

Programmable Switching Li+ Battery Charger with USB/AC Input, CurrentPath™ Manager, TurboCharge™ Mode*, Low Battery Recovery*, AICL* and USB OTG/HDMI/MHL Support
FEATURES & APPLICATIONS
FEATURES

- Automatic Input Current Limit for universal USB/AC/DC adapter compatibility*
- Optional automatic power source detection per latest USB charging specification 1.2
- USB or AC input with automatic input selection and programmable input current limiting (USB2.0 compliant)
- Up to 750mA charging output from 500mA USB port or 1500mA from AC adapter using proprietary “TurboCharge™ Mode”
- Input/output CurrentPath™ control allows system operation with deeply discharged/missing battery – no start-up delay
- “Low Battery Recovery” mode for >500mA startup from 100mA USB port with deeply discharged cells – no start-up delay*
- USB OTG, HDMI, MHL power support (up to 500mA @ +5V)
- Hardware programmable support for JEITA
- High-efficiency step-down regulator with 3MHz switching
- +4.35 to +6.0V input voltage range
- +18V input tolerance (non-operating)
- High-accuracy float voltage regulation: 1.0%
- Digital programming of major parameters via I²C interface*
- Comprehensive protection features
- Tiny CSP-30 package

APPLICATIONS

- Smartphones
- Tablet PCs
- Portable Media Players
- Perfect Companion for MSM Chipsets

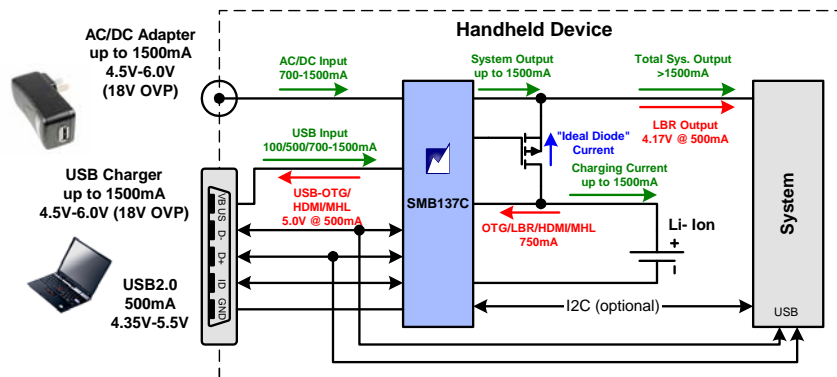
INTRODUCTION

The SMB137C is a programmable single-cell lithium-ion/lithium-polymer battery charger designed for a variety of portable applications. Unlike conventional charging devices, the SMB137C’s high-efficiency switch-mode operation eliminates the low charge current and thermal problems of conventional linear solutions. In addition, the switching architecture in conjunction with programmability enables dramatically faster charging – TurboCharge™ mode - from current limited inputs such as USB.

The SMB137C can switch between USB mode and AC Adapter mode and works seamlessly in conjunction with a USB controller. The device can manage two outputs independently: battery charging and system power. This allows immediate system operation even under missing/deeply discharged battery conditions. The SMB137C can also run its switching regulator in reverse to support “Low Battery Recovery” mode (+4.17V @ 500mA) or USB “On the Go” and HDMI/MHL power (+5.0V @ 500mA).

Charge control includes input current limit (supporting USB2.0), trickle charge, pre-charge, constant current/constant voltage, float voltage and termination/safety settings that are fully programmable via a serial I²C/SMBus and stored in non-volatile memory making the device truly a flexible solution.

The SMB137C also offers a wide variety of features that protect the battery pack as well as the charger and input circuitry: over-current, under/over-voltage, safety timers, charge current/float voltage compensation and thermal protection. Status can be monitored via the serial port for charge state and fault conditions. In addition, the STAT output can be used to signal charge status while the SYSOK output can be used as a System OK indicator. Operating voltage is specified from +4.35V to +6.0V with +18V non-operating input tolerance. The SMB137C is available in an ultra-compact CSP-30 package and is rated over the -30C to +85C temperature range.

Figure 1 – SYSTEM APPLICATION

Using the SMB137C to charge a single cell Li+ battery from USB or AC Adapter power sources

*Patent Granted or Pending