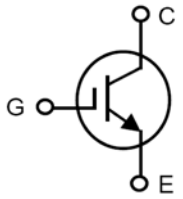
# IXYS

## 900V XPT™ IGBT GenX3™

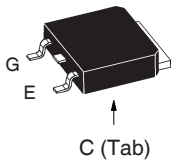
## IXYY8N90C3
## IXYP8N90C3

$V_{CES}$ = 900V
$I_{C110}$ = 8A
$V_{CE(sat)}$ ≤ 3.0V
$t_{fi(typ)}$ = 130ns

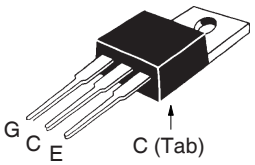
High-Speed IGBT
for 20-50 kHz Switching




**TO-252 (IXYY)**




**TO-220 (IXYP)**




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

| Symbol | Test Conditions | Maximum Ratings | |
|---|---|---|---|
| $V_{CES}$ | $T_J$ = 25°C to 175°C | 900 | V |
| $V_{CGR}$ | $T_J$ = 25°C to 175°C, $R_{GE}$ = 1MΩ | 900 | V |
| $V_{GES}$ | Continuous | ±20 | V |
| $V_{GEM}$ | Transient | ±30 | V |
| $I_{C25}$ | $T_C$ = 25°C | 20 | A |
| $I_{C110}$ | $T_C$ = 110°C | 8 | A |
| $I_{CM}$ | $T_C$ = 25°C, 1ms | 48 | A |
| $I_A$ | $T_C$ = 25°C | 4 | A |
| $E_{AS}$ | $T_C$ = 25°C | 15 | mJ |
| SSOA (RBSOA) | $V_{GE}$ = 15V, $T_{VJ}$ = 150°C, $R_G$ = 30Ω<br>Clamped Inductive Load | $I_{CM}$ = 16<br>@$V_{CE} \leq V_{CES}$ | A |
| $P_C$ | $T_C$ = 25°C | 125 | W |
| $T_J$ | | -55 ... +175 | °C |
| $T_{JM}$ | | 175 | °C |
| $T_{stg}$ | | -55 ... +175 | °C |
| $T_L$ | Maximum Lead Temperature for Soldering | 300 | °C |
| $T_{SOLD}$ | 1.6 mm (0.062in.) from Case for 10s | 260 | °C |
| $M_d$ | Mounting Torque (TO-220) | 1.13/10 | Nm/lb.in. |
| Weight | TO-252 | 0.35 | g |
| | TO-220 | 3.00 | g |

| Symbol | Test Conditions ($T_J$ = 25°C, Unless Otherwise Specified) | Characteristic Values Min. | Typ. | Max. | |
|---|---|---|---|---|---|
| $BV_{CES}$ | $I_C$ = 250μA, $V_{GE}$ = 0V | 950 | | | V |
| $V_{GE(th)}$ | $I_C$ = 250μA, $V_{CE}$ = $V_{GE}$ | 3.5 | | 6.0 | V |
| $I_{CES}$ | $V_{CE}$ = $V_{CES}$, $V_{GE}$ = 0V | | | 10 | μA |
| | $T_J$ = 150°C | | | 150 | μA |
| $I_{GES}$ | $V_{CE}$ = 0V, $V_{GE}$ = ±20V | | | ±100 | nA |
| $V_{CE(sat)}$ | $I_C$ = 8A, $V_{GE}$ = 15V, Note 1 | | 2.15 | 3.00 | V |
| | $T_J$ = 150°C | | 2.75 | | V |

### Features

- Optimized for Low Switching Losses
- Square RBSOA
- Positive Thermal Coefficient of Vce(sat)
- Avalanche Rated
- International Standard Packages

### Advantages

- High Power Density
- Low Gate Drive Requirement

### Applications

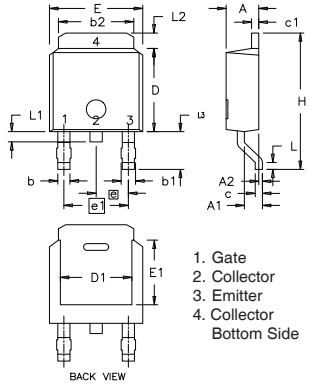
- High Frequency Power Inverters
- UPS
- Motor Drives
- SMPS
- PFC Circuits
- Battery Chargers
- Welding Machines
- Lamp Ballasts

| Symbol | Test Conditions ($T_J$ = 25°C Unless Otherwise Specified) | Characteristic Values Min. | Typ. | Max. | |
|---|---|---|---|---|---|
| $g_{fs}$ | $I_C$ = 8A, $V_{CE}$ = 10V, Note 1 | 2.9 | 4.8 | | S |
| $C_{ies}$ | $V_{CE}$ = 25V, $V_{GE}$ = 0V, f = 1MHz | | 400 | | pF |
| $C_{oes}$ | | | 24 | | pF |
| $C_{res}$ | | | 7.8 | | pF |
| $Q_{g(on)}$ | $I_C$ = 8A, $V_{GE}$ = 15V, $V_{CE}$ = 0.5 • $V_{CES}$ | | 13.3 | | nC |
| $Q_{ge}$ | | | 3.4 | | nC |
| $Q_{gc}$ | | | 5.8 | | nC |
| $t_{d(on)}$ | **Inductive load, $T_J$ = 25°C** | | 16 | | ns |
| $t_{ri}$ | $I_C$ = 8A, $V_{GE}$ = 15V | | 20 | | ns |
| $E_{on}$ | $V_{CE}$ = 0.5 • $V_{CES}$, $R_G$ = 30Ω | | 0.46 | | mJ |
| $t_{d(off)}$ | Note 2 | | 40 | | ns |
| $t_{fi}$ | | | 130 | | ns |
| $E_{off}$ | | | 0.18 | 0.50 | mJ |
| $t_{d(on)}$ | **Inductive load, $T_J$ = 125°C** | | 17 | | ns |
| $t_{ri}$ | $I_C$ = 8A, $V_{GE}$ = 15V | | 22 | | ns |
| $E_{on}$ | $V_{CE}$ = 0.5 • $V_{CES}$, $R_G$ = 30Ω | | 1.00 | | mJ |
| $t_{d(off)}$ | Note 2 | | 75 | | ns |
| $t_{fi}$ | | | 163 | | ns |
| $E_{off}$ | | | 0.22 | | mJ |
| $R_{thJC}$ | | | | 1.20 | °C/W |
| $R_{thCS}$ | TO-252 | | 0.35 | | °C/W |
| | TO-220 | | 0.50 | | °C/W |

Notes:

1. Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.
2. Switching times & energy losses may increase for higher $V_{CE}$(clamp), $T_J$ or $R_G$.

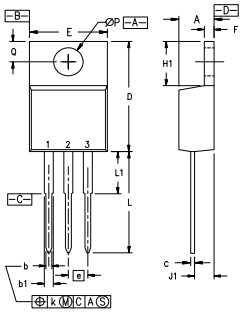
## TO-252 AA Outline




1. Gate
2. Collector
3. Emitter
4. Collector Bottom Side

| Dim. | Millimeter Min. | Max. | Inches Min. | Max. |
|---|---|---|---|---|
| A | 2.19 | 2.38 | 0.086 | 0.094 |
| A1 | 0.89 | 1.14 | 0.035 | 0.045 |
| A2 | 0 | 0.13 | 0 | 0.005 |
| b | 0.64 | 0.89 | 0.025 | 0.035 |
| b1 | 0.76 | 1.14 | 0.030 | 0.045 |
| b2 | 5.21 | 5.46 | 0.205 | 0.215 |
| c | 0.46 | 0.58 | 0.018 | 0.023 |
| c1 | 0.46 | 0.58 | 0.018 | 0.023 |
| D | 5.97 | 6.22 | 0.235 | 0.245 |
| D1 | 4.32 | 5.21 | 0.170 | 0.205 |
| E | 6.35 | 6.73 | 0.250 | 0.265 |
| E1 | 4.32 | 5.21 | 0.170 | 0.205 |
| e | 2.28 BSC | | 0.090 BSC | |
| e1 | 4.57 BSC | | 0.180 BSC | |
| H | 9.40 | 10.42 | 0.370 | 0.410 |
| L | 0.51 | 1.02 | 0.020 | 0.040 |
| L1 | 0.64 | 1.02 | 0.025 | 0.040 |
| L2 | 0.89 | 1.27 | 0.035 | 0.050 |
| L3 | 2.54 | 2.92 | 0.100 | 0.115 |

## TO-220 Outline




Pins: 1 - Gate 2 - Collector
3 - Emitter

| SYM | INCHES MIN | MAX | MILLIMETERS MIN | MAX |
|---|---|---|---|---|
| A | .170 | .190 | 4.32 | 4.83 |
| b | .025 | .040 | 0.64 | 1.02 |
| b1 | .045 | .065 | 1.15 | 1.65 |
| c | .014 | .022 | 0.35 | 0.56 |
| D | .580 | .630 | 14.73 | 16.00 |
| E | .390 | .420 | 9.91 | 10.66 |
| e | .100 BSC | | 2.54 BSC | |
| F | .045 | .055 | 1.14 | 1.40 |
| H1 | .230 | .270 | 5.85 | 6.85 |
| J1 | .090 | .110 | 2.29 | 2.79 |
| k | 0 | .015 | 0 | 0.38 |
| L | .500 | .550 | 12.70 | 13.97 |
| L1 | .110 | .230 | 2.79 | 5.84 |
| ØP | .139 | .161 | 3.53 | 4.08 |
| Q | .100 | .125 | 2.54 | 3.18 |

**Fig. 1. Output Characteristics @ $T_J$ = 25ºC**

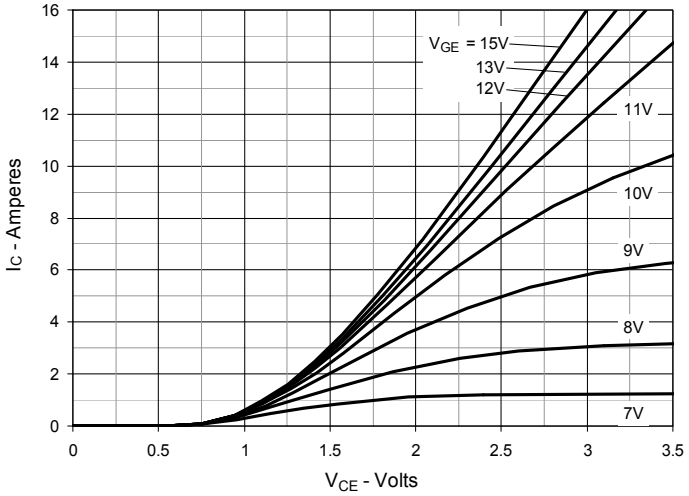



**Fig. 2. Extended Output Characteristics @ $T_J$ = 25ºC**

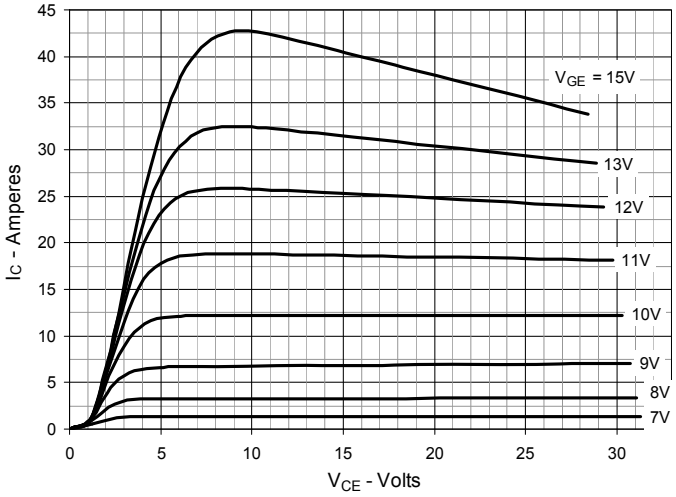



**Fig. 3. Output Characteristics @ $T_J$ = 150ºC**

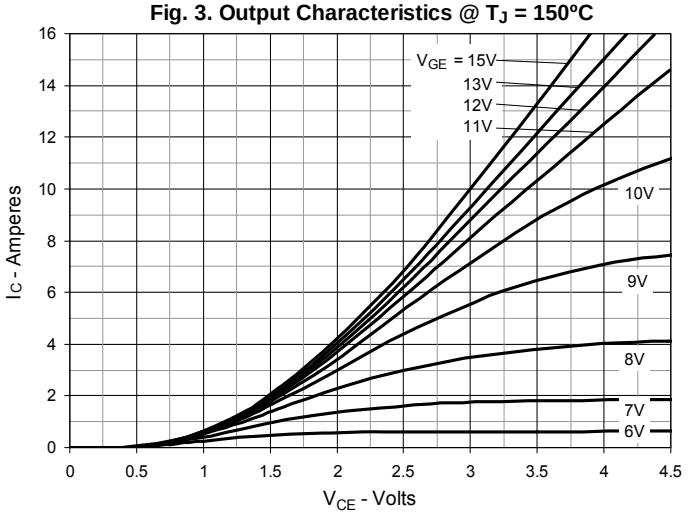



**Fig. 4. Dependence of $V_{CE(sat)}$ on Junction Temperature**

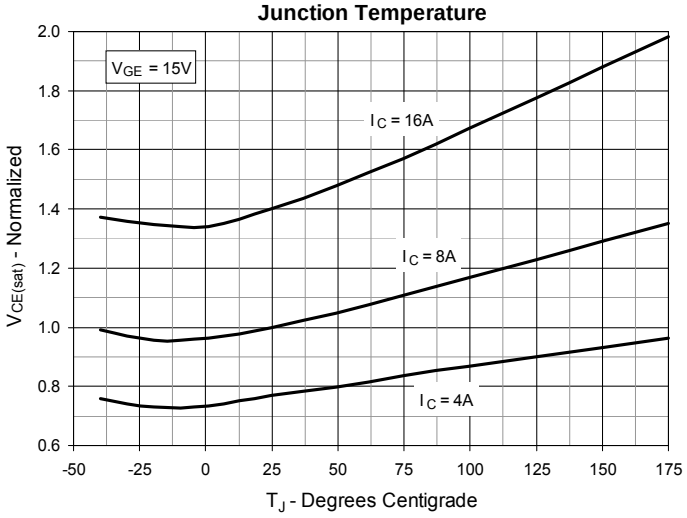



**Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emitter Voltage**

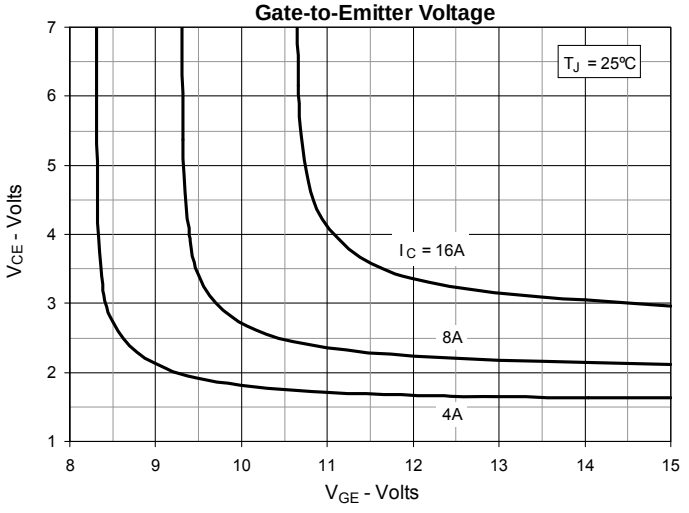



**Fig. 6. Input Admittance**

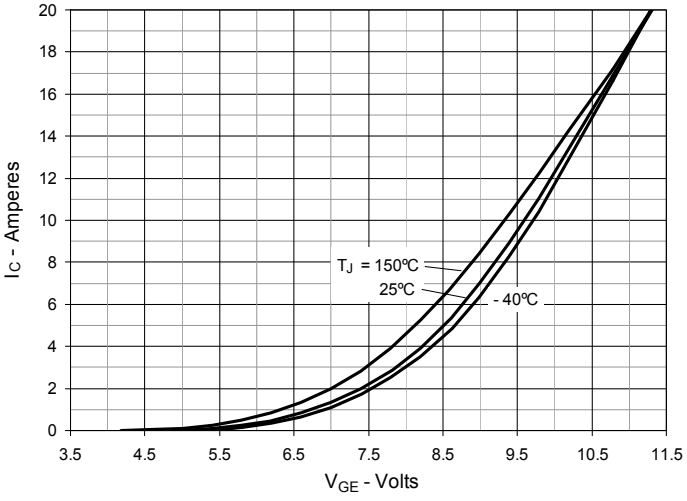


**Fig. 7. Transconductance**

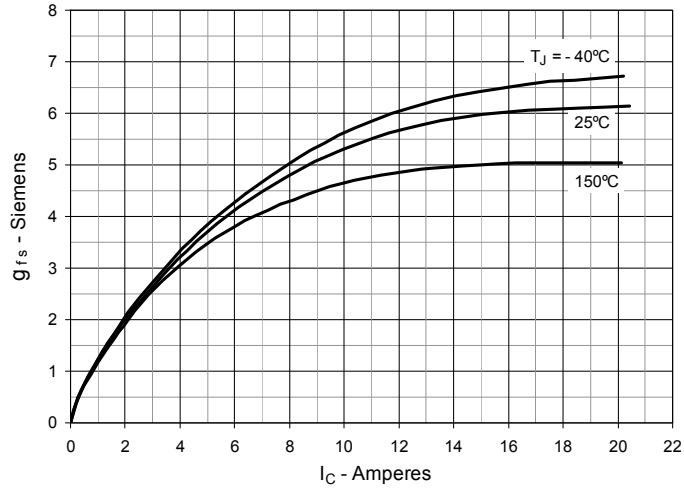



**Fig. 8. Gate Charge**

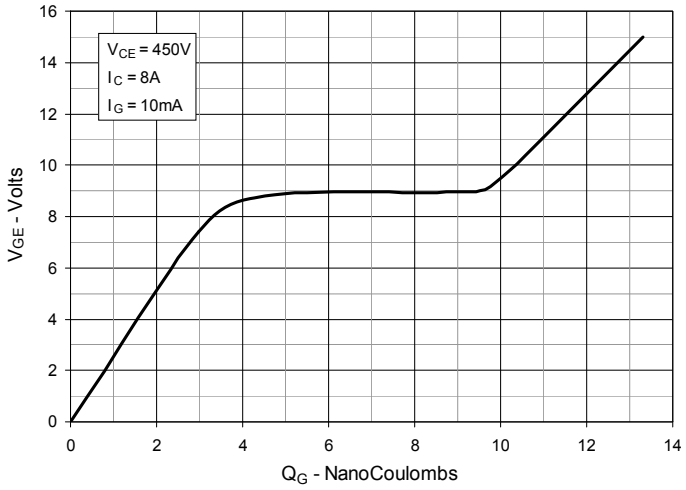



**Fig. 9. Capacitance**

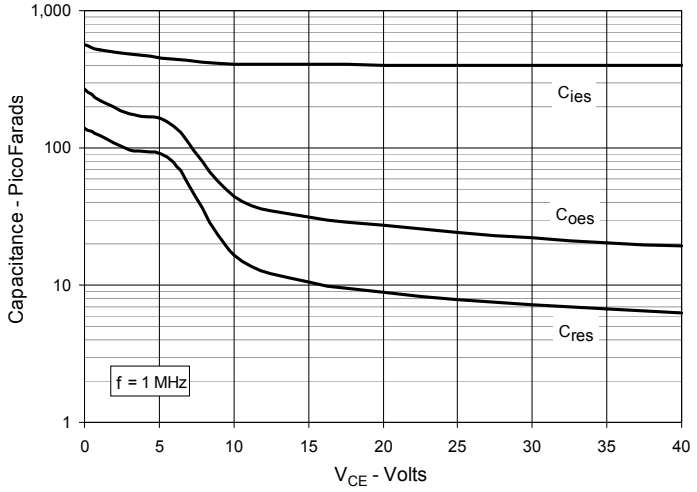



**Fig. 10. Reverse-Bias Safe Operating Area**

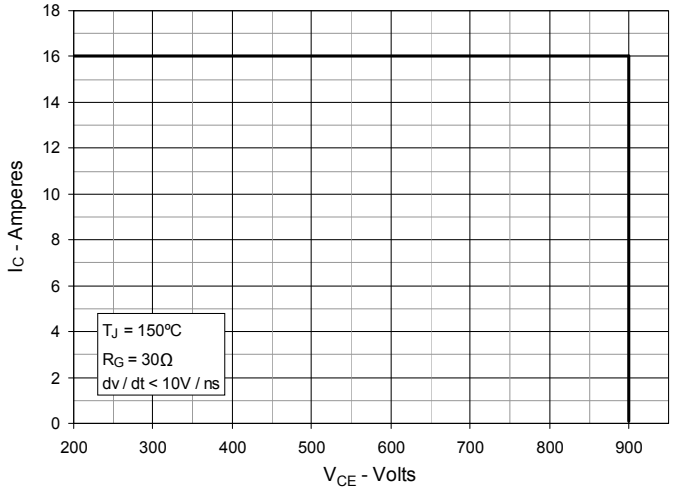



**Fig. 11. Maximum Transient Thermal Impedance**

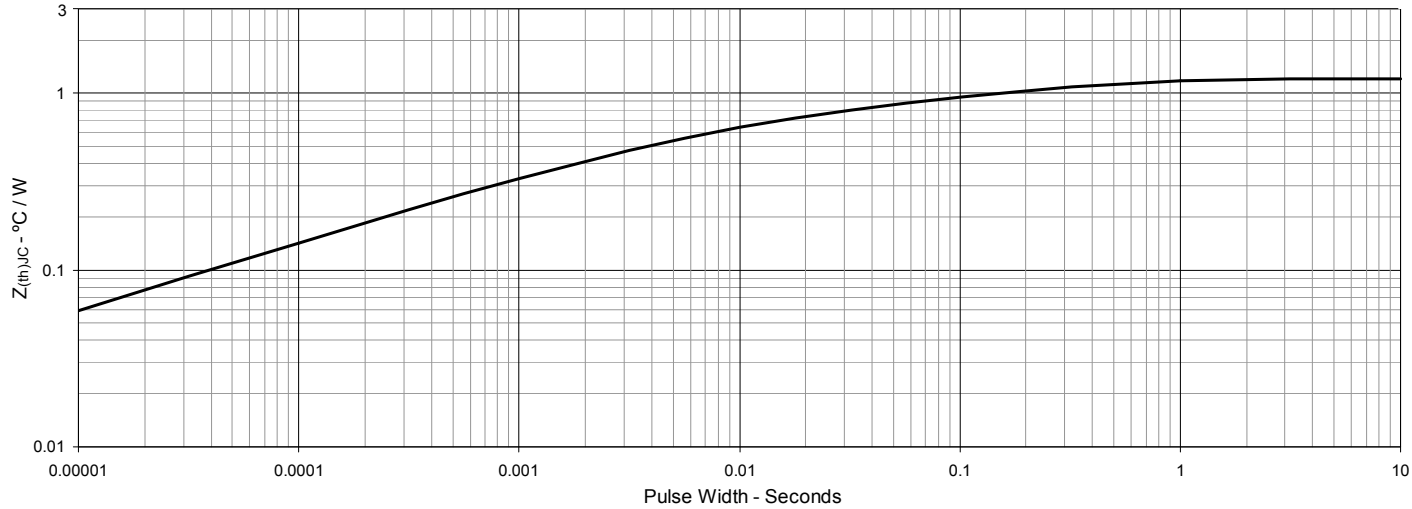


**Fig. 12. Inductive Switching Energy Loss vs. Gate Resistance**

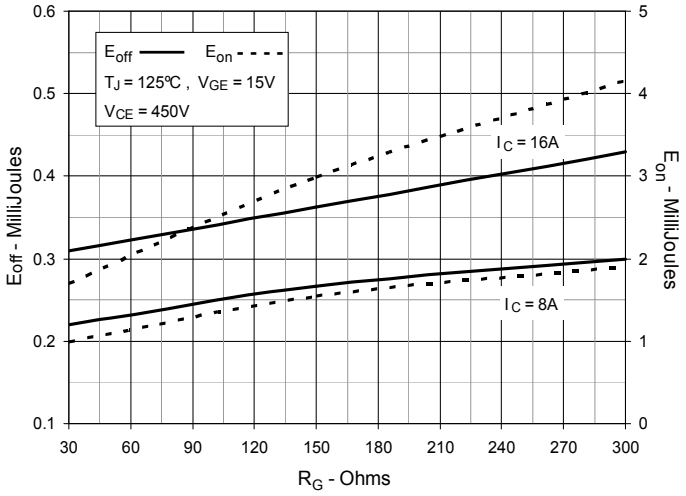



**Fig. 13. Inductive Switching Energy Loss vs. Collector Current**

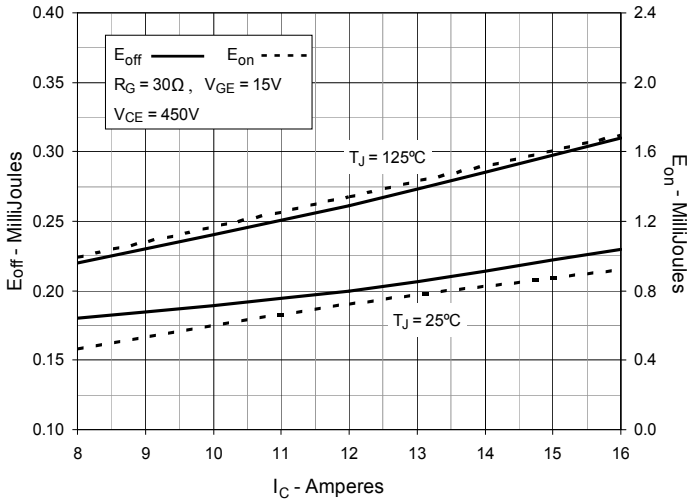



**Fig. 14. Inductive Switching Energy Loss vs. Junction Temperature**

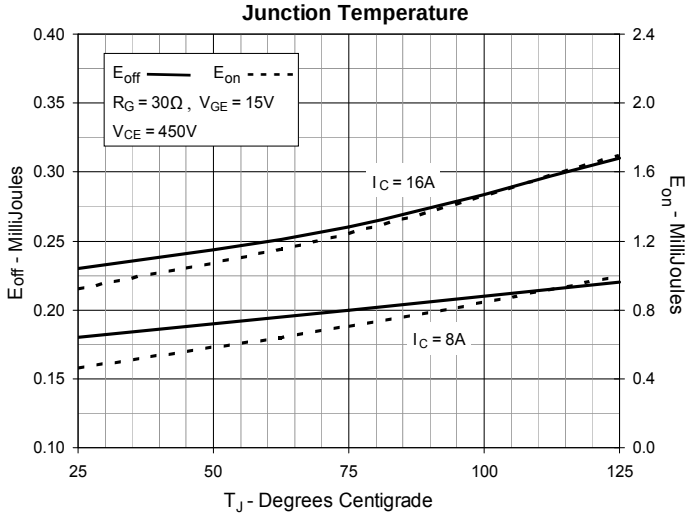



**Fig. 15. Inductive Turn-off Switching Times vs. Gate Resistance**

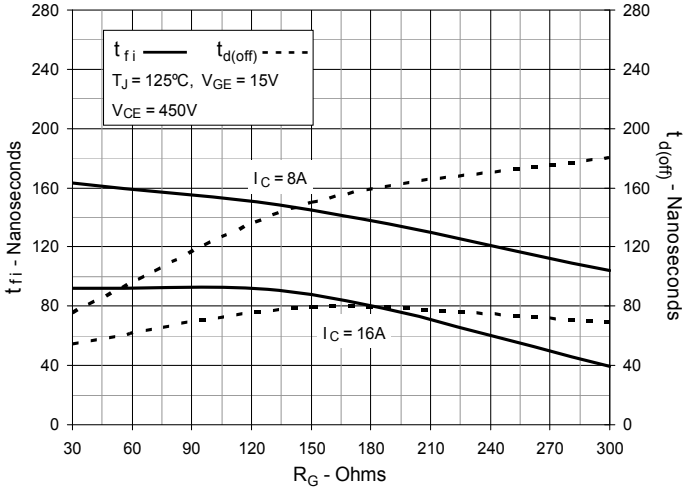



**Fig. 16. Inductive Turn-off Switching Times vs. Collector Current**

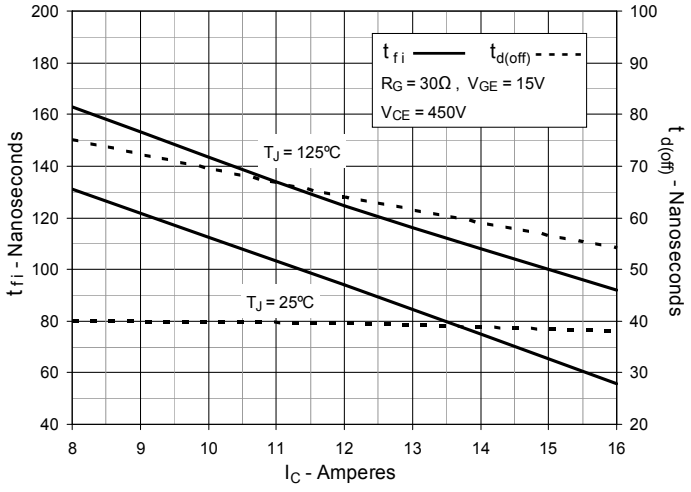



**Fig. 17. Inductive Turn-off Switching Times vs. Junction Temperature**

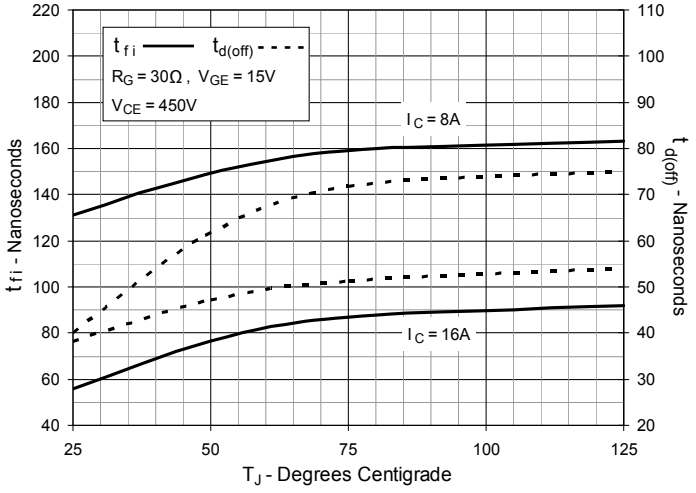


**Fig. 18. Inductive Turn-on Switching Times vs. Gate Resistance**

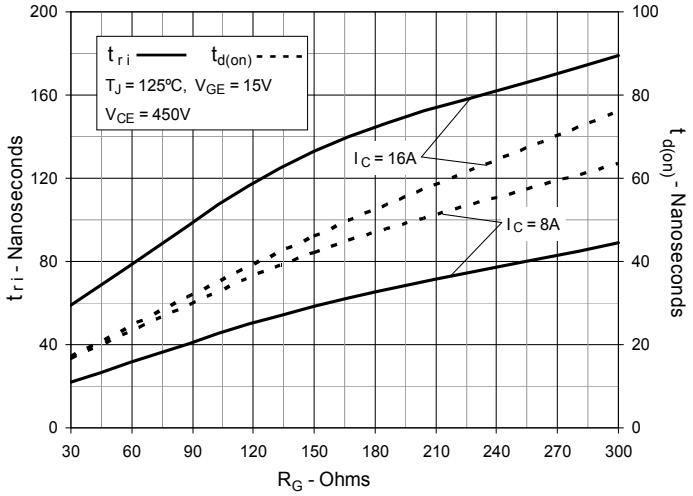



**Fig. 19. Inductive Turn-on Switching Times vs. Collector Current**

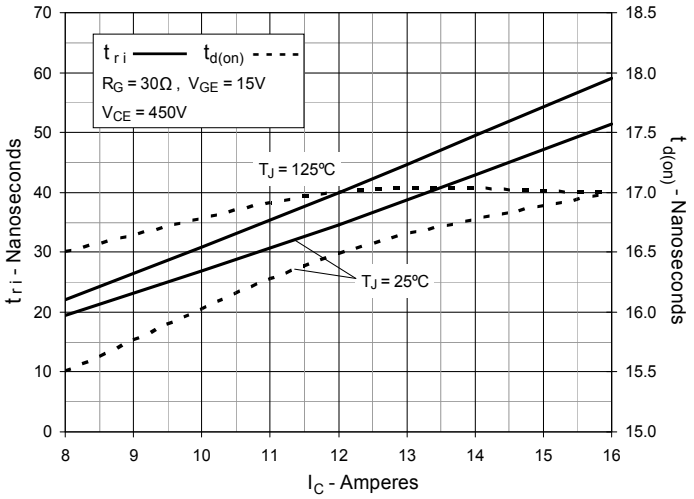
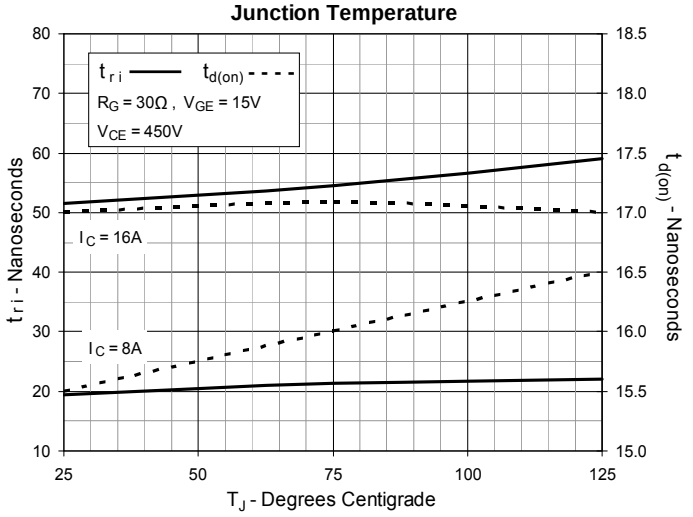



**Fig. 20. Inductive Turn-on Switching Times vs. Junction Temperature**



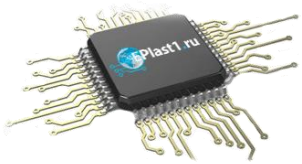
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

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