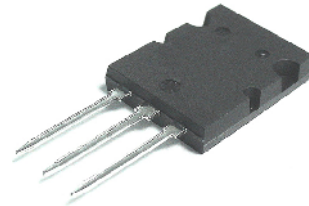
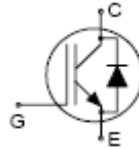


PRELIMINARY DATASHEET
IGBT with anti-parallel FRED, in EXT TO264 Package

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


MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CES}	1200	V
DC collector current	I_C	75	A
Peak collector current, limited by T_{jmax}	I_{CM}	150	
Diode forward current	I_F	60	
Gate-emitter voltage	V_{GE}	± 20	V
IGBT short circuit SOA $V_{CC} = 1200V, V_{GE} = 15V, V_{CEM} \leq 1200V, T_{vj} \leq 125^\circ C$	t_{SC}	10	μs
Operating junction and storage temperature	T_j, T_{stg}	-40... +150	$^\circ C$

Thermal Resistance

Parameter	Symbol	Max. Value	Units
Characteristics			
IGBT thermal resistance, junction to case	R_{thJC}	0.26	K/W
Diode thermal resistance, junction to case	R_{thJD}	0.4	
Thermal resistance, junction to ambient	R_{thJA}	40	

ELECTRICAL CHARACTERISTICS, at $T_j = 25^\circ C$, 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	$V_{CE(sat)}$	$V_{GE} = 15V, I_C = 75A$	-	1.8	-	
At $T_j = 125^\circ C$			-	2.0	-	
Diode forward voltage	V_F	$V_{GE} = 0V, I_F = 60A$	-	1.85	-	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C = 3mA, V_{CE} = V_{GE}$	5	6.2	7	
Zero gate voltage collector current	I_{CES}	$V_{CE} = 1200V, V_{GE} = 0$	-	-	100	μA
At $T_j = 125^\circ C$			-	300	-	
Gate-emitter leakage current	I_{GES}	$V_{CE} = 0V, V_{GE} = \pm 20V,$ At $T_j = 125^\circ C$	-200	-	200	nA

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

Dynamic Characteristics						
Gate charge	Q_{ge}	$I_C = 75A, V_{CE} = 600V,$ $V_{GE} = +15V$	-	780	-	nC
Input capacitance	C_{iss}	$V_{CE} = 25V,$ $V_{GE} = 0V,$ $f = 1MHz$	-	5.52	-	nF
Output capacitance	C_{oss}		-	0.40	-	
Reverse transfer capacitance	C_{rss}		-	0.26	-	
Short circuit current	I_{sc}	$T_C = 125^\circ C,$ $V_{CC} = 900V, V_{GE} = 15V,$ $t_{psc} \leq 10\mu s,$ $V_{CEM} \leq 1200V$	-	420	-	A

SWITCHING CHARACTERISTICS, Inductive Load, at $T_j = 25^\circ C$, unless otherwise specified at $T_j = 25^\circ C$

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{CC} = 600V, I_C = 75A,$ $V_{GE} = \pm 15V,$ $R_G = 15\Omega,$ $L_\sigma = 60nH,$ Inductive load.	-	165	-	ns
Rise time	t_r		-	75	-	
Turn-off delay time	$t_{d(off)}$		-	435	-	
Fall time	t_f		-	50	-	
Turn-on energy	E_{on}			-	9.3	-
Turn-off energy	E_{off}	-		4.5	-	

Anti-Parallel Diode Characteristics, at $T_j = 25^\circ C$, unless otherwise specified at $T_j = 25^\circ C$

Diode reverse recovery time	t_{rr}	$V_R = 300V, I_F = 60A$ $di_F/dt = 200A/\mu s$ $L_\sigma = 60nH,$ Inductive load	-	87	-	ns
Diode reverse recovery charge	Q_{rr}		-	428	-	nC
Diode peak reverse recovery current	I_{rm}		-	11.6	-	A

Package Outline Drawing

