WINSOURCE ELECTRONICS

# THE DATASHEET OF

# P6SMBJ100CA

# Silicon Avalanche Diodes

## 600W Surface Mount Transient Voltage Supressors

## RoHS P6SMBJ Series

### FEATURES

- RoHS compliant
- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low lead 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 µmA above 10V
- High Temperature soldering: 250˚C/10 seconds at terminals

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

**Agency File Number:** E128662

OBSOLETE

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

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Peak pulse power Dissipation on 10\1000µs waveform (note 1,2, FIG.1) | $P_{PPM}$ | Min 600 | Watts |
| Peak pulse current of on 10\1000µs waveform (note 1, FIG.3) | $I_{PPM}$ | SEE TABLE 1 | Amps |
| Peak forward Surge Current, 8.3ms Single Half SIne Wave Superimposed on Rated Load, (JEDEC Method) (note 2.3) | $I_{PSM}$ | 100 | Amps |
| Operating junction and Storage Temperature Range | $T_j$, $T_{STG}$ | -55 to +150 | °C |

Note 1. Non-repetitive current pulse, per Fig.3 and derated above $T_A$= 25˚C per Fig.2
Note 2. Mounted on 5.0mm$^2$(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

### ORDERING INFORMATION

P6SMBJ ___ C A
Voltage
Bi-Directional
5% Voltage Tolerance

Tape and reeled (3000 pcs)

### Mechanical Specifications:

**Weight:** 0.003ounce, 0.093 gram
**Case:** JEDEC DO-214AA Molded Plastic over glass passivated junction
**Mounting Position:** Any
**Polarity:** Color band denotes cathode except Bidirectional
**Terminal:** Solder Plated solderable per MIL-STD-750, Method 2026
**Standard Packaging:** 12mm tape (EIA STF RS-481)

# RoHS P6SMBJ Series

## ELECTRICAL SPECIFICATION @ Tamb 25°C

| Part Number (Uni) | Part Number (Bi) | Device Marking Code | | Reverse Stand off Voltage $V_R$ (Volts) | Breakdown Voltage $V_{BR}$ (Volts) @ $I_T$ | | Test Current $I_T$ (mA) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (Volts) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_R$ (µA) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | UNI | BI | | MIN | MAX | | | | |
| P6SMBJ6.8A | P6SMBJ6.8CA | 6V8A | 6V8CA | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 58.1 | 1000 |
| P6SMBJ7.5A | P6SMBJ7.5CA | 7V5A | 7V5CA | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 54.0 | 500 |
| P6SMBJ8.2A | P6SMBJ8.2CA | 8V2A | 8V2CA | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 50.4 | 200 |
| P6SMBJ9.1A | P6SMBJ9.1CA | 9V1A | 9V1CA | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 45.5 | 50 |
| P6SMBJ10A | P6SMBJ10CA | 10A | 10CA | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 42.1 | 10 |
| P6SMBJ11A | P6SMBJ11CA | 11A | 11CA | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 39.1 | 5 |
| P6SMBJ12A | P6SMBJ12CA | 12A | 12CA | 10.20 | 11.40 | 12.60 | 1 | 1 | 36.5 | 5 |
| P6SMBJ13A | P6SMBJ13CA | 13A | 13CA | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 3 | 5 |
| P6SMBJ15A | P6SMBJ15CA | 15A | 15CA | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 8 | 5 |
| P6SMBJ16A | P6SMBJ16CA | 16A | 16CA | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 27.1 | 5 |
| P6SMBJ18A | P6SMBJ18CA | 18A | 18CA | 15.30 | 17.10 | 18.90 | 1 | 5 | 24.2 | 5 |
| P6SMBJ20A | P6SMBJ20CA | 20A | 20CA | 17.10 | 19.00 | 21.00 | | 2 | 22.0 | 5 |
| P6SMBJ22A | P6SMBJ22CA | 22A | 22CA | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 19.9 | 5 |
| P6SMBJ24A | P6SMBJ24CA | 24A | 24CA | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 18.4 | 5 |
| P6SMBJ27A | P6SMBJ27CA | 27A | 27CA | 23.10 | 25.70 | 28.40 | | 37.5 | 16.3 | 5 |
| P6SMBJ30A | P6SMBJ30CA | 30A | 30CA | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 14.7 | 5 |
| P6SMBJ33A | P6SMBJ33CA | 33A | 33CA | 28.20 | 31.40 | 4.70 | 1 | 45.7 | 13.3 | 5 |
| P6SMBJ36A | P6SMBJ36CA | 36A | 36CA | 30.80 | 34.20 | 0 | 1 | 49.9 | 12.2 | 5 |
| P6SMBJ39A | P6SMBJ39CA | 39A | 39CA | 33.30 | 3 | 41. | 1 | 53.9 | 11.3 | 5 |
| P6SMBJ43A | P6SMBJ43CA | 43A | 43CA | 36.80 | 0.90 | 5.20 | 1 | 59.3 | 10.3 | 5 |
| P6SMBJ47A | P6SMBJ47CA | 47A | 47CA | 40.20 | 44.70 | .40 | 1 | 64.8 | 9.4 | 5 |
| P6SMBJ51A | P6SMBJ51CA | 51A | 51CA | 43.60 | 48.50 | 60 | 1 | 70.1 | 8.7 | 5 |
| P6SMBJ56A | P6SMBJ56CA | 56A | 56CA | 4 | 0 | 3.80 | 1 | 77.0 | 7.9 | 5 |
| P6SMBJ62A | P6SMBJ62CA | 62A | 62CA | .00 | 58. | 65.10 | 1 | 85.0 | 7.2 | 5 |
| P6SMBJ68A | P6SMBJ68CA | 68A | 68CA | 8.1 | 4.60 | 71.40 | 1 | 92.0 | 6.6 | 5 |
| P6SMBJ75A | P6SMBJ75CA | 75A | 75CA | | 1.30 | 78.80 | 1 | 103.0 | 5.9 | 5 |
| P6SMBJ82A | P6SMBJ82CA | 82A | 8 | 70.1 | 7.90 | 86.10 | 1 | 113.0 | 5.4 | 5 |
| P6SMBJ91A | P6SMBJ91CA | 91A | 1CA | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 4.9 | 5 |
| P6SMBJ100A | P6SMBJ100CA | 100A | 00C | 5 | 95.00 | 105.00 | 1 | 137.0 | 4.5 | 5 |
| P6SMBJ110A | P6SMBJ110CA | 110A | 1 | 0 | 105.00 | 116.00 | 1 | 152.0 | 4.0 | 5 |
| P6SMBJ120A | P6SMBJ120CA | | 120 | 02.00 | 114.00 | 126.00 | 1 | 165.0 | 3.7 | 5 |
| P6SMBJ130A | P6SMBJ130CA | 130A | 0CA | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 3.4 | 5 |
| P6SMBJ150A | P6SMBJ150CA | 150A | CA | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.9 | 5 |
| P6SMBJ160A | P6SMBJ160CA | 60A | 0CA | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 2.8 | 5 |
| P6SMBJ170A | P6SMBJ170CA | | 70CA | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 2.6 | 5 |
| P6SMBJ180A | P6SMBJ180CA | 180A | 180CA | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 2.5 | 5 |
| P6SMBJ200A | P6SMBJ200CA | 200A | 200CA | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 2.2 | 5 |
| P6SMBJ220A | P6SMBJ220CA | 220A | 220CA | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.9 | 5 |
| P6SMBJ250A | P6SMBJ250CA | 250A | 250CA | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.8 | 5 |
| P6SMBJ300A | P6SMBJ300CA | 300A | 300CA | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.5 | 5 |
| P6SMBJ350A | P6SMBJ350CA | 350A | 350CA | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 1.3 | 5 |
| P6SMBJ400A | P6SMBJ400CA | 400A | 400CA | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 1.1 | 5 |
| P6SMBJ440A | P6SMBJ440CA | 440A | 440CA | 376.00 | 418.00 | 462.00 | 1 | 602.0 | 1.0 | 5 |
| P6SMBJ480A | P6SMBJ480CA | 480A | 480CA | 408.00 | 456.00 | 504.00 | 1 | 658.0 | 0.9 | 5 |
| P6SMBJ510A | P6SMBJ510CA | 510A | 510CA | 434.00 | 485.00 | 535.00 | 1 | 698.0 | 0.9 | 5 |
| P6SMBJ530A | P6SMBJ530CA | 530A | 530CA | 477.00 | 503.50 | 556.50 | 1 | 725.0 | 0.8 | 5 |
| P6SMBJ540A | P6SMBJ540CA | 540A | 540CA | 459.00 | 513.00 | 567.00 | 1 | 740.0 | 0.8 | 5 |
| P6SMBJ550A | P6SMBJ550CA | 550A | 550CA | 495.00 | 522.50 | 577.50 | 1 | 760.0 | 0.8 | 5 |

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For bidirectional type having Vrwm of 10 volts and less, the IR limit is double.
For parts without A (VBR is ± 10%).

# RoHS P6SMBJ Series

**Ratings and Characteristic Curves $T_A$=25˚C unless otherwise noted**

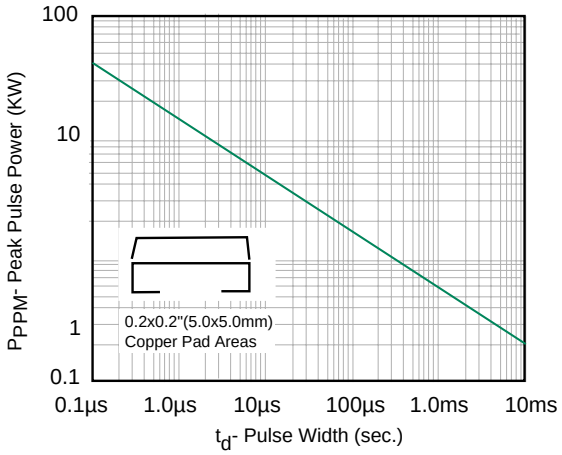


Fig. 1 Peak Pulse Power Rating

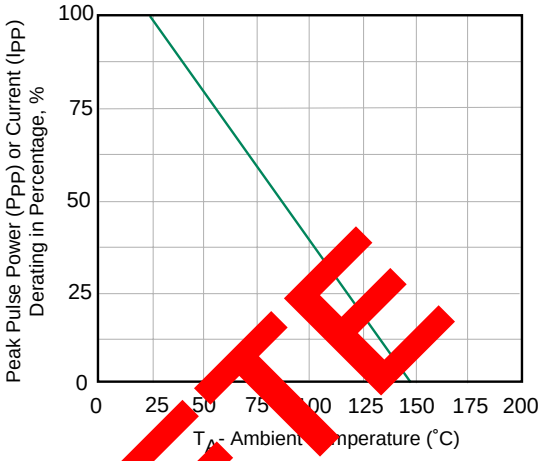


Fig. 2 Pulse Derating Curve

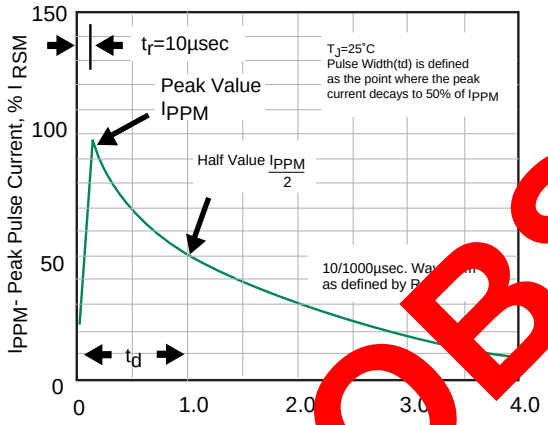


Fig. 3 Pulse Wa[illegible]

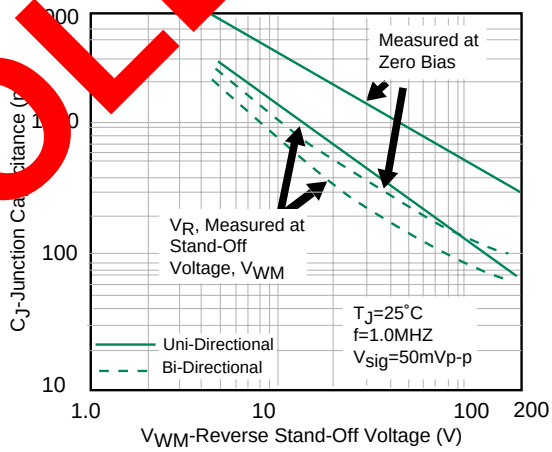


Fig. 4- Typical Junction Capacitance

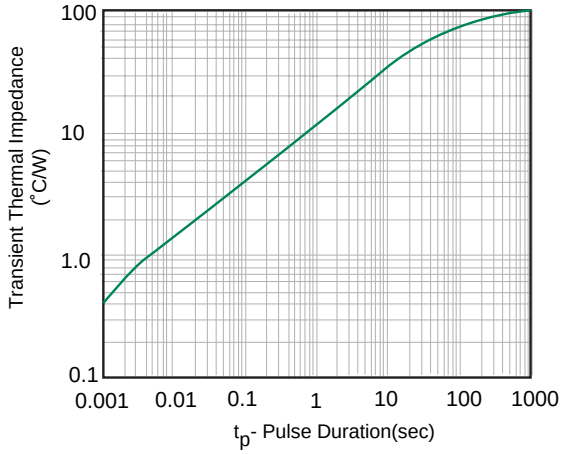


Fig. 5- Typ. Transient Thermal Impedance

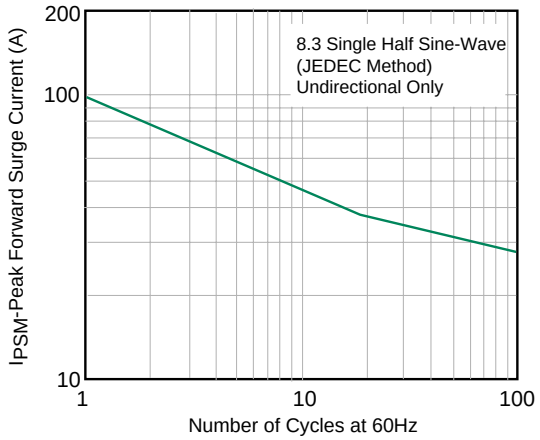


Fig. 6- Maximum Non-Repetitive Peak Forward Surge Current

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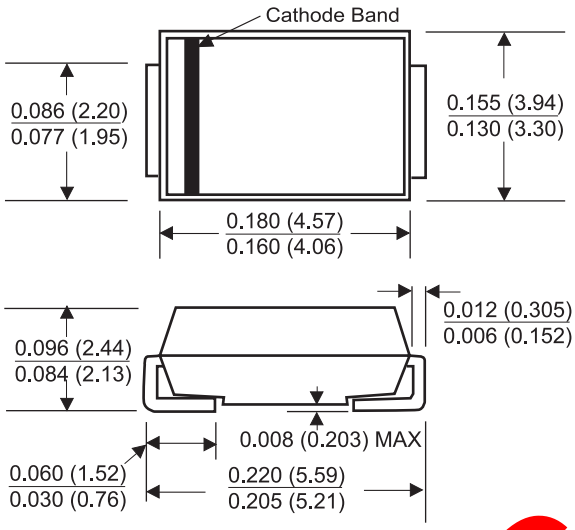
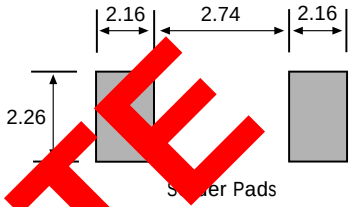
# RoHS P6SMBJ Series

## Package Outline Dimensions and Pad Layout

DO-214AA (SMB J-Bend)




Dimensions in inches and (millimeters




dimensions in mm

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