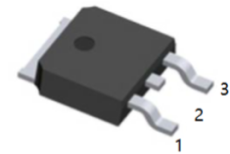


**FEATURES**

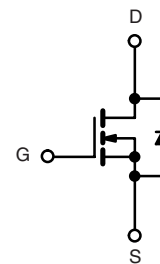
- $V_{DS} (V) = 60V$
- $I_D = 35A (V_{GS}=10V)$
- $R_{DS(ON)} < 25m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 30m\Omega (V_{GS} = 4.5V)$

**PRODUCT SUMMARY**

- TrenchFET<sup>®</sup> Power MOSFET
- 175 °C Junction Temperature



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



N-Channel MOSFET

**ABSOLUTE MAXIMUM RATINGS**  $T_C = 25\text{ }^\circ\text{C}$ , unless otherwise noted

Parameter	Symbol	Limit	Unit
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current ( $T_J = 175\text{ }^\circ\text{C}$ ) <sup>b</sup>	$I_D$	$T_C = 25\text{ }^\circ\text{C}$	35
		$T_C = 100\text{ }^\circ\text{C}$	28
Pulsed Drain Current	$I_{DM}$	100	A
Continuous Source Current (Diode Conduction)	$I_S$	23	
Avalanche Current	$I_{AS}$	20	
Single Avalanche Energy (Duty Cycle $\leq 1\%$ )	$E_{AS}$	20	mJ
Maximum Power Dissipation	$P_D$	$T_C = 25\text{ }^\circ\text{C}$	100
		$T_A = 25\text{ }^\circ\text{C}$	3 <sup>a</sup>
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	- 55 to 175	$^\circ\text{C}$

**THERMAL RESISTANCE RATINGS**

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	$t \leq 10\text{ sec}$	18	22
		Steady State	40	50
Maximum Junction-to-Case	$R_{thJC}$	3.2	4	$^\circ\text{C/W}$

Notes:

a. Surface Mounted on 1" x 1" FR4 board,  $t \leq 10\text{ sec}$ .

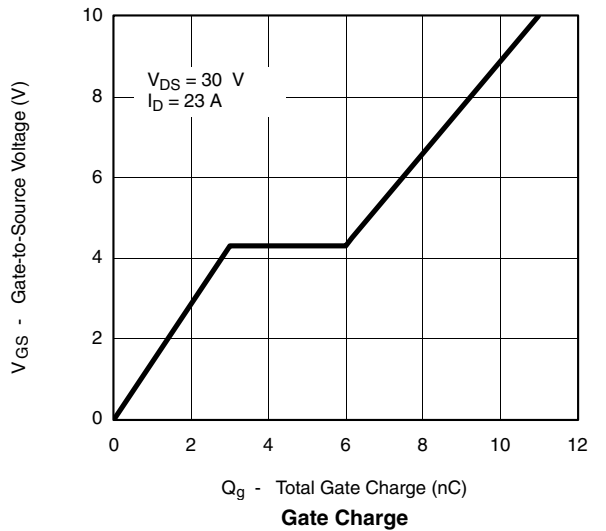
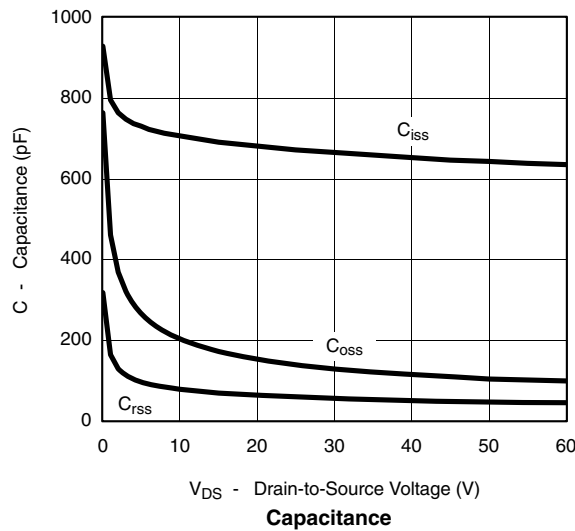
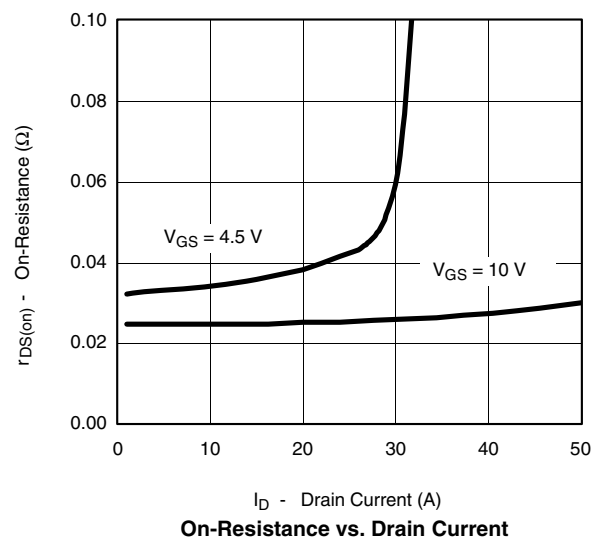
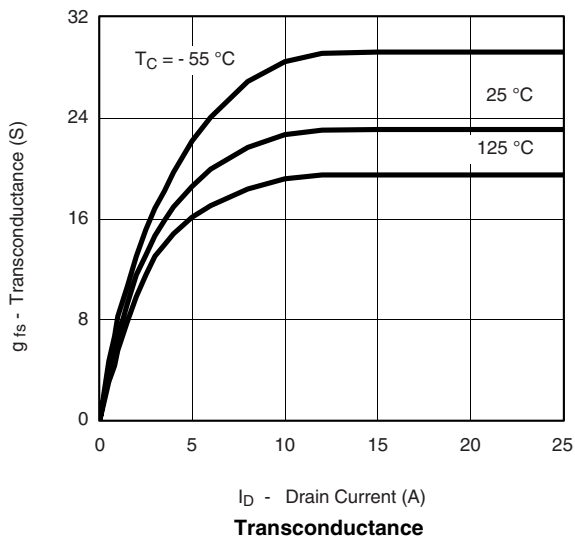
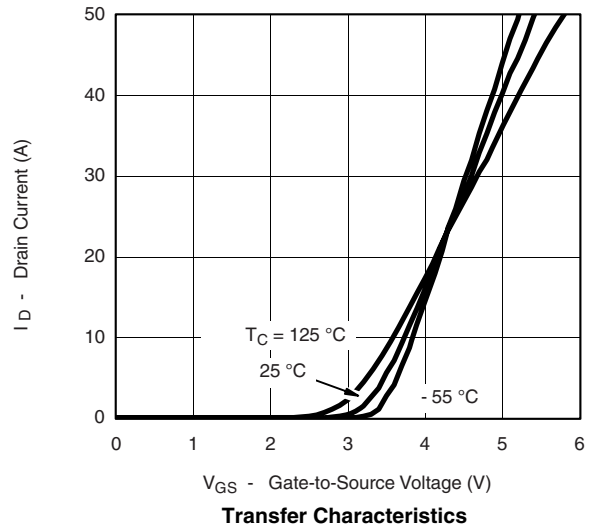
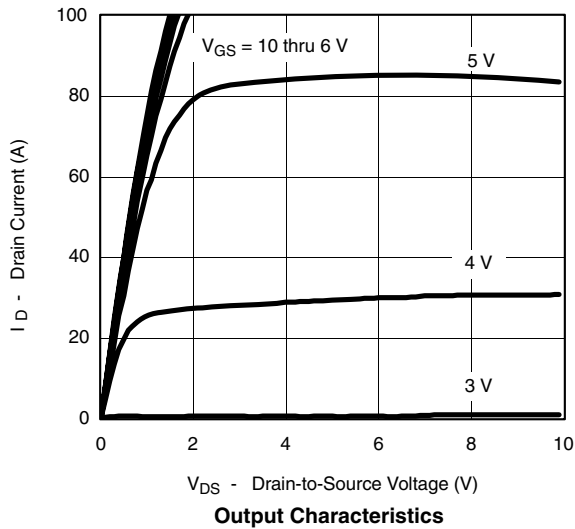
## SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$ , unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0	2.0	3.0	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$			1	$\mu\text{A}$
		$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}, T_J = 125\text{ }^\circ\text{C}$			50	
		$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}, T_J = 175\text{ }^\circ\text{C}$			250	
On-State Drain Current <sup>b</sup>	$I_{D(on)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$	50			A
Drain-Source On-State Resistance <sup>b</sup>	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$		25	31	$\text{m}\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 10\text{ A}$		30	45	
Forward Transconductance <sup>b</sup>	$g_{fs}$	$V_{DS} = 15\text{ V}, I_D = 15\text{ A}$		20		S
<b>Dynamic<sup>a</sup></b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		670		$\text{pF}$
Output Capacitance	$C_{oss}$			140		
Reverse Transfer Capacitance	$C_{rss}$			60		
Total Gate Charge <sup>c</sup>	$Q_g$	$V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V}, I_D = 23\text{ A}$		11	17	nC
Gate-Source Charge <sup>c</sup>	$Q_{gs}$			3		
Gate-Drain Charge <sup>c</sup>	$Q_{gd}$			3		
Turn-On Delay Time <sup>c</sup>	$t_{d(on)}$	$V_{DD} = 30\text{ V}, R_L = 1.3\text{ }\Omega$ $I_D \cong 23\text{ A}, V_{GEN} = 10\text{ V}, R_g = 2.5\text{ }\Omega$		8	15	ns
Rise Time <sup>c</sup>	$t_r$			15	25	
Turn-Off Delay Time <sup>c</sup>	$t_{d(off)}$			30	45	
Fall Time <sup>c</sup>	$t_f$			25	40	
<b>Source-Drain Diode Ratings and Characteristics</b> ( $T_C = 25\text{ }^\circ\text{C}$ )						
Pulsed Current	$I_{SM}$				50	A
Diode Forward Voltage	$V_{SD}$	$I_F = 15\text{ A}, V_{GS} = 0\text{ V}$		1.0	1.5	V
Reverse Recovery Time	$t_{rr}$	$I_F = 15\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		30	60	ns

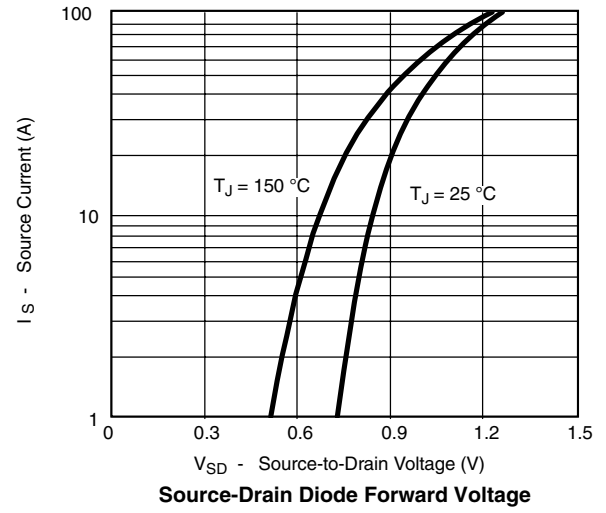
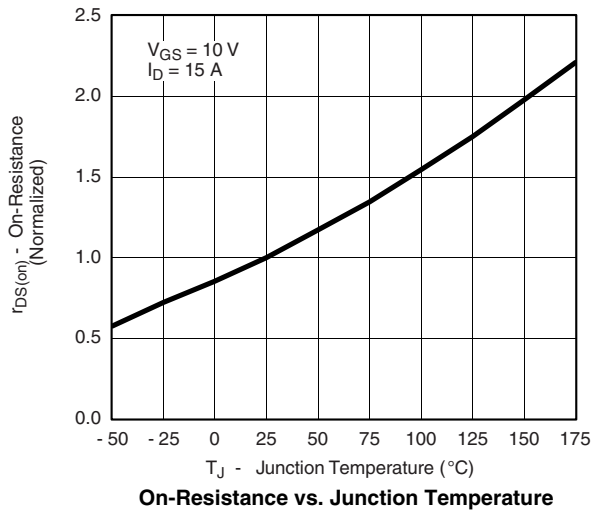
Notes:

- a. For design aid only; not subject to production testing.
- b. Pulse test; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ .
- c. Independent of operating temperature.

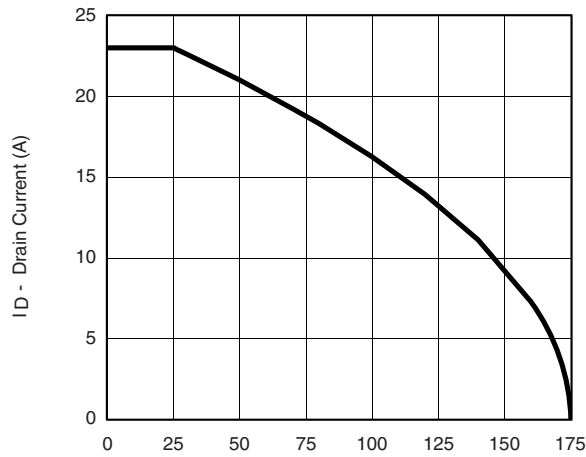
TYPICAL CHARACTERISTICS 25 °C unless noted



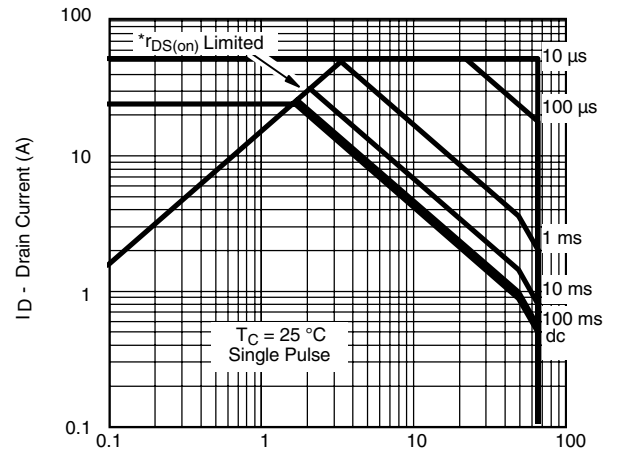
TYPICAL CHARACTERISTICS 25 °C unless noted



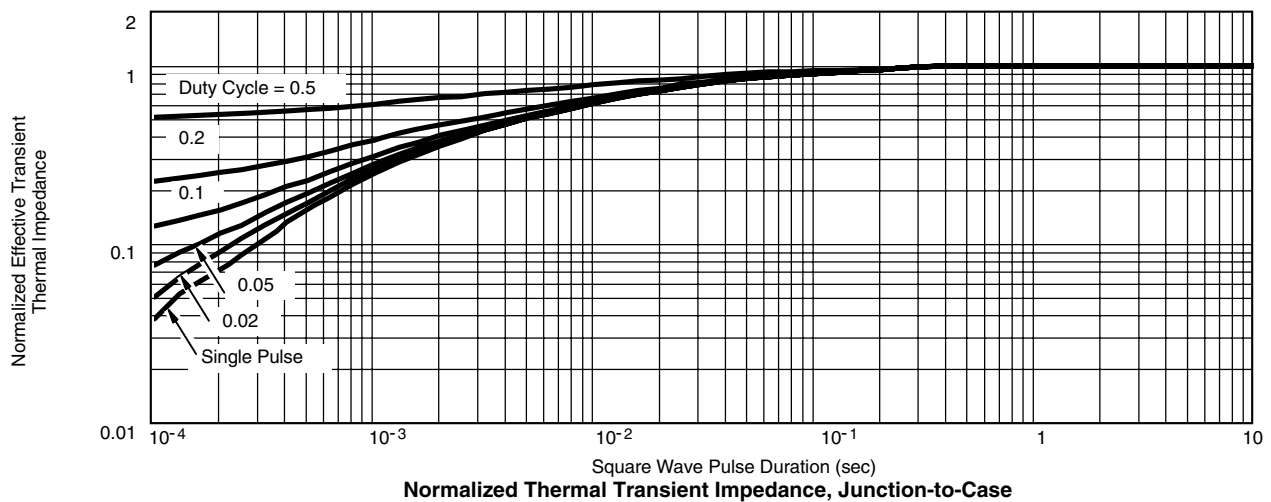
**THERMAL RATINGS**



$T_A$  - Ambient Temperature (°C)  
**Maximum Drain Current vs. Ambient Temperature**

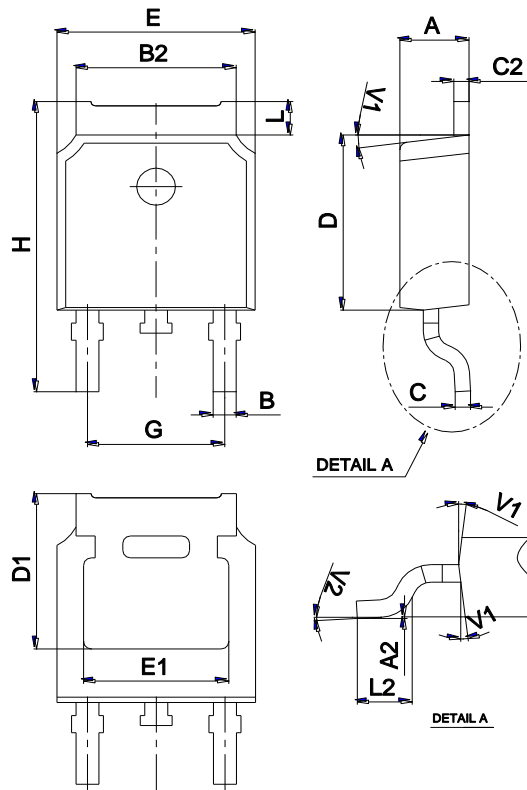


$V_{DS}$  - Drain-to-Source Voltage (V)  
 $*V_{GS} >$  minimum  $V_{GS}$  at which  $r_{DS(on)}$  is specified  
**Safe Operating Area**



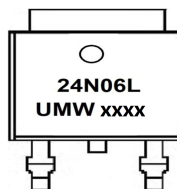
**Normalized Thermal Transient Impedance, Junction-to-Case**

### 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 NTD24N06LT4G	TO-252	2500	Tape and reel