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Freescale RF Low Power Low Noise Amplifiers MC13850

MC13850: General Purpose Low Noise Amplifier with Bypass Switch

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The MC13850 is a cost-effective, high IP3 LNA with low noise figure. This is the leadless package version of the popular MBC13720 device. As with the MBC13720, this device is designed for general purpose RF applications, yet has excellent high frequency gain and noise figure. An integrated bypass switch is included to preserve high input intercept performance. The input and output match are external to allow maximum design flexibility. The LNA has two selectable IP3 modes, a bypass mode and a standby mode. The MC13850 is fabricated with an advanced RF BiCMOS process using the SiGe:C module and is packaged in the MLPD-8 leadless package.

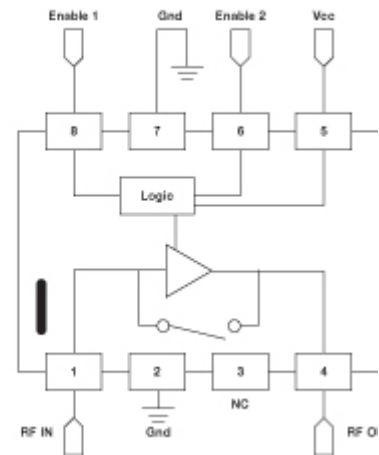
This page contains information on a preproduction product. Specifications and information herein are subject to change without notice.

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

Features

- RF input frequency = 400 to 2500 MHz
- Gain: 21 dB at 470 MHz, 14.5 dB and 1960 MHz and 12 dB at 2.4 GHz in high IP3 mode
- Input third order intercept point (IIP3): 10 dBm at 1960 MHz, 13 dBm at 2.4 GHz and -2.5 dBm at 860 MHz in high IP3 mode
- Noise Figure (NF): 1.6 dB at 860 MHz, 1.4 dB at 1960 MHz and 1.55 dB at 2400 MHz in low IP3 mode
- Output 1dB compression point (P1dB): 9 dBm at 470 MHz and 11.5 dBm at 1960 MHz in high IP3 mode
- Selectable IP3 mode allows for running at the desired IP3 performance for a receiver's linearity requirements
- 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 <math>< 1\mu\text{A}</math>
- Total supply current: 5 mA at 2.7 V in low IP3 mode and 10 mA in high IP3 mode. <math>< 10\mu\text{A}</math> in bypass mode
- In a receiver system with 20% active mode and 80% bypass mode, the average current drain is 1 mA
- On-chip bias sets the bias point
- Bias stabilized for device and temperature variations
- MLPD-8 leadless package with low parasitics
- 470-860, 900, 1900 and 2400 MHz application circuit evaluation boards with characterization data are available
- Available in tape and reel packaging

MC13850 Low-Noise Amplifier



Target Applications

Ideal for use in any RF product that operates between 400 MHz may be applied in:

- Buffer amplifiers
- Mixers
- IF amplifiers
- Voltage controlled oscillators (VCOs)
- Use with transceivers requiring external LNAs
- ISM
- Mobile — Cellular front end LNA, GPS, 2 way radios
- Consumer — WLAN, 802.11 b/g
- Auto — RKE, TPMS, GPS, active antenna, wireless secur

Evaluation Kits



Evaluation kits are available for this part to save effort. These evaluation kits include a fully featured evaluation board with data, circuit schematic information. Each evaluation kit is specific to frequency. For the MC13850 there are five kits available:

- MC13850-470EVK for 470-860 MHz
- MC13850-900EVK for 900 MHz
- MC13850-900HEVK for higher IP3 at 900 MHz
- MC13850-1960EVK for 1900 MHz
- MC13850-2400EVK for 2400 MHz

Contact Sales or Marketing to order your evaluation kit.