

TECHNICAL DATA
DATA SHEET 5294, REV. -

HERMETIC SILICON CARBIDE MOSFET WITH SiC DIODE

DESCRIPTION: A 1200 VOLT, 31 AMP POWER SILICON CARBIDE N-CHANNEL MOSFET AND SiC DIODE IN AN ISOLATED HERMETIC TO-254 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_C = 25 °C UNLESS OTHERWISE SPECIFIED.

RATING	SYMBOL	MAX	UNITS
DRAIN-SOURCE VOLTAGE	V _{DSS}	1200	V
CONTINUOUS DRAIN CURRENT	I _D	31	A
CONTINUOUS DRAIN CURRENT, T _C = 100 °C	I _D	20	A
PULSED DRAIN CURRENT (t ≤ 10μs, dc ≤ 1%)	I _{D, pulse}	80	A
GATE - SOURCE VOLTAGE	V _{GSS}	-6 to 22	V
MAXIMUM POWER DISSIPATION, T _C = 25 °C,	P _d	150	W
MAXIMUM THERMAL RESISTANCE	R _{θJC}	.83	°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

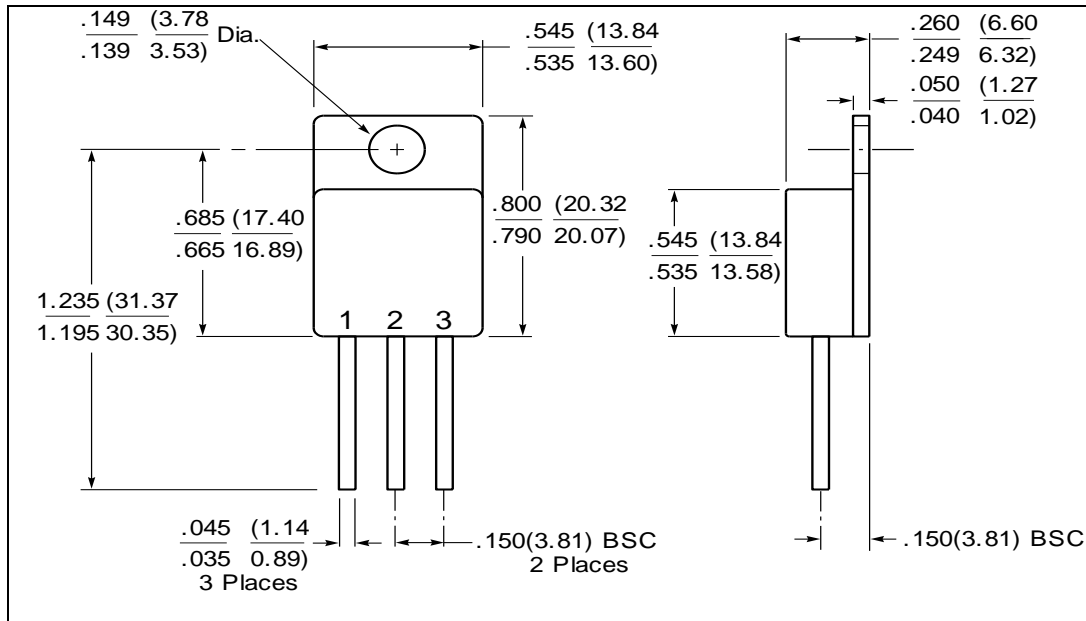
TECHNICAL DATA
DATA SHEET 5294, REV. -**ELECTRICAL CHARACTERISTICS (CONTINUED)**

CHARACTERISTIC	MIN	TYP	MAX	UNITS
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			31	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

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MECHANICAL DIMENSIONS

TO-254



PINOUT TABLE

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

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