

FPGA Industry Bets on Immortality

Martin Hart
TopLine Corporation

THE RESPONSIBILITY OF PROVIDING timely delivery of Field Programmable Gate Arrays (FPGA) for use in warfighters and space applications is entrusted to a relatively small number of civilians in the industrial base. The entire supply chain relies on an uninterrupted supply of solder columns, the last step in the manufacture of aerospace and defense grade LGA packaged FPGA components.

Betting on Immortality

Decision makers in the supply chain are betting on the immortality of a single source subcontractor that provides 90% of America's solder columns. Simply stated, the defense establishment is placing a high stakes gamble that one subcontractor will be in business 5 years from now, or even 30 years from now. Should one assume that the Department of Defense agrees with decision makers in the industrial base?

Risk Analysis

Let's analyze the odds of this wager. Firstly, it is helpful to review some unclassified information available in the public domain.

Fact 1. Less than 100,000 aerospace and defense FPGA devices are produced annually that require solder columns to connect the FPGA device package to the PC board.

Fact 2. Solder columns perform a critical function to reduce stress on the FPGA device and assure resiliency (operational longevity in rugged environments) of the device within black-box systems. These ruggedized FPGA devices can not operate without solder columns. In other words, there is a risk that the supply chain can come to a halt should solder columns suddenly become unavailable.

Even though 100,000 devices may not

seem significant, they are nonetheless the primary critical devices that are required to keep warfighters flying and rockets launching.

At the time of this writing, only one subcontractor (Six Sigma) is certified by the Defense Logistics Agency (DLA) to perform solder column attachment services in the United States.

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It may take as long as a 3-year process for FPGA device makers to certify additional vendors to perform column attachment services on defense and space grade FPGA components.

The controlling owner of America's single-source column vendor is quickly approaching the age that most people are considering to retire.

Even if retirement is not in his plans, actuarially speaking, it is a high stakes bet to assume America's sole column attachment vendor will be operational 20 years from now.

Most manufacturers of defense and aerospace grade FPGA devices are

satisfied with relying on one-supplier and have not taken steps to qualify an alternative supplier of column attachment services.

Civilian managers within the supply chain have decided not to qualify alternative suppliers of column attachment services.

It appears that no U.S. Government agency, such as the Department of Defense, has a policy in place that creates incentives for chip makers to qualify alternative suppliers of column attachment services.

Consequences of Inaction

The author predicts that before the end of this decade, there could be End of Life (E.O.L.) announcements by chip makers whose FPGA devices will no longer be available with solder columns. The onset of such an event will put the defense and space industry into a tailspin.

This scenario should be disturbing to thousands of customers who rely on an uninterrupted supply of Aerospace and Defense grade FPGA devices with solder columns.

Normally, the loss of just one supplier in the supply chain can be covered by another supplier providing a similar product or service.

Sadly, today there is no industry-wide Plan "B" solution to continue delivering FPGA devices with columns in the event of a loss of the nation's solely certified provider of column attachment services.

Conclusion

To reduce risk of a formidable collapse of warfighter and space missions that rely on FPGA components with solder columns, steps should be taken by the Department of Defense to incentivize chipmakers to engage and certify alternative subcontractors for column attach services before disaster actually strikes. ♦