

# AMP300600040L

## 10 W Power Amplifier Module 300 ... 6000 MHz

### Features

- output power +42 dBm typ.
- high OIP3 +46 dBm typ.
- high dynamic
- reverse polarity protected
- self test function
- optical power and status indication
- status signaling contact (floating)

### Applications

- ultra wideband power amplifier
- GSM, UMTS, LTE, 5G, Wifi
- UHF, SHF



Designed for mounting on external heat sink.

### At a Glance

AMP300600040L 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 and the module status is indicated by a LED at the module. The amplifier module is designed for mounting on heat sinks provided by user.

### Special Features

The high output power and the ultra-wide operation frequency range makes the amplifier module suitable in systems for cellular and Wifi applications including 5G (FR1). To adapt the output power to desired value and to minimize heat generation the DC voltage supply of the module can vary. 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.

### Rugged Design

The amplifier is housed in 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.

**RF Specification (32 V)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	$Z_{in} / Z_{out}$		50		$\Omega$	
low frequency	$f_{LOW}$			0.3	GHz	
	$f_{HIGH}$	6.0			GHz	
linear gain	$S_{21}$	44	50	55	dB	$f < 0.7$ GHz
	$S_{21}$	44	47	50	dB	$0.7$ GHz $\leq f \leq 3.5$ GHz
	$S_{21}$	42	46	50	dB	$3.5$ GHz $< f \leq 5.0$ GHz
	$S_{21}$	37	43	47	dB	$f > 5.0$ GHz
input return loss	$S_{11}$		-15	-10	dB	$f \leq 5.0$ GHz
			-10	-7	dB	$f > 5.0$ GHz
saturation power	$P_{SAT}^{1)}$	+39	+41		dBm	$f < 0.7$ GHz
	$P_{SAT}^{1)}$	+40	+42		dBm	$0.7$ GHz $\leq f \leq 3.5$ GHz
	$P_{SAT}^{1)}$	+39	+41		dBm	$3.5$ GHz $< f \leq 5.0$ GHz
	$P_{SAT}^{1)}$	+37	+39		dBm	$f > 5.0$ GHz
1 dB compression	$P_{1dB}$		+38		dBm	
harmonics	D		-27		dBc	$P = +37$ dBm
3 <sup>rd</sup> order intercept	OPIP3 <sup>2)</sup>	+44	+46		dBm	$f \leq 5.5$ GHz
	OPIP3 <sup>2)</sup>	+42	+44			$f > 5.5$ GHz
noise figure	NF		7	9	dB	
input power	$P_{in}$			+10	dBm	no damage
DC voltage	$U_{DCI}$			20	V	RF input
	$U_{DCO}$			0	V	RF output
ESD discharge resistor	$R_{ESD}$		4.7		k $\Omega$	RF ports
RF connectors	$X_{RF}$	SMA female				

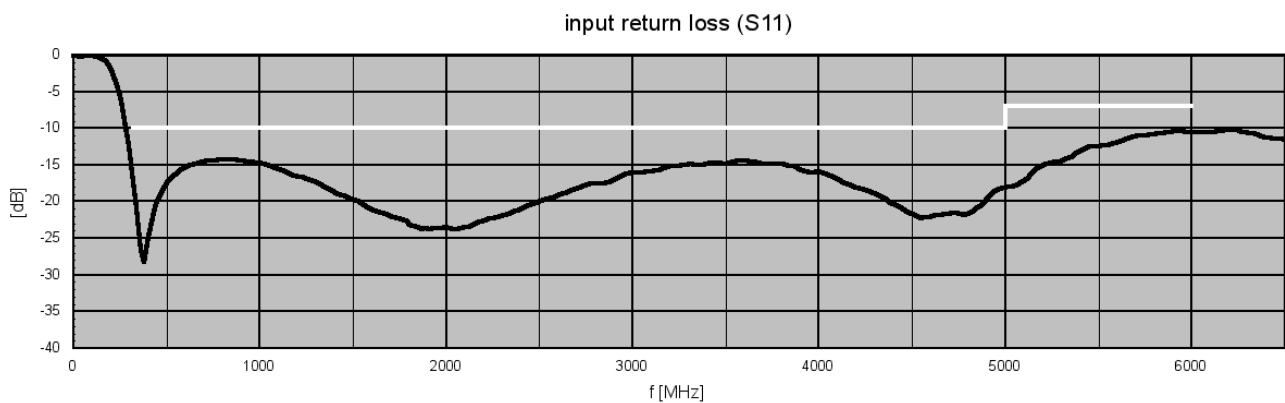
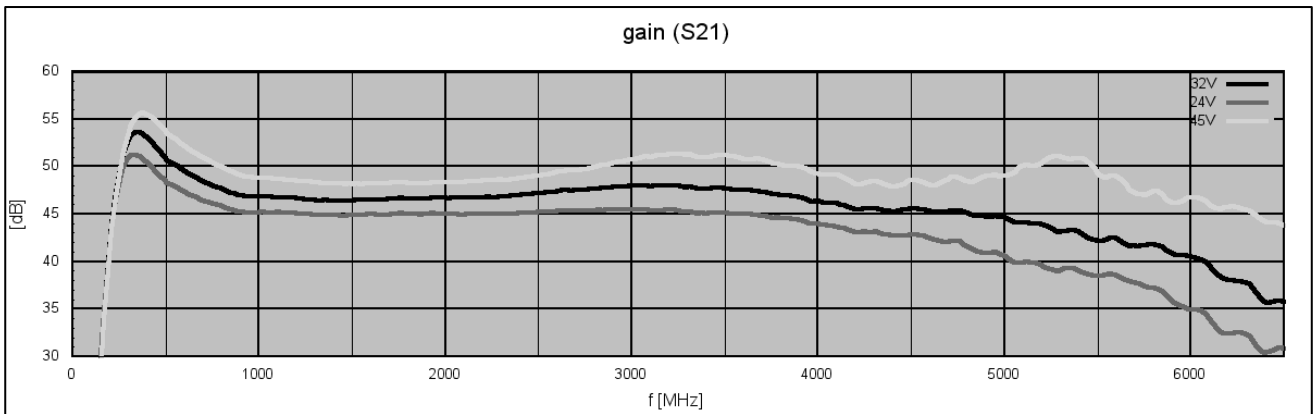
Note 1: Tested at  $P_{IN} = +5$  dBmNote 2: Tested at  $P_{out} = 2 \times +25$  dBm; 400M / 500M, 750M / 850M, 950M / 1050M, 1750M / 1850M, 1950M / 2050M, 950M / 3050M, 3950M / 4050M, 4950M / 5050M, 5450M / 5550M, 5800M / 5900M**Common Specification**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
supply voltage	$U_{DC}$	24	32	45	V	DC
current consumption	$I_{DC}$		1500*	2400	mA	@ 32 V DC, *quiescent current
dimensions	W x H x D	approx. 105 x 20 x 90			mm	without connectors
weight	m		360		g	
current threshold	$I_{thres}$		$\pm 20$		%	failure if current consumption exceeds
temperature threshold	$T_{thres}$		+80		$^{\circ}$ 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	$^{\circ}$ C	module surface, please comply required cooling
storage temp. range	$T_s$	-40		+70	$^{\circ}$ C	
thermal emission	$P_{TH}$		60W			32V
	$P_{TH}$		90W			45V
required cooling	$R_{TH}$		0.5	0.75 <sup>3)</sup>	K/W	32V
	$R_{TH}$		0.3	0.50 <sup>3)</sup>	K/W	45V
heat sink (example)		SK 479 100 SA (400x100x40mm)				Fischer Elektronik
fixed with		4x M3x16 + washer + spring washer				
ordering information		AMP300600040L		1801.5001.1		

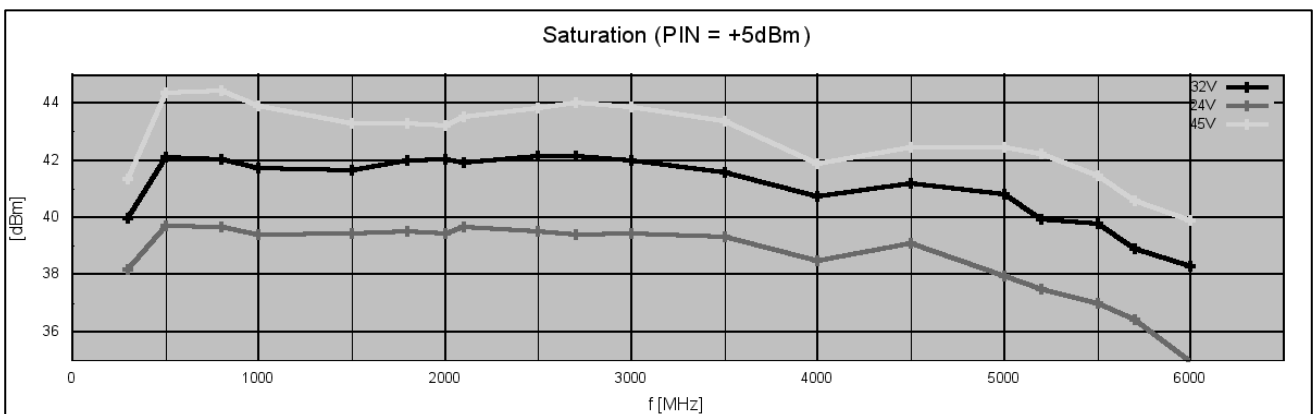
Note 3: effective thermal resistance,  $T_{AMB} \leq +30^{\circ}$ C

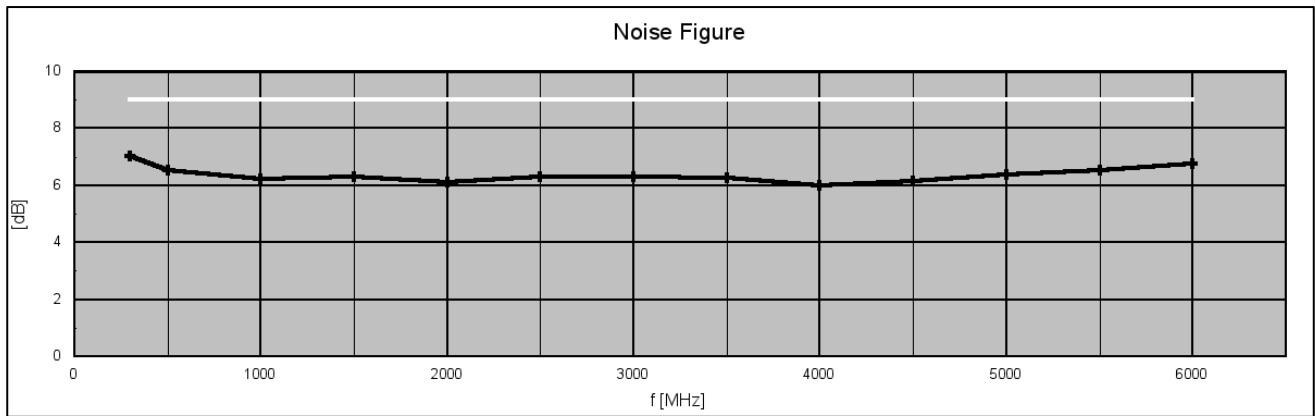
**S-Parameters** (typical responses)

S21 versus supply voltage (24V, 32V and 45V)

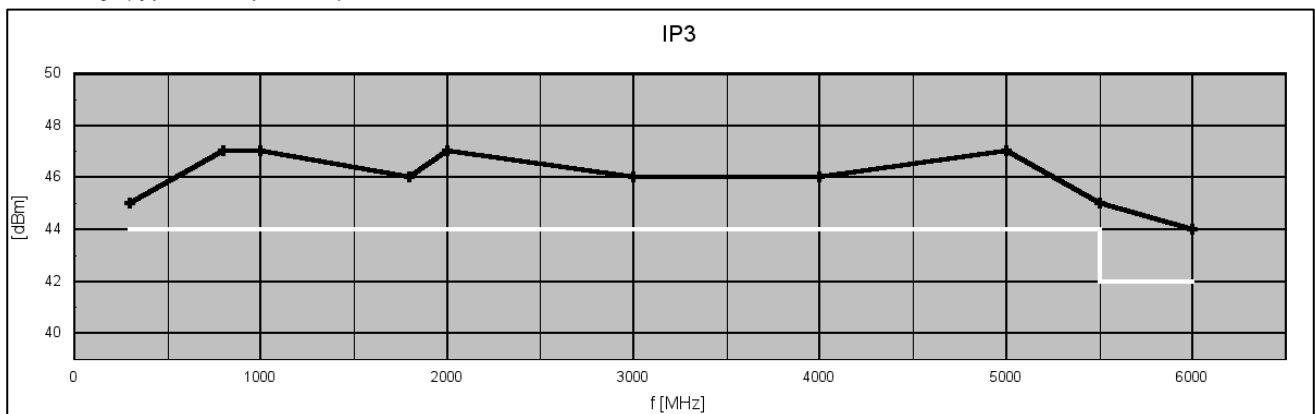
**Dynamic Range** (typical responses)

Saturation versus supply voltage (24V, 32V and 45V)

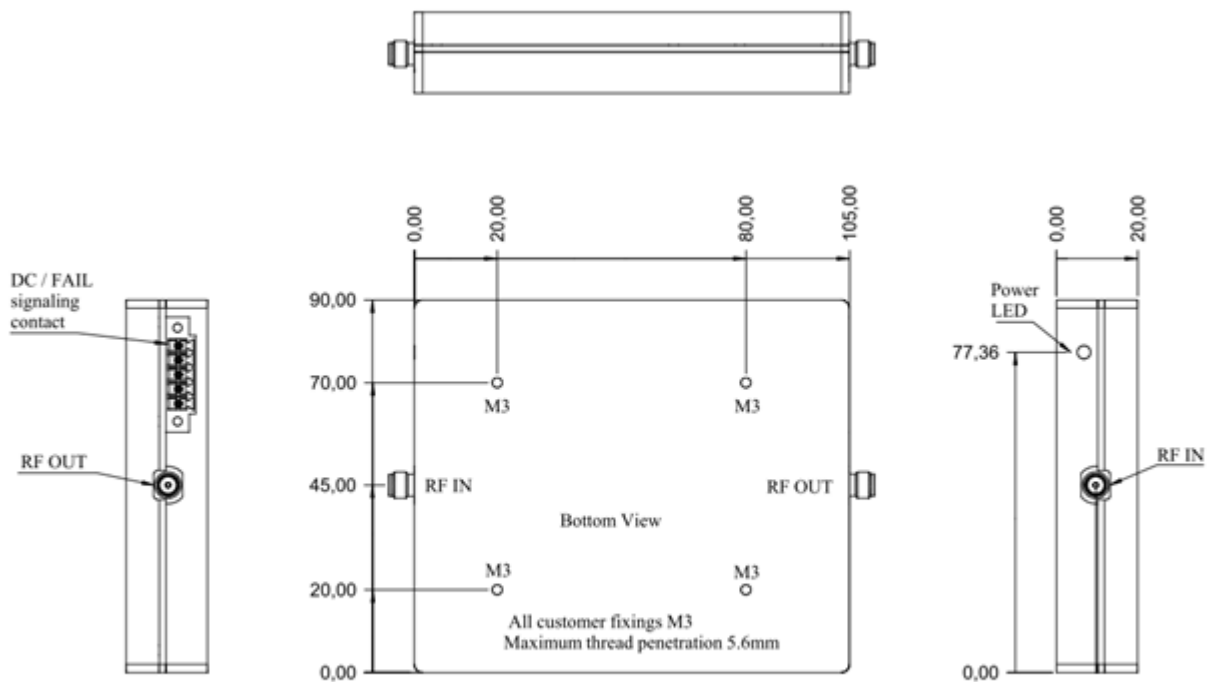




### Linearity (typical responses)

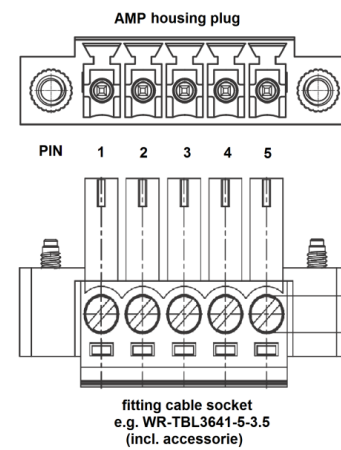


### Dimensions



**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
AMP1053043H	20 W Power Amplifier Module 10 ... 530 MHz	1001.5001.x
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.