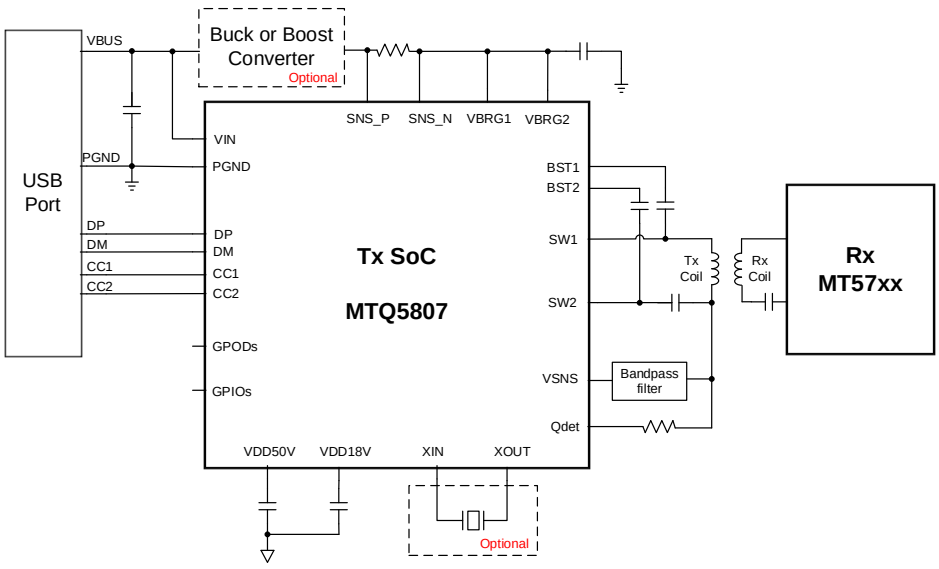
1. FEATURES

- AEC-Q100 qualified for automotive applications:
  - Temperature grade 1
  - HBM ESD classification level H2
  - CDM ESD classification level C3
- Compliant with the latest WPC Qi Specification (V2.0) of Baseline Power Profile (BPP) and Extended Power Profile (EPP), and supports various proprietary protocols
- Up to 15W power delivery
- 32 bits ARM-M0 with 4kB SRAM and 32kB MTP
- 4V to 20V wide input VIN voltage
- Supports 6-channel DMA
- Supports 8-channel voltage and current ASK demodulation
- PLL with programmable VCO frequency and output divider
- Supports 12MHz~24MHz XTAL
- 48MHz oscillator with ±1.5% accuracy
- 12 bits 100ksps SAR ADC
- Supports SWD and I²C debug mode
- Supports QC, FCP, SCP, UFCS and USB PD
- 2 UART interfaces
- 3 advanced timers with PWM generation and capture function
- 1 basic timer with 2 channels
- Integrates high-side current sense circuit
- Voltage/current demodulation flexible configuration
- Q-value detection
- Floating point ln(x) operation hardware acceleration support
- Supports CRC hardware
- Embedded with hardware UVLO/OCP
- Supports low power mode and ultra-low power mode
- Halogen free and RoHS compliant
- Available in FCQFN24L (3mm×4mm) package

2. APPLICATIONS

- WPC compliant wireless power transmitters for smartphones and wearable devices
- Medical, home appliance and industrial applications
- Other wireless power applications

3. TYPICAL APPLICATION CIRCUIT



4. DESCRIPTION

MTQ5807 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.

MTQ5807 integrates separate high frequency and low frequency oscillators for low power and low-cost applications. 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.

MTQ5807 supports multi-protocol power adaptor interface detection and control with support of QC 2.0/3.0, USB PD, SCP, FCP, UFCS etc.

MTQ5807 integrates two LDOs, two channels of ASK demodulation Analog Front End (AFE), and 8 channels of ASK demodulation DSP. The embedded precise high-side current sense circuit, generic 12-bit SAR ADC and DAC enable high performance FOD and Q-factor detection.

MTQ5807 supports over-voltage protection (OVP), over-current protection (OCP), under-voltage protection (UVP) and over-temperature protection (OTP) for safe operation. In addition, the chip is embedded with a dynamic power limit (DPL) comparator to prevent IC from entering UVLO when the input power can't meet the requirement of output power. If VDD50V drops below the DPL threshold, the chip decreases the output power accordingly to protect system from entering UVLO state.

MTQ5807 integrates an ARM Cortex M0 processor with 4kB SRAM and 32kB MTP 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. With the support of library (released separately), customers can easily develop the customized features.