



Lower Your Cost and Power Budgets

Video and Image Processing Solutions

Designing next-generation, real-time video processing systems demands lower silicon cost and lower power budgets. Altera's low-power, low-cost FPGA families—with inherently parallel digital signal processing (DSP) blocks and plenty of embedded memory blocks, registers, and high-speed memory interfaces—are ideal for meeting these requirements while providing higher image quality.

To complement the FPGAs, we also provide an award-winning video design framework that can significantly increase your productivity. It includes our full Video and Image Processing (VIP) Suite of intellectual property (IP) cores, video system design tool flow, reference designs, and development kits.

FPGAs Equipped for Low-Cost Video Processing

Our Cyclone® IV FPGA family provides the lowest cost and power for applications requiring 3G serial digital interface (3G-SDI) or PCI Express®. These devices require only two power supplies, so you can simplify your power distribution network and save board cost, board space, and design time. Built with Altera's proven transceiver technology, Cyclone IV GX FPGAs, with up to eight integrated 3.125-Gbps transceivers, offer excellent jitter performance and superior signal integrity.

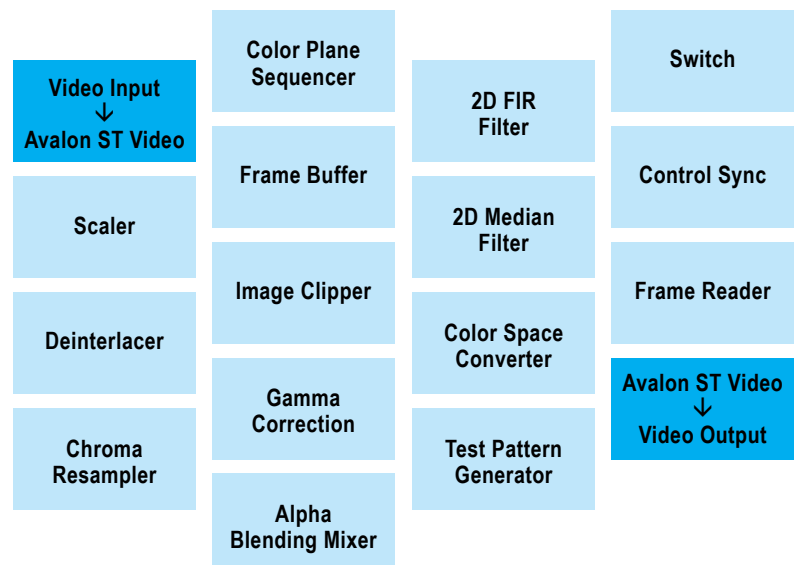
Cyclone IV E FPGAs, with up to 114K logic elements, are ideal for a wide spectrum of low-cost, general logic applications. Extending our low-power leadership, Cyclone IV E FPGAs reduce core voltage, lowering your total power by 25 percent compared to the previous generation.

IP Cores Streamline Design Process

Altera and our partners have developed a variety of reference designs using our award-winning VIP Suite IP cores, along with some custom cores that can help you get off the ground quickly with your design.

All of these cores are pre-tested and verified, and use an open, low-overhead Avalon® Streaming (Avalon-ST) video interface that allows them to be easily connected into a video signal chain. The Avalon-ST interface defines how any type of video data can be broken down into packets of video data and packets of control data.

Video and Image Processing Suite



Tools Simplify and Accelerate Design Process

Get a head start using the Qsys system-integration tool in Quartus® II software. Qsys automates the process of customizing and integrating components, such as IP cores, verification IP, and other design modules with Altera and third-party developer components.

Featured Development Kits

Cyclone IV video and image processing development kits make it easier to design low-cost and low-power FPGA designs:

- The Cyclone IV GX FPGA Development Kit helps you get started in FPGA system-level video designs. Use the kit to develop and test with PCI Express. For additional flexibility, take advantage of more than 30 high-speed mezzanine card (HSMC) connectors for protocols such as HDMI, DVI, SATA, and SDI.
- Available from Terasic, the Multimedia Development Kit for Cyclone IV FPGAs offers an LCD multimedia touch panel and a 5-megapixel digital image sensor module to create multimedia systems. It delivers an integrated platform with hardware, design tools, IP, and reference designs for developing embedded software and hardware platforms in a wide range of video applications.

Cost-Effective Video Development Kits

Development Kit	Reference Design/ Design Example	Altera IP Available	Daughtercard
Cyclone IV GX FPGA	<ul style="list-style-type: none"> • SDI to PCIe® • SDI loopback • HD video upconversion and mixing • 1-channel HD format conversion (Available in a future release) 	VIP Suite, PCIe, Display Port, Nios® II processor, memory controller, USB	DVI, SDI, Display Port, SATA, HDMI, Quad Video, LVDS
Multimedia (featuring Cyclone IV E FPGA)	<ul style="list-style-type: none"> • VIP Suite demo • VIP camera demo • VIP PIP demo • 4-channel multiview demo* 	VIP Suite, Nios II processor, memory controller, USB	DVI, SATA, HDMI, Quad Video, LVDS
Cyclone III FPGA	<ul style="list-style-type: none"> • HD video upconversion and mixing • 4-channel multiview 1080p PIP • Quad video mosaic 	VIP Suite, Nios II processor, memory controller, USB	DVI, SATA, HDMI, Quad Video, LVDS
Arria® II GX FPGA	<ul style="list-style-type: none"> • 2-channel HD format conversion • SDI to PCIe 	VIP Suite, PCIe, Display Port, Nios II processor, memory controller, USB	DVI, SDI, Display Port, SATA, HDMI, Quad Video, LVDS

Find Design Examples at the Altera Video Framework Wiki

On the Altera Video Framework Wiki, you can read or contribute how-to articles, design examples, checklists, and more. Find the latest video topics including a high-definition video reference design. Visit the Altera Video Framework Wiki today at: www.alterawiki.com/wiki/videoframework.

Want to Dig Deeper?

For more information about how Altera's video and image processing solutions can support your broadcast applications, contact your local Altera sales representative or FAE, or visit: www.altera.com/video.

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