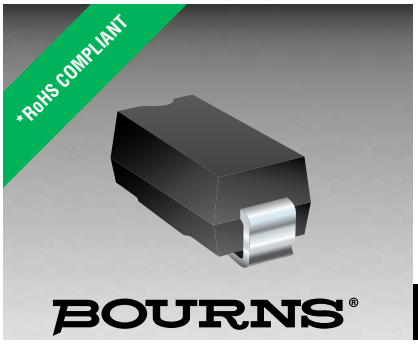


Features

- RoHS compliant* and halogen free**
- Surface Mount SMB package
- Breakdown Voltage: 6.8 to 550 volts
- Peak Pulse Power: 600 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

P6SMB 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-214AA (SMB) 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 the flat configuration minimizes roll away.

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

Parameter		Symbol	Value	Unit
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}	100	Amps
Maximum Instantaneous Forward Voltage @ I_{PP} = 50 A (For Unidirectional Units Only)	P6SMB6.8A ~ P6SMB200A P6SMB220A ~ P6SMB550A	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).

How to Order

P6SMB 6.8 CA - H

Series
P6SMB= SMB/DO-214AA

Breakdown Voltage
6.8 to 550 = 6.8 to 550 V_{BD} (Volts)

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

Reel
(blank) = 13 inch reel
-H = 7 inch reel

BOURNS®

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

Europe:
Tel: +36 88 520 390
Email: eurocus@bourns.com

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

www.bourns.com

* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

** 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.

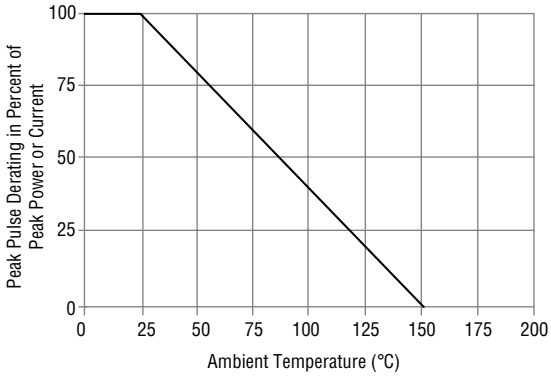
Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Unidirectional Device		Bidirectional Device		Breakdown Voltage V_{BR} (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum 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)**
P6SMB6.8A	6V8A	P6SMB6.8CA	6V8C	6.45	7.14	10	5.8	1000	10.5	58.1
P6SMB7.5A	7V5A	P6SMB7.5CA	7V5C	7.13	7.88	10	6.4	500	11.3	54
P6SMB8.2A	8V2A	P6SMB8.2CA	8V2C	7.79	8.61	10	7.02	200	12.1	50.4
P6SMB9.1A	9V1A	P6SMB9.1CA	9V1C	8.65	9.55	1	7.78	50	13.4	45.5
P6SMB10A	10A	P6SMB10CA	10C	9.5	10.5	1	8.55	10	14.5	42.1
P6SMB11A	11A	P6SMB11CA	11C	10.5	11.6	1	9.4	5	15.6	39.1
P6SMB12A	12A	P6SMB12CA	12C	11.4	12.6	1	10.2	5	16.7	36.5
P6SMB13A	13A	P6SMB13CA	13C	12.4	13.7	1	11.1	1	18.2	33.5
P6SMB15A	15A	P6SMB15CA	15C	14.3	15.8	1	12.8	1	21.2	28.8
P6SMB16A	16A	P6SMB16CA	16C	15.2	16.8	1	13.6	1	22.5	27.1
P6SMB18A	18A	P6SMB18CA	18C	17.1	18.9	1	15.3	1	25.5	24.2
P6SMB20A	20A	P6SMB20CA	20C	19	21	1	17.1	1	27.7	22
P6SMB22A	22A	P6SMB22CA	22C	20.9	23.1	1	18.8	1	30.6	19.9
P6SMB24A	24A	P6SMB24CA	24C	22.8	25.2	1	20.5	1	33.2	18.4
P6SMB27A	27A	P6SMB27CA	27C	25.7	28.4	1	23.1	1	37.5	16.3
P6SMB30A	30A	P6SMB30CA	30C	28.5	31.5	1	25.6	1	41.4	14.7
P6SMB33A	33A	P6SMB33CA	33C	31.4	34.7	1	28.2	1	45.7	13.3
P6SMB36A	36A	P6SMB36CA	36C	34.2	37.8	1	30.8	1	49.9	12.2
P6SMB39A	39A	P6SMB39CA	39C	37.1	41	1	33.3	1	53.9	11.3
P6SMB43A	43A	P6SMB43CA	43C	40.9	45.2	1	36.8	1	59.3	10.3
P6SMB47A	47A	P6SMB47CA	47C	44.7	49.4	1	40.2	1	64.8	9.4
P6SMB51A	51A	P6SMB51CA	51C	48.5	53.6	1	43.6	1	70.1	8.7
P6SMB56A	56A	P6SMB56CA	56C	53.2	58.8	1	47.8	1	77	7.9
P6SMB62A	62A	P6SMB62CA	62C	58.9	65.1	1	53	1	85	7.2
P6SMB68A	68A	P6SMB68CA	68C	64.6	71.4	1	58.1	1	92	6.6
P6SMB75A	75A	P6SMB75CA	75C	71.3	78.8	1	64.1	1	103	5.9
P6SMB82A	82A	P6SMB82CA	82C	77.9	86.1	1	70.1	1	113	5.4
P6SMB91A	91A	P6SMB91CA	91C	86.5	95.5	1	77.8	1	125	4.9
P6SMB100A	100A	P6SMB100CA	100C	95	105	1	85.5	1	137	4.5
P6SMB110A	110A	P6SMB110CA	110C	105	116	1	94	1	152	4
P6SMB120A	120A	P6SMB120CA	120C	114	126	1	102	1	165	3.7
P6SMB130A	130A	P6SMB130CA	130C	124	137	1	111	1	179	3.4
P6SMB150A	150A	P6SMB150CA	150C	143	158	1	128	1	207	2.9
P6SMB160A	160A	P6SMB160CA	160C	152	168	1	136	1	219	2.8
P6SMB170A	170A	P6SMB170CA	170C	162	179	1	145	1	234	2.6
P6SMB180A	180A	P6SMB180CA	180C	171	189	1	154	1	246	2.5
P6SMB200A	200A	P6SMB200CA	200C	190	210	1	171	1	274	2.2
P6SMB220A	220A	P6SMB220CA	220C	209	231	1	185	1	328	1.9
P6SMB250A	250A	P6SMB250CA	250C	237	263	1	214	1	344	1.8
P6SMB300A	300A	P6SMB300CA	300C	285	315	1	256	1	414	1.5
P6SMB350A	350A	P6SMB350CA	350C	332	368	1	300	1	482	1.3
P6SMB400A	400A	P6SMB400CA	400C	380	420	1	342	1	548	1.1
P6SMB440A	440A	P6SMB440CA	440C	418	462	1	376	1	602	1
P6SMB480A	480A	P6SMB480CA	480C	456	504	1	408	1	658	0.9
P6SMB510A	510A	P6SMB510CA	510C	485	535	1	434	1	698	0.9
P6SMB530A	530A	P6SMB530CA	530C	503.5	556.5	1	477	1	725	0.8
P6SMB540A	540A	P6SMB540CA	540C	513	567	1	486	1	740	0.8
P6SMB550A	550A	P6SMB550CA	550C	522.5	577.5	1	495	1	760	0.8

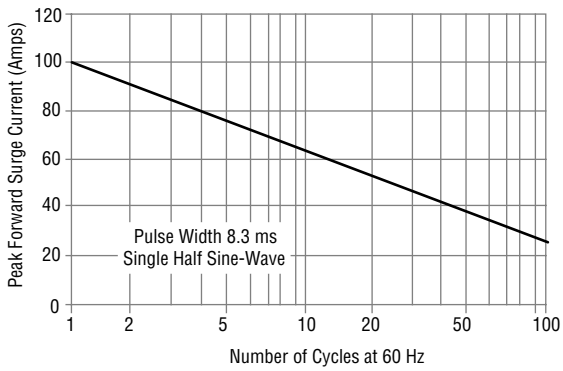
Notes:
1. Suffix 'A' denotes a 5 % tolerance unidirectional device.
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.
3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.

Rating & Characteristic Curves

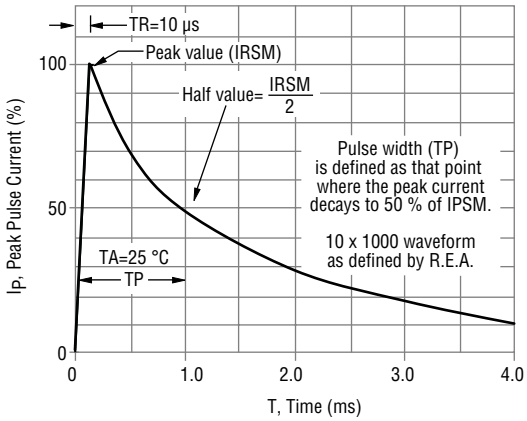
Pulse Derating Curve



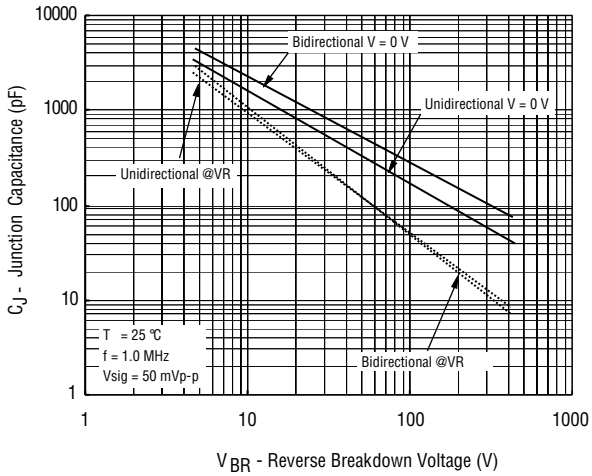
Maximum Non-Repetitive Surge Current



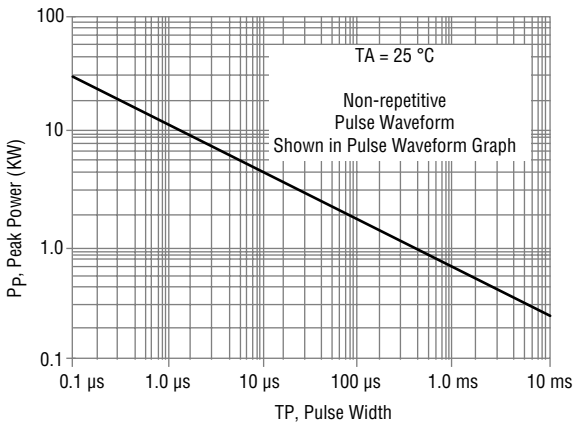
Pulse Waveform



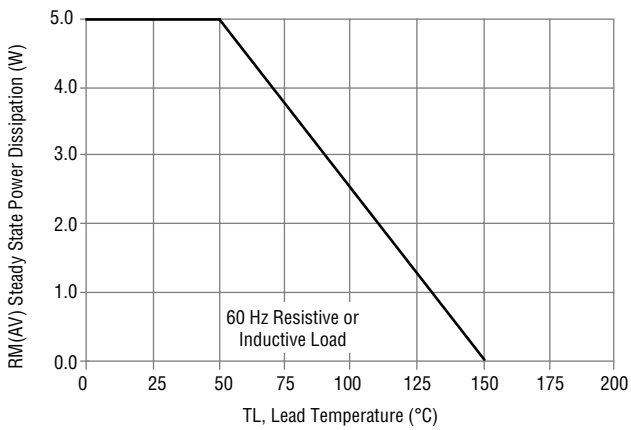
Typical Junction Capacitance



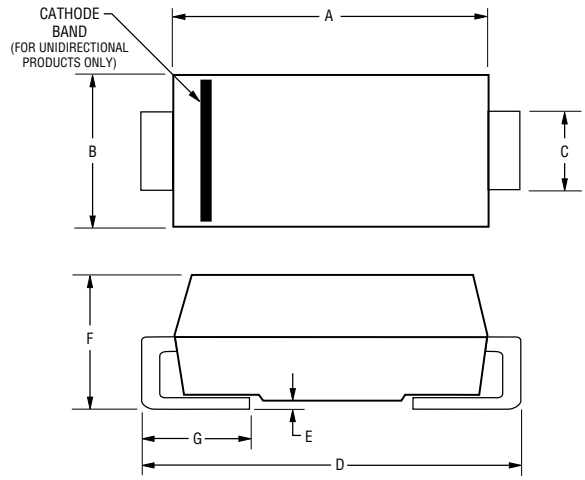
Pulse Rating Curve



Steady State Power Derating Curve



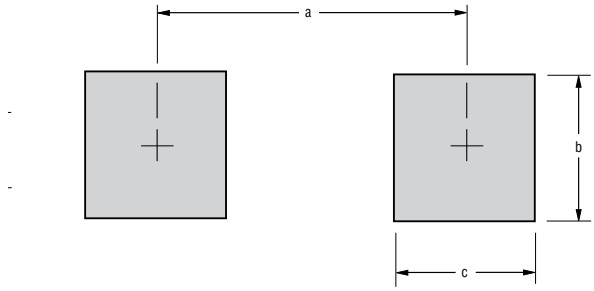
Product Dimensions



Dimension	SMB (DO-214AA)
A	4.06 - 4.57 (0.160 - 0.180)
B	3.30 - 3.94 (0.130 - 0.155)
C	1.95 - 2.20 (0.077 - 0.087)
D	5.21 - 5.59 (0.205 - 0.220)
E	0.05 - 0.203 (0.002 - 0.008)
F	2.13 - 2.44 (0.080 - 0.103)
G	0.76 - 1.52 (0.030 - 0.060)

DIMENSIONS: MM / (INCHES)

Recommended Footprint



Dimension	SMB (DO-214AA)
a (Max.)	2.69 (0.106)
b (Min.)	2.10 (0.083)
c (Min.)	1.27 (0.050)

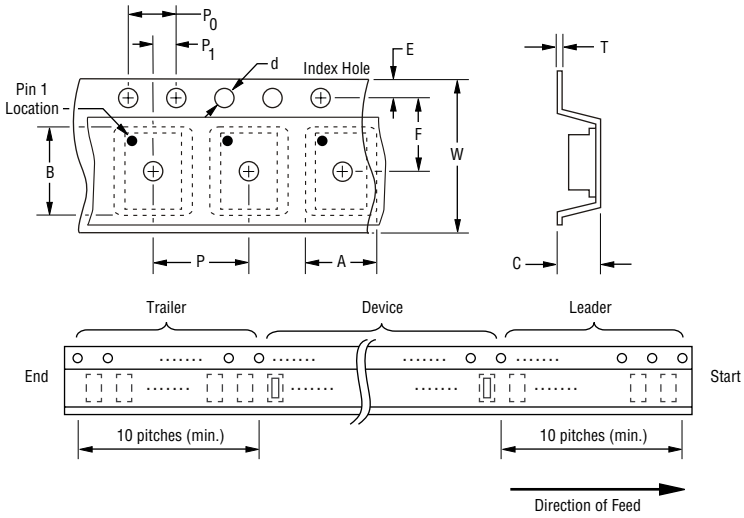
DIMENSIONS: MM / (INCHES)

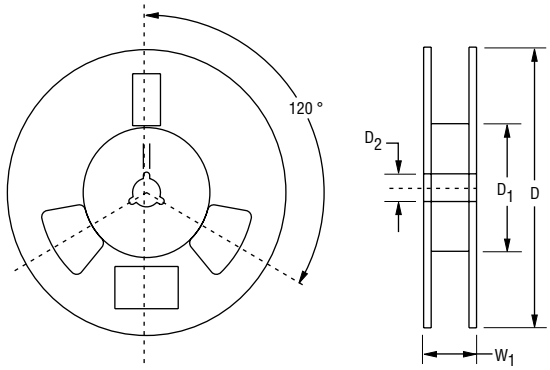
Physical Specifications

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

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	SMB (DO-214AA)	
		7 Inch Reel	13 Inch Reel
Carrier Width	A	3.67 ± 0.20 (0.144 ± 0.008)	
Carrier Length	B	5.60 ± 0.20 (0.220 ± 0.008)	
Carrier Depth	C	2.57 ± 0.20 (0.101 ± 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 ± 0.20 (0.512 ± 0.008)	
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)	
Punch Hole Position	F	5.50 ± 0.05 (0.217 ± 0.002)	
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 ± 0.05 (0.079 ± 0.002)	
Overall Tape Thickness	T	0.30 ± 0.10 (0.012 ± 0.004)	
Tape Width	W	12.00 ± 0.30 (0.472 ± 0.012)	
Reel Width	W_1	18.4 (0.724) MAX.	
Quantity per Reel	--	500	3,000