1. DESCRIPTION
The QLF063A-AA/QLF063D-AA are 660 nm quantum well laser devices designed for high output power application. The laser diode is mounted into a TO-56 header including a monitor PD and hermetic sealed with a flat glass cap.

2. FEATURES
- 660 nm FP-LD
- Ф5.6mm TO-CAN package
- High output power and high slope efficiency
- Including monitor PD
- Two types of pin assignments: anode common type (QLF063A-AA)/cathode common type (QLF063D-AA)

3. APPLICATIONS
- Industrial laser markers
- Measuring instruments
- Life science applications

4. ABSOLUTE MAXIMUM RATING
(CW operation, Tc = 25°C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>RATING</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical output power</td>
<td>Pο</td>
<td>60</td>
<td>mW</td>
</tr>
<tr>
<td>LD reverse voltage</td>
<td>VRLD</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>PD reverse voltage</td>
<td>VRPD</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Operation temperature</td>
<td>Tc</td>
<td>-10 to 60</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td>-40 to 85</td>
<td>°C</td>
</tr>
</tbody>
</table>
### 5. OPTICAL AND ELECTRICAL CHARACTERISTICS

(T<sub>c</sub> = 25°C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>TEST CONDITION</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold current</td>
<td>I&lt;sub&gt;th&lt;/sub&gt;</td>
<td>CW</td>
<td>-</td>
<td>55</td>
<td>70</td>
<td>mA</td>
</tr>
<tr>
<td>Operation current</td>
<td>I&lt;sub&gt;op&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW</td>
<td>-</td>
<td>100</td>
<td>135</td>
<td>mA</td>
</tr>
<tr>
<td>Operation voltage</td>
<td>V&lt;sub&gt;op&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW</td>
<td>-</td>
<td>2.3</td>
<td>2.8</td>
<td>V</td>
</tr>
<tr>
<td>Slope efficiency</td>
<td>η</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=5 - 50 mW</td>
<td>0.8</td>
<td>1.1</td>
<td>-</td>
<td>W/A</td>
</tr>
<tr>
<td>Monitor current</td>
<td>I&lt;sub&gt;m&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW, V&lt;sub&gt;RD&lt;/sub&gt;=5 V</td>
<td>25</td>
<td>150</td>
<td>300</td>
<td>μA</td>
</tr>
<tr>
<td>Peak wavelength</td>
<td>λ&lt;sub&gt;p&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW</td>
<td>655</td>
<td>660</td>
<td>665</td>
<td>nm</td>
</tr>
<tr>
<td>Beam divergence</td>
<td>θ&lt;sub&gt;h&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW (FWHM)</td>
<td>7</td>
<td>10</td>
<td>13</td>
<td>deg.</td>
</tr>
<tr>
<td>Beam divergence</td>
<td>θ&lt;sub&gt;v&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW (FWHM)</td>
<td>11</td>
<td>14</td>
<td>17</td>
<td>deg.</td>
</tr>
<tr>
<td>Beam angle Horizontal</td>
<td>Δθ&lt;sub&gt;h&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW</td>
<td>-3</td>
<td>-</td>
<td>3</td>
<td>deg.</td>
</tr>
<tr>
<td>Beam angle vertical</td>
<td>Δθ&lt;sub&gt;v&lt;/sub&gt;</td>
<td>CW, P&lt;sub&gt;b&lt;/sub&gt;=50 mW</td>
<td>-3</td>
<td>-</td>
<td>3</td>
<td>deg.</td>
</tr>
</tbody>
</table>

#### Diagrams

1. Threshold current vs. temperature
2. Operation current vs. temperature
3. Slope efficiency vs. temperature
4. Monitor current vs. temperature
5. Peak wavelength vs. temperature
6. Beam divergence (horizontal) vs. temperature
7. Beam divergence (vertical) vs. temperature
8. Beam angle (horizontal) vs. temperature
9. Beam angle (vertical) vs. temperature
10. Operation voltage vs. temperature
11. Peak wavelength vs. temperature
12. Monitor current vs. temperature
13. Beam divergence (horizontal) vs. temperature
14. Beam divergence (vertical) vs. temperature
15. Beam angle (horizontal) vs. temperature
16. Beam angle (vertical) vs. temperature
17. Operation voltage vs. temperature
18. Peak wavelength vs. temperature
19. Monitor current vs. temperature
20. Beam divergence (horizontal) vs. temperature
21. Beam divergence (vertical) vs. temperature
22. Beam angle (horizontal) vs. temperature
23. Beam angle (vertical) vs. temperature
24. Operation voltage vs. temperature
25. Peak wavelength vs. temperature
26. Monitor current vs. temperature
27. Beam divergence (horizontal) vs. temperature
28. Beam divergence (vertical) vs. temperature
29. Beam angle (horizontal) vs. temperature
30. Beam angle (vertical) vs. temperature
31. Operation voltage vs. temperature
32. Peak wavelength vs. temperature
33. Monitor current vs. temperature
34. Beam divergence (horizontal) vs. temperature
35. Beam divergence (vertical) vs. temperature
36. Beam angle (horizontal) vs. temperature
37. Beam angle (vertical) vs. temperature
Optical power [mW]
Operating current [mA]

Tc=25 deg.C
Tc=60 deg.C
Tc= -10 deg.C

Operating voltage [V]
Operating current [mA]

Tc=25 deg.C
Tc=60 deg.C
Tc= -10 deg.C

Optical intensity [a.u.]
Wavelength [nm]

Tc=25 deg.C
Tc=60 deg.C
FFP-h
FFP-v

Optical intensity [a.u.]
Angle [deg]

Tc=25 deg.C
Tc=60 deg.C
6. OUTLINE DRAWINGS

7. NOTICE

- Safety Information
This product is classified as Class 3B laser product, and complies with 21 CFR Part 1040.10.
Please do not take a look at laser lighting in operations since laser devices may cause troubles to human eyes.
Please do not eat, burn, break and make chemical process of the products since they contain GaAs material.

- Handling products
Semiconductor lasers are easily damaged by external stress such as excess temperature and ESD.
Please pay attention to handling products, and use within range of maximum ratings.
QD Laser takes no responsibility for any failure or unusual operation resulting from improper handling, or unusual physical or electrical stress.

- RoHS
This product conforms to RoHS compliance related EU Directive 2011/65/EU.

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