

## GenX3™ 300V IGBT

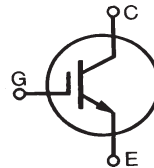
## IXGK400N30A3 IXGX400N30A3

$$V_{CES} = 300V$$

$$I_{C25} = 400A$$

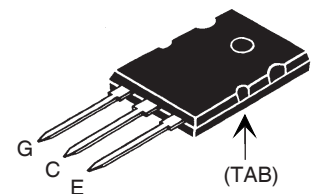
$$V_{CE(sat)} \leq 1.15V$$

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

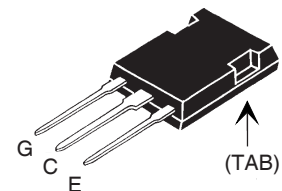


Symbol	Test Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ C$ to $150^\circ C$	300	V
$V_{CGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GE} = 1M\Omega$	300	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ C$	400	A
$I_{C110}$	$T_C = 110^\circ C$	200	A
$I_{LRMS}$	Terminal Current Limit	75	A
$I_{CM}$	$T_C = 25^\circ C$ , 1ms	400	A
<b>SSOA</b> <b>(RBSOA)</b>	$V_{GE} = 15V$ , $T_{VJ} = 125^\circ C$ , $R_G = 1\Omega$ Clamped inductive load	$I_{CM} = 400$ @ $0.8 \cdot V_{CES}$	A
$P_C$	$T_C = 25^\circ C$	1000	W
$T_J$		-55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		-55 ... +150	$^\circ C$
$T_L$	Maximum lead temperature for soldering	300	$^\circ C$
$T_{SOLD}$	1.6 mm (0.062 in.) from case for 10	260	$^\circ C$
$M_d$	Mounting torque ( IXGK )	1.13/10	Nm/lb.in.
$F_c$	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

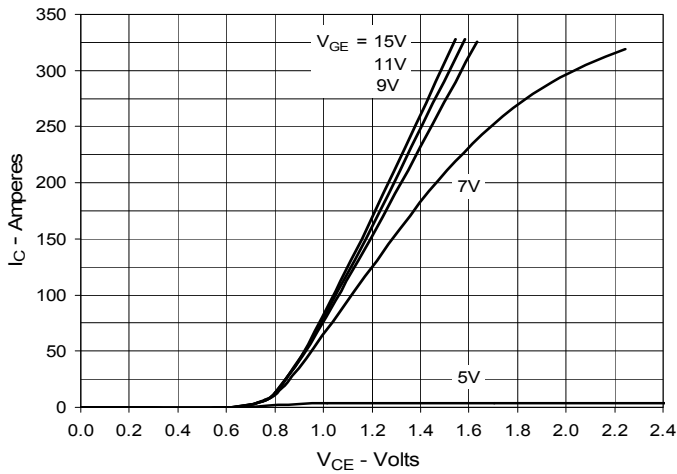
### Applications

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

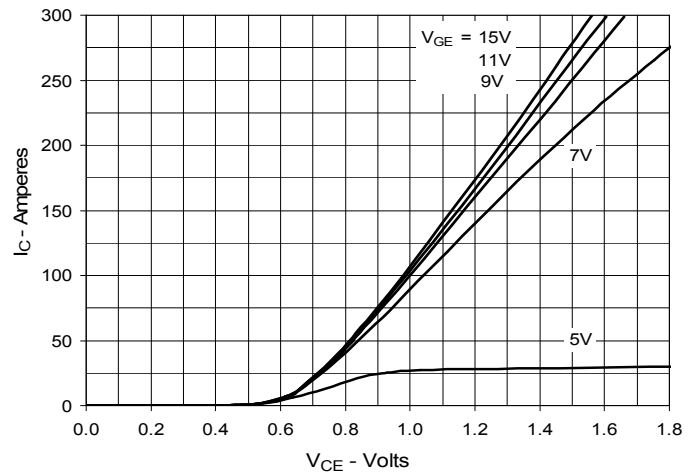
Symbol	Test Conditions ( $T_J = 25^\circ C$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{CES}$	$I_C = 1mA$ , $V_{GE} = 0V$	300		V
$V_{GE(th)}$	$I_C = 4mA$ , $V_{CE} = V_{GE}$	3.0		5.0 V
$I_{CES}$	$V_{CE} = V_{CES}$ $V_{GE} = 0V$ $T_J = 125^\circ C$			50 $\mu A$ 2 mA
$I_{GES}$	$V_{CE} = 0V$ , $V_{GE} = \pm 20V$			$\pm 400$ nA
$V_{CE(sat)}$	$I_C = 100A$ , $V_{GE} = 15V$ , Note 1 $I_C = 400A$	1.70	1.15	V V



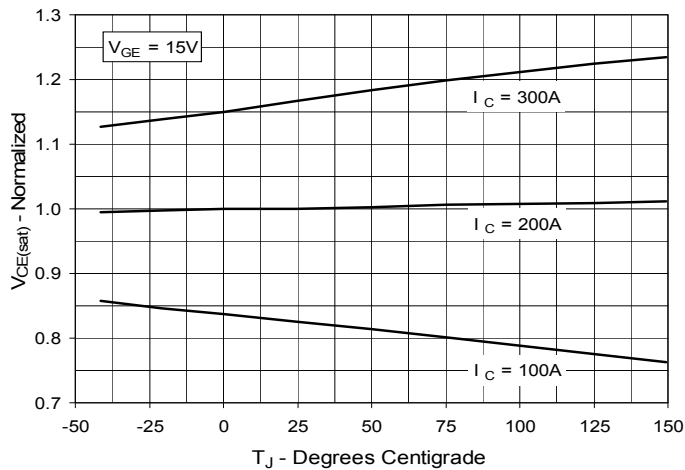
**Fig. 1. Output Characteristics @ 25°C**



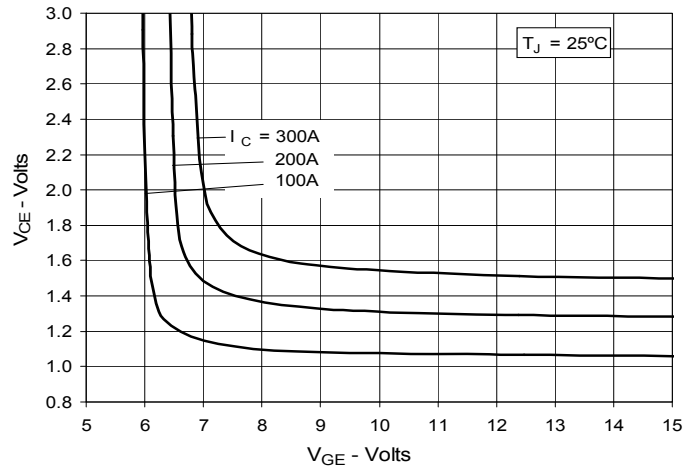
**Fig. 2. Output Characteristics @ 125°C**



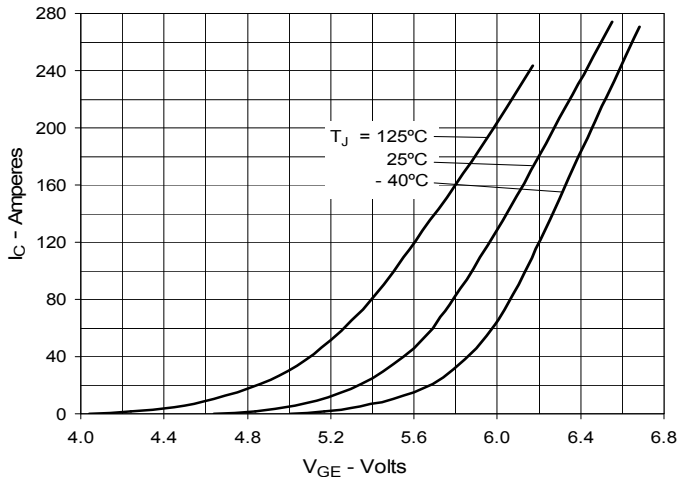
**Fig. 3. Dependence of  $V_{CE(sat)}$  on Junction Temperature**



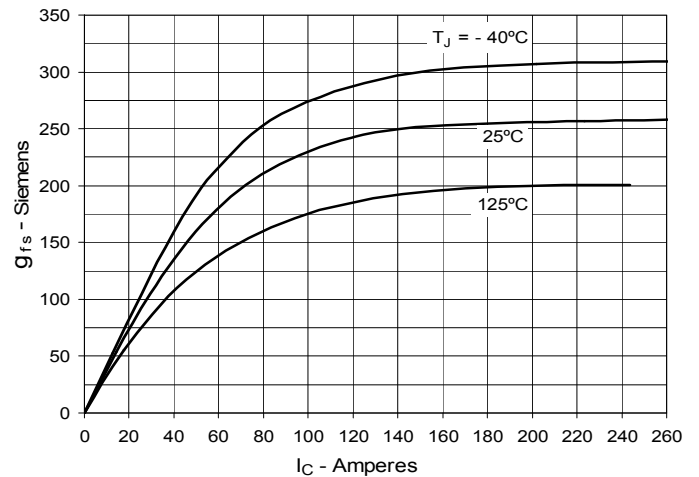
**Fig. 4. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**



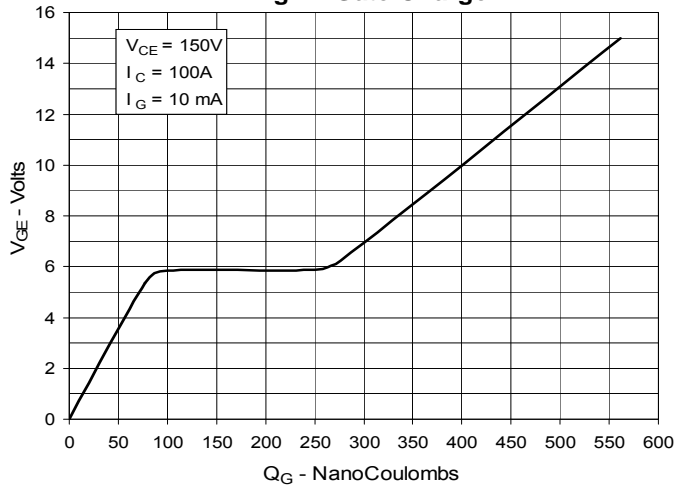
**Fig. 5. Input Admittance**



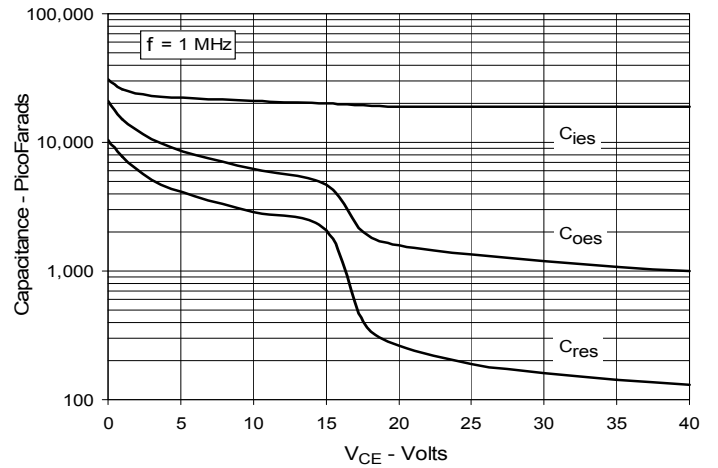
**Fig. 6. Transconductance**



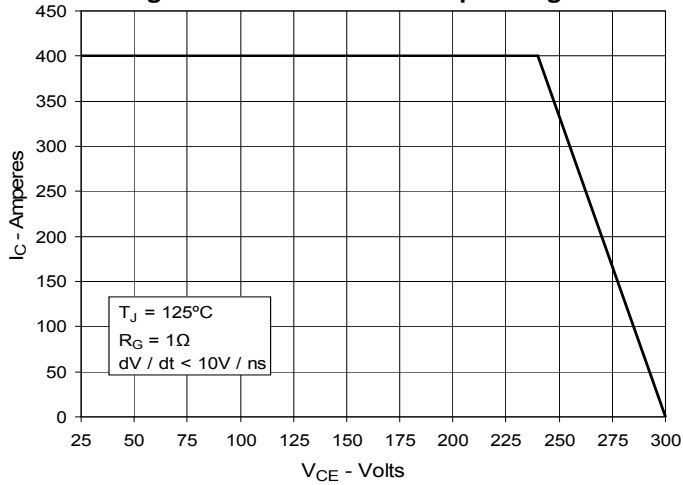
**Fig. 7. Gate Charge**



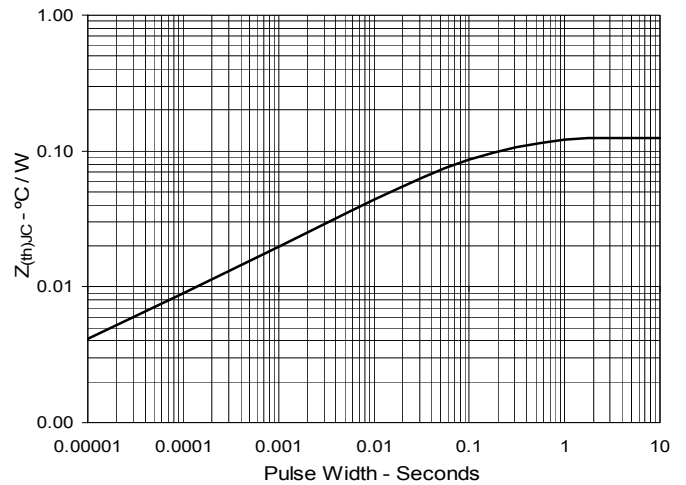
**Fig. 8. Capacitance**



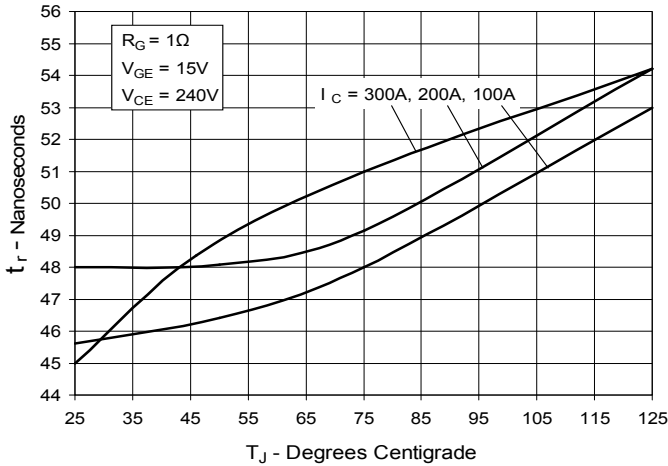
**Fig. 9. Reverse-Bias Safe Operating Area**



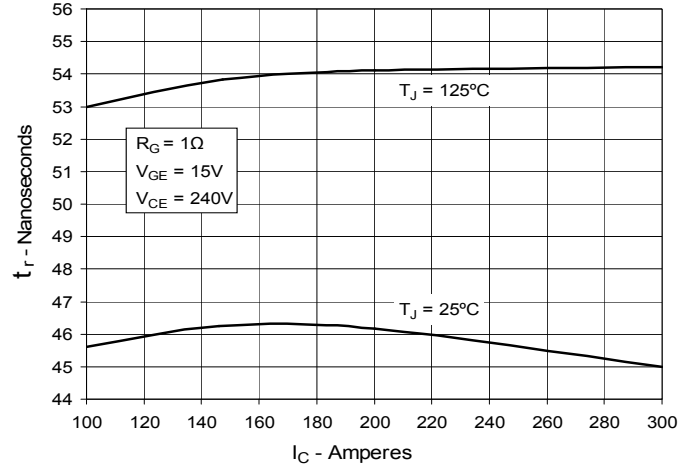
**Fig. 10. Maximum Transient Thermal Impedance**



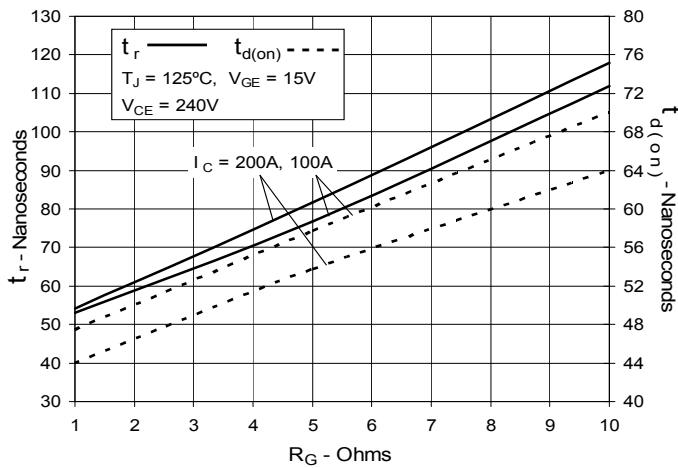
**Fig. 11. Resistive Turn-on Rise Time vs. Junction Temperature**



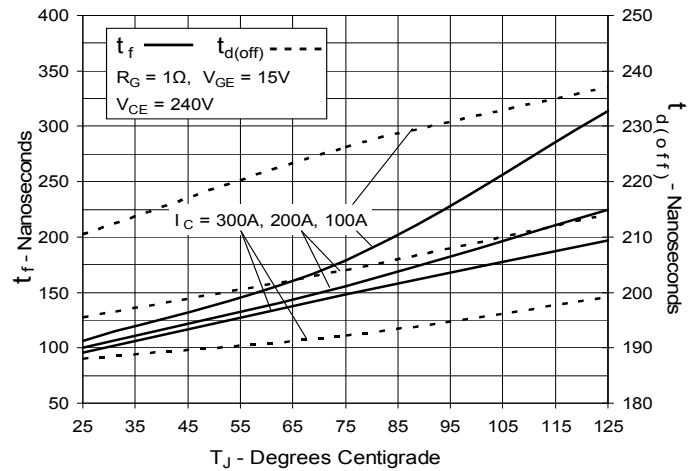
**Fig. 12. Resistive Turn-on Rise Time vs. Collector Current**



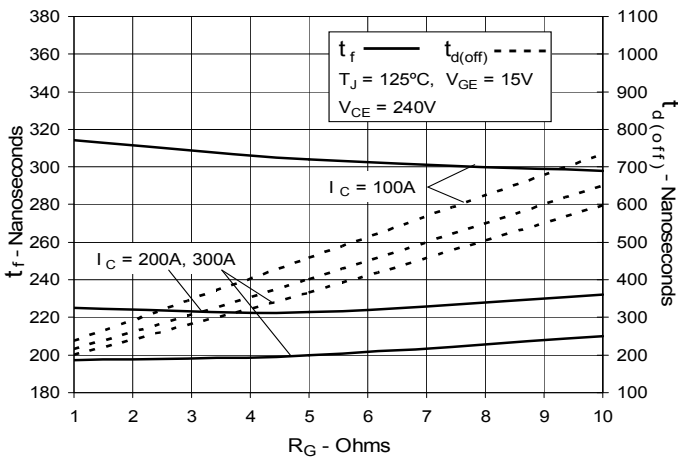
**Fig. 13. Resistive Turn-on Switching Times vs. Gate Resistance**



**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**

