

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

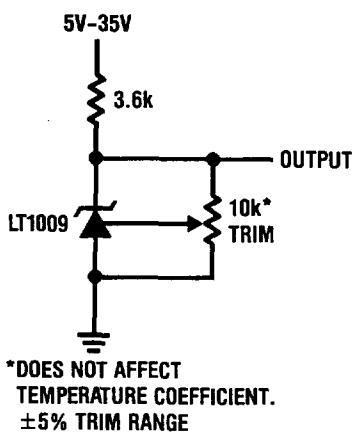
The LT1009 is a precision trimmed 2.500 Volt shunt regulator diode featuring a maximum initial tolerance of only $\pm 5\text{mV}$. The low dynamic impedance and wide operating current range enhances its versatility. The 0.2% reference tolerance is achieved by on-chip trimming which not only minimizes 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 $\pm 5\%$ 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.

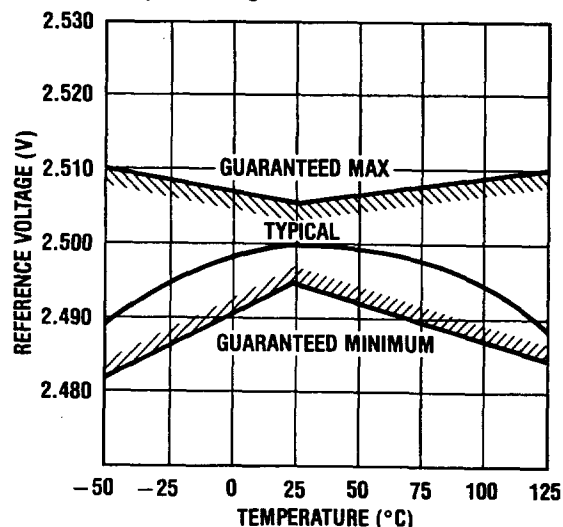
For a lower drift 2.5V reference, see the LT1019 data sheet.

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2.5 Volt Reference



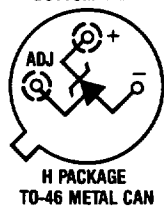

Output Voltage



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

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

ELECTRICAL CHARACTERISTICS

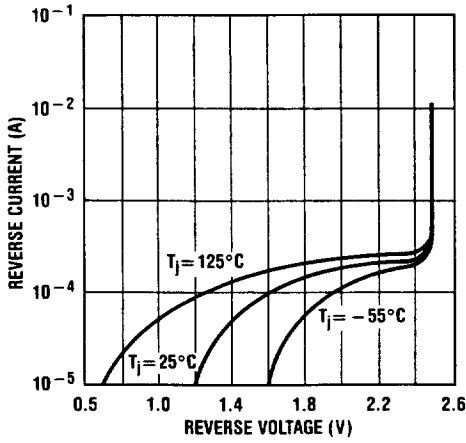
SYMBOL	PARAMETER	CONDITIONS	LT1009M			LT1009C			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
V_Z	Reverse Breakdown Voltage	$T_A = 25^\circ\text{C}$, $I_R = 1\text{mA}$	2.495	2.500	2.505	2.495	2.500	2.505	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Change with Current	$400\mu\text{A} \leq I_R \leq 10\text{mA}$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

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

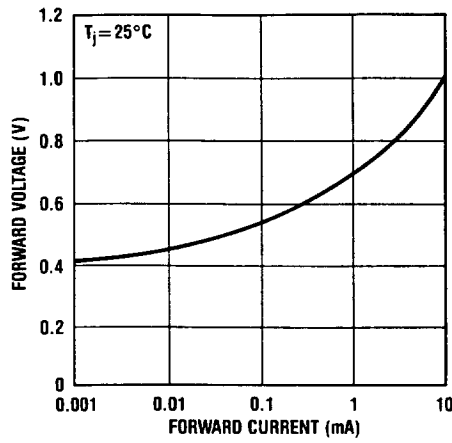
Note 1: Average temperature coefficient is defined as the total voltage change divided by the specified temperature range.

TYPICAL PERFORMANCE CHARACTERISTICS

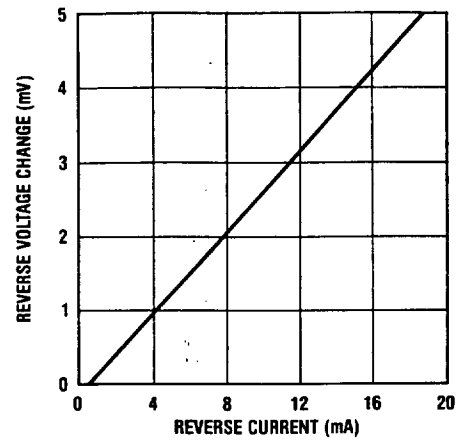
Reverse Characteristics



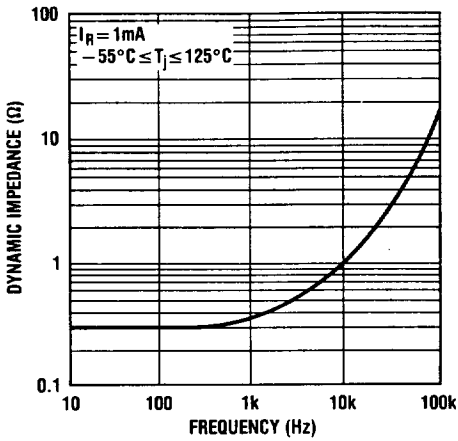
Forward Characteristics



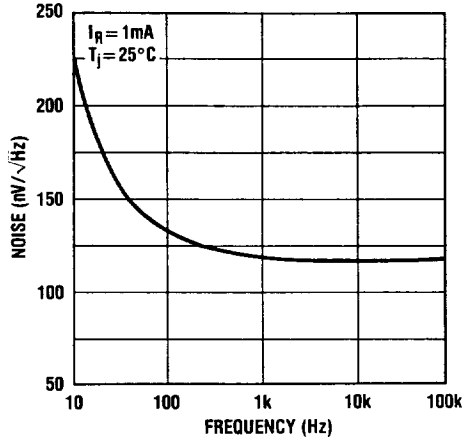
Reverse Voltage Change



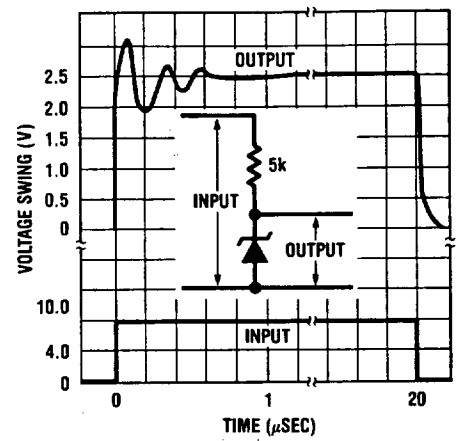
Dynamic Impedance



Zener Noise Voltage

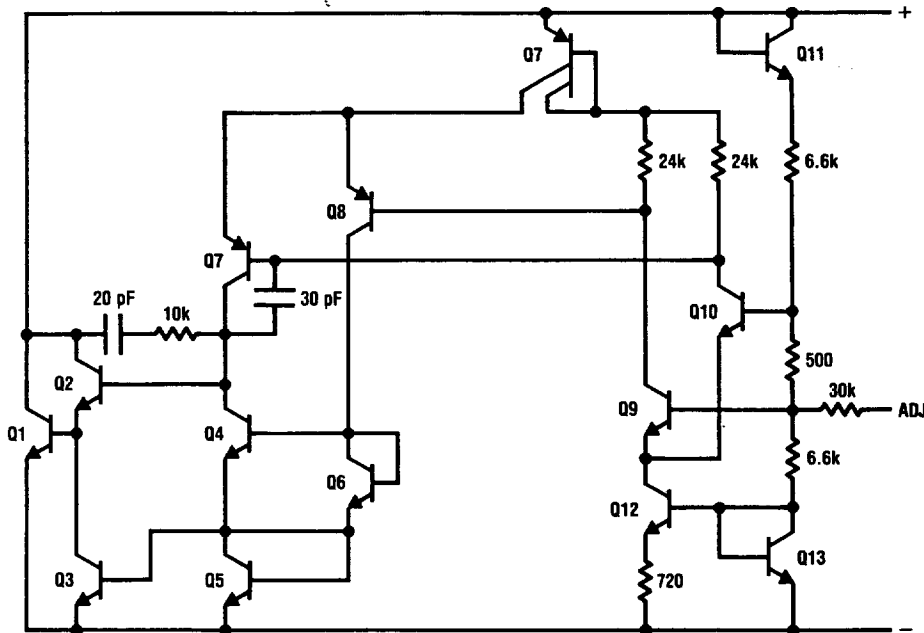


Response Time



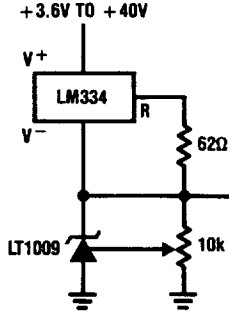
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SCHEMATIC DIAGRAM

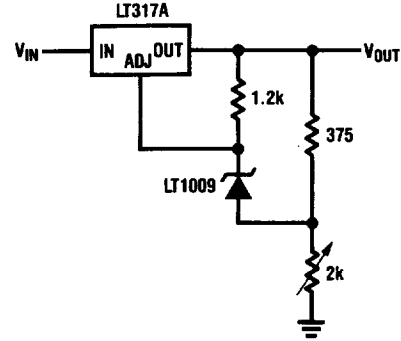


TYPICAL APPLICATIONS

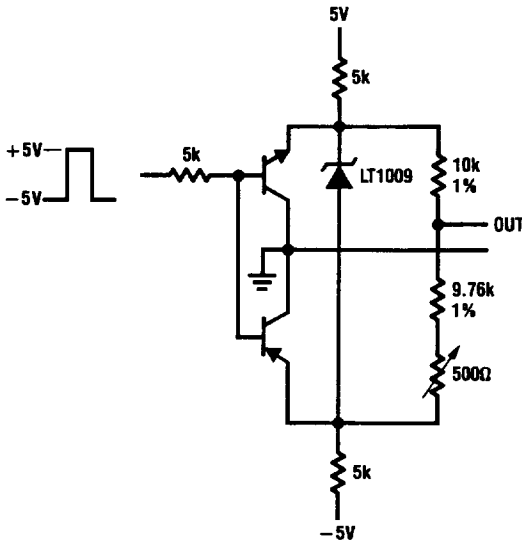
Wide Supply Range, Adjustable Reference



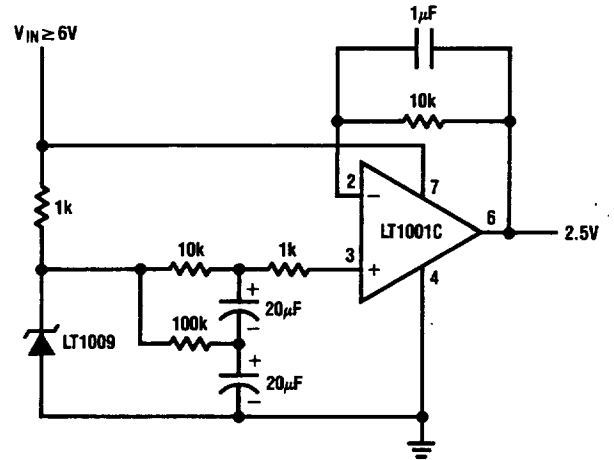
Low Temperature Coefficient Power Regulator



Switchable $\pm 1.25V$ Bipolar Reference

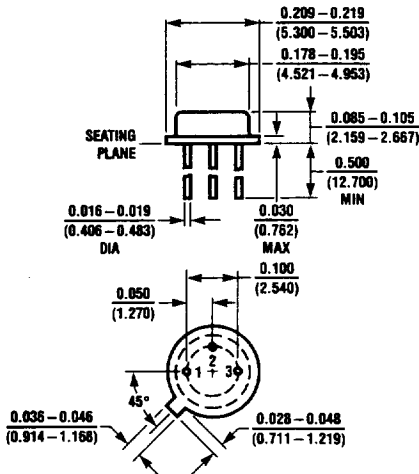


Low Noise 2.5V Buffered Reference



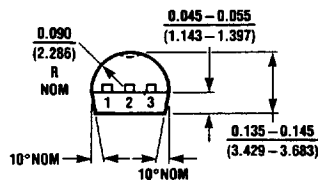
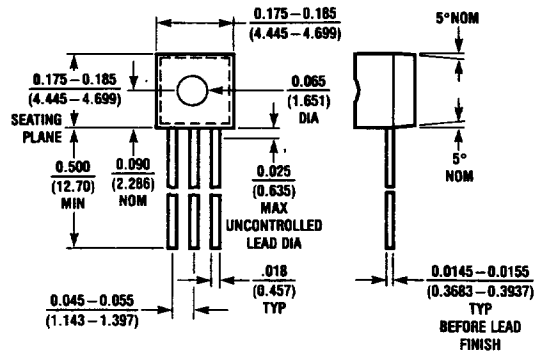
PACKAGE DESCRIPTION Dimensions in inches (millimeters) unless otherwise noted.

H Package
Metal Can



T_{max}	θ_{ja}	θ_{jc}
150°C	440°C/W	80°C/W

Z Package
Plastic



T_{max}	θ_{ja}
100°C	160°C/W