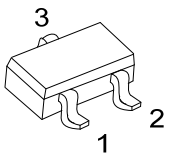
UT2301Z

Power MOSFET

-2.8A, -20V P-CHANNEL ENHANCEMENT MODE POWER MOSFET



SOT-23
(EIAJ SC-59)

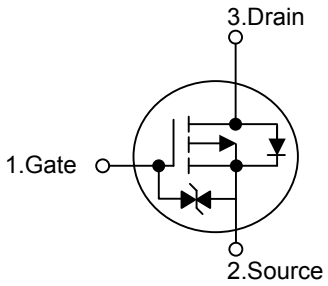
■ DESCRIPTION

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



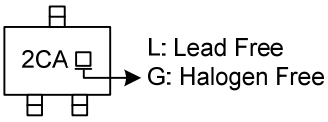
■ ORDERING INFORMATION

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

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

UT2301ZG-AE3-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A = 25°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 (Note 4)	P_D	1.25	W
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. Repetitive Rating : Pulse width limited by maximum junction temperature.
3. Pulse width ≤300μs, duty cycle ≤ 2 %.
4. Surface mounted on 1 in $_2$ copper pad of FR4 board.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	100	°C/W

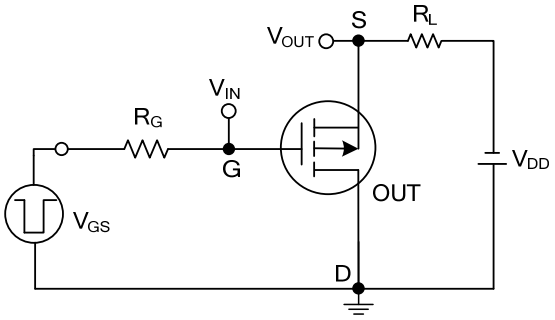
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS (I_D=-2.3A , T_A=25°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						
Maximum Diode Forward Current	I_S				-1.6	A
Diode Forward Voltage (Note)	V_{SD}	I_S=-1.6 A, V_{GS}=0 V		-0.8	-1.2	V

Notes: Pulse width ≤300μs, Duty Cycle ≤2%

■ SWITCHING TEST CIRCUIT



■ TYPITAL CHARACTERISTICS