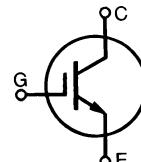


HiPerFAST™ IGBT

IXGH 40N60B IXGT 40N60B

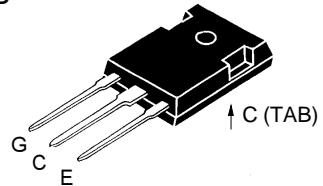
V_{CES} = 600 V
 I_{C25} = 75 A
 $V_{CE(sat)}$ = 2.1 V
 t_{fi} = 180 ns



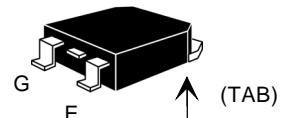
Preliminary data sheet

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	600	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_c = 25^\circ\text{C}$	75	A
I_{C110}	$T_c = 110^\circ\text{C}$	40	A
I_{CM}	$T_c = 25^\circ\text{C}$, 1 ms	150	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 10 \Omega$ Clamped inductive load, $L = 100 \mu\text{H}$	$I_{CM} = 80$ @ 0.8 V_{CES}	A
P_c	$T_c = 25^\circ\text{C}$	250	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C
M_d	Mounting torque (M3)	1.13/10Nm/lb.in.	
Weight		TO-247 AD	6 g
		TO-247 SMD	4 g

TO-247 AD
(IXGH)



TO-268 (D3)
(IXGT)



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

Features

- International standard packages
JEDEC TO-268 surface
mountable and JEDEC TO-247 AD
- High current handling capability
- Latest generation HDMOS™ process
- MOS Gate turn-on
 - drive simplicity

Applications

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

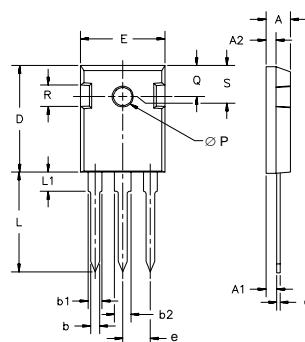
Advantages

- Space savings (two devices in one package)
- High power density
- Suitable for surface mounting
- Switching speed for high frequency applications
- Easy to mount with 1 screw, TO-247 (isolated mounting screw hole)

Symbol	Test Conditions	Characteristic Values		
		($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_c = 250 \mu\text{A}$, $V_{GE} = 0 \text{ V}$ BV_{CES} temperature coefficient	600	0.072	V %/K
$V_{GE(th)}$	$I_c = 250 \mu\text{A}$, $V_{CE} = V_{GE}$ $V_{GE(th)}$ temperature coefficient	2.5	5 -0.286	V %/K
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		200 μA
		$T_J = 150^\circ\text{C}$		1 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_c = I_{C110}$, $V_{GE} = 15 \text{ V}$		1.6	2.1 V

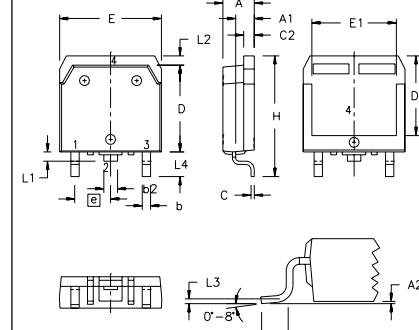
Symbol	Test Conditions	Characteristic Values		
		min.	typ.	max.
g_{fs}	$I_C = I_{C110}$, $V_{CE} = 10$ V, Pulse test, $t \leq 300$ μ s, duty cycle ≤ 2 %	30	42	S
C_{les} C_{oes} C_{res}	$V_{CE} = 25$ V, $V_{GE} = 0$ V, $f = 1$ MHz	3300	pF	
		310	pF	
		65	pF	
Q_g Q_{ge} Q_{gc}	$I_C = I_{C110}$, $V_{GE} = 15$ V, $V_{CE} = 0.5 V_{CES}$	116	nC	
		23	nC	
		55	nC	
$t_{d(on)}$ t_{ri} $t_{d(off)}$ t_{fl} E_{off}	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C110}$, $V_{GE} = 15$ V $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 4.7 \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G	25	ns	
		30	ns	
		180	300	ns
		180	270	ns
		2.7	4.0	mJ
		25	ns	
$t_{d(on)}$ t_{ri} E_{on} $t_{d(off)}$ t_{fl} E_{off}	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C110}$, $V_{GE} = 15$ V $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 4.7 \Omega$ Remarks: Switching times may increase for V_{CE} (Clamp) $> 0.8 \cdot V_{CES}$, higher T_J or increased R_G	35	ns	
		0.4	mJ	
		300	ns	
		270	ns	
		4.0	mJ	
		0.50	KW	
R_{thuc} R_{thck}	(IXGH40N60B)	0.25	KW	

TO-247 AD Outline

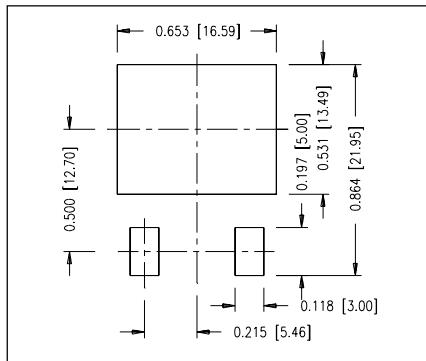


Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	.205	.225
L	19.81	20.32	.780	.800
L ₁		4.50		.177
ØP	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

TO-268 Outline



Min Recommended Footprint



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A ₁	.106	.114	2.70	2.90
A ₂	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b ₂	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C ₂	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D ₁	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E ₁	.524	.535	13.30	13.60
e	.215	BSC	5.45	BSC
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L ₁	.047	.055	1.20	1.40
L ₂	.039	.045	1.00	1.15
L ₃	.010	BSC	0.25	BSC
L ₄	.150	.161	3.80	4.10

IXYS reserves the right to change limits, test conditions, and dimensions.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025