

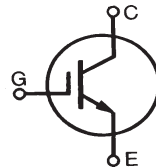
# GenX3™ 300V IGBT

# IXGK400N30A3

# IXGX400N30A3\*

\*Obsolete Part Number

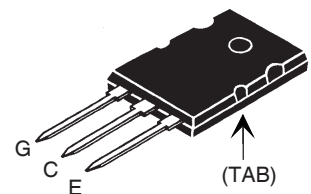
Ultra-low V<sub>sat</sub> PT IGBTs for up to 10kHz switching



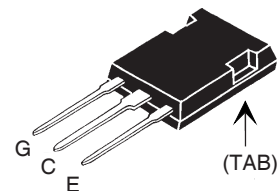
**V<sub>CES</sub> = 300V**  
**I<sub>C25</sub> = 400A**  
**V<sub>CE(sat)</sub> ≤ 1.15V**

Symbol	Test Conditions	Maximum Ratings	
V <sub>CES</sub>	T <sub>J</sub> = 25°C to 150°C	300	V
V <sub>CGR</sub>	T <sub>J</sub> = 25°C to 150°C, R <sub>GE</sub> = 1MΩ	300	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	400	A
I <sub>C110</sub>	T <sub>C</sub> = 110°C	200	A
I <sub>LRMS</sub>	Terminal Current Limit	75	A
I <sub>CM</sub>	T <sub>C</sub> = 25°C, 1ms	400	A
<b>SSOA</b> <b>(RBSOA)</b>	V <sub>GE</sub> = 15V, T <sub>VJ</sub> = 125°C, R <sub>G</sub> = 1Ω Clamped inductive load	I <sub>CM</sub> = 400 @ 0.8 • V <sub>CES</sub>	A
P <sub>C</sub>	T <sub>C</sub> = 25°C	1000	W
T <sub>J</sub>		-55 ... +150	°C
T <sub>JM</sub>		150	°C
T <sub>stg</sub>		-55 ... +150	°C
T <sub>L</sub>	Maximum lead temperature for soldering	300	°C
T <sub>SOLD</sub>	1.6 mm (0.062 in.) from case for 10	260	°C
M <sub>d</sub>	Mounting torque ( IXGK )	1.13/10	Nm/lb.in.
F <sub>C</sub>	Mounting force ( IXGX )	20..120/4.5..27	N/lb.
<b>Weight</b>	TO-264	10	g
	PLUS247	6	g

TO-264



PLUS247™



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

### Features

- Optimized for low switching losses
- Square RBSOA
- High avalanche capability
- International standard packages

### Advantages

- High power density
- Low gate drive requirement

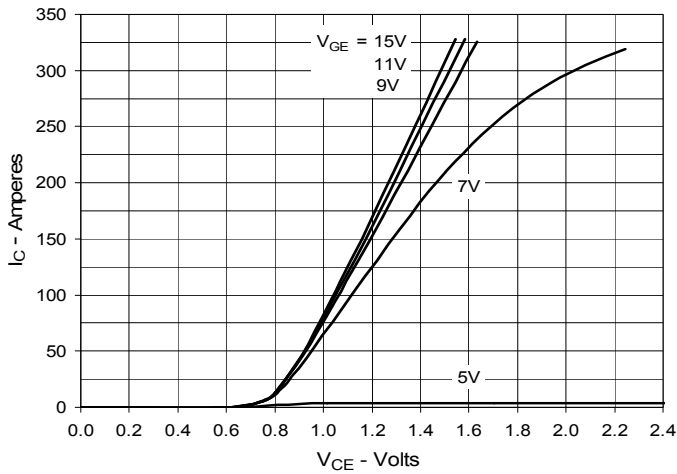
### Applications

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

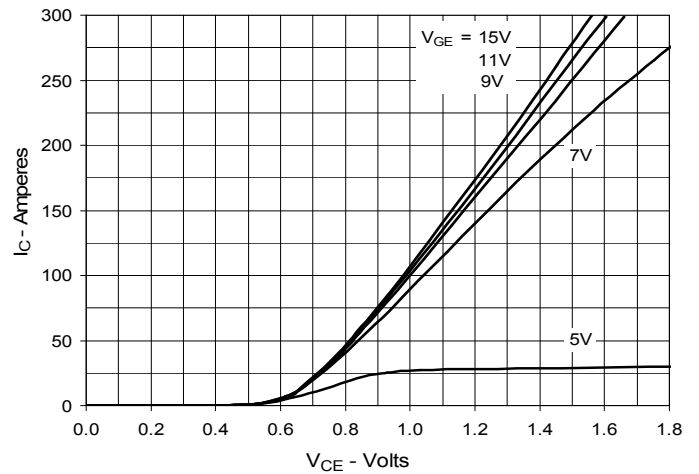
Symbol	Test Conditions (T <sub>J</sub> = 25°C, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV <sub>CES</sub>	I <sub>C</sub> = 1mA, V <sub>GE</sub> = 0V	300		V
V <sub>GE(th)</sub>	I <sub>C</sub> = 4mA, V <sub>CE</sub> = V <sub>GE</sub>	3.0		5.0 V
I <sub>CES</sub>	V <sub>CE</sub> = V <sub>CES</sub> V <sub>GE</sub> = 0V                      T <sub>J</sub> = 125°C			50 μA 2 mA
I <sub>GES</sub>	V <sub>CE</sub> = 0V, V <sub>GE</sub> = ±20V			±400 nA
V <sub>CE(sat)</sub>	I <sub>C</sub> = 100A, V <sub>GE</sub> = 15V, Note 1 I <sub>C</sub> = 400A	1.70	1.15	V V



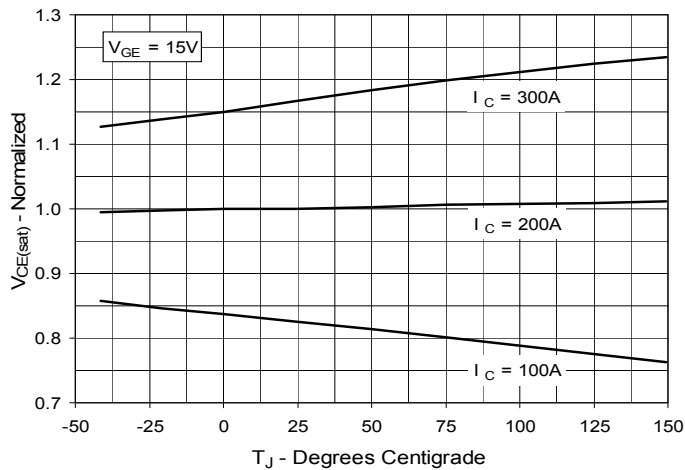
**Fig. 1. Output Characteristics @ 25°C**



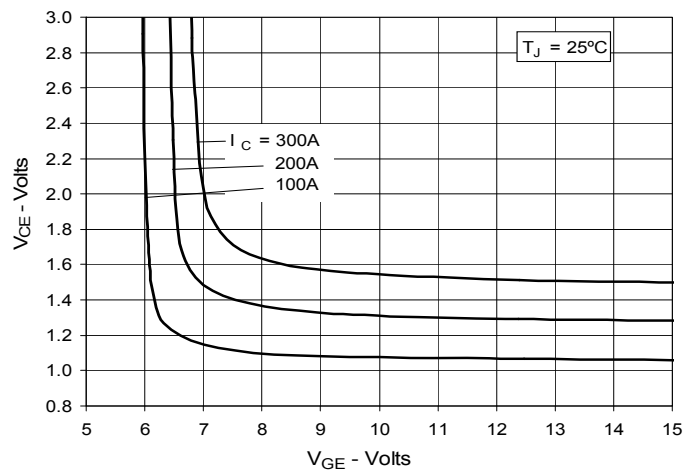
**Fig. 2. Output Characteristics @ 125°C**



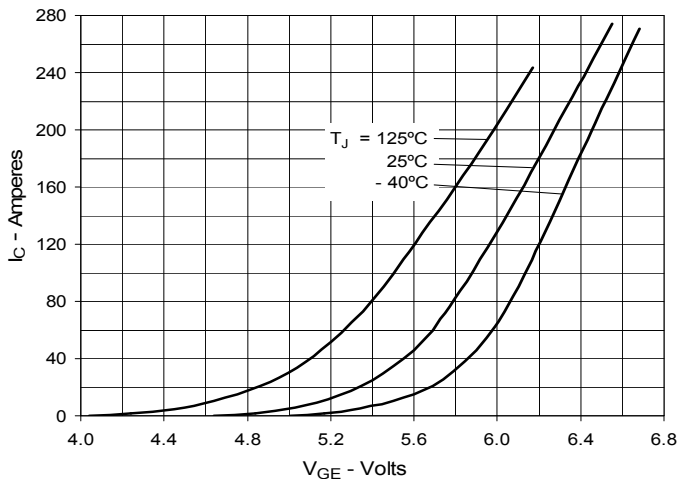
**Fig. 3. Dependence of  $V_{CE(sat)}$  on Junction Temperature**



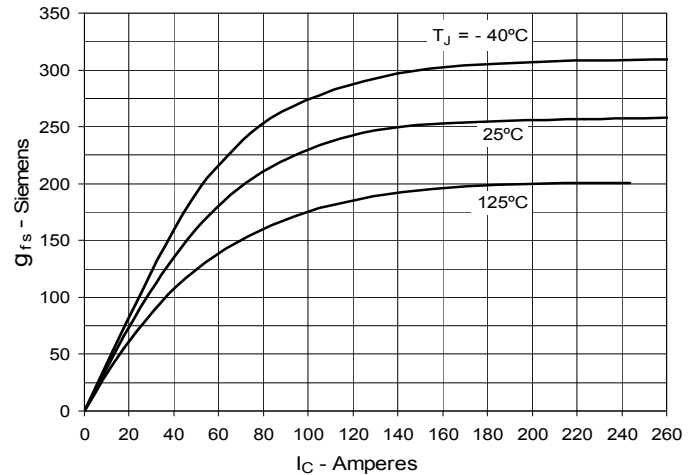
**Fig. 4. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**



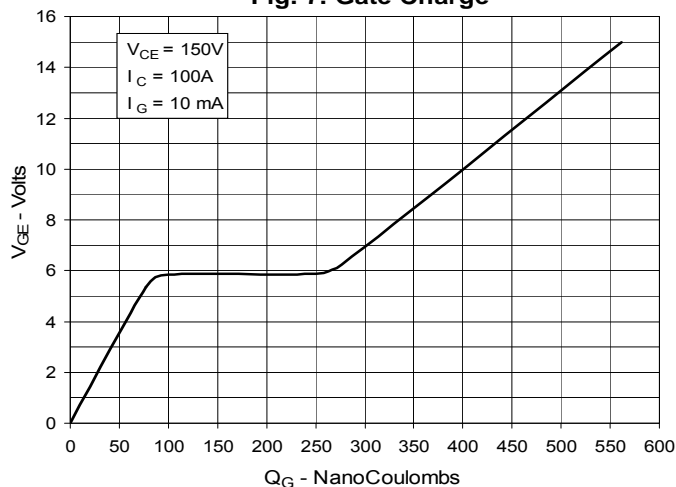
**Fig. 5. Input Admittance**



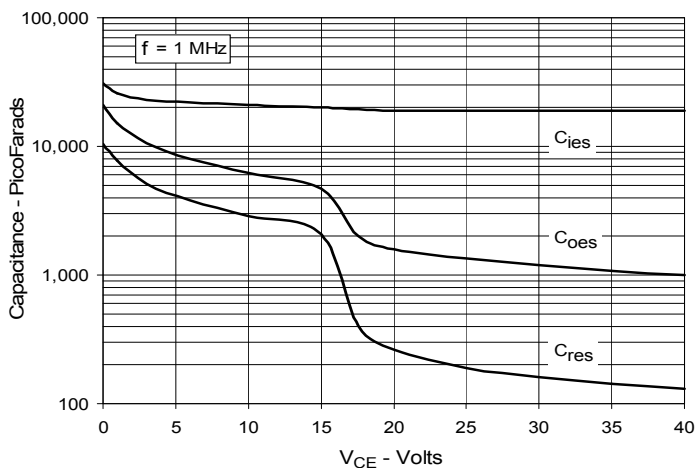
**Fig. 6. Transconductance**



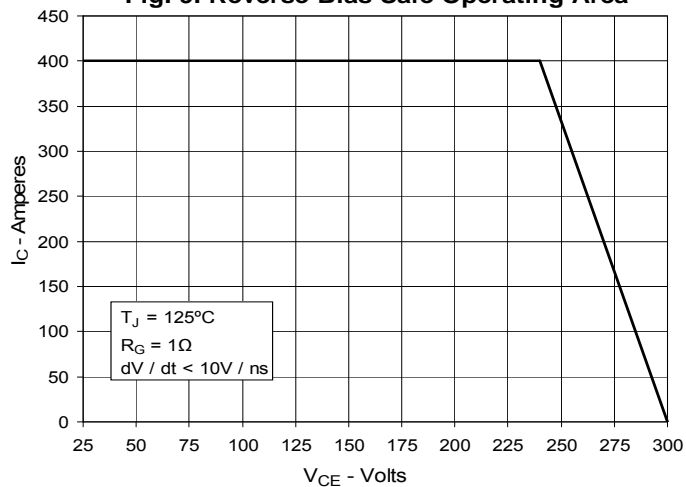
**Fig. 7. Gate Charge**



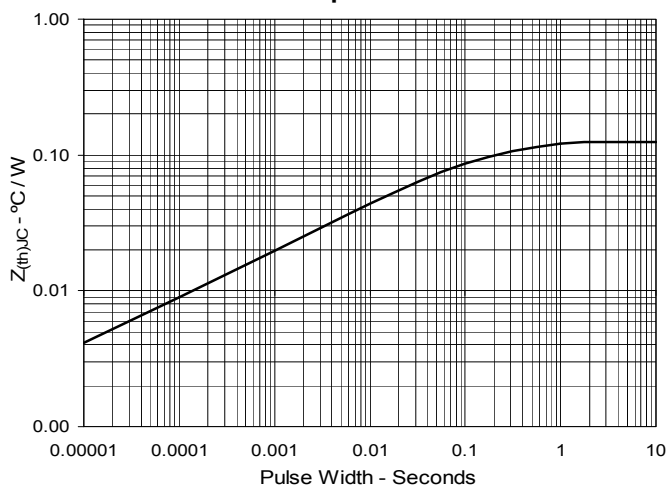
**Fig. 8. Capacitance**



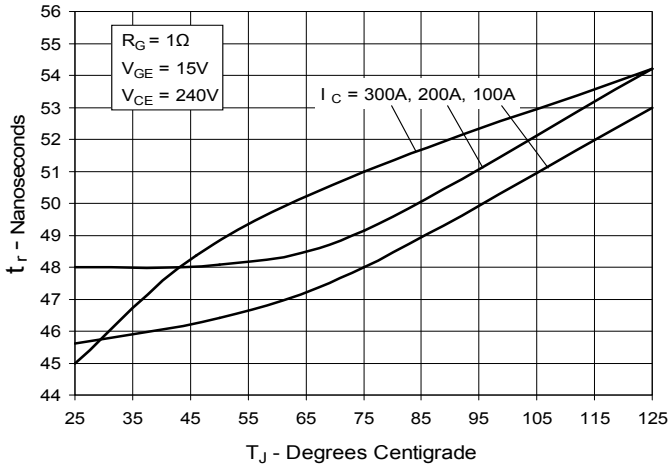
**Fig. 9. Reverse-Bias Safe Operating Area**



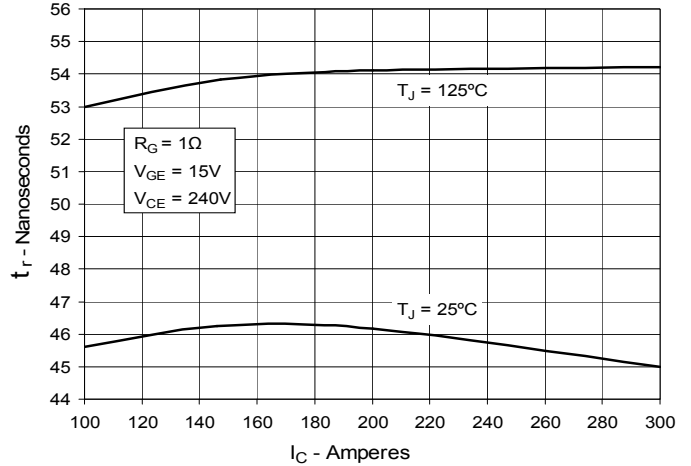
**Fig. 10. Maximum Transient Thermal Impedance**



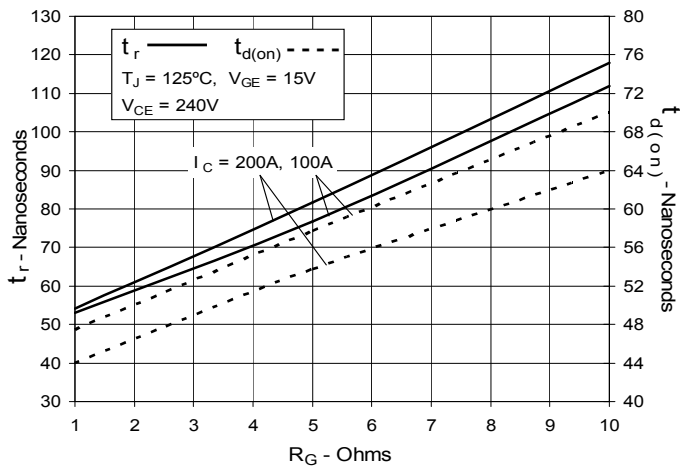
**Fig. 11. Resistive Turn-on Rise Time vs. Junction Temperature**



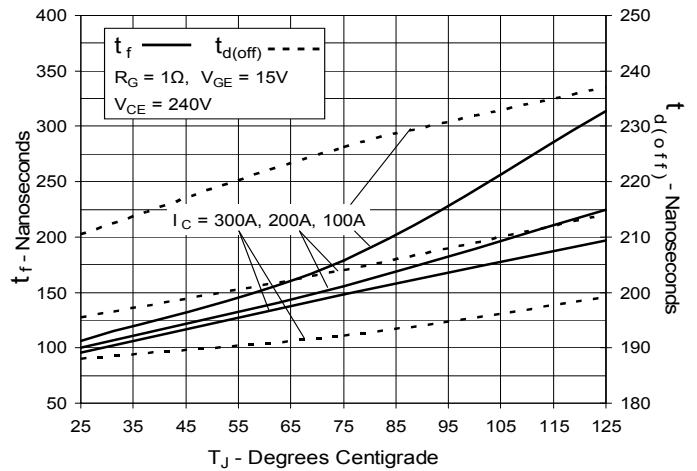
**Fig. 12. Resistive Turn-on Rise Time vs. Collector Current**



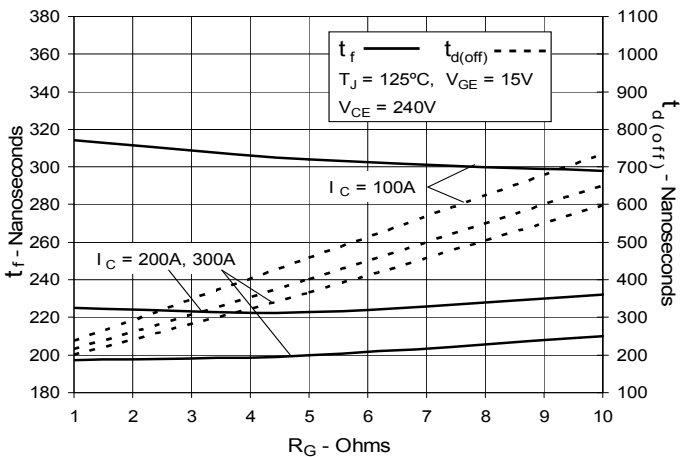
**Fig. 13. Resistive Turn-on Switching Times vs. Gate Resistance**



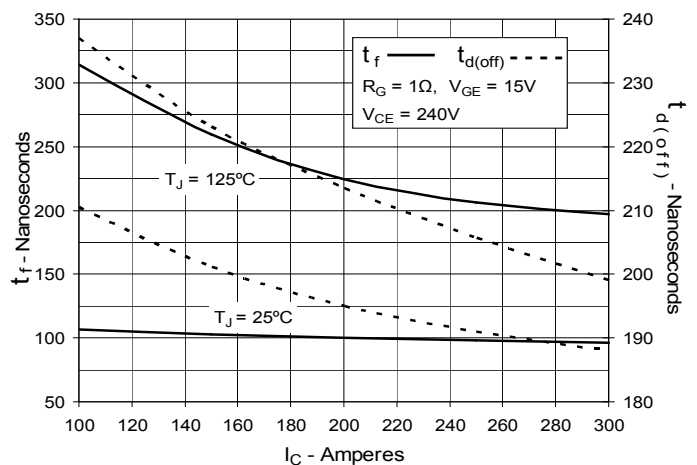
**Fig. 14. Resistive Turn-off Switching Times vs. Junction Temperature**



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



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





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