

SOT-23 Encapsulate Adjustable Reference Source

TL432A Adjustable Accurate Reference Source

DEVICE DESCRIPTION

The TL432A is a three-terminal Shunt Voltage Reference providing a highly accurate 1.25V. The TL432 thermal stability and wide operating current, makes it suitable for all variety of applications that are looking for a low cost solution with high performance.

FEATURES

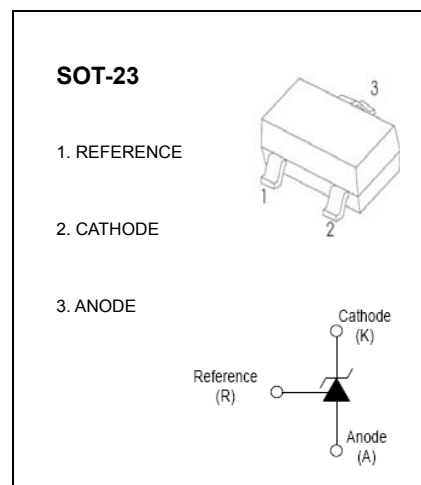
- Low dynamic output impedance
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on-state response
- Sink current capability of 0.1mA to 100mA

APPLICATION

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Units
Cathode Voltage	V_{KA}	18	V
Cathode Current Range (continuous)	I_{KA}	100	mA
Reference Input Current Range	I_{ref}	6	μA
Power Dissipation	P_D	350	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}C/W$
Operating Temperature	T_{opr}	0~+70	$^{\circ}C$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{stg}	-65~+150	$^{\circ}C$



ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

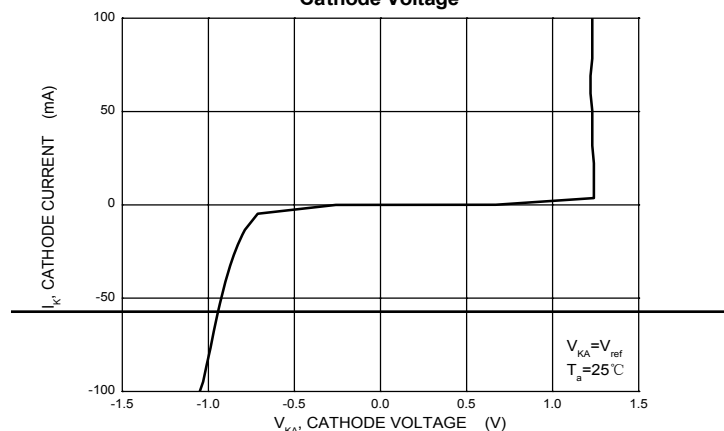
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage (Fig 1)	V_{ref}	$V_{KA}=V_{\text{REF}}, I_{KA}=10\text{mA}$	1.2437		1.2562	V
Deviation of reference voltage over full temperature range (Fig 1)	$\Delta V_{\text{ref(DEV)}}$	$V_{KA}=V_{\text{REF}}, I_{KA}=10\text{mA}$ $0^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$			16	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig 2)	$\Delta V_{\text{ref}} / \Delta V_{KA}$	$I_{KA}=10\text{mA}$, $\Delta V_{KA}=1.25\text{V} \sim 15\text{V}$			2.4	mV/V
Deviation of reference input current over full temperature range (Fig 2)	$\Delta I_{\text{ref}} / \Delta T$	$I_{KA}=10\text{mA}$, $R_1=10\text{k}\Omega$, $R_2=\infty$, $0^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$			0.6	μA
Minimum cathode current for regulation (Fig 1)	$I_{KA(\text{min})}$	$V_{KA}=V_{\text{REF}}$			0.1	mA
Off-state cathode current(Fig 3)	I_{off}	$V_{KA}=15\text{V}, V_{\text{REF}}=0$			0.5	μA
Dynamic impedance	Z_{KA}	$V_{KA}=V_{\text{REF}}, I_{KA}=0.1 \sim 20\text{mA}$, $f \leq 1.0\text{kHz}$			0.5	Ω

CLASSIFICATION OF V_{ref}

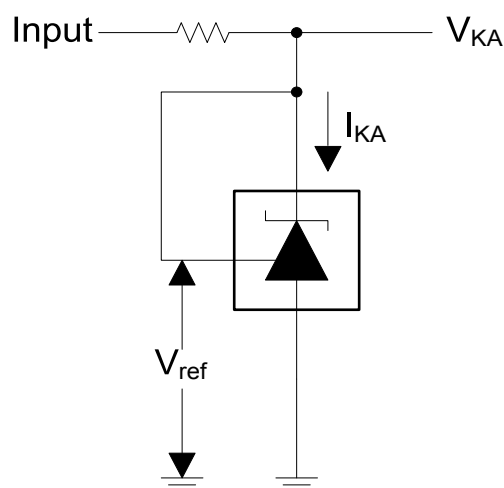
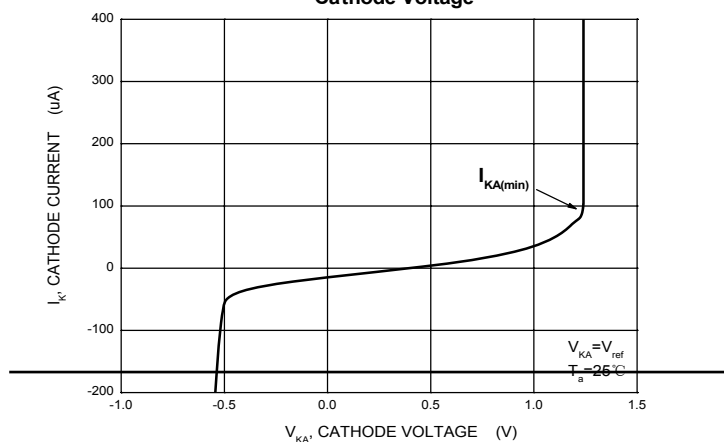
Rank	0.5%	0.4%
Range	1.2437~1.2562	1.245~1.255

Typical Characteristics

Cathode Current versus Cathode Voltage

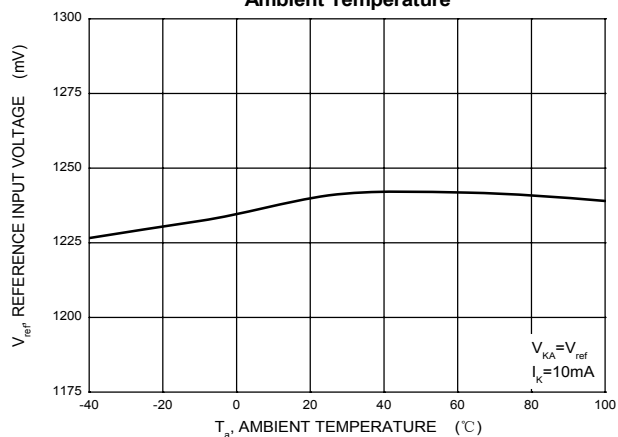


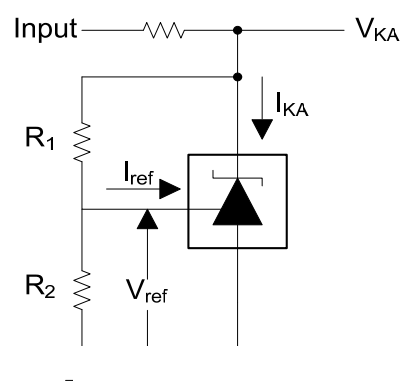
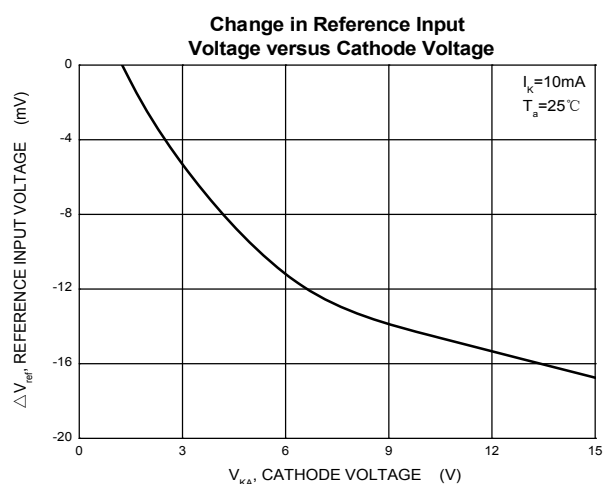
Cathode Current versus Cathode Voltage



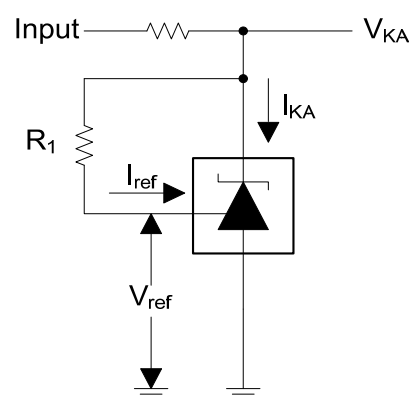
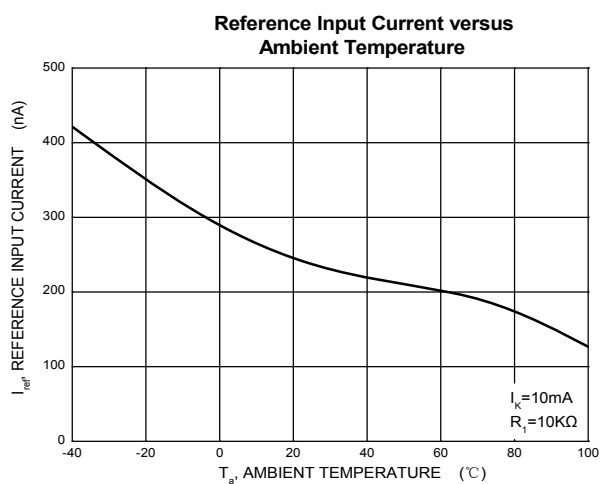
Test Circuit for $V_{KA} = V_{ref}$

Reference Input Voltage versus Ambient Temperature

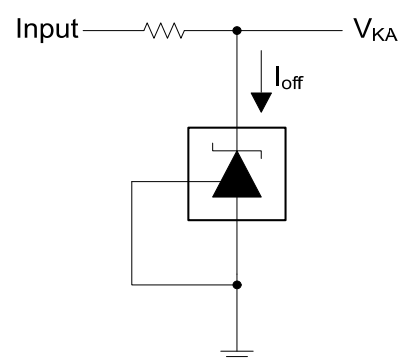
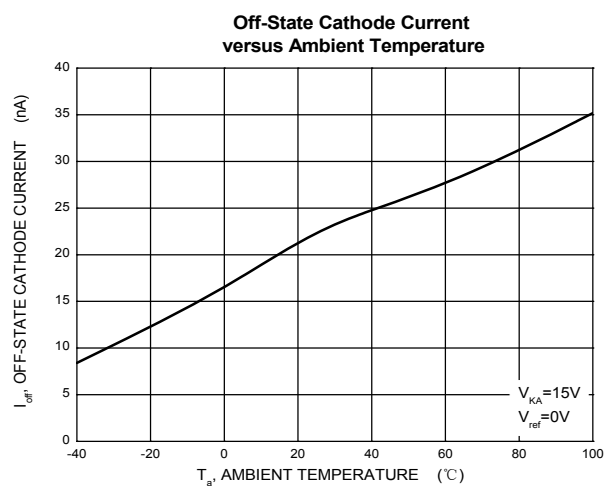




Test Circuit for $V_{KA} = V_{ref}(1 + R_1/R_2) + R_1 \cdot I_{ref}$



Test Circuit for I_{ref}

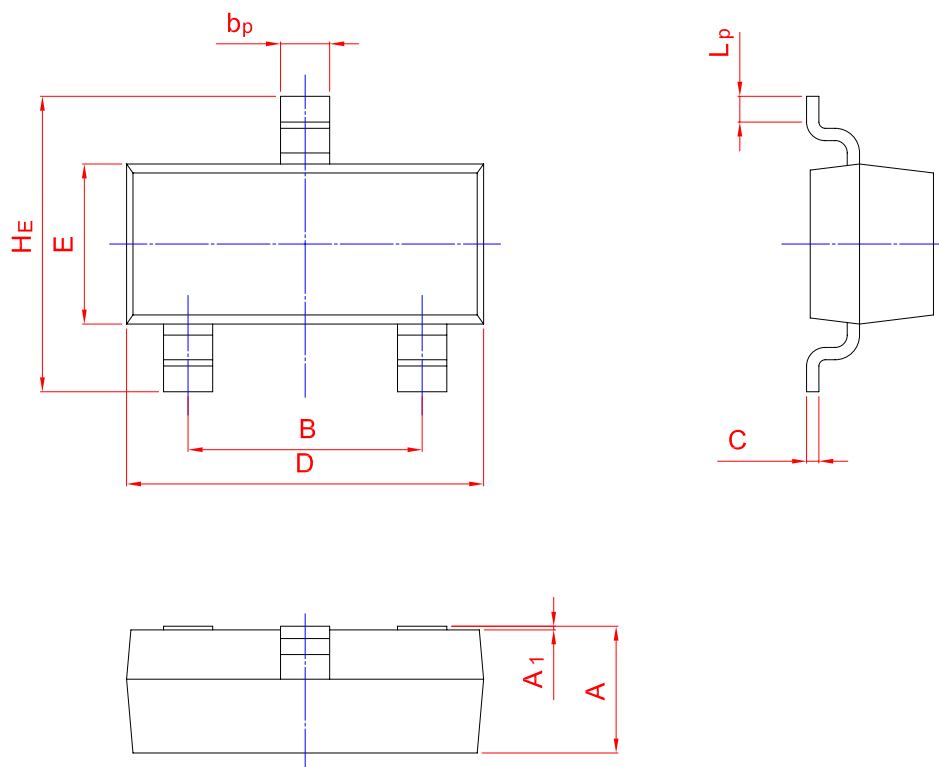
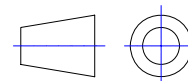


Test Circuit for I_{off}

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20