



UT2311

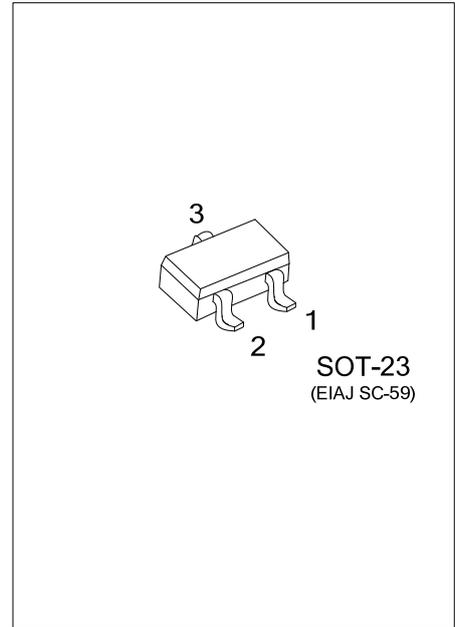
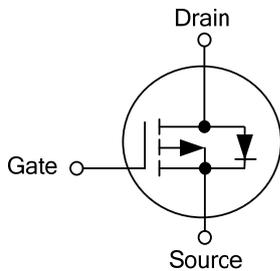
Power MOSFET

-4A, -20V P-CHANNEL ENHANCEMENT MODE MOSFET

■ FEATURES

- * Extremely low on-resistance due to high density cell
- * Perfect thermal performance and electrical capability with advanced technology of trench process

■ SYMBOL



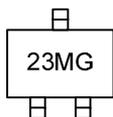
■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT2311G-AE3-R	SOT-23	S	G	D	Tape Reel

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

<p>UT2311G-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free</p>
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■ MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 8	V
Continuous Drain Current	I_D	-4	A
Pulsed Drain Current	I_{DM}	-20	A
Power Dissipation ($T_A=25^\circ\text{C}$) (Note 2)	P_D	1.25	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Notes: 1. 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.

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

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (PCB mounted)	θ_{JA}	100	$^\circ\text{C/W}$

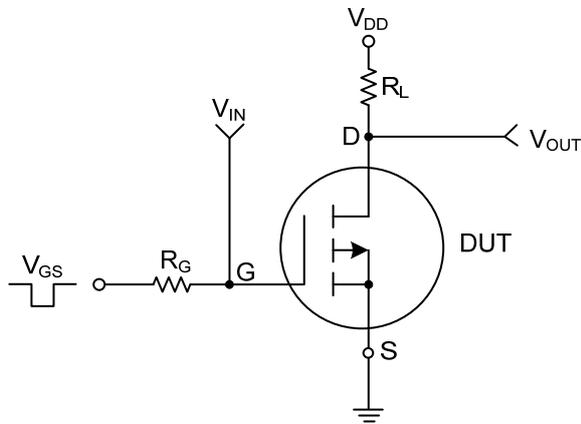
Note: Surface Mounted on FR4 board $t \leq 5$ sec.

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

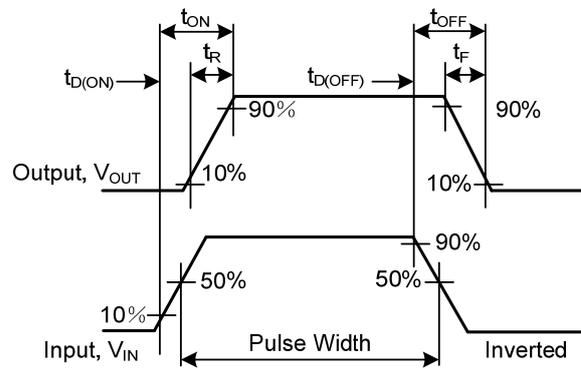
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-20			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-16\text{V}, V_{GS}=0\text{V}$			-1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.45			V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=-4.0\text{A}$		45	55	m Ω
		$V_{GS}=-2.5\text{V}, I_D=-2.5\text{A}$		75	85	m Ω
On-State Drain Current	$I_{D(ON)}$	$V_{DS} \geq -10\text{V}, V_{GS}=-4.5\text{V}$	-6			A
DYNAMIC PARAMETERS^b						
Input Capacitance	C_{ISS}	$V_{DS}=-6\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		970		pF
Output Capacitance	C_{OSS}			485		pF
Reverse Transfer Capacitance	C_{RSS}			160		pF
SWITCHING PARAMETERS^b						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-4\text{V}, V_{GEN}=-4.5\text{V}, I_D=-1\text{A}$ $R_L=4\Omega, R_G=6\Omega$		18		ns
Turn-ON Rise Time	t_R			45		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			95		ns
Turn-OFF Fall-Time	t_F			65		ns
Total Gate Charge	Q_G	$V_{GS}=-4.5\text{V}, V_{DS}=-6\text{V}, I_D=-4.0\text{A}$		8.5	12	nC
Gate Source Charge	Q_{GS}			1.5		nC
Gate Drain Charge	Q_{GD}			2.1		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=-1.6\text{A}$		-0.8	-1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				-1.6	A

Note: Pulse test; pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

■ TEST CIRCUITS AND WAVEFORMS

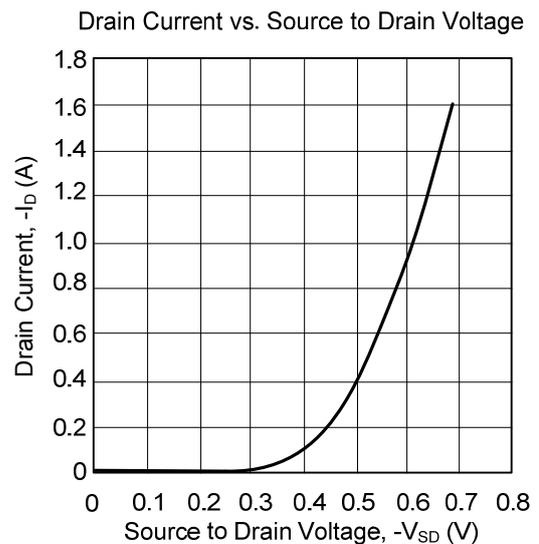
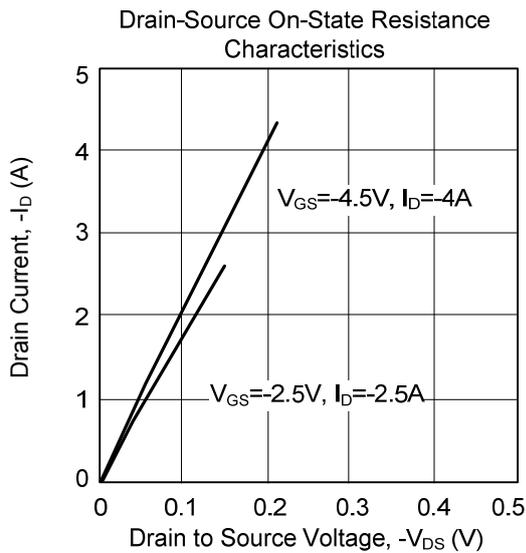
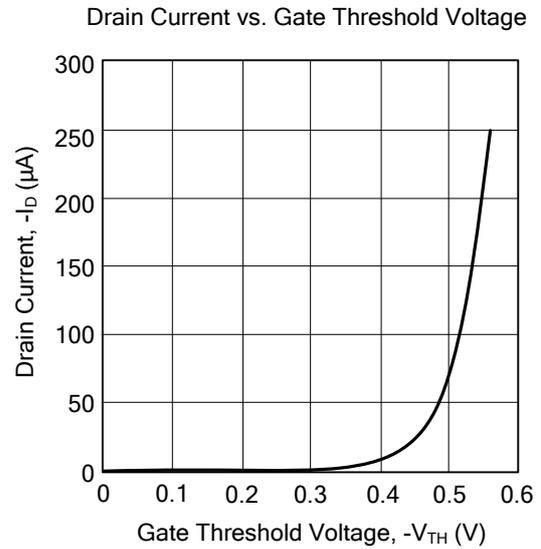
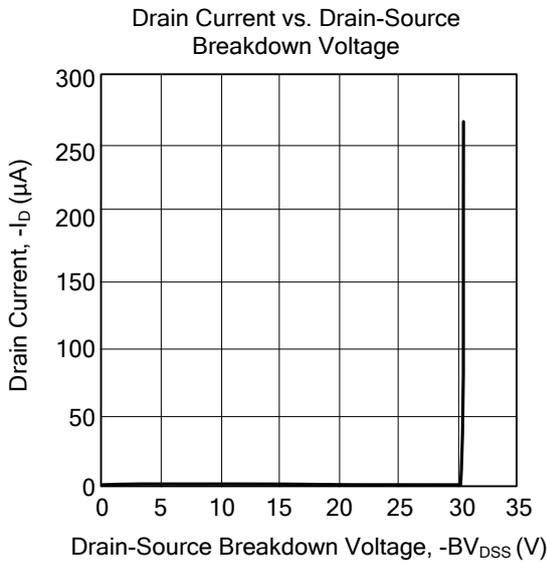


Switching Test Circuit



Switching Waveforms

■ TYPICAL CHARACTERISTICS



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