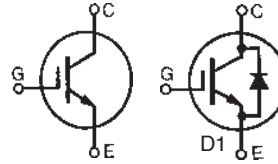


# HiPerFAST™ IGBT B2-Class High Speed IGBT in ISOPLUS220™ Case Electrically Isolated Back Surface

IXGC 16N60B2  
IXGC 16N60B2D1

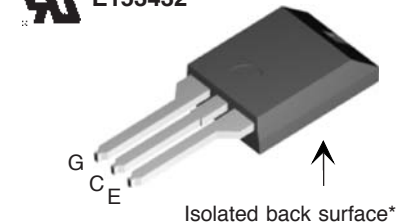
$V_{CES}$  = 600 V  
 $I_{C25}$  = 28 A  
 $V_{CE(sat)}$  = 2.3 V  
 $t_{fi(typ)}$  = 80 ns

Preliminary Data Sheet



Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	600	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 1\text{ M}\Omega$	600	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	28	A
$I_{C110}$	$T_C = 110^\circ\text{C}$	13	A
$I_{D110}$	$T_C = 110^\circ\text{C}$ (IXGC16N60B2D1 diode)	10	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	100	A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15\text{ V}$ , $T_J = 125^\circ\text{C}$ , $R_G = 22\ \Omega$ Clamped inductive load	$I_{CM} = 32$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	63	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-55 ... +150	$^\circ\text{C}$
$F_C$	Mounting Force	11..65/2.5..15	N/lb.
$V_{ISOL}$	Isolation Voltage; 50/60Hz; t = 1minute; RMS	2500	V
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
<b>Weight</b>		2	g

ISOPLUS 220™ (IXGC)  
E153432



G = Gate      C = Collector  
E = Emitter

## Features

- DCB Isolated mounting tab
- UL recognized (E153432)
- Meets TO-273 package Outline
- High current handling capability
- MOS Gate turn-on  
- drive simplicity
- Epoxy meets UL94V-0 flammability classification

## Applications

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

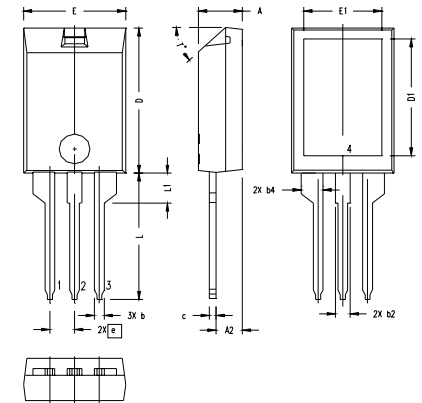
## Advantages

- Easy assembly
- High power density
- Very fast switching speeds for high frequency applications

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{GE(th)}$	$I_C = 250\ \mu\text{A}$ , $V_{CE} = V_{GE}$	2.5		5.0 V
$I_{CES}$	$V_{CE} = V_{CES}$ $V_{GE} = 0\text{ V}$			25 $\mu\text{A}$ 50 $\mu\text{A}$
$I_{GES}$	$V_{CE} = 0\text{ V}$ , $V_{GE} = \pm 20\text{ V}$			$\pm 100\text{ nA}$
$V_{CE(sat)}$	$I_C = 12\text{ A}$ , $V_{GE} = 15\text{ V}$ Note 2		1.8	2.3 V V

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$I_C = 12\text{A}; V_{CE} = 10\text{V}$ , Note 2.	8	12	S
$C_{ies}$	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		780	pF
$C_{oes}$		16N60B2	55	pF
		16N60B2D1	65	pF
$C_{res}$			19	pF
$Q_g$	$I_C = 20\text{A}, V_{GE} = 15\text{V}, V_{CE} = 0.5 V_{CES}$		32	nC
$Q_{ge}$			6	nC
$Q_{gc}$			10	nC
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b>		25	ns
$t_{ri}$			15	ns
$t_{d(off)}$	$I_C = 12\text{A}; V_{GE} = 15\text{V}$		70	150 ns
$t_{fi}$	$V_{CE} = 400\text{V}; R_G = R_{off} = 22\ \Omega$		80	150 ns
$E_{off}$	Note 1		150	260 mJ
$t_{d(on)}$	<b>Inductive load, <math>T_J = 125^\circ\text{C}</math></b>		25	ns
$t_{ri}$			18	ns
$E_{on}$		16N60B2	0.38	mJ
		16N60B2D 1	0.8	mJ
$t_{d(off)}$	$I_C = 12\text{A}; V_{GE} = 15\text{V}$		110	ns
$t_{fi}$	$V_{CE} = 400\text{V}; R_G = R_{off} = 22\ \Omega$		170	ns
$E_{off}$	Note 1		350	mJ
$R_{thJC}$				2.0 K/W
$R_{thCK}$			0.25	K/W

**ISOPLUS220 Outline**



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T*			42.5°	47.5°

NOTE:  
1. Bottom heatsink (Pin 4) is electrically isolated from Pin 1, 2, or 3.  
2. This drawing will meet dimensional requirement of JEDEC SS Product Outline 10-273 except D and D1 dimension.

**Reverse Diode (FRED)**

Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_F$	$I_F = 10\text{A}, V_{GE} = 0\text{V}$ $T_J = 125^\circ\text{C}$			2.66 V 1.66 V
$I_{RM}$	$I_F = 12\text{A}; -di_F/dt = 100\text{A}/\mu\text{s}, V_R = 100\text{V}$		2.5	A
$t_{rr}$	$V_{GE} = 0\text{V}; T_J = 125^\circ\text{C}$		110	ns
$t_{rr}$	$I_F = 1\text{A}; -di_F/dt = 100\text{A}/\mu\text{s}; V_R = 30\text{V}, V_{GE} = 0\text{V}$		30	ns
$R_{thJC}$				2.5 K/W

Notes: 1. Switching times may increase for  $V_{CE}$  (Clamp)  $> 0.8 \cdot V_{CES}$ , higher  $T_J$ , or increased  $R_G$ .  
2. Pulse test,  $t < 300\text{ms}$ , duty cycle  $d < 2\%$

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

IXYS MOSFETs and IGBTs are covered by	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
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	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	