



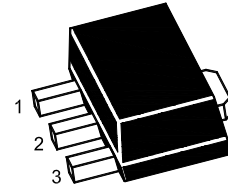
TL431SQ/TL431ASQ

Programmable Precision Reference

Features

- Programmable output voltage to 36V.
- Low dynamic output impedance.
- Sink current capability of 1.0 to 100mA.
- Low output noise voltage
- Fast turn on response

SOT-89



- 1: Reference
- 2: Anode
- 3: Cathode

Marking: TL431SQ: TL431
TL431ASQ: TL431A

Application

- It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.

Absolute Maximum Ratings (Ta=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V _{KA}	Cathode Voltage	37	V
I _{KA}	Cathode Current Range(Continuous)	-100 ~ +150	mA
I _{REF}	Reference Input Current Range	-0.05 ~ +10	mA
P _D	Power Dissipation	770	mW
T _J	Operating Junction	+150	°C
T _{OPR}	Operating Ambient	-40 ~ +85	°C
T _{STG}	Storage Temperature	-65 ~ +150	°C

Recommended Operating Conditions

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



TL431SQ/TL431ASQ

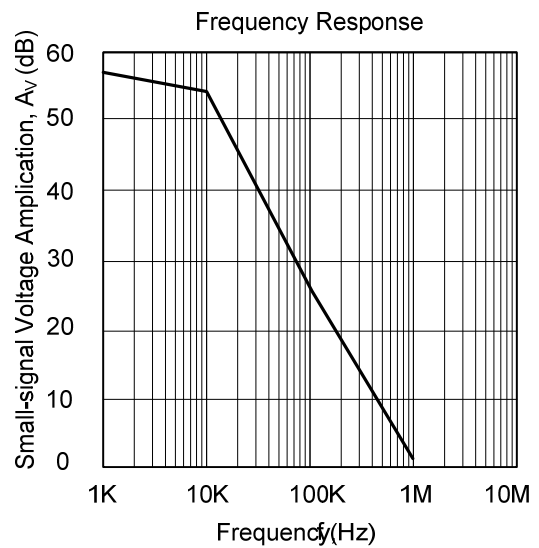
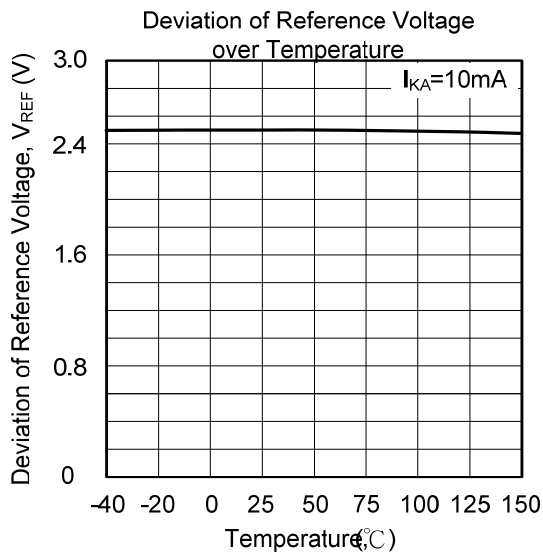
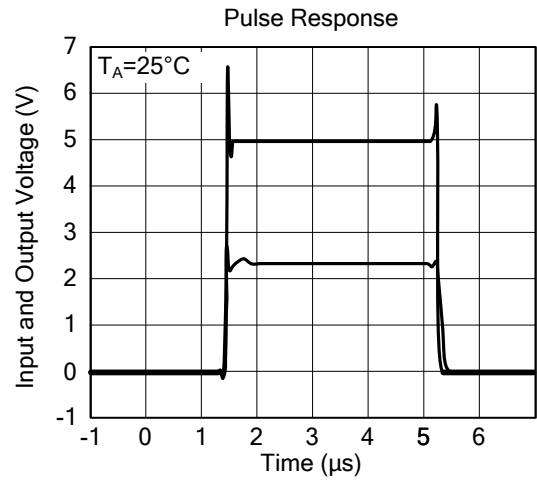
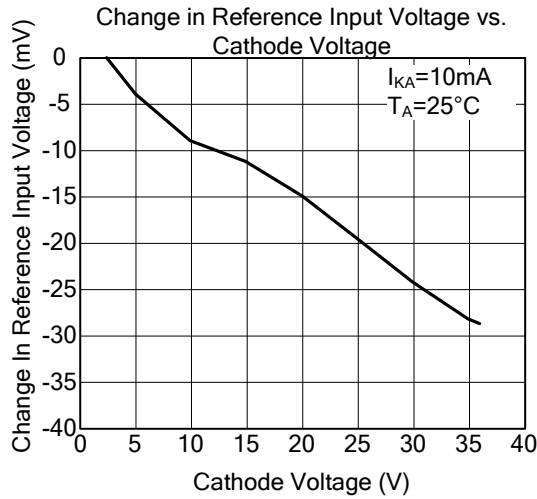
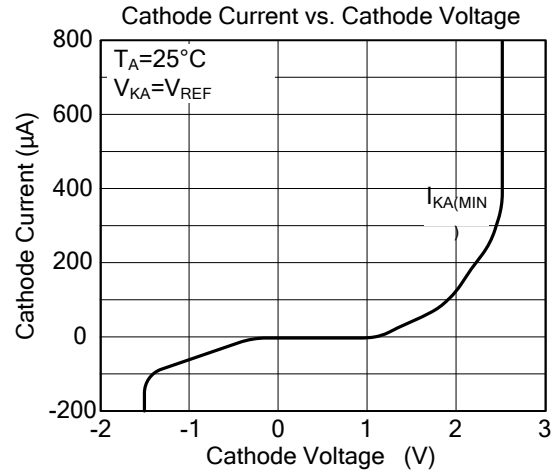
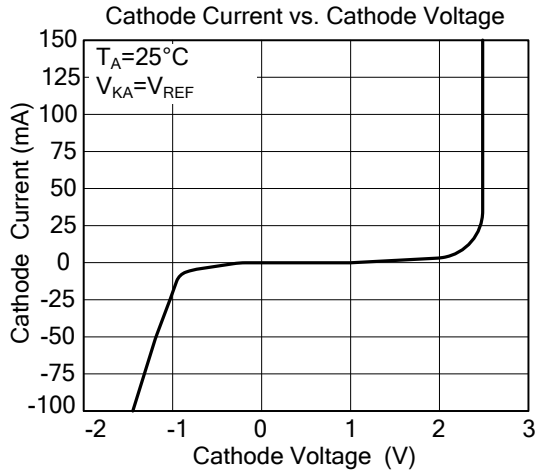
Programmable Precision Reference

Electrical Characteristics (Ta=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_{REF}	Reference Input Voltage	$V_{KA}=V_{REF}, I_{KA}=10mA$	TL431SQ	2.44	2.495	2.55	V
			TL431ASQ	2.48	2.495	2.51	V
ΔV_{REF}	Deviation of Reference Input Voltage Over Temperature	$V_{KA}=V_{REF}, I_{KA}=10mA,$ $-40^{\circ}C \leq T_A \leq +85^{\circ}C$			4.5	17	mV
$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$I_{KA}=10mA$	$\Delta V_{KA}=10V \sim V_{REF}$		-1.0	-2.7	mV/V
			$\Delta V_{KA}=36V \sim 10V$		-0.5	-2.0	mV/V
I_{REF}	Reference Input Current	$I_{KA}=10mA, R1=10k\Omega, R2=\infty$			1.5	4	μA
ΔI_{REF}	Deviation of Reference Input Current Over Full Temperature Range	$I_{KA}=10mA, R1=10k\Omega, R2=\infty,$ $-25^{\circ}C \leq T_A \leq +85^{\circ}C$			0.4	1.2	μA
$I_{KA(MIN)}$	Minimum Cathode Current for Regulation	$V_{KA}=V_{REF}$			0.45	1	mA
$I_{KA(OFF)}$	Off-State Cathode Current	$V_{KA}=36V, V_{REF}=0$			0.05	1.0	μA
Z_{KA}	Dynamic Impedance	$V_{KA}=V_{REF}, I_{KA}=1 \sim 100mA, f \leq 1.0kHz$			0.15	0.5	Ω



Typical Characteristic Curves

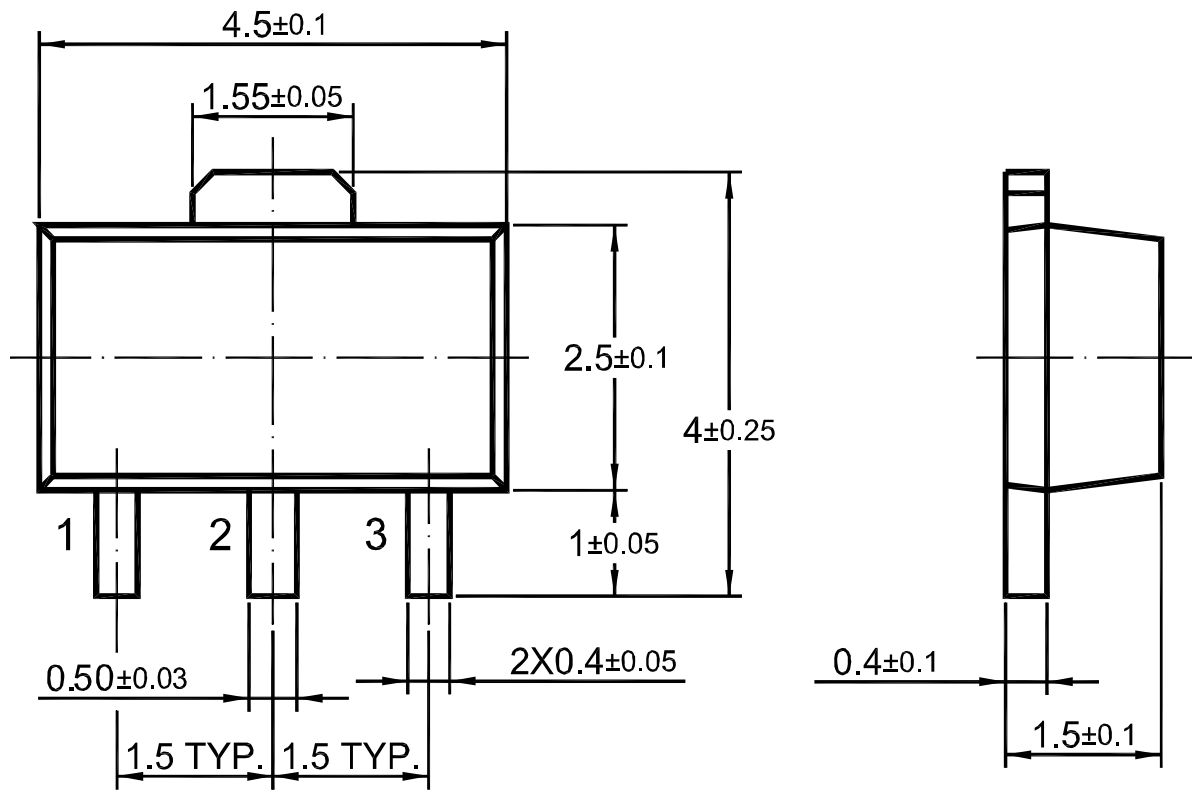




Package Outline

SOT-89

Dimensions in mm



Ordering Information

Device	Package	Shipping
TL431SQ/TL431ASQ	SOT-89	1000PCS/Reel&Tape