Powerex Inc., 200 Hillis St., Youngwood, PA 15697 (724)925-7272

Asymmetrical Half Bridge IGBT H-Series
Hermetic Module
400 Amperes/600 Volts

Hermetic Package TBD

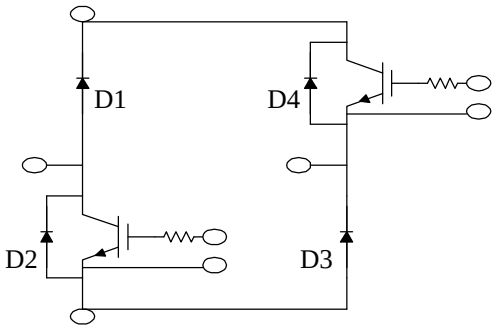
Description:

Powerex IGBT Hermetic modules are designed for use in switching applications. Each Module consists of two IGBT transistors, four super fast free wheel diodes in an asymmetrical half bridge configuration with each transistor having a reverse connected super fast recovery free wheel diode. All components are located in a hermetically sealed chamber and are electrically isolated from the heat sinking base plate, offering simplified system assembly and thermal management.

Features:

- Low Drive Power
- Low $V_{CE(sat)}$
- Discrete Super-Fast Recovery (70ns) Free-Wheel Diode
- Isolated Base plate for Easy Heat sinking
- Fully Hermetic Package
- Package Design Capable of Use at High Altitudes
- Package can be modified to adhere to customer dimensions.
- High Capacity Diodes (D1 & D3)

Schematic:



Applications:

- AC Motor Control
- Motion/Servo Control
- Air Craft Applications

Ordering Information:

Contact Powerex Custom Modules

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Maximum Ratings, Tj=25°C unless otherwise specified

Ratings	Symbol		Units
Collector Emitter Voltage	V_{CES}	600	Volts
Gate Emitter Voltage	V_{GES}	±20	Volts
Collector Current	I_C	400	Amperes
Peak Collector Current	I_{CM}	800*	Amperes
Diode Forward Current (D2,D4)	I_{FM}	400	Amperes
Diode Forward Surge Current (D2,D4)	I_{FM}	800*	Amperes
Diode Forward Current (D1,D3)	I_{FM}	400	Amperes
V Isolation	V_{RMS}	2500	Volts

Static Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Collector Cutoff Current	I_{CES}	$V_{CE}=V_{CES}$			1.0	mA
Gate Leakage Current	I_{GES}	$V_{CE}=0V$			0.5	µA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$I_C=40mA$, $V_{CE}=10V$	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=400A$, $V_{GE}=15V$		2.1	2.8	Volts
	$V_{CE(sat)}$	$I_C=400A$, $V_{GE}=15V$, $T_j=150°C$		2.15		Volts
Total Gate Charge	Q_G	$V_{CC}=300V$, $I_C=400A$, $V_{GS}=15V$		1200		nC
Diode Forward Voltage (D1,D3)	V_{FM}	$I_E=400A$, $V_{GS}=0V$			2.0	Volts
Diode Forward Voltage (D2,D4)	V_{FM}	$I_E=200A$, $V_{GS}=0V$			2.8	Volts

Dynamic Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Input Capacitance	C_{ies}	$V_{GE}=0V$			40	nF
Output Capacitance	C_{oes}	$V_{CE}=10V$			14	nF
Reverse Transfer Capacitance	C_{res}	f=1MHz			8	nF
Turn on Delay time	$t_{d(on)}$	$V_{CC}=300V$			350	nS
Rise Time	t_r	$I_C=200A$			600	nS
Turn off delay time	$t_{d(off)}$	$V_{GE1}=V_{GE2}=15$ V			350	nS
Fall Time	t_f	$R_G=1.6\Omega$			300	nS
Diode Reverse Recovery (D1,D3)	trr	$I_E=400A$			400	nS
Diode reverse Recovery Charge (D1, D3)	Qrr	$di_E/dt=-400A/\mu S$		80		µC
Diode Reverse Recovery (D2, D4)	trr	$I_E=200A$			110	nS
Diode reverse Recovery Charge (D2,D4)	Qrr	$di_E/dt=-400A/\mu S$		1.08		µC

Thermal and Mechanical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per IGBT			0.085	°C/W
Thermal Resistance, Junction to Case (D1,D3)	$R_{\theta JC}$	Per Diode			0.08	°C/W
Thermal Resistance, Junction to Case (D2,D4)	$R_{\theta JC}$	Per Diode			0.18	°C/W