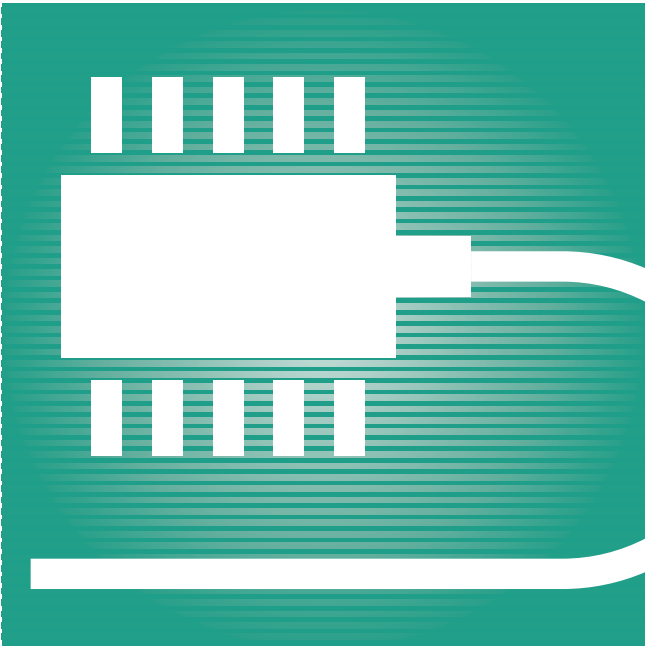


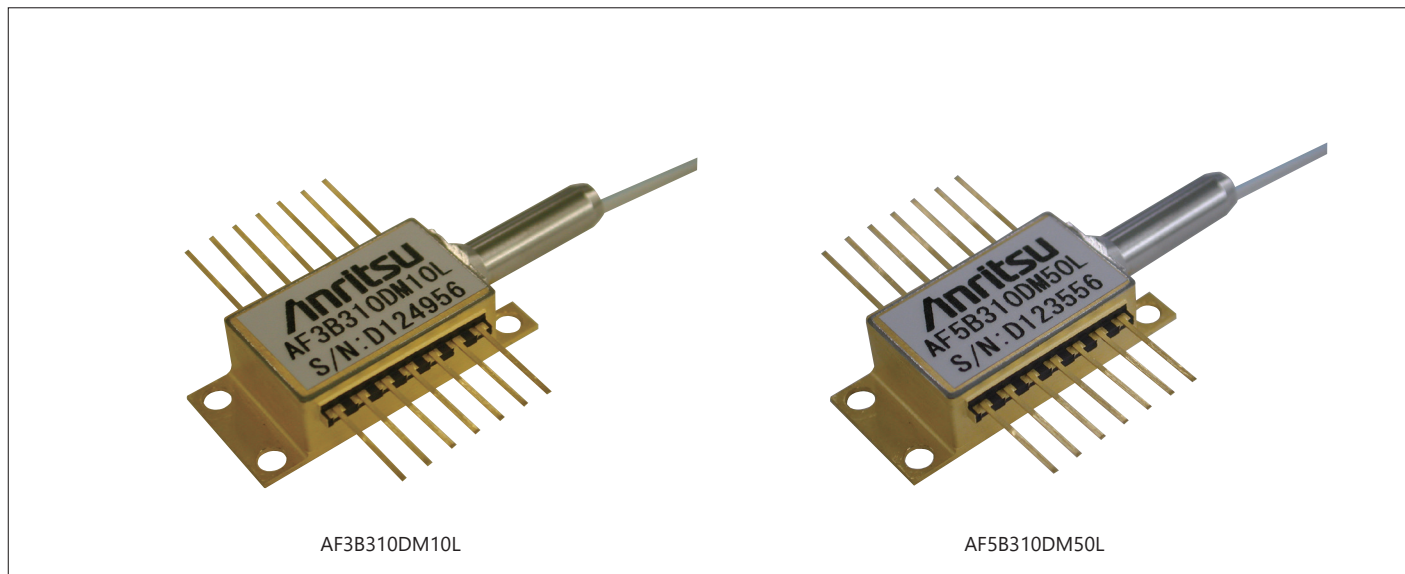


OPTICAL DEVICES

1.31/1.55 μm LD Module	714
1.48 μm LD Module	716, 720
1.4 μm FBG LD Module	722
1.48 μm Cylindrical Module	724
1.31/1.55/1.65 μm SLD Module	726
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1.31/1.55 μm LD Module

AF3B310DM10L/AF5B310DM50L



RoHS Compliant Part

1.31 μm /1.55 μm laser diode modules designed for optical measurement and communication. The laser is packaged in a 14-pin butterfly package with optical isolator, monitor photodiode and thermo-electric cooler (TEC).

Features

- High optical output: 100 mW/ ≤ 500 mA
- PMF output (fiber: $\varnothing 0.9$ mm)
- Built-in optical isolator
- Internal monitor PD and TEC

Absolute Maximum Ratings

Item	Symbol	Rating Unit
LD Forward Current	I_F	900 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°C to $+70^\circ\text{C}$
Storage Temperature	T_{stg}	-40°C to $+85^\circ\text{C}$
Cooler Current	I_C	2 A

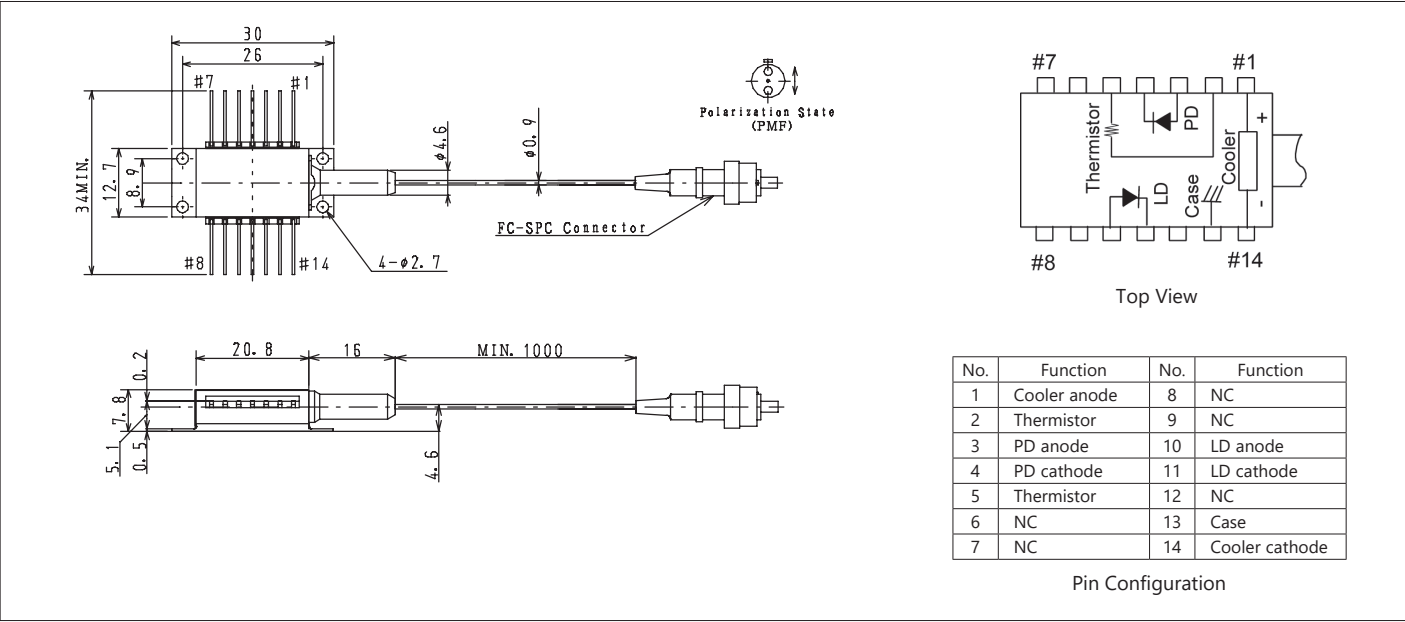
*: Excess over the absolute maximum ratings may cause device failure.

Optical and Electrical Characteristics ($T_{LD} = 25^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

Item	Symbol	Test condition	AF3B310DM10L			AF5B310DM50L		
			Min.	Typ.	Max.	Min.	Typ.	Max.
Forward Voltage	V_F	$I_F = 500$ mA	—	2.0 V	2.5 V	—	2.0 V	2.5 V
Threshold Current	I_{th}		—	30 mA	60 mA	—	30 mA	60 mA
Optical Output Power	P_f	$I_F = 500$ mA	100 mW	—	—	100 mW	—	—
Center Wavelength	λ_C	$I_F = 500$ mA, RMS (-20 dB)	1295 nm	1310 nm	1325 nm	1535 nm	1550 nm	1565 nm
Spectral Width	$\Delta\lambda$	$I_F = 500$ mA, RMS (-20 dB)	—	4 nm	8 nm	—	5 nm	10 nm
Monitor Current	I_m	$I_F = 500$ mA, $V_{RD} = 5$ V	100 μA	400 μA	—	100 μA	400 μA	—
PD Dark Current	I_d	$V_{RD} = 5$ V	—	—	0.1 μA	—	—	0.1 μA
Tracking Error	ΔP_f	$I_m = \text{const}$, $T_C = -20^\circ\text{C}$ to $+70^\circ\text{C}$	—	—	0.5 dB	—	—	0.5 dB
Cooler Voltage	V_C	$I_F = 600$ mA, $T_C = +70^\circ\text{C}$	—	—	3.2 V	—	—	3.2 V
Cooler Current	I_C	$I_F = 600$ mA, $T_C = +70^\circ\text{C}$	—	—	1.2 A	—	—	1.2 A
Thermistor Resistance	R_{th}	$T_{LD} = 25^\circ\text{C}$, $B = 3900 \pm 100\text{K}$	9.5 k Ω	10 k Ω	10.5 k Ω	9.5 k Ω	10 k Ω	10.5 k Ω
Optical Isolation	R_o	$T_{LD} = 25^\circ\text{C}$	—	30 dB	—	—	30 dB	—
Extinction Ratio	X_p	$I_F = 500$ mA	17 dB	—	—	17 dB	—	—

Note: Polarization state of LD is aligned parallel to the slow axis.

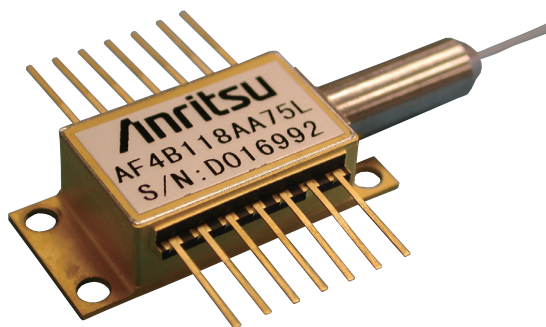
Dimensions



1.48 μm LD Module

AF4B Series

Type A: 120 mW to 180 mW, Type B: 200 mW to 250 mW, Type C: 300 mW to 400 mW, Type D: 420 mW to 500 mW



Type A

RoHS Compliant Part

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

Features

• Optical Output

Type A:

120 mW ($I_F \leq 500$ mA) AF4B112AA75L/AF4B112AD75L
140 mW ($I_F \leq 550$ mA) AF4B114AA75L/AF4B114AD75L
160 mW ($I_F \leq 600$ mA) AF4B116AA75L/AF4B116AD75L
180 mW ($I_F \leq 600$ mA) AF4B118AA75L/AF4B118AD75L

Type B:

200 mW ($I_F \leq 700$ mA) AF4B120EA75L/AF4B120ED75L
220 mW ($I_F \leq 700$ mA) AF4B122EA75L/AF4B122ED75L
250 mW ($I_F \leq 800$ mA) AF4B125EA75L/AF4B125ED75L

Type C:

300 mW ($I_F \leq 1100$ mA) AF4B130CA75L/AF4B130CD75L
350 mW ($I_F \leq 1400$ mA) AF4B135CA75L/AF4B135CD75L
400 mW ($I_F \leq 1400$ mA) AF4B140CA75L/AF4B140CD75L

Type D:

420 mW ($I_F \leq 1600$ mA) AF4B142FA75L/AF4B142FD75L
460 mW ($I_F \leq 1700$ mA) AF4B146FA75L/AF4B146FD75L
500 mW ($I_F \leq 1800$ mA) AF4B150FA75L/AF4B150FD75L

• Fiber

SMF output (UV coating fiber: $\varnothing 0.25$ mm)
PMF output (UV coating fiber: $\varnothing 0.25$ mm)

- 14-pin Butterfly Package
- Built-in Optical Isolator
- Internal Monitor PD and TEC
- Low Power Consumption (Type B, C)
- Operating Case Temperature 75°C (Type A)
- Operating Case Temperature 70°C (Type B, C, D)

Absolute Maximum Ratings ($T_{LD} = 25^\circ\text{C}$)

Item	Symbol	Rating					
		Type A	Type B	Type C			Type D
				AF4B130CA75L AF4B130CD75L	AF4B135CA75L AF4B135CD75L	AF4B140CA75L AF4B140CD75L	
LD Forward Current	I _F	1100 mA	1300 mA	1500 mA	1700 mA		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°C to +75°C	−20°C to +70°C				
Storage Temperature	T _{stg}	−40°C to +85°C					
Cooler Current	I _C	2 A			5.8 A		

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

Optical and Electrical Characteristics (T_{LD} = 25°C, T_C = 25°C)

Item	Symbol	Test Condition	Type A			
			AF4B112AA75L AF4B112AD75L	AF4B112AD75L AF4B114AD75L	AF4B116AA75L AF4B116AD75L	AF4B118AA75L AF4B118AD75L
Output Power	P _f		120 mW	140 mW	160 mW	180 mW
Forward Voltage	V _F	At Output Power	Max. 2.5 V			
Threshold Current	I _{th}		Max. 50 mA			
Forward Current (BOL)	I _F	At Output Power	Max. 500 mA	Max. 550 mA	Max. 600 mA	
Center Wavelength	λ _C	At Output Power	Min. 1460 nm, Typ. 1475 nm, Max. 1490 nm			
Spectral Width	Δλ	At Output Power RMS (−20 dB)	Typ. 4 nm, Max. 8 nm			
Monitor Current	I _m	At Output Power V _{RD} = 5 V	Min. 100 μA, Typ. 400 μA, Max. 800 μA			
PD Dark Current	I _d	V _{RD} = 5 V	Max. 0.1 μA			
Tracking Error	ΔP _f	I _m = const, T _C = −20°C to +75°C	Max. 0.5 dB			
Cooler Voltage	V _C	IF = *EOL, T _C = 75°C	Max. 3.5 V			
Cooler Current	I _C	IF = *EOL, T _C = 75°C	Max. 1.2 A	Max. 1.4 A		
Thermistor Resistance	R _{th}	T _{LD} = 25°C B = 3900 ±100K	Min. 9.5 kΩ, Typ. 10 kΩ, Max. 10.5 kΩ			
Optical Isolation	R _O	T _{LD} = 25°C	Typ. 30 dB			
Extinction Ratio**	X _p	At Output Power	Min. 17 dB			

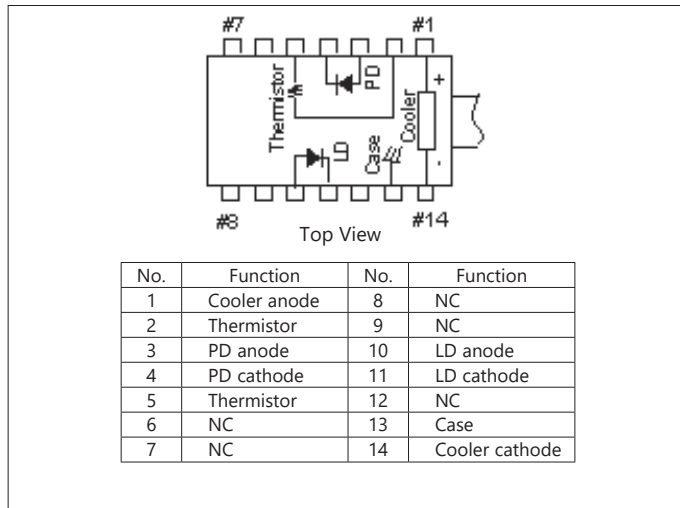
Item	Symbol	Test Condition	Type B			Type C		
			AF4B120EA75L AF4B120ED75L	AF4B122EA75L AF4B122ED75L	AF4B125EA75L AF4B125ED75L	AF4B130CA75L AF4B130CD75L	AF4B135CA75L AF4B135CD75L	AF4B140CA75L AF4B140CD75L
Output Power	P _F		200 mW	220 mW	250 mW	300 mW	350 mW	400 mW
Forward Voltage	V _F	At Output Power	Max. 2 V			Max. 2 V		
Threshold Current	I _{th}		Typ. 70 mA, Max. 150 mA			Typ. 100 mA, Max. 150 mA		
Forward Current (BOL)	I _F	At Output Power	Max. 700 mA		Max. 800 mA	Max. 1100 mA	Max. 1400 mA	
Center Wavelength	λ _C	At Output Power	Min. 1460 nm, Typ. 1475 nm, Max. 1490 nm			Min. 1460 nm, Typ. 1475 nm, Max. 1490 nm		
Spectral Width	Δλ	At Output Power RMS (−20 dB)	Typ. 5 nm, Max. 10 nm			Typ. 5 nm, Max. 10 nm		
Monitor Current	I _m	At Output Power V _{RD} = 5 V	Min. 100 μA, Max. 1000 μA			Min. 100 μA, Max. 2000 μA		
PD Dark Current	I _d	V _{RD} = 5 V	Max. 0.1 μA			Max. 0.1 μA		
Tracking Error	ΔP _f	I _m = const, T _C = −20°C to +75°C	Max. 0.5 dB			Max. 0.5 dB		
Cooler Voltage	V _C	IF = *EOL, T _C = 75°C	Max. 3.1 V			Max. 2.9 V	Max. 3.1 V	
Cooler Current	I _C	IF = *EOL, T _C = 75°C	Max. 1.3 A		Max. 1.5 A	Max. 2.7 A	Max. 3 A	
Thermistor Resistance	R _{th}	T _{LD} = 25°C B = 3900 ±100K	Min. 9.5 kΩ, Typ. 10 kΩ, Max. 10.5 kΩ			Min. 9.5 kΩ, Typ. 10 kΩ, Max. 10.5 kΩ		
Optical Isolation	R _O	T _{LD} = 25°C	Typ. 30 dB			Typ. 30 dB		
Extinction Ratio**	X _p	At Output Power	Min. 17 dB					

Item	Symbol	Test Condition	Type D		
			AF4B142FA75L AF4B142FD75L	AF4B146FA75L AF4B146FD75L	AF4B150FA75L AF4B150FD75L
Output Power	P _f		420 mW	460 mW	500 mW
Forward Voltage	V _F	At Output Power	Max. 2.2 V		
Threshold Current	I _{th}		Typ. 70 mA, Max. 180 mA		
Forward Current (BOL)	I _F	At Output Power	Max. 1600 mA	Max. 1700 mA	Max. 1800 mA
Center Wavelength	λ _C	At Output Power	Min. 1460 nm, Typ. 1475 nm, Max. 1490 nm		
Spectral Width	Δλ	At Output Power RMS (−20 dB)	Typ. 5 nm, Max. 10 nm		
Monitor Current	I _m	At Output Power V _{RD} = 5 V	Min. 100 μA, Max. 2000 μA		
PD Dark Current	I _d	V _{RD} = 5 V	Max. 0.1 μA		
Tracking Error	ΔP _f	I _m = const, T _C = −20°C to +75°C	Max. 0.5 dB		
Cooler Voltage	V _C	IF = *EOL, T _C = 75°C	Max. 3.2 V	Max. 3.4 V	Max. 3.6 V
Cooler Current	I _C	IF = *EOL, T _C = 75°C	Max. 2.7 A	Max. 2.9 A	Max. 3.1 A
Thermistor Resistance	R _{th}	T _{LD} = 25°C B = 3900 ±100K	Min. 9.5 kΩ, Typ. 10 kΩ, Max. 10.5 kΩ		
Optical Isolation	R _O	T _{LD} = 25°C	Typ. 30 dB		
Extinction Ratio**	X _p	At Output Power	Min. 17 dB		

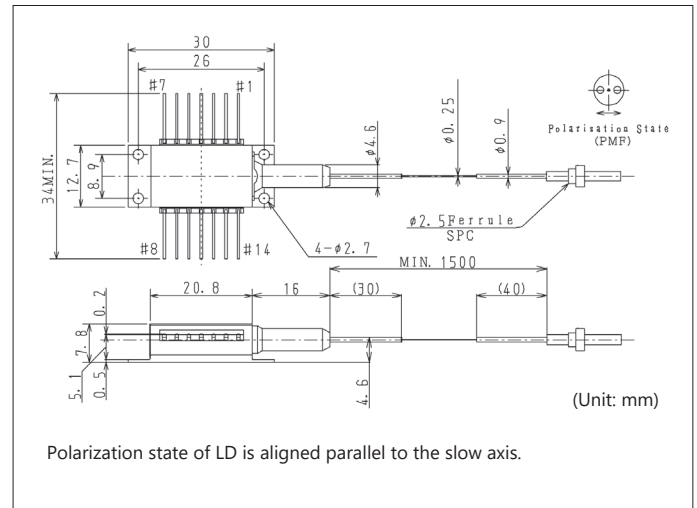
*: EOL = BOL × 1.2

**: Only PMF

Pin Configuration



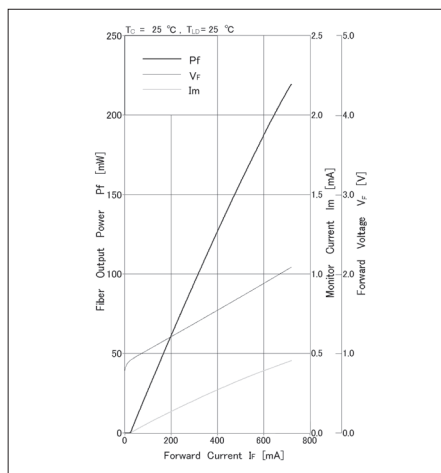
Dimensions



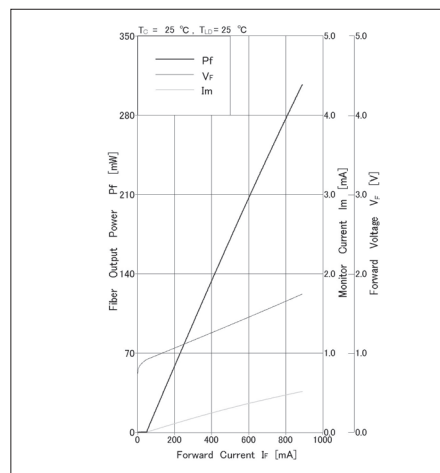
AF4B Series Typical Characteristics

Fiber Output Power/Monitor Current/Voltage-Forward Current Characteristics

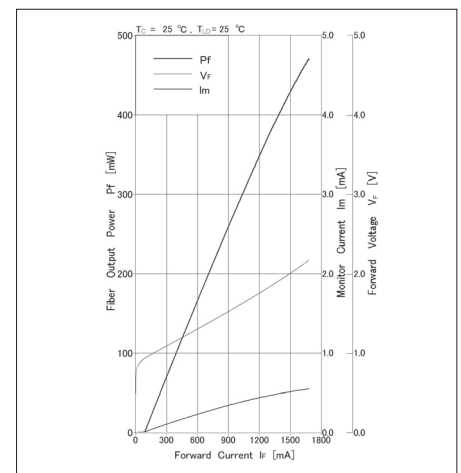
AF4B118AA75L



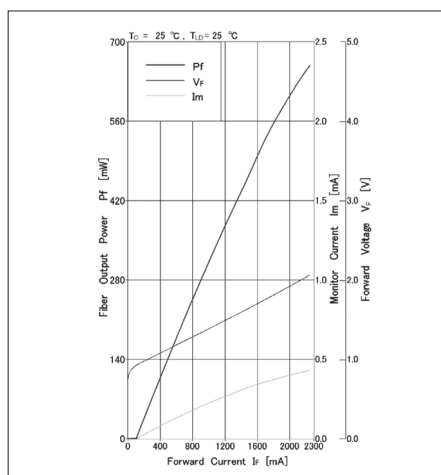
AF4B125EA75L



AF4B140CA75L

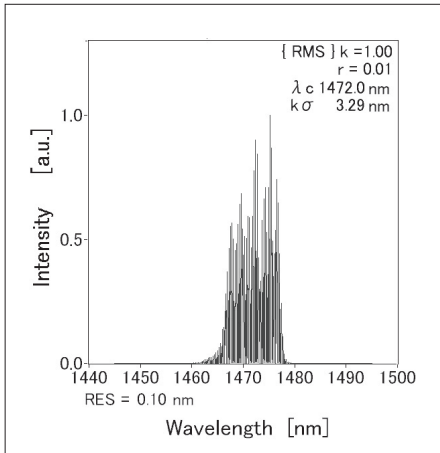


AF4B150FA75L

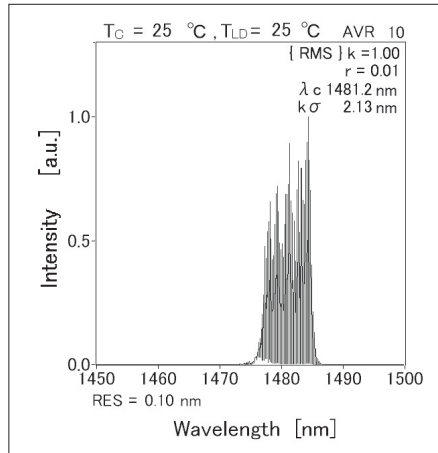


Emission Spectrum

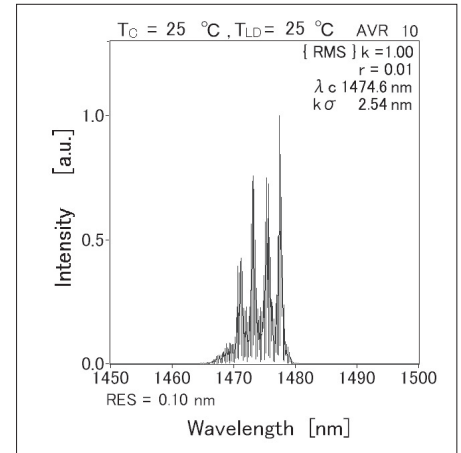
AF4B118AA75L



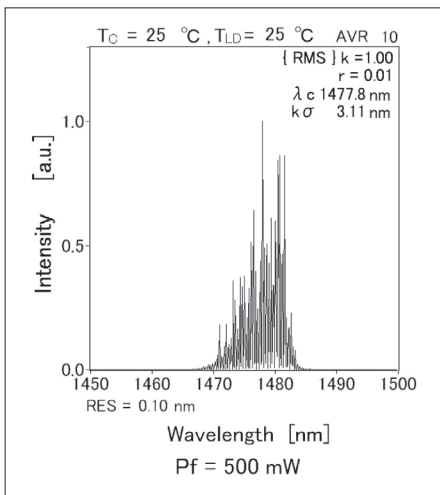
AF4B125EA75L



AF4B140CA75L



AF4B150FA75L



Ordering Information

Model: AF4B1 ### # ## #

Center Wavelength range

L: ±15 nm, M: ±20 nm, K: ±10 nm

Center Wavelength

75: 1475 nm, 80: 1480 nm,

70: 1470 nm, 65: 1465 nm

Fiber and Connector

A: SMF Ferrule, D: PMF Ferrule,

G: SMF FC/PC, K: PMF FC/PC

Optical Output Power

Type A

12A: 120 mW

14A: 140 mW

16A: 160 mW

18A: 180 mW

Type B

20E: 200 mW

22E: 220 mW

25E: 250 mW

Type C

30C: 300 mW

35C: 350 mW

40C: 400 mW

Type D

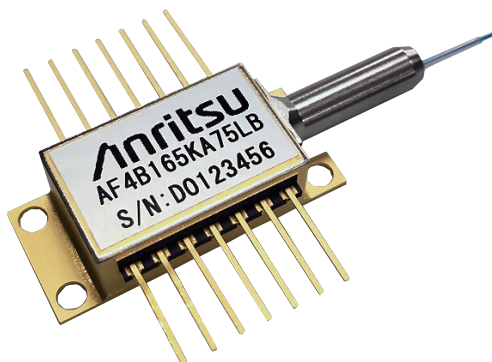
42F: 420 mW

46F: 460 mW

50F: 500 mW

1.48 μm LD Module

AF4B Series type E



RoHS Compliant Part

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 14 pin butterfly package with optical isolator, monitor photodiode and thermo-electric cooler (TEC).

Features

- Optical output power: AF4B155KA/KD75LB: 550 mW
AF4B160KA/KD75LB: 600 mW
AF4B165KA/KD75LB: 650 mW
- Fiber (UV coating fiber: ø0.25 mm)
- 14 pin butterfly Package
- Built-in optical isolator
- Internal monitor PD and TEC
- LD operating temperature: 35°C

Application

- for Er doped Fiber Amplifier.

Absolute Maximum Ratings

Item	Symbol	Ratings
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°C to +70°C
Storage Temperature	T_{stg}	-40°C to +85°C
Cooler Current	I_C	5.8 A

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

Optical and Electrical Characteristics ($T_{LD} = 35^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.
Threshold Current	I_{th}	—	—	—	250 mA
Center Wavelength	λ_C	At Output Power, RMS (-20 dB)	1460 nm	1475 nm	1490 nm
Spectral width	$\Delta\lambda$	At Output Power -20 dB	—	5 nm	10 nm
Monitor Current	I_m	At Output Power	300 μA	—	3000 μA
PD Dark Current	I_d	$V_{RD} = 5 \text{ V}$	—	—	0.1 μA
Tracking Error	ΔP_f	$I_m = \text{const.}, T_C = -5^\circ\text{C to } 70^\circ\text{C}$	—	—	0.5 dB
Isolation	R_O	$T_{LD} = 35^\circ\text{C}$	—	30 dB	—
Extinction Ratio*	X_P	At Output Power	17 dB	—	—
Thermistor Resistance	R_{th}	$T_{LD} = 35^\circ\text{C}$	—	6.5 kΩ	—
		$T_{LD} = 25^\circ\text{C}$	—	10.0 kΩ	—

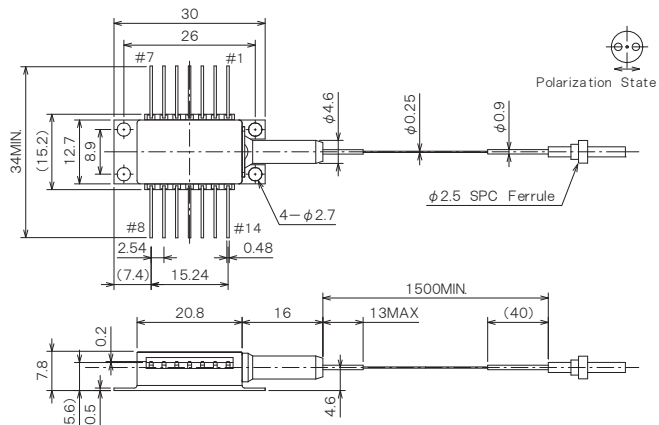
*: PMF Only

Optical Output Power/Cooler/Consumption Power

Item		Forward Current (Max.)	Forward Voltage (Max.)		Cooler Current (Max.)	Cooler Voltage (Max.)	Total Consumption Power (Max.)
Symbol		I _F	V _F		I _C	V _C	P _{Total}
Test Condition		At Output Power			I _F = EOL*, T _C = 70°C		
At Output Power	550 mW	1980	2.00	2.24	2.30	2.85	11.0
	600 mW	2170	2.05	2.30	2.60	3.15	13.0
	650 mW	2400	2.15	2.41	2.90	3.45	15.5
Unit		BOL [mA]	BOL [V]	EOL [V]	EOL [A]	EOL [V]	EOL [W]

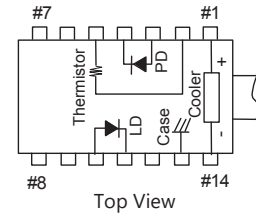
*: EOL = BOL × 1.12

Dimensions



(Unit: mm)

(Note) Polarization state of LD is Aligned parallel to the slow axis.

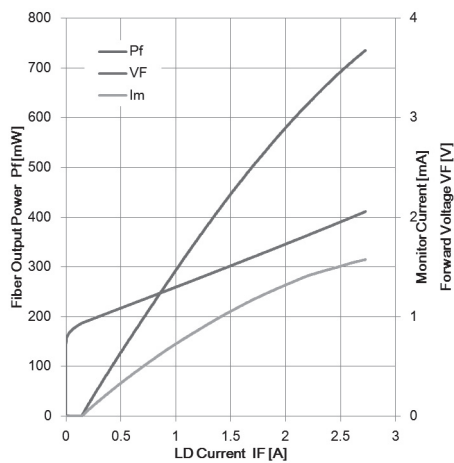


No.	Function	No.	Function
1	Cooler anode	8	NC
2	Thermistor	9	NC
3	PD anode	10	LD anode
4	PD cathode	11	LD cathode
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler cathode

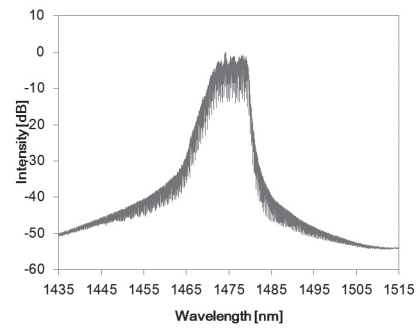
Pin Configuration

Typical Characteristics

Output Power/Monitor Current/Forward Voltage [AF4B165KA75LB]

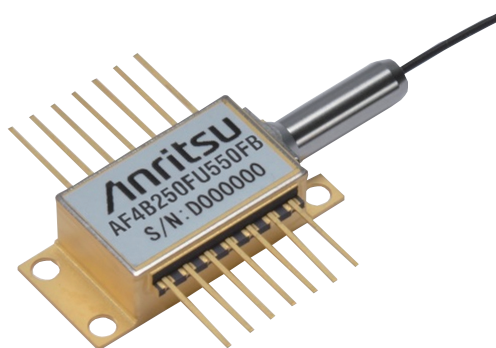


Emission spectrum



1.4 μm FBG LD Module

AF4B2 Series type GD



RoHS Compliant Part

The AF4B2 SERIES type GD is the pumping laser module of 1.4 μm band developed for the optical fiber Raman amplifier.

Features

- Optical output power: 300 mW to 500 mW
- Wavelength range: $\lambda_T = 1420 \text{ nm}$ to 1485 nm
- Polarization maintaining fiber (PMF, $\varnothing 0.25 \text{ mm}$ UV-coating)
- 14 pin butterfly package, Monitor-PD, Built-in Cooler
- LD operating temperature: 35°C

Application

- Raman Amplifier

Absolute Maximum Ratings

Item	Symbol	Ratings
LD Forward Current	I_F	2200 mA
LD Reverse Voltage	V_R	2 V
PD Forward Current	I_{FD}	10 μA
PD Reverse Voltage	V_{RD}	20 V
Operating Case Temperature	T_C	-5°C to $+70^\circ\text{C}$
Storage Temperature	T_{stg}	-40°C to $+85^\circ\text{C}$
Cooler Current	I_C	5.8 A

*: Exceeding the absolute maximum ratings may cause a failure.

Specification of Pigtail Fiber

Item	Min.	Typ.	Max.
Cut-off Wavelength	1300 nm	—	1400 nm
Mode Field Diameter @1550 nm	10.0 μm	10.5 μm	11.0 μm
Clad Diameter	124 μm	125 μm	126 μm
UV Coating Diameter	230 μm	245 μm	260 μm
Temperature Characteristic of FBG Wavelength	—	0.01 nm/ $^\circ\text{C}$	0.02 nm/ $^\circ\text{C}$
Bending Radius	30 mm	—	—

Optical and Electrical Characteristics ($T_{FBG} = 25^\circ\text{C}$, $T_{LD} = 35^\circ\text{C}$, $T_C = 25^\circ\text{C}$)

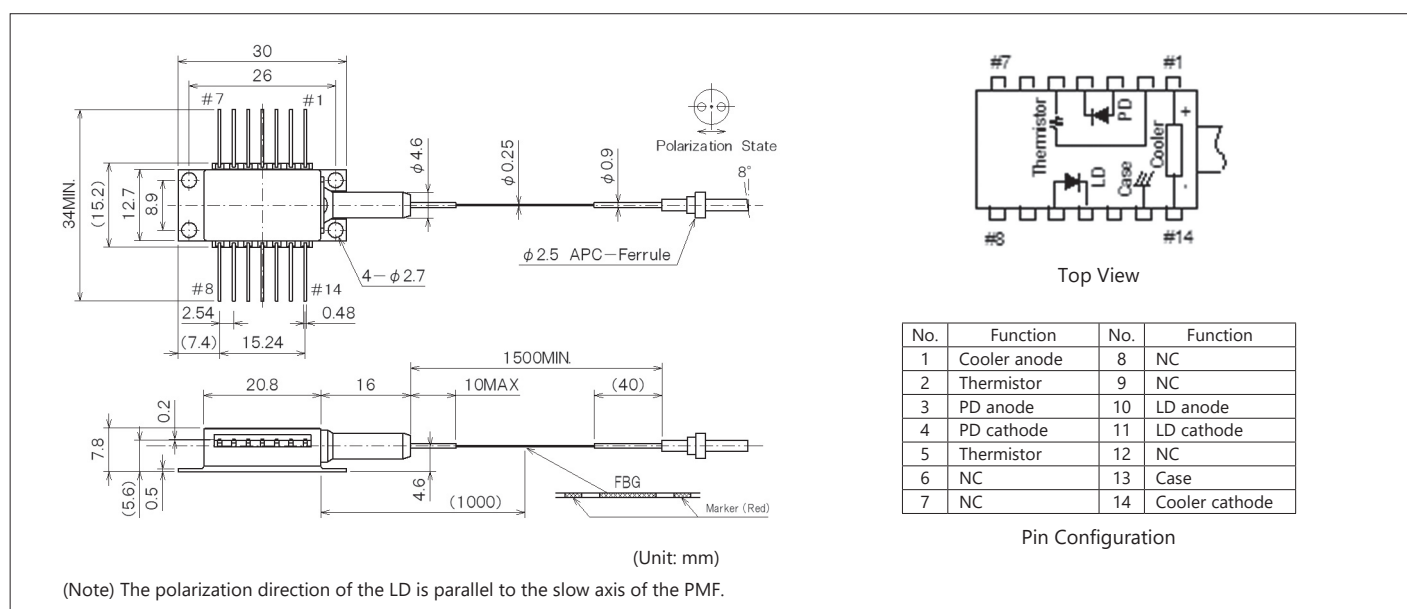
Item	Symbol	Test Condition	Min.	Typ.	Max.
Threshold Current	I_{th}	—	—	—	180 mA
Center Wavelength	λ_C	At rating output power, RMS (-20 dB)	$\lambda_T - 1.0 \text{ nm}$	$\lambda_T \text{ nm}$	$\lambda_T + 1.0 \text{ nm}$
Spectral Width	$\Delta\lambda$	At rating output power, -10 dB	—	—	3.5 nm
Monitor Current	I_m	At rating output power, $V_{RD} = 5 \text{ V}$	100 μA	—	2000 μA
PD Dark Current	I_d	$V_{RD} = 5 \text{ V}$	—	—	0.1 μA
Tracking Error	ΔP_f	$I_m = \text{const.}$, $T_C = -5^\circ\text{C}$ to $+70^\circ\text{C}$	-0.5 dB	—	0.5 dB
Thermistor Resistance	R_{th}	$T_{LD} = 35^\circ\text{C}$, $B = 3900 \pm 100\text{K}$	6.0 k Ω	6.5 k Ω	7.0 k Ω
Polarization Extinction Ration	X_P	At rating output power	17 dB	—	—

Optical Output, Cooler Characteristics and Power Consumption

Center Wavelength	Rating Output Power	LD Current	Forward Voltage		Cooler Current	Cooler Voltage	Power Consumption
λ_T	P_f	I_f	V_f		I_c	V_c	P_{total}
[nm]	[mW]	BOL [A]	BOL [V]	EOL [V]	EOL [A]	EOL [V]	EOL [W]
1420 to 1485	300	1100	2.0	2.2	1.52	1.94	5.2
	320	1200	2.0	2.2	1.61	2.01	5.7
	340	1300	2.0	2.2	1.69	2.09	6.2
	350	1330	2.0	2.2	1.72	2.11	6.5
	360	1350	2.0	2.2	1.75	2.17	6.7
	380	1400	2.0	2.2	1.80	2.21	7.1
	400	1450	2.0	2.2	1.85	2.30	7.5
	420	1550	2.2	2.45	1.95	2.36	8.0
	450	1650	2.2	2.45	2.01	2.40	8.7
	500	1750	2.2	2.45	2.05	2.45	9.2

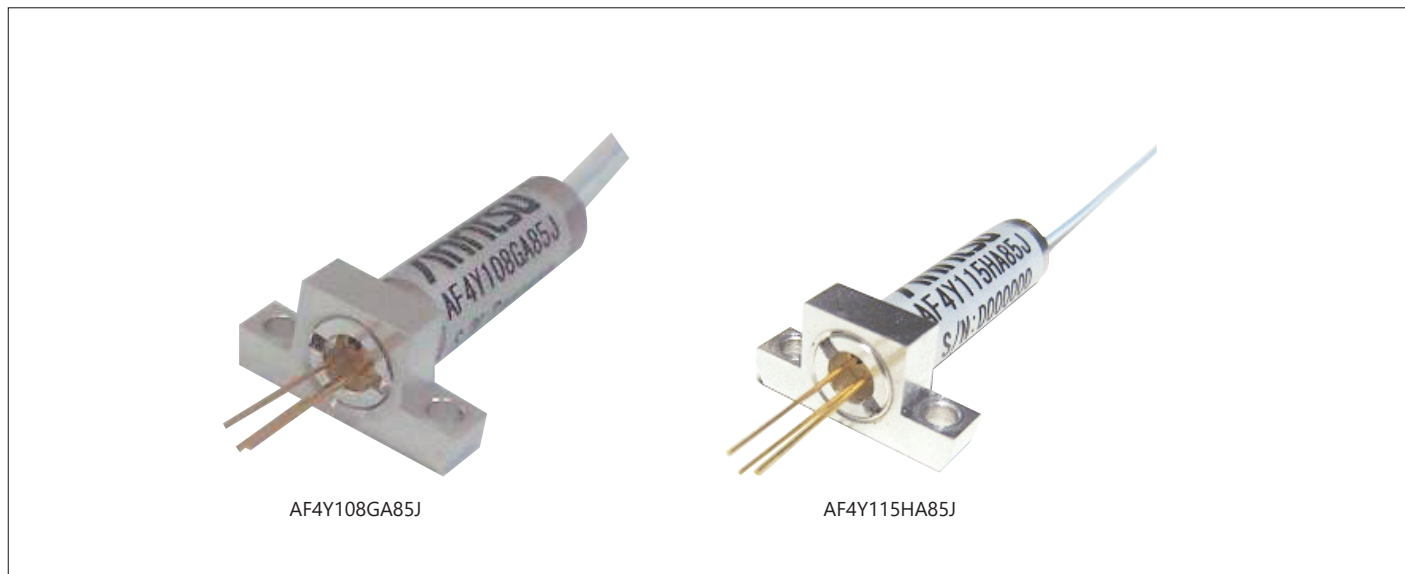
*: $I_{f_EOL} = I_{f_BOL} \times 1.15$, maximum value

Dimensions



1.48 μm Cylindrical Module

AF4Y108GA85J/AF4Y115HA85J



RoHS Compliant Part

This LD is 1.48 μm high power laser diode module designed for Er doped fiber amplifier. The laser is packaged in a cylindrical package without isolator, monitor photodiode and thermoelectric cooler (TEC).

Features

- Uncooled (TEC less) coaxial module
- Low power consumption

Absolute Maximum Ratings ($T_C = 70 \text{ deg.C}$)

Item	Symbol	AF4Y108GA85J	AF4Y115HA85J
LD Forward Current	I_F	600 mA	1000 mA
LD Reverse Voltage	V_R	2.0 V	
Operating Case Temperature*	T_C	-5°C to $+70^\circ\text{C}$	
Storage Temperature	T_{stg}	-40°C to $+85^\circ\text{C}$	

*: Wavelength begins to be distributed under the cut-off (1450 nm) when operated below 30 deg.C

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

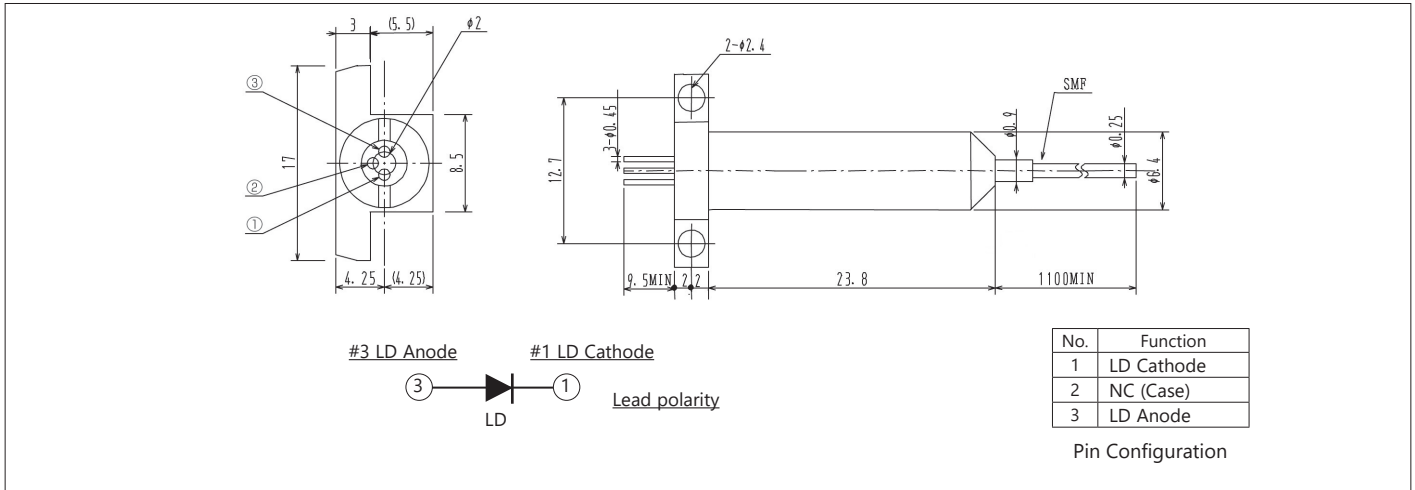
Optical and Electrical Characteristics ($T_C = 70 \text{ deg.C}$)

Item	Symbol	Test Condition	AF4Y108GA85J			AF4Y115HA85J		
			Min.	Typ.	Max.	Min.	Typ.	Max.
Threshold Current	I_{th}		—	45 mA	55 mA	—	130 mA	—
Forward Current (BOL)	I_F	*2	—	350 mA	400 mA	—	—	800 mA
Center Wavelength*1	λ_C	*2, RMS (-20 dB)	1478 nm	—	1490 nm	1478 nm	—	1490 nm
Forward Voltage	V_F	*2	—	1.4 V	1.8 V	—	—	2.0 V

*1: Center wavelength is measured under no reflected light condition

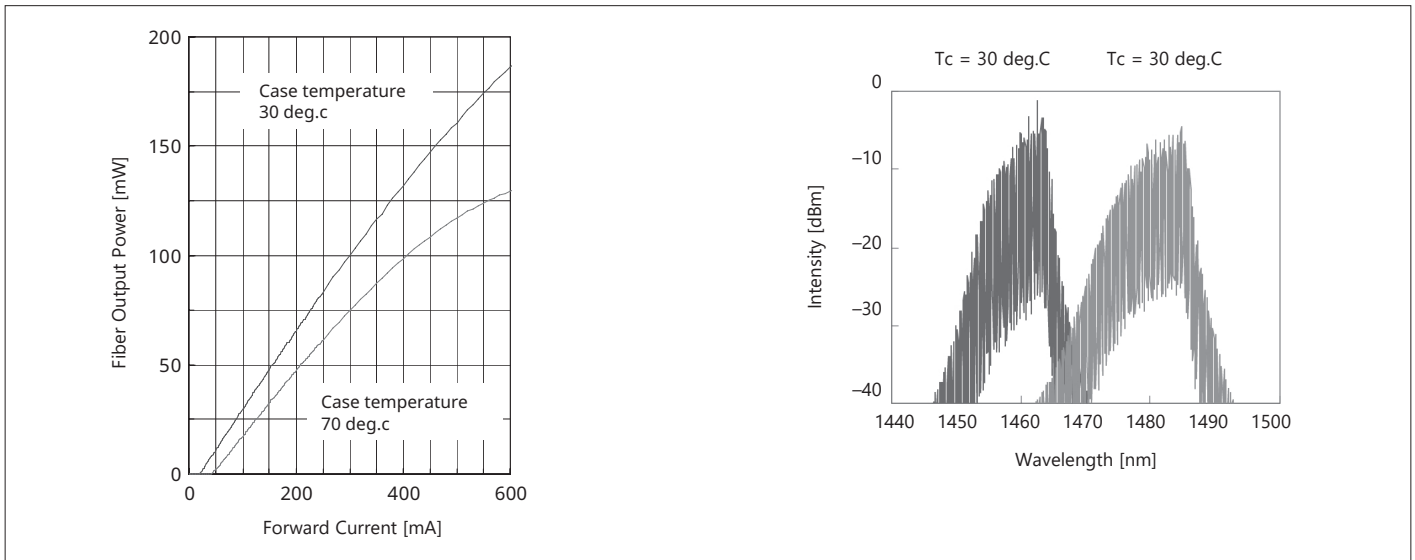
*2: AF4Y108GA85J ($P_F = 80 \text{ mW}$), AF4Y115HA85J ($P_F = 150 \text{ mW}$)

Dimensions

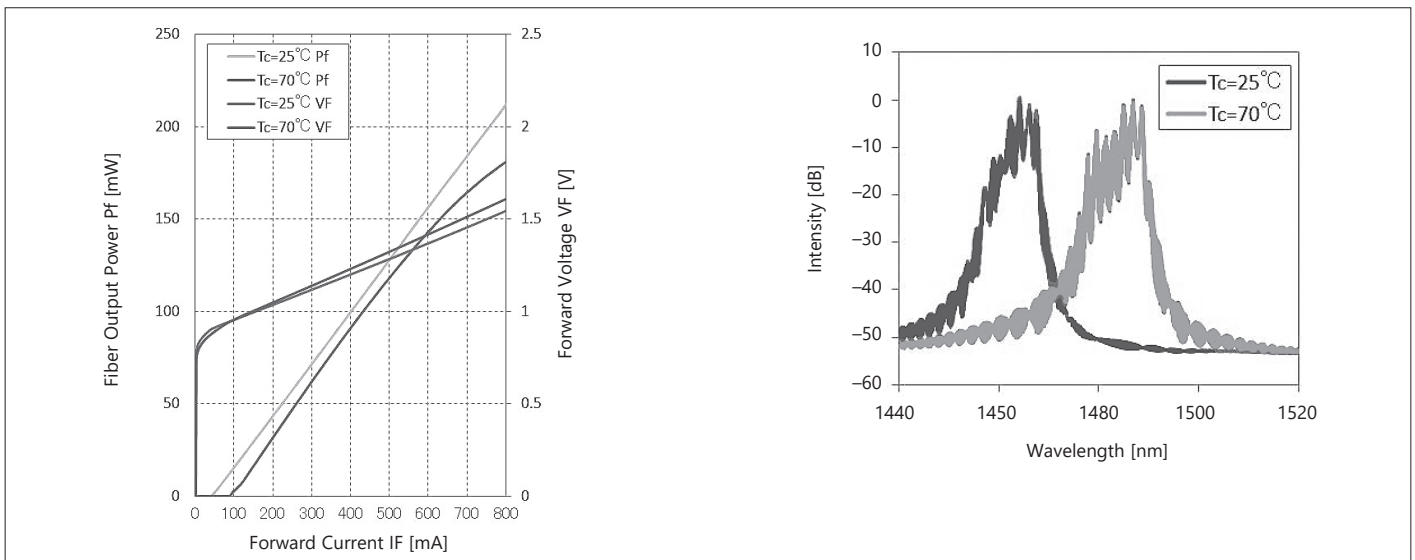


IL Characteristics & Spectrum

AF4Y108GA85J

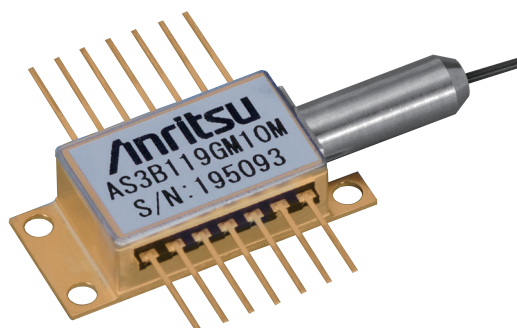


AF4Y115HA85J



1.31/1.55/1.65 μm SLD Module

AS3B119GM10M/AS5B125EM50M/AS6B118GM50M



AS3B119GM10M

RoHS Compliant Part

The AS3B/5B/6B series are 1.55 μm SLD (Super-Luminescent Diode) modules 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).

Applications

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

Features

- High optical output: 15 mW/ ≤ 400 mA (AS3B)
25 mW/ ≤ 500 mA (AS5B)
10 mW/ ≤ 350 mA (AS6B)
- Wide spectral half width: $\Delta\lambda = 55$ nm (typ., AS3B)
 $\Delta\lambda = 60$ nm (typ., AS5B)
 $\Delta\lambda = 70$ nm (typ., AS6B)
- Built-in optical isolator
- Internal monitor PD and TEC

Absolute Maximum Ratings ($T_{\text{SLD}} = 25$ deg.C)

Item	Symbol	Rating		
		AS3B119GM10M	AS5B125EM50M	AS6B118GM50M
SLD Forward Current	I_F	480 mA	600 mA	420 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°C to $+75^\circ\text{C}$		
Storage Temperature	T_{stg}	-40°C 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 deg.C, T_C = 25 deg.C)

Item	Symbol	Test Condition	AS3B119GM10M			AS5B125EM50M			AS6B118GM50M		
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.
Forward Voltage	V _F	*1	—	—	2.5 V	—	—	2.4 V	—	—	2.5 V
Forward Current (BOL)	I _F	*1	—	—	400 mA	—	—	500 mA	—	—	350 mA
Center Wavelength	λ _C	*1, -3 dB	1290 nm	1310 nm	1330 nm	1530 nm	1550 nm	1570 nm	1630 nm	1650 nm	1670 nm
Spectral Width	Δλ	*1, -3 dB	50 nm	55 nm	—	55 nm	60 nm	—	65 nm	70 nm	—
Spectral Ripple	M	*1, res = 0.1 nm	—	—	0.6 dB	—	—	0.6 dB	—	—	0.8 dB
Monitor Current	I _m	*1, V _{RD} = 5 V	100 μA	—	2000 μA	400 μA	—	2000 μA	100 μA	—	2000 μA
PD Dark Current	I _d	V _{RD} = 5 V	—	—	0.1 μA	—	—	0.1 μA	—	—	0.1 μA
Tracking Error	ΔP _f	I _m = const, T _C = -20°C to +70°C	—	—	0.5 dB	—	—	0.5 dB	—	—	0.5 dB
Cooler Voltage	V _C	I _F = I _F (EOL), T _C = 75°C	—	—	3.5 V	—	—	3.5 V	—	—	3.5 V
Cooler Current	I _C	I _F = I _F (EOL), T _C = 75°C	—	—	1.2 A	—	—	1.2 A	—	—	1.2 A
Thermistor Resistance	R _{th}	T _{SLD} = 25°C, B = 3900 ±100K	9.5 kΩ	10 kΩ	10.5 kΩ	9.5 kΩ	10 kΩ	10.5 kΩ	9.5 kΩ	10 kΩ	10.5 kΩ
Optical Isolation	R _o	*2, T _{SLD} = 25°C	—	30 dB	—	—	30 dB	—	—	30 dB	—

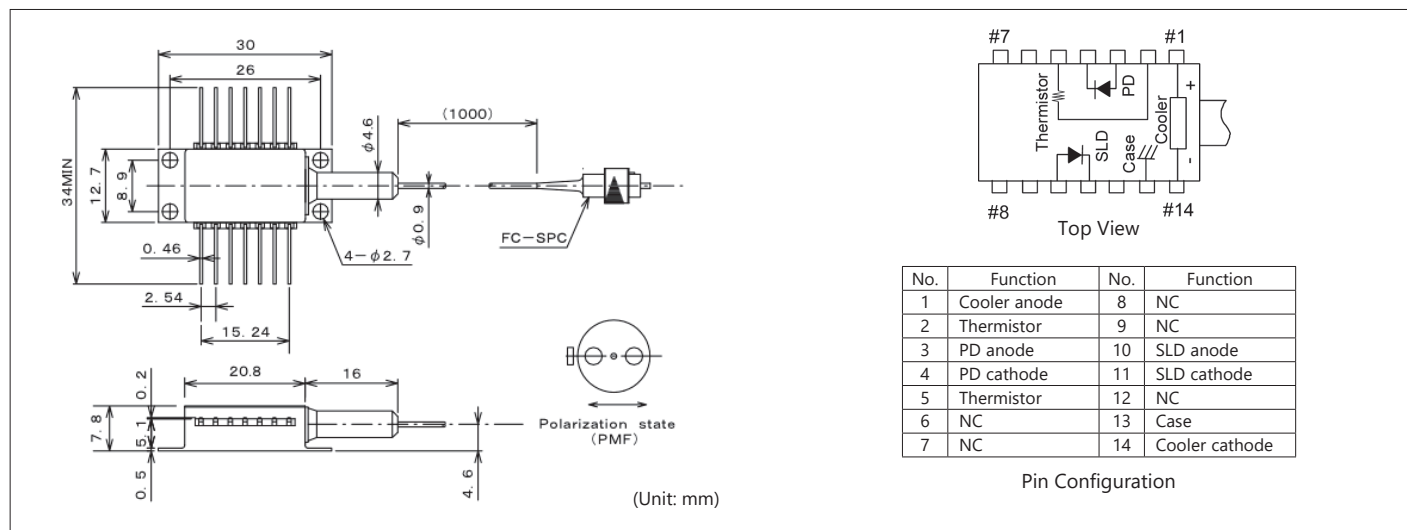
*1: AS3B119GM10M (P_F = 15 mW), AS5B125EM50M (P_F = 25 mW), AS6B118GM50M (P_F = 10 mW)

*2: AS3B119GM10M (λ = 1310nm), AS5B125EM50M (λ = 1550nm), AS6B118GM50M (λ = 1650 nm)

Note: I_F (EOL) = I_F (BOL) × 1.2

Polarization state of SLD is aligned parallel to the slow axis.

Dimensions



SLD Unit with Drive Circuits

AM8P8006SL45G

NEW



RoHS Compliant Part

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: 880 nm
- Half spectrum width: 50 nm
- Built in SLD source and drive circuits
- SMF output
- D-sub 9pins female connector

Applications

- Light source for ophthalmology OCT
- Optical measurement

Absolute Maximum Rating

Item	Min.	Max.	Unit
Input Voltage (+5 V DC)	4.5	5.5	V
Input Voltage (Vset)	—	2.75	V
Storage Temperature	-20	+65	°C
Storage Humidity	—	95*	%

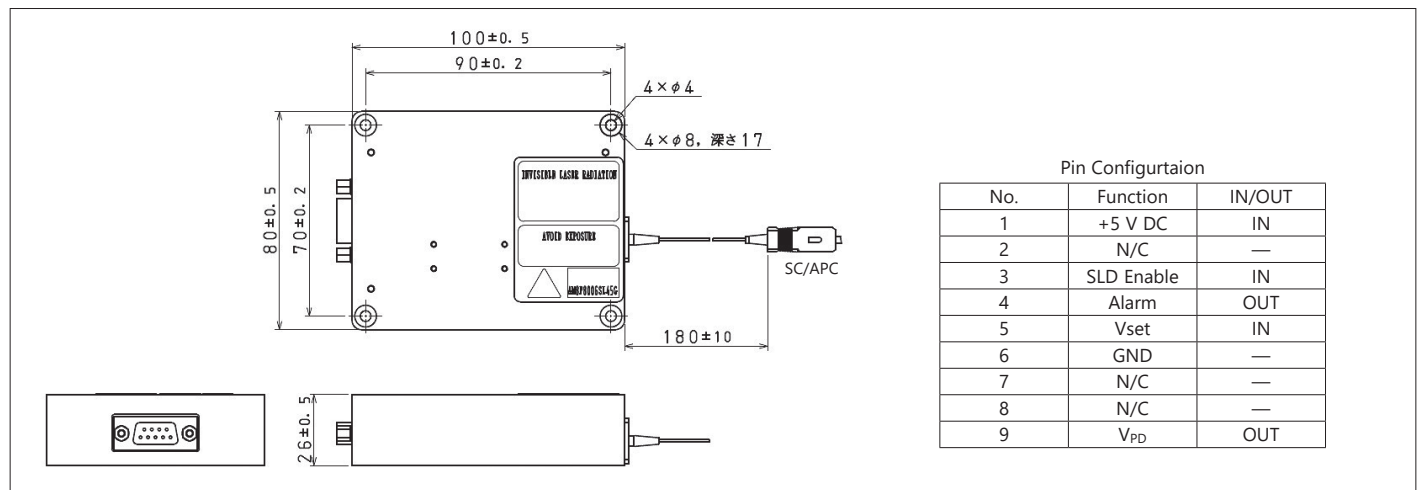
*: No condensation

Operating Conditions

Item	Min.	Max.	Unit
Input Voltage (+5 V DC)	4.75	5.25	V
Input Voltage (Vset)	0	2.5	V
Operating Temperature	+10	+55	°C
Operating Humidity	—	90*	%

*: No condensation

Dimensions



Optical and Electrical Characteristics (T_C = 25°C)

Item	Symbol	Test Condition	Min.	Typ.	Max.
Maximum Optical Output	P _{max}	V _{set} = 2.5 V	6.0 mW	—	7.0 mW
Center Wavelength (@-3 dB)	λ _c	V _{set} = 2.5 V	870 nm	880 nm	890 nm
Half Spectrum Width (@-3 dB)	Δλ	V _{set} = 2.5 V	45 nm	50 nm	—
Supply Current	—	Output P _{max} , +55°C	—	0.4 A	2.0 A
Power Consumption	—	Output P _{max} , +55°C	—	2.0 W	10.0 W
Input Voltage (V _{set})	V _{set}	Control from P _{min} to P _{max}	0.0 V	—	2.5 V
V _{set} Input Impedance	—	—	5kΩ	—	—
V _{PD} Output (Open circuit voltage at output end)	V _{PD}	V _{PD} = 0 to 3 V (±0.3 V) in P _f = P _{min} to P _{max}	0.0	—	3.3 V
V _{PD} Output Impedance	—	—	—	100Ω	—
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 mW to 7 mW

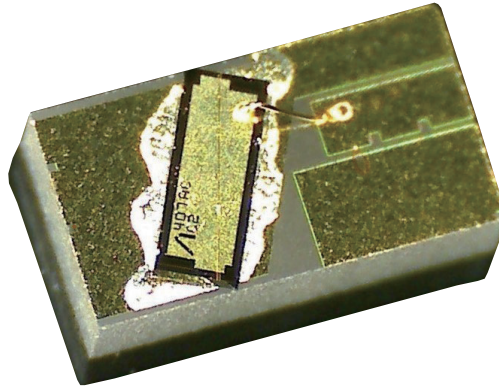
Alarm: Abnormal = High, Normal = Low

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

1.31 μm SOA (Chip Carrier Type)

AA3T115CY

NEW



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

Features

- Gain: 18 dB
- Polarization Dependent Gain (PDG): 1.5 dB
- Low Power Consumption: 0.18 W

Applications

- Optical transceiver
- Preamplifier

RoHS Compliant Part

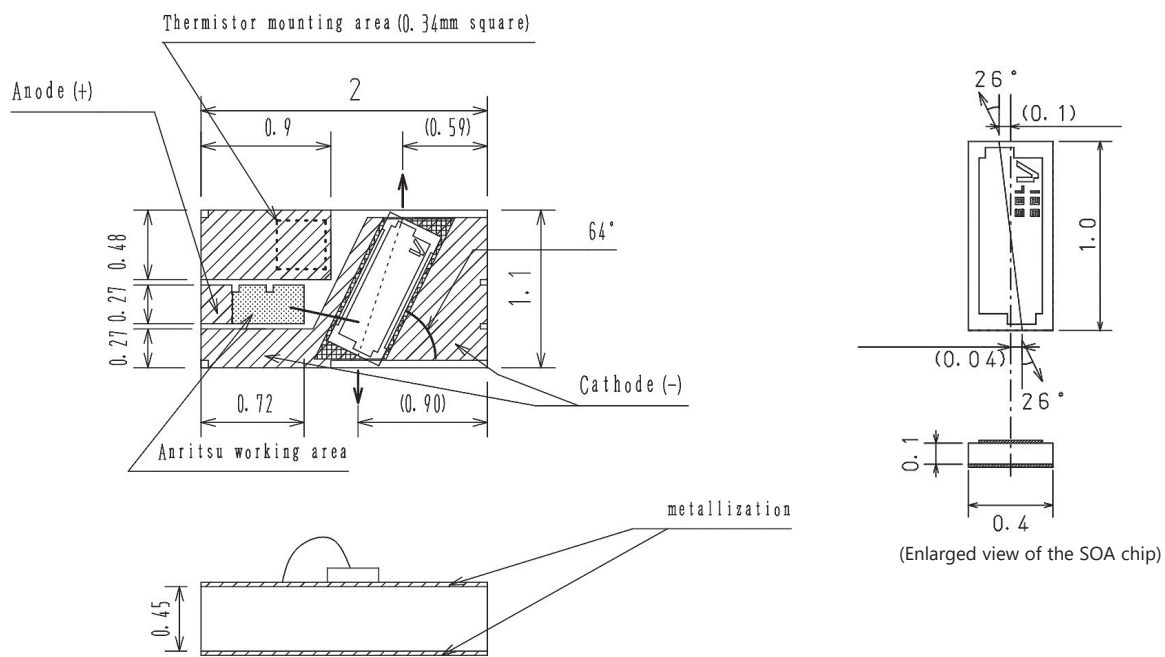
Absolute Maximum Ratings ($T_{\text{sub}} = 25^\circ\text{C}$)

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

Excess over the absolute maximum ratings may lead to damage.

*: No condensation

Dimensions

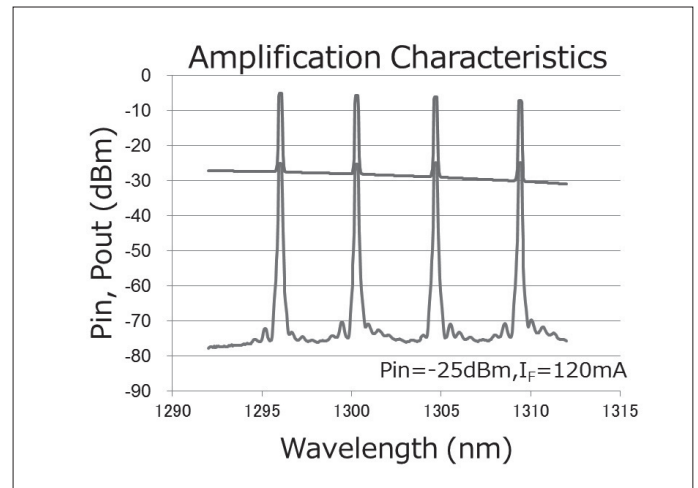
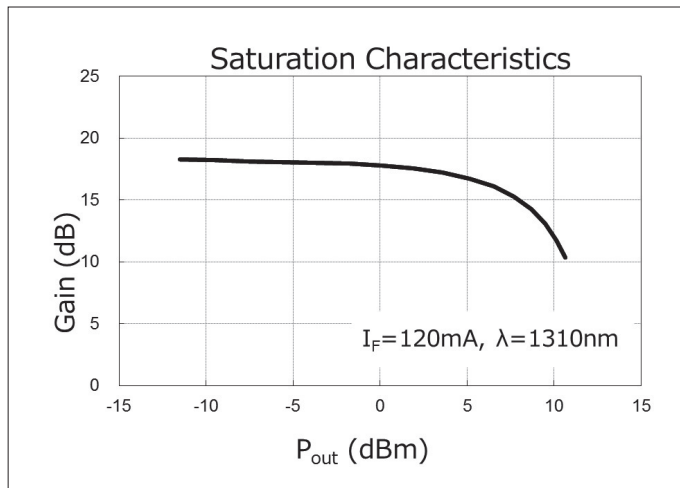


Optical and Electrical Specifications ($T_{sub} = 25^{\circ}\text{C}$)

Item	Symbol	Test Condition	Min.	Typ.	Max.
Gain	G	$I_F = 120\text{ mA}$, $\lambda_{in} = 1310\text{ nm}$, $P_{in} = -25\text{ dBm}$	—	18 dB	—
Polarization Dependent Gain	PDG	$I_F = 120\text{ mA}$, $\lambda_{in} = 1310\text{ nm}$, $P_{in} = -25\text{ dBm}$	—	1.5 dB	—
Saturation Power	P_S	$I_F = 120\text{ mA}$, -3 dB , $\lambda_{in} = 1310\text{ nm}$	—	7 dBm	—
Noise Figure	NF	$I_F = 120\text{ mA}$, $\lambda_{in} = 1310\text{ nm}$, $P_{in} = -25\text{ dBm}$	—	7 dB	—
Beam Divergence Angle Lateral (Parallel)	θ_t	$I_F = 120\text{ mA}$, FAHM	—	21 deg.	—
Beam Divergence Angle Transverse (Perpendicular)	θ_p	$I_F = 120\text{ mA}$, FAHM	—	29 deg.	—
Optical output	P_{ASE}	$I_F = 120\text{ mA}$	0.7 mW	0.9 mW	1.9 mW
Forward Voltage	V_F	$I_F = 120\text{ mA}$	1.0 V	1.1 V	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.

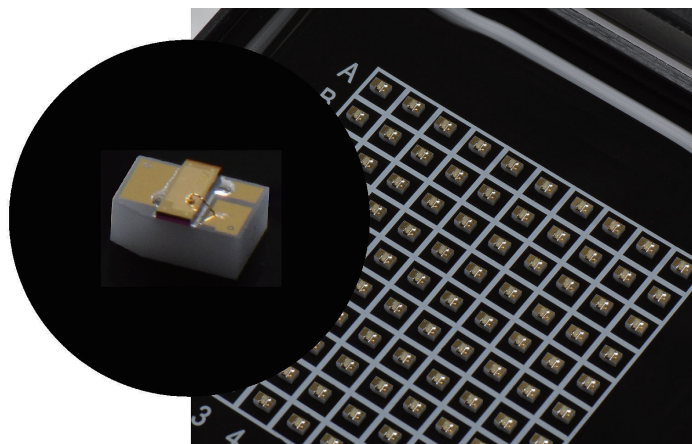
Typical Characteristics



1.5 μm Gain Chip (chip on submount) for External Cavity Laser

AE5T315BY20P/AE5T310BY10P

NEW



RoHS Compliant Part

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

Features

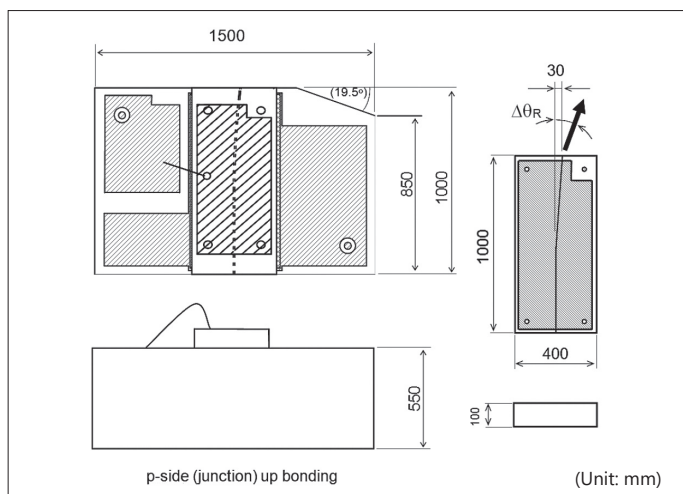
- Broad band: >100 nm tuning range
- High optical output power: >40 mW with external cavity
- Low spectral ripple
- Bare chip shipment is also available
- Normal facet reflectance
 - AE5T315BY20P: HR (95%)
 - AE5T310BY10P: LR (6%)

Absolute Maximum Ratings ($T_{LD} = 25^{\circ}\text{C}$)

Item	Symbol	Rating	Unit
Forward Current	I_F	500	mA
LD Reverse Voltage ($T_{LD} = 25^{\circ}\text{C}$)	V_R	2	V
Operating Case Temperature	T_C	+15 to +45	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-40 to +85	$^{\circ}\text{C}$
Process/Soldering Temp. vs. Time	300 $^{\circ}\text{C}$	<20	s
	200 $^{\circ}\text{C}$	<2	hour
	120 $^{\circ}\text{C}$	<100	hour
ESD (Human Body Model)	ESD	500	V

Excess over the absolute maximum ratings may cause device failure.

Dimensions



Optical and Electrical Characteristics (T_{LD} = 25°C, T_C = 25°C)

Item	Symbol	Test Condition	AEST315BY20P			AEST310BY10P		
			Min.	Typ.	Max.	Min.	Typ.	Max.
Forward Voltage	V _F	I _F = 200 mA pulsed (tw = 50 μs)	—	1.4 V	2 V	—	1.4 V	2 V
ASE Output Power	P _{ASE}	I _F = 200 mA pulsed (tw = 50 μs)	5 mW	10 mW	—	1 mW	5 mW	—
Center Wavelength	λ _C	I _F = 100 mA pulsed (tw = 50 μs)	1490 nm	—	1550 nm	1480 nm	—	1540 nm
ASE Ripple	M	I _F = 100 mA CW at λ = 1550 nm	—	—	3.5 dB	—	—	2 dB
Beam Exit Angle	Δθ _R	I _F = 200 mA CW	19 deg.	20 deg.	21 deg.	19 deg.	20 deg.	21 deg.
Beam Divergence Angle (FAHM) Transverse (Perpendicular), Normal Facet	Θ _t ^{NOR}	I _F = 200 mA CW, FAHM	15 deg.	20 deg.	25 deg.	15 deg.	20 deg.	25 deg.
Beam Divergence Angle (FAHM) Lateral (Parallel), Normal Facet	Θ _p ^{NOR}	I _F = 200 mA CW, FAHM	17 deg.	20 deg.	23 deg.	17 deg.	20 deg.	23 deg.
Beam Divergence Angle (FAHM) Transverse (Perpendicular), Angled Facet	Θ _t ^{ANG}	I _F = 200 mA CW, FAHM	26 deg.	29 deg.	32 deg.	26 deg.	29 deg.	32 deg.
Beam Divergence Angle (FAHM) Lateral (Parallel), Angled Facet	Θ _p ^{ANG}	I _F = 200 mA CW, FAHM	15 deg.	18 deg.	21 deg.	15 deg.	18 deg.	21 deg.

Technical Specifications

Item	Symbol	Test Condition	AEST315BY20P			AEST310BY10P		
			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	Length		0.98 mm	1 mm	1.02 mm	0.98 mm	1 mm	1.02 mm
Chip Width	Width		0.38 mm	0.40 mm	0.42 mm	0.38 mm	0.40 mm	0.42 mm
Chip Height	Height		0.09 mm	0.10 mm	0.11 mm	0.09 mm	0.10 mm	0.11 mm

Wavelength Swept Light Source

AQA5500P/AQB5500P



RoHS Compliant Part

The 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
- Single-longitudinal-mode oscillation 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

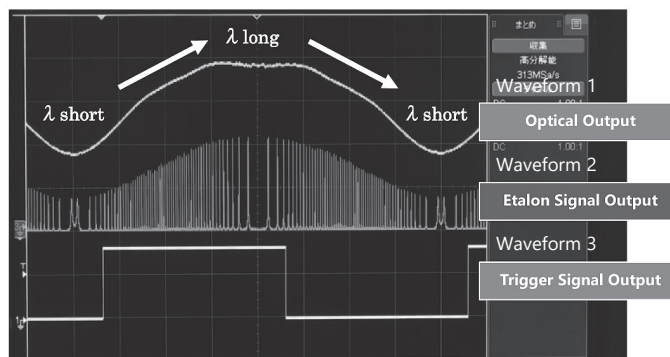
- Precision and wide range dimensional metrology using optical interferometry
- OCT* for internal structure measurement
- Temperature, torsion, deformation, and vibration measurement using optical fiber sensing
- Inspecting optical-device wavelength characteristics

* OCT: Optical Coherence Tomography

Wavelength Swept Optical Output

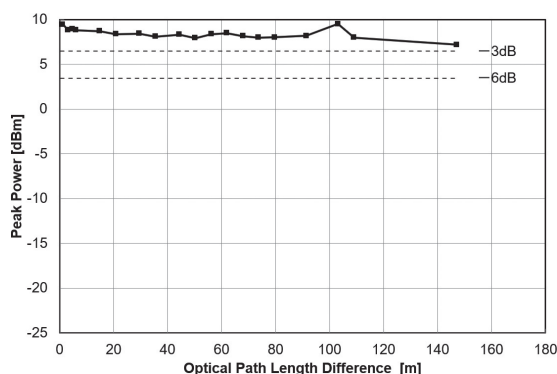
The output wavelength of this light source changes sinusoidally over time. The optical output changes periodically according to the wavelength sweep as indicated by green waveform. The wavelength changes from the short-wavelength end λ_{short} to the long-wavelength end λ_{long} in the half period and then returns to λ_{short} in the remaining half period as shown by Waveform 1.

Waveforms 2 and 3 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.

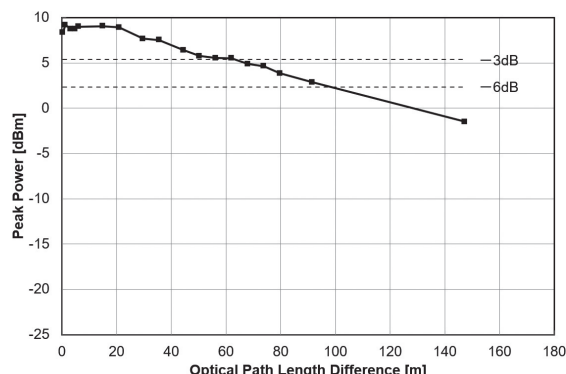


Output Light Coherence Length

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 each wavelength sweep width of 25 nm and 50 nm.



Wavelength Sweep Width 25 nm



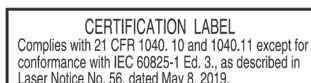
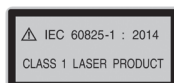
Wavelength Sweep Width 50 nm

Optical/Electrical Specifications

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 nm to 110 nm	15 nm 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: Class 1*
Trigger Signal Output	LVTTTL		Interface: SMA Trigger signal output setting resolution: 1 pm
Etalon Signal Output	Analog signal		Interface: SMA
Power Supply	+12 Vdc ±0.5 V		Maximum consumption current: 3.2 A max.
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%RH		No condensation or icing

About 30-minutes warmup

*: This product complies with the IEC 60825-1:2014, 21 CFR1040.10, and 1040.11 laser safety regulations; the following safety labels are affixed to the product.



Ordering Information

Please specify the model/order number, name and quantity when ordering.

The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model/Order No.	Name
AQA5500P	Main Frame Wavelength Swept Light Source
	Standard Accessories
	Power cable: 1 pc
	CD-ROM (Contents - Operation manual, Control software, USB driver): 1 disk
	Operation manual: 1 copy

Model/Order No.	Name
AQB5500P	Main Frame Wavelength Swept Light Source
	Standard Accessories
	Power cable: 1 pc
	CD-ROM (Contents - Operation manual, Control software, USB driver): 1 disk
	Operation manual: 1 copy