

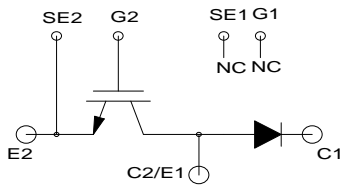
QIQ0630003
Low side Chopper IGBT Module
300 Amperes / 600 Volts

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:

- Isolated Mounting
- Low Drive Requirement
- Low $V_{CE(sat)}$
- Super Fast Diode
- (2) H Series 150A 600V Chips per IGBT Switch
- (6) H Series 100A 600V Chips per Diode
- Metal Baseplate
- Low Thermal Impedance



Note:

This chopper module is intended to be used in circuits in which no positive voltage ever appears from E2 to C2E1

Applications:

- Choppers
- Welding Power Supplies

Dim	Inches	Millimeters
A	3.70	94.0
B	3.150 ±0.01	80.0 ±0.25
C	1.89	48.0
D	1.18 Max.	30.0 Max
E	0.90	23.0
F	0.83	21.2
G	0.71	18.0
H	0.67	17.0
J	0.63	16.0
K	0.51	13.0
L	0.47	12.0
M	0.30	7.5
N	0.28	7.0
P	0.256 Dia.	Dia. 6.5
Q	0.26	6.5
R	M5 Metric	M5
S	0.16	4.0

Maximum Ratings, T_j=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	300	Amperes
Peak Collector Current	I _{CM}	600	Amperes
Diode Average Forward Current 180° Conduction, T _C =78°C	I _{FM}	300	Amperes
Diode Forward Surge Current	I _{FM}	3600	Amperes
Diode I ² t for Fusing for One Cycle t=8.3mS	I ² t	54000	A ² sec
Power Dissipation	P _d	1100	Watts
Junction Temperature	T _{stg}	-40 to 125	°C
Max. Mounting Torque M5 Terminal Screws	-	17	In-lb
Max. Mounting Torque M6 Mounting Screws	-	26	In-lb
Module Weight (Typical)	-	270	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 =30mA, V _{CE} =10V	4.5	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =300A, V _{GE} =15V	-	2.1	2.8	Volts
		I _C =300A, V _{GE} =15V, T _j =125°C	-	2.15	-	Volts
Total Gate Charge	Q _G	V _{CC} =300V, I _C =300A, V _{GS} =15V	-	900	-	nC
Diode Forward Voltage	V _{FM}	I _F =600A	-	2.0	2.8	Volts
		I _F =300A	-	1.7	2.2	Volts
		I _F =200A	-	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	-	-	30	nF
Output Capacitance	C _{oes}	V _{CE} =10V	-	-	10.5	nF
Reverse Transfer Capacitance	C _{res}	f=1MHz	-	-	6	nF
Turn on Delay time	t _{d(on)}	V _{CC} =300V	-	-	350	nS
Rise Time	t _r	I _C =300A	-	-	600	nS
Turn off delay time	t _{d(off)}	V _{GE1} =V _{GE2} =15V	-	-	350	nS
Fall Time	t _f	R _G =2.1Ω	-	-	300	nS
Diode Reverse Recovery Time	t _{rr}	I _F =600A	-	-	110	nS
Diode reverse Recovery Charge	Q _{rr}	di _F /dt=-1200A/µS	-	1.62	-	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	-	0.11	TBD	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	Per Diode	-	0.12	TBD	°C/W
Contact Thermal Resistance	R _{θCF}	Per Module	-	-	0.065	°C/W