



## UT09N02LZ

Preliminary

Power MOSFET

### 0.9A ,20V N-CHANNEL LOGIC LEVEL ENHANCEMENT MODE

#### DESCRIPTION

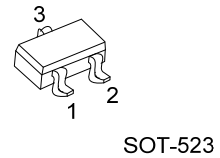
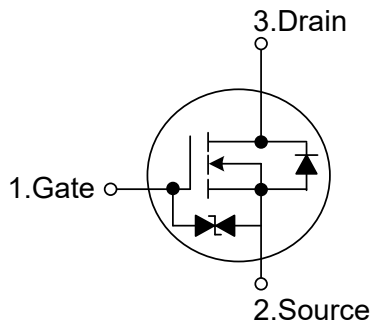
The **UT09N02LZ** employs advanced MOSFET technology and features low gate charge while maintaining low on-resistance.

Optimized for switching applications, this device improves the overall efficiency of DC/DC converters and allows operation to higher switching frequencies.

#### FEATURES

- \*  $R_{DS(ON)} \leq 0.2 \Omega$  @  $V_{GS}=4.5V$ ,  $I_D=0.5A$   
 $R_{DS(ON)} \leq 0.24 \Omega$  @  $V_{GS}=2.5V$ ,  $I_D=0.5A$
- \* Low Capacitance
- \* Low Gate Charge
- \* Fast Switching Capability
- \* Avalanche Energy Specified

#### SYMBOL



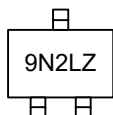
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT09N02LZL-AN3-R	UT09N02LZG-AN3-R	SOT-523	G	S	D	Tape Reel

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

UT09N02LZG-AN3-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AN3: SOT-523 (3) G: Halogen Free and Lead Free, L: Lead Free
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#### MARKING



■ 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	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	DC	0.9	A
	Pulse	1.8	A
Power Dissipation	$P_D$	0.15	W
Single Pulsed Avalanche Energy (Note 3)	$E_{AS}$	6.5	mJ
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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3.  $L = 10\text{mH}$ ,  $I_{AS} = 1.1\text{A}$ ,  $V_{DD} = 15\text{V}$ ,  $R_G = 25\Omega$ , Starting  $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	833	$^\circ\text{C/W}$

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

■ 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 <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage, Forward	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±10	uA
ON CHARACTERISTICS (Note)						
Gate-Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.3		1.2	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A			0.2	Ω
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.5A			0.24	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		53		pF
Output Capacitance	C <sub>OSS</sub>			22		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			15		pF
SWITCHING PARAMETERS (Note)						
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> =16V, V <sub>GS</sub> =10V, I <sub>D</sub> =0.9A		9		nC
Gate Source Charge	Q <sub>GS</sub>			1		nC
Gate Drain Charge	Q <sub>GD</sub>			1		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =10V,V <sub>GS</sub> =10V, I <sub>D</sub> =0.9A, R <sub>G</sub> =3Ω (Note 1, 2)		5		ns
Turn-ON Rise Time	t <sub>R</sub>			18		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			112		ns
Turn-OFF Fall-Time	t <sub>F</sub>			67		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Max. Diode Forward Current	I <sub>S</sub>				0.9	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> =0.9A (Note)			1.4	V

Notes: 1. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

2. Essentially independent of operating temperature.

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