

### FEATURES

- Temperature-Compensated: 50ppm/°C
- Trimmed 1% Bandgap Reference
- Internal Amplifier with 150mA Capability
- Nominal Temperature Range Extended to 105°C
- Low Frequency Dynamic Output Impedance: < 150m
- Low Output Noise

### DESCRIPTION

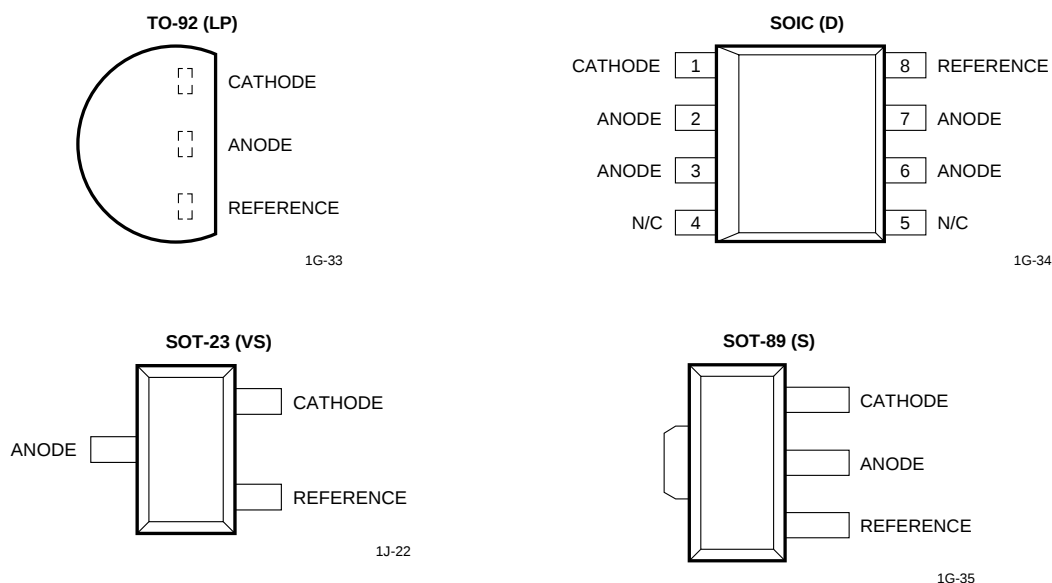
Calogic's CL432A is a 3-terminal Adjustable Shunt Regulator highly accurate 1.25V bandgap reference with a 1% tolerance. The device offers thermal stability, wide operating current (100mA) and an extended temperature range of 0° to 105°C for operation in power supply applications. The CL432A offers a wide operating voltage range of up to 10V and is an excellent choice for voltage reference requirements in an isolated feedback circuit for 3.0V to 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.

The device is housed in several package options to meet the designers criteria.

### ORDERING INFORMATION

| Part     | Package            | Temperature Range |
|----------|--------------------|-------------------|
| CL432ALP | TO-92              | 0 to 105°C        |
| CL432AD  | 8-Pin Plastic SOIC | 0 to 105°C        |
| CL432AVS | SOT-23             | 0 to 105°C        |
| CL432AS  | SOT-89             | 0 to 105°C        |

### PIN CONFIGURATION (Top View)



ABSOLUTE MAXIMUM RATINGS

| SYMBOL           | PARAMETER                                                        | RATING                    | UNITS                |
|------------------|------------------------------------------------------------------|---------------------------|----------------------|
| V <sub>KA</sub>  | Cathode-Anode Reverse Breakdown                                  | 10                        | V                    |
| I <sub>AK</sub>  | Anode-Cathode Forward Current                                    | 1                         | A                    |
| I <sub>KA</sub>  | Operating Cathode Current                                        | 100                       | mA                   |
| I <sub>REF</sub> | Reference Input Current                                          | 1                         | mA                   |
| P <sub>D</sub>   | Continuous Power at 25°C<br>TO-92<br>8L SOIC<br>SOT-23<br>SOT-89 | 775<br>750<br>1000<br>200 | mW<br>mW<br>mW<br>mW |
| T <sub>J</sub>   | Junction Temperature                                             | 150                       | °C                   |
| T <sub>STG</sub> | Storage Temperature                                              | -65 to 150                | °C                   |
| T <sub>L</sub>   | Lead Temperature, Soldering 10 Seconds                           | 300                       | °C                   |

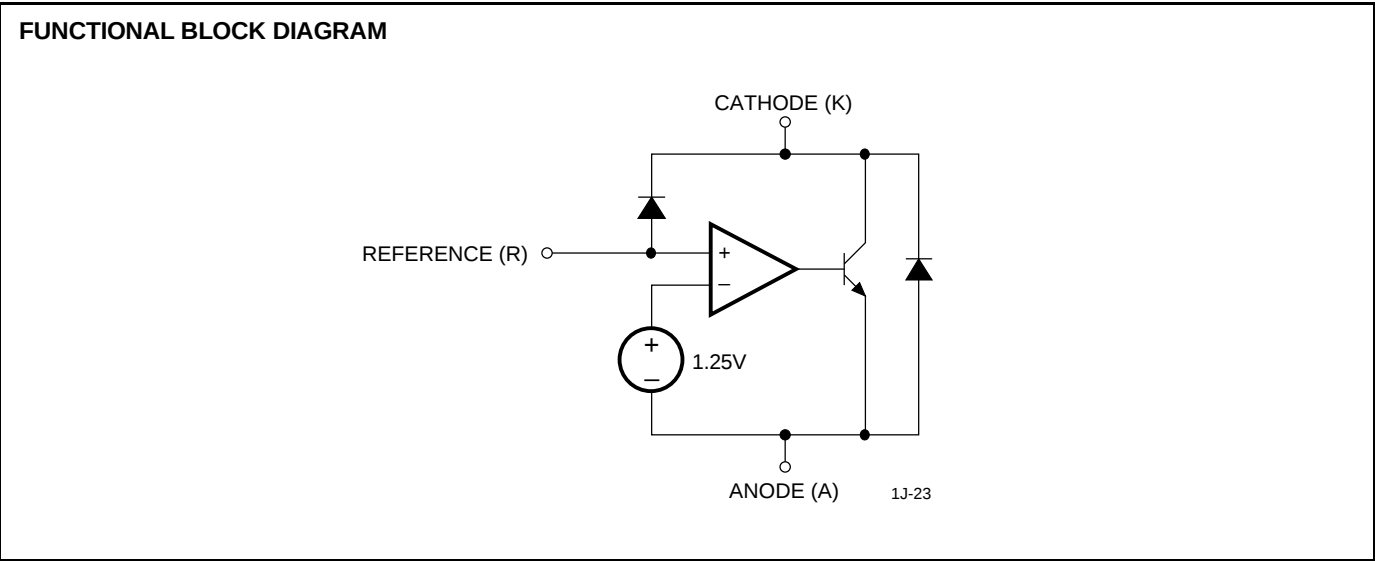
Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

RECOMMENDED CONDITIONS

| SYMBOL          | PARAMETER       | RATING                 | UNIT |
|-----------------|-----------------|------------------------|------|
| V <sub>KA</sub> | Cathode Voltage | V <sub>REF</sub> to 10 | V    |
| I <sub>K</sub>  | Cathode Current | 10                     | mA   |

TYPICAL THERMAL RESISTANCES

| PACKAGE | θ <sub>JA</sub> | θ <sub>JC</sub> | TYPICAL DERATING |
|---------|-----------------|-----------------|------------------|
| TO-92   | 160°C/W         | 80°C/W          | 6.3mW/°C         |
| SOIC    | 175°C/W         | 45°C/W          | 5.7mW/°C         |
| SOT-23  | 575°C/W         | 150°C/W         | 1.7mW/°C         |
| SOT-89  | 110°C/W         | 8°C/W           | 9.1mW/°C         |



## ELECTRICAL CHARACTERISTICS

Electrical characteristics are guaranteed over full junction temperature range (0 to 105°C). Ambient temperature must be derated based on power dissipation and package thermal characteristics. The conditions are:  $V_{KA} = V_{REF}$  and  $I_K = 10\text{mA}$  unless otherwise stated.

| SYMBOL       | PARAMETER                                       | MIN   | TYP   | MAX   | UNIT          | TEST CONDITION                                                   |
|--------------|-------------------------------------------------|-------|-------|-------|---------------|------------------------------------------------------------------|
| $V_{REF}$    | Output Voltage                                  | 1.237 | 1.250 | 1.263 | V             | $I_K = 10\text{mA}$ , $T_J = 25^\circ\text{C}$ , $V_K = V_{REF}$ |
| $V_{REF}$    | Line Regulation                                 |       | 10    | 15    | mV            | $V_K = 1.25$ to $10\text{V}$                                     |
| $V_{REF}$    | Load Regulation                                 |       | 3     | 6     | mV            | $I_K = 1$ to $100\text{mA}$                                      |
| $V_{REF}$    | Temperature Deviation                           |       | 2     | 6     | mV            | $0 < T_J < 105^\circ\text{C}$                                    |
| $I_{REF}$    | Reference Input Current                         |       | 3     | 6     | $\mu\text{A}$ |                                                                  |
| $I_{REF}$    | Reference Input Current Temperature Coefficient |       | 0.3   | 0.6   | $\mu\text{A}$ | $0 < T_J < 105^\circ\text{C}$                                    |
| $I_{K(MIN)}$ | Min. Cathode Current for Regulation             |       | 0.6   | 1     | mA            |                                                                  |
| $I_{K(MIN)}$ | Off State Leakage                               |       | 0.04  | 500   | nA            | $V_{REF} = 0\text{V}$ , $V_{KA} = 10\text{V}$                    |

\*Temperature deviation is defined as the maximum deviation of the reference over the given temperature range and does not imply an incremental deviation at any given temperature.

## TYPICAL PERFORMANCE CURVES (Not available at time of publishing)