

### FEATURES

**Very low voltage noise: 1.8 nV/√Hz**  
**Low input bias current: 90 nA maximum**  
**Offset voltage: 125 μV maximum**  
**High gain: 120 dB**  
**Wide bandwidth: 12 MHz**  
**±5 V to ±15 V operation**

### APPLICATIONS

**Precision instrumentation**  
**Filter blocks**  
**Microphone preamplifiers**  
**Industrial control**  
**Thermocouples and RTDs**  
**Reference buffers**

### GENERAL DESCRIPTION

The ADA4004-1/ADA4004-2/ADA4004-4 are 1.8 nV/√Hz precision amplifiers featuring 40 μV offset, 0.7 μV/°C drift, 12 MHz bandwidth, and low 1.7 mA per amplifier supply current.

The ADA4004-1/ADA4004-2/ADA4004-4 are designed on the high performance *iPolar™* process, enabling improvements such as reduced noise and power consumption, increased speed and stability, and smaller footprint size. Novel design techniques enable the ADA4004-1/ADA4004-2/ADA4004-4 to achieve 1.8 nV/√Hz voltage noise density and a low 6 Hz 1/f noise corner frequency while consuming just 1.7 mA per amplifier. The small package saves board space, reduces cost, and improves layout flexibility.

Applications for these amplifiers include high precision controls, PLL filters, high performance precision filters, medical and analytical instrumentation, precision power supply controls, ATE, and data acquisition systems. Operation is fully specified from ±5 V to ±15 V from -40°C to +125°C.

The ADA4004-1, ADA4004-2, and ADA4004-4 are members of a growing series of low noise op amps offered by Analog Devices, Inc. (see Table 1).

**Table 1. Voltage Noise**

| Pkg.   | 0.9 nV | 1.1 nV | 1.8 nV    | 2.8 nV | 3.8 nV |
|--------|--------|--------|-----------|--------|--------|
| Single | AD797  | AD8597 | ADA4004-1 | AD8675 | AD8671 |
| Dual   |        | AD8599 | ADA4004-2 | AD8676 | AD8672 |
| Quad   |        |        | ADA4004-4 |        | AD8674 |

### PIN CONFIGURATIONS

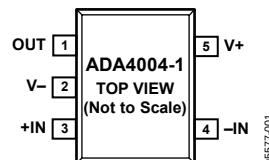


Figure 1. 5-Lead SOT (RJ-5)

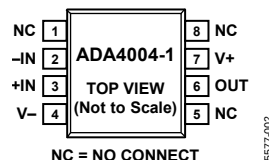


Figure 2. 8-Lead SOIC (R-8)

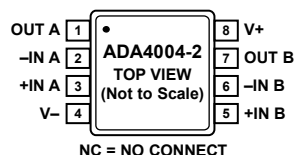


Figure 3. 8-Lead MSOP (RM-8) and 8-Lead SOIC (R-8)

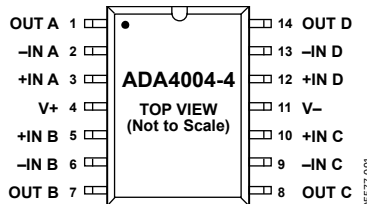
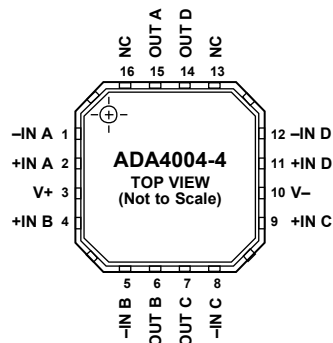


Figure 4. 14-Lead SOIC (R-14)



**NOTES**  
1. NC = NO CONNECT.  
2. IT IS RECOMMENDED THAT THE EXPOSED PAD BE CONNECTED TO V-.

Figure 5. 16-Lead LFCSP (CP-16-4)

### Rev. G

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## REVISION HISTORY

### 4/11—Rev. F to Rev. G

|                                  |    |
|----------------------------------|----|
| Changes to Figure 1 .....        | 1  |
| Updated Outline Dimensions ..... | 12 |

### 6/10—Rev. E to Rev. F

|                                                   |   |
|---------------------------------------------------|---|
| Added Differential Input Current to Table 4 ..... | 5 |
| Changes to Figure 14 and Figure 17 .....          | 7 |

### 10/09—Rev. D to Rev. E

|                                                                           |    |
|---------------------------------------------------------------------------|----|
| Changes to Product Title, General Description Section, and Figure 5 ..... | 1  |
| Updated Outline Dimensions (RM-8) .....                                   | 13 |
| Changes to Ordering Guide .....                                           | 14 |

### 6/09—Rev. C to Rev. D

|                           |   |
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| Changes to Figure 5 ..... | 1 |
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### 10/08—Rev. B to Rev. C

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| Added ADA4004-1 and ADA4004-2 .....                              | Universal |
| Added 5-Lead SOT, 8-Lead SOIC, and 8-Lead MSOP .....             | Universal |
| Changes to Features Section .....                                | 1         |
| Added Figure 1 to Figure 3; Renumbered Sequentially .....        | 1         |
| Changes to General Description Section .....                     | 1         |
| Added Table 1; Renumbered Sequentially .....                     | 1         |
| Change to Output Voltage Low Parameter, Table 2 .....            | 3         |
| Changes to Supply Current per Amplifier Parameter, Table 2 ..... | 3         |
| Added Phase Margin Parameter, Table 2 .....                      | 3         |
| Change to Output Voltage Low Parameter, Table 3 .....            | 3         |
| Changes to Supply Current per Amplifier Parameter, Table 3 ..... | 4         |
| Added Phase Margin Parameter, Table 3 .....                      | 4         |
| Changes to Table 4 .....                                         | 5         |
| Changes to Thermal Resistance Section .....                      | 5         |
| Changes to Table 5 .....                                         | 5         |
| Update Outline Dimensions .....                                  | 12        |
| Changes to Ordering Guide .....                                  | 13        |

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### 11/07—Rev. A to Rev. B

|                                                                 |           |
|-----------------------------------------------------------------|-----------|
| Changed $V_S$ to $V_{SY}$ .....                                 | Universal |
| Changes to General Description .....                            | 1         |
| Changes to Supply Current per Amplifier .....                   | 3         |
| Changes to Open-Loop Gain .....                                 | 4         |
| Changes to Supply Current per Amplifier .....                   | 4         |
| Changes to Figure 10, Figure 11, Figure 13, and Figure 14 ..... | 7         |
| Changes to Figure 26 .....                                      | 9         |
| Updated Outline Dimensions .....                                | 12        |
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### 7/06—Rev. 0 to Rev. A

|                                  |    |
|----------------------------------|----|
| Changes to Table 4 .....         | 5  |
| Updated Outline Dimensions ..... | 12 |
| Changes to Ordering Guide .....  | 12 |

### 1/06—Revision 0: Initial Version

## SPECIFICATIONS

$V_{SY} = \pm 5\text{ V}$ ,  $V_{CM} = 0\text{ V}$ ,  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

Table 2.

| Parameter                    | Symbol                   | Conditions                                                                                                                    | Min  | Typ      | Max   | Unit                         |
|------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------|------|----------|-------|------------------------------|
| INPUT CHARACTERISTICS        |                          |                                                                                                                               |      |          |       |                              |
| Offset Voltage               | $V_{OS}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          |      | 40       | 140   | $\mu\text{V}$                |
| Input Bias Current           | $I_B$                    | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          |      | 40       | 300   | $\mu\text{V}$                |
| Input Offset Current         | $I_{OS}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          |      | 40       | 85    | $\text{nA}$                  |
| Input Voltage Range          | IVR                      | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          | -3.5 |          | 100   | $\text{nA}$                  |
| Common-Mode Rejection Ratio  | CMRR                     | $V_{CM} = -3.0\text{ V to }+3.0\text{ V}$<br>$-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                             | 105  | 111      |       | $\text{dB}$                  |
| Open-Loop Gain               | $A_{VO}$                 | $R_L = 2\text{ k}\Omega$ , $V_{OUT} = -2.5\text{ V to }+2.5\text{ V}$<br>$-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$ | 95   | 110      |       | $\text{dB}$                  |
| Offset Voltage Drift         | $\Delta V_{OS}/\Delta T$ | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          | 250  | 400      |       | $\text{V/mV}$                |
|                              |                          |                                                                                                                               | 170  |          |       | $\text{V/mV}$                |
|                              |                          |                                                                                                                               |      | 0.7      | 1     | $\mu\text{V}/^\circ\text{C}$ |
| OUTPUT CHARACTERISTICS       |                          |                                                                                                                               |      |          |       |                              |
| Output Voltage High          | $V_{OH}$                 | $R_L = 2\text{ k}\Omega$ to ground<br>$-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                    | 3.7  | 3.9      |       | $\text{V}$                   |
| Output Voltage Low           | $V_{OL}$                 | $R_L = 2\text{ k}\Omega$ to ground<br>$-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                    | 3.4  | 3.6      |       | $\text{V}$                   |
| Short-Circuit Limit          | $I_{SC}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          |      | -3.6     | -3.55 | $\text{V}$                   |
| Output Current               | $I_O$                    | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$<br>$V_{OUT} = \pm 3.6\text{ V}$                                          |      | -3.6     | -3.4  | $\text{V}$                   |
|                              |                          |                                                                                                                               |      | 25       |       | $\text{mA}$                  |
|                              |                          |                                                                                                                               |      | $\pm 10$ |       | $\text{mA}$                  |
| POWER SUPPLY                 |                          |                                                                                                                               |      |          |       |                              |
| Power Supply Rejection Ratio | PSRR                     | $V_{SY} = \pm 5\text{ V to } \pm 15\text{ V}$<br>$-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                         | 110  | 118      |       | $\text{dB}$                  |
| Supply Current per Amplifier | $I_{SY}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                                                                          | 110  |          | 2.0   | $\text{dB}$                  |
|                              |                          |                                                                                                                               |      |          | 2.2   | $\text{mA}$                  |
| DYNAMIC PERFORMANCE          |                          |                                                                                                                               |      |          |       |                              |
| Slew Rate                    | SR                       | $R_L = 2\text{ k}\Omega$ to ground                                                                                            |      | 2.7      |       | $\text{V}/\mu\text{s}$       |
| Gain Bandwidth Product       | GBP                      |                                                                                                                               |      | 12       |       | $\text{MHz}$                 |
| Phase Margin                 | $\Phi_M$                 |                                                                                                                               |      | 48       |       | Degrees                      |
| NOISE PERFORMANCE            |                          |                                                                                                                               |      |          |       |                              |
| Voltage Noise                | $e_{n\text{ p-p}}$       | $f = 0.1\text{ Hz to }10\text{ Hz}$                                                                                           |      | 0.1      |       | $\mu\text{V p-p}$            |
| Voltage Noise Density        | $e_n$                    | $f = 1\text{ kHz}$                                                                                                            |      | 1.8      |       | $\text{nV}/\sqrt{\text{Hz}}$ |
| Current Noise Density        | $i_n$                    | $f = 10\text{ Hz}$                                                                                                            |      | 3.5      |       | $\text{pA}/\sqrt{\text{Hz}}$ |
| Current Noise Density        | $i_n$                    | $f = 200\text{ Hz}$                                                                                                           |      | 1.2      |       | $\text{pA}/\sqrt{\text{Hz}}$ |

# ADA4004-1/ADA4004-2/ADA4004-4

$V_{SY} = \pm 15\text{ V}$ ,  $V_{CM} = 0\text{ V}$ ,  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

Table 3.

| Parameter                    | Symbol                   | Conditions                                                               | Min | Typ | Max | Unit          |
|------------------------------|--------------------------|--------------------------------------------------------------------------|-----|-----|-----|---------------|
| INPUT CHARACTERISTICS        |                          |                                                                          |     |     |     |               |
| Offset Voltage               | $V_{OS}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     | 40  | 125 | $\mu\text{V}$ |
| Input Bias Current           | $I_B$                    | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     | 40  | 270 | $\mu\text{V}$ |
| Input Offset Current         | $I_{OS}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     |     | 90  | $\text{nA}$   |
| Input Voltage Range          | IVR                      | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     |     | 165 | $\text{nA}$   |
| Common-Mode Rejection Ratio  | CMRR                     | $V_{CM} = -12.5\text{ V to } +12.5\text{ V}$                             |     |     | 60  | $\text{nA}$   |
| Open-Loop Gain               | $A_{VO}$                 | $R_L = 2\text{ k}\Omega$ , $V_{OUT} = -12.0\text{ V to } +12.0\text{ V}$ |     |     | 100 | $\text{nA}$   |
| Offset Voltage Drift         | $\Delta V_{OS}/\Delta T$ | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     |     |     | $\text{nA}$   |
| OUTPUT CHARACTERISTICS       |                          |                                                                          |     |     |     |               |
| Output Voltage High          | $V_{OH}$                 | $R_L = 2\text{ k}\Omega$ to ground                                       |     |     |     | $\text{V}$    |
| Output Voltage Low           | $V_{OL}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     |     |     | $\text{V}$    |
| Short-Circuit Limit          | $I_{SC}$                 | $R_L = 2\text{ k}\Omega$ to ground                                       |     |     |     | $\text{V}$    |
| Output Current               | $I_O$                    | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     |     |     | $\text{V}$    |
| POWER SUPPLY                 |                          |                                                                          |     |     |     |               |
| Power Supply Rejection Ratio | PSRR                     | $V_{SY} = \pm 5\text{ V to } \pm 15\text{ V}$                            |     |     |     | $\text{dB}$   |
| Supply Current per Amplifier | $I_{SY}$                 | $-40^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$                     |     |     |     | $\text{dB}$   |
| DYNAMIC PERFORMANCE          |                          |                                                                          |     |     |     |               |
| Slew Rate                    | SR                       | $R_L = 2\text{ k}\Omega$ to ground                                       |     |     |     | $\text{dB}$   |
| Gain Bandwidth Product       | GBP                      |                                                                          |     |     |     | $\text{dB}$   |
| Phase Margin                 | $\Phi_M$                 |                                                                          |     |     |     | $\text{dB}$   |
| NOISE PERFORMANCE            |                          |                                                                          |     |     |     |               |
| Voltage Noise                | $e_{n,p-p}$              | $f = 0.1\text{ Hz to } 10\text{ Hz}$                                     |     |     |     | $\text{dB}$   |
| Voltage Noise Density        | $e_n$                    | $f = 1\text{ kHz}$                                                       |     |     |     | $\text{dB}$   |
| Current Noise Density        | $i_n$                    | $f = 10\text{ Hz}$                                                       |     |     |     | $\text{dB}$   |
| Current Noise Density        | $i_n$                    | $f = 200\text{ Hz}$                                                      |     |     |     | $\text{dB}$   |

## ABSOLUTE MAXIMUM RATINGS

Table 4.

| Parameter                            | Rating                                      |
|--------------------------------------|---------------------------------------------|
| Supply Voltage                       | $\pm 18\text{ V}$ or $+36\text{ V}$         |
| Input Voltage                        | $V_- < V_{IN} < V_+$                        |
| Differential Input Voltage           | $\pm V$ supply                              |
| Differential Input Current           | $\pm 5\text{ mA}$                           |
| Output Short-Circuit Duration to GND | Indefinite                                  |
| Storage Temperature Range            | $-65^\circ\text{C}$ to $+150^\circ\text{C}$ |
| Operating Temperature Range          | $-40^\circ\text{C}$ to $+125^\circ\text{C}$ |
| Junction Temperature Range           | $-65^\circ\text{C}$ to $+150^\circ\text{C}$ |
| Lead Temperature (Soldering 60 sec)  | $300^\circ\text{C}$                         |

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## THERMAL RESISTANCE

$\theta_{JA}$  is specified with the device soldered on a circuit board with its exposed paddle soldered to a pad (if applicable) on a 4-layer JEDEC standard printed circuit board with zero airflow.

Table 5.

| Package Type                 | $\theta_{JA}$ | $\theta_{JC}$ | Unit               |
|------------------------------|---------------|---------------|--------------------|
| 5-Lead SOT (RJ-5)            | 230           | 92            | $^\circ\text{C/W}$ |
| 8-Lead SOIC (R-8), ADA4004-1 | 177           | 53            | $^\circ\text{C/W}$ |
| 8-Lead SOIC (R-8), ADA4004-2 | 155           | 45            | $^\circ\text{C/W}$ |
| 8-Lead MSOP (RM-8)           | 186           | 52            | $^\circ\text{C/W}$ |
| 14-Lead SOIC_N (R-14)        | 115           | 36            | $^\circ\text{C/W}$ |
| 16-Lead LFCSP_VQ (CP-16-4)   | 44            | 31.5          | $^\circ\text{C/W}$ |

## ESD CAUTION



**ESD (electrostatic discharge) sensitive device.** Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

## TYPICAL PERFORMANCE CHARACTERISTICS

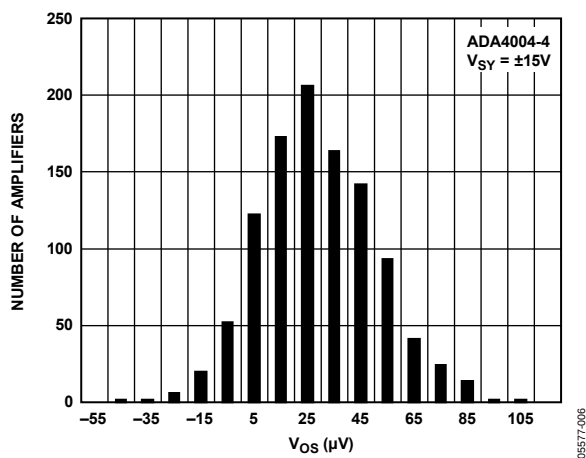


Figure 6. Number of Amplifiers vs. Input Offset Voltage

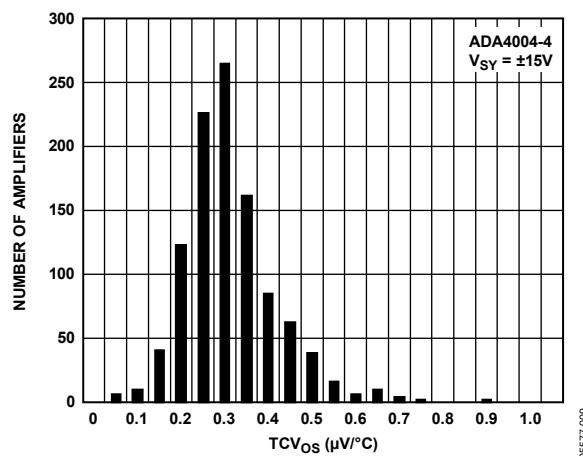


Figure 9. Number of Amplifiers vs.  $TCV_{OS}$

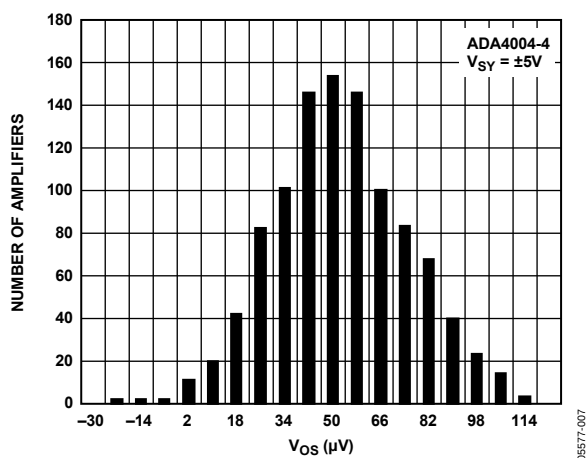


Figure 7. Number of Amplifiers vs. Input Offset Voltage

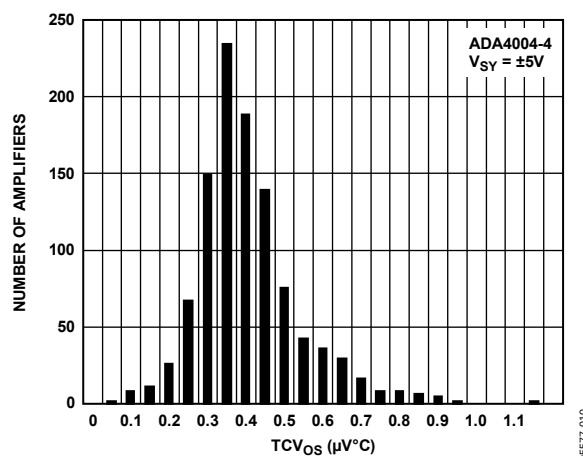


Figure 10. Number of Amplifiers vs.  $TCV_{OS}$

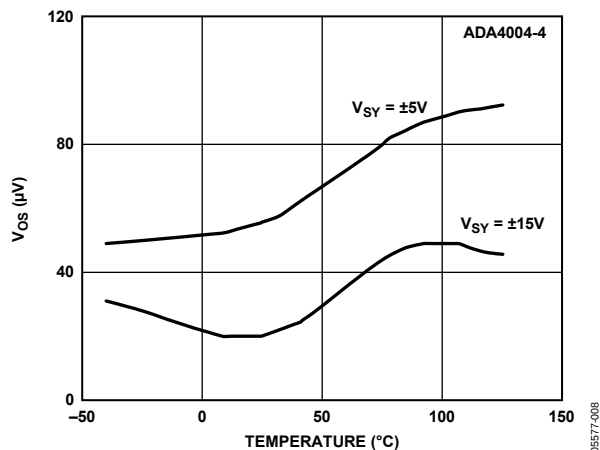


Figure 8. Input Offset Voltage vs. Temperature

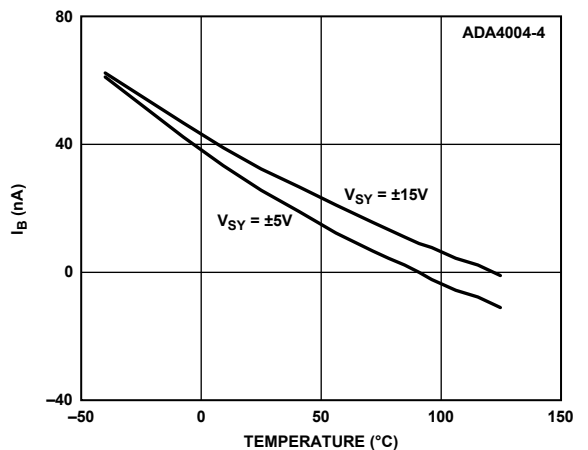


Figure 11. Input Bias Current vs. Temperature

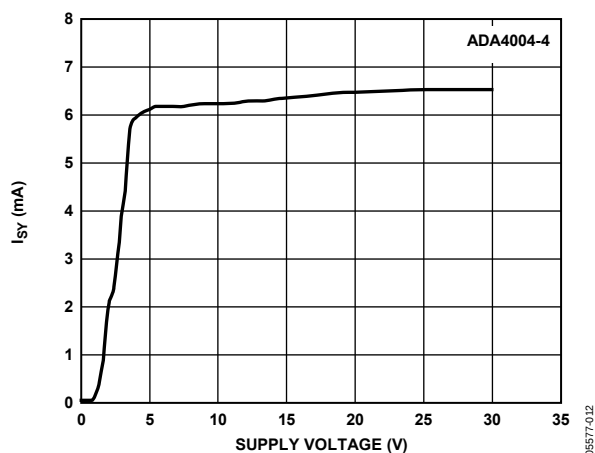


Figure 12. Supply Current vs. Total Supply Voltage

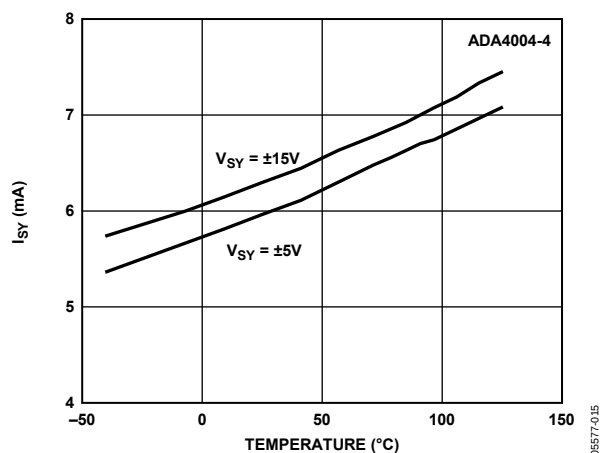


Figure 15. Supply Current vs. Temperature

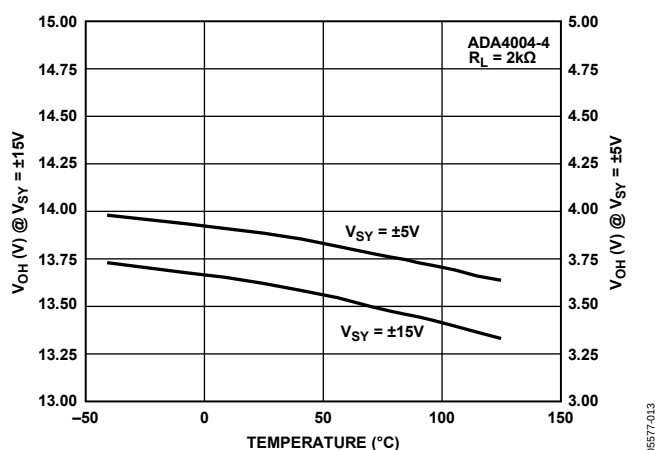


Figure 13.  $V_{OH}$  vs. Temperature

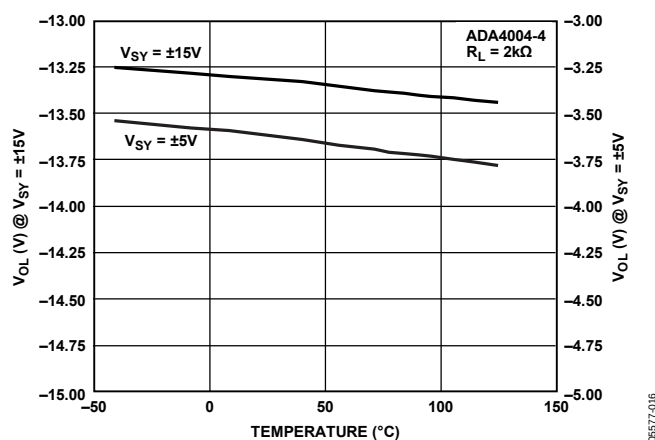


Figure 16.  $V_{OL}$  vs. Temperature

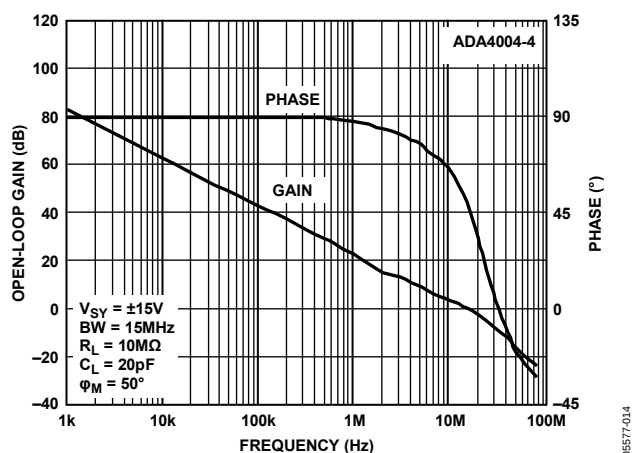


Figure 14. Open-Loop Gain and Phase vs. Frequency

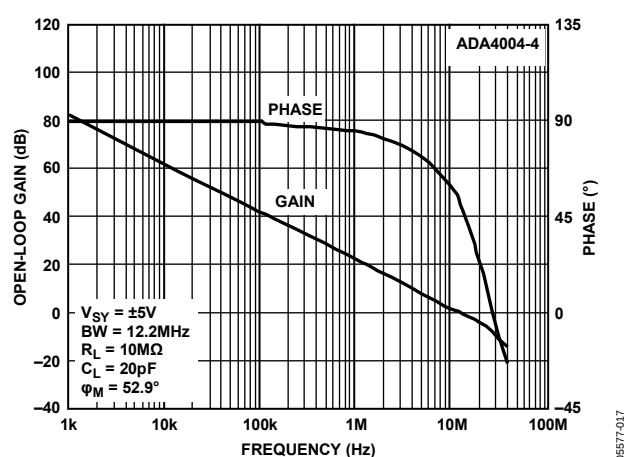


Figure 17. Open-Loop Gain and Phase vs. Frequency

# ADA4004-1/ADA4004-2/ADA4004-4

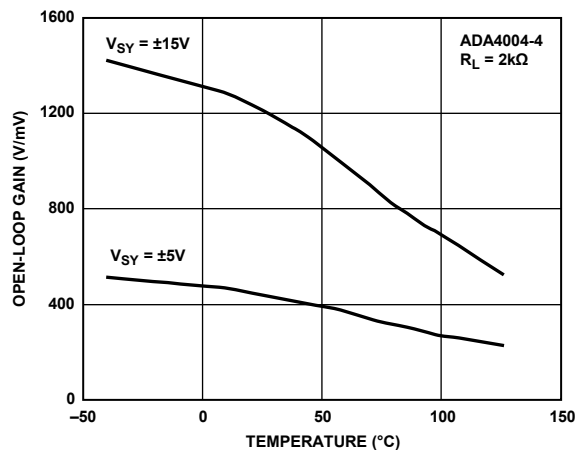


Figure 18. Open-Loop Gain vs. Temperature

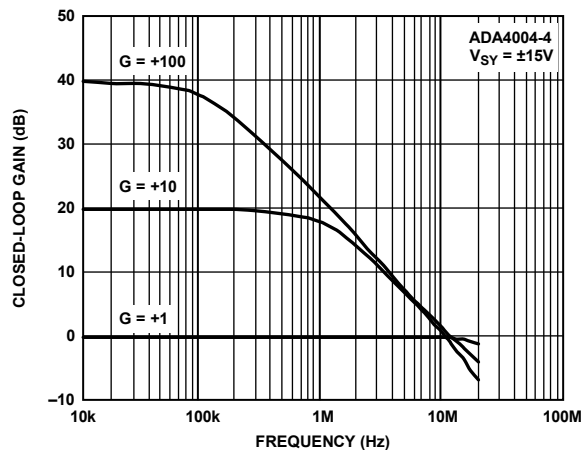


Figure 21. Closed-Loop Gain vs. Frequency

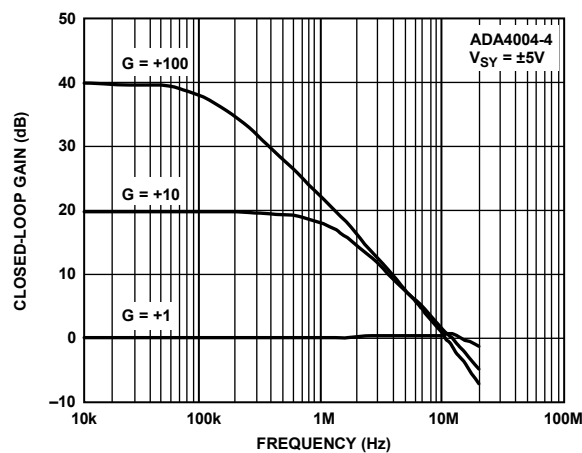


Figure 19. Closed-Loop Gain vs. Frequency

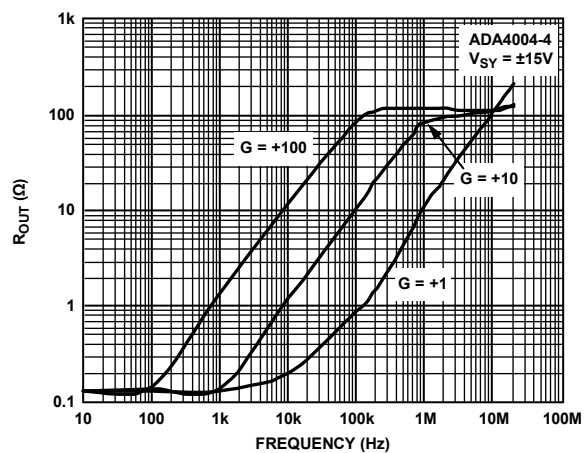


Figure 22. Output Impedance vs. Frequency

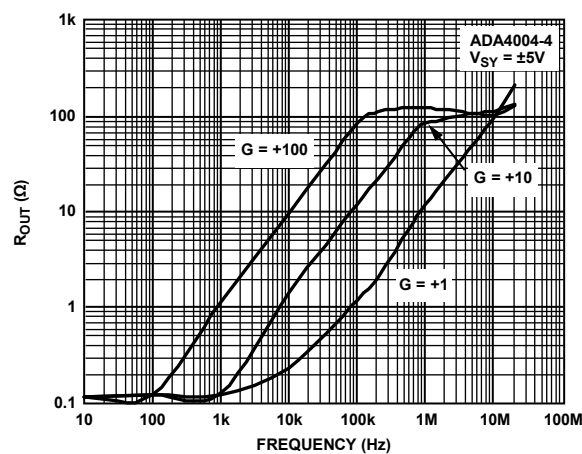


Figure 20. Output Impedance vs. Frequency

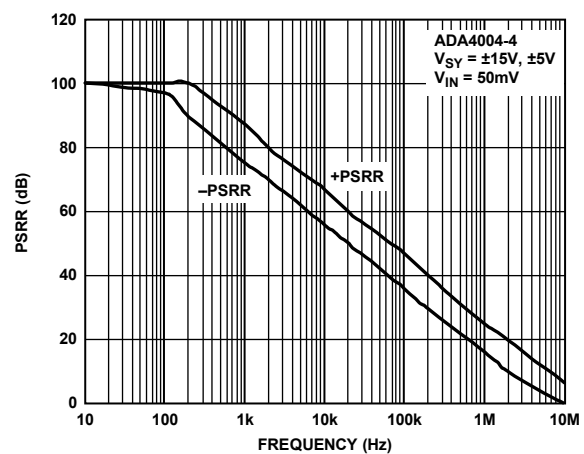


Figure 23. PSRR vs. Frequency

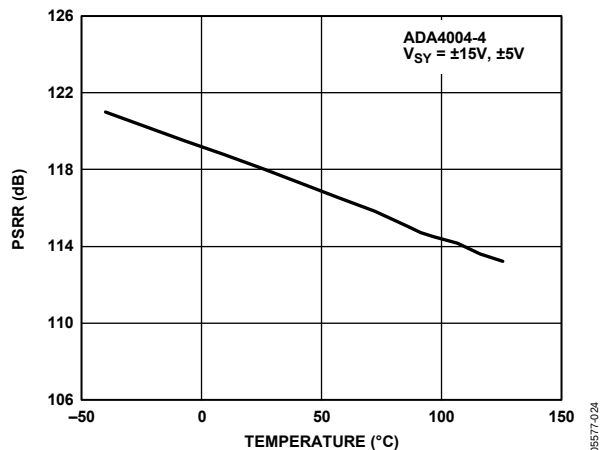


Figure 24. PSRR vs. Temperature

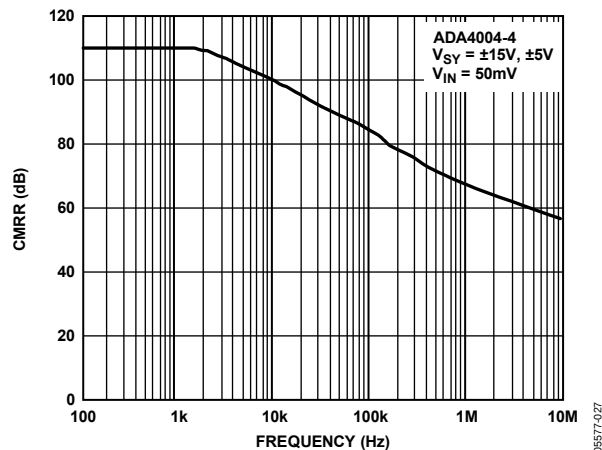


Figure 27. CMRR vs. Frequency

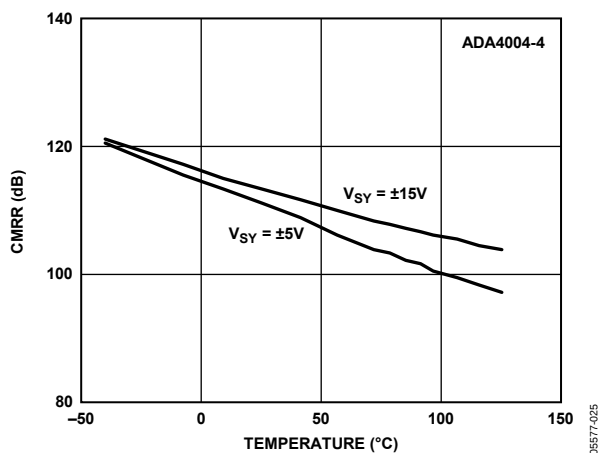


Figure 25. CMRR vs. Temperature

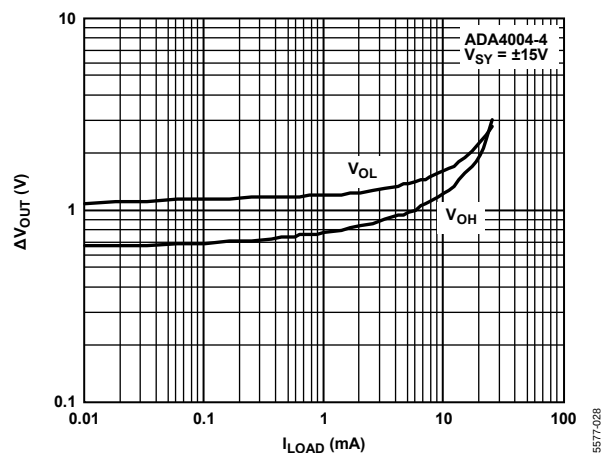


Figure 28. Output Voltage vs. Current Load

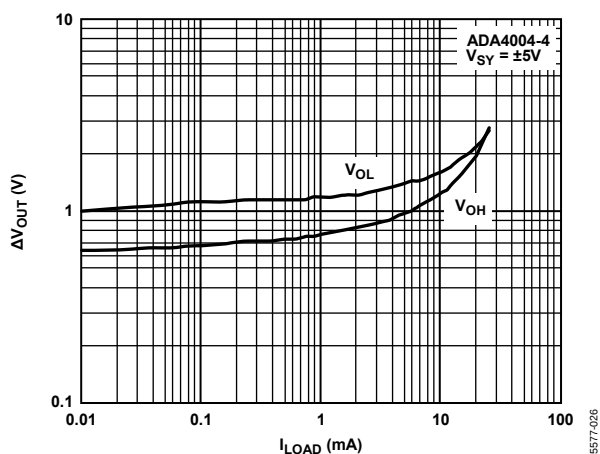


Figure 26. Output Voltage vs. Current Load

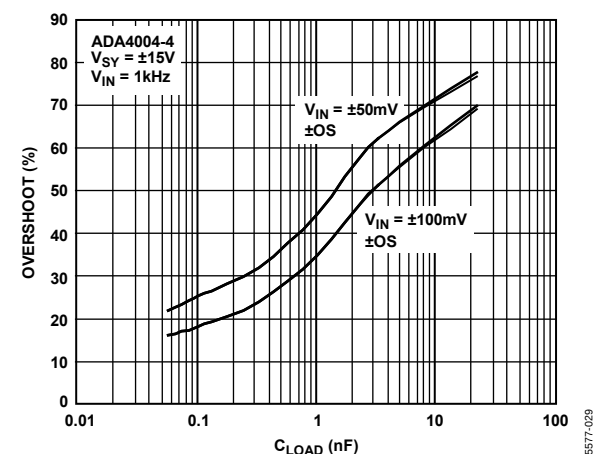


Figure 29. Small-Signal Overshoot vs. Capacitive Load

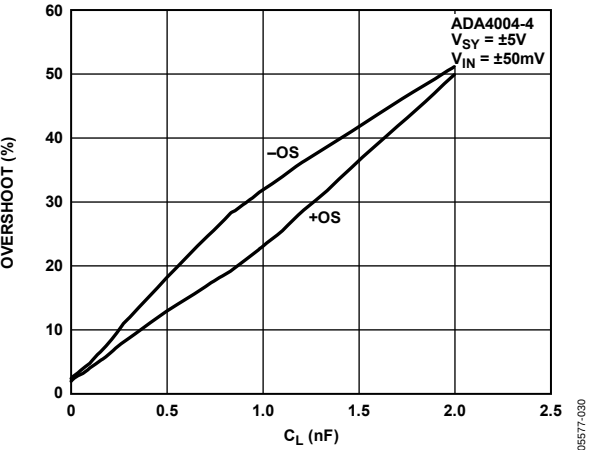


Figure 30. Small-Signal Overshoot vs. Capacitive Load

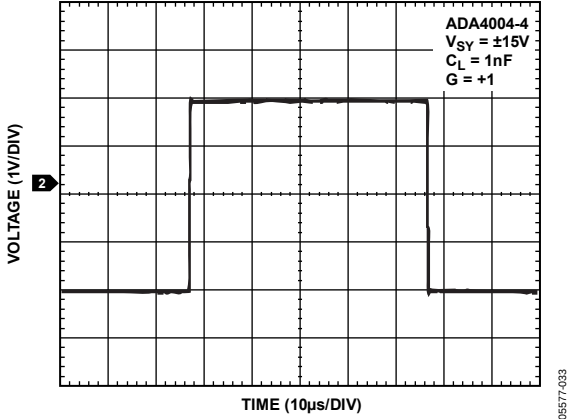


Figure 33. Large-Signal Transient Response

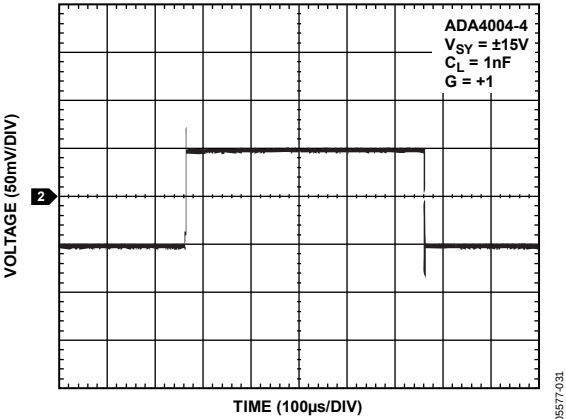


Figure 31. Small-Signal Transient Response

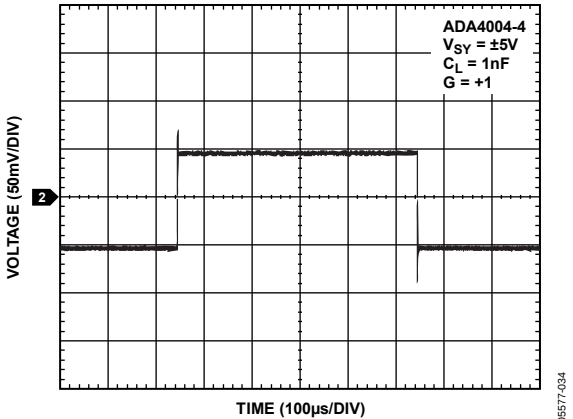


Figure 34. Small-Signal Transient Response

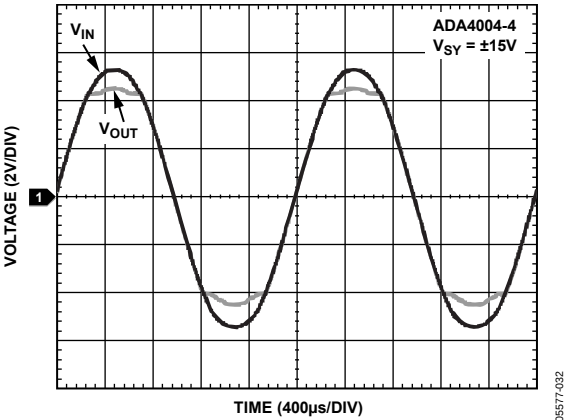


Figure 32. No Phase Reversal

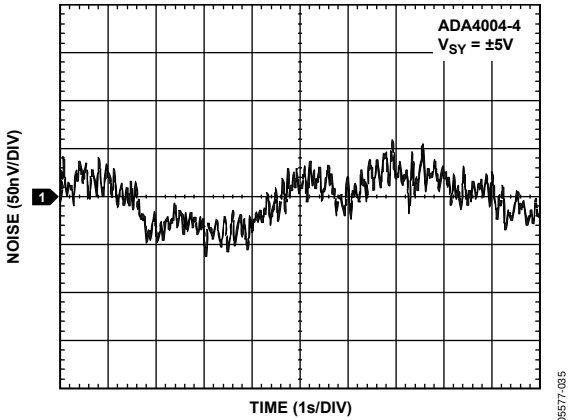


Figure 35. Voltage Noise (0.1 Hz to 10 Hz)

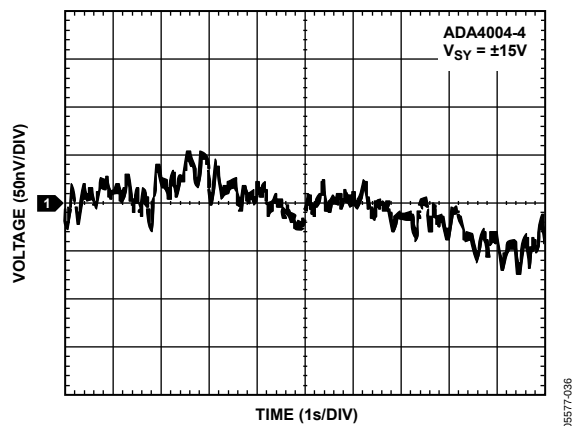


Figure 36. Voltage Noise (0.1 Hz to 10 Hz)

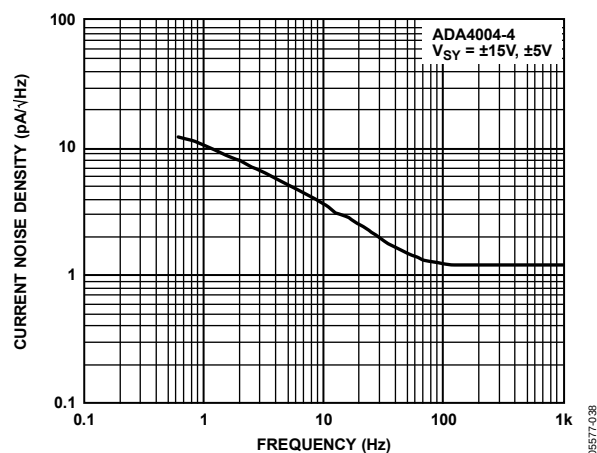


Figure 38. Current Noise Density vs. Frequency

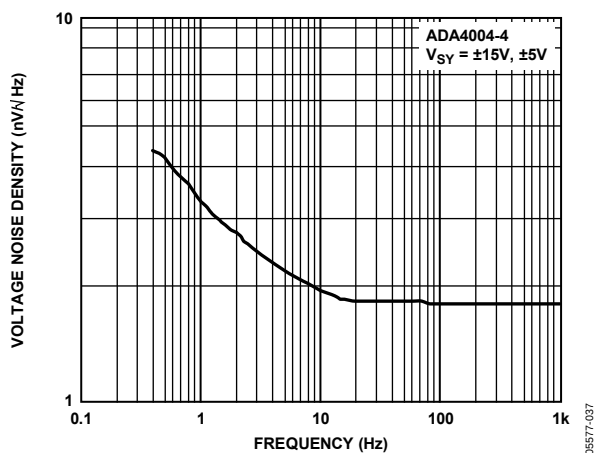


Figure 37. Voltage Noise Density vs. Frequency

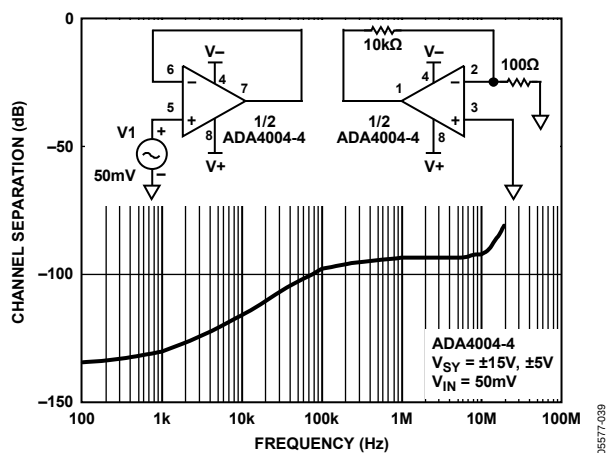
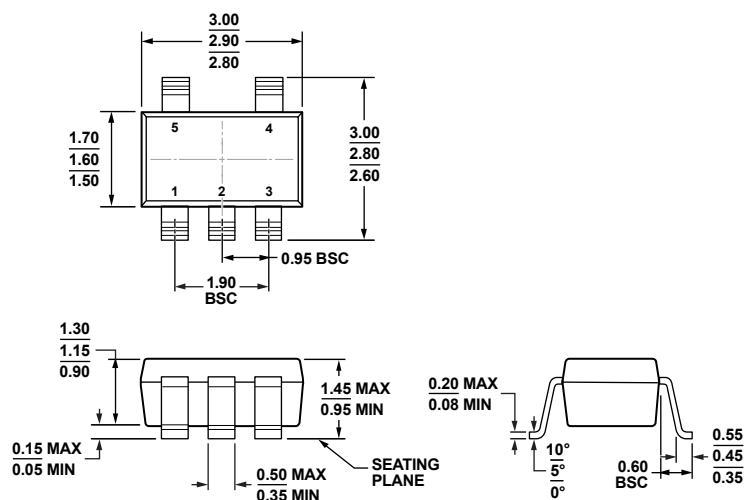


Figure 39. Channel Separation vs. Frequency

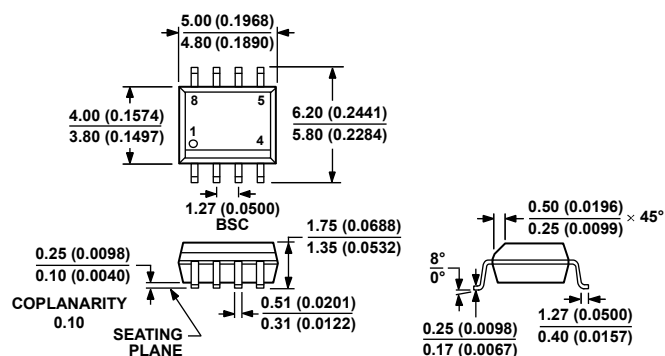
## OUTLINE DIMENSIONS



COMPLIANT TO JEDEC STANDARDS MO-178-AA

Figure 40. 5-Lead Small Outline Transistor Package [SOT-23]  
(RJ-5)

Dimensions shown in millimeters



COMPLIANT TO JEDEC STANDARDS MS-012-AA

CONTROLLING DIMENSIONS ARE IN MILLIMETERS; INCH DIMENSIONS  
(IN PARENTHESES) ARE ROUNDED-OFF MILLIMETER EQUIVALENTS FOR  
REFERENCE ONLY AND ARE NOT APPROPRIATE FOR USE IN DESIGN.

Figure 41. 8-Lead Standard Small Outline Package [SOIC\_N]  
Narrow Body (R-8)

Dimensions shown in millimeters and (inches)

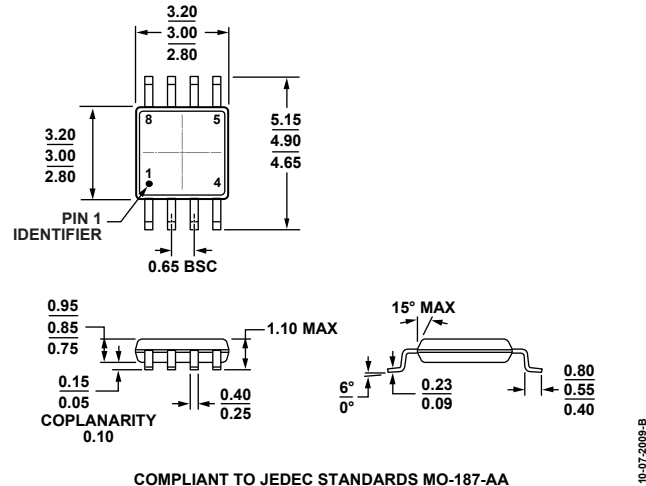


Figure 42. 8-Lead Mini Small Outline Package [MSOP]  
(RM-8)  
Dimensions shown in millimeters

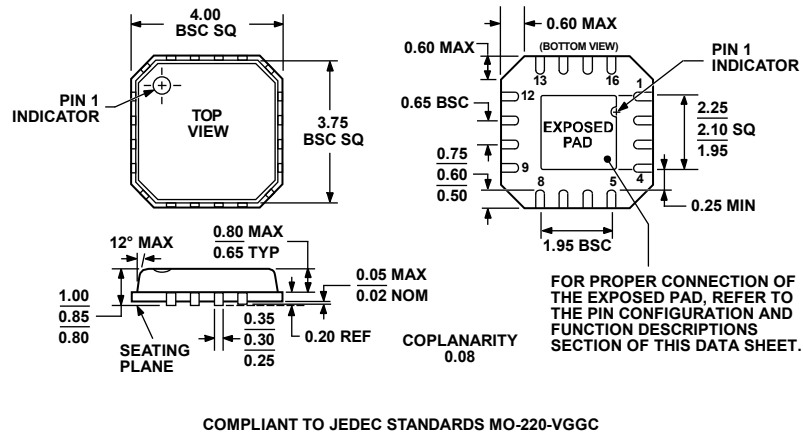
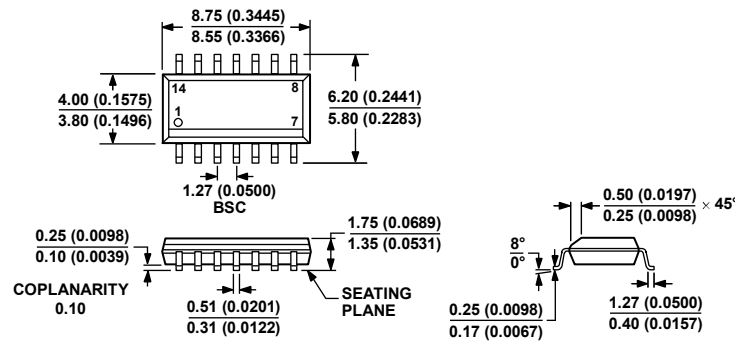


Figure 43. 16-Lead Lead Frame Chip Scale Package [LFCSP\_VQ]  
4 mm x 4 mm Body, Very Thin Quad  
(CP-16-4)  
Dimensions shown in millimeters



CONTROLLING DIMENSIONS ARE IN MILLIMETERS; INCH DIMENSIONS  
(IN PARENTHESES) ARE ROUNDED-OFF MILLIMETER EQUIVALENTS FOR  
REFERENCE ONLY AND ARE NOT APPROPRIATE FOR USE IN DESIGN.

Figure 44. 14-Lead Standard Small Outline Package [SOIC\_N]  
Narrow Body  
(R-14)  
Dimensions shown in millimeters and (inches)

# ADA4004-1/ADA4004-2/ADA4004-4

## ORDERING GUIDE

| Model <sup>1</sup> | Temperature Range | Package Description | Package Option | Branding |
|--------------------|-------------------|---------------------|----------------|----------|
| ADA4004-1ARJZ-R2   | –40°C to +125°C   | 5-Lead SOT-23       | RJ-5           | A1M      |
| ADA4004-1ARJZ-R7   | –40°C to +125°C   | 5-Lead SOT-23       | RJ-5           | A1M      |
| ADA4004-1ARJZ-RL   | –40°C to +125°C   | 5-lead SOT-23       | RJ-5           | A1M      |
| ADA4004-1ARZ       | –40°C to +125°C   | 8-Lead SOIC_N       | R-8            |          |
| ADA4004-1ARZ-R7    | –40°C to +125°C   | 8-Lead SOIC_N       | R-8            |          |
| ADA4004-1ARZ-RL    | –40°C to +125°C   | 8-Lead SOIC_N       | R-8            |          |
| ADA4004-2ARMZ      | –40°C to +125°C   | 8-Lead MSOP         | RM-8           | A1N      |
| ADA4004-2ARMZ-RL   | –40°C to +125°C   | 8-Lead MSOP         | RM-8           | A1N      |
| ADA4004-2ARMZ-R7   | –40°C to +125°C   | 8-Lead MSOP         | RM-8           | A1N      |
| ADA4004-2ARZ       | –40°C to +125°C   | 8-Lead SOIC_N       | R-8            |          |
| ADA4004-2ARZ-RL    | –40°C to +125°C   | 8-Lead SOIC_N       | R-8            |          |
| ADA4004-2ARZ-R7    | –40°C to +125°C   | 8-Lead SOIC_N       | R-8            |          |
| ADA4004-4ACPZ-R2   | –40°C to +125°C   | 16-Lead LFCSP_VQ    | CP-16-4        |          |
| ADA4004-4ACPZ-R7   | –40°C to +125°C   | 16-Lead LFCSP_VQ    | CP-16-4        |          |
| ADA4004-4ACPZ-RL   | –40°C to +125°C   | 16-Lead LFCSP_VQ    | CP-16-4        |          |
| ADA4004-4ARZ       | –40°C to +125°C   | 14-Lead SOIC_N      | R-14           |          |
| ADA4004-4ARZ-R7    | –40°C to +125°C   | 14-Lead SOIC_N      | R-14           |          |
| ADA4004-4ARZ-RL    | –40°C to +125°C   | 14-Lead SOIC_N      | R-14           |          |

<sup>1</sup> Z = RoHS Compliant Part.

## **NOTES**

## **NOTES**