IXYS

Preliminary Technical Information

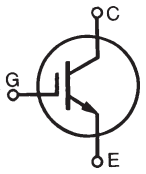
High Voltage IGBT

IXGL75N250

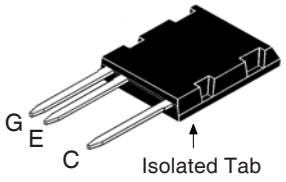
V_{CES} = 2500V
I_{C90} = 65A
$V_{CE(sat)}$ ≤ 2.9V

For Capacitor Discharge Applications

(Electrically Isolated Tab)



ISOPLUS i5-Pak™



G = Gate C = Collector
E = Emitter

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	2500	V
V_{CES}	T_J = 25°C to 150°C, R_{GE} = 1MΩ	2500	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	T_C = 25°C	110	A
I_{C90}	T_C = 90°C	65	A
I_{CM}	T_C = 25°C, V_{GE} = 20V, 1ms	580	A
SSOA	V_{GE}= 15V, T_{VJ} = 125°C, R_G = 1Ω	I_{CM} = 200	A
(RBSOA)	Clamped Inductive Load	V_{CE} ≤ 0.8 • V_{CES}	
P_C	T_C = 25°C	430	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
T_L	Maximum Lead Temperature for Soldering	300	°C
T_{SOLD}	1.6 mm (0.062 in.) from Case for 10s	260	°C
V_{ISOL}	50/60Hz, 1 minute	2500	V~
F_C	Mounting Force with Clip	30..170 / 7..36	Nm/lb-in.
Weight		8	g

Features

- Very High Peak Current Capability
- Low Saturation Voltage
- MOS Gate Turn-On
- Rugged NPT Structure
- ISOPLUS i5-PAK™
  High Voltage Package
  - Isolated Back Surface
  - Enlarged Creepage Torwards Heat-Sink
  - Enlarged Creepage between High Voltage Pins
  - Application Friendly PinOut
  - High Reliability
  - Industry Standard Outline
  - UL Registered

Applications

- Capacitor Discharge
- Pulser Circuits

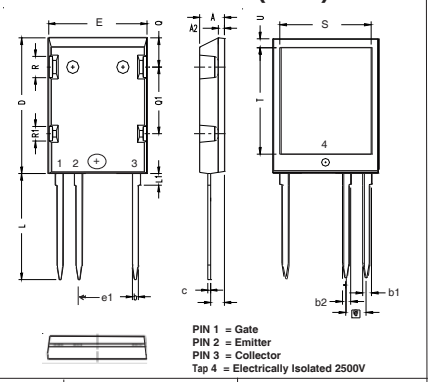
Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.	
BV_{CES}	I_C = 1mA, V_{GE} = 0V	2500			V
$V_{GE(th)}$	I_C = 4mA, V_{CE} = V_{GE}	3.0		5.0	V
I_{CES}	V_{CE} = 0.8 • V_{CES}, V_{GE} = 0V			50	μA
	Note 2, T_J = 125°C			5	mA
I_{GES}	V_{CE} = 0V, V_{GE} = ±20V			±200	nA
$V_{CE(sat)}$	I_C = 75A, V_{GE} = 15V, Note 1		2.5	2.9	V
	I_C = 300A, V_{GE} = 25V		4.1		V

Symbol	Test Conditions (T_J = 25°C, Unless Otherwise Specified)	Characteristic Values Min.	Typ.	Max.
g_{fs}	I_C = 60A, V_{CE} = 10V, Note 1	35	58	S
C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz		9000	pF
C_{oes}			345	pF
C_{res}			110	pF
Q_g	I_C = 75A, V_{GE} = 15V, V_{CE} = 0.5 • V_{CES}		410	nC
Q_{ge}			63	nC
Q_{gc}			175	nC
$t_{d(on)}$	**Resistive Switching Times**		55	ns
t_r	I_C = 150A, V_{GE} = 15V		225	ns
$t_{d(off)}$	V_{CE} = 1250V, R_G = 1Ω		270	ns
t_f			455	ns
R_{thJC}				0.29 °C/W
R_{thCK}			0.15	°C/W

Notes:

1. Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.
2. Part must be heatsunk for high-temp Ices measurement.

ISOPLUS i5-Pak™ HV (IXGL) Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETER MIN	MILLIMETER MAX
A	0.190	0.205	4.83	5.21
A1	0.102	0.118	2.59	3.00
A2	0.046	0.055	1.17	1.40
b	0.045	0.055	1.14	1.40
b1	0.063	0.072	1.60	1.83
b2	0.058	0.068	1.47	1.73
c	0.020	0.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	0.770	0.799	19.56	20.29
e	0.150 BSC		3.81 BSC	
e1	0.450 BSC		11.43 BSC	
L	0.780	0.820	19.81	20.83
L1	0.080	0.102	2.03	2.59
Q	0.210	0.235	5.33	5.97
Q1	0.490	0.513	12.45	13.03
R	0.150	0.180	3.81	4.57
R1	0.100	0.130	2.54	3.30
S	0.668	0.690	16.97	17.53
T	0.801	0.821	20.34	20.85
U	0.065	0.080	1.65	2.03

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 pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

Fig. 1. Output Characteristics @ T_J = 25ºC

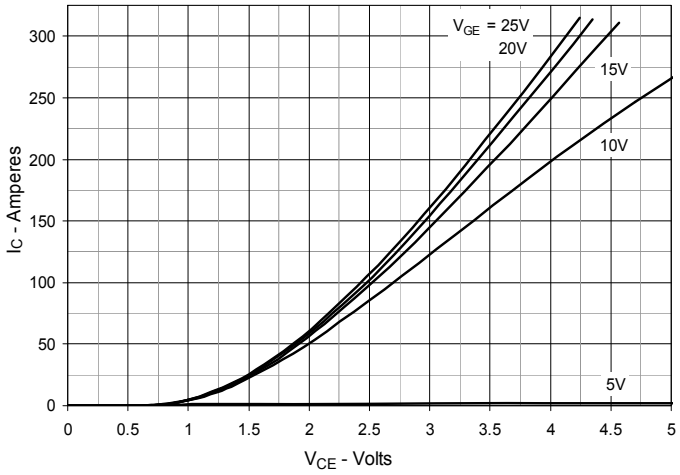


Fig. 2. Output Characteristics @ T_J = 125ºC

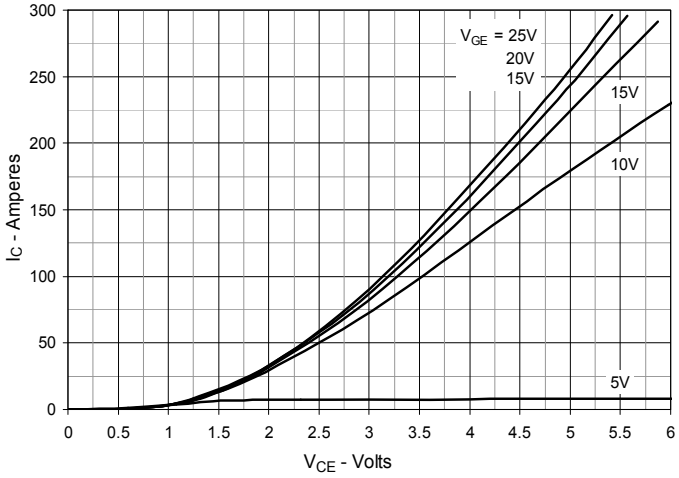


Fig. 3. Dependence of $V_{CE(sat)}$ on Junction Temperature

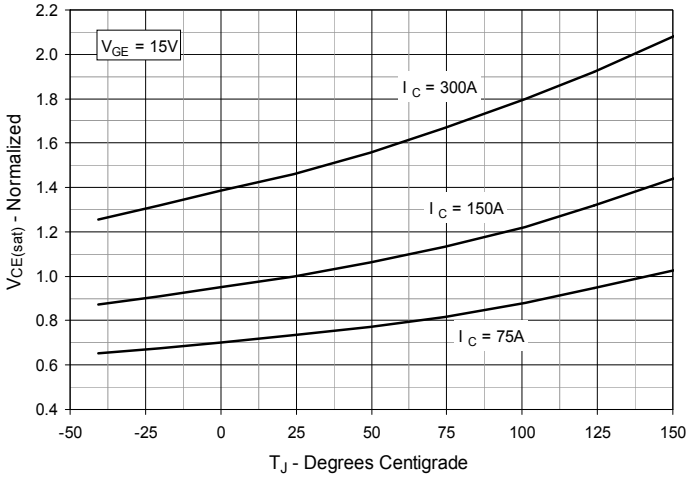


Fig. 4. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage

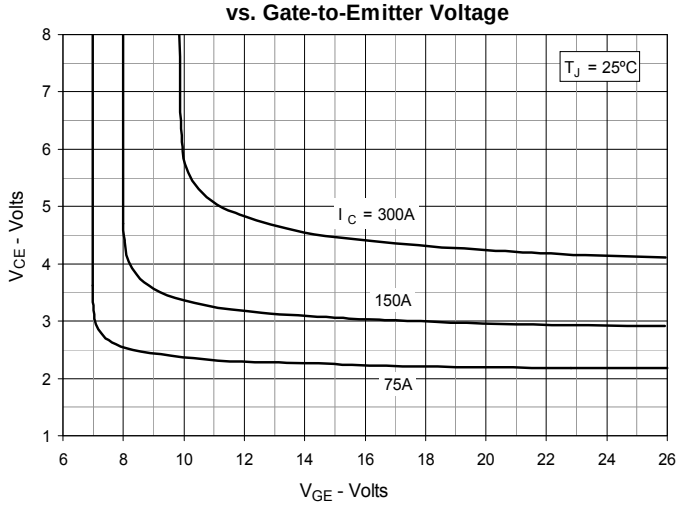


Fig. 5. Input Admittance

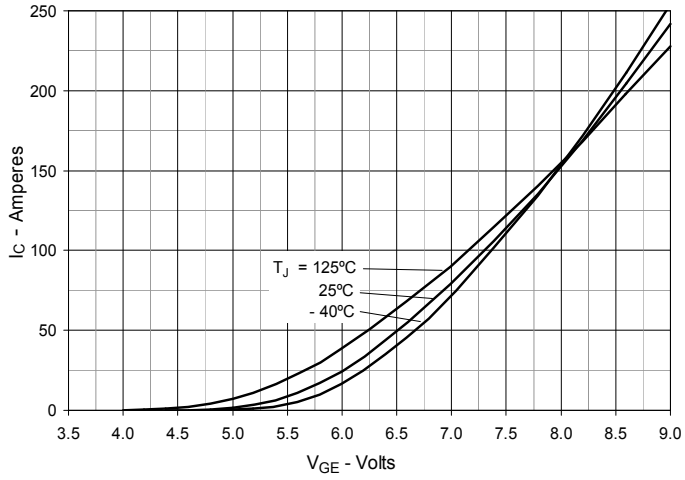


Fig. 6. Transconductance

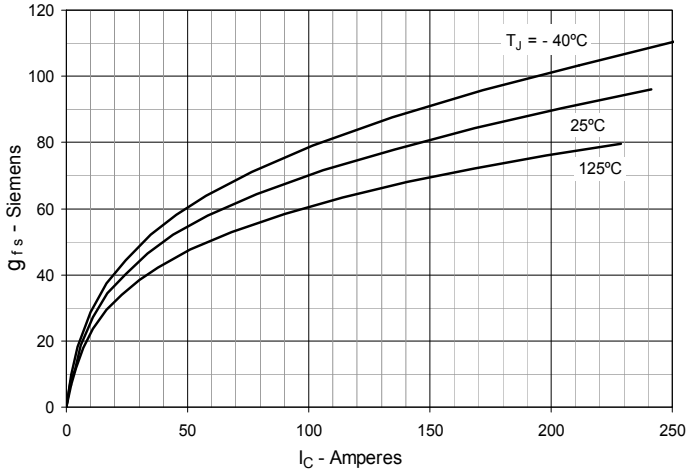


Fig. 7. Gate Charge

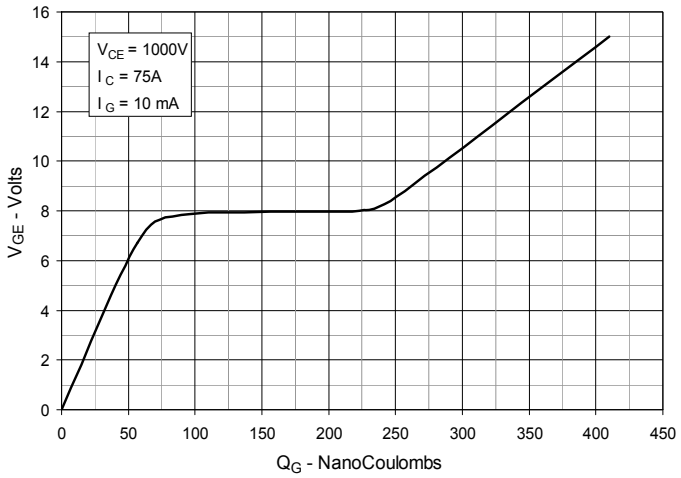


Fig. 8. Capacitance

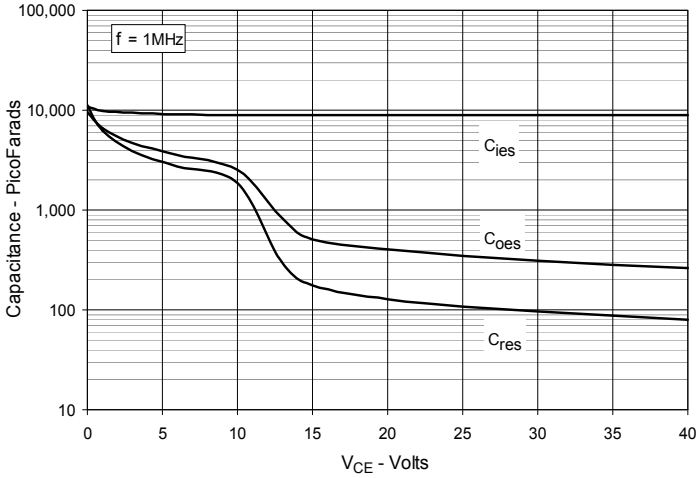


Fig. 9. Reverse-Bias Safe Operating Area

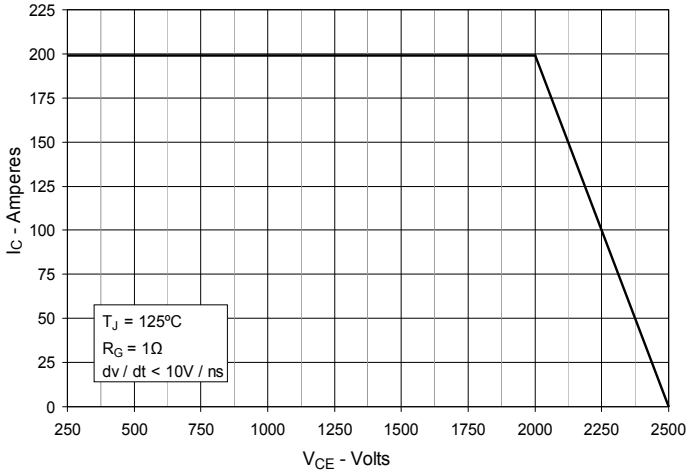


Fig. 10. Maximum Transient Thermal Impedance

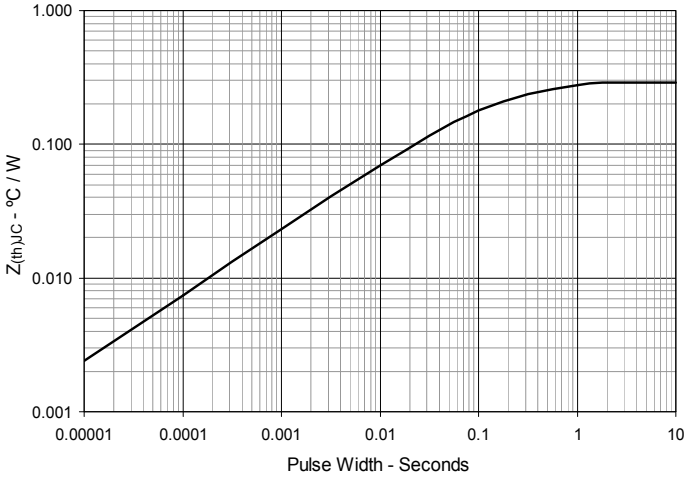


Fig. 11. Resistive Turn-on Rise Time vs. Junction Temperature

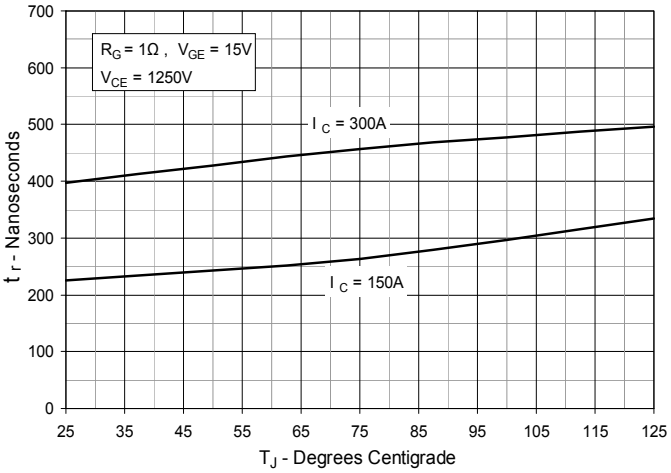


Fig. 12. Resistive Turn-on Rise Time vs. Collector Current

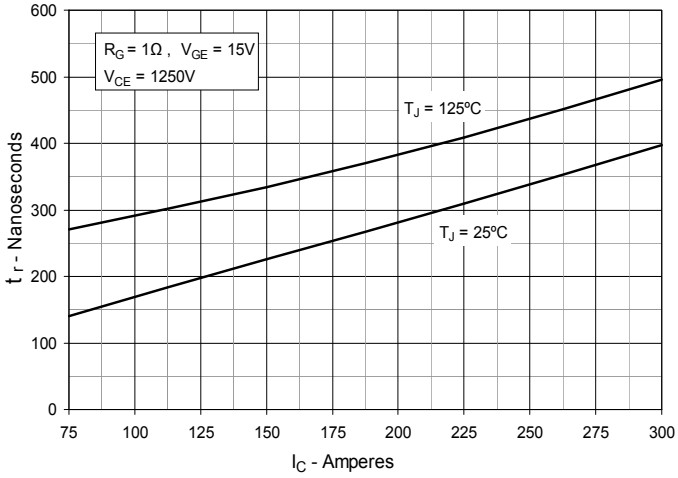


Fig. 13. Resistive Turn-on Switching Times vs. Gate Resistance

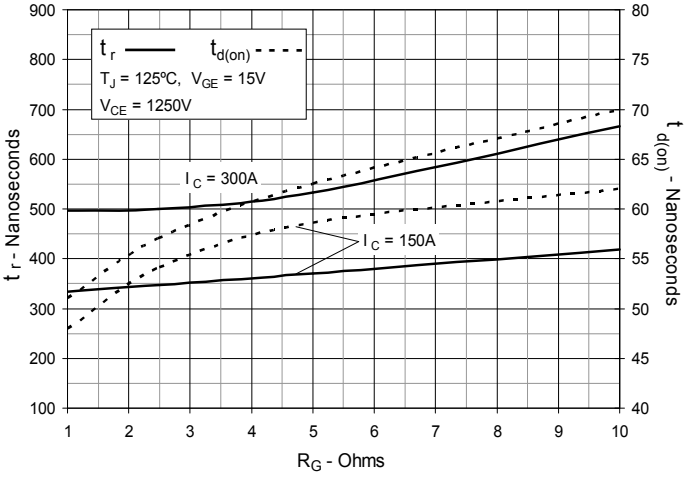


Fig. 14. Resistive Turn-off Switching Times vs. Junction Temperature

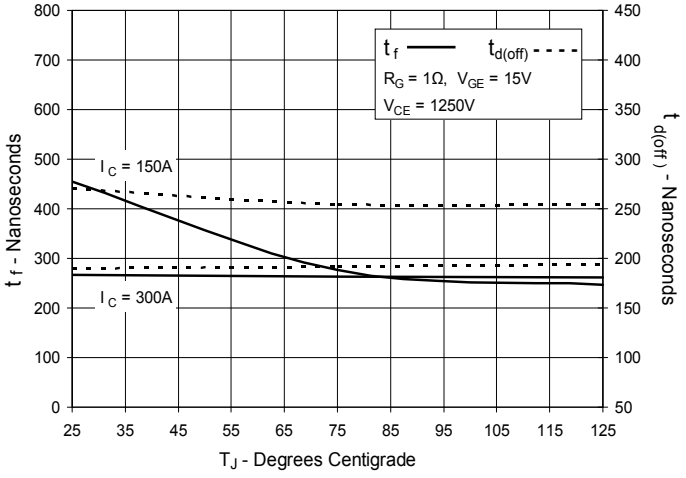


Fig. 15. Resistive Turn-off Switching Times vs. Collector Current

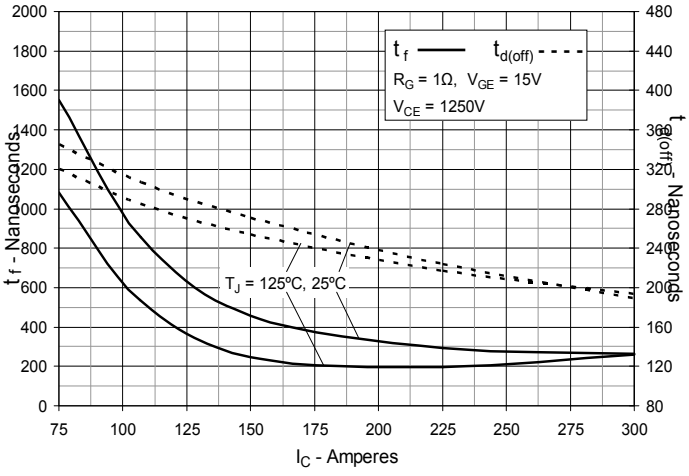


Fig. 16. Resistive Turn-off Switching Times vs. Gate Resistance