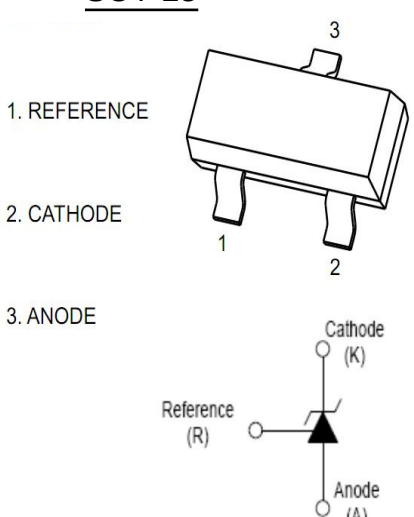


Adjustable Accurate Reference Source	SOT-23 Encapsulate Adjustable Reference Source
<u>SOT-23</u>  1. REFERENCE 2. CATHODE 3. ANODE Marking :431	Features #.The output voltage can be adjusted to 36V #.Low dynamic output impedance, its typical value is 0.2Ω #.Trapping current capability is 1 to 100mA #.Low 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

DEVICE DESCRIPTION:

The TL431 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.

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

Parameter	Symbol	Value	Unit
Cathode Voltage	VKA	37	V
Cathode Current Range (Continuous)	IKA	-100~+150	mA
Reference Input Current Range	Iref	0.05~+150	mA
Power Dissipation	PD	300	mW
Thermal Resistance from Junction to Ambient	RθJA	417	°C/W
Operating Junction Temperature	Tj	150	°C
Operating Ambient Temperature Range	Topr	-25~+85	°C
Storage temperature Range	Tstg	-65~+150	°C

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)							
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Reference input voltage (Fig.1)	Vref	VKA=VREF, IKA=10mA		2.475	2.5	2.525	V
Deviation of reference input voltage over temperature (note) (Fig.1)	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 (Fig.2)	ΔVref / ΔVKA	IKA=10mA	Δ VKA=10V~VRE		-1.0	-2.7	mV/V
			Δ VKA=36V~10V		-0.5	-2.0	mV/V
Reference input current (Fig.2)	Iref	IKA=10mA, R1=10kΩ R2=∞			1.5	4	μA
Deviation Of reference input current over full temperature range (Fig.2)	ΔIref / ΔT	IKA=10mA, R1=10kΩ R2=∞ TA=-25 to 85℃			0.4	1.2	μA
Minimum cathode current for regulation (Fig.1)	IKA(min)	VKA=VREF, IKA=10mA			0.45	1.0	mA
Off-state cathode Current (Fig.3)	IKA(OFF)	VKA=36V,VREF=0			0.05	1.0	μA
Dynamic impedance	ZKA	VKA=VREF, IKA=1 to100mA f≤1.0kHz			0.15	0.5	Ω
Note: TMIN=-25℃ ,TMAX=+85℃							
CLASSIFICATION of Vref							
Rank	0.50%			1%			
Range	2.487-2.513			2.475-2.525			
Figure 1. Test Circuit for VKA = Vref							
Figure 2. Test Circuit for VKA >Vref							
Figure 3. Test Circuit for Ioff							
$V_{KA} = V_{ref} \left(1 + \frac{R1}{R2} \right) + I_{ref} \cdot R1$							