

ISL99390R5935, ISL99390BR5935

90A Smart Power Stage (SPS) Module with Integrated High Accuracy Current and Temperature Monitors

The ISL99390R5935 and ISL99390BR5935 are 90A Smart Power Stages (SPS) that are compatible with Renesas ISL68/69xxx Digital Multiphase (DMP) controllers and phase doublers (ISL6617A), respectively. The ISL99390R5935 and ISL99390BR5935 offer best in class current sense accuracy over line, load, and temperature. When combined with a Renesas Digital PWM controller, these devices enable precision system level power management and best in class transient response for loadline based regulators. These devices simplify design by eliminating typical DCR sensing networks and associated thermal compensation components. The thermally enhanced 5x6 package enables high density designs.

The ISL99390R5935 and ISL99390BR5935 feature the Renesas tri-state PWM input that works with Renesas multiphase PWM controllers and phase doublers to provide a robust solution in the event of abnormal operating conditions. The ISL99390R5935 and ISL99390BR5935 also improve system performance and reliability with integrated fault protection, including HFET overcurrent, shorted HFET, Smart Reverse Overcurrent (SROCP), Over-Temperature (OTP), and V_{CC} Undervoltage Lockout (UVLO).

Features

- V_{IN} input range: +3.0V to +16V
- Supports 90A DC current
- 3.3V compatible tri-state PWM input (ISL99390R5935)
- 5V compatible tri-state PWM input (ISL99390BR5935)
- $\pm 3\%$ accuracy continuous signal for current monitor
- 8mV/ $^{\circ}\text{C}$ temperature monitor, TOUT
- Comprehensive fault protection for high system reliability
 - High-side FET short and overcurrent protection
 - Smart Reverse Overcurrent Protection (SROCP)
 - Over-temperature protection
 - V_{CC} Undervoltage Lockout (UVLO)
- Enable Input and fault reporting outputs
- Low power mode operation
- Up to 1.25MHz switching frequency
- RoHS-compliant, 5x6 QFN package

Applications

- Accelerators (GPU, ASIC, Artificial Intelligence)
- Core, graphic, and memory VRs for microprocessors
- High density VR for server, networking, and cloud computing
- POL DC/DC converters and video gaming consoles

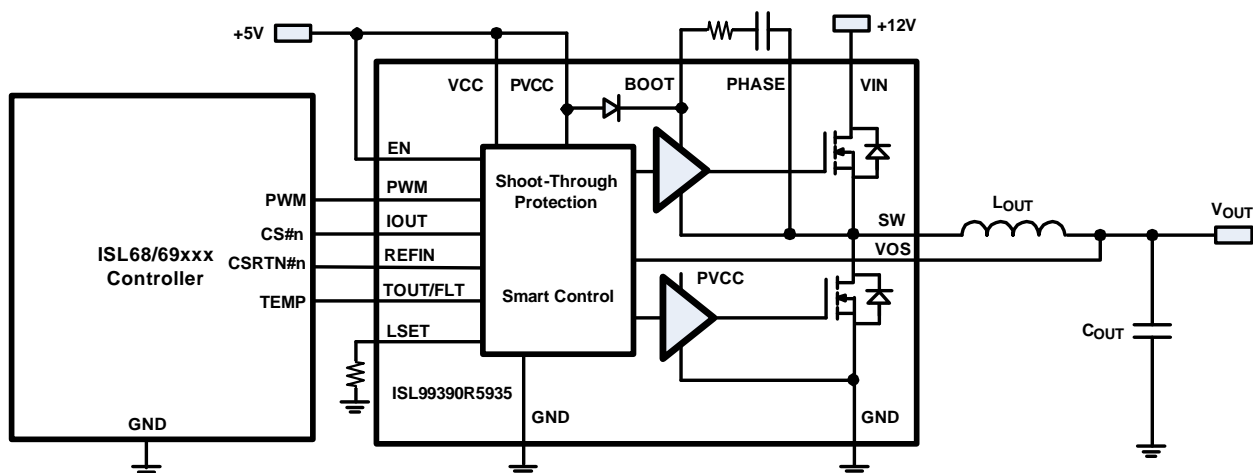


Figure 1. ISL99390R5935 Simplified Application Block Diagram

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