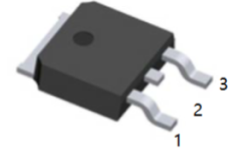
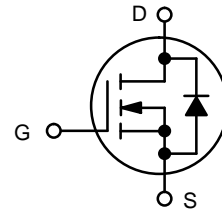


Features

- Low Gate Charge
- Fast Switching
- High Current Capability
- $V_{DS}(V) = 60V$
- $I_D = 46A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 16m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 19m\Omega$ ($V_{GS} = 4.5V$)



1.G 2.D 3.S
TO-252(DPAK) top view



MAXIMUM RATINGS ($T_J = 25^\circ C$ unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|------------------|---------------------|------------|------------|
| Drain-to-Source Voltage | | V_{DSS} | 60 | V |
| Gate-to-Source Voltage – Continuous | | V_{GS} | ± 20 | V |
| Gate-to-Source Voltage – Non-Repetitive ($t_p < 10 \mu s$) | | V_{GS} | ± 30 | V |
| Continuous Drain Current ($R_{\theta JC}$) | Steady State | $T_C = 25^\circ C$ | 46 | A |
| | | $T_C = 100^\circ C$ | 33 | |
| Power Dissipation ($R_{\theta JC}$) | | $T_C = 25^\circ C$ | P_D | 71 W |
| Pulsed Drain Current | $t_p = 10 \mu s$ | I_{DM} | 203 | A |
| Operating Junction and Storage Temperature | | T_J, T_{stg} | -55 to 175 | $^\circ C$ |
| Source Current (Body Diode) | | I_S | 46 | A |
| Single Pulse Drain-to-Source Avalanche Energy | (L = 0.1 mH) | E_{AS} | 36 | mJ |
| | | I_{AS} | 27 | A |
| Lead Temperature for Soldering Purposes (1/8" from case for 10 s) | | T_L | 260 | $^\circ C$ |

THERMAL RESISTANCE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------|--------------|
| Junction-to-Case (Drain) | $R_{\theta JC}$ | 2.1 | $^\circ C/W$ |
| Junction-to-Ambient – Steady State (Note 1) | $R_{\theta JA}$ | 49 | |

1. Surface-mounted on FR4 board using a 650 mm², 2 oz. Cu pad.

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

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|-------------------|--|--|--------------------------|-----------|---------------|
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$ | 60 | | | V |
| Drain-to-Source Breakdown Voltage Temperature Coefficient | $V_{(BR)DSS}/T_J$ | | | 55 | | mV/°C |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{GS} = 0\text{ V}, V_{DS} = 60\text{ V}$ | $T_J = 25^\circ\text{C}$ | | 1.0 | μA |
| | | | $T_J = 150^\circ\text{C}$ | | 100 | |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$ | | | ± 100 | nA |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{GS} = V_{DS}, I_D = 250\ \mu\text{A}$ | 1.0 | | 2.0 | V |
| Negative Threshold Temperature Coefficient | $V_{GS(TH)}/T_J$ | | | 5.6 | | mV/°C |
| Drain-to-Source on Resistance | $R_{DS(on)}$ | $V_{GS} = 10\text{ V}, I_D = 20\text{ A}$ | | 13 | 16 | m Ω |
| Drain-to-Source on Resistance | $R_{DS(on)}$ | $V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$ | | 16 | 19 | m Ω |
| Forward Transconductance | gFS | $V_{DS} = 15\text{ V}, I_D = 20\text{ A}$ | | 15 | | S |
| Input Capacitance | C_{iss} | $V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = 25\text{ V}$ | | 1400 | | pF |
| Output Capacitance | C_{oss} | | | 137 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 95 | | |
| Total Gate Charge | $Q_{G(TOT)}$ | $V_{GS} = 10\text{ V}, V_{DS} = 48\text{ V}, I_D = 40\text{ A}$ | | 29 | | nC |
| Threshold Gate Charge | $Q_{G(TH)}$ | | | 1.1 | | |
| Gate-to-Source Charge | Q_{GS} | | | 4 | | |
| Gate-to-Drain Charge | Q_{GD} | | | 8 | | |
| Total Gate Charge | $Q_{G(TOT)}$ | $V_{GS} = 4.5\text{ V}, V_{DS} = 48\text{ V}, I_D = 40\text{ A}$ | | 15 | | nC |
| Gate Resistance | R_G | | | 1.3 | | Ω |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS} = 10\text{ V}, V_{DD} = 48\text{ V}, I_D = 40\text{ A}, R_G = 2.5\ \Omega$ | | 8.4 | | ns |
| Rise Time | t_r | | | 12.4 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 26 | | |
| Fall Time | t_f | | | 4.4 | | |
| Forward Diode Voltage | V_{SD} | | $V_{GS} = 0\text{ V}, I_S = 40\text{ A}$ | $T_J = 25^\circ\text{C}$ | 0.95 | |
| | | $T_J = 125^\circ\text{C}$ | | 0.85 | | |
| Reverse Recovery Time | t_{RR} | $V_{GS} = 0\text{ V}, dI_S/dt = 100\text{ A}/\mu\text{s}, I_S = 40\text{ A}$ | | 20 | | ns |
| Charge Time | t_a | | | 13 | | |
| Discharge Time | t_b | | | 7 | | |
| Reverse Recovery Charge | Q_{RR} | | | 13 | | |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.
3. Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS

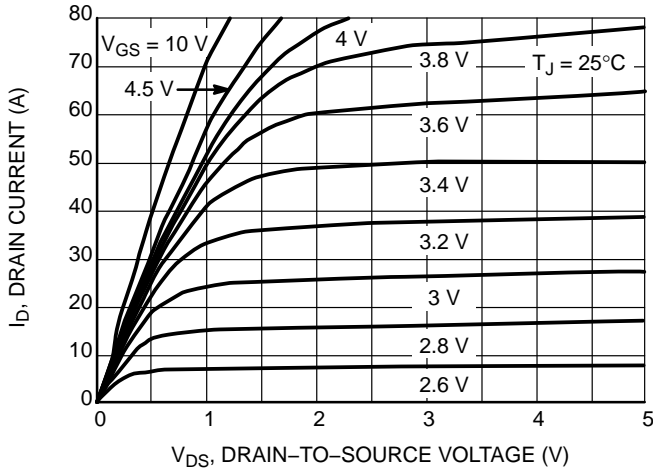


Figure 1. On-Region Characteristics

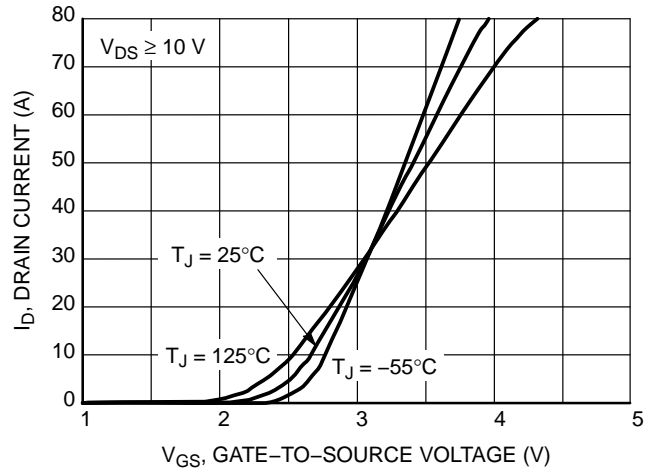


Figure 2. Transfer Characteristics

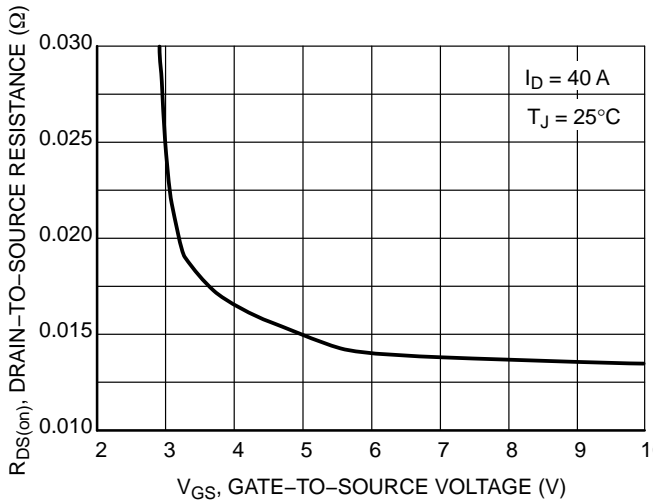


Figure 3. On-Resistance vs. Gate Voltage

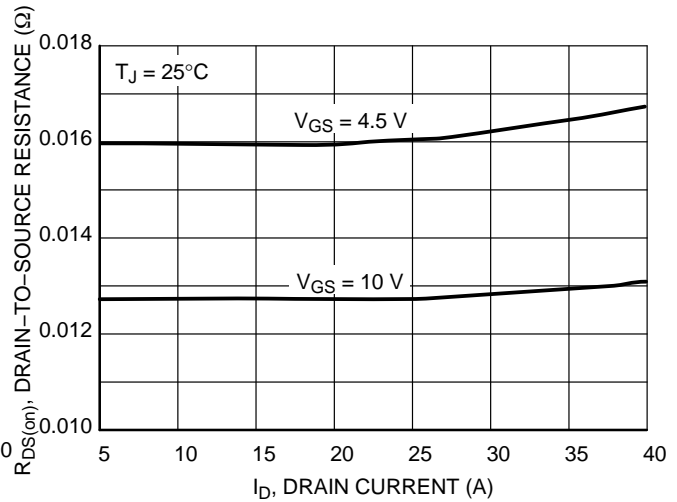


Figure 4. On-Resistance vs. Drain Current

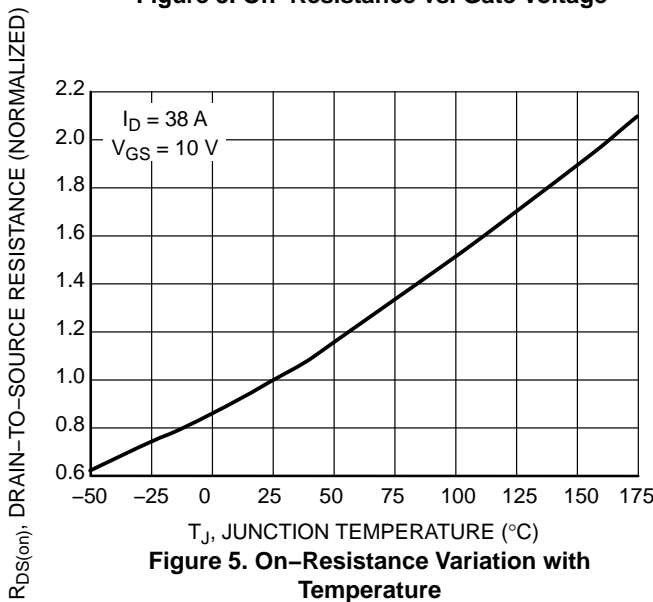


Figure 5. On-Resistance Variation with Temperature

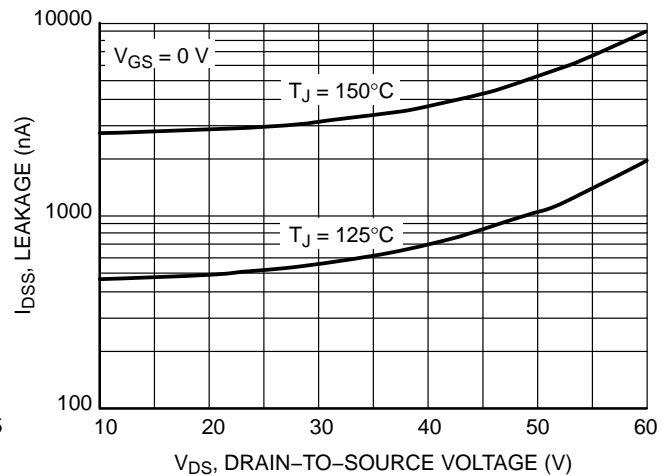


Figure 6. Drain-to-Source Leakage Current vs. Voltage

TYPICAL CHARACTERISTICS

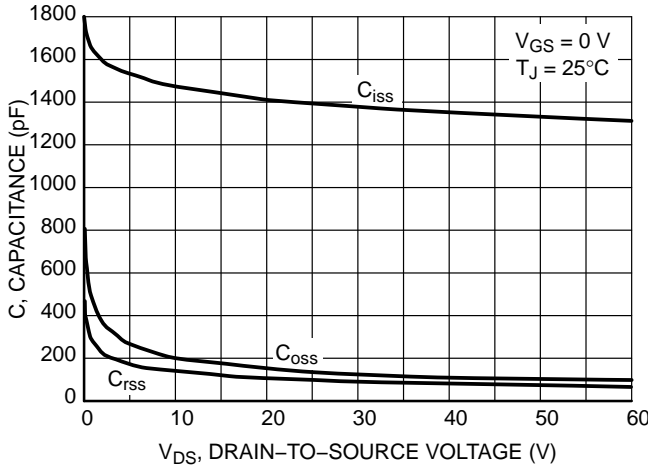


Figure 7. Capacitance Variation

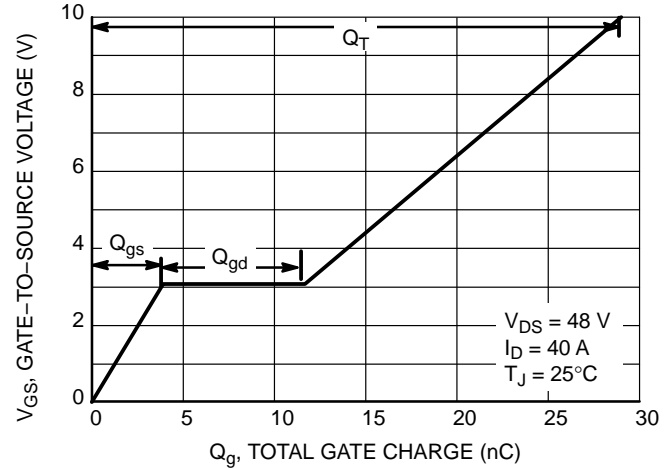


Figure 8. Gate-to-Source vs. Total Charge

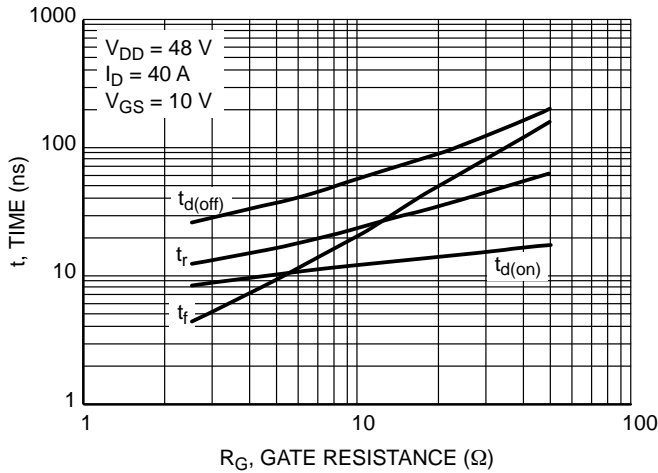


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

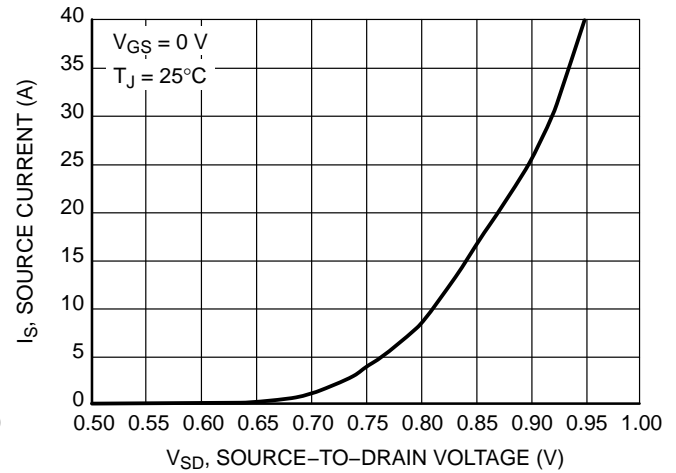


Figure 10. Diode Forward Voltage vs. Current

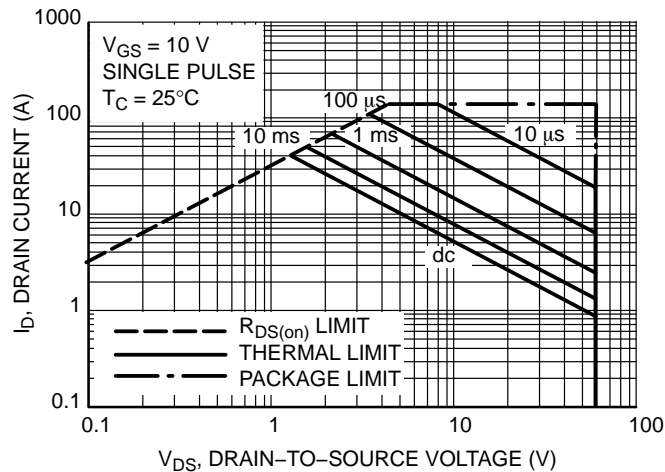


Figure 11. Maximum Rated Forward Biased Safe Operating Area

TYPICAL CHARACTERISTICS

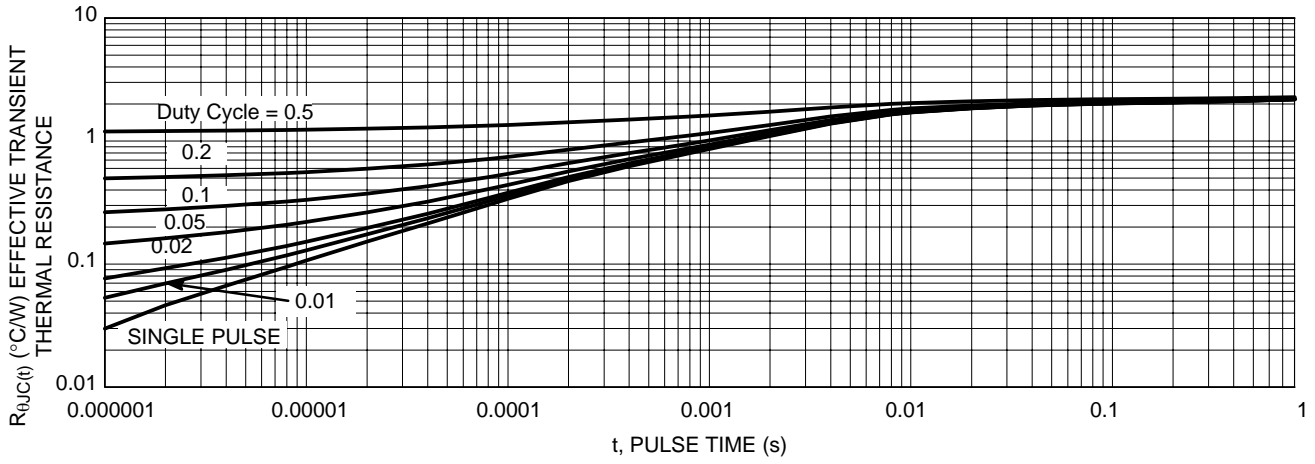
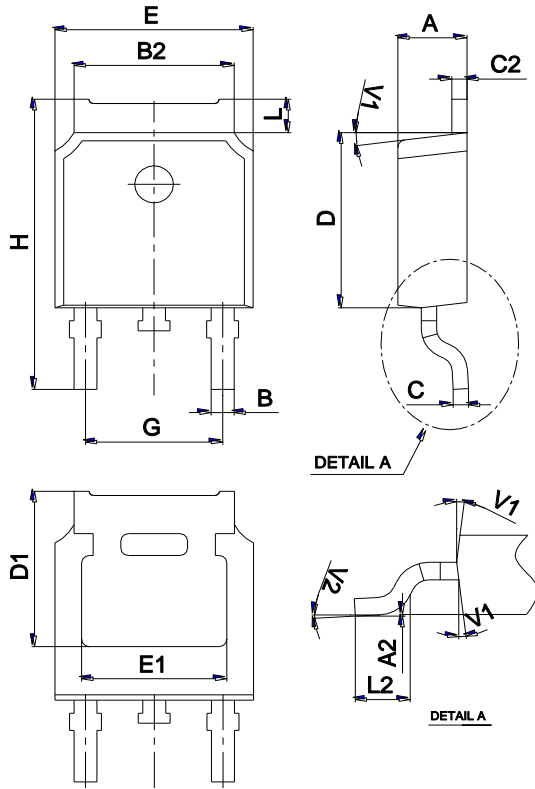


Figure 12. Thermal Response

Package Mechanical Data TO-252



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|----------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 5.48 | 0.202 | | 0.216 |
| C | 0.40 | | 0.60 | 0.016 | | 0.024 |
| C2 | 0.44 | | 0.58 | 0.017 | | 0.023 |
| D | 5.90 | | 6.30 | 0.232 | | 0.248 |
| D1 | 5.30REF | | | 0.209REF | | |
| E | 6.40 | | 6.80 | 0.252 | | 0.268 |
| E1 | 4.63 | | | 0.182 | | |
| G | 4.47 | | 4.67 | 0.176 | | 0.184 |
| H | 9.50 | | 10.70 | 0.374 | | 0.421 |
| L | 1.09 | | 1.21 | 0.043 | | 0.048 |
| L2 | 1.35 | | 1.65 | 0.053 | | 0.065 |
| V1 | | 7° | | | 7° | |
| V2 | 0° | | 6° | 0° | | 6° |

Marking



Ordering information

| Order code | Package | Baseqty | Deliverymode |
|------------------|---------|---------|---------------|
| UMW NTD5865NLT4G | TO-252 | 2500 | Tape and reel |

单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)