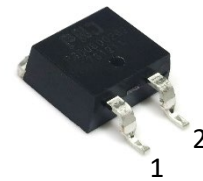


SiC SBD P3D06004G2

650V SiC Schottky Diode



Features

- Qualified to AEC-Q101
- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation
- Positive Temperature Coefficient on V_F
- High Surge Current
- 100% UIS tested

TO-263-2

| | |
|---------|---|
| Cathode | 1 |
| Anode | 2 |



Benefits

- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway



Applications

- Consumer SMPS
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters



Order Information

| Part Number | Package | Marking |
|-------------|----------|------------|
| P3D06004G2 | TO-263-2 | P3D06004G2 |



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PNJ Preliminary

1. Maximum Ratings

At $T_J = 25^\circ\text{C}$, unless specified otherwise

| Parameter | Symbol | Value | Unit | Test condition |
|--|----------------|--------------|------------------|---|
| Repetitive Peak Reverse Voltage | V_{RRM} | 650 | V | $T_C = 25^\circ\text{C}$ |
| Surge Peak Reverse Voltage | V_{RSM} | 650 | V | $T_C = 25^\circ\text{C}$ |
| DC Blocking Voltage | V_R | 650 | V | $T_C = 25^\circ\text{C}$ |
| Forward Current | I_F | 14 8 4 | A | $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$ $T_C = 160^\circ\text{C}$ |
| Repetitive Peak Forward Surge Current | I_{FRM} | 24 13 | A | $T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ $T_C = 125^\circ\text{C}, t_p = 10\text{ms}$ |
| Non-Repetitive Forward Surge Current | I_{FSM} | 34 31 | A | $T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ $T_C = 125^\circ\text{C}, t_p = 10\text{ms}$ |
| Non-Repetitive Forward Surge Current | $I_{F, MAX}$ | 331 320 | A | $T_C = 25^\circ\text{C}, t_p = 10\mu\text{s}$ $T_C = 125^\circ\text{C}, t_p = 10\mu\text{s}$ |
| Power Dissipation | P_{tot} | 69 | W | $T_C = 25^\circ\text{C}$ |
| Operating Junction and Storage Temperature | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ | |
| TO-220 Mounting Torque M3 Screw | T_{orq} | 1 8.8 | Nm lbf-in | |

2. Thermal Characteristics

| Parameter | Symbol | Values | Unit |
|--|-----------------|--------|---------------------------|
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ | 2.17 | $^\circ\text{C}/\text{W}$ |

3. Electrical Characteristics

At $T_J = 25^\circ\text{C}$, unless specified otherwise

| Parameter | Symbol | Values | | | Unit | Test condition |
|---------------------------|--------|--------|------|------|---------------|---|
| | | Min. | Typ. | Max. | | |
| Forward Voltage | V_F | / | 1.5 | 1.7 | V | $I_F = 4\text{A}$, $T_J = 25^\circ\text{C}$ |
| | | | 1.8 | / | | $I_F = 4\text{A}$, $T_J = 175^\circ\text{C}$ |
| Reverse Current | I_R | / | 1 | 20 | μA | $V_R = 650\text{V}$, $T_J = 25^\circ\text{C}$ |
| | | | 48 | / | | $V_R = 650\text{V}$, $T_J = 175^\circ\text{C}$ |
| Total Capacitance | C | / | 145 | / | pF | $V_R = 0\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$ |
| | | | 15.7 | | | $V_R = 200\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$ |
| | | | 12.2 | | | $V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$ |
| Total Capacitive Charge | Q_C | / | 8.03 | / | nC | $V_R = 400\text{V}$, $I_F = 4\text{A}$ $T_J = 25^\circ\text{C}$ |
| Capacitance Stored Energy | E_C | / | 1 | / | μJ | $V_R = 400\text{V}$ |

4. Typical Performance

At $T_J = 25^\circ\text{C}$, unless specified otherwise

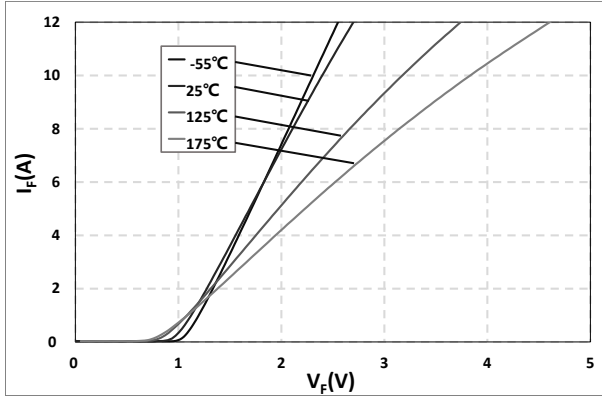


Fig. 1 Typical Forward Characteristics
 $I_F = f(V_F)$; $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 175^\circ\text{C}$

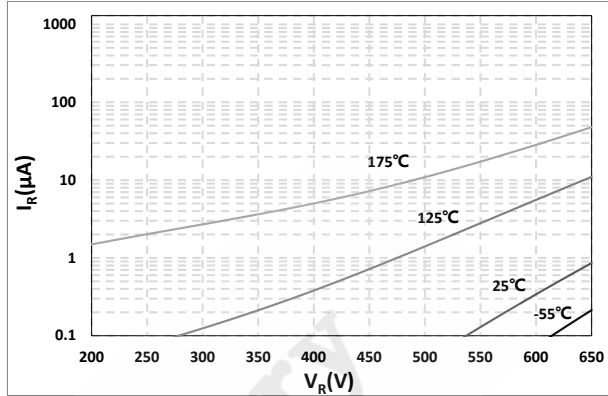


Fig. 2 Reverse Characteristics
 $I_R = f(V_R)$; $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 175^\circ\text{C}$

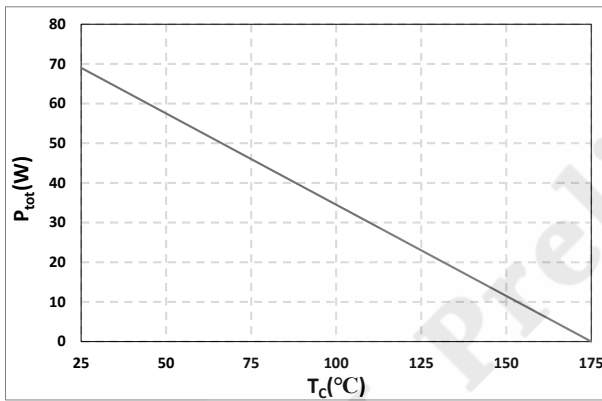


Fig. 3 Typical Power Derating
 $P_{\text{tot}} = f(T_c)$

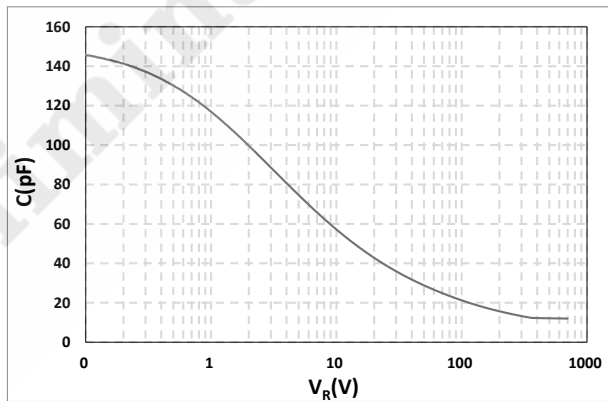


Fig. 4 Typical Total Capacitance
 $C = f(V_R)$

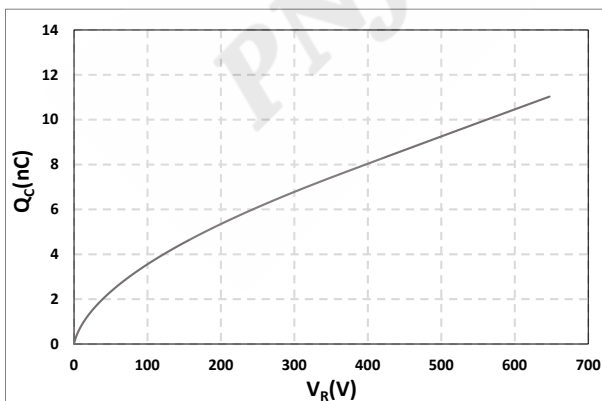


Fig. 5 Typical Total Capacitive Charge
 $Q_C = f(V_R)$

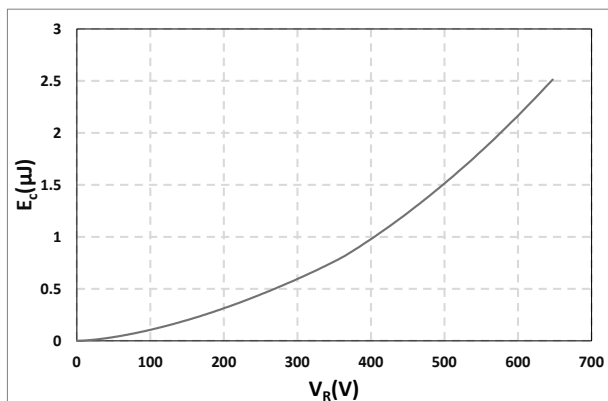


Fig. 6 Capacitance Stored Energy
 $E_C = f(V_R)$

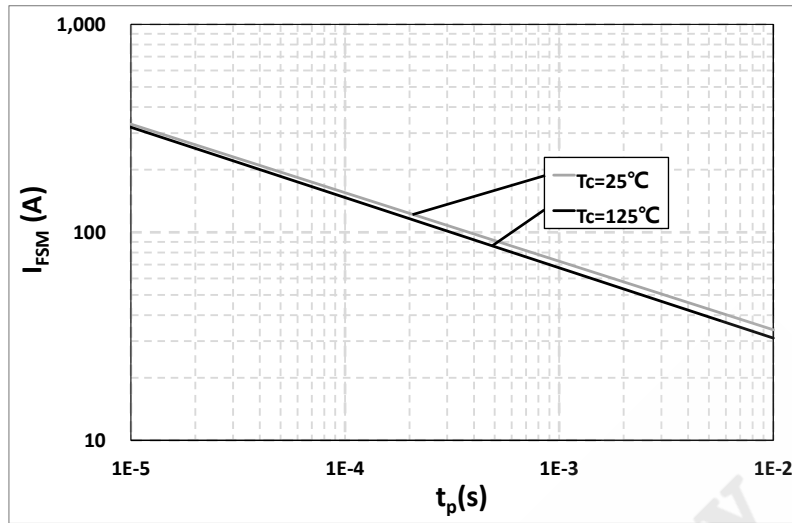
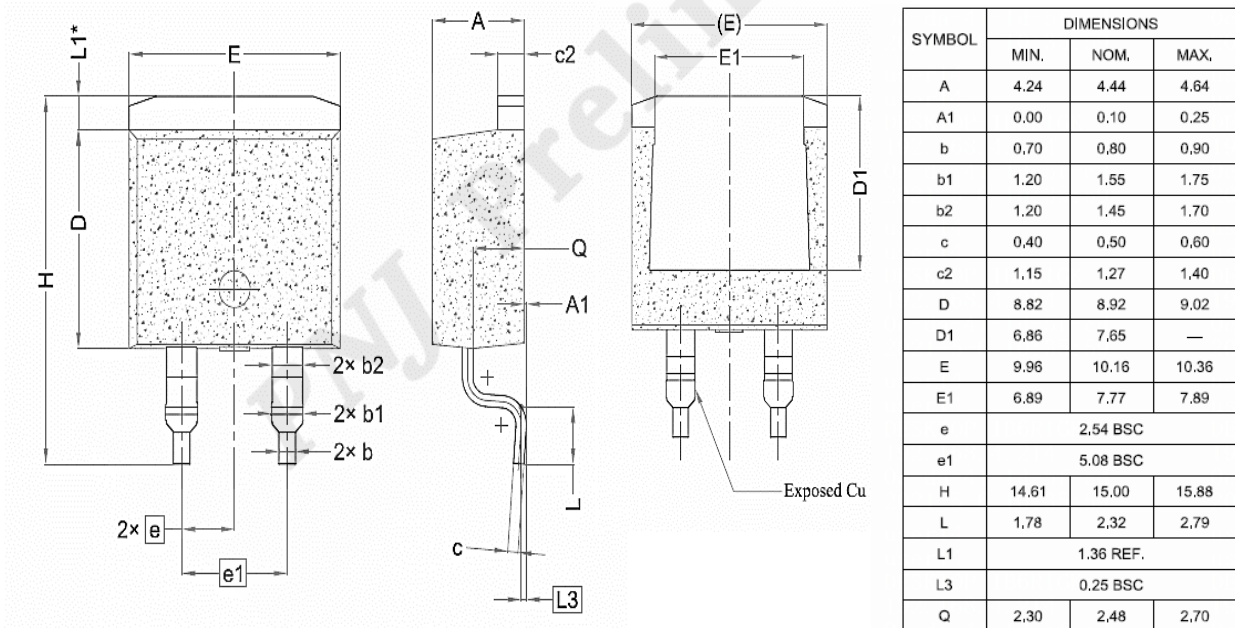


Fig. 7 Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

5. Package Outlines



Drawing and Dimensions



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