

# SC8949 High Efficiency, Synchronous, Bi-directional Buck Charger Converter with Integrated MOSFETs and I2C Interface

## 1 Description

SC8949 is a synchronous buck charger with reverse boost discharging function. It integrates two N-channel MOSFETs with ultra-low  $R_{ds(on)}$  and can support 5V high efficiency charging and discharging operation.

In charging mode, it steps down the input voltage to effectively charge the single cell battery. SC8949 supports trickle charging, constant current (CC) charging and constant voltage (CV) charging management functions automatically. When working in discharging mode (reverse boost mode), it can support 5V output and achieve up to 93% efficiency with 3V battery voltage for 5V4A output load.

The SC8949 features I2C interface, so the user can easily control the charging/discharging mode, and program the charging current, charging voltage, output voltage, and output current limits through I2C. It also monitors the VBUS status of up to three USB ports and provides three NMOS gate drivers to control the power path independently.

The IC also provides IMON pin, through which the MCU can monitor the VBUS / VBAT voltage, IBUS / IBAT current and the current of each port in real time. The NTC function guarantees the battery operation safety. All these features help simplify the system design and reduce the BOM.

The SC8949 supports under voltage protection, over voltage protection, over current protection, short circuit protection and over temperature protections to ensure safety under different abnormal conditions.

SC8949 adopts 32 pin 4mm x 4mm QFN package.

## 3 Applications

- Power Bank
- Li-Ion Battery Charger
- Fast Charge
- Smart USB Sockets

## 2 Features

- Charging management, including trickle charging, CC charging, CV charging and charging termination function
- 5V VBUS voltage operation
- Programmable battery voltage from 4.1V to 4.5V
- Integrated MOSFET with ultra-low  $R_{ds(on)}$
- Support 3V VBAT to 5V4A output with 93% efficiency
- Programmable VINREG voltage
- Programmable current limit with 25mA/step
- Programmable output voltage with 10mV/step
- Programmable cable drop compensation
- Insert detection for up to three USB ports
- Integrate N-Gate drivers for up to three USB ports
- Voltage and current monitor through IMON pin
- Supports pass-through operation
- Charging status indication
- Support NTC function
- Under voltage protection and over voltage protection
- Over current protection, short circuit indication and thermal shutdown protection
- QFN-32 4x4 package

## 4 Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
SC8949QFER	32 pin QFN	4.0mm x 4.0mm x 0.75mm