



# UT40N03T

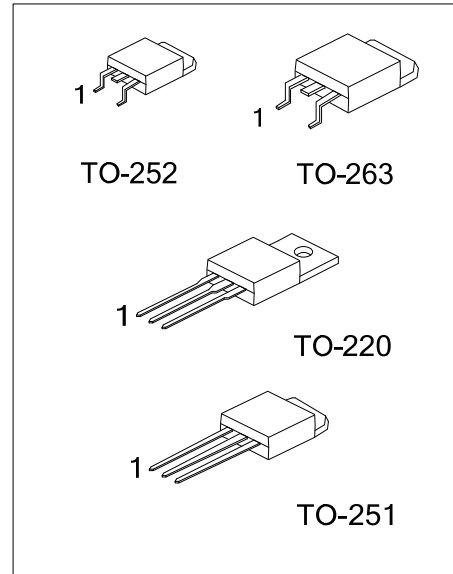
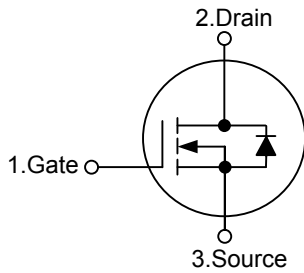
**Power MOSFET**

30V, 28A N-CHANNEL  
ENHANCEMENT MODE  
POWER MOSFET

■ FEATURES

- \*  $R_{DS(ON)} = 25m\Omega @V_{GS} = 10V$
- \* 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	
UT40N03TL-TA3-T	UT40N03TG-TA3-T	TO-220	G	D	S	Tube
UT40N03TL-TM3-R	UT40N03TG-TM3-R	TO-251	G	D	S	Tube
UT40N03TL-TN3-R	UT40N03TG-TN3-R	TO-252	G	D	S	Tape Reel
UT40N03TL-TN3-T	UT40N03TG-TN3-T	TO-252	G	D	S	Tube
UT40N03TL-TQ2-R	UT40N03TG-TQ2-R	TO-263	G	D	S	Tape Reel
UT40N03TL-TQ2-T	UT40N03TG-TQ2-T	TO-263	G	D	S	Tube

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UT40N03TL-TN3-R</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TA3: TO-220, TM3: TO-251, TN3: TO-252, TQ2: TO-263</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 25$	V
Continuous Drain Current	$I_D$	28	A
Pulsed Drain Current	$I_{DM}$	95	A
Total Power Dissipation	TO-220/TO-263	45	W
	TO-251/ TO-252	41	
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

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/TO-263	62	$^{\circ}\text{C}/\text{W}$
	TO-251/ TO-252	100	
Junction to Case	TO-220/TO-263	2.73	$^{\circ}\text{C}/\text{W}$
	TO-251/ TO-252	3	

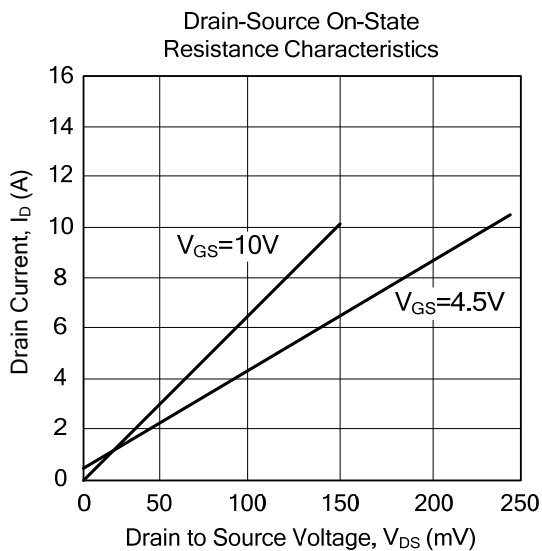
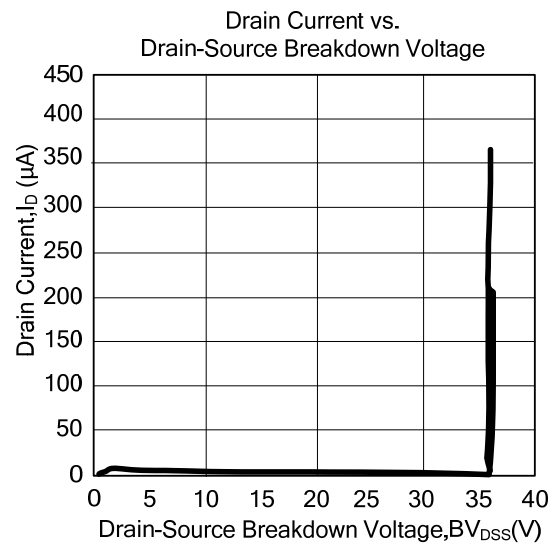
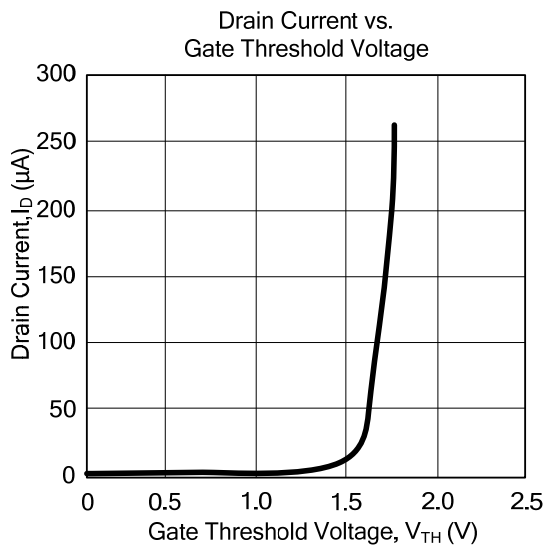
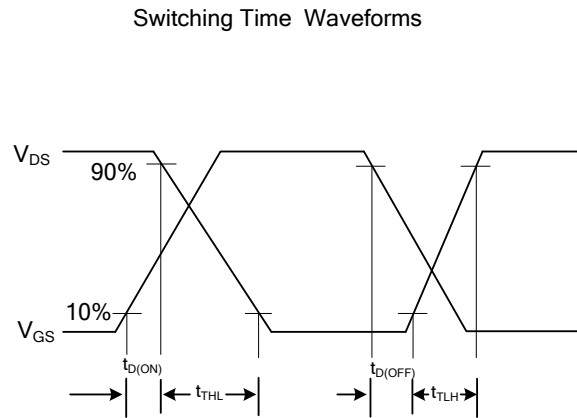
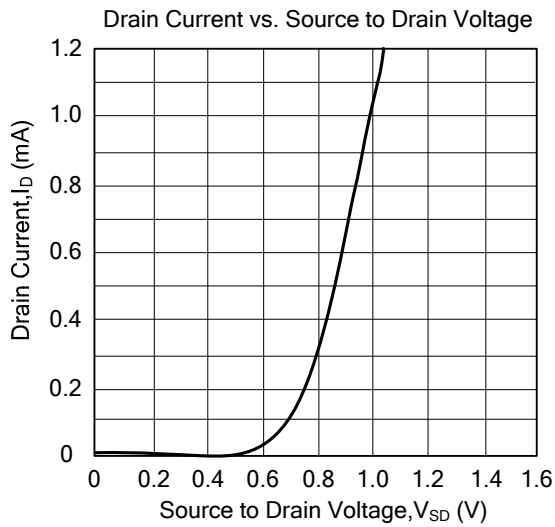
### ■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^{\circ}\text{C}$ , unless otherwise specified)

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	$I_{DSS}$	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 25^{\circ}\text{C}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 25\text{ V}$			$\pm 100$	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	Reference to $25^{\circ}\text{C}$ , $I_D = 1\text{ mA}$		0.032		$\text{V}/^{\circ}\text{C}$
<b>ON CHARACTERISTICS</b>						
Gate-Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1		3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 18\text{ A}$			25	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 14\text{ A}$			45	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		655		pF
Output Capacitance	$C_{OSS}$			145		
Reverse Transfer Capacitance	$C_{RSS}$			95		
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS} = 10\text{ V}, V_{DS} = 15\text{ V},$ $R_D = 0.83\Omega, I_D = 18\text{ A},$ $R_G = 3.3\Omega$		6		ns
Turn-ON Rise Time	$t_R$			62		
Turn-OFF Delay Time	$t_{D(OFF)}$			16		
Turn-OFF Fall-Time	$t_F$			4.4		
Total Gate Charge	$Q_G$	$V_{DS} = 20\text{ V}, V_{GS} = 4.5\text{ V},$ $I_D = 18\text{ A}$		8.8		nC
Gate-Source Charge	$Q_{GS}$			2.5		
Gate-Drain Charge	$Q_{GD}$			5.8		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S = 28\text{ A}, V_{GS} = 0\text{ V}$			1.3	V
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	$V_D = V_G = 0\text{ V}, V_S = 1.3\text{ V}$			28	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				95	A

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

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

### TYPICAL CHARACTERISTICS



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