

ISL9538B

Buck-Boost Narrow VDC Battery Charger with SMBus Interface

FN9321

Rev. 1.00

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The [ISL9538B](#) is a buck-boost Narrow Output Voltage DC (NVDC) charger. The ISL9538B provides NVDC charging, system bus regulation, and protection features for tablets, Ultrabooks, notebooks, power banks, and any USB-C interface platform. The advanced Renesas R3™ technology provides high light-load efficiency and fast transient response.

In Charging mode, the ISL9538B accepts input power from a wide range of DC power sources (such as conventional AC/DC charger adapters, USB PD ports, and travel adapters) and safely charges battery packs with up to 4-series cell Li-ion batteries.

As an NVDC topology charger, the ISL9538B also regulates the system output to a narrow DC range for stable system bus voltage. System power can be provided from the adapter, battery, or a combination of both. The ISL9538B can operate with only a battery, only an adapter, or with both connected. For Intel IMVP8 compliant systems the ISL9538B includes System Power monitor (PSYS) functionality that provides an analog signal representing total platform power. The PSYS output connects to a wide range of Renesas IMVP8 core regulators to provide an IMVP8 compliant power domain function.

The ISL9538B supports buck, boost, or buck-boost operation to the input port from 2- to 4-cell batteries.

The ISL9538B provides SMBus/I²C serial communication that allows programming of many critical parameters to deliver a customized solution.

Related Literature

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

- [ISL9538B](#) device page

Features

- Buck-boost NVDC charger for 2-, 3-, or 4-cell Li-ion batteries
- Input voltage range: 3.2V to 23.4V (no dead zone)
- System output voltage: 2.4V to 18.304V
- Autonomous charging option (automatic completion of charging)
- System power monitor PSYS output, IMVP compliant
- Up to 1MHz switching frequency
- Adapter current and battery current monitor (AMON/BMON)
- Pass-Through mode in forward direction
- PROCHOT# open-drain output, IMVP compliant
- Allows trickle charging of depleted battery
- Ideal diode control in Turbo mode
- Two-level adapter current limit available
- Battery Ship mode option
- SMBus and auto-increment I²C compatible
- 4x4 32 Ld TQFN package

Applications

- 2 to 4-cell tablet, Ultrabook, notebook, power bank, and any USB-C interface portable device requiring batteries

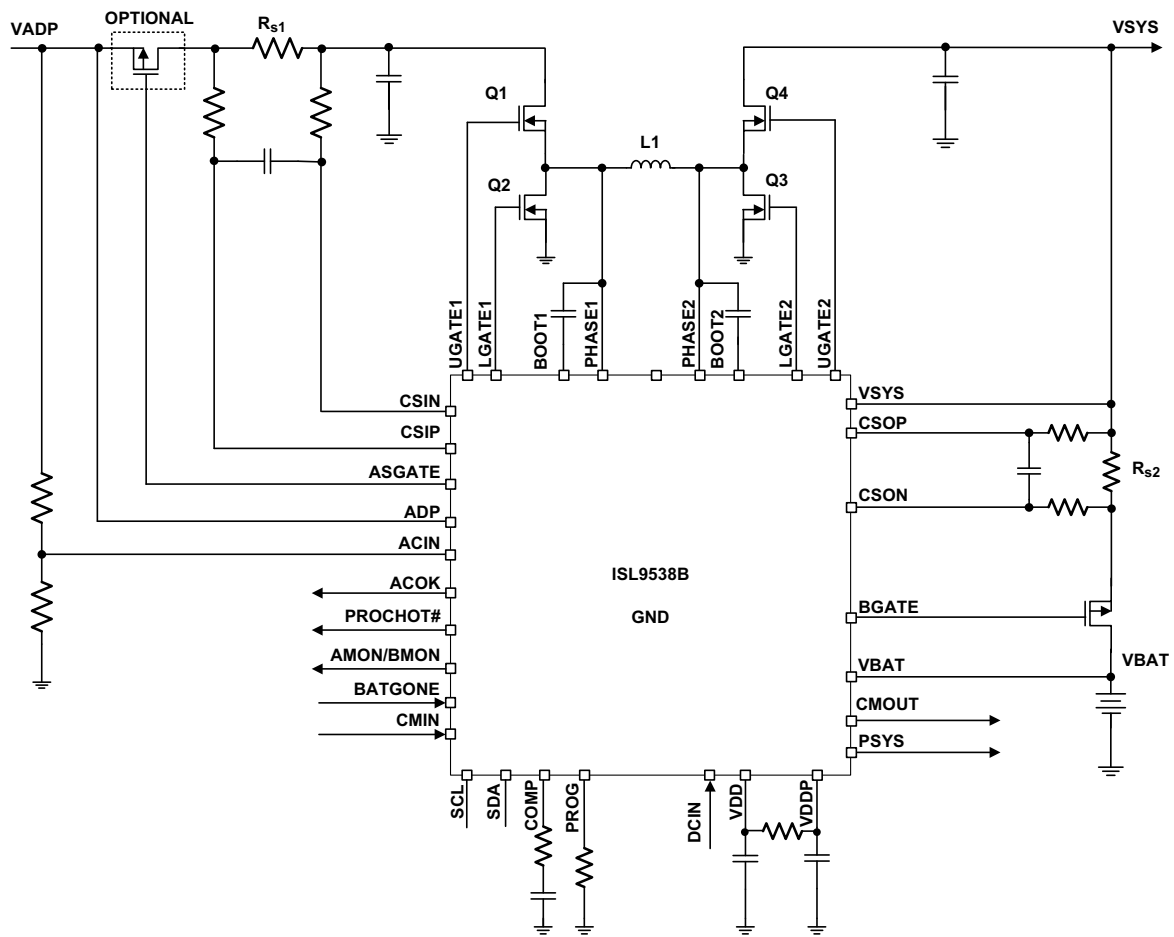


Figure 1. Typical Application Circuit

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