

A Very High Efficiency 2S Battery Direct Charger embedded Active Cell Balancer

Features

- 2S2P battery Direct Charger with up to 99% efficiency
- Active cell balancer for 2S battery stacked two individual battery pack (2S2P) via integrated switched capacitor converter
- Max DC 6A for Direct Charge
- Max DC 7A for Switched Capacitor Converter
- 6V to 10.5V VBUS Input Voltage Range
- 2S2P Battery Charge Regulation
 - . Input Current Limit
 - . Charging Current Regulation
 - . Battery Voltage Regulation
- Protections
 - . VBUS, VOUT, and VBAT1/2 OVP
 - . IBUS and IBAT1/2 OCP
 - . Reverse Blocking
 - . Flying Capacitor SCP
 - . Relative OVP
 - . Reverse Bypass OCP
 - . Reverse Bypass VBUS SCP
 - . High Side Battery Detachment Detection
 - . Die Thermal Shutdown
 - . THEM OTP
 - . Watchdog Timer
- A 13-bit ADC for V_{BUS} , $V_{MIDVBUS}$, $V_{BAT1/2}$, V_{OUT} , I_{BUS} , $I_{BAT1/2}$, V_{THEM} and die temperature
- 400kHz Full-Speed I²C Interface
- 72-Bump, 3.5mm x 3.77mm WLCSP Package

Applications

- 2S Foldable Smartphone
- 2S Tablet and Note-PC
- Portable Devices

Description

SM5441 is a high efficiency 2S Li-ion or Li-polymer battery direct charger with an innovative active cell balancer based on a dual phase switched capacitor converter. The direct charger ensures fast direct charge of 2S battery stacked by two individual pack (**2S2P**) with peak efficiency up to 99% and the switched capacitor converter (**SCC**) enables two individual battery to be balanced out.

The device provides deep depth of protections for two individual battery pack. Firstly, battery charge current and battery voltage are securely regulated by programmable thresholds. Secondly, battery over current and battery over voltage protection add an additional layer of protection.

Various operation modes deliver high flexibility of system integration; direct charge, cell balance, reverse bypass, sleep mode and bi-operation modes. Also, the device supports trickle-charge for a heavily discharged battery and detects a battery detachment.

The embedded 13-bit ADC supports high resolution of conversion on VBUS input voltage/current, MIDVBUS voltage, VBAT1/2 output voltage, IBAT1/2 current, VOUT output voltage, battery temperature via THEM voltage and the die temperature.

SM5441 is available in 3.5mm x 3.77mm, 72-Bump WLCSP package.

Device Information

Part	Package	Size
SM5441	72-Bump WLCSP	3.5 mm x 3.77mm

SM5441

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