



UTT80N07

Power MOSFET

**70V, 80A N-CHANNEL
POWER MOSFET**

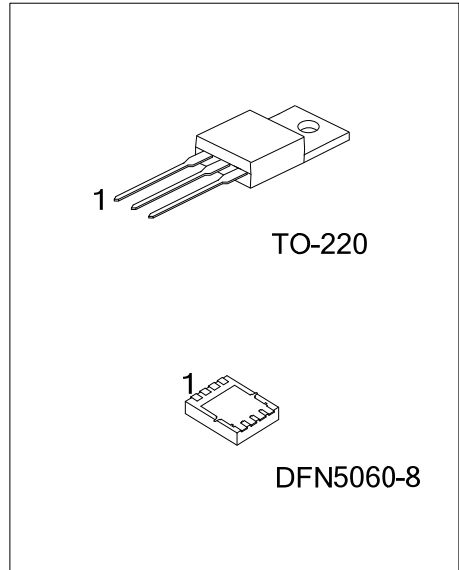
■ **DESCRIPTION**

The UTC **UTT80N07** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low $R_{DS(ON)}$ characteristic by high cell density trench technology.

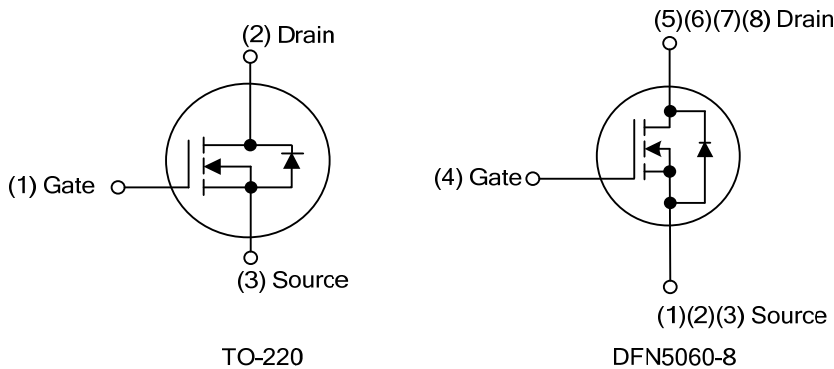
The UTC **UTT80N07** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

■ **FEATURES**

- * $R_{DS(ON)} < 11\text{ m}\Omega @ V_{GS}=10\text{V}, I_D=40\text{A}$
- * Trench FET Power MOSFETS Technology



■ **SYMBOL**



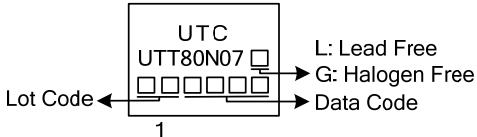
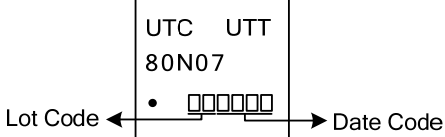
■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT80N07L-TA3-T	UTT80N07G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT80N07L-K08-5060-R	UTT80N07G-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>UTT80N07G-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, K08-5060: DFN5060-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

TO-220	DFN5060-8
 <p>Diagram showing marking on a TO-220 package. The marking area contains: UTC, UTT80N07, a small square, and a 5-digit lot code. A '1' is printed below the lot code. Arrows point from the lot code to 'Lot Code' and from the small square to 'Data Code'. Text to the right indicates: L: Lead Free, G: Halogen Free.</p>	 <p>Diagram showing marking on a DFN5060-8 package. The marking area contains: UTC, UTT, 80N07, a dot, and a 5-digit date code. Arrows point from the date code to 'Date Code' and from the dot to 'Lot Code'.</p>

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	70	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current	I_{DM}	320	A
Avalanche Energy, Single Pulse	E_{AS}	288	mJ
Power Dissipation	TO-220	130	W
	DFN5060-8	35	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. $L=0.09\text{mH}$, $I_{AS}=80\text{A}$, $V_{DD}=25\text{V}$, $R_G=20\Omega$, Starting $T_J = 25^\circ\text{C}$.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	62.5	$^\circ\text{C/W}$
	DFN5060-8	35 (Note)	$^\circ\text{C/W}$
Junction to Case	TO-220	0.96	$^\circ\text{C/W}$
	DFN5060-8	3.57 (Note)	$^\circ\text{C/W}$

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

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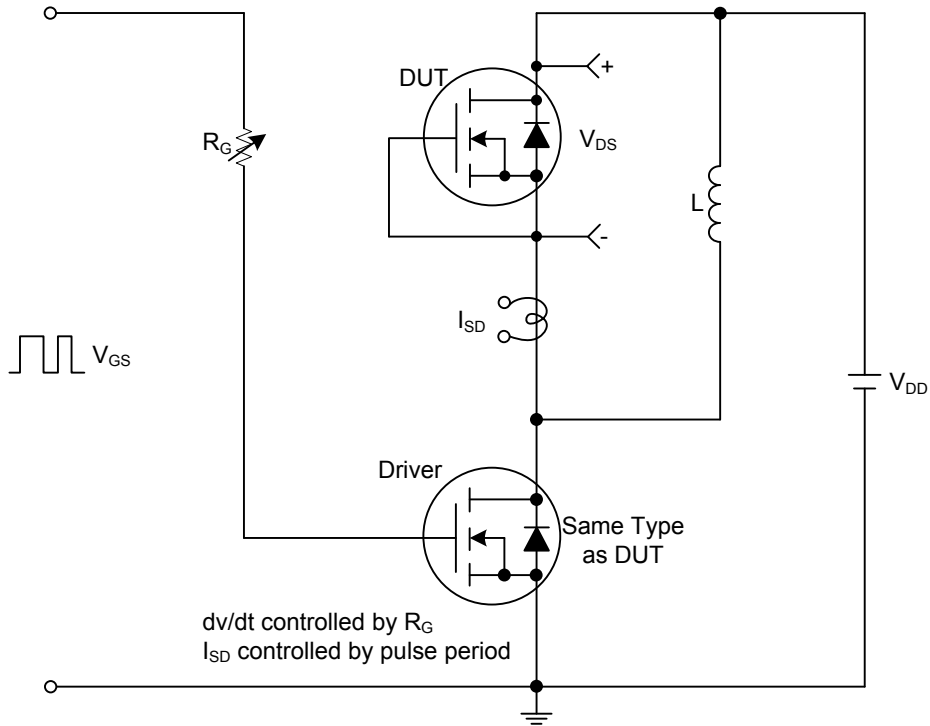
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	70			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=70\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=40\text{A}$			11	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		5930		pF
Output Capacitance	C_{OSS}			410		pF
Reverse Transfer Capacitance	C_{RSS}			290		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	$V_{DS}=56\text{V}$, $V_{GS}=10\text{V}$, $I_D=20\text{A}$, $I_G=100\mu\text{A}$ (Note 1, 2)		96		nC
Gate to Drain Charge	Q_{GD}			22		nC
Gate to Source Charge	Q_{GS}			11		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	$V_{DS}=35\text{V}$, $V_{GS}=10\text{V}$, $I_D=20\text{A}$, $R_G=25\Omega$ (Note 1, 2)		60		ns
Rise Time	t_R			88		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			172		ns
Fall-Time	t_F			140		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 (Note 1)	V_{SD}	$I_{SD}=80\text{A}$			1.2	V
Reverse Recovery Time (Note 1)	t_{rr}	$I_S=30\text{A}$, $V_{GS}=0\text{V}$,		71		nS
Reverse Recovery Charge	Q_{rr}	$di_F/dt = 100\text{A}/\mu\text{s}$		175		nC

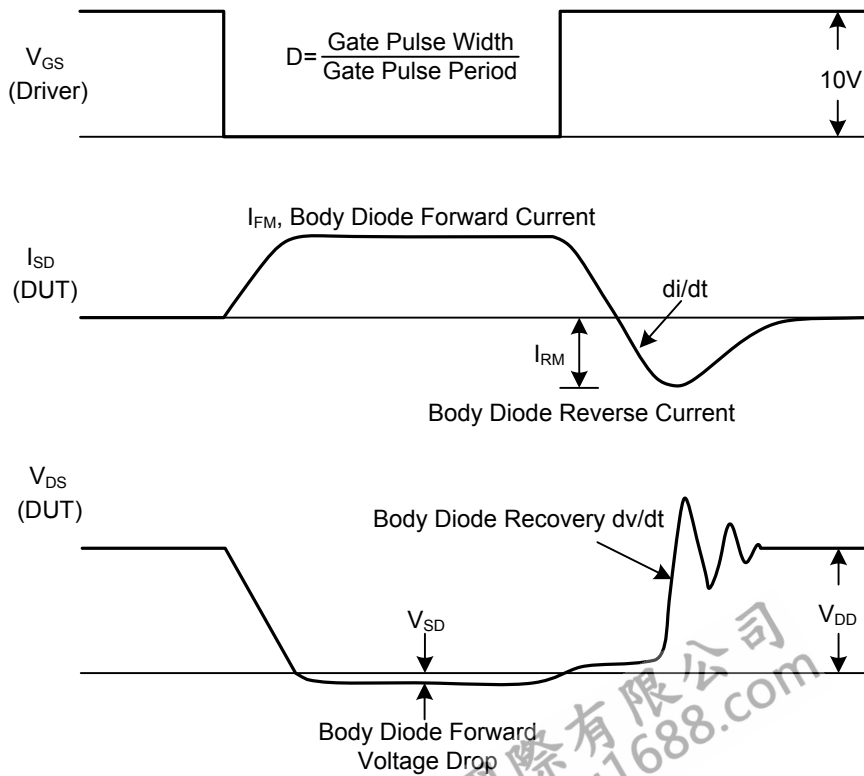
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



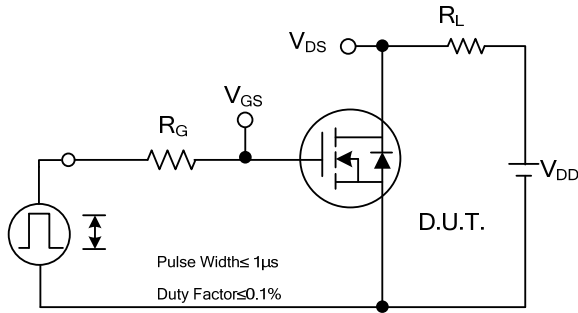
Peak Diode Recovery dv/dt Test Circuit



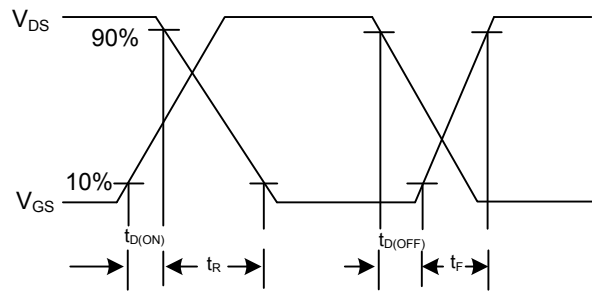
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

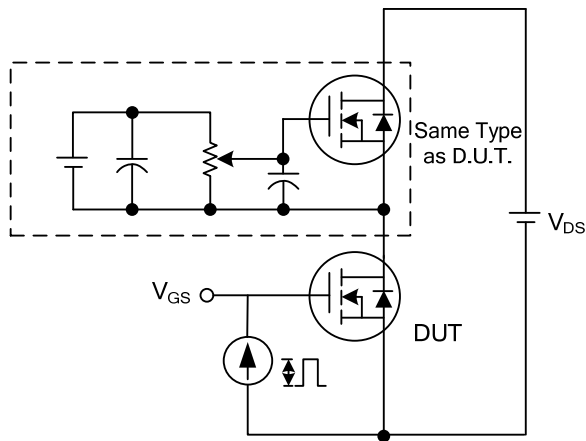
TEST CIRCUITS AND WAVEFORMS



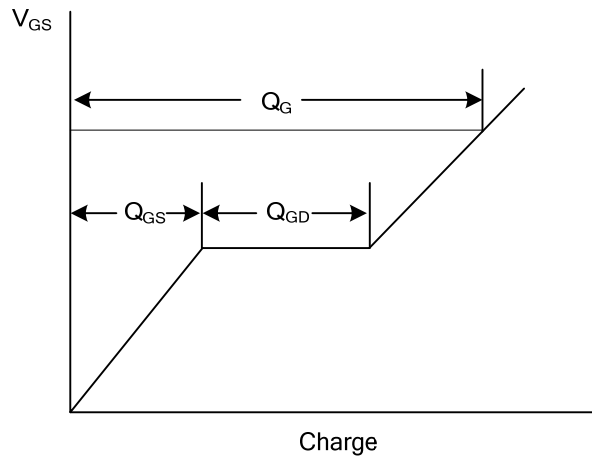
Switching Test Circuit



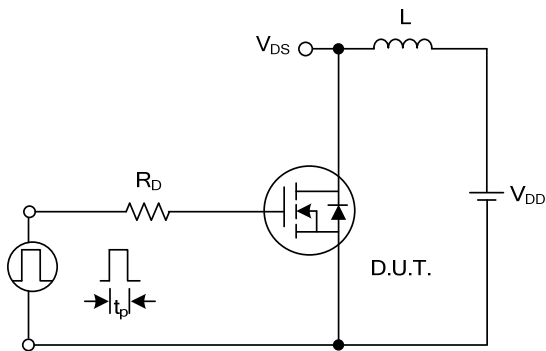
Switching Waveforms



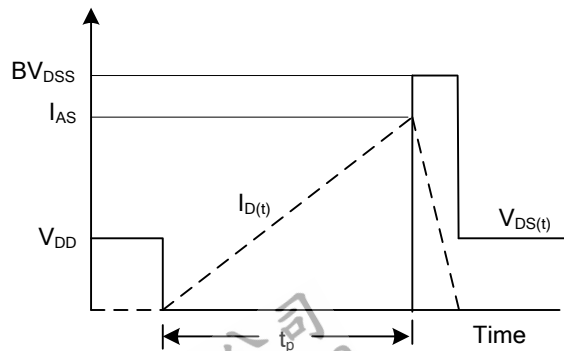
Gate Charge Test Circuit



Gate Charge Waveform

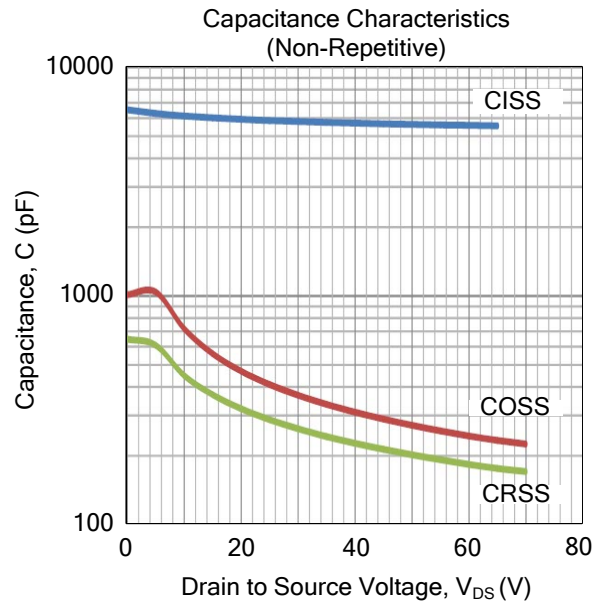
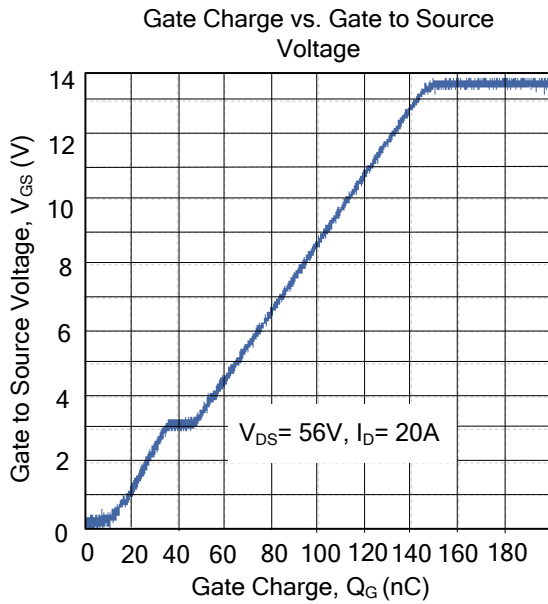


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



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