

ISL91301A, ISL91301B

Triple/Quad Output Power Management IC

FN8966

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The [ISL91301A](#) is a 4-phase, three output programmable Power Management IC (PMIC) and the [ISL91301B](#) is a 4-phase, four output programmable PMIC. They are optimized with highly efficient, synchronous buck converters capable of multiphase and single-phase operations. The devices can deliver 4A per phase continuous output current for 2.8V to 5.5V supply voltages or 3A per phase current for wider 2.5V to 5.5V supply voltages. It features four buck controllers and can 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.

The ISL91301A and ISL91301B 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 ISL91301A and ISL91301B feature 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 the standard interrupt, chip enable, and watchdog reset functions, the ISL91301A and ISL91301B also feature four MPIOs and two GPIOs capable of supporting SPI, I²C communication protocol, and various other pin mode functions.

Features

- Triple output 2+1+1 phases (ISL91301A) or quad output single phase (ISL91301B)
- 4A per phase for the 2.8V to 5.5V supply voltage, VIN_SEL = AVIN
- 3A per phase for the 2.5V to 5.5V supply voltage, VIN_SEL = GND
- Small solution size
- High efficiency (93% for 3.8V_{IN}/1.8V_{OUT})
- Low IQ 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
- 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
- 2.570mmx2.919mm 42 ball WLCSP with 0.4mm pitch

Applications

- Smartphones, AR/VR glasses, drones
- Optical transceiver modules
- Artificial Intelligence (AI) processors
- Client/enterprise/data center SSD, NAS

Related Literature

For a full list of related documents, visit our website

- [ISL91301A](#), [ISL91301B](#) device pages

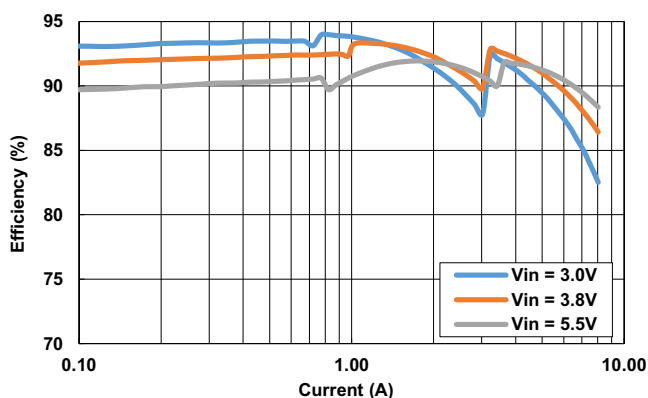


Figure 1. Dual Phase Efficiency ($V_{OUT} = 1.8V$), Load Sweep (0.1A to 8A)

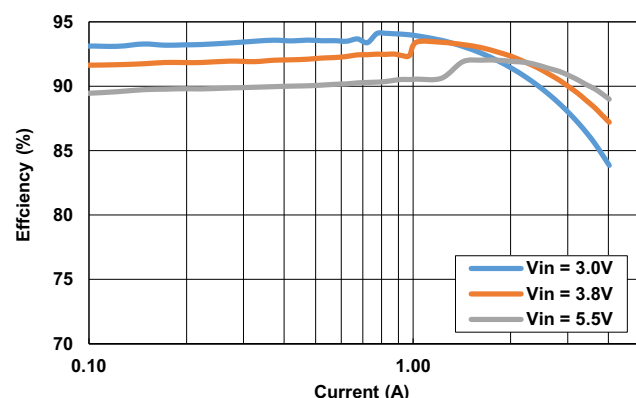


Figure 2. Single Phase Efficiency ($V_{OUT} = 1.8V$), Load Sweep (0.1A to 4A)

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information

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