



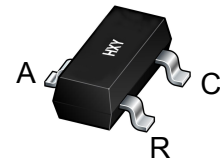
## DEVICE DESCRIPTION

The TL432 is a three-terminal adjustable shunt regulator highly accurate 1.25V bandgap reference with a 0.5% tolerance.

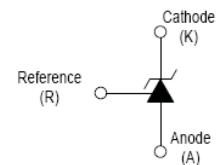
The device offers thermal stability, wide operating current (50mA) and an extended temperature range of 0 to 105°C for operation in power supply applications.

The TL432 offers a wide operating voltage range of up to 18V and is an excellent choice for voltage reference requirements in an isolated feedback circuit for 3.0V to 3.3V switching mode power supplies.

The tight tolerance guarantees a lower design cost for the power supply manufacturer by virtually eliminating the need for an extra power supply manufacturing process of the power supply.



**SOT-23**



**Equivalent Circuit**

## FEATURES

Wide Programmable Output Voltage from 1.25V to 18V.

Low Dynamic Output Resistance: 0.05Ω Typical.

High Sink Current Capacity from 55μA-100mA.

Low Equivalent Full-Range Temperature Coefficient : 20PPM/°C Typical.

Wide Operating Range of -40 to 125°C.

## APPLICATION

Shunt Regulator

High-Current Shunt Regulator

Precision Current Limiter

## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TL432	SOT-23	432	3000

## Absolute Maximum Ratings(Ta=25°C)

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	350	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	357	°C/W
$T_J, T_{stg}$	Operation Junction And Storage Temperature Range	-40~+125	°C



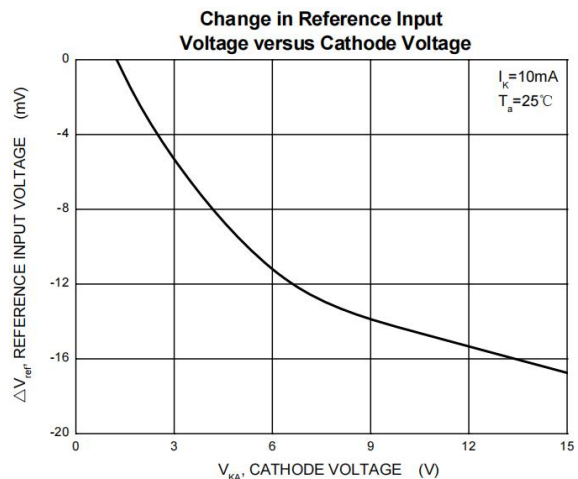
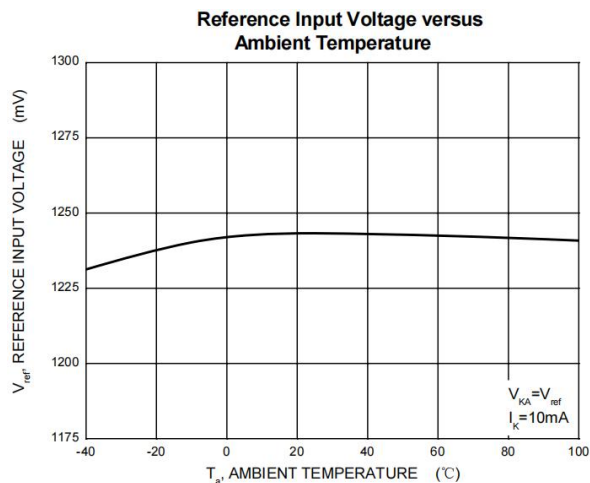
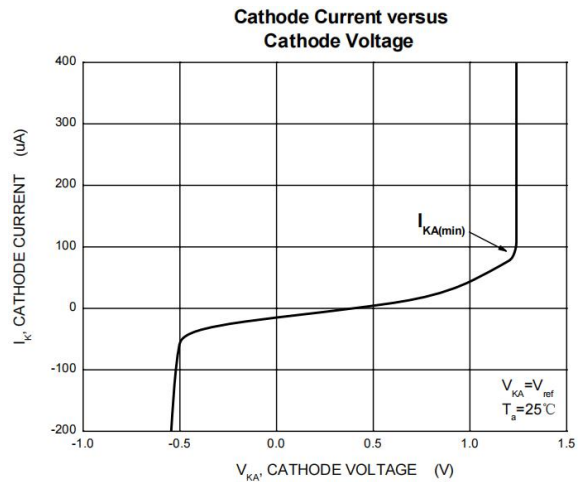
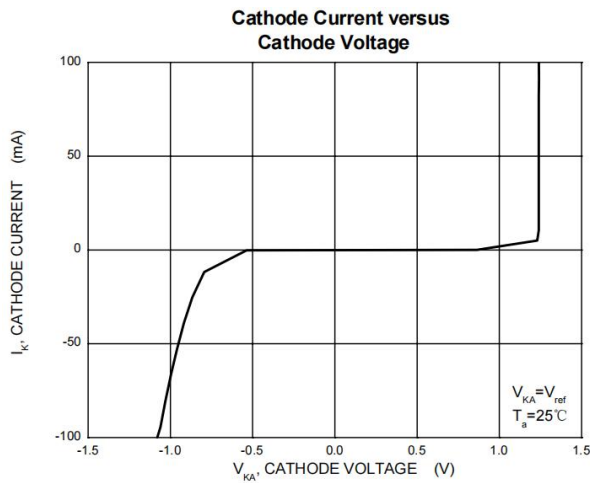
**Electrical Characteristics (Ta=25°C unless otherwise specified)**

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{ref}$	Reference input voltage	$V_{KA}=V_{REF}, I_{KA}=10mA$	1.225		1.275	V
$\Delta V_{ref}/\Delta T$	Deviation of reference input voltage over temperature (note)	$V_{KA}=V_{REF}, I_{KA}=10mA,$ $T_{MIN}\leq T_a\leq T_{MAX}$		4.5	16	mV
$\Delta V_{ref}/\Delta V_{KA}$	Ratio of change in reference input voltage to the change in cathode voltage	$I_{KA}=10mA, \Delta V_{KA}=1.25V\sim 18V$			2.4	mV/V
$I_{ref}$	Reference input current	$I_{KA}=10mA, R1=10K\Omega, R2=\infty$			0.5	$\mu A$
$\Delta I_{ref}/\Delta T$	Deviation of reference input current over full temperature range	$I_{KA}=10mA, R1=10K\Omega, R2=\infty$ $T_a=0$ to $70^\circ C$			0.6	$\mu A$
$I_{KA(min)}$	Minimum cathode current for regulation	$V_{KA}=V_{REF}$			0.1	mA
$I_{KA(OFF)}$	Off-state cathode current	$V_{KA}=36V, V_{REF}=0$			0.5	$\mu A$
$Z_{KA}$	Dynamic impedance	$V_{KA}=V_{REF}, I_{KA}=1\sim 100mA, f\leq 1.0KHz$			0.5	$\Omega$

**CLASSIFICATION cZVref**

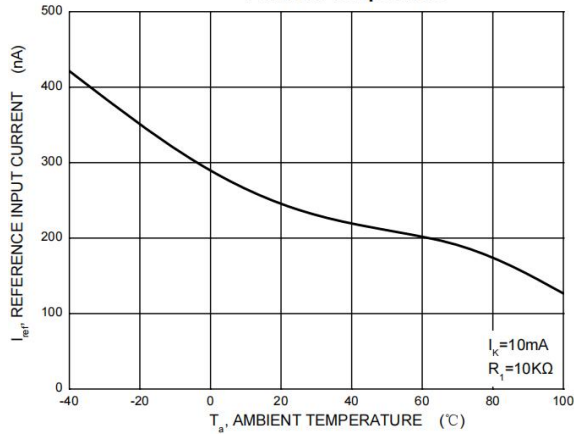
<b>Rank</b>	*** 0.5%	*****1%
<b>Range</b>	2.487-2.513	2.475-2.525

**Typical Characteristics**

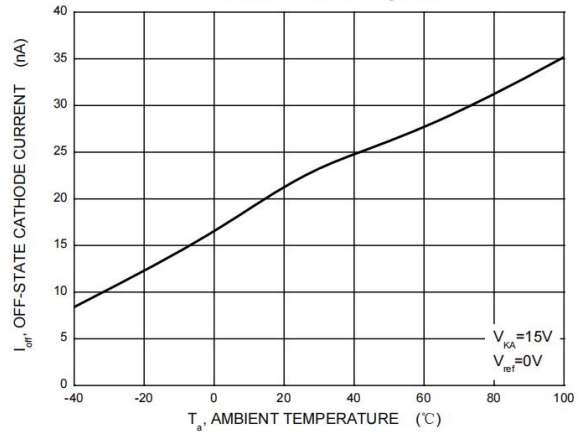




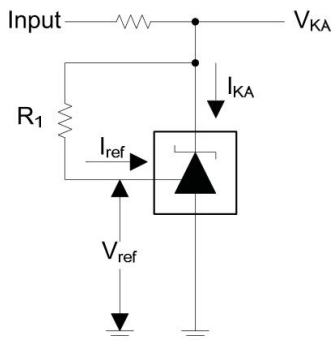
Reference Input Current versus Ambient Temperature



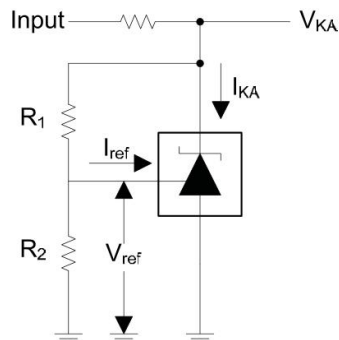
Off-State Cathode Current versus Ambient Temperature



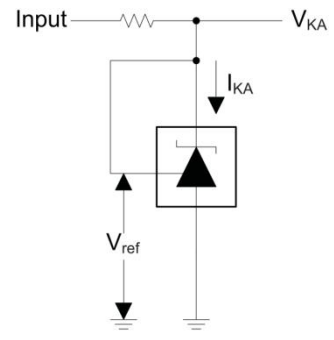
### Test Circuit



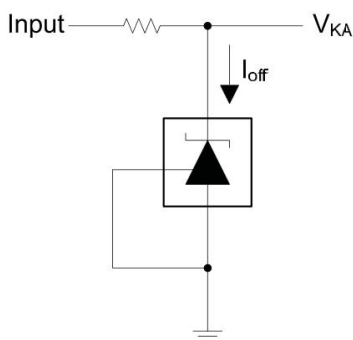
Test Circuit for I<sub>ref</sub>



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



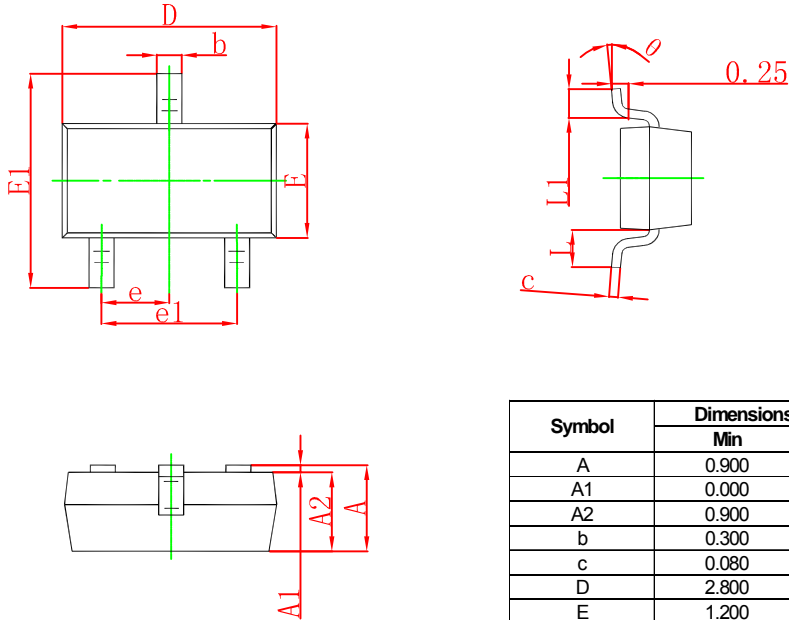
Test Circuit for  $V_{KA} = V_{ref}$



Test Circuit for I<sub>off</sub>

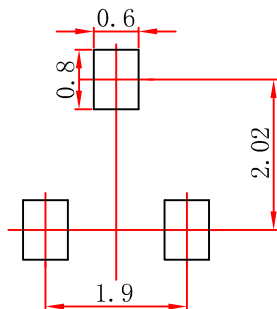


### SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.



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