



UT2309

Power MOSFET

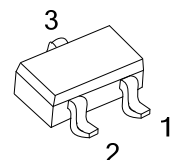
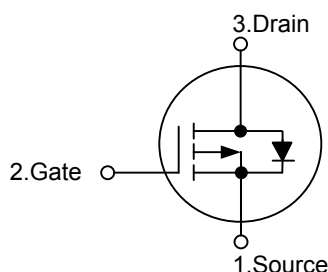
P-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The **UT2309** is P-channel power MOSFET, designed with high density cell with fast switching speed, ultra low on-resistance and excellent thermal and electrical capabilities.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

SYMBOL



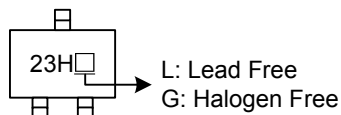
SOT-23

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2309L-AE3-R	UT2309G-AE3-R	SOT-23	S	G	D	Tape Reel

UT2309L-AE3-R		(1)Packing Type	(1) R: Tape Reel
		(2)Package Type	(2) AE3: SOT-23
		(3)Lead Plating	(3) G: Halogen Free, L: Lead Free

MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Note 3)	I_D	-3.7	A
Pulsed Drain Current (Note 1, 2)	I_{DM}	-12	A
Total Power Dissipation	P_D	1.38	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°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	RATINGS	UNIT
Junction to Ambient (Note 3)	θ_{JA}	90	°C/W

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

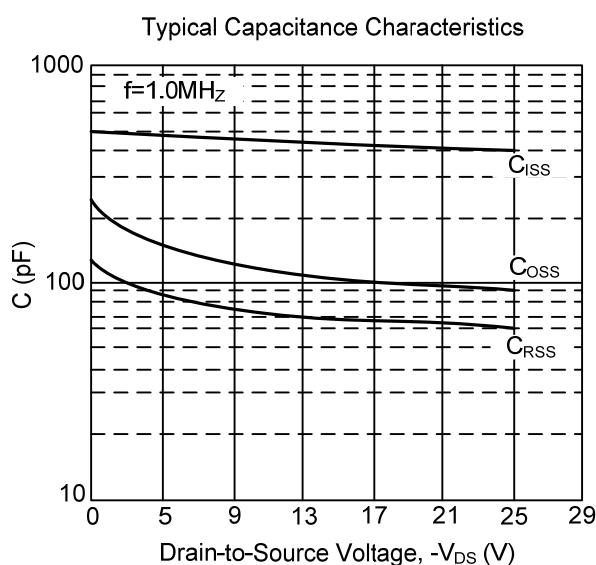
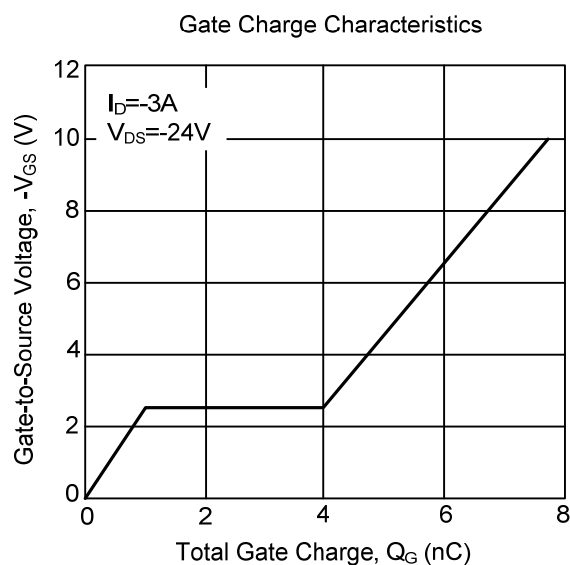
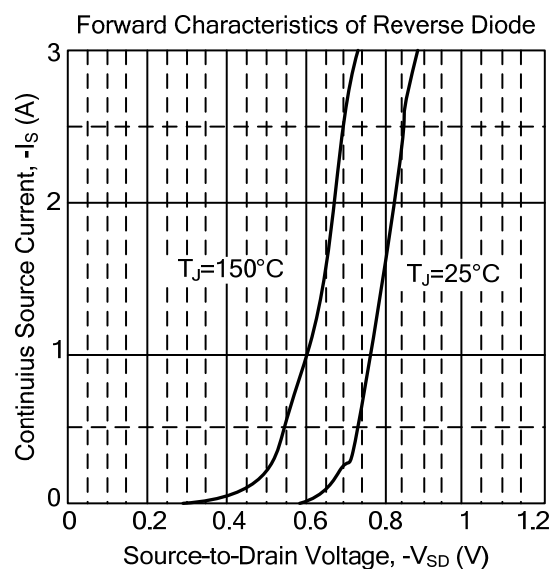
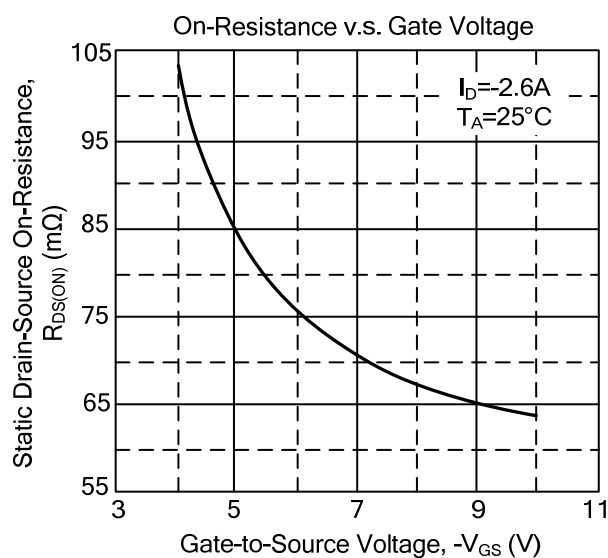
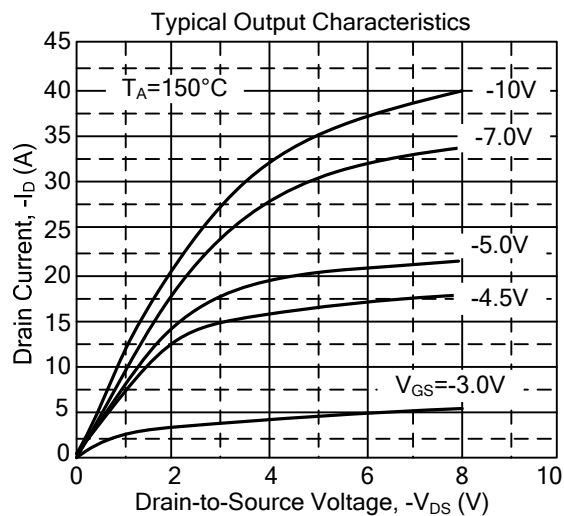
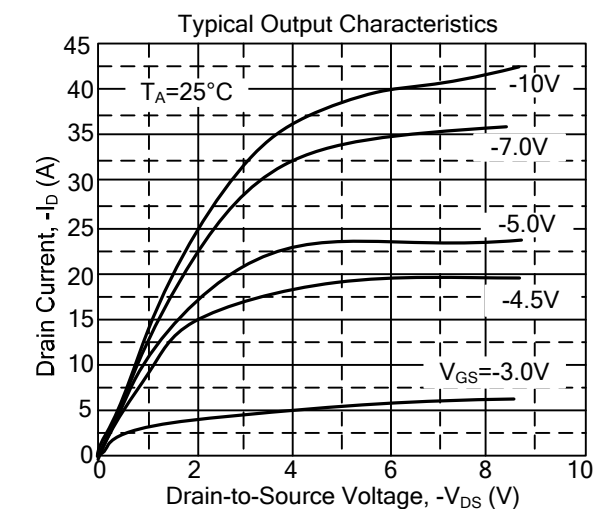
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =-250 μA	-30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V			-0.5	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			5	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =-1mA		-0.02		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250uA	-1		-3	V
Static Drain-Source On-Resistance (Note 2)	R _{DS(ON)}	V _{GS} =-10V, I _D =-3A			75	mΩ
		V _{GS} =-4.5V, I _D =-2.6A			120	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz		412	660	pF
Output Capacitance	C _{OSS}			91		pF
Reverse Transfer Capacitance	C _{RSS}			62		pF
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note 2)	t _{D(ON)}	V _{DS} =- 15V, I _D =-1A, R _G =3.3Ω, V _{GS} =-10V, R _D =15Ω		8		ns
Turn-ON Rise Time	t _R			5		ns
Turn-OFF Delay Time	t _{D(OFF)}			20		ns
Turn-OFF Fall Time	t _F			7		ns
Total Gate Charge (Note 2)	Q _G	V _{DS} =-24V, V _{GS} =-4.5V, I _D =-3A		5	8	nC
Gate-Source Charge	Q _{GS}			1		nC
Gate-Drain Charge	Q _{GD}			3		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward On Voltage	V _{SD}	I _S =-1A, V _{GS} =0V		-0.76	-1.2	V
Reverse Recovery Time	t _{RR}	I _S =-3A, V _{GS} =0V,		20		ns
Reverse Recovery Charge	Q _{RR}	dI/dt=-100A/μs		15		nC

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

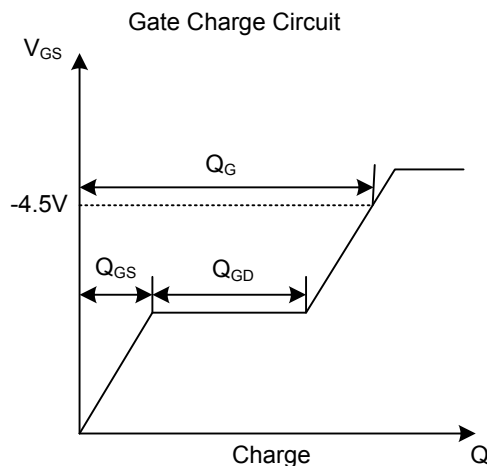
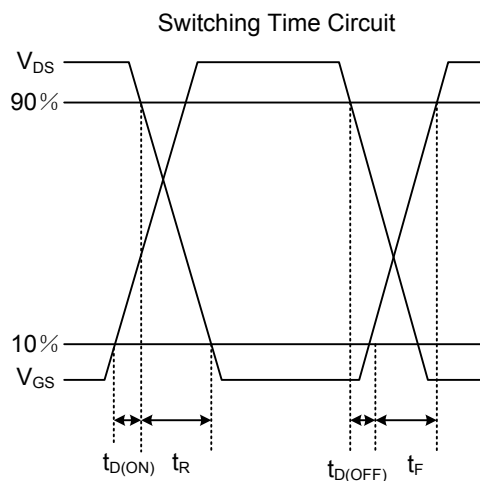
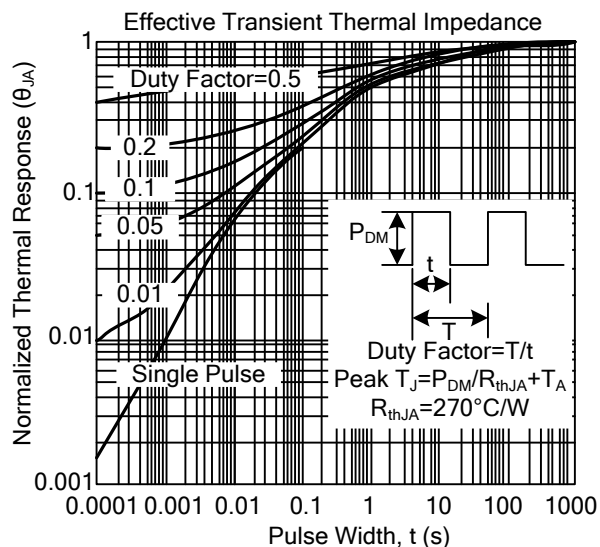
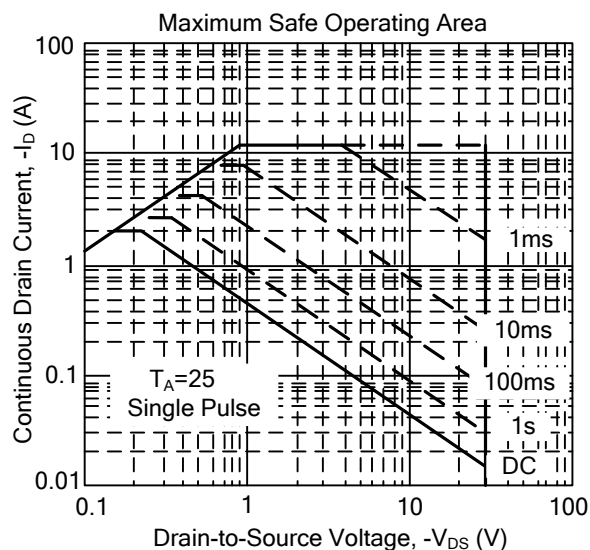
2. Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

3. Surface mounted on 1 in^2 copper pad of FR4 board.

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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