**TYPE NAME**

# ML725B11F/ML720J11S
# ML725AA11F / ML720AA11S
# ML725J11F / ML720L11S

## DESCRIPTION

ML7XX11series are DFB (Distributed Feedback) laser diodes emitting light beam around 1310nm.
They are well suited for light source in long distance digital transmission system.
They are hermetically sealed devices with the photo diode for optical output monitoring.

## APPLICATION

· ~1.25Gbps digital transmission system

## FEATURES

· Homogeneous grating (AR/HR facet coating) structure DFB
· Wide temperature range operation ( -40 to 85ºC )
· Low threshold current (typical 6mA)
· High speed response (typical 0.1nsec)
· ϕ5.6mm TO-CAN package
· Flat window cap, Ball lens cap, or Aspherical lens cap

## ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Po | Light output power | CW | 10 | mW |
| If | Forward current (Laser diode) | --- | 150 | mA |
| $V_{RL}$ | Reverse voltage (Laser diode) | --- | 2 | V |
| $V_{RD}$ | Reverse voltage (Photo diode) | --- | 20 | V |
| $I_{FD}$ | Forward current (Photo diode) | --- | 2 | mA |
| Tc | Case temperature | --- | -40 to +85 | ºC |
| Tstg | Storage temperature | --- | -40 to +100 | ºC |

## ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25ºC otherwise specified)

**[ Flat window cap : ML725B11F / ML720J11S ]**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Ith | Threshold current | CW | --- | 6 | 12 | mA |
| | | CW, Tc=85ºC | --- | 30 | 40 | |
| Iop | Operation current | CW, Po=5mW | --- | 16 | 30 | mA |
| | | CW, Po=5mW, Tc=85ºC | --- | 50 | 75 | |
| Vop | Operating voltage | CW, Po=5mW | --- | 1.1 | 1.5 | V |
| η | Slope efficiency | CW, Po=5mW | 0.3 | 0.5 | --- | mW/mA |
| λp | Peak wavelength | CW, Po=5mW | 1290 | 1310 | 1330 | nm |
| θ // | Beam divergence angle (parallel) | CW, Po=5mW | --- | 25 | 35 | deg. |
| θ ⊥ | Beam divergence angle (perpendicular) | CW, Po=5mW | --- | 30 | 40 | deg. |
| SMSR | Side mode suppression ratio | CW, Po=5mW<br>Tc= - 40 to +85ºC | 35 | 40 | --- | dB |
| tr,tf | Rise and Fall time | Ib=Ith, 20-80% <*> | --- | 0.1 | 0.2 | ns |
| Im | Monitoring output current (PD) | CW, Po=5mW | 0.05 | 0.2 | --- | mA |
| Id | Dark current (PD) | $V_{RD}$=5V | --- | --- | 0.1 | μA |
| Ct | Capacitance (PD) | $V_{RD}$=5V | --- | 10 | 20 | pF |

<*> Except influence of the 18mm lead.

## ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25ºC otherwise specified)

**[ Ball lens cap ; ML725AA11F / ML720AA11S ]**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Ith | Threshold current | CW | --- | 6 | 12 | mA |
| | | CW, Tc=85ºC | --- | 30 | 40 | |
| Iop | Operation current | CW, Po=5mW | --- | 16 | 30 | mA |
| | | CW, Po=5mW, Tc=85ºC | --- | 50 | 75 | |
| Vop | Operating voltage | CW, Po=5mW | --- | 1.1 | 1.5 | V |
| η | Slope efficiency | CW, Po=5mW | 0.3 | 0.5 | --- | mW/mA |
| λp | Peak wavelength | CW, Po=5mW | 1290 | 1310 | 1330 | nm |
| SMSR | Side mode suppression ratio | CW, Po=5mW<br>Tc= - 40 to +85ºC | 35 | 40 | --- | dB |
| Pf | Fiber coupling power | CW, Po=5mW, SMF | 0.5 | 1.0 | --- | mW |
| Df | Focul length | CW, Po=5mW, SMF | 6.0 | 6.5 | 7.0 | mm |
| tr,tf | Rise and Fall time | Ib=Ith, 20-80% <*> | --- | 0.1 | 0.2 | ns |
| Im | Monitoring output current (PD) | CW, Po=5mW | 0.05 | 0.2 | --- | mA |
| Id | Dark current (PD) | $V_{RD}$=5V | --- | --- | 0.1 | μA |
| Ct | Capacitance (PD) | $V_{RD}$=5V | --- | 10 | 20 | pF |

<*> Except influence of the 18mm lead.

## ELECTRICAL/OPTICAL CHARACTERISTICS (Tc=25ºC otherwise specified)

**[ Aspherical lens cap ; ML725J11F / ML720L11S ]**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Ith | Threshold current | CW | --- | 6 | 12 | mA |
| | | CW, Tc=85ºC | --- | 30 | 40 | |
| Iop | Operation current | CW, Po=5mW | --- | 16 | 30 | mA |
| | | CW, Po=5mW, Tc=85ºC | --- | 50 | 75 | |
| Vop | Operating voltage | CW, Po=5mW | --- | 1.1 | 1.5 | V |
| η | Slope efficiency | CW, Po=5mW | 0.3 | 0.5 | --- | mW/mA |
| λp | Peak wavelength | CW, Po=5mW | 1290 | 1310 | 1330 | nm |
| SMSR | Side mode suppression ratio | CW, Po=5mW<br>Tc= - 40 to +85ºC | 35 | 40 | --- | dB |
| Pf | Fiber coupling power | CW, Po=5mW, SMF | 1.5 | 2.0 | --- | mW |
| Df | Focul length | CW, Po=5mW, SMF | 6.5 | 7.5 | 8.5 | mm |
| tr,tf | Rise and Fall time | Ib=Ith, 20-80% <*> | --- | 0.1 | 0.2 | ns |
| Im | Monitoring output current (PD) | CW, Po=5mW | 0.05 | 0.2 | --- | mA |
| Id | Dark current (PD) | $V_{RD}$=5V | --- | --- | 0.1 | μA |
| Ct | Capacitance (PD) | $V_{RD}$=5V | --- | 10 | 20 | pF |

<*> Except influence of the 18mm lead.

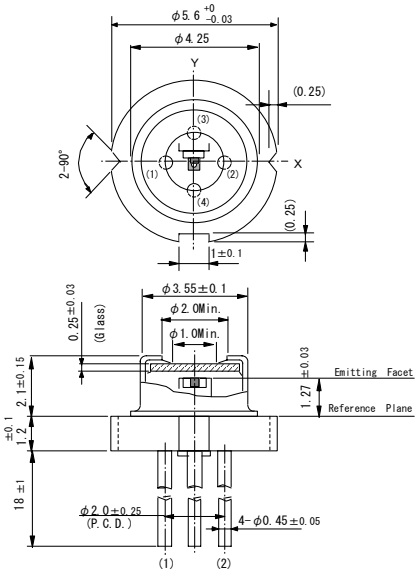
**Notice : Some parametric limits are subject to change**

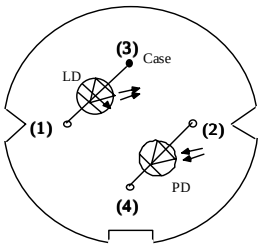
## OUTLINE DRAWINGS

### ML725B11F
### ML720J11S

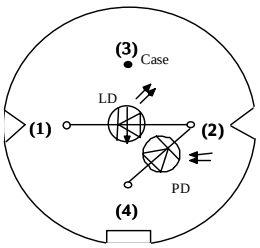


Dimension : mm




ML725B11F

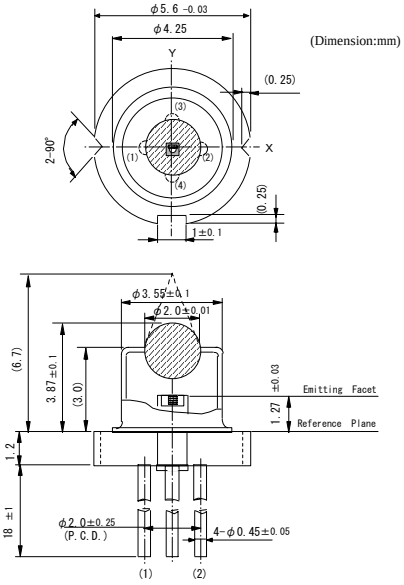


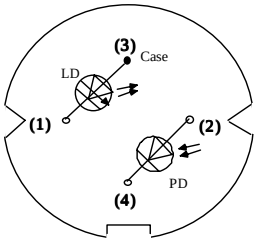

ML720J11S
Pin Connection
( Top view )

### ML725AA11F
### ML720AA11S

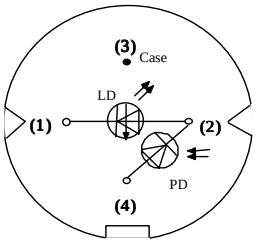


Dimension : mm




ML725AA11F




ML720AA11S
Pin Connection
( Top view )

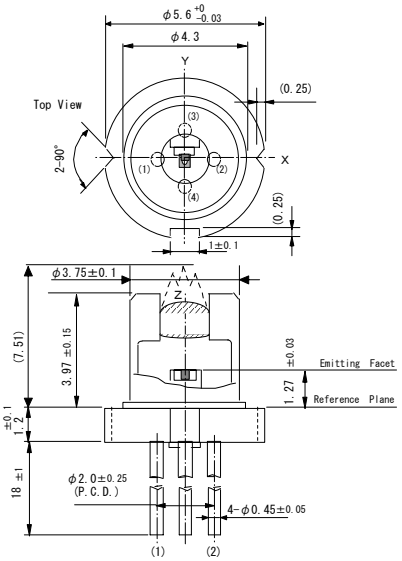
**Notice : Some parametric limits are subject to change**

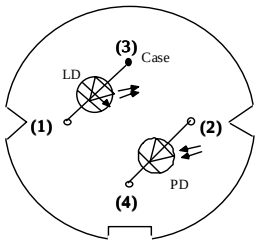
## OUTLINE DRAWINGS

**ML725J11F**
**ML720L11S**

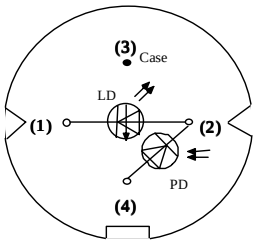


Dimension : mm




ML725J11F




ML720L11S

Pin Connection

( Top view )