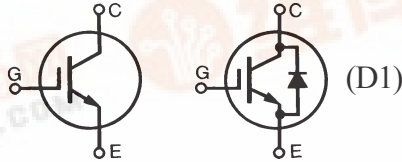




Preliminary Data Sheet

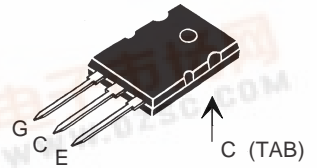
**HiPerFAST™ IGBT IXGK 35N120C**  
**IXGX 35N120C**  
**IXGK 35N120CD1**  
**IXGX 35N120CD1**

**V<sub>CES</sub> = 1200 V**  
**I<sub>C25</sub> = 70 A**  
**V<sub>CE(sat)</sub> = 4.0 V**  
**t<sub>fi(typ)</sub> = 115 ns**

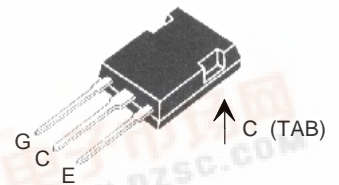


Symbol	Test Conditions	Maximum Ratings
V <sub>CES</sub>	T <sub>J</sub> = 25°C to 150°C	1200 V
V <sub>CGR</sub>	T <sub>J</sub> = 25°C to 150°C; R <sub>GE</sub> = 1 MΩ	1200 V
V <sub>GES</sub>	Continuous	±20 V
V <sub>GEM</sub>	Transient	±30 V
I <sub>C25</sub>	T <sub>C</sub> = 25°C	70 A
I <sub>C90</sub>	T <sub>C</sub> = 90°C	35 A
I <sub>CM</sub>	T <sub>C</sub> = 25°C, 1 ms	140 A
<b>SSOA (RBSOA)</b>	V <sub>GE</sub> = 15 V, T <sub>VJ</sub> = 125°C, R <sub>G</sub> = 5 Ω Clamped inductive load	I <sub>CM</sub> = 90 A @ 0.8 V <sub>CES</sub>
P <sub>C</sub>	T <sub>C</sub> = 25°C	350 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
M <sub>d</sub>	Mounting torque (M3) (IXGK)	1.13/10Nm/lb.in.
<b>Weight</b>	TO-264AA	10 g
	PLUS247™	6 g

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<sub>(sat)</sub>
- 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**

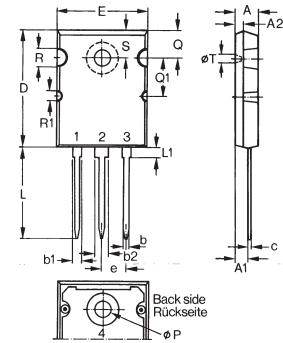
- High power density
- Easy to mount with 1 screw, (isolated mounting screw hole)
- Spring clip or clamp assembly possible.

Symbol	Test Conditions	Characteristic Values (T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
BV <sub>CES</sub>	I <sub>C</sub> = 1 mA, V <sub>GE</sub> = 0 V	1200		5 V
V <sub>GE(th)</sub>	I <sub>C</sub> = 750 μA, V <sub>CE</sub> = V <sub>GE</sub>	2.5		5 V
I <sub>CES</sub>	V <sub>CE</sub> = V <sub>CES</sub> V <sub>GE</sub> = 0 V		T <sub>J</sub> = 25°C T <sub>J</sub> = 125°C	250 μA 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		3.2	4.0 V V

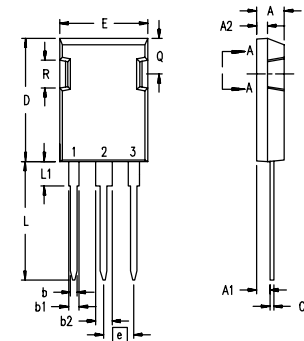


Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$g_{fs}$	$I_C = I_{C90}$ ; $V_{CE} = 10\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$	30	40	S	
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		4620	pF	
$C_{oes}$			260	pF	
$C_{res}$			90	pF	
$Q_g$	$I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		170	nC	
$Q_{ge}$			28	nC	
$Q_{gc}$			57	nC	
$t_{d(on)}$	<b>Inductive load, <math>T_J = 25^\circ\text{C}</math></b>  $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 5\ \Omega$  Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		50	ns	
$t_{ri}$			27	ns	
$t_{d(off)}$			150	220	ns
$t_{fi}$			115	190	ns
$E_{off}$			3.0	4.2	mJ
$t_{d(on)}$			<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b>  $I_C = I_{C90}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}$ , $R_G = R_{off} = 5\ \Omega$  Remarks: Switching times may increase for $V_{CE}$ (Clamp) $> 0.8 \cdot V_{CES}$ , higher $T_J$ or increased $R_G$		55
$t_{ri}$	31	ns			
$E_{on}$	2.6	mJ			
$t_{d(off)}$	220	ns			
$t_{fi}$	260	ns			
$E_{off}$	6.2	mJ			
$R_{thJC}$			0.35	K/W	
$R_{thCK}$		0.15		K/W	

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)			
		min.	typ.	max.	
$V_F$	$I_F = I_{C90}$ , $V_{GE} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$ , $T_J = 125^\circ\text{C}$			2.35	V
$I_{RM}$	$I_F = I_{C90}$ , $V_{GE} = 0\text{ V}$ , $-di_F/dt = 480\text{ A}/\mu\text{s}$ $V_R = 540\text{ V}$ $T_J = 100^\circ\text{C}$ $I_F = 1\text{ A}$ ; $-di_F/dt = 200\text{ A}/\mu\text{s}$ ; $V_R = 30\text{ V}$ $T_J = 25^\circ\text{C}$		32	36	A
$t_{rr}$			225		ns
			40	60	ns
$R_{thJC}$			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	5.46BSC		.215BSC	
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
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b1	1.91	2.13	.075	.084
b2	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