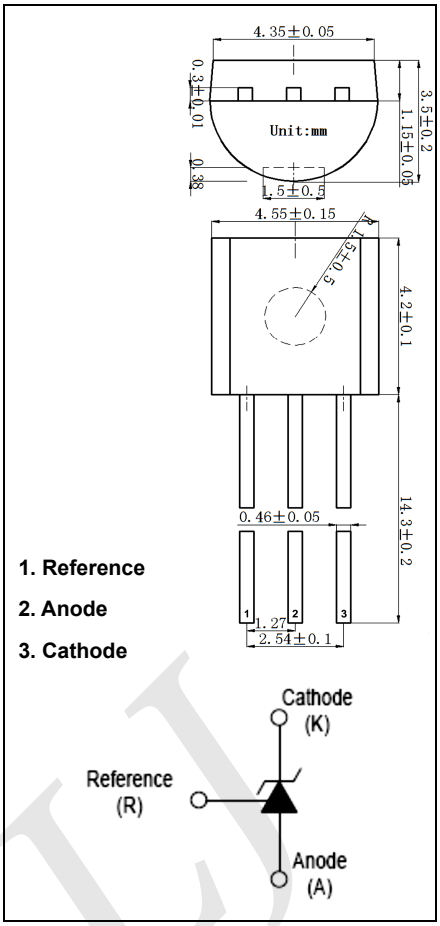
TO-92 Encapsulate Adjustable Reference Source

432 Adjustable Accurate Reference Source



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 to100mA

Applications

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

Device Description

The 432 is a three-terminal Shunt Voltage Reference providing a highly accordance 1.24V. The 432 thermal stability and wide operating current, makes is suitable for all variety of applications that are looking for a low cost solution with high performance.

Maximum Ratings (Operating temperature range applies unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{KA}	Cathode Voltage	18	V
I_{KA}	Cathode Current Range (continuous)	100	mA
I_{ref}	Reference Input Current Range	6	μA
P_D	Power Dissipation	500	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	250	°C/W
T_{opr}	Operating Temperature	0 ~ +70	°C
T_J	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-65 ~ +150	°C

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

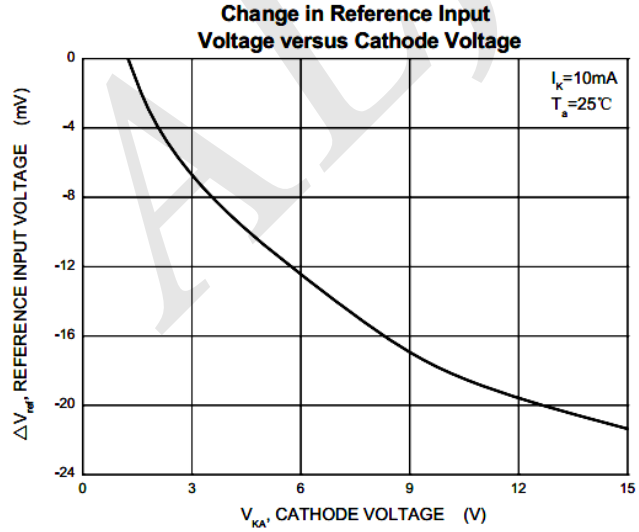
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{ref}	Reference input voltage (Fig 1)	$V_{KA}=V_{REF}$, I_{KA}=10mA	1.223	1.24	1.258	V
$\triangle V_{ref(DEV)}$	Deviation of reference voltage over full temperature range (Fig1)	$V_{KA}=V_{REF}$, I_{KA}=10mA, 0°C≤T_a≤70°C			16	mV
$\triangle V_{ref}/\triangle V_{KA}$	Ratio of change in reference input voltage to the change in cathode voltage (Fig 2)	I_{KA}=10mA, $\triangle V_{KA}$=1.25V~15V			2.4	mV/V
$\triangle I_{ref}/\triangle T$	Deviation of reference input current over full temperature range (Fig 2)	I_{KA}=10mA, R_1=10KΩ, R2=∞, 0°C≤T_a≤70°C			0.6	μA

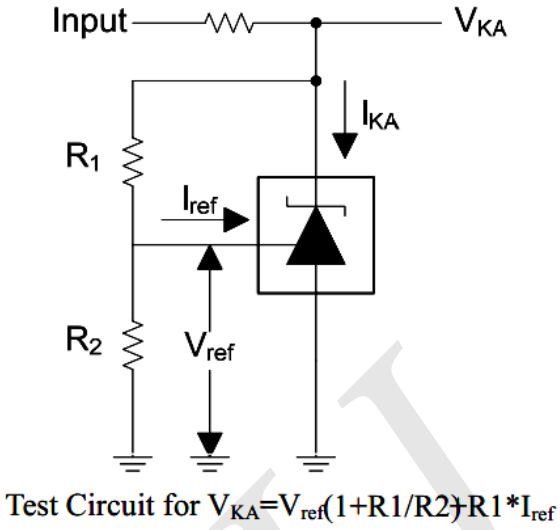
$I_{KA(min)}$	Minimum cathode current for regulation (Fig 1)	$V_{KA}=V_{REF}$			0.1	mA
I_{off}	Off-state cathode current (Fig 3)	$V_{KA}=15V, V_{REF}=0$			0.5	μA
Z_{KA}	Dynamic impedance	$V_{KA}=V_{REF}$, $I_{KA}=0.1\sim20mA$, $f\leq1.0kHz$			0.5	Ω

Classification of V_{ref}

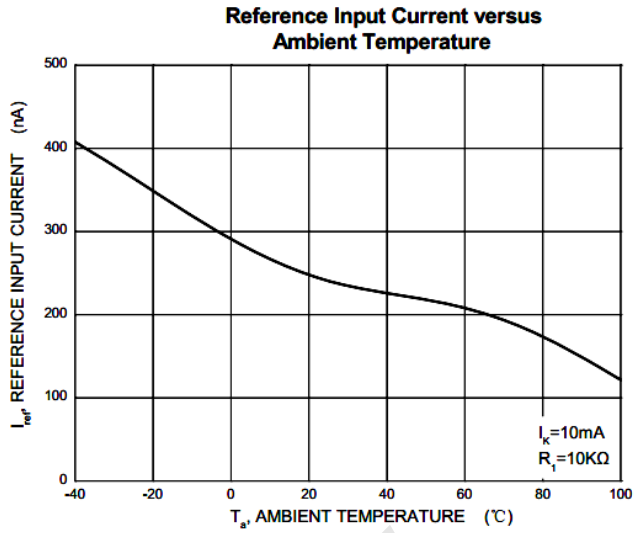
Rank	0.5%	1%	1.5%
Range	1.234 – 1.246	1.228 – 1.252	1.223 – 1.258

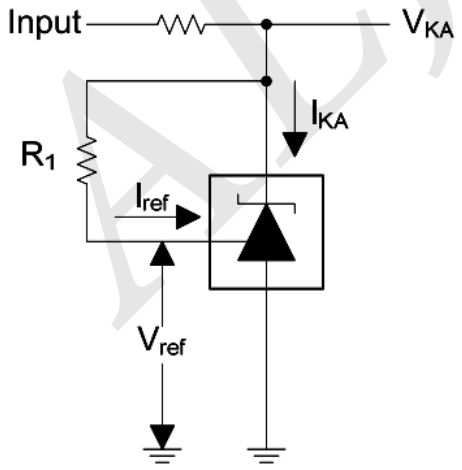
Typical Characteristics



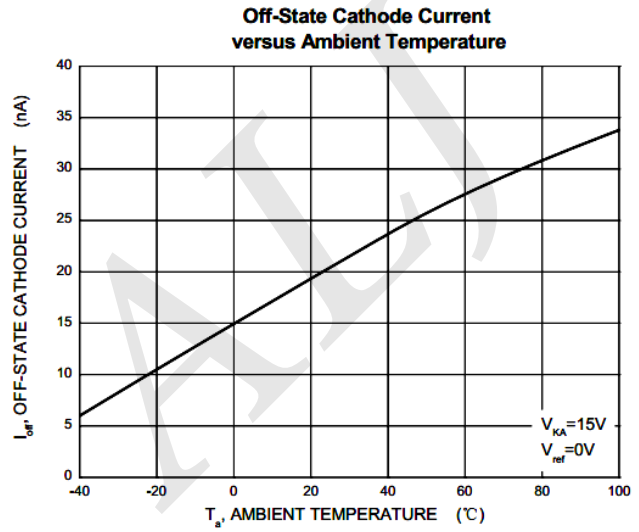


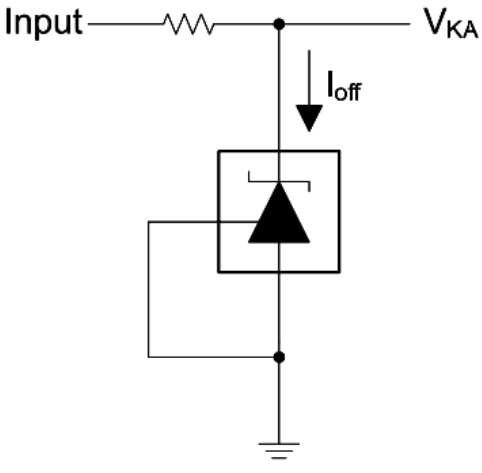
Test Circuit for $V_{KA}=V_{ref}(1+R1/R2)+R1*I_{ref}$





Test Circuit for I_{ref}





Test Circuit for I_{off}

Typical Characteristics

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

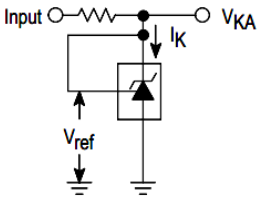
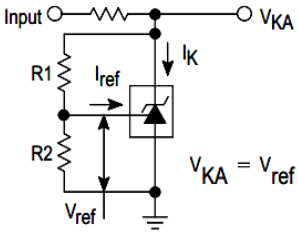
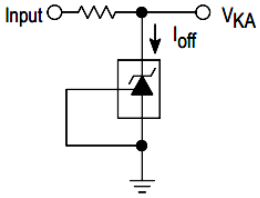


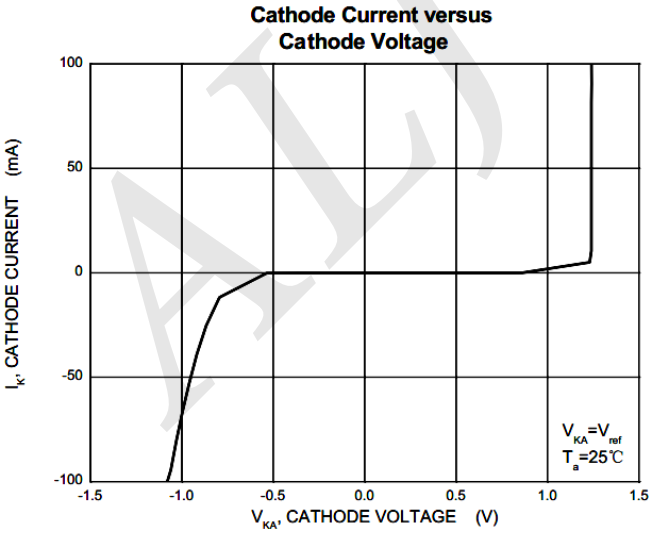
Figure 2. Test Circuit for $V_{KA} > V_{ref}$

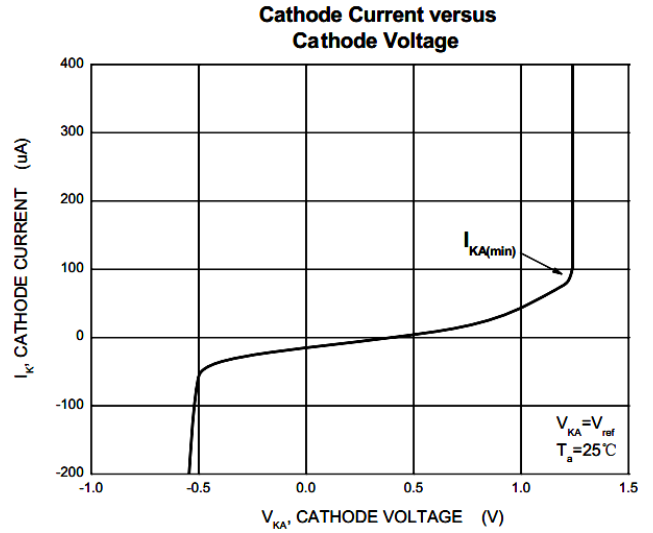


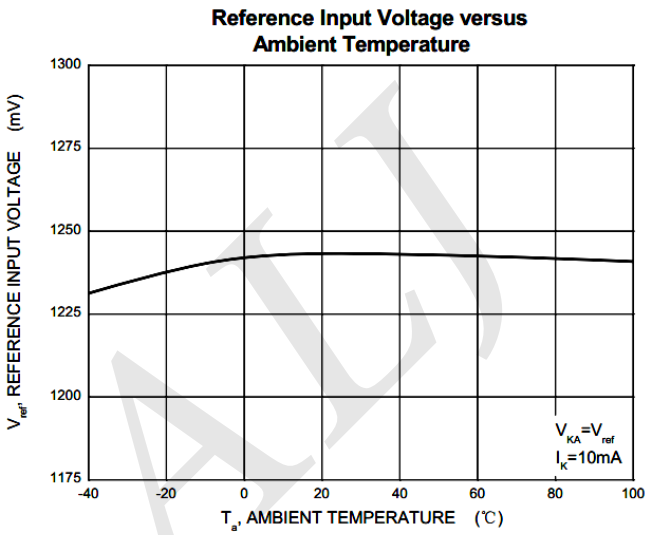
$$V_{KA} = V_{ref}\left(1 + \frac{R1}{R2}\right) + I_{ref} \bullet R1$$

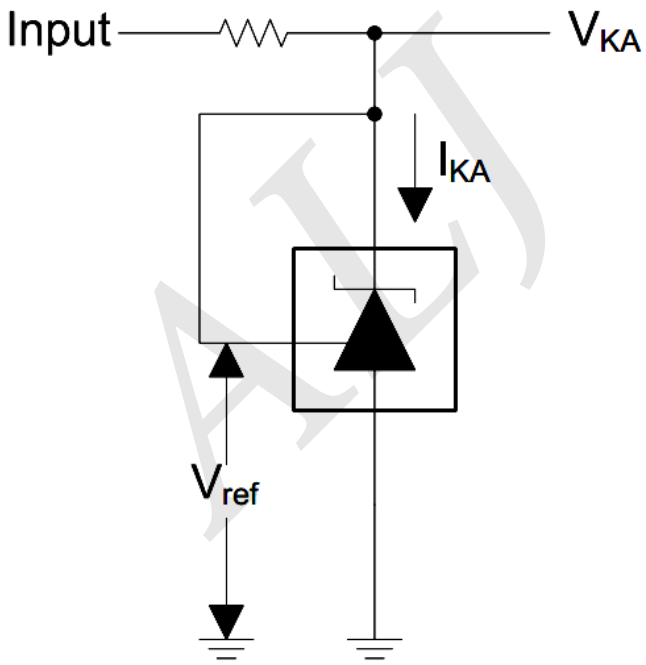
Figure 3. Test Circuit for I_{off}











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