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## AD9739A FMC Card

Part # 6026-410-000P-BOARD

Hide Details

IC: [Analog Devices AD9739A 14-bit, 2.5 GSPS, RF D/A Converter](#)

Connector(s): FMC (FPGA Mezzanine Card) 160-pin connector

- Features the powerful [Analog Devices AD9739A D/A Converter](#) on an FMC card
- Internal (crystal + PLL) and external (SMA) clock options
- **AD9739A specs:**
  - 14-bit, 2.5 GSPS
  - Direct RF Synthesis @ 2.5 GSPS Update Rate
  - Industry Leading Single/Multicarrier IF or RF Synthesis
  - Dual-port LVDS data interface
  - Programmable Output Current: 8.7 to 31.7 mA
  - Low power: 1.1 W @ 2.5 GSPS
- **Applications:**
  - Broadband communications systems
  - DOCSIS CMTS systems
  - Military Jammers

The new AD9739A FMC card allows cable head-end equipment manufacturers and others to rapidly prototype and verify system developments using Xilinx FPGA development boards equipped with an FMC header. This card can help engineers de-risk the development cycle and accelerate time-to-market by providing production ready reference HDL code and software for use in end products. Using the AD9739 allows synthesis of the entire cable spectrum into a single RF port and increases the number of QAM channels per D/A converter by up to 20 times to meet cable infrastructure demands while significantly lowering power consumption and system cost.

### The AD9739A DAC:

The AD9739A is a 14-bit, 2.5 GSPS high performance RF DAC capable of synthesizing wideband signals from dc up to 3 GHz. The AD9739A is pin and functionally compatible with the AD9739 with the exception that the AD9739A does not support synchronization and is specified to operate between 1.6 GSPS and 2.5 GSPS. By elimination of the synchronization circuitry, some nonideal artifacts such as images and discrete clock spurs remain stationary on the AD9739A between power-up cycles, thus allowing for possible system calibration. AC linearity and noise performance remain the same between the AD9739 and AD9739A.

The inclusion of on-chip controllers simplifies system integration. A dual-port, source synchronous, LVDS interface simplifies the digital interface with existing FPGA/ASIC technology. On-chip controllers are used to manage external and internal clock domain variations over temperature to ensure reliable data transfer from the host to the DAC core. A serial peripheral interface (SPI) is used for device configuration as well as readback of status registers.

The AD9739A is manufactured on a 0.18  $\mu$ m CMOS process and operates from 1.8 V and 3.3 V supplies. It is supplied in a 160-ball chip scale ball grid array for reduced package parasitics.

### Product Highlights:

- Ability to synthesize high quality wideband signals with bandwidths of up to 1.25 GHz in the first or second Nyquist zone.
- A proprietary quad-switch DAC architecture provides exceptional ac linearity performance while enabling mix-mode operation.
- A dual-port, double data rate, LVDS interface supports the maximum conversion rate of 2500 MSPS.
- On-chip controllers manage external and internal clock domain skews.
- Programmable differential current output with a 8.66 mA to 31.66 mA range.

### For more information:

Please visit [the Analog Devices wiki](#) for a reference design that demonstrates the use of an AD9739A FMC Board and a Xilinx ML-605.

