

# ML9xx45 SERIES

1550,1520nm InGaAsP FP LASER DIODES

Notice: Some parametric limits are subject to change.

**TYPE  
NAME**

**ML920J45S , ML920K45S, ML920Y45S  
ML925B45F , ML925C45F**

**DESCRIPTION**

ML9XX45 series are InGaAsP laser diodes which provide a stable, single transverse mode oscillation with emission wavelength of 1550nm and standard continuous light output of 5mW.

ML9XX45 are hermetically sealed devices having the photo diode for optical output monitoring. This is suitable for such applications as FTTH (Fiber to the Home)systems.

**FEATURES**

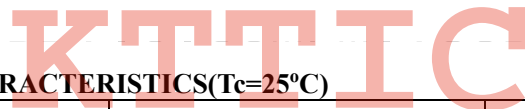
- 1550 or 1520nm typical emission wavelength, FP-LDs
- Low threshold current, low operating current
- Wide temperature range operation (Tc=-40 to 85deg.C)
- φ5.6mm TO-CA N package
- Flat window cap : ML920J45S, ML925B45F
- Ball lens cap : ML920K45S, ML925C45F, ML920Y45S

**APPLICATION**

- ~155Mbps FTTH system

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Conditions	Ratings	Unit
Po	Light output power	CW	<b>6[4]</b>	<b>mW</b>
VRL	Laser reverse voltage	-	<b>2</b>	<b>V</b>
VRD	PD reverse voltage	-	<b>20</b>	<b>V</b>
IFD	PD forward current	-	<b>2</b>	<b>mA</b>
Tc	Operation temperature	-	<b>-40 to +85</b>	<b>deg.C</b>
Tstg	Storage temperature	-	<b>-40 to +100</b>	<b>deg.C</b>



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


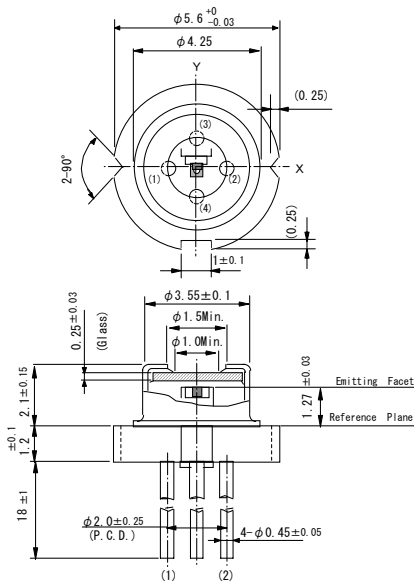
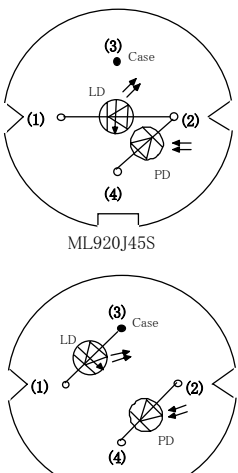
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
Ith	Threshold current	CW	<b>3</b>	<b>10</b>	<b>20</b>	<b>mA</b>	
Iop	Operation current	CW, Po=5mW[3mW]	<b>10</b>	<b>30</b>	<b>50</b>	<b>mA</b>	
Vop	Operating voltage	CW, Po=5mW[3mW]	---	<b>1.1</b>	<b>1.5</b>	<b>V</b>	
η	Slope efficiency	CW, Po=5mW[3mW]	<b>0.15[0.1]</b>	<b>0.25[0.2]</b>	<b>0.5</b>	<b>mW/mA</b>	
λc	Center wavelength	CW, Po=5mW[3mW]	-01spec	<b>1520</b>	<b>1550</b>	<b>1580</b>	<b>nm</b>
			-02spec	<b>1495</b>	<b>1520</b>	<b>1544</b>	
Δλ	Spectral Width	CW, Po=5mW, [3mW]RMS(-20dB)	---	<b>1.5</b>	<b>3</b>	<b>nm</b>	
θ	Beam divergence angle(parallel)	CW, Po=5mW[3mW]	---	<b>25[11]</b>	---	<b>deg.</b>	
θ ⊥	Beam divergence angle(perpendicular)	CW, Po=5mW[3mW]	---	<b>30[11]</b>	---	<b>deg.</b>	
tr,tf	Rise and Fall time (10%-90%)	Ib=Ith,Po=5mW [3mW],10-90%	---	<b>0.3</b>	<b>0.7</b>	<b>nsec</b>	
Im	Monitor Current (PD)	CW, Po=5mW[3mW], VRD=1V,	<b>0.1</b>	<b>0.5</b>	<b>1.0</b>	<b>mA</b>	
Id	Dark Current (PD)	VRD=10V	---	---	<b>0.1</b>	<b>μA</b>	
Ct	Capacitance (PD)	VRD=10V, f=1MHz	---	<b>10</b>	<b>20</b>	<b>pF</b>	
Pf(Note2)	Fiber Coupling characteristics at peak coupling<3>	CW, PL=3mW,SI10/125	<b>0.2</b>	<b>0.5</b>	---	<b>mW</b>	
Df(Note2)		CW, PL=3mW SI10/125	ML920K45S	<b>5.0</b>	<b>5.8</b>	<b>6.2</b>	<b>mm</b>
			ML920Y45S	<b>6.0</b>	<b>6.5</b>	<b>7.0</b>	


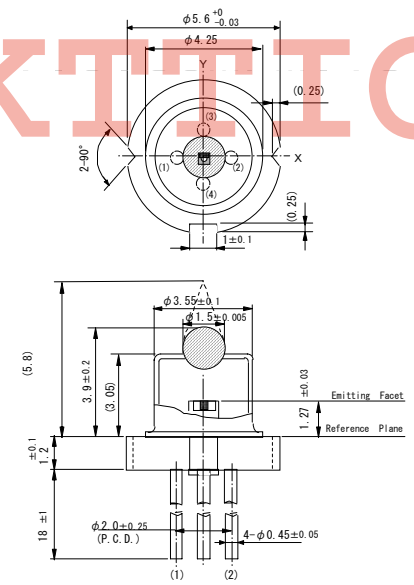
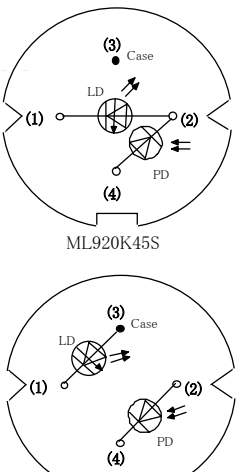
Note : <1> [ ] applied to the lens cap type.  
 Note : <2> Pf,Df are applied to the ball lens type.  
 Note : <3> Df is a distance between reference plane of the base to the fiber.

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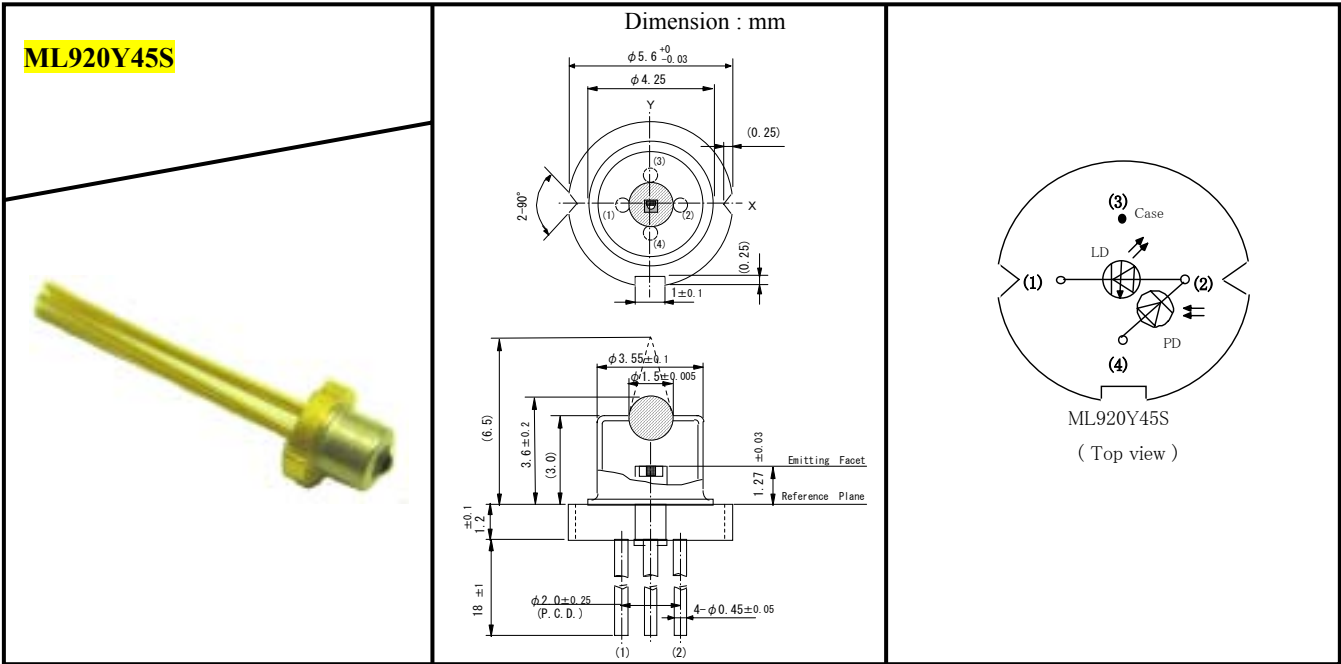
## OUTLINE DRAWINGS

<p><b>ML920J45S</b></p> <p><b>ML925B45F</b></p> 	<p>Dimension : mm</p>  <p>Top view dimensions: <math>\phi 5.6^{+0}_{-0.03}</math>, <math>\phi 4.25</math>, <math>2-90^\circ</math>, <math>1 \pm 0.1</math>, <math>0.25</math>, <math>0.25</math>.</p> <p>Side view dimensions: <math>\phi 3.55 \pm 0.1</math>, <math>\phi 1.5 \text{ min}</math>, <math>\phi 1.0 \text{ min}</math>, <math>0.25 \pm 0.03</math> (Glass), <math>2.1 \pm 0.15</math>, <math>1.27 \pm 0.03</math> (Emitting Facet), <math>1.27 \pm 0.03</math> (Reference Plane), <math>18 \pm 1</math>, <math>\phi 2.0 \pm 0.25</math> (P.C.D.), <math>4-\phi 0.45 \pm 0.05</math>.</p>	 <p>ML920J45S</p> <p>ML925B45F Pin Connection ( Top view )</p>
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<p><b>ML920K45S</b></p> <p><b>ML925C45F</b></p> 	<p>Dimension : mm</p>  <p>Top view dimensions: <math>\phi 5.6^{+0}_{-0.03}</math>, <math>\phi 4.25</math>, <math>2-40^\circ</math>, <math>1 \pm 0.1</math>, <math>0.25</math>, <math>0.25</math>.</p> <p>Side view dimensions: <math>\phi 3.55 \pm 0.1</math>, <math>\phi 1.5 \pm 0.005</math>, <math>3.9 \pm 0.2</math>, <math>0.105</math>, <math>1.27 \pm 0.03</math> (Emitting Facet), <math>1.27 \pm 0.03</math> (Reference Plane), <math>18 \pm 1</math>, <math>\phi 2.0 \pm 0.25</math> (P.C.D.), <math>4-\phi 0.45 \pm 0.05</math>.</p>	 <p>ML920K45S</p> <p>ML925C45F Pin Connection ( Top view )</p>
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MITSUBISHI LASER DIODES  
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OUTLINE DRAWINGS



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