



GVA-290 Virtex-E DSP Hardware Accelerator

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Product Specification

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Features

- Consists of 2 Virtex™-E FPGAs, 1 Spartan™-II FPGA, and a 95144XL CPLD
- USB interface to MatLab
- Supports Xilinx Chipscope-ILA
- Parallel port interface
- 100 MHz maximum input A/D sample rate
- 100 MHz maximum output D/A sample rate
- Four Dedicated A/D and D/A channels
- Dedicated external communication FPGA for analog control
- Secondary data processing FPGA
- +5 V tolerant 48 bit external I/O
- 32 Bit LVDS interface
- FPGA logic expansion (2M to 4M gates)
- Each Virtex-E FPGA has a dedicated 256K x 18 ZBT SRAM
- Up to 655,360 bits of internal Block SelectRAM™
- 100 bit local bus between the two Virtex-E FPGAs
- 44 bit local bus between one Virtex-E and Spartan-II FPGAs
- JTAG download configurable
- On-board 128M x 8 FLASH EPROM
- On-board FLASH EPROM programming
- Separate FPGA power plane for power measurement
- External 1.8V Jack for high current FPGAs
- Programmable A/D and D/A sample clocks
- On-board 100 MHz clock oscillator
- External high stability clock Input

General Description

The GVA-290 Digital Signal Processing Hardware Accelerator is designed for the implementation of complex DSP or other channel coding designs. This platform provides a highly flexible environment for the integration of various software and hardware DSP applications using the Xilinx Virtex-E FPGA family.

The GVA-290 supports the following Xilinx Virtex-E FPGAs:

- XCV1000E-6BG560C
- XCV1600E-6BG560C
- XCV2000E-6BG560C

Functional Description

The GVA-290 DSP Hardware Accelerator consists of three Xilinx FPGAs. Two Virtex-E FPGAs are used for Analog Control (AC) and Data Processing (DP) respectively. The DP FPGA also serves as the primary FPGA for external communication. A Spartan-II FPGA (EI) is used for interfacing to provide a 5V tolerant external interface. An XC95144XL CPLD is used to assist in programming the bit stream into the Flash EPROM.

The platform's general configuration consists of four channels that are digitized by four 12 bit A/D converters. The sample rate (maximum of 100 megasamples) of each A/D converter is programmable since it is generated by the FPGA. The digitized signals can be processed by the customer's algorithm implemented in hardware in any of the Xilinx FPGAs. Once the signals have been processed, four 100 MSPS D/A converters can convert them back to analog signals via the Analog Control (AC) Virtex-E FPGA. The processed data may also be sent to the external LVDS data port via the Data Processing Virtex-E FPGA. The data may also be uploaded directly into MatLab for viewing or for further processing via a USB interface. The analog signals are connected to 50 ohm SMA outputs for viewing

Each Virtex-E FPGA has access to an external 256K x 18 ZBT SRAM that can be used for temporary data storage. Each Virtex-E FPGA also has up to 655,360 bits of internal Block SelectRAM. The dedicated analog control Virtex-E FPGA may be accessed by the secondary data processing Virtex-E FPGA via a 100 bit bi-directional local bus.

The external interface Spartan II FPGA (EI) is used to provide a +5V CMOS tolerant 32 bit interface between the Virtex-E FPGAs and other external devices. However, this FPGA could be used for additional processing as determined by the user.

Using the 48 bit external bus interface, the GVA-290 could be configured to have an off-board interface to an external processor such as a TMS320C31 or other Digital Signal Processors. Additionally, the GVA-290 can be configured either by the Multilinx JTAG cable or by the on-board FLASH EPROM. The on-board FLASH EPROM can be programmed through the use of the Multilinx Master Serial connector. The Xilinx FPGAs may also access unused address space in the configuration EPROM by interfacing to the CPLD via either the FPGA local bus or the dedicated 32 bit Spartan-II external interface bus to CPLD bus. For non-specific clock requirements, an external clock source is available.

Ordering Information

This product is available directly from GV & Associates. Please contact them for pricing and more information.

Related Information

Xilinx Programmable Logic

For information on Xilinx programmable logic or development system software, contact your local Xilinx sales office, or:

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