

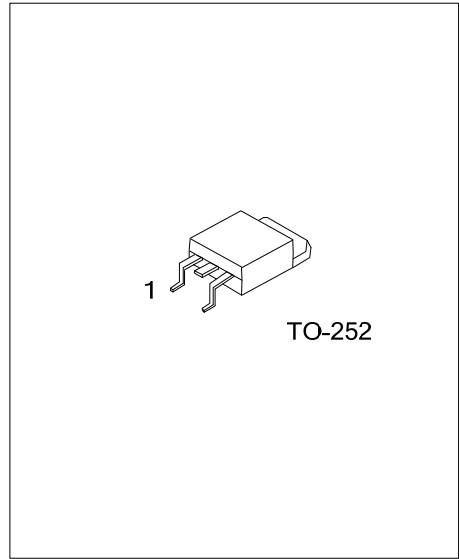


UTT50P06-H

Preliminary

Power MOSFET

**-35A, -60V P-CHANNEL (D-S)
POWER MOSFET**



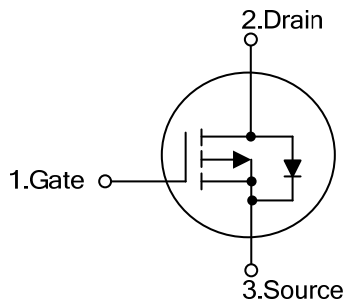
■ DESCRIPTION

The UTC **UTT50P06-H** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance, and withstand high energy pulse in the avalanche and commutation mode. The UTC **UTT50P06-H** well suited for high efficiency fast switching applications.

■ FEATURES

- * $R_{DS(ON)} < 30m\Omega @ V_{GS} = -10V, I_D = -8.0A$
- * $R_{DS(ON)} < 40m\Omega @ V_{GS} = -4.5V, I_D = -6.0A$
- * Fast switching
- * Green Device Available
- * Suit for -4.5V Gate Drive Applications

■ SYMBOL



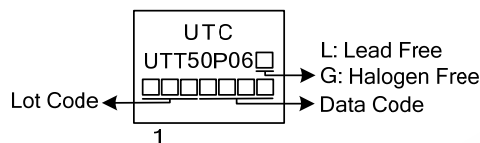
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT50P06L-TN3-R	UTT50P06G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UTT50P06G-TN3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
------------------------	---

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_c=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V _{DSS}	-60	V	
Gate-Source Voltage		V _{GSS}	±20	V	
Drain Current	Continuous	I _D	T _C =25°C	-35	A
			T _C =100°C	-22.1	A
Pulsed		I _{DM}	-140	A	
Power Dissipation		P _D	72.6	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.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	62	°C/W
Junction to Case	θ _{JC}	1.72	°C/W

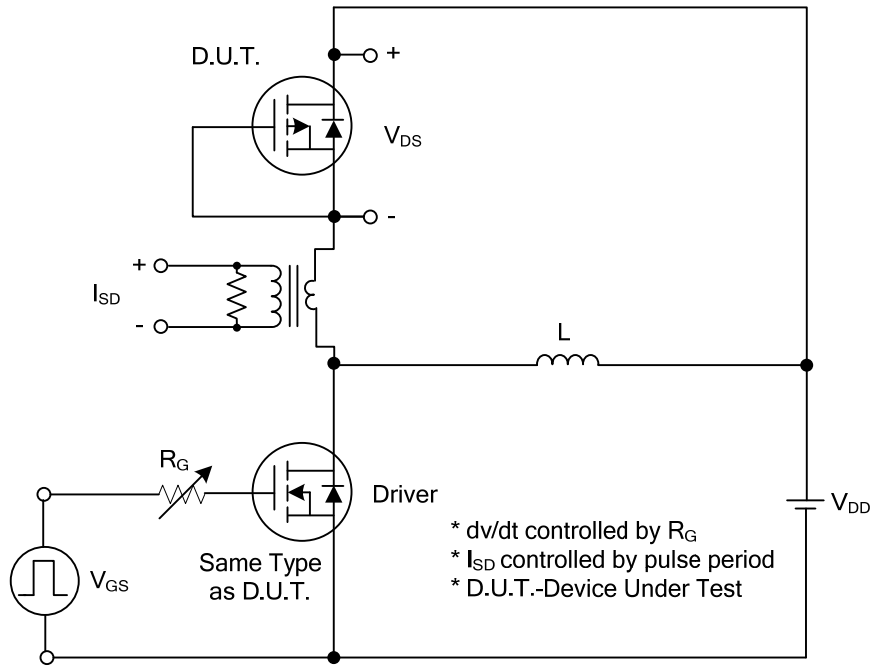
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =-250μA	-60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
		V _{DS} =-48V, V _{GS} =0V, T _J =125°C			-10	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						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0		-2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-8.0A			30	mΩ
		V _{GS} =-4.5V, I _D =-6.0A			40	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-25V, V _{GS} =0V, f=1.0MHz		2595	3900	pF
Output Capacitance	C _{OSS}			162	240	pF
Reverse Transfer Capacitance	C _{RSS}			115	170	pF
SWITCHING PARAMETERS (Note 1, 2)						
Total Gate Charge	Q _G	V _{DS} =-30V, V _{GS} =-10V, I _D =-5.0A		43.8	88	nC
Gate Source Charge	Q _{GS}			4.6	9	nC
Gate Drain Charge	Q _{GD}			8.3	17	nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =-30V, V _{GS} =-10V, I _D =-1.0A, R _G =6.0Ω		25	50	ns
Turn-ON Rise Time	t _R			13.8	28	ns
Turn-OFF Delay Time	t _{D(OFF)}			148	29	ns
Turn-OFF Fall-Time	t _F			51	100	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				-35	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				-70	A
Diode Forward Voltage	V _{SD}	I _S =-1.0A, V _{GS} =0V			-1	V

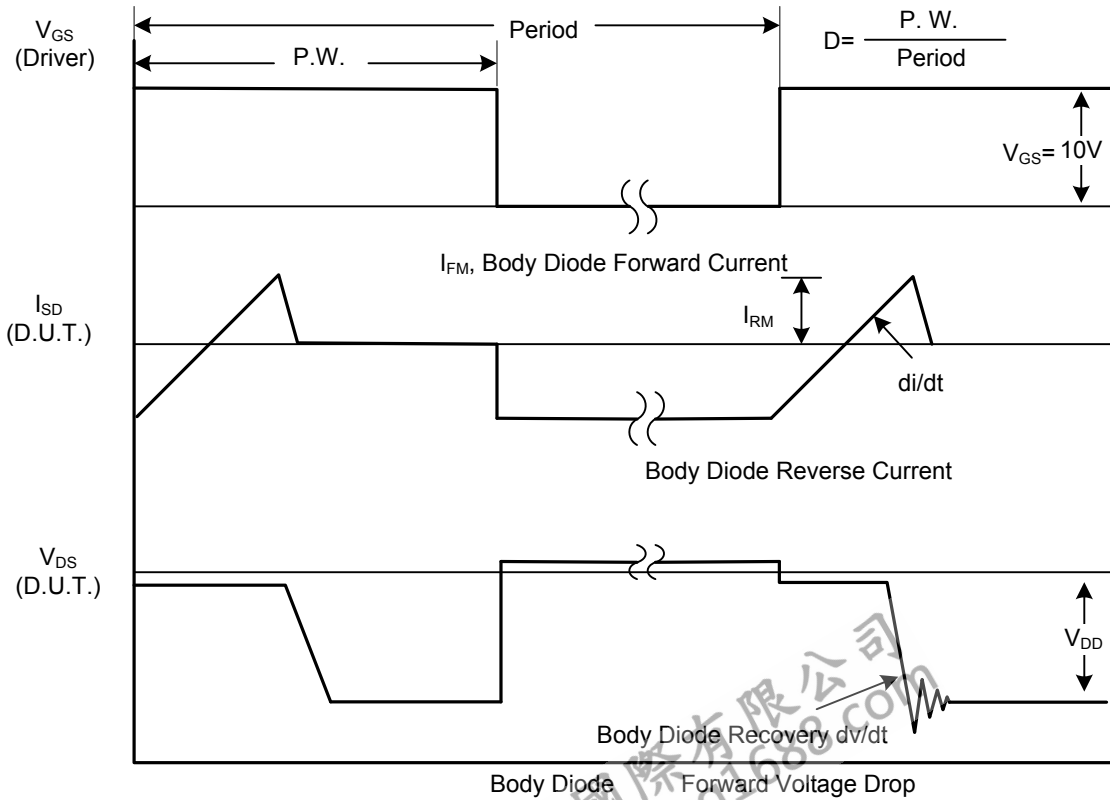
Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

TEST CIRCUITS AND WAVEFORMS

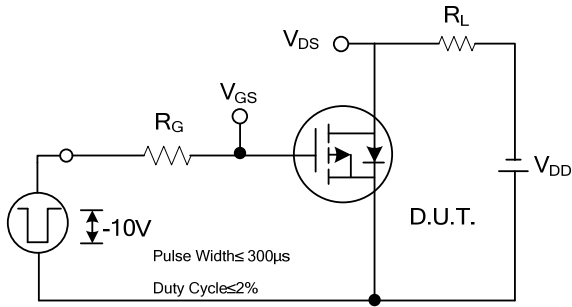


Peak Diode Recovery dv/dt Test Circuit

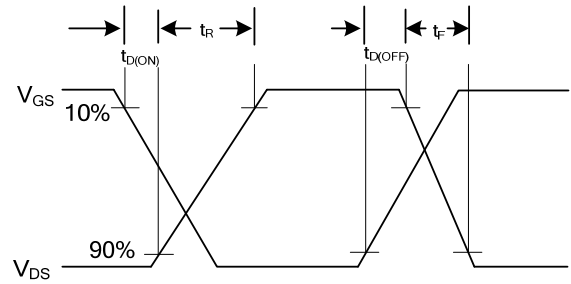


Peak Diode Recovery dv/dt Waveforms

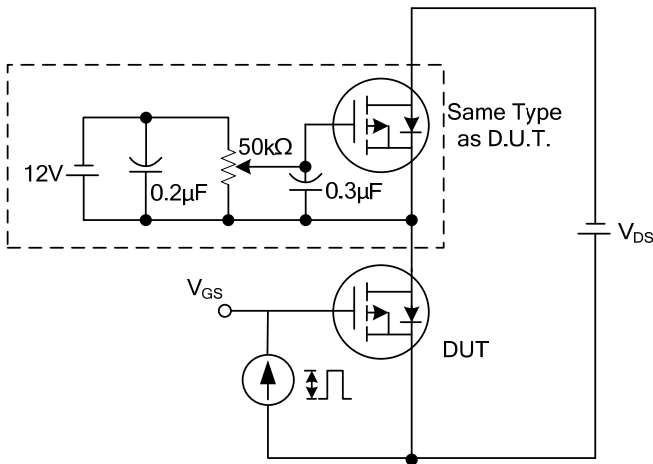
TEST CIRCUITS AND WAVEFORMS (Cont.)



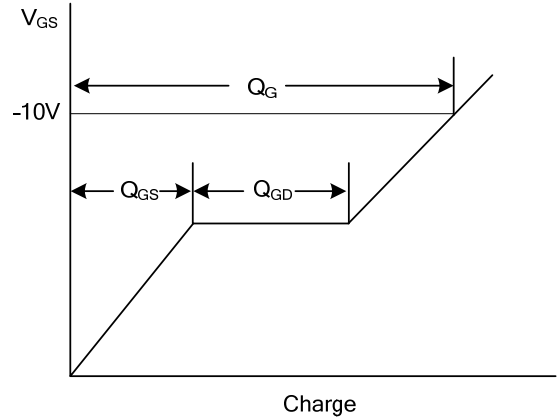
Switching Test Circuit



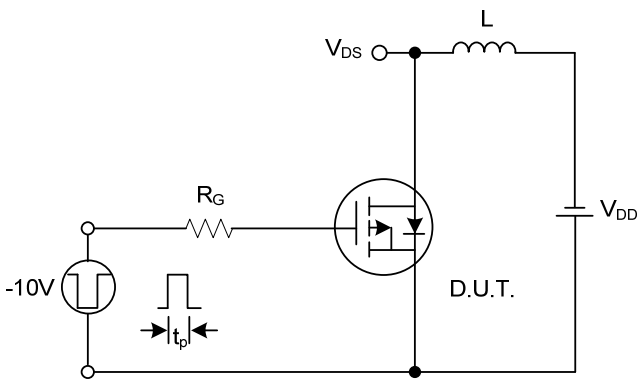
Switching Waveforms



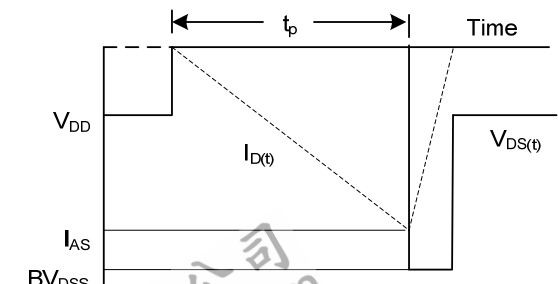
Gate Charge Test Circuit



Gate Charge Waveform



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.