19-0887; Rev 7; 4/07

+5V, +10V Precision Voltage References

General Description

The REF01/REF02 are industry-standard precision voltage references. The stable 10V output of the REF01 can be adjusted over a ±6% range with minimal effect on temperature stability. The 5V output REF02 can also be adjusted over a ±6% range. The 10V REF01 has a single-supply operation over an input voltage range of 13V to 33V, while the 5V REF02 has a single-supply operation over an input voltage range of 7V to 33V. Both devices offer a low-current drain of 1mA. The REF02 also provides a TEMP pin whose output voltage varies linearly with temperature, making this device suitable for a wide variety of temperature-sensing and control applications. For new designs, refer to the MAX6035 or MAX6143 data sheets.

Features

- ♦ **Pretrimmed to +5V, +10V**
- ♦ **Excellent Temperature Stability: 3ppm/°C (typ)**
- ♦ **Low Noise: 10µVP-P (REF02)**
- ♦ **Short-Circuit Protected**
- ♦ **Linear Temperature Transducer Output (REF02)**

Ordering Information

PART	TEMP RANGE	MAX TEMPCO (ppm/°C)	INITIAL ERROR (mV)	PIN-PACKAGE	PKG CODE
REF01EP	0°C to +70°C	8.5	±30	8 Plastic DIP	P8-2
REF01EP+	0°C to +70°C	8.5	±30	8 Plastic DIP	P8-2
REF01HP	0°C to +70°C	25	±50	8 Plastic DIP	P8-2
REF01HP+	0°C to +70°C	25	±50	8 Plastic DIP	P8-2
REF01HSA	0°C to +70°C	25	±50	8 SO	S8-2
REF01HSA+	0°C to +70°C	25	±50	8 SO	S8-2
REF01CP	0°C to +70°C	65	±100	8 Plastic DIP	P8-2
REF01CP+	0°C to +70°C	65	±100	8 Plastic DIP	P8-2
REF01CSA	0°C to +70°C	65	±100	8 SO	S8-2
REF01CSA+	0°C to +70°C	65	±100	8 SO	S8-2
REF01CESA	-40°C to +85°C	65	±100	8 SO	S8-2
REF01CESA+	-40°C to +85°C	65	±100	8 SO	S8-2

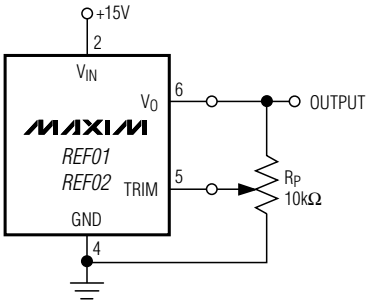
+Denotes a lead-free package.

Ordering Information continued at end of data sheet.

Applications

Analog-to-Digitial Converters
Digitial-to-Analog Converters
Digital Voltmeters
Voltage Regulators
Threshold Detectors

Typical Operating Circuit



REFERENCE WITH TRIMMED OUTPUT.

For pricing, delivery, and ordering information, please contact Maxim/Dallas Direct! at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.

ABSOLUTE MAXIMUM RATINGS–REF01

Input Voltage
REF01, E, H 40V
REF01C 30V
Continuous Power Dissipation
Plastic Dip (P) (derate at 5.6mW/°C above +36°C) 500mW
Small Outline (S) (derate at 5.0mW/°C above +55°C) ..300mW

Output Short-Circuit Duration
(to ground or V_{IN}) .....Indefinite
Storage Temperature Range .....-65°C to +150°C
Operating Temperature Range
REF01E, REF01H, REF01C
(except REF01CESA).....0°C to +70°C
REF01CESA.....-40°C to +85°C
Lead Temperature (soldering, 60s) .....+300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS—REF01E/REF01H

(V_{IN} = +15V, **T_A = +25°C**, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF01E			REF01H			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage	V_O	I_L = 0	9.97	10.00	10.03	9.95	10.00	10.05	V
Output Adjustment Range	ΔV_{trim}	R_P = 10kΩ	±3.0	±6.0		±3.0	±6.0		%
Output Voltage Noise	e_{nP-P}	0.1Hz to 10Hz (Note 1)		20	30		20	30	μV_{P-P}
Line Regulation		V_{IN} = 13V to 33V (Note 2)		0.006	0.010		0.006	0.010	%/V
Load Regulation		I_L = 0 to 10mA (Note 2)		0.005	0.008		0.006	0.010	%/mA
Turn-On Settling Time	t_{ON}	To ±0.1% of final value		400			400		µs
Quiescent Supply Current	I_{SY}	No load		1.0	1.4		1.0	1.4	mA
Load Current	I_L	To specified output voltage tolerance	10	21		10	21		mA
Sink Current	I_S	To specified output voltage tolerance	0.3	0.5		0.3	0.5		mA
Short-Circuit Current	I_{SC}	V_O = 0V		30			30		mA

ELECTRICAL CHARACTERISTICS—REF01E/REF01H

(V_{IN} = +15V, **0°C ≤ T_A ≤ +70°C for REF01E and REF01H**, I_L = 0mA, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF01E			REF01H			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage Change with Temperature	ΔV_{OT}	0°C ≤ T_A ≤ +70°C (Note 3)		0.02	0.06		0.07	0.17	%
Output Voltage Temperature Coefficient	TCV_O	(Note 4)		3	8.5		10.0	25.0	ppm/°C
Change in V_O Temperature Coefficient with Output Adjustment		R_P = 10kΩ		0.7			0.7		ppm/%
Line Regulation (V_{IN} = 13V to 33V)		0°C ≤ T_A ≤ +70°C (Note 2)		0.007	0.012		0.007	0.012	%/V
Load Regulation (I_L = 0 to 8mA)		0°C ≤ T_A ≤ +70°C (Note 2)		0.006	0.010		0.007	0.012	%/mA

ELECTRICAL CHARACTERISTICS—REF01C

(V_{IN} = +15V, **T_A = +25°C**, I_L = 0mA, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF01C			UNITS
			MIN	TYP	MAX	
Output Voltage	V_O	I_L = 0mA	9.90	10.00	10.10	V
Output Adjustment Range	ΔV_{trim}	R_P = 10kΩ	±2.7	±6.0		%
Output Voltage Noise	e_{nP-P}	0.1Hz to 10Hz (Note 1)		25	35	µV$_{P-P}$
Line Regulation		V_{IN} = 13V to 30V (Note 2)		0.009	0.015	%/V
Load Regulation (Note 2)		I_L = 0 to 8mA		0.006	0.015	%/mA
		I_L = 0 to 4mA		0.006	0.015	
Turn-On Settling Time	t_{ON}	To ±0.1% of final value		400		µs
Quiescent Supply Current	I_{SY}	No load		1.0	1.6	mA
Load Current	I_L	To specified output voltage tolerance	8	21		mA
Sink Current	I_S	To specified output voltage tolerance	0.2	0.5		mA
Short-Circuit Current	I_{SC}	V_O = 0V		30		mA

ELECTRICAL CHARACTERISTICS—REF01C

(V_{IN} = +15V, **$T_A = T_{MIN}$ to T_{MAX}**, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF01C			UNITS
			MIN	TYP	MAX	
Output Voltage Change with Temperature	ΔV_{OT}	(Note 3)		0.14	0.45	%
Output Voltage Temperature Coefficient	TCV_O	(Note 4)		20	65	ppm/°C
Change in V_O Temperature Coefficient with Output Adjustment		R_P = 10kΩ		0.7		ppm/%
Line Regulation		V_{IN} = 13V to 30V (Note 2)		0.011	0.018	%/V
Load Regulation		I_L = 0 to 5mA (Note 2)		0.008	0.018	%/mA

Note 1: Guaranteed by design.

Note 2: Line and load regulation specifications include the effect of self heating. 100% production tested at T_A = +25°C and guaranteed by design for $T_A = T_{MIN}$ to T_{MAX}, as specified.

Note 3: ΔV_{OT} is defined as the absolute difference between the maximum output voltage and the minimum output voltage over the specified temperature range expressed as a percentage of 10V. Guaranteed by design.

$$\Delta V_{OT} = \left[\frac{V_{MAX} - V_{MIN}}{10V}\right] \times 100$$

Note 4: TCV_O is defined as ΔV_{OT} divided by the temperature range. Guaranteed by design.

Output Adjustment

The REF01 trim terminal can be used to adjust the voltage over a 10V ±600mV range. This feature allows the system designer to trim system errors by setting the reference to a voltage other than 10V, including 10.240V for binary applications (see the *Typical Operating Circuit*).

Adjustment of the output does not significantly affect the temperature performance of the device. The temperature coefficient change is approximately 0.7ppm/°C for 100mV of output adjustment.

+5V, +10V Precision Voltage References

ABSOLUTE MAXIMUM RATINGS–REF02

Input Voltage
- REF02, E, H 40V
- REF02C 30V

Continuous Power Dissipation
- Plastic Dip (P) (derate at 5.6mW/°C above +36°C) 500mW
- Small Outline (S) (derate at 5.0mW/°C above +55°C) .. 300mW

Storage Temperature Range ..... -65°C to +150°C

Operating Temperature Range
- REF02E, REF02H ..... 0°C to +70°C
- REF02C (except REF02CESA) ..... 0°C to +70°C
- REF02CESA ..... -40°C to +85°C

Output Short-Circuit Duration
- (to ground or V_{IN}) ..... Indefinite

Lead Temperature (soldering, 60s) ..... +300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS—REF02E/REF02H

(V_{IN} = +15V, **T_A = +25°C**, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF02E			REF02H			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage	V_O	I_L = 0	4.985	5.000	5.015	4.975	5.000	5.025	V
Output Adjustment Range	ΔV_{trim}	R_P = 10kΩ	±3	±6		±3	±6		%
Output Voltage Noise	e_{nP-P}	0.1Hz to 10Hz (Note 5)		10	15		10	15	µVP-P
Line Regulation		V_{IN} = 8V to 33V (Note 6)		0.006	0.010		0.006	0.010	%/V
Load Regulation		I_L = 0 to 10mA (Note 6)		0.005	0.010		0.006	0.010	%/mA
Turn-On Settling Time	t_{ON}	To ±0.1% of final value		230			230		µs
Quiescent Supply Current	I_{SY}	No load		1.0	1.4		1.0	1.4	mA
Load Current	I_L	To specified output voltage tolerance	10	21		10	21		mA
Sink Current	I_S	To specified output voltage tolerance	0.3	0.5		0.3	0.5		mA
Short-Circuit Current	I_{SC}	V_O = 0V		30			30		mA
Temperature Voltage Output	V_T	(Note 7)		630			630		mV

ELECTRICAL CHARACTERISTICS—REF02E/REF02H

(V_{IN} = +15V, **0°C ≤ T_A ≤ +70°C for REF02E and REF02H**, I_L = 0mA, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF02E			REF02H			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Output Voltage Change with Temperature	ΔV_{OT}	0°C ≤ T_A ≤ +70°C (Note 8)		0.02	0.06		0.07	0.17	%
Output Voltage Temperature Coefficient	TCV_O	(Note 9)		3	8.5		10	25	ppm/°C
Change in V_O Temperature Coefficient with Output Adjustment		R_P = 10kΩ		0.7			0.7		ppm/%
Line Regulation (V_{IN} = 8V to 33V)		0°C ≤ T_A ≤ +70°C (Note 6)		0.007	0.012		0.007	0.012	%/V
Load Regulation (I_L = 0 to 8mA)		0°C ≤ T_A ≤ +70°C (Note 6)		0.006	0.010		0.007	0.012	%/mA

ELECTRICAL CHARACTERISTICS—REF02E/REF02H (continued)

(V_{IN} = +15V, **0°C ≤ T_A ≤ +70°C for REF02E and REF02H**, I_L = 0mA, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF02E			REF02H			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Temperature Voltage Output Temperature Coefficient	TCV_T	(Note 7)		2.1			2.1		mV/°C

ELECTRICAL CHARACTERISTICS—REF02C

(V_{IN} = +15V, **T_A = +25°C**, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF02C			UNITS
			MIN	TYP	MAX	
Output Voltage	V_O	I_L = 0mA	4.950	5.000	5.050	V
Output Adjustment Range	ΔV_{trim}	R_P = 10kΩ	±2.7	±6.0		%
Output Voltage Noise	e_{nP-P}	0.1Hz to 10Hz (Note 5)		12	18	μV_{P-P}
Line Regulation		V_{IN} = 8V to 30V (Note 6)		0.009	0.015	%/V
Load Regulation (Note 6)		I_L = 0 to 8mA		0.006	0.015	%/mA
		I_L = 0 to 4mA				
Turn-On Settling Time	t_{ON}	To ±0.1% of final value		230		µs
Quiescent Supply Current	I_{SY}	No load		1.0	1.6	mA
Load Current	I_L	To specified output voltage tolerance	8	21		mA
Sink Current	I_S	To specified output voltage tolerance	0.2	0.5		mA
Short-Circuit Current	I_{SC}	V_O = 0V		30		mA
Temperature Voltage Output	V_T	(Note 7)		630		mV

ELECTRICAL CHARACTERISTICS—REF02C

(V_{IN} = +15V, **T_A = T_{MIN} to T_{MAX}**, I_L = 0mA, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	REF02C			UNITS
			MIN	TYP	MAX	
Output Voltage Change with Temperature	ΔV_{OT}	(Note 8)		0.14	0.45	%
Output Voltage Temperature Coefficient	TCV_O	(Note 9)		20	65	ppm/°C
Change in V_O Temperature Coefficient with Output Adjustment		R_P = 10kΩ		0.7		ppm/%
Line Regulation		V_{IN} = 8V to 30V (Note 6)		0.011	0.018	%/V
Load Regulation		I_L = 0 to 5mA (Note 6)		0.008	0.018	%/mA
Temperature Voltage Output Temperature Coefficient	TCV_T	(Note 7)		2.1		mV/°C

+5V, +10V Precision Voltage References

ELECTRICAL CHARACTERISTICS–REF02 (continued)

(V_{IN} = +15V, **T_A = T_{MIN} to T_{MAX}**, I_L = 0mA, unless otherwise noted.)

Note 5: Guaranteed by design.

Note 6: Line and load regulation specifications include the effect of self heating. 100% production tested at T_A = +25°C and guaranteed by design for T_A = T_{MIN} to T_{MAX}, as specified.

Note 7: Limit current in or out of pin 3 to 50nA and capacitance on pin 3 to 30pF.

Note 8: ΔV_{OT} is defined as the absolute difference between the maximum output voltage and the minimum output voltage over the specified temperature range expressed as a percentage of 5V. Guaranteed by design.

$$\Delta V_{OT} = \left[\frac{V_{MAX} - V_{MIN}}{5V}\right] \times 100$$

Note 9: TCV_O is defined as ΔV_{OT} divided by the temperature range. Guaranteed by design.

Output Adjustment

The REF02 trim terminal can be used to adjust the output voltage over a 5V ±300mV range. This feature allows the system designer to trim system errors by setting the reference to a voltage other than 5V (refer to the *Typical Operating Circuit*).

Adjustment of the output does not significantly affect the temperature performance of the device. Typically, the temperature coefficient change is 0.7ppm/°C for 100mV of output adjustment.

Temperature Voltage Output

The REF02 provides a temperature-dependent output voltage on the TEMP pin. This voltage is proportional to the absolute temperature, and has a scale factor of approximately 2.1mV/°C (Figure 1).

Output Voltage = 2.1(T + 273)mV

where T = Temperature in °C.

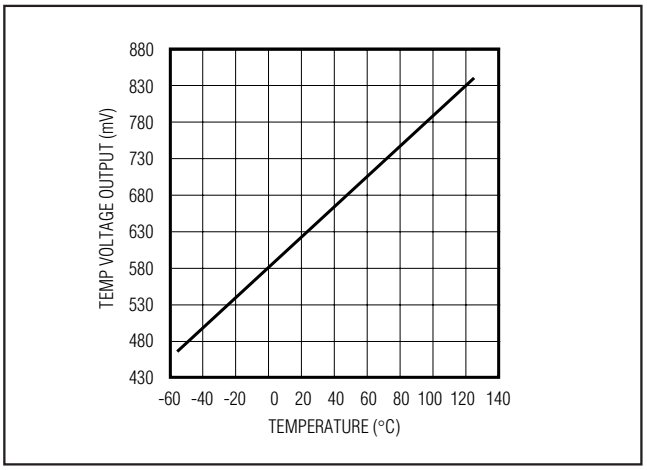
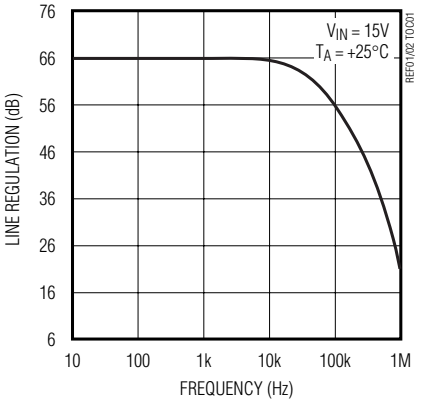


Figure 1. REF02 Temperature/Voltage Output vs. Temperature

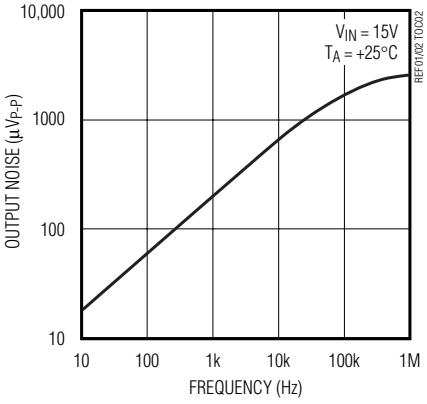
Typical Operating Characteristics

(T_A = +25°C, unless otherwise noted.)

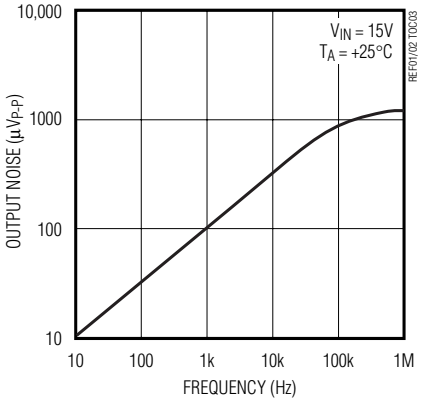
LINE REGULATION vs. FREQUENCY



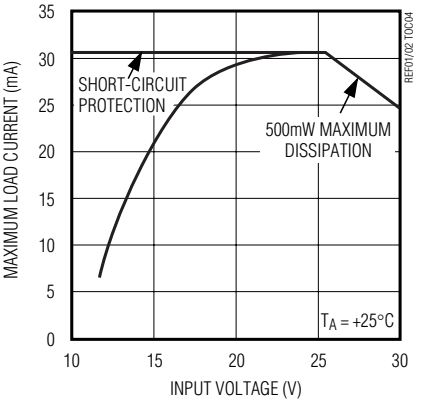
REF01 OUTPUT WIDEBAND NOISE vs. BANDWIDTH (0.1Hz TO FREQUENCY INDICATED)



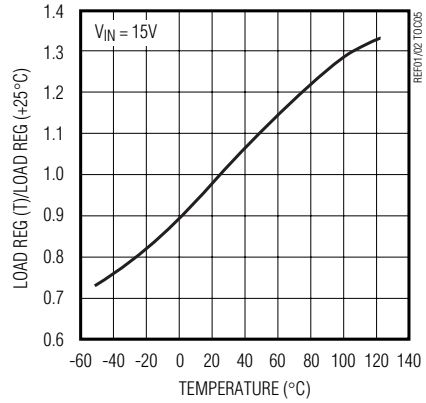
REF02 OUTPUT WIDEBAND NOISE vs. BANDWIDTH (0.1Hz TO FREQUENCY INDICATED)



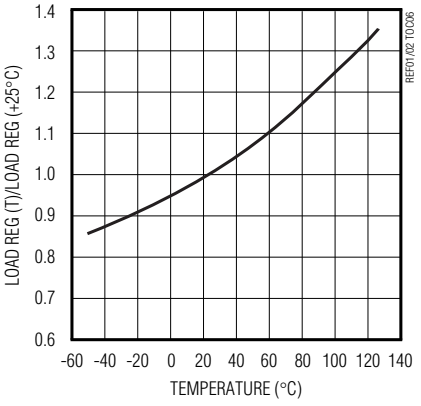
MAXIMUM LOAD CURRENT vs. INPUT VOLTAGE



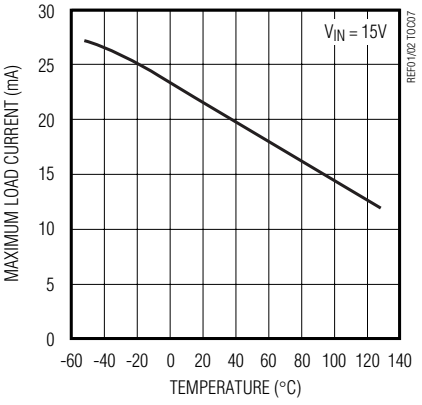
NORMALIZED LOAD REGULATION (ΔI_L = 10mA) vs. TEMPERATURE



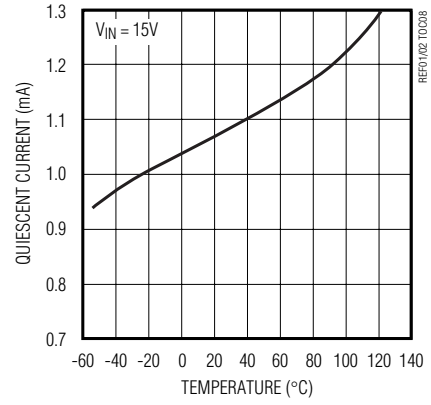
NORMALIZED LINE REGULATION vs. TEMPERATURE



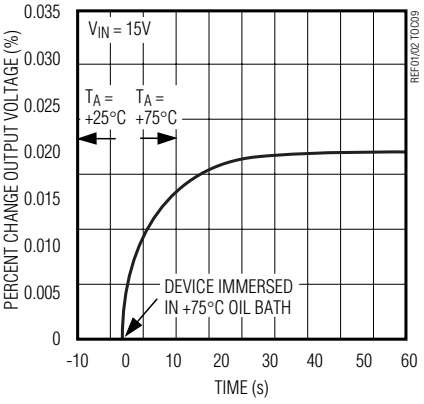
MAXIMUM LOAD CURRENT vs. TEMPERATURE



QUIESCENT CURRENT vs. TEMPERATURE



OUTPUT CHANGE DUE TO THERMAL SHOCK



+5V, +10V Precision Voltage References

Typical Applications

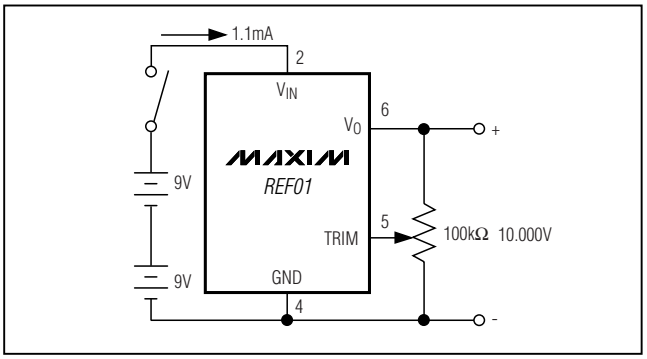


Figure 2. Precision Calibration Standard

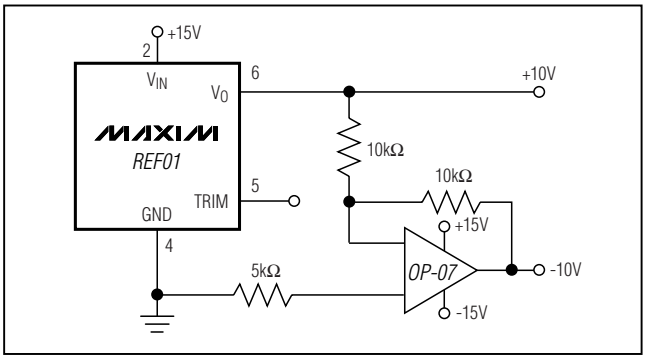


Figure 3. ±10V Reference

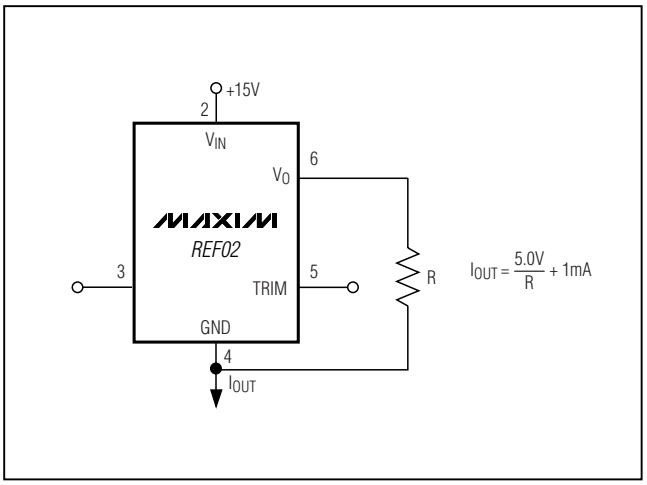


Figure 4. Current Source

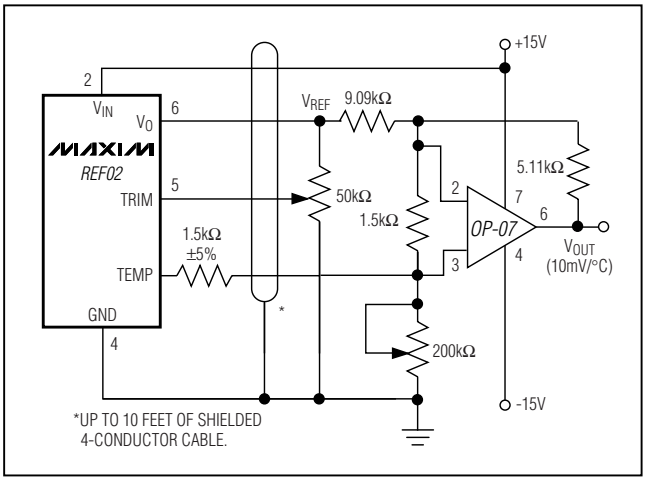
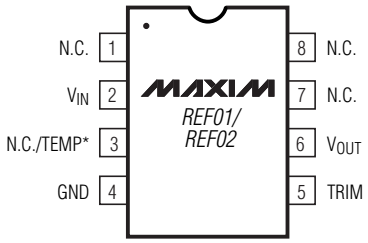


Figure 5. Precision Temperature Transducer with Remote Sensor

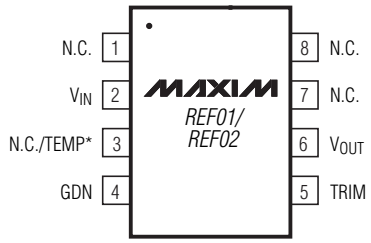
+5V, +10V Precision Voltage References

Pin Configurations

TOP VIEW



DIP



SO

*__NOTE:__ PIN 3 IS N.C. (NO CONNECTION) ON REF01, TEMP OUTPUT ON REF02.

Ordering Information (continued)

PART	TEMP RANGE	MAX TEMPCO (ppm/°C)	INITIAL ERROR (mV)	PIN-PACKAGE	PKG CODE
REF02EP	0°C to +70°C	8.5	±15	8 Plastic DIP	P8-2
REF02EP+	0°C to +70°C	8.5	±15	8 Plastic DIP	P8-2
REF02HP	0°C to +70°C	25	±25	8 Plastic DIP	P8-2
REF02HP+	0°C to +70°C	25	±25	8 Plastic DIP	P8-2
REF02HSA	0°C to +70°C	25	±25	8 SO	S8-2
REF02HSA+	0°C to +70°C	25	±25	8 SO	S8-2
REF02CP	0°C to +70°C	65	±50	8 Plastic DIP	P8-2
REF02CP+	0°C to +70°C	65	±50	8 Plastic DIP	P8-2
REF02CSA	0°C to +70°C	65	±50	8 SO	S8-2
REF02CSA+	0°C to +70°C	65	±50	8 SO	S8-2
REF02CESA	-40°C to +85°C	65	±50	8 SO	S8-2
REF02CESA+	-40°C to +85°C	65	±50	8 SO	S8-2

+Denotes a lead-free package.

Revision History

Pages changed at Rev 7: 1, 9

Package Information

For the latest package outline information, go to **www.maxim-ic.com/packages**.

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

© 2007 Maxim Integrated Products MAXIM is a registered trademark of Maxim Integrated Products, Inc.

REF01

Part Number Table

Notes:

1. See the REF01 QuickView Data Sheet for further information on this product family or download t data sheet (PDF, 108kB).
2. Other options and links for purchasing parts are listed at: http://www.maxim-ic.com/sales.
3. Didn't Find What You Need? Ask our applications engineers. Expert assistance in finding parts, us one business day.
4. Part number suffixes: T or T&R = tape and reel; + = RoHS/lead-free; # = RoHS/lead-exempt. M data sheet or Part Naming Conventions.
5. * Some packages have variations, listed on the drawing. "PkgCode/Variation" tells which variatio uses.

Part Number	Free Sample	Buy Direct	Package: TYPE PINS SIZE DRAWING CODE/VAR *	Temp	RoHS/ Materi
REF01CSA+G106				0C to +70C	RoHS/L
REF01CESA+				-40C to +85C	RoHS/L
REF01EZ-G106			Ceramic DIP;8 pin;.300" Dwg: 21-0045A (PDF) Use pkgcode/variation: J8-2*	0C to +70C	RoHS/L Materia
REF01CZ-G106			Ceramic DIP;8 pin;.300" Dwg: 21-0045A (PDF) Use pkgcode/variation: J8-2*	0C to +70C	RoHS/L Materia
REF01Z-G106			Ceramic DIP;8 pin;.300" Dwg: 21-0045A (PDF) Use pkgcode/variation: J8-2*	-55C to +125C	RoHS/L Materia
REF01Z/883B			Ceramic DIP;8 pin;.300" Dwg: 21-0045A (PDF) Use pkgcode/variation: J8-2*	-55C to +125C	RoHS/L Materia
REF01AZ/883B			Ceramic DIP;8 pin;.300" Dwg: 21-0045A (PDF) Use pkgcode/variation: J8-2*	-55C to +125C	RoHS/L Materia

REF01C/D					RoHS/L
REF01CJ-G106			Gold Can -TO;8 pin; Dwg: 21-0022A (PDF) Use pkgcode/variation: G99-8*	0C to +70C	RoHS/L Materia
REF01J/883B			Gold Can -TO;8 pin; Dwg: 21-0022A (PDF) Use pkgcode/variation: G99-8*	-55C to +125C	RoHS/L Materia
REF01AJ/883B			Gold Can -TO;8 pin; Dwg: 21-0022A (PDF) Use pkgcode/variation: G99-8*	-55C to +125C	RoHS/L Materia
REF01J-G106			Metal Can-TO;8 pin; Dwg: 21-0022A (PDF) Use pkgcode/variation: T99-8*	-55C to +125C	RoHS/L Materia
REF01EP+			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8+1*	0C to +70C	RoHS/L Materia
REF01CP			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8-1*	0C to +70C	RoHS/L Materia
REF01EP-G106			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8-1*	0C to +70C	RoHS/L Materia
REF01HP+			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8+1*	0C to +70C	RoHS/L Materia
REF01HP			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8-1*	0C to +70C	RoHS/L Materia
REF01CP-G106			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8-1*	0C to +70C	RoHS/L Materia
REF01HP-G106			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8-1*	0C to +70C	RoHS/L Materia
REF01CP+			PDIP;8 pin;.300" Dwg: 21-0043D (PDF) Use pkgcode/variation: P8+1*	0C to +70C	RoHS/L Materia
REF01HSA+T			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8+2*	0C to +70C	RoHS/L Materia
REF01HSA+			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8+2*	0C to +70C	RoHS/L Materia
REF01CSA+T			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8+2*	0C to +70C	RoHS/L Materia

REF01CSA+			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8+2*	0C to +70C	RoHS/L Materia
REF01HSA-T			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8-2*	0C to +70C	RoHS/L Materia
REF01HSA			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8-2*	0C to +70C	RoHS/L Materia
REF01CSA-T			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8-2*	0C to +70C	RoHS/L Materia
REF01CSA			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8-2*	0C to +70C	RoHS/L Materia
REF01CESA+T				-40C to +85C	RoHS/L
REF01CESA-T				-40C to +85C	RoHS/L
REF01CESA			SOIC;8 pin;.150" Dwg: 21-0041B (PDF) Use pkgcode/variation: S8-4*	-40C to +85C	RoHS/L Materia

Didn't Find What You Need?

CONTACT US: SEND US AN EMAIL

Copyright 2007 by Maxim Integrated Products, Dallas Semiconductor • Legal Notices • Privacy Polic

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Voltage References ***category:***

Click to view products by Maxim ***manufacturer:***

Other Similar products are found below :

622664A 636116E 748389C AS431ARTR-E1 NCP431BCSNT1G NCP432BCSNT1G NCV431BSNT1G AP4313UKTR-G1 TL1431AIYDT AZ431BR-ATRE1 622668D NCP432BVSNT1G 5962-8686103XC NCV431BVDMR2G AP4306BUKTR-G1 SC431BVSNT1G MAX6023EBT30+T NCV431ASNT1G LM4040CEM3-5.0/V+T LT1460KCS3-3#TRM LT1460KCS3-3.3#TRM LT1019AIS8-2.5 LT6660KCDC-10#TRMPBF LTC6652BHLS8-5#PBF LTC6652AHLS8-4.096#PBF LTC6655BHLS8-4.096#PBF LT6660HCDC-5#TRMPBF LM336Z-2.5#PBF LT1021BMH-10 SC431ILPRAG TLVH431MIL3T MAX6023EBT21+T AP432AQG-7 ADR4540CRZ LM4040B25QFTA TS3325AQPR REF102AU/2K5 TL4050B25QDBZR TL4051C12QDCKR TL431ACZ KA431SLMF2TF KA431SMF2TF KA431SMFTF LM385BXZ/NOPB LM4040QCEM3-3.0/NOPB LM4041C12ILPR LM4050AEM3X-5.0/NOPB LM4050AIM3X-5.0/NOPB LM4120AIM5-2.5/NOP LM431SCCMFX