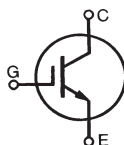


**HiPerFAST™ IGBTs**  
**C2-Class**  
**High Speed**

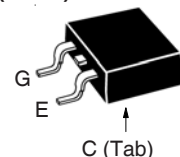
**IXGA16N60C2**  
**IXGP16N60C2**

**V<sub>CES</sub> = 600V**  
**I<sub>C110</sub> = 16A**  
**V<sub>CE(sat)</sub> ≤ 3.0V**  
**t<sub>fi(typ)</sub> = 33ns**

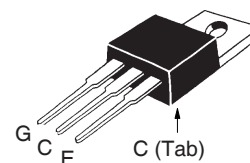


Symbol	Test Conditions	Maximum Ratings	
V <sub>CES</sub>	T <sub>J</sub> = 25°C to 150°C	600	V
V <sub>CGR</sub>	T <sub>J</sub> = 25°C to 150°C, R <sub>GE</sub> = 1MΩ	600	V
V <sub>GES</sub>	Continuous	±20	V
V <sub>GEM</sub>	Transient	±30	V
I <sub>C25</sub>	T <sub>C</sub> = 25°C	40	A
I <sub>C110</sub>	T <sub>C</sub> = 110°C	16	A
I <sub>CM</sub>	T <sub>C</sub> = 25°C, 1ms	100	A
<b>SSOA</b> <b>(RBSOA)</b>	V <sub>GE</sub> = 15V, T <sub>J</sub> = 125°C, R <sub>G</sub> = 22Ω Clamped Inductive load	I <sub>CM</sub> = 32 V <sub>CE</sub> ≤ V <sub>CES</sub>	A
P <sub>C</sub>	T <sub>C</sub> = 25°C	150	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 ... +150	°C
M <sub>d</sub>	Mounting Torque (TO-220)	1.13/10	Nm/lb.in.
F <sub>C</sub>	Mounting Force (TO-263)	10..65 / 2.2..14.6	N/lb.
T <sub>L</sub>	Maximum Lead Temperature for Soldering	300	°C
T <sub>SOLD</sub>	1.6mm (0.062 in.) from Case for 10s	260	°C
<b>Weight</b>	TO-263	2.5	g
	TO-220	3.0	g

**TO-263 AA (IXGA)**



**TO-220AB (IXGP)**



G = Gate      C = Collector  
 E = Emitter    Tab = Collector

**Features**

- Optimized for Low Switching Losses
- Square RBSOA
- International Standard Packages

**Advantages**

- High Power Density
- Low Gate Drive Requirement

**Applications**

- Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Battery Chargers
- Welding Machines
- Lamp Ballasts

Symbol	Test Conditions (T <sub>J</sub> = 25°C, Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
BV <sub>CES</sub>	I <sub>C</sub> = 250μA, V <sub>GE</sub> = 0V	600		V
V <sub>GE(th)</sub>	I <sub>C</sub> = 250μA, V <sub>CE</sub> = V <sub>GE</sub>	3.0		5.5 V
I <sub>CES</sub>	V <sub>CE</sub> = V <sub>CES</sub> , V <sub>GE</sub> = 0V T <sub>J</sub> = 125°C			15 μA 250 μA
I <sub>GES</sub>	V <sub>CE</sub> = 0V, V <sub>GE</sub> = ±20V			±100 nA
V <sub>CE(sat)</sub>	I <sub>C</sub> = 12A, V <sub>GE</sub> = 15V, Note1 T <sub>J</sub> = 125°C		1.8	3.0 V V



Fig. 1. Output Characteristics @  $T_J = 25^\circ\text{C}$

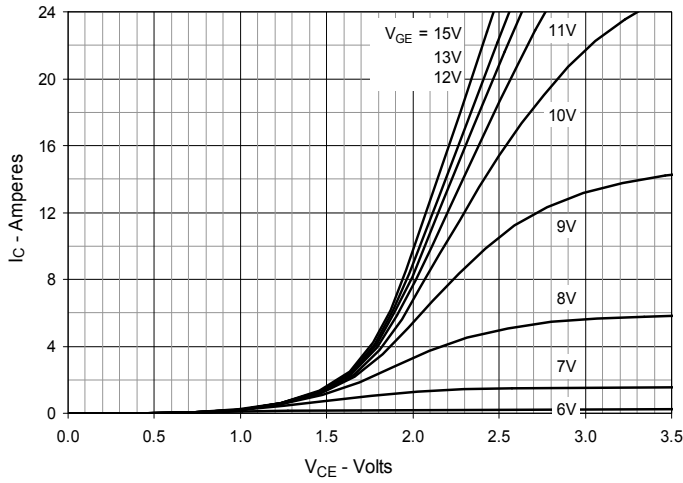


Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$

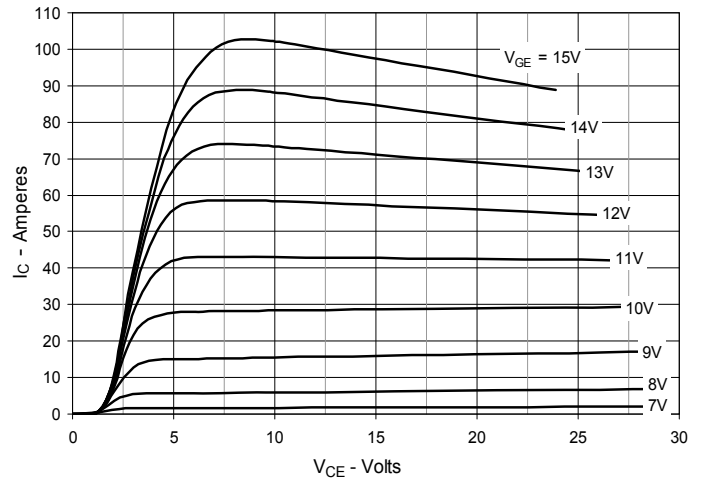


Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$

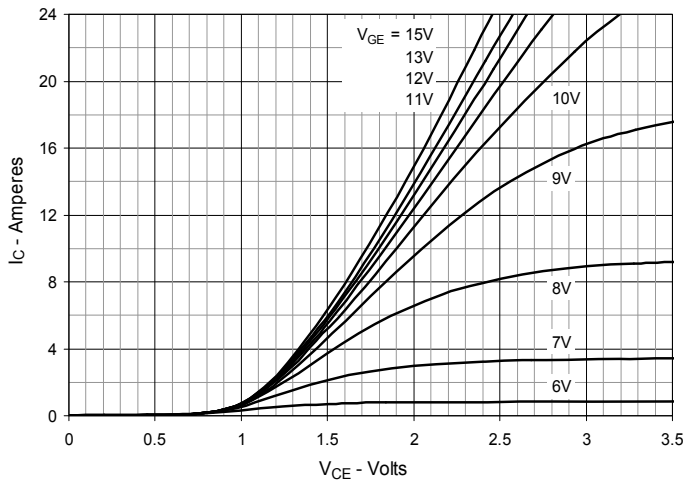


Fig. 4. Dependence of  $V_{CE(sat)}$  on Junction Temperature

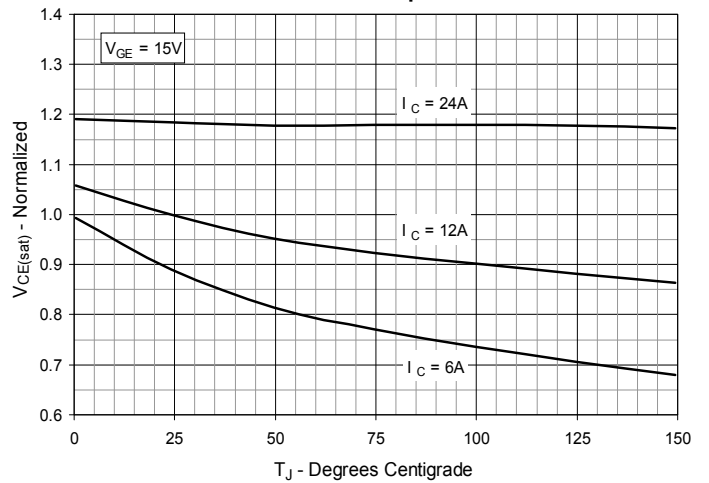


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

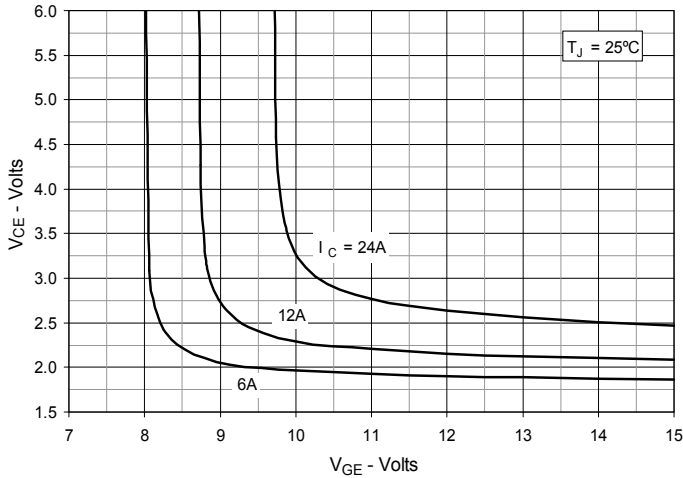
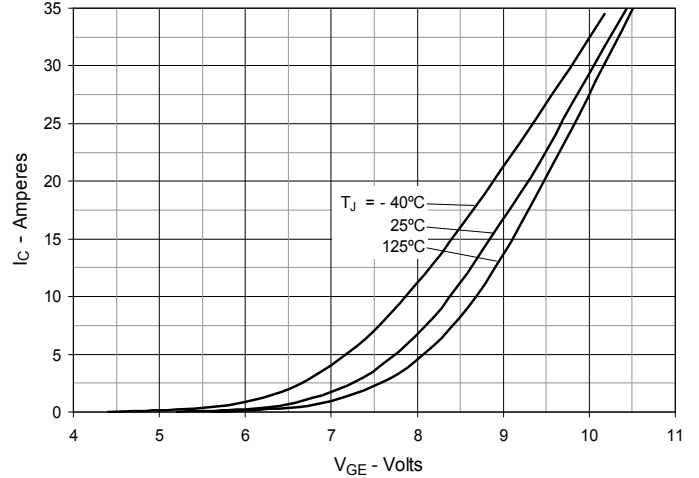
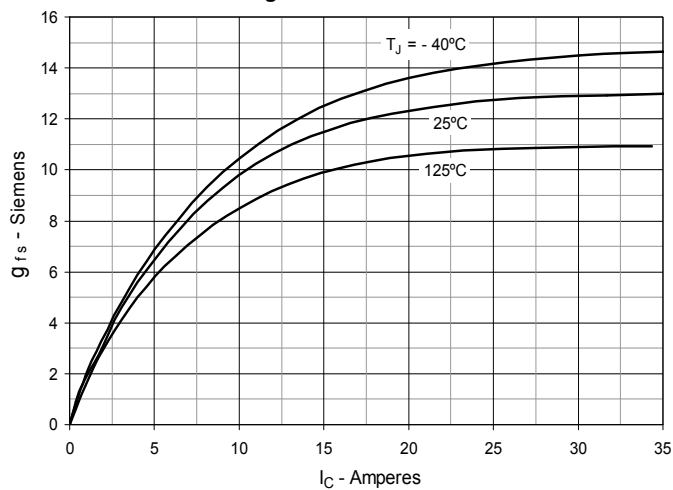


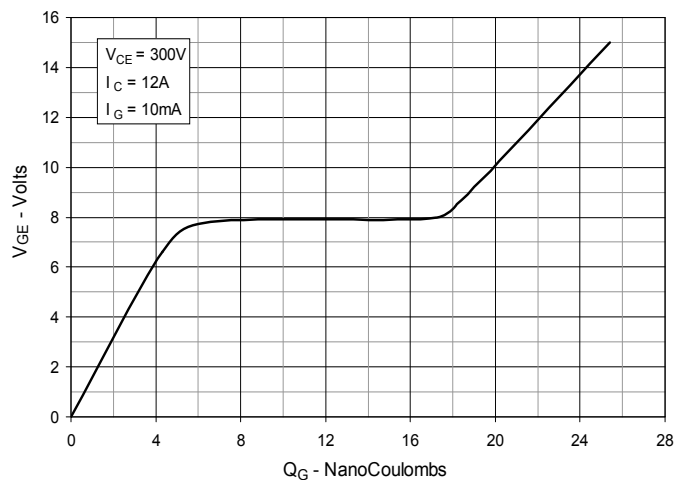
Fig. 6. Input Admittance



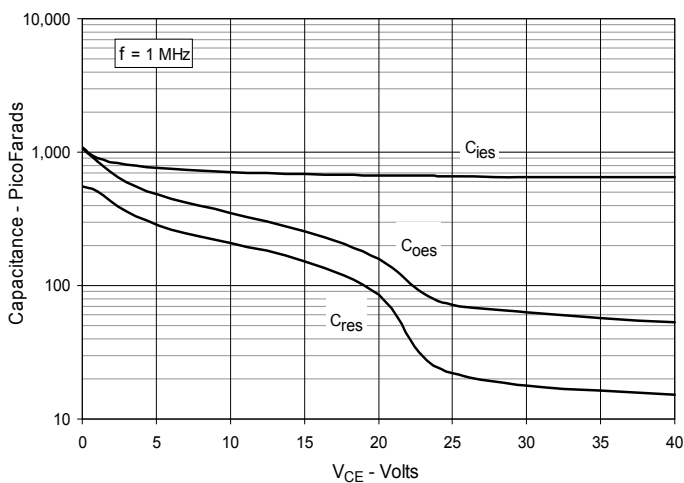
**Fig. 7. Transconductance**



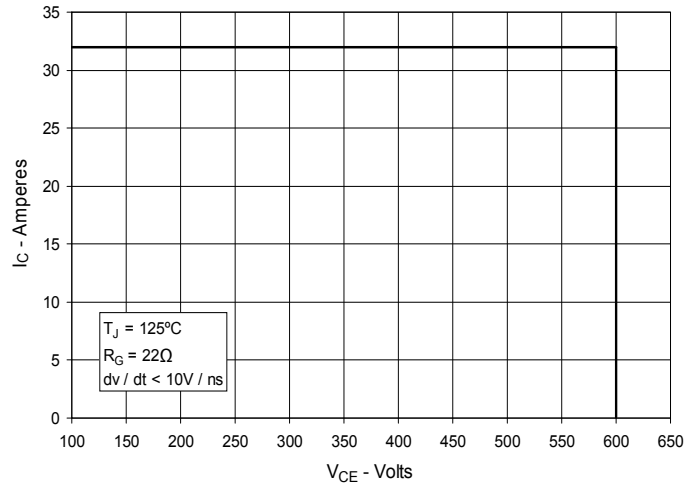
**Fig. 8. Gate Charge**



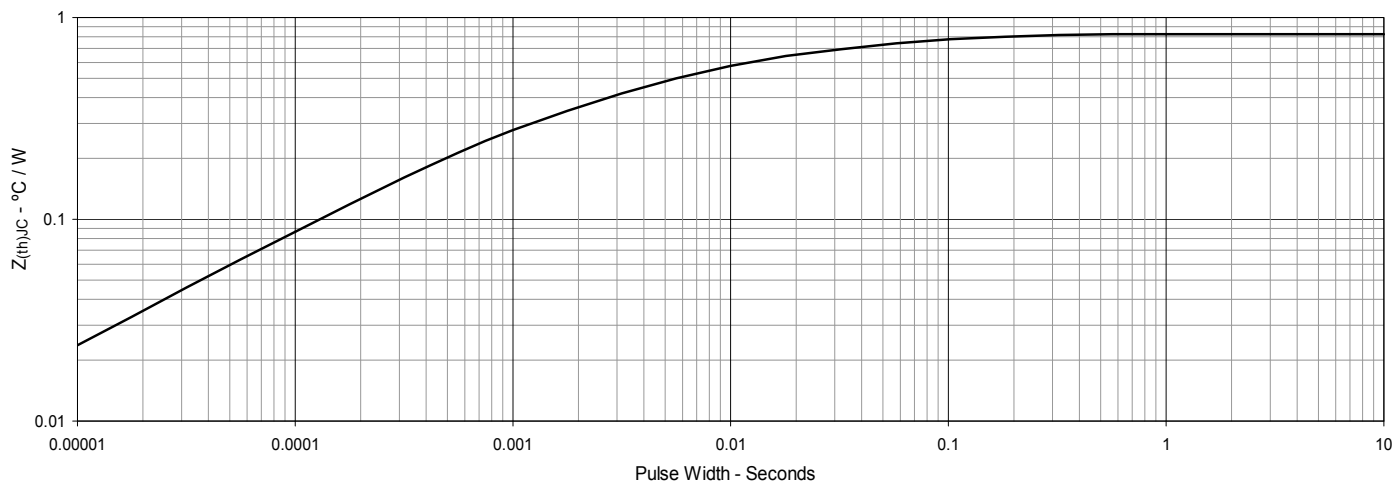
**Fig. 9. Capacitance**



**Fig. 10. Reverse-Bias Safe Operating Area**

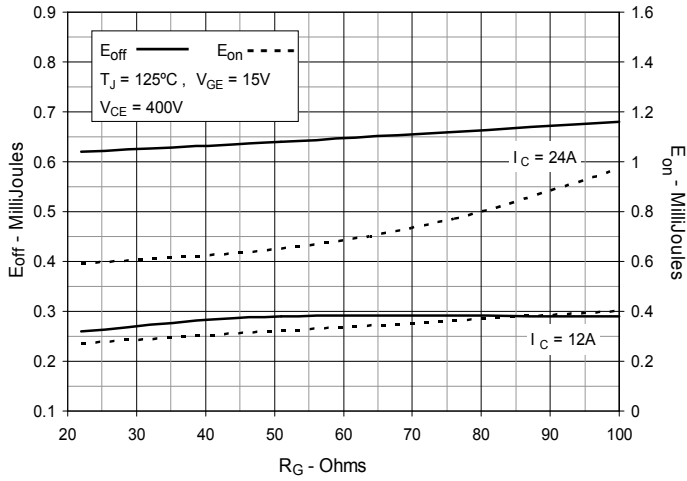


**Fig. 11. Maximum Transient Thermal Impedance**

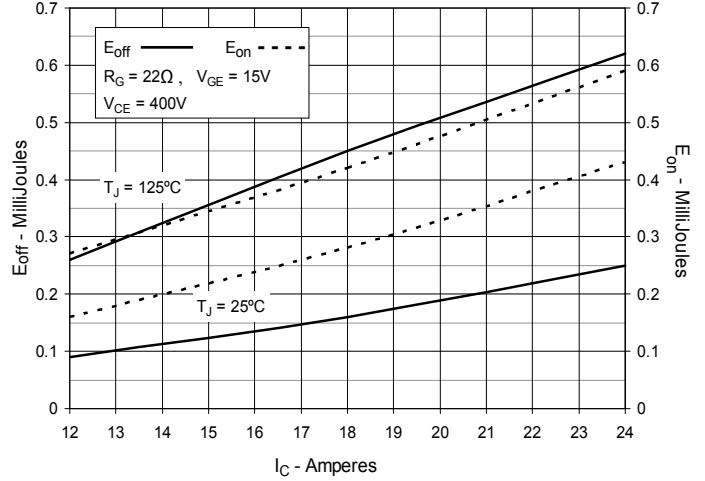


IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

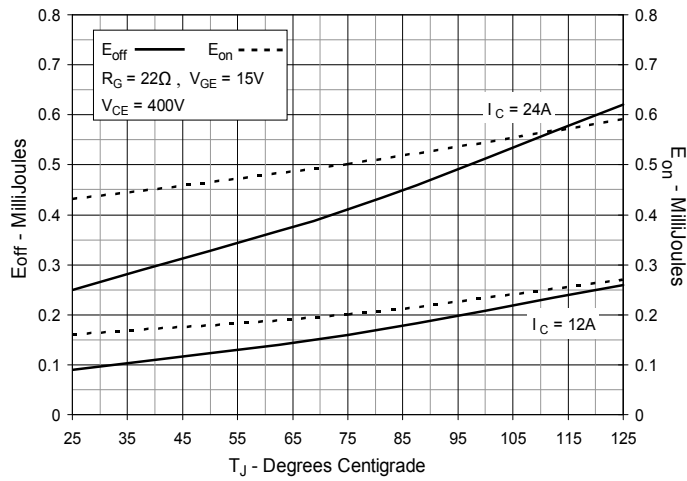
**Fig. 12. Inductive Switching Energy Loss vs. Gate Resistance**



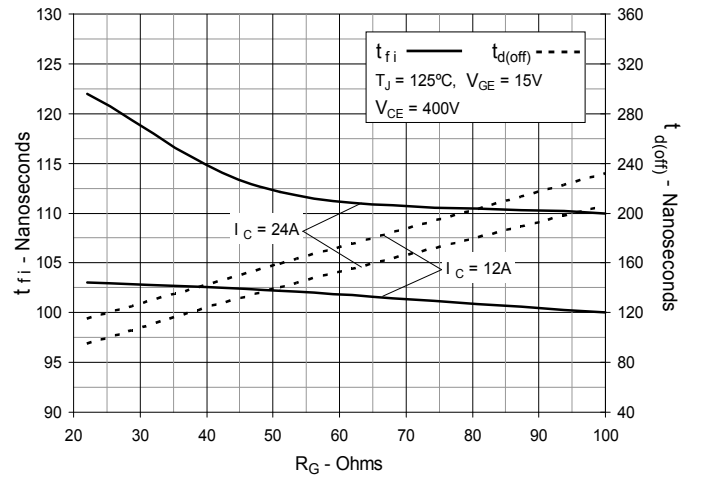
**Fig. 13. Inductive Switching Energy Loss vs. Collector Current**



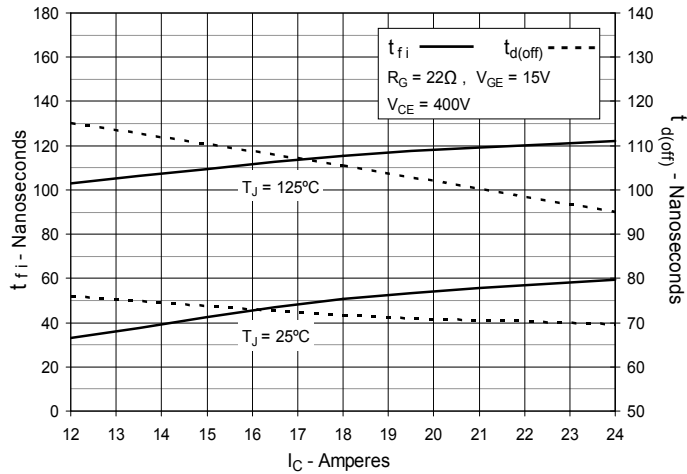
**Fig. 14. Inductive Switching Energy Loss vs. Junction Temperature**



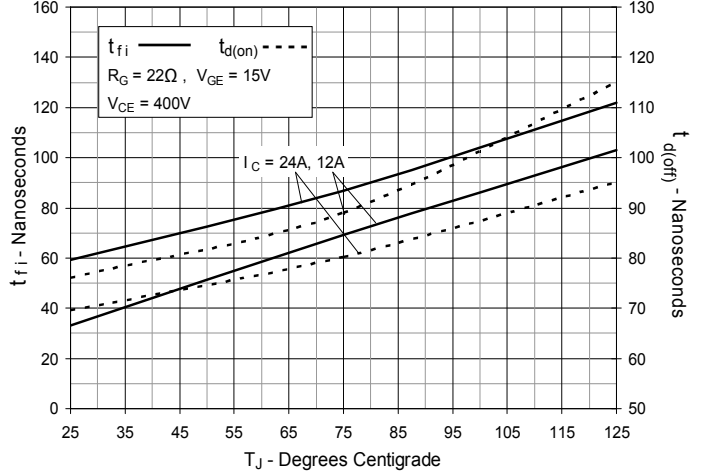
**Fig. 15. Inductive Turn-off Switching Times vs. Gate Resistance**



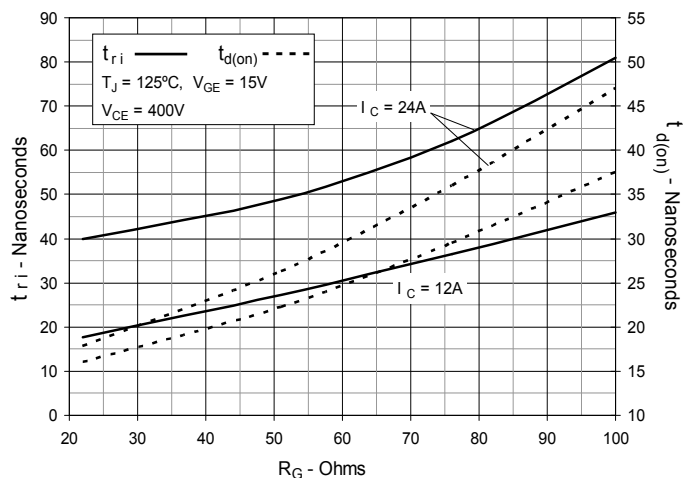
**Fig. 16. Inductive Turn-off Switching Times vs. Collector Current**



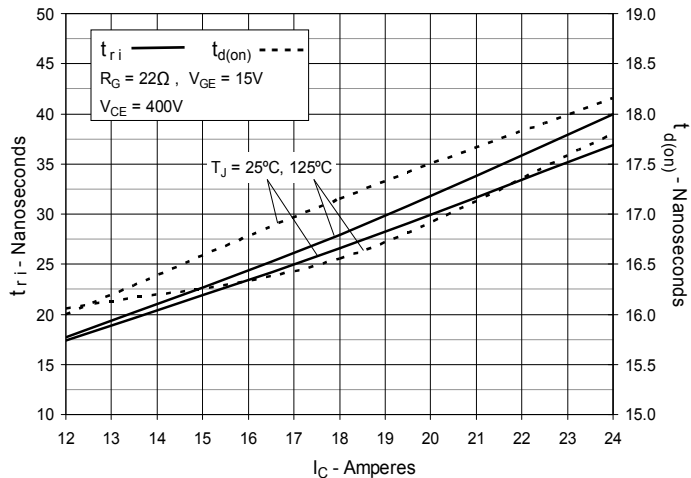
**Fig. 17. Inductive Turn-off Switching Times vs. Junction Temperature**



**Fig. 18. Inductive Turn-on Switching Times vs. Gate Resistance**



**Fig. 19. Inductive Turn-on Switching Times vs. Collector Current**



**Fig. 20. Inductive Turn-on Switching Times vs. Junction Temperature**

