Micropower Dual Reference

FEATURES

- **Guaranteed 20 ppm/°C Drift (H Package and Z Package)**
- **Guaranteed 40 ppm/°C Drift (SO-8 Package)**
- **20μA to 20mA Operation (1.2V)**
- Dynamic Impedance: 1Ω
- 7V, 100μA Reference

APPLICATIONS

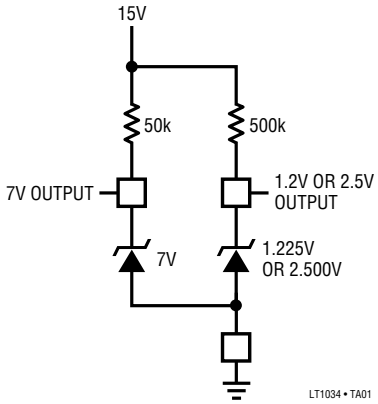
- Portable Meters
- Precision Regulators
- Calibrators

DESCRIPTION

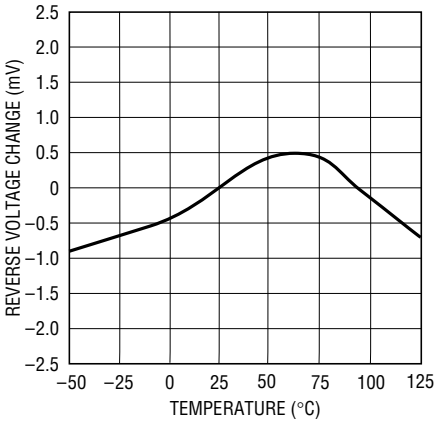
The LT®1034 is a micropower, precision 1.2V/2.5 reference combined with a 7V auxiliary reference. The 1.2V/2.5V reference is a trimmed, thin-film, band-gap, voltage reference with 1% initial tolerance and guaranteed 20ppm/°C temperature drift. Operating on only 20μA, the LT1034 offers guaranteed drift, low temperature cycling hysteresis and good long-term stability. The low dynamic impedance makes the LT1034 easy to use from unregulated supplies. The 7V reference is a subsurface zener device for less demanding applications.

The LT1034 reference can be used as a high performance upgrade of the LM385 or LT1004, where guaranteed temperature drift is desired.

TYPICAL APPLICATION AND BLOCK DIAGRAM



Temperature Drift LT1034CS8-1.2



RELATED PARTS

PART NUMBER	DESCRIPTION	COMMENTS
LT1004	Low Cost Precision Band-Gap	Micropower, SO-8, Industrial Temperature Options
LT1019	Precision Series or Shunt Band-Gap	Low Dropout, Multiple Output Options
LT1236	Precision Series or Shunt Buried Zener	Low Noise, Low Power, Multiple Output Options

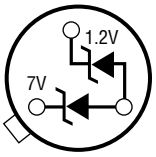
ABSOLUTE MAXIMUM RATINGS

Operating Current 20mA
Forward Current (Note 1)..... 20mA
Storage Temperature Range ..... –65°C to 150°C
Lead Temperature (Soldering, 10 sec)..... 300°C

Operating Temperature
Commercial ..... 0° to 70°C
Industrial ..... –40°C to 85°C
Military ..... –55°C to 125°C

PACKAGE/ORDER INFORMATION

BOTTOM VIEW



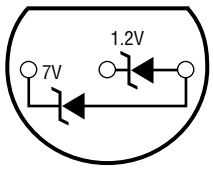
H PACKAGE
3-LEAD TO-46 METAL CAN

T_{JMAX} = 150°C, θ_{JA} = 440°C/W,
θ_{JC} = 80°C/W

ORDER PART NUMBER

LT1034BCH-1.2
LT1034BCH-2.5
LT1034BMH-1.2
LT1034BMH-2.5
LT1034CH-1.2
LT1034CH-2.5
LT1034MH-1.2
LT1034MH-2.5

BOTTOM VIEW



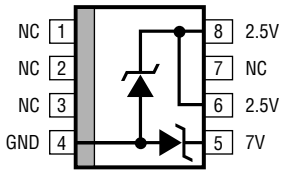
Z PACKAGE
3-LEAD TO-92 PLASTIC

T_{JMAX} = 100°C, θ_{JA} = 160°C/W

ORDER PART NUMBER

LT1034BCZ-1.2
LT1034BCZ-2.5
LT1034BIZ-1.2
LT1034BIZ-2.5
LT1034CZ-1.2
LT1034CZ-2.5
LT1034IZ-1.2
LT1034IZ-2.5

TOP VIEW



S8 PACKAGE
8-LEAD PLASTIC SO

T_{JMAX} = 175°C, θ_{JA} = 150°C/W

ORDER PART NUMBER

LT1034CS8-1.2
LT1034CS8-2.5
LT1034IS8-1.2
LT1034IS8-2.5

PART MARKING

3401
3402
34I01
34I02

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

PARAMETER	CONDITIONS		LT1034-1.2 MIN	LT1034-1.2 TYP	LT1034-1.2 MAX	LT1034-2.5 MIN	LT1034-2.5 TYP	LT1034-2.5 MAX	UNITS
Reverse Breakdown Voltage	I_R = 100µA		1.210	1.225	1.240	2.46	2.5	2.54	V
		●	1.205	1.225	1.245	2.43	2.5	2.57	V
Reverse Breakdown Change with Current	Note 3			0.5	2.0		1.0	3.0	mV
		●		1.0	4.0		1.5	6.0	mV
	2mA ≤ I_R ≤ 20mA			4.0	8.0		6.0	16.0	mV
		●		6.0	15.0		10.0	20.0	mV
Minimum Operating Current		●		10	20		15	30	µA
Temperature Coefficient	I_R = 100µA LT1034B	●		10	20		10	20	ppm/°C
	LT1034			20	40		20	40	ppm/°C
Reverse Dynamic Impedance (Note 2)	I_R = 100µA			0.25	1.0		0.5	1.5	Ω
		●		0.50	2.0		1.0	2.5	Ω
Low Frequency Noise	I_R = 100µA, 0.1Hz ≤ F ≤ 10Hz	●		4			6		μV_{P-P}
Long-Term Stability	I_R = 100µA			20			20		ppm$\sqrt{khrs}$

ELECTRICAL CHARACTERISTICS

7V Reference. T_A = 25°C, unless otherwise specified.

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Reverse Breakdown Voltage	I_R = 100µA		6.80	7.0	7.3	V
		●	6.75	7.0	7.4	V
Reverse Breakdown Change with Current	100µA ≤ I_R ≤ 1mA			90	140	mV
	100µA ≤ I_R ≤ 1mA	●		100	190	mV
	1mA ≤ I_R ≤ 20mA			160	250	mV
	1mA ≤ I_R ≤ 20mA	●		200	350	mV
Temperature Coefficient	I_R = 100µA	●		40		ppm/°C
Long-Term Stability	I_R = 100µA			20		ppm$\sqrt{\text{khrs}}$

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

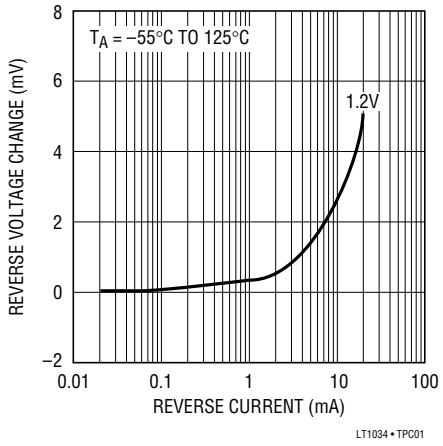
Note 1: Forward biasing either diode will affect the operation of the other diode.

Note 2: This parameter guaranteed by "reverse breakdown change with current" test.

Note 3: For the LT1034-1.2: 20µA ≤ I_R ≤ 2mA. For the LT1034-2.5: 30µA ≤ I_R ≤ 2mA.

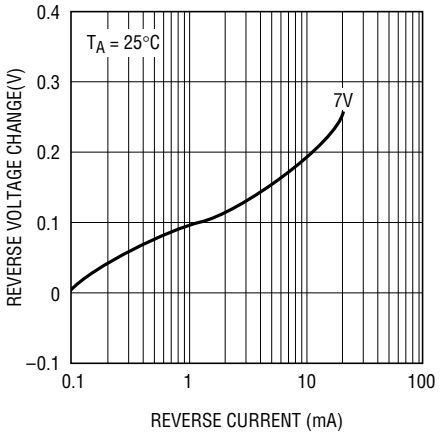
TYPICAL PERFORMANCE CHARACTERISTICS

Reverse Voltage Change 1.2V



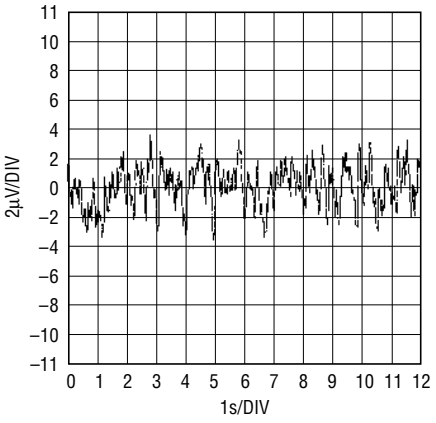
LT1034 • TPC01

Reverse Voltage Change 7V



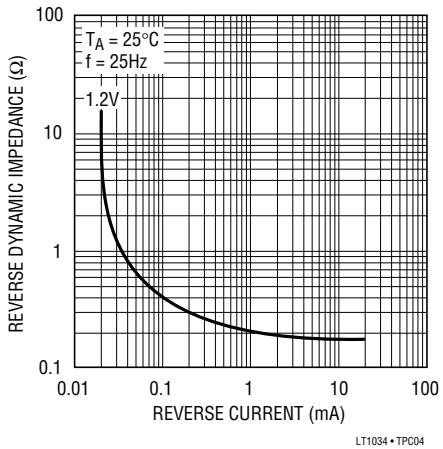
LT1034 • TPC02

0.1Hz to 10Hz Noise 1.2V



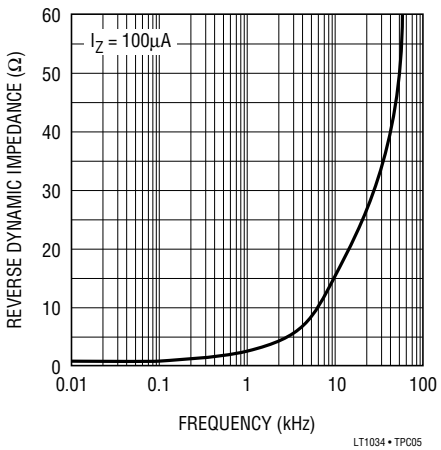
LT1034 • TPC03

Reverse Dynamic Impedance 1.2V



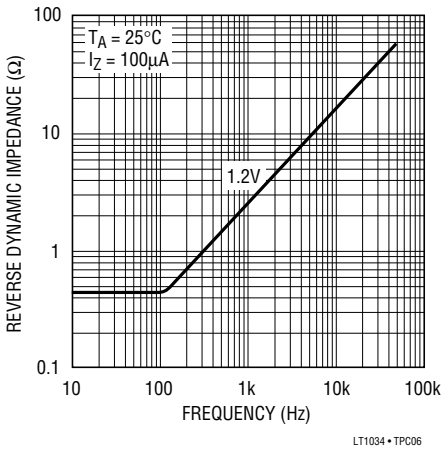
LT1034 • TPC04

Reverse Dynamic Impedance 2.5V



LT1034 • TPC05

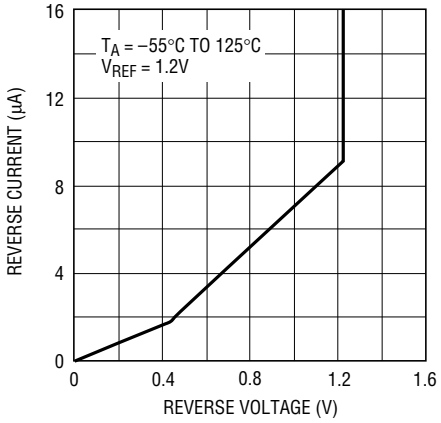
Reverse Dynamic Impedance 7V



LT1034 • TPC06

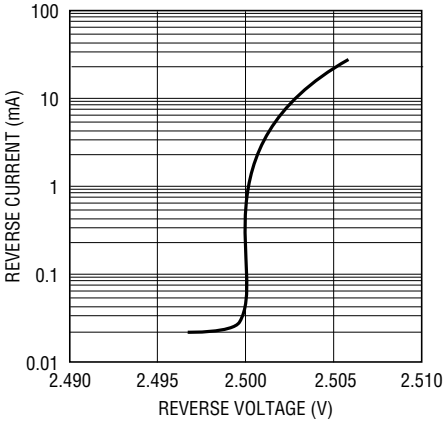
TYPICAL PERFORMANCE CHARACTERISTICS

Reverse Characteristics 1.2V



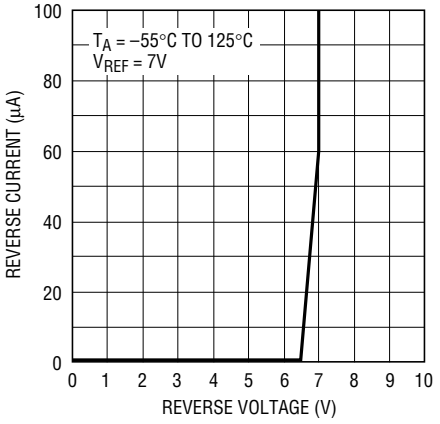
LT1034 • TPC07

Reverse Characteristics 2.5V



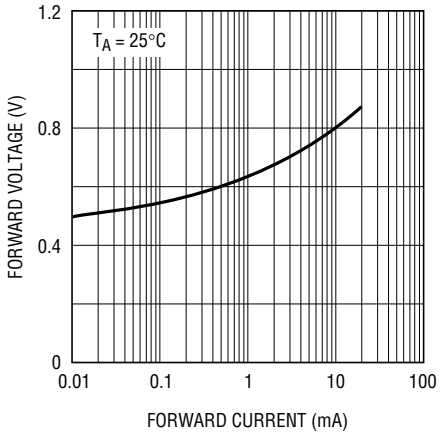
LT1034 • TPC02

Reverse Characteristics 7V



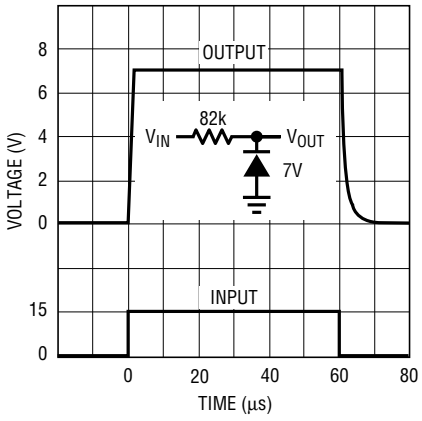
LT1034 • TPC09

Forward Characteristics



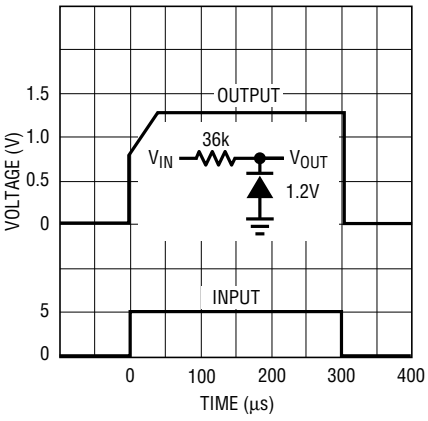
LT1034 • TPC10

Response Time



LT1180A • TPC11

Response Time

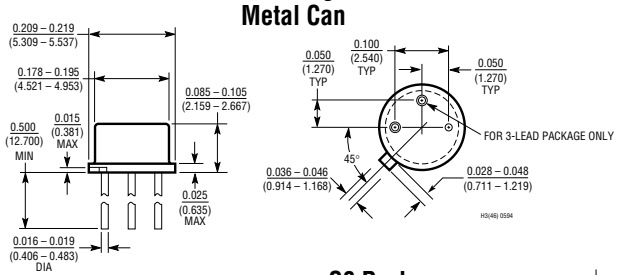


LT1180A • TPC12

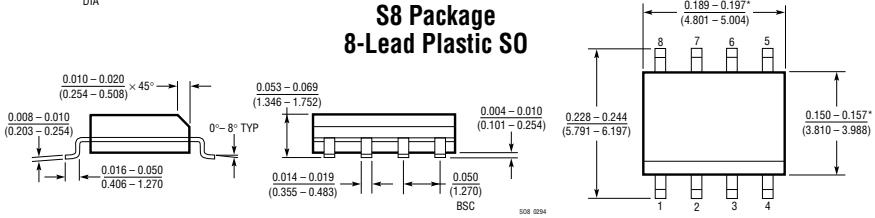
PACKAGE DESCRIPTION

Dimension in inches (millimeters) unless otherwise noted.

H Package
Metal Can

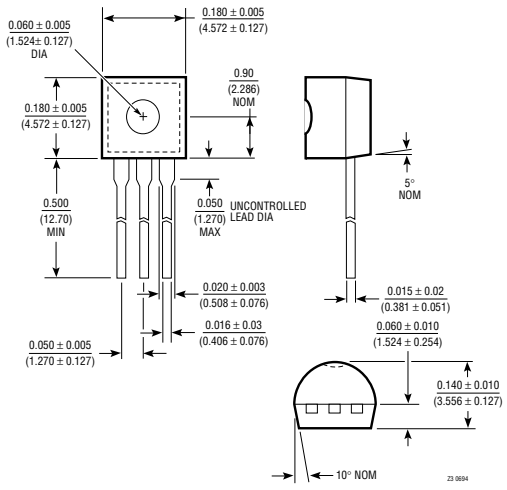


S8 Package
8-Lead Plastic SO



*THESE DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.
MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.006 INCH (0.15mm).

Z Package
Plastic



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