# Data Sheet

## HL8340MG/41MG

852nm / 50mW  GaAlAs Laser Diode

### Features
- Operation temperature: -10~+60°C
- Optical output power: 50mW(CW)
- Infrared lasing: 852nm Typ.
- Low operating voltage: 2.4V Max.
- Package: φ5.6mm
- Single transverse mode
- TE mode oscillation

### Application
- Sensor application
- Night vision
- Machine vision
- Light source of optical equipments

### Outline

![Outline Diagram](image)

(Unit:mm)

### Internal Circuit

![Internal Circuit Diagram](image)
## Absolute Maximum Ratings (Tc=25°C)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical output power</td>
<td>Po</td>
<td>50</td>
<td>mW</td>
</tr>
<tr>
<td>LD Reverse Voltage</td>
<td>VR(LD)</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>PD Reverse Voltage</td>
<td>VR(PD)</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-10 ~ +60</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40 ~ +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

## Optical and Electrical Characteristics (Tc=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Test Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold current</td>
<td>Ith</td>
<td>-</td>
<td>20</td>
<td>40</td>
<td>mA</td>
<td>-</td>
</tr>
<tr>
<td>Operating current</td>
<td>Iop</td>
<td>-</td>
<td>75</td>
<td>100</td>
<td>mA</td>
<td>Po=50mW</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>Vop</td>
<td>-</td>
<td>1.9</td>
<td>2.4</td>
<td>V</td>
<td>Po=50mW</td>
</tr>
<tr>
<td>Beam divergence Parallel to the junction</td>
<td>θ//</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>°</td>
<td>Po=50mW, FWHM</td>
</tr>
<tr>
<td>Beam divergence Perpendicular to the junction</td>
<td>θ⊥</td>
<td>18</td>
<td>22</td>
<td>26</td>
<td>°</td>
<td>Po=50mW, FWHM</td>
</tr>
<tr>
<td>Lasing Wavelength</td>
<td>λp</td>
<td>842</td>
<td>852</td>
<td>862</td>
<td>nm</td>
<td>Po=50mW</td>
</tr>
<tr>
<td>Monitor Current</td>
<td>Is</td>
<td>0.10</td>
<td>0.25</td>
<td>0.50</td>
<td>mA</td>
<td>Po=50mW, VR(PD)=5V</td>
</tr>
</tbody>
</table>
Typical Characteristic Curves

1. **Optical Output Power vs. Forward Current**
   - Graph showing optical output power ($P_o$) vs. forward current ($I_f$) at different temperatures ($T_C$) with $T_C = 0^\circ C$, $25^\circ C$, and $60^\circ C$.

2. **Threshold Current vs. Case Temperature**
   - Graph showing threshold current ($I_{th}$) vs. case temperature ($T_C$).

3. **Slope Efficiency vs. Case Temperature**
   - Graph showing slope efficiency ($\eta_s$) vs. case temperature ($T_C$).

4. **Monitor Current vs. Case Temperature**
   - Graph showing monitor current ($I_M$) vs. case temperature ($T_C$) with $P_o = 50\,\text{mW}$ and $V_{R(PD)} = 5\,\text{V}$.

5. **Lasing Wavelength vs. Case Temperature**
   - Graph showing lasing wavelength ($\lambda_p$) vs. case temperature ($T_C$) with $P_o = 50\,\text{mW}$.

6. **Far Field Pattern**
   - Graph showing relative intensity vs. angle ($\theta$) with $P_o = 50\,\text{mW}$ and $T_C = 25^\circ C$.
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