



# UTT20N06

*Power MOSFET*

## 20A, 60V N-CHANNEL POWER MOSFET

■ DESCRIPTION

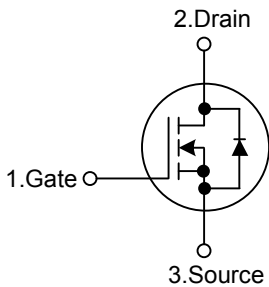
The UTC **UTT20N06** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

The UTC **UTT20N06** is universally applied in low voltage, such as automotive, high efficiency switching for DC/DC converters and DC motor control.

■ FEATURES

- \*  $R_{DS(ON)} < 46m\Omega @ V_{GS}=10V, I_D=20A$
- \* Typically 58pF low  $C_{RSS}$
- \* High switching speed
- \* Typically 21.2nC low gate charge

■ SYMBOL

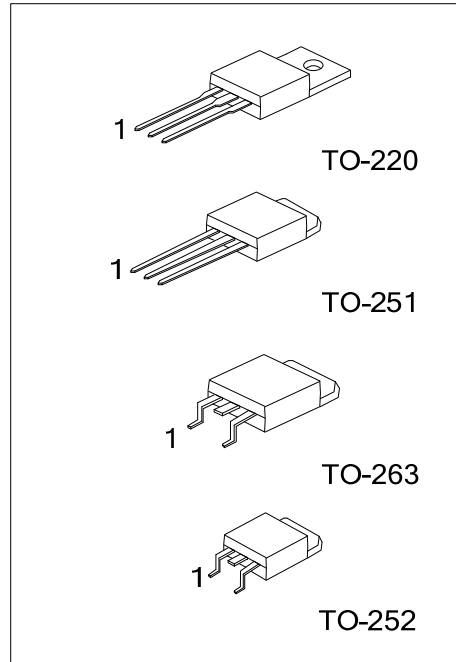


■ ORDERING INFORMATION

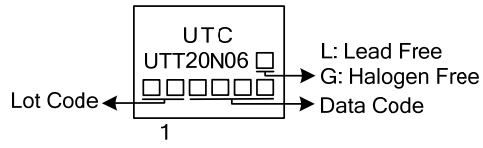
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT20N06L-TA3-T	UTT20N06G-TA3-T	TO-220	G	D	S	Tube
UTT20N06L-TM3-T	UTT20N06G-TM3-T	TO-251	G	D	S	Tube
UTT20N06L-TN3-R	UTT20N06G-TN3-R	TO-252	G	D	S	Tape Reel
UTT20N06L-TQ2-T	UTT20N06G-TQ2-T	TO-263	G	D	S	Tube
UTT20N06L-TQ2-R	UTT20N06G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UTT20N06G-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel                  (2) TA3: TO-220, TM3: TO-251, TN3: TO-252                  TQ2: TO-263                  (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



## ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	60	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	20	A
	Pulsed	$I_{DM}$	80	A
Single Pulsed Avalanche Energy		$E_{AS}$	170	mJ
Power Dissipation	TO-220/TO-263	$P_D$	89	W
	TO-251/TO-252		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	TO-220/TO-263	$\theta_{JA}$	62	$^{\circ}\text{C/W}$
	TO-251/TO-252		110	
Junction to Case	TO-220/TO-263	$\theta_{JC}$	1.4	$^{\circ}\text{C/W}$
	TO-251/TO-252		2.5	

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	60			V
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
			$V_{DS}=48\text{V}, V_{GS}=0\text{V}, T_C=125^{\circ}\text{C}$			10	$\mu\text{A}$
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+16\text{V}, V_{DS}=0\text{V}$			+100	nA
	Reverse		$V_{GS}=-16\text{V}, V_{DS}=0\text{V}$			-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		$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		37.5	46	m $\Omega$
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		725	1015	pF
Output Capacitance		$C_{OSS}$			213	300	pF
Reverse Transfer Capacitance		$C_{RSS}$			58	120	pF
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge		$Q_G$	$V_{GS}=10\text{V}, V_{DS}=30\text{V}, I_D=20\text{A}, I_G=3.33\text{mA}$		21.2	30	nC
Gate to Source Charge		$Q_{GS}$			5.6		nC
Gate to Drain Charge		$Q_{GD}$			7.3		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=30\text{V}, I_D=1\text{A}, R_G=25\Omega, V_{GS}=10\text{V}$		9.5		ns
Rise Time		$t_R$			60.5	120	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			27.1		ns
Fall-Time		$t_F$			37.1	80	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		$V_{SD}$	$I_S=20\text{A}, V_{GS}=0\text{V}$			1.2	V

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