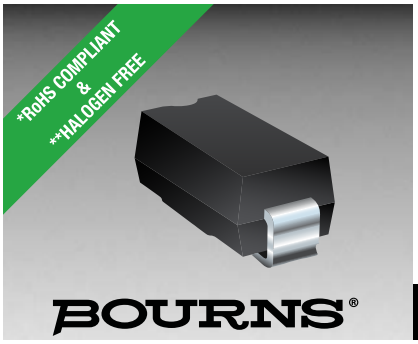


Features

- Surface Mount SMB package
- Breakdown Voltage: 15 to 68 volts
- Power Dissipation: 600 watts
- RoHS compliant* and halogen free**
- AEC-Q101 compliant***

Applications

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

P6SMB-Q 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 15 V up to 68 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)	V_F	3.5	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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www.bourns.com

How to Order

P6SMB 15 CA - Q

Series
P6SMB= SMB/DO-214AA

Breakdown Voltage
15 to 68 = 15 to 68 V_{BR} (Volts)

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

AEC-Q101 Suffix
Q = AEC-Q101 Compliant, 13-inch Reel (3000 pcs.)

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.

*** Q suffix for applications requiring appropriate AEC-Q101 compliance for electronic limiters.

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Users should verify actual device performance in their specific applications.
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Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

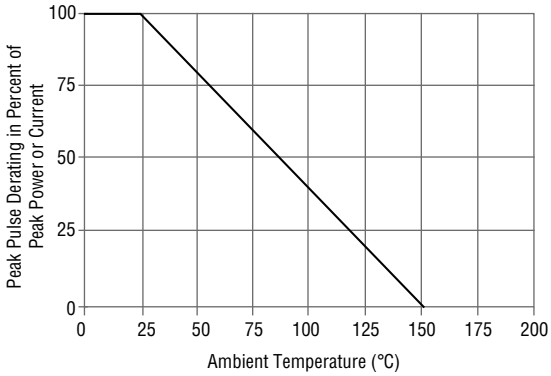
Unidirectional Device		Bidirectional Device		Breakdown Voltage V_{BR} (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Reverse Voltage @ I_{RSM}	Maximum Reverse Surge Current
Part No.	Marking	Part No.	Marking	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_{RSM} (V)	I_{RSM} (A)
P6SMB15A-Q	15AQ	P6SMB15CA-Q	15CQ	14.3	15.8	1	12.8	1	21.2	28.8
P6SMB16A-Q	16AQ	P6SMB16CA-Q	16CQ	15.2	16.8	1	13.6	1	22.5	27.1
P6SMB18A-Q	18AQ	P6SMB18CA-Q	18CQ	17.1	18.9	1	15.3	1	25.5	24.2
P6SMB20A-Q	20AQ	P6SMB20CA-Q	20CQ	19	21	1	17.1	1	27.7	22
P6SMB22A-Q	22AQ	P6SMB22CA-Q	22CQ	20.9	23.1	1	18.8	1	30.6	19.9
P6SMB24A-Q	24AQ	P6SMB24CA-Q	24CQ	22.8	25.2	1	20.5	1	33.2	18.4
P6SMB27A-Q	27AQ	P6SMB27CA-Q	27CQ	25.7	28.4	1	23.1	1	37.5	16.3
P6SMB30A-Q	30AQ	P6SMB30CA-Q	30CQ	28.5	31.5	1	25.6	1	41.4	14.7
P6SMB33A-Q	33AQ	P6SMB33CA-Q	33CQ	31.4	34.7	1	28.2	1	45.7	13.3
P6SMB36A-Q	36AQ	P6SMB36CA-Q	36CQ	34.2	37.8	1	30.8	1	49.9	12.2
P6SMB39A-Q	39AQ	P6SMB39CA-Q	39CQ	37.1	41	1	33.3	1	53.9	11.3
P6SMB43A-Q	43AQ	P6SMB43CA-Q	43CQ	40.9	45.2	1	36.8	1	59.3	10.3
P6SMB47A-Q	47AQ	P6SMB47CA-Q	47CQ	44.7	49.4	1	40.2	1	64.8	9.4
P6SMB51A-Q	51AQ	P6SMB51CA-Q	51CQ	48.5	53.6	1	43.6	1	70.1	8.7
P6SMB56A-Q	56AQ	P6SMB56CA-Q	56CQ	53.2	58.8	1	47.8	1	77	7.9
P6SMB62A-Q	62AQ	P6SMB62CA-Q	62CQ	58.9	65.1	1	53	1	85	7.2
P6SMB68A-Q	68AQ	P6SMB68CA-Q	68CQ	64.6	71.4	1	58.1	1	92	6.6

Notes:
1. Suffix ‘A’ denotes a 5 % tolerance unidirectional device.
2. Suffix ‘CA’ denotes a 5 % tolerance bidirectional device.

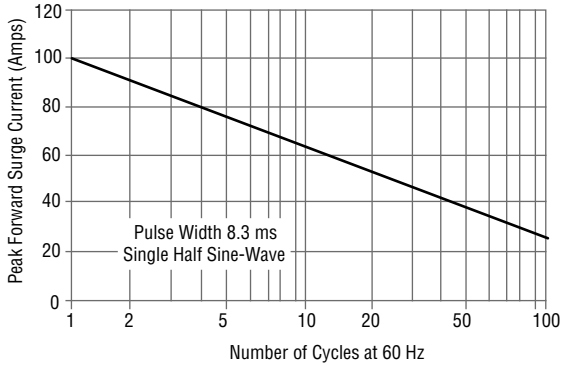
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Rating & Characteristic Curves

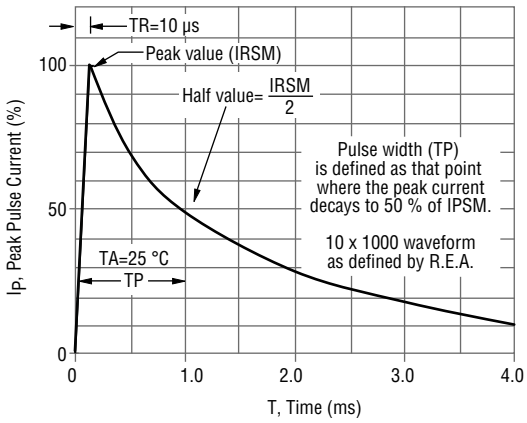
Pulse Derating Curve



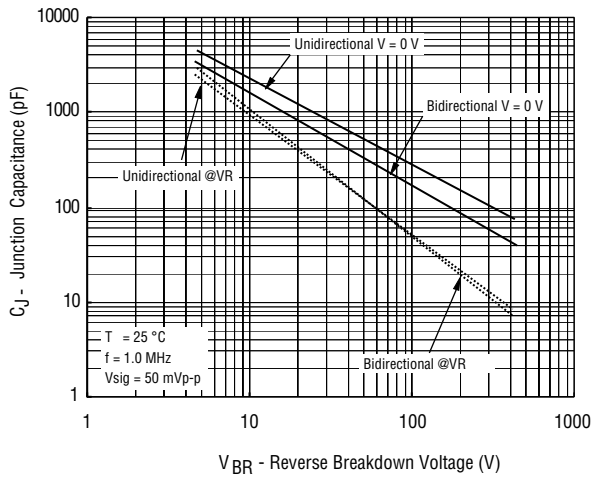
Maximum Non-Repetitive Surge Current



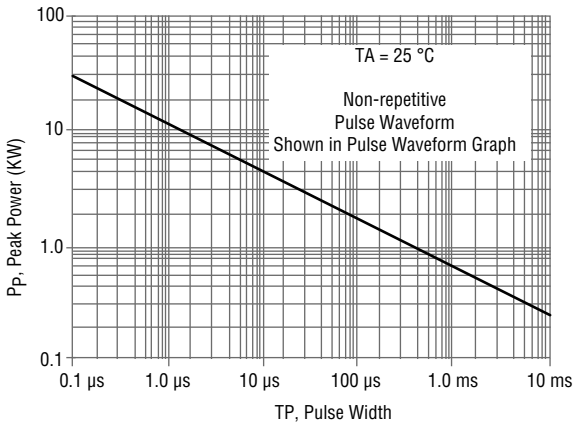
Pulse Waveform



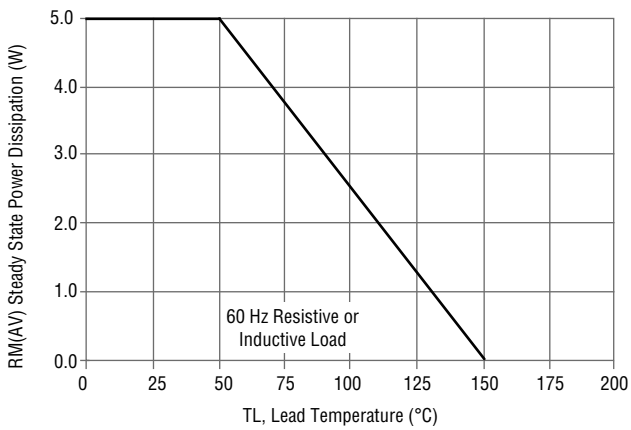
Typical Junction Capacitance



Pulse Rating Curve

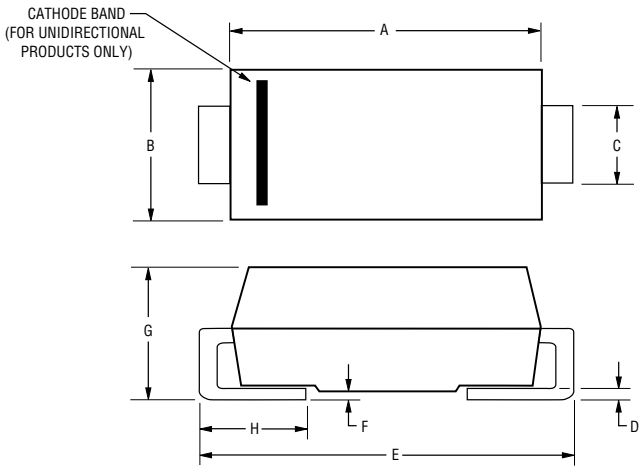


Steady State Power Derating Curve



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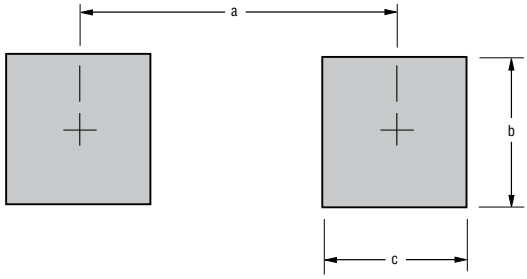
Product Dimensions



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	0.15 - 0.31 (0.006 - 0.012)
E	5.21 - 5.59 (0.205 - 0.220)
F	0.203 (0.008) MAX.
G	2.13 - 2.44 (0.084 - 0.096)
H	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

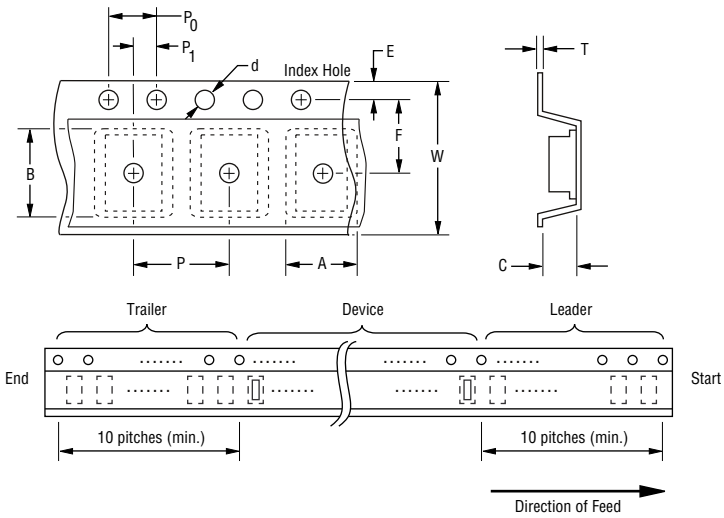
Physical Specifications

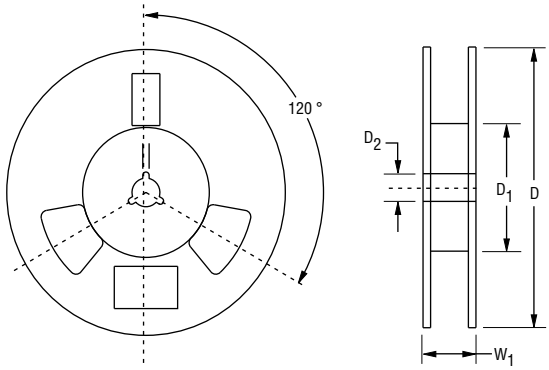
Moisture Sensitivity Level.....1
ESD Classification (HBM)..... 3B

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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	SMB (DO-214AA) 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	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	--	3000

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