

# Programmable logic, tools, IP, and partners **Designing military DSP applications**

Radar, electronic warfare, secure communications, electro-optics, intelligence—an array of military applications can benefit from the digital signal processing (DSP) capabilities of programmable logic. Electronic sensors at the core of these systems continue to evolve, requiring more DSP functionality and integration.

#### 40-nm Stratix<sup>®</sup> IV FPGAs:

- More than 700-GMAC/s **DSP** performance
- 200 sustained GFLOPs for matrix multiplication

To enable your systems to perform operations in parallel on data streams, while also meeting power, weight, space, complexity, and cost challenges, design with Altera® programmable logic devices. Our devices meet a variety of price/performance requirements.

By doing the job of tens or even hundreds of stand-alone DSP processors, a single FPGA can substantially lower bill of material (BOM) costs as well as power consumption. We also offer a variety of intellectual property (IP) "building blocks" that can further accelerate your design cycle.



Military sensor solutions		
Focus	Offering	Description
Silicon	<ul> <li>Stratix IV GX FPGAs</li> <li>Arria<sup>®</sup> II GX FPGAs</li> <li>HardCopy<sup>®</sup> IV ASICs</li> <li>Cyclone<sup>®</sup> series FPGAs</li> </ul>	Altera has a spectrum of devices capable of performing critical military DSP functions
Tools and IP	<ul> <li>DSP Builder Advanced Blockset</li> <li>Extensive floating-point library</li> <li>Floating-point optimization</li> <li>Video and image processing IP</li> <li>Embedded processing</li> </ul>	End-to-end tool flow supports demanding military DSP requirements
Customer relationships	<ul><li>Altera DSP technology investment focus</li><li>Altera military DSP support position</li></ul>	Altera has investment strategy for military DSP customers
Partnerships	The MathWorks     Mentor Graphics®     Xtreme Data     SRC     Bittware	Altera is engaged with partners for system solution development

# Technology for the long haul

As part of our enhanced commercial off-the-shelf (E-COTS) initiative, we deliver devices that meet your requirements for anti-tampering, end-of-life protection, military temperatures, rugged operating environments, single event upset (SEU) mitigation, and more.

We integrate customer feedback into next-generation products. We also have a long-term roadmap that you can map to your design proposals.

# **Design tools and resources**

Altera offers the industry's most comprehensive portfolio of tools for implementing a high-performance DSP design in our FPGAs:

- DSP Builder—a MATLAB/Simulink-based system-level design tool in Quartus<sup>®</sup> II design software with utilities that automatically manage FPGA synthesis, compilation, programming, and debugging
- New DSP Builder Advanced Blockset—a timing-driven Simulink synthesis utility that automates a multi-channel design flow and performs datapath time division multiplexing
- SOPC Builder—a Quartus II software tool that lets you build and evaluate systems at the block level quickly and easily
- Floating-point library cores (single precision and double precision)—IEEE 754-compliant cores for functions including matrix multiplication, logarithm, exponential, inverse, and inverse SQRT calculations

- Video and Image Processing Suite MegaCore\* functions building blocks for functions including gamma correction, frame buffer, deinterlacer, scaler, chroma resampler, and alpha blending mixer
- Embedded processor portfolio, including a DO-254-compliant version of the Nios<sup>®</sup> II soft-core processor, the ARM Cortex-M1 processor, and the Freescale V1 ColdFire processor

#### **Customer support**

Working with Altera, you'll have a customer support plan carried out by dedicated DSP technology and military specialists who can help with:

- Proposal generation
- Algorithm development
- Hardware/software development
- Test and integration
- Service and sustainment

## **Ready to get started?**

To evaluate our device DSP capabilities, purchase a Stratix IV GX FPGA Development Kit (part number DK-DEV-4SGX230N-C2) at **www.altera.com/devkits**.

## Want to dig deeper?

For more information about how Altera's military DSP solutions can help you with your designs, contact your local Altera sales representative or FAE, or visit **www.altera.com/military**.

Altera Corporation 101 Innovation Drive San Jose, CA 95134

USA www.altera.com

创口中的创

#### Altera European Headquarters

Holmers Farm Way High Wycombe Buckinghamshire HP12 4XF United Kingdom Telephone: (44) 1494 602000

#### Altera Japan Ltd.

Shinjuku i-Land Tower 32F 6-5-1, Nishi-Shinjuku Shinjuku-ku, Tokyo 163-1332 Japan Telephone: (81) 3 3340 9480 www.altera.co.jp

#### Altera International Ltd.

Unit 11-18, 9/F Millennium City 1, Tower 1 388 Kwun Tong Road Kwun Tong Kowloon, Hong Kong Telephone: (852) 2945 7000 www.altera.com.cn

Copyright © 2009 Altera Corporation. All rights reserved. Altera, The Programmable Solutions Company, the stylized Altera logo, specific device designations, and all other words and logos that are identified as trademarks and/or service marks are, unless noted otherwise, the trademarks and service marks of Altera Corporation in the U.S. and other countries. All other product or service names are the property of their respective holders. Altera products are protected under numerous U.S. and foreign patents and pending applications, mask work rights, and copyrights. Altera warrants performance of its semiconductor products to current specifications in accordance with Altera's standard warrantly, but reserves the right to make changes to any products and services at any time without notice. Altera assumes no responsibility or liability arising out of the application or use of any information, product, or service described herein except as expressly agreed to in writing by Altera. Altera customers are advised to obtain the latest version of device specifications before relying on any published information and before placing orders for products or services. March 2009; PDF SS-01056-1.0