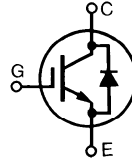
# IXYS

# High Voltage, High Gain BIMOSFET™ Monolithic Bipolar MOS Transistor

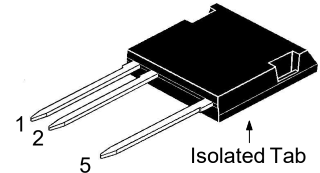
## IXBF32N300

(Electrically Isolated Tab)

$V_{CES}$ = 3000V
$I_{C90}$ = 22A
$V_{CE(sat)}$ ≤ 3.2V




ISOPLUS i4-Pak™




1 = Gate
2 = Emitter
5 = Collector

| Symbol | Test Conditions | Maximum Ratings | |
|---|---|---|---|
| $V_{CES}$ | $T_C$ = 25°C to 150°C | 3000 | V |
| $V_{CGR}$ | $T_J$ = 25°C to 150°C, $R_{GE}$ = 1MΩ | 3000 | V |
| $V_{GES}$ | Continuous | ± 20 | V |
| $V_{GEM}$ | Transient | ± 30 | V |
| $I_{C25}$ | $T_C$ = 25°C | 40 | A |
| $I_{C90}$ | $T_C$ = 90°C | 22 | A |
| $I_{CM}$ | $T_C$ = 25°C, 1ms | 250 | A |
| SSOA (RBSOA) | $V_{GE}$ = 15V, $T_{VJ}$ = 125°C, $R_G$ = 10Ω<br>Clamped Inductive Load | $I_{CM}$ = 80<br>$V_{CES}$ ≤ 2400 | A<br>V |
| $P_C$ | $T_C$ = 25°C | 160 | W |
| $T_J$ | | -55 ... +150 | °C |
| $T_{JM}$ | | 150 | °C |
| $T_{stg}$ | | -55 ... +150 | °C |
| $T_L$ | Maximum Lead Temperature for Soldering 1.6 mm (0.062 in.) from Case for 10s | 300 | °C |
| $F_C$ | Mounting Force | 20..120 / 4.5..27 | Nm/lb.in. |
| $V_{ISOL}$ | 50/60Hz, 1 Minute | 3000 | V |
| Weight | | 5 | g |

| Symbol | Test Conditions ($T_J$ = 25°C Unless Otherwise Specified) | Characteristic Values Min. | Typ. | Max. | |
|---|---|---|---|---|---|
| $BV_{CES}$ | $I_C$ = 250µA, $V_{GE}$ = 0V | 3000 | | | V |
| $V_{GE(th)}$ | $I_C$ = 250µA, $V_{CE}$ = $V_{GE}$ | 2.5 | | 5.0 | V |
| $I_{CES}$ | $V_{CE}$ = 0.8 • $V_{CES}$, $V_{GE}$ = 0V | | | 50 | µA |
| | Note 2, $T_J$ = 125°C | | | 2 | mA |
| $I_{GES}$ | $V_{CE}$ = 0V, $V_{GE}$ = ± 20V | | | ±100 | nA |
| $V_{CE(sat)}$ | $I_C$ = 32A, $V_{GE}$ = 15V, Note 1 | | 2.8 | 3.2 | V |
| | $T_J$ = 125°C | | 3.5 | | V |

### Features

- Silicon Chip on Direct-Copper Bond (DCB) Substrate
- Isolated Mounting Surface
- 3000V Electrical Isolation
- High Blocking Voltage
- International Standard Package
- Low Conduction Losses

### Advantages

- Low Gate Drive Requirement
- High Power Density

### Applications:

- Switched-Mode and Resonant-Mode Power Supplies
- Uninterruptible Power Supplies (UPS)
- Laser Generators
- Capacitor Discharge Circuits
- AC Switches

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| Symbol | Test Conditions ($T_J$ = 25°C Unless Otherwise Specified) | Min. | Typ. | Max. | |
|---|---|---|---|---|---|
| $g_{fS}$ | $I_C$ = 32A, $V_{CE}$ = 10V, Note 1 | 16 | 26 | | S |
| $C_{ies}$ | $V_{CE}$ = 25V, $V_{GE}$ = 0V, f = 1MHz | | 3140 | | pF |
| $C_{oes}$ | | | 124 | | pF |
| $C_{res}$ | | | 40 | | pF |
| $Q_g$ | $I_C$ = 32A, $V_{GE}$ = 15V, $V_{CE}$ = 1000V | | 142 | | nC |
| $Q_{ge}$ | | | 20 | | nC |
| $Q_{gc}$ | | | 57 | | nC |
| $t_{d(on)}$ | **Resistive Switching Times, $T_J$ = 25°C** | | 50 | | ns |
| $t_r$ | $I_C$ = 32A, $V_{GE}$ = 15V | | 185 | | ns |
| $t_{d(off)}$ | $V_{CE}$ = 1250V, $R_G$ = 2Ω | | 160 | | ns |
| $t_f$ | | | 720 | | ns |
| $t_{d(on)}$ | **Resistive Switching Times, $T_J$ = 125°C** | | 58 | | ns |
| $t_r$ | $I_C$ = 32A, $V_{GE}$ = 15V | | 515 | | ns |
| $t_{d(off)}$ | $V_{CE}$ = 1250V, $R_G$ = 2Ω | | 165 | | ns |
| $t_f$ | | | 630 | | ns |
| $R_{thJC}$ | | | | 0.78 | °C/W |
| $R_{thCS}$ | | | 0.15 | | °C/W |

**Reverse Diode**

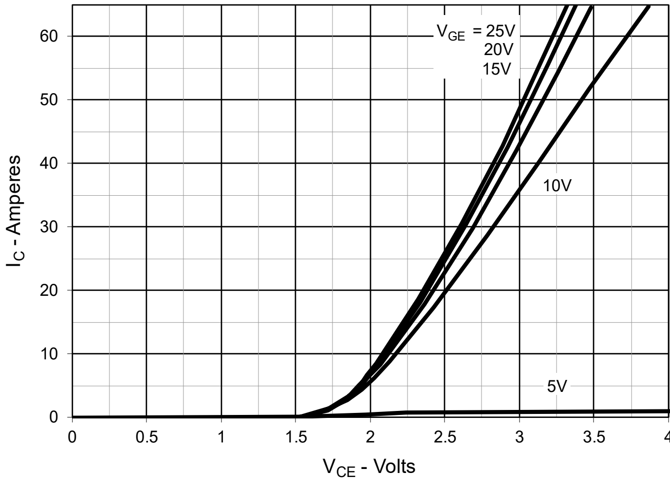
| Symbol | Test Conditions ($T_J$ = 25°C Unless Otherwise Specified) | Min. | Typ. | Max. | |
|---|---|---|---|---|---|
| $V_F$ | $I_F$ = 32A, $V_{GE}$ = 0V | | | 2.1 | V |
| $t_{rr}$ | $I_F$ = 16A, $V_{GE}$ = 0V, -$di_F$/dt = 100A/μs | | 1.5 | | μs |
| $I_{RM}$ | $V_R$ = 100V, $V_{GE}$ = 0V | | 33 | | A |

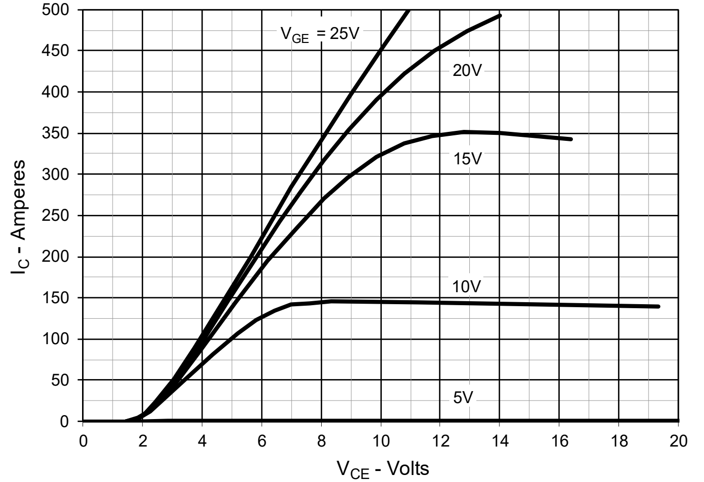
Notes:

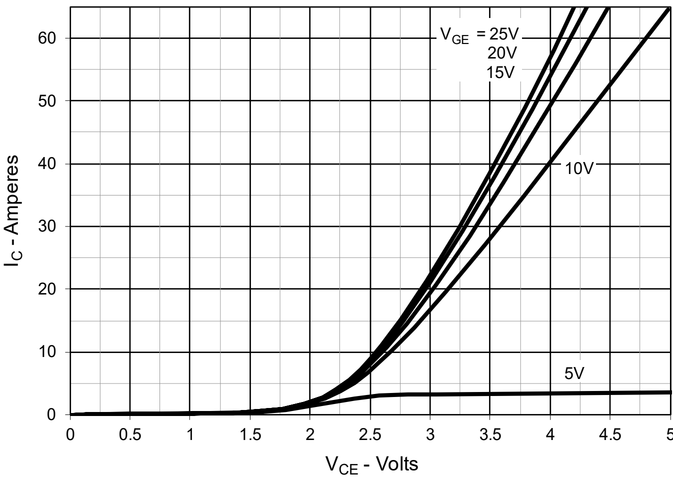
1. Pulse test, t ≤ 300μs, duty cycle, d ≤ 2%.
2. Device must be heatsunk for high temperature leakage current measurements to avoid thermal runaway.

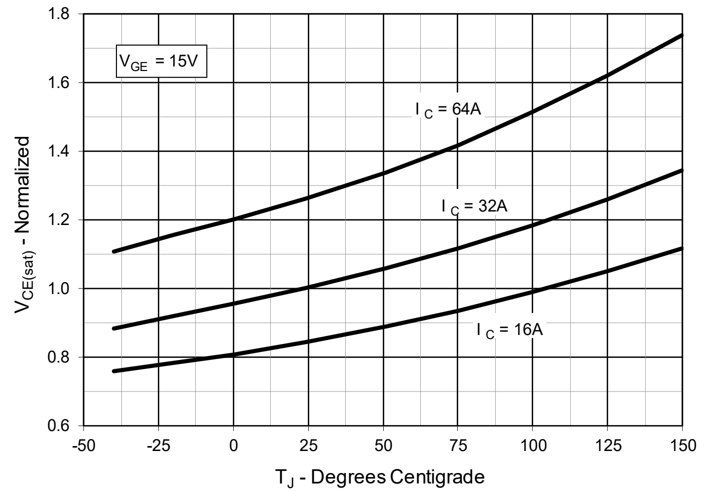
Littelfuse reserves the right to change limits, test conditions and dimensions.

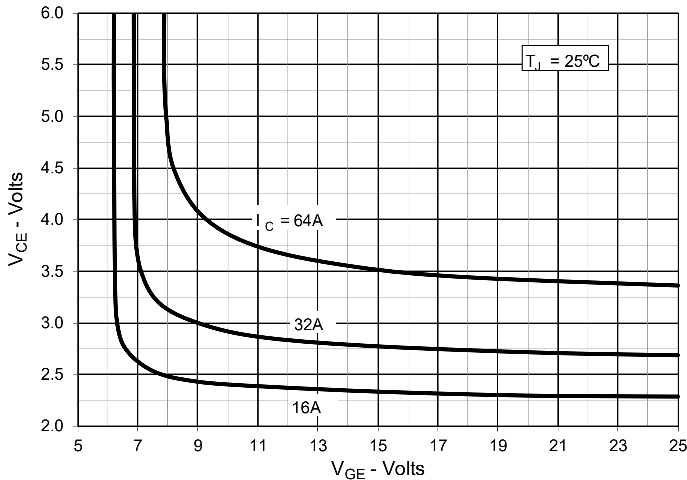
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2 7,157,338B2 4,850,072 5,017,508 5,063,307 5,381,025 6,259,123 B1 6,534,343 6,710,405 B2 6,759,692 7,063,975 B2 4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537

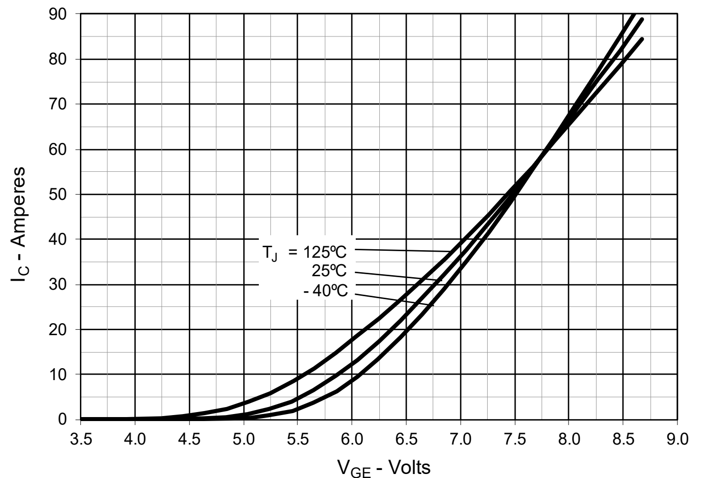
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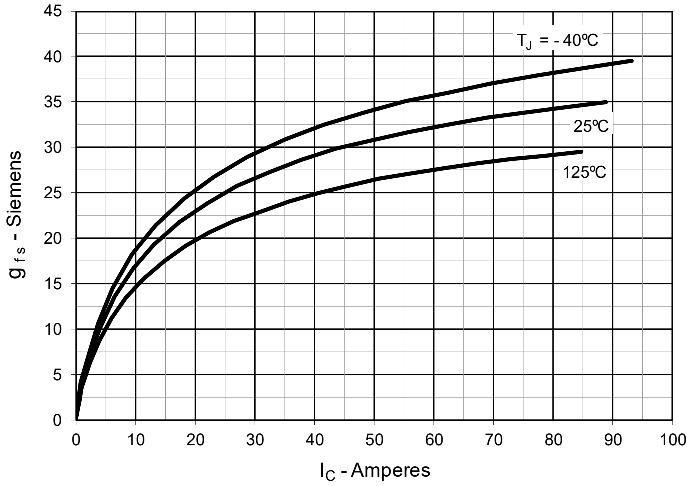


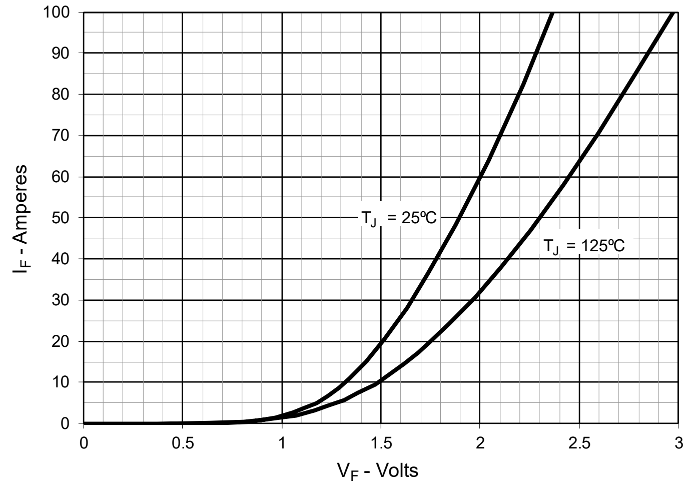


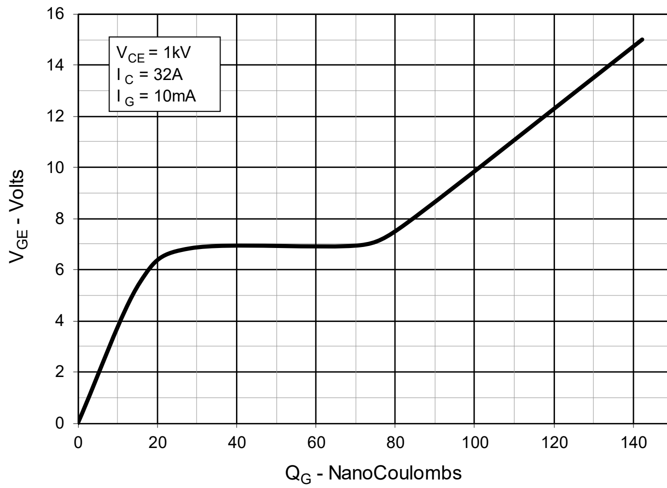


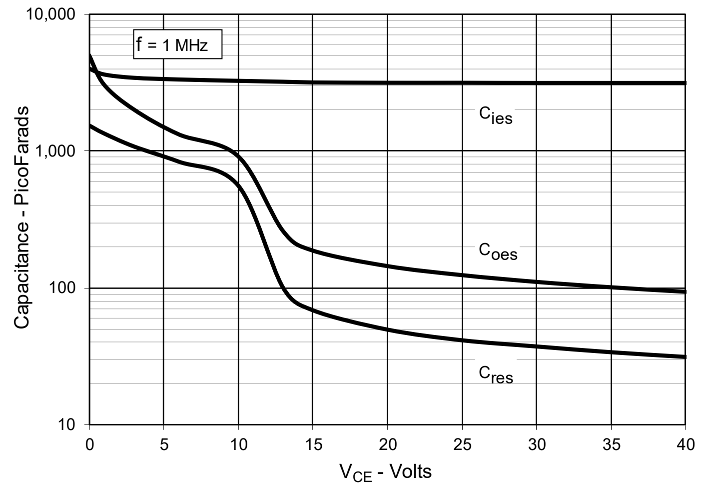


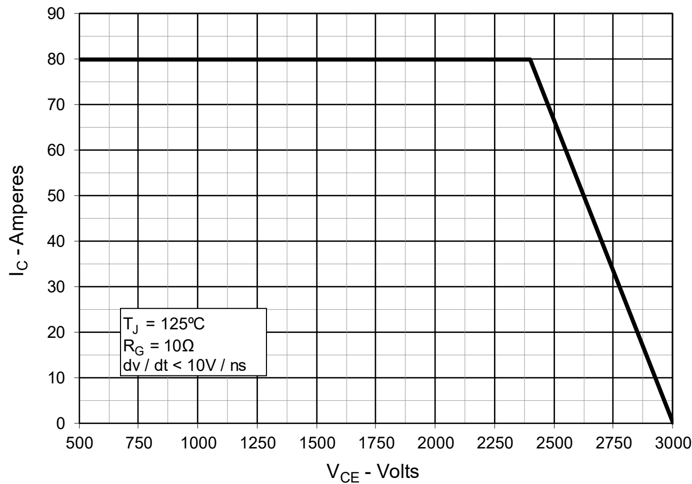


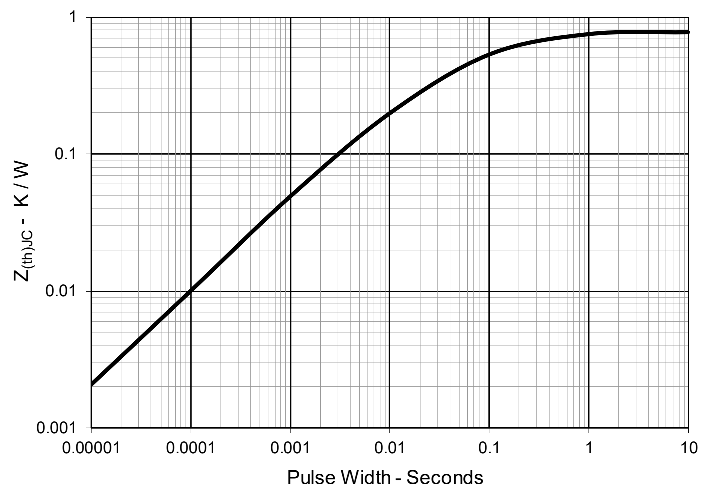


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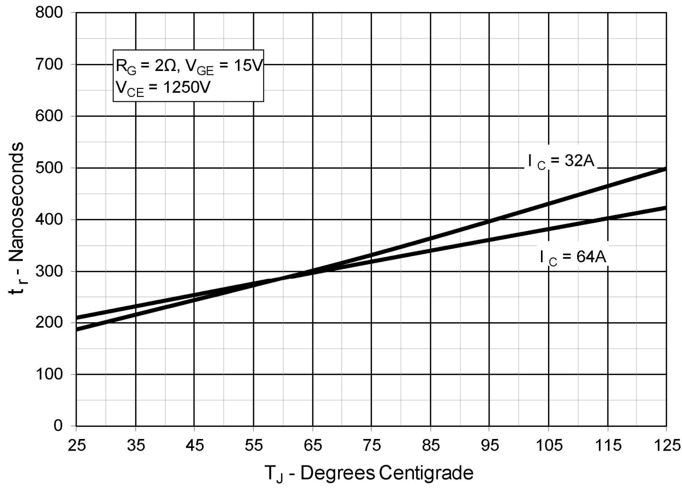


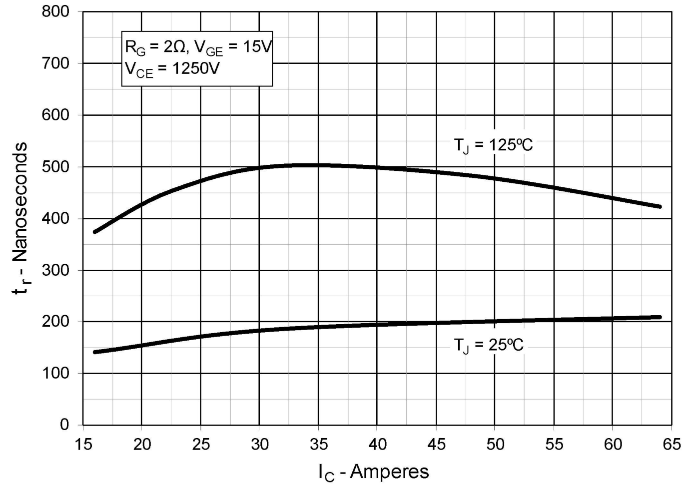


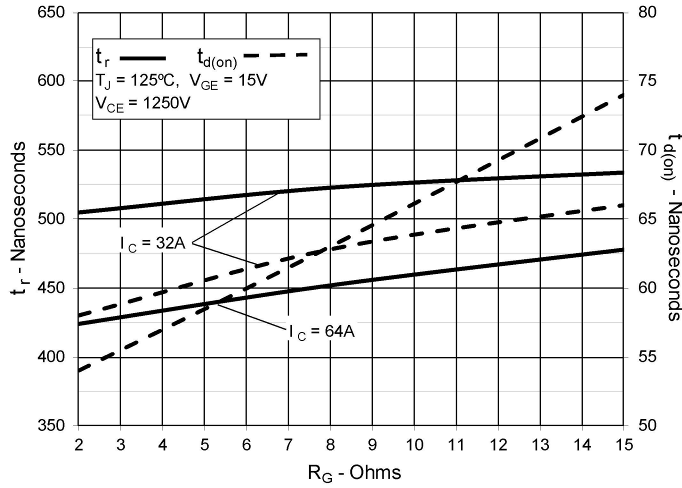


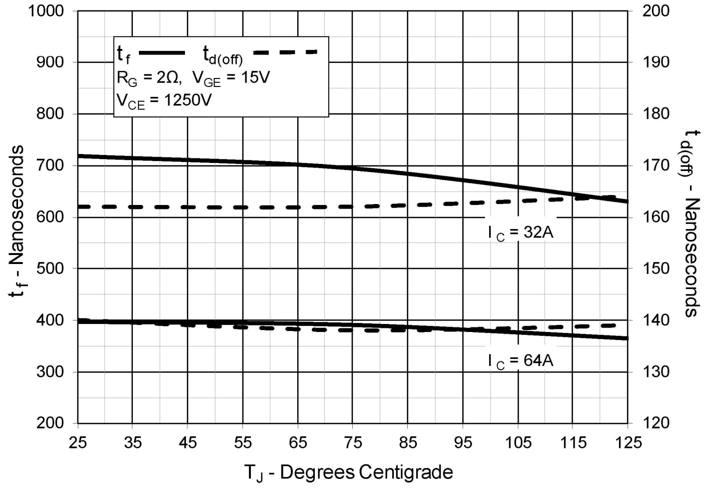


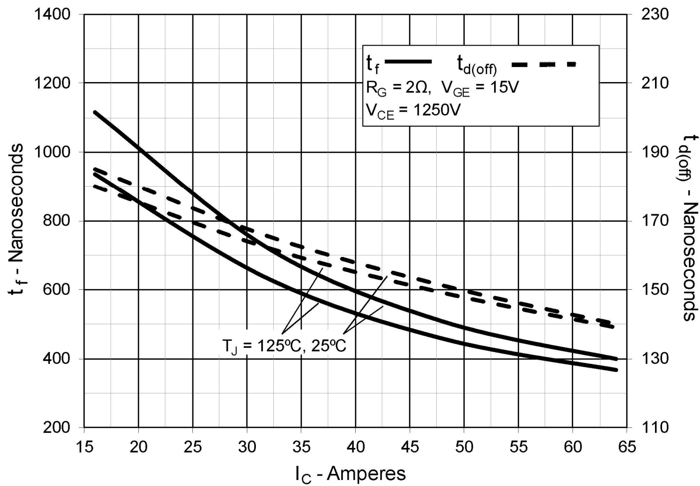


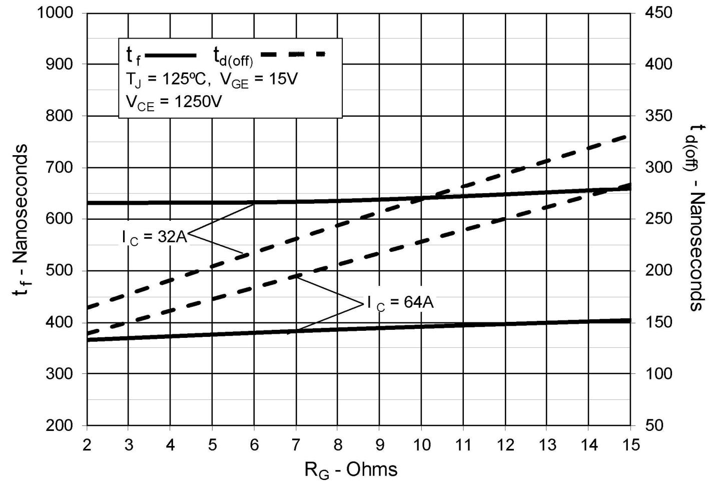


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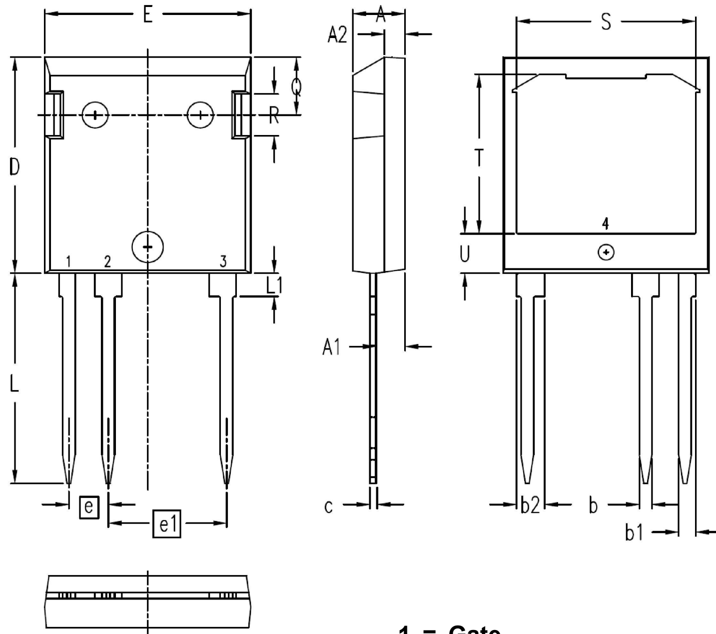
**ISOPLUS i4-Pak Outline**




1 = Gate
2 = Emitter
3,4 = Colector

| SYM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | .193 | .201 | 4.90 | 5.10 |
| A1 | .106 | .114 | 2.70 | 2.90 |
| A2 | .075 | .083 | 1.90 | 2.10 |
| b | .047 | .055 | 1.20 | 1.40 |
| b1 | .061 | .069 | 1.55 | 1.75 |
| b2 | .087 | .094 | 2.20 | 2.40 |
| c | .020 | .029 | 0.51 | 0.74 |
| D | .819 | .846 | 20.80 | 21.50 |
| E | .768 | .799 | 19.50 | 20.30 |
| e | .150 BSC | | 3.81 BSC | |
| e1 | .450 BSC | | 11.43 BSC | |
| L | .780 | .838 | 19.80 | 21.30 |
| L1 | .083 | .094 | 2.10 | 2.40 |
| Q | .213 | .236 | 5.40 | 6.00 |
| R | .157 | .169 | 4.00 | 4.30 |
| S | .673 | .685 | 17.10 | 17.40 |
| T | .602 | .614 | 15.30 | 15.60 |
| U | .142 | .154 | 3.60 | 3.90 |

IXYS
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