



Violet Laser Diode

NDHV220APA

Features

- Optical Output Power: 200mW
- Multi Transverse Mode
- Can Type: ϕ 5.6 with Photo Diode

Absolute Maximum Ratings

(Tc=25°C)

Item	Symbol	Absolute Maximum Ratings	Unit
Optical Output Power	Po	250	mW
LD Reverse Voltage	Vr (LD)	5	V
PD Reverse Voltage	Vr (PD)	20	V
Storage Temperature	Tstg	-35 ~ 85	°C
Operating Case Temperature	Tc	* 0 ~ 30	°C

* Operating Temperature is recommended within 20 ~ 30 °C range.

Initial Electrical/Optical Characteristics

(Tc=25°C)

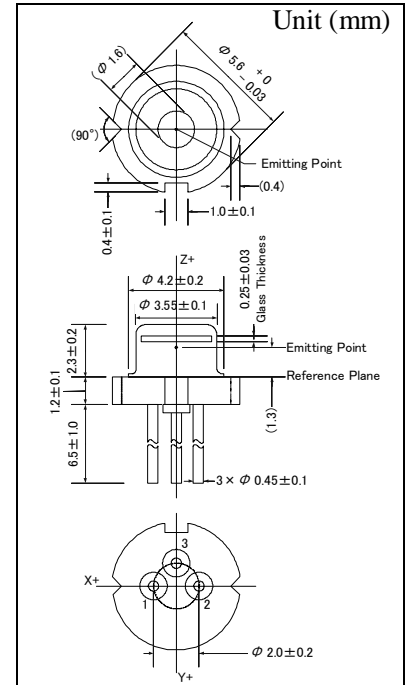
Item	Condition	Symbol	Min	Typ.	Max	Unit	
Optical Output Power	CW	Po	-	-	200	mW	
Peak Wavelength	Po=200mW	λ_p	400	405	410	nm	
Threshold Current	CW	Ith	-	100	130	mA	
Operating Current	Po=200mW	Iop	-	230	270	mA	
Slope Efficiency	CW	η	1.0	1.5	2.0	W/A	
Operating Voltage	Po=200mW	Vop	-	4.1	4.6	V	
Beam Divergence Full Angle (1/e ²)	Po=200mW	$\theta_{//}$	8	16	26	deg.	
		θ_{\perp}	35	42	55	deg.	
Emission Point Accuracy	Angle	Po=200mW	$\Delta\theta_{\perp}$	-	-	±5	deg.
Monitor Current*	Po=200mW	Im	0.4	0.8	1.2	mA	

* Monitor Current is short time power reference purpose only. Not guaranteed for accuracy.

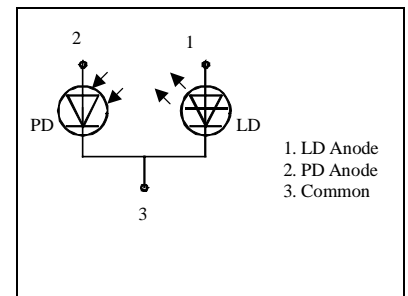
All figures in this specification are measured by Nichia's method and may contain measurement deviations.

The above specifications are for reference purpose only and subjected to change without prior notice.

Outline Dimension



Pin Connection



Safety of Laser light

- **Laser Light can damage the human eyes and skin.** Do not expose the eye or skin to any laser light directly and/or through optical lens. When handling the LDs, wear appropriate safety glasses to prevent laser light, even any reflections from entering to the eye. Focused laser beam through optical instruments will increase the chance of eye hazard.
- These LDs are classified in **Class 4 of IEC60825-1 and 21 CFR Part 1040.10 Safety Standards.** It is absolutely necessary to take overall safety measures against User's modules, equipment and systems into which Nichia LDs are incorporated and/or integrated.



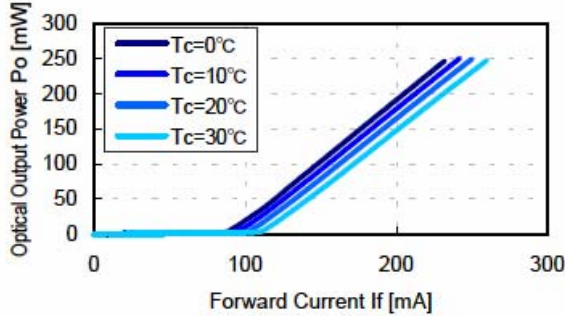
NICHIA CORPORATION

<http://www.nichia.co.jp>

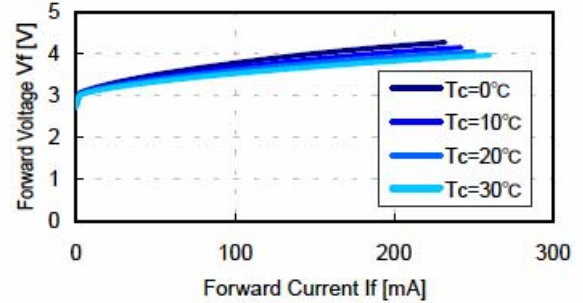
- ◆ HEAD OFFICE
P.O.BOX 6 ANAN, TOKUSHIMA-KEN 774-8601, JAPAN
PHONE: +81-884-22-2311 FAX: +81-884-21-0148
- ◆ CONTACT
TOKYO SALES DEPARTMENT OPTOELECTRONICS PRODUCTS DIV.
13F TAMACHI CENTER BUILDING, 34-7, SHIBA 5-CHOME, MINATO-KU,
TOKYO 108-0014, JAPAN
PHONE: +81-3-3456-3108 FAX: +81-3-5440-7330

■ Typical Characteristics

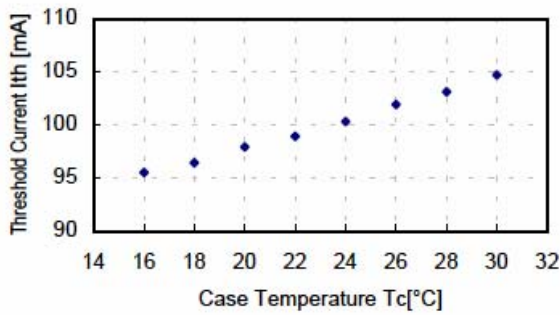
◆ Optical Output Power vs. Forward Current



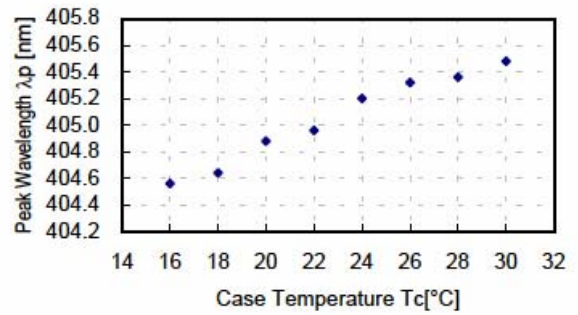
◆ Forward Voltage V_f vs. Forward Current



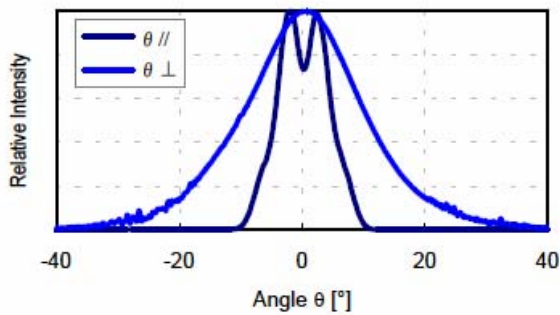
◆ Threshold Current I_{th} vs. Case Temperature



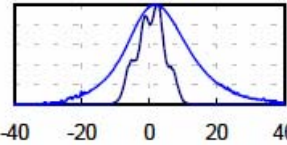
◆ Peak Wavelength λ_p vs. Case Temperature



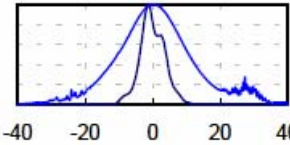
◆ Far Field Pattern



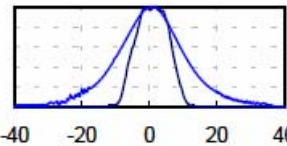
example.1



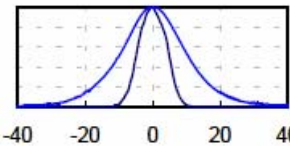
example.2



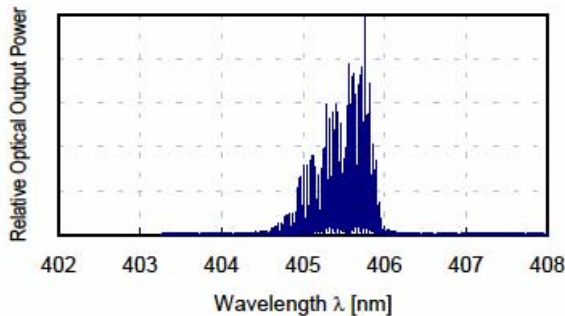
example.3



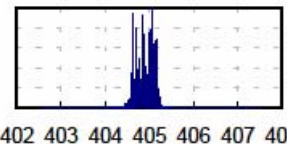
example.4



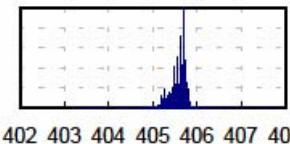
◆ Typical Spectrum



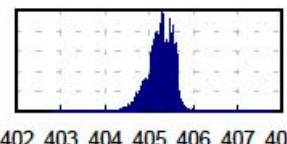
example.1



example.2



example.3



example.4



■ Cautions

(1) Operating method

- The LD shall change its forward voltage requirement and optical output power according to temperature change. Also, the LD will require more operation current to maintain same output power as it degrades. In order to maintain output power, use of APC (Automatic Power Control) is recommended, which use monitor feedback to adjust the operation current.
- Confirm that electrical spike current generated by switching on and off does not exceed the maximum operating current level specified herein above as absolute max rating. Also, employ appropriate countermeasures to reduce chattering and/or overshooting in the Circuit.

(2) Static Electricity

- Static electricity or electrical surges will reduce and degrade the reliability of the LDs. It is recommended to use a wrist strap or anti-electrostatic glove when handling the Product.

(3) Absolute Maximum Rating

- Active layer of LDs shall have high current density and generate high electric field during its operation. In order to prevent excessive damage, the LD must be operated strictly below Absolute Max Rating.

(4) Others

- Nichia LDs described in this brochure are intended to be used for ordinary electronic equipment (such as office equipment, communications equipment, measurement instruments and household appliances). Consult Nichia's sales staff in advance for information on the applications in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LDs may directly jeopardize life or health (such as for airplanes, aerospace, submersible repeaters, nuclear reactor control systems, automobiles, traffic control equipment, life support systems and safety devices).
- The Purchaser must acknowledge that any LD can be failed statically and must design its equipments fail safe design. Prior to use of the LD, please confirm that the LD, as described in Nichia's specifications, meets the life expectancy needs of, and provides the features required by the Circuit and any related modules, equipment and/or systems.
- Nichia prohibit Purchaser from reverse engineering, disassembling, or taking any other steps to derive the structure or design of the LD.
- The appearance and specifications of the product may be modified for improvement without notice. The formal specifications must be exchanged and signed by both parties before large volume purchase begins.
- No unauthorized transmission or reproduction of this document, either in whole or in part, is permitted.