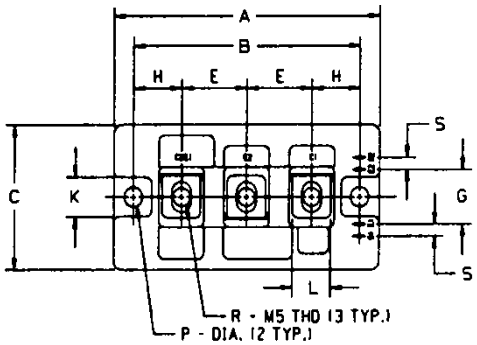
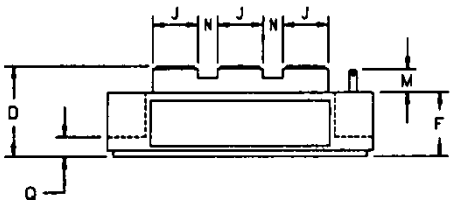
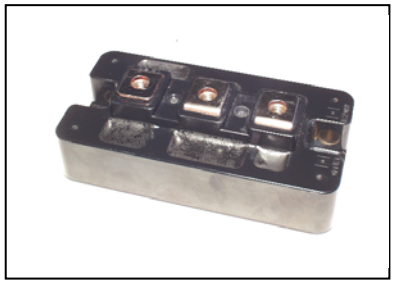
Powerex, Inc., 173 Pavilion Lane, Youngwood 15697 (724) 925-7272
www.pwrx.com

Low side Chopper IGBT Module
600V 300A IGBT / 600V 300A Fast Diode







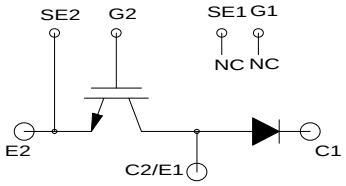
QIQ0630003
Low side Chopper IGBT Module
300 Amperes / 600 Volts

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

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Low side Chopper IGBT Module
600V 300A IGBT / 600V 300A Fast Diode

Maximum Ratings, Tj=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^2t for Fusing for One Cycle t=8.3mS	I^2t	54000	A^2sec
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, Tj=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, Tj=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	trr	I_F=600A	-	-	110	nS
Diode reverse Recovery Charge	Qrr	di_F/dt=-1200A/μS	-	1.62	-	μC

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per IGBT	-	0.11	TBD	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Diode	-	0.12	TBD	°C/W
Contact Thermal Resistance	$R_{\theta CF}$	Per Module	-	-	0.065	°C/W