ML1XX3 SERIES

FOR OPTICAL INFORMATION SYSTEMS

TYPE NAME

ML1013R, ML1413R, ML120G3

DESCRIPTION

ML1XX3 is a high power AlGaInP semiconductor laser which provides a stable, single transverse mode oscillation with emission wavelength of 685-nm and standard CW light output of 50mW.

ML1XX3 has a window-mirror-facet which improves the maximum output power. That leads to highly reliable and high-power operation.

FEATURES

- High Power: 50mW (CW), 60mW (pulse)
- Visible Light: 685nm (typ)

APPLICATION

Optical disc drive (High Density / High Speed)

ABSOLUTE MAXIMUM RATINGS (Note 1)

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

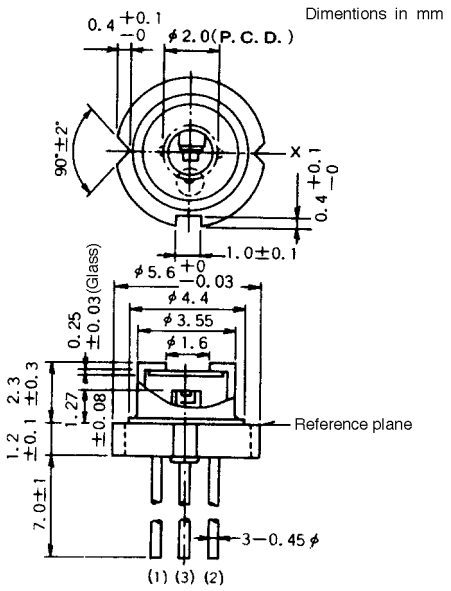
Symbol	Parameter	Test conditions	Min.	Typ.	Max	Unit
Ith	Threshold current	CW	**-**	**35**	**60**	mA
Iop	Operation current	CW,Po=50mW	**-**	**80**	**120**	mA
Vop	Operating voltage	CW,Po=50mW	**2.0**	**2.4**	**3.0**	V
η	Slope efficiency	CW,Po=50mW	**-**	**0.8**	**-**	mW/mA
λp	Peak wavelength	CW,Po=50mW	**670**	**685**	**700**	nm
θ//	Beam divergence angle (parallel)	CW,Po=50mW	**7**	**10**	**12**	°
θ⊥	Beam divergence angle (perpendicular)	CW,Po=50mW	**16**	**20**	**25**	°
Im	Monitoring output current (Photodiode)	CW,Po=50mW VRD=1V RL=10Ω(Note 3)	**0.05**	**0.3**	**1.5**	mA
ID	Dark current (Photodiode)	VRD=10V	**0**	**-**	**0.5**	uA
Ct	Capacitance (Photodiode)	VRD=5V	**-**	**7**	**-**	pF

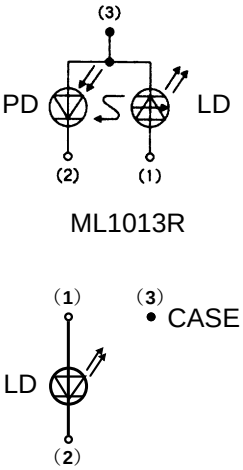
Note3: RL=the load resistance of photodiode for ML1013R and ML1413R

OUTLINE DRAWINGS

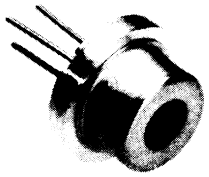
ML1013R
ML120G3

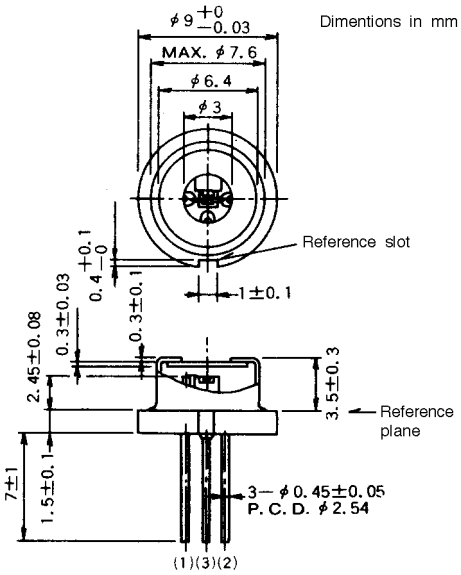


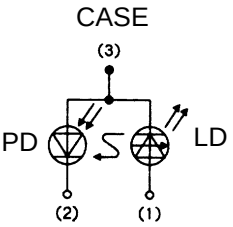




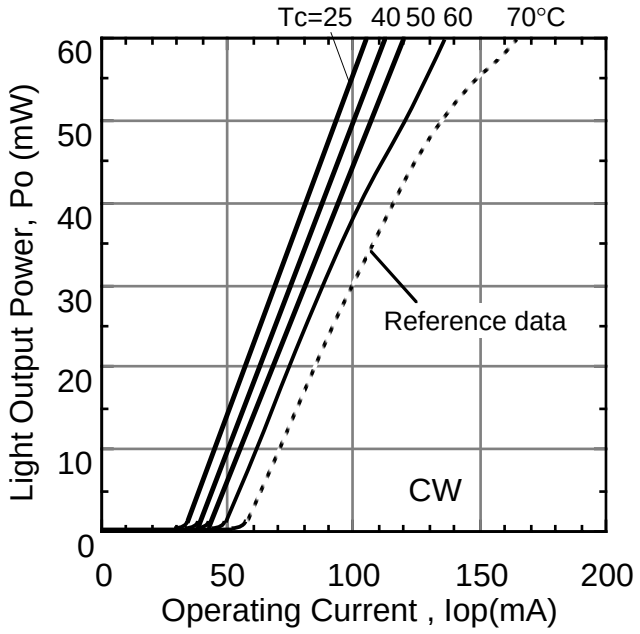
ML1413R



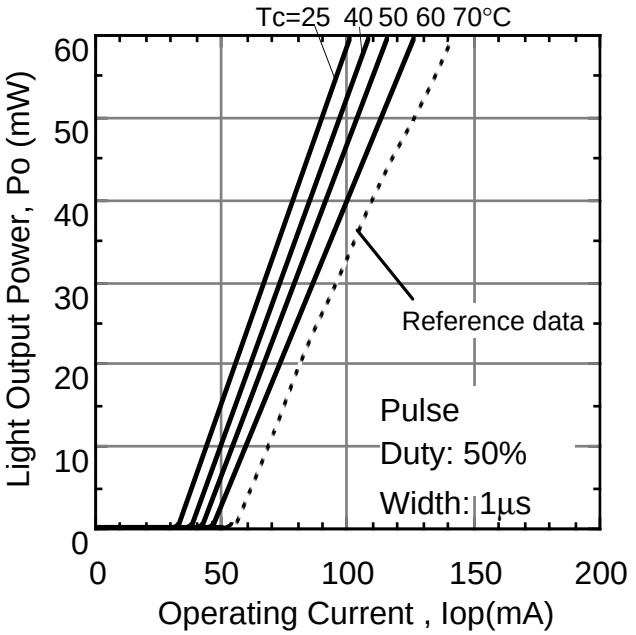




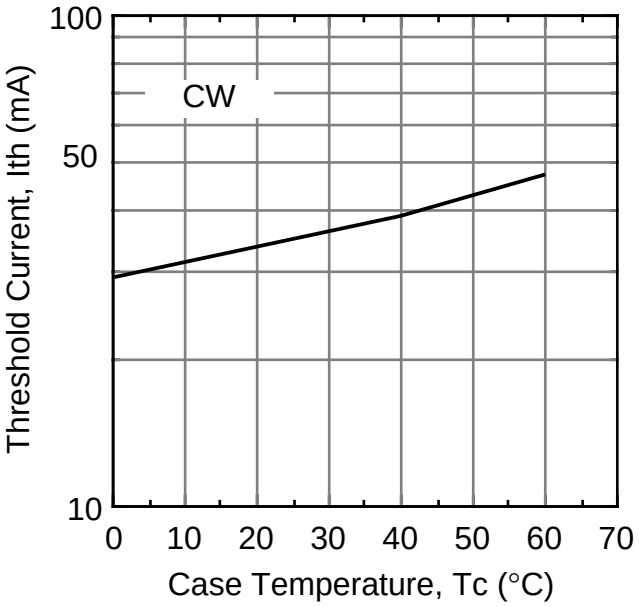
Typical Characteristics



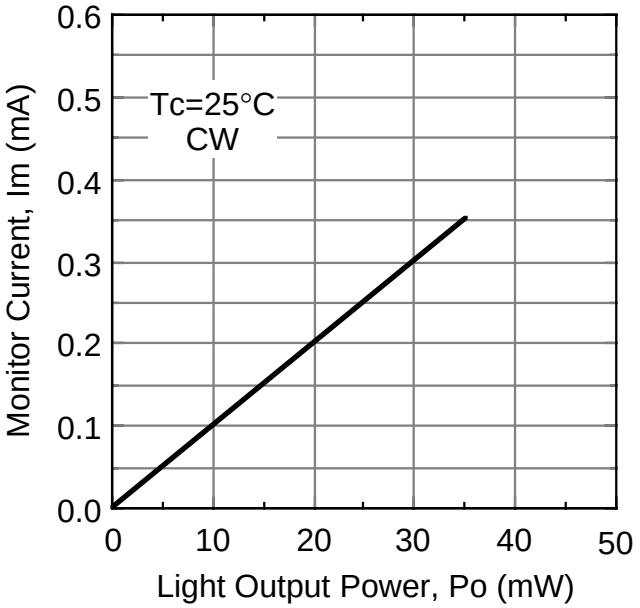
Light Output Power vs. Current (CW)



Light Output Power vs. Current (Pulse)

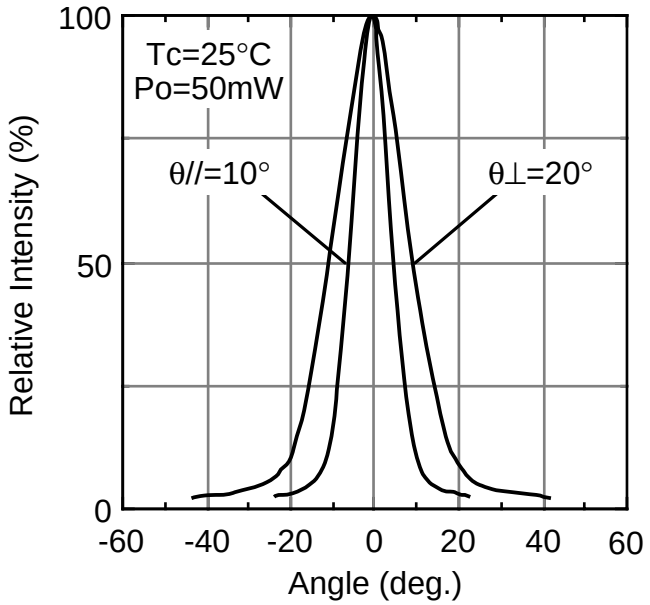


Threshold Current vs. Temperature

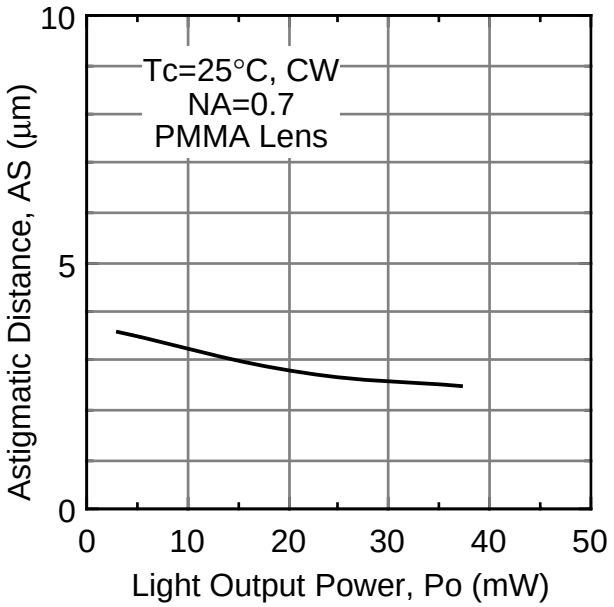


Monitor Photodiode Current

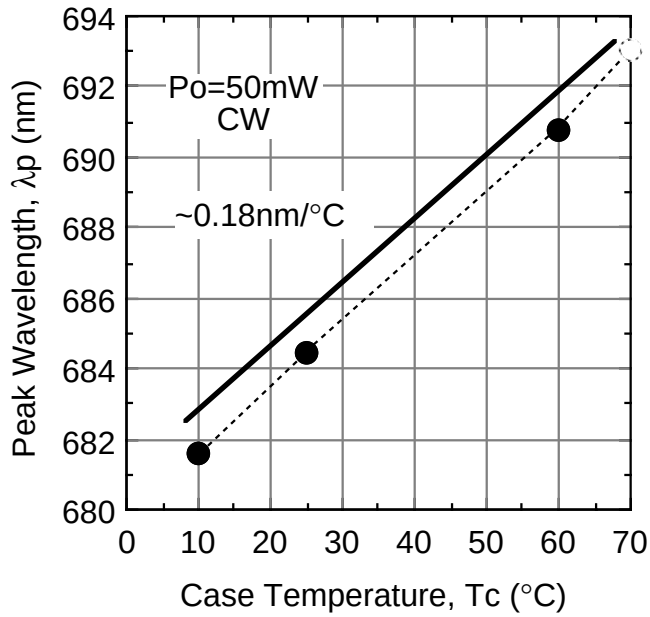
Typical Characteristics



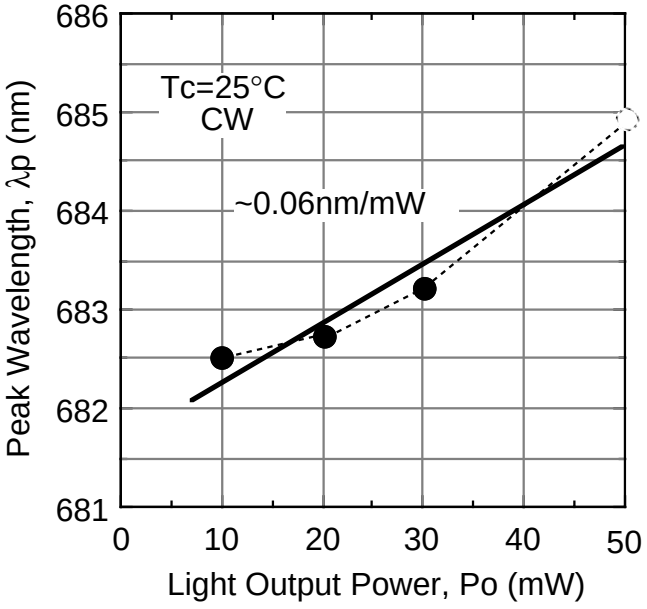
Far-Field-Patterns



Astigmatic Distance

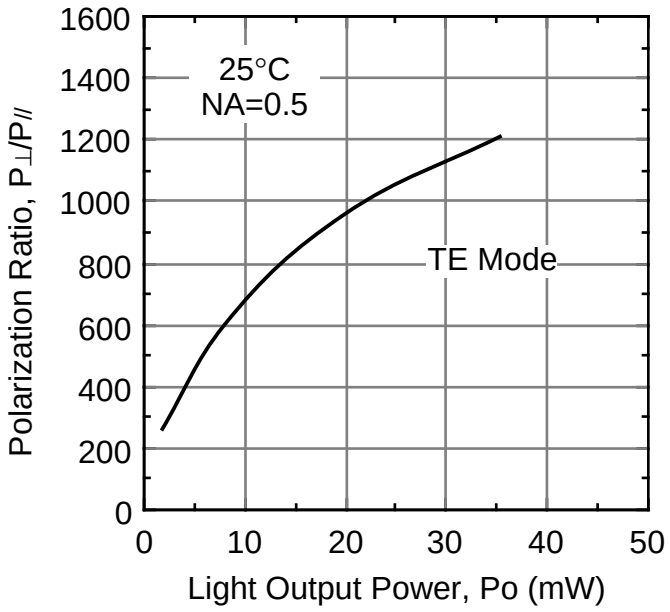


Peak Wavelength vs. Temperature



Peak Wavelength vs. Light Output Power

Typical Characteristics



Polarization Ratio