

SOT-23 Encapsulate Adjustable Reference Source

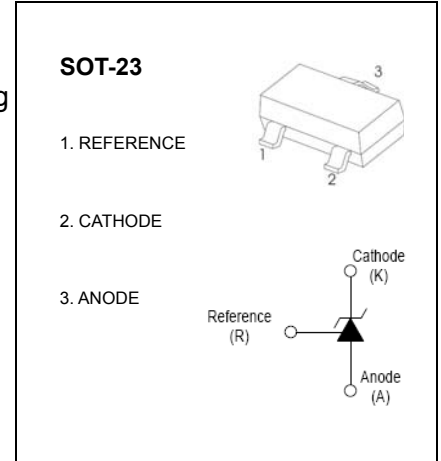
CJ431K Adjustable Accurate Reference Source

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}	-25~+125	°C
Storage Temperature Range	T_{stg}	-65~+150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference Input Voltage (Fig.1)	V _{ref}	V _{KA} =V _{REF} , I _{KA} =10mA	2.470		2.520	V
Deviation of Reference Input Voltage Over Temperature (note) (Fig.1)	ΔV _{ref} /ΔT	V _{KA} =V _{REF} , I _{KA} =10mA T _{min} ≤T _a ≤T _{max}		4.5	17	mV
Ratio Of Change in Reference Input Voltage to the Change in Cathode Voltage (Fig.2)	ΔV _{ref} /ΔV _{KA}	I _{KA} =10mA				
		ΔV _{KA} =10V~V _{REF}		-1.0	-2.7	mV/V
		ΔV _{KA} =36V~10V		-0.5	-2.0	mV/V
Reference Input Current (Fig.2)	I _{ref}	I _{KA} =10mA, R ₁ =10 kΩ R ₂ =∞		1.5	4	μA
Deviation Of Reference Input Current Over Full Temperature Range (Fig.2)	ΔI _{ref} /ΔT	I _{KA} =10mA, R ₁ =10 kΩ R ₂ =∞ T _A =-25 to 125°C		0.4	1.2	μA
Minimum Cathode Current for Regulation (Fig.1)	I _{KA(min)}	V _{KA} =V _{REF}		0.45	1.0	mA
Off-state Cathode Current (Fig.3)	I _{KA(OFF)}	V _{KA} =40V, V _{REF} =0		0.05	0.5	μA
Dynamic Impedance	Z _{KA}	V _{KA} =V _{REF} , I _{KA} =1 to 100mA f≤1.0kHz		0.15	0.5	Ω

Note: T_{MIN}=-25°C , T_{MAX}=+125°C

CLASSIFICATION of V_{ref}

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

Figure 1. Test Circuit for V_{KA} = V_{ref}

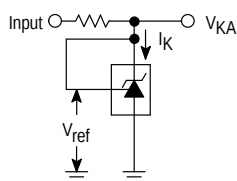


Figure 2. Test Circuit for V_{KA} > V_{ref}

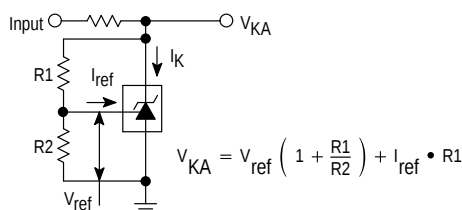
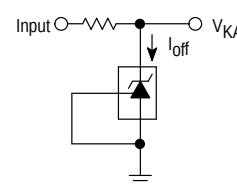
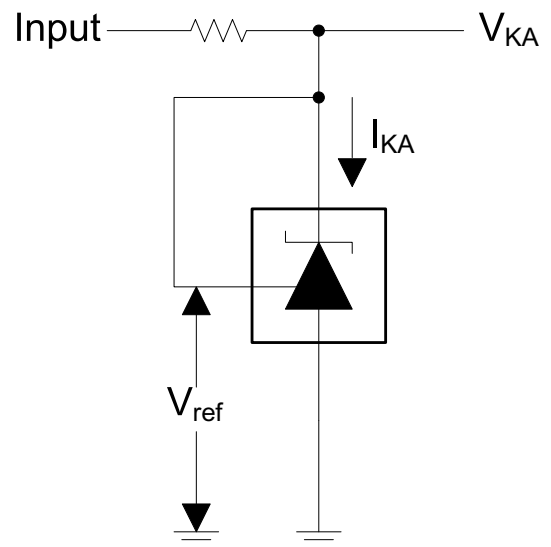
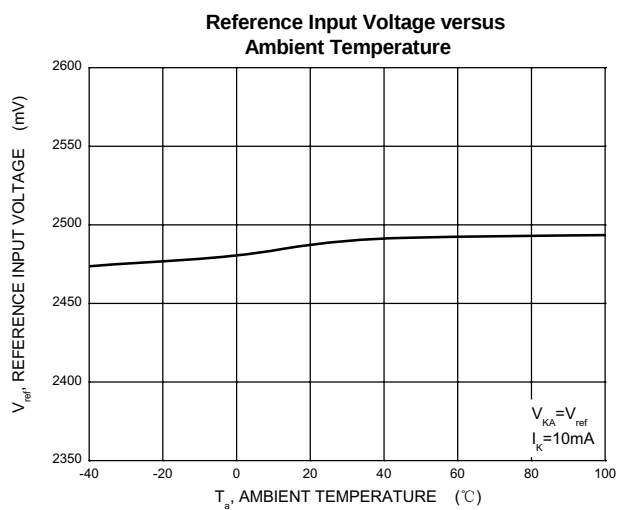
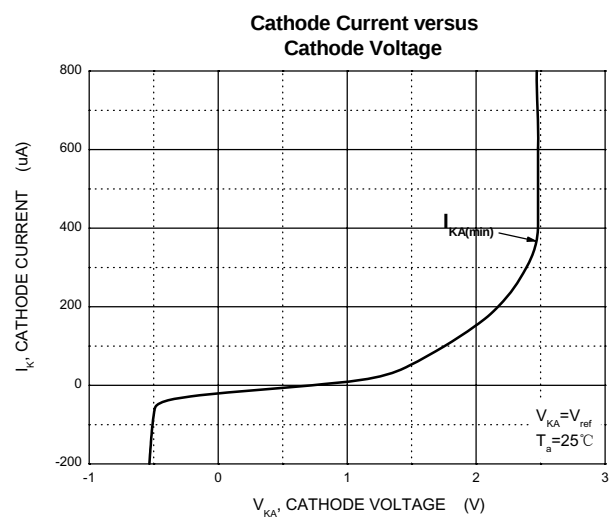
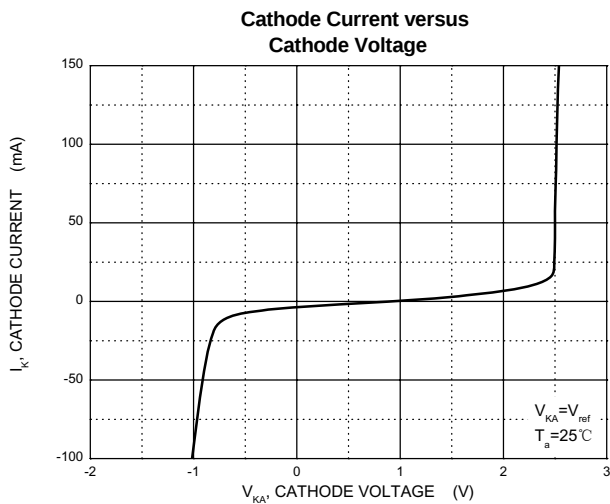


Figure 3. Test Circuit for I_{off}

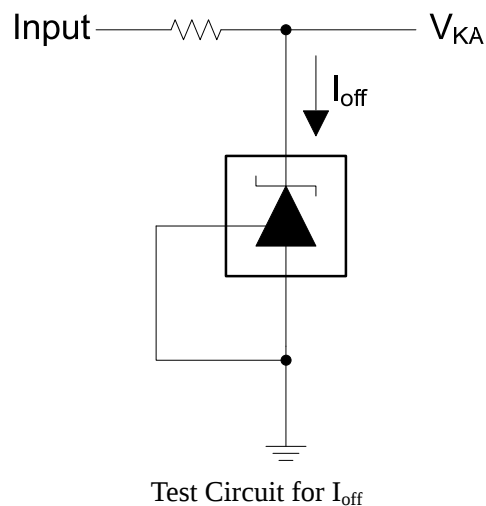
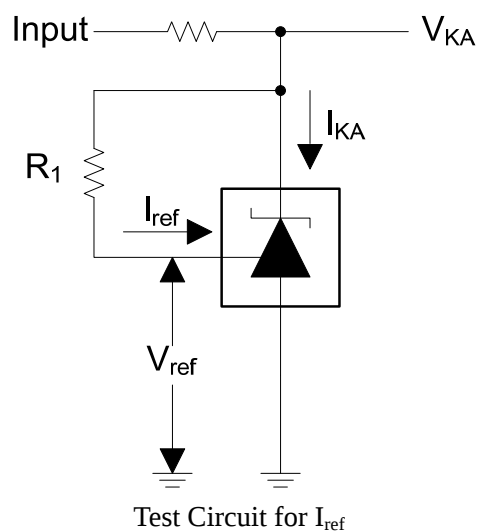
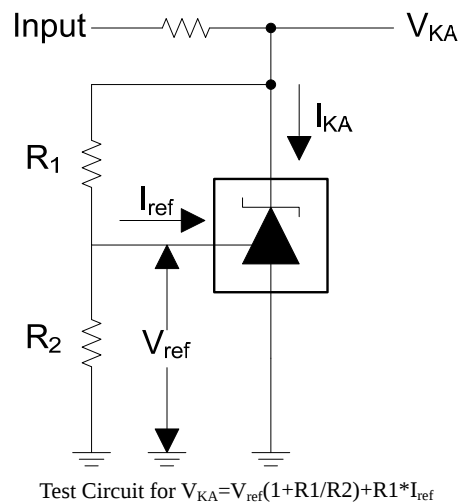
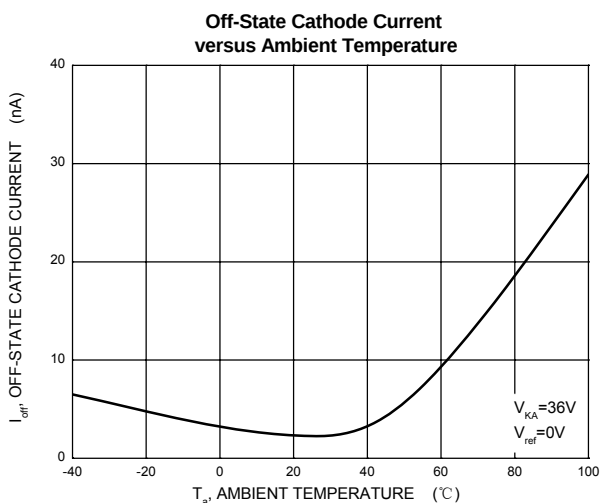
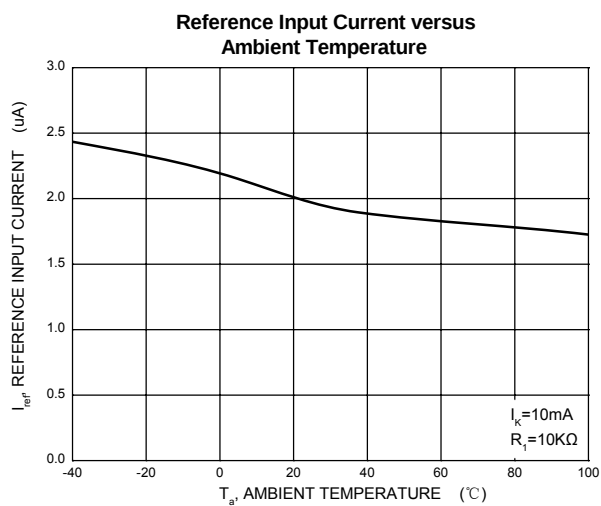
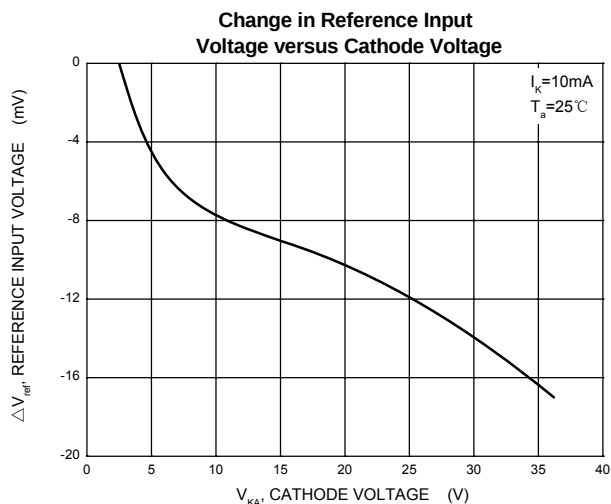


Typical Characteristics

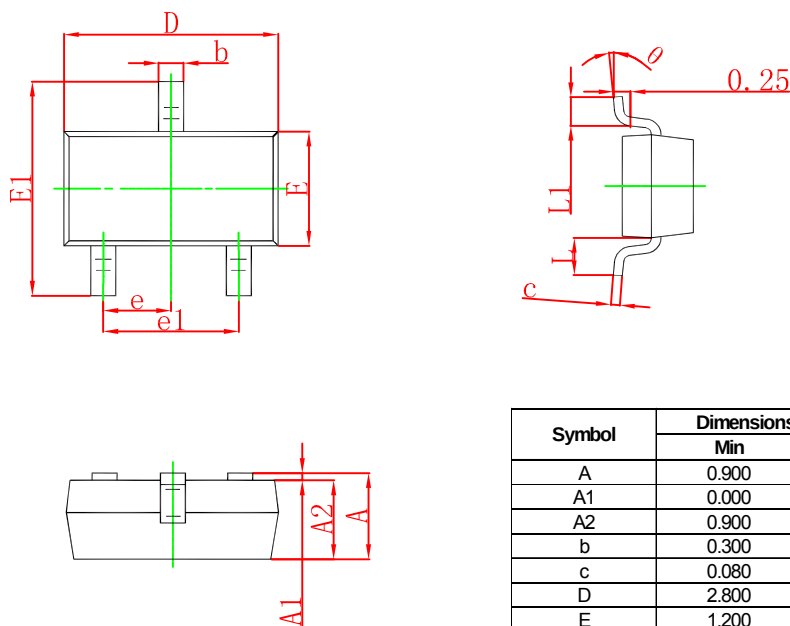


Test Circuit for $V_{KA} = V_{ref}$

Typical Characteristics

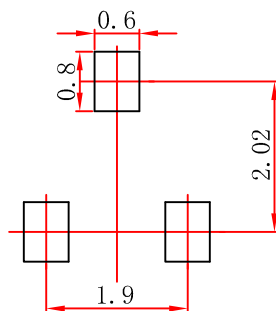


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout

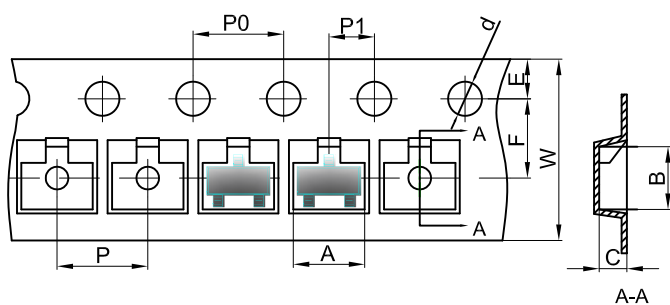


Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.

NOTICE

JCET reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JCET does not assume any liability arising out of the application or use of any product described herein.

SOT-23 Embossed Carrier Tape

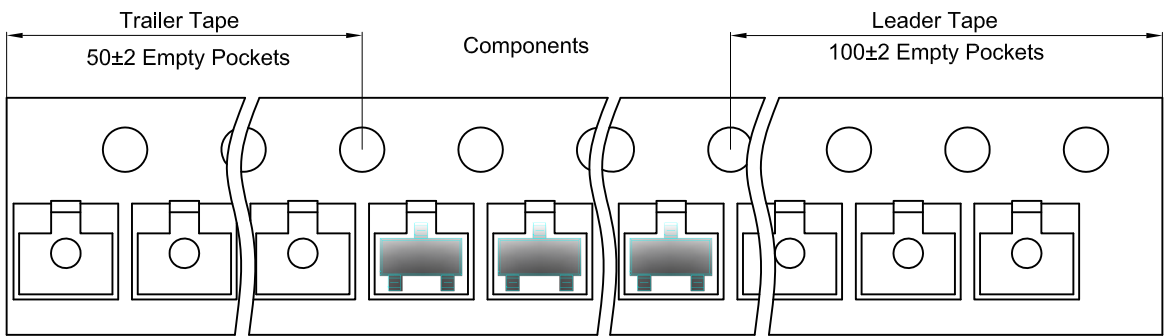


Packaging Description:

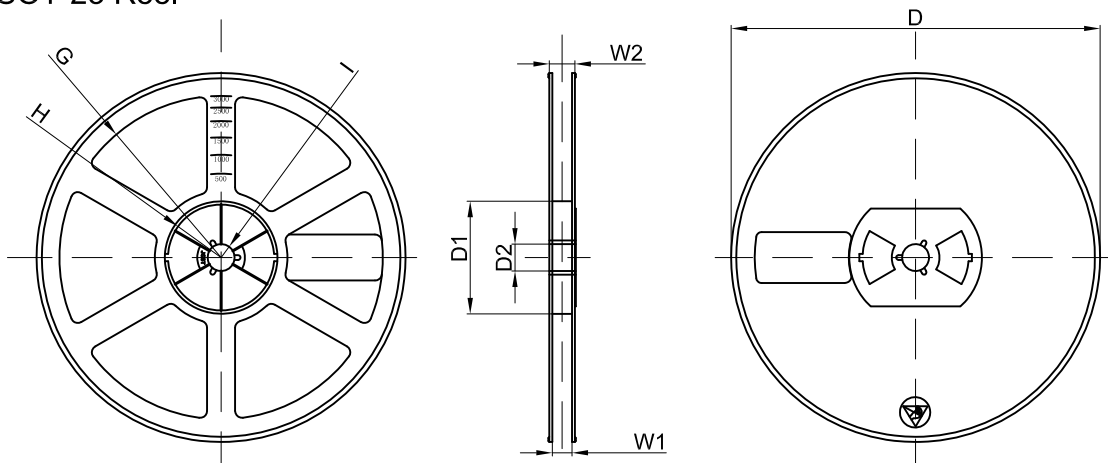
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	