

MITSUBISHI LASER DIODES  
ML6XX14 SERIES

AlGaAs LASER DIODES

TYPE  
NAME

ML60114R, ML64114R

DISCRIPTION

ML6XX14 series are high power AlGaAs semiconductor laser diodes which provides a stable, single transverse mode oscillation with emission wavelength of 785nm and standard light output of 50mW.

ML6XX14 are 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 50mW (CW) 60mW (pulse)
  - Short astigmatic distance
  - Built - in monitor photodiode
  - MQW\* active layer
- \* : Multiple Quantum Well.

APPLICATION

Optical disc memory (rewritable, write once)

ABSOLUTE MAXIMUM RATINGS (Note 1)

Symbol	Parameter	Conditions	Ratings	Unit
Po	Light output power	CW	60	mW
		Pulse (Note2)	70	
VRL	Reverse voltage (Laser diode)	—	2	V
VRD	Reverse voltage (photodiode)	—	30	V
IFD	Forward current (photodiode)	—	10	mA
Tc	Case temperature	—	-40~+60	°C
Tstg	Storage temperature	—	-55~+100	°C

Note 1 : Duty less than 50%, plus width less than 1 μs

2 : 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.

ELECTRICAL/OPTICAL CHARACTERISTICS (Tc = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
Ith	Threshold current	CW	—	55	80	mA
IOP	Operating current	CW, Po = 50mW	—	140	165	mA
VOP	Operating voltage	CW, Po = 50mW	—	2.0	2.5	V
η	Slope efficiency	CW, Po = 50mW	0.40	0.55	0.75	mW/mA
λP	Center Wavelength	CW, Po = 50mW	770	785	800	nm
θ //	Beam divergence angle (parallel)	CW, Po = 50mW	8	10	13	deg.
θ ⊥	Beam divergence angle (perpendicular)	CW, Po = 50mW	22	25	28	deg.
Im	Monitoring output current (photodiode) (Note 3)	CW, Po = 50mW, VRD = 1V, RL = 10 Ω (Note 4)	—	0.2	—	mA
Im'			—	0.4	—	
Id	Dark current (photodiode)	VRD = 10V	—	—	0.5	μA
Ct	Capacitance (photodiode)	VRD = 5V, f = 1MHz	—	7	—	pF

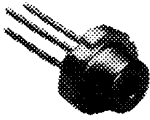
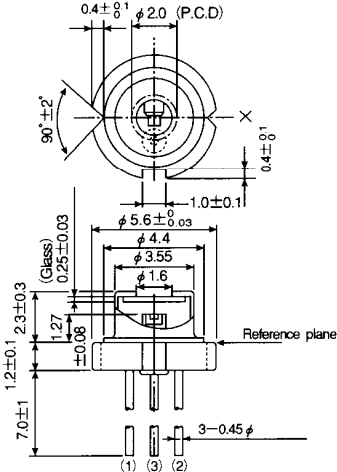
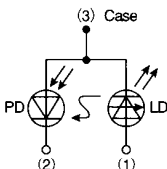
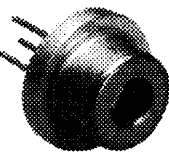
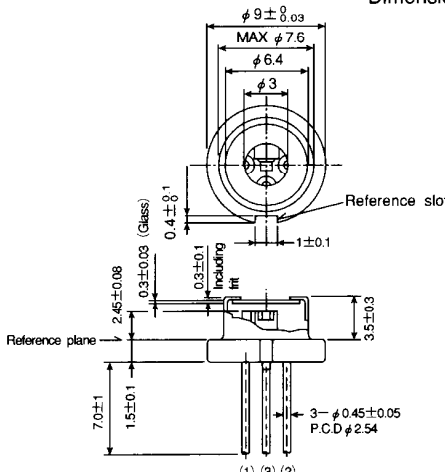
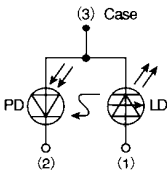
Note 3 : Applicable to ML64114R

4 : RL = the load resistance of photodiode

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OUTLINE DRAWINGS

<p>ML60114R</p> 	<p>Dimension : mm</p>  <p>Top view dimensions: <math>0.4 \pm 0.1</math>, <math>\phi 2.0</math> (P.C.D.), <math>90^\circ \pm 2^\circ</math>, <math>0.4 \pm 0.1</math>, <math>1.0 \pm 0.1</math>.</p> <p>Side view dimensions: <math>1.27</math>, <math>1.2 \pm 0.1</math>, <math>2.3 \pm 0.3</math>, <math>\pm 0.08</math>, <math>7.0 \pm 1</math>, <math>3 - 0.45 \phi</math>.</p> <p>Internal diameters: <math>\phi 5.6 \pm 0.03</math>, <math>\phi 4.4</math>, <math>\phi 3.55</math>, <math>\phi 1.6</math>.</p> <p>Other labels: (Glass), Reference plane, (1), (3), (2).</p>	 <p>(3) Case PD (2) LD (1)</p>
<p>ML64114R</p> 	<p>Dimension : mm</p>  <p>Top view dimensions: <math>\phi 9 \pm 0.03</math>, MAX <math>\phi 7.6</math>, <math>\phi 6.4</math>, <math>\phi 3</math>, <math>1 \pm 0.1</math>.</p> <p>Side view dimensions: <math>2.45 \pm 0.08</math>, <math>0.3 \pm 0.03</math> (Glass), <math>0.4 \pm 0.1</math>, <math>0.3 \pm 0.1</math> including lift, <math>3.5 \pm 0.3</math>, <math>7.0 \pm 1</math>, <math>1.5 \pm 0.1</math>, <math>3 - \phi 0.45 \pm 0.05</math>, P.C.D <math>\phi 2.54</math>.</p> <p>Other labels: Reference slot, Reference plane, (1), (3), (2).</p>	 <p>(3) Case PD (2) LD (1)</p>

# MITSUBISHI LASER DIODES ML6XX14 SERIES

AIGaAs LASER DIODES

## TYPICAL CHARACTERISTICS

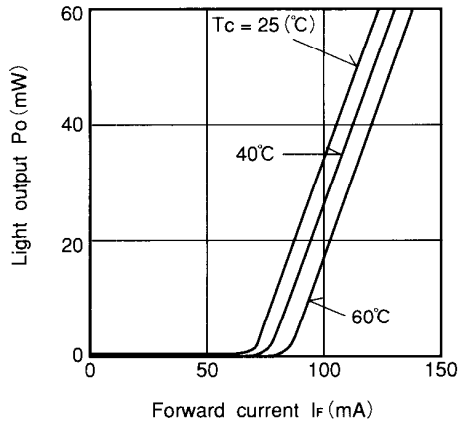


Fig. 1 Light output vs. forward current

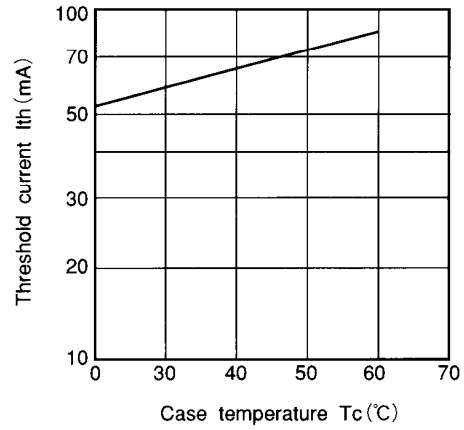


Fig. 2 Temperature dependence of threshold current

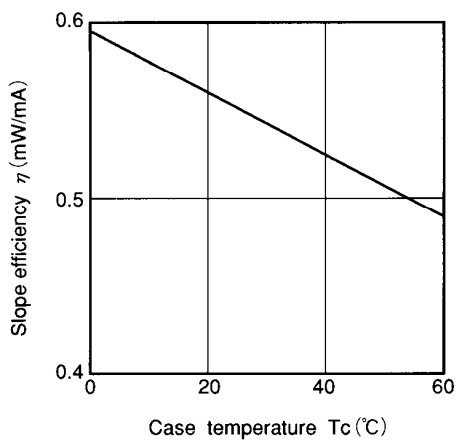


Fig. 3 Case temperature dependence of slope efficiency

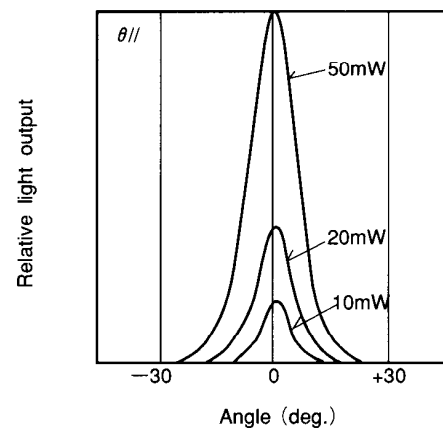


Fig. 4 Far field pattern  $\theta_{//}$

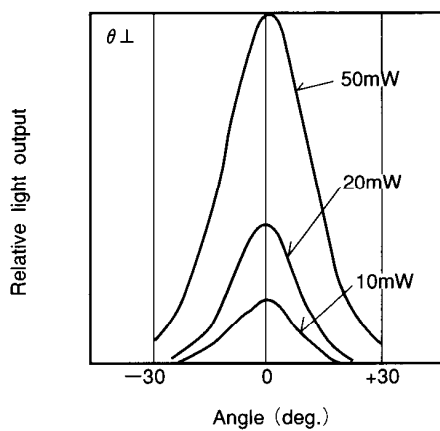


Fig. 5 Far field pattern  $\theta_{\perp}$