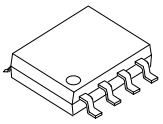
UT4413

Power MOSFET

P-CHANNEL ENHANCEMENT MODE



SOP-8

*Pb-free plating product number: UT4413L

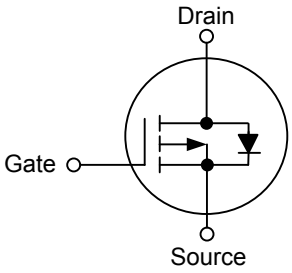
■ DESCRIPTION

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

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

■ SYMBOL



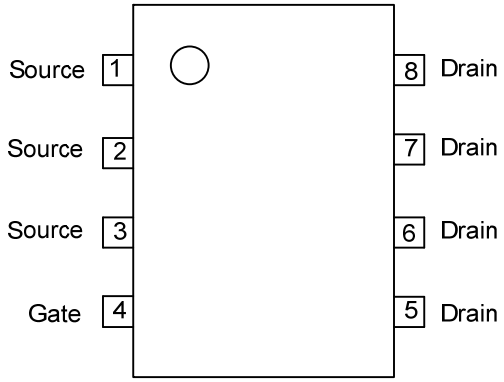
■ ORDERING INFORMATION

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

■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATINGS (T_A = 25℃, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	±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°C)	P_D	3	W
Junction a Temperature	T_J	+150	℃
Strong Temperature	T_{STG}	-55 ~ +150	℃

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	℃/W

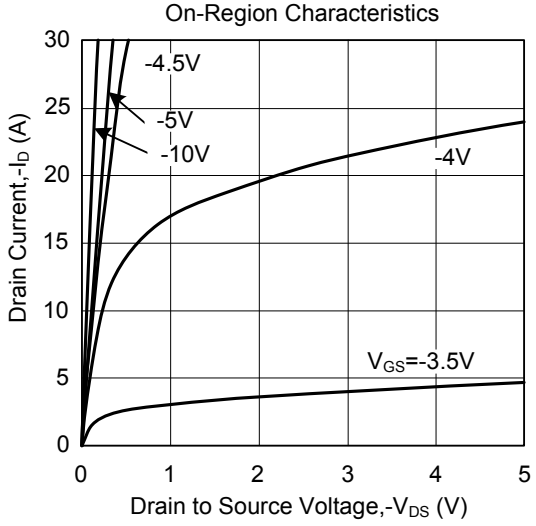
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =-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/μs		55		nC

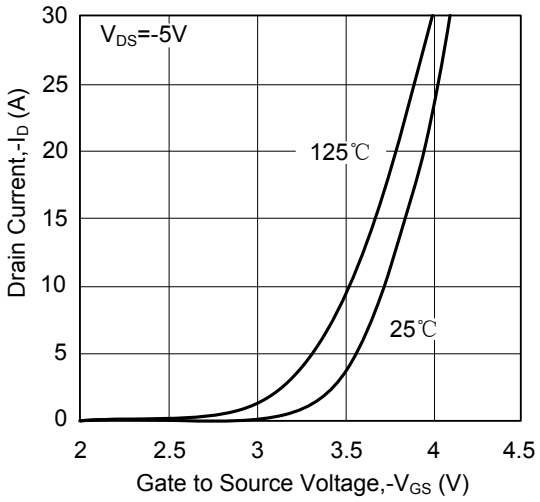
Note: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤0.5% max.
3. Surface mounted on 1 in^2 copper pad of FR4 board

■ TYPICAL CHARACTERISTICS

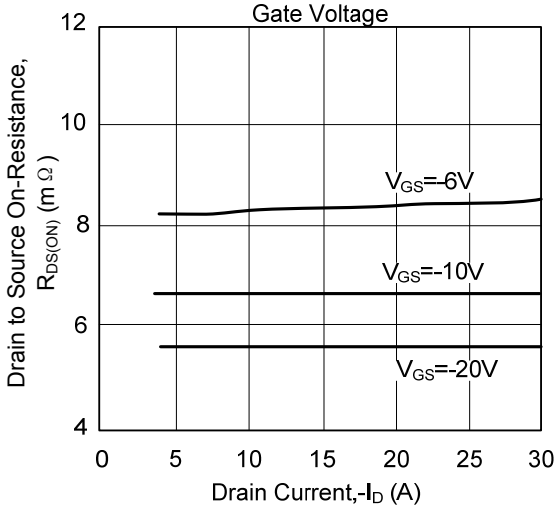
On-Region Characteristics



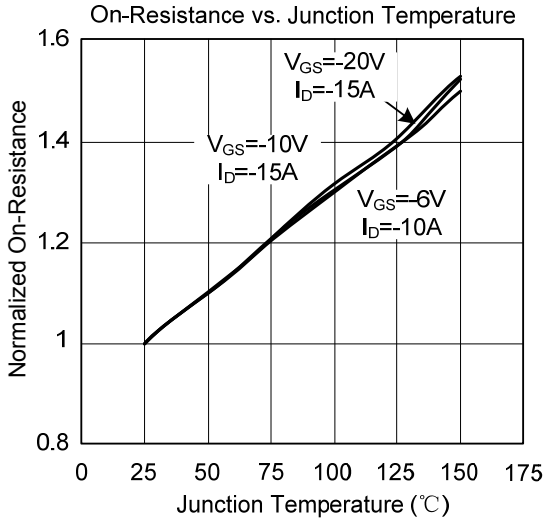
Transfer Characteristics



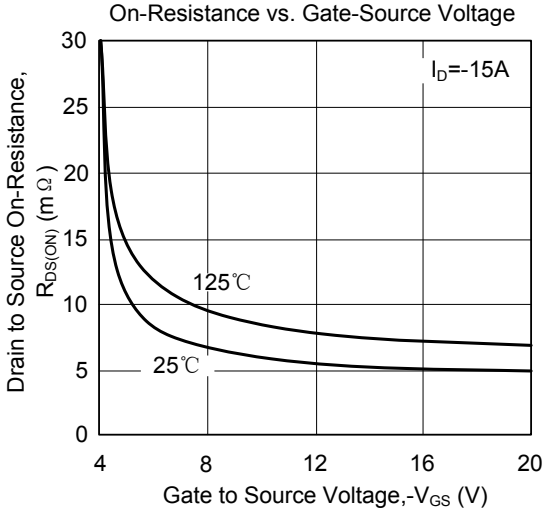
On-Resistance vs. Drain Current and Gate Voltage



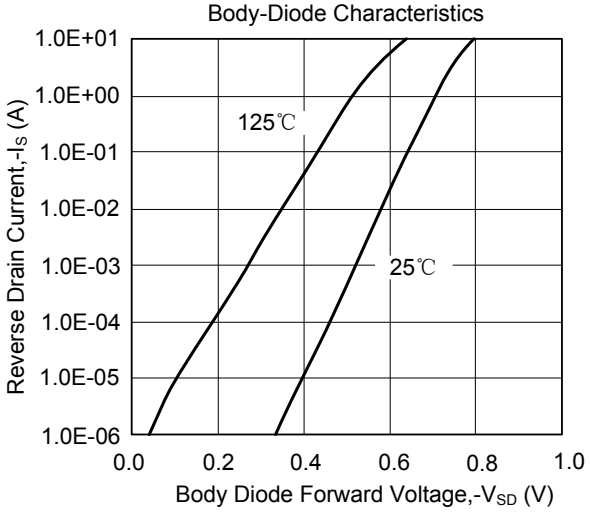
On-Resistance vs. Junction Temperature



On-Resistance vs. Gate-Source Voltage

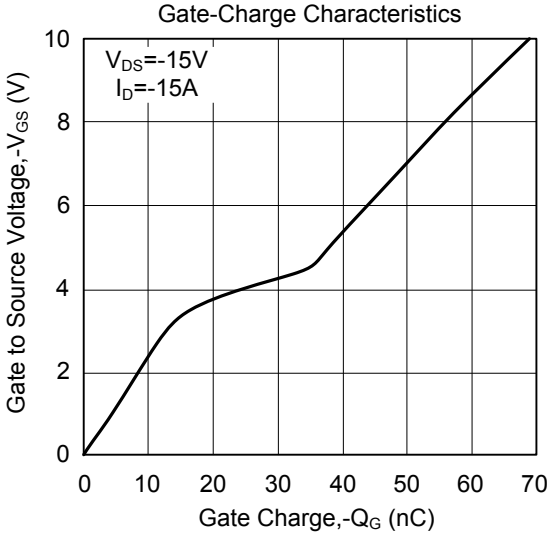


Body-Diode Characteristics

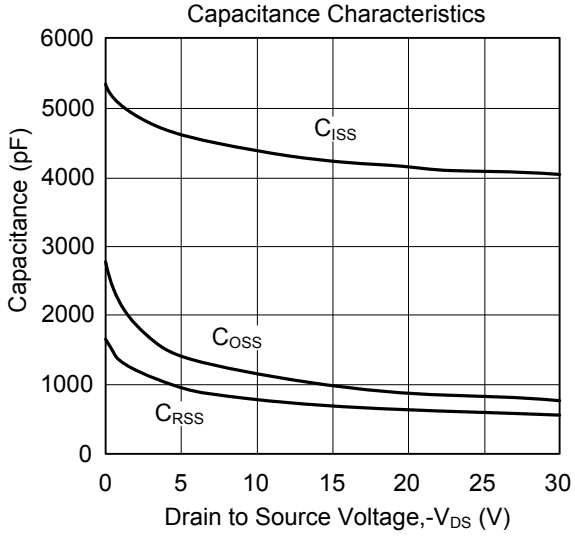


■ TYPICAL CHARACTERISTICS(Cont.)

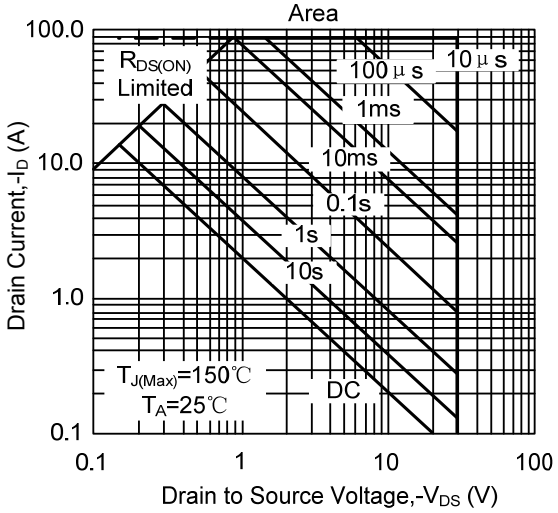
Gate-Charge Characteristics



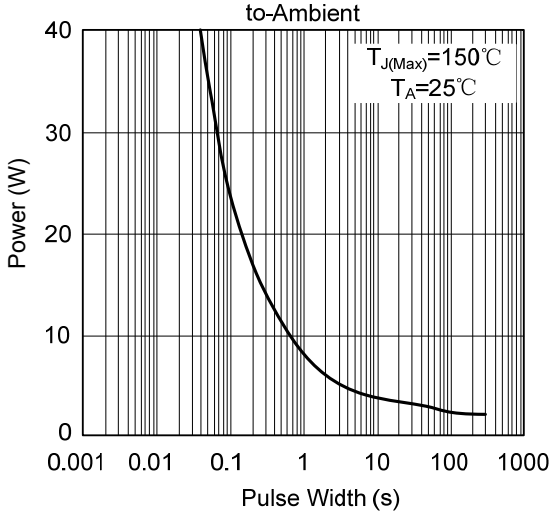
Capacitance Characteristics



Maximum Forward Biased Safe Operating Area



Single Pulse Power Rating Junction-to-Ambient



Normalized Maximum Transient Thermal Impedance