

**TECHNICAL DATA**  
**DATA SHEET 4336, REV. B**

**HERMETIC SILICON CARBIDE RECTIFIER**

**DESCRIPTION:** A 600-VOLT, 20 AMP POWER SILICON CARBIDE RECTIFIER IN A HERMETIC TO-254 PACKAGE AVAILABLE SCREENED TO ANY REQUIRED LEVEL

**FEATURES:**

- NO RECOVERY TIME OR REVERSE RECOVERY LOSSES
- NO TEMPERATURE INFLUENCE ON SWITCHING BEHAVIOR
- **Ceramic Seal Option** – For ceramic seals use part number prefix SHDC
- **High Frequency Option** - Non-magnetic Glidcop leads with ceramic seals are available for improved performance at high frequency; use part number prefix SHDCG

**MAXIMUM RATINGS**

ALL RATINGS ARE @  $T_C = 25\text{ }^\circ\text{C}$  UNLESS OTHERWISE SPECIFIED.

RATING	SYMBOL	MAX.	UNITS
PEAK INVERSE VOLTAGE	PIV	600	Volts
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65\text{ }^\circ\text{C}$ for P and N suffixes)	$I_O$	20	Amps
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65\text{ }^\circ\text{C}$ for Single and D suffixes)	$I_O$	10	Amps
MAXIMUM REPETITIVE FORWARD SURGE CURRENT PER LEG ( $t = 8.3\text{ms}$ , Sine) per leg, $T_C = 25\text{ }^\circ\text{C}$	$I_{FRM}$	50	Amps
MAXIMUM POWER DISSIPATION, $T_C = 25\text{ }^\circ\text{C}$ ,	$P_d$	40	W
MAXIMUM THERMAL RESISTANCE, Junction to Case PER LEG	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE*	Top, Tstg	-55 to 200	$^\circ\text{C}$

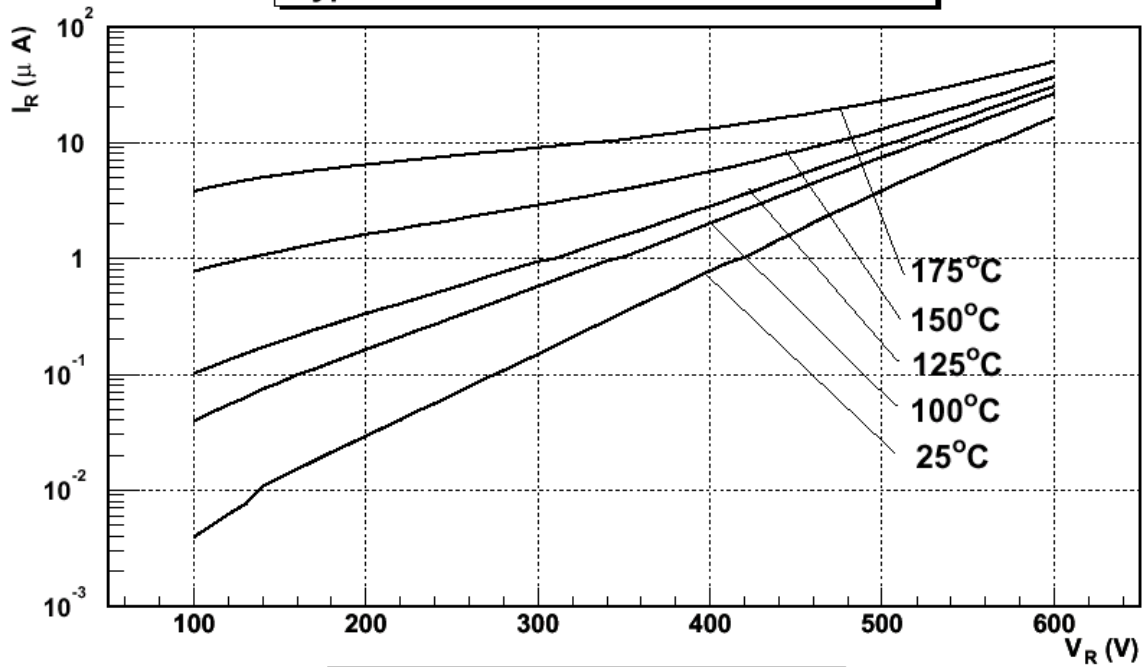
\* Note: SiC semiconductors will handle at or above this operating and storage temperature. However, extended operational use of the packaged device above 175C may reduce its future performance. All qualification testing and screening per MIL-PRF-19500 will only be performed to 175C.

**ELECTRICAL CHARACTERISTICS**

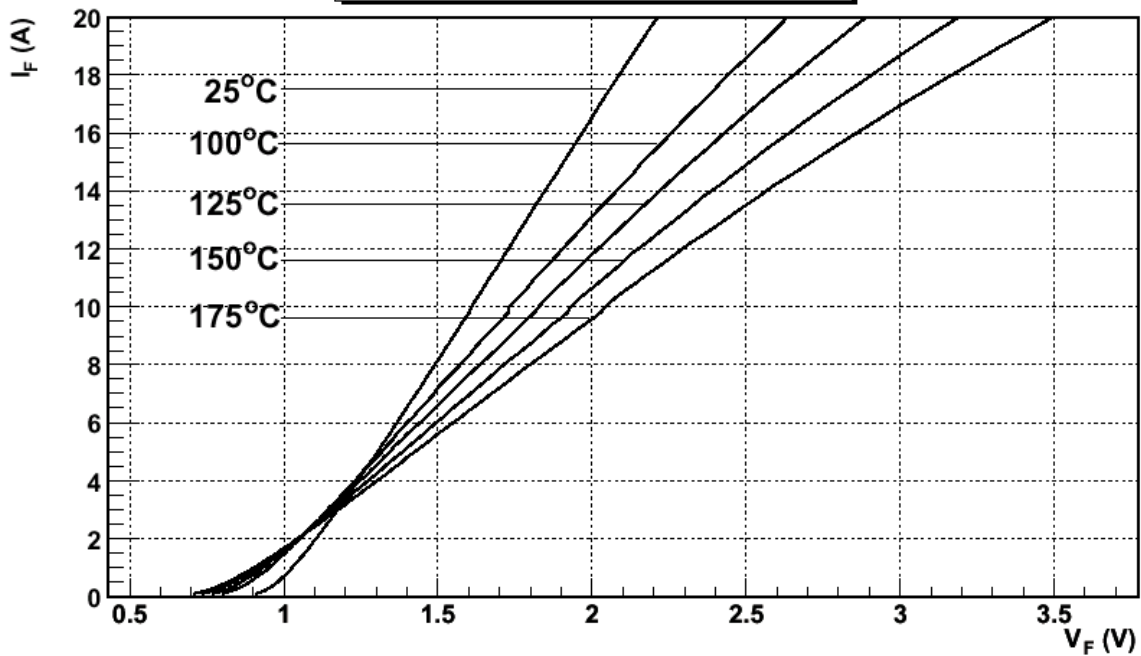
CHARACTERISTIC		TYP	MAX.	UNITS
MAXIMUM FORWARD VOLTAGE DROP	$T_J = 25\text{ }^\circ\text{C}$	1.65	1.80	Volts
Pulsed ( $I_f = 10\text{ A PER LEG}$ ) $V_f$	$T_J = 150\text{ }^\circ\text{C}$	2.05	2.20	
MAXIMUM FORWARD VOLTAGE DROP	$T_J = 25\text{ }^\circ\text{C}$	1.35	1.45	Volts
Pulsed ( $I_f = 6\text{ A PER LEG}$ ) $V_f$	$T_J = 150\text{ }^\circ\text{C}$	1.60	1.70	
MAXIMUM REVERSE CURRENT ( $I_r @ 600\text{V PIV PER LEG}$ )	$T_J = 25\text{ }^\circ\text{C}$	0.04	0.15	mA
	$T_J = 150\text{ }^\circ\text{C}$	0.08	0.50	
JUNCTION CAPACITANCE $C_T$ ( $V_r = 5\text{V}$ ) per leg	$C_T$	250	350	pF
TOTAL CAPACITIVE CHARGE ( $V_R = 600\text{V}$ $I_F = 20\text{A}$ $di/dt = 500\text{A}/\mu\text{s}$ $T_J = 25\text{ }^\circ\text{C}$ ) This is design information only	$Q_C$ per leg	35	N/A	nC

TECHNICAL DATA  
DATA SHEET 4336, REV. B

**Typical Reverse Current Characteristics**

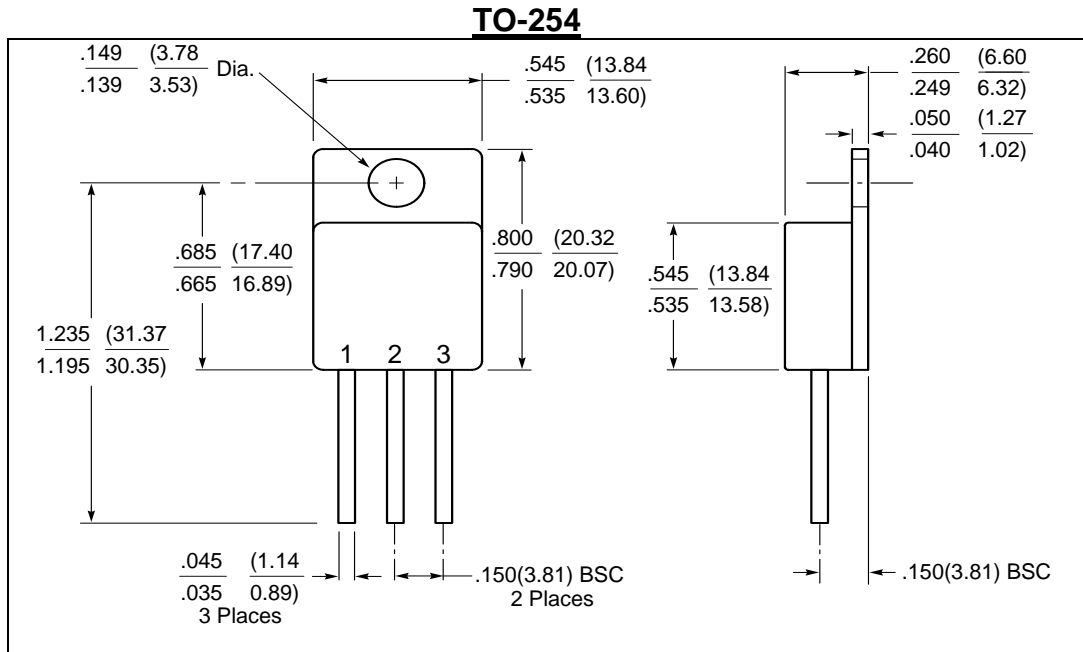


**Typical Forward Characteristics**



**TECHNICAL DATA**  
**DATA SHEET 4336, REV. B**

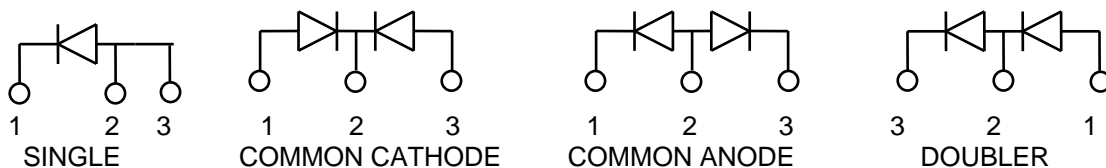
**MECHANICAL DIMENSIONS**



**PINOUT TABLE**

TYPE	PIN 1	PIN 2	PIN 3
SINGLE RECTIFIER	CATHODE	ANODE	ANODE
DUAL RECTIFIER/COMMON CATHODE (P)	ANODE 1	COMMON CATHODE	ANODE 2
DUAL RECTIFIER/COMMON ANODE (N)	CATHODE 1	COMMON ANODE	CATHODE 2
DUAL RECTIFIER/DOUBLER (D)	ANODE	ANODE/CATHODE	CATHODE

**SCHEMATIC**



Application Note: Customers should be aware that at the current stage of technical development of SiC, the reverse avalanche capabilities of the device are limited.

Customer designs will need to accommodate these limitations and avoid exposure of the device to this and other potentially damaging conditions in their applications.

**SENSITRON**  
**SEMICONDUCTOR**

**SHD625051**  
**SHD625051P**  
**SHD625051N**  
**SHD625051D**

---

**TECHNICAL DATA**  
**DATA SHEET 4336, REV. B**

**DISCLAIMER:**

1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the Sensitron Semiconductor sales department for the latest version of the datasheet(s).

2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.

3- In no event shall Sensitron Semiconductor be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). Sensitron Semiconductor assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.

4- In no event shall Sensitron Semiconductor be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.

5- No license is granted by the datasheet(s) under any patents or other rights of any third party or Sensitron Semiconductor.

6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of Sensitron Semiconductor.

7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations.