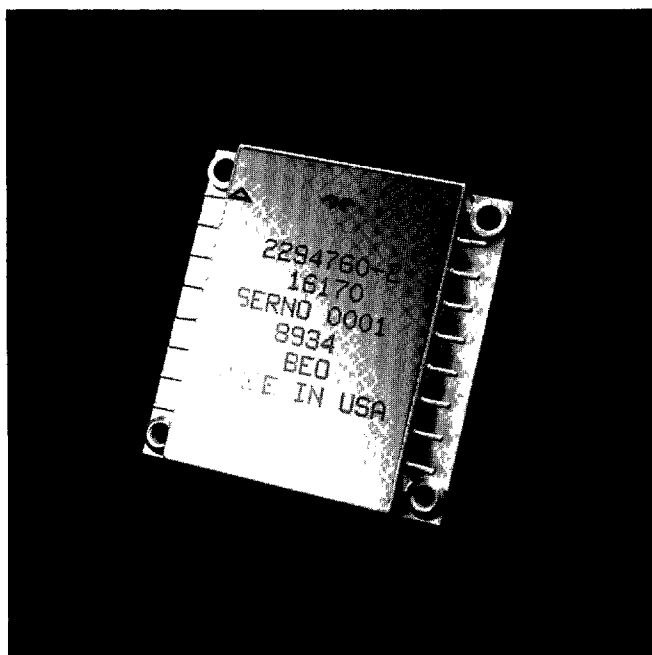


TELEDYNE MICROELECTRONICS



Power Hybrid, Full Bridge P/N 2294760

DESCRIPTION

The 2294760 Power Hybrid contains four N-Channel Enhancement mode high voltage power MOSFETS. Each is coupled with a blocking Schottky diode on the drain and a by-pass ultrafast recovery diode from the source to eliminate momentary shoot-through conditions caused by induced slow MOSFET recovery. Each MOSFET gate is also connected to back-to-back zeners for gate overvoltage protection.

The components are housed in hermetically sealed 16-pin packages. The hybrid is specified for operation over the temperature range of -55°C to 125°C and is designed for high reliability power switching applications.

Modular thermally managed power packaging designs, certification to MIL-H-38534 and screening to MIL-STD-883 Method 5008, make this hybrid an excellent choice for Military, Avionic (Class "H") and Space (Class "K") applications.

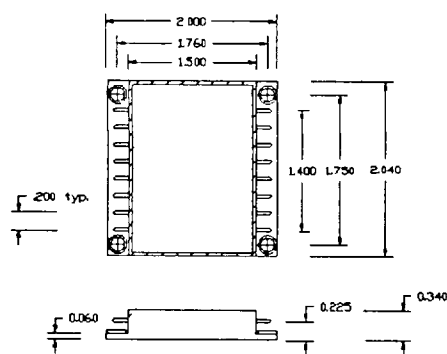
FEATURES

- Isolated metal hermetic power case
- Low thermal resistance: 0.3°C/W max
- 25A/500V rating
- High frequency switching
- Certification to MIL-H-38534
- Screening to MIL-STD-883
- Other circuit configurations, component types, voltage ratings, etc., are also available.

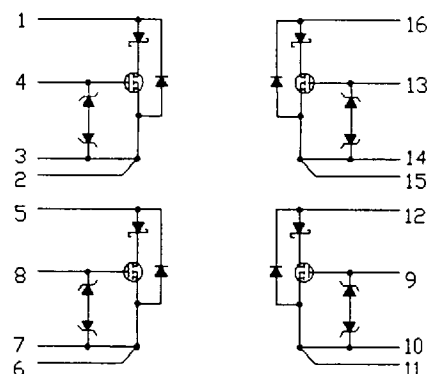
APPLICATIONS

- PWM and Resonant Mode Power Supply
- Motor Drives
- Inverters

PACKAGE DIMENSIONS (inches)



FUNCTIONAL DIAGRAM

ABSOLUTE MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$ unless otherwise noted) P/N 2294760

V_{DS}	Drain to Source Voltage (MOSFET and By-pass diode)	500V
I_D	Drain Current	
	Continuous (MOSFET and Schottky)	25A
	Pulsed ^① (MOSFET and Schottky)	100A
$-I_D$	Reverse Drain Current	
	Continuous (By-pass diode)	25A
	Pulsed ^① (By-pass diode)	100A
V_{GS}	Gate to Source Voltage: Two 15V, 1W back-to-back zeners protected	
P_D	Power Dissipation	
	Each MOSFET	310W
	(Derate above 25°C T_c linearly to zero watts at 150°C T_c)	
T_j, T_{STG}	Operating and Storage Junction Temperature	-55°C to 150°C

THERMAL CHARACTERISTICS

$R\theta_{jc}$	Junction to Case	
	MOSFET	0.3 $^\circ\text{C/W}$ max
	Schottky	0.55 $^\circ\text{C/W}$ max
	By-pass diode	0.45 $^\circ\text{C/W}$ max

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
B_{VDS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	500	—	V
I_{DSS+IR}	Zero Gate Drain Current	$V_{DS}=500V, V_{GS}=0V$	—	300	μA
	Zero Gate Drain Current ($T_c = 125^\circ\text{C}$)	$V_{DS}=400V, V_{GS}=0V$	—	6	mA
$I_{D ON}$	On State Drain Current	$V_{DS} > I_{D ON} \times R_{DS ON} \text{ max.}$ $V_{GS}=10V$	25	—	A
$V_{GS TH}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=1mA$	2	—	V
$R_{DS ON}$	Static Drain to Source On Resistance ^②	$V_{GS}=10V, I_D=12.5A$	—	0.27	ohm
V_F	Instantaneous Forward Voltage Drop (By-pass diode) ^③	$-I_D=25A$	—	1.6	V
C_{ISS}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V, F=1MHz$	—	2400	pF
$t_{D ON}$	Turn-on Delay Time	$V_{DD}=250V, I_D=25A, V_{GS}=15V, R_G=1.8 \text{ ohm}$	—	20	nS
$t_{D OFF}$	Turn-off Delay Time	$V_{DD}=250V, I_D=25A, V_{GS}=15V, R_G=1.8 \text{ ohm}$	—	70	nS
t_r	Rise Time	$V_{DD}=250V, I_D=25A, V_{GS}=15V, R_G=1.8 \text{ ohm}$	—	35	nS
t_f	Fall Time	$V_{DD}=250V, I_D=25A, V_{GS}=15V, R_G=1.8 \text{ ohm}$	—	45	nS
Q_g	Total Gate Charge	$V_{GS}=10V, I_D=25A, V_{DS}=250V$	60	—	nC
t_{rr}	Reverse Recovery Time (By-pass diode)	$I_F=0.5A, I_R=1A, I_{RR}=0.25A$	—	50	nS

NOTES: ^① Pulse width limited by maximum junction temperature. ^② 300 μS pulse width at 2% duty cycle.

Wherever possible, the information supplied is supported by performance and test data. However, no responsibility is assumed by Teledyne Microelectronics for its use. Teledyne reserves the right to make changes to this device or device specifications.

Contact your local authorized sales representative or the factory direct for any further information on the product.