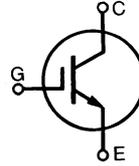


# IGBT

## Lightspeed Series

**IXGH 15N120C**  
**IXGT 15N120C**

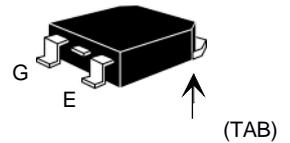
**V<sub>CES</sub> = 1200 V**  
**I<sub>C25</sub> = 30 A**  
**V<sub>CE(sat)</sub> = 3.8 V**  
**t<sub>fi(typ)</sub> = 115 ns**



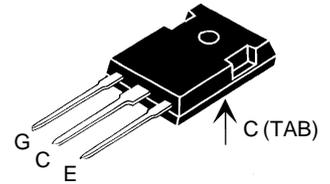
Preliminary data

Symbol	Test Conditions	Maximum Ratings	
V <sub>CES</sub>	T <sub>J</sub> = 25°C to 150°C	1200	V
V <sub>CGR</sub>	T <sub>J</sub> = 25°C to 150°C; R <sub>GE</sub> = 1 MΩ	1200	V
V <sub>GES</sub>	Continuous	±20	V
V <sub>GEM</sub>	Transient	±30	V
I <sub>C25</sub>	T <sub>C</sub> = 25°C	30	A
I <sub>C90</sub>	T <sub>C</sub> = 90°C	15	A
I <sub>CM</sub>	T <sub>C</sub> = 25°C, 1 ms	60	A
<b>SSOA</b> <b>(RBSOA)</b>	V <sub>GE</sub> = 15 V, T <sub>VJ</sub> = 125°C, R <sub>G</sub> = 10 Ω Clamped inductive load	I <sub>CM</sub> = 40 @ 0.8 V <sub>CES</sub>	A
P <sub>C</sub>	T <sub>C</sub> = 25°C	150	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-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 <sub>d</sub>	Mounting torque (M3)	1.13/10 Nm/lb.in.	
Weight	TO-247 AD	6	g
	TO-268	4	g

### TO-268 (IXGT)



### TO-247 AD (IXGH)



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

### Features

- International standard packages  
JEDEC TO-268 surface and  
JEDEC TO-247 AD
- Low switching losses
- 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

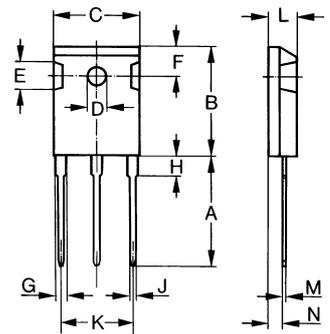
### Advantages

- High power density
- Suitable for surface mounting
- Easy to mount with 1 screw,  
(mounting screw hole)

Symbol	Test Conditions	Characteristic Values (T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
BV <sub>CES</sub>	I <sub>C</sub> = 250 μA, V <sub>GE</sub> = 0 V	1200		V
V <sub>GE(th)</sub>	I <sub>C</sub> = 250 μA, V <sub>CE</sub> = V <sub>GE</sub>	2.5		V
I <sub>CES</sub>	V <sub>CE</sub> = V <sub>CES</sub> V <sub>GE</sub> = 0 V			100 μA 3.5 mA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = ±20 V			±100 nA
V <sub>CE(sat)</sub>	I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V T <sub>J</sub> = 125°C	3.0		3.8 V V

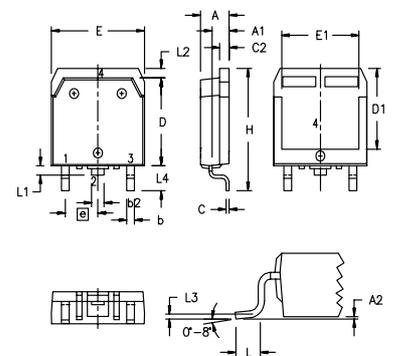
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$g_{fs}$	$I_C = I_{C90}$ ; $V_{CE} = 10\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$	12	15	S	
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		1720	pF	
$C_{oes}$			95	pF	
$C_{res}$			35	pF	
$Q_g$	$I_C = I_{C90}$ ; $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		69	nC	
$Q_{ge}$			13	nC	
$Q_{gc}$			26	nC	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		25	ns	
$t_{ri}$			15	ns	
$t_{d(off)}$			150	200	ns
$t_{fi}$			115	190	ns
$E_{off}$			1.05	1.6	mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		25	ns	
$t_{ri}$			18	ns	
$E_{on}$			0.60	mJ	
$t_{d(off)}$			220	ns	
$t_{fi}$			250	ns	
$E_{off}$		2.1	mJ		
$R_{thJC}$				0.83 K/W	
$R_{thCK}$	(TO-247)		0.25	K/W	

### TO-247 AD (IXGH) Outline



Dim.	Millimeter		Inches	
	Min.	Max.	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 (D<sup>3</sup> PAK)



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A <sub>1</sub>	2.7	2.9	.106	.114
A <sub>2</sub>	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b <sub>2</sub>	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 <sub>1</sub>	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
L <sub>1</sub>	1.20	1.40	.047	.055
L <sub>2</sub>	1.00	1.15	.039	.045
L <sub>3</sub>	0.25 BSC		.010 BSC	
L <sub>4</sub>	3.80	4.10	.150	.161

### Min. Recommended Footprint

