

MITSUBISHI LASER DIODES  
**ML1XX6 SERIES**  
 FOR OPTICAL INFORMATION SYSTEMS

**TYPE  
NAME**

**ML1016R, ML120G6**

**DESCRIPTION**

ML1XX6 is a high power AlGaInP semiconductor laser which provides a stable, single transverse mode oscillation with emission wavelength of 658-nm and standard CW light output of 30mW.

ML1XX6 has a window-mirror-facet which improves the maximum output power. That leads to highly reliable and high-power operation.

**FEATURES**

- High Power: 30mW (CW), 50mW (pulse)
- Visible Light: 658nm (typ)

**APPLICATION**

DVD(Digital Versatile Disc)-RAM/RW 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	Reverse voltage (Photodiode)	-	<b>30</b>	V
IFD	Forward current (Photodiode)	-	<b>10</b>	mA
Tc	Case temperature	-	<b>-10 ~ +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

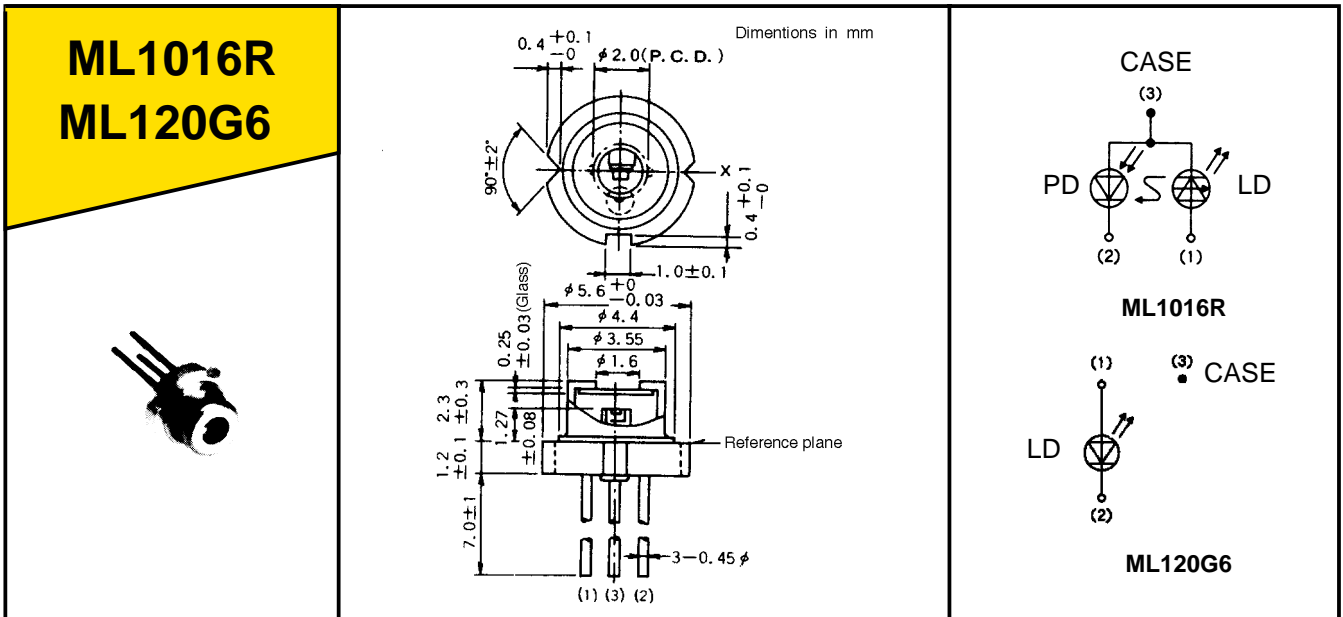
**ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25°C)**

Symbol	Parameter	Test conditions	Min.	Typ.	Max	Unit
I <sub>th</sub>	Threshold current	CW	-	<b>40</b>	<b>70</b>	mA
I <sub>op</sub>	Operating current	CW, Po=30mW	-	<b>80</b>	<b>120</b>	mA
V <sub>op</sub>	Operating voltage	CW, Po=30mW	-	<b>2.7</b>	<b>3.0</b>	V
η	Slope efficiency	CW, Po=30mW	-	<b>0.7</b>	-	mW/mA
λ <sub>p</sub>	Peak wavelength	CW, Po=30mW	<b>655</b>	<b>658</b>	<b>666</b>	nm
θ <sub>//</sub>	Beam divergence angle (parallel)	CW, Po=30mW	<b>7</b>	<b>8.5</b>	<b>11</b>	°
θ <sub>⊥</sub>	Beam divergence angle (perpendicular)	CW, Po=30mW	<b>17</b>	<b>22</b>	<b>26</b>	°
I <sub>m</sub>	Monitoring output current (Photodiode) (only for ML1016R)	CW, Po=30mW, VRD=1V RL=10Ω(Note 3)	<b>0.05</b>	<b>0.35</b>	<b>2.5</b>	mA
I <sub>D</sub>	Dark current (Photodiode)	VRD=10V	-	-	<b>0.5</b>	mA
C <sub>t</sub>	Capacitance (Photodiode)	f=1MHz, VRD=5V	-	<b>7</b>	-	pF

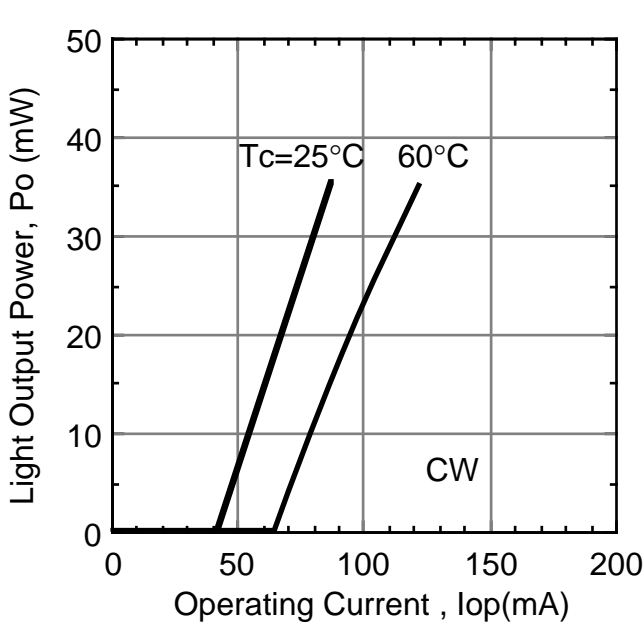
Note 3: RL=the load resistance of photodiode for ML1016R

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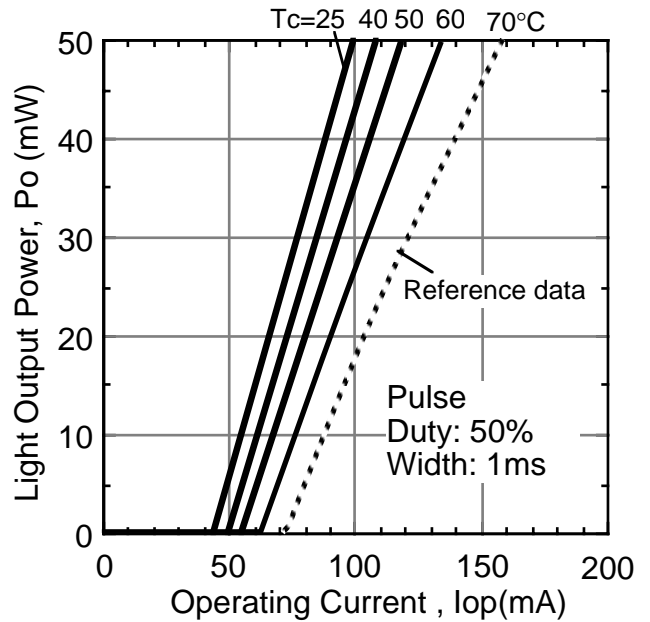
OUTLINE DRAWINGS



Typical Characteristics

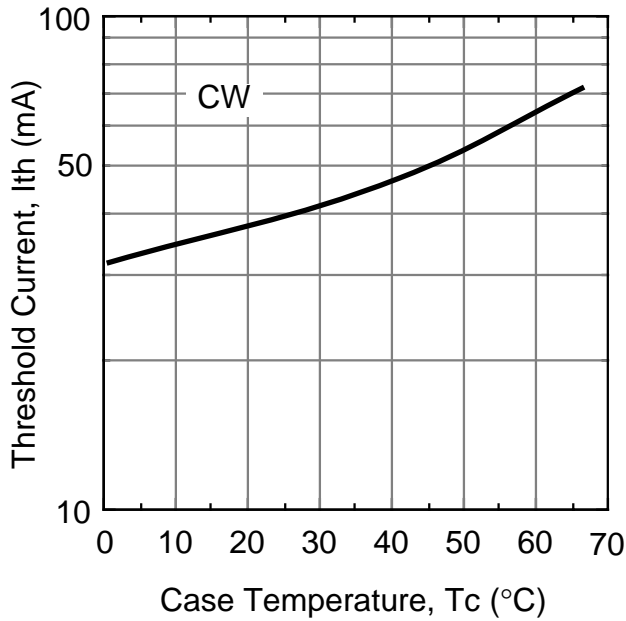


Light Output Power vs. Current (CW)

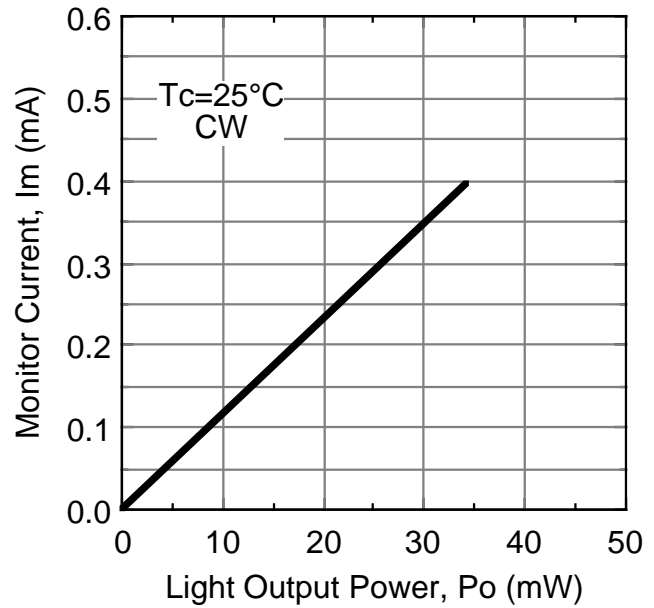


Light Output Power vs. Current (Pulse)

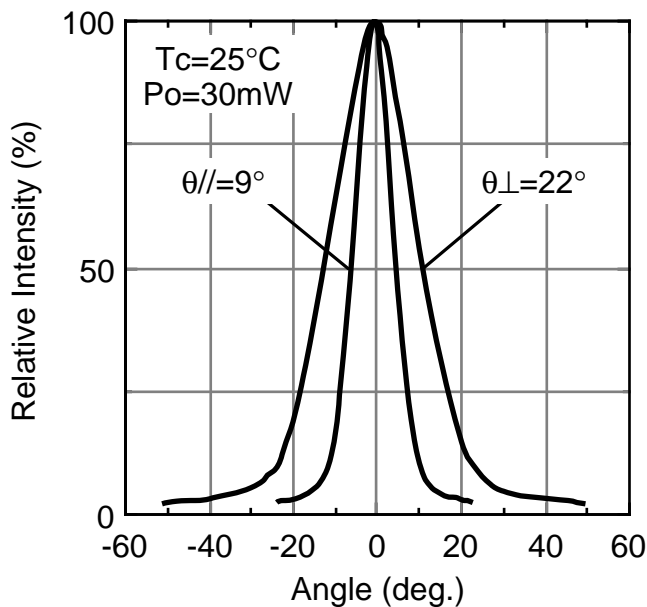
## Typical Characteristics



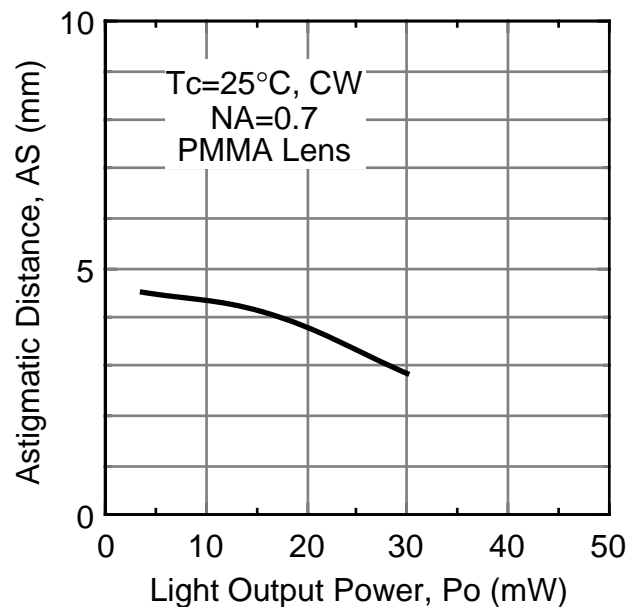
Threshold Current vs. Temperature



Monitor Photodiode Current

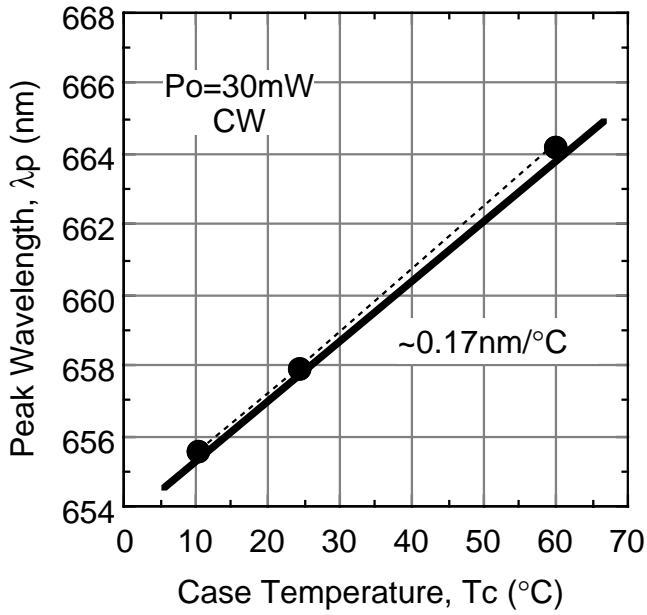


Far-Field-Patterns

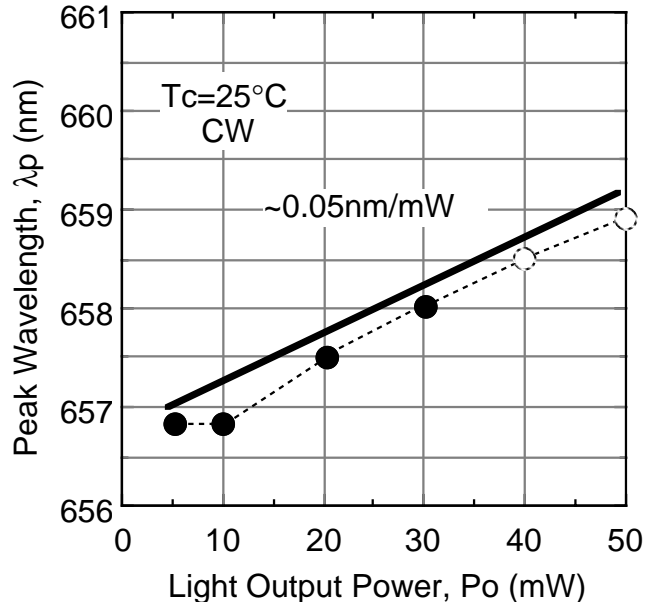


Astigmatic Distance

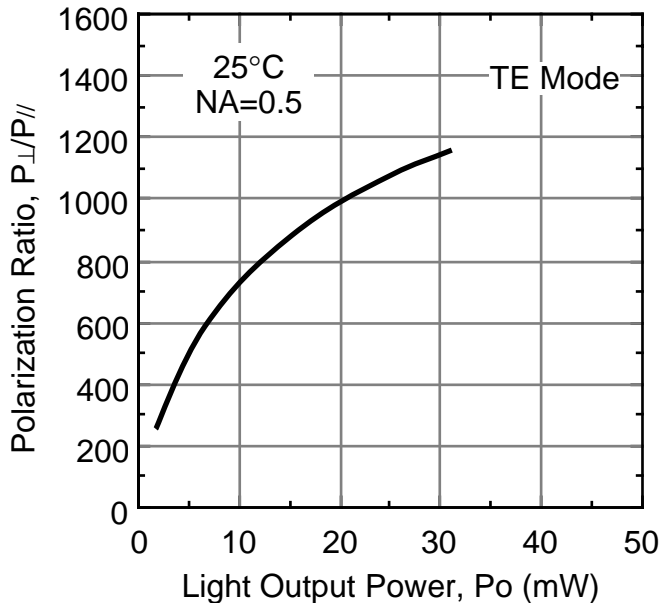
## Typical Characteristics



Peak Wavelength vs. Temperature



Peak Wavelength vs. Light Output Power



Polarization Ratio