



## Applications

- Wireless infrastructure including GSM, CDMA, WCDMA, ISM, and TD-SCDMA
- Ultra low noise applications

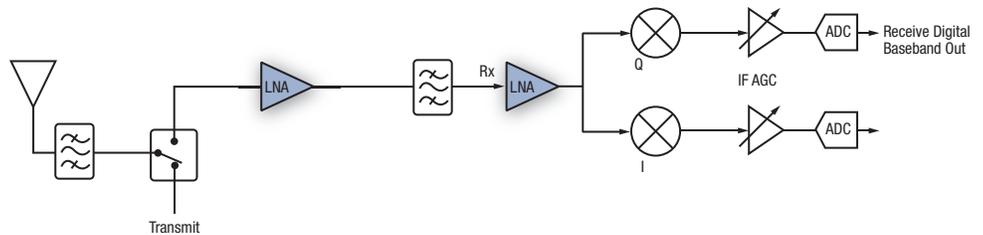
## Features

- Adjustable gain: 15–25 dB
- High output 3rd order intercept: 33.5 dBm @ 75 mA
- Adjustable supply current, 30–100 mA
- Low cost small 8-lead QFN 2 x 2 Skyworks Green™ package

## **WEB** Ultra Low Noise Two-Stage Amplifiers

Skyworks new two-stage Low Noise Amplifier (LNA) products meet the demanding ultra low noise figure and high linearity needs of today's receiver designs. Fabricated from Skyworks' advanced pseudomorphic high electron mobility transistor (pHEMT) process, these multi-stage amplifiers have the flexibility to achieve varied gain and linearity. These devices are offered in a small, low cost 8-lead QFN 2 x 2 mm package which is compatible with the footprint of the TSLP package.

An integrated interstage matching network on die to reduce the external SMTs is needed. Using the recommended schematics from Skyworks, the device has a tested low noise figure of 0.6 dB and gain of 17 dB. The device also allows designers to adjust current and gain without degrading noise figure. The gain is adjustable through use of feedback, and can be increased as high as 25 dB by removing feedback components.

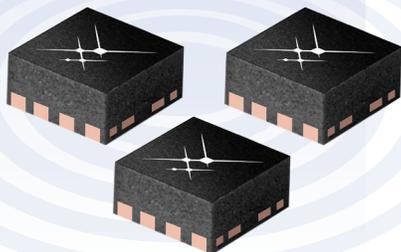


Typical Receiver Block Diagram

## Skyworks Family of pHEMT Two-Stage Low Noise Amplifiers

Part Number	Frequency (MHz)	Gain Typ. (dB)	Test Freq. (MHz)	NF (dB) <sup>(1)</sup>	OIP3 Typ. (dBm)	OP <sub>1</sub> dB (dBm)	V <sub>DD</sub> (V)	Quiescent Current Typ. (mA)
SKY65037-360LF	700–1200	15–25	900	0.6	33.5	18	5	75
SKY65040-360LF	1500–2400	15–25	1900	0.6	34.0	18	5	65
SKY65066-360LF	2300–2700	15–25	2500	0.6	34.0	17	5	75

1. Input connector loss removed from measurement. Unconditional-stability matching used.



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## Typical Performance

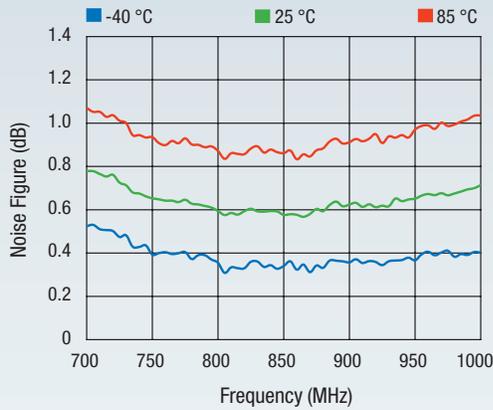


Figure 1. SKY65037-360LF Noise Figure vs. Frequency for Multiple Temperatures, Input RF Connector and Board Trace De-embedded from Measurement

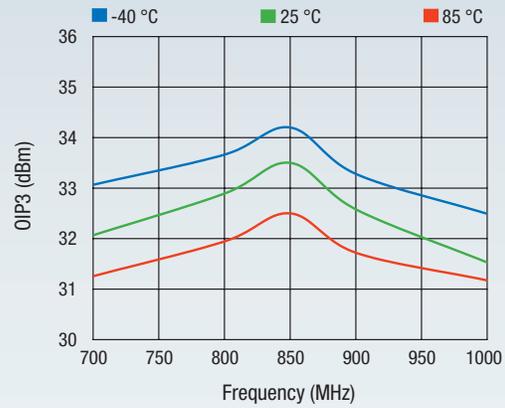
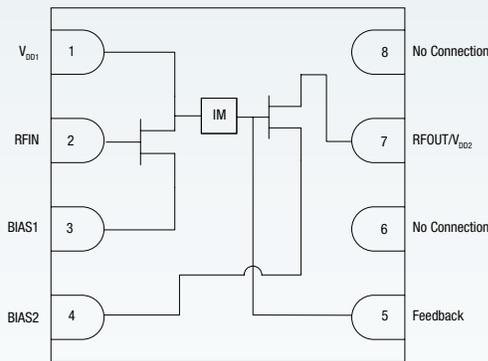


Figure 2. SKY65037-360LF OIP3 vs. Frequency Over Temperature,  $P_{IN} = -18$  dBm/Tone, 10 MHz Tone Spacing



Two-Stage Amplifier Internal Schematic

## Two-Stage Device Biasing Summary

The internal layout of the part contains a single MMIC device comprising of 2 depletion mode pHEMT transistors. The input transistor of the amplifier and is typically biased at 20% IDSS for best noise figure performance. The second transistor provides a high gain stage without effecting noise figure. The gain and linearity performance of the second stage can be adjusted with feedback and biasing. The on die interstage matching network significantly reduces the overall external component count.



Through our Green Initiative™, we are committed to manufacturing products that comply with global government directives and industry requirements.

Skyworks is continuously innovating RF, analog and mixed-signal ICs. For the latest product introductions and information about Skyworks, visit our Web site at [www.skyworksinc.com](http://www.skyworksinc.com)

For additional information on our broad overall product portfolio, please contact your local sales office or email us at [sales@skyworksinc.com](mailto:sales@skyworksinc.com).

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