

MITSUBISHI LASER DIODES  
**ML5xx54 LD SERIES**  
 FOR DISPLAY SYSTEM

**TYPE  
NAME**

**ML520G54 / ML529P54**

Please note that this data sheet may be changed without any notice.

**DESCRIPTION**

Mitsubishi ML5xx54 is a high-power, high-efficient semiconductor laser diode which provides emission wavelength of 638 nm and standard light output of 110mW.

This LD has narrow-stripe structure which enables better beam quality even at high output power.

**FEATURES**

- High Output Power: 110mW (CW)
- High Efficiency: 1.1mW/mA (typ.)
- Visible Light: 638nm (typ.)
- Package:  $\phi$  5.6mm TO-CAN PKG (ML520G54)  
 $\phi$  3.8mm Cap-less PKG (ML529P54)

**APPLICATION**

- Display system, Bio-medical

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

Symbol	Parameter	Conditions	Ratings	Unit
Po	Light output power	CW	110(Tc $\leq$ 50 °C), 90(50 °C < Tc $\leq$ 60 °C)	mW
VRL	Reverse voltage	-	2	V
Tc	Case temperature	-	-5 ~ +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. This does not mean the guarantee of its lifetime. As for the reliability, please refer to the reliability report issued by Quality Assurance Section, HF & Optical Semiconductor Division, Mitsubishi Electric Corporation.


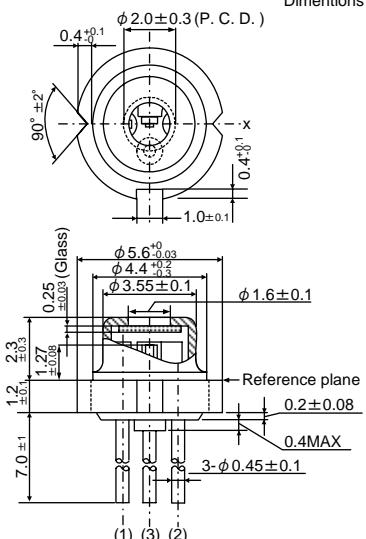
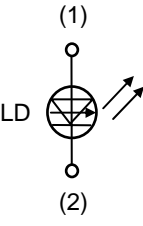
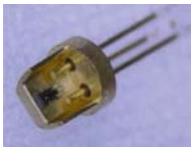
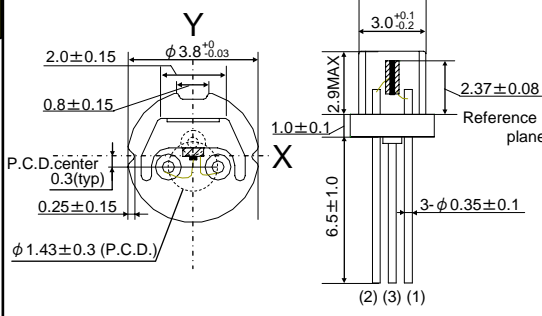
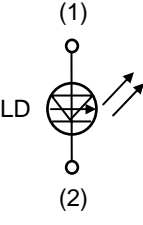
**ELECTRICAL/OPTICAL CHARACTERISTICS** (Tc=25°C)

Symbol	Parameter	Test conditions	Min.	Typ.	Max	Unit
Ith	Threshold current	CW	35	50	65	mA
Iop	Operating current	CW, Po=110mW	100	150	200	mA
Vop	Operating voltage	CW, Po=110mW	2.4	2.7	3.0	V
$\eta$	Slope efficiency	CW, Po=110mW	0.8	1.1	1.3	mW/mA
$\lambda_p$	Peak wavelength	CW, Po=110mW	632	638	644	nm
$\theta_{//}$	Beam divergence angle (parallel)	CW, Po=110mW	5	9	13	°
$\theta_{\perp}$	Beam divergence angle (perpendicular)	CW, Po=110mW	14	19	24	°



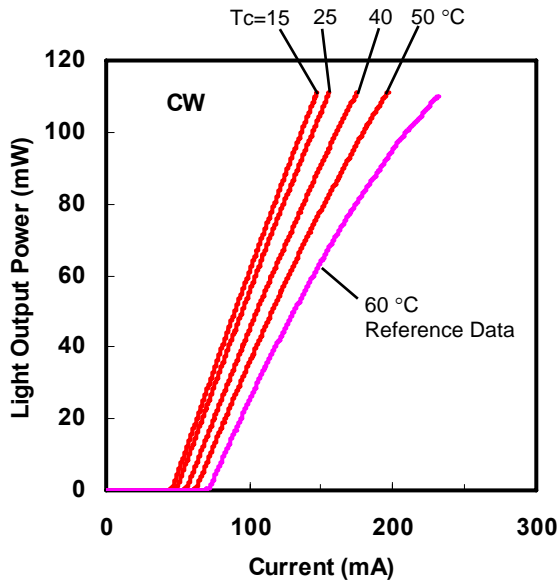
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OUTLINE DRAWINGS

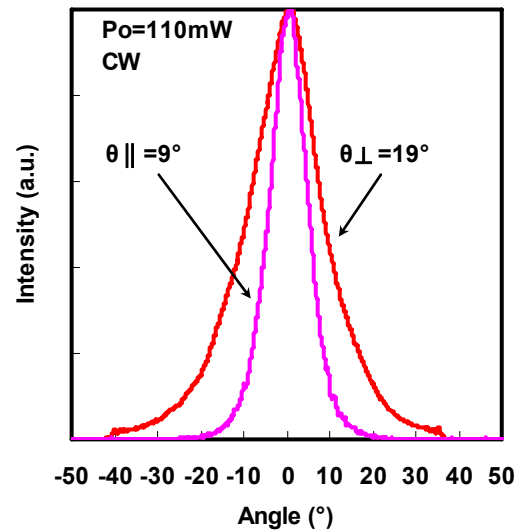
<p><b>ML520G54</b></p>  <p><math>\phi 5.6\text{mm}</math></p>	<p>Dimensions in mm</p>  <p>Top view dimensions: <math>\phi 2.0 \pm 0.3</math> (P.C.D.), <math>0.4 \pm 0.1</math>, <math>90^\circ \pm 2^\circ</math>, <math>0.4 \pm 0.1</math>, <math>1.0 \pm 0.1</math>.</p> <p>Side view dimensions: <math>\phi 5.6 \pm 0.03</math> (Glass), <math>\phi 4.4 \pm 0.2</math>, <math>\phi 3.55 \pm 0.1</math>, <math>\phi 1.6 \pm 0.1</math>, <math>0.25 \pm 0.03</math>, <math>2.3 \pm 0.03</math>, <math>1.27 \pm 0.08</math>, <math>1.2 \pm 0.1</math>, <math>7.0 \pm 1</math>, <math>0.2 \pm 0.08</math>, <math>0.4\text{MAX}</math>, <math>3-\phi 0.45 \pm 0.1</math>.</p> <p>Reference plane</p> <p>(1) (3) (2)</p>	 <p>LD</p> <p>(1) (2) (3)</p> <p>● CASE</p> <p><b>ML520G54</b></p>
<p><b>ML529P54</b></p>  <p><math>\phi 3.8\text{mm}</math></p>	<p>Dimensions in mm</p>  <p>Top view dimensions: <math>2.0 \pm 0.15</math>, <math>\phi 3.8 \pm 0.03</math>, <math>0.8 \pm 0.15</math>, P.C.D. center <math>0.3</math> (typ), <math>0.25 \pm 0.15</math>, <math>\phi 1.43 \pm 0.3</math> (P.C.D.).</p> <p>Side view dimensions: <math>3.0 \pm 0.1</math>, <math>2.9\text{MAX}</math>, <math>2.37 \pm 0.08</math>, <math>1.0 \pm 0.1</math>, <math>6.5 \pm 1.0</math>, <math>3-\phi 0.35 \pm 0.1</math>.</p> <p>Reference plane</p> <p>(2) (3) (1)</p>	 <p>LD</p> <p>(1) (2) (3)</p> <p>● CASE</p> <p><b>ML529P54</b></p>

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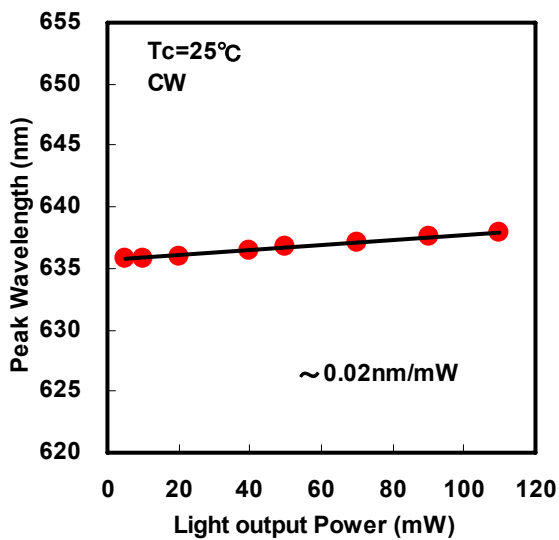
Typical Characteristics of ML520G54



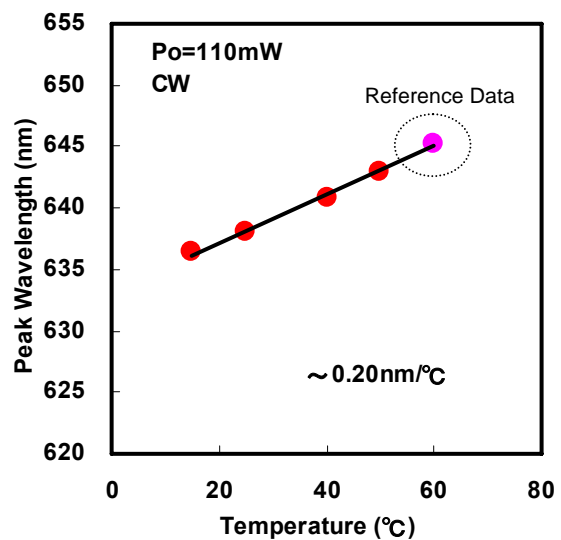
Light Output Power vs. Current (CW)



Far-Field-Patterns



Peak Wavelength vs. Light Output Power



Peak Wavelength vs. Temperature

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