



UT2312

Power MOSFET

20V N-CHANNEL ENHANCEMENT MODE MOSFET

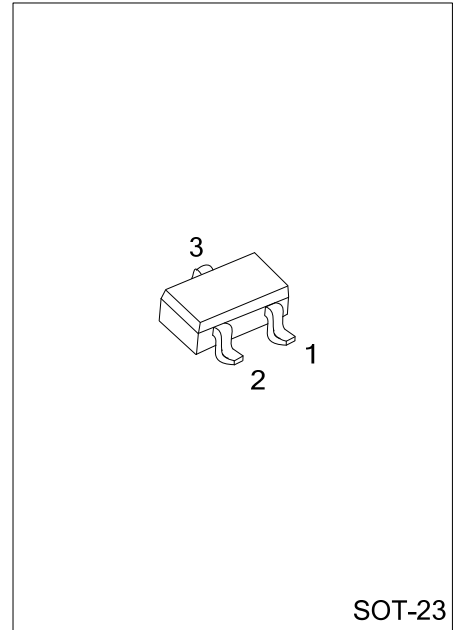
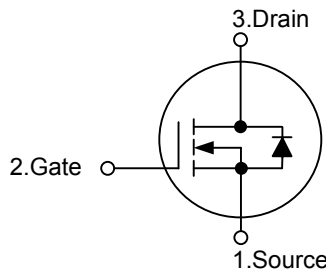
DESCRIPTION

The **UT2312** 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

- * $R_{DS(ON)} = 33\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- * $R_{DS(ON)} = 40\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$
- * Advanced trench process technology
- * Excellent thermal and electrical capabilities
- * High density cell design for ultra low on-resistance

SYMBOL

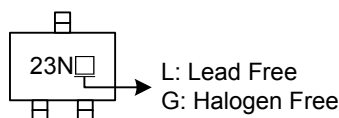


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2312L-AE3-R	UT2312G-AE3-R	SOT-23	S	G	D	Tape Reel

<p>UT2312L-AE3-R</p>	<p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Plating</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS (Ta =25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	20	V
Gate-Source Voltage	V _{GSS}	±8	V
Continuous Drain Current	I _D	5	A
Pulsed Drain Current	I _{DM}	15	A
Power Dissipation (Ta =25°C)	P _D	1.25	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

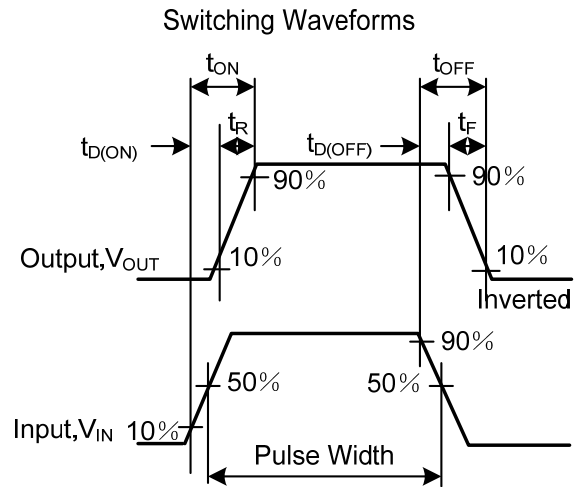
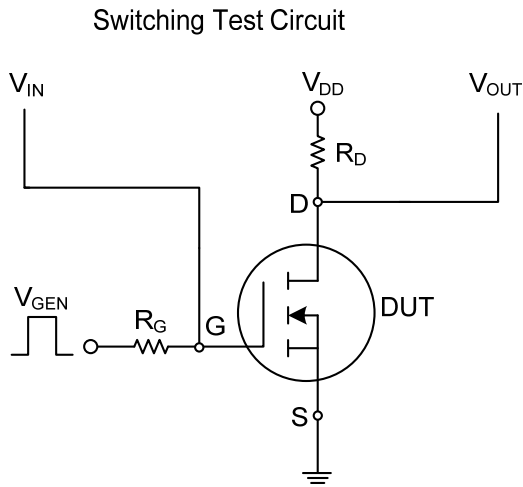
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ _{JA}			100	°C/W

■ ELECTRICAL CHARACTERISTICS (Ta =25°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 μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20 V, V _{GS} =0 V			1.0	μA
Gate-Body Leakage, Forward	I _{GSS}	V _{GS} =±8V, V _{DS} = 0 V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	0.45			V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =5.0 A		25	33	mΩ
		V _{GS} =2.5 V, I _D =4.0 A		35	40	mΩ
On-State Drain Current	I _{D(ON)}	V _{DS} ≥10 V, V _{GS} = 4.5 V	15			A
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 5.0 A		20		S
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =10V, V _{GS} =0V, f=1.0MHz		900		pF
Output Capacitance	C _{OSS}			140		pF
Reverse Transfer Capacitance	C _{RSS}			100		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =10V, V _{GS} =4.5V, I _D =3.6A		11	14	nC
Gate Source Charge	Q _{GS}			1.4		nC
Gate Drain Charge	Q _{GD}			2.2		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =10V, I _D =1A, R _L =10Ω V _{GEN} =4.5V, R _G =6Ω		15	25	ns
Turn-ON Rise Time	t _R			40	60	ns
Turn-OFF Delay Time	t _{D(OFF)}			48	70	ns
Turn-OFF Fall-Time	t _F			31	45	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1.0 A, V _{GS} =0 V		0.75	1.2	V
Max. Diode Forward Current	I _S				1.6	A

Notes: Pulse test; pulse width ≤300μs, duty cycle≤2%

■ TEST CIRCUIT AND WAVEFORM



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