

Description

The P9242-G is a highly integrated, magnetic induction, wireless power transmitter that supports up to 15W in compliance with the WPC-1.2.4 specification or proprietary applications. It is compatible with all popular wireless charging protocols including the WPC Baseline Power Profile (BPP), Extended Power Profile (EPP), up to 7.5W charging for iPhones, and Android proprietary fast charging modes. This system-on-chip solution (SoC) operates with an input voltage range of 5V to 19V.

The P9242-G transmitter IC includes an industry-leading 32-bit ARM® Cortex®-M0 processor, offering a high level of programmability and extremely low standby power consumption.

The P9242-G transmitter generates power through the power coil, detects the presence of a wireless power receiver, decodes the communication packets from the receiver, and adjusts the transmitted power by controlling the voltage based on feedback from the receiver. The P9242-G is specially designed to support fixed-frequency operation as described in the WPC MP-A11 coil configuration with an external input step-down buck regulator. It uses an external oscillator for very accurate 127.7kHz fixed frequency operation.

The P9242-G features two LED outputs with pre-defined user-programmable blinking patterns for end-user indication, supporting a wide range of applications. The transmitter detects if a foreign metal object is placed on the transmitter pad via advanced Q detection. The microcontroller empowers the user to customize foreign object detection (FOD) threshold settings. The I2C serial communication allows the user to read the transmitter's basic information, such as voltage, current, frequency, and fault conditions.

The P9242-G also features a wide range of system protections, such as over-current, over-voltage, under-voltage lockout, and thermal management circuits to safe guard wireless power systems under fault conditions.

The P9242-G is available in a lead-free, space-saving 48-pin VFQFPN package. The product is rated for a -40°C to +85°C operating temperature range.

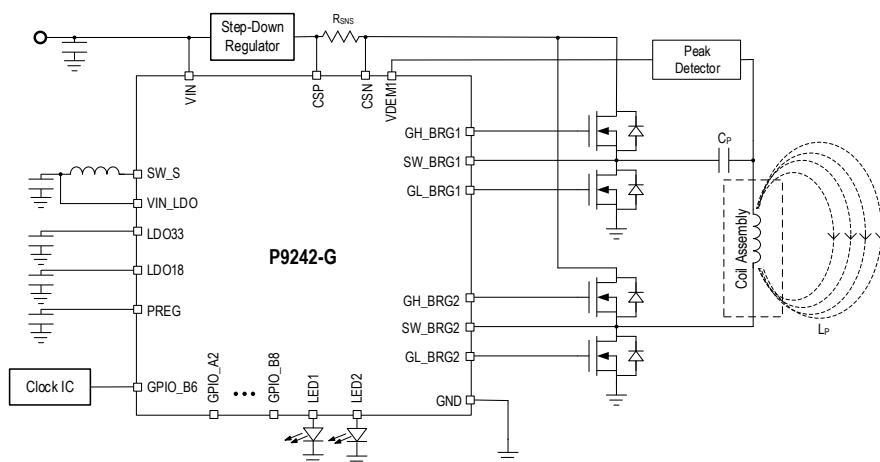
Typical Applications

- BPP and EPP Wireless Charging Pads
- Up to 7.5W charging for iPhones
- Android Fast Charging Pads
- Cradles
- Tablets
- After-Market Automotive Wireless Charging Pads

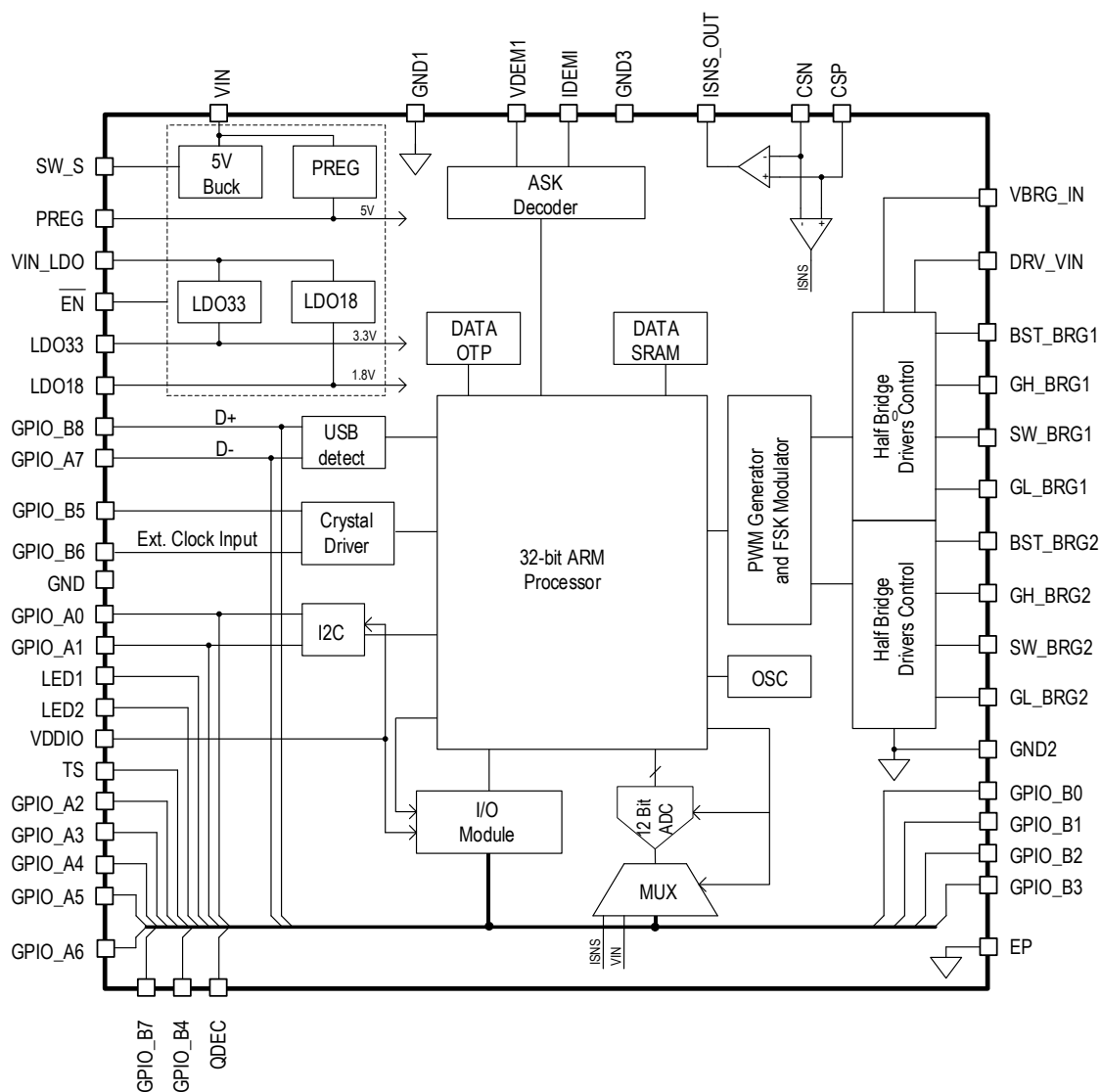
Features

- Power transfer up to 15W at receiver side
- Wide input voltage range: 5V to 19V
- WPC-1.2.4 compatible, MP-A11 coil configuration
- Integrated drivers for external power MOSFETs
- Embedded 32-bit ARM® Cortex®-M0 processor (trademark of ARM, Ltd.)
- Simultaneous voltage and current demodulation scheme for WPC communication
- Integrated current sense amplifier
- Low standby power
- Supports accurate 127.7kHz frequency operation
- Feedback control for external input step-down regulator
- Dedicated remote temperature sensing
- User-programmable power transfer LED indicators
- User programmable foreign objects detection (FOD)
- WPC EPP-based Q-factor detection and advanced proprietary Q-factor detection
- Active-LOW enable pin for electrical on/off
- Over-current and over-temperature protection
- Supports I2C interface
- -40 to +85°C ambient operating temperature range
- 48-VFQFPN (6 × 6 mm) RoHS-compliant package

Typical Application Circuit



Function Block Diagram



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)

Corporate Headquarters

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

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 www.renesas.com/contact-us/.

Trademarks

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