



# UTD36N03

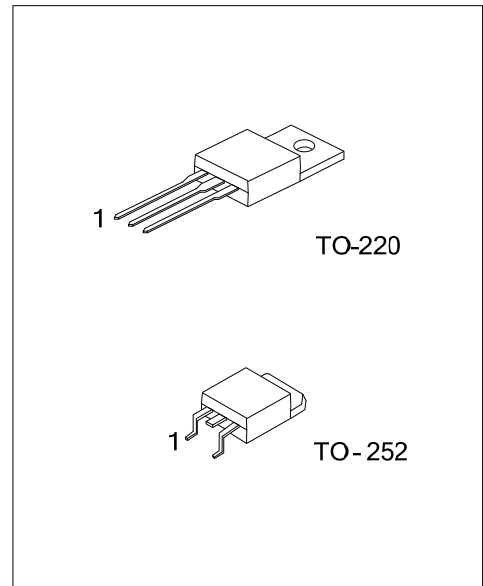
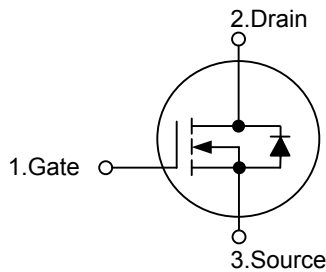
*Power MOSFET*

## N-CHANNEL ENHANCEMENT MODE

■ FEATURES

- \*  $R_{DS(ON)} < 17m\Omega @ V_{GS} = 10 V$
- \* Low capacitance
- \* Optimized gate charge
- \* Fast switching capability
- \* Avalanche energy specified

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTD36N03L-TA3-T	UTD36N03G-TA3-T	TO-220	G	D	S	Tube
UTD36N03L-TN3-T	UTD36N03G-TN3-T	TO-252	G	D	S	Tube
UTD36N03L-TN3-R	UTD36N03G-TN3-R	TO-252	G	D	S	Tape Reel

<p>UTD36N03L-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TN3: TO-252</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ( $T_J=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	43.4	A
Pulsed Drain Current (Note 1)	$I_{DM}$	173.6	A
Power Dissipation	TO-220	1.9	W
	TO-252	1.6	W
Junction Temperature	$T_J$	+175	$^{\circ}\text{C}$
Storage 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	RATINGS	UNIT
Junction-to-Ambient	TO-220	62.5	$^{\circ}\text{C}/\text{W}$
	TO-252	75	$^{\circ}\text{C}/\text{W}$

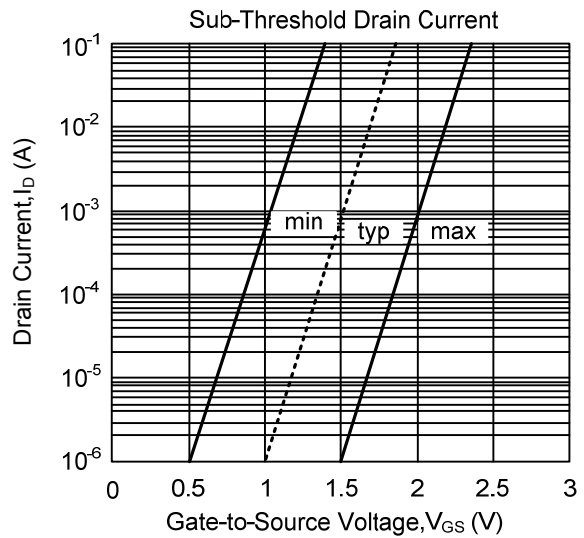
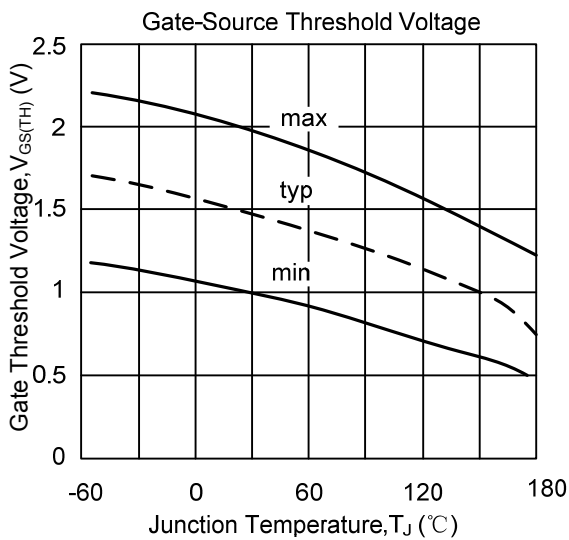
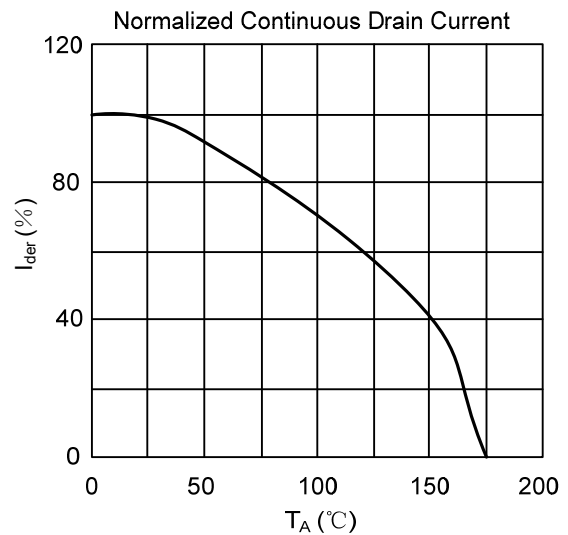
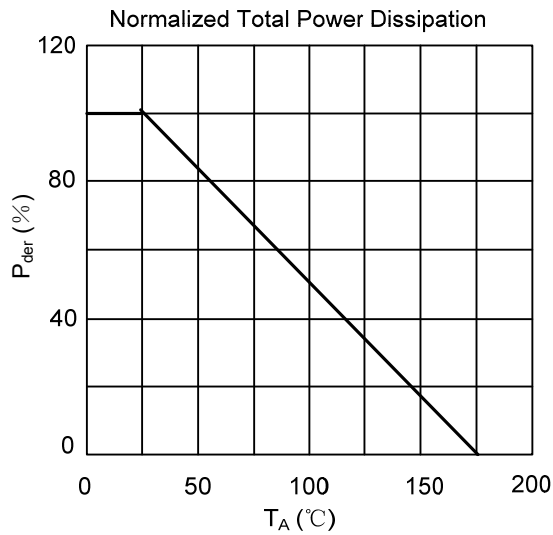
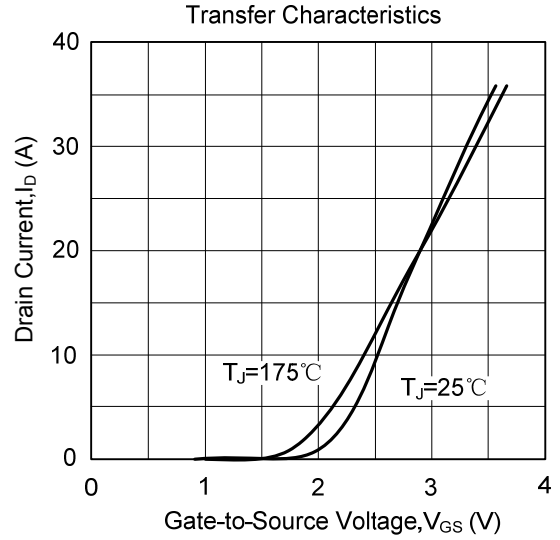
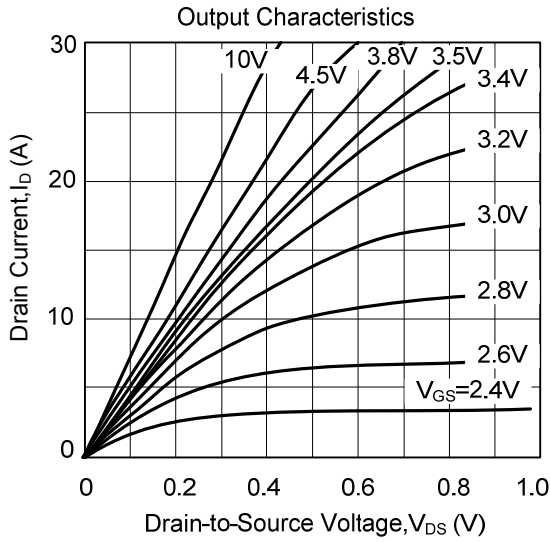
■ ELECTRICAL CHARACTERISTICS ( $T_J=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=250\ \mu\text{A}$	30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=24\text{V}, V_{GS}=0\text{V}$		0.05	1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$		10	100	nA
<b>ON CHARACTERISTICS</b>						
Gate-Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\ \mu\text{A}$	1	1.5	2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5\text{V}, I_D=12\text{A}$		18	22	m $\Omega$
		$V_{GS}=10\text{V}, I_D=25\text{A}$		14	17	
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		690		pF
Output Capacitance	$C_{OSS}$			160		
Reverse Transfer Capacitance	$C_{RSS}$			110		
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, R_G=10\ \Omega, R_L=0.6\ \Omega$		6		ns
Turn-ON Rise Time	$t_R$			10		
Turn-OFF Delay Time	$t_{D(OFF)}$			33		
Turn-OFF Fall-Time	$t_F$			19		
Total Gate Charge	$Q_G$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=36\text{A}$		18.5		nC
Gate-Source Charge	$Q_{GS}$			4.2		
Gate-Drain Charge	$Q_{GD}$			2.9		
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=25\text{A}, V_{GS}=0\text{V}$		0.97	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				43.4	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				173.6	
Reverse Recovery Time	$t_{RR}$	$V_R=15\text{V}, I_F=I_S, dI_F/dt=100\text{A}/\mu\text{s}$		15	18	ns
Reverse Recovery Charge	$Q_{RR}$				2	3

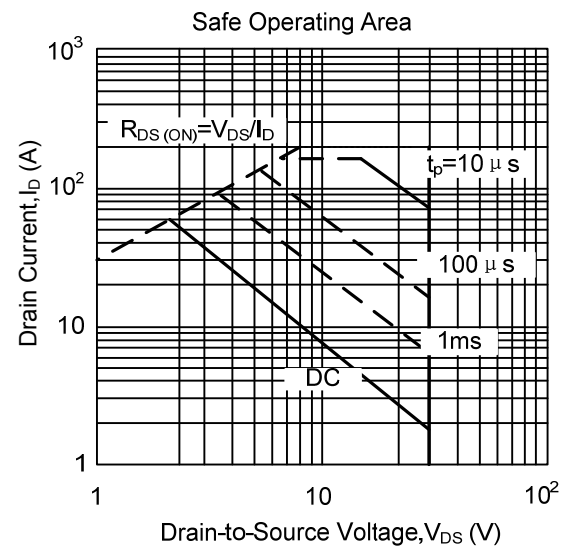
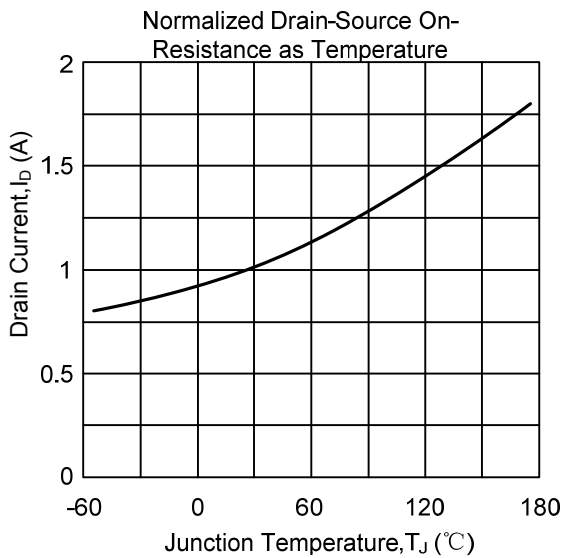
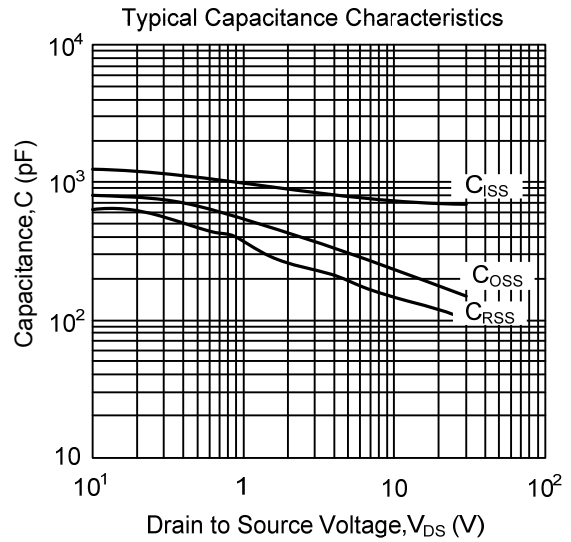
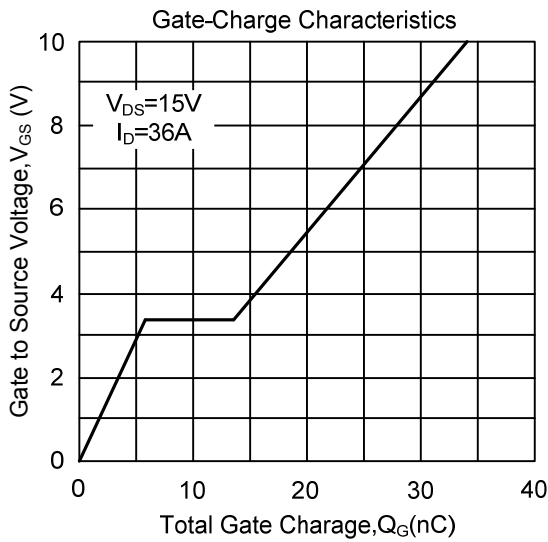
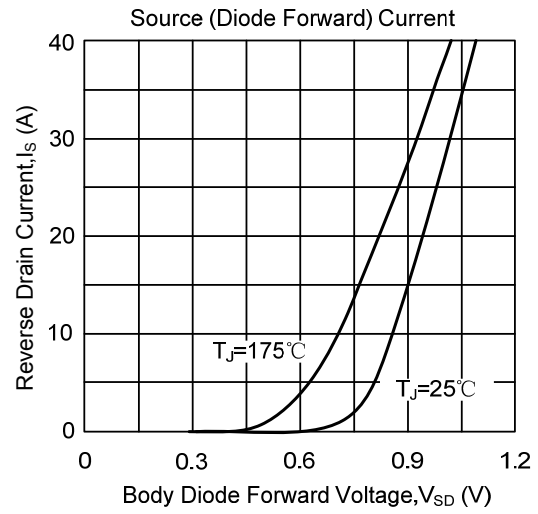
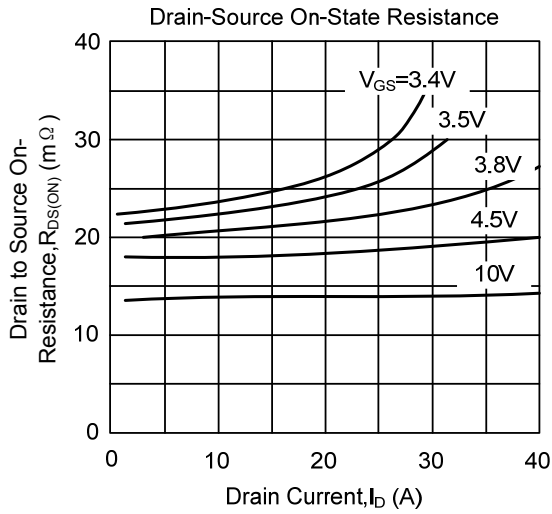
Notes: 1. Pulse width limited by  $T_{J(MAX)}$

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

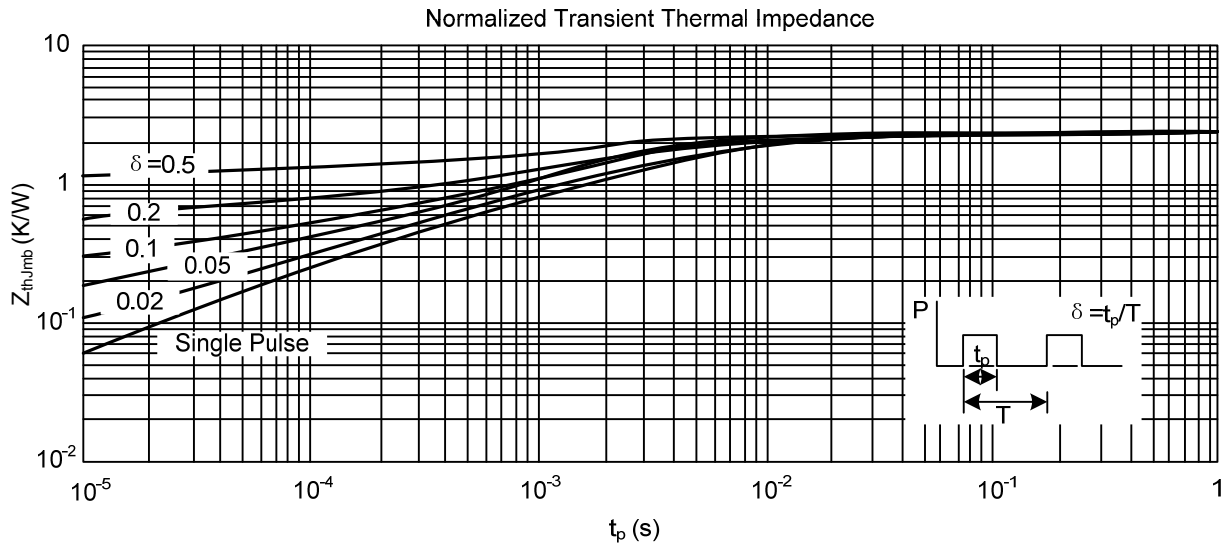
## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



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