



UTT24N06

Power MOSFET

24A, 60V N-CHANNEL ENHANCEMENT MODE MOSFET

DESCRIPTION

The UTC **UTT24N06** is an N-Channel enhancement mode MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low gate charge, etc.

The UTC **UTT24N06** is suitable for switching application in Industry and converter application in LED TV, etc.

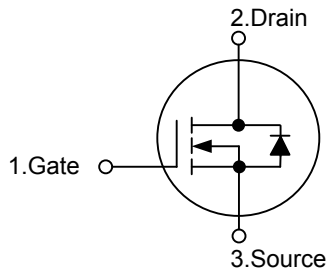
FEATURES

* $R_{DS(ON)} < 40\text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_{DS}=12\text{A}$

$R_{DS(ON)} < 50\text{ m}\Omega$ @ $V_{GS}=5\text{V}$, $I_{DS}=11\text{A}$

* Low $R_{DS(ON)}$

SYMBOL



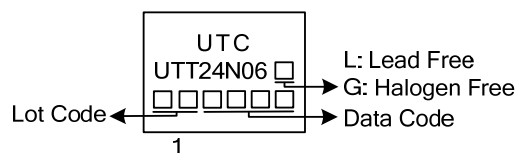
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT24N06L-TM3-T	UTT24N06G-TM3-T	TO-251	G	D	S	Tube
UTT24N06L-TN3-R	UTT24N06G-TN3-R	TO-252	G	D	S	Tape Reel

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

UTT24N06G-TM3-T	(1)Packing Type	(1) T: Tube, R: Tape Reel
	(2)Package Type	(2) TM3: TO-251, TN3: TO-252
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	Continuous	I_D	24	A
Pulsed Drain Current	Pulsed (Note 2)	I_{DM}	96	A
Avalanche Current (Note 3)		I_{AR}	17.8	A
Avalanche energy	Single Pulsed (Note 3)	E_{AS}	160	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3.27	V/nS
Power Dissipation		P_D	60	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 maximum junction temperature.

3. $L = 1.0\text{mH}$, $I_{AS} = 17.8\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq 12\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	2.1	$^\circ\text{C}/\text{W}$

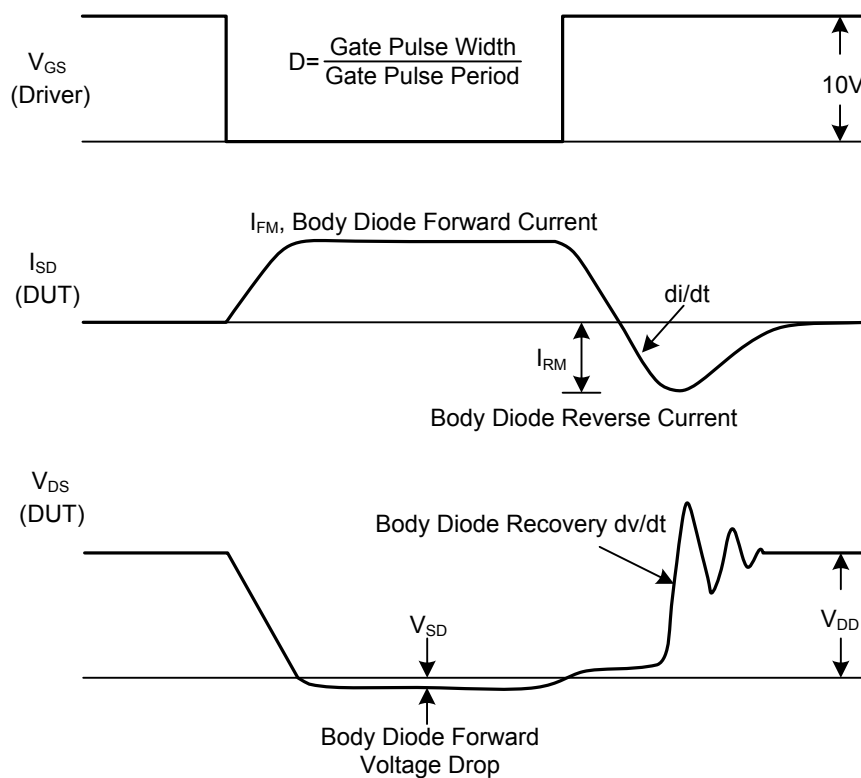
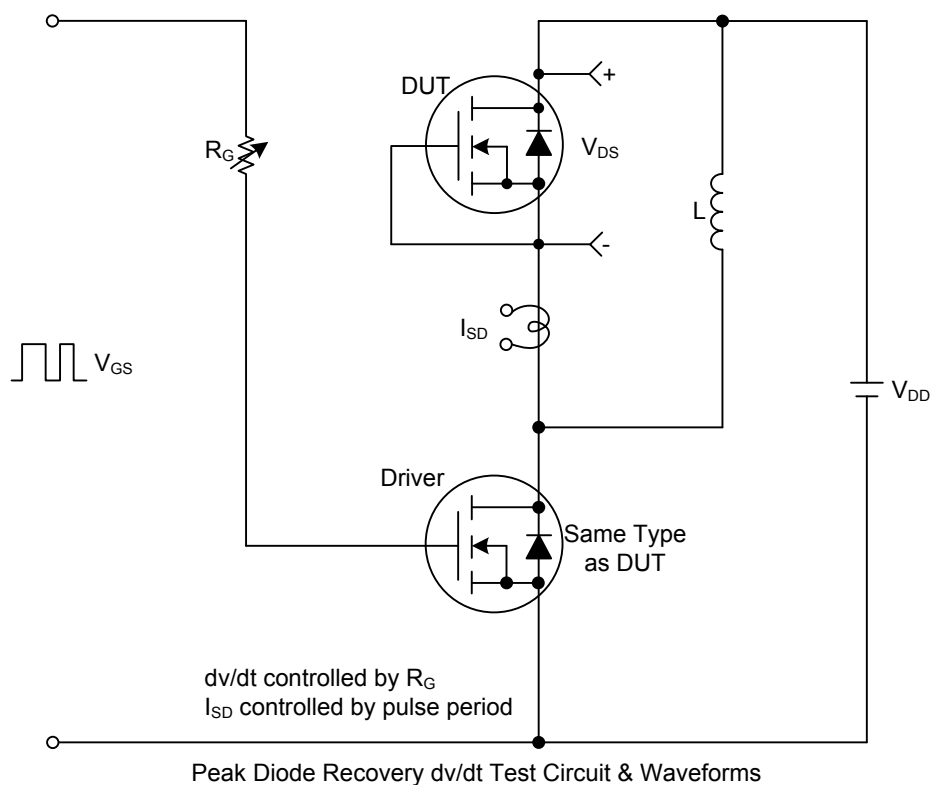
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250μA	1.0		3.0	V
Drain-Source On-State Resistance (Note 1)	R _{DS(ON)}	V _{GS} =10V, I _{DS} =12A			40	mΩ
		V _{GS} =5.0V, I _{DS} =11A			50	mΩ
DYNAMIC PARAMETERS (Note 2)						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		1080		pF
Output Capacitance	C _{OSS}			130		pF
Reverse Transfer Capacitance	C _{RSS}			85		pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge (Note 1)	Q _G	V _{DS} =30V, V _{GS} =10V, I _D =1.3A I _G =100μA (Note 1, 2)		115		nC
Gate to Source Charge	Q _{GS}			6		nC
Gate to Drain Charge	Q _{GD}			8		nC
Turn-on Delay Time (Note 1)	t _{D(ON)}	V _{DS} =30V, V _{GS} =10V, I _D =0.5A, R _G =25Ω (Note 1, 2)		36		ns
Rise Time	t _R			49		ns
Turn-off Delay Time	t _{D(OFF)}			320		ns
Fall-Time	t _F			108		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				12	A
Maximum Body-Diode Pulsed Current	I _{SM}				48	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =12A, V _{GS} =0V		0.8	1.3	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =12A, V _{GS} =0V		124		ns
Reverse Recovery Charge	Q _{rr}	dI _F /dt=100A/μs		165		μC

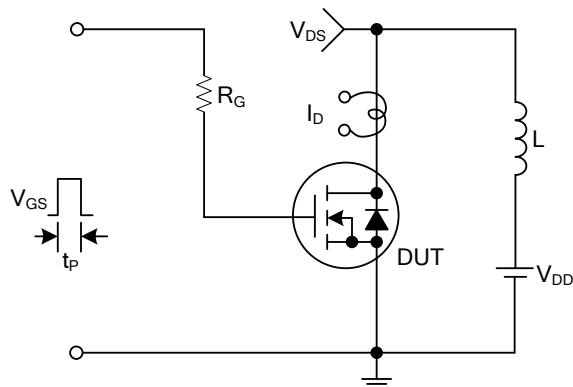
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

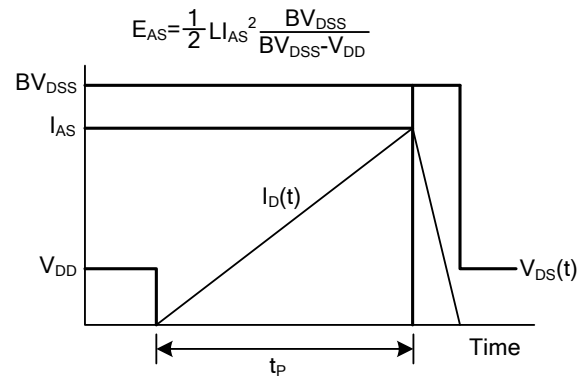
■ TEST CIRCUITS AND WAVEFORMS



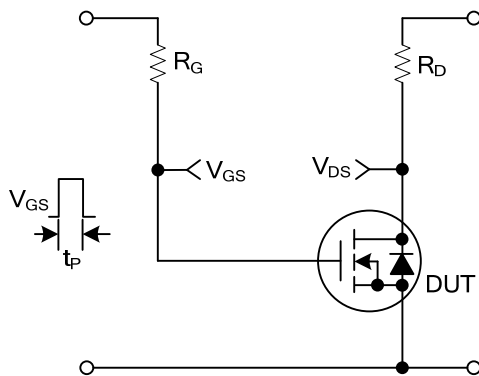
■ TEST CIRCUITS AND WAVEFORMS



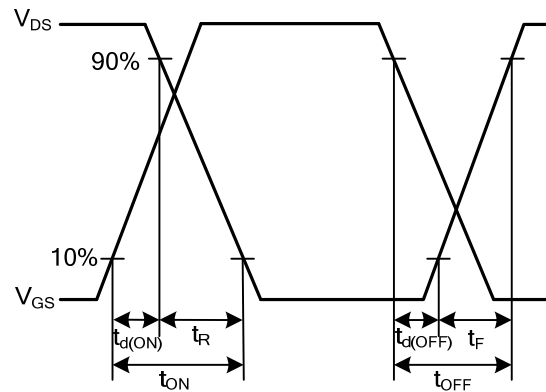
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



Resistive Switching Test Circuit



Resistive Switching Waveforms

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. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.