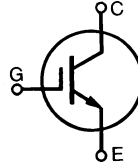


# HiPerFAST™ IGBT

**IXGA 15N120B**  
**IXGP 15N120B**

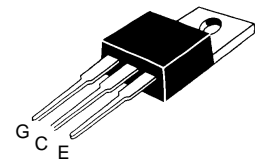
**V<sub>CES</sub> = 1200 V**  
**I<sub>C25</sub> = 30 A**  
**V<sub>CE(sat)</sub> = 3.2 V**  
**t<sub>fi(typ)</sub> = 160 ns**



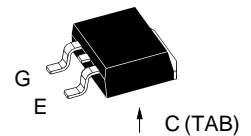
Preliminary data

Symbol	Test Conditions	Maximum Ratings	
<b>V<sub>CES</sub></b>	T <sub>J</sub> = 25°C to 150°C	1200	V
<b>V<sub>CGR</sub></b>	T <sub>J</sub> = 25°C to 150°C; R <sub>GE</sub> = 1 MΩ	1200	V
<b>V<sub>GES</sub></b>	Continuous	±20	V
<b>V<sub>GEM</sub></b>	Transient	±30	V
<b>I<sub>C25</sub></b>	T <sub>C</sub> = 25°C	30	A
<b>I<sub>C90</sub></b>	T <sub>C</sub> = 90°C	15	A
<b>I<sub>CM</sub></b>	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
<b>P<sub>C</sub></b>	T <sub>C</sub> = 25°C	150	W
<b>T<sub>J</sub></b>		-55 ... +150	°C
<b>T<sub>JM</sub></b>		150	°C
<b>T<sub>stg</sub></b>		-55 ... +150	°C
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C
<b>M<sub>d</sub></b>	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45/4 0.55/5	Nm/lb.in.
<b>Weight</b>	TO-220 TO-263	4 2	g

## TO-220AB (IXGP)



## TO-263 AA (IXGA)



## Features

- International standard packages JEDEC TO-220AB and TO-263AA
- Low switching losses, low V<sub>CE(sat)</sub>
- MOS Gate turn-on - drive simplicity

## Applications

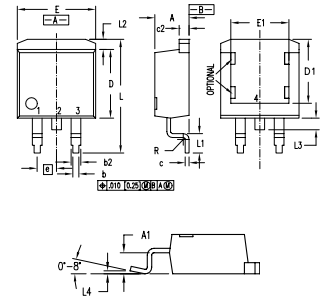
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

## Advantages

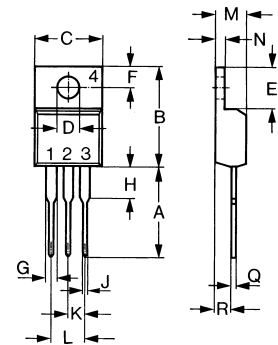
- Easy to mount with one screw
- Reduces assembly time and cost
- High power density

Symbol	Test Conditions (T <sub>J</sub> = 25°C, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
<b>BV<sub>CES</sub></b>	I <sub>C</sub> = 250 μA, V <sub>GE</sub> = 0 V	1200		V
<b>V<sub>GE(th)</sub></b>	I <sub>C</sub> = 250 μA, V <sub>CE</sub> = V <sub>GE</sub>	2.5		V
<b>I<sub>CES</sub></b>	V <sub>CE</sub> = V <sub>CES</sub> , T <sub>J</sub> = 25°C			100 μA
	V <sub>GE</sub> = 0 V, T <sub>J</sub> = 125°C			3.5 mA
<b>I<sub>GES</sub></b>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = ±20 V			±100 nA
<b>V<sub>CE(sat)</sub></b>	I <sub>C</sub> = I <sub>CE90</sub> , V <sub>GE</sub> = 15			3.2 V
	T <sub>J</sub> = 125°C	2.5		V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values			
		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> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 960\text{ V}$ , $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ , higher $T_J$ or increased $R_G$		25	ns	
$t_{ri}$			15	ns	
$t_{d(off)}$			180	280	ns
$t_{fi}$			160	320	ns
$E_{off}$			1.75	3.0	mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 960\text{ V}$ , $R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 V_{CES}$ , higher $T_J$ or increased $R_G$		25	ns	
$t_{ri}$			18	ns	
$E_{on}$			0.60	mJ	
$t_{d(off)}$			300	ns	
$t_{fi}$			360	ns	
$E_{off}$		3.5	mJ		
$R_{thJC}$	TO-220		0.83	K/W	
$R_{thCK}$			0.5	K/W	

**TO-263 AA (IXGA) Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029

**TO-220 AB (IXGP) Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.35	0.56	0.014	0.022
R	2.29	2.79	0.090	0.110

**Min. Recommended Footprint**
