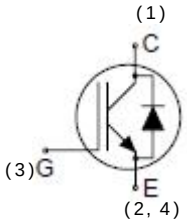
PRELIMINARY DATASHEET

1200V 150A, SPT+ IGBT with soft, fast switching
Anti-parallel Diode in Isolated SOT227 Package



APPLICATIONS

- General inverters
- Uninterruptible power supplies (UPS)
- Welders

FEATURES

- Ultra low loss IGBT
- Highly rugged SPT design
- Pb-free finished; **RoHS Compliant**

MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CE}	1200	V
DC collector current, T_{jmax}=150°C T_C=80°C	I_C	150	A
Peak collector current	I_{CM}	300	
Diode forward current, T_{jmax}=150°C T_C = 80 °C	I_F	45	
Gate-emitter voltage	V_{GES}	± 20	V
IGBT short circuit SOA V_{CC} = 900 V, $V_{CEM} \leq$ 1200 V, $V_{GE} \leq$ 15 V, T_j = 125 °C	t_{PSC}	10	µs
Operating junction and storage temperature	T_j, T_{stg}	-40… +150	°C

Thermal and Isolation Characteristics

Parameter	Symbol	Max. Value	Units
Characteristics			
IGBT thermal resistance, junction to case	R_{thJC}	0.14	K/W
Diode thermal resistance, junction to case	R_{thJCD}	0.76	
Isolation voltage, RMS (measured between terminals and mounting base, 50-60 Hz, for 1-3 seconds)	V_{ISO}	3000	V

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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 at T_{vj}=25°C at T_{vj}=125°C	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 150A	- -	1.9 2.1	- -	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 6 mA, V_{CE} = V_{GE}	5	6.2	7	
Diode forward voltage	V_F	I_F = 45 A	-	2.0	-	
Zero gate voltage collector current at T_{vj} = 25°C at T_{vj} = 125°C	I_{CES}	V_{CE} = 1200V, V_{GE} = 0	- -	- 600	100 -	µA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = 20V at T_j = 125°C	-200	-	200	nA
Internal gate resistance	R_{Gint}		-	2	-	Ω
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	-	10.6	-	nF
Output capacitance	C_{oss}		-	0.71	-	
Reverse transfer capacitance	C_{rss}		-	0.47	-	

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

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time T_j = 25°C T_j= 125°C	$t_{d(on)}$	V_{CC}=600V, I_C = 150A, V_{GE}=±15V, R_G=6.8Ω, L_J=60nH Inductive Load	- -	190 220	- -	ns
Rise time T = 25°C T_j= 125°C	t_r		- -	60 60	- -	
Turn-off delay time T_j = 25°C T_j= 125°C	$t_{d(off)}$		- -	460 530	- -	
Fall time T_j = 25°C T_j= 125°C	t_f		- -	55 75	- -	
Turn-on energy T_j = 25°C T_j= 125°C	E_{on}		- -	11.2 16.7	- -	mJ
Turn-off energy T_j = 25°C T_j= 125°C	E_{off}		- -	9.8 15.3	- -	
Short Circuit Current	I_{SC}	V_{CC} = 900V, V_{GE} = 15V t_{psc} ≤10us V_{CEM} _1200V at T_C= 125°C	-	650	-	A
Gate Charge	Q_g	V_{CE} = 600V I_C = 150A V_{GE} = -15V…15V	-	1530	-	nC
Anti-parallel Diode Characteristics						
Diode reverse recovery charge	Q_{rr}	I_F = 45A d_{iF}/d_t = -550A/µs V_R = 600V V_{GE} = -15V	-	3.60	-	µC
Diode peak reverse recovery current	I_{rrm}		-	39	-	A

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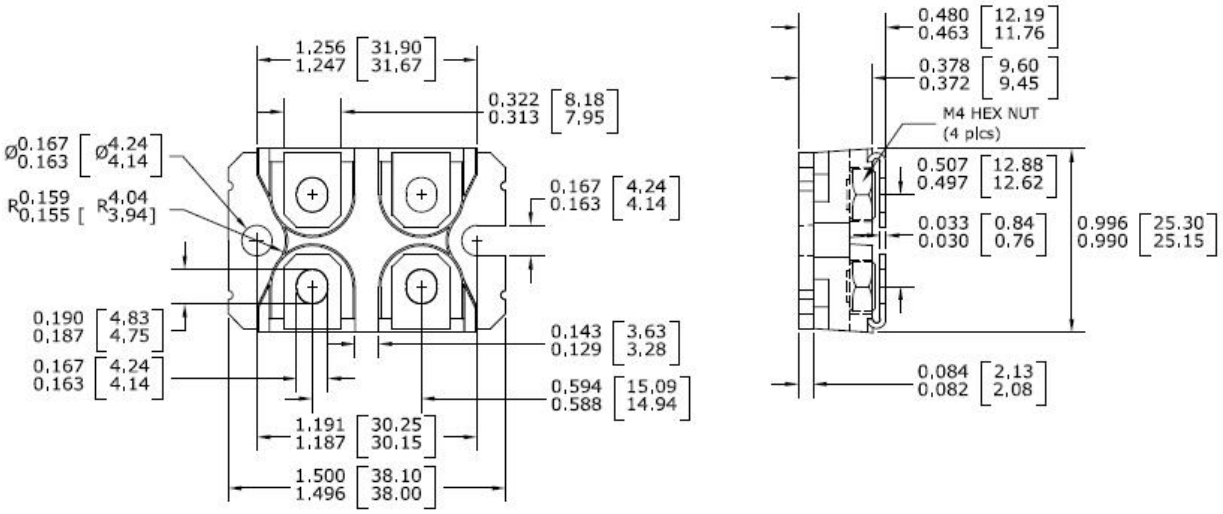
Package Outline Drawing



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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