ISL88750

Narrow VDC (NVDC) Battery Charger with SMBus Interface

The ISL88750 is a highly versatile Narrow VDC (NVDC) battery charger that supports 2-, 3-, or 4-cell batteries. It allows the battery to work with the adapter to supply the system load when it exceeds the adapter capability, referred to as system Turbo mode. The ISL88750 quickly turns on BGATE to enable the battery to help the adapter provide the system power in Turbo mode.

The ISL88750 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 quickly or slowly depending on the circumstance or need. The ability to quickly turn on NFETs prevents system bus voltage drop when the battery is suddenly removed in Turbo mode or in Battery Learn mode.

The ISL88750 features hardware based adapter current limit and battery-current limit in addition to SMBus programmable limits.

The ISL88750 provides a high accuracy adapter current monitor and battery discharging current 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 ISL88750 uses the patented Robust Ripple Regulator (R3™) modulation scheme to provide excellent light-load efficiency and fast dynamic response. The ISL88750 is available in a 32 Ld 4mmx4mm QFN package.

Related Literature

For a full list of related documents, visit our website:

- ISL88750 device page

Features

- Adapter current monitor and battery discharging current monitor
- Uses NFET for all the switches
  - Supports battery removal during Battery Learn mode
  - Actively controlled inrush current to prevent FET damage
- SMBus programmable settings and high accuracy
- Comprehensive protection features include
  - Hardware-based adapter current and battery current limits
  - Supports sudden battery removal in system Turbo mode
- 16 switching frequency options from 350kHz to 1MHz
- Low quiescent current
- SMBus and auto-increment I^2C compatible
- Robust Ripple Regulator (R3) modulation scheme provides excellent light-load efficiency and fast dynamic response
- 32 Ld 4mmx4mm QFN package
- Pb-free (RoHS compliant)

Applications

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

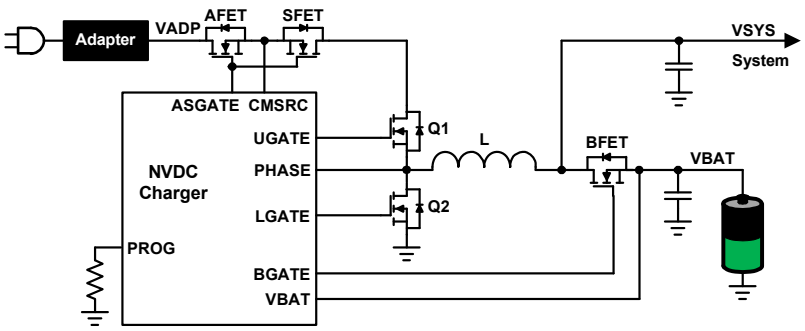


Figure 1. Typical Configuration

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