

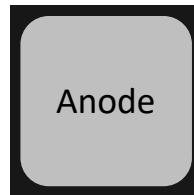
| | |
|-------------|--------|
| V_{DC} | 1700 V |
| Q_C | 52 nC |
| I_F | 5 A |
| $T_{j,max}$ | 175 °C |

1700V/5A SiC Schottky Diode Bare Die

Amp+™ Features

- Unipolar rectifier with surge current
- Zero reverse recovery current
- Fast, temperature-independent switching
- Reduced temperature dependence of V_F

Chip Outline



| Part # | Die Size | Anode | Cathode |
|--------------|----------------|-------|---------|
| GP3D005A170X | 2.16 x 2.16 mm | Al | Ni/Ag |

Maximum Ratings, at $T_j=25\text{ °C}$, unless otherwise specified

| Characteristics | Symbol | Conditions | Values | Unit |
|--|-----------------------|--|-----------|------|
| Continuous forward current | I_F | $T_C=25\text{ °C}$, $T_j=175\text{ °C}$ | 21* | A |
| | | $T_C=125\text{ °C}$, $T_j=175\text{ °C}$ | 11* | |
| | | $T_C=150\text{ °C}$, $T_j=175\text{ °C}$ | 7* | |
| Surge non-repetitive forward current sine halfwave | I_{FSM} | $T_C=25\text{ °C}$, $t_p=8.3\text{ ms}$ | 75* | A |
| | | $T_C=110\text{ °C}$, $t_p=8.3\text{ ms}$ | 60* | |
| Non-repetitive peak forward current | $I_{F,max}$ | $T_C=25\text{ °C}$, $t_p=10\text{ }\mu\text{s}$ | 440 | A |
| Repetitive peak reverse voltage | V_{RRM} | $T_j=25\text{ °C}$ | 1700** | V |
| Operating junction & storage temperature | T_j , $T_{storage}$ | Continuous | -55...175 | °C |

Values have been verified on TO-247 packaged devices

*Assumes R_{thJC} thermal resistance of 1.07°C/W with recommended wire bond

** Verified by 100% wafer test

Electrical Characteristics, at $T_j=25\text{ }^\circ\text{C}$, unless otherwise specified

| Characteristics | Symbol | Conditions | Values | | | Unit |
|-------------------------|----------|---|--------|------|------|---------------|
| | | | min. | typ. | max. | |
| DC blocking voltage | V_{DC} | $T_j=25\text{ }^\circ\text{C}$ | 1700** | - | - | V |
| Diode forward voltage | V_F | $I_F=5\text{A}, T_j=25\text{ }^\circ\text{C}$ | - | 1.50 | 1.65 | V |
| | | $I_F=5\text{A}, T_j=125\text{ }^\circ\text{C}$ | - | 1.96 | - | |
| | | $I_F=5\text{A}, T_j=175\text{ }^\circ\text{C}$ | - | 2.33 | 2.55 | |
| Reverse current | I_R | $V_R=1700\text{V}, T_j=25\text{ }^\circ\text{C}$ | - | 1** | 20** | μA |
| | | $V_R=1700\text{V}, T_j=125\text{ }^\circ\text{C}$ | - | 6 | - | |
| | | $V_R=1700\text{V}, T_j=175\text{ }^\circ\text{C}$ | - | 23 | 200 | |
| Total capacitive charge | Q_C | $V_R=1700\text{V}, T_j=25\text{ }^\circ\text{C}$ | - | 52 | - | nC |
| Total capacitance | C | $V_R=1\text{V}, f=1\text{ MHz}$ | - | 347 | - | pF |
| | | $V_R=800\text{V}, f=1\text{ MHz}$ | - | 23 | - | |
| | | $V_R=1700\text{V}, f=1\text{ MHz}$ | - | 22 | - | |

Values have been verified on TO-247 packaged devices

*Assumes R_{thJC} thermal resistance of $1.07\text{ }^\circ\text{C/W}$ with recommended wire bond

** Verified by 100% wafer test

Mechanical Parameters

| Parameter | Typ. | Unit |
|--------------------------------|------------------------------|---------------|
| Die Size | 2.16 x 2.16 | mm |
| Anode Pad Opening | 0.84 x 0.84 | mm |
| Recommended Wire Bond (TO-247) | 15 mil x 1 | mil |
| Die Thickness | 360 ± 25 | μm |
| Wafer Size | 150 | mm |
| Anode Metalization (Al) | 4 | μm |
| Cathode Metalization (Ni/Ag) | | μm |
| Frontside Passivation | Polyimide on Silicon Nitride | |

Typical Performance in packaged device

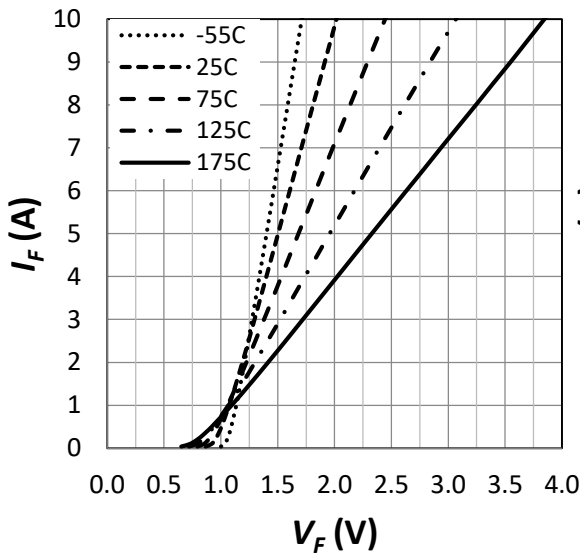


Fig. 1 Forward Characteristics

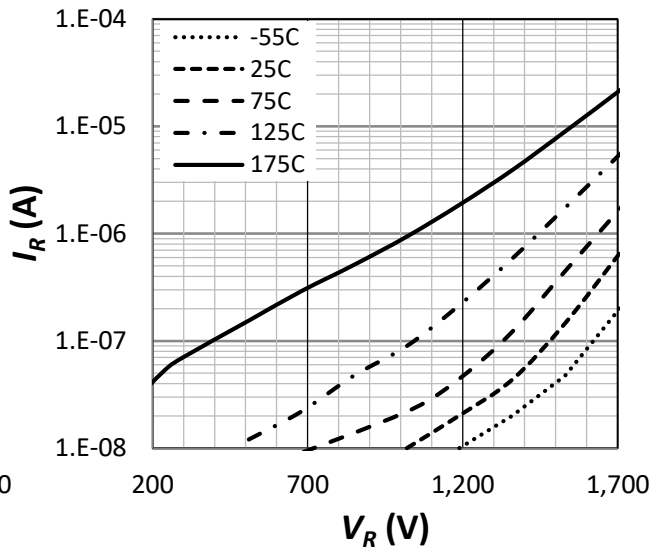


Fig. 2 Reverse Characteristics

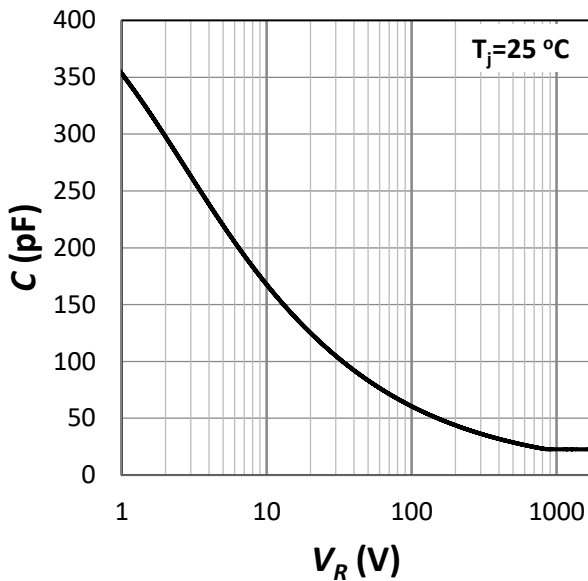


Fig. 3 Capacitance vs. Reverse Voltage

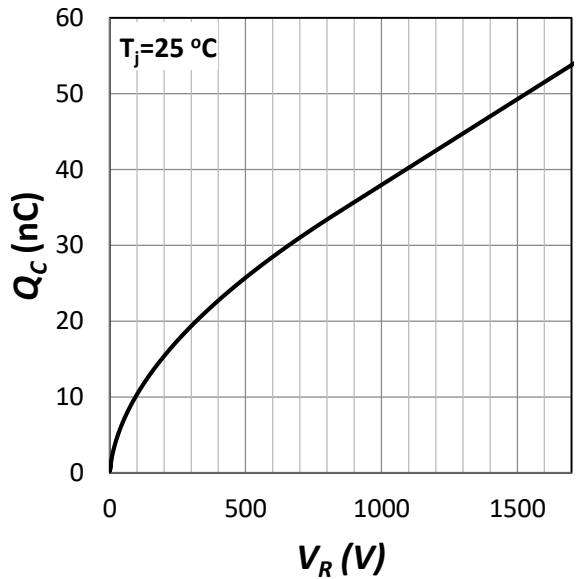


Fig. 4 Capacitive Charge vs. Reverse Voltage

Notes**RoHS Compliance**

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented March, 2013. RoHS Declarations for this product can be obtained from the Product Documentation sections of www.SemiQ.com.

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