

Hybrid Power Boost (HPB) and Narrow VDC (NVDC) Configurations Combo Battery Charger With SMBus Interface

ISL95520

The ISL95520 is a highly versatile combo battery charger configurable for operating as either a Hybrid Power Boost (HPB) charger or a Narrow VDC (NVDC) charger, supporting 2-, 3- or 4-cell batteries. Both configurations allow the battery to work with the adapter together to supply the system load when it exceeds the adapter capability, referred to as system Turbo mode. HPB charger configuration reverse-boosts battery energy to system bus in order to help the adapter provide the system power in Turbo mode. NVDC charger configuration quickly turns on BGATE to enable the battery to help adapter provide the system power in Turbo mode.

The ISL95520 uses N-channel MOSFETs (NFETs) for all the switches to achieve the best performance and lowest BOM cost. The internal charge pump is capable of turning on all the NFETs fast or slow depending on the circumstance or the need. The ability to quickly turn on NFETs prevents system bus voltage drop when battery is suddenly removed in Turbo mode or in battery learn mode.

The ISL95520 provides many protection features including PROCHOT# indicator for system low voltage, adapter overcurrent, battery overcurrent or overheating, with an array of SMBus programmable parameters for maximum flexibility. It also features hardware based adapter current limit and battery-current limit in addition to SMBus programmable limits.

The ISL95520 provides high accuracy adapter current monitor, battery current monitor and system power monitor outputs. To provide maximum flexibility for working with high power and low power systems, it provides several configurable current-sense resistor value options to achieve the best trade-off of current sensing accuracy vs power loss.

The ISL95520 uses Intersil patented Robust Ripple Regulator (R3™) modulation scheme to provide excellent light load efficiency and fast dynamic response. It is available in a 32 Ld 4x4mm² QFN package.

Features

- Configurable as HPB charger or NVDC charger
- Compliant with Intel PROCHOT# and PSYS requirements
- Adapter current monitor and battery discharging current monitor
- Uses NFET for all the switches
 - Supports removal of battery during battery learn mode
 - Actively controlled inrush current to prevent FET damage
- SMBus programmable settings and high accuracy
- Comprehensive protection features include
 - PROCHOT# indicator for system low voltage, adapter overcurrent, battery overcurrent or system overheating
 - Hardware-based adapter-current and battery-current limits
 - Supports sudden removal of battery in system Turbo mode
- 16 switching frequency options from 350kHz to 1MHz
- Low quiescent current
- Intersil Robust Ripple Regulator (R3™) modulation scheme provides excellent light load efficiency and fast dynamic response
- 32 Ld 4x4mm² QFN package
- Pb-free (RoHS compliant)

Applications

- Devices with rechargeable 2-, 3- or 4-cell batteries

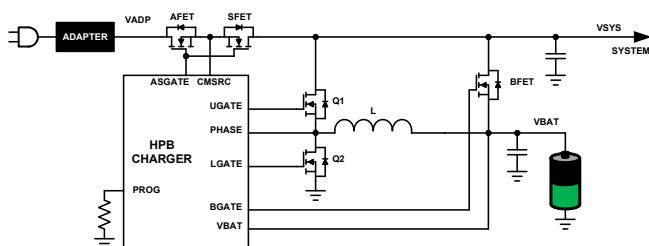


FIGURE 1. HPB CHARGER CONFIGURATION

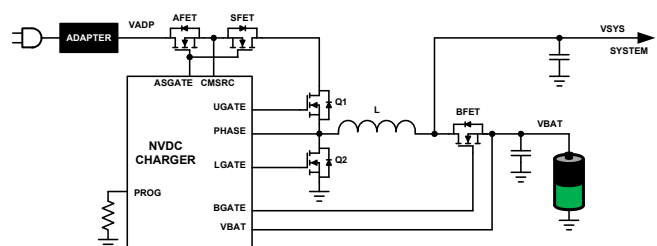


FIGURE 2. NVDC CHARGER CONFIGURATION

For additional products, see www.intersil.com/en/products.html

Intersil products are manufactured, assembled and tested utilizing ISO9001 quality systems as noted in the quality certifications found at www.intersil.com/en/support/qualandreliability.html

Intersil products are sold by description only. Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see www.intersil.com