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9/26/2011
Exar Releases 8-Channel Compact Power Optimizing LED Driver

Smart Talk™ Technology Minimizes Power Needed to Drive Multiple Strings of Multiple LEDs
Freemont

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XRP7704

Quad-Output Digital PWM Buck Controller

Features

- Four switching buck (step-down) controllers each with internal FET drivers
- 6.5V to 20V input voltage range – no additional voltage rails required
- Output voltages programmable from 0.9V to 5.1V
- Up to 6 reconfigurable 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, including soft start with a pre-biased load voltage
- 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 configuration
- Configuration development tools

Applications

- Computing: Servers, Storage Systems
- Consumer: Set-top box (STB), Game Systems
- Industrial: ATE, DC-DC converters, Video Processing
- Plasma Display Panel (PDP)
- Networking and Telecommunications Equipment

Description

The XRP7704 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 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.

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 6.5V to 20V.

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 for soft-start and soft-stop. The start-up delay and ramp of each PWM regulator can be independently controlled. The device can start up a pre-biased PWM channel without causing large negative inductor current.

The Exar Model XRP7704EVB-XCM and XRP7704EVB-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	Package Type	RoHS	Status	Buy Now	Order Samples
XRP7704ILBTR-F	TQFN-40		Active		
XRP7704ILB-F	TQFN-40		Active		

Part Status Legend

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

Specifications

Vin Range	6.5V – 20V
Vout Range	0.9V – 5.1V
Gate DrivePull Up/Down	- / -
IQ (μA)	9mA
Package Type	TQFN40
Junction Temperature Range	-40°C to 125°C

Documents



[Block Diagram](#)

Datasheets

[Datasheet](#)
[Version 1.1.0](#)
[September 2009](#)
[859.33 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](#)

Manuals

[Exar Configuration Module \(XCM\) Evaluation Board Manual](#)
[Version 1.1.0](#)
[April 2011](#)
[1.04 MB](#)

Schematics

[XRP_7704_std-app-board](#)
[Version](#)
[February 2010](#)

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.

[2.28 MB](#)

[XRP_7740_high-current-app-board](#)
[Version](#)
[February 2010](#)
[2.37 MB](#)

■ **Process Qualification Report**

[Reliability and Qualification Report](#)
[Version 1.0.0](#)
[July 2010](#)
[35.03 KB](#)

■ **Software**

[XRP7704EVB_XPM_Operators](#)
[Manual_R1.0.1](#)
[Version 1.0.1](#)
[January 2010](#)
[1.05 MB](#)

- **Related News**
- [9/21/2009 - Exar Redefines Digital Power Market -- Introduces PowerXR Family High-Performance System Solutions](#)