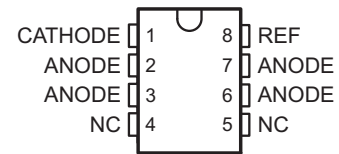


Programmable Precision Reference

LR431XD

DESCRIPTION

The LR431 is a three-terminal adjustable regulator with a guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between V_{ref} (approximately 2.5V) and 36V with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.



SOP-8

FEATURES

Programmable output Voltage to 36V.

Low dynamic output impedance 0.2Ω

Sink current capability of 1 to 100mA.

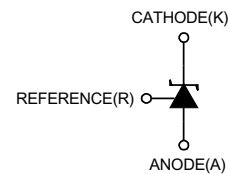
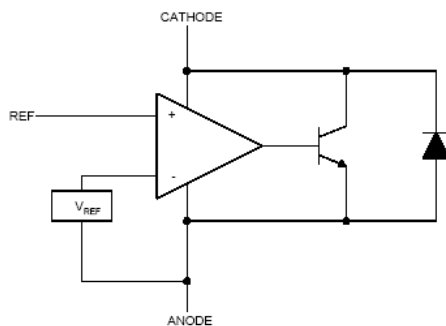
Equivalent full-range temperature coefficient of $50\text{ppm}/^\circ\text{C}$ typical for operation over full rated operating temperature range.

We declare that material of product compliance with ROHS requirements.

ESD: HBM 4000V

MSL: Level 3

BLOCK DIAGRAM



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
Operating Junction Temperature	T _j	150	°C
Operating Ambient Temperature	T _{opr}	-40 ~ +125	°C
Storage Temperature Temperature	T _{stg}	-65 ~ +150	°C
Power Dissipation(SOP8)	P _d	530	mW
Thermal resistance	R _{ja}	236	°C/W

RECOMMENDED OPERATING CONDITIONS

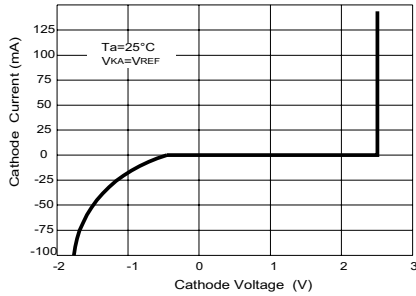
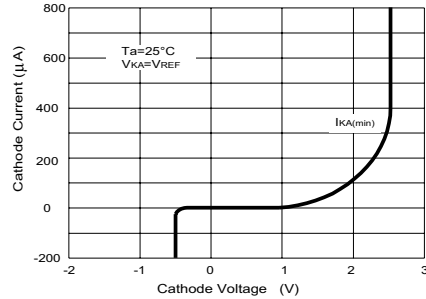
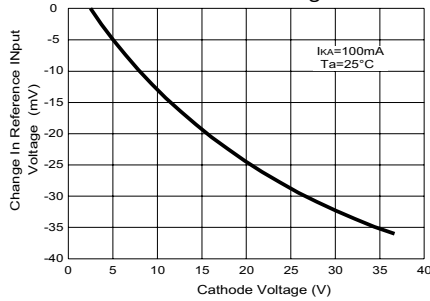
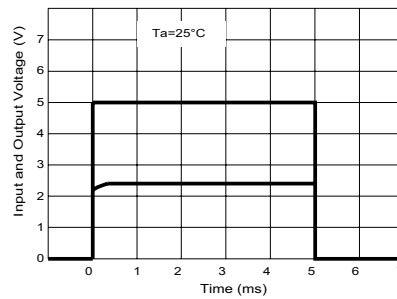
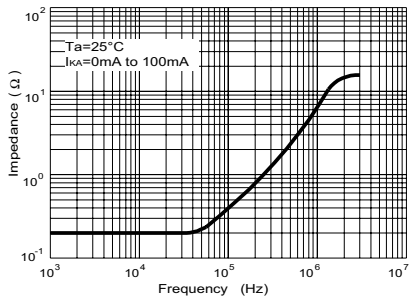
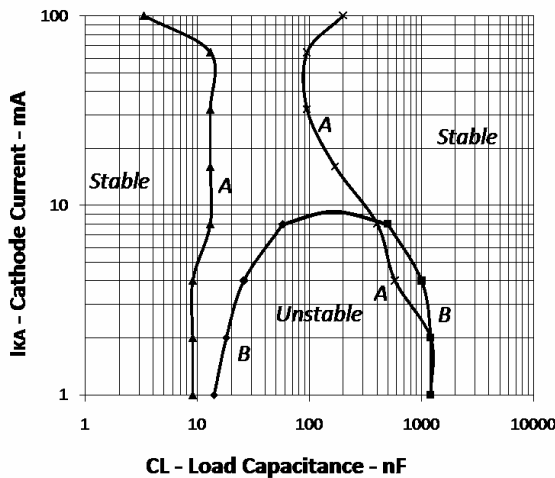
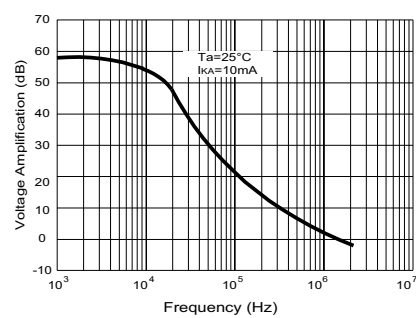
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Cathode Voltage	V _{KA}	V _{REF}		36	V
Cathode Current	I _{KA}	0.5		100	mA

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

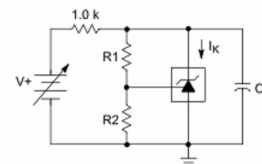
Characteristic	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Reference Input Voltage 1	V _{ref}	V _{KA} =V _{REF} , I _{KA} =10mA	2.488	2.50	2.512	V
			2.475	2.50	2.525	
Deviation of reference Input Voltage Over temperature	ΔV _{ref}	V _{KA} =V _{REF} , I _{KA} =10mA T _{MIN} ≤T _A ≤T _{MAX}		4.5	25	mV
Ratio 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	
Reference Input Current	I _{ref}	I _{KA} =10mA, R1=10kΩ, R2=∞		1	2	μA
Deviation of Reference Input Current Over Full Temperature Range	ΔI _{ref} /ΔT	I _{KA} =10mA, R1=10kΩ, R2=∞, T _A =full Temperature		0.2	0.4	μA
Minimum cathode current for regulation	I _{KA} (min)	V _{KA} =V _{REF}		0.3	0.5	mA
Off-state cathode Current	I _{KA} (OFF)	V _{KA} =36V, V _{REF} =0		0.05	0.5	μA
Dynamic Impedance	Z _{KA}	V _{KA} =V _{REF} , I _{KA} =1 to 100mA f≤1.0kHz		0.15	0.5	Ω

CLASSIFICATION OF V_{ref} AND PACKAGE

Device	LR431AD	LR431BD
Rank	0.5%	1%
Range(V)	2.487~2.512	2.475~2.525
Marking	L431AD	L431BD
Package	SOP-8	SOP-8

TYPICAL PERFORMANCE CHARACTERISTICS
Fig 1 Cathode Current Vs Cathode Voltage

Fig 2 Cathode Current Vs Cathode Voltage

Fig 3 Change in Reference Input Voltage Vs Cathode voltage

Fig 4 Pulse Response

Fig 5 Dynamic Impedance Vs Frequency

Fig 6 Small Signal Voltage Amplification Vs Frequency

Fig7. Stability Boundary Conditions (Ta=25 ° C)

Note: The region C is not unstable when test current is above 1mA,


Fig8. Test Circuit for Fig7

Unstable region	VKA(V)	R1(KΩ)	R2(KΩ)
A	Vref	0	∞
B	5	10	10
C	10	30	10

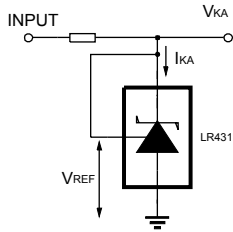
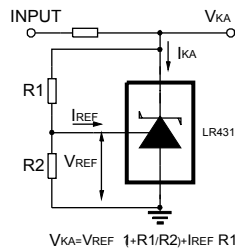
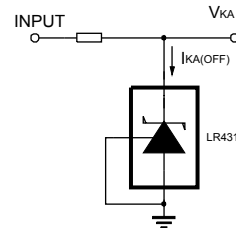
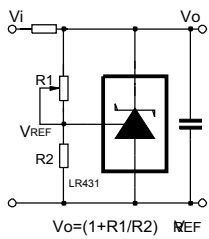
TEST CIRCUIT

 Fig9 Test Circuit For $V_{KA}=V_{REF}$

 Fig10 Test Circuit for $V_{KA} \geq V_{REF}$

 Fig11 Test Circuit For $I_{KA(OFF)}$
APPLICATION CIRCUIT


Fig12 Shutdown Regulator

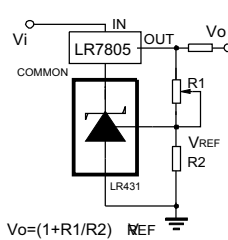


Fig13 Output Control of a Three-Terminal Fixed Regulator

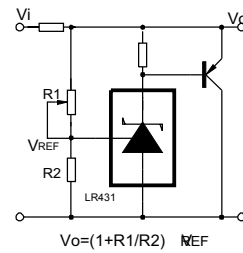


Fig14 Higher-current Shunt Regulator

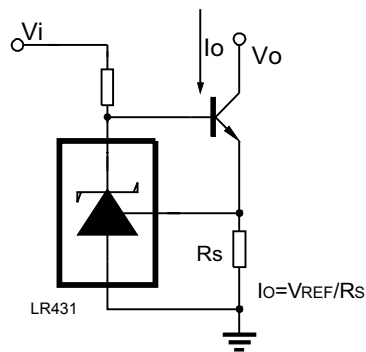


Fig15 Constant-current Sink

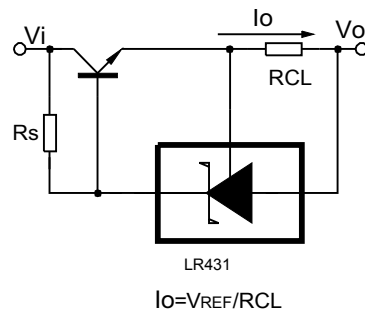
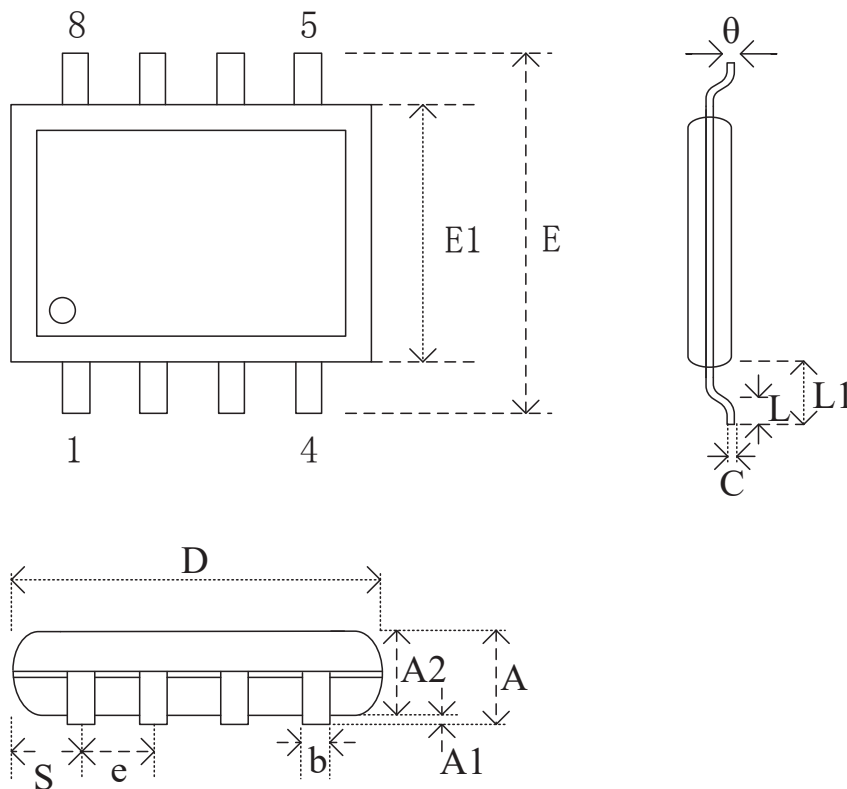


Fig16 Current Limiting or Current Source

Package 8-Pin SOP 150-mil

Dimensions

Symbol		A	A1	A2	b	C	D	E	E1	e	L	L1	S	θ
Unit														
mm	Min		0.10	1.35	0.36	0.15	4.77	5.80	3.80		0.46	0.85	0.41	0
	Nom		0.15	1.45	0.41	0.20	4.90	5.99	3.90	1.27	0.66	1.05	0.54	5
	Max	1.75	0.20	1.55	0.51	0.25	5.03	6.20	4.00		0.86	1.25	0.67	8
Inch	Min		0.004	0.053	0.014	0.006	0.188	0.228	0.150		0.018	0.033	0.016	0
	Nom		0.006	0.057	0.016	0.008	0.193	0.236	0.154	0.05	0.026	0.041	0.021	5
	Max	0.069	0.008	0.061	0.020	0.010	0.198	0.244	0.158		0.034	0.049	0.026	8

SHIPPING INFORMATION

Tape: 4000 Units/ Reel

单击下面可查看定价，库存，交付和生命周期等信息

[>>LRC\(乐山无线电\)](#)