



UTT70P10

Preliminary

Power MOSFET

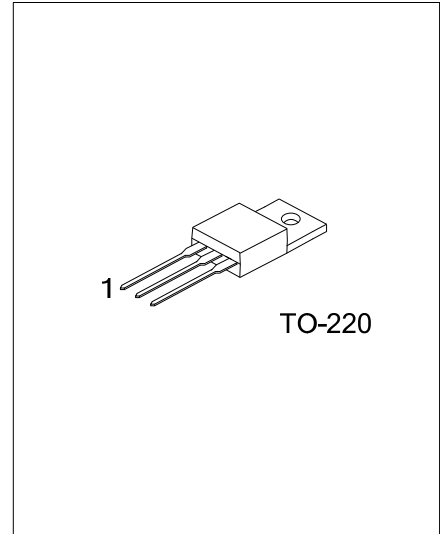
-70A, -100V P-CHANNEL POWER MOSFET

DESCRIPTION

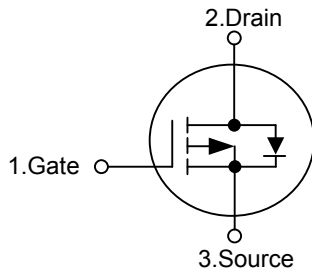
The UTC **UTT70P10** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance. It can also withstand high energy in the avalanche.

FEATURES

- * $R_{DS(ON)} < 0.03\Omega$ @ $V_{GS} = -10V, I_D = -20A$
- * High Switching Speed



SYMBOL



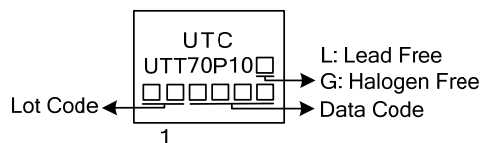
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT70P10L-TA3-T	UTT70P10G-TA3-T	TO-220	G	D	S	Tube

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

UTT70P10L-TA3-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free and Lead Free, L: Lead Free
--	---

MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	Continuous	I_D	-70	A
	Pulsed	I_{DM}	-90	A
Power Dissipation		P_D	225	W
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.

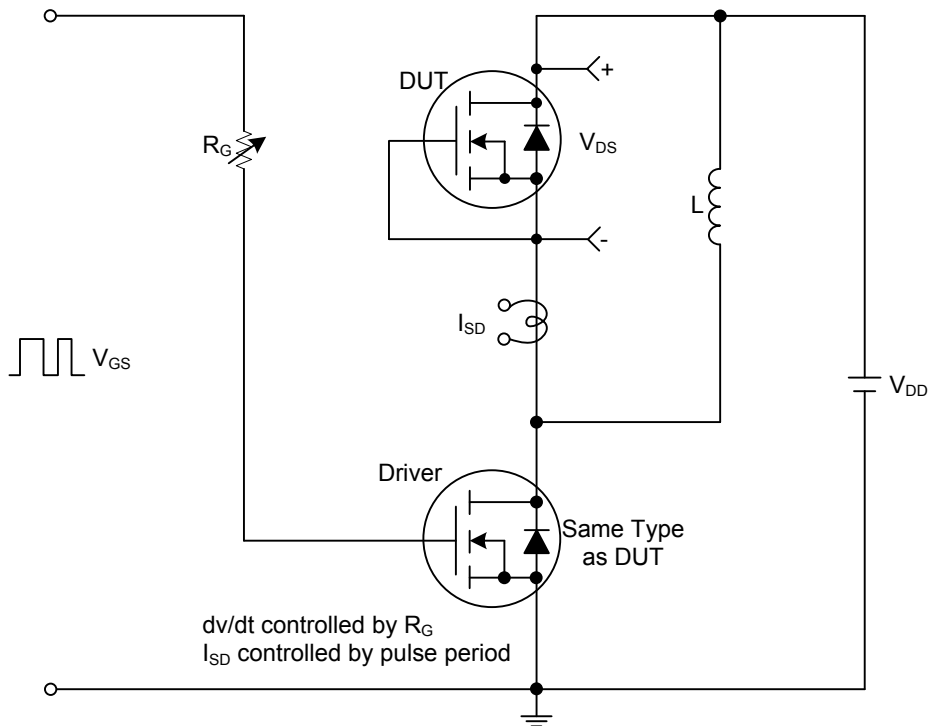
■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case	θ_{JC}	0.55	$^{\circ}\text{C}/\text{W}$

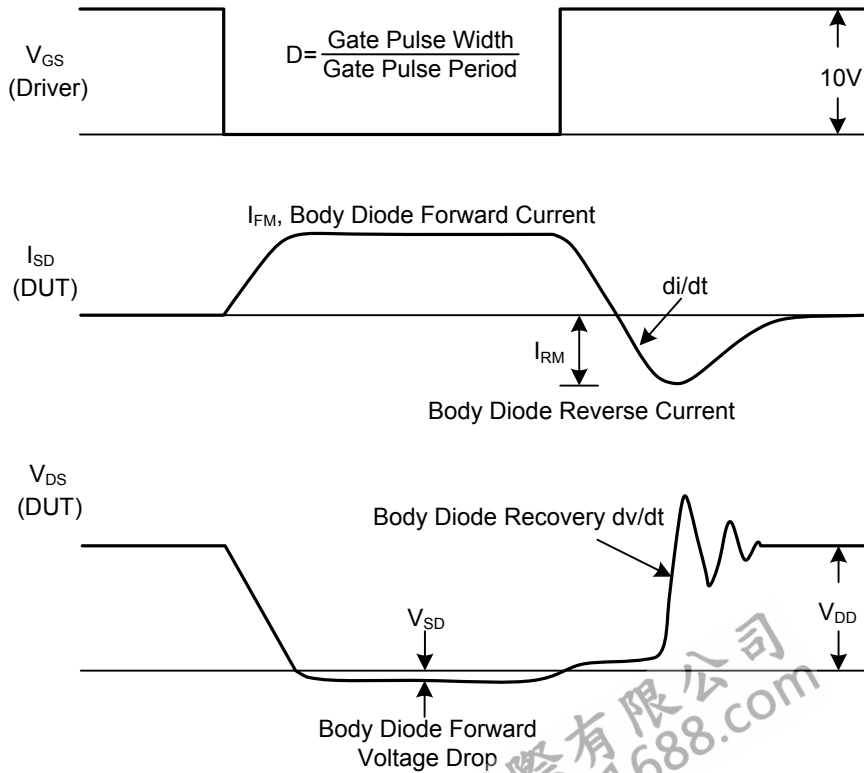
■ ELECTRICAL CHARACTERISTICS

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}	$V_{DS}=0.8\times\text{Max. rating}$, $V_{GS}=0\text{V}$, $T_J=25^{\circ}\text{C}$			-1	μA
		$V_{DS}=0.8\times\text{Max. rating}$, $V_{GS}=0\text{V}$, $T_J=125^{\circ}\text{C}$			-500	
Gate- Source Leakage Current	I_{GSS}	Forward $V_{GS}=+20\text{V}$			+100	nA
		Reverse $V_{GS}=-20\text{V}$			-100	nA
ON CHARACTERISTICS						
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	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-20\text{A}$			0.03	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=-50\text{V}$, $f=1.0\text{MHz}$		2250		pF
Output Capacitance	C_{OSS}			700		pF
Reverse Transfer Capacitance	C_{RSS}			275		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-50\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-50\text{A}$, $R_G=1\Omega$		20	200	ns
Rise Time	t_R			110	420	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			145	1500	ns
Fall-Time	t_F			300	500	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_F=-20\text{A}$, $V_{GS}=0\text{V}$, Pulse test, $t_s\leq 300\mu\text{s}$, duty cycle $d\leq 2\%$		-1.0	-1.5	V
Body Diode Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}\text{C}$, $I_F=-20\text{A}$, $V_R=-50\text{V}$, $di/dt=-100\text{A}/\mu\text{s}$		80	120	ns

■ TEST CIRCUITS AND WAVEFORMS



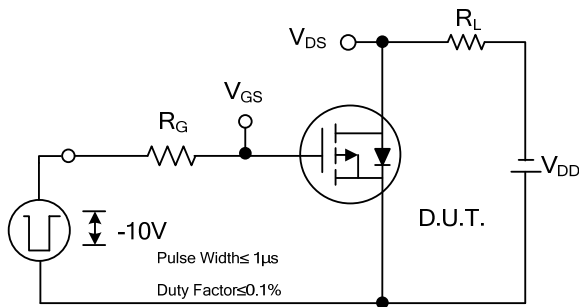
Peak Diode Recovery dv/dt Test Circuit



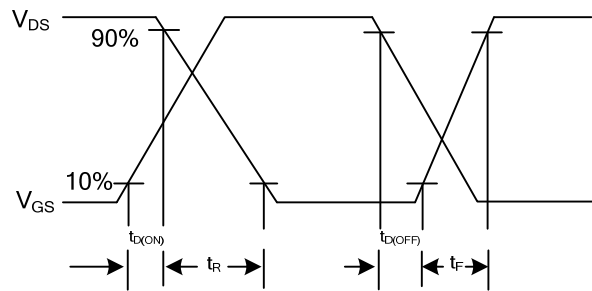
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

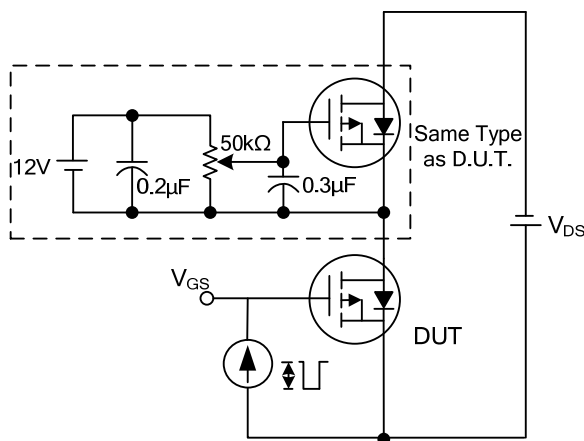
TEST CIRCUITS AND WAVEFORMS



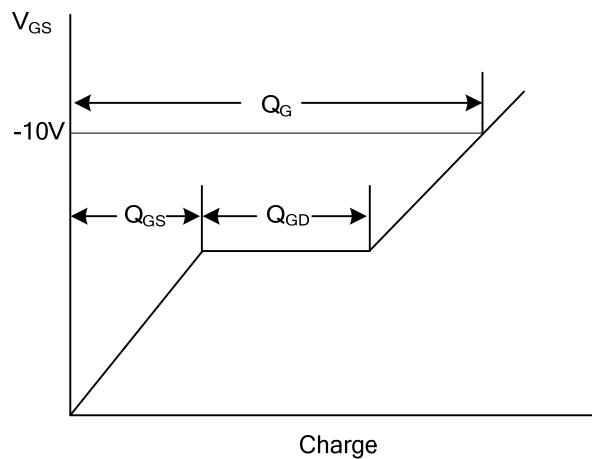
Switching Test Circuit



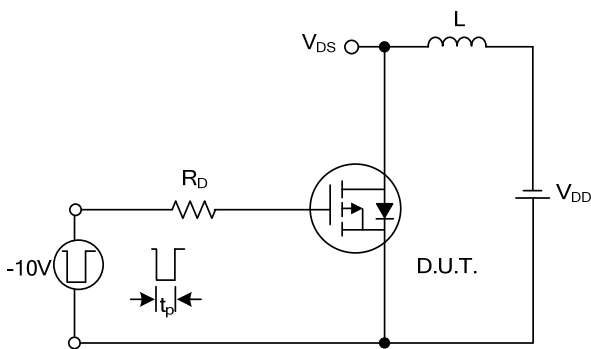
Switching Waveforms



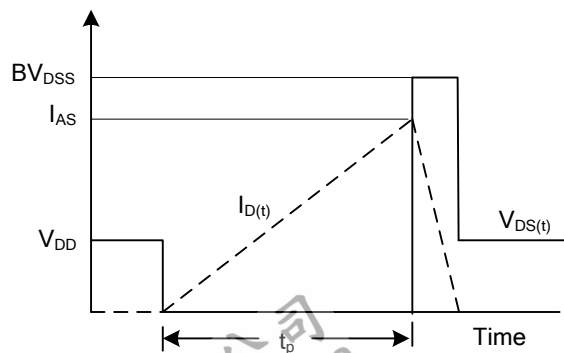
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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.