IXYS

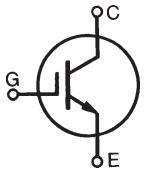
Preliminary Technical Information

High-Gain IGBT

IXGH30N60B4

V_{CES} = 600V
I_{C110} = 30A
$V_{CE(sat)}$ ≤ 1.7V
$t_{fi(typ)}$ = 88ns

Medium-Speed PT Trench IGBT



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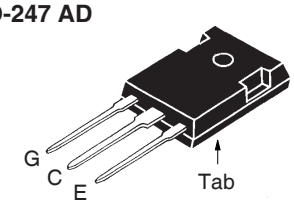


G = Gate C = Collector
E = Emitter Tab = Collector

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	600	V
V_{CGR}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	600	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	66	A
I_{C110}	T_C = 110°C	30	A
I_{CM}	T_C = 25°C, 1ms	156	A
SSOA	V_{GE} = 15V, T_{VJ} = 125°C, R_G = 10Ω	I_{CM} = 48	A
(RBSOA)	Clamped Inductive Load	@ ≤ V_{CES}	
P_C	T_C = 25°C	190	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062in.) from Case for 10s	260	°C
M_d	Mounting Torque	1.13/10	Nm/lb.in.
Weight		6	g

Features

- Optimized for Low Conduction and Switching Losses
- Square RBSOA
- International Standard Package

Advantages

- High Power Density
- Low Gate Drive Requirement

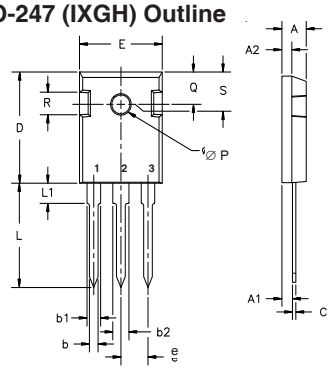
Applications

- Switch-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- DC Choppers
- AC Motor Speed Drives
- DC Servo and Robot Drives
- PFC Circuits

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 250μA, V_{GE} = 0V	600			V
$V_{GE(th)}$	I_C = 250μA, V_{CE} = V_{GE}	4.0		6.5	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0V			10	μA
	T_J = 125°C			500	μA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±100	nA
$V_{CE(sat)}$	I_C = 24A, V_{GE} = 15V, Note 1		1.5	1.7	V
	T_J = 125°C		1.5		V

Symbol	Test Conditions (T_J = 25°C Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	I_C = 24A, V_{CE} = 10V, Note 1	10	17		S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		860		pF
C_{oes}			50		pF
C_{res}			29		pF
Q_g	I_C = 24A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		77		nC
Q_{ge}			9		nC
Q_{gc}			33		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		21		ns
t_{ri}	I_C = 24A, V_{GE} = 15V		34		ns
E_{on}	V_{CE} = 400V, R_G = 10Ω		0.44		mJ
$t_{d(off)}$	Note 2		200		ns
t_{fi}			88		ns
E_{off}			0.70	1.30	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		20		ns
t_{ri}	I_C = 24A, V_{GE} = 15V		33		ns
E_{on}	V_{CE} = 400V, R_G = 10Ω		0.75		mJ
$t_{d(off)}$	Note 2		228		ns
t_{fi}			223		ns
E_{off}			1.50		mJ
R_{thJC}				0.66	°C/W
R_{thCS}			0.21		°C/W

TO-247 (IXGH) Outline



Terminals: 1 - Gate 2 - Collector
3 - Emitter

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.7	5.3	.185	.209
A_1	2.2	2.54	.087	.102
A_2	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b_1	1.65	2.13	.065	.084
b_2	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L1		4.50		.177
∅P	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15 BSC		242 BSC	

Notes:

1. Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.
2. Switching times & energy losses may increase for higher V_{CE}(clamp), T_J or R_G.

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.