freescale™ Analog



Analog Solutions—Robust Reliable Performance

BC3770

The most flexible battery charger in the industry

Overview

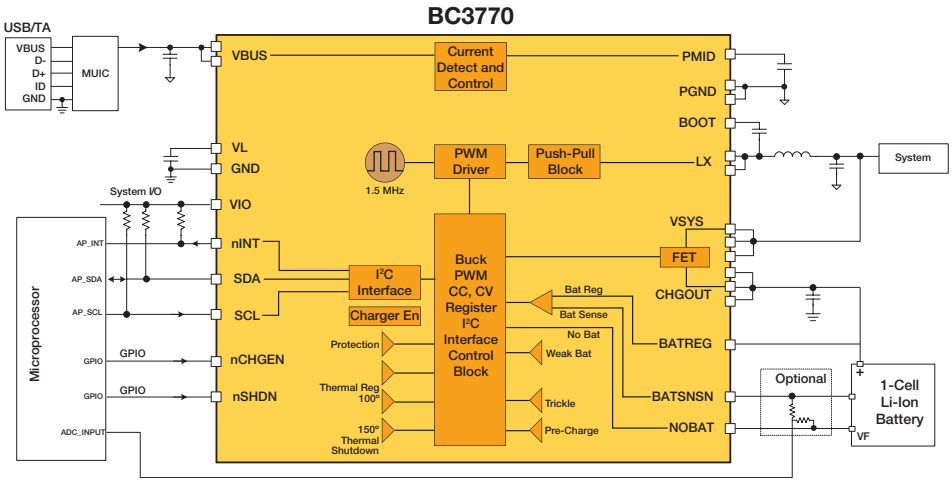
The growing demand for remote intelligence for end users is driving the adoption of products with higher autonomy and battery efficiency. Product manufacturers are placing more importance on batteries to be easily and quickly charged without disturbing the end user experience.

Supporting a dual power path, the Freescale's BC3770 battery charger has been designed to operate while charging the battery. Combined with the adaptive input current limiting feature, the BC3770 optimizes a dynamic share between the battery and the system. To optimize battery lifetime and enable a full charge, the BC3770 features high voltage accuracy over the full temperature range due to the different charging process (constant current, constant voltage and trickle mode) controlled by the I^2C bus. As safety is an important requirement for battery manufacturers, the BC3770 encompasses a set of protection such as thermal regulation and protection as prime examples to avoid damaging any downstream components. Supporting 1.5 MHz switching capabilities combined with a small component count make the BC3770 perfect for system cost optimizations.

Target Applications

- Internet of Things (IoT)
- Handheld consumer devices
- Wearable market
- PoS terminals
- Medical portable equipment
- Consumer tablets

BC3770 Simplified Block Diagram



Features:

- 20 V maximum protection input voltage
- Up to 2 A load current for the system or the battery
- Single cell Li-ion and Li-polymer battery support
- Dual output to both charge the battery and run the use case
- +/- 1% voltage accuracy over full temperature range
- +/- 0.5% voltage accuracy at 25° C
- Programmable interface to monitor the different charging modes
  - Constant current charge
  - Constant voltage charge
  - Trickle mode
- 1.5 MHz switching frequency
- 400 kHz I²C interface
- Boost mode operation for USB OTG
- Different types of protection (thermal protection, thermal regulation, etc.)
- 25-bump 2.27 mm x 2.17 mm WLCSP package
- -40° C to 85° C temperature range support

Benefits:

- Programmable architecture to meet different modes of operation (charging and power management)
- Dual output solution to meet both the charging and use case
- Dynamically share current between the application and battery upon current demand
- Set of protection features to avoid damaging the downstream components
- Lower BOM cost to reduce PCB space, board complexity and system cost

Freescale: A Leader in Analog Solutions

Expanding on more than 30 years of innovation, Freescale is a leading provider of high-performance products that use SMARTMOS technology combining digital, power and standard analog functions. Freescale supplies analog and power management ICs that are advancing the automotive, consumer, industrial and networking markets. Analog solutions interface with real world signals to control and drive for complete embedded systems.

Documentation

Freescale Document Number	Title	Description
BC3770	Battery Chargers	Data Sheet
SG1002	Analog Product Selector Guide	Selector Guide
SG200	Industrial Product Selector Guide	Selector guide

Developments Tools

Freescale Document Number	Description
FRDM-BC3770-EVB	Evaluation board compatible with the Freescale Freedom Development Platform to demonstrate the key features of the BC3770
FRDM-KL25Z	Freescale Freedom Development Platform for Kinetis MCUs used to enable the BC3770 evaluation board

For more information about Freescale products, please visit freescale.com/analog

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