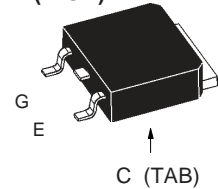


# High Voltage IGBT

**IXGY 2N120**

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

Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ 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	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	5	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	2	A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	8	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15\text{ V}$ , $T_J = 125^\circ\text{C}$ , $R_G = 150\Omega$ Clamped inductive load	$I_{CM} = 6$ @ $0.8 V_{CES}$	A
$P_C$	$T_C = 25^\circ\text{C}$	25	W
$T_J$		-55 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{STG}$		-55 ... +150	$^\circ\text{C}$
<b>Weight</b>		0.8	g
<b>Max. Lead Temperature for Soldering</b> (1.6mm from case for 10s)		300	$^\circ\text{C}$

**TO-252 AA (IXGY)**


G = Gate  
E = Emitter  
C = Collector  
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

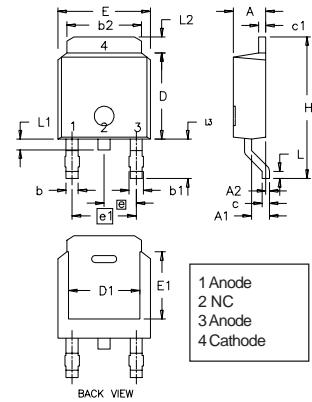
**Applications**

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

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

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

### TO-252 AA Outline (IXGY)



Dim.	Millimeter		Inches	
	Min.	Max.	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

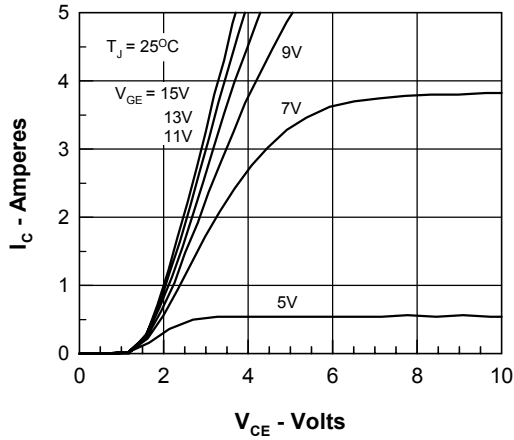


Fig. 2. Extended Output Characteristics

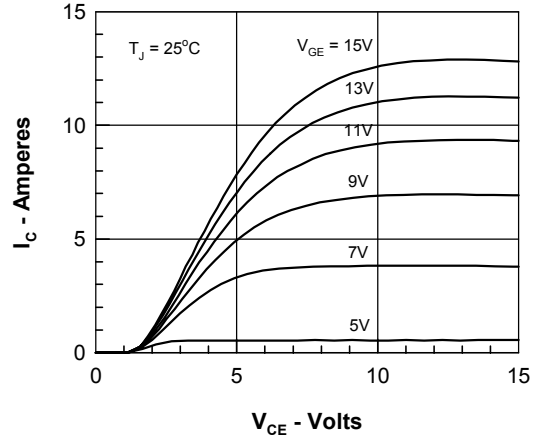


Fig. 3. Saturation Voltage Characteristics @ 125°C

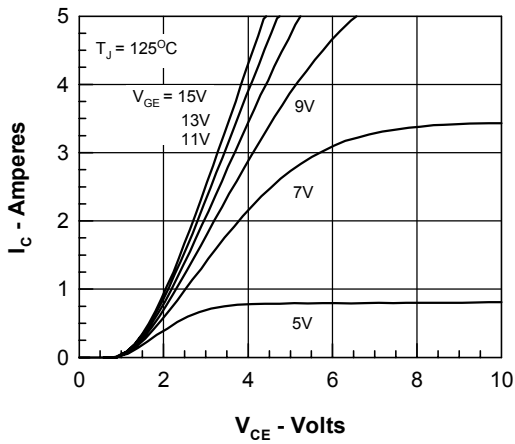


Fig. 4. Temperature Dependence of  $V_{CE(SAT)}$

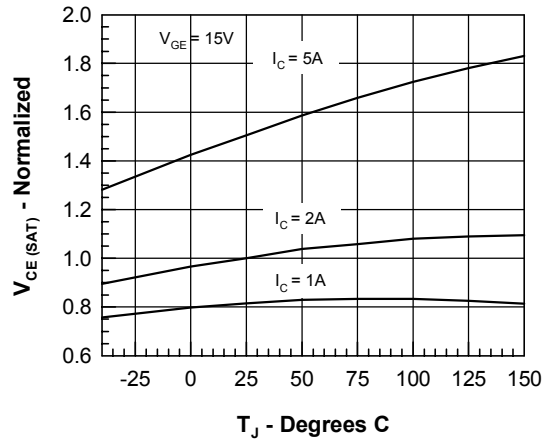


Fig. 5. Admittance Curves

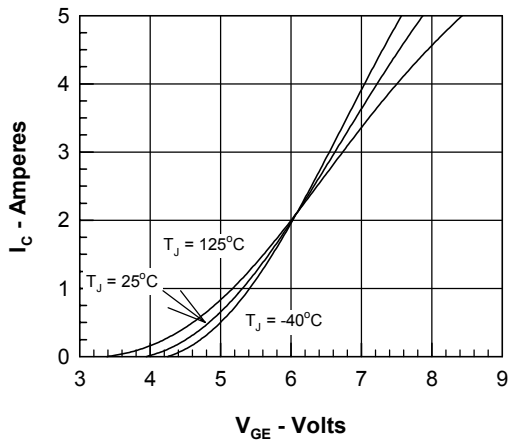


Fig. 6. Capacitance Curves

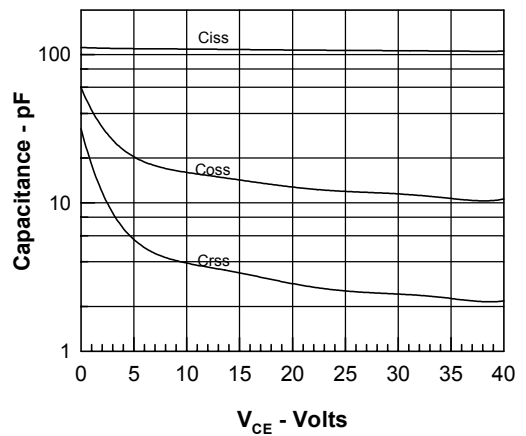


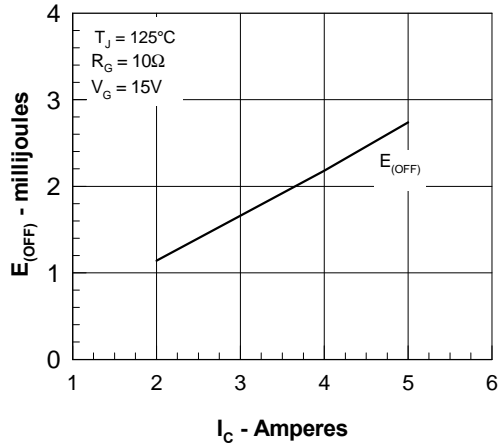
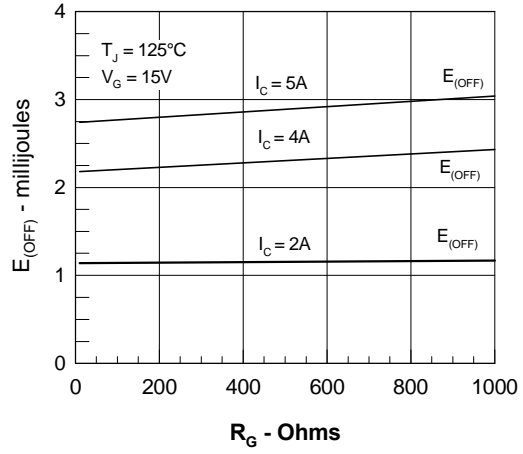
Fig. 7. Dependence of  $E_{OFF}$  on  $I_C$ .

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


Fig. 9. Gate Charge

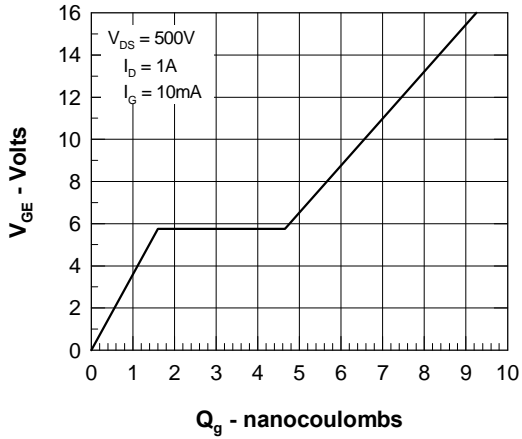


Fig. 10. Turn-off Safe Operating Area

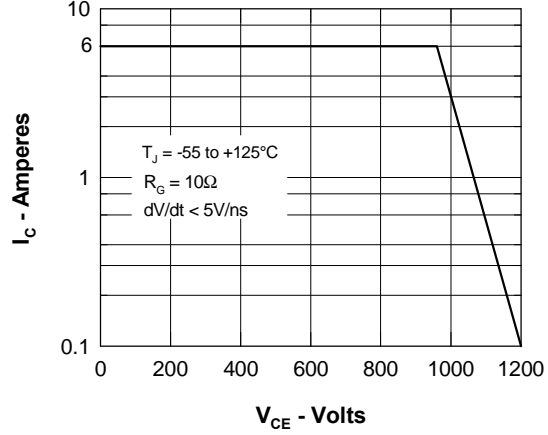


Fig. 11. Transient Thermal Resistance

