



**UTC606P-H**

Preliminary

*Power MOSFET*

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

■ DESCRIPTION

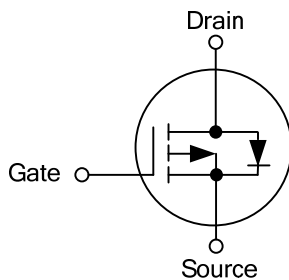
The UTC **UTC606P-H** is a P-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and high switching speed.

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



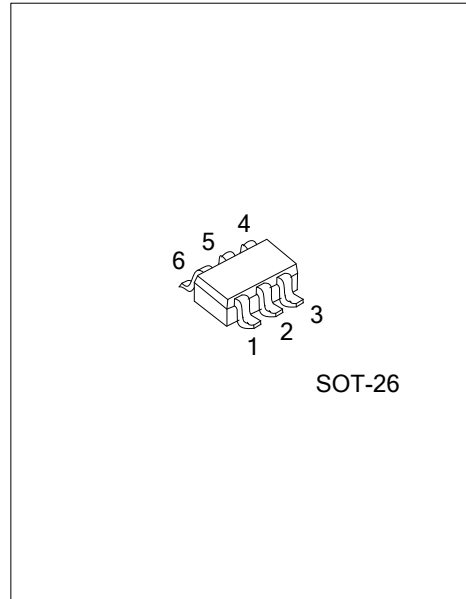
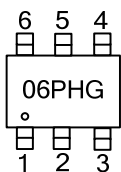
■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
UTC606PG-AG6-R	SOT-26	D	D	G	D	D	S	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>
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■ 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	A
	Pulsed	$I_{DM}$	-20	A
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	$^{\circ}\text{C}/\text{W}$
Junction-to-Case	$\theta_{JC}$	110	$^{\circ}\text{C}/\text{W}$

■ 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  $\leq 2.0\%$

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