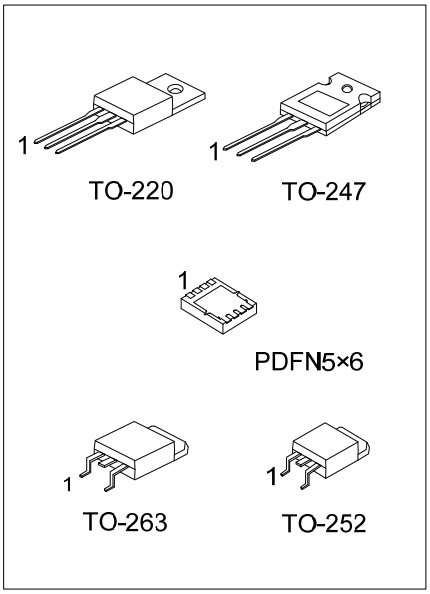
UTT80N07

Power MOSFET

70V, 80A N-CHANNEL POWER MOSFET



■ DESCRIPTION

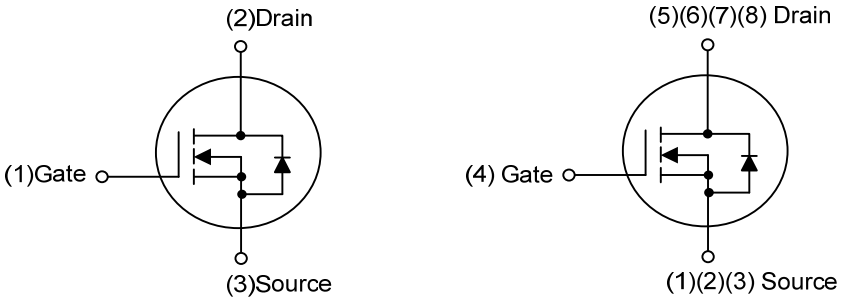
The UTC **UTT80N07** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low $R_{DS(ON)}$ characteristic by high cell density trench technology.

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

■ FEATURES

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

■ SYMBOL

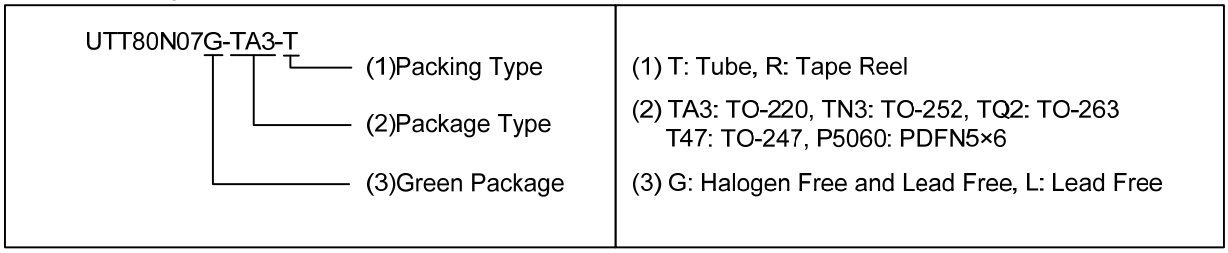


TO-220 / TO-247 / TO-252 / TO-263 PDFN5×6

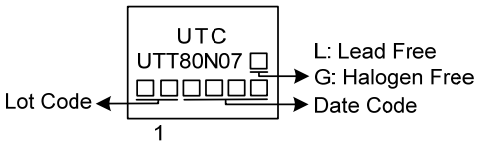
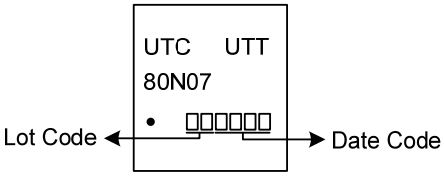
■ ORDERING INFORMATION

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-TN3-R	UTT80N07G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT80N07L-TQ2-T	UTT80N07G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT80N07L-TQ2-R	UTT80N07G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT80N07L-T47-T	UTT80N07G-T47-T	TO-247	G	D	S	-	-	-	-	-	Tube
UTT80N07L-P5060-R	UTT80N07G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

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



■ MARKING

TO-220 / TO-247 / TO-252 / TO-263	PDFN5×6
	

■ ABSOLUTE MAXIMUM RATINGS (T_J= 25 °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}	160	A
Avalanche Energy, Single Pulse		E_{AS}	180	mJ
Power Dissipation	TO-220/TO-263	P_D	180	W
	TO-247		230	W
	TO-252		64	W
	PDFN5×6		42	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=0.1mH, I_{AS}=60A, V_{DD}=25V, R_G=20Ω, Starting T_J =25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-263	θ_{JA}	62.5	°C/W
	TO-247		30	°C/W
	TO-252		110(Note)	°C/W
	PDFN5×6		65 (Note)	°C/W
Junction to Case	TO-220/TO-263	θ_{JC}	0.69	°C/W
	TO-247		0.54	°C/W
	TO-252		1.95 (Note)	°C/W
	PDFN5×6		2.97 (Note)	°C/W

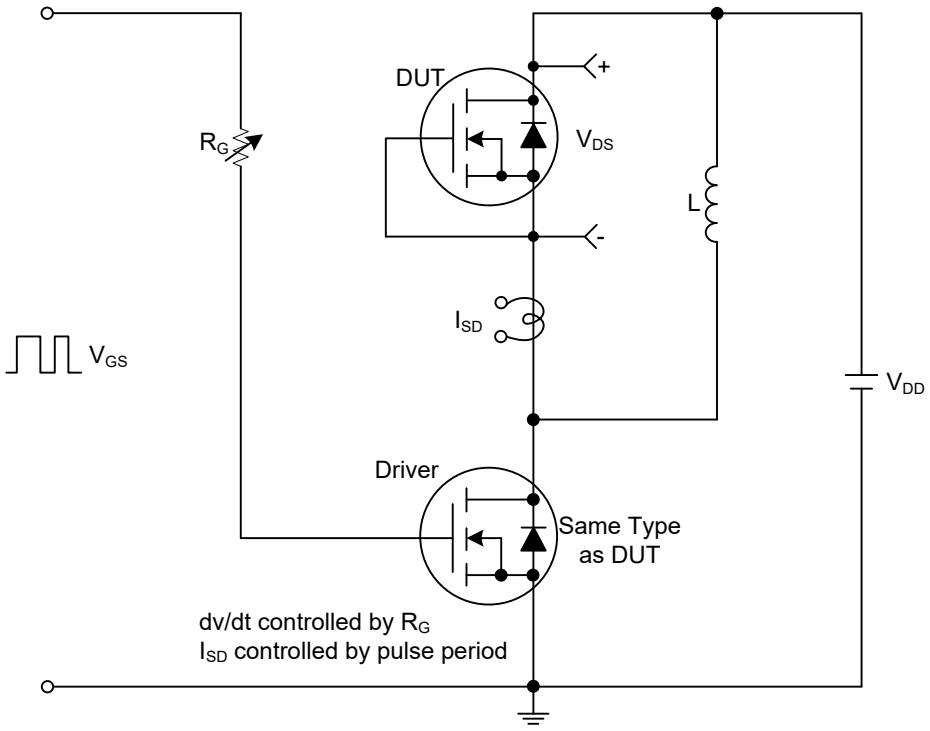
Note: The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

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

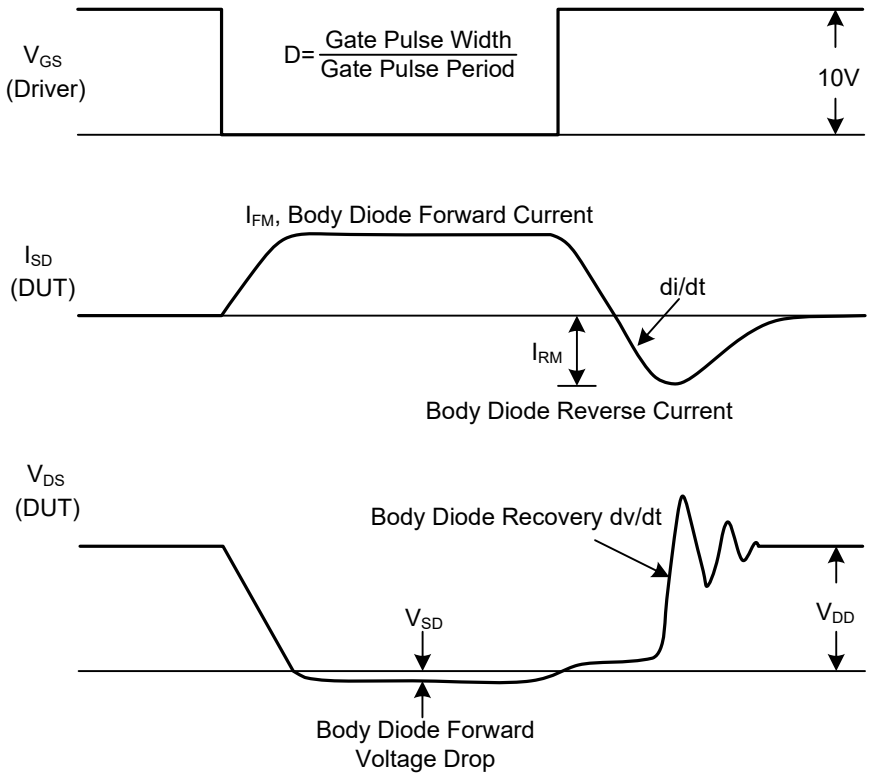
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	70			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=70V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=40A			11	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		4380		pF
Output Capacitance	C_{OSS}			393		pF
Reverse Transfer Capacitance	C_{RSS}			340		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	V_{DS}=56V, V_{GS}=10V, I_D=80A, (Note 1, 2)		130		nC
Gate to Drain Charge	Q_{GD}			22		nC
Gate to Source Charge	Q_{GS}			45		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	V_{DS}=35V, V_{GS}=10V, I_D=80A, R_G=3.3Ω (Note 1, 2)		19		ns
Rise Time	t_R			22		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			65		ns
Fall-Time	t_F			25		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				80	A
Maximum Body-Diode Pulsed Current	I_{SM}				160	A
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	I_{SD}=80A			1.2	V
Reverse Recovery Time (Note 1)	t_{rr}	I_S=30A, V_{GS}=0V, dI_F/dt =100A/μs		50		nS
Reverse Recovery Charge	Q_{rr}			75		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



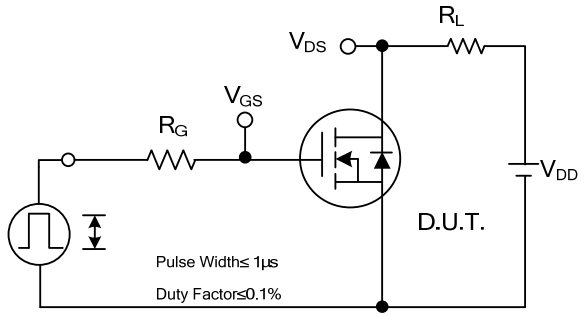
Peak Diode Recovery dv/dt Test Circuit



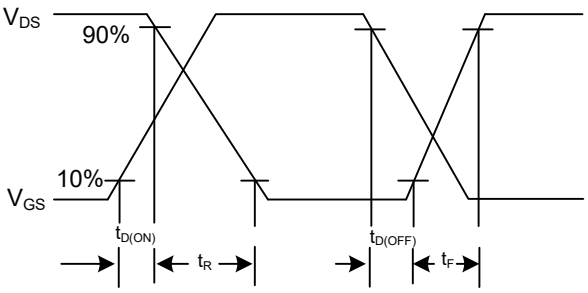
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

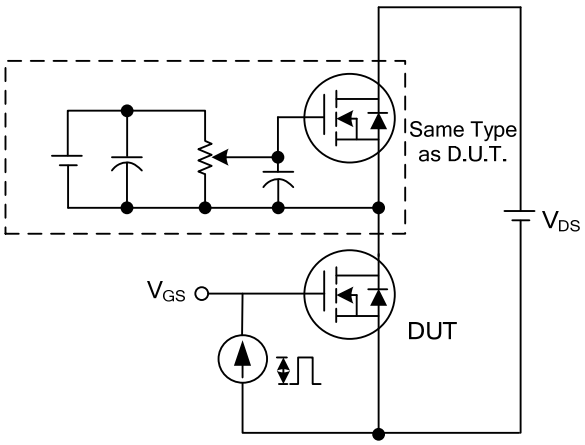
■ TEST CIRCUITS AND WAVEFORMS



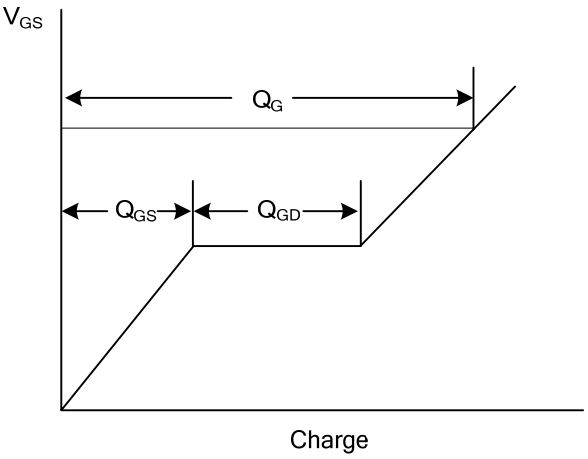
Switching Test Circuit



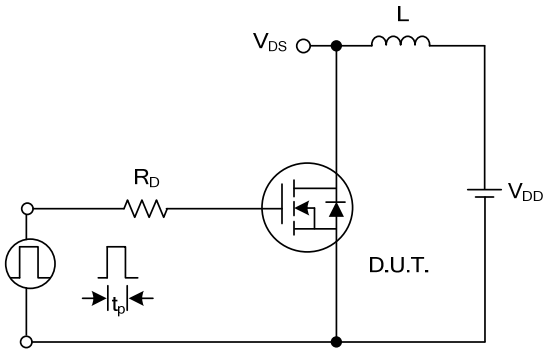
Switching Waveforms



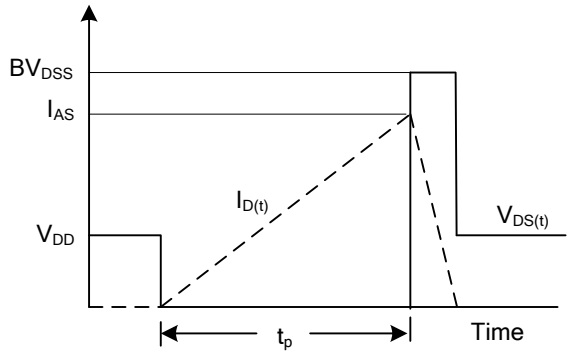
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms