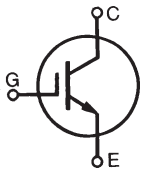
High Voltage IGBT

IXGH 20N120B
IXGT 20N120B

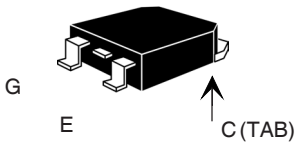
V_{CES} = 1200 V
I_{C25} = 40 A
$V_{CE(sat)}$ = 3.4 V
$t_{fi(typ)}$ = 160 ns

Preliminary Data Sheet

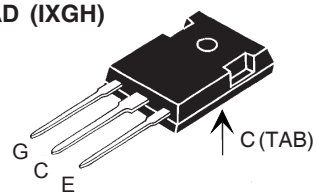


Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	1200	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ	1200	V
V_{GES}	Continuous	±20	V
V_{GEM}	Transient	±30	V
I_{C25}	T_C = 25°C	40	A
I_{C110}	T_C = 110°C	20	A
I_{CM}	T_C = 25°C, 1 ms	80	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 10 Ω Clamped inductive load	I_{CM} = 80 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	190	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) (TO-247)	1.13/10	Nm/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

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			V
$V_{GE(th)}$	I_C = 250 μA, V_{CE} = V_{GE}		2.5		5	V
I_{CES}	V_{CE} = V_{CES}	T_J = 25°C			50	μA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±100	nA
$V_{CE(sat)}$	I_C = 20A, V_{GE} = 15 V			2.9	3.4	V
		T_J = 125°C		2.8	3.8	V

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

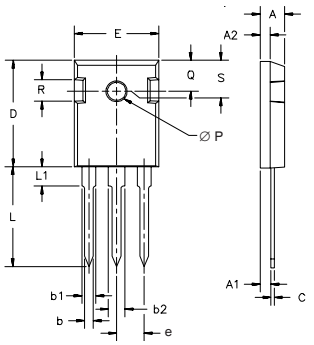
Advantages

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

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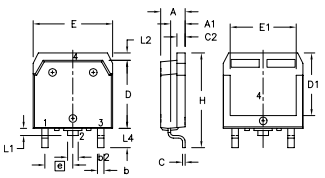
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	I_C = 20A; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	12	18		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1700		pF
C_{oes}			95		pF
C_{res}			35		pF
Q_g	I_C = 20A, V_{GE} = 15 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

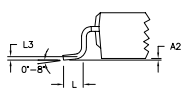
TO-247 AD Outline



Dim.	Millimeter Min.	Max.	Inches 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	

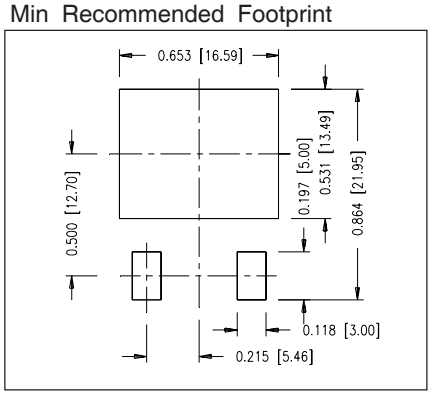
TO-268 Outline





Dim.	Millimeter Min.	Max.	Inches 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

Min Recommended Footprint



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Fig. 1. Output Characteristics @ 25 Deg. C

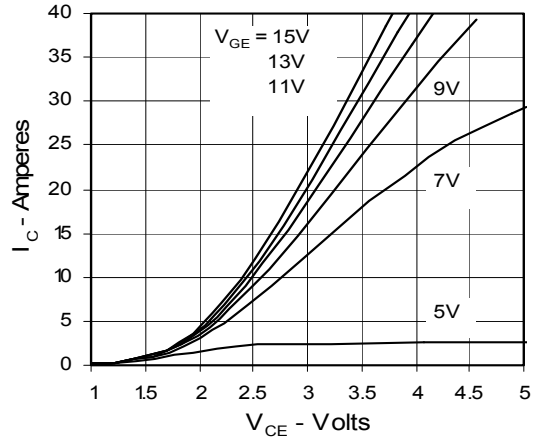


Fig. 2. Extended Output Characteristics @ 25 deg. C

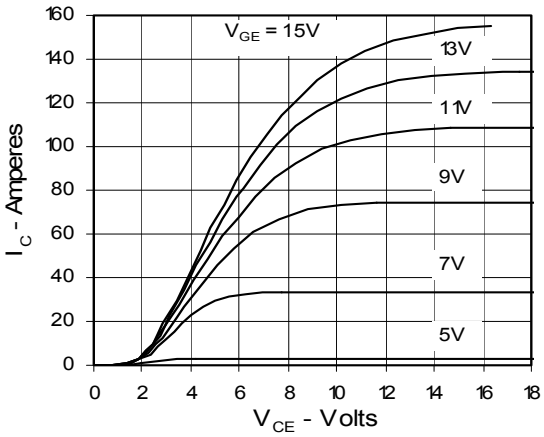


Fig. 3. Output Characteristics @ 125 Deg. C

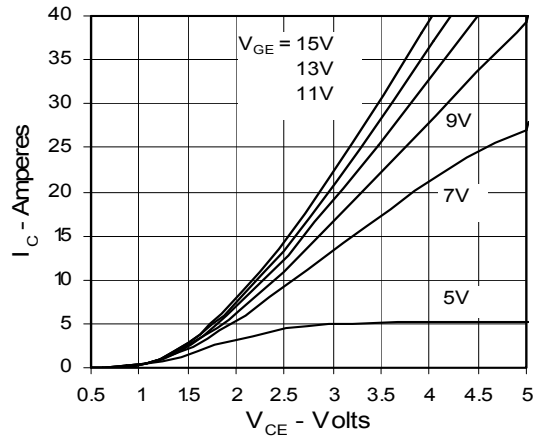


Fig. 4. Temperature Dependence of $V_{CE(sat)}$

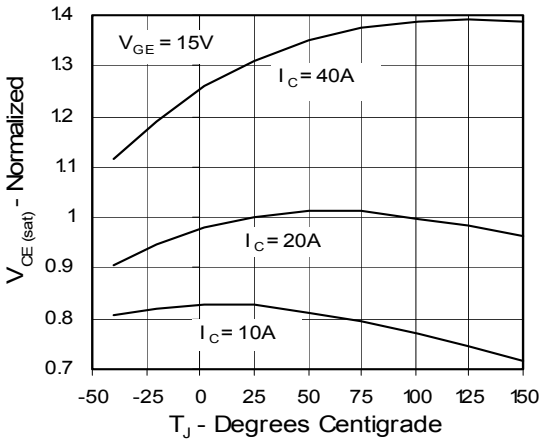


Fig. 5. Input Admittance

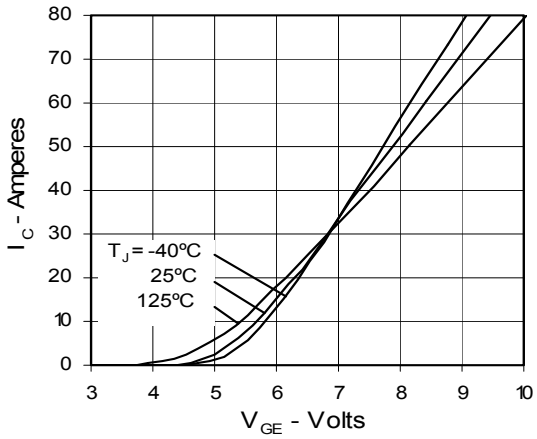
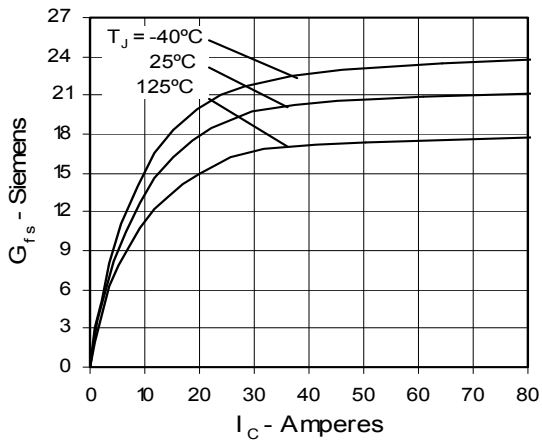


Fig. 6. Transconductance



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

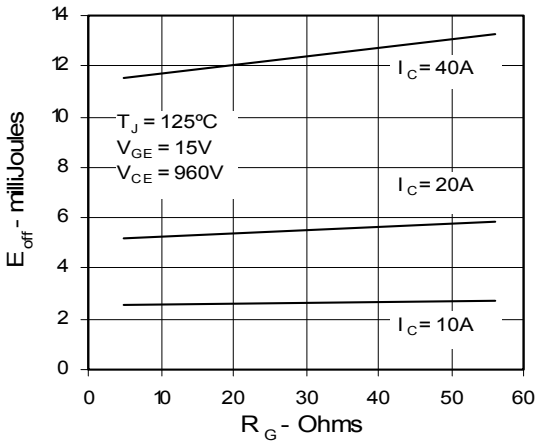


Fig. 8. Dependence of E_{off} on I_C

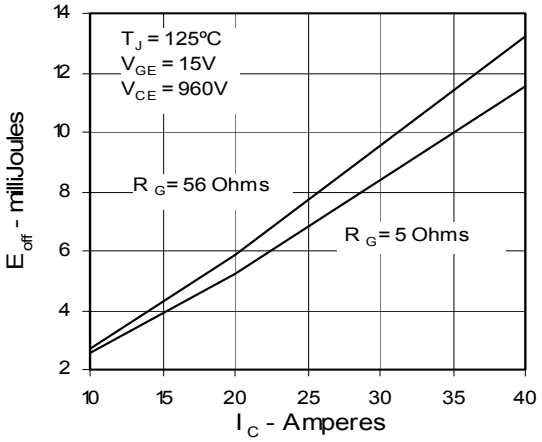


Fig. 9. Dependence of E_{off} on Temperature

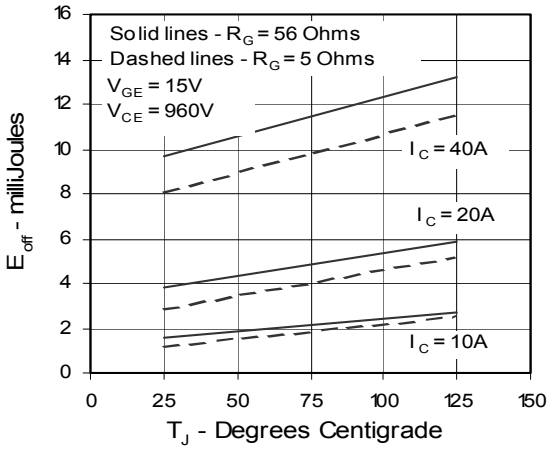


Fig. 10. Gate Charge

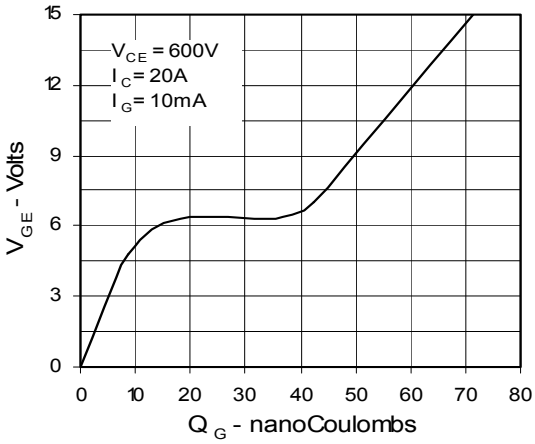


Fig. 11. Capacitance

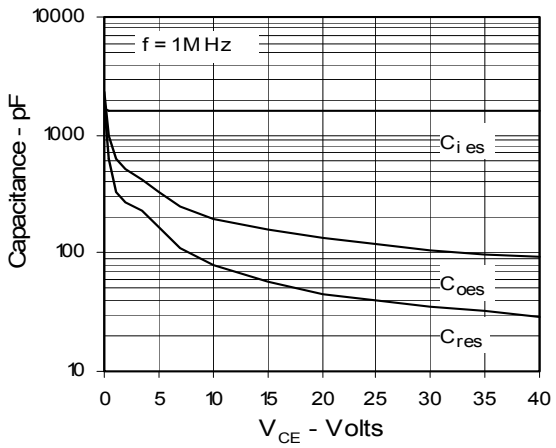
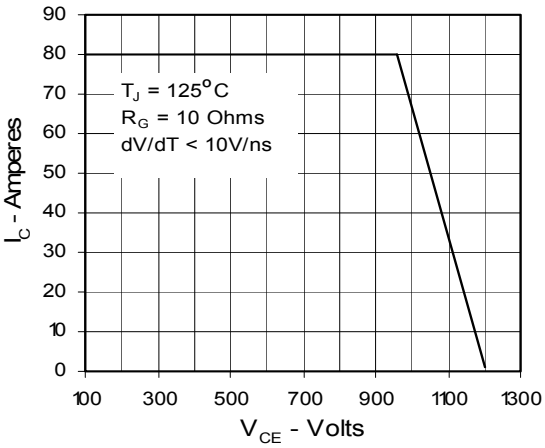


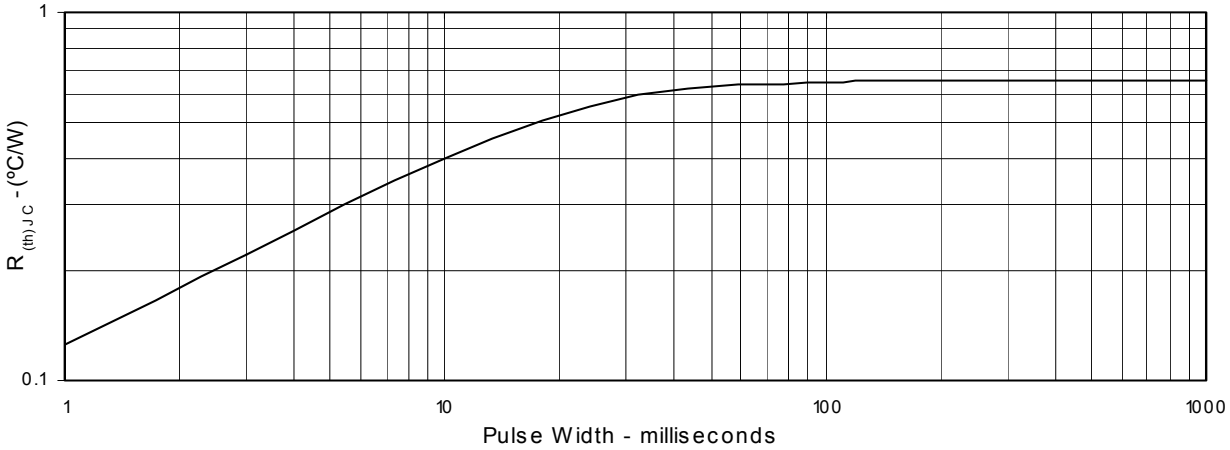
Fig. 12. Reverse-Bias Safe Operating Area



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Fig. 13. Maximum Transient Thermal Resistance



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