



## UTT150N06H

Power MOSFET

### 150A, 60V N-CHANNEL POWER MOSFET

#### DESCRIPTION

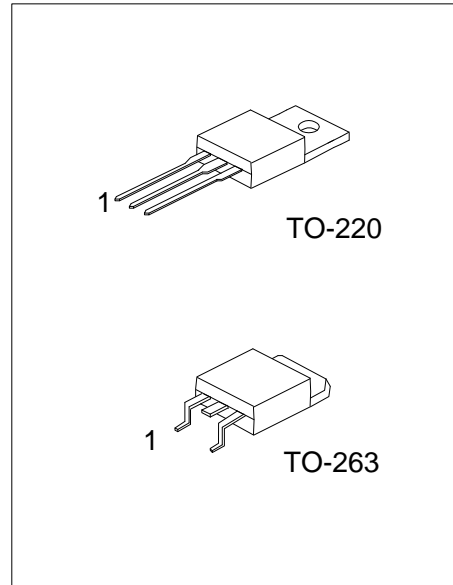
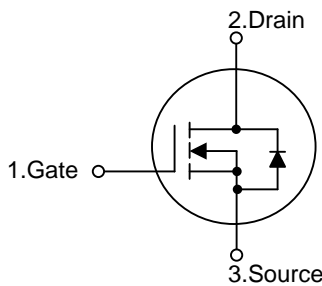
The UTC **UTT150N06H** is an N-channel Power Trench MOSFET, using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

The UTC **UTT150N06H** is generally applied in synchronous Rectification or DC to DC converter.

#### FEATURES

- \*  $R_{DS(ON)} \leq 3.8 \text{ m}\Omega$  @  $V_{GS}=10V, I_D = 75A$
- \* High Switching Speed
- \* High Power and Current Handling Capability

#### SYMBOL



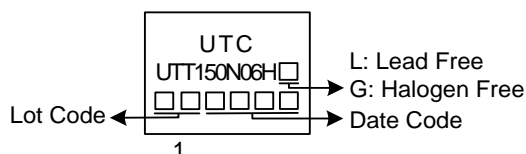
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT150N06HL-TA3-T	UTT150N06HG-TA3-T	TO-220	G	D	S	Tube
UTT150N06HL-TQ2-R	UTT150N06HG-TQ2-R	TO-263	G	D	S	Tape Reel
UTT150N06HL-TQ2-T	UTT150N06HG-TQ2-T	TO-263	G	D	S	Tube

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

<p>UTT150N06HG-TA3-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TQ2: TO-263 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	60	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Peak Diode Recovery dv/dt (Note 4)		dv/dt	7.0	V/ns
Drain Current	Continuous (T <sub>C</sub> =25°C, Silicion Limited)	I <sub>D</sub>	150	A
	Pulsed (Note 2)	I <sub>DM</sub>	600	A
Single Pulsed Avalanche Energy (Note 3)		E <sub>AS</sub>	500	mJ
Power Dissipation	T <sub>C</sub> =25°C	P <sub>D</sub>	231	W
	Derate above 25°C		1.54	
Junction Temperature		T <sub>J</sub>	+150	°C
Storage Temperature		T <sub>STG</sub>	-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<sub>AS</sub> = 75A, V<sub>DD</sub> = 50V, R<sub>G</sub> = 25Ω, Starting T<sub>J</sub> = 25°C

4. Essentially independent of operating temperature Typical Characteristics

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ <sub>JA</sub>	62.5	°C/W
Junction to Case	θ <sub>JC</sub>	0.94	°C/W

### ■ ELECTRICAL CHARACTERISTICS (T<sub>C</sub>=25°C, unless otherwise specified)

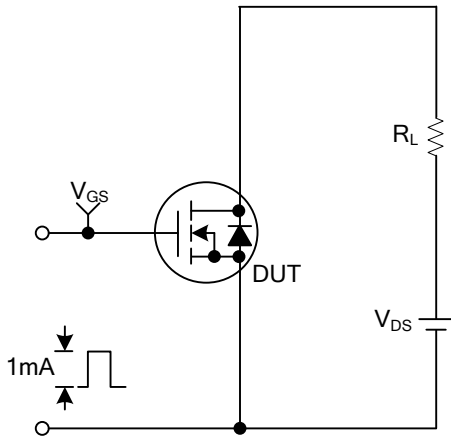
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C	60			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μA
Gate- Source Leakage Current	I <sub>GSS</sub>	Forward V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+100	nA
		Reverse V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =75A			3.8	mΩ
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz		6190		pF
Output Capacitance	C <sub>OSS</sub>			1040		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			300		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =1.3A I <sub>G</sub> =100μA (Note1, 2)		440		nC
Gate to Source Charge	Q <sub>GS</sub>			60		nC
Gate to Drain Charge	Q <sub>GD</sub>			60		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, I <sub>D</sub> =0.5A, R <sub>G</sub> =25Ω (Note1, 2)		300		ns
Rise Time	t <sub>R</sub>			300		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			800		ns
Fall-Time	t <sub>F</sub>			380		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	I <sub>S</sub>				150	A
Maximum Body-Diode Pulsed Current	I <sub>SM</sub>				600	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>SD</sub> =75A, V <sub>GS</sub> =0V			1.3	V

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

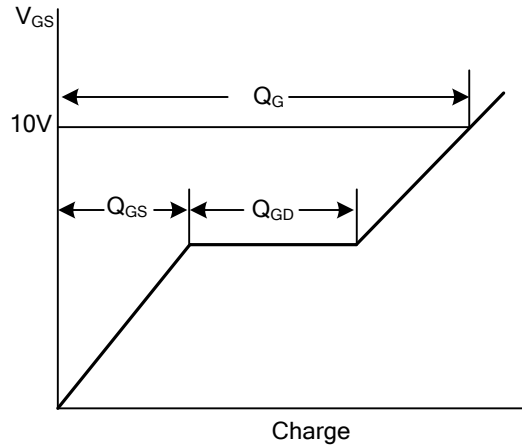
2. Essentially independent of operating temperature.

## TEST CIRCUITS AND WAVEFORMS

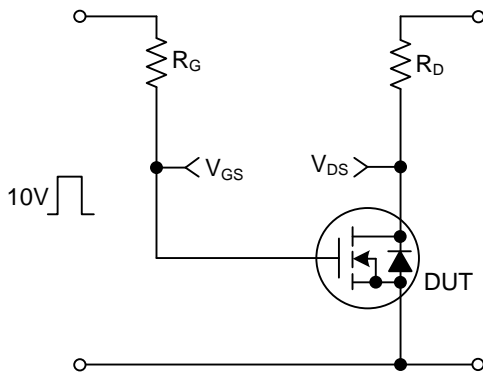
Gate Charge Test Circuit



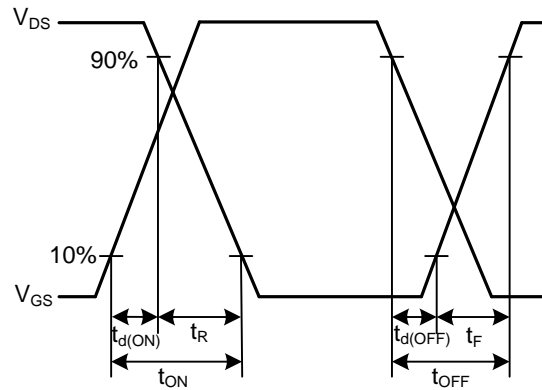
Gate Charge Waveforms



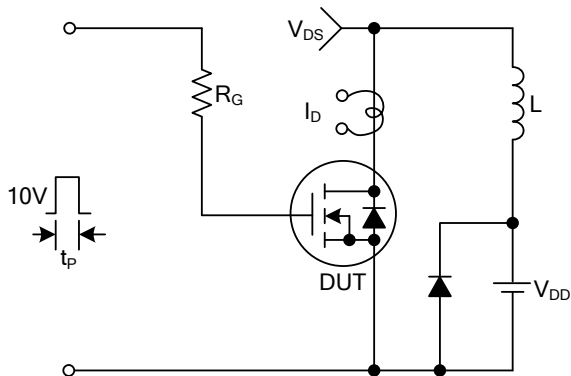
Resistive Switching Test Circuit



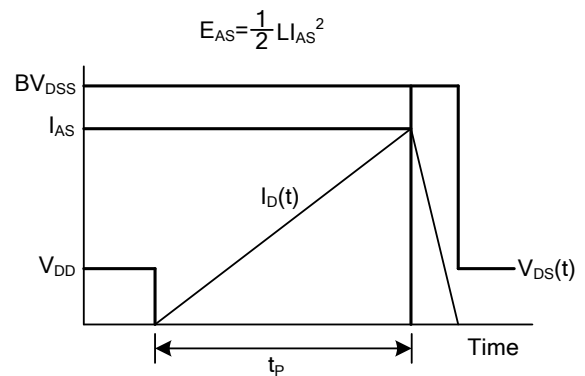
Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit

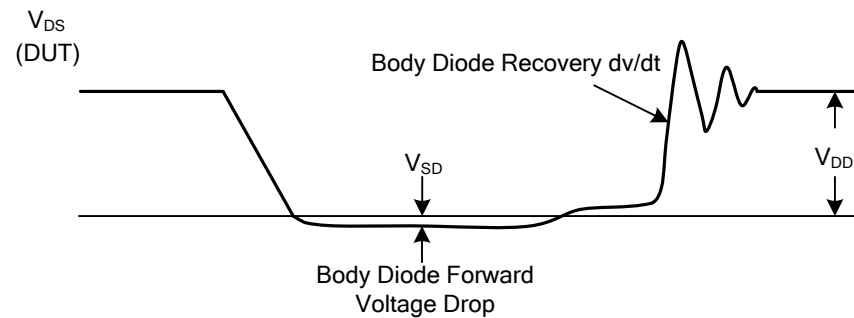
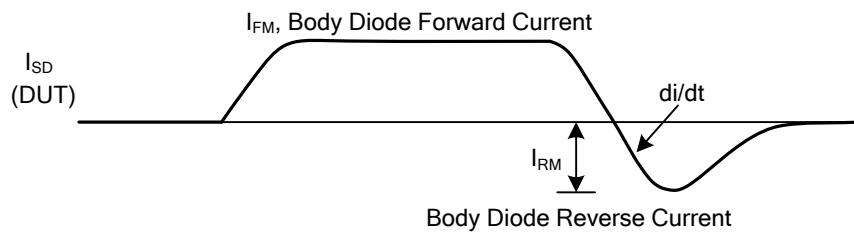
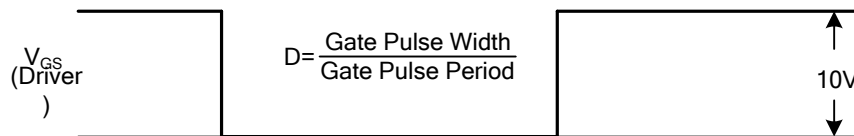
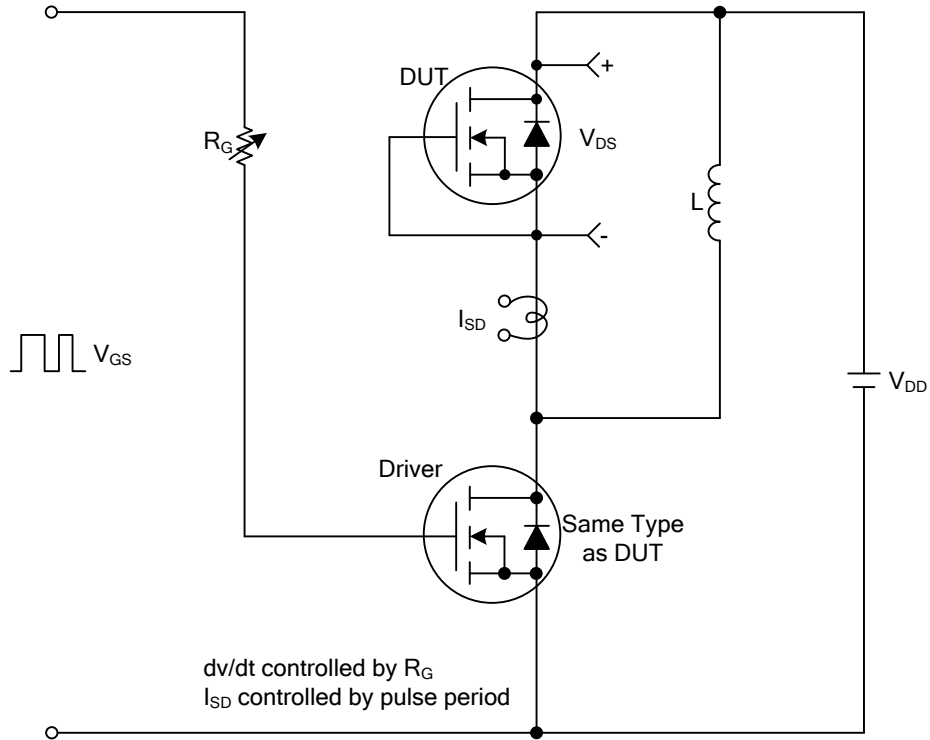


Unclamped Inductive Switching Waveforms



## TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit & Waveforms



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