

ISL91212A, ISL91212B

Triple/Quad Output PMIC with I²C Interface

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The [ISL91212A](#) is a four-phase, three output programmable Power Management IC (PMIC) and the [ISL91212B](#) is a four-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. They feature four buck controllers and can reconfigure their 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.

The ISL91212A and ISL91212B 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 ISL91212A and ISL91212B deliver a highly robust power solution by featuring a controller based on the proprietary Renesas R5 Technology, which provides tight output accuracy and load regulation, ultra-fast transient response, seamless DCM/CCM transitions, and requires no external compensation.

In addition to standard interrupt and chip enable functions, the ISL91212A and ISL91212B feature three MPIOs and two GPIOs capable of supporting the I²C communication protocol and various other pin mode functions.

Related Literature

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

- [ISL91212A](#), [ISL91212B](#) device page

Features

- Triple output 2+1+1 phases (ISL91212A) or quad output 1+1+1+1 single phase (ISL91212B)
- 2.5V to 5.5V supply voltage
- 5A per phase output current capability
- Small solution size (7x10mm² for 4-phase design)
- High efficiency (94.7% for 3.8V_{IN}/1.8V_{OUT})
- Low I_Q in low power mode
- Patented 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
- I²C 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
- 2.551mm x 3.67mm 35 ball WLCSP with 0.5mm pin pitch

Applications

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

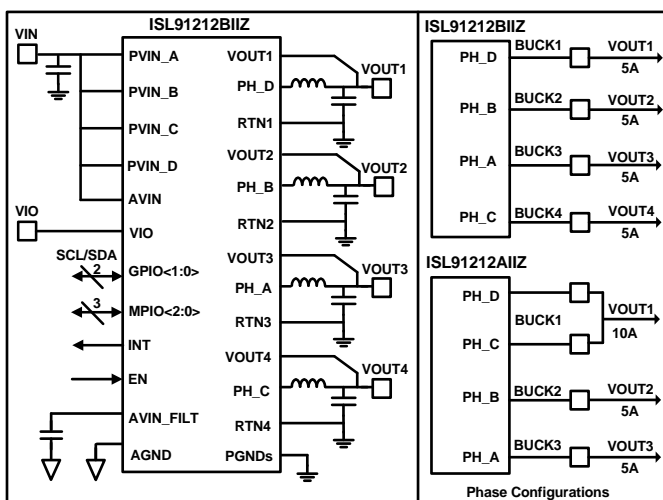


Figure 1. Simplified Block Diagram

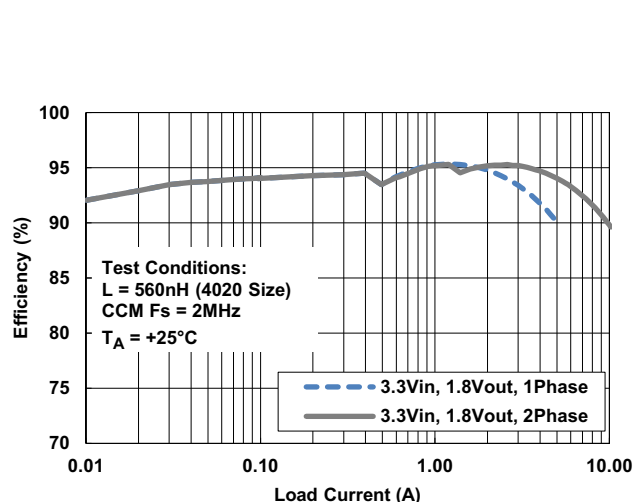


Figure 2. Efficiency vs Load Current

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