

### Description:

Powerex Low side Chopper IGBT Module designed specially for customer applications. The modules are isolated for easy mounting with other components on a common heatsink.

### Features:

- Low Drive Requirement
- Low  $V_{CE(sat)}$
- Super Fast Diode
- (3) H Series 150A 600V Chips per IGBT Switch
- (9) H Series 100A 600V Chips per Diode
- Isolated Baseplate for Easy Heat Sinking
- Low Thermal Impedance

### Applications:

- Choppers
- Welding Power Supplies

Dim	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.14+0.04/-0.02	29+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.88±0.01	48.0±0.25
F	0.67	17.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0

Dim	Inches	Millimeters
K	0.55	14.0
L	0.87	22.0
M	0.33	8.5
N	0.10	2.5
P	0.85	21.5
Q	0.98	25.0
R	0.11	2.8
S	0.25 Dia.	6.5 Dia.
T	0.6	15.15

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

Ratings	Symbol	QIQ0645001	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>	450	Amperes
Peak Collector Current	I <sub>CM</sub>	900	Amperes
Diode Average Forward Current 180° Conduction, T <sub>C</sub> =70°C	I <sub>FM</sub>	450	Amperes
Diode Forward Surge Current	I <sub>FM</sub>	5400	Amperes
Diode I <sup>2</sup> t for Fusing for One Cycle t=8.3mS	I <sup>2</sup> t	121500	A <sup>2</sup> sec
Power Dissipation	P <sub>d</sub>	1650	Watts
Junction Temperature	T <sub>stg</sub>	-40 to 125	°C
Mounting Torque, M6 Terminal Screws	-	40	In-lb
Mounting Torque, M6 Mounting Screws	-	40	In-lb
Module Weight (Typical)	-	400	Grams
V Isolation	V <sub>RMS</sub>	2000	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> V <sub>GE</sub> =0V	-	-	1.0	mA
Gate Leakage Current	I <sub>GES</sub>	V <sub>GE</sub> =V <sub>GES</sub> V <sub>CE</sub> =0V	-	-	0.5	µA
Gate-Emitter Threshold Voltage	V <sub>GE(th)</sub>	I <sub>C</sub> =45mA, 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> =450A, V <sub>GE</sub> =15V	-	2.1	2.8	Volts
		I <sub>C</sub> =450A, V <sub>GE</sub> =15V, T <sub>j</sub> =125°C	-	2.15	-	Volts
Total Gate Charge	Q <sub>G</sub>	V <sub>CC</sub> =300V, I <sub>C</sub> =450A, V <sub>GS</sub> =15V	-	1350	-	nC
Diode Forward Voltage	V <sub>FM</sub>	I <sub>F</sub> =900A	-	2.0	2.8	Volts
		I <sub>F</sub> =450A	-	1.7	2.2	Volts
		I <sub>F</sub> =300A	-	1.3	-	Volts

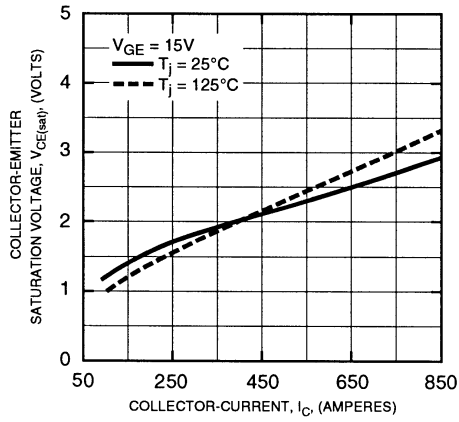
**Dynamic Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C <sub>ies</sub>	V <sub>GE</sub> =0V	-	-	45	nF
Output Capacitance	C <sub>oes</sub>	V <sub>CE</sub> =10V	-	-	15.9	nF
Reverse Transfer Capacitance	C <sub>res</sub>	f=1MHz	-	-	9	ns
Turn on Delay time	t <sub>d(on)</sub>	V <sub>CC</sub> =300V	-	-	350	ns
Rise Time	t <sub>r</sub>	I <sub>C</sub> =450A	-	-	600	ns
Turn- off Delay Time	t <sub>d(off)</sub>	V <sub>GE1</sub> =V <sub>GE2</sub> =15V R <sub>G</sub> =1.6Ω	-	-	350	ns
Fall Time	t <sub>f</sub>		-	-	300	ns
Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =900A	-	-	110	ns
Diode Reverse Recovery Charge	Q <sub>rr</sub>	di <sub>F</sub> /dt=-1800A/µS	-	2.43	-	µC

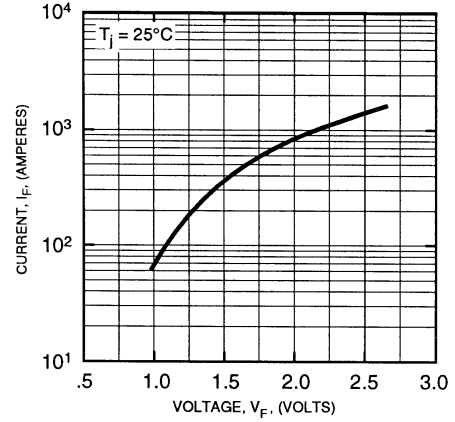
**Thermal and Mechanical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	Per IGBT	-	0.075	TBD	°C/W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	Per Diode	-	0.08	TBD	°C/W
Contact Thermal Resistance	R <sub>θCF</sub>	Per Module	-	0.02	-	°C/W

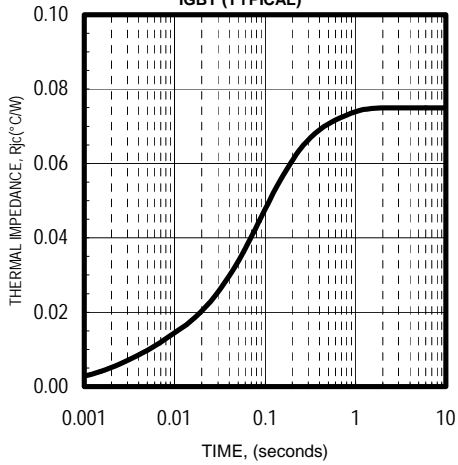
**COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)**



**DIODE FORWARD CHARACTERISTICS (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC IGBT (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC DIODE (TYPICAL)**

