

P8610

Distributed Power Unit for P8620

The P8610 is a power management device used in conjunction with a Gen-2 DPS[™] enabled host PMIC to implement output rails when connected to a PMIC's standalone controller channels. The device operates as a current source unit controlled by the host PMIC. Up to four P8610s can be used in parallel to create a multiphase rail with up to 29A of pulsed load current capability.

A proprietary single-wire Gen-2 DIF[™] digital bus connects the Buck controller on the host PMIC to the P8610 distributed power units (DPUs) to provide control and exchange status information. The device seamlessly integrates into the PMIC ecosystem and is transparent from the user's point of view.

The P8610's DPU integrates advanced features that are user-programmable through the host PMIC to allow the DPU to be optimized for efficiency, transient response and standby power. The DPU also supports output current measurement, and includes safety and diagnostic functions to allow easy debug of an initial prototype system.

The P8610 is available in a small thermally enhanced $3.0 \times 4.0 \text{ mm} 12$ -DFN package.

Features

- Operates from a single 3.3V to 5.5V supply
- Output current up to 5A DC / 7.4A pulsed
- Switching frequency of 1MHz or 2MHz
- Supports up to four DPUs supplying the same rail
- Automatic DPU Multi-phasing up to four phases
- Supports phase shedding and PFM mode
- Output voltage range of 0.5V to 3.6V
- 1-wire Gen-2 DIF bus interface to host PMIC
- Operating temperature range: -40°C to +85°C
- 3.0 × 4.0 × 0.9 mm 12-DFN package

Applications

- Servers
- Solid state disks
- Embedded systems
- Industrial applications



Figure 1. Typical Application Circuit including Connection to a P8620 Host PMIC

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES ("RENESAS") PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01 Jan 2024)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan www.renesas.com

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit <u>www.renesas.com/contact-us/</u>.