

## **Notification about the transfer of the semiconductor business**

The semiconductor business of Panasonic Corporation was transferred on September 1, 2020 to Nuvoton Technology Corporation (hereinafter referred to as "Nuvoton"). Accordingly, Panasonic Semiconductor Solutions Co., Ltd. became under the umbrella of the Nuvoton Group, with the new name of Nuvoton Technology Corporation Japan (hereinafter referred to as "NTCJ").

In accordance with this transfer, semiconductor products will be handled as NTCJ-made products after September 1, 2020. However, such products will be continuously sold through Panasonic Corporation.

Publisher of this Document is NTCJ.

If you would find description "Panasonic" or "Panasonic semiconductor solutions", please replace it with NTCJ.

※ Except below description page

"Request for your special attention and precautions in using the technical information and semiconductors described in this book"

Nuvoton Technology Corporation Japan



# LNCQ28PS01WW

## Description

LNCQ28PS01WW is a MOCVD fabricated 660nm band wavelength laser diode with multi quantum well structure, using TO-56 CAN package to ensure versatile use.

## Features

- Wavelength: 661 nm (typ.)
- High output power and temperature: 100 mW, Max+85°C (CW)  
300 mW, Max+85°C (pulse)  
350 mW, Max+75°C (pulse)
- Package: TO-56 CAN

## Applications

- Optical disk drive
- Sensing
- Analysis
- Measurement
- Agriculture
- Other industrial use



## Absolute Maximum Ratings

| Item                       | Symbol | Value      | Unit | Condition           |
|----------------------------|--------|------------|------|---------------------|
| Output power               | Po     | 100        | mW   | CW                  |
|                            |        | 300        | mW   | pulse <sup>1)</sup> |
|                            |        | 350        | mW   | pulse <sup>2)</sup> |
| Reverse voltage            | Vr     | 1.5        | V    | CW                  |
| Operating case temperature | Tc     | -10 to +85 | °C   | CW                  |
|                            |        | -10 to +85 | °C   | pulse <sup>1)</sup> |
| Storage temperature        | Tstg   | -40 to +85 | °C   |                     |

Note) 1) Pulse width ≤ 40ns, duty ≤ 33%  
2) Pulse width ≤ 40ns, duty ≤ 33% Operating case temperature condition: -10~+75°C

## Electrical and Optical Characteristics

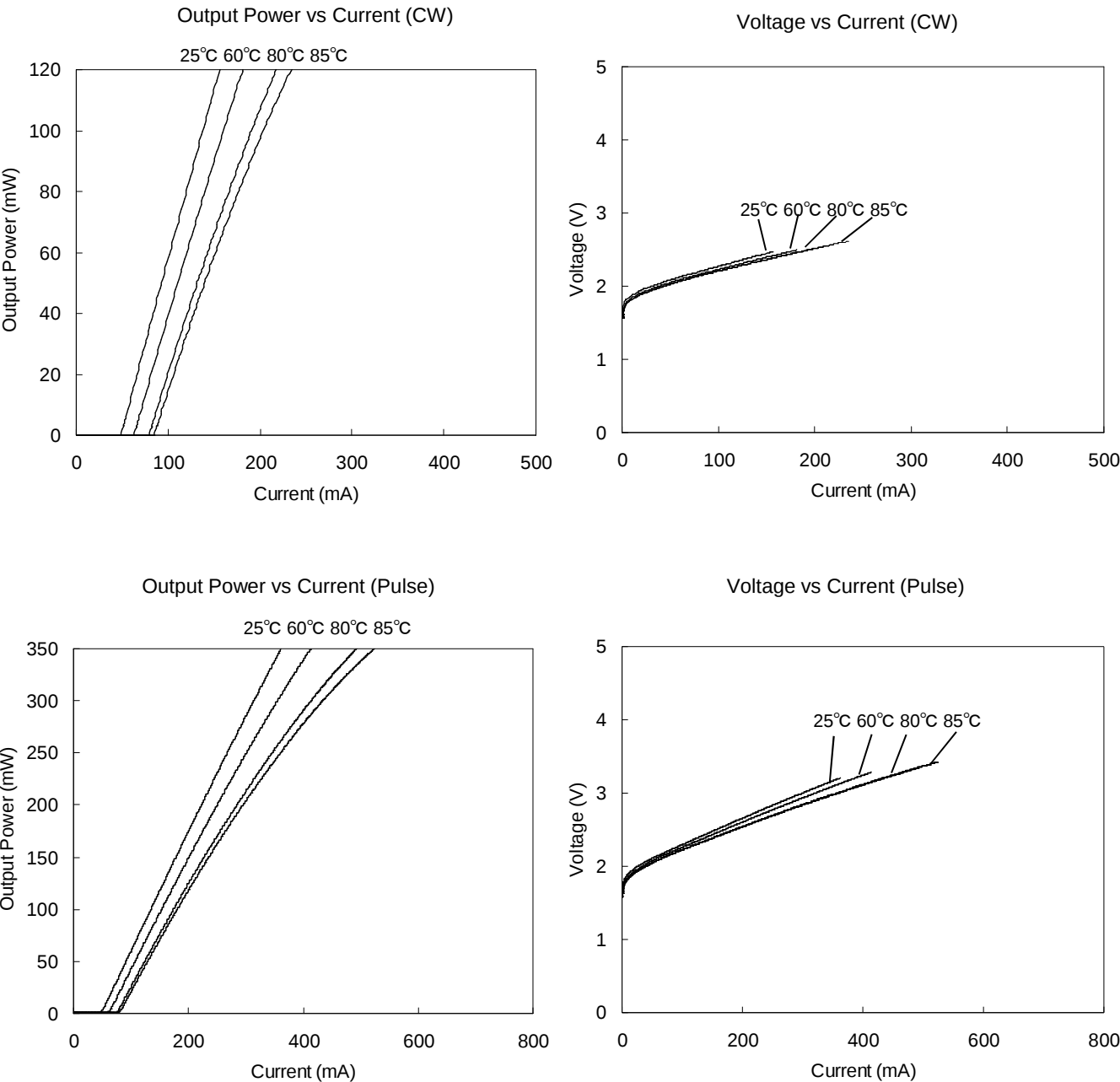
T=25°C, CW, Po=90 mW

| Item              |               | Symbol          | Min. | Typ. | Max. | Unit | Condition |
|-------------------|---------------|-----------------|------|------|------|------|-----------|
| Threshold current |               | I <sub>th</sub> | 35   | 50   | 70   | mA   |           |
| Operating current |               | I <sub>op</sub> | 110  | 128  | 165  | mA   |           |
| Operating voltage |               | V <sub>op</sub> | 2.0  | 2.4  | 3.0  | V    |           |
| Wavelength        |               | λ               | 656  | 661  | 665  | nm   |           |
| Beam Divergence   | Parallel      | θ <sub>h</sub>  | 7.5  | 9.0  | 13.0 | deg  | FWHM      |
|                   | Perpendicular | θ <sub>v</sub>  | 13.0 | 15.0 | 19.5 | deg  | FWHM      |

FWHM: Full width at half maximum

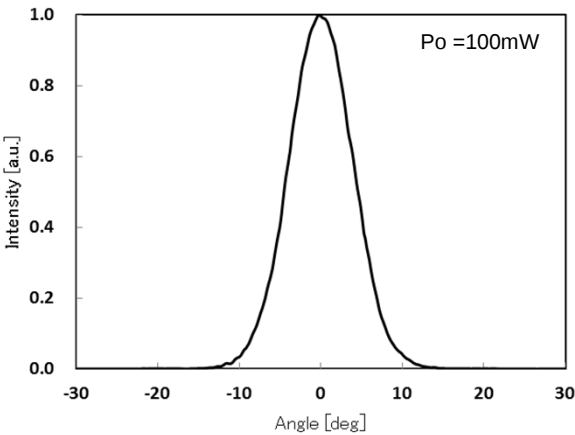


Typical Characteristics

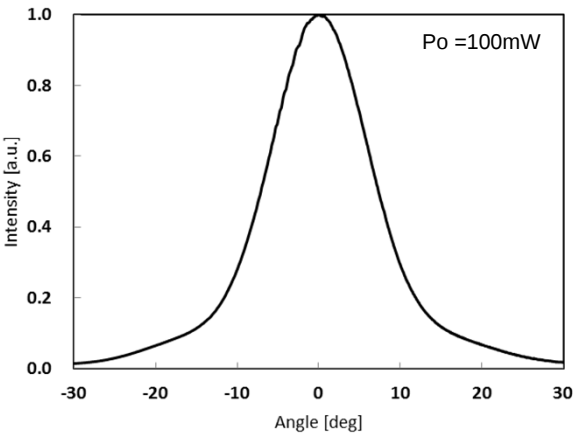


Typical Characteristics

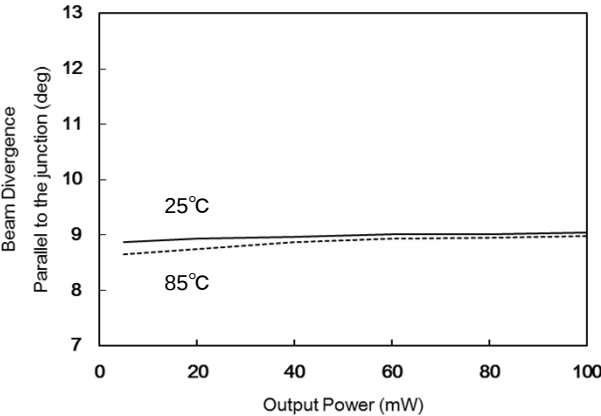
Beam Divergence  
Parallel to the Junction (CW)



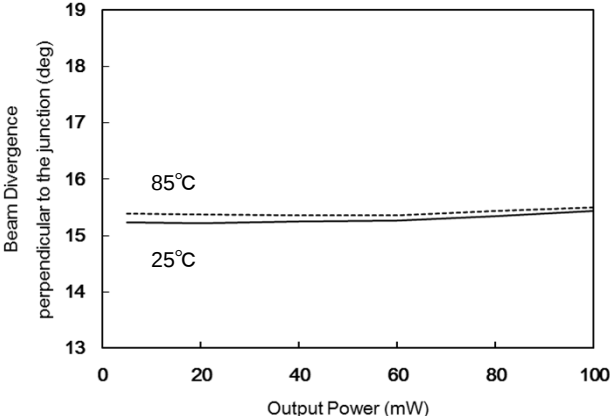
Beam Divergence  
Perpendicular to the Junction (CW)



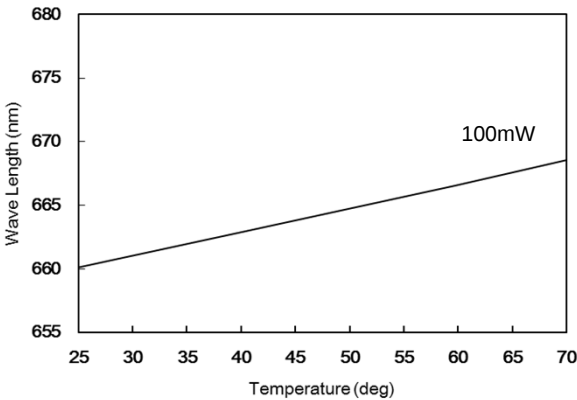
Beam Divergence of Parallel  
to the Junction vs Output Power (CW)



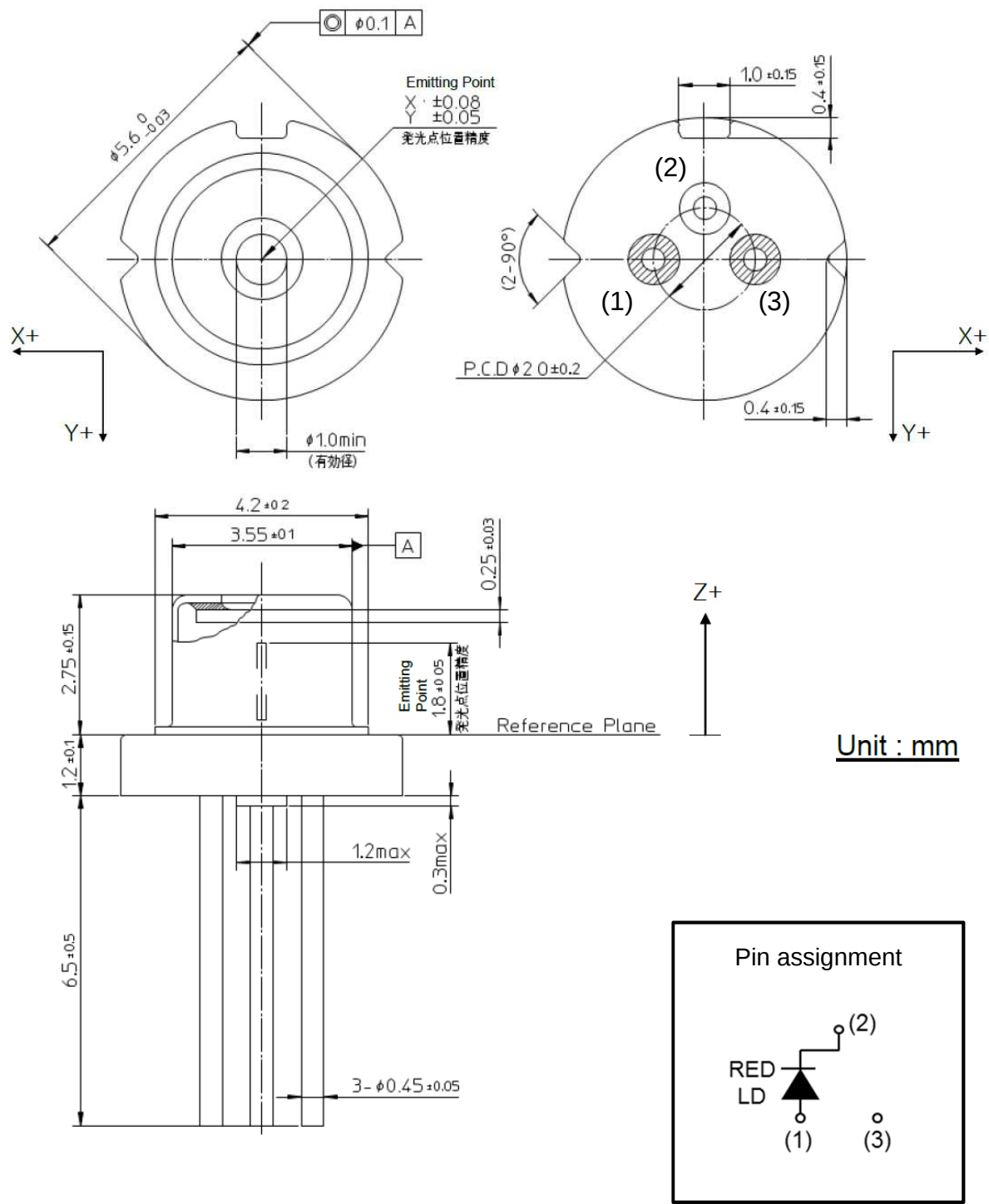
Beam Divergence of Perpendicular  
to the Junction vs Output Power (CW)



Wavelength vs Temperature (CW)



Package Dimensions



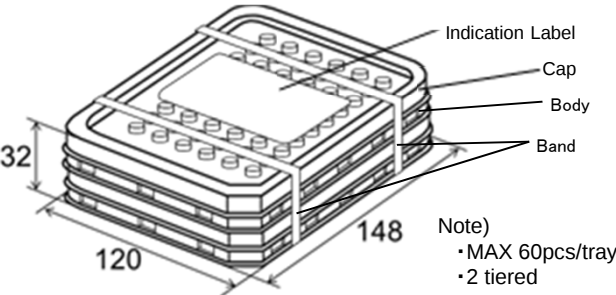
Note)  
1. X-Y tolerance of lead is specified on the package bottom plane.

### Packing Specifications

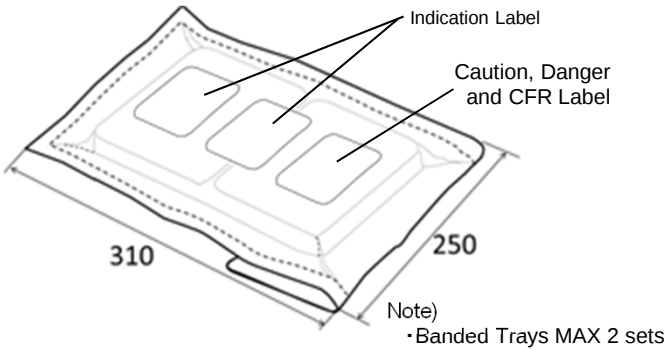
#### 1 Packing Material

##### 1.1 Tray

Material: PS Conductive (Black)

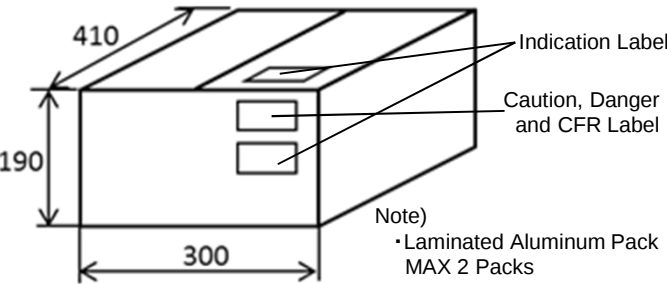


##### 1.2 Laminated Aluminum Pack



##### 1.3 Packing Case

Material: Corrugated fiber board

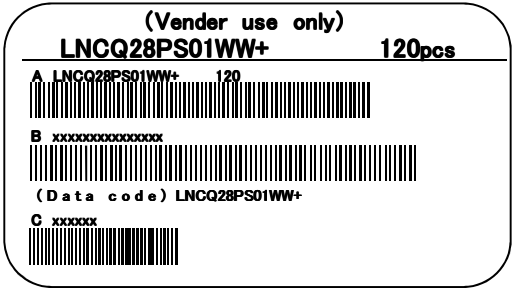


※As for label indication except ①(Order person part number), ②(Order person part number and Quantity), ③(Serial number and Corporate code), and ④(Quantity), the information only for our process control. Therefore, revision might be done for improvement without notice.

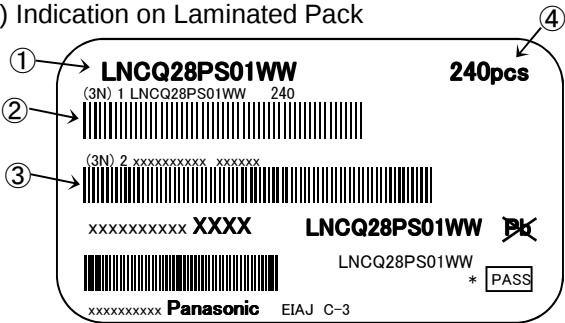
### 2 Packaging Quantity

| Form                    | Quantity      | Contents             |
|-------------------------|---------------|----------------------|
| Tray                    | n=60          | --                   |
| Laminated Aluminum Pack | n=240         | Tray: 4              |
| Packing Case            | n=240 to 1920 | Aluminum Pack:1 to 8 |

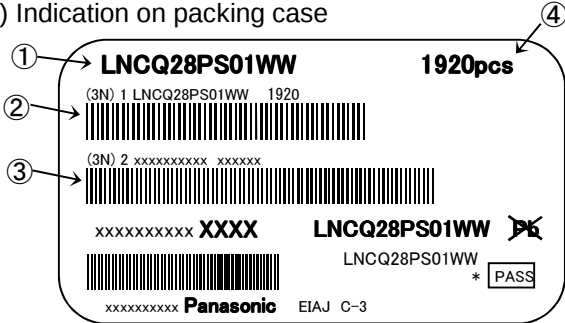
#### 1) Indication on Top Tray



#### 2) Indication on Laminated Pack



#### 3) Indication on packing case



## Warning

### ■ Laser class

This product is ranked "Class IIIb laser" according to IEC60825-1 and JIS standard 6802 "Laser Product Emission Safety Standards," so that safety protection is necessary when laser beam is radiated.

## Cautions

### ■ TO-56 CAN packaged laser diode

This product uses a TO-56 CAN package to ensure versatile use.

### ■ Prevention of Electrostatic discharge (ESD) and surge stress

Semiconductor laser diode is a device sensitive to ESD and surge, so that sufficient cautions are needed. If electrostatic discharge is applied to a laser diode, intensive light emission may occur instantaneously, leading to the potential for catastrophic damage in the laser diode or degradation of the laser diode in a short time. Therefore, taking all possible measures against ESD and surge for usage of CAN packaged laser diode is strongly requested.

### ■ Heat sink design

As case temperature becomes higher, the life of semiconductor laser diode becomes shorter. So appropriate heat dissipation design is required. Especially it is effective to make a thermal connection to the highly thermally conductive heat sink at the base plate of a TO56 package.

### ■ Precautions for soldering

Excess heating to laser diode package during soldering may affect eutectic solder and/or laser diode itself. Soldering must be done as quickly as possible with controlling the heating temperature. Lead(terminal) soldering with appropriate cooling time is strongly recommended. Also, soldering position of lead(terminal) is recommended to be more than 2mm away from the package body.

- Soldering temperature: below 350°C
- Heating period: within 3 s
- Soldering position: 2mm away from the package body



# Caution for Safety



**DANGER**

**Do not touch or look into the laser beam directly.**

The laser beam may cause injury to the eye or skin, or loss of eyesight.

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No.070920