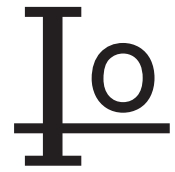


MMBTL432

SOT-23 Encapsulate Adjustable Reference Source



DEVICE DESCRIPTION

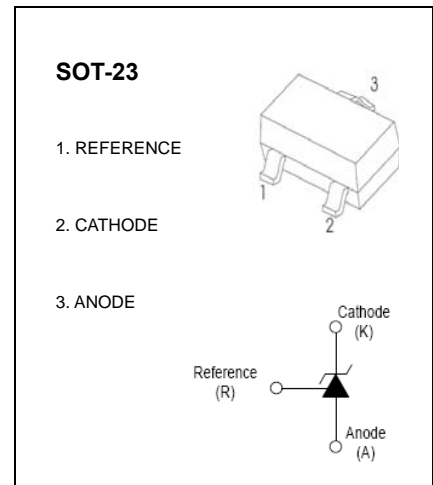
The TL432 is a three-terminal Shunt Voltage Reference providing a highly accurate 1.24V. The TL432 thermal stability and wide operating current, makes it suitable for all variety of applications that are looking for a low cost solution with high performance.

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



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

| 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 | μ A |
| Power Dissipation | P_D | 350 | mW |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 357 | $^{\circ}$ C/W |
| Operating Temperature | T_{opr} | 0~+70 | $^{\circ}$ C |
| Junction Temperature | T_J | 150 | $^{\circ}$ C |
| Storage Temperature | T_{stg} | -65~+150 | $^{\circ}$ C |

MMBTL432

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

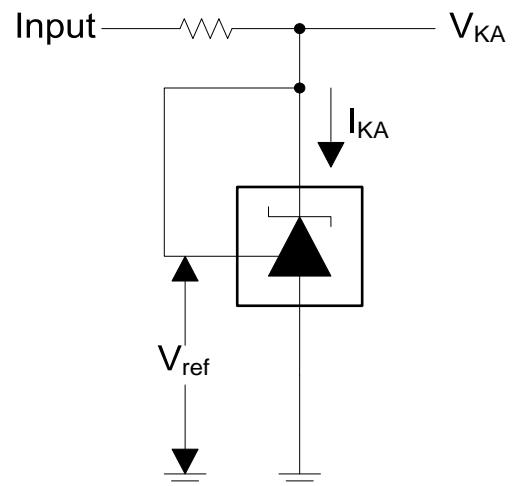
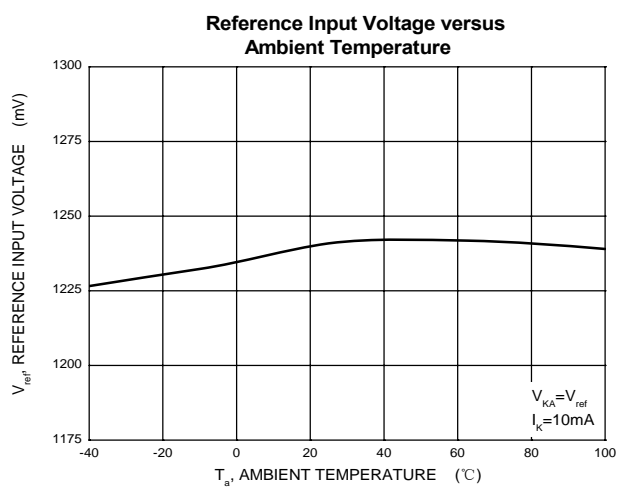
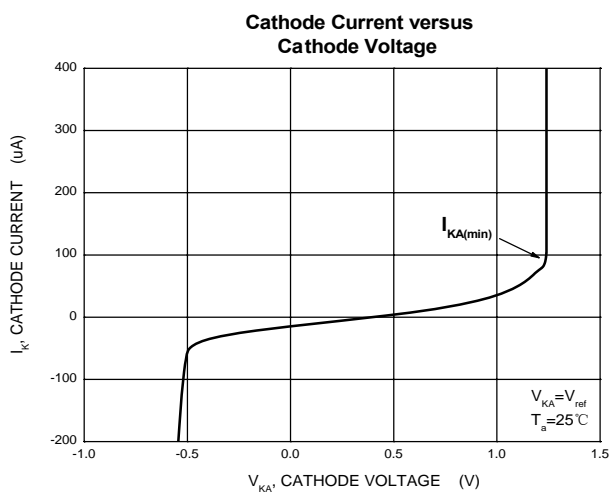
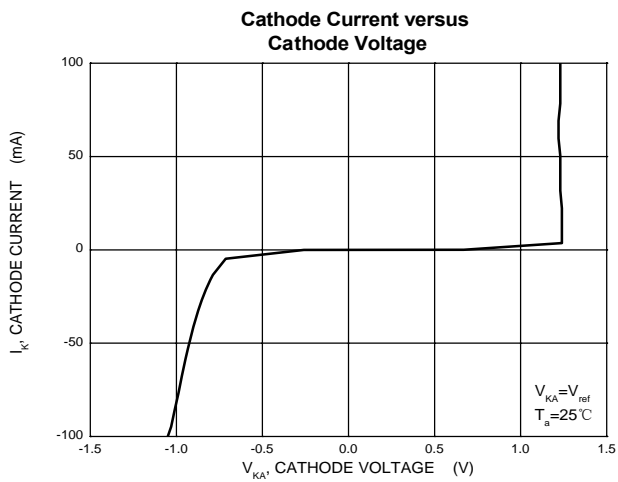
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|-----------------------------|---|--------|-----|--------|----------|
| Reference input voltage (Fig 1) | V_{ref} | $V_{KA}=V_{REF}, I_{KA}=10mA$ | 1.2214 | | 1.2586 | V |
| Deviation of reference voltage over full temperature range (Fig 1) | $\Delta V_{ref(DEV)}$ | $V_{KA}=V_{REF}, I_{KA}=10mA$ $0^{\circ}C \leq T_a \leq 70^{\circ}C$ | | | 16 | mV |
| Ratio of change in reference input voltage to the change in cathode voltage (Fig 2) | $V_{ref} / \Delta V_{KA}$ | $I_{KA}=10mA,$ $\Delta V_{KA}=1.25V \sim 15V$ | | | 2.4 | mV/V |
| Deviation of reference input current over full temperature range (Fig 2) | $\Delta I_{ref} / \Delta T$ | $I_{KA}=10mA, R_1=10k\Omega,$ $R_2=\infty, 0^{\circ}C \leq T_a \leq 70^{\circ}C$ | | | 0.6 | μA |
| Minimum cathode current for regulation (Fig 1) | $I_{KA(min)}$ | $V_{KA}=V_{REF}$ | | | 0.1 | mA |
| Off-state cathode current(Fig 3) | I_{off} | $V_{KA}=15V, V_{REF}=0$ | | | 0.5 | μA |
| Dynamic impedance | Z_{KA} | $V_{KA}=V_{REF}, I_{KA}=0.1 \sim 20mA,$ $f \leq 1.0kHz$ | | | 0.5 | Ω |

CLASSIFICATION OF V_{ref}

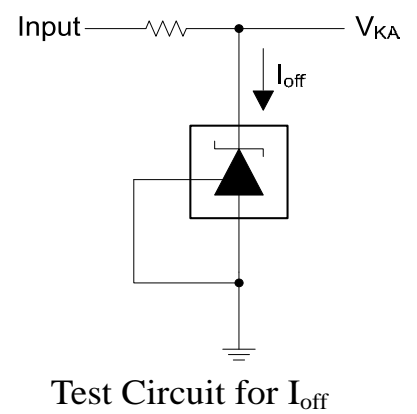
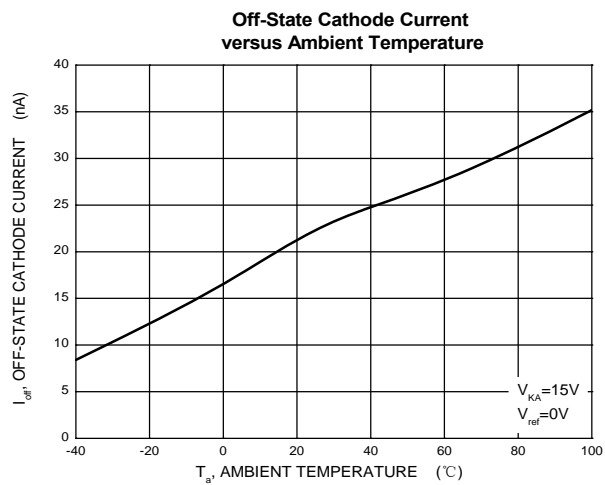
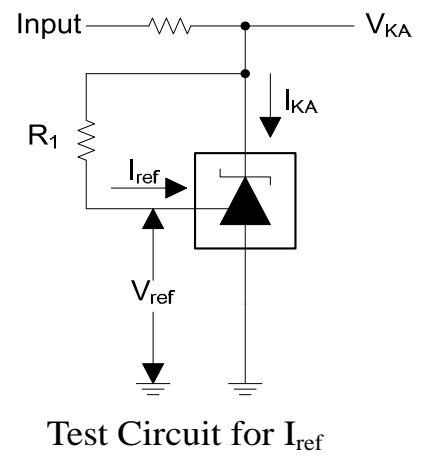
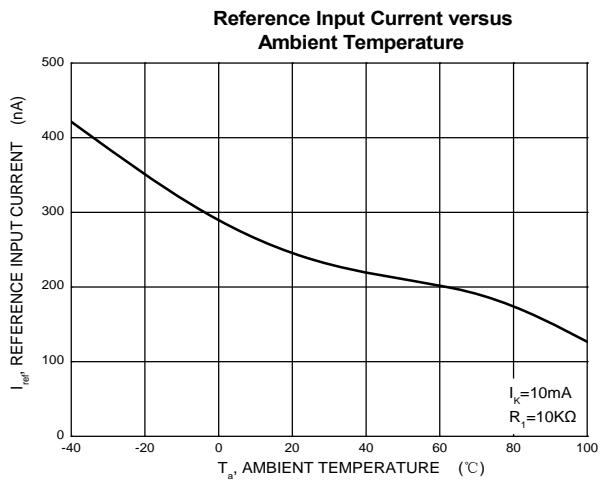
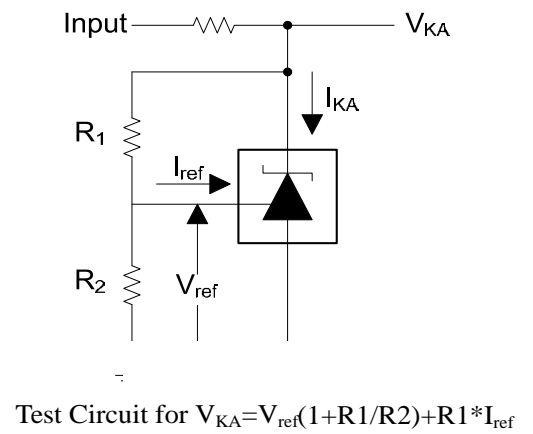
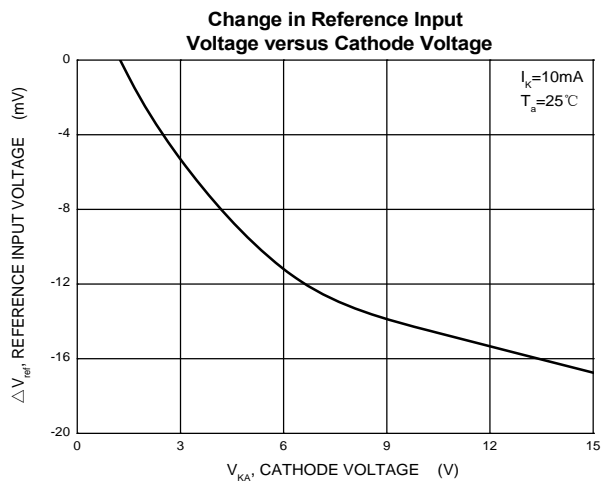
| Rank | 1% | 1.5% |
|-------|---------------|---------------|
| Range | 1.2276~1.2524 | 1.2214~1.2586 |

Typical Characteristics

MMBTL432



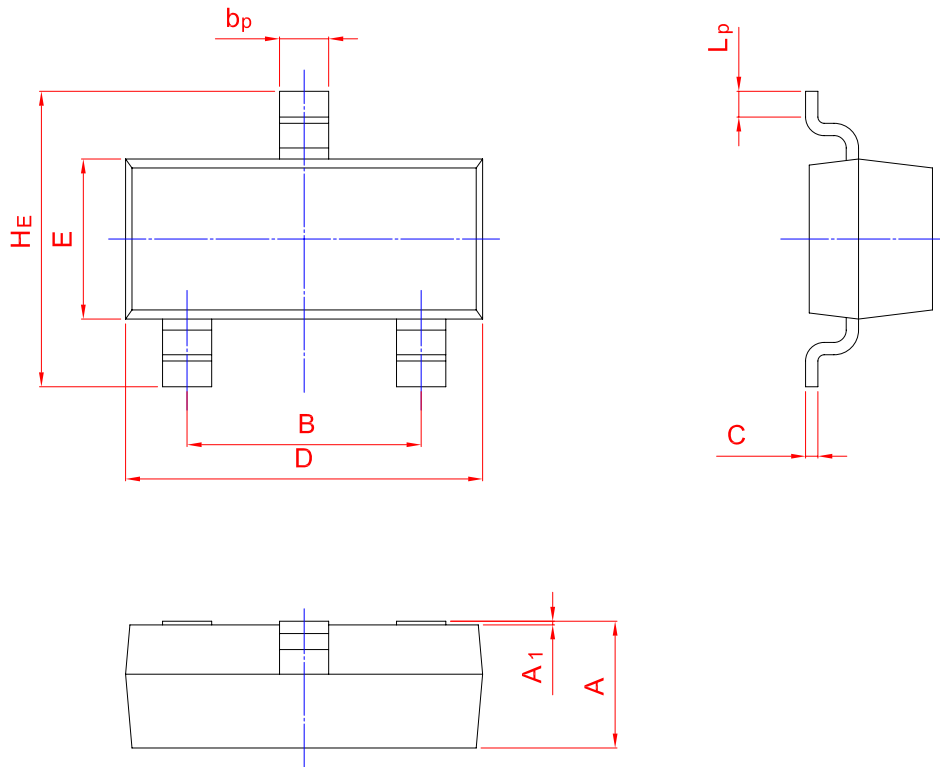
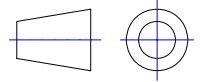
Test Circuit for $V_{KA} = V_{ref}$



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| UNIT | A | B | bp | C | D | E | HE | A1 | Lp |
|------|------|------|------|------|------|------|------|-------|------|
| mm | 1.40 | 2.04 | 0.50 | 0.19 | 3.10 | 1.65 | 3.00 | 0.100 | 0.50 |
| | 0.95 | 1.78 | 0.35 | 0.08 | 2.70 | 1.20 | 2.20 | 0.013 | 0.20 |