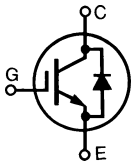
IXYS

Low $V_{CE(sat)}$ IGBT with Diode
High Speed IGBT with Diode

IXGH/IXGT 15N120BD1
IXGH/IXGT 15N120CD1

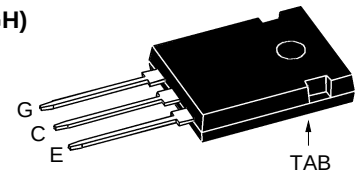
V_{DSS}	I_{C25}	$V_{CE(sat)}$
1200 V	30 A	3.2 V
1200 V	30 A	3.8 V

Preliminary data

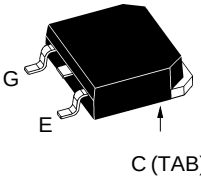


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	30	A
I_{C90}	T_C = 90°C	15	A
I_{CM}	T_C = 25°C, 1 ms	60	A
SSOA (RBSOA)	V_{GE} = 15 V, T_J = 125°C, R_G = 10 Ω Clamped inductive load	I_{CM} = 40 @0.8 V_{CES}	A
P_C	T_C = 25°C	150	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
M_d	Mounting torque	1.13/10	Nm/lb.in.
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C
Maximum tab temperature soldering SMD devices for 10s		260	°C
Weight	TO-247AD/TO-268	6/4	g

TO-247AD (IXGH)



TO-268 (IXGT)



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

Features

- International standard packages: JEDEC TO-247AD & TO-268
- IGBT and anti-parallel FRED in one package
- MOS Gate turn-on
  - drive simplicity
- Fast Recovery Expitaxial Diode (FRED)
  - soft recovery with low 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

- Saves space (two devices in one package)
- Easy to mount with 1 screw (isolated mounting screw hole)
- Reduces assembly time and cost

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 1 A, V_{GE} = 0 V		1200			V
$V_{GE(th)}$	I_C = 250 μA, V_{CE} = V_{GE}		2.5		5.0	V
I_{CES}	V_{CE} = V_{CES}	T_J = 25°C			500	μA
	V_{GE} = 0 V	T_J = 125°C		2		mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V	15N120BD1			3.2	V
	Note 2	15N120CD1			3.8	V

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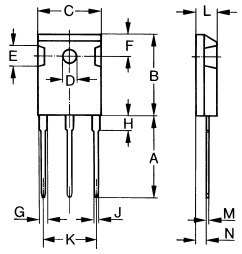
Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	$I_C = I_{C90}$; V_{CE} = 10 V, Note 2.		12	15		S
C_{ies}				1700		pF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz			155		pF
C_{res}				38		pF
Q_g				69		nC
Q_{ge}	$I_C = I_{C90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}			13		nC
Q_{gc}				26		nC
$t_{d(on)}$				25		ns
t_{ri}	**Inductive load, T_J = 25°C**			15		ns
$t_{d(off)}$	$I_C = I_{C90}$; V_{GE} = 15 V			150	280	ns
t_{fi}	V_{CE} = 0.8 V_{CES}; $R_G = R_{off}$ = 10 Ω Note 1.	15N120BD1		160	320	ns
		15N120CD1		115	190	ns
		15N120BD1		1.75	3.0	mJ
E_{off}		15N120CD1		1.05	1.6	mJ
$t_{d(on)}$				25		ns
t_{ri}	**Inductive load, T_J = 125°C**			18		ns
E_{on}	$I_C = I_{C90}$; V_{GE} = 15 V			1.5		mJ
$t_{d(off)}$	V_{CE} = 0.8 V_{CES}; $R_G = R_{off}$ = 10 Ω			270		ns
t_{fi}	Note 1	15N120BD1		360		ns
		15N120CD1		250		mJ
		15N120BD1		3.5		mJ
E_{off}		15N120CD1		2.1		mJ
R_{thJC}					0.83	K/W
R_{thCK}	TO-247			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 = 20 A, V_{GE} = 0 V		2.6	2.8	V
	I_F = 20 A, V_{GE} = 0 V, T_J = 125°C		2.1		V
I_F	T_C = 25°C			33	V
	T_C = 90°C			20	V
I_{RM}	I_F = 20 A; -di$_F$/dt = 400 A/µs, V_R = 600 V		15		A
t_{rr}	V_{GE} = 0 V; T_J = 125°C		200		ns
t_{rr}	I_F = 1 A; -di$_F$/dt = 100 A/µs; V_R = 30 V, V_{GE} = 0 V		40		ns
R_{thJC}				1.6	K/W

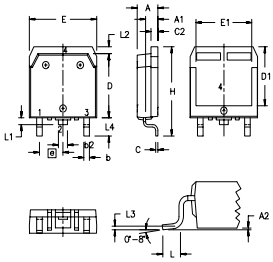
Notes:
1. Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G.
2. Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %

TO-247 AD (IXGH) Outline



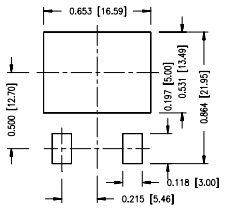
Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

TO-268AA (D³ PAK)



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

Min. Recommended Footprint



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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