

Extremely High Linearity Amplifier Module 5 ... 1700 MHz, 50 Ω

Features

- output power +33 dBm typ.
- excellent linearity
- low noise figure
- open/ short stable
- VLF suppression
- wide DC supply range
- reverse polarity protection
- optical supply and status indication
- remote monitoring via floating contacts

Applications

- FM, TETRA, DAB 3&L, ISM 433&868, DVB-T, Wireless, GPS
- tunnel radio
- driver amplifier for radiating cable
- in-house repeaters
- optical modulator driver



At a Glance

AMP5170033 from Becker Nachrichtentechnik is a compact and very high dynamic amplifier module. It is suitable for frequencies from 5 MHz to 1700 MHz and is realized in 50 Ohm technology.

Excellent Dynamic

The high output power and an excellent 3rd order intercept point in combination with a low noise figure make this amplifier suitable for applications with very high demands.

Versatile Use

The high gain allows full output power at an input level of approximately 0 dBm. AMP5170033 offers a wide DC supply range which enables an easy integration into existing systems. It can be used for several areas of application such as VHF / UHF, ISM 433 / 868 MHz and GSM / UMTS / LTE and GPS. Beyond this, it is useable as a radiating cable driver for tunnels and in-house repeaters. Additionally, it can be used as a driver amplifier for optical modulators.

Built-in Test Capability

AMP5170033 offers an internal monitoring function. Module temperature and operating points of the amplifier stages are supervised. The module is equipped with a LED which indicates the module status. For remote monitoring, the device offers floating relay switching contacts.

Robust Design

AMP5170033 features a compact and robust module design with integrated passive cooling. The DC supply input is reverse polarity protected; thereby inadvertently damage of the module is prevented.

RF Specifications

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{in} / Z_{out}		50		Ohm	
low frequency	f_{min}		3	5	MHz	
high frequency	f_{max}	1700	1800		MHz	
gain	S_{21}	34	36	38	dB	5 MHz \leq f < 30 MHz
	S_{21}	33	35	37	dB	30 MHz \leq f < 1000 MHz
	S_{21}	31	34	36	dB	1000 MHz \leq f < 1600 MHz
	S_{21}	30	33	35	dB	f \geq 1600 MHz
low frequency response	A_{LF}		-100	-70	dBr	@ 100 kHz, rel. to 200 MHz
	A_{LF}		-36	-25	dBr	@ 1 MHz, rel. to 200 MHz
input return loss	S_{11}		-15	-10	dB	5 MHz \leq f \leq 300 MHz
	S_{11}		-10	-7	dB	f > 300 MHz
output return loss	S_{22}		-6	-4	dB	f < 10 MHz
	S_{22}		-10	-6	dB	10 MHz \leq f \leq 1000 MHz
	S_{22}		-8	-4	dB	f > 1000 MHz
reverse isolation	S_{12}		-45	-40	dB	
3 rd order intercept	OPIP3 ¹⁾	+46	+51		dBm	5 MHz \leq f \leq 500 MHz
	²⁾	+43	+48		dBm	500 MHz < f \leq 1000 MHz
	³⁾	+35	+43		dBm	f > 1000 MHz
2 nd order intercept	OPIP2	+63	+80		dBm	5 MHz \leq f \leq 800 MHz
		+50	+60		dBm	f > 800 MHz
1 dB compression	P_{1dB}	+31	+33		dBm	5 MHz \leq f \leq 1000 MHz
		+27	+30		dBm	1000 MHz < f \leq 1500 MHz
		+23	+27		dBm	f > 1500 MHz
noise figure	NF		5	7	dB	5 MHz \leq f < 10 MHz
			3	5	dB	10 MHz \leq f \leq 1500 MHz
input power	P_{in}			+5	dBm	no damage
RF connectors						SMA female

Note 1: Tested at $P_{out} 2 \times +23$ dBm; $\Delta f = 2$ MHz

Note 2: Tested at $P_{out} 2 \times +20$ dBm; $\Delta f = 2$ MHz

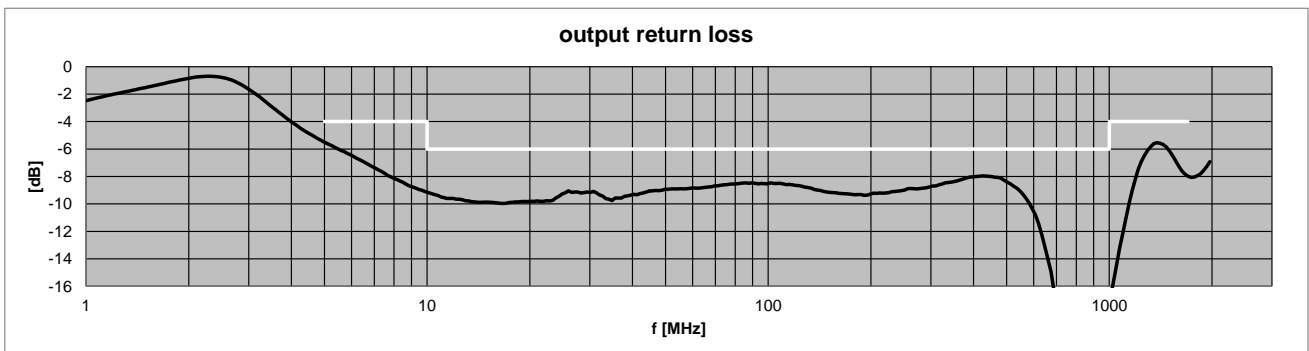
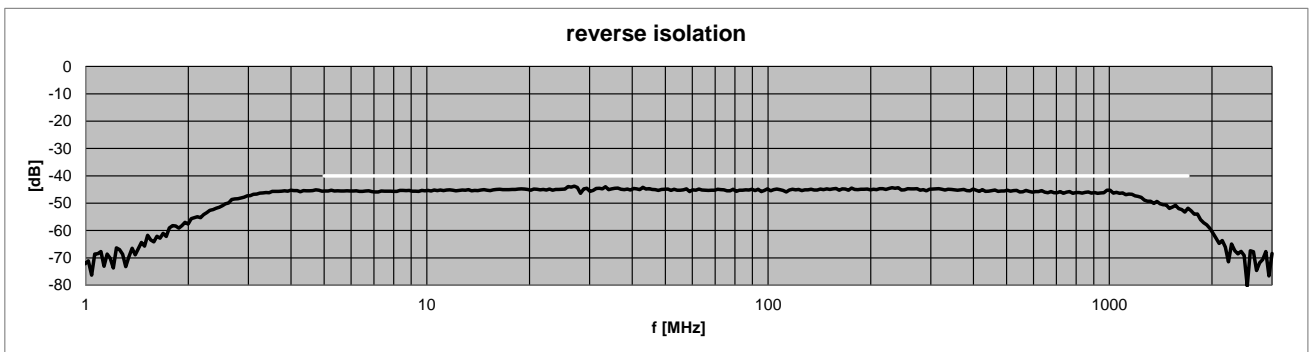
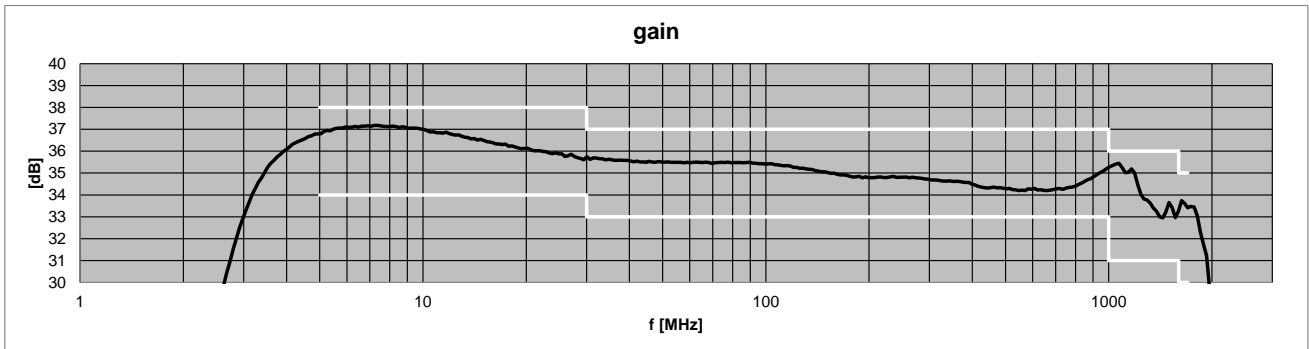
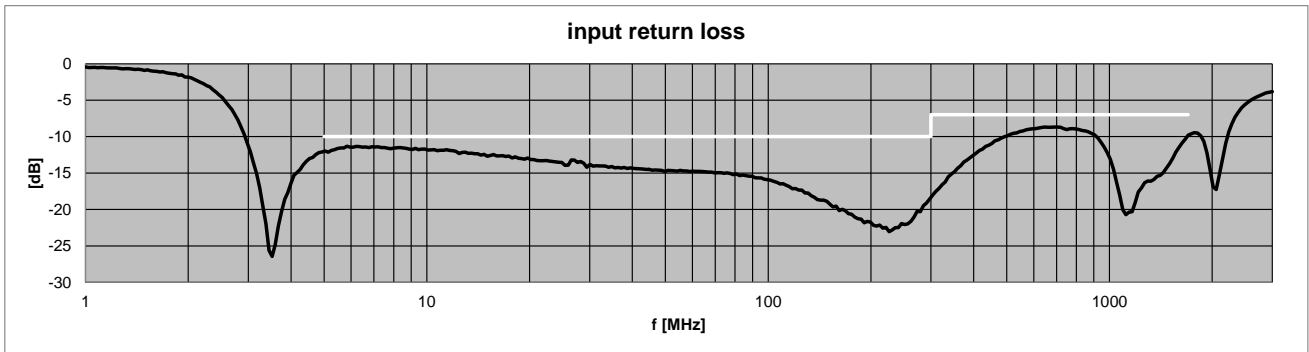
Note 3: Tested at $P_{out} 2 \times +17$ dBm; $\Delta f = 2$ MHz

Common Specifications

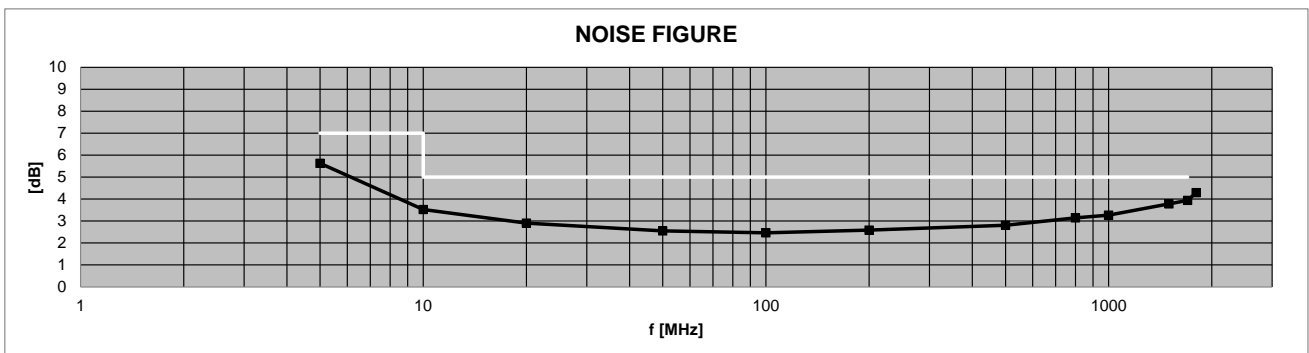
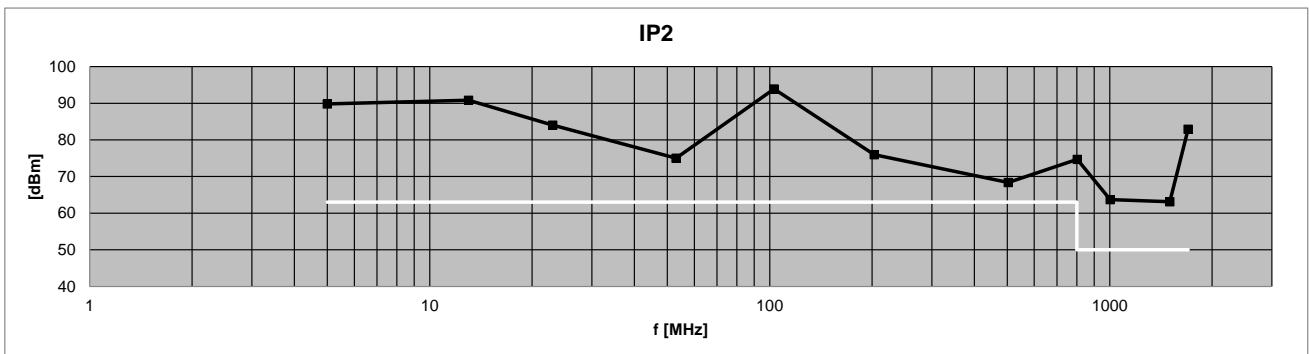
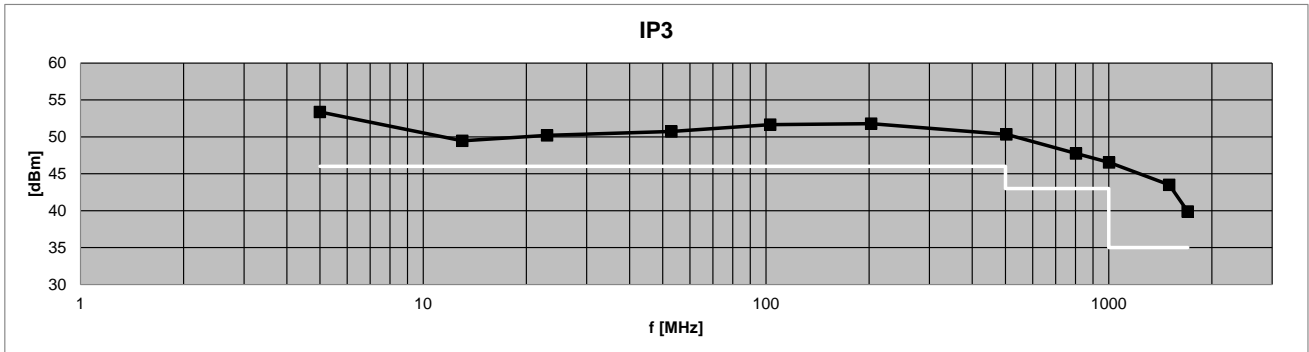
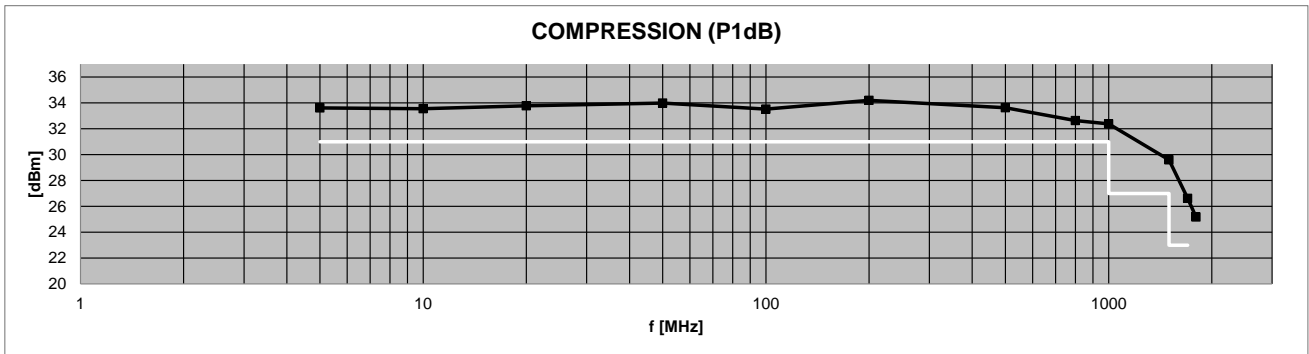
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U	11		29	V	DC
current consumption	I_{12V}	640	750	890	mA	@ 12V DC
	I_{24V}	350	380	420	mA	@ 24V DC
dimensions	L x W x H	approx. 124 x 75 x 38			mm	
weight	m		360		g	
failure indication		LED & relay contact				
current threshold	I_{THRES}		± 20		%	failure if current consumption exceeds
temperature threshold	T_{THRES}		+80		°C	failure if temperature exceeds, hysteresis approx. 5K
failure signaling		floating relay contact				
switching current	I_{SW}			1	A	DC
switching voltage	U_{SW}			42	V	DC
recommend plug		Würth WR-TBL3641-5-3.5				5 pole; included accessories
operating temp. range	T_{AMB}	-20		+55	°C	ambiance
storage temp. range	T_s	-40		+70	°C	
ordering information		AMP5170033		1401.5011.1		



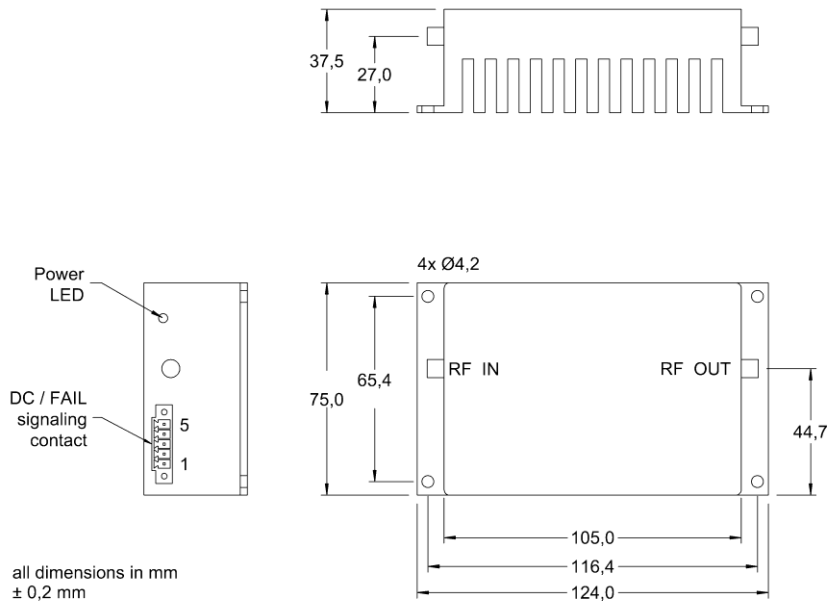
S-Parameters (typical responses)



Dynamic Range (typical responses)

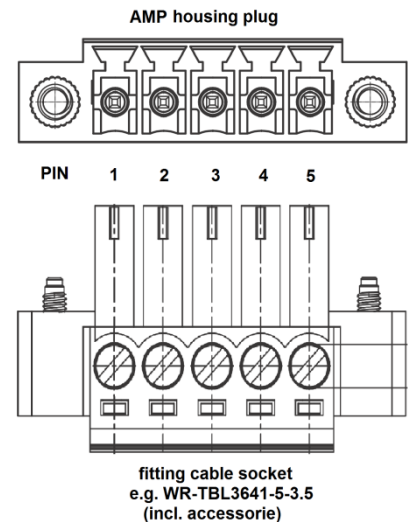


Dimensions



PIN Assignment (DC / STATUS signaling contact)

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
AMP018032	1 W Medium Power Amplifier Module 100 kHz ... 80 MHz, 50 Ω	1002.5701.1
LNA1080014	High Dynamic Range Amplifier Module 10 ... 800 MHz, 50 Ω	0901.5501.1
AMP590033	2 W Booster Amplifier Module 5 ... 900 MHz, 50 Ω	0901.5011.1
AMP590033H	2 W Power Amplifier Module 5 ... 900 MHz, 50 Ω	0901.5001.1
AMP5270026	High Dynamic Amplifier Module 5 ... 2700 MHz, 50 Ω	1005.5201.1
AMP5220031	High Dynamic Amplifier Module 5 ... 2200 MHz, 50 Ω	1005.5101.1
AMP20280035	4.5 W Wideband Amplifier Module 20 ... 2800 MHz, 50 Ω	1209.5001.1
AMP10850026	500 mW Wideband Amplifier Module 10 ... 8500 MHz, 50 Ω	1305.5001.1
AMP1053043H	20 W Power Amplifier Module 10 ... 530 MHz, 50 Ω	1001.5001.1