AMP3060036

4 W Ultra High Linearity Full Redundant Wideband Amplifier Module 30 ... 600 MHz

Features

- output power +36 dBm peak typ.
- high OIP3 +55 dBm typ.
- open/ short stable
- LF/HF suppression
- wide DC supply range
- optical power and status indication
- reverse polarity protected
- self test function
- status signaling contact (floating)

Applications

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

At a Glance

AMP30600036 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 and the module status is indicated by a LED at the module. The amplifier module has an integrated heat sink with fans. The fans are controlled dependant by module temperature.

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 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 supresses unwanted signals in the VLF and HF range.

An internal self-test function monitors current consumption and module temperature. In the case of exceeding limits a floating contact is opened and the status is signalized by the LED at the module.

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.

Use as TX Amplifier in Radio Equipment

For use as a transmitter amplifier in radio systems, the AMP3060036 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		Ohm	
low frequency	f_{min}		30	50	MHz	
high frequency	f_{min}	500	600		MHz	
gain	S_{21}	34	35.5	37	dB	
input return loss	S_{11}		-14	-10	dB	
output return loss	S_{22}		-10	-7	dB	
reverse isolation	S_{12}		-45	-40	dB	
3rd order intercept	OIP3	+48	+55		dBm	note 1
2nd order intercept	OIP2	+65	+80		dBm	note 2
1 dB compression	P_{1dB}	+34	+36		dBm	PEP
output power	P_{out}			+30	dBm	RMS
IM3 rejection	IM3		-40		dBc	8 carrier, each +20 dBm
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
input power	P_{in}			+5	dBm	no damage
RF connectors		SMA female				

Note 1: Tested at P_{out} 2 x +25 dBm; Δf = 2 MHz

Note 2: Tested at P_{out} 2 x +25 dBm; f = 49/51; 99/101; 149/151; 199/201; 249/251; 300/350; 450/500 MHz, in-band products only

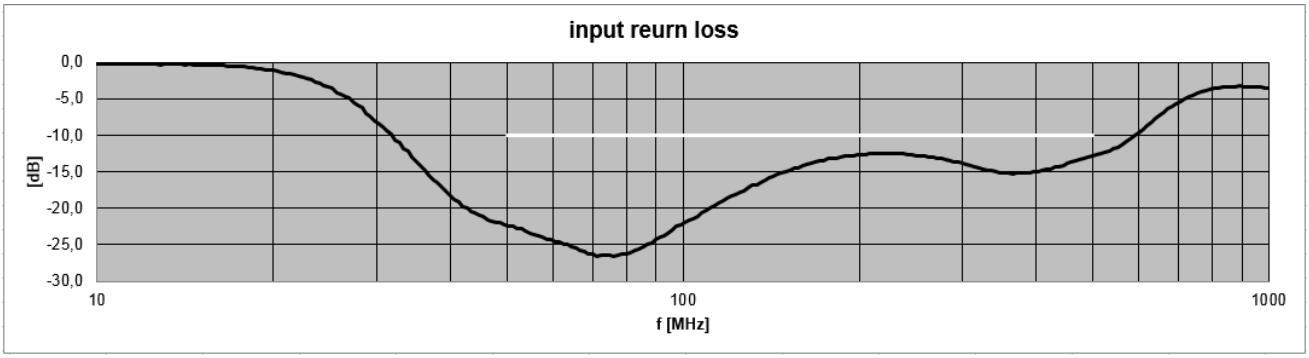
Note 3: Spurious in frequency range 9 kHz … 4 GHz, excluding harmonics (P_{OUT} +30 dBm),

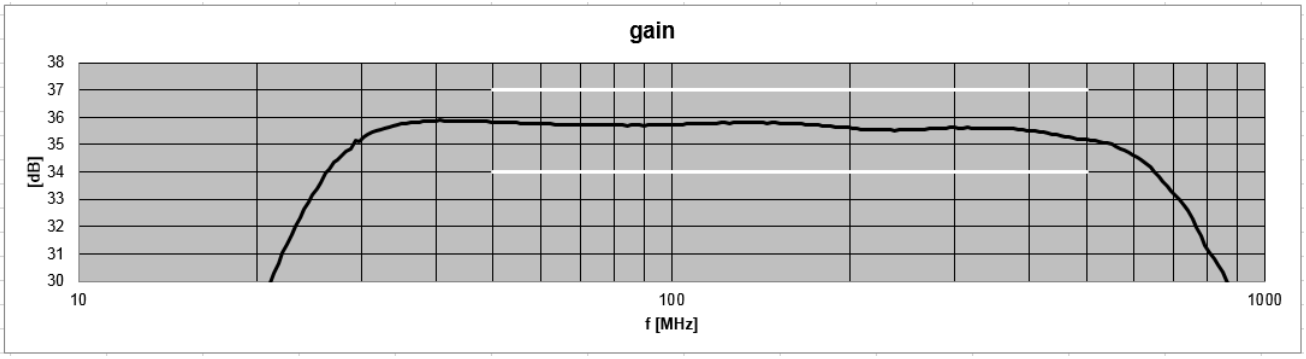
Note 4: Caused by the presence of the output power (+30 dBm, CW) and an interfering signal at the output. ($IM3_{REV}$ specification).

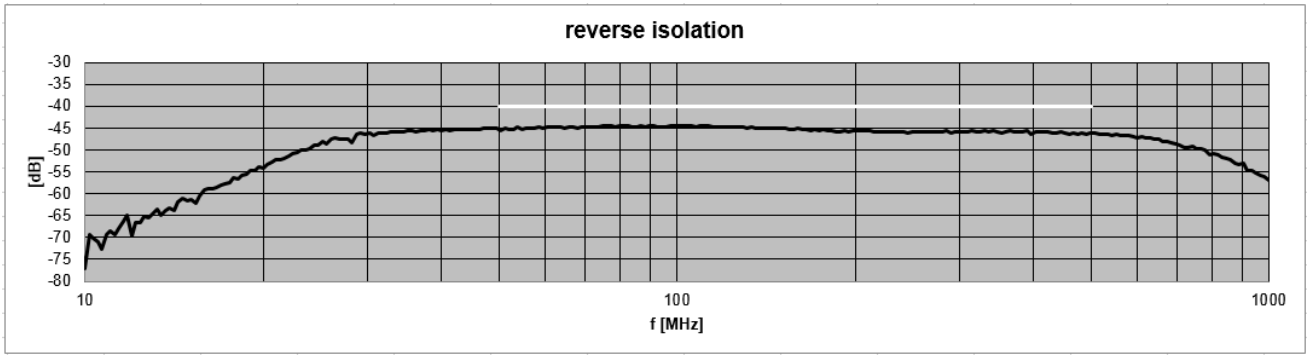
Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{DC}	11.5		28	V	DC
current consumption	I_{DC12V}		2000		mA	@ 12 V DC
dimensions	W x H x D	approx. 124 x 37 x 92			mm	without connectors
weight	m		600		g	
current threshold	I_{Thres}		±20		%	failure if current consumption exceeds
temperature threshold	T_{Thres}		+80		°C	failure if temperature exceeds, hysteresis approx. 5 K
failure signalling		STATUS LED				gn / rd
		floating relay contacts				SPDT
SPDT switching current	I_{SW}			1	A	DC
SPDT switching voltage	U_{SW}			42	V	DC
power socket	X_{DC}	Würth WR-TBL3251-5-3.5-W				
power plug	X_{DCP}	Würth WR-TBL3641-5-3.5				part of delivery
operating temp. range	T_O	0		+70	°C	module surface
storage temp. range	T_s	-40		+70	°C	
ordering information		AMP3060036		1602.5001.1		

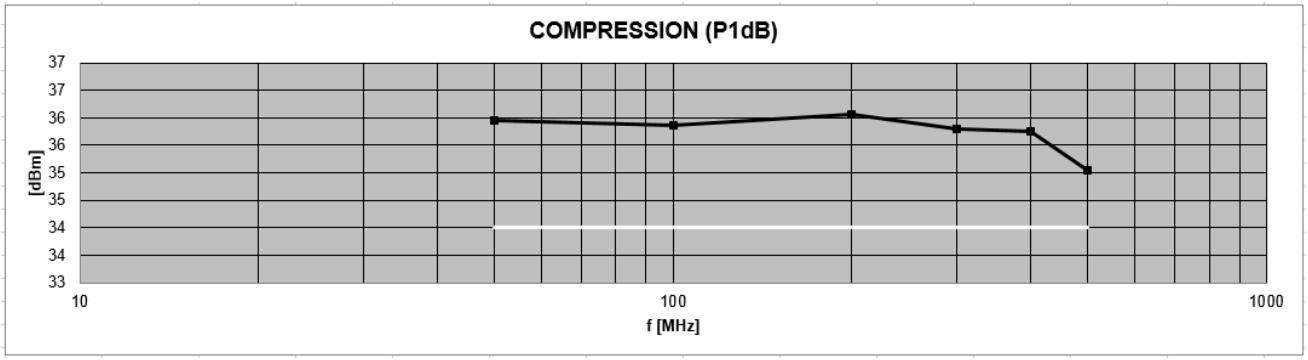
S-Parameters (typical responses)

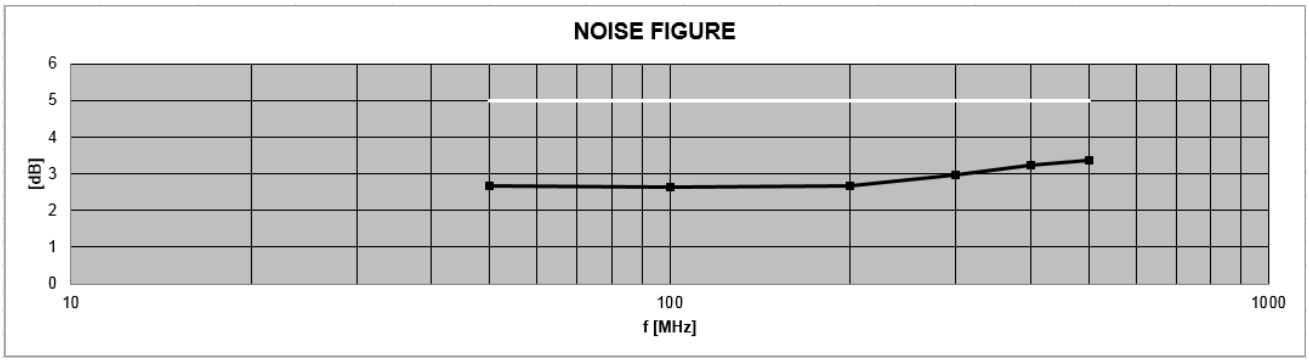




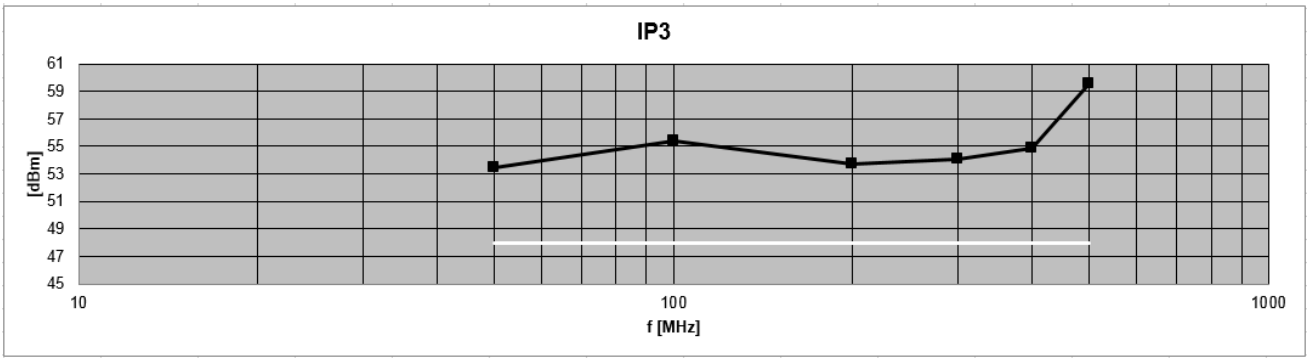


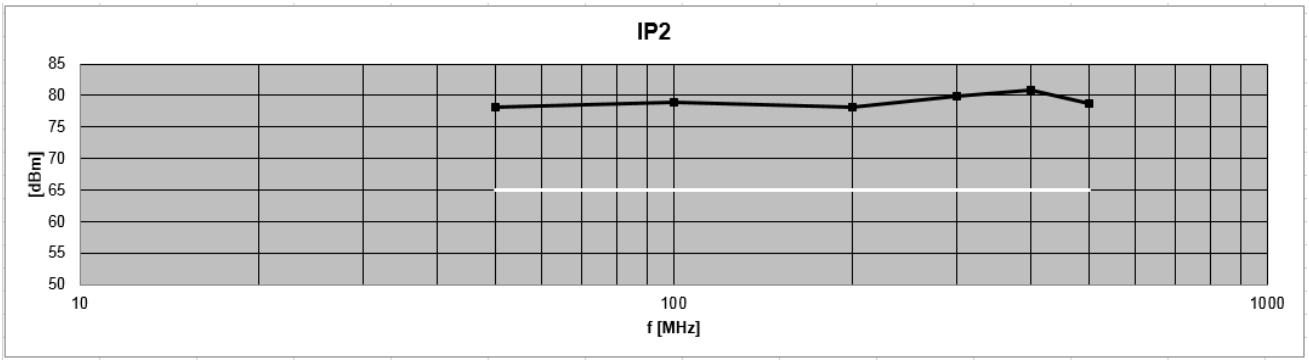
Dynamic Range (typical responses)



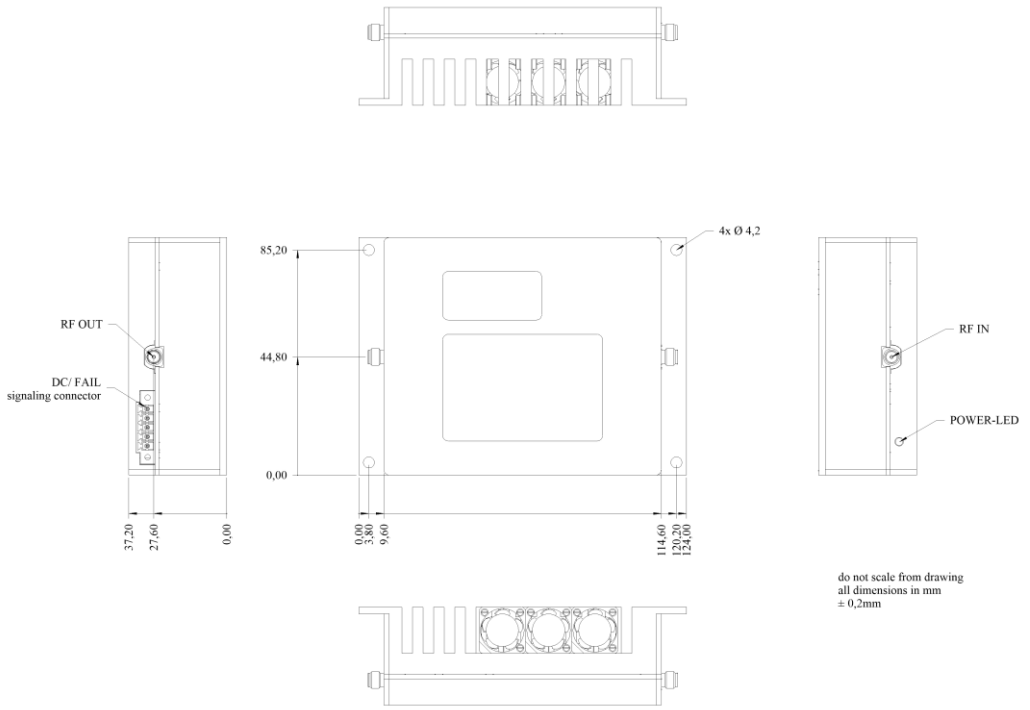


Linearity (typical responses)



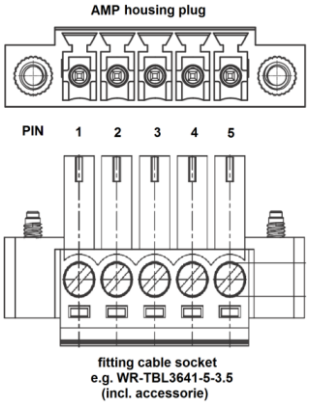


Dimensions



PIN Assignment DC / STATUS (floating contacts)

PIN	Designation	Remark
1	GND	Ground
2	+UB	DC supply voltage
3	REL_COM	relay common
4	REL_OK	OK when closed
5	REL_FAIL	failure when closed



Related Products

Product	Description	P/N
AMP20002000042	10 W Power Amplifier Module, 2000 MHz … 20 GHz Module with external heat sink	2301.5111.1
AMP20002000042L	10 W Power Amplifier Module, 2000 MHz … 20 GHz Module for mounting on external heat sink	2301.5101.1
AMP101800030	1 W Ultra-Wideband Linear Amplifier Module, 10 … 18000 MHz	2106.5001.x
AMP17001300038	6 W Power Amplifier Module, 1700 … 13000 MHz Module with external heat sink	2004.5111.1
AMP17001300038L	6 W Power Amplifier Module, 1700 … 13000 MHz Module for mounting on external heat sink	2004.5011.1
AMP300600040	10 W Power Amplifier Module, 300 … 6000 MHz Module with external heat sink	1801.5101.1
AMP300600040L	10 W Power Amplifier Module, 300 … 6000 MHz Module for mounting on external heat sink	1801.5001.1
AMP01600017B	50 mW Wideband Amplifier, 100 kHz … 6000 MHz	1604.5001.2
AMP51505925-TRX	Wi-Fi TX/RX Booster Amplifier for Radiating Cables	1802.5001.1
AMP51505925-TRX-K	Kit for 5 GHz Wi-Fi Coverage Extension using Radiating Cables	1802.5011.1
AMP20280035B	4.5 W Wideband Amplifier Module, 20 … 2800 MHz	1209.5201.x
AMP5270026	400 mW High Dynamic Amplifier Module, 5 … 2700 MHz	1005.5201.x
AMP5220031	1 W High Dynamic Amplifier Module, 5 … 2200 MHz	1005.5101.x
AMP5170033	2 W Amplifier Module 5 … 1700 MHz	1401.5011.1
AMP50130036	4 W High Linearity, Full Redundant, UHF Wideband Amplifier, 50…1300 MHz Module with heat sink	1602.5001.4
AMP50130036L	4 W High Linearity, Full Redundant, UHF Wideband Amplifier, 50…1300 MHz Module for mounting in external heat sink	1602.5001.5
AMP590033	2 W Booster Amplifier Module 5 … 900 MHz Module with heat sink	0901.5011.x
AMP590033L	2 W Booster Amplifier Module 5 … 900 MHz Module for mounting in external heat sink	0901.5011.x
AMP590033H	2 W Amplifier Module 5 … 900 MHz Module with heat sink	0901.5001.x
AMP590033HL	2 W Amplifier Module 5 … 900 MHz Module for mounting in external heat sink	0901.5001.x
LNA1080014	400 mW Low Noise Amplifier Module 10 … 800 MHz	0901.5501.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
AMP1053045	30 W Linear Power Amplifier Module 10 … 530 MHz	1908.5001.1
AMP17024048L	60 W DAB Linear Power Amplifier Module 170 … 240 MHz Module for mounting on external heat sink	2104.5001.4
AMP17024048	60 W DAB Linear Power Amplifier Module 170 … 240 MHz Module with external heat sink	2104.5101.4
AMP7610849L	80 W FM Linear Power Amplifier Module 76 … 108 MHz Module for mounting on external heat sink	2104.5001.3
AMP7610849	80 W FM Linear Power Amplifier Module 76 … 108 MHz Module with external heat sink	2104.5101.3
AMP018032	1.3 W High Linearity Amplifier Module 100 kHz…80 MHz	1002.5701.x

Note: Sorted descending by upper limit frequency.
All modules with P/N extension with ".x" are available with horizontal or vertical orientated DC power connector.