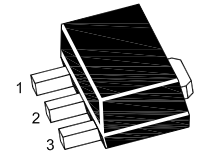




TL431U Programmable Precision Reference

Features:

- Programmable output Voltage to 36 V
- Low dynamic output impedance
- Sink current capability of 1 to 100 mA
- Low output noise voltage
- Fast turn on response



1.Reference 2.Anode 3.Cathode

SOT-89-3L

Marking: 431

Absolute Maximum Ratings (T_a = 25 °C, unless otherwise noted.)

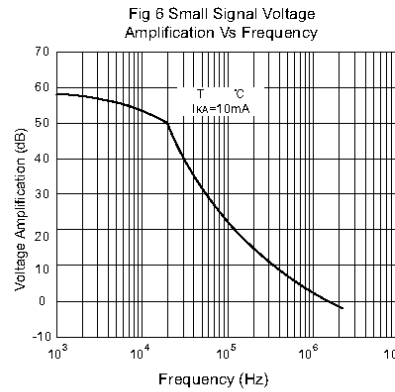
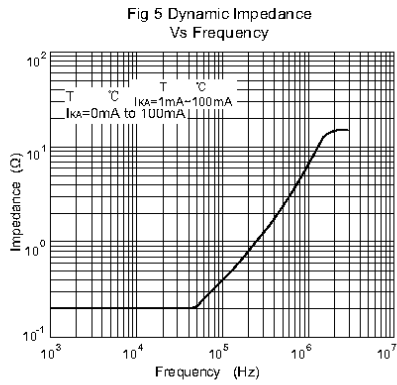
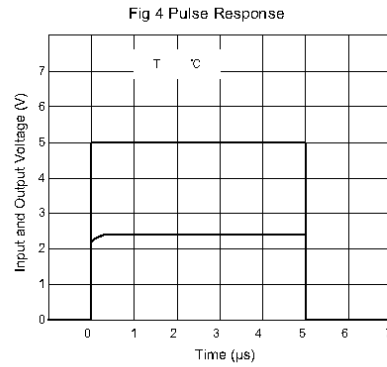
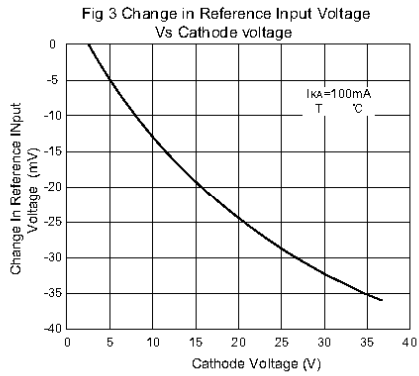
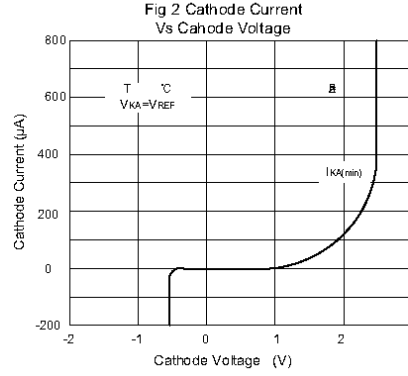
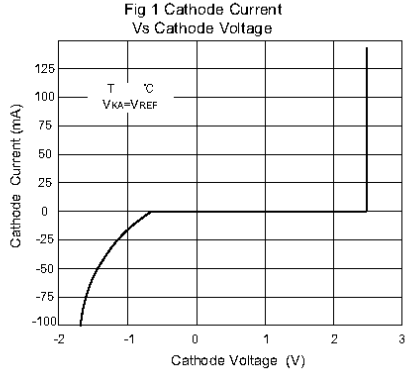
Parameter	Symbol	Value	Unit
Cathode Voltage	V _{KA}	37	V
Cathode Current Range (Continuous)	I _{KA}	- 100 to + 150	mA
Reference Input Current Range	I _{REF}	- 0.05 to + 10	mA
Power Dissipation	P _D	770	mW
Operating Temperature Range	T _{opr}	- 25 to + 85	°C
Junction Temperature	T _j	150	°C
Storage Temperature Range	T _{stg}	- 65 to + 150	°C

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Unit
Cathode Voltage	V _{KA}	V _{REF}	36	V
Cathode Current	I _{KA}	1	100	mA

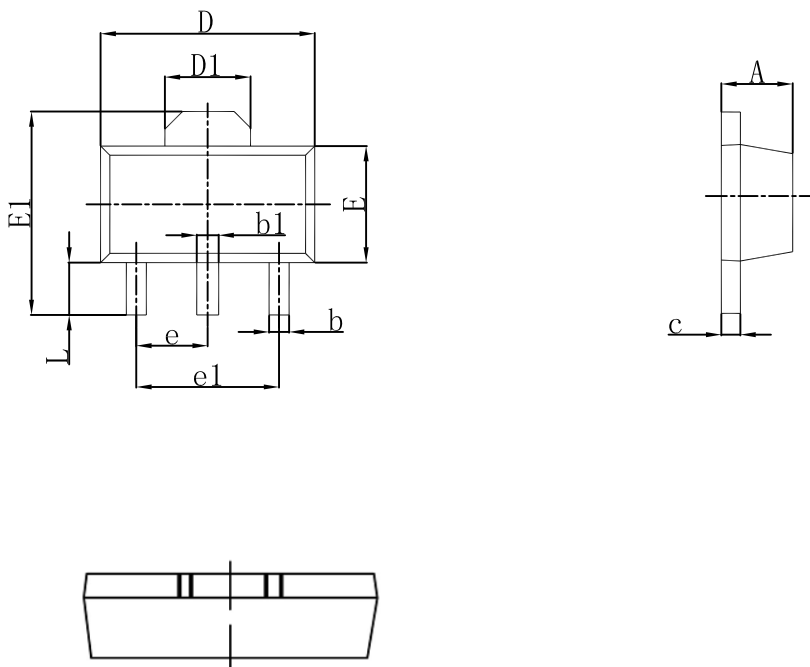
Characteristics at T_a = 25 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit
Reference Input Voltage at V _{KA} = V _{REF} , I _{KA} = 10 mA	V _{REF}	2.44	2.495	2.55	V
Deviation of Reference Input Voltage Over Temperature at V _{KA} = V _{REF} , I _{KA} = 10 mA, - 25 °C ≤ T _a ≤ + 85 °C	ΔV _{REF} /ΔT	-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage at I _{KA} = 10 mA ΔV _{KA} = 10 V to V _{REF} ΔV _{KA} = 36 V to 10 V	ΔV _{REF} /ΔV _{KA}	-	-1.0 -0.5	-2.7 -2	mV/V
Reference Input Current at I _{KA} = 10 mA, R1 = 10 KΩ, R2 = ∞	I _{REF}	-	1.5	4	μA
Deviation of Reference Input Current Over Full Temperature at I _{KA} = 10 mA, R1 = 10 KΩ, R2 = ∞, - 25 °C ≤ T _a ≤ + 85 °C	ΔI _{REF} /ΔT	-	0.4	1.2	μA
Minimum Cathode Current for Regulation at V _{KA} = V _{REF}	I _{KA(min)}	-	0.45	1	mA
Off-Stage Cathode Current at V _{KA} = 36 V, V _{REF} = 0	I _{KA(OFF)}	-	0.05	1	μA
Dynamic Impedance at V _{KA} = V _{REF} , I _{KA} = 1 to 100 mA, f ≤ 1 KHz	Z _{KA}	-	0.15	0.5	Ω





SOT-89-3L Outlines Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047