



**UTT75N08M**

Preliminary

Power MOSFET

**75A, 80V N-CHANNEL  
POWERTRENCH MOSFET**

■ DESCRIPTION

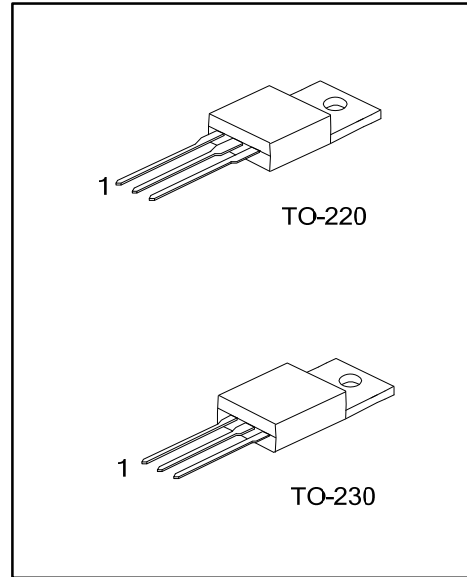
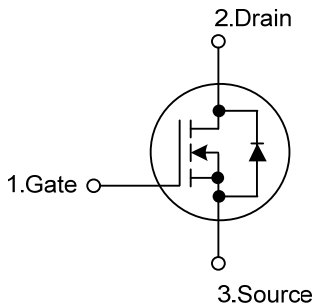
The UTC **UTT75N08M** is an N-channel enhancement MOSFET, it uses UTC's advanced technology to provide the customers with perfect  $R_{DS(ON)}$ , high switching speed, high current capacity and low gate charge.

The UTC **UTT75N08M** is suitable for DC-DC converters, Off-Line UPS, High Voltage Synchronous Rectifier, Primary Switch for 48V and 24V Systems, etc.

■ FEATURES

- \*  $R_{DS(ON)} < 11\text{ m}\Omega @ V_{GS}=10V, I_D=75A$
- \* High Switching Speed
- \* High Current Capacity

■ SYMBOL



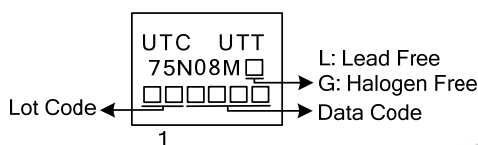
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT75N08ML-TA3-T	UTT75N08MG-TA3-T	TO-220	G	D	S	Tube
UTT75N08ML-TC3-T	UTT75N08MG-TC3-T	TO-230	G	D	S	Tube

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

<p>UTT75N08ML-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TC3: TO-230</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	80	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	75	A
	Pulsed (Note 2)	$I_{DM}$	300	A
Single Pulsed Avalanche Energy (Note 3)		$E_{AS}$	125	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.5	V/ns
Power Dissipation	TO-220	$P_D$	125	W
	TO-230		167	W
Junction Temperature		$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range		$T_{STG}$	-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  $T_J$ .

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

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

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	$\theta_{JA}$	62.5	$^{\circ}\text{C}/\text{W}$
	TO-230		55	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	$\theta_{JC}$	1	$^{\circ}\text{C}/\text{W}$
	TO-230		0.7	$^{\circ}\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	80			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=80\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	Forward			+100	nA
		Reverse	$V_{GS}=+20\text{V}$ , $V_{DS}=0\text{V}$			-100
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=75\text{A}$			11	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		4000		pF
Output Capacitance	$C_{OSS}$			320		pF
Reverse Transfer Capacitance	$C_{RSS}$			120		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}$ , $V_{DD}=50\text{V}$ , $I_D=1.3\text{A}$ , $I_G=100\mu\text{A}$		300		nC
Gate to Source Charge	$Q_{GS}$			14		nC
Gate to Drain Charge	$Q_{GD}$			16		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$ , $I_D=0.5\text{A}$ , $V_{GS}=10\text{V}$ , $R_G=25\Omega$		56		ns
Rise Time	$t_R$			65		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			780		ns
Fall-Time	$t_F$			200		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				75	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				300	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_{SD}=75\text{A}$			1.4	V

# UTT75N08M

Preliminary

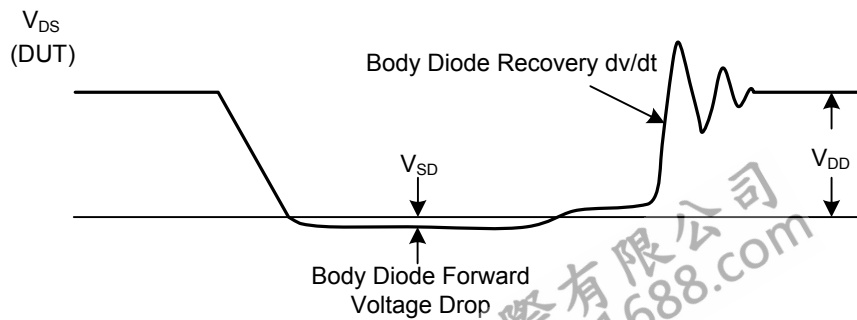
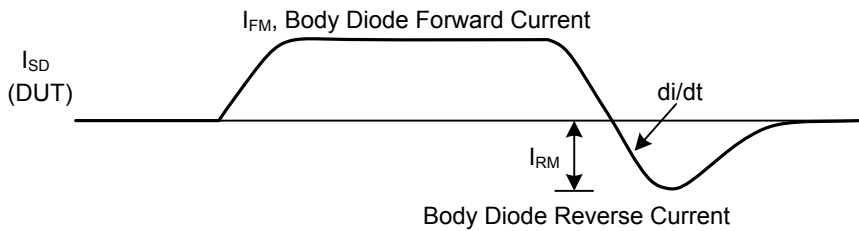
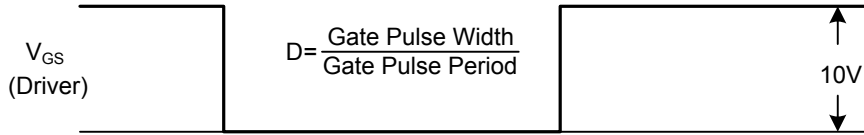
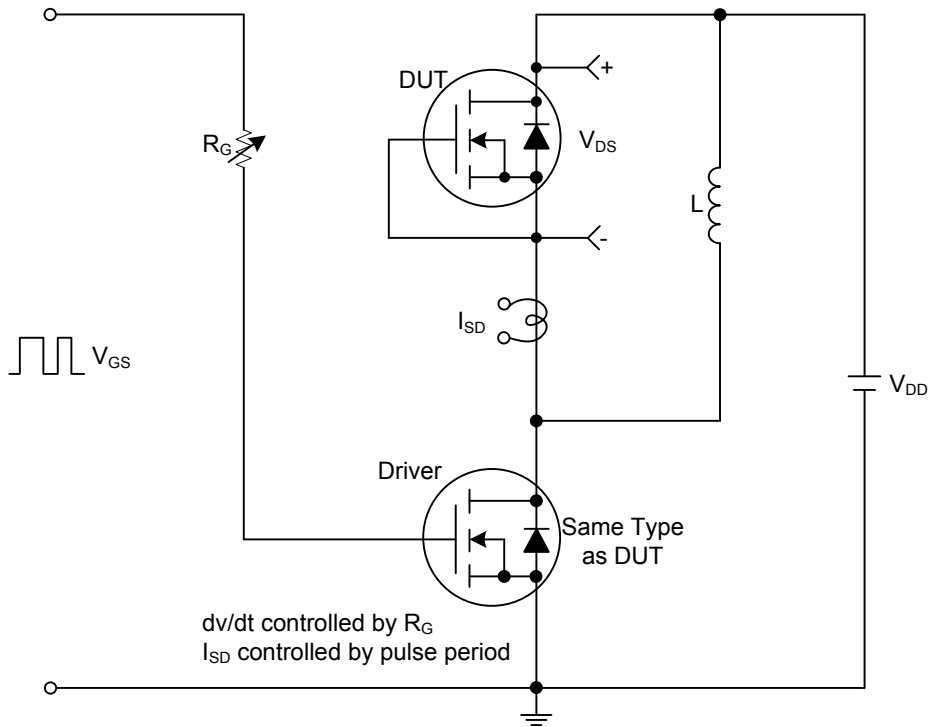
Power MOSFET

Reverse Recovery Time	$t_{rr}$	$V_{GS} = 0\text{ V}, I_{SD} = 30\text{ A},$ $di/dt = 100\text{ A}/\mu\text{s}$ (Note 1)	48	ns
Reverse Recovery Charge	$Q_{RR}$		62	nC

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

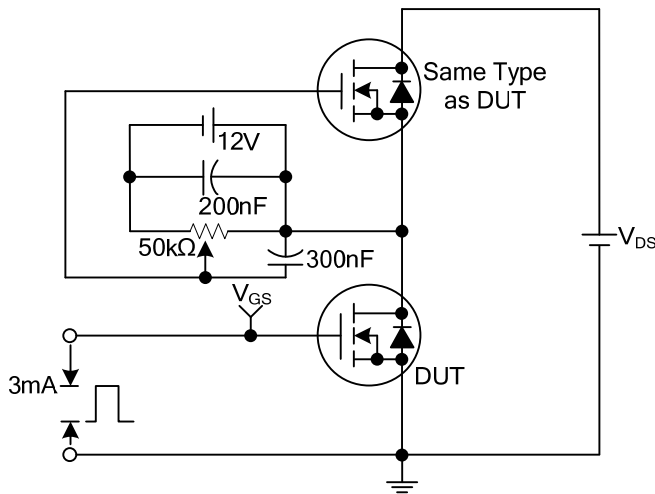
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

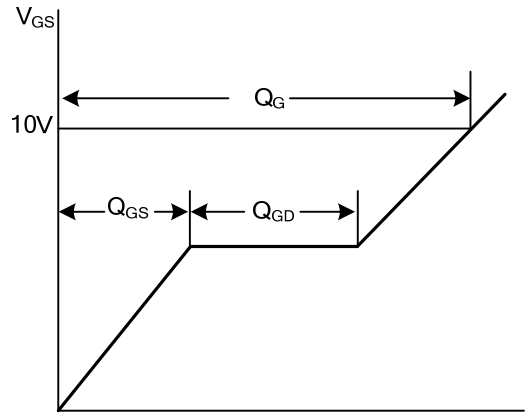


Peak Diode Recovery dv/dt Test Circuit and Waveforms

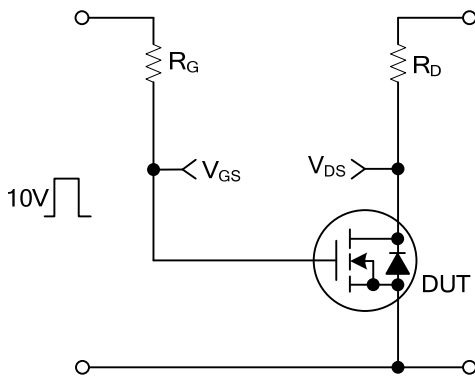
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



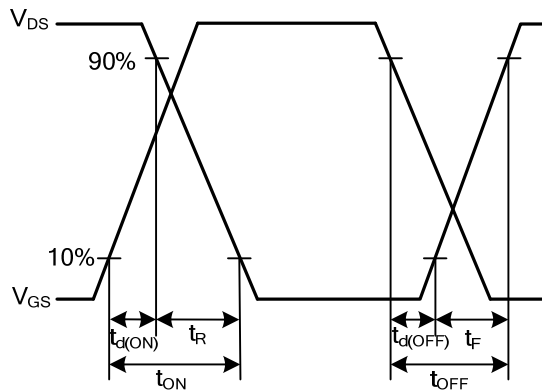
Gate Charge Test Circuit



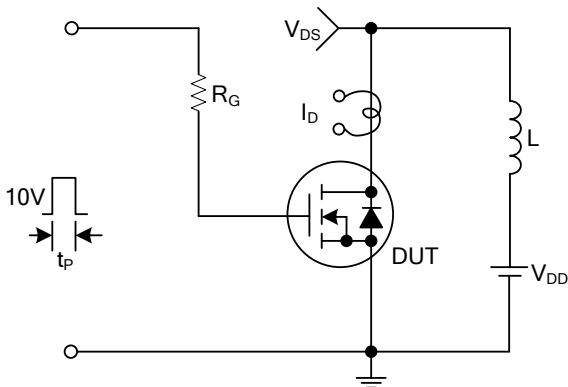
Gate Charge Waveforms



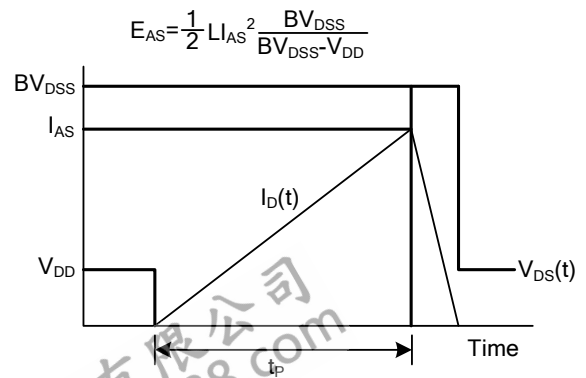
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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