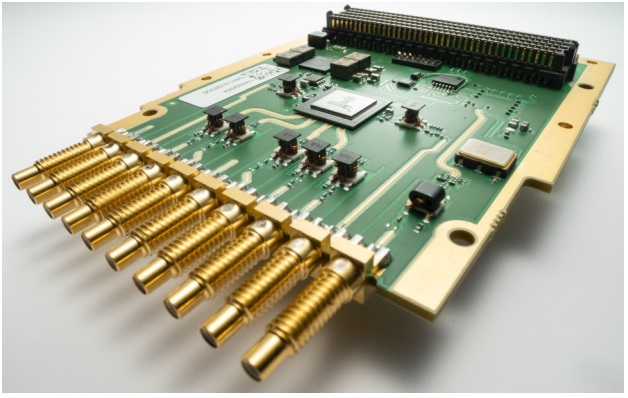
FMC+ AD9084 Quad Channels ADC and DAC



Overview

The **FMC-MXFE4-A** is a FMC+ for High-Speed Data Acquisition applications based on the AD9084 Quad 12-bit ADC and Quad 16-bit DAC from Analog Devices Inc (ADI).

The **AD9084** mixed signal front-end (MxFE®) is a highly integrated device with a 16-bit, 28 GSPS maximum sample rate, RF digital-to-analog converter (DAC) core, and 12-bit, 20 GSPS maximum sample rate, RF analog-to-digital converter (ADC) core. The AD9084 supports four transmit channels and four receive channels.
The AD9084 is well suited for applications requiring both wideband ADCs and DACs to process signal(s) having wide instantaneous bandwidth.
The device features a 48 lane, 32.5 Gbps JESD204C or 20 Gbps JESD204B data transceiver port, an on-chip clock multiplier, and a digital signal processing (DSP) capability targeted at either wideband or multiband, direct to RF applications.
The AD9084 also features a bypass mode that allows the full bandwidth capability of the ADC and/or DAC cores to bypass the DSP datapaths.
The device also features low latency loopback and frequency hopping modes targeted at phased array radar systems and electronic warfare applications.

PanaTeQ offers the **VPX3-VERSA2-MXFE4-A-CAA-AS** development system based on the VPX3-VERSA2 3U VPX VERSAL and the FMC-MXFE4-A-AAA for typical Digital Signal Processing.

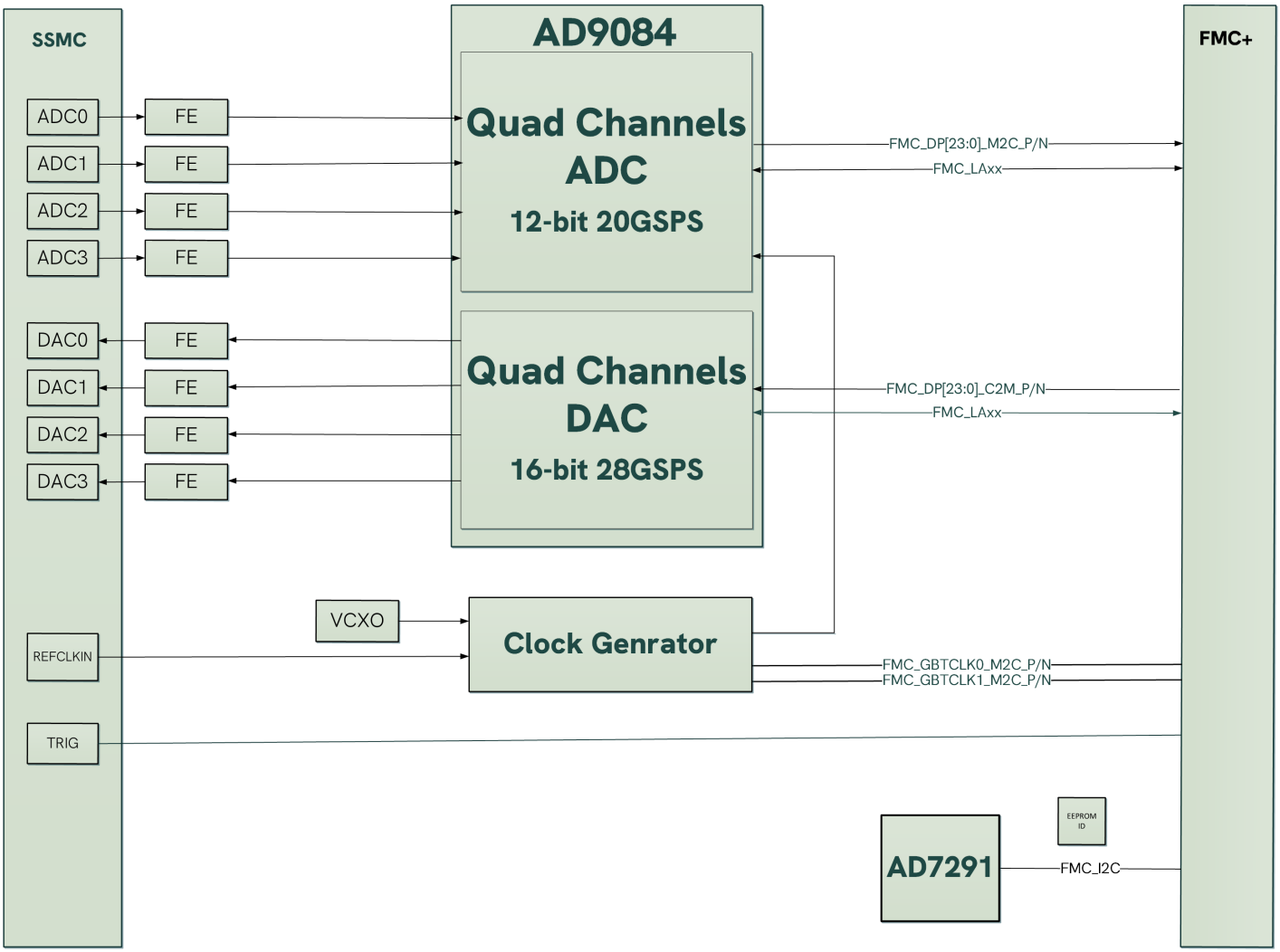
Key Features

- FMC+ Vita 57.4 specification compliant
- JESD024B/C interface up to 20/32.5 Gbps
  - 24x Tx
  - 24x Rx
- Operates with VAdj = 2.5V to 1.5V
- Air and Conduction Cooled compatible
- Quad ADC Channels (12-bit up to 20GSPS)
- Quad DAC Channels (16-bit up to 28GSPS)
- Uses of 10x 12GHz bandwidth SSMC connectors
- Inputs with Impedance of 50 ohms AC Coupled
- Analog Bandwidth Input Up to 18 GHz
- Reference Clock Input
- FPGA GPIO direct Input or Output
- On-board VCXO

Typical Applications

- Radar and phase array systems
- Seeker front end
- Tactical defense radio infrastructure
- Electronic warfare and signal intelligence
- Wireless communications infrastructure
- Wireless communications test (5G mmWave, 5G C band

Block Diagram



Board Specifications

FMC+ Interface

- VITA 57.4 Specifications compliant
- Single Module Width 69 mm, Depth 76.5 mm
- 24x MGT DP[23:0]_M2C, 24x MGT DP[23:0]_C2M for JESD204B/C interfaces up to 32Gbps
- 2x MGTCLK[1:0]_M2C
- LA Bus for LVDS and Single-Ended signals
- VADJ = 2.5V to 1.5V
- Power Consumption : TBD

Board Main ADI Components

- AD9084 (see ordering option)
  4x 12-bit ADC @ up to 14 GSPS
  4x 16-bit DAC @ up to 28 GSPS
- AD9084 (see ordering option)
  4x 12-bit ADC @ up to 20 GSPS
  4x 16-bit DAC @ up to 28 GSPS

- TBD : JED204B/C Clock Generator
- AD7291 : 8-Channel, I2C, 12-bit SAR ADC with Temperature Sensor

Analog Performances

- Input Bandwith up TBD GHz

On-board VCXO Options

- TBD

Front Panel I/O: 10x SSMC Connectors

- ADC Channel 0 Input
- ADC Channel 1 Input
- ADC Channel 2 Input
- ADC Channel 3 Input
- DAC Channel 0 Output
- DAC Channel 1 Output
- DAC Channel 2 Output
- DAC Channel 3 Output
- GPIO Input/Output (Trigger)
- External Reference Clock Input

Environnemental Specifications

- Commercial Ruggedized 0-50C
- Conduction Cooled –40C to 70C at Thermal Interface

Product Codification

The FMC-MXFE4-A can be assembled with different versions. The cooling technique et ruggedization level are also available options. The following table shows the product coding for all these options.

FMC-MXFE4-A- A A A - AS

	ADC Option
A	AD9084-MX-DF-SW1
B	AD9084-MX-DF-SW2
B	AD9084-MX-DF-SW5

	Board Option 1
A	Reserved

	Board Option 2
A	Reserved

	Ruggedization Level	VITA 47
AS	Air Standard	EAC4
AR	Air Rugged	EAC6
CC	Conduction Cooled	ECC3

Ordering Information

The following product references are offered by PanaTeQ as standard products. Other combinations of devices, speed grade, memory and cooling can be specially ordered. Please contact us for details

Reference	ADC Option	Board Option1	Board Option2	Ruggedization Level
FMC-MXFE4-A-AAA-AS	AD9084-MX-DF-SW1	A	A	Air Standard Cooled
FMC-MXFE4-A-AAA-CC	AD9084-MX-DF-SW1	A	A	Conduction Cooled

Reference	SDR System Development
VPX3-VERSA2-MXFE4-A-AAA-AS	4U Desktop Chassis Air Cooled, VPX3-VERSA2-A1M-AS, RTM-VERSA2-A, FMC-MXFE4-A-AAA-AS, Linux BSP, Cables

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Available from: