



UTM3006-H

Preliminary

POWER MOSFET

81A, 30V N-CHANNEL FAST SWITCHING MOSFET

DESCRIPTION

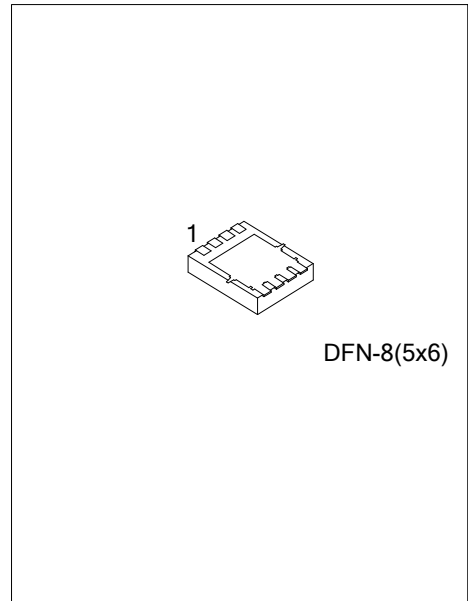
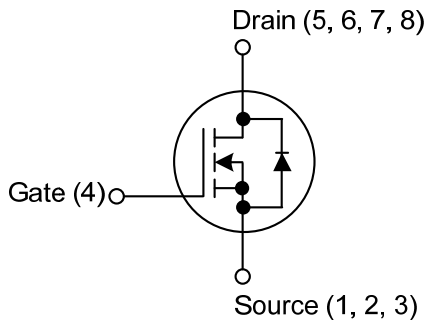
The UTC **UTM3006-H** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance and low gate charge.

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



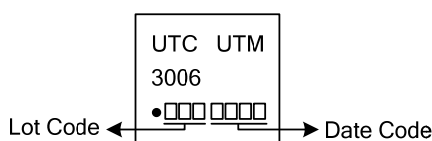
ORDERING INFORMATION

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UTM3006G-K08-5060-R	DFN-8(5x6)	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTM3006G-K08-5060-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) K08-5060: DFN-8(5x6)</p> <p>(3) G: Halogen Free and Lead Free</p>
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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	I_D	$V_{GS}=10V, T_C=25^\circ C$ (Note 2)	81	A
			$V_{GS}=10V, T_C=100^\circ C$ (Note 2)	51	A
			$V_{GS}=10V, T_A=25^\circ C$ (Note 2)	15	A
			$V_{GS}=10V, T_A=70^\circ C$ (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)	$T_C=25^\circ C$	P_D	59	W	
	$T_A=25^\circ C$		2	W	
Operating Junction Temperature Range		T_J	-55~+150	$^\circ C$	
Storage Temperature Range		T_{STG}	-55~+150	$^\circ C$	

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.

- The data tested by surface mounted on a 1 inch² FR-4 board with 2 OZ copper
- The data tested by pulsed, pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$
- The EAS data shows Max. rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=48A$
- 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°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	30			V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _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°C			1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =55°C			5	μA
Gate-Source Leakage Current	Forward	I _{GSS}			100	nA
	Reverse					
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 =250μA	1.2	1.5	2.5	V
V _{GS(TH)} Temperature Coefficient	ΔV _{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 =100μA		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 =25Ω 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°C, I _S =1A, V _{GS} =0V			1	V
Reverse Recovery Time	t _{RR}	I _F =30A, dI/dt=100A/μs, T _J =25°C		14		nS
Reverse Recovery Charge	Q _{RR}				5	

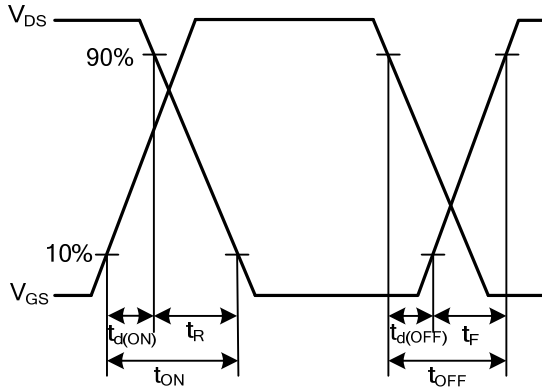
Notes: 1. The data tested by surface mounted on a 1 inch² FR-4 board with 2 OZ copper

2. The data tested by pulsed, pulse width ≤ 300μs; duty cycle ≤ 2%

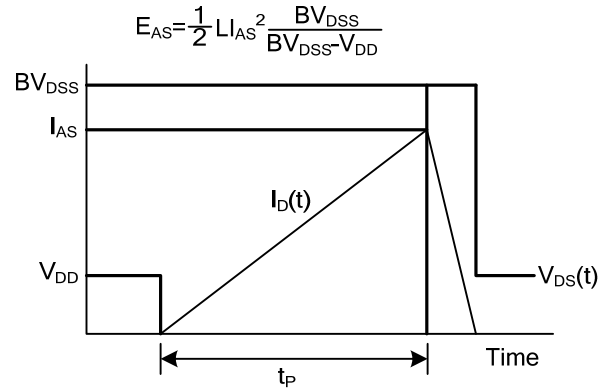
3. The Min. value is 100% EAS tested guarantee

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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