FEATURES

- 0.2% Initial Tolerance Max
- *Guaranteed* Temperature Stability
- Maximum 0.6Ω Dynamic Impedance
- Wide Operating Current Range
- Directly Interchangeable with LM136 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 2.500 Volt shunt regulator diode featuring a maximum initial tolerance of only ±5mV. The low dynamic impedance and wide operating current range enhances its versatility. The 0.2% 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 ±5% to calibrate out system errors. In many applications, the LT1009 can be used as a pin-to-pin replacement of the LM136H-2.5 and the external trim network eliminated.

For a lower drift 2.5V reference, see the LT1019 data sheet.

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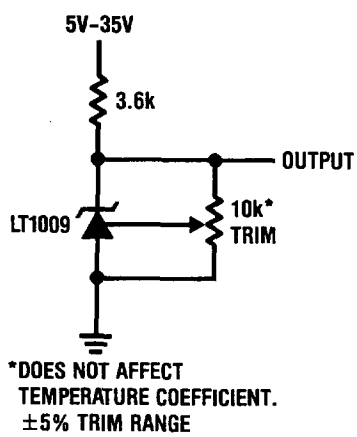
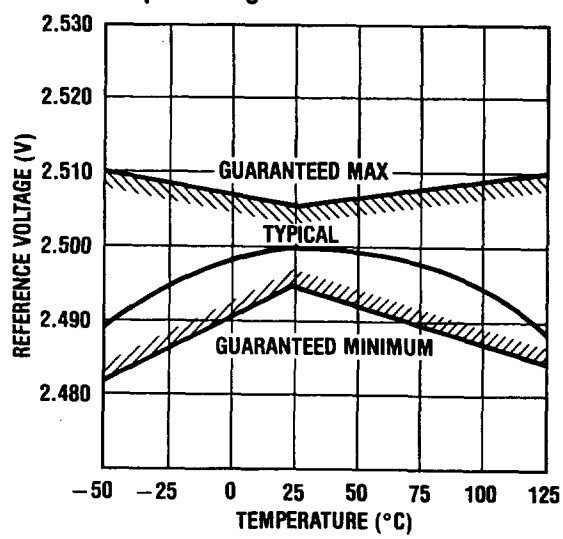
2.5 Volt Reference



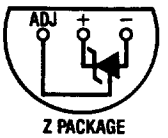
Output Voltage



ABSOLUTE MAXIMUM RATINGS

Reverse Current 20mA
Forward Current 10mA
Operating Temperature Range
LT1009M ..... −55°C to 125°C
LT1009C ..... 0°C to 70°C
Storage Temperature Range
LT1009M and C ..... −65°C to 150°C
Lead Temperature (Soldering, 10 sec.)..... 300°C

PACKAGE/ORDER INFORMATION

	ORDER PART NUMBER
BOTTOM VIEW  H PACKAGE TO-46 METAL CAN	LT1009MH LT1009CH
BOTTOM VIEW  Z PACKAGE TO-92 PLASTIC	LT1009CZ

ELECTRICAL CHARACTERISTICS

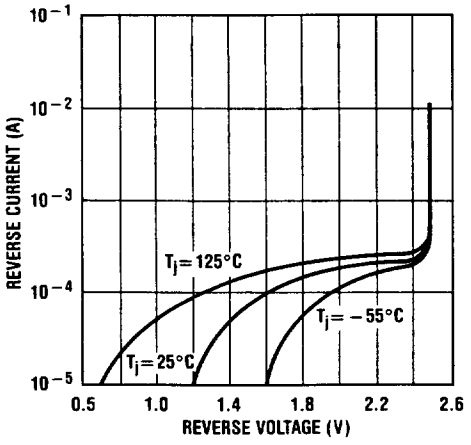
SYMBOL	PARAMETER	CONDITIONS		LT1009M MIN	LT1009M TYP	LT1009M MAX	LT1009C MIN	LT1009C TYP	LT1009C MAX	UNITS
V_Z	Reverse Breakdown Voltage	$T_A = 25°C$, $I_R = 1mA$		2.495	2.500	2.505	2.495	2.500	2.505	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Change with Current	$400\mu A \le I_R \le 10mA$			2.6	6		2.6	10	mV
			●		3	10		3	12	mV
r_Z	Reverse Dynamic Impedance	$I_R = 1mA$			0.2	0.6		0.2	1.0	Ω
			●		0.4	1		0.4	1.4	Ω
$\frac{\Delta V_Z}{\Delta Temp}$	Temperature Stability	$T_{MIN} \le T_A \le T_{MAX}$	●			15		1.8	4	mV
	Average Temperature Coefficient	$0°C \le T_A \le 70°C$			15	25		15	25	ppm/°C
		$-55°C \le T_A \le 125°C$ (Note 1)			25	35				ppm/°C
$\frac{\Delta V_Z}{\Delta Time}$	Long Term Stability	$T_A = 25°C \pm 0.1°C$, $I_R = 1mA$			20			20		ppm/kHr

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

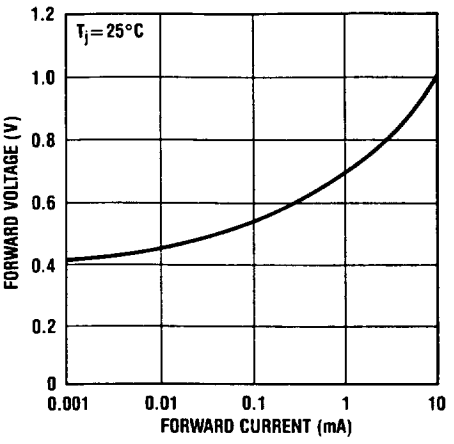
Note 1: Average temperature coefficient is defined as the total voltage change divided by the specified temperature range.

TYPICAL PERFORMANCE CHARACTERISTICS

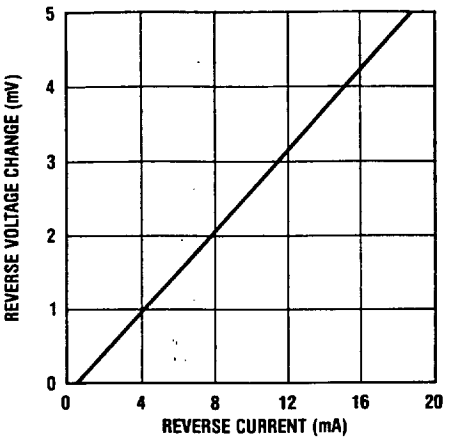
Reverse Characteristics



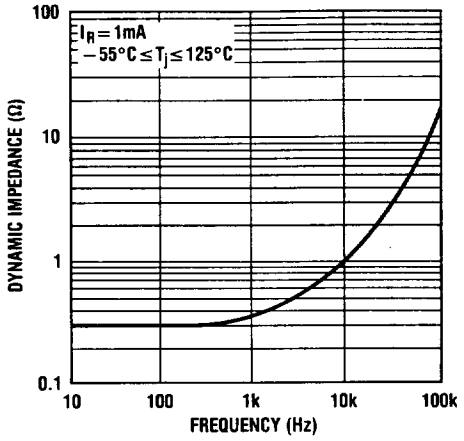
Forward Characteristics



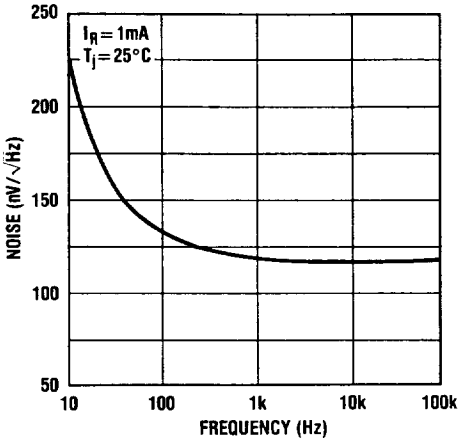
Reverse Voltage Change



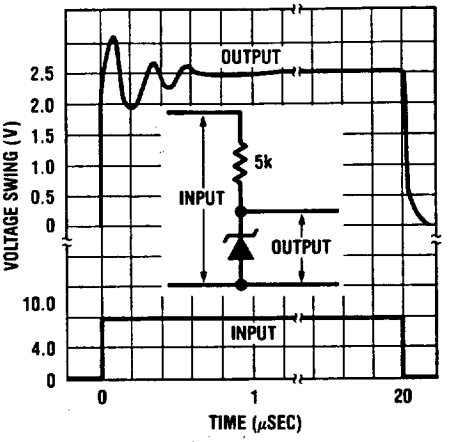
Dynamic Impedance



Zener Noise Voltage



Response Time



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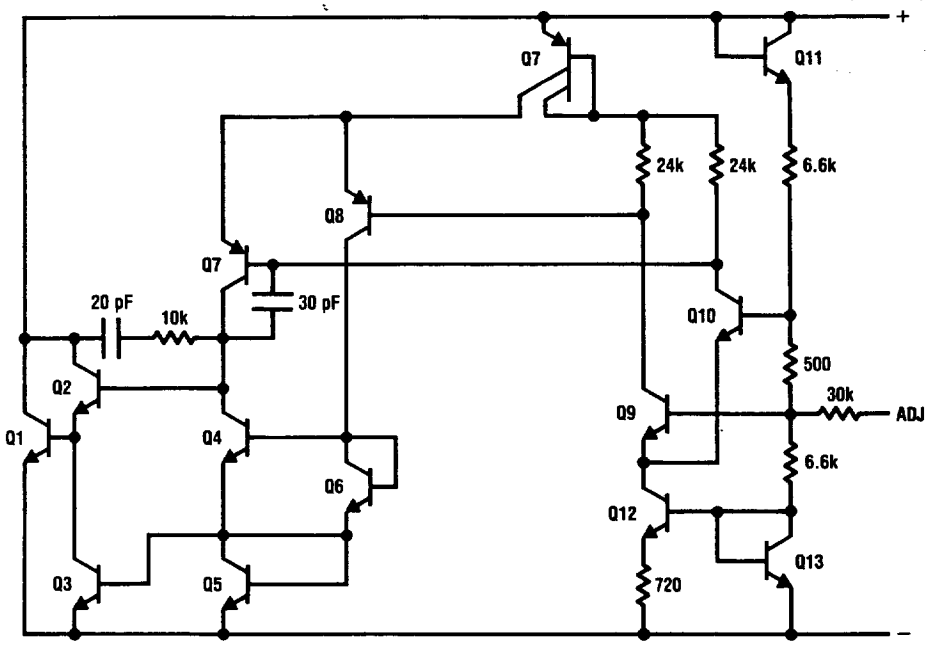
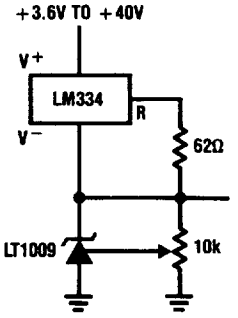
SCHEMATIC DIAGRAM

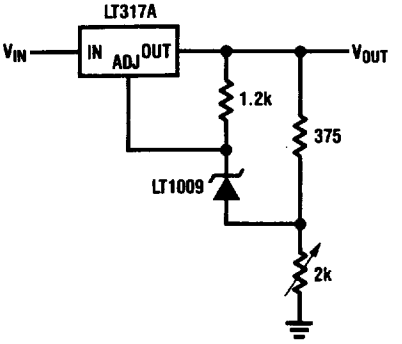


TYPICAL APPLICATIONS

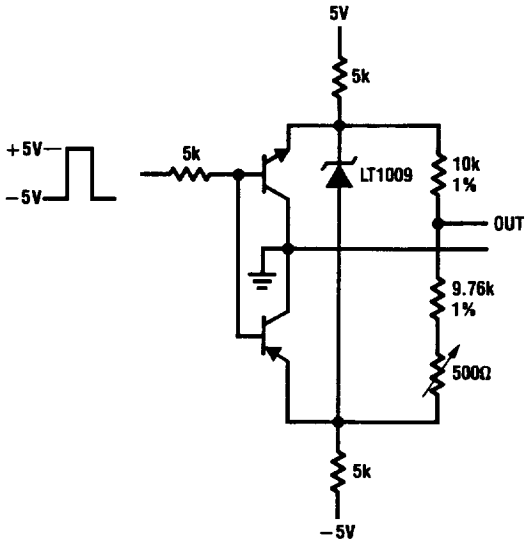
Wide Supply Range, Adjustable Reference



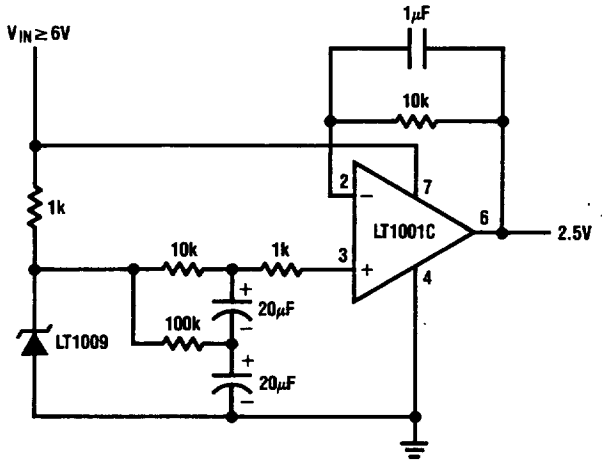
Low Temperature Coefficient Power Regulator



Switchable ±1.25V Bipolar Reference



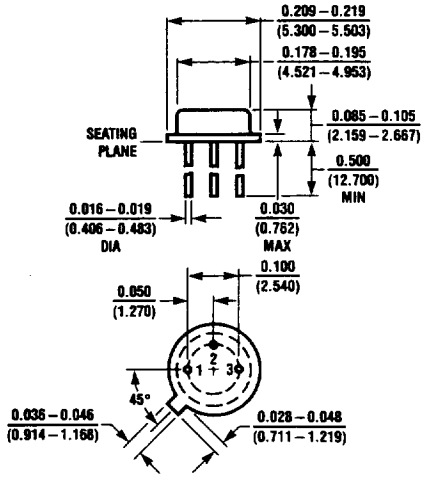
Low Noise 2.5V Buffered Reference



PACKAGE DESCRIPTION

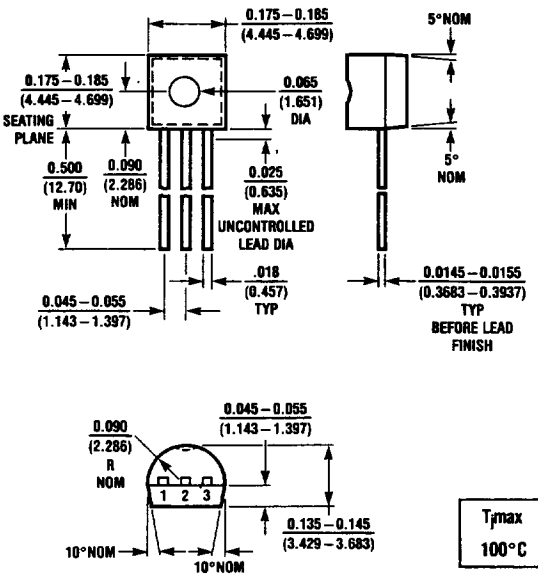
Dimensions in inches (millimeters) unless otherwise noted.

H Package
Metal Can



Tjmax	θja	θjc
150°C	440°C/W	80°C/W

Z Package
Plastic



Tjmax	θja
100°C	160°C/W