

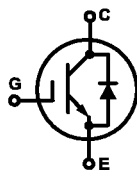
High Voltage IGBT with Diode

IXDH 30N120AU1
IXDT 30N120AU1

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

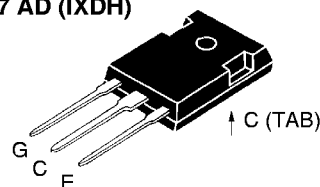
Short Circuit SOA Capability

Preliminary Data

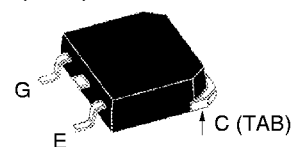


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1200	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1200	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	50	A
I_{C90}	$T_C = 90^\circ\text{C}$	31	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	100	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 47 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$	$I_{CM} = 50$ @ V_{CES}	A
t_{SC} (SCSOA)	$V_{GE} = 15 \text{ V}, V_{CE} = V_{CES}, T_J = 125^\circ\text{C}$ $R_G = 47 \Omega$, non repetitive	10	μs
P_c	$T_C = 25^\circ\text{C}$ IGBT	300	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
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	$^\circ\text{C}$

TO-247 AD (IXDH)



TO-268 AA (IXDT)



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

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_{tr} 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

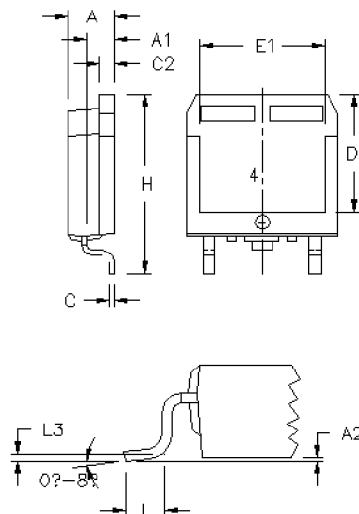
Advantages

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

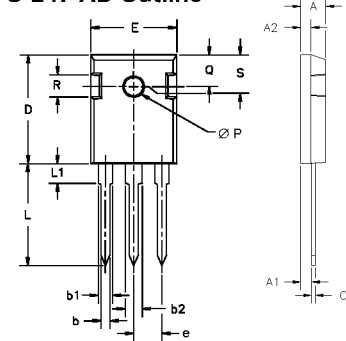
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 5 \text{ mA}, V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 1 \text{ mA}, V_{CE} = V_{GE}$	4	5.5	6.5 V
I_{CES}	$V_{CE} = V_{CES}, V_{GE} = 0 \text{ V}$ $T_J = 25^\circ\text{C}$ $V_{CE} = 0.8 \cdot V_{CES}, V_{GE} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$		0.9 2	1.1 mA mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			± 500 nA
$V_{CE(sat)}$	$I_C = 25 \text{ A}, V_{GE} = 15 \text{ V}$		2,5	3 V

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

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



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-268 AA Outline

Dim.	Millimeter		Inches	
	Min.	Max.	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	.075	.083
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

