

RTK-251-SinkCharger-ISL9238C 100W USB Type-C® Battery system reference

This is a single port reference design for implementing battery systems with 2 to 4 cells connected in series. This reference design supports a mode where power is only supplied from the USB Type-C® port and a mode that enables a power bank in combination with a lithium-ion battery with BMS.

Introduction

The RTK-251-SinkCharger-ISL9238C is an evaluation board for Universal Serial Bus Power Delivery (USB PD). The RTK-251-SinkCharger-ISL9238C is designed with USB PD controller R9A02G011 and On-Board Charger ISL9238C. On Board Charger ISL9238C supports 2 to 4 cells in series configuration. The RTK-251-SinkCharger-ISL9238C supports USB PD 2.0, USB PD3.1, USB Type-C® Specification.

The RTK-251-SinkCharger-ISL9238C works as a USB Type-C® power sink charger or a power bank. The Battery module requires Renesas' Battery Management System to avoid over discharging, especially when the RTK-251-SinkCharger-ISL9238C is used in the power bank mode. The configuration switches enable the selection of the number of battery cells, the maximum charge current and the operation mode.

The RTK-251-SinkCharger-ISL9238C may be combined with an Evaluation Module of the Battery Fuel Gauging IC (FGIC)

Futures

- USB PD Spec Rev 2.0 and 3.1
- USB Type-C® Cable Spec Rev 2.2.
- Sink Only or Dual Role Power (DRP)
- Under Sink Only SPR Mode 5, 9, 15, or 20V input from USB Type-C® sourcing device.
- PDP rating of 15W, 27W, 45W or 60W in sourcing mode.
- Power Supply Indicator (3 LEDs, green)
- Battery Configuration control for ISL9238C
- Charging Current limits control for R9A02G011
- Renesas on-chip debugging emulator interface for firmware programming and debugging for R9A02G011.
- BMS Evaluation board interface to communicate with Battery w/FGIC.
- Standalone battery charging for power tools, portable vacuums, battery-powered lawn mowers, drones.
- Rotary DIP Switch to select number cells from 2 to 4 cells and charging current from 1A to 6A.

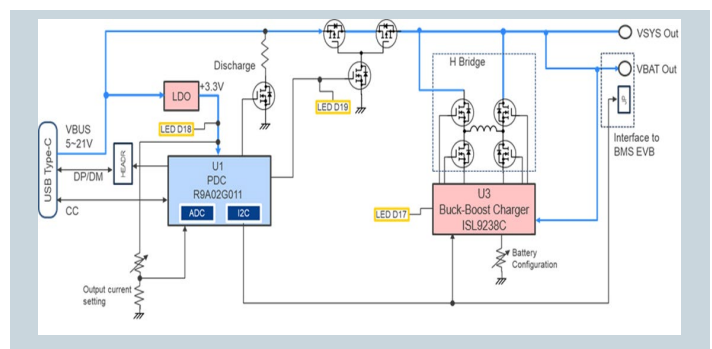
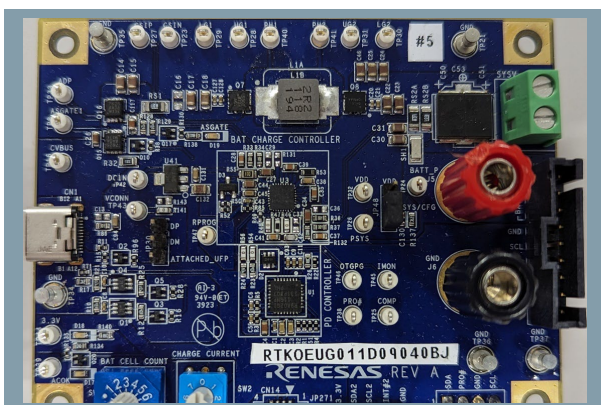
Part Number

RTK-251-SinkCharger-ISL9238C: RTK0EUG011D09040BJ

USB Power Delivery controller: R9A02G011

Buck-Boost Narrow VDC Battery Charger: ISL9238C

Evaluation board and Block Diagram



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