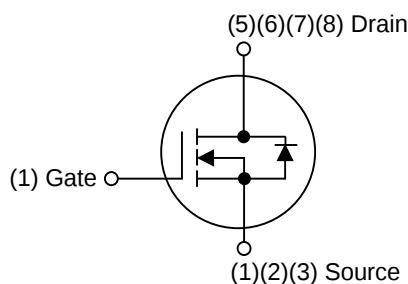


**UTT75N06****Power MOSFET****75A, 60V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UTT75N06** is n-channel enhancement mode power field effect transistors with stable off-state characteristics, fast switching speed, low thermal resistance, usually used at telecom and computer application.

FEATURES

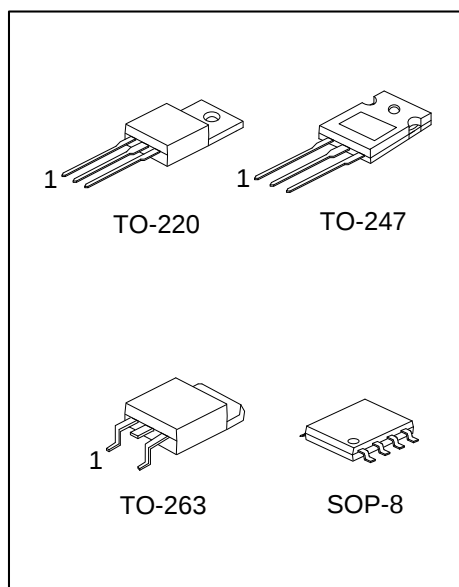
- * $R_{DS(ON)} \leq 10 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=35\text{A}$
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT75N06L-TA3-T	UTT75N06G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT75N06L-T47-T	UTT75N06G-T47-T	TO-247	G	D	S	-	-	-	-	-	Tube
UTT75N06L-TQ2-T	UTT75N06G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT75N06L-TQ2-R	UTT75N06G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT75N06L-S08-R	UTT75N06G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

UTT75N06G-TA3-T (1) Packing Type (2) Package Type (3) Green Package		(1) T: Tube, R: Tape Reel (2) TA3: TO-220, T47: TO-247, TQ2: TO-263, S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

TO-220 / TO-247 / TO-263	SOP-8
UTC UTT75N06 Lot Code 1 L: Lead Free G: Halogen Free Date Code	8 7 6 5 1 2 3 4 Date Code L: Lead Free G: Halogen Free Lot Code

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	75	A
	$T_C=100^{\circ}\text{C}$		50	A
Drain Current Pulsed (Note 2)		I_{DM}	150	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	80	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	1.2	V/ns
Power Dissipation	TO-220/TO-263	P_D	220	W
	TO-247		150	W
	SOP-8		2	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		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 junction temperature.

3. $L=0.1\text{mH}$, $I_{AS}=58.3\text{A}$, $V_{DD}=25\text{V}$, $R_G=20\Omega$, Starting $T_J=25^{\circ}\text{C}$

4. $I_{SD}\leq 75\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-263	θ_{JA}	40	$^{\circ}\text{C}/\text{W}$
	TO-247		62.5	$^{\circ}\text{C}/\text{W}$
	SOP-8		90	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220/TO-263	θ_{JC}	0.57	$^{\circ}\text{C}/\text{W}$
	TO-247		0.83	$^{\circ}\text{C}/\text{W}$
	SOP-8		62.5 (Note)	$^{\circ}\text{C}/\text{W}$

Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

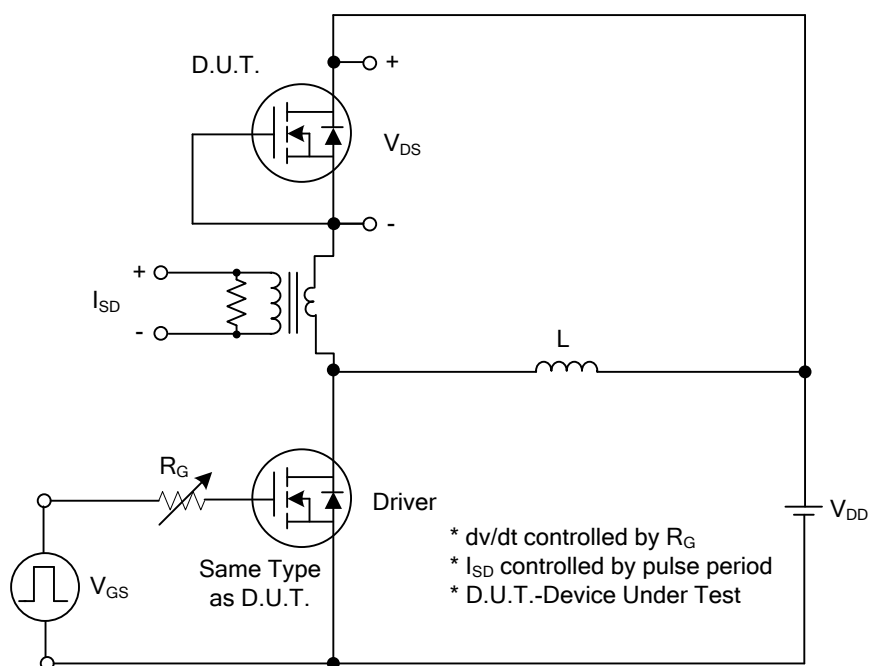
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V, V _{DS} =0V			100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =35A			10	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		3800		pF
Output Capacitance		C _{OSS}			330		pF
Reverse Transfer Capacitance		C _{RSS}			250		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge		Q _G	V _{DS} =48V, V _{GS} =10V, I _D =75A R _G =1mA (Note 1, 2)		82		nC
Gate-Source Charge		Q _{GS}			12		nC
Gate-Drain Charge (Miller Charge)		Q _{GD}			20		nC
Turn-On Delay Time		t _{D(ON)}	V _{DD} =30V, I _D =75A, R _G =25Ω (Note 1, 2)		17		ns
Turn-On Rise Time		t _R			19		ns
Turn-Off Delay Time		t _{D(OFF)}			58		ns
Turn-Off Fall Time		t _F			22		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				75	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				150	A
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} =0V, I _S =75A			1.4	V
Reverse Recovery Time		t _{rr}	V _{GS} =0V, I _S =75A		41		ns
Reverse Recovery Charge		Q _{rr}	dI _F /dt=100A/μs		54		nC

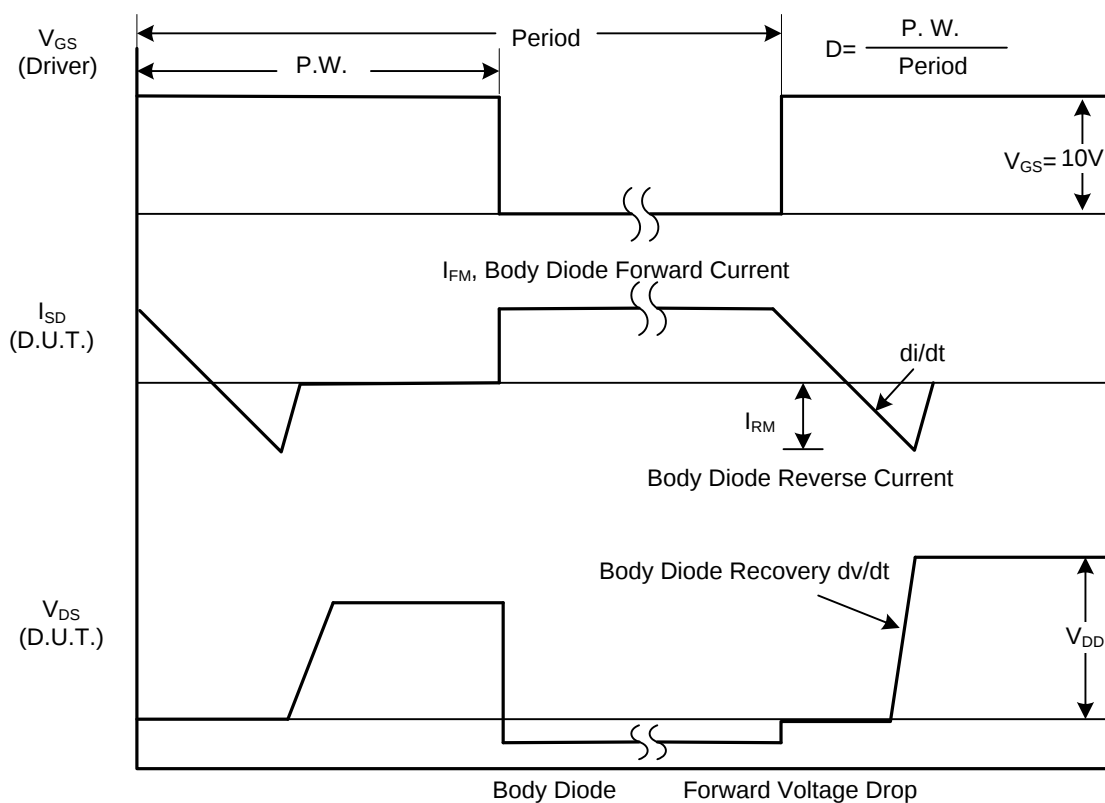
Notes: 1. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS



1A Peak Diode Recovery dv/dt Test Circuit



1B Peak Diode Recovery dv/dt Waveforms

■ TEST CIRCUITS AND WAVEFORMS

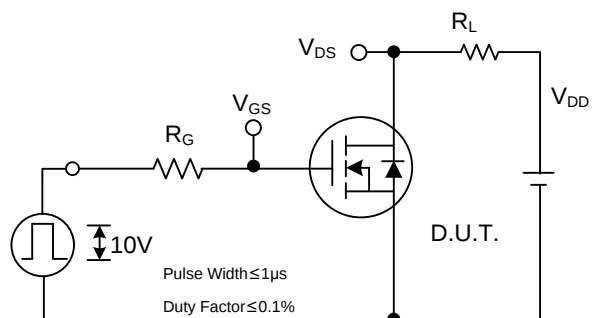


Fig. 2A Switching Test Circuit

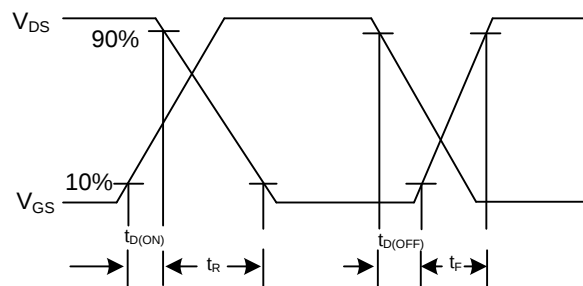


Fig. 2B Switching Waveforms

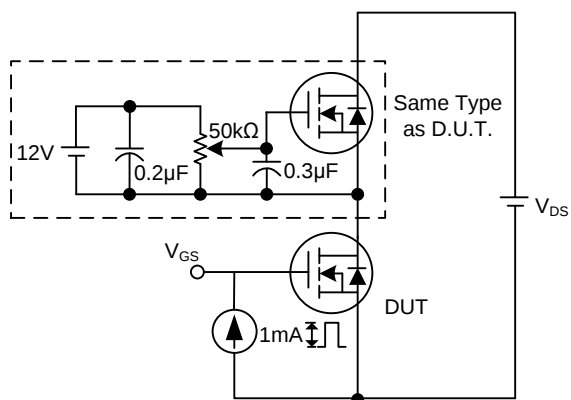


Fig. 3A Gate Charge Test Circuit

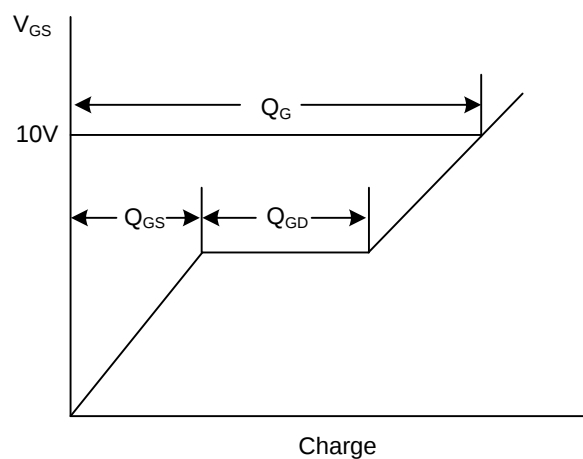


Fig. 3B Gate Charge Waveform

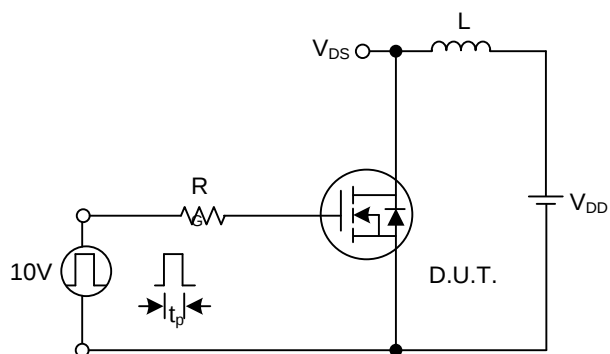


Fig. 4A Unclamped Inductive Switching Test Circuit

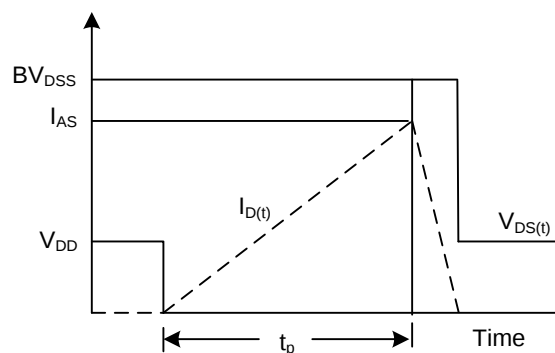
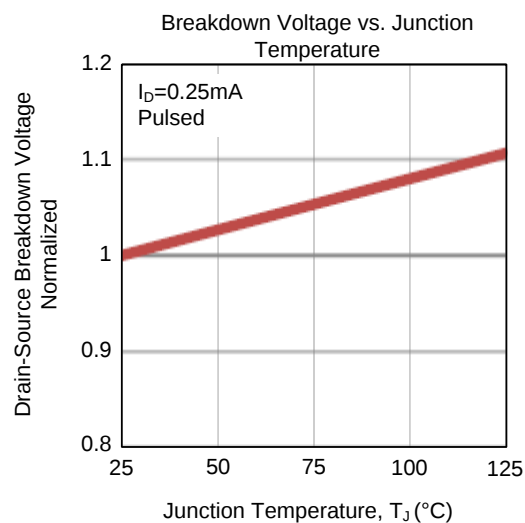
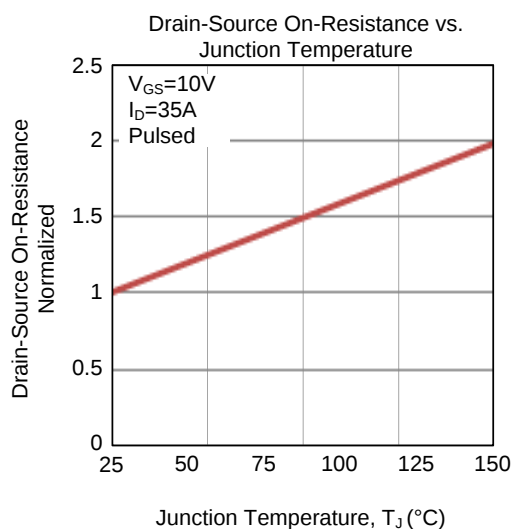
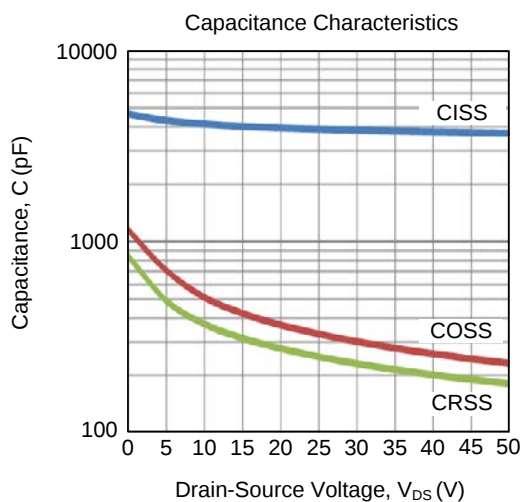
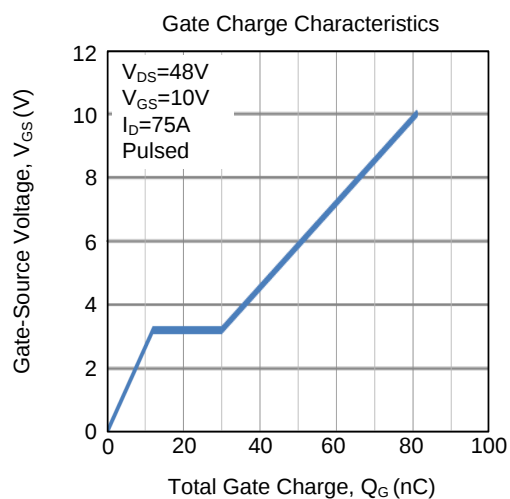
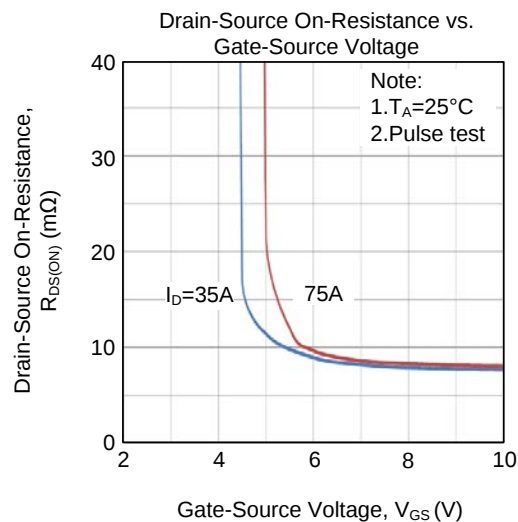
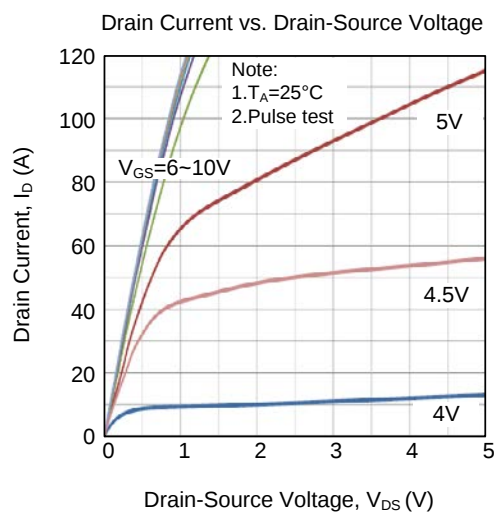


Fig. 4B Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)

