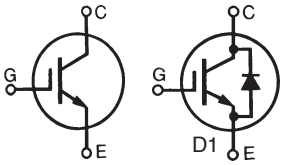
HiPerFAST™ IGBT B2-Class High Speed IGBT in ISOPLUS220™ Case

Electrically Isolated Back Surface

IXGC 16N60B2
IXGC 16N60B2D1

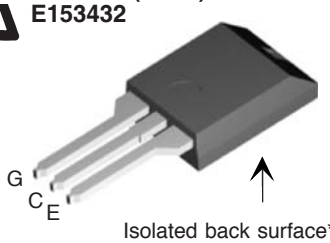
Preliminary Data Sheet

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



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	28	A
I_{C110}	T_C = 110°C	13	A
I_{D110}	T_C = 110°C (IXGC16N60B2D1 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

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

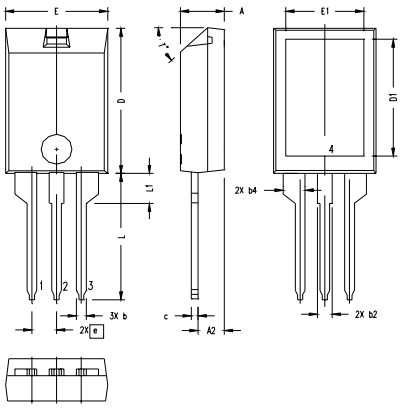
Applications
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies
- AC motor speed control
- DC servo and robot drives
- DC choppers

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

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	16N60B2 16N60B2D1			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		 1.8	2.3	V V

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			780		pF
C_{oes}		16N60B2		55		pF
		16N60B2D1		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 = 125°C**			25		ns
t_{ri}				15		ns
$t_{d(off)}$	I_C = 12A; V_{GE} = 15 V			70	150	ns
t_{fi}	V_{CE} = 400 V; R_G = R_{off} = 22 Ω			80	150	ns
E_{off}	Note 1			150	260	mJ
$t_{d(on)}$				25		ns
t_{ri}	**Inductive load, T_J = 125°C**			18		ns
E_{on}	I_C = 12A; V_{GE} = 15 V	16N60B2		0.38		mJ
		16N60B2D 1		0.8		mJ
$t_{d(off)}$	V_{CE} = 400 V; R_G = R_{off} = 22 Ω			110		ns
t_{fi}	Note 1			170		ns
E_{off}				350		mJ
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 ms, duty cycle d < 2 %