	28.2	1	45.7	33.3	59.4	166.5
1.5SMC36A	36A	1.5SMC36CA	36C	34.2	37.8	1	30.8	1	49.9	30.5	64.9	152.5
1.5SMC39A	39A	1.5SMC39CA	39C	37.1	41	1	33.3	1	53.9	28.2	70.1	141.0
1.5SMC43A	43A	1.5SMC43CA	43C	40.9	45.2	1	36.8	1	59.3	25.6	77.1	128.0
1.5SMC47A	47A	1.5SMC47CA	47C	44.7	49.4	1	40.2	1	64.8	23.5	84.2	117.5
1.5SMC51A	51A	1.5SMC51CA	51C	48.5	53.6	1	43.6	1	70.1	21.7	91.1	108.5
1.5SMC56A	56A	1.5SMC56CA	56C	53.2	58.8	1	47.8	1	77	19.7	100.1	98.5
1.5SMC62A	62A	1.5SMC62CA	62C	58.9	65.1	1	53	1	85	17.9	110.5	89.5
1.5SMC68A	68A	1.5SMC68CA	68C	64.6	71.4	1	58.1	1	92	16.5	119.6	82.5
1.5SMC75A	75A	1.5SMC75CA	75C	71.3	78.8	1	64.1	1	103	14.8	133.9	74.0
1.5SMC82A	82A	1.5SMC82CA	82C	77.9	86.1	1	70.1	1	113	13.5	146.9	67.5
1.5SMC91A	91A	1.5SMC91CA	91C	86.5	95.5	1	77.8	1	125	12.2	162.5	61.0
1.5SMC100A	100A	1.5SMC100CA	100C	95	105	1	85.5	1	137	11.1	178.1	55.5
1.5SMC110A	110A	1.5SMC110CA	110C	105	116	1	94	1	152	10	198	50
1.5SMC120A	120A	1.5SMC120CA	120C	114	126	1	102	1	165	9.2	214.5	46.0
1.5SMC130A	130A	1.5SMC130CA	130C	124	137	1	111	1	179	8.5	232.7	42.5
1.5SMC150A	150A	1.5SMC150CA	150C	143	158	1	128	1	207	7.3	269.1	36.5
1.5SMC160A	160A	1.5SMC160CA	160C	152	168	1	136	1	219	6.9	284.7	34.5
1.5SMC170A	170A	1.5SMC170CA	170C	162	179	1	145	1	234	6.5	304.2	32.5
1.5SMC180A	180A	1.5SMC180CA	180C	171	189	1	154	1	246	6.2	319.8	31.0
1.5SMC200A	200A	1.5SMC200CA	200C	190	210	1	171	1	274	5.5	356.2	27.5
1.5SMC220A	220A	1.5SMC220CA	220C	209	231	1	185	1	328	4.6	426.4	23.0
1.5SMC250A	250A	1.5SMC250CA	250C	237	263	1	214	1	344	4.4	447.2	22.0
1.5SMC300A	300A	1.5SMC300CA	300C	285	315	1	256	1	414	3.7	538.2	18.5
1.5SMC350A	350A	1.5SMC350CA	350C	332	368	1	300	1	482	3.2	626.6	16.0
1.5SMC400A	400A	1.5SMC400CA	400C	380	420	1	342	1	548	2.8	712.4	14.0
1.5SMC440A	440A	1.5SMC440CA	440C	418	462	1	376	1	602	2.5	782.6	12.5
1.5SMC480A	480A	1.5SMC480CA	480C	456	504	1	408	1	658	2.3	855.4	11.4
1.5SMC510A	510A	1.5SMC510CA	510C	485	535	1	434	1	698	2.1	907.4	10.7
1.5SMC530A	530A	1.5SMC530CA	530C	503.5	556.5	1	477	1	725	2.1	942.5	10.3
1.5SMC540A	540A	1.5SMC540CA	540C	513	567	1	486	1	740	2	962	10
1.5SMC550A	550A	1.5SMC550CA	550C	522.5	577.5	1	495	1	760	2	988	10

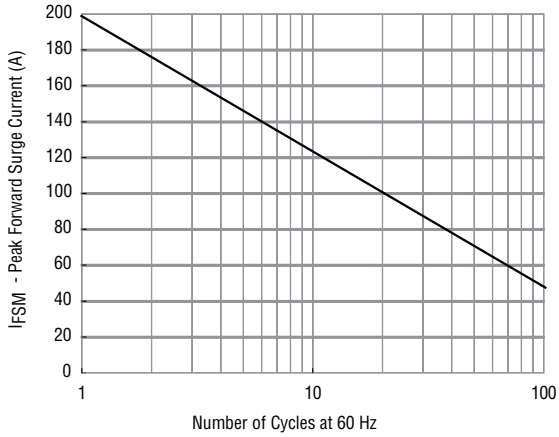
Notes:
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.

Rating & Characteristic Curves

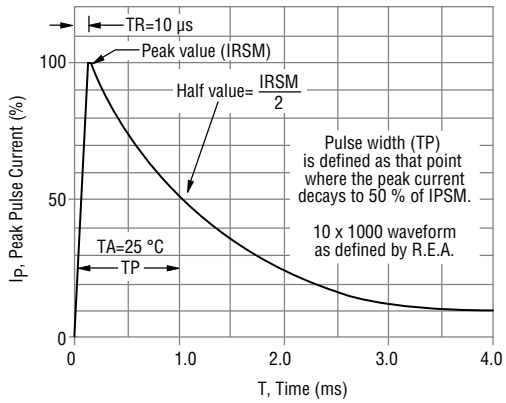
Pulse Derating Curve



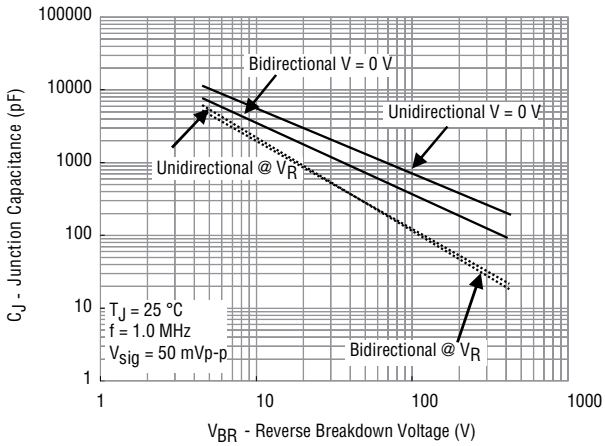
Maximum Non-Repetitive Surge Current



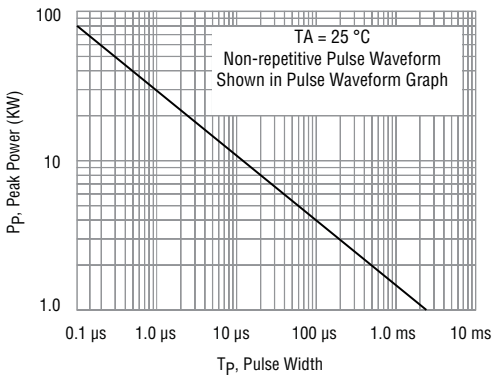
Pulse Waveform



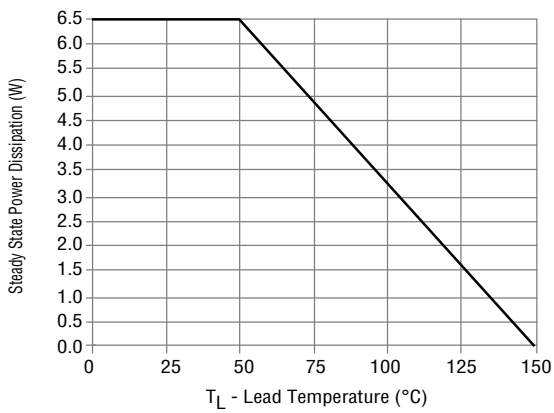
Typical Junction Capacitance



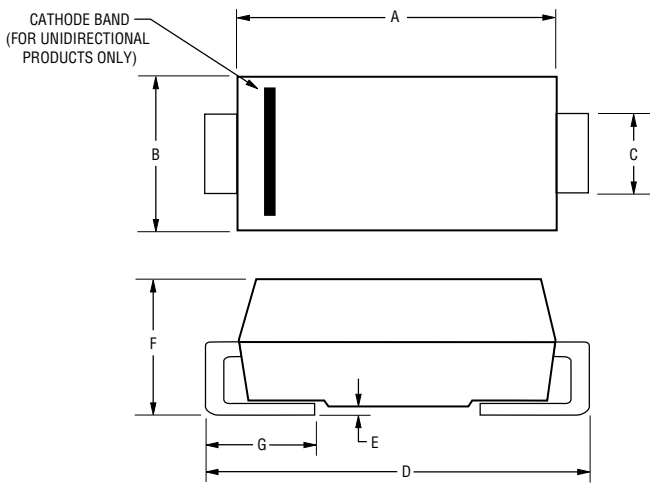
Pulse Rating Curve



Steady State Power Derating Curve



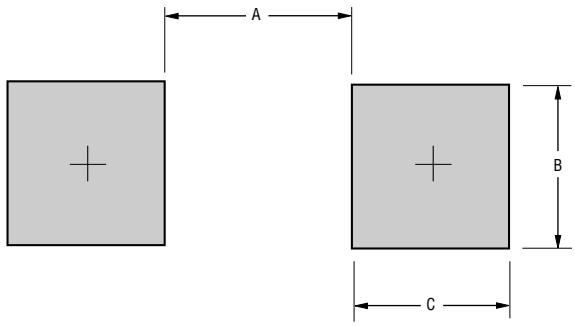
Product Dimensions



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	7.75 - 8.13 (0.305 - 0.320)
E	0.05 - 0.202 (0.002 - 0.008)
F	2.00 - 2.62 (0.079 - 0.103)
G	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

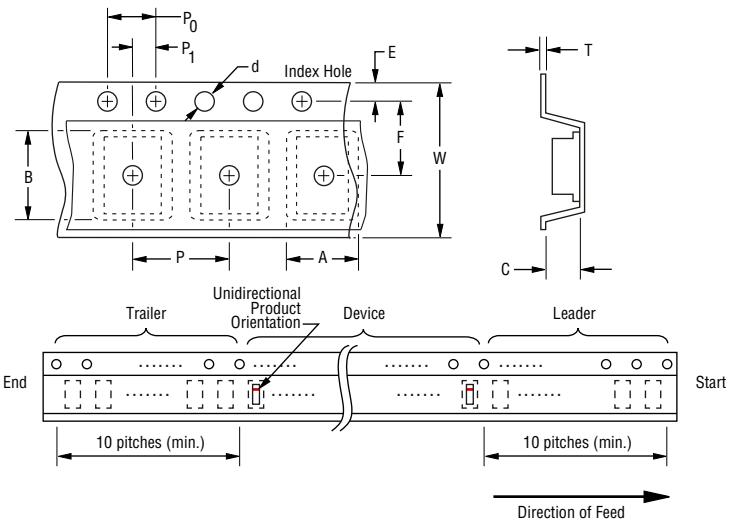
Case ..... Molded plastic per UL Class 94V-0
Polarity..... Cathode band indicates unidirectional device
No cathode band indicates bidirectional device

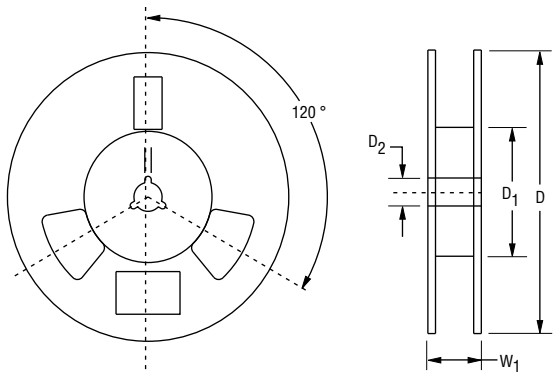
Environmental Specifications

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

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. 03/20

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