

TECHNICAL DATA  
DATA SHEET 5295, REV. -

## HERMETIC SILICON CARBIDE MOSFET WITH SiC DIODE

**DESCRIPTION:** A 1200 VOLT, 22 AMP POWER SILICON CARBIDE N-CHANNEL MOSFET AND SiC DIODE IN AN ISOLATED HERMETIC TO-257 PACKAGE, AVAILABLE SCREENED TO ANY REQUIRED LEVEL

### FEATURES:

- 80mΩ typical on-resistance
- Fast switching and reverse recovery
- Ceramic seals
- Low Vf silicon carbide Schottky barrier diode included in parallel with body diode

### MAXIMUM RATINGS

ALL RATINGS ARE @ T<sub>c</sub> = 25 °C UNLESS OTHERWISE SPECIFIED.

RATING	SYMBOL	MAX	UNITS
DRAIN-SOURCE VOLTAGE	V <sub>DSS</sub>	1200	V
CONTINUOUS DRAIN CURRENT	I <sub>D</sub>	22	A
CONTINUOUS DRAIN CURRENT, T <sub>C</sub> = 100 °C	I <sub>D</sub>	14	A
PULSED DRAIN CURRENT (t ≤ 10μs, dc ≤ 1%)	I <sub>D, pulse</sub>	80	A
GATE - SOURCE VOLTAGE	V <sub>GSS</sub>	-6 to 22	V
MAXIMUM POWER DISSIPATION, T <sub>C</sub> = 25 °C,	P <sub>d</sub>	75	W
MAXIMUM THERMAL RESISTANCE	R <sub>θJC</sub>	1.67	°C/W
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE	Top, Tstg	-55 to 150	°C

### ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	MIN	TYP	MAX	UNITS
DRAIN - SOURCE BREAKDOWN VOLTAGE (VGS = 0V, ID = 1mA)	1200			V
ZERO GATE VOLTAGE DRAIN CURRENT (VDS = 1200V, VGS = 0V)			400	μA
GATE - SOURCE LEAKAGE CURRENT (VGS = +22V, VDS = 0V)			100	nA
GATE - SOURCE LEAKAGE CURRENT (VGS = -6V, VDS = 0V)			-100	nA
GATE THRESHOLD VOLTAGE (VDS = VGS, ID = 4.4mA)	1.6		4.0	V
STATIC DRAIN - SOURCE ON - STATE RESISTANCE (VGS = 18V, ID = 10A)			125	mΩ
TRANSCONDUCTANCE (VDS = 10V, ID = 10A)		3.7		S
INPUT CAPACITANCE (VGS = 0V, VDS = 800V, f = 1MHz)		1850		pF
OUTPUT CAPACITANCE (VGS = 0V, VDS = 800V, f = 1MHz)		175		pF
REVERSE TRANSFER CAPACITANCE (VGS = 0V, VDS = 800V, f = 1MHz)		20		pF

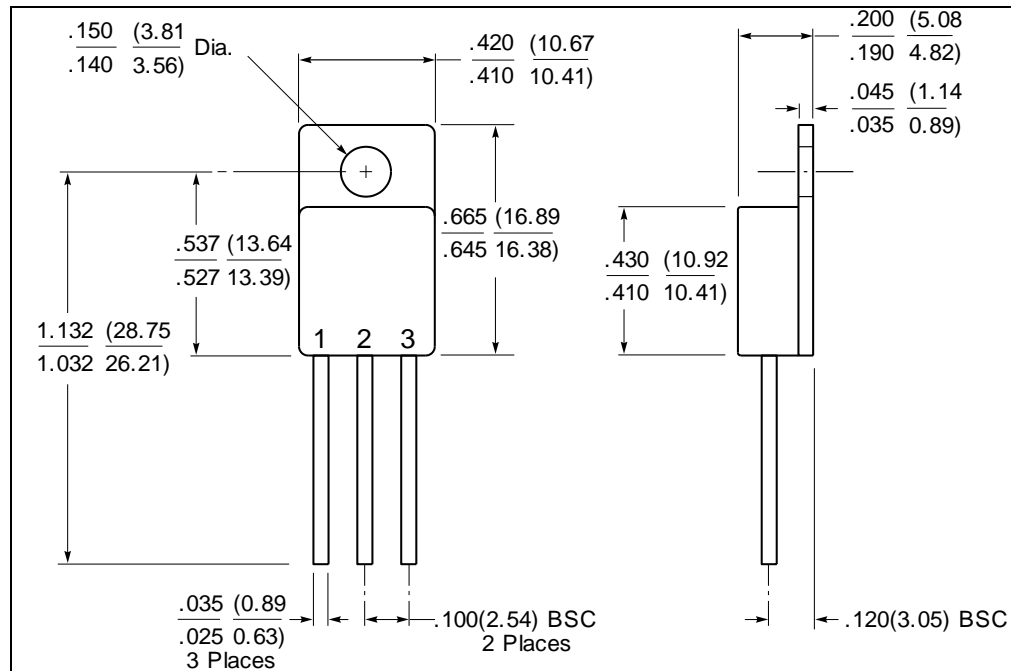
**TECHNICAL DATA**  
**DATA SHEET 5295, REV. -****ELECTRICAL CHARACTERISTICS (CONTINUED)**

<b>CHARACTERISTIC</b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>	<b>UNITS</b>
Turn - on delay time (VDD = 400V, VGS = 18V, ID = 10A, RL = 40Ω, RG = 0Ω)		37		ns
Rise time (VDD = 400V, VGS = 18V, ID = 10A, RL = 40Ω, RG = 0Ω)		33		ns
Turn - off delay time (VDD = 400V, VGS = 18V, ID = 10A, RL = 40Ω, RG = 0Ω)		70		ns
Fall time (VDD = 400V, VGS = 18V, ID = 10A, RL = 40Ω, RG = 0Ω)		28		ns
Total gate charge (VDD = 400V, VGS = 18V, ID = 10A)		106		nC
Gate - Source charge (VDD = 400V, VGS = 18V, ID = 10A)		27		nC
Gate - Drain charge (VDD = 400V, VGS = 18V, ID = 10A)		31		nC
Gate plateau voltage (VDD = 400V, VGS = 18V, ID = 10A)		9.7		V
INVERSE DIODE CONTINUOUS, FORWARD CURRENT			22	A
INVERSE DIODE DIRECT CURRENT, PULSED			80	A
FORWARD VOLTAGE		1.3		V
REVERSE RECOVERY TIME		37		ns
REVERSE RECOVERY CHARGE		60		nC
PEAK REVERSE RECOVERY CURRENT		2.4		A

**TECHNICAL DATA**  
**DATA SHEET 5295, REV. –**

**MECHANICAL DIMENSIONS**

**TO-257**



**PINOUT TABLE**

TYPE	PIN 1	PIN 2	PIN 3
N-CHANNEL MOSFET	DRAIN	SOURCE	GATE

**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.