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PMICs Offer Customized And Compact Power Supply Solutions For FPGAs

[AnDAPT](#), a provider of highly integrated and configurable power management ICs (PMICs), which are built on a proprietary mixed-signal FPGA platform, has launched six new PMIC solutions (the AmP PMICs) for powering multiple supply rails of the Xilinx Zynq UltraScale+ (ZU+) MPSoC FPGAs and Xilinx-defined use cases. AnDAPT has worked closely with Xilinx on the designs which speed development of power supplies for a variety of industrial and computing applications, including industrial (motor control, programmable logic control and IoT), medical, networking and datacenter equipment.

"AnDAPT reference designs leverage the distinct advantages of its unique technology, including flexibility, scalability and integration to offer highly efficient systems that allow remarkable reduction in PCB area and changes in power configuration and sequencing, even after final assembly," said Bill McLean, AnDAPT CEO. "All of these reference designs are supported by our AmP device which can have different personalities (PMIC) provided by SPI flash," Bill continued.

Consider the Xilinx ZU+ MPSoC power architecture (see the figure). The MPSoC IC requires more than 25 power rails among the PS (processing system) and PL (programmable logic) domains. According to the company, AnDAPT reference designs meet or exceed the Xilinx power performance specifications while achieving a reduction in solution PCB area by merging and reducing the number of devices used.

AnDAPT plans to release similar power solutions for the Kintex, Artix, Virtex, Versal and Spartan FPGA families in the future.

AnDAPT has created an intuitive software tool, WebAmp R.D. (reference design), to provide ready-to-use reference designs with optimum flexibility for users. The designs are based on Xilinx part numbers and use cases that have been defined by Xilinx for the ZU+ MPSoC FPGA device family. Users can apply these reference designs as-is or modify rail sequencing, revise output voltages, alter maximum current per rail, and disable an unused rail if desired.

If customized, WebAmp R.D. provides all the necessary design documentation including design files, reference schematics, datasheets, BoM and layout guide. If additional functionality is desired, such as system rails or glue logic, the generated design files can be used on the WebAmp software tool for additional modifications.

The AmP IC offers a compact 5-mm x 5-mm package and a high level of integration to provide what the vendor describes as a best-in-class system solution to power Xilinx FPGAs. All products incorporate a single-/two-phase DrMOS controller (up to 70 A), multiple buck converters (10 A and 6 A), high-current (up to 2 A) LDOs or load switches, four general-purpose 200-mA LDOs and various power management features including fault protection and sequencing.

Reference designs can be used as-is by customers without any software programming or coding and offer best-in-class flexibility and time-to-market, says the company. AnDAPT reference designs map the entire ZU+ MPSoC family using one to three PMICs available on the "Reference Design PMIC" page on the AnDAPT website.

The designs make it remarkably simple for the designer to pick and choose a solution and get it up and running within minutes for evaluation, says the vendor. Further, the WebAmp R.D. tool allows designers to scale a solution both up and down quickly depending on the FPGA design requirements. This makes the AnDAPT AmP IC solution well suited for Xilinx FPGA applications.

Evaluation boards for ZU+ MPSoC cost-optimized-with-MGT devices use case are available now and an evaluation board for the performance-optimized use case will be available sometime this month. For more information, see the AnDAPT [website](#) or email [Zaryab Hamavand](mailto:Zaryab.Hamavand).

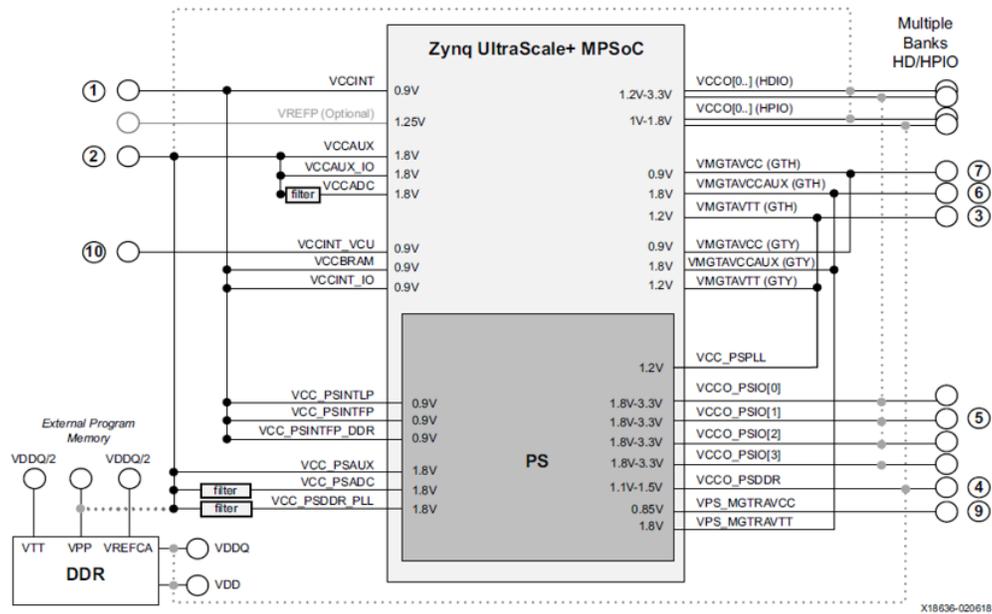


Figure. The AmP power management ICs offer six power supply solutions for powering Xilinx Zynq UltraScale+ (ZU+) MPSoC FPGAs. The Xilinx ZU+ MPSoC power architecture requires more than 25 power rails. According to the company, AnDAPT reference designs based on the AmP PMIC meet or exceed the Xilinx power performance specifications while achieving a reduction in PCB area. (Image courtesy Xilinx.)