

Silicon Carbide Schottky Barrier Diode

| | | | |
|---------------|-------|-------|--------|
| V_{RRM} | 650 V | I_F | 4 A |
| $V_{F(Typ.)}$ | 1.5 V | Q_C | 6.4 nC |

Features

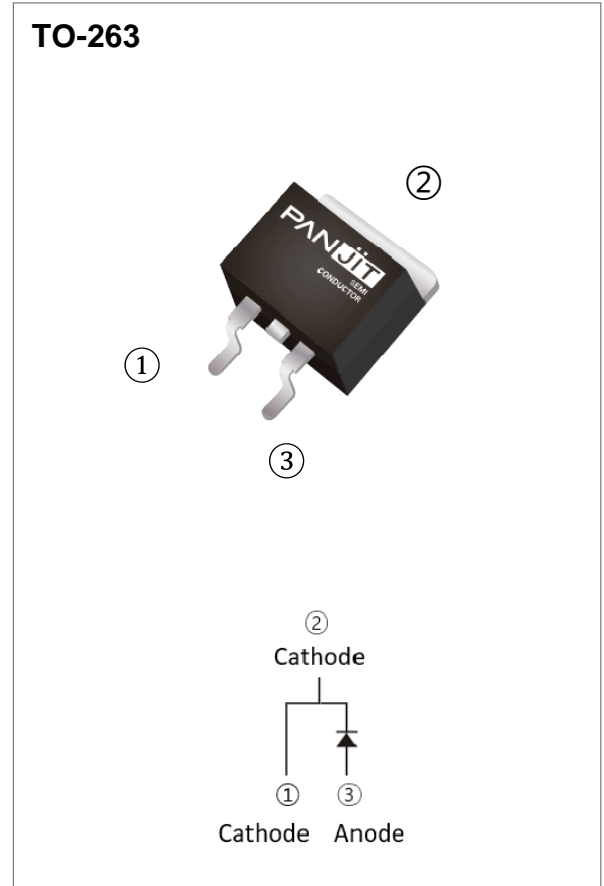
- Temperature Independent Switching Behavior
- High Surge Current Capability
- Positive Temperature Coefficient on V_F
- Low Conduction Loss
- Zero Reverse Recovery
- High junction temperature 175 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: TO-263 molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0487 ounces, 1.38 grams

Application

- PFC, UPS, PV Inverter, Welder



Maximum Ratings and Thermal Characteristics ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|---|---|-------------|---------|------------------|
| Repetitive Peak Reverse Voltage | | V_{RRM} | 650 | V |
| DC Blocking Voltage | | V_{DC} | 650 | V |
| Continuous Forward Current | $T_C = 150\text{ }^\circ\text{C}$ | I_F | 4 | A |
| Repetitive Peak Surge Current <i>Half Sine Wave, D=0.1</i> | $T_C = 25\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$ | I_{FRM} | 20 | A |
| | $T_C = 125\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$ | | 16 | |
| Peak Forward Surge Current <i>Half Sine Wave</i> | $T_C = 25\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$ | I_{FSM} | 20 | A |
| | $T_C = 125\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$ | | 16 | |
| Peak Forward Surge Current $t_p = 10\text{us}$, Pulse | | | 280 | A |
| Maximum Power Dissipation | | P_{total} | 46 | W |
| Operating Junction Temperature Range | | T_J | -55~175 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{STG} | -55~175 | $^\circ\text{C}$ |

Electrical Characteristics ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---------------------------|-----------------|---|------|------|------|--------------------|
| Forward Voltage Drop | V_F | $I_F = 4\text{ A}, T_J = 25\text{ }^\circ\text{C}$ | - | 1.5 | 1.7 | V |
| | | $I_F = 4\text{ A}, T_J = 175\text{ }^\circ\text{C}$ | - | 1.8 | - | |
| Reverse Leakage Current | I_R | $V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$ | - | 2 | 40 | μA |
| | | $V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$ | - | 0.02 | - | mA |
| Total Capacitive Charge | Q_C | $I_F = 4\text{ A}, V_R = 400\text{V}$ | - | 6.4 | - | nC |
| Total Capacitance | C | $V_R = 1\text{V}, f = 1\text{MHz}$ | - | 146 | - | pF |
| | | $V_R = 200\text{V}, f = 1\text{MHz}$ | - | 9.9 | - | pF |
| | | $V_R = 400\text{V}, f = 1\text{MHz}$ | - | 6.2 | - | pF |
| Capacitance Stored Energy | E_C | $V_R = 400\text{V}$ | - | 0.8 | - | μJ |
| Thermal Resistance | $R_{\theta JC}$ | | - | 3.26 | - | $^\circ\text{C/W}$ |

TYPICAL CHARACTERISTIC CURVES

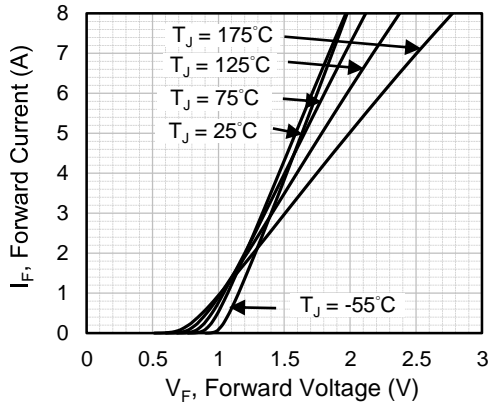


Fig.1 Forward Characteristics

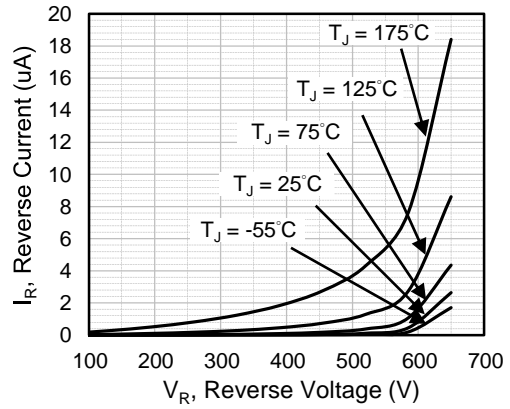


Fig.2 Reverse Characteristics

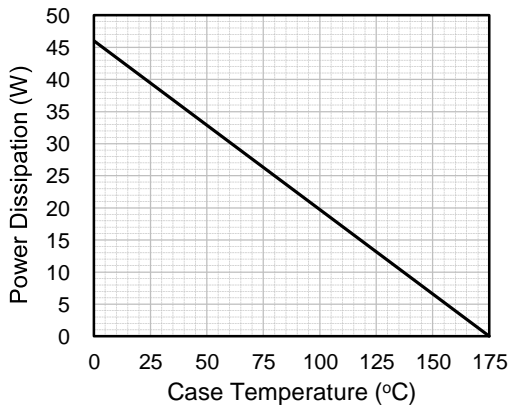


Fig.3 Power Derating Curve

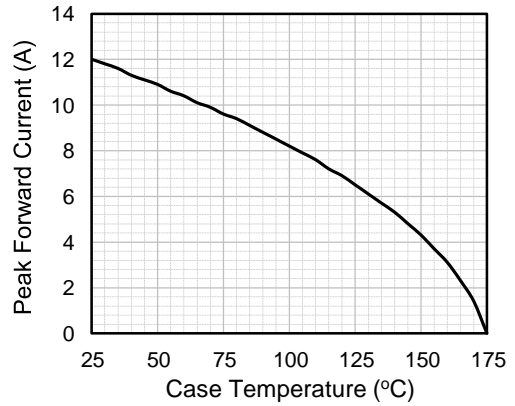


Fig.4 Current Derating Curve

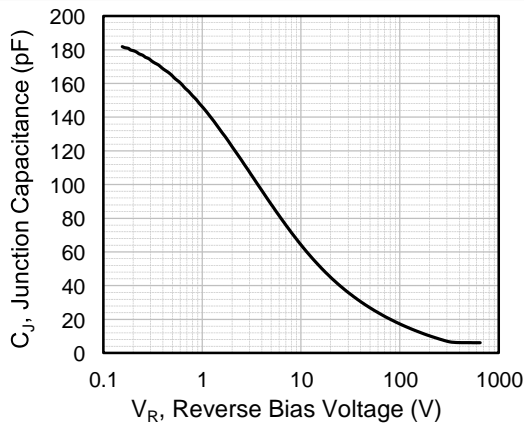


Fig.5 Typical Junction Capacitance

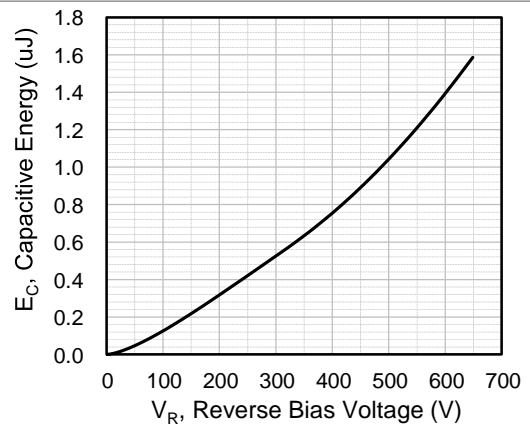


Fig.6 Capacitance Stored Energy

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