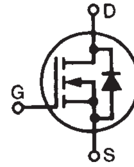
IXYS

# High Voltage Power MOSFET

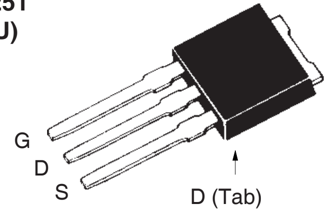
## IXTU01N100
## IXTY01N100

$V_{DSS}$ = 1000V
$I_{D25}$ = 100mA
$R_{DS(on)}$ ≤ 80Ω

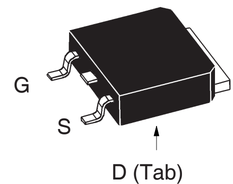
N-Channel Enhancement Mode




TO-251 (IXTU)




TO-252 (IXTY)




G = Gate D = Drain
S = Source Tab = Drain

| Symbol | Test Conditions | Maximum Ratings | |
|---|---|---|---|
| $V_{DSS}$ | $T_J$ = 25°C to 150°C | 1000 | V |
| $V_{DGR}$ | $T_J$ = 25°C to 150°C, $R_{GS}$ = 1MΩ | 1000 | V |
| $V_{GSS}$ | Continuous | ±20 | V |
| $V_{GSM}$ | Transient | ±30 | V |
| $I_{D25}$ | $T_C$ = 25°C | 100 | mA |
| $I_{DM}$ | $T_C$ = 25°C, Pulse Width Limited by $T_{JM}$ | 400 | mA |
| $P_D$ | $T_C$ = 25°C | 25 | 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 (0.062in.) from Case for 10s | 260 | °C |
| $F_C$ | Mounting force | 1.13 / 10 | Nm/lb.in. |
| Weight | TO-251<br>TO-252 | 0.40<br>0.35 | g<br>g |

| Symbol | Test Conditions ($T_J$ = 25°C, Unless Otherwise Specified) | Characteristic Values Min. | Typ. | Max. | |
|---|---|---|---|---|---|
| $BV_{DSS}$ | $V_{GS}$ = 0V, $I_D$ = 25µA | 1000 | | | V |
| $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 25µA | 2.0 | | 4.5 | V |
| $I_{GSS}$ | $V_{GS}$ = ± 20V, $V_{DS}$ = 0V | | | ±50 | nA |
| $I_{DSS}$ | $V_{DS}$ = 0.8 • $V_{DSS}$, $V_{GS}$ = 0V | | | 10 | µA |
| | $T_J$ = 125°C | | | 200 | µA |
| $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 50mA, Note 1 | | 60 | 80 | Ω |

### Features

- International Standard Packages
- Fast Switching Times
- Avalanche Rated
- $R_{ds(on)}$ HDMOS™ Process
- Rugged Polysilicon Gate Cell structure

### Advantages

- High Power Density
- Space Savings

### Applications

- Level Shifting
- Triggers
- Solid State Relays
- Current Regulators

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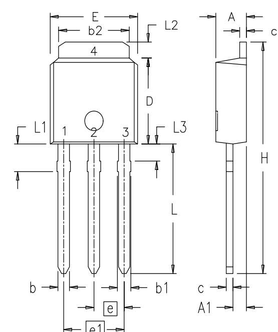
| Symbol | Test Conditions | Characteristic Values Min. | Typ. | Max. |
|---|---|---|---|---|
| ($T_J$ = 25°C, Unless Otherwise Specified) | | | | |
| $g_{fs}$ | $V_{DS}$ = 10V, $I_D$ = 50mA, Note 1 | | 0.16 | S |
| $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 25V, f = 1MHz | | 54.0 | pF |
| $C_{oss}$ | | | 6.9 | pF |
| $C_{rss}$ | | | 2.0 | pF |
| $t_{d(on)}$ | **Resistive Switching Times** | | 12 | ns |
| $t_r$ | $V_{GS}$ = 10V, $V_{DS}$ = 0.5 • $V_{DSS}$, $I_D$ = 50mA | | 12 | ns |
| $t_{d(off)}$ | $R_G$ = 50Ω (External) | | 40 | ns |
| $t_f$ | | | 28 | ns |
| $Q_{g(on)}$ | $V_{GS}$ = 10V, $V_{DS}$ = 0.5 • $V_{DSS}$, $I_D$ = 50mA | | 6.9 | nC |
| $Q_{gs}$ | | | 1.8 | nC |
| $Q_{gd}$ | | | 3.0 | nC |
| $R_{thJC}$ | | | | 5 °C/W |

**Source-Drain Diode**

| Symbol | Test Conditions | Characteristic Values Min. | Typ. | Max. |
|---|---|---|---|---|
| ($T_J$ = 25°C, Unless Otherwise Specified) | | | | |
| $I_S$ | $V_{GS}$ = 0V | | | 100 mA |
| $I_{SM}$ | Repetitive, Pulse Width Limited by $T_{JM}$ | | | 300 mA |
| $V_{SD}$ | $I_F$ = $I_S$, $V_{GS}$ = 0V, Note 1 | | | 1.8 V |
| $t_{rr}$ | $I_F$ = 0.75A, -di/dt = 100A/µs, $V_R$ = 25V | | | 1.5 µs |

Note 1: Pulse test, t ≤ 300µs, duty cycle, d ≤ 2%.

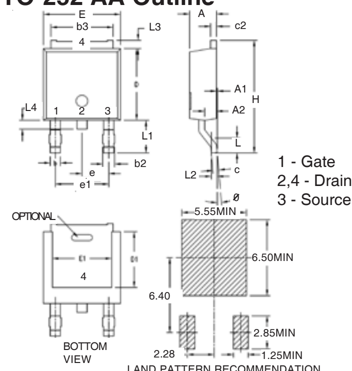
**TO-251 Outline**




1. Gate 2. Drain
3. Source 4. Drain

| Dim. | Millimeter Min. | Max. | Inches Min. | Max. |
|---|---|---|---|---|
| A | 2.19 | 2.38 | .086 | .094 |
| A1 | 0.89 | 1.14 | 0.35 | .045 |
| b | 0.64 | 0.89 | .025 | .035 |
| b1 | 0.76 | 1.14 | .030 | .045 |
| b2 | 5.21 | 5.46 | .205 | .215 |
| c | 0.46 | 0.58 | .018 | .023 |
| c1 | 0.46 | 0.58 | .018 | .023 |
| D | 5.97 | 6.22 | .235 | .245 |
| E | 6.35 | 6.73 | .250 | .265 |
| e | 2.28 | BSC | .090 | BSC |
| e1 | 4.57 | BSC | .180 | BSC |
| H | 17.02 | 17.78 | .670 | .700 |
| L | 8.89 | 9.65 | .350 | .380 |
| L1 | 1.91 | 2.28 | .075 | .090 |
| L2 | 0.89 | 1.27 | .035 | .050 |

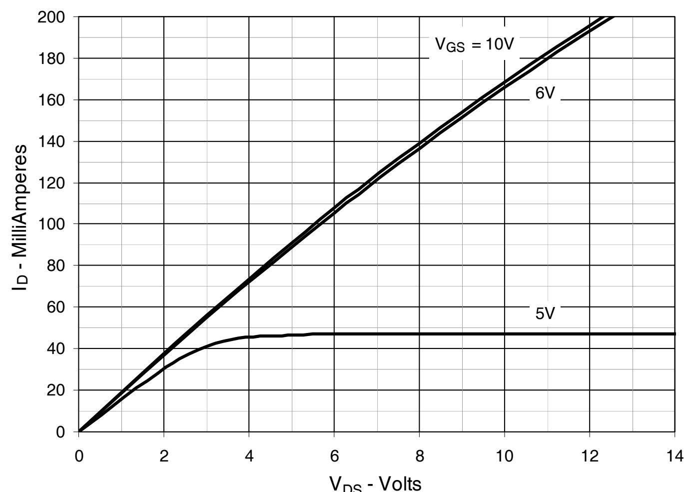
**TO-252 AA Outline**

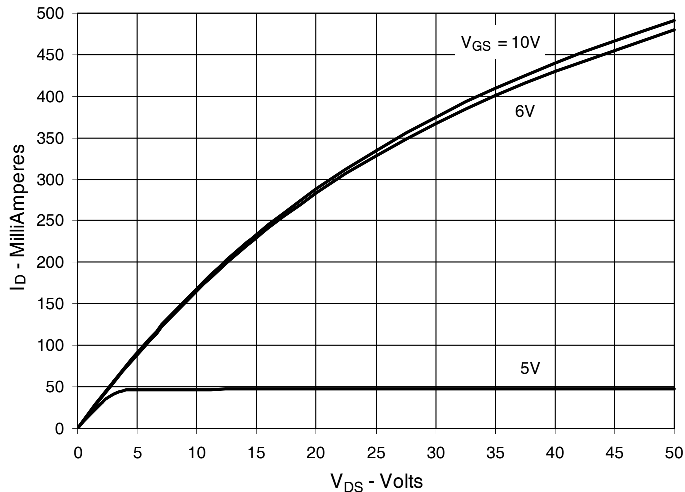


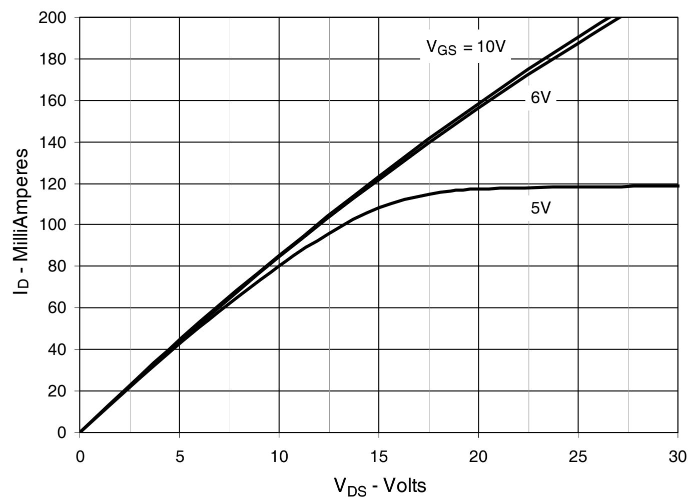

| SYM | INCHES MIN | MAX | MILLIMETERS MIN | MAX |
|---|---|---|---|---|
| A | .086 | .094 | 2.19 | 2.38 |
| A1 | 0 | .005 | 0 | 0.12 |
| A2 | .038 | .046 | 0.97 | 1.17 |
| b | .025 | .035 | 0.64 | 0.89 |
| b2 | .030 | .045 | 0.76 | 1.14 |
| b3 | .200 | .215 | 5.08 | 5.46 |
| c | .018 | .024 | 0.46 | 0.61 |
| c2 | .018 | .023 | 0.46 | 0.58 |
| D | .235 | .245 | 5.97 | 6.22 |
| D1 | .180 | .205 | 4.57 | 5.21 |
| E | .250 | .265 | 6.35 | 6.73 |
| E1 | .170 | .205 | 4.32 | 5.21 |
| e | .090 BSC | | 2.28 BSC | |
| e1 | .180 BSC | | 4.57 BSC | |
| H | .370 | .410 | 9.40 | 10.42 |
| L | .055 | .070 | 1.40 | 1.78 |
| L1 | .100 | .115 | 2.54 | 2.92 |
| L2 | .020 BSC | | 0.50 BSC | |
| L3 | .025 | .040 | 0.64 | 1.02 |
| L4 | .025 | .040 | 0.64 | 1.02 |
| θ | 0° | 10° | 0° | 10° |

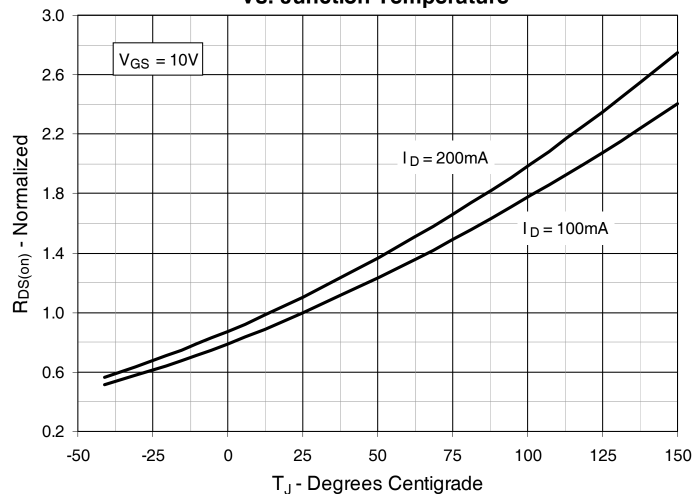
IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

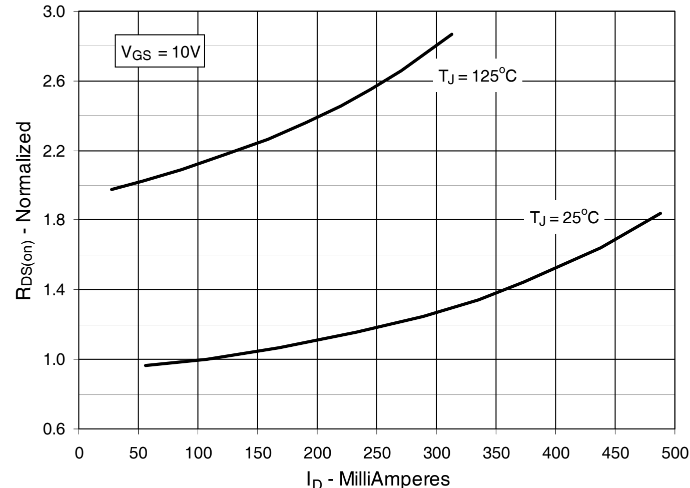
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,860,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692 6,771,478 B2 7,005,734 B2 7,063,975 B2 7,071,537 7,157,338B2

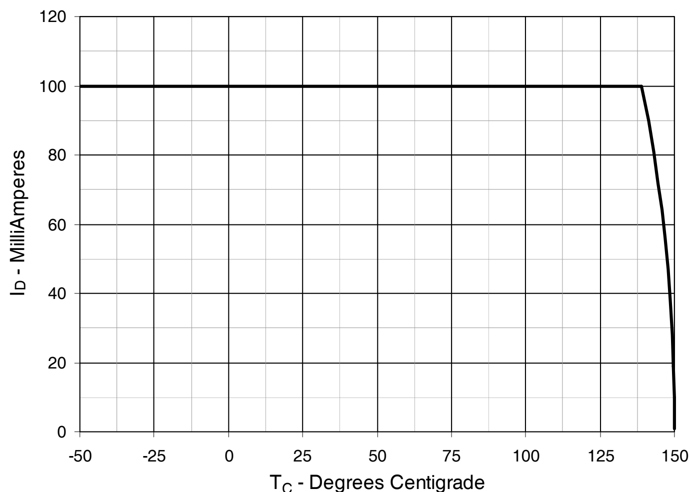
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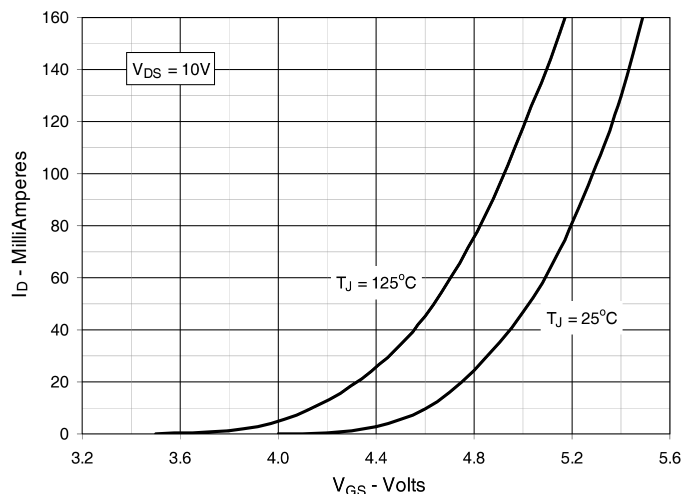


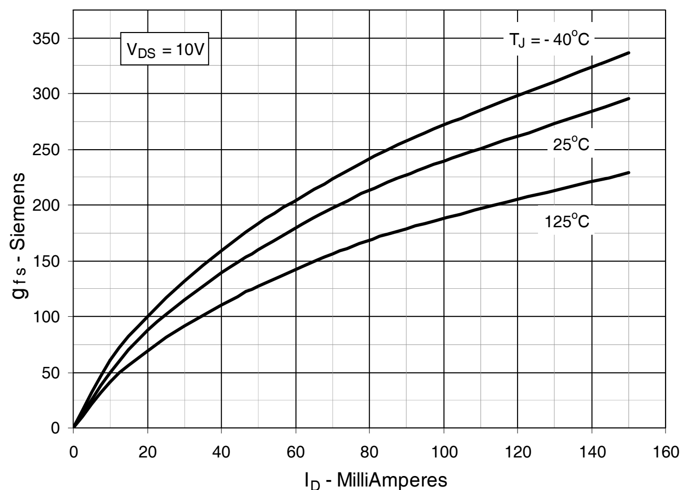


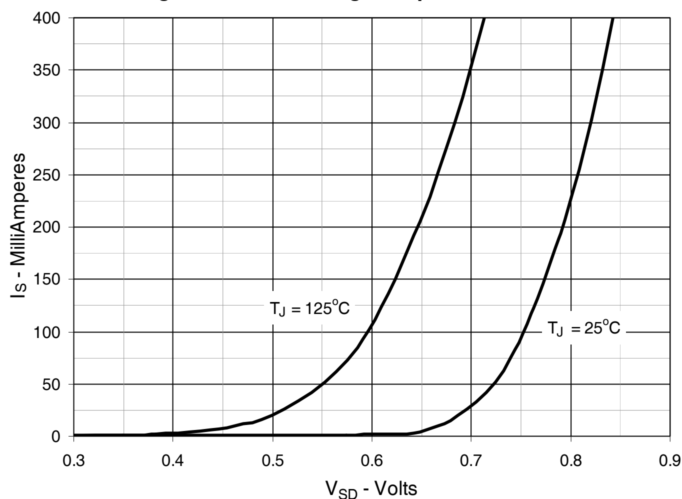


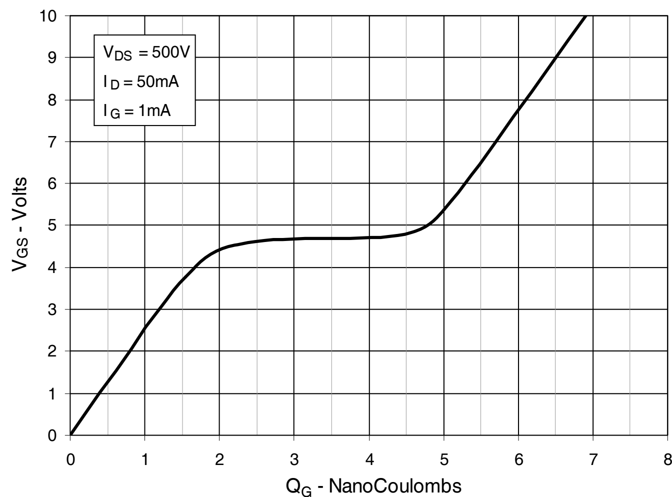


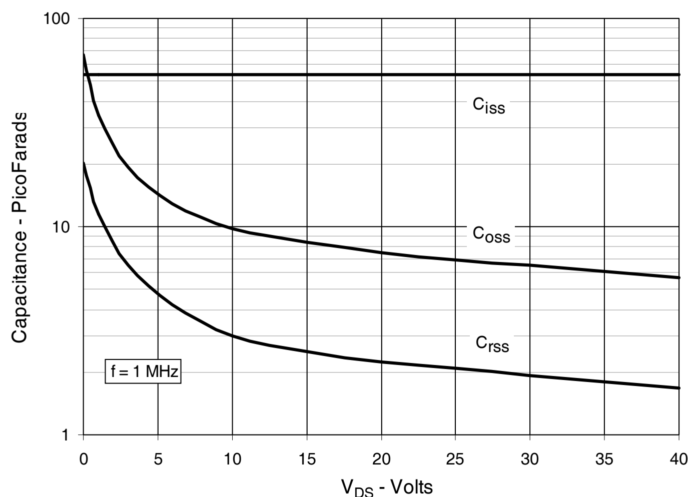


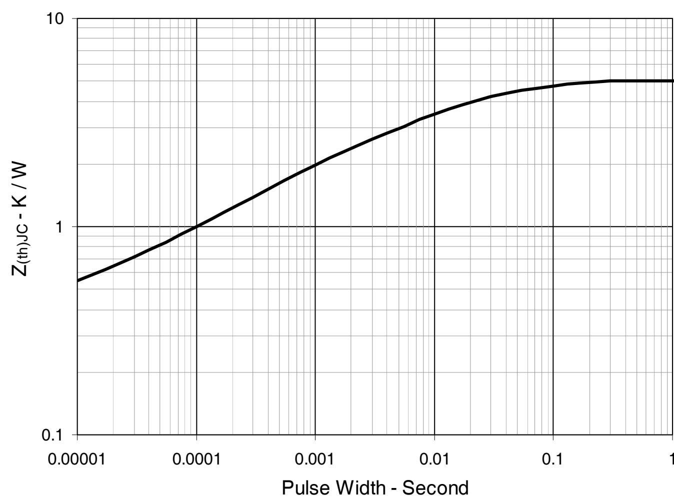


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