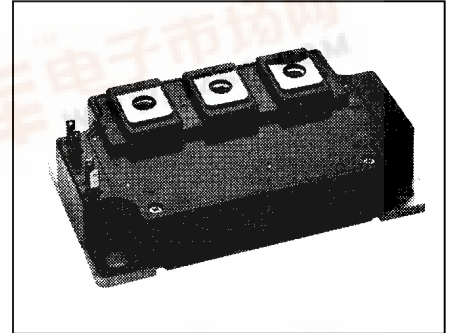
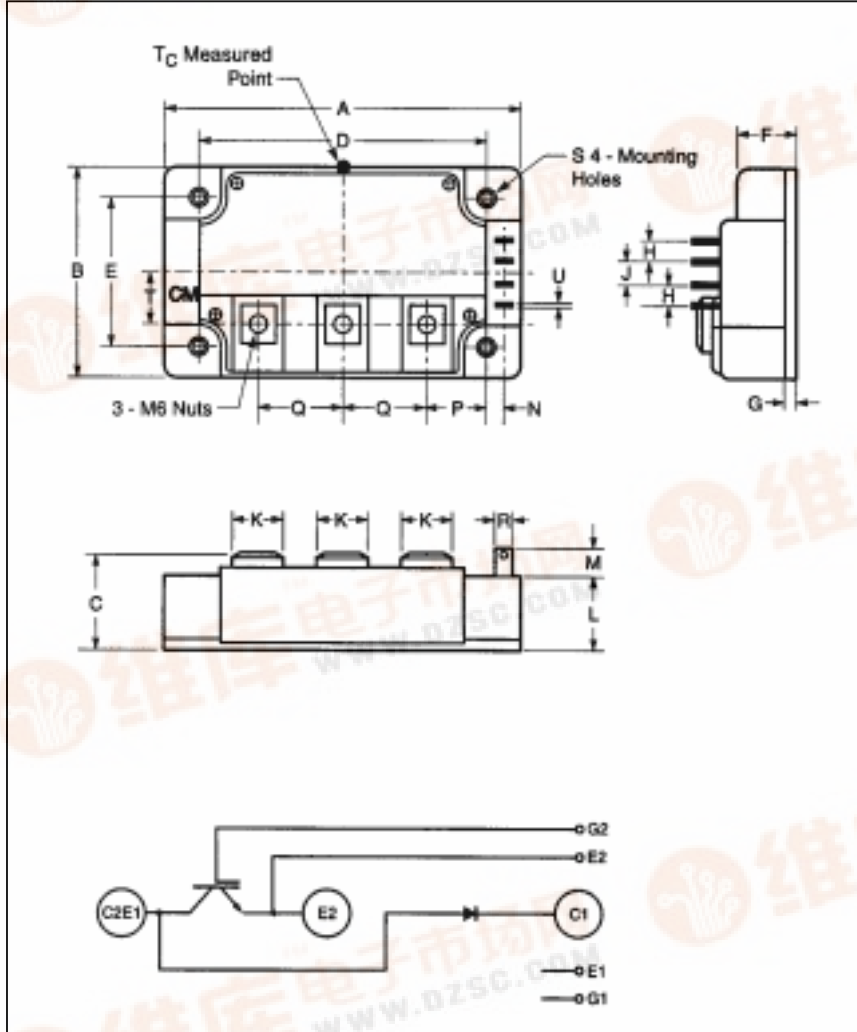




QIQ0645001

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

Low side Chopper IGBT Module
600V 450A IGBT / 600V 450A Fast Diode



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_j=25°C unless otherwise specified

Ratings	Symbol	QIQ0645001	Units
Collector Emitter Voltage	V _{CES}	600	Volts
Gate Emitter Voltage	V _{GES}	±20	Volts
Collector Current	I _C	450	Amperes
Peak Collector Current	I _{CM}	900	Amperes
Diode Average Forward Current 180° Conduction, T _C =70°C	I _{FM}	450	Amperes
Diode Forward Surge Current	I _{FM}	5400	Amperes
Diode I ² t for Fusing for One Cycle t=8.3mS	I ² t	121500	A ² sec
Power Dissipation	P _d	1650	Watts
Junction Temperature	T _{stg}	-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 _{RMS}	2000	Volts

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

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current	I _{CES}	V _{CE} =V _{CES} V _{GE} =0V	-	-	1.0	mA
Gate Leakage Current	I _{GES}	V _{GE} =V _{GES} V _{CE} =0V	-	-	0.5	µA
Gate-Emitter Threshold Voltage	V _{GE(th)}	I _C =45mA, V _{CE} =10V	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =450A, V _{GE} =15V	-	2.1	2.8	Volts
		I _C =450A, V _{GE} =15V, T _j =125°C	-	2.15	-	Volts
Total Gate Charge	Q _G	V _{CC} =300V, I _C =450A, V _{GS} =15V	-	1350	-	nC
Diode Forward Voltage	V _{FM}	I _F =900A	-	2.0	2.8	Volts
		I _F =450A	-	1.7	2.2	Volts
		I _F =300A	-	1.3	-	Volts

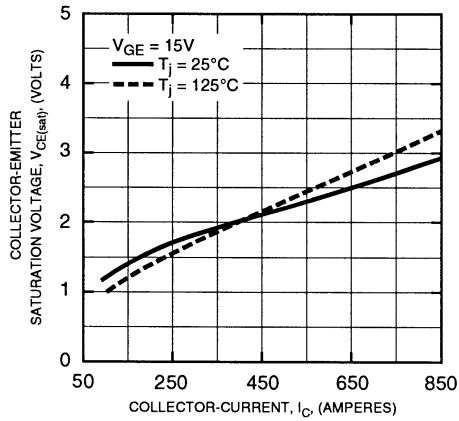
Dynamic Electrical Characteristics, T_j=25°C unless otherwise specified

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

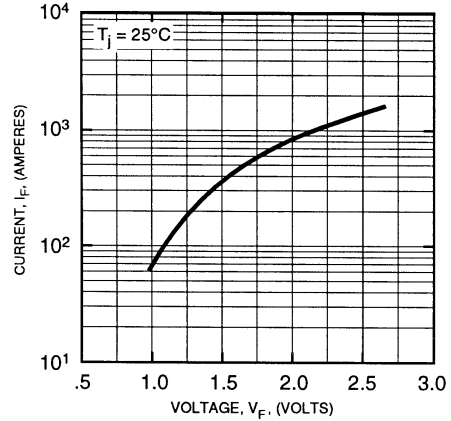
Thermal and Mechanical Characteristics, T_j=25°C unless otherwise specified

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

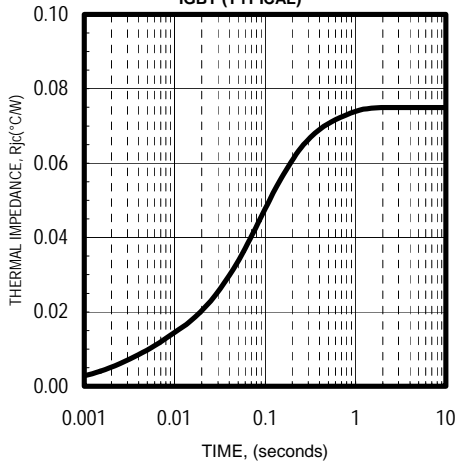
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



DIODE FORWARD CHARACTERISTICS (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC IGBT (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC DIODE (TYPICAL)

