

## Description

The F1129 family is a series of single-ended input / differential output 1400MHz to 6000MHz high gain RF amplifiers. The combination of low noise figure and high linearity performance allows these device to be used in both receiver and transmitter applications.

The F1129 series is designed to operate with a single 5V power supply using a nominal 70mA of  $I_{CC}$ . With a supply voltage of 5V, the F1129 variant provides 18dB typical gain with 2.2dB noise figure and +32dBm OIP3 at 3600MHz.

Each F1129 variant is packaged in a 2mm x 2mm, 12-pin DFN, with 50Ω single-ended RF input and 50Ω or 100Ω differential RF output impedances for ease of integration into the signal-path.

## Competitive Advantage

- High Gain
- Excellent Gain Flatness Over Frequency
- Outstanding Gain Variance Over Temperature
- STBY Feature
- Differential Output to Directly Drive Transceiver Inputs

## Typical Applications

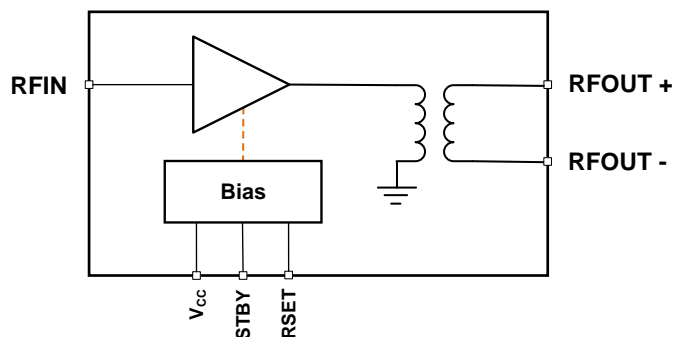
- 5G / MIMO Base Stations
- 4G TDD & FDD Base Stations
- 2G/3G Base Stations
- Repeaters and DAS
- Point to Point Infrastructure
- Public Safety Infrastructure
- Military Handhelds

## Features

- RF Range: 1400MHz to 6000MHz
  - F1129Lx Variants: 1400MHz to 3200MHz
  - F1129Mx Variants: 3000MHz to 4200MHz
  - F1129Hx Variants: 4000MHz to 6000MHz
- Gain = 18dB at 3600MHz
- Noise Figure = 2.2dB at 3600MHz
- OIP3 = +32dBm at 3600MHz
- Output P1dB = +18dBm at 3600MHz
- Near-Constant Gain versus Temperature
- 5V Power Supply
- $I_{CC}$  = 70mA at 5V
- 2mA Standby Current
- 350mW Typical DC Power at 5V Supply
- 50Ω Single-ended Input Impedances
- 50Ω or 100Ω Differential Output Impedances
  - F1129xA Variants: 50Ω Differential Outputs
  - F1129xB Variants: 100Ω Differential Outputs
- 1.8V and 3.3V Logic Support for STBY Control
- Operating Temperature ( $T_{EP}$ ) Range: -40°C to +115°C
- 2mm x 2mm, 12-pin DFN Package

## Block Diagram

**Figure 1. Block Diagram**



## Component Family Variants

Base Part Number	Frequency Band	Frequency Coverage	Differential Output Impedance
F1129LA	Low	1400MHz to 3200MHz	50Ω
F1129LB			100Ω
F1129MA	Mid	3000MHz to 4200MHz	50Ω
F1129MB			100Ω
F1129LA	High	4000MHz to 6000MHz	50Ω
F1129LB			100Ω

## Ordering Information

Orderable Part Number	Package	MSL Rating	Shipping Packaging	Temperature
F1129LANELI	2mm x 2mm x 0.75mm 12 pin DFN	1	Tray	-40° to +115°C
F1129LANELI8	2mm x 2mm x 0.75mm 12 pin DFN	1	Reel	-40° to +115°C
F1129LBNELI	2mm x 2mm x 0.75mm 12 pin DFN	1	Tray	-40° to +115°C
F1129LBNELI8	2mm x 2mm x 0.75mm 12 pin DFN	1	Reel	-40° to +115°C
F1129MANELI	2mm x 2mm x 0.75mm 12 pin DFN	1	Tray	-40° to +115°C
F1129MANELI8	2mm x 2mm x 0.75mm 12 pin DFN	1	Reel	-40° to +115°C
F1129MBNELI	2mm x 2mm x 0.75mm 12 pin DFN	1	Tray	-40° to +115°C
F1129MBNELI8	2mm x 2mm x 0.75mm 12 pin DFN	1	Reel	-40° to +115°C
F1129HANELI	2mm x 2mm x 0.75mm 12 pin DFN	1	Tray	-40° to +115°C
F1129HANELI8	2mm x 2mm x 0.75mm 12 pin DFN	1	Reel	-40° to +115°C
F1129HBNELI	2mm x 2mm x 0.75mm 12 pin DFN	1	Tray	-40° to +115°C
F1129HBNELI8	2mm x 2mm x 0.75mm 12 pin DFN	1	Reel	-40° to +115°C
F1129EVB	Evaluation Board			

## Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
5. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
  - "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
  - "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
6. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
7. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
9. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
10. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
11. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.

(Note2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.4.0-1 November 2017)

## Corporate Headquarters

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