

Does the FPGA Industry Face Peril? Pt. VI

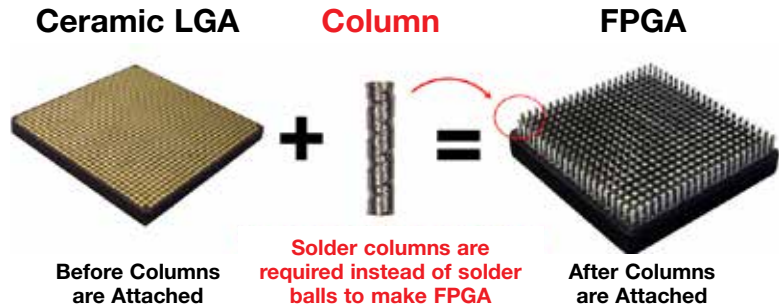
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PART V OF THE FALL 2020 MEPTEC Report titled "Call to Action" cited that multiple subcontractors are queued and ready to provide column attachment services for aerospace and defense grade Field Programmable Gate Array (FPGA) components. The benefit of that capability may not be immediately mobilized. Let's now examine a potential new risk to defense grade and radiation hardened (RADHARD) FPGA devices arising from the acquisition of XILINX by AMD.

AMD Acquisition of XILINX has Unintended Consequence: The Potential to Disrupt World Peace

XILINX provides roughly half of the Free World's defense grade FPGA devices, including RADHARD FPGA for aerospace. Typically, defense grade and RADHARD FPGA are built to survive harsh environments. They are generally ceramic packages with solder column terminals, called Column Grid Arrays (CGA), rather than Ball Grid Arrays (BGA) using solder ball terminals. The total market for rugged, defense grade and RADHARD FPGA devices is tiny compared to Commercial Off-the-Shelf COTS devices. At the time of this writing, AMD has announced its acquisition of XILINX. Suddenly the continuing supply of aerospace and defense grade FPGA becomes uncertain. Here's why:

AMD has publicly cited reasons for acquiring XILINX to strengthen its combined offering of high performance computing for data centers. AMD said that it expects to achieve operational efficiencies of \$300 million within 18 months after closing the transaction primarily based on synergies in costs of goods sold, shared infrastructure and through the streamlining of common areas. That's fancy talk for AMD's intent to offer early retirement, scale-back redundant operations, lay-off employees,



and possibly shut down unprofitable product manufacturing. The ramifications of AMD's acquisition of XILINX will become clearer in 2021, as key managers and technical staff most familiar with defense products take early retirement from XILINX, leave the industry, or seek greener pastures with competitors. The erosion of know-how will also contribute to increased risk in the continuation of supply within the defense and aerospace component sectors. Rest assured that after the acquisition is completed, AMD will focus on ferreting out and possibly eliminating divisions and teams that do not fit the combined entity's vision.

The aerospace and defense product line most likely will not fit AMD's future vision. The defense and RADHARD FPGA product group is burdened with costs and complexity to comply with the exacting requirements of the Defense Logistics Agency (DLA) which regulates and certifies products before being approved to be on the Qualified Manufacturer List (QML-38535). AMD may scale back or spin-off its line of defense related products. There is a potential to disrupt downstream customers who rely on defense grade FPGA for black box builds and systems that keep warfighters flying and warships sailing if AMD elects to reduce costs by exiting the military products market.

Extenuating Circumstances

A secret that is hiding in plain sight is that all major manufacturers of aerospace and defense grade FPGA components rely today on a single source subcontractor

to provide copper wrapped column attachment services. This is the final step in assembling FPGA. Solder column attachment is the "Achilles Heel" in the assembly process of defense grade FPGA devices. New builds of military grade FPGA will come to a screeching halt, should a series of unplanned crises hit the current monopoly subcontractor of copper wrapped solder column attachment services. The lack of a fifty-cent solder column can bring the entire FPGA industry to its knees.

Ignoring a weakness in the Supply of Solder Columns

Original Device Makers (ODM) that make military grade FPGA are aware of the lack of redundancy and questionable sustainability in today's supply chain of copper wrapped solder columns. This begs the most important question: Will the aerospace and defense industry be assured of a stable supply of solder column attachment services five years from now? Continuation of supply of defense grade FPGA is not guaranteed.

Conclusion

Can measures be taken now to avoid a sudden shortage of mission critical FPGA to keep the balance of peace in the World Order? This can be answered in the affirmative only if makers of defense grade FPGA elevate the need to act in securing and qualifying a second source capability to attach solder columns sooner, rather than later. Our next installment of Call to Action outlines an easy to follow plan. ♦