Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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IXYS

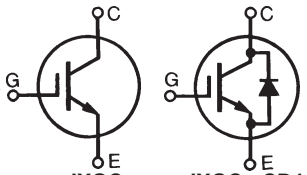
ADVANCE TECHNICAL INFORMATION

HiPerFAST™ IGBT
ISOPLUS247™

(Electrically Isolated Back Surface)

IXGC 12N60C
IXGC 12N60CD1

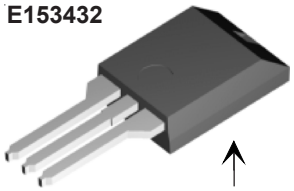
V_{CES} = 600 V
I_{C25} = 15 A
$V_{CE(sat)}$ = 2.7 V
$t_{fi(typ)}$ = 55 ns



IXGC IXGC - CD1

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	15	A
I_{C90}	T_C = 90°C	8	A
I_{CM}	T_C = 25°C, 1 ms	48	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 33 Ω Clamped inductive load, L = 300 μH	I_{CM} = 24 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	85	W
T_J		-40 ... +150	°C
T_{JM}		150	°C
T_{stg}		-40 ... +150	°C
V_{ISOL}	Isolation Voltage	2500	V
Weight		2	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C

ISOPLUS220™
E153432



Isolated back surface*

Features

- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- Low collector to tab capacitance (<35pF)
- 3rd generation HDMOS™ process $V_{CE(sat)}$
- Rugged polysilicon gate cell structure

Applications

- PFC circuits
- AC motor control
- Switched-mode and resonant-mode power supplies, UPS, no screws, or isolation foils
- DC choppers

Advantages

- Easy assembly
- Low capacitance to ground, low EMI

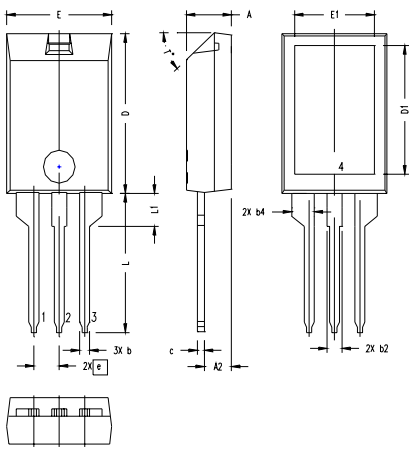
See IXGA12N60C data sheet for IGBT characteristic curves

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 250 μA, V_{GE} = 0 V	600			V
$V_{GE(th)}$	I_C = 250 μA, V_{GE} = V_{GE}	2.5		5.0	V
I_{CES}	V_{CE} = 0.8 • V_{CES} T_J = 25°C V_{GE} = 0 V T_J = 125°C			200 1.5	μA mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V			±100	nA
$V_{CE(sat)}$	I_C = I_T, V_{GE} = 15 V		2.1	2.7	V

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	$I_C = I_T$; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	7	11		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		860		pF
C_{oes}			64		pF
C_{res}			15		pF
Q_g	$I_C = I_T$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		32		nC
Q_{ge}			10		nC
Q_{gc}			10		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C**		20		ns
t_{ri}	$I_C = I_T$, V_{GE} = 15 V, L = 300 µH		20		ns
$t_{d(off)}$	V_{CE} = 0.8 • V_{CES}, $R_G = R_{off}$ = 18 Ω		60		ns
t_{fi}	Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G		55		ns
E_{off}			0.09		mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C**		20		ns
t_{ri}	$I_C = I_T$, V_{GE} = 15 V, L = 300 µH		20		ns
E_{on}	V_{CE} = 0.8 • V_{CES}, $R_G = R_{off}$ = 18 Ω		0.15		mJ
$t_{d(off)}$	Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G		85	180	ns
t_{fi}			85	180	ns
E_{off}			0.27	0.60	mJ
R_{thJC}				1.6	K/W
R_{thCK}			0.25		K/W

Note: I_T = 12A

ISOPLUS 220 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°

Notes:
1. Lead 1 = Gate
2. Lead 2 = Collector
3. Lead 3 = Emitter
4. Back surface 4 is electrically isolated from leads 1, 2 & 3

Reverse Diode (FRED) (IXGC12N60CD1 ONLY)

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 15A; T_{VJ} = 150°C		1.7		V
	T_{VJ} = 25°C			2.5	V
I_{RM}	V_R = 100 V; I_F =25A; -di_F/dt = 100 A/µs L ≤ 0.05 µH; T_{VJ} = 100°C		2	2.5	A
t_{rr}	I_F = 1 A; -di/dt = 50 A/µs; V_R = 30 V T_J = 25°C		35		ns
R_{thJC}	Diode			1.6	K/W