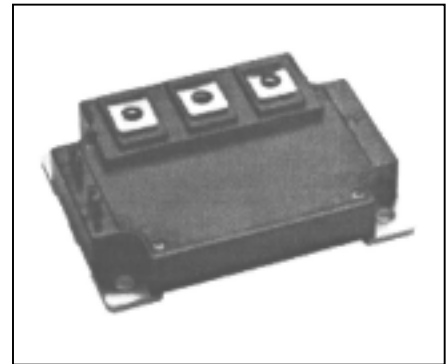


Outline Drawing and Circuit Diagram



Description:

Powerex Low Side Chopper IGBT Module is 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) F Series 150A 1200V Trench Gate Chips per IGBT
- (5) F Series 150A 1200V Chips per Diode
- Isolated Baseplate for Easy Heat Sinking
- Al_2O_3 DBC Ceramic
- Low Thermal Impedance

Applications:

- Choppers
- Welding Power Supplies

Dim	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.83	21.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0

Dim	Inches	Millimeters
K	0.55	14.0
M	0.33	8.5
P	0.94	24.0
Q	0.98	25.0
R	0.86	21.75
S	M6	M6
T	0.26 Dia.	6.5 Dia.
V	0.02	0.5
W	0.11	2.79
X	1.08	27.35

Maximum Ratings, T_j=25°C unless otherwise specified

Ratings	Symbol	QIQ1245001	Units
Collector- Emitter Voltage (G-E Short)	V _{CES}	1200	Volts
Gate- Emitter Voltage (C-E Short)	V _{GES}	±20	Volts
Collector Current	I _C	450	Amperes
Peak Collector Current (T _j <= 150°C)	I _{CM}	900*	Amperes
Diode Forward Current	I _{FM}	750	Amperes
Power Dissipation	P _d	TBD	Watts
Junction Temperature	T _j	-40 to 150	°C
Storage 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)	-	580	Grams
Isolation Voltage (Main Terminal to Baseplate, AC 1 min.)	V _{RMS}	2500	Volts

*Pulse width and repetition rate should be such that the device junction temperature (T_j) does not exceed T_j(max) rating.

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	-	-	60	µA
Gate-Emitter Threshold Voltage	V _{GE(th)}	I _C =45mA, V _{CE} =10V	5.0	6.0	7.0	Volts
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =450A, V _{GE} =15V	-	1.8	2.4	Volts
		I _C =450A, V _{GE} =15V, T _j =125°C	-	1.9	-	Volts
Total Gate Charge	Q _G	V _{CC} =600V, I _C =450A, V _{GS} =15V	-	4950	-	nC
Diode Forward Voltage	V _{FM}	I _F =750A	-	-	3.2	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	-	-	180	nF
Output Capacitance	C _{oes}	V _{CE} =10V	-	-	7.6	nF
Reverse Transfer Capacitance	C _{res}	f=1MHz	-	-	4.5	nF
Turn on Delay time	t _{d(on)}	V _{CC} =600V	-	-	TBD	ns
Rise Time	t _r	I _C =450A	-	-	TBD	ns
Turn-off Delay Time	t _{d(off)}	V _{GE1} =V _{GE2} =15V	-	-	TBD	ns
Fall Time	t _f	R _G =1.0Ω	-	-	TBD	ns
Diode Reverse Recovery Time	t _{rr}	I _F =750A	-	-	250	ns
Diode Reverse Recovery Charge	Q _{rr}		-	44.0	-	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	-	0.052	TBD	°C/W
Contact Thermal Resistance	R _{θCF}	Per Module	-	0.01	-	°C/W