

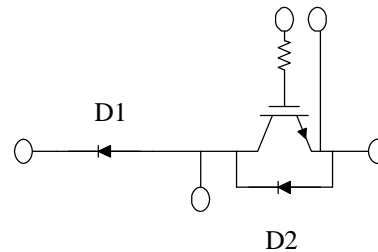
### Description:

Powerex IGBT Hermetic modules are designed for use in switching applications. Each Module consists of two IGBT transistors in a 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.
- ◆ D1 sized to match RM400HA

### Schematic:

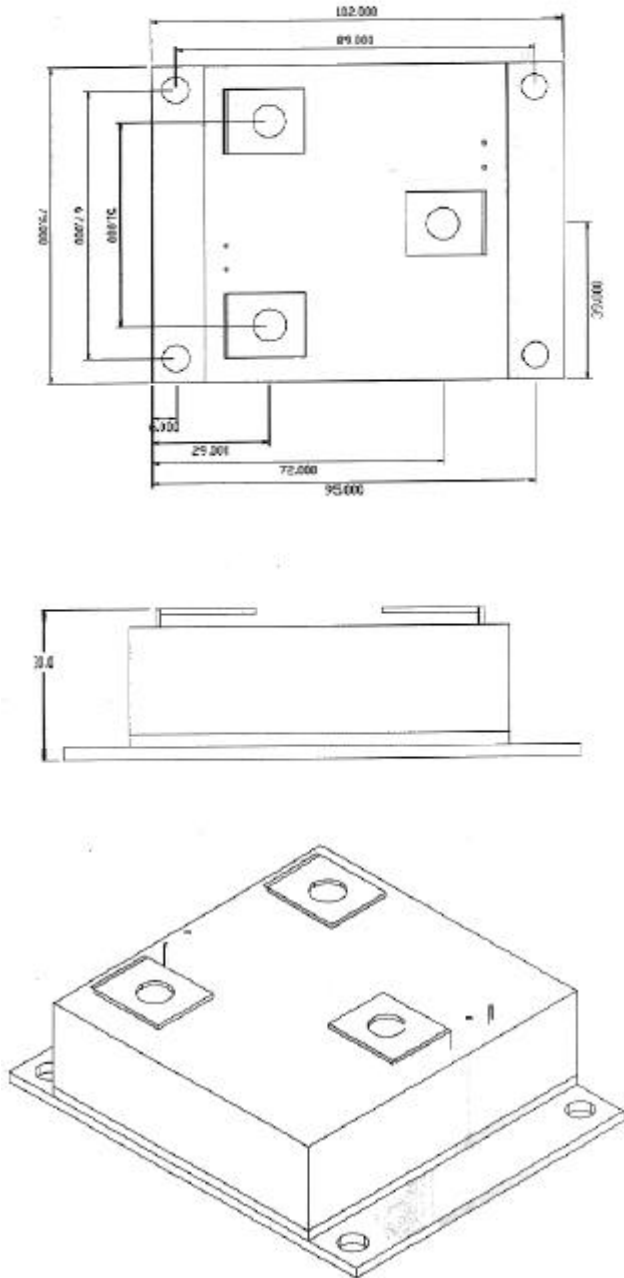


### Applications:

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

### Ordering Information:

Contact Powerex Custom Modules



**Maximum Ratings, T<sub>j</sub>=25°C unless otherwise specified**

Ratings	Symbol		Units
Collector Emitter Voltage	V <sub>CES</sub>	600	Volts
Gate Emitter Voltage	V <sub>GES</sub>	±20	Volts
Collector Current	I <sub>C</sub>	600	Amperes
Peak Collector Current	I <sub>CM</sub>	1200*	Amperes
Diode Forward Current (D2)	I <sub>FM</sub>	600	Amperes
Diode Forward Current (D1)	I <sub>FM</sub>	400	Amperes
V Isolation	V <sub>RMS</sub>	2500	Volts

**Static Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Collector Cutoff Current	I <sub>CES</sub>	V <sub>CE</sub> =V <sub>CES</sub>			1.0	mA
Gate Leakage Current	I <sub>GES</sub>	V <sub>CE</sub> =0V			0.5	μA
Gate-Emitter Threshold Voltage	V <sub>GE(th)</sub>	I <sub>C</sub> =60mA, V <sub>CE</sub> =10V	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =600A, V <sub>GE</sub> =15V		2.1	2.8	Volts
	V <sub>CE(sat)</sub>	I <sub>C</sub> =600A, V <sub>GE</sub> =15V, T <sub>j</sub> =150°C		2.15		Volts
Total Gate Charge	Q <sub>G</sub>	V <sub>CC</sub> =300V, I <sub>C</sub> =600A, V <sub>GS</sub> =15V		1800		nC
Diode Forward Voltage (D1)	V <sub>FM</sub>	I <sub>E</sub> =400A, V <sub>GS</sub> =0V			2.0	Volts
Diode Forward Voltage (D2)	V <sub>FM</sub>	I <sub>E</sub> =600A, V <sub>GS</sub> =0V			2.8	Volts

**Dynamic Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Input Capacitance	C <sub>ies</sub>	V <sub>GE</sub> =0V			60	nF
Output Capacitance	C <sub>oes</sub>	V <sub>CE</sub> =10V			21	nF
Reverse Transfer Capacitance	C <sub>res</sub>	f=1MHz			12	nF
Turn on Delay time	t <sub>d(on)</sub>	V <sub>CC</sub> =300V				nS
Rise Time	t <sub>r</sub>	I <sub>C</sub> =600A				nS
Turn off delay time	t <sub>d(off)</sub>	V <sub>GE1</sub> =V <sub>GE2</sub> =15V				nS
Fall Time	t <sub>f</sub>	R <sub>G</sub> =1Ω			300	nS
Diode Reverse Recovery Time (D1)	t <sub>rr</sub>	I <sub>E</sub> =400A			400	nS
Diode Reverse Recovery Time (D2)	t <sub>rr</sub>	I <sub>E</sub> =600A			110	nS
Diode reverse Recovery Charge (D1)	Q <sub>rr</sub>	di <sub>E</sub> /dt= 400A/μS		80		μC
Diode reverse Recovery Charge (D2)	Q <sub>rr</sub>	di <sub>E</sub> /dt= 1200A/μS		1.62		μC

### Thermal and Mechanical Characteristics, $T_j=25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	IGBT			0.06	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode (D1)			0.08	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Diode (D2)			0.12	$^\circ\text{C}/\text{W}$

