

RG8G31220

2 × 128Gbaud Linear TIA

Description

The RG8G31220 is a dual-channel 128Gbaud linear Trans-Impedance Amplifier (TIA) for 800G and beyond Integrated Coherent Receivers (ICRs).

The RG8G31220 integrates two TIA signal paths for I and Q channels. The high-performance, low power, and compact design of the RG8G31220 also enables optical sub-assembly such as u-ICR and IC-TROSA used for small form factor integrated optical module.

Applications

- 800G and beyond coherent systems with 128Gbaud higher-order QAM modulation format
- Optical sub assembly of u-ICR and IC-TROSA for small form factor optical modules.

Features

- Dual-channel integrated 128Gbaud linear TIA with analog control interface
- 50–2.3kΩ typical differential linear trans-impedance gain
- > 30dB dynamic range
- > 80+GHz adjustable SDD21 3dB bandwidth
- Automatic and manual gain control, output voltage control, peak detection, and shutdown functionalities
- Low THD, low crosstalk, and low power consumption
- Output amplitude clipping to prevent peak to peak differential swing above 1200mVppd

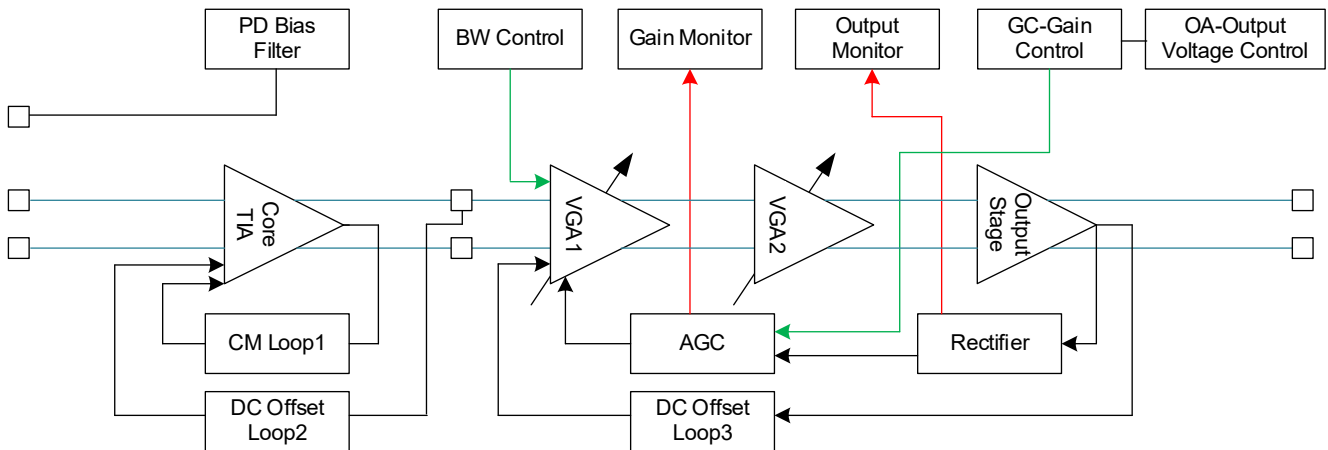


Figure 1. Block Diagram

## 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 who are 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 to develop 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 from 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 of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01)

### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

### Trademarks

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

### 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-us/](http://www.renesas.com/contact-us/).