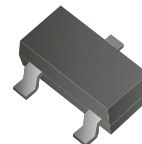


## CJ431K-HF

RoHS Device  
Halogen Free



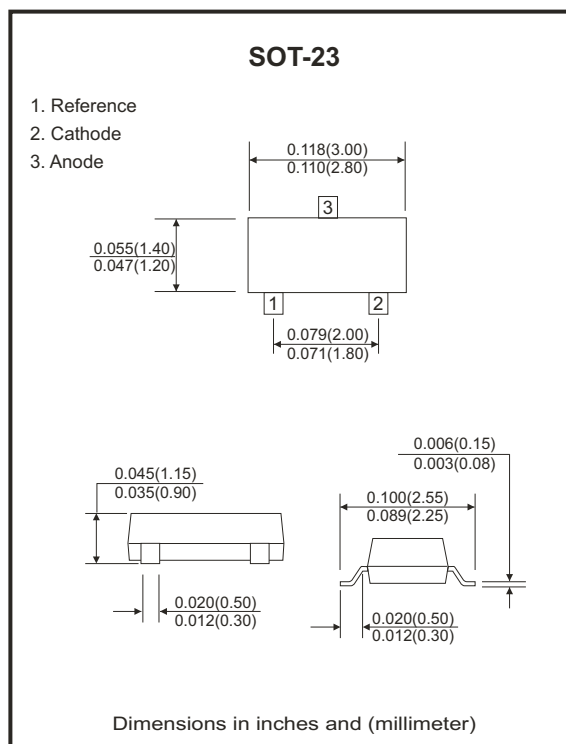
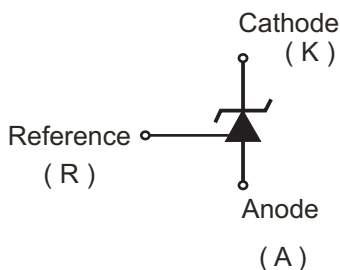
### Features

- 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

### Mechanical data

- Case: SOT-23, molded plastic.
- Terminals: solderable per MIL-STD-750, method 2026.

### Circuit Diagram



### Absolute Maximum Ratings

(operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Cathode voltage	V <sub>KA</sub>	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
Thermal resistance from junction to ambient	R <sub>θJA</sub>	417	°C/W
Operating junction temperature	T <sub>J</sub>	150	°C
Operating ambient temperature range	T <sub>opr</sub>	-40~+85	°C
Storage temperature range	T <sub>stg</sub>	-65~+150	°C

## Electrical Characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	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)	$\Delta V_{ref} / \Delta T$	$V_{KA} = V_{REF}, I_{KA} = 10mA$ $T_{min} \leq T_a \leq T_{max}$		4.5	17	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig.2)	$\Delta V_{ref} / \Delta V_{KA}$	$I_{KA} = 10mA$	$\Delta V_{KA} = 10V \sim V_{REF}$	-1.0	-2.7	mV/V
			$\Delta V_{KA} = 36V \sim 10V$	-0.5	-2.0	mV/V
Reference input current (Fig.2)	$I_{ref}$	$I_{KA} = 10mA, R_1 = 10 k\Omega$ $R_2 = \infty$		1.5	4	$\mu A$
Deviation of reference input current over full temperature range (Fig.2)	$\Delta I_{ref} / \Delta T$	$I_{KA} = 10mA, R_1 = 10 k\Omega$ $R_2 = \infty$ $T_a = \text{full Temperature}$		0.4	1.2	$\mu A$
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	$\mu A$
Dynamic impedance	$Z_{KA}$	$V_{KA} = V_{REF}, I_{KA} = 1 \text{ to } 100mA$ $f \leq 1.0kHz$		0.15	0.5	$\Omega$

Note: TMIN= 0°C, TMAX= +70°C

## Classification of Vref

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

Fig.1 - Test Circuit for  $V_{KA} = V_{ref}$

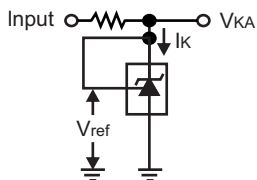
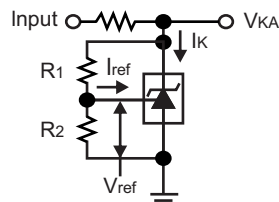
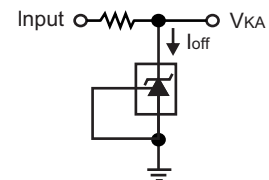


Fig.2 - Test Circuit for  $V_{KA} > V_{ref}$

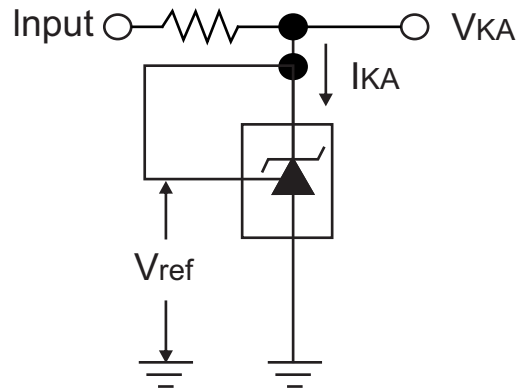
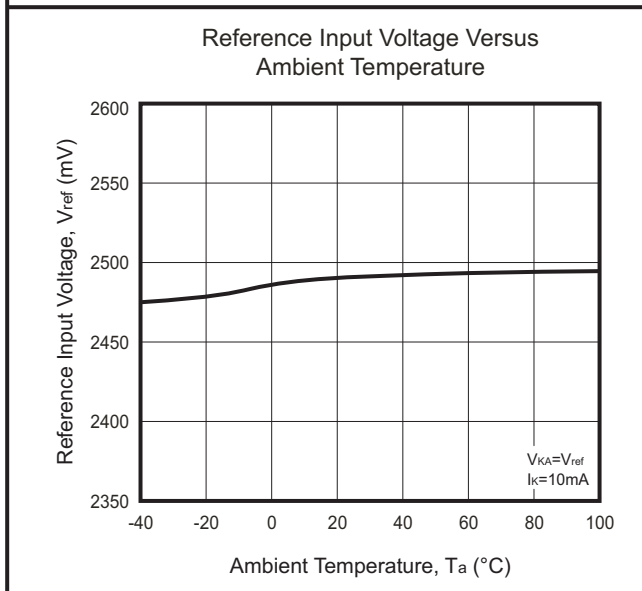
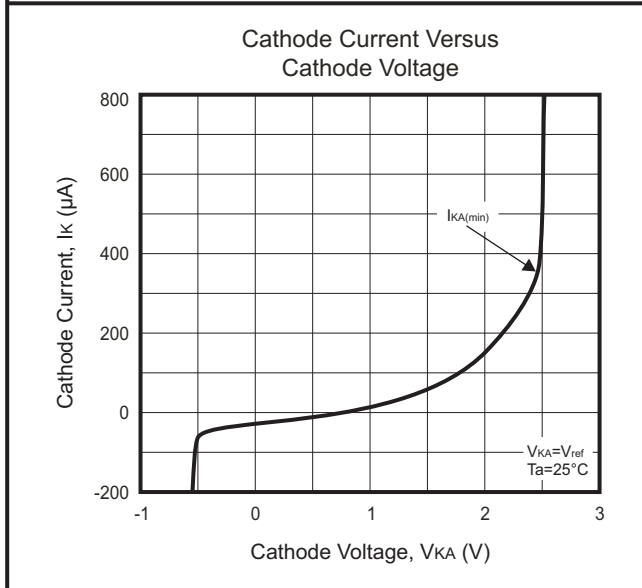
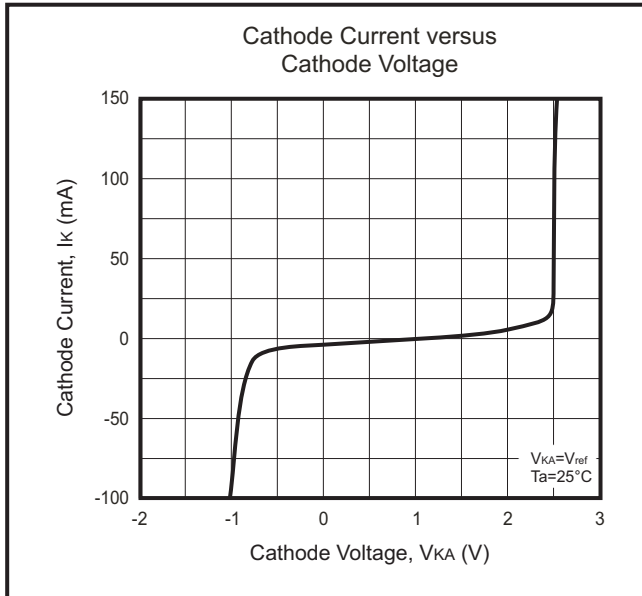


$$V_{KA} = V_{ref} (1 + R_1/R_2) + I_{ref} \cdot R_1$$

Fig.3 - Test Circuit for  $I_{off}$



## RATING AND CHARACTERISTIC CURVES (CJ431K-HF)

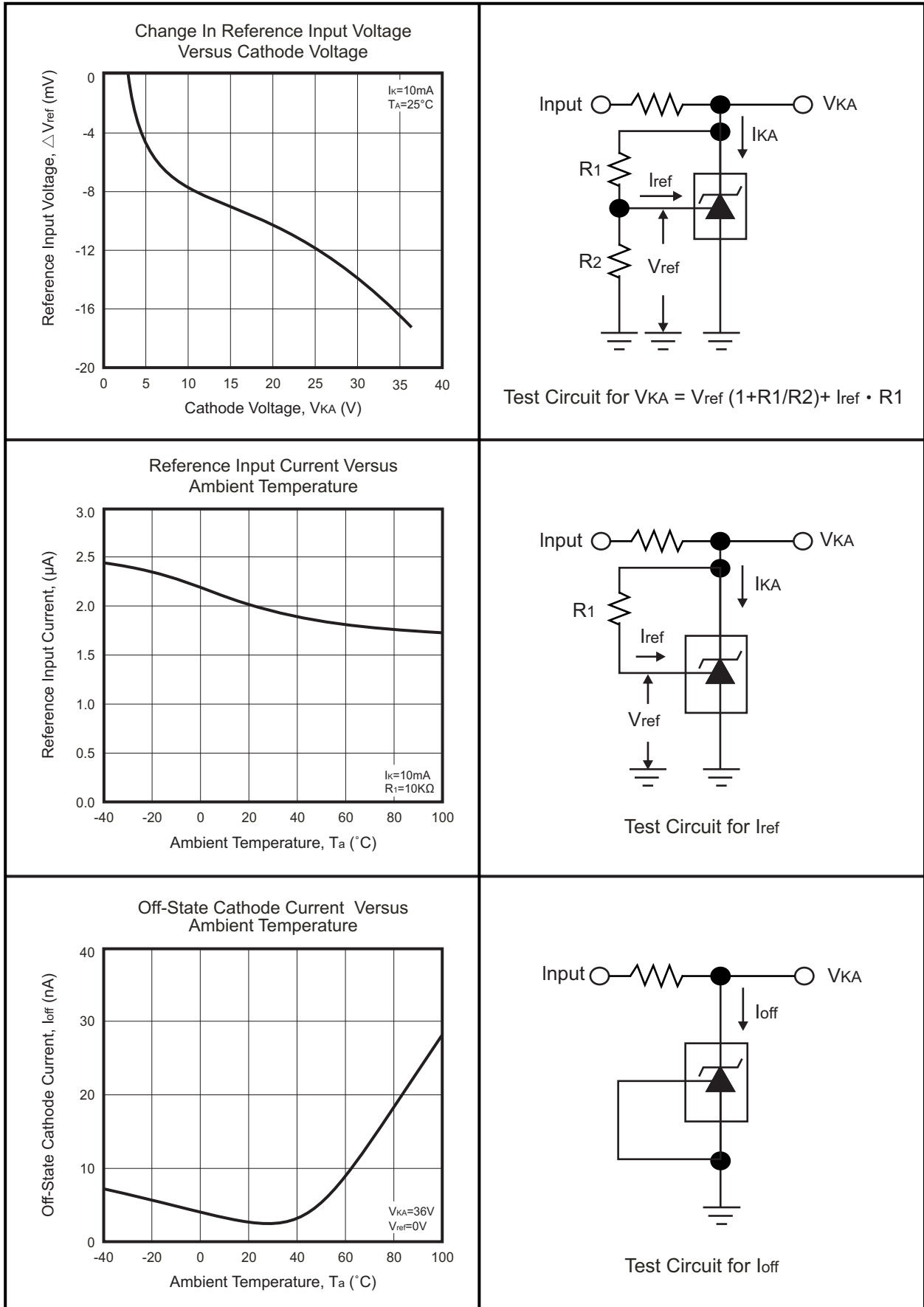


Test Circuit for  $V_{KA} = V_{ref}$

Company reserves the right to improve product design, functions and reliability without notice.

REV: A

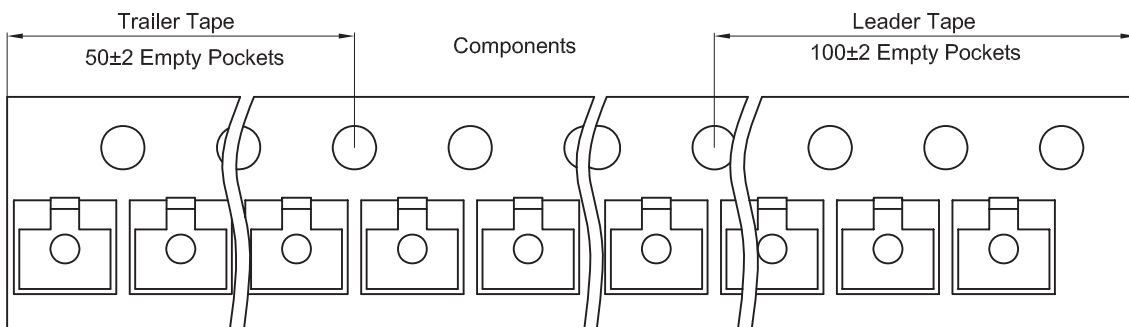
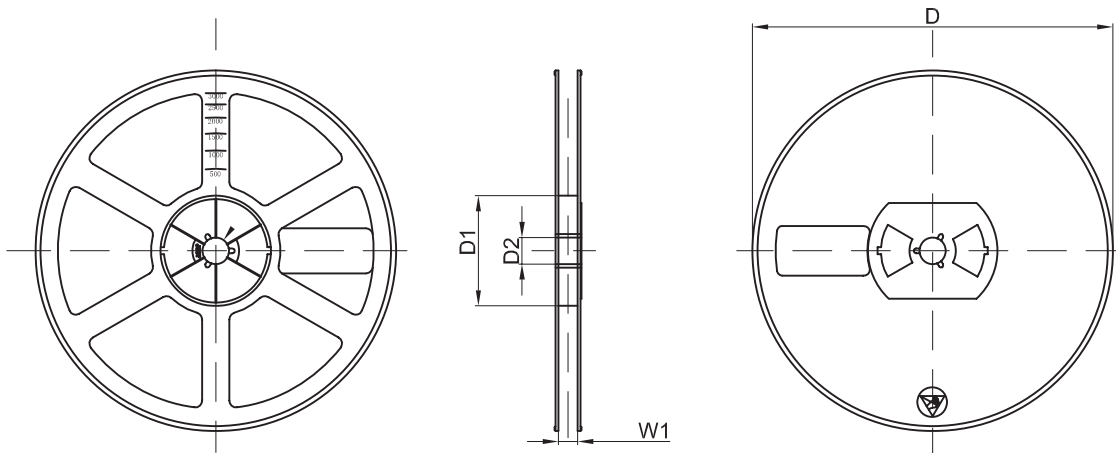
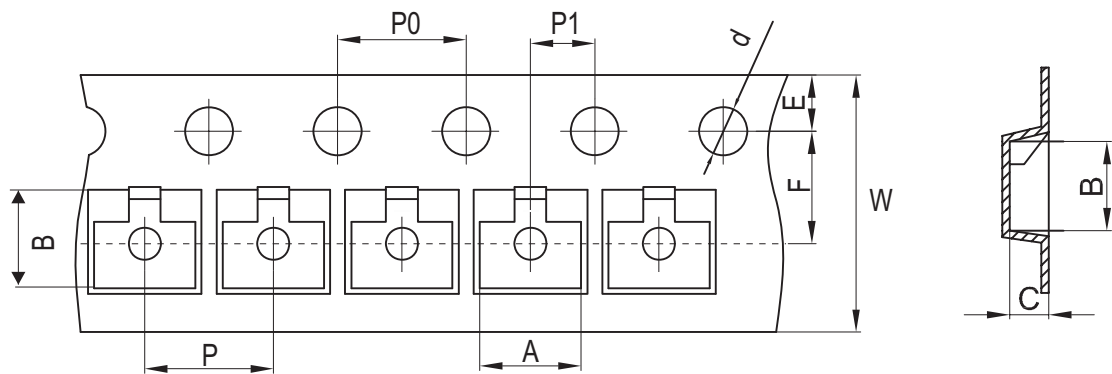
## RATING AND CHARACTERISTIC CURVES (CJ431K-HF)



Company reserves the right to improve product design, functions and reliability without notice.

REV: A

Reel Taping Specification



SOT-23	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	3.15 ± 0.10	2.77 ± 0.10	1.22 ± 0.10	1.50 ± 0.10	178 ± 2.0	54.40 ± 1.0	13.00 ± 1.0
	(inch)	0.124 ± 0.004	0.109 ± 0.004	0.048 ± 0.004	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-23	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 / - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.158 ± 0.004	0.158 ± 0.004	0.079 ± 0.004	0.315 + 0.012 / - 0.004	0.374 ± 0.039

Company reserves the right to improve product design , functions and reliability without notice.

REV: A

## Marking Code

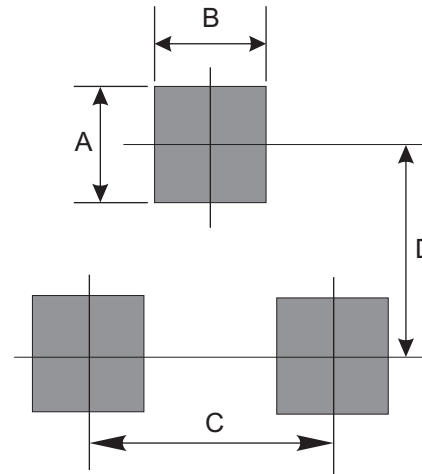
Part Number	Marking Code
CJ431K-HF	431K



Solid dot “.” = Halogen Free

## Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	0.60	0.024
C	1.90	0.075
D	2.02	0.080



Note:

- 1.General tolerance:  $\pm 0.05\text{mm}$ .
- 2.The pad layout is for reference purposes only.

## Standard Packaging

Case Type	REEL PACK	
	REEL ( pcs )	Reel Size (inch)
SOT-23	3,000	7