



**UTT15P06**

**Power MOSFET**

**-15A, -60V P-CHANNEL  
POWER MOSFET**

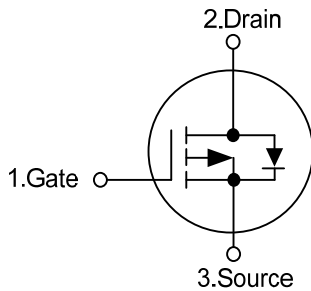
■ DESCRIPTION

The UTC **UTT15P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and minimum on-state resistance. It can also withstand high energy in the avalanche.

■ FEATURES

- \*  $R_{DS(ON)} < 90m\Omega @ V_{GS} = -10V, I_D = -15A$
- \* High Switching Speed

■ SYMBOL



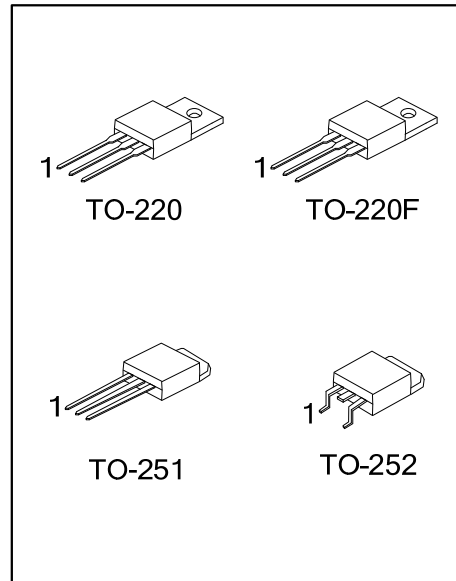
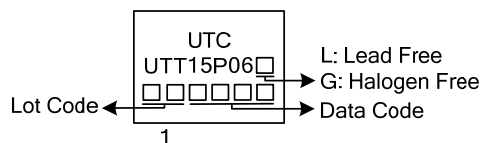
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT15P06L-TA3-T	UTT15P06G-TA3-T	TO-220	G	D	S	Tube
UTT15P06L-TF3-T	UTT15P06G-TF3-T	TO-220F	G	D	S	Tube
UTT15P06L-TM3-T	UTT15P06G-TM3-T	TO-251	G	D	S	Tube
UTT15P06L-TN3-R	UTT15P06G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UTT15P06L-TA3-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF3: TO-220F, TM3: TO-251, TN3: TO-252 (3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	-60	V
Gate-Source Voltage		$V_{GSS}$	$\pm 25$	V
Drain Current	Continuous	$I_D$	-15	A
	Pulsed	$I_{DM}$	-45	A
Power Dissipation	TO-220	$P_D$	40	W
	TO-220F		37	
	TO-251/TO-252		31.3	
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-55~+150	$^\circ\text{C}$

Note: 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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Steady state)	TO-220/TO-220F	$\theta_{JA}$	62	$^\circ\text{C/W}$
	TO-251/TO-252		110	$^\circ\text{C/W}$
Junction to Case	TO-220	$\theta_{JC}$	3.125	$^\circ\text{C/W}$
	TO-220F		3.3	
	TO-251/TO-252		4	

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

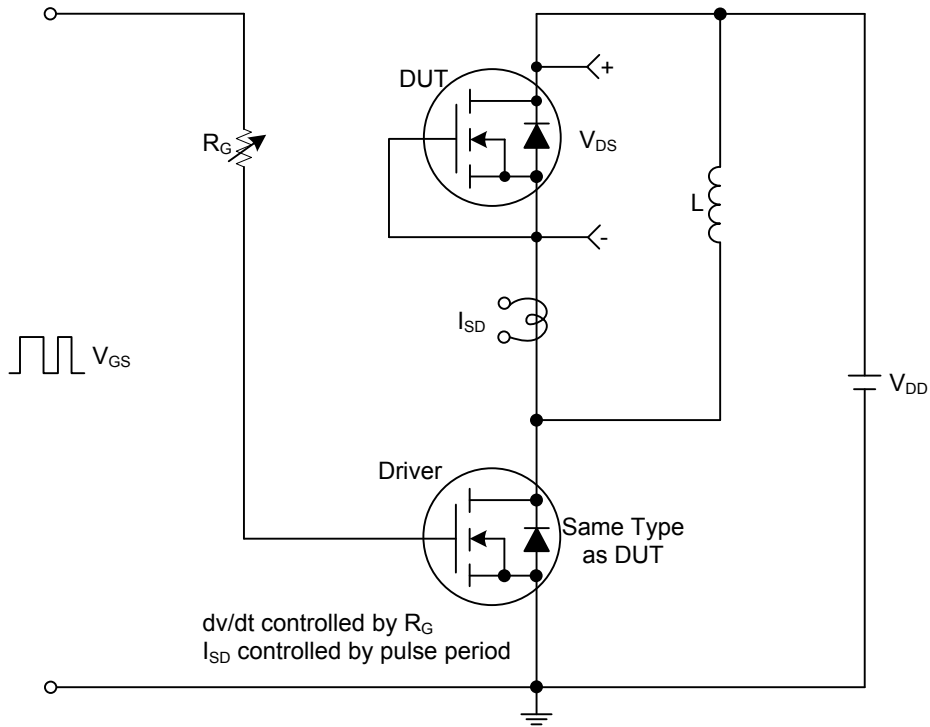
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=-250\mu\text{A}, V_{GS}=0\text{V}$	-60			V
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=-60\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+25\text{V}, V_{DS}=0\text{V}$			+100	nA
	Reverse		$V_{GS}=-25\text{V}, V_{DS}=0\text{V}$			-100	nA
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1		-3	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-15\text{A}$ (Note 1)			90	m $\Omega$
<b>DYNAMIC PARAMETERS</b> (Note 2)							
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=-25\text{V}, f=1.0\text{MHz}$ (Note 2)		1100	2660	pF
Output Capacitance		$C_{OSS}$			115		pF
Reverse Transfer Capacitance		$C_{RSS}$			90		pF
<b>SWITCHING PARAMETERS</b>							
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=-30\text{V}, I_D=-1\text{A}, R_G=12.5\Omega$ (Note 3)		16		ns
Rise Time		$t_R$			30		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			50		ns
Fall-Time		$t_F$			20		ns
Total Gate Charge		$Q_G$	$V_{GS}=-10\text{V}, V_{DS}=-30\text{V},$ $I_D=-15\text{A}$ (Note 3)		14	27	nC
Gate to Source Charge		$Q_{GS}$			3		nC
Gate to Drain Charge		$Q_{GD}$			8		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b> ( $T_c=25^\circ\text{C}$ ) (Note 2)							
Maximum Body-Diode Continuous Current		$I_S$				-15	A
Maximum Body-Diode Pulsed Current		$I_{SM}$				-45	A
Drain-Source Diode Forward Voltage		$V_{SD}$	$I_F=-15\text{A}, V_{GS}=0\text{V}$ (Note 1)		-1.0	-1.5	V

Notes: 1. Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

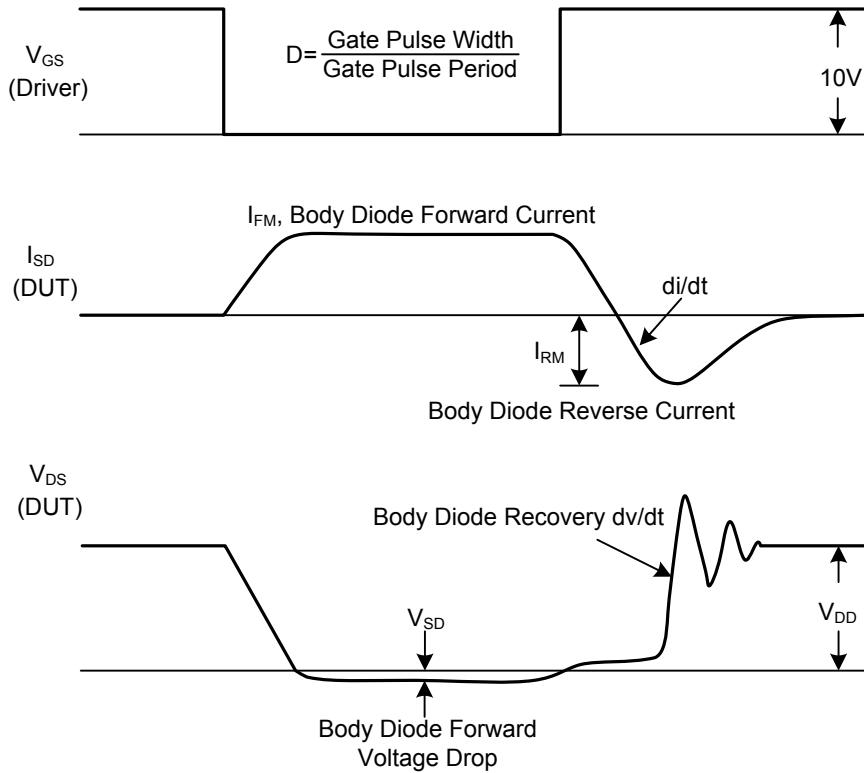
2. Guaranteed by design, not subject to production testing.

3. Independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



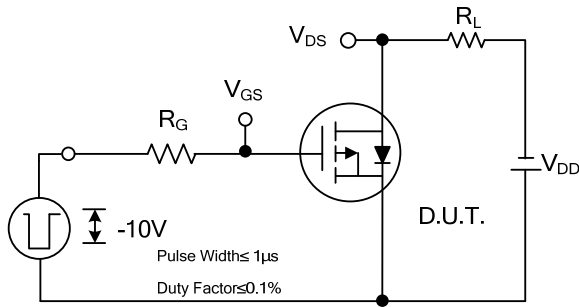
Peak Diode Recovery dv/dt Test Circuit



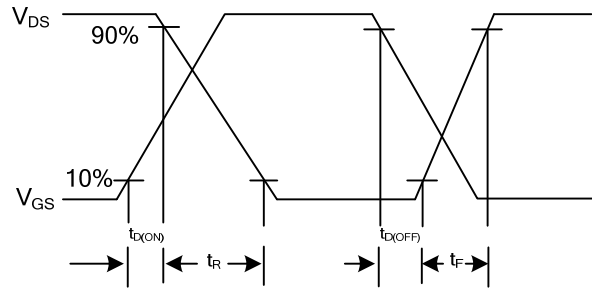
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

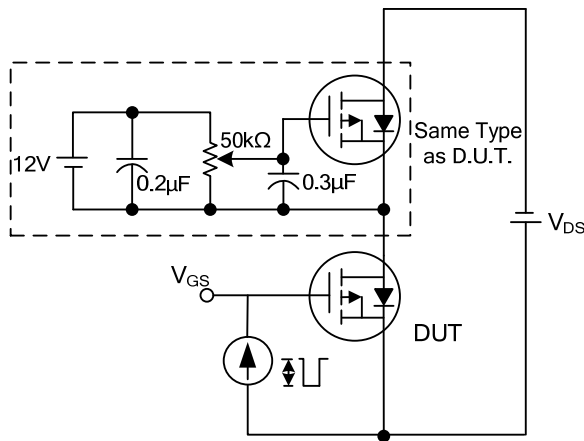
## TEST CIRCUITS AND WAVEFORMS



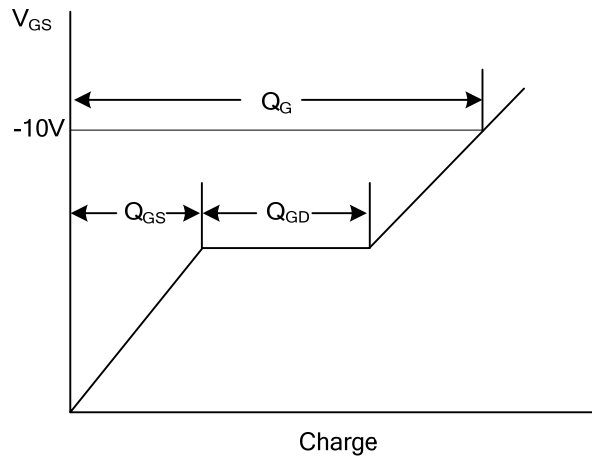
**Switching Test Circuit**



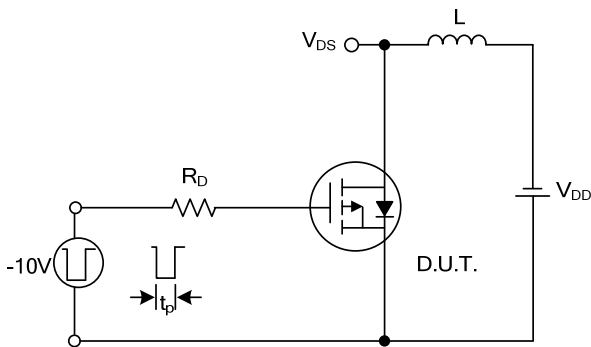
**Switching Waveforms**



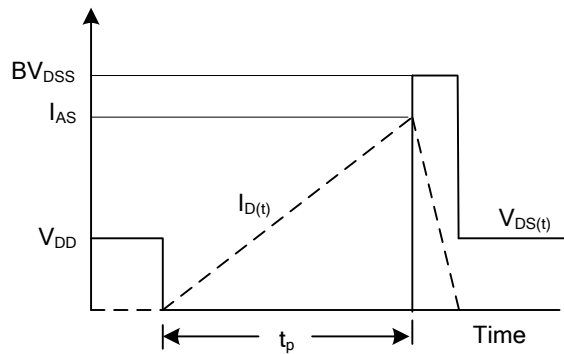
**Gate Charge Test Circuit**



**Gate Charge Waveform**



**Unclamped Inductive Switching Test Circuit**



**Unclamped Inductive Switching Waveforms**

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