

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 be amplified without any distortion effects. An integrated high pass filter in the input suppresses 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 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_{IN}/Z_{OUT}		50		Ω	
low frequency	f_{low}		10	70	MHz	
high frequency	f_{high}	420	530		MHz	
gain	S_{21}	43	45	47	dB	
input return loss	S_{11}		-20	-15	dB	
output return loss	S_{22}		-10		dB	
reverse isolation	S_{12}		-70		dB	
1 dB compression	P_{1dB}	+43	+45		dBm	PEP
saturated output power	P_{SAT}		+46		dBm	PEP
output power	P_{out}			+40	dBm	RMS
3 rd 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_{SPUR}		-70	-36	dBm	ETSI EN 300 086 V2.1.2, chapter 7.6, note 1
intermodulation attenuation	IM3 _{REV}		-65	-40	dBc	ETSI EN 300 086 V2.1.2, chapter 7.7, note 2
input power	P_{in}			+5	dBm	no damage
maximum DC voltage	U_{DC}			20	V	RF ports
ESD discharge resistor	R_{ESD}		4.7		k Ω	RF ports
RF connectors	X_{RF}	SMA female				input and output

Note 1: Spurious in frequency range 9 kHz ... 4 GHz, excluding harmonics (P_{OUT} +40 dBm),

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

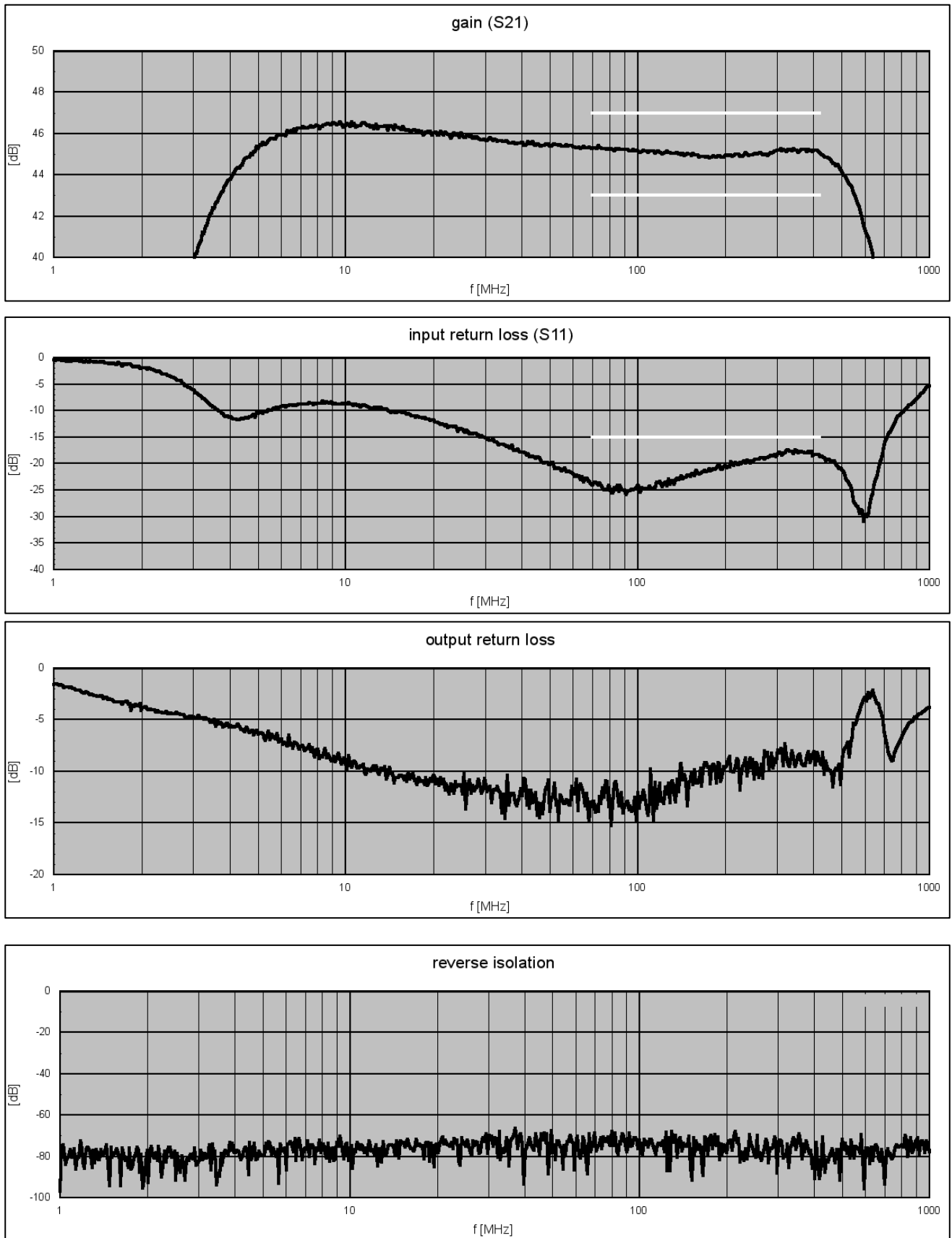
(IM3_{REV} specification).

Note 3: measured at 2x +32dBm, $\Delta f = 1$ MHz

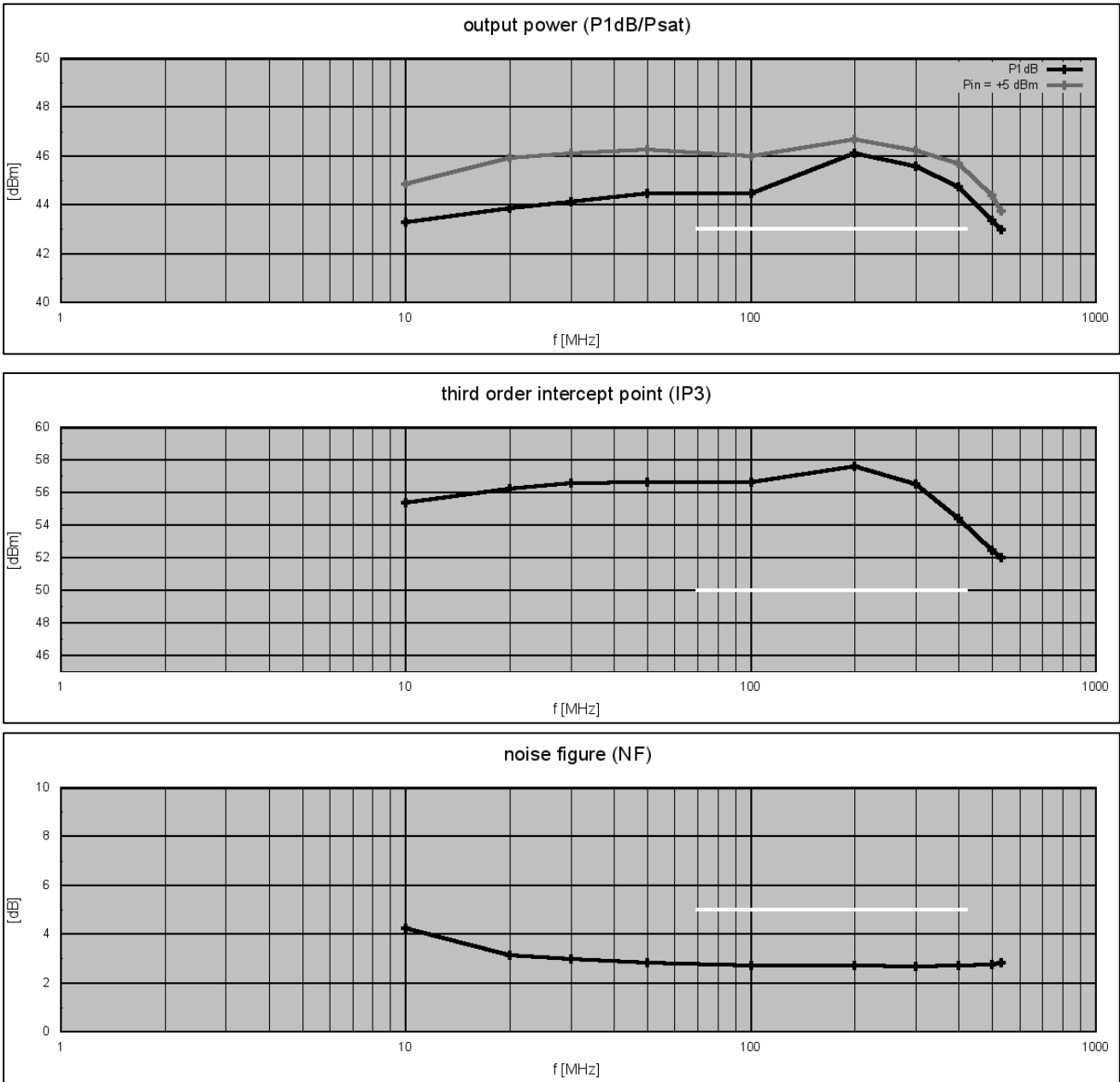
Common Specification

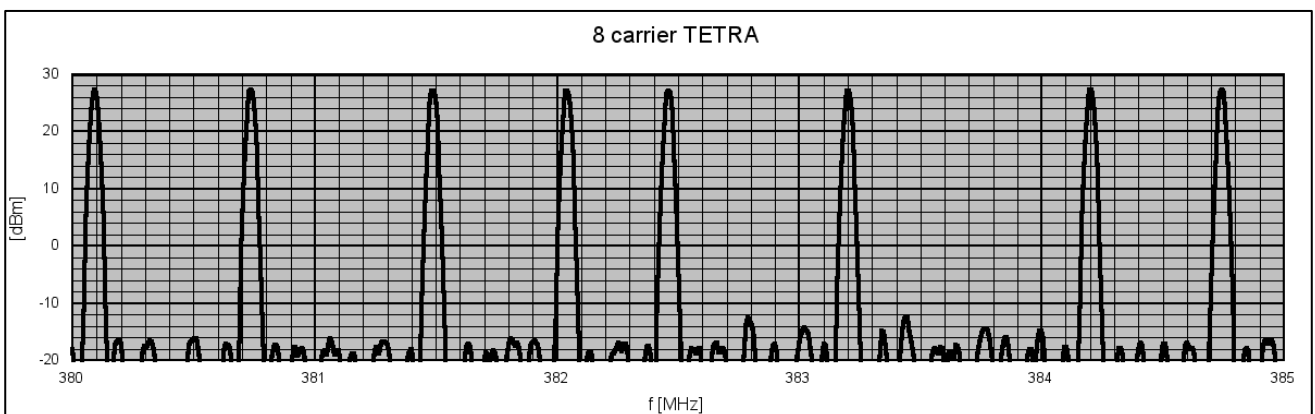
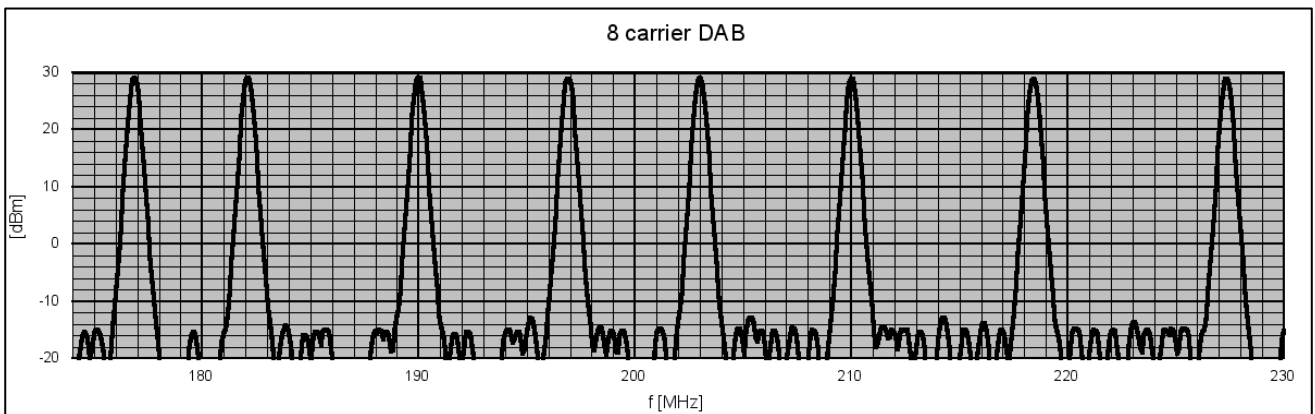
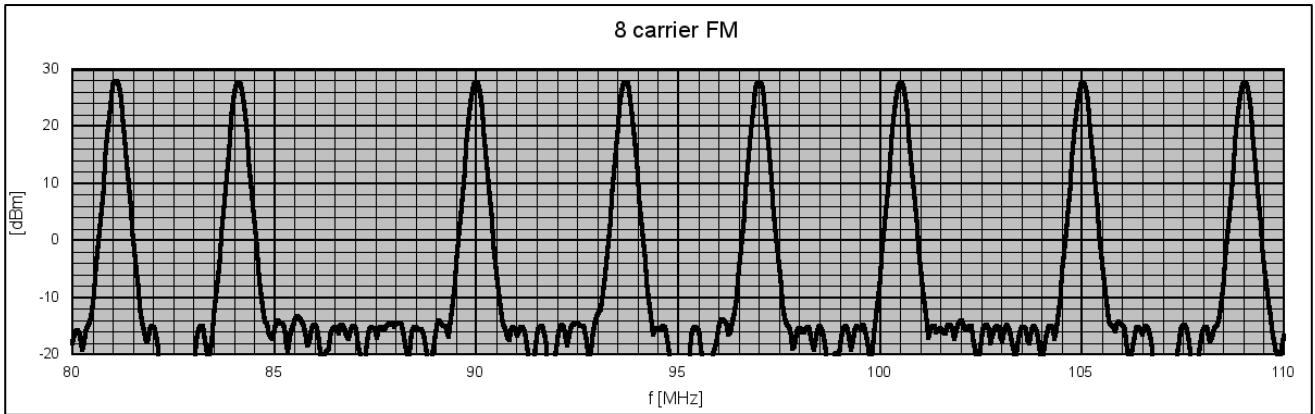
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	U_{DC}	23	24	29	V	all specs rated at 24V
current consumption	I_{DC}	4.0	4.3*	6.1	A	*quiescent current
dimensions	W x H x D	approx. 300 x 110 x 112			mm	including Heatsink
weight	m		3.7		kg	
floating relay contacts						
switching current	I_{SW}			1	A	DC
switching voltage	U_{SW}			42	V	DC
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
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	$T_{HEATSINK}$	+10		+75	°C	module surface
max. operating temp.	T_{AMB_MAX}		+45		°C	free air convection
storage temp. range	T_s	-40		+70	°C	
ordering information	AMP1053045			1908.5001.1		



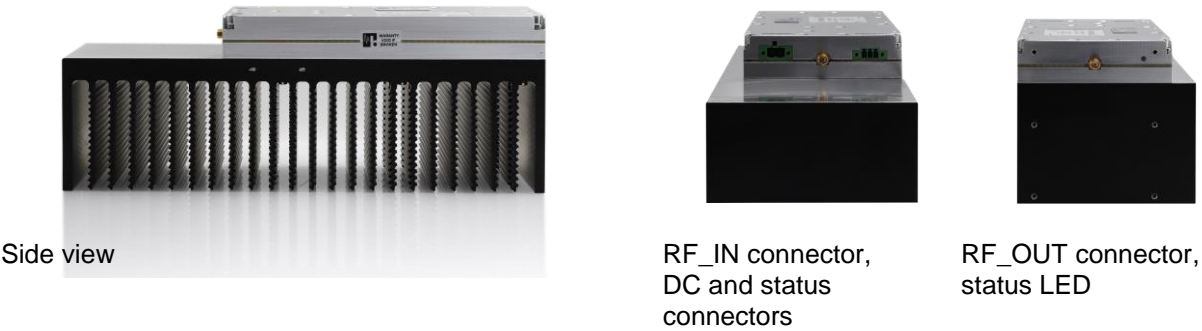
S-Parameters (typical responses)

Dynamic Range (typical responses)

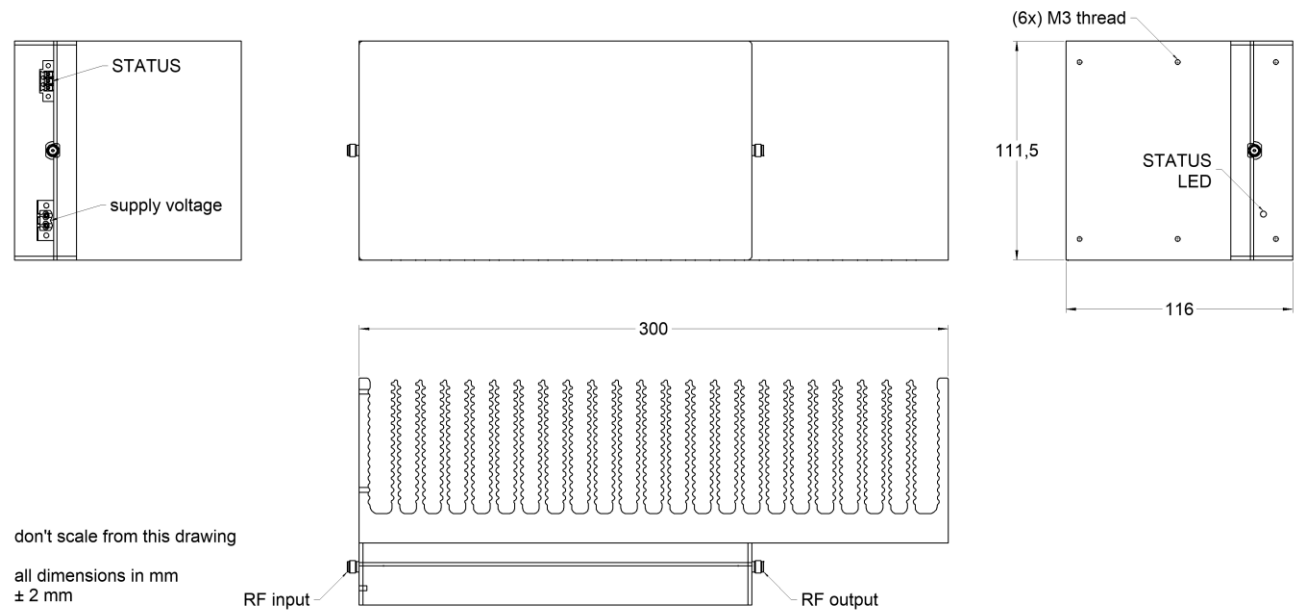


Multi carrier spectrum (typical response)

Appearances

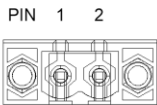


Mechanical Drawing

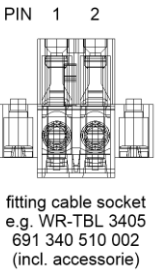


PIN Assignment (supply voltage)

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

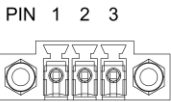


AMP header

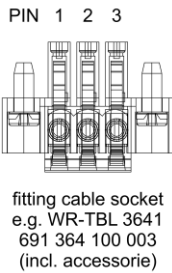


PIN Assignment (STATUS-signaling contact)

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



AMP header



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.