

**UT30NN10H**

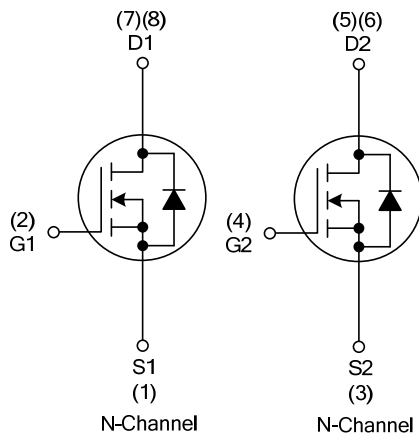
Preliminary

*Power MOSFET***30A, 100V DUAL N-CHANNEL
ENHANCEMENT MODE POWER
MOSFET****DESCRIPTION**

The UTC **UT30NN10H** is a dual N-Channel enhancement mode power MOSFET, it provides designer with fast switching speed, ruggedized device design, low on-resistance and cost-effectiveness.

FEATURES

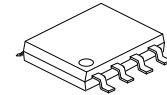
- * $R_{DS(ON)} \leq 38 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=15\text{A}$
- * Fast Switching Speed
- * Simple Drive Requirement

SYMBOL**ORDERING INFORMATION**

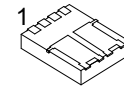
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT30NN10HL-S08-R	UT30NN10HG-S08-R	SOP-8	S1	G1	S2	G2	D2	D2	D1	D1	Tape Reel
UT30NN10HL-P5060-R	UT30NN10HG-P5060-R	PDFN5×6	S1	G1	S2	G2	D2	D2	D1	D1	Tape Reel

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

UT30NN10HG-S08-R 		(1) R: Tape Reel (2) S08: SOP-8, P5060: PDFN5×6 (3) G: Halogen Free and Lead Free, L: Lead Free
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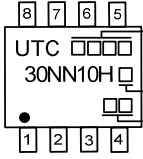
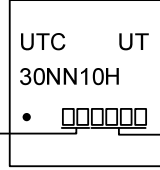


SOP-8



PDFN5×6

MARKING

SOP-8	PDFN5×6
 8 7 6 5 → Date Code UTC 30NN10H L: Lead Free G: Halogen Free • → Lot Code 1 2 3 4	 UTC UT 30NN10H • → Lot Code → Date Code

■ **ABSOLUTE MAXIMUM RATINGS** ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	100	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current	Continuous (Note 3)	PDFN5X6	I _D	30	A
		SOP-8		5	
	Pulsed (Note 2)	PDFN5X6	I _{DM}	60	A
		SOP-8		20	
Avalanche Energy	Single Pulsed (Note 3)		E _{AS}	4	mJ
Peak Diode Recovery dv/dt (Note 4)			dv/dt	13	V/ns
Power Dissipation (T _C =25°C)	SOP-8		P _D	5	W
	PDFN5×6			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. $L = 0.1\text{mH}$, $I_{AS} = 9.0\text{A}$, $V_{DD} = 25\text{V}$, $R_G = 25\ \Omega$ Starting $T_J = 25^{\circ}\text{C}$

4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$

■ **THERMAL DATA**

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ_{JA}	125	$^{\circ}\text{C}/\text{W}$
	PDFN5x6		62.5	$^{\circ}\text{C}/\text{W}$
Junction to Ambient	SOP-8	θ_{JC}	25	$^{\circ}\text{C}/\text{W}$
	PDFN5x6		4.46	$^{\circ}\text{C}/\text{W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

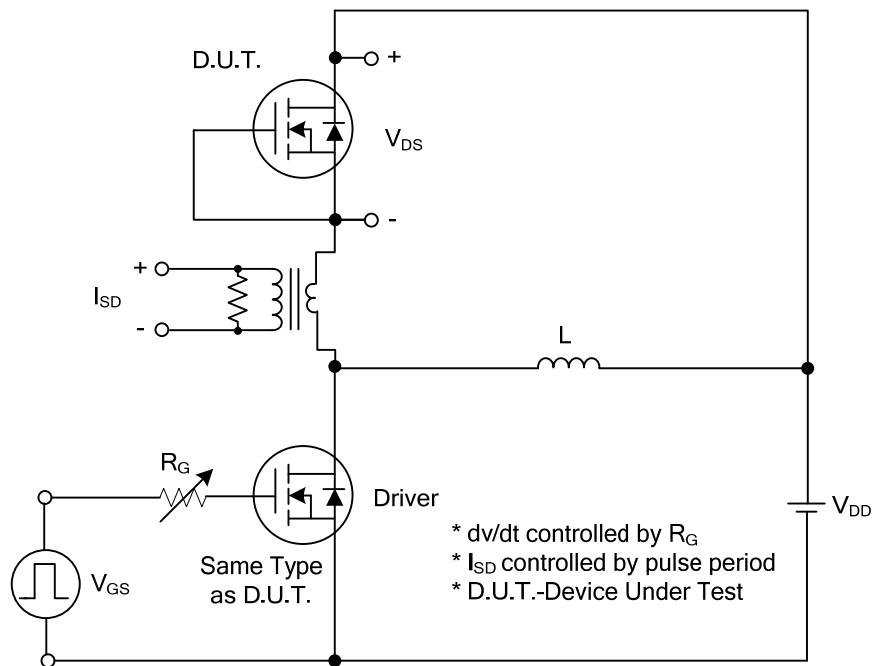
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	100			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{DS} =0V, V _{GS} =20V			100	nA
	Reverse		V _{DS} =0V, V _{GS} =-20V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Drain-Source On-State Resistance (Note 1)		R _{DS(ON)}	V _{GS} =10V, I _D =15A			38	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		1480		pF
Output Capacitance		C _{OSS}			125		pF
Reverse Transfer Capacitance		C _{RSS}			100		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =80V, V _{GS} =10V, I _D =30A I _G =1mA (Note 1, 2)		46		nC
Gate-Source Charge		Q _{GS}			12		nC
Gate-Drain Charge		Q _{GD}			15		nC
Turn-ON Delay Time (Note 1)		t _{D(ON)}	V _{DS} =50V, V _{GS} =10V, I _D =30A, R _G =3.0Ω (Note 1, 2)		11		ns
Turn-ON Rise Time		t _R			18		ns
Turn-OFF Delay Time		t _{D(OFF)}			29		ns
Turn-OFF Fall Time		t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				30	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				60	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =30A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)		t _{rr}	I _S =30A, V _{GS} =0V,		52		ns
Body Diode Reverse Recovery Charge		Q _{rr}	di _F /dt=100A/μs		60		nC

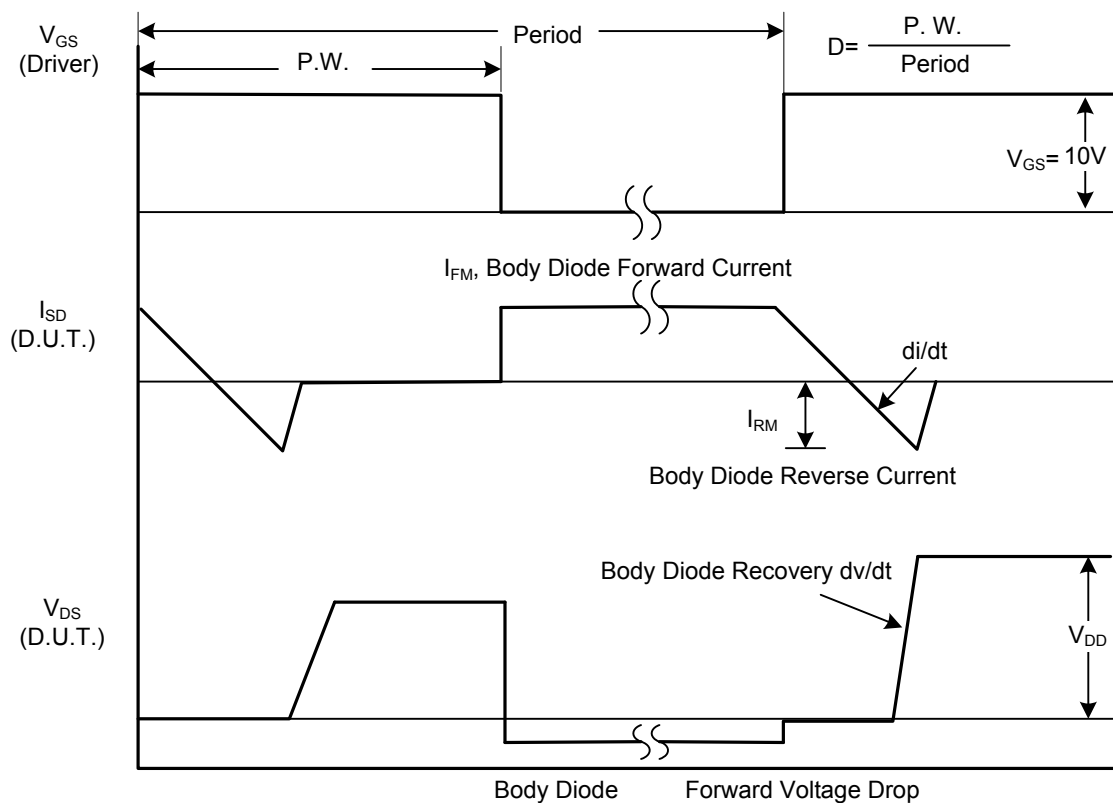
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

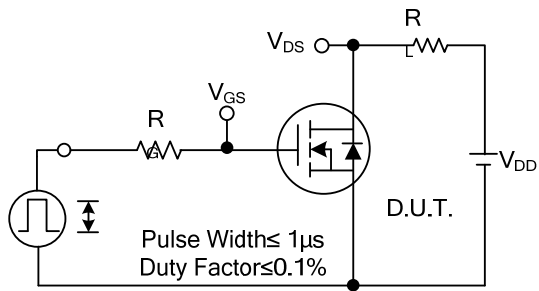


Peak Diode Recovery dv/dt Test Circuit

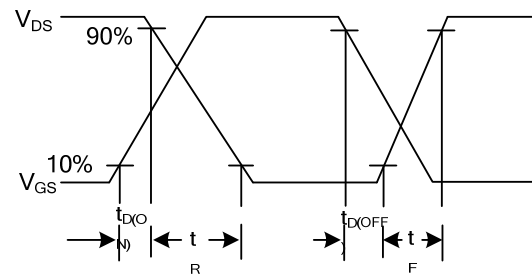


Peak Diode Recovery dv/dt Waveforms

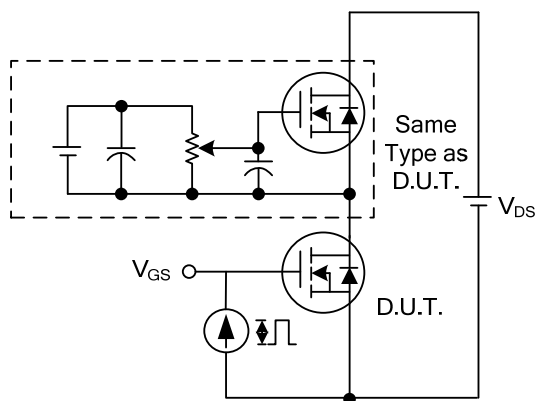
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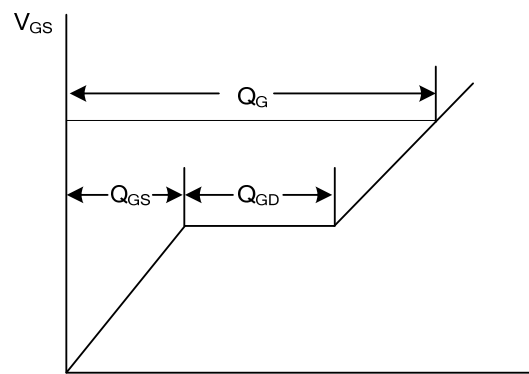
Switching Test Circuit



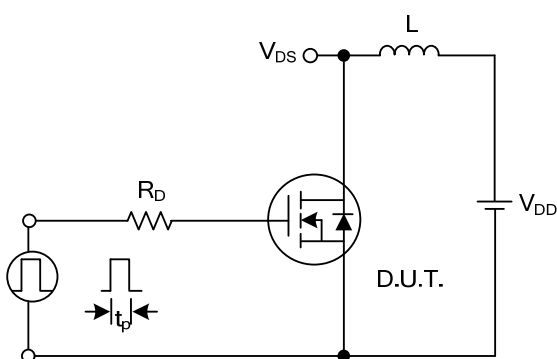
Switching Waveforms



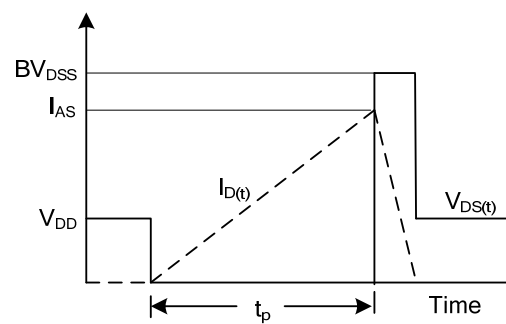
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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