HL9323 Sampler / Harmonic Mixer

The HL9323 is a high-precision sampler / harmonic mixer offering better than -60 dBc linearity in the second and third harmonics up to 20 GHZ (RF).

Figure 1: HL9323 Sampler / Harmonic Mixer

Features and Technical Specifications

RF Bandwidth (typical, from reference signal)	15 GHz (-3 dB) 19 GHz (-6 dB)
LO Input Frequency, Sinusoidal	1 GHz to 2.5 GHz
LO Input Frequency, Square Wave	10 Hz to 2.5 GHz
Conversion Loss	-24 dB
LO to RF Isolation	67 dB
Linearity, Second Harmonic Distortion*	-68 dBc, see *Figure 2* on next page
Linearity, Third Harmonic Distortion*	-66 dBc, see *Figure 3* on next page
Noise Floor	-107 dBm
Time Domain Response	See *Figure 5* on next page
Power Supplies	+12 V (115 mA) +3.3 V (35 mA) -5 V (150 mA) -8 V (40 mA)
Power Dissipation	2.25 W
Connectors	SMA, 2 x Jack RF in, 1 x Jack IF, 1 x Jack LO
Dimensions	57.2 x 53.3 x 13.9 mm 2.25″ x 2.1″ x 0.55″
Weight	36 g, 1.27 oz
Temperature Limits	0° to +40° C, operating -40° to +85° C, storage
Warranty	1 year, repair or return at the sole discretion of HYPERLABS, Inc.

* NOTE: Harmonic distortion measurements taken under test conditions: LO = 1 GHz + 5 dBm, Pin = 100 MHz 0 dBm.

.

Applications

- Frequency down conversion
- Harmonic mixing
- Use in network analyzers, TDRs, sampling oscilloscopes, and spectrum analyzers
- High-speed front end for A/D converters

Deployment Notes

The HL9323 requires a differential RF input. Use of a precision broadband balun, such as the HL9402 from HYPERLABS, is highly recommended.

This product comes standard with SMA connectors. For pricing and availability of other connector types, please contact HYPERLABS.

Export Information and Restrictions

An export license may be required to purchase this product from outside of the United States. Please contact HYPERLABS for more information.

HL9323 Measured Data

In *Figure 2* below, the linearity curves of the HL9323 are shown for the Second and Third Harmonics. The horizontal axis is Pin, and the vertical is Pout.

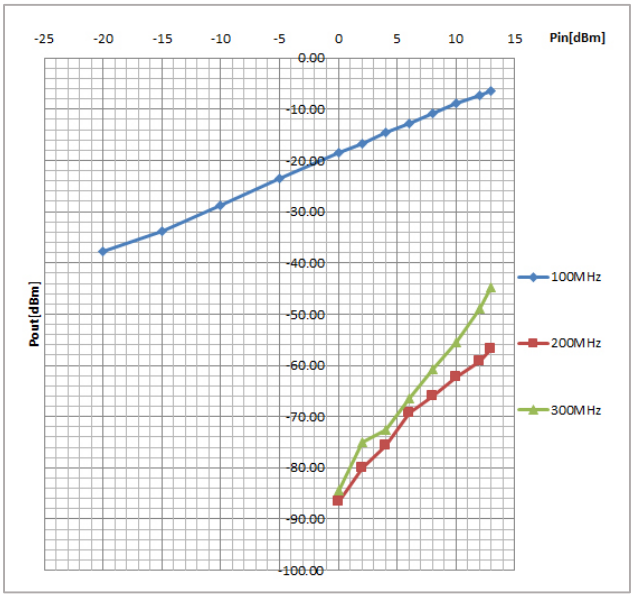

Figure 2: Linearity chart of the HL9323

In *Figure 3*, the RF response of the HL9323 is shown up to 20 GHz. Vertical scale is Pout (dBm).

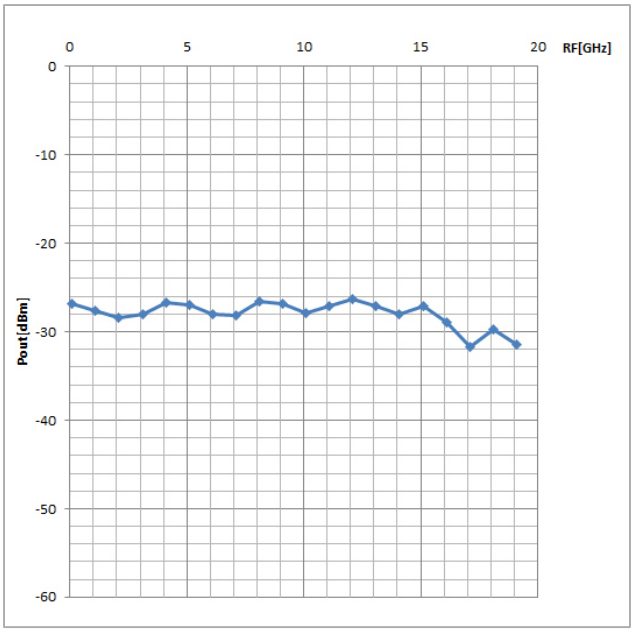

Figure 3: RF response of the HL9323

HL9323 Measured Data (cont.)

Figure 4 shows the IF Response up to 2 GHz (four Nyquist Zones). Vertical scale is Pout (dBm).

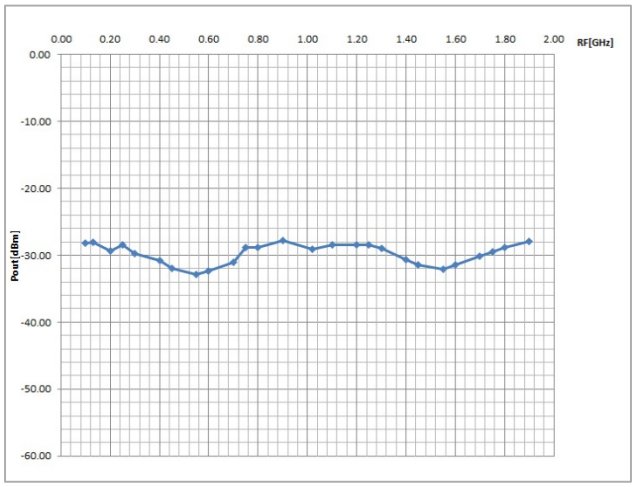

Figure 4: IF response of the HL9323

Figure 5 shows the IF output in the time domain, or modulation curve, for LO = 1 GHz +5 dBm and RF input = 100 MHz 0 dBm.

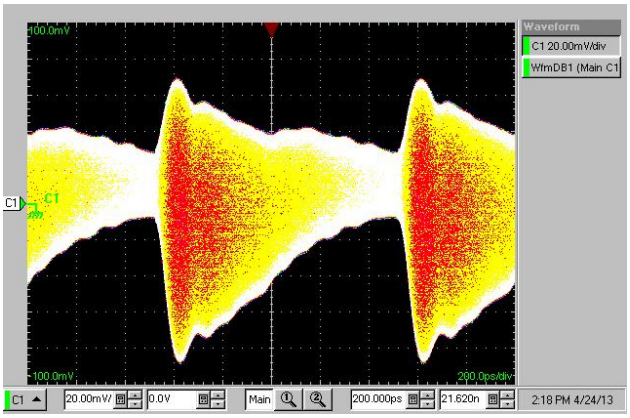

Figure 5: HL9323 modulation curve

Design and Fabrication

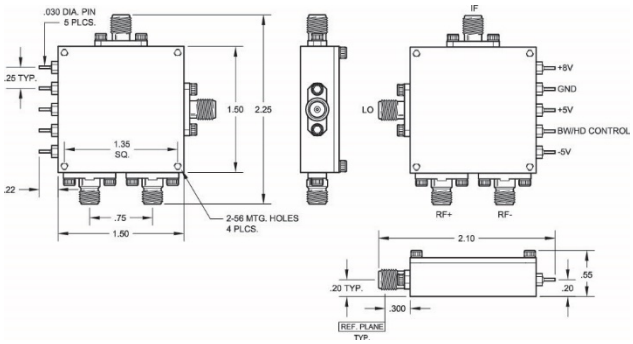

Figure 6: HL9323 dimensional drawing

Design and Fabrication

The HL9323 features an integrated circuit designed by HYPERLABS using Agilent™ ADS software.

The IC was fabricated at the TriQuint™ facility in Hillsboro, Oregon. Final assembly was performed by HYPERLABS in Beaverton, Oregon.

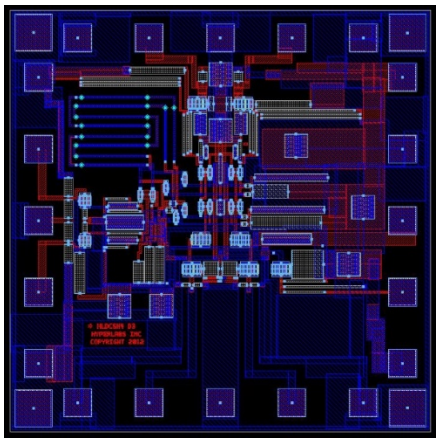

Figure 7: HL9323 integrated circuit layout in Agilent™ ADS