

# AMP1053045

## 30 W Linear Power Amplifier Module 10 ... 530 MHz

### Features

- compact design
- high dynamic
- current and temperature monitoring
- STATUS signalling
- reverse polarity protection

### Applications

- TX amplifier
- FM, DAB, BOS, TETRA
- Multicarrier
- tunnel radio coverage
- driver for radiating cables



### At a Glance

AMP1053045 from Becker Nachrichtentechnik is a compact amplifier module in 50 ohms technology specially designed for professional FM, DAB and BOS/TETRA 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 amplifier module is supplied with a single DC voltage. The presence of DC power and the module status is indicated by a LED at the module.

The RF connectors are SMA female type. AMP1053045 has a heat sink foreseen for operation with passive cooling.

### 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 suppress 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 signaled 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 in a milled aluminium 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 AMP1053045 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 <sub>IN</sub> /Z <sub>OUT</sub>		50		Ω	
low frequency	f <sub>low</sub>		10	70	MHz	
high frequency	f <sub>high</sub>	420	530		MHz	
gain	S <sub>21</sub>	43	45	47	dB	
input return loss	S <sub>11</sub>		-20	-15	dB	
output return loss	S <sub>22</sub>		-10		dB	
reverse isolation	S <sub>12</sub>		-70		dB	
1 dB compression	P <sub>1dB</sub>	+43	+45		dBm	PEP
saturated output power	P <sub>SAT</sub>		+46		dBm	PEP
output power	P <sub>out</sub>			+40	dBm	RMS
3 <sup>rd</sup> order intercept	OIP3	+50	+55		dBm	2 carrier, Note 3
IM3 rejection	IM3		-40		dBc	8 carrier, each +28 dBm
noise figure	NF		3	5	dB	
spurious emissions	P <sub>SPUR</sub>		-70	-36	dBm	ETSI EN 300 086 V2.1.2, chapter 7.6, note 1
intermodulation attenuation	IM3 <sub>REV</sub>		-65	-40	dBc	ETSI EN 300 086 V2.1.2, chapter 7.7, note 2
input power	P <sub>in</sub>			+5	dBm	no damage
maximum DC voltage	U <sub>DC</sub>			20	V	RF ports
ESD discharge resistor	R <sub>ESD</sub>		4.7		kΩ	RF ports
RF connectors	X <sub>RF</sub>	SMA female				input and output

Note 1: Spurious in frequency range 9 kHz ... 4 GHz, excluding harmonics (P<sub>OUT</sub> +40 dBm),

Note 2: Caused by the presence of the output power (+40 dBm, CW) and an interfering signal at the output.

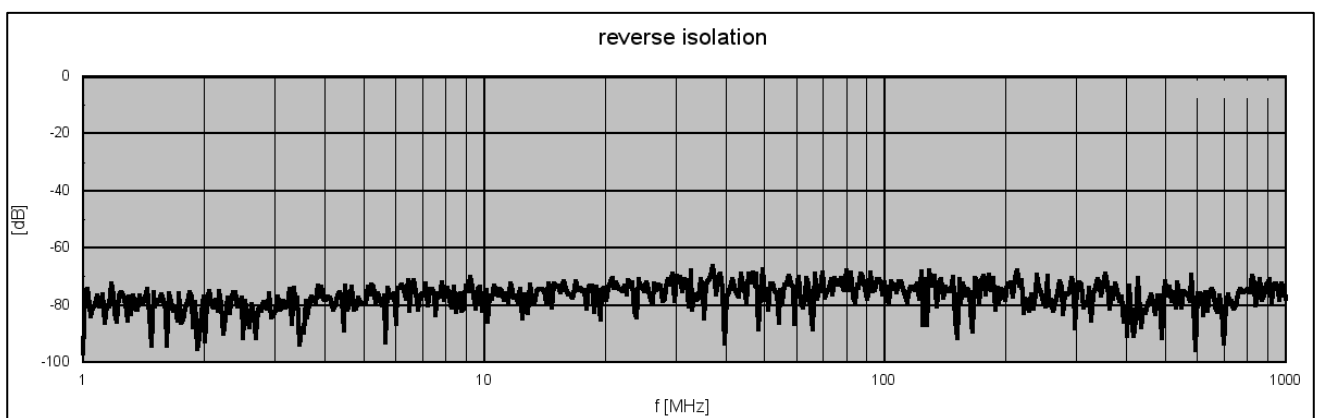
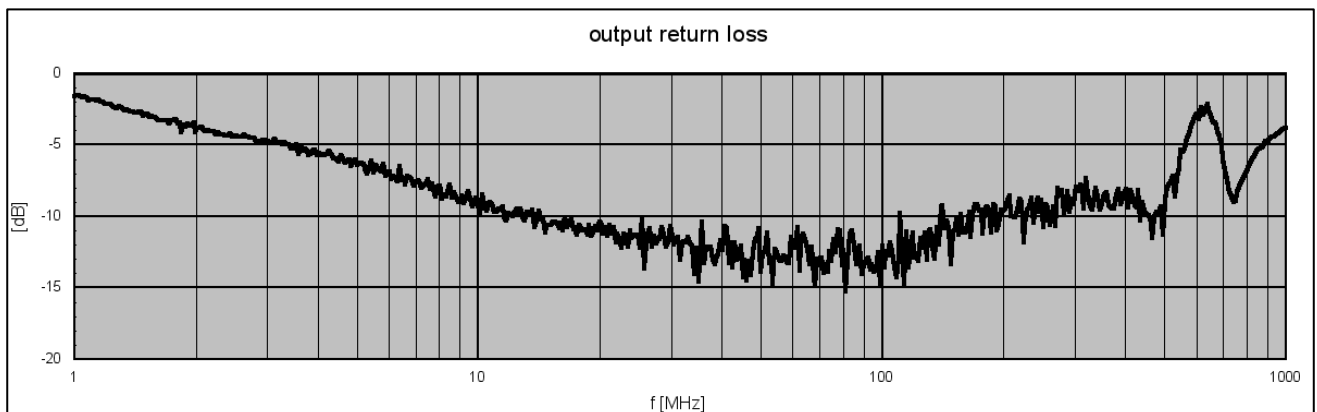
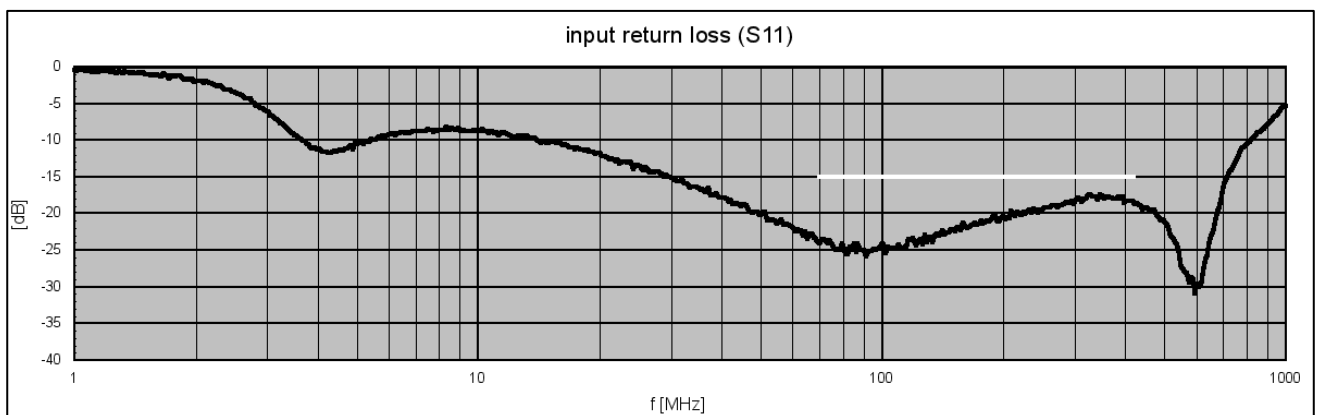
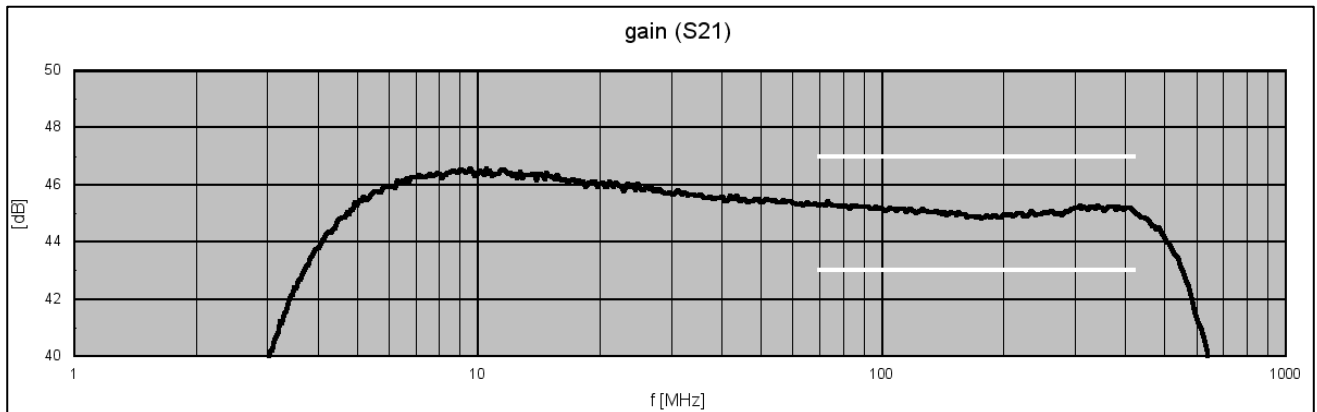
(IM3<sub>REV</sub> specification).

Note 3: measured at 2x +32dBm, Δf = 1MHz

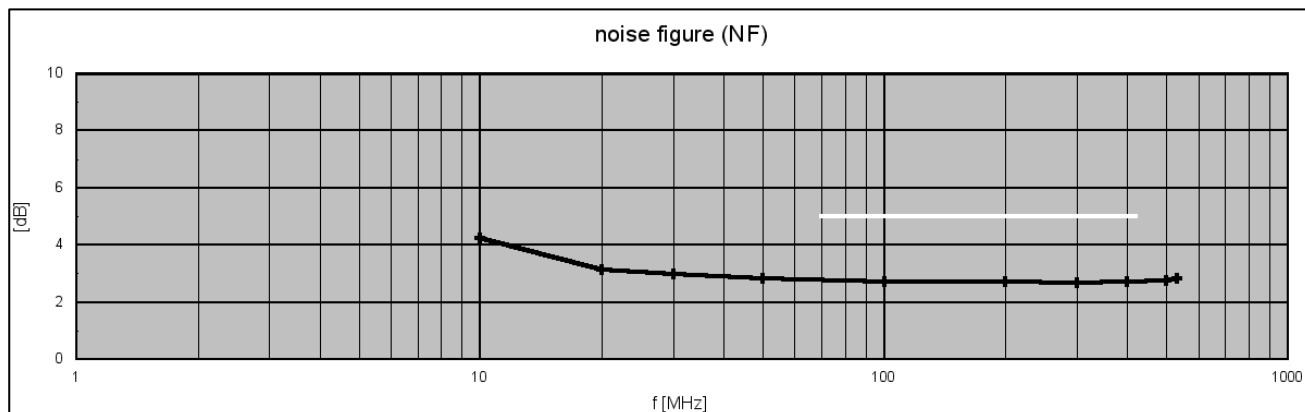
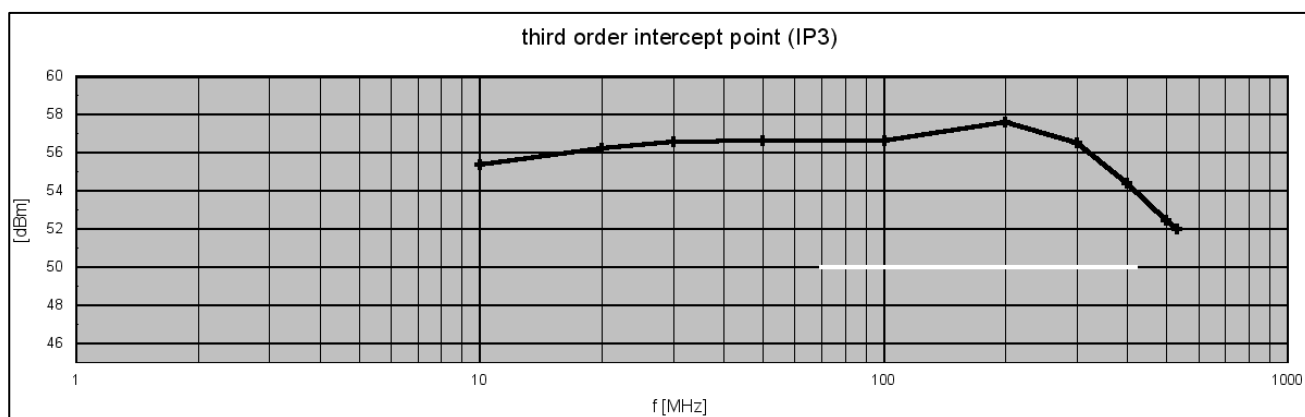
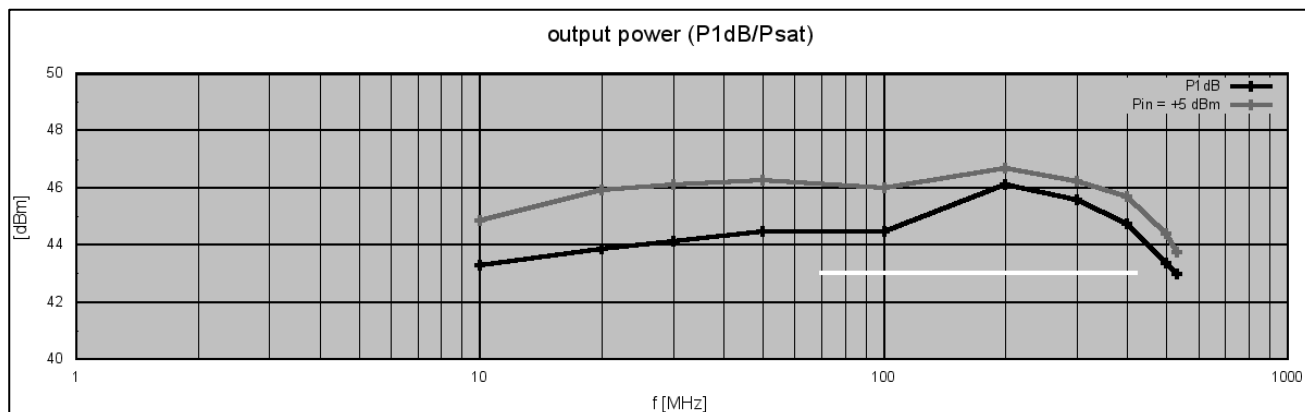
**Common Specification**

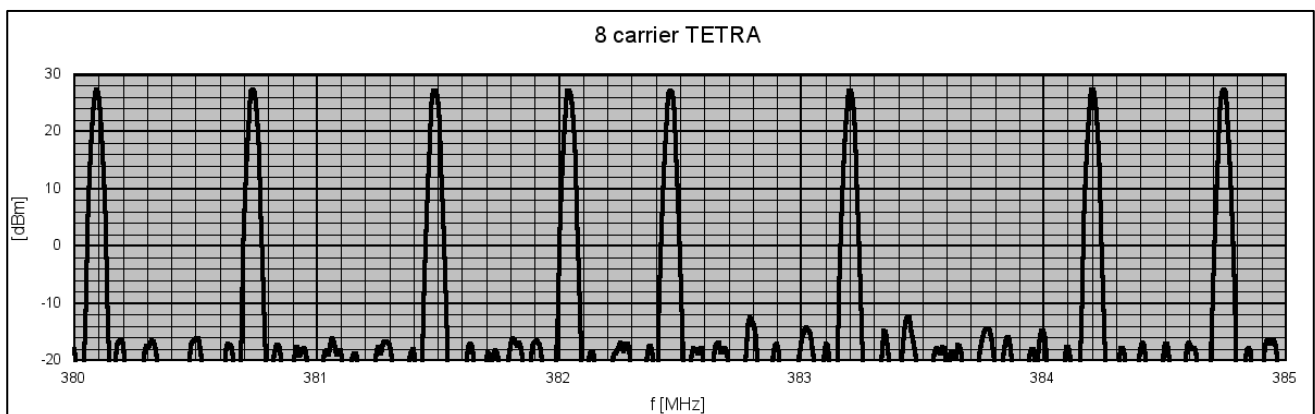
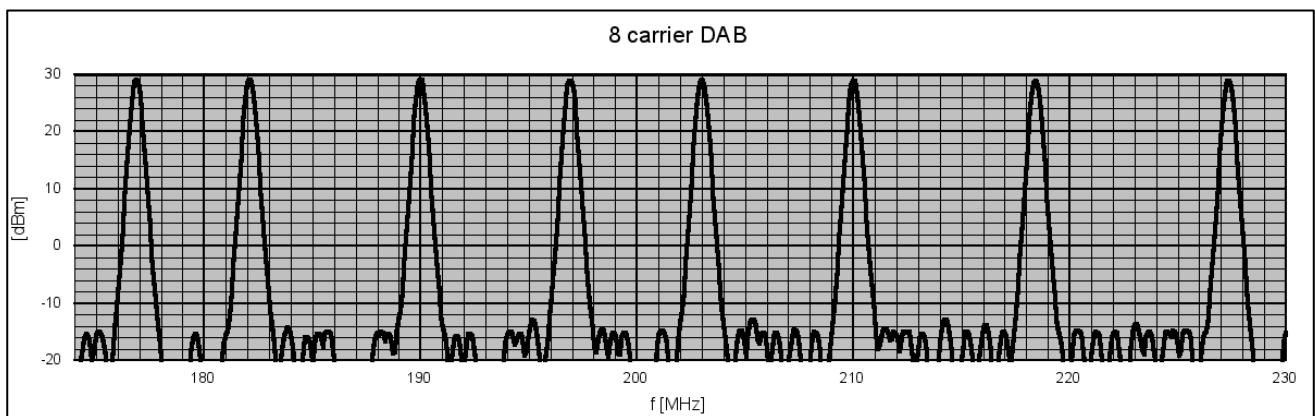
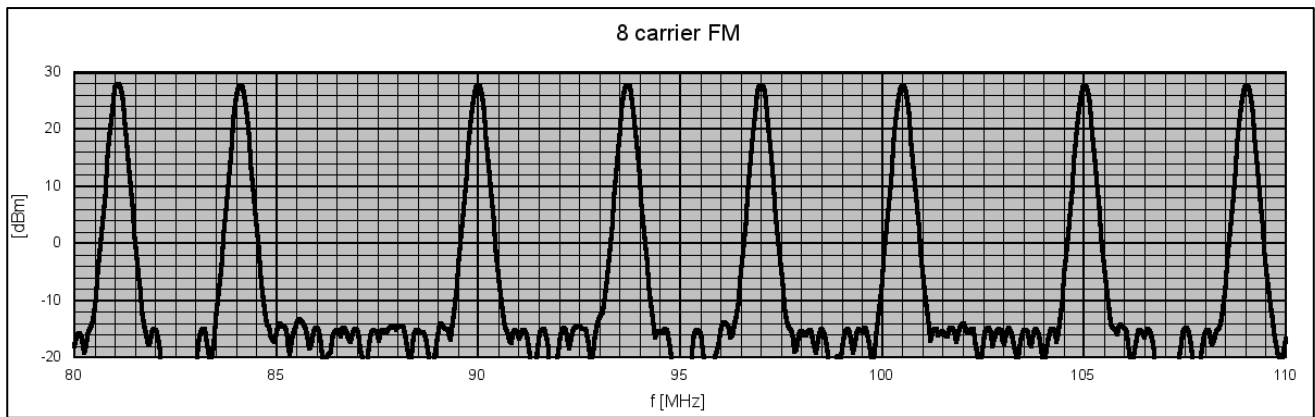
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U <sub>DC</sub>	23	24	29	V	all specs rated at 24V
current consumption	I <sub>DC</sub>	4.0	4.3*	6.1	A	*quiescent current
dimensions	W x H x D	approx. 300 x 110 x 112			mm	including Heatsink
weight	m		3.7		kg	
floating relay contacts						
switching current	I <sub>SW</sub>			1	A	DC
switching voltage	U <sub>SW</sub>			42	V	DC
current threshold	I <sub>thres</sub>		±20		%	failure if current consumption exceeds
temperature threshold	T <sub>thres</sub>		+80		°C	failure if temperature exceeds, hysteresis approx. 5 K
failure signalling		STATUS LED				gn / rd
power socket		Würth 691317510002				2 pole
counterpart		Würth 691340500002				2 pole; part of delivery
STATUS contact socket		Würth 691325110003				3 pole
counterpart		Würth 691364100003				3 pole; part of delivery
operating temp. range	T <sub>HEATSINK</sub>	+10		+75	°C	module surface
max. operating temp.	T <sub>AMB_MAX</sub>		+45		°C	free air convection
storage temp. range	T <sub>s</sub>	-40		+70	°C	
ordering information		AMP1053045		1908.5001.1		



**S-Parameters** (typical responses)

## Dynamic Range (typical responses)



**Multi carrier spectrum (typical response)**

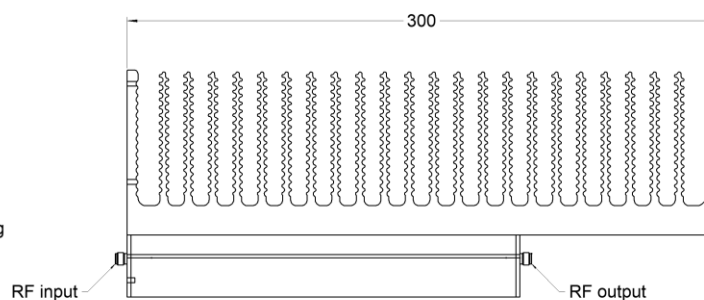
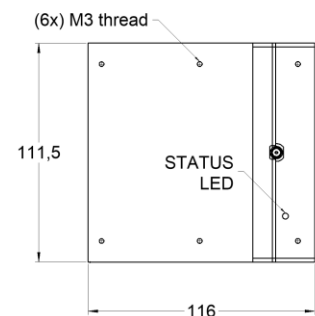
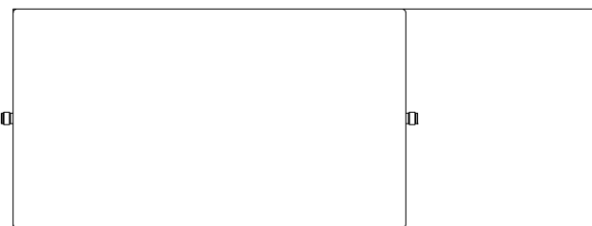
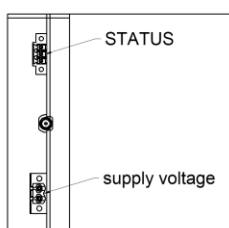
## Appearances



Side view

RF\_IN connector,  
DC and status  
connectorsRF\_OUT connector,  
status LED

## Mechanical Drawing

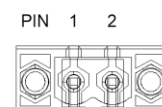


don't scale from this drawing

all dimensions in mm  
± 2 mm

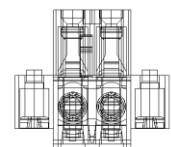
## PIN Assignment (supply voltage)

PIN	Designation	Remark
1	+UB	DC supply voltage
2	GND	ground



AMP header

PIN 1 2

fitting cable socket  
e.g. WR-TBL 3405  
691 340 510 002  
(incl. accessorie)

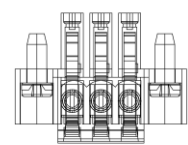
## PIN Assignment (STATUS-signaling contact)

PIN	Designation	Remark
1	REL_COM	relay common
2	REL_OK	OK when closed
3	REL_FAIL	failure when closed



AMP header

PIN 1 2 3

fitting cable socket  
e.g. WR-TBL 3641  
691 364 100 003  
(incl. accessorie)

## 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.

