

**UTT10N10****Power MOSFET****10A, 100V N-CHANNEL MOSFET****DESCRIPTION**

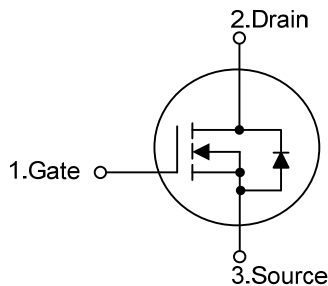
The UTC **UTT10N10** is a N-channel enhancement mode power MOSFET using UTC's advanced technology to provide the customers with a minimum on-state resistance, high switching speed and ultra low gate charge. It also can withstand high energy pulse in the avalanche and commutation mode.

FEATURES

* $R_{DS(on)} \leq 143m\Omega$ @ $V_{GS}=10V$, $I_D=6.4A$

$R_{DS(on)} \leq 156m\Omega$ @ $V_{GS}=4.5V$, $I_D=6.4A$

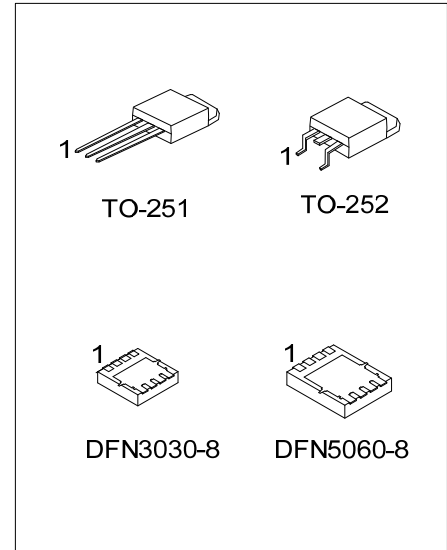
* High Switching Speed

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT10N10L-TM3-T	UTT10N10G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
UTT10N10L-TN3-R	UTT10N10G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT10N10L-K08-3030-R	UTT10N10G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel
UTT10N10L-K08-5060-R	UTT10N10G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

UTT10N10G-TM3-T 		(1) T: Tube, R: Tape Reel (2) TM3: TO-251, TN3: TO-252 K08-3030: DFN3030-8, K08-5060: DFN5060-8 (3) G: Halogen Free and Lead Free, L: Lead Free
---------------------	--	--



MARKING

PACKAGE	MARKING
TO-252	UTC UTT10N10 Lot Code 1 L: Lead Free G: Halogen Free Date Code
DFN3030-8	UTT 10N10 Date Code
DFN5060-8	UTC UTT 10N10 Lot Code Date Code

■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	± 25	V
Drain Current	Continuous	I_D	10	A
	Pulsed	I_{DM}	30	A
Avalanche Energy	Single Pulsed	E_{AS}	13	mJ
Peak Diode Recovery dv/dt		dv/dt	13	V/ns
Power Dissipation	TO-252	P_D	45	W
	DFN3030-8		15	W
	DFN5060-8		31	W
Junction Temperature		T_J	-25 ~ +150	°C
Storage Temperature		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. Repetitive rating; pulse width limited by max. junction temperature.

3. $L=0.1\text{mH}$, $I_{AS}=16.4\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

4. $I_{SD} \leq 10\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, starting $T_J=25^\circ\text{C}$

■ THERMAL DATA

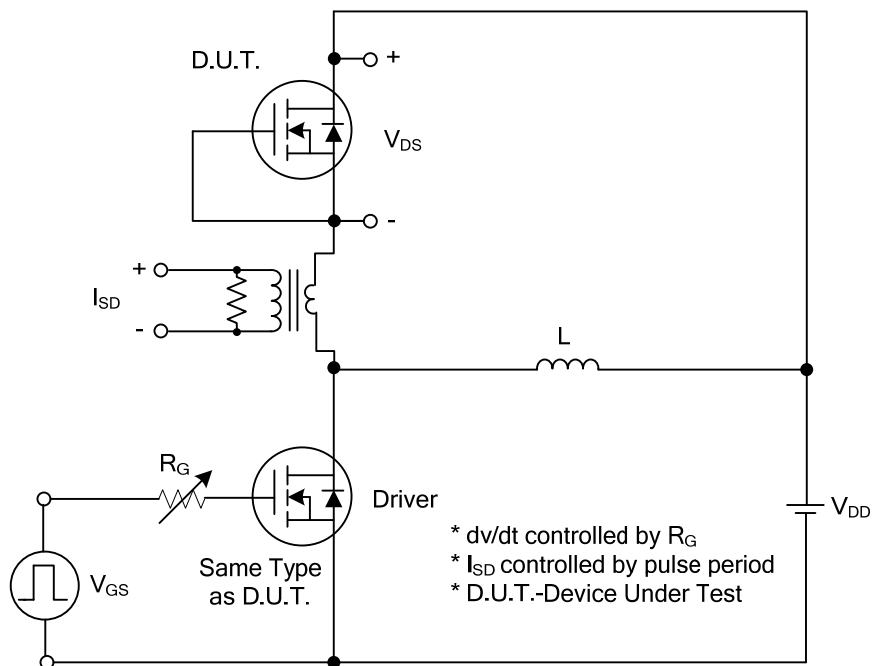
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	θ_{JA}	62.5	°C/W
	DFN3030-8		60	°C/W
	DFN5060-8		35	°C/W
Junction to Case	TO-252	θ_{JC}	2.77	°C/W
	DFN3030-8		8.06	°C/W
	DFN5060-8		4.03	°C/W

Note: Surface mounted on 1 in² copper pad of FR4 board.

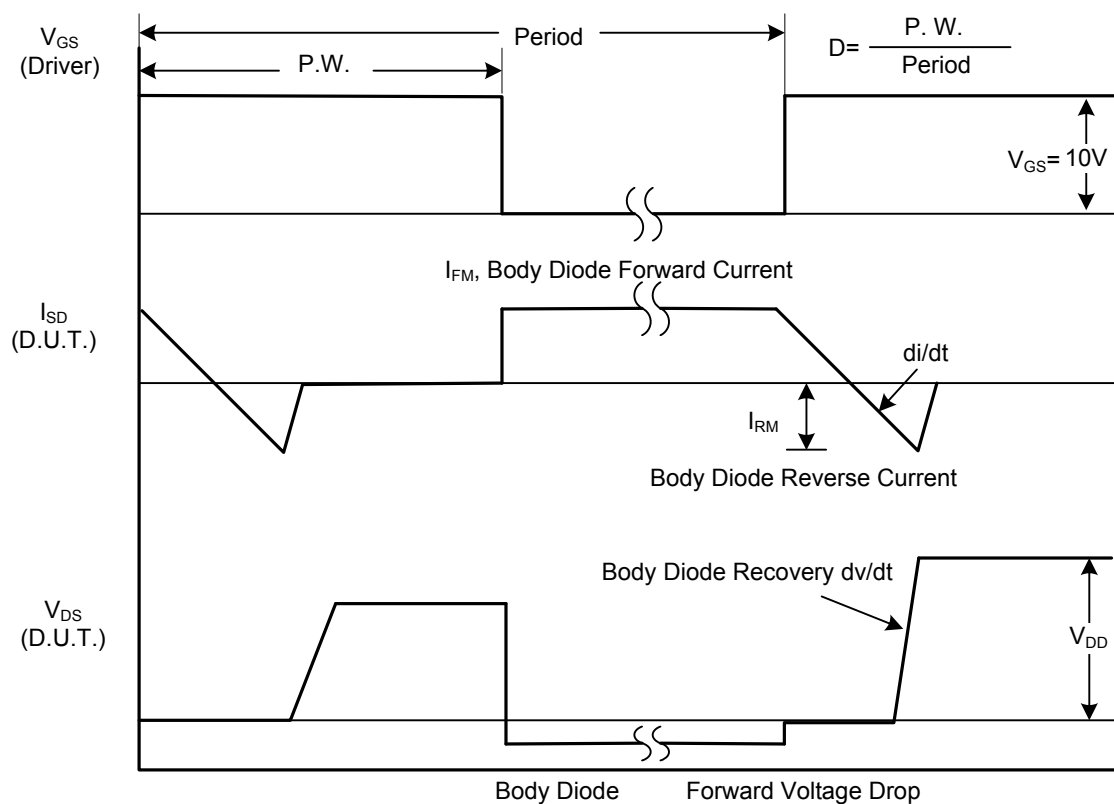
■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+25V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-25V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =6.4A			143	mΩ
			V _{GS} =4.5V, I _D =6.4A			156	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		860		pF
Output Capacitance		C _{OSS}			56		pF
Reverse Transfer Capacitance		C _{RSS}			44		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =80V, V _{GS} =10V, I _D =10A I _G =1mA		26		nC
Gate to Source Charge		Q _{GS}			7		nC
Gate to Drain Charge		Q _{GD}			5.4		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =50V, V _{GS} =10V, I _D =10A, R _G =25Ω		4.8		ns
Rise Time		t _R			4.5		ns
Turn-OFF Delay Time		t _{D(OFF)}			67		ns
Fall-Time		t _F			34		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				10	A
Maximum Body-Diode Pulsed Current		I _{SM}				30	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =10A, V _{GS} =0V			1.5	V
Body Diode Reverse Recovery Time		t _{rr}	I _S =10A, dI/dt=100A/μs		50		ns
Body Diode Reverse Recovery Charge		Q _{rr}	(Note)		80		nC

■ TEST CIRCUITS AND WAVEFORMS

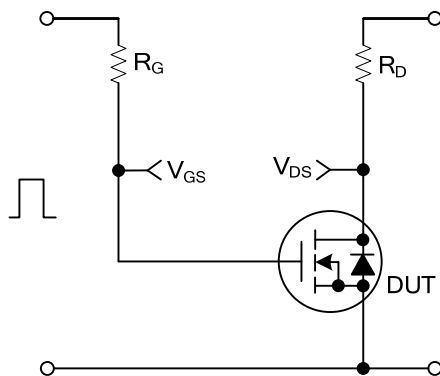


Peak Diode Recovery dv/dt Test Circuit

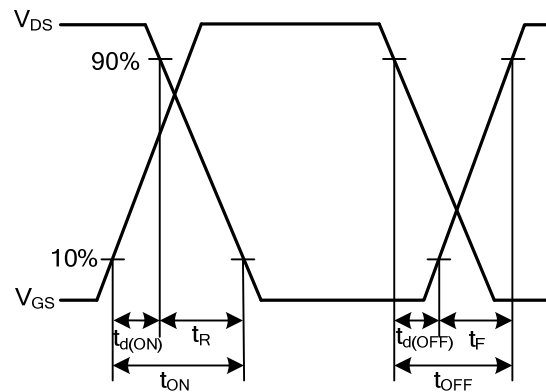


Peak Diode Recovery dv/dt Waveforms

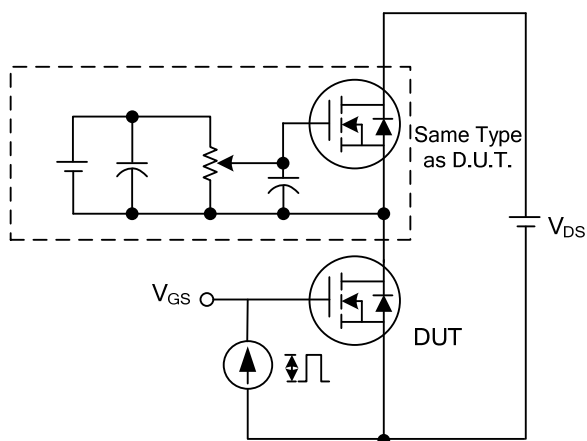
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



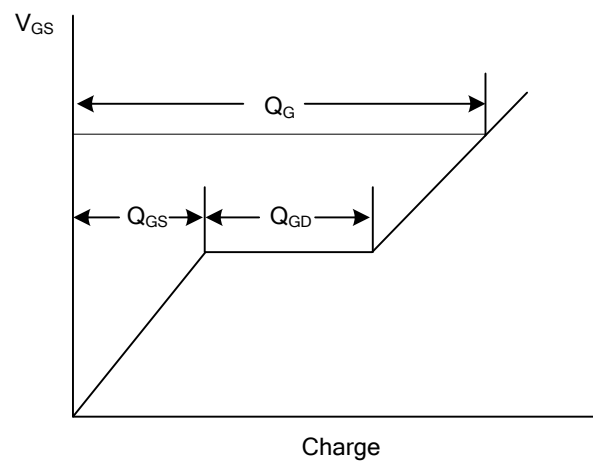
Switching Test Circuit



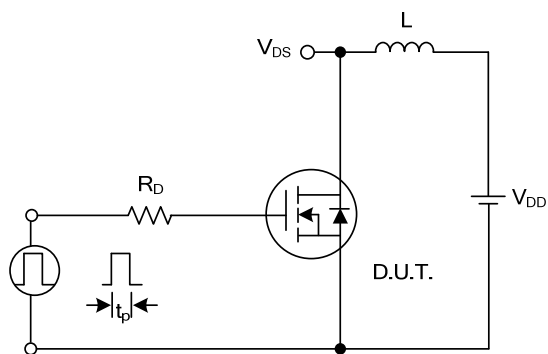
Switching Waveforms



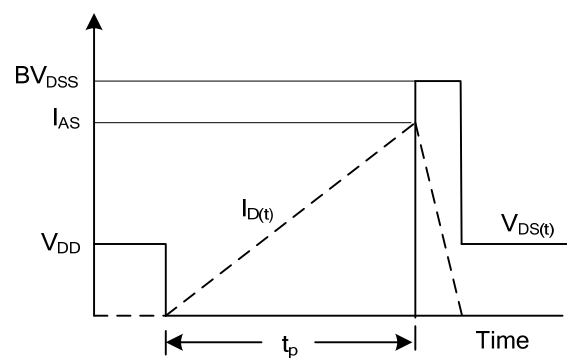
Gate Charge Test Circuit



Gate Charge Waveform

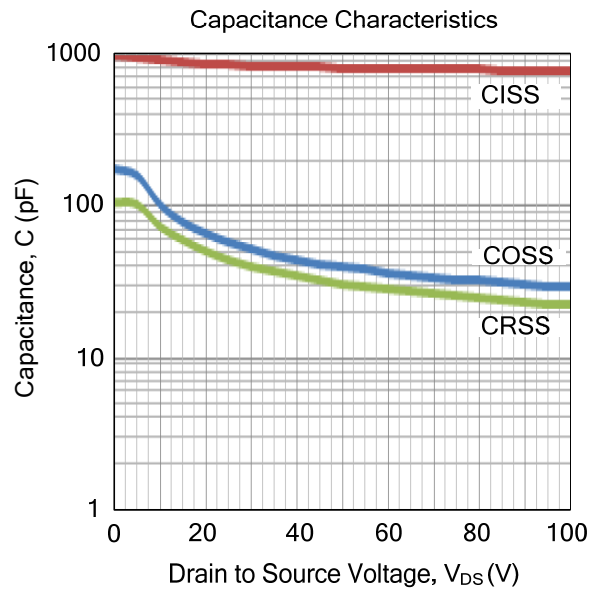
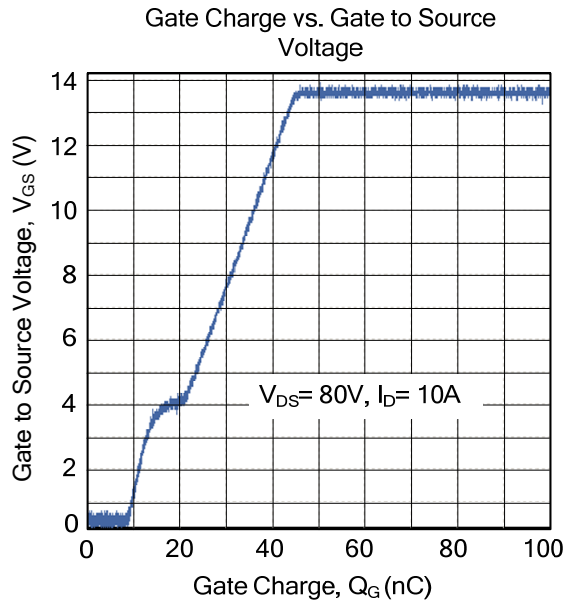


Unclamped Inductive Switching Test Circuit



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. 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.