

120 Gbaud Wideband Linear Amplifier AH15199A

The AH15199A is a 120 Gbaud wideband linear amplifier with a bandwidth of ≥ 100 GHz and a linear output amplitude of $\geq 2.0 V_{p-p}$. It can be used as a driver for 800G coherent optical modulators, or as an amplifier for ultrafast pulses, or as a booster amplifier for test equipment for optical communications and high-frequency measurement.

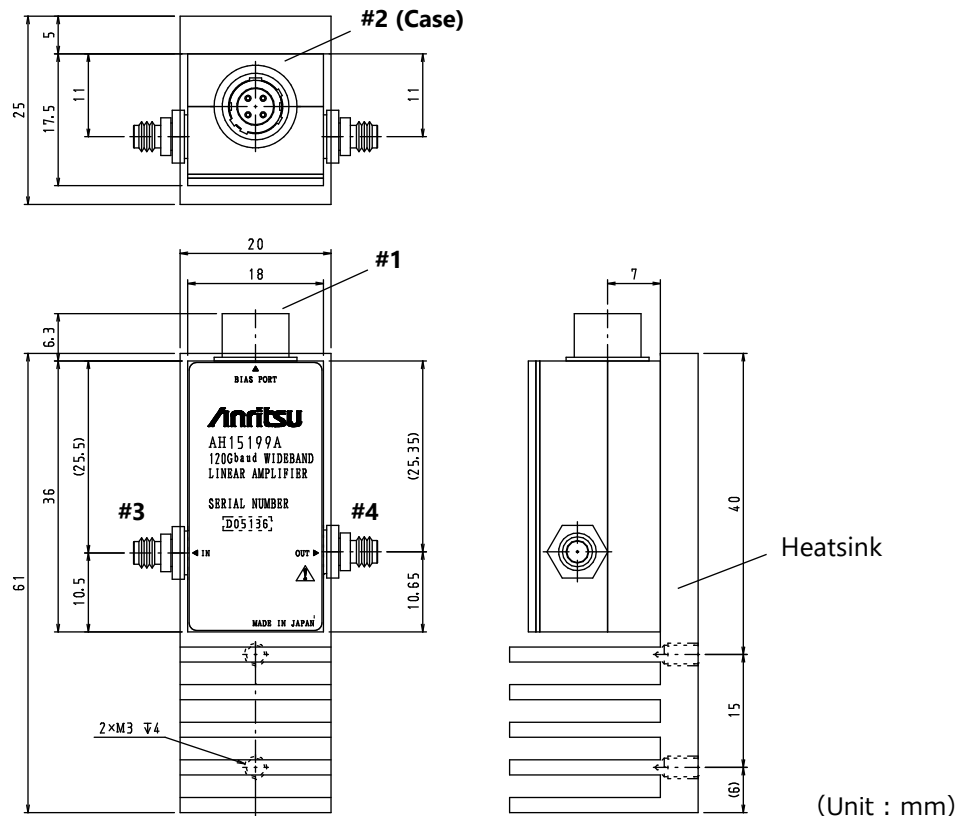
FEATURES

- Operating baud-rate: 120 Gbaud typ.
- Linear output level: $2.0 V_{p-p}$ typ.
- Bandwidth: 200 kHz to 105 GHz
- Small signal gain: 16 dB typ.
- Power consumption: 1.2 W typ.
- I/O interface: W connector
- Package size: 36 mm \times 18 mm \times 18 mm
- Standard accessory with dedicated power supply – AH15199A-01

APPLICATIONS

- Driver for 800G coherent MZ modulator
- Booster amplifier for measuring equipment

DIMENSIONS



PIN CONFIGURATION

No.	Symbol	Function	Remarks
1	–	Power supply	HIROSE; HR10-7R-4S (73)
2	GND	Ground	Case
3	IN	Input port	W-F connector
4	OUT	Output port	W-F connector

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Input Power	V_{IN}	1	V_{p-p}
Operating Ambient Temperature* ¹	T_a	5 to 50	°C
Storage Temperature* ¹	T_{stg}	-20 to 60	°C

*Excess over the absolute maximum ratings may cause device failure.

*1 No Condensation

SPECIFICATIONS

Electrical characteristics ($T_a=25^\circ\text{C}$) $Z_{in}=50\ \Omega$, $Z_{out}=50\ \Omega$

Item	Test Condition	Min.	Typ.	Max.	Unit
Baud-rate	–	–	120	–	Gbaud
Maximum Linear Output Voltage* ¹	$V_{in} = 0.35 V_{p-p}$	–	2.0	–	V_{p-p}
Jitter* ²	–	–	300	500	fs
T_r / T_f	20 to 80%	–	5	–	ps
Small Signal Gain	@1 GHz	15	16	–	dB
Bandwidth	-3 dB (low end)	–	200	500	kHz
	-3 dB (high end)	–	105	–	GHz
Input Return Loss	< 35 GHz	10	18	–	dB
	< 65 GHz	5	12	–	
Output Return Loss	< 35 GHz	10	18	–	dB
	< 65 GHz	5	12	–	
Output Polarity	–	Inverted			–

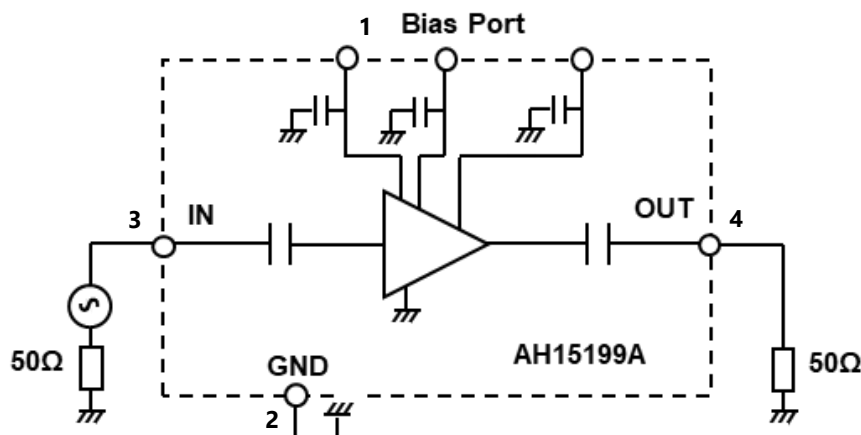
*1: In the case of being measured in the following conditions.

-Measured by the Keysight N1046A 100 GHz remote sampling head with precision time base.

-Operated by AH15199A-01 dedicated power supply.

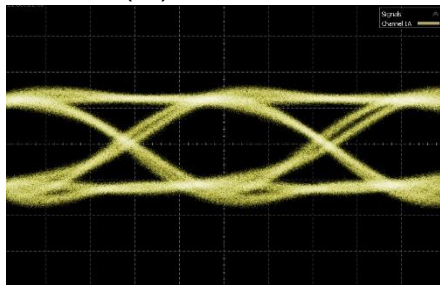
*2: Jitter (add) = $\sqrt{\text{Jitter (out)}^2 - \text{Jitter (in)}^2}$

BLOCK DIAGRAM

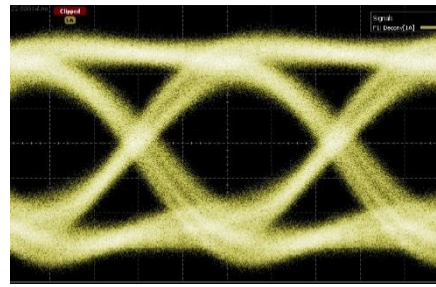


PULSE RESPONSE

112Gbaud NRZ(SE)

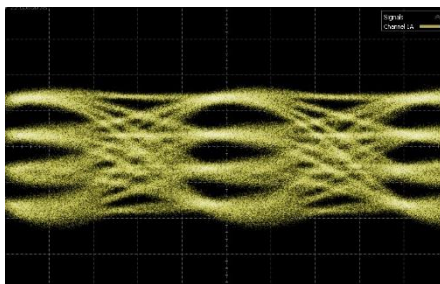


V: 100mV/div H: 2ps/div
Input Waveform

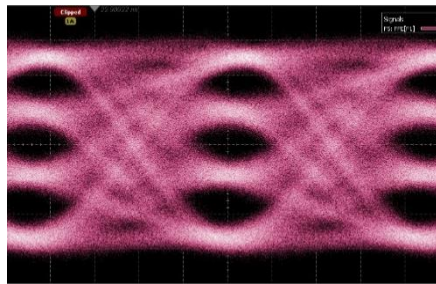


V: 300mV/div H: 2ps/div
Output Waveform

112Gbaud PAM4(SE)

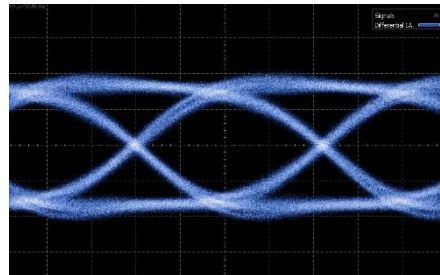


V: 100mV/div H: 2ps/div
Input Waveform

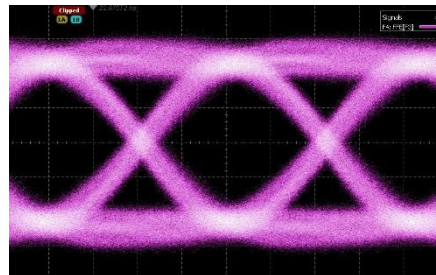


V: 300mV/div H: 2ps/div
Output Waveform

120Gbaud NRZ (Differential waveforms of 2 sets combined)

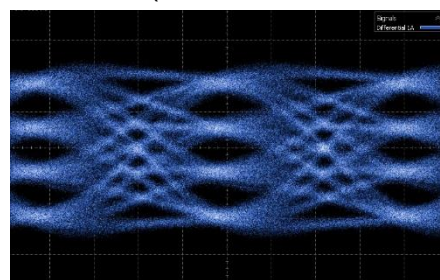


V: 200mV/div H: 2ps/div
Input Waveform

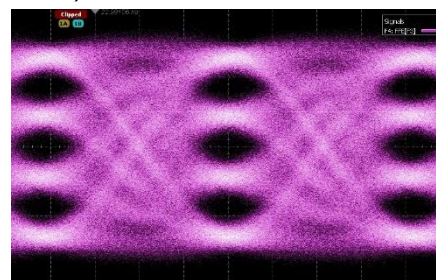


V: 600mV/div H: 2ps/div
Output Waveform

120Gbaud PAM4 (Differential waveforms of 2 sets combined)



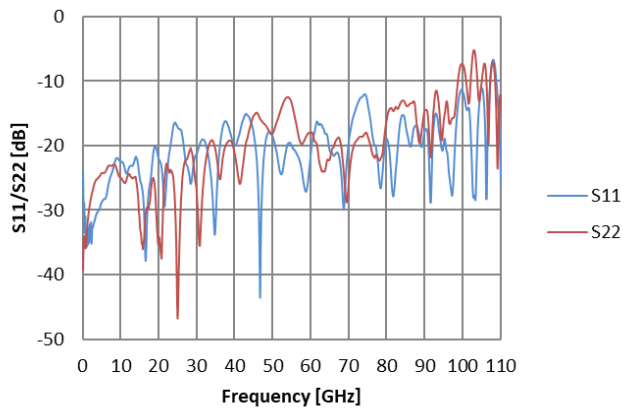
V: 200mV/div H: 2ps/div
Input Waveform



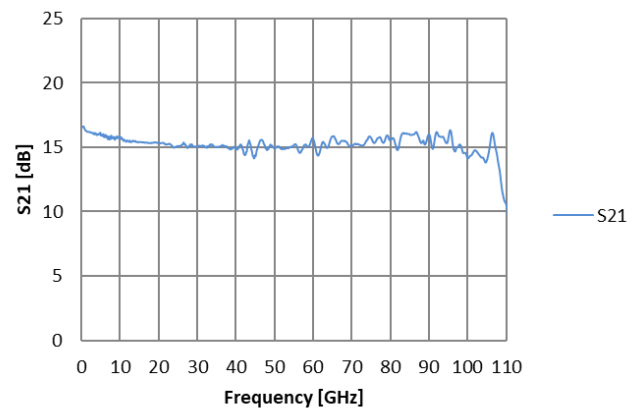
V: 600mV/div H: 2ps/div
Output Waveform

Output waveform has been optimized with 4 Tap equalizer of oscilloscope.

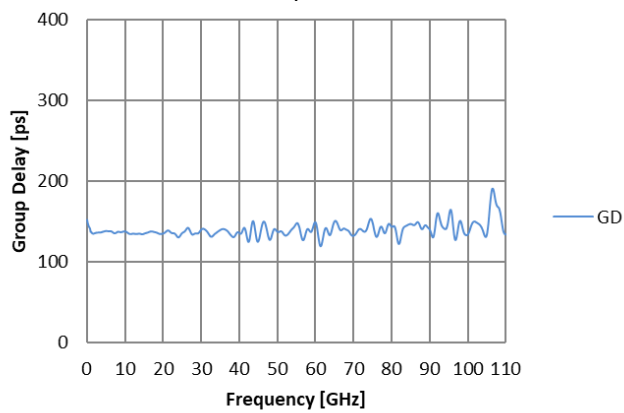
FREQUENCY RESPONSE



S11/S22



S21

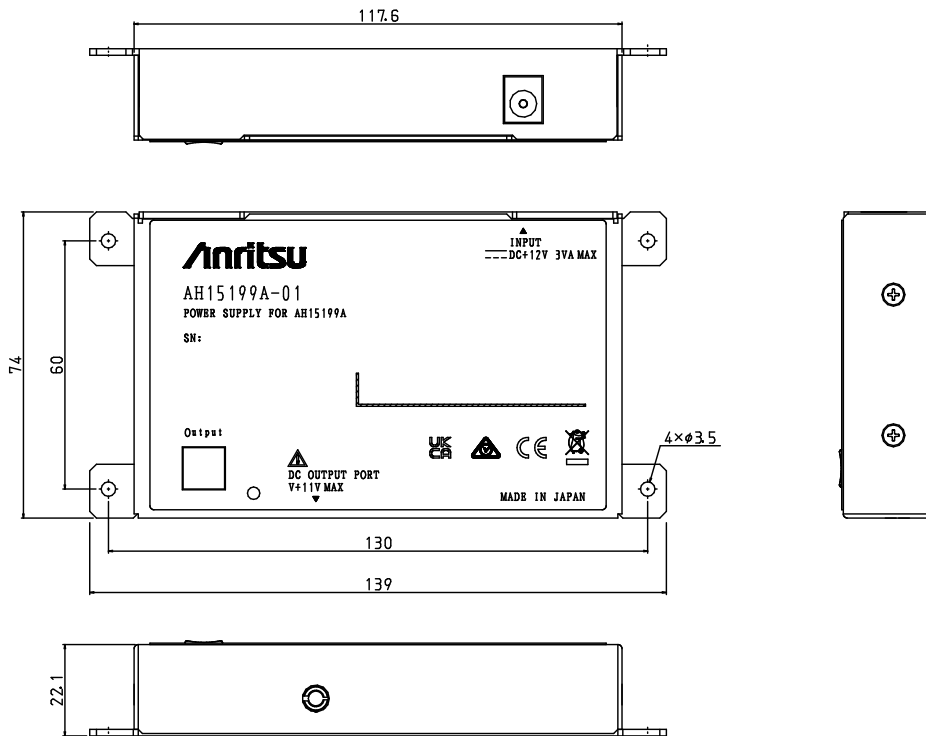


Group Delay

STANDARD ACCESORY

- 1) AH15199A-01 power supply for AH15199A: 1 pc
- 2) AC Adapter: 1 pc
- 3) Dedicated DC power cable: 1 pc

AH15199A-01 DIMENSIONS



(Unit: mm)

AH15199A-01 SPECIFICATIONS

Electrical characteristics ($T_a=25^{\circ}\text{C}$)

$V_{in}=+12\text{V DC}$ [AC adapter (100-240 V AC, 50/60 Hz)]

Item	Symbol	Min.	Max.	Unit
Output Voltage	V_{DC}	–	11	V
Power consumption	P_t	–	3	VA
Operating Ambient Temperature *1	T_a	5	40	$^{\circ}\text{C}$
Storage Temperature *1	T_{stg}	-20	60	$^{\circ}\text{C}$

*1 No Condensation



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