IXYS

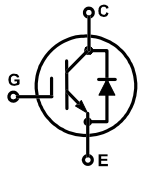
High Voltage IGBT with Diode

IXDH 30N120AU1
IXDT 30N120AU1

V_{CES} = 1200 V
I_{C25} = 50 A
$V_{CE(sat)\ typ}$ = 2.5 V

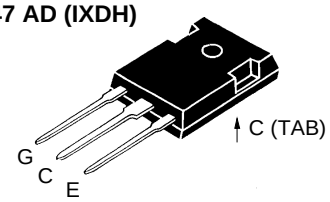
Short Circuit SOA Capability

Preliminary Data

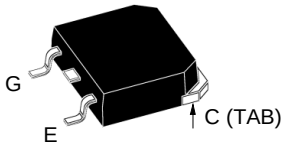


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	50	A
I_{C90}	T_C = 90°C	31	A
I_{CM}	T_C = 25°C, 1 ms	100	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 47 Ω Clamped inductive load, L = 30 µH	I_{CM} = 50 @ V_{CES}	A
t_{SC} **(SCSOA)**	V_{GE} = 15 V, V_{CE} = V_{CES}, T_J = 125°C R_G = 47 Ω, non repetitive	10	µs
P_C	T_C = 25°C IGBT	300	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
M_d	Mounting torque	1.1/10	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-247 AD (IXDH)



TO-268 AA (IXDT)



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 = 5 mA, V_{GE} = 0 V	1200			V
$V_{GE(th)}$	I_C = 1 mA, V_{CE} = V_{GE}	4	5.5	6.5	V
I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0 V T_J = 25°C		0.9	1.1	mA
	V_{CE} = 0.8 • V_{CES}, V_{GE} = 0 V T_J = 125°C		2		mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V			±500	nA
$V_{CE(sat)}$	I_C = 25 A, V_{GE} = 15 V		2,5	3	V

Features

- Square RBSOA
- International standard package
- Low $V_{CE(sat)}$
  - for minimum on-state conduction losses
- Low package inductance
- Fast Recovery Epitaxial Diode
  - short t_{rr} and I_{RM}

Applications

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

Advantages

- Space savings
- High power density
- Surface mountable, high power packager

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

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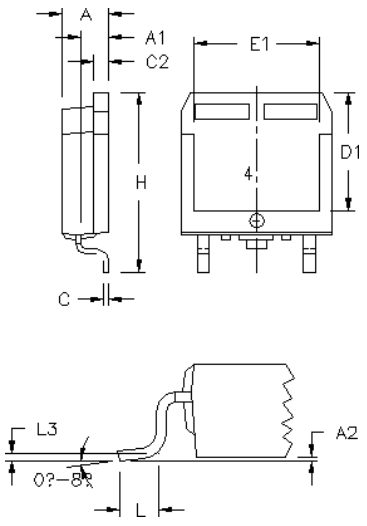
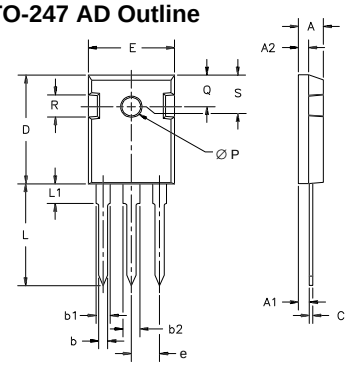
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1650		pF
C_{oes}			250		pF
C_{res}			110		pF
Q_g	I_C = 25 A, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		TBD		nC
Q_{ge}			TBD		nC
Q_{gc}			TBD		nC
$t_{d(on)}$	**Inductive load, T_J = 125°C**		75	150	ns
t_{ri}	I_C = 25 A, V_{GE} = 15 V,		65	130	ns
$t_{d(off)}$	V_{CE} = 0.5 V_{CES}, $R_{on/off}$ = 47 Ω		400	600	ns
t_{fi}	Remarks: Switching times may increase		50	100	ns
E_{on}	for V_{CE} (Clamp) > 0.5 • V_{CES}, higher T_J or		3.7		mJ
E_{off}	increased R_G		2.4		mJ
R_{thJC}				0.42	K/W
R_{thCK}			0.25		K/W

Reverse Diode (FRED)

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 25 A, V_{GE} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %		2.1	2.6	V
I_{RM}	I_F = 25 A, V_{GE} = 0 V, -di_F/dt = 200 A/µs V_R = 600 V T_J = 100°C		12	15	A
t_{rr}	I_F = 25 A, V_{GE} = 0 V, -di_F/dt = 200 A/µs V_R = 600 V T_J = 100°C		200		ns
	I_F = 1 A; -di/dt = 200 A/µs; V_R = 30 V T_J = 25°C		40	60	ns
R_{thJC}				1	K/W



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-268 AA Outline

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.9	5.1	.193	.201
A_1	2.7	2.9	.106	.114
A_2	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b_2	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E_1	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	0.25 BSC		.010 BSC	
L4	3.80	4.10	.150	.161