

## 1.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.

## 3.Applications

- Shunt Regulator
- High-Current Shunt Regulator

## 2.Features

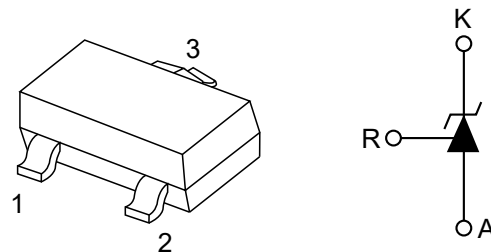
- Low dynamic output impedance
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on -state response
- Sink current capability of 0.1mA to 100mA

- Precision Current Limiter

## 4.Pinning information

Pin	Symbol	Description
1	R	Reference
2	K	Cathode
3	A	Anode

SOT-23





## 5. Absolute Maximum Ratings

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	mA
Power Dissipation	$P_D$	350	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	350	°C/W
Operating Junction Temperature	$T_J$	125	°C
Operating Ambient Temperature Range	$T_{opr}$	-40 to 105	°C
Storage temperature Range	$T_{STG}$	-40 to 150	°C



## 6. Electrical Characteristics (Unless Otherwise Specified, $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reference voltage <sup>(1)</sup>	$V_{\text{ref}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$	1.243	1.25	1.256	V
Deviation of reference input voltage over full temperature range <sup>(1)</sup>	$\Delta V_{\text{ref}}/\Delta T$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}, 0^\circ\text{C}\leq T_a\leq 70^\circ\text{C}$		4.5	16	mV
Ratio of change in reference voltage to the change in cathode voltage <sup>(2)</sup>	$\Delta V_{\text{ref}}/\Delta V_{\text{KA}}$	$I_{\text{KA}}=10\text{mA}, \Delta V_{\text{KA}}=1.25\text{V}\sim 15\text{V}$		1	2.5	mV/V
Reference input current <sup>(2)</sup>	$I_{\text{ref}}$	$I_{\text{KA}}=10\text{mA}, R1=10\text{k}\Omega, R2=\infty$		1.5	4	$\mu\text{A}$
Deviation of reference input current over full temperature range <sup>(2)</sup>	$\Delta I_{\text{ref}}/\Delta T$	$I_{\text{KA}}=10\text{mA}, R1=10\text{k}\Omega, R2=\infty, 0^\circ\text{C}\leq T_a\leq 70^\circ\text{C}$		0.2	0.6	$\mu\text{A}$
Min. cathode current for regulation <sup>(1)</sup>	$I_{\text{KA(min)}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$			0.1	mA
Off-state cathode current <sup>(3)</sup>	$I_{\text{KA(OFF)}}$	$V_{\text{KA}}=36\text{V}, V_{\text{REF}}=0$		0.05	0.5	$\mu\text{A}$
Dynamic impedance	$Z_{\text{KA}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=1\text{ to }100\text{mA}, f\leq 1.0\text{kHz}$		0.15	0.5	$\Omega$

Note 1:  $T_{\text{MIN}}=-25^\circ\text{C}$ ,  $T_{\text{MAX}}=+85^\circ\text{C}$ .



7.Classification of  $V_{ref}$

Rank	0.5%	1.00%
Range	1.243-1.256	1.237-1.262

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

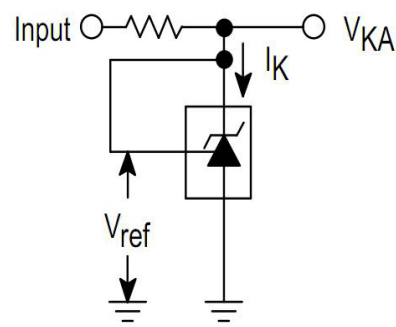
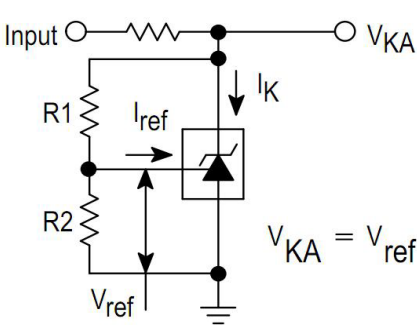
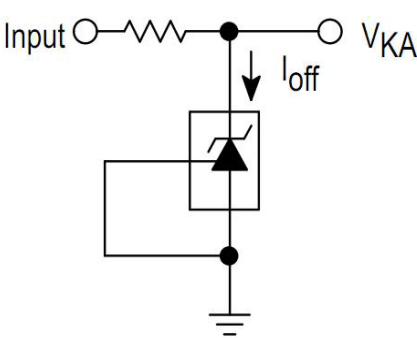


Figure 2. Test Circuit for  $V_{KA}>V_{ref}$



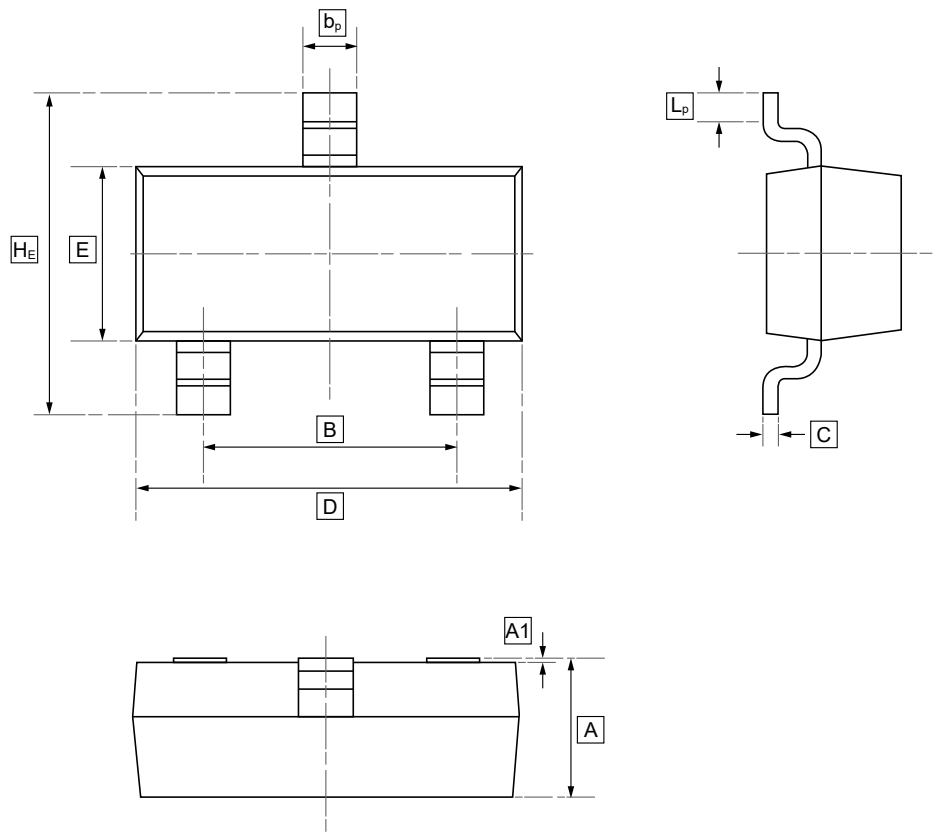
$$V_{KA} = V_{ref} (1 + R1/R2) + I_{ref} \times R1$$

Figure 3. Test Circuit for  $I_{off}$





8.SOT-23 Package Outline Dimensions

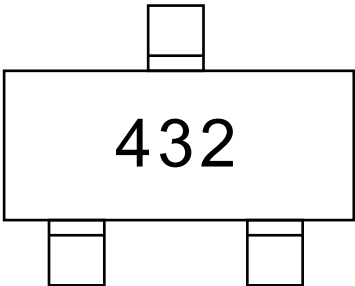


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b <sub>p</sub>	C	D	E	H <sub>E</sub>	A1	L <sub>p</sub>
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



9.Ordering information



Order Code	Package	Base QTY	Delivery Mode
UMW TL432 0.5%	SOT-23	3000	Tape and reel



## 10.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.