

20W Full-Bridge Power Stage for High-Integrated, High-Efficiency Wireless Power Transmitter

1 Descriptions

The SC5003Q 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 SC5003Q integrates a full-bridge power driver with MOSFETs, current sense amplifier, bootstrap circuit, communication demodulator and protection circuit. The SC5003Q can work with transmitter controller together 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).

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 SC5003Q measures the input DC current very accurately using a current sense amplifier. Besides, the SC5003Q also supports input under-voltage lockout (UVLO), input over-voltage protection (OVLO), over-current protection (OCP) and over-temperature protection (OTP).

The SC5003Q is available in a compact 4 x 4 mm FCQFN21L package.

2 Features

- Support 1V to 20V full bridge input voltage range
- Support 4V to 20V AVIN input voltage range
- Support up to 20W output power
- AEC-Q100 qualified for automotive applications:
Device temperature Grade 1: -40°C to +125°C, T_A
- Integrated four low R_{dson} power FETs
- Integrated FET driver and bootstrap circuit
- Integrated 5V/200mA buck regulator
- Integrated voltage and current demodulation
- Integrated accurate current sense for FOD
- Integrated Q factor detection
- Single-wire digital interface
- UVLO/OVLO/OCP/OTP
- 4mm x 4mm FCQFN21L package

3 Applications

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

4 Device Information

Part Number	Package	Dimension
SC5003QQFER	FCQFN21L	4mm x 4mm x0.75mm