



## UTT50P10

Preliminary

Power MOSFET

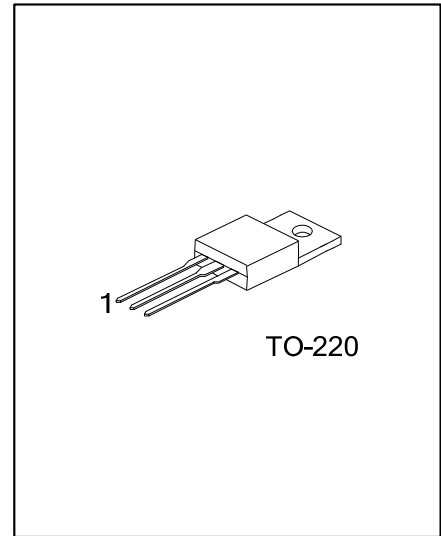
### -50A, -100V P-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **UTT50P10** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance. It can also withstand high energy in the avalanche.

#### FEATURES

- \*  $V_{DS} = -100V$
- \*  $I_D = -50A$
- \*  $R_{DS(ON)} < 60m\Omega @ V_{GS} = -10V, I_D = -20A$
- \* High Switching Speed



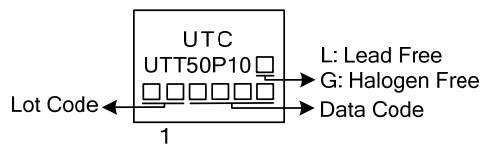
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT50P10L-TA3-T	UTT50P10G-TA3-T	TO-220	G	D	S	Tube

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

<p>UTT50P10L-TA3-T</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) T: Tube</li> <li>(2) TA3: TO-220</li> <li>(3) L: Lead Free, G: Halogen Free and Lead Free</li> </ul>
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#### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	Continuous	-50	A
	Pulsed	-90	A
Power Dissipation	$P_D$	225	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 CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	$\theta_{JC}$	0.55	$^{\circ}\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS

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	$I_{DSS}$	$V_{DS}=0.8 \times \text{Max. rating}$ , $V_{GS}=0\text{V}$ , $T_J=25^{\circ}\text{C}$			-1	$\mu\text{A}$
		$V_{DS}=0.8 \times \text{Max. rating}$ , $V_{GS}=0\text{V}$ , $T_J=125^{\circ}\text{C}$			-500	
Gate- Source Leakage Current	Forward	$I_{GSS}$				
	Reverse					
		$V_{GS}=+20\text{V}$			+100	nA
		$V_{GS}=-20\text{V}$			-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	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$ , $I_D=-20\text{A}$			60	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}$ , $I_D=-15\text{A}$			65	$\text{m}\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=-50\text{V}$ , $f=1.0\text{MHz}$		4200		pF
Output Capacitance	$C_{OSS}$			250		pF
Reverse Transfer Capacitance	$C_{RSS}$			110		pF
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-50\text{V}$ , $V_{GS}=-10\text{V}$ , $I_D=-50\text{A}$ , $R_G=1\Omega$		80	130	ns
Rise Time	$t_R$			76	130	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			740	900	ns
Fall-Time	$t_F$			200	400	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_F=-20\text{A}$ , $V_{GS}=0\text{V}$ , Pulse test, $t_s \leq 300\mu\text{s}$ , duty cycle $d \leq 2\%$		-1.0	-1.5	V
Body Diode Reverse Recovery Time	$t_{RR}$	$T_J=25^{\circ}\text{C}$ , $I_F=-20\text{A}$ , $V_R=-50\text{V}$ , $di/dt=-100\text{A}/\mu\text{s}$		80	120	ns

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