

# 15W Full-Bridge Power Stage with Voltage/Current Demodulation for High-Integrated Wireless Power Transmitter

## 1 Descriptions

The SC5004 is a highly integrated wireless power transmitter analog front end that contains all of the analog components required to implement a WPC compliant transmitter. The SC5004 integrates a full-bridge power driver with MOSFETs, current sense amplifier, bootstrap circuit, communication demodulator, linear regulator and protection circuit. The SC5004 can work with transmitter controller to create a high-performance wireless power transmitter that complies with both the WPC V1.2.4 Extended Power Profile (EPP) and Baseline Power Profile (BPP). Once an EPP receiver is detected, the transmitter will provide with up to 15W of output power. If a BPP receiver is present, the transmitter will deliver only up to 5W of output power.

The system supports foreign object detection (FOD) by continuously monitoring the amount of power transferred and comparing that to the amount of received power, as reported by the receiver. In order to do this, the SC5004 measures the input DC current very accurately using a current sense amplifier. Besides, the SC5004 also supports input under-voltage lockout (UVLO), over-current protection (OCP) and over-temperature protection (OTP). These protections further enhance the reliability of the total wireless power transmitter system.

The SC5004 is available in a compact 4 x 4 mm FCQFN package.

## 2 Features

- Support 5V/9V/12V input voltage
- Support up to 15W output power
- Integrated voltage and current demodulation
- Integrated 5V LDO for powering MCU
- Integrated four ultra-low Ron FETs
- Integrated FET driver and bootstrap circuit
- Integrated accurate current sense for FOD
- Support various type of transmitter in WPC V1.2.4
  - BPP A11/A11a
  - BPP A6 with single coil or dual coil
  - EPP MPA2
  - EPP MPA5/MPA11 with additional DC-DC
- UVLO/OCP/OTP
- 4mm x 4mm FCQFN package

## 3 Applications

- WPC Compliant Wireless Power Transmitter
- Proprietary Wireless Chargers and Transmitter

## 4 Device Information

Part Number	Package	Dimension
SC5004QFER	FCQFN19L	4mm x 4mm x0.75mm