

## 1 DESCRIPTION

The MT5728 is a 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 30W of delivered power with fully programmable output voltage (maximum 20V) and current limit (maximum 2A).

MT5728 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  $R_{dson}$  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 an ARM Cortex M0 processor with 8KB SRAM and 16KB MTP, full synchronous rectifier and special output LDO, robust and reliable over voltage, over current and over 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 MT5728 is future proof in supporting WPC Qi specification's further updates and new proprietary protocols. It also supports reverse charging mode where a wireless power receiver is configured into a wireless power transmitter by firmware control.

## 2 FEATURES

- Up to 30W power delivery
- Fully programmable output voltage (up to 20V) and current limit (up to 2A)
- Embedded ARM Cortex M0 processor with 8KB SRAM and 16KB MTP
- Up to 97% AC input to DC output efficiency
- Reverse charging mode with integrated dual channel TX demodulation
- Fully integrated bi-directional current sensing
- 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 and FSK modulation and demodulation
- Independent I<sup>2</sup>C slave interface with additional GPIO's
- Halogen free and RoHS compliant
- 2.80mm x 3.96mm (6x9 ball array) WLCSP

## 3 APPLICATIONS

- Standard and fast wireless charging for smart phones with up to 30W received power
- Wireless charging for wearable devices with high integration and small form factor
- TRx function for phones or power banks where they can be wirelessly charged and wirelessly charge other devices
- Other wireless power applications

**4 TYPICAL APPLICATION CIRCUIT**

