

InstaBIST™ ADC BIST IP Core

InstaCell™ Semiconductor IP



Industry-Standard, High-Performance, Silicon-Proven ADC Technology

- InstaBIST™ ADC BIST (Built-in Self-Test) allows the analog-to-digital converter (ADC) circuit to test itself, saving valuable test time and reducing the need for capital equipment
- Easily integrated into a chip design to test the converter's INL and DNL functionality
- Digitally invoked via the standard scan bus interface IEEE-1149.1 (JTAG)
- Permits remote testing for fielded systems

General Description

The InstaBIST™ ADC was developed to test the functionality of analog-to-digital converters in space applications. Designed to rigorous standards, the IP block occupies minimal area, while providing a digitally invoked measurement of the converter's integral nonlinearity (INL) or differential nonlinearity (DNL). The design can also be adapted to various process nodes for maximum flexibility. The data is available via an optional IEEE-1149.1 scan bus interface. Other interfaces such as inter-integrated circuit (I2C) are also available from Ridgetop.

Applications

- Space electronic ADC testing
- Consumer electronic ADC testing
- Industrial control ADC testing
- Medical imaging ADC testing
- Radiation strip detector ADC testing

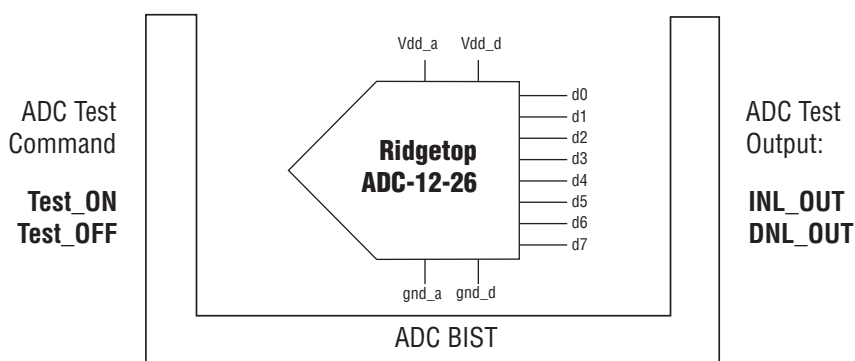


Figure 1: InstaBIST™ ADC BIST (block diagram)

Technical Specifications

The basic specifications are as follows:

- 26, 40, and 100 Msps sampling rate
- 12- to 16-bit DAC for 8- to 12-bit ADC
- DAC: 11.5 to 14 ENOB
- SNDR: 69 dB (12 bit) to 72 dB (16-bit)
- 45 mW (12-bit) to 60 mW (16-bit) power
- DNL: 0.5 LSB
- INL: 1.0 LSB (12-bit) to 2.0 LSB (16-bit)
- 0 to 70 °C operating temperature

Cell Specifications

- Width: 100 to 125 µm
- Height: 100 to 125 µm
- Power: 45 to 60 mW

| I/O Description | | |
|-----------------|---------------|----------------|
| Name | Specification | Notes |
| a0 | 2.5 volts | Analog In |
| d0 to d7 | 2.5 volts | Digital Out |
| Vdd_a | 2.5 volts | Analog Power |
| Vdd_d | 2.5 volts | Digital Power |
| gnd_a | 0 volt | Analog Ground |
| gnd_d | 0 volt | Digital Ground |

Need modified or custom design? Contact Ridgetop at 520-742-3300 to discuss your ideal solution!

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