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Freescle RF Low Power Low Noise Amplifiers MC13851

MC13851: General Purpose Low Noise Amplifier with Bypass Switch

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The MC13851 is a cost-effective, high IP3 LNA with low noise figure. This is the leadless package version of the MC13821 device. An integrated bypass switch is included to preserve high input intercept performance in variable signal strength environments and boosts dynamic range. On-chip bias circuitry offers low system cost. The input and output match are external to allow maximum design flexibility. An external resistor is used to set device current which allows balancing required linearity with low current consumption. Gain is optimized for applications >1000 MHz. The MC13851 is fabricated with Freescale's advanced RF BiCMOS process using the eSiGe:C module and is available in the 2x2 mm MLPD-8 leadless package, offering a small, low height, easy-to-solder solution for applications with tight printed circuit board placement requirements.

This page contains information on a preproduction product. Specifications and information herein are subject to change without notice.

For additional information and sample availability contact your local [Freescale Sales Office](#) or [Freescale Authorized Distributor](#).

Features

The MC13851 is intended for applications from 1000 to 2500 MHz and the MC13852 is for applications <1000 MHz.

Gain: 18.7 dB (typ) at 1960 MHz and 17.7 dB (typ) at 2140 MHz

Output third order intercept point (OIP3): 16 dBm at 1960 MHz and 17 dBm (typ) dBm at 2140 MHz

Noise Figure (NF): 1.37 dB (typ) at 1960 MHz and 1.46 dB at 2140 MHz

Output 1dB compression point (P1dB): 8 dBm (typ) at 1960 MHz and 8 dBm (typ) at 2140 MHz

Freescale IP3 Boost Circuitry

Bypass mode has return losses comparable to active mode, for use in systems with filters and duplexers

Bypass mode improves dynamic range in variable signal strength environments

Integrated logic-controlled standby mode with current drain < 1µA

Total supply current variable from 2.5–5 mA using an external bias resistor.

In a receiver system with 20% active mode and 80% bypass mode, the average current drain is < 0.6 mA

On-chip bias sets the bias point

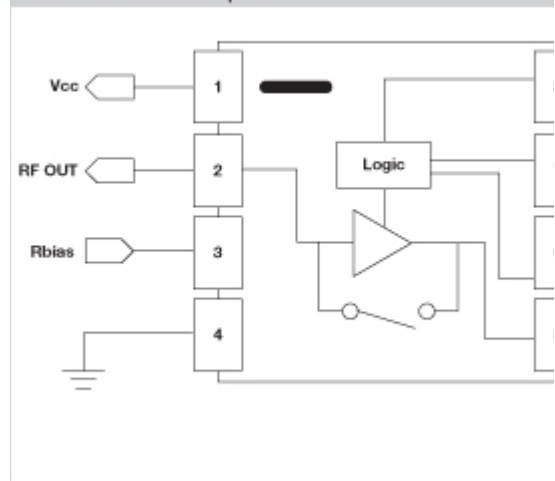
Bias stabilized for device and temperature variations

MLPD-8 leadless package with low parasitics

1575, 1960, 2140 and 2400 MHz application circuit evaluation boards with characterization data are available

Available in tape and reel packaging

MC13851 Low-Noise Amplifier



Target Applications

Ideal for use in any RF product that operates between 1000 MHz and may be applied in:

- Buffer amplifiers
- Mixers
- IF amplifiers
- Voltage controlled oscillators (VCOs)
- Use with transceivers requiring external LNAs
- Smart metering
- Mobile — Cellular front end LNA, GPS, 2 way radios
- Consumer — WLAN, 802.11 b/g
- Auto — GPS, active antenna, wireless security
- Low current drain/long standby time for extended battery li

Evaluation Kits



Evaluation kits are available for this part to save effort. These evaluation kits include a fully characterized evaluation board with data, circuit schematic information. Each evaluation kit is specific to frequency. For the MC13851 there are four kits available:

MC13851-1575EVK for 1575 MHz

MC13851-1960EVK for 1960 MHz

MC13851-2140EVK for 2140 MHz

MC13851-2400EVK for 2400 MHz

Contact Sales or Marketing to order your evaluation kit.