



## UTT40N03

Power MOSFET

### 40A, 30V N-CHANNEL POWER MOSFET

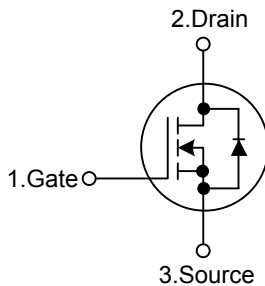
#### DESCRIPTION

The **UTT40N03** power MOSFET provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness

#### FEATURES

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

#### SYMBOL

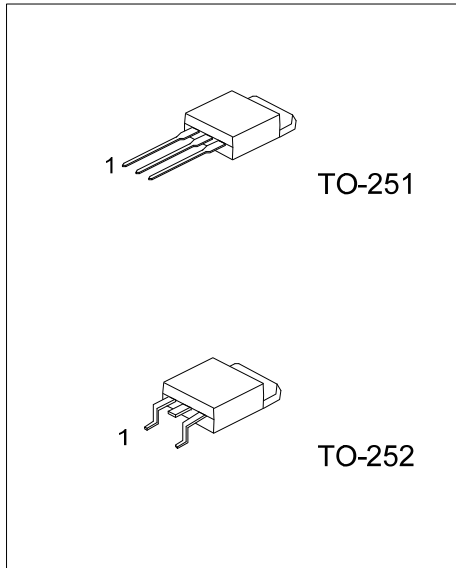


#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT40N03L-TM3-T	UTT40N03G-TM3-T	TO-251	G	D	S	Tube
UTT40N03L-TN3-R	UTT40N03G-TN3-R	TO-252	G	D	S	Tape Reel
UTT40N03L-TN3-T	UTT40N03G-TN3-T	TO-252	G	D	S	Tube

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

UTT40N03L-TM3-R 	(1) R: Tape Reel, T: Tube (2) TM3: TO-251, TN3: TO-252 (3) G: Halogen Free, L: Lead Free
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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
Drain Current	Continuous	$I_D$	40	A
	Pulsed (Note 1)	$I_{DM}$	160	A
Power Dissipation		$P_D$	50	W
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

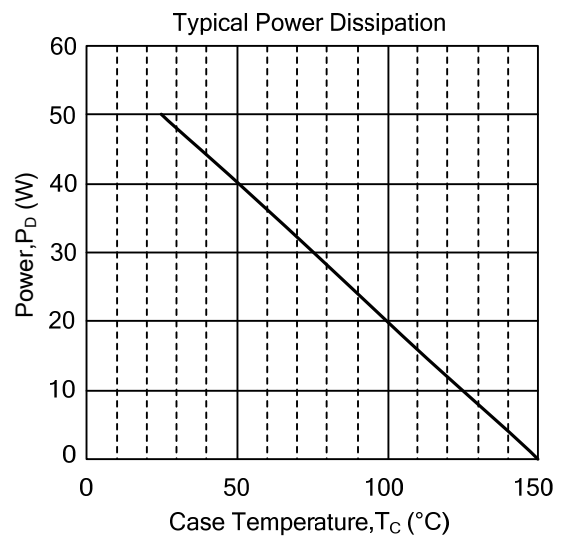
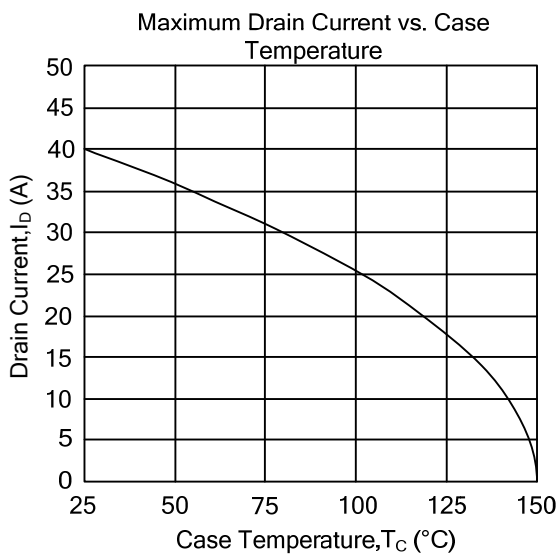
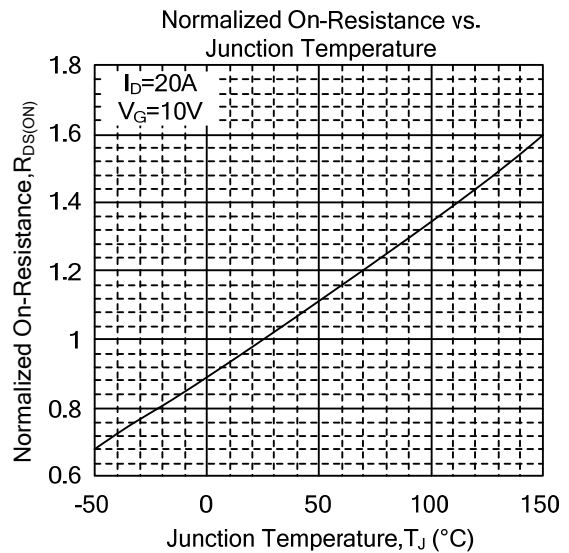
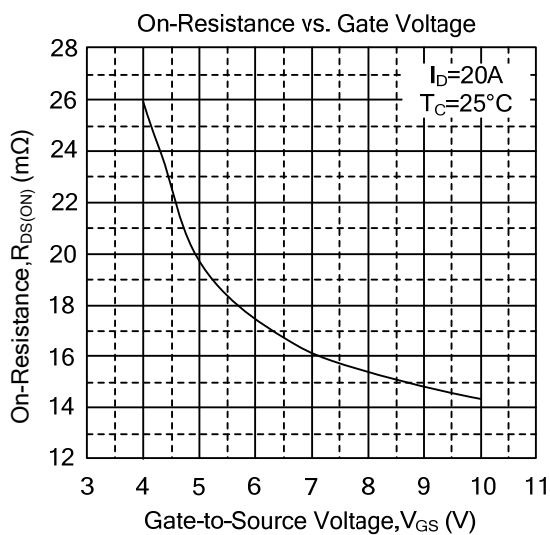
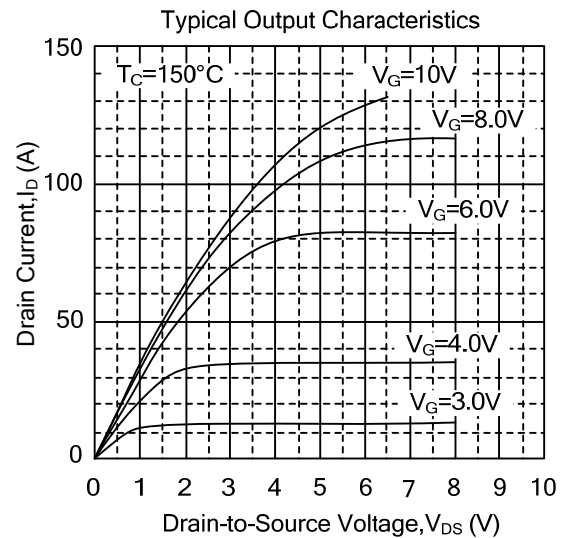
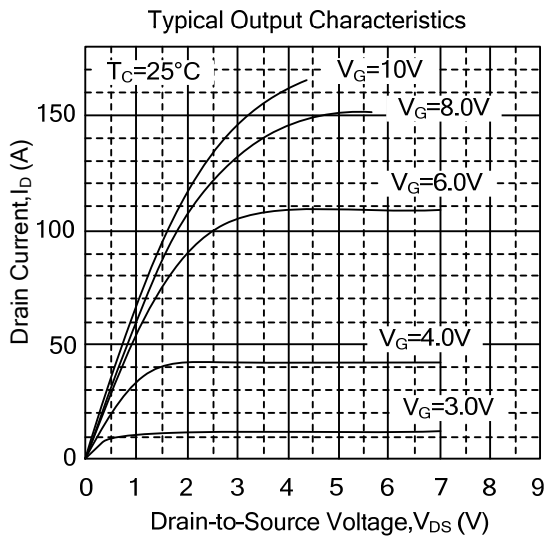
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		$\theta_{JA}$	62	$^\circ\text{C/W}$
Junction to Case		$\theta_{JC}$	2.5	$^\circ\text{C/W}$

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

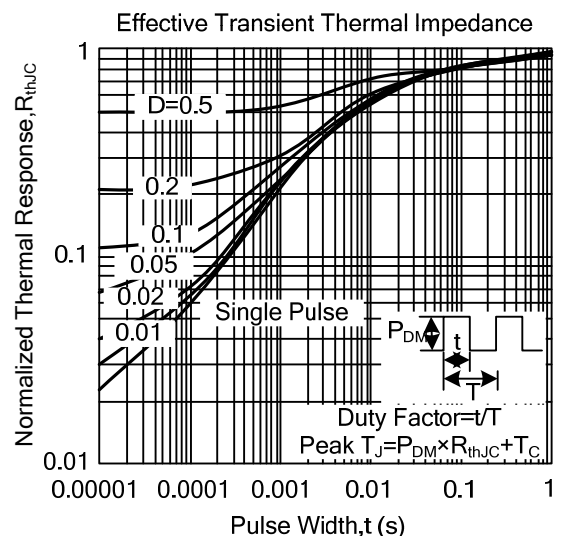
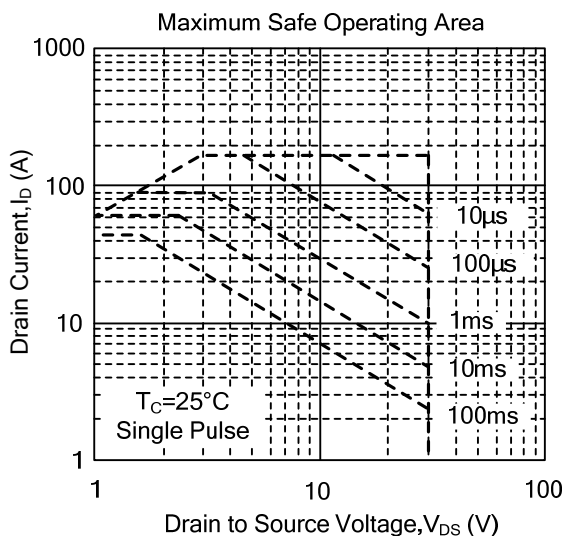
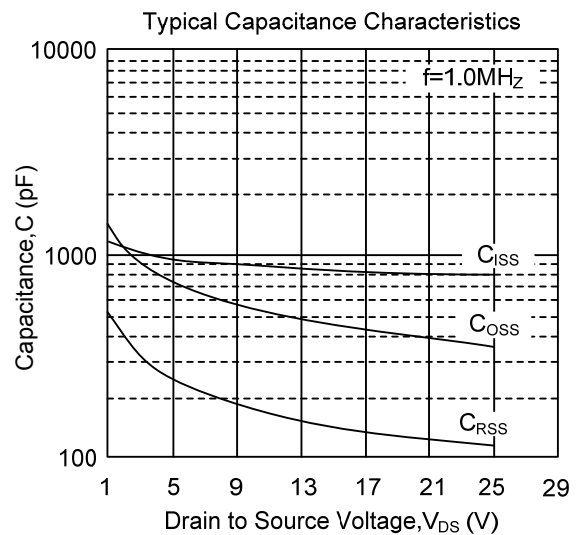
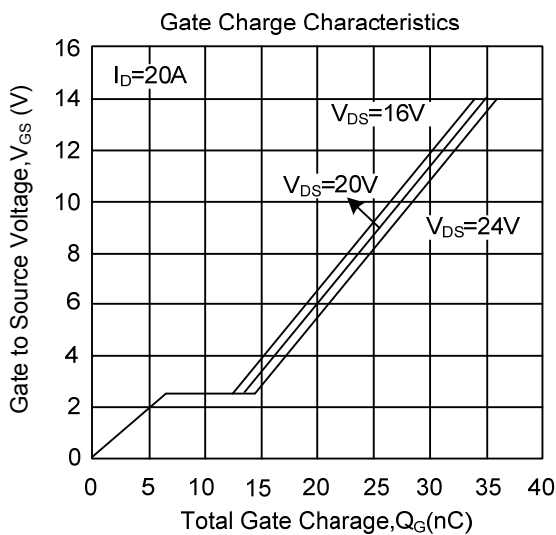
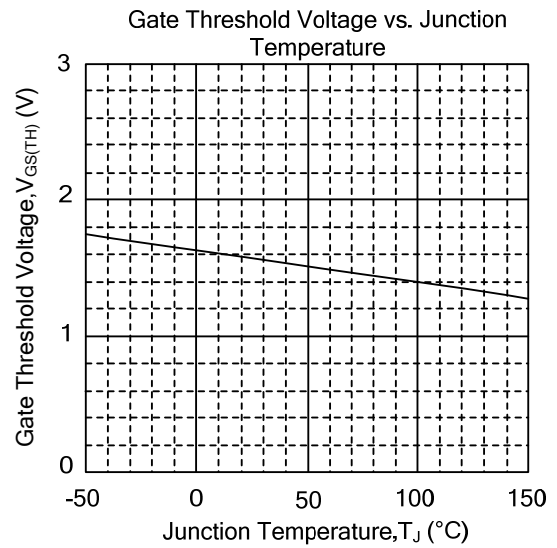
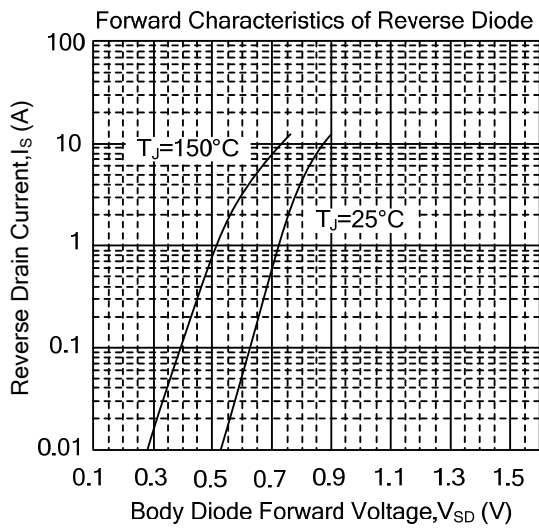
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	30			V
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=30\text{V}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}$			1	$\mu\text{A}$
Gate- Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+20\text{V}$			+100	nA
	Reverse		$V_{GS}=-20\text{V}$			-100	nA
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1		3	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		14	17	$\text{m}\Omega$
			$V_{GS}=4.5\text{V}, I_D=16\text{A}$		20	23	$\text{m}\Omega$
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance		$C_{ISS}$	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		800		pF
Output Capacitance		$C_{OSS}$			380		pF
Reverse Transfer Capacitance		$C_{RSS}$			133		pF
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge		$Q_G$	$V_{DS}=24\text{V}, V_{GS}=5\text{V}, I_D=20\text{A}$		17		nC
Gate to Source Charge		$Q_{GS}$			3		nC
Gate to Drain Charge		$Q_{GD}$			10		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DS}=15\text{V}, I_D=20\text{A}, V_{GS}=10\text{V}, R_G=3.3\Omega, R_L=0.75\Omega$		7.2		ns
Rise Time		$t_R$			60		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			22.5		ns
Fall-Time		$t_F$			10		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Maximum Body-Diode Continuous Current		$I_S$	$V_D=V_G=0\text{V}, V_S=1.3\text{V}$			40	A
Maximum Body-Diode Pulsed Current		$I_{SM}$				160	A
Drain-Source Diode Forward Voltage		$V_{SD}$	$T_J=25^\circ\text{C}, I_S=40\text{A}, V_{GS}=0\text{V}$			1.3	V

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.)



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