



UT2301Z

Power MOSFET

2.3A, 20V P-CHANNEL ENHANCEMENT MODE POWER MOSFET

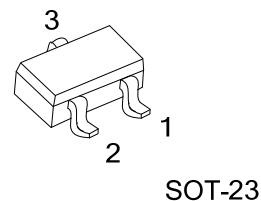
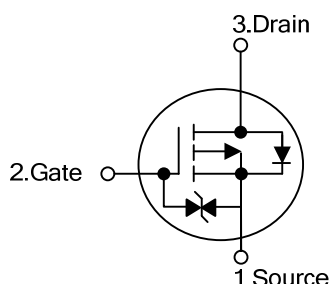
DESCRIPTION

The UTC **UT2301Z** is a P-channel enhancement mode power MOSFET with fast switching speed, low on-resistance and favorable stabilization. It can be used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

FEATURES

- * Very High Density Cell Design for Low On-Resistance
- * Very Good Thermal and Electrical Capabilities

SYMBOL

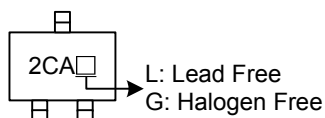


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2301ZL-AE3-R	UT2301ZG-AE3-R	SOT-23	S	G	D	Tape Reel

UT2301ZL-AE3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE3: SOT-23
	(3)Lead Free	(3) G: Halogen Free, L: Lead Free

MARKING



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

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-2.8	A
Pulsed Drain Current (Note 2, 3)	I_{DM}	-10	A
Total Power Dissipation	P_D	1.25	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: 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. Pulse width limited by $T_{J(MAX)}$

3. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

■ THERMAL DATA (Note)

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

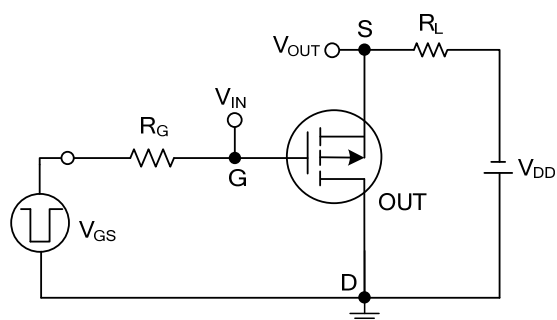
Note: Surface mounted on FR4 board $t \leq 5\%$ sec.

■ ELECTRICAL CHARACTERISTICS ($I_D = -2.3\text{A}$, $T_a = 25^\circ\text{C}$, unless otherwise specified)

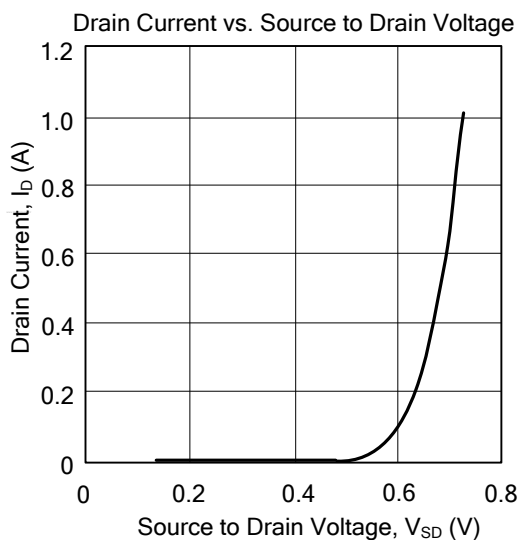
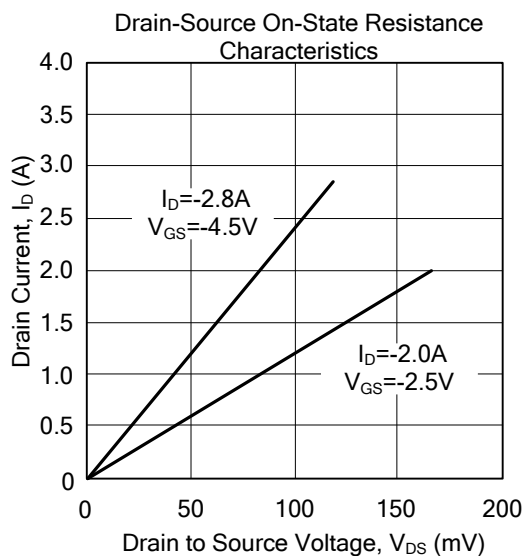
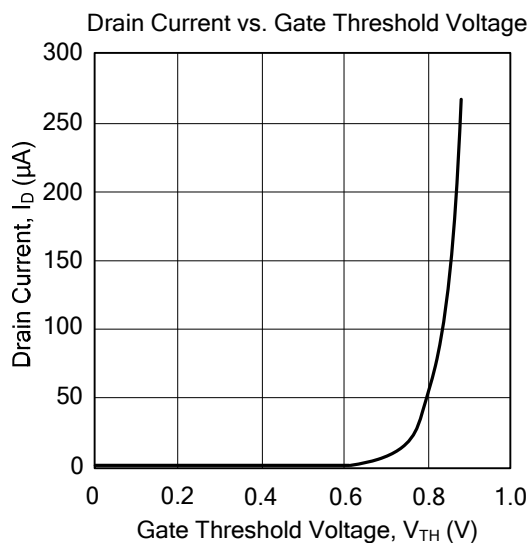
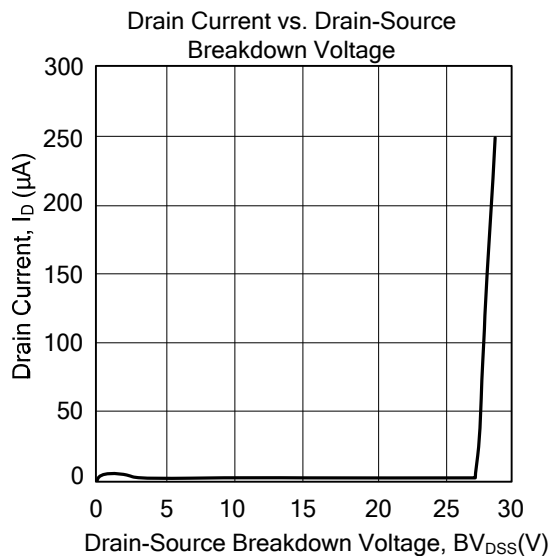
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V			-1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V			±5	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250uA	-0.45			V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-2.8A		95	130	mΩ
		V _{GS} =-2.5V, I _D =-2.0A		122	190	mΩ
On-State Drain Current	I _{D(ON)}	V _{DS} =-5 V, V _{GS} =-10V	-6			A
Forward Tran conductance	g _{FS}	V _{DS} =-5 V, I _D =-2.8A		6.5		S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-6V, f=1.0MHz		447		pF
Output Capacitance	C _{OSS}			127		pF
Reverse Transfer Capacitance	C _{RSS}			80		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note)	Q _G	V _{DS} =-6V, V _{GS} =-4.5V, I _D =-2.8A		5.4	10	nC
Gate-Source Charge	Q _{GS}			0.8		nC
Gate-Drain Charge	Q _{GD}			1.1		nC
Turn-ON Delay Time (Note)	t _{D(ON)}	V _{DD} =-6V, V _{GEN} =-4.5V, I _D =-1A, R _G =6Ω, R _L =6Ω		5	25	ns
Turn-ON Rise Time	t _R			19	60	ns
Turn-OFF Delay Time	t _{D(OFF)}			95	110	ns
Turn-OFF Fall Time	t _F			65	80	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage (Note)	V _{SD}	I _S =-1.6 A, V _{GS} =0 V		-0.8	-1.2	V
Maximum Diode Forward Current	I _S				-1.6	A

Note: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

■ SWITCHING TEST CIRCUIT



TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.