



# UTT20N10

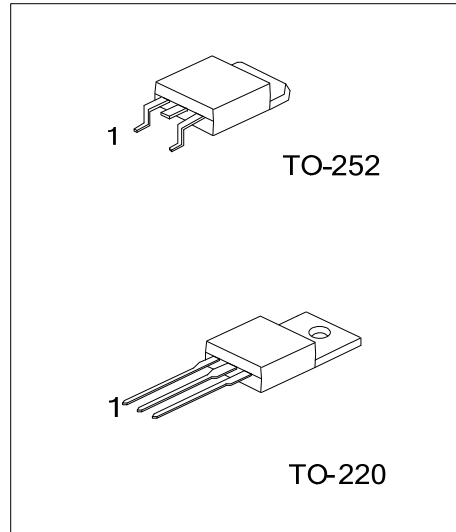
*Power MOSFET*

## 20A, 100V N-CHANNEL POWER MOSFET

■ DESCRIPTION

The UTC **UTT20N10** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

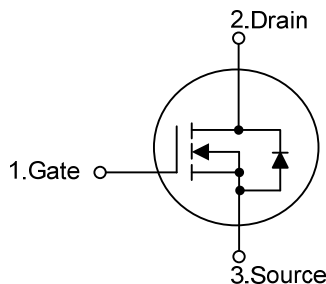
The UTC **UTT20N10** is universally applied in low voltage, such as automotive, high efficiency switching for DC/DC converters, and DC motor control.



■ FEATURES

- \*  $R_{DS(on)} < 0.12\Omega @ V_{GS} = 10V$
- \* Typically 32pF low  $C_{RSS}$
- \* High switching speed
- \* Typically 19nC low gate charge

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT20N10L-TA3-T	UTT20N10G-TA3-T	TO-220	G	D	S	Tube
UTT20N10L-TN3-R	UTT20N10G-TN3-R	TO-252	G	D	S	Tape Reel
UTT20N10L-TN3-T	UTT20N10G-TN3-T	TO-252	G	D	S	Tube

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

<p>UTT20N10L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TN3: TO-252</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	100	V
Gate-Source Voltage		$V_{GSS}$	$\pm 25$	V
Drain Current	Continuous	$I_D$	20	A
	Pulsed	$I_{DM}$	80	A
Power Dissipation	TO-220	$P_D$	62.5	W
	TO-252		50	
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +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	$\theta_{JA}$	62.5	$^\circ\text{C/W}$
	TO-252		100	
Junction to Case	TO-220	$\theta_{JC}$	2	$^\circ\text{C/W}$
	TO-252		2.5	

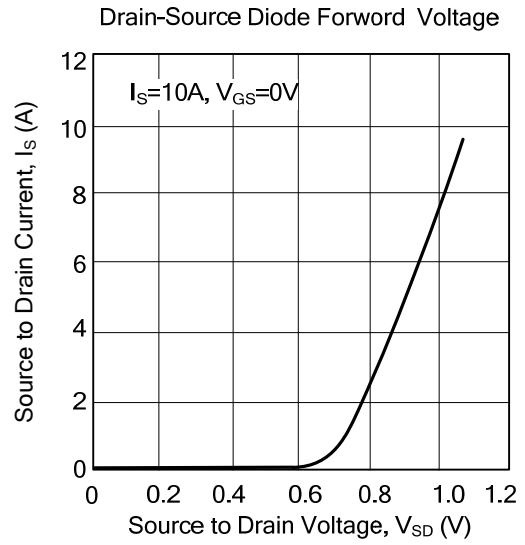
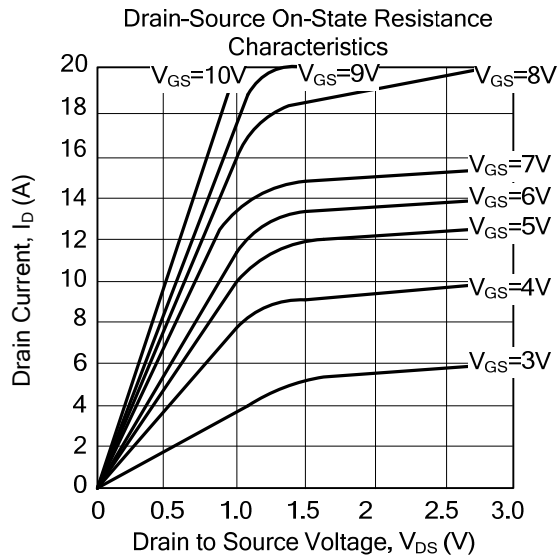
■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate- Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+25\text{V}, V_{DS}=0\text{V}$			+100	nA
	Reverse		$V_{GS}=-25\text{V}, V_{DS}=0\text{V}$			-100	nA
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$			120	m $\Omega$
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		600	780	pF
Output Capacitance		$C_{OSS}$			165	215	pF
Reverse Transfer Capacitance		$C_{RSS}$			32	40	pF
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge		$Q_G$	$V_{GS}=10\text{V}, V_{DS}=80\text{V}, I_D=19\text{A}$ (Note 1, 2)		19	25	nC
Gate to Source Charge		$Q_{GS}$			3.9		nC
Gate to Drain Charge		$Q_{GD}$			9.0		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=50\text{V}, I_D=1\text{A}, R_L=50\Omega,$ $V_{GS}=10\text{V}, R_G=25\Omega$ (Note 1, 2)		7.5	25	ns
Rise Time		$t_R$			150	310	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			20	50	ns
Fall-Time		$t_F$			65	140	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Maximum Body-Diode Continuous Current		$I_S$				20	A
Maximum Body-Diode Pulsed Current		$I_{SM}$				80	A
Drain-Source Diode Forward Voltage		$V_{SD}$	$I_S=20\text{A}, V_{GS}=0\text{V}$			1.5	V

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

2. Essentially independent of operating temperature

■ TYPICAL CHARACTERISTICS



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