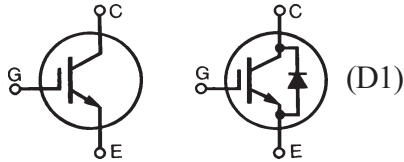


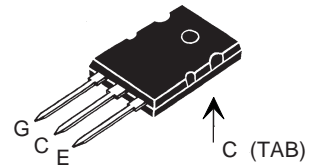
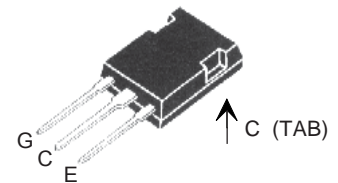
# HiPerFAST™ IGBT

**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
$I_{CM}$	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	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 $^\circ\text{C}$

**TO-264 AA (IXGK)**

**PLUS 247™ (IXGX)**


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

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

**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**

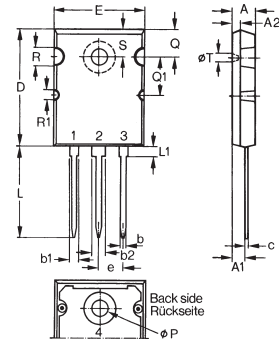
- High power density
- Easy to mount with 1 screw, (isolated mounting screw hole)
- Spring clip or clamp assembly possible.

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , 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
$I_{GES}$	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100$ nA
$V_{CE(sat)}$	$I_C = I_{C90}, V_{GE} = 15 \text{ V}$	$T_J = 125^\circ\text{C}$	2.7	3.3 V
				V

Symbol	Test Conditions	Characteristic Values			
		(T <sub>J</sub> = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g <sub>fs</sub>	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	
C <sub>ies</sub>	V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz		4620	pF	
C <sub>oes</sub>			260	pF	
C <sub>res</sub>			90	pF	
Q <sub>g</sub>	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	
Q <sub>ge</sub>			28	nC	
Q <sub>gc</sub>			57	nC	
t <sub>d(on)</sub>	<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	
t <sub>ri</sub>			27	ns	
t <sub>d(off)</sub>			180	280	ns
t <sub>fi</sub>			160	320	ns
E <sub>off</sub>			3.8	7.3	mJ
t <sub>d(on)</sub>	<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	
t <sub>ri</sub>			31	ns	
E <sub>on</sub>			2.6	mJ	
t <sub>d(off)</sub>			300	ns	
t <sub>fi</sub>			360	ns	
E <sub>off</sub>		8.0	mJ		
R <sub>thJC</sub>				0.35 K/W	
R <sub>thCK</sub>			0.15	K/W	

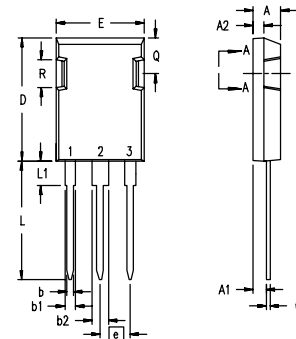
Symbol	Test Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
V <sub>F</sub>	I <sub>F</sub> = I <sub>C90</sub> , V <sub>GE</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %, T <sub>J</sub> = 125°C			2.35 V
I <sub>RM</sub>	I <sub>F</sub> = 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/dt = 200 A/μs; V <sub>R</sub> = 30 V		32	36 A
t <sub>rr</sub>		T <sub>J</sub> = 100°C	225	ns
		T <sub>J</sub> = 25°C	40	60
R <sub>thJC</sub>				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 5,049,961 5,187,117 5,486,715 6,306,728B1  
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025