

Broadcast Design Solutions from Altera

FPGAs Taking Center Stage in Broadcast Applications

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® (PCIe®), 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 6.144 Gbps	25K to 300K	Up to 1,276 M10K memory blocks	Hard memory controllers supporting mobile DDR2, LPDDR2, 400 MHz DDR3 SDRAM	<ul style="list-style-type: none"> • PCIe 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	<ul style="list-style-type: none"> • PCIe 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	<ul style="list-style-type: none"> • PCIe 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 PCIe bridge.



Stratix V GX FPGA Development Kit

- 5SGXEA7K2F40C2N FPGA
- PCIe Gen3 x8 edge connector
- Dual HSMC general-purpose I/O high-speed ports, for expansion to SDI daughtercard
- Single triple-rate SDI I/O port
- Gbps Ethernet (GbE) port for video and data
- QSFP optical cage
- 72 bit wide DDR3
- QDR II+ and RDRAM II



Stratix V Advanced Systems Development Kit

- Over 1.2M LEs of FPGA resources from dual 5SGXEA7N2F45C2N devices
- 128 Gbps of PCIe Gen3x16 bandwidth
- Over 1500 Gbps total external memory bandwidth: each FPGA has dedicated 192 bit wide DDR3, 36 bit wide QDRII+, and 198 Gbps serial SRAM
- Dual HSMC general-purpose I/O high-speed ports, for expansion to SDI daughtercard
- FMC front-panel general-purpose I/O expansion, for in-server usage with COTS daughtercards such as SFP+, SDI, Ethernet, etc.
- Capable of handling 16x 1080p60 video processing, or 4x 4k UHD, or 8k UHD/Super Hi-Vision



Arria V FPGA Starter Kit

- 5AGXFB3H4F35C5N FPGA
- PCIe Gen2 x8 edge connector
- HSMC general-purpose I/O high-speed port, for expansion to SDI daughtercard
- Single triple-rate SDI I/O port
- High-definition multimedia interface (HDMI) video output port
- GbE port for video and data
- 32 bit wide DDR3 and 36 bit wide SSRAM



Cyclone V GT FPGA Development Kit

- 5CGTFD9E5F35C7N devices
- PCIe x4 edge connector
- Dual HSMC general-purpose I/O high-speed ports, for expansion to SDI daughtercard
- GbE port for video and data
- SDI channel
- 40 bit wide and 64 bit wide DDR3 SDRAMs

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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