

## FEATURES

1.8 V analog supply operation

1.8 V to 3.3 V output supply

SNR

77.6 dBFS at 9.7 MHz input

76.4 dBFS at 70 MHz input

SFDR

94 dBc at 9.7 MHz input

93 dBc at 70 MHz input

Low power

111 mW at 65 MSPS

Differential input with 700 MHz bandwidth

On-chip voltage reference and sample-and-hold circuit

2 V p-p differential analog input

DNL =  $-0.5/+1.0$  LSB

Interleaved data output for reduced pin-count interface

Serial port control options

Offset binary, Gray code, or twos complement data format

Optional clock duty cycle stabilizer

Integer 1 to 8 input clock divider

Built-in selectable digital test pattern generation

Energy-saving power-down modes

Data clock output (DCO) with programmable clock and data alignment

## ENHANCED PRODUCT FEATURES

Supports defense and aerospace applications (AQEC standard)

Military temperature range ( $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ )

Controlled manufacturing baseline

Enhanced product change notification

Qualification data available on request

## APPLICATIONS

Communications

Diversity radio systems

Multimode digital receivers

GSM, EDGE, W-CDMA, LTE, CDMA2000, WiMAX, TD-SCDMA

Smart antenna systems

Battery-powered instruments

Handheld scope meters

Portable medical imaging

Ultrasound

Radar/LIDAR

PET/SPECT imaging

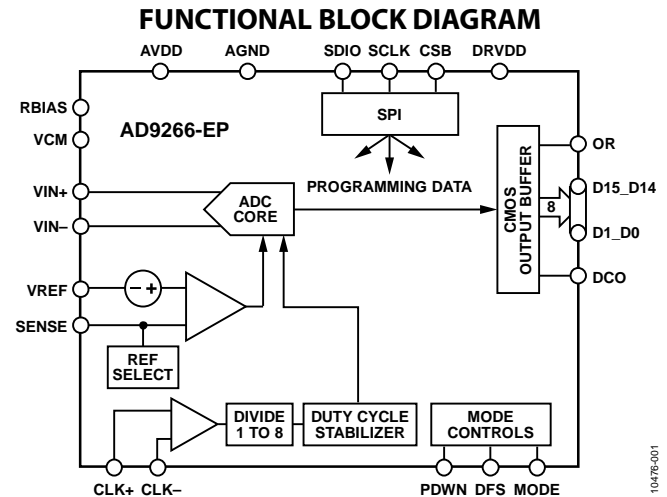


Figure 1.

## PRODUCT HIGHLIGHTS

1. The **AD9266-EP** operates from a single 1.8 V analog power supply and features a separate digital output driver supply to accommodate 1.8 V to 3.3 V logic families.
2. The sample-and-hold circuit maintains excellent performance at high input frequencies and is designed for low cost, low power, and ease of use.
3. A standard serial port interface supports various product features and functions, such as data output formatting, internal clock divider, power-down, DCO and data output (D15\_D14 to D1\_D0) timing and offset adjustments, and voltage reference modes.
4. The **AD9266-EP** is packaged in a 32-lead RoHS-compliant LFCSP that is pin compatible with the **AD9609** 10-bit ADC, the **AD9629** 12-bit ADC, and the **AD9649** 14-bit ADC, enabling a simple migration path between 10-bit and 16-bit converters sampling at 65 MSPS.

**TABLE OF CONTENTS**

|                                 |   |  |    |
|---------------------------------|---|--|----|
| Features .....                  | 1 | Digital Specifications .....                     | 6  |
| Enhanced Product Features ..... | 1 | Switching Specifications .....                   | 7  |
| Applications.....               | 1 | Timing Specifications .....                      | 8  |
| Functional Block Diagram .....  | 1 | Absolute Maximum Ratings .....                   | 9  |
| Product Highlights .....        | 1 | Thermal Characteristics .....                    | 9  |
| Revision History .....          | 2 | ESD Caution.....                                 | 9  |
| General Description .....       | 3 | Pin Configuration and Function Descriptions..... | 10 |
| Specifications.....             | 4 | Outline Dimensions .....                         | 11 |
| DC Specifications .....         | 4 | Ordering Guide .....                             | 11 |
| AC Specifications.....          | 5 |  |    |

**REVISION HISTORY**

**3/16—Rev. A to Rev. B**

|   |    |
|---|----|
| Change to Product Highlights .....                          | 1  |
| Changes to General Description .....                        | 3  |
| Change to Pipeline Delay (Latency) Parameter, Table 4 ..... | 7  |
| Changes to Figure 3 and Table 8.....                        | 10 |

**7/12—Rev. 0 to Rev. A**

|  |   |
|--|---|
| Changes to Resolution Parameter, Table 1 and Note 3, Table 1 ..... | 4 |
|--|---|

**1/12—Revision 0: Initial Version**

## GENERAL DESCRIPTION

The [AD9266-EP](#) is a monolithic, single-channel 1.8 V supply, 16-bit, 65 MSPS analog-to-digital converter (ADC). It features a high performance sample-and-hold circuit and on-chip voltage reference.

The product uses multistage differential pipeline architecture with output error correction logic to provide 16-bit accuracy at 65 MSPS data rates and to guarantee no missing codes over the full operating temperature range.

The ADC contains several features designed to maximize flexibility and minimize system cost, such as programmable clock and data alignment and programmable digital test pattern generation. The available digital test patterns include built-in deterministic and pseudorandom patterns, along with custom user-defined test patterns entered via the serial port interface (SPI).

A differential clock input with a selectable internal 1-to-8 divide ratio controls all internal conversion cycles. An optional duty cycle stabilizer (DCS) compensates for wide variations in the clock duty cycle while maintaining excellent overall ADC performance.

The interleaved digital output data is presented in offset binary, gray code, or twos complement format. A data clock output (DCO) is provided to ensure proper latch timing with receiving logic. CMOS levels from 1.8 V through 3.3 V are supported.

The [AD9266-EP](#) is available in a 32-lead RoHS compliant LFCSP and is specified over the  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  temperature range.

Additional application and technical information can be found in the [AD9266](#) data sheet.

## SPECIFICATIONS

### DC SPECIFICATIONS

AVDD = 1.8 V; DRVDD = 1.8 V, maximum sample rate, 2 V p-p differential input, 1.0 V internal reference; AIN = -1.0 dBFS, 50% duty cycle clock, DCS disabled, unless otherwise noted.

Table 1.

| Parameter                                    | Temp | Min   | Typ        | Max       | Unit    |
|--|------|-------|------------|-----------|---------|
| RESOLUTION                                   | Full | 16    |            |           | Bits    |
| ACCURACY                                     |      |       |            |           |         |
| No Missing Codes                             | Full |       | Guaranteed |           |         |
| Offset Error                                 | Full |       | +0.05      | ±0.30     | % FSR   |
| Gain Error <sup>1</sup>                      | 25°C |       | -1.3       |           | % FSR   |
| Differential Nonlinearity (DNL) <sup>2</sup> | Full |       |            | -0.9/+1.7 | LSB     |
|  | 25°C |       | -0.5/+1.0  |           | LSB     |
| Integral Nonlinearity (INL) <sup>2</sup>     | Full |       |            | ±6.5      | LSB     |
|  | 25°C |       | ±2.6       |           | LSB     |
| TEMPERATURE DRIFT                            |      |       |            |           |         |
| Offset Error                                 | Full |       | ±2         |           | ppm/°C  |
| INTERNAL VOLTAGE REFERENCE                   |      |       |            |           |         |
| Output Voltage (1 V Mode)                    | Full | 0.983 | 0.995      | 1.007     | V       |
| Load Regulation Error at 1.0 mA              | 25°C |       | 2          |           | mV      |
| INPUT-REFERRED NOISE                         |      |       |            |           |         |
| VREF = 1.0 V                                 | 25°C |       | 2.8        |           | LSB rms |
| ANALOG INPUT                                 |      |       |            |           |         |
| Input Span, VREF = 1.0 V                     | 25°C |       | 2          |           | V p-p   |
| Input Capacitance <sup>3</sup>               | 25°C |       | 6.5        |           | pF      |
| Input Common-Mode Voltage                    | 25°C |       | 0.9        |           | V       |
| Input Common-Mode Range                      | Full | 0.5   |            | 1.3       | V       |
| REFERENCE INPUT RESISTANCE                   | Full |       | 7.5        |           | kΩ      |
| POWER SUPPLIES                               |      |       |            |           |         |
| Supply Voltage                               |      |       |            |           |         |
| AVDD   | Full | 1.7   | 1.8        | 1.9       | V       |
| DRVDD  | Full | 1.7   |            | 3.6       | V       |
| Supply Current                               |      |       |            |           |         |
| IAVDD <sup>2</sup>                           | Full |       | 56.3       | 62.2      | mA      |
| IDRVDD <sup>2</sup> (1.8 V)                  | 25°C |       | 5.2        |           | mA      |
| IDRVDD <sup>2</sup> (3.3 V)                  | 25°C |       | 9.3        |           | mA      |
| POWER CONSUMPTION                            |      |       |            |           |         |
| DC Input                                     | 25°C |       | 107        |           | mW      |
| Sine Wave Input <sup>2</sup> (DRVDD = 1.8 V) | Full |       | 111        | 122       | mW      |
| Sine Wave Input <sup>2</sup> (DRVDD = 3.3 V) | 25°C |       | 132        |           | mW      |
| Standby Power <sup>4</sup>                   | 25°C |       | 44         |           | mW      |
| Power-Down Power                             | 25°C |       | 0.5        |           | mW      |

<sup>1</sup> Measured with 1.0 V external reference.

<sup>2</sup> Measured with a 10 MHz input frequency at rated sample rate, full-scale sine wave, with approximately 5 pF loading on each output bit.

<sup>3</sup> Input capacitance refers to the effective capacitance between the differential inputs.

<sup>4</sup> Standby power is measured with a dc input and the CLK active.

**AC SPECIFICATIONS**

AVDD = 1.8 V; DRVDD = 1.8 V, maximum sample rate, 2 V p-p differential input, 1.0 V internal reference; AIN = -1.0 dBFS, 50% duty cycle clock, DCS disabled, unless otherwise noted.

**Table 2.**

| Parameter <sup>1</sup>                            | Temp | Min  | Typ  | Max | Unit |
|---|------|------|------|-----|------|
| SIGNAL-TO-NOISE RATIO (SNR)                       |      |      |      |     |      |
| $f_{IN} = 9.7$ MHz                                | 25°C |      | 77.6 |     | dBFS |
| $f_{IN} = 30.5$ MHz                               | 25°C |      | 77.4 |     | dBFS |
|   | Full | 76.5 |      |     | dBFS |
| $f_{IN} = 70$ MHz                                 | 25°C |      | 76.4 |     | dBFS |
| SIGNAL-TO-NOISE-AND-DISTORTION (SINAD)            |      |      |      |     |      |
| $f_{IN} = 9.7$ MHz                                | 25°C |      | 77.4 |     | dBFS |
| $f_{IN} = 30.5$ MHz                               | 25°C |      | 77.2 |     | dBFS |
|   | Full | 76.0 |      |     | dBFS |
| $f_{IN} = 70$ MHz                                 | 25°C |      | 76.3 |     | dBFS |
| EFFECTIVE NUMBER OF BITS (ENOB)                   |      |      |      |     |      |
| $f_{IN} = 9.7$ MHz                                | 25°C |      | 12.6 |     | Bits |
| $f_{IN} = 30.5$ MHz                               | 25°C |      | 12.5 |     | Bits |
|   | Full | 12.3 |      |     | Bits |
| $f_{IN} = 70$ MHz                                 | 25°C |      | 12.4 |     | Bits |
| WORST SECOND OR THIRD HARMONIC                    |      |      |      |     |      |
| $f_{IN} = 9.7$ MHz                                | 25°C |      | -94  |     | dBc  |
| $f_{IN} = 30.5$ MHz                               | 25°C |      | -93  |     | dBc  |
|   | Full |      |      | -80 | dBc  |
| $f_{IN} = 70$ MHz                                 | 25°C |      | -93  |     | dBc  |
| SPURIOUS-FREE DYNAMIC RANGE (SFDR)                |      |      |      |     |      |
| $f_{IN} = 9.7$ MHz                                | 25°C |      | 94   |     | dBc  |
| $f_{IN} = 30.5$ MHz                               | 25°C |      | 93   |     | dBc  |
|   | Full | 80   |      |     | dBc  |
| $f_{IN} = 70$ MHz                                 | 25°C |      | 93   |     | dBc  |
| WORST OTHER (HARMONIC OR SPUR)                    |      |      |      |     |      |
| $f_{IN} = 9.7$ MHz                                | 25°C |      | -92  |     | dBc  |
| $f_{IN} = 30.5$ MHz                               | 25°C |      | -101 |     | dBc  |
|   | Full |      |      | -88 | dBc  |
| $f_{IN} = 70$ MHz                                 | 25°C |      | -98  |     | dBc  |
| TWO-TONE SFDR                                     |      |      |      |     |      |
| $f_{IN} = 30.5$ MHz (-7 dBFS), 32.5 MHz (-7 dBFS) | 25°C |      | 90   |     | dBc  |
| ANALOG INPUT BANDWIDTH                            | 25°C |      | 700  |     | MHz  |

<sup>1</sup> See the [AN-835](#) Application Note, *Understanding High Speed ADC Testing and Evaluation*, for a complete set of definitions.

**DIGITAL SPECIFICATIONS**

AVDD = 1.8 V; DRVDD = 1.8 V, maximum sample rate, 2 V p-p differential input, 1.0 V internal reference; AIN = -1.0 dBFS, 50% duty cycle clock, DCS disabled, unless otherwise noted.

**Table 3.**

| Parameter   | Temp | Min       | Typ              | Max         | Unit  |
|---|------|-----------|------------------|-------------|-------|
| <b>DIFFERENTIAL CLOCK INPUTS (CLK+, CLK-)</b>               |      |           |                  |             |       |
| Logic Compliance  |      |           | CMOS/LVDS/LVPECL |             |       |
| Internal Common-Mode Bias                                   | Full |           | 0.9              |             | V     |
| Differential Input Voltage                                  | Full | 0.2       |                  | 3.6         | V p-p |
| Input Voltage Range   | Full | GND - 0.3 |                  | AVDD + 0.2  | V     |
| High Level Input Current                                    | Full | -10       |                  | +10         | μA    |
| Low Level Input Current                                     | Full | -10       |                  | +10         | μA    |
| Input Resistance  | Full | 8         | 10               | 12          | kΩ    |
| Input Capacitance   | Full |           | 4                |             | pF    |
| <b>LOGIC INPUTS (SCLK/DFS, MODE, SDIO/PDWN)<sup>1</sup></b> |      |           |                  |             |       |
| High Level Input Voltage                                    | Full | 1.2       |                  | DRVDD + 0.3 | V     |
| Low Level Input Voltage                                     | Full | 0         |                  | 0.8         | V     |
| High Level Input Current                                    | Full | -50       |                  | -75         | μA    |
| Low Level Input Current                                     | Full | -10       |                  | +10         | μA    |
| Input Resistance  | Full |           | 30               |             | kΩ    |
| Input Capacitance   | Full |           | 2                |             | pF    |
| <b>LOGIC INPUTS (CSB)<sup>2</sup></b>                       |      |           |                  |             |       |
| High Level Input Voltage                                    | Full | 1.2       |                  | DRVDD + 0.3 | V     |
| Low Level Input Voltage                                     | Full | 0         |                  | 0.8         | V     |
| High Level Input Current                                    | Full | -10       |                  | +10         | μA    |
| Low Level Input Current                                     | Full | 40        |                  | 135         | μA    |
| Input Resistance  | Full |           | 26               |             | kΩ    |
| Input Capacitance   | Full |           | 2                |             | pF    |
| <b>DIGITAL OUTPUTS</b>                                      |      |           |                  |             |       |
| DRVDD = 3.3 V   |      |           |                  |             |       |
| High Level Output Voltage, I <sub>OH</sub> = 50 μA          | Full | 3.29      |                  |             | V     |
| High Level Output Voltage, I <sub>OH</sub> = 0.5 mA         | Full | 3.25      |                  |             | V     |
| Low Level Output Voltage, I <sub>OL</sub> = 1.6 mA          | Full |           |                  | 0.2         | V     |
| Low Level Output Voltage, I <sub>OL</sub> = 50 μA           | Full |           |                  | 0.05        | V     |
| DRVDD = 1.8 V   |      |           |                  |             |       |
| High Level Output Voltage, I <sub>OH</sub> = 50 μA          | Full | 1.79      |                  |             | V     |
| High Level Output Voltage, I <sub>OH</sub> = 0.5 mA         | Full | 1.75      |                  |             | V     |
| Low Level Output Voltage, I <sub>OL</sub> = 1.6 mA          | Full |           |                  | 0.2         | V     |
| Low Level Output Voltage, I <sub>OL</sub> = 50 μA           | Full |           |                  | 0.05        | V     |

<sup>1</sup> Internal 30 kΩ pull-down.

<sup>2</sup> Internal 30 kΩ pull-up.

**SWITCHING SPECIFICATIONS**

AVDD = 1.8 V; DRVDD = 1.8 V, maximum sample rate, 2 V p-p differential input, 1.0 V internal reference; AIN = -1.0 dBFS, 50% duty cycle clock, DCS disabled, unless otherwise noted.

**Table 4.**

| Parameter                                 | Temp | Min   | Typ  | Max | Unit    |
|---|------|-------|------|-----|---------|
| <b>CLOCK INPUT PARAMETERS</b>             |      |       |      |     |         |
| Input Clock Rate                          | Full |       |      | 520 | MHz     |
| Conversion Rate <sup>1</sup>              | Full | 3     |      | 65  | MSPS    |
| CLK Period—Divide by 1 Mode ( $t_{CLK}$ ) | Full | 15.38 |      |     | ns      |
| CLK Pulse Width High ( $t_{CH}$ )         |      |       | 7.69 |     | ns      |
| Aperture Delay ( $t_A$ )                  | Full |       | 1.0  |     | ns      |
| Aperture Uncertainty (Jitter, $t_j$ )     | Full |       | 0.1  |     | ps rms  |
| <b>DATA OUTPUT PARAMETERS</b>             |      |       |      |     |         |
| Data Propagation Delay ( $t_{PD}$ )       | Full |       | 3    |     | ns      |
| DCO Propagation Delay ( $t_{DCO}$ )       | Full |       | 3    |     | ns      |
| DCO to Data Skew ( $t_{SKEW}$ )           | Full |       | 0.1  |     | ns      |
| Pipeline Delay (Latency)                  | Full |       | 8    |     | Cycles  |
| Wake-Up Time <sup>2</sup>                 | Full |       | 350  |     | $\mu$ s |
| Standby                                   | Full |       | 300  |     | ns      |
| <b>OUT-OF-RANGE RECOVERY TIME</b>         | Full |       | 2    |     | Cycles  |

<sup>1</sup> Conversion rate is the clock rate after the CLK divider.  
<sup>2</sup> Wake-up time is dependent on the value of the decoupling capacitors.

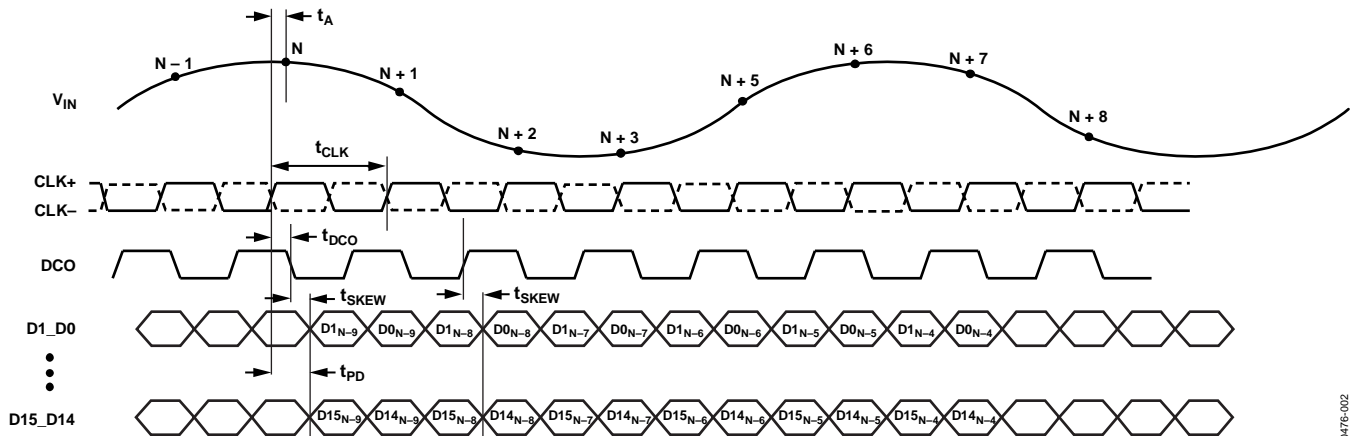


Figure 2. CMOS Output Data Timing

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## TIMING SPECIFICATIONS

Table 5.

| Parameter               | Test Conditions/Comments  | Min | Typ | Max | Unit |
|-------------------------|---|-----|-----|-----|------|
| SPI TIMING REQUIREMENTS |   |     |     |     |      |
| t <sub>DS</sub>         | Setup time between the data and the rising edge of SCLK   | 2   |     |     | ns   |
| t <sub>DH</sub>         | Hold time between the data and the rising edge of SCLK  | 2   |     |     | ns   |
| t <sub>CLK</sub>        | Period of the SCLK  | 40  |     |     | ns   |
| t <sub>S</sub>          | Setup time between CSB and SCLK   | 2   |     |     | ns   |
| t <sub>H</sub>          | Hold time between CSB and SCLK  | 2   |     |     | ns   |
| t <sub>HIGH</sub>       | SCLK pulse width high   | 10  |     |     | ns   |
| t <sub>LOW</sub>        | SCLK pulse width low  | 10  |     |     | ns   |
| t <sub>EN_SDIO</sub>    | Time required for the SDIO pin to switch from an input to an output relative to the SCLK falling edge | 10  |     |     | ns   |
| t <sub>DIS_SDIO</sub>   | Time required for the SDIO pin to switch from an output to an input relative to the SCLK rising edge  | 10  |     |     | ns   |



## ABSOLUTE MAXIMUM RATINGS

Table 6.

| Parameter                                  | Rating                  |
|--|-------------------------|
| AVDD to AGND                               | -0.3 V to +2.0 V        |
| DRVDD to AGND                              | -0.3 V to +3.9 V        |
| VIN+, VIN- to AGND                         | -0.3 V to AVDD + 0.2 V  |
| CLK+, CLK- to AGND                         | -0.3 V to AVDD + 0.2 V  |
| VREF to AGND                               | -0.3 V to AVDD + 0.2 V  |
| SENSE to AGND                              | -0.3 V to AVDD + 0.2 V  |
| VCM to AGND                                | -0.3 V to AVDD + 0.2 V  |
| RBIAS to AGND                              | -0.3 V to AVDD + 0.2 V  |
| CSB to AGND                                | -0.3 V to DRVDD + 0.3 V |
| SCLK/DFS to AGND                           | -0.3 V to DRVDD + 0.3 V |
| SDIO/PDWN to AGND                          | -0.3 V to DRVDD + 0.3 V |
| MODE/OR to AGND                            | -0.3 V to DRVDD + 0.3 V |
| D1_D0 Through D15_D14 to AGND              | -0.3 V to DRVDD + 0.3 V |
| DCO to AGND                                | -0.3 V to DRVDD + 0.3 V |
| Operating Temperature Range<br>(Ambient)   | -55°C to +125°C         |
| Maximum Junction Temperature<br>Under Bias | 150°C                   |
| Storage Temperature Range<br>(Ambient)     | -65°C to +150°C         |

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

## THERMAL CHARACTERISTICS

The exposed paddle is the only ground connection for the chip. The exposed paddle must be soldered to the AGND plane of the circuit board. Soldering the exposed paddle to the board also increases the reliability of the solder joints and maximizes the thermal capability of the package.

Table 7. Thermal Resistance

| Package Type                 | Airflow Velocity (m/sec) | $\theta_{JA}^{1,2}$ | $\theta_{JC}^{1,3}$ | $\theta_{JB}^{1,4}$ | $\Psi_{JT}^{1,2}$ | Unit |
|------------------------------|--------------------------|---------------------|---------------------|---------------------|-------------------|------|
| 32-Lead LFCSP<br>5 mm × 5 mm | 0                        | 37.1                | 3.1                 | 20.7                | 0.3               | °C/W |
|                              | 1.0                      | 32.4                |                     |                     | 0.5               | °C/W |
|                              | 2.5                      | 29.1                |                     |                     | 0.8               | °C/W |

<sup>1</sup> Per JEDEC 51-7, plus JEDEC 51-5 252P test board.

<sup>2</sup> Per JEDEC JESD51-2 (still air) or JEDEC JESD51-6 (moving air).

<sup>3</sup> Per MIL-Std 883, Method 1012.1.

<sup>4</sup> Per JEDEC JESD51-8 (still air).

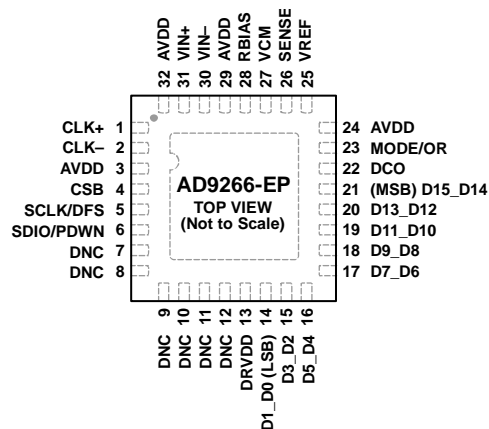
Typical  $\theta_{JA}$  is specified for a 4-layer printed circuit board (PCB) with a solid ground plane. As shown in Table 7, airflow improves heat dissipation, which reduces  $\theta_{JA}$ . In addition, metal in direct contact with the package leads from metal traces, through holes, ground, and power planes reduces the  $\theta_{JA}$ .

## 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.

## PIN CONFIGURATION AND FUNCTION DESCRIPTIONS



- NOTES
1. DNC = DO NOT CONNECT.
  2. THE EXPOSED PADDLE IS THE ONLY GROUND CONNECTION ON THE DEVICE. IT MUST BE SOLDERED TO THE ANALOG GROUND OF THE PCB TO ENSURE PROPER FUNCTIONALITY, HEAT DISSIPATION, NOISE, AND MECHANICAL STRENGTH.

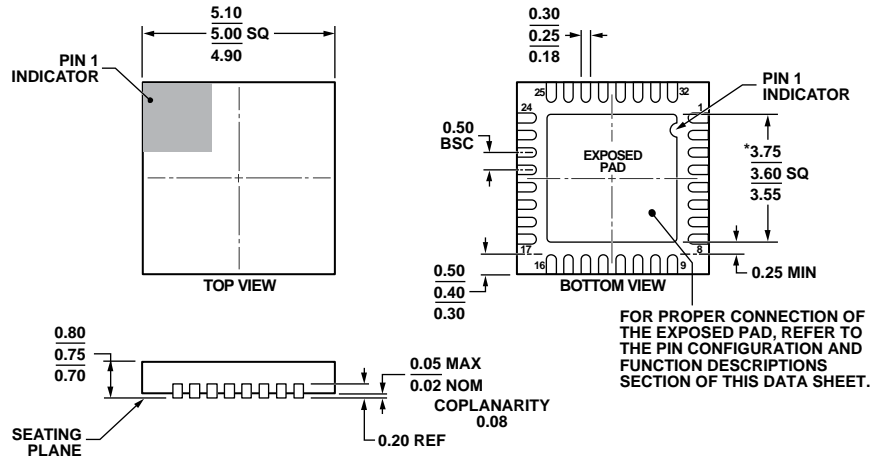
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Figure 3. Pin Configuration

Table 8. Pin Function Descriptions

| Pin No.       | Mnemonic                     | Description  |
|---------------|------------------------------|--|
| 0             | EPAD                         | Exposed Paddle. The exposed paddle is the only ground connection on the device. It must be soldered to the analog ground of the PCB to ensure proper functionality, heat dissipation, noise, and mechanical strength.  |
| 1, 2          | CLK+, CLK-                   | Differential Encode Clock for PECL, LVDS, or 1.8 V CMOS Inputs.  |
| 3, 24, 29, 32 | AVDD                         | 1.8 V Supply Pin for ADC Core Domain.  |
| 4             | CSB                          | SPI Chip Select. Active low enable, 30 k $\Omega$ internal pull-up.  |
| 5             | SCLK/DFS                     | SPI Clock Input in SPI Mode (SCLK). 30 k $\Omega$ internal pull-down.<br>Data Format Select in Non SPI Mode (DFS). Static control of data output format. 30 k $\Omega$ internal pull-down.<br>DFS high = twos complement output; DFS low = offset binary output.   |
| 6             | SDIO/PDWN                    | SPI Data Input/Output (SDIO). Bidirectional SPI data I/O with 30 k $\Omega$ internal pull-down.<br>Non-SPI Mode Power-Down (PDWN). Static control of chip power-down with 30 k $\Omega$ internal pull-down.  |
| 7 to 12       | DNC                          | Do Not Connect.  |
| 13            | DRVDD                        | 1.8 V to 3.3 V Supply Pin for Output Driver Domain.  |
| 14 to 21      | D1_D0 (LSB) to (MSB) D15_D14 | ADC Digital Outputs.   |
| 22            | DCO                          | Data Clock Digital Output.   |
| 23            | MODE/OR                      | Chip Mode Select Input (MODE)/Out-of-Range Digital Output in SPI Mode (OR).<br>Default = out-of-range (OR) digital output (SPI Register 0x2A, Bit 0 = 1).<br>Option = chip mode select input (SPI Register 0x2A, Bit 0 = 0).<br>Chip power-down (SPI Register 0x08, Bits[7:5] = 100b).<br>Chip standby (SPI Register 0x08, Bits[7:5] = 101b).<br>Normal operation, output disabled (SPI Register 0x08, Bits[7:5] = 110b).<br>Normal operation, output enabled (SPI Register 0x08, Bits[7:5] = 111b).<br>Out-of-range (OR) digital output only in non-SPI mode. |
| 25            | VREF                         | 1.0 V Voltage Reference Input/Output.  |
| 26            | SENSE                        | Reference Mode Selection.  |
| 27            | VCM                          | Analog Output Voltage at Mid AVDD Supply. Sets common mode of the analog inputs.   |
| 28            | RBIAS                        | Set Analog Current Bias. Connect to 10 k $\Omega$ (1% tolerance) resistor to ground.   |
| 30, 31        | VIN-, VIN+                   | ADC Analog Inputs.   |

### OUTLINE DIMENSIONS



\*COMPLIANT TO JEDEC STANDARDS MO-220-WHHD-5 WITH EXCEPTION TO EXPOSED PAD DIMENSION.

Figure 4. 32-Lead Lead Frame Chip Scale Package [LFCSP\_WQ]  
 5 mm x 5 mm Body, Very Very Thin Quad (CP-32-12)  
 Dimensions shown in millimeters

08-16-2010-B

### ORDERING GUIDE

| Model <sup>1</sup> | Temperature Range | Package Description                              | Package Option |
|--------------------|-------------------|--|----------------|
| AD9266TCPZ-65EP    | -55°C to +125°C   | 32-Lead Lead Frame Chip Scale Package [LFCSP_WQ] | CP-32-12       |
| AD9266TCPZRL7-65EP | -55°C to +125°C   | 32-Lead Lead Frame Chip Scale Package [LFCSP_WQ] | CP-32-12       |

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

**NOTES**