

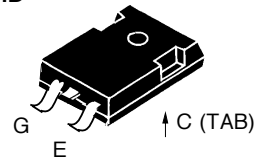
HiPerFAST™ IGBT

IXGH 40N30/S
IXGH 40N30A/S
IXGH 40N30B/S

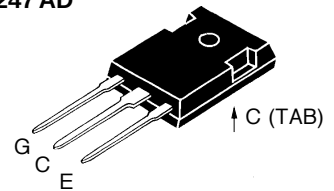
V_{CES}	I_{C25}	$V_{CE(sat)}$	t_{fi}
300 V	60 A	1.8 V	220ns
300 V	60 A	2.1 V	120ns
300 V	60 A	2.4 V	75 ns

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	300	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	300	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	60	A
I_{C90}	$T_C = 90^\circ\text{C}$	40	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	160	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 10 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$	$I_{CM} = 80$ @ $0.8 V_{CES}$	A
P_C	$T_C = 25^\circ\text{C}$	200	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$
Maximum Tab temperature for soldering SMD devices for 10 s		260	$^\circ\text{C}$
M_d	Mounting torque (M3)	1.13/10	Nm/lb.in.
Weight	TO-247 AD	6	g
	TO-247 SMD	4	g

TO-247 SMD*



TO-247 AD



G = Gate, C = Collector,
E = Emitter, TAB = Collector
* Add suffix letter "S" for surface mountable package

Features

- International standard packages JEDEC TO-247 AD and surface mountable TO-247 SMD
- High current handling capability
- Newest 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

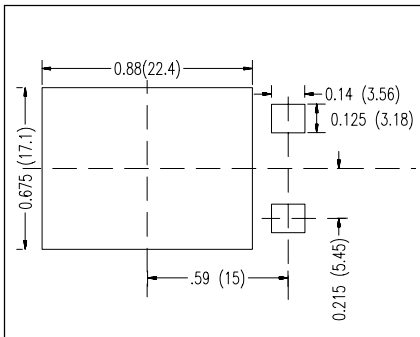
Advantages

- High power density
- Suitable for surface mounting
- Switching speed for high frequency applications
- Easy to mount with 1 screw, (isolated mounting screw hole)

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	300		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		5 V
I_{CES}	$V_{CE} = 0.8 V_{CES}, T_J = 25^\circ\text{C}$ $V_{GE} = 0 \text{ V}, T_J = 125^\circ\text{C}$			200 μA 1 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$			1.8 V 2.1 V 2.4 V

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$I_C = I_{C90}; V_{CE} = 10\text{ V}$, Pulse test, $t \leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$	20	28	S
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$	2500	210	pF
C_{oes}				pF
C_{res}				pF
Q_g	$I_C = I_{C90}; V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$	145	23	nC
Q_{ge}				nC
Q_{gc}				nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C90}; V_{GE} = 15\text{ V}$, $L = 100\text{ }\mu\text{H}$, $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 1.0\text{ }\Omega$ Switching times may increase for V_{CE} (Clamp) $> 0.8 V_{CES}$, higher T_J or increased R_G	40N30 40N30A 40N30B 40N30 40N30A 40N30B 40N30 40N30A 40N30B	25	ns
t_{ri}			40	ns
$t_{d(off)}$			170	ns
t_{fi}			100	ns
t_{fi}			75	ns
t_{fi}			230	ns
t_{fi}			120	ns
t_{fi}			75	ns
E_{off}			1.6	mJ
E_{off}			0.75	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C90}; V_{GE} = 15\text{ V}$, $L = 100\text{ }\mu\text{H}$, $V_{CE} = 0.8 V_{CES}$, $R_G = R_{off} = 1.0\text{ }\Omega$ Switching times may increase for V_{CE} (Clamp) $> 0.8 V_{CES}$, higher T_J or increased R_G	40N30 40N30A 40N30B 40N30 40N30A 40N30B 40N30 40N30A 40N30B	25	ns
t_{ri}			40	ns
E_{on}			0.3	mJ
$t_{d(off)}$			250	ns
$t_{d(off)}$			150	ns
$t_{d(off)}$			300	ns
$t_{d(off)}$			90	ns
$t_{d(off)}$			180	ns
$t_{d(off)}$			350	ns
$t_{d(off)}$			600	ns
t_{fi}			220	ns
t_{fi}			330	ns
t_{fi}			130	ns
t_{fi}			230	ns
t_{fi}			3.3	mJ
t_{fi}			4.8	mJ
t_{fi}			1.6	mJ
t_{fi}			2.4	mJ
t_{fi}			0.6	mJ
t_{fi}			1.4	mJ
R_{thJC}		0.25		0.62 K/W
R_{thCK}				K/W

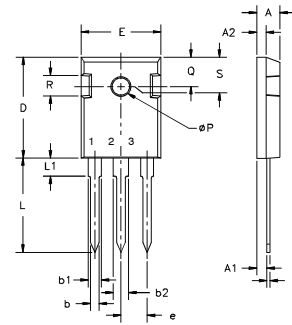
Min. Recommended Footprint (Dimensions in inches and mm)



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

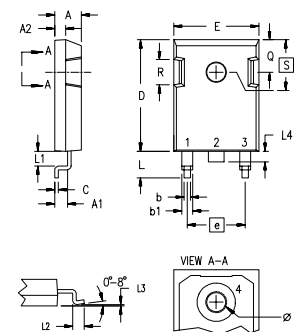
IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

TO-247 AD Outline



Dim.	Millimeter	Inches
	Min. Max.	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
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-247 SMD Outline



1 - Gate 3 - Source (Emitter)
2 - Drain (collector) 4 - Drain (collector)

Dim.	Millimeter	Inches
	Min. Max.	Min. Max.
A	4.83 5.21	.190 .205
A ₁	2.29 2.54	.090 .100
A ₂	1.91 2.16	.075 .085
b	1.14 1.40	.045 .055
b ₁	1.19 2.13	.075 .084
C	0.61 0.80	.024 .031
D	20.80 21.34	.819 .840
E	15.75 16.13	.620 .635
e	5.45 BSC	.215 BSC
L	4.90 5.10	.193 .201
L1	2.70 2.90	.106 .114
L2	2.10 2.30	.083 .091
L3	0.00 0.10	.000 .004
L4	1.90 2.10	.075 .083
ØP	3.55 3.65	.140 .144
Q	5.59 6.20	.220 .244
R	4.32 4.83	.170 .190
S	6.15 BSC	.242 BSC