



UT1P02VZ

Preliminary

Power MOSFET

1.0A ,20V P-CHANNEL LOGIC LEVEL ENHANCEMENT MODE

DESCRIPTION

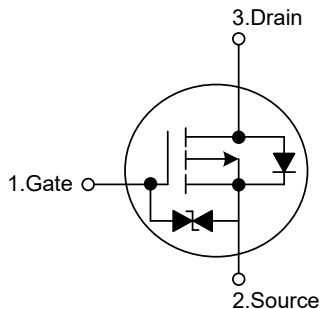
The **UT1P02VZ** employs advanced MOSFET technology and features low gate charge while maintaining low on-resistance.

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

FEATURES

- * $R_{DS(ON)} \leq 0.5 \Omega$ @ $V_{GS} = -4.5V$, $I_D = -1.0A$
 $R_{DS(ON)} \leq 0.85 \Omega$ @ $V_{GS} = -2.5V$, $I_D = -0.7A$
- * Low Capacitance
- * Low Gate Charge
- * Fast Switching Capability
- * Avalanche Energy Specified

SYMBOL

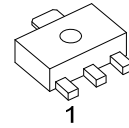


ORDERING INFORMATION

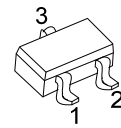
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT1P02VZL-AB3-R	UT1P02VZG-AB3-R	SOT-89	G	D	S	Tape Reel
UT1P02VZL-AN3-R	UT1P02VZG-AN3-R	SOT-523	G	S	D	Tape Reel

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

UT1P02VZG-AB3-R	(1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AB3: SOT-89, AN3: SOT-523 (3) G: Halogen Free and Lead Free, L: Lead Free
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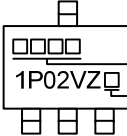
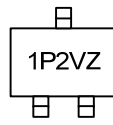


SOT-89



SOT-523

■ MARKING

SOT-89	SOT-523
 Diagram of SOT-89 package marking. The package is a small rectangle with three pins on the left and one on the right. The top surface has four small squares for a date code, the text '1P02VZ', and a small square for a lead/halogen free indicator. → Date Code → L: Lead Free → G: Halogen Free	 Diagram of SOT-523 package marking. The package is a small rectangle with two pins on the left. The top surface has the text '1P2VZ' and a small square for a lead/halogen free indicator.

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 10	V
Continuous Drain Current	DC	I_D	-1	A
	Pulse		-2	A
Power Dissipation	SOT-89	P_D	0.5	W
	SOT-523		0.17	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$

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	RATINGS	UNIT
Junction to Ambient	SOT-89	θ_{JA}	125	$^\circ\text{C/W}$
	SOT-523		833	$^\circ\text{C/W}$

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

■ **ELECTRICAL CHARACTERISTICS** ($T_J = 25^\circ\text{C}$ 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
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =±10V, V _{DS} =0V			±10	μA
	Reverse						
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D =-250μA	-0.5		-1.5	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =-4.5V, I _D =-1.0A			0.5	Ω
			V _{GS} =-2.5V, I _D =-0.7A			0.85	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-10V, f=1.0MHz		66		pF
Output Capacitance		C _{OSS}			24		pF
Reverse Transfer Capacitance		C _{RSS}			14		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =-16V, V _{GS} =-10V, I _D =-1.0A (Note 1, 2)		6.62		nC
Gate to Source Charge		Q _{GS}			0.84		nC
Gate to Drain Charge		Q _{GD}			1.3		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =-10V, V _{GS} =-10V, I _D =-1.0A, R _G =-3Ω (Note 1, 2)		9.1		ns
Rise Time		t _R			18		ns
Turn-OFF Delay Time		t _{D(OFF)}			164		ns
Fall-Time		t _F			90		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				-1	A
Maximum Body-Diode Pulsed Current		I _{SM}				-2	A
Diode Forward Voltage		V _{SD}	I _F =-1.0A, V _{GS} =0V		-1	-1.4	V

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

2. Essentially independent of operating temperature.

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