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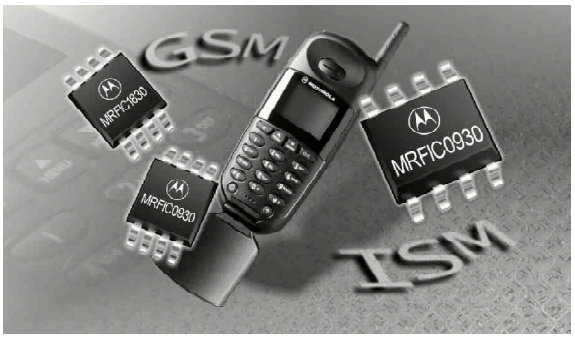
Information Brief



GaAs Low Noise Amplifiers Integrate Step Attenuator Function for 900 MHz and 1.8/1.9 GHz Applications

Gain control improves dynamic range of receivers

The MRFIC0930 and MRFIC1830 are Low Noise Amplifiers (LNAs) that are designed for use at frequencies of 900 MHz, and 1.8 to 1.9 GHz respectively. These Gallium Arsenide two-stage LNAs both have an integrated step attenuator which is controlled by a V_{gain} pin. Also, both amplifiers can be turned off during the transmit mode to reduce current drain by using an Rx Enable pin. These LNAs can both be matched to optimize gain or noise figure with simplified off-chip input matching.

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FEATURES

COMMON FEATURES/SPECIFICATIONS

- Integrated step attenuator
- Receive enable pin
- Simplified off-chip input matching
- High “off-state” isolation
- Supply voltage from 2.7 to 4.5 V
- Low standby current of 20 µA

SPECIFICATION DIFFERENCES	MRFIC0930	MRFIC1830
• Usable Frequency Range	800 to 1000 MHz	1800 to 2000 MHz
• High Gain at frequency	19 dB	19 dB
• Gain Attenuation	18 dB	19.5 dB
• Noise Figure at frequency	1.7 dB	2.1 dB
• Reverse Isolation	41 dB	38 dB
• Power Consumption	24 mW	30 mW

TYPES OF APPLICATIONS

These low noise amplifiers with integrated gain control are ideal for use in GSM or PCS cellular phones that operate in the 900 MHz or 1.8 and 1.9 GHz bands. The MRFIC0930 may also be used in 900 MHz ISM band applications.

- The MRFIC0930 GaAs 900 MHz Low Noise Amplifier is for use in wireless communications systems such as GSM900 and AMPS cellular phones.
- The MRFIC0930 can also be used in Industrial, Scientific and Medical (ISM) band 900 MHz applications.
- The MRFIC1830 GaAs 1.8/1.9 GHz Low Noise Amplifier will find application in 1.8 & 1.9 GHz wireless Personal Communication Systems (PCS) such as DCS1800, PCS1900, PHS, and DECT cellular phones.

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BENEFITS TO YOU

- Lowers system cost and manufacturing costs due to integrated, on-chip gain control circuitry.
- Inherent excellent RF signal isolation with 38 to 41 dB of Reverse Isolation at the operating frequency.
- Improves dynamic range of the receiver with integrated step attenuator for gain control.
- Can be used in three-cell battery-powered applications with a power supply voltage as low as 2.7 V.
- Maximized design flexibility and efficiency with off-chip input matching to optimize gain or noise figure.
- Smaller battery for portable applications with 2.7 V operation and low drain current of only 20 µA in standby mode.
- Improved performance with excellent gain, gain attenuation, and noise figure specifications.
- Higher circuit and system density with miniature Micro-8 (MRFIC0930DM and MRFIC1830) and SO-8 (MRFIC0930 only) surface mount packages.
- Improved reliability due to lower power dissipation.

A SOLUTION FOR THESE QUESTIONS

- Do you want to reduce the parts count and lower your manufacturing costs by using an LNA with on-chip gain control circuitry?
- Do you need more RF signal isolation for your system?
- Do you want to improve the dynamic range of your receiver with an LNA that has an integrated step attenuator for gain control.
- Does your design require that the battery size be reduced with a supply voltage as low as 2.7 V and low power consumption?
- Would you like to improve your design flexibility by customizing the input matching to optimize gain or noise figure for the LNA?
- Do you need to improve the performance of your wireless or RF product by designing in an LNA that has excellent gain, gain attenuation, and noise figure specifications?
- Do you want to reduce the pc board area for your portable RF product?

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LITERATURE

Complete data sheets containing full specifications, characteristic curves, and application circuit configurations are available through Motorola's LDC as MRFIC0930/D and MRFIC1830/D. Alternately, call Mfax at 602/244-6609 and key-in MRFIC0930 and/or MRFIC1830.

ORDERING INFORMATION

Device	Operating Temperature Range	Package in Tape & Reel
MRFIC0930R2	T_A = – 30°C to + 70°C	SO-8*
MRFIC0930DMR2		Micro-8*
MRFIC1830R2		Micro-8*

* (2,500 units per 16 mm, 13 inch reel)

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