FPGAs Taking Center Stage in Broadcast Applications

Broadcast Design Solutions from Altera

More than ever, FPGAs are taking center stage in broadcast applications. As ASSPs fade to black, FPGAs are meeting performance, power, cost, and time-to-market requirements.

Altera's 28-nm device portfolio is tailored to your broadcast design requirements. In the portfolio, you'll find FPGAs and resources like intellectual property (IP) cores that support single and multichannel format conversions, 4K2K displays, and more. The devices are part of a full solution that includes our Video and Image Processing Suite of IP cores, memory controllers, and hardened IP blocks for protocols including PCI Express®, Display Port, and serial digital interface (SDI).

28-nm FPGAs at a Glance

Device Family	Transceiver Data Rate	Density Range (Logic Elements)	Memory	External Memory	Protocols Supported	Variable-Precision DSP Blocks
Cyclone® V FPGAs	Up to 5 Gbps	25K to 300K	Up to 1,276 M10K memory blocks	Hard memory controllers supporting mobile DDR2, LPDDR2, 400-MHz DDR3 SDRAM	• PCI Express Gen2 x2 with multifunction support (up to 5 Gbps) • 3G-SDI (up to 2.97 Gbps) • SDI SD/HD (up to 2.97 Gbps) • Display Port 8 (up to 2.7 Gbps) • V-by-One (up to 3.75 Gbps)	Up to 406
Arria® V FPGAs	Up to 10.3125 Gbps	75K to 495K	Up to 2,324 M10K memory blocks	Hard memory controller supporting 533-MHz DDR3 SDRAM	• PCI Express Gen2 x4 with multifunction support (up to 5 Gbps) • 3G-SDI (up to 2.97 Gbps)	Up to 1,139
Stratix® V FPGAs	Up to 28.05 Gbps	236K to 952K	Up to 2,660 M20K memory blocks	Soft memory controller supporting 1,066-MHz DDR3 SDRAM	• PCI Express Gen3 x8 (up to 8 Gbps) • 3G-SDI (up to 2.97 Gbps) • 10G-SDI • SDI SD/HD • SFP+ (up to 11.32 Gbps) • V-by-One	Up to 1,963

Video Framework Toolkit

Our video framework toolkit along with 28-nm FPGAs allow you to rapidly build multichannel video format conversion functions and future proof your products for emerging video formats such as 4K and 3D. The kit includes format conversion reference designs, video and image processing functions, and FPGA development kits. The run-time reconfigurable reference designs use highly parameterizable video and image processing functions and configurable software to avoid long compile times.

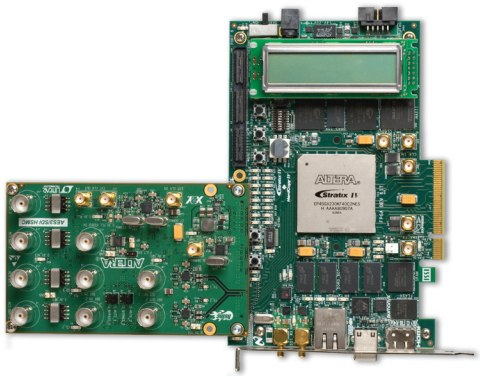
SDI MegaCore Function

Our SDI MegaCore® function lets you quickly implement triple-rate SDI (SD-SDI, HD-SDI, and 3G-SDI) on the same FPGA transceiver pin. The core has built-in auto detect and auto switch features that allow you to switch easily between the three triple-rate SDI standards:

- Support for SD (270 Mbps), HD (1.485 Gbps), and 3G-SDI (2.970 Gbps)
- Audio embed/extract

Development Kits to Simplify Your Video Design Process

Our development kits provide easy-to-use platforms for you to prototype your video designs. Available reference designs include triple-rate SDI loop-through and triple-rate SDI to/from a PCI Express bridge.

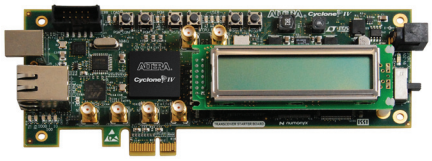


Stratix IV GX Audio Video Development Kit Highlights

- EP4SGX230 FPGA
- PCI Express x8 edge connector and x4 cable connector
- Dual general-purpose I/O high-speed ports
- Single triple-rate SDI I/O port
- SDI daughtercard
- High-definition multimedia interface (HDMI) video output port
- Gbps Ethernet (GbE) port for video and data
- USB 2.0 port
- DDR3, dual-channel QDR II+, and SRAM

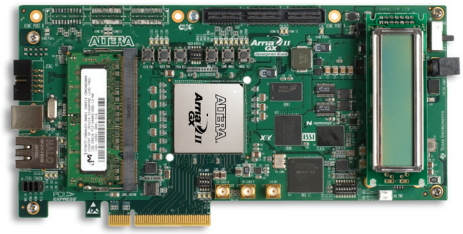
SDI Daughtercard Highlights

- Dual triple-rate SDI I/O ports
  - Includes cable equalizer and driver
- Audio Advanced Encryption Standard (AES) port
- Audio and video clocks and voltage controlled crystal oscillator (VCXO)
- Video sync separator



Cyclone IV GX FPGA Development Board Highlights

- EP4CGX150 FPGA
- PCI Express x4 edge connector
- Two high-speed mezzanine card (HSMC) connectors
- 10/100/1000-Mbps Ethernet PHY with RJ-45 connector
- DDR2 and SSRAM
- SDI daughtercard



Arria II GX Audio Video Development Kit Highlights

- EP2AGX125 FPGA
- PCI Express x8 edge connector
- One HSMC expansion high-speed port
- GbE port for video and data
- USB 2.0 port
- DDR3 and SRAM
- User-definable switches, LEDs, and buttons
- SDI daughtercard

Want to Dig Deeper?

To learn more about how Altera's broadcast design solutions can help you, contact your local Altera® sales representative or FAE, or visit **www.altera.com/broadcast**.

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