

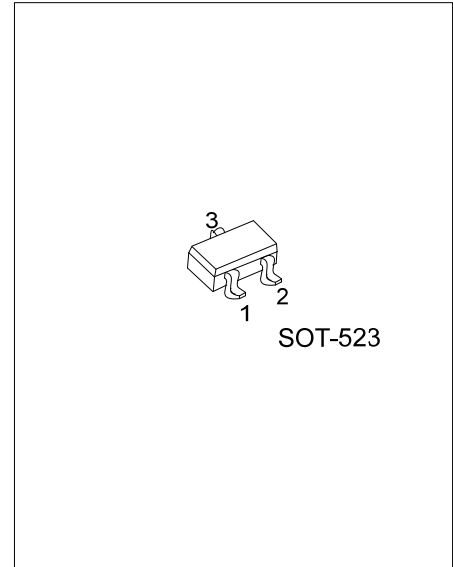


**UT03P02VZ**

Preliminary

*Power MOSFET*

**-0.3A, -20V P-CHANNEL  
LOGIC LEVEL  
ENHANCEMENT MODE**



■ DESCRIPTION

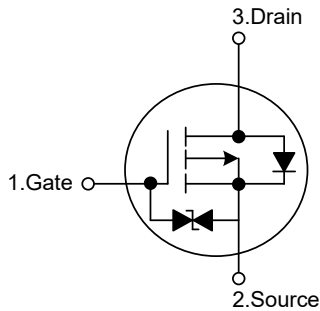
The **UT03P02VZ** employs advanced MOSFET technology and features low gate charge while maintaining low on-resistance.

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

■ FEATURES

- \*  $R_{DS(ON)} \leq 1.2 \Omega @ V_{GS} = -4.5V, I_D = -0.2A$
- $R_{DS(ON)} \leq 1.9 \Omega @ V_{GS} = -2.5V, I_D = -0.1A$
- $R_{DS(ON)} \leq 3.5 \Omega @ V_{GS} = -1.8V, I_D = -0.1A$
- \* Low Capacitance
- \* Low Gate Charge
- \* Fast Switching Capability
- \* Avalanche Energy Specified

■ SYMBOL



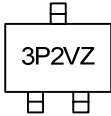
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT03P02VZL-AN3-R	UT03P02VZG-AN3-R	SOT-523	G	S	D	Tape Reel

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

<p>UT03P02VZG-AN3-R</p> <ul style="list-style-type: none"> <li>(1)Packing Type</li> <li>(2)Package Type</li> <li>(3)Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AN3: SOT-523</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V <sub>DSS</sub>	-20	V
Gate-Source Voltage	V <sub>GSS</sub>	±10	V
Continuous Drain Current	DC	-0.3	A
	Pulse	-0.6	A
Power Dissipation	P <sub>D</sub>	0.15	W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°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	θ <sub>JA</sub>	833 (Note)	°C/W

Note: Device mounted on FR-4 substrate P<sub>c</sub> board, 2oz copper, with 1inch square copper plate.

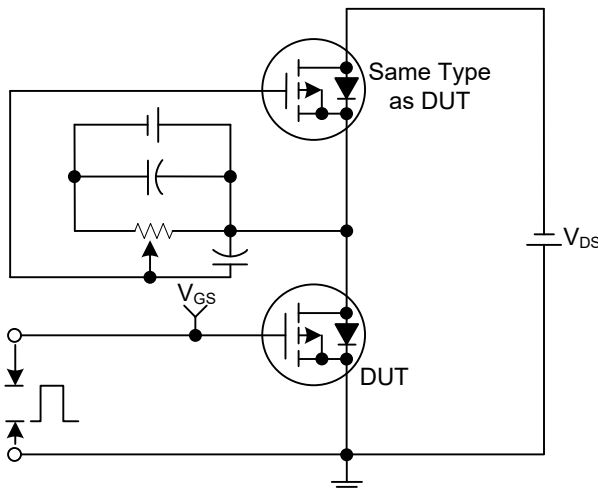
■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
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> =±10V			±10	μA
<b>ON CHARACTERISTICS (Note)</b>						
Gate-Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.5		-1.5	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.2A			1.2	Ω
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.1A			1.9	Ω
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-0.1A			3.5	Ω
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz (Note 1, 2)		31		pF
Output Capacitance	C <sub>OSS</sub>			15		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			8		pF
<b>SWITCHING PARAMETERS (Note)</b>						
Total Gate Charge (Note 1)	Q <sub>G</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-0.3A (Note 1, 2)		6		nC
Gate to Source Charge	Q <sub>GS</sub>			0.67		nC
Gate to Drain Charge	Q <sub>GD</sub>			0.47		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-0.3A, R <sub>G</sub> =3Ω		4.4		ns
Turn-ON Rise Time	t <sub>R</sub>			17.3		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			88		ns
Turn-OFF Fall-Time	t <sub>F</sub>			42.2		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Max. Diode Forward Current	I <sub>S</sub>				-0.3	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> =-0.3A (Note)		-0.8	-1.4	V

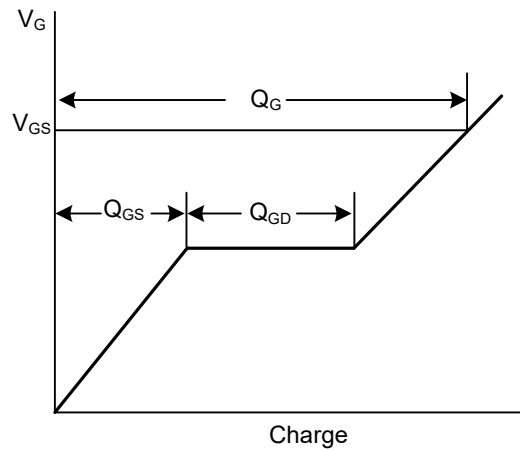
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

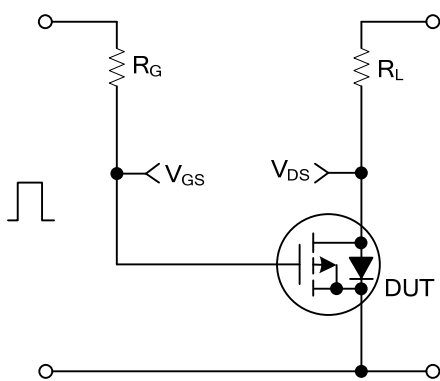
■ TEST CIRCUITS AND WAVEFORMS



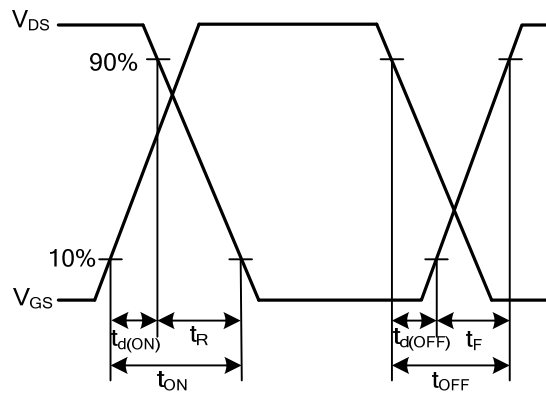
Gate Charge Test Circuit



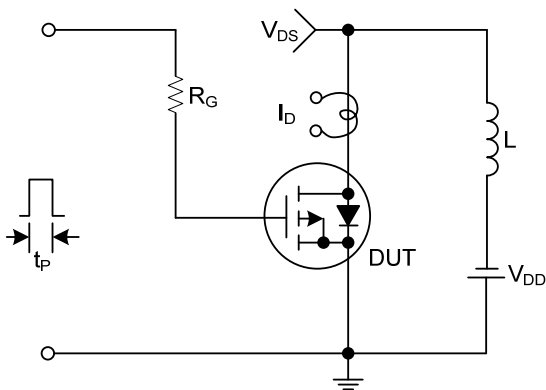
Gate Charge Waveforms



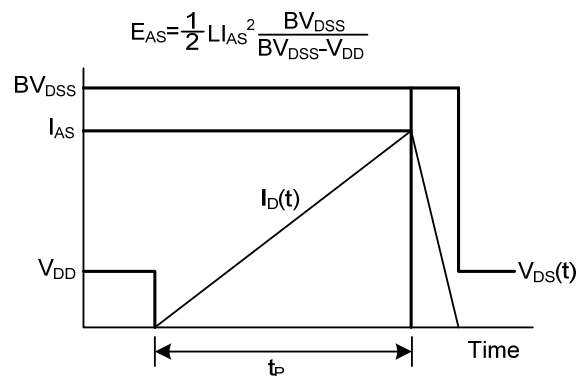
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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