



UT2309

Power MOSFET

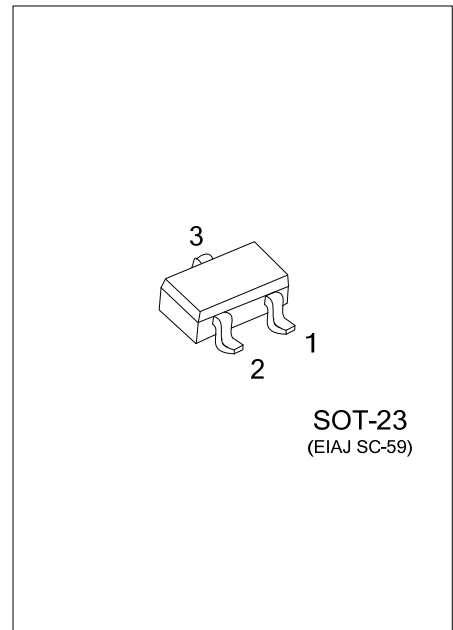
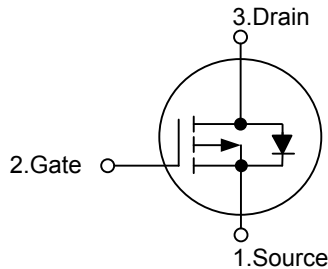
P-CHANNEL ENHANCEMENT MODE

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



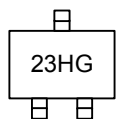
ORDERING INFORMATION

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

Note: Pin Assignment: S: Source G: Gate D: Drain

	<p>(1) Packing Type (1) R: Tape Reel</p> <p>(2) Package Type (2) AE3: SOT-23</p> <p>(3) Green Package (3) G: Halogen Free and Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	± 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	$^{\circ}C$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}C$

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

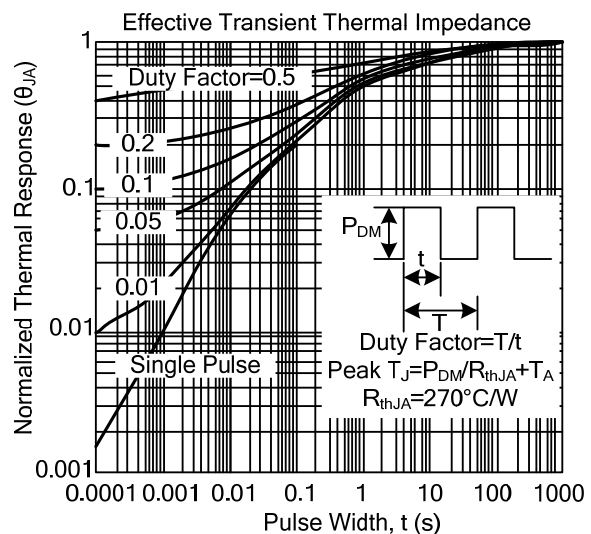
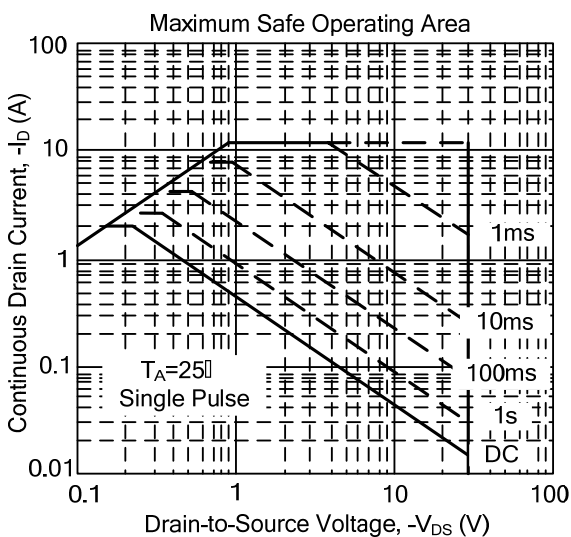
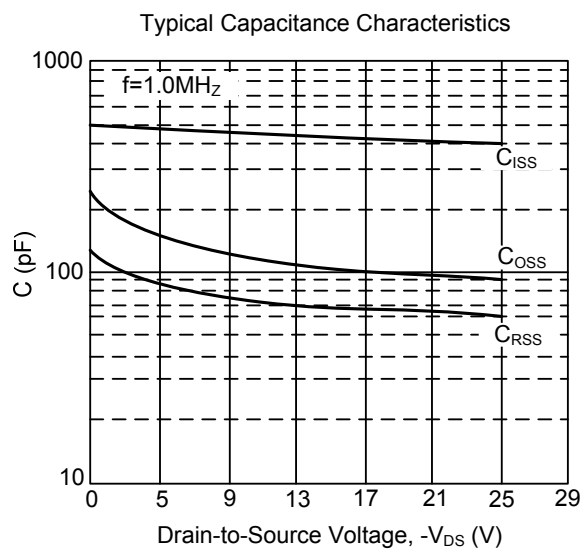
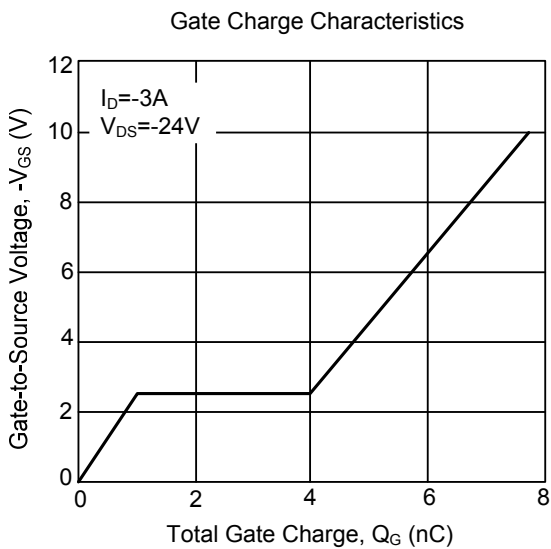
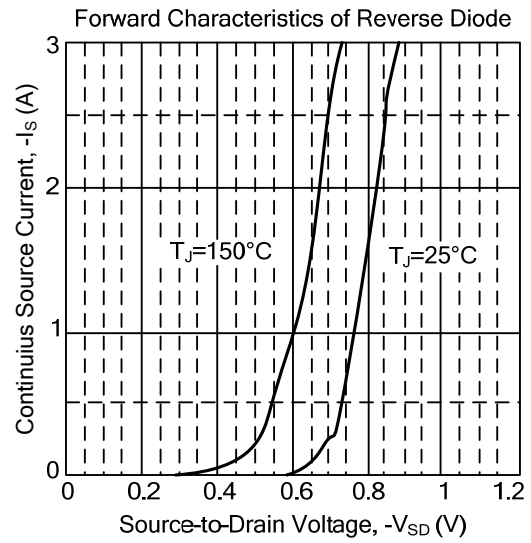
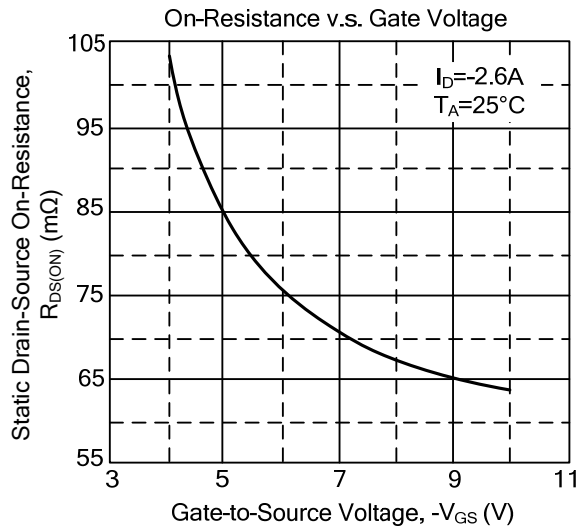
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 3)	θ_{JA}	90	$^{\circ}C/W$

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

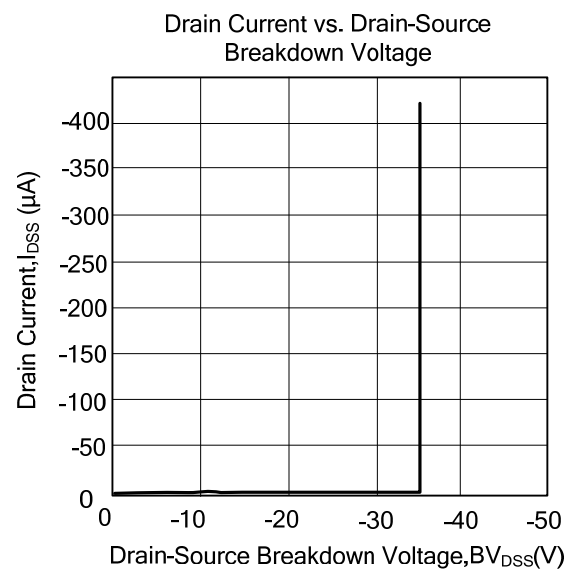
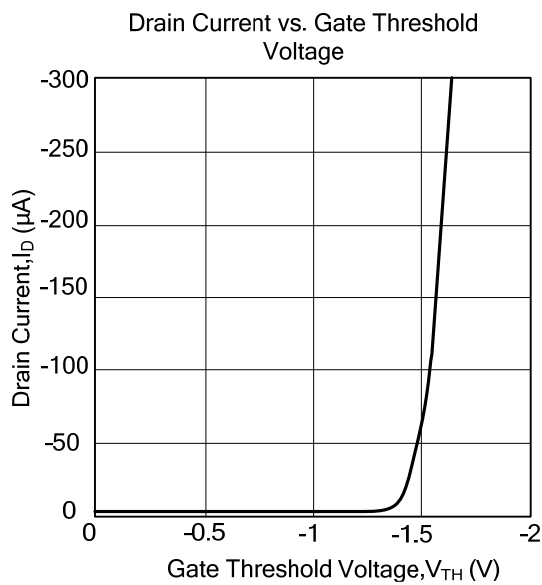
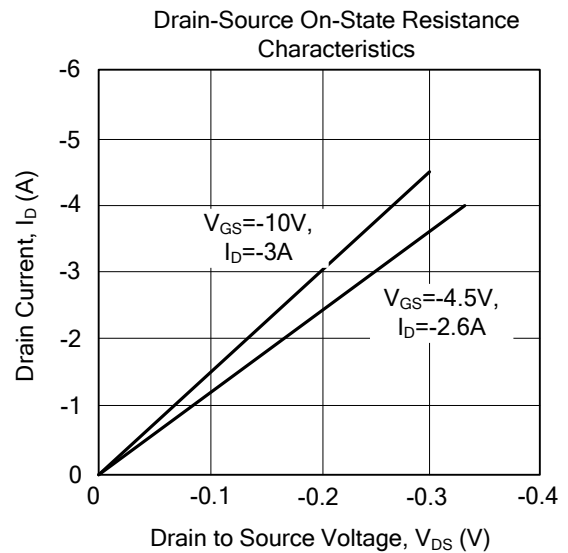
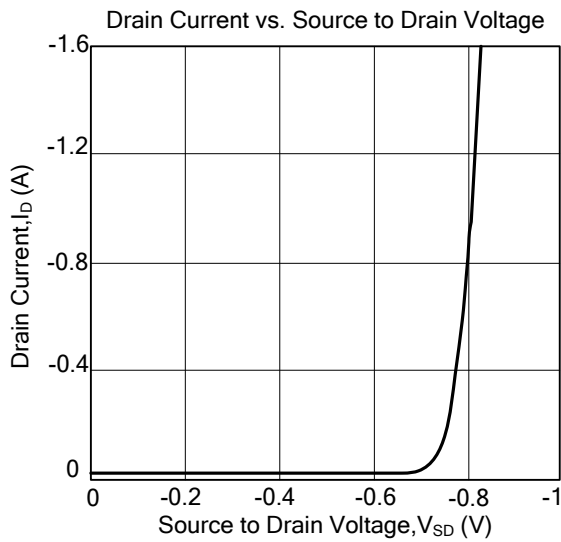
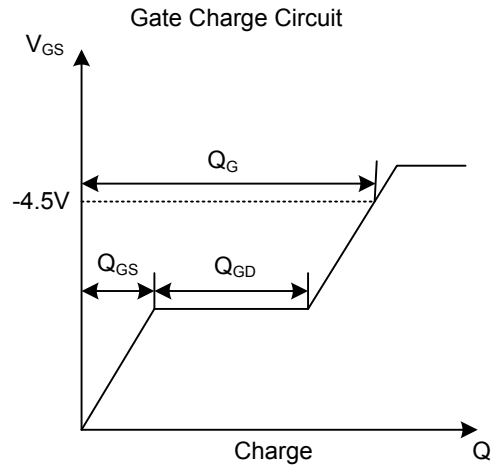
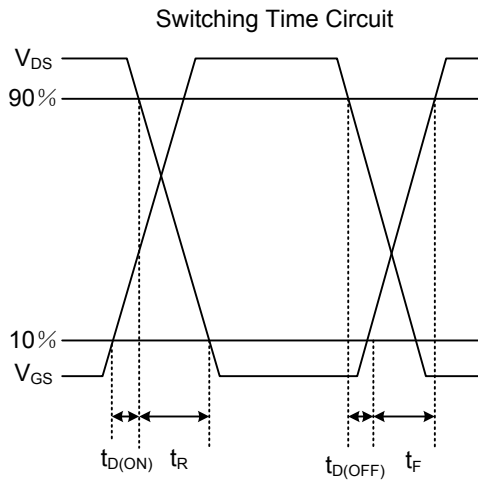
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-0.5	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			100	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^{\circ}C, I_D=-1mA$		-0.02		$V/^{\circ}C$
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-3	V
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-3A$			75	$m\Omega$
		$V_{GS}=-4.5V, I_D=-2.6A$			120	$m\Omega$
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						
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
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=-15V, I_D=-1A, R_G=3.3\Omega, V_{GS}=-10V, R_D=15\Omega$		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
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}	$di/dt=-100A/\mu s$		15		nC

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

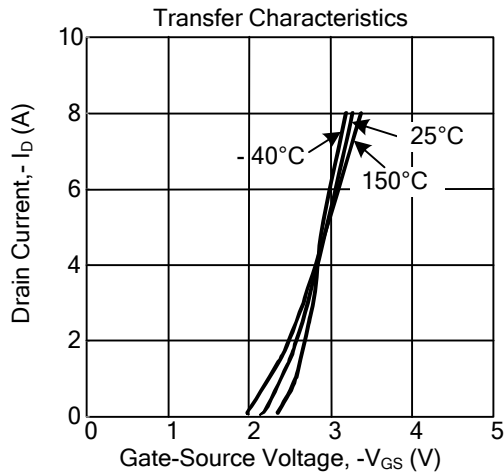
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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