

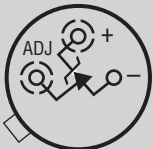
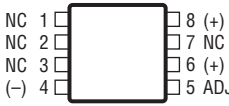
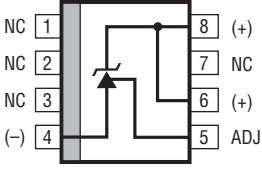
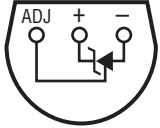
LT1009 Series

ABSOLUTE MAXIMUM RATINGS (Note 1)

Reverse Current20mA
 Forward Current.....10mA
 Storage Temperature Range.....-65°C to 150°C
 Lead Temperature (Soldering, 10 sec) 300°C

Operating Temperature Range
 LT1009/LT1009C 0°C to 70°C
 LT1009I -40°C to 85°C
 LT1009M (**OBSOLETE**) -55°C to 125°C

PIN CONFIGURATION

BOTTOM VIEW  H PACKAGE 3-LEAD TO-46 METAL CAN $T_{JMAX} = 150^{\circ}\text{C}$, $\theta_{JA} = 440^{\circ}\text{C/W}$, $\theta_{JC} = 80^{\circ}\text{C/W}$ OBSOLETE PACKAGE Consider the MS8, S8 or Z Packages for Alternate Source	TOP VIEW  MS8 PACKAGE 8-LEAD PLASTIC MSOP $T_{JMAX} = 150^{\circ}\text{C}$, $\theta_{JA} = 250^{\circ}\text{C/W}$
TOP VIEW  S8 PACKAGE 8-LEAD PLASTIC SO $T_{JMAX} = 150^{\circ}\text{C}$, $\theta_{JA} = 190^{\circ}\text{C/W}$	BOTTOM VIEW  Z PACKAGE 3-LEAD PLASTIC TO-92 $T_{JMAX} = 100^{\circ}\text{C}$, $\theta_{JA} = 160^{\circ}\text{C/W}$

ORDER INFORMATION

LEAD FREE FINISH	TAPE AND REEL	PART MARKING	PACKAGE DESCRIPTION	TEMPERATURE RANGE
LT1009MH#PBF	LT1009MH#TRPBF		3-Lead TO-46 Metal Can	-55°C to 125°C
LT1009CH#PBF	LT1009CH#TRPBF		3-Lead TO-46 Metal Can	0°C to 70°C
LT1009CMS8#PBF	LT1009CMS8#TRPBF	LTQZ	8-Lead Plastic MSOP	0°C to 70°C
LT1009S8#PBF	LT1009S8#TRPBF	1009	8-Lead Plastic SO	0°C to 70°C
LT1009IS8#PBF	LT1009IS8#TRPBF	1009I	8-Lead Plastic SO	-40°C to 85°C
LT1009CZ#PBF	LT1009CZ#TRPBF		3-Lead Plastic TO-92	0°C to 70°C
LT1009IZ#PBF	LT1009IZ#TRPBF		3-Lead Plastic TO-92	-40°C to 85°C

ORDER INFORMATION

LEAD BASED FINISH	TAPE AND REEL	PART MARKING	PACKAGE DESCRIPTION	TEMPERATURE RANGE
LT1009MH	LT1009MH#TR		3-Lead TO-46 Metal Can	-55°C to 125°C
LT1009CH	LT1009CH#TR		3-Lead TO-46 Metal Can	0°C to 70°C
LT1009CMS8	LT1009CMS8#TR	LTQZ	8-Lead Plastic MSOP	0°C to 70°C
LT1009S8	LT1009S8#TR	1009	8-Lead Plastic SO	0°C to 70°C
LT1009IS8	LT1009IS8#TR	1009I	8-Lead Plastic SO	-40°C to 85°C
LT1009CZ	LT1009CZ#TR		3-Lead Plastic TO-92	0°C to 70°C
LT1009IZ	LT1009IZ#TR		3-Lead Plastic TO-92	-40°C to 85°C

Consult LTC Marketing for parts specified with wider operating temperature ranges.

For more information on lead free part marking, go to: <http://www.linear.com/leadfree/>

For more information on tape and reel specifications, go to: <http://www.linear.com/tapeandreel/>

AVAILABLE OPTIONS

TEMPERATURE	ACCURACY (%)	TEMPERATURE COEFFICIENT (ppm/°C)	PACKAGE STYLE			
			TO-46 (H) OBSOLETE	MSOP-8 (MS8)	SO-8 (S8)	TO-92 (Z)
0°C to 70°C	0.20 0.40	25 25	LT1009CH	LT1009CMS8	LT1009S8	LT1009CZ
-40°C to 85°C	0.20 0.40	35 35			LT1009IS8	LT1009IZ
-55°C to 125°C	0.20	35	LT1009MH			

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^\circ\text{C}$.

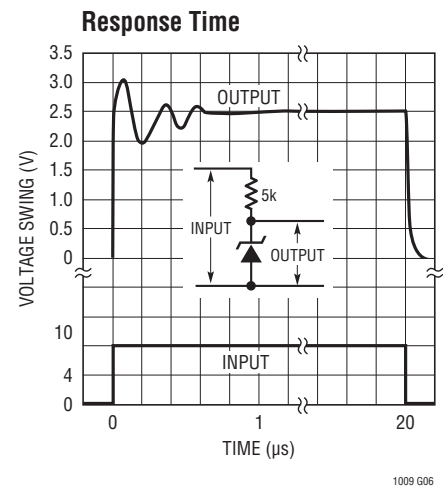
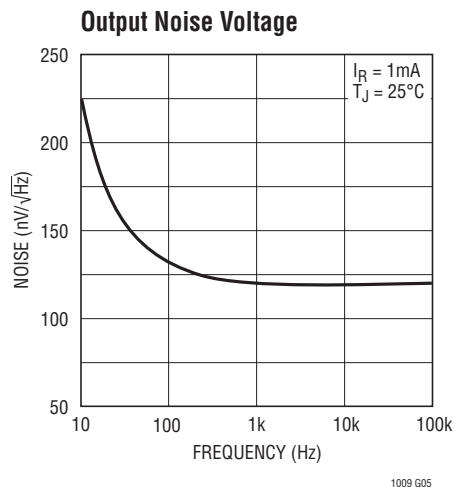
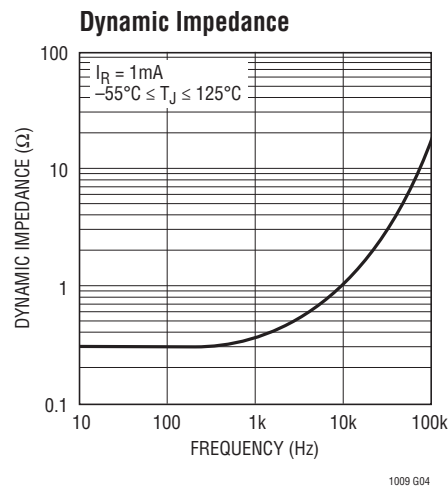
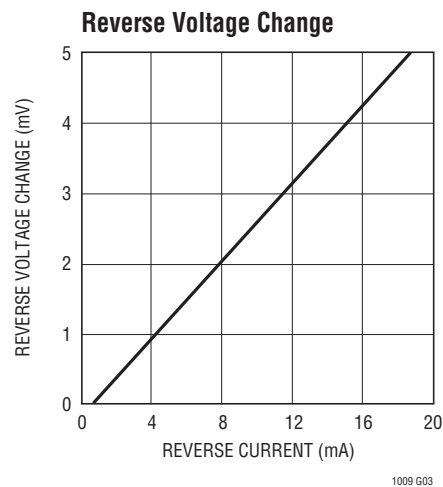
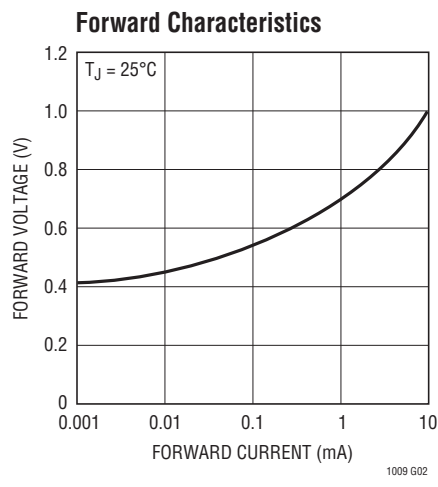
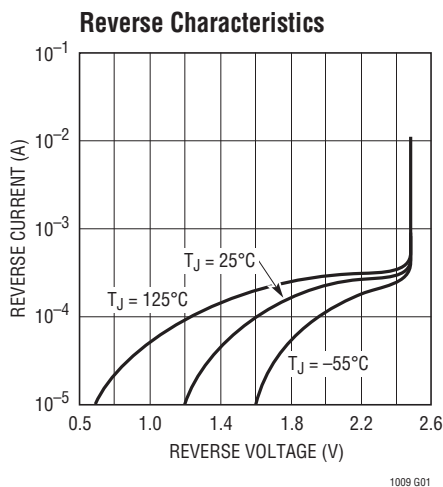
SYMBOL	PARAMETER	CONDITIONS	LT100M			LT1009I			LT1009/LT1009C			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
V_Z	Reverse Breakdown Voltage	$T_A = 25^\circ\text{C}$, $I_R = 1\text{mA}$ H, Z Pkg MS, S Pkg	2.495	2.500	2.505	2.495	2.500	2.505	2.495	2.500	2.505	V
ΔV_Z ΔI_R	Reverse Breakdown Change with Current	$400\mu\text{A} \leq I_R \leq 10\text{mA}$	●	2.6 3.0	6 10	2.6 3.0	10 12		2.6 3.0	10 12		mV mV
r_Z	Reverse Dynamic Impedance	$I_R = 1\text{mA}$	●	0.2 0.4	0.6 1.0	0.2 0.4	1.0 1.4		0.2 0.4	1.0 1.4		Ω Ω
	Temperature Stability	$T_{\text{MIN}} \leq T_A \leq T_{\text{MAX}}$	●		15		15		1.8	4		mV
$\frac{\Delta V_Z}{\Delta \text{Temp}}$	Average Temperature Coefficient (Notes 2, 3)	$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$ $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$ $-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		15 25	25 35	15 25	25 35		15	25		ppm/°C 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			20			ppm/kHr

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

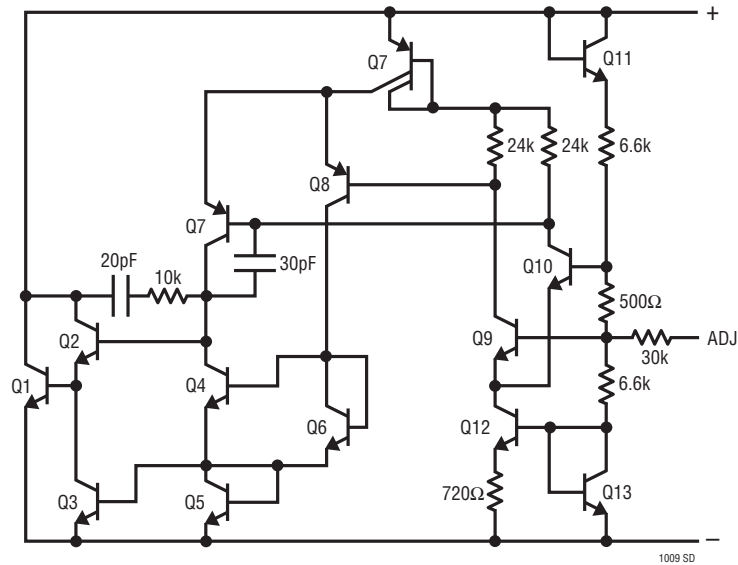
Note 2: Guaranteed by Design.

Note 3: Average temperature coefficient is defined as the total voltage change divided by the specified temperature change.

TYPICAL PERFORMANCE CHARACTERISTICS

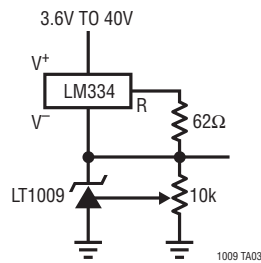


SCHEMATIC DIAGRAM

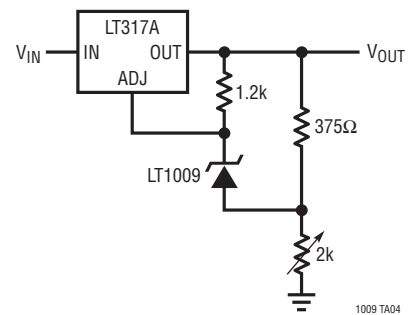


TYPICAL APPLICATIONS

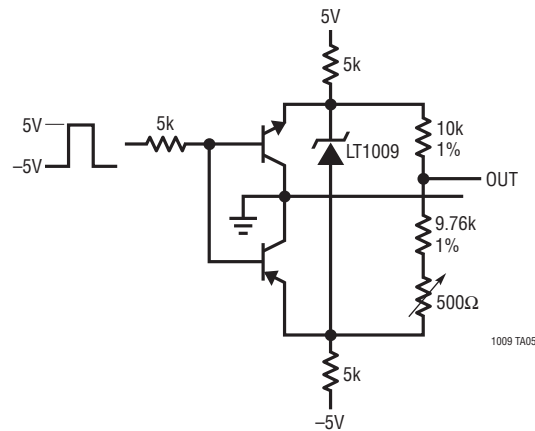
Wide Supply Range, Adjustable Reference



Low Temperature Coefficient Power Regulator

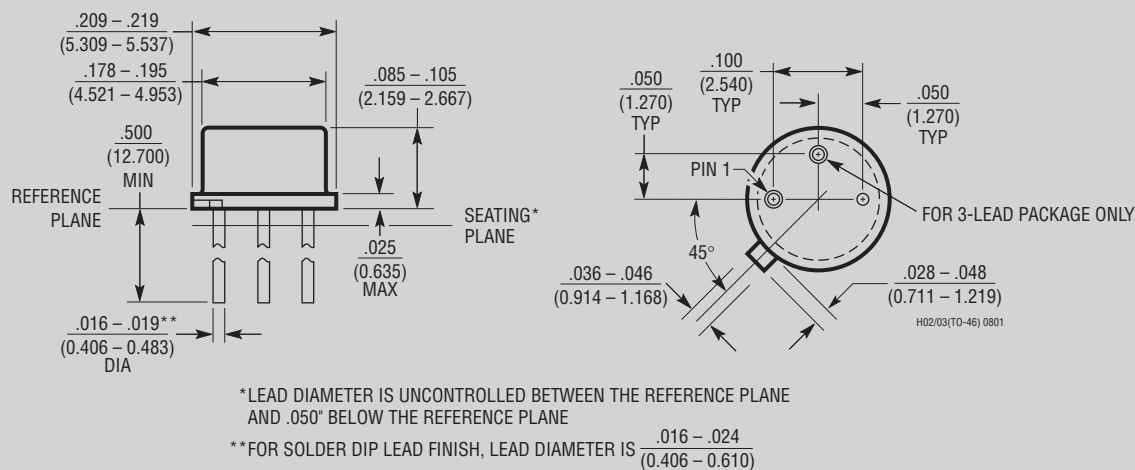


Switchable $\pm 1.25V$ Bipolar Reference



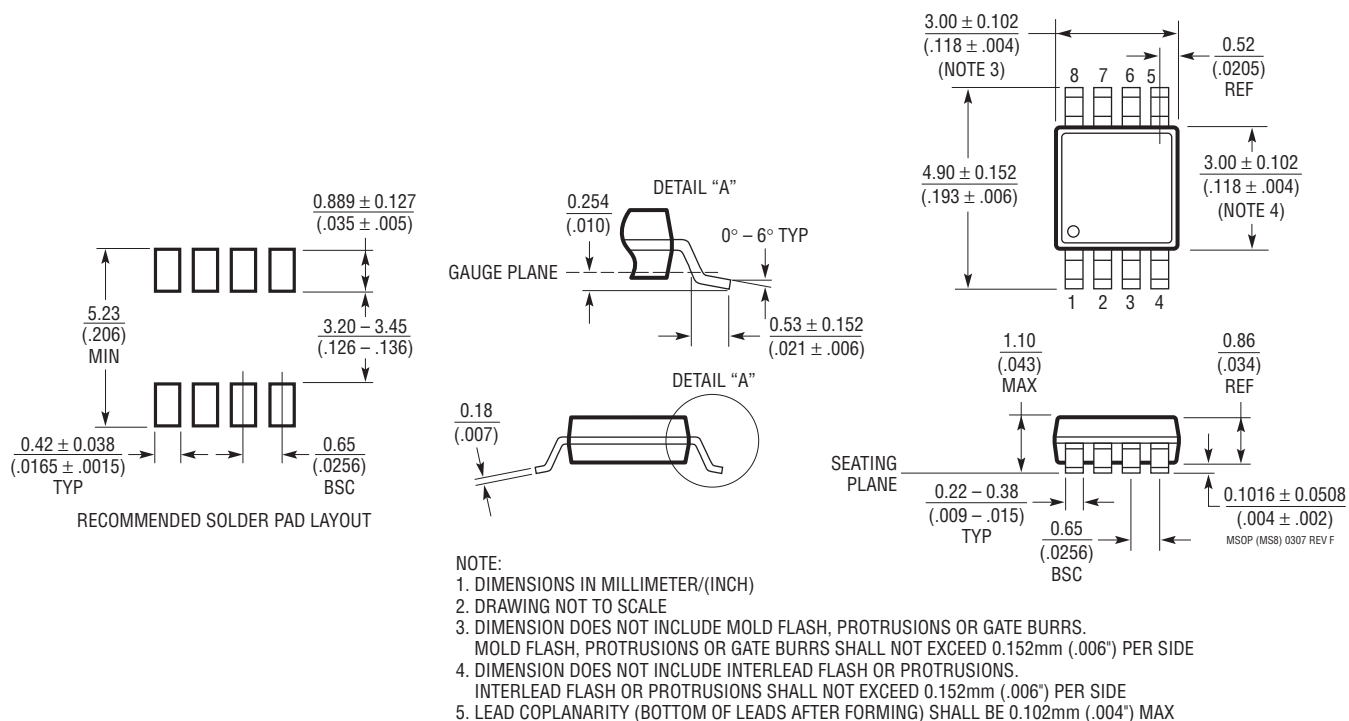
PACKAGE DESCRIPTION

H Package
2-Lead and 3-Lead TO-46 Metal Can
(Reference LTC DWG # 05-08-1340)



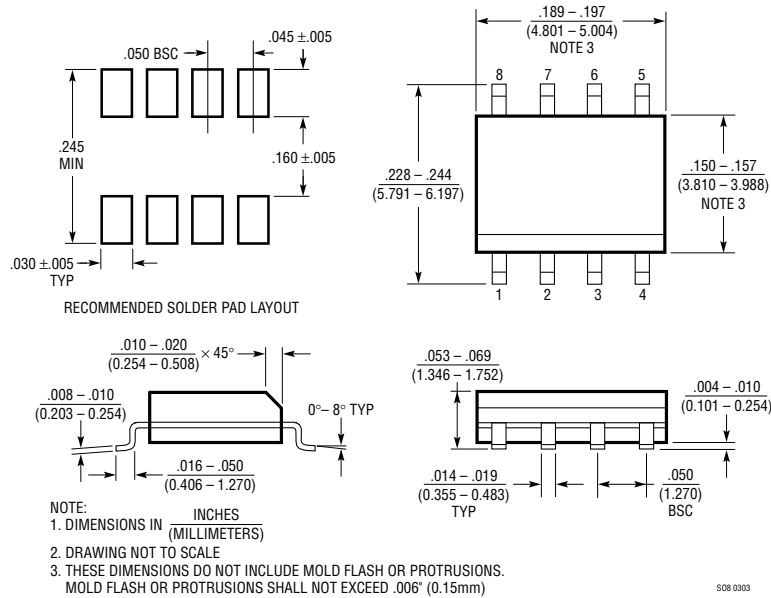
OBSOLETE PACKAGE

MS8 Package
8-Lead Plastic MSOP
 (Reference LTC DWG # 05-08-1660)

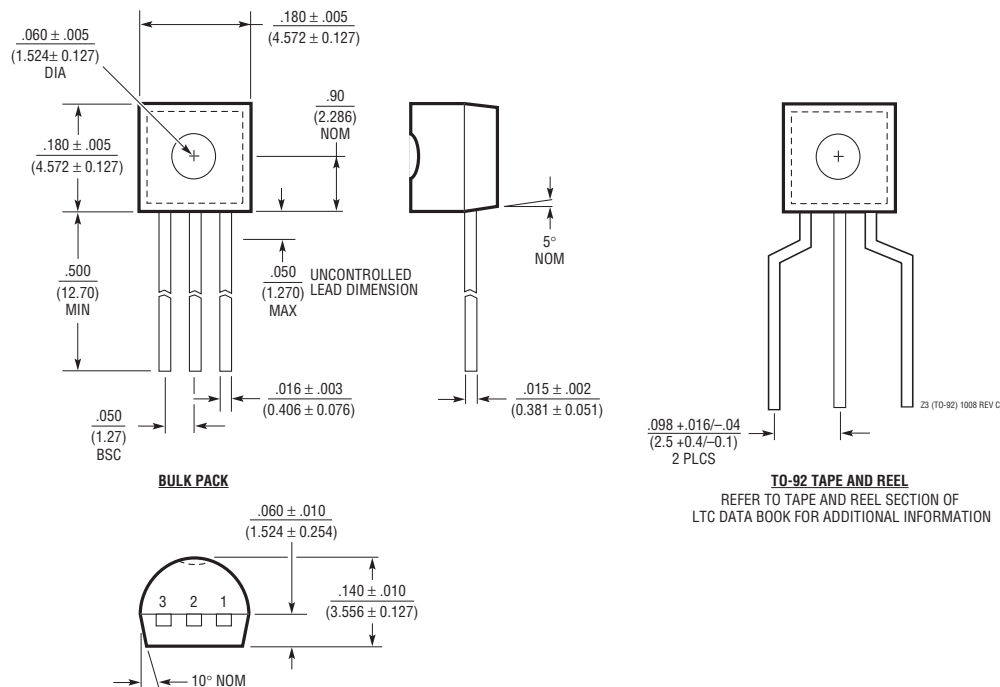


PACKAGE DESCRIPTION

S8 Package 8-Lead Plastic Small Outline (Narrow .150 Inch) (Reference LTC DWG # 05-08-1610)



Z Package 3-Lead Plastic TO-92 (Similar to TO-226) (Reference LTC DWG # 05-08-1410)



TYPICAL APPLICATION

The circuit diagram shows a precision rectifier. The input $V_{IN} \geq 6V$ is connected to a 1k resistor, which is then connected to the non-inverting input (pin 2) of the LT1001C op-amp. The inverting input (pin 3) is connected to a 10k resistor, which is in series with a 100k resistor and a diode (LT1009) connected to ground. The op-amp's output (pin 6) is connected to a 10k resistor and a 1μF capacitor, which are both connected to ground. The output of the circuit is taken from the op-amp's output (pin 6) and is labeled 2.5V. The op-amp's supply pins (pin 4 to ground and pin 7 to 2.5V) are also shown. The LT1009 diode is connected with its cathode to the input and its anode to the inverting input of the op-amp.

PART NUMBER	DESCRIPTION	COMMENTS
LT1019	Precision Series Reference	Bandgap, 0.05%, 5ppm/°C
LT1236	Precision Series Reference	5V and 10V Zener-Based 5ppm/°C, SO-8 Package
LTC®1798	Micropower Low Dropout Series Reference	0.15% Max, 6.5µA Supply Current
LT1460	Micropower Precision Series Reference	Bandgap, 130µA Supply Current 10ppm/°C, Available in SOT-23
LT1634	Micropower Precision Shunt Voltage Reference	Bandgap 0.05%, 10ppm/°C, 10µA Supply Current
LT1461	Micropower Precision Series Reference	0.04% Max, 3ppm/°C Max, 35µA Supply Current