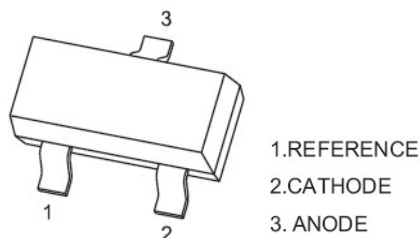
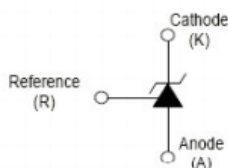


SOT-23



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	V _{KA}	36	V
Cathode Current Range(Continuous)	I _{KA}	-100~+150	mA
Reference Input Current Range	I _{ref}	0.05~+10	mA
Power Dissipation	P _D	300	mW
Junction Temperature	T _j	150	°C
Operating Temperature	T _{opr}	-25~+85	°C
Thermal Resistance From Junction to Ambient	R _{θJA}	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.)

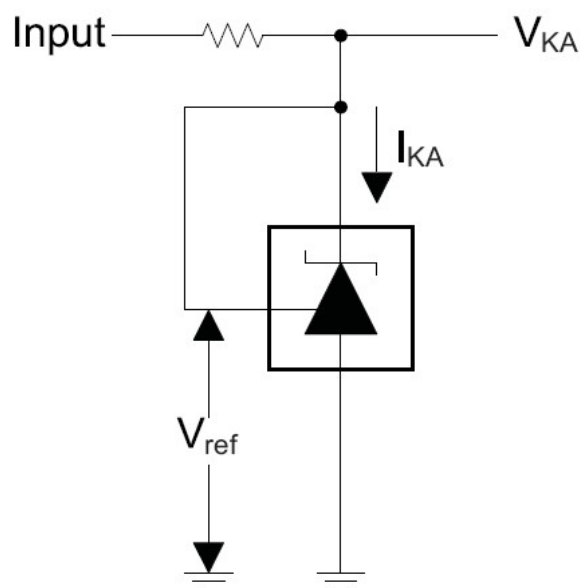
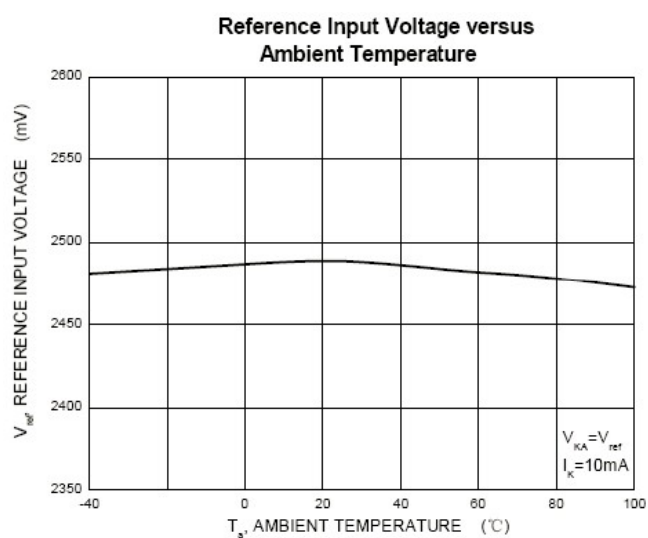
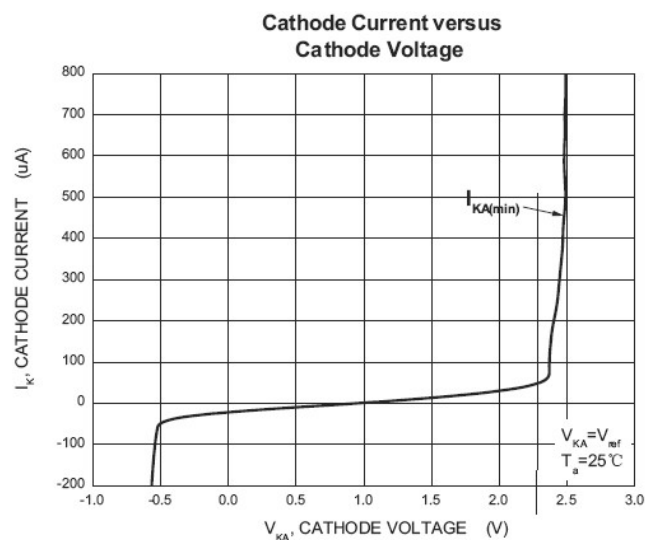
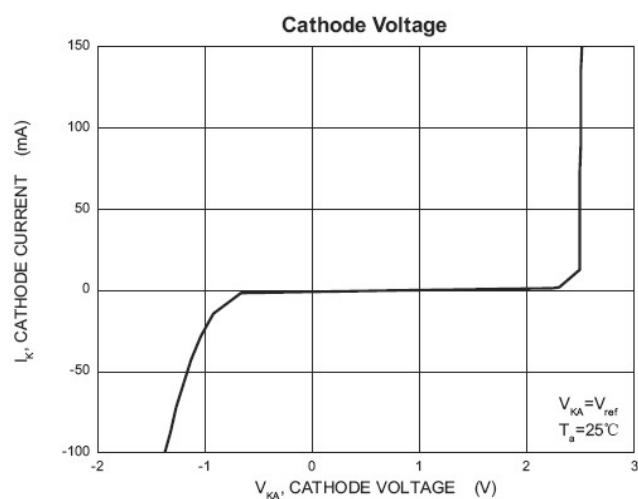
参数 Parameter	符号 Symbols	测试条件 Test Condition	界限 Limits			单位 Unit
			Min	Typ	Max	
Reference input Voltage	V _{ref}	V _{KA} = V _{REF} V, I _{KA} = 10mA	2.475	2.5	2.525	V
Deviation of reference input voltage over temperature(note)	ΔV _{ref} /ΔT	V _{KA} = V _{REF} , I _{KA} = 10mA T _{MIN} ≤ T _a ≤ T _{MAX}		4.5	17	mV
Ratio of change in reference Input voltage to the change in cathode voltage	ΔV _{ref} /ΔV _{KA}	I _{KA} = 10mA, ΔV _{KA} = 10V ~ V _{REF}		-1.0	-2.7	mV/v
		ΔV _{KA} = 36V ~ 10V		-0.5	-2.0	mV/v
Reference input current	I _{ref}	I _{KA} = 10mA, R ₁ = 10KΩ, R ₂ = ∞		1.5	4	uA
Deviation of reference input current over full temperature	ΔI _{ref} /ΔT	I _{KA} = 10mA, R ₁ = 10KΩ, R ₂ = ∞ T _A = -25 to 85°C		0.4	1.2	uA
Minimum cathode current for regulation	I _{KA(min)}	V _{KA} = V _{REF}		0.45	1.0	mA
Off-state cathode current	I _{KA(off)}	V _{KA} = 36V, V _{REF} = 0		0.05	1.0	uA
Dynamic impedance	Z _{KA}	V _{KA} = V _{REF} , I _{KA} = 1 to 100mA, f ≤ 1.0kHz		0.15	0.5	Ω

Note: T_{MIN} = -25°C, T_{MAX} = +85°C.

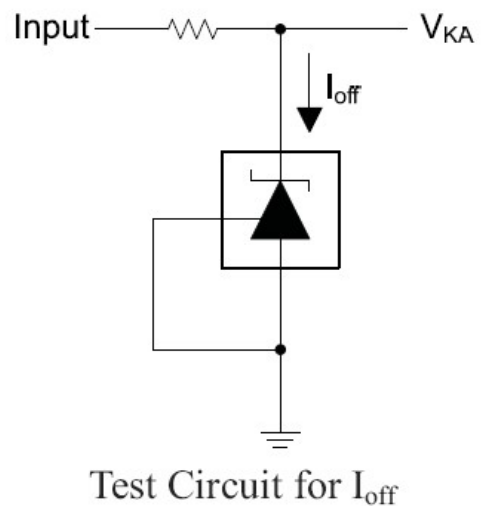
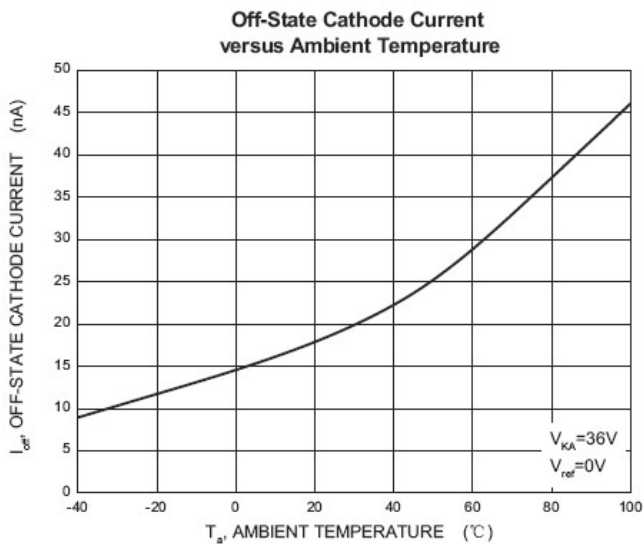
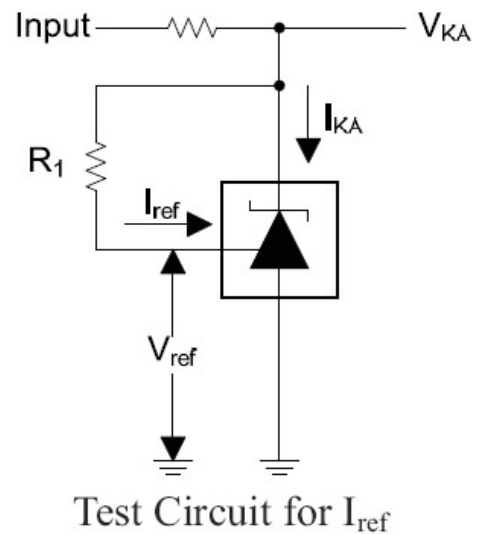
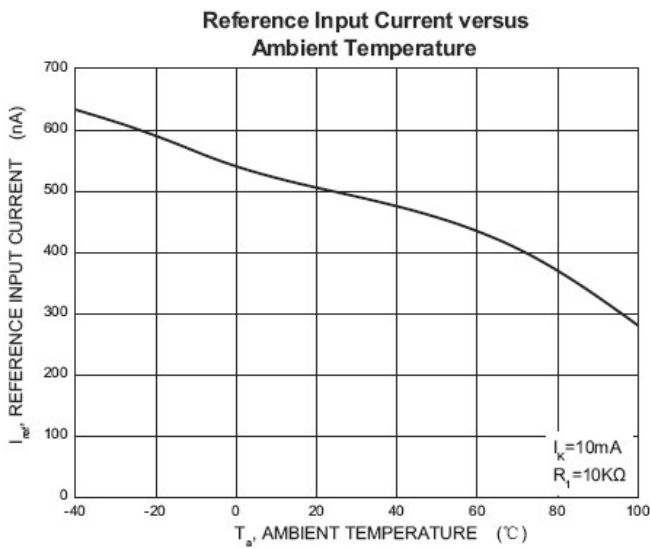
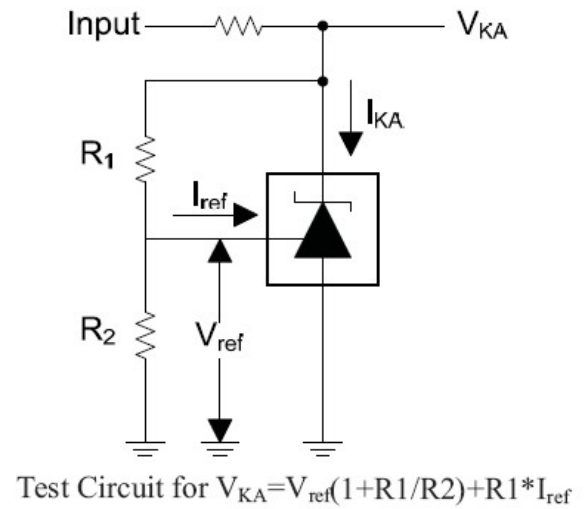
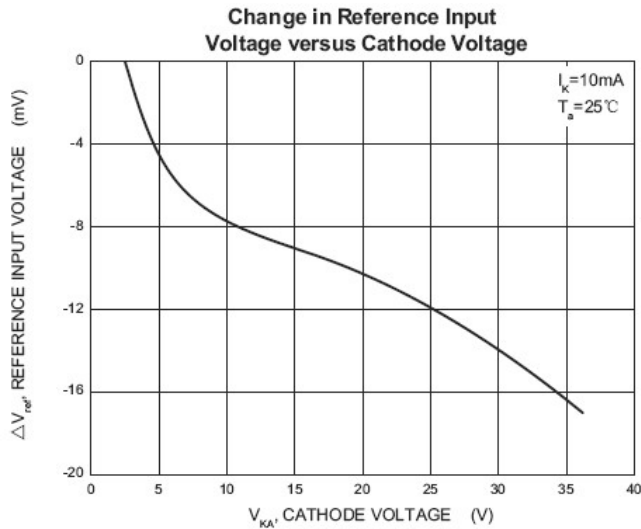
CLASSIFICATION of V_{ref}

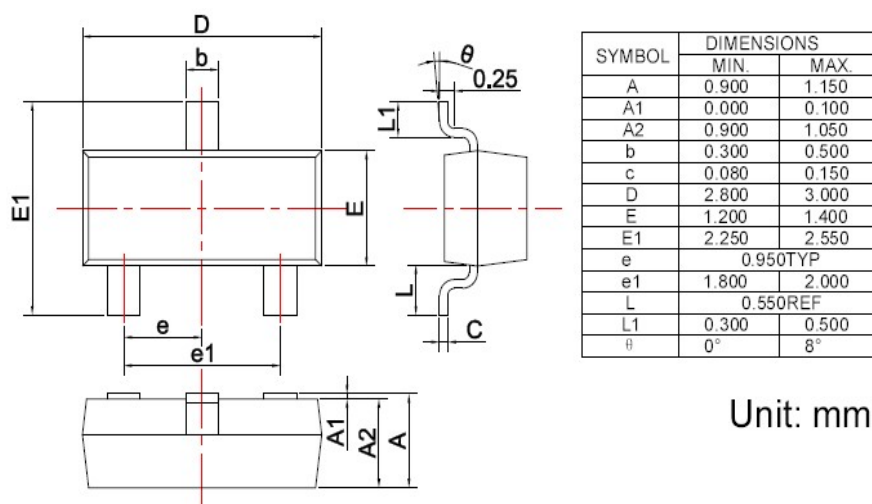
Rank	0.5%	1%
Rank	2.487-2.513	2.475-2.525

Typical characteristics

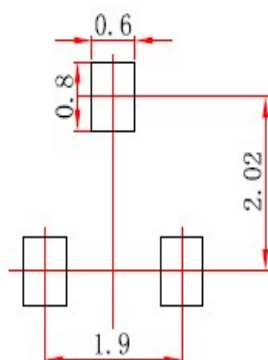


Test Circuit for $V_{KA} = V_{ref}$



SOT-23 PACKAGE OUTLINE Plastic surface mounted package

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: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

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