

**UTT30N10**

Preliminary

Power MOSFET**30A, 100V N-CHANNEL
POWER MOSFET**

■ DESCRIPTION

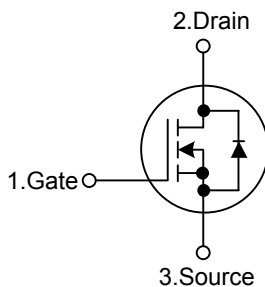
The UTC **UTT30N10** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The UTC **UTT30N10** is suitable for high voltage synchronous rectifier and DC/DC converters, etc.

■ FEATURES

- * $R_{DS(ON)}=32m\Omega$ @ $V_{GS}=10V, I_D=30A$
- * Low Gate Charge (Typical 18.5nC)
- * High Switching Speed

■ SYMBOL

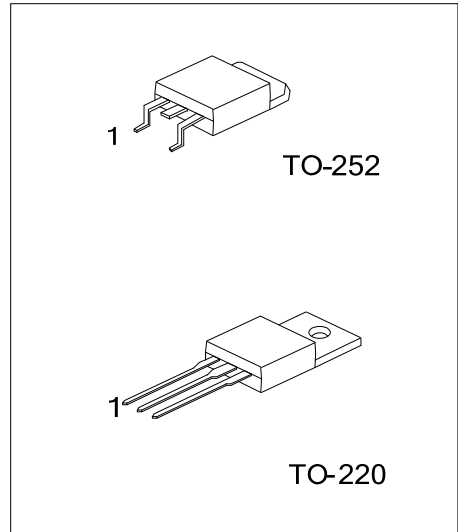


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT30N10L-TA3-T	UTT30N10G-TA3-T	TO-220	G	D	S	Tube
UTT30N10L-TN3-T	UTT30N10G-TN3-T	TO-252	G	D	S	Tube
UTT30N10L-TN3-R	UTT30N10G-TN3-R	TO-252	G	D	S	Tape Reel

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

UTT30N10L-TA3-T		(1)Packing Type	(1) T: Tube
		(2)Package Type	(2) TA3: TO-220, TN3: TO-252
		(3)Lead Free	(3) G: Halogen Free, L: Lead Free



■ 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 ($V_{GS}=10\text{V}$) $T_C=25^{\circ}\text{C}$	I_D	30	A
	Pulsed	I_{DM}	120	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	55	mJ
Power Dissipation	TO-220	P_D	79	W
	TO-252		44	
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. Starting $T_J = 25^{\circ}\text{C}$, $L = 0.27\text{mH}$, $I_{AS} = 30\text{A}$.

3. Pulse Width = 100s

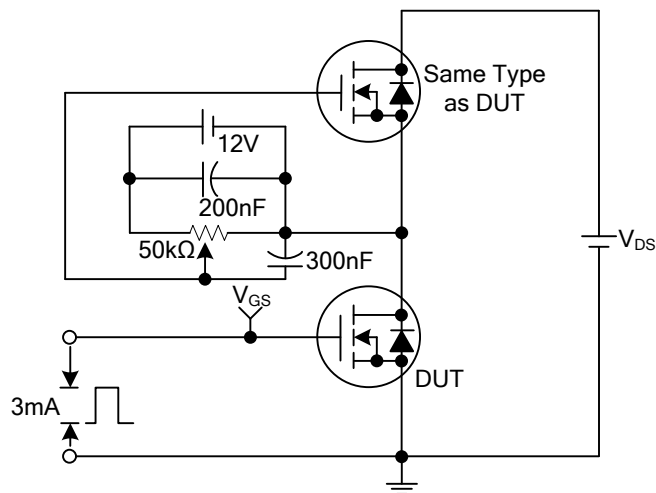
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62	$^{\circ}\text{C/W}$
	TO-252		110	
Junction to Case	TO-220	θ_{JC}	1.58	$^{\circ}\text{C/W}$
	TO-252		2.85	

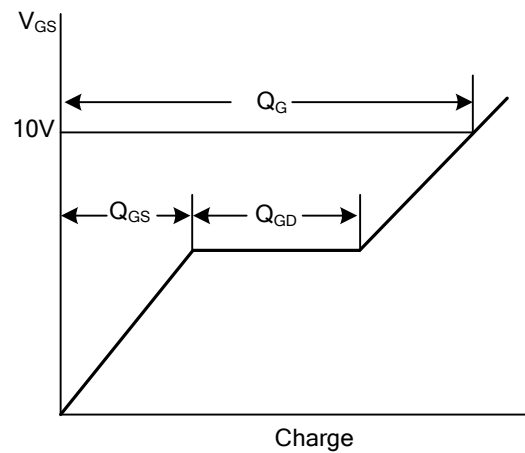
■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1		3	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A		32	43	mΩ
			V _{GS} =6V, I _D =15A		40	72	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		1250		pF
Output Capacitance		C _{OSS}			190		pF
Reverse Transfer Capacitance		C _{RSS}			45		pF
SWITCHING PARAMETERS							
Total Gate Charge at 10V		Q _G	V _{GS} =0~10V, V _{DD} =50V, I _D =30A, I _G =1.0mA		18.5	28	nC
Gate to Source Charge		Q _{GS}	V _{DD} =50V, I _D =30A, I _G =1.0mA		6.5		nC
Gate to Drain Charge		Q _{GD}			4.6		nC
Turn-ON Time		t _{ON}	V _{DD} =50V, I _D =30A, V _{GS} =10V, R _{GS} =16Ω			83	ns
Turn-ON Delay Time		t _{D(ON)}			9		ns
Rise Time		t _R			46		ns
Turn-OFF Delay Time		t _{D(OFF)}			26		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V _{SD}	I _{SD} =30A			1.25	V
			I _{SD} =15A			1.0	V

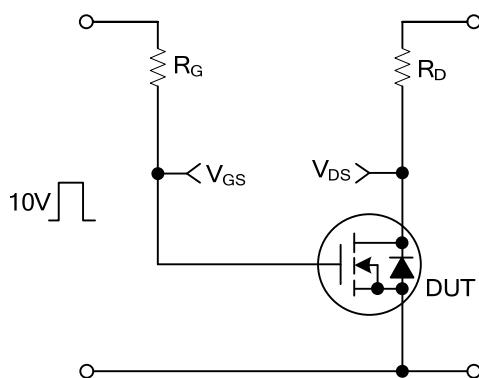
■ TEST CIRCUITS AND WAVEFORMS



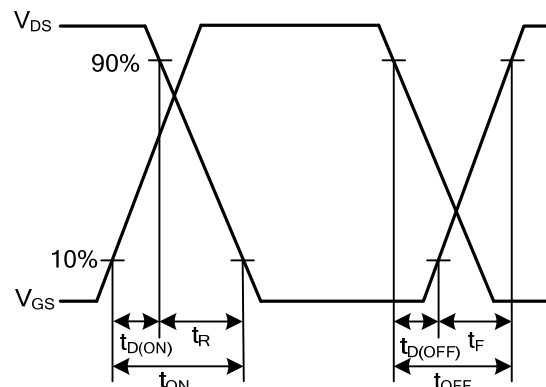
Gate Charge Test Circuit



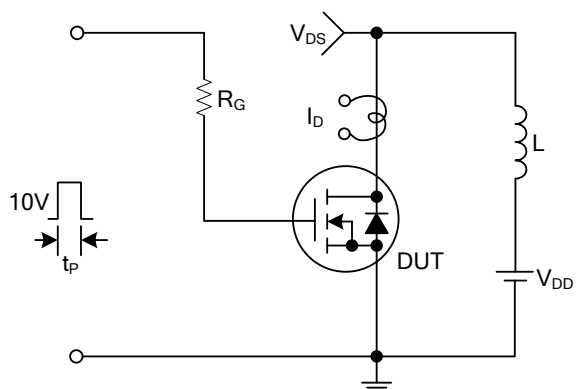
Gate Charge Waveforms



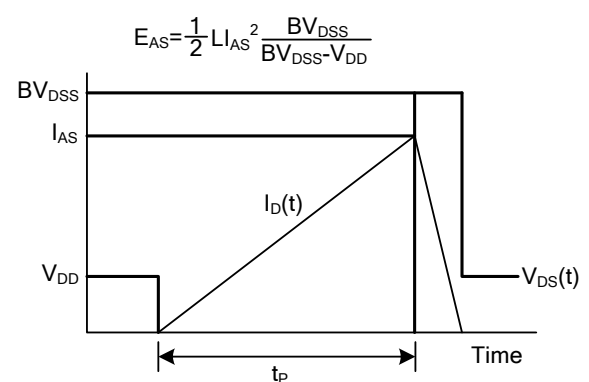
Resistive Switching Test Circuit



Resistive Switching Waveforms

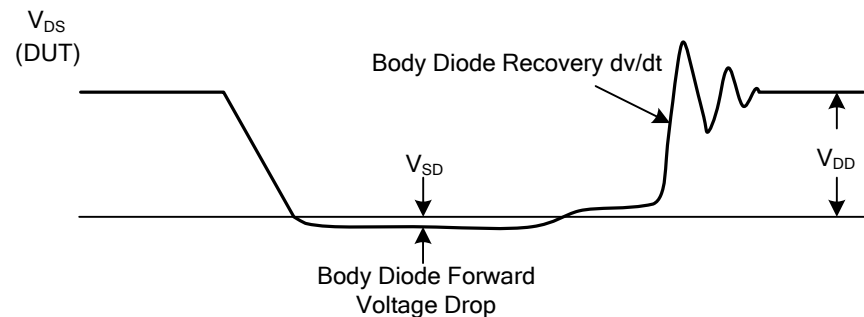
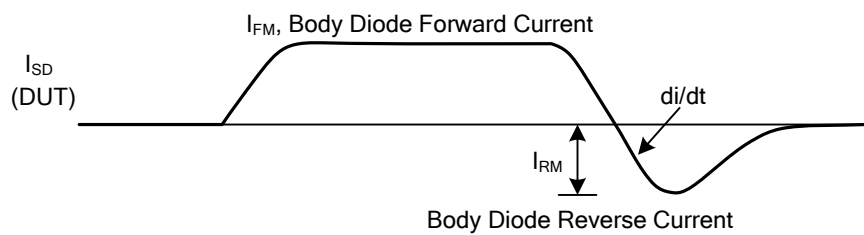
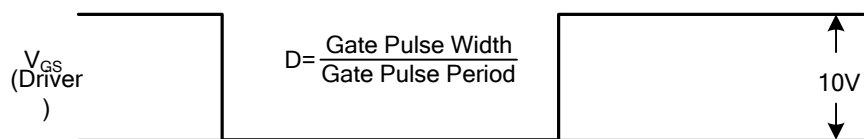
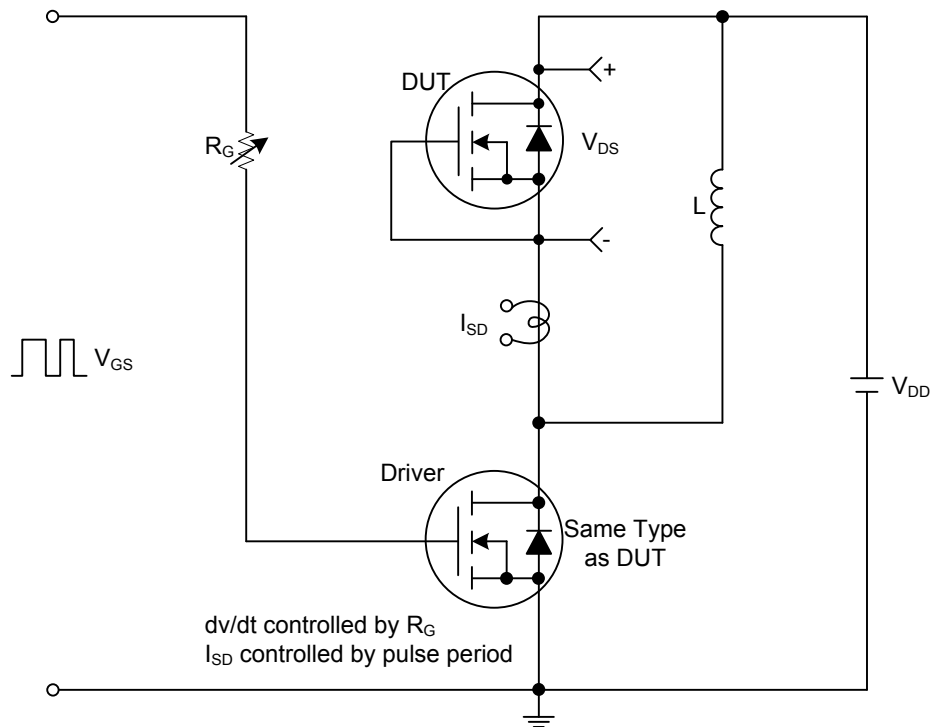


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit and Waveforms

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