



UT2312

Power MOSFET

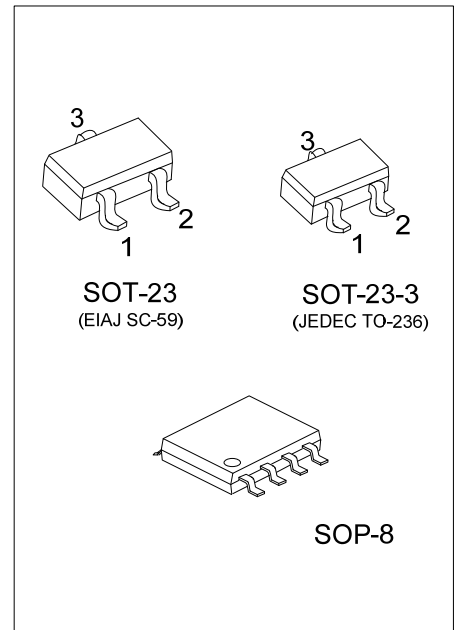
5A, 20V N-CHANNEL ENHANCEMENT MODE MOSFET

DESCRIPTION

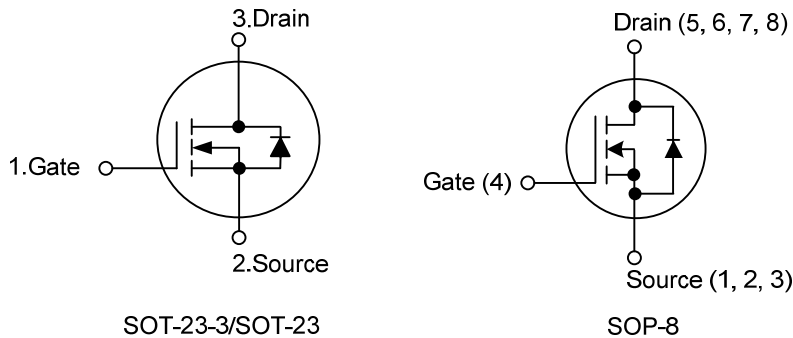
The **UT2312** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

- * $R_{DS(ON)} \leq 33 \text{ m}\Omega @ V_{GS} = 4.5\text{V}, I_D = 5.0 \text{ A}$
- * $R_{DS(ON)} \leq 40 \text{ m}\Omega @ V_{GS} = 2.5 \text{ V}, I_D = 4.0 \text{ A}$
- * Advanced trench process technology
- * Excellent thermal and electrical capabilities
- * High density cell design for ultra low on-resistance



SYMBOL



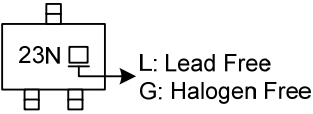
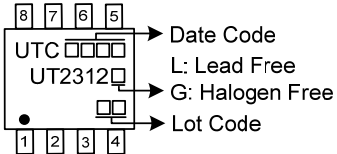
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT2312L-AE2-R	UT2312G-AE2-R	SOT-23-3	G	S	D	-	-	-	-	-	Tape Reel
UT2312L-AE3-R	UT2312G-AE3-R	SOT-23	G	S	D	-	-	-	-	-	Tape Reel
UT2312L-S08-R	UT2312G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT2312G-AE2-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23, S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23-3 / SOT-23	SOP-8
 <p>23N □ → L: Lead Free G: Halogen Free</p>	 <p>8 7 6 5 → Date Code UTC □ □ □ □ → L: Lead Free UT2312 □ → G: Halogen Free □ □ → Lot Code 1 2 3 4</p>

■ ABSOLUTE MAXIMUM RATINGS (T_A=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 (T _A =25°C) (Note 2)	SOT-23-3	P _D	1.25	W
	SOT-23			
	SOP-8			
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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

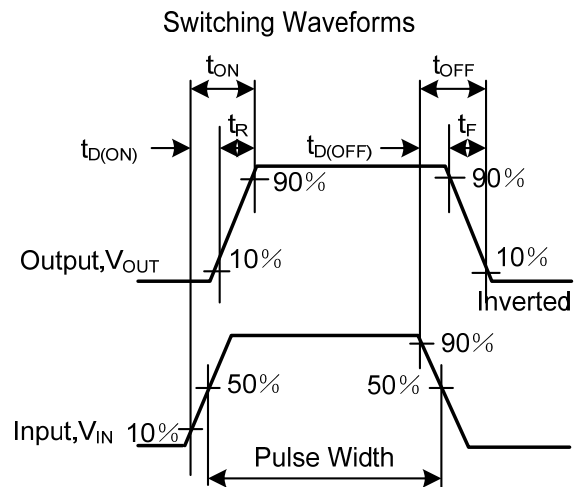
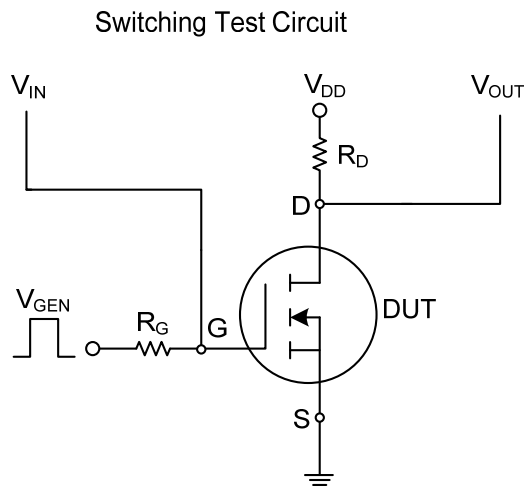
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-3	θ _{JA}	100	°C/W
	SOT-23			
	SOP-8			
			62.5	°C/W

■ ELECTRICAL CHARACTERISTICS (T_A=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	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						
Max. Diode Forward Current	I _S				1.6	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1.0 A, V _{GS} =0 V		0.75	1.2	V

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

■ TEST CIRCUIT AND WAVEFORM



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