

# Silicon Avalanche Diodes

## 600W Surface Mount Transient Voltage Suppressors

### P6SMBJ Series



#### FEATURES

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition Rate (duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV for unidirectional types
- Typical IR less than 1 mA above 10V
- High Temperature soldering: 250°C/10 seconds at terminals
- Plastic packages has Underwriters Laboratory Flammability 94V-0



#### MECHANICAL CHARACTERISTICS

- Case: JEDEC DO214AA. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750 Method 2026
- Polarity. Color band denotes positive end(cathode) except Bidirectional
- Standard Packaging: 12mm tape(EIA STF RS-481)
- Weight: 0.003 ounce, 0.093 gram

#### DEVICES FOR BIPOLAR APPLICATIONS

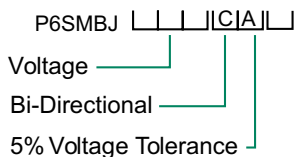
For Bidirectional use C or CA Suffix for types SMBJ5.0 thru types SMBJ110(e.g. SMBJ5.0C, SMBJ170CA)

Electrical characteristics apply in both directions

**Agency Approvals:** Recognized under the Components Program of Underwriters Laboratories.

**Agency File Number:** E128662

#### ORDERING INFORMATION



#### MAXIMUM RATINGS @25°C AMBIENT TEMPERATURE AND CHARACTERISTICS (unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power Dissipation on 10/1000µs waveform (note 1,2, FIG.1)	P <sub>ppm</sub>	Min 600	Watts
Peak pulse current of on 10\1000µs waveform (note 1, FIG.3)	I <sub>ppm</sub>	SEE TABLE 1	Amps
Peak forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load, (JEDEC Method) (note 2.3)	I <sub>psm</sub>	100	Amps
Operating junction and Storage Temperature Range	T <sub>j</sub> , T <sub>sTG</sub>	-55 to +150 -55 to +150	°C

Note 1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>= 25°C per Fig.2

Note 2. Mounted on 5.0mm<sup>2</sup>(0.03mm thick) Copper Pads to each terminal

Note 3. 8.3 ms single half sine-wave, or equivalent square wave, Duty cycle= 4 pulses per minute

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### ELECTRICAL SPECIFICATION @ Tamb 25°C

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Reverse Stand off Voltage Vr (Volts)	Breakdown Voltage VBR (Volts) @ Ir		Test Current Ir (mA)	Maximum Clamping Voltage Vc @ IPP (Volts)	Maximum Peak Pulse Current IPP (A)	Maximum Reverse Leakage Ir @ Vr (µA)
		UNI	BI		MIN	MAX				
		P6SMBJ 6.8A	P6SMBJ 6.8CA		6V8A	6V8C				
P6SMBJ 7.5A	P6SMBJ 7.5CA	7V5A	7V5C	6.40	7.13	7.88	10	11.3	54.0	500
P6SMBJ 8.2A	P6SMBJ 8.2CA	8V2A	8V2C	7.02	7.79	8.61	10	12.1	50.4	200
P6SMBJ 9.1A	P6SMBJ 9.1CA	9V1A	9V1C	7.78	8.65	9.55	1	13.4	45.5	50
P6SMBJ 10A	P6SMBJ 10CA	10A	10C	8.55	9.50	10.50	1	14.5	42.1	10
P6SMBJ 11A	P6SMBJ 11CA	11A	11C	9.40	10.50	11.60	1	15.6	39.1	5
P6SMBJ 12A	P6SMBJ 12CA	12A	12C	10.20	11.40	12.60	1	16.7	36.5	5
P6SMBJ 13A	P6SMBJ 13CA	13A	13C	11.10	12.40	13.70	1	18.2	33.5	5
P6SMBJ 15A	P6SMBJ 15CA	15A	15C	12.80	14.30	15.80	1	21.2	28.8	5
P6SMBJ 16A	P6SMBJ 16CA	16A	16C	13.60	15.20	16.80	1	22.5	27.1	5
P6SMBJ 18A	P6SMBJ 18CA	18A	18C	15.30	17.10	18.90	1	25.5	24.2	5
P6SMBJ 20A	P6SMBJ 20CA	20A	20C	17.10	19.00	21.00	1	27.7	22.0	5
P6SMBJ 22A	P6SMBJ 22CA	22A	22C	18.80	20.90	23.10	1	30.6	19.9	5
P6SMBJ 24A	P6SMBJ 24CA	24A	24C	20.50	22.80	25.20	1	33.2	18.4	5
P6SMBJ 27A	P6SMBJ 27CA	27A	27C	23.10	25.70	28.40	1	37.5	16.3	5
P6SMBJ 30A	P6SMBJ 30CA	30A	30C	25.60	28.50	31.50	1	41.4	14.7	5
P6SMBJ 33A	P6SMBJ 33CA	33A	33C	28.20	31.40	34.70	1	45.7	13.3	5
P6SMBJ 36A	P6SMBJ 36CA	36A	36C	30.80	34.20	37.80	1	49.9	12.2	5
P6SMBJ 39A	P6SMBJ 39CA	39A	39C	33.30	37.10	41.00	1	53.9	11.3	5
P6SMBJ 43A	P6SMBJ 43CA	43A	43C	36.80	40.90	45.20	1	59.3	10.3	5
P6SMBJ 47A	P6SMBJ 47CA	47A	47C	40.20	44.70	49.40	1	64.8	9.4	5
P6SMBJ 51A	P6SMBJ 51CA	51A	51C	43.60	48.50	53.60	1	70.1	8.7	5
P6SMBJ 56A	P6SMBJ 56CA	56A	56C	47.80	53.20	58.80	1	77.0	7.9	5
P6SMBJ 62A	P6SMBJ 62CA	62A	62C	53.00	58.90	65.10	1	85.0	7.2	5
P6SMBJ 68A	P6SMBJ 68CA	68A	68C	58.10	64.60	71.40	1	92.0	6.6	5
P6SMBJ 75A	P6SMBJ 75CA	75A	75C	64.10	71.30	78.80	1	103.0	5.9	5
P6SMBJ 82A	P6SMBJ 82CA	82A	82C	70.10	77.90	86.10	1	113.0	5.4	5
P6SMBJ 91A	P6SMBJ 91CA	91A	91C	77.80	86.50	95.50	1	125.0	4.9	5
P6SMBJ 100A	P6SMBJ 100CA	100A	100C	85.50	95.00	105.00	1	137.0	4.5	5
P6SMBJ 110A	P6SMBJ 110CA	110A	110C	94.00	105.00	116.00	1	152.0	4.0	5
P6SMBJ 120A	P6SMBJ 120CA	120A	120C	102.00	114.00	126.00	1	165.0	3.7	5
P6SMBJ 130A	P6SMBJ 130CA	130A	130C	111.00	124.00	137.00	1	179.0	3.4	5
P6SMBJ 150A	P6SMBJ 150CA	150A	150C	128.00	143.00	158.00	1	207.0	2.9	5
P6SMBJ 160A	P6SMBJ 160CA	160A	160C	136.00	152.00	168.00	1	219.0	2.8	5
P6SMBJ 170A	P6SMBJ 170CA	170A	170C	145.00	162.00	179.00	1	234.0	2.6	5
P6SMBJ 180A	P6SMBJ 180CA	180A	180C	154.00	171.00	189.00	1	246.0	2.5	5
P6SMBJ 200A	P6SMBJ 200CA	200A	200C	171.00	190.00	210.00	1	274.0	2.2	5
P6SMBJ 220A	P6SMBJ 220CA	220A	220C	185.00	209.00	231.00	1	328.0	1.9	5
P6SMBJ 250A	P6SMBJ 250CA	250A	250C	214.00	237.00	263.00	1	344.0	1.8	5
P6SMBJ 300A	P6SMBJ 300CA	300A	300C	256.00	285.00	315.00	1	414.0	1.5	5
P6SMBJ 350A	P6SMBJ 350CA	350A	350C	300.00	332.00	368.00	1	482.0	1.3	5
P6SMBJ 400A	P6SMBJ 400CA	400A	400C	342.00	380.00	420.00	1	548.0	1.1	5
P6SMBJ 440A	P6SMBJ 440CA	440A	440C	376.00	418.00	462.00	1	602.0	1.0	5
P6SMBJ 480A	P6SMBJ 480CA	480A	480C	408.00	456.00	504.00	1	658.0	0.9	5
P6SMBJ 510A	P6SMBJ 510CA	510A	510C	434.00	485.00	535.00	1	698.0	0.9	5
P6SMBJ 530A	P6SMBJ 530CA	530A	530C	477.00	503.50	556.50	1	725.0	0.8	5
P6SMBJ 540A	P6SMBJ 540CA	540A	540C	459.00	513.00	567.00	1	740.0	0.8	5
P6SMBJ 550A	P6SMBJ 550CA	550A	550C	495.00	522.50	577.50	1	760.0	0.8	5

For bidirectional type having Vrwm of 10 volts and less, the IR limit is double.  
The available parts are "A" type only, the parts without A (VBR is ± 10%) is not available.

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Ratings and Characteristic Curves  $T_A=25^\circ\text{C}$  unless otherwise noted

Fig. 1 Peak Pulse Power Rating

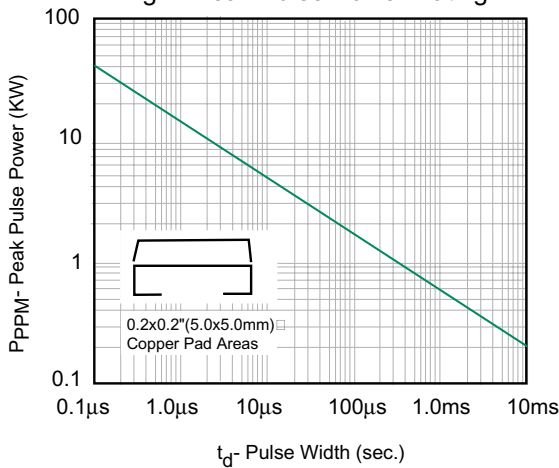


Fig. 2 Pulse Derating Curve

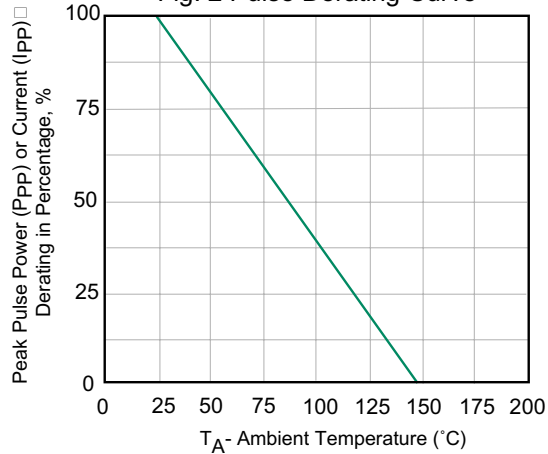


Fig. 3 Pulse Waveform

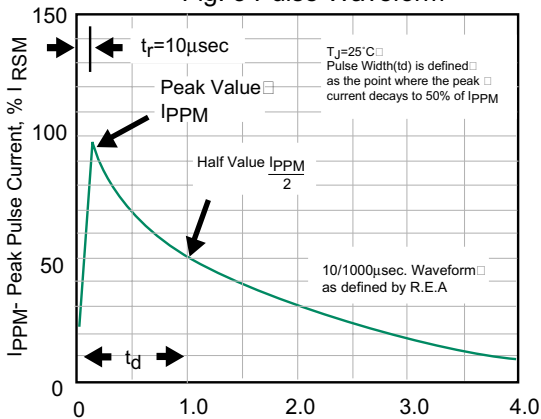


Fig. 4- Typical Junction Capacitance

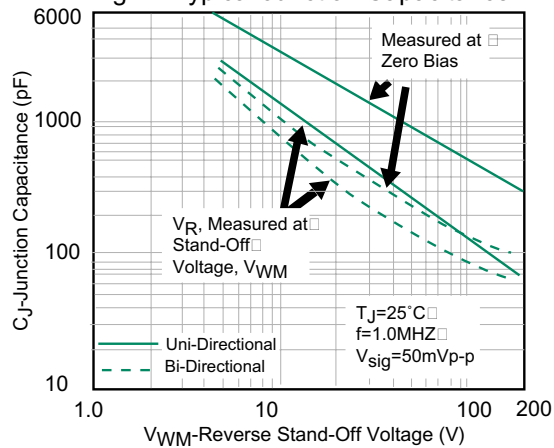


Fig. 5- Typ. Transient Thermal Impedance

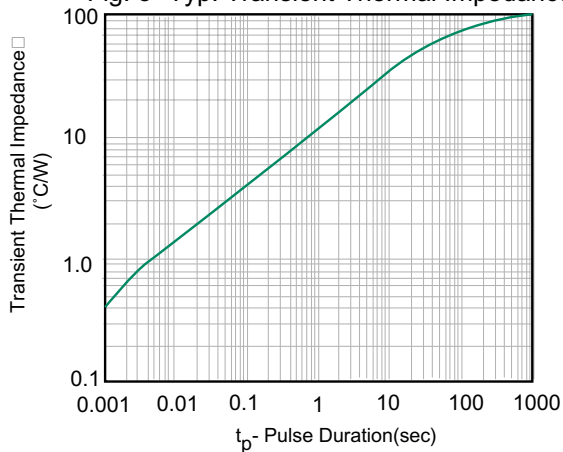
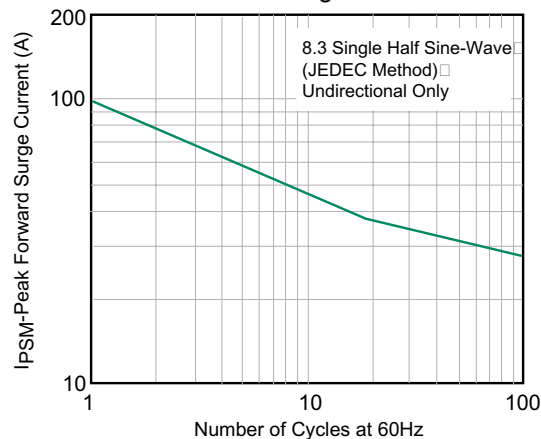


Fig. 6- Maximum Non-Repetitive Peak Forward Surge Current



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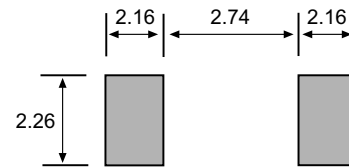
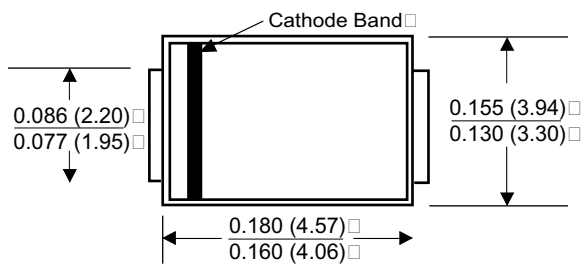
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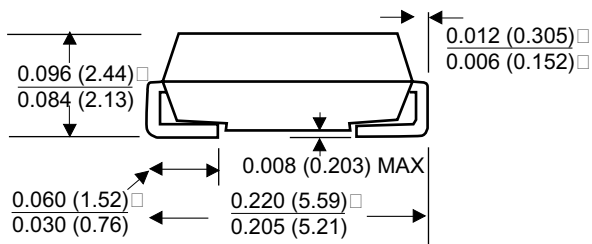
#### Package Outline Dimensions and Pad Layout

DO-214AA (SMB J-Bend)



Solder Pads

All dimensions in mm



Dimensions in inches and (millimeters)