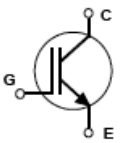
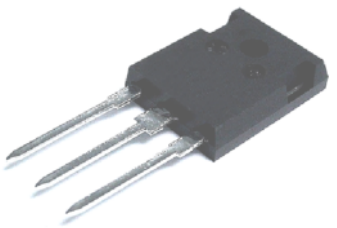
PRELIMINARY DATASHEET

Fast IGBT in NPT technology
Series 1200, 8A in TO247 Package

- Short circuit withstand time - 10µs
- Designed for motor controls, inverters, and SMPS
- High ruggedness, temperature stability
  - Parallel switching capability
- Pb-free lead finish; RoHS compliant





MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CE}	1200	V
DC collector current, limited by T_{jmax} T_C= 25°C T_C= 100°C	I_C	 16.5 7.9	A
Pulsed collector current, t_p limited by T_{jmax}	I_{Cpulse}	27	
Turn off safe operating area $V_{CE} \leq 600V$, $T_J \leq 150$ °C	-	27	
Gate-emitter voltage	V_{GE}	± 20	V
Avalanche energy, single pulse I_C=8A, V_{CC}=50V, R_{GE}=25Ω, start at T_J=25°C	E_{AS}	40	mJ
Short circuit withstand time[1] V_{GE} = 15V, $V_{CC} \leq 400V$, $T_j \leq 150$°C	t_{SC}	10	µs
Power dissipation T_C = 25°C	P_{tot}	100	W
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… +150	°C

Thermal Resistance

Parameter	Symbol	Max. Value	Units
Characteristics			
IGBT thermal resistance, junction to case	R_{thJC}	1.25	K/W
Thermal resistance, junction to ambient	R_{thJA}	62	

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

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

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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 = 0.5mA	1200	-	-	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 8A T_J= 25°C T_J= 150°C	2.5 -	3.1 3.7	3.6 4.3	
Gate-emitter threshold voltage	$V_{GE(th)}$	I_C = 0.35mA, V_{CE} = V_{GE}	3	4	5	
Zero gate voltage collector current	I_{CES}	V_{CE} = 1200V, V_{GE} = 0V T_J= 25°C T_J= 150°C	- -	- -	100 400	µA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0V, V_{GE} = 20V	-	-	100	nA
Transconductance	g_{fs}	V_{CE} = 20V, I_C = 8A	-	6	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	-	720	870	pF
Output capacitance	C_{oss}		-	60	75	
Reverse transfer capacitance	C_{rss}		-	40	50	
Gate charge	Q_G	V_{CC} = 960V, I_C = 8A V_{GE} = 15V	-	70	90	nC
Internal emitter inductance measured 5mm (0,197 in.) from case	L_E		-	7	-	nH
Short circuit collector current[1]	$I_{C(SC)}$	V_{GE} = 15V, tsc≤10µs 100≤V_{CC} ≤1200V, T_J =150 °C	-	75	-	A

SWITCHING CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristics						
Turn-on delay time	$t_{d(on)}$	T_j = 25°C, V_{CC}=800V, I_C=8A, V_{GE}=0/15V, R_G=47Ω, L_{O2} = 180nH C_{O2} = 40pF Energy losses included tail and diode reverse recovery.	-	27	35	ns
Rise time	t_r		-	29	38	
Turn-off delay time	$t_{d(off)}$		-	440	570	
Fall time	t_f		-	21	12	
Turn-on energy	E_{on}		-	0.6	0.8	mJ
Turn-off energy	E_{off}		-	0.4	0.55	
Total switching energy	E_{ts}		-	1.0	1.35	
Turn-on delay time	$t_{d(on)}$	T_j = 150°C, V_{CC}=800V, I_C=8A, V_{GE}=0/15V, R_G=47Ω, L_{O2} = 180nH C_{O2} = 40pF Energy losses included tail and diode reverse recovery.	-	30	36	ns
Rise time	t_r		-	26	31	
Turn-off delay time	$t_{d(off)}$		-	490	590	
Fall time	t_f		-	30	36	
Turn-on energy	E_{on}		-	1.0	1.2	mJ
Turn-off energy	E_{off}		-	0.7	0.9	
Total switching energy	E_{ts}		-	1.7	2.1	

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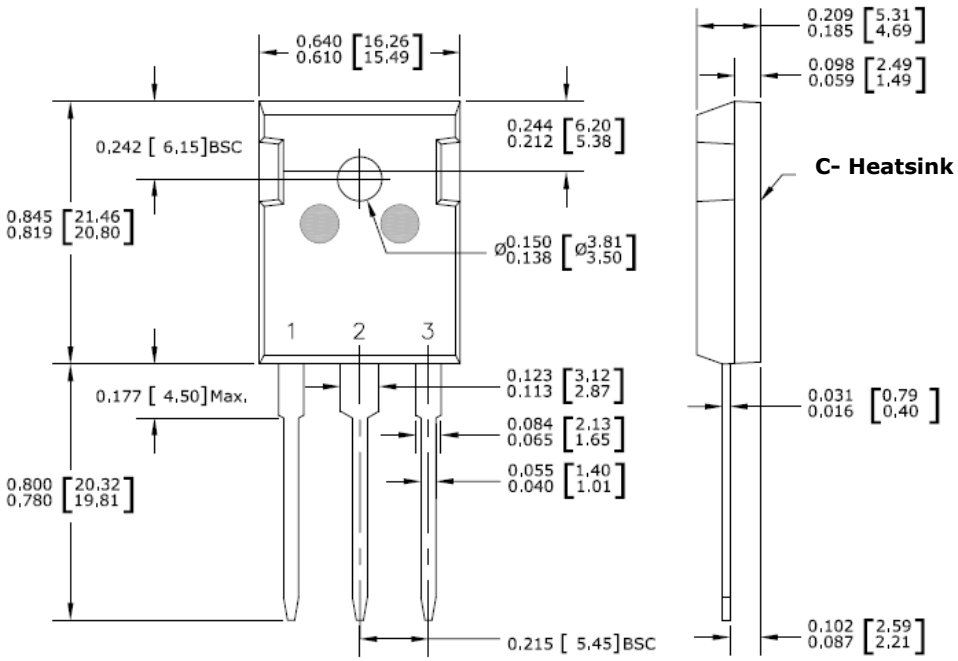
Package Outline Drawing



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