UNISONIC TECHNOLOGIES CO., LTD

UTM3052-H

Preliminary

POWER MOSFET

62A, 30V N-CHANNEL FAST SWITCHING MOSFET

■ DESCRIPTION

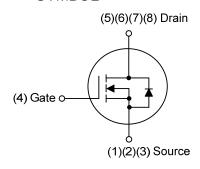
The UTC **UTM3052-H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance and low gate charge.

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

■ FFATURES

- * $R_{DS(ON)} \le 8.0 \text{ m}\Omega$ @ $V_{GS}=10V$, $I_{D}=30A$
- * Super low gate charge

■ SYMBOL



■ ORDERING INFORMATION

Note: Pin Assignment: G: Gate

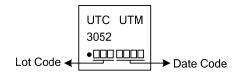
Ordering Number		Dookogo	Pin Assignment							Daakina	
Lead Free	Halogen Free	Package	1	2	3	4	5	6	7	8	Packing
UTM3052L-P5060-R	UTM3052G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

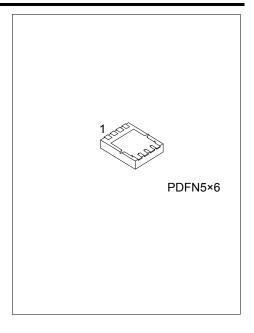
UTM3052G-P5060-R
(1)Packing Type
(1) R: Tape Reel
(2) P5060: PDFN5×6
(3) Green Package
(3) G: Halogen Free and Lead Free, L: Lead Free

S: Source

D: Drain

MARKING





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ABSOLUTE MAXIMUM RATING

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V	
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current		V _{GS} =10V, T _C =25°C (Note 2, 6)		62	Α
	Continuous	V _{GS} =10V, T _C =100°C (Note 2)		40	Α
	Continuous	V _{GS} =10V, T _A =25°C (Note 2)	l _D	13.1	Α
		V _{GS} =10V, T _A =70°C (Note 2)		10.5	Α
	Pulsed (Not	e 3)	I _{DM}	150	Α
Avalanche Energy Single Pulse (Note 4)			E _{AS}	69	mJ
Avalanche Current			I _{AS}	37	Α
Total Power Dissipation		T _C =25°C	0	46.3	W
(Note 5)		T _A =25°C	- P _D	2	W
Operating Junction Temperature Range			TJ	-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 μ 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°C junction temperature
- 6. Package limitation current is 85A

■ THERMAL RESISTANCE (Note 2)

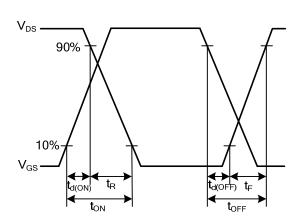
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	°C/W
Junction to Case	θјς	2.7	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J = 25°C, unless otherwise noted)

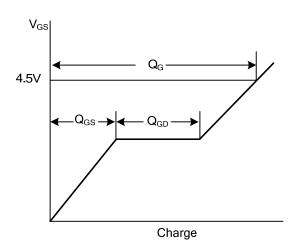
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							,
Drain-Source Breakdown Voltage		BV_{DSS}	I_D =250 μ A, V_{GS} =0 V	30			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_{J}$	Reference to 25°C, I _D =1mA		0.01		V/°C
Drain-Source Leakage Current			V _{DS} =24V, V _{GS} =0V, T _J =25°C			1	μΑ
		I _{DSS}	V _{DS} =24V, V _{GS} =0V, T _J =55°C			5	μΑ
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V, V _{DS} =0V			100	nA
Rev	erse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS	· ·						-ā
Static Drain-Source On-State Resi	Static Drain-Source On-State Resistance		V_{GS} =10V, I_D =30A		6.4	8.0	mΩ
(Note 2)		$R_{DS(ON)}$	V _{GS} =4.5V, I _D =15A		10	12.5	mΩ
Gate Threshold Voltage		$V_{GS(TH)}$	\\ -\\ -250\	1.2	1.5	2.5	V
V _{GS(TH)} Temperature Coefficient		$\Delta V_{GS(TH)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu A$		-3.1		mV/°C
Forward Transconductance		g FS	V_{DS} =5V, I_D =30A		41		S
DYNAMIC PARAMETERS							
Input Capacitance	ut Capacitance				600		pF
Output Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		120		pF
Reverse Transfer Capacitance	verse Transfer Capacitance				70		Pf
Sate Resistance		R_G	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		3.9	5.8	Ω
SWITCHING PARAMETERS							
otal Gate Charge		Q_{G}	1 44 1/ 201/1/ 401/		60		nC
Gate to Source Charge		Q_GS	I _D =1A, V _{DS} =30V, V _{GS} =10V		1.0		nC
Gate to Drain ("Miller") Charge		Q_GD	I _G =100μA		5.5		nC
Turn-ON Delay Time		t _{D(ON)}			20		ns
Rise Time	ise Time		V_{DD} =30V, I_{D} =0.5A, R_{G} =25 Ω		48		ns
Turn-OFF Delay Time			V _{GS} =10V		165		ns
Fall Time		$rac{t_{D(OFF)}}{t_{F}}$			170		ns
GUARANTEED AVALANCHE CHA	RACTI	ERISTICS			•		
Single Pulse Avalanche Energy (No	te 3)	E _{AS}	V _{DD} =25V, L=0.1mH, I _{AS} =30A	45			mJ
DIODE CHARACTERISTICS	•						
Continuous Source Current (Note 1, 4)		Is	\\ -\\ -0\\ Fare 0:			62	Α
Pulsed Source Current (Note 2, 4)		I _{SM}	V _G =V _D =0V, Force Current			150	Α
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							

- 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 $\leq 300 \mu s$; 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

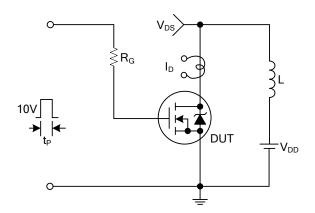
■ TEST CIRCUITS AND WAVEFORMS



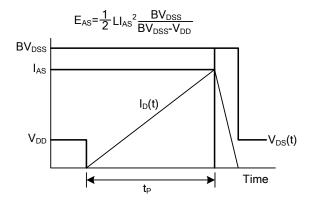
Resistive Switching Waveforms



Gate Charge Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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