



UTC606P-H

Preliminary

Power MOSFET

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

DESCRIPTION

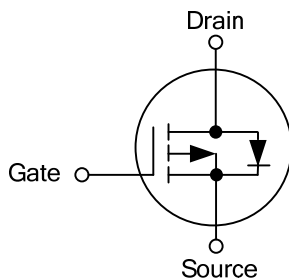
The UTC **UTC606P-H** is a P-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and high switching speed.

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



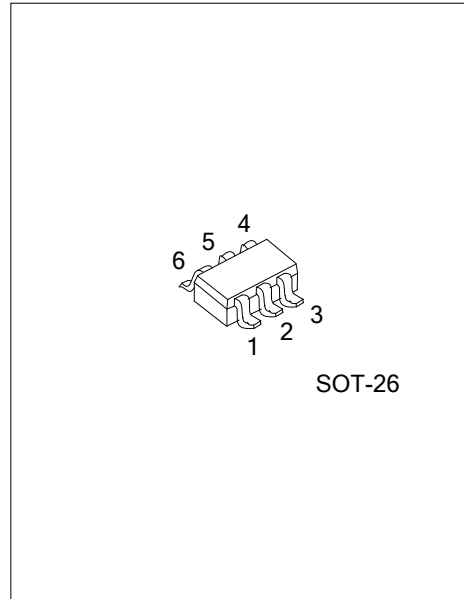
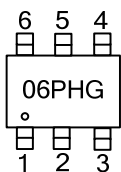
ORDERING INFORMATION

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

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



SOT-26

■ 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}	± 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	θ_{JA}	380	$^{\circ}\text{C}/\text{W}$
Junction-to-Case	θ_{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
STATIC PARAMETERS						
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°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	μA
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
ON CHARACTERISTICS (Note)						
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°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
DYNAMIC PARAMETERS						
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
SWITCHING PARAMETERS (Note)						
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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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