

**UTM3006-H**

Preliminary

POWER MOSFET**81A, 30V N-CHANNEL FAST SWITCHING MOSFET****DESCRIPTION**

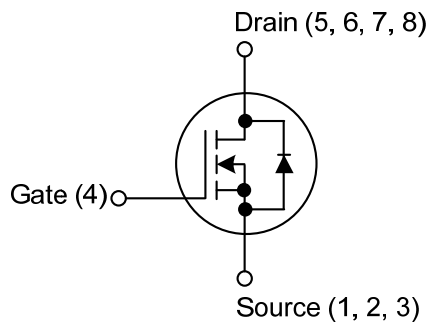
The UTC **UTM3006-H** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance and low gate charge.

The UTC **UTM3006-H** is suitable for load switch and networking DC-DC power system, etc.

FEATURES

* $R_{DS(ON)} < 5.5m\Omega$ @ $V_{GS}=10V$, $I_D=30A$

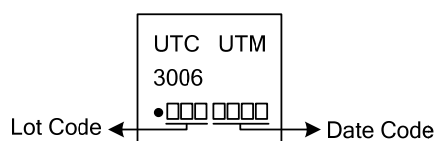
* Super low gate charge

SYMBOL**ORDERING INFORMATION**

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UTM3006G-K08-5060-R	DFN-8(5×6)	S	S	S	G	D	D	D	D	Tape Reel

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

UTM3006G-K08-5060-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) K08-5060: DFN-8(5×6) (3) G: Halogen Free and Lead Free
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MARKING

■ ABSOLUTE MAXIMUM RATING

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current	Continuous	V _{GS} =10V, T _C =25°C (Note 2)	I _D	81	A
		V _{GS} =10V, T _C =100°C (Note 2)		51	A
		V _{GS} =10V, T _A =25°C (Note 2)		15	A
		V _{GS} =10V, T _A =70°C (Note 2)		12	A
	Pulsed (Note 3)		I _{DM}	160	A
Single Pulse Avalanche Energy (Note 4)			E _{AS}	252	mJ
Avalanche Current			I _{AS}	48	A
Total Power Dissipation (Note 5)		T _C =25°C	P _D	59	W
		T _A =25°C		2	W
Operating Junction Temperature Range			T _J	-55~+150	°C
Storage Temperature Range			T _{STG}	-55~+150	°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. The data tested by surface mounted on a 1 inch² FR-4 board with 2 OZ copper

3. The data tested by pulsed, pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$

4. The EAS data shows Max. rating. The test condition is $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=48A$

5. The power dissipation is limited by $150^{\circ}C$ junction temperature

■ THERMAL RESISTANCE (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	$^{\circ}C/W$
Junction to Case	θ_{JC}	2.1	$^{\circ}C/W$

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	30			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, $I_D=1mA$		0.028		V/°C
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=24V, V_{GS}=0V, T_J=25^\circ C$			1	μA
			$V_{DS}=24V, V_{GS}=0V, T_J=55^\circ C$			5	μA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$			100	nA
	Reverse		$V_{GS}=-20V, V_{DS}=0V$			-100	nA
ON CHARACTERISTICS							
Static Drain-Source On-State Resistance (Note 2)		$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$		4.5	5.5	mΩ
			$V_{GS}=4.5V, I_D=15A$		7.5	9	mΩ
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.5	2.5	V
$V_{GS(TH)}$ Temperature Coefficient		$\Delta V_{GS(TH)}$			-6.16		mV/°C
Forward Transconductance		g_{FS}	$V_{DS}=5V, I_D=30A$		43		S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$		750		pF
Output Capacitance		C_{OSS}			170		pF
Reverse Transfer Capacitance		C_{RSS}			115		Pf
Gate Resistance		R_G	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$		1.7	2.9	Ω
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	$V_{DS}=30V, V_{GS}=10V, I_D=1A$ $I_G=100\mu A$		122		nC
Gate to Source Charge		Q_{GS}			2		nC
Gate to Drain Charge		Q_{GD}			8.5		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=30V, I_D=0.5A, R_G=25\Omega$ $V_{GS}=10V$		20		ns
Rise Time		t_R			60		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			360		ns
Fall Time		t_F			315		ns
GUARANTEED AVALANCHE CHARACTERISTICS							
Single Pulse Avalanche Energy (Note 3)		E_{AS}	$V_{DD}=25V, L=0.1mH, I_{AS}=24A$	63			mJ
DIODE CHARACTERISTICS							
Continuous Source Current (Note 1, 4)		I_S	$V_G=V_D=0V$, Force Current			81	A
Pulsed Source Current (Note 2, 4)		I_{SM}				160	A
Diode Forward Voltage (Note 4)		V_{SD}	$T_J=25^\circ C, I_S=1A, V_{GS}=0V$			1	V
Reverse Recovery Time		t_{RR}	$I_F=30A, dI/dt=100A/\mu s, T_J=25^\circ C$		14		nS
Reverse Recovery Charge		Q_{RR}			5		nC

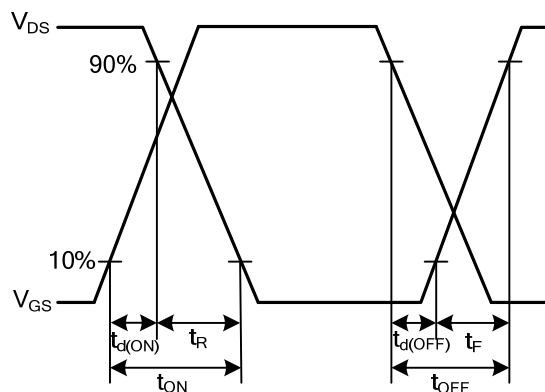
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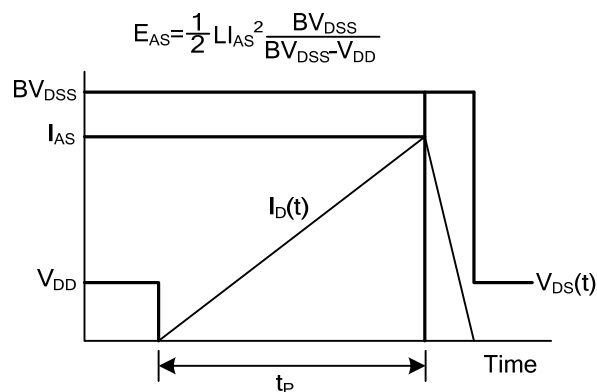
3. The Min. value is 100% EAS tested guarantee

4. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation

■ TEST CIRCUITS AND WAVEFORMS



Resistive Switching Waveforms



Unclamped Inductive Switching Waveforms

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