



## UTT80P06

Preliminary

Power MOSFET

### -80A, -60V P-CHANNEL POWER MOSFET

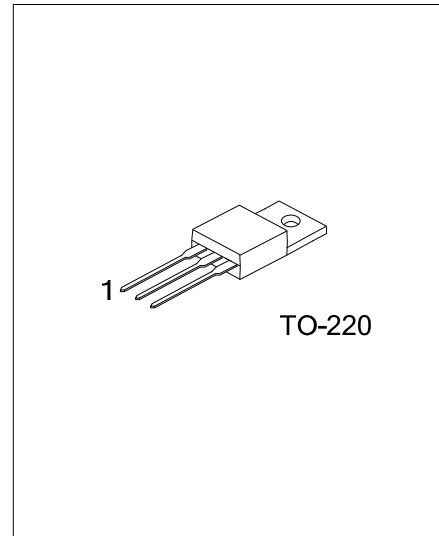
#### DESCRIPTION

The UTC **UTT80P06** 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 it can also withstand high energy in the avalanche.

The UTC **UTT80P06** is suitable for low voltage and high speed switching applications

#### FEATURES

- \*  $R_{DS(ON)} < 0.023\Omega @ V_{GS}=-10V, I_D=-64A$
- \* High Switching Speed



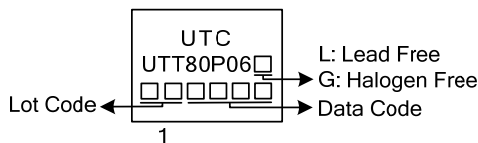
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT80P06L-TA3-T	UTT80P06G-TA3-T	TO-220	G	D	S	Tube

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

<p>UTT80P06L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		$V_{DSS}$	-60	V	
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V	
Drain Current	Continuous	$T_C=25^\circ\text{C}$	-80	A	
		$T_C=100^\circ\text{C}$	-64	A	
	Pulsed	$T_C=25^\circ\text{C}$	$I_{DM}$	-320	A
Avalanche Energy		Single Pulsed	$E_{AS}$	823	mJ
		Repetitive	$E_{AR}$	34	mJ
Power Dissipation		$T_C=25^\circ\text{C}$	$P_D$	313	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$	
Storage Temperature		$T_{STG}$	-55~+150	$^\circ\text{C}$	

Notes: 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.

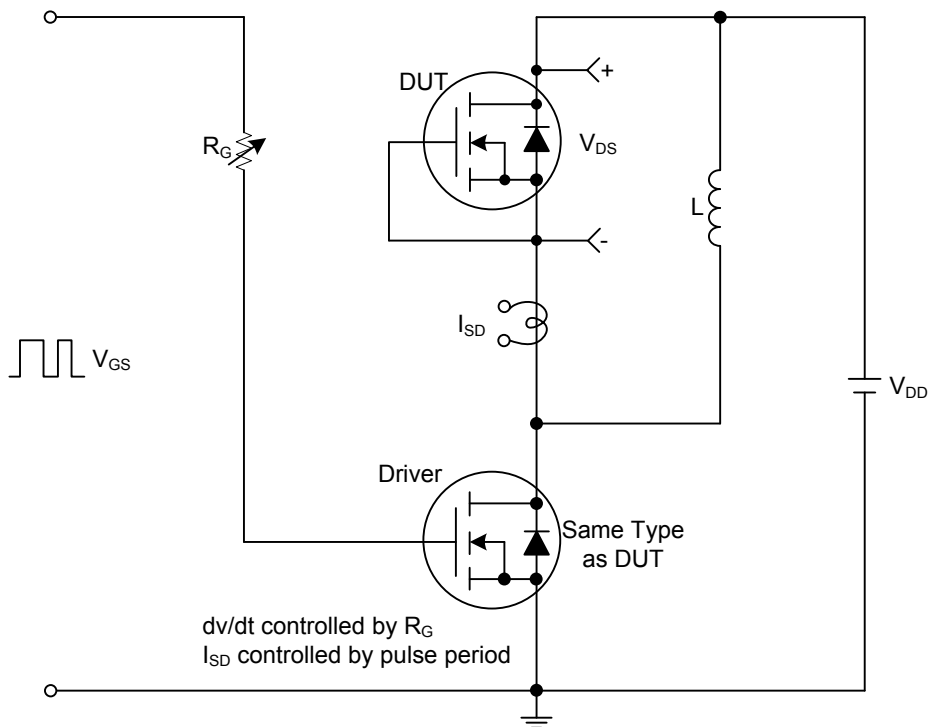
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	$\theta_{JC}$	0.4	$^\circ\text{C/W}$
Junction to Ambient	$\theta_{JA}$	62	$^\circ\text{C/W}$

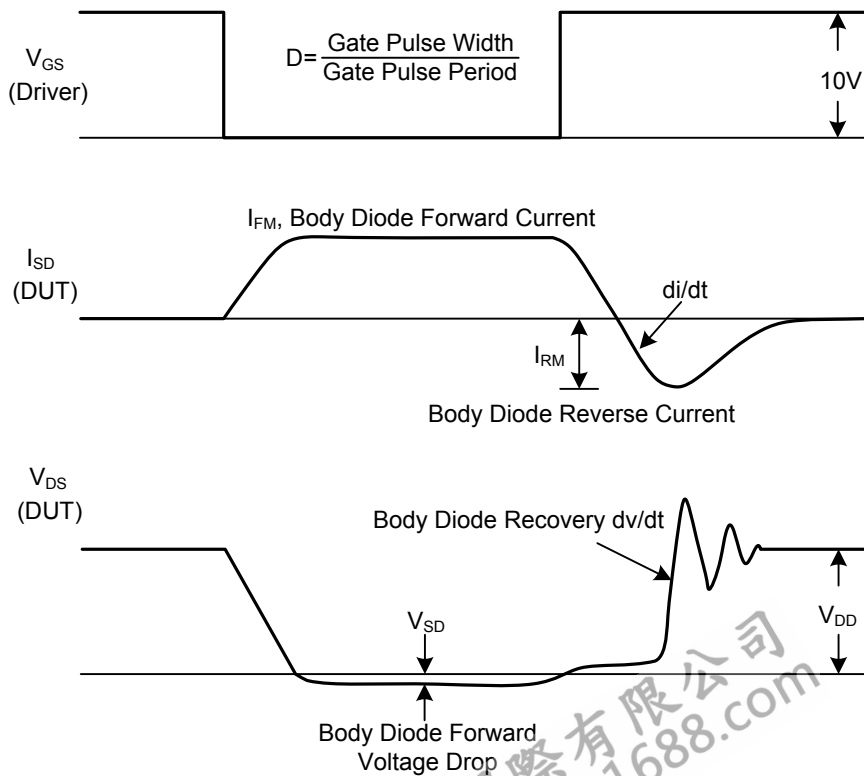
■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ\text{C}$ , unless otherwise specified)

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	$I_{DSS}$	$V_{DS}=-60\text{V}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}$		-0.1	-1	$\mu\text{A}$
		$V_{DS}=-60\text{V}, T_C=150^\circ\text{C}$		-10	-100	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	Forward $V_{GS}=+20\text{V}, V_{DS}=0\text{V}$			+100	nA
		Reverse $V_{GS}=-20\text{V}, V_{DS}=0\text{V}$			-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-5.5\text{mA}$	-2.1	-3	-4	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$I_D=-64\text{A}, V_{GS}=-10\text{V}$		0.021	0.023	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=-25\text{V}, f=1.0\text{MHz}$		4026	5033	pF
Output Capacitance	$C_{OSS}$			1252	1565	pF
Reverse Transfer Capacitance	$C_{RSS}$			437	546	pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{DD}=-48\text{V}, I_D=-80\text{A}, V_{GS}=-10\text{V}$		115	173	nC
Gate to Source Charge	$Q_{GS}$	$V_{DD}=-48\text{V}, I_D=-80\text{A}$		27.4	41	nC
Gate to Drain Charge	$Q_{GD}$			50	75	nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-30\text{V}, I_D=-64\text{A}, R_G=1\Omega, V_{GS}=-10\text{V}$		24	36	ns
Rise Time	$t_R$			18	27	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			56	84	ns
Fall-Time	$t_F$			30	45	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$	$T_C=25^\circ\text{C}$			-80	A
Maximum Body-Diode Pulsed Current	$I_{SM}$	$T_C=25^\circ\text{C}$			-320	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_F=-80\text{A}, V_{GS}=0\text{V}$	-1.2	-1.6		V

■ TEST CIRCUITS AND WAVEFORMS



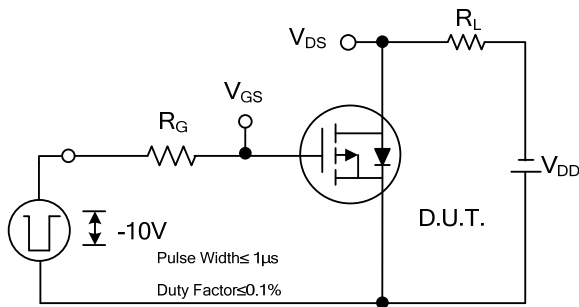
Peak Diode Recovery dv/dt Test Circuit



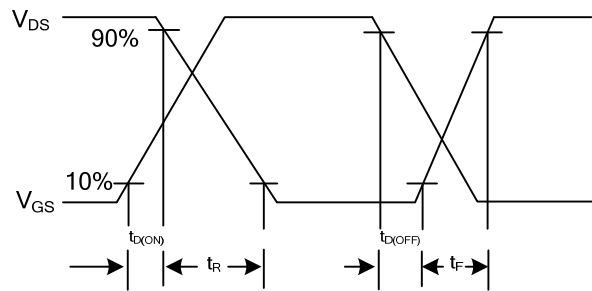
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

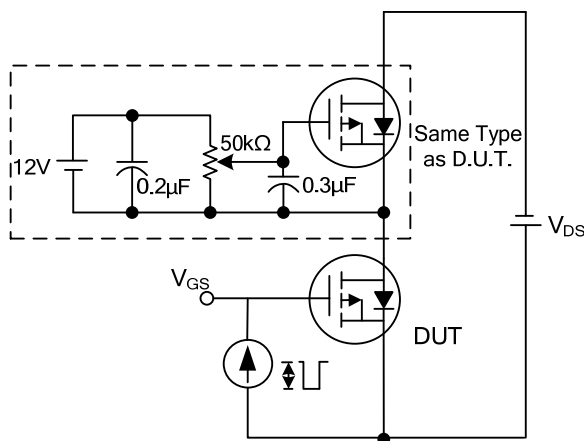
TEST CIRCUITS AND WAVEFORMS



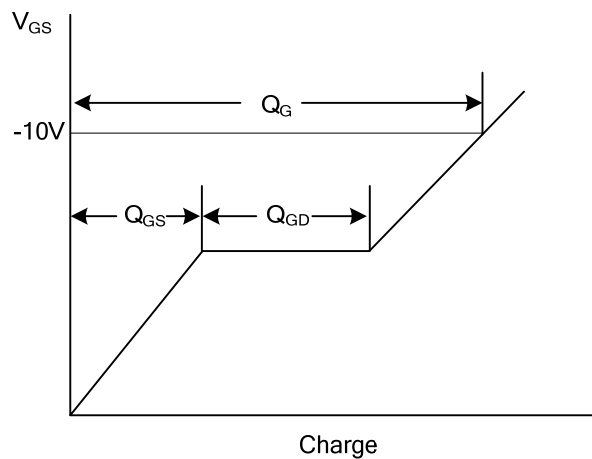
Switching Test Circuit



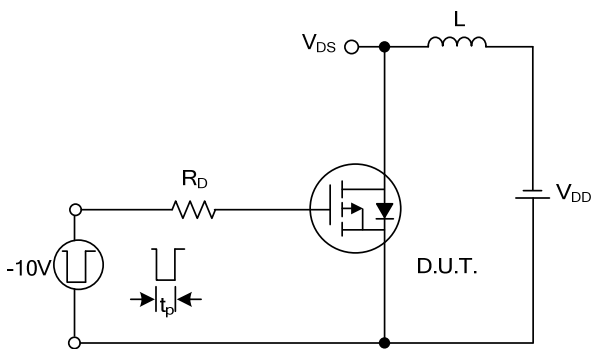
Switching Waveforms



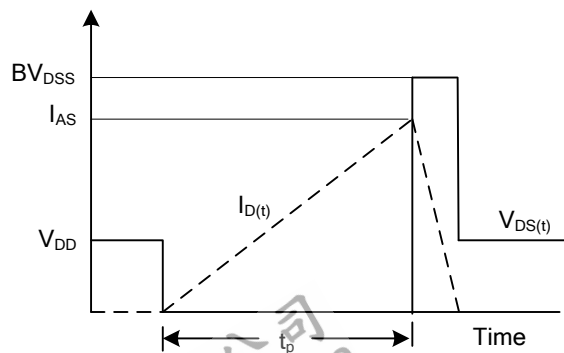
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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