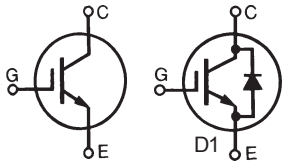
HiPerFAST™ IGBT
C2-Class High Speed
IGBT in ISOPLUS220™ Case
Electrically Isolated Back Surface

IXGC 16N60C2
IXGC 16N60C2D1

V_{CES} = 600 V
I_{C25} = 20 A
$V_{CE(sat)}$ = 3.0 V
$t_{fi(typ)}$ = 35 ns

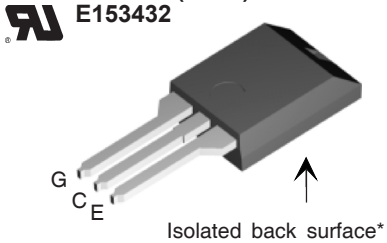
Preliminary Data Sheet



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	600	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	600	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	20	A
I_{C110}	T_C = 110°C	8	A
I_{D110}	T_C = 110°C (IXGC16N60C2D1 diode)	10	A
I_{CM}	T_C = 25°C, 1 ms	100	A
SSOA (RBSOA)	V_{GE} = 15 V, T_J = 125°C, R_G = 22 Ω Clamped inductive load	I_{CM} = 32 @0.8 V_{CES}	A
P_C	T_C = 25°C	63	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°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	°C
Weight		2	g

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
$V_{GE(th)}$	I_C = 250 μA, V_{CE} = V_{GE}		2.5		5.0	V
I_{CES}	V_{CE} = V_{CES} V_{GE} = 0 V	16N60C2 16N60C2D1			25 50	μA μA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = 12 A, V_{GE} = 15 V Note 2	 T_J=125°C		2.7 2.1	3.0	V V

ISOPLUS 220™ (IXGC)
E153432



Isolated back surface*

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

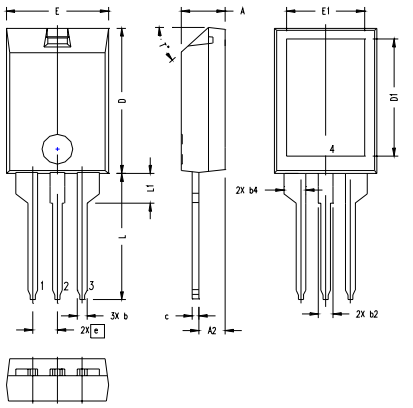
Advantages

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

© 2004 IXYS All rights reserved

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	I_C = 12A; V_{CE} = 10 V, Note 2.		8	12		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz			720		pF
C_{oes}		16N60C2		55		pF
		16N60C2D1		65		pF
C_{res}				19		pF
Q_g	I_C = 20A, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}			32		nC
Q_{ge}				6		nC
Q_{gc}				10		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**			25		ns
t_{ri}	I_C = 12 A; V_{GE} = 15 V			15		ns
$t_{d(off)}$	V_{CE} = 400 V; R_G = R_{off} = 22 Ω			60	120	ns
t_{fi}	Note 1.			35	100	ns
E_{off}				60	100	µJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**			25		ns
t_{ri}	I_C = 12A; V_{GE} = 15 V			18		ns
E_{on}	V_{CE} = 400 V; R_G = R_{off} = 22 Ω	16N60C2D1		0.38		mJ
$t_{d(off)}$	Note 1			115		ns
t_{fi}				70		ns
E_{off}				150		µJ
R_{thJC}					2.0	K/W
R_{thCK}				0.25		K/W

ISOPLUS220 Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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 TO-273 except D and D1 dimension.

Reverse Diode (FRED)

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

Notes: 1. Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J, or increased R_G.
2. Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %

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