Short-Form Datasheet

To request the full datasheet, visit the **RAA221320** product page.

RAA221320

20A Smart Power Stage (SPS) with Integrated High Accuracy Current and Temperature Monitors

The RAA221320 is a Smart Power Stage (SPS) compatible with the ISL68xxx/69xxx Digital Multiphase (DMP) controllers. The SPS has integrated high-accuracy current and temperature monitors that are fed back to the controller to complete a multiphase DC/DC system. These monitors simplify design and increase performance by eliminating the DCR sensing network and associated thermal compensation. An industry-leading thermally enhanced 4x5 PQFN package allows minimal overall PCB real estate.

The SPS features a 3.3V compatible tri-state PWM input that works together with the Renesas multiphase PWM controllers to provide a robust solution in abnormal operating conditions. The SPS also improves system performance and reliability with integrated fault protection of UVLO, shorted HFET, over-temperature, and overcurrent. An open-drain fault reporting pin simplifies the handshake between the SPS and controllers and can disable the controller during startup and fault conditions.

Features

- Input range: +3.0V to +16V
- Supports 20A DC current
- 3.3V compatible tri-state PWM input
- Downslope current sensing
- ±3% accuracy current monitor (IMON) with REFIN input
- 8mV/°C temperature monitor with OT flag
- Comprehensive fault protection for high system reliability
  - Shorted HFET and overcurrent protection
  - Over-temperature protection
  - V_{CC} Undervoltage Lockout (UVLO)
- Fault reporting outputs (TMON, Fault#, and IMON)
- Up to 1.5MHz switching frequency
- Pb-free (RoHS compliant), 25 Ld 4x5 PQFN

Applications

- High frequency and high efficiency VRM and VRD
- Core, graphic, and memory regulators for microprocessors
- High density VR for server, networking, and cloud computing
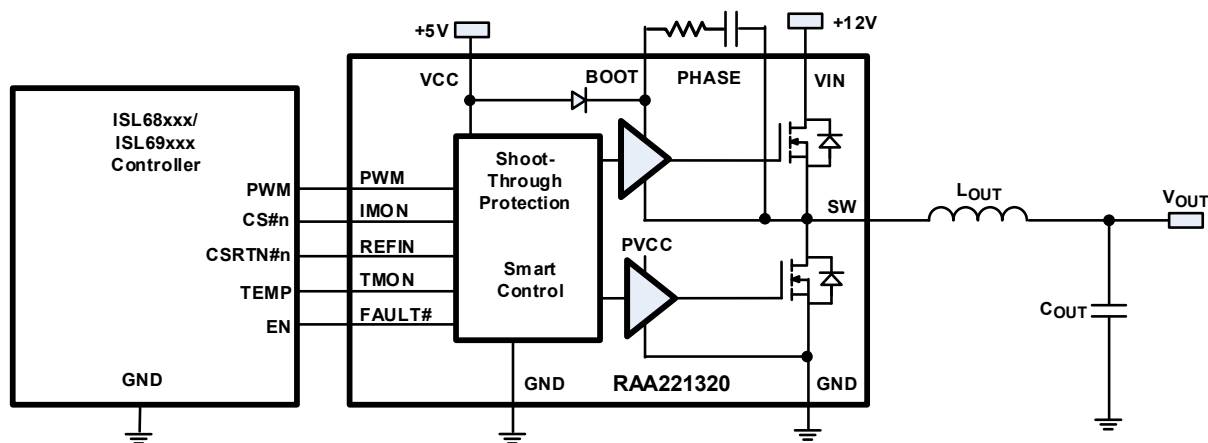- POL DC/DC converters and video gaming consoles

Figure 1. RAA221320 Simplified Application Block Diagram

1. Revision History

Rev.	Date	Description
1.1	Apr 2, 2021	Added Revision History and updated file number with Short-Form Datasheet file numbering scheme.
1.0	Oct 6, 2020	Initial release