

ISL9238

Buck-Boost Narrow VDC Battery Charger with SMBus Interface and USB OTG

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The [ISL9238](https://www.renesas.com/en/products/power-management/converters/isl9238) is a buck-boost Narrow Output Voltage DC (NVDC) charger. The ISL9238 provides the NVDC charging, system bus regulation and protection features for tablet, Ultrabook, notebook, power bank, and any USB-C interface platform. The advanced Renesas R3™ Technology provides high light-load efficiency and fast transient response.

In Charging mode, the ISL9238 takes 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 a NVDC topology charger, it also regulates the system output to a narrow DC range for stable system bus voltage. The system power can be provided from the adapter, battery, or a combination of both. The ISL9238 can operate with only a battery, only an adapter, or both connected. For Intel IMVP8 compliant systems the ISL9238 includes System Power monitor (PSYS) functionality, which provides an analog signal representing total platform power. The PSYS output connects to a wide range of IMVP8 core regulators to provide an IMVP8 compliant power domain function.

The ISL9238 supports reverse buck, boost, or buck-boost operation to input port from 2- to 4-cell batteries.

The ISL9238 has serial communication using SMBus/I²C that allows programming of many critical parameters to deliver a customized solution.

Related Literature

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

- [ISL9238](https://www.renesas.com/en/products/power-management/converters/isl9238) device page

Features

- Buck-boost NVDC charger for 1-, 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 end of charging)
- System power monitor PSYS output, IMVP compliant
- Up to 1MHz switching frequency
- Adapter current and battery current monitor (AMON/BMON)
- PROCHOT# open-drain output, IMVP compliant
- Allows trickle charging of depleted battery
- Ideal diode control in Turbo mode
- Reverse buck, boost, and buck-boost operation from battery
- Two-level adapter current limit available
- Battery Ship mode option
- SMBus and auto-increment I²C compatible
- 4x4 32 Ld TQFN package

Applications

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

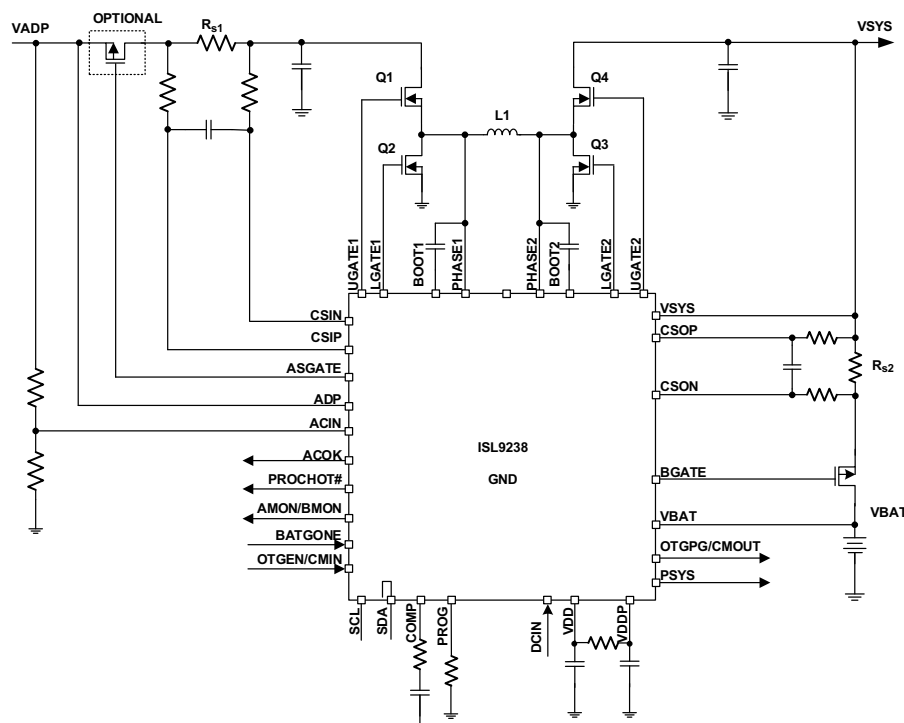


FIGURE 1. TYPICAL APPLICATION CIRCUIT

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