



## UTC606P-H

Preliminary

Power MOSFET

### -6A, -12V, P-CHANNEL 1.8V TRENCH MOSFET

#### DESCRIPTION

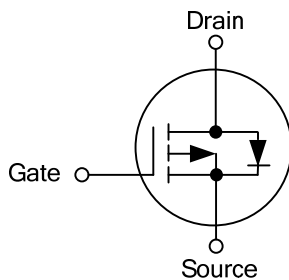
The UTC **UTC606P-H** is a P-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and high switching speed.

The UTC **UTC606P-H** is suitable for battery management, load switch and battery protection.

#### FEATURES

- \*  $R_{DS(ON)} < 26m\Omega @ V_{GS} = -4.5V, I_D = -6A$
- \*  $R_{DS(ON)} < 35m\Omega @ V_{GS} = -2.5V, I_D = -5A$
- \*  $R_{DS(ON)} < 53m\Omega @ V_{GS} = -1.8V, I_D = -4A$
- \* High switching speed
- \* High performance trench technology for extremely low  $R_{DS(ON)}$

#### SYMBOL



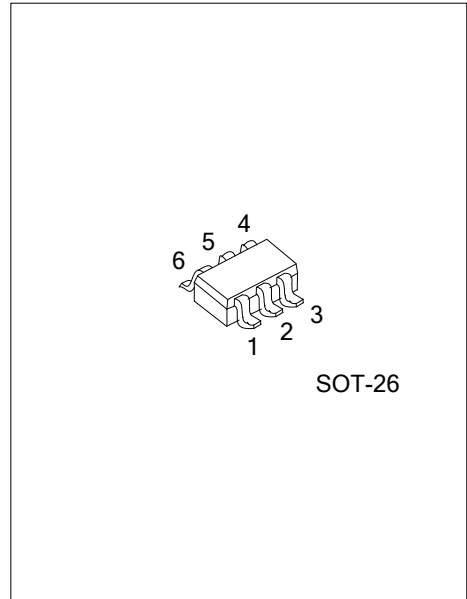
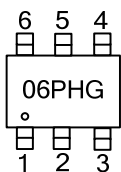
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
UTC606PG-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UTC606PG-AG6-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AG6: SOT-26</p> <p>(3) G: Halogen Free and Lead Free</p>
--	---

#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	-12	V
Gate-Source Voltage	$V_{GSS}$	$\pm 8$	V
Drain Current	Continuous (Note 2)	$I_D$	-6
	Pulsed	$I_{DM}$	-20
Power Dissipation	$P_D$	300	mW
Junction Temperature	$T_J$	-55~+150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-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 Ambient	$\theta_{JA}$	380	$^\circ\text{C/W}$
Junction-to-Case	$\theta_{JC}$	110	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=-250\mu\text{A}$ , $V_{GS}=0\text{V}$	-12			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	$I_D=-250\mu\text{A}$ , Referenced to $25^\circ\text{C}$		-3		$\text{mV}/^\circ\text{C}$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-10\text{V}$ , $V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	Forward	$V_{GS}=+8\text{V}$ , $V_{DS}=0\text{V}$			100	nA
	Reverse	$V_{GS}=-8\text{V}$ , $V_{DS}=0\text{V}$			-100	nA
<b>ON CHARACTERISTICS (Note)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=-250\mu\text{A}$	-0.4	-0.5	-1.5	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta BV_{GS(th)}}{\Delta T_J}$	$I_D=-250\mu\text{A}$ , Referenced to $25^\circ\text{C}$		2.5		$\text{mV}/^\circ\text{C}$
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}$ , $I_D=-6\text{A}$		21	26	$\text{m}\Omega$
		$V_{GS}=-2.5\text{V}$ , $I_D=-5\text{A}$		26	35	$\text{m}\Omega$
		$V_{GS}=-1.8\text{V}$ , $I_D=-4\text{A}$		34	53	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}$ , $I_D=-6\text{A}$ , $T_J=125^\circ\text{C}$		28	35	$\text{m}\Omega$
On State Drain Current	$I_{D(ON)}$	$V_{GS}=-4.5\text{V}$ , $V_{DS}=-5\text{V}$	-20			A
Forward Transconductance	$g_{FS}$	$V_{DS}=-5\text{V}$ , $I_D=-6\text{A}$		25		S
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=-6\text{V}$ , $f=1.0\text{MHz}$		1699		pF
Output Capacitance	$C_{OSS}$			679		pF
Reverse Transfer Capacitance	$C_{RSS}$			423		pF
<b>SWITCHING PARAMETERS (Note)</b>						
Total Gate Charge	$Q_G$	$V_{GS}=-4.5\text{V}$ , $V_{DS}=-6\text{V}$ , $I_D=-6\text{A}$		18	25	nC
Gate to Source Charge	$Q_{GS}$			3		nC
Gate to Drain Charge	$Q_{GD}$			4.2		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=-4.5\text{V}$ , $V_{DD}=-6\text{V}$ , $I_D=-1\text{A}$ , $R_{GEN}=6\Omega$		11	19	ns
Rise Time	$t_R$			10	20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			89	142	ns
Fall-Time	$t_F$			70	112	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				-1.3	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=-1.3\text{A}$ , $V_{GS}=0\text{V}$ (Note)		-0.6	-1.2	V

Note: Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2.0\%$

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.