



V5054

30-Port 1394b AS5643 PCI Express FPGA Card

Benefits

- High density 1394b PCIe FPGA Card for SAE-AS5643 aerospace applications and test stands
- Supports transformer-coupled S100/S200/S400 data rates
- A COTS solution optimized for SWaP (size, weight and power)
- Programmable FPGA with a powerful development framework
- Next generation host interface connection bandwidths
- STOF offload for superior timing tolerance and test repeatability
- Wide range of FPGA sizes and memory configuration options

Features

- Thirty transformer-coupled ports (optionally non-transformer-coupled)
- Physical ports are configurable for up to ten different 1394b nodes, with three ports in each node
- Two separate link/application layers and host interface options offered:
 - Open Host Controller Interface (OHCI)
 - Direct DMA with AS5643 hardware offload
- Xilinx Kintex UltraScale FPGA (KU115)
- Supports PCIe Gen3 x 8
- PPS time synchronization with nSec resolution
- Thermal sensors for monitoring card temperature
- Robust FPGA development framework
- Linux and Windows drivers available

Overview

The V5054 is the highest density 1394b PCIe card available on the market. The V5054 has been designed specifically for 1394b AS5643 aerospace application development and test stand purposes.

The V5054 provides thirty front panel transformer-coupled 1394b ports (optionally the V5054 can be provided without transformer-coupled ports). The host interface provided is Gen3 x 8 PCIe.

Two different link/application layer cores are available from New Wave DV pre-loaded on the V5054:

- 1) An industry standard OHCI interface with the New Wave DV addition of hardware-based offload of the AS5643 STOF.
- 2) An AS5643 hardware offload engine providing complete packet formation, ASM label checking, and direct DMA with the host.

For more information on the New Wave DV 1394 FPGA IP cores visit: <https://newwavedv.com/products/ip-cores/1394b-as5643/>.

The thirty front panel ports are perfect for lab environments, emulation environments, or developments where front panel ports are desired.

New Wave DV also offers an optional breakout-panel that cables all 30 ports from the board's high-density connector to a 19-inch rack-mounted 1U panel populated with industry standard 1394b connectors for easy access to and connector strain relief.

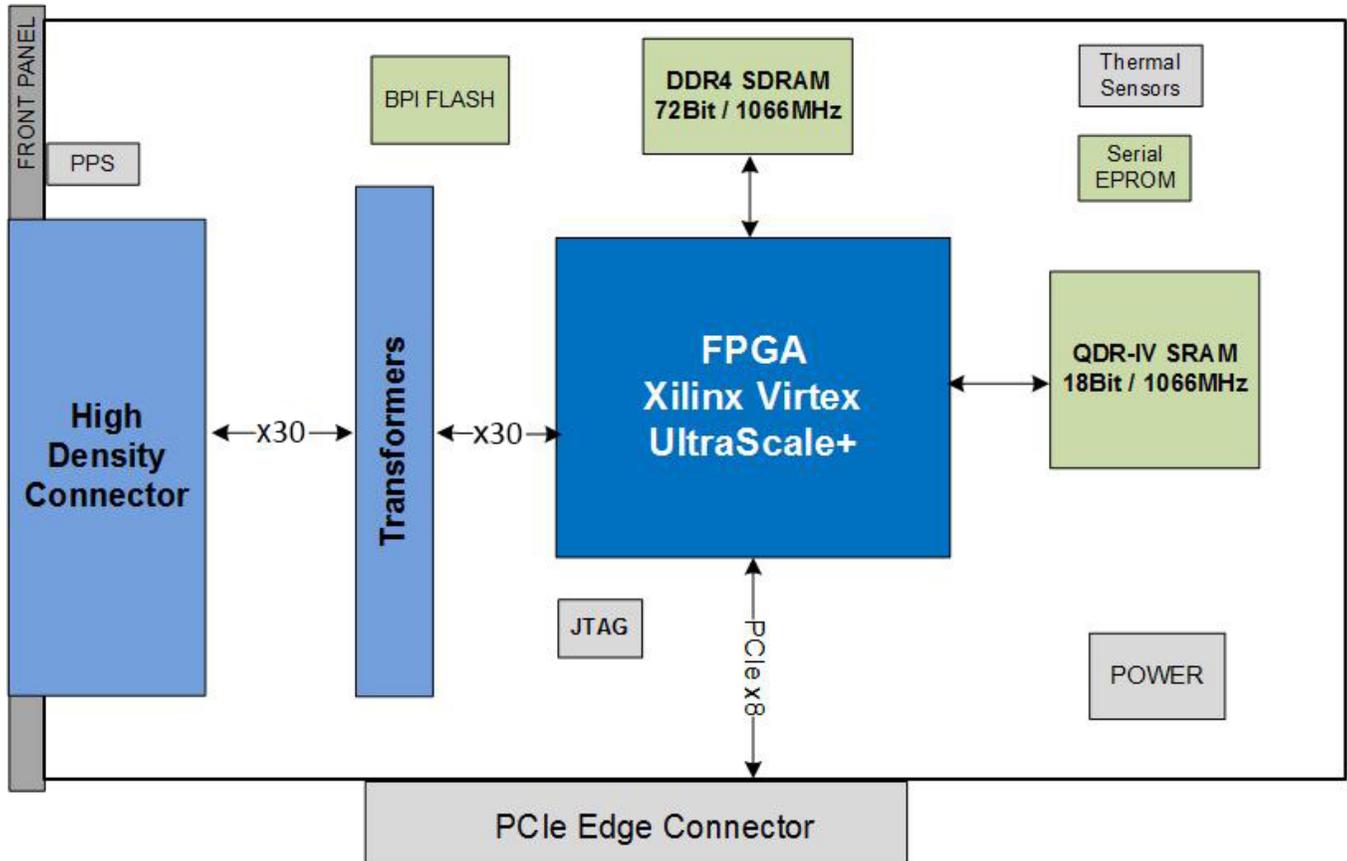


Custom Cable Lengths Available



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> V5054 Block Diagram

Simplified Programmability Framework

The V5054 can optionally ship with a Development Framework, a fully-integrated and flexible toolset that provides the infrastructure necessary to ensure rapid deployment of custom applications. The framework abstracts the details of the protocol and interfaces, memory controllers and host fabric interfaces, thereby reducing the development effort and schedule for designers to implement custom solutions.

Operation Customization

The V5054 is an FPGA-based network card that can be customized to fit your requirements. New Wave provides access to the FPGA for customers to customize, however New Wave can also modify existing cores or develop new cores for your applications. If you have specific networking requirements, New Wave can help you accomplish your goals.

Optional Offload Engines

The V5054 can support the 1394b AS5643 IP Core offloading the entire protocol stack, as well as AS5643 STOF offload. Industry-leading timing tolerance is available with STOF offload enabled.

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Complete Product Support Program

Our customers can attest to our exceptional support. New Wave DV provides an industry-standard warranty on its products, but it is the human factor that makes our support so valuable to our customers. Our team takes the time and effort to ensure a positive customer experience.

Our Commitment

New Wave DV is committed to providing the latest innovations in technology, architectures, and techniques to keep our customers one step ahead of the rest. Our products, complete with the Development Framework, are intended to offer our customers an entirely unique out-of-the-box experience.

Ordering Information

400-05054-00-01: V5054 1394b PCIe FPGA card, 30 front panel transformer-coupled 1394b ports, Xilinx UltraScale KU115 FPGA, 18GB 72-bit DDR4 SDRAM, 144Mbit QDRII+ SRAM, includes 10-node and 3-ports per node 1394b PHY and OHCI PCIe Express Core with STOF offload, default S200 rate (includes S400), Linux software driver

Technical Specifications

INTERFACE

Thirty transformer-coupled 1394b ports on front panel

FPGA DEVICE

Xilinx Kintex UltraScale (KU115)

MEMORY

One bank of 4GB to 18GB 72-bit up to 1066MHz DDR4 SDRAM
One bank of 36Mbit to 144Mbit 18-bit 1066MHz QDR-IV SRAM

FLASH

One 32MB memory for storing a default configuration image

HOST INTERFACE

PCI Express Gen3 x 8

EXTERNAL INTERFACE

32 differential pairs (user-configurable)
PPS Interface for time synchronization with μ second resolution
RS-232 serial interface for debug

THERMAL SENSORS

2 digital temperature sensors

COMPLIANCE

PCI Express Card Electromechanical Specification, Rev 2.0 IEEE FCC 47 CFR Part 15, Subpart B, Class A (USA) IEC 60950-1 (International) RoHS Directive 2002/95EC

DIMENSIONS

111.15 mm height
254 mm length (card)¹

POWER REQUIREMENTS

Maximum 65W (preliminary)

TEMPERATURE

Operating: 0 to 45°C
Storage: -40°C to 85°C

¹ Power connector is optional, for designs that exceed backplane specific PCIe power specifications. A typical straight mating connector will add an additional 10 mm, and bend radius will add an additional 38 mm for total length of 254 mm + 10 mm + 38 mm = 302 mm. Right angle mating connectors are also available. A typical right angle connector would add 5 mm for a total length of 254 mm + 5 mm = 259 mm.

FOR MORE INFORMATION

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