



## SOT-23 Encapsulate Adjustable Reference Source

### TL431 Adjustable Accurate Reference Source

#### 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
- The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/°C
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on -state response

SOT-23

1. REFERENCE

2. CATHODE

3. ANODE



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

Parameter	SYMBOL	VALUE	UNITS
Cathode Voltage	V	37	V
Cathode Current Range (Continuous)	I <sub>KA</sub>	-100-+150	mA
Reference Input Current Range	I <sub>ref</sub>	0.05-+10	mA
Power Dissipation	P <sub>D</sub>	300	mW
Operating temperature	T <sub>opr</sub>	0-70	°C
Storage temperature Range	T <sub>stg</sub>	-65-+150°C	°C

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Reference Input Voltage	V	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA	2.450	2.5	2.550	V
Deviation of reference input Voltage Over temperature (note)	$\Delta V_{ref} / \Delta T$	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	$\Delta V_{ref} / \Delta V_{KA}$	I <sub>KA</sub> =10mA $\Delta V_{KA}$ =10V~V <sub>REF</sub> $\Delta V_{KA}$ =36V~ 10V		-1.0	-2.7	m V/V
				-0.5	-2.0	m V/V
Reference Input Current	I <sub>ref</sub>	I <sub>KA</sub> = 10mA,R=10KΩ R <sub>2</sub> =∞		1.5	4	μA
Deviation Of Reference Input Current Over Full Temperature Range	$\Delta I_{ref} / \Delta T$	I <sub>KA</sub> =10mA, R=10KΩ R =∞ T <sub>amb</sub> =full Temperature		0.4	1.2	μA
Minimum cathode current for regulation	I <sub>KA(min)</sub>	V <sub>KA</sub> =V <sub>REF</sub>		0.45	1.0	mA
Off-state cathode Current	I <sub>KA(OFF)</sub>	V <sub>KA</sub> =36V,V <sub>REF</sub> =0		0.05	1.0	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 OF V<sub>ref</sub>

Rank	0.5%
Range	2.487-2.512



### Typical Characteristics

TL431

