



UT03P06

Preliminary

POWER MOSFET

-0.3A, -60V P-CHANNEL POWER MOSFET

DESCRIPTION

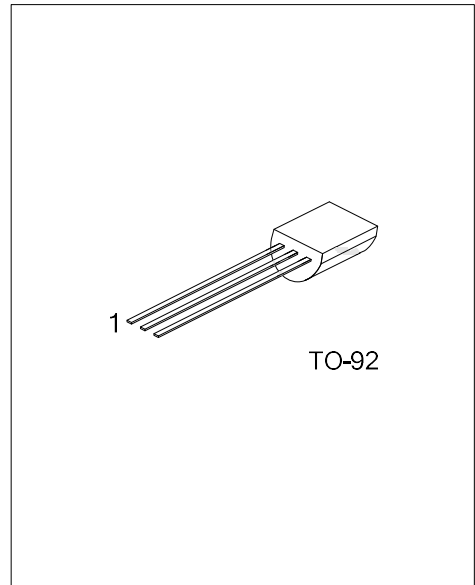
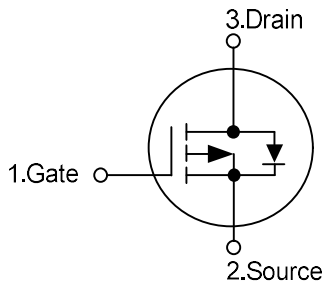
The UTC **UT03P06** is a P-channel MOS Field Effect Transistor. it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

The UTC **UT03P06** is suitable for high voltage switching applications.

FEATURES

- * $R_{DS(ON)} \leq 4.5 \Omega @ V_{GS}=-10V, I_D=-0.15A$
- $R_{DS(ON)} \leq 6.5 \Omega @ V_{GS}=-4.5V, I_D=-0.15A$
- * High switching speed
- * Low input capacitance

SYMBOL



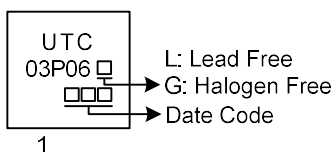
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT03P06L-T92-B	UT03P06G-T92-B	TO-92	S	G	D	Tape Box
UT03P06L-T92-K	UT03P06G-T92-K	TO-92	S	G	D	Bulk

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

<p>UT03P06G-T92-B</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) B: Tape Box, K: Bulk (2) T92: TO-92 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DSS}	-60	V	
Gate-Source Voltage	V_{GSS}	± 20	V	
Drain Current	DC	I_D	-0.3	A
	Pulsed (Note 2)	I_{DM}	-0.6	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	700	mW	
Junction Temperature	T_J	+150	$^\circ\text{C}$	
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$	

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 DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	178.6	$^\circ\text{C/W}$

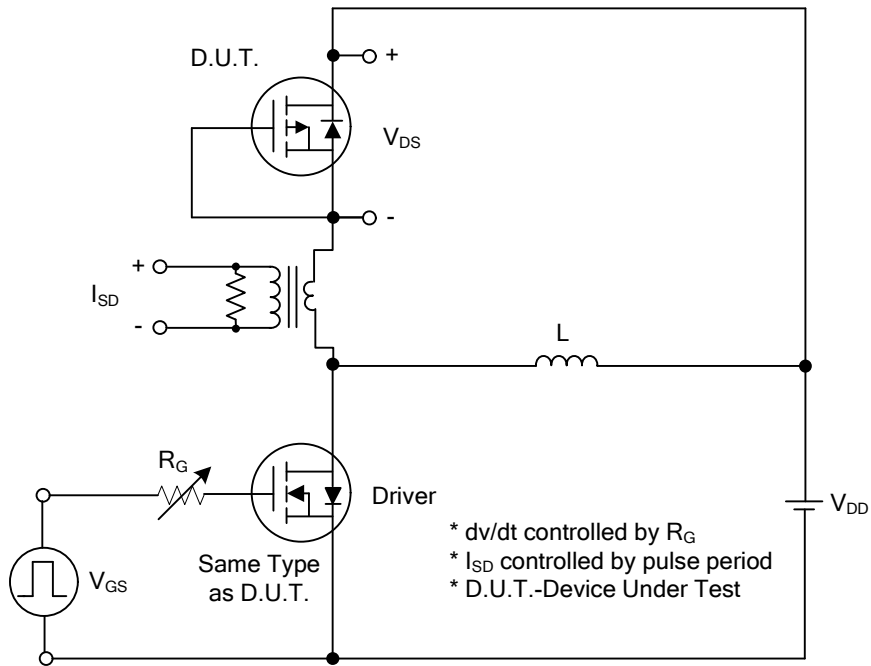
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-60\text{V}, V_{GS}=0\text{V}$			-1	μA
Gate-Source Leakage Current	Forward	I_{GSS}			+10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1.0		-3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-0.15\text{A}$			4.5	Ω
		$V_{GS}=-4.5\text{V}, I_D=-0.15\text{A}$			6.5	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=-25\text{V}, f=1.0\text{MHz}$		23.3		pF
Output Capacitance	C_{OSS}			8.7		pF
Reverse Transfer Capacitance	C_{RSS}			3.3		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=-48\text{V}, V_{GS}=-10\text{V}, I_D=-0.3\text{A}, I_D=-1\text{mA}$ (Note 1, 2)		6.1		nC
Gate to Source Charge	Q_{GS}			1.8		nC
Gate to Drain Charge	Q_{GD}			0.9		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-0.3\text{A}, R_G=25\Omega$ (Note 1, 2)		3.4		ns
Rise Time	t_R			16		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			6.4		ns
Fall-Time	t_F			20		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-0.3	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-0.6	A
Diode Forward Voltage	V_{SD}	$I_F=-0.3\text{A}, V_{GS}=0\text{V}$			-1.4	V

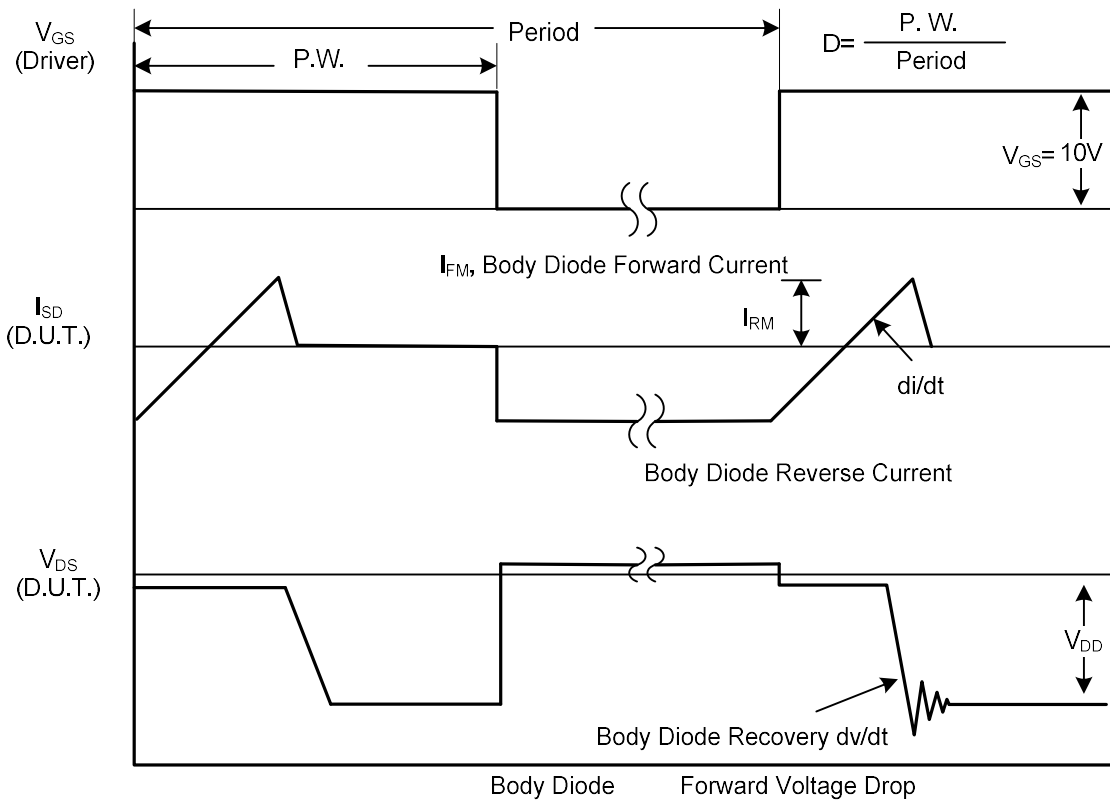
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

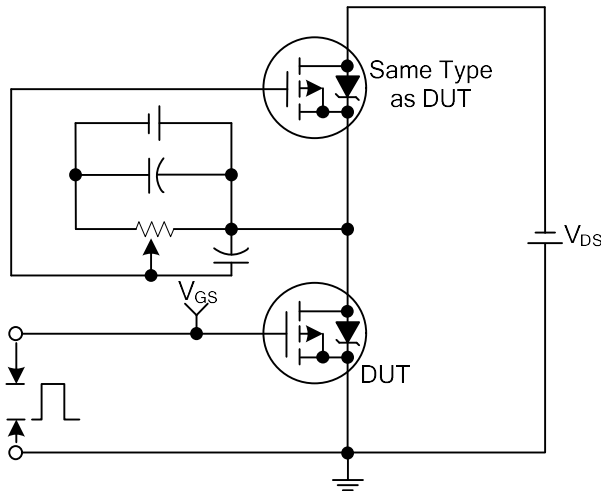


Peak Diode Recovery dv/dt Test Circuit

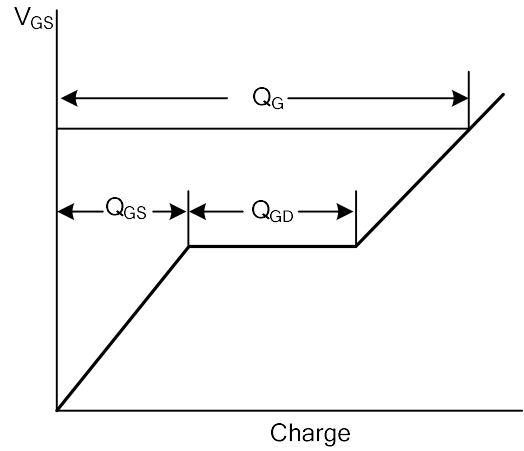


Peak Diode Recovery dv/dt Waveforms

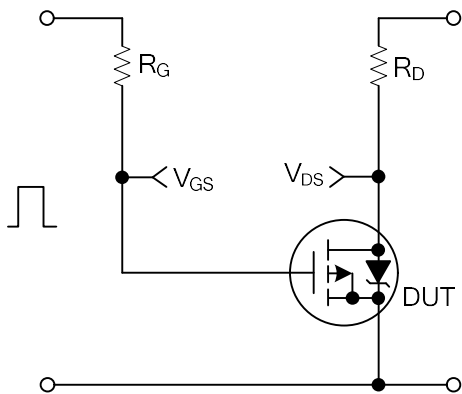
■ TEST CIRCUITS AND WAVEFORMS



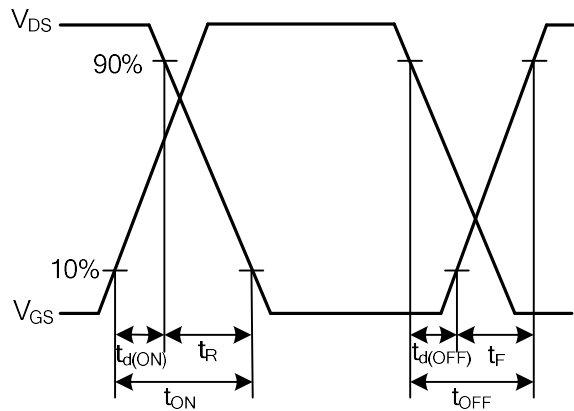
Gate Charge Test Circuit



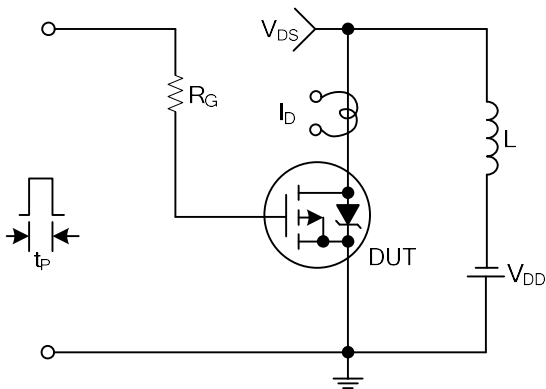
Gate Charge Waveforms



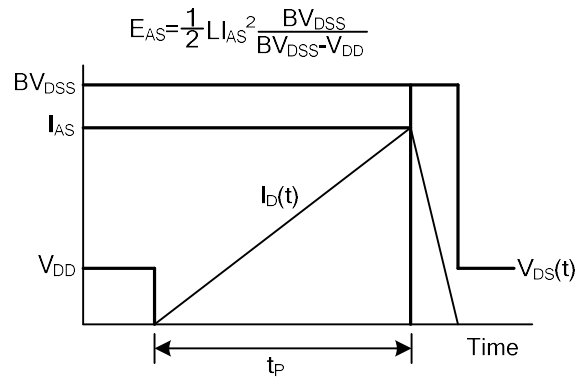
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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