



DC COMPONENTS CO., LTD.

INTEGRATED CIRCUIT

TL431

TECHNICAL SPECIFICATIONS OF ADJUSTABLE SHUNT REGULATOR

Features

- * Programmable output voltage
- * Temperature coefficient is 50ppm/°C typical
- * Temperature compensated for operation over
- * Full temperature range
- * Low output noise voltage
- * Fast turn on response

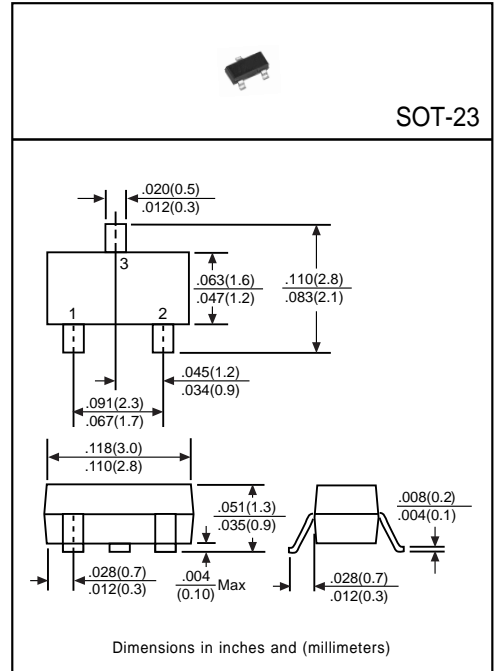
Pinning

- 1 = Reference
- 2 = Cathode
- 3 = Anode

Absolute Maximum Ratings

(Operating temperature range applies, unless otherwise specified)

Characteristic	Symbol	Rating	Unit
Cathode to Anode Voltage	V _{KA}	37	V
Cathode Current Range(Continuous)	I _K	-100 to +150	mA
Reference Input Current Range	I _{ref}	+0.05 to +10	mA
Power Dissipation	P _D	225	mW
Operating Temperature Range	T _{opr}	0 to +70	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C



Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reference Input Voltage	V _{ref}	2.445	2.495	2.545	V	V _{KA} =V _{REF} , I _K =10mA
Reference Input Voltage Deviation Over Temperature Range	ΔV _{ref}	-	4.0	17	mV	V _{KA} =V _{REF} , I _K =10mA T _{min} ≤ T _A ≤ T _{max}
Ratio of Change in Reference Input Voltage to Change in Cathode to Anode Voltage	ΔV _{ref} / ΔV _{KA}	-	-1.4	-2.7	mV/V	I _K =10mA, ΔV _{KA} =10V-V _{REF}
		-	-1.0	-2.0		I _K =10mA, ΔV _{KA} =36V-10V
Reference Input Current	I _{ref}	-	2.0	4.0	μA	I _K =10mA, R ₁ =10kΩ, R ₂ =∞
Reference Input Current Deviation Over Temperature Range	ΔI _{ref}	-	0.4	1.2	μA	I _K =10mA, R ₁ =10kΩ, R ₂ =∞ T _{min} ≤ T _A ≤ T _{max}
Minimum Cathode Current for Regulation	I _{K(min)}	-	0.4	1.0	mA	V _{KA} =V _{REF}
Off-State Cathode Current	I _{K(off)}	-	0.1	1.0	μA	V _{KA} =36V, V _{REF} =0
Dynamic Impedance	Z _{KA}	-	0.2	0.5	Ω	V _{KA} =V _{REF} , f ≤ 1.0KHz I _K =1 to 100mA

Electrical Characteristic Curves

