



UTT14P02

Preliminary

Power MOSFET

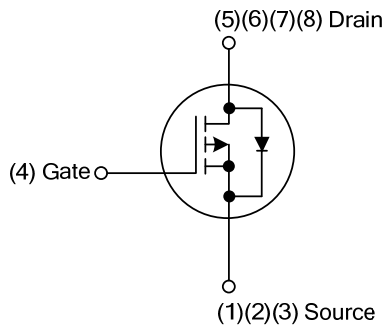
**-8A, -20V P-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UTT14P02** is a P-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low gate charge, etc.

The UTC **UTT14P02** is suitable for load switch and battery protection applications.

FEATURES

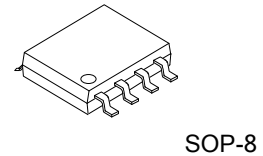
- * $R_{DS(ON)} \leq 8.5 \text{ m}\Omega$ @ $V_{GS} = -4.5\text{V}$, $I_D = -8.0\text{A}$
- * $R_{DS(ON)} \leq 12 \text{ m}\Omega$ @ $V_{GS} = -2.5\text{V}$, $I_D = -5.0\text{A}$
- * $R_{DS(ON)} \leq 17 \text{ m}\Omega$ @ $V_{GS} = -1.8\text{V}$, $I_D = -3.0\text{A}$
- * Improved dv/dt capability
- * Fast switching
- * Suit for -1.8V gate drive applications

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT14P02L-S08-R	UTT14P02G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

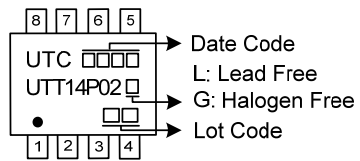
Note: Pin Assignment: S: Source G: Gate D: Drain

UTT14P02G-S08-R	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) S08: SOP-8
	(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free



SOP-8

■ MARKING



■ **ABSOLUTE MAXIMUM RATINGS** ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	-20	V
Gate-Source Voltage			V _{GSS}	±12	V
Drain Current	Continuous	T _C = 25°C	I _D	-14	A
		T _C = 100°C		-8.8	A
	Pulsed (Note 2)		I _{DM}	-56	A
Power Dissipation (T _A = 25°C)			P _D	2	W
Junction Temperature			T _J	+150	°C
Storage Temperature			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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. $L=0.1\text{mH}$, $I_{AS}=65\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\ \Omega$, Starting $T_J = 25^\circ\text{C}$

■ **THERMAL DATA**

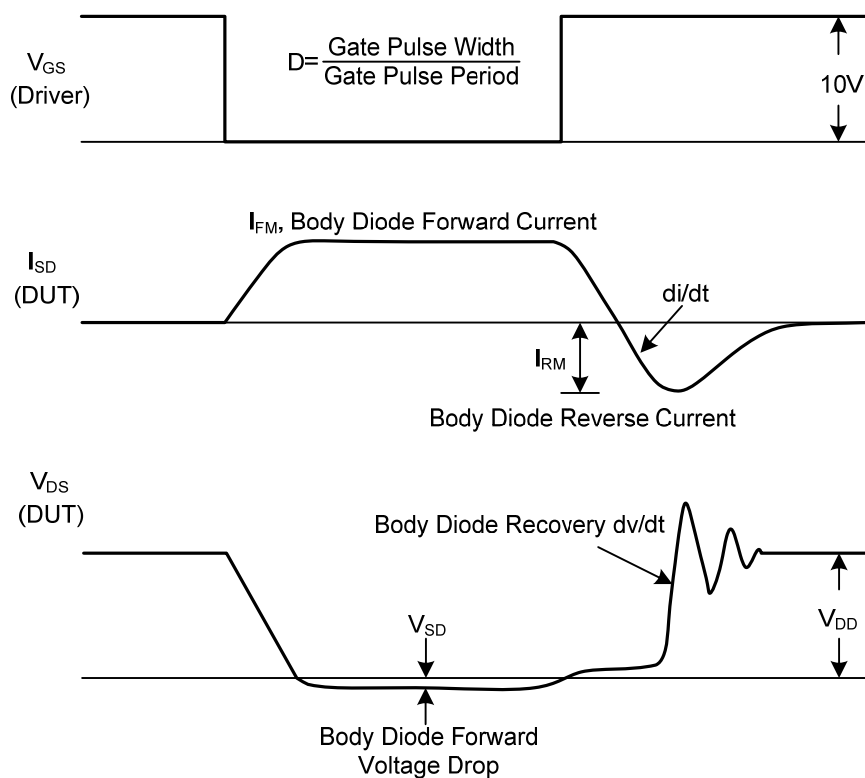
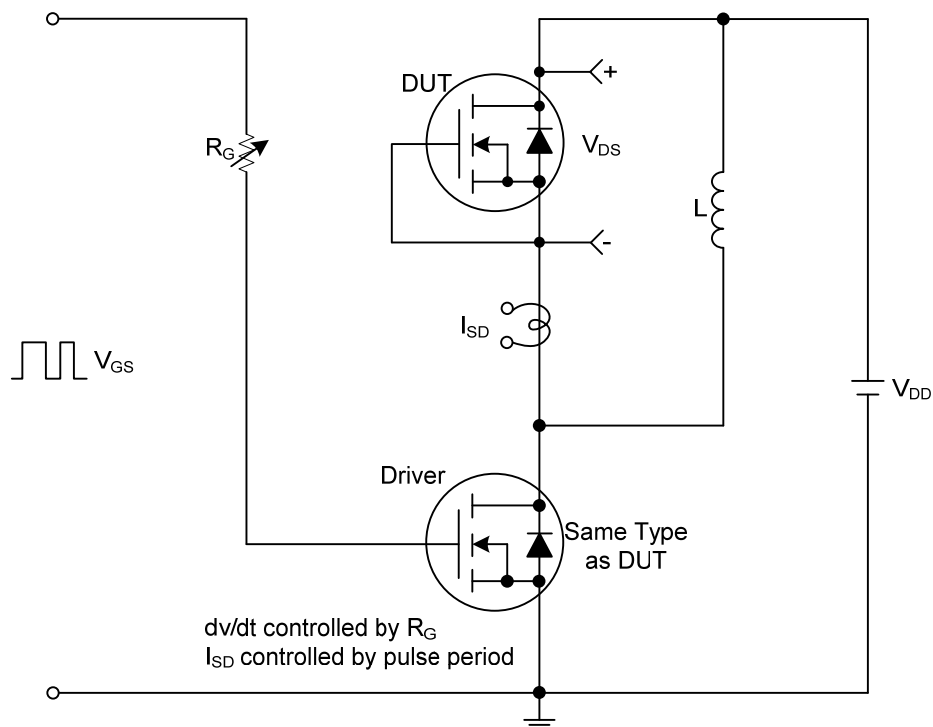
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	17	$^\circ\text{C/W}$

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

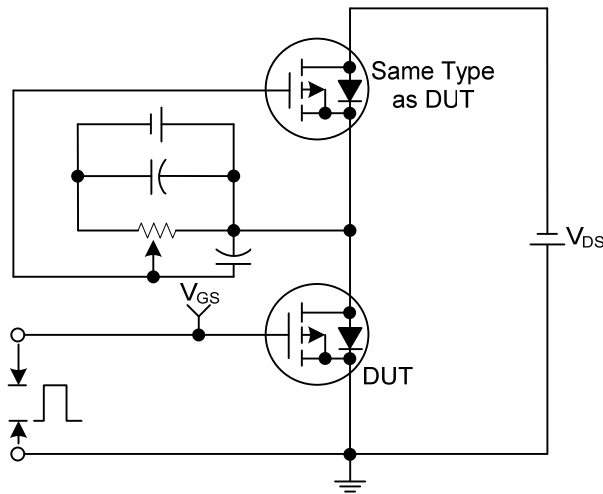
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =-250μA, V _{GS} =0V	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-0.3	-0.6	-1.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-8.0A		6.5	8.5	mΩ
		V _{GS} =-2.5V, I _D =-5.0A		9.0	12	mΩ
		V _{GS} =-1.8V, I _D =-3.0A		12	17	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-15V, f=1.0MHz		4060		pF
Output Capacitance	C _{OSS}			520		pF
Reverse Transfer Capacitance	C _{RSS}			400		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-5A		44.4		nC
Gate to Source Charge	Q _{GS}			7.2		nC
Gate to Drain Charge	Q _{GD}			10.2		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =-10V, V _{GS} =-4.5V, I _D =-1A, R _G =25Ω		13.2		ns
Turn-ON Rise Time	t _R			68		ns
Turn-OFF Delay Time	t _{D(OFF)}			160		ns
Turn-OFF Fall-Time	t _F			154		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				-14	A
Maximum Body-Diode Pulsed Current	I _{SM}				-28	A
Diode Forward Voltage	V _{SD}	I _S =-1A, V _{GS} =0V			-1	V

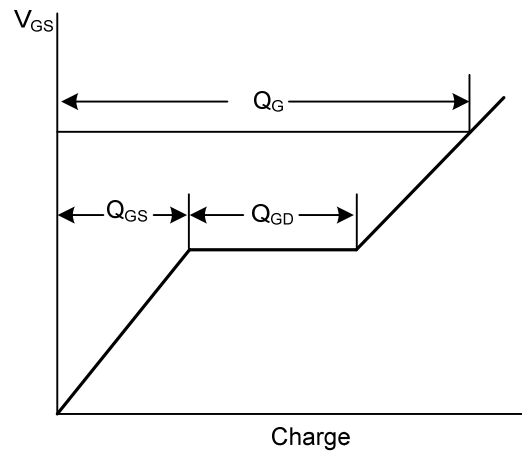
■ TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit and Waveforms

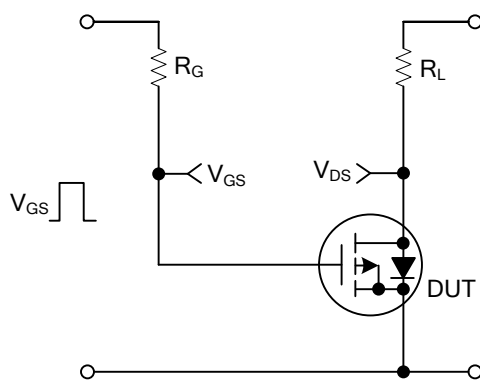
■ TEST CIRCUITS AND WAVEFORMS



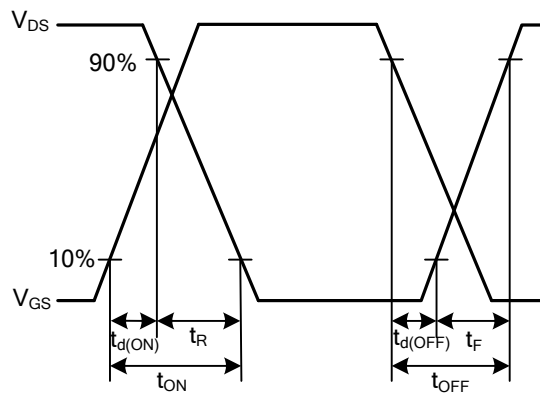
Gate Charge Test Circuit



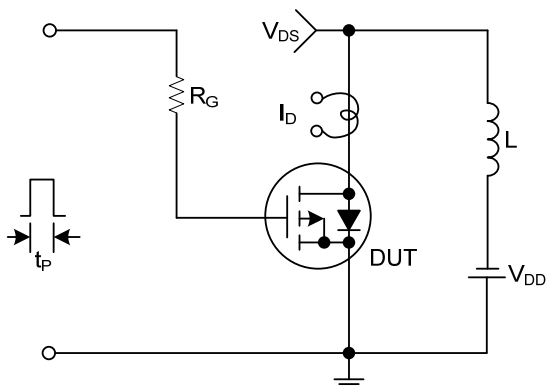
Gate Charge Waveforms



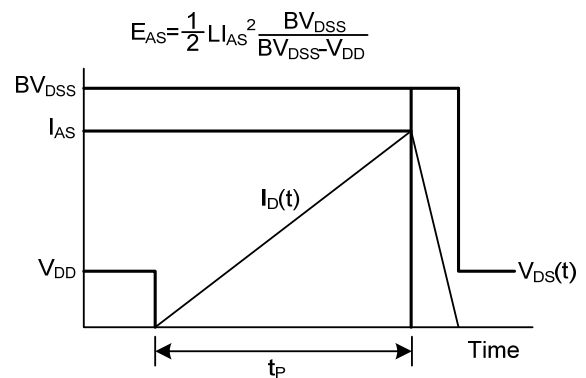
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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