# P6SMBxxx(C)A

Transient Voltage Suppressor

## Features

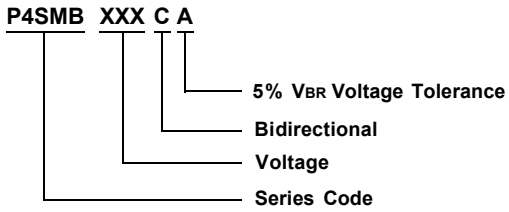
- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 600W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1μA above 12V
- High Temperature soldering: 260℃/10 seconds at terminals
- Plastic package has underwriters laboratory flammability 94V-0

SMB
(DO-214AA)

## Mechanical Data

- Case : JEDEC DO-214AA/SMB molded plastic body
- Terminals : Solderable per MIL-STD-750,Method 2026
- Polarity : Polarity symbol marking on body
- Mounting Position: Any
- Weight: 0.003 ounce, 0.095 grams

## Part Number Code




## Applications

- I/O interface
- AC/D Cpower supply
- Low frequency signal transmission line (RS232, RS485, etc.)

## Maximum Ratings (Ta=25℃ unless otherwise noted)

| | | | |
|---|---|---|---|
| Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1) | $P_{PPM}$ | 600 | W |
| Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3) | $I_{PPM}$ | See Tale | A |
| Steady state power dissipation at $T_A$=50℃ (Fig.5) | $P_{M(AV)}$ | 5.0 | W |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6) | $I_{FSM}$ | 100 | A |
| Operating junction and Storage Temperature Range. | $T_J$,$T_{STG}$ | -65 to +150 | °C |
| Typical thermal resistance junction to lead | $R_{\theta JL}$ | 20 | °C/W |
| Typical thermal resistance junction to ambient | $R_{\theta JA}$ | 100 | °C/W |

Notes:1. Non-repetitive current pulse, per Fig.3 and derated above TA=25℃ per Fig.2.
2. Mounted on 5.0mm×5.0mm (0.03mm thick) copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

## Electrical Characteristics (Ta=25°C)

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage @$I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|---|
| Unidirectional | Bidirectional | UNI | BI | $V_{RWM}$(V) | $V_{BR}$(V) | $I_T$(mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(μA) |
| P6SMB6.8A | P6SMB6.8CA | 6V8A | 6V8C | 5.80 | 6.45~7.14 | 10 | 10.5 | 58.1 | 1000 |
| P6SMB7.5A | P6SMB7.5CA | 7V5A | 7V5C | 6.40 | 7.13~7.88 | 10 | 11.3 | 54.0 | 500 |
| P6SMB8.2A | P6SMB8.2CA | 8V2A | 8V2C | 7.02 | 7.79~8.61 | 10 | 12.1 | 50.4 | 200 |
| P6SMB9.1A | P6SMB9.1CA | 9V1A | 9V1C | 7.78 | 8.65~9.55 | 1 | 13.4 | 45.5 | 50 |
| P6SMB10A | P6SMB10CA | 10A | 10C | 8.55 | 9.50~10.50 | 1 | 14.5 | 42.1 | 10 |
| P6SMB11A | P6SMB11CA | 11A | 11C | 9.40 | 10.50~11.60 | 1 | 15.6 | 39.1 | 5 |
| P6SMB12A | P6SMB12CA | 12A | 12C | 10.20 | 11.40~12.60 | 1 | 16.7 | 36.5 | 5 |
| P6SMB13A | P6SMB13CA | 13A | 13C | 11.10 | 12.40~13.70 | 1 | 18.2 | 33.5 | 1 |
| P6SMB15A | P6SMB15CA | 15A | 15C | 12.80 | 14.30~15.80 | 1 | 21.2 | 28.8 | 1 |
| P6SMB16A | P6SMB16CA | 16A | 16C | 13.60 | 15.20~16.80 | 1 | 22.5 | 27.1 | 1 |
| P6SMB18A | P6SMB18CA | 18A | 18C | 15.30 | 17.10~18.90 | 1 | 25.2 | 24.2 | 1 |
| P6SMB20A | P6SMB20CA | 20A | 20C | 17.10 | 19.00~21.00 | 1 | 27.7 | 22.0 | 1 |
| P6SMB22A | P6SMB22CA | 22A | 22C | 18.80 | 20.90~23.10 | 1 | 30.6 | 19.9 | 1 |
| P6SMB24A | P6SMB24CA | 24A | 24C | 20.50 | 22.80~25.20 | 1 | 33.2 | 18.4 | 1 |
| P6SMB27A | P6SMB27CA | 27A | 27C | 23.10 | 25.70~28.40 | 1 | 37.5 | 16.3 | 1 |
| P6SMB30A | P6SMB30CA | 30A | 30C | 25.60 | 28.50~31.50 | 1 | 41.4 | 14.7 | 1 |
| P6SMB33A | P6SMB33CA | 33A | 33C | 28.20 | 31.40~34.70 | 1 | 45.7 | 13.3 | 1 |
| P6SMB36A | P6SMB36CA | 36A | 36C | 30.80 | 34.20~37.80 | 1 | 49.9 | 12.2 | 1 |
| P6SMB39A | P6SMB39CA | 39A | 39C | 33.30 | 37.10~41.00 | 1 | 53.9 | 11.3 | 1 |
| P6SMB43A | P6SMB43CA | 43A | 43C | 36.80 | 40.90~45.20 | 1 | 59.3 | 10.3 | 1 |
| P6SMB47A | P6SMB47CA | 47A | 47C | 40.20 | 44.70~49.40 | 1 | 64.8 | 9.4 | 1 |
| P6SMB51A | P6SMB51CA | 51A | 51C | 43.60 | 48.50~53.60 | 1 | 70.1 | 8.7 | 1 |
| P6SMB56A | P6SMB56CA | 56A | 56C | 47.80 | 53.20~58.80 | 1 | 77.0 | 7.9 | 1 |
| P6SMB62A | P6SMB62CA | 62A | 62C | 53.00 | 58.90~65.10 | 1 | 85.0 | 7.2 | 1 |
| P6SMB68A | P6SMB68CA | 68A | 68C | 58.10 | 64.60~71.40 | 1 | 92.0 | 6.6 | 1 |
| P6SMB75A | P6SMB75CA | 75A | 75C | 64.10 | 71.30~78.80 | 1 | 103.0 | 5.9 | 1 |
| P6SMB82A | P6SMB82CA | 82A | 82C | 70.10 | 77.90~86.10 | 1 | 113.0 | 5.4 | 1 |
| P6SMB91A | P6SMB91CA | 91A | 91C | 77.80 | 86.50~95.50 | 1 | 125.0 | 4.9 | 1 |

| Part Number | | Device Marking Code | | Reverse Stand-Off Voltage | Breakdown Voltage @$I_T$ | Test Current | Maximum Clamping Voltage @$I_{PP}$ | Peak Pulse Current | Reverse Leakage @$V_{RWM}$ |
|---|---|---|---|---|---|---|---|---|---|
| Unidirectional | Bidirectional | UNI | BI | $V_{RWM}$(V) | $V_{BR}$(V) | $I_T$(mA) | $V_C$(V) | $I_{PP}$(A) | $I_R$(μA) |
| P6SMB100A | P6SMB100CA | 100A | 100C | 85.50 | 95.00~105.00 | 1 | 137.0 | 4.5 | 1 |
| P6SMB110A | P6SMB110CA | 110A | 110C | 94.00 | 105.00~116.00 | 1 | 152.0 | 4.0 | 1 |
| P6SMB120A | P6SMB120CA | 120A | 120C | 102.00 | 114.00~126.00 | 1 | 165.0 | 3.7 | 1 |
| P6SMB130A | P6SMB130CA | 130A | 130C | 111.00 | 124.00~137.00 | 1 | 179.0 | 3.4 | 1 |
| P6SMB150A | P6SMB150CA | 150A | 150C | 128.00 | 143.00~158.00 | 1 | 207.0 | 2.9 | 1 |
| P6SMB160A | P6SMB160CA | 160A | 160C | 136.00 | 152.00~168.00 | 1 | 219.0 | 2.8 | 1 |
| P6SMB170A | P6SMB170CA | 170A | 170C | 145.00 | 162.00~179.00 | 1 | 234.0 | 2.6 | 1 |
| P6SMB180A | P6SMB180CA | 180A | 180C | 154.00 | 171.00~189.00 | 1 | 246.0 | 2.5 | 1 |
| P6SMB200A | P6SMB200CA | 200A | 200C | 171.00 | 190.00~210.00 | 1 | 274.0 | 2.2 | 1 |
| P6SMB220A | P6SMB220CA | 220A | 220C | 185.00 | 209.00~231.00 | 1 | 328.0 | 1.9 | 1 |
| P6SMB250A | P6SMB250CA | 250A | 250C | 214.00 | 237.00~263.00 | 1 | 344.0 | 1.8 | 1 |
| P6SMB300A | P6SMB300CA | 300A | 300C | 256.00 | 285.00~315.00 | 1 | 414.0 | 1.5 | 1 |
| P6SMB350A | P6SMB350CA | 350A | 350C | 300.00 | 332.00~368.00 | 1 | 482.0 | 1.3 | 1 |
| P6SMB400A | P6SMB400CA | 400A | 400C | 342.00 | 380.00~420.00 | 1 | 548.0 | 1.1 | 1 |
| P6SMB440A | P6SMB440CA | 440A | 440C | 376.00 | 418.00~462.00 | 1 | 602.0 | 1.0 | 1 |
| P6SMB480A | P6SMB480CA | 480A | 480C | 408.00 | 456.00~504.00 | 1 | 658.0 | 0.9 | 1 |
| P6SMB510A | P6SMB510CA | 510A | 510C | 434.00 | 485.00~535.00 | 1 | 698.0 | 0.9 | 1 |
| P6SMB530A | P6SMB530CA | 530A | 530C | 450.00 | 503.50~556.50 | 1 | 725.0 | 0.8 | 1 |
| P6SMB540A | P6SMB540CA | 540A | 540C | 459.00 | 513.00~567.00 | 1 | 740.0 | 0.8 | 1 |
| P6SMB550A | P6SMB550CA | 550A | 550C | 467.00 | 522.50~577.50 | 1 | 760.0 | 0.8 | 1 |

Notes: For bidirectional type having $V_{RWM}$ of 10V and less, the $I_R$ limit is double.

## Ratings and Characteristic Curves ($T_A$=25°C unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

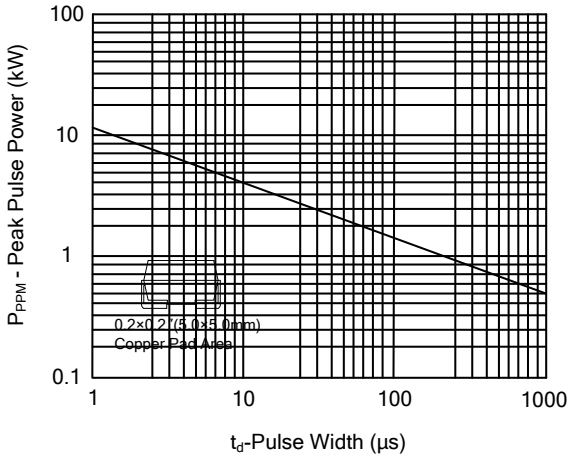



Figure 2. Pulse Derating Curve

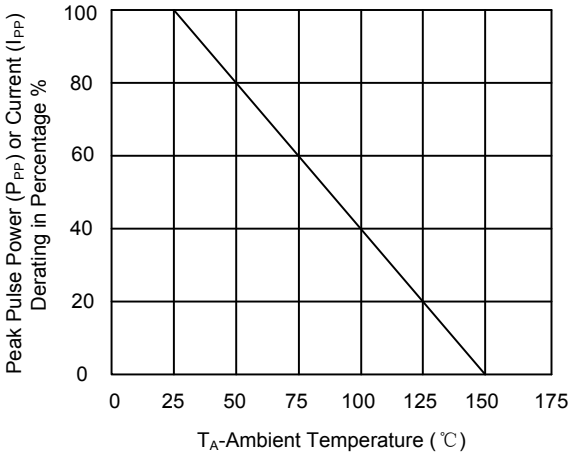



Figure 3. Pulse Waveform

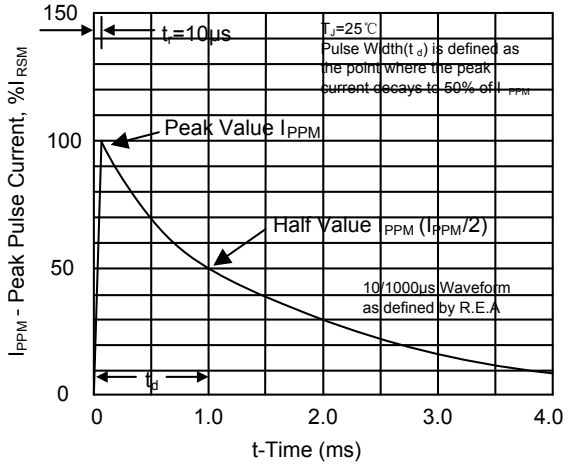



Figure 4. Typical Junction Capacitance

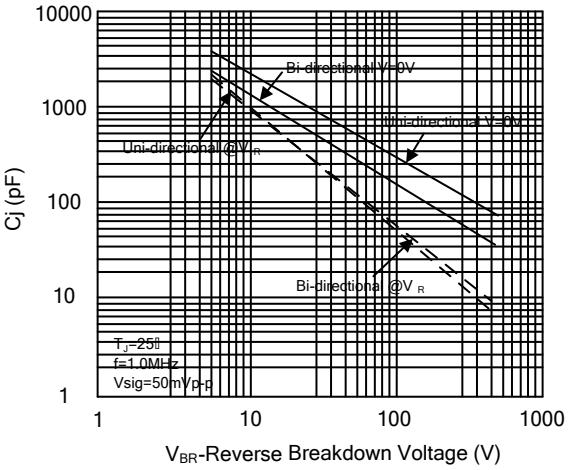



Figure 5. Steady State Power Dissipation Derating Curve

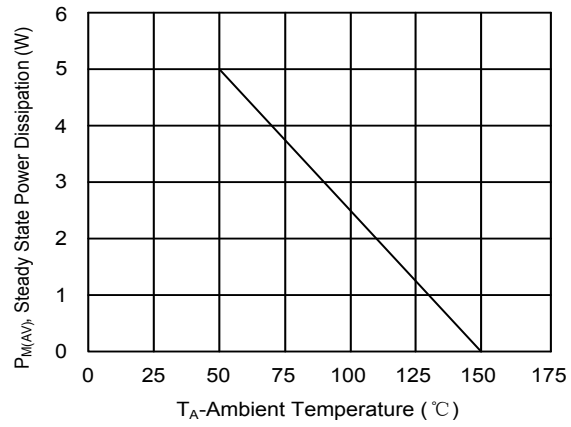
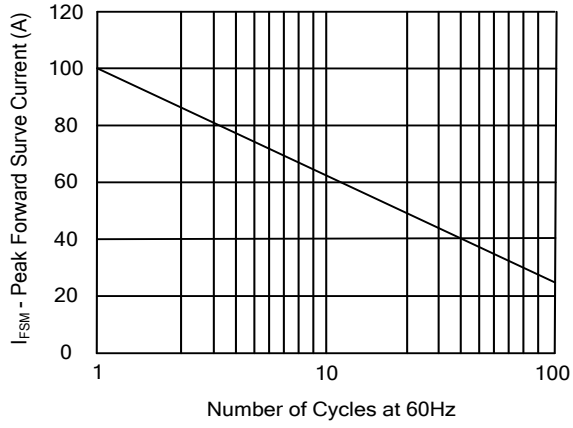
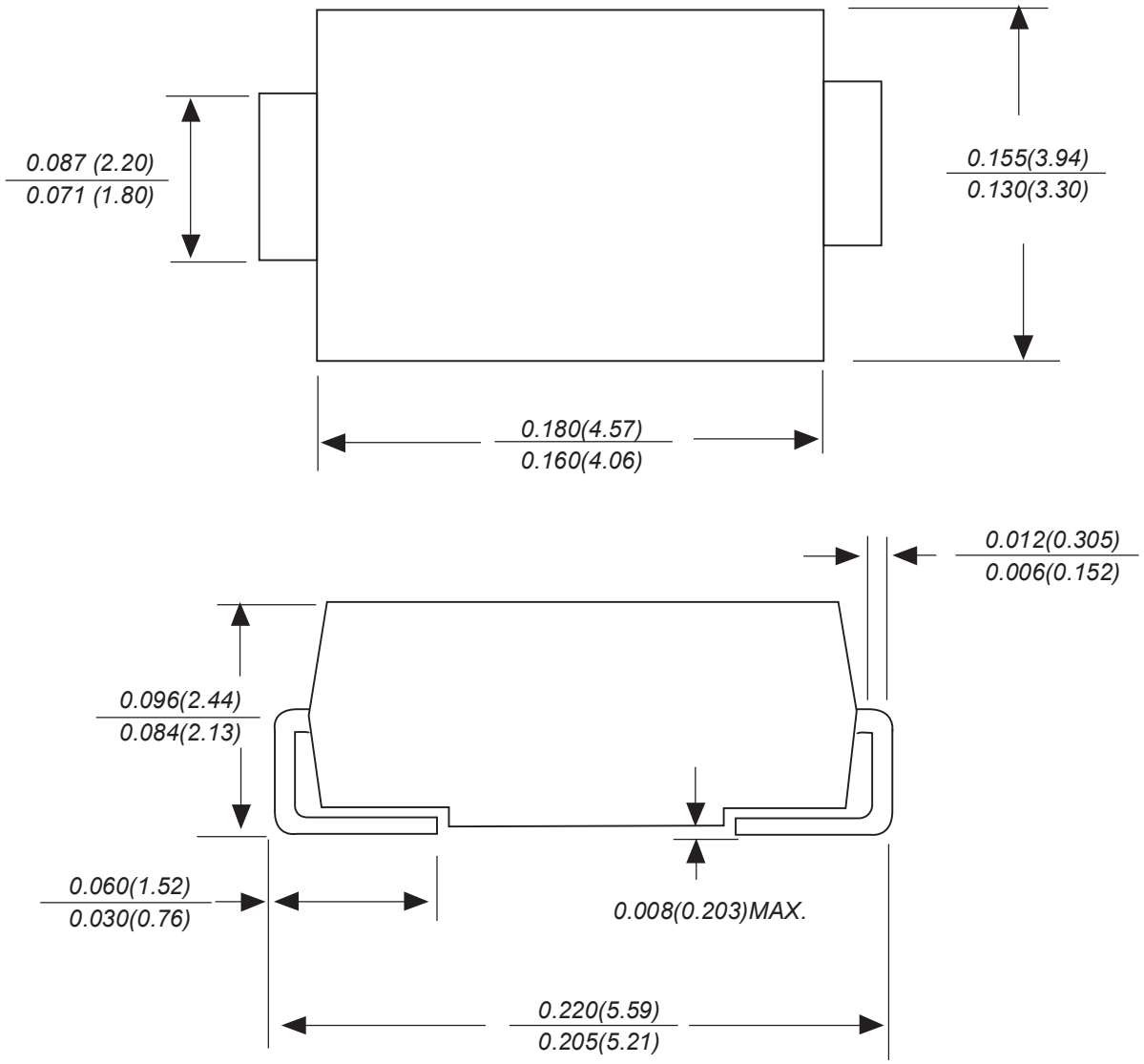



Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



## Package Outline Dimensions

SMB(DO-214AA)




*Dimensions in inches and (millimeters)*

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