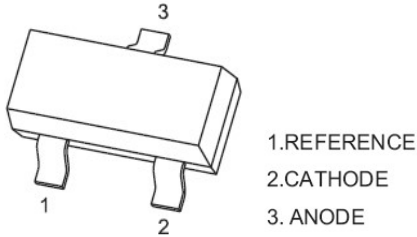
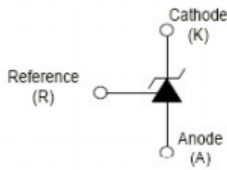


SOT-23



Equivalent Circuit



MARKING: 431

Device Description

The TL431BIDBZR-CN is a three-terminal adjustable shunt regulator offering excellent temperature stability. This device has a typical dynamic output impedance of 0.2Ω. The device can be used as a replacement for zener diodes in many applications.

Features

- The output voltage can be adjusted to 36V
- Low dynamic output impedance, its typical value is 0.2Ω
- Trapping current capability is 1 to 100mA
- Low output noise voltage
- Fast on-state response
- The effective temperature compensation in the working range of full temperature
- The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/°C

Application

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

Mechanical Data

- 封装: SOT-23 封装 SOT-23 Small Outline Plastic Package.
- 环氧树脂 UL 易燃等级 Epoxy UL: 94V-0.
- 安装位置: 任意 Mounting Position: Any.

极限值和温度特性(TA = 25°C 除非另有规定)

Maximum Ratings & Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

参数 Parameters	符号 Symbol	数值 Value	单位 Unit
Cathode Voltage	VKA	36	V
Cathode Current Range(Continuous)	IKA	-100~+150	mA
Reference Input Current Range	Iref	0.05~+10	mA
Power Dissipation	PD	300	mW
Junction Temperature	Tj	150	°C
Operating Temperature	Topr	-25-+85	°C
Thermal Resistance From Junction to Ambient	RθJA	417	°C/W

电特性 (TA = 25°C 除非另有规定)

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

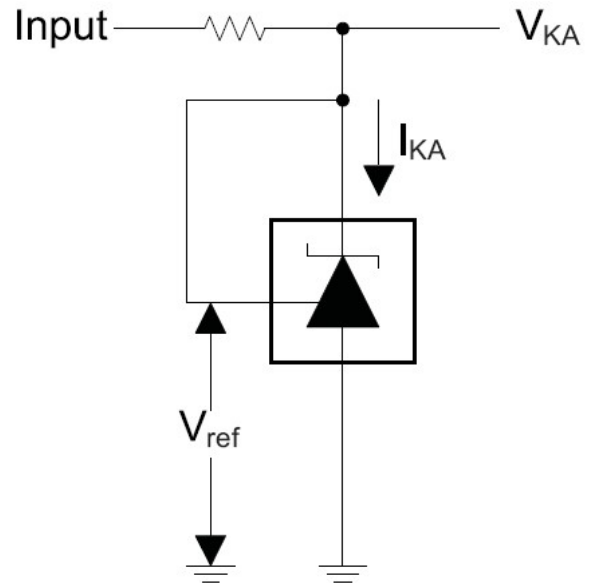
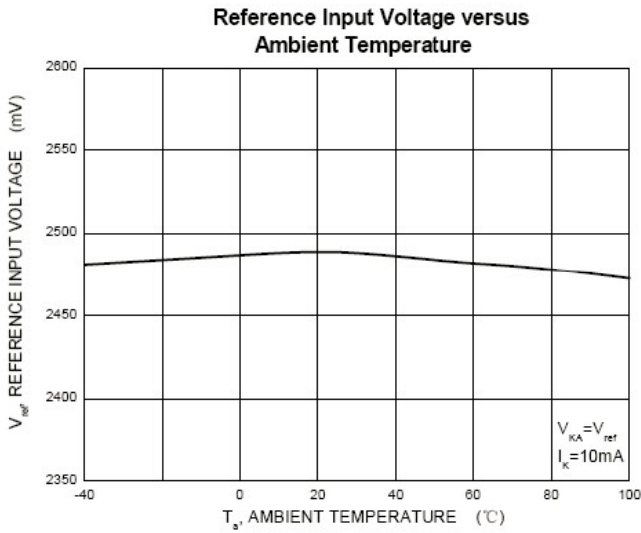
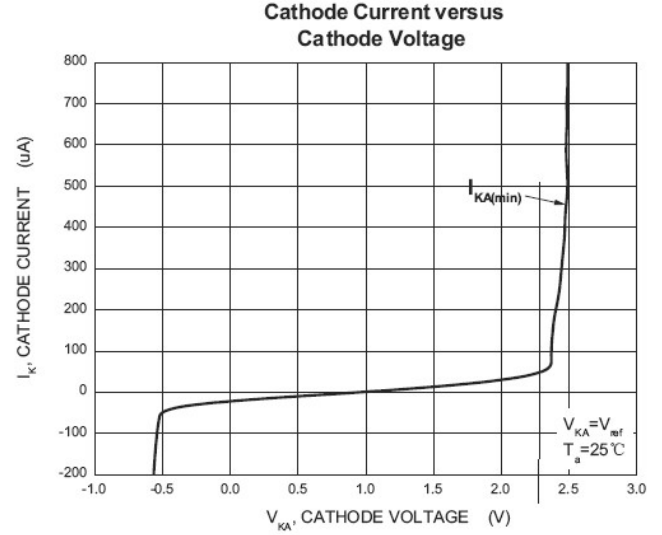
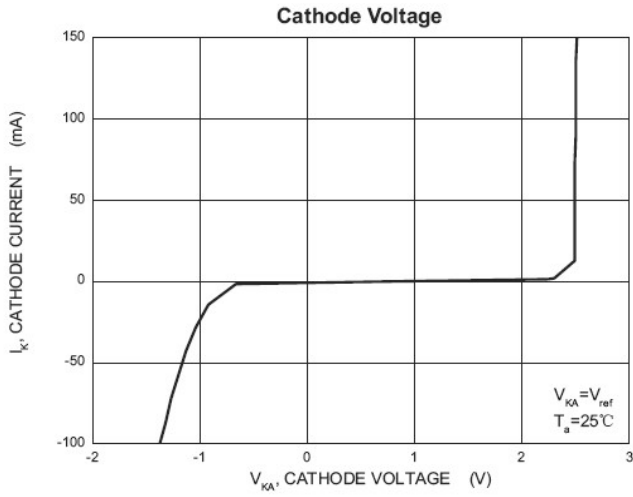
参数 Parameter	符号 Symbols	测试条件 Test Condition	界限 Limits			单位 Unit	
			Min	Typ	Max		
Reference input Voltage	Vref	VKA= VREF V, IKA=10mA	2.475	2.5	2.525	V	
Deviation of reference input voltage over temperature(note)	ΔVref/ΔT	VKA= VREF, IKA=10mA TMIN≤Ta≤TMAX		4.5	17	mV	
Ratio of change in reference Input voltage to the change in cathode voltage	ΔVref/ΔVKA	IKA=10mA	ΔVKA=10V~VREF		-1.0	-2.7	mV/v
			ΔVKA=36V~10V		-0.5	-2.0	mV/v
Reference input current	Iref	IKA=10mA, R1=10KΩ, R2=∞	1.5	4		uA	
Deviation of reference input current over full temperature	ΔIref/ΔT	IKA=10mA, R1=10KΩ, R2=∞ TA=-25 to 85°C	0.4	1.2		uA	
Minimum cathode current for regulation	IKA(min)	VKA=VREF	0.45	1.0		mA	
Off-state cathode current	IKA(off)	VKA=36V, VREF=0	0.05	1.0		uA	
Dynamic impedance	ZKA	VKA=VREF, IKA=1 to 100mA, f≤1.0kHz	0.15	0.5		Ω	

Note: TMIN=-25°C, TMAX=+85°C.

CLASSIFICATION of Vref

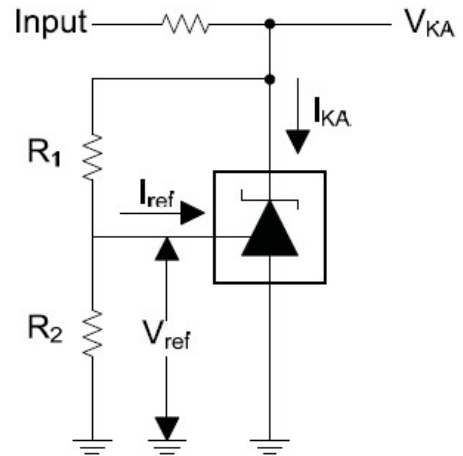
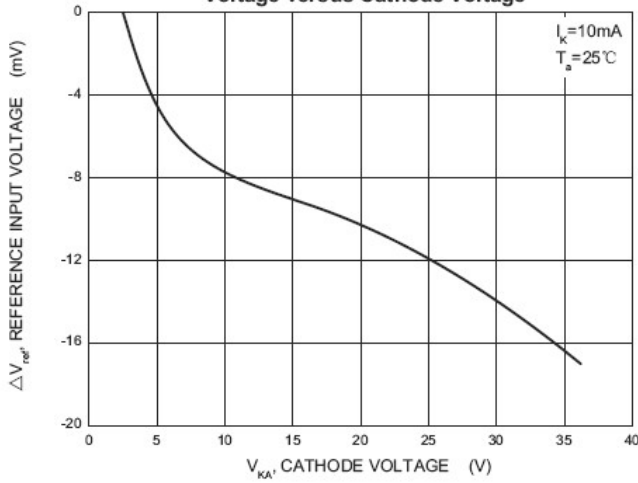
Rank	0.5%	1%
Rank	2.487-2.513	2.475-2.525

Typical characteristics



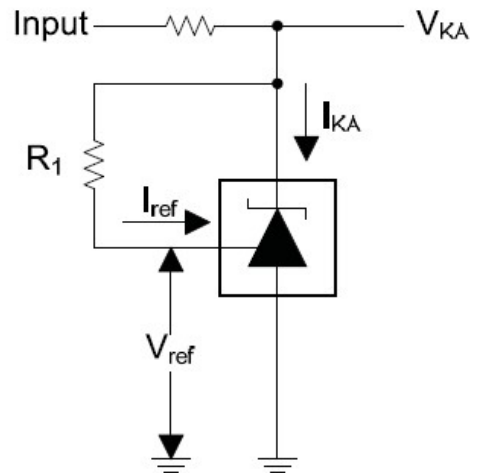
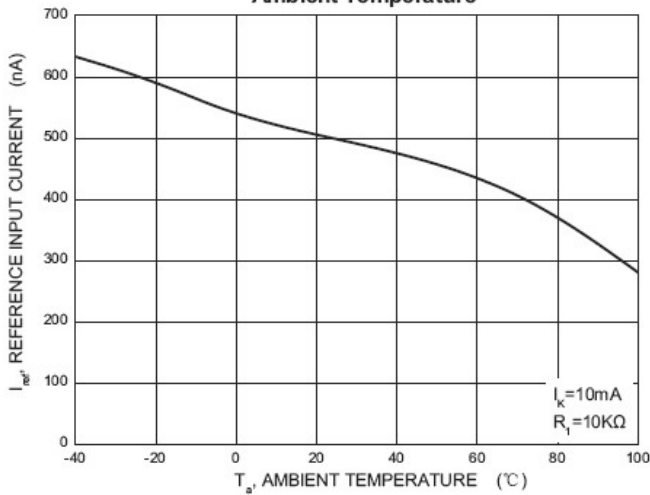
Test Circuit for $V_{KA} = V_{ref}$

Change in Reference Input Voltage versus Cathode Voltage



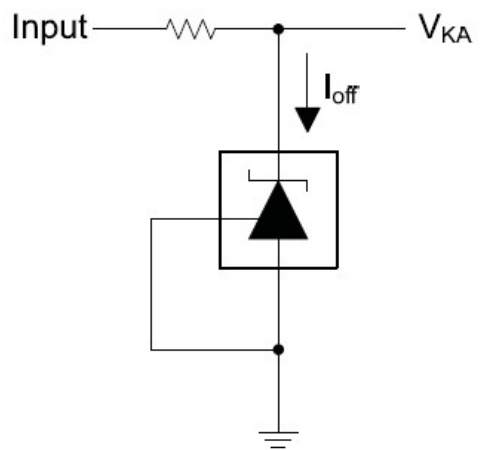
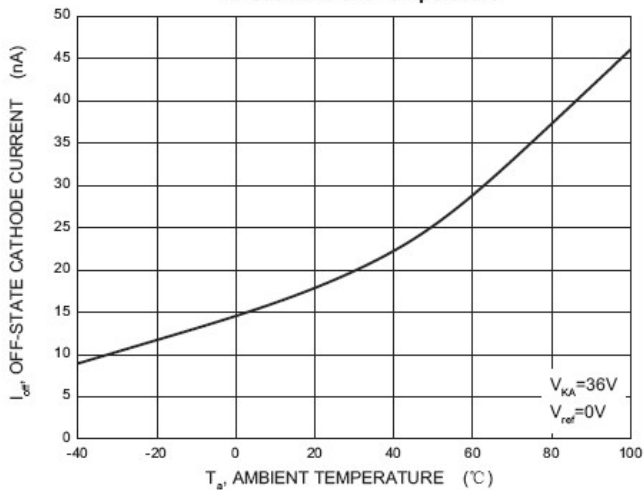
Test Circuit for $V_{KA} = V_{ref}(1 + R1/R2) + R1 * I_{ref}$

Reference Input Current versus Ambient Temperature



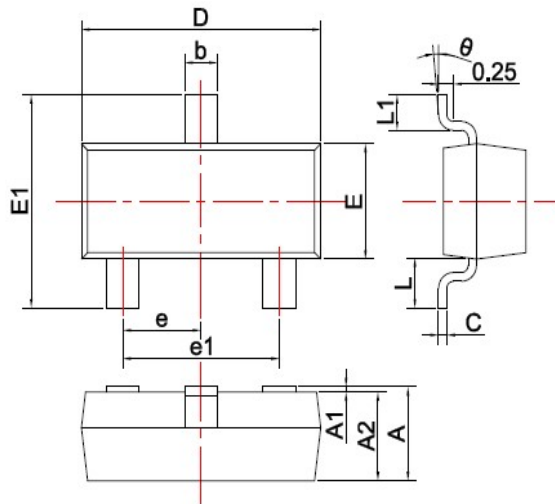
Test Circuit for I_{ref}

Off-State Cathode Current versus Ambient Temperature



Test Circuit for I_{off}

SOT-23 PACKAGE OUTLINE Plastic surface mounted package

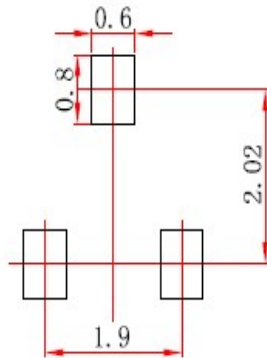


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

焊盘设计参考 Precautions: PCB Design

Recommended land dimensions for SOT-23 diode. Electrode patterns for PCBs



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

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