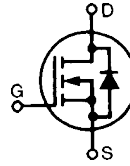


TrenchT2™ Power MOSFET

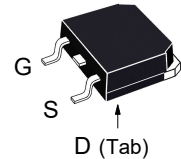
IXTH360N055T2 IXTT360N055T2

$V_{DSS} = 55V$
 $I_{D25} = 360A$
 $R_{DS(on)} \leq 2.4m\Omega$

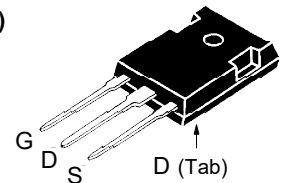
N-Channel Enhancement Mode
 Avalanche Rated
 Fast Intrinsic Diode



TO-268
(IXTT)



TO-247
(IXTH)



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

| Symbol | Test Conditions | Maximum Ratings | |
|------------|---|-----------------|------------|
| V_{DSS} | $T_J = 25^\circ C$ to $175^\circ C$ | 55 | V |
| V_{DGR} | $T_J = 25^\circ C$ to $175^\circ C$, $R_{GS} = 1M\Omega$ | 55 | V |
| V_{GSM} | Transient | ± 20 | V |
| I_{D25} | $T_C = 25^\circ C$ (Chip Capability) | 360 | A |
| I_{LRMS} | Lead Current Limit, RMS | 160 | A |
| I_{DM} | $T_C = 25^\circ C$, Pulse Width Limited by T_{JM} | 900 | A |
| I_A | $T_C = 25^\circ C$ | 180 | A |
| E_{AS} | $T_C = 25^\circ C$ | 960 | mJ |
| P_D | $T_C = 25^\circ C$ | 935 | W |
| T_J | | -55 ... +175 | $^\circ C$ |
| T_{JM} | | 175 | $^\circ C$ |
| T_{stg} | | -55 ... +175 | $^\circ C$ |
| T_L | Maximum Lead Temperature for Soldering | 300 | $^\circ C$ |
| T_{SOLD} | Plastic Body for 10s | 260 | $^\circ C$ |
| M_d | Mounting Torque (TO-247) | 1.13 / 10 | Nm/lb.in. |
| Weight | TO-247 | 6 | g |
| | TO-268 | 4 | g |

Features

- International Standard Package
- $175^\circ C$ Operating Temperature
- High Current Handling Capability
- Avalanche Rated
- Fast Intrinsic Diode
- Low $R_{DS(on)}$

Advantages

- Easy to Mount
- Space Savings
- High Power Density

Applications

- DC/DC Converters and Off-line UPS
- Primary- Side Switch
- High Current Switching Applications

| Symbol | Test Conditions ($T_J = 25^\circ C$ Unless Otherwise Specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|----------------|
| | | Min. | Typ. | Max. |
| BV_{DSS} | $V_{GS} = 0V$, $I_D = 250\mu A$ | 55 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 250\mu A$ | 2.0 | | 4.0 V |
| I_{GSS} | $V_{GS} = \pm 20V$, $V_{DS} = 0V$ | | | ± 200 nA |
| I_{DSS} | $V_{DS} = V_{DSS}$, $V_{GS} = 0V$ $T_J = 150^\circ C$ | | | 10 μA |
| | | | | 300 μA |
| $R_{DS(on)}$ | $V_{GS} = 10V$, $I_D = 100A$, Note 1 | | | 2.4 m Ω |

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|--------------|--|-----------------------|------|-------------------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $V_{DS} = 10\text{V}, I_D = 60\text{A}$, Note 1 | 65 | 110 | S |
| C_{iss} | } $V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$ | | 20 | nF |
| C_{oss} | | | 2650 | pF |
| C_{rss} | | | 480 | pF |
| R_{Gi} | Gate Input Resistance | | 1.6 | Ω |
| $t_{d(on)}$ | } Resistive Switching Times $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 100\text{A}$ $R_G = 2\Omega$ (External) | | 30 | ns |
| t_r | | | 23 | ns |
| $t_{d(off)}$ | | | 62 | ns |
| t_f | | | 56 | ns |
| $Q_{g(on)}$ | } $V_{GS} = 10\text{V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ | | 330 | nC |
| Q_{gs} | | | 76 | nC |
| Q_{gd} | | | 87 | nC |
| R_{thJC} | | | | 0.16 $^\circ\text{C/W}$ |
| R_{thCH} | TO-247 | | 0.21 | $^\circ\text{C/W}$ |

Source-Drain Diode

| Symbol | Test Conditions ($T_J = 25^\circ\text{C}$, Unless Otherwise Specified) | Characteristic Values | | |
|----------|---|-----------------------|------|--------|
| | | Min. | Typ. | Max. |
| I_S | $V_{GS} = 0\text{V}$ | | | 360 A |
| I_{SM} | Repetitive, Pulse Width Limited by T_{JM} | | | 1440 A |
| V_{SD} | $I_F = 100\text{A}, V_{GS} = 0\text{V}$, Note 1 | | | 1.3 V |
| t_{rr} | } $I_F = 150\text{A}, V_{GS} = 0\text{V}$ $-di/dt = 100\text{A}/\mu\text{s}$ $V_R = 27\text{V}$ | | 78 | ns |
| I_{RM} | | | 4.2 | A |
| Q_{RM} | | | 164 | nC |

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

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

| | | | | | | | | | | |
|---|-----------|-----------|-----------|-----------|--------------|-------------|-------------|--------------|-------------|-------------|
| IXYS MOSFETs and IGBTs are covered | 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 |
| by one or more of the following U.S. patents: | 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 | 6,306,728 B1 | 6,583,505 | 6,710,463 | 6,771,478 B2 | 7,071,537 | |

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

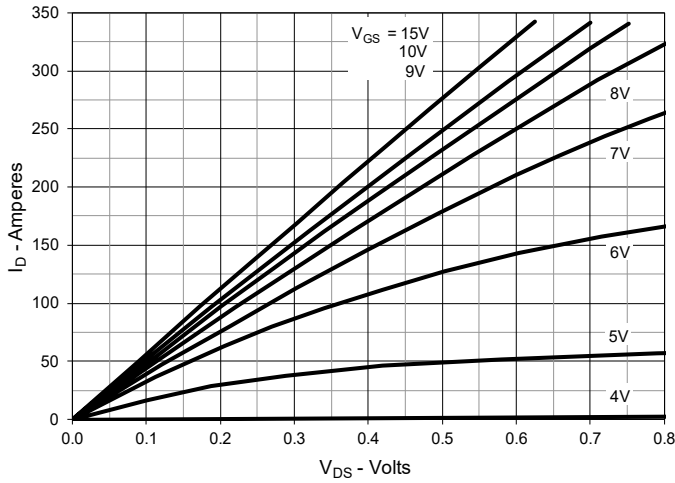


Fig. 2. Extended Output Characteristics @ $T_J = 25^\circ\text{C}$

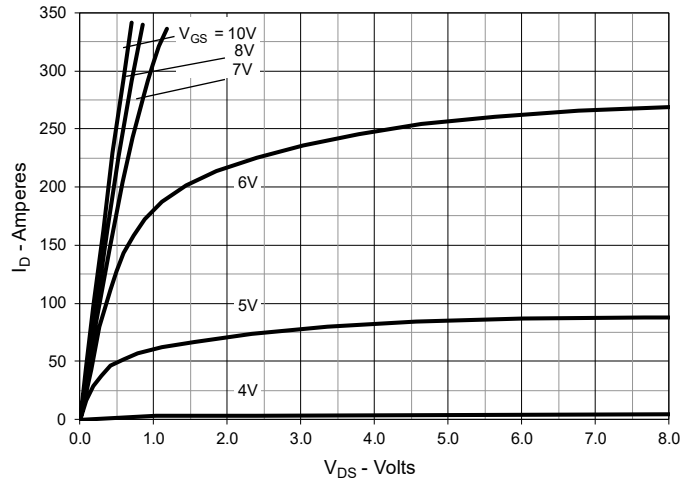


Fig. 3. Output Characteristics @ $T_J = 150^\circ\text{C}$

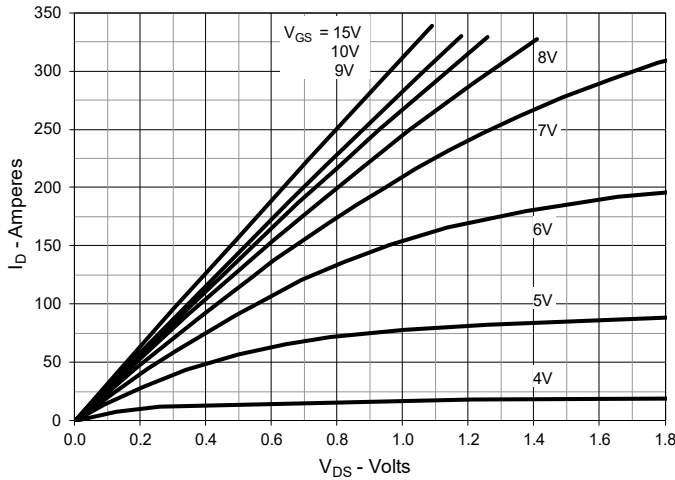


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 180\text{A}$ Value vs. Junction Temperature

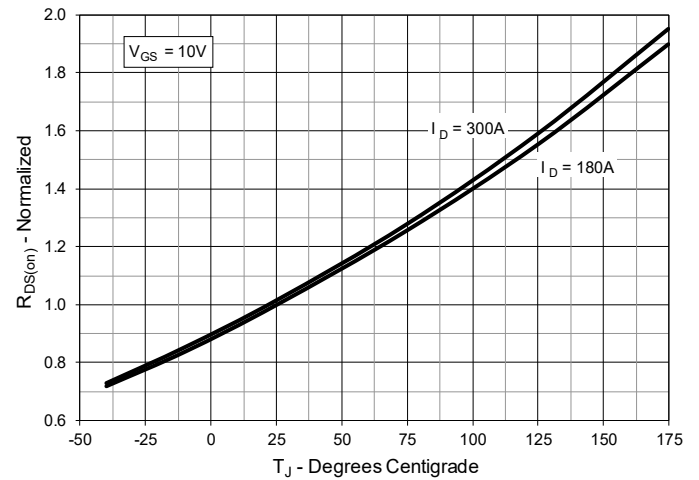


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 180\text{A}$ Value vs. Drain Current

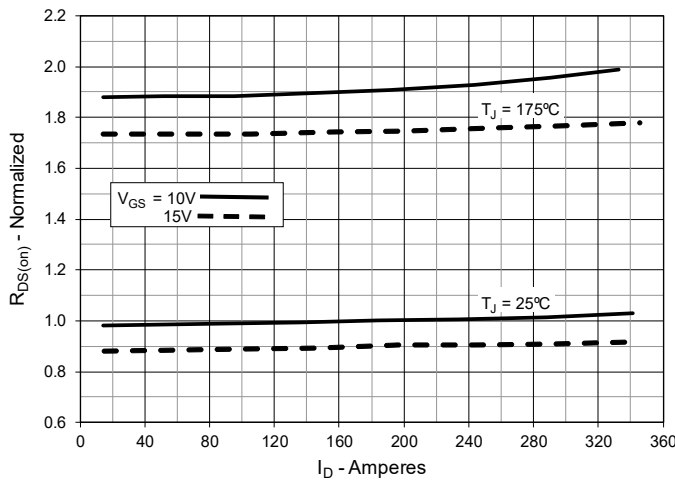


Fig. 6. Drain Current vs. Case Temperature

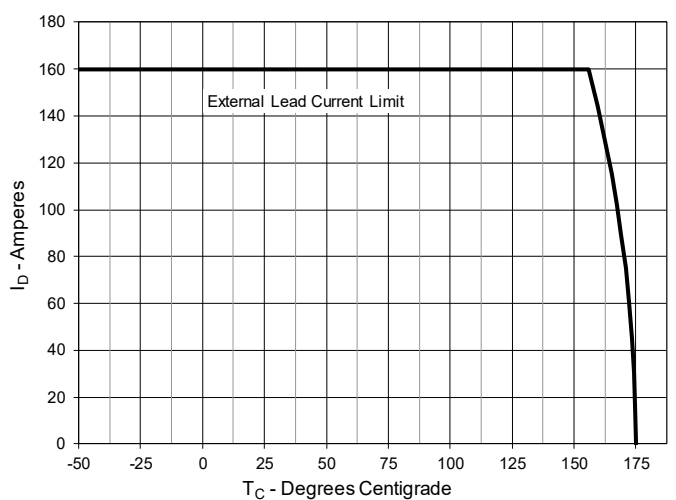


Fig. 7. Input Admittance

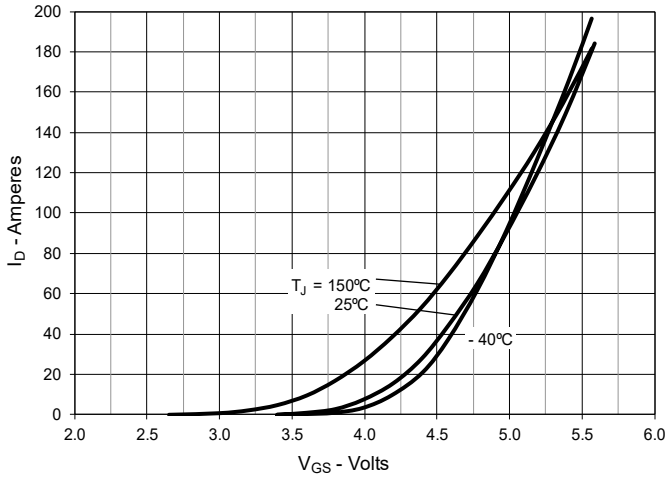


Fig. 8. Transconductance

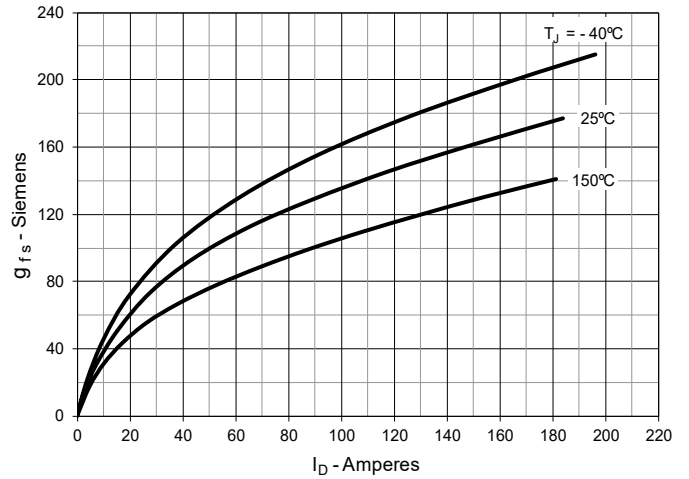


Fig. 9. Forward Voltage Drop of Intrinsic Diode

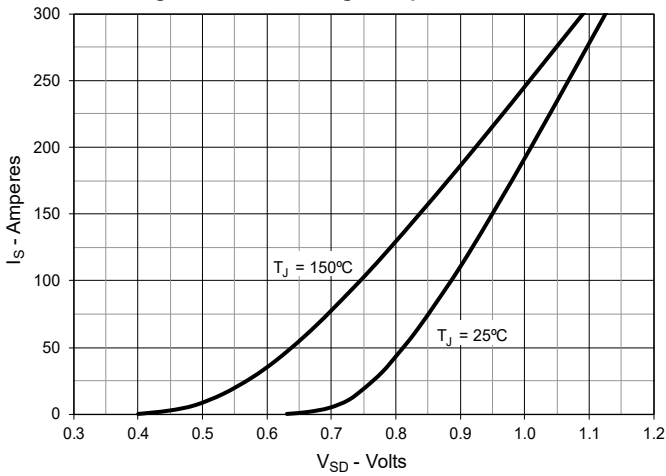


Fig. 10. Gate Charge

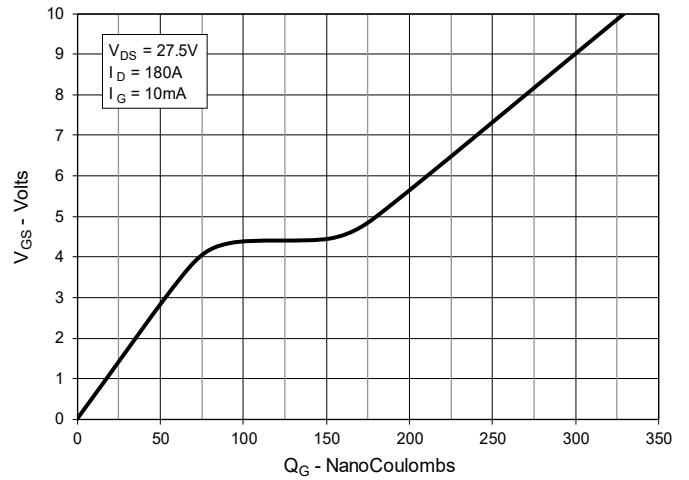


Fig. 11. Capacitance

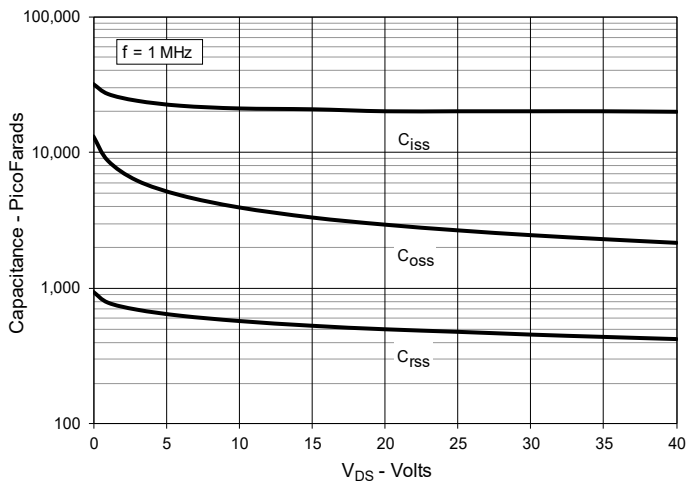


Fig. 12. Forward-Bias Safe Operating Area

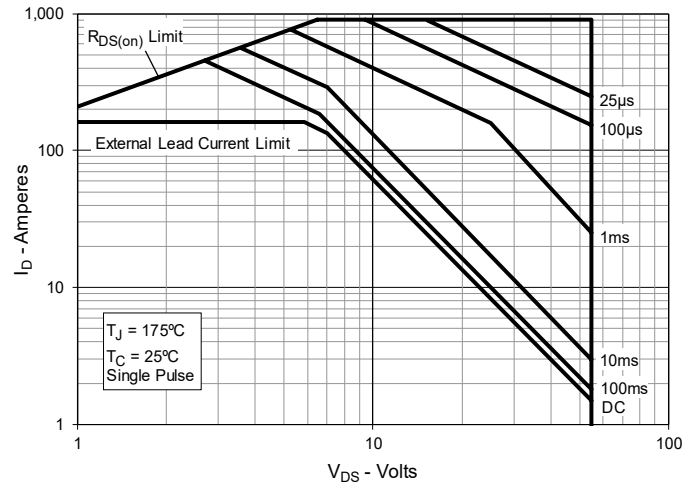


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

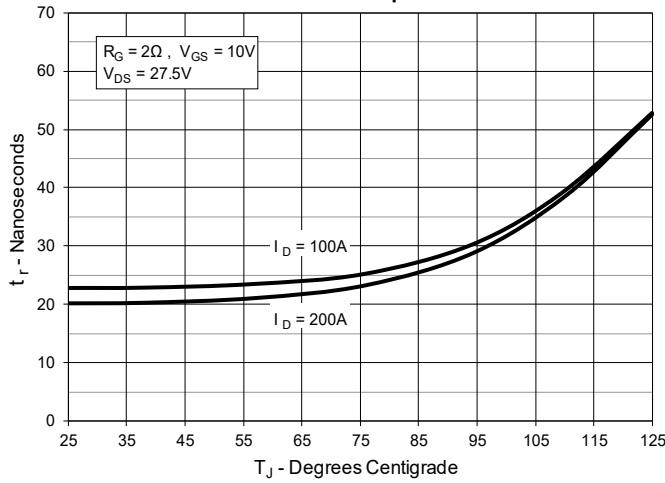


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

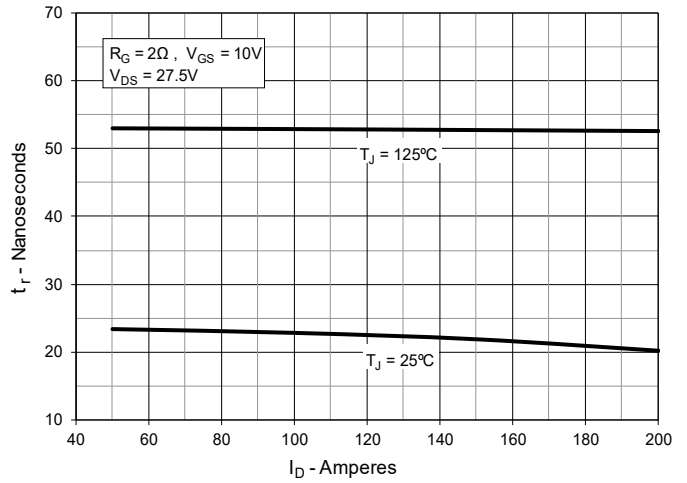


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

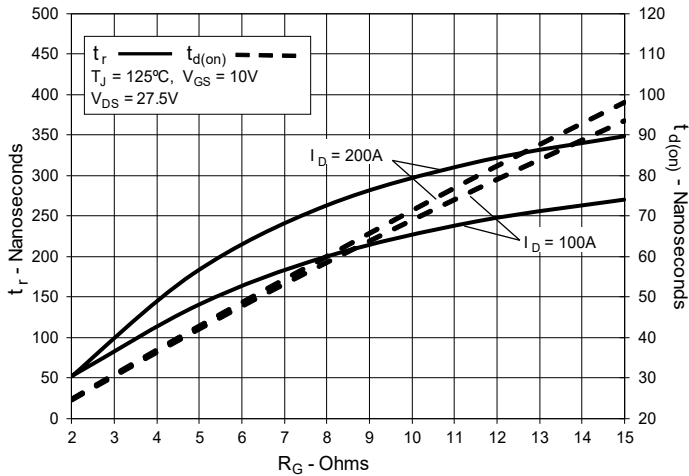


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

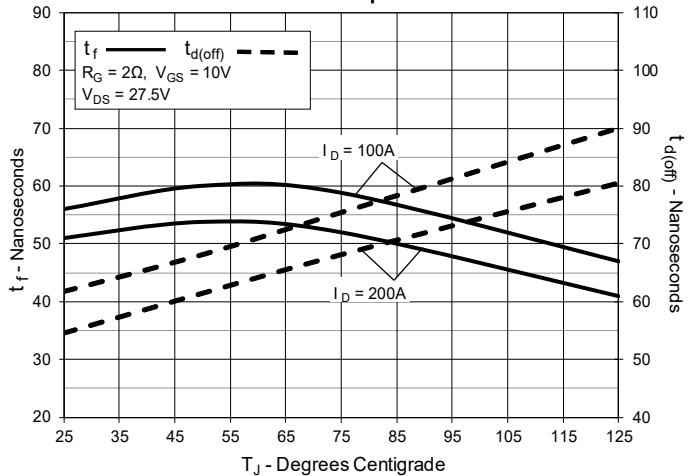


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

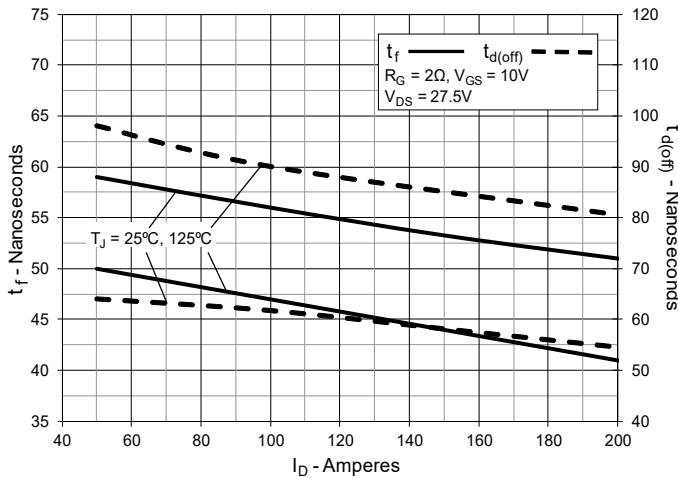


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance

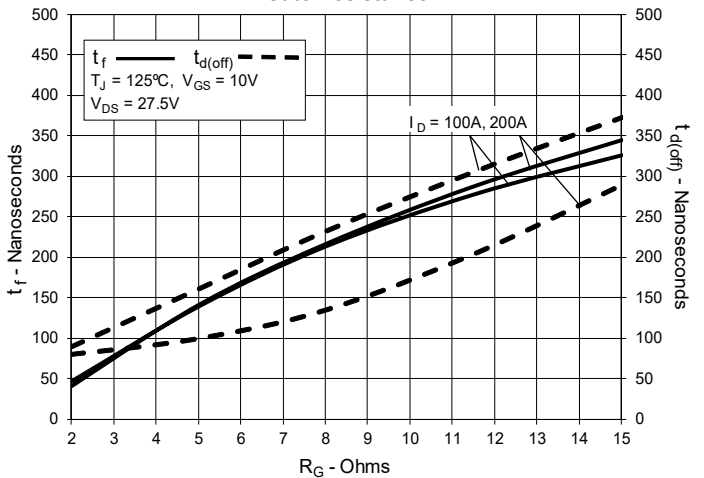
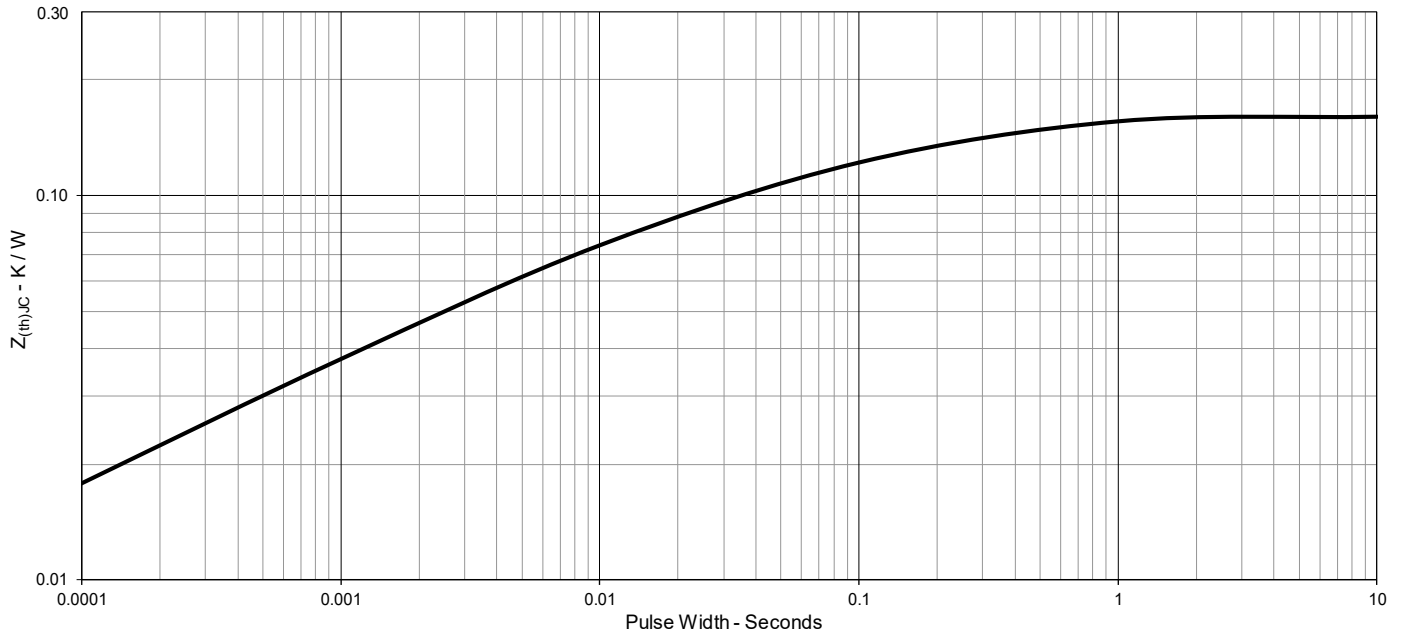
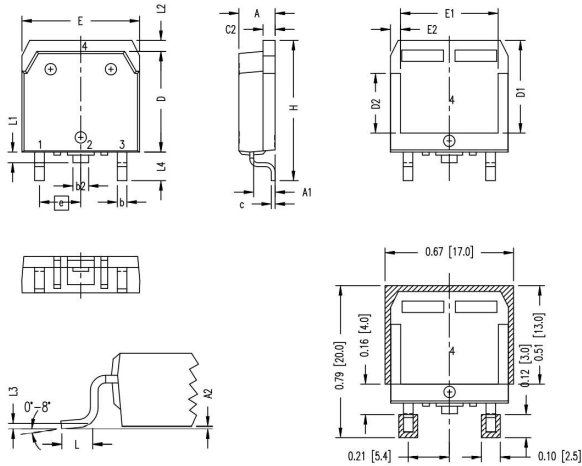


Fig. 19. Maximum Transient Thermal Impedance



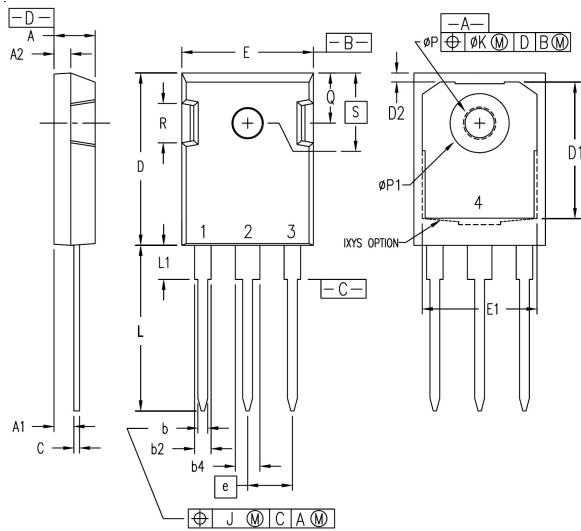
TO-268 Outline



- 1 - Gate
- 2,4 - Drain
- 3 - Source

| SYM | Inches | | Millimeters | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.193 | 0.201 | 4.90 | 5.10 |
| A1 | 0.106 | 0.114 | 2.70 | 2.90 |
| A2 | 0.001 | 0.010 | 0.02 | 0.25 |
| b | 0.045 | 0.057 | 1.15 | 1.45 |
| b2 | 0.075 | 0.083 | 1.90 | 2.10 |
| c | 0.016 | 0.026 | 0.40 | 0.65 |
| C2 | 0.057 | 0.063 | 1.45 | 1.60 |
| D | 0.543 | 0.551 | 13.80 | 14.00 |
| D1 | 0.488 | 0.500 | 12.40 | 12.70 |
| D2 | 0.320 | 0.335 | 8.13 | 8.50 |
| E | 0.624 | 0.632 | 15.85 | 16.05 |
| E1 | 0.524 | 0.535 | 13.30 | 13.60 |
| E2 | 0.045 | 0.055 | 1.14 | 1.39 |
| e | 0.215 | BSC | 5.45 | BSC |
| H | 0.736 | 0.752 | 18.70 | 19.10 |
| L | 0.094 | 0.106 | 2.40 | 2.70 |
| L1 | 0.047 | 0.055 | 1.20 | 1.40 |
| L2 | 0.039 | 0.045 | 1.000 | 1.15 |
| L3 | 0.010 | BSC | 0.25 | BSC |
| L4 | 0.150 | 0.161 | 3.80 | 4.10 |

TO-247 Outline



- 1 - Gate
- 2,4 - Drain
- 3 - Source

| SYM | INCHES | | INCHES | |
|-----|-----------|-------|----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.190 | 0.205 | 4.83 | 5.21 |
| A1 | 0.090 | 0.100 | 2.29 | 2.54 |
| A2 | 0.075 | 0.085 | 1.91 | 2.16 |
| b | 0.045 | 0.055 | 1.14 | 1.40 |
| b2 | 0.075 | 0.087 | 1.91 | 2.20 |
| b4 | 0.115 | 0.126 | 2.92 | 3.20 |
| C | 0.024 | 0.031 | 0.61 | 0.80 |
| D | 0.819 | 0.840 | 20.80 | 21.34 |
| D1 | 0.650 | 0.690 | 16.51 | 17.53 |
| D2 | 0.035 | 0.050 | 0.89 | 1.27 |
| E | 0.620 | 0.635 | 15.57 | 16.13 |
| E1 | 0.545 | 0.565 | 13.84 | 14.35 |
| e | 0.215 BSC | | 5.45 BSC | |
| J | -- | 0.010 | -- | 0.250 |
| K | -- | 0.025 | -- | 0.640 |
| L | 0.780 | 0.810 | 19.81 | 20.57 |
| L1 | 0.150 | 0.170 | 3.81 | 4.32 |
| ØP | 0.140 | 0.144 | 3.55 | 3.65 |
| ØP1 | 0.275 | 0.290 | 6.99 | 7.37 |
| Q | 0.220 | 0.244 | 5.59 | 6.20 |
| R | 0.170 | 0.190 | 4.32 | 4.83 |
| S | 0.242 BSC | | 6.15 BSC | |



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