Synchronous, Bi-directional Buck-Boost Charger Controller with NVDC PowerPath management and I2C interface

1 Descriptions

SC8886S is a synchronous buck-boost charger, which supports buck mode, boost mode and buck-boost mode during forward charging or reverse discharging operation. SC8886S manages 1 to 4 cells battery charging from wide input range from 3.5V to 24V, supporting pre-charge, constant current charge, constant voltage charge. The battery discharging mode supports wide output range from 3V to 24V with 8mV resolution. SC8886S is compliant with Intel IMVP8/IMVP9 specification including system power, input current, charging or discharging current monitoring and processor hot indication. SC8886S adopts Narrow-VDC power path management, which automatically regulates the current and voltage and controls the flow of power.

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

SC8886S supports pass through mode to reduce switching losses during forward charging. The device also supports Vmin active mode to absorb system peak power when only battery powers the system. 10-bit ADC is integrated to monitor voltage, current and power. SC8886S can operate in learn mode and ship mode to meet the user's demands. Full protection is supported including input over voltage protection/undervoltage, system and battery over-voltage protection, MOSFETs over-current protection. over-temperature protection.

SC8886S is available in a 4mm x 4mm QFN-32 Package.

2 Features

- Wide input range: 3.5V to 24V, 29V sustainable
- High efficiency Buck-Boost conversion
- Buck-Boost battery charger for 1 to 4 cell batteries
- Charging management including precharge, fast charge, constant voltage charge, auto-wake up
- Reverse discharging mode, output voltage range: 3V to 24V with 8 mV resolution, comply with USB PD 3.0 standards
- NVDC PowerPath management and dynamic power management
- I2C interface
- Input current limit set by external resistor and internal register
- Switching frequency: 800kHz /1.2MHz
- Integrated PSYS/IADPT/IBAT pin for power and current monitor, compliant with Intel IMVP8/9 standard
- Integrated processor hot indication(/PROCHOT) pin
- Pass through mode (PTM)
- Integrated VMIN active protection (VAP) to supplement system peak power when only battery exists
- 2-Level input current limit for CPU peak power
- Input current optimizer (ICO) algorithm for maximum adapter power capacity
- Learn mode and ship mode for system application
- Integrated high accuracy ADC
- Integrated independent comparator for system voltage monitoring
- Protection including UVP, OVP, OCP, SCP, OTP
- QFN-32 Package

3 Applications

- Ultra-Books, Notebooks, Tablet PCs
- Power Banks
- Industrial Equipment
- Equipment with Rechargeable Batteries

4 Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
SC8886SQDER	32 pin QFN	4mm x 4mm x 0.75mm