



# P6SMB6.8A(CA) - P6SMB440A(CA)

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR DIODE

**VOLTAGE RANGE: 6.8 - 440 V**

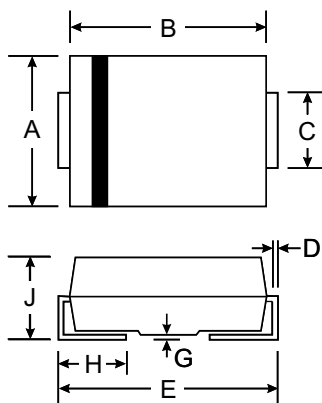
**POWER: 600Watts**

### Features

- Glass Passivated Die Construction
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Material: UL Flammability Classification Rating 94V-0

### Mechanical Data

- Case: SMB/DO-214AA, Molded Plastic
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number
- Weight: 0.093 grams (approx.)



| SMB(DO-214AA)        |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 3.30 | 3.94 |
| B                    | 4.06 | 4.70 |
| C                    | 1.91 | 2.21 |
| D                    | 0.15 | 0.31 |
| E                    | 5.00 | 5.59 |
| G                    | 0.10 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 2.00 | 2.62 |
| All Dimensions in mm |      |      |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                                                                                                         | Symbol         | Value                                                             | Unit             |
|------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------|------------------|
| Peak Pulse Power Dissipation<br>(Non repetitive current pulse derated above $T_A = 25^\circ\text{C}$ )<br>(Note 1)     | $P_{PK}$       | 600                                                               | W                |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method)<br>(Notes 1, 2, & 3) | $I_{FSM}$      | 100                                                               | A                |
| Instantaneous Forward Voltage @ $I_{PP} = 35\text{A}$<br>(Notes 1, 2, & 3)                                             | $V_F$          | $V_{BR} < 100\text{V}$<br>3.5<br>$V_{BR} \geq 100\text{V}$<br>5.0 | V<br>V           |
| Operating and Storage Temperature Range                                                                                | $T_j, T_{STG}$ | -55 to +150                                                       | $^\circ\text{C}$ |

- Notes:
1. Valid provided that terminals are kept at ambient temperature.
  2. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
  3. Unidirectional units only.



| TYPE      |            | Reverse Stand-Off Voltage | Breakdown Voltage Min. @I <sub>T</sub> | Breakdown Voltage Max. @ I <sub>T</sub> | Test Current        | Maximum Clamping Voltage @I <sub>PP</sub> | Peak Pulse Current  | Reverse Leakage @V <sub>RWM</sub> |
|-----------|------------|---------------------------|----------------------------------------|-----------------------------------------|---------------------|-------------------------------------------|---------------------|-----------------------------------|
| (UNI)     | (BI)       | V <sub>RWM</sub> (V)      | V <sub>BR MIN</sub> (V)                | V <sub>BR MAX</sub> (V)                 | I <sub>T</sub> (mA) | V <sub>C</sub> (V)                        | I <sub>PP</sub> (A) | I <sub>R</sub> (uA)               |
| P6SMB6.8  | P6SMB6.8C  | 5.50                      | 6.12                                   | 7.48                                    | 10.0                | 10.8                                      | 55.6                | 1000.0                            |
| P6SMB6.8A | P6SMB6.8CA | 5.80                      | 6.45                                   | 7.14                                    | 10.0                | 10.5                                      | 57.1                | 1000.0                            |
| P6SMB7.5  | P6SMB7.5C  | 6.05                      | 6.75                                   | 8.25                                    | 10.0                | 11.7                                      | 51.3                | 500.0                             |
| P6SMB7.5A | P6SMB7.5CA | 6.40                      | 7.13                                   | 7.88                                    | 10.0                | 11.3                                      | 53.1                | 500.0                             |
| P6SMB8.2  | P6SMB8.2C  | 6.63                      | 7.38                                   | 9.02                                    | 10.0                | 12.5                                      | 48.0                | 200.0                             |
| P6SMB8.2A | P6SMB8.2CA | 7.02                      | 7.79                                   | 8.61                                    | 10.0                | 12.1                                      | 49.6                | 200.0                             |
| P6SMB9.1  | P6SMB9.1C  | 7.37                      | 8.19                                   | 10.0                                    | 1.0                 | 13.8                                      | 43.5                | 50.0                              |
| P6SMB9.1A | P6SMB9.1CA | 7.78                      | 8.65                                   | 9.55                                    | 1.0                 | 13.4                                      | 44.8                | 50.0                              |
| P6SMB10   | P6SMB10C   | 8.10                      | 9.00                                   | 11.0                                    | 1.0                 | 15.0                                      | 40.0                | 10.0                              |
| P6SMB10A  | P6SMB10CA  | 8.55                      | 9.50                                   | 10.5                                    | 1.0                 | 14.5                                      | 41.4                | 10.0                              |
| P6SMB11   | P6SMB11C   | 8.92                      | 9.90                                   | 12.1                                    | 1.0                 | 16.2                                      | 37.0                | 5.0                               |
| P6SMB11A  | P6SMB11CA  | 9.40                      | 10.5                                   | 11.6                                    | 1.0                 | 15.6                                      | 38.5                | 5.0                               |
| P6SMB12   | P6SMB12C   | 9.72                      | 10.8                                   | 13.2                                    | 1.0                 | 17.3                                      | 34.7                | 5.0                               |
| P6SMB12A  | P6SMB12CA  | 10.2                      | 11.4                                   | 12.6                                    | 1.0                 | 16.7                                      | 35.9                | 5.0                               |
| P6SMB13   | P6SMB13C   | 10.5                      | 11.7                                   | 14.3                                    | 1.0                 | 19.0                                      | 31.6                | 5.0                               |
| P6SMB13A  | P6SMB13CA  | 11.1                      | 12.4                                   | 13.7                                    | 1.0                 | 18.2                                      | 33.0                | 5.0                               |
| P6SMB15   | P6SMB15C   | 12.1                      | 13.5                                   | 16.5                                    | 1.0                 | 22.0                                      | 27.3                | 5.0                               |
| P6SMB15A  | P6SMB15CA  | 12.8                      | 14.3                                   | 15.8                                    | 1.0                 | 21.2                                      | 28.3                | 5.0                               |
| P6SMB16   | P6SMB16C   | 12.9                      | 14.4                                   | 17.6                                    | 1.0                 | 23.5                                      | 25.5                | 5.0                               |
| P6SMB16A  | P6SMB16CA  | 13.6                      | 15.2                                   | 16.8                                    | 1.0                 | 22.5                                      | 26.7                | 5.0                               |
| P6SMB18   | P6SMB18C   | 14.5                      | 16.2                                   | 19.8                                    | 1.0                 | 26.5                                      | 22.6                | 5.0                               |
| P6SMB18A  | P6SMB18CA  | 15.3                      | 17.1                                   | 18.9                                    | 1.0                 | 25.2                                      | 23.8                | 5.0                               |
| P6SMB20   | P6SMB20C   | 16.2                      | 18.0                                   | 22.0                                    | 1.0                 | 29.1                                      | 20.6                | 5.0                               |
| P6SMB20A  | P6SMB20CA  | 17.1                      | 19.0                                   | 21.0                                    | 1.0                 | 27.7                                      | 21.7                | 5.0                               |
| P6SMB22   | P6SMB22C   | 17.8                      | 19.8                                   | 24.2                                    | 1.0                 | 31.9                                      | 18.8                | 5.0                               |
| P6SMB22A  | P6SMB22CA  | 18.8                      | 20.9                                   | 23.1                                    | 1.0                 | 30.6                                      | 19.6                | 5.0                               |
| P6SMB24   | P6SMB24C   | 19.4                      | 21.6                                   | 26.4                                    | 1.0                 | 34.7                                      | 17.3                | 5.0                               |
| P6SMB24A  | P6SMB24CA  | 20.5                      | 22.8                                   | 25.2                                    | 1.0                 | 33.2                                      | 18.1                | 5.0                               |
| P6SMB27   | P6SMB27C   | 21.8                      | 24.3                                   | 29.7                                    | 1.0                 | 39.1                                      | 15.3                | 5.0                               |
| P6SMB27A  | P6SMB27CA  | 23.1                      | 25.7                                   | 28.4                                    | 1.0                 | 37.5                                      | 16.0                | 5.0                               |
| P6SMB30   | P6SMB30C   | 24.3                      | 27.0                                   | 33.0                                    | 1.0                 | 43.5                                      | 13.8                | 5.0                               |
| P6SMB30A  | P6SMB30CA  | 25.6                      | 28.5                                   | 31.5                                    | 1.0                 | 41.4                                      | 14.5                | 5.0                               |
| P6SMB33   | P6SMB33C   | 26.8                      | 29.7                                   | 36.3                                    | 1.0                 | 47.7                                      | 12.6                | 5.0                               |
| P6SMB33A  | P6SMB33CA  | 28.2                      | 31.4                                   | 34.7                                    | 1.0                 | 45.7                                      | 13.1                | 5.0                               |
| P6SMB36   | P6SMB36C   | 29.1                      | 32.4                                   | 39.6                                    | 1.0                 | 52.0                                      | 11.5                | 5.0                               |
| P6SMB36A  | P6SMB36CA  | 30.8                      | 34.2                                   | 37.8                                    | 1.0                 | 49.9                                      | 12.0                | 5.0                               |
| P6SMB39   | P6SMB39C   | 31.6                      | 35.1                                   | 42.9                                    | 1.0                 | 56.4                                      | 10.6                | 5.0                               |
| P6SMB39A  | P6SMB39CA  | 33.3                      | 37.1                                   | 41.0                                    | 1.0                 | 53.9                                      | 11.1                | 5.0                               |
| P6SMB43   | P6SMB43C   | 34.8                      | 38.7                                   | 47.3                                    | 1.0                 | 61.9                                      | 9.7                 | 5.0                               |
| P6SMB43A  | P6SMB43CA  | 36.8                      | 40.9                                   | 45.2                                    | 1.0                 | 59.3                                      | 10.1                | 5.0                               |
| P6SMB47   | P6SMB47C   | 38.1                      | 42.3                                   | 51.7                                    | 1.0                 | 67.8                                      | 8.8                 | 5.0                               |
| P6SMB47A  | P6SMB47CA  | 40.2                      | 44.7                                   | 49.4                                    | 1.0                 | 64.8                                      | 9.3                 | 5.0                               |
| P6SMB51   | P6SMB51C   | 41.3                      | 45.9                                   | 56.1                                    | 1.0                 | 73.5                                      | 8.2                 | 5.0                               |



| TYPE      |            | Reverse Stand-Off Voltage | Breakdown Voltage Min. @I <sub>T</sub> | Breakdown Voltage Max. @ I <sub>T</sub> | Test Current        | Maximum Clamping Voltage @I <sub>PP</sub> | Peak Pulse Current  | Reverse Leakage @V <sub>RWM</sub> |
|-----------|------------|---------------------------|----------------------------------------|-----------------------------------------|---------------------|-------------------------------------------|---------------------|-----------------------------------|
| (UNI)     | (BI)       | V <sub>RWM</sub> (V)      | V <sub>BR</sub> MIN(V)                 | V <sub>BR</sub> MAX(V)                  | I <sub>T</sub> (mA) | V <sub>C</sub> (V)                        | I <sub>PP</sub> (A) | I <sub>R</sub> (uA)               |
| P6SMB51A  | P6SMB51CA  | 43.6                      | 48.5                                   | 53.6                                    | 1.0                 | 70.1                                      | 8.6                 | 5.0                               |
| P6SMB56   | P6SMB56C   | 45.4                      | 50.4                                   | 61.6                                    | 1.0                 | 80.5                                      | 7.5                 | 5.0                               |
| P6SMB56A  | P6SMB56CA  | 47.8                      | 53.2                                   | 58.8                                    | 1.0                 | 77.0                                      | 7.8                 | 5.0                               |
| P6SMB62   | P6SMB62C   | 50.2                      | 55.8                                   | 68.2                                    | 1.0                 | 89.0                                      | 6.7                 | 5.0                               |
| P6SMB62A  | P6SMB62CA  | 53.0                      | 58.9                                   | 65.1                                    | 1.0                 | 85.0                                      | 7.1                 | 5.0                               |
| P6SMB68   | P6SMB68C   | 55.1                      | 61.2                                   | 74.8                                    | 1.0                 | 98.0                                      | 6.1                 | 5.0                               |
| P6SMB68A  | P6SMB68CA  | 58.1                      | 64.6                                   | 71.4                                    | 1.0                 | 92.0                                      | 6.5                 | 5.0                               |
| P6SMB75   | P6SMB75C   | 60.7                      | 67.5                                   | 82.5                                    | 1.0                 | 108                                       | 5.6                 | 5.0                               |
| P6SMB75A  | P6SMB75CA  | 64.1                      | 71.3                                   | 78.8                                    | 1.0                 | 103                                       | 5.8                 | 5.0                               |
| P6SMB82   | P6SMB82C   | 66.4                      | 73.8                                   | 90.2                                    | 1.0                 | 118                                       | 5.1                 | 5.0                               |
| P6SMB82A  | P6SMB82CA  | 70.1                      | 77.9                                   | 86.1                                    | 1.0                 | 113                                       | 5.3                 | 5.0                               |
| P6SMB91   | P6SMB91C   | 73.7                      | 81.9                                   | 100                                     | 1.0                 | 131                                       | 4.6                 | 5.0                               |
| P6SMB91A  | P6SMB91CA  | 77.8                      | 86.5                                   | 95.5                                    | 1.0                 | 125                                       | 4.8                 | 5.0                               |
| P6SMB100  | P6SMB100C  | 81.0                      | 90.0                                   | 110                                     | 1.0                 | 144                                       | 4.2                 | 5.0                               |
| P6SMB100A | P6SMB100CA | 85.5                      | 95.0                                   | 105                                     | 1.0                 | 137                                       | 4.4                 | 5.0                               |
| P6SMB110  | P6SMB110C  | 89.2                      | 99.0                                   | 121                                     | 1.0                 | 158                                       | 3.8                 | 5.0                               |
| P6SMB110A | P6SMB110CA | 94.0                      | 105                                    | 116                                     | 1.0                 | 152                                       | 3.9                 | 5.0                               |
| P6SMB120  | P6SMB120C  | 97.2                      | 108                                    | 132                                     | 1.0                 | 173                                       | 3.5                 | 5.0                               |
| P6SMB120A | P6SMB120CA | 102                       | 114                                    | 126                                     | 1.0                 | 165                                       | 3.6                 | 5.0                               |
| P6SMB130  | P6SMB130C  | 105                       | 117                                    | 143                                     | 1.0                 | 187                                       | 3.2                 | 5.0                               |
| P6SMB130A | P6SMB130CA | 111                       | 124                                    | 137                                     | 1.0                 | 179                                       | 3.4                 | 5.0                               |
| P6SMB150  | P6SMB150C  | 121                       | 135                                    | 165                                     | 1.0                 | 215                                       | 2.8                 | 5.0                               |
| P6SMB150A | P6SMB150CA | 128                       | 143                                    | 158                                     | 1.0                 | 207                                       | 2.9                 | 5.0                               |
| P6SMB160  | P6SMB160C  | 130                       | 144                                    | 176                                     | 1.0                 | 230                                       | 2.6                 | 5.0                               |
| P6SMB160A | P6SMB160CA | 136                       | 152                                    | 168                                     | 1.0                 | 219                                       | 2.7                 | 5.0                               |
| P6SMB170  | P6SMB170C  | 138                       | 153                                    | 187                                     | 1.0                 | 244                                       | 2.5                 | 5.0                               |
| P6SMB170A | P6SMB170CA | 145                       | 162                                    | 179                                     | 1.0                 | 234                                       | 2.6                 | 5.0                               |
| P6SMB180  | P6SMB180C  | 146                       | 162                                    | 198                                     | 1.0                 | 258                                       | 2.3                 | 5.0                               |
| P6SMB180A | P6SMB180CA | 154                       | 171                                    | 189                                     | 1.0                 | 246                                       | 2.4                 | 5.0                               |
| P6SMB200  | P6SMB200C  | 162                       | 180                                    | 220                                     | 1.0                 | 287                                       | 2.1                 | 5.0                               |
| P6SMB200A | P6SMB200CA | 171                       | 190                                    | 210                                     | 1.0                 | 274                                       | 2.2                 | 5.0                               |
| P6SMB220  | P6SMB220C  | 175                       | 198                                    | 242                                     | 1.0                 | 344                                       | 1.7                 | 5.0                               |
| P6SMB220A | P6SMB220CA | 185                       | 209                                    | 231                                     | 1.0                 | 328                                       | 1.8                 | 5.0                               |
| P6SMB250  | P6SMB250C  | 202                       | 225                                    | 275                                     | 1.0                 | 360                                       | 1.7                 | 5.0                               |
| P6SMB250A | P6SMB250CA | 214                       | 237                                    | 263                                     | 1.0                 | 344                                       | 1.7                 | 5.0                               |
| P6SMB300  | P6SMB300C  | 243                       | 270                                    | 330                                     | 1.0                 | 430                                       | 1.4                 | 5.0                               |
| P6SMB300A | P6SMB300CA | 256                       | 285                                    | 315                                     | 1.0                 | 414                                       | 1.4                 | 5.0                               |
| P6SMB350  | P6SMB350C  | 284                       | 315                                    | 385                                     | 1.0                 | 504                                       | 1.2                 | 5.0                               |
| P6SMB350A | P6SMB350CA | 300                       | 333                                    | 368                                     | 1.0                 | 482                                       | 1.2                 | 5.0                               |
| P6SMB400  | P6SMB400C  | 324                       | 360                                    | 440                                     | 1.0                 | 574                                       | 1.0                 | 5.0                               |
| P6SMB400A | P6SMB400CA | 342                       | 380                                    | 420                                     | 1.0                 | 548                                       | 1.1                 | 5.0                               |
| P6SMB440  | P6SMB440C  | 356                       | 396                                    | 484                                     | 1.0                 | 631                                       | 0.95                | 5.0                               |
| P6SMB440A | P6SMB440CA | 376                       | 418                                    | 462                                     | 1.0                 | 602                                       | 1.0                 | 5.0                               |



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

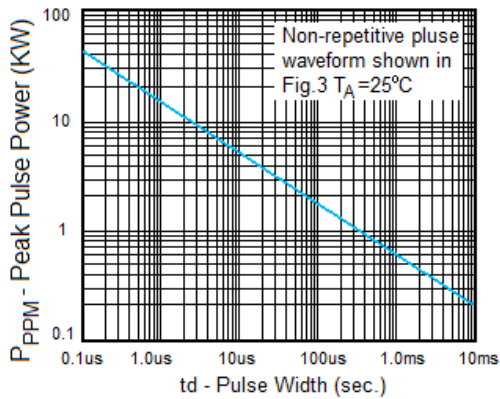


Fig. 1 Peak Pulse Power Rating

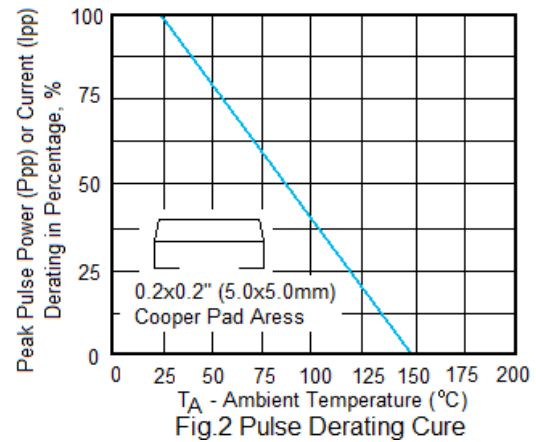


Fig. 2 Pulse Derating Curve

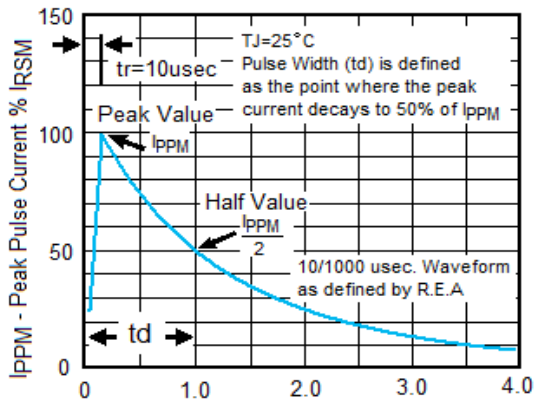


Fig. 3 Pulse Waveform

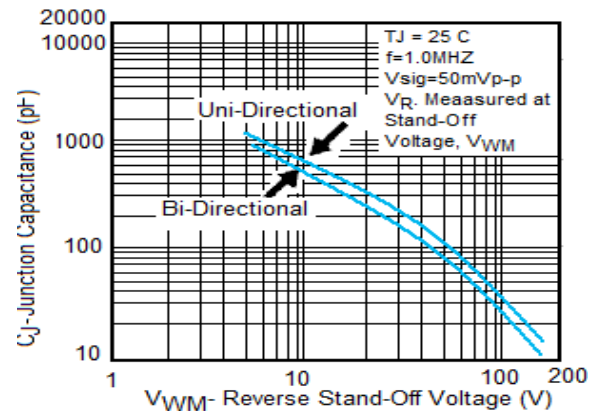


Fig. 4- Typical Junction Capacitance