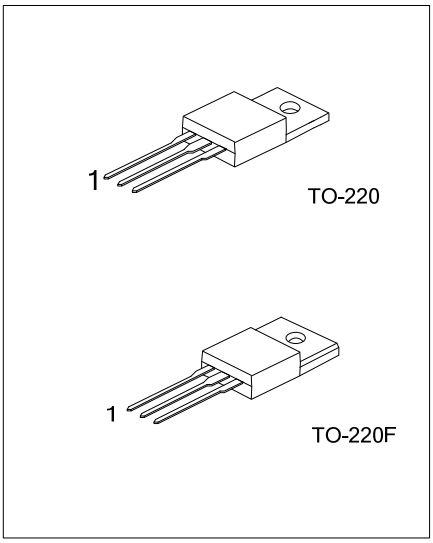
UTT75N75

Power MOSFET

80A, 75V N-CHANNEL POWER MOSFET



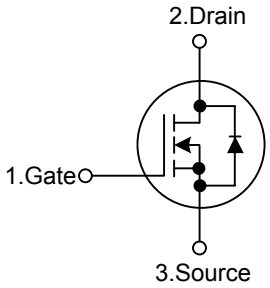
■ DESCRIPTION

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

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

■ SYMBOL



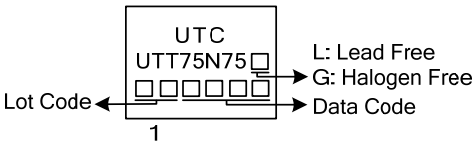
■ ORDERING INFORMATION

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

UTT75N75L-TA3-T (1)Packing Type	(1) T: Tube
(2)Package Type	(2) TA3: TO-220, TF3: TO-220F
(3)Green Package	(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING



■ 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	TO-220	P_D	300	W
	TO-220F		48	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

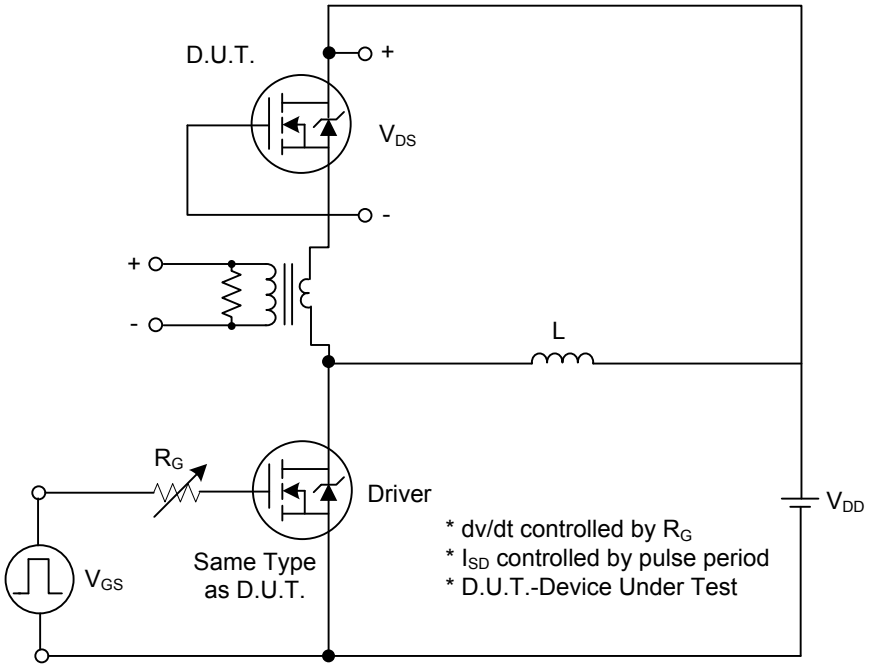
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	62.5	°C/W
Junction to Case	TO-220	θ_{JC}	0.5	°C/W
	TO-220F		2.6	°C/W

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

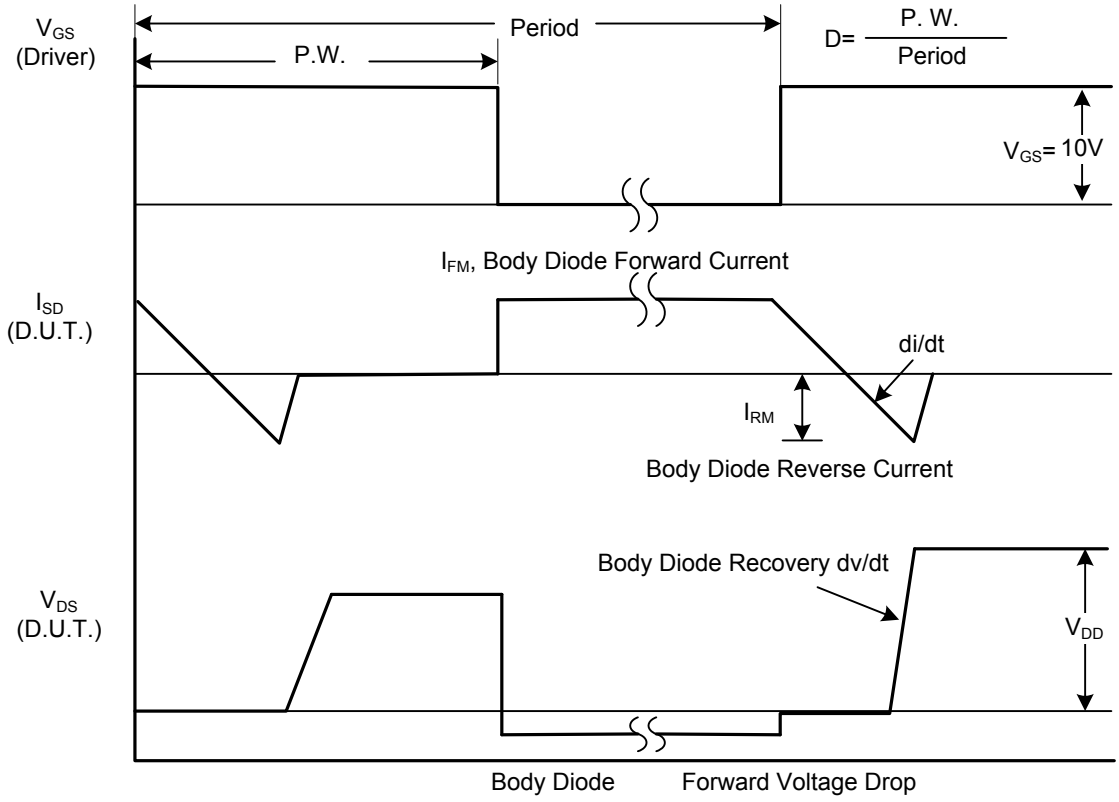
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	75			V
Drain-Source Leakage Current		I_{DSS}	V_{DS} = 75 V, V_{GS} = 0 V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS} = 20V, V_{DS} = 0 V			100	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	15	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	V_{GS} = 0V, V_{DS} = 25V f = 1MHz		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} = 30V, I_D =0.5A, V_{GS}=10V, R_G=25Ω		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} = 50V, V_{GS} = 10V I_D = 1.3A		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} = 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

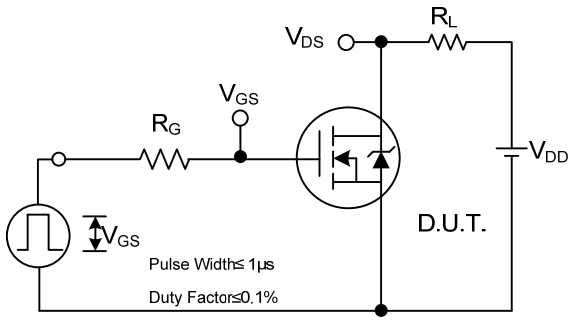


Peak Diode Recovery dv/dt Test Circuit

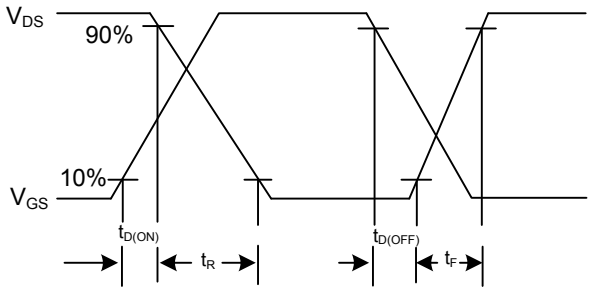


Peak Diode Recovery dv/dt Waveforms

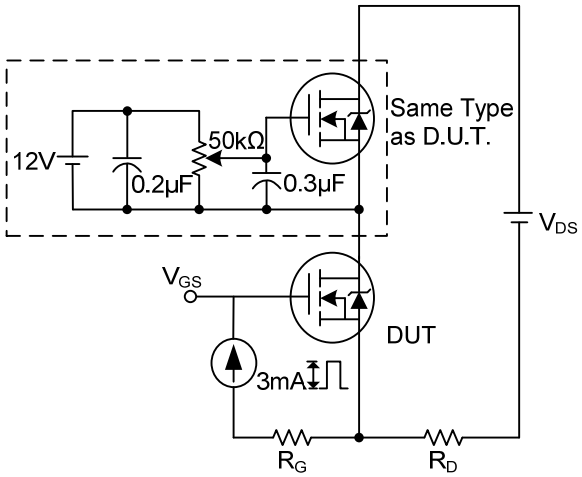
■ TEST CIRCUITS AND WAVEFORMS(Cont.)



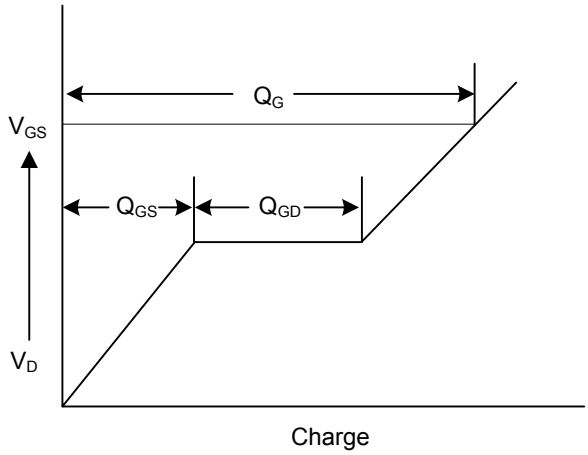
Switching Test Circuit



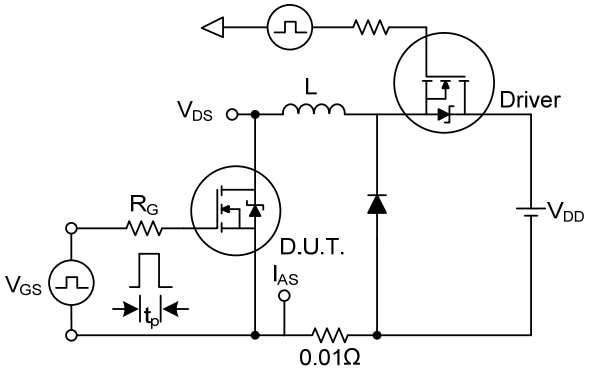
Switching Waveforms



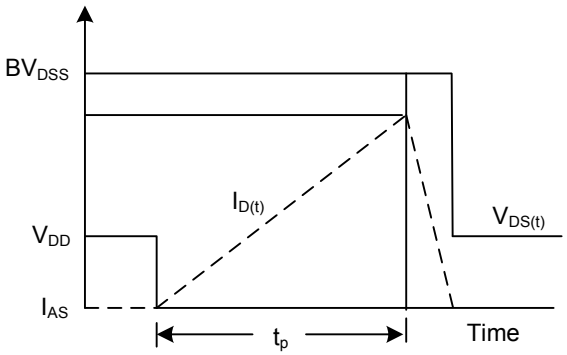
Gate Charge Test Circuit



Gate Charge Waveform



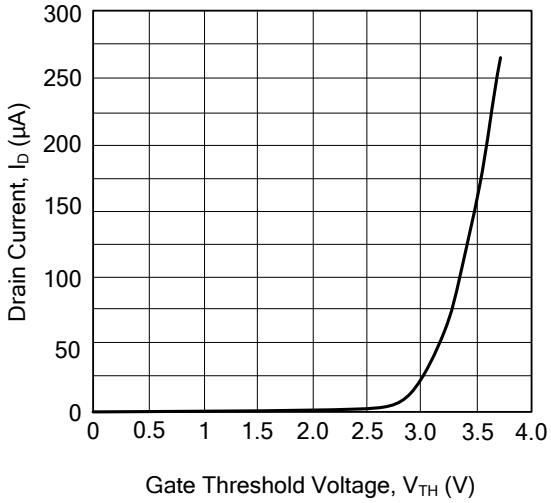
Unclamped Inductive Switching Test Circuit



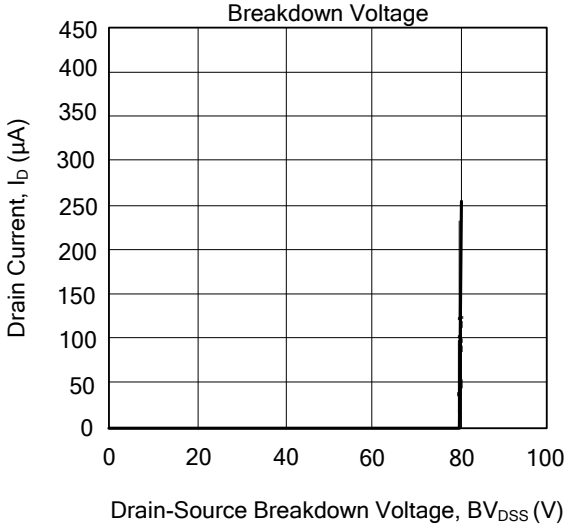
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

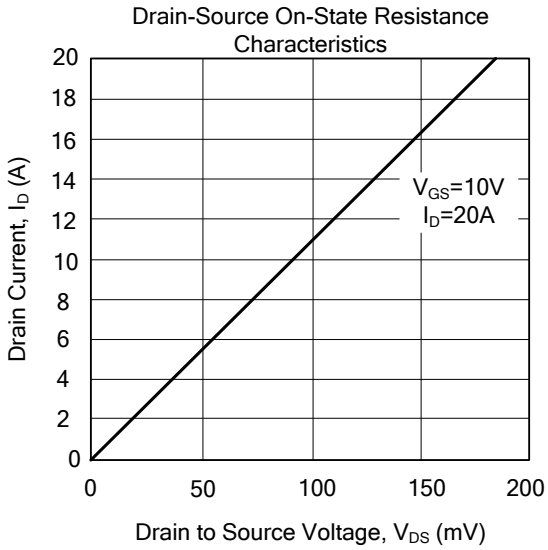
Drain Current vs. Gate Threshold Voltage



Drain Current vs. Drain-Source Breakdown Voltage



Drain-Source On-State Resistance Characteristics



Drain Current vs. Source to Drain Voltage