

## FEATURES

- 0.4% Initial Tolerance Max
- *Guaranteed* Temperature Stability
- Maximum  $0.6\Omega$  Dynamic Impedance
- Wide Operating Current Range
- Directly Interchangeable with LM336 for Improved Performance
- No Adjustments Needed for Minimum Temperature Coefficient

## APPLICATIONS

- Reference for 5V Systems
- 8-Bit A/D and D/A Reference
- Digital Voltmeters
- Current Loop Measurement and Control Systems
- Power Supply Monitor

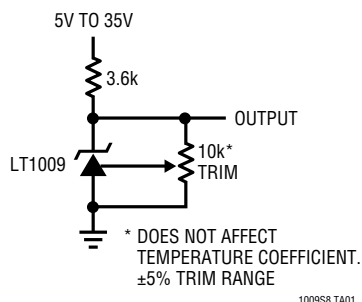
## DESCRIPTION

The LT1009 is a precision trimmed 2.5V shunt regulator diode featuring a maximum initial tolerance of only  $\pm 10\text{mV}$ . The low dynamic impedance and wide operating current range enhances its versatility. The 0.4% reference tolerance is achieved by on-chip trimming which not only minimizes the initial voltage tolerance but also minimizes the temperature drift.

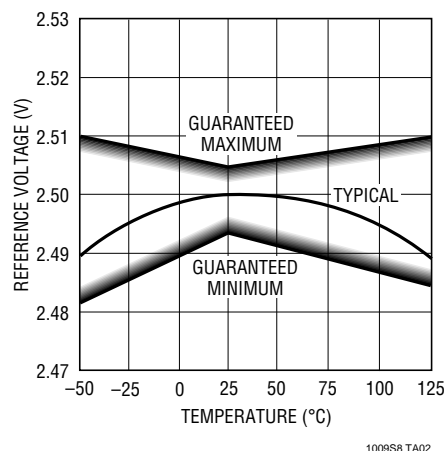
Even though no adjustments are needed with the LT1009, a third terminal allows the reference voltage to be adjusted  $\pm 5\%$  to calibrate out system errors. In many applications, the LT1009 can be used as a pin-to-pin replacement of the LM336-2.5 and the external trim network eliminated.

## TYPICAL APPLICATION

2.5V Reference



Output Voltage



ABSOLUTE MAXIMUM RATINGS

Reverse Current ..... 20mA  
Forward Current..... 10mA  
Operating Temperature Range ..... 0°C to 70°C  
Storage Temperature Range ..... -65°C to 150°C  
Lead Temperature (Soldering, 10 sec)..... 300°C

PACKAGE/ORDER INFORMATION

TOP VIEW

S8 PACKAGE  
8-LEAD PLASTIC SOIC  
 $T_{JMAX} = 175^{\circ}C, \theta_{JA} = 150^{\circ}C/W$

ORDER PART NUMBER
LT1009S8
PART MARKING
1009

ELECTRICAL CHARACTERISTICS  $V_{IN} = 3V$ , Military or Commercial Version

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
$V_Z$	Reverse Breakdown Voltage	$T_A = 25^{\circ}C, I_R = 1mA$	2.49	2.50	2.51	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Change with Current	$400\mu A \leq I_R \leq 10mA$		2.6 3.0	10 12	mV mV
$r_Z$	Reverse Dynamic Impedance	$I_R = 1mA$		0.2 0.4	1.0 1.4	$\Omega$ $\Omega$
$\frac{\Delta V_Z}{\Delta Temp}$	Temperature Stability Average Temperature Coefficient	$T_{MIN} \leq T_A \leq T_{MAX}$ $0^{\circ}C \leq T_A \leq 70^{\circ}C$ (Note 1)		1.8 15.0	4 25	mV ppm/ $^{\circ}C$
$\frac{\Delta V_Z}{\Delta Time}$	Long-Term Stability	$T_A = 25^{\circ}C \pm 0.1^{\circ}C, I_R = 1mA$		20		ppm/kHr

The ● denotes specifications which apply over the full operating temperature range.

Note 1: Average temperature coefficient is defined as the total voltage change divided by the specified temperature range.

PACKAGE DESCRIPTION Dimensions in inches (millimeters) unless otherwise noted.

S8 Package  
8-Lead Plastic SOIC

