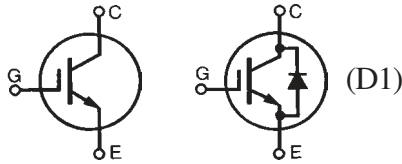


# HiPerFAST™ IGBT

**IXGK 35N120B**  
**IXGX 35N120B**  
**IXGK 35N120BD1**  
**IXGX 35N120BD1**

$$\begin{aligned}
 V_{CES} &= 1200 \text{ V} \\
 I_{C25} &= 70 \text{ A} \\
 V_{CE(sat)} &= 3.3 \text{ V} \\
 t_{fi(typ)} &= 160 \text{ ns}
 \end{aligned}$$

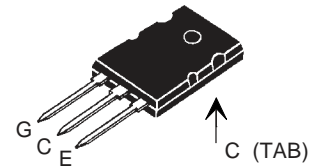


Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1200	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 1 \text{ M}\Omega$	1200	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	70	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	35	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	140	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 5 \Omega$ Clamped inductive load	$I_{CM} = 90$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	350	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
Maximum Lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

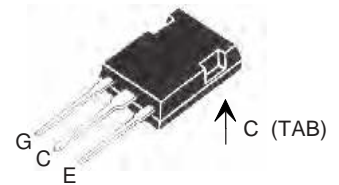
$M_d$	Mounting torque (M3) (IXGK)	1.13/10Nm/lb.in.
<b>Weight</b>	TO-264 AA	10 g
	PLUS247™	6 g

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 1 \text{ mA}$ , $V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 750 \mu\text{A}$ , $V_{CE} = V_{GE}$	2.5		V
$I_{CES}$	$V_{CE} = V_{CES}$ $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		250 $\mu\text{A}$
		$T_J = 125^\circ\text{C}$		5 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15 \text{ V}$		2.7	3.3 V
				$T_J = 125^\circ\text{C}$

## TO-264 AA (IXGK)



## PLUS 247™ (IXGX)



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

## Features

- International standard packages JEDEC TO-264 and PLUS247™
- Low switching losses, low  $V_{(sat)}$
- MOS Gate turn-on - drive simplicity

## Applications

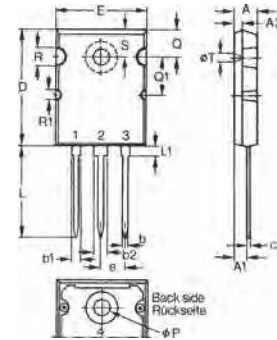
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

## Advantages

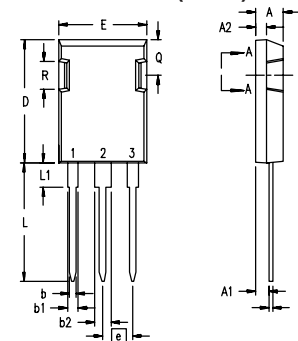
- High power density
- Easy to mount with 1 screw, (isolated mounting screw hole)
- Spring clip or clamp assembly possible.

Symbol	Test Conditions	Characteristic Values			
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
<b>g<sub>fs</sub></b>	I <sub>C</sub> = I <sub>C90</sub> ; V <sub>CE</sub> = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %	30	40	S	
<b>C<sub>ies</sub></b>	V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz		4620	pF	
<b>C<sub>oes</sub></b>			260	pF	
<b>C<sub>res</sub></b>			90	pF	
<b>Q<sub>g</sub></b>	I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V, V <sub>CE</sub> = 0.5 V <sub>CES</sub>		170	nC	
<b>Q<sub>ge</sub></b>			28	nC	
<b>Q<sub>gc</sub></b>			57	nC	
<b>t<sub>d(on)</sub></b>	<b>Inductive load, T<sub>J</sub> = 25°C</b> I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V V <sub>CE</sub> = 0.8 V <sub>CES</sub> , R <sub>G</sub> = R <sub>off</sub> = 5 Ω Remarks: Switching times may increase for V <sub>CE</sub> (Clamp) > 0.8 • V <sub>CES</sub> , higher T <sub>J</sub> or increased R <sub>G</sub>		50	ns	
<b>t<sub>ri</sub></b>			27	ns	
<b>t<sub>d(off)</sub></b>			180	280	ns
<b>t<sub>fi</sub></b>			160	320	ns
<b>E<sub>off</sub></b>			3.8	7.3	mJ
<b>t<sub>d(on)</sub></b>	<b>Inductive load, T<sub>J</sub> = 125°C</b> I <sub>C</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 15 V V <sub>CE</sub> = 0.8 V <sub>CES</sub> , R <sub>G</sub> = R <sub>off</sub> = 5 Ω Remarks: Switching times may increase for V <sub>CE</sub> (Clamp) > 0.8 • V <sub>CES</sub> , higher T <sub>J</sub> or increased R <sub>G</sub>		55	ns	
<b>t<sub>ri</sub></b>			31	ns	
<b>E<sub>on</sub></b>			2.6	mJ	
<b>t<sub>d(off)</sub></b>			300	ns	
<b>t<sub>fi</sub></b>			360	ns	
<b>E<sub>off</sub></b>		8.0	mJ		
<b>R<sub>thJC</sub></b>				0.35 K/W	
<b>R<sub>thCK</sub></b>		0.15		K/W	

Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>V<sub>F</sub></b>	I <sub>F</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %, T <sub>J</sub> = 125°C			2.35 V
<b>I<sub>RM</sub></b>	I <sub>F</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 0 V, -di <sub>F</sub> /dt = 480 A/μs V <sub>R</sub> = 540 V I <sub>F</sub> = 1 A; -di <sub>F</sub> /dt = 200 A/μs; V <sub>R</sub> = 30 V		32	36 A
<b>t<sub>rr</sub></b>		T <sub>J</sub> = 100°C	225	ns
		T <sub>J</sub> = 25°C	40	60
<b>R<sub>thJC</sub></b>				0.65 K/W

**TO-264 AA Outline (IXGK)**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

**PLUS247™ Outline (IXGX)**


Terminals: 1 - Gate  
2 - Drain (Collector)  
3 - Source (Emitter)  
4 - Drain (Collector)

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A <sub>1</sub>	2.29	2.54	.090	.100
A <sub>2</sub>	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b <sub>1</sub>	1.91	2.13	.075	.084
b <sub>2</sub>	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	0.244
R	4.32	4.83	.170	.190

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

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  
4,850,072    4,931,844    5,034,796

5,049,961    5,187,117    5,486,715    6,306,728B1  
5,063,307    5,237,481    5,381,025



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