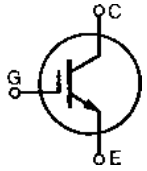
IXYS

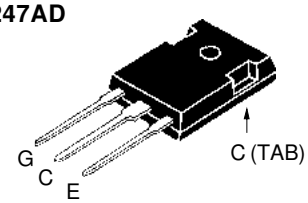
Low $V_{CE(sat)}$ IGBT
High Speed IGBT

	V_{CES}	I_{C25}	$V_{CE(sat)}$
IXGH 12N100	1000 V	24 A	3.5 V
IXGH 12N100A	1000 V	24 A	4.0 V



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1000	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1000	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	24	A
I_{C90}	T_C = 90°C	12	A
I_{CM}	T_C = 25°C, 1 ms	48	A
SSOA (RBSOA)	V_{GE}= 15 V, T_{VJ} = 125°C, R_G = 150 Ω Clamped inductive load, L = 300 μH	I_{CM} = 24 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	100	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
M_d	Mounting torque (M3)	1.13/10	Nm/lb.in.
Weight		6	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C

TO-247AD



G = Gate C = Collector
E = Emitter TAB = Collector

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified)			
		Min.	Typ.	Max.	
BV_{CES}	I_C = 3 mA, V_{GE} = 0 V	1000			V
	BV_{CES} temperature coefficient		0.072		%/K
$V_{GE(th)}$	I_C = 500 μA, V_{GE} = V_{GE}	2.5		5.5	V
	$V_{GE(th)}$ temperature coefficient		-0.192		%/K
I_{CES}	V_{CE} = 0.8 V_{CES} T_J = 25°C V_{GE} = 0 V T_J = 125°C			250 1	μA mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V			±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V 12N100			3.5	V
	12N100A			4.0	V

Features
- International standard package JEDEC TO-247 AD
- 2nd generation HDMOS™ process
- Low $V_{CE(sat)}$
  - for low on-state conduction losses
- High current handling capability
- MOS Gate turn-on
  - drive simplicity
- Voltage rating guaranteed at high temperature (125°C)

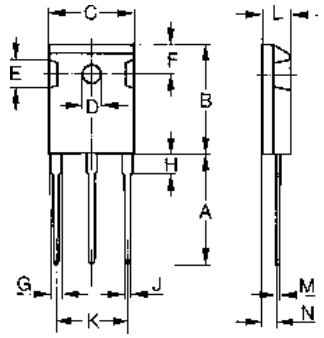
Applications
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages
- Easy to mount with 1 screw (isolated mounting screw hole)
- High power density

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) Min.	Typ.	Max.	
g_{fs}	$I_C = I_{C90}$; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %		6	10		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz			750		pF
C_{oes}				80		pF
C_{res}				30		pF
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}			65	90	nC
Q_{ge}				8		nC
Q_{gc}				24	45	nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**			100		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V, L = 300 µH,			200		ns
$t_{d(off)}$	V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 120 Ω			850	1000	ns
t_{fi}	Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G	12N100		800	1000	ns
		12N100A		500	700	ns
E_{off}		12N100		2.5		mJ
		12N100A		1.5	3.0	mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**			100		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V, L = 300 µH			200		ns
E_{on}	V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 120 Ω			1.1		mJ
$t_{d(off)}$	Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G			900		ns
t_{fi}		12N100		1250		ns
		12N100A		950		ns
E_{off}		12N100		3.5		mJ
		12N100A		2.2		mJ
R_{thJC}					1.25	K/W
R_{thCK}				0.25		K/W

IXGH12N100/A characteristic curves may be found in the IXGH12N100U/AU1 data sheet.

TO-247 AD (IXGH) Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102