

**ALTERA**



## Arria GX FPGAs

**Connect.**

With the right connections, you can seamlessly bridge point A with point B—and focus on more critical things, like your application design. That's the idea behind Altera® Arria™ GX FPGAs. They're just right for linking with PCI Express, Gigabit Ethernet, and Serial RapidIO™ protocols. Not only that, they're also perfect for coprocessing applications.

Make the right connections with Arria GX FPGAs. And turn your unique ideas into differentiated products—swiftly, smoothly, and cost-effectively.

# The right price-performance mix for your

Who can afford long design cycles due to timing closure or signal integrity issues? More than ever, you need to design efficiently and get to market sooner rather than later. We developed our newest low-cost FPGAs, the Arria GX family, specifically for applications requiring support for three mainstream serial interface protocols—the PCI Express, Gigabit Ethernet, and Serial RapidIO standards.

With its attractive balance of price and performance, you'll get the value you need and the design efficiency your engineering team craves. Since we developed Arria GX FPGAs with our proven Stratix® II GX transceiver technology, risk is one thing you won't have to worry about.

Bridge PCI Express, Gigabit Ethernet, or Serial RapidIO protocols to your legacy devices and modules. Or, use Arria GX FPGAs as coprocessors to new CPUs or digital signal processing (DSP) devices with serial interfaces. For these popular protocols or your coprocessing needs, you'll enjoy a fast path to product development for high-volume, transceiver-based applications.



## Inside Arria GX FPGAs

Our Arria GX FPGA family consists of five members supporting serial data rates of up to 2.5 Gbps. The devices come with:

- Up to 90,220 logic elements (LEs)
- Up to 12 transceiver channels
- Support for SDR, DDR, and DDR2 memory interfaces
- 3 different-sized, robust flip-chip packages

## Optimal signal integrity

The combination of our proven transceivers and robust flip-chip packages equals best-in-class signal integrity for cost-optimized, transceiver-based FPGAs. With Stratix GX and Stratix II GX FPGAs, we established our leadership in reliable, high-performing transceivers. The Arria GX family continues this tradition of excellent jitter performance, featuring 8b/10b encoder/decoders and word detection and alignment circuitry.

## Unmatched support infrastructure

Since 1999, we've had teams of top engineers dedicated to functions critical to the development of Arria GX FPGAs—transceiver R&D, building related intellectual property (IP) cores, and developing related applications. Dozens of high-speed transceiver experts in our field applications engineering (FAE) organization are helping to seamlessly integrate Altera's transceiver technology into our customers' design projects. Speaking of our customers, it's our standard business practice to gather and use your feedback to define our next-generation products.

## Comprehensive software tools

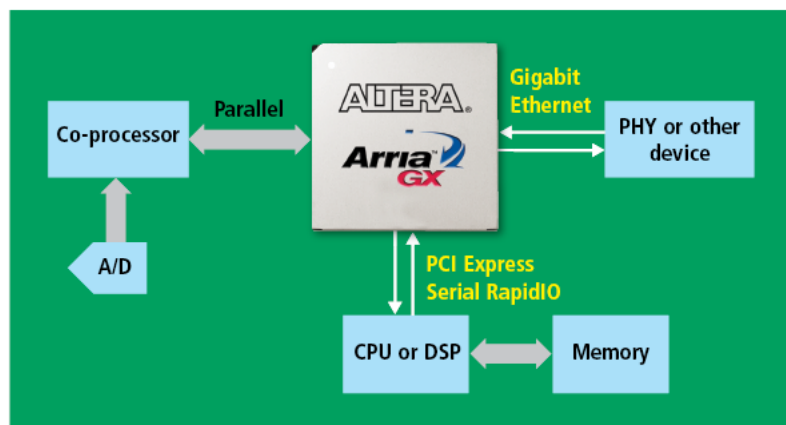
We understand that the device is part of a bigger picture. To move quickly from concept through development and production, you also need comprehensive software tools. Our industry-leading Quartus® II design software is paramount in performance and productivity. We also offer, with our partners, an array of off-the-shelf IP cores that you can drop into your designs. Pre-optimized and configurable, these "building blocks" decrease development time and costs. Along these lines, we also offer an inexpensive development kit that will shorten your design process.

## Reliable production-ready supply

We deliver on our commitments, and with Arria GX FPGAs, it's no different. Start designing right away, and get a jump on your competition.

# applications

## A typical Arria GX bridging application



This example of an Arria GX application shows the FPGA acting as a bridge between two mainstream serial interface protocols and a parallel legacy module.

### Three protocols, one low-cost design path

Arria GX FPGAs are especially useful in two types of applications—endpoints and bridging. For example, as an endpoint, the FPGAs can complement DSP devices, adding computational capabilities beyond the reach of standard processors. WiMAX applications, for instance, call for this type of parallel fabric, benefiting from the data transmission speed that a transceiver-based FPGA can deliver. In a bridging application, where devices with dissimilar interfaces need to talk, you can use Arria GX FPGAs to connect legacy devices or modules to devices supporting the PCI Express, Gigabit Ethernet, or Serial RapidIO standards.

#### PCI Express (x1, x4)

The interface of choice in many applications, driven by the PC market explosion, PCI Express is becoming pervasive in the digital design domain. Single-board computers, for example, are the foundation of numerous systems in markets such as medical imaging, storage, and industrial control.

#### Gigabit Ethernet

Building on the ubiquitous Ethernet protocol, Gigabit Ethernet is increasingly popular in markets such as wireline and industrial. As bandwidth-demanding applications continue their surge—even appearing in the small office-home office (SOHO) market—the use of Gigabit Ethernet looks to become more widespread.

#### Serial RapidIO (x1, x4)

Most popular DSP devices include Serial RapidIO interfaces. As FPGAs continue to demonstrate their value in offloading complex tasks where parallel computation is critical, there will be more designs using an FPGA as a coprocessor to a DSP device. This should be especially true in markets like imaging and wireless communications.

### Design with confidence

An optimal level of I/O and transceiver performance, a lower total cost of ownership, and support for three mainstream serial protocols—that's the value behind Arria GX FPGAs. And since these devices come with excellent signal integrity, comprehensive software tools, and an extensive support infrastructure, you can design productively without the risk or compromise that comes with less proven solutions.

**Get connected**  
with Arria GX FPGAs  
and quickly turn your design concepts  
into **profitable**  
**applications.**

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