



# UNISONIC TECHNOLOGIES CO., LTD

## UT2316

Power MOSFET

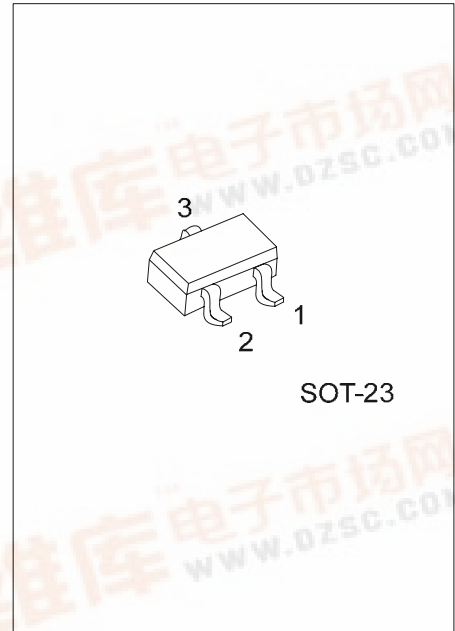
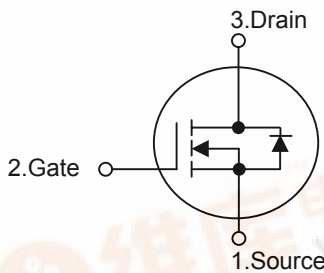
### N-CHANNEL ENHANCEMENT MODE

■ DESCRIPTION

The UTC **UT2316L** is N-channel enhancement mode Power MOSFET, designed in serried ranks with fast switching speed, low on-resistance, favorable stabilization.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

■ SYMBOL



SOT-23

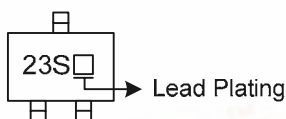
\*Pb-free plating product number: UT2316L

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
UT2316-AE3-R	UT2316L-AE3-R	SOT-23	S	G	D	Tape Reel

UT2316L-AE3-R (1) Packing Type (2) Package Type (3) Lead Plating	(1) R: Tape Reel (2) AE3: SOT-23 (3) L: Lead Free Plating, Blank: Pb/Sn
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■ MARKING



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

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (Note 3)	I <sub>D</sub>	3.6	A
Pulsed Drain Current (Note 1, 2)	I <sub>DM</sub>	16	A
Total Power Dissipation (Ta=25 )	P <sub>D</sub>	0.96	W
Junction Temperature	T <sub>J</sub>	+150	
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	

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

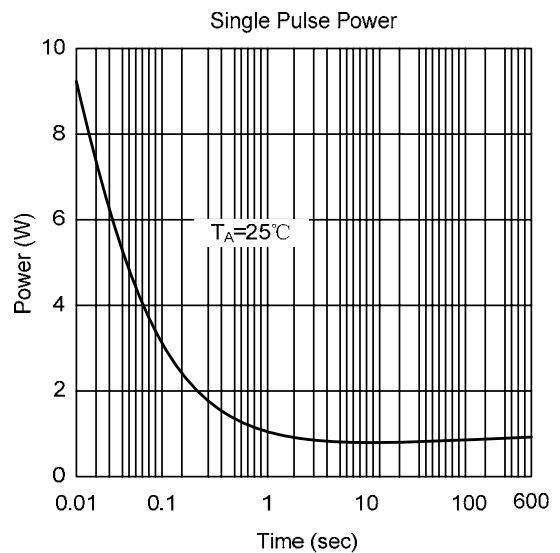
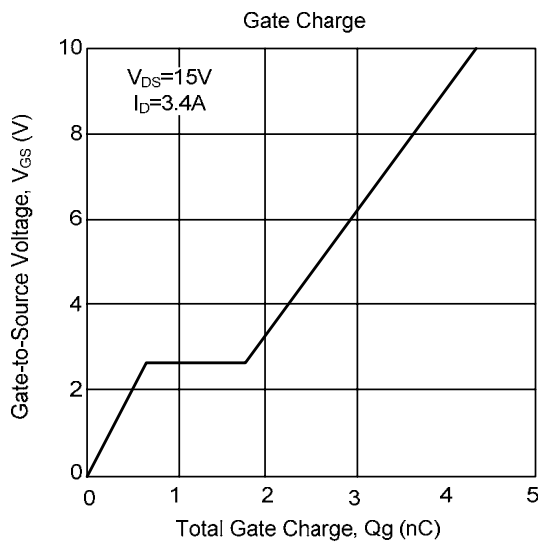
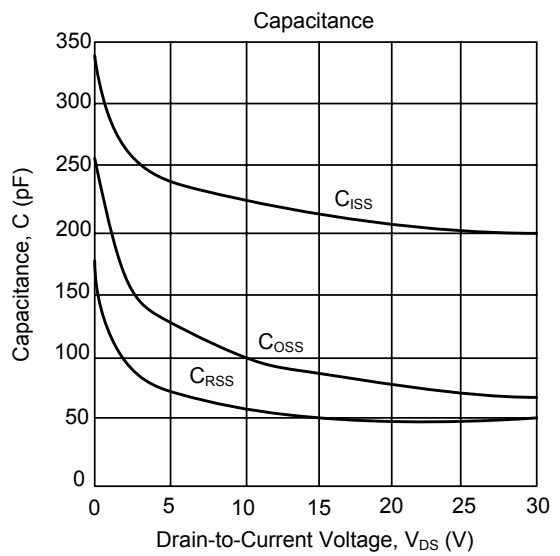
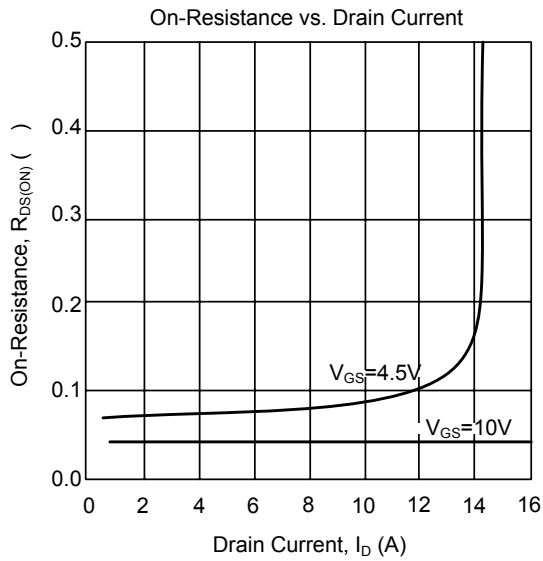
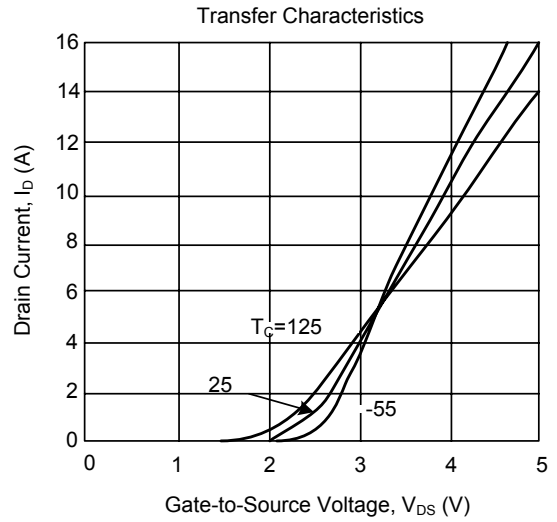
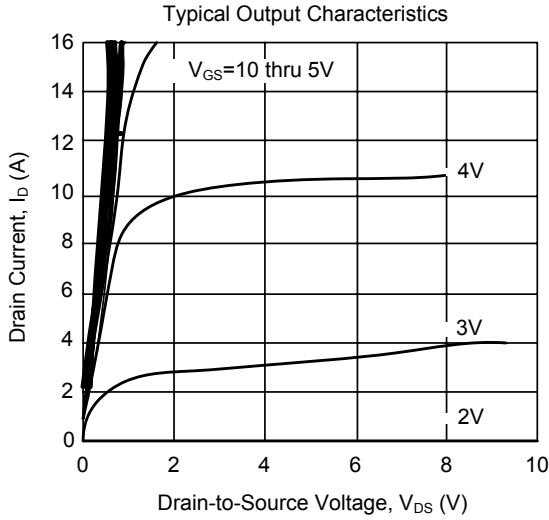
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 3)	θ <sub>JA</sub>			175	/W

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25 , unless otherwise specified)

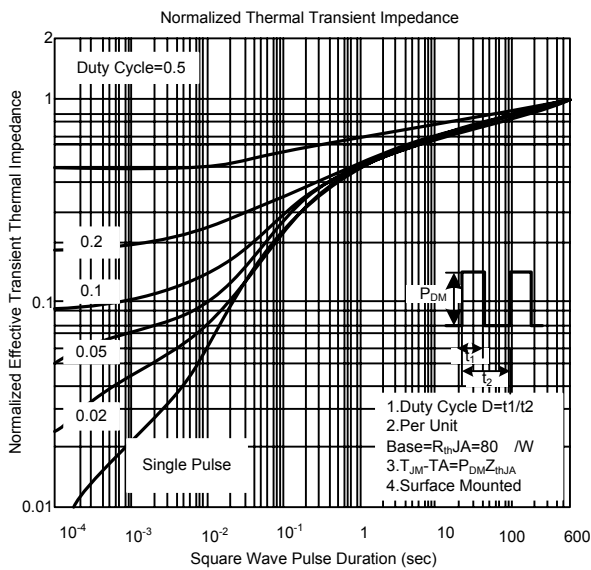
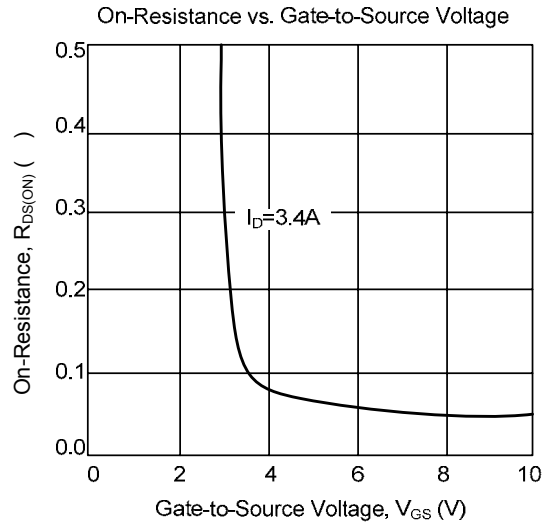
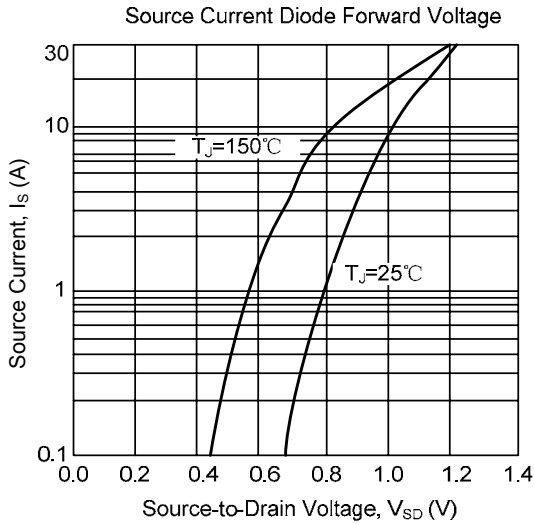
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.8			V
On-State Drain Current	I <sub>D(ON)</sub>	V <sub>DS</sub> = 4.5V, V <sub>GS</sub> = 10V	6			A
		V <sub>DS</sub> = 4.5V, V <sub>GS</sub> = 4.5V	4			A
Drain-Source On-State Resistance (Note 2)	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3.4A		42	50	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.6A		68	85	mΩ
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHz		215		pF
Output Capacitance	C <sub>OSS</sub>			90		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			55		pF
<b>SWITCHING CHARACTERISTICS</b>						
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> = 1A, R <sub>G</sub> =6Ω, R <sub>L</sub> =15Ω		9	15	ns
Turn-ON Rise Time	t <sub>R</sub>			9	15	ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			14	20	ns
Turn-OFF Fall Time	t <sub>F</sub>			6	12	ns
Total Gate Charge	Q <sub>G</sub>			4.3	7	nC
Gate-Source Charge	Q <sub>GS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =3.6A		0.65		nC
Gate-Drain Charge	Q <sub>GD</sub>			1.2		nC
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage(Note2)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =0.8A		0.88	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	V <sub>D</sub> =V <sub>G</sub> =0V, V <sub>S</sub> =1.2V		0.8		A

- Notes: 1. Pulse width limited by T<sub>J(MAX)</sub>  
 2. Pulse width ≤300us, duty cycle ≤2%.  
 3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board

## TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS(Cont.)



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