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)
- ±3% accuracy continuous signal for current monitor
- 8mV/°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

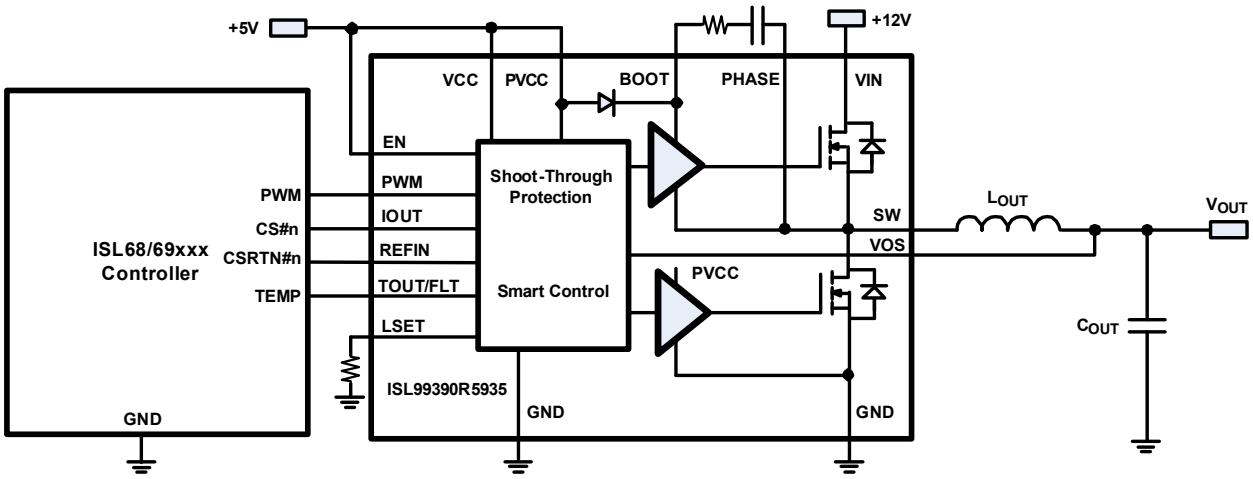


Figure 1. ISL99390R5935 Simplified Application Block Diagram

Downloaded from Arrow.com.

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES (“RENESAS”) PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers skilled in the art designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only for development of an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising out of your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use o any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.0 Mar 2020)

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

Contact Information
For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:
www.renesas.com/contact/

Trademarks
Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

© 2023 Renesas Electronics Corporation. All rights reserved.

Downloaded from Arrow.com.