



# 7P30

**POWER MOSFET**

## 6.0A, 300V, SWITCHING P-CHANNEL POWER MOSFET

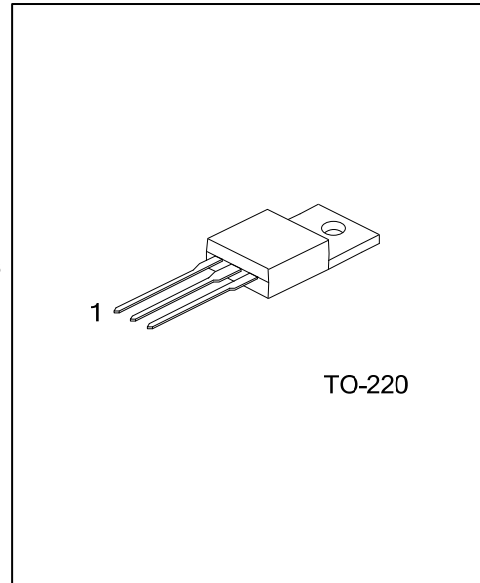
■ DESCRIPTION

The UTC **7P30** is a P-channel MOS Field Effect Transistor. it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

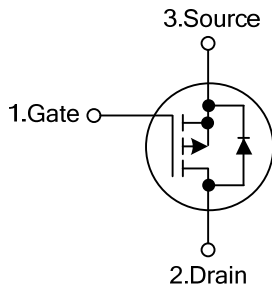
The UTC **7P30** is suitable for high voltage switching applications.

■ FEATURES

- \*  $R_{DS(ON)} < 1\Omega$  @  $V_{GS} = -10V, I_D = -3.0A$
- \* High switching speed
- \* Low input capacitance



■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
7P30L-TA3-T	7P30G-TA3-T	TO-220	G	D	S	Tube

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

<p>7P30L-TA3-T</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Lead Free</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</li> </ul>
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■ MARKING INFORMATION

PACKAGE	MARKING
TO-220	<p>UTC 7P30</p> <p>Lot Code ← [ ] → Data Code</p> <p>1</p> <p>L: Lead Free G: Halogen Free</p>

■ ABSOLUTE MAXIMUM RATING ( $T_A=25^\circ\text{C}$ )

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	-300	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_{D(DC)}$	-6.0	A
	Pulsed (Note 2)	$I_{D(pulse)}$	-24	A
Single Avalanche Current (Note 3)		$I_{AS}$	-6.0	A
Single Avalanche Energy (Note 3)		$E_{AS}$	180	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	$P_{D1}$	35	W
	$T_A=25^\circ\text{C}$	$P_{D2}$	2.0	W
Channel Temperature		$T_{CH}$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55~+150	$^\circ\text{C}$

Notes: 1. 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.

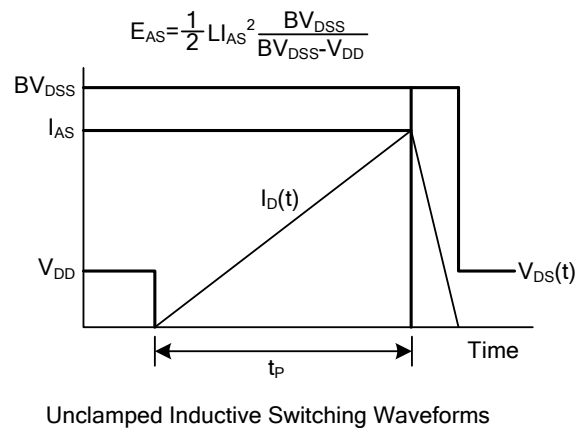
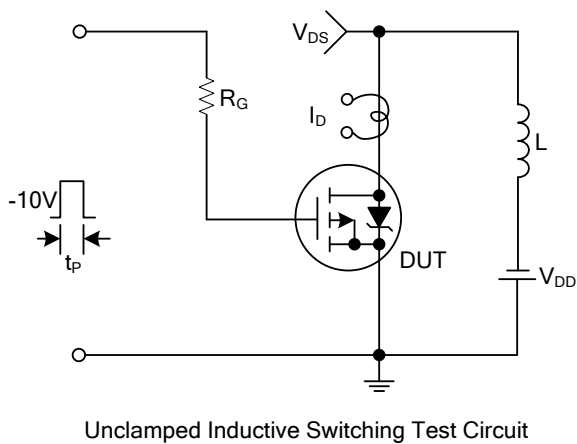
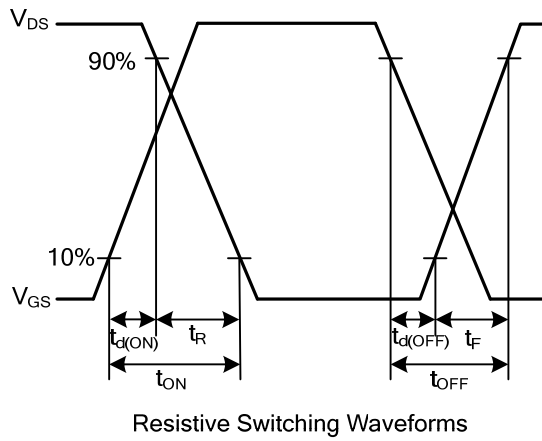
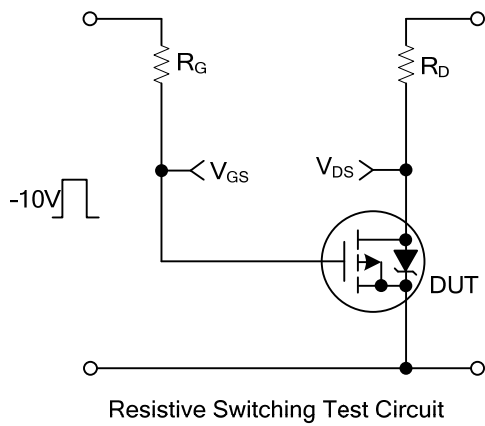
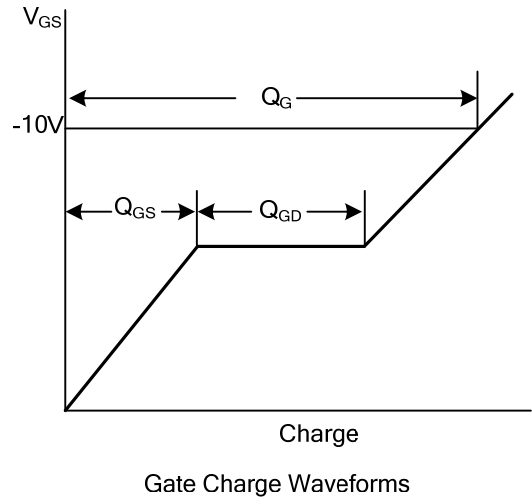
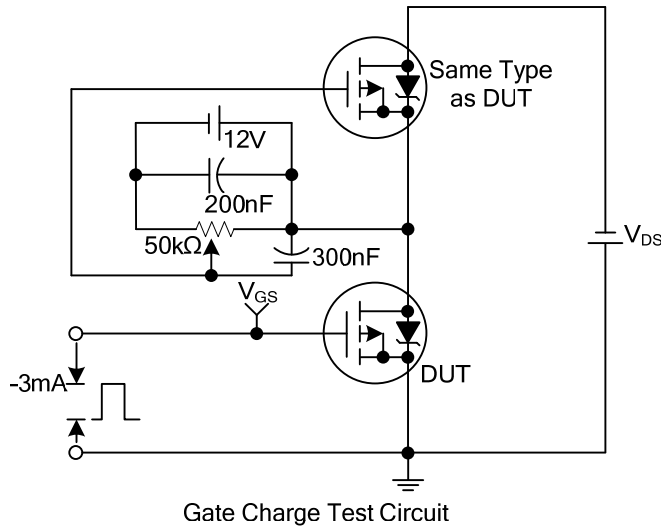
2.  $P_w \leq 10\mu\text{s}$ , Duty cycle  $\leq 1\%$ .

3. Starting  $T_{CH}=25^\circ\text{C}$ ,  $R_G=25\Omega$ ,  $V_{GS}=-20\text{V} \rightarrow 0$ .

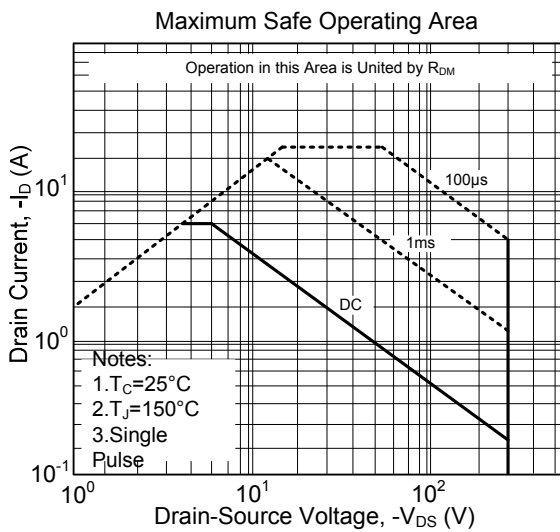
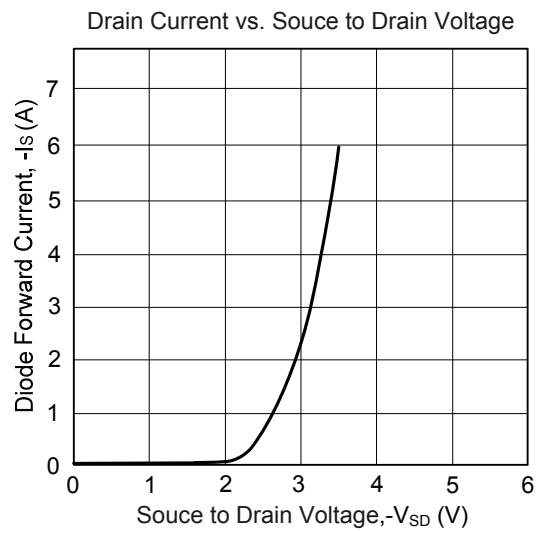
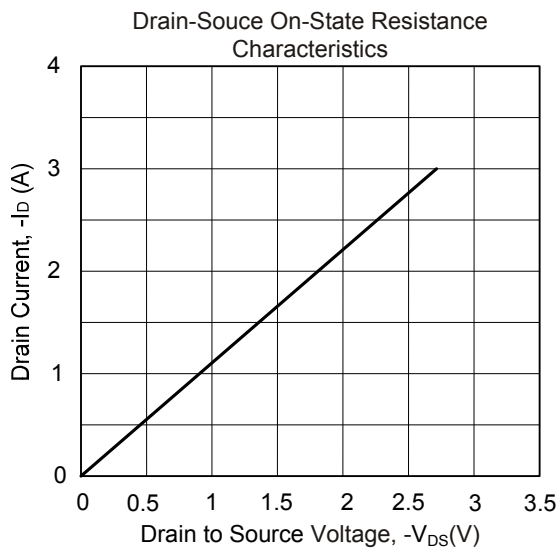
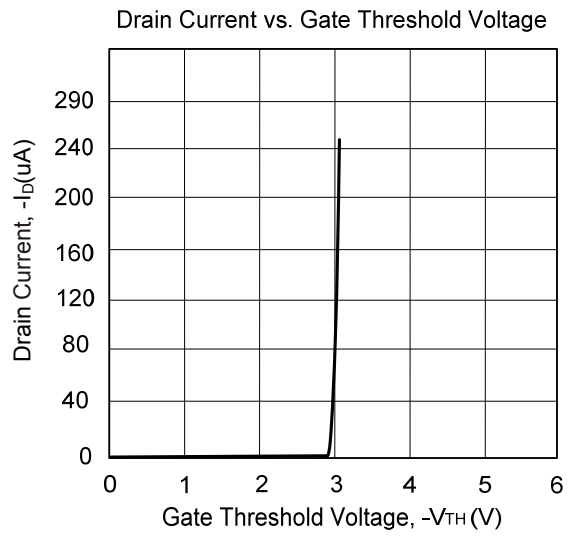
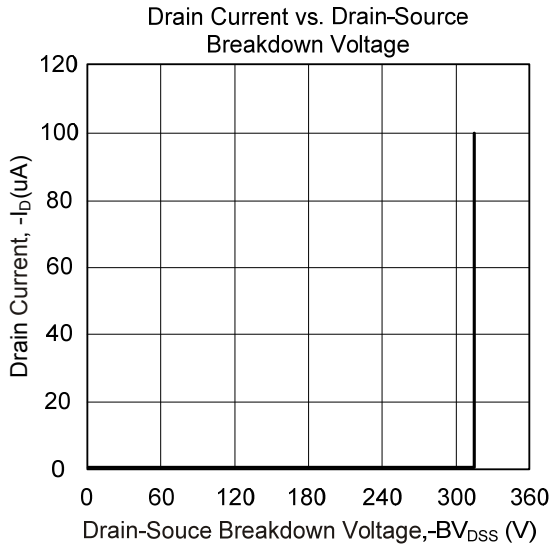
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>								
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=-300\text{V}$ , $V_{GS}=0\text{V}$			-1.0	$\mu\text{A}$	
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+30\text{V}$ , $V_{DS}=0\text{V}$			+100	nA	
	Reverse		$V_{GS}=-30\text{V}$ , $V_{DS}=0\text{V}$			-100	nA	
<b>ON CHARACTERISTICS</b>								
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=-250\mu\text{A}$	-2.0		-4.5	V	
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=-10\text{V}$ , $I_D=-3.0\text{A}$			1	$\Omega$	
<b>DYNAMIC PARAMETERS</b>								
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=-10\text{V}$ , $f=1.0\text{MHz}$		1040		pF	
Output Capacitance		$C_{OSS}$				360		pF
Reverse Transfer Capacitance		$C_{RSS}$				70		pF
<b>SWITCHING PARAMETERS</b>								
Total Gate Charge		$Q_G$	$V_{GS}=-10\text{V}$ , $V_{DD}=-200\text{V}$ , $I_D=-6.0\text{A}$		23.1		nC	
Gate to Source Charge		$Q_{GS}$				7.1		nC
Gate to Drain Charge		$Q_{GD}$				12.9		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=-125\text{V}$ , $V_{GS(ON)}=-10\text{V}$ , $I_D=-3.0\text{A}$ , $R_G=10\Omega$ , $R_L=42\Omega$		24		ns	
Rise Time		$t_R$				16		ns
Turn-OFF Delay Time		$t_{D(OFF)}$				47		ns
Fall-Time		$t_F$				14		ns
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>								
Diode Forward Voltage		$V_{SD}$	$I_F=-6.0\text{A}$ , $V_{GS}=0\text{V}$		3.4		V	
Body Diode Reverse Recovery Time		$t_{RR}$	$I_F=-6.0\text{A}$ , $V_{GS}=0\text{V}$ , $di/dt=50\text{A}/\mu\text{s}$		155		ns	
Body Diode Reverse Recovery Charge		$Q_{RR}$				930		nC

■ TEST CIRCUITS AND WAVEFORMS



■ TYPICAL CHARACTERISTICS



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