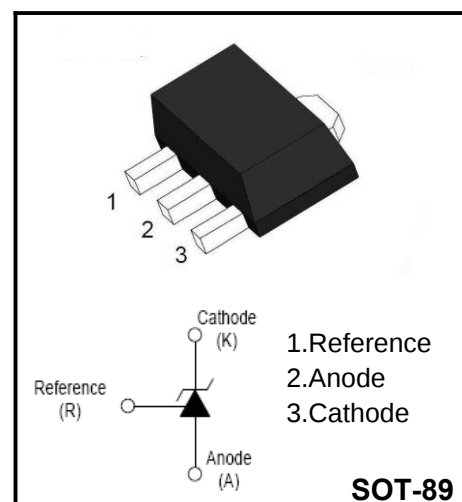


Adjustable Accurate Reference Source

Device Description

The TL431SI 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

applications

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

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	°C/W
Operating Temperature	T_{opr}	-25~+85	°C
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-65~+150	°C

Electrical Characteristics (Ta=25℃, 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	mV/V
			ΔV _{KA} =36V~10V		-0.5	-2.0	mV/V
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℃			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: $T_{MIN}=-25^\circ C$, $T_{MAX}=+85^\circ C$

Ordering information

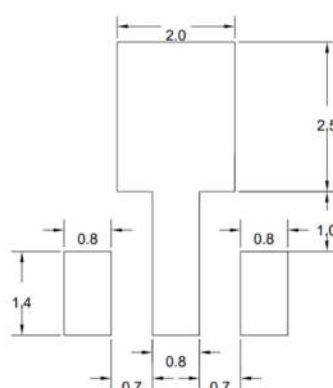
Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

Package Dimensions

SOT-89

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

The recommended mounting pad size



UNIT:MM

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