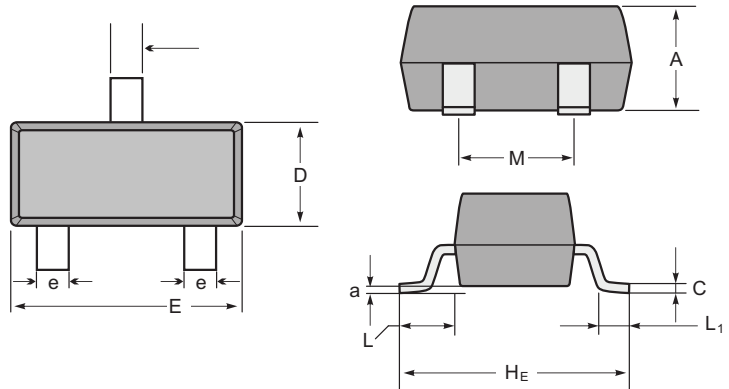
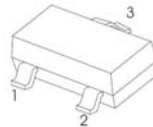


### FEATURES

- Programmable output voltage to 36V
- Low dynamic output impedance 0.2ohm
- Sink current capability of 1.0 to 100mA
- Typical for operation over full rated operating temperature range

### SOT-23

- 1.REFERENCE
- 2.CATHODE
3. ANODE



SOT-23 mechanical data

UNIT		A	C	D	E	He	e	M	L	L <sub>1</sub>	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

### Marking

Type number	Marking code
TL431	431

## Absolute Maximum Ratings (T<sub>amb</sub>=25°C)

Parameter	Symbol	Rating	Unit
Cathode Voltage	V <sub>ka</sub>	37	V
Cathode Current Range	I <sub>kao</sub>	-100 +150	mA
Reference Input Current Rang	I <sub>ref</sub>	-0.05 +10	mA
Operating Junction Temperature	T <sub>j</sub>	150	°C
Operating Ambient Temperature	T <sub>opr</sub>	0 +70	°C
Storage Temperature	T <sub>stg</sub>	-65~150	°C

# TL431

## RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Cathode Voltage	Vka	Vref		36	V
Cathode Current	Ika	1		100	mA

## Electrical Characteristic(Tamb=25°C)

Parameter	Symbol	Test Condition	Min	Max	Unit
Reference Input Voltage	Vref	Vka=Vref,Ika=10mA	2.44	2.495	2.55 V
Deviation of reference input Voltage Over temperature	$\Delta V_{ref}/\Delta T$	Vka=Vref,Ika=10mA; 0°C ≤ Ta ≤ 70°C		4.5	17 mV
Ratio of change in reference input voltage to the change in cathode voltage	$\Delta V_{ref}/\Delta V_{ka}$	Ika=10mA, ΔVka=10V~Vref		-1	-2.7 mV/V
Ratio of change in reference input voltage to the change in cathode voltage	$\Delta V_{ref}/\Delta V_{ka}$	Ika=10mA, ΔVka=36V~10V		-0.5	-2 mV/V
Reference Input Current	Iref	Ika=10V,R1=10Kohm,R2=∞		1.5	4 uA
Deviation of reference input Current Over Full Temperature Range	$\Delta I_{ref}/\Delta T$	Ika=10V,R1=10Kohm,R2=∞, Ta=full tempertaure		0.4	1.2 uA
Minimum Cathode Current for Regulation	Ika(min)	Vka=Vref		0.45	1 mA
Off-State Cathode Current	Ika(off)	Vka=36V,Vref=0		0.05	1.0 uA
Dynamic Impedance	Zka	Vka=Vref,Ika=1 to 100mA,f=1.0kHz		0.15	0.5 ohm

# TL431 LINEAR INTEGRATED CIRCUIT

## Characteristics Curve

