

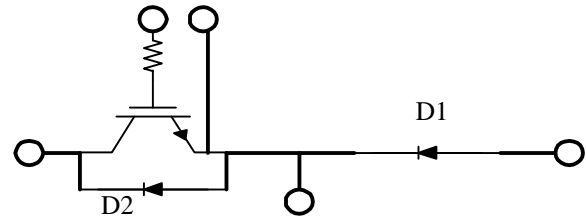
### Description:

Powerex IGBT modules are designed for use in switching applications. Each Module consists of one IGBT transistor and one super fast recovery diode in a chopper configuration. All components are encapsulated in a plastic package 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) Diodes
- ◆ High Frequency Operation (20-25kHz)
- ◆ Isolated Base plate for Easy Heat sinking

### Schematic:



### Applications:

- ◆ AC Motor Control
- ◆ Motion/Servo Control

### 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>	200	Amperes
Peak Collector Current	I <sub>CM</sub>	400*	Amperes
Diode Forward Current (D1)	I <sub>FM</sub>	300	Amperes
Diode Forward Surge Current (D1)	I <sub>FM</sub>	600*	Amperes
Power Dissipation	P <sub>d</sub>	1100	Watts
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> =20mA, 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> =200A, V <sub>GE</sub> =15V		2.1	2.8	Volts
	V <sub>CE(sat)</sub>	I <sub>C</sub> =200A, 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> =200A, V <sub>GS</sub> =15V		600		nC
Diode Forward Voltage (D1)	V <sub>FM</sub>	I <sub>E</sub> =300A, 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			20	nF
Output Capacitance	C <sub>oes</sub>	V <sub>CE</sub> =10V			7	nF
Reverse Transfer Capacitance	C <sub>res</sub>	f=1MHz			4	nF
Turn on Delay time	t <sub>d(on)</sub>	V <sub>CC</sub> =300V			200	nS
Rise Time	t <sub>r</sub>	I <sub>C</sub> =200A			550	nS
Turn off delay time	t <sub>d(off)</sub>	V <sub>GE1</sub> =V <sub>GE2</sub> =15V			300	nS
Fall Time	t <sub>f</sub>	R <sub>G</sub> =3.1Ω			300	nS
Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>E</sub> =200A			110	nS
Diode reverse Recovery Charge	Q <sub>rr</sub>	di <sub>E</sub> /dt=- 400A/μS		0.54		μC

**Thermal and Mechanical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Thermal Resistance, Junction to	R <sub>θJC</sub>	Per IGBT			0.16	°C/W



**QIR0620001**

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IGBT H-Series  
Chopper Module  
200/300 Amperes/600 Volts

Case \_\_\_\_\_