IXYS

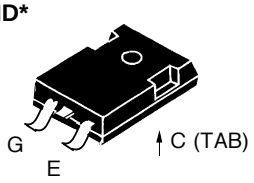
HiPerFAST™ IGBT

	V_{CES}	I_{C25}	$V_{CE(sat)}$	t_{fi}
IXGH 40N30/S	300 V	60 A	1.8 V	220ns
IXGH 40N30A/S	300 V	60 A	2.1 V	120ns
IXGH 40N30B/S	300 V	60 A	2.4 V	75 ns

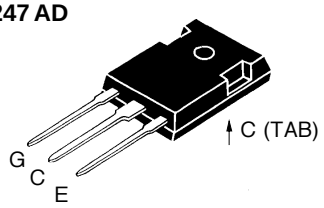
Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	300	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	300	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	60	A
I_{C90}	T_C = 90°C	40	A
I_{CM}	T_C = 25°C, 1 ms	160	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 10 Ω Clamped inductive load, L = 30 µH	I_{CM} = 80 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	200	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
Maximum Tab temperature for soldering SMD devices for 10 s		260	°C
M_d	Mounting torque (M3)	1.13/10	Nm/lb.in.
Weight	TO-247 AD	6	g
	TO-247 SMD	4	g

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 250 µA, V_{GE} = 0 V		300			V
$V_{GE(th)}$	I_C = 250 µA, V_{CE} = V_{GE}		2.5		5	V
I_{CES}	V_{CE} = 0.8 V_{CES} V_{GE} = 0 V	T_J = 25°C T_J = 125°C			200 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	40N30 40N30A 40N30B			1.8 2.1 2.4	V V V

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

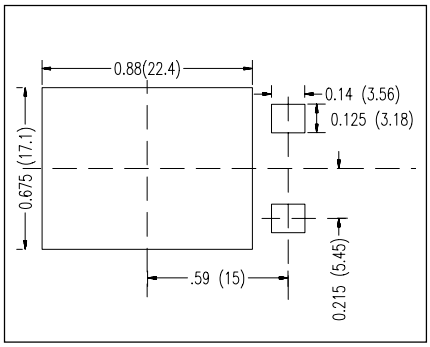
Advantages

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

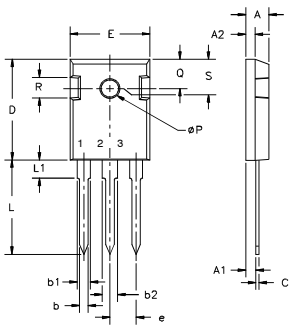
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Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	$I_C = I_{C90}$; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %		20	28		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz			2500		pF
C_{oes}				210		pF
C_{res}				60		pF
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}			145	170	nC
Q_{ge}				23	35	nC
Q_{gc}				50	75	nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**			25		ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V,			40		ns
$t_{d(off)}$	L = 100 µH,	40N30		170		ns
	V_{CE} = 0.8 V_{CES},	40N30A		100		ns
	$R_G = R_{off}$ = 1.0 Ω	40N30B		75		ns
t_{fi}	Switching times may	40N30		230		ns
	increase for V_{CE} (Clamp)	40N30A		120		ns
	> 0.8 V_{CES}, higher T_J or	40N30B		75		ns
E_{off}	increased R_G	40N30		1.6		mJ
		40N30A		0.75		mJ
		40N30B		0.3		mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**			25		ns
t_{ri}				40		ns
E_{on}	$I_C = I_{C90}$, V_{GE} = 15 V,			0.3		mJ
$t_{d(off)}$	L = 100 µH	40N30		250	500	ns
		40N30A		150	300	ns
	V_{CE} = 0.8 V_{CES},	40N30B		90	180	ns
	$R_G = R_{off}$ = 1.0 Ω	40N30		350	600	ns
t_{fi}	Switching times may	40N30A		220	330	ns
	increase for V_{CE} (Clamp)	40N30B		130	230	ns
	> 0.8 V_{CES}, higher T_J or	40N30		3.3	4.8	mJ
E_{off}	increased R_G	40N30A		1.6	2.4	mJ
		40N30B		0.6	1.4	mJ
R_{thJC}					0.62	K/W
R_{thCK}				0.25		K/W

Min. Recommended Footprint
(Dimensions in inches and mm)

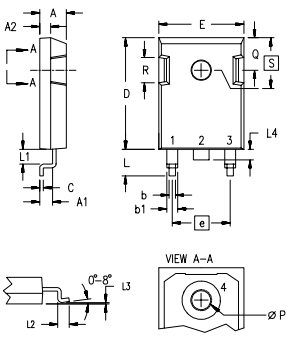


TO-247 AD Outline



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
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 Min.	Max.	Inches Min.	Max.
A	4.83	5.21	.190	.205
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b1	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	

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