

1 DESCRIPTION

The MT5715 is an SoC (System on Chip) for magnetic induction based wireless power receiver. It is fully compliant with the latest WPC Qi specification (Version 1.2.4) of BPP (Baseline Power Profile) and EPP (Extended Power Profile) and also supports various proprietary fast charging protocols used by major smart phone OEM's. It is capable of true fast wireless charging for up to 20W of delivered power with fully programmable output voltage (maximum 20V) and current. MT5715 has a very high overall AC to DC conversion efficiency (up to 97%), thanks to the optimized and adaptive full synchronous rectifier control, very small R_{ds(on)} of power MOSFET's, and extremely low bias current. With the exception of a few external passive components, this SoC integrates everything that is needed for a wireless power receiving function. It is composed of a generic embedded micro controller and its associated data and program memories, specialty digital and analog hardware co-processing units for wireless power, full synchronous rectifier and special output LDO, robust and reliable over voltage/current/temperature protection circuits, bi-directional communication unit and various GPIO's and serial interfaces. With the flexibility of SoC architecture and the unique implementation, the MT5715 is future proof in supporting WPC Qi specification's further updates and new proprietary protocols. It also supports "Power Sharing" mode where a wireless power receiver is configured into a wireless power transmitter by firmware control.

2 FEATURES

- Up to 20W power delivery
- Fully programmable output voltage and current
- WPC Qi Specification Version 1.2.4BPP and EPP compliant
- Up to 97% AC input to DC output efficiency
- Power sharing mode with both receiver and transmitter function
- Reliable and unique over voltage/current/temperature protection
- Specially designed output LDO with output clamping and fast response to line and load transient
- WPC compliant and proprietary communication protocols support with hardware ASK modulation and FSK demodulation
- Independent I2C slave and I2C master interface with additional GPIO's
- 2.46mm x 3.87mm (6x9 ball array) WLCSP

3 APPLICATIONS

- Standard and fast wireless charging for smart phones with up to 20W power
- Wireless charging for wearable devices with high integration and small form factor
- TRx for phones or power banks where they can be wirelessly charged and wirelessly charge other devices
- Other wireless power applications

4 TYPICAL APPLICATION CIRCUIT

