



UTT20N10

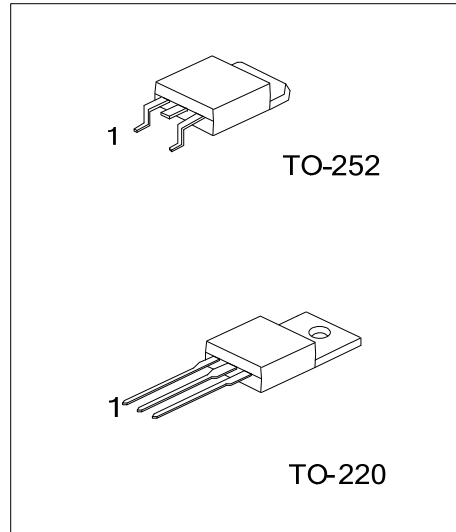
Power MOSFET

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.

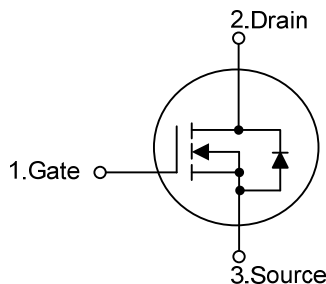
The UTC **UTT20N10** is universally applied in low voltage, such as automotive, high efficiency switching for DC/DC converters, and DC motor control.



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 (2) Package Type (3) Lead Free</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TN3: TO-252 (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}	± 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	θ_{JA}	62.5	$^\circ\text{C/W}$
	TO-252		100	
Junction to Case	TO-220	θ_{JC}	2	$^\circ\text{C/W}$
	TO-252		2.5	

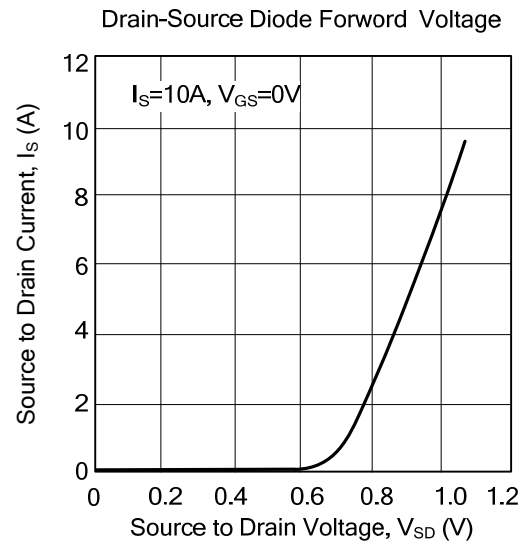
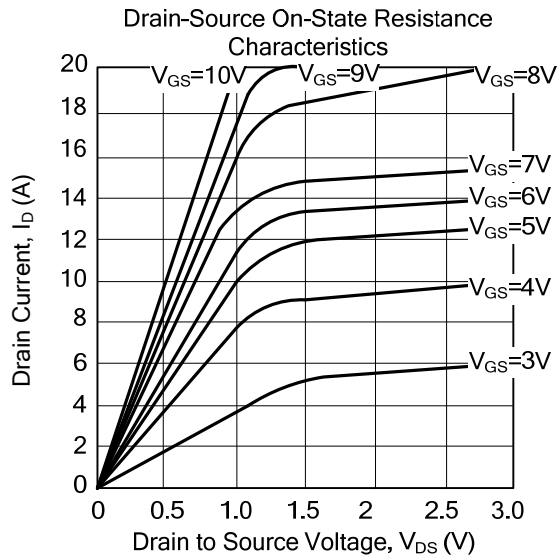
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
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	μA
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
ON CHARACTERISTICS							
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 Ω
DYNAMIC PARAMETERS							
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
SWITCHING PARAMETERS							
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
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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