

## SOT-23 Encapsulate Adjustable Reference Source

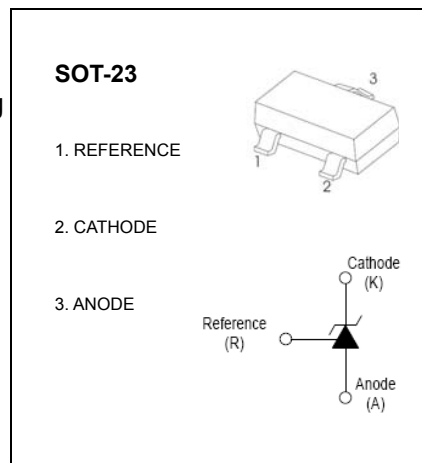
### CJ431K Adjustable Accurate Reference Source

#### DEVICE DESCRIPTION

The CJ431K 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

#### ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Cathode Voltage	$V_{KA}$	37	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
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	°C/W
Operating Junction Temperature	$T_j$	150	°C
Operating Ambient Temperature Range	$T_{opr}$	-40~+85	°C
Storage Temperature Range	$T_{stg}$	-65~+150	°C

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference Input Voltage (Fig.1)	V <sub>ref</sub>	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA	2.445		2.545	V
Deviation of Reference Input Voltage Over Temperature (note) (Fig.1)	ΔV <sub>ref</sub> /ΔT	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA T <sub>min</sub> ≤T <sub>a</sub> ≤T <sub>max</sub>		4.5	17	mV
Ratio Of Change in Reference Input Voltage to the Change in Cathode Voltage (Fig.2)	ΔV <sub>ref</sub> /ΔV <sub>KA</sub>	I <sub>KA</sub> =10mA	ΔV <sub>KA</sub> =10V~V <sub>REF</sub>	-1.0	-2.7	mV/V
			ΔV <sub>KA</sub> =36V~ 10V	-0.5	-2.0	mV/V
Reference Input Current (Fig.2)	I <sub>ref</sub>	I <sub>KA</sub> = 10mA, R <sub>1</sub> =10 kΩ R <sub>2</sub> =∞		1.5	4	μA
Deviation Of Reference Input Current Over Full Temperature Range (Fig.2)	ΔI <sub>ref</sub> /ΔT	I <sub>KA</sub> =10mA, R <sub>1</sub> =10 kΩ R <sub>2</sub> =∞ T <sub>a</sub> =full Temperature		0.4	1.2	μA
Minimum Cathode Current for Regulation (Fig.1)	I <sub>KA(min)</sub>	V <sub>KA</sub> =V <sub>REF</sub>		0.45	1.0	mA
Off-state Cathode Current (Fig.3)	I <sub>KA(OFF)</sub>	V <sub>KA</sub> =40V, V <sub>REF</sub> =0		0.05	0.5	μA
Dynamic Impedance	Z <sub>KA</sub>	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =1 to 100mA f≤1.0kHz		0.15	0.5	Ω

note: T<sub>MIN</sub>=0°C , T<sub>MAX</sub>=+70°C

**CLASSIFICATION cZV<sub>ref</sub>**

Rank	0.5%	1%
Range	2.482-2.508	2.47-2.52