# 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. λ/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

· λ/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 | | 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 | --- | dB |
| θ// | Beam divergence angle (parallel) <*6> | CW, Po=5mW | --- | 25 | --- | deg. |
| θ⊥ | (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=10Ω<*7> | 0.1 | --- | 1.5 | mA |
| Id | Dark current (PD) | VRD=5V | --- | --- | 0.1 | μA |
| 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> Beam divergence is not applied to ML925J19F

**< *4 >Peak Wavelength**

| Type | Symbol | Test Condition | Limits | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| ML925B19F-01 / ML920J19S-01 / ML925J19F-01 | lp | CW, Po=5mW Tc=0 to 70°C < *1> | 1530 | 1550 | 1570 | nm |
| ML925B19F-04 / ML920J19S-04 / ML925J19F-04 | | CW, Po=5mW Tc=25°C < *1> | 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 | lp | CW, Po=5mW Tc=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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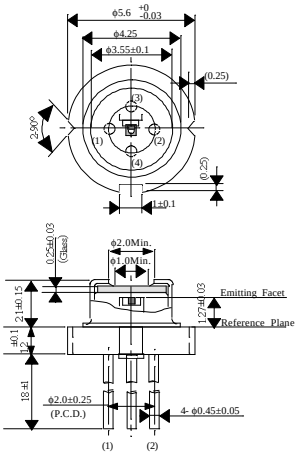
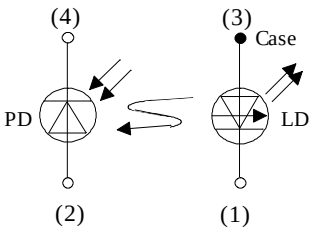
OUTLINE DRAWINGS

## ML925B19F

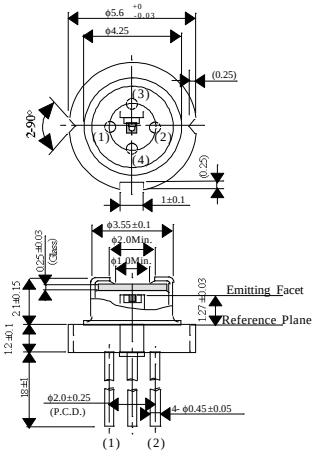
(Dimensions : mm)

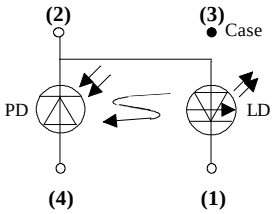



## ML920J19S

(Dimensions : mm)




## ML925J19F

(Dimensions : mm)