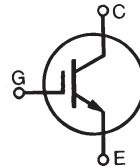


HiPerFAST™ IGBT

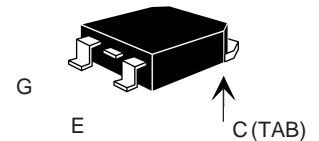
IXGH 15N120B
IXGT 15N120B

V_{CES} = 1200 V
I_{C25} = 30 A
V_{CE(sat)} = 3.2 V
t_{fi(typ)} = 160 ns

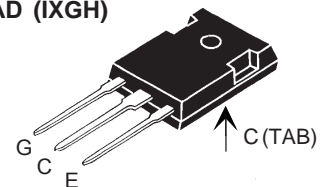


Symbol	Test Conditions	Maximum Ratings
V _{CES}	T _J = 25°C to 150°C	1200 V
V _{CGR}	T _J = 25°C to 150°C; R _{GE} = 1 MΩ	1200 V
V _{GES}	Continuous	±20 V
V _{GEM}	Transient	±30 V
I _{C25}	T _C = 25°C	30 A
I _{C110}	T _C = 110°C	15 A
I _{CM}	T _C = 25°C, 1 ms	60 A
SSOA (RBSOA)	V _{GE} = 15 V, T _{VJ} = 125°C, R _G = 10 Ω Clamped inductive load	I _{CM} = 40 A @ 0.8 V _{CES}
P _C	T _C = 25°C	180 W
T _J		-55 ... +150 °C
T _{JM}		150 °C
T _{stg}		-55 ... +150 °C
Maximum Lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300 °C
Maximum Tab temperature for soldering SMD devices for 10 s		260 °C
M _d	Mounting torque (M3)	1.13/10Nm/lb.in.
Weight	TO-247 AD	6 g
	TO-268	4 g

TO-268 (IXGT)



TO-247 AD (IXGH)



G = Gate, C = Collector,
E = Emitter, TAB = Collector

Features

- International standard packages JEDEC TO-268 surface and JEDEC TO-247 AD
- Low switching losses, low V_(sat)
- MOS Gate turn-on - drive simplicity

Applications

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

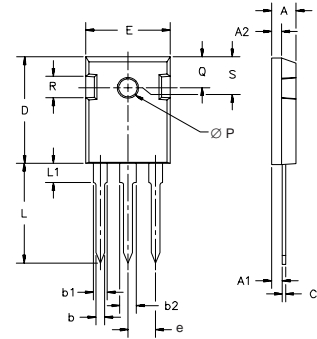
Advantages

- High power density
- Suitable for surface mounting
- Easy to mount with 1 screw, (isolated mounting screw hole)

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	1200		5 V
V_{GE(th)}	I _C = 250 μA, V _{CE} = V _{GE}	2.5		5 V
I_{CES}	V _{CE} = V _{CES} V _{GE} = 0 V	T _J = 25°C		100 μA
		T _J = 125°C		3.5 mA
I_{GES}	V _{CE} = 0 V, V _{GE} = ±20 V			±100 nA
V_{CE(sat)}	I _C = I _{C90} , V _{GE} = 15 V		2.5	3.2 V
	T _J = 125°C			V

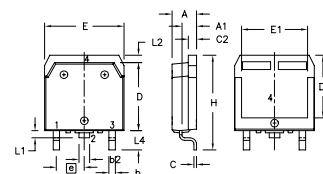
Symbol	Test Conditions	Characteristic Values			
		$(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
g_{fs}	$I_C = I_{C110}; V_{CE} = 10\text{ V},$ Pulse test, $t \leq 300\ \mu\text{s}, \text{ duty cycle} \leq 2\%$	12	15	S	
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		1720	pF	
C_{oes}		95	pF		
C_{res}		35	pF		
Q_g	$I_C = I_{C110}, V_{GE} = 15\text{ V}, V_{CE} = 0.5 V_{CES}$		69	nC	
Q_{ge}		13	nC		
Q_{gc}		26	nC		
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = I_{C110}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE} \text{ (Clamp)} > 0.8 \cdot V_{CES}$, higher T_J or increased R_G		25	ns	
t_{ri}		15	ns		
$t_{d(off)}$		180	280	ns	
t_{fi}		160	320	ns	
E_{off}		1.75	3.0	mJ	
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = I_{C110}, V_{GE} = 15\text{ V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 10\ \Omega$ Remarks: Switching times may increase for $V_{CE} \text{ (Clamp)} > 0.8 \cdot V_{CES}$, higher T_J or increased R_G		25	ns	
t_{ri}		18	ns		
E_{on}		0.60	mJ		
$t_{d(off)}$		300	ns		
t_{fi}		360	ns		
E_{off}	3.5	mJ			
R_{thJC}				0.65	K/W
R_{thCK}	(TO-247)	0.25			K/W

TO-247 AD Outline



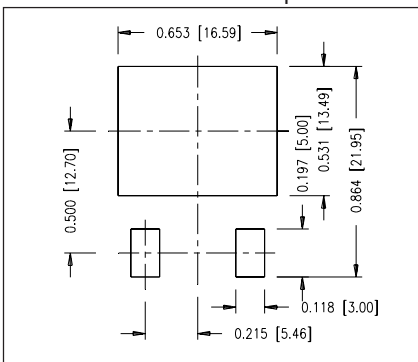
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.7	5.3	.185	.209
A ₁	2.2	2.54	.087	.102
A ₂	2.2	2.6	.059	.098
b	1.0	1.4	.040	.055
b ₁	1.65	2.13	.065	.084
b ₂	2.87	3.12	.113	.123
C	.4	.8	.016	.031
D	20.80	21.46	.819	.845
E	15.75	16.26	.610	.640
e	5.20	5.72	0.205	0.225
L	19.81	20.32	.780	.800
L ₁		4.50		.177
ØP	3.55	3.65	.140	.144
Q	5.89	6.40	0.232	0.252
R	4.32	5.49	.170	.216
S	6.15	BSC	.242	BSC

TO-268 Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.075	.083
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L ₁	1.20	1.40	.047	.055
L ₂	1.00	1.15	.039	.045
L ₃	0.25 BSC		.010 BSC	
L ₄	3.80	4.10	.150	.161

Min Recommended Footprint



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 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715 6,306,728B1
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

Fig. 1. Saturation Voltage Characteristics @ 25°C

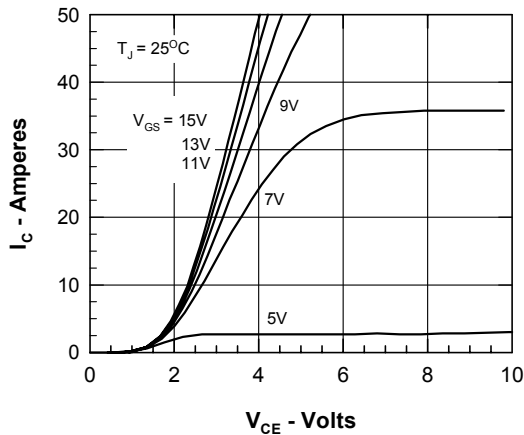


Fig. 2. Extended Output Characteristics

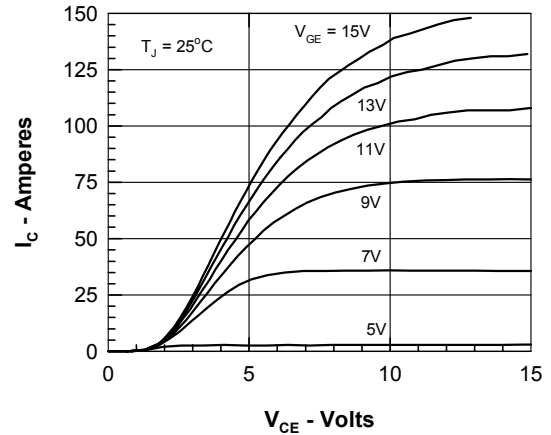


Fig. 3. Saturation Voltage Characteristics @ 125°C

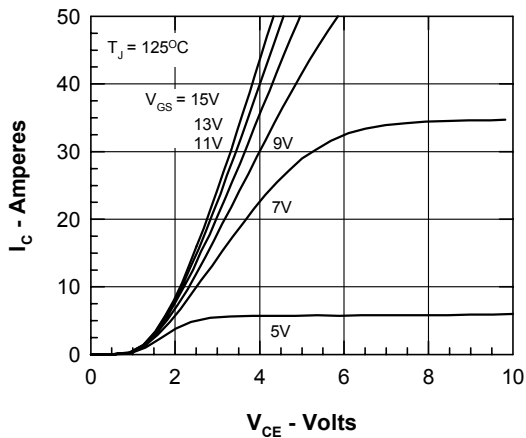


Fig. 4. Temperature Dependence of $V_{CE(SAT)}$

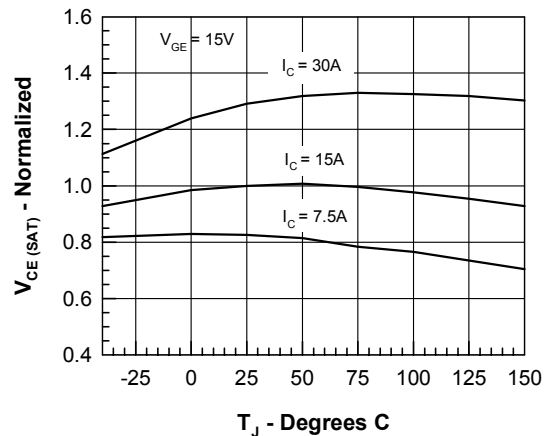


Fig. 5. Admittance Curves

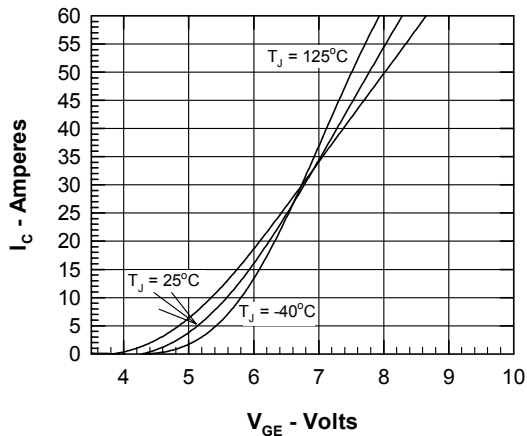


Fig. 6. Capacitance Curves

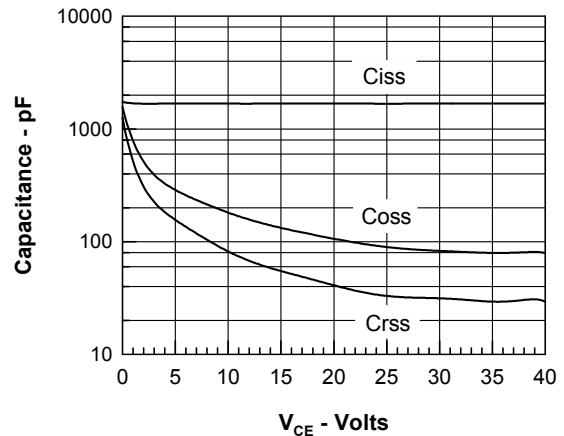


Fig. 7. Dependence of E_{OFF} on I_C .

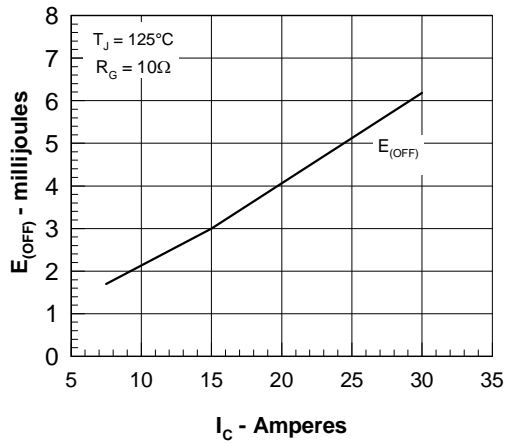


Fig. 8. Dependence of E_{OFF} on R_G .

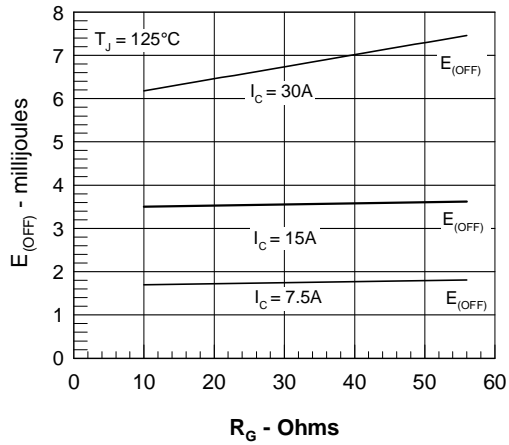


Fig. 9. Gate Charge

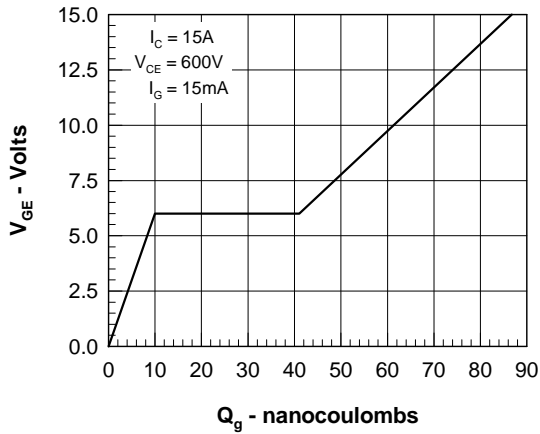


Fig. 10. Turn-off Safe Operating Area

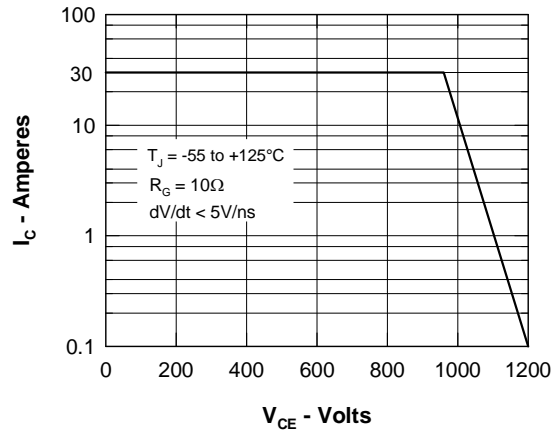


Fig. 11. Thermal Impedance

