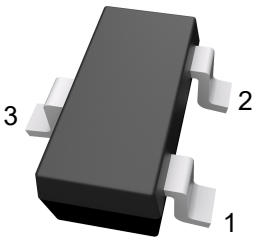
TL431SC
Programmable Precision Reference

Features

- Programmable output voltage to 36V.
- Low dynamic output impedance.
- Sink current capability of 0.5 to 100mA.
- Low output noise voltage
- Fast turn on response

SOT-23-3

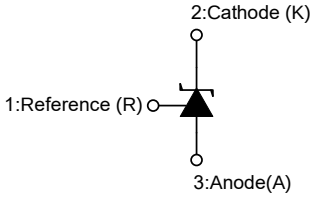


1. Reference 2.Cathode 3.Anode

Marking Code:
TL431SC: 431
TL431ASC: 431A

Application

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



Absolute Maximum Ratings (Ta=25℃unless otherwise specified)

Parameter	Symbol	Value	Units
Cathode Voltage	V_{KA}	37	V
Cathode Current Range(Continuous)	I_{KA}	-100 ~ +150	mA
Reference Input Current Range	I_{REF}	-0.05 ~ +10	mA
Maximum Power Dissipation	P_D	770	mW
Operating Junction Temperature	T_J	150	°C
Operating Ambient	T_{OPR}	-40 ~ +85	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units
Cathode Voltage	V_{KA}	V_{REF}	36	V
Cathode Current	I_{KA}	1	100	mA

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

Parameter	Symbol	Test Conditions		Min.	Typ.	Max.	Unit
Reference Input Voltage [Fig1]	V_{REF}	$V_{KA}=V_{REF}$, $I_{KA}=10mA$	TL431SC	2.47	2.495	2.52	V
			TL431ASC	2.483	2.495	2.507	V
Deviation of Reference Input Voltage Over Temperature [Fig1]	ΔV_{REF}	$V_{KA}=V_{REF}$, $I_{KA}=10mA$, $-40°C \le T_A \le +85°C$		--	4.5	17	mV
Ratio of Change in Reference Input Voltage to The Change in Cathode Voltage [Fig2]	$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	$I_{KA}=10mA$	$V_{KA}=10V \sim V_{REF}$	--	-1.0	-2.7	mV/V
			$V_{KA}=36V \sim 10V$	--	-0.5	-2.0	mV/V
Reference Input Current [Fig2]	I_{REF}	$I_{KA}=10mA$, R1=10KΩ, R2=∞		--	1.5	4	μA
Deviation of Reference Input Current Over Full Temperature Range [Fig2]	ΔI_{REF}	$I_{KA}=10mA$, R1=10KΩ, R2=∞, $-20°C \le T_A \le +85°C$		--	0.4	1.2	μA
Minimum Cathode Current for Regulation [Fig1]	$I_{KA(MIN)}$	$V_{KA}=V_{REF}$		--	0.45	1	mA
Off-State Cathode Current [Fig3]	$I_{KA(OFF)}$	$V_{KA}=36V$, $V_{REF}=0$		--	0.05	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA}=V_{REF}$, $I_{KA}=1 \sim 100mA$, $f \le 1.0KHz$		--	0.15	0.5	Ω

Figure 1. Test Circuit for $V_{KA} = V_{REF}$

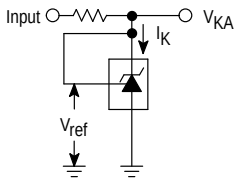


Figure 2. Test Circuit for $V_{KA} > V_{REF}$

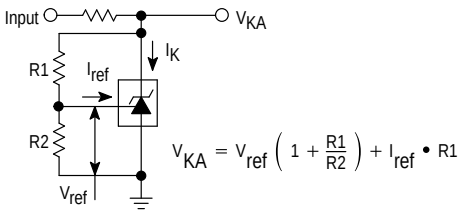
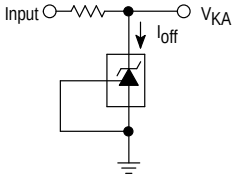
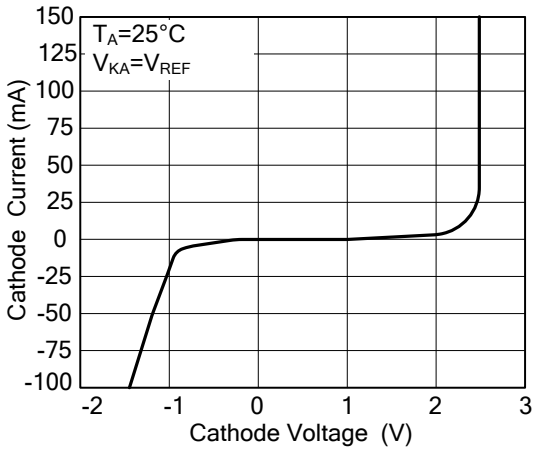
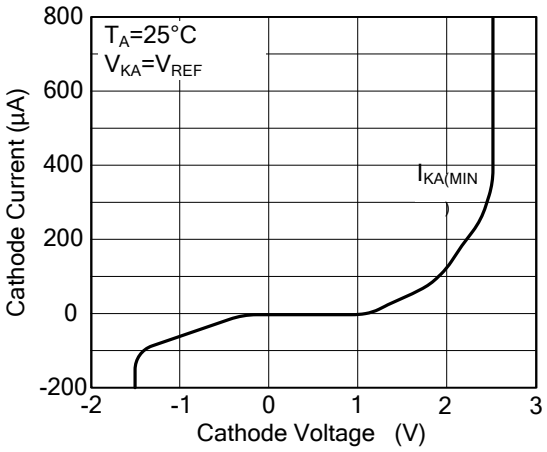


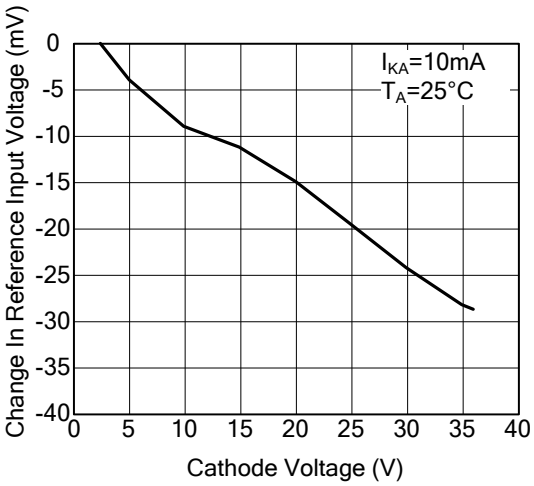
Figure 3. Test Circuit for I_{OFF}

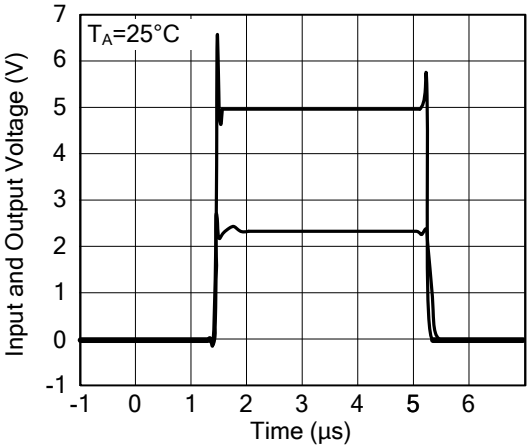


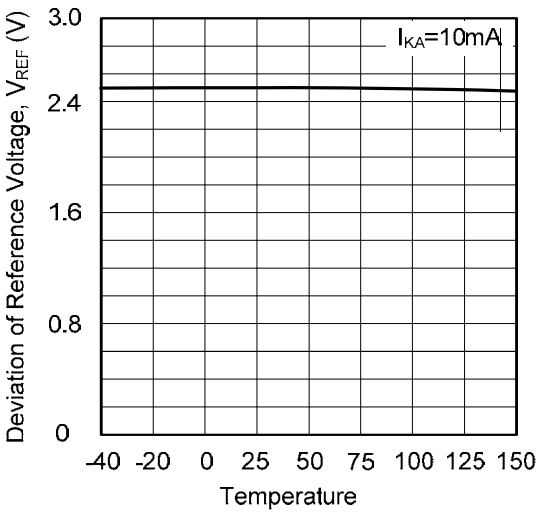
Typical Characteristic Curves

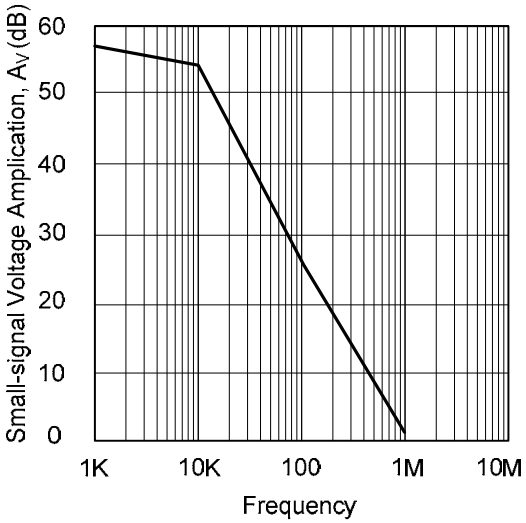








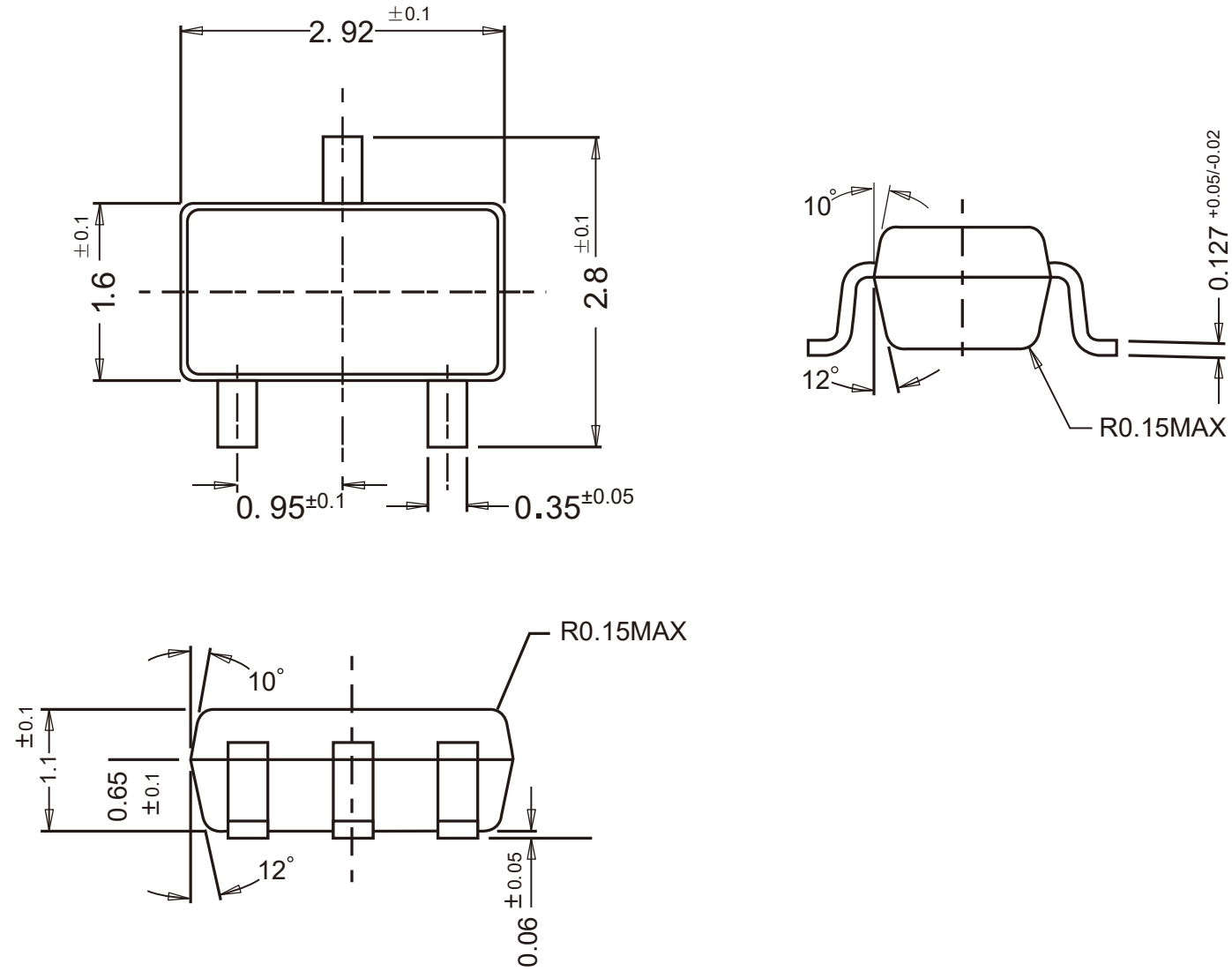




Package Outline

SOT-23-3

Dimensions in mm



Ordering Information

Device	Package	Shipping
TL431SC	SOT-23-3	3,000PCS/Reel&7inches