

**UTM3052-H**

Preliminary

POWER MOSFET**62A, 30V N-CHANNEL FAST SWITCHING MOSFET****DESCRIPTION**

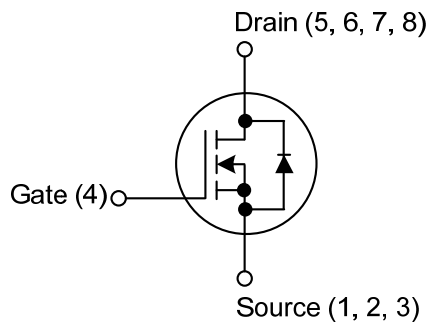
The UTC **UTM3052-H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance and low gate charge.

The UTC **UTM3052-H** is suitable for load switch and networking DC-DC power system, etc.

FEATURES

* $R_{DS(ON)} < 8.0m\Omega$ @ $V_{GS}=10V$, $I_D=30A$

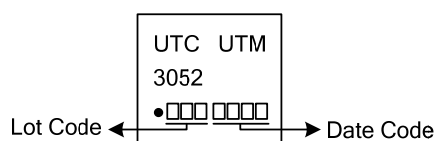
* Super low gate charge

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTM3052L-K08-5060-R	UTM3052G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

UTM3052G-K08-5060-R		(1)Packing Type	(1) R: Tape Reel
		(2)Package Type	(2) K08-5060: DFN5060-8
		(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

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	$V_{GS}=10V, T_C=25^{\circ}C$ (Note 2, 6)	I_D	62	A
		$V_{GS}=10V, T_C=100^{\circ}C$ (Note 2)		40	A
		$V_{GS}=10V, T_A=25^{\circ}C$ (Note 2)		13.1	A
		$V_{GS}=10V, T_A=70^{\circ}C$ (Note 2)		10.5	A
	Pulsed (Note 3)		I_{DM}	150	A
Avalanche Energy Single Pulse (Note 4)			E_{AS}	69	mJ
Avalanche Current			I_{AS}	37	A
Total Power Dissipation (Note 5)		$T_C=25^{\circ}C$	P_D	46.3	W
		$T_A=25^{\circ}C$		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 $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=37A$

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

6. Package limitation current is 85A

■ THERMAL RESISTANCE (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	$^{\circ}C/W$
Junction to Case	θ_{JC}	2.7	$^{\circ}C/W$

■ **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 =250μA, V _{GS} =0V	30			V
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA		0.01		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}	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		6.4	8.0	mΩ
			V _{GS} =4.5V, I _D =15A		10	12.5	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		Δ V _{GS(TH)}			-3.1		mV/°C
Forward Transconductance		g _{FS}	V _{DS} =5V, I _D =30A		41		S
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		600		pF
Output Capacitance		C _{OSS}			120		pF
Reverse Transfer Capacitance		C _{RSS}			70		Pf
Gate Resistance		R _G	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		3.9	5.8	Ω
SWITCHING PARAMETERS							
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			48		ns
Turn-OFF Delay Time		t _{D(OFF)}			165		ns
Fall Time		t _F			170		ns
Total Gate Charge		Q _G	I _D =1A, V _{DS} =30V, V _{GS} =10V I _G =100μA		60		nC
Gate to Source Charge		Q _{GS}			1.0		nC
Gate to Drain ("Miller") Charge		Q _{GD}			5.5		nC
GUARANTEED AVALANCHE CHARACTERISTICS							
Single Pulse Avalanche Energy (Note 3)		E _{AS}	V _{DD} =25V, L=0.1mH, I _{AS} =30A	45			mJ
DIODE CHARACTERISTICS							
Continuous Source Current (Note 1, 4)		I _S	V _G =V _D =0V, Force Current			62	A
Pulsed Source Current (Note 2, 4)		I _{SM}				150	A
Diode Forward Voltage (Note 2)		V _{SD}	T _J =25°C, I _S =1A, V _{GS} =0V			1	V

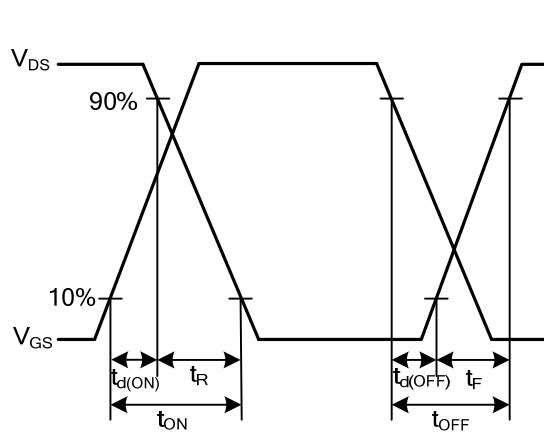
Notes: 1. The data tested by surface mounted on a 1 inch² FR-4 board with 2 OZ copper

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

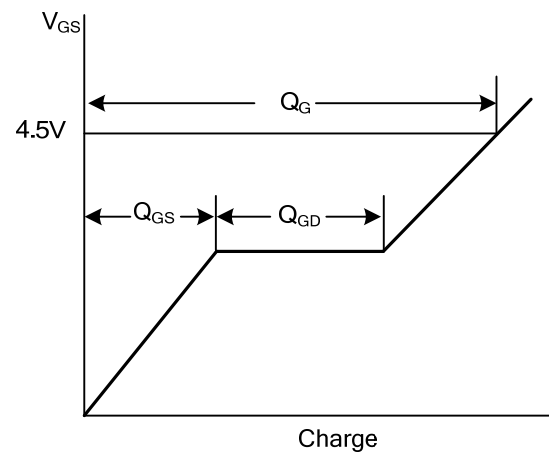
3. The Min. value is 100% EAS tested guarantee

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

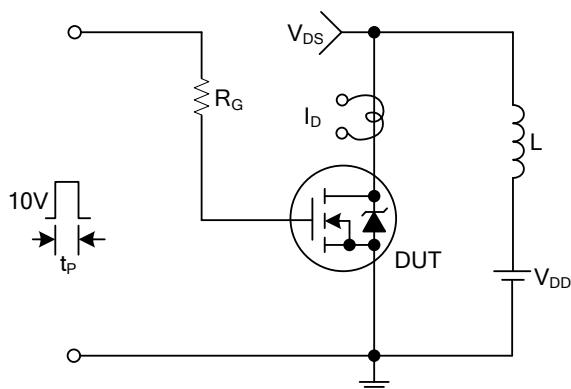
■ TEST CIRCUITS AND WAVEFORMS



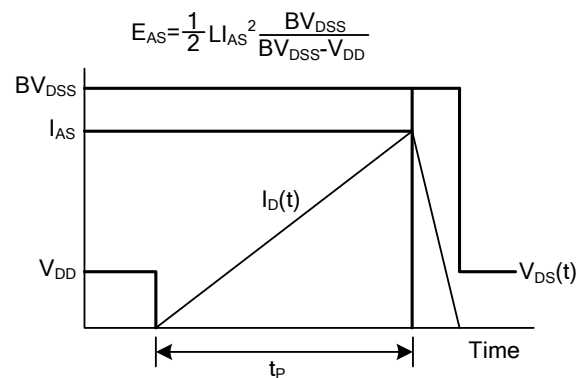
Resistive Switching Waveforms



Gate Charge Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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.