becker nachrichtentechnik

# LAN1080014

## 400 mW Low Noise Amplifier Module 10 … 800 MHz

### Features

- output power +28 dBm typ.
- high OIP3 +48 dBm typ.
- open/ short stable
- L/HF suppression
- wide DC supply range
- optical supply indication
- reverse polarity protected

### Applications

- VHF/ UHF preamplifier
- ISM
- laboratory
- test equipment


### At a Glance

LNA1080014 from Becker Nachrichtentechnik is a compact low noise amplifier module in 50 ohms technology designed for the use in professional applications. The robust electric and mechanic design gives solid operations over a long time. The amplifier works stable over a wide frequency range with many octaves. Internal filters and low noise voltage supplies guarantee high suppression of spurious. To avoid damages during installation the supply is protected against reverse polarity. For versatile use the amplifier works over a wide DC supply voltage range. The presence of DC power is indicated by a LED at the module.
The amplifier module has an integrated heat sink.

### Push Pull Technology

The internal wideband amplifier stages are designed in push-pull technology. This technology gives the amplifier high linearity performance and wider operation bandwidths. Compared with the linearity of single stage amplifiers the push-pull technology gives much better power efficiency with less heat generation. This saves costs for cooling and increases life time of the amplifier.

### Special Features

The low noise figure combined with the high compression point makes the amplifier module suitable as i.e. preamplifier in professional receiving systems where signals must amplified without any distortion effects. An integrated high pass filter in the input supress unwanted signals in the VLF and HF range.

### Tolerant to Mismatches

Using power transistors with enough head room to maximum ratings make the amplifier module robust against reverse power and therefore robust against loads at the output which are not matched. The output of the amplifier module is robust against open and short load at the output.

### Rugged Design

The amplifier is housed is a milled aluminum case. This saves the circuits against mechanical damage and gives best shielding for avoiding EMI influences caused by radio signals coming from the environment.

### DC Connector Variants

For mechanical integration into customer specific setups the amplifier module is available in variants with horizontal or vertical orientation of DC plug. This enables optimized DC cable routing to the amplifier module.

## RF Specification

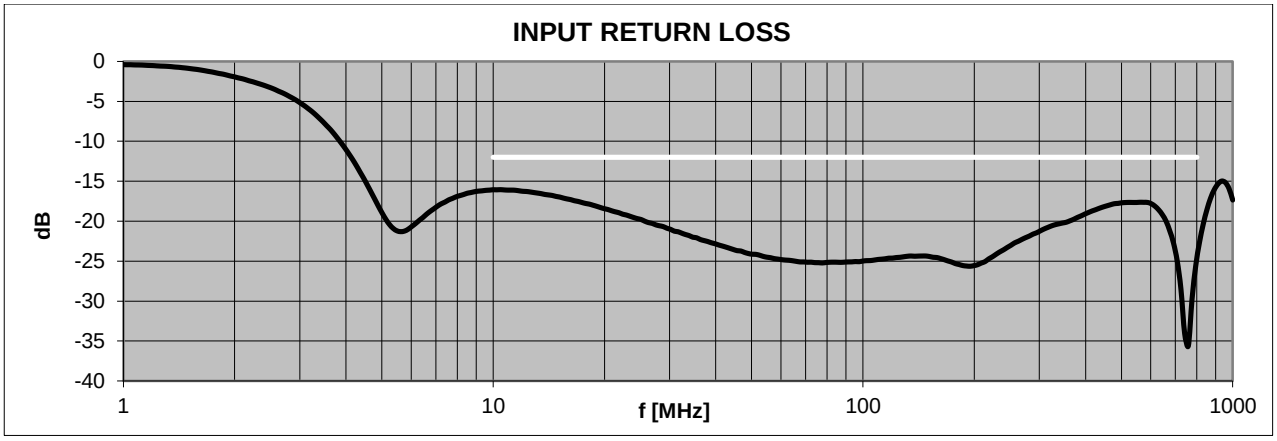
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|
| impedance | $Z_{in}$ / $Z_{out}$ | | 50 | | Ω | |
| low frequency | $f_{min}$ | | 5 | 10 | MHz | |
| high frequency | $f_{max}$ | 800 | 1000 | | MHz | |
| gain | $S_{21}$ | 12.0 | 13.5 | 15.0 | dB | |
| gain ripple | Delta $S_{21}$ | | ±0.6 | ±1.0 | dB | |
| low frequency response | $S_{21}$ | | | -70 | dB | 100 kHz, rel. 100 MHz |
| | $S_{21}$ | | | -25 | dB | 1 MHz, rel. 100 MHz |
| input return loss | $S_{11}$ | | -20 | -12 | dB | |
| output return loss | $S_{22}$ | | -23 | -12 | dB | |
| reverse isolation | $S_{12}$ | | -19 | -17 | dB | |
| 1 dB compression | $P_{1dB}$ | +26 | +28 | | dBm | |
| 3rd order intercept | OIP3[1] | +43 | +48 | | dBm | |
| 2nd order intercept | OIP2[1] | +65 | +80 | | dBm | |
| noise figure | NF | | 2.5 | 4.0 | dB | |
| maximum DC Voltage | $U_{DC}$ | | | 20 | V | RF ports |
| ESD discharge resistor | $R_{ESD}$ | | 4.7 | | kΩ | RF input |
| maximum input power | $P_{in\ max}$ | | | +20 | dBm | output terminated with 50 Ohm |
| RF connectors | $X_{RF}$ | SMA female | | | | |

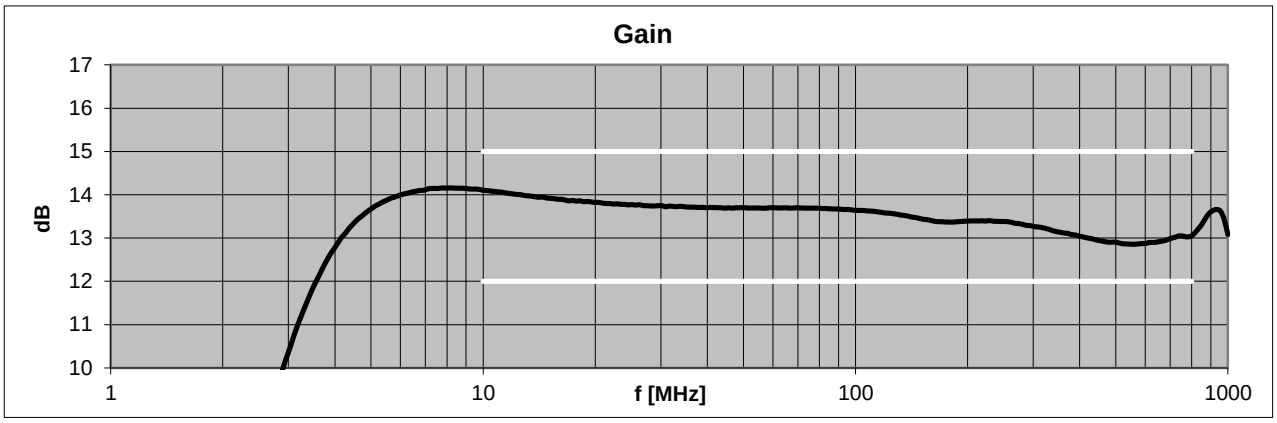
Note 1: Tested at $P_{in}$ 2 x 0 dBm; Δf = 1 MHz

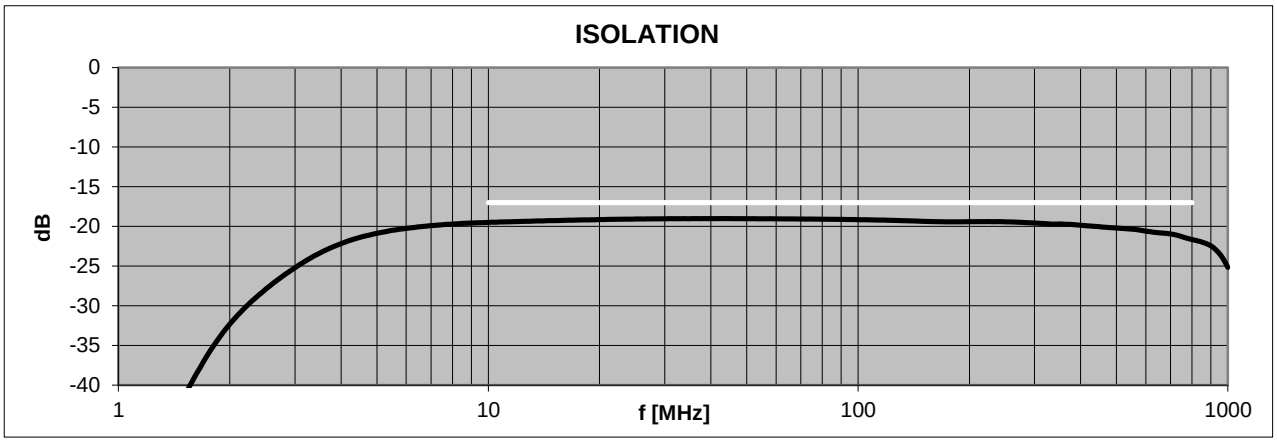
## Common Specification

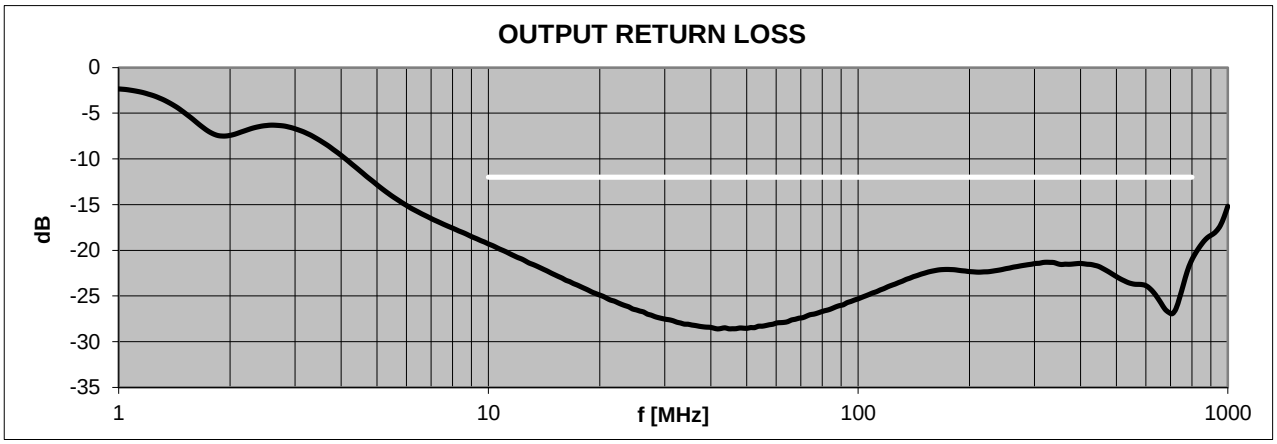
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|
| supply voltage | $U_{DC}$ | 11 | | 28 | V | |
| current consumption | $I_{DC}$ | 85 | | 280 | mA | |
| | $I_{DC}$ | 230 | 250 | 270 | mA | at +12 V |
| dimensions | W x H x D | approx. 99 x 36 x 75 | | | mm | |
| weight | m | | 350 | | g | |
| power socket | $X_{DC}$ | NSL-396M-2W/NSL-396M-2G | | | | grid 3.96 mm, Var. 1/Var. 2 |
| power plug | $X_{DCP}$ | NSG396M-2 | | | | housing with 3 contacts are part of delivery |
| operating temp. range | $T_o$ | 0 | | +70 | °C | module surface |
| storage temp. range | $T_s$ | -40 | | +70 | °C | |
| ordering information | LNA1080014 | | | 0901.5501.1 | | vertical orientated power connector |
| | LNA1080014 | | | 0901.5501.2 | | horizontal orientated power connector |

**S-Parameters** (typical responses)

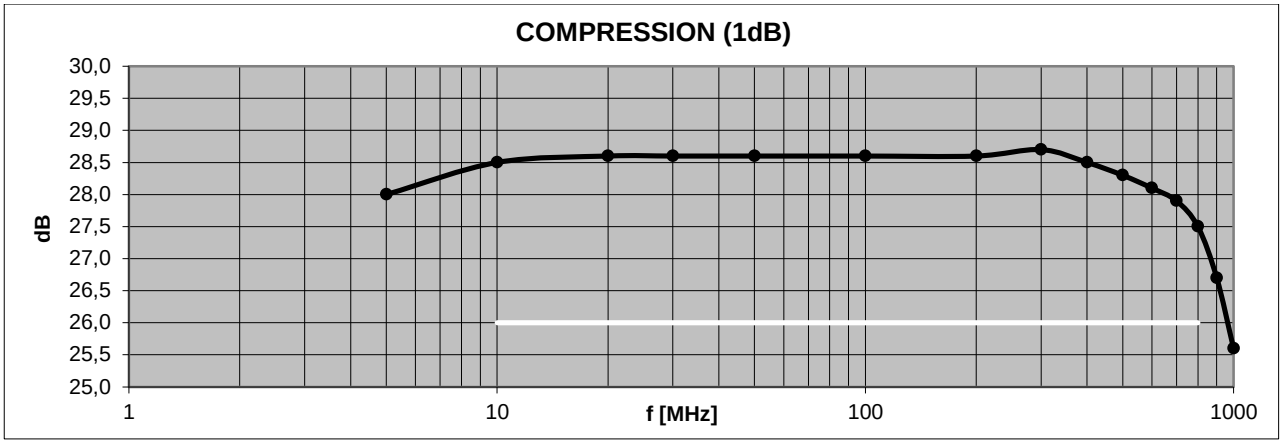


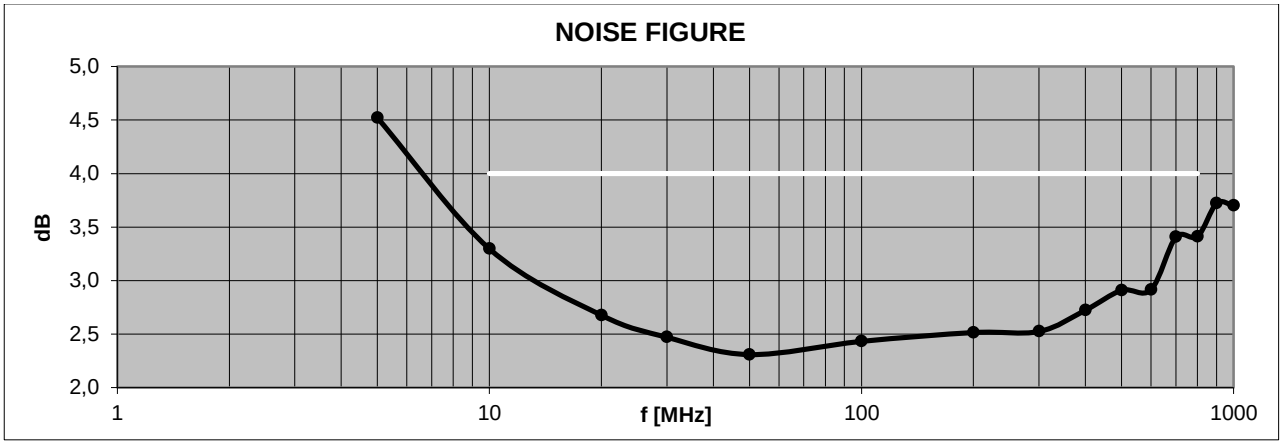



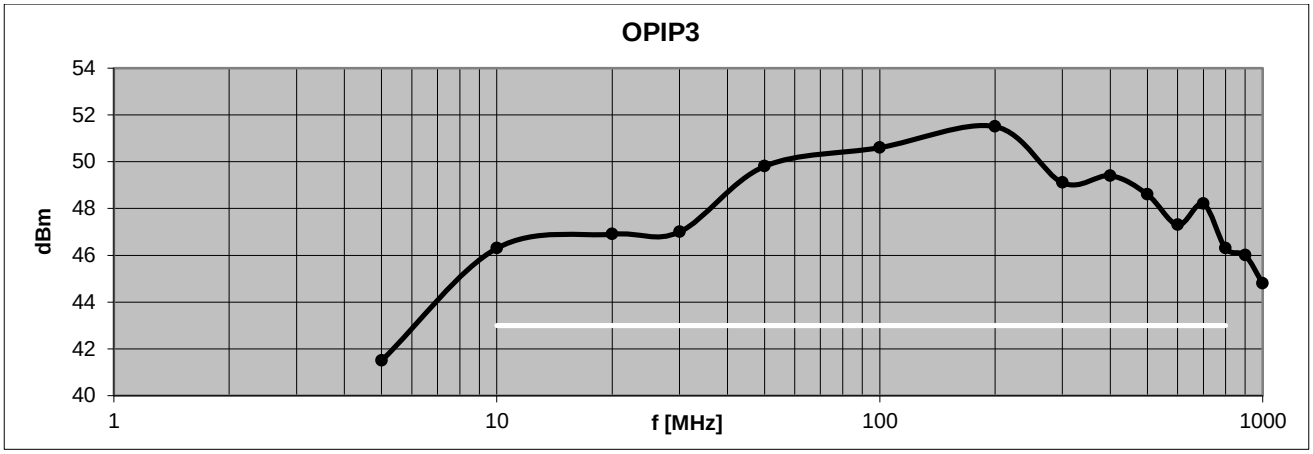



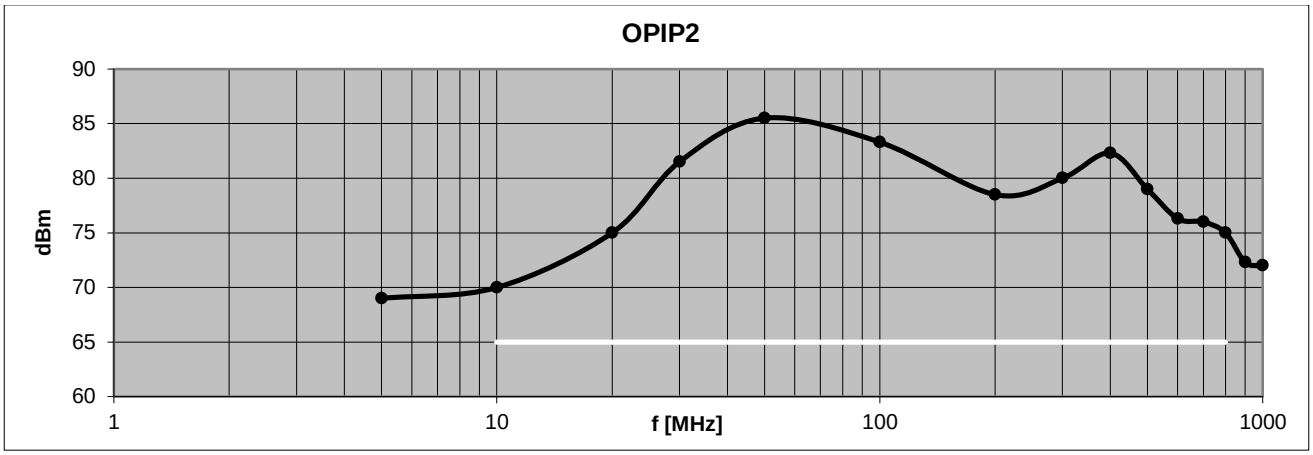
**Dynamic Range** (typical responses)



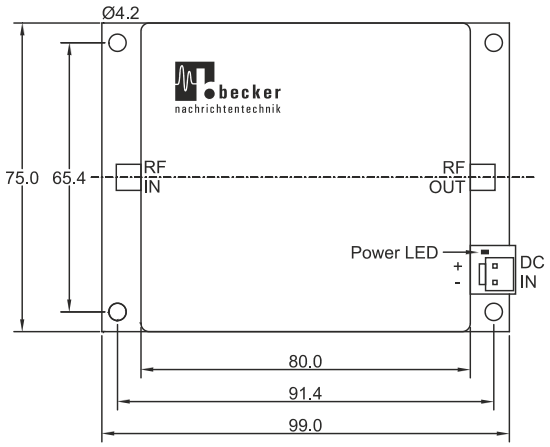



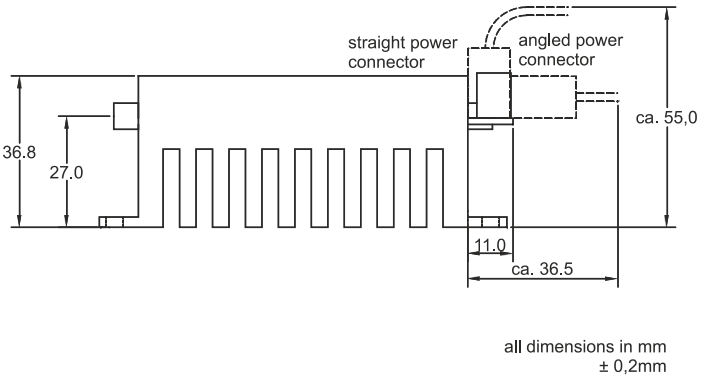
**Linearity** (typical responses)



## Dimensions




all dimensions in mm
± 0,2mm

## Related Products

| Product | Description | P/N |
|---|---|---|
| AMP1053043H | 20 W Power Amplifier Module 10 ... 530 MHz | 1001.5001.x |
| AMP2000600040L | 13 W Power Amplifier Module 2000 … 6000 MHz | 1711.5001.1 |
| AMP300600040L | 10 W Power Amplifier Module 300 … 6000 MHz | 1801.5001.1 |
| AMP20280035 | 4.5 W Wideband Amplifier Module 20 … 2800 MHz | 1209.5001.x |
| AMP3060036 | 4 W Ultra High Linearity, Full Redundant, Wideband Amplifier Module 30 ... 600 MHz with heat sink | 1602.5001.1 |
| AMP3060036L | 4 W Ultra High Linearity, Full Redundant, Wideband Amplifier Module 30 ... 600 MHz for mounting on heat sink | 1602.5001.2 |
| AMP590033 | 2 W Booster Amplifier Module 5 … 900 MHz | 0901.5011.x |
| AMP590033H | 2 W Amplifier Module 5 … 900 MHz | 0901.5001.x |
| AMP5170033 | 2 W Amplifier Module 5 … 1700 MHz | 1401.5011.1 |
| AMP5220031 | 1 W High Dynamic Amplifier Module 5 … 2200 MHz | 1005.5101.x |
| AMP018032 | 1.3 W High Linearity Amplifier Module 100 kHz…80 MHz | 1002.5701.x |
| AMP5270026 | 400 mW High Dynamic Amplifier Module 5 … 2700 MHz | 1005.5201.x |
| AMP10850026 | 400 mW Ultra Wideband Amplifier Module 10 ... 8500 MHz | 1305.5001.x |
| LNA1080014 | 400 mW Low Noise Amplifier Module 10 … 800 MHz | 0901.5501.x |

Remark: All modules with P/N extension with ".x" are available with horizontal or vertical orientated DC power connector.