



UT73P10H

Preliminary

Power MOSFET

**-73A, -100V P-CHANNEL
POWER MOSFET**

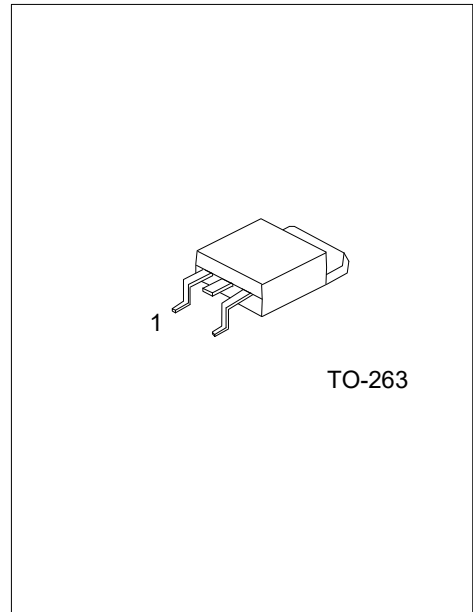
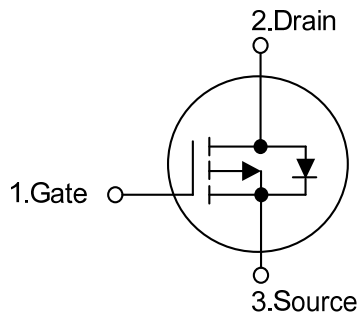
■ DESCRIPTION

The UTC **UT73P10H** provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

- * $R_{DS(ON)} \leq 25 \text{ m}\Omega$ @ $V_{GS} = -10\text{V}$, $I_D = -40\text{A}$
- * High Switching Speed
- * 100% Avalanche Tested

■ SYMBOL



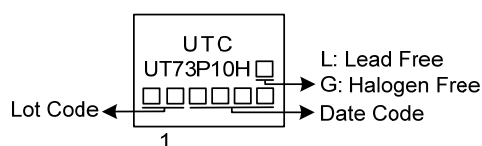
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT73P10HL-TQ2-T	UT73P10HG-TQ2-T	TO-263	G	D	S	Tube
UT73P10HL-TQ2-R	UT73P10HG-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UT73P10HG-TQ2-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TQ2: TO-263</p> <p>(3) G: Halogen Free and Lead Free L: 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}	-100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous,	I_D	-73	A
	Pulsed (Note 2)	I_{DM}	-146	A
Avalanche Energy	Repetitive (Note 3)	E_{AS}	168	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.2	V/ns
Power Dissipation ($T_C=25^{\circ}\text{C}$)		P_D	128	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		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.

3. $L = 1\text{mH}$, $I_{AS} = -58\text{A}$, $V_{DD} = -50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

4. $I_{SD} \leq -30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	θ_{JC}	0.98 (Note)	$^{\circ}\text{C}/\text{W}$

Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

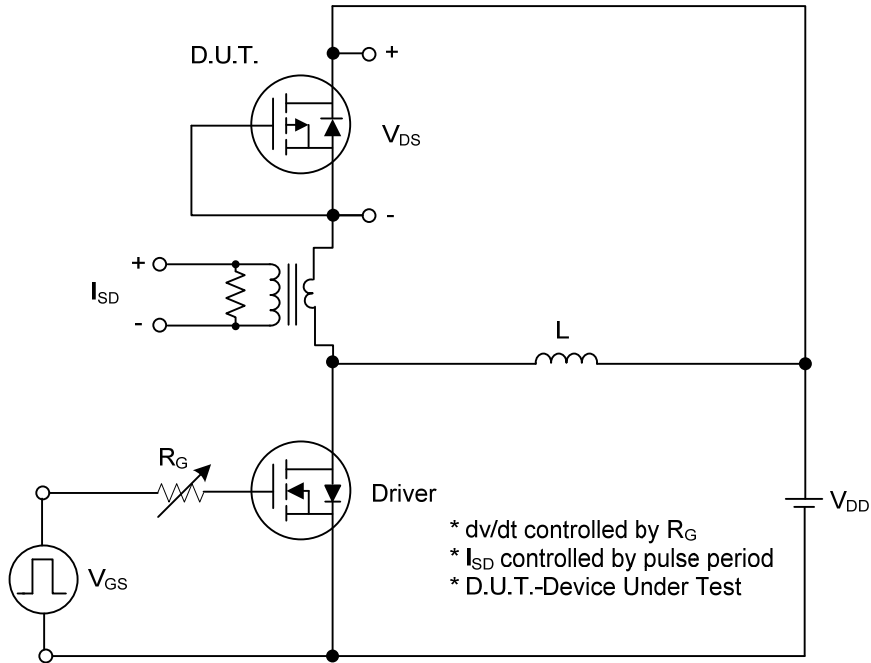
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-100			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-100\text{V}$, $V_{GS}=0\text{V}$			-1	μA
Gate- Source Leakage Current	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
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-2.0		-4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-40\text{A}$			25	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=-25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		7078		pF
Output Capacitance	C_{OSS}			382		pF
Reverse Transfer Capacitance	C_{RSS}			295		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	$V_{DS}=-80\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-73\text{A}$ (Note 1, 2)		128		nC
Gate to Source Charge	Q_{GS}			25		nC
Gate to Drain Charge	Q_{GD}			48		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	$V_{DD}=-50\text{V}$, $I_D=-73\text{A}$, $R_G=3\Omega$ (Note 1, 2)		18		ns
Rise Time	t_R			22		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			86		ns
Fall-Time	t_F			41		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-73	A
Maximum Body-Diode Pulsed Current	I_{SM}	(Note 1)			-146	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=-73\text{A}$, $V_{GS}=0\text{V}$ (Note 2)			1.4	V
Body Diode Reverse Recovery Time (Note 1)	t_{rr}	$I_S=-30\text{A}$, $V_{GS}=0\text{V}$,		176		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$dI_F/dt=100\text{A}/\mu\text{s}$		399		nC

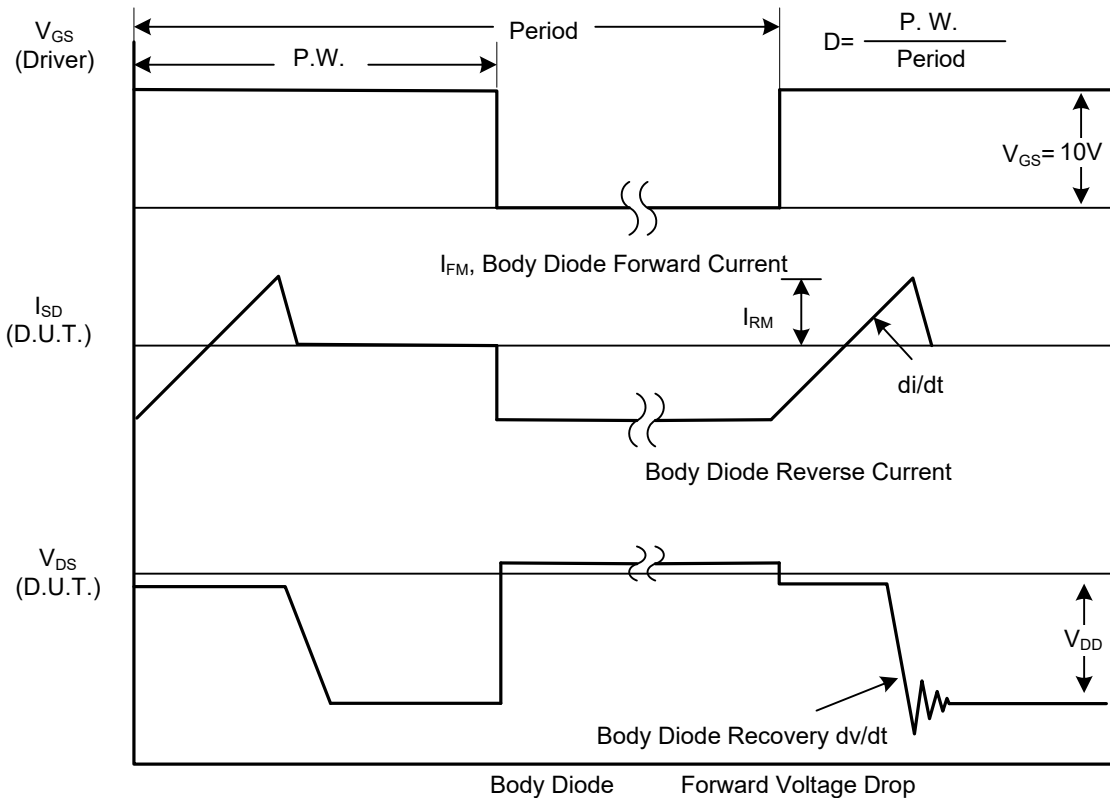
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

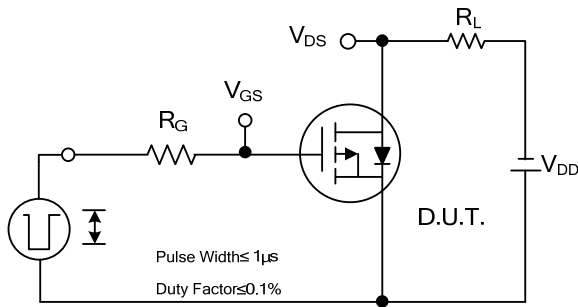


Peak Diode Recovery dv/dt Test Circuit

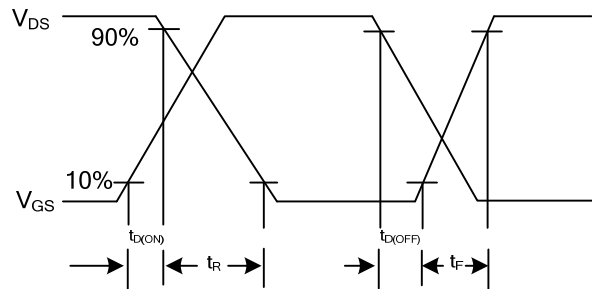


Peak Diode Recovery dv/dt Waveforms

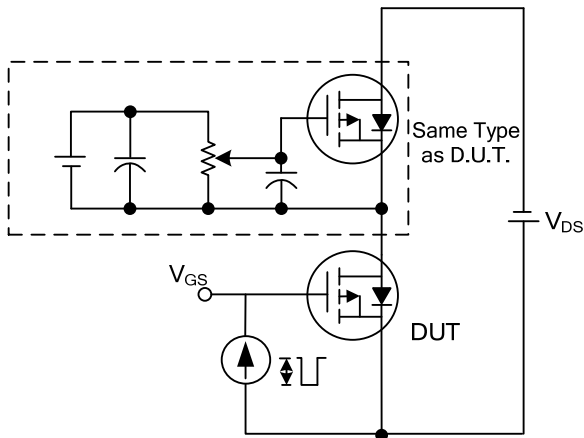
■ TEST CIRCUITS AND WAVEFORMS



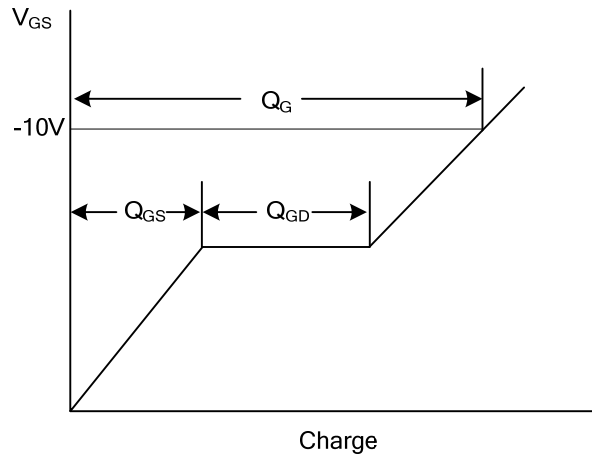
Switching Test Circuit



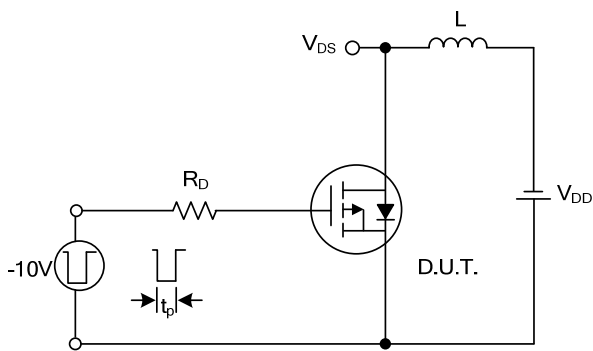
Switching Waveforms



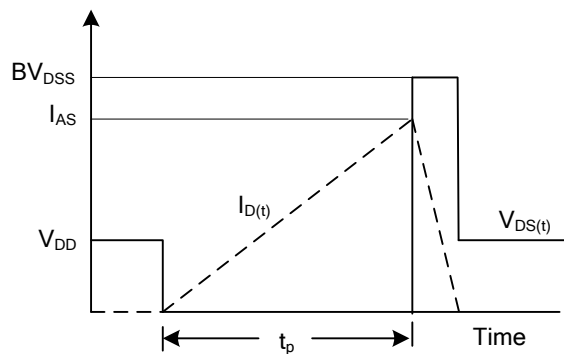
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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