

SOT-23 Encapsulate Adjustable Reference Source

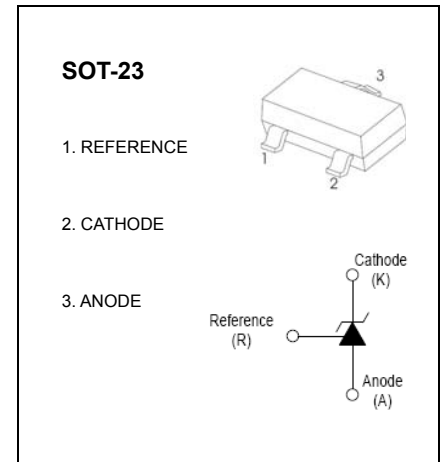
CJ431 Adjustable Accurate Reference Source

DEVICE DESCRIPTION

The CJ431 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 $50 \text{ ppm}/^\circ\text{C}$



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	$^\circ\text{C}/\text{W}$
Operating Junction Temperature	T_j	150	$^\circ\text{C}$
Operating Ambient Temperature Range	T_{opr}	0~+70	$^\circ\text{C}$
Storage temperature Range	T_{stg}	-65~+150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage (Fig.1)	V_{ref}	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$	2.450	2.5	2.550	V
Deviation of reference input voltage over temperature (note) (Fig.1)	$\Delta V_{\text{ref}}/\Delta T$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$ $T_{\text{min}}\leq T_a\leq T_{\text{max}}$		4.5	17	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig.2)	$\Delta V_{\text{ref}}/\Delta V_{\text{KA}}$	$I_{\text{KA}}=10\text{mA}$	$\Delta V_{\text{KA}}=10\text{V}\sim V_{\text{REF}}$	-1.0	-2.7	mV/V
			$\Delta V_{\text{KA}}=36\text{V}\sim 10\text{V}$	-0.5	-2.0	mV/V
Reference input current (Fig.2)	I_{ref}	$I_{\text{KA}}=10\text{mA}, R_1=10\text{k}\Omega$ $R_2=\infty$		1.5	4	μA
Deviation Of reference input current over full temperature range (Fig.2)	$\Delta I_{\text{ref}}/\Delta T$	$I_{\text{KA}}=10\text{mA}, R_1=10\text{k}\Omega$ $R_2=\infty$ $T_a=\text{full Temperature}$		0.4	1.2	μA
Minimum cathode current for regulation (Fig.1)	$I_{\text{KA}(\text{min})}$	$V_{\text{KA}}=V_{\text{REF}}$		0.45	1.0	mA
Off-state cathode Current (Fig.3)	$I_{\text{KA}(\text{OFF})}$	$V_{\text{KA}}=36\text{V}, V_{\text{REF}}=0$		0.05	1.0	μA
Dynamic impedance	Z_{KA}	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=1$ to 100mA $f\leq 1.0\text{kHz}$		0.15	0.5	Ω

note: $T_{\text{MIN}}=0^\circ\text{C}, T_{\text{MAX}}=+70^\circ\text{C}$ CLASSIFICATION cZV_{ref}

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