

1. KEY FEATURES

- Wide input voltage range from 3.5V to 7.5V
- Power transfer: up to 5W
- Compliant with WPC Qi specification v1.2.4 with proprietary protocol support
- Embedded 32-bit ARM M0[®] processor with 16KB e-Flash and 4 KB SRAM
- QC2.0/QC3.0, FCP/SCP support
- Integrates 3 pairs of N-MOSFET drivers (supports single coil only)
- Integrated high voltage Buck converter to reduce transmitter's power consumption in high voltage input cases
- Integrated 3.3V LDO for internal and I/O power supplies
- 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
- 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
- Integrated 32KHz oscillator for ultra-low power sleeping mode
- Integrated watchdog for sleeping power monitor and wake up
- Integrated 60MHz programmable oscillator for system and PWM generation
- Supports 8~24MHz XTAL
- Integrated 440~660MHz programmable PLL for high performance PWM generation
- Integrated 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 I²C, UART and SPI Interface with plenty of GPIO's
- Dual VDD_IO pins for flexible I/O levels
- Over-voltage/current/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 smart phones and wearable devices
- Other wireless power applications

3. DESCRIPTION

MT5813 is a highly integrated, high performance System on Chip (SoC) for magnetic induction based wireless power transmitter solutions. It is fully compliant with WPC Qi v1.2.4 specification, with both Baseline Power Profile (BPP) and Extended Power Profile (EPP) support. The integrated large size e-FLASH enables flexible customer function support.

MT5813 integrates High voltage Buck, 2 LDO's, three pairs of N-MOSFET's drivers, 4 channels of ASK demodulation Analog Front End (AFE) and 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 for safe operation.

The chip 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. MT5813 is able to provide flexible dead time control and phase shift generation to improve EMI performance.

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

MT5813 integrates an ARM Cortex M0 processor with 16KB e-Flash memory and various serial interfaces (I²C, 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).