



UTD410

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

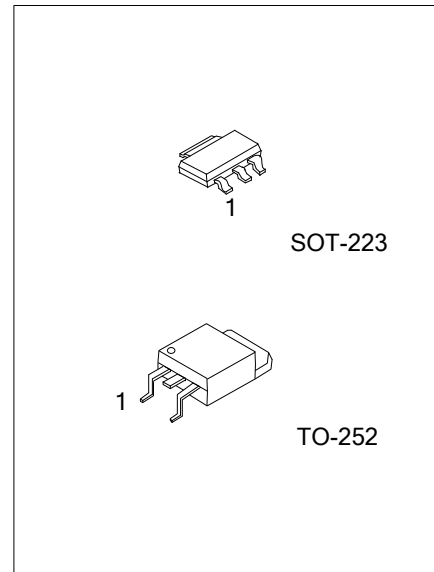
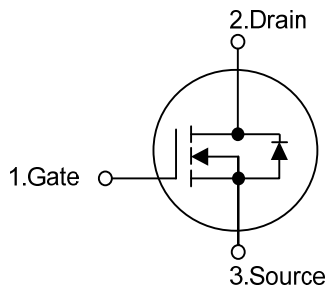
■ DESCRIPTION

The **UTD410** can provide excellent $R_{DS(ON)}$ and low gate charge by using advanced trench technology. This **UTD410** is suitable for using as a load switch or in PWM applications.

■ FEATURES

- * $V_{DS}=30V, I_D=8A$
- * $R_{DS(ON)}=48m\Omega @V_{GS}=10V$

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTD410L-TN3-R	UTD410G-TN3-R	TO-252	G	D	S	Tape Reel
UTD410L-TN3-T	UTD410G-TN3-T	TO-252	G	D	S	Tube
UTD410L-AA3-R	UTD410G-AA3-R	SOT-223	G	D	S	Tape Reel

<p>UTD410L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3: TO-252, AA3: SOT-223</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±20	
Continuous Drain Current	I _D	8	A
Pulsed Drain Current (Note1)	I _{DM}	20	
Repetitive Avalanche Energy (L=0.1mH Note1)	E _{AR}	10	mJ
Power Dissipation (T _C =25°C)	TO-252	P _D	2
	SOT-223		2.3
Junction Temperature	T _J	+175	°C
Storage Temperature	T _{STG}	-55 ~ +175	°C

Note: 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.

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient (T _C =25°C)	TO-252	θ _{JA}	46	60	°C/W
	SOT-223			55	°C/W

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

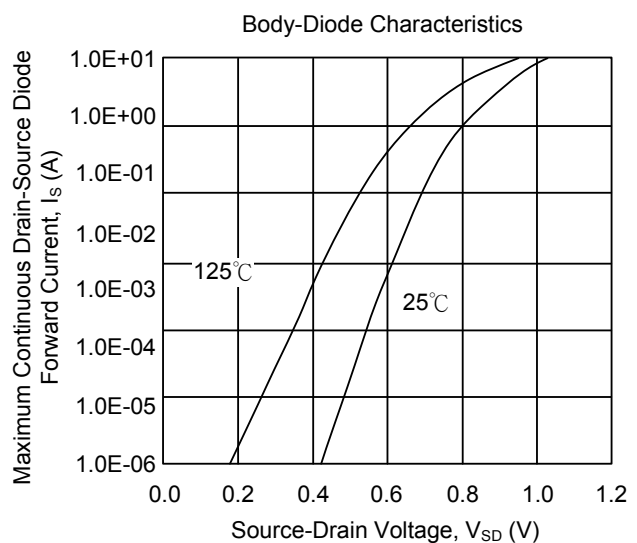
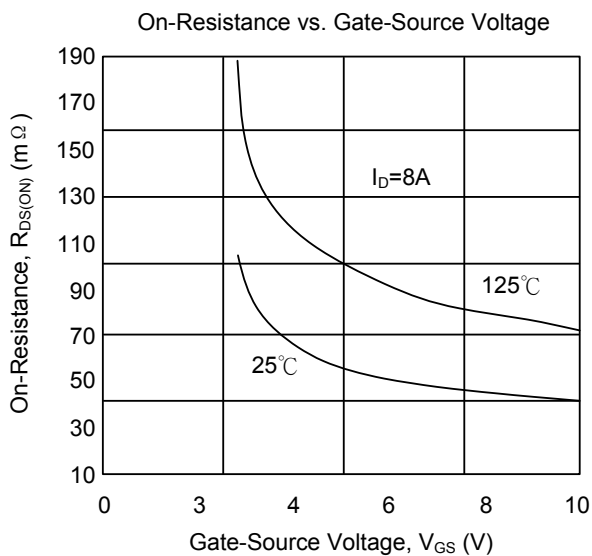
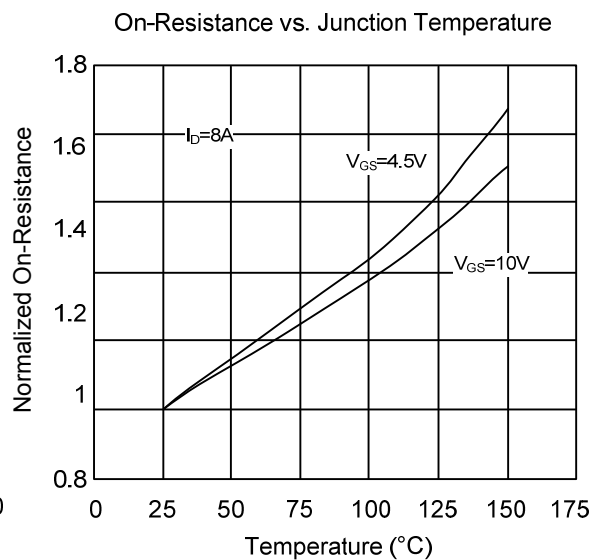
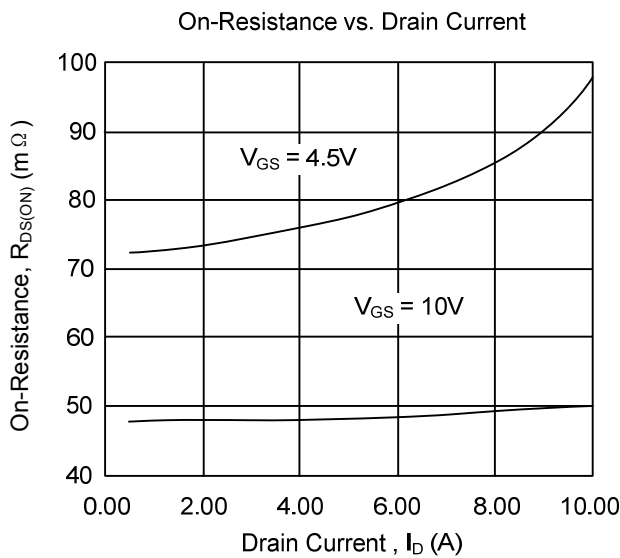
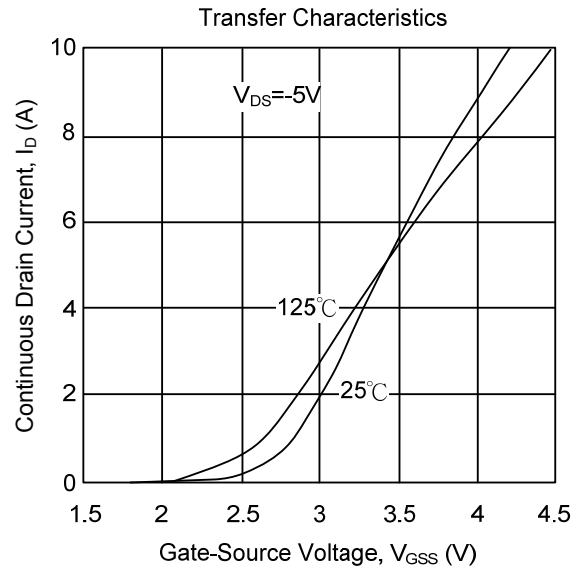
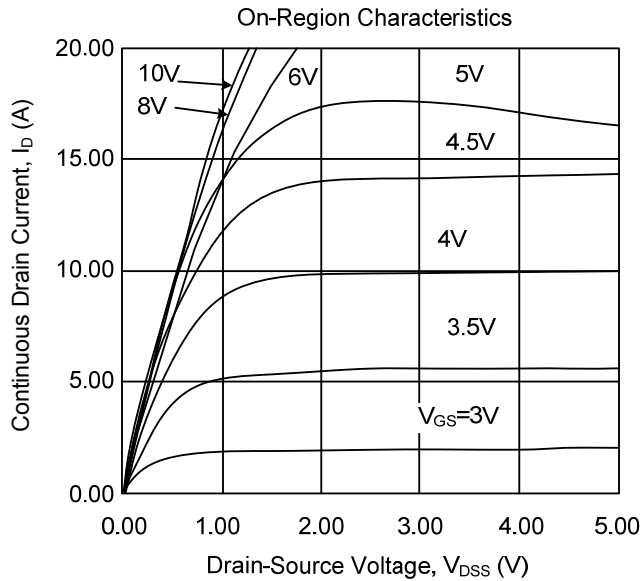
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.8	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 8A		48	65	mΩ
		V _{GS} = 4.5V, I _D = 2A		75	105	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} = 15 V, V _{GS} = 0V, f = 1MHz		288		pF
Output Capacitance	C _{OSS}			57		pF
Reverse Transfer Capacitance	C _{RSS}			39		pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{D(ON)}	V _{GS} = 10V, V _{DD} = 15V, R _L = 1.8Ω, R _G = 3Ω		3.7		ns
Turn-On Rise Time	t _R			3.7		ns
Turn-Off Delay Time	t _{D(OFF)}			15.6		ns
Turn-Off Fall-Time	t _F			2.6		ns
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 15V, I _D = 8A		6.72		nC
Gate-Source Charge	Q _{GS}			0.76		nC
Gate-Drain Charge	Q _{GD}			1.78		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 1A		0.75	1	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				4.3	A
Reverse Recovery Time	t _{RR}	I _F = 8A, dI _F /dt = 100A/μs		12.6		ns
Reverse Recovery Charge	Q _{RR}			5.1		nC

Note: 1. Pulse width limited by T_{J(MAX)}

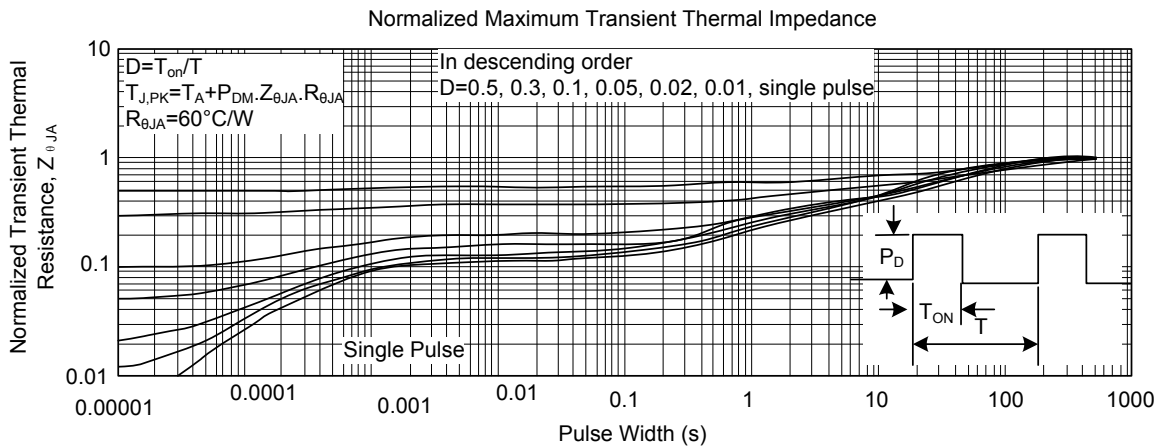
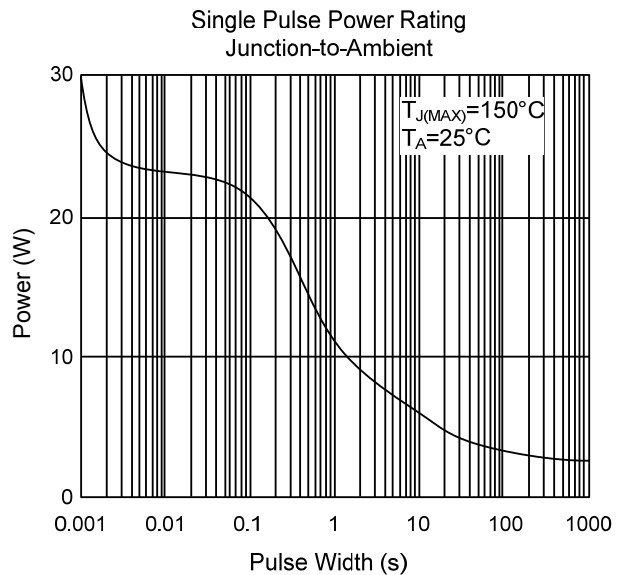
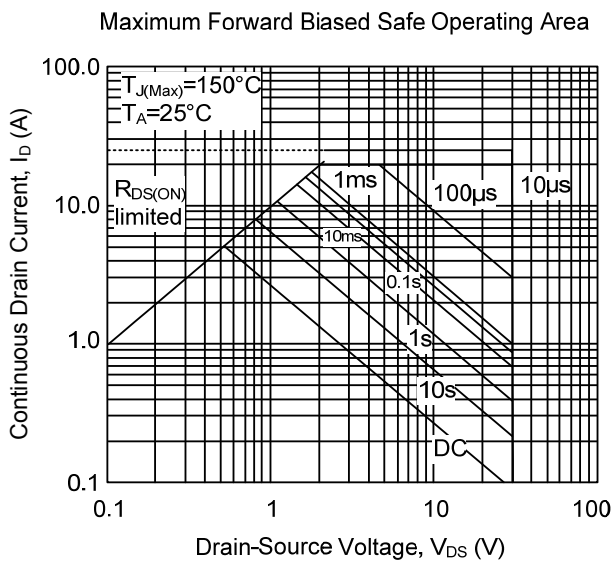
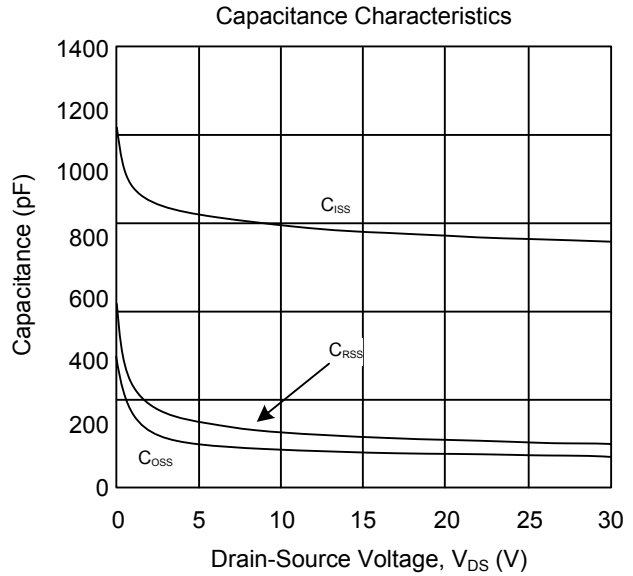
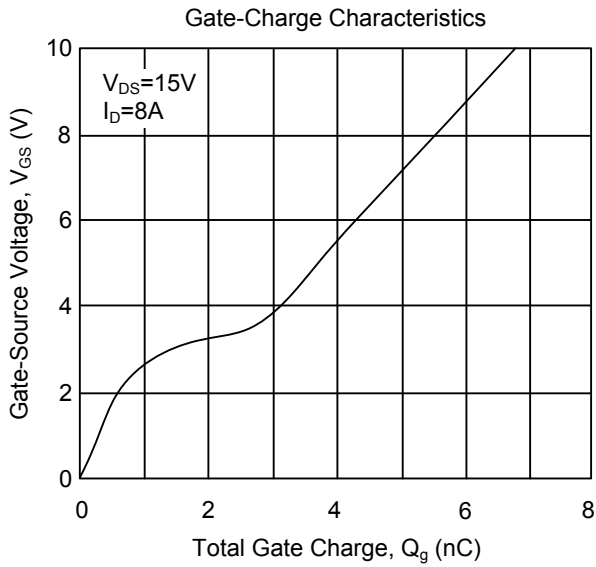
2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR4 board

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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