

MITSUBISHI LASER DIODES  
**ML6XX25 SERIES**  
 FOR OPTICAL INFORMATION SYSTEMS

**TYPE  
NAME**

**ML60125R, ML601J25**

**DESCRIPTION**

ML6XX25 is a high power AlGaAs semiconductor laser which provides a stable, single transverse mode oscillation with emission wavelength of 785nm and standard light output of 30mW. ML6XX25 is produced by the MOCVD crystal growth method which is excellent in mass production and characteristics uniformity. This is a high-performance, highly reliable, and long life semiconductor laser.

**FEATURES**

- Output 30mW (CW) 45mW (pulse)
- Short astigmatic distance
- MQW \* active layer  
\* : Multiple Quantum Well
- High volume production capacity
- Built-in monitor photodiode (ML60125R)

**APPLICATION**

Optical disc drive

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

| Symbol      | Parameter                     | Conditions    | Ratings          | Unit |
|-------------|-------------------------------|---------------|------------------|------|
| Po          | Light output power            | CW            | <b>35</b>        | mW   |
|             |                               | Pulse(Note 2) | <b>50</b>        |      |
| VRL         | Reverse voltage (laser diode) | -             | <b>2</b>         | V    |
| VRD(Note 3) | Reverse voltage (Photodiode)  | -             | <b>30</b>        | V    |
| IFD(Note 3) | Forward current (Photodiode)  | -             | <b>10</b>        | mA   |
| Tc          | Case temperature              | -             | <b>-40~ +60</b>  | °C   |
| Tstg        | Storage temperature           | -             | <b>-40~ +100</b> | °C   |

Note1: The maximum rating means the limitation over which the laser should not be operated even instant time, and this does not mean the guarantee of its lifetime. As for the reliability, please refer to the reliability report from Mitsubishi Semiconductor Quality Assurance Department.

Note2: TARGET SPEC /Condition Duty less than 50%, pulse width less than 1μs

Note3: Applicable to ML60125R

**ELECTRICAL/OPTICAL CHARACTERISTICS** (Tc=25°C)


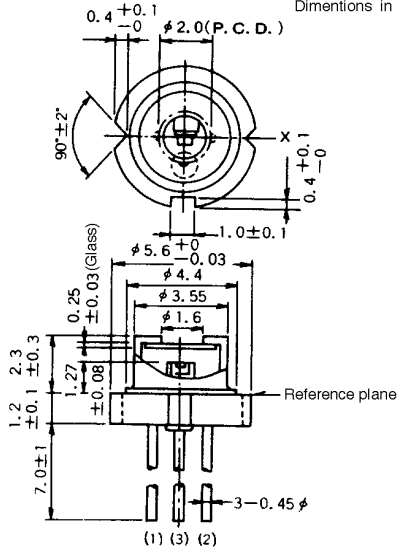
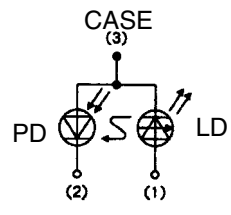
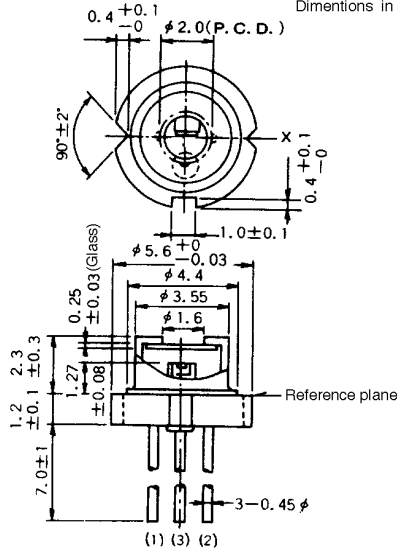
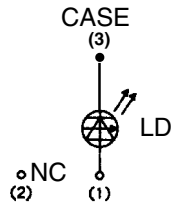
| Symbol     | Parameter                              | Test conditions                      | Min.       | Typ.       | Max        | Unit  |
|------------|--|--------------------------------------|------------|------------|------------|-------|
| Ith        | Threshold current                      | CW                                   | -          | <b>35</b>  | <b>50</b>  | mA    |
| Iop        | Operation current                      | CW, Po=30mW                          | -          | <b>85</b>  | <b>110</b> | mA    |
|            | Slope efficiency                       | CW, Po=30mW                          | -          | <b>0.6</b> | -          | mW/mA |
| Vop        | Operating voltage                      | CW, Po=30mW                          | -          | <b>2.0</b> | <b>2.5</b> | V     |
| p          | Peak wavelength                        | CW, Po=30mW                          | <b>775</b> | <b>785</b> | <b>795</b> | nm    |
| //         | Beam divergence angle (parallel)       | CW, Po=30mW                          | <b>9</b>   | <b>10</b>  | <b>11</b>  | deg.  |
| ⊥          | Beam divergence angle (perpendicular)  | CW, Po=30mW                          | <b>22</b>  | <b>25</b>  | <b>28</b>  | deg.  |
| Im(Note 4) | Monitoring output current (Photodiode) | CW, Po=30mW, VRD=1V<br>RL=10(Note 5) | -          | <b>0.4</b> | -          | mA    |
| ID(Note 4) | Dark current (Photodiode)              | VRD=10V                              | -          | -          | <b>0.5</b> | μA    |
| Ct(Note 4) | Capacitance (Photodiode)               | VRD=5V                               | -          | <b>7</b>   | -          | pF    |

Note 4: Applicable to ML60125R

Note 5: RL=the load resistance of photodiode

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OUTLINE DRAWINGS

|  |  |  |
|--|--|--|
| <p><b>ML60125R</b></p>  | <p>Dimensions in mm</p>  <p>0.4 <math>\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}</math> <math>\phi</math> 2.0 (P. C. D.)</p> <p>90° <math>\pm</math> 2°</p> <p>0.4 <math>\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}</math></p> <p>1.0 <math>\pm</math> 0.1</p> <p><math>\phi</math> 5.6 <math>\begin{smallmatrix} +0 \\ -0.03 \end{smallmatrix}</math></p> <p><math>\phi</math> 4.4</p> <p><math>\phi</math> 3.55</p> <p><math>\phi</math> 1.6</p> <p>0.25 <math>\pm</math> 0.03 (Glass)</p> <p>1.27 <math>\pm</math> 0.08</p> <p>1.2 <math>\pm</math> 0.1</p> <p>2.3 <math>\pm</math> 0.3</p> <p>7.0 <math>\pm</math> 1</p> <p>Reference plane</p> <p>3-0.45 <math>\phi</math></p> <p>(1) (3) (2)</p>  |  <p>CASE (3)</p> <p>PD</p> <p>LD</p> <p>(2) (1)</p> |
| <p><b>ML601J25</b></p>   | <p>Dimensions in mm</p>  <p>0.4 <math>\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}</math> <math>\phi</math> 2.0 (P. C. D.)</p> <p>90° <math>\pm</math> 2°</p> <p>0.4 <math>\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}</math></p> <p>1.0 <math>\pm</math> 0.1</p> <p><math>\phi</math> 5.6 <math>\begin{smallmatrix} +0 \\ -0.03 \end{smallmatrix}</math></p> <p><math>\phi</math> 4.4</p> <p><math>\phi</math> 3.55</p> <p><math>\phi</math> 1.6</p> <p>0.25 <math>\pm</math> 0.03 (Glass)</p> <p>1.27 <math>\pm</math> 0.08</p> <p>1.2 <math>\pm</math> 0.1</p> <p>2.3 <math>\pm</math> 0.3</p> <p>7.0 <math>\pm</math> 1</p> <p>Reference plane</p> <p>3-0.45 <math>\phi</math></p> <p>(1) (3) (2)</p> |  <p>CASE (3)</p> <p>LD</p> <p>NC (2) (1)</p>      |