

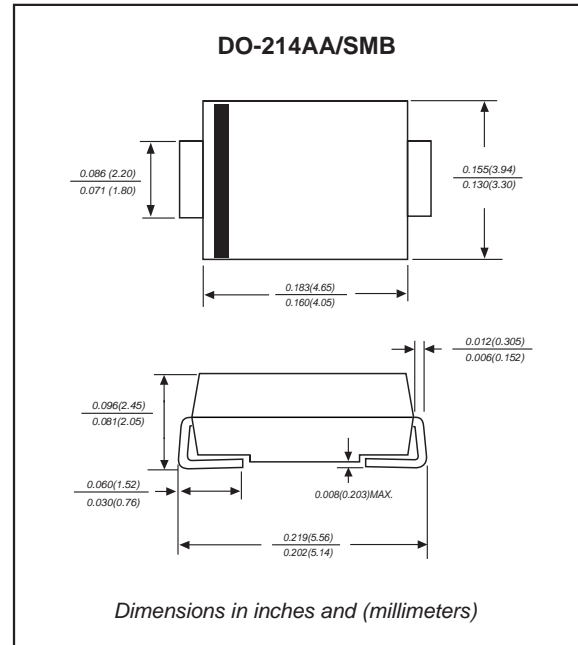
Features

- 600W peak pulse power capability with a 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%.
- Low profile surface mounted application in order to optimize board space.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AA / SMB
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

Package outline



Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | CONDITIONS | Symbol | Value | UNIT |
|---------------------------------------|---|------------------------------------|------------|--------------------|
| Peak Power Dissipation | with a 10/1000 μ s waveform, Note 1, 2 & Fig. 1 | P_{PPM} | 600 | W |
| Peak Pulse current | with a 10/1000 μ s waveform | I_{PPM} | 75 | A |
| Steady State Power Dissipation | at $T_L=75^\circ\text{C}$, Note 2 | $P_{M(AV)}$ | 5.0 | W |
| Peak Forward Surge Current | 8.3ms Single Half Sine-Wave, Note 3 | I_{FSM} | 100 | A |
| Maximum Instantaneous Forward Voltage | at 10A For Uni-Directional Types Only | V_F | 3.5 | V |
| Typical Thermal resistance | Junction to case Junction to ambient | $R_{\theta JC}$ $R_{\theta JA}$ | 30 50 | $^\circ\text{C/W}$ |
| Operating junction temperature range | | T_J | -55 ~ +150 | $^\circ\text{C}$ |
| Storage temperature range | | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

Note 1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A=25^\circ\text{C}$ per Fig. 2

2. Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5

3. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

Electrical characteristics (at $T_A=25^\circ\text{C}$)

| Part No. (Uni) | Part No. (Bi) | Reverse Stand-off Voltage | Breakdown Voltage @ I_T | | Test Current | Maximum Clamping Voltage @ I_{PP} | | Maximum Reverse Leakage Current | Marking Code | |
|----------------|---------------|---------------------------|---------------------------|--------------|--------------|-------------------------------------|----------|---------------------------------|--------------|------|
| | | V_{RWM} | $V_{BR Min}$ | $V_{BR Max}$ | I_T | V_C | I_{PP} | $I_R@V_{RWM}$ | | |
| | | Volts | Volts | Volts | mA | Volts | A | μA | UNI | BI |
| SMBJ3V3 | SMBJ3V3CA | 3.3 | 5.00 | 6.50 | 10 | 8.0 | 75 | 600 | KC | 3V3C |

Rating and characteristic curves

Fig.1 - Peak Pulse Power Rating Curve

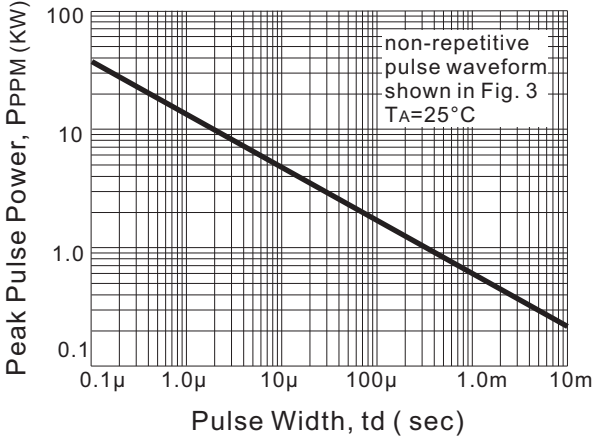


Fig.2 - Pulse Derating Curve

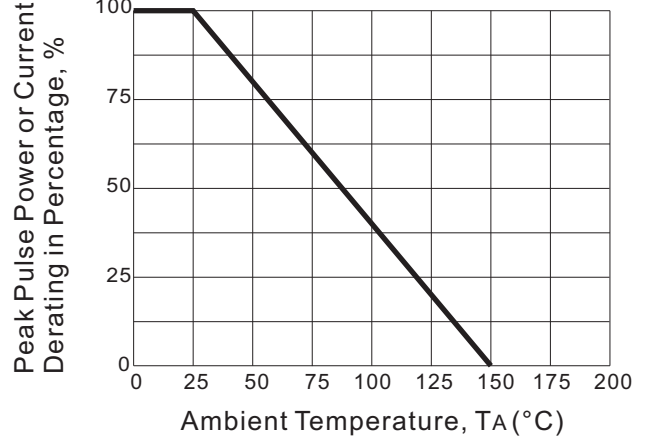


Fig.3 - Pulse Waveform

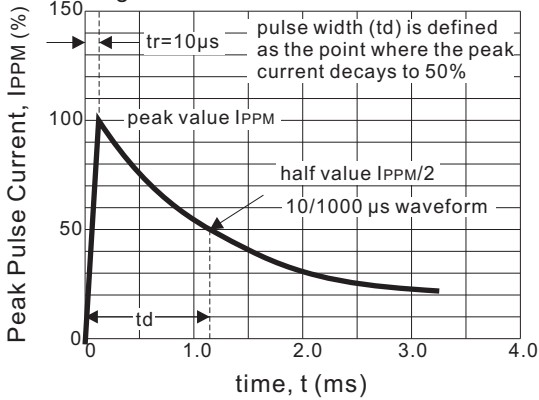


Fig.4 - Typical Junction Capacitance

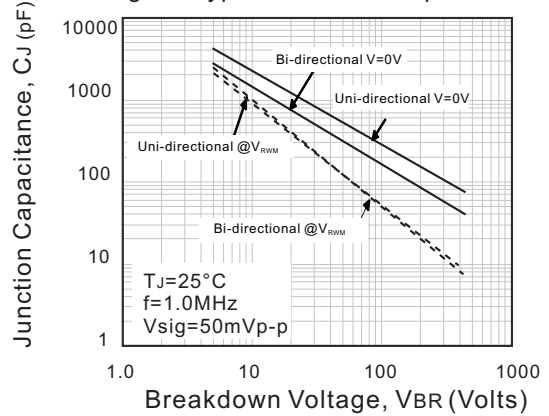


Fig.5 - Steady State Power Derating Curve

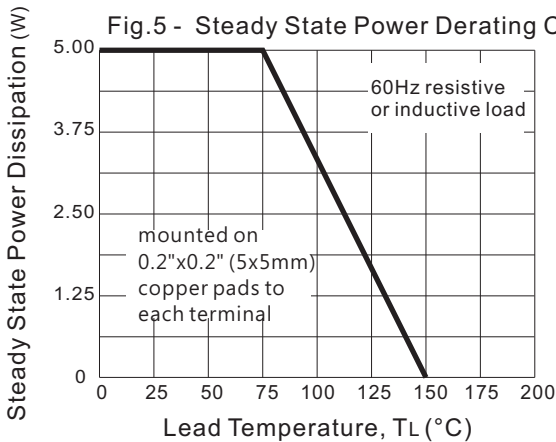
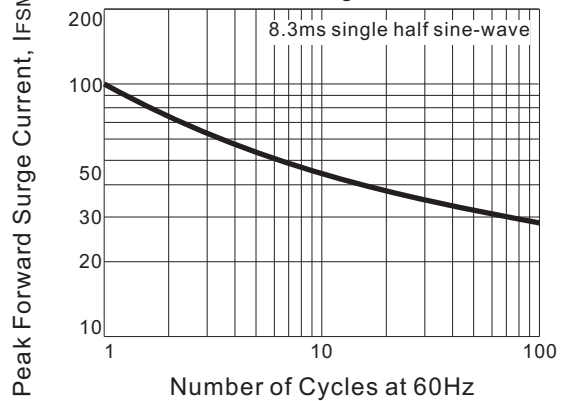


Fig.6 - Maximum Non-Repetitive Forward Surge Current



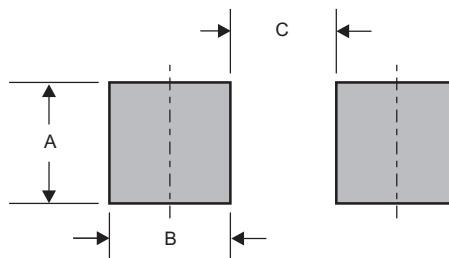
Pinning information

| Pin | Simplified outline | Symbol |
|---|--------------------|--------|
| Uni-Directional Pin1 cathode Pin2 anode | | |
| Bi-Directional | | |

Marking

| Type number | Example |
|-----------------|---------|
| Uni-Directional | |
| Bi-Directional | |

Suggested solder pad layout



Dimensions in inches and (millimeters)

| PACKAGE | A | B | C |
|---------|--------------|--------------|--------------|
| SMB | 0.078 (2.00) | 0.059 (1.50) | 0.110 (2.80) |

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

| Profile Feature | Soldering Condition |
|--|-----------------------------|
| Average ramp-up rate(TL to TP) | <3°C/sec |
| Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts) | 150°C 200°C 60~120sec |
| Tsmax to TL -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(TL) -Time(tL) | 217°C 60~260sec |
| Peak Temperature(TP) | 255°C-0/+5°C |
| Time within 5°C of actual Peak Temperature(tp) | 10~30sec |
| Ramp-down Rate | <6°C/sec |
| Time 25°C to Peak Temperature | <6minutes |

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