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Choosing A 3.3V CPLD?
"ARM" Yourself…

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Leading digital system manufacturers are rapidly adopting 3.3V components for higher performance, lower costs, lower power, and higher system reliability. With many new 3.3V CPLD families being introduced, the choices can seem confusing and overwhelming. To simplify your decision, "ARM" yourself with the three most important criteria when choosing a new 3.3V CPLD family: **Architecture, Reliability,** and **Manufacturing-friendliness.**

Architecture

CPLDs are commonly used in state machine and control applications, and they are often used to implement the last design fixes before board production. As such, they need the architectural flexibility to adapt to last minute changes without pin assignment changes. For maximum protection against unexpected design iterations, the architecture should have superior pin-locking characteristics and excellent logic resource allocation.

ARCHITECTURE

RELIABILITY

MANUFACTURING-FRIENDLINESS

You should look for superior switch matrix routability, wide block fan-in, an abundance of clocking options, and flexible macrocell capability. This will give you the utmost flexibility to make those last-minute changes without reworking your entire board.

Reliability

Device reliability is a critical issue, yet many CPLD manufacturers have not kept up with the latest advances. The reliability of CPLDs is a large part of overall system reliability for several reasons:

- CPLDs are being programmed and tested within the system instead of being externally programmed and tested prior to board assembly. Thus, any programming failure involves not only the device cost but also expensive board rework costs as well.

- Leading-edge manufacturers are continuing to increase the operating life of new digital systems. This puts a strain on older CPLD technologies developed for a system life of less than 10 years.

- More systems are incorporating field upgrade capabilities to prolong system life. Because in-system programming is done under variable field conditions, programming reliability is critical.

You should look for a CPLD family that offers the highest level of programming reliability and data retention, to ensure that your designs will continue to work under any conditions. Flash technology currently offers the highest reliability, with an endurance rating of 10,000 program/erase cycles and 20 years data retention. Most older technologies can offer only 100 cycles and 10 years of data retention. Fortunately, the new Flash CPLD technologies can easily support increased programming reliability levels with no additional cost.

Manufacturing-friendliness

Working prototypes do not provide sales dollars until they are produced and sold. CPLDs enable rapid test development and production release, which makes industry-standard, JTAG, in-system programming support invaluable. The IEEE Std 1149.1 (JTAG) interface is the most popular method for in-system programming, because it is supported by the most CPLD and FPGA vendors. Full conformance to the JTAG standard, enables suppliers of in-system programming and test tools to easily support your future designs.

For full compatibility with third party in-system programming suppliers, you should look for full JTAG Boundary-Scan test capability and JTAG in-system programming interface.

The FastFLASH XC9500XL Advantage

The XC9500XL 3.3V CPLD family uniquely excels in all three "ARM" criteria, and offers the highest level of programming reliability in a JTAG-compatible, in-system programmable family. The XC9500XL family features:

- The most flexible architecture

- Wide 54-input function blocks*

- Up to 90 product-terms per output*

- Three global clocks, with local inversion capability

- Immunity from all power supply sequencing problems

- Compatibility with 5V, 3.3V, and 2.5V signals

- Highest reliability rating

- 20 year data retention*

- 10,000 endurance cycles*

"...you can rest assured that your designs will remain trouble free."

- Full IEEE Std 1149.1 (JTAG) test and programming

- The most complete Boundary-Scan support with eight instructions*

- JTAG supported in-system programming instructions.

Conclusion

Arm yourself with the XC9500XL family for all your 3.3V CPLD needs, and you can rest assured that your designs will remain trouble free. ⚡

These are the highest available in the 3.3V CPLD industry.

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