

Part of our Enhanced COTS PLD Initiative

Cyclone III FPGAs advancing military and aerospace applications

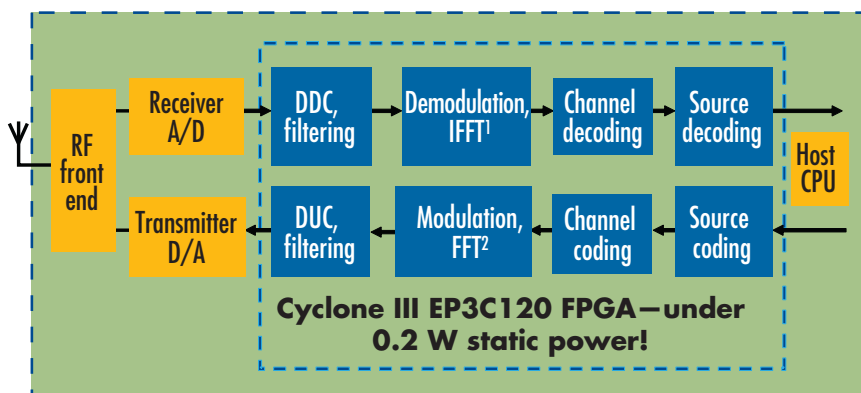
Cyclone III 65-nm FPGAs deliver 1/10th the static power of competing FPGAs and support waveform integration in under 0.2 W

Altera® Cyclone® III FPGAs are your unparalleled commercial off-the-shelf (COTS) solution for meeting and often exceeding extreme battlefield scenarios where size, weight, and power (SWaP) are an issue. Because Cyclone III FPGAs give you an unprecedented combination of low power, high functionality, and low cost, they enable next-generation military applications and put you on the leading edge of military and aerospace design. Design with Cyclone III FPGAs—part of Altera’s Enhanced COTS PLD Initiative— to deliver an in-field advantage.

Why Cyclone III FPGAs are the ideal fit

Feature	Advantage
Low power	Consumes under 0.2 W typical static power at junction temperature of 85°C at the highest density
Abundant memory at every density	Up to 4 Mbits of embedded memory and a high memory-to-logic ratio for all members
Density	Up to 119K logic elements (LEs)
Digital signal processing (DSP) multipliers	Up to 288 embedded 18-bit x 18-bit multipliers at up to 260-MHz performance to process DSP-intensive algorithms
Nios® II embedded soft processor	The world’s most versatile embedded soft processor, ideal for implementing a low-cost microcontroller
Small form factor support	.5-mm spacing MBGA packages, bare die support, and custom multi-chip module support
Industrial temperature support	Industrial and extended temperature support for harsh operating environments from -40°C to 125°C.
SEU mitigation	Dedicated cyclic redundancy check (CRC) circuitry ensures data integrity and is one of the best techniques for mitigating single event upset (SEU) problems
End of life protection	Altera keeps its devices in production longer, reducing customers’ obsolescence risk management volume

Software defined radio example



¹ IFFT = Inverse fast Fourier transform, ² FFT = fast Fourier transform

You can implement the major DSP portion of this software defined radio (SDR) design in a Cyclone III EP3C120 FPGA and still have enough head room to support today’s waveforms as well as next-generation waveforms. While it’s critical to meet performance needs, you must balance size, weight, and power consumption to extend battery life and reduce the burden of packing equipment. With up to 119K LEs and 4 Mbits of memory, only Cyclone III devices provide enough system integration capabilities while keeping static power consumption under 0.2 W at 85°C junction temperature.

Altera Enhanced COTS PLD Initiative for military and aerospace:

- Enhanced feature sets
- Benefits of industry-leading commercial solutions
- No extra cost

Cyclone III FPGAS—military resources

Development kits	Description
Cyclone III FPGA Starter Kit	This FPGA starter kit is ideal for a quick "out-of-the-box" evaluation experience. Features the EP3C25 device and dedicated circuitry to measure static and dynamic power consumption during operation.
Cyclone III Development Kit	Complete solution to design and evaluate using Cyclone III FPGAs. Includes the largest EP3C120F780 device and dedicated circuitry to measure static and dynamic power consumption during operation.
Cyclone III DSP Development Kit	Design and evaluate DSP designs using Cyclone III FPGAs, including analog-to-digital (A/D) and digital-to-analog (D/A) converters and the EP3C120F780 FPGA.

Tools and support	Description
Reference designs	Reference designs from Altera and partners for common wireless communications systems components such as scalable orthogonal frequency-division multiple access (OFDMA) reference design, digital down conversion (DDC) and digital up conversion (DUC), and bridges to DSP devices.
DSP functions	Library of intellectual property (IP) cores from Altera and partners including: filtering, modulation, demodulation, transforms encryption, decryption, correlation, error detection, error correction, signal generation, synchronization, and video and image processing.
Nios II embedded processor	The world's most versatile processors supported by easy-to-use development tools and a portfolio of FPGA development kits.
Quartus® II design software	Number one in performance and productivity for CPLD, FPGA, and structured ASIC designs, this design software features an integrated development environment that accelerates system-level design and offers seamless integration with leading third-party software tools and flows.

Video-on-demand	Description
Addressing SWaP Constraints in Military and Aerospace Applications	Learn how you can use the newest 65-nm FPGAs to reduce size, weight, and power in SWaP-constrained applications to take new platforms to the battlefield and air.

White Papers

Designing With Confidence for Military SDR Production Applications (PDF)	Describes how FPGAs can enable new SDR systems with smaller footprints, lighter weight, and smaller batteries.
Architecture and component selection for SDR applications	Explores an optimized architecture for typical SDR applications.

Want to dig deeper?

To learn more about accessing these resources and how Cyclone III FPGAs can help you in your military and aerospace applications, contact your local sales representative or FAE today, or visit www.altera.com/Cyclone3.

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