

MITSUBISHI LASER DIODES  
**ML9xx19 SERIES**

Notice: Some parametric limits are subject to change

2.5Gbps InGaAsP DFB LASER DIODE

**TYPE  
NAME**

**ML925B19F / ML920J19S / ML925J19F**

**DESCRIPTION**

ML9XX19 series are uncooled DFB (Distributed Feedback) laser diodes for 2.5Gbps transmission emitting light beam at 1470~1610nm.  $\lambda/4$  shifted grating structure is employed to obtain excellent SMSR performance under 2.5Gbps modulation. Furthermore, ML9xx19 can operate in the wide temperature range from 0°C to 70 °C without any temperature control. They are well suited for light source in long distance digital transmission application of coarse WDM.

**FEATURES**

- $\lambda/4$  shifted grating structure
- Wide temperature range operation (0°C to 70°C)
- High side-mode-suppression-ratio (typical 45dB)
- High resonance frequency (typical 11GHz)

**APPLICATION**

- 2.5Gbps long-haul transmission
- Coarse WDM application

**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Conditions	Ratings	Unit
Po	Output power	CW	6	mW
IF	Laser forward current	-	200	mA
VRL	Laser reverse voltage	-	2	V
IFD	PD forward current	-	2	mA
VRD	PD reverse voltage	-	20	V
Tc	Operation temperature	-	0 to +70	°C
Tstg	Storage temperature	-	-40 to +100	°C

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

Symbol	Parameter	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Ith	Threshold current	CW	---	12	18	mA
		CW, Tc=70°C	---	28	40	
Iop	Operation current	CW, Po=5mW <*1>	---	40	55	mA
		CW, Po=5mW, Tc=70°C <*1>	---	70	80	
Vop	Operating voltage	CW, Po=5mW <*1>	---	1.1	1.5	V
h	Slope efficiency	CW, Po=5mW <*2>	0.15	0.20	---	mW/mA
		CW, PL=5mW <*3>	0.13	0.18	---	
lp	Peak wavelength	CW, Po=5mW <*1>	<*4,*5>			nm
SMSR	Side mode suppression ratio	CW, Po=5mW, Tc=0 to 70°C <*1>	35	45	---	dB
	Side mode suppression ratio(RF)	2.48832Gbps, Ib=Ith, Ipp=40mA	---	45	---	
$\theta//$	Beam divergence angle (parallel) <*6>	CW, Po=5mW	---	25	---	deg.
$\theta\perp$	(perpendicular) <*6>	CW, Po=5mW	---	30	---	
fr	Resonance frequency	2.48832Gbps, Ib=Ith, Ipp=40mA	---	11	---	GHz
tr, tf	Rise and Fall time	2.48832Gbps, Ib=Ith, Ipp=40mA 20%-80%	---	80	120	psec
Im	Monitoring current (PD)	CW, Po=5mW, VRD=1V, RL=10 $\Omega$ <*7>	0.1	---	1.5	mA
Id	Dark current (PD)	VRD=5V	---	---	0.1	$\mu$ A
Ct	Capacitance (PD)	VRD=5V, f=1MHz	---	10	20	pF

<\*1> PL=5mW is applied to ML925J19F <\*2> Applied to ML925B19F and ML920J19S

<\*3> Applied to ML925J19F <\*6> Beamdivergence is not applied to ML925J19F

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< \*4 >Peak Wavelength

Type	Symbol	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
ML925B19F-01 / ML920J19S-01 / ML925J19F-01	l <sub>p</sub>	CW, P <sub>o</sub> =5mW T <sub>c</sub> =0 to 70°C < *1 >	1530	1550	1570	nm
ML925B19F-04 / ML920J19S-04 / ML925J19F-04			1467	1470	1473	
ML925B19F-05 / ML920J19S-05 / ML925J19F-05		1487	1490	1493		
ML925B19F-06 / ML920J19S-06 / ML925J19F-06		1507	1510	1513		
ML925B19F-07 / ML920J19S-07 / ML925J19F-07		1527	1530	1533		
ML925B19F-08 / ML920J19S-08 / ML925J19F-08		1547	1550	1553		
ML925B19F-09 / ML920J19S-09 / ML925J19F-09		1567	1570	1573		
ML925B19F-10 / ML920J19S-10 / ML925J19F-10		1587	1590	1593		
ML925B19F-11 / ML920J19S-11 / ML925J19F-11		1607	1610	1613		

< \*5 >Peak Wavelength

Type	Symbol	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
ML925B19F-12 / ML920J19S-12 / ML925J19F-12	l <sub>p</sub>	CW, P <sub>o</sub> =5mW T <sub>c</sub> =25°C < *1 >	1468	1470	1472	nm
ML925B19F-13 / ML920J19S-13 / ML925J19F-13			1488	1490	1492	
ML925B19F-14 / ML920J19S-14 / ML925J19F-14			1508	1510	1512	
ML925B19F-15 / ML920J19S-15 / ML925J19F-15			1528	1530	1532	
ML925B19F-16 / ML920J19S-16 / ML925J19F-16			1548	1550	1552	
ML925B19F-17 / ML920J19S-17 / ML925J19F-17			1568	1570	1572	
ML925B19F-18 / ML920J19S-18 / ML925J19F-18			1588	1590	1592	
ML925B19F-19 / ML920J19S-19 / ML925J19F-19			1608	1610	1612	

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OUTLINE DRAWINGS

