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
Description
LNCT22PK01WW is a MOCVD fabricated 660 nm and 780 nm band dual wavelength laser diode with multi quantum well structure, adapting open type frame package to reduce the size and weight.

Feature
- Dual wavelength: 661 nm (typ) and 785 nm (typ)
- High output power: 280 mW (pulse) for Red and 380 mW (pulse) for IR
- Package: Flat package
- Operating temperature: Max. +85°C

Application
- Optical disk drive
- Sensing
- Industrial use

Absolute Maximum Ratings 3)

<table>
<thead>
<tr>
<th>LD</th>
<th>Item</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Output power</td>
<td>Po</td>
<td>100 mW</td>
<td></td>
<td>CW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>280 mW</td>
<td>pulse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reverse voltage</td>
<td>Vr</td>
<td>1.5 V</td>
<td></td>
<td>CW</td>
</tr>
<tr>
<td></td>
<td>Operating case temperature</td>
<td>Tc</td>
<td>−10 to +85 °C</td>
<td></td>
<td>CW/pulse</td>
</tr>
<tr>
<td>IR</td>
<td>Output power</td>
<td>Po</td>
<td>200 mW</td>
<td></td>
<td>CW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>380 mW</td>
<td>pulse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reverse voltage</td>
<td>Vr</td>
<td>1.5 V</td>
<td></td>
<td>CW</td>
</tr>
<tr>
<td></td>
<td>Operating case temperature</td>
<td>Tc</td>
<td>−10 to +85 °C</td>
<td></td>
<td>CW/pulse</td>
</tr>
<tr>
<td></td>
<td>Storage temperature</td>
<td>Tstg</td>
<td>−40 to +85 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note
1) Pulse width ≤ 30 ns, duty ≤ 33% for RED-LD
2) Pulse width ≤ 100 ns, duty ≤ 50% for IR-LD
3) These ratings are guaranteed only when RED-LD or IR-LD is turned on individually.

Electrical and Optical Characteristics

<table>
<thead>
<tr>
<th>LD</th>
<th>Item</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Threshold current</td>
<td>Ith</td>
<td>-</td>
<td>65</td>
<td>95</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating current</td>
<td>Iop</td>
<td>-</td>
<td>160</td>
<td>230</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating voltage</td>
<td>Vop</td>
<td>-</td>
<td>2.3</td>
<td>3.0</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wavelength</td>
<td>λ</td>
<td>656</td>
<td>661</td>
<td>665</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beam divergence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FWHM</td>
</tr>
<tr>
<td></td>
<td>Parallel</td>
<td>θh</td>
<td>7.5</td>
<td>9.0</td>
<td>13.0</td>
<td>deg</td>
<td>FWHM</td>
</tr>
<tr>
<td></td>
<td>Perpendicular</td>
<td>θv</td>
<td>13.0</td>
<td>16.0</td>
<td>19.5</td>
<td>deg</td>
<td>FWHM</td>
</tr>
<tr>
<td>IR</td>
<td>Threshold current</td>
<td>Ith</td>
<td>-</td>
<td>60</td>
<td>95</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating current</td>
<td>Iop</td>
<td>-</td>
<td>260</td>
<td>380</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating voltage</td>
<td>Vop</td>
<td>-</td>
<td>2.4</td>
<td>3.2</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wavelength</td>
<td>λ</td>
<td>777</td>
<td>785</td>
<td>791</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beam divergence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FWHM</td>
</tr>
<tr>
<td></td>
<td>Parallel</td>
<td>θh</td>
<td>6.0</td>
<td>7.5</td>
<td>11.5</td>
<td>deg</td>
<td>FWHM</td>
</tr>
<tr>
<td></td>
<td>Perpendicular</td>
<td>θv</td>
<td>12.0</td>
<td>15.0</td>
<td>19.0</td>
<td>deg</td>
<td>FWHM</td>
</tr>
</tbody>
</table>

FWHM: Full width at half maximum
Representative Characteristics [RED-LD]

Output Power vs Current (CW)

Output Power vs Current (Pulse)

Voltage vs Current (CW)

Voltage vs Current (Pulse)
Representative Characteristics [RED-LD]

- **Beam Divergence Parallel to the Junction (CW)**
  - Intensity [a.u.] vs Angle [deg]
  - Po = 100mW

- **Beam Divergence Perpendicular to the Junction (CW)**
  - Intensity [a.u.] vs Angle [deg]
  - Po = 100mW

- **Beam Divergence of parallel to the junction vs Output Power (CW)**
  - Beam Divergence [deg] vs Output Power [mW]
  - 25°C - 85°C

- **Beam Divergence of Perpendicular to the junction vs Output Power (CW)**
  - Beam Divergence [deg] vs Output Power [mW]
  - 25°C - 85°C

- **Wavelength vs Temperature (CW)**
  - Wavelength [nm] vs Temperature [°C]
  - 25°C, 65°C, 85°C

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Revised Apr. 2018
Laser Diode

LNCT22PK01WW

Representative Characteristics [IR-LD]

Output Power vs Current (CW)

Voltage vs Current (CW)

Output Power vs Current (Pulse)

Voltage vs Current (Pulse)
Laser Diode

Representative Characteristics [IR-LD]

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)

Po = 200mW

Temparature [℃]

Intensity [a.u.]

Intensity [a.u.]

Beam Divergence [deg]

Beam Divergence [deg]

Beam Divergence of parallel to the junction vs Output Power (CW)

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

Wavelength [nm]

Output Power [mW]

Output Power [mW]

0 50 100 150 200

0 50 100 150 200

85℃

85℃

25℃

25℃

770 775 780 785 790 795 800 805 810

200mW

5mW

770 775 780 785 790 795 800 805 810

25 45 65 85

25 45 65 85
Package Dimensions

Unit: mm

- E.P. = Emitting point
- General corner R is 0.25mm
### Packing Specifications

#### 1 Packing Material

**1.1 Tray**

Material: Conductive Polystyrene

1) Indication on Top Tray

<table>
<thead>
<tr>
<th>(Vender use only)</th>
<th>LNCT22PK01WW+</th>
<th>480pcs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A LNCT22PK01WW+</td>
<td></td>
<td>480</td>
</tr>
<tr>
<td>B LT49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Data code)</td>
<td>LNCT22PK01WW+</td>
<td></td>
</tr>
<tr>
<td>C xxxxx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2) Indication on Laminated Pack

<table>
<thead>
<tr>
<th>(Vender use only)</th>
<th>LNCT22PK01WW+</th>
<th>480pcs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A LNCT22PK01WW+</td>
<td></td>
<td>480</td>
</tr>
<tr>
<td>B xxxxx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Data code)</td>
<td>LNCT22PK01WW+</td>
<td></td>
</tr>
<tr>
<td>C xxxxx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3) Indication on packing case

<table>
<thead>
<tr>
<th>(Vender use only)</th>
<th>LNCT22PK01WW+</th>
<th>4800pcs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A LNCT22PK01WW+</td>
<td></td>
<td>4800</td>
</tr>
<tr>
<td>B xxxxx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Data code)</td>
<td>LNCT22PK01WW+</td>
<td></td>
</tr>
<tr>
<td>C xxxxx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 1.2 Laminated Aluminum Cover

#### 1.3 Packing Case

Material: Card Board Box

<table>
<thead>
<tr>
<th>Form</th>
<th>Quantity</th>
<th>Contents</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tray</td>
<td>n=80</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Laminated Aluminum Cover</td>
<td>n=480</td>
<td>Tray: 7 (Body + Cap)</td>
<td>Wrap The Product and The Desiccant</td>
</tr>
<tr>
<td>Packing Case</td>
<td>n=4800</td>
<td>Aluminum Pack 10</td>
<td>--</td>
</tr>
</tbody>
</table>

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

#### 2 Packaging Quantity

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**Laser Diode**

LNCT22PK01WW

Revised Apr.2018
Cautions

- Laser class
  This product is ranked in class IIb 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.

- Flat package laser diode (FLD)
  This product is adopting open type plastic package for the reduction of size and weight, so please take care of dust and touching laser diode with tweezers.

- Prevention of Electrostatic discharge (ESD) and surge stress
  Semiconductor laser diode is sensitive device to ESD and surge, so that sufficient cautions are needed. If electric pulses that may cause emission are inputted, the laser itself will be damaged by light intensity and will bring the laser diode degradation in a short time. Therefore, taking all possible measures against ESD and surge for FLD usage is strongly requested.

- Heat sink design
  If case temperature becomes higher, the life of semiconductor laser diode becomes shorter. So it is important that design for heat radiation is appropriated. Especially it is effective to make the heat radiation from metal moiety of the package back side, locating under the submount and laser diode.

- Precaution at soldering
  When soldering, please give attention to the mechanical stress and the temperature because of using Ag paste. Temperature of die-pad portion should be less than 200°C. It is recommended to radiate heat by putting heat sink on the package.

  • Soldering temperature and time
    • Temperature : Less than 360°C (FLD only)
      • Less than 380°C (FLD with holder for heat radiation)
    • Time : Within 5sec (Recommend within 3sec)
Request for your special attention and precautions in using the technical information and semiconductors described in this book

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