



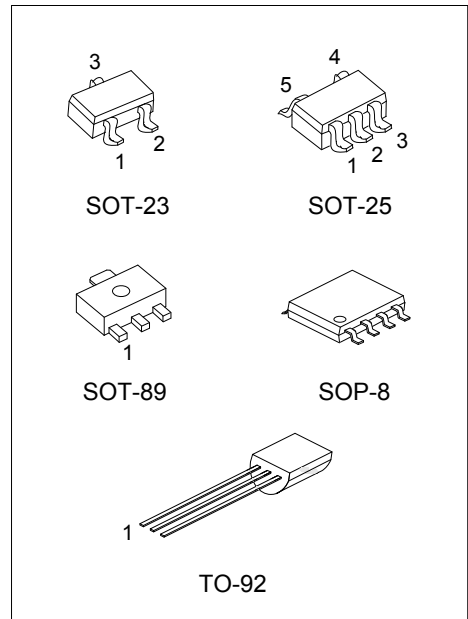
TL432D

LINEAR INTEGRATED CIRCUIT

0.8V PRECISION ADJUSTABLE SHUNT REFERENCE REGULATORS

DESCRIPTION

The UTC **TL432D** is a three-terminal adjustable shunt regulator highly accurate 0.8V band gap reference with 1%, 2% tolerance. The device offers thermal stability, wide operating current (50mA) and an extended temperature range of 0° to 105°C for operation in power supply applications. The UTC **TL432D** 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

- * Temperature-Compensated: 50ppm/°C
- * Internal Amplifier with 50mA Capability
- * Nominal Temperature Range Extended to 105°C
- * Low Frequency Dynamic Output Impedance:<150mΩ
- * Low Output Noise

ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | | | | | | Packing |
|-----------------|---------------|---------|----------------|---|---|---|---|---|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| TL432DL-AB3-R | TL432DG-AB3-R | SOT-89 | R | A | K | - | - | - | - | - | Tape Reel |
| TL432DL-AE3-R | TL432DG-AE3-R | SOT-23 | R | K | A | - | - | - | - | - | Tape Reel |
| TL432DL-AF5-R | TL432DG-AF5-R | SOT-25 | X | X | K | R | A | - | - | - | Tape Reel |
| TL432DL-T92-B | TL432DG-T92-B | TO-92 | R | A | K | - | - | - | - | - | Tape Box |
| TL432DL-T92-K | TL432DG-T92-K | TO-92 | R | A | K | - | - | - | - | - | Bulk |
| TL432DL-S08-R | TL432DG-S08-R | SOP-8 | K | A | A | X | X | A | A | R | Tape Reel |

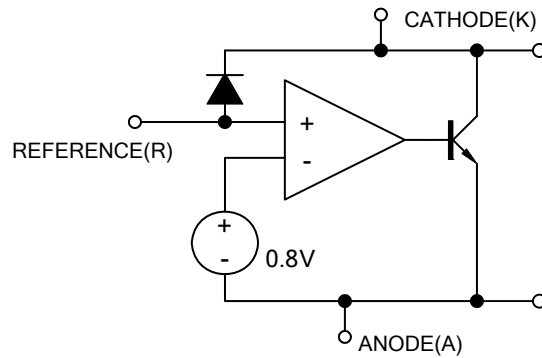
Note: Pin Code: R: Reference A: Anode K: Cathode X: No Connection

| | |
|---|---|
| <p>TL432DG-AB3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) R: Tape Reel, B: Tape Box, K: Bulk</p> <p>(2) AB3: SOT-89, AE3: SOT-23, AF5: SOT-25, S08: SOP-8, T92: TO-92</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|---|---|

MARKING

| PACKAGE | MARKING |
|---------|--|
| SOT-89 | <p>TL432D □ → Data Code L: Lead Free G: Halogen Free</p> |
| SOT-23 | <p>432D □ → L: Lead Free G: Halogen Free</p> |
| SOT-25 | <p>432D □ → L: Lead Free G: Halogen Free</p> |
| SOP-8 | <p>UTC □ □ □ □ → Date Code TL432D □ → L: Lead Free G: Halogen Free □ □ → Lot Code</p> |
| TO-92 | <p>UTC TL432D □ → L: Lead Free G: Halogen Free □ □ → Data Code</p> |

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------------------|-----------|------------|------|
| Cathode-Anode Reverse Breakdown | V_{KA} | 15 | V |
| Operating Cathode Current | I_{KA} | 50 | mA |
| Reference Input Current | I_{REF} | 1 | mA |
| Junction Temperature | T_J | 125 | °C |
| Operating Temperature | T_{OPR} | -40 ~ +85 | °C |
| Storage Temperature | T_{STG} | -40 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|-----------------|----------|-----------|-----|-----|------|
| Cathode Voltage | V_{KA} | V_{REF} | | 15 | V |
| Cathode Current | I_K | 5 | 10 | | mA |

■ THERMAL DATA

| PARAMETER | SYMBOL | RATING | UNIT |
|---------------------|---------------|--------|------|
| Junction to Ambient | SOT-23/SOT-25 | 350 | °C/W |
| | TO-92 | 100 | °C/W |
| | SOP-8 | 150 | °C/W |
| | SOT-89 | 220 | °C/W |

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, $V_{KA}=V_{REF}$, $I_K=10\text{mA}$, unless otherwise specified.)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|------------------|---|-------|------|-------|---------------|
| Reference Input Voltage | V_{REF} | $I_K=10\text{mA}$, $V_K=V_{REF}$ | 0.792 | 0.80 | 0.808 | V |
| | | | 0.784 | 0.80 | 0.816 | V |
| Line Regulation | ΔV_{REF} | $V_K=0.8 \sim 15\text{V}$ | | 10 | 15 | mV |
| Load Regulation | ΔV_{REF} | $I_K=5 \sim 50\text{mA}$ | | 6 | 15 | mV |
| Temperature Deviation | ΔV_{REF} | $0 < T_J < 105^\circ\text{C}$ | | 2 | 6 | mV |
| Reference Input Current | I_{REF} | | | 3 | 6 | μA |
| Reference Input Current Temperature Coefficient | ΔI_{REF} | $0 < T_J < 105^\circ\text{C}$ | | 0.3 | 0.6 | μA |
| Minimum Cathode Current for Regulation | $I_{K(MIN)}$ | | | 0.6 | 1 | mA |
| Off State Leakage | $I_{KA(OFF)}$ | $V_{REF}=0\text{V}$, $V_{KA}=15\text{V}$ | | | 500 | nA |

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