



UTD408

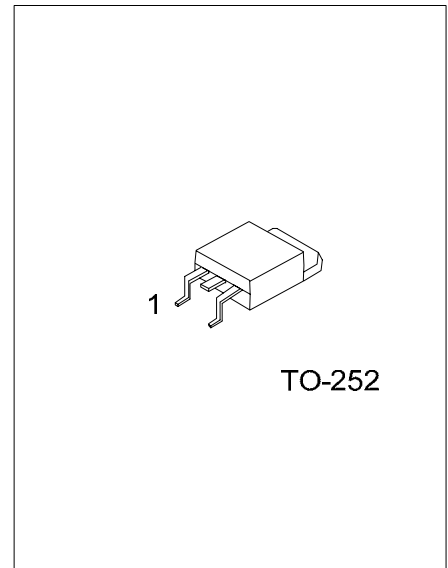
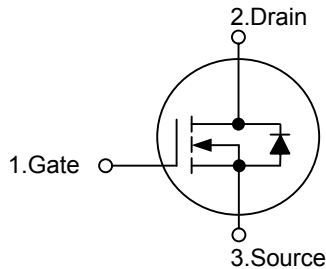
Power MOSFET

N-CHANNEL ENHANCEMENT MODE

■ FEATURES

- * $R_{DS(ON)} = 18m\Omega @ V_{GS} = 10 V$
- * Low capacitance
- * Optimized gate charge
- * Fast switching capability
- * Avalanche energy specified

■ SYMBOL



*Pb-free plating product number: UTD408L

■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|-------------------|---------|----------------|---|---|-----------|
| Normal | Lead Free Plating | | 1 | 2 | 3 | |
| UTD408-TN3-R | UTD408L-TN3-R | TO-252 | G | D | S | Tape Reel |
| UTD408-TN3-T | UTD408L-TN3-T | TO-252 | G | D | S | Tube |

| | |
|---|---|
| <p>UTD408L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p> | <p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3: TO-252</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p> |
|---|---|

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|-----------|------------|------------------|
| Drain-Source Voltage | V_{DSS} | 30 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Continuous Drain Current ($T_C=25^\circ\text{C}$) | I_D | 18 | A |
| Pulsed Drain Current | I_{DM} | 40 | A |
| Avalanche Current | I_{AR} | 18 | A |
| Repetitive Avalanche Energy ($L=0.1\text{mH}$) | E_{AR} | 40 | mJ |
| Power Dissipation ($T_C=25^\circ\text{C}$) | P_D | 60 | W |
| Junction Temperature | T_J | +175 | $^\circ\text{C}$ |
| Strong Temperature | T_{STG} | -55 ~ +175 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---------------------|---------------|-----|-----|-----|--------------------|
| Junction-to-Ambient | θ_{JA} | | 40 | 50 | $^\circ\text{C/W}$ |

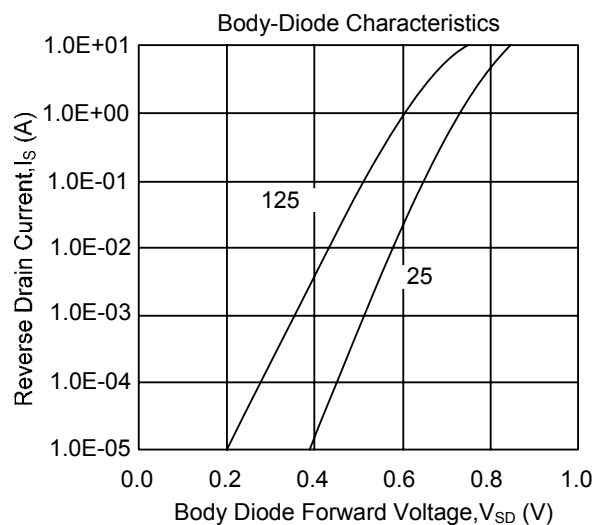
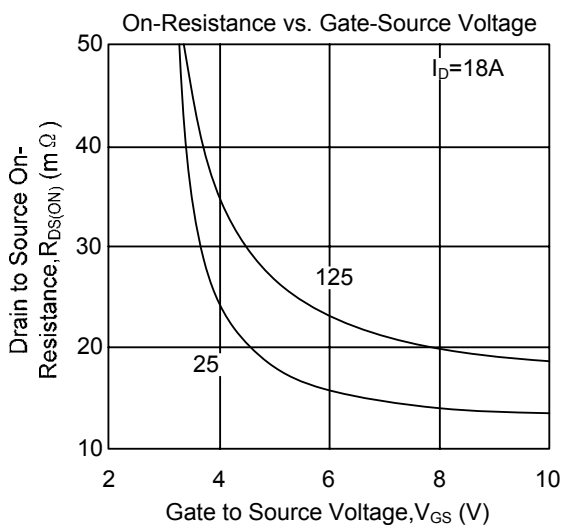
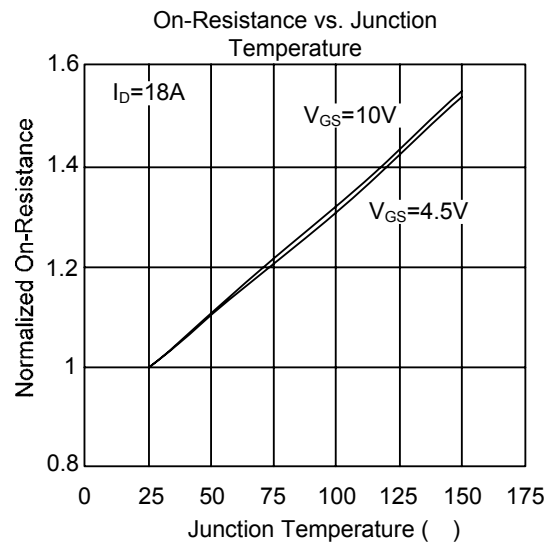
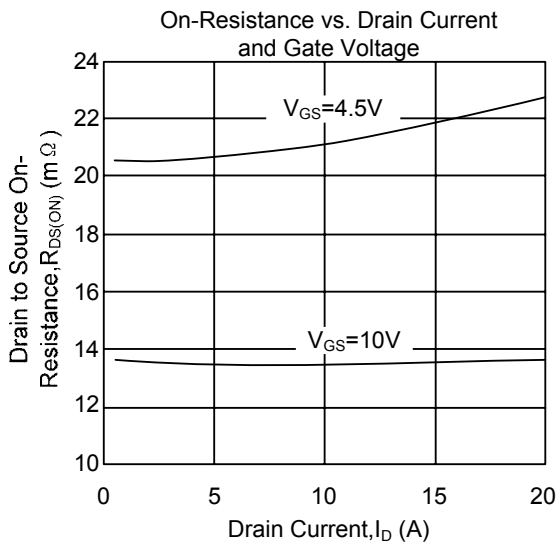
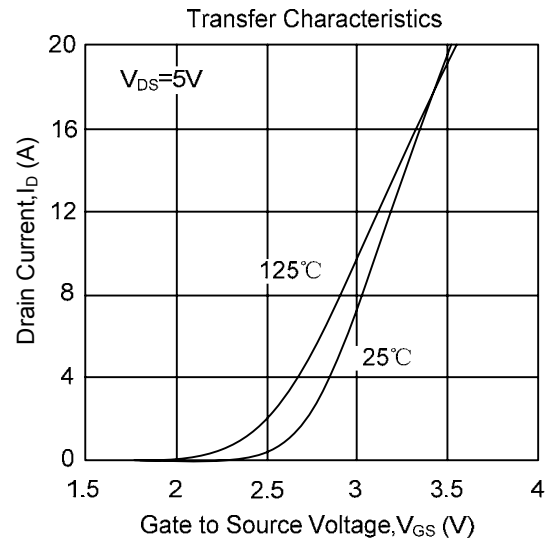
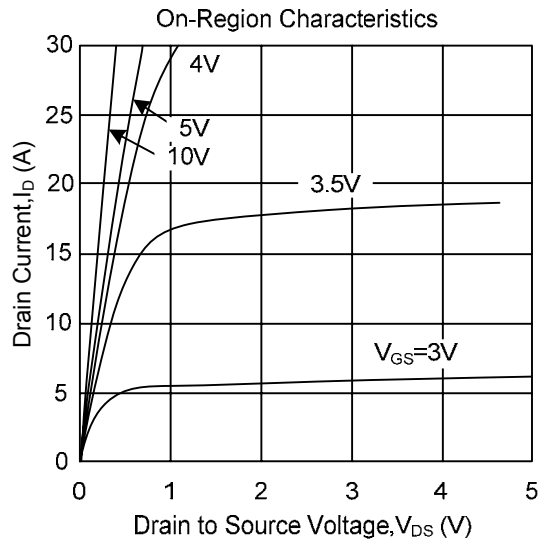
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|--------------|---|-----|------|------|---------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$ | 30 | | | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS} = 24\text{V}, V_{GS} = 0\text{ V}$ | | | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$ | | | 100 | nA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ | 1 | 1.8 | 2.5 | V |
| On State Drain Current | $I_{D(ON)}$ | $V_{DS} = 5\text{V}, V_{GS} = 4.5\text{V}$ | 40 | | | A |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS} = 10\text{V}, I_D = 18\text{A}$ | | 13.6 | 18 | m Ω |
| | | $V_{GS} = 4.5\text{V}, I_D = 10\text{A}$ | | 20.6 | 27 | m Ω |
| DYNAMIC PARAMETERS | | | | | | |
| Input Capacitance | C_{ISS} | $V_{DS} = 15\text{ V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$ | | 1040 | 1250 | pF |
| Output Capacitance | C_{OSS} | | | 180 | | |
| Reverse Transfer Capacitance | C_{RSS} | | | 110 | | |
| SWITCHING PARAMETERS | | | | | | |
| Turn-ON Delay Time | $t_{D(ON)}$ | $V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, R_L = 0.82\Omega, R_{GEN} = 3\Omega$ | | 4.5 | | ns |
| Turn-ON Rise Time | t_R | | | 3.9 | | |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | | | 17.4 | | |
| Turn-OFF Fall-Time | t_F | | | 3.2 | | |
| Total Gate Charge | Q_G | $V_{DS} = 15\text{V}, V_{GS} = 10\text{V}, I_D = 18\text{A}$ | | 19.8 | 25 | nC |
| Gate Source Charge | Q_{GS} | | | 2.5 | | |
| Gate Drain Charge | Q_{GD} | | | 3.5 | | |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | |
| Drain-Source Diode Forward Voltage | V_{SD} | $I_S = 1\text{A}, V_{GS} = 0\text{V}$ | | 0.75 | 1 | V |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | | | | 18 | A |
| Body Diode Reverse Recovery Time | t_{RR} | $I_F = 18\text{ A}, dI/dt = 100\text{A}/\mu\text{s}$ | | 19 | 25 | ns |
| Body Diode Reverse Recovery Charge | Q_{RR} | $I_F = 18\text{ A}, dI/dt = 100\text{A}/\mu\text{s}$ | | 8 | | nC |

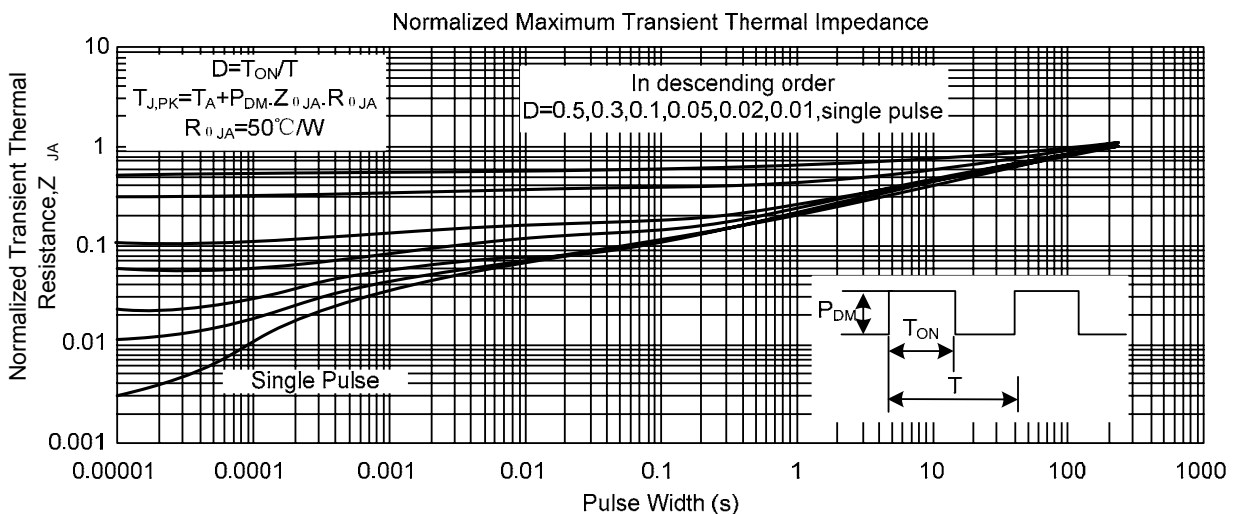
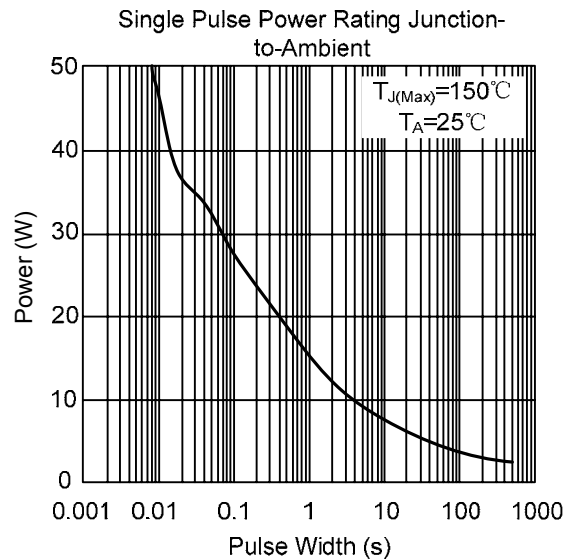
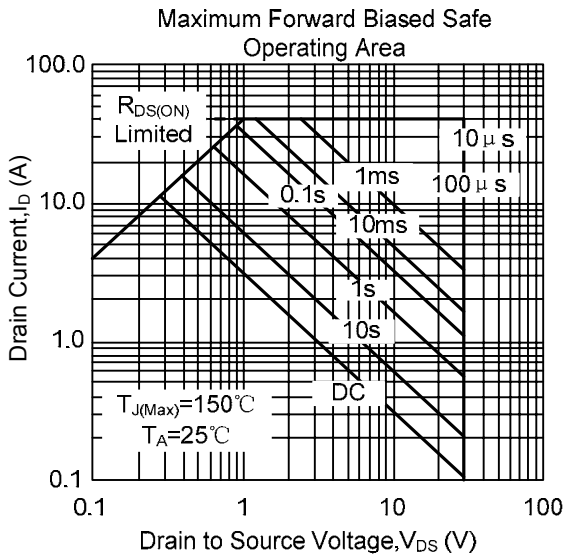
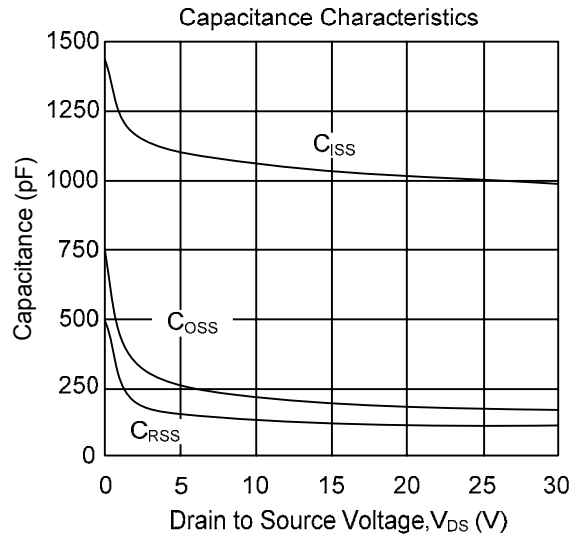
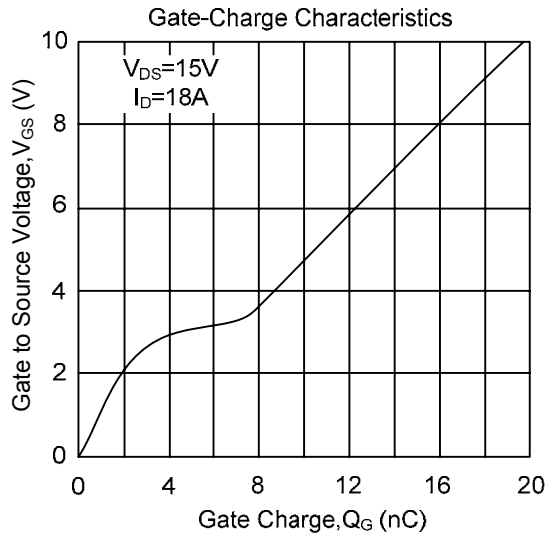
Notes: 1. Pulse width limited by $T_{J(MAX)}$

2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.