Dual-Mode Wireless Power Receiver IC

Preliminary Overview

IDTP9021

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
- I^2C 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

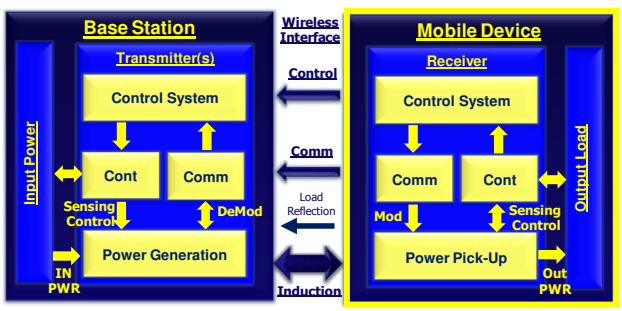
- Smartphones, Handsets, and related Accessories
- Bluetooth devices
- Game Controllers, Remote Controls
- PC Peripherals and Storage devices
- Tools, medical monitors, fitness accessories

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.



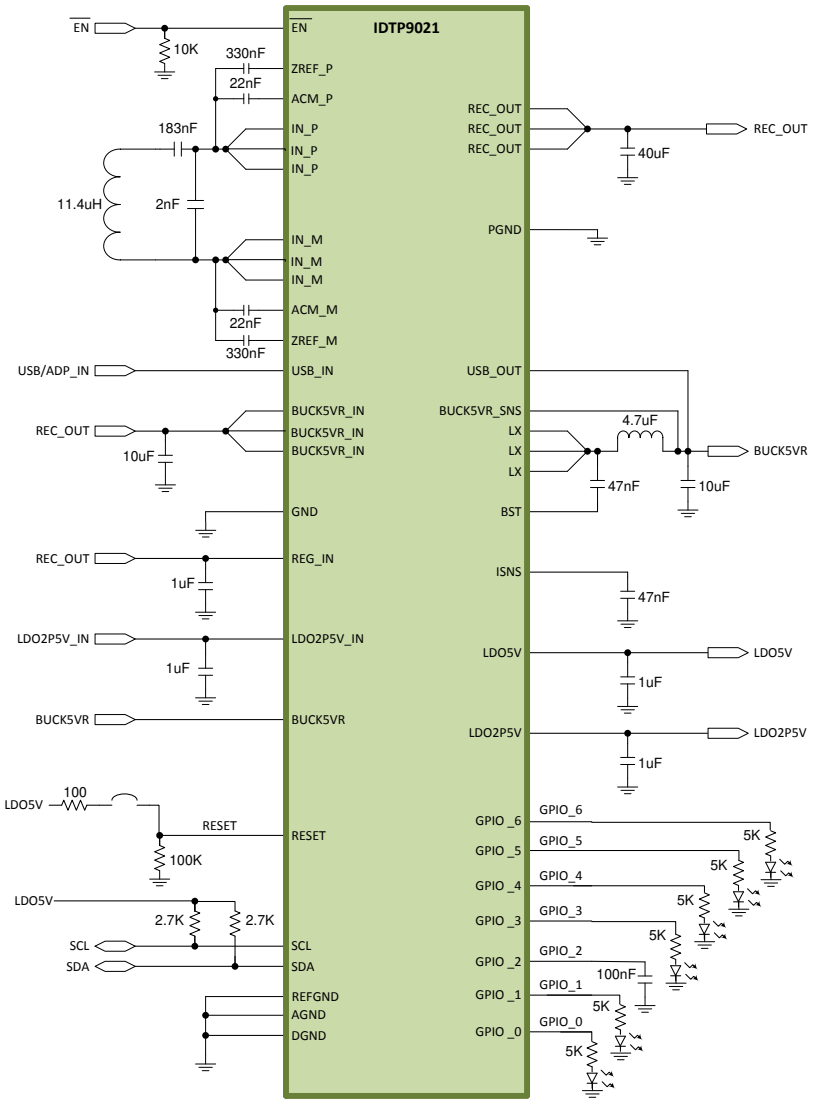


Fig. 2 IDTP9021 Typical Application Circuit

Preliminary Information – Subject to Change

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