



POWER^{XR}

Programmable Power Technology

2010

www.exar.com

Exar's Power^{XR} Digital Power Solutions

Exar's Power^{XR} ICs integrate the best of both worlds; the low cost and flexibility of digital power control as well as the robust power capabilities of high performance analog power switches. Power^{XR} products reduce development time from weeks to hours, enabling a significant time-to-market advantage for system design engineers.

Additionally, Exar's Digital Power StudioTM is an easy to use software environment, empowering engineers to create complex sequencing schemes and power systems, and modify voltage, current or other parameters in seconds.

Exar's Power^{XR} Family

Feature	Advantage	Benefit
(re)configurability / Flexibility	<ul style="list-style-type: none"> Digitally (re)configurable SoC power supply solution 	<ul style="list-style-type: none"> Reduces design effort by using simple GUI instead of changing hardware Reduces risk by enabling customer to repair/upgrade power supply when already at end-customer location Use common platform across multiple customer designs
Complete, Feature-Rich Power SoC Solution	<ul style="list-style-type: none"> Power SoC Solution replaces up to 13 discrete ICs in 6x6 mm package Usable across a wide range of Vin, and broad cross-section of embedded processors, ASICs, or SOCs. 	<ul style="list-style-type: none"> Replaces cumbersome discrete solutions, reduces footprint and cost of passive components
Digital Power Studio TM	<ul style="list-style-type: none"> Rapid development, easy to use Enables fast, simple design of complex power solution 	<ul style="list-style-type: none"> Accelerates time to market from first meeting to production in as little as 2 weeks Enable wide range of design engineers to leverage their level of expertise for optimal design

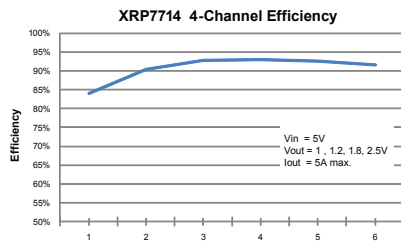
Small SoC power supply solution with 4 power controllers, 1 LDO and all power management on a single chip.

Power SoC Solution replaces up to 13 discrete ICs in 6x6 mm package.



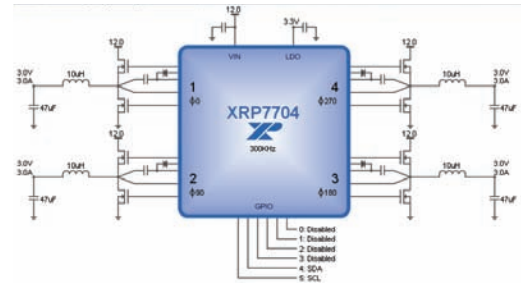
Excellent Efficiency

Up to 93% efficiency on 4 combined voltage rails.



Digitally (re)configurable SOC power supply solution

Useable across a wide range of Vin, and broad cross-section of embedded processors, ASICs, or SOCs.



Digital Power StudioTM enables fast, simple design of complex power solution.

The Power^{XR} Product Family

The Power^{XR} family is comprised of five Pulse-Width Modulated (PWM) step-down DC-DC controllers with a built-in LDO for standby power and GPIOs. The XRP7704, XRP7708, XRP7713, XRP7714, and XRP7740 devices provide a complete power management solution in one IC and are fully programmable via the included I²C serial interface. Independent Digital Pulse-Width Modulator (DPWM) channels regulate output voltages and provide all required protection functions such as current limiting and over-voltage protection.



Part Number	Channels	Output Current	Operating Voltage		Min. Output Voltage	Quiescent Current	Frequency	Package	Features
			Min.	Max.					
XRP7713	3	3 x 5A	4.75V	25V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-32	DPWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7714	4	5A	4.75V	25V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	DPWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7704	4	4 x 5A	6.5V	20V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	DPWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7708	4	2 x 5A 2 x 8A	6.5V	20V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	DPWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7740	4	2 x 5A 2 x 15A	6.5V	20V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	DPWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection

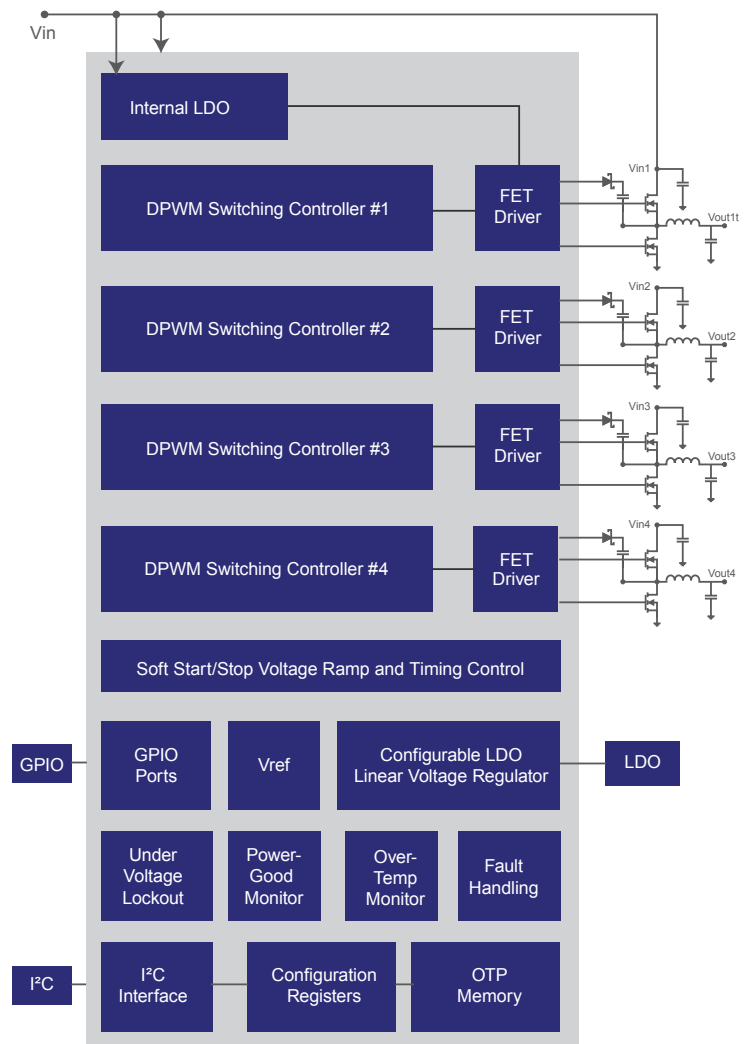
Applications

- Consumer - Set-Top Box (STB), IP Camera, Plasma Display Panel (PDP)
- Computing - Server, Storage Systems
- Industrial - Automatic Test Equipment, Point of Sale
- Medical Equipment
- Networking and Telecommunications Equipment, Ethernet Adapter cards

Power^{XR} Family Features

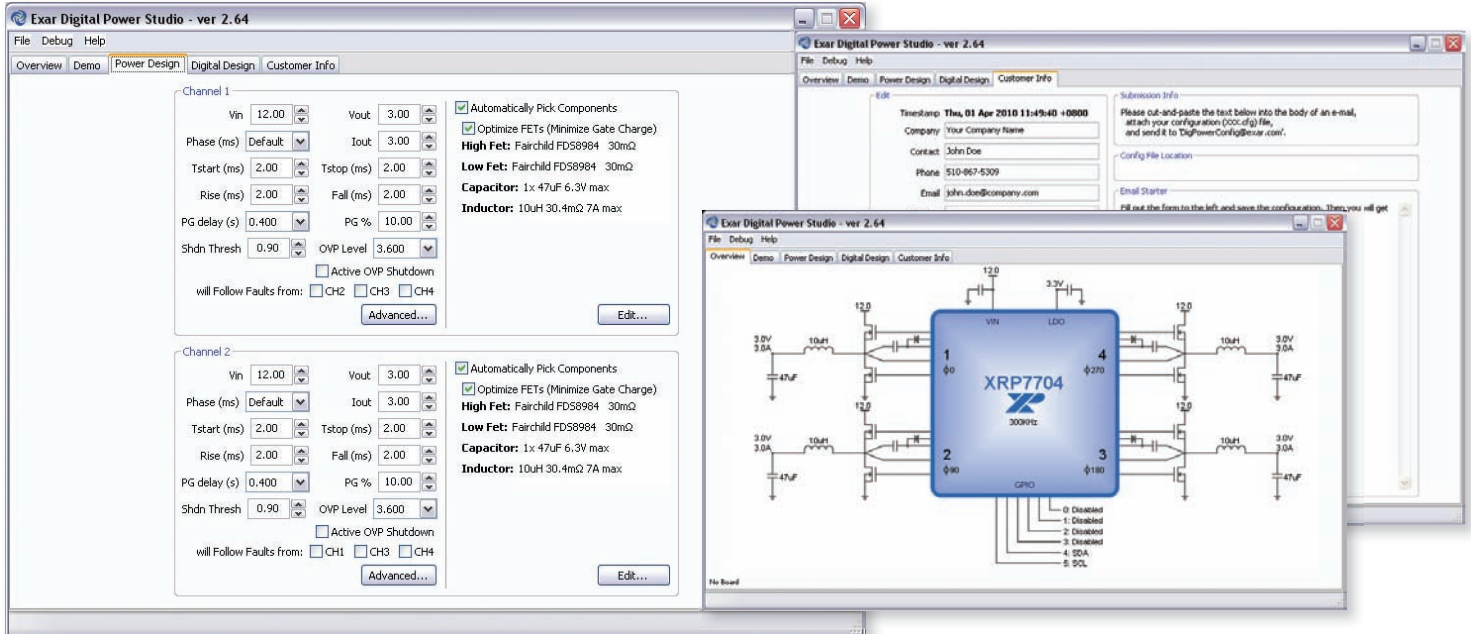
- Three to four switching buck (step-down) controllers each with internal FET drivers
- Output voltages programmable from 0.9V to 5.1V
- Up to 6 (re)configurable GPIO pins
- Fully programmable via I²C interface
- Independent Digital Pulse Width Modulator (DPWM) channels with five coefficient PID control
- High Integration: elimination of external circuits and components required for compensation, parameter adjustment and interface
- Programmable DPWM frequency range (300 kHz to 1.5 MHz) enables efficiency and component size optimization
- Complete power monitoring and reporting
- Independently controlled start-up delay and ramp for each regulator
- Independently controlled soft-stop delay and ramp for each regulator with a programmable stop voltage
- Over-temperature protection (OTP) and Under Voltage Lockout (UVLO); per-channel over-current protection (OCP) and over-voltage protection (OVP)
- Built-in LDO (configurable to 3.3V or 5V) with over-current protection
- Non-volatile memory for system

Power^{XR} Architecture Overview

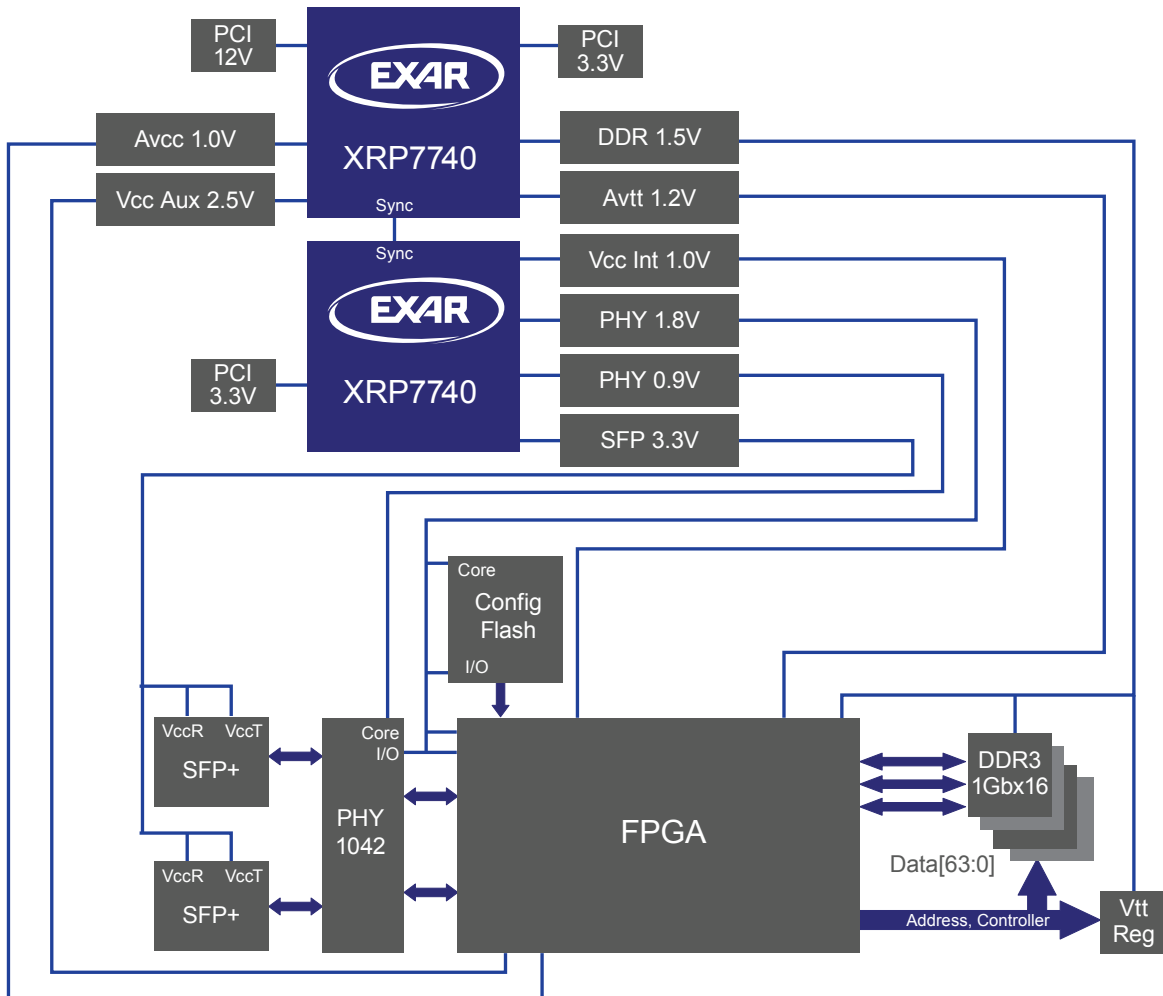


Exar's Digital Power Studio™

Exar's Digital Power Studio (DPS™) interactive design tool enables you to create a complete 5 channel optimized power supply design with complex sequencing and many advanced power management features all with a few clicks of the mouse. Download the latest DPS from www.exar.com/DigitalPower to start and finish your design today.

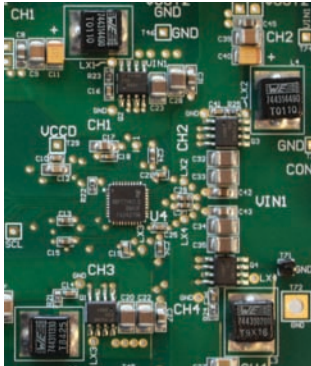


XRP7740 Application (Vin = 12V, Iout = 3A-15A, Vout = 0.9V-2.5V)

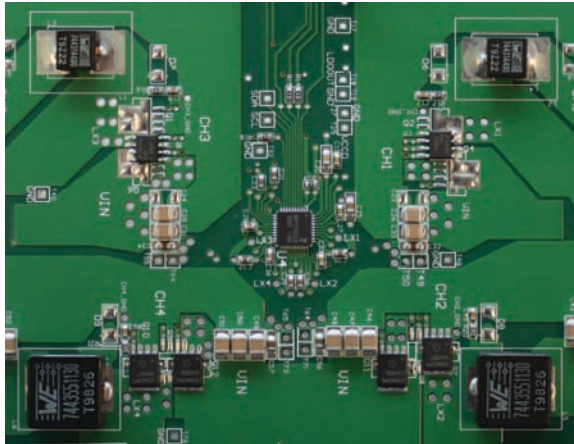


Evaluation Boards

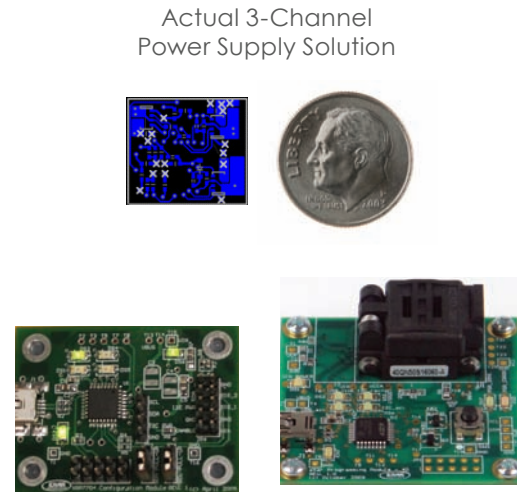
Evaluation boards for all Power^{XR} family of devices are available along with their user manual.



XRP7714EVB



XRP7740EVB



Actual 3-Channel
Power Supply Solution

XCM

XPM

Technical Resources

Visit www.exar.com/digitalpower to learn more about Power^{XR} products, development tools and support.

Datasheets

- XRP7704 Datasheet
- XRP7708 Datasheet
- XRP7713 Datasheet
- XRP7714 Datasheet
- XRP7740 Datasheet

Digital Power Studio Software

- ExarDigitalPowerStudio_setup.zip

Evaluation Boards

- XRP7704EVB
- XRP7708EVB
- XRP7714EVB
- XRP7740EVB
- XRP77XX-XCM (Exar Configuration Module)
- XRP77XX-XPM (Exar Programming Module)
- XRP77XX Gerber Files

User Guides

- Digital Power Studio™ Quick Start Guide
- XPM Operator Manual
- XCM Operator Manual

Articles/White Paper

- Programmable Power Systems Now Essential for Advanced Processors
- 17 Ways Field Programmable PS Reduce Risk

Technical Email Support

- digital.power@exar.com

Power^{XR} in the News



The XRP7704 and XRP7740 were recognized as one of the Top 100 new products of 2009 by EDN (Electronic Design Magazine)



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