



## 02N06Z

Power MOSFET

### 0.2A, 60V SILICON N-CHANNEL MOSFET

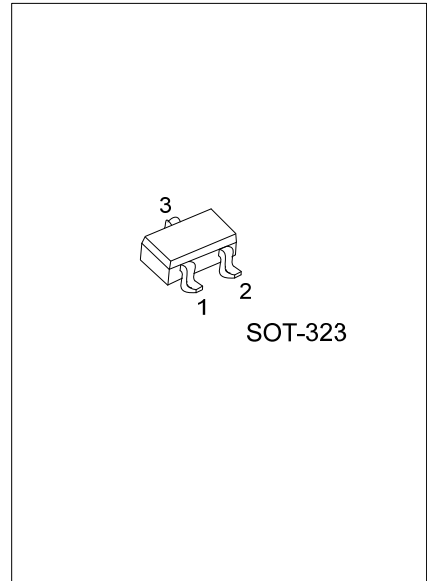
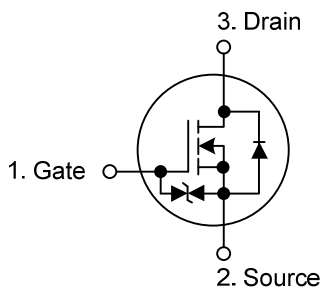
#### DESCRIPTION

The UTC **02N06Z** is a silicon N-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge.

#### FEATURES

- \*  $R_{DS(ON)} \leq 2.4\Omega$  @  $V_{GS}=10V, I_D=200mA$
- \*  $R_{DS(ON)} \leq 4.0\Omega$  @  $V_{GS}=4V, I_D=200mA$
- \* High switching speed
- \* Low gate charge
- \* High ESD

#### SYMBOL



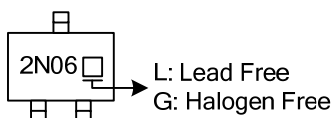
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
02N06ZL-AL3-R	02N06ZG-AL3-R	SOT-323	G	S	D	Tape Reel

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

02N06ZG-AL3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AL3: SOT-323
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

#### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	200
	Pulsed (Note 2)	$I_{DM}$	800
Source Current	Continuous	$I_S$	200
	Pulsed (Note 2)	$I_{SP}$	800
Power Dissipation (Note 3)	$P_D$	200	mW
Channel Temperature	$T_{CH}$	+150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-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.  $P_W \leq 10\mu\text{s}$ , Duty cycle  $\leq 1\%$

3. Each terminal mounted on a recommended

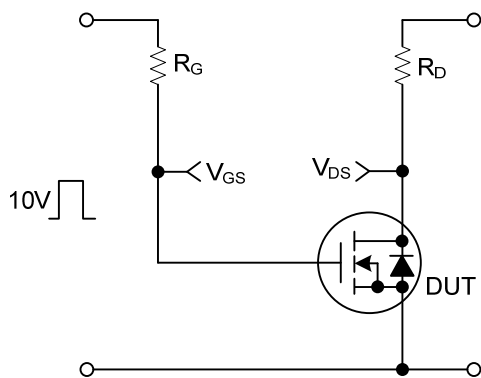
■ ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=10\mu\text{A}$ , $V_{GS}=0\text{V}$	60			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	Forward $V_{GS}=+20\text{V}$ , $V_{DS}=0\text{V}$			+10	$\mu\text{A}$
		Reverse $V_{GS}=-20\text{V}$ , $V_{DS}=0\text{V}$			-10	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	1		2.5	V
Static Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=200\text{mA}$		1.7	2.4	$\Omega$
		$V_{GS}=4\text{V}$ , $I_D=200\text{mA}$		2.8	4.0	$\Omega$
Forward Transfer Admittance (Note 2)	$ Y_{FS} $	$V_{DS}=10\text{V}$ , $I_D=200\text{mA}$	100			mS
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=10\text{V}$ , $f=1.0\text{MHz}$		15		pF
Output Capacitance	$C_{OSS}$			8		pF
Reverse Transfer Capacitance	$C_{RSS}$			4		pF
<b>SWITCHING PARAMETERS (Note 3)</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}$ , $V_{DD}=30\text{V}$ , $I_D=200\text{mA}$		2.2	4.4	nC
Gate to Source Charge	$Q_{GS}$			0.6		nC
Gate to Drain Charge	$Q_{GD}$			0.3		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=100\text{mA}$ , $R_{GS}=10\Omega$ , $R_L=300\Omega$		6		ns
Rise Time	$t_R$			5		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			12		ns
Fall-Time	$t_F$			95		ns

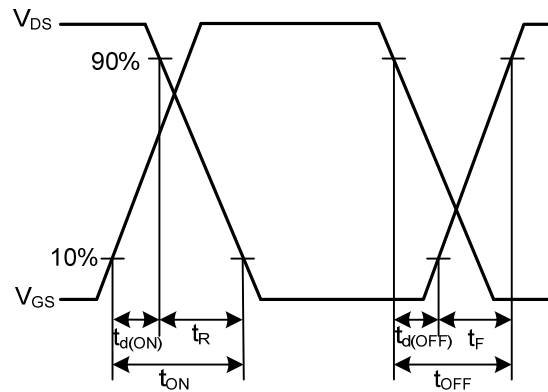
Notes: 1.  $P_W \leq 300\mu\text{s}$ , Duty cycle  $\leq 1\%$

2. Pulsed

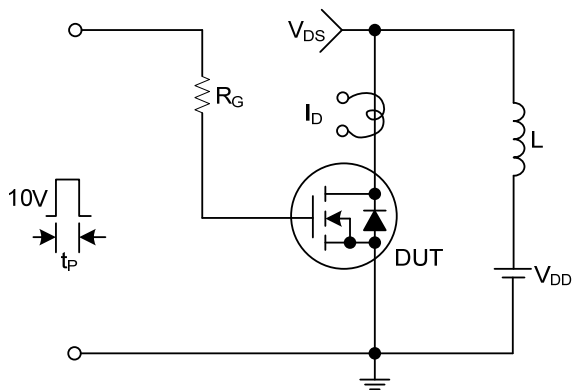
## ■ TEST CIRCUITS AND WAVEFORMS



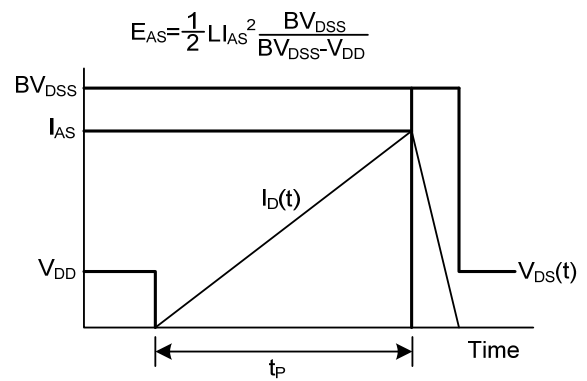
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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