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# RAA221320

## Active Samples Available 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
- $\pm 3\%$  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

## Tools & Support

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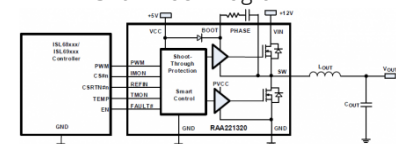
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## Images

RAA221320 - Block Diagram



<https://www.renesas.com/sites/default/files/%20Block%20Diagram.PNG>

- Over-Temperature Protection (OTP)
- V<sub>CC</sub> Undervoltage Lockout (UVLO)
- Fault reporting outputs (TMON, Fault#, and IMON)
- Up to 1.5MHz switching frequency
- Pb-free (RoHS compliant), 25 Ld 4 x 5 PQFN

## Applications

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

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## Product Options

**Orderable Part ID**

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RAA2213204GNP#HB0

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<a href="#">RAA221320 Short-Form Datasheet</a> ( <a href="#">/document/sds/raa221320-short-form-datasheet?language=en</a> )	PDF	Oct 6, 2020
<b>User Guides &amp; Manuals</b>		
<a href="#">PMBus Interface Install Guide - Win7 x86 and x64</a> ( <a href="#">/document/man/pmbus-interface-install-guide-win7-x86-and-x64?language=en</a> )	PDF	May 25, 2010
<b>Application Notes &amp; White Papers</b>		
<a href="#">AN1681: Grounding Techniques</a> ( <a href="#">/document/apn/an1681-grounding-techniques?language=en</a> )	PDF	Jan 19, 2004
<a href="#">AN1684: Nonideality of Ground</a> ( <a href="#">/document/apn/an1684-nonideality-ground?language=en</a> )	PDF	Jan 19, 2004
<b>Other</b>		
<a href="#">PMBus Conversion Software Tool</a> ( <a href="#">/document/lbr/pmbus-conversion-software-tool?language=en</a> )	ZIP	Jul 17, 2018
<a href="#">ZLHLD Software v2.9</a> ( <a href="#">/document/lbr/zlhld-software-v29?language=en</a> )	ZIP	Jul 3, 2018
<a href="#">CompZL Software v1.5.1</a> ( <a href="#">/document/lbr/compzl-software-v151?language=en</a> )	ZIP	Nov 22, 2017
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