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## XRP7714

Quad Channel Digital PWM Step Down Controller

### Features

- 4 Channel Step Down Controller
  - Programmable Output Voltage 0.9V-5.1V
  - Programmable 1.5MHz DPWM Frequency
  - Integrated FET Drivers
- 4.75V to 5.5V and 5.5V to 25V Input Voltage Range
- Up to 6 Reconfigurable GPIO Pins
- Fully Programmable via I2C Interface
- Independent Digital Pulse Width Modulator (DPWM) channels
- Complete Monitoring and Reporting
- Complete Power Up/Down Sequencing
- Full On Board Protection OTP, UVLO, OCP and OVP
- Built-in 3.3V/5V LDO
- PowerArchitect™ Design Software
- Green/Halogen Free 40-pin TQFN

### Applications

- Multi-Channel Programmable Power Supplies
- Audio-Video Equipment
- Industrial & Telecom Equipment
- Processors & DSP-Based Equipment

### Description

The XRP7714 is a quad-output pulse-width modulated (PWM) step-down DC-DC controller with a built-in LDO for standby power and GPIOs. The device provides a complete power management solution in one IC and is fully programmable via an 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.

Each output voltage can be programmed from 0.9V to 5.1V without the need of an external voltage divider. The wide range of the programmable DPWM switching frequency (from 300 KHz to 1.5 MHz) enables the user to optimize between efficiency and component size. Input voltage range is from 4.75V to 25V. An I2C bus interface is provided to program the IC as well as to communicate with the host for fault reporting and handling, power rail parameters monitoring, etc.

The device offers a complete solution including independently programmable: soft-start, soft-stop, start-up delay and ramp of each PWM regulator.

**The Exar Model XRP77xxEVB-XCM and XRP77xxEVB-XPM ("Evaluation Board") provides designers with a simple, quick and inexpensive means of evaluating and prototyping new designs using PowerXR devices. This Evaluation Board is designed only for low volume engineering purposes; not production volumes. For production requirements commercial programmers must be used. The Evaluation Board is provided “as is and whereas” and without any warranty as to results, merchantability or purpose. Exar is not responsible for misuse of the Evaluation Board.**

| Part Number            | Pkg Code               | RoHS | Status | Buy Now | Order Samples |
|------------------------|------------------------|------|--------|---------|---------------|
| XRP7714ILB-0X1C-F      | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILBTR-0X10-F    | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILB-0X14-F      | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILB-0X18-F      | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILBTR-0X1C-F    | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILBTR-F         | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILBTR-0X14-F    | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILBTR-0X18-F    | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714ILB-0X10-F      | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714EVB-DEMO-1-KIT  | <a href="#">Kit</a>    |      | CF     |         |               |
| XRP7714EVB-DEMO-2      | <a href="#">Board</a>  |      | Active |         |               |
| XRP7714EVB             | <a href="#">Board</a>  |      | CF     |         |               |
| XRP7714EVB-DEMO-1      | <a href="#">Board</a>  |      | CF     |         |               |
| XRP7714EVB-DEMO-2P-KIT | <a href="#">Kit</a>    |      | Active |         |               |
| XRP7714ILB- F          | <a href="#">TQFN40</a> |      | Active |         |               |
| XRP7714EVB-DEMO-2-KIT  | <a href="#">Kit</a>    |      | Active |         |               |
| XRP7714EVB-DEMO-2P     | <a href="#">Board</a>  |      | Active |         |               |

### Part Status Legend

**Active** - the part is released for sale, standard product.

**EOL (End of Life)** - the part is no longer being manufactured, there may or may not be inventory still in stock.

**CF (Contact Factory)** - the part is still active but customers should check with the factory for availability. Longer lead-times may apply.

**PRE (Pre-introduction)** - the part has not been introduced or the part number is an early version available for sample only.

**OBS (Obsolete)** - the part is no longer being manufactured and may not be ordered.

**NRND (Not Recommended for New Designs)** - the part is not recommended for new designs.

### Specifications

|                            |                |
|----------------------------|----------------|
| Vin Range                  | 4.75V – 25V    |
| Vout Range                 | 0.9V – 5.1V    |
| Gate DrivePull Up/Down     | 6ohm / 3ohm    |
| IQ (μA)                    | 9mA            |
| Package Type               | TQFN40         |
| Junction Temperature Range | -40°C to 125°C |

### Documents



Block Diagram

#### Datasheets

Datasheet

Version 1.1.6

March 2011

1,009.17 KB

#### Application Notes

ANP-31, PowerXR Configuration and Programming

Version 1.0.0

August 2010

405.48 KB

ANP-32, Practical Layout Guidelines for PowerXR Designs

Version 1.0.0

August 2010

1.26 MB

ANP-35, XRP77XX: Extending the MOSFET Gate Drive Conductors

Version 1.0.0

May 2011

2.00 MB

ANP-37, PowerXR EMI Reduction Technique Utilizing Spread-Spectrum

Clock Dithering

Version 1.0.0

February 2012

618.09 KB

#### Manuals

Evaluation Board Manual

Version 1.0.0

April 2011

6.53 MB

Exar Configuration Module (XCM) Evaluation Board Manual

Version 1.1.0

April 2011

1.04 MB

#### Process Qualification Report

XRP77XX Family Reliability and Qualification Report

Version 1.0.0

July 2010

35.03 KB

#### Info Guide

Quick Start Guide: XRP7714EVB-DEMO-1-KIT

Version 1.0.0

April 2011

593.06 KB

Quick Start Guide: XRP7714EVB-DEMO-2-KIT & XRP7714EVB-DEMO-2P-KIT

Version 1.0.0

May 2011

681.73 KB

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- 6/15/2010 - Exar Named as Finalist in Electronic Components Category for TechAmerica Foundation American Technology Awards