

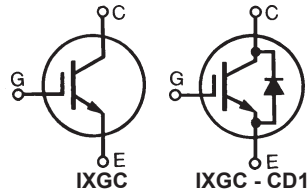
HiPerFAST™ IGBT
ISOPLUS247™
IXGC 12N60C
IXGC 12N60CD1

$$V_{CES} = 600 \text{ V}$$

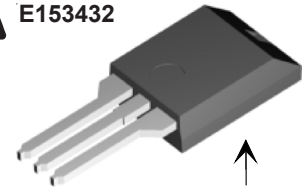
$$I_{C25} = 15 \text{ A}$$

$$V_{CE(sat)} = 2.7 \text{ V}$$

$$t_{fi(typ)} = 55 \text{ ns}$$

(Electrically Isolated Back Surface)


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	600	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	15	A
I_{C90}	$T_C = 90^\circ\text{C}$	8	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms	48	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 33 \Omega$ Clamped inductive load, $L = 300 \mu\text{H}$	$I_{CM} = 24$ @ $0.8 V_{CES}$	A
P_c	$T_C = 25^\circ\text{C}$	85	W
T_J		-40 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-40 ... +150	$^\circ\text{C}$
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	$^\circ\text{C}$

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
- 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

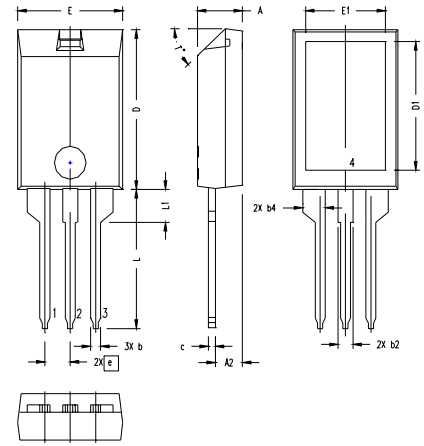
See IXGA12N60C data sheet for IGBT characteristic curves

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}$, $V_{GE} = 0 \text{ V}$	600		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}$, $V_{GE} = V_{GE}$	2.5	5.0	V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$, $T_J = 25^\circ\text{C}$ $V_{GE} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$		200	μA 1.5 mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_T$, $V_{GE} = 15 \text{ V}$	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 I _C = I _T , V _{GE} = 15 V, L = 300 μH V _{CE} = 0.8 • V _{CES} , R _G = R _{off} = 18 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _J or increased R _G		20	ns
t_{ri}			20	ns
t_{d(off)}			60	ns
t_{fi}			55	ns
E_{off}			0.09	mJ
t_{d(on)}	Inductive load, T_J = 125°C I _C = I _T , V _{GE} = 15 V, L = 300 μH V _{CE} = 0.8 • V _{CES} , R _G = R _{off} = 18 Ω Remarks: Switching times may increase for V _{CE} (Clamp) > 0.8 • V _{CES} , higher T _J or increased R _G		20	ns
t_{ri}			20	ns
E_{on}			0.15	mJ
t_{d(off)}			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

Reverse Diode (FRED) (IXGC12N60CD1 ONLY)		Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V_F	I _F = 15A; T _{VJ} = 150°C T _{VJ} = 25°C		1.7	V 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 _F /dt = 50 A/μs; V _R = 30 V T _J = 25°C		35
R_{thJC}	Diode			1.6 K/W

ISOPLUS 220 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°

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

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