IXYS

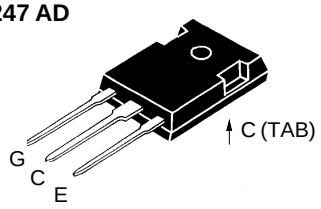
HiPerFAST™ IGBT

	V_{CES}	I_{C25}	$V_{CE(sat)}$	t_{fi}
IXGH 40N30	600 V	60 A	1.8 V	220ns
IXGH 40N30A	600 V	60 A	2.1 V	120ns
IXGH 40N30B	600 V	60 A	2.4 V	75 ns

Preliminary data

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
M_d	Mounting torque (M3)	1.13/10	Nm/lb.in.
Weight	TO-247 AD	6	g

TO-247 AD



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 = 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}	T_J = 25°C			200	μA
	V_{GE} = 0 V	T_J = 125°C			1	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			1.8	V
		40N30A			2.1	V
		40N30B			2.4	V

Features

- International standard package JEDEC TO-247 AD
- High current handling capability
- Newest generation HDMOS™ process
- MOS Gate turn-on - drive simplicity

Applications

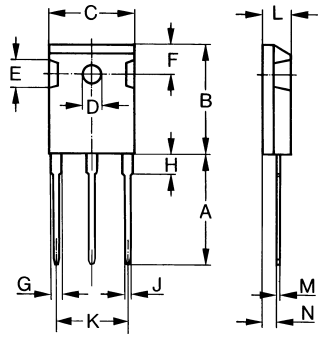
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

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°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}				40		ns
$t_{d(off)}$	$I_C = I_{C90}$, V_{GE} = 15 V, L = 100 µH, V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 1.0 Ω	40N30		170		ns
		40N30A		100		ns
		40N30B		75		ns
t_{fi}	Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G	40N30		230		ns
		40N30A		120		ns
		40N30B		75		ns
E_{off}		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, L = 100 µH, V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 1.0 Ω			0.3		mJ
$t_{d(off)}$		40N30		250	500	ns
		40N30A		150	300	ns
		40N30B		90	180	ns
t_{fi}	Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G	40N30		350	600	ns
		40N30A		220	330	ns
		40N30B		130	230	ns
E_{off}		40N30		3.3	4.8	mJ
		40N30A		1.6	2.4	mJ
		40N30B		0.6	1.4	mJ
R_{thJC}					0.62	K/W
R_{thCK}				0.25		K/W

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