

# AMP5220031

## 1 W High Dynamic Amplifier Module 5 ... 2200 MHz

### Features

- output power +31 dBm typ.
- high OIP3 +50 dBm typ.
- open/ short stable
- L/HF suppression
- wide DC supply range
- optical supply indication
- reverse polarity protected

### Applications

- VHF/ UHF amplifier
- PA driver amplifier
- broadcast, GNSS
- laboratory
- test equipment



### At a Glance

AMP5220031 from Becker Nachrichtentechnik is a compact 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 high IP3 properties makes the amplifier module suitable in professional receiving systems applications where weak RF signals in combination with very strong signals must be amplified without any distortion effects. An integrated high pass filter in the input suppresses 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 in 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

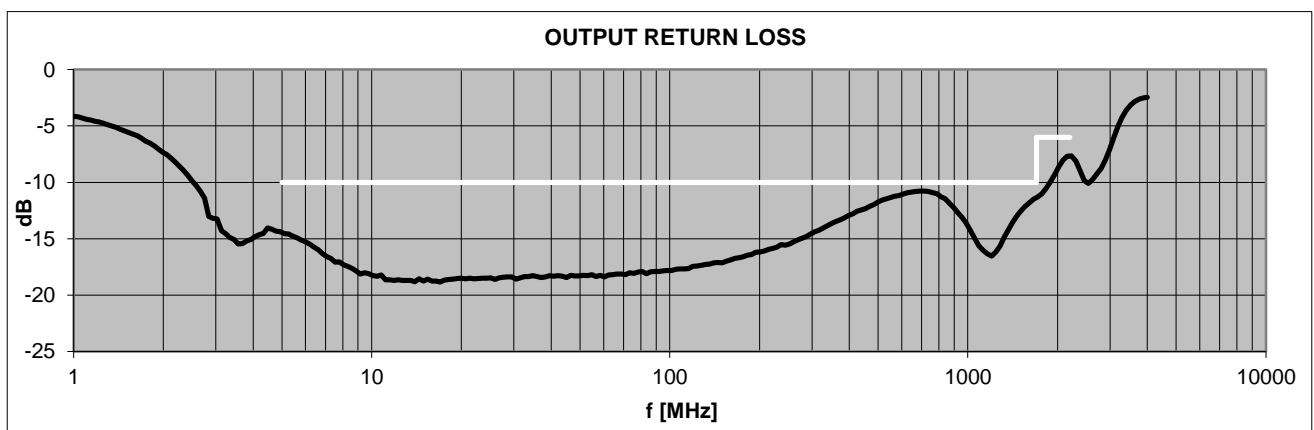
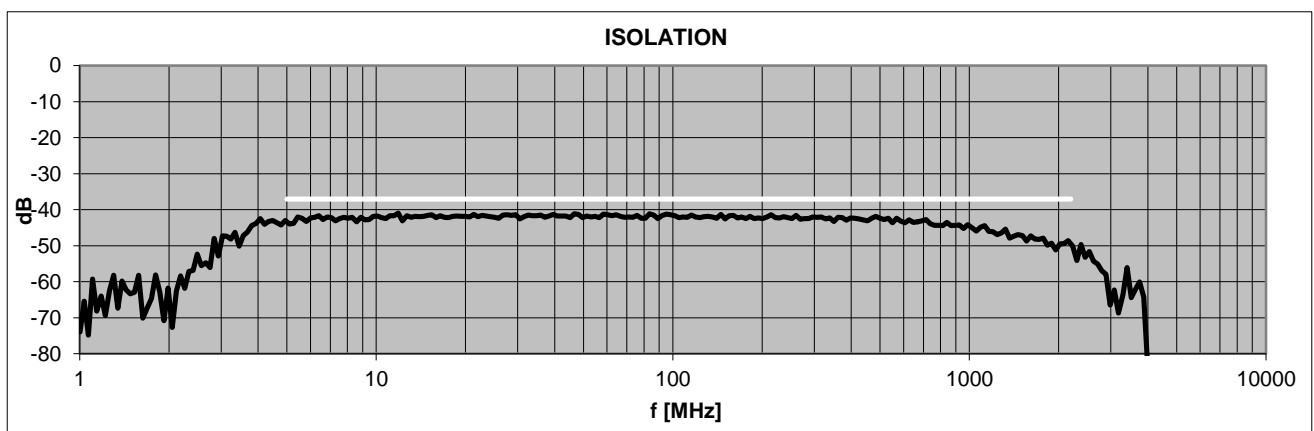
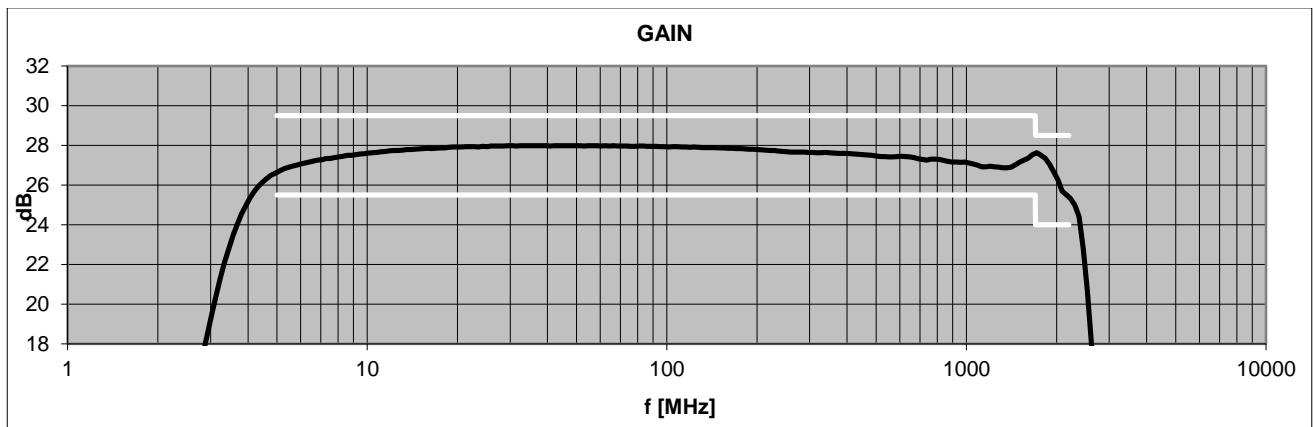
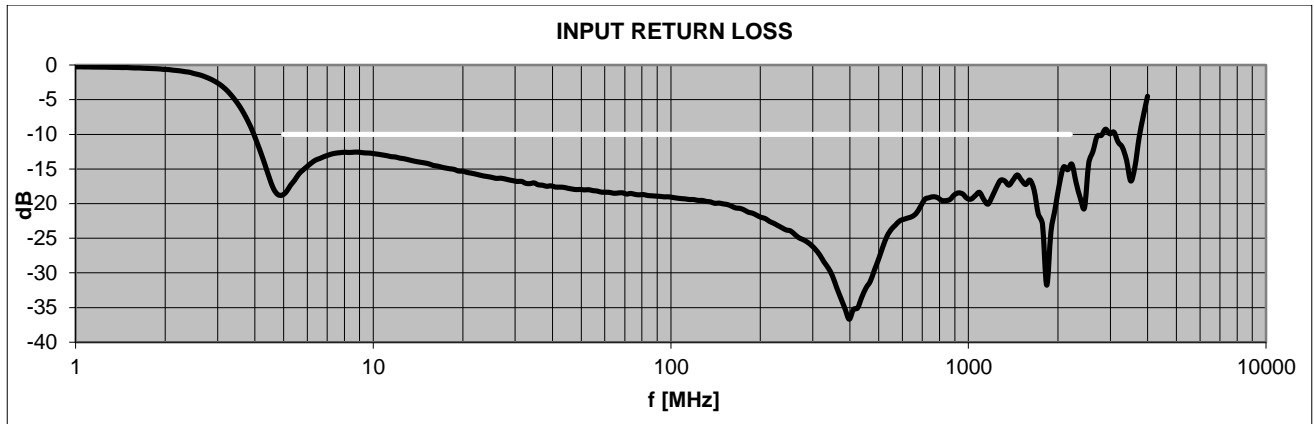
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{in} / Z_{out}$		50		$\Omega$	
low frequency	$f_{min}$			5	MHz	
high frequency	$f_{min}$	2200			MHz	
gain	$S_{21}$	25.5	27.5	29.5	dB	$5 \text{ MHz} \leq f \leq 1700 \text{ MHz}$
	$S_{21}$	24.0	26.0	28.5	dB	$1700 \text{ MHz} < f \leq 2200 \text{ MHz}$
gain ripple	$\Delta S_{21}$		$\pm 0.6$	$\pm 1.0$	dB	$5 \text{ MHz} \leq f \leq 1700 \text{ MHz}$
low frequency response	$S_{21}$		-85	-70	dBr	100 kHz, rel. 100 MHz
	$S_{21}$		-40	-25	dBr	1 MHz, rel. 100 MHz
input return loss	$S_{11}$		-15	-10	dB	
output return loss	$S_{22}$		-15	-10	dB	$5 \text{ MHz} \leq f \leq 1700 \text{ MHz}$
	$S_{22}$		-8	-6	dB	$1700 \text{ MHz} < f \leq 2200 \text{ MHz}$
reverse isolation	$S_{12}$		-40	-37	dB	
1 dB compression	$P_{1dB}$	+30	+31		dBm	
3 <sup>rd</sup> order intercept	$OIP3^1$	+43	+50		dBm	
harmonic distortion	HD		-35	-25	dBr	+30 dBm fundamental
noise figure	NF		6.0	8.0	dB	$5 \text{ MHz} \leq f < 10 \text{ MHz}$
			5.5	7.0	dB	$10 \text{ MHz} \leq f \leq 2200 \text{ MHz}$
maximum input power	$P_{in,max}$			+15	dBm	output terminated with 50 Ohm
maximum DC Voltage	$U_{DC}$			20	V	RF ports
ESD discharge resistor	$R_{ESD}$		4.7		k $\Omega$	RF input
RF connectors	$X_{RF}$	SMA female				

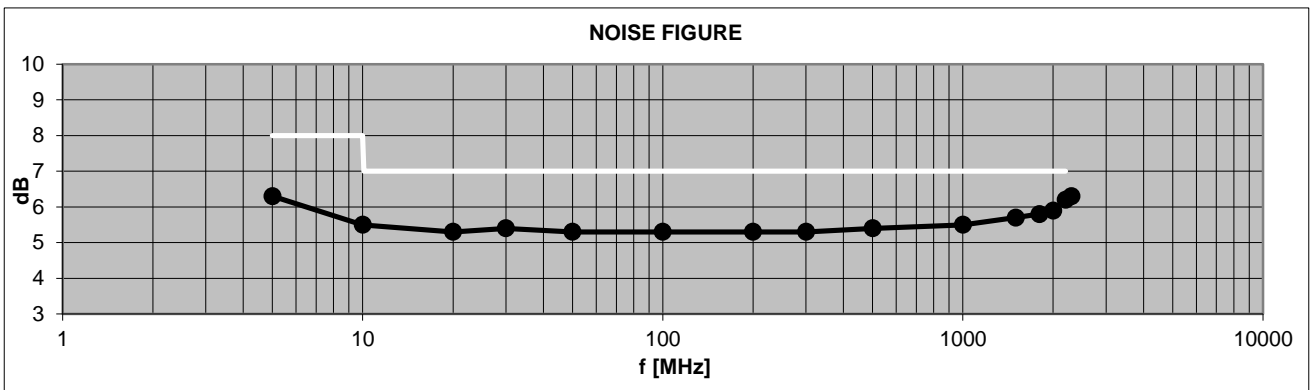
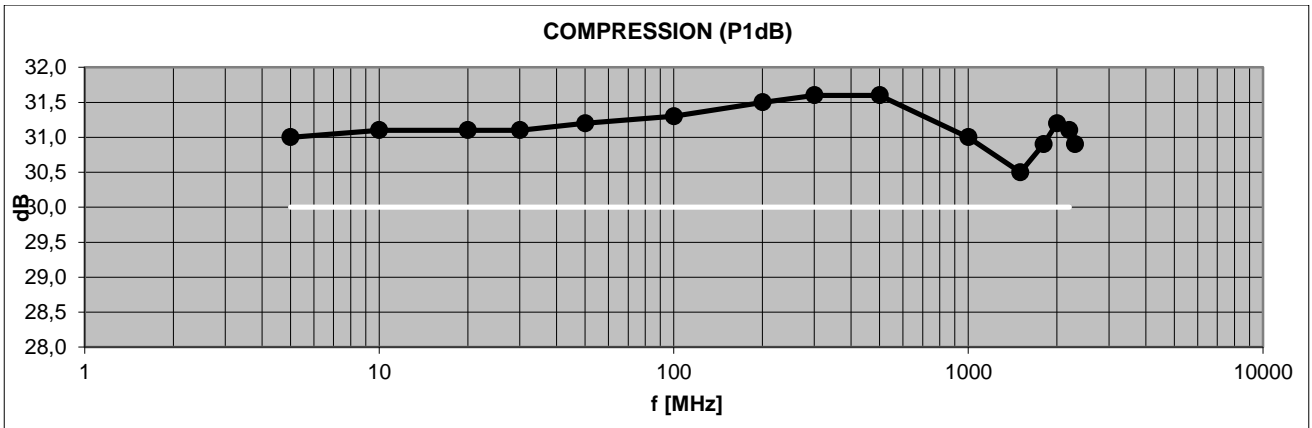
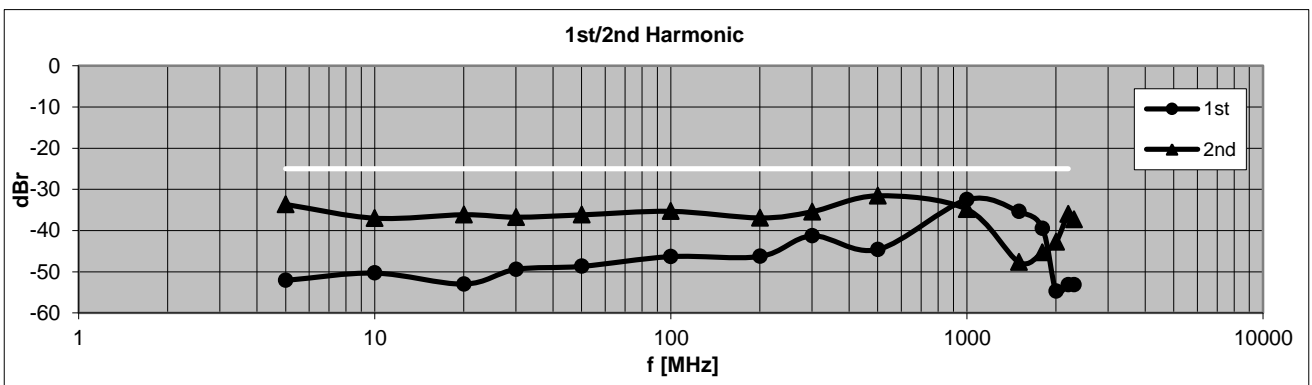
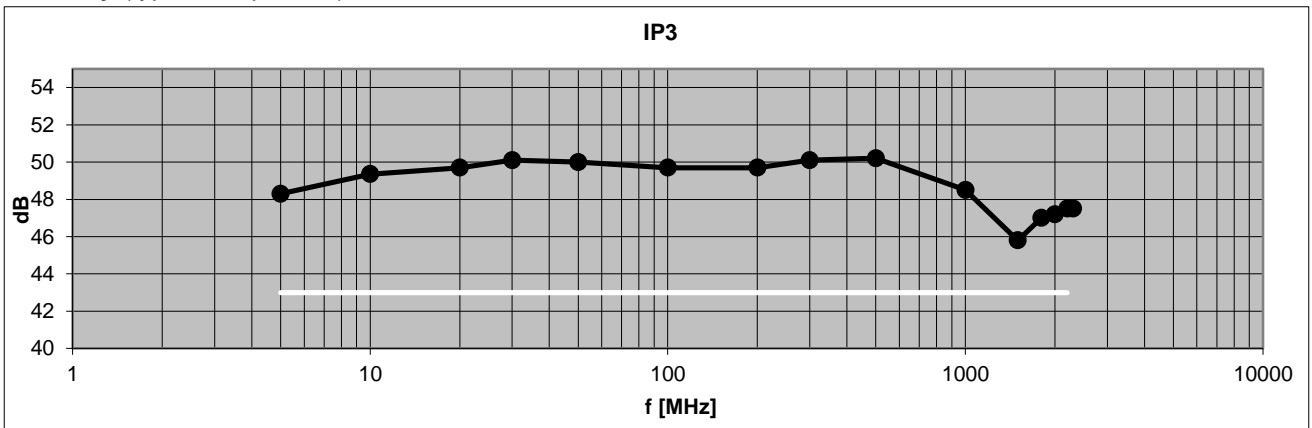
Note 1: Tested at  $P_{out} 2 \times +17$  dBm;  $\Delta f = 1$  MHz

## Common Specification

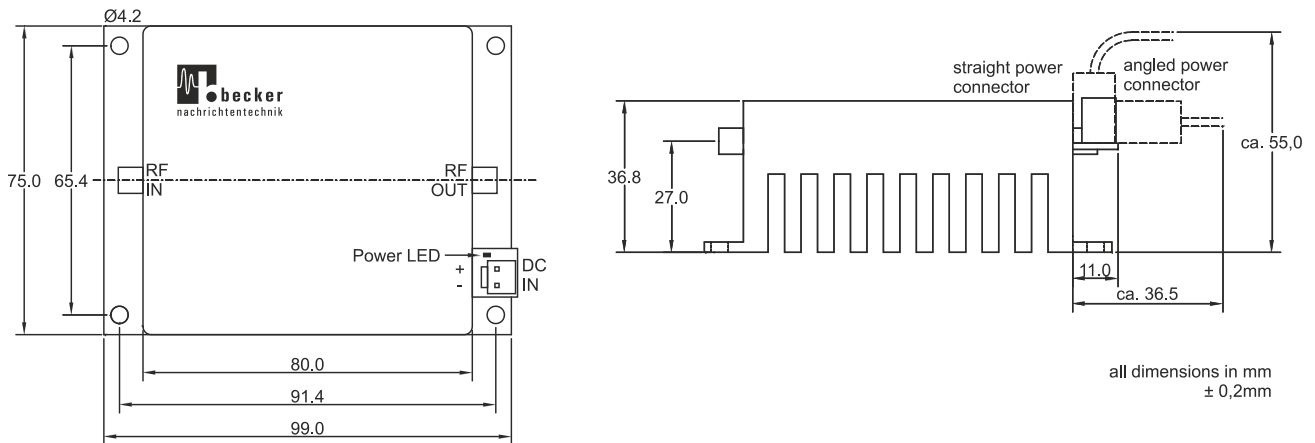
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	$U_{DC}$	11		28	V	DC
current consumption	$I_{DC}$	245		665	mA	$I_{min}$ at +28 V
	$I_{DC}$	550	580	610	mA	
dimensions	W x H x D	approx. 99 x 36 x 75			mm	
weight	m		360		g	
power socket	$X_{DC}$	NSL-396M-2W/NSL-396M-2G				grid 3.96 mm, Var. 1/Var. 2
power plug	$X_{DCP}$	NSG396M-2				housing with 3 contacts are part of delivery
operating temp. range	$T_o$	0		+70	$^{\circ}\text{C}$	module surface
storage temp. range	$T_s$	-40		+70	$^{\circ}\text{C}$	
ordering information		AMP5220031		1005.5101.1		vertical orientated power connector
		AMP5220031		1005.5101.2		horizontal orientated power connector



**S-Parameters (typical responses)**

**Dynamic Range (typical responses)****Linearity (typical responses)**

## Dimensions



## 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.