

**GLASS PASSIVATED
UNIDIRECTIONAL AND BIDIRECTIONAL
TRANSIENT VOLTAGE SUPPRESSORS**

**REVERSE VOLTAGE - 6.8 to 180 V
POWER DISSIPATION - 1000 W**

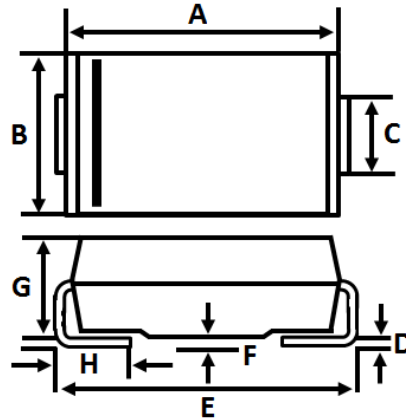
FEATURES

- Glass passivated chip
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Fast response time
- RoHs compliant
- Qualified to AEC-Q101 Rev_D

MECHANICAL DATA

- Case : Molded plastic
- Marking : Unidirectional - type number and cathode band Bidirectional - type number only

SMB



| SMB | | |
|------|------|------|
| DIM. | MIN. | MAX |
| A | 4.06 | 4.57 |
| B | 3.30 | 3.93 |
| C | 1.96 | 2.21 |
| D | 0.15 | 0.31 |
| E | 5.21 | 5.59 |
| F | 0.05 | 0.20 |
| G | 2.01 | 2.50 |
| H | 0.76 | 1.52 |

All Dimensions in millimeter

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

ABSOLUTE RATINGS

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|-------------------------|-----------------|--------------------|
| Peak Power Dissipation | P_{PP} | 1000 | W |
| Peak Forward Surge Current 8.3ms single half sine-wave @ $T_J = 25^\circ\text{C}$ (Note 1) | I_{FSM} | 120 | A |
| Steady State Power Dissipation at $T_L = 145^\circ\text{C}$ | $P_{M(AV)}$ | 5 | W |
| Maximum Instantaneous forward voltage at 16A for unidirectional devices only (Note 2) | V_F | 2 | V |
| Typical Thermal Resistance (Note 3) | RthJA RthJL RthJC | 67 14 8.5 | $^\circ\text{C/W}$ |
| Operating junction temperature range | T_J | -55 to +175 | $^\circ\text{C}$ |
| Storage temperature range | T_{STG} | -55 to +175 | $^\circ\text{C}$ |

REV.0, FEB-2020, KSIB11

- NOTES: 1. Non-repetitive current pulse and derated above $T_A = 25^\circ\text{C}$
 2. Unidirectional units only. $V_F \text{ max} = 2\text{V}$ at $I_F = 16\text{A}$ 300us square wave pulse.
 3. Thermal resistance from junction to ambient, lead and case

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RATING AND CHARACTERISTIC CURVES P1.0SMBJ SERIES



FIG.1- Pulse Derating Curve

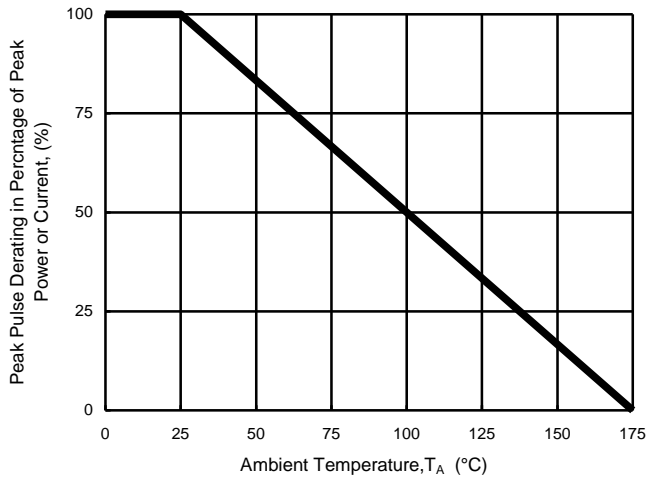


FIG.2- Maximum Non-Repetitive Surge Current

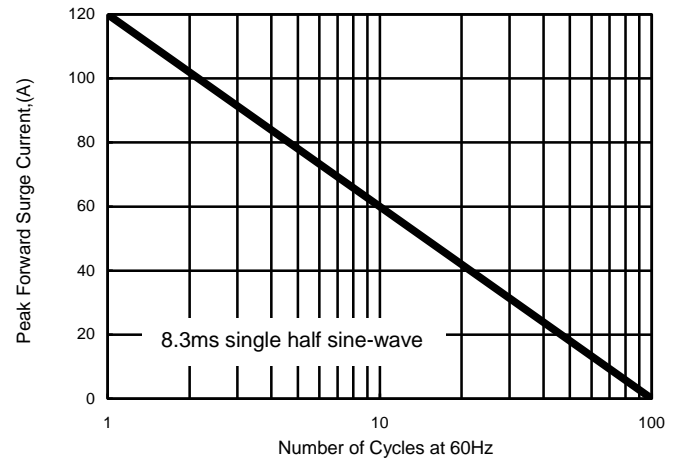


FIG.3- Steady State Power Derating Curve

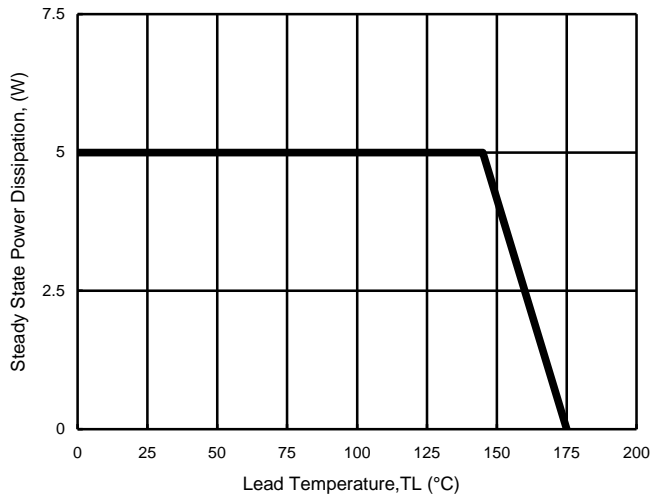


FIG.4- Peak Pulse Power Rating Curve

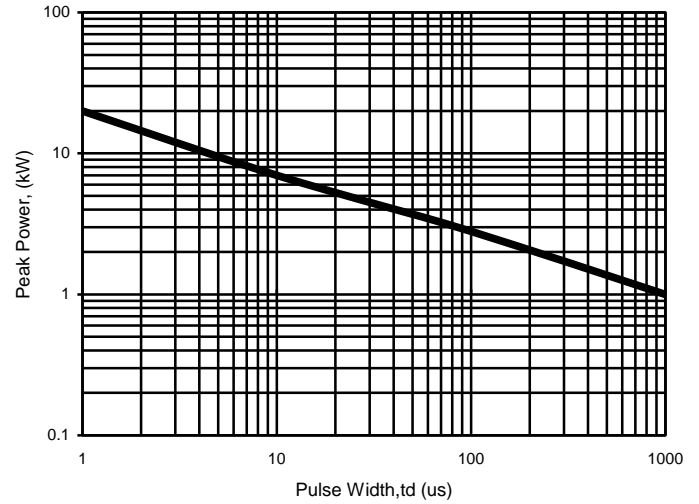


FIG.5- Typical Junction Capacitance

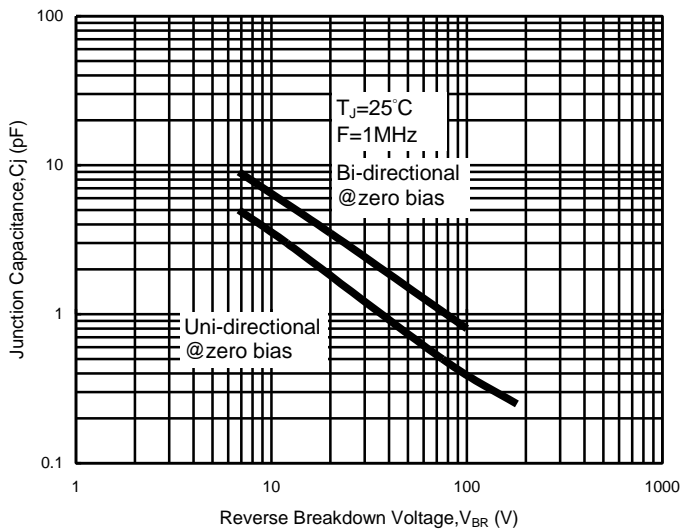
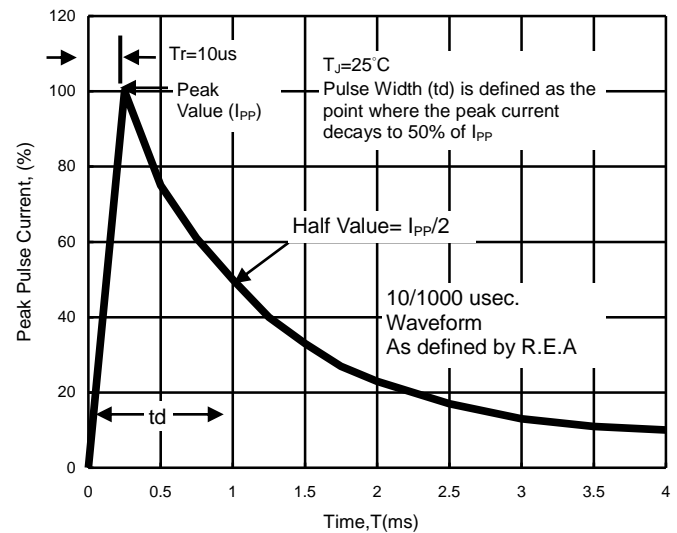


FIG.6- Pulse Waveform



P1.0SMBJ series
Electrical Characteristics (TA=25°C unless otherwise noted)



| Device | | Marking code | | Working peak reverse voltage | Break down voltage V_{BR} volts | | | Maximum reverse voltage at I_{RSM} (clamping voltage) | Maximum reverse surge current | Maximum reverse leakage at V_{RWM} |
|--------------|---------------|--------------|-------|------------------------------|-----------------------------------|--------|-------------|---|-------------------------------|--------------------------------------|
| Uni | Bi | Uni | Bi | $V_{RWM}(V)$ | Min | Max | @ $I_T(mA)$ | $V_{RSM}(V)$ | $I_{RSM}(A)$ | $I_R (\mu A)$ |
| P1.0SMBJ6.8A | P1.0SMBJ6.8CA | P6V8A | P6V8C | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 95.2 | 900 |
| P1.0SMBJ7.5A | P1.0SMBJ7.5CA | P7V5A | P7V5C | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 88.5 | 400 |
| P1.0SMBJ8.2A | P1.0SMBJ8.2CA | P8V2A | P8V2C | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 82.6 | 180 |
| P1.0SMBJ9.1A | P1.0SMBJ9.1CA | P9V1A | P9V1C | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 74.6 | 45 |
| P1.0SMBJ10A | P1.0SMBJ10CA | P10A | P10C | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 69.0 | 8 |
| P1.0SMBJ11A | P1.0SMBJ11CA | P11A | P11C | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 64.1 | 4 |
| P1.0SMBJ12A | P1.0SMBJ12CA | P12A | P12C | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 59.9 | 1 |
| P1.0SMBJ13A | P1.0SMBJ13CA | P13A | P13C | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 54.9 | 1 |
| P1.0SMBJ15A | P1.0SMBJ15CA | P15A | P15C | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 47.2 | 1 |
| P1.0SMBJ16A | P1.0SMBJ16CA | P16A | P16C | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 44.4 | 1 |
| P1.0SMBJ18A | P1.0SMBJ18CA | P18A | P18C | 15.30 | 17.70 | 18.90 | 1 | 25.5 | 39.2 | 1 |
| P1.0SMBJ20A | P1.0SMBJ20CA | P20A | P20C | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 36.1 | 1 |
| P1.0SMBJ22A | P1.0SMBJ22CA | P22A | P22C | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 32.7 | 1 |
| P1.0SMBJ24A | P1.0SMBJ24CA | P24A | P24C | 20.50 | 22.80 | 25.50 | 1 | 32.2 | 30.1 | 1 |
| P1.0SMBJ27A | P1.0SMBJ27CA | P27A | P27C | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 26.7 | 1 |
| P1.0SMBJ30A | P1.0SMBJ30CA | P30A | P30C | 26.50 | 28.50 | 31.50 | 1 | 41.4 | 24.2 | 1 |
| P1.0SMBJ33A | P1.0SMBJ33CA | P33A | P33C | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 21.9 | 1 |
| P1.0SMBJ36A | P1.0SMBJ36CA | P36A | P36C | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 20.0 | 1 |
| P1.0SMBJ39A | P1.0SMBJ39CA | P39A | P39C | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 18.6 | 1 |
| P1.0SMBJ43A | P1.0SMBJ43CA | P43A | P43C | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 16.9 | 1 |
| P1.0SMBJ47A | P1.0SMBJ47CA | P47A | P47C | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 15.4 | 1 |
| P1.0SMBJ51A | P1.0SMBJ51CA | P51A | P51C | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 14.3 | 1 |
| P1.0SMBJ56A | P1.0SMBJ56CA | P56A | P56C | 47.80 | 53.20 | 58.50 | 1 | 77.0 | 13.0 | 1 |
| P1.0SMBJ62A | P1.0SMBJ62CA | P62A | P62C | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 11.8 | 1 |
| P1.0SMBJ68A | P1.0SMBJ68CA | P68A | P68C | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 10.9 | 1 |
| P1.0SMBJ75A | P1.0SMBJ75CA | P75A | P75C | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 9.7 | 1 |
| P1.0SMBJ82A | P1.0SMBJ82CA | P82A | P82C | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 8.8 | 1 |
| P1.0SMBJ91A | P1.0SMBJ91CA | P91A | P91C | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 8.0 | 1 |
| P1.0SMBJ100A | P1.0SMBJ100CA | P100A | P100C | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 7.3 | 1 |
| P1.0SMBJ110A | -- | P110A | -- | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 6.6 | 1 |
| P1.0SMBJ120A | -- | P120A | -- | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 6.1 | 1 |
| P1.0SMBJ130A | -- | P130A | -- | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 5.6 | 1 |
| P1.0SMBJ150A | -- | P150A | -- | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 4.8 | 1 |
| P1.0SMBJ160A | -- | P160A | -- | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 4.6 | 1 |
| P1.0SMBJ170A | -- | P170A | -- | 144.50 | 162.00 | 179.00 | 1 | 234.0 | 4.3 | 1 |
| P1.0SMBJ180A | -- | P180A | -- | 153.00 | 171.00 | 189.00 | 1 | 246.0 | 4.1 | 1 |

Notes:

1. Suffix 'A' denotes 5% tolerance device.
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices.
3. The IR limit is double for Bi-Directional devices

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