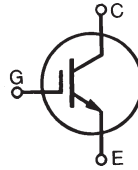


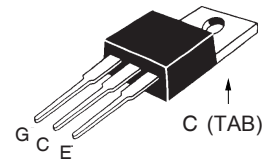
High Voltage IGBT IXGP 28N120B

$V_{CES} = 1200 \text{ V}$
 $I_{C25} = 50 \text{ A}$
 $V_{CE(sat)} = 3.5 \text{ V}$
 $t_{fi(typ)} = 160 \text{ ns}$



Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1200	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 1 \text{ M}\Omega$	1200	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	50	A
I_{C110}	$T_C = 110^\circ\text{C}$	28	A
I_{CM}	$T_C = 25^\circ\text{C}$, 1 ms	150	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}$, $T_{VJ} = 125^\circ\text{C}$, $R_G = 5 \Omega$ Clamped inductive load	$I_{CM} = 60$ @ $0.8 V_{CES}$	A
P_C	$T_C = 25^\circ\text{C}$	250	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 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$
M_d	Mounting torque (M3.5) (TO-220)	0.55/5Nm/lb.in.	
Weight		4	g

TO-220 (IXGP)



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

Features

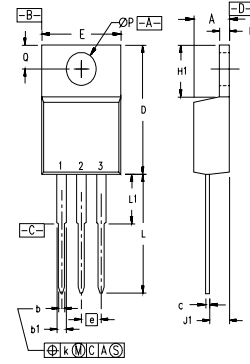
- High Voltage IGBT for resonant power supplies
 - Induction heating
 - Rice cookers
- International standard package JEDEC TO-220
- Low switching losses, low $V_{(sat)}$
- MOS Gate turn-on
 - drive simplicity

Advantages

- High power density
- Suitable for surface mounting
- Easy to mount with 1 screw

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 250 \mu\text{A}$, $V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}$, $V_{CE} = V_{GE}$	2.5		V
I_{CES}	$V_{CE} = V_{CES}$, $V_{GE} = 0 \text{ V}$			25 μA 250 μA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = 28 \text{ A}$, $V_{GE} = 15 \text{ V}$		2.9 2.8	3.5 V V
	$T_J = 125^\circ\text{C}$			

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	$I_C = 28\text{A}; V_{CE} = 10\text{V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$	18	25	S	
C_{ies}	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$		2700	pF	
C_{oes}			170	pF	
C_{res}			60	pF	
Q_g	$I_C = 28\text{A}, V_{GE} = 15\text{V}, V_{CE} = 0.5 V_{CES}$		92	nC	
Q_{ge}			15	nC	
Q_{gc}			30	nC	
$t_{d(on)}$	Inductive load, $T_J = 25^\circ\text{C}$ $I_C = 28\text{A}, V_{GE} = 15\text{V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 5\ \Omega$		30	ns	
t_{ri}			20	ns	
$t_{d(off)}$			180	280	ns
t_{fi}			160	320	ns
E_{off}			2.0	5.0	mJ
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 28\text{A}, V_{GE} = 15\text{V}$ $V_{CE} = 0.8 V_{CES}, R_G = R_{off} = 5\ \Omega$		35	ns	
t_{ri}			28	ns	
E_{on}			1.4	mJ	
$t_{d(off)}$			250	ns	
t_{fi}			300	ns	
E_{off}		8.0	mJ		
R_{thJC}				0.5 K/W	
R_{thCK}		0.25		K/W	

TO-220 Outline


Pins: 1 - Gate 2 - Drain
3 - Source 4 - Drain

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

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

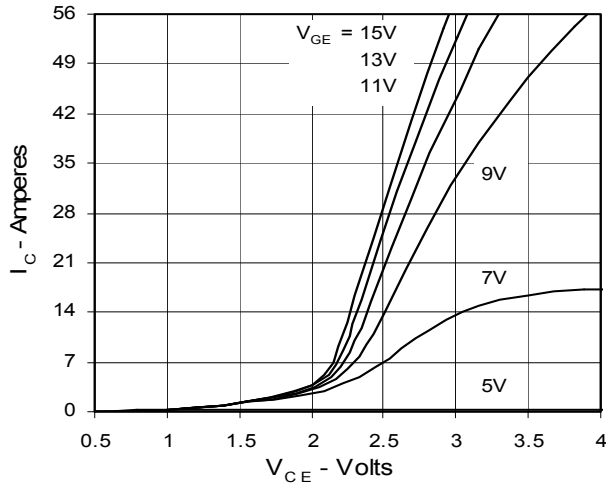


Fig. 2. Extended Output Characteristics @ 25 deg. C

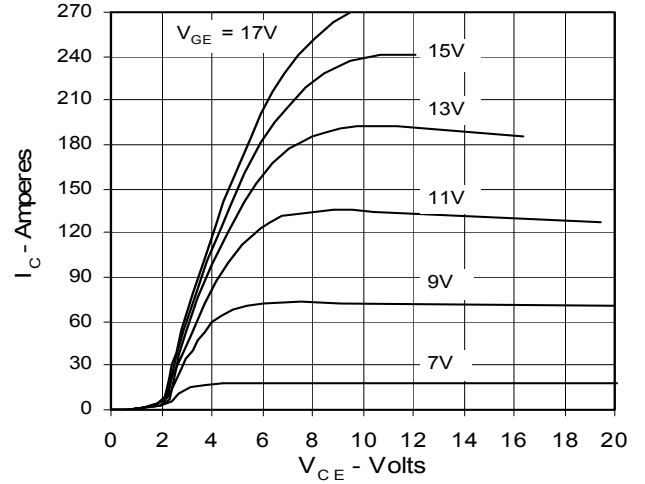


Fig. 3. Output Characteristics @ 125 Deg. C

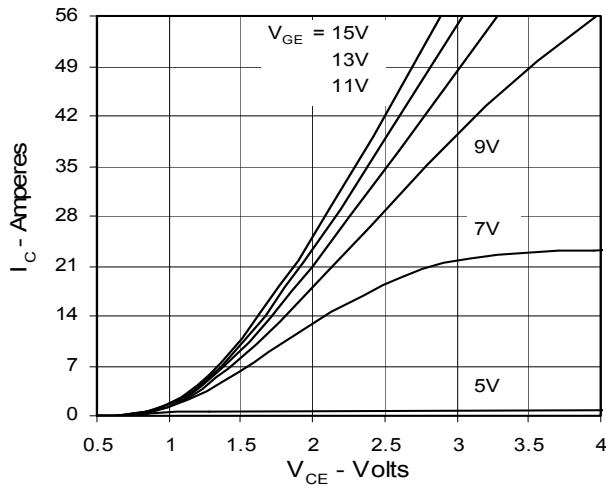


Fig. 4. Dependence of $V_{CE(sat)}$ on Temperature

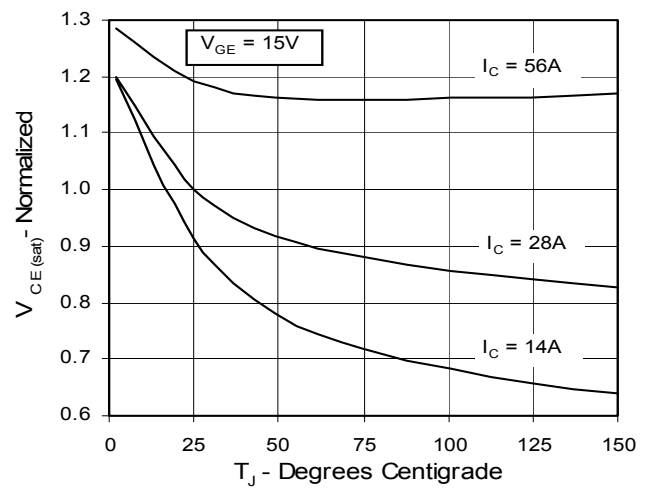


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter voltage

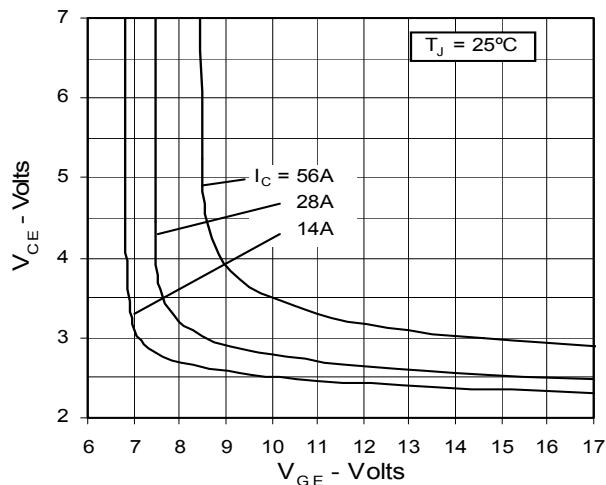


Fig. 6. Input Admittance

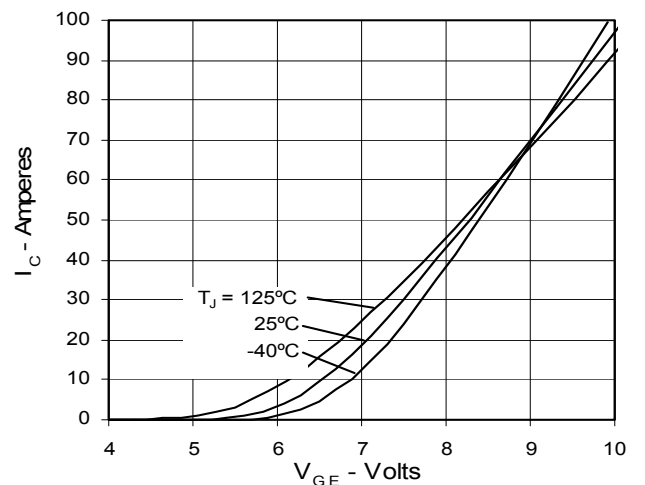
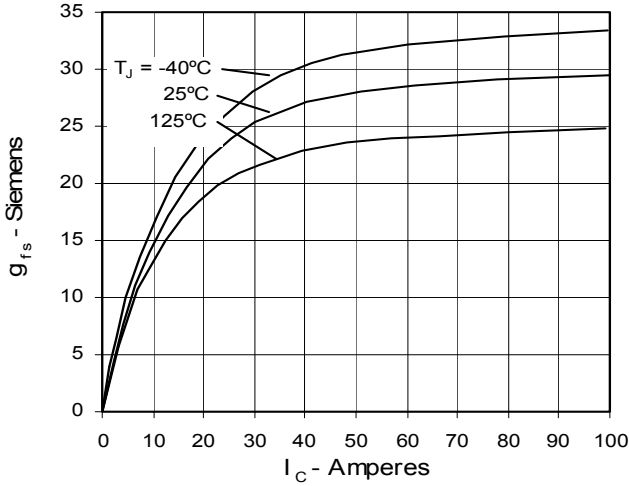
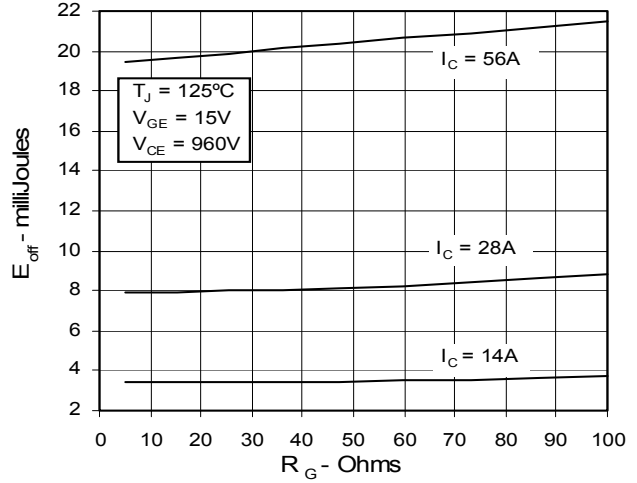
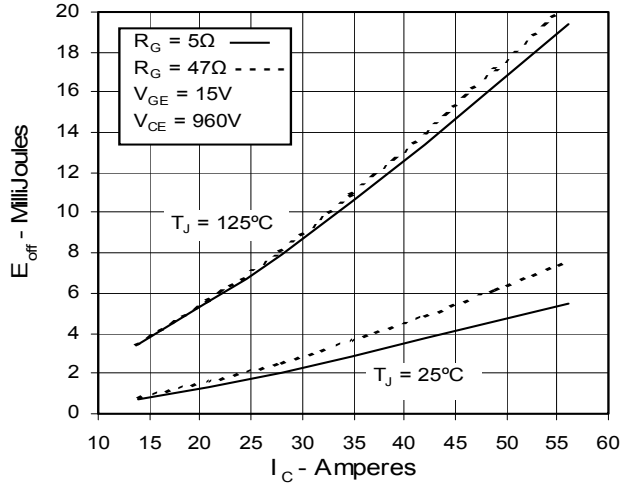
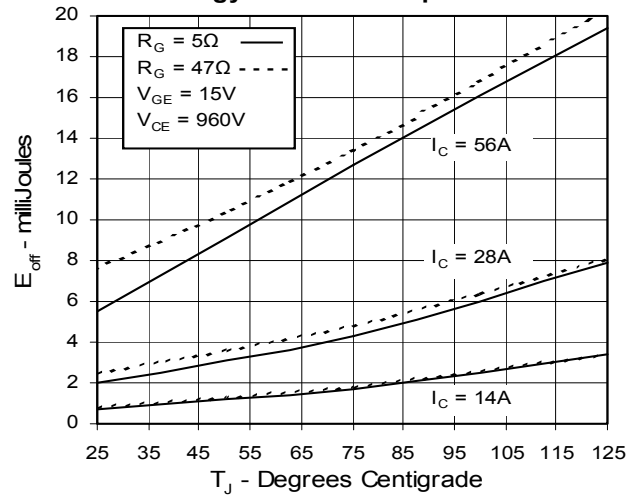
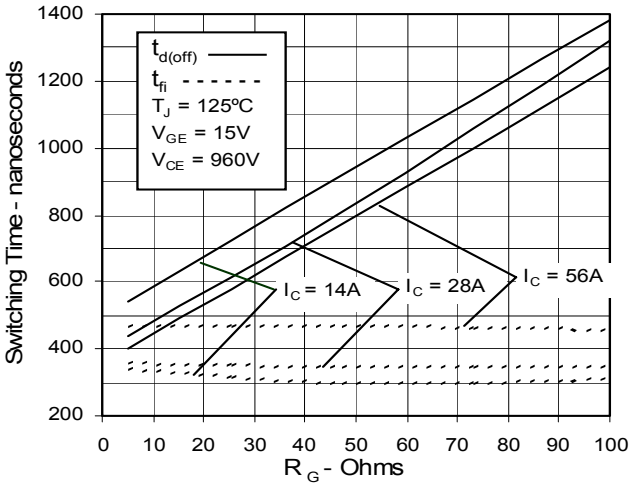
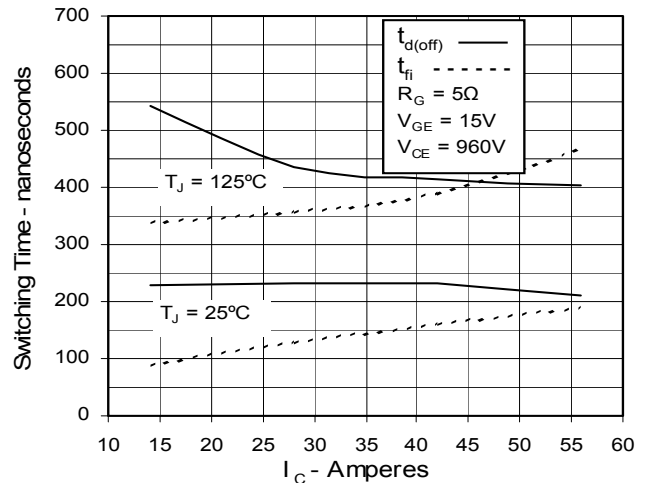


Fig. 7. Transconductance

Fig. 8. Dependence of Turn-off Energy Loss on R_G

Fig. 9. Dependence of Turn-Off Energy Loss on I_C

Fig. 10. Dependence of Turn-off Energy Loss on Temperature

Fig. 11. Dependence of Turn-off Switching Time on R_G

Fig. 12. Dependence of Turn-off Switching Time on I_C


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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. Dependence of Turn-off Switching Time on Temperature

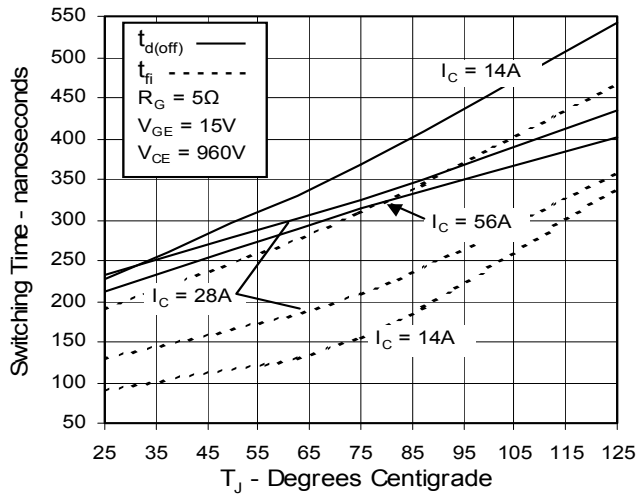


Fig. 14. Gate Charge

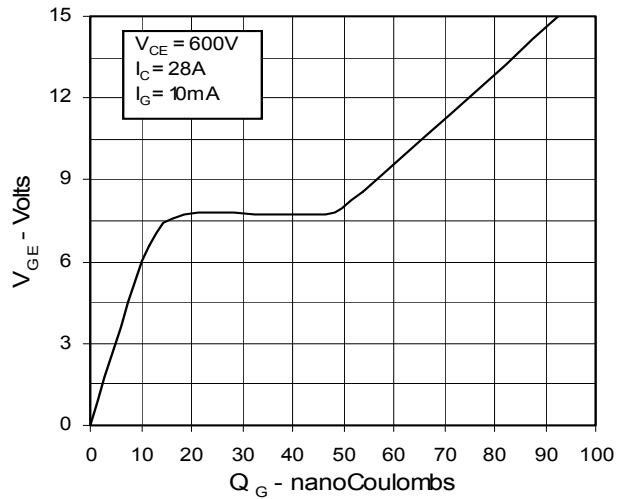


Fig. 15. Capacitance

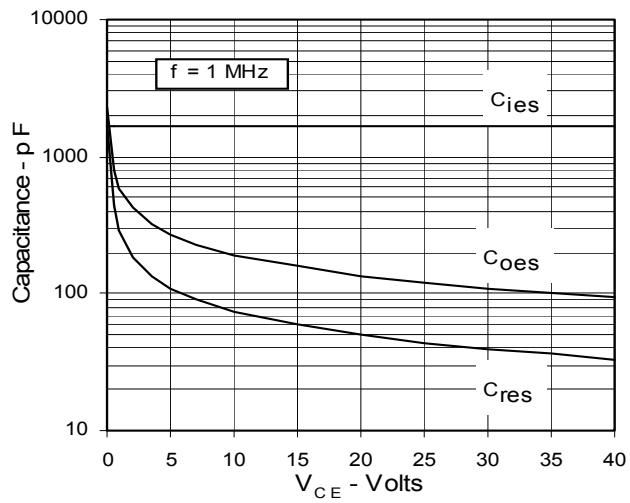


Fig. 16. Maximum Transient Thermal Resistance

