6-bit, 5 GSPS
Digital-to-Analog Converter IP block

General Description

The D6B5G is ultra-low power, high-speed digital to analog converter (DAC) intellectual property (IP) block. It has a 6-bit resolution, and a sampling speed of 5 gigasamples per second (GSPS).

The D6B5G 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 16 mW, making it a perfect fit for designs with high efficiency, low power and high performance requirements.

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

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

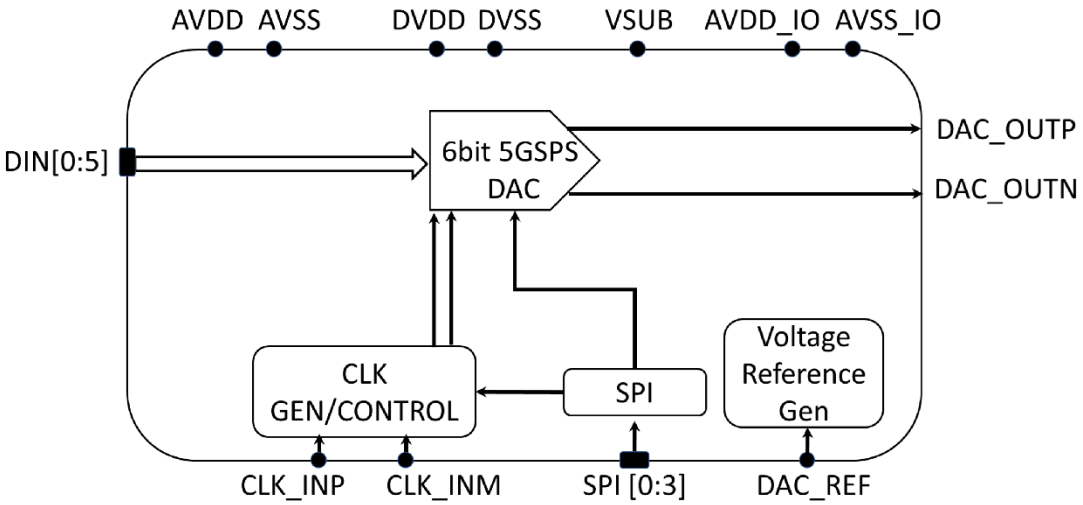
Key Features

- 6-bit Resolution
- 5 GSPS Sampling Rate
- 16 mW Power Consumption
- 6 GHz Input Bandwidth
- Static Performance:
  - DNL: ± 0.5 LSB
  - INL: ± 0.3 LSB
- Dynamic Performance:
  - SFDR: 43 dBc
  - SNDR: 35 dB
  - ENOB: 5.5 bits
- Area: 464 um x 242 um
- Hard IP block
- Radiation-tolerant design available: D6B5GRH

Applications

- Wideband Communications and Networking
  - Microwave Receivers
  - Radar and Satellite Communications
  - C-band Satellite Services
  - 5G Telecommunications
- Electronic Warfare
  - Software-defined Radio
- Automated Test Equipment

Functional Block Diagram



Specifications

Resolution (bits)	6
Sampling rate	5
SFDR (dBc)	43
SNDR (dB)	35
ENOB	5.5
Input Bandwidth (GHz)	6
Power (mW)	16
FOM (fJ/conv)	95
INL (Integral Non-Linearity) (LSB)	± 0.3
DNL (Differential Non-Linearity) (LSB)	± 0.5
Architecture	Current Steering
Layout area (um x um)	464 x 242
Foundry	GlobalFoundries GF22FDX FDSOI
Node	22nm
Maturity	Foundry Qualification Underway

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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*Specifications subject to change