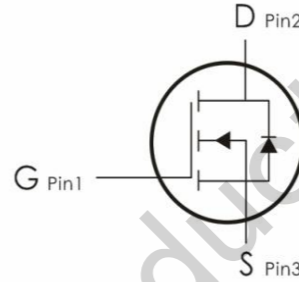
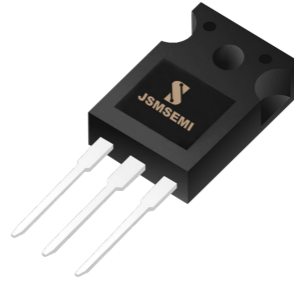


FEATURES

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)



| Device Marking and Package Information | | |
|--|---------|------------|
| Device | Package | Marking |
| IXTQ88N30P | TO-247 | IXTQ88N30P |

| Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, unless otherwise noted | | | |
|--|----------------|----------|------------------|
| Parameter | Symbol | Value | Unit |
| | | TO-247 | |
| Drain-Source Voltage ($V_{GS} = 0\text{V}$) | V_{DSS} | 300 | V |
| Continuous Drain Current $V_{GS} = 10\text{V}$ $T_C = 25^\circ\text{C}$ | I_D | 90 | A |
| Pulsed Drain Current (note1) | I_{DM} | 350 | A |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Single Pulse Avalanche Energy (note2) | E_{AS} | 1960.2 | mJ |
| Avalanche Current (note1) | I_{AS} | 19.8 | A |
| Repetitive Avalanche Energy (note1) | E_{AR} | 1176.1 | mJ |
| Power Dissipation ($T_C = 25^\circ\text{C}$) | P_D | 600 | W |
| Peak Diode Recovery dv/dt (note1) | dv/dt | 5.0 | |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55~+150 | $^\circ\text{C}$ |

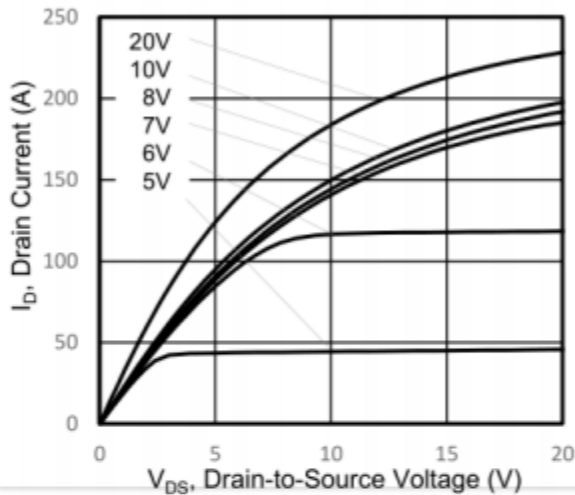
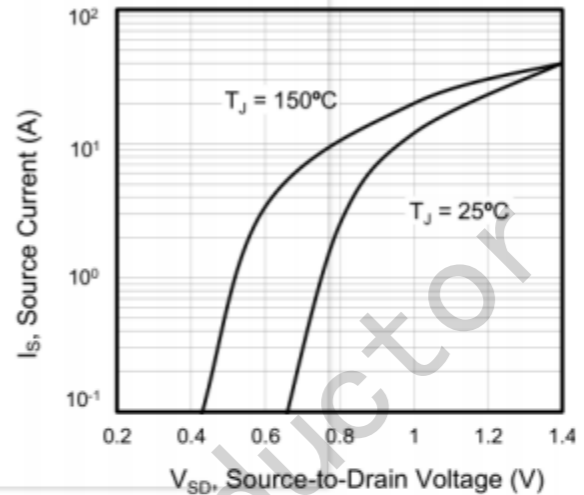
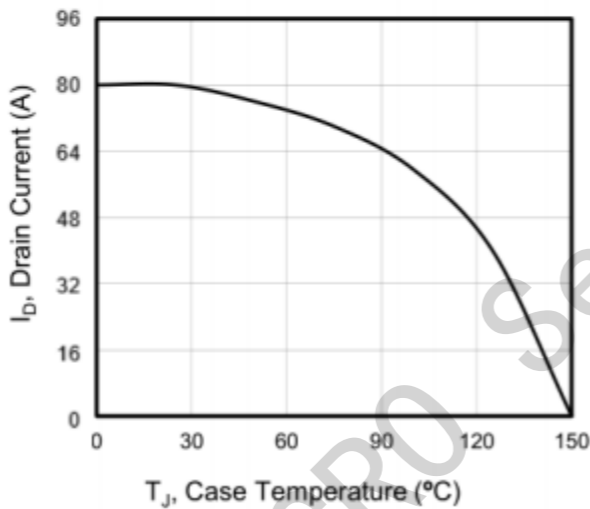
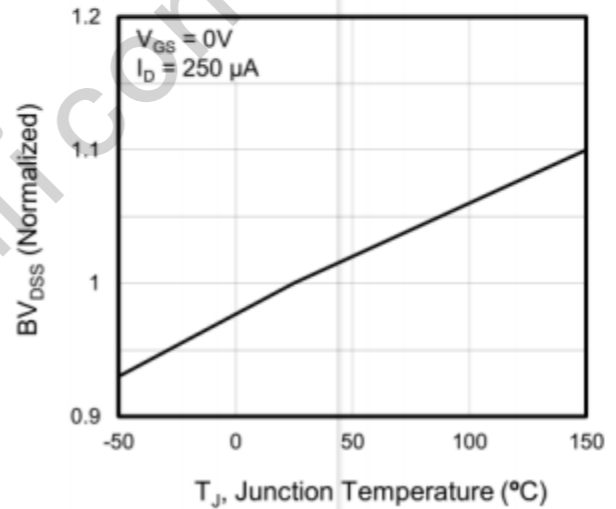
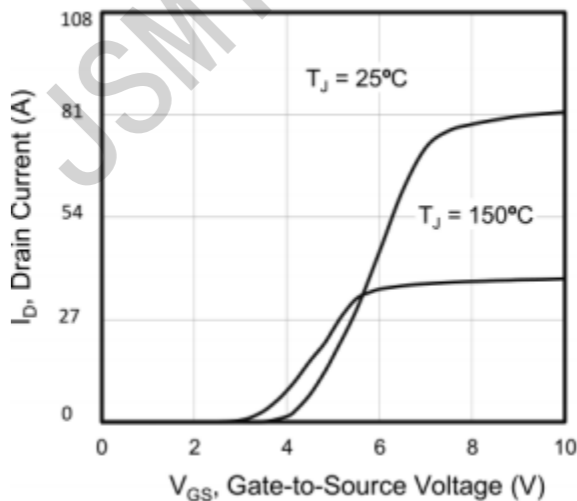
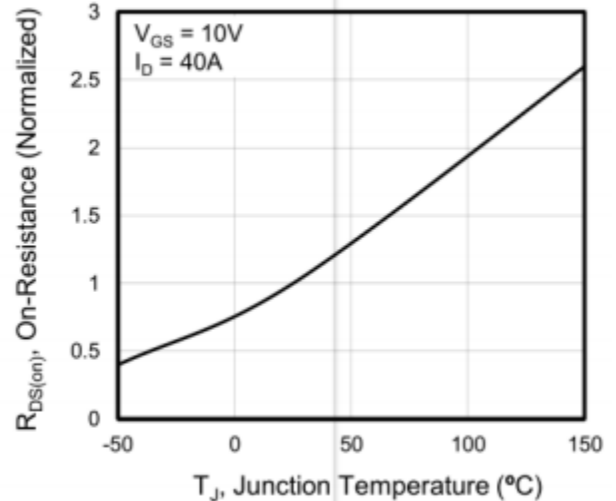
| Thermal Resistance | | | |
|---|------------|-------|--------------------|
| Parameter | Symbol | Value | Unit |
| Thermal Resistance, Junction-to-Case | R_{thJC} | 0.89 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient | R_{thJA} | 60 | |

| Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted | | | | | | |
|--|---------------|--|-------|------|-----------|-----------|
| Parameter | Symbol | Test Conditions | Value | | | Unit |
| | | | Min. | Typ. | Max. | |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 300 | -- | -- | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 40V, V_{GS} = 0V, T_J = 25^\circ\text{C}$ | -- | -- | 1 | μA |
| | | $V_{DS} = 32V, V_{GS} = 0V, T_J = 125^\circ\text{C}$ | -- | -- | 100 | |
| Gate-Source Leakage | I_{GSS} | $V_{GS} = \pm 20V$ | -- | -- | ± 100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 2.0 | -- | 4.0 | V |
| Drain-Source On-Resistance (Note3) | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 95A(\text{Note4})$ | -- | 30 | 35 | $m\Omega$ |
| Dynamic | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V,$ $V_{DS} = 25V,$ $f = 1.0MHz$ | -- | 5784 | -- | pF |
| Output Capacitance | C_{oss} | | -- | 893 | -- | |
| Reverse Transfer Capacitance | C_{rss} | | -- | 561 | -- | |
| Total Gate Charge | Q_g | $V_{DD} = 20V, I_D = 190A,$ $V_{GS} = 10V(\text{Note4})$ | -- | 367 | -- | nC |
| Gate-Source Charge | Q_{gs} | | -- | 33.8 | -- | |
| Gate-Drain Charge | Q_{gd} | | -- | 177 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD} = 20V, I_D = 190A,$ $R_G = 10\Omega, V_{GS} = 10V$ (Note4) | -- | 55 | -- | ns |
| Turn-on Rise Time | t_r | | -- | 165 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 1050 | -- | |
| Turn-off Fall Time | t_f | | -- | 367 | -- | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | $T_C = 25^\circ\text{C}$ | -- | -- | 90 | A |
| Pulsed Diode Forward Current | I_{SM} | | -- | -- | 350 | |
| Body Diode Voltage | V_{SD} | $T_J = 25^\circ\text{C}, I_{SD} = 95A, V_{GS} = 0V$ | -- | -- | 1.4 | V |
| Reverse Recovery Time | t_{rr} | $V_{GS} = 0V, I_S = 190A,$ $di_F/dt = 100A/\mu s$ | -- | 360 | -- | ns |
| Reverse Recovery Charge | Q_{rr} | | -- | 5.61 | -- | μC |

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L = 10mH, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s, \text{Duty Cycle} \leq 1\%$

Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

Figure 2. Body Diode Forward Voltage

Figure 3. Drain Current vs. Temperature

Figure 4. BV_{DSS} Variation vs. Temperature

Figure 5. Transfer Characteristics

Figure 6. On-Resistance vs. Temperature


Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

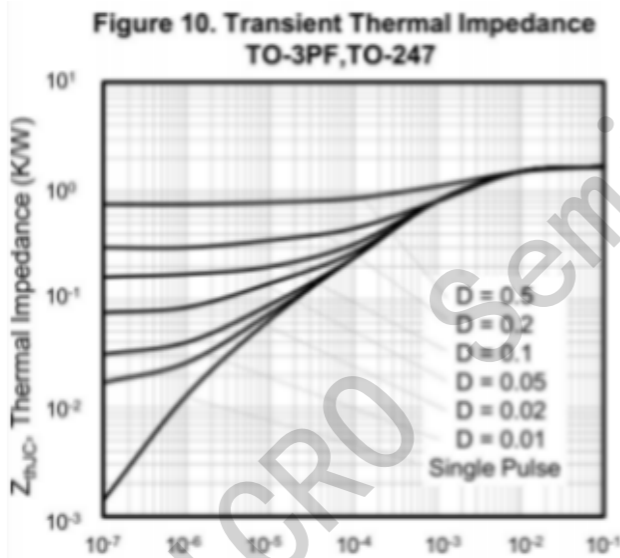
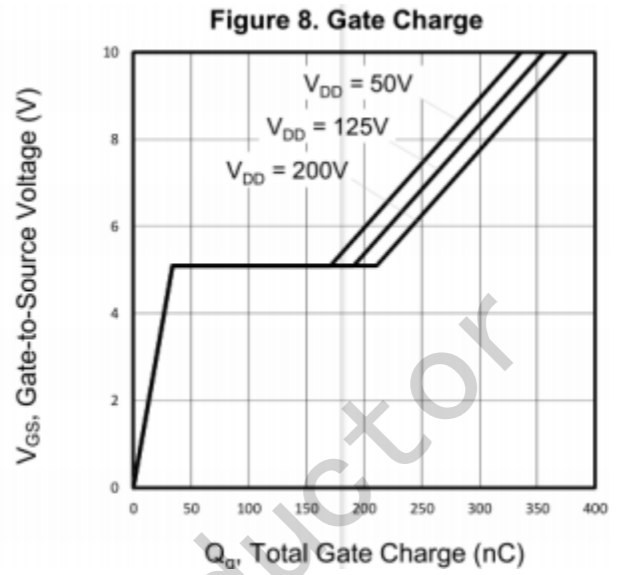
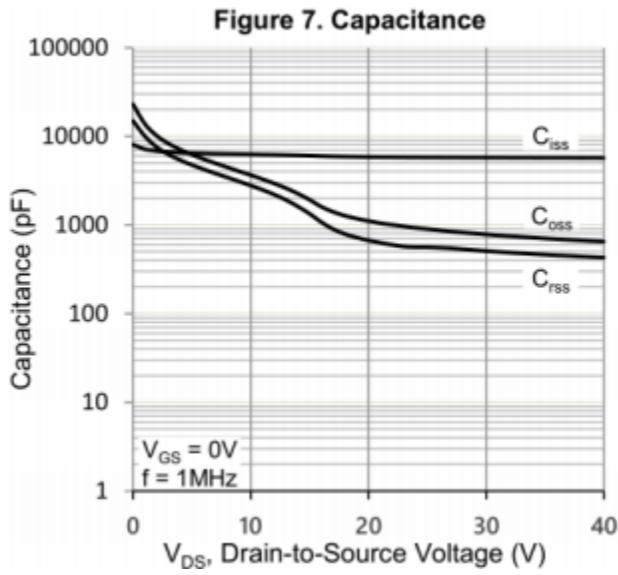


Figure A: Gate Charge Test Circuit and Waveform

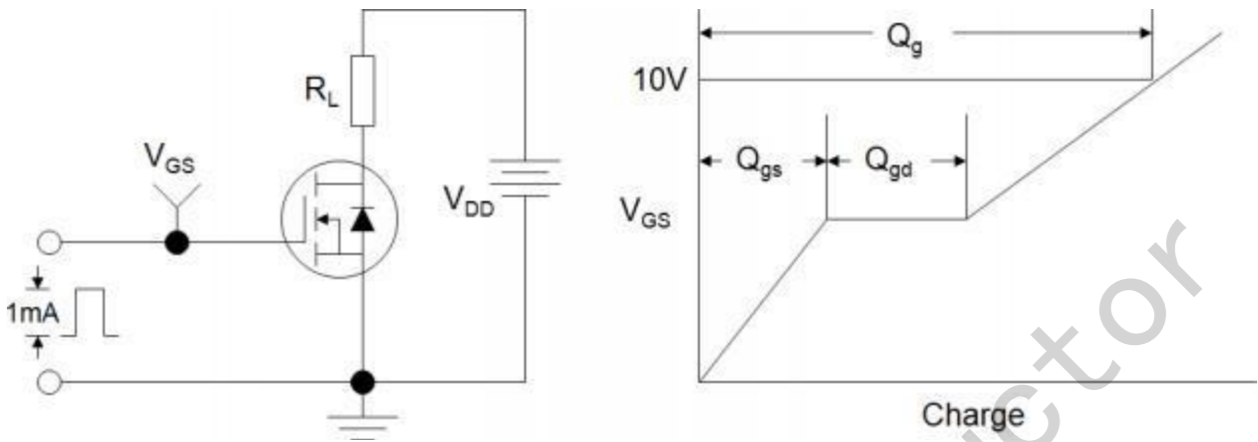


Figure B : Resistive Switching Test Circuit and Waveform

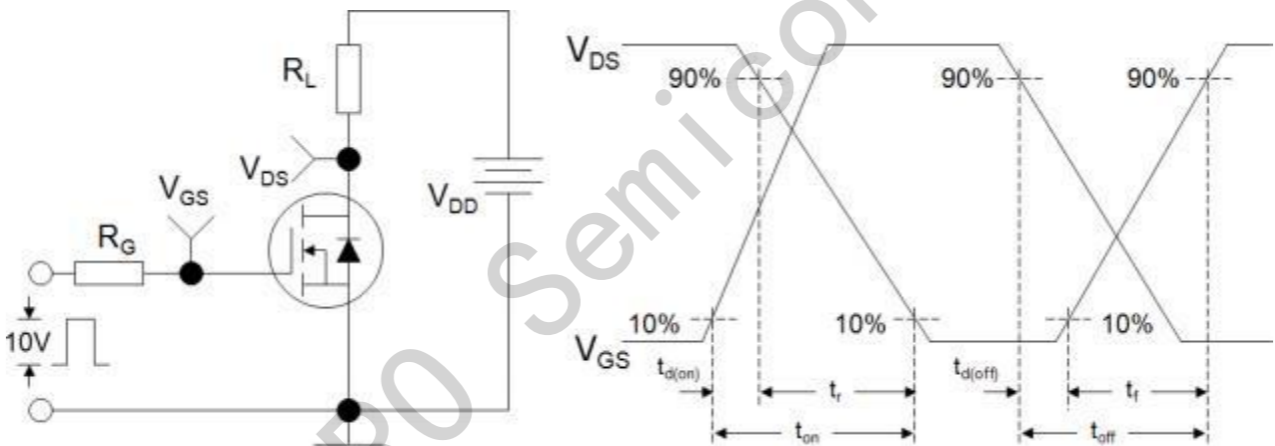
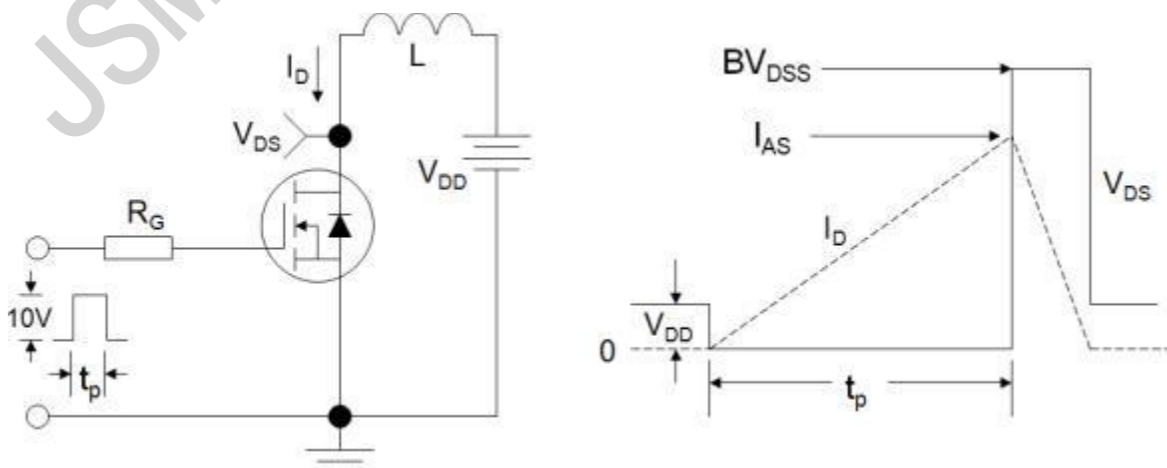
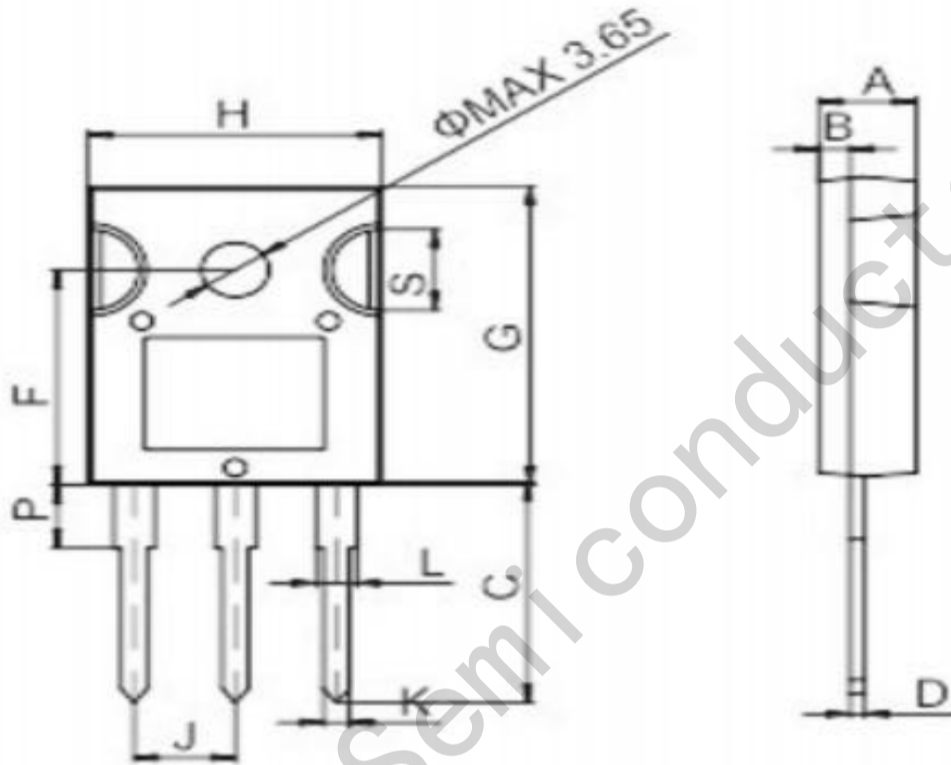


Figure C : Unclamped Inductive Switching Test Circuit and Waveform



TO-247



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.9 | | 5.4 | 0.193 | | 0.213 |
| B | 1.6 | | 2.0 | 0.063 | | 0.079 |
| C | 14.35 | | 15.4 | 0.565 | | 0.606 |
| D | 0.5 | | 0.8 | 0.020 | | 0.031 |
| F | 14.4 | | 15.1 | 0.567 | | 0.594 |
| G | 19.7 | | 20.6 | 0.775 | | 0.811 |
| H | 15.4 | | 16.2 | 0.606 | | 0.638 |
| J | 5.3 | | 5.6 | 0.209 | | 0.220 |
| K | 1.3 | | 1.5 | 0.051 | | 0.059 |
| L | 2.8 | | 3.3 | 0.110 | | 0.130 |
| P | 3.7 | | 4.2 | 0.146 | | 0.165 |
| S | 5.35 | | 5.65 | 0.211 | | 0.222 |