AMC529 / AMC529C – AMC Dual DAC 14-bit @ 5.7 GSPS Module

High Speed Dual DAC, 5.7 GSPS

AMC529

AMC529C

KEY FEATURES

- Dual AD9129 DAC, 14-bit at 5.7 GSPS (2.85 GSPS direct RF synthesis)
- Conduction cooled version available
- Single module, mid-size per AMC.0
- Xilinx Virtex-7 690T FPGA in FFG-1761 package
- Triple bank QDR-II+ memory (432 Mb total) and 1GB DDR3
- AMC Ports 4-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (PCIe, SRIO, XAUI, etc. are FPGA programmable)
- AMC Ports 12-15 and 17-20 optionally routed to the FPGA
- Internal, external or backplane clock with on-board wide-band PLL
- IPMI 2.0 compliant

AdvancedMC™

Benefits of Choosing VadaTech

- Ultra-high speed DAC speed in compact modular format
- Excellent dynamic and direct RF synthesis performance
- Ideal for communications systems, automatic test equipment, RADAR/Jamming
- Strong mil/aero support – conduction cooled variant available
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

The AMC529 provides two Analog Devices AD9129. Each chip core is based on a quad-switch architecture that enables dual-edge clocking operation, effectively increasing the DAC update rate to 5.7 GSPS when configured for Mix-Mode™ or 2x interpolation. The high dynamic range and bandwidth enable multi-carrier generation up to 4.2 GHz. The on-board Virtex-7 690T provides signal processing capability for complex waveform generation, appropriate for applications such as SDR, ATE and jamming.

The AMC ports 12-15 and 17-20 are optionally routed to the FPGA from the AMC connector, providing the user with flexibility to support custom high-bandwidth interconnects between compatible FPGA modules (depending on backplane capabilities). The FPGA is supported by FLASH memory for boot image storage, four banks of QDR-II+ for fast data buffering and a further bank of DDR3 for local data.

TCLKA-D are routed to the FPGA via an on-board clock and jitter cleaner while FCLK is routed directly. The module includes a very flexible clocking sub-system, supporting internal or external (backplane or FMC connector) clock source with internal PLL/jitter cleaner.

The AMC529 is available in both air-cooled (MTCA.0 and MTCA.1) and rugged conduction-cooled (MTCA.2 or MTCA.3) versions.

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REFERENCE DESIGN

VadaTech provides a reference design implementation for our FPGAs complete with VHDL source code and configuration binaries. The reference design focuses on the I/O ring of the FPGA to demonstrate low-level operation of the interconnections between the FPGA and other circuits on the board and/or backplane. It is geared to prove out the hardware for engineering/factory diagnostics and customer acceptance of the hardware, but it does not strive to implement a particular end application.

AMC529

BLOCK DIAGRAM

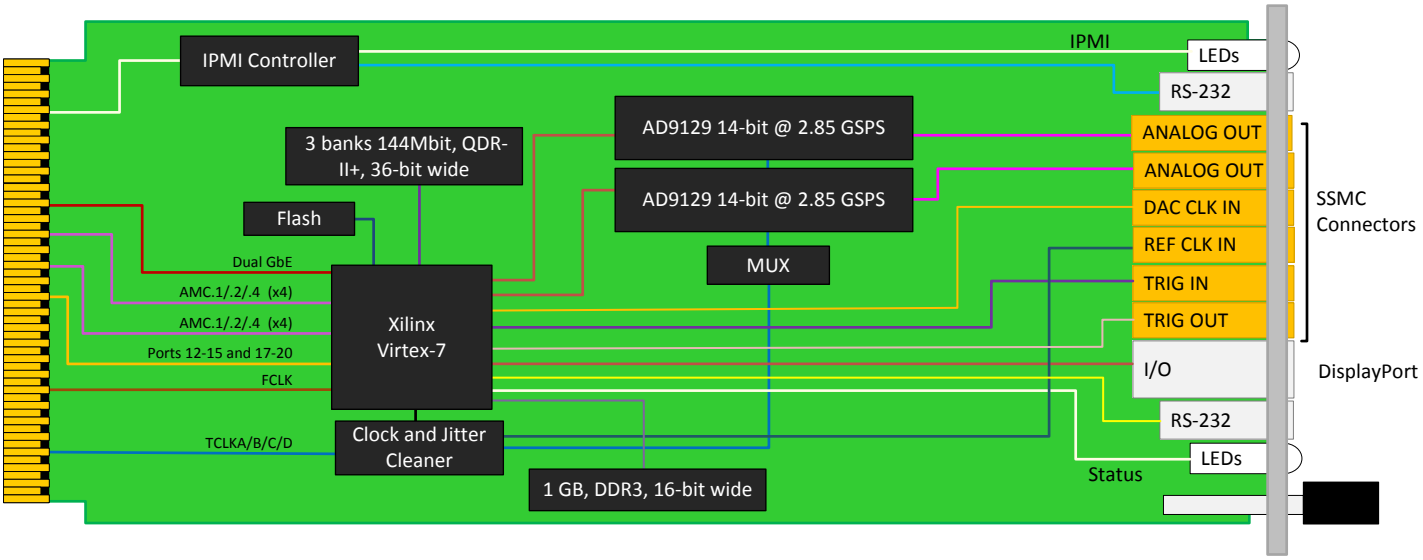

Figure 1: Block Diagram

FRONT PANEL

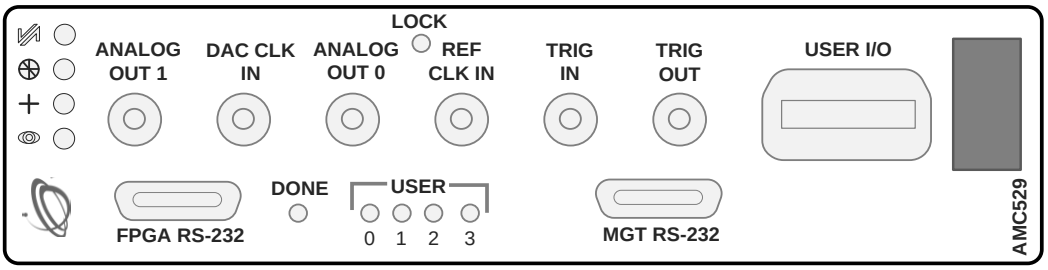

Figure 2: AMC529 Front Panel

AMC529C

BLOCK DIAGRAM

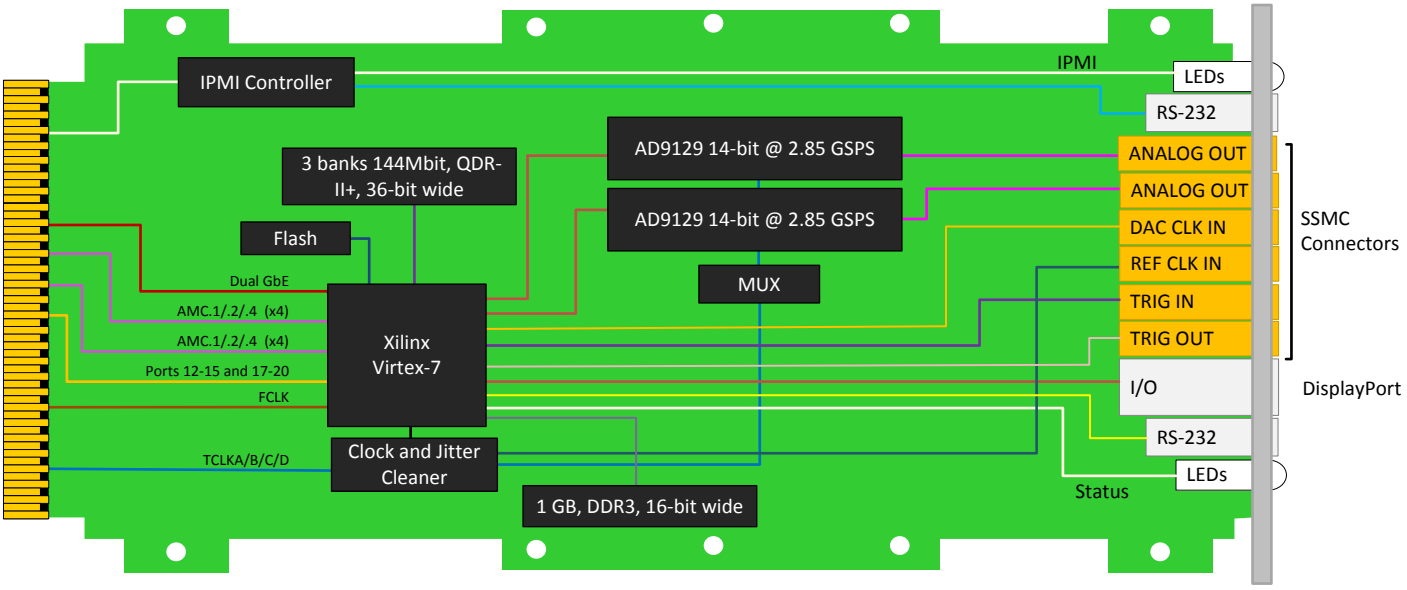

Figure 3:AMC59C Block Diagram

FRONT PANEL

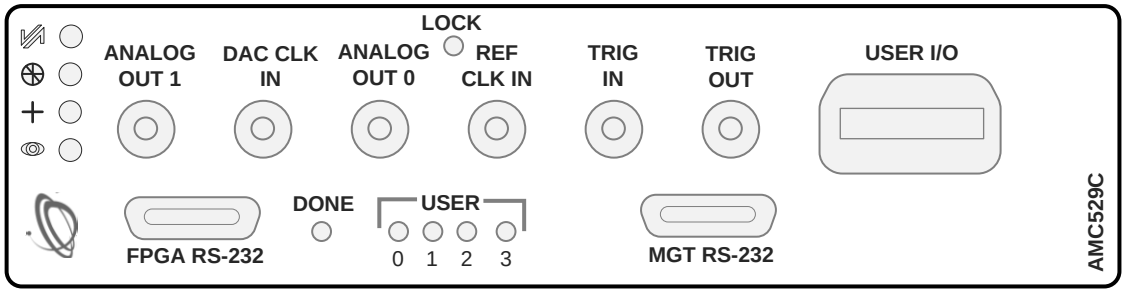

Figure 4: AMC529C Front Panel

SPECIFICATIONS

Architecture		
Physical	Dimensions	Single module, mid-size (full-size optional)
		Width 2.89" (73.5 mm)
		Depth 7.11" (180.6 mm)
Type	AMC FPGA Carrier	Xilinx Virtex-7 device
		Dual Port DAC
Standards		
AMC	Type	AMC.1, AMC.2 and /or AMC.4
Module Management	IPMI	IPMI version 2.0
PCIe	Lanes	Dual x4 via FPGA to AMC or x8
Ethernet	GbE	Dual GbE
Configuration		
Power	AMC529	~35W (FPGA code dependent)
Environmental	Temperature	Operating temperature: -5° to 45° C (55°C for limited time, performance restrictions may apply), industrial and military versions also available (See environmental spec sheet)
		Storage Temperature: –40° to +85° C
	Vibration	1G, 5 to 500 Hz on each axis
	Shock	30Gs each axis
	Relative Humidity	5 to 95 percent, non-condensing
Front Panel	Interface Connectors	Front panel DAC, CLK/TRIGIN, MGT RS-232, FPGA RS-232 and User I/O
	LEDs	IPMI Management Status
		4 user defined LEDs, 5 general status LEDs
	Mechanical	Hot swap ejector handle (AMC529); wedgelocks (AMC529C)
Software	Operating System	Linux (consult VadaTech for other options)
Conformal Coating		Humiseal 1A33 Polyurethane (Optional)
		Humiseal 1B31 Acrylic (Optional)
Other		
MTBF	MIL Hand book 217-F @ TBD Hrs	
Certifications	Designed to meet FCC, CE and UL certifications where applicable	
Standards	VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards	
Warranty	Two (2) years	

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of ATCA and µTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTM), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

ORDERING OPTIONS

AMC529 – ABC – DEF – G0J

A = RF Direct Clock sampling
0 = Front panel
1 = On board wide-band PLL

B = Ports 12-15 and 17-20
0 = To FPGA
1 = Not Routed

C = Front Panel
1 = Reserved
2 = Mid-size
3 = Full-size
4 = Reserved
5 = Mid-size, MTCA.1 (captive screw)
6 = Full-size, MTCA.1 (captive screw)

D = FPGA
0 = Reserved
1 = Reserved
2 = XC7VX690T

E = FPGA Speed
1 = Reserved
2 = High
3 = Highest

F = PCIe Option
0 = No PCIe
1 = PCIe on ports 4 – 7
2 = PCIe on ports 8 – 11
3 = PCIe on ports 4 – 11

G = Clock Holdover Stability
0 = Standard (XO)
1 = Stratum-3 (TCXO)

J = Temperature Range and Coating
0 = Commercial (–5° to +55° C), No coating
1 = Commercial (–5° to +55° C), Humiseal 1A33 Polyurethane
2 = Commercial (–5° to +55° C),Humiseal 1B31 Acrylic
3 = Reserved
4 = Industrial (–20° to +70° C), Humiseal 1A33 Polyurethane
5 = Industrial (–20° to +70° C), Humiseal 1B31 Acrylic
6 = Military (–40° to +85° C), Humiseal 1A33 Polyurethane
7 = Military (–40° to +85° C), Humiseal 1B31 Acrylic

AMC529C – ABC – DEF – G0J

A = RF Direct Clock sampling
0 = Front panel
1 = On board wide-band PLL

B = Ports 12-15 and 17-20
0 = To FPGA
1 = Not Routed

C = Ruggedization Level*
0 = None
1 = Contact Vadatech
2 = Contact Vadatech
3 = Contact Vadatech

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0 = Reserved
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*Ruggedization level is per the uTCA.2 and uTCA.3 specification
** Edge of module

RELATED PRODUCTS

AMC526 Dual ADC

AMC517 Kintex-7 FPGA

VT872 ½ ATR Short, 6 AMC Conduction Cooled Chassis

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