



UTT30N10

Preliminary

Power MOSFET

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

■ DESCRIPTION

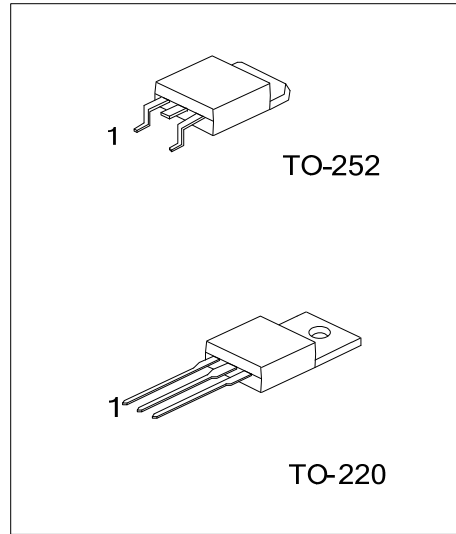
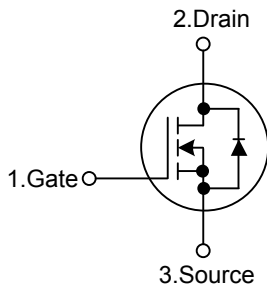
The UTC **UTT30N10** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

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

<p>UTT30N10L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TN3: TO-252</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS (T_c=25°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} =10V) T _c =25°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	°C
Storage Temperature		T _{STG}	-55~+150	°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°C, L = 0.27mH, I_{AS} = 30A.

3. Pulse Width = 100s

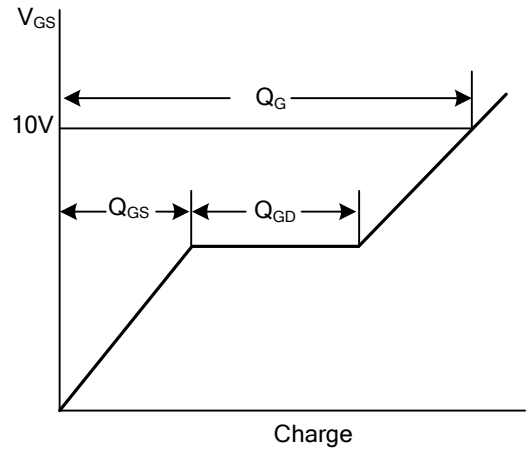
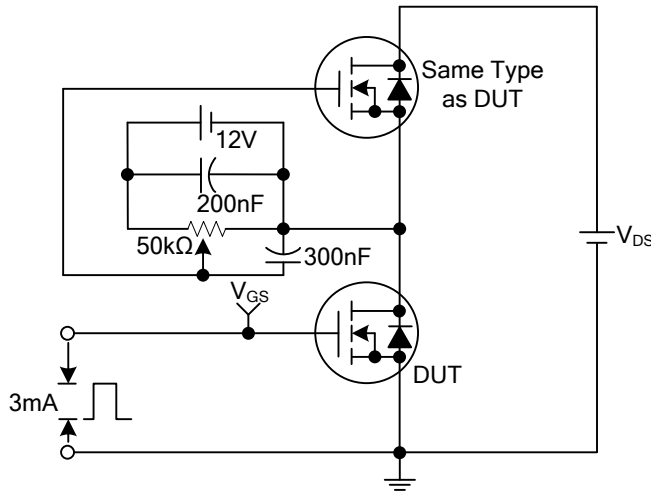
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ _{JA}	62	°C/W
	TO-252		110	
Junction to Case	TO-220	θ _{JC}	1.58	°C/W
	TO-252		2.85	

■ ELECTRICAL CHARACTERISTICS (T_c=25°C, unless otherwise specified)

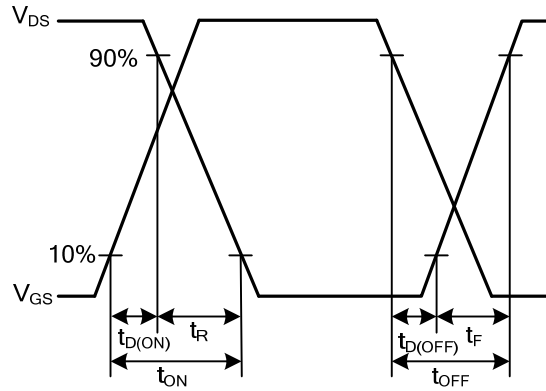
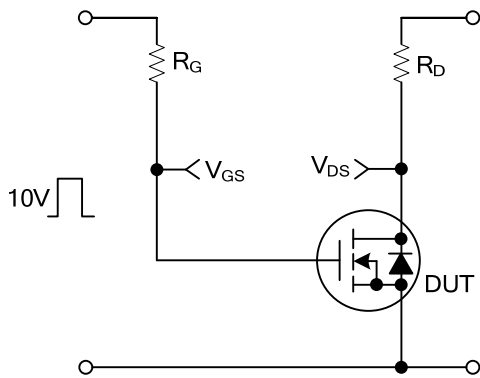
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS} V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100
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}				83	
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =50V, I _D =30A, V _{GS} =10V, R _{GS} =16Ω		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



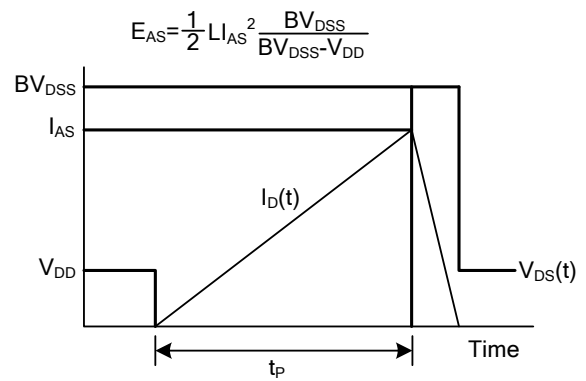
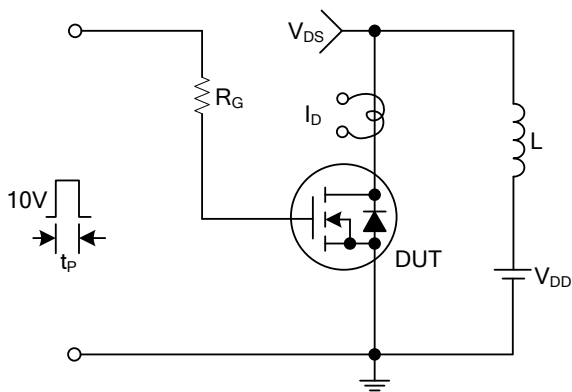
Gate Charge Test Circuit

Gate Charge Waveforms



Resistive Switching Test Circuit

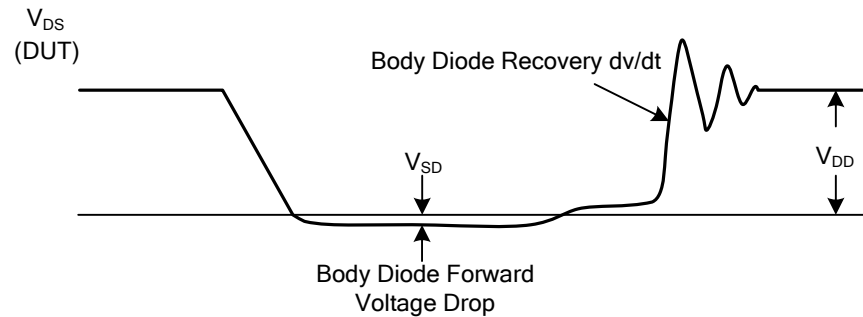
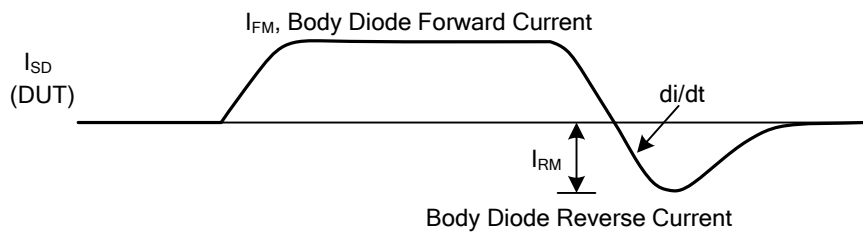
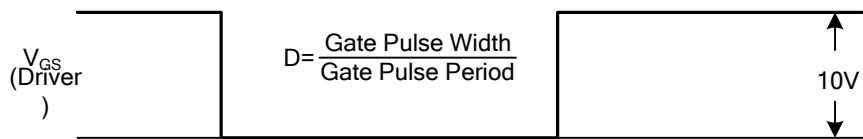
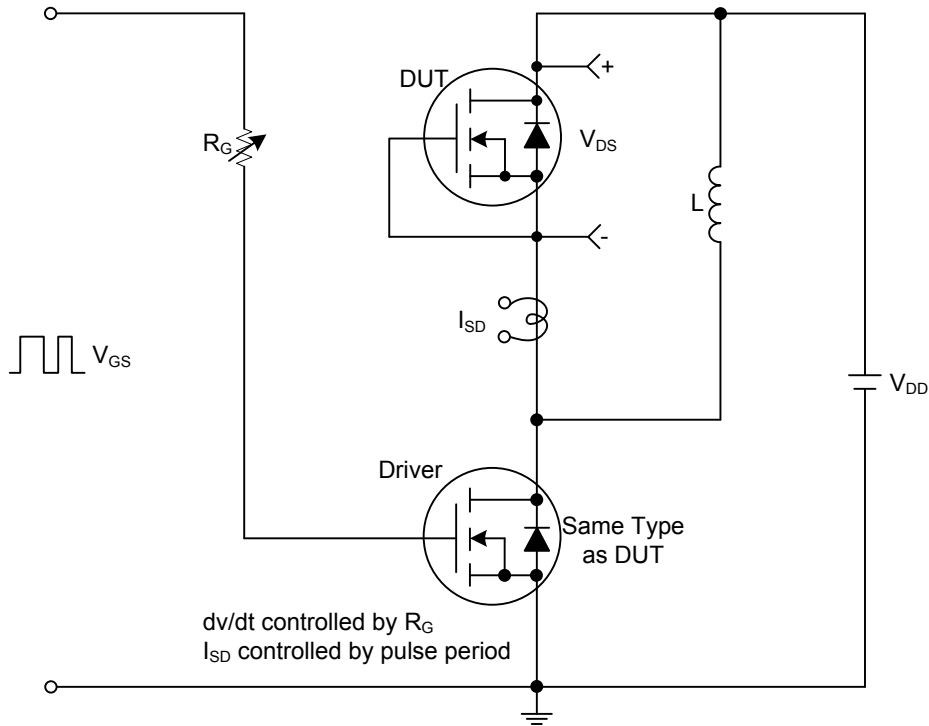
Resistive Switching Waveforms



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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