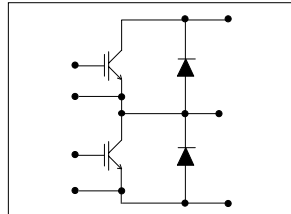


Features

- UltraFast Non Punch Through (NPT) Technology
- Positive $V_{CE(ON)}$ Temperature Coefficient
- 10 μ s Short Circuit Capability
- HEXFRED™ Antiparallel Diodes with UltraSoft Reverse Recovery
- Low Diode V_F
- Square RBSOA
- Aluminum Nitride DBC
- Optional SMT Thermistor Inside
- Very Low Stray Inductance Design for High Speed Operation



$$V_{CES} = 1200V$$

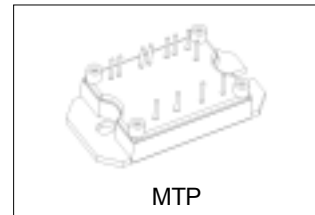
$$V_{CE(on) typ.} = 3.1V @$$

$$V_{GE} = 15V, I_C = 40A$$

$$T_C = 25^\circ C$$

Benefits

- Optimized for Welding, UPS and SMPS Applications
- Rugged with UltraFast Performance
- Benchmark Efficiency above 20KHz
- Outstanding ZVS and Hard Switching Operation
- Low EMI, requires Less Snubbing
- Excellent Current Sharing in Parallel Operation
- Direct Mounting to Heatsink
- PCB Solderable Terminals
- Very Low Junction-to-Case Thermal Resistance



Absolute Maximum Ratings

Parameters	Max	Units
V_{CES} Collector-to-Emitter Voltage	1200	V
I_C Continuous Collector Current	@ $T_C = 25^\circ C$	A
	@ $T_C = 100^\circ C$	
I_{CM} Pulsed Collector Current	200	
I_{LM} Peak Switching Current	200	
I_F Diode Continuous Forward Current	@ $T_C = 100^\circ C$	
I_{FM} Peak Diode Forward Current	120	V
V_{GE} Gate-to-Emitter Voltage	± 20	
V_{ISOL} RMS Isolation Voltage, Any Terminal to Case, $t = 1$ min	2500	W
P_D Maximum Power Dissipation	@ $T_C = 25^\circ C$	
	@ $T_C = 100^\circ C$	

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
V _{(BR)CES} Collector-to-Emitter Breakdown Voltage	1200			V	V _{GE} = 0V, I _C = 250μA
V _{CE(on)} Collector-to-Emitter Voltage		3.1			V _{GE} = 15V, I _C = 40A
		3.9			V _{GE} = 15V, I _C = 40A, T _J = 125°C
V _{GE(th)} Gate Threshold Voltage	4.4		6		I _C = 0.5mA
ΔV _{GE(th)} /ΔT _J Temperature Coeff. of Threshold Voltage		-		mV/°C	
g _{fe} Forward Transconductance		-		S	
I _{CES} Collector-to-Emitter Leaking Current			250	μA	V _{GE} = 0V, V _{CE} = 1200V
V _{FM} Diode Forward Voltage Drop		2.0		V	I _F = 40A, V _{GE} = 0V
		2.35			I _F = 40A, V _{GE} = 0V, T _J = 125°C
I _{GES} Gate-to-Emitter Leakage Current			± 200	nA	V _{GE} = ± 20V

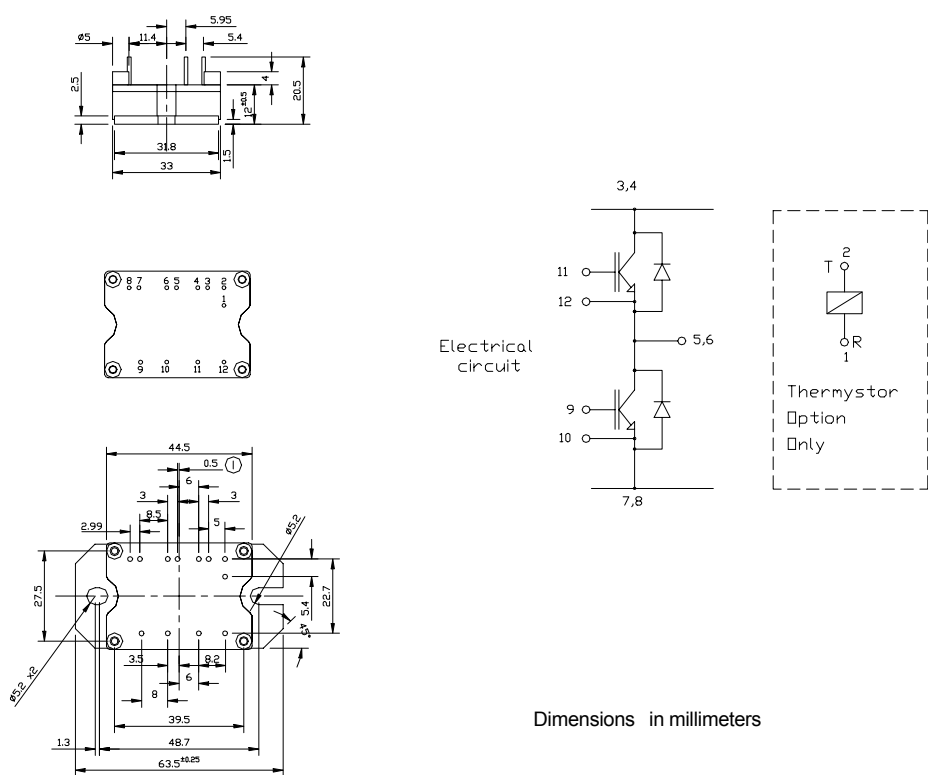
Switching Characteristics @ T_J = 25°C (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
Q _g Total Gate Charge (turn-on)		395		nC	I _C = 40A V _{CC} = 600V V _{GE} = 15V
Q _{ge} Gate-Emitter Charge (turn-on)		56			
Q _{gc} Gate-Collector Charge (turn-on)		190			
E _{on} Turn-On Switching Loss		1500		μJ	T _J = 125°C Energy losses include tail and diode reverse recovery
E _{off} Turn-Off Switching Loss		1220			
E _{tot} Total Switching Loss		2720			
E _{on} Turn-On Switching Loss		950			T _J = 25°C Energy losses include tail and diode reverse recovery
E _{off} Turn-Off Switching Loss		850			
E _{tot} Total Switching Loss		1800			
C _{ies} Input Capacitance		5100		pF	V _{GE} = 0V V _{CC} = 30V f = 1.0 MHz
C _{oes} Output Capacitance		490			
C _{res} Reverse Transfer Capacitance		200			
E _{rec} Reverse Recovery Energy of the Diode		1600		μJ	T _J = 125°C
t _{rr} Diode Reverse Recovery Time		300		ns	V _{CC} = 600V, I _C = 40A
I _{rr} Peak Reverse Recovery Current		32		A	V _{GE} = 15V, R _g = 5Ω, L = 200μH

Thermal- Mechanical Specifications

Parameters	Min	Typ	Max	Units
T _J Operating Junction Temperature Range	- 40		150	°C
T _{STG} Storage Temperature Range	- 40		125	
R _{thJC} Junction-to-Case	IGBT		0.35	°C/ W
	Diode		0.9	
R _{thCS} Case-to-Sink (Heatsink Compound Thermal Conductivity = 1 W/mK)	Module	0.06		
Weight		66		g

Outline Table



Data and specifications subject to change without notice.
This product has been designed for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
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