

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.

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

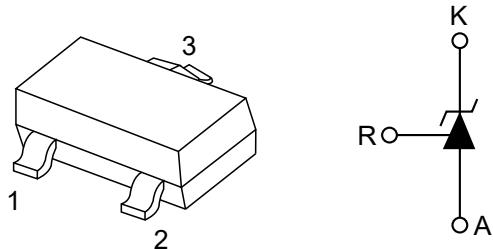
3. Applications

- Shunt Regulator
- High-Current Shunt Regulator
- 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



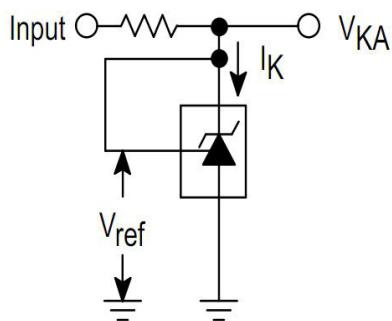
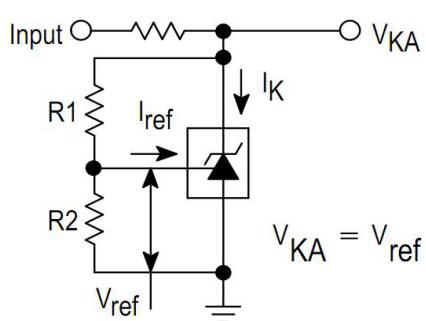
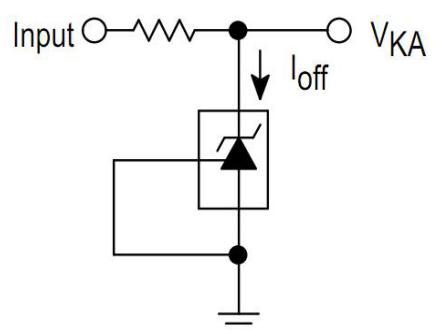
6. Electrical Characteristics (Unless Otherwise Specified, $T_a=25^\circ\text{C}$)

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

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

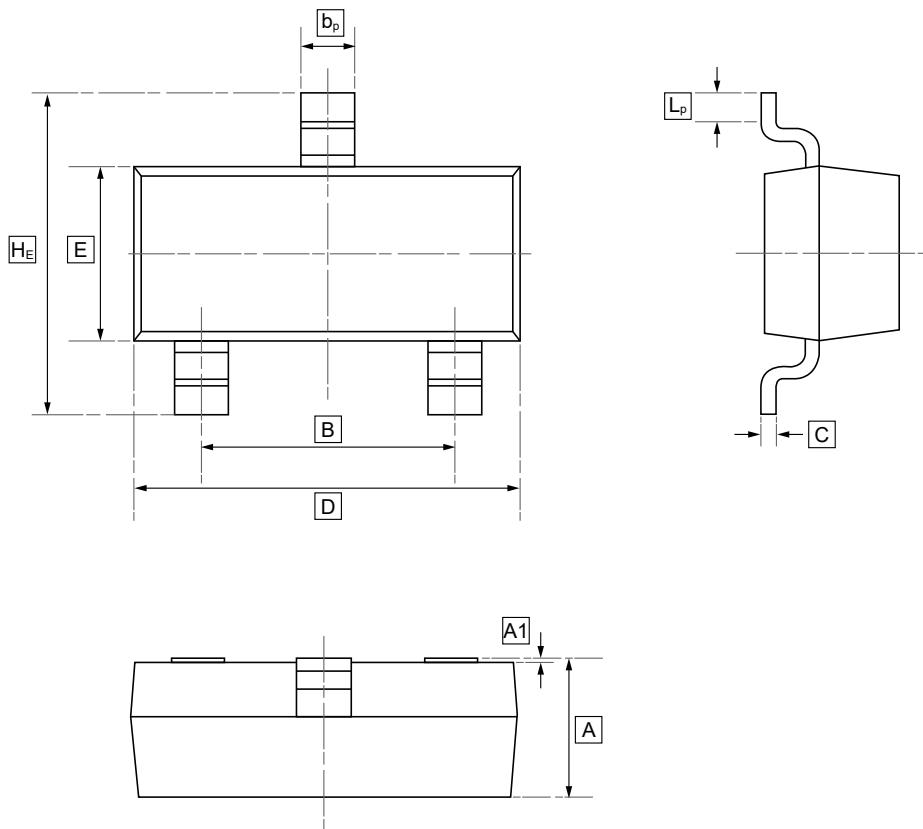
7. Classification of V_{ref}

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 $V_{KA}>V_{ref}$ Figure 3. Test Circuit for I_{off} 

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

8.SOT-23 Package Outline Dimensions

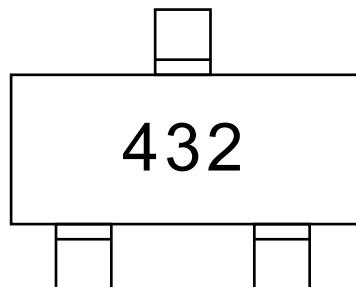


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b _p	C	D	E	H _E	A1	L _p
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

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