



UT3413

Power MOSFET

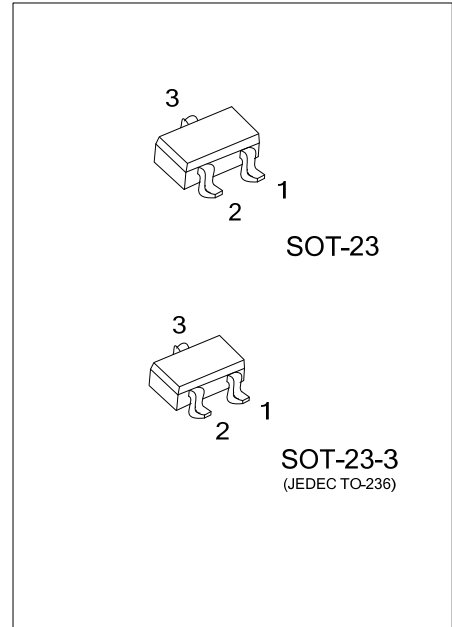
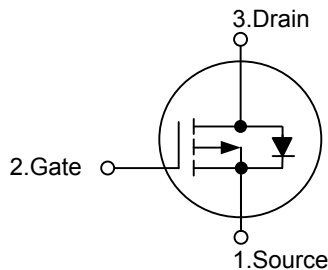
P-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The UTC **UT3413** is P-channel enhancement mode Power MOSFET, designed with high density cell, with fast switching speed, low on-resistance, excellent thermal and electrical capabilities and operation with low gate voltages.

This device is suitable for use as a load switch or in PWM applications.

SYMBOL

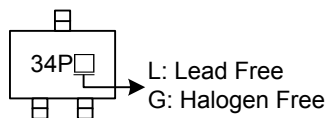


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3413L-AE2-R	UT3413G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UT3413L-AE3-R	UT3413G-AE3-R	SOT-23	S	G	D	Tape Reel

	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE2: SOT-23-3, AE3: SOT-23
	(3)Lead Free	(3) G: Halogen Free, L: Lead Free

MARKING



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

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current (Note 3)	I_D	-3	A
Pulsed Drain Current (Note 1, 2)	I_{DM}	-15	A
Power Dissipation	P_D	1.4	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage 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

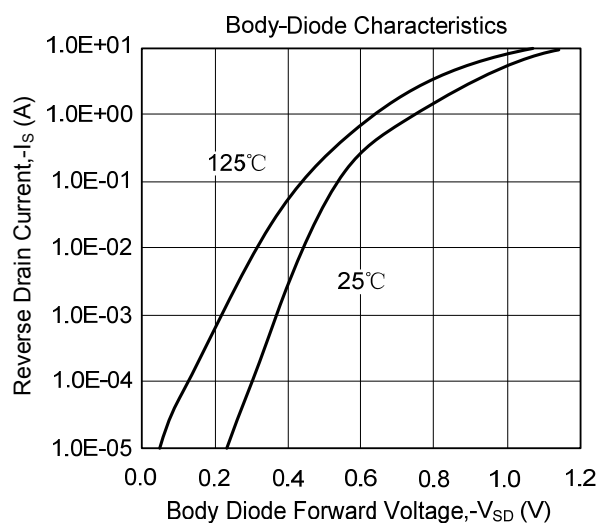
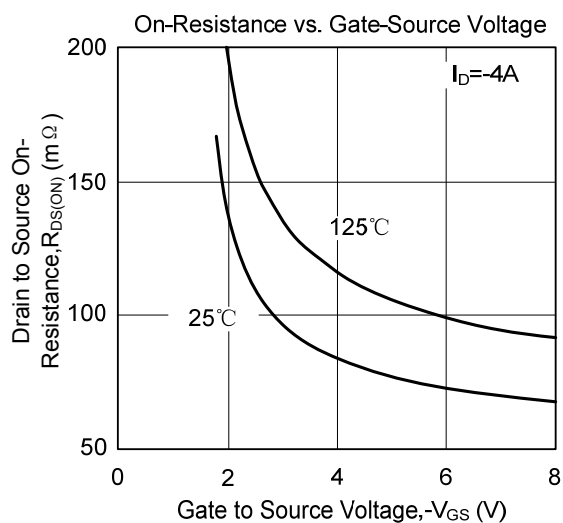
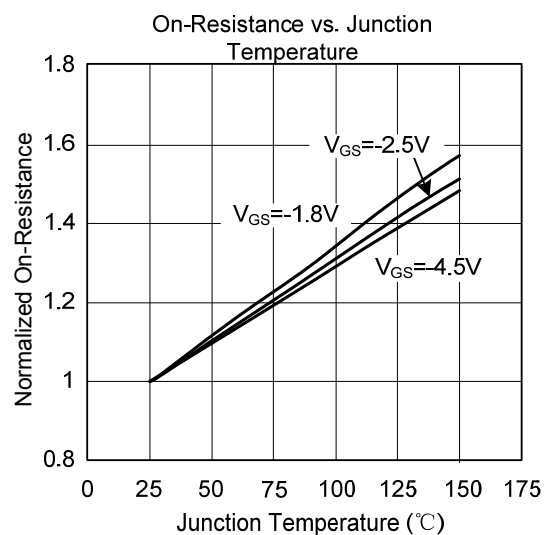
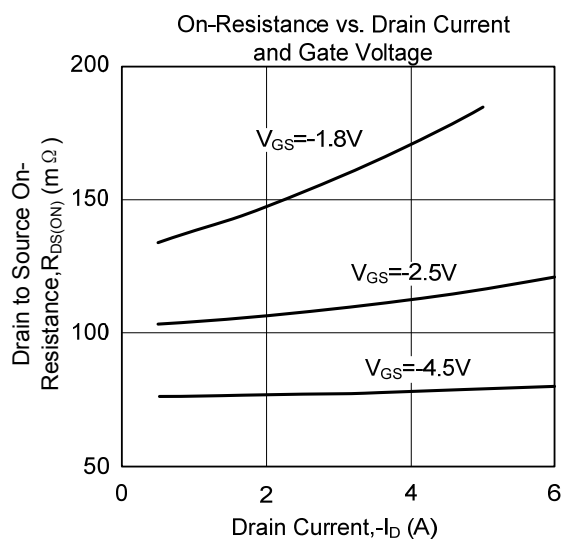
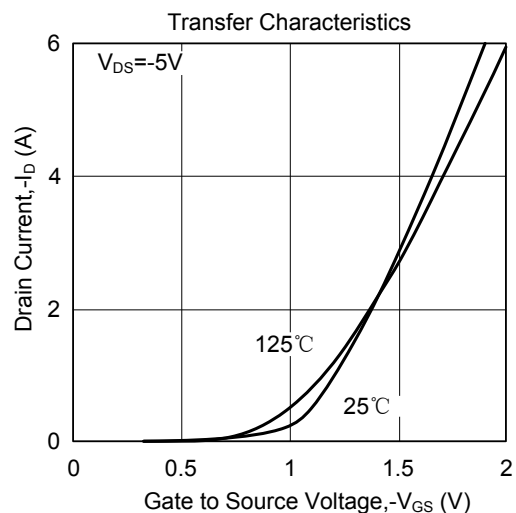
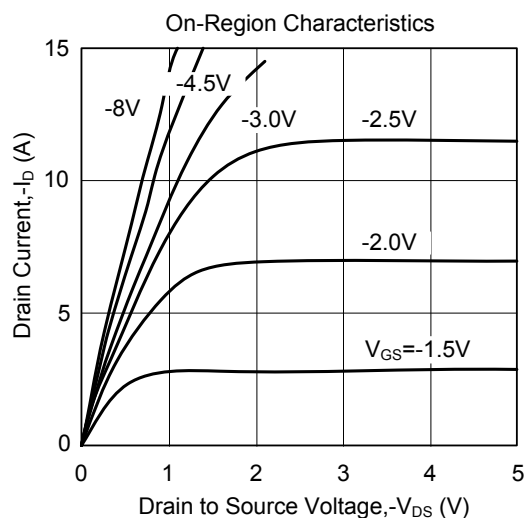
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 3)	θ_{JA}		70	90	$^\circ\text{C/W}$

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

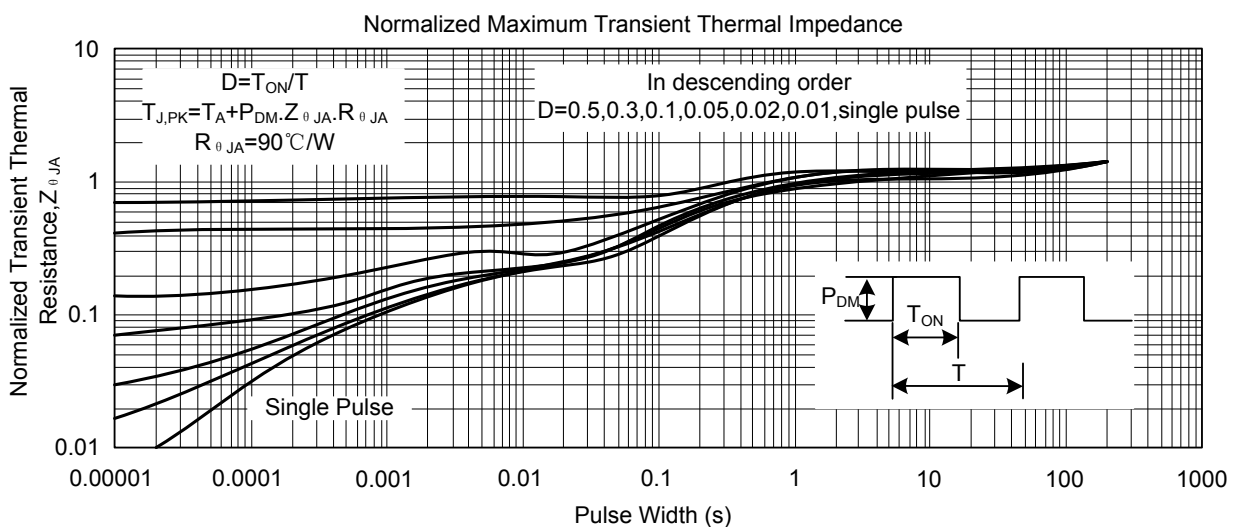
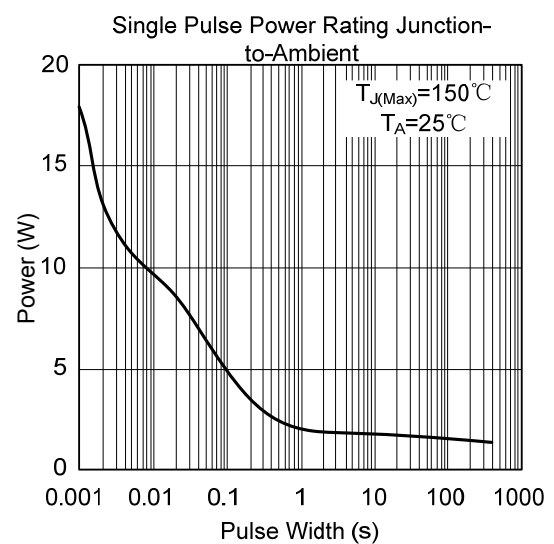
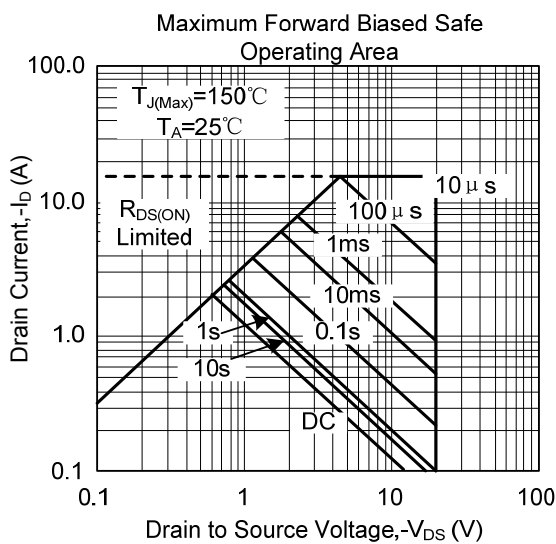
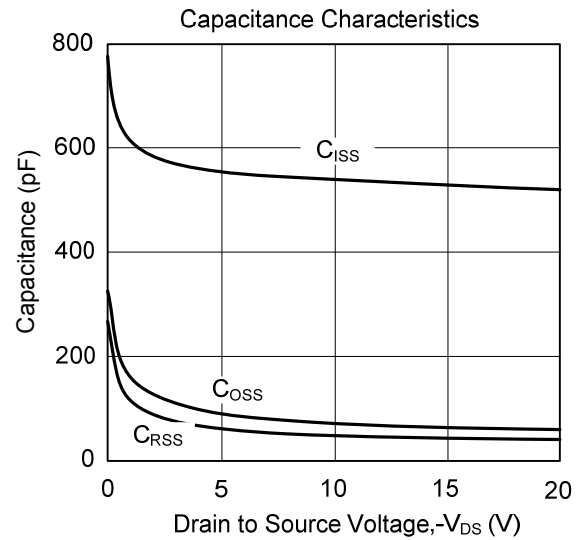
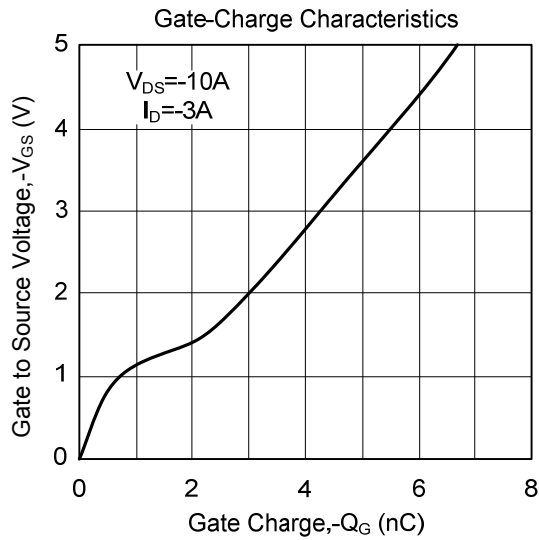
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0 V			-1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±8 V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250 μA	-0.3	-0.55	-1	V
Drain-Source On-State Resistance(Note 2)	R _{DS(ON)}	V _{GS} =-4.5 V, I _D =-3 A		81	97	mΩ
		V _{GS} =-2.5 V, I _D =-2.6 A		108	130	mΩ
		V _{GS} =-1.8 V, I _D =-1A		146	190	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-10 V, V _{GS} =0V, f=1MHz		540		pF
Output Capacitance	C _{OSS}			72		pF
Reverse Transfer Capacitance	C _{RSS}			49		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time (Note 2)	t _{D(ON)}	V _{GS} =-4.5V,V _{DS} =-10V, R _L =3.3Ω, R _{GEN} =3Ω		10		ns
Turn-ON Rise Time	t _R			12		ns
Turn-OFF Delay Time	t _{D(OFF)}			44		ns
Turn-OFF Fall Time	t _F			22		ns
Total Gate Charge (Note 2)	Q _G	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-3A		6.1		nC
Gate-Source Charge	Q _{GS}			0.6		nC
Gate-Drain Charge	Q _{GD}			1.6		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V _{SD}	I _S =-1A, V _{GS} =0V		-0.78	-1	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				-2	A
Reverse Recovery Time	t _{RR}	I _F =-3 A, dI/dt=100A/μs		21		ns
Reverse Recovery Charge	Q _{RR}			7.5		nC

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

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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