

Description:

Powerex Dual IGBT power module is configured as a half bridge inverter. The Aluminum Silicon Carbide (AlSiC) baseplate offers light weight module design.

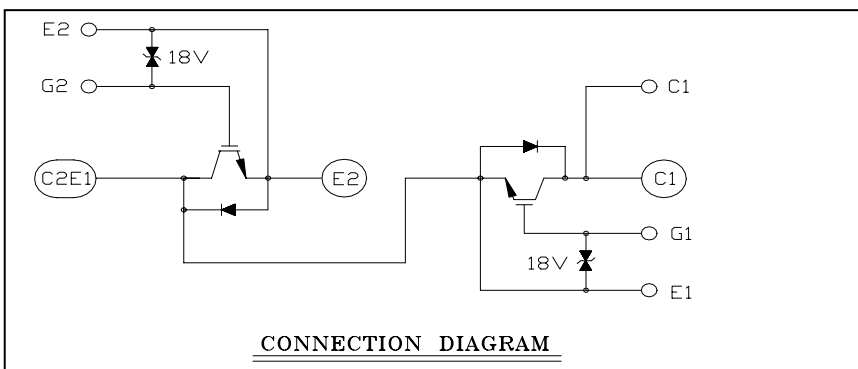
The power module is designed to operate reliably in harsh aerospace, military and other environments. The module is rated to operate over full temperature range -55°C to 125°C. Powerex is using High Accelerated Stress Test (HAST) to assure long term reliability of plastic power modules.

Features:

- Class H hybrid screened to MIL-PRF-38534 requirements
- Withstand HAST
- Light Weight AlSiC Baseplate
- Low Drive Requirement
- Ultra Fast Free Wheeling Diode
- Internal Zener Protection on Gates
- High Side Collector Sense Pin for De-Sat Detection
- High Power Density
- Aluminum Nitride DBC Ceramic

Applications:

- Aerospace
- Military
- Motor Control



Maximum Ratings, T_j=25°C unless otherwise specified

Ratings	Symbol	QID0645011	Units
Collector Emitter Voltage	V _{CES}	600	Volts
Gate Emitter Voltage	V _{GES}	±20	Volts
Collector Current	I _C	450	Amperes
Peak Collector Current, 1msec	I _{CM}	900	Amperes
Diode Forward Current	I _F	450	Amperes
Diode Forward Surge Current, 1msec	I _{FM}	900	Amperes
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to 125	°C
Mounting Torque, Terminal Screws	-	26	In-lb
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Module Weight (Typical)	-	272	Grams
V Isolation	V _{RMS}	2500	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	-	-	10.0	µA
Gate-Emitter Threshold Voltage	V _{GE(th)}	I _C =45mA, V _{CE} =10V	4.0	6.0	7.5	Volts
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =450A, V _{GE} =15V	-	2.3	2.6	Volts
		I _C =225A, V _{GE} =15V	-	-	2.1	Volts
Total Gate Charge	Q _G	V _{CC} =300V, I _C =450A, V _{GS} =15V	-	-	4300	nC
Diode Forward Voltage	V _{FM}	I _E =450A, V _{GS} =0V	-	-	2.6	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	-	-	TBD	nF
Output Capacitance	C _{oes}	V _{CE} =25V	-	-	TBD	nF
Reverse Transfer Capacitance	C _{res}	f=1KHz	-	-	TBD	nF
Turn on Delay time	t _{d(on)}	V _{CC} =300V I _C =450A	-	-	900	ns
Rise Time	t _r	V _{GE1} =V _{GE2} =15V	-	-	700	ns
Turn- off Delay Time	t _{d(off)}	R _G =20 turn-on	-	-	2.1	µs
Fall Time	t _f	R _G =10 turn-off	-	-	300	ns
Diode Reverse Recovery Time	t _{rr}	I _F =450A	-	-	170	ns
Diode Reverse Recovery Charge	Q _{rr}	di _F /dt=-900A/µS	-	-	2.5	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	-	0.067	0.080	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	Per Diode	-	0.120	0.144	°C/W