

»Features

- Excellent clamping capability
- Low leakage current
- Low capacitance
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- Fast response time:
typically less than 1.0ps from 0 Volts to V_{BR} min



SMB (DO-214AA)

»Mechanical Characteristics

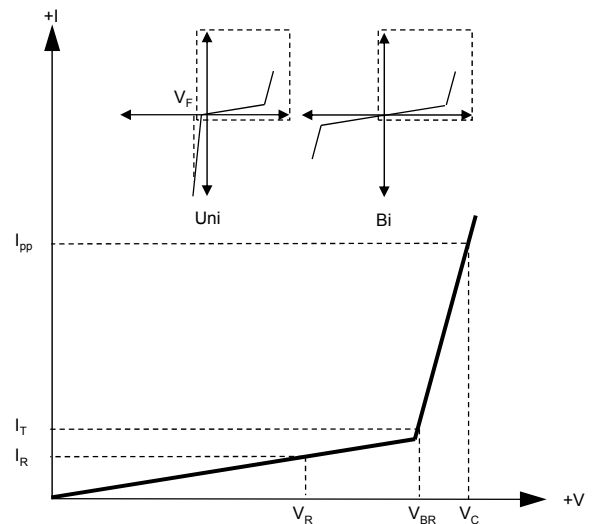
- Package: SMB plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

»Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

»Electrical Parameters

| Parameter | Definition |
|-----------|--|
| C_J | Junction Capacitance - typical capacitance measured with 0V or V_R bias |
| I_{PP} | Peak Pulse Current - maximum rated peak impulse current |
| V_C | Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm} (peak impulse current) |
| V_{BR} | Breakdown Voltage - Maximum voltage that flows through the TVS at a specified test current (I_T) |
| I_R | Leakage Current - maximum peak off-state current measured at V_R |
| V_R | Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state |


»Summary of Packing Options

| Package | Packing Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SMB | Tape/Reel, 13" reel | 3000 | EIA-481-1 |
| | Tape/Reel, 7" reel | 500 | EIA-481-1 |

»Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Units | Remarks |
|--|-----------------|------------|-----------------------------|----------------|
| Peak Pulse Power Dissipation | P_{PPM} | 3000 | W | (Note1)(Note2) |
| Steady State Power Dissipation | P_D | 6.5 | W | (Note3) |
| Peak Forward Surge Current | I_{FSM} | 300 | A | (Note4) |
| Maximum Instantaneous Forward Voltage at 100A | V_{FM} | 3.5/5 | V | (Note5) |
| Typical Thermal Resistance Junction to Lead | $R_{\theta JL}$ | 15 | $^{\circ}\text{C}/\text{W}$ | |
| Typical Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 75 | $^{\circ}\text{C}/\text{W}$ | |
| Operating Temperature Range | T_J | -55 to 150 | $^{\circ}\text{C}$ | |
| Storage Temperature Range | T_{STG} | -55 to 150 | $^{\circ}\text{C}$ | |

Notes1: Non-repetitive current pulse , 10/1000us Waveform.

Notes2: Mounted on copper pad area of 8×8mm to each terminal.

Notes3: Infinite HeatSink at $T_A=50^{\circ}\text{C}$

Notes4: Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perminute maximum.

Notes5: For UnidirectionalOnly, $V_{FM}<3.5\text{V}$ for $V_{BR} \leq 200\text{V}$ and $V_{FM}<5.0\text{V}$ for $V_{BR} \geq 201\text{V}$.

»Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Part Number | V_R | $I_R@V_R$ | $V_{BR}@I_T$ | | I_T | $V_C@10/700\mu\text{s}$ 4KV /40 Ω | $V_C@8/20\mu\text{s}$ 500A |
|---------------------------|-------|---------------|--------------|--------|-------|---|-------------------------------|
| | V | μA | min(V) | max(V) | mA | max(V) | max(V) |
| 3.0SMBJ58CA 3.0SMBJ58A | 58 | 1 | 60 | 72 | 1 | 85 | 85 |

»Rating And Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

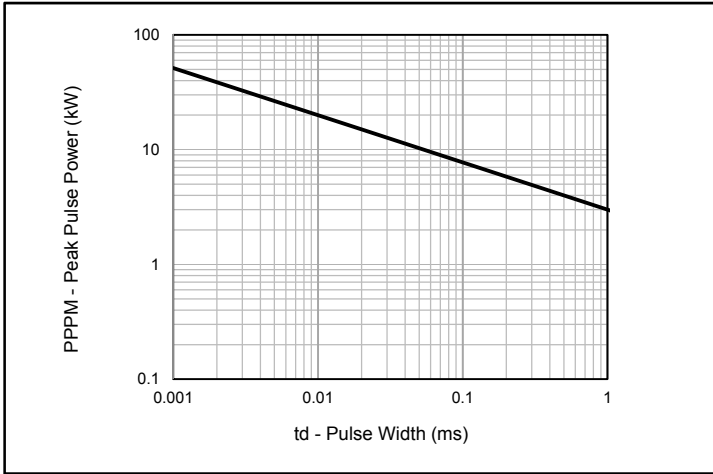


Fig.1 - Peak Pulse Power Rating

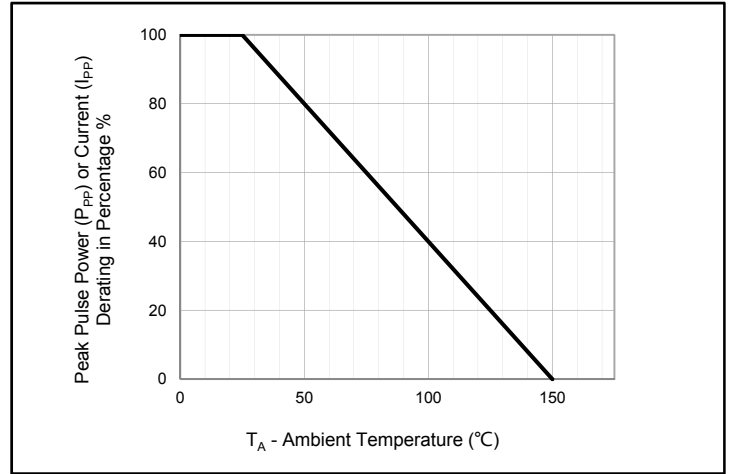


Fig.2 - Pulse Derating Curve

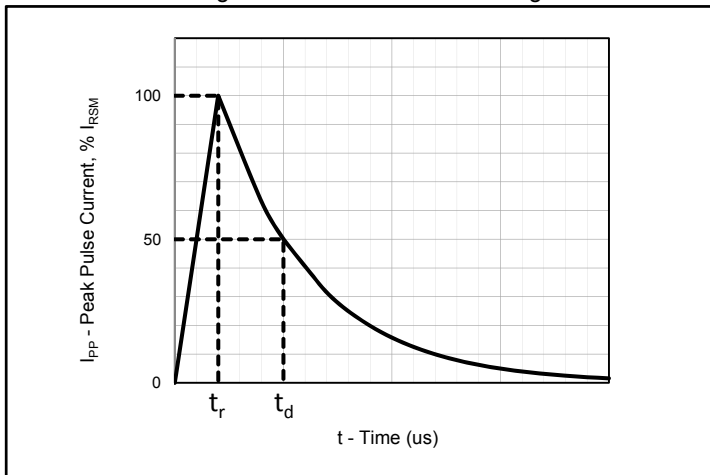


Fig.3 - Pulse Waveform

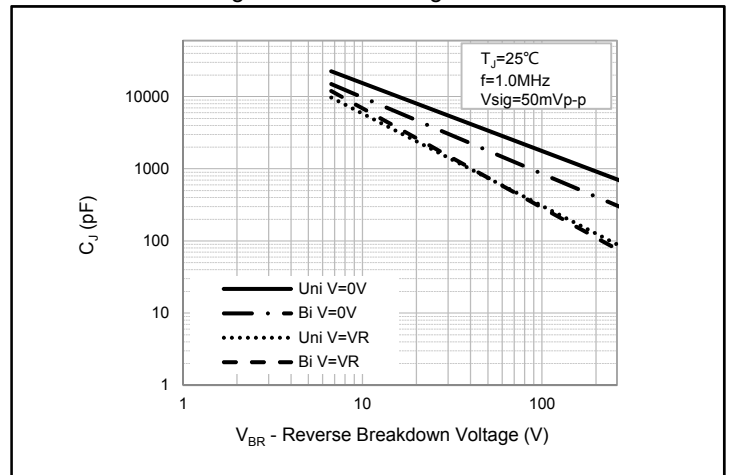


Fig.4 - Typical Junction Capacitance

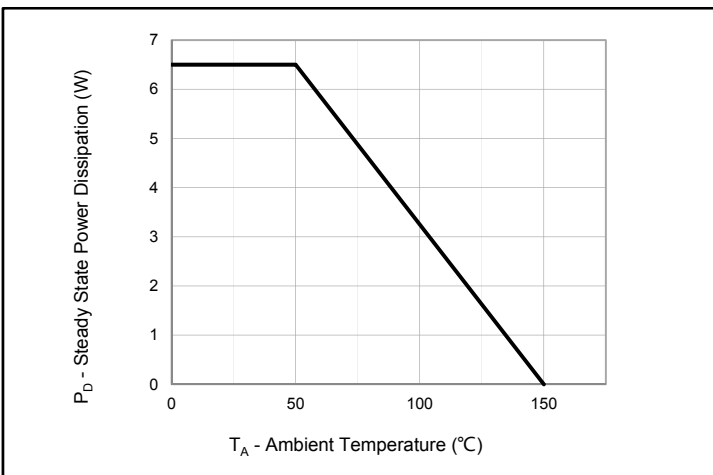


Fig.5 - Steady State Power Dissipation Derating Curve

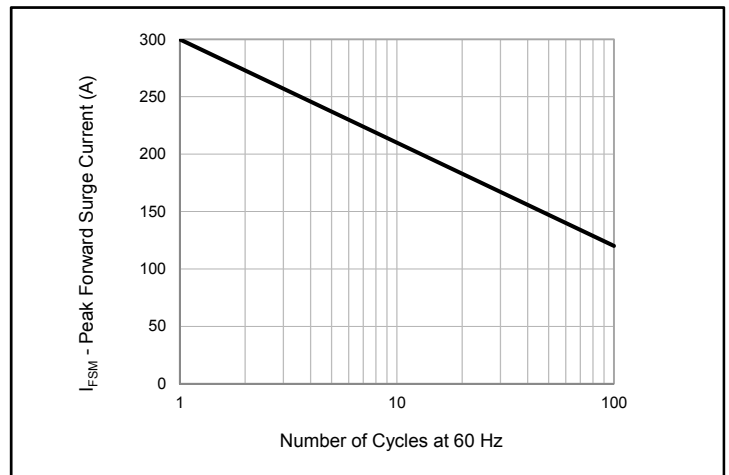
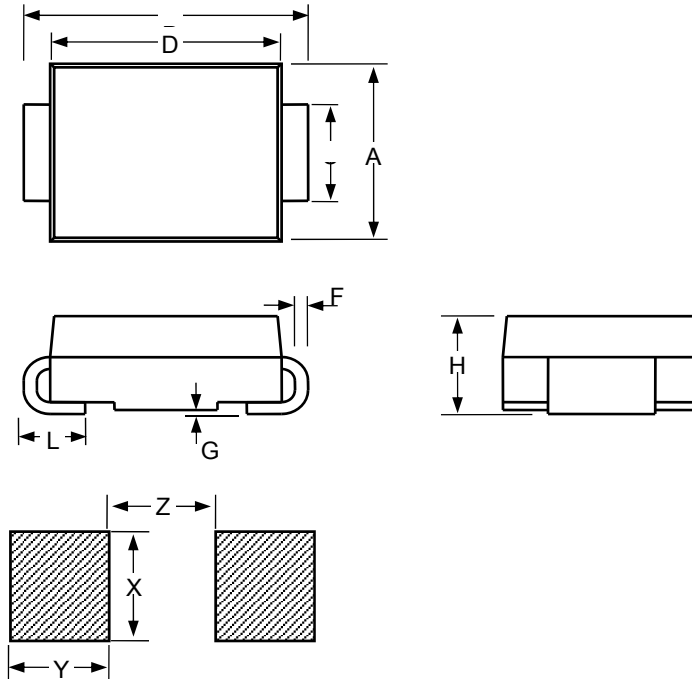


Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current
Uni-Directional Only

»Package Dimensions

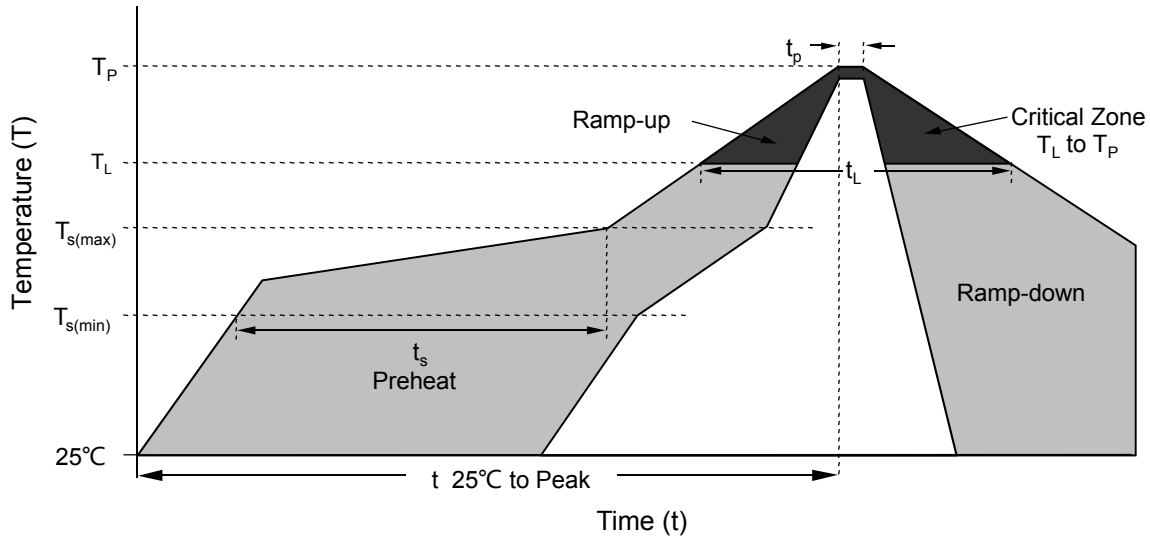


| SMB | | | | | | |
|-----------|--------|-------|-------|-------------|------|-------|
| Dimension | Inches | | | Millimeters | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.134 | 0.144 | 0.155 | 3.4 | 3.67 | 3.94 |
| B | 0.205 | 0.213 | 0.22 | 5.21 | 5.4 | 5.59 |
| C | 0.075 | 0.079 | 0.083 | 1.9 | 2 | 2.1 |
| D | 0.169 | | 0.185 | 4.3 | | 4.7 |
| F | 0.006 | | 0.012 | 0.152 | | 0.305 |
| G | - | | 0.008 | - | | 0.203 |
| H | 0.085 | 0.091 | 0.096 | 2.15 | 2.3 | 2.45 |
| L | 0.03 | | 0.06 | 0.76 | | 1.52 |
| X | | 0.11 | | | 2.8 | |
| Y | | 0.079 | | | 2 | |
| Z | | 0.079 | | | 2 | |

»Marking Information

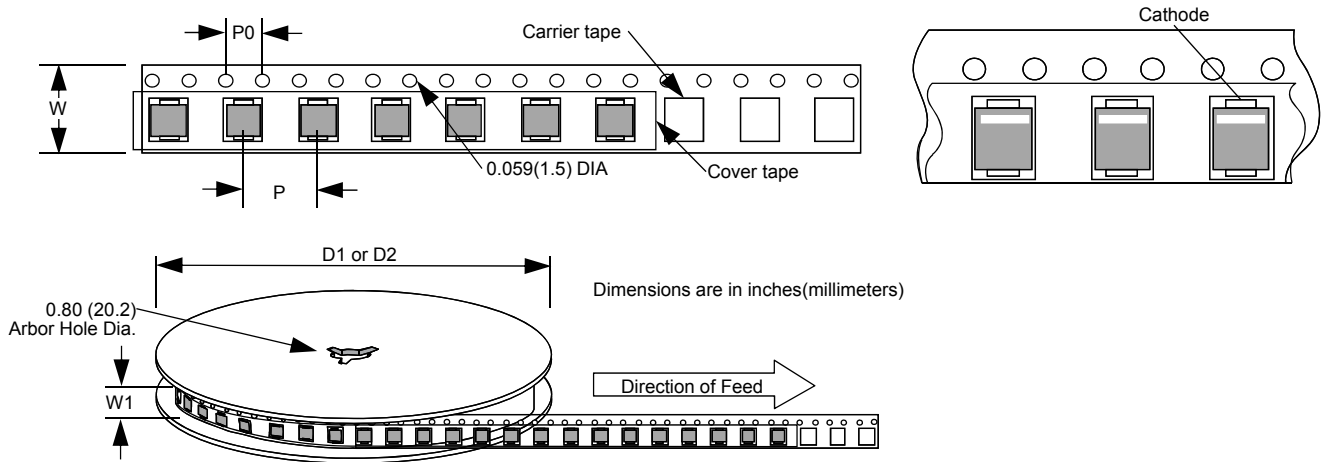


»Soldering Parameters



| Reflow Condition | | Lead-free assembly |
|--|------------------------------------|-------------------------|
| Pre Heat | - Temperature Min ($T_{s(min)}$) | 150°C |
| | - Temperature Max ($T_{s(max)}$) | 200°C |
| | - Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | - Temperature (T_L) (Liquidus) | 217°C |
| | - Time (t_L) | 60 – 150 secs |
| Peak Temperature (T_P) | | 260 ^{+0/-5} °C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 secs |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (t) | | 8 minutes Max. |
| Do not exceed | | 260°C |

»Tape and Reel Specification



| Dimension | Inches | | | Millimeters | | |
|-----------|--------|-------|-----|-------------|-------|-----|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| P | | 0.315 | | | 8 | |
| P0 | | 0.157 | | | 4 | |
| W | | 0.63 | | | 16 | |
| W1 | | 0.646 | | | 16.4 | |
| D1 | | 7 | | | 177.8 | |
| D2 | | 13 | | | 330.2 | |

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