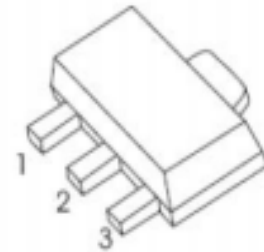


Adjustable Accurate Reference Source

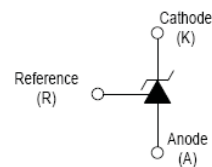
DEVICE DESCRIPTION

The TL431B 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.



- 1.Reference
- 2.Anode
- 3.Cathode

■ Simplified outline(SOT-89)



■ 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)

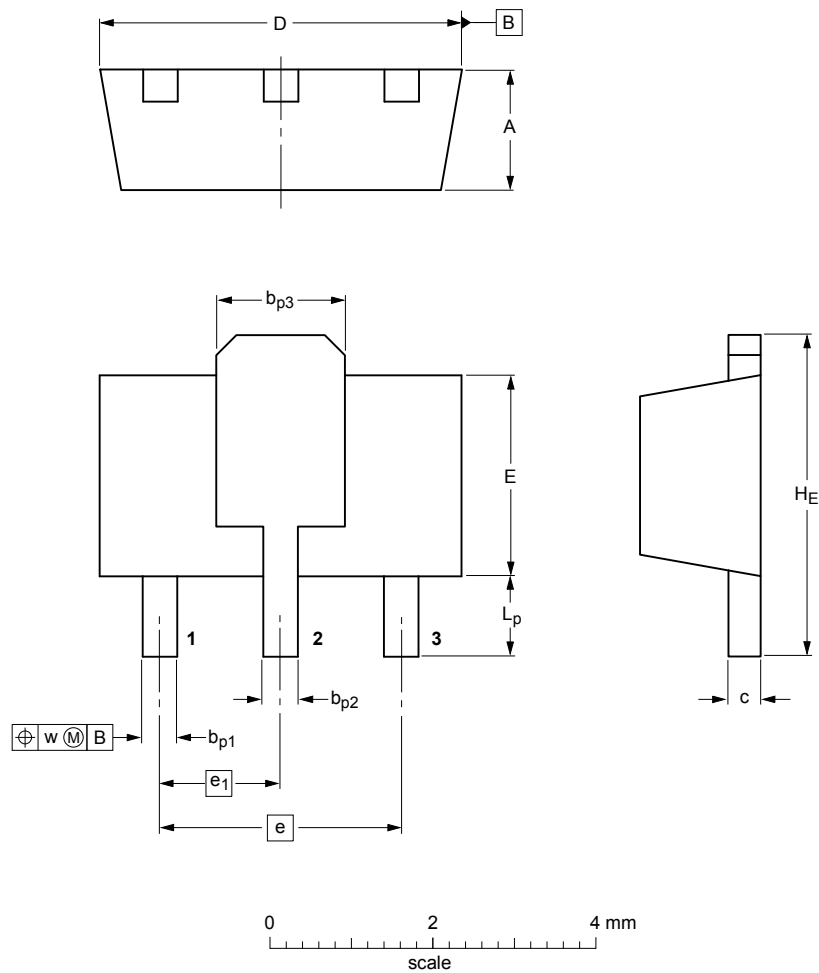
Parameter	Symbol	Value	Unit
Cathode Voltage	V_{KA}	36	V
Cathode Current Range (Continuous)	I_{KA}	-100~+150	mA
Reference Input Current Range	I_{ref}	0.05~+10	mA
Power Dissipation	P_D	500	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	250	$^\circ\text{C}/\text{W}$
Operating Temperature	T_{opr}	-25~+85	$^\circ\text{C}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65~+150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage	V _{ref}	V _{KA} =V _{REF} , I _{KA} =10mA	2.487	2.5	2.513	V
Deviation of reference Input voltage over temperature (note)	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	ΔV _{ref} /ΔV _{KA}	I _{KA} =10mA				
			ΔV _{KA} =10V~V _{REF}		-1.0	-2.7
Reference input current	I _{ref}	I _{KA} = 10mA, R ₁ =10kΩ R ₂ =∞		1.5	4	μA
Deviation of reference input current over full temperature range	ΔI _{ref} /ΔT	I _{KA} =10mA, R ₁ =10kΩ R ₂ =∞ T _A =-25 to 85 °C		0.4	1.2	μA
Minimum cathode current for regulation	I _{KA(min)}	V _{KA} =V _{REF}		0.45	1.0	mA
Off-state cathode current	I _{KA(OFF)}	V _{KA} =36V, V _{REF} =0		0.05	1.0	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}=+85 °C

■ SOT-89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_{p1}	b_{p2}	b_{p3}	c	D	E	e	e_1	H_E	L_p	w
mm	1.6	0.48	0.53	1.8	0.44	4.6	2.6	3.0	1.5	4.25	1.2	0.13
	1.4	0.35	0.40	1.4	0.23	4.4	2.4					