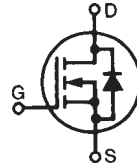


**TrenchMV™
Power MOSFET**
IXTN200N10T

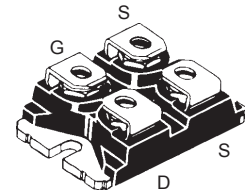
 N-Channel Enhancement Mode
Avalanche Rated


$$V_{DSS} = 100V$$

$$I_{D25} = 200A$$

$$R_{DS(on)} \leq 5.5m\Omega$$

| Symbol | Test Conditions | Maximum Ratings | |
|---------------|---|-----------------|------------|
| | | | |
| V_{DSS} | $T_J = 25^\circ C$ to $175^\circ C$ | 100 | V |
| V_{DGR} | $T_J = 25^\circ C$ to $175^\circ C$, $R_{GS} = 1M\Omega$ | 100 | V |
| V_{GSS} | Continuous | ± 20 | V |
| V_{GSM} | Transient | ± 30 | V |
| I_{D25} | $T_C = 25^\circ C$ | 200 | A |
| I_{LRMS} | External lead current limit | 100 | A |
| I_{DM} | $T_C = 25^\circ C$, pulse width limited by T_{JM} | 500 | A |
| I_A | $T_C = 25^\circ C$ | 40 | A |
| E_{AS} | $T_C = 25^\circ C$ | 1.5 | J |
| P_D | $T_C = 25^\circ C$ | 550 | W |
| T_J | | -55 ... +175 | $^\circ C$ |
| T_{JM} | | 175 | $^\circ C$ |
| T_{stg} | | -55 ... +175 | $^\circ C$ |
| T_L | 1.6mm (0.062 in.) from case for 10s | 300 | $^\circ C$ |
| V_{ISOL} | 50/60 Hz, RMS $I_{ISOL} \leq 1mA$ | t = 1min | 2500 V~ |
| | | t = 1s | 3000 V~ |
| M_d | Mounting torque | 1.5/13 | Nm/lb.in. |
| | Terminal connection torque | 1.3/11.5 | Nm/lb.in. |
| Weight | | 30 | g |

 miniBLOC, SOT-227 B
E153432

 G = Gate
S = Source
D = Drain

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Features

- International standard package
- miniBLOC, with Aluminium nitride isolation
- Avalanche Rated
- Low $R_{DS(ON)}$ and Q_G
- Low package inductance
- Fast intrinsic Rectifier

Advantages

- Low gate charge drive requirement
- High power density

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC and DC motor drives
- Uninterrupted power supplies
- High speed power switching applications

| Symbol | Test Conditions ($T_J = 25^\circ C$, unless otherwise specified) | Characteristic Values | | |
|--------------|---|-----------------------|------|----------------|
| | | Min. | Typ. | Max. |
| BV_{DSS} | $V_{GS} = 0V$, $I_D = 250\mu A$ | 100 | | V |
| $V_{GS(th)}$ | $V_{DS} = V_{GS}$, $I_D = 250\mu A$ | 2.5 | | 4.5 V |
| I_{GSS} | $V_{GS} = \pm 20V$, $V_{DS} = 0V$ | | | ± 200 nA |
| I_{DSS} | $V_{DS} = V_{DSS}$ $V_{GS} = 0V$ $T_J = 150^\circ C$ | | | 5 μA |
| | | | | 250 μA |
| $R_{DS(on)}$ | $V_{GS} = 10V$, $I_D = 50A$, Note 1 | | | 5.5 m Ω |

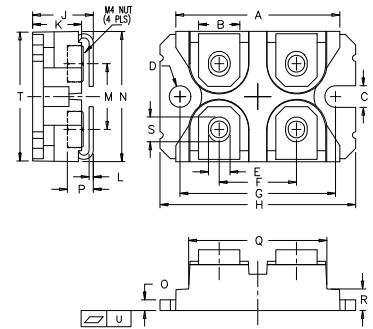
| Symbol | Test Conditions | Characteristic Values | | |
|--------------|---|-----------------------|------|---------------|
| | | Min. | Typ. | Max. |
| g_{fs} | $V_{DS} = 10V, I_D = 60A$, Note 1 | 60 | 96 | S |
| C_{iss} | $V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$ | | 9400 | pF |
| C_{oss} | | | 1087 | pF |
| C_{rss} | | | 140 | pF |
| $t_{d(on)}$ | Resistive Switching Times $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 50A$ $R_G = 3.3\Omega$ (External) | | 35 | ns |
| t_r | | | 31 | ns |
| $t_{d(off)}$ | | | 45 | ns |
| t_f | | | 34 | ns |
| $Q_{g(on)}$ | $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 25A$ | | 152 | nC |
| Q_{gs} | | | 47 | nC |
| Q_{gd} | | | 47 | nC |
| R_{thJC} | | | 0.27 | $^{\circ}C/W$ |
| R_{thCS} | | 0.05 | | $^{\circ}C/W$ |

Source-Drain Diode

| Symbol | Test Conditions | Characteristic Values | | |
|----------|---|-----------------------|------|-------|
| | | Min. | Typ. | Max. |
| I_S | $V_{GS} = 0V$ | | | 200 A |
| I_{SM} | Repetitive, pulse width limited by T_{JM} | | | 500 A |
| V_{SD} | $I_F = 50A, V_{GS} = 0V$, Note 1 | | | 1.0 V |
| t_{rr} | $I_F = 100A, -di/dt = 100A/\mu s, V_R = 50V$ $V_{GS} = 0V$ | | 76 | ns |
| I_{RM} | | | 5.4 | A |
| Q_{RM} | | | 205 | nC |

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

SOT-227B Outline



| SYM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.240 | 1.255 | 31.50 | 31.88 |
| B | .307 | .323 | 7.80 | 8.20 |
| C | .161 | .169 | 4.09 | 4.29 |
| D | .161 | .169 | 4.09 | 4.29 |
| E | .161 | .169 | 4.09 | 4.29 |
| F | .587 | .595 | 14.91 | 15.11 |
| G | 1.186 | 1.193 | 30.12 | 30.30 |
| H | 1.496 | 1.505 | 38.00 | 38.23 |
| J | .460 | .481 | 11.68 | 12.22 |
| K | .351 | .378 | 8.92 | 9.60 |
| L | .030 | .033 | 0.76 | 0.84 |
| M | .496 | .506 | 12.60 | 12.85 |
| N | .990 | 1.001 | 25.15 | 25.42 |
| O | .078 | .084 | 1.98 | 2.13 |
| P | .195 | .235 | 4.95 | 5.97 |
| Q | 1.045 | 1.059 | 26.54 | 26.90 |
| R | .155 | .174 | 3.94 | 4.42 |
| S | .186 | .191 | 4.72 | 4.85 |
| T | .968 | .987 | 24.59 | 25.07 |
| U | -.002 | .004 | -0.05 | 0.1 |

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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 | 6,404,065 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 | |

Fig. 1. Output Characteristics @ 25°C

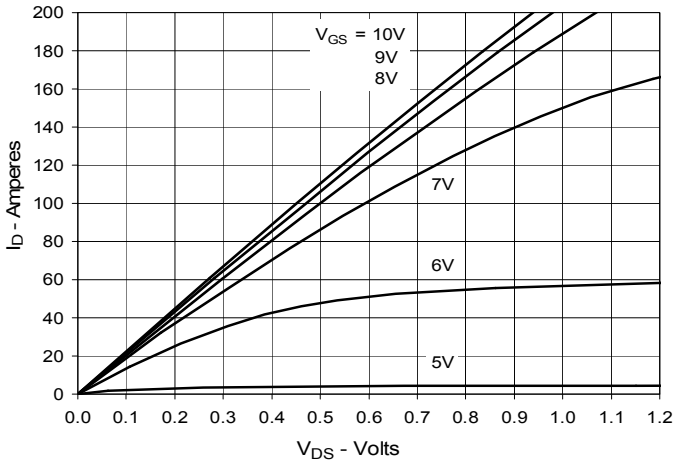


Fig. 2. Extended Output Characteristics @ 25°C

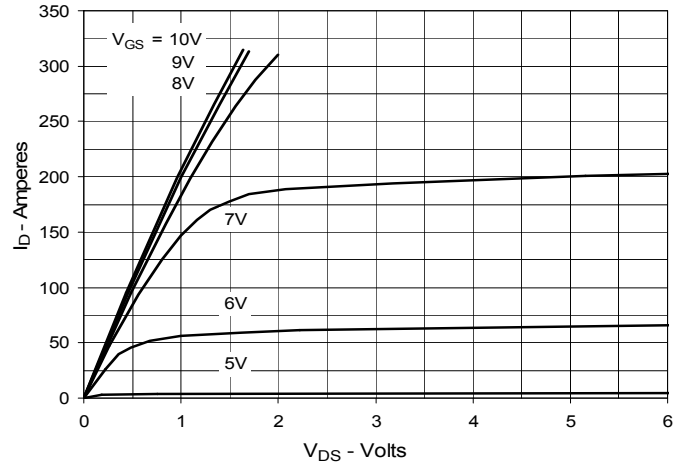


Fig. 3. Output Characteristics @ 150°C

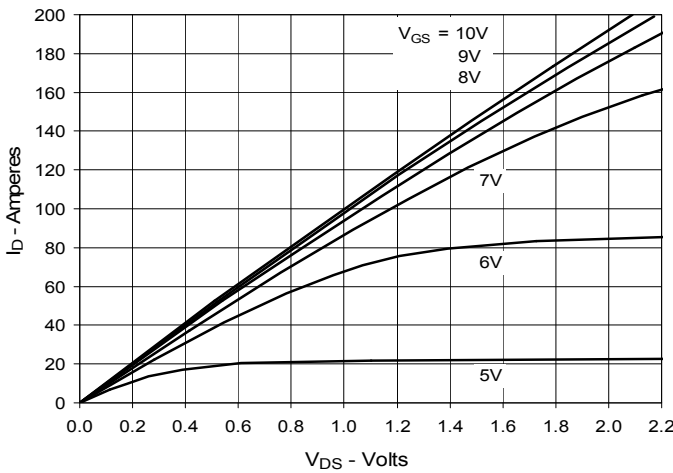


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 100A$ Value vs. Junction Temperature

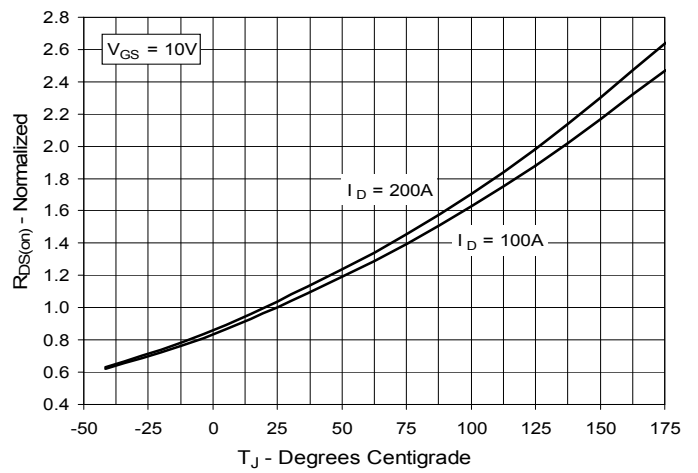


Fig. 5. $R_{DS(on)}$ Normalized to $I_D = 100A$ Value vs. Drain Current

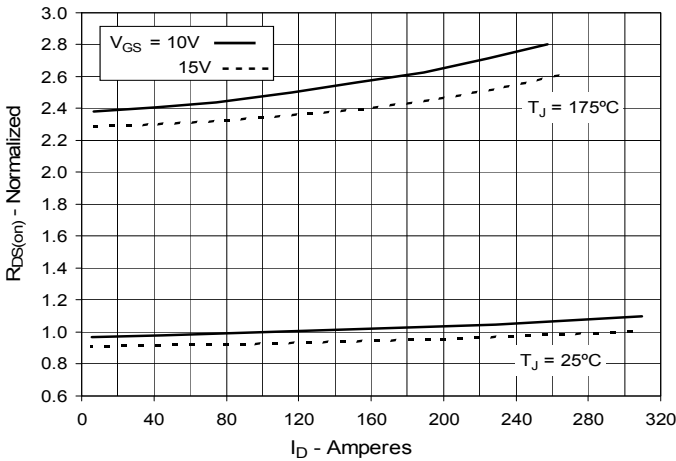


Fig. 6. Drain Current vs. Case Temperature

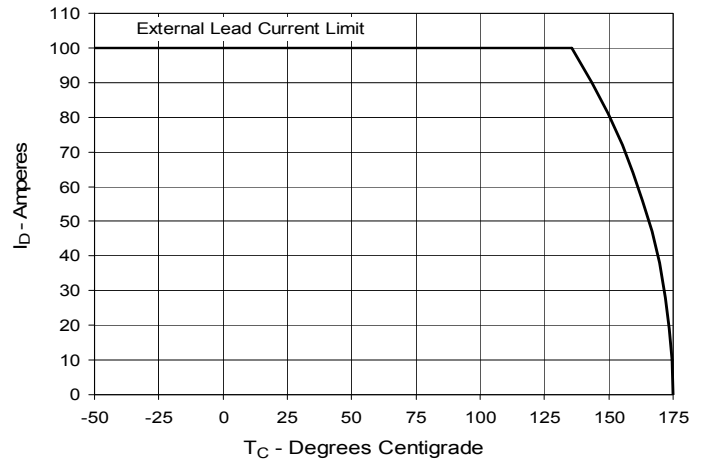


Fig. 7. Input Admittance

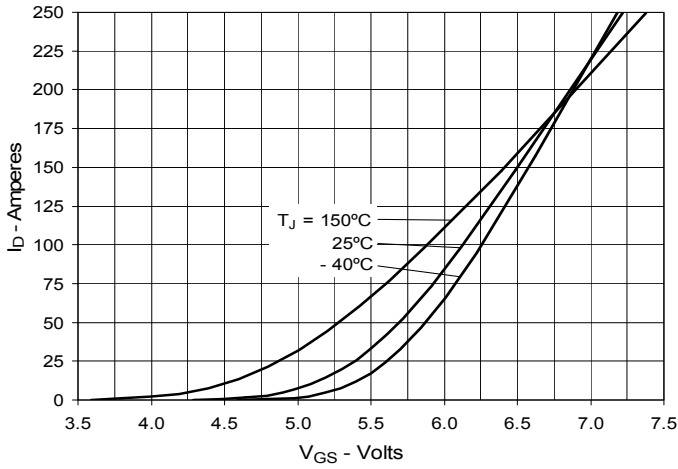


Fig. 8. Transconductance

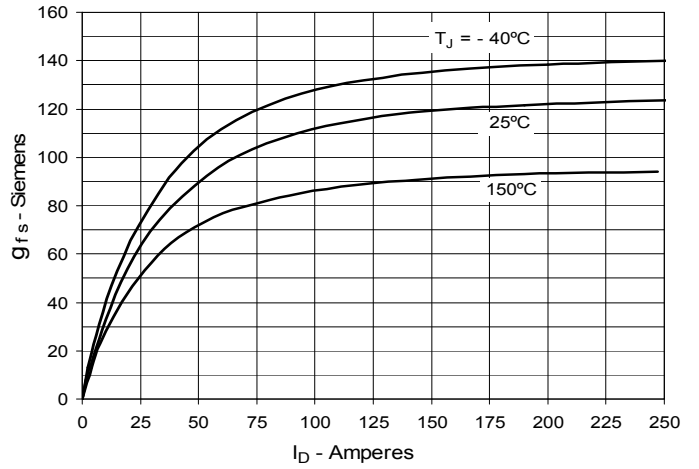


Fig. 9. Forward Voltage Drop of Intrinsic Diode

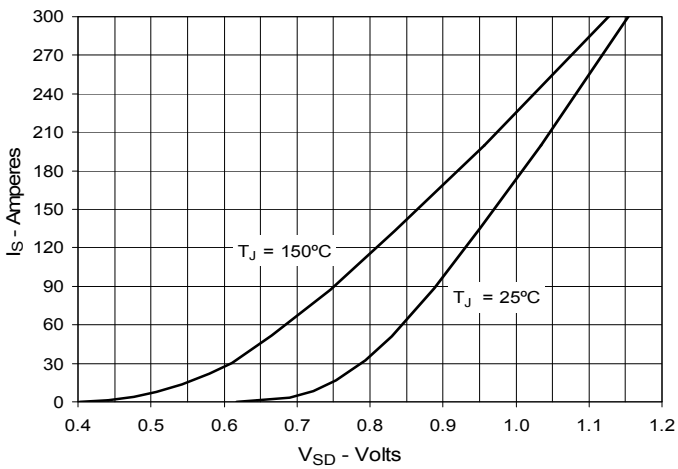


Fig. 10. Gate Charge

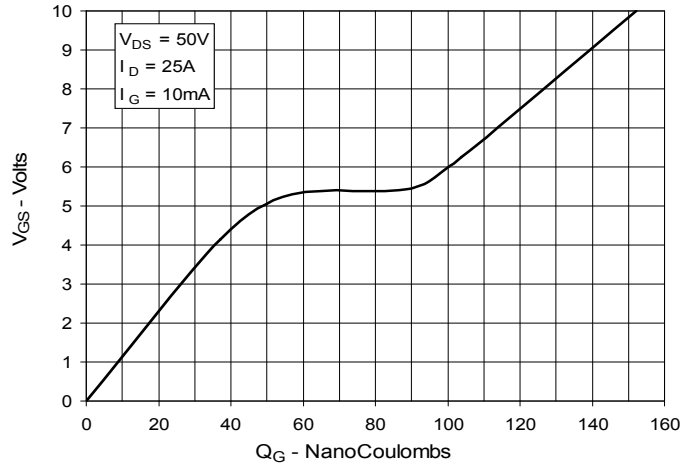


Fig. 11. Capacitance

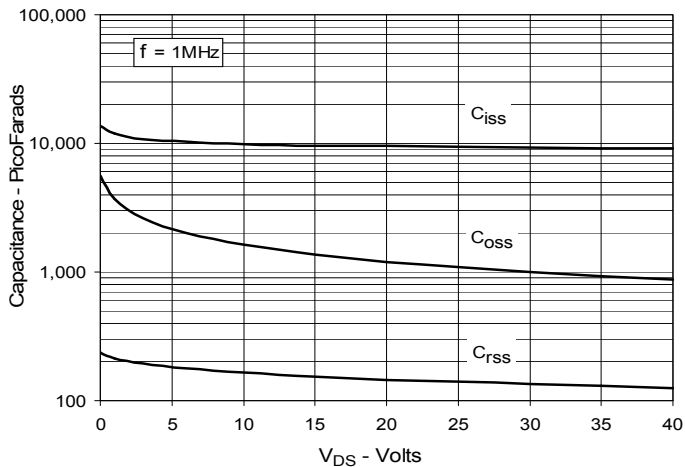


Fig. 12. Maximum Transient Thermal Impedance

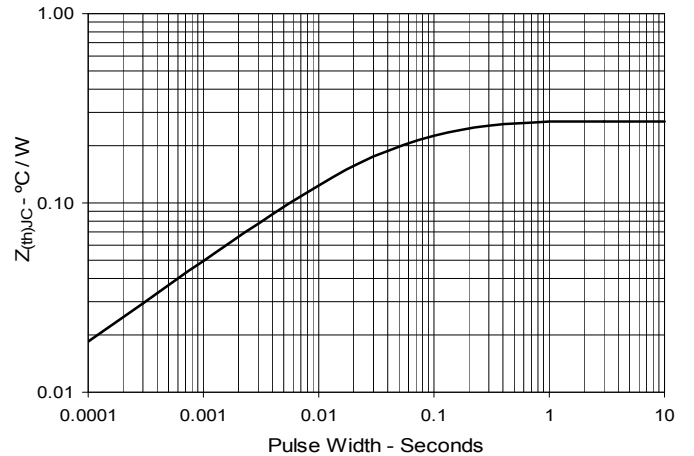


Fig. 13. Resistive Turn-on Rise Time vs. Junction Temperature

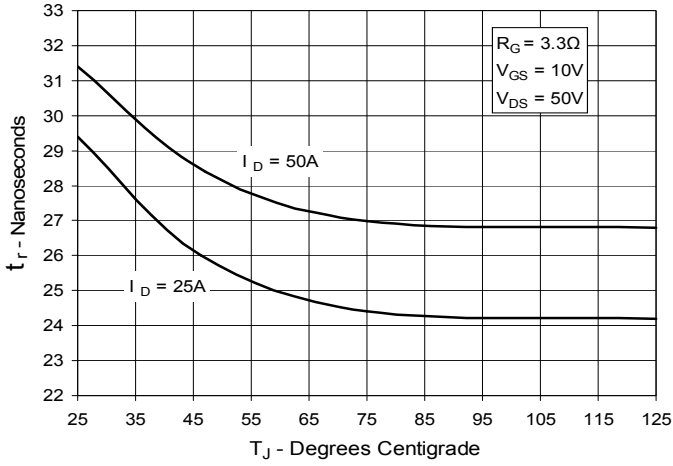


Fig. 14. Resistive Turn-on Rise Time vs. Drain Current

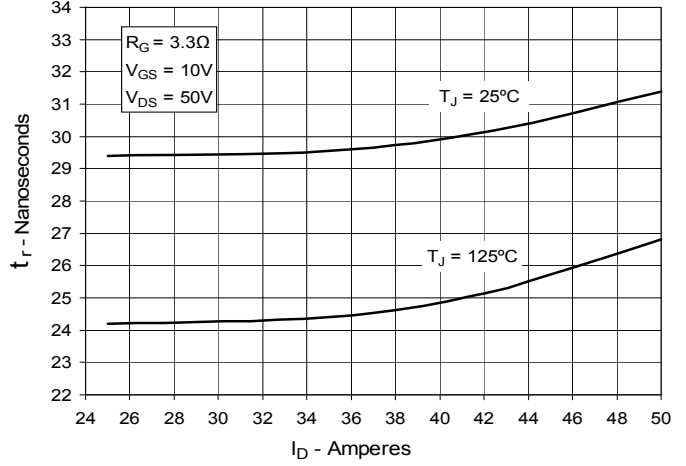


Fig. 15. Resistive Turn-on Switching Times vs. Gate Resistance

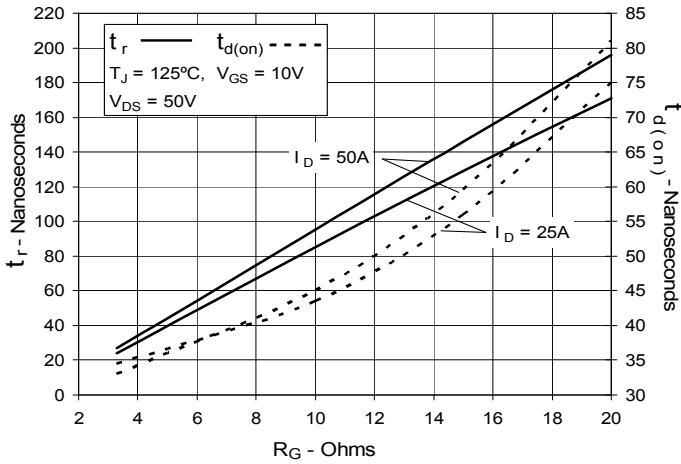


Fig. 16. Resistive Turn-off Switching Times vs. Junction Temperature

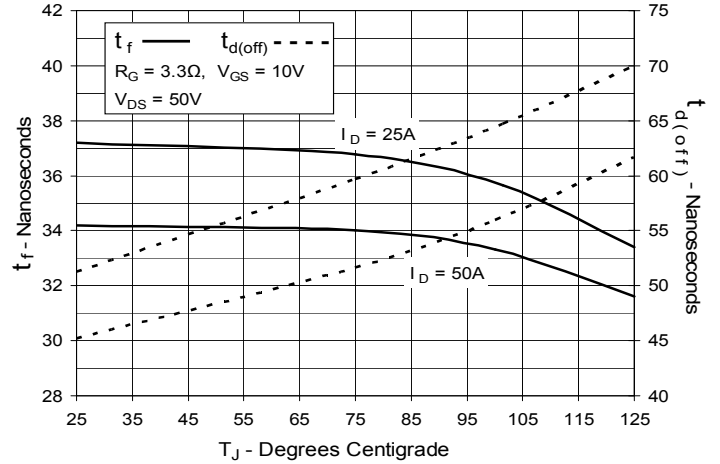


Fig. 17. Resistive Turn-off Switching Times vs. Drain Current

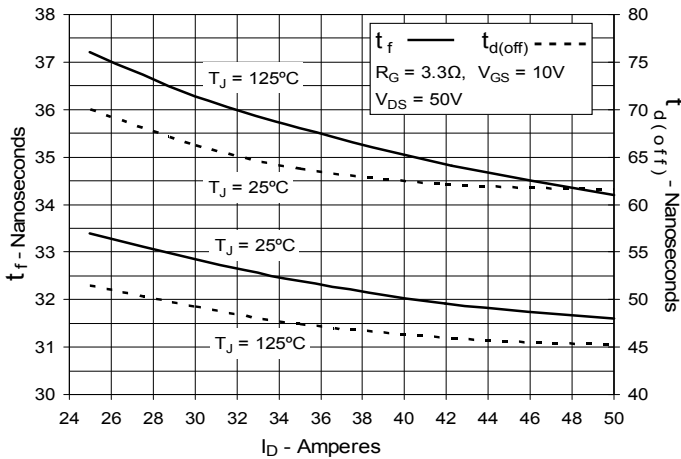
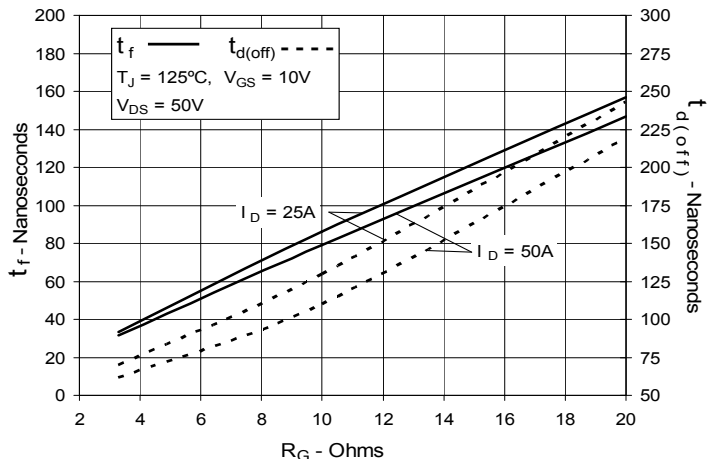


Fig. 18. Resistive Turn-off Switching Times vs. Gate Resistance





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