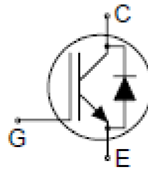
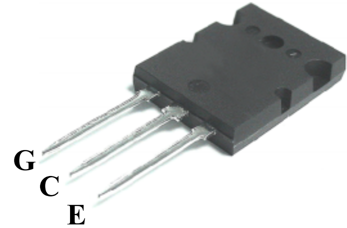
PRELIMINARY DATASHEET

1200V 75A IGBT with anti-parallel diode, in TO264 Package

- Ultra low loss thin IGBT die
- Highly rugged SPT+ design
- Large bondable emitter area





MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CE}	1200	V
DC collector current, limited by T_{jmax} T_C= 100°C	I_C	75	A
Peak collector current	I_{CM}	150	A
Diode forward current T_C= 100°C	I_F	60	A
Gate-emitter voltage	V_{GE}	± 20	V
Short circuit withstand time[1] V_{GE} = 15V, V_{CC} ≤ 400V, T_j ≤ 150°C	t_{SC}	10	µs
Operating junction and storage temperature	T_j, T_{stg}	-40… +150	°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_{thJCD}	0.4	K/W
Thermal resistance, junction to ambient	R_{thJA}	40	K/W

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

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 = 1 mA	1200	-	-	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 75A	-	1.8	-	V
Diode forward voltage	V_F	V_{GE} = 0V, I_F = 60A	-	1.85	-	V
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 3 mA, V_{CE} = V_{GE}	5.0	6.2	7	V
Zero gate voltage collector current	I_{CES}	V_{CE} = 1200V, V_{GE} = V_{CE}	-	-	100	µA
Diode reverse leakage current	I_R	V_R = 1200V	-	-	-	
Gate-emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = 20V	-	-	±200	nA
Integrated gate resistor	R_{Gint}		-	3	-	Ω
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	-	5520	-	pF
Output capacitance	C_{oss}		-	400	-	pF
Reverse transfer capacitance	C_{rss}		-	260	-	pF

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

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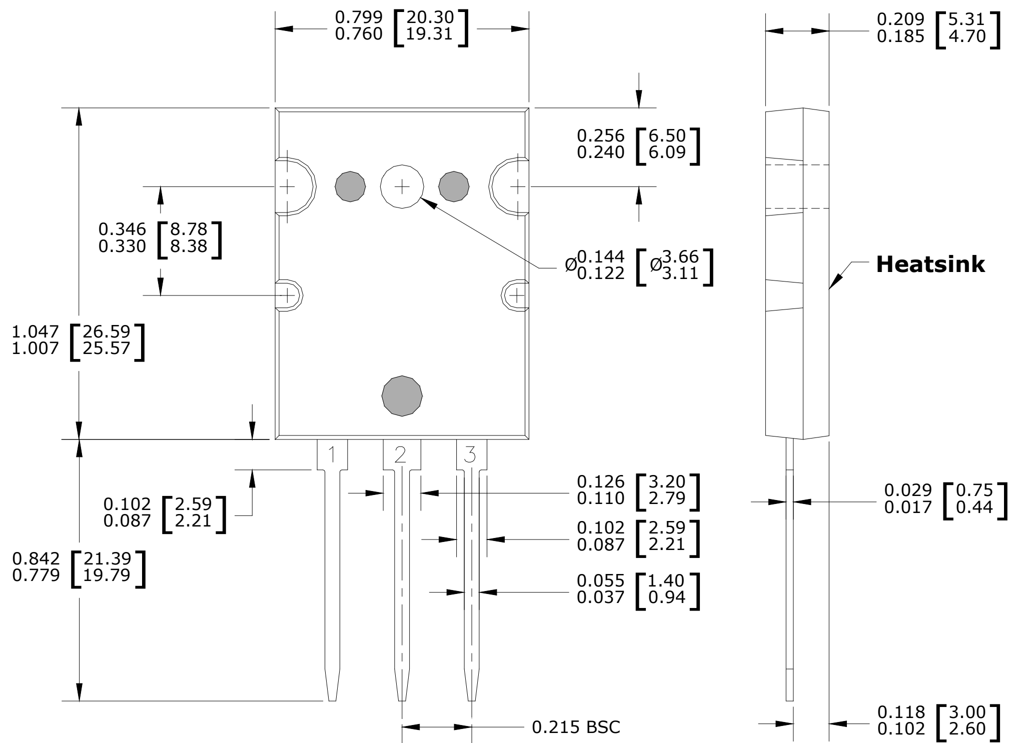
SWITCHING CHARACTERISTICS, Inductive Load at T_j = 25°C

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

Anti-Parallel Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Diode reverse recovery time	t_{rr}	V_R=600V, I_F=60A di_F/dt = 1600A/μs $L_σ$ = 60nH, Inductive load	-	250	-	ns
Diode reverse recovery charge	Q_{rr}		-	10	-	μC
Diode peak reverse recovery current	I_{rrm}		-	65	-	A

Package Outline Drawing



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