

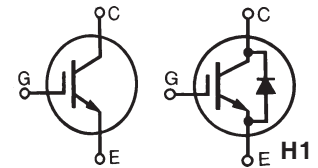
# High Voltage IGBT

**IXGH 16N170A**  
**IXGT 16N170A**  
**IXGH 16N170AH1**  
**IXGT 16N170AH1**

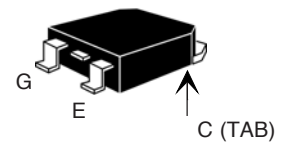
$V_{CES} = 1700 \text{ V}$   
 $I_{C25} = 16 \text{ A}$   
 $V_{CE(sat)} = 5.0 \text{ V}$   
 $t_{fi(typ)} = 70 \text{ ns}$

## Preliminary Data Sheet

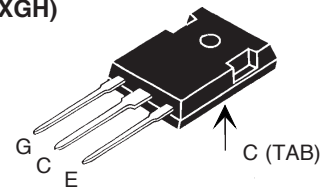
Symbol	Test Conditions	Maximum Ratings
$V_{CES}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	1700 V
$V_{CGR}$	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	1700 V
$V_{GES}$	Continuous	$\pm 20 \text{ V}$
$V_{GEM}$	Transient	$\pm 30 \text{ V}$
$I_{C25}$	$T_C = 25^\circ\text{C}$	16 A
$I_{C90}$	$T_C = 90^\circ\text{C}$	11 A
$I_{F90}$	$T_C = 90^\circ\text{C}$ , Diode	17 A
$I_{CM}$	$T_C = 25^\circ\text{C}$ , 1 ms	40 A
<b>SSOA (RBSOA)</b>	$V_{GE} = 15 \text{ V}$ , $T_{VJ} = 125^\circ\text{C}$ , $R_G = 10\Omega$ Clamped inductive load	$I_{CM} = 40$ @ $0.8 V_{CES}$
$t_{SC}$	$T_J = 125^\circ\text{C}$ , $V_{CE} = 1200 \text{ V}$ ; $V_{GE} = 15 \text{ V}$ , $R_G = 22\Omega$	10 $\mu\text{s}$
$P_C$	$T_C = 25^\circ\text{C}$	190 W
$T_J$		-55 ... +150 $^\circ\text{C}$
$T_{JM}$		150 $^\circ\text{C}$
$T_{stg}$		-55 ... +150 $^\circ\text{C}$
$M_d$	Mounting torque (M3)	TO-247 1.13/10Nm/lb.in.
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s	300 $^\circ\text{C}$
	Plastic body for 10s	260 $^\circ\text{C}$
<b>Weight</b>		TO-247 6 g TO-268 4 g



**TO-268 (IXGT)**



**TO-247 (IXGH)**



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

### Features

- High blocking voltage
- High current handling capability
- MOS Gate turn-on - drive simplicity
- Rugged NPT structure
- Molding epoxies meet UL 94 V-0 flammability classification
- SONIC-FRD™ fast recovery copack diode
- International standard packages JEDEC TO-268 and JEDEC TO-247 AD

### Applications

- Capacitor discharge & pulser circuits
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switched-mode and resonant-mode power supplies

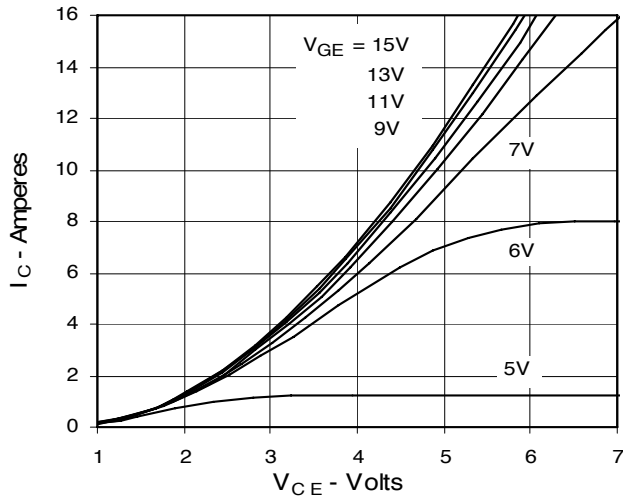
### Advantages

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

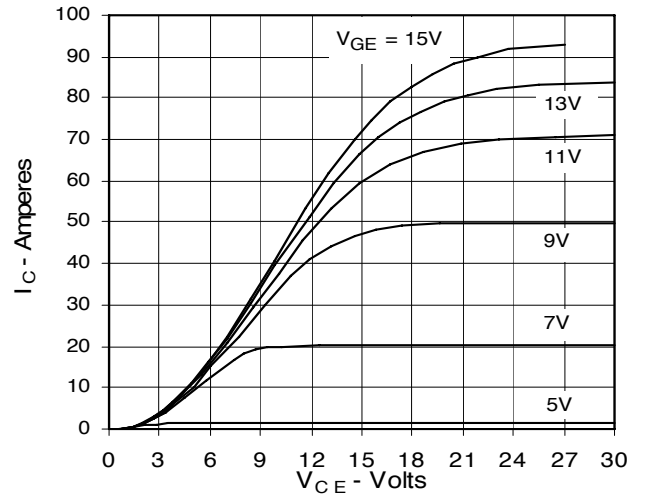
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$BV_{CES}$	$I_C = 250 \mu\text{A}$ , $V_{GE} = 0 \text{ V}$	1700		V
$V_{GE(th)}$	$I_C = 250 \mu\text{A}$ , $V_{CE} = V_{GE}$	3.0		V
$I_{CES}$	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$ , Note 1 $T_J = 125^\circ\text{C}$	16N170A		50 $\mu\text{A}$
		16N170AH1		100 $\mu\text{A}$
		16N170A		750 $\mu\text{A}$
		16N170AH1		1.5 mA
$I_{GES}$	$V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$I_C = I_{C90}$ , $V_{GE} = 15 \text{ V}$ $T_J = 125^\circ\text{C}$	4.0		V
		4.8		V



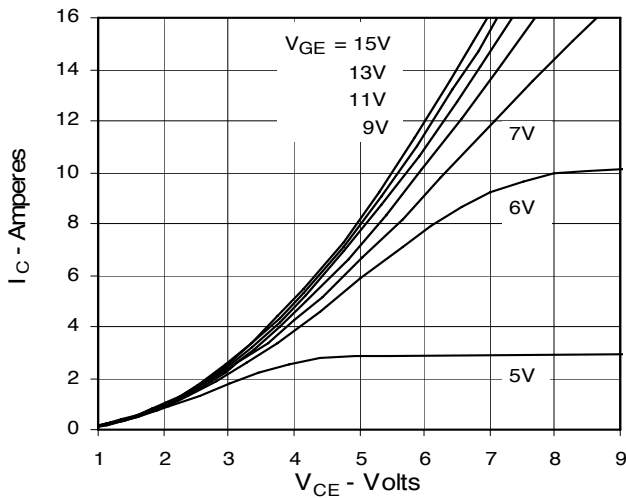
**Fig. 1. Output Characteristics**  
**@ 25 °C**



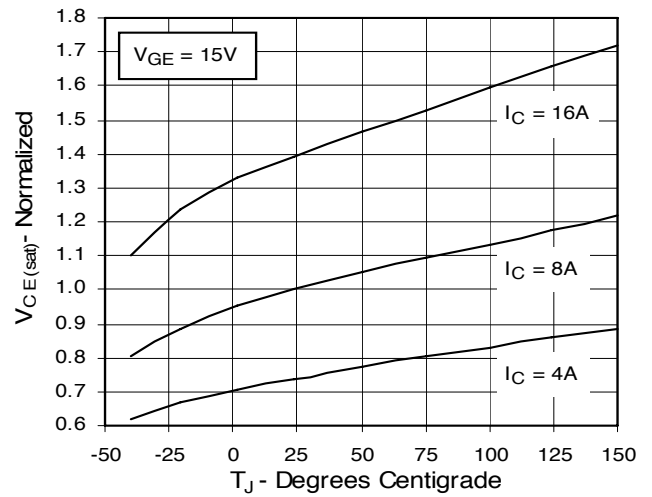
**Fig. 2. Extended Output Characteristics**  
**@ 25 °C**



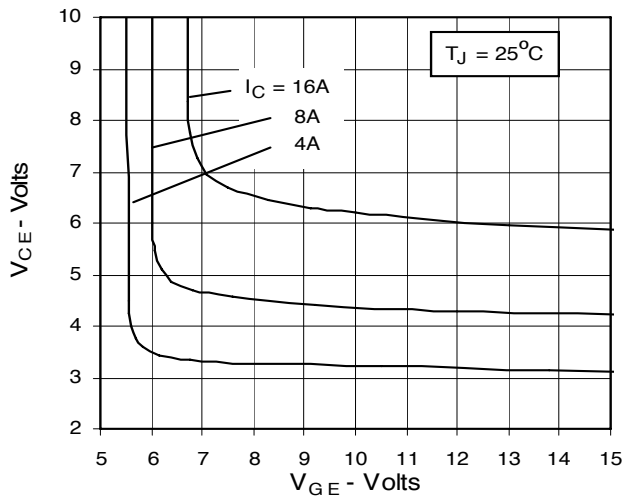
**Fig. 3. Output Characteristics**  
**@ 125 °C**



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



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



**Fig. 6. Input Admittance**

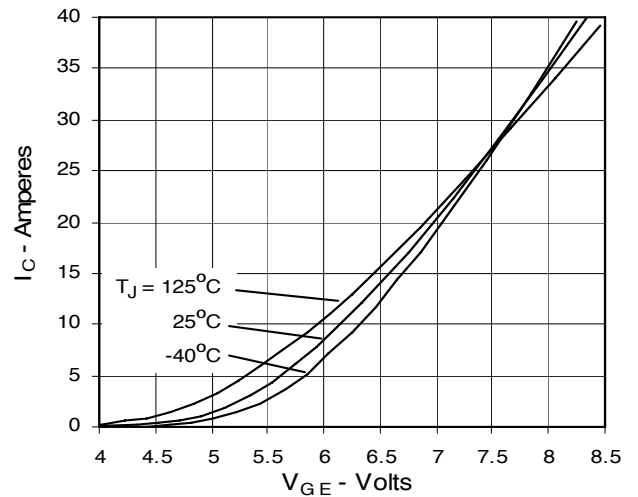


Fig. 7. Transconductance

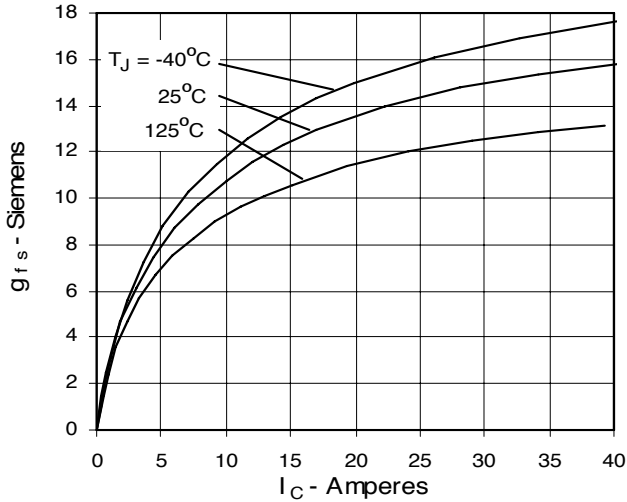


Fig. 8. Dependence of Turn-off Energy Loss on  $R_G$

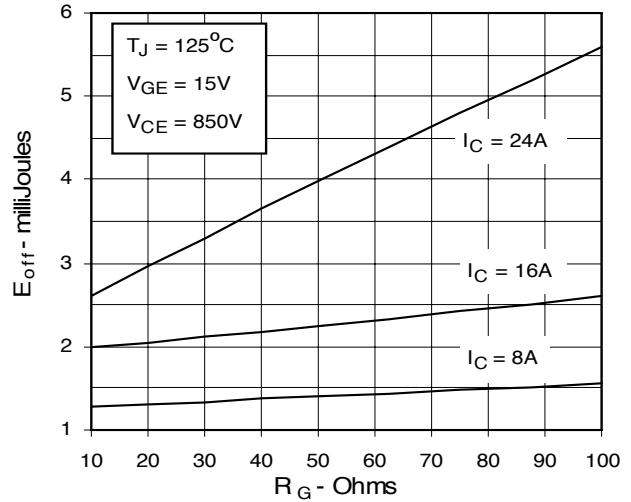


Fig. 9. Dependence of Turn-Off Energy Loss on  $I_C$

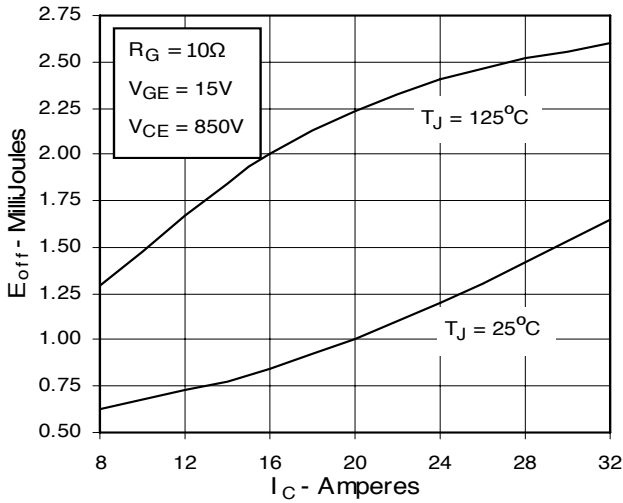


Fig. 10. Dependence of Turn-off Energy Loss on Temperature

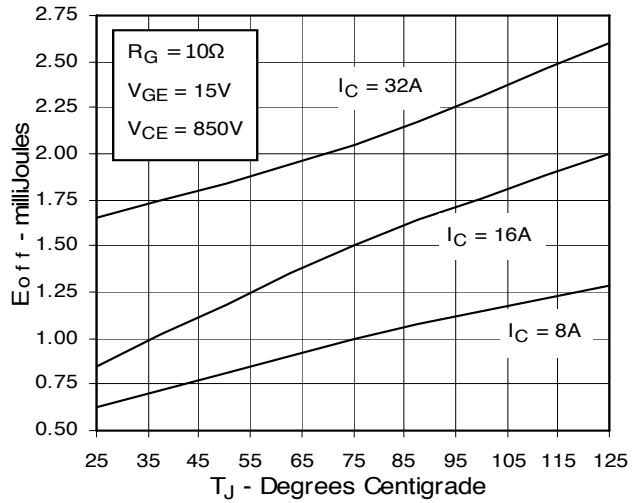


Fig. 11. Dependence of Turn-off Switching Time on  $R_G$

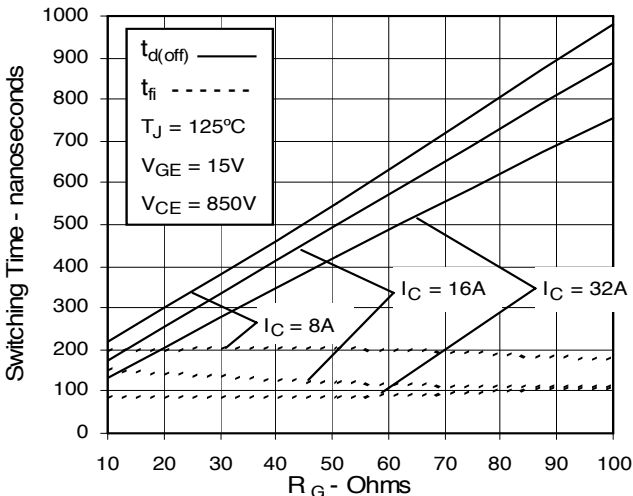
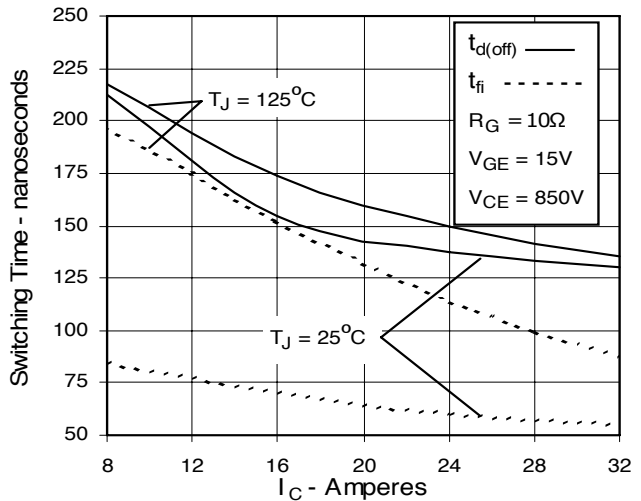
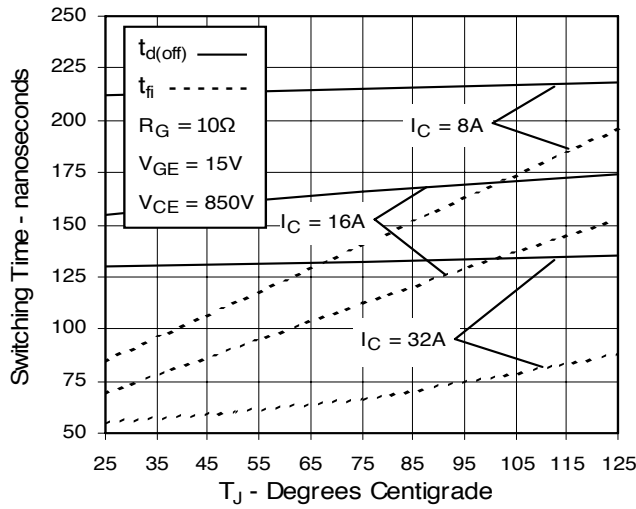


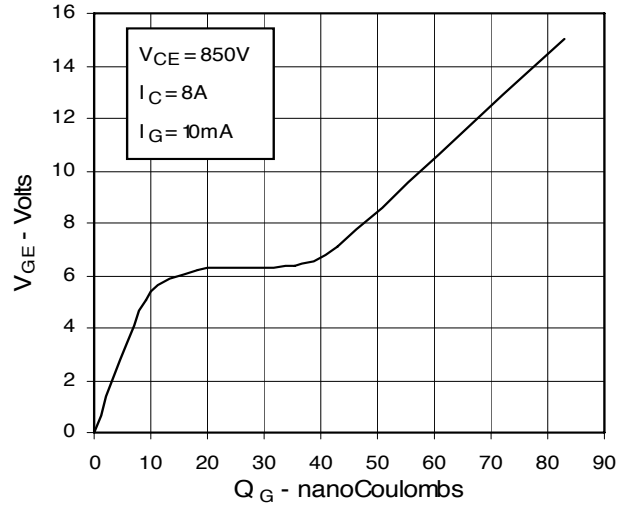
Fig. 12. Dependence of Turn-off Switching Time on  $I_C$



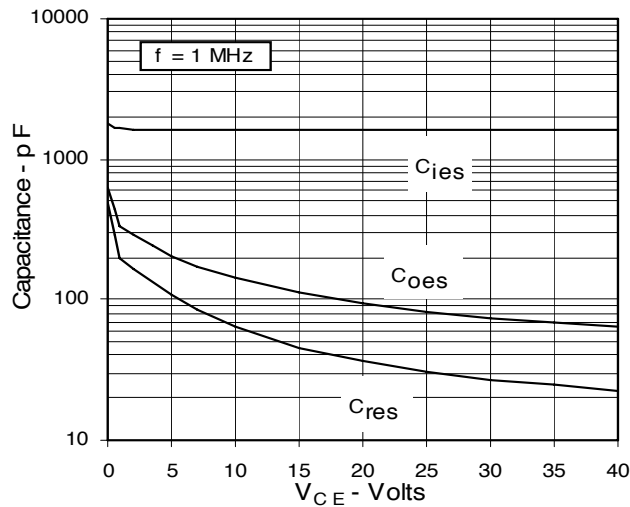
**Fig. 13. Dependence of Turn-off Switching Time on Temperature**



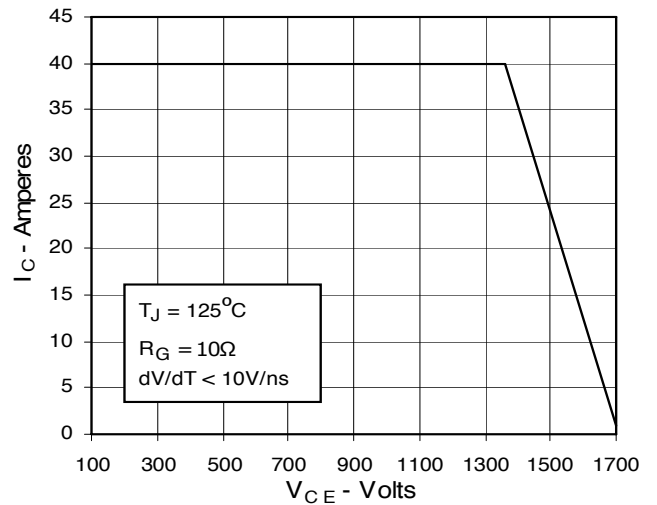
**Fig. 14. Gate Charge**



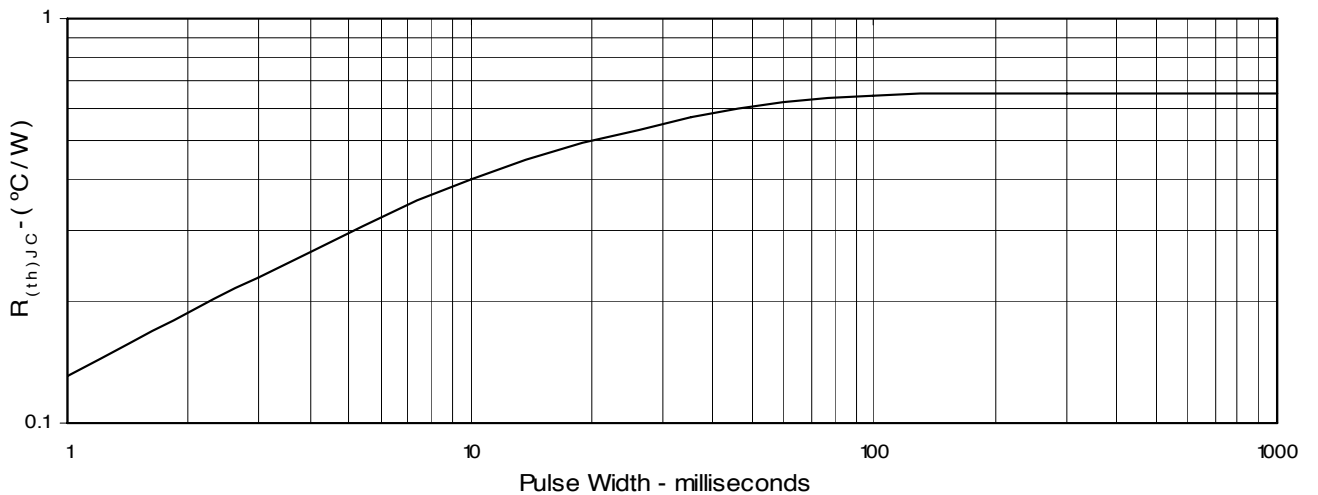
**Fig. 15. Capacitance**



**Fig. 16. Reverse-Bias Safe Operating Area**



**Fig. 17. Maximum Transient Thermal Resistance**



**PRELIMINARY TECHNICAL INFORMATION**

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a subjective pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.