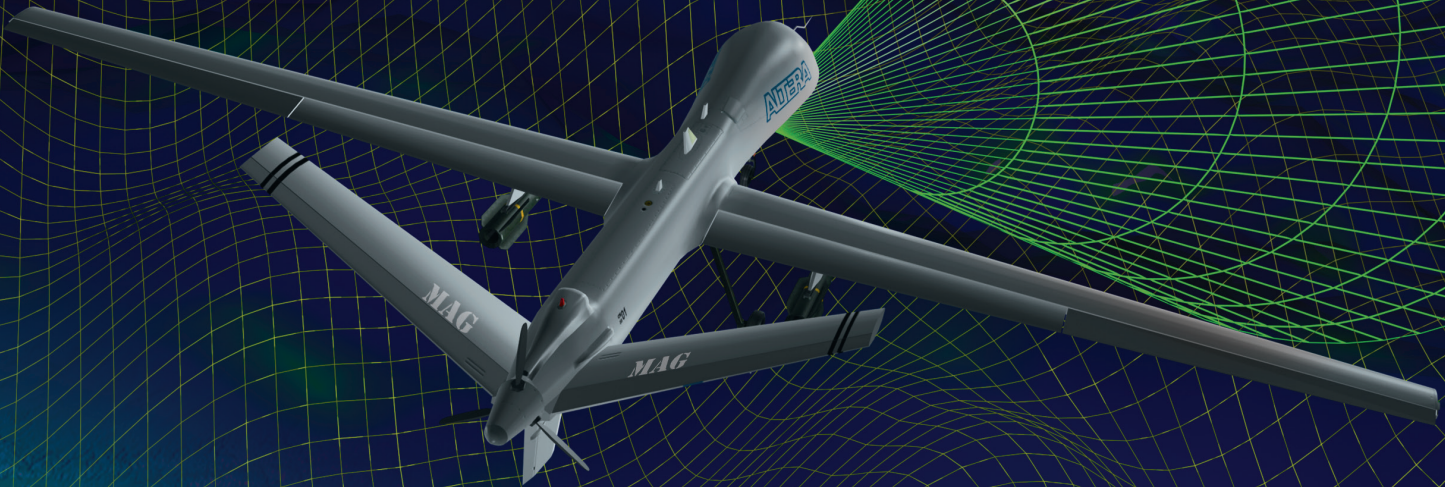


MILITARY TEMPERATURE ARRIA 10 FPGAs AND SoCs

Explore, Acquire, Analyze, Decide.
Deliver Sooner, Better.



ADTERA®
MEASURABLE ADVANTAGE™

Altera's Military Temperature and High-Reliability Product Support

Altera Products Supporting Military Temperature and Leaded Solder Balls

Altera offers Military temperature variants of the following products for order today: Stratix®, Stratix II, Stratix III, and Stratix IV FPGAs. Order details can be found at www.altera.com/devices/common/military/mil-temp.html

Altera provides leaded and high reliability versions of all product families. Contact your Altera representative for an exact list of ordering codes that support leaded solder balls.

Single-purpose embedded electronics design is the old way of doing business. Today's military platforms rely on design re-use, cross-platform design, and multiple embedded processing element variants. This means that the selection of an FPGA or other embedded platform needs to be based on a forward-looking strategic plan for platform extensibility into land, air, sea, space, and cyber space.

Arria® 10
FPGAs and SoCs

Altera® FPGAs have long supported military temperature and leaded product variants to help support this platform extensibility. With Arria® 10 FPGAs and SoCs, Altera is providing our military temperature qualification plans and product family support earlier in product characterization and qualification to help support your platform planning process. This enables you to make the hard architectural decisions and cross-platform migration plans to get the most out of your platform design.

Using Military Featured FPGAs Across Multi-Platform Designs



Altera Legacy of Military Temperature and Leaded Device Support

Altera has supported multiple defense customers in specifying, qualifying, and in some cases redesigning product packaging in order to support extended military temperature ranges of -55°C to 125°C. Devices are qualified for a subset of transceiver protocols, as documented in military temperature application notes.

All of these devices are pin compatible to commercial and industrial temperature versions of the product, enabling extensible platform design across a variety of operating environments.

All device testing, screening, and qualification occur within Altera Corporation. This fact, coupled with Altera's proven superior product longevity over competing commercial and military FPGAs, provides your system the maximum assurance of long term product support and product longevity.

Additional Features of Altera FPGAs for Military Systems:

- Single-event upset (SEU) detection and mitigation automatically and continually monitors FPGA configuration RAM for SEU or other errors
- Extended Life Cycles: Altera historically provides the longest life cycles of all major FPGA providers, reducing costly end-of-life (EOL) risks to program
- Leaded Packages: Altera provides leaded package options across nearly all product families
- Reliable Supply Chain: Altera maintains a reputation for robust and reliable supply chains
- AQEC Compliance: Altera is part of the Aerospace Qualified Electronics Components (AQEC) working group and previous families hold GEIA-STD-0002-01 certifications
- DO-254 Compliance Solutions: Combined with certified Nios® II soft embedded processors and third party assessment partners, Altera has a long history of use in DO-254 applications
- Advanced Security Features: Altera has a legacy of security features in all FPGA product families to include bitstream encryption and authentication, anti-tamper and anti-cloning features, and now secure boot and code authentication for Arria 10 SoC ARM® Cortex®-A9 processors

Availability and Lead Times

Because all military temperature and leaded Altera products are produced in-house, lead times are considerably lower than competing defense-grade FPGA products. For legacy products (Stratix IV and prior), lead times can be as little as 10 weeks for fully military temperature qualified devices.

Stratix V military temperature devices will have lead times comparable to existing commercial and industrial temperature devices, and designs with military temperature Stratix V devices is available beginning in Quartus® II software v14.1.

Arria 10 FPGAs and SoCs are characterized and qualified in military temperature versions in parallel with the roll-out of the extended and industrial versions of the product. Designers can begin designs at full military temperature beginning in Quartus II software v15.0, with device availability varying by device density in 2015. Contact your Altera representative for additional details.

New Military and Leaded Device Support for Arria 10 FPGAs and SoCs

Family	Device	Density (LEs)	Package	Estimated Availability
Arria 10 FPGA	10AX016C	160K	U484 – 19x19 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 FPGA	10AX022C	220K	U484 – 19x19 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 FPGA	10AX016E	160K	F760 – 29x29 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 FPGA	10AX022E	220K	F760 – 29x29 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 FPGA	10AX048E	480K	F760 – 29x29 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 SoC	10AS048E	480K	F760 – 29x29 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 FPGA	10AX048K	480K	F1152 – 35x35 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 SoC	10AS048K	480K	F1152 – 35x35 mm	Estimated Q1 2016, and Quartus II software v15.0
Arria 10 FPGA	10AX057K	570K	F1152 – 35x35 mm	Estimated Q4 2015, and Quartus II software v15.0
Arria 10 FPGA	10AX066K	660K	F1152 – 35x35 mm	Estimated Q4 2015, and Quartus II software v15.0
Arria 10 FPGA	10AX057K	570K	F1517 – 40x40 mm	Estimated Q4 2015, and Quartus II software v15.0
Arria 10 FPGA	10AX066K	660K	F1517 – 40x40 mm	Estimated Q4 2015, and Quartus II software v15.0

Military temperature Arria 10 FPGAs and SoCs will be characterized over the full temperature range of -55°C to 125°C ambient temperature, including device configuration at both temperature extremes. All devices will be initially offered in leaded packaging. Supported interfaces will include GigE and 10GigE, Altera's SerialLite III up to 12 Gbps, JESD204B up to 12 Gbps, and Serial Rapid I/O® (SRIO) Generations 1 and 2. Other protocols can be characterized and tested upon customer request.

Arria 10 FPGA will support external memory interfaces as well at the full military temperature range, including DDR3, DDR4, RLD RAM 3, QDR IV, and LPDDR3. Final interface data rates supported will be published upon completion of characterization, but Altera can provide target clock rates to qualified customers. Additional memory interface standards can be characterized and tested upon customer request.

Arria 10 FPGA/SoC, Full Extended/Industrial Temperature Family

Logic Elements	Tranceivers	Variants	Memory	Packages	Application
160K	6-12	GX, SX	9Mb	19 mm, 27 mm, 29 mm	Battery Power, Soldier Radio
220K	6-12	GX, SX	11Mb	19 mm, 27 mm, 29 mm	Module, Soldier Radio
270K	12-24	GX, SX	15Mb	27 mm, 29 mm, 35 mm	SDR Waveform and Security
320K	12-24	GX, SX	17Mb	27 mm, 29 mm, 35 mm	SDR Waveform and Security
480K	12-36	GX, SX	28Mb	29 mm, 35 mm	Multichannel SDR
570K	24-48	GX, SX	35Mb	35 mm, 40 mm	Multichannel SDR
660K	24-48	GX, SX	42Mb	35 mm, 40 mm	Multichannel SDR, High-Rate Data Encryption
900K	24-96	GX, GT	47Mb	35 mm, 40 mm, 45 mm	High-Rate Data Encryption
1150K	24-96	GX, GT	53Mb	35 mm, 40 mm, 45 mm	High-Rate Data Encryption

Learn More About Military Temperature Testing and Qualification

A profile of existing Altera products that have been qualified for military temperature ranges can be found at:

www.altera.com/devices/common/military/mil-temp.html

This page include product qualification statements, application notes, and ordering codes for existing products, and forward ordering and pin compatibility design information for the Stratix V and Arria 10 military temperature qualified products.



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