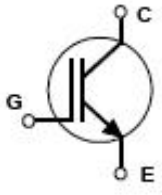
PRELIMINARY DATASHEET

600V 50A, N-Channel IGBT in NPT technology, in TO247 Package

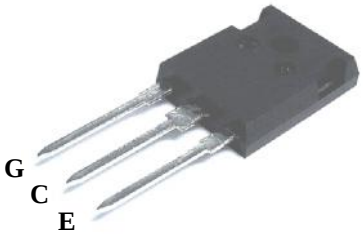
APPLICATIONS

- Motor controls
- Inverters
- Induction heating
- Switch mode power supplies (SMPS)



FEATURES

- Low Eoff combined with low conduction loss
- Short circuit withstand time - 10µs
- Very tight parameter distribution
- High ruggedness, temperature stability
- Parallel switching capability
- Pb-free finished; **RoHS compliant**



MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CE}	600	V
DC collector current, limited by T_{jmax} T_C= 25°C T_C= 55°C	I_C	 55 50	A
Repetitive peak collector current	I_{CRM}	100	
Gate-emitter voltage	V_{GE}	± 20	V
Operating junction temperature	T_j	-55 to 150	°C
Storage temperature	T_{stg}	-40 to 125	

Thermal Resistance

Parameter	Symbol	Max. Value	Units
Characteristics			
IGBT thermal resistance, junction to case	R_{thJC}	0.48	K/W
Thermal resistance, junction to ambient	R_{thJA}	40	

ELECTRICAL CHARACTERISTICS, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Characteristics						
Collector-emitter breakdown voltage	$V_{(BR)CES}$	V_{GE} = 0V, I_C = 0.2 mA	600	-	-	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 50A T_j = 25°C T_j = 150°C	 - -	 1.95 2.20	 2.55 -	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 1mA, V_{CE} = V_{GE}	4.5	5.5	6.5	
Zero gate voltage collector current	I_{CES}	V_{CE} = 600V, V_{GE} = 0	-	-	5	mA

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Gate-emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = 20V	-	-	400	nA
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	-	2200	-	pF
Reverse transfer capacitance	C_{rss}		-	200	-	
Gate charge	Q_{Gate}	V_{GE} = -15V to +15V	-	300	-	nC
Short circuit collector current[1]	$I_{C(SC)}$	$V_{GE} \leq$ 15V, $t_{SC} \leq$ 10 µS V_{CC} = 360V, T_j = 125°C	-	225	-	A

[1] *Allowed number of short circuits: < 1000; time between short circuits: > 1s.*

SWITCHING CHARACTERISTICS, Inductive Load at T_j = 25°C

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{CC}=300V, I_C=50A, V_{GE}=±15V, R_G=3.3Ω,	-	42	-	ns
Rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	120	-	
Fall time	t_f		-	20	-	

SWITCHING CHARACTERISTICS, Inductive Load at T_j = 125°C

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{CC}=300V, I_C=50A, V_{GE}=±15V, R_G=3.3Ω,	-	43	-	ns
Rise time	t_r		-	12	-	
Turn-off delay time	$t_{d(off)}$		-	130	-	
Fall time	t_f		-	30	-	
Turn-on energy	E_{on}	V_{CC}=300V, I_C=50A, V_{GE}=15V, R_G=3.3Ω,	-	0.5	-	mJ
Turn-off energy	E_{off}		-	1.35	-	

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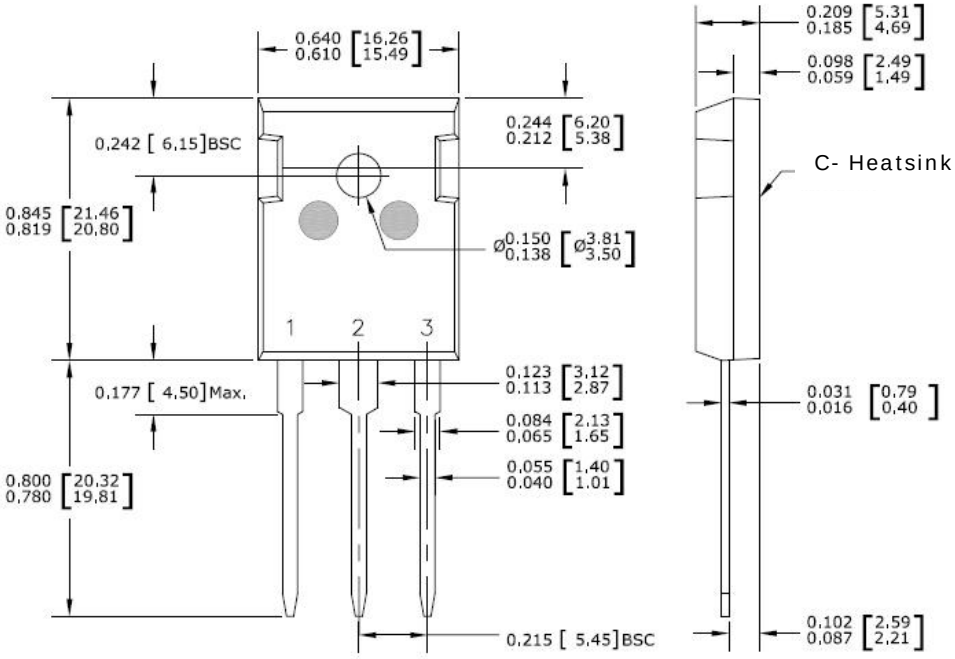
Package Outline Drawing



CAUTION: These devices are ESD sensitive. Use proper handling procedure.

Disclaimer

These specifications may not be considered as a guarantee of components characteristics. Components have to be tested depending on intended application as adjustments may be necessary. The use of **iQXPRZ Power Inc.** components in life support appliances and systems are subject to written approval of **iQXPRZ Power Inc.**

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