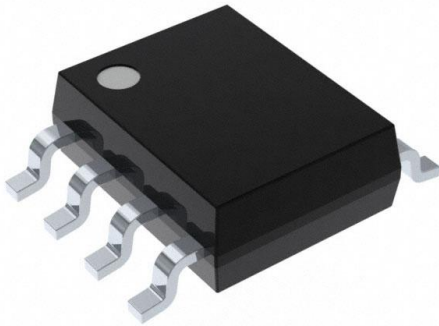


REF02CESA+T Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

| | |
|------------------------------|---|
| DiGi Electronics Part Number | REF02CESA+T-DG |
| Manufacturer | Analog Devices Inc./Maxim Integrated |
| Manufacturer Product Number | REF02CESA+T |
| Description | IC VREF SERIES 1% 8SOIC |
| Detailed Description | Series Voltage Reference IC Fixed 5V V ±1% 21 mA 8-SOIC |

This model REF02CESA+T is available at DiGi Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets.

We welcome your inquiries regarding pricing, lead time, or other product-related questions.

 [Request a Quote](#)

 [Datasheet Search](#)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

REF02CESA+T

Series:

REF02

Reference Type:

Series

Voltage - Output (Min/Fixed):

5V

Tolerance:

±1%

Noise - 0.1Hz to 10Hz:

12µVp-p

Voltage - Input:

8V ~ 30V

Operating Temperature:

-40°C ~ 85°C (TA)

Package / Case:

8-SOIC (0.154", 3.90mm Width)

Base Product Number:

REF02

Manufacturer:

Analog Devices Inc./Maxim Integrated

Product Status:

Active

Output Type:

Fixed

Current - Output:

21 mA

Temperature Coefficient:

65ppm/°C

Noise - 10Hz to 10kHz:

-

Current - Supply:

1.6mA

Mounting Type:

Surface Mount

Supplier Device Package:

8-SOIC

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

MAXIM

+5V, +10V Precision Voltage References

REF01/REF02

General Description

The REF01/REF02 are industry-standard precision voltage references. The stable 10V output of the REF01 can be adjusted over a $\pm 6\%$ range with minimal effect on temperature stability. The 5V output REF02 can also be adjusted over a $\pm 6\%$ 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: 10 μ Vp-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 |

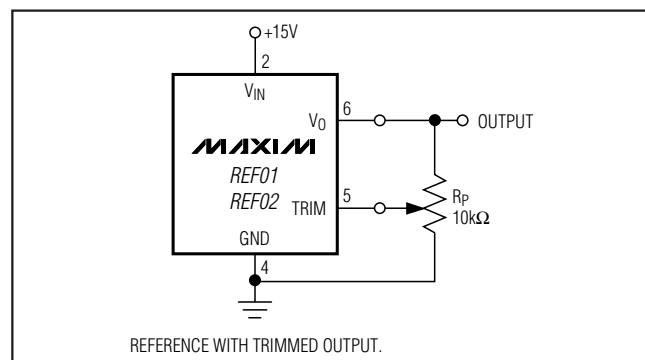
+Denotes a lead-free package.

Ordering Information continued at end of data sheet.

Applications

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

Typical Operating Circuit



MAXIM

Maxim Integrated Products 1

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.

+5V, +10V Precision Voltage References

REF01/REF02

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

($V_{IN} = +15V$, $T_A = +25^\circ C$, 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} | $R_P = 10k\Omega$ | ± 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 $\pm 0.1\%$ 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

($V_{IN} = +15V$, $0^\circ C \leq T_A \leq +70^\circ C$ 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} | $0^\circ C \leq T_A \leq +70^\circ C$ (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 | | $R_P = 10k\Omega$ | | 0.7 | | | 0.7 | | ppm/% |
| Line Regulation ($V_{IN} = 13V$ to 33V) | | $0^\circ C \leq T_A \leq +70^\circ C$ (Note 2) | | 0.007 | 0.012 | | 0.007 | 0.012 | %/V |
| Load Regulation ($I_L = 0$ to 8mA) | | $0^\circ C \leq T_A \leq +70^\circ C$ (Note 2) | | 0.006 | 0.010 | | 0.007 | 0.012 | %/mA |

+5V, +10V Precision Voltage References

REF01/REF02

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 | μVP-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

REF01/REF02

ABSOLUTE MAXIMUM RATINGS—REF02

| | |
|---|---|
| Input Voltage | Operating Temperature Range |
| REF02, E, H40V | REF02E, REF02H0°C to +70°C |
| REF02C30V | REF02C (except REF02CESA)0°C to +70°C |
| Continuous Power Dissipation | REF02CESA-40°C to +85°C |
| Plastic Dip (P) (derate at 5.6mW/°C above +36°C)500mW | Output Short-Circuit Duration |
| Small Outline (S) (derate at 5.0mW/°C above +55°C) ..300mW | (to ground or V_{IN})Indefinite |
| Storage Temperature Range-65°C to +150°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—REF02E/REF02H

($V_{IN} = +15V$, $T_A = +25^\circ C$, 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} | $R_P = 10k\Omega$ | ± 3 | ± 6 | | ± 3 | ± 6 | | % |
| Output Voltage Noise | e_{nP-P} | 0.1Hz to 10Hz (Note 5) | | 10 | 15 | | 10 | 15 | μV_{P-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 $\pm 0.1\%$ 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

($V_{IN} = +15V$, $0^\circ C \leq T_A \leq +70^\circ C$ 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} | $0^\circ C \leq T_A \leq +70^\circ C$ (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 | | $R_P = 10k\Omega$ | | 0.7 | | | 0.7 | | ppm/% |
| Line Regulation ($V_{IN} = 8V$ to 33V) | | $0^\circ C \leq T_A \leq +70^\circ C$ (Note 6) | | 0.007 | 0.012 | | 0.007 | 0.012 | %/V |
| Load Regulation ($I_L = 0$ to 8mA) | | $0^\circ C \leq T_A \leq +70^\circ C$ (Note 6) | | 0.006 | 0.010 | | 0.007 | 0.012 | %/mA |

+5V, +10V Precision Voltage References

REF01/REF02

ELECTRICAL CHARACTERISTICS—REF02E/REF02H (continued)

($V_{IN} = +15V$, $0^{\circ}C \leq T_A \leq +70^{\circ}C$ 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 | TCVT | (Note 7) | 2.1 | | | 2.1 | | | mV/°C |

ELECTRICAL CHARACTERISTICS—REF02C

($V_{IN} = +15V$, $T_A = +25^{\circ}C$, 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} | $R_P = 10k\Omega$ | ± 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 $\pm 0.1\%$ 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 | TCVO | (Note 9) | | 20 | 65 | ppm/°C |
| Change in V_O Temperature Coefficient with Output Adjustment | | $R_P = 10k\Omega$ | | 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 | TCVT | (Note 7) | | 2.1 | | mV/°C |

+5V, +10V Precision Voltage References

REF01/REF02

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 $T_A = +25^\circ C$ 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 $5V \pm 300mV$ 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/ $^\circ C$ 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/ $^\circ C$ (Figure 1).

$$\text{Output Voltage} = 2.1(T + 273)mV$$

where T = Temperature in $^\circ C$.

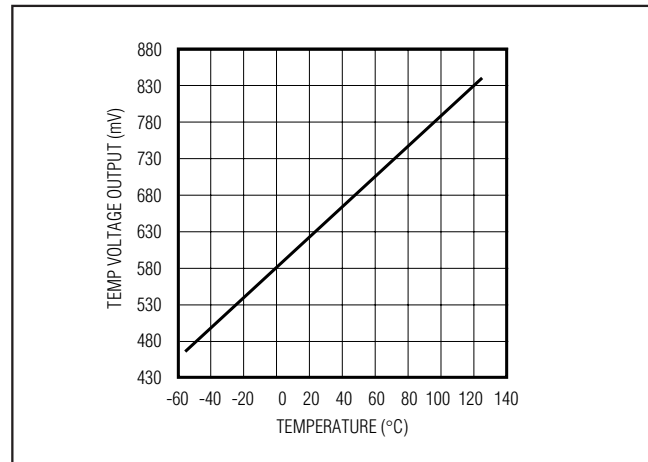


Figure 1. REF02 Temperature/Voltage Output vs. Temperature

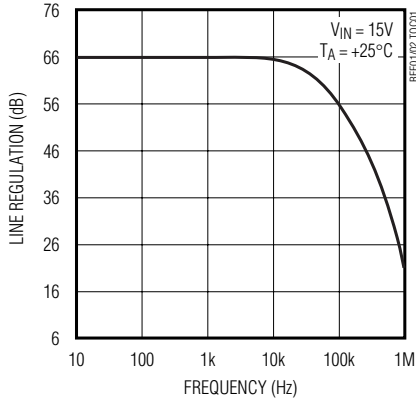
+5V, +10V Precision Voltage References

Typical Operating Characteristics

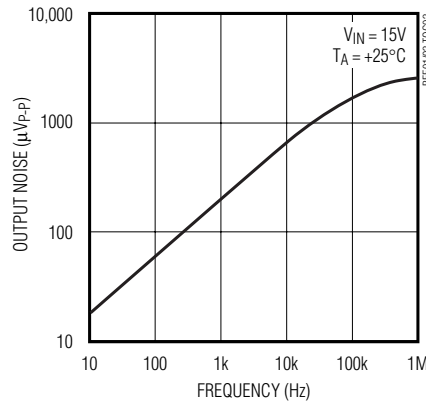
($T_A = +25^\circ\text{C}$, unless otherwise noted.)

REF01/REF02

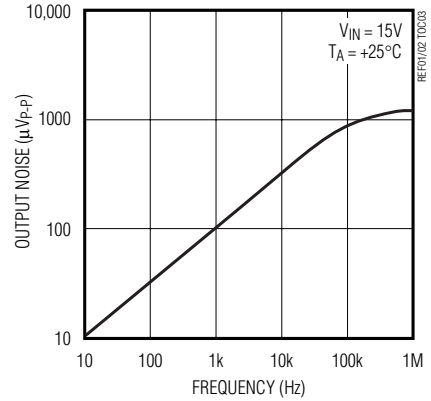
LINE REGULATION vs. FREQUENCY



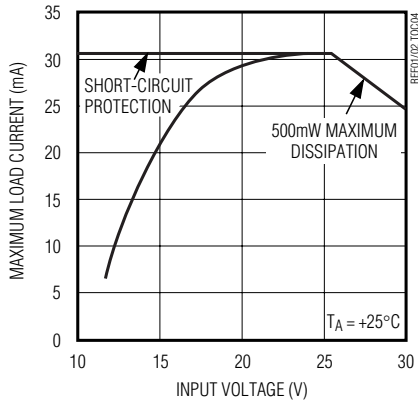
REF01 OUTPUT WIDEBAND NOISE vs. BANDWIDTH (0.1Hz TO FREQUENCY INDICATED)



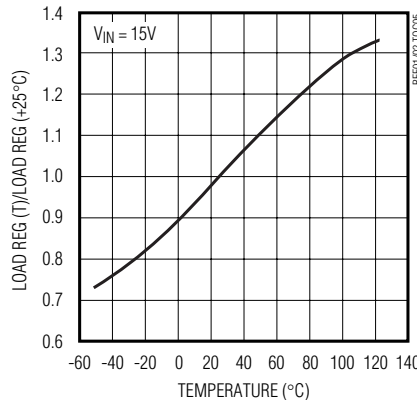
REF02 OUTPUT WIDEBAND NOISE vs. BANDWIDTH (0.1Hz TO FREQUENCY INDICATED)



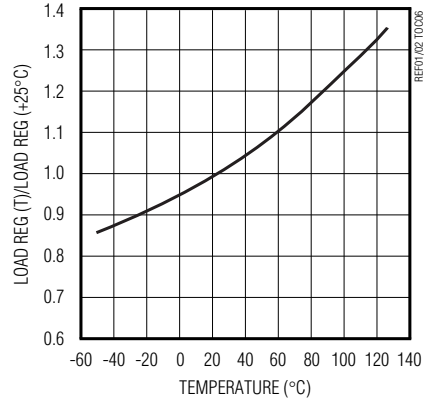
MAXIMUM LOAD CURRENT vs. INPUT VOLTAGE



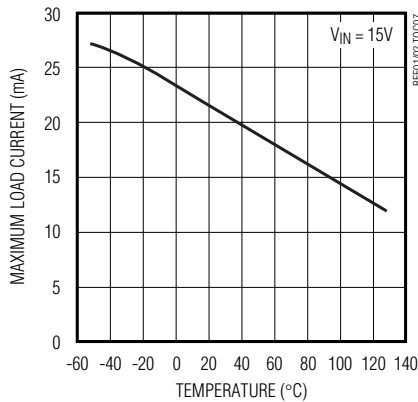
NORMALIZED LOAD REGULATION ($\Delta I_L = 10\text{mA}$) vs. TEMPERATURE



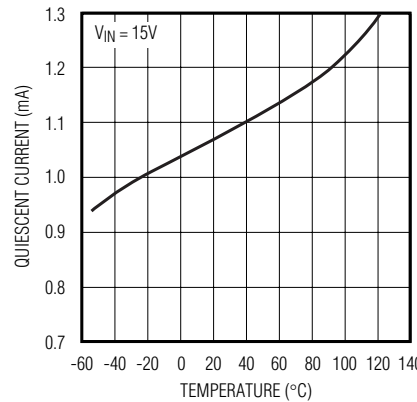
NORMALIZED LINE REGULATION vs. TEMPERATURE



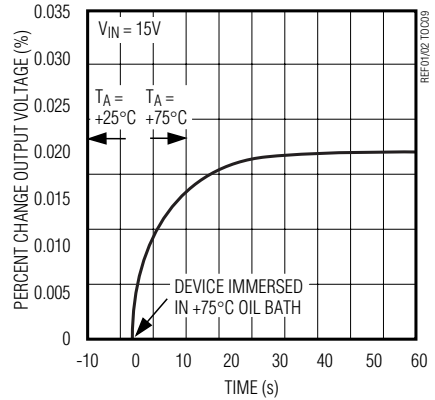
MAXIMUM LOAD CURRENT vs. TEMPERATURE



QUIESCENT CURRENT vs. TEMPERATURE



OUTPUT CHANGE DUE TO THERMAL SHOCK



+5V, +10V Precision Voltage References

REF01/REF02

Typical Applications

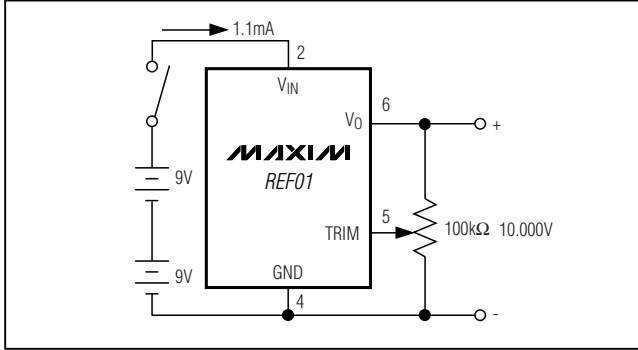


Figure 2. Precision Calibration Standard

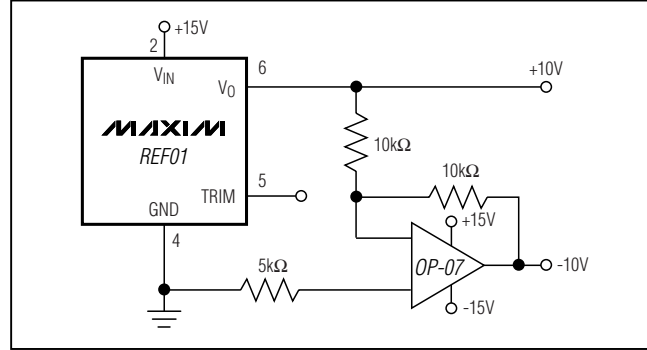


Figure 3. ±10V Reference

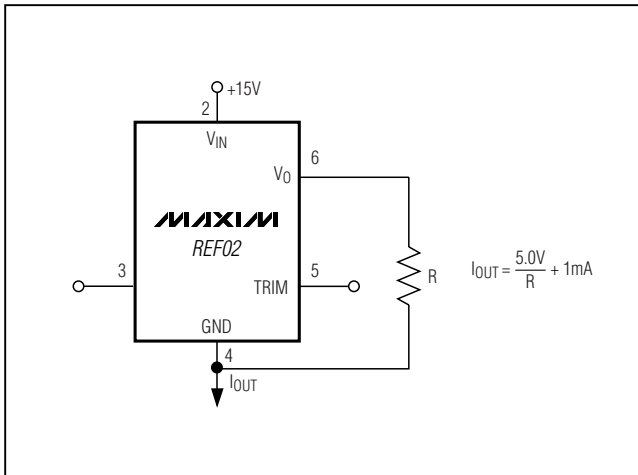


Figure 4. Current Source

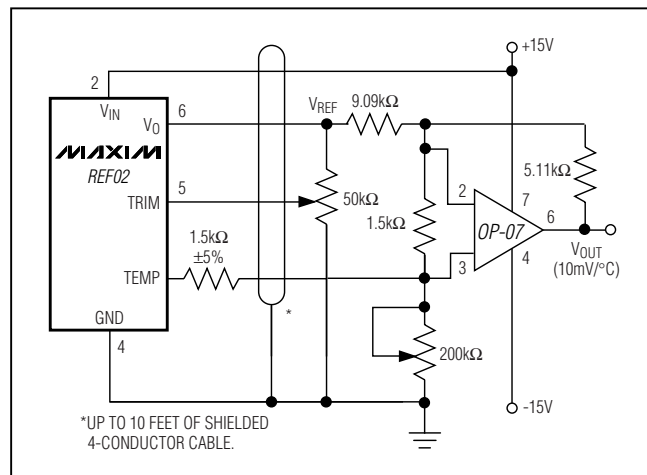
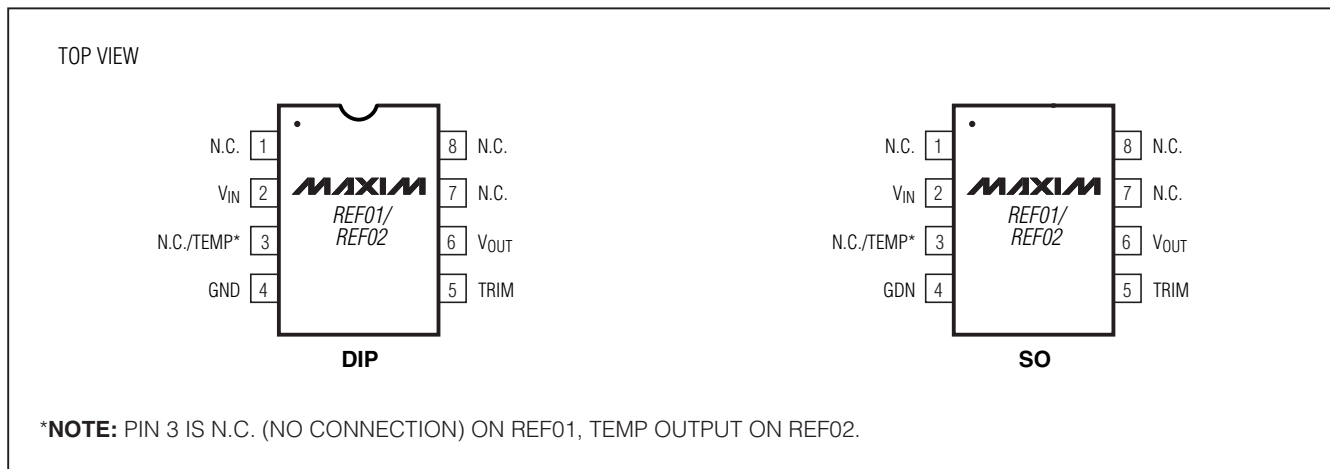


Figure 5. Precision Temperature Transducer with Remote Sensor

+5V, +10V Precision Voltage References

Pin Configurations

REF01/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.

Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600 9

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we stricly control the quality of products and services. Welcome your RFQ to

Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.