

56 Gbaud Wideband OE Converter AD44198A

AD44198A has wide frequency characteristics of 45 GHz in the -3 dB band, supports OE conversion of PAM4 optical signals between 28 and 56 Gbaud.

FEATURES

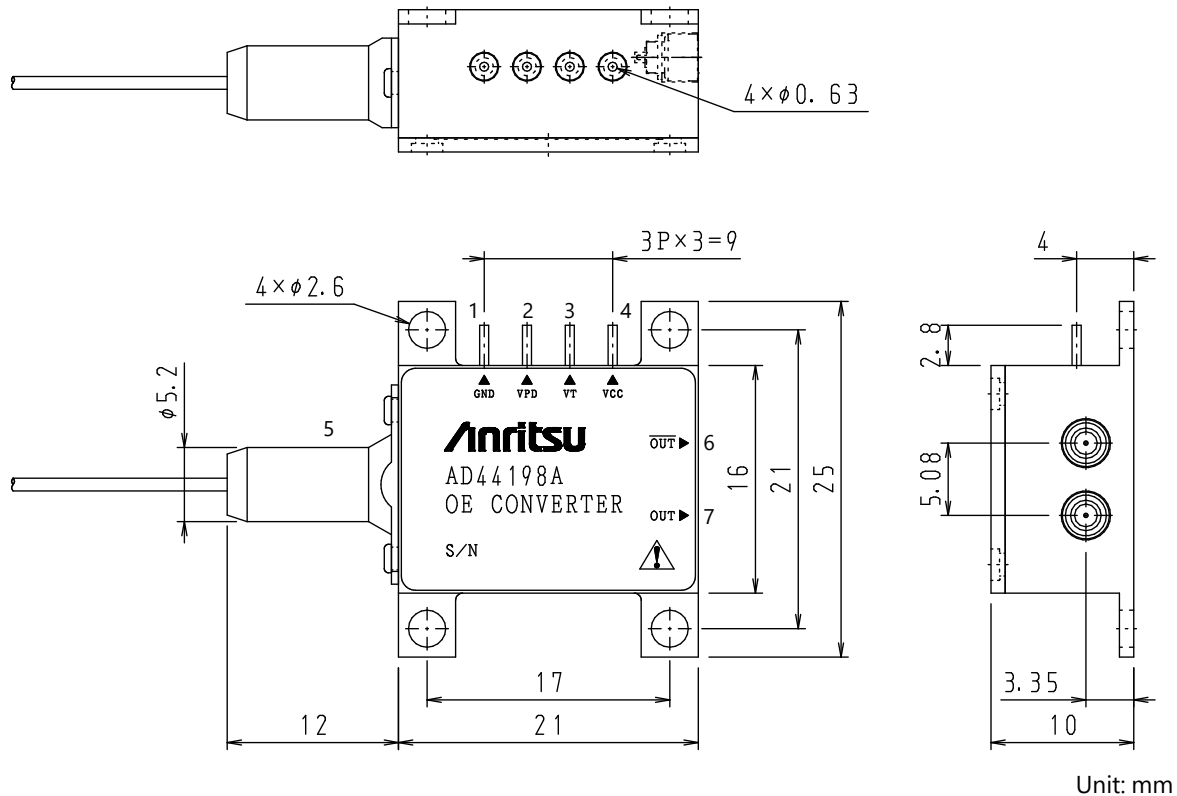
- Operating wavelength: 1260 to 1620 nm
- Wideband: 30 kHz to 45 GHz
- Responsivity: 0.7 A/W
- Conversion gain: 250 V/W
- Power Consumption: 0.7 W typ.
- Output interface: Differential
- Package size: 25 mm × 21 mm × 10 mm



APPLICATION

- Receiver for optical modulator

DIMENSIONS



PIN CONFIGURATION

No.	Symbol	Function	Remarks
1	GND	Ground	—
2	V _{PD}	Photodiode Power Supply	+4 V
3	V _T	Amplifier Power Supply	+4.5 V
4	V _{CC}	Amplifier Power Supply	+4.5 V
5	IN	Optical Input	SM fiber / FC connector
6	OUT	Electrical Output Port (invert)	GPPO connector
7	OUT	Electrical Output Port (non-invert)	GPPO connector

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Optical Input Power ^{*1}	P_{IN}	+6	dBm
Supply Voltage	V_{PD}	0 to +6	V
	V_{CC}	0 to +6	
	V_T	0 to +6	
Operating Ambient Temperature ^{*2}	T_a	5 to 45	°C
Storage Temperature ^{*2}	T_{stg}	-20 to 70	°C

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

*1 CW Input

*2 No Condensation

SPECIFICATIONS

Optical Characteristics ($T_a = 25^\circ\text{C}$)

Item	Test Condition	Min.	Typ.	Max.	Unit
Wavelength Range	CW Input	1260	1310	1620	nm
Responsivity	@1310 nm	–	0.7	–	A/W
Conversion Gain	@1310 nm, Single-ended	–	250	–	V/W
Optical Return Loss	@1310 nm	–	-30	-24	dB
Dark Current	@25°C	–	1	20	nA

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

Item	Test Condition	Min.	Typ.	Max.	Unit
Bandwidth	-3 dBc (low end)	–	30	–	kHz
	-3 dBc (high end)	35	45	–	GHz
Output Swing	Single-ended	–	300	–	mV _{p-p}
Output Return Loss	40 MHz to 30 GHz	–	-10	–	dB
Internal Output Coupling	–	AC-coupled			–

Power Supplies

Item	Symbol	Min.	Typ.	Max.	Unit
Photodiode Supply Voltage	V_{PD}	3	4	5	V
Amplifier Supply Voltage	V_{CC}	–	4.5	–	V
	V_T	–	4.5	5	V
Amplifier Supply Current	I_{CC}	–	100	–	mA
	I_T	–	50	–	mA
Power Consumption	–	–	0.7	–	W

Turn on/off Sequence (V_{PD} , V_T , V_{CC})

For turn on - Supply voltage V_{PD} first or turn on all three at the same time.

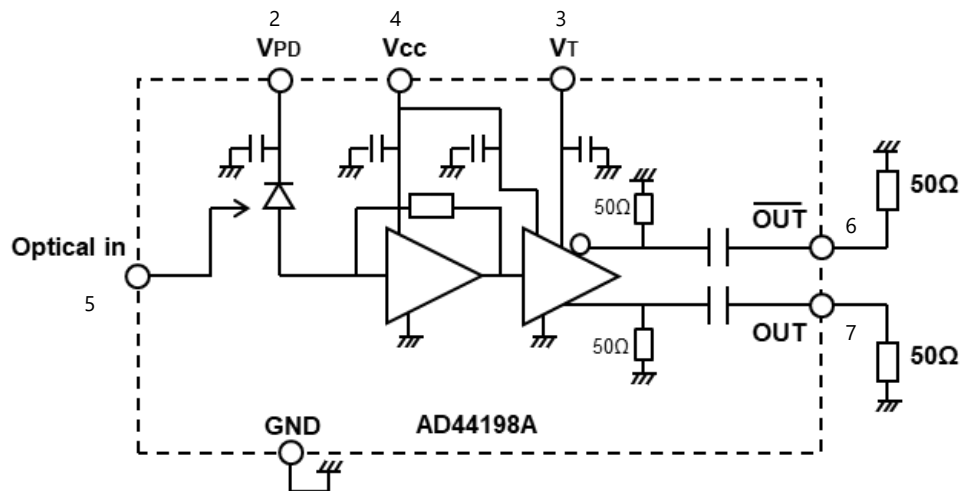
For turn off - Turn off all three at the same time or turn off V_{PD} at last.

Note : Incorrect turn on and off sequence can cause PD failure.

Mechanical Characteristics

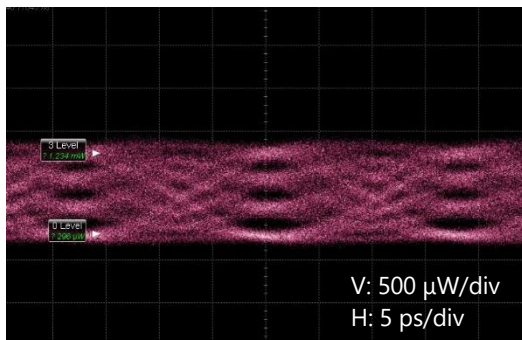
Item	Min.	Typ.	Max.	Unit
Output Connector	Dual GPPO			—
Fiber Type	Single-Mode			—
Fiber Connector	FC / SPC			—
Fiber Length	120	—	—	cm
Fiber Bend Radius	3	—	—	cm
Lead Soldering	350°C, 5 sec max.			—

BLOCK DIAGRAM

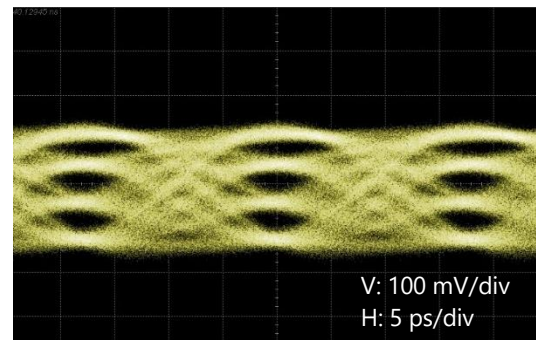


PULSE RESPONSE (Single-ended)

56Gbaud PAM4



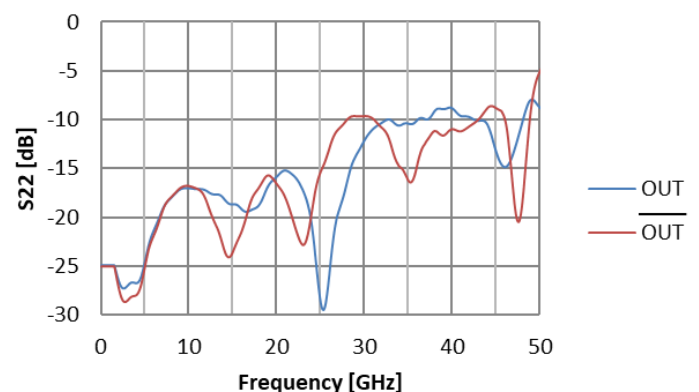
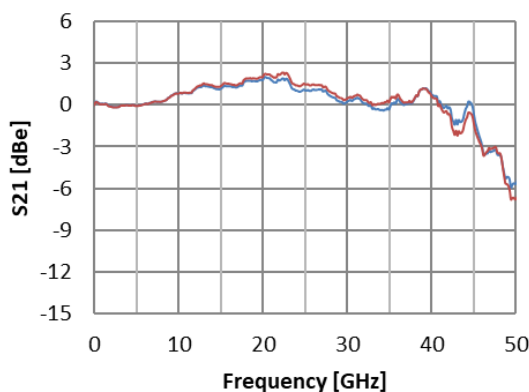
Input Waveform ($P_{in} = 1 \text{ mW}$)



Output Waveform ($V_{out} = 230 \text{ mV}_{p-p}$)

Output waveform has been optimized with equalizer of oscilloscope.

FREQUENCY RESPONSE





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