1. FEATURES

- Wide input voltage range from 3.5V to 16V
- Power transfer: Less than 15W
- Compliant with latest WPC Qi Specification (V2.0) of Baseline Power Profile (BPP) and Extended Power Profile (EPP), and supports proprietary protocols
- Embedded with 32-bit ARM M0 processor with 64kB e-Flash and 4kB SRAM
- QC2.0/QC3.0, FCP/SCP and USB PD fast charging power adaptor support
- Integrates three pairs of N-MOSFET drivers (supports single coil only)
- Integrates high-voltage BUCK converter to reduce transmitter's power consumption in high voltage input cases
- Integrates 3.3V LDO for internal and I/O power supplies
- Integrates 1.5V LDO for core power supply
- Precise low-side current sensing function for FOD and current mode demodulation
- 4 channels demodulation AFE for voltage and current mode demodulation
- 16 channels dedicated DSP for robust ASK demodulation
- Dedicated FSK modulation hardware with programmable modulation depth
- 2 high performance PWM generation modules with 6 channels PWM output for each module, both with programmable dead time control
- Integrates 32kHz oscillator for ultra-low power sleeping mode
- Integrates watchdog with sleeping power monitor and wake-up function
- Integrates 60MHz programmable oscillator for system and PWM generation
- Supports 8MHz~24MHz XTAL
- Integrates 440MHz~660MHz programmable PLL for high performance PWM generation
- Built-in 10bit ADC for voltage, current and temperature measurement
- Built-in 10bit DAC with output buffer
- Low operating current and extremely low standby current in deep sleeping mode
- Supports SWD debug mode
- Supports I^2C, UART and SPI Interface with plenty of GPIOs
- Dual VDD_IO pins for flexible I/O levels
- Over-voltage/over-current/over-temperature protection
- Input under-voltage detection and lockout function
- Halogen free and RoHS compliant
- Available in 6mm x 6mm QFN48 package

2. APPLICATIONS

- WPC compliant wireless power transmitters for smartphones and wearable devices
- Other wireless power applications

3. DESCRIPTION

MT5811 is a highly integrated, high-performance System on Chip (SoC) for magnetic induction based wireless power transmitter solutions. It is fully compliant with the latest WPC Qi V2.0 specification supporting both BPP and EPP. The integrated large size e-FLASH enables flexible customer function support.

MT5811 integrates high-voltage BUCK converter, two LDOs, three pairs of N-MOSFET's drivers, four channels of ASK demodulation Analog Front End (AFE), 16 channels of ASK demodulation DSP. The embedded precise low-side current sensing, generic 10-bit ADC and DAC enable high-performance FOD and Q-factor detection.

It supports over-voltage, over-current, under-voltage protection and over-temperature protection (OVP, OCP, UVP, OTP) for safe operation. MT5811 integrates separated high-frequency and low-frequency oscillators for low-power and low-cost application. The internal high-frequency PLL with support of external crystal is designed for high-accuracy clock and PWM signal generation. The chip is able to provide flexible dead time control and phase shift generation to improve EMI performance.

MT5811 supports multi-protocol power adaptor interface detection and control with support of QC 2.0/3.0, USB PD, SCP, FCP, etc.

MT5811 integrates an ARM Cortex M0 processor with 64kB e-Flash memory and various serial interfaces (I^2C, UART, GPIO's, etc.), offering powerful processing capabilities and code space. The reference application is available with standard firmware. Customers can easily develop the customized features with the support of library (released separately).

4. TYPICAL APPLICATION CIRCUIT