



Information Brief



First Fully Monolithic RF Cascode IC Amplifiers

Off-chip matching maximizes flexibility

The MRFIC0915 and MRFIC0916 are cost-effective, high isolation cascode amplifiers that operate at frequencies ranging from 100 MHz to 2.5 GHz. These unique silicon monolithic ICs are available in the industry standard SOT-143 miniature surface mount package, saving significant printed circuit board space in a wide variety of applications. Both devices have on-chip bias circuitry that sets the bias point, while off-chip matching maximizes design flexibility and efficiency.

The MRFIC0915 is a lower bias current (2.5 mA) version of the MRFIC0916, which has a bias current of 5.6 mA at a supply voltage of 2.7 V. The higher current MRFIC0916 offers improved specifications for Small Signal Gain, Reverse Isolation, and Output Power. These integrated cascode amplifiers are ideal for Voltage Controlled Oscillators (VCOs), buffer amplifiers, Low Noise Amplifiers (LNAs), mixers, and IF amplifiers in RF end products.

FEATURES

COMMON SPECIFICATIONS

- Usable frequency range of 100 MHz to 2.5 GHz
- On-chip bias circuitry sets bias point
- Supply voltage from 2.7 to 5.0 V
- Noise figure of 1.9 dB at 850 MHz

SPECIFICATION DIFFERENCES

	MRFIC0915	MRFIC0916
• Bias Current ($V_{CC} = 2.7\text{ V}$)	2.5 mA	5.6 mA
• Small Signal Gain ($V_{CC} = 2.7\text{ V}$; $f = 850\text{ MHz}$)	16.2 dB	18.5 dB
• P_{out} @ 1 dB Gain Comp. ($V_{CC} = 2.7\text{ V}$; $f = 850\text{ MHz}$)	-4.6 dBm	2.3 dBm
• Reverse Isolation ($f = 850\text{ MHz}$)	38 dB	44 dB

TYPES OF APPLICATIONS

These integrated cascode amplifiers are ideal for use in any RF product that operates between 100 MHz and 2.5 GHz, and may be applied in:

- Voltage Controlled Oscillators (VCOs)
- Buffer Amplifiers
- Low Noise Amplifiers (LNAs)
- Mixers
- IF Amplifiers

BENEFITS TO YOU

- Higher circuit and system density with miniature surface mount package.
- Inherent excellent RF signal isolation with 38 to 44 dB of Reverse Isolation at 850 MHz.
- Simplified design with an integrated cascode amplifier in a single package.
- Lower system cost and manufacturing costs due to integrated, on-chip bias circuitry.
- 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 matching.
- Smaller battery for portable applications with 2.7 V operation.



A SOLUTION FOR THESE QUESTIONS

- Do you need to use one or more cascode amplifiers in your design to enhance the RF signal isolation in your wireless or RF product?
- Do you want to reduce the pc board area for your portable RF product?
- Do you need more isolation between your VCO and mixer?
- Does your design require that the battery size be reduced with a supply voltage as low as 2.7 V?
- Do you want to reduce the parts count and lower your manufacturing costs by using an integrated cascode amplifier with on-chip bias circuitry?
- Would you like to improve your design flexibility by customizing the matching for your cascode amplifier in VCO, buffer amplifier, LNA, IF amplifier and/or mixer designs?

LITERATURE

Complete data sheets containing full specifications, characteristic curves, S-parameters, typical noise parameters, and application circuit configurations are available through Motorola's LDC as MRFIC0915/D and MRFIC0916/D. Alternately, call Mfax at 602/244-6609 and key-in MRFIC0915 and/or MRFIC0916.

ORDERING INFORMATION

Device	Operating	
	Temperature Range	Package
MRFIC0915T1	T _C = -35°C to +100°C	SOT-143
MRFIC0916T1		Tape and Reel*

*(3,000 units per 8 mm, 7 inch reel)



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