STWBC2HP

Data brief

Digital controller for wireless battery charger transmitters

Product status link
STWBC2HP

Table 1.

Product summary	
Order code	STWBC2-HP
Package	VFQFPN68L
Packing	Tape&Reel

Features

- Digital controller for wireless power transmitters
  - Proprietary ST Super Charge extension for high power charging
- System-in-package (SiP) with microcontroller and front-end device:
  - Arm 32-bit Cortex™-M0+ CPU, frequency up to 64 MHz
  - 3x half-bridge drivers
  - Embedded 3.6 V/5 V DC-DC
  - 3.3 V and 1.8 V LDOs
  - 6 V or 9 V voltage doubler
  - FSK programmable modulator
  - Integrated current, voltage, and phase demodulators
  - Integrated current and voltage sensors
- Support for half- and full-bridge topologies with input DC-DC
  - Support for limited power sources such as 5 V 500 mA USB
- VIN operative range: 4.1 V to 24 V
- USB physical interfaces
  - USB Power Delivery
- Communication interfaces
  - UART
  - I^2C
  - GPIOs
- Peripherals
  - 12-bit 0.5 us ADC
  - Q-factor driver
- Memory
  - 128 Kbytes of flash memory with ECC
  - 32 Kbytes of SRAM with hardware parity check
- Development support: serial wire debug (SWD)
- Package: VFQFPN68L 8x8 mm pitch 0.4 mm

Application

- Charging pads
- RFID Scanners, Portable POS systems
- Up to 30 W power delivery when paired with STWLC89JRO Rx

Description

The STWBC2HP is a digital controller specifically designed for wireless power transmitter (TX) applications. It is a System-in-Package (SiP) that includes an STM32 microcontroller and an application-specific front-end die.

The STWBC2HP is capable of driving the DC-DC stage and the half- or full-bridge inverter stage of a generic wireless battery charging transmitter (TX). It generates and controls the relevant PWM signals using a PWM machine with a resolution of 1.47 ns. To achieve this, the front-end die includes a 40 MHz PLL and a 17-step DLL.

The STWBC2HP front end can work from any DC voltage in the range of 4.1 V to 24 V and embeds:

- 3x half-bridge drivers capable of driving both the FB inverter or the DC-DC MOSFET
- 2x PWM outputs for external gate drivers
- 2x LED drivers
- 3.6 V/5 V monolithic buck DC-DC to supply the analog portion of the die
- 3.3 V LDO to supply the STM32
- 1.8 V LDO to supply the core
- 6 V or 9 V voltage doubler to supply the gate drivers
- Resonant tank current, voltage, and phase sense circuitry and Q-factor driver
- USB D+/D-, CC1, CC2 external interface pins for USB PD

The STM32 microcontroller features an Arm Cortex™-M0+ CPU with up to 128 KB of flash memory and up to 32 KB of SRAM with parity check, operating at a clock frequency of up to 64 MHz. It also includes a 12-bit, 0.5 µs ADC and provides UART, I2C, SPI, and GPIO interfaces.

The STM32 embedded in the STWBC2HP also provides two 12-bit DACs and a USB Power Delivery controller.

Revision history

Table 2. **Document revision history**

Date	Version	Changes
19-June-2025	1	Initial release

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