

PROGRAMMABLE PRECISION
REFERENCE

LR432ALT1G

Description

The LR432ALT1G 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 1.24V) and 18V with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.



SOT-23 1: Ref; 2: Cathode; 3: Anode

Features:

- Precise Reference Voltage to 1.24V
- Guaranteed 1% Reference Voltage Tolerance
- Sink Current Capability, 80 μ A to 100mA
- Quick Turn-on
- Adjustable Output Voltage, $V_o = V_{REF}$ to 18V
- 0.2 Ω Typical Output Impedance
- Marking: EA

We declare that the material of product is ROHS compliant and does not contain any Br, Cl, and Sb203

Ordering Information

Device	Marking	Shipping
LR432ALT1G	EA	3000/Tape & Reel
LR432ALT3G	EA	10000/Tape & Reel

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{KA}	Cathode voltage	18	V
I_K	Continuous cathode current range	100	mA
I_{REF}	Reference current range	3	mA
T_j	Operating Junction Temperature Range	150	°C
T_{opr}	Operating Ambient Temperature	- 40 to 105	°C

Electrical Characteristics $T_A=25^{\circ}\text{C}$ (unless otherwise noted)

Symbol	Parameter	Test Conditions	LR432ALT1G			Unit
			Min	Typ	Max	
V_{REF}	Reference voltage	$V_{KA}=V_{REF}$, $I_K=10\text{mA}$ (Fig. 1) $T_A=25^{\circ}\text{C}$	1.228	1.240	1.252	V
V_{DEV}	V_{REF} Temp Deviation	T_A =full range(see Note1) $V_{KA}=V_{REF}$, $I_K=10\text{mA}$ (Fig. 1)		10	25	mV
$\Delta V_{REF}/\Delta V_{KA}$	Ratio of Change in V_{REF} to Change in Cathode Voltage	$I_K=10\text{mA}$, $V_{KA}=18\text{V}$ to V_{REF} (Fig. 2)		-1	-2.7	mV / V
I_{REF}	Reference Input Current	$I_K=10\text{mA}$, $R_1=10\text{k}\Omega$ $R_2=\infty$ (Fig.2)		0.25	0.5	μA
$I_{REF(DEV)}$	I_{REF} Temp Deviation	T_K =full range (see Note 1), $R_1=10\text{k}\Omega$, $R_2=\infty$, $I_K=10\text{mA}$ (Fig. 2)		0.05	0.3	μA
$I_k(\text{off})$	Off-state cathode current	$V_{REF}=0\text{V}$, (Fig.3) $V_k=18\text{V}$		0.04	0.5	μA
Zka	Dynamic Output Impedance	$V_{ka}=V_{ref}$, $I_k=1\text{mA}$ to 100mA $F \leq 1\text{kHz}$ (Fig. 1)		0.2	0.4	Ω
$I_K(\text{MIN})$	Minimum Operating Current	$V_{KA}=V_{REF}$ (Fig. 1)		60	80	μA

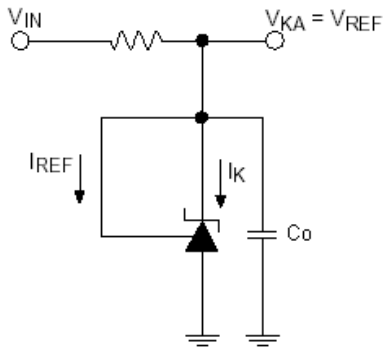
TEST CIRCUITS


Fig.1 Test Circuit for $V_{ka}=V_{ref}$,
 $V_o=V_{ka}=V_{ref}$, $C_o=0.1\mu F$

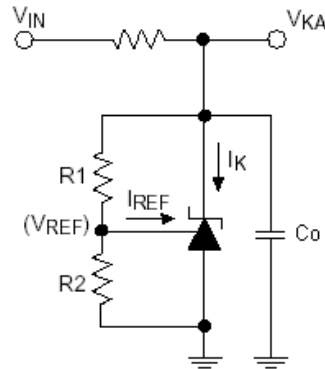


Fig.2 Test Circuit for $V_{ka}>V_{ref}$,
 $V_o=V_{ka}=V_{ref}\cdot(1+R_1/R_2)+I_{ref}\cdot R_1$,
 $C_o=0.1\mu F$

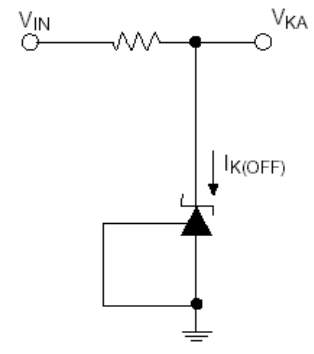


Fig.3 Test Circuit for $I_{k(off)}$

Typical Performance Characteristics

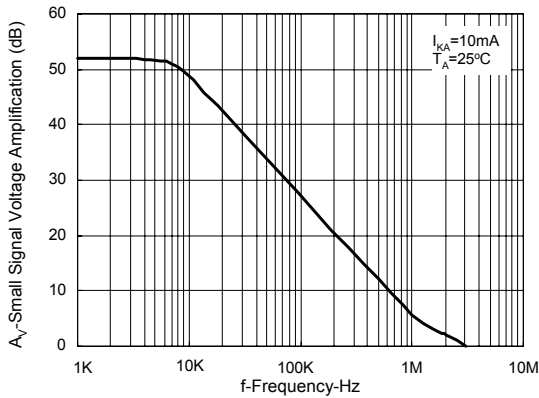
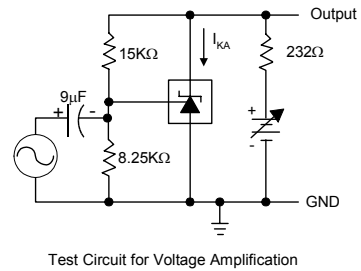


Fig.4 Small-Signal Voltage Amplification vs Frequency



Test Circuit for Voltage Amplification

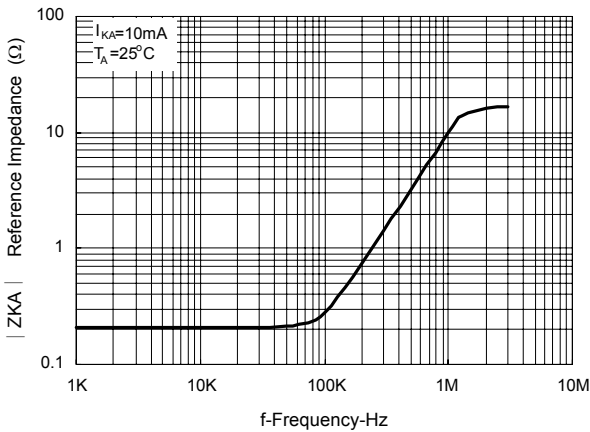
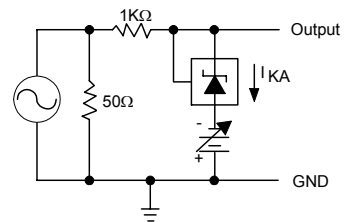


Fig.5 Reference Impedance vs Frequency



Test Circuit for Reference Impedance

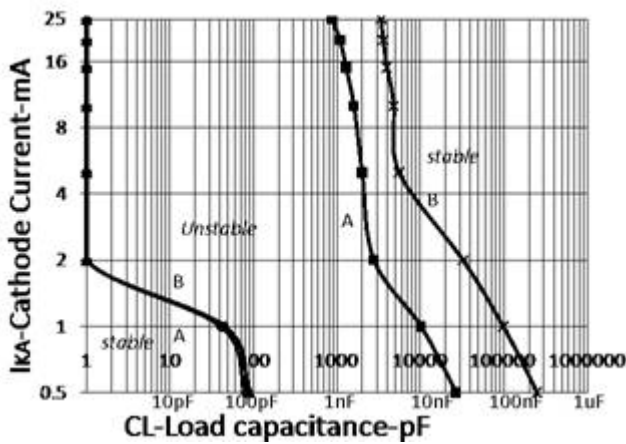
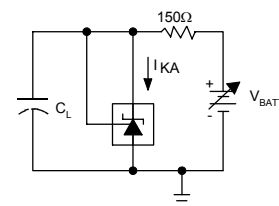
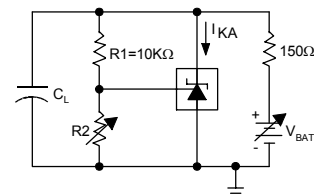


Fig.6 STABILITY BOUNDARY CONDITIONS



Test Circuit for Curve A



Test Circuit for Curve B, C, and D

Unstable region	VKA(V)	R1(KΩ)	R2(KΩ)
A	Vref	0	∞
B	5.0	30	10

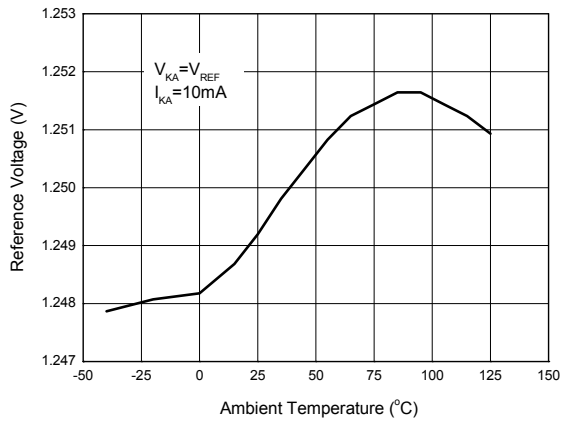


Fig 7. Reference Voltage vs. Ambient Temperature

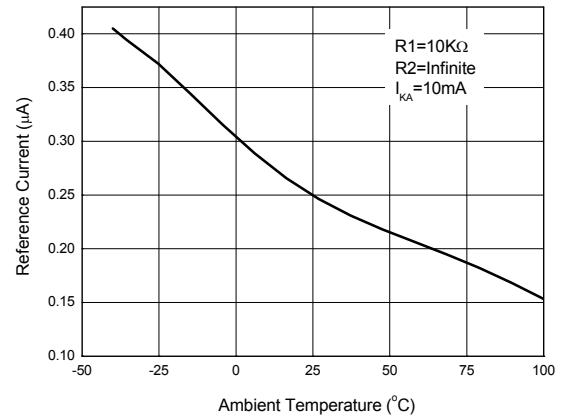


Fig 8. Reference Current vs. Ambient Temperature

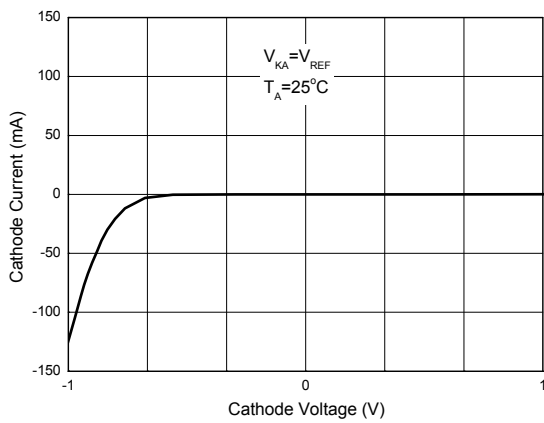


Fig 9. Cathode Current vs. Cathode Voltage

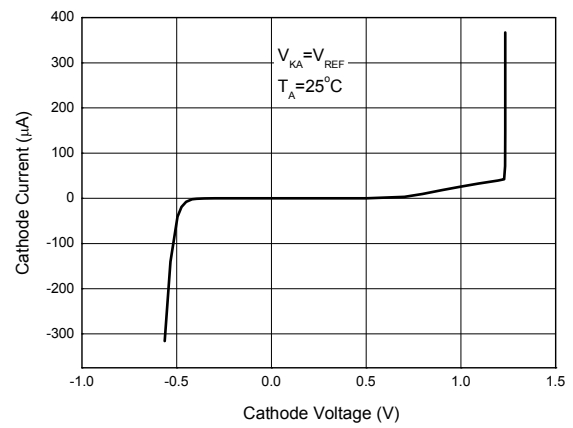


Fig 10. Cathode Current vs. Cathode Voltage

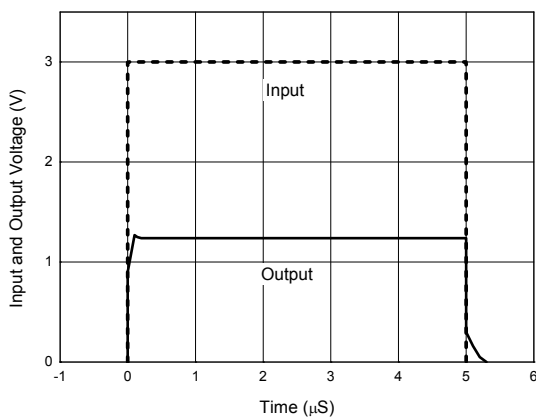
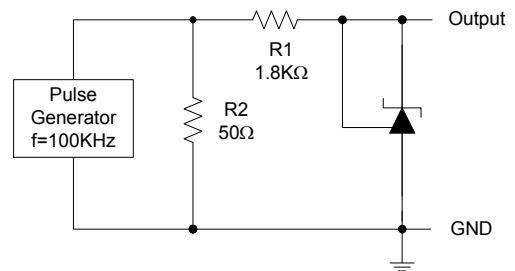
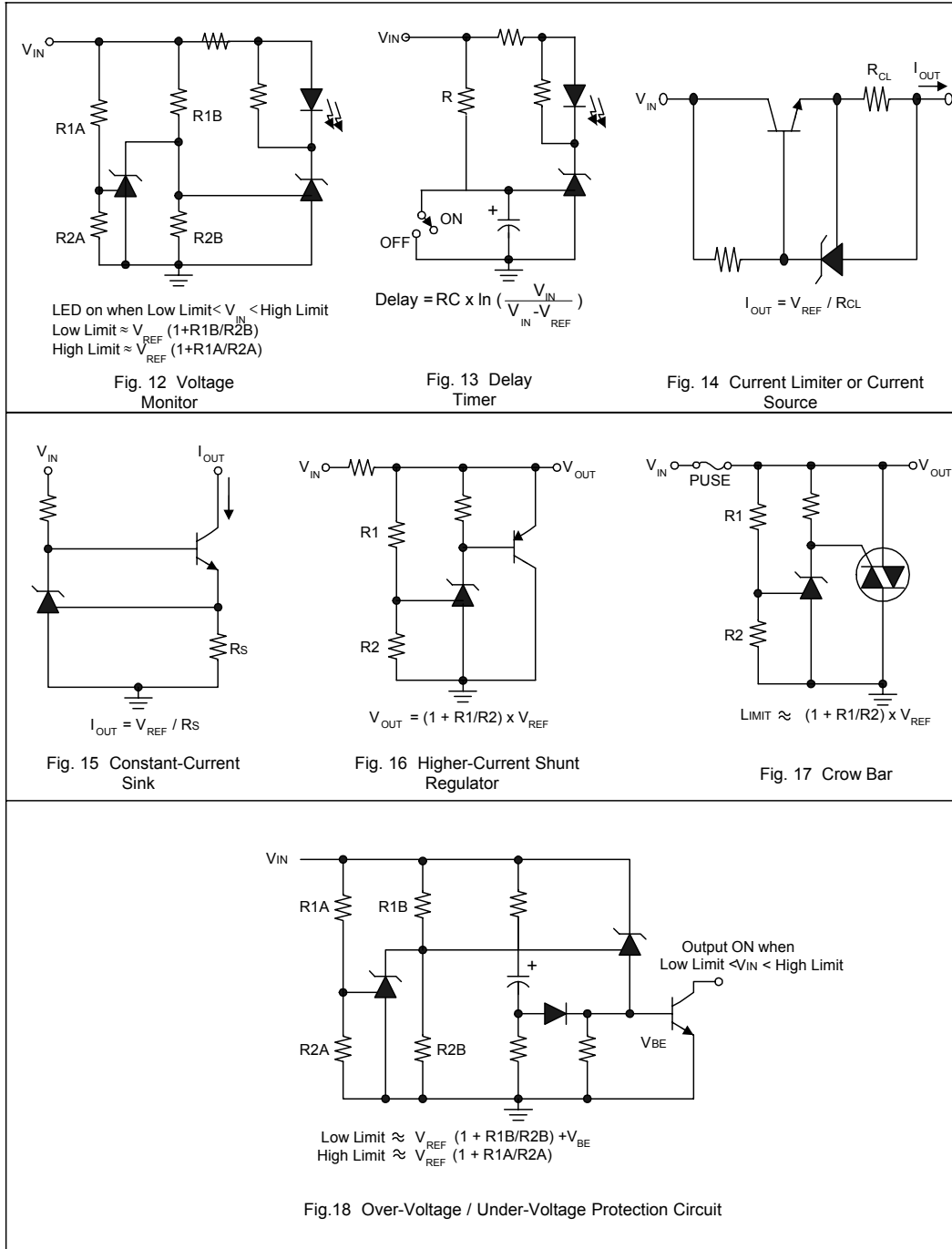


Fig 11. Pulse Response of Input and Output Voltage



Application Examples

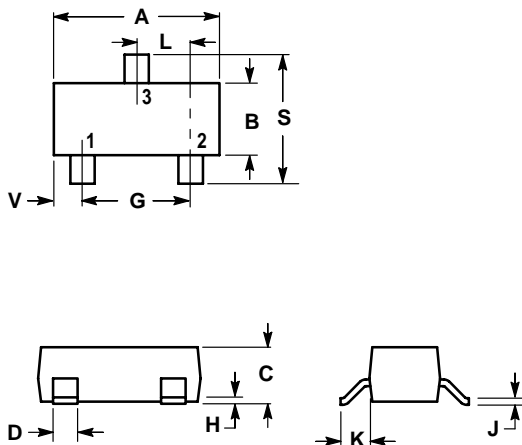


LR432ALT1G LINEAR INTEGRATED CIRCUIT

SOT-23

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

