ISL91211A, ISL91211B

Triple/Quad Output PMIC with SPI/I^{2}C Interface

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The ISL91211A is a 4-phase, three output programmable Power Management IC (PMIC) and the ISL91211B is a 4-phase, four output programmable PMIC. They are optimized with highly efficient synchronous buck converters capable of multiphase and single-phase operations that can deliver up to 5A per phase continuous output current. It features four buck controllers and has the capability to reconfigure its power stages to these controllers. This flexibility allows seamless design-in for a wide range of applications that require high output power and small solution size.

ISL91211A and ISL91211B integrate low ON-resistance MOSFETs and programmable PWM frequency, allowing the use of very small external inductors and capacitors. They feature automatic Diode Emulation and Pulse Skipping modes under light-load conditions to further improve efficiency and maximize battery life. The ISL91211A and ISL91211B deliver a highly robust power solution by featuring a controller based on the Renesas proprietary R5 Technology that provides tight output accuracy and load regulation, ultra-fast transient response, seamless DCM/CCM transitions, and requires no external compensation.

In addition to the standard interrupt, chip enable, and watchdog reset functions, ISL91211A and ISL91211B also feature four MPIOs and three GPIOs capable of supporting SPI, I^{2}C communication protocol, and various other pin mode functions.

Applications

- Smartphones, AR/VR Glasses, Drones
- Optical Transceiver Modules
- Artificial Intelligence (AI) Processors
- Client/Enterprise/Data Center SSD, NAS

Features

- Triple output 2+1+1 phases (ISL91211A) or quad output single phase (ISL91211B)
- 2.5V to 5.5V supply voltage
- 5A per phase output current capability
- Small solution size (for four phase design)
- High efficiency (94.7% for $3.8V_{IN}/1.8V_{OUT}$)
- Low I_Q in low power mode
- Proprietary control scheme reduces output capacitor and supports fast load transient (such as 50A/µs per phase)
- ±0.7% system accuracy, remote voltage sensing
- Programmable PWM frequency from 2MHz to 6MHz
- I^{2}C programmable output from 0.3V to 2V
- Independent Dynamic Voltage Scaling (DVS) for each output
- Soft-start and fault detection (UV, OV, OC, OT), short-circuit protection
- 2.551mmx3.67mm 54 ball WLCSP with 0.4mm pin pitch

Related Literature

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

- ISL91211A, ISL91211B device pages
- UG111, “ISL91211AII-EV1Z Evaluation Board User Guide”
- UG116, “ISL91211BII-EV1Z Evaluation Board User Guide”

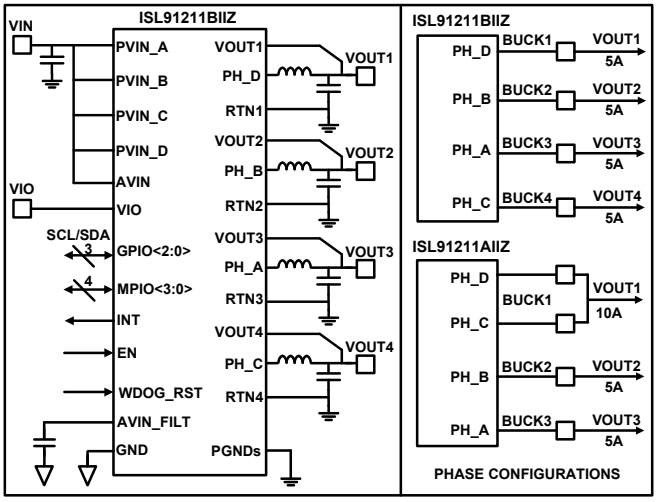

Figure 1. Simplified Block Diagram

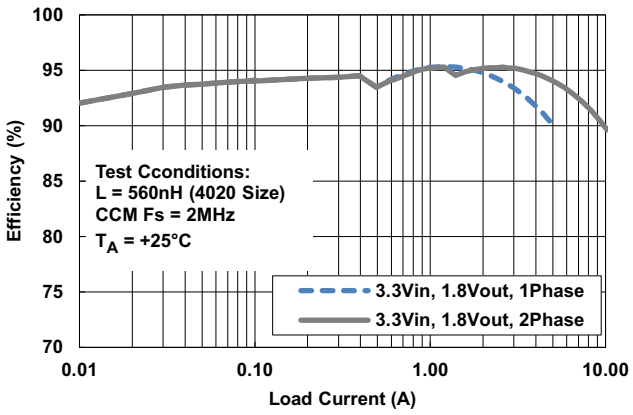

Figure 2. Efficiency vs Load Current

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