1 FEATURES

- Wide input voltage range from 3V to 5.5V
- Up to 120W power delivery
- Compliant with WPC Qi specification (V2.0) of Baseline Power Profile (BPP) and Extended Power Profile (EPP), and supports proprietary protocol
- Embedded 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
- Integrated 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
- Dedicate 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
- Integrated 32kHz oscillator for ultra-low power sleeping mode
- Integrated watchdog with sleeping power monitor and wake-up function
- Integrated 60MHz programmable oscillator for system and PWM generation
- Supports 8MHz~24MHz XTAL
- Internal 440MHz~660MHz programmable PLL for high performance PWM generation
- Build-in 10bit ADC for voltage, current and temperature measurement
- Build-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
- Less than 5% FOD accuracy
- 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

MT5810 is a highly integrated, high-performance System on Chip (SoC) for magnetic induction based wireless power transmitter solutions. It is fully compliant with the Wireless Power Consortium (WPC) Qi V2.0 specification, supporting both BPP and EPP. The integrated large size e-Flash enables flexible customer function.

MT5810 integrates 1.5V LDO, 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 and over-temperature protection (OVP, OCP, UVP, OTP) for safe operation.

MT5810 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. MT5810 is able to provide flexible dead time control and phase shift generation to improve EMI performance.

MT5810 supports multi-protocol power adaptor interface detection and control with support of QC 2.0/3.0, USB PD, SCP, FCP, etc.

MT5810 integrates an ARM Cortex M0 processor with 64kB e-Flash memory and various serial interfaces (I^2C, UART, GPIO, etc.), offering powerful processing capabilities and code space. The reference application is available with standard firmware. With the support of library (released separately), customers can easily develop customized features.

4 TYPICAL APPLICATION CIRCUIT

Single Coil Application