

**UTT30N08**

Preliminary

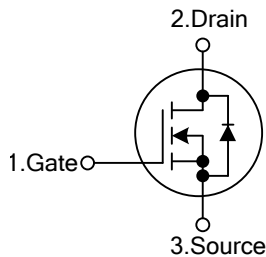
Power MOSFET**80V, 30A N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UTT30N08** is an N-channel mode power MOSFET using UTC's advanced technology to provide customers with planar stripe and DMOS technology. This technology allows a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

The UTC **UTT30N08** is generally applied in high efficiency switch mode power supplies.

FEATURES

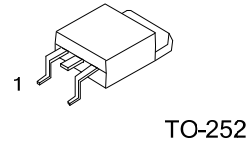
- * $R_{DS(ON)} < 40m\Omega$ @ $V_{GS}=10V$, $I_D=30A$
- * Low Gate Charge (Typical 48nC)
- * Low C_{RSS} (Typical 30pF)
- * High Switching Speed

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT30N08L-TN3-R	UTT30N08G-TN3-R	TO-252	G	D	S	Tape Reel
UTT30N08L-TN3-T	UTT30N08G-TN3-T	TO-252	G	D	S	Tube

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

UTT30N08L-TN3-R (1) Packing Type (2) Package Type (3) Lead Free		(1) R: Tape Reel, T: Tube (2) TN3: TO-252 (3) G: Halogen Free, L: Lead Free
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■ **ABSOLUTE MAXIMUM RATINGS** ($T_C=25^{\circ}\text{C}$, unless otherwise specified) (Note 4)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain to Source Voltage			V _{DSS}	80	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current (Note 5)	Continuous	T _C =25°C	I _D	30	A
		T _C =100°C		21.3	A
	Pulsed (Note 2)		I _{DM}	120	A
Avalanche Energy	Single Pulsed (Note 3)		E _{AS}	300	mJ
	Repetitive (Note 2)		E _{AR}	8	mJ
Power Dissipation (T _C =25°C)			P _D	28	W
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. Repetitive Rating; Pulse width limited by maximum junction temperature.

3. $L=4\text{mH}$, $I_{AS}=30\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$

4. Drain current limited by maximum junction temperature

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	4.53	$^{\circ}\text{C/W}$

■ **ELECTRICAL CHARACTERISTICS**

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V, T _J =150°C	80			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =80V, 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 _{GS} =V _{DS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A		32	40	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{DS} =25, V _{GS} =0V, f=1.0MHz		2400		pF
Output Capacitance		C _{OSS}			390		pF
Reverse Transfer Capacitance		C _{RSS}			30		pF

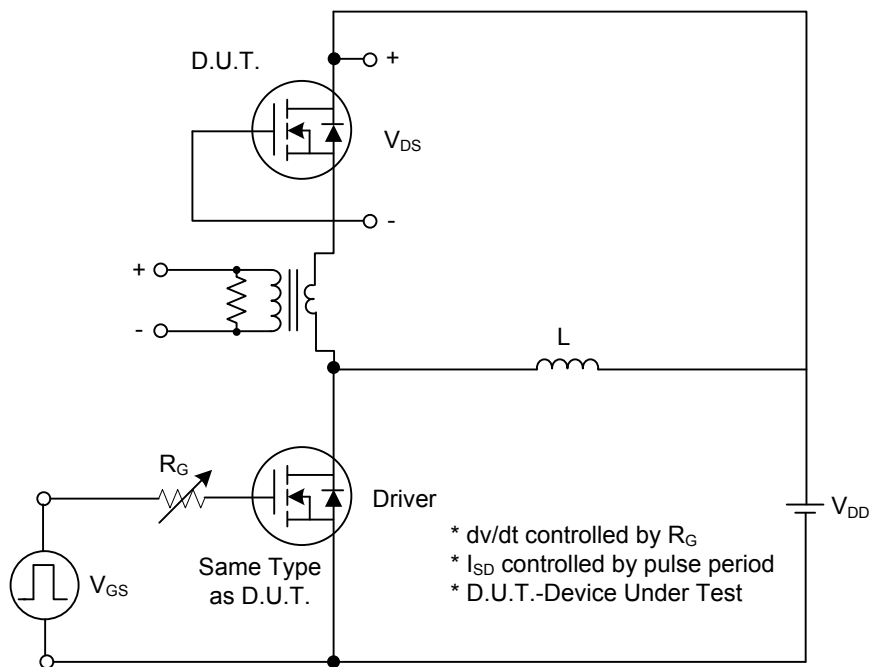
■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=60V, V_{GS}=10V, I_D=30A$ (Note 1, 2)		48	60	nC
Gate to Source Charge	Q_{GS}			15		nC
Gate to Drain ("Miller") Charge	Q_{GD}			20		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30V, I_D=15A, R_G=4.7\Omega$ (Note 1, 2)		45		ns
Rise Time	t_R			60		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			115		ns
Fall-Time	t_F			66		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				30	A
Maximum Body-Diode Pulsed Current	I_{SM}				120	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_{SD}=30A, V_{GS}=0V$			1.4	V

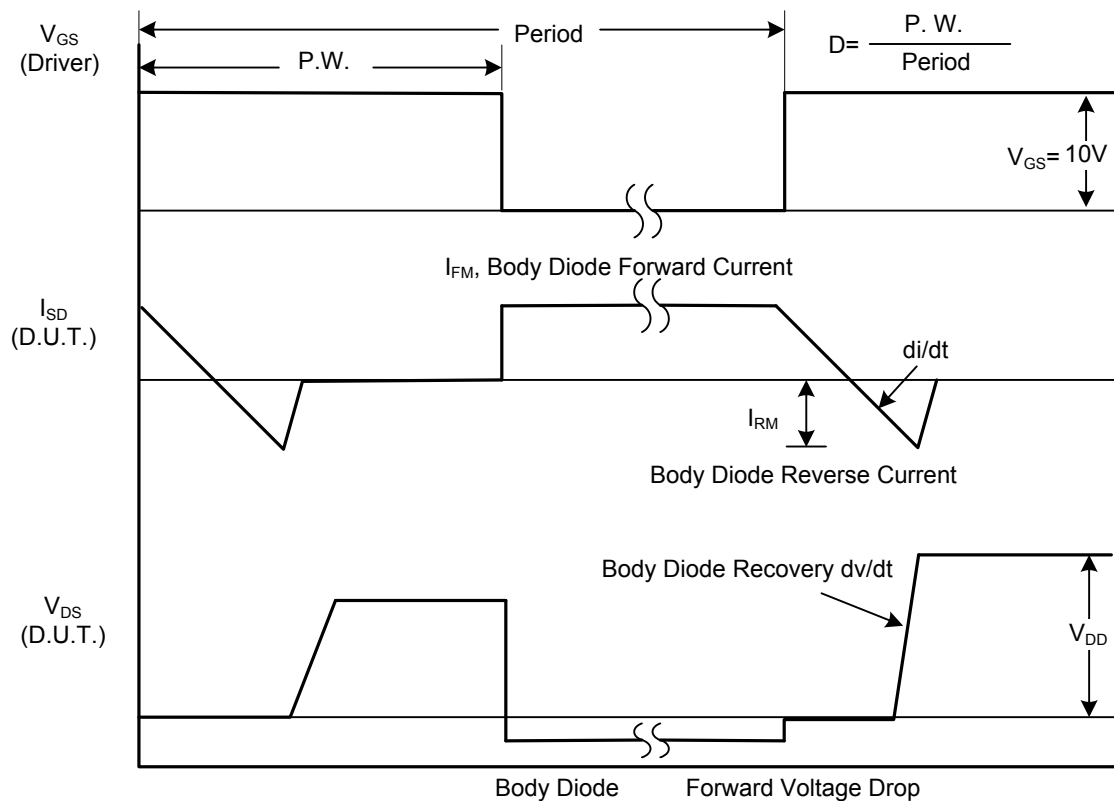
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$; Duty Cycle $\leq 2\%$.

2. Essentially Independent of Operating Temperature Typical Characteristics

■ TEST CIRCUITS AND WAVEFORMS

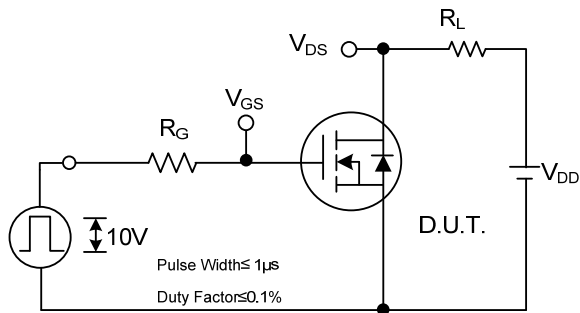


Peak Diode Recovery dv/dt Test Circuit

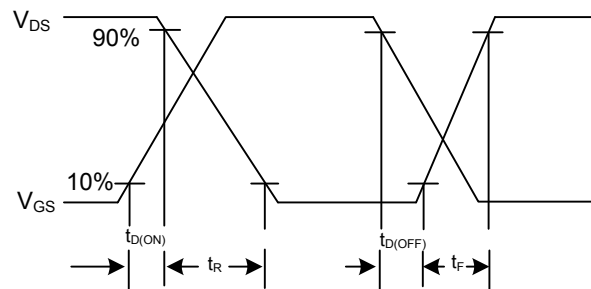


Peak Diode Recovery dv/dt Waveforms

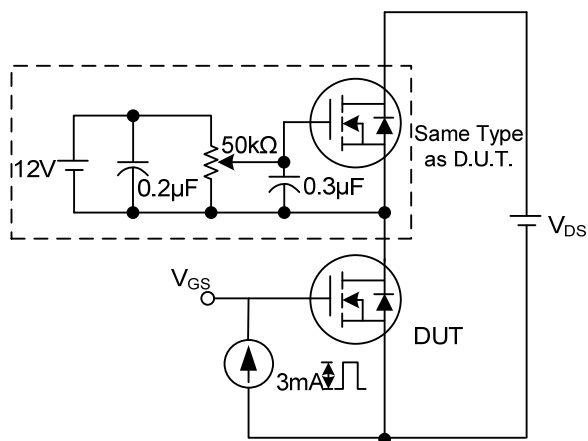
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



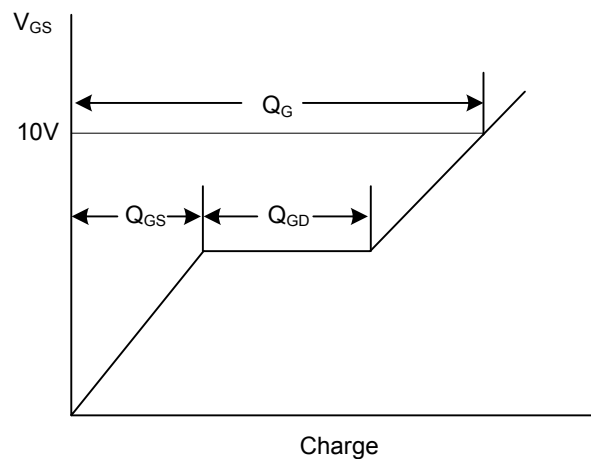
Switching Test Circuit



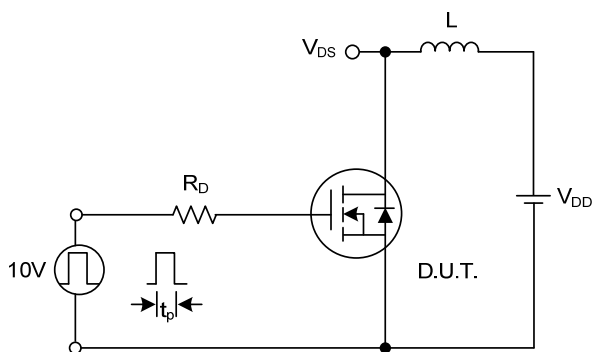
Switching Waveforms



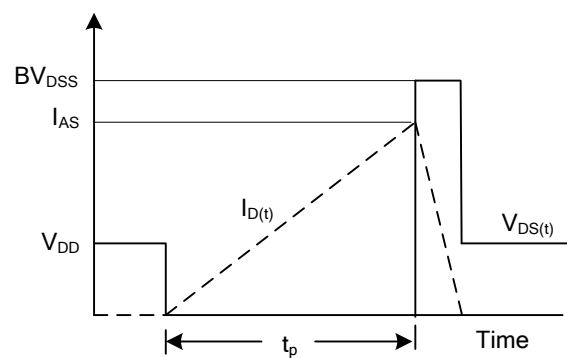
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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