



UTT70P10

Preliminary

Power MOSFET

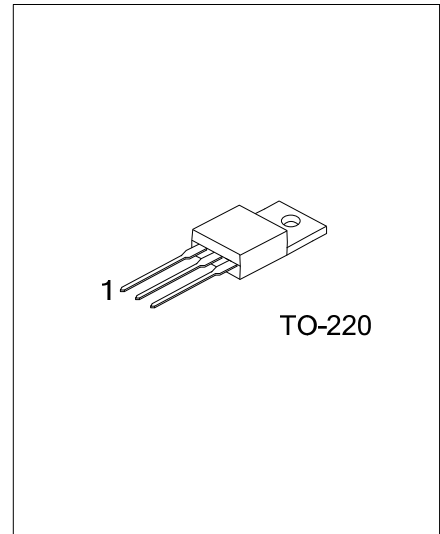
**-70A, -100V P-CHANNEL
POWER MOSFET**

■ DESCRIPTION

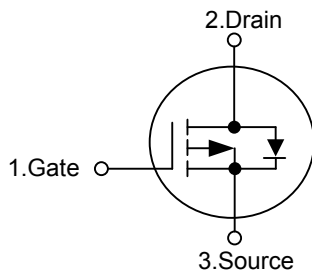
The UTC **UTT70P10** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance. It can also withstand high energy in the avalanche.

■ FEATURES

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



■ SYMBOL



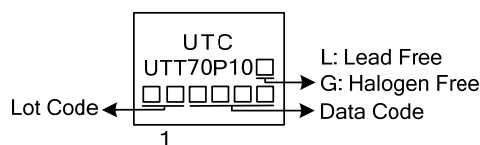
■ ORDERING INFORMATION

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

<p>UTT70P10L-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 ($T_C=25^{\circ}\text{C}$, 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.

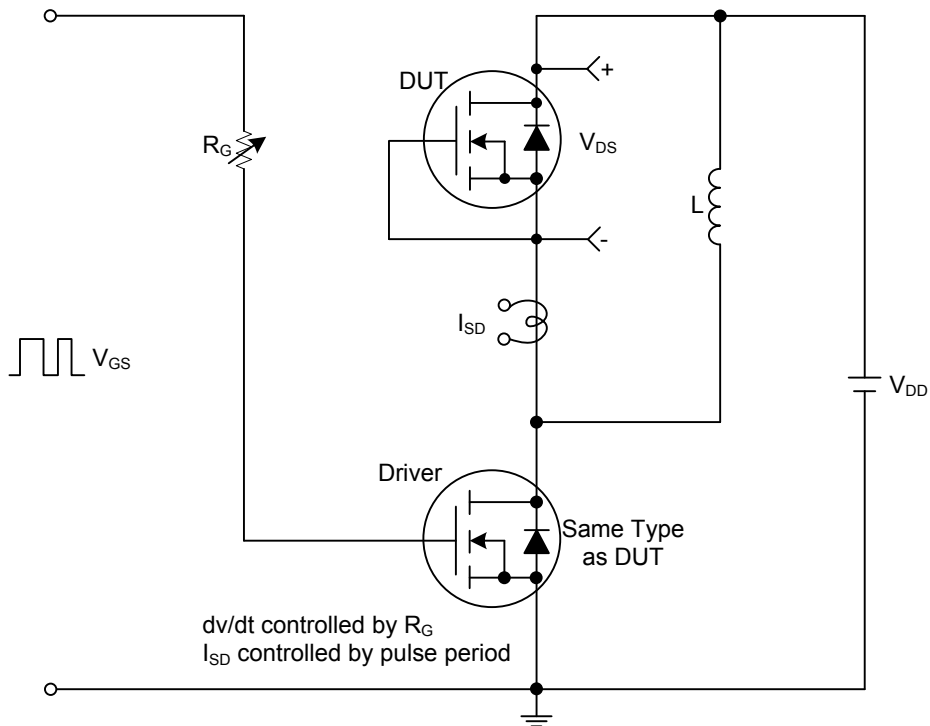
■ THERMAL CHARACTERISTICS

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

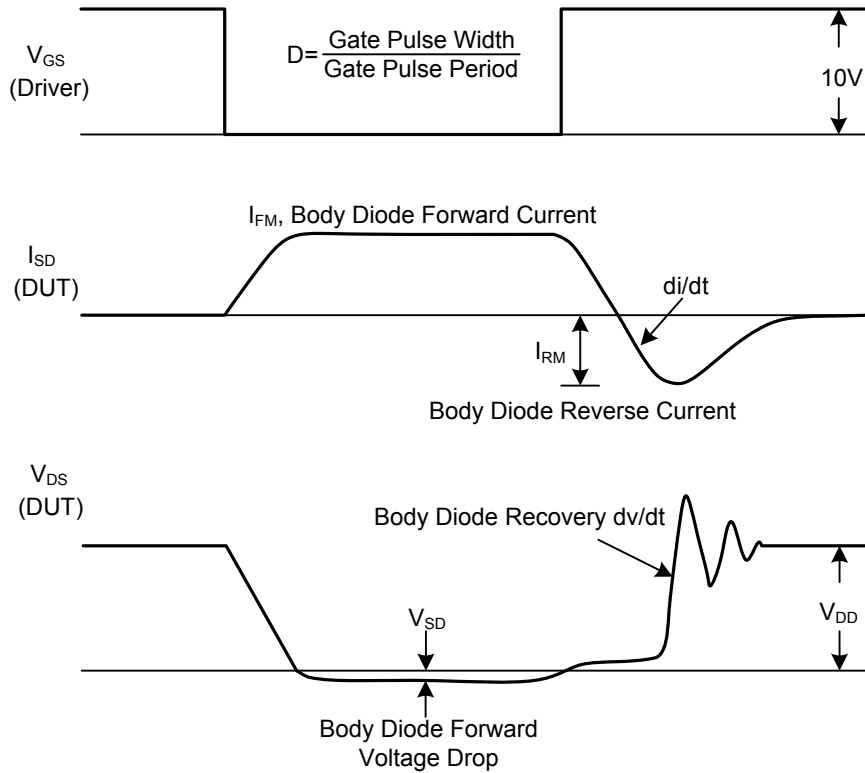
■ ELECTRICAL CHARACTERISTICS

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, $t\leq 300\mu\text{s}$, 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



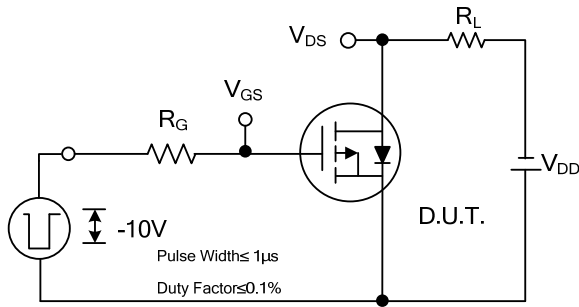
Peak Diode Recovery dv/dt Test Circuit



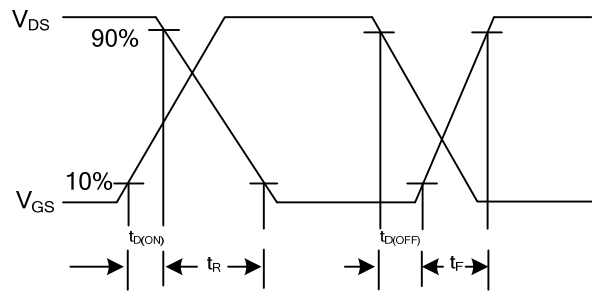
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

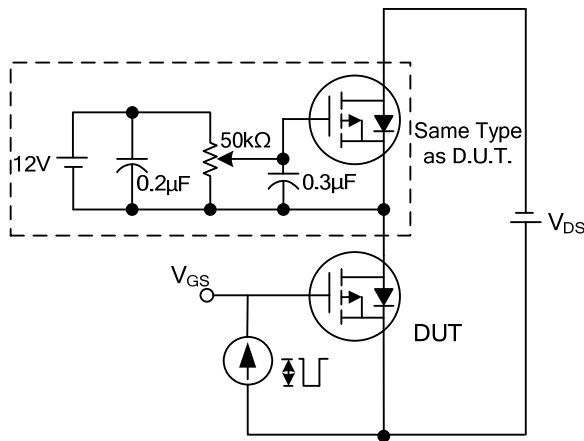
■ TEST CIRCUITS AND WAVEFORMS



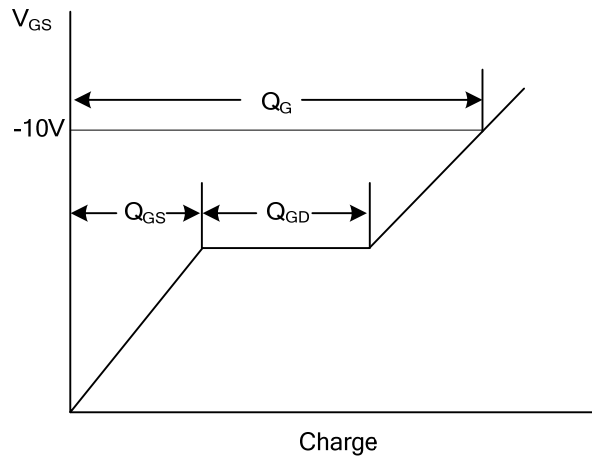
Switching Test Circuit



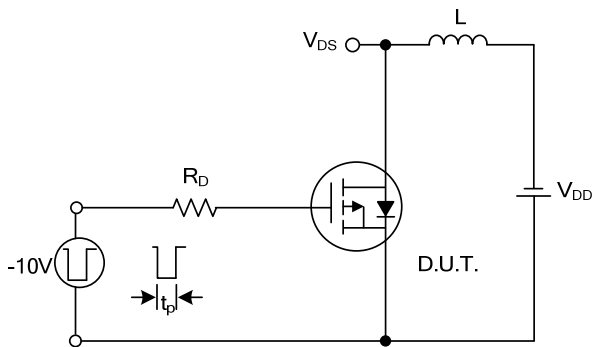
Switching Waveforms



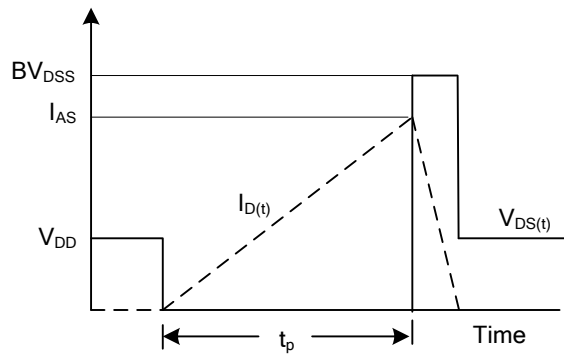
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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