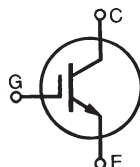


### GenX3™ 1200V IGBTs

### IXGK120N120B3

### IXGX120N120B3

High Speed Low V<sub>sat</sub> PT IGBTs  
for 3-20 kHz Switching



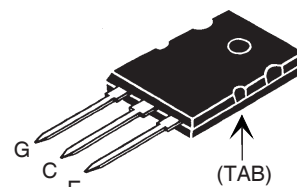
$$V_{CES} = 1200V$$

$$I_{C90} = 120A$$

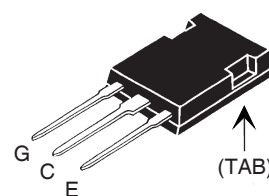
$$V_{CE(sat)} \leq 3.0V$$

Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^{\circ}C$ to $150^{\circ}C$	1200	V
$V_{CGR}$	$T_J = 25^{\circ}C$ to $150^{\circ}C$ , $R_{GE} = 1M\Omega$	1200	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^{\circ}C$ ( Chip Capability )	200	A
$I_{C90}$	$T_C = 90^{\circ}C$	120	A
$I_{LRMS}$	Terminal Current Limit	120	A
$I_{CM}$	$T_C = 25^{\circ}C$ , 1ms	370	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^{\circ}C$ , $R_G = 2\Omega$ Clamped Inductive Load	$I_{CM} = 240$ $V_{CES} \leq 1200$	A V
$P_C$	$T_C = 25^{\circ}C$	830	W
$T_J$		-55 ... +150	$^{\circ}C$
$T_{JM}$		150	$^{\circ}C$
$T_{stg}$		-55 ... +150	$^{\circ}C$
$T_L$	Maximum Lead Temperature for Soldering	300	$^{\circ}C$
$T_{SOLD}$	1.6 mm (0.062 in.) from Case for 10	260	$^{\circ}C$
$M_d$	Mounting Torque ( IXGK )	1.13/10	Nm/lb.in.
$F_C$	Mounting Force ( IXGX )	20..120/4.5..27	N/lb.
<b>Weight</b>	TO-264	10	g
	PLUS247	6	g

TO-264 (IXGK)



PLUS 247™ (IXGX)



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

#### Features

- Optimized for Low Conduction and Switching Losses
- Square RBSOA
- International Standard Packages

#### Advantages

- High Power Density
- Low Gate Drive Requirement

#### Applications

- Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Battery Chargers
- Welding Machines
- Lamp Ballasts

Symbol	Test Conditions ( $T_J = 25^{\circ}C$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 250\mu A$ , $V_{CE} = 0V$	1200		V
$V_{GE(th)}$	$I_C = 1mA$ , $V_{CE} = V_{GE}$	3.0		5.0 V
$I_{CES}$	$V_{CE} = V_{CES}$ , $V_{GE} = 0V$ $T_J = 125^{\circ}C$			50 $\mu A$ 5 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 400$ nA
$V_{CE(sat)}$	$I_C = 100A$ , $V_{GE} = 15V$ , Note 1		2.4	3.0 V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = 60\text{A}$ , $V_{CE} = 10\text{V}$ , Note 1	40	70	S
$C_{ies}$	$V_{CE} = 25\text{V}$ , $V_{GE} = 0\text{V}$ , $f = 1\text{MHz}$		9700	pF
$C_{oes}$			670	pF
$C_{res}$			255	pF
$Q_{g(on)}$	$I_C = I_{C90}$ , $V_{GE} = 15\text{V}$ , $V_{CE} = 0.5 \cdot V_{CES}$		470	nC
$Q_{ge}$			67	nC
$Q_{gc}$			190	nC
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$ $V_{CE} = 600\text{V}$ , $R_G = 2\Omega$ Note 2		36	ns
$t_{ri}$			88	ns
$E_{on}$			5.5	mJ
$t_{d(off)}$	Note 2		275	ns
$t_{fi}$			145	ns
$E_{off}$			5.8	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 100\text{A}$ , $V_{GE} = 15\text{V}$ $V_{CE} = 600\text{V}$ , $R_G = 2\Omega$ Note 2		34	ns
$t_{ri}$			88	ns
$E_{on}$			6.1	mJ
$t_{d(off)}$	Note 2		315	ns
$t_{fi}$			570	ns
$E_{off}$			10.3	mJ
$R_{thJC}$				0.15 $^\circ\text{C/W}$
$R_{thCK}$			0.15	$^\circ\text{C/W}$

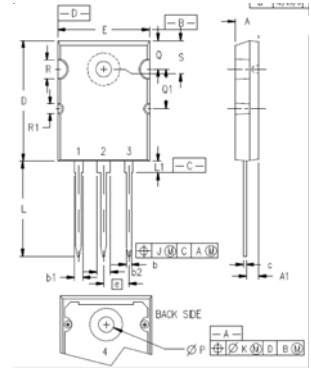
### Note

1. Pulse Test,  $t \leq 300\mu\text{s}$ , Duty Cycle,  $d \leq 2\%$ .
2. Switching Times may Increase for  $V_{CE} \text{ (Clamp)} > 0.8 V_{CES}$ , Higher  $T_J$  or Increased  $R_G$ .

### ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

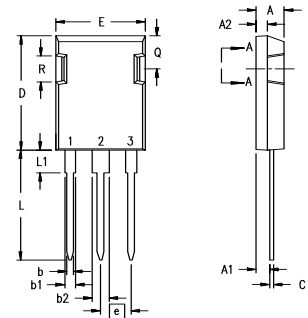
### TO-264 (IXGK) Outline



1 - GATE  
2, 4 - DRAIN (COLLECTOR)  
3 - SOURCE (EMITTER)

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
J	.000	.010	0.00	0.25
K	.000	.010	0.00	0.25
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
Q	.122	.138	3.10	3.51
Q1	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
Q1	.155	.187	3.94	4.75
Q1	.085	.093	2.16	2.36
S	.243	.253	6.17	6.43

### PLUS 247™ (IXGX) Outline



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

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

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	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	



---

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).