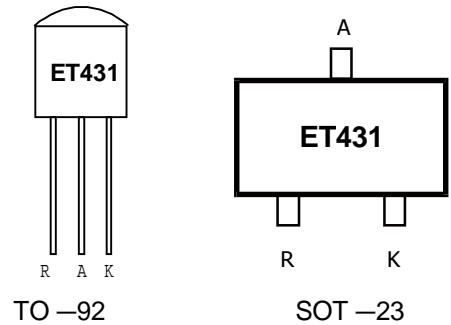


## Description

The ET431 is a three-terminal adjustable regulator series with a guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between  $V_{ref}$  (approximately 2.5 volts) and 36 volts with two external resistors. The devices have a typical dynamic output impedance of  $0.2 \Omega$ . Active output circuitry provides a very sharp turn-on characteristic, making these devices excellent replacement for zener diodes in many applications. The ET431 is characterized for operation from  $-0^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

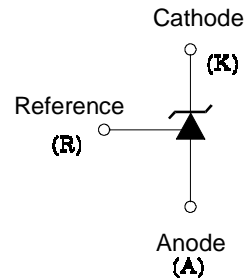
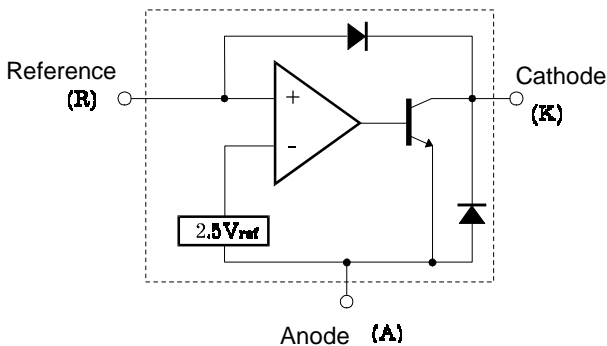
## Features

- Programmable Output Voltage to 36V
- Low Dynamic Output Impedance  $0.2 \Omega$
- Sink Current Capability of 0.1 mA to 100 mA
- Equivalent Full-Range Temperature Coefficient of  $50 \text{ ppm}/^{\circ}\text{C}$
- Temperature Compensated for Operation over Full Rated
- Operating Temperature Range
- Low Output Noise
- Fast Turn on



## Package

## FUNCTIONAL BLOCK DIAGRAM SYMBOL



## Absolute Maximum Ratings

(Operating temperature range applies unless otherwise specified)

Characteristic	Symbol	Value	Unit
Cathode Voltage	$V_{KA}$	36	V
Cathode Current Range (Continuous)	$I_K$	-100 ~ 150	mA
Reference Input Current Range	$I_{REF}$	0.05 ~ 10	mA
Power Dissipation at 25°C: TO –92 Package	$P_D$	0.7	W
SOT –23 –3 Package		0.2	W
Junction Temperature Range	$T_J$	0 ~ 150	°C
Operating Temperature Range	$T_g$	0 ~ 70	°C
Storage Temperature Range	$T_{stg}$	-65 ~ +150	°C

## Electrical Characteristics

( $T_a = 25^\circ\text{C}$ ,  $V_{KA} = V_{REF}$ ,  $I_K = 10\text{mA}$ )

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Reference Input Voltage	$V_{REF}$	0.5% 1.0%	2.483 2.470	2.495	2.507 2.520	V
Deviation of Reference Input Voltage Over Full Temperature Range	$V_{REF(dev)}$	$T_{min} \leq T_a \leq T_{max}$		3	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$\frac{V_{REF}}{V_{KA}}$	$V_{KA} = 10\text{V} - V_{REF}$ $V_{KA} = 36\text{V} - 10\text{V}$		-1.4 -1.0	-2.7 -2.0	mV/V
Reference Input Current	$I_{REF}$	$R_1 = 10\text{K}$ , $R_2 = \infty$		1.8	4	A
Deviation of Reference Input Current Over Full Temperature Range	$I_{REF(dev)}$	$R_1 = 10\text{K}$ , $R_2 = \infty$		0.4	1.2	A
Minimum Cathode Current for Regulation	$I_{K(min)}$			0.25	0.5	mA
Off-State Cathode Current	$I_{K(off)}$	$V_{KA} = 36\text{V}$ , $V_{REF} = 0$		0.26	1.0	A
Dynamic Impedance	$Z_{KA}$	$I_K = 1$ mA to 100 mA, $f$ , 1.0KHz		0.22	0.5	ohm

## TEST CIRCUITS

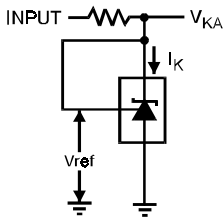


FIGURE 1. TEST CIRCUIT FOR  $V_{KA} = V_{ref}$

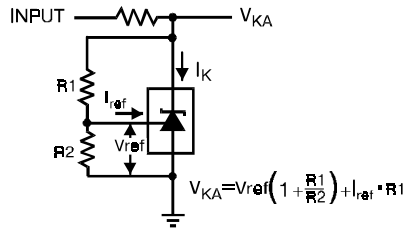


FIGURE 2. TEST CIRCUIT FOR  $V_{KA} > V_{ref}$

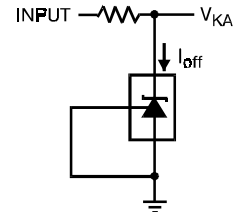


FIGURE 3. TEST CIRCUIT FOR  $I_{off}$

## Ordering Information

ORDERING NUMBER	PACKAGE	MARKING
431	TO-92 / SOT-23	ET431 / 431

Address : 北京市海淀区永定路 88 号长银大厦 6A06--6A07

Rm 6A07, Changyin Office Building, No.88, Yong Ding Road, Hai Dian District, Beijing

Postalcode: 100039

Tel: 86-010-58895780 / 81 / 82 / 83 / 84 Fax : 010-58895793

Http://www.estek.com.cn

Email:sales@estek.com.cn

REV No:01-060807