

## Silicon Carbide Schottky Barrier Diode

|               |       |       |       |
|---------------|-------|-------|-------|
| $V_{RRM}$     | 650 V | $I_F$ | 12 A  |
| $V_{F(Typ.)}$ | 1.5 V | $Q_C$ | 25 nC |

### Features

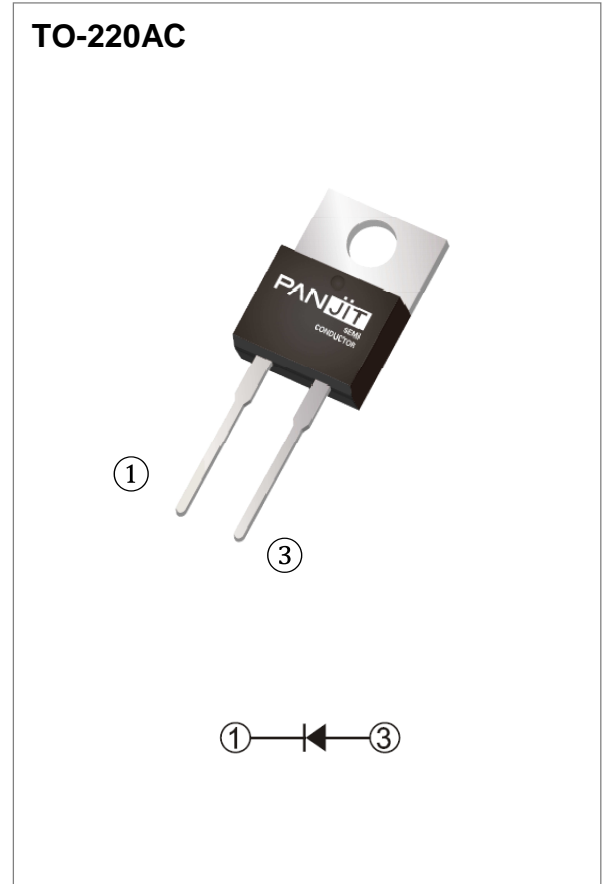
- Temperature Independent Switching Behavior
- High Surge Current Capability
- Positive Temperature Coefficient on  $V_F$
- Low Conduction Loss
- Zero Reverse Recovery
- High junction temperature 175 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: TO-220AC molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.067 ounces, 1.89 grams

### Application

- PFC, UPS, PV Inverter, EV Charging Station, 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                                    | $T_C = 140\text{ }^\circ\text{C}$                       | $I_F$       | 12      | A                |
| Repetitive Peak Surge Current<br><i>Half Sine Wave, D=0.1</i> | $T_C = 25\text{ }^\circ\text{C}$ , $t_p = 10\text{ms}$  | $I_{FRM}$   | 48      | A                |
|   | $T_C = 125\text{ }^\circ\text{C}$ , $t_p = 10\text{ms}$ |             | 44      |                  |
| Peak Forward Surge Current<br><i>Half Sine Wave</i>           | $T_C = 25\text{ }^\circ\text{C}$ , $t_p = 10\text{ms}$  | $I_{FSM}$   | 52      | A                |
|   | $T_C = 125\text{ }^\circ\text{C}$ , $t_p = 10\text{ms}$ |             | 44      |                  |
| Peak Forward Surge Current<br>$t_p = 10\mu\text{s}$ , Pulse   |   |             | 640     |                  |
| Maximum Power Dissipation                                     |   | $P_{total}$ | 102.7   | 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      | $V_F$           | $I_F = 12\text{ A}, T_J = 25\text{ }^\circ\text{C}$   | -    | 1.5  | 1.7  | V                  |
|                           |                 | $I_F = 12\text{ A}, T_J = 175\text{ }^\circ\text{C}$  | -    | 1.8  | -    |                    |
| Reverse Leakage Current   | $I_R$           | $V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$  | -    | 2.5  | 80   | $\mu\text{A}$      |
|                           |                 | $V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$ | -    | 0.03 | -    | mA                 |
| Total Capacitive Charge   | $Q_C$           | $I_F = 12\text{ A}, V_R = 400\text{V}$                | -    | 25   | -    | nC                 |
| Total Capacitance         | C               | $V_R = 1\text{V}, f = 1\text{MHz}$                    | -    | 452  | -    | pF                 |
|                           |                 | $V_R = 200\text{V}, f = 1\text{MHz}$                  | -    | 44.9 | -    | pF                 |
|                           |                 | $V_R = 400\text{V}, f = 1\text{MHz}$                  | -    | 34   | -    | pF                 |
| Capacitance Stored Energy | $E_C$           | $V_R = 400\text{V}$                                   | -    | 3.8  | -    | $\mu\text{J}$      |
| Thermal Resistance        | $R_{\theta JC}$ |   | -    | 1.46 | -    | $^\circ\text{C/W}$ |

TYPICAL CHARACTERISTIC CURVES

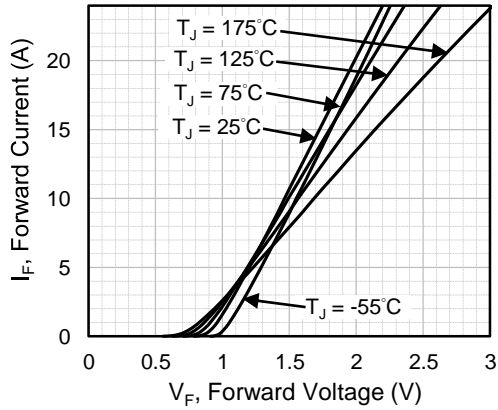


Fig.1 Forward Characteristics

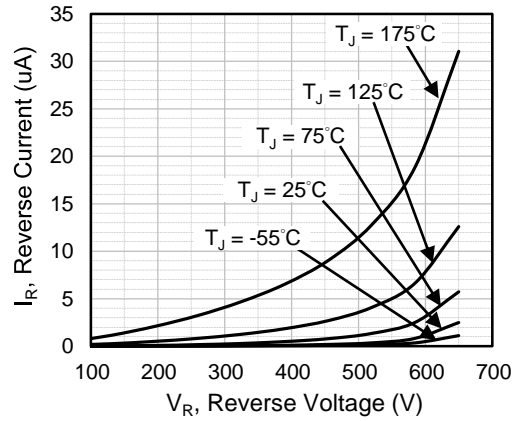


Fig.2 Reverse Characteristics

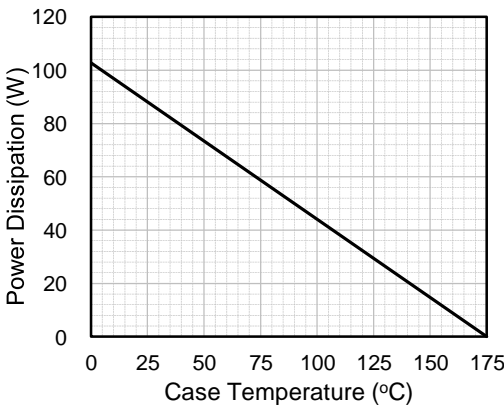


Fig.3 Power Derating Curve

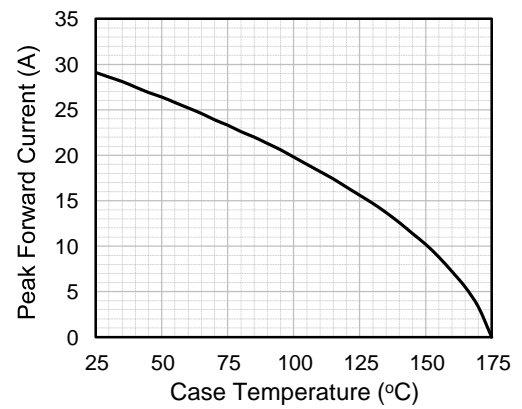


Fig.4 Current Derating Curve

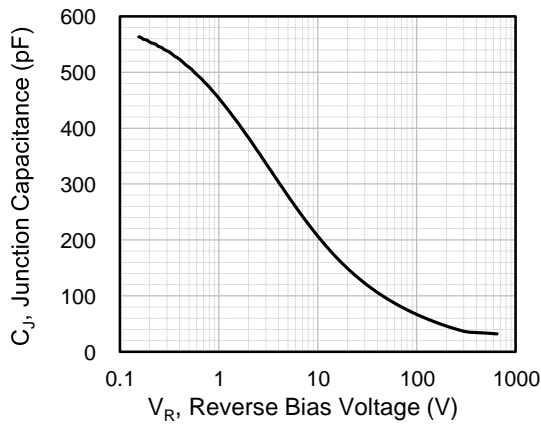


Fig.5 Typical Junction Capacitance

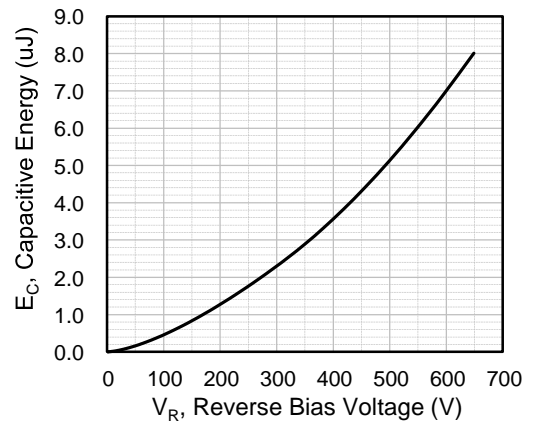


Fig.6 Capacitance Stored Energy

**Product and Packing Information**

| Part No.   | Package Type | Packing Type | Marking   |
|------------|--------------|--------------|-----------|
| PCDP1265G1 | TO-220AC     | 50pcs / Tube | CDP1265G1 |

**Packaging Information**

