



UTT30N08

Preliminary

Power MOSFET

80V, 30A N-CHANNEL POWER MOSFET

DESCRIPTION

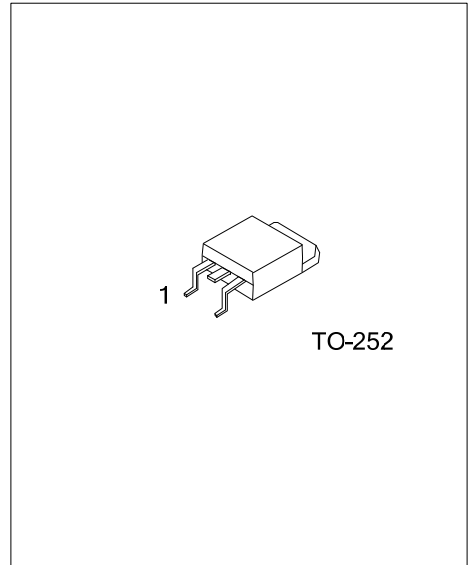
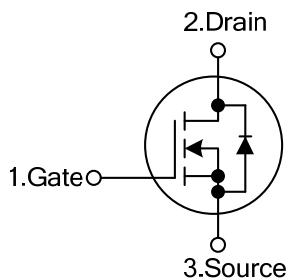
The UTC **UTT30N08** is an N-channel mode power MOSFET using UTC's advanced technology to provide customers with planar stripe and DMOS technology. This technology allows a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation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



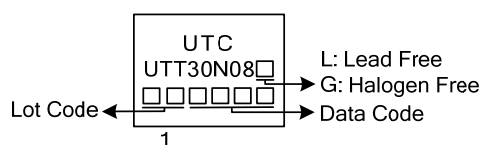
ORDERING INFORMATION

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

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

UTT30N08L-TN3-R 	(1) R: Tape Reel (2) TN3: TO-252 (3) L: Lead Free, G: Halogen Free and Lead Free
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MARKING



■ 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	I_D	$T_C=25^\circ\text{C}$	30	A
			$T_C=100^\circ\text{C}$	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 ($T_C=25^\circ\text{C}$)		P_D	28	W	
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. 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

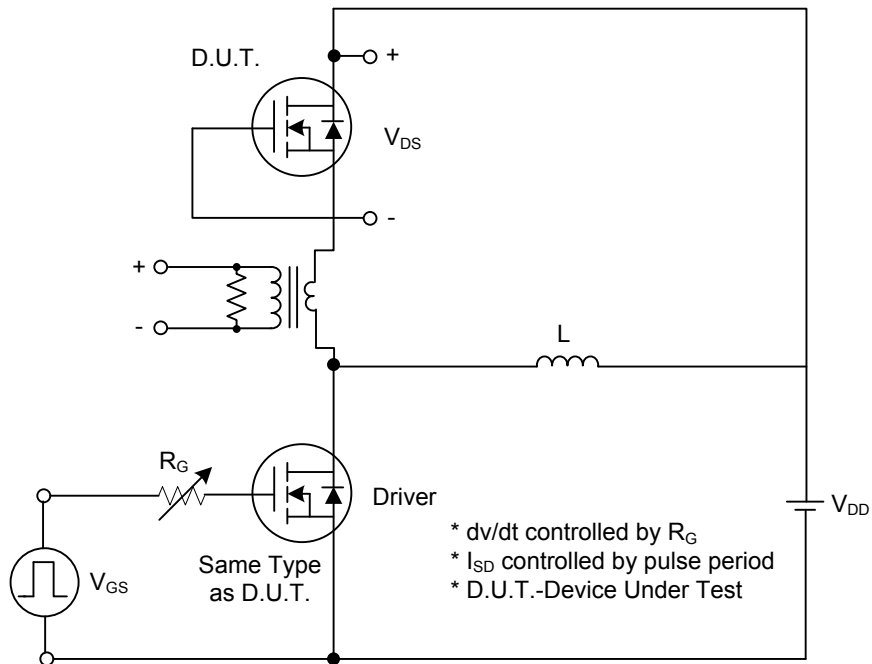
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	4.53	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

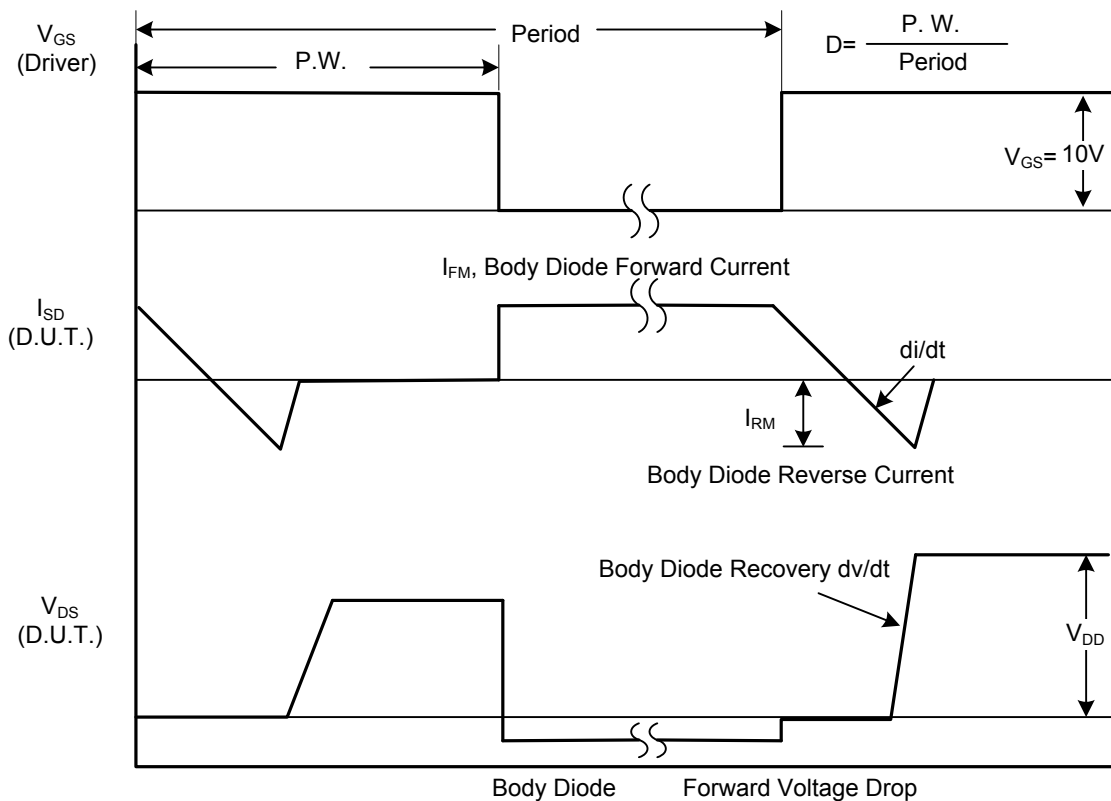
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$, $T_J=150^\circ\text{C}$	80			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80\text{V}$, $V_{GS}=0\text{V}$,			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}$, $I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=30\text{A}$		32	40	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=25$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$		2400		pF
Output Capacitance	C_{OSS}			390		pF
Reverse Transfer Capacitance	C_{RSS}			30		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=60\text{V}$, $V_{GS}=10\text{V}$, $I_D=30\text{A}$ (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	$t_{D(ON)}$	$V_{DD}=30\text{V}$, $I_D=15\text{A}$, $R_G=4.7\Omega$ (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}	$I_{SD}=30\text{A}$, $V_{GS}=0\text{V}$			1.4	V

- Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$; Duty Cycle $\leq 2\%$.
 2. Essentially Independent of Operating Temperature Typical Characteristics

■ TEST CIRCUITS AND WAVEFORMS

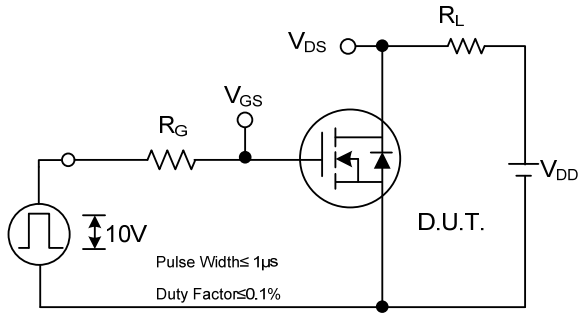


Peak Diode Recovery dv/dt Test Circuit

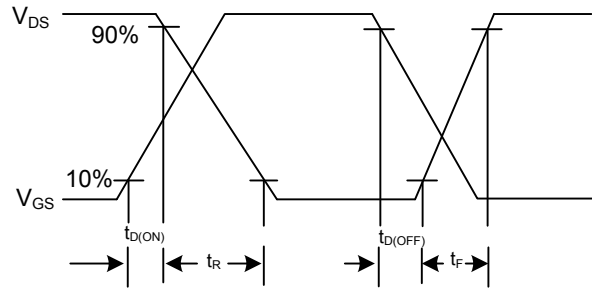


Peak Diode Recovery dv/dt Waveforms

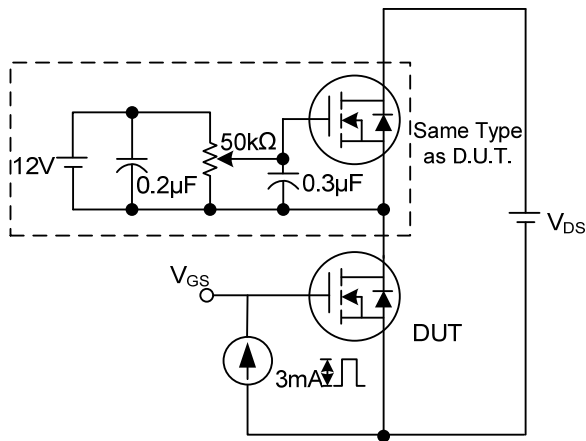
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



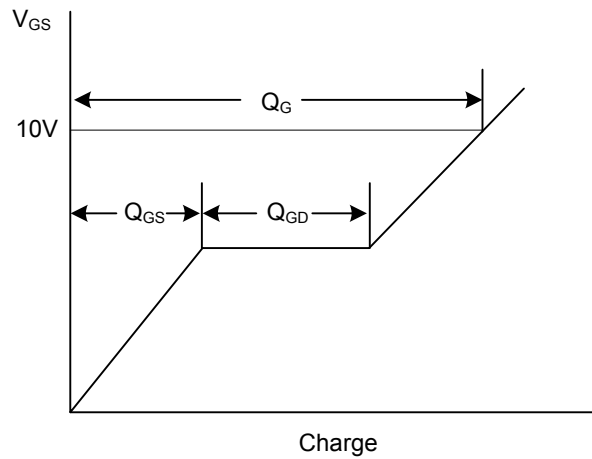
Switching Test Circuit



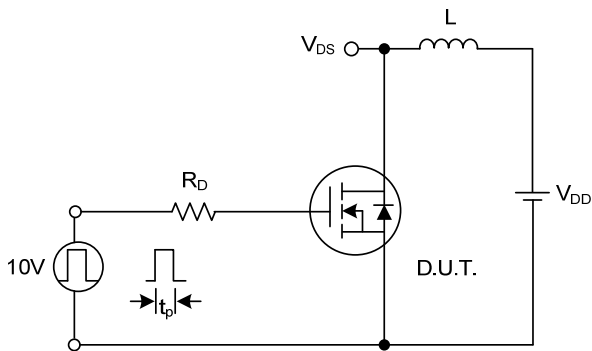
Switching Waveforms



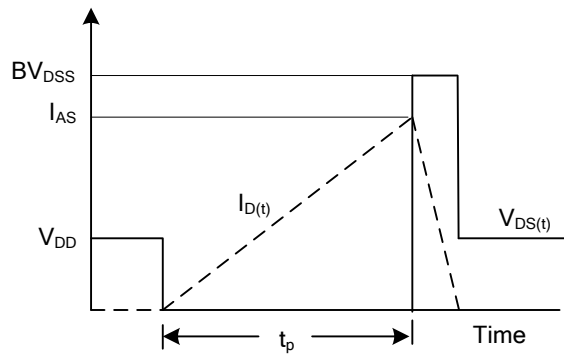
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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