

DATASHEET: Rev 1B, Issued May 2017, Reviewed November 2017

***GAMP102500-10W is solid state type high power amplifier for wide frequency range 10-2500MHz. The amplifier can be used up to 2.7GHz. GAMP102500-10W has wide supply range +12...+18V and temperature sensor on-board.***

## KEY FEATURES

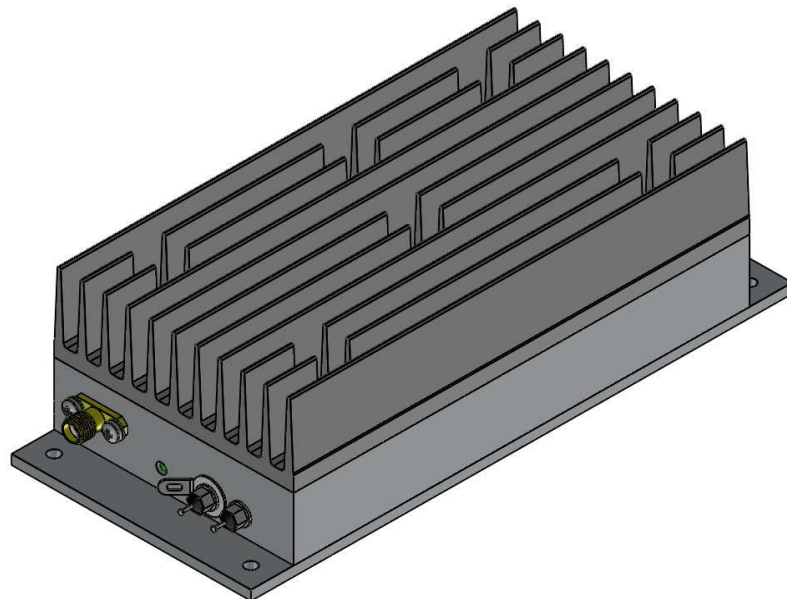
- High output power 10W
- High gain
- Good flatness
- Compact
- Temperature sensor
- Indicating LED
- RoHS compliance

## APPLICATIONS

- LTE 450/800/1800/2100
- Radio-transmitters
- FM/DAB
- Radio-amateurism
- Wi-Fi/WLAN
- Test equipment and laboratories

## GENERAL DESCRIPTION

The device is intended to amplify signals coming from RF input port. Maximum output power level is 10W. The amplifier is based on GaN technology. Supported frequency range is 10-2500MHz. For details please see technical specifications given below.



## TECHNICAL SPECIFICATIONS

### Absolute maximum ratings

<b>Supply voltage maximum</b> (NB! Built-in over-voltage protective diode)	+18	V
<b>Supply voltage minimum</b>	+12	V
<b>CW RF input power</b> below or equal to 2GHz above 2GHz	+4 +1	<b>dBm</b> <b>dBm</b>
<b>Temperature of pallet</b>	+75	°C
<b>Output VSWR</b>	1.5	

**NB!** The amplifier GAMP102500-10W can be used only with heat sinking radiator in free air flow conditions. In case of need additional cooler can be used (recommended airflow 95m<sup>3</sup>/hour). Before switching GAMP102500-10W read carefully all instructions for given product. Switching on make sure that device RF ports are loaded with 50Ω. Do not use the amplifier in deep compression (>2dB) for long time. Not observing the requirement, the device may be damaged.

### RF and DC characteristics

Frequency	10	500	1000	2500	2700	MHz
<b>Gain</b> (note 1)	45.5	42.0	41.5	44.0	40.0	<b>dB</b>
<b>Input return loss</b> (note 1)	typ 10					<b>dB</b>
<b>Flatness</b> (note 1)	typ ±3					<b>dB</b>
<b>1dB output compression</b> (note 2,4)	37.0	35.5	34.5	34.0	34.0	<b>dBm</b>
<b>Saturated output power</b> (note 2,4)	39.0	40.0	39.4	39.7	38.7	<b>dBm</b>
<b>Input RF power @ saturation</b>	Apprx +0...+3					<b>dBm</b>
<b>OIP3</b> (note 5)	typ 43					<b>dBm</b>
<b>Output 2nd harmonic at input +0dBm</b>	>20	>20	>15	>40	>40	<b>dBc</b>
<b>Output 2nd harmonic at input -15dBm</b>	>30	>35	>40	>50	>60	<b>dBc</b>
<b>Output 3rd harmonic at input +0dBm</b>	>10	>15	>25	>50	>55	<b>dBc</b>
<b>Output 3rd harmonic at input -15dBm</b>	>40	>45	>50	>70	>70	<b>dBc</b>
<b>Noise figure</b>	5.8	3.5	3.2	3.1	3.2	<b>dB</b>
<b>Supply voltage</b>	+12...+18					<b>V DC</b>
<b>OFF state current</b> (note 3)	10					<b>mA</b>
<b>Current @ "no signal"</b> (note 3)	0.9 (inrush up to 4A at start moment)					<b>A</b>
<b>Current @ saturated output</b> (note 2,3)	0.9	1.0	1.0	1.0	1.0	<b>A</b>
<b>Current @ saturated output</b> (note 2,3)	1.1	1.5	1.4	1.9	1.7	<b>A</b>

\* Typical values measured at temperature T=+25°C.

#### NOTES:

- 1) Measured at small input signal
- 2) Measured at CW
- 3) Voltage supply +15Vdc
- 4) +28dBm output as 0dB compression reference
- 5) Measured with two input tones -25dBm each, frequency difference 1MHz

## Mechanical specifications

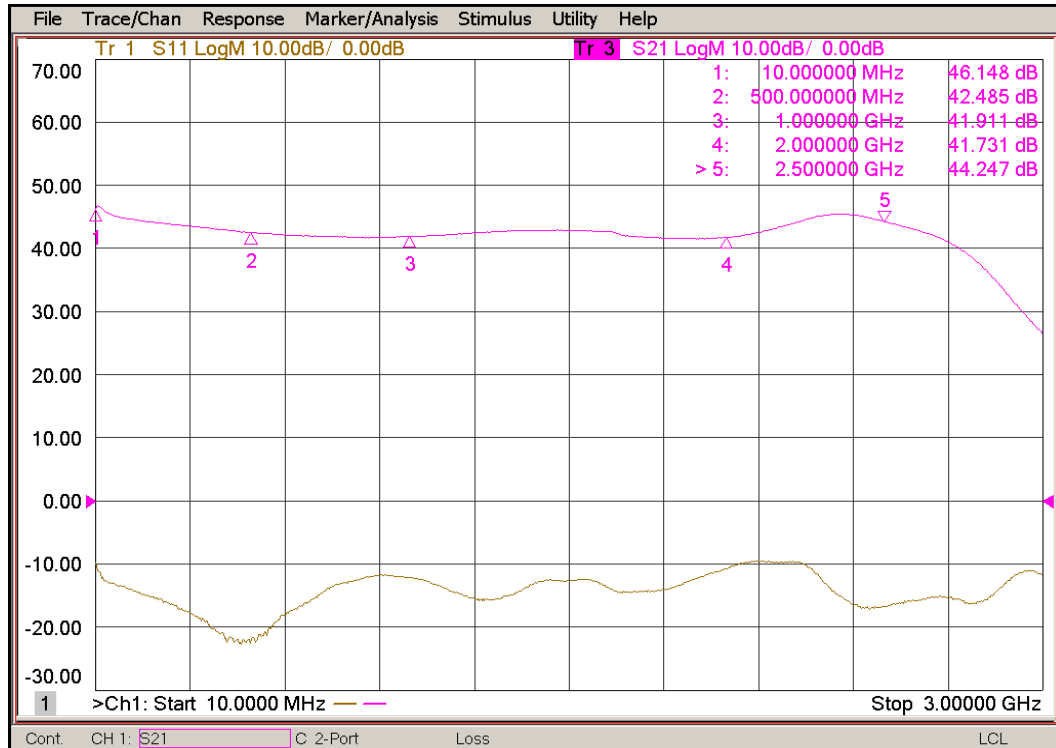
<b>Enclosure type</b>	Amplifier with heat sinking radiator (see first page)	
<b>Max dimensions</b>	165x73x48 (see last page)	<b>mm</b>
<b>Input RF connector</b>	SMA-female (N-type by order)	
<b>Output RF connector</b>	SMA-female (N-type by order)	
<b>DC supply connector</b>	Soldering terminals (one pin for +V, one pin for ground, see last page)	
<b>Control terminal block</b>	Soldering terminals (see description table for control terminal block)	

## Description table of control terminal block

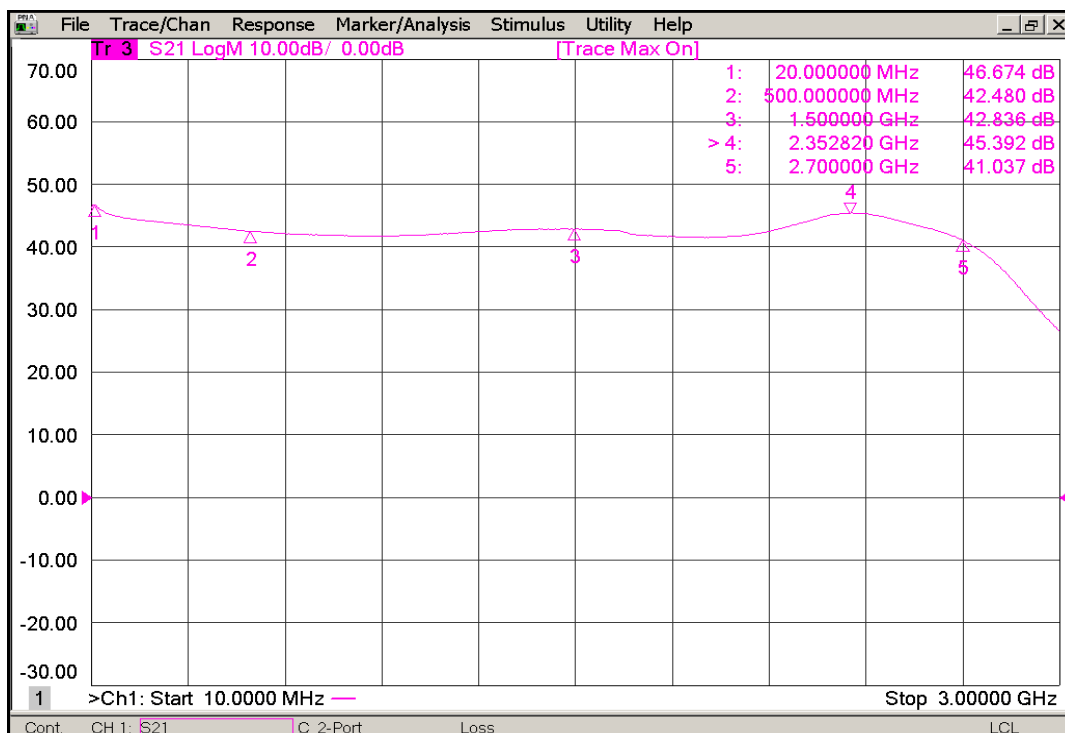
No	Pin name	Direction (to or from PA)	Type	Description
1	GND	-	-	grounded
2	TEMPERATURE MONITOR	out	analog	Built-in temperature sensor (TC1047A) output: $V_{out}[V]=0.01 \cdot T[degC]+0.5$
3	ON/OFF CONTROL*	in	digital	This pin switch the amplifier on or off; OFF: high level +2V...+5V or leave open ON: low level 0V...+0.1V or tie to ground

\* When amplifier is switched on, green LED is active. When amplifier is switched off, green LED is not active.

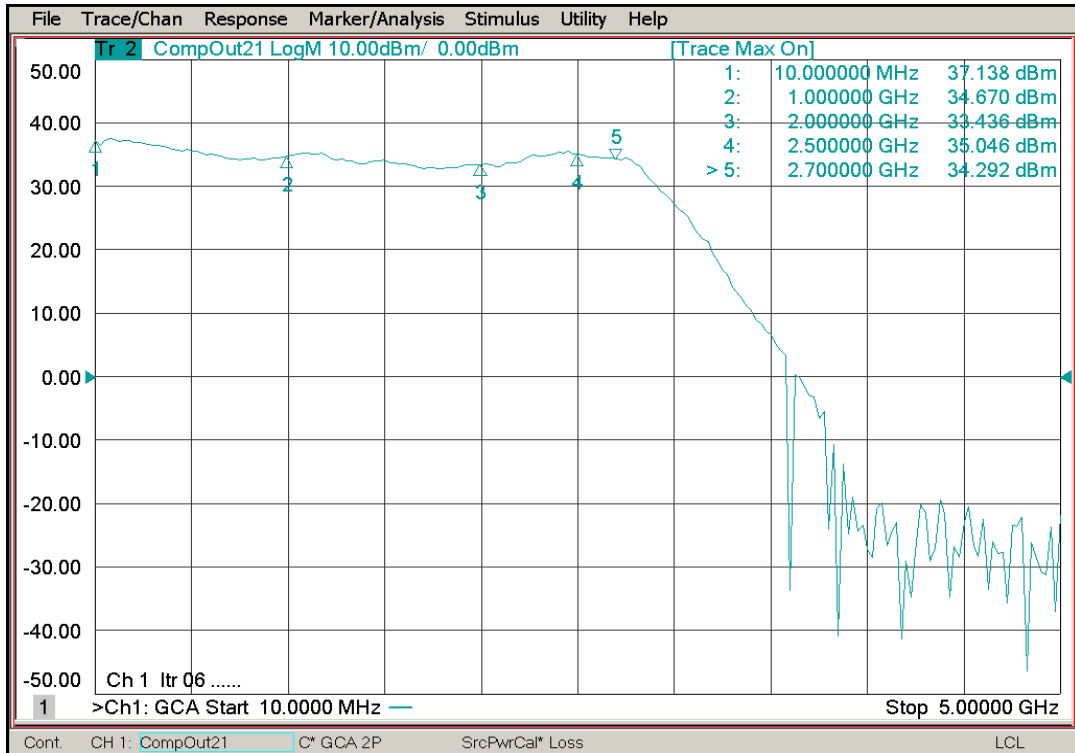
## Gain and input matching responses at small signal



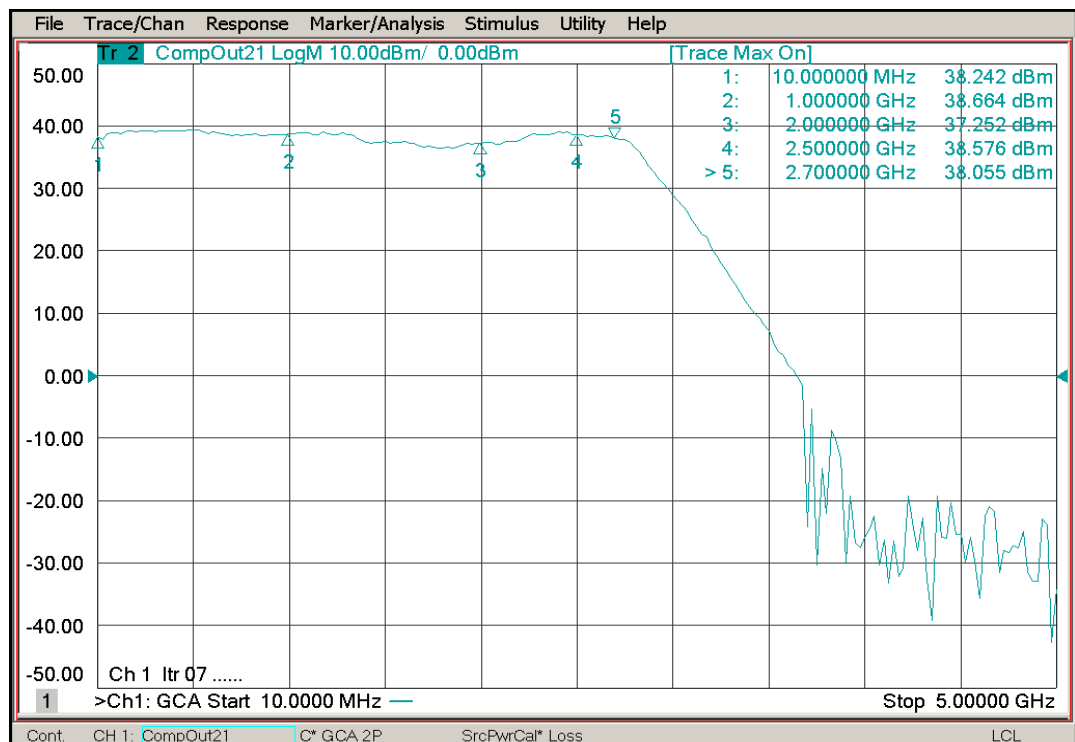
## Gain response 10 – 2700MHz at small signal



## Output power at 1dB gain compression



## Output power at 3dB gain compression



## ACTIVATION SEQUENCE

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Please follow next steps to switch the device on or off.

Before switching on:

- 1) ensure that amplifier is switched off;
- 2) ensure that RF signal is not presented on the input of amplifier;
- 3) ensure that RF ports are properly loaded with 50ohm, output load must be at least 50W rated;
- 4) ensure that all necessary connections are done.

Switching on:

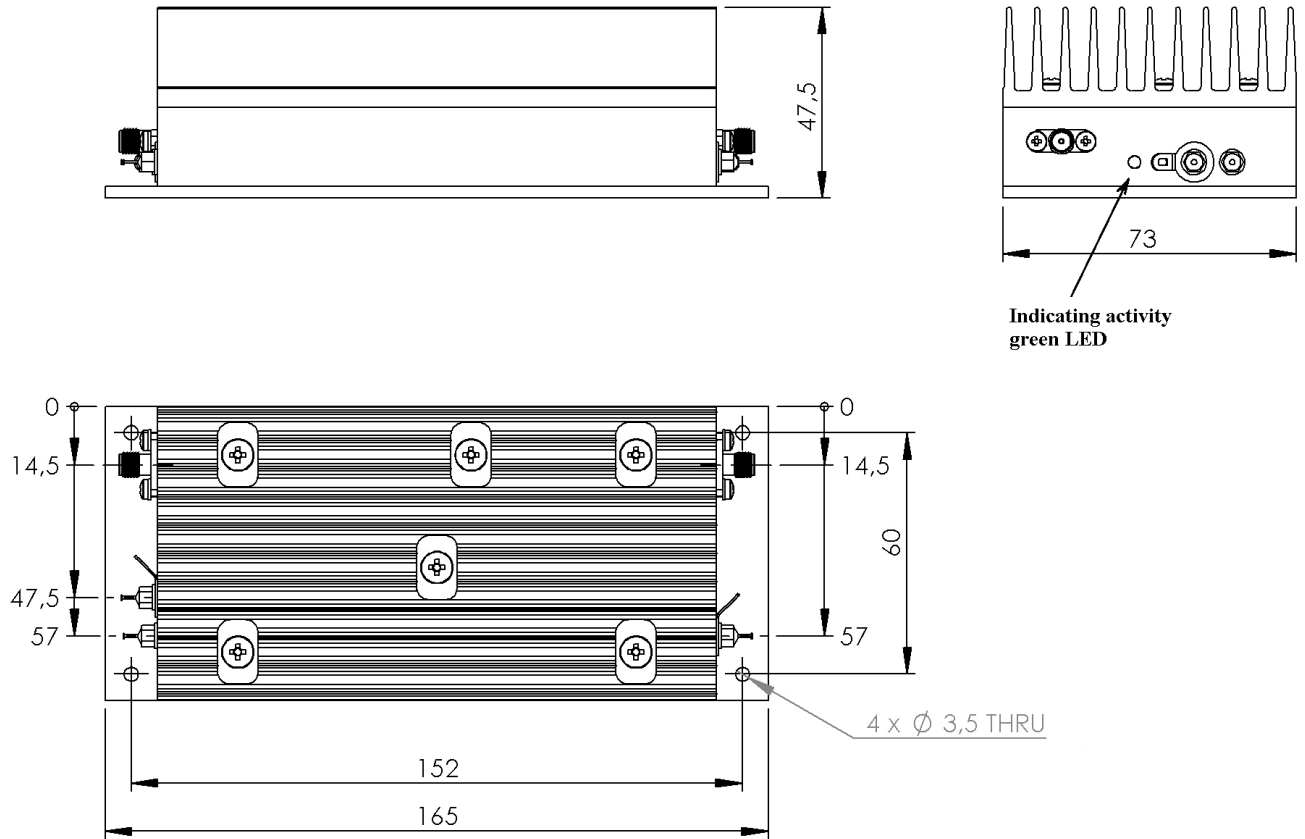
- 1) connect proper DC supply, apply voltage;
- 2) switch amplifier on using corresponding ON/OFF control pin,  
*just connect together terminal block pins "GROUND" and "ON/OFF CONTROL";*
- 3) apply RF input;
- 4) watch that "indicating activity" green LED is active;
- 5) watch that working temperature is within specified limits.

Switching off:

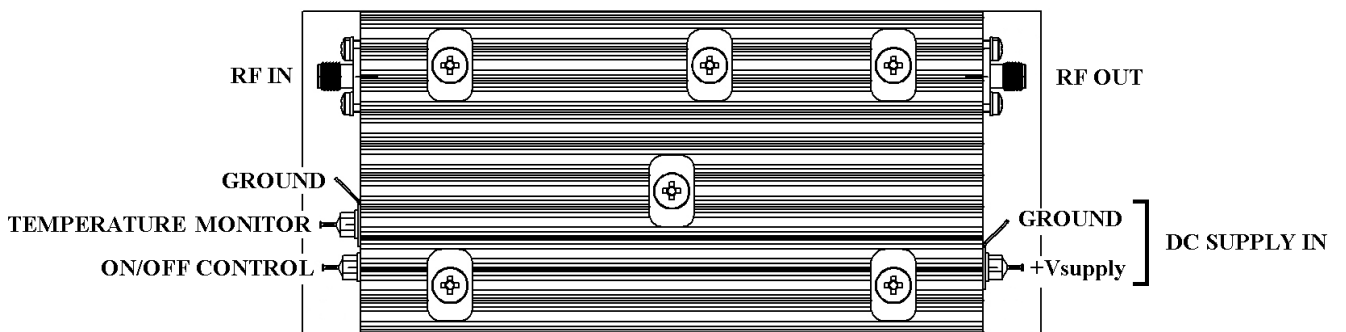
- 1) switch off RF input signal;
- 2) switch amplifier off using corresponding ON/OFF control pin;
- 3) switch DC supply off;
- 4) watch that "indicating activity" green LED is not active.

A lot of thermal energy can be dissipated at PA case. Because of that reason watch carefully for temperature of PA. If it is critically high, use additional cooling or switch amplifier off.

Mechanical view and dimensions (mm)



Description of connectors



Rantelon reserves the right to change the specification without notice.