becker nachrichtentechnik

AMP1053043H

20 W Power Amplifier Module 10 ... 530 MHz

Features

- output power +45 dBm typ.
- high OIP3 +49 dBm typ.
- open/ short stable
- LF/HF suppression
- optical power and status indication
- reverse polarity protected

Applications

- VHF/UHF transmitters
- FM, BOS / TETRA, DAB3, ISM433
- tunnel radio
- driver amplifier for radiating cables

At a Glance

AMP1053043H 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.
The presence of DC power is indicated by a LED at the module.

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 output power in combination with high IP3 properties make the amplifier module suitable in professional applications where digital modulated 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.

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.

Use as TX Amplifier in Radio Equipment

For use as a transmitter amplifier in radio systems, the AMP1053043H meets the requirements for spurious and intermodulation resistance of the ETSI EN 300 086 V2.1.2 as harmonised standard of the RED directive 2014/53/EU.

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}	530	550		MHz	
gain	S_{21}	40	44	47	dB	
gain ripple	ΔS_{21}		±1.5	±2.0	dB	
low frequency response	S_{21}		-85	-70	dB	100 kHz, rel. 100 MHz
	S_{21}		-50	-25	dB	1 MHz, rel. 100 MHz
input return loss	S_{11}		-18	-12	dB	
output return loss	S_{22}		-8	-4	dB	small signal
load Mismatch	VSWR		1:6.0	1:3.0		P_{out} > 10W
reverse isolation	S_{12}	50	70		dB	
1 dB compression	P_{1dB} [1]	+43	+45		dBm	note 1
3rd order intercept	OIP3 [2]	+45	+49		dBm	note 2
2nd order intercept	OIP2 [2]	+50	+70		dBm	note 2
noise figure	NF		3	5	dB	
spurious emissions	P_{SPUR}		-70	-36	dBm	ETSI EN 300 086 V2.1.2, chapter 7.6, note 3
intermodulation attenuation	$IM3_{REV}$		-60	-40	dBc	ETSI EN 300 086 V2.1.2, chapter 7.7, note 4
maximum DC Voltage	U_{DC}			20	V	RF ports
ESD discharge resistors	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			

Specifications are valid for CW signals

Note 1: Referred to gain at +37 dBm output level

Note 2: Tested at P_{OUT} 2 x +38 dBm; Δf = 1 MHz

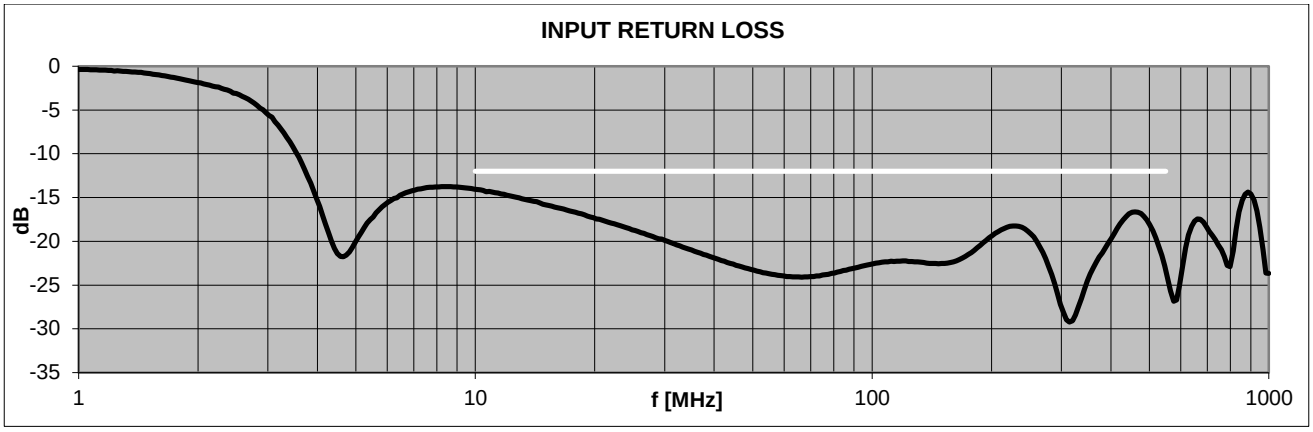
Note 3: Spurious in frequency range 9 kHz … 4 GHz, excluding harmonics (P_{OUT} +40 dBm),

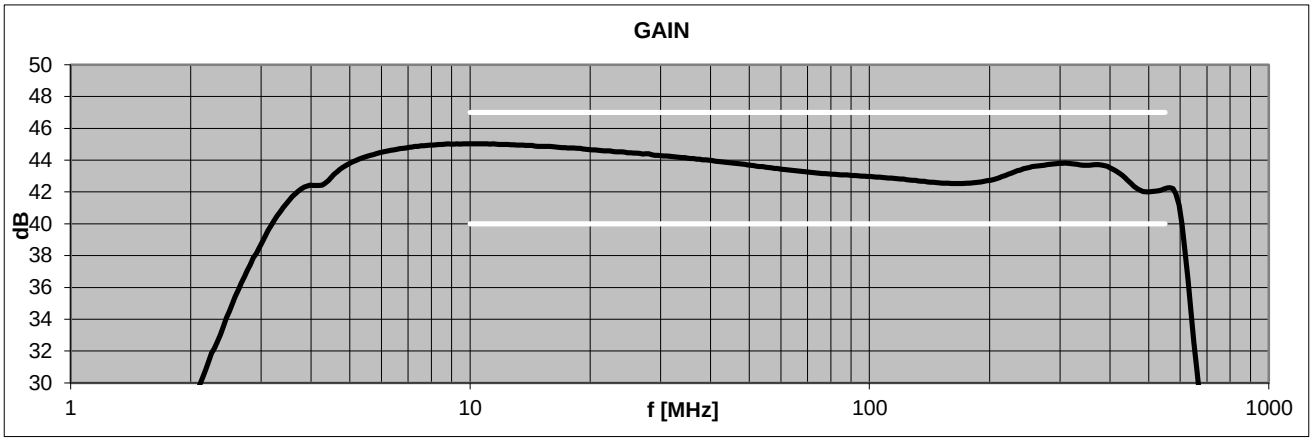
Note 4: Caused by the presence of the output power (+40 dBm) and an interfering signal at the output. ($IM3_{REV}$ specification).

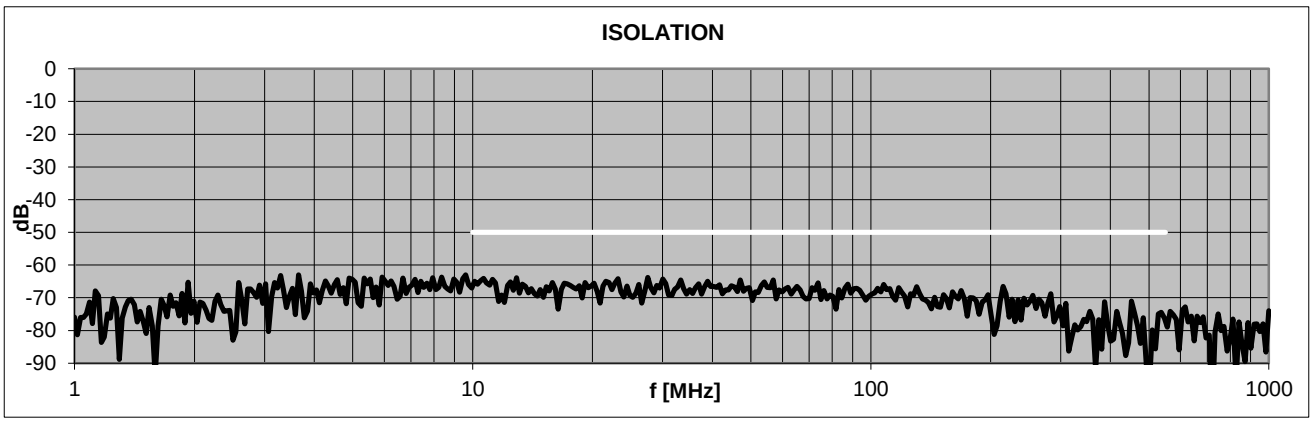
Common Specification

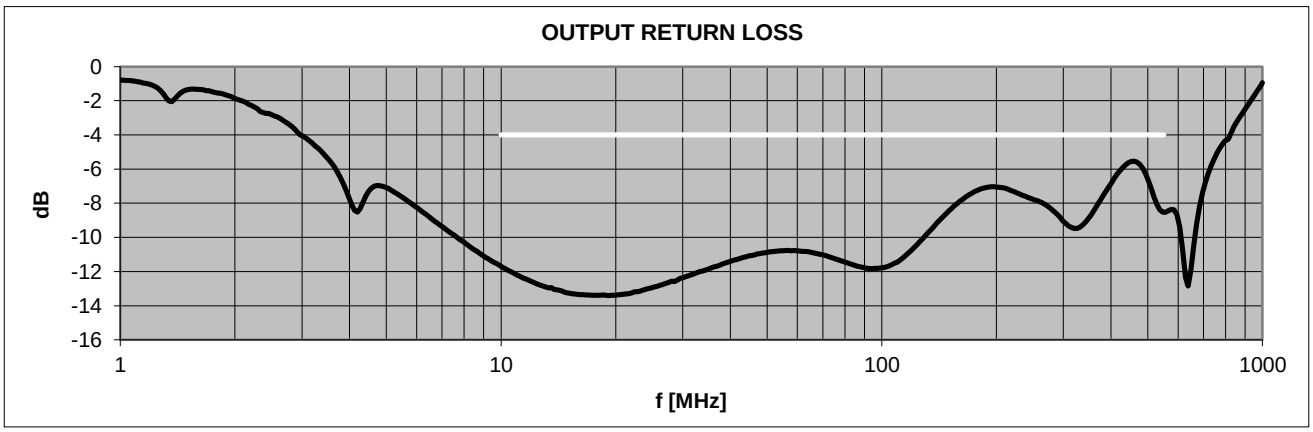
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{DC}	27.5	28.0	28.5	V	DC
current consumption	I_{DC}		1240*	6000	mA	*quiescent current
	I_{DC}	3000	3800	4800	mA	at +43 dBm output level
dimensions	W x H x D		approx. 232 x 96 x 119		mm	
weight	m		2.9		kg	
power socket	X_{DC}		NSL-396M-3W			grid 3.96 mm
power plug	X_{DCP}		NSG396M-3			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	AMP1053043H			1001.5001.1		

S-Parameters (typical responses)

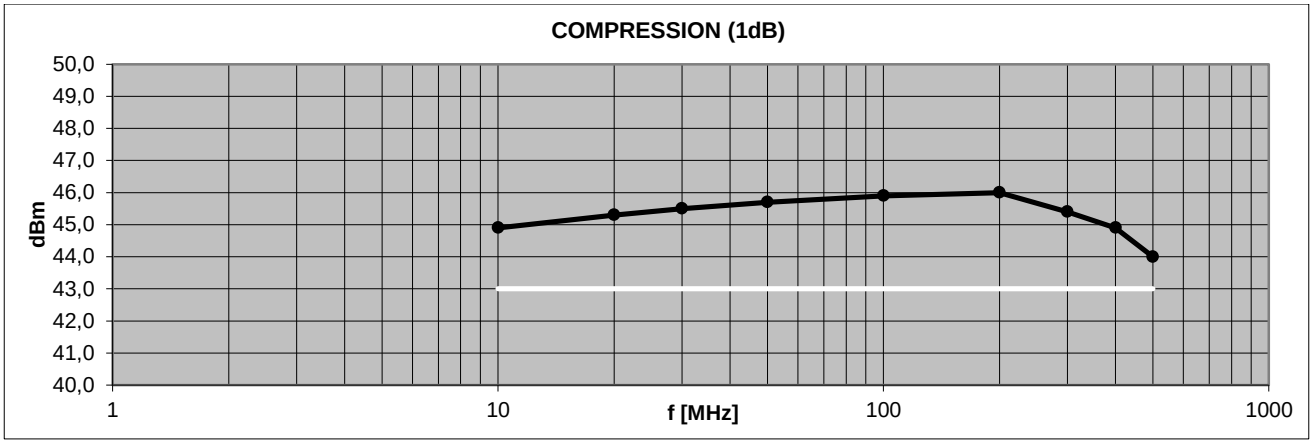


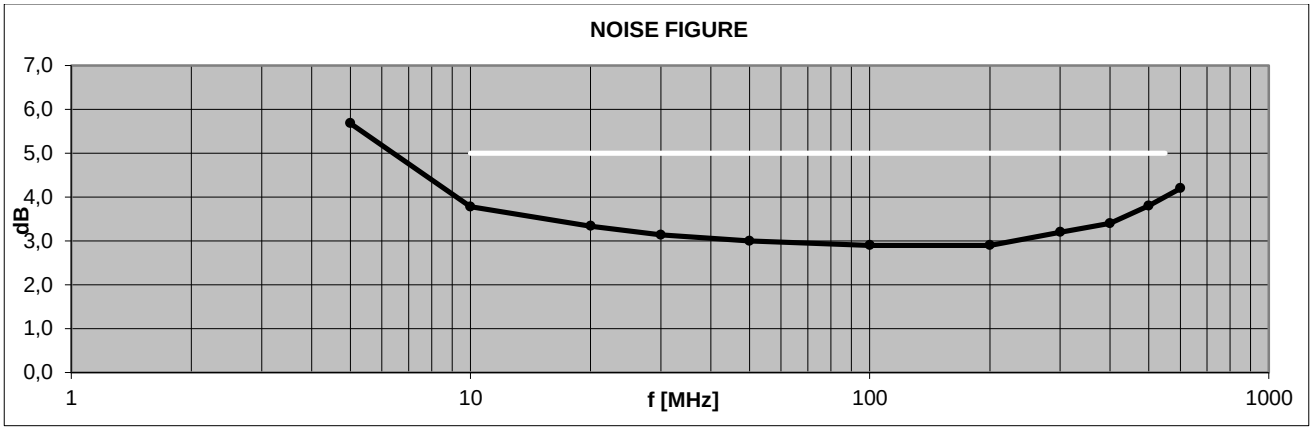




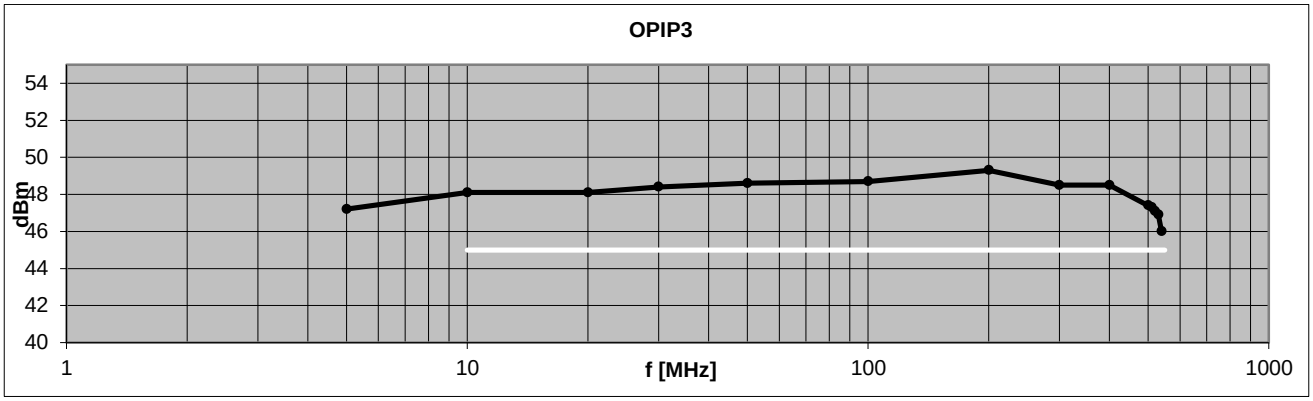


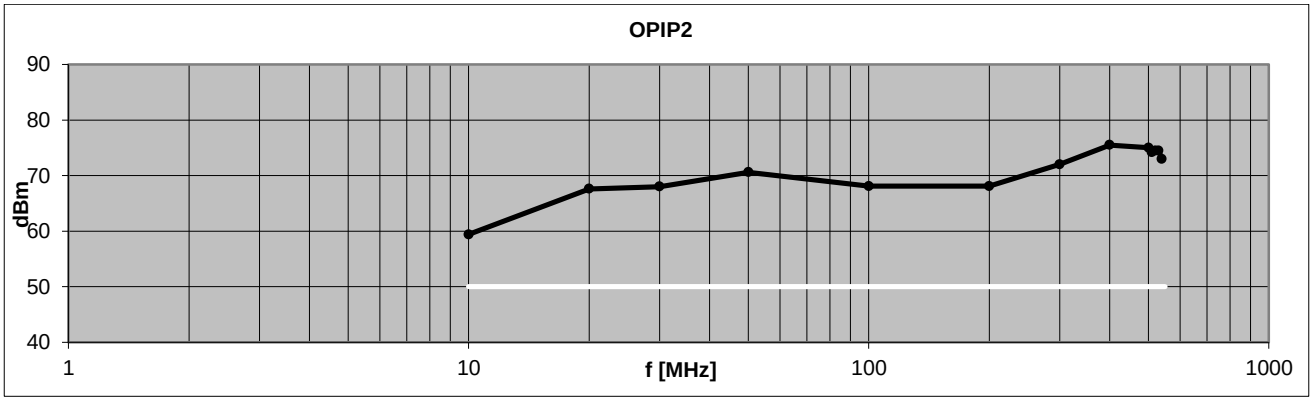
Dynamic Range (typical responses)



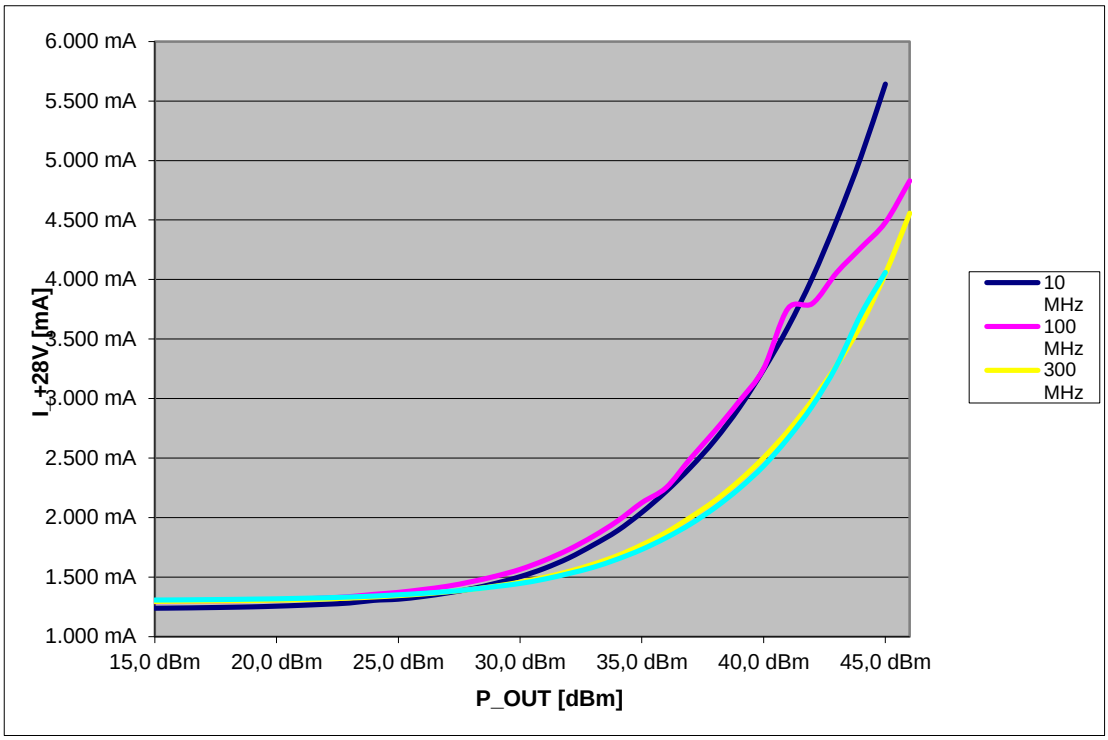


Linearity (typical responses)

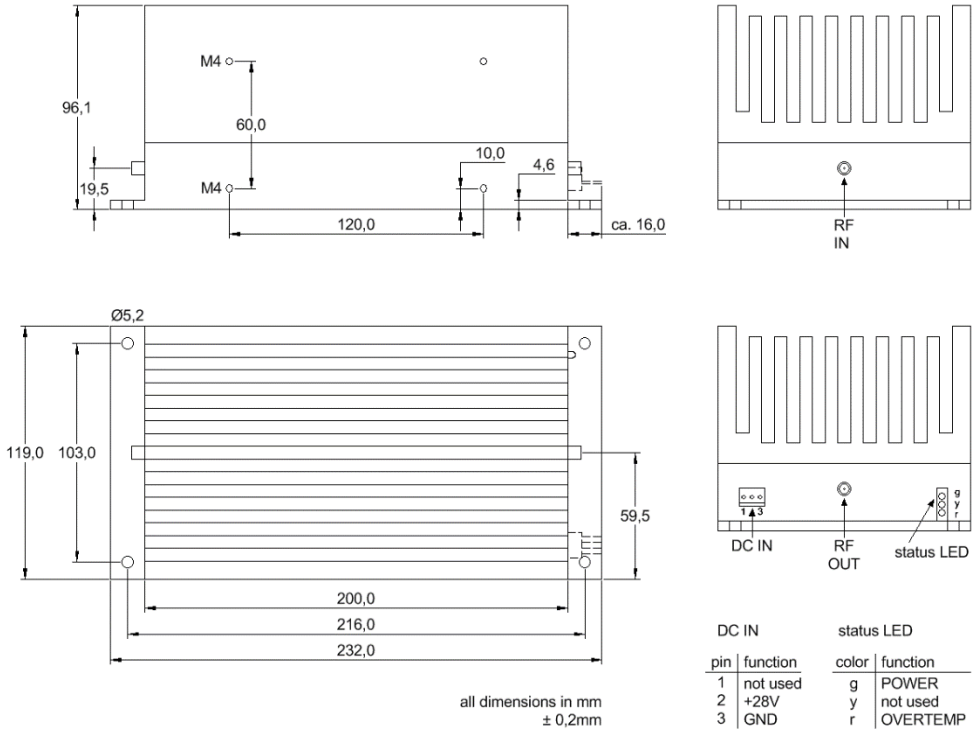




Efficiency



Dimensions



all dimensions in mm
± 0,2mm

DC IN

pin	function
1	not used
2	+28V
3	GND

status LED

color	function
g	POWER
y	not used
r	OVERTEMP

Related Products

Product	Description	P/N
AMP1053045	30 W Linear Power Amplifier Module 10 … 530 MHz	1908.5001.1
AMP1053043H	20 W Power Amplifier Module 10 ... 530 MHz	1001.5001.1
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.