

## **DSPBRIK™ II PRODUCT FAMILY**

MODULAR, HIGH-PERFORMANCE COMPUTING PLATFORM



- Achieve processing performance and data throughput unmatched by general-purpose microprocessors
- Reconfigure in the field to enhance and upgrade without costly hardware replacements
- Implement designs using a wide variety of languages and tools, such as VHDL, Verilog, SystemC, OpenCL, and MATLAB
- Develop applications using mature, industry-provided FPGA development tools (not included)
- Leverage a large user support base and intellectual property infrastructure

**TARGETING HIGH-PERFORMANCE COMPUTATION AND DSP APPLICATIONS**, the 2nd generation DSPBrik products enable higher bandwidth applications while reducing overall system cost.

**BUILT USING COMMERCIAL-OFF-THE-SHELF (COTS) PRODUCTION METHODS**, DSPBrik-based designs provide cost-effective solutions for both prototyping and full production systems.

**WITH FLEXIBILITY AS THE OVERARCHING GOAL** and conforming to a compact 4.6" x 4.6" form-factor weighing around 5 ounces each, DSPBrik modules can be integrated into a variety of enclosures ranging from standard 19" rackmount units to custom conduction-cooled enclosures. DSPBrik products accept power (DC) from a wide range of sources commonly found in battery, automotive, telecommunications, and airborne applications.

**COMMUNICATION WITH DSPBRIK SYSTEMS** is achieved using industry-standard interfaces (Ethernet) and protocols (IP/HTTP), allowing application control from most host platforms and operating systems (e.g., Microsoft Windows, Linux).

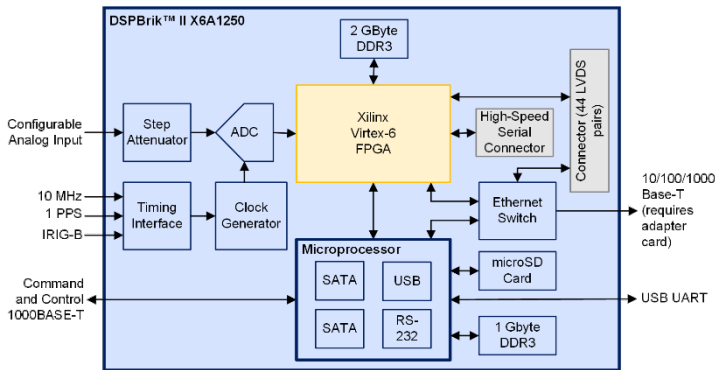
### **APPLICATION EXAMPLES**

- Software-Defined Radios
- Satellite Communications
- Adaptive Arrays
- Digital Signal Processing
- High-Bandwidth Demodulation
- Radar Processing
- Digital IF Transport
- Radio Astronomy
- Network Packet Processing

**DSPBRIK™ II**

# DSPBRIK™ II FEATURES

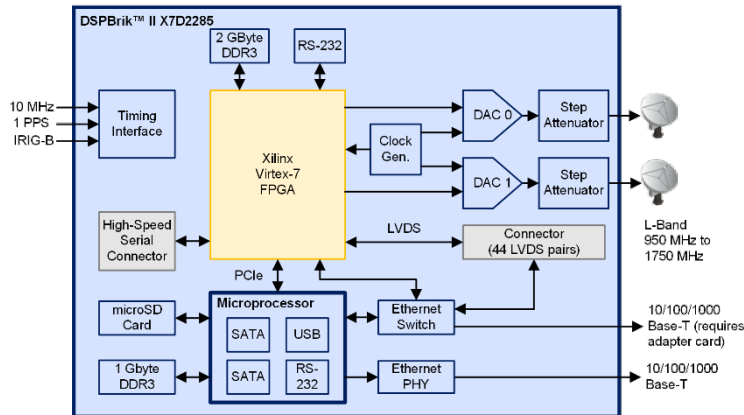
- Reconfigurable Xilinx Virtex FPGA for data processing and precision time tagging (X7F1000 and X7D2285 have Virtex-7, X6A1250 has Virtex-6)
- 2 GByte of DDR3-1600 SDRAM for capturing signal snapshots and user application processing (X7D2285 has 3 GByte)
- Integrated NXP P1010 microprocessor running Rincon Research Corporation's embedded Linux distribution with 1 GByte SDRAM and a removable microSD card
- Programmable attenuator provides 1 dB to 32 dB of attenuation in 0.5 dB steps (X6A1250 and X7D2285 only)
- 10/100/1000 Ethernet interface for command and control
- Support for precision time tagging of sampled data using a 1 PPS input and NMEA-0183, IRIG-B, or NTP time code signals
- Programmable on-board synthesizer for sample clock generation (600 MHz to 2600 MHz) using either an onboard or external 10 MHz reference (X6A1250 and X7D2285 only)
- High-speed SERDES connector attached to eight Virtex transceivers capable of various serial formats (e.g., 1G/10G Ethernet, PCI)
- 4.6" L x 4.6" W x 1½" H, approx. 5 oz (141.75 g) each



## X6A1250 DSPBRIK™ II WIDEBAND A/D CONVERTER AND FPGA

2.6 GSPS, 10-bit ADC input module with a 5 GHz analog input bandwidth

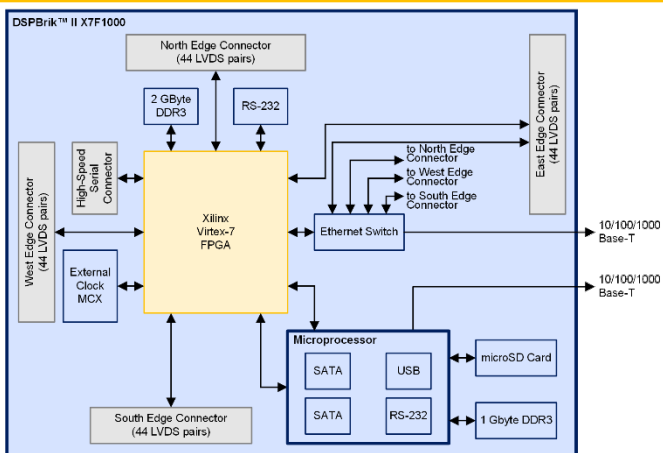
- Digitize over a GHz of signal bandwidth from an analog input range of 10 MHz to 5 GHz (via Nyquist sampling techniques and bandpass filtering)
- Directly digitize L-band IFs
- High-speed DSPBrik™II connector utilizing LVDS signaling



## X7D2285 DSPBRIK™ II WIDEBAND D/A CONVERTER AND FPGA

Dual, 2.85 GSPS. 14-bit DAC output module with a 1.425 GHz analog output bandwidth

- Dual Analog Devices AD9129 devices capable of 5.7 GHz update rate using 2x interpolation (mixed-mode)
- Output L band directly to a microwave upconverter (950 MHz to 1750 MHz)
- Dual-channel architecture permits synthesis of multiple antenna polarizations
- High-speed DSPBrik™II connector utilizing LVDS signaling



## X7F1000 DSPBRIK™ II VIRTEX-7 FPGA PROCESSOR

High-performance signal and data processing platform

- Standard: XC7VX485T device (485,760 logic cells, 2,800 DSP slices, 37,080 Kbit of block RAM)
- Option: XC7VX690T device (693,120 logic cells, 3,600 DSP slices, 52,920 Kbit of block RAM)
- 4 high-speed DSPBrik™II connectors with an aggregate bandwidth of greater than 44 Gbit/s per connector

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