



UTD452

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

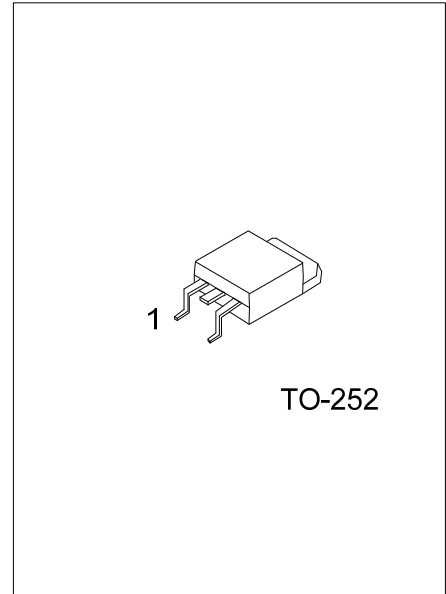
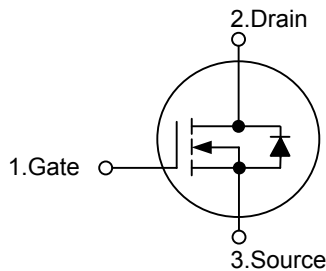
DESCRIPTION

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

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

SYMBOL



TO-252

Lead-free: UTD452L
Halogen-free: UTD452G

ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free	Halogen Free		1	2	3	
UTD452-TN3-R	UTD452L-TN3-R	UTD452G-TN3-R	TO-252	G	D	S	Tape Reel
UTD452-TN3-T	UTD452L-TN3-T	UTD452G-TN3-T	TO-252	G	D	S	Tube

UTD452L-TN3-R (1)Packing Type (2)Package Type (3)Lead Plating	(1) R: Tape Reel, T: Tube (2) TN3: TO-252 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn
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ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	55	A
Pulsed Drain Current	I_{DM}	100	A
Avalanche Current	I_{AR}	30	A
Repetitive avalanche energy L=0.1mH	E_{AR}	135	mJ
Power Dissipation	P_D	50	W
Junction Temperature	T_J	+175	°C
Storage Temperature	T_{STG}	-55 ~ +175	°C

Note: 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 $T_{J(MAX)}$

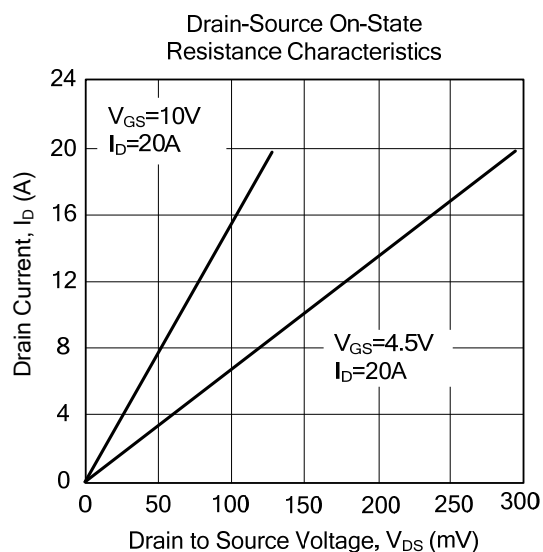
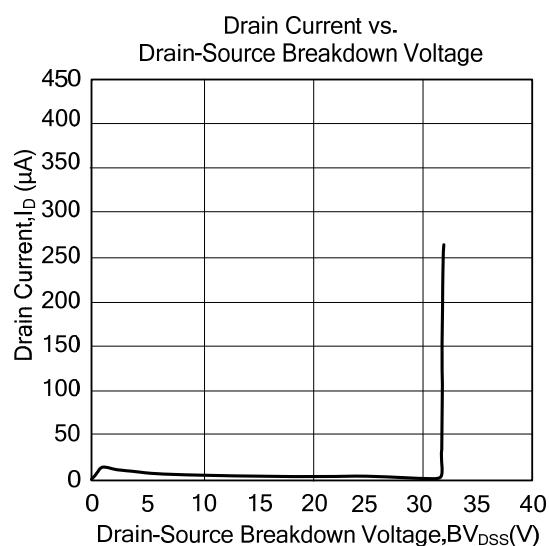
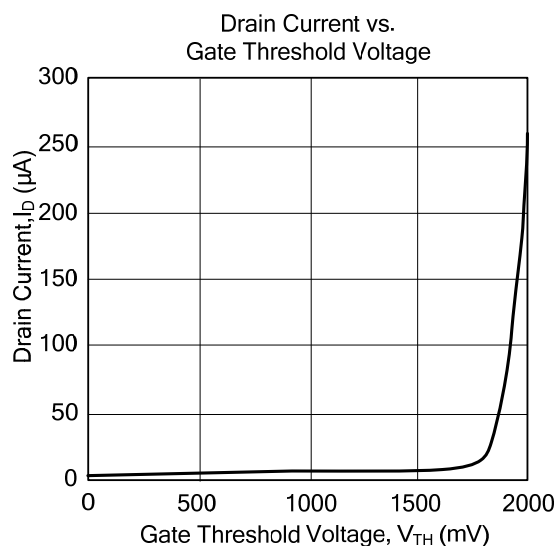
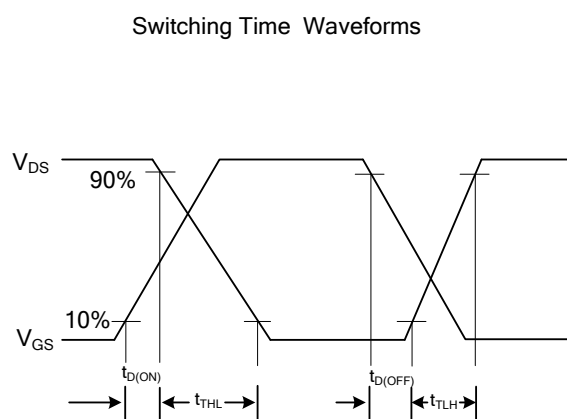
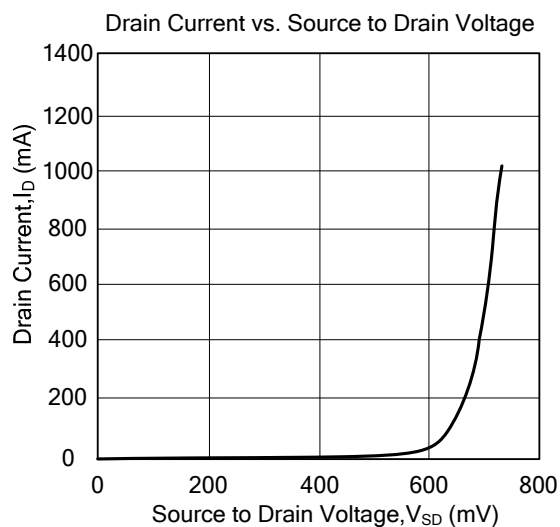
■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}		39	50	°C/W
Junction-to-Case	θ_{JC}		2.5	3	°C/W

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, 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	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	1.8	3	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		6.5	8.5	mΩ	
		V _{GS} =4.5V, I _D =20A		11.5	14		
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =10A		35		S	
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{DS} =12.5V, V _{GS} =0V, f=1MHz		1230	1476	pF	
Output Capacitance	C _{OSS}			315		pF	
Reverse Transfer Capacitance	C _{RSS}			190		pF	
SWITCHING PARAMETERS							
Total Gate Charge	10V	Q _G	V _{DS} =12.5V, V _{GS} =10V, I _D =20A		26.4	32	nC
	4.5V				13.5		
Gate Source Charge	Q _{GS}			3.9		nC	
Gate Drain Charge	Q _{GD}			7.75		nC	
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V, V _{DS} =12.5V, R _L =0.6Ω, R _G =3Ω			6.5		ns
Turn-ON Rise Time	t _R				10		ns
Turn-OFF Delay Time	t _{D(OFF)}				22.7		ns
Turn-OFF Fall-Time	t _F				6.2		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.72	1	V	
Maximum Body-Diode Continuous Current	I _S				55	A	
Body Diode Reverse Recovery Time	t _{RR}	I _F =20A, dI/dt=100A/μs		23.06	27.5	ns	
Body Diode Reverse Recovery Charge	Q _{RR}	I _F =20A, dI/dt=100A/μs		15.25		nC	

TYPICAL CHARACTERISTICS



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