

# A Very High Efficiency Switched Capacitor 6A Charger with Bypass Mode

## Features

- Integrated External OVP Switch Controller with a Very Fast Response time
- Highly Integrated Switched Capacitor Charger with a Dual mode
  - Maximum 6A Charging Current at 2:1 mode
  - Maximum 4A Charging Current at 1:1 mode
- 97.3% Efficiency at VBAT=4V and IBAT=2A at 2:1 mode
- Embedded Infinite Regulation Loop with an internal Q<sub>RB</sub> Switch
  - VBAT Output Voltage Regulation
  - IBAT Output Current Regulation
- Very Accurate 5-Channel ADC with 12-Bit Resolution
  - VBUS Input Voltage with 4mV Resolution
  - IBUS Input Current with 2mA Resolution
  - VBAT Output Voltage with 2mV Resolution
  - IBAT Output Current with 2mA Resolution
  - Die Temperature with 1°C Resolution
- Smart Protections
  - Programmable Input/Output Over-Voltage Protection
  - Programmable Input/Output Over-Current Protection
  - Programmable Input Under-Current Protection
  - Flying Capacitor Short Protection
  - Die Thermal Shutdown
  - Watchdog Timer
- Up to 1MHz Fast-mode Plus I<sup>2</sup>C Interface
- 36-Bump, 2.65mm x 2.65mm WLCSP Package

## Applications

- Smartphones, Tablet PC, Mobile IOT and Portable Devices

## Description

The SM5470 is a highly integrated dual-mode switched capacitor charger that integrates an external OVP switch controller, an infinite regulation loop and a very accurate 12-Bit ADC. The device features not only a switched-capacitor architecture for a current doubler mode but also a path-through topology for a bypass mode.

This very high efficiency switched capacitor charger with a very low R<sub>DS\_ON</sub> resistance reduces thermal dissipation of a fast charging system, which results in a shorter charging time. The device integrates a stand-alone infinite regulation loop for VBAT and IBAT using an internal Q<sub>RB</sub> switch without an external OVP switch.

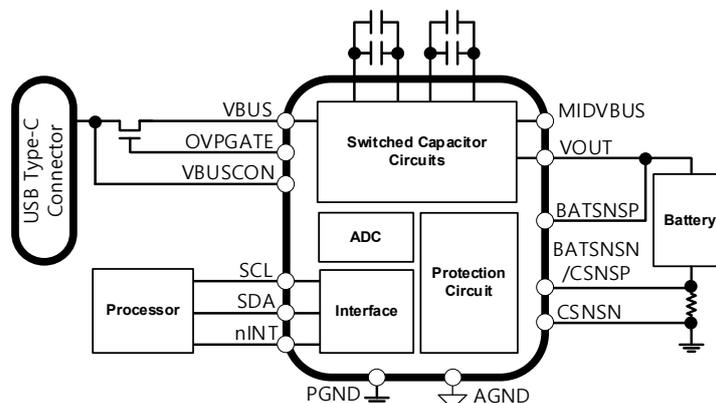
The device also includes a very accurate 12-bit ADC to provide input voltage, input current, output voltage, output current and die temperature needed to manage the charging profile of fast charging system.

The device integrated very powerful protection schemes such as over-voltage, over-current, under-current, over-temperature, a flying capacitor short-circuit and watchdog timer to secure a robust charging for the system.

The SM5470 is available in 2.65 mm x 2.65 mm, 36-bumps WLCSP package.

## Device Information

Part	Package	Size
SM5470	36-Bump WLCSP 0.4 mm Pitch	2.65mm x 2.65mm



# **SM5470**

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