

mitsubishi laser diodes
ML6XX16 SERIES

AlGaAs LASER DIODES

**TYPE
NAME**

ML60116R, ML64116R

DISCRIPTION

ML6XX16 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 30mW.

ML6XX16 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 30mW (CW) 40mW (pulse)
- Short astigmatic distance
- Built - in monitor photodiode
- Low IOP

APPLICATION

Optical disc memory (rewritable, write once)

ABSOLUTE MAXIMUM RATINGS (Note 1)

Symbol	Parameter	Conditions	Ratings	Unit
Po	Light output power	CW	40	mW
		Pulse (Note 2)	50	
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%, pulse width less than 1 μ s

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	—	30	50	mA
IOP	Operating current	CW, Po = 30mW	—	80	110	mA
VOP	Operating voltage	CW, Po = 30mW	—	2.0	2.5	V
η	Slope efficiency	CW, Po = 30mW	0.40	0.55	0.75	mW/mA
λP	Peak Wavelength	CW, Po = 30mW	770	785	800	nm
$\theta //$	Beam divergence angle (parallel)	CW, Po = 30mW	8	10	13	deg.
$\theta \perp$	Beam divergence angle (perpendicular)	CW, Po = 30mW	22	25	28	deg.
Im	Monitoring output current (photodiode) (Note 2)	CW, Po = 30mW, VRD = 1V, RL = 10 Ω (Note 3)	—	0.2	—	mA
Im			—	0.5	—	
ID	Dark current (photodiode)	VRD = 10V	—	—	0.5	μ A
Ct	Capacitance (photodiode)	VRD = 5V, f = 1MHz	—	7	—	pF

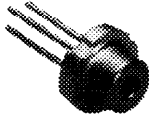
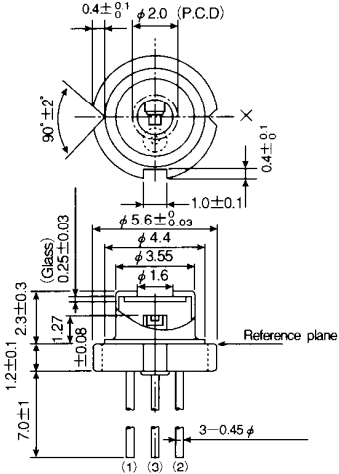
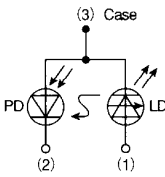
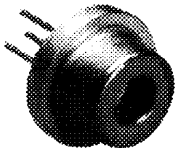
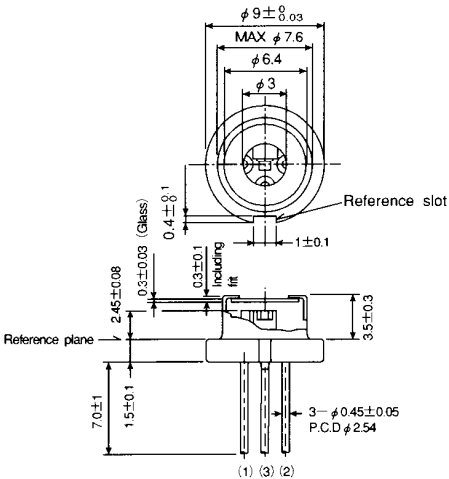
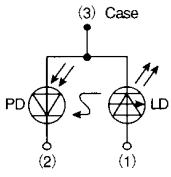
Note 2 : Applicable to ML64116R

3 : RL = the load resistance of photodiode

ITSUBISHI LASER DIODES
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OUTLINE DRAWINGS

ML60116R 	Dimension : mm  Top view dimensions: 0.4 ± 0.1, $\phi 2.0$ (P.C.D.), $90^\circ \pm 2^\circ$, 0.4 ± 0.1, 1.0 ± 0.1, $\phi 5.6 \pm 0.03$, $\phi 4.4$, $\phi 3.55$, $\phi 1.6$, 1.27, 0.25 ± 0.03 (Glass), ± 0.08, 1.2 ± 0.1, 2.3 ± 0.3, 7.0 ± 1, $3 - 0.45 \phi$, (1) (3) (2). Side view: Reference plane.	 (3) Case PD (2) LD (1)
ML64116R 	Dimension : mm  Top view dimensions: $\phi 9 \pm 0.03$, MAX $\phi 7.6$, $\phi 6.4$, $\phi 3$, 1 ± 0.1, 0.4 ± 0.1, 0.3 ± 0.03 (Glass), 0.3 ± 0.1 including fit, 2.45 ± 0.08, 3.5 ± 0.3, 7.0 ± 1, 1.5 ± 0.1, $3 - \phi 0.45 \pm 0.05$, P.C.D $\phi 2.54$, (1) (3) (2). Side view: Reference plane, Reference slot.	 (3) Case PD (2) LD (1)

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TYPICAL CHARACTERISTICS

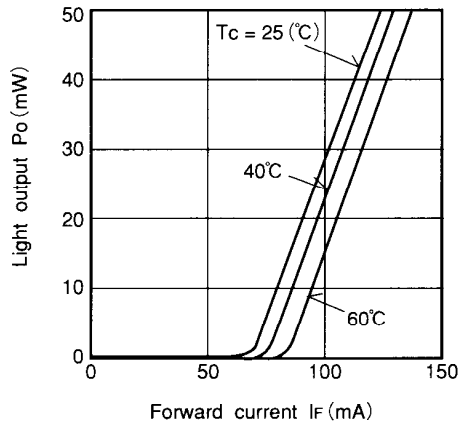


Fig. 1 Light output vs. forward current

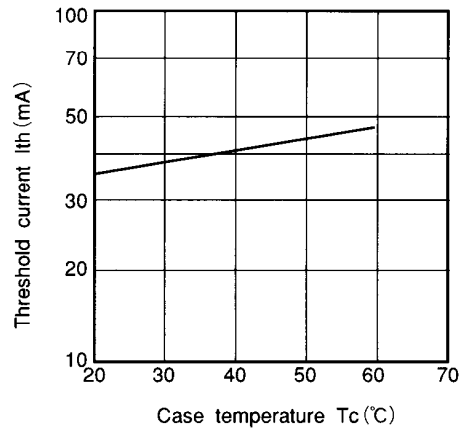


Fig. 2 Temperature dependence of threshold current

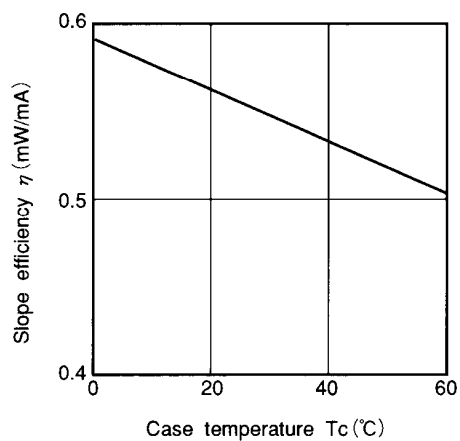


Fig. 3 Case temperature dependence of slope efficiency

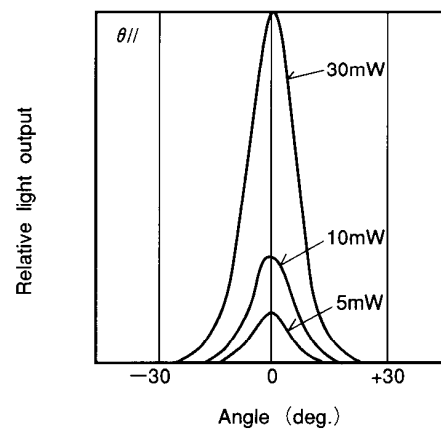


Fig. 4 Far field pattern $\theta //$

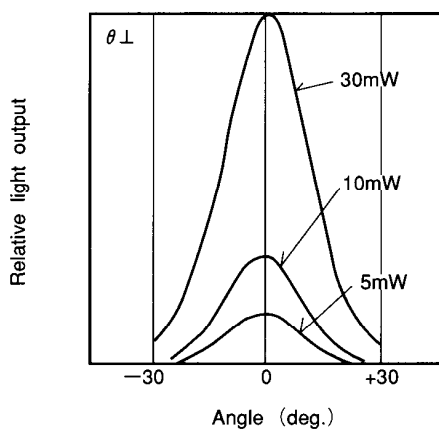


Fig. 5 Far field pattern $\theta \perp$