

Features

- Dual-Mode Wireless Power Receiver
Complies with WPC 1.0.1 and PMA Type 1 Requirements for Certification
- Single-Chip Solution
- Compatible with all WPC receiver coils including proprietary and PCB-based coils
- Integrated Synchronous Full-Bridge Rectifier
- Integrated Synchronous Buck Converter
- Closed-Loop Power Transfer control between Base Station and Mobile Device
- Optional Proprietary Back-Channel Communication
- Security and Encryption up to 64-bit
- Power Good Status Pin
- I²C Interface
- WLCSP package, 4.65mm x 4.86mm, 0.4mm pitch

Safety Features

- Optional, Advanced Multi-layered Foreign Object Detection (FOD)
- Over Temperature/Voltage/Current Protection
- User-programmable GPIOs for a variety of LED status/alarm and buzzer indicators
- Thermal loop control

Applications

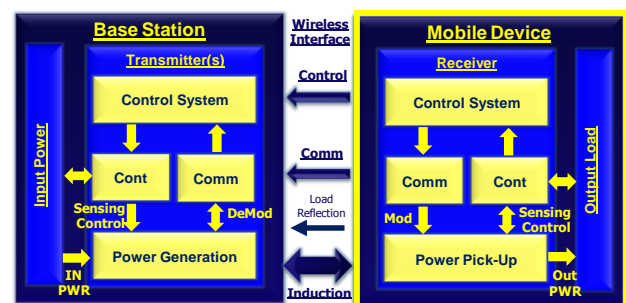
- Smartphones, Handsets, and related Accessories
- Bluetooth devices
- Game Controllers, Remote Controls
- PC Peripherals and Storage devices
- Tools, medical monitors, fitness accessories

Description

The IDTP9021 is a Dual-Mode single-chip Wireless Power Receiver IC which complies with the requirements of both WPC 1.0.1 and PMA Type 1 Interoperability specifications. The device receives an AC power signal from a compatible wireless transmitter and converts it into a regulated 5V output voltage which can be used to power devices or supply the charger input in mobile applications.

The IDTP9021 integrates a high-efficiency synchronous full-bridge rectifier, high-efficiency synchronous buck converter, and control circuits used to modulate the load to transmit WPC or PMA-compliant message packets to the transmitter to optimize power delivery. In WPC mode, power delivery is limited to 5W in accordance with the Qi specification. All communication and protocol selection can be managed by the device, without user supervision. The device also features optional communication security with data encryption using a Secure Hash Algorithm (SHA) of up to 64 bits when communicating with other IDT Wireless Power devices.

The device includes over-temperature and over-voltage protection and a Foreign Object Detection method to protect the base station and the mobile device from overheating in the presence of a metallic foreign object. Fault conditions associated with power transfer are managed by the embedded MCU, which also controls Status LEDs to indicate operating and fault modes. The IDTP9021 is available in a 4.86mm x 4.65mm WLCSP package.



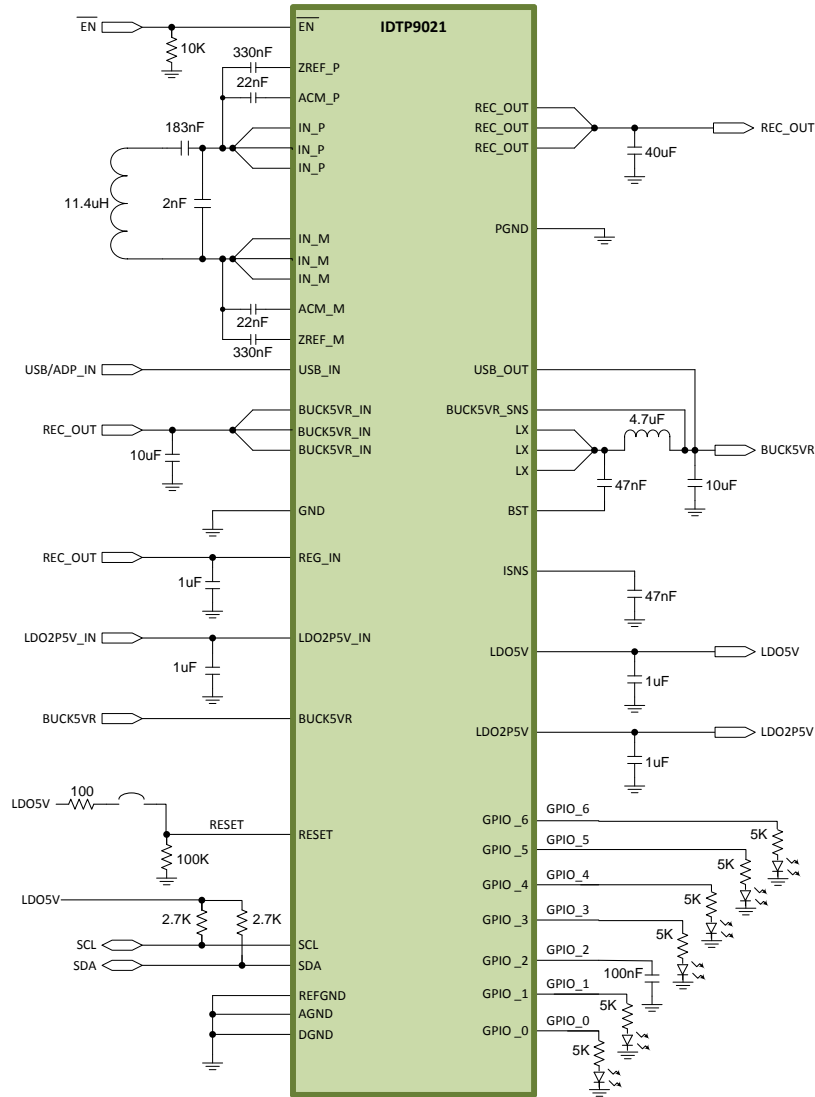


Fig. 2 IDTP9021 Typical Application Circuit

Preliminary Information – Subject to Change

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 skilled in the art 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 for development of 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 out of 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.

(Rev.1.0 Mar 2020)

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/

Trademarks

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