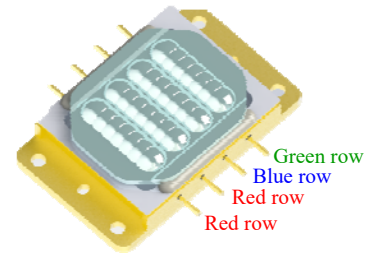


Features

- High Power Multiple Laser Diode (LD) Chip Package
- 28 Collimator Beams
- 7 series × 4 connection
- High Heat Dissipation

Standard Operating Conditions (CW Operation)

- Forward Current: Blue: 3.0A, Green: 2.1A, Red: 2.75A
- Tm=45°C, ACC(Auto Current Control) Operation



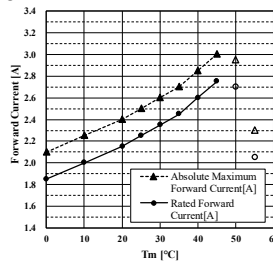
Absolute Maximum Ratings

Item	Symbol	Color	Absolute Maximum Ratings	Unit
Forward Current (Tm=25°C)*1	If	Blue	3.5	A
		Green	2.3	A
		Red	Table.1	A
Forward Current *1		Blue	85	mA
Allowable Reverse Current (Tm=25°C)*1	Ir(LD)	Green	85	mA
		Red	85	mA
Storage Temperature	Tstg	-	-40 ~ 85	°C
Operating Temperature (CW)	Tm	-	0 ~ 55	°C

*1: Individual LD chip

Table.1 CW Operation * Data exceeding Tm = 45°C is a reference value and cannot be guaranteed.

Tm [°C]	Rated Forward Current[A]	Absolute Maximum Forward Current[A]
0	1.85	2.10
10	2.00	2.25
20	2.15	2.40
25	2.25	2.50
30	2.35	2.60
35	2.45	2.70
40	2.60	2.85
45	2.75	3.00
50*	2.70	2.95
55*	2.05	2.30



Initial Electrical/Optical Characteristics

(Tm=25°C)

Item	Symbol	Color	Condition*2	Min	Typ.	Max	Unit
Optical Output Power	Po	Blue	CW	26	(29)	-	W
		Green		10	(11.5)	-	W
		Red		22	(25)	-	W
Dominant Wavelength	λd	Blue	CW	459	(465)	471	nm
		Green		519	(525)	531	nm
		Red *3		635	(639) (643) (647)	651	nm
Threshold Current	Ith	Blue	CW	300	-	550	mA
		Green		150	-	500	mA
		Red		400	-	650	mA
Slope Efficiency	η	Blue	CW	-	(11.0)	-	W/A
		Green		-	(6.4)	-	W/A
		Red		-	(14.5)	-	W/A
Operating Voltage *4	Vop	Blue	CW	26	(28.5)	31	V
		Green		29	(32.5)	36	V
		Red		26.5	(29.5)	32.5	V
Beam Pointing Tilt Angle *5	Total Beam Area *6	Δθ	-	-	1.1	°	
Beam Divergence *6	Parallel	Blue	CW	0.12	(0.42)	0.72	°
		Green		-0.12	(0.18)	0.48	°
		Red		1.5	(2.5)	3.5	°
	Perpendicular	θ⊥	-	(0)	1.5	°	

() are reference figures.

*2: Blue: If=3.0A, Green: If=2.1A, Red: If=2.25A

*3: Composed of 3 ranges.

*4: When connected in each color series with the 7/7/14 LD chips.

*5: Beam Pointing Tilt Angle $\Delta\theta = \sqrt{\Delta\theta_x^2 + \Delta\theta_y^2}$ (Total Beam Area)

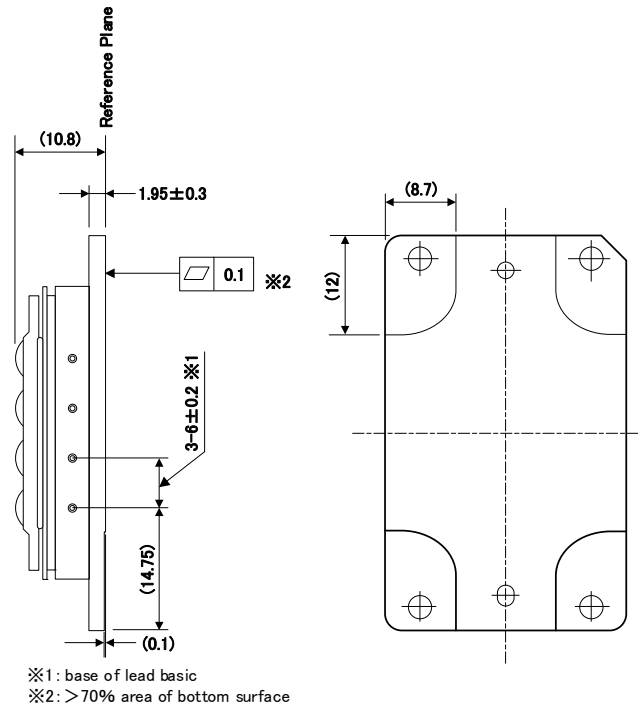
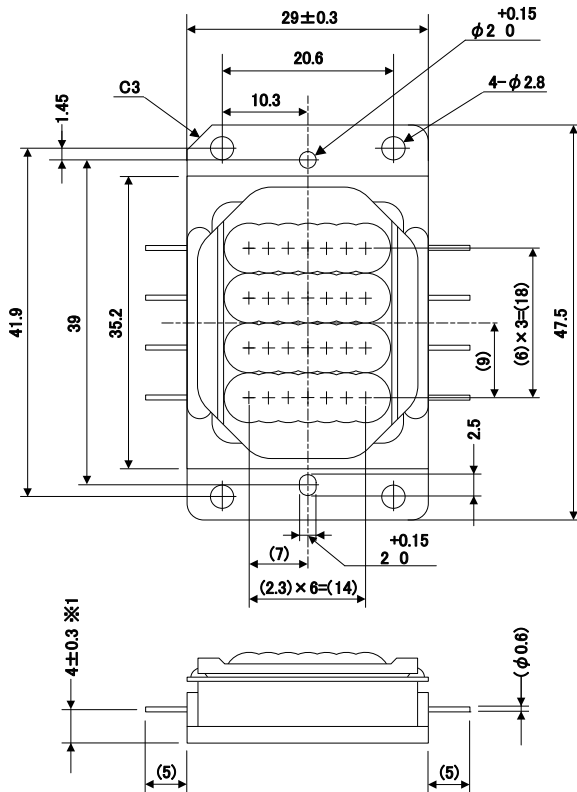
*6: Full angle at 1/e² from peak intensity (Total Beam Area)

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

This model is Test Sample for evaluation or design purpose only. Life time is not guaranteed.

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

Outline Dimensions



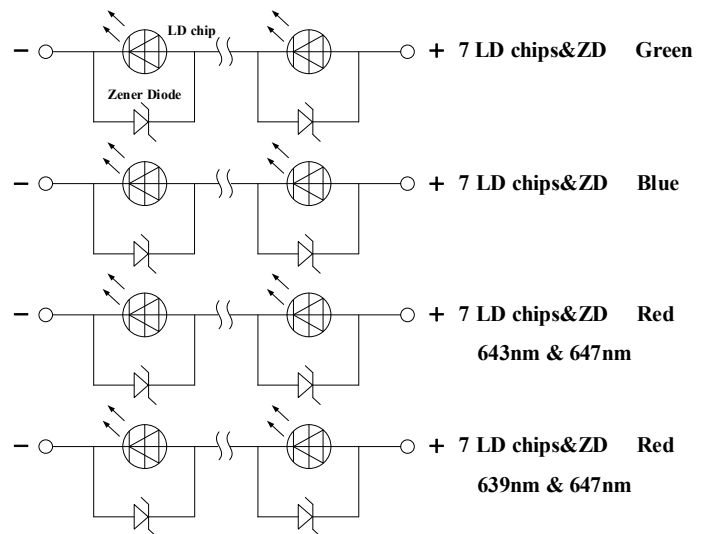
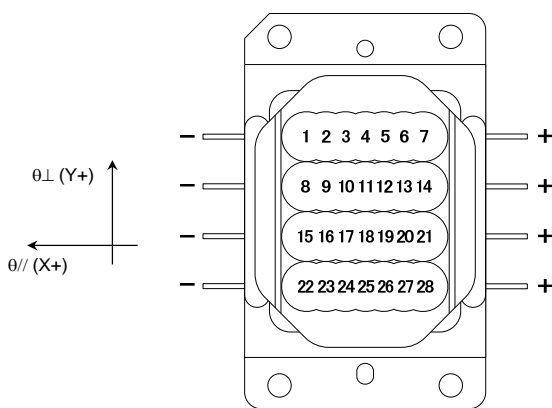
※1: base of lead basic
 ※2: >70% area of bottom surface

※Note
 TOLERANCES based on JIS B 0405-m(Table), UNLESS NOTED

Range	0.5 to 3	above 3 to 6	above 6 to 30	above 30 to 120
Tolerance	±0.1	±0.1	±0.2	±0.3

Dimensions are in millimeters
 () are reference figures

LD chips Position No. & Pin Connection



This model does not have a Photo Diode.
 This model has a Zener Diode built in as a protection circuit against static electricity.

■Cautions

(1) Safety of Collimated beam LD

- **Laser Light can damage the human eyes and skin.** Do not expose the eye or skin to laser light directly. This Laser product has an optical lens and emits a collimated laser beam. The light from this product, both direct and reflected, is very harmful as it can propagate a long distance while maintaining high optical density. When handling the product, wear appropriate safety glasses to protect eyes from laser light including reflected and stray light. The reflected and stray light spilling into an unintended area should be attenuated and/or absorbed.
- The LD is 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 LD is incorporated and/or integrated.



(2) Operating method

- The LD shall change its Vf 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 feedback of the optical output power 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.
- ACC (Auto Current Control) mode is recommended for the Product operation. Also, please be careful for the overshooting in order to avoid excessive optical output power as the laser operation is started.

(3) Design Consideration

- LDs may fail as either a short circuit or an open circuit. If an LD shorts during operation, the forward voltage of the LD may fluctuate greatly. When designing a circuit, ensure that both short and open circuits are considered and that there will be no issues if a short or open circuit occurs.
- Since this LD uses a resin to secure the lens, if the lens becomes removed during operation, it may cause unintentional laser exposure to occur (e.g. random radiation) leading to accidents/injuries (e.g. causing an object to smoke, fire, and the laser light to escape). Ensure that the chosen system includes a safeguard (e.g. containing the laser light, emergency shutdown, etc.).

(4) Static Electricity

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

(5) Absolute Maximum Rating

- Active layer of mounted LD chips 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.
- During operation, if the forward current and/or optical output power are increased the lifetime of the LDs will decrease. Ensure that the LDs are operated within the recommended conditions.

(6) Others

- The LD described in this brochure is 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 LD 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 statistically fail and must design its equipments in a 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.
- Due to its short wavelength and high optical output power, optical depositions on optical path may occur depending on the surrounding conditions. Appropriate design or countermeasures should be used to avoid optical depositions.
- Nichia prohibits 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.