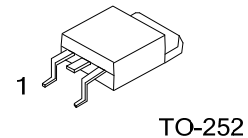
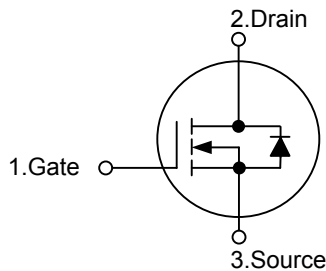


**UTD452****Power MOSFET****N-CHANNEL ENHANCEMENT
MODE****DESCRIPTION**

The **UTD452** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

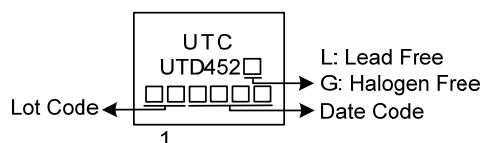
- * $R_{DS(ON)} \leq 8.5 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=30\text{A}$
- * $R_{DS(ON)} \leq 14 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=20\text{A}$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTD452L-TN3-R	UTD452G-TN3-R	TO-252	G	D	S	Tape Reel

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

UTD452G-TN3-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) TN3: TO-252 (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_{DSS}	25	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	55	A
Pulsed Drain Current	I_{DM}	100	A
Avalanche Current	I_{AS}	24.8	A
Avalanche Energy (Note 3)	E_{AS}	30.8	mJ
Power Dissipation	P_D	50	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 maximum junction temperature.
 3. $L = 0.1\text{mH}$, $I_{AS} = 24.8\text{A}$, $V_{DD} = 20\text{V}$, $R_G = 25\ \Omega$ Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction-to-Ambient	θ_{JA}	110	$^{\circ}\text{C/W}$
Junction-to-Case	θ_{JC}	2.5 (Note)	$^{\circ}\text{C/W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

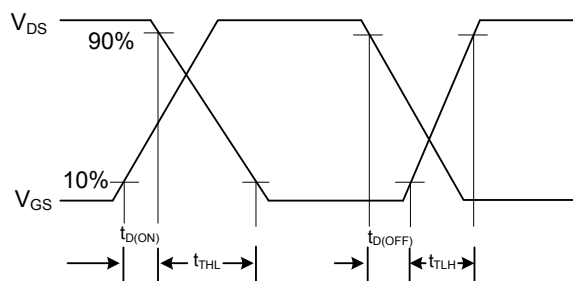
PARAMETER		SYMBO	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	25			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Source Leakage Current		I _{GSS}	V _{DS} =0V, V _{GS} =±20V			100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	3.0	V
On State Drain Current		I _{D(ON)}	V _{DS} =5V, V _{GS} =10V	100			A
Static Drain-Source On-Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A		7.6	8.5	mΩ
			V _{GS} =4.5V, I _D =20A		12.4	14	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{DS} =12.5V, V _{GS} =0V, f=1MHz		1429	1476	pF
Output Capacitance		C _{OSS}			332		pF
Reverse Transfer Capacitance		C _{RSS}			294		pF
Forward Transconductance		g _{FS}	V _{DS} =5V, I _D =10A		18.1		S
SWITCHING PARAMETERS							
Total Gate Charge	10V	Q _G	V _{DS} =12.5V, V _{GS} =10V, I _D =20A		40		nC
	5V				21		nC
Gate Source Charge		Q _{GS}	(Note 1, 2)		5.5		nC
Gate Drain Charge		Q _{GD}			11		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =12.5V, V _{GS} =10V, R _L =0.6Ω, R _G =3Ω (Note 1, 2)		8		ns
Turn-ON Rise Time		t _R			16		ns
Turn-OFF Delay Time		t _{D(OFF)}			27		ns
Turn-OFF Fall-Time		t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				55	A
Diode Forward Voltage		V _{SD}	I _S =1.0A, V _{GS} =0V		0.72	1	V
Body Diode Reverse Recovery Time		t _{rr}	I _S =30A, V _{GS} =0V,		153		ns
Body Diode Reverse Recovery Charge		Q _{rr}	dl _F /dt=100A/μs		471		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

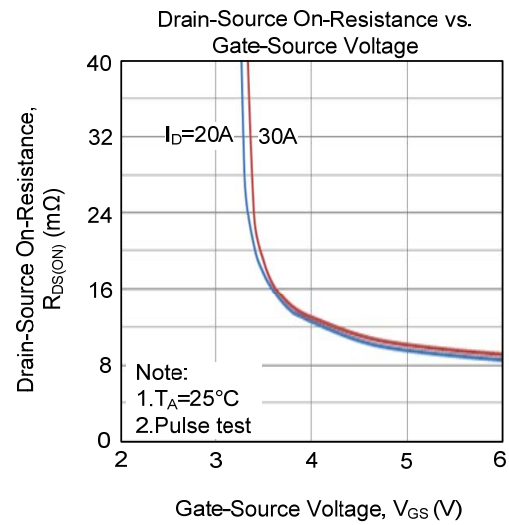
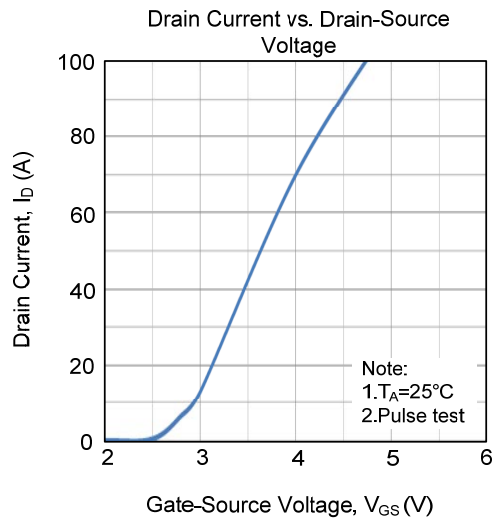
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

Switching Time 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.