

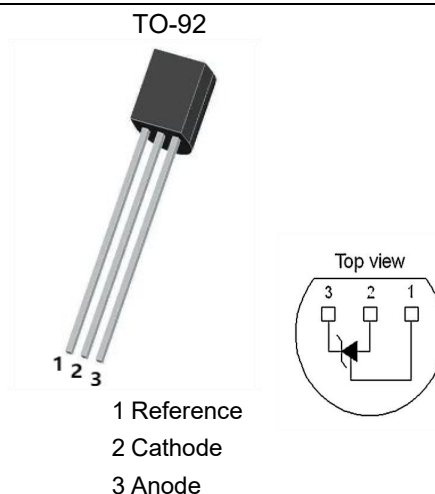


## 1. Features

- 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

## 2. Mechanical Data

- Case:Molded Plastic,TO-92 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking:TL431
- Mounting Position : Any.



## 3. Maximum Ratings

Electrical Characteristics Rating at 25°C ambient temperature unless otherwise specified.

Characteristic	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

## 4. Electrical Characteristics (TA=25°C unless otherwise noted)

Characteristics	Symbol	Min	TYP	Max	Unit
<b>Recommended Operating Conditions</b>					
Cathode Voltage	$V_{KA}$	$V_{REF}$	-	36	V
Cathode Current	$I_{KA}$	1	-	100	mA
Reference Input Voltage at $V_{KA} = V_{REF}$ , $I_{KA} = 10$ mA	$V_{REF}$	2.487	2.5	2.513	V
Reference Input Voltage at $V_{KA} = V_{REF}$ , $I_{KA} = 10$ mA	$V_{REF}$	2.475	2.5	2.525	V
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, $-25^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$	$\Delta V_{REF} / \Delta T$	-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage at $I_{KA} = 10$ mA	$\Delta V_{REF} / \Delta V_{KA}$	-	-1.0 -0.5	-2.7 -2	mV/V
Reference Input Current at $I_{KA} = 10$ mA, $R1 = 10$ K $\Omega$ , $R2 = \infty$	$I_{REF}$	-	1.5	4	$\mu\text{A}$
Deviation of Reference Input Current Over Full Temperature at $I_{KA} = 10$ mA, $R1 = 10$ K $\Omega$ , $R2 = \infty$ , $-25^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$	$\Delta I_{REF} / \Delta T$	-	0.4	1.2	$\mu\text{A}$
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	$\mu\text{A}$
Dynamic Impedance at $V_{KA} = V_{REF}$ , $I_{KA} = 1$ to 100 mA, $f \leq 1$ KHz	$Z_{KA}$	-	0.15	0.5	$\Omega$



## 5. Rating And Characteristic Curves

Fig.1 Cathode Current vs. Cathode Voltage

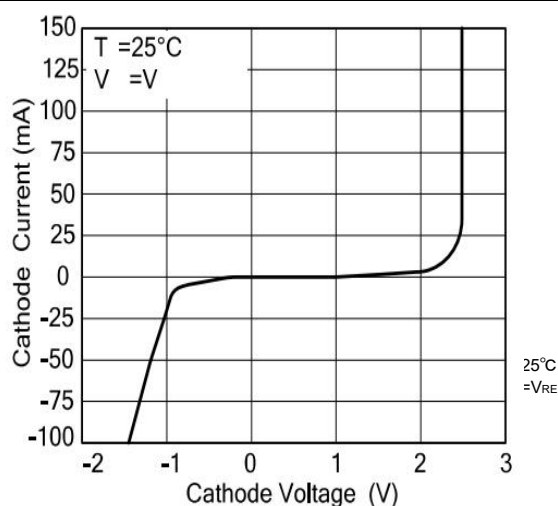


Fig.2 Cathode Current vs. Cathode Voltage

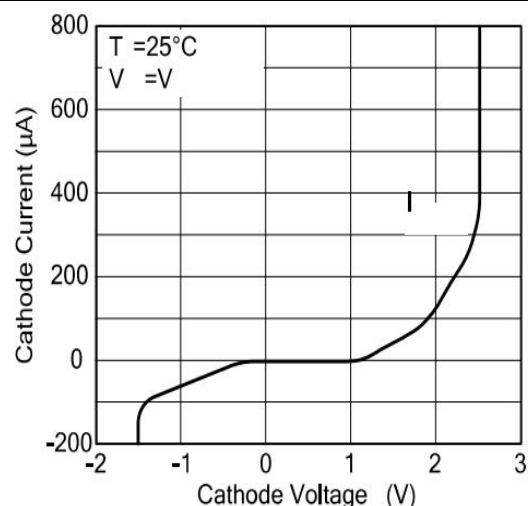


Fig.3 Change in Reference Input Voltage vs Cathode Voltage

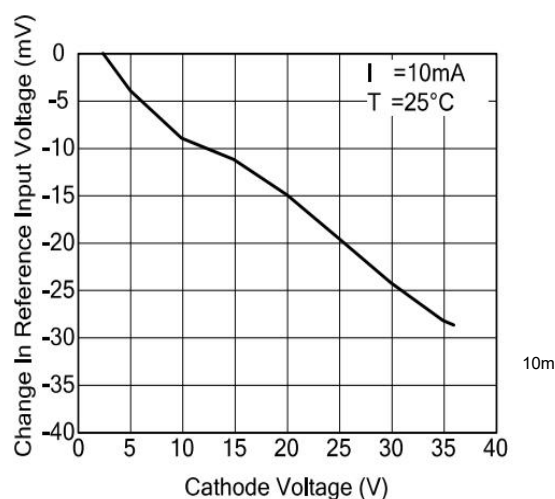


Fig.4 Pulse Response

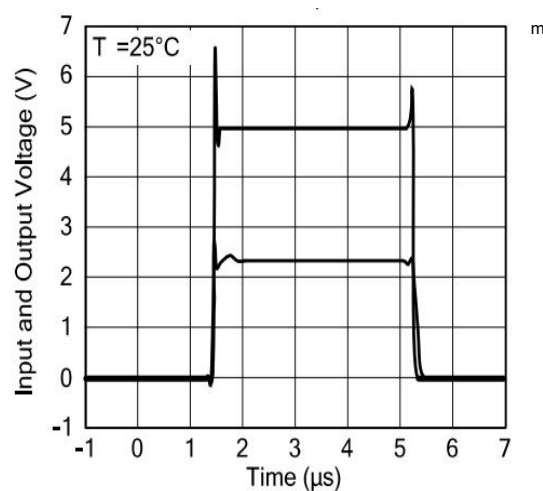


Fig.5 Deviation of Reference Voltage over Temperature

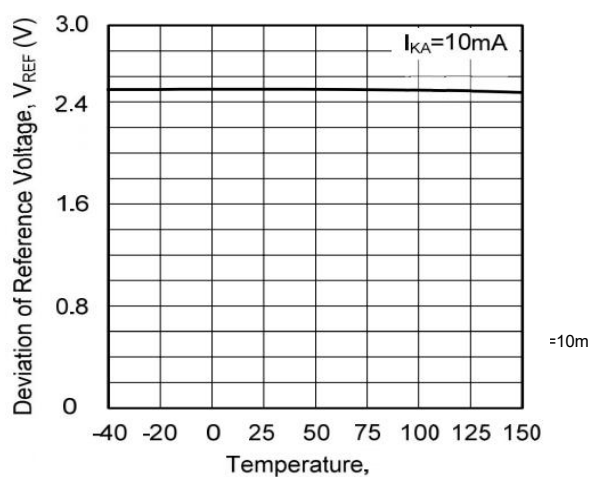
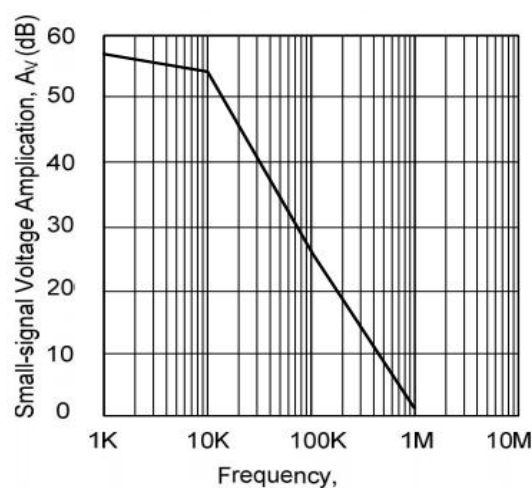
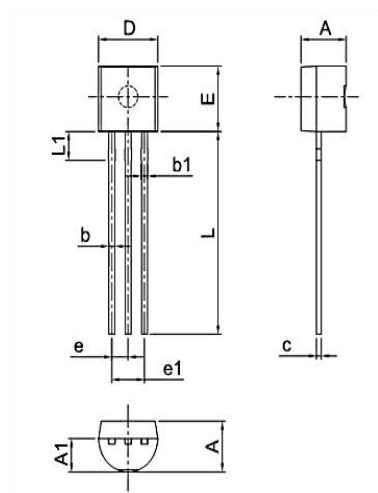


Fig.6 Frequency Response



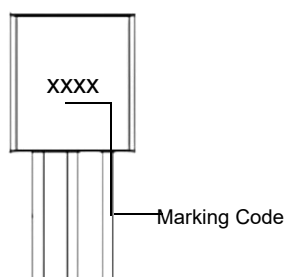


## 7. Dimensions



Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	0.125	0.165	3.18	4.19
A1	0.080	0.105	2.04	2.66
b	0.016	0.021	0.40	0.53
b1	0.024	0.031	0.60	0.80
c	0.014	0.020	0.35	0.50
D	0.175	0.205	4.45	5.20
E	0.170	0.210	4.32	5.33
e	0.050		1.27	
e1	0.100		2.54	
L	0.500	0.591	12.70	15.00
L1	0.073	0.081	1.86	2.06

## 8. Part Marking System



## 9. Package Information

Package	Box	Carton
TO92	2000pcs	20,000pcs



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