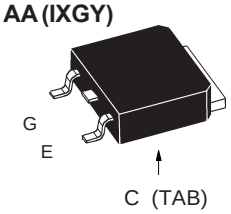
High Voltage IGBT

IXGY 2N120

V_{CES}	I_{C90}	$V_{CE(SAT)}$
1200 V	2.0 A	3 V

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	5	A
I_{C90}	T_C = 90°C	2	A
I_{CM}	T_C = 25°C, 1 ms	8	A
SSOA (RBSOA)	V_{GE} = 15 V, T_J = 125°C, R_G = 150Ω Clamped inductive load	I_{CM} = 6 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	25	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{STG}		-55 ... +150	°C
Weight		0.8	g
Max. Lead Temperature for Soldering (1.6mm from case for 10s)		300	°C

TO-252 AA (IXGY)



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

Features

- International standard package
- Low $V_{CE(sat)}$
  - for low on-state conduction losses
- High current handling capability
- MOS Gate turn-on
  - drive simplicity

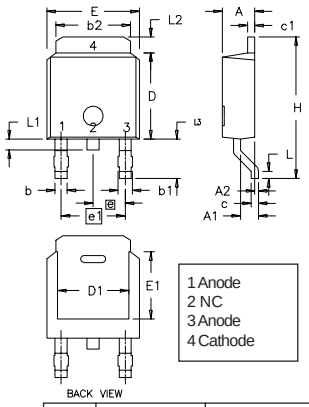
Applications

- Capacitor discharge
- Anode triggering of thyristors
- DC choppers
- Switched-mode and resonant-mode power supplies.

Symbol (T_J = 25°C unless otherwise specified)	Test Conditions		Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 25µA, V_{GE} = 0 V		1200			V
$V_{GE(th)}$	I_C = 25µA, V_{CE} = V_{GE}		2.5		5.0	V
I_{CES}	V_{CE} = 0.8 V_{CES}	T_J = 25°C			10	µA
	V_{GE} = 0 V	T_J = 125°C			200	µA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				± 50	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V			2.5	3.0	V
	I_C = I_{C25}, V_{GE} = 15 V			3.8	4.5	V
	I_C = I_{C25}, T = 125°C			4.5		V

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.
g_{fs}	$I_C = I_{C90}$, V_{CE} = 15 V, Pulse test, t < 300 µs, duty cycle < 2 %	1.5	2.5	S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		110	pF
C_{oes}			12	pF
C_{res}			2	pF
Q_g	$I_C = I_{c90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		9.0	nC
Q_{ge}			1.6	nC
Q_{gc}			3.2	nC
$t_{d(on)}$	Inductive load, T_J = 25°C		15	ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V		25	ns
$t_{d(off)}$	R_G = 150 Ω		300	ns
t_{fi}	V_{CLAMP} = 0.8 V_{CES}		360	ns
E_{off}	Note 1		0.6	mJ
$t_{d(on)}$	Inductive load, T_J = 125°C		15	ns
t_{ri}	$I_C = I_{C90}$, V_{GE} = 15 V		30	ns
$t_{d(off)}$	$R_G = R_{(off)}$ = 150 Ω		500	µs
t_{fi}	V_{CLAMP} = 0.8 V_{CES}		500	ns
E_{off}	Note 1		1.2	mJ
R_{thJC}				4.2 K/W

TO-252 AA Outline (IXGY)



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

Notes: 1. Switching times may increase for V_{CE} (Clamp) > 0.8 V_{CES}, higher T_J or increased R_G.

Fig. 1. Saturation Voltage Characteristics @ 25°C

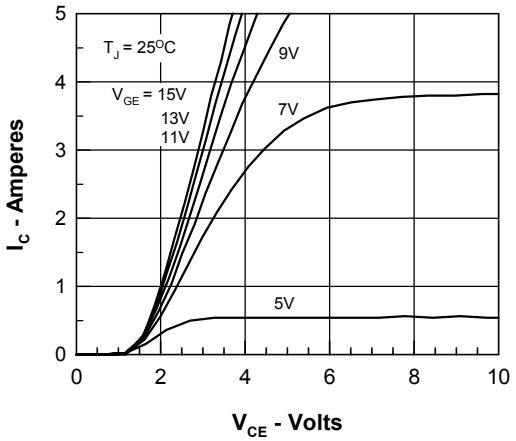


Fig. 2. Extended Output Characteristics

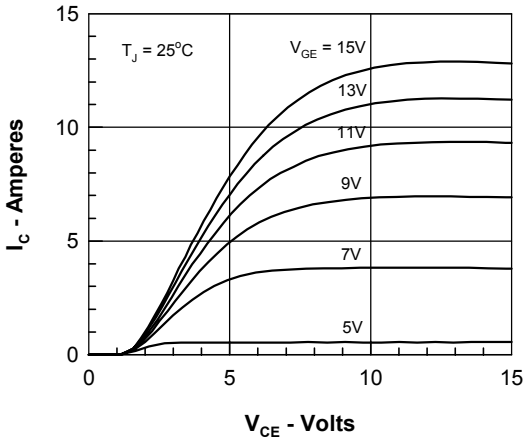


Fig. 3. Saturation Voltage Characteristics @ 125°C

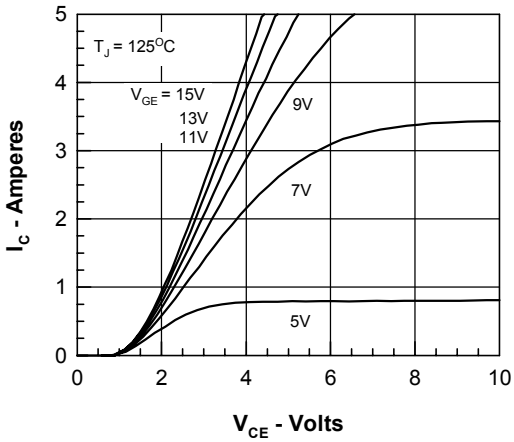


Fig. 4. Temperature Dependence of $V_{CE(SAT)}$

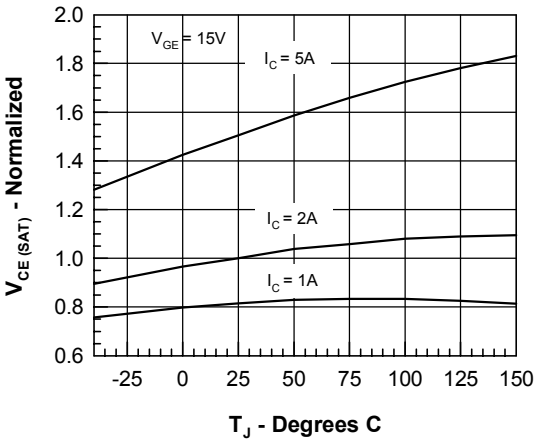


Fig. 5. Admittance Curves

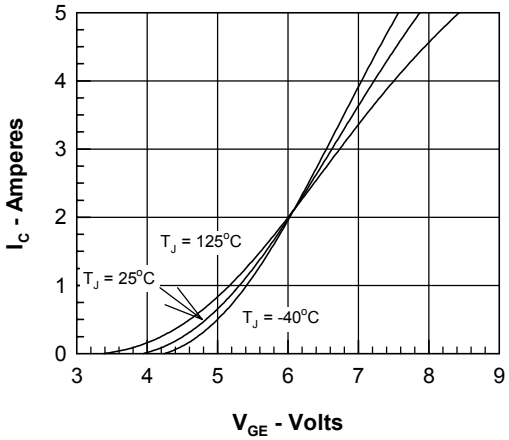


Fig. 6. Capacitance Curves

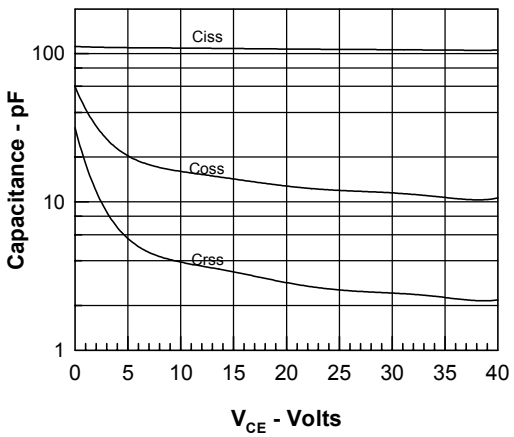


Fig. 7. Dependence of E_{OFF} on I_C.

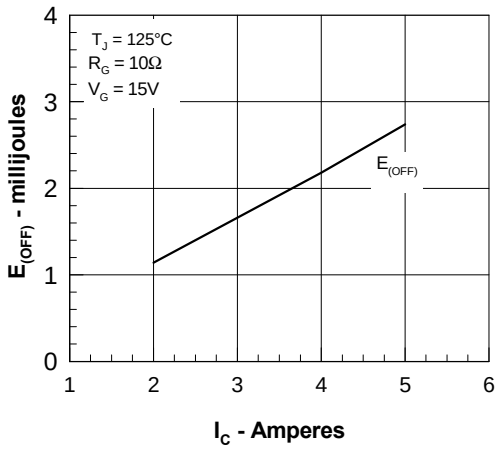


Fig. 8. Dependence of E_{OFF} on R_G.

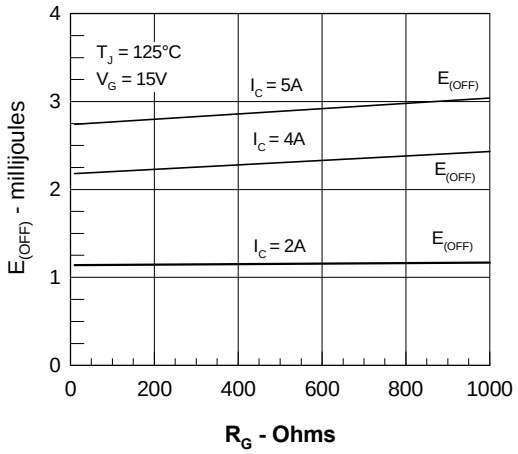


Fig. 9. Gate Charge

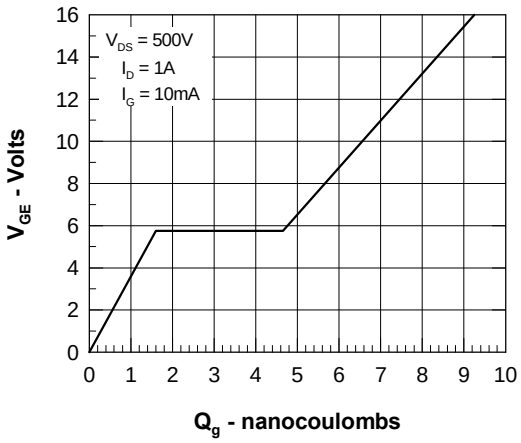


Fig. 10. Turn-off Safe Operating Area

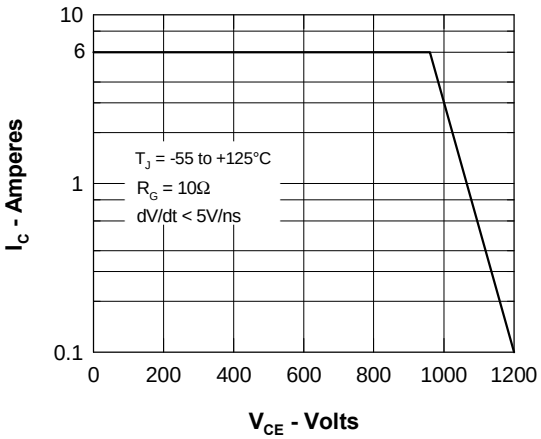


Fig. 11. Transient Thermal Resistance