



UTT75N75

Preliminary

Power MOSFET

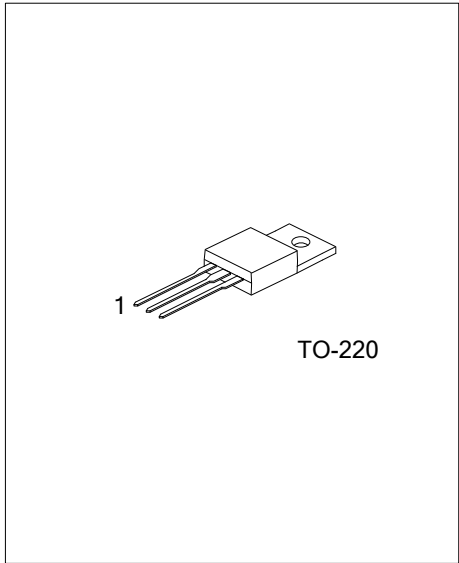
80A, 75V N-CHANNEL POWER MOSFET

DESCRIPTION

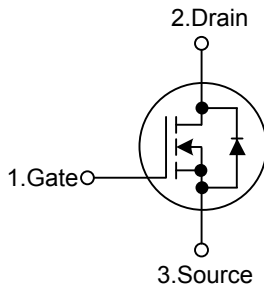
The UTC **UTT75N75** is n-channel enhancement mode power field effect transistors with stable off-state characteristics including fast switching speed and low thermal resistance. It is usually used in the telecom and computer applications.

FEATURES

- * $R_{DS(ON)} = 10m\Omega @ V_{GS} = 10V$
- * Ultra low gate charge (typical 117 nC)
- * Fast switching capability
- * Low reverse transfer Capacitance ($C_{RSS} =$ typical 240 pF)
- * 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

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

UTT75N75L-TA3-T (1)Packing Type (2)Package Type (3)Lead Free	(1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free, L: Lead Free
---	---

■ ABSOLUTE MAXIMUM RATINGS (T_J=25°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°C)	I _D	80	A
	Pulsed (Note 2)	I _{DM}	320	A
Single Pulsed Avalanche Energy (Note 3)		E _{AS}	700	mJ
Power Dissipation		P _D	300	W
Junction Temperature		T _J	+150	°C
Storage Temperature Range		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. Pulse width limited by safe operating area

3. Starting T_J=25°C, I_D=40A, V_{DD}=37.5V

4. I_{SD}≤80A, di/dt≤300A/μs, V_{DD}≤BV_{DSS}, T_J≤T_{JMAX}

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ _{JA}	62.5	°C/W
Junction to Case		θ _{JC}	0.5	°C/W

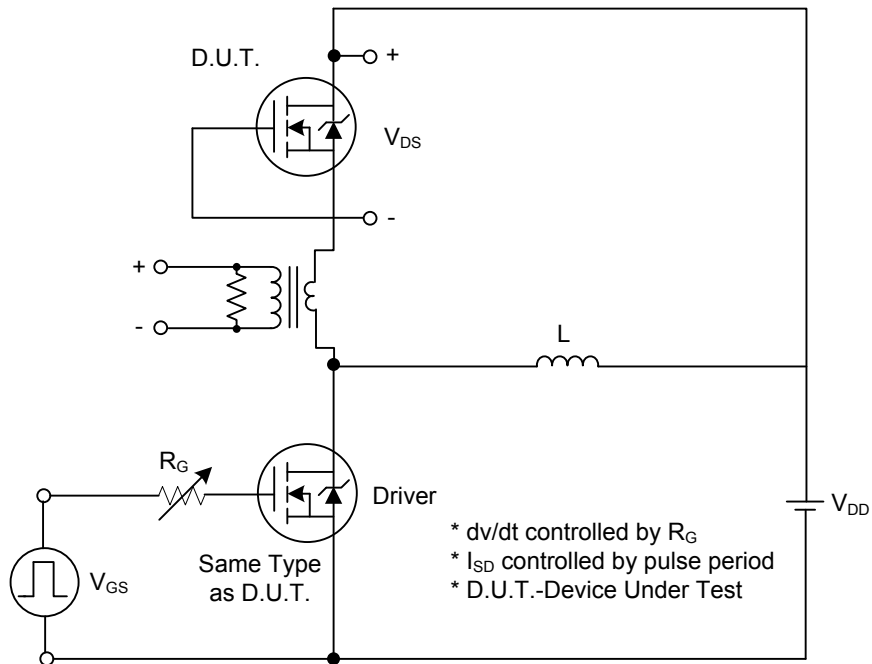
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} = 0 V, I _D = 250 μA	75			V	
Drain-Source Leakage Current		I _{DSS}	V _{DS} = 75 V, V _{GS} = 0 V			1	μA	
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} = 20V, V _{DS} = 0 V			100	nA	
	Reverse		V _{GS} = -20V, V _{DS} = 0 V			-100	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250 μA	1.4		3.0	V	
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} = 10 V, I _D = 40 A		10	30	mΩ	
DYNAMIC CHARACTERISTICS								
Input Capacitance		C _{ISS}	V _{GS} = 0V, V _{DS} = 25V f = 1MHz		3700		pF	
Output Capacitance		C _{OSS}				730		pF
Reverse Transfer Capacitance		C _{RSS}				240		pF
SWITCHING CHARACTERISTICS								
Turn-On Delay Time		t _{D(ON)}	V _{DD} = 37.5V, I _D = 45A, V _{GS} = 10V, R _G = 4.7Ω		25		ns	
Turn-On Rise Time		t _R				100		ns
Turn-Off Delay Time		t _{D(OFF)}				66		ns
Turn-Off Fall Time		t _F				30		ns
Total Gate Charge		Q _G	V _{DS} = 60V, V _{GS} = 10V I _D = 80A		117	160	nC	
Gate-Source Charge		Q _{GS}				27		nC
Gate-Drain Charge		Q _{GD}				47		nC
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS								
Drain-Source Diode Forward Voltage (Note 2)		V _{SD}	V _{GS} = 0V, I _S = 80A			1.5	V	
Continuous Source Current		I _S				80	A	
Pulsed Source Current (Note 1)		I _{SM}				320	A	

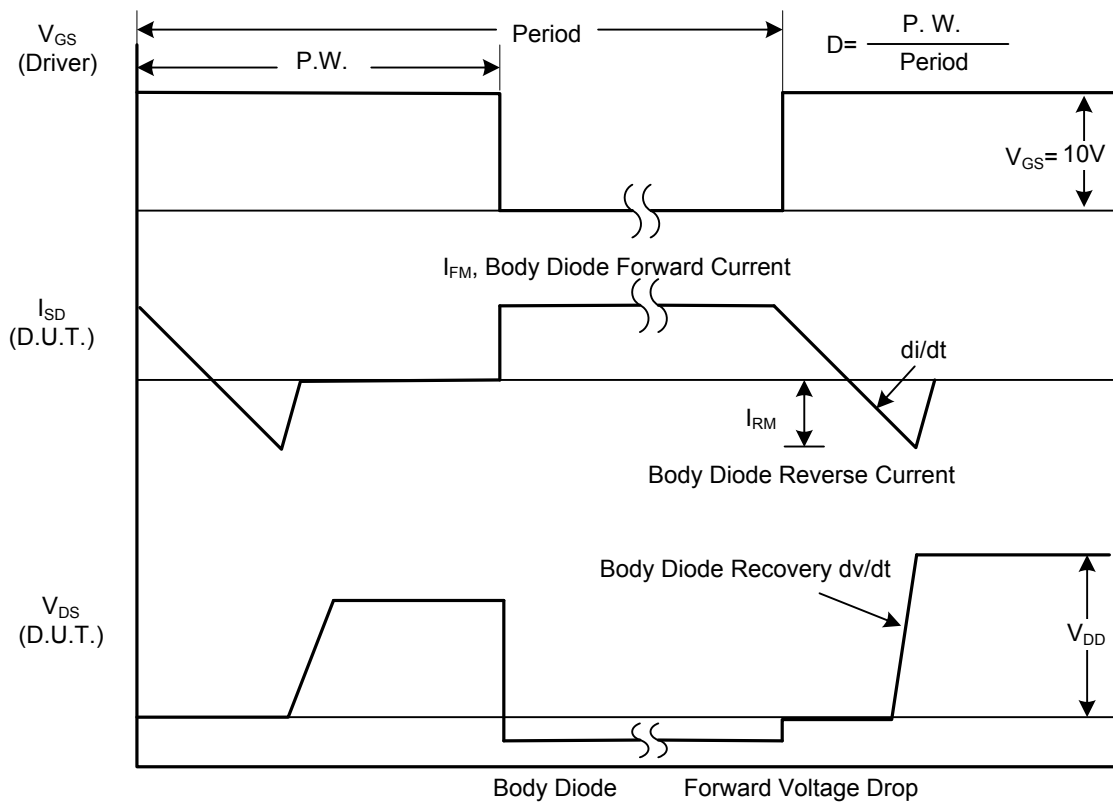
Notes: 1. Pulse width limited by safe operating area

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

■ TEST CIRCUITS AND WAVEFORMS

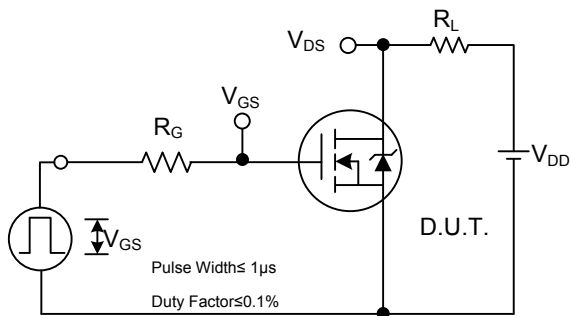


Peak Diode Recovery dv/dt Test Circuit

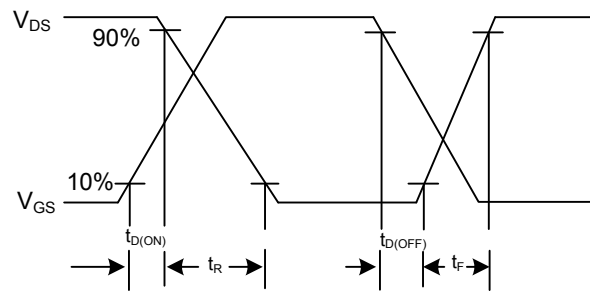


Peak Diode Recovery dv/dt Waveforms

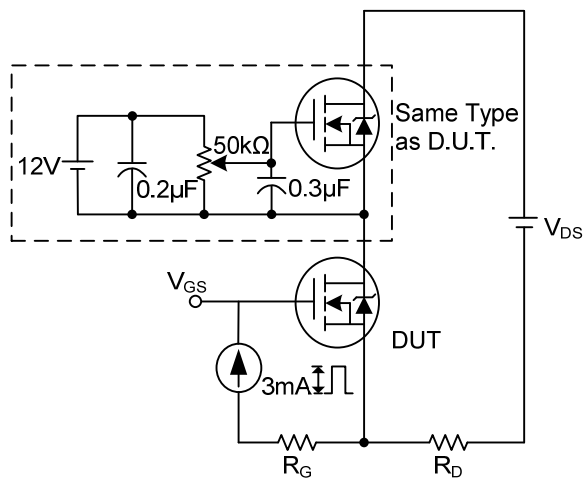
■ TEST CIRCUITS AND WAVEFORMS(Cont.)



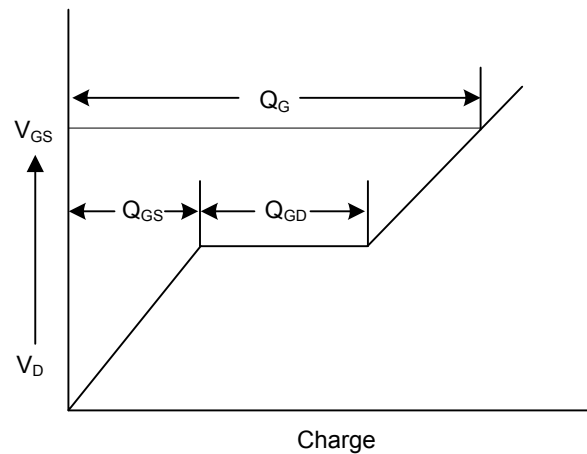
Switching Test Circuit



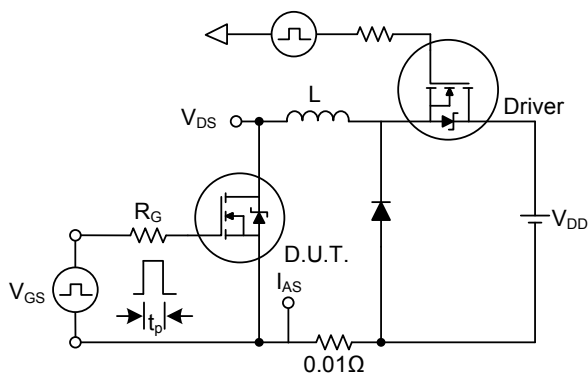
Switching Waveforms



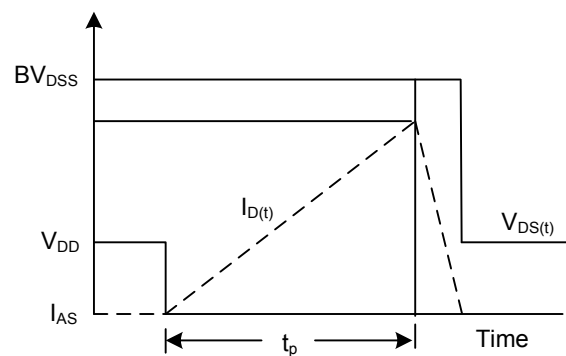
Gate Charge Test Circuit



Gate Charge Waveform

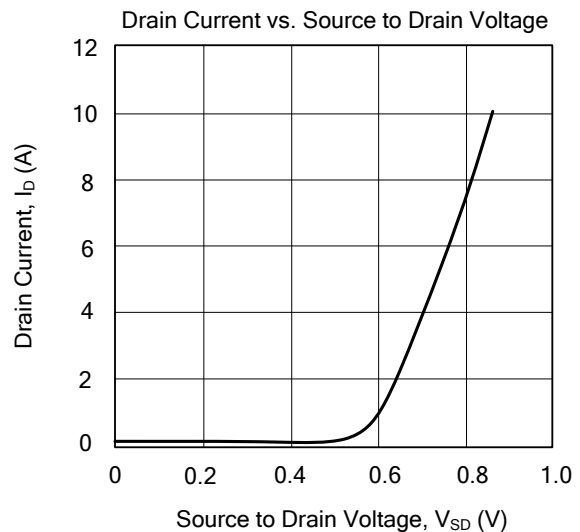
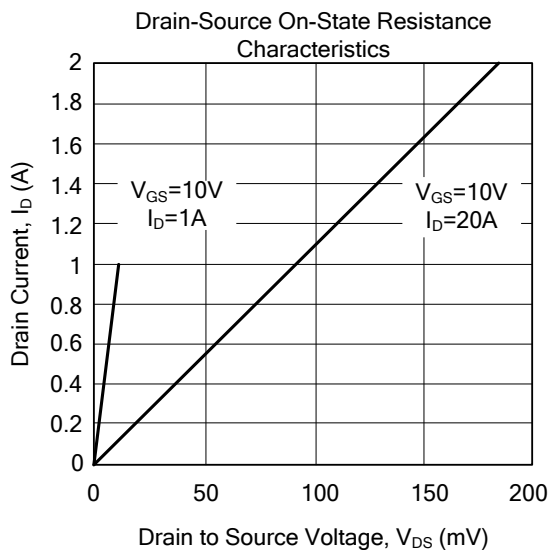
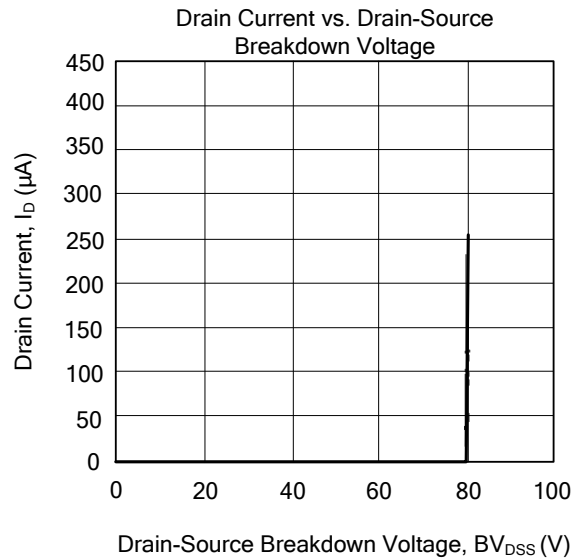
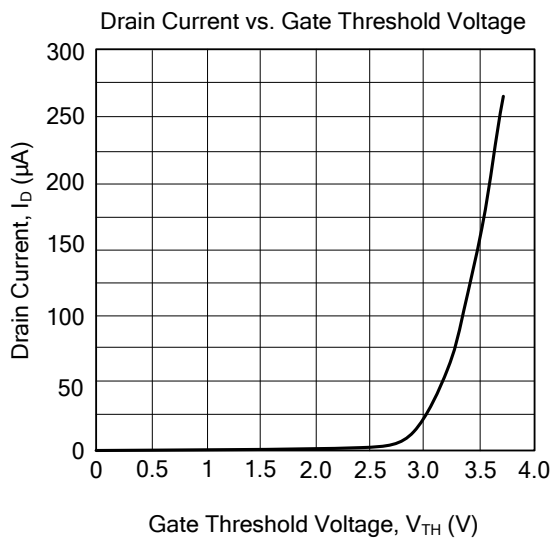


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.