



# A6B12G

## 6-bit, 12 GSPS

### Analog to Digital Converter IP block

#### GENERAL DESCRIPTION

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The A6B12G is a low-power, high-speed analog to digital converter (ADC) intellectual property (IP) design block. It is a FLASH-type ADC, with 6-bit resolution and a sampling rate of 12 gigasamples per second (GSPS).

The A6B12G is a unique solution that provides the dual benefit of reaching an extremely high sampling speed while maintaining an exceptionally low power consumption of only 13 mW, making it a perfect fit for designs with high efficiency, low power and high performance requirements.

The cost-effective IP block has been designed and verified for the GF22FDX fabrication process with FDSOI technology to provide superior performance/power specifications.

The ADC IP is also available in a radiation-tolerant version, that can function under harsh environmental constraints.

#### KEY FEATURES

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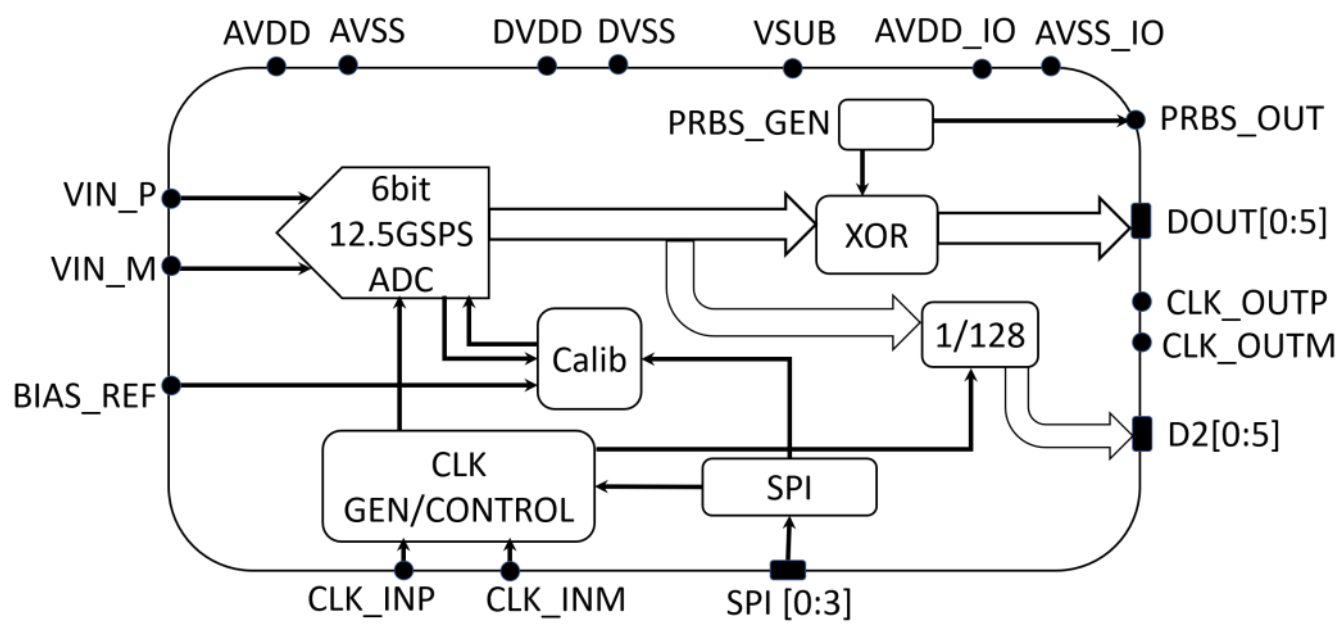
- ◆ 6 bit resolution
- ◆ 12 GSPS sampling rate
- ◆ 13 mW power
- ◆ 10 GHz Input Bandwidth
- ◆ Static Performance:
  - ◆ DNL:  $\pm 0.5$  LSB
  - ◆ INL:  $\pm 0.8$  LSB
- ◆ Dynamic Performance:
  - ◆ SFDR: 37 dBc
  - ◆ SNDR: 33.6 dB
  - ◆ ENOB: 5.3
- ◆ Hard IP block
- ◆ Radiation-tolerant design available: A6B12GRH

#### APPLICATIONS

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- ◆ High-speed test and measurement systems
  - ◆ Spectrometers
- ◆ Communications and Networking
  - ◆ Wideband Communications
  - ◆ Serial data links
- ◆ Ultra Wideband Phased Arrays
- ◆ Radio astronomy

## FUNCTIONAL BLOCK DIAGRAM



## SPECIFICATIONS

Resolution (bits)	6
Sampling rate (GSPS)	12
SFDR (dBc)	37
SNDR (dB)	33.6
ENOB	5.3
Input Bandwidth (GHz)	10
Power (mW)	13
FOM (fJ/conv)	23
INL (Integral Non-Linearity) (LSB)	± 0.8
DNL (Differential Non-Linearity) (LSB)	± 0.5
Architecture	Flash
Layout area (um x um)	160 x 330
Foundry Process	GlobalFoundries GF22FDX FDSOI
Node	22nm
Maturity	Verified, Tapeout in December 2019

## ABOUT ALPHACORE

Alphacore enables engineers to develop ultra-high-performance and ultra-low power microelectronic components and systems with our products and IP design services. Our robust designs serve the **defense, aerospace, automotive, communications, and scientific instrumentation** markets. Let us supply you with state-of-the-art designs to satisfy your product and system needs.

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