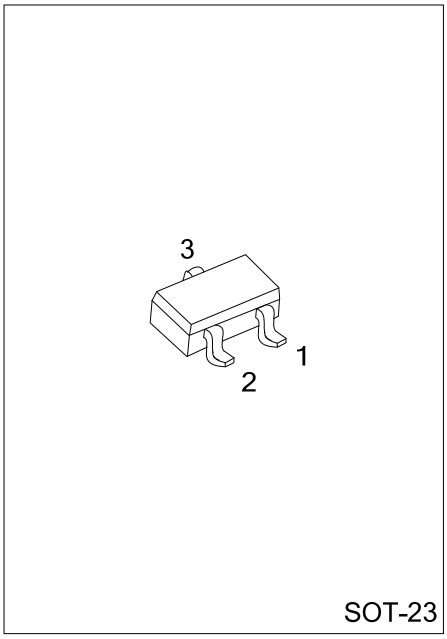
UT2312

Power MOSFET

20V N-CHANNEL ENHANCEMENT MODE MOSFET



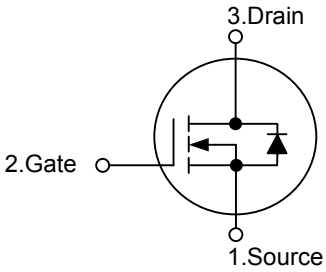
■ DESCRIPTION

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

■ SYMBOL

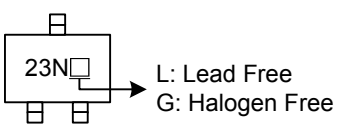


■ ORDERING INFORMATION

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

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

■ 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

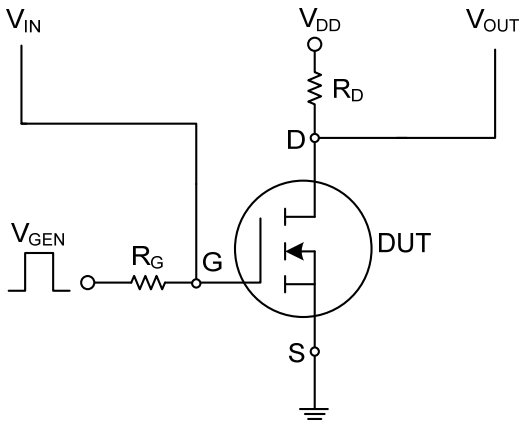
■ ELECTRICAL CHARACTERISTICS (Ta =25°C, unless otherwise specified)

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

Switching Test Circuit



Switching Waveforms