NFL: 1502203

Sender: Photonic Component Business Group
NTT Electronics
Contact: Overseas Device Business Division
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INSPECTION SHEET

Model Number	NLKIC5EAAA
Quantity	2
Serial Number	Refer To Sheet
Data Attached	◯Laser Diode Module Test Data ◯I-L, I-V , I-Im ◯Spectrum ◯How to handle laser diodes
Order No.	D1301021
Note	Thermistor Resistance: 10KΩ±5%(@25^{0}C) Thermistor B Constant: 3410KΩ±2%(@25^{0}C)

CAUTION

(a)Electrostatic surge causes a permanent damage to laser diodes. Before connecting /disconnecting the laser diode to a power supply, set the output level of the power supply to zero.

(b)These laser diodes are designed for use solely as components of buyer's products or systems and therefore do not comply with the appropriate requirements for complete laser products by U.S.Department of Health and Human Services.

WARNING

1.Laser diodes emit invisible radiation which can be harmful to human eyes. Do not look into the light emitted from the fiber.

2.Optical fiber is fragile. A broken fiber can cause an injury. Please handle with maximum care.

3.Semiconductor laser chip consists of In, Ga, As and P atoms. When you dispose of it, to avoid environmental pollution, please follow the guidelines of your local government.

Inspection Date: 8—Apr-16
Inspected by:
Approved by:

Shipping Date: 2016/04/08

Model Number: NLKIC5EAAA

NEL Part No.1502203-A-1-00

Quantity: 2 pieces

No.	Model Number	Wave Length	Serial No.
1	NLK1C5EAAA	1550	15144533
2	NLK1C5EAAA	1550	15144534

Module Type: AAA

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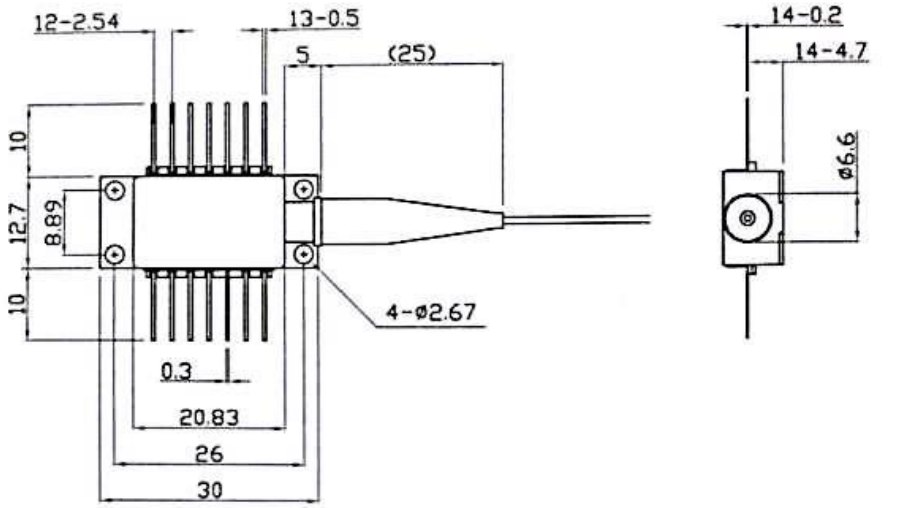
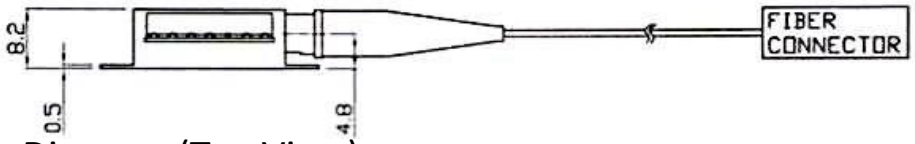
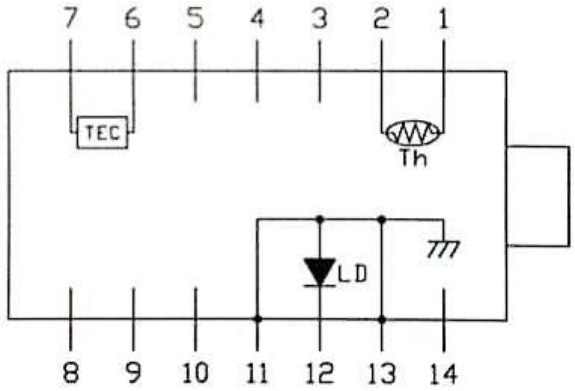
Outline Diagram [mm]





Schematic Diagram (Top View)



Pin Connection

No.	Description	No.	Description
1	Thermistor	8	NC
2	Thermistor	9	NC
3	NC	10	NC
4	PD Anode(-)	11	Case Ground (LD Anode)
5	PD Cathode(+)	12	LD Cathode(-)
6	Cooler(+)	13	Case Ground(LD Anode)
7	Cooler(-)	14	NC

NTT Electronics

[DFB-LD Module Test Data]

NTT Electronics Corporation

Product Type	NLK1C5EAAA
Module No.	15144533

ELECTRICAL/ OPTICAL CHARACTERISTICS $T_{CASE} = T_{LASER} = 25℃$

No.	Parameter	Symbol	Condition	Specifications			Test Results	Units
				Min	Typ	Max		
1	Forward Voltage	V_F	CW, I_F=30mA		1.2	1.6	1.15	V
2	Threshold Current	$I_{(TH)}$	CW		10	20	12.3	mA
3	Fiber Output Power	Φ_e	CW, I_F=80mA	10			16.3	mW
4	Peak Wavelength	λ_p	CW, Φ_e=10mA	1549.00	1550.00	1551.00	1550.21	nm
5	Side Mode Suppression Ratio	SMS	CW, Φ_e=10mA	35			45	dB
6	Monitoring Current (PD)	IR(E)	CW, Φ_e=10mA	0.1			0.352	mA
7	Tracking Error	E_R	IR(E)=Constant	-0.5		0.5	-0.08	dB
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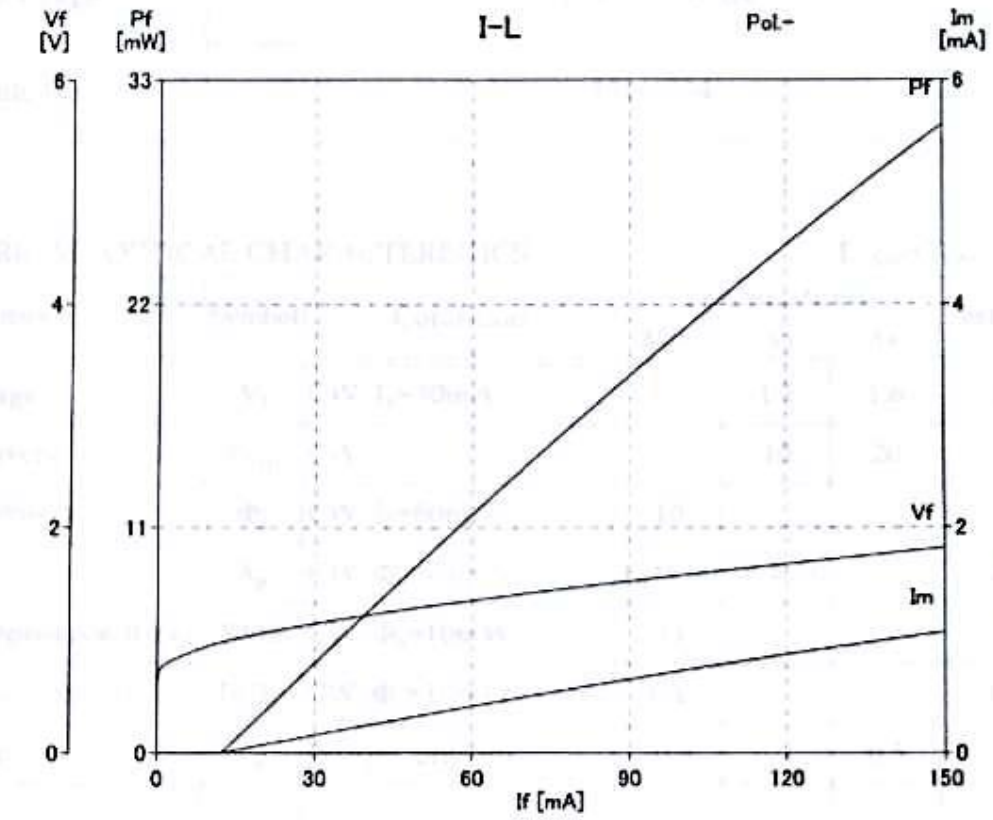
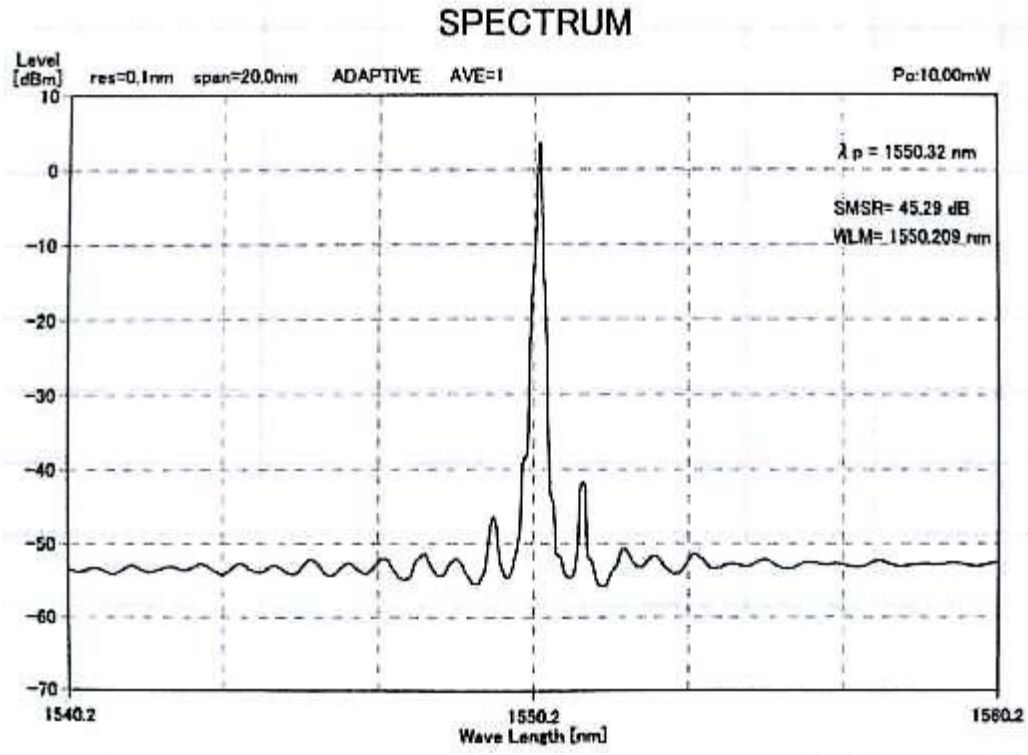
LD Characteristic

Module No. 15144533

T-CASE[℃] 25.0

T-Sub[℃] 25.0





NTT Electronics

[DFB-LD Module Test Data]

NTT Electronics Corporation

Product Type	NLK1C5EAAA
Module No.	15144534

ELECTRICAL/ OPTICAL CHARACTERISTICS $T_{CASE} = T_{LASER} = 25℃$

No.	Parameter	Symbol	Condition	Specifications			Test Results	Units
				Min	Typ	Max		
1	Forward Voltage	V_F	CW, I_F=30mA		1.2	1.6	0.99	V
2	Threshold Current	$I_{(TH)}$	CW		10	20	12.5	mA
3	Fiber Output Power	Φ_e	CW, I_F=80mA	10			16.3	mW
4	Peak Wavelength	λ_p	CW, Φ_e=10mA	1549.00	1550.00	1551.00	1549.74	nm
5	Side Mode Suppression Ratio	SMS	CW, Φ_e=10mA	35			44	dB
6	Monitoring Current (PD)	IR(E)	CW, Φ_e=10mA	0.1			0.301	mA
7	Tracking Error	E_R	IR(E)=Constant	-0.5		0.5	-0.03	dB
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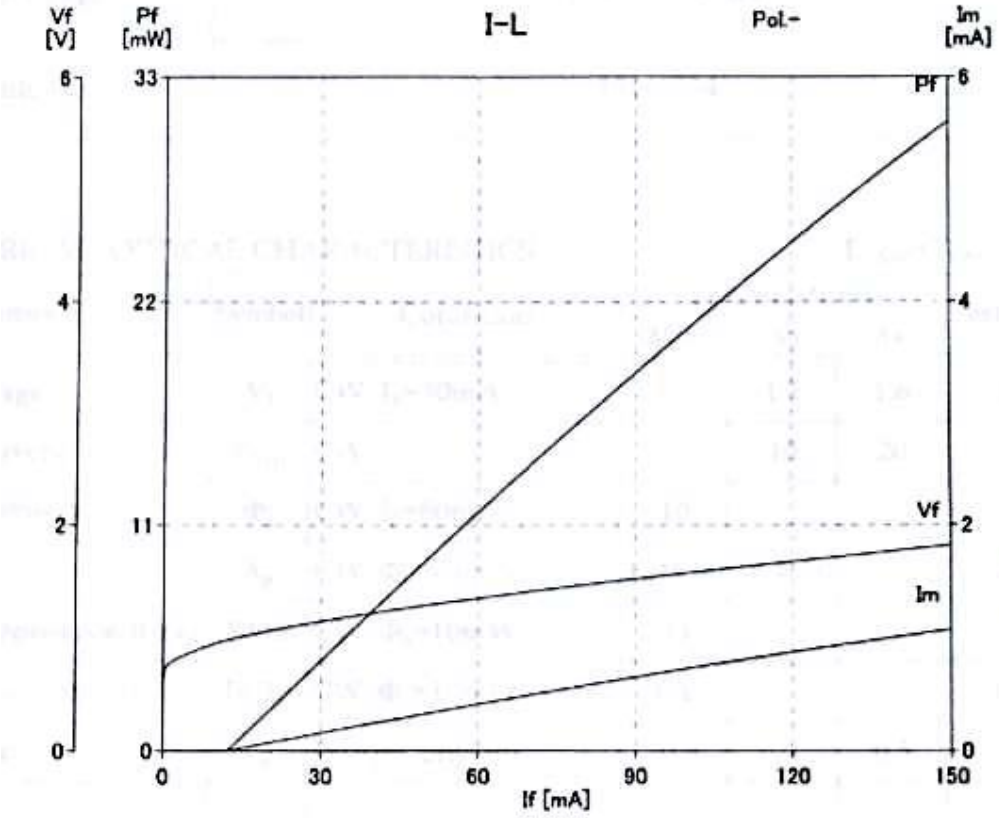
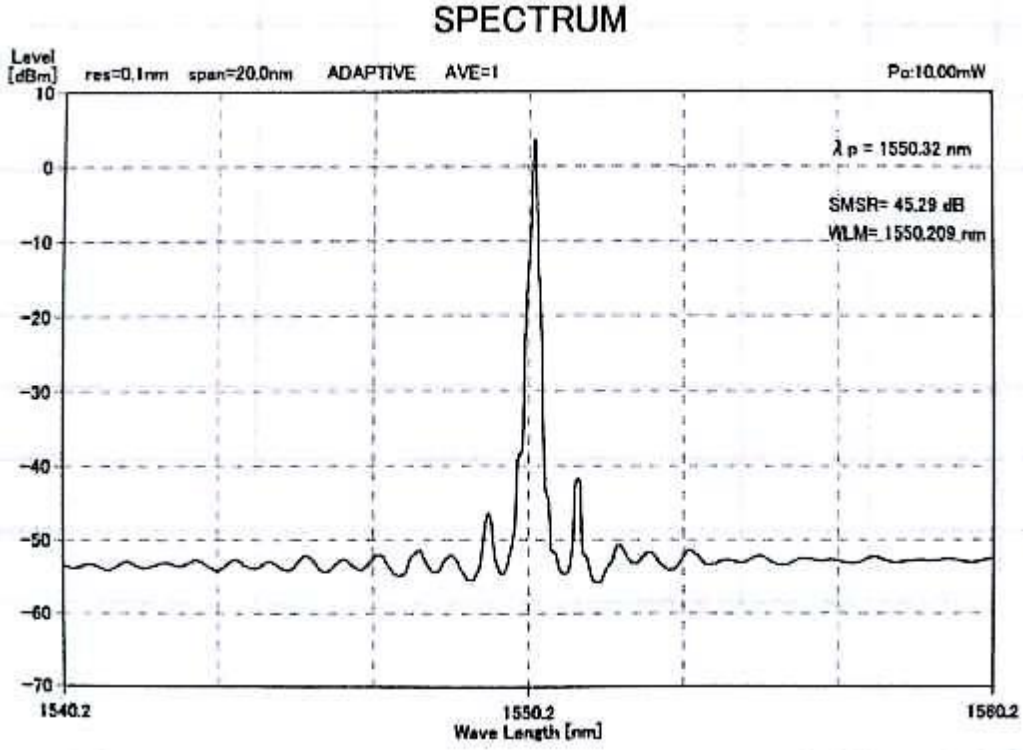
LD Characteristic

Module No. 15144534

T-CASE[℃] 25.0

T-Sub[℃] 25.0





How to handle laser diodes.

Essentially, a laser diode itself is tough. Under correct handling and operation it can live for more than 10 years. But under incorrect handling it is very fragile. The present leaflet will show you the correct handling of laser diodes.

l. Avoid electrical surge

A laser diode is weak against an electrical surge. An electrical surge shortens the laser's life expectancy depending on the surge strength. The laser life may be shortened to 5 years, 2 years, or I year and in some case, instant death. If a laser dies after one year of operation nobody may remember that a surge was applied a year ago.

In order to avoid electrical surges,

a) Put on wrist bands on both your wrists and ground the wrist bands.
b) Your working bench should be covered with a conductive material (metal or conductive sheet), which should be grounded.
c) Your floor should also be covered with a grounded conductive sheet.

At the instant of powering on/off of the electrical power supply a surge may attack the laser diode. The output voltage should be set to zero before power is switched on, and also it should be set to zero before switching off.

2. Carrying a laser diode

After opening the package when you pick up the laser diode or carry the laser diode it should be noted that you should hold the rectangular metal package and also the fiber connector with both hands. Do not hold the boot. It is the base of the fiber. Because the metal package is heavy, when you hold the boot a strong force may be exerted at the interface between the package and the boot causing a deformation that results in faulty optical coupling between the laser chip and the fiber, no light will be available from the fiber.

3. Fixing a laser diode

The laser diode should be fixed on a metal base for the purpose of an efficient heat escape. Be sure that the metal base is completely flat. When the base is concave or when a smallest protrusion exists, the laser package is deformed resulting in faulty optical coupling between the laser chip and the fiber.

When tightening screws maximum care should be taken so that the screwdriver does not touch the boot. If it touches the boot it will receive a strong force again causing faulty optical coupling between the laser chip and the fiber.

お様のご注意

レーゲダイオード(LD)および TEC =ントーラをご利月になる際には、LD そジュールをコント 0 ーラにする前に以下の点にご意ください。

LD そジュールのいすれかのビン(TEC やサーミスタービンを含む)を。丁こコントローラに技続する際には、ご使月になるコントローラが起動されかっ起動時のテストシークニンスがすべて終丁していることをこ・ください。

コントローラによっては起動時のシークエンスの最中に、子に一時に過夫な電圧が印加されるケースがあり、これによって LD モジュールに回復不可能な傷が加わることがありまれこのような過渡的な現象では、ントローラに前もって敲定された電流リミットを超える流が蠅子に流れる可能性あります、起動シークンスの終丁の確認方法はコントローラの噪作説明ををご参照ください。

Caution

When a laser diode (LD) /thermoelectronic cooler (TEC) controller is used for LD/TEC operation, please take the following precautions BEFORE CONNECTING LD modules to the controller.

Make sure that the LD/TEC controller is turned on all the power-on/self-test sequence of the controller is finished before connecting ANY pins of the LD modules including TEC/thermistor pins.

Some controllers may inadvertently generate transient excessive voltages on the output t a during the power-on/self-test sequence, which may cause irreversible damage to the LD module.In this transient phenomenon, the current output may exceed the current set to the controller beforehand. Refer to the operation of the controller to identify when the power on sequence is finished.