



UTT40N03

Power MOSFET

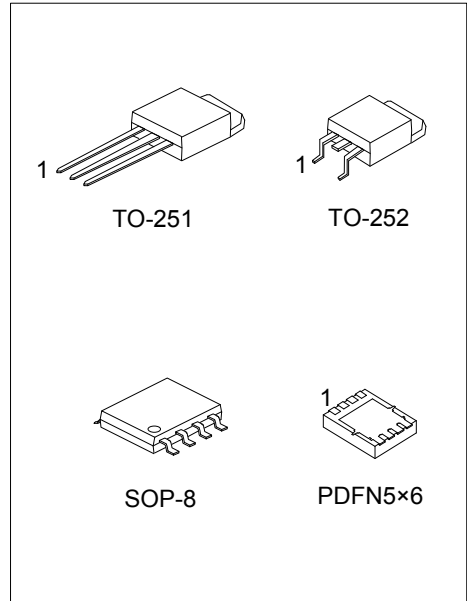
40A, 30V N-CHANNEL POWER MOSFET

DESCRIPTION

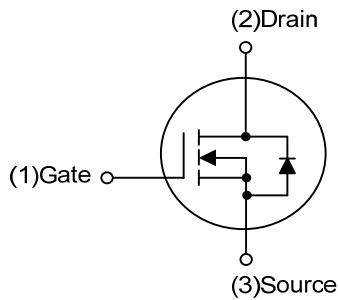
The **UTT40N03** power MOSFET provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness

FEATURES

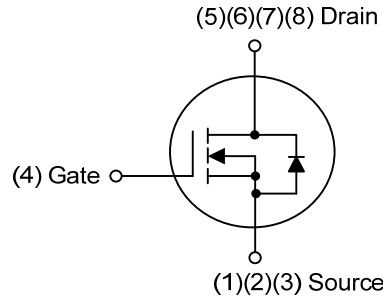
- * $R_{DS(ON)} \leq 17 \text{ m}\Omega @ V_{GS}=10\text{V}, I_D=20\text{A}$
- * $R_{DS(ON)} \leq 23 \text{ m}\Omega @ V_{GS}=4.5\text{V}, I_D=16\text{A}$
- * Low capacitance
- * Optimized gate charge
- * Fast switching capability
- * Avalanche energy specified



SYMBOL



TO-251/TO-252



SOP-8/PDFN5x6

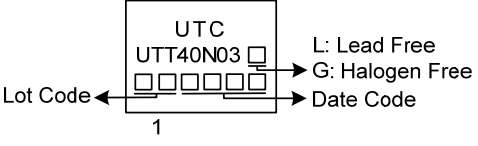
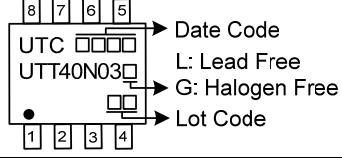
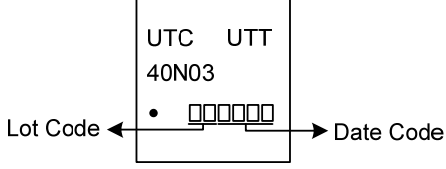
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
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-S08-R	UTT40N03G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT40N03L-P5060-R	UTT40N03G-P5060-R	PDFN5x6	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT40N03G-TM3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TM3: TO-251, TN3: TO-252, S08: SOP-8</p> <p>P5060: PDFN5x6</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

PACKAGE	MARKING
<p>TO-251 TO-252</p>	
<p>SOP-8</p>	
<p>PDFN5x6</p>	

■ ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	40	A
	Pulsed (Note 1)	I_{DM}	160	A
Power Dissipation	TO-251/TO-252	P_D	50	W
	SOP-8		1.6	W
	PDFN5x6		21	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	TO-251/TO-252	θ_{JA}	50	$^{\circ}\text{C/W}$
	SOP-8		90	$^{\circ}\text{C/W}$
	PDFN5x6		65	$^{\circ}\text{C/W}$
Junction to Case (Note)	TO-251/TO-252	θ_{JC}	2.5	$^{\circ}\text{C/W}$
	SOP-8		78	$^{\circ}\text{C/W}$
	PDFN5x6		6	$^{\circ}\text{C/W}$

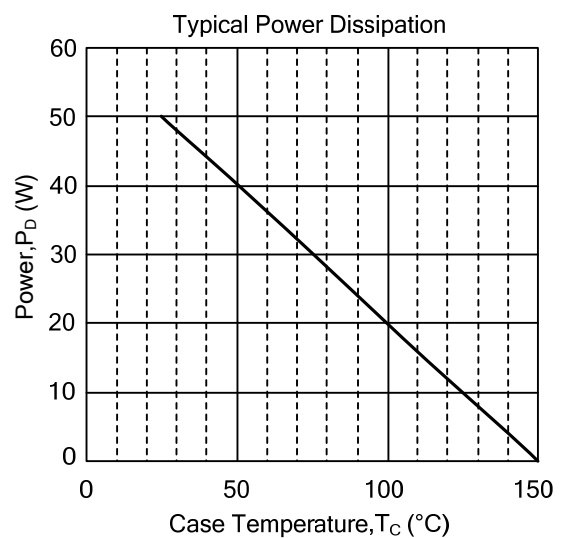
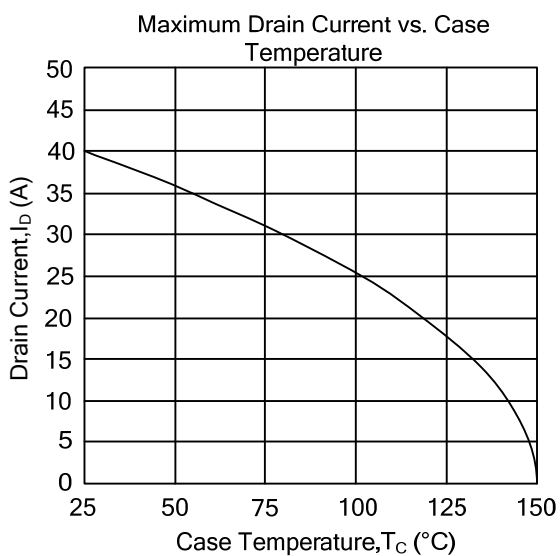
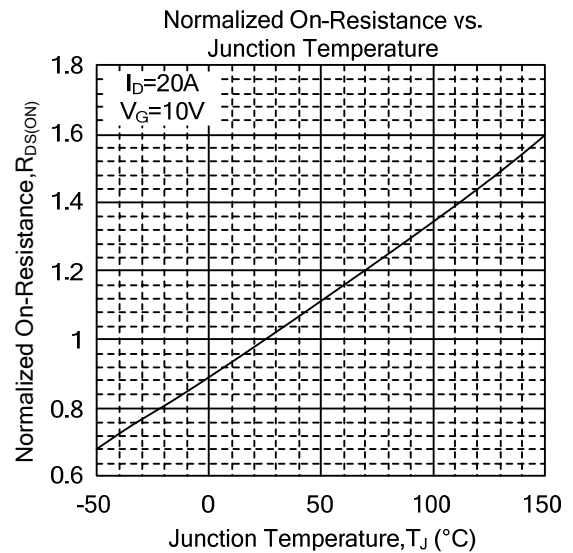
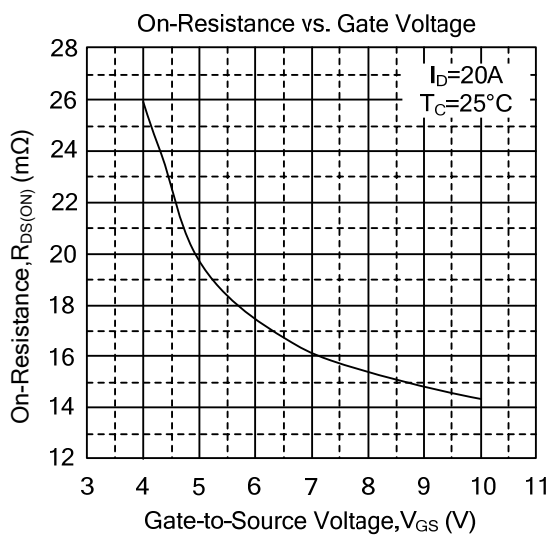
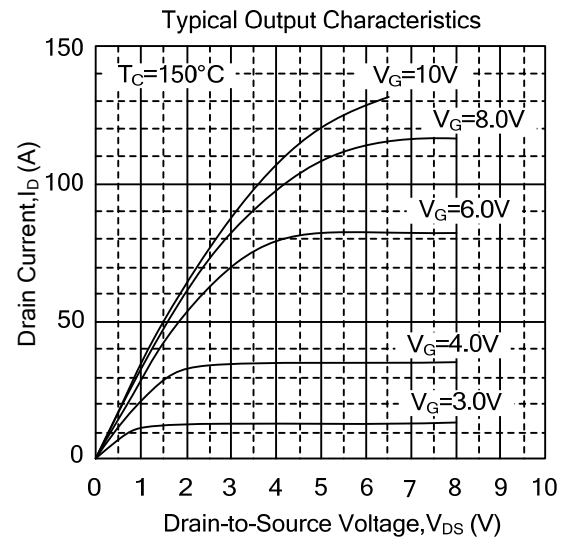
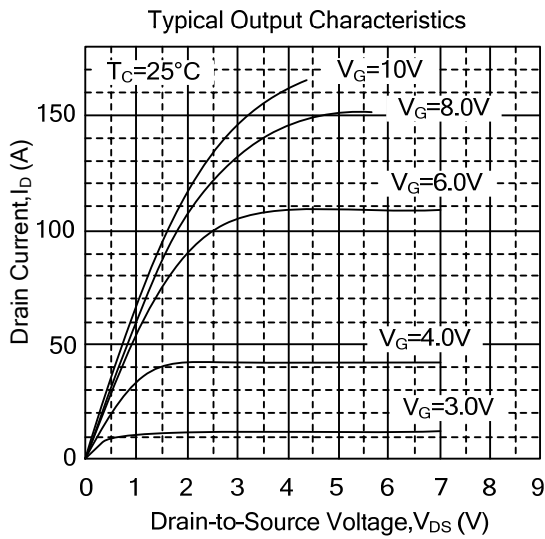
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

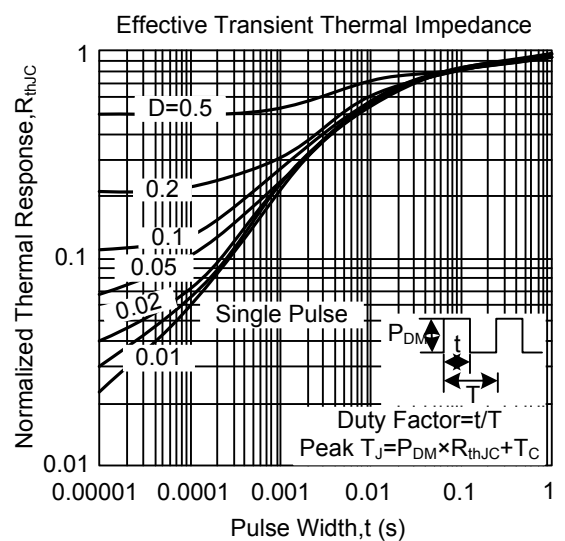
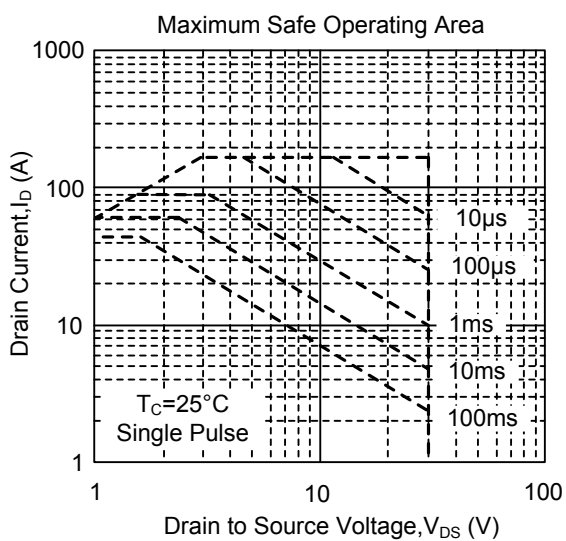
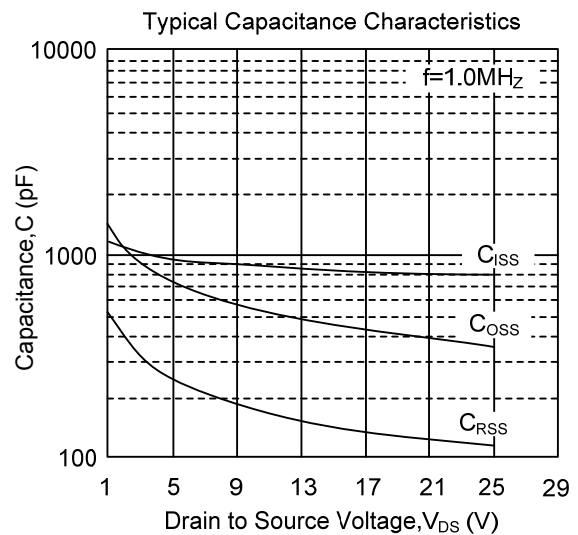
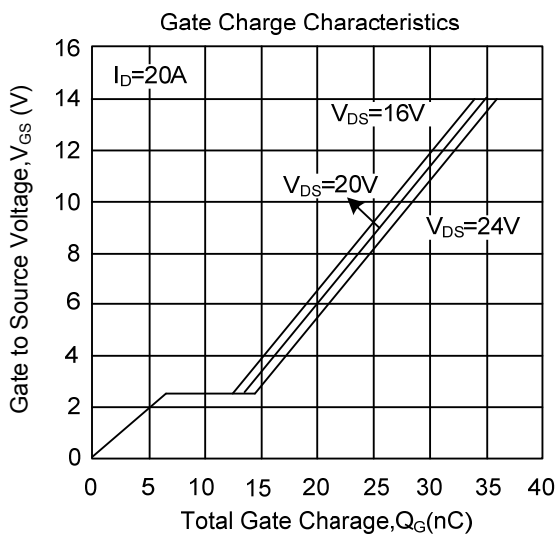
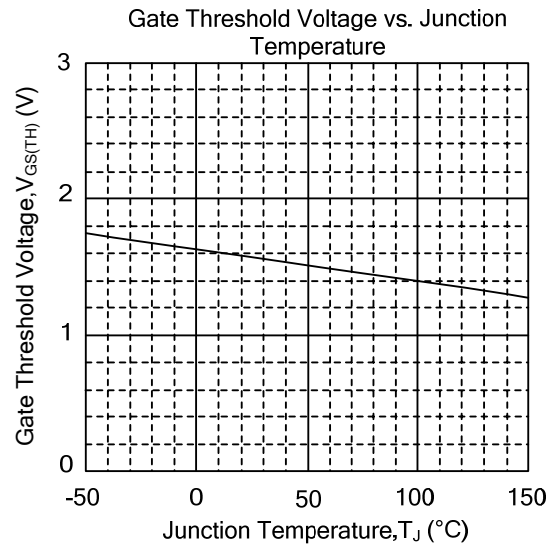
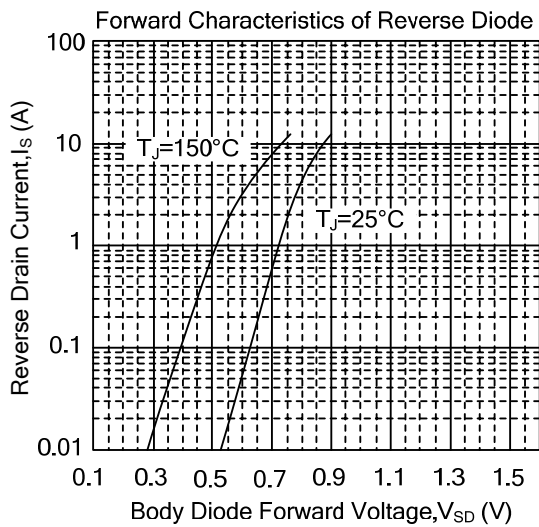
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^{\circ}\text{C}$			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+20\text{V}$			+100	nA
	Reverse		$V_{GS}=-20\text{V}$			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=20\text{A}$		14	17	m Ω
			$V_{GS}=4.5\text{V}$, $I_D=16\text{A}$		20	23	m Ω
DYNAMIC PARAMETERS							
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
SWITCHING PARAMETERS							
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
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}	$I_S=40\text{A}$, $V_{GS}=0\text{V}$, $T_J=25^{\circ}\text{C}$			1.3	V

Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
2. Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



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