

TECHNICAL DATASHEET

AVBR40120H42

The AVBR40120H42 is a 18W high gain Solid State Broadband High Power Amplifier. This amplifier module utilizes the latest high power RF GaN transistors and also features built in control and monitoring, with protection functions to ensure high availability. This amplifier is suitable for Linear System and high power combination.

**Features**

- 4GHz-12GHz frequency range
- Psat 42.5 dBm type.42 dBm min.
- Power gain 42 dB type.
- 50 ohm input/output impedance
- Built-in control, monitoring and protection circuits
- Solid-state Class AB Broadband design
- Instantaneous ultra-broadband
- Suitable for CW, and Pulse Signal
- Small and light weight
- High reliability and ruggedness

**ELECTRICAL SPECIFICATIONS(T=25°C,DC Voltage= 28V,Load VSWR ≤ 1.2 )**

Description	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	4		12	GHz
Output Power CW @Pin= 0dBm	PSAT	42	42.5		dBm
Power Gain @Pin= 0dBm	Gp		42		dB
Power Gain Flatness @Pin= 0dBm	ΔGp		±1	±1.5	dB
Input Power for Rated Psat	PIN	-3	0	6	dBm
Harmonics @ Pin=-5dBm	2 <sup>nd</sup>		-15/-20	-12/-15	dBc
Noise Figure*	NF		N/A		dB
Spurious Signals @Pin= 0dBm	Spur		-70	-60	dBc
Input Return Loss	S11			-10	dB
Third Order Intercept Point					
2-Tone @ 33dBm/Tone, 100kHz Spacing*	IP3		N/A		dBc
Operating Voltage	VDC	24	28	30	V
Current Consumption @ Pout= 14~17 W	IDD		3.5	4.5	A
Current Quiescent ON/OFF	IDQ		2.2/0.1		A
Switching Time @ 1kHz TTL, PIN = 0dBm	TON/TOFF		350	500	ns

**Note\*:** contact our sales for further information.

**MECHANICAL SPECIFICATIONS**

Cooling External Heat Sink Needed (Not Supplied)

Length*Width*Height[ mm ]	120*70*18
Weight[ Kg ]	0.8
RF Connector Input	SMA, Female
RF Connector Output	SMA, Female

## ENVIRONMENTAL SPECIFICATIONS (Design to Meet)

Module Operation Temperature* <sup>1</sup>	-40* <sup>1</sup>	85	°C
Storage Temperature Range	-45	85	°C
Relative-Humidity		95	%
Altitude * <sup>2</sup>	N/A		
Vibration/Shock* <sup>2</sup>	N/A		

**Notes** \*<sup>1</sup>: Module Operation Temperature can be extended to -45~85 °C, Contact Sales for update.

**Notes** \*<sup>1</sup>: Should Supply Adequate Heat Dissipation, Enough Fan and Heat-Sink is necessary during the Temp Test.

**Notes** \*<sup>2</sup>: Altitude /Vibration are designed with considerations, but without tests and experiments.

## LIMITS

Input RF drive level without damage	Pin ≤ 12	dBm
Load VSWR @ POUT =10W	VSWR ≤ 5:1 [Design To Meet]	N/A
Thermal Degradation	90 °C @ heatsink [recovery@ 80 °C]	°C

## DC INTERFACE CONNECTOR – [ D-sub,9 Pin, Male]

Pin #	Description	Specifications
1	Reserved	No Connection
2	Current Monitor	Analog voltage relative to IDD @ 100mV per Ampere
3	Temp Monitor	Analog voltage relative to module temperature @ 10 mV/°C *
4	Reserved	No Connection
5	Enable**	Amplifier Enable: TTL Logic High(3.3~5V)(Internally Pulled-Low)
6,7	VDD	+28.0VDC
8,9	GND	Ground

**Note** \*: Temp sense has a positive temperature coefficient of approximately 10mV/°C by design.

The Temp sense voltage can be calculated using the equation:  $V_T(\text{mV}) = 0.5 + 10\text{mV} \times \text{Temp}$

**Note** \*\*: Amplifier Enable can be modified to shutdown: Amplifier disable: TTL Logic High(3.3~5V), Amplifier enable: TTL Logic Low(0~0.6V)(Internally Pulled-Low). Contact Sales for update.

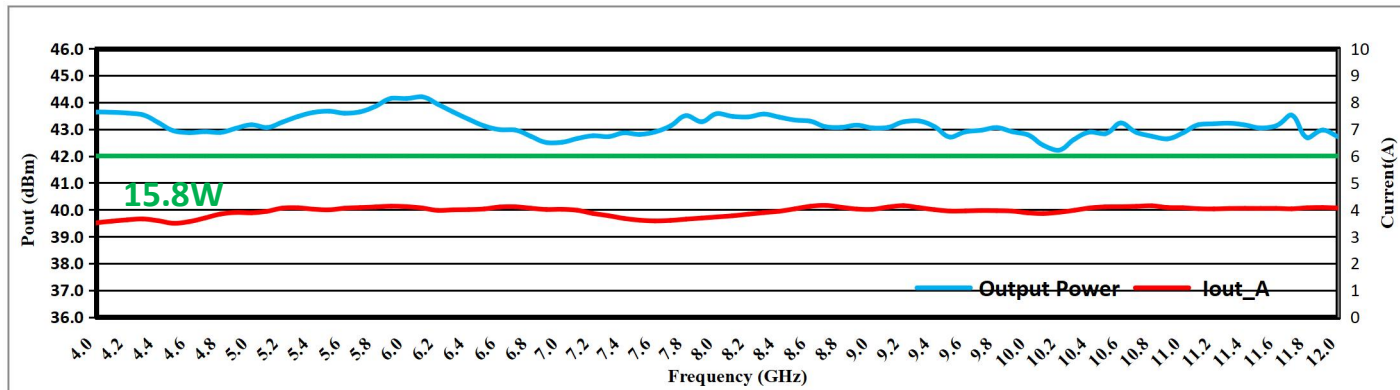
## PLOTTED AND OTHER DATA

Notes:

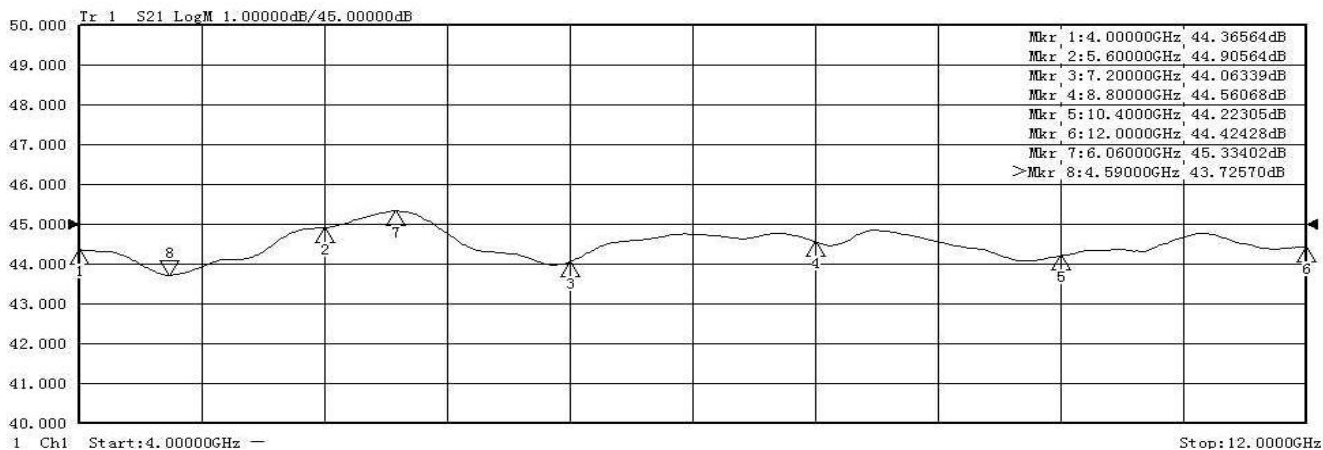
1. Values at +25 °C, sea level.
2. ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.
3. Heat Sink required for Proper Operation, Unit is cooled by conduction to heat sink.

**TYPICAL PERFORMANCE DATA** [Volume Shipment product data for Reference] [ DC Voltage= 28V,Load VSWR ≤

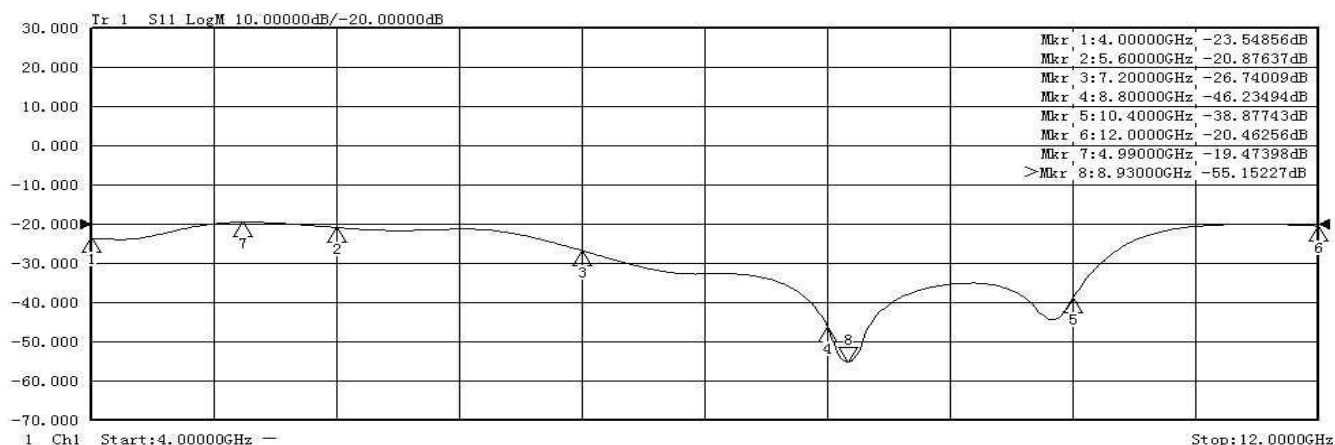
1.2,Ambient temp. +25±3°C]



Output Power&DC Current

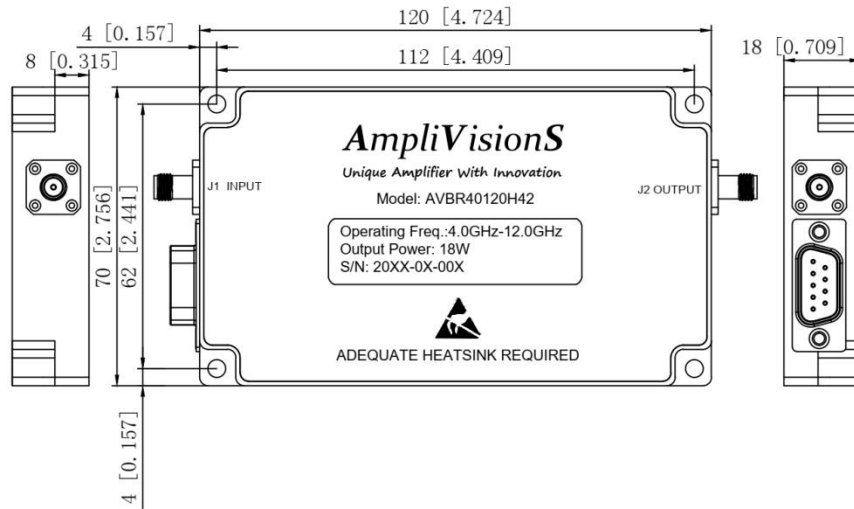


Power Gain @ Pin=0 dBm



Input return loss @ Pin=-25dBm

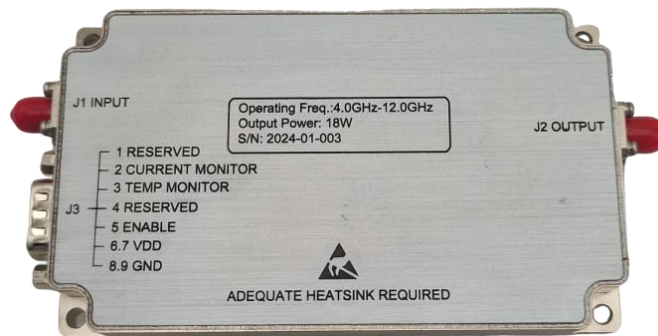
**OUTLINE DRAWING(mm) Surface: Nickel plating. Laser sealed welding.**



Unit: mm,Tolerance:  $\pm 0.2$

\*Note: The Outline and Functions can be customized, please contact our sales for further information.

**OUTLINE - Fabricated**



Part Number	Version	Release Date	Modification	Status
AVBR40120H42	1.0	2024.2.5	Based on AVBR20180H41 Product data	Preliminary
AVBR40120H42	1.1	2024.2.20	Modified Switching Time from 1us Typ to 350ns, 2us Max to 500ns. Modified Module Operation Temperature min:-20°C to -40°C,max :+65°C to +-85°C	Customized
AVBR40120H42	2	5.21	Modified Output power min: 41.5dBm to 42dBm Add OUTLINE - Fabricated Updated typical performance data according batch product	Customized