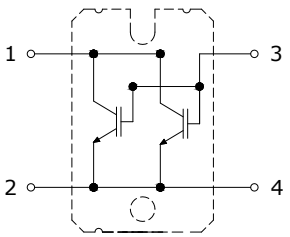
PRELIMINARY DATASHEET

IGBT in Trench & Field Stop-technology in Isolated SOT227 Package

- Very high switching speed
- Very low VCE(sat
- Short circuit withstand time – 5 us
- Designed for frequency converters and UPS
- Very tight parameter distribution
- High ruggedness, temperature stability - Parallel switching capability
- Pb-free lead finish; RoHS compliant



MAXIMUM RATINGS (per IGBT)), at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CE}	600	V
DC collector current, limited by T_{jmax} T_C= 25°C T_C= 80°C	I_C	 300 150	A
Pulsed collector current, t_p limited by T_{jmax}	I_{Cpulse}	450	
Turn off safe operating area $V_{CE} \leq$ 1200V, $T_j \leq$ 150°C	-	450	
Gate-emitter voltage	V_{GE}	± 20	V
Short circuit withstand time[1] V_{GE} = 15V, $V_{CC} \leq$ 400V, $T_j \leq$ 150°C	t_{SC}	5	µs
Soldering temperature Wave soldering, 1.6 mm (0.063 in.) from case for 10s	T_S	260	°C
Operating junction and storage temperature	T_j, T_{stg}	-55… +175	°C

Thermal and Isolation Characteristics (per IGBT)

Parameter	Symbol	Max. Value	Units
Characteristics			
IGBT thermal resistance, junction to case	R_{thJC}	0.46	K/W
Thermal resistance, junction to ambient	R_{thJA}	40	
Isolation voltage, RMS (measured between terminals and mounting base, 50-60 Hz, for 1-3 seconds)	V_{iso}	3000	V

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

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

Team Pacific Building, Electronics Avenue
FTI Complex, Special Economic Zone
Taguig City, Philippines

Website: www.iqxprzpower.com
Telefax +632 837 1538

ELECTRICAL CHARACTERISTICS (per IGBT), 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 = 0.4 mA	600	-	-	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 150A T_j = 25°C T_j = 175°C	- -	1.5 1.9	2.0 -	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 2.4 mA, V_{CE} = V_{GE}	4.1	4.9	5.7	
Zero gate voltage collector current	I_{CES}	V_{CE} = 600V, V_{GE} = 0 T_j = 25°C	-	-	80	µA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = 20V	-	-	200	nA
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	-	9240	-	pF
Output capacitance	C_{oss}		-	576	-	
Reverse transfer capacitance	C_{rss}		-	274	-	
Gate charge	Q_{Gate}	V_{CC} = 480V, I_C = 75A V_{GE} = 15V	-	940	-	nC
Short circuit collector current[1]	$I_{C(SC)}$	V_{GE} = 15V, $t_{SC} \leq$ 5 µS V_{CC} = 400V, $T_j \leq$ 150°C	-	1375	-	A

SWITCHING CHARACTERISTICS (per IGBT), Inductive Load at T_j = 25°C

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	T_j = 25°C, V_{CC}=400V, I_C=75A, V_{GE}=0/15V, R_G=5Ω, L_σ[2] = 100nH, C_σ[2] = 39pF Energy losses include tail and diode reverse recovery.	-	33	-	ns
Rise time	t_r		-	36	-	
Turn-off delay time	$t_{d(off)}$		-	330	-	
Fall time	t_f		-	35	-	
Turn-on energy	E_{on}		-	2.0	-	mJ
Turn-off energy	E_{off}		-	2.5	-	
Total switching energy	E_{ts}		-	4.5	-	

Team Pacific Building, Electronics Avenue
FTI Complex, Special Economic Zone
Taguig City, Philippines

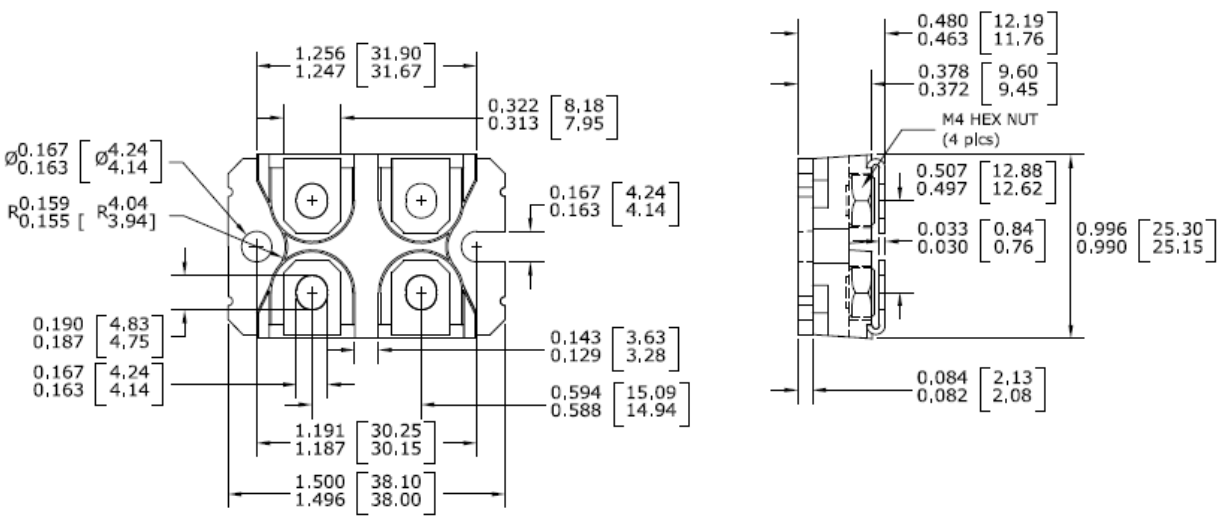
Website: www.iqxprzpower.com
Telefax +632 837 1538

SWITCHING CHARACTERISTICS (per IGBT) , Inductive Load at T_j = 150°C

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	T_j = 150°C, V_{CC}=400V, I_C=75A, V_{GE}=0V/15V, R_G=5Ω, L_σ[2] = 100nH, C_σ[2] = 39pF Energy losses include tail and diode reverse recovery.	-	32	-	ns
Rise time	t_r		-	37	-	
Turn-off delay time	$t_{d(off)}$		-	363	-	
Fall time	t_f		-	38	-	
Turn-on energy	E_{on}		-	2.9	-	mJ
Turn-off energy	E_{off}		-	2.9	-	
Total switching energy	E_{ts}		-	5.8	-	

1 *Allowed number of short circuits: < 1000; time between short circuits: > 1s.*
2 *Leakage inductance Lσ and Stray capacity Cσ due to dynamic test circuit.*

Package Outline Drawing



Website: www.iqxprzpower.com
Telefax +632 837 1538