TL0374J

0.03 – 3.0 GHz GaAs Ultra Low Noise Amplifier

Application Note: TL0374J EVB B

Application Note

2500 MHz~2700 MHz

5.0 V, 60 mA

Rev-2.2

List of Contents

1. General Description

The TL0374J is a broadband, ultra-low Noise Amplifier (LNA) providing high gain and linearity. With a simple input and output match, this LNA can be tuned for different frequency bands targeting LTE (small cells and infrastructure) and any other applications requiring low noise, high gain, and linearity. For > 3 GHz frequency band, TL0375J can be considered. The TL0374J is packaged in a compact, low-cost Dual Flat No Lead (DFN) 2 x 2 x 0.75 mm, 8 pin plastic package.

TL0374J-EVB-B is an evaluation board specially tuned for frequency range of 2500 MHz~2700 MHz applications. Its high gain, low noise performance makes it suitable.
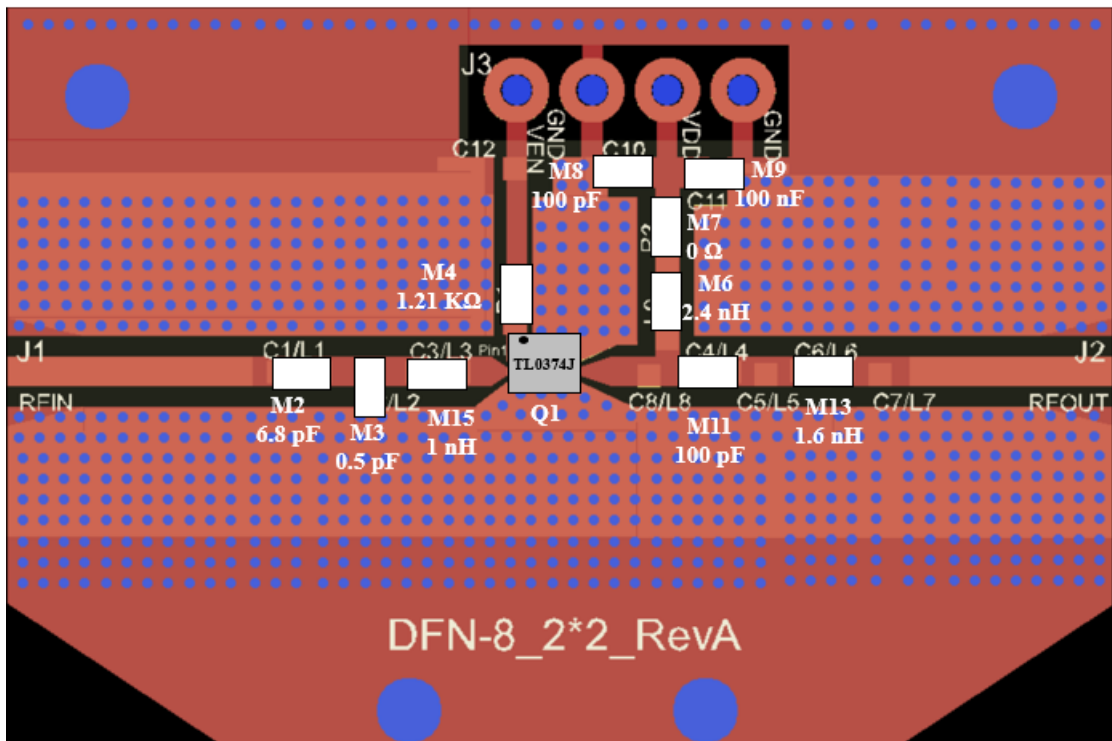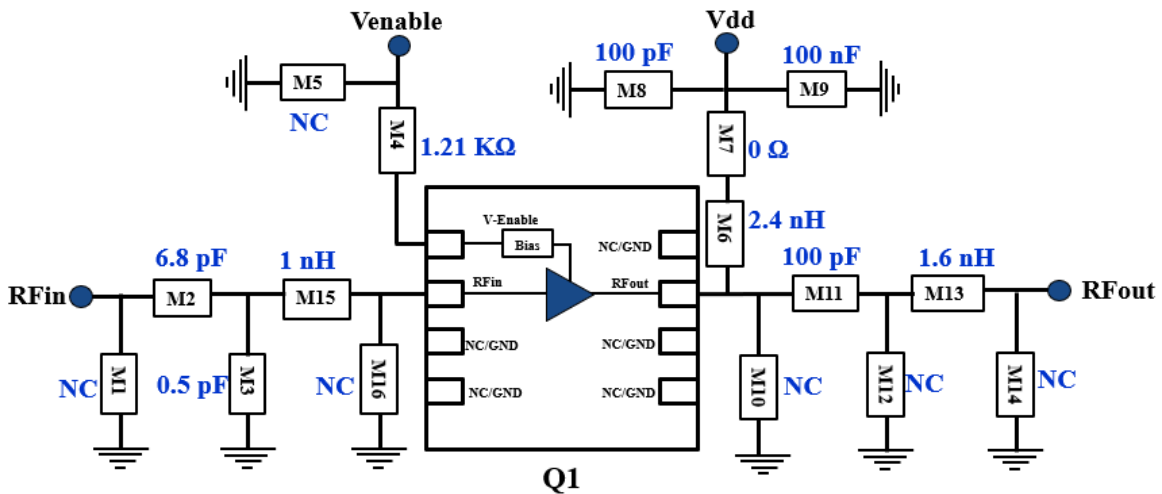
2. TL0374J-EVB-B Board Details

Figure 2.1 TL0374J-EVB-B 2500 MHz ~ 2700 MHz Schematic and EVB Layout

3. TL0374J-EVB-B Bill of Material

Component ID	Value	Manufacturer	Recommended Part Number
M2	6.8 pF	Murata	GJM1555C1H6R8BB01
M3	0.5 pF	Murata	GJM1555C1HR50BB01
M15	1 nH	Coil craft	0402HP-1N0XJE
M4	1.21 KΩ	Panasonic	ERJ-2RKF1211X
M8	100 pF	AVX	04025A101JAT4A
M9	100 nF	TDK	C1005X7R1H104K050BE
M7	0 Ω	Panasonic	ERJ-2GE0R00X
M6	2.4 nH	Coil craft	0402HP-2N4XGE
M11	100 pF	AVX	04025A101JAT4A
M13	1.6 nH	Coil craft	0603HC-1N6XGLW
Q1	GaAs LNA	Tagore Tech	TL0374J
PCB		Rogers RO4350B, 20 mils, 1 oz copper	

Table 3.1 TL0374J-EVB-B BOM

4. TL0374J-EVB-B Biasing Sequence

Turn ON Device	Turn OFF Device
1. Set Venable to +5 V 2. Set V_{DD} to +5 V 3. Device will draw required I_{DQ} current 4. Apply RF power	1. Turn RF power off 2. Turn off V_{DD} 3. Turn off Venable

Table 4.1 TL0374J-EVB-B Bias and Sequencing

5. TL0374J-EVB-B Board Measurement Summary

Frequency (MHz)	EVB Noise figure (dB)	Gain(dB)	OP1 (dBm)	OIP3(dBm) Fspacing:1 MHz 0 dBm Pout/tone	S11(dB)	S22(dB)	Mu1
2500	0.5	19.2	19.0	41	-27.0	-9.0	1.2
2600	0.5	18.9	19.6	42	-33.0	-9.3	1.2
2700	0.5	18.5	18.4	43	-23.0	-9.0	1.2

Table 5.1 TL0374J-EVB-B Electrical Characteristics Summary

6. TL0374J-EVB-B Test Results

All the tests are carried out at room temperature.
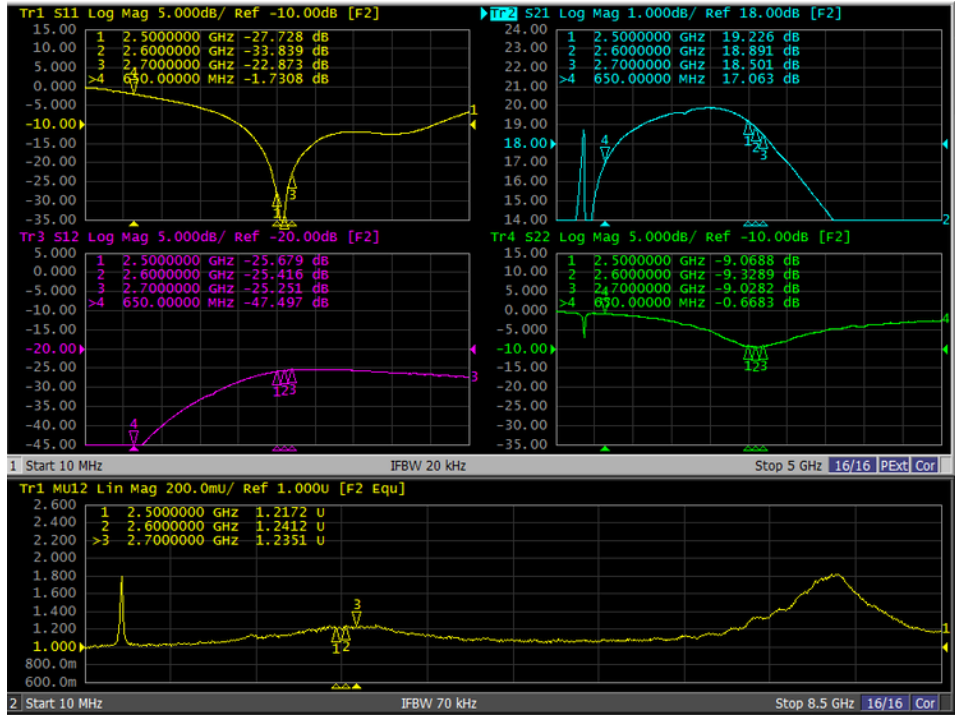
6.1. S parameters

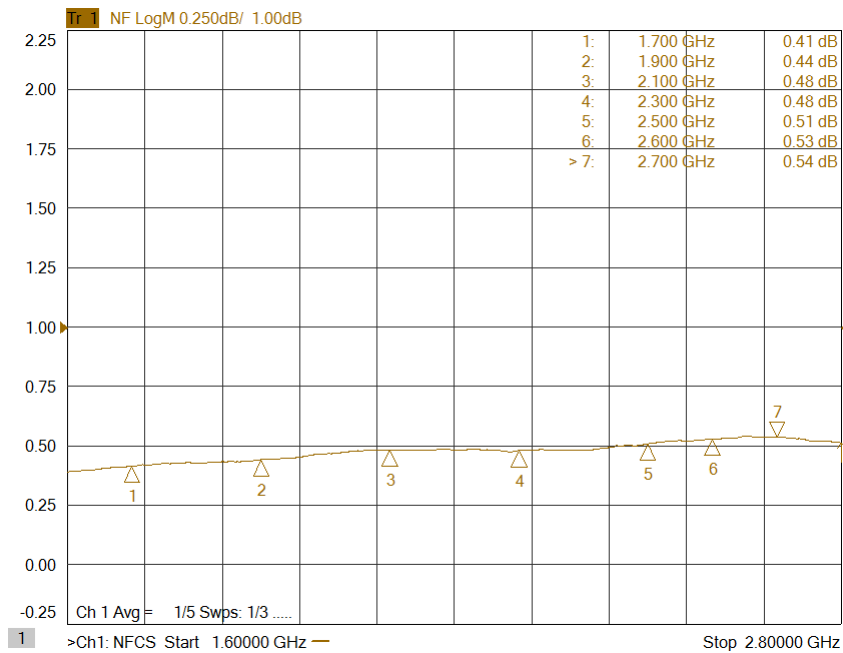**Figure 6.1.1. S parameters of TL0374J-EVB-B**

6.2. SMA to SMA Noise Figure

Figure 6.2.1 SMA to SMA NF of TL0374J-EVB-B

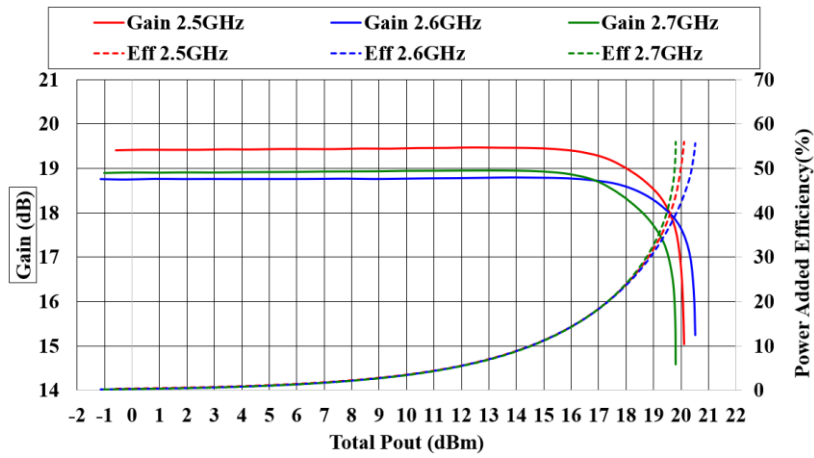## 6.3. Large Signal Test Results
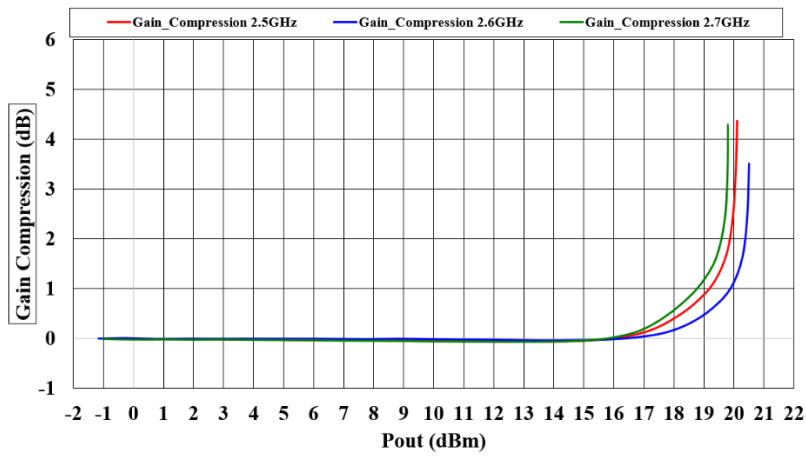

Figure 6.3.1. Gain Vs Pout of TL0374J-EVB-B

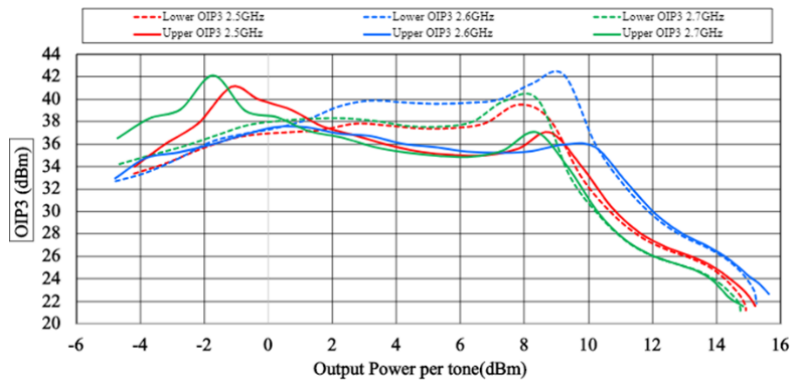**Figure 6.3.2. Gain compression Vs Pout of TL0374J-EVB-B**

Figure 6.3.3. Output 3rd Order Intercept Point of TL0374J-EVB-B

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Information

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