

# **UTC** UNISONIC TECHNOLOGIES CO., LTD

**UTT8P03** 

#### **Power MOSFET**

#### -8A, -30V **P-CHANNEL POWER MOSFET**

#### DESCRIPTION

The UTC UTT8P03 is a P-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, etc.

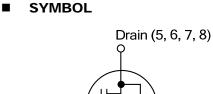
The UTC UTT8P03 is suitable for battery switches, load switches and power management, etc.

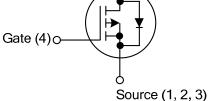
#### **FEATURES**

\*  $R_{DS(ON)}$  < 33 m $\Omega$  @  $V_{GS}$ =-10V,  $I_D$ =-8.0A

 $R_{DS(ON)} < 51 \text{ m}\Omega @ V_{GS} = -4.5 \text{V}, I_D = -8.0 \text{A}$ 

#### \* Low R<sub>DS(ON)</sub>





# TO-252

#### **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing	
Lead Free	Halogen Free			3	Facking		
UTT8P03L-TN3-R	UTT8P03G-TN3-R	TO-252	G	D	S	Tape Reel	
Note: Pin Assignment: G: G	•				· · · · ·		
Note:       Pin Assignment: G: Gate       D: Drain       S: Source         UTT8P03G-TN3-R       (1)Packing Type       (1) R: Tape Reel         (2)Package Type       (2)Package Type       (2) TN3: TO-252         (3)Green Package       (3) G: Halogen Free and Lead Free, L: Lead Free						ad Free	
■ MARKING UTC UTC L: Lead Free G: Halogen Free Data Code 1 Www.unisonic.com.tw Copyright @ 2017 Unisonic Technologies Co. Ltd							
<u>www.unisonic.com.tw</u> Copyright © 2017 Unisonic Technologies Co., Ltd				1 of 5 QW-R210-063.A			
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#### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V <sub>DSS</sub>	-30	V	
Gate-Source Voltage	V <sub>GSS</sub>	±20	V	
Continuous Drain Current	I <sub>D</sub>	-8	A	
Pulsed Drain Current (t=300µs)	I <sub>DM</sub>	-32	A	
Avalanche Energy, Single Pulsed (Note 3)	E <sub>AS</sub>	22	mJ	
Peak Diode Recovery dv/dt (Note4)	dv/dt	1.85	V/ns	
Power Dissipation	PD	41	W	
Junction Temperature	TJ	+150	°C	
Storage Temperature Range	T <sub>STG</sub>	-50 ~+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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. L=-0.1mH, I<sub>AS</sub>=-21A, V<sub>DD</sub>=-25V, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C

4.  $I_{SD} \leq -8A$ , di/dt  $\leq 200A/\mu s$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J=25^{\circ}C$ 

#### THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	$\theta_{JA}$	60	°C/W	
Junction to Case	θ <sub>JC</sub>	3.04	°C/W	

Note: The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.

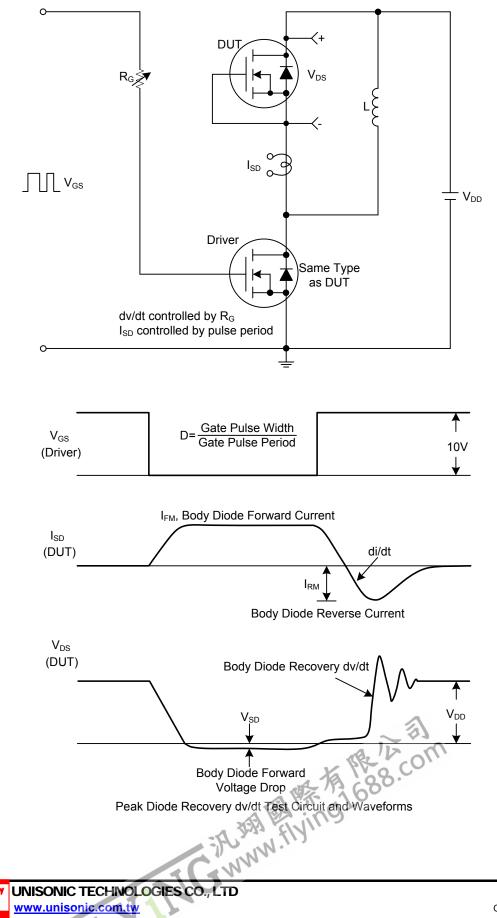
#### ELECTRICAL CHARACTERISTICS (TJ=25°C, unless otherwise specified)

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PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =-250μΑ, V <sub>GS</sub> =0V	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+100	nA
Reverse		V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-100	nA
ON CHARACTERISTICS					_	
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0		-3.0	V
Static Drain-Source On-State	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-8.0A			33	mΩ
Resistance (Note 1)		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-8.0A			51	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	CISS			1200		pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, f=1.0MHz		185		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			115		pF
SWITCHING PARAMETERS				-		
Total Gate Charge (Note 1)	$Q_{G}$	-V <sub>GS</sub> =-4.5V, V <sub>DD</sub> =-24V, I <sub>D</sub> =-8A		12.5		nC
Gate to Source Charge	Q <sub>GS</sub>	$I_{G}=1$ mA (Note 1, 2)		3.8		nC
Gate to Drain Charge	$Q_{GD}$	$I_{G}$ = IIIA (Note 1, 2)		5.7		nC
Turn-ON Delay Time (Note 1)	t <sub>D(ON)</sub>			8		ns
Rise Time	t <sub>R</sub>	V <sub>GS</sub> =-4.5V, V <sub>DD</sub> =-15V, I <sub>D</sub> =-8A		17		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>	R <sub>G</sub> =25Ω (Note 1, 2)		70		ns
Fall-Time	t⊨	1		41		ns
SOURCE- DRAIN DIODE RATINGS AN	D CHARACT	ERISTICS				
Continuous Source-Drain Diode Current	ls	TR. CO	D//.		-8	Α
Pulse Diode Forward Current	I <sub>SM</sub>	10.08.			-32	Α
Body Diode Voltage (Note 1)	$V_{\text{SD}}$	Is=-8A,VGS=0V			-1.5	V
Reverse Recovery Time (Note 1)	trr	V <sub>GS</sub> =0V, I <sub>S</sub> =-8A, dI⊧/dt=-100A/µs		170		nC
Reverse Recovery Charge	Qrr	vgs−uv, isoA, ui⊧/ui100A/µs		250		nS
Notoe: 1. Pulso tost: pulso width $\leq 300$ us	duty avala	20/ 11/1				

Notes: 1. Pulse test; pulse width ≤ 300µs, duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

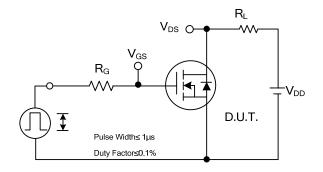
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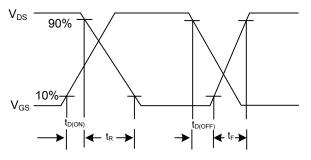
#### TEST CIRCUITS AND WAVEFORMS



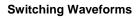
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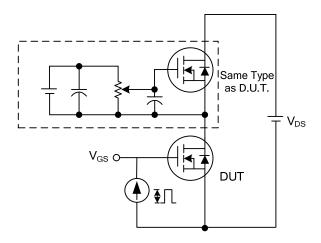
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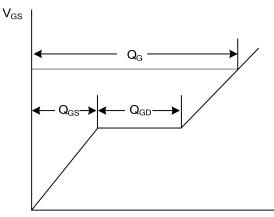






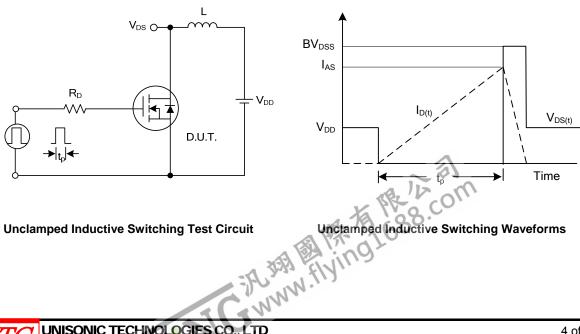


**Gate Charge Test Circuit** 



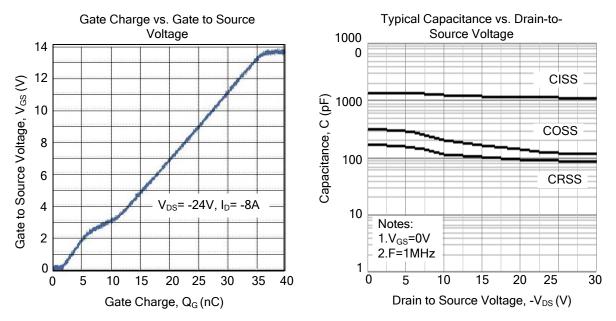
Charge





# **UTT8P03**

#### TYPICAL CHARACTERISTICS



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