

# Synchronous, 80V Bi-directional Buck-Boost Charger Controller with I2C interface and MPPT

## 1 Descriptions

SC8808 is a synchronous buck-boost charger, which supports buck mode, boost mode and buck-boost mode during forward charging or reverse discharging operation. SC8808 manages multi types of battery charging from wide input range from 4.5V to 80V, supporting trickle charge, pre-charge, constant current charge, constant voltage charge and autonomous termination. The battery discharging mode supports wide output range from 5V to 48V. SC8808 also provides input current and battery current monitoring function.

Through I2C interface, user can set the charging/discharging mode easily, and program the charging current, charging voltage, input voltage regulation, input current limit, OTG output voltage adjustment, current limits and other parameters flexibly. Besides, input/output current limit, charge voltage/discharging voltage, and switching frequency could be set by external resistors.

SC8808 supports frequency dithering to meet better EMI performance and integrates synchronization feature to switching under same frequency with external clock.

SC8808 integrates 11-bit ADC to monitor voltage, current. Full protection is supported including input and battery over-voltage protection, input over-current, over-temperature protection.

SC8808 is available in a 5mm x 6mm QFN-36 Package

## 3 Applications

- Outdoor Power Station
- Industrial Equipment
- Power Backup
- Equipment with Rechargeable Batteries

## 2 Features

- Wide Input Range: 4.5V to 80V, 88V sustainable
- High Efficiency Buck-Boost Conversion
- Buck-Boost Battery Charger up to 16 cells Li-on battery, 18 cells LiFePO4 battery, lead-acid battery
- Charging Management including Trickle charge, Pre-Charge, CC Charge, CV Charge, Auto-recharge
  - Charge current : 1000mA~20A, 150mA/step, for 5mΩ
  - Pre-charge current: 400mA~10A, 100mA/step, for 5mΩ
  - Termination Current: 400mA~6700mA, 100mA/step , for 5mΩ
- Support reverse discharging mode:
  - Power up USB port from battery (USB OTG), Compliant with PD 3.1
  - OTG output voltage 5~48V
  - EPR 28V/36V/48V
  - Output Current: 2375mA~50A, 375mA/step for 2mΩ
- I2C interface
- Input current limit set by external resistor and register, up to 50A, support 2mΩ/5mΩ sense resistor
- Input voltage regulation to avoid adapter overload
- Support external supply for driver, up to 12V
- Switching frequency: 80kHz~480kHz and support frequency dithering and frequency synchronization
- Current monitor for input and output current
- Automatic MPPT algorithm to support solar charging
- Integrated 11-bit high accuracy ADC for current/voltage monitor
- Protection including UVP, OVP, OCP, SCP, OTP
- QFN 5x6-36 Package, 0.5mm pitch

## 4 Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
SC8808QDGR	36 pin QFN	5mm x 6mm x 0.75mm