

GenX3™ 1200V IGBTs

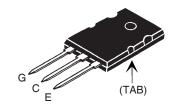
IXGK120N120B3 IXGX120N120B3

High Speed Low Vsat PT IGBTs for 3-20 kHz Switching

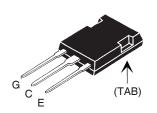


$\mathbf{V}_{\mathtt{CES}}$	=	1200V
I _{C90}	=	120A
V _{CE(sat)}	≤	3.0V

TO-264 (IXGK)



PLUS 247™ (IXGX)



G	= Gate	E	=	Emitter
С	= 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	Maximum F	Ratings
V _{CES}	T _J = 25°C to 150°C	1200	V
V _{CGR}	$T_{_{ m J}}$ = 25°C to 150°C, $R_{_{ m GE}}$ = 1M Ω	1200	V
V _{GES}	Continuous	±20	V
V _{GEM}	Transient	±30	V
I _{C25}	T _C = 25°C (Chip Capability)	200	A
I _{C90}	$T_{c} = 90^{\circ}C$	120	Α
LRMS	Terminal Current Limit	120	Α
I _{CM}	$T_{\rm C} = 25^{\circ}\text{C}$, 1ms	370	Α
SSOA	$V_{GF} = 15V, T_{V,I} = 125^{\circ}C, R_{G} = 2\Omega$	I _{CM} = 240	A
(RBSOA)	Clamped Inductive Load	$V_{CES} \le 1200$	V
P _c	T _C = 25°C	830	W
T _J		-55 +150	°C
\mathbf{T}_{JM}		150	°C
T _{stg}		-55 +150	°C
T _L	Maximum Lead Temperature for Soldering	300	°C
T _{SOLD}	1.6 mm (0.062 in.) from Case for 10	260	°C
M _d	Mounting Torque (IXGK)	1.13/10	Nm/lb.in.
F _c	Mounting Force (IXGX)	20120/4.527	N/lb.
Weight	TO-264 PLUS247	10 6	g g
	. 2002	O	9

•	est Conditions ess Otherwise Specified)		Charac Min.	teristic \ Typ.	/alues Max.	
BV _{CES} I _C	$_{c} = 250 \mu A, V_{CE} = 0 V$		1200			V
V _{GE(th)} I _C	$_{c}$ = 1mA, $V_{CE} = V_{GE}$		3.0		5.0	V
I _{CES} V	$V_{CE} = V_{CES, V_{GE}} = 0V$	T _J = 125°C				μA mA
I _{GES} V	$V_{CE} = 0V, V_{GE} = \pm 20V$				±400	nA
V _{CE(sat)}	= 100A, V _{GE} = 15V, Note	:1		2.4	3.0	V



Symbol	•		racteristic Values		
$(T_J = 25^{\circ}C, l)$	Unless Otherwise Specified)	Min.	Тур.	Max.	
g _{fs}	$I_{\rm C} = 60A, V_{\rm CE} = 10V, \text{ Note 1}$	40	70	S	
C _{ies}			9700	pF	
C _{oes}	$V_{CE} = 25V, V_{GE} = 0V, f = 1 MHz$		670	pF	
C _{res}			255	pF	
$Q_{g(on)}$			470	nC	
Q_{ge}	$I_{\text{C}} = I_{\text{C90}}, V_{\text{GE}} = 15\text{V}, V_{\text{CE}} = 0.5 \bullet V_{\text{CES}}$		67	nC	
Q _{gc}			190	nC	
t _{d(on)}			36	ns	
t _{ri}	Inductive load, T _J = 25°C		88	ns	
E _{on}	$I_{\rm C} = 100A, V_{\rm GE} = 15V$		5.5	mJ	
t _{d(off)}	$V_{CE} = 600V, R_{G} = 2\Omega$		275	ns	
t _{fi}	Note 2		145	ns	
E _{off}			5.8	mJ	
t _{d(on)}			34	ns	
t _{ri}	Inductive load, T _J = 125°C		88	ns	
E _{on}	$I_{\rm C} = 100A, V_{\rm GE} = 15V$		6.1	mJ	
t _{d(off)}	$V_{CE} = 600V$, $R_{G} = 2\Omega$		315	ns	
t _{fi}	Note 2		570	ns	
E _{off}			10.3	mJ	
R _{thJC}				0.15 °C/W	
R _{thCK}			0.15	°C/W	

TO-264 (IXGK) Outline							
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	4		St. Mbord	N D I D (B)			
	1 - GA	TE					
	2, 4 -	URCE (EM	OLLECTOR)				
	3 - 50	UNCE (EM	III IEK)				
SYM	INCH	HES	MILLIM	ETERS			
SIM	MIN	MAX	MIN	MAX			
		.209					
A	.185		4.70	5.31			
A1	.102	.118	2.59	3.00			
A1 b	.102	.118	2.59 0.94	3.00 1.40			
6 b	.102 .037 .087	.118 .055 .102	2.59 0.94 2.21	3.00 1.40 2.59			
b b1 b2	.102 .037 .087 .110	.118 .055 .102 .126	2.59 0.94 2.21 2.79	3.00 1.40 2.59 3.20			
b1 b2 c	.102 .037 .087 .110	.118 .055 .102 .126 .029	2.59 0.94 2.21 2.79 0.43	3.00 1.40 2.59 3.20 0.74			
A1 b b1 b2 c	.102 .037 .087 .110 .017 1.007	.118 .055 .102 .126 .029 1.047	2.59 0.94 2.21 2.79 0.43 25.58	3.00 1.40 2.59 3.20 0.74 26.59			
A1 b b1 b2 c D	.102 .037 .087 .110 .017 1.007	.118 .055 .102 .126 .029 1.047	2.59 0.94 2.21 2.79 0.43 25.58 19.30	3.00 1.40 2.59 3.20 0.74 26.59 20.29			
A1 b b1 b2 c D E	.102 .037 .087 .110 .017 1.007 .760	.118 .055 .102 .126 .029 1.047 .799 BSC	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC			
A1 b b1 b2 c D E	.102 .037 .087 .110 .017 1,007 .760 .215	.118 .055 .102 .126 .029 1.047 .799 BSC .010	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25			
A1 b b1 b2 c D E e J	.102 .037 .087 .110 .017 1.007 .760 .215 .000	.118 .055 .102 .126 .029 1.047 .799 BSC .010	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25			
A1 b b1 b2 c D E e J K	.102 .037 .087 .110 .017 1.007 .760 .215 .000	.118 .055 .102 .126 .029 1.047 .799 BSC .010 .010	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00 0.00	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 21.39			
A1 b b1 b2 c D E e J K L L L1	.102 .037 .087 .110 .017 1.007 .760 .215 .000 .000 .779	.118 .055 .102 .126 .029 1.047 .799 BSC .010 .010 .842 .102	2,59 0,94 2,21 2,79 0,43 25,58 19,30 5,46 0,00 19,79 2,21	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 21.39 2.59			
A1 b1 b2 c D E e J K L L1	.102 .037 .087 .110 .017 1.007 .760 .215 .000 .000 .779 .087	.118 .055 .102 .126 .029 1.047 .799 BBSC .010 .010 .842 .102	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00 0.00 19.79 2.21 3.10	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 0.25 21.39 2.59 3.51			
A1 b b1 b2 c D E e J K L L L1	.102 .037 .087 .110 .017 1.007 .760 .215 .000 .000 .779 .087 .122	.118 .055 .102 .126 .029 1.047 .799 BSC .010 .010 .842 .102 .138 .256	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00 0.00 19.79 2.21 3.10 6.10	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 21.39 2.59 3.51 6.50			
A1 b b1 b2 c D E e J K L L1 ØP	.102 .037 .087 .110 .017 1.007 .760 .215 .000 .000 .779 .087	.118 .055 .102 .126 .029 1.047 .799 BBSC .010 .010 .842 .102	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00 0.00 19.79 2.21 3.10	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 0.25 21.39 2.59 3.51			
A1 b b1 b2 c D E e J K L L1 ØP Q Q1	.102 .037 .087 .110 .017 .1007 .760 .215 .000 .000 .779 .087 .122 .240	.118 .055 .102 .126 .029 1.047 .799 .88C .010 .010 .842 .102 .138 .256	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00 0.00 1.00 2.21 3.10 6.10 8.38 3.94	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 21.39 2.59 3.51 6.50 8.79			
A1 b b1 b2 c c D E e J K L L1 ØP Q1 ØR	.102 .037 .087 .110 .017 1.007 .760 .215 .000 .000 .779 .087 .122 .240 .330	.118 .055 .102 .126 .029 1.047 .799 .8SC .010 .010 .842 .102 .138 .256 .346	2.59 0.94 2.21 2.79 0.43 25.58 19.30 5.46 0.00 0.00 19.79 2.21 3.10 6.10 8.38	3.00 1.40 2.59 3.20 0.74 26.59 20.29 BSC 0.25 0.25 21.39 2.59 3.51 6.50 8.79 4.75			

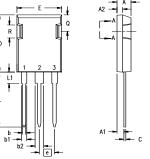
Note

- 1. Pulse Test, $t \le 300\mu s$, Duty Cycle, $d \le 2\%$.
- 2. Switching Times may Increase for V_{CE} (Clamp) > 0.8 V_{CES} , Higher T₁ or Increased R₆.

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.

PLUS 247™ (IXGX) Outline



Terminals: 1 - Gate

2 - Drain (Collector) 3 - Source (Emitter)

Dim.	Millimeter		Inc	hes
	Min.	Max.	Min.	Max.
Α	4.83	5.21	.190	.205
A_1	2.29	2.54	.090	.100
A_2	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b,	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
С	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
Е	15.75	16.13	.620	.635
е	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 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 by one or more of the following U.S. patents: 4,850,072 5,381,025 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2 5,017,508 5,063,307 6,259,123 B1 4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,771,478 B2 7,071,537



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