



# High-Accuracy Protector with Cell Balance for 2-5 Cells Li-ION/Polymer Battery

## 1 Descriptions

The SC5650 is a high-accuracy protection IC for 2-5 cells rechargeable battery application. It integrates complete battery protection functions including battery over voltage protection, battery under voltage protection, 3-levels discharge over current protection, charge over current protection, battery over and under temperature protection under both charging and charging condition, chip thermal shutdown protection etc. Besides, the voltage protection delay time is flexible to set by external capacitor.

SC5650 provides secondary battery over voltage protection and indication function. This can be cooperated with fuse, to enhance battery safety.

SC5550 also provides intelligent cell balance function to avoid unbalanced capacity between cells. Cells' lifetime is effectively extended.

In addition, SC5650 also integrates CTCR/CTRD control pin to support stacked application, up to 6-10 cells application.

The SC5650 consumes low supply current under normal working status and automatically enters into sleep mode when battery voltage is lower than under voltage protection threshold, which ensures cells' storing time longer.

SC5650 is available in TSSOP-20 footprint.

## 3 Applications

- Power tool
- Electrical bikes
- UPS backup battery

## 2 Features

- Support 2-5 cells Li-ion/LiFePO<sub>4</sub> rechargeable battery
- IC working temperature range: -45°C~+85°C
- Support over voltage protection (OVP)
  - 3.0 V to 4.575V, ±25mV accuracy(+25°C)
- Support under voltage protection (UVP)
  - 1.2V to 3V, ±50mV accuracy(+25°C)
- Support cell disconnection detection
- Support over voltage secondary protection and indication
- OVP and UVP delay time adjusted by external resistor
- Support 3-levels discharge over current protection:
  - Discharging over current 1 (DOC1): 10mV-85mV
  - Discharging over current 2 (DOC2): 2 x DOC1
  - Short circuit protection (SCP): 4 x DOC1
- Support charge over current protection (COC):
  - Charging over current (COC): 5mV-80mV
- Support battery temperature protection
  - Charging over temperature (COT): 45°C/50°C
  - Charging under temperature (CUT): -5°C/0°C
  - Discharging over temperature (DOT): 65°C/70°C
  - Discharging under temperature (DUT): -20°C/10°C
- Support NTC disconnection detection
- Support cell balance function
- Support 0V charger function
- Support separate path for charge and discharge
- Support stacked application
- Support chip thermal shutdown
- Low power consumption:
  - Normal mode (20uA for typically)
  - sleep mode (5uA for typically)

## 4 Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
SC5650SFER	20 pin TSSOP	6.5mm x 6.4mm x 1.2mm