



UTT75N75

Power MOSFET

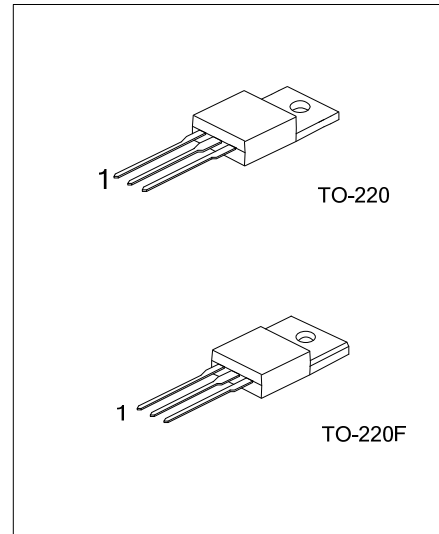
80A, 75V N-CHANNEL POWER MOSFET

DESCRIPTION

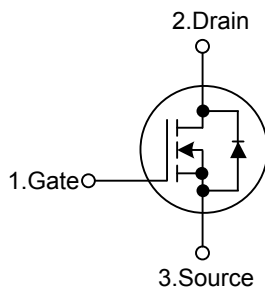
The UTC **UTT75N75** is n-channel enhancement mode power field effect transistors with stable off-state characteristics including fast switching speed and low thermal resistance. It is usually used in the telecom and computer applications.

FEATURES

- * $R_{DS(ON)} < 15m\Omega @ V_{GS} = 10V, I_D = 40A$
- * Fast switching capability
- * Avalanche energy Specified
- * Improved dv/dt capability, high ruggedness



SYMBOL



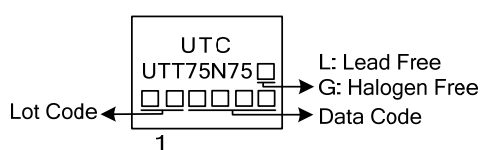
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT75N75L-TA3-T	UTT75N75G-TA3-T	TO-220	G	D	S	Tube
UTT75N75L-TF3-T	UTT75N75G-TF3-T	TO-220F	G	D	S	Tube

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

<p>UTT75N75L-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, TF3: TO-220F</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	75	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous ($T_C = 25^\circ\text{C}$)	I_D	80	A
	Pulsed (Note 2)	I_{DM}	320	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	700	mJ
Power Dissipation	TO-220	P_D	300	W
	TO-220F		48	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.

- Pulse width limited by safe operating area
- Starting $T_J = 25^\circ\text{C}$, $I_D = 40\text{A}$, $V_{DD} = 37.5\text{V}$
- $I_{SD} \leq 80\text{A}$, $di/dt \leq 300\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, $T_J \leq T_{JMAX}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
Junction to Case	TO-220	θ_{JC}	0.5	$^\circ\text{C}/\text{W}$
	TO-220F		2.6	$^\circ\text{C}/\text{W}$

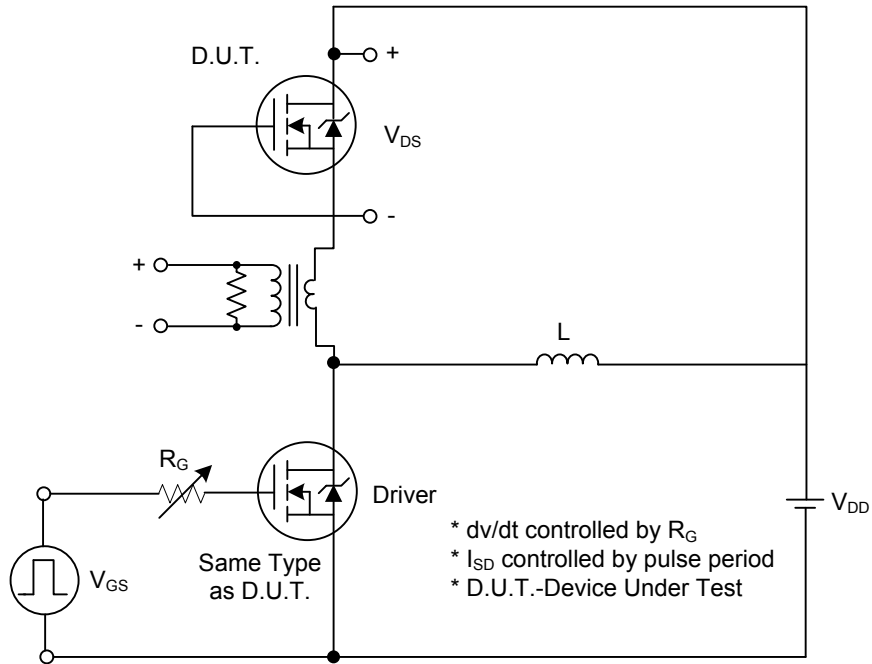
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$V_{GS} = 0\text{V}$, $I_D = 250\ \mu\text{A}$	75			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS} = 75\text{V}$, $V_{GS} = 0\text{V}$			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS} = 20\text{V}$, $V_{DS} = 0\text{V}$			100	nA
	Reverse		$V_{GS} = -20\text{V}$, $V_{DS} = 0\text{V}$			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	1.4		3.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{V}$, $I_D = 40\text{A}$		10	15	m Ω
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$		4000		pF
Output Capacitance		C_{OSS}			400		pF
Reverse Transfer Capacitance		C_{RSS}			350		pF
SWITCHING CHARACTERISTICS							
Turn-On Delay Time		$t_{D(ON)}$	$V_{DD} = 30\text{V}$, $I_D = 0.5\text{A}$, $V_{GS} = 10\text{V}$, $R_G = 25\ \Omega$		200		ns
Turn-On Rise Time		t_R			250		ns
Turn-Off Delay Time		$t_{D(OFF)}$			1000		ns
Turn-Off Fall Time		t_F			420		ns
Total Gate Charge		Q_G	$V_{DS} = 50\text{V}$, $V_{GS} = 10\text{V}$ $I_D = 1.3\text{A}$		170	230	nC
Gate-Source Charge		Q_{GS}			17		nC
Gate-Drain Charge		Q_{GD}			35		nC
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage (Note 2)		V_{SD}	$V_{GS} = 0\text{V}$, $I_S = 80\text{A}$			1.5	V
Continuous Source Current		I_S				80	A
Pulsed Source Current (Note 1)		I_{SM}				320	A

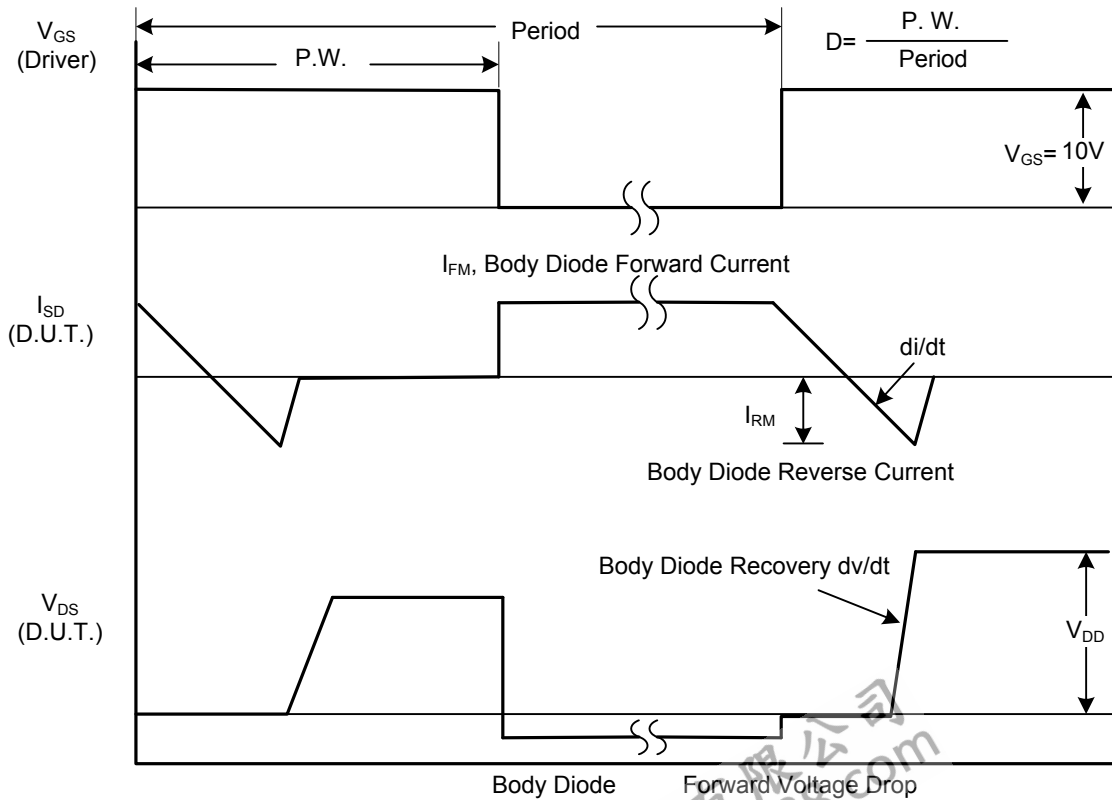
Notes: 1. Pulse width limited by safe operating area

- Pulsed: pulse duration=300 μs , duty cycle 1.5%

TEST CIRCUITS AND WAVEFORMS

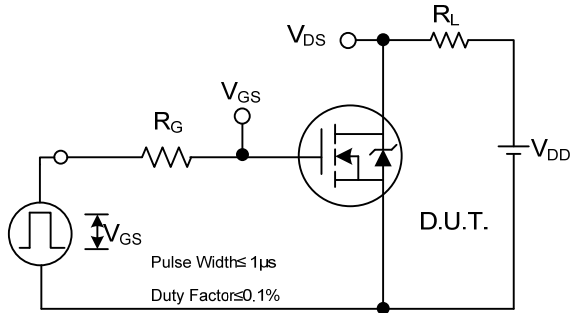


Peak Diode Recovery dv/dt Test Circuit

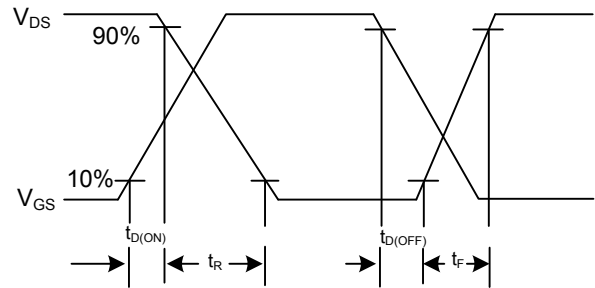


Peak Diode Recovery dv/dt Waveforms

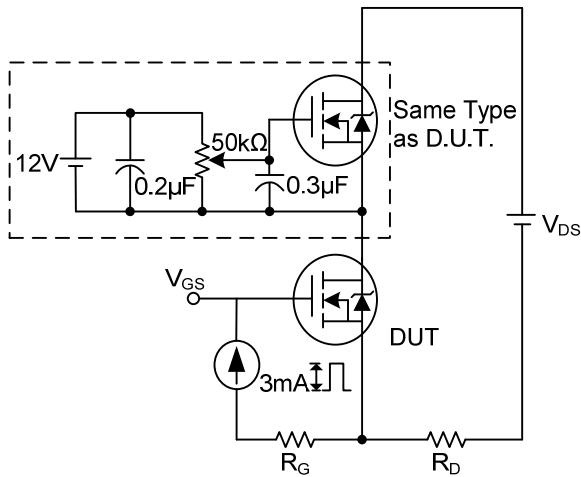
TEST CIRCUITS AND WAVEFORMS(Cont.)



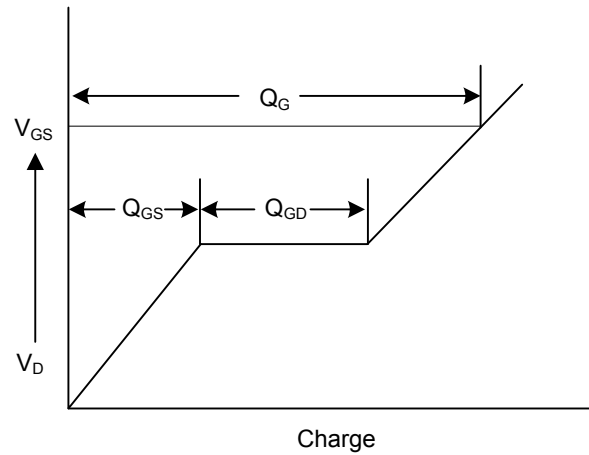
Switching Test Circuit



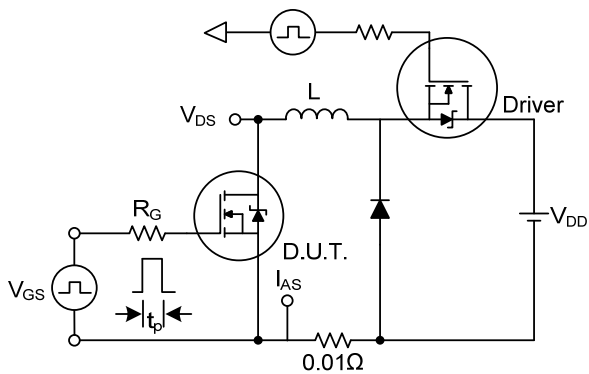
Switching Waveforms



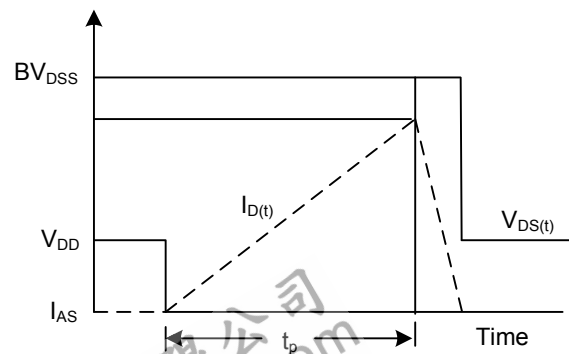
Gate Charge Test Circuit



Gate Charge Waveform

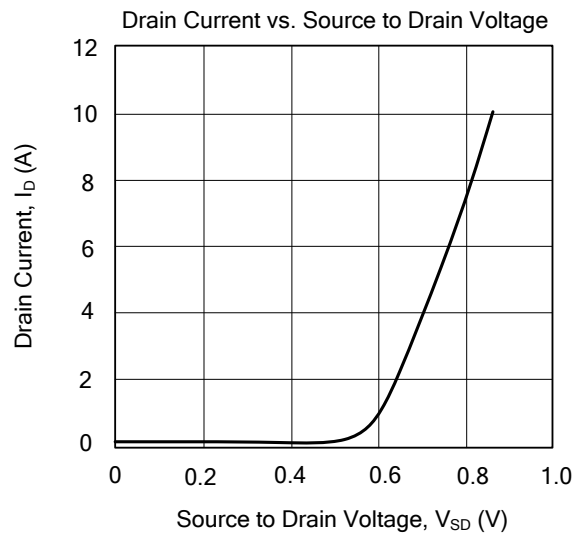
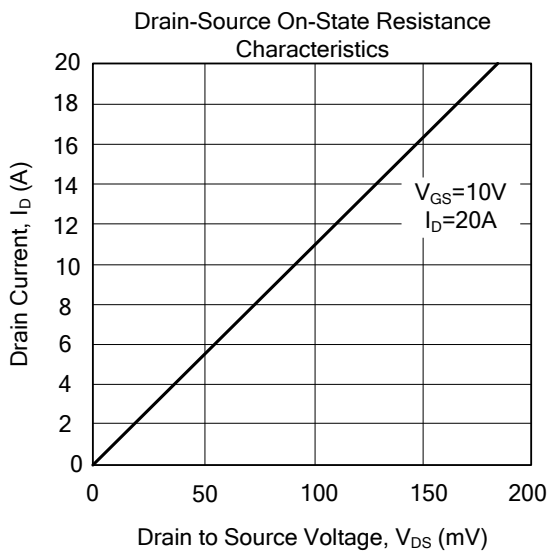
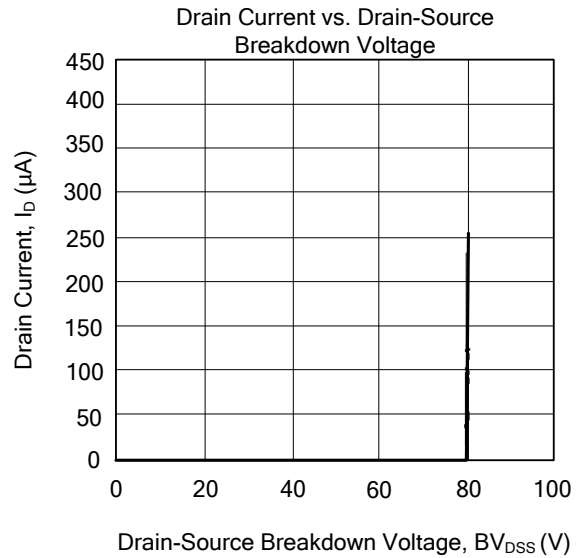
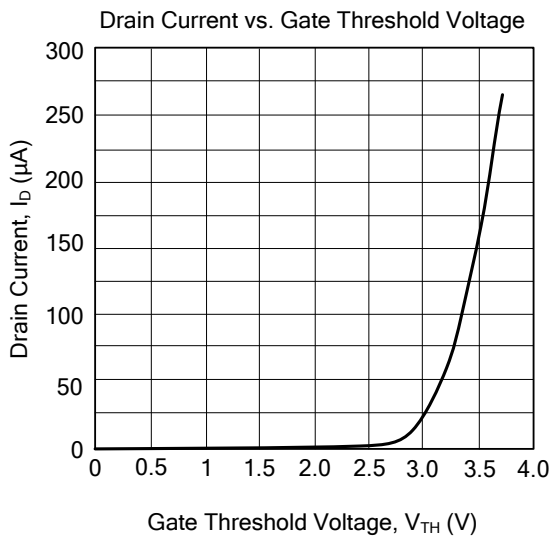


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



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