

56Gbaud Differential Linear Amplifier AH54192A

Features

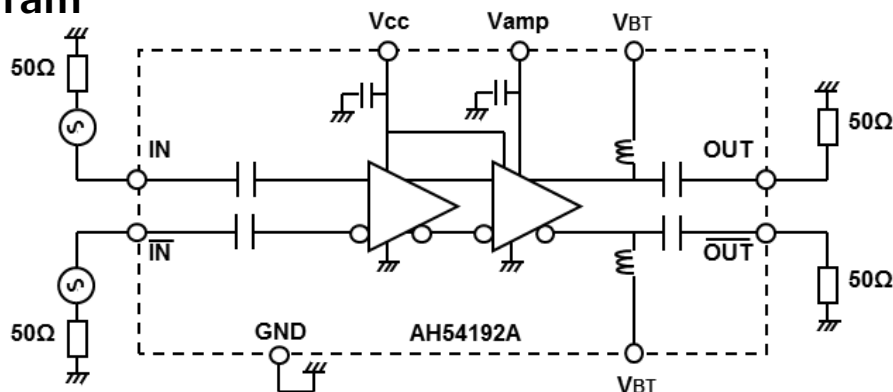
- Operating baud-rate: up to 56Gbaud
- Differential output: 4Vp-p typ.
- Wideband: 100kHz to 40GHz
- Power consumption: 0.9W typ.
- I/O interface: Differential
- Package size: 28mm x 36mm x 17mm
- Standard accessory with dedicated power supply



Applications

- Driver for 400G coherent MZ modulator
- Booster amplifier for measuring equipment

Block Diagram



Absolute Maximum Ratings

Items	Symbols	Conditions	Units	Ratings	
				min.	max.
Input signal voltage	V _{in}		V	-1	+0.7
Supply voltage	V _{BT}		V	-0.5	+5
	V _{CC}		V	-0.5	+3.5
	V _{amp}		V	-0.5	+3.5
Operating temperature	T _a	Ambient temperature No dew condensation	°C	+5	+50
Storage temperature	T _{stg}	No dew condensation	°C	0	+60

Electrical characteristics

Ta=25°C, VBT=+4.2V, VCC=+3V, Vamp=+3V, Zin=50ohms, Zout=50ohms

Items	Conditions	Units	Specifications		
			min.	typ.	max.
Baud-rate		Gbaud	56		
Differential input voltage ^{*1}		Vpp(diff)		1	
Linear output voltage ^{*2}		Vpp(diff)		4	
Small signal gain	@1GHz	dB		12	
Bandwidth	-3dB (low end)	kHz		100	
	-3dB (high end)	GHz		40	
Input return loss	10M - 30GHz	dB		10	
Output return loss	10M - 30GHz	dB		10	
Output polarity		-	Inverted		

*1: The data input condition is differential only.

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

- Connect 15cm V-type coaxial cable to the output of AH54192A.
- Measured by the Keysight 86118A 70GHz remote sampling head with 86107A precision time base.
- Operated by AH54192A-01 dedicated power supply.

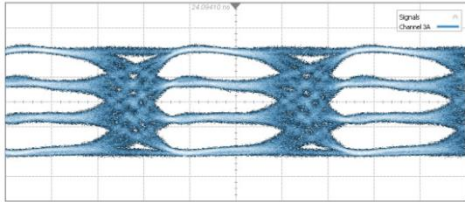
Power supplies

Items	Conditions	Units	Specifications		
			min.	typ.	max.
Supply voltage	VBT	V		+4.2	+4.4
	VCC			+3	
	Vamp			+3	
Supply current	IBT (x2)	mA		160	180
	ICC			65	75
	Iamp			10	20
Power consumption		W		0.9	

Electrical Characteristics

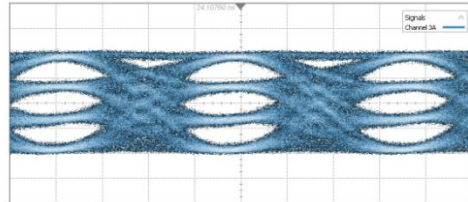
Pulse response (single-ended output)

26Gbaud PAM4



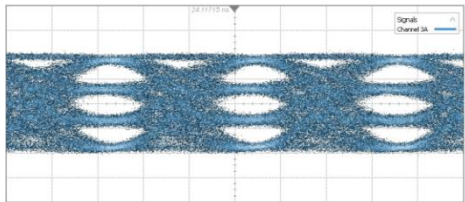
V: 0.5V/div H: 10ps/div

53Gbaud PAM4



V: 0.5V/div H: 5ps/div

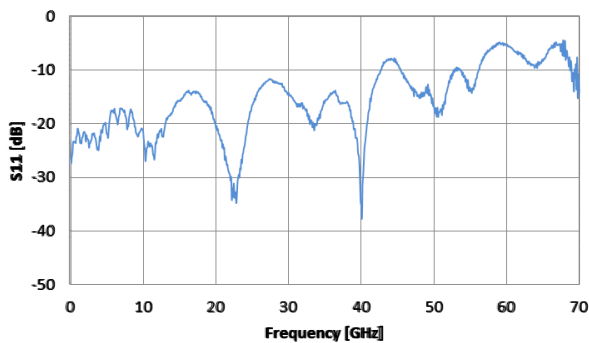
64Gbaud PAM4



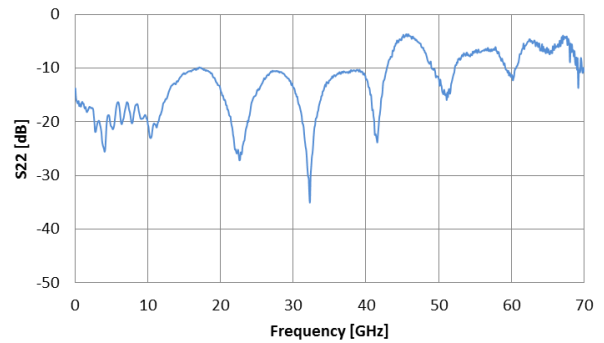
V: 0.5V/div H: 5ps/div

- Differential input signals had been taken from the PAM4 PPG adjusted with emphasis.

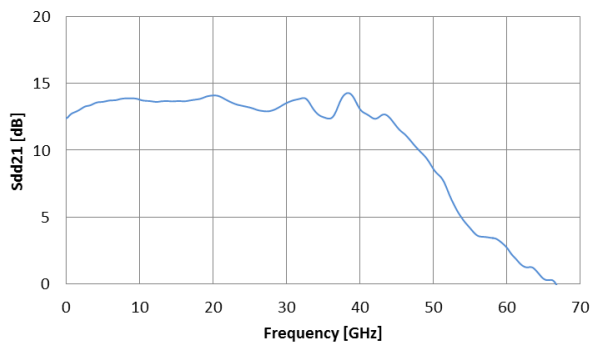
Frequency response



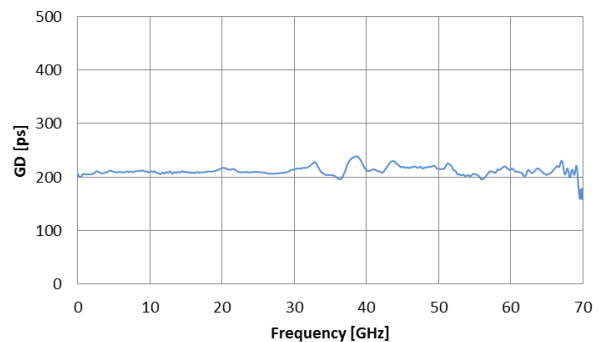
S11



S22

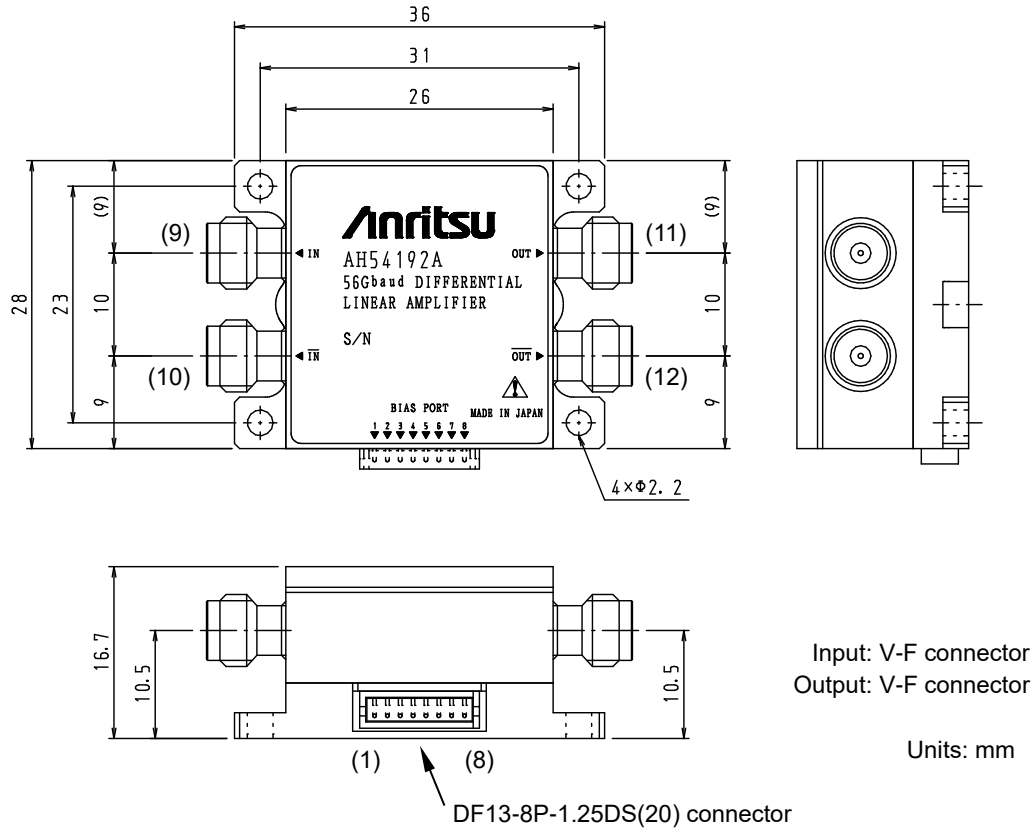


Sdd21



Group Delay

Dimensions



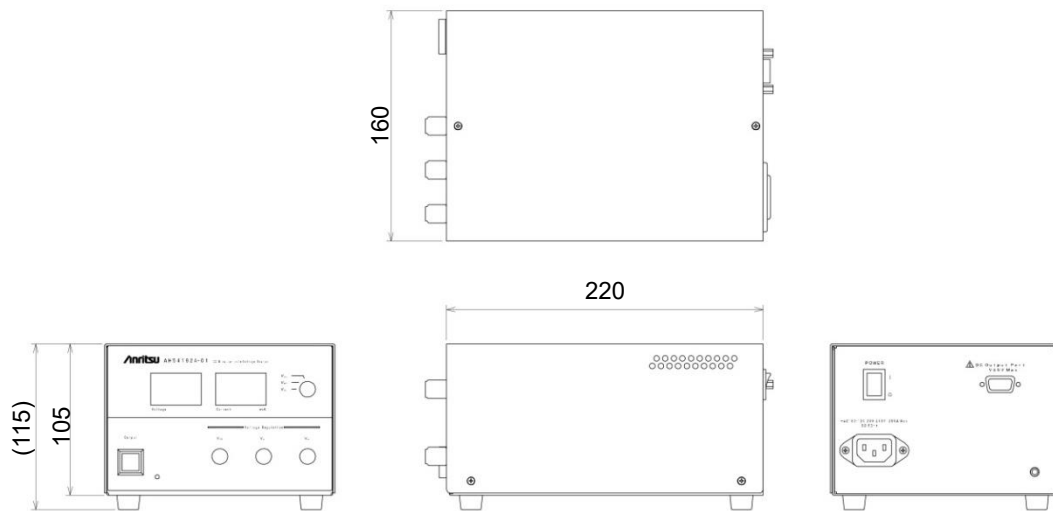
No.	Symbols	Functions	Remarks
1	NC		
2	NC		
3	NC		
4	GND	Ground	
5	VCC	Power supply	+3V
6	Vamp	Power supply	+3V
7	VBT	Choke bias	+4.2V
8	VBT	Choke bias	+4.2V
9	IN	Input port (non-invert)	AC coupled
10	$\overline{\text{IN}}$	Input port (invert)	
11	OUT	Output port (non-invert)	AC coupled
12	$\overline{\text{OUT}}$	Output port (invert)	

Table1. Pin functions

Standard Accessory

- 1) AH54192A-01 power supply for AH54192A : 1pc
- 2) AC power cable: 1pc
- 3) Dedicated DC power cable: 1pc

Dimensions



AH54192A-01 power supply

Specifications $T_a=25^{\circ}\text{C}$, $V_{in}=100\text{-}120/200\text{-}240\text{V (AC)}$, 50/60Hz

Items	Symbols	Conditions	Units	Specifications		
				min.	typ.	max.
Voltage output	VBT		V	+3.5		+4.5
	VCC		V	+2.5		+3.2
	Vamp		V	+1.5		+3.2
Current output	IBT	VBT=+4.2V	mA			180
	ICC	VCC=+3V	mA			75
	Iamp	Vamp=+3V	mA			20
Ripple noise			mVpp			5
Power consumption			VA			20
Operating temperature	T_a	No dew condensation	$^{\circ}\text{C}$	+5		+50
Storage temperature	T_{stg}	No dew condensation	$^{\circ}\text{C}$	-20		+60

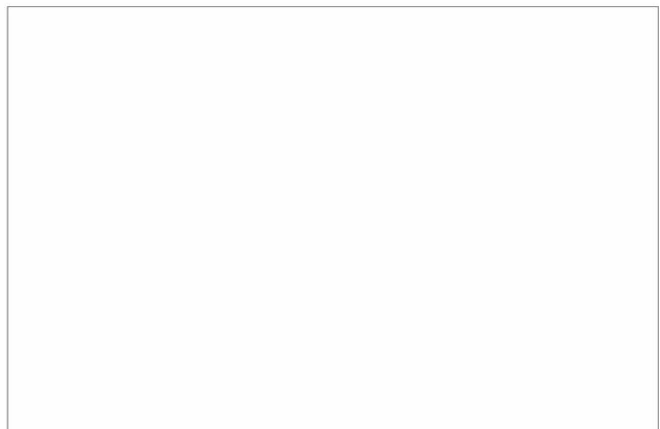


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