

Adjustable Accurate Reference Source

DEVICE DESCRIPTION:

The UMW TL432 is a three-terminal adjustable shunt regulator highly accurate 1.25V band gap reference with 0.5%, 1% tolerance. The device offers thermal stability, wide operating current (50mA) and an extended temperature range of -40°C to 105°C for operation in power supply applications. The UMW TL432 offers a wide operating voltage range of up to 12V and is an excellent choice for voltage reference requirements in an isolated feedback circuit for 3.0V ~ 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

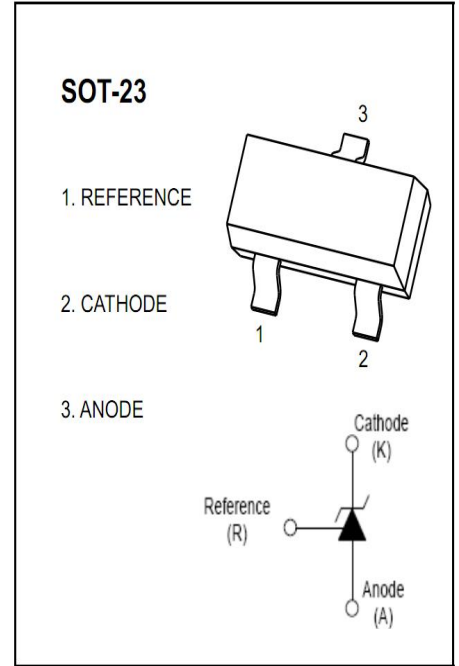
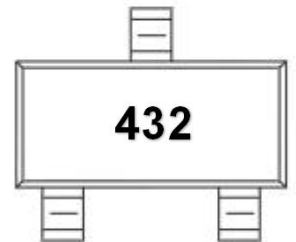
FEATURES:

- 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

MARKING:



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

Parameter	Symbol	Value	Unit
Cathode Voltage	VKA	18	V
Cathode Current Range (Continuous)	IKA	100	mA
Reference Input Current Range	Iref	6	mA
Power Dissipation	PD	350	mW
Thermal Resistance from Junction to Ambient	RθJA	350	°C/W
Operating Junction Temperature	Tj	125	°C
Operating Ambient Temperature Range	Topr	-40-105	°C
Storage temperature Range	Tstg	-40~+150	°C

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ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reference input voltage (Fig.1)	Vref	VKA=VREF, IKA=10mA	1.22	1.25	1.26	V
Deviation of reference voltage over full temperature range (Fig 1)	$\Delta V_{ref} / \Delta T$	VKA =VREF, IKA =10mA 0°C≤Ta≤70°C		4.5	16	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig.2)	$\Delta V_{ref} / \Delta V_{KA}$	IKA=10mA $\Delta V_{KA}=1.25V\sim 15V$		1	2.5	mV/V
Reference input current (Fig.2)	Iref	IKA=10mA, R1=10kΩ R2=∞		1.5	4	μA
Deviation Of reference input current over full temperature range (Fig.2)	$\Delta I_{ref} / \Delta T$	IKA=10mA, R1=10kΩ R2=∞ 0°C≤Ta≤70°C		0.2	0.6	μA
Minimum cathode current for regulation (Fig.1)	IKA(min)	VKA=VREF, IKA=10mA			0.1	mA
Off-state cathode Current (Fig.3)	IKA(OFF)	VKA=36V, VREF=0		0.05	0.5	μA
Dynamic impedance	ZKA	VKA=VREF, IKA=1 to100mA f≤1.0kHz		0.15	0.5	Ω

Note: TMIN=-25°C ,TMAX=+85°C

CLASSIFICATION of Vref

Rank	0.5%	1.00%
Range	1.234-1.246	1.228-1.252

Figure 1. Test Circuit for VKA = Vref

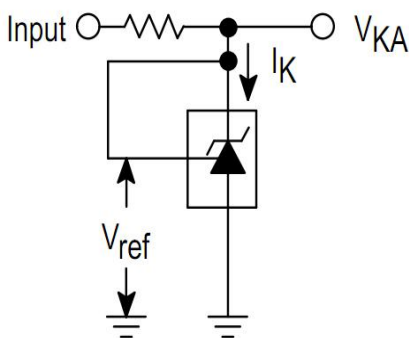
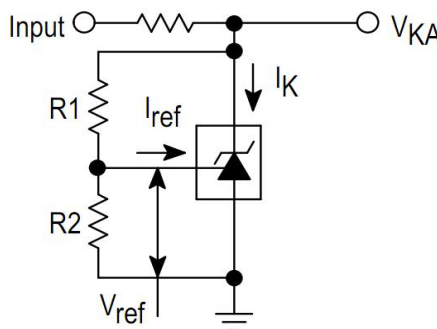
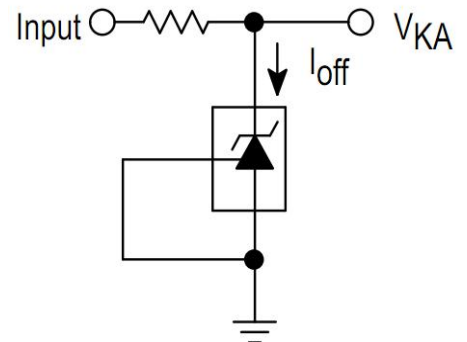


Figure 2. Test Circuit for VKA >Vref

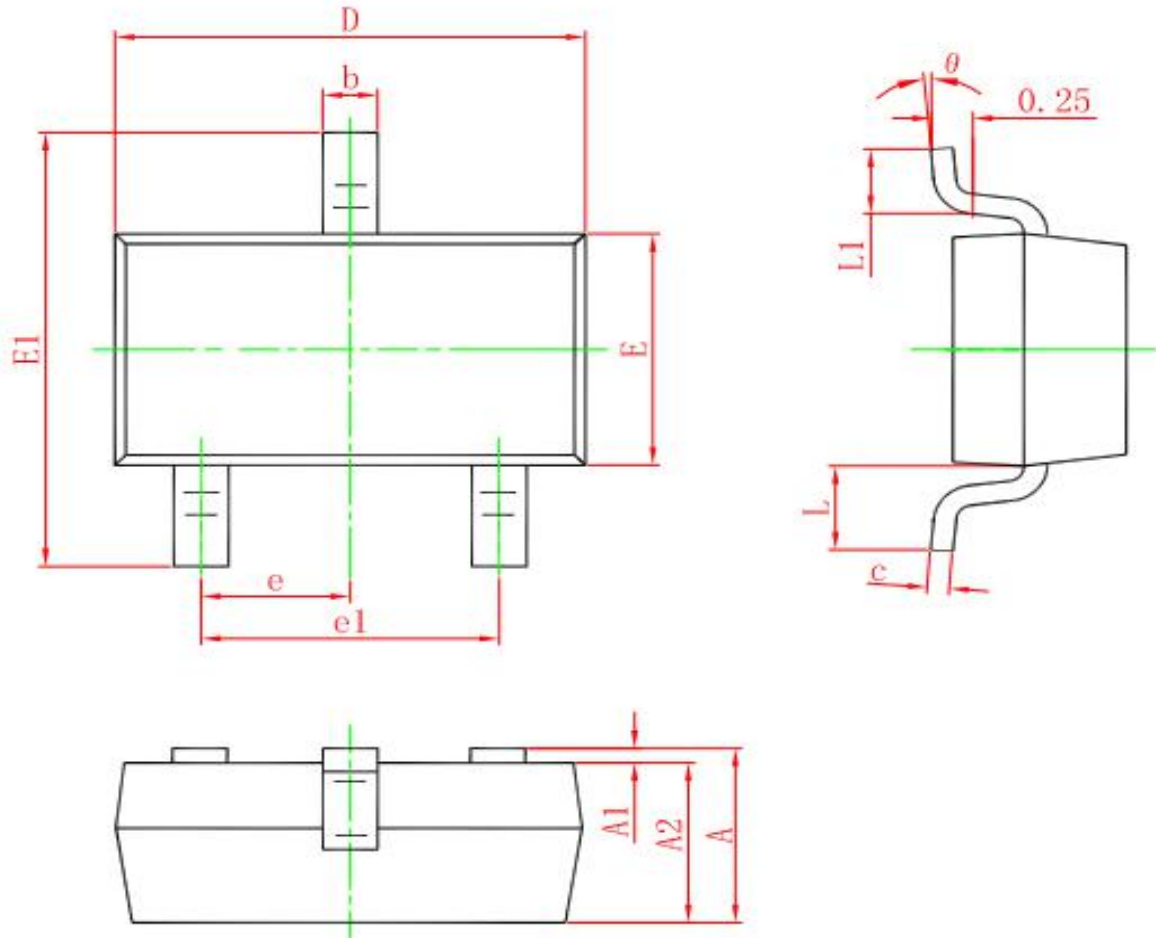


$$V_{KA} = V_{ref} \left(1 + \frac{R1}{R2} \right) + I_{ref} \cdot R1$$

Figure 3. Test Circuit for Ioff



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°