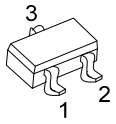
UT09N02LZ

Preliminary | ***Power MOSFET***

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



SOT-523

■ DESCRIPTION

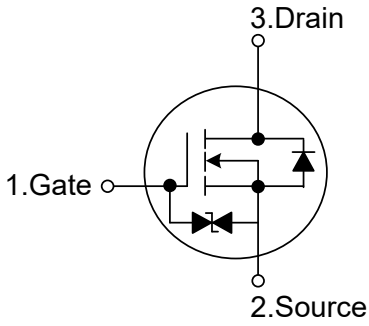
The **UT09N02LZ** employs advanced MOSFET technology and features low gate charge while maintaining low on-resistance.

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



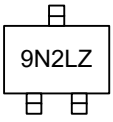
■ ORDERING INFORMATION

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

■ MARKING



■ 0ABSOLUTE MAXIMUM RATINGS (T_A = 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	DC	I_D	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	°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. L =10mH, I_{AS} = 1.1A, V_{DD} = 15V, R_G = 25Ω, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	833	°C/W

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

■ ELECTRICAL CHARACTERISTICS (T_A=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=250μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate–Body Leakage, Forward	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±10	uA
ON CHARACTERISTICS (Note)						
Gate-Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.3		1.2	V
Static Drain–Source On–Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.5A			0.2	Ω
		V_{GS}=2.5V, I_D=0.5A			0.24	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=15V, V_{GS}=0V, f=1MHz		53		pF
Output Capacitance	C_{OSS}			22		pF
Reverse Transfer Capacitance	C_{RSS}			15		pF
SWITCHING PARAMETERS (Note)						
Total Gate Charge	Q_G	V_{DS}=16V, V_{GS}=10V, I_D=0.9A		9		nC
Gate Source Charge	Q_{GS}			1		nC
Gate Drain Charge	Q_{GD}			1		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=10V,V_{GS}=10V, I_D=0.9A, R_G=3Ω (Note 1, 2)		5		ns
Turn-ON Rise Time	t_R			18		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			112		ns
Turn-OFF Fall-Time	t_F			67		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Max. Diode Forward Current	I_S				0.9	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}= 0V, I_S=0.9A (Note)			1.4	V

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.