

Product Datasheet - Technical Specifications



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DC-coupled Low Noise Amplifier

1 Introduction

The TBLNA-110M-50 is a DC-coupled amplifier with a gain of 40 dB in the frequency range DC–110 MHz.

Application:

External pre-amplifier for measurement receiver TBMR-110M

Pre-amplifier for amplifying low level input signals to spectrum analyzers

General-purpose LNA for low and very low frequency applications, where conventional LNAs sometimes suffer from an increase in noise figure.



2 Specification

General specification

| | |
|------------------|--|
| Frequency range: | DC – 110 MHz |
| Gain: | 40 dB, typ. (\cong linear voltage gain 100) |
| RF-connectors: | BNC-female |

Input specification

| | |
|----------------------|---|
| Input impedance: | 50 Ω |
| Input return loss: | > 16 dB, typ. |
| Input Noise Voltage: | < 1.5 nV/ $\sqrt{\text{Hz}}$; 500 Hz – 60 MHz: typ. 1nV/ $\sqrt{\text{Hz}}$ |
| Maximum input level: | -25 dBm (\cong 0.036 V _{pp}); for output saturation |
| Input protection: | Pin-diode limiter |
| Maximum ratings: | +30 dBm in a 50 Ohm system / \pm 0.7V DC max. input rating (\pm 1.5V DC, 1s) |

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Output specification

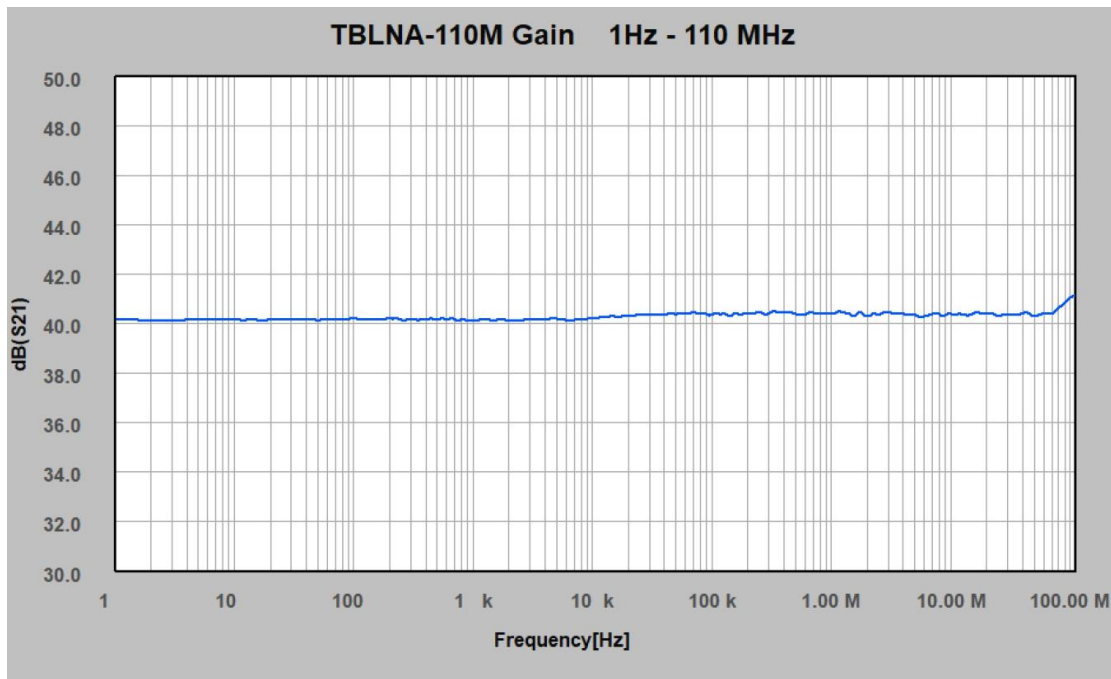
| | |
|-----------------------|--|
| Output impedance: | 50 Ω |
| Output return loss: | > 30 dB, typ. |
| P1dB _{out} : | +15 dBm (\cong 3.5 V _{pp}); output saturation |
| IP3 _{out} : | +28 dBm |
| DC offset: | < 10mV at output; input terminated with 50 Ohm |

Supply specification

| | |
|------------------------------|--|
| Power-connector: | Coaxial power socket; 2 mm / 5.5 mm; positive center conductor |
| Indicator LEDs: | Power ON, Power Good |
| Operating voltage: | 12 V; external power supply 100 V – 240 V, 50/60 Hz |
| Current consumption: | 250 mA |
| Operating temperature range: | -20°C to +50°C |
| Dimensions: | W 135 mm x H 40 mm x L 110 mm; |
| Weight: | 330 g |

3 Measurement Plots

3.1 Gain



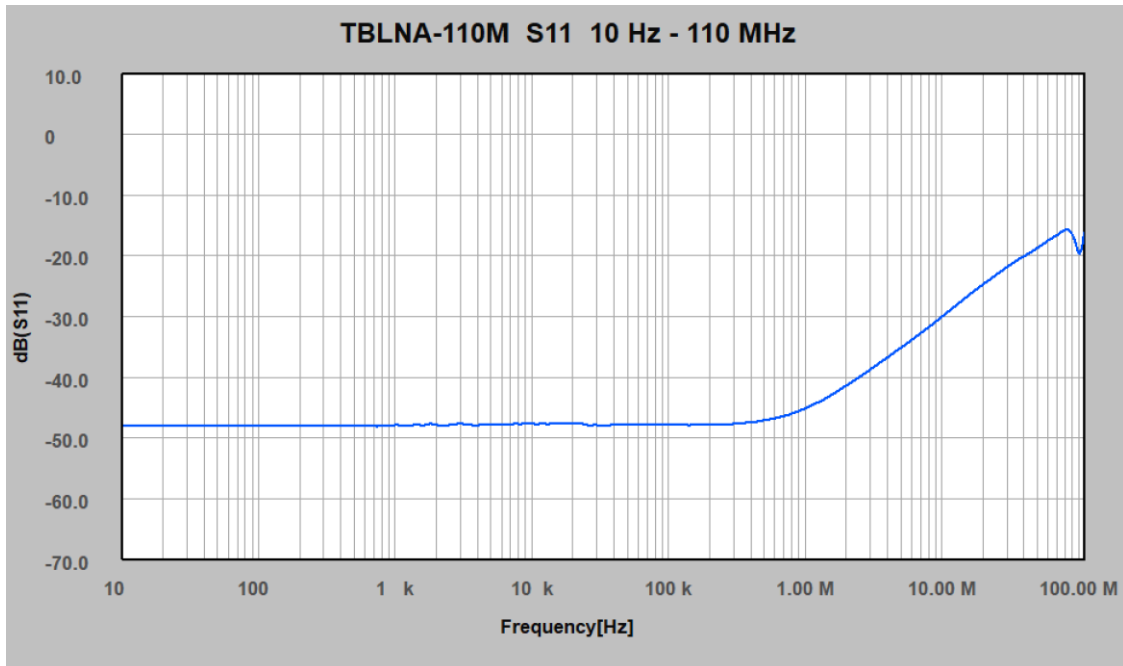
TBLNA-110M-50, Gain, DC – 110 MHz, typ.

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| Frequency [MHz] | Gain [dB] | Frequency [MHz] | Gain [dB] |
|-----------------|-----------|-----------------|-----------|
| DC | 40,12 | 50 | 40,28 |
| 0.000001 | 40,12 | 60 | 40,38 |
| 0.00001 | 40,12 | 70 | 40,37 |
| 0.0001 | 40,19 | 75 | 40,50 |
| 0.001 | 40,12 | 80 | 40,62 |
| 0.01 | 40,17 | 85 | 40,70 |
| 0.1 | 40,34 | 90 | 40,80 |
| 1 | 40,37 | 95 | 40,92 |
| 10 | 40,36 | 100 | 41,03 |
| 20 | 40,36 | 105 | 41,08 |
| 30 | 40,35 | 110 | 41,07 |
| 40 | 40,38 | | |

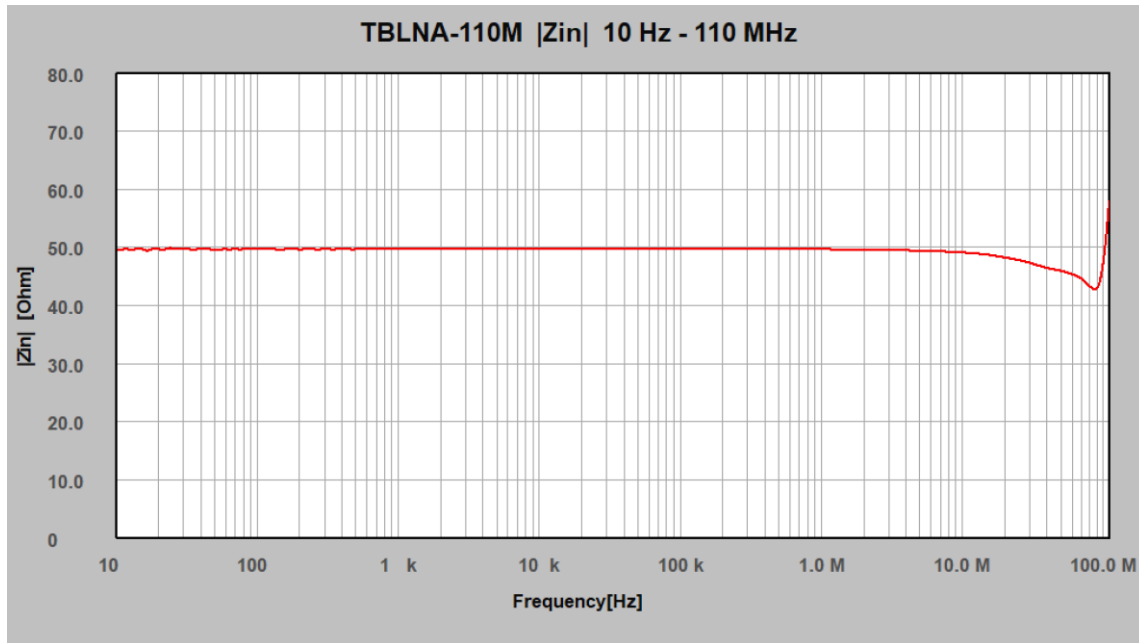
TBLNA-110M-50, Gain Table, DC – 110 MHz, typ.

3.2 Input return loss and impedance



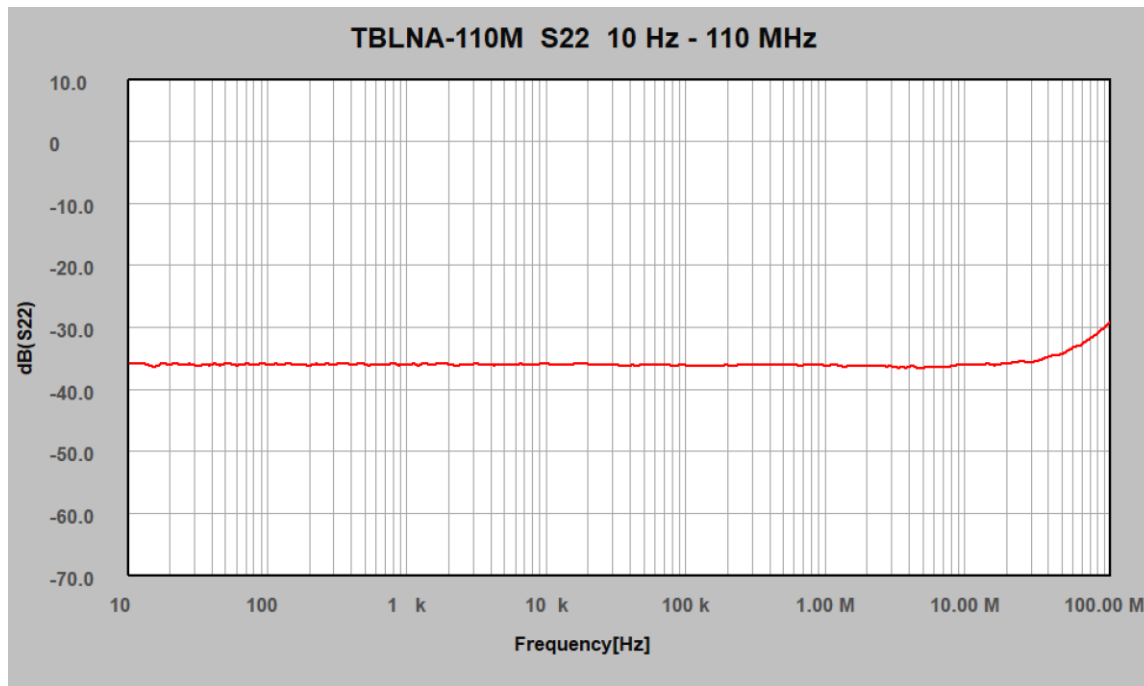
TBLNA-110M-50, S11, 10Hz – 110 MHz, typ.

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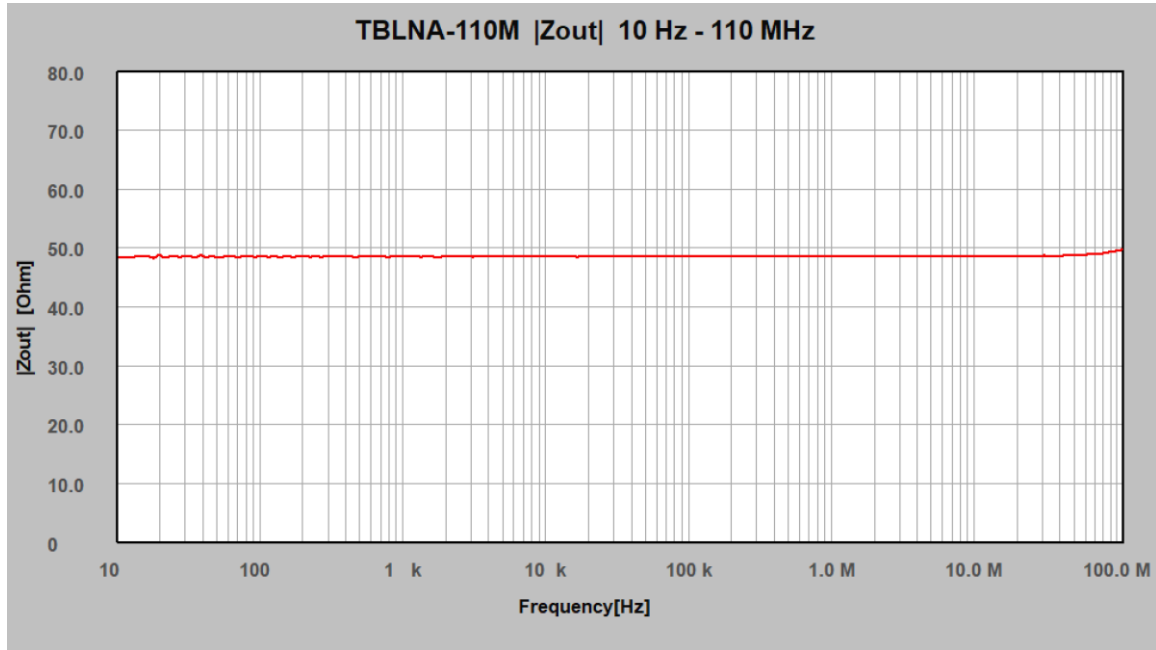
TBLNA-110M-50, Input Impedance, 10Hz – 110 MHz, typ.

3.3 Output return loss and impedance



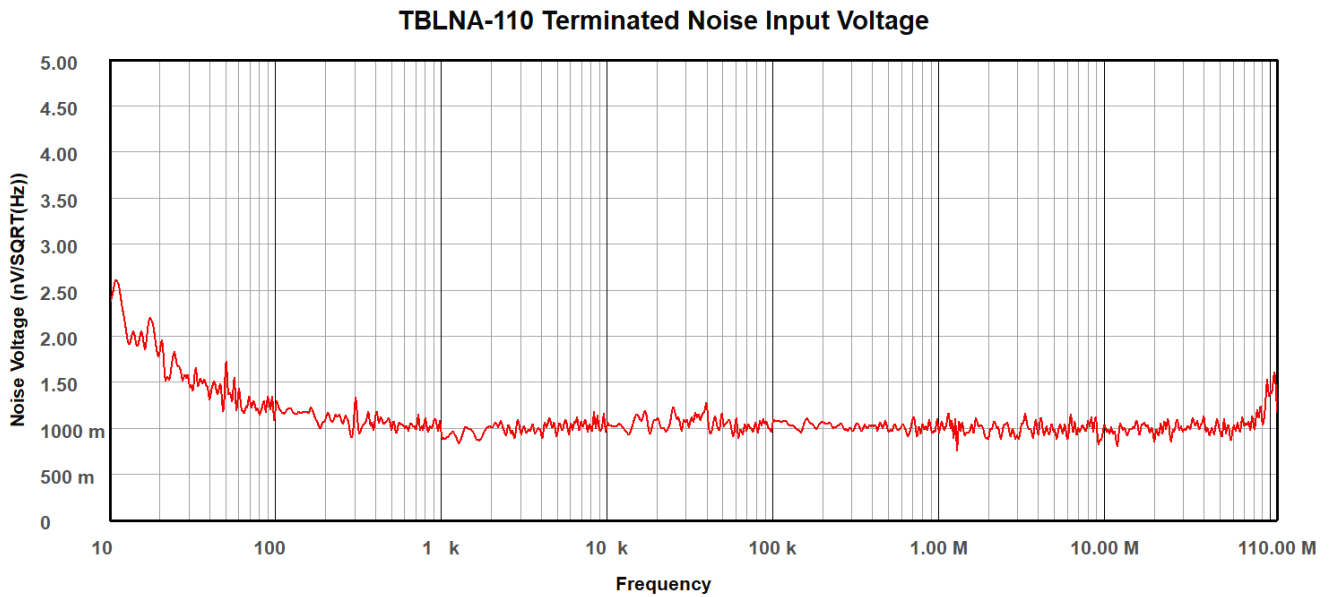
TBLNA-110M-50, S22, 10Hz – 110 MHz, typ.

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TBLNA-110M-50, Output Impedance, 10Hz – 110 MHz, typ.

3.4 Noise Spectral Density



TBLNA-110M-50, Input referred noise density versus frequency, 10Hz – 110 MHz, typ.

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4 Ordering Information

| Part Number | Description |
|---------------|--|
| TBVNA-110M-50 | DC-coupled LNA, 110V-240V power supply |

5 History

| Version | Date | Author | Changes |
|---------|------------|------------|--------------------------|
| V1.0 | 23.12.2024 | Mayerhofer | Creation of the document |
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