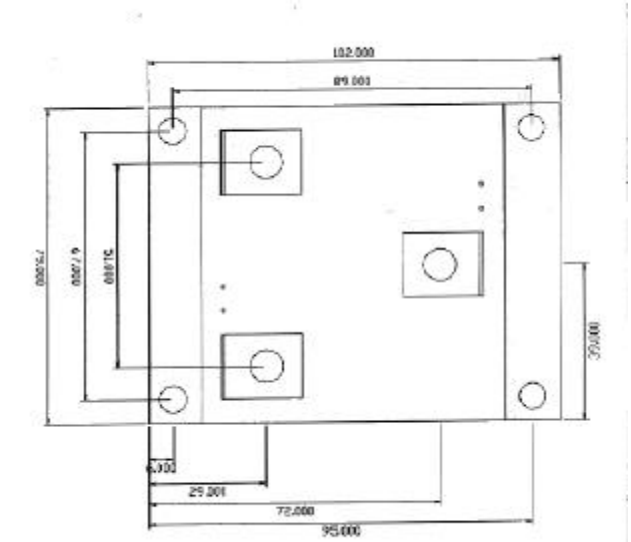
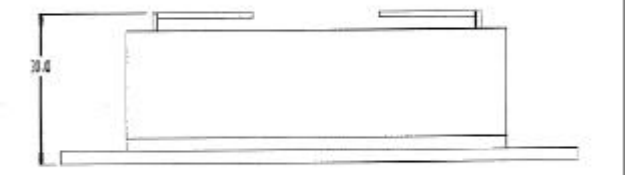
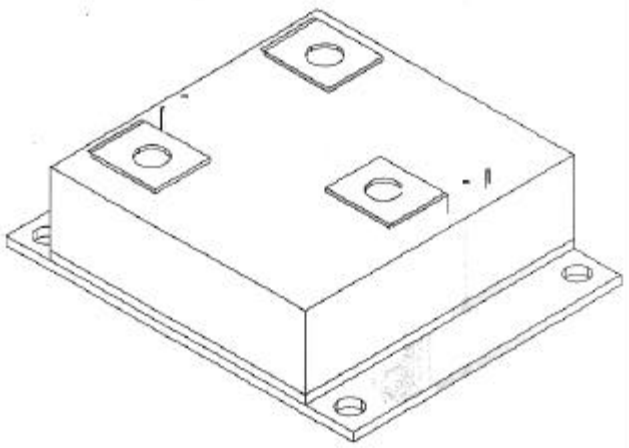
Powerex Inc., 200 Hillis St., Youngwood, PA 15697 (724) 925-7272

**IGBT H-Series Chopper**
**Hermetic Module**
**600 Amperes/600 Volts**







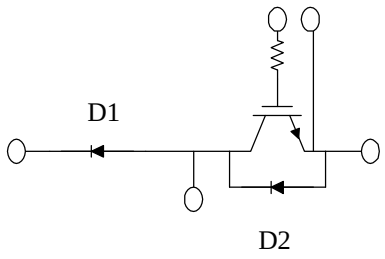
## Description:

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

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

IGBT H-Series Chopper
Hermetic Module
600 Amperes/600 Volts

## 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 | $I_C$ | 600 | Amperes |
| Peak Collector Current | $I_{CM}$ | 1200* | Amperes |
| Diode Forward Current (D2) | $I_{FM}$ | 600 | Amperes |
| Diode Forward Current (D1) | $I_{FM}$ | 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 | $V_{GE(th)}$ | $I_C=60mA$, $V_{CE}=10V$ | 4.5 | 6.0 | 7.5 | Volts |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=600A$, $V_{GE}=15V$ | | 2.1 | 2.8 | Volts |
| | $V_{CE(sat)}$ | $I_C=600A$, $V_{GE}=15V$, $T_j=150°C$ | | 2.15 | | Volts |
| Total Gate Charge | $Q_G$ | $V_{CC}=300V$, $I_C=600A$, $V_{GS}=15V$ | | 1800 | | nC |
| Diode Forward Voltage (D1) | $V_{FM}$ | $I_E=400A$, $V_{GS}=0V$ | | | 2.0 | Volts |
| Diode Forward Voltage (D2) | $V_{FM}$ | $I_E=600A$, $V_{GS}=0V$ | | | 2.8 | Volts |

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

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Input Capacitance | $C_{ies}$ | $V_{GE}=0V$ | | | 60 | nF |
| Output Capacitance | $C_{oes}$ | $V_{CE}=10V$ | | | 21 | nF |
| Reverse Transfer Capacitance | $C_{res}$ | f=1MHz | | | 12 | nF |
| Turn on Delay time | $t_{d(on)}$ | $V_{CC}=300V$ | | | | nS |
| Rise Time | $t_r$ | $I_C=600A$ | | | | nS |
| Turn off delay time | $t_{d(off)}$ | $V_{GE1}=V_{GE2}=15V$ | | | | nS |
| Fall Time | $t_f$ | $R_G=1\Omega$ | | | 300 | nS |
| Diode Reverse Recovery Time (D1) | trr | $I_E=400A$ | | | 400 | nS |
| Diode Reverse Recovery Time (D2) | trr | $I_E=600A$ | | | 110 | nS |
| Diode reverse Recovery Charge (D1) | Qrr | $di_E/dt=400A/\mu S$ | | 80 | | µC |
| Diode reverse Recovery Charge (D2) | Qrr | $di_E/dt=1200A/\mu S$ | | 1.62 | | µC |

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



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

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