



ANRITSU

DEVICE PRODUCT CATALOG 2023

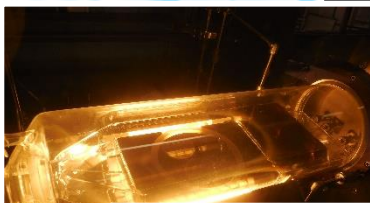
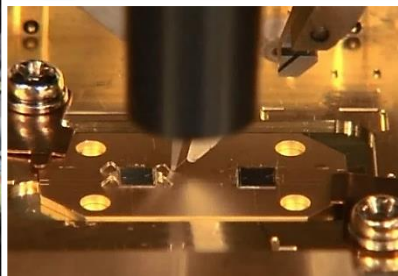
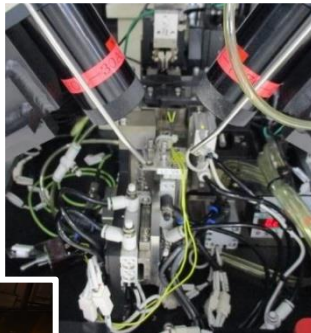
www.anritsu.com/sensing-devices



Optical Devices

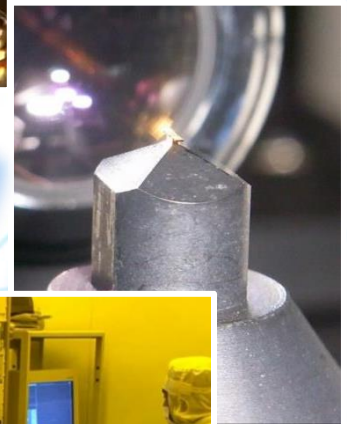
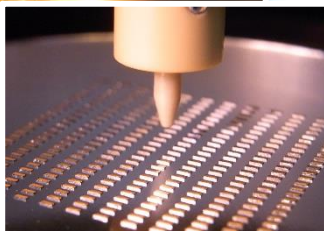
Our crystal growth technology has been developed over many years, resulting in semiconductor lasers with the world's highest output power. In addition, our superior optical and packaging technologies are the basis for successful development of various optical devices.

■ Microfabrication ■ Device Design ■ Fiber Coupling ■ Crystal Growth



Core Technology

Crystal Growth ~ Mounting



Ultrafast Electron Devices

High-performance process technology is essential to year-on-year development of leading-edge devices with better performance. Our own integrated production lines, circuit simulation and assembly technologies support superior technical capabilities and rigorous quality management.

■ Microfabrication ■ Circuit Design ■ Mounting of High-frequency Module

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■ Optical Devices

Anritsu provides optical devices for communications, such as high-power semiconductor lasers, semiconductor optical amplifiers and external cavity lasers, which are essential for fiber amplifiers and high-capacity optical communication systems, and light sources for sensing, such as super luminescent diodes, wavelength-swept light sources and distributed feedback lasers for industrial and medical optical sensing applications. Our optical devices are key components in their applications using high power optical technology and wavelength capability based on epi-wafer growth technology developed over many years.

Optical Device Applications



Telecommunication

Pump Laser for EDFA

1480 nm FP-LD

14xx nm FBG-LD for FRA

Gain Chip for Tunable Light Source

(C-band, L-band)

Semiconductor Optical Amplifier

1300 nm SOA



Measurement

Light Source for

Measurement Instruments

1300/1550/1625 nm FP-LD

1650 nm DFB-LD/SLD

Gain Chip for Tunable Light Source

(1300nm to 1600 nm)



Healthcare

OCT

830 nm SLD

1310 nm SLD

1550 nm SLD

1550 nm Wavelength Swept Light Source

Eye Examination

830 nm SLD

1060 nm Wavelength Swept Light Source

Blood Flow Sensor

1310 nm DFB-LD



Precision

Probe Microscope

830 nm SLD

Dimension/Displacement Measurement

830 nm SLD

1550 nm Wavelength Swept Light Source

Industrial OCT

1310 nm SLD

1550 nm Wavelength Swept Light Source



Industrial Use

Current Sensor

830 nm SLD

LiDAR/Vehicle Detection

1480 nm FP-LD

FBG Strain Sensor

1550 nm SLD

1550 nm Wavelength Swept Light Source

Optical Powering

1550 nm DFB-LD

1480 nm FP-LD



Environment

Gas Sensing

1270 to 1800 nm DFB-LD

Water Detection

1450 nm FP-LD

List of Optical Devices Products

LD Module

Type		Series/Model	Page	Output Power	Laser Class	Center Wavelength	Package
Pump Laser	1.48 μm FP-LD	AF4B Series type A	–	120 to 180 mW	IIIb	1475 nm	Butterfly
		AF4B Series type B	–	200 to 250 mW	IIIb		
		AF4B Series type C	–	300 to 400 mW	IV		
		AF4B Series type D	–	410 to 500 mW	IV		
		AF4B Series type E	6	550 to 650 mW	IV		
	1.3xx μm FBG-LD	AF3B250FU400N	–	500 mW	IV	1340 nm	Butterfly
		AF3B250FU600N	–	500 mW	IV	1360 nm	
	1.4xx μm FBG-LD	AF4B2 Series type GB/GC	8	300 to 500 mW	IV	1420 to 1499 nm (≤400 mW) 1420 to 1485 nm (≥410 mW)	Butterfly
		AF4B2 Series type GD Low Power Consumption	–	300 to 500 mW	IV	1420 to 1485 nm	
	1.48 μm FP-LD Uncooled type	AF4Y108GA85J	14	80 mW	IIIb	1478 to 1490 nm	Cylindrical
AF4Y115HA85J		150 mW		IIIb	1450 to 1490 nm		
FP-LD		AF3B310DM10L	–	100 mW	IIIb	1310 nm	Butterfly
		AF3B150FM20M	10	500 mW	IV	1320 nm	
		AF5B310DM50L	–	100 mW	IIIb	1550 nm	
		AF5B145FM50M	12	450 mW	IV		

Gain Chip

Type		Series/Model	Page	Center Wavelength	Laser Class	ASE Output Power	Normal Facet Reflectance	Package
Gain Chips	1.5 μ m Gain Chip	AE5T310BY10P	15	1480 to 1540 nm	IIIb	5 mW/200 mA	LR (6%)	Chip Carrier
		AE5T315BY20P		1490 to 1550 nm		10 mW/200 mA	HR (95%)	
		AE5T310BY60P	–	1530 to 1590 nm		5 mW/200 mA	LR (6%)	
		AE5T315BY70P	–	1540 to 1600 nm		10 mW/200 mA	HR (95%)	

SOA

Type		Series/Model	Page	Gain	Laser Class	Polarization Dependent Gain	Package
SOA	1.3 μ m SOA Module	AA3F215CA	16	15 dB	IIIb	1.5 dB max.	6Pin PKG
	1.3 μ m SOA Chip Carrier Type	AA3T115CY	17	18 dB		1.5 dB typ.	Chip Carrier
		AA3T115FYB		17 dB		1 dB typ.	

SLD

Type		Series/Model	Page	Output Power	Laser Class	Center Wavelength	Spectral Width	Package
SLD	0.8 μ m SLD	AS8K215GY30M	18	5 mW	IIIb	830 nm	15 nm	Can
		AS8E210GP30M	19	1 mW				Cylindrical
		AS8B115GT30M	20	5 mW		840 nm	14 nm	Butterfly
		AS8B115LT40MA		5 mW			50 nm	
	1.31 μ m SLD	AS3E113HJ10M	–	3 mW		1310 nm	53 nm	Cylindrical
		AS3B119GM10M	22	15 mW			55 nm	
	1.55 μ m SLD	AS5B125EM50M	–	25 mW		1550 nm	60 nm	Butterfly
	1.65 μ m SLD	AS6B118GM50M	–	10 mW		1650 nm	70 nm	
	1.55 μ m SLD	AS5B310KM50M	23	3 mW typ.		1550 nm	60 nm	
		AS5B320EM50M		25 mW typ.			55 nm	
	SLD Unit with Drive Circuit	AM8P8006SL45G	24	7 mW max.		880 nm	50 nm	Unit

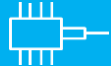
DFB-LD Module

Type		Series/Model	Page	Output Power	Laser Class	Center Wavelength	Package
DFB-LD	1.65 μ m DFB-LD	AF6B407BJ537F	25	7 mW	IIIb	1653.7 nm	Butterfly

Wavelength Swept Light Source

Type		Series/Model	Page	Center Wavelength	Laser Class	Wavelength Sweep Range	Sweep Range	Package
Wavelength Swept Light Source	Bench-top	AQA5500P	26	1550 nm	1	30 to 110 nm	1250 Hz	Bench-top
		AQB5500P				15 to 70 nm	150 Hz	
	Built-in unit	AQA5500D	27			130 to 110 nm	1250 Hz	Built-in
		AQB5500D				15 to 70 nm	150 Hz	
	Module	AQA0600A	28	1060 nm	—*1	30 nm	1250 Hz	Module

*1: This product is excluded from 21 CFR 1040.10 compliance.



1.48 μm LD Module

AF4B Series type E

AF4B SERIES type E is 1.48 μm high power laser diode modules designed for Er doped fiber amplifier. The laser is packaged in a 14pin butterfly package with optical isolator, monitor photodiode and thermos-electric cooler (TEC).



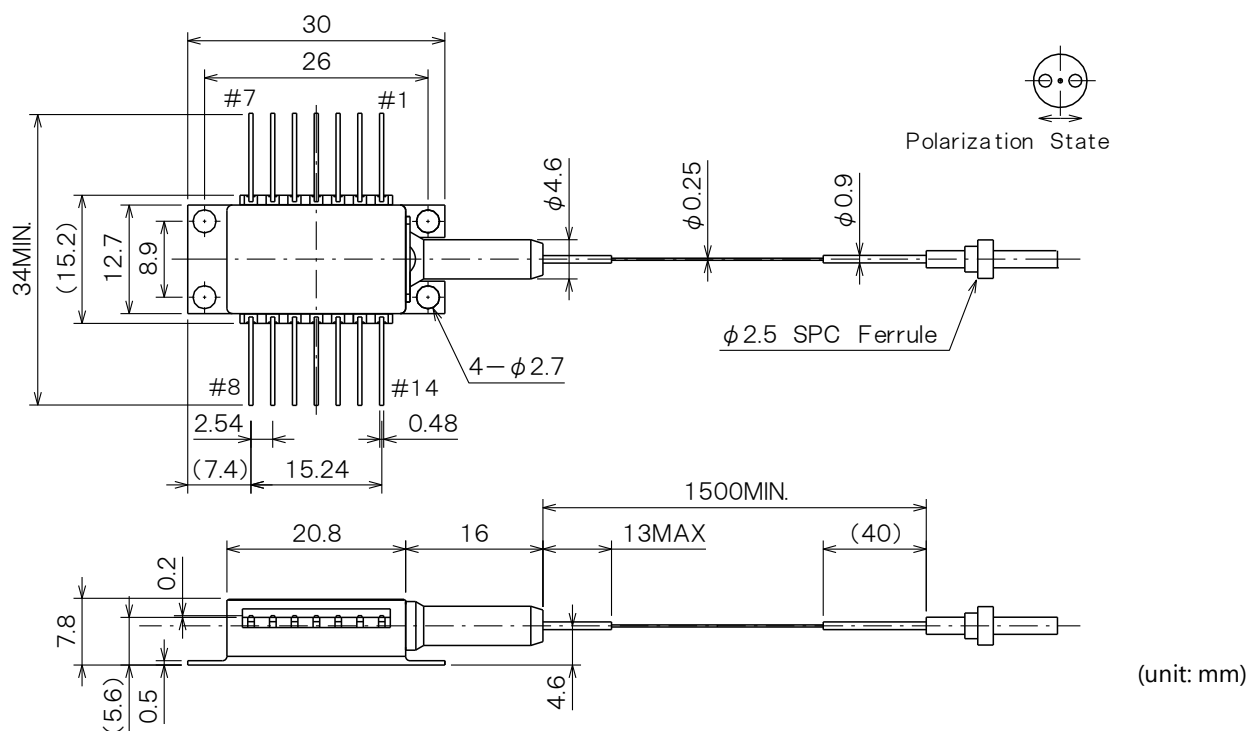
FEATURES

- Optical output power
 - AF4B155KA/KD75LB: 550 mW
 - AF4B160KA/KD75LB: 600 mW
 - AF4B165KA/KD75LB: 650 mW
- Fiber (UV coating fiber: $\Phi 0.25$ mm)
 - Single mode fiber (SMF) / Polarization maintaining fiber (PMF)
- 14 pin butterfly Package
- Built-in optical Isolator, Monitor photodiode and Thermoelectric cooler
- LD operating temperature: 35°C

APPLICATIONS

- Er doped Fiber Amplifier
- Optical power supply

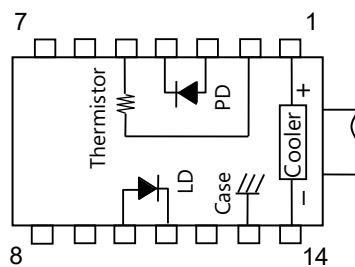
DIMENSIONS



The polarization direction of the LD is parallel to the slow axis of the PMF.

PIN CONFIGURATION / TOP VIEW

No.	FUNCTION	No.	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	LD Anode
4	PD Cathode	11	LD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode



■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
LD Forward Current	I_F	2800	mA
LD Reverse Voltage	V_R	2	V
PD Forward Current	I_{FD}	10	mA
PD Reverse Voltage	V_{RD}	20	V
Operating Case Temperature	T_C	-5 to +70	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Cooler Current	I_C	5.8	A

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

■ ABSOLUTE MAXIMUM RATINGS ($T_{LD} = 35^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Threshold Current	I_{th}	—	—	—	250	mA
Center Wavelength	λ_c	at Rated Power, RMS (-20 dB)	1460	1475	1490	nm
Spectral Width	$\Delta\lambda$	at Rated Power, -20 dB	—	5	10	nm
Monitor Current	I_m	at Rated Power,	300	—	3000	μA
PD Dark Current	I_d	$V_{RD} = 5\text{ V}$	—	—	0.1	μA
Tracking Error	ΔP_f	$I_m = \text{const.}$, $T_C = -5$ to 70°C	—	—	0.5	dB
Isolation	R_O	$T_{LD} = 35^\circ\text{C}$	—	30	—	dB
Extinction Ratio ^{*1}	X_p	at Rated Power,	17	—	—	dB
Thermistor Resistance	R_{th}	$T_{LD} = 35^\circ\text{C}$, $B = 3900 \pm 100\text{ K}$	—	6.5	—	k Ω
		$T_{LD} = 25^\circ\text{C}$, $B = 3900 \pm 100\text{ K}$	—	10.0	—	

*1: This specification is only specified for PMF model.

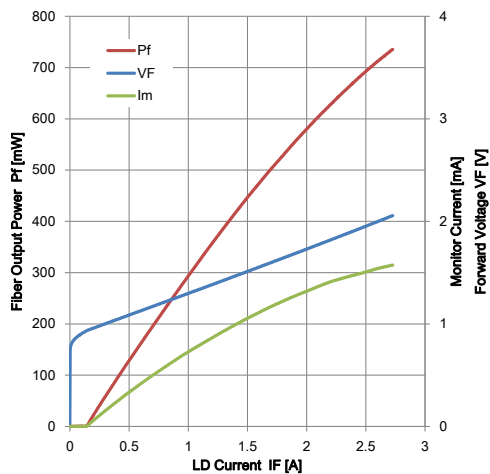
■ OPTICAL OUTPUT POWER / COOLER

Item	Symbol	type E			Unit
Rated Output Power	P_f	550	600	650	mW
Forward Current (BOL)	I_F	1980	2170	2440	mA
Forward Voltage (BOL)	V_F	2.00	2.05	2.15	V
Forward Voltage (EOL)	V_F	2.24	2.30	2.41	V
Cooler Current (EOL)	I_C	2.30	2.60	2.90	A
Cooler Voltage (EOL)	V_C	2.85	3.15	3.45	V

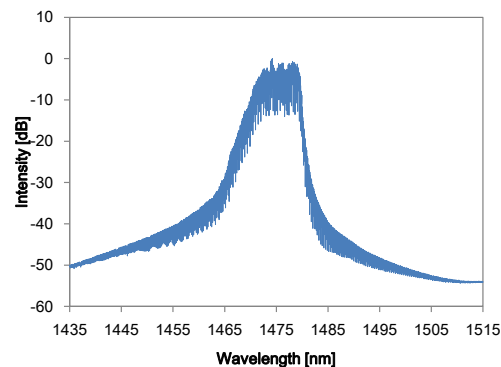
* EOL = BOL $\times$ 1.12

■ TYPICAL CHARACTERISTICS

◆ Output Power/Forward Voltage/Monitor Current
[AF4B165KA75LB]

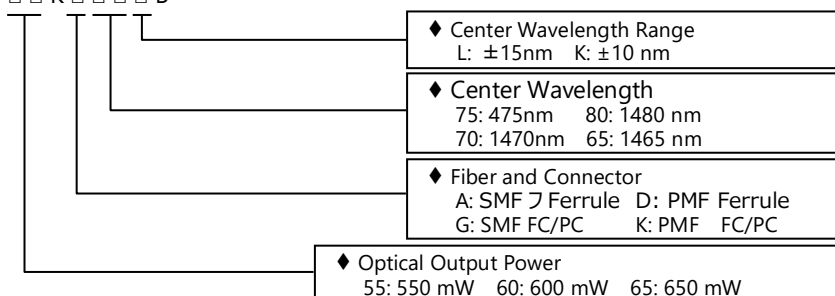


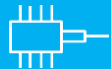
◆ Emission Spectrum



■ ORDERING INFORMATION

MODEL : A F 4 B 1 □ □ K □ □ □ B

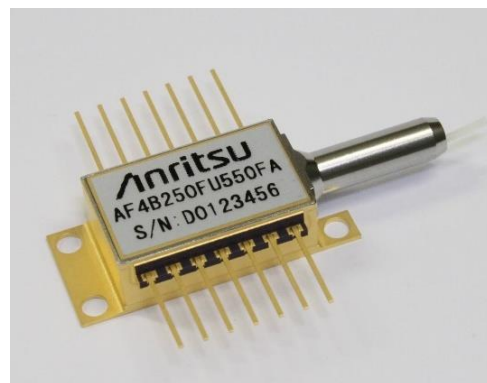




1.48 μm LD Module

AF4B2 Series type GB/GC

AF4B2 SERIES type GB/GC are 1.4 μm band FBG-LD module developed for Raman amplifier.



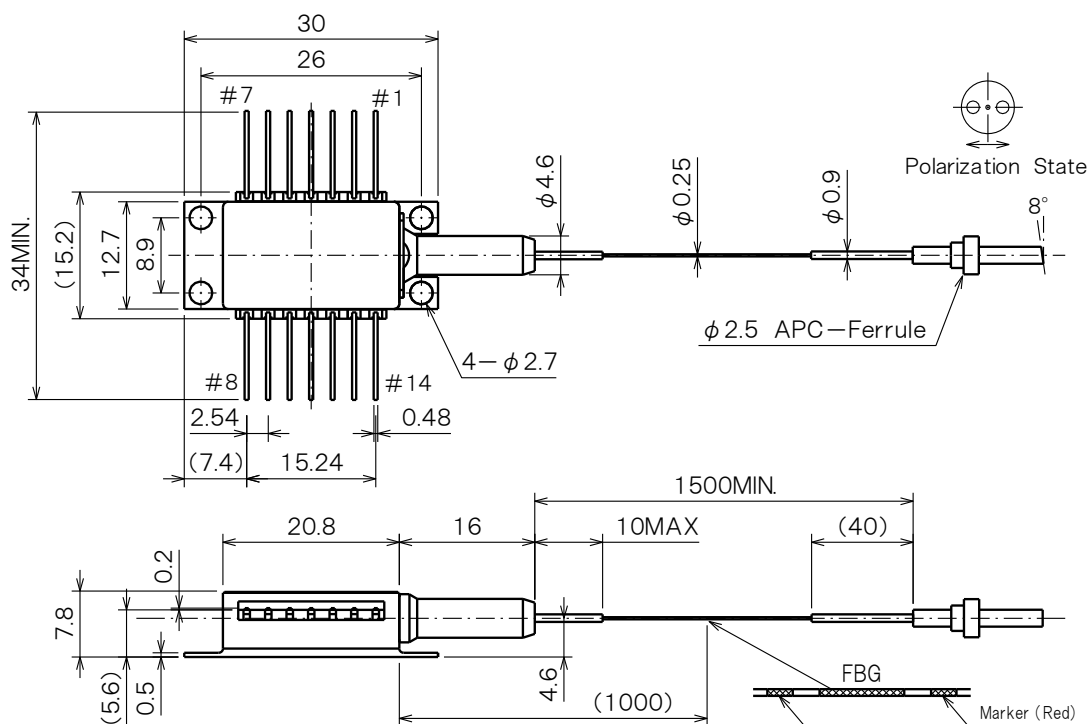
FEATURES

- Optical output power: type GB; 300 mW to 400 mW
type GC; 410 mW to 500 mW
- Wavelength range: type GB; $\lambda_T = 1420$ to 1499 nm
type GC; $\lambda_T = 1420$ to 1485 nm
- Polarization maintaining fiber (PMF: $\phi 0.25$ mm UV coated)
- 14 pin butterfly package, Monitor photodiode, Built-in TEC

APPLICATION

- Raman amplifier

DIMENSIONS

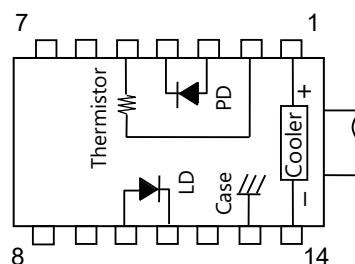


(Unit: mm)

The polarization direction of the LD is parallel to the slow axis of the PMF.

PIN CONFIGURATION/Top View

No.	FUNCTION	No.	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	LD Anode
4	PD Cathode	11	LD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode



■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
LD Forward Current	I_F	2200	mA
LD Reverse Voltage	V_R	2	V
PD Forward Current	I_{FD}	10	mA
PD Reverse Voltage	V_{RD}	20	V
Operating Case Temperature	T_C	-20 to +70	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Cooler Current	I_C	5.8	A

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

■ OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{FBG} = 25^\circ\text{C}$, $T_{LD} = 25^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Threshold Current	I_{th}	—	—	—	180	mA
Center Wavelength	λ_C	at Rated Power, RMS (-20 dB)	$\lambda_T - 1.0$	λ_T	$\lambda_T + 1.0$	nm
Spectral Width	$\Delta\lambda$	at Rated Power, -10 dB	—	—	3.5	nm
Monitor Current	I_m	at Rated Power, $V_{RD} = 5\text{ V}$	100	—	2000	μA
PD Dark Current	I_d	$V_{RD} = 5\text{ V}$	—	—	0.1	μA
Tracking Error	ΔP_f	$I_m = \text{const.}$, $T_C = -20\text{ to }70^\circ\text{C}$	-0.5	—	0.5	dB
Thermistor Resistance	R_{th}	$T_{LD} = 25^\circ\text{C}$, $B = 3900 \pm 100\text{ K}$	9.5	10	10.5	k Ω
Extinction Ratio	X_p	at Rated Power	17	—	—	dB

■ OPTICAL OUTPUT POWER / COOLER / CONSUMPTION POWER ($T_{LD} = 25^\circ\text{C}$)

Item	Symbol	type GB							type GC			Unit
Center Wavelength	λ_T	1420 to 1499							1420 to 1485			nm
Output Power	P_f	300	320	340	350	360	380	400	420	450	500	mW
LD CURRENT (BOL)	I_F	1150	1200	1300	1400	1400	1400	1400	1600	1700	1800	mA
Forward Voltage (BOL)	V_F	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.2	V
Forward Voltage (EOL)	V_F	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	V
Cooler Current (EOL)	I_C	2.20	2.20	2.30	2.35	2.40	2.45	2.50	2.60	2.70	2.90	A
Cooler Voltage (EOL)	V_C	2.70	2.70	2.80	2.85	2.90	2.95	3.00	3.10	3.20	3.40	V

*EOL = BOL $\times$ 1.12

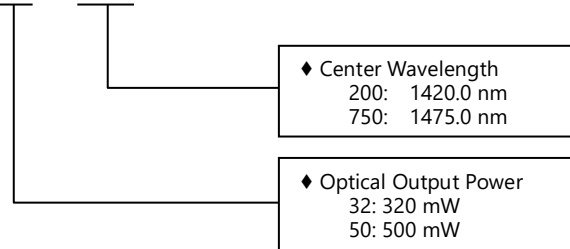
*maximum value

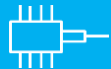
■ SPECIFICATION OF PIGTAIL FIBER

Item	Min.	Typ.	Max.	Unit
Cut-off wavelength	1300	—	1400	nm
Mode field diameter @1550 nm	10.0	10.5	11.0	μm
Clad diameter	124	125	126	μm
UV coating diameter	230	245	260	μm
Temperature characteristics FBG Center Wavelength	—	0.01	0.02	nm/°C
Bending radius	30	—	—	mm

■ ORDERING INFORMATION

Model number : A F 4 B 2 □ □ F U □ □ F

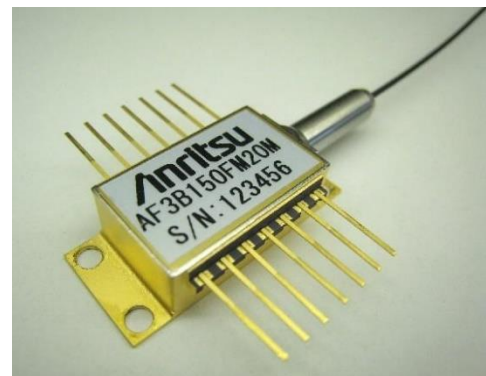




1.3 μm LD Module

AF3B150FM20M

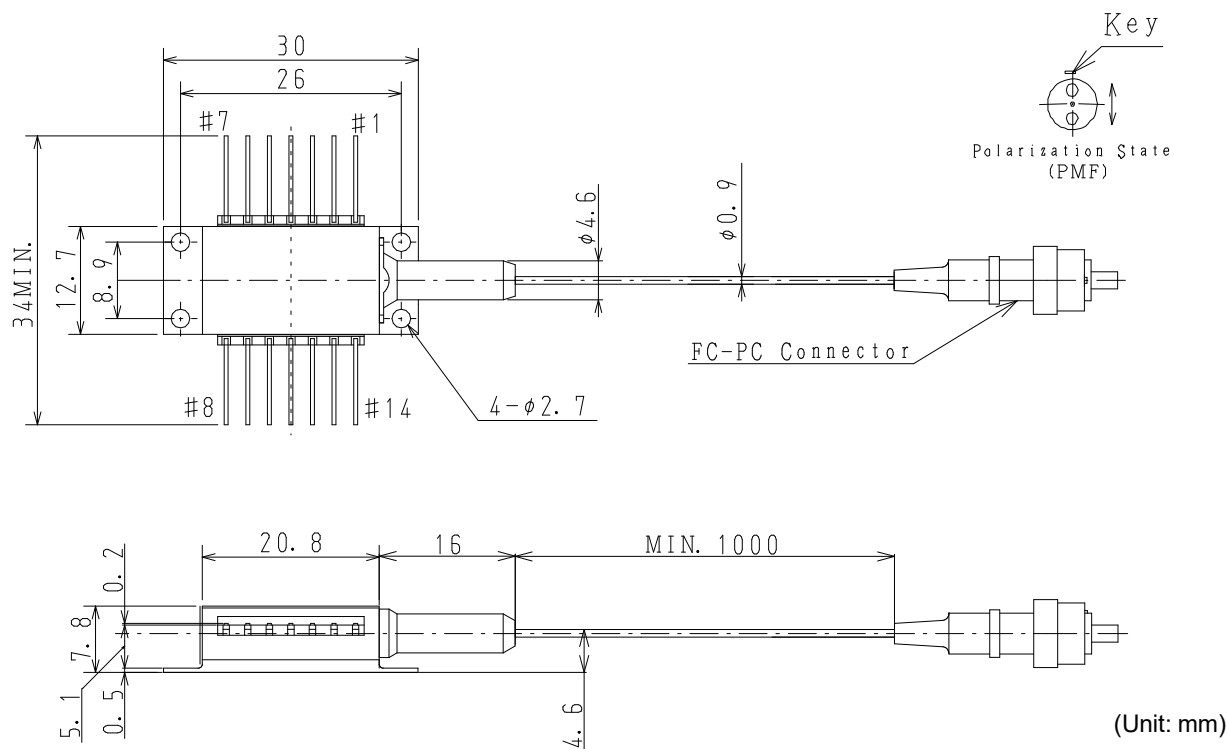
AF3B150FM20M is 1.3 μm laser diode module designed for optical measurement and communication.



FEATURES

- Optical output power: 500 mW ($I_F \leq 1800$ mA)
- Wavelength: 1320 ± 20 nm
- Fiber: Flame-retardant PMF ($\phi 0.9$ mm)
- FC-PC connector
- 14-pin butterfly package
- Built-in optical isolator
- Internal monitor PD and TEC
- Low power consumption

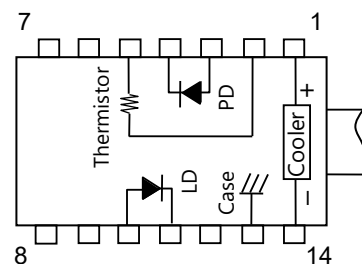
DIMENSIONS



The polarization direction of the LD is parallel to the slow axis of the PMF.

PIN CONFIGURATION/Top View

No.	FUNCTION	No.	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	LD Anode
4	PD Cathode	11	LD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode



■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
LD Forward Current	I_F	2200	mA
LD Reverse Voltage	V_R	2	V
PD Forward Current	I_{FD}	10	mA
PD Reverse Voltage	V_{RD}	20	V
Operating Case Temperature	T_C	-20 to +70	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Cooler Current	I_C	5.8	A

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

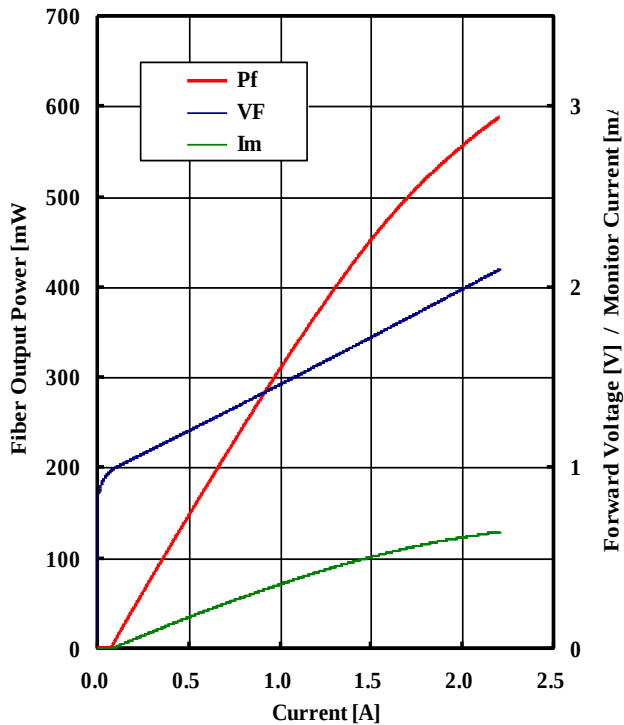
■ OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{LD} = 25^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Power	P_f	—	—	—	500	mW
Forward Voltage	V_F	$P_f = 500 \text{ mW}$	—	—	2.3	V
Threshold Current	I_{th}	—	—	—	180	mA
Forward Current (BOL)	I_F	$P_f = 500 \text{ mW}$	—	—	1800	mA
Center Wavelength	λ_c	$P_f = 500 \text{ mW}$, RMS (-20 dB)	1300	1320	1340	nm
Spectral Width	$\Delta\lambda$	$P_f = 500 \text{ mW}$, RMS (-20 dB)	—	5	10	nm
Monitor Current	I_m	$P_f = 500 \text{ mW}$, $V_{RD} = 5 \text{ V}$	100	—	2000	μA
PD Dark Current	I_d	$V_{RD} = 5 \text{ V}$	—	—	0.1	μA
Tracking Error	ΔP_f	$I_m = \text{const}$, $T_C = -20 \text{ to } 70^\circ\text{C}$	—	—	0.5	dB
Cooler Voltage	V_C	$I_F = EOL^1$, $T_C = 70^\circ\text{C}$	—	—	4.0	V
Cooler Current	I_C	$I_F = EOL^1$, $T_C = 70^\circ\text{C}$	—	—	3.5	A
Thermistor Resistance	R_{th}	$T_{LD} = 25^\circ\text{C}$, $B = 3900 \pm 100 \text{ K}$	9.5	10.0	10.5	$k\Omega$
Isolation	R_o	$T_{LD} = 25^\circ\text{C}$	—	30	—	dB
Extinction Ratio	X_p	$P_f = 500 \text{ mW}$	17	—	—	dB

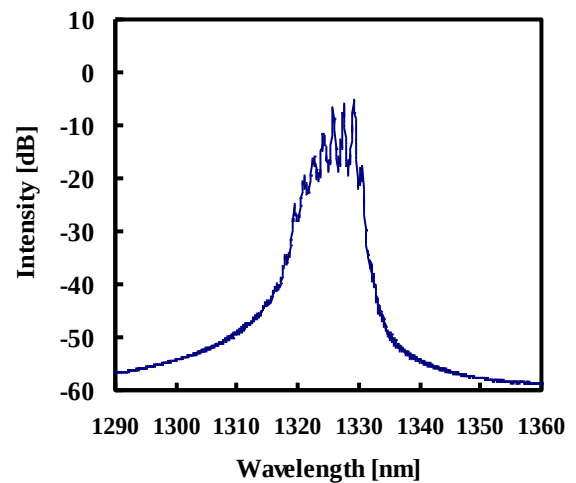
*1: EOL = BOL $\times$ 1.2

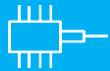
■ TYPICAL CHARACTERISTICS

◆ Output Power/Forward Voltage/Monitor Current



◆ Emission Spectrum ($P_f = 500 \text{ mW}$)

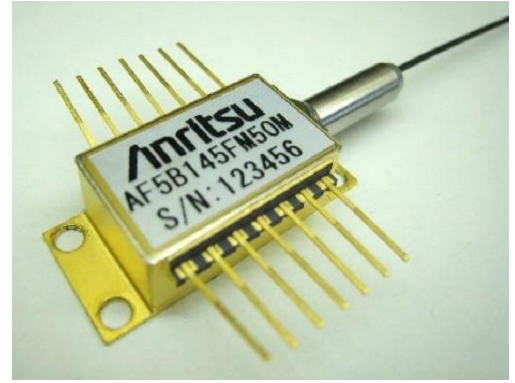




1.55 μm LD Module

AF5B145FM50M

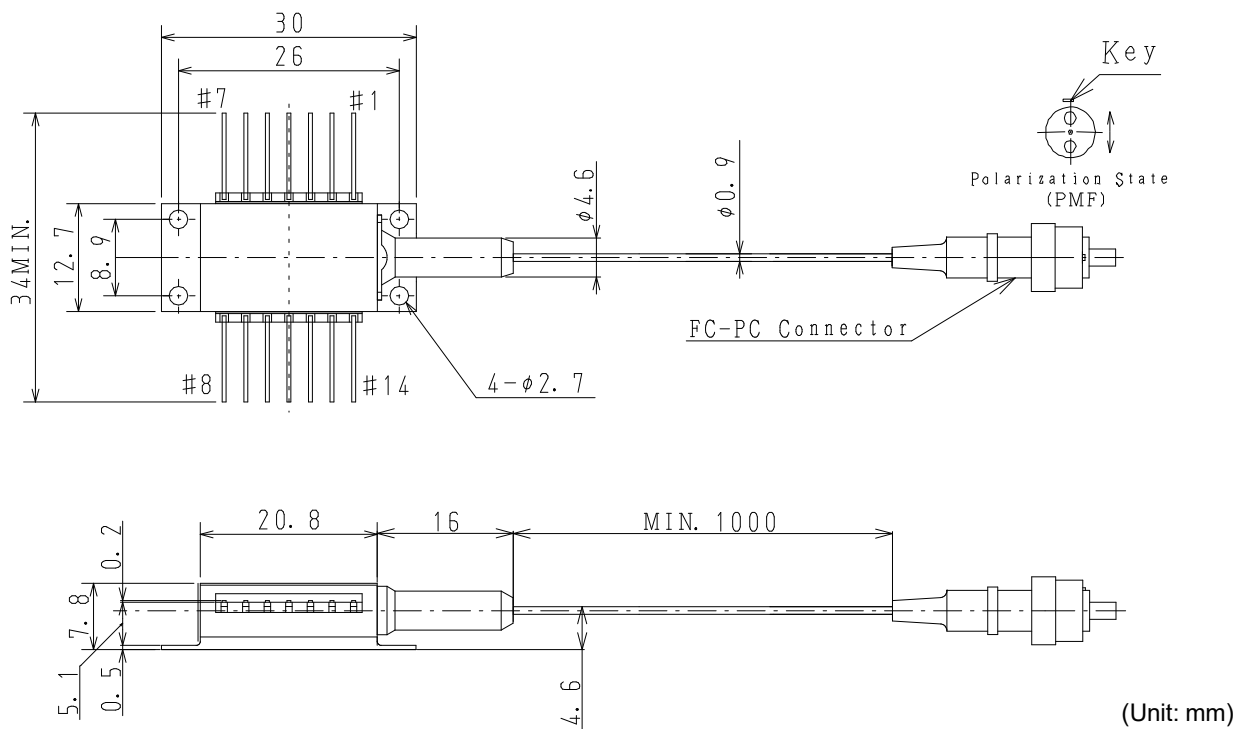
AF5B145FM50M is 1.55 μm laser diode module designed for optical measurement and communication.



FEATURES

- Optical output power : 450 mW ($I_F \leq 1800$ mA)
- Wavelength : 1550 $\pm$ 20 nm
- Fiber : Flame-retardant PMF ($\phi 0.9$ mm)
- FC-PC connector
- 14 pin butterfly package
- Built-in optical isolator
- Internal monitor PD and TEC
- Low power consumption

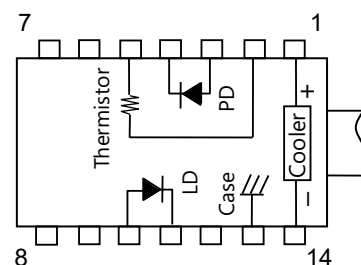
DIMENSIONS



The polarization direction of the LD is parallel to the slow axis of the PMF.

PIN CONFIGURATION/Top View

No	FUNCTION	No	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	LD Anode
4	PD Cathode	11	LD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode



■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
LD Forward Current	I_F	2200	mA
LD Reverse Voltage	V_R	2	V
PD Forward Current	I_{FD}	10	mA
PD Reverse Voltage	V_{RD}	20	V
Operating Case Temperature	T_C	-20 to +70	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Cooler Current	I_C	5.8	A

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

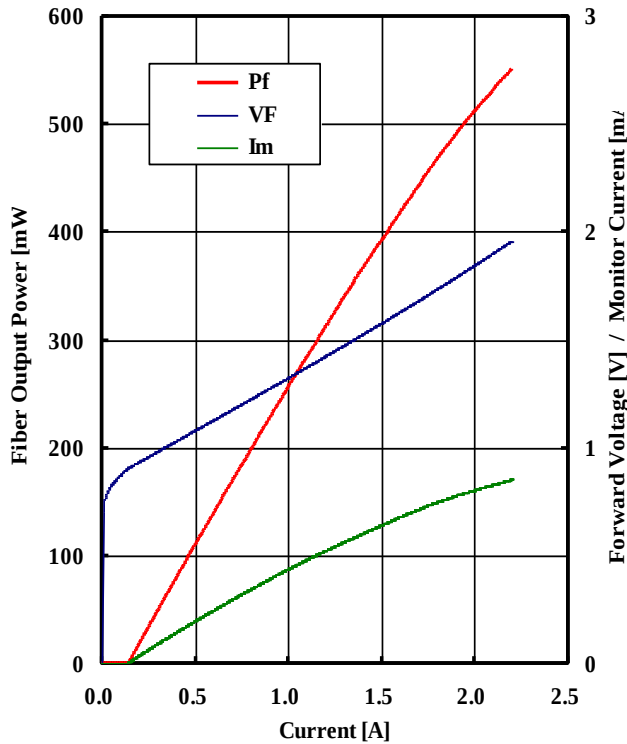
■ OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{LD} = 25^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Power	P_f	—	—	—	450	mW
Forward Voltage	V_F	$P_f = 450 \text{ mW}$	—	—	2.2	V
Threshold Current	I_{th}	—	—	—	180	mA
Forward Current (BOL)	I_F	$P_f = 450 \text{ mW}$	—	—	1800	mA
Center Wavelength	λ_C	$P_f = 450 \text{ mW}$, RMS (-20 dB)	1530	1550	1570	nm
Spectral Width	$\Delta\lambda$	$P_f = 450 \text{ mW}$, RMS (-20 dB)	—	5	10	nm
Monitor Current	I_m	$P_f = 450 \text{ mW}$, $V_{RD} = 5 \text{ V}$	100	—	2000	μA
PD Dark Current	I_d	$V_{RD} = 5 \text{ V}$	—	—	0.1	μA
Tracking Error	ΔP_f	$I_m = \text{const}$, $T_C = -20 \text{ to } 70^\circ\text{C}$	—	—	0.5	dB
Cooler Voltage	V_C	$I_F = \text{EOL}^*1$, $T_C = 70^\circ\text{C}$	—	—	4.0	V
Cooler Current	I_C	$I_F = \text{EOL}^*1$, $T_C = 70^\circ\text{C}$	—	—	3.5	A
Thermistor Resistance	R_{TH}	$T_{LD} = 25^\circ\text{C}$, $B = 3900 \pm 100 \text{ K}$	9.5	10.0	10.5	k Ω
Isolation	R_o	$T_{LD} = 25^\circ\text{C}$	—	30	—	dB
Extinction Ratio	X_P	$P_f = 450 \text{ mW}$	17	—	—	dB

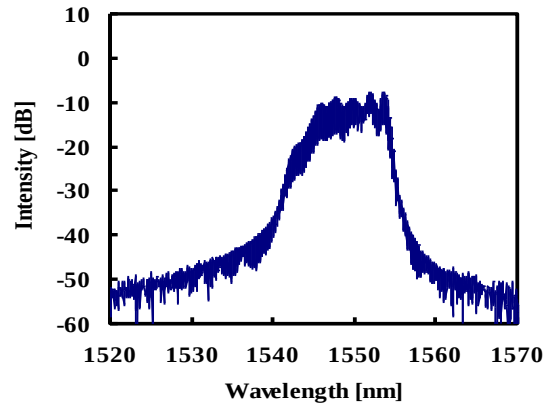
*1: EOL = BOL $\times$ 1.2

■ TYPICAL CHARACTERISTICS

◆ Output Power/Forward Voltage/Monitor Current



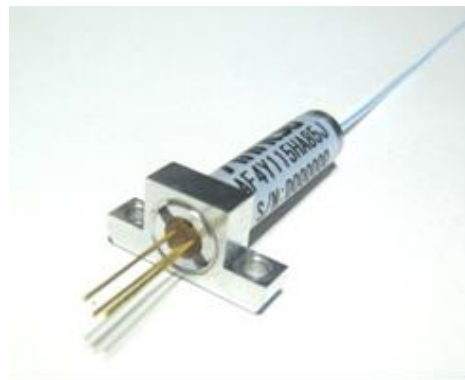
◆ Emission Spectrum ($P_f = 450 \text{ mW}$)



1.48 μm Cylindrical Module

AF4Y108GA85J/AF4Y115HA85J

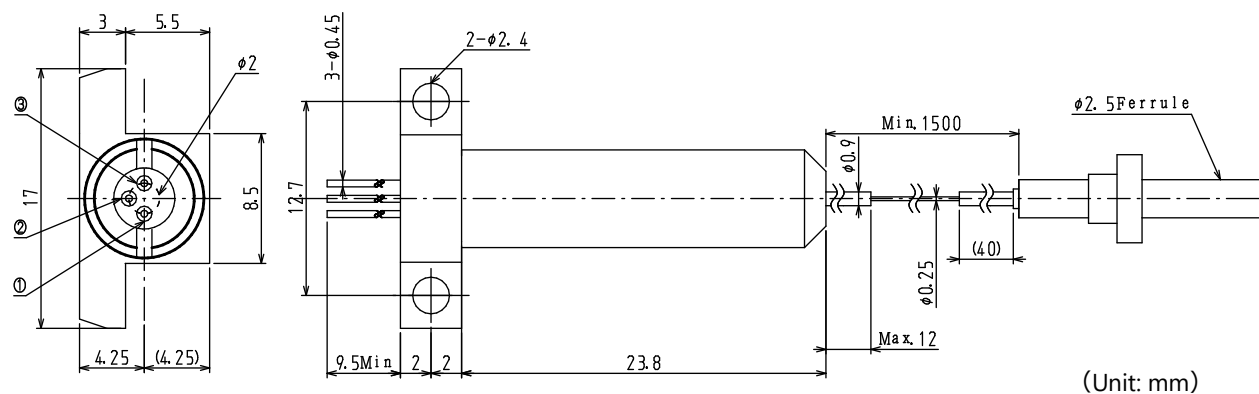
AF4Y108GA85J/AF4Y115HA85J is 1.48 μm high power laser diode module designed for Er doped fiber amplifier. This laser is an uncooled cylindrical type without a thermoelectric cooler (TEC) and features extremely low power consumption.



■ FEATURES

- SMF output power: 150 mW ($I_F < 800$ mA)
- Operation case temperature: $T_C = -5$ to 70°C
- Cylindrical module
- Low power consumption: < 1 W

DIMENSIONS



■ PIN CONFIGURATION

No.	FUNCTION
1	LD Cathode
2	NC
3	LD Anode



■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings		Unit
		AF4Y108GA85J	AF4Y115HA85J	
LD Forward Current	I_F	600	1000	mA
LD Reverse Voltage	V_R	2		V
Operating Case Temperature	T_C	-5 to +70		°C
Storage Temperature	T_{sta}	-40 to +85		°C

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

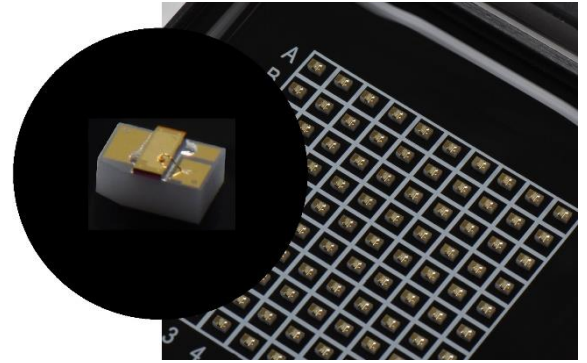
■ OPTICAL AND ELECTRICAL CHARACTERISTICS (T_C = 70°C)

Item	Symbol	Test Condition	AF4Y108GA85J			AF4Y115HA85J			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Threshold Current	I_{th}	—	—	45	—	—	130	—	mA
Center Wavelength	λ_c	AF4Y108GA85J: $P_f = 80$ mW, RMS (-20 dB) AF4Y115HA85J: $P_f = 150$ mW, RMS (-20 dB)	1478	—	1490	1450	—	1490	nm
Forward Current	I_F	AF4Y108GA85J: $P_f = 80$ mW AF4Y115HA85J: $P_f = 150$ mW	—	350	400	—	—	800	mA
Forward Voltage	V_F	AF4Y108GA85J: $P_f = 80$ mW AF4Y115HA85J: $P_f = 150$ mW	—	1.4	1.8	—	—	2.0	V

1.5 μm Gain Chip (Chip Carrier Type)

AE5T315BY20P/AE5T310BY10P

AE5T315BY20P/AE5T310BY10P is 1.5 μm InGaAsP/InP Gain Chip for External Cavity Laser developed as a light source for optical fiber communication or optical sensing.



FEATURES

- Wide bandwidth: > 100 nm tuning range
- High Optical Output Power: > 40 mW with external cavity
- Low spectral ripple
- Normal facet reflectance:
 - AE5T315BY20P: HR (95%)
 - AE5T310BY10P: LR (6%)

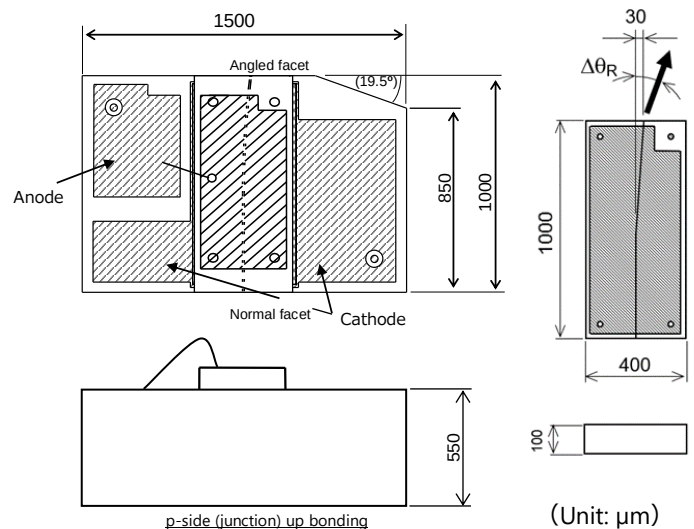
ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
LD Forward Current	I_F	500	mA
LD Reverse Voltage	V_R	2	V
Operating Case Temperature*1	T_C	15 to 45	$^{\circ}\text{C}$
Storage Temperature*1	T_{stg}	-40 to +85	$^{\circ}\text{C}$
Process/Soldering Temp vs Time			
Maximum duration 20 s	—	300	$^{\circ}\text{C}$
Maximum duration 2 hour	—	200	$^{\circ}\text{C}$
Maximum duration 100 hour	—	120	$^{\circ}\text{C}$
ESD (Human Body Model)	ESD	500	V

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

*1 No Condensation

DIMENSIONS

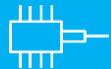


OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{\text{LD}} = 25^{\circ}\text{C}$, $T_C = 25^{\circ}\text{C}$)

Item	Symbol	Test Condition	AE5T315BY20P			AE5T310BY10P			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F = 200 \text{ mA}$ pulsed ($t_w = 50 \mu\text{s}$)	—	1.4	2.0	—	1.4	2.0	V
ASE Output Power	P_{ASE}	$I_F = 200 \text{ mA}$ pulsed ($t_w = 50 \mu\text{s}$)	5	10	—	1	5	—	mW
Center Wavelength	λ_c	$I_F = 100 \text{ mA}$ pulsed ($t_w = 50 \mu\text{s}$)	1490	—	1550	1480	—	1540	nm
ASE Ripple	M	$I_F = 100 \text{ mA}$ CW at $\lambda_c = 1550 \text{ nm}$	—	—	3.5	—	—	2.0	dB
Beam Exit Angle	$\Delta\theta_R$	$I_F = 200 \text{ mA}$ CW	19	20	21	19	20	21	deg.
Beam Divergence Angle Transverse (perpendicular), Normal Facet	$\theta_{\text{t}}^{\text{NOR}}$	$I_F = 200 \text{ mA}$ CW, FAHM	15	20	25	15	20	25	deg.
Beam Divergence Angle Lateral (parallel), Normal Facet	$\theta_{\text{p}}^{\text{NOR}}$	$I_F = 200 \text{ mA}$ CW, FAHM	17	20	23	17	20	23	deg.
Beam Divergence Angle Transverse (perpendicular), Angled Facet	$\theta_{\text{p}}^{\text{ANG}}$	$I_F = 200 \text{ mA}$ CW, FAHM	26	29	32	26	29	32	deg.
Beam Divergence Angle Lateral (parallel), Angled Facet	$\theta_{\text{p}}^{\text{ANG}}$	$I_F = 200 \text{ mA}$ CW, FAHM	15	18	21	15	18	21	deg.

TECHNICAL SPECIFICATIONS

Item	Symbol	Test Condition	AE5T315BY20P			AE5T310BY10P			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Angled facet Reflectance	R^{ANG}	C-band	—	5×10^{-5}	10^{-4}	—	5×10^{-5}	10^{-4}	—
Normal facet Reflectance	R^{NOR}	C-band	90	95	—	5	6	7	%
Chip Length	—	—	0.98	1.00	1.02	0.98	1.00	1.02	mm
Chip Width	—	—	0.38	0.40	0.42	0.38	0.40	0.42	mm
Chip Height	—	—	0.09	0.10	0.11	0.09	0.10	0.11	mm



1.3 μm SOA Module

AA3F215CA

AA3F215CA is 1.3 μm high gain and low polarization dependent gain SOA (Semiconductor Optical Amplifier) module with optical isolator and thermo-electric cooler (TEC).



FEATURES

- Gain: ≥ 15 dB
- Polarization Dependent Gain (PDG): ≤ 1.5 dB
- Built-in optical isolator (input side)
- Low power consumption: 1.0 W typ. ($T_C = 75^\circ\text{C}$)

APPLICATIONS

- 100GBASE-ER4 CFP/CFP2 Transceiver
- Preamplifier

PIN CONFIGURATION

No.	FUNCTION	Fiber Characteristics	
1	Cooler Cathode	Fiber type	SMF
2	Cooler Anode	Diameter of Fiber	0.25 mm
3	Thermistor	Minimum Fiber bend radius	5.0 mm
4	Thermistor	Fiber length	1,000 mm
5	SOA Cathode	Connectors (both sides)	LC Connector
6	SOA Anode		

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
SOA Forward Current	I_F	150	mA
SOA Reverse Voltage	V_R	2	V
Operating Case Temperature	T_C	-5 to +75	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to +85	$^\circ\text{C}$
Cooler Current	I_C	1.0	A
Cooler Voltage	V_C	2.5	V

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{SOA}=25^\circ\text{C}$, $T_C=25^\circ\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Optical Gain	G	$I_F = 120 \text{ mA}^{*1, *2, *3}$	15	—	—	dB
Polarization Dependent Gain	PDG	$I_F = 120 \text{ mA}^{*1, *2, *3}$	—	—	1.5	dB
Forward Current	I_F	—	100	—	150	mA
Forward Voltage	V_F	$I_F = 120 \text{ mA}$	—	—	2.0	V
Wavelength Range	λ	$I_F = 120 \text{ mA}$	1294	—	1311	nm
Saturation Power	P_S	$I_F = 120 \text{ mA}^{*4}$	—	7	—	dBm
Noise Figure	NF	$I_F = 120 \text{ mA}^{*1, *2, *3, *5}$	—	7	—	dB
Cooler Current	I_C	$I_F = 120 \text{ mA}$, $T_C = 75^\circ\text{C}$	—	—	0.6	A
Cooler Voltage	V_C	$I_F = 120 \text{ mA}$, $T_C = 75^\circ\text{C}$	—	—	2.2	V
Thermistor Resistance	R_{th}	$T_{SOA} = 25^\circ\text{C}$, $B = 3435 \pm 105 \text{ K}$	9.5	10	10.5	k Ω

*1: Optical input signal condition: Continuous Wave (CW)

*2: Optical input signals are 4 ranges of wavelength listed below. Characteristics are measured for each wavelength range.

Wavelength range of optical input signals are as follows:

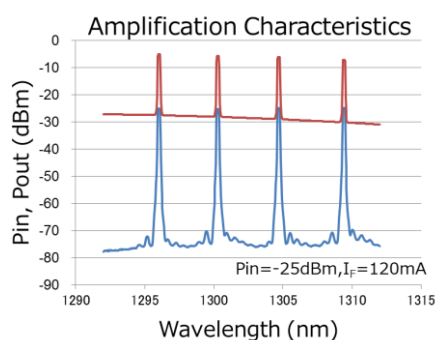
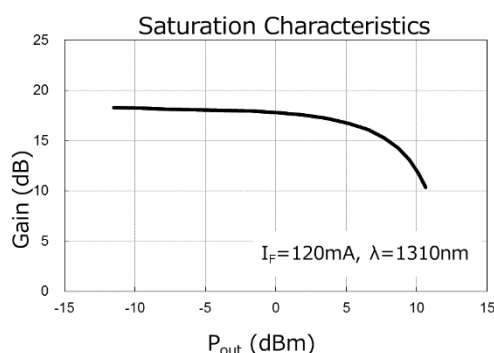
λ_0 : 1294.5 to 1296.6 nm λ_1 : 1299.0 to 1301.1 nm λ_2 : 1303.5 to 1305.7 nm λ_3 : 1308.0 to 1310.2 nm

*3: Optical Input signal Power (P_{in}) = -25 dBm

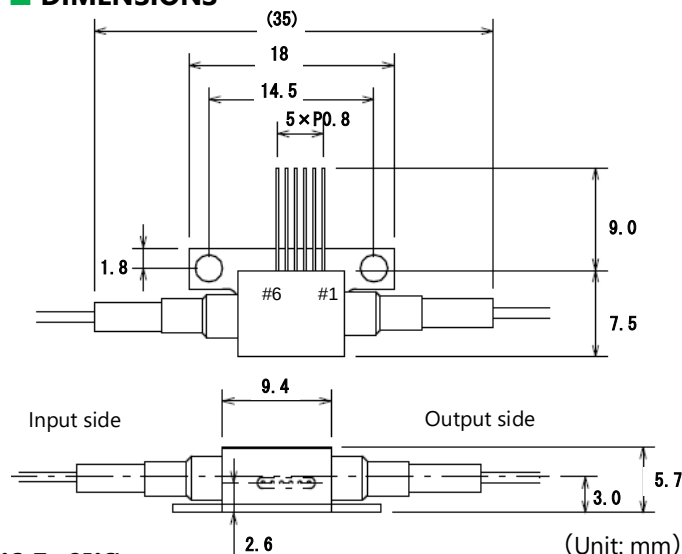
*4: Saturation power is measured by using single wavelength ($\lambda=1310 \text{ nm}$).

*5: Without polarization adjustment.

TYPICAL CHARACTERISTICS

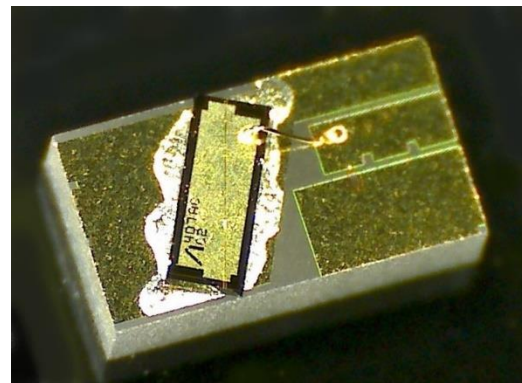


DIMENSIONS



1.3 μm SOA (Chip Carrier Type) AA3T115CY/AA3T115FYB

AA3T115CY / AA3T115FYB is 1.31 μm high gain and low polarization dependent gain SOA (Semiconductor Optical Amplifier) chip on carrier.
The SOA chip is mounted p-side up on a 1.1 $\times$ 2.0 mm AlN sub-mount.



FEATURES

- Optical gain
AA3T115CY: 18 dB / AA3T115FYB: 17 dB
- Operating temperature
AA3T115CY: 25°C / AA3T115FYB: 45°C
- Low power consumption: 0.18 W

APPLICATIONS

- Optical transceiver
- Preamplifier

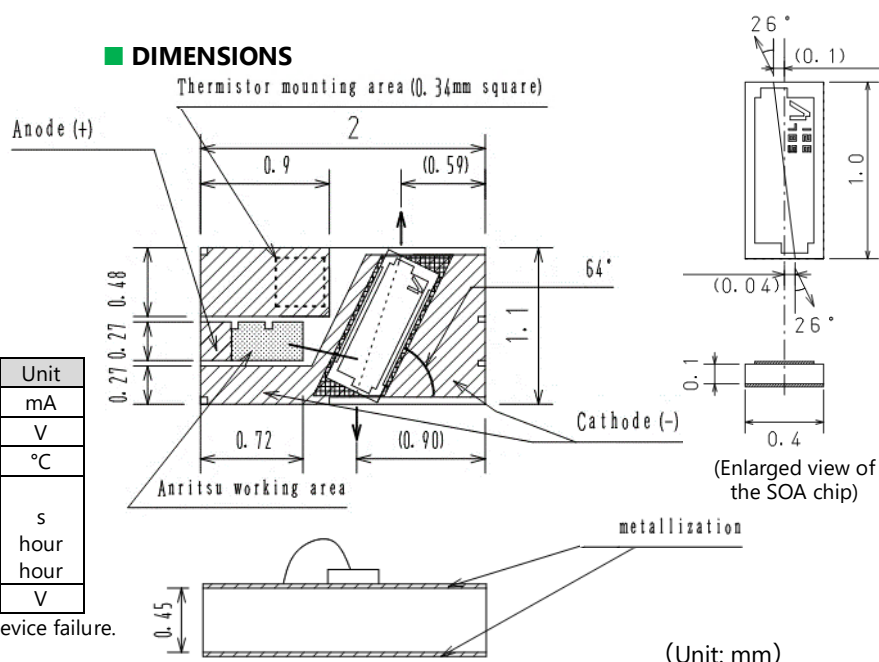
ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
SOA Forward Current	I_F	350	mA
SOA Reverse Voltage	V_R	2	V
Storage Temperature*1	T_{stg}	-40 to +85	°C
Process/Soldering Temp. vs Time			
300°C		< 20	s
200°C		< 2	hour
120°C		< 100	hour
ESD (Human Body Model)	ESD	500	V

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

*1 No Condensation

DIMENSIONS



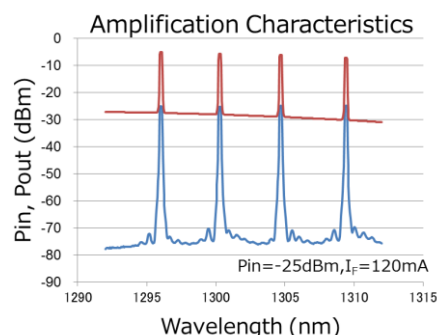
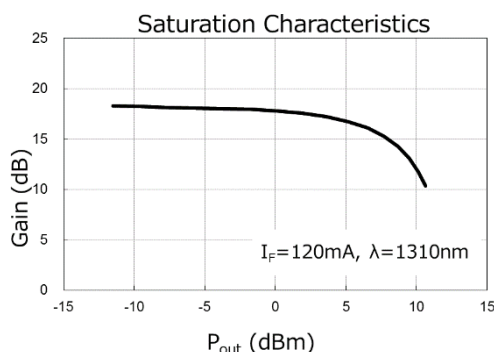
OPTICAL AND ELECTRICAL CHARACTERISTICS (AA3T115CY: $T_{sub} = 25^\circ\text{C}$, AA3T115FYB: $T_{sub} = 45^\circ\text{C}$)

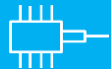
Item	Symbol	Test Condition	AA3T115CY			AA3T115FYB			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Optical Gain	G	$I_F = 120 \text{ mA}$, $\lambda_{in} = 1310 \text{ nm}$, $P_{in} = -25 \text{ dBm}$	—	18	—	16	17	22	dB
Polarization Dependent Gain	PDG	$I_F = 120 \text{ mA}$, $\lambda_{in} = 1310 \text{ nm}$, $P_{in} = -25 \text{ dBm}$	—	1.5	—	-1.5	1	1.5	dB
Saturation Power	P_S	$I_F = 120 \text{ mA}$, -3 dB, $\lambda_{in} = 1310 \text{ nm}$	—	7	—	7	8	10	dBm
Noise Figure	NF	$I_F = 120 \text{ mA}$, $\lambda_{in} = 1310 \text{ nm}$, $P_{in} = -25 \text{ dBm}$	—	7	—	6.5	7.5	8.5	dB
Beam Divergence Angle Lateral (Parallel)	θ_t	$I_F = 120 \text{ mA}$, FAHM	—	21	—	—	22	—	deg.
Beam Divergence Angle Transverse (Perpendicular)	θ_p	$I_F = 120 \text{ mA}$, FAHM	—	29	—	—	31	—	deg.
Output Power	P_{ASE}	$I_F = 120 \text{ mA}$	0.7	0.9	1.9	0.5	0.6	1.0	mW
Forward Voltage	V_F	$I_F = 120 \text{ mA}$	1.0	1.1	1.5	1.0	1.2	1.5	V

* The measured data may be different with these specifications depending on the measurement settings.

* Hermetic sealing is recommended for long term reliability.

TYPICAL CHARACTERISTICS

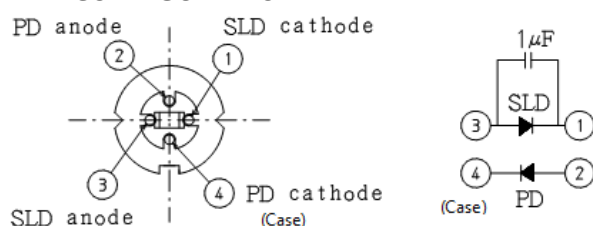


**0.8 μm SLD CAN****AS8K215GY30M**

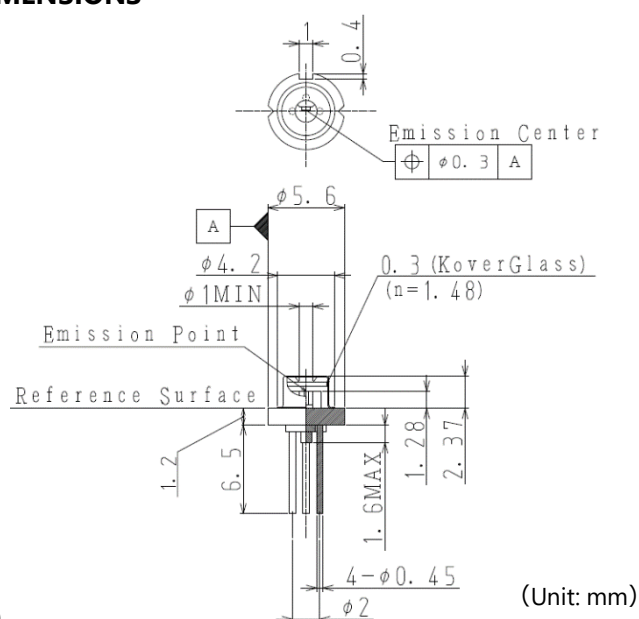
The AS8K215GY30M is SLD (Super-Luminescent Diode) developed as incoherent light sources for various optical measurements including Optical Coherent Tomography (OCT). The device emits wide spectral incoherent light. High intensity in a narrow radiation angle makes high-efficient optical coupling to a single mode fiber.

**FEATURES**

- $\Phi 5.6$ CAN package
- High optical output power: $P_O = 5 \text{ mW}$
- Wide spectral bandwidth: $\Delta\lambda = 15 \text{ nm typ.}$
- Built-in monitor photo diode

PIN CONFIGURATION**APPLICATIONS**

- Optical sensor / Optical encoder
- Optical Coherent Tomography (OCT)
- Optical measurement

DIMENSIONS

(Unit: mm)

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
SLD Reverse Voltage	V_R	2.0	V
Output Power	P_O	6	mW
SLD Forward Current	I_F	120	mA
PD Reverse Voltage	V_{RD}	15	V
Operating Case Temperature	T_C	-20 to 70	$^{\circ}\text{C}$
Storage Temperature ^{*1}	T_{stg}	-40 to 80	$^{\circ}\text{C}$

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

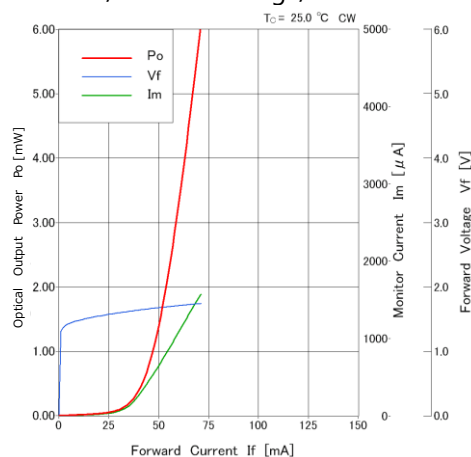
*1 : No Condensation

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$)

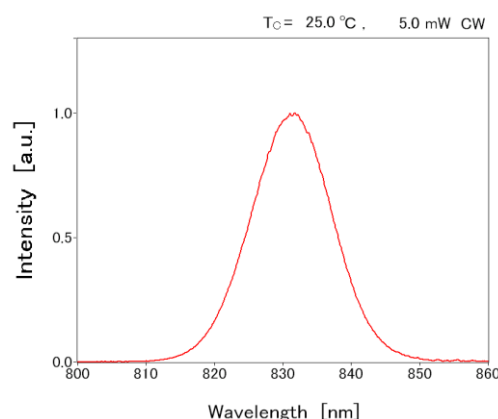
Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
SLD Forward Current	I_F	$P_O = 5 \text{ mW}$	-	70	100	mA
SLD Forward Voltage	V_F	$P_O = 5 \text{ mW}$	-	2.0	2.5	V
Center Wavelength	λ_C	$P_O = 5 \text{ mW}$	810	830	850	nm
Spectral Bandwidth	$\Delta\lambda$	$P_O = 5 \text{ mW}, -3\text{dB}$	10	15	-	nm
Spectral Modulation	M_d	$P_O = 5 \text{ mW}$	-	2	10	%
PD Monitor Current	I_m	$P_O = 5 \text{ mW}, V_{RD} = 5 \text{ V}$	0.2	1.5	2.2	mA
Parallel Beam Divergence	$\theta_{//}$	$P_O = 5 \text{ mW}$	-	15	-	deg.
Perpendicular Beam Divergence	$\theta_{\perp}$	$P_O = 5 \text{ mW}$	-	45	-	deg.

TYPICAL CHARACTERISTICS

Output Power/Forward Voltage/Monitor Current

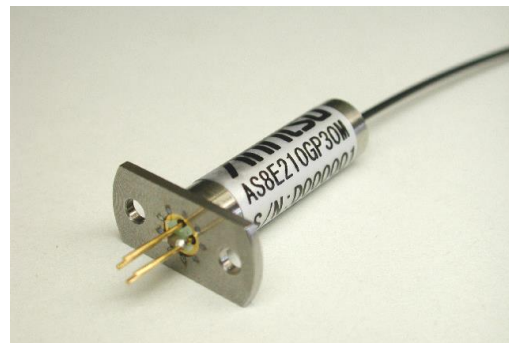


Emission Spectrum



0.8 μm SLD Cylindrical Module AS8E210GP30M

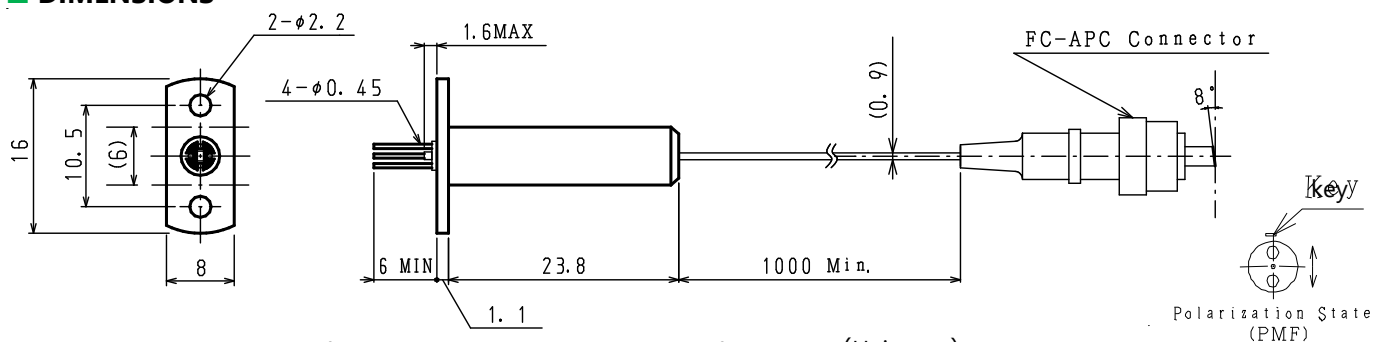
AS8E210GP30M is SLD (Super Luminescent Diode) module developed as incoherent and broad spectrum profile light sources for various optical measurements. The device emits incoherent light having wide spectral half width and high optical output power from PMF (polarization-maintaining fiber).



FEATURES

- PMF output
- Uncooled cylindrical type
- High optical output Power $P_f = 1 \text{ mW}$
- Wide spectral bandwidth $\Delta\lambda = 15 \text{ nm}$
- Built-in monitor photo diode

DIMENSIONS



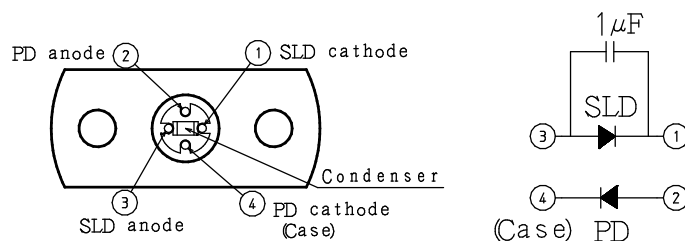
The polarization direction of the SLD is parallel to the slow axis of the PMF. (Unit: mm)

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Output Power	P_f	1.2	mW
SLD Forward Current	I_F	120	mA
SLD Reverse Voltage	V_R	2	V
PD Reverse Voltage	V_{RD}	15	V
Operating Case Temperature	T_C	-20 to +70	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-40 to +80	$^{\circ}\text{C}$

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

PIN CONFIGURATION

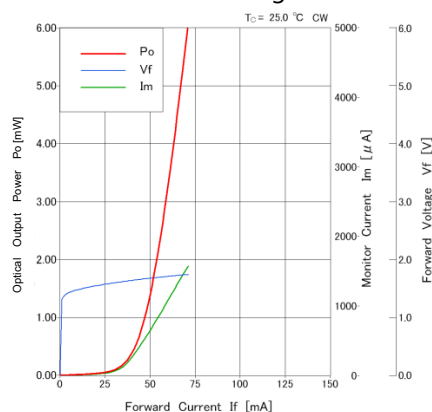


OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$)

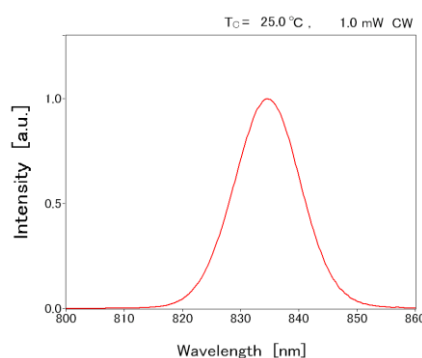
Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
SLD Forward Current	I_F	$P_f = 1 \text{ mW}$	—	70	100	mA
SLD Forward Voltage	V_F	$P_f = 1 \text{ mW}$	—	2.0	2.5	V
Center Wavelength	λ_C	$P_f = 1 \text{ mW}$	810	830	850	nm
Spectral Bandwidth	$\Delta\lambda$	$P_f = 1 \text{ mW}, -3\text{dB}$	10	15	—	nm
Spectral Modulation	M_d	$P_f = 1 \text{ mW}$	—	2	10	%
PD Monitor Current	I_m	$P_f = 1 \text{ mW}, V_{RD} = 5 \text{ V}$	0.2	1.5	—	μA
Tracking Error	ΔP_f	$I_m = \text{Const}, T_C = -20 \text{ to } +70^{\circ}\text{C}$	-2.0	—	2.0	dB

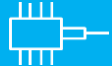
TYPICAL CHARACTERISTICS

Output Power/Forward Voltage/Monitor Current



Emission Spectrum



**0.8 μm SLD Module****AS8B115GT30M/AS8B115LT40MA**

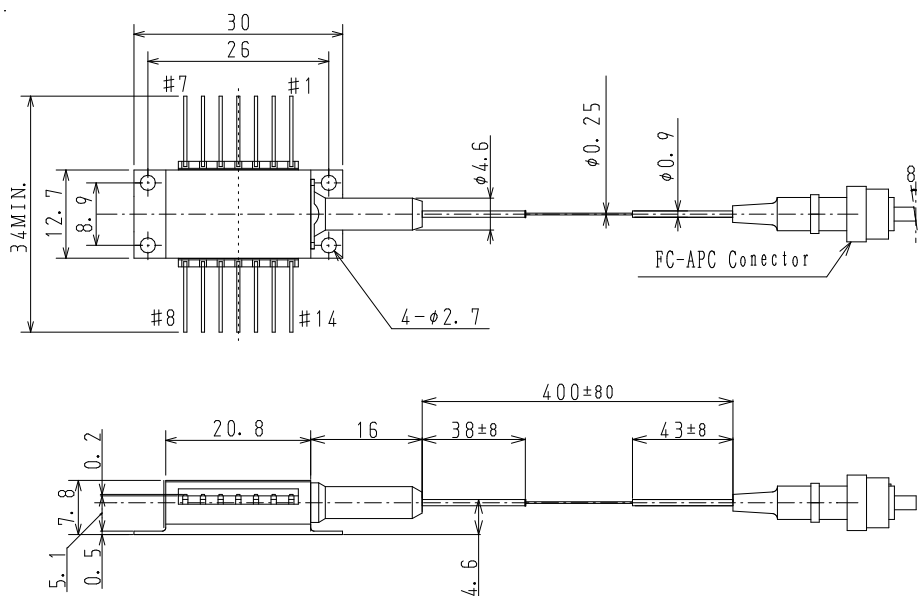
AS8B series is Super Luminescent Diode (SLD) modules developed as the light source of Optical Coherent Tomography (OCT) and the incoherent optical measurement equipment.

**FEATURES**

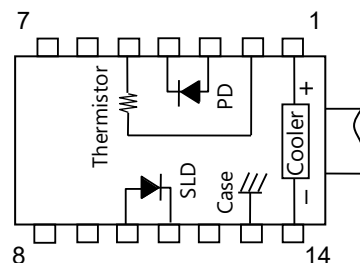
- Spectral bandwidth / Optical output power:
AS8B115GT30M 14 nm / 5 mW
AS8B115LT40MA 50 nm / 5 mW
- FC-APC connector
- Internal monitor PD and TEC (Thermo-electric cooler)

APPLICATIONS

- Optical Coherent Tomography (OCT)
- Light source of optical sensing system

DIMENSIONS**PIN CONFIGURATION/Top View**

No.	FUNCTION	No.	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	SLD Anode
4	PD Cathode	11	SLD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode

**ABSOLUTE MAXIMUM RATINGS**

Item	Symbol	Ratings		Unit
		AS8B115GT30M	AS8B115LT40MA	
Output Power	P_f	6.0	7.0	mW
SLD Forward Current	I_F	220	220	mA
SLD Reverse Voltage	V_R	2.0		V
PD Reverse Voltage	V_{RD}	20		V
Operating Case Temperature	T_C	-20 to +70		$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-40 to +85		$^{\circ}\text{C}$
Cooler Current	I_C	2.0		A

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

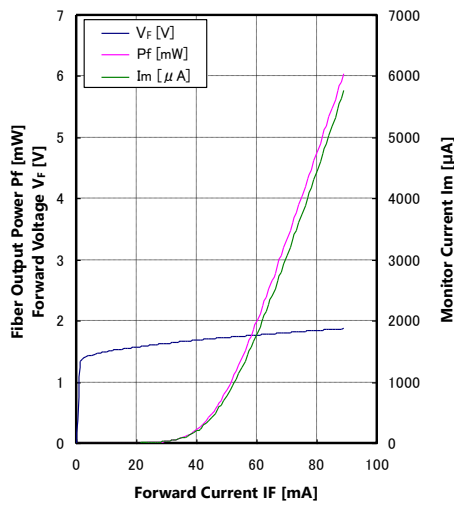
■ OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{SLD} = 25^{\circ}\text{C}$, $T_C = 25^{\circ}\text{C}$)

Item	Symbol	Test Condition	AS8B115GT30M			AS8B115LT40MA			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Optical Output Power	P_F	at Rated Power	5.0	—	—	5.0	—	—	mW
Forward Voltage	V_F	at Rated Power	—	2.0	2.5	—	2.0	2.5	V
Forward Current (BOL)	I_F	at Rated Power	—	—	150	—	150	180	mA
Center Wavelength	λ_C	at Rated Power	810	830	850	820	840	860	nm
Spectral Bandwidth	$\Delta\lambda$	at Rated Power, -3dB	10	14	—	45	50	—	nm
Monitor Current	I_m	at Rated Power, $V_{RD} = 5\text{ V}$	0.2	—	—	0.05	—	2.0	mA
Tracking Error	ΔP_F	$I_m = \text{const}$, $T_C = -20\text{ to }70^{\circ}\text{C}$	-1.0	—	1.0	-1.0	—	1.0	dB
Cooler Voltage	V_C	$I_F = \text{EOL}^*$, $T_C = 70^{\circ}\text{C}$	—	—	2.5	—	—	2.5	V
Cooler Current	I_C	$I_F = \text{EOL}^*$, $T_C = 70^{\circ}\text{C}$	—	—	1.0	—	—	1.0	A
Thermistor Resistance	R_{th}	$T_{LD} = 25^{\circ}\text{C}$, $B = 3900 \pm 100\text{ K}$	9.5	10.0	10.5	9.5	10.0	10.5	k Ω

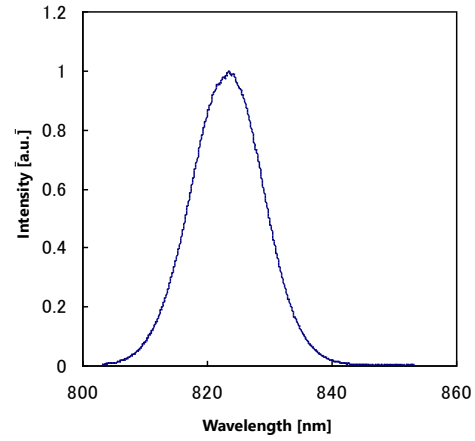
*1: EOL = BOL $\times$ 1.2

■ TYPICAL CHARACTERISTICS

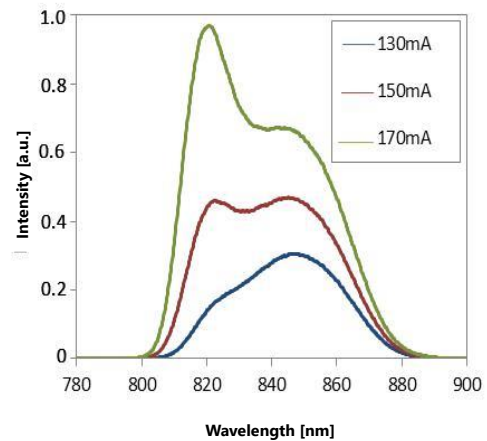
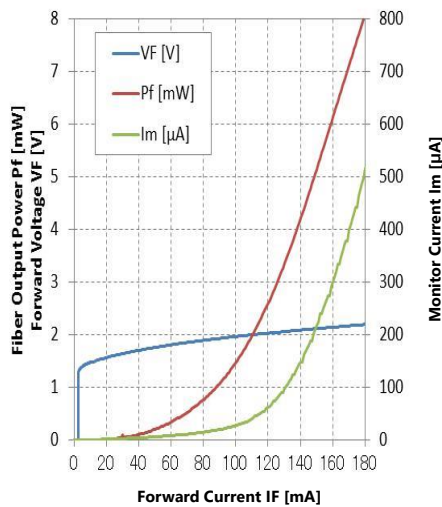
◆ Output Power/Forward Voltage/Monitor Current [AS8B115GT30M]

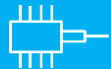


◆ Emission Spectrum



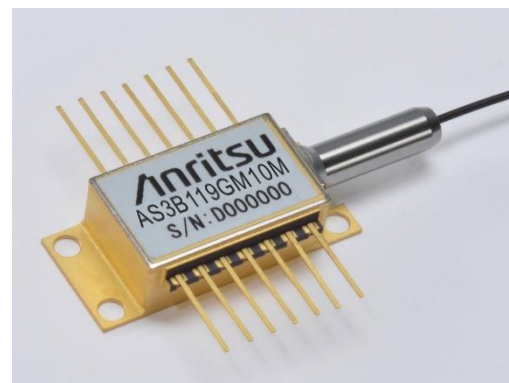
[AS8B115LT40MA]





1.31 μm /1.65 μm SLD Module AS3B119GM10M/AS6B118GM50M

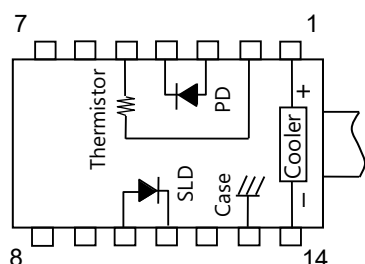
AS3B119GM10M/AS6B118GM50M is 1.31 μm /1.65 μm SLD (Super Luminescent Diode) module developed as incoherent light sources for various optical measurements. The device emits incoherent light having wide spectral half width and high output power from PMF (polarization-maintaining fiber).



FEATURES

- High optical output Power: 15 mW / ≤ 400 mA
- Wide Spectral bandwidth: $\Delta\lambda = 50$ nm (Min.)
- Built-in optical isolator
- Internal monitor PD and TEC

PIN CONFIGURATION/TOP VIEW

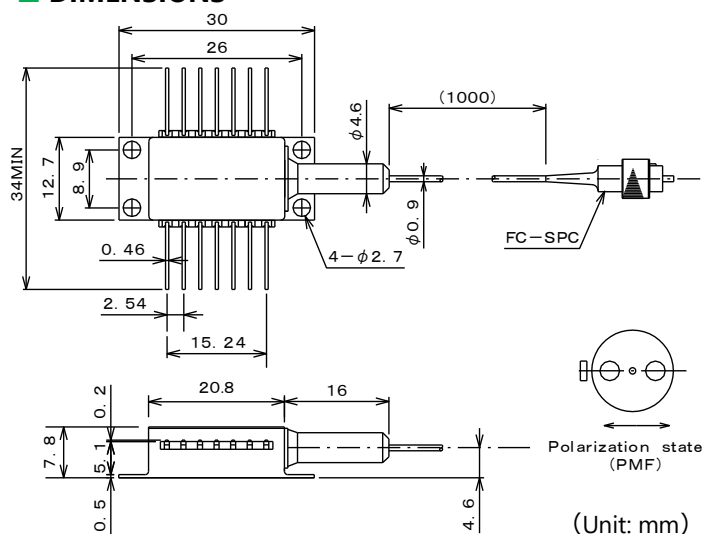


No.	FUNCTION	No.	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	SLD Anode
4	PD Cathode	11	SLD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode

APPLICATIONS

- Optical sensor
- Optical Coherent Tomography (OCT)
- Optical measurement

DIMENSIONS



The polarization direction of the SLD is parallel to the slow axis of the PMF.

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings		Unit
		AS3B119GM10M	AS6B118GM50M	
SLD Forward Current	I_F	480	420	mA
SLD Reverse Voltage	V_R	2.0		V
PD Forward Current	I_{FD}	10		mA
PD Reverse Voltage	V_{RD}	10		V
Operating Case Temperature	T_C	-20 to +75		$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-40 to +85		$^{\circ}\text{C}$
Cooler Current	I_C	2.0		A

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{SLD} = 25^{\circ}\text{C}$, $T_C = 25^{\circ}\text{C}$)

Item	Symbol	Test Condition	AS3B119GM10M			AS6B118GM50M			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Optical Output Power	P_f	—	15	—	—	10	—	—	mW
Forward Voltage	V_F	Rated Power	—	—	2.5	—	—	2.4	V
Forward Current(BOL)	I_F	Rated Power	—	—	400	—	—	500	mA
Center Wavelength	λ_C	Rated Power, -3 dB	1290	1310	1330	1530	1550	1570	nm
Spectral Bandwidth	$\Delta\lambda$	Rated Power, -3 dB	50	55	—	55	60	—	nm
Spectral Ripple	M	Rated Power, res = 0.1 nm	—	—	0.6	—	—	0.6	dB
Monitor Current	I_m	Rated Power, $V_{RD} = 5$ V	100	—	2000	400	—	2000	μA
PD Dark Current	I_d	$V_R = 5$ V	—	—	0.1	—	—	0.1	μA
Tracking Error	ΔP_i	$I_m = \text{const.}, T_C = -20$ to 70°C	-1.0	—	1.0	-1.0	—	1.0	dB
Cooler Voltage	V_C	$I_F = \text{EOL}^*, T_C = 70^{\circ}\text{C}$	—	—	2.5	—	—	2.5	V
Cooler Current	I_C	$I_F = \text{EOL}^*, T_C = 70^{\circ}\text{C}$	—	—	1.0	—	—	1.0	A
Thermistor Resistance	R_{th}	$T_{LD} = 25^{\circ}\text{C}, B = 3900 \pm 100$ K	9.5	10.0	10.5	9.5	10.0	10.5	k Ω
Isolation	R_o	$\lambda = 1310$ nm, $T_{SLD} = 25^{\circ}\text{C}$	—	30	—	—	30	—	dB

*1: EOL = BOL $\times$ 1.2

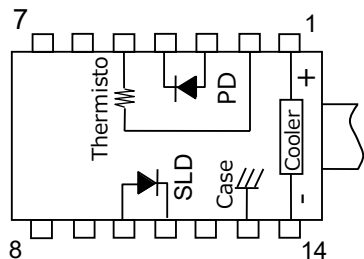
1.55 μm SLD Module AS5B310KM50M/AS5B320EM50M

AS5B310KM50M/AS5B320EM50M is 1.55 μm SLD (Super Luminescent Diode) module developed as incoherent light sources for various optical measurement. The device emits incoherent light having wide spectral half width and high output power from PMF (polarization-maintaining fiber).

FEATURES

- Center wavelength/Spectral bandwidth/
Output power (typ.):
AS5B310KM50M: 1.55 μm /60 nm/3 mW
AS5B320EM50M: 1.55 μm /55 nm/25 mW
- Built-in optical isolator
- Internal monitor PD and TEC

PIN CONFIGURATION/TOP VIEW



No.	FUNCTION	No.	FUNCTION
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	SLD Anode
4	PD Cathode	11	SLD Cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler Cathode

ABSOLUTE MAXIMUM RATINGS

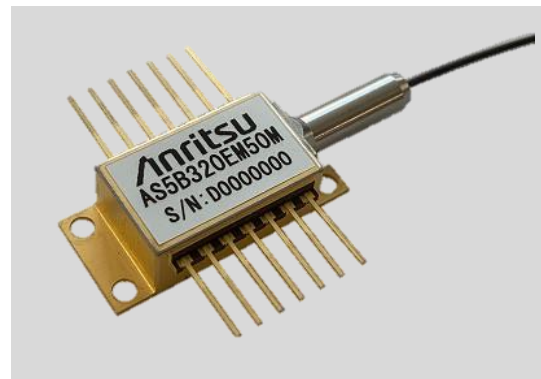
Item	Symbol	Ratings		Unit
		AS5B310KM50M	AS5B320EM50M	
SLD Forward Current	I_F	250	600	mA
SLD Reverse Voltage	V_R	2		V
PD Forward Current	I_{FD}	10		mA
PD Reverse Voltage	V_{RD}	10		V
Operating Case Temperature	T_C	-20 to +75		$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-40 to +85		$^{\circ}\text{C}$
Cooler Current	I_C	2		A

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{SLD}=25^{\circ}\text{C}$, $T_C=25^{\circ}\text{C}$)

Item	Symbol	Test Condition	AS5B310KM50M			AS5B320EM50M			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Forward Voltage	V_F	Rated Current	—	—	2.0	—	—	2.4	V
Output Power	P_F	Rated Current	1	3	—	20	25	—	mW
Center Wavelength	λ_C	Rated Current, -3 dB	1530	1550	1570	1530	1550	1570	nm
Spectral Bandwidth	$\Delta\lambda$	Rated Current, -3 dB	40	60	—	50	55	—	nm
Spectral Ripple	M	Rated Current, res = 0.1 nm	—	—	0.6	—	—	0.6	dB
Monitor Current	I_m	Rated Current, $V_{RD} = 5\text{ V}$	200	—	1500	400	—	2000	μA
PD Dark Current	I_d	$V_{RD} = 5\text{ V}$	—	—	0.1	—	—	0.1	μA
Tracking Error	ΔP_i	Rated Current, $T_C = -20\text{ to }75^{\circ}\text{C}$	-0.5	—	0.5	-0.5	—	0.5	dB
Cooler Voltage	V_C	Rated Current, $T_C = 75^{\circ}\text{C}$	—	—	3.5	—	—	3.5	V
Cooler Current	I_C	Rated Current, $T_C = 75^{\circ}\text{C}$	—	—	1.2	—	—	1.2	A
Thermistor Resistance	R_{th}	$T_{SLD} = 25^{\circ}\text{C}$, $B = 3900 \pm 100\text{ K}$	9.5	10	10.5	9.5	10	10.5	k Ω
Isolation	R_O	$\lambda = 1550\text{ nm}$, $T_{SLD} = 25^{\circ}\text{C}$	—	30	—	—	30	—	dB

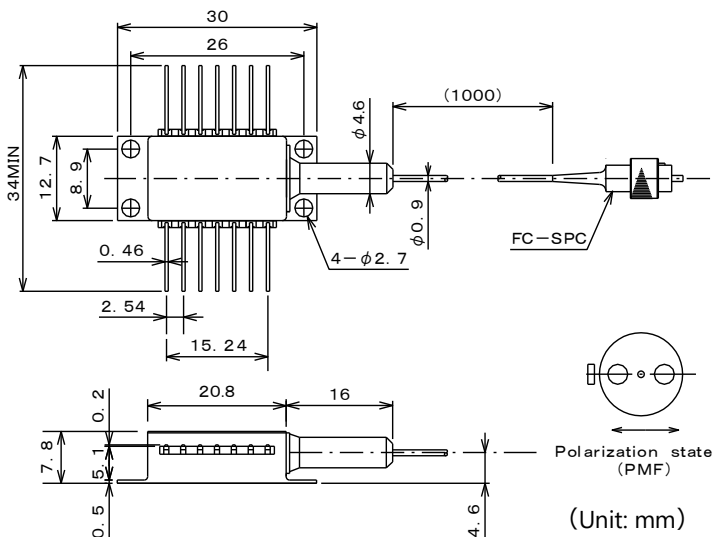
* Rated Current: AS5B310KM50M $I_F = 200\text{ mA}$, AS5B320EM50M $I_F = 500\text{ mA}$



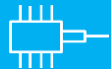
APPLICATIONS

- Optical fiber sensor
- Optical Coherent Tomography (OCT)
- Optical measurement

DIMENSIONS



The polarization direction of the SLD is parallel to the slow axis of the PMF.



SLD unit with Drive Circuits

AM8P8006SL45G

AM8P8006SL45G is 880 nm SLD unit with drive circuits developed as light sources for ophthalmology OCT. It has built in both SLD light source and drive circuits so that it is suitable for embedding.



FEATURES

- Center wavelength/Spectral bandwidth:
880 nm/50 nm
- Built in SLD source and drive circuits
- SMF output
- D-sub 9pins female connector

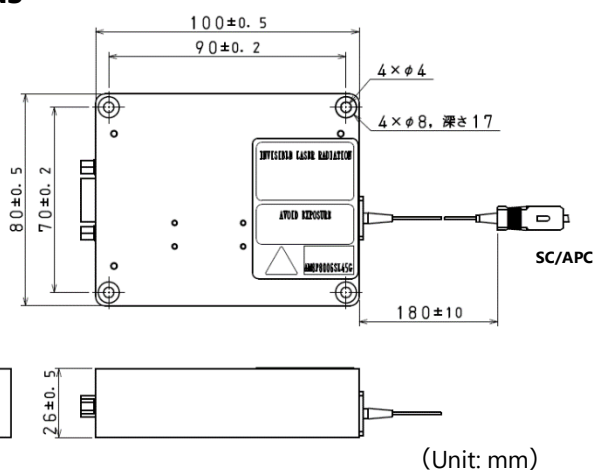
PIN CONFIGURATION

No.	FUNCTION	IN/OUT
1	+5 V DC	IN
2	N/C	–
3	SLD Enable	IN
4	Alarm	OUT
5	V _{set}	IN
6	GND	–
7	N/C	–
8	N/C	–
9	V _{PD}	OUT

APPLICATIONS

- Light source for ophthalmology OCT
- Optical measurement

DIMENSIONS



ABSOLUTE MAXIMUM RATINGS

Item	Ratings	Unit
Input Voltage (+5 V DC)	4.5 to 5.5	V
Input Voltage (V _{set})	2.75	V
Storage Temperature*1	-20 to +65	°C

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

*1 No Condensation

OPERATING CONDITIONS

Item	Min.	Max.	Unit
Input Voltage (+5 V DC)	4.75	5.25	V
Input Voltage (V _{set})	0	2.5	V
Operating Temperature*1	+10	+55	°C

*1 No Condensation

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_c=25°C)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Maximum optical output	P _{max}	V _{set} = 2.5 V	6.0	–	7.0	mW
Center Wavelength	λ _c	V _{set} = 2.5 V, -3dB	870	880	890	nm
Spectral Bandwidth	Δλ	V _{set} = 2.5 V, -3dB	45	50	–	nm
Supply current	–	Output P _{max} , +55°C	–	0.4	2.0	A
Power consumption	–	Output P _{max} , +55°C	–	2.0	10.0	W
Input voltage (V _{set})	V _{set}	Control P _{min} to P _{max}	0.0	–	2.5	V
V _{set} input impedance	–	–	5	–	–	kΩ
V _{PD} output (Open circuit voltage at output end)	V _{PD}	V _{PD} = 0 to 3 V (±0.3V) in P _f = P _{min} to P _{max}	0.0	–	3.3	V
V _{PD} output impedance	–	–	–	100	–	Ω
SLD Enable Signal TTL/High	V _H	V _H : SLD ON	3.80	–	–	V
SLD Enable Signal TTL/Low	V _L	V _L : SLD OFF	–	–	1.02	V

*Optical output or spectrum may be changed, due to the optical feedback.

*P_{min}: <0.1 mW, P_{max}: 6 to 7 mW

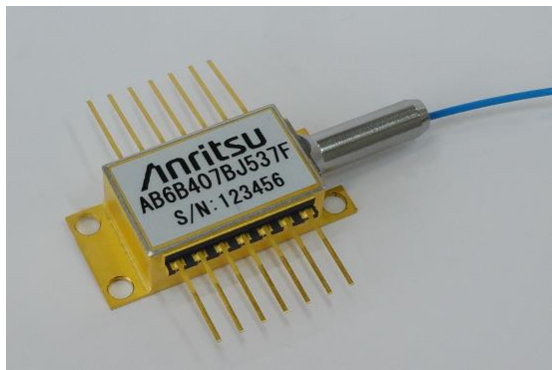
*Alarm: Abnormal = High, Normal = Low

*Please contact us, if any requests such as other center wavelength.

1.65 μm DFB LD Module

AB6B407BJ537F

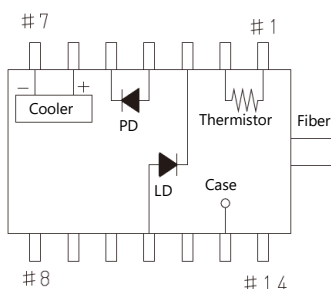
AB6B407BJ537F is 1.65 μm InGaAsP/InP distributed feedback (DFB) laser diodes developed as a light source for methane sensing.



FEATURES

- Output power: $\geq 10\text{ mW}$
- Built-in optical Isolator (30 dB)
- Internal monitor photodiode and Thermoelectric cooler
- SMF pigtail type ($\phi 0.9\text{ mm}$)

PIN CONFIGURATION/Top View

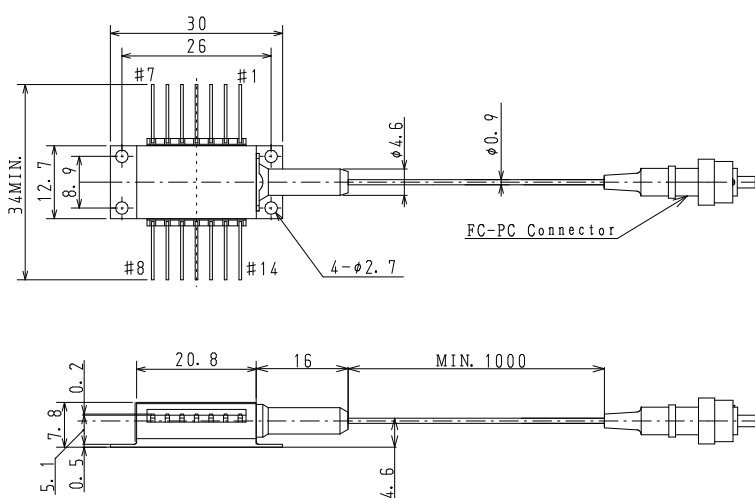


No.	FUNCTION	No.	FUNCTION
1	Thermistor	8	NC
2	Thermistor	9	NC
3	LD Cathode	10	NC
4	PD Anode	11	LD Anode
5	PD Cathode	12	NC
6	Cooler Anode	13	Case
7	Cooler Cathode	14	NC

APPLICATION

- Methane gas detection

DIMENSIONS



ABSOLUTE MAXIMUM RATINGS

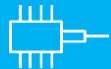
Item	Symbol	Ratings	Unit
LD Forward Current	I_F	150	mA
LD Reverse Voltage	V_R	2	V
PD Forward Current	I_{FD}	10	mA
PD Reverse Voltage	V_{RD}	10	V
Operating Case Temperature	T_C	-20 to 70	$^{\circ}\text{C}$
Storage Temperature*1	T_{stg}	-40 to 85	$^{\circ}\text{C}$
Cooler Current	I_C	2	A

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{LD}=25^{\circ}\text{C}$, $T_C=25^{\circ}\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 100\text{ mA}$	—	—	2.5	V
Threshold Current	I_{th}	—	—	10	25	mA
Output Power	P_f	$I_F = 100\text{ mA}$	7	10	—	mW
Peak Wavelength	λ_p	$I_F = 100\text{ mA}$	1652.7	1653.7	1654.7	nm
Side Mode Suppression Ratio	SMSR	$I_F = 100\text{ mA}$	33	40	—	dB
Spectral Linewidth	Δf	$I_F = 100\text{ mA}$	—	3	15	MHz
PD Dark Current	I_d	$V_{RD} = 5\text{ V}$	—	—	0.1	μA
Tracking Error	ΔP_f	$I_m = \text{const}$, $T_C = -20\text{ to }70^{\circ}\text{C}$	—	—	0.5	dB
Cooler Voltage	V_C	$I_F = 100\text{ mA}$, $T_C = 70^{\circ}\text{C}$	—	—	2.5	V
Cooler Current	I_C	$I_F = 100\text{ mA}$, $T_C = 70^{\circ}\text{C}$	—	—	1	A
Thermistor Resistance	R_{th}	$T_{LD} = 25^{\circ}\text{C}$, $B = 3900 \pm 100\text{ K}$	9.5	10	10.5	$\text{k}\Omega$
Isolation	R_o	$\lambda = 1650\text{ nm}$	—	30	—	dB
Current dependency of peak wavelength	$d\lambda/dI$	$I_F = 100\text{ mA}$	—	0.009	—	nm/mA
Temperature dependency of peak wavelength	$d\lambda/dT$	$I_F = 100\text{ mA}$	—	0.09	—	nm/ $^{\circ}\text{C}$

(Unit: mm)



Wavelength Swept Light Source

AQA5500P/AQB5500P

AQA5500P/AQB5500P Wavelength Swept Light Source outputs single-longitudinal-mode laser light that wavelength is swept phase-continuously without mode hopping. Since the output light with narrow line width has high coherence, it is suitable for optical interferometry-based dimensional metrology for precise and wide distance range measurement.



FEATURES

- 1550 nm-band swept laser without mode hopping
- Coherence length of more than 100 m
- Wavelength sweep width setting via USB from PC
- Wavelength trigger position setting via USB from PC

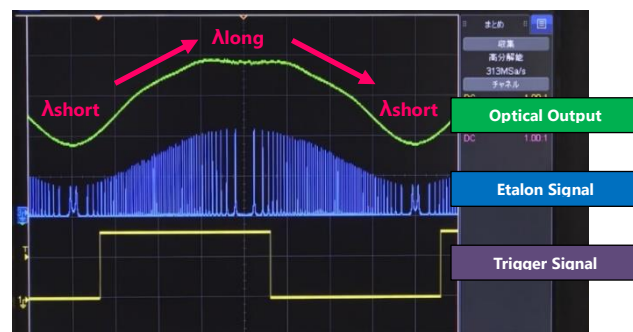
APPLICATIONS

- Precision dimensional metrology using optical interferometry
 - OCT for internal structure measurement
 - Temperature, strain, deformation, and vibration measurement
 - Inspecting optical-device wavelength characteristics
- ※OCT: Optical Coherence Tomography

Wavelength Swept Optical Output

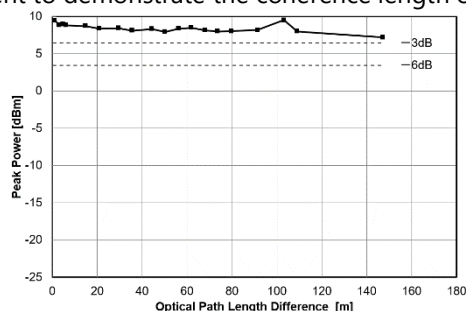
The output wavelength of this light source changes sinusoidally over time. The optical output changes periodically according to the wavelength sweep as indicated by green waveform. The wavelength changes from the short-wavelength end λ_{short} to the long-wavelength end λ_{long} in the half period and then returns to λ_{short} in the remaining half period as shown by the red arrows.

Blue and yellow waveforms are the etalon signal and the trigger-signal that output on the front panel. They can be used for wavelength calibration or as a reference signal when connecting external equipment.

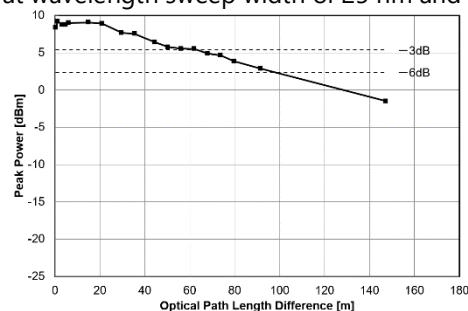


Output Light Coherence Length

The following graphs show the FFT spectrum peak power versus the optical path length difference at interferometry measurement to demonstrate the coherence length of the AQB5500P at wavelength sweep width of 25 nm and 50 nm.



(a) Wavelength Sweep Width 25 nm



(b) Wavelength Sweep Width 50 nm

OPTICAL AND ELECTRICAL CHARACTERISTICS

Item	AQA5500P	AQB5500P	Remarks
Optical Connector	FC/APC		Internal optical fiber: Single Mode Fiber (SMF)
Oscillation Mode	Single longitudinal and mode-hop-free		Monitoring range: approximately 70% of wavelength sweep range centered on the sweep center wavelength.
Optical Output Wavelength Change Method	Sinusoidal		—
Center Wavelength	1550 ± 5 nm		AQA5500P: at 110 nm sweep AQB5500P: at 70 nm sweep
Wavelength Sweep Range	30 to 110 nm	15 to 70 nm	Wavelength sweep setting resolution: 1 pm
Sweep Frequency	1250 ± 50 Hz	150 ± 20 Hz	Not adjustable
Average Optical Output	≥ 10 mW		CW Output: Class1 ^{*1}
Trigger Signal Output	LVTTTL		Interface: SMA
Etalon Signal Output	Analog signal		Trigger signal output setting resolution: 1 pm
Power Supply	DC +12 ± 0.5 V		Interface: SMA
Control Interface	USB 2.0 (type mini-B)		—
Dimensions	137.4 (W) × 131.4 (H) × 219.4 (D) mm		Excluding protrusions
Mass	< 2.0 kg		—
Operating Conditions	Temperature: 0 to 50°C, Relative Humidity: ≤85%		No condensation
Storage Environment	Temperature: -20 to 60°C, Relative Humidity: ≤95%		No condensation or icing

* About 30-minutes warmup

*1: This product complies with the IEC 60825-1:2014, 21 CFR1040.10, and 1040.11 laser safety regulations.

Wavelength Swept Light Source

AQA5500D/AQB5500D

AQA5500D/AQB5500D Wavelength Swept Light Source outputs single-longitudinal-mode laser light that wavelength is swept phase-continuously without mode hopping. The compact, lightweight assembly with built-in light-source has the same performance as the bench-top AQA5500P/AQB5500P models.



FEATURES

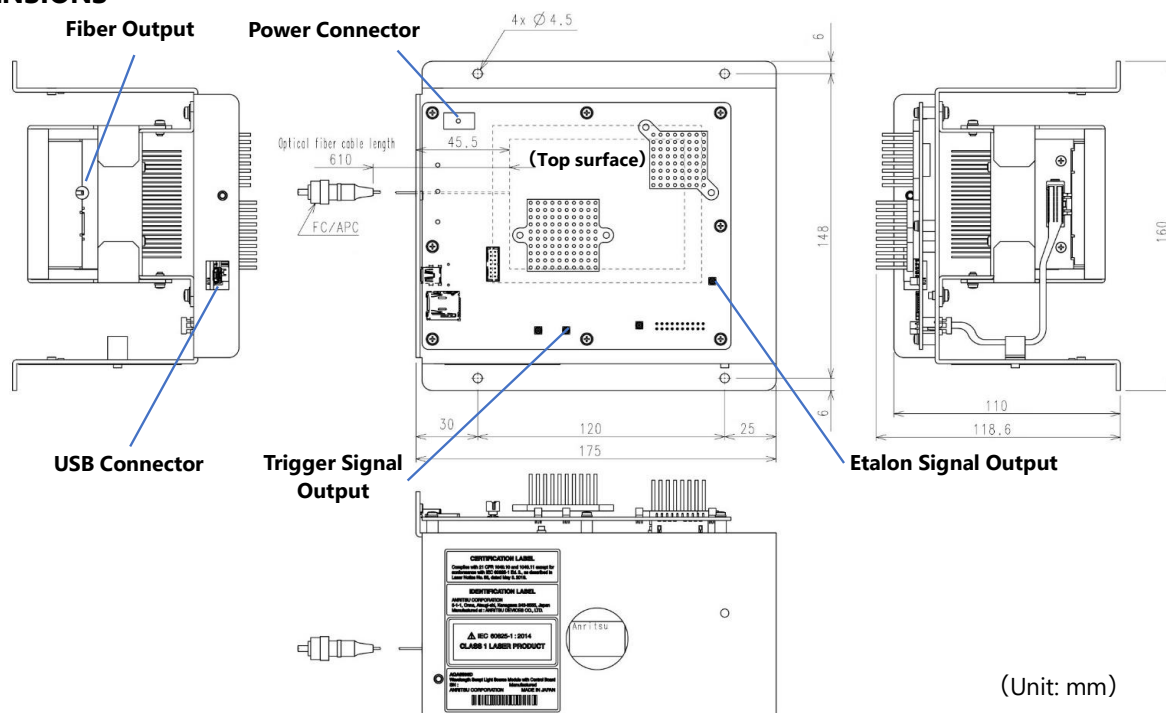
- 1550 nm-band swept laser without mode hopping
- Compact, lightweight assembly
- Sweep frequency: 1250 Hz/150 Hz
- Wavelength sweep setting width via USB from PC
- Wavelength trigger position setting via USB from PC

APPLICATIONS

- Precision dimensional metrology using optical interferometry
- Incorporation into OCT system
- Temperature, strain, deformation, and vibration measurement
- Inspecting optical-device wavelength characteristics

※OCT: Optical Coherence Tomography

DIMENSIONS



(Unit: mm)

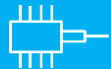
OPTICAL AND ELECTRICAL CHARACTERISTICS

Item	AQA5500D	AQB5500D	Remarks
Optical Connector	FC/APC		Internal optical fiber: SMF
Optical Fiber Length	610 ± 50 mm		—
Oscillation Mode	Single longitudinal and mode-hop-free		Monitoring range: approximately 70% of wavelength sweep range centered on sweep center wavelength
Optical Output Wavelength Change Method	Sinusoidal		—
Center Wavelength	1550 ± 5 nm		AQA5500D: at 110 nm sweep
Wavelength Sweep Range	30 to 110 nm	15 to 70 nm	Wavelength sweep setting resolution: 1 pm
Sweep Frequency	1250 ± 50 Hz	150 ± 20 Hz	Not adjustable
Average Optical Output	≥ 10 mW		Not adjustable
Trigger Signal Output	LVTTTL		CW Output: Class 1 ^{*1}
Etalon Signal Output	Analog		Interface: MMCX-R-PC (40)
Power Supply	+12 ± 0.5 V, max. current consumption: 3.2 A		Trigger signal output setting resolution: 1 pm
Control Interface	USB 2.0 (type: mini-B)		Interface: MMCX-R-PC (40)
Dimensions	160 (W) × 118.6 (H) × 175 (D) mm		Interface: B4P-VH-B (LF) (SN)
Mass	< 1.0 kg		—
Operating Conditions	Temperature: 0 to 50°C, Relative Humidity: ≤85%		No condensation, requires air-cooling ^{*2}
Storage Environment	Temperature: -20 to +60°C, Relative Humidity: ≤95 %		No condensation or icing

* About 30-minutes warmup

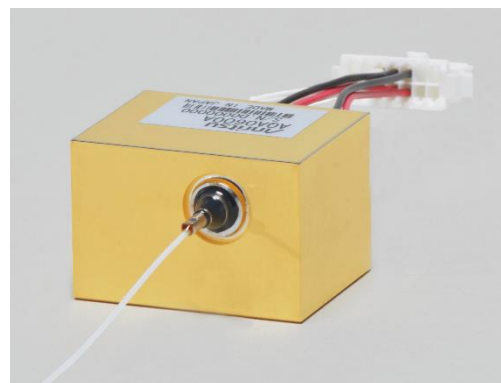
*1: This product complies with the IEC 60825-1:2014, 21 CFR1040.10, and 1040.11 laser safety regulations

*2: To keep the light source module and control boards in the nominal operating temperature range, use air cooling/conditioning matching the usage environment (recommended airflow of 2 m/s in +50°C operating environment)



Wavelength Swept Light Source AQA0600A

AQA0600A Wavelength Swept Light Source outputs single-longitudinal-mode laser light that is continuously wavelength phase-swept without mode hopping. This modular light source is built into a 40 × 27 × 31.6 mm metal package.



FEATURES

- 1060 nm-band swept laser
- Built-in type, compact and lightweight
- Sweep frequency: 1250 Hz, sinusoidal
- Wavelength sweep range: 30 nm
- Average optical output: ≥10 mW

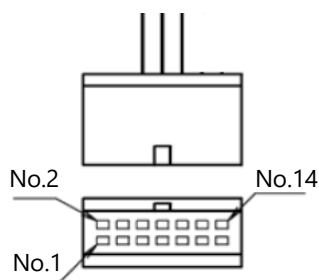
APPLICATIONS

- OCT for internal structure measurement
- Integration into fiber sensing equipment
- Integration into bio-imaging equipment

※OCT: Optical Coherence Tomography

PIN CONFIGURATION

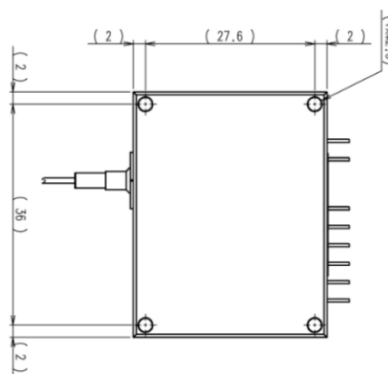
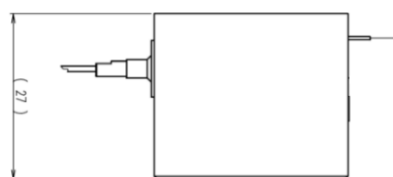
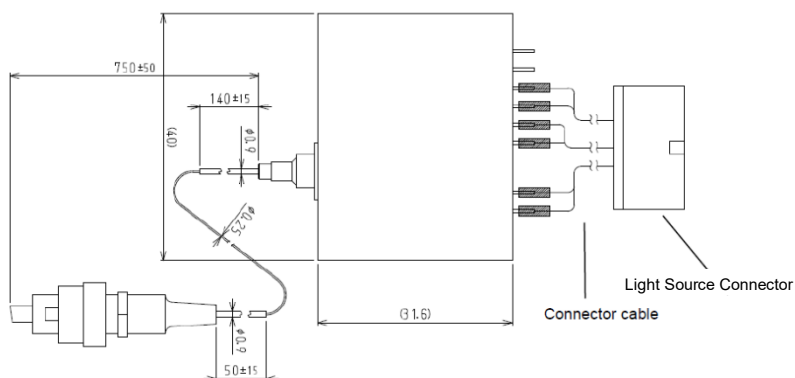
Light Source Connector



DF1B-14DES-2.5RC

No.	FUNCTION	No.	FUNCTION
1	NC	8	LD Cathode
2	NC	9	Thermistor
3	NC	10	Thermistor
4	NC	11	NC
5	MEMS Coil	12	NC
6	MEMS Coil	13	NC
7	LD Anode	14	NC

DIMENSIONS



(Unit: mm)

■ ABSOLUTE MAXIMUM RATINGS ($T_{th} = 25^{\circ}\text{C}$)

Item	Symbol	Ratings	Unit
LD Forward Current	I_F	180	mA
LD Reverse Voltage	V_R	2	V
MEMS Driving Coil Application Signal	—	Wavelength sweep width should not exceed 32.5 nm	—
Operating Thermistor Temperature ^{*1}	T_{th}	+20 to +30	$^{\circ}\text{C}$
Storage Temperature ^{*2}	T_{stg}	-20 to +60	$^{\circ}\text{C}$

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

*1: Relative Humidity: $\leq 85\%$, No condensation

*2: Relative Humidity: $\leq 95\%$, No condensation

■ OPTICAL AND ELECTRICAL CHARACTERISTICS

Item	Symbol	Test Condition	仕様	Unit
Optical Connector	—	—	FC/APC	—
Optical Fiber Length	—	SMF	750 ± 50	mm
Oscillation Mode	—	—	Single longitudinal and mode-hop-free	—
Optical Output Wavelength Change Method	—	—	Sinusoidal	—
Center Wavelength	λ_c	At 30 nm sweep	1060 ± 5	nm
Wavelength Sweep Range	—	—	30	nm
Sweep Frequency ^{*3}	—	—	1250 ± 50	Hz
Average Optical Output	P_f	—	$\geq 10^{-4}$	mW
Light Source Connector	—	—	HIROSE; DF1B-14DES-2.5RC	—
Connector Cable Length	—	—	60 ± 10	mm
Thermistor Resistance	R_{th}	$T_{th} = 25^{\circ}\text{C}$, $B = 3450 \text{ K} \pm 2\%$	$9.8 \leq R_{th} \leq 11.7$	$\text{k}\Omega$
MEMS Coil Resistor	—	—	7 ± 2	Ω
Dimensions ^{*5}	—	Excluding protrusions	$40 \text{ (W)} \times 27 \text{ (H)} \times 31.6 \text{ (D)}$	mm
Mass	—	—	< 200	g

*3: The sweep frequency depends on the mechanical oscillation frequency of the MEMS device built into the wavelength swept light source and cannot be adjusted by the user.

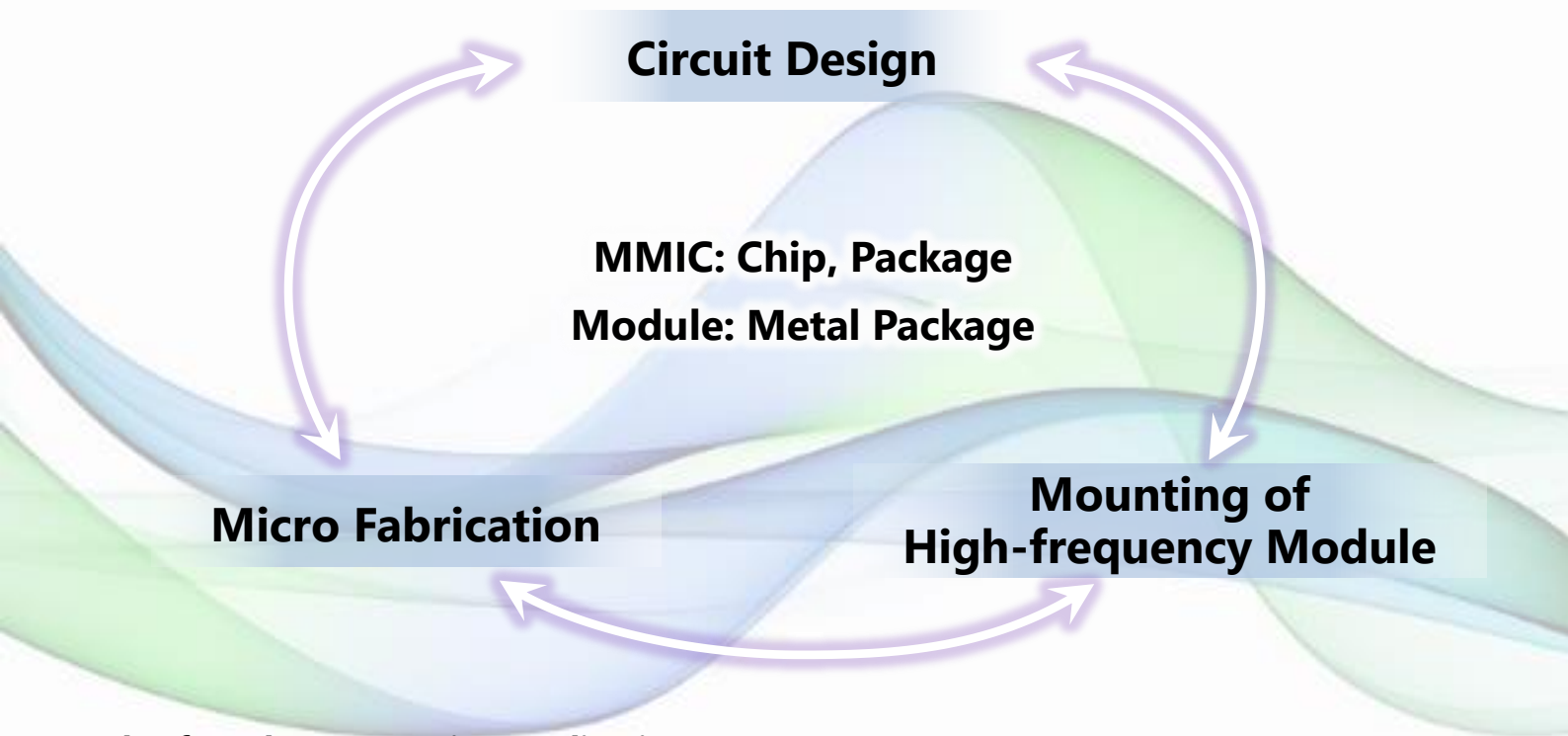
Do not use a drive signal outside the 1250 ± 50 Hz frequency range of the MEMS device, otherwise it may be damaged.

*4: The AQA0600A (this product) is designed as a component for use in customers' electronic products. As a result, it is excluded from 21 CFR 1040.10 compliance.

*5: This product is mounted using four M2.5 bolts in the bottom face. Use a torque driver to tighten these bolts to 0.07 to 0.08 N-m.

■ Ultrafast Electron Devices

Anritsu's high-speed electronic devices are characterized by heterojunction bipolar transistors on compound semiconductor substrates, such as indium phosphide and gallium arsenide. This enables operation at much faster speeds than typical silicon semiconductors and can be used in the next generation of optical communications. We have our own dedicated clean rooms, production facilities and inspection equipment for the integrated production of various driver amplifiers, filters, optical receivers and other products. Our packages range from IC chips to module-type metal packages, and we can satisfy most customers' requirements.



Ultrafast Electron Device Application



Telecommunication

- Wideband Linear Amplifier**
 - 120 Gbaud Wideband Linear Amplifier
 - 56 Gbaud Differential Linear Amplifier
- Optical Receiver**
 - 56 Gbaud Wideband OE Converter
- Power Divider**



Measurement

- Filter**
 - Bessel Filter
- Optical Receiver**
 - 56 Gbaud Wideband OE Converter
- Power Divider**

List of Ultrafast Electron Devices Products

MMIC

Product Name	Series/Model Number	Page	Operating Range	Features
56 Gbaud Differential Linear Amplifier	AG5PB6P	32	56 Gbaud	Linear differential output voltage: 3.0 V _{p-p} Gain control range: -12 dB to +15 dB

Amplifier

Product Name	Series/Model Number	Page	Operating Range	Features
120 Gbaud Wideband Linear Amplifier	AH15199A	34	120 Gbaud	Linear output: 2.0 V _{p-p} typ. Wideband: 200 kHz to 1050 GHz
56 Gbaud Differential Linear Amplifier	AH54192A	36	56 Gbaud	Differential output: 4.0 V _{p-p} (diff) typ. Wideband: 100 kHz to 40 GHz

Optical Receiver

Product Name	Series/Model Number	Page	Operating Range	Features
56 Gbaud Wideband OE Converter	AD44198A	38	30 kHz to 45 GHz	Wideband: 30 kHz to 45 GHz Responsivity: 0.7 A/W

Filter

Product Name	Series/Model Number	Page	Operating Range	Features
Bessel Filter	AN14165A/B/C	42	f ₀ : 1.6 GHz	Low reflection, Low group delay deviation, Metal PKG with K-connectors
	AN14166A/B/C		f ₀ : 3.2 GHz	
	AN14167A/B/C		f ₀ : 7.5 GHz	
	AN44168A/B/C		f ₀ : 30 GHz	Low reflection, Low group delay deviation Metal PKG with V-connectors
	AN44169A/B/C		f ₀ : 35 GHz	
	AN44170A/B/C		f ₀ : 40 GHz	

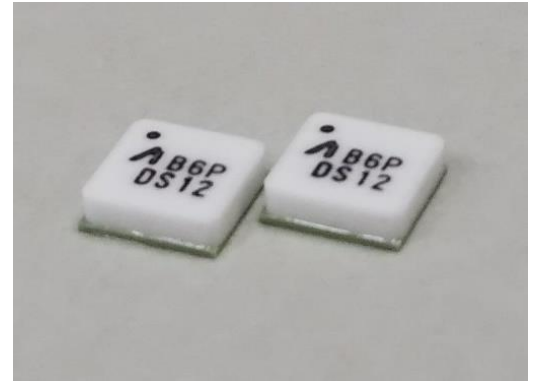
Power Divider

Product Name	Series/Model Number	Page	Operating Range	Features
4-Way Power Divider	AN44182A	–	DC to 40 GHz	Insertion loss: 12 dB typ, Skew Between the channels: <3 ps
Low Reflection 4-Way Power Divider	AN44187A	44	DC to 40 GHz	Low reflection: > 15 dB, Insertion loss: 12 dB typ, Skew Between the channels: <3 ps



56 Gbaud Differential Linear Amplifier AG5PB6P

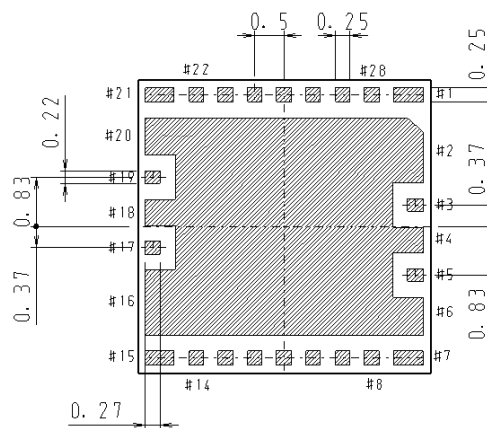
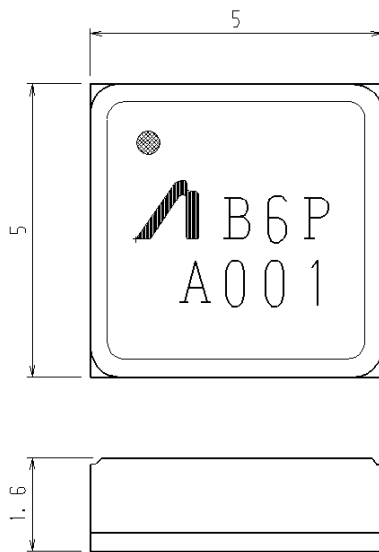
AG5PB6P is a compact package and lower power consumption supporting high-density mounting for multilane signal applications. It is ideal for applications such as use as a test signal source and as an optical modulator driver signal.



FEATURES

- Operating baud-rate: up to 56 Gbaud
- Linear differential output voltage: 3.0 V_{p-p}(diff.)
- Gain control range: -12 dB to +15 dB
- Peaking control range: 15 dB
- Power consumption: 1.8 W typ.
- I/O interface : Differential
- 28pin QFN Package: 5 mm × 5 mm × 1.6 mm
- Input/Output DC block capacitors included

DIMENSIONS



(Unit: mm)

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Input Voltage (single-ended input voltage to each input port (IN/INb))	V _{IN}	1.0	V _{p-p}
Supply Voltage	V _{CC1}	-0.5 to 6.0	V
	V _{CC2}	-0.5 to 5.0	
	V _T	-0.5 to 7.5	
Output Amplitude Control Bias	V _{amp}	-0.5 to 2.5	V
Gain/Peaking Control Bias	V _{gG}	-1.5 to 7.0	V
	V _{gP}	-1.5 to 7.0	
Current Source Bias	V _{CSG}	-0.5 to 5.0	V
	V _{CSP}	-0.5 to 5.0	
Input DC Voltage	V _{INDC}	-7.0 to 10.0	V
Output DC Voltage	V _{OUTDC}	-4.0 to 10.0	V
Operating Case Temperature*1	T _C	5 to 85	°C
Storage Temperature *1	T _{stg}	-40 to 90	°C

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

*1: No Condensation

RECOMMENDED CONDITIONS

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Voltage	V _{CC1}	—	—	4.7	—	V
	V _{CC2}	—	—	4.0	—	
	V _T	—	—	6.2	—	
Output Amplitude Control Bias	V _{amp}	—	0.0	2.0	2.2	V
Gain/peaking Control Bias	V _{gG}	—	0.9	—	5.0	V
	V _{gP}	—	-1.0	—	5.0	
Current Source Bias	V _{CSG}	—	0.0	4.0	—	V
	V _{CSP}	—	0.0	4.2	—	
Differential Input Signal Level	V _{in}	—	—	—	0.8	V _{p-p} (diff)
Input/Output Interface	AC coupled (DC block capacitors are included in PKG)					
Operating Case Temperature	T _C	PKG Backside	5	—	50	°C

ELECTRICAL CHARACTERISTICS

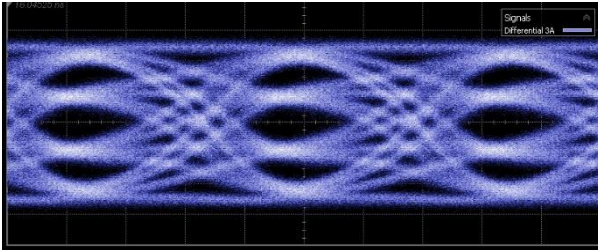
($T_c = 25^\circ\text{C}$, $V_{CC1} = 4.7\text{ V}$, $V_{CC2} = 4.0\text{ V}$, $V_T = 6.2\text{ V}$, $V_{CSG} = 4.0\text{ V}$, $V_{CSP} = 0.0\text{ V}$, $Z_{in} = 50\ \Omega$, $Z_{out} = 50\ \Omega$)

Item	Test Condition	Min.	Typ.	Max.	Unit
Baud Rate	—	—	56	—	Gbaud
Differential Output Voltage	$V_{gG} = 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	—	3.0	—	$V_{p-p}(\text{diff})$
Gain Control Range (@1 GHz)	$V_{gG} = 0\text{ V to } 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	-5	—	15	dB
	$V_{gG} = 0\text{ V to } 5.0\text{ V}$, $V_{amp} = 0.0\text{ V}$	-12	—	5	dB
Peaking Control Range (SDD21@43 GHz/SDD21@1 GHz)	$V_{gG} = 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	—	15	—	dB
	$V_{CSP} = 4.2\text{ V}$, $V_{CSG} = 0.0\text{ V}$	—	—	—	—
Bandwidth	-3 dB (low end) $V_{gG} = 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	—	250	—	kHz
	-3 dB (high end) $V_{gG} = 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	—	45	—	GHz
Input Return Loss (40 MHz to 20 GHz)	$V_{gG} = 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	—	10	—	dB
Output Return Loss (40 MHz to 20 GHz)	$V_{gG} = 5.0\text{ V}$, $V_{amp} = 2.0\text{ V}$	—	10	—	dB
Temperature Monitor Thermistor Resistance	$T_c = 25^\circ\text{C}$ $B = 3930 \pm 50\text{ K}$	9.5	10	10.5	k Ω

ELECTRICAL CHARACTERISTICS

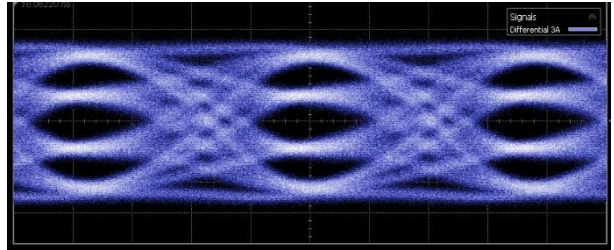
Typical output waveform (at maximum gain)

56 Gbaud PAM4



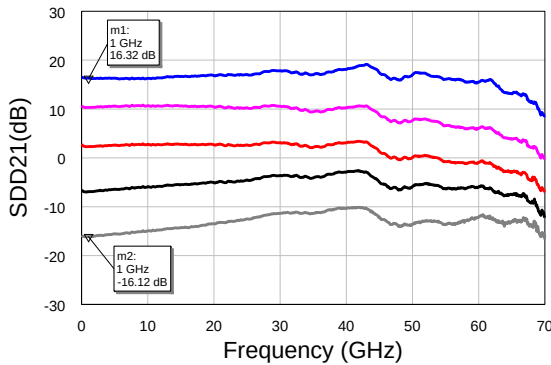
V_{out} : 3.05 $V_{p-p}(\text{diff})$ Linearity: 0.89

53 Gbaud PAM4

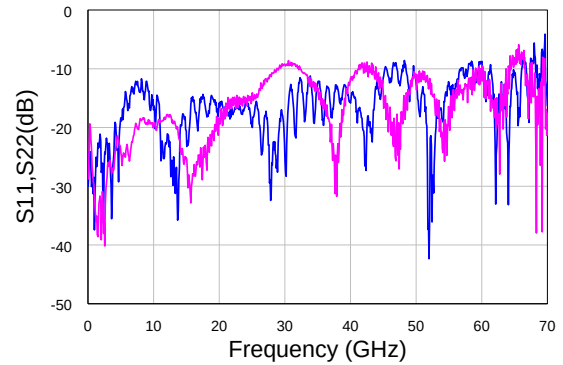


V_{out} : 2.99 $V_{p-p}(\text{diff})$ Linearity: 0.91

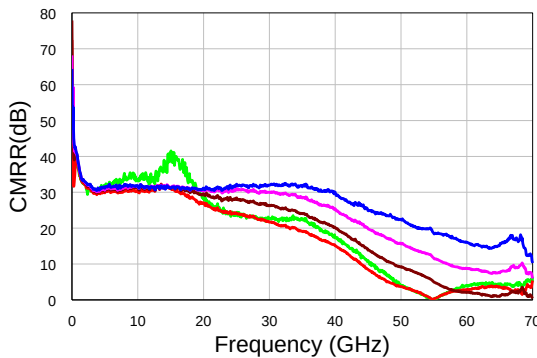
FREQUENCY RESPONSE



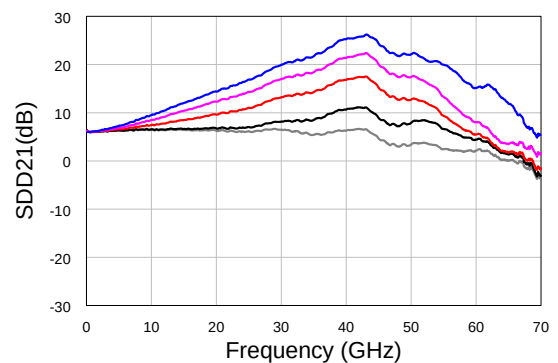
Differential mode gain at adjusting gain (SDD21)



Reflection characteristics at maximum gain
(Red line: S11, Blue line: S22)



CMRR at adjusting gain



Differential mode gain during peaking adjustment
(SDD21)



120 Gbaud Wideband Linear Amplifier AH15199A

AH15199A is a 120 Gbaud wideband linear amplifier with a bandwidth of ≥ 100 GHz and a linear output amplitude of ≥ 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 optical communications and high-frequency test equipment for.



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 × 18 mm × 18 mm
- Standard accessory with dedicated power supply – AH15199A-01

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

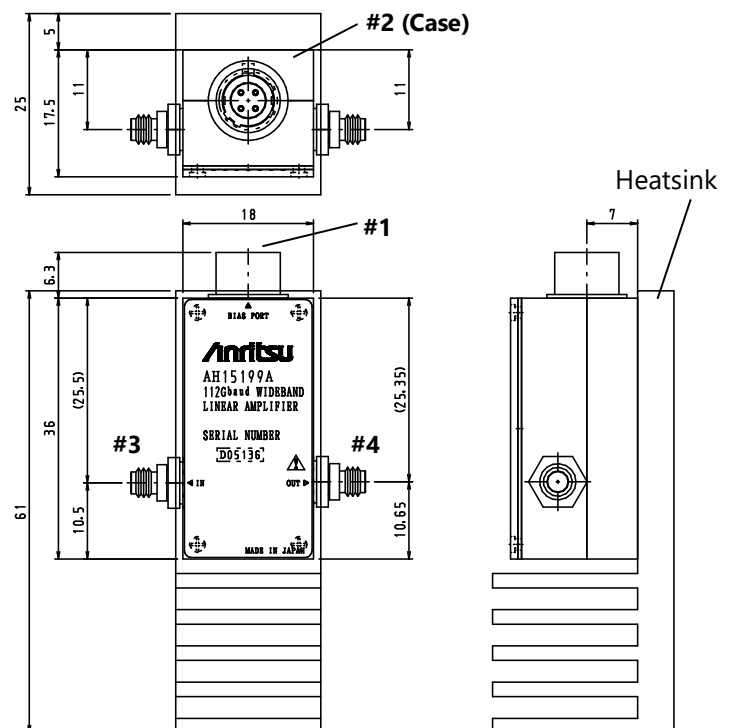
*Excess over the absolute maximum ratings may cause device failure.

*1: No Condensation

APPLICATIONS

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

DIMENSIONS



(Unit: mm)

ELECTRICAL CHARACTERISTICS (T_a=25°C, Z_{in}=50 Ω, Z_{out}=50 Ω)

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	–	dB
Output Return Loss	< 35 GHz	10	18	–	dB
	< 65 GHz	5	12	–	dB
Output Polarity	–	Inverted			–

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

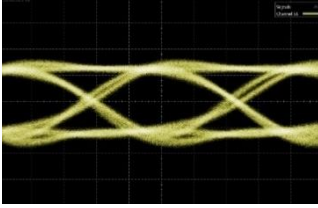
–Measured by the Keysight N1046A 100 GHz remote sampling head with precision time base.

–Operated by AH15199A-01 dedicated power supply.

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

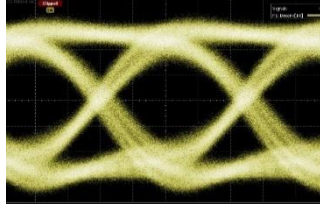
PULSE RESPONSE

112 Gbaud NRZ(SE)



V: 100 mV/div, H: 2 ps/div

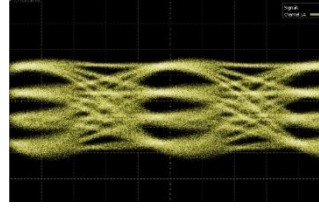
Input Waveform



V: 300 mV/div, H: 2 ps/div

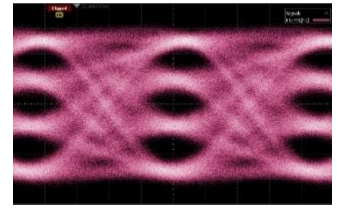
Output Waveform

112 Gbaud PAM4(SE)



V: 100 mV/div, H: 2 ps/div

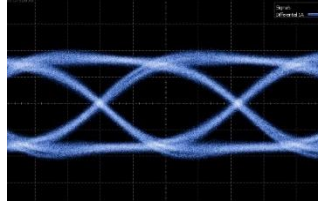
Input Waveform



V: 300 mV/div, H: 2 ps/div

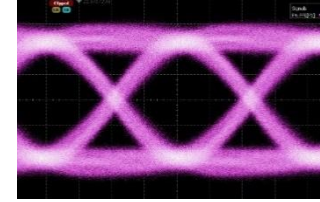
Output Waveform

120 Gbaud NRZ (Differential waveforms of 2 sets combined)



V: 200 mV/div, H: 2 ps/div

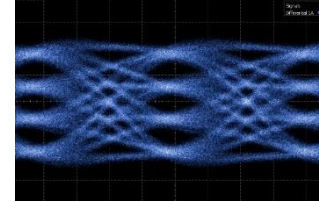
Input Waveform



V: 600 mV/div, H: 2 ps/div

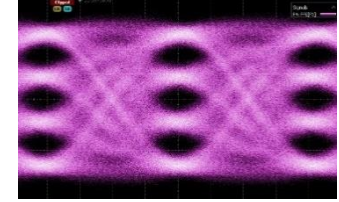
Output Waveform

120 Gbaud PAM4 (Differential waveforms of 2 sets combined)



V: 200 mV/div, H: 2 ps/div

Input Waveform

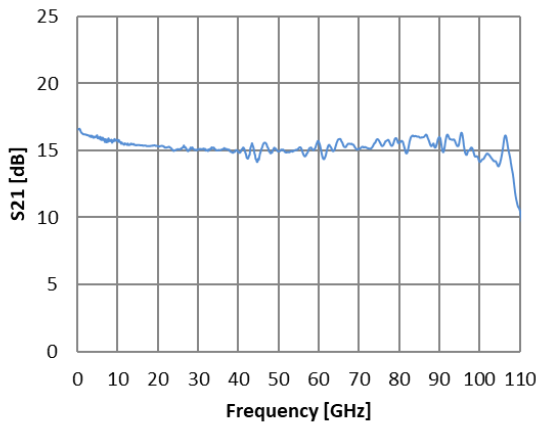


V: 600 mV/div, H: 2 ps/div

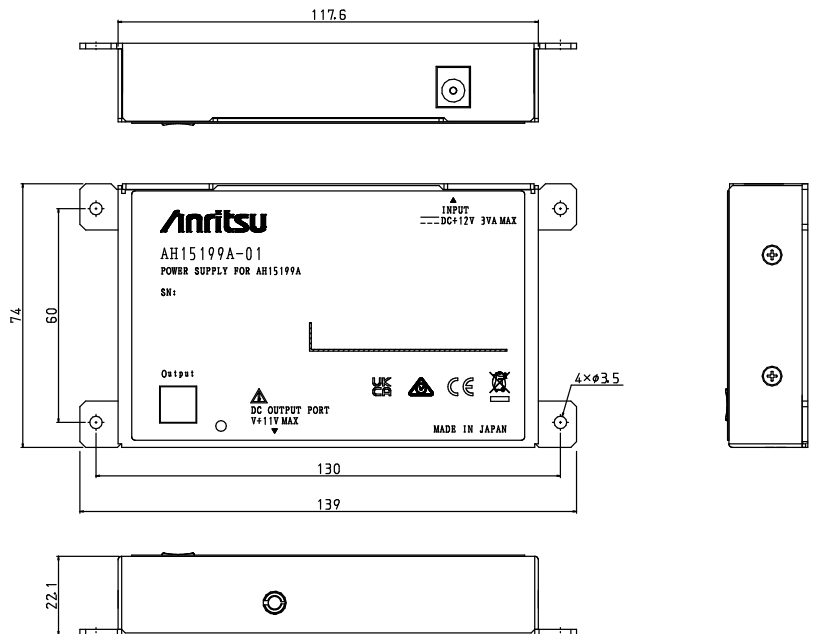
Output Waveform

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

FREQUENCY RESPONSE



AH15199A-01 DIMENSIONS



STANDARD ACCESSORY

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

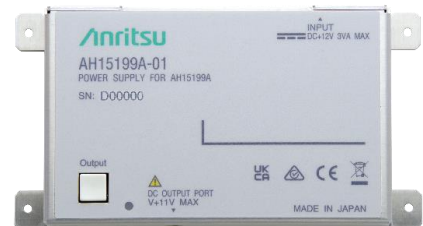
AH15199A-01 SPECIFICATIONS

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

$V_{in}=+12\text{ V DC}$ [AC adapter (100-120/200-240 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	50	$^\circ\text{C}$
Storage Temperature ^{*1}	T_{stg}	-20	60	$^\circ\text{C}$

^{*1}: No Condensation



(Unit: mm)



56 Gbaud Differential Linear Amplifier

AH54192A

AH54192A is a linear amplifier with superior characteristics for high-speed pulse response. It is suitable for driving optical modulators and amplifying high-speed digital signal.

FEATURES

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

APPLICATIONS

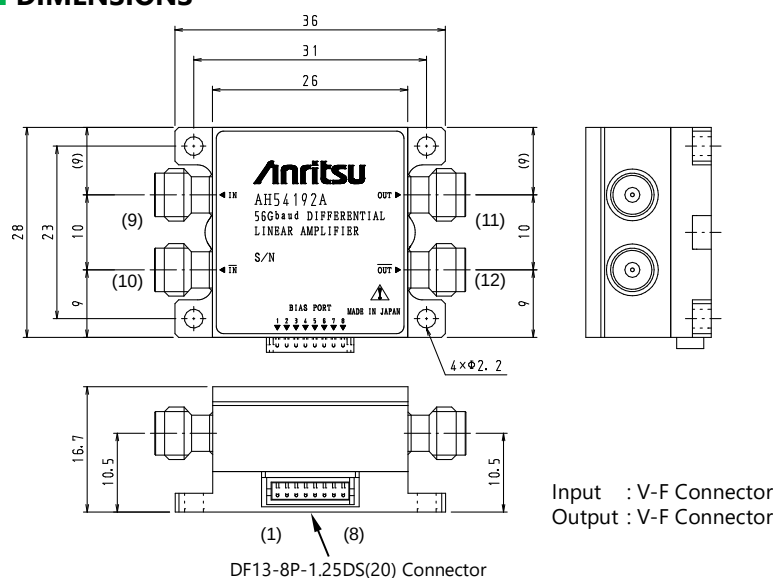
- Driver for 400G coherent MZ modulator
- Booster amplifier for measuring equipment



PIN CONFIGURATION

No.	Symbol	Function	Remarks
1	NC	—	—
2	NC	—	—
3	NC	—	—
4	GND	Ground	—
5	V _{CC}	Power Supply	+3 V
6	V _{amp}	Power Supply	+3 V
7	V _{BT}	Choke Bias	+4.2 V
8	V _{BT}	Choke Bias	+4.2 V
9	IN	Input Port (non-invert)	AC Coupled
10	IN	Input Port (invert)	
11	OUT	Output Port (non-invert)	AC Coupled
12	OUT	Output Port (invert)	

DIMENSIONS



ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Input Signal Voltage	V _{in}	-1 to +0.7	V
Supply Voltage	V _{BT}	-0.5 to +5	V
	V _{CC}	-0.5 to +3.5	V
	V _{amp}	-0.5 to +3.5	V
Operating Ambient Temperature*1	T _a	+5 to +50	°C
Storage Temperature*1	T _{stg}	0 to +60	°C

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

*1: No Condensation

ELECTRICAL CHARACTERISTICS (T_a = 25°C, V_{BT} = +4.2 V, V_{CC} = +3 V, V_{amp} = +3 V, Z_{in} = 50 Ω, Z_{out} = 50 Ω)

Item	Test Condition	Min.	Typ.	Max.	Unit
Baud-rate	—	56	—	—	Gbaud
Differential Input Voltage*1	—	—	1	—	V _{p-p} (diff)
Linear Output Voltage*2	—	—	4	—	V _{p-p} (diff)
Small Signal Gain	@1 GHz	—	12	—	dB
Bandwidth	-3 dB (low end)	—	100	—	kHz
	-3 dB (high end)	—	40	—	GHz
Input Return Loss	10 MHz to 30 GHz	—	10	—	dB
Output Return Loss	10 MHz to 30 GHz	—	10	—	dB
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.

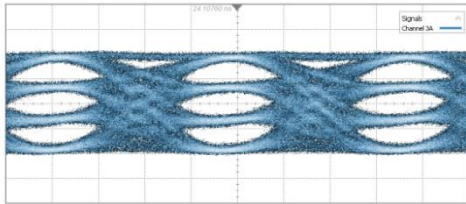
POWER SUPPLIES

Item	Test Condition	Min.	Typ.	Max.	Unit
Supply Voltage	V_{BT}	—	+4.2	+4.4	V
	V_{CC}	—	+3	—	V
	V_{amp}	—	+3	—	V
Supply Current	$I_{BT} (x2)$	—	160	180	mA
	I_{CC}	—	65	75	mA
	I_{amp}	—	10	20	mA
Power Consumption	—	—	0.9	—	W

ELECTRICAL CHARACTERISTICS

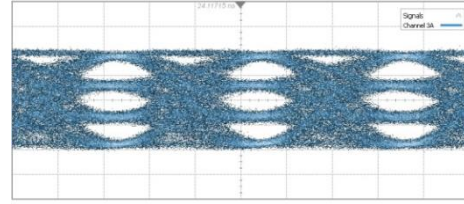
Pulse response (single-ended output)

53 Gbaud PAM4



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

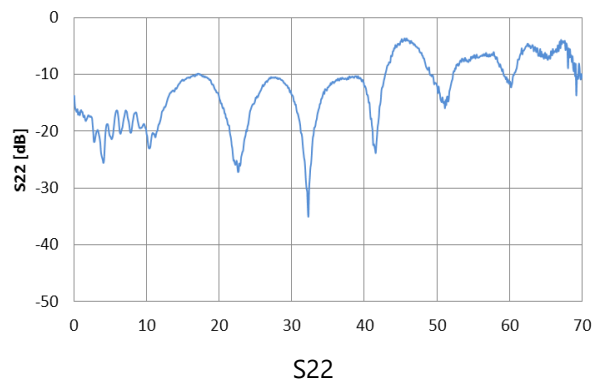
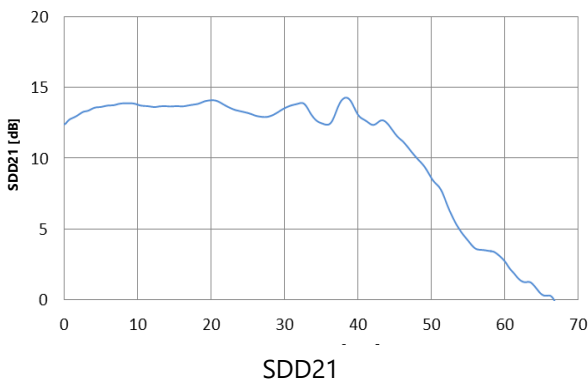
64 Gbaud PAM4



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

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

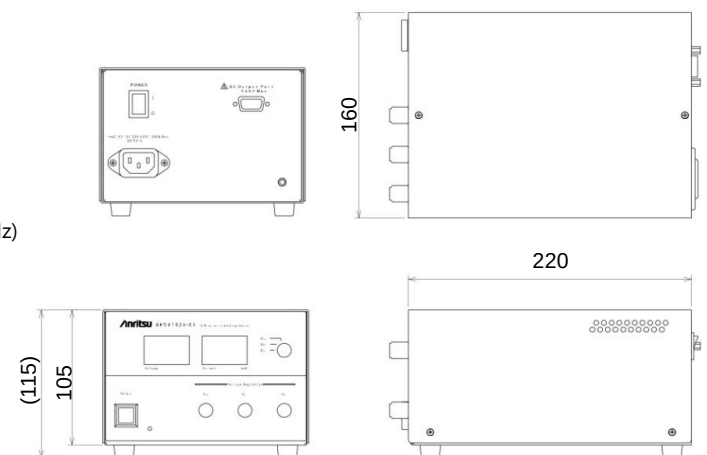
FREQUENCY RESPONSE



STANDARD ACCESORY

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

AH54192A-01 DIMENSIONS



(Unit: mm)

AH54192A-01 SPECIFICATIONS

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

Item	Symbol	Test Condition	Min.	Max.	Unit
Voltage Output	V_{BT}	—	+3.5	+4.5	V
	V_{CC}	—	+2.5	+3.2	V
	V_{amp}	—	+1.5	+3.2	V
Current Output	I_{BT}	$V_{BT} = +4.2\text{ V}$	—	180	mA
	I_{CC}	$V_{CC} = +3\text{ V}$	—	75	mA
	I_{amp}	$V_{amp} = +3\text{ V}$	—	20	mA
Ripple Noise	—	—	—	5	mV _{p-p}
Power Consumption	—	—	—	20	VA
Operating Ambient Temperature*1	T_a	—	+5	+50	$^\circ\text{C}$
Storage Temperature*1	T_{stg}	—	-20	+60	$^\circ\text{C}$

*1: No Condensation



56 Gbaud Wideband OE Converter

AD44198A

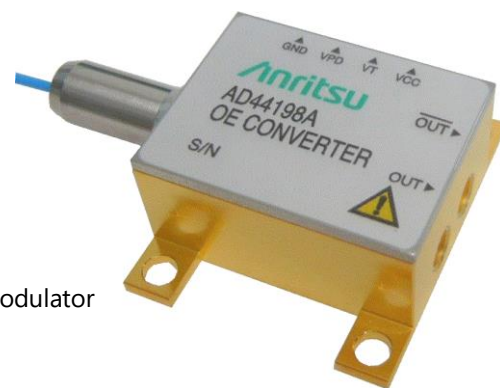
AD44198A has wide frequency characteristics of 45 GHz in the -3 dB band, supports OE conversion of PAM4 optical signals between 28 and 56 Gbaud.

FEATURES

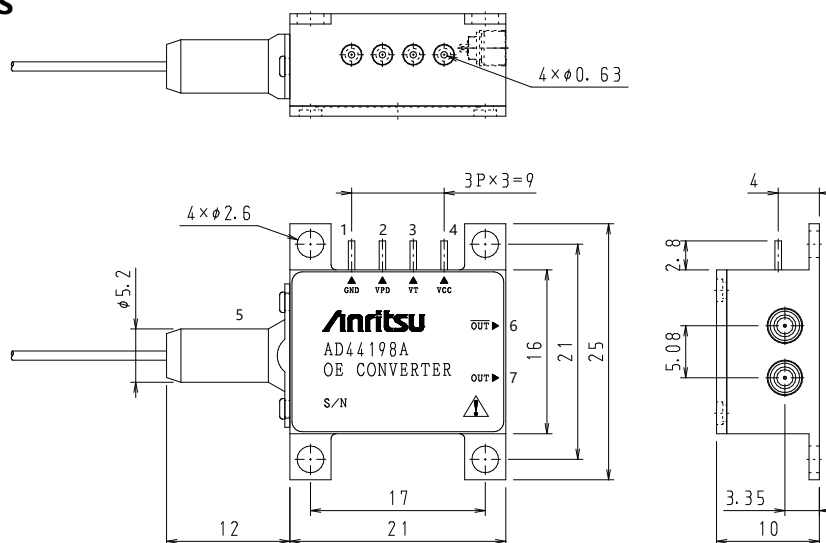
- Operating wavelength: 1260 to 1620 nm
- Wideband: 30 kHz to 45 GHz
- Responsivity: 0.7 A/W
- Conversion gain: 250 V/W
- Power consumption: 0.7 W typ.
- Output interface: Differential
- Package size: 25 mm × 21 mm × 10 mm

APPLICATION

- Receiver for optical modulator



DIMENSIONS



(Unit: mm)

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入力

*2: No Condensation

SPECIFICATIONS

Optical Characteristics (T_a = 25°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 dBe (low end)	–	30	–	kHz
	-3 dBe (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.

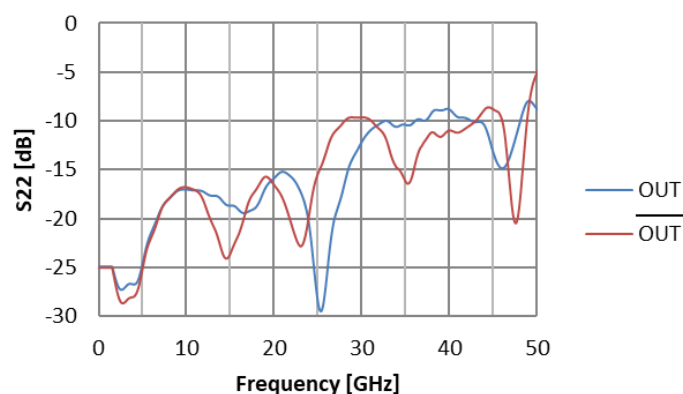
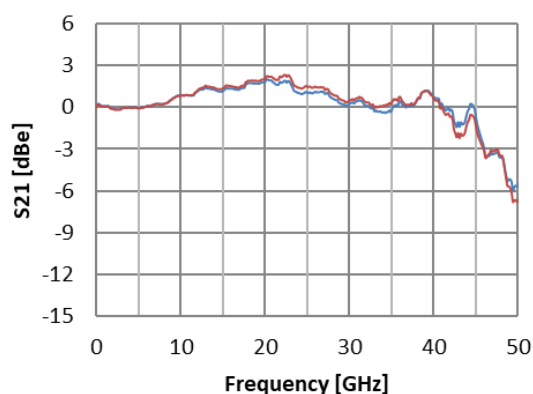
For Turn off - Turn off all three at the same time or turn off V_{PD} at last.

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

Mechanical Characteristics

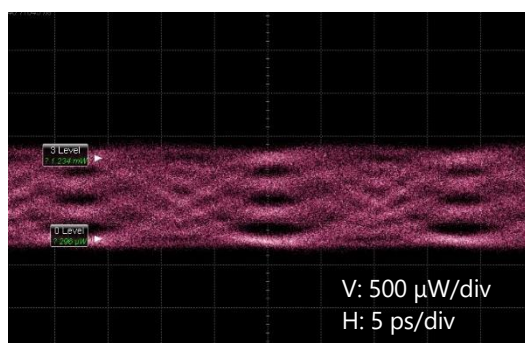
Item	Min.	Typ.	Max.	Unit
Output Connector	Dual GPPO			–
Fiber Type	Single-Mode			–
Fiber Connector	FC/SPC			–
Fiber Length	120	–	–	cm
Fiber Bend Radius	3	–	–	cm
Lead Soldering	350°C, 5 s max.			–

FREQUENCY RESPONSE

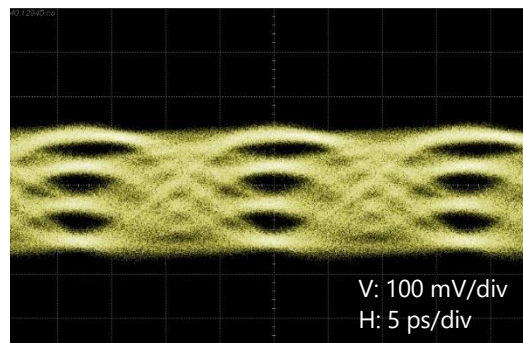


PULSE RESPONSE (Single-ended)

56 Gbaud 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.



Bessel Filter

AN14 series/AN44 series

AN-series filters are low-reflection Bessel filters with superior group delay characteristics. The frequency ranges from 1.6 GHz to 40 GHz are available.

FEATURES

- AN14165□ f_0 : 1.6 GHz, K connector
- AN14166□ f_0 : 3.2 GHz, K connector
- AN14167□ f_0 : 7.5 GHz, K connector
- AN44168□ f_0 : 30 GHz, V connector
- AN44169□ f_0 : 35 GHz, V connector
- AN44170□ f_0 : 40 GHz, V connector
- Low reflection, low group delay deviation

APPLICATIONS

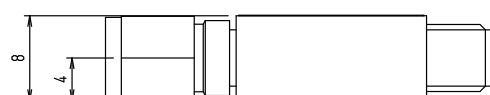
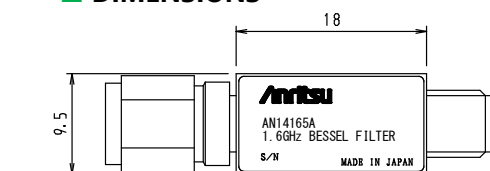
- Optical communication
- Measurement equipment, Others



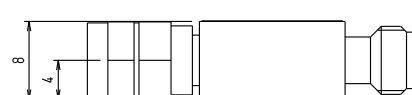
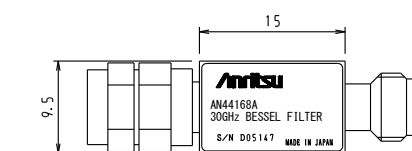
PIN CONFIGURATION

Connector Symbol	Input/Output Port
A	M-F
B	F-F
C	M-M

DIMENSIONS



AN14165 ~ 14167□



AN44168 ~ 44170□

(Unit: mm)

MODEL NUMBER

AN14165□

└ Connector type Example: AN14165A

ABSOLUTE MAXIMUM RATINGS

Item	Ratings		Unit
	AN14165 – 14167□	AN44168 – 44170□	
Maximum Input Power	17	20	dBm
Operation Ambient Temperature	+5 to +60	+5 to +60	°C

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

*1: No Condensation

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

Item	Test Condition	AN14165□			AN14166□			AN14167□			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Cut-off Frequency f_0	—	—	1.6	—	—	3.2	—	—	7.5	—	GHz
Correspondence Bit-rate	—	—	2.125	—	—	4.25	—	—	10	—	
Return Loss (S11/S22)	DC to f_0	15	—	—	15	—	—	15	—	—	dB
	to $3f_0$	8	—	—	8	—	—	8	—	—	
Insertion Loss	100 MHz	—	1.0	1.5	—	0.7	1.2	—	0.5	1.0	dB
Insertion Loss ^{*1}	$0.2f_0$	-0.4	0.1	0.6	-0.4	0.1	0.6	-0.4	0.1	0.6	dB
	$0.4f_0$	-0.1	0.4	0.9	-0.1	0.4	0.9	-0.1	0.4	0.9	
	$0.6f_0$	0.5	1.0	1.5	0.5	1.0	1.5	0.5	1.0	1.5	
	$0.8f_0$	1.4	1.9	2.4	1.4	1.9	2.4	1.4	1.9	2.4	
	$1.0f_0$	2.5	3.0	3.5	2.5	3.0	3.5	2.5	3.0	3.5	
	$1.2f_0$	3.34	4.5	5.66	3.34	4.5	5.66	3.34	4.5	5.66	
	$1.33f_0$	4.16	5.7	7.24	4.16	5.7	7.24	4.16	5.7	7.24	
	$1.4f_0$	4.69	6.4	8.11	4.69	6.4	8.11	4.69	6.4	8.11	
	$1.6f_0$	6.3	8.5	10.7	6.3	8.5	10.7	6.3	8.5	10.7	
	$(1.8f_0)$	8.28	10.9	13.52	8.28	10.9	13.52	8.28	10.9	13.52	
	$(2.0f_0)$	10.4	13.4	16.4	10.4	13.4	16.4	10.4	13.4	16.4	
Group delay deviation ^{*2}	DC to f_0	—	—	$\Delta 100$	—	—	$\Delta 100$	—	—	$\Delta 100$	mUI

*1: Reference is prescribed with the insertion loss at 100MHz.

*2: Reference frequency of UI : Correspondence bit-rate.

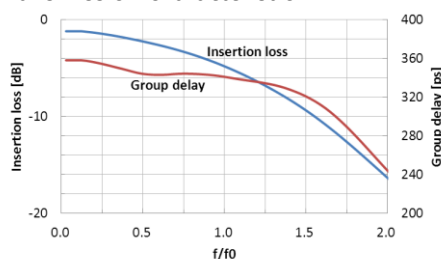
Item	Test Condition	AN44168□			AN44169□			AN44170□			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Cut-off frequency f_0	-3 dB	—	30	—	—	35	—	—	40	—	GHz
Return Loss (S11/S22)	DC to f_0	10	15	—	10	15	—	10	15	—	dB
	to 65 GHz	5	10	—	5	10	—	5	10	—	
Return Loss 1	100 MHz	—	0.2	0.7	—	0.2	0.7	—	0.2	0.7	dB
Return Loss 2	0.2 f_0	-0.6	0.1	0.8	-0.6	0.1	0.8	-0.6	0.1	0.8	dB
	0.4 f_0	-0.2	0.5	1.2	-0.2	0.5	1.2	-0.2	0.5	1.2	
	0.6 f_0	0.3	1.0	1.7	0.3	1.0	1.7	0.3	1.0	1.7	
	0.8 f_0	1.2	1.9	2.6	1.2	1.9	2.6	1.2	1.9	2.6	
	1.0 f_0	2.3	3.0	3.7	2.3	3.0	3.7	2.3	3.0	3.7	
	1.2 f_0	3.4	4.5	5.7	3.4	4.5	5.7	3.4	4.5	5.7	
	1.33 f_0	4.3	5.7	7.1	4.3	5.7	7.1	4.3	5.7	7.1	
	1.4 f_0	4.9	6.4	7.9	4.9	6.4	7.9	4.9	6.4	7.9	
	1.6 f_0	6.7	8.6	10.5	6.7	8.6	10.5	6.7	8.6	10.5	
(1.8 f_0)	8.8	10.9	13.0	8.8	10.9	13.0	8.8	10.9	13.0		
	(2.0 f_0)	11.0	13.4	15.8	11.0	13.4	15.8	11.0	13.4	15.8	
Group delay deviation*3	DC to f_0	—	—	Δ300	—	—	Δ300	—	—	Δ300	mUI

*3: Reference frequency: $1.3f_0$

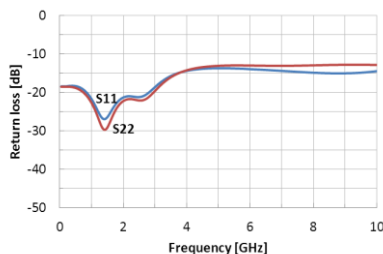
TYPICAL CHARACTERISTICS

AN14165A

Transmission characteristic

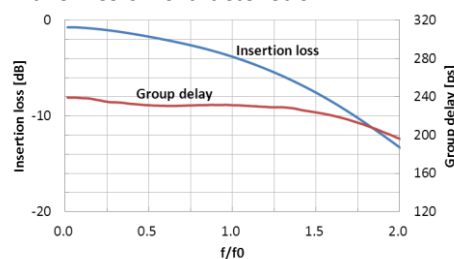


Reflection characteristics

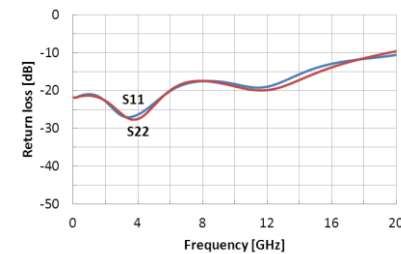


AN14166A

Transmission characteristic

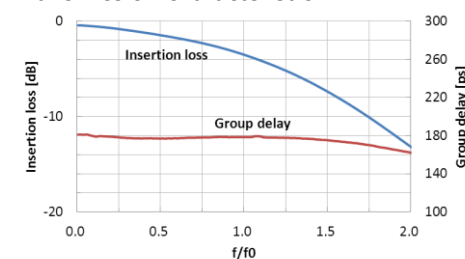


Reflection characteristics

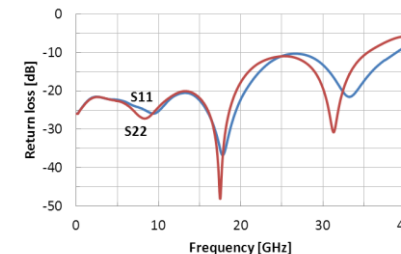


AN14167A

Transmission characteristic

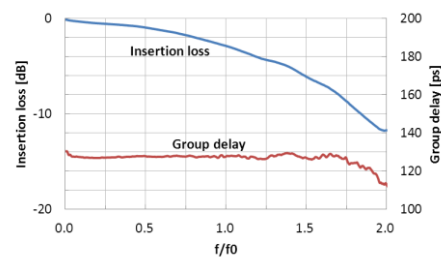


Reflection characteristics

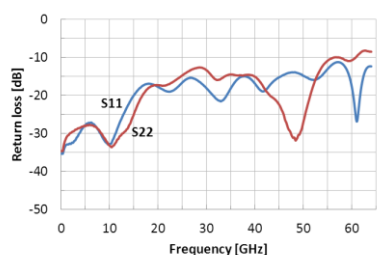


AN44168

Transmission characteristic

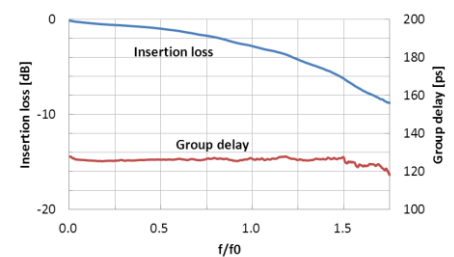


Reflection characteristics

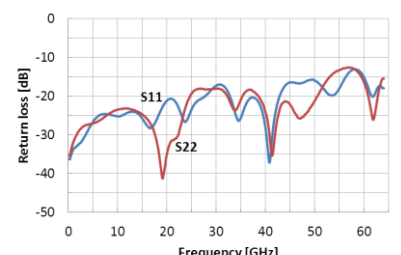


AN44169

Transmission characteristic

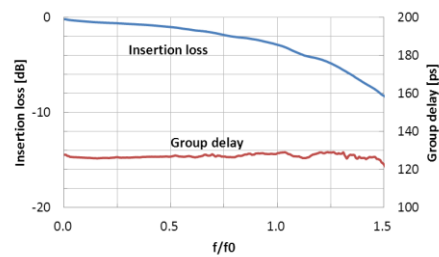


Reflection characteristics

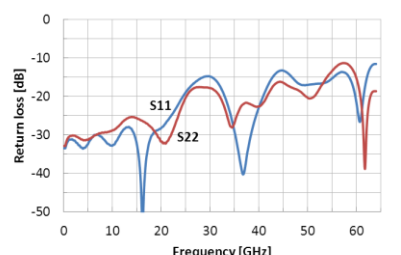


AN44170

Transmission characteristic



Reflection characteristics





Low Reflection 4-Way Power Divider AN44187A

AN44187A is a 4-Way Power Divider for applications in a frequency range of DC to 40 GHz. Suitable for distributing signals in the multi-channel evaluation system and during the comparative evaluation.

FEATURES

- 4 branches
- Wideband: DC to 40 GHz
- Insertion loss: 12 dB typ.
- Low reflection: > 15 dB

APPLICATIONS

- Signal distribution at the multi-channels system
/ Comparison with characteristics

PIN CONFIGURATION

No.	Symbol	Function	Remarks
1	IN	Signal Input	K-F connector
2	OUT1	Signal Output 1	K-F connector
3	OUT2	Signal Output 2	K-F connector
4	OUT3	Signal Output 3	K-F connector
5	OUT4	Signal Output 4	K-F connector

ABSOLUTE MAXIMUM RATINGS

Item	Ratings	Unit
Input power	+30	dBm
Operation Ambient Temperature*1	0 to +70	°C
Storage Temperature*1	-40 to +85	°C

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

*1: No Condensation

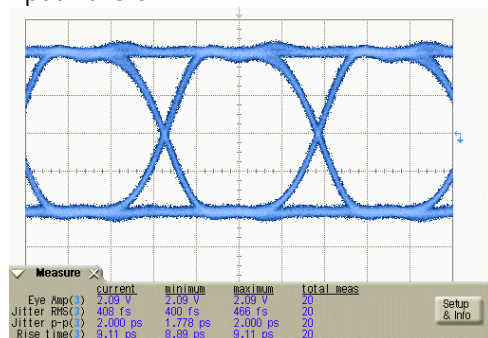
SPECIFICATIONS ($T_a = 25^\circ\text{C}$, $Z_{in} = 50 \Omega$, $Z_{out} = 50 \Omega$)

Item	Test Condition	Min.	Typ.	Max.	Unit
Frequency Range	—	DC	—	40	GHz
Insertion Loss	@DC	—	12	14	dB
	@40 GHz	—	13	15	
Input Return Loss	DC to 20 GHz	15	20	—	dB
	20 GHz to 40 GHz	10	15	—	
Output Return Loss	DC to 20 GHz	15	20	—	dB
	20 GHz to 40 GHz	10	15	—	
Group Delay	DC to 40 GHz	—	± 50	—	ps
Isolation	Out1(3) – Out2(4)	—	6	—	dB
	Between ports other than above	—	18	—	
Skew Between Channels	—	—	3	—	ps

ELECTRICAL CHARACTERISTICS

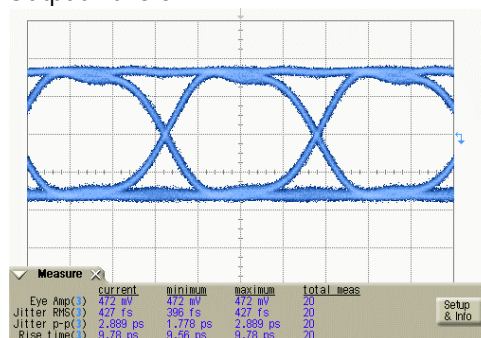
Pulse response characteristics @28 Gbit/s

Input waveform



V: 0.50 V/div H: 10 ps/div

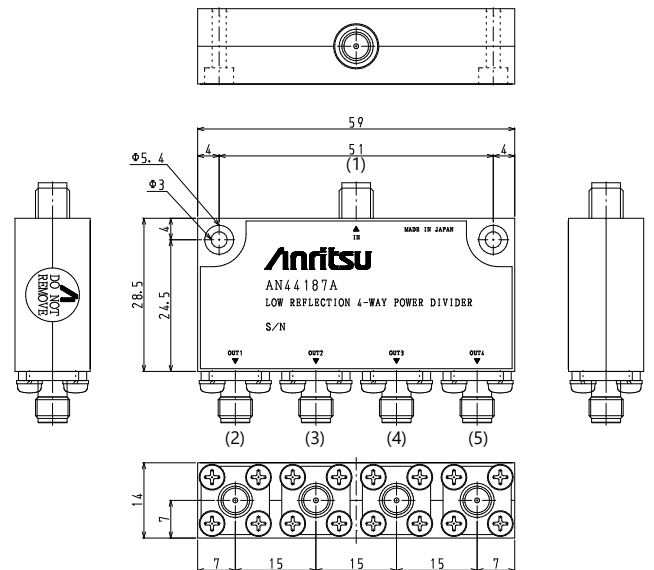
Output waveform



V: 0.15 V/div H: 10 ps/div



DIMENSIONS



(Unit: mm)

Anritsu Corporation Sensing & Device Company

Business Activities

Anritsu Corporation Sensing & Device Company develops, manufactures, and sells optical and electronic devices, and our products are used as key components in optical communication systems and devices used in the medical, measurement, and disaster prevention fields.

Our Optical Device Business segment supplies high output lasers, semiconductor optical amplifiers and external cavity lasers essential to fiber amplifiers and high-capacity optical communication systems.

Our Sensing Device Business segment supplies super-luminescent diodes, wavelength swept light sources and distributed feedback lasers used in industrial and medical optical sensing systems.

Our Electronic Device Business segment supplies optical modulator drivers, amps, and filters for use in ultra-high speed communication networks, and ultra-high speed digital ICs and OE modules for use in measurement devices.



Fabrication

Anritsu Devices Co., Ltd



Anritsu Devices Co., Ltd. manufactures products developed by its group Sensing and Devices Company. We have the advantage of our own integrated production lines for advanced optical and ultrafast electron devices. We also have outstanding technological capabilities in crystal growth and module technology for basic optical device manufacturing, and microfabrication and assembly technology for electronic device manufacturing, as well as a proven track record of strict quality management. As a company that handles optical and ultrafast electron devices and develops technologies for using these devices, we continue to strive to improve our long-term reputation for reliable customer satisfaction from customers in diverse industries, including telecommunications, medicine, industry, environment, and precision measurement.

ISO9001 / 14001

Anritsu's quality policy and related conduct policy are shared by Group companies in Japan. Under the Company philosophy of "Contribute to the development of a safe, secure, and prosperous global society by offering 'Original & High Level' products and services with 'Sincerity, Harmony, and Enthusiasm,'" we constantly improve the quality of our products and services to meet customer needs and social demands.

Anritsu Products are manufactured under the quality and environmental management systems in conformity with ISO international standard.

Factory	Conformance Standard	Registration Certificate Number	Registration Date	Accreditation Body
Headquarter (Atsugi)	ISO9001	JQA-0316	15th/November/1993	Japan Quality Assurance Organization
	ISO14001	JQA-EM0210	28th/August/1998	

Excellent Eco Product

These industry-leading products meet our own excellent eco product requirements and carry the excellent eco product mark in our catalogs.



Notes on Handling Device Products

Power-supply spikes, surge current and static-electric charges can cause product aging or damage. Our optical devices emit light in the infrared region, which is not seen by the eye even when looked at directly, but may damage your eyes or the human body. Please read the following pages for basic precautions to ensure safe and stable use of our devices for a long time before use.

<https://www.anritsu.com/ja-jp/sensing-devices/guide/optdevices-handling>

<https://www.anritsu.com/ja-jp/sensing-devices/guide/electronddevices-handling>



ANRITSU CORPORATION

SENSING & DEVICES COMPANY OVERSEAS SALES DEPT

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Contact URL

<https://www.anritsu.com/en-gb/sensing-devices/contact-us>



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