

TrenchP™ Power MOSFET

IXTY26P10T
IXTA26P10T
IXTP26P10T

$V_{DSS} = -100V$
 $I_{D25} = -26A$
 $R_{DS(on)} \leq 90m\Omega$

P-Channel Enhancement Mode
Avalanche Rated



| Symbol | Test Conditions | Maximum Ratings | |
|---------------|---|-----------------|------------|
| V_{DSS} | $T_J = 25^\circ C$ to $150^\circ C$ | - 100 | V |
| V_{DGR} | $T_J = 25^\circ C$ to $150^\circ C$, $R_{GS} = 1M\Omega$ | - 100 | V |
| V_{GSS} | Continuous | ± 15 | V |
| V_{GSM} | Transient | ± 25 | V |
| I_{D25} | $T_C = 25^\circ C$ | - 26 | A |
| I_{DM} | $T_C = 25^\circ C$, Pulse Width Limited by T_{JM} | - 80 | A |
| I_A | $T_C = 25^\circ C$ | - 26 | A |
| E_{AS} | $T_C = 25^\circ C$ | 300 | mJ |
| P_D | $T_C = 25^\circ C$ | 150 | 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 (0.062in.) from Case for 10s | 260 | $^\circ C$ |
| M_d | Mounting Torque (TO-220) | 1.13 / 10 | Nm/lb.in |
| Weight | TO-252 | 0.35 | g |
| | TO-263 | 2.50 | g |
| | TO-220 | 3.00 | g |

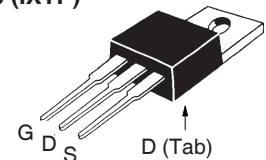
TO-252 (IXTY)



TO-263 (IXTA)



TO-220 (IXTP)



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

Features

- International Standard Packages
- Avalanche Rated
- Extended FBSOA
- Fast Intrinsic Diode
- Low $R_{DS(ON)}$ and Q_G

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- High-Side Switching
- Push Pull Amplifiers
- DC Choppers
- Automatic Test Equipment
- Current Regulators
- Battery Charger Applications

| Symbol | Test Conditions ($T_J = 25^\circ C$, Unless Otherwise Specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|---------------|
| | | Min. | Typ. | Max. |
| BV_{DSS} | $V_{GS} = 0V$, $I_D = -250\mu A$ | -100 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = -250\mu A$ | - 2.5 | | - 4.5 V |
| I_{GSS} | $V_{GS} = \pm 15V$, $V_{DS} = 0V$ | | | ± 50 nA |
| I_{DSS} | $V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 125^\circ C$ | | | -10 μA |
| | | | | - 250 μA |
| $R_{DS(on)}$ | $V_{GS} = -10V$, $I_D = 0.5 \cdot I_{D25}$, Note 1 | | | 90 m Ω |

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|---|---|-----------------------|------|-------------------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $V_{DS} = -10\text{V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1 | 10 | 17 | S |
| C_{iss} C_{oss} C_{rss} | $V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$ | | 3820 | pF |
| | | | 280 | pF |
| | | | 93 | pF |
| $t_{d(on)}$ t_r $t_{d(off)}$ t_f | Resistive Switching Times $V_{GS} = -10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$ $R_G = 3\Omega$ (External) | | 20 | ns |
| | | | 15 | ns |
| | | | 37 | ns |
| | | | 11 | ns |
| $Q_{g(on)}$ Q_{gs} Q_{gd} | $V_{GS} = -10\text{V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$ | | 52 | nC |
| | | | 18 | nC |
| | | | 16 | nC |
| R_{thJC} R_{thCS} | TO-220 | | | 0.83 $^\circ\text{C/W}$ |
| | | | 0.50 | $^\circ\text{C/W}$ |

Source-Drain Diode

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|----------------------------------|---|-----------------------|------|--------|
| | | Min. | Typ. | Max. |
| I_S | $V_{GS} = 0\text{V}$ | | | -26 A |
| I_{SM} | Repetitive, Pulse Width Limited by T_{JM} | | | -104 A |
| V_{SD} | $I_F = I_S$, $V_{GS} = 0\text{V}$, Note 1 | | | -1.5 V |
| t_{rr} Q_{RM} I_{RM} | $I_F = 0.5 \cdot I_{D25}$, $-di/dt = -100\text{A}/\mu\text{s}$ $V_R = -50\text{V}$, $V_{GS} = 0\text{V}$ | | 70 | ns |
| | | | 210 | nC |
| | | | -6 | A |

Note 1: Pulse test, $t \leq 300\mu\text{s}$, duty cycle, $d \leq 2\%$.

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 | 4,931,844 | 5,049,961 | 5,237,481 | 6,162,665 | 6,404,065B1 | 6,683,344 | 6,727,585 | 7,005,734B2 | 7,157,338B2 |
| | 4,860,072 | 5,017,508 | 5,063,307 | 5,381,025 | 6,259,123B1 | 6,534,343 | 6,710,405B2 | 6,759,692 | 7,063,975B2 | |
| | 4,881,106 | 5,034,796 | 5,187,117 | 5,486,715 | 6,306,728B1 | 6,583,505 | 6,710,463 | 6,771,478B2 | 7,071,537 | |

Fig. 1. Output Characteristics @ $T_J = 25^\circ\text{C}$

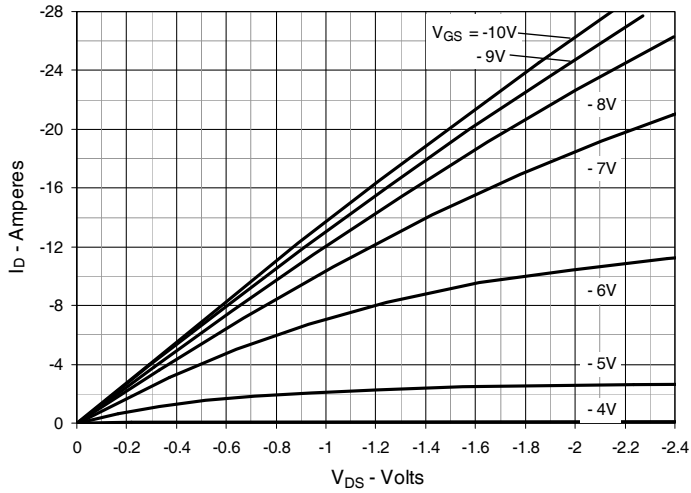


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

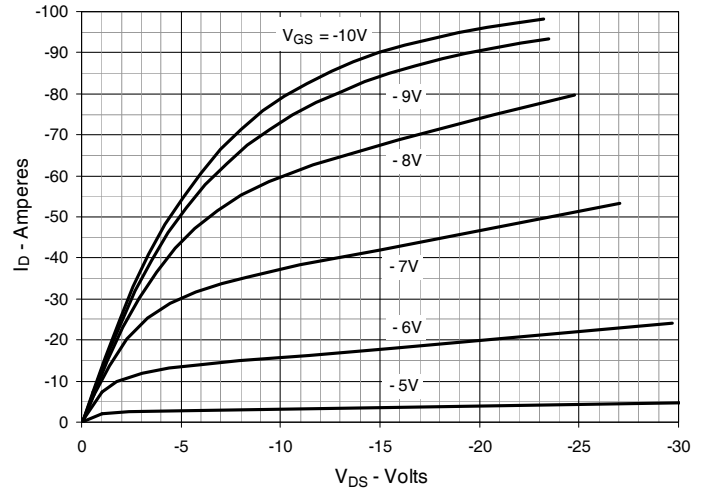


Fig. 3. Output Characteristics @ $T_J = 125^\circ\text{C}$

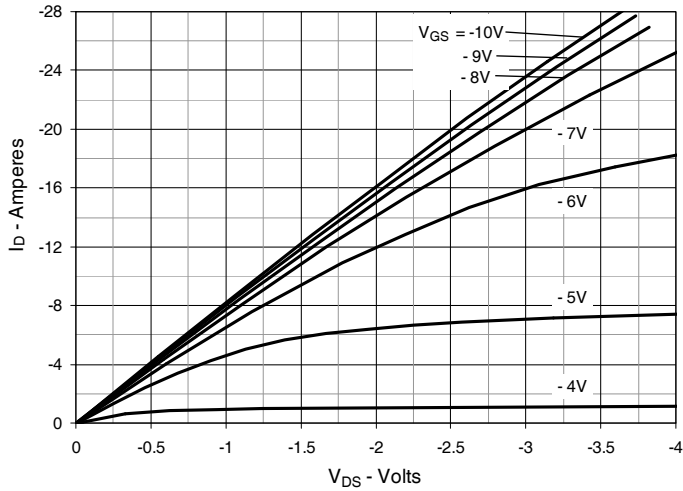


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = -13\text{A}$ Value vs. Junction Temperature

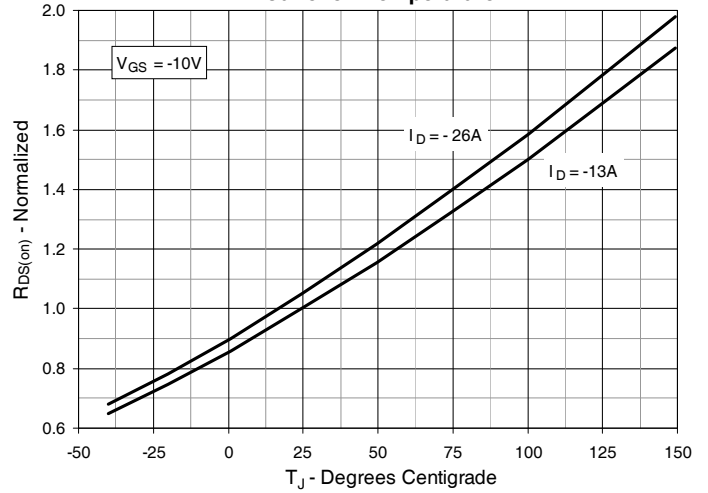


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = -13\text{A}$ Value vs. Drain Current

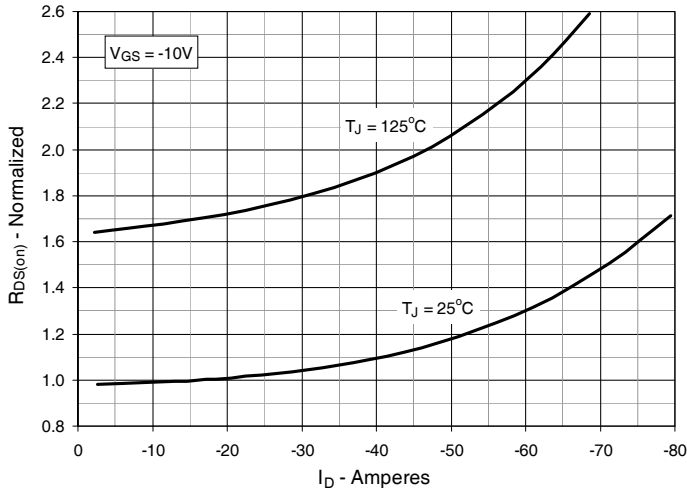


Fig. 6. Maximum Drain Current vs. Case Temperature

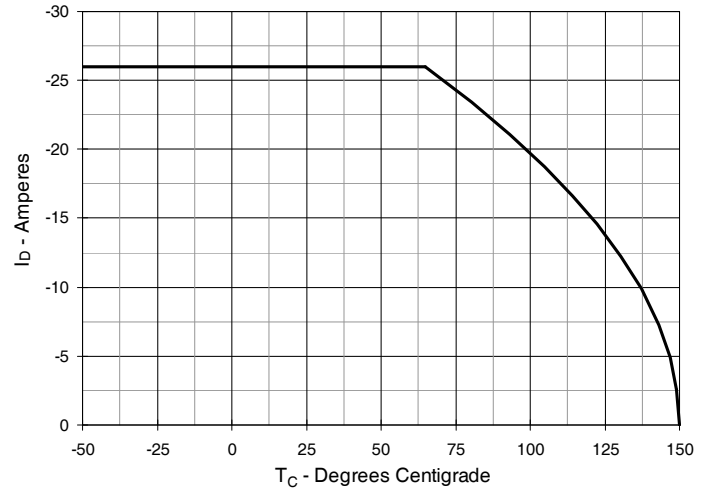


Fig. 7. Input Admittance

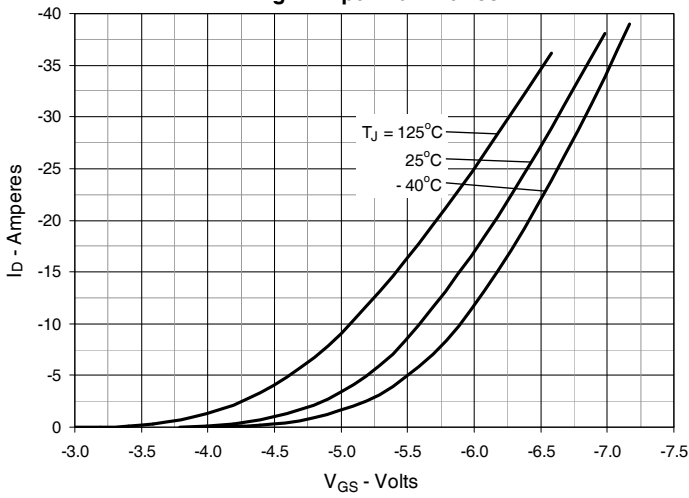


Fig. 8. Transconductance

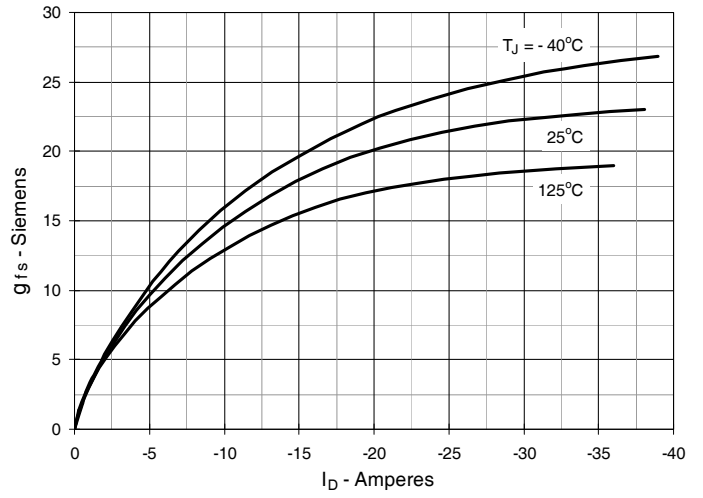


Fig. 9. Forward Voltage Drop of Intrinsic Diode

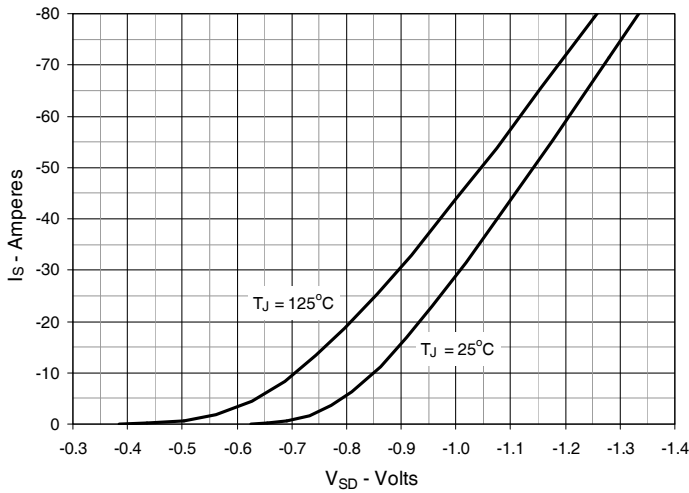


Fig. 10. Gate Charge

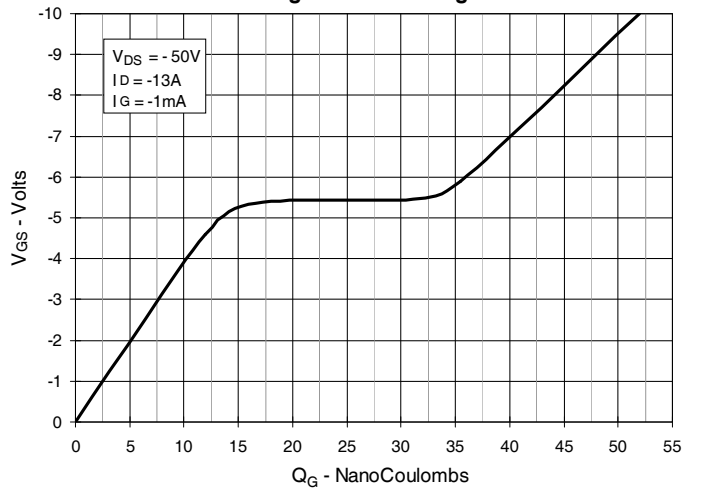


Fig. 11. Capacitance

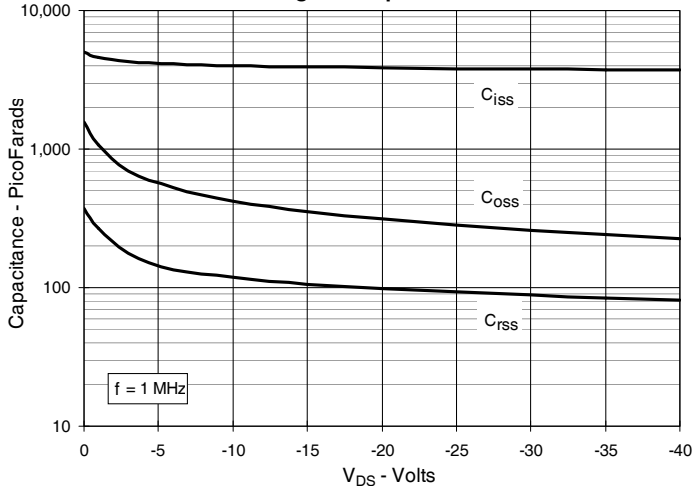


Fig. 12. Forward-Bias Safe Operating Area

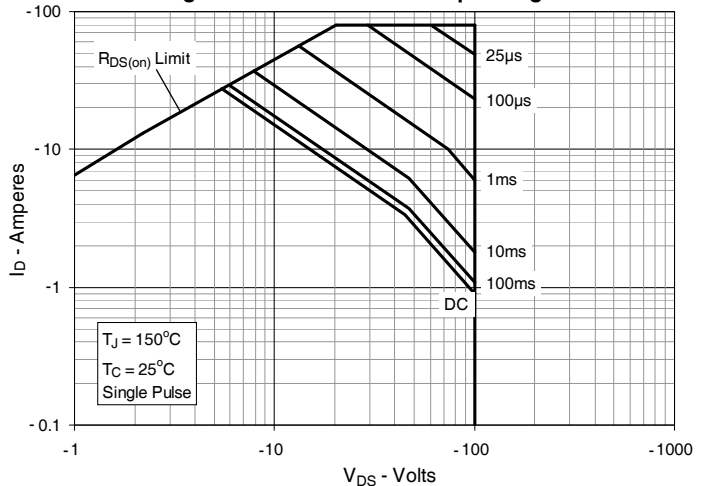


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

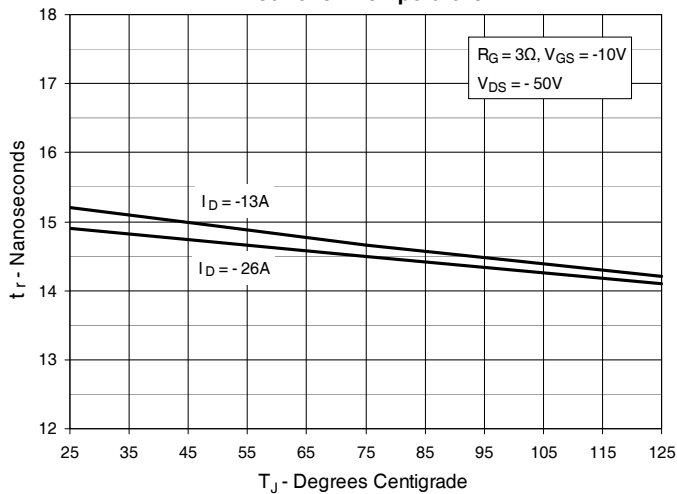


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

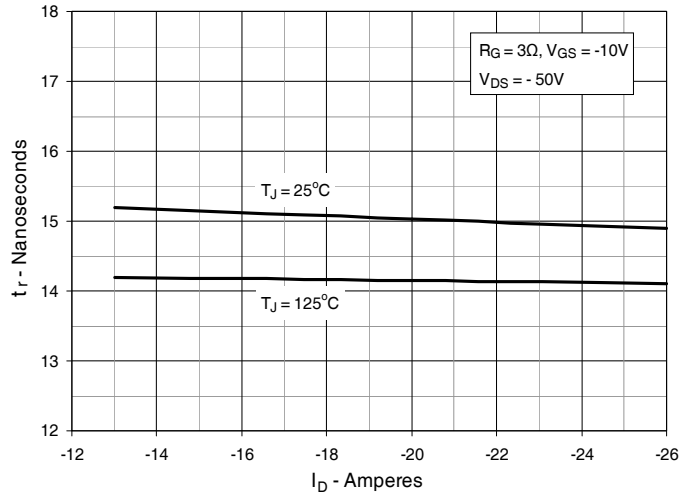


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

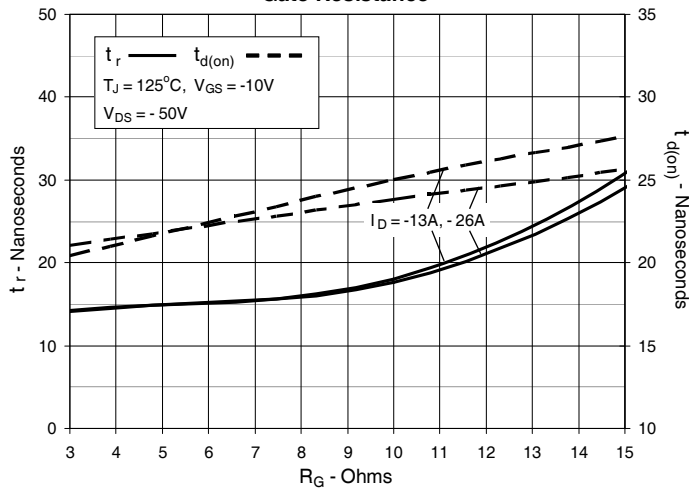


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

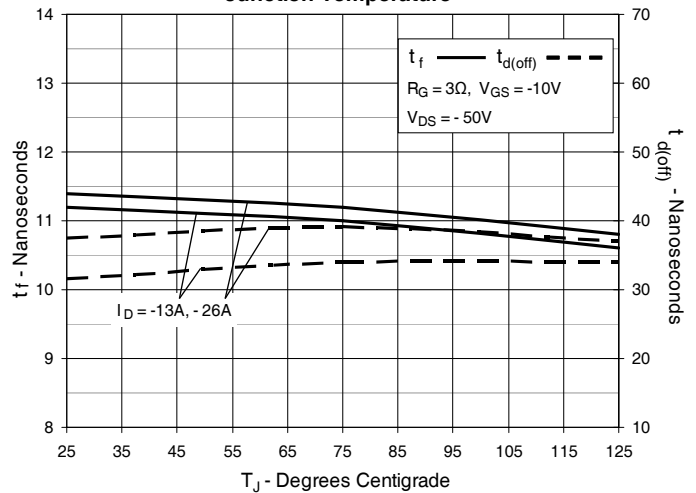


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

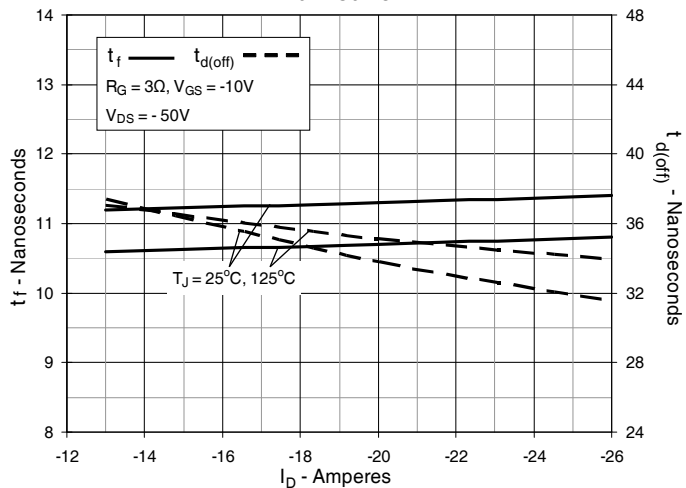


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance

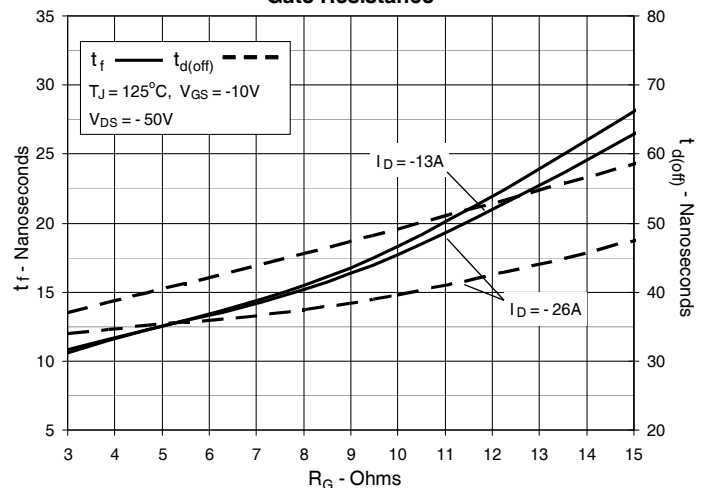
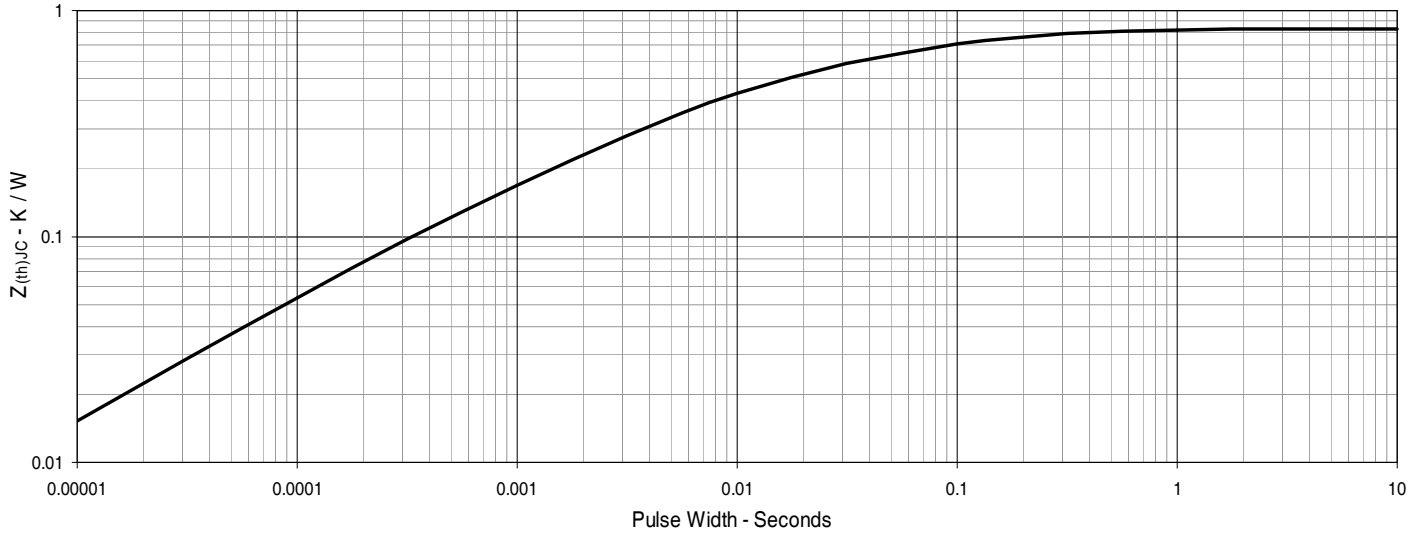


Fig. 19. Maximum Transient Thermal Impedance



TO-252 AA Outline

1 - Gate
2,4 - Drain
3 - Source

OPTIONAL

BOTTOM VIEW

LAND PATTERN RECOMMENDATION

| SYM | INCHES | | MILLIMETERS | |
|-----|----------|------|-------------|-------|
| | MIN | MAX | 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 |
| ø | 0* | 10* | 0* | 10* |

TO-263 Outline

1 - Gate
2,4 - Drain
3 - Source

| SYM | INCHES | | MILLIMETER | |
|------|----------|------|------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .170 | .185 | 4.30 | 4.70 |
| A1 | .000 | .008 | 0.00 | 0.20 |
| A2 | .091 | .098 | 2.30 | 2.50 |
| b | .028 | .035 | 0.70 | 0.90 |
| b2 | .046 | .060 | 1.18 | 1.52 |
| C | .018 | .024 | 0.45 | 0.60 |
| C2 | .049 | .060 | 1.25 | 1.52 |
| D | .340 | .370 | 8.63 | 9.40 |
| D1 | .300 | .327 | 7.62 | 8.30 |
| E | .380 | .410 | 9.65 | 10.41 |
| E1 | .270 | .330 | 6.86 | 8.38 |
| [e] | .100 BSC | | 2.54 BSC | |
| H | .580 | .620 | 14.73 | 15.75 |
| L | .075 | .105 | 1.91 | 2.67 |
| L1 | .039 | .060 | 1.00 | 1.52 |
| L2 | — | .070 | — | 1.77 |
| [L3] | .010 BSC | | 0.254 BSC | |

TO-220 Outline

1 - Gate
2,4 - Drain
3 - Source

| SYM | INCHES | | MILLIMETERS | |
|------|----------|------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .169 | .185 | 4.30 | 4.70 |
| A1 | .047 | .055 | 1.20 | 1.40 |
| A2 | .079 | .106 | 2.00 | 2.70 |
| b | .024 | .039 | 0.60 | 1.00 |
| b2 | .045 | .057 | 1.15 | 1.45 |
| c | .014 | .026 | 0.35 | 0.65 |
| D | .587 | .626 | 14.90 | 15.90 |
| D1 | .335 | .370 | 8.50 | 9.40 |
| (D2) | .500 | .531 | 12.70 | 13.50 |
| E | .382 | .406 | 9.70 | 10.30 |
| (E1) | .283 | .323 | 7.20 | 8.20 |
| e | .100 BSC | | 2.54 BSC | |
| e1 | .200 BSC | | 5.08 BSC | |
| H1 | .244 | .268 | 6.20 | 6.80 |
| L | .492 | .547 | 12.50 | 13.90 |
| L1 | .110 | .154 | 2.80 | 3.90 |
| ∅P | .134 | .150 | 3.40 | 3.80 |
| Q | .106 | .126 | 2.70 | 3.20 |

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