



UT4413

Power MOSFET

P-CHANNEL ENHANCEMENT MODE

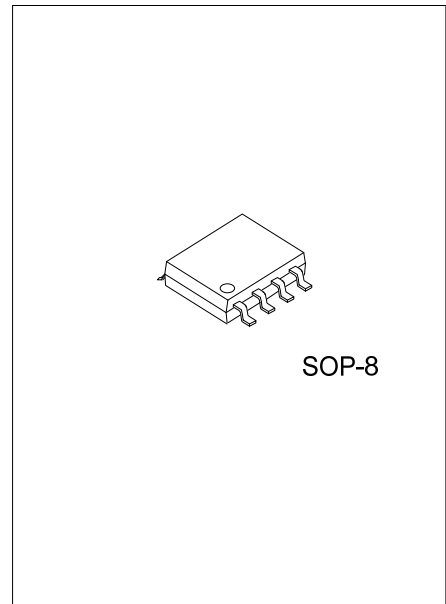
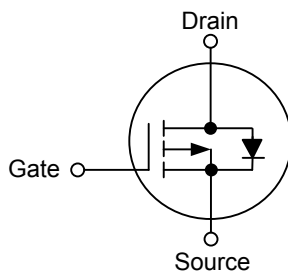
■ DESCRIPTION

The **UT4413** 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

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

■ SYMBOL



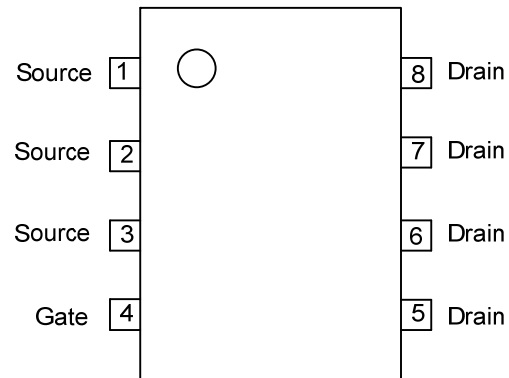
*Pb-free plating product number: UT4413L

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Normal	Lead Free Plating		
UT4413-S08-R	UT4413L-S08-R	SOP-8	Tape Reel
UT4413-S08-T	UT4413L-S08-T	SOP-8	Tube

UT4413L-S08-R (1)Packing Type (2)Package Type (3)Lead Plating		(1) R: Tape Reel, T: Tube (2) S08: SOP-8 (3) L: Lead Free Plating, Blank: Pb/Sn
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■ PIN CONFIGURATION



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current (Note 1)	I_D	-15	A
Pulsed Drain Current (Note 2)	I_{DM}	-80	A
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	3	W
Junction a Temperature	T_J	+150	$^\circ\text{C}$
Strong Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

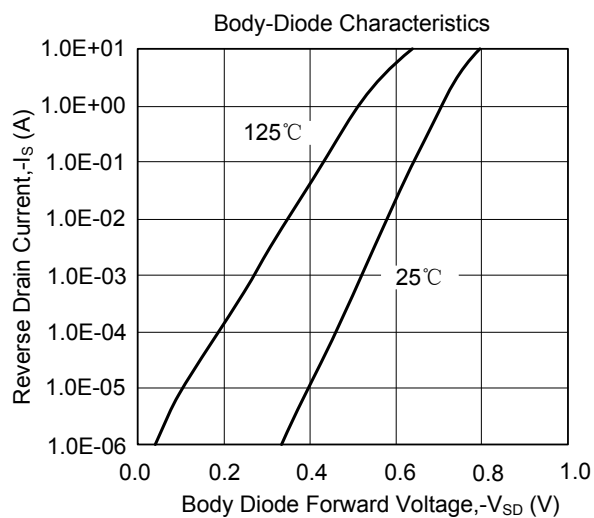
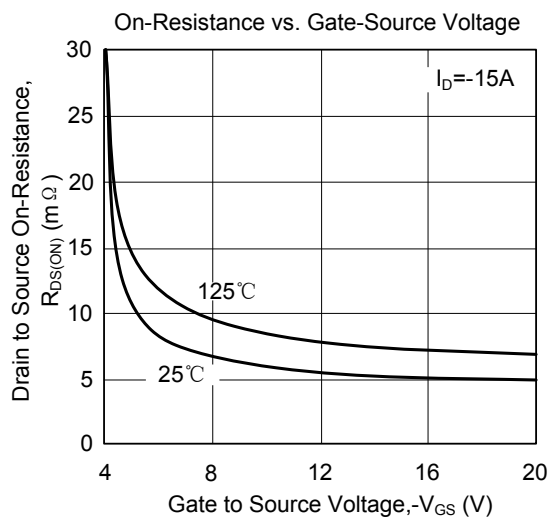
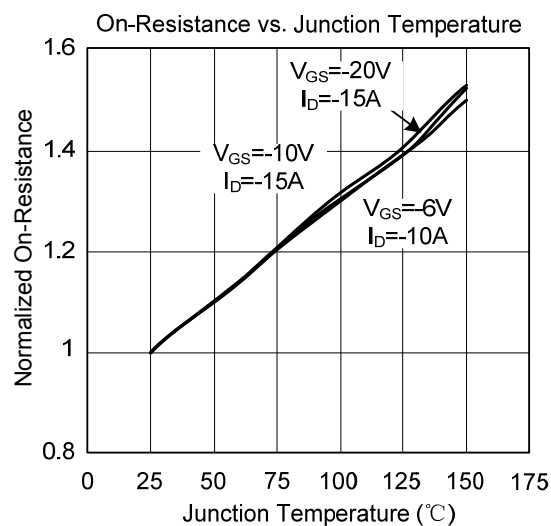
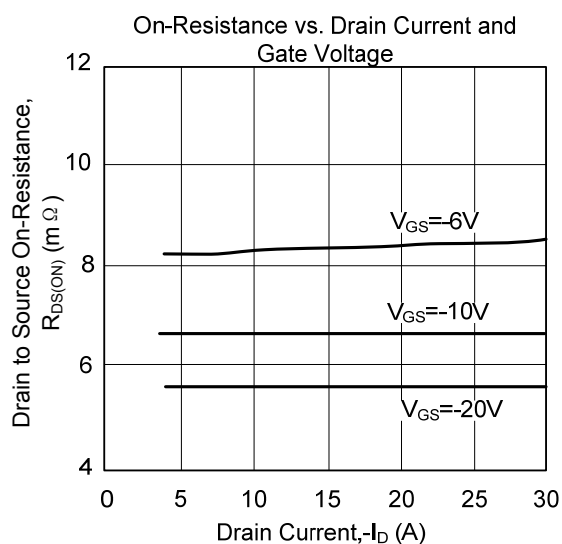
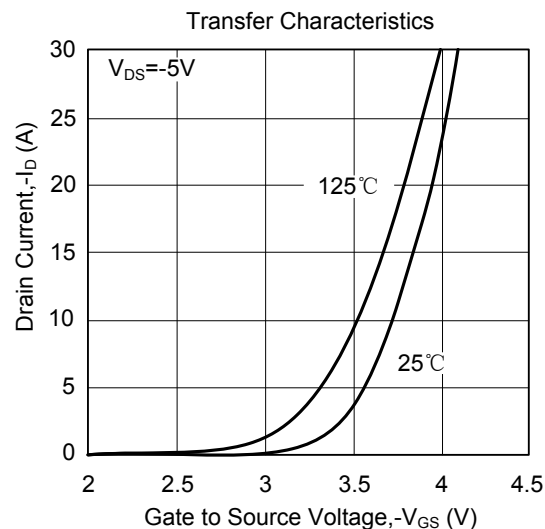
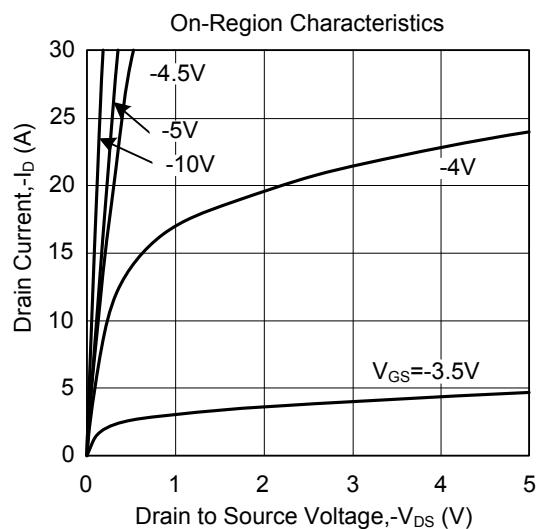
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}		62	75	$^\circ\text{C/W}$

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

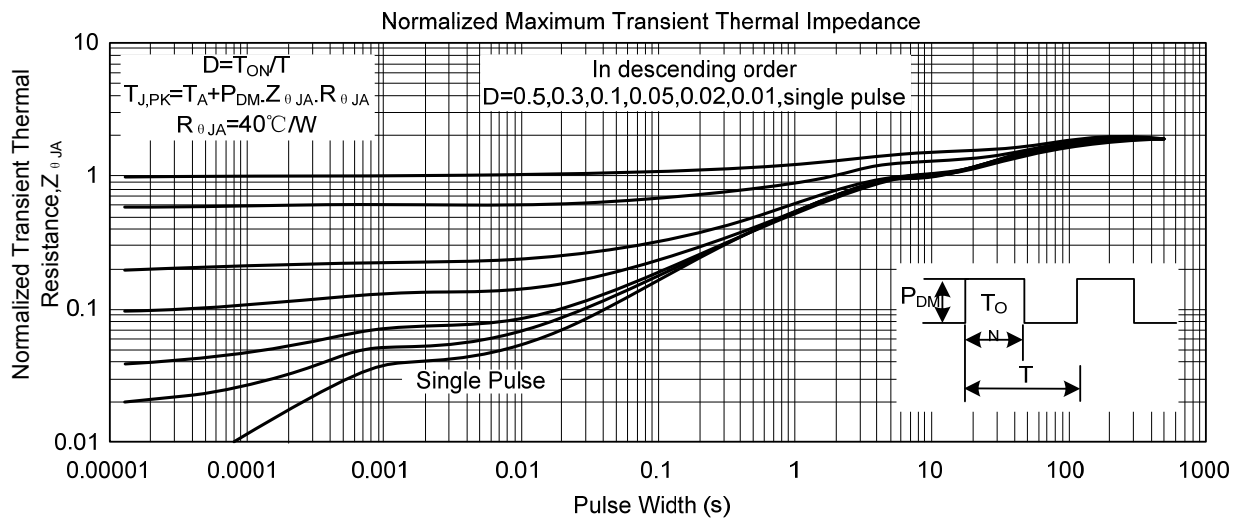
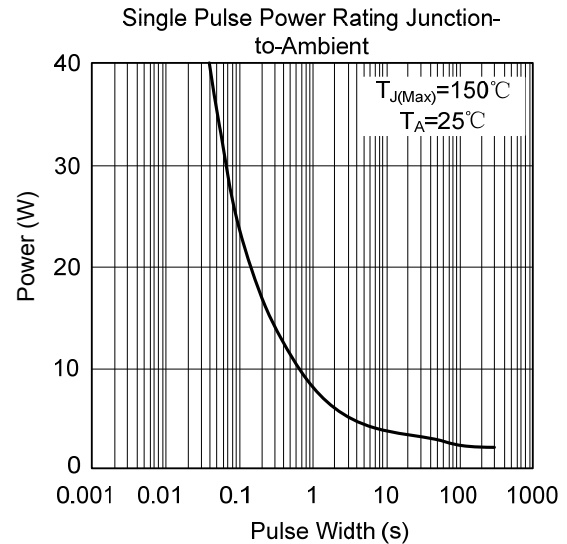
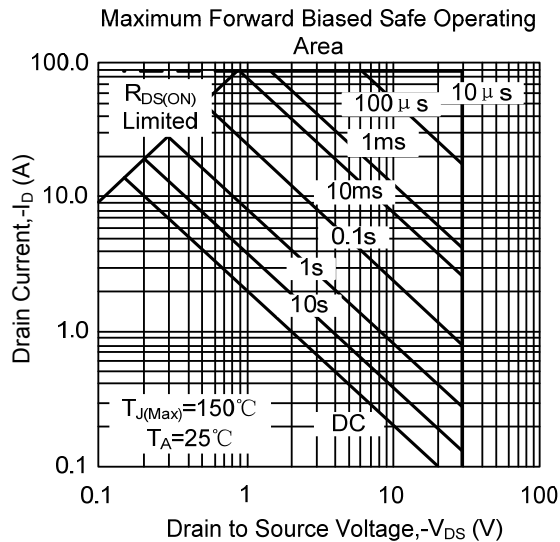
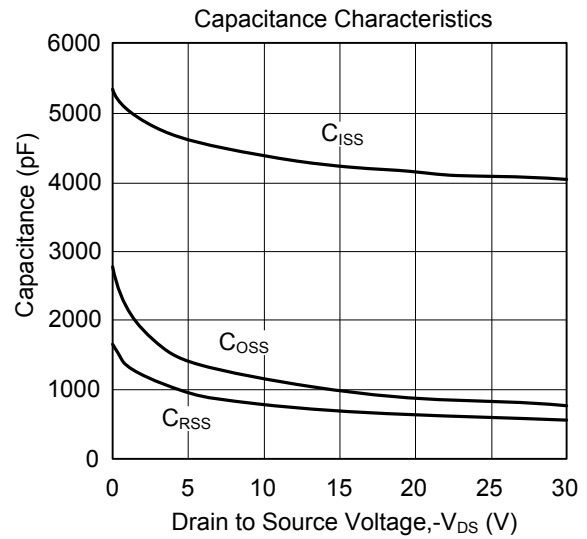
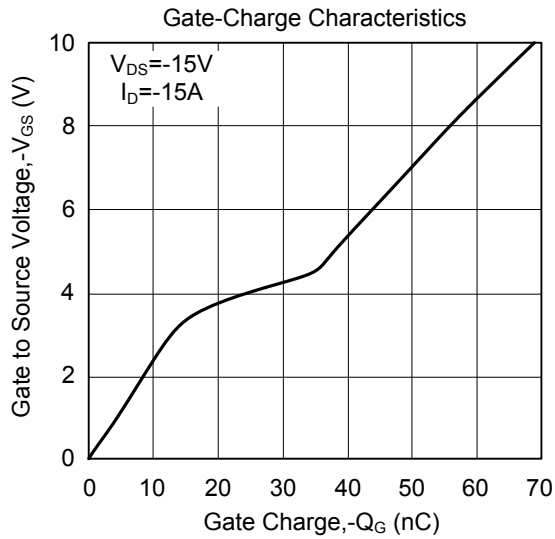
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =-250 μA	-30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-24 V, V _{GS} =0 V			-1	μA
Drain-Source Breakdown Voltage	I _{GSS}	V _{DS} =0 V, V _{GS} = ±25 V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250 μA	-1.5	-2.2	-3.5	V
On State Drain Current	I _{D(ON)}	V _{DS} =-5V, V _{GS} =-10 V	-60			A
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-20V, I _D =-15A		5.5	7	mΩ
		V _{GS} =-10 V, I _D =-15 A		6.6	8.5	mΩ
		V _{GS} =-6 V, I _D =-10 A		8.2		
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V, f=1MHz		4245	5500	pF
Output Capacitance	C _{OSS}			983		
Reverse Transfer Capacitance	C _{RSS}			689		
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =-15V, V _{GS} =-10V, I _D =-15A		69	90	nC
Gate Source Charge	Q _{GS}			15.2		
Gate Drain Charge	Q _{GD}			18.8		
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =-10V,V _{DS} =-15V,R _L =1.0Ω, R _{GEN} =3Ω		16.5		ns
Turn-ON Rise Time	t _R			23.5		
Turn-OFF Delay Time	t _{D(OFF)}			116		
Turn-OFF Fall-Time	t _F			82		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V _{SD}	I _S =-1A,V _{GS} =0V		-0.72	-1	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				5	A
Reverse Recovery Time	t _{RR}	I _F =-15 A, dI/dt=100A/μs		59	77	ns
Reverse Recovery Charge	Q _{RR}	I _F =-15 A, dI/dt=100A/us		55		nC

Note: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 0.5\%$ max.
3. Surface mounted on 1 in² copper pad of FR4 board

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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