



UT2312

Power MOSFET

5A, 20V N-CHANNEL ENHANCEMENT MODE MOSFET

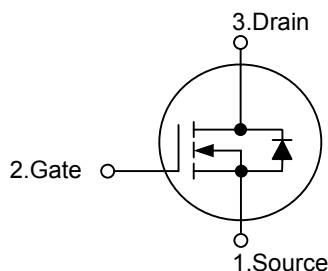
DESCRIPTION

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

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

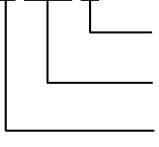
SYMBOL

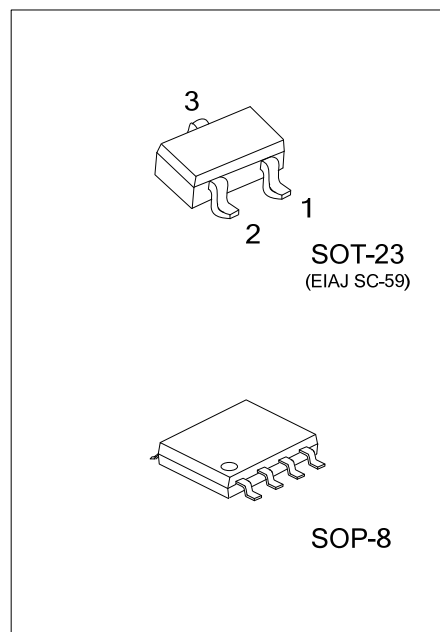


ORDERING INFORMATION

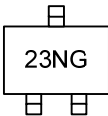
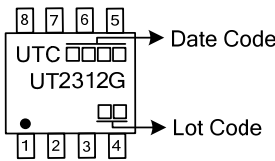
Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UT2312G-AE3-R	SOT-23	S	G	D	-	-	-	-	-	Tape Reel
UT2312G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

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



MARKING

SOT-23	SOP-8
	

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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	5	A
Pulsed Drain Current	I_{DM}	15	A
Power Dissipation ($T_A = 25^\circ\text{C}$) (Note 2)	P_D	1.25	W
		2	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 \times 2 copper pad of FR4 board.

■ THERMAL DATA

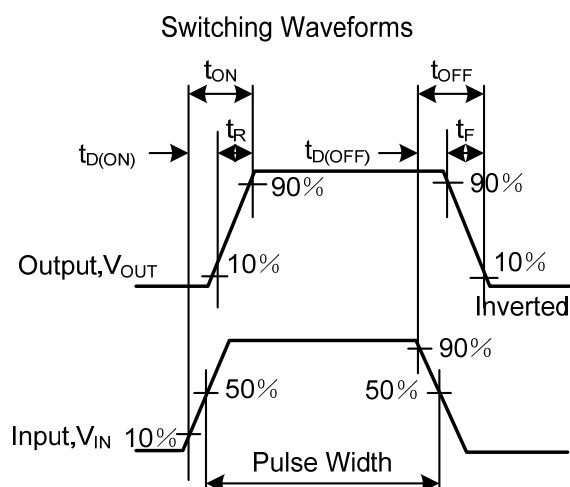
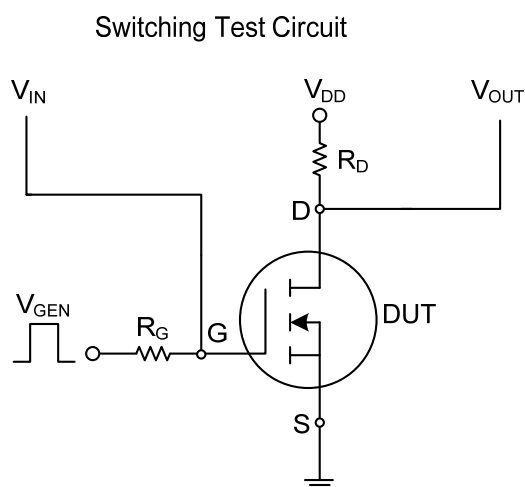
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	100	$^\circ\text{C/W}$
		62.5	$^\circ\text{C/W}$

■ 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} =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 $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

■ TEST CIRCUIT AND WAVEFORM



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