



UTT80N10H

Power MOSFET

80A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

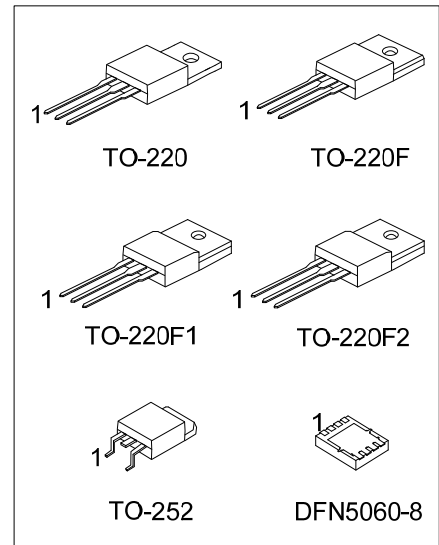
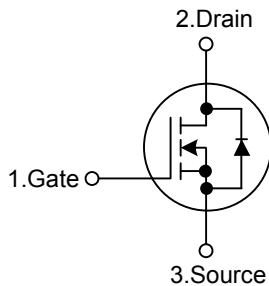
The UTC **UTT80N10H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and low gate charge, etc.

The UTC **UTT80N10H** applies to primary side switch, synchronous rectifier, Motor Drives, etc.

FEATURES

- * $R_{DS(ON)} \leq 14 \text{ m}\Omega @ V_{GS}=10\text{V}, I_D=40\text{A}$
- * High Cell Density Trench Technology
- * High Power and Current Handling Capability

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT80N10HL-TA3-T	UTT80N10HG-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TF1-T	UTT80N10HG-TF1-T	TO-220F1	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TF2-T	UTT80N10HG-TF2-T	TO-220F2	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TF3-T	UTT80N10HG-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TN3-R	UTT80N10HG-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT80N10HL-K08-5060-R	UTT80N10HG-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

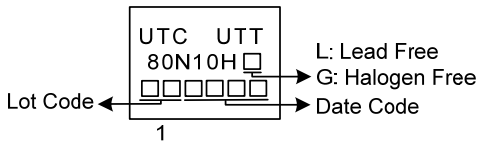
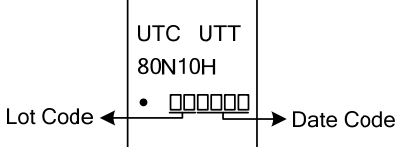
Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UTT80N10HG-TA3-T</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF1: TO-220F1, TF2: TO-220F2, TF3: TO-220F, TN3: TO-252, K08-5060; DFN5060-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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UTT80N10H

Power MOSFET

MARKING

TO-220 / TO-220F / TO-220F1 TO-220F2 / TO-252	DFN5060-8
 <p>UTC UTT 80N10H □ □□□□□ 1</p> <p>Lot Code ←</p> <p>→ L: Lead Free → G: Halogen Free → Date Code</p>	 <p>UTC UTT 80N10H • □□□□□</p> <p>Lot Code ←</p> <p>→ Date Code</p>

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■ 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	I_D	80	A
	Pulsed (Note 2)	I_{DM}	320	A
Avalanche Current (Note 2)		I_{AR}	49	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	120	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.2	V/ns
Power Dissipation	TO-220	P_D	142	W
	TO-220F		39	W
	TO-220F1			
	TO-220F2			
	TO-252			
	DFN5060-8			
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. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

3. $L = 0.1\text{mH}$, $I_{AS} = 49\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

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

■ THERMAL DATA

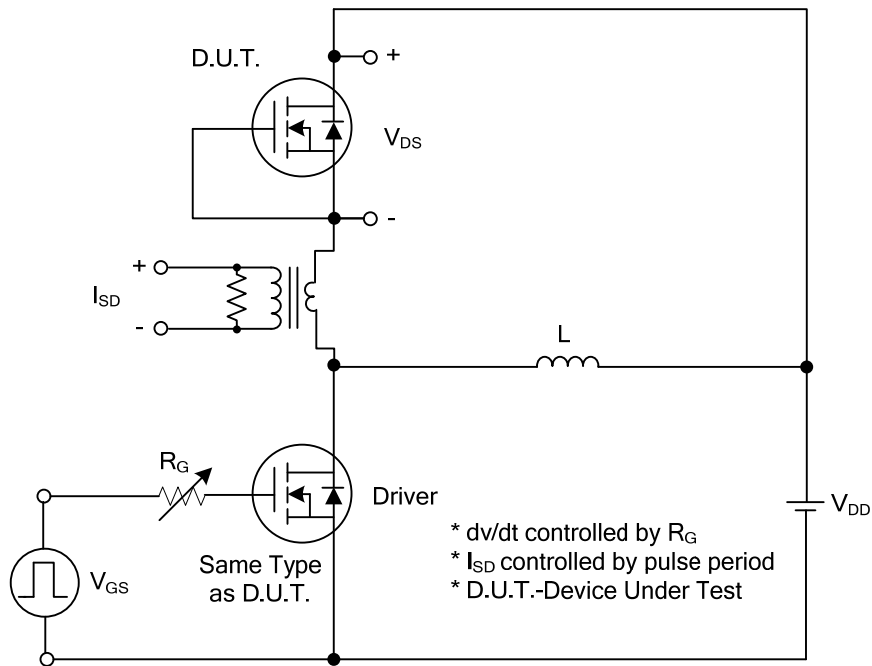
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-220F1/ TO-220F2	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
	TO-252		110	$^{\circ}\text{C}/\text{W}$
	DFN5060-8		35 (Note)	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	θ_{JC}	0.88	$^{\circ}\text{C}/\text{W}$
	TO-220F		3.2	$^{\circ}\text{C}/\text{W}$
	TO-220F1		3.05	$^{\circ}\text{C}/\text{W}$
	TO-220F2			
	TO-252		2.01	$^{\circ}\text{C}/\text{W}$
	DFN5060-8		3.2 (Note)	$^{\circ}\text{C}/\text{W}$

Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

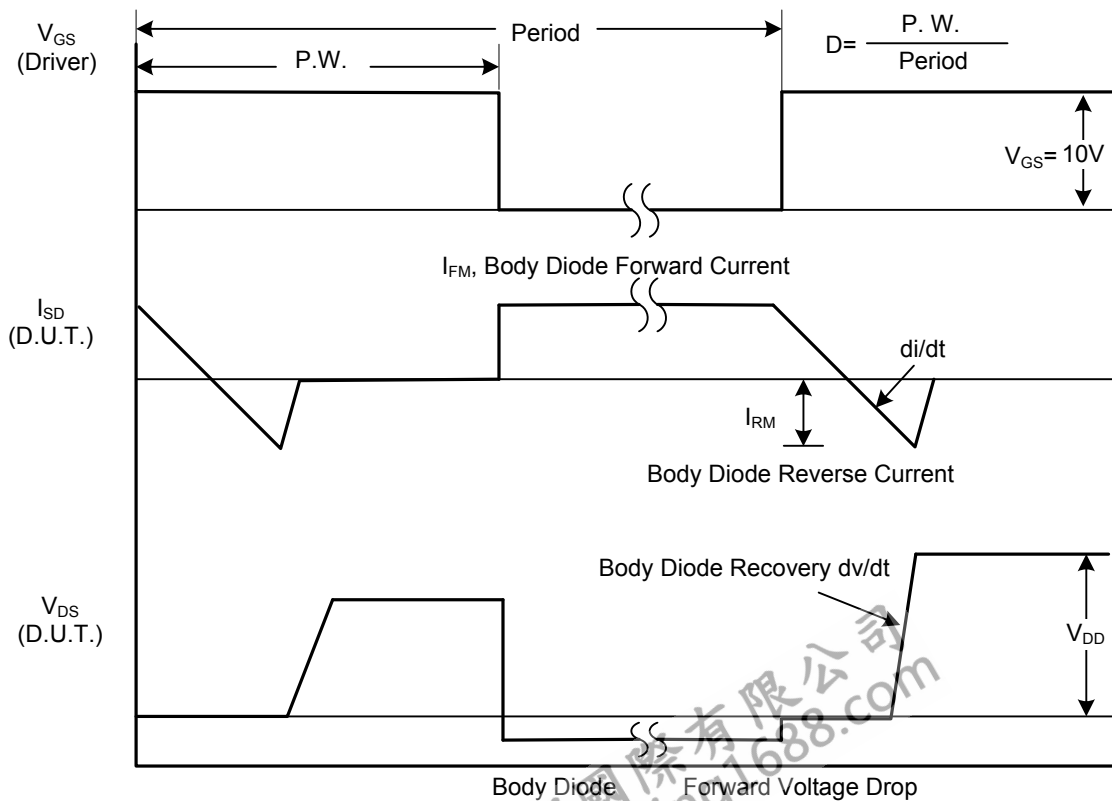
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

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} =80V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =40A		12	14	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		2750		pF
Output Capacitance	C _{OSS}			270		pF
Reverse Transfer Capacitance	C _{RSS}			90		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =50V, V _{GS} =10V, I _D =1.3A, I _G =100μA		175		nC
Gate to Source Charge	Q _{GS}			25		nC
Gate to Drain Charge	Q _{GD}			12		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =0.5A, R _G =25Ω		135		ns
Rise Time	t _R			80		ns
Turn-OFF Delay Time	t _{D(OFF)}			250		ns
Fall-Time	t _F			70		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				80	A
Maximum Body-Diode Pulsed Current	I _{SM}				320	A
Drain-Source Diode Forward Voltage	V _{SD}	I _{SD} =80A			1.25	V
Body Diode Reverse Recovery Time	t _{rr}	I _S =30A, dI/dt=100A/μs		40		ns
Body Diode Reverse Recovery Charge	Q _{rr}			40		nC

TEST CIRCUITS AND WAVEFORMS

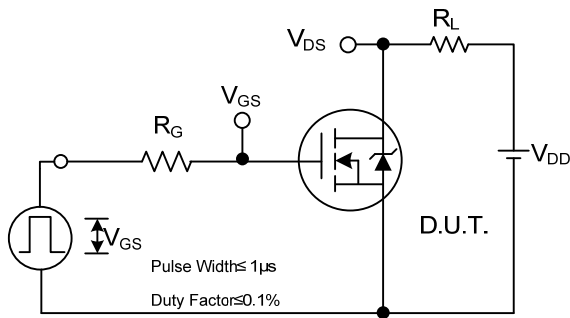


Peak Diode Recovery dv/dt Test Circuit

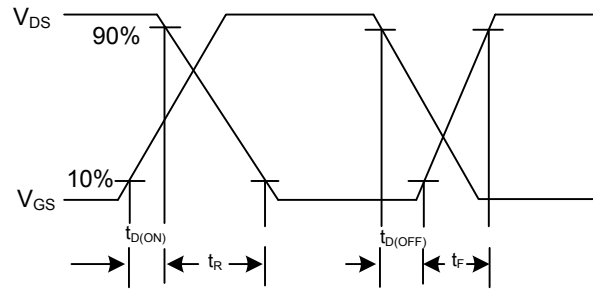


Peak Diode Recovery dv/dt Waveforms

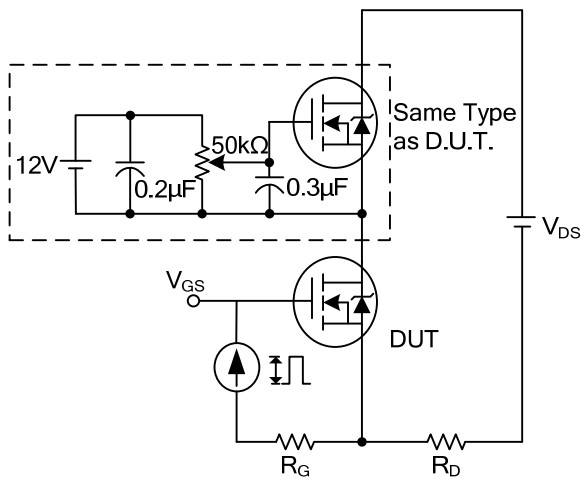
TEST CIRCUITS AND WAVEFORMS(Cont.)



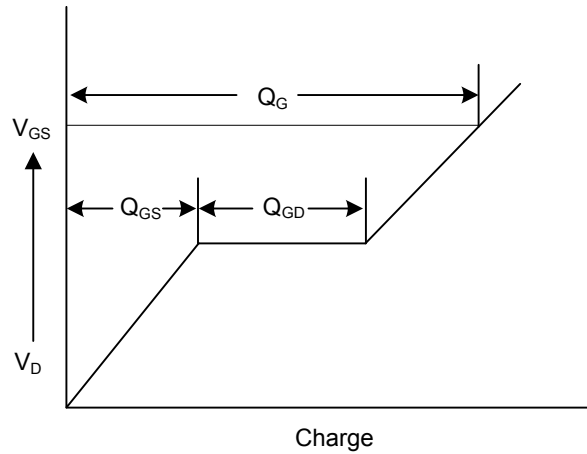
Switching Test Circuit



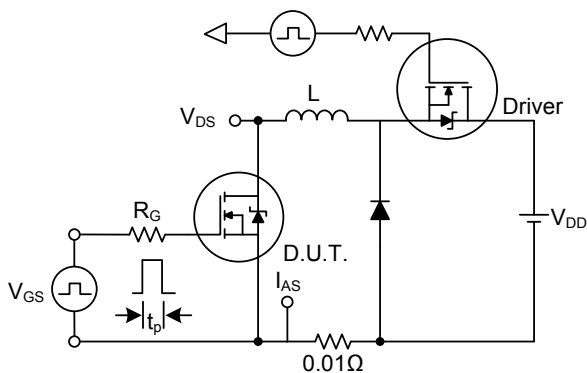
Switching Waveforms



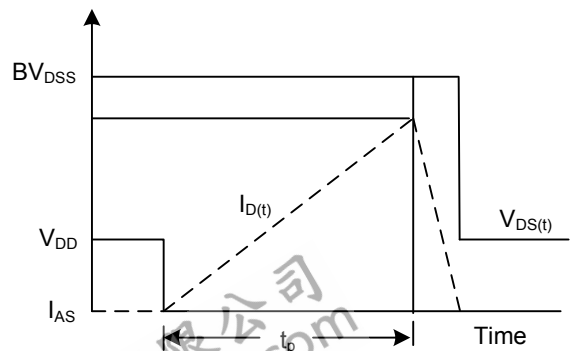
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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