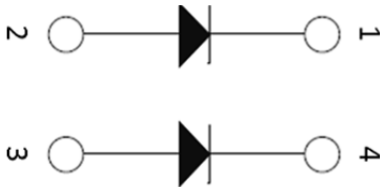


### SiC SBD Parallel Power Module

$$V_{RRM} = 600V$$

$$I_{DAV} = 30A @ T_C = 125^{\circ}C$$



Parallel

#### Features

- **SiC Schottky Diode**
  - Zero reverse recovery
  - Zero forward recovery
  - Temperature Independent switching behavior
  - Positive temperature coefficient on  $V_f$
- Low stray inductance
- High junction temperature operation

#### Applications

- Supplies for DC power equipment
- Rectifier for induction heating
- Welding equipment
- High temperature and rectifiers

#### Benefits

- Outstanding performance at high frequency operation
- Low losses and Low EMI noises
- Very rugged and easy mount
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive  $T_c$  of  $V_f$
- RoHS Compliant

#### Absolute Maximum Ratings ( $T_j=25^{\circ}C$ unless otherwise specified)

| Parameters                           | Symbol    | Conditions                             | Specifications | Units       |
|--------------------------------------|-----------|--|----------------|-------------|
| Maximum Reverse Voltage              | $V_{RRM}$ |  | 600            | V           |
| Average Forward Current (per SBD)    | $I_{DAV}$ | $T_C = 25^{\circ}C$                    | 69             | A           |
|                                      |           | $T_C = 150^{\circ}C$                   | 36             | A           |
| Non-repetitive Forward Surge Current | $I_{FSM}$ | $t=8.3\text{ ms}, T_C = 25^{\circ}C$   | 288            | A           |
|                                      |           | $T=10\ \mu\text{s}, T_C = 25^{\circ}C$ | 720            | A           |
| Operating Junction Temperature       | $T_j$     |  | -55 ~ 175      | $^{\circ}C$ |
| Storage Temperature                  | $T_{STG}$ |  | -55 ~ 150      | $^{\circ}C$ |

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

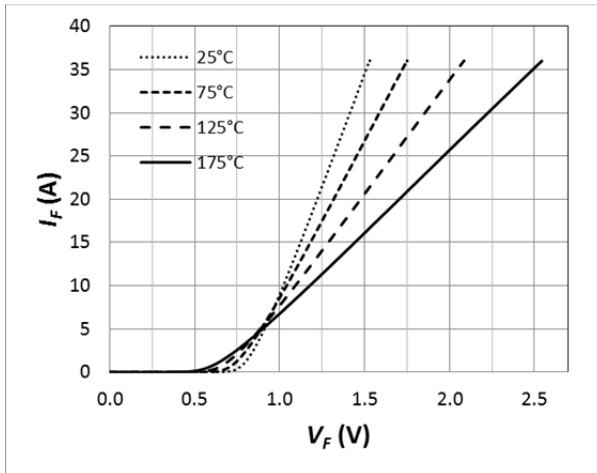
| Parameters                                | Symbol    | Conditions   | Min | Typ  | Max | Units         |
|---|-----------|--|-----|------|-----|---------------|
| Maximum peak repetitive reverse voltage   | $V_{RRM}$ |  | 600 | --   | --  | V             |
| Maximum Reverse Leakage Current per diode | $I_{RM}$  | $V_R = 600\text{V}, T_j = 25^{\circ}\text{C}$                  | --  | 9.9  | 100 | $\mu\text{A}$ |
|   |           | $V_R = 600\text{V}, T_j = 150^{\circ}\text{C}$                 | --  | 1455 | --  | $\mu\text{A}$ |
| Diode Forward Voltage                     | $V_F$     | $I_F = 30\text{A}, T_j = 25^{\circ}\text{C}$                   | --  | 1.5  | 1.7 | V             |
|   |           | $I_F = 30\text{A}, T_j = 175^{\circ}\text{C}$                  | --  | 2.5  | 2.8 | V             |
| Total Capacitive Charge                   | $Q_C$     | $V_R=600\text{V}, I_F<I_{F,max}$                               | --  | 75   | --  | nC            |
| Switching Time                            | $t_c$     | $dI_F/dt = 200\text{A}/\mu\text{s}, T_j = 175^{\circ}\text{C}$ | --  | --   | 10  | ns            |
| Total Capacitance                         | C         | $V_R = 1\text{V}, f = 1\text{MHz}$                             | --  | 1461 | --  | pF            |
|   |           | $V_R = 300\text{V}, f = 1\text{MHz}$                           | --  | 129  | --  | pF            |
|   |           | $V_R = 600\text{V}, f = 1\text{MHz}$                           | --  | 123  | --  | pF            |

### Thermal and Package Characteristics ( $T_j=25^{\circ}\text{C}$ unless otherwise specified)

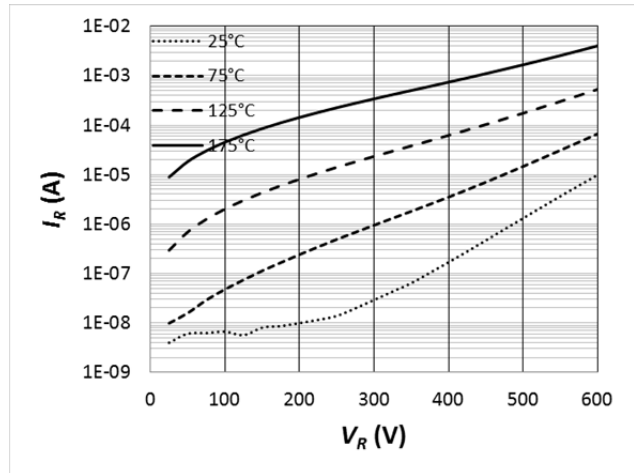
| Parameters                             | Symbol     | Conditions   | Min  | Typ | Max  | Units                       |
|--|------------|--|------|-----|------|-----------------------------|
| Junction to Case Thermal Resistance    | $R_{THJC}$ | Per Diode  | --   | --  | 0.51 | $^{\circ}\text{C}/\text{W}$ |
| Junction to Ambient Thermal Resistance | $R_{THJA}$ | Per Diode  | --   | --  | 20   | $^{\circ}\text{C}/\text{W}$ |
| Mounting Torque                        | $M_d$      |  |      |     | 1.5  | N-m                         |
| Terminal Connection Torque             | $M_{dt}$   |  | 1.3  | --  | 1.5  | N-m                         |
| Package Weight                         | $W_t$      |  |      | 32  |      | g                           |
| Isolation Voltage                      | $V_{ISOL}$ | $I_{ISOL} < 1\text{mA}, 50/60\text{Hz}, t=1\text{min}$ | 2500 | V   |      |                             |

### Product Number and Pin Descriptions

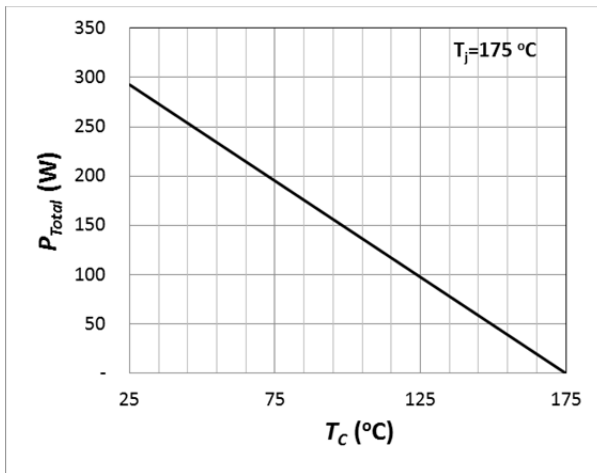
| Part Number     | Rating    | Pin 1     | Pin 2   | Pin 3   | Pin 4     |
|-----------------|-----------|-----------|---------|---------|-----------|
| GHXS030A060S-D3 | 600V, 30A | Cathode 1 | Anode 1 | Anode 2 | Cathode 2 |



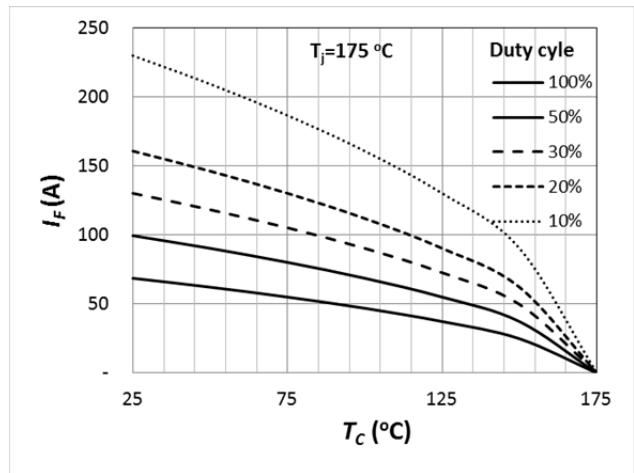
Forward Characteristics (parameterized on  $T_j$ )



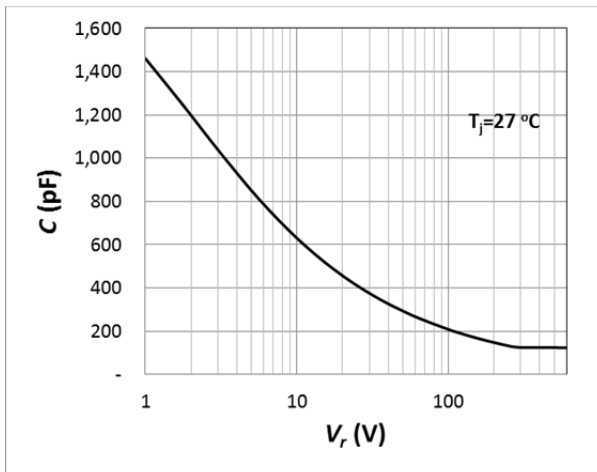
Reverse Characteristics (parameterized on  $T_j$ )



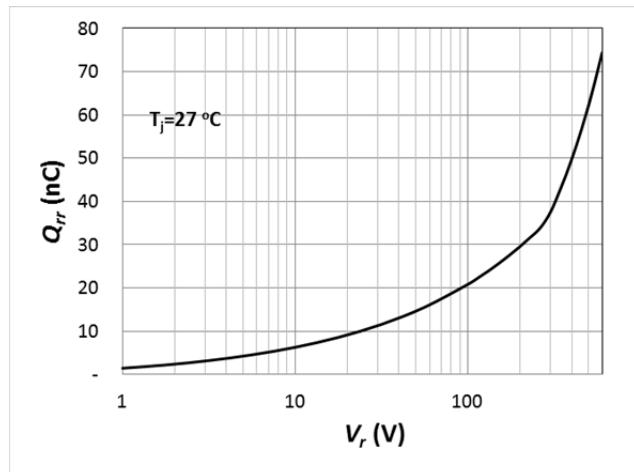
Power Derating



Current Derating

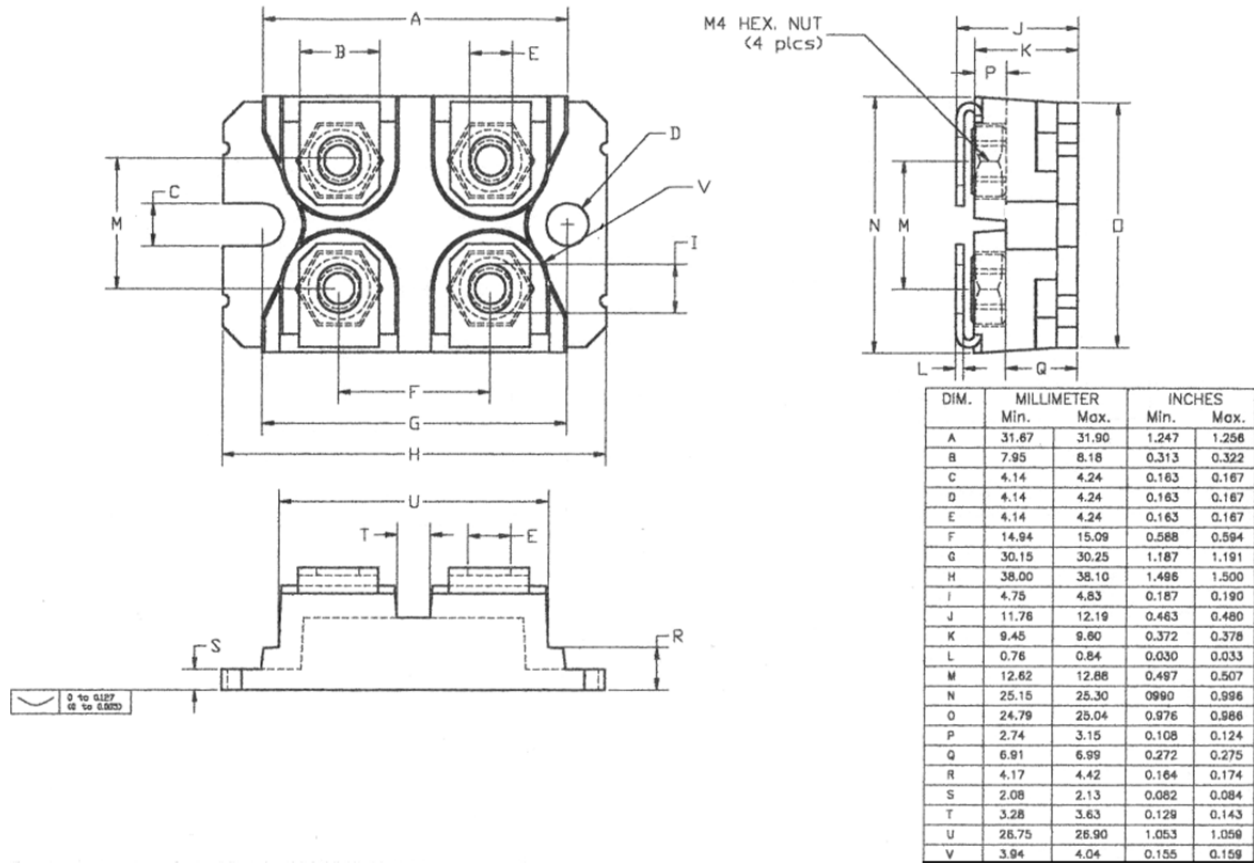


Capacitance Curve



Recovery Charge

### SOT-227 Package Outline



### Revision History

| Date     | Revision | Notes                                      |
|----------|----------|--|
| 9/6/2013 | 1.0      | Initial release                            |
| 6/4/2014 | 1.1      | Add the part number, pin assignment table. |

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### 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.gptechgroup.com](http://www.gptechgroup.com).

- **REACH Compliance**

REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact our office at GPTG Headquarters in Lake Forest, California to insure you get the most up-to-date REACH SVHC Declaration.

REACH banned substance information (REACH Article 67) is also available upon request.

- This product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, cardiac defibrillators or similar emergency medical equipment, aircraft navigation or communication or control systems, or air traffic control.
- To obtain additional technical information or to place an order for this product, please contact us. The information in this datasheet is provided by Global Power Technologies Group. GPTG reserves the right to make changes, corrections, modifications, and improvements of datasheet without notice.