



UTT75N08M

Preliminary

Power MOSFET

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

■ DESCRIPTION

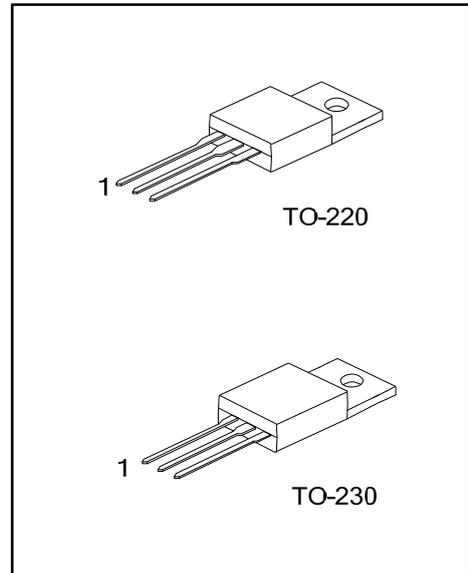
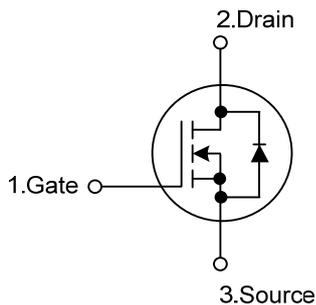
The UTC **UTT75N08M** is an N-channel enhancement MOSFET, it uses UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

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



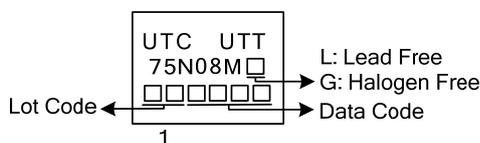
■ ORDERING INFORMATION

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}	± 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	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
	TO-230		55	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	θ_{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
OFF CHARACTERISTICS						
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	μA
Gate-Source Leakage Current	I_{GSS}	Forward			+100	nA
		Reverse	$V_{GS}=+20\text{V}$, $V_{DS}=0\text{V}$			-100
ON CHARACTERISTICS						
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 Ω
DYNAMIC PARAMETERS						
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
SWITCHING PARAMETERS						
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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

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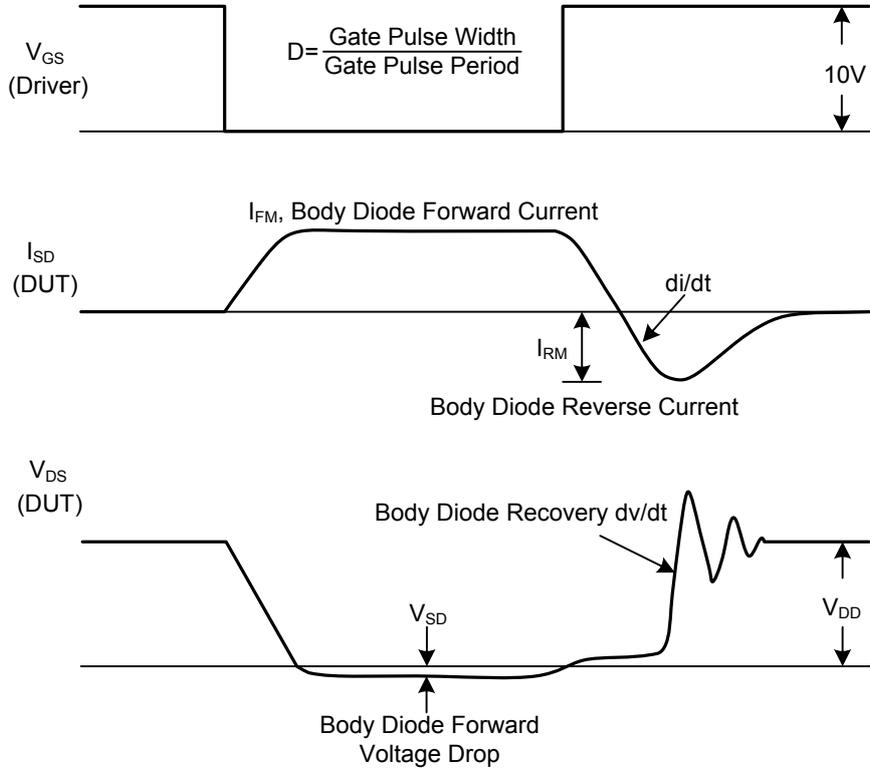
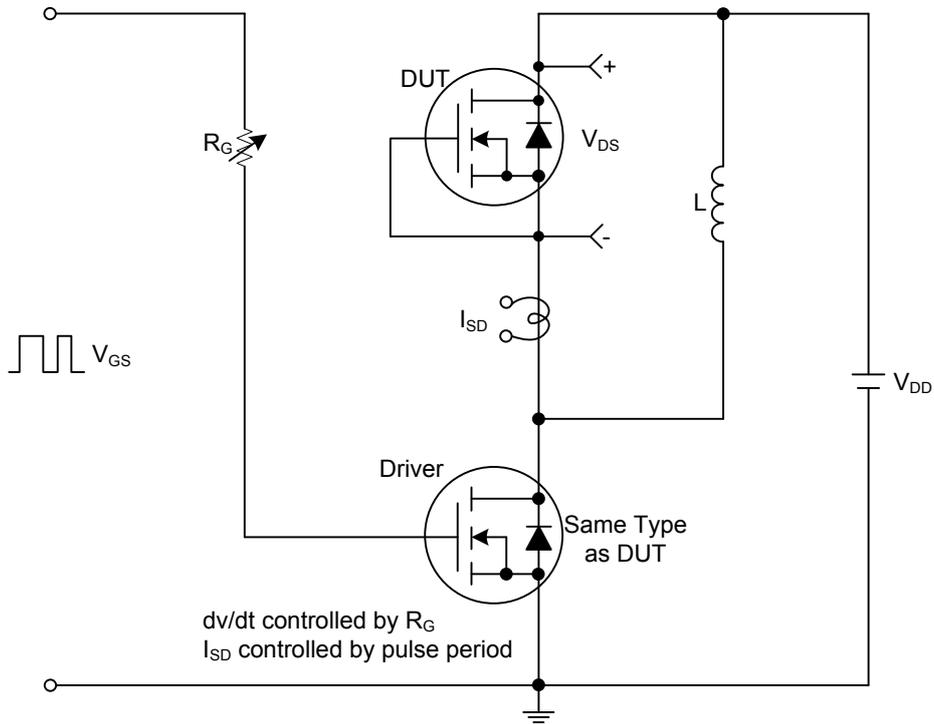
Power MOSFET

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

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

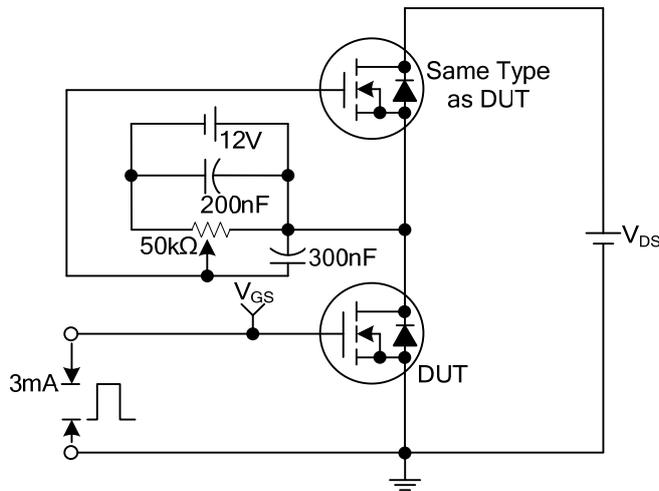
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

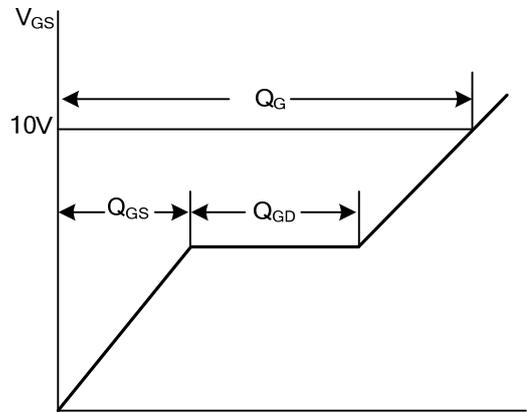


Peak Diode Recovery dv/dt Test Circuit and Waveforms

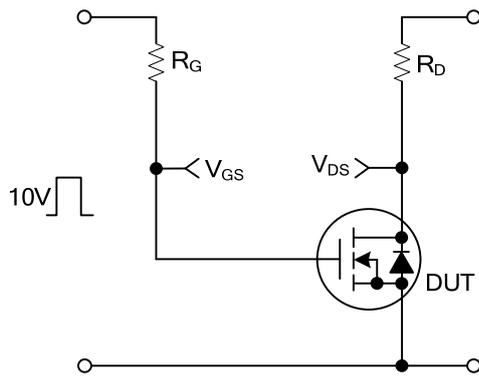
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



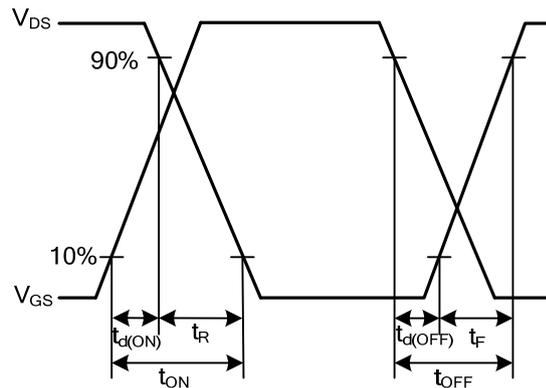
Gate Charge Test Circuit



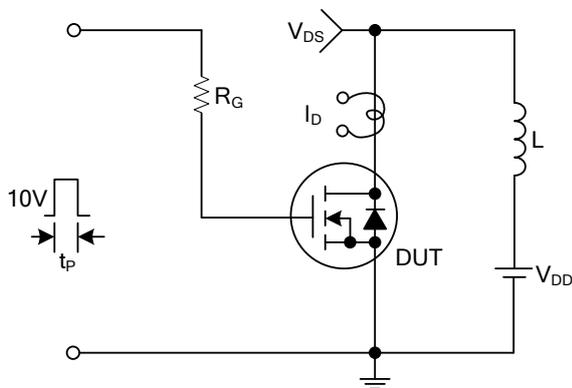
Gate Charge Waveforms



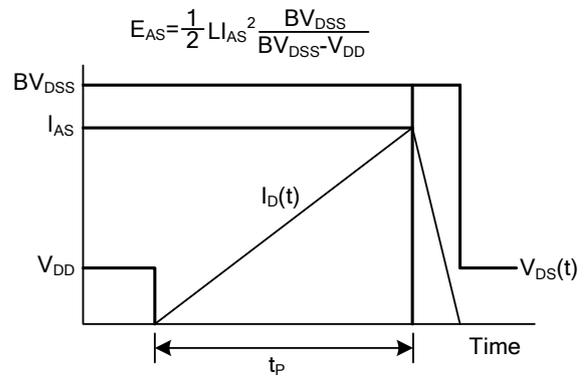
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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