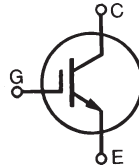


High Voltage IGBT

IXGH 20N120B
IXGT 20N120B

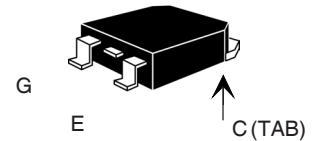
$V_{CES} = 1200 \text{ V}$
 $I_{C25} = 40 \text{ A}$
 $V_{CE(sat)} = 3.4 \text{ V}$
 $t_{fi(typ)} = 160 \text{ ns}$

Preliminary Data Sheet

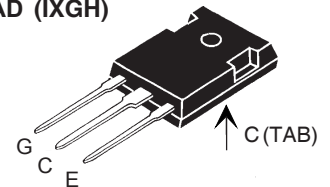


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1200	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1200	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	40	A
I_{C110}	$T_C = 110^\circ\text{C}$	20	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	80	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_{VJ} = 125^\circ\text{C}, R_G = 10 \Omega$ Clamped inductive load	$I_{CM} = 80$ @ $0.8 V_{CES}$	A
P_C	$T_C = 25^\circ\text{C}$	190	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
Maximum Lead temperature for soldering		300	$^\circ\text{C}$
1.6 mm (0.062 in.) from case for 10 s			
Maximum Tab temperature for soldering SMD devices for 10 s		260	$^\circ\text{C}$
M_d	Mounting torque (M3) (TO-247)	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

- High Voltage IGBT for resonant power supplies
 - Induction heating
 - Rice cookers
- International standard packages JEDEC TO-268 surface and JEDEC TO-247 AD
- Low switching losses, low $V_{(sat)}$
- MOS Gate turn-on
 - drive simplicity

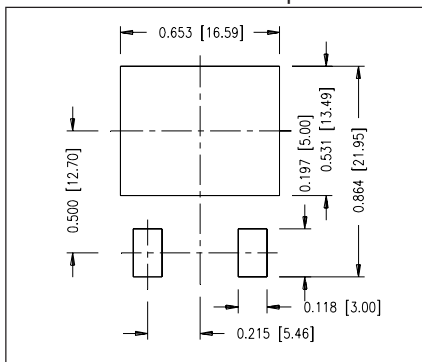
Advantages

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

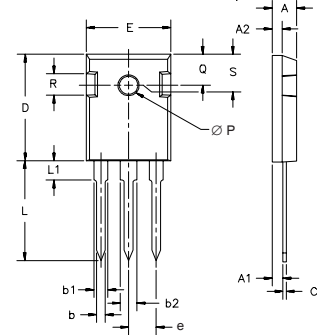
Symbol	Test Conditions	Characteristic Values		
		$(T_J = 25^\circ\text{C}, \text{ unless otherwise specified})$		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}, V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}, V_{CE} = V_{GE}$	2.5		V
I_{CES}	$V_{CE} = V_{CES}, T_J = 25^\circ\text{C}$			50 μA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = 20 \text{ A}, V_{GE} = 15 \text{ V}$		2.9	3.4 V
		$T_J = 125^\circ\text{C}$	2.8	3.8 V

Symbol	Test Conditions	Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	I _C = 20A; V _{CE} = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %	12	18	S	
C_{ies}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		1700	pF	
C_{oes}		95	pF		
C_{res}		35	pF		
Q_g	I _C = 20A, V _{GE} = 15 V, V _{CE} = 0.5 V _{CES}		72	nC	
Q_{ge}		12	nC		
Q_{gc}		27	nC		
t_{d(on)}	Inductive load, T_J = 25°C I _C = 20 A, V _{GE} = 15 V V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 10 Ω		25	ns	
t_{ri}		15	ns		
t_{d(off)}		150	280	ns	
t_{fi}		160	320	ns	
E_{off}		2.1	3.5	mJ	
t_{d(on)}	Inductive load, T_J = 125°C I _C = 20A, V _{GE} = 15 V V _{CE} = 0.8 V _{CES} , R _G = R _{off} = 10 Ω		25	ns	
t_{ri}		18	ns		
E_{on}		0.9	mJ		
t_{d(off)}		270	ns		
t_{fi}		360	ns		
E_{off}	3.5	mJ			
R_{thJC}				0.65	K/W
R_{thCK}	(TO-247)	0.25			K/W

Min Recommended Footprint

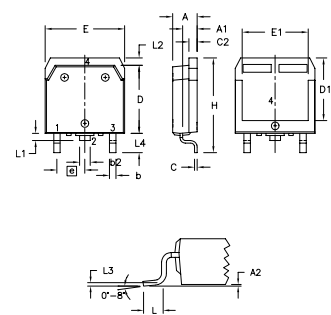


TO-247 AD Outline



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
L1		4.50		.177
∅P	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	.75	.83
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
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	0.25 BSC		.010 BSC	
L4	3.80	4.10	.150	.161

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 6,259,123B1 6,306,728B1
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025 6,404,065B1 6,162,665 6,534,343

Fig. 1. Output Characteristics
@ 25 Deg. C

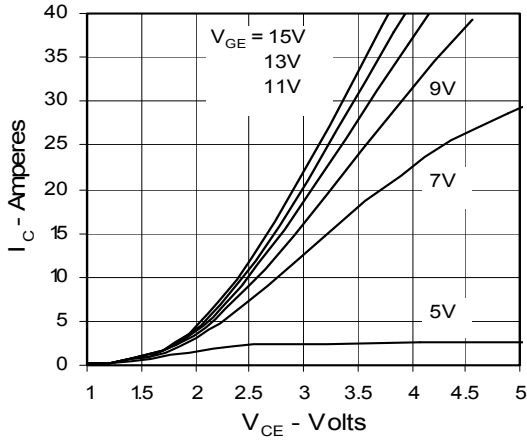


Fig. 2. Extended Output Characteristics
@ 25 deg. C

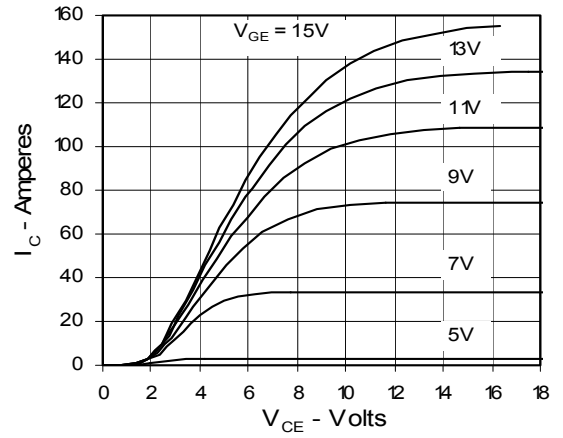


Fig. 3. Output Characteristics
@ 125 Deg. C

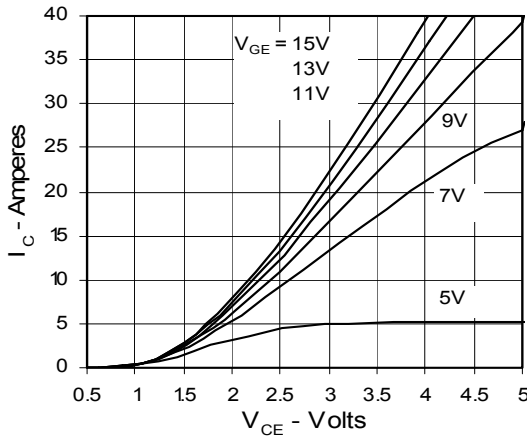


Fig. 4. Temperature Dependence of $V_{CE(sat)}$

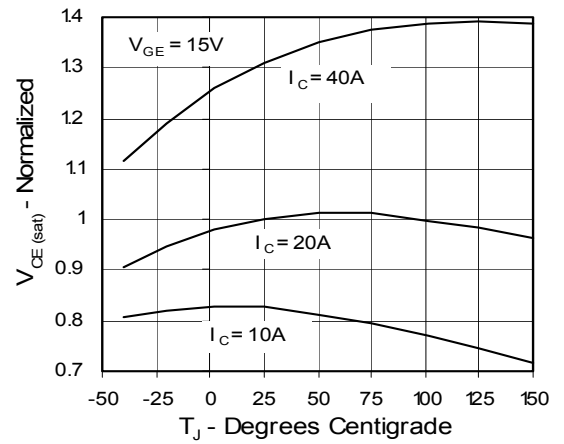


Fig. 5. Input Admittance

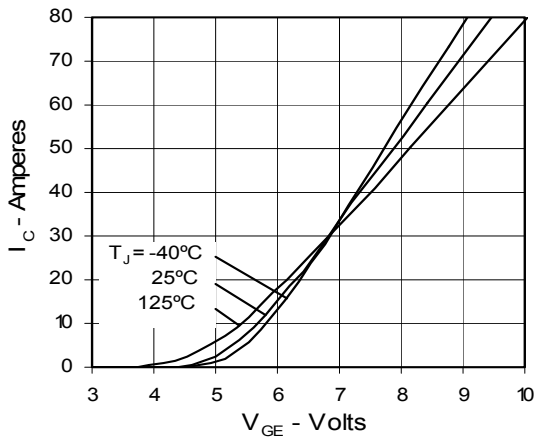


Fig. 6. Transconductance

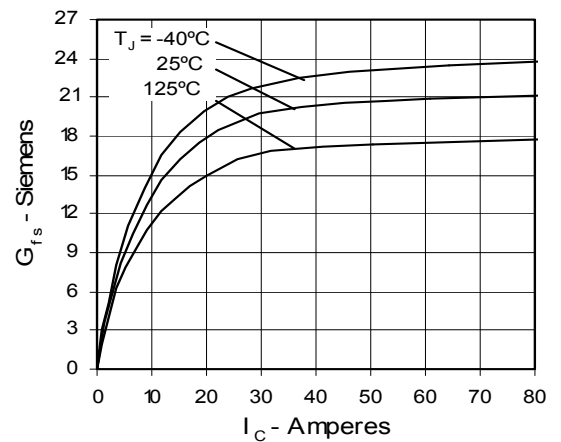


Fig. 7. Dependence of E_{off} on R_G

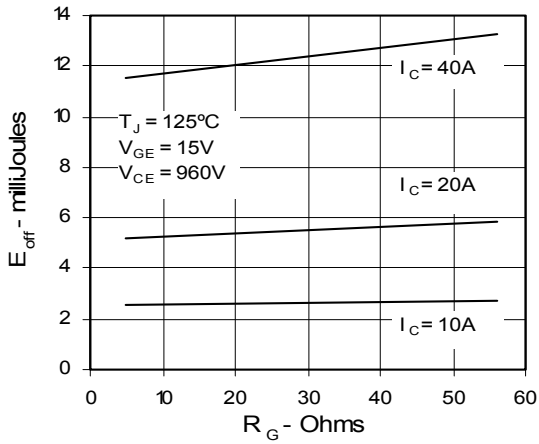


Fig. 8. Dependence of E_{off} on I_C

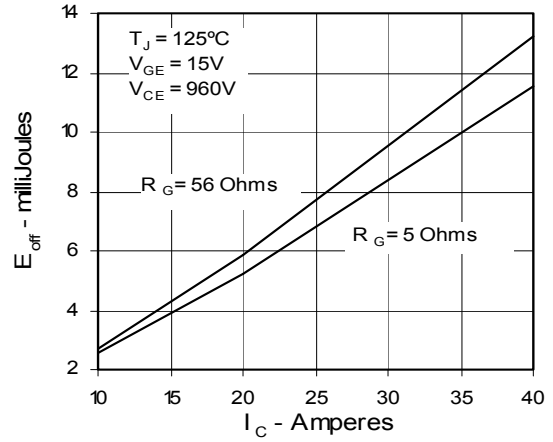


Fig. 9. Dependence of E_{off} on Temperature

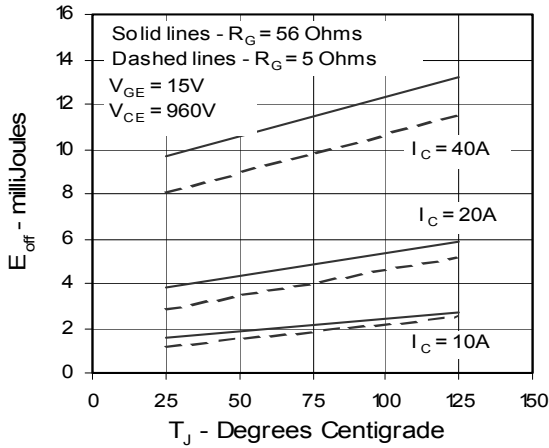


Fig. 10. Gate Charge

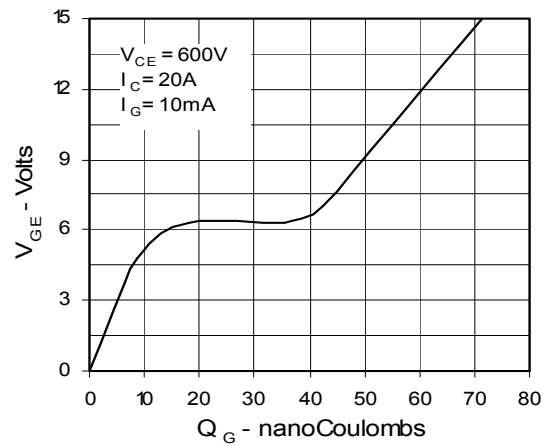


Fig. 11. Capacitance

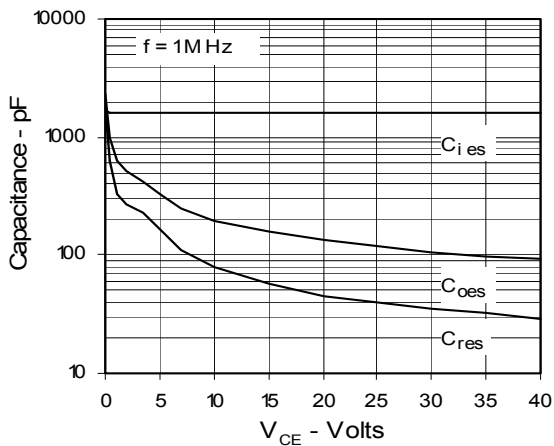
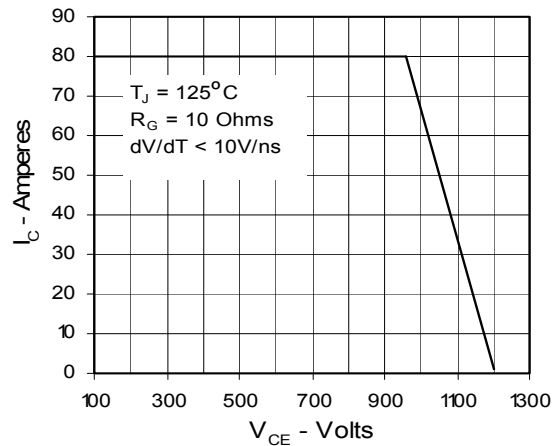


Fig. 12. Reverse-Bias Safe Operating Area

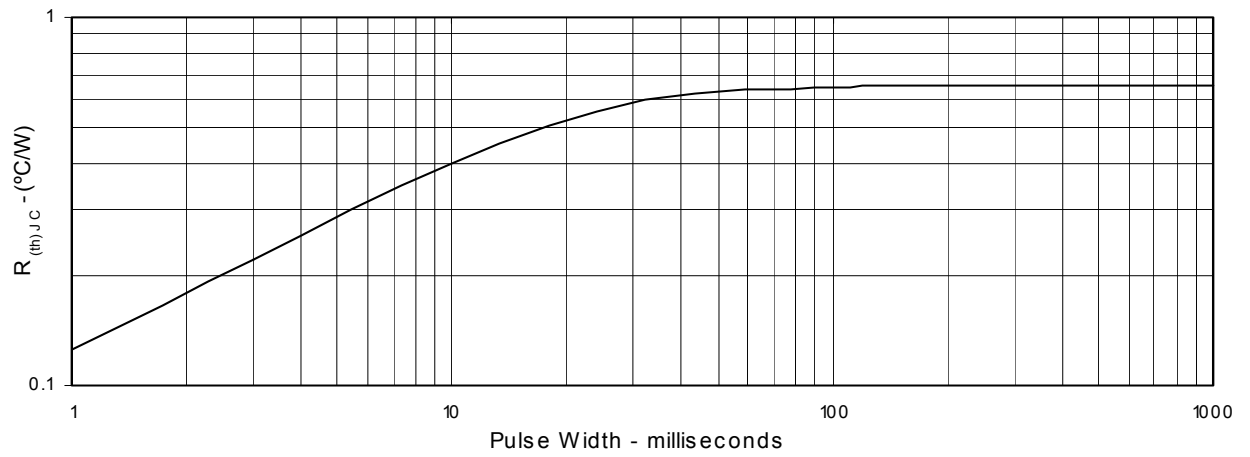


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4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025 6,404,065B1 6,162,665 6,534,343

Fig. 13. Maximum Transient Thermal Resistance





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