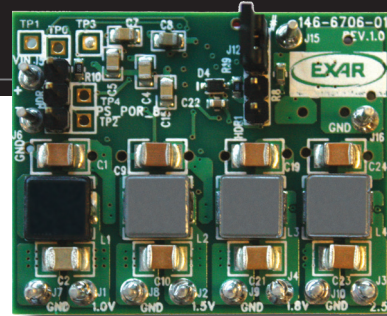# MAXLINEAR

Powering the Zynq®-7000 All Programmable SoC

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Xcell Daily Blog

## Reference Design Powers Zynq SoC in 1.875 Square Inches

by Steve Leibson
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Exar has a slick little quad high-current, programmable, switching power controller IC called the XRP7714 and some recent Googling for "Zynq" uncovered an Exar reference power-supply design that uses the XRP7714 to power a Xilinx Zynq All Programmable SoC. The reference design has a board footprint of 1.875 square inches (1.50 x 1.25 inches) and it looks like (above) on the FET side.

Application note ANP-41 "Powering the Zynq-7000 All Programmable SoC with XRP7714" describes the reference design which uses the XRP7714 to supply 0.75V, 1.0V @ 5A, 1.5V @ 3A, 1.8V @ 1.5A and 2.5V @1.5A to the Zynq SoC. The XRP7714 generates these high current supplies through external switching power FETs. An Exar XRP2997 DDR-2/3 SDRAM bus termination regulator provides a 0.75V termination voltage for the SDRAM.

What makes this design somewhat unusual is the XRP7714 digital power controller's programmability. That programmability—which resides in the power controller's on-chip, non-volatile configuration memory—includes the ability to set supply voltages and to dial in independent power supply sequencing and supply-rail ramp-up and ramp-down slew rates to meet the requirements of the attached circuitry. In this case, that's the Zynq SoC. On the left below is a graphical illustration of the power-on supply voltage ramps for the Zynq SoC reference design. And on the right is the ramp-down profile for the Zynq SoC.
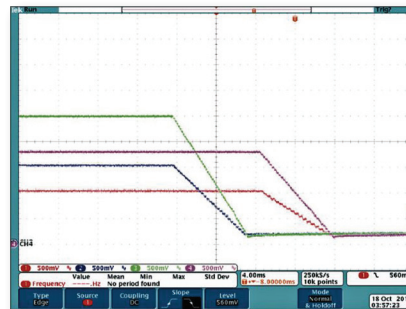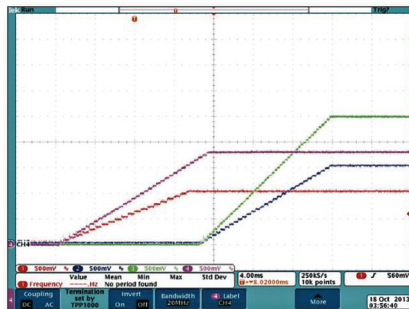
In addition, the XRP7714 has an I²C interface port so the host Zynq SoC can talk to the power supply, if needed, through a couple of spare I/O pins.

https://forums.xilinx.com/t5/Xcell-Daily-Blog/Reference-design-powers-Zynq-SoC-in-1-875-square-inches/ba-p/409547