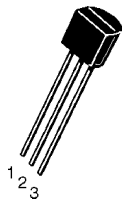
TL432 Adjustable Precision Shunt Regulator

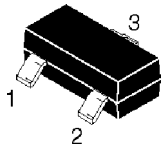
TO-92 SOT-23

FEATURES

- Precise Reference Voltage to 1.240V
- Guaranteed 1% Voltage Tolerance
- Adjustable Output Voltage Vo = Vref to 18V
- Sink Current Capability , 80uA to 100mA
- Die size 0.85 x0.85mm2, Thickness 270+/- 30um
- TO-92 and SOT-23 Packages



Pin: 1. Reference
2. Anode
3. Cathode



Pin: 1. Reference
2. Cathode
3. Anode

Features:

- Precise Reference Voltage to 1.24V
- Guaranteed 1% Reference Voltage Tolerance
- Sink Current Capability, 80μA to100mA
- Quick Turn-on
- Adjustable Output Voltage, V_o=V_{REF} to 18V
- 0.2 Ω Typical Output Impedance

Physical Characteristics:

- Wafer Diameter ……100 ± 0.5 mm
- Wafer thickness …… ..280 ± 20 μm
- Die size ……0.85 x 0.85 mm^2
- Scribe width ……....100 μm
- Metallization bottom…without metallization
- Passivation …… PSG

Absolute Maximum Ratings

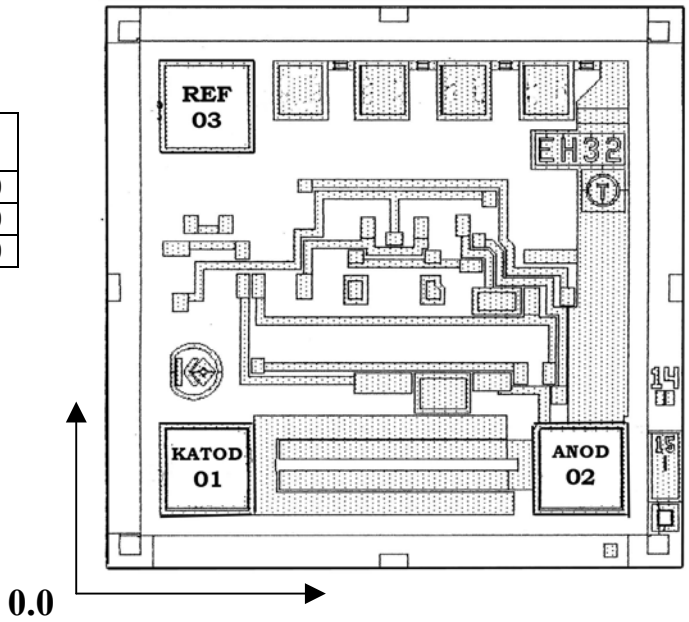
Symbol	Parameter	Rating	Unit
V_{KA}	Cathode voltage	18	V
I_K	Continuous cathode current range	100	mA
I_{REF}	Reference current range	3	mA
Tj	Operating Junction Temperature Range	- 40 to 150	°C

Electrical Characteristics T_A= 25°C (unless otherwise noted)

Symbol	Parameter	Test Conditions	TL432A			Unit
			Min	Typ	Max	
V_{RFF}	Reference voltage	V_{KA}=V_{REF}, I_K=10mA (Fig. 1) T_A =25°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=10mA(Fig. 1)		10	25	mV
$\Delta V_{REF}/\Delta V_{KA}$	Ratio of Change in V_{REF} to Change in Cathode Voltage	!$_K$=10mA, V_{KA}=18V to V_{REF} (Fig. 2)		-1	-2.7	mV / V
I_{REF}	Reference Input Current	I_K=10mA, R_1 =10kΩ R_2=∞ (Fig.2)		0.25	0.5	μA
$I_{REF(DEV)}$	I_{REF} Temp Deviation	T_K=full range (see Note 1), R_1 =10kΩ, R_2=∞, I_K=10mA (Fig. 2)		0.05	0.3	μA
Ik(off)	Off-state cathode current	V_{REF}=0 V,(Fig.3) V_k=18V		0.04	0.5	μA
Zka	Dynamic Output Impedance	V_{ka}=V_{ref}, I_k=1mA to 100mA F ≤1kHz (Fig. 1)		0.2	0.4	Ω
$I_{K(MIN)}$	Minimum Operating Current	V_{KA}=V_{REF}(Fig. 1)		60	80	μA

Notes: 1. Full temperature range is -40°C to 105°C for TL432

Pad #	Pad Name	Description	Bond Pad (μm)	X	Y
1	K	CATHODE	130 x 130	150	700
2	A	ANODE	130 x 130	700	150
3	REF	REF	130 x 130	150	150



Test Figures

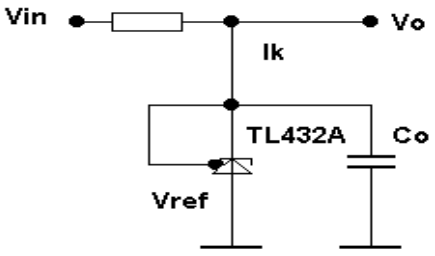


Figure 1. Test Circuit for Vka=Vref,
Vo=Vka=Vref Co=1uF*

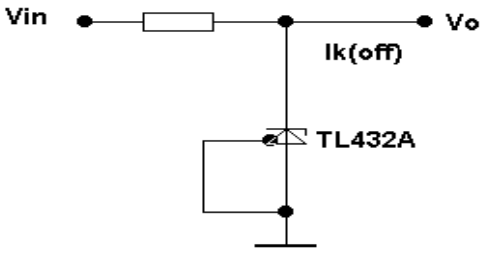


Figure 3. Test Circuit for Ik(off)

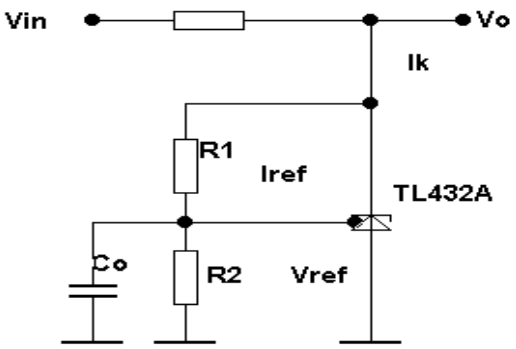


Figure 2. Test Circuit for Vka>Vref,
Vo=Vka=Vref * (1+R1/R2)+Iref1*R1
Co=1uF*