



SOT-23 Encapsulate Adjustable Reference Source

TL431X

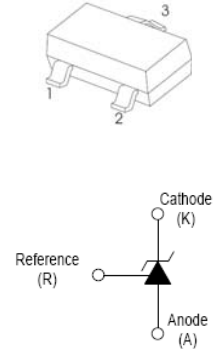
TL431X Adjustable Accurate Reference Source

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. CATHODE
2. REFERENCE
3. ANODE



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

Parameter	Symbol	Value	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
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	°C/W
Operating Temperature	T_{opr}	-25~+85	°C
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	-65~+150	°C

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Reference input voltage	V_{ref}	$V_{KA}=V_{REF}, I_{KA}=10\text{mA}$	2.445	2.5	2.545	V
Deviation of reference input voltage over temperature (note)	$\Delta V_{ref}/\Delta T$	$V_{KA}=V_{REF}, I_{KA}=10\text{mA}$ $T_{MIN}\leq T_a\leq T_{MAX}$		4.5	17	mV
Ratio of change in reference input voltage to the change in cathode voltage	$\Delta V_{ref}/\Delta V_{KA}$	$I_{KA}=10\text{mA}$	$\Delta V_{KA}=10\text{V}\sim V_{REF}$	-1.0	-2.7	mV/V
			$\Delta V_{KA}=36\text{V}\sim 10\text{V}$	-0.5	-2.0	mV/V
Reference input current	I_{ref}	$I_{KA}=10\text{mA}, R_1=10\text{k}\Omega$ $R_2=\infty$		1.5	4	μA
Deviation of reference input current over full temperature range	$\Delta I_{ref}/\Delta T$	$I_{KA}=10\text{mA}, R_1=10\text{k}\Omega$ $R_2=\infty$ $T_A=-25\text{ to }85^\circ\text{C}$		0.4	1.2	μA
Minimum cathode current for regulation	$I_{KA(\text{min})}$	$V_{KA}=V_{REF}$		0.45	1.0	mA
Off-state cathode current	$I_{KA(\text{OFF})}$	$V_{KA}=36\text{V}, V_{REF}=0$		0.05	0.5	μA
Dynamic impedance	Z_{KA}	$V_{KA}=V_{REF}, I_{KA}=1\text{ to }100\text{mA}$ $f\leq 1.0\text{kHz}$		0.15	0.5	Ω

Note: $T_{MIN}=-25^\circ\text{C}$, $T_{MAX}=+85^\circ\text{C}$

CLASSIFICATION of V_{ref}

Rank	0.5%	1%
Range	2.483-2.507	2.445-2.545