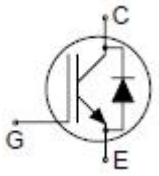
PRELIMINARY DATASHEET

IGBT with soft, fast recovery anti-parallel diode, in EXT TO264 Package

- Ultra low loss IGBT
- Highly rugged SPT design
- Designed for
  - Motor controls
  - General inverters
  - Uninterrupted power supplies (UPS)
- Pb-free finished; RoHS compliant



MAXIMUM RATINGS, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CES}	1200	V
DC collector current, T_C = 100 °C	I_C	57	A
Peak collector current	I_{CM}	114	
Diode forward current	I_F	50	
Diode peak forward current	I_{FM}	100	
Gate-emitter voltage	V_{GE}	± 20	V
IGBT short circuit SOA V_{CC} =1200V , V_{GE} = 15V, V_{CEM} ≤1200V, T_{VJ} ≤ 125°C	t_{SC}	10	µs
Operating junction and storage temperature	T_j, T_{stg}	-40… +150	°C

Thermal Characteristics

Parameter	Symbol	Max. Value	Units
Characteristics			
IGBT thermal resistance, junction to case	R_{thJC}	0.33	K/W
Diode thermal resistance, junction to case	R_{thJCD}	0.65	
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 = 1mA	1200	-	-	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 57A	1.7	1.87	2.0	
Diode forward voltage	V_F	V_{GE} = 0V, I_F = 50A	-	1.8	-	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 2 mA, V_{CE} = V_{GE}	5	-	7	
Zero gate voltage collector current	I_{CES}	V_{CE} = 1200V, V_{GE} = 0 T= 25°C	-	-	100	µA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = ±20V,	-200	-	200	nA
Internal gate resistance	R_{Gint}		-	10	-	Ω
Dynamic Characteristics						
Gate charge	Q_{ge}	I_C = 57A, V_{CE} = 600V, V_{GE} = ±15V	-	611	-	nC
Input capacitance	C_{iss}	V_{CE} = 25V, V_{GE} = 0V,	-	4.29	-	nF
Output capacitance	C_{oss}		-	0.30	-	

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Reverse transfer capacitance	C_{rss}	f = 1MHz	-	0.20	-	
Short circuit current	I_{SC}	T_C=125 °C , V_{CC}=900V, V_{GE}=15V, t_{psc}≤10μs, V_{CEM}=≤1200V	-	270	-	A

SWITCHING CHARACTERISTICS, Inductive Load , at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{CC}=600V, I_C=57A, V_{GE}=±15V, R_G=18.2Ω,	-	421	-	ns
Rise time	t_r		-	150	-	
Turn-off delay time	$t_{d(off)}$		-	428	-	
Fall time	t_f		-	62	-	
Turn-on energy	E_{on}		-	10.2	-	mJ
Turn-off energy	E_{off}		-	2.8	-	

Anti-Parallel Diode Characteristics, at T_j = 25°C, unless otherwise specified

Diode reverse recovery time	t_{rr}	V_R=600V, I_F=50A di_F/dt = 1200A/μs	-	190	-	ns
Diode reverse recovery charge	Q_{rr}		-	7.5	-	μC
Diode peak reverse recovery current	I_{rrm}		-	55	-	A

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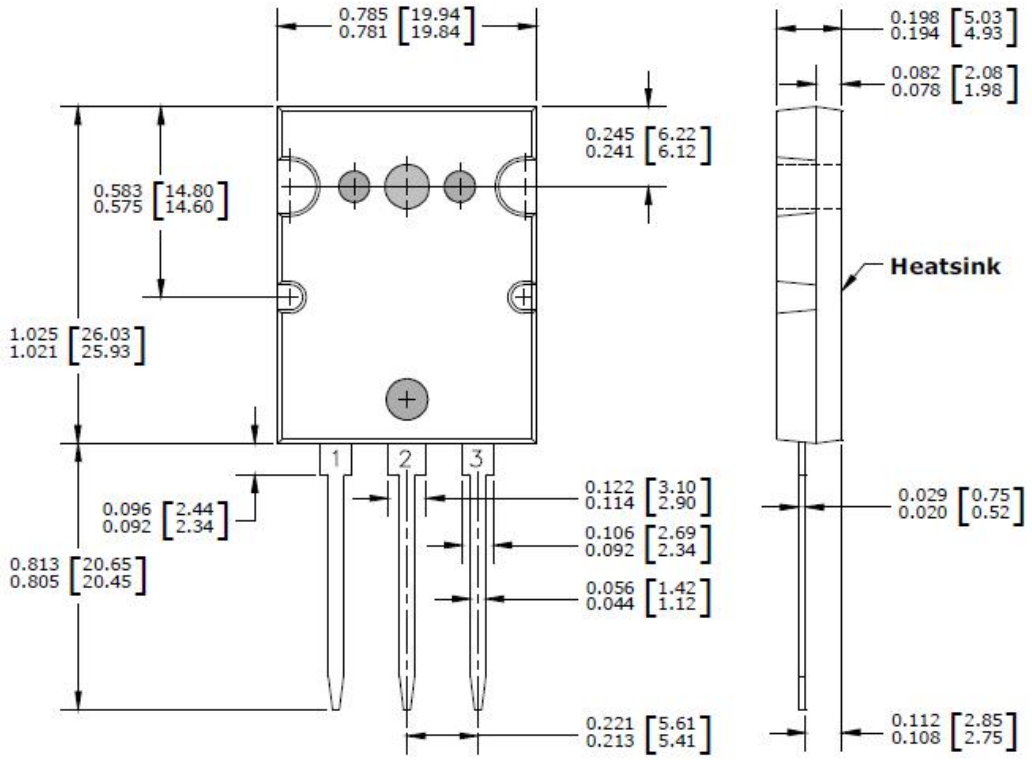
Package Outline Drawing



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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