

## C-13-DFB10-TX-SXXXX-HT



## Features

- Uncooled DFB Laser diode with MQW structure
- Hermetically sealed active component
- Built-in InGaAs monitor photodiode
- Single frequency operation with high SMSR
- Integrated 4-pin TO-18 TOSA package, with built-in isolator, for SC/LC connector
- Designed for 10Gbps Ethernet application.

## Absolute Maximum Rating (Tc=25°C)

| Parameter                                         | Symbol    | Value          | Unit |
|---------------------------------------------------|-----------|----------------|------|
| Fiber Output Power (Middle power)<br>(High power) | $P_o$     | 2(CW)<br>4(CW) | mW   |
| LD Reverse Voltage                                | $V_{RLD}$ | 2              | V    |
| LD Forward Current                                | $I_{FLD}$ | 150            | mA   |
| PD Reverse Voltage                                | $V_{RPD}$ | 10             | V    |
| PD Forward Current                                | $I_{FPD}$ | 2.0            | mA   |
| Operating Temperature                             | $T_{opr}$ | 0 to +85       | °C   |
| Storage Temperature                               | $T_{stg}$ | -40 to +85     | °C   |

(All optical data refer to a coupled 9/125μm SM fiber)

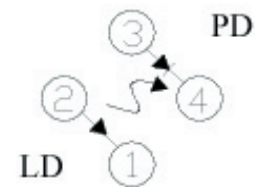
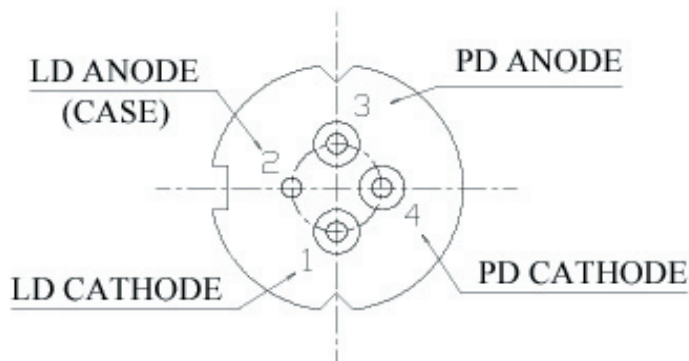
## Optical and Electrical Characteristics( T=0 to 70°C unless otherwise noted)

| Parameter                                           | Symbol                   | Min        | Typical | Max      | Unit  | Test Condition                               |
|-----------------------------------------------------|--------------------------|------------|---------|----------|-------|----------------------------------------------|
| Threshold Current                                   | $I_{th}$                 | -          | 10      | 15       | mA    | T=25°C                                       |
| Optical Output Power (Middle power)<br>(High power) | $P_o$                    | 0.3<br>1.5 | -       | 1<br>2.5 | mW    | $I_{op}=40mA, CW, T=25^\circ$                |
| Operating Current                                   | $I_{op}$                 | -          | 40      | -        | mA    | T=25°C                                       |
| Peak Wavelength                                     | $\lambda$                | 1295       | 1310    | 1325     | nm    | CW, T=25°, @ $I_{op}$                        |
| Spectral Width (RMS)                                | $\Delta\lambda$          | -          | -       | 1        | nm    | $P_o=2mW, CW$                                |
| Side Mode Suppression                               | $S_r$                    | 30         | -       | -        | dB    | CW, @ $I_{op}$                               |
| Wavelength Temperature Coefficient                  | $\delta\lambda/\delta T$ | -          | 0.08    | 0.1      | nm/°C |                                              |
| Forward Voltage                                     | $V_F$                    | -          | 1.5     | -        | V     | CW, @ $I_{op}$                               |
| Rise/Fall Time, 20 to 80%*                          | $t_r/t_f$                | -          | 40      | -        | ps    |                                              |
| Relative Intensity Noise                            | RIN                      | -          | -       | -130     | dB/Hz | CW, T=25°C, @ $I_{op}$                       |
| Tracking Error                                      | $\Delta P_f / P_f$       | -1.5       | -       | 1.5      | dB    | $I_m=constant, CW$                           |
| PD Monitor Current                                  | $I_m$                    | 100        | -       | -        | μA    | CW, $V_{RPD}=5V, T=25^\circ C$<br>@ $I_{op}$ |
| PD Dark Current                                     | $I_{DARK}$               | -          | -       | 0.1      | μA    | $V_{RPD}=5V$                                 |
| PD Capacitance                                      | $C_t$                    | -          | 6       | 15       | pF    | $V_{RPD}=5V, f=1MHz$                         |

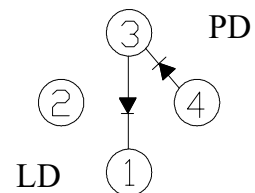
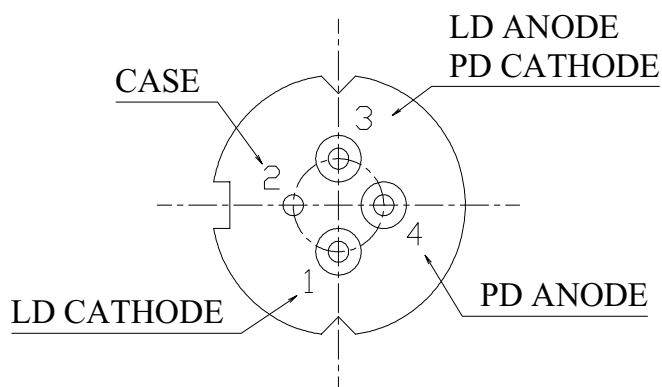
\*10.3125Gb/s PRBS 2<sup>31</sup>-1, Er=6.0dB, @  $I_{op}$ , and T=25°C

Pin Assignment

## Bottom view

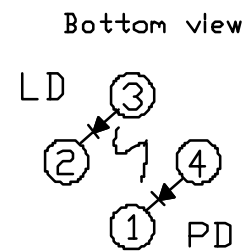
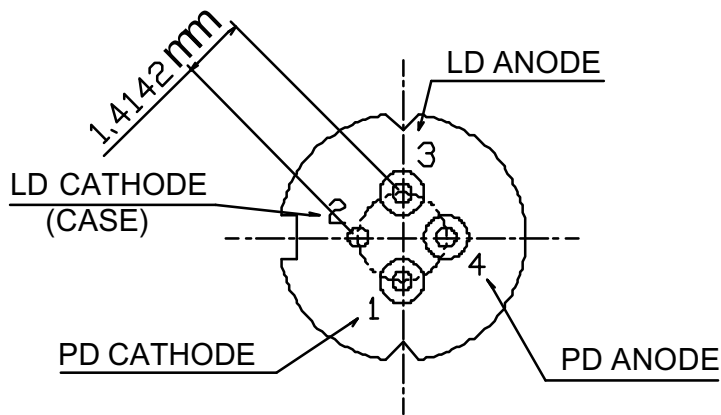


## A Type

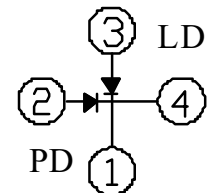
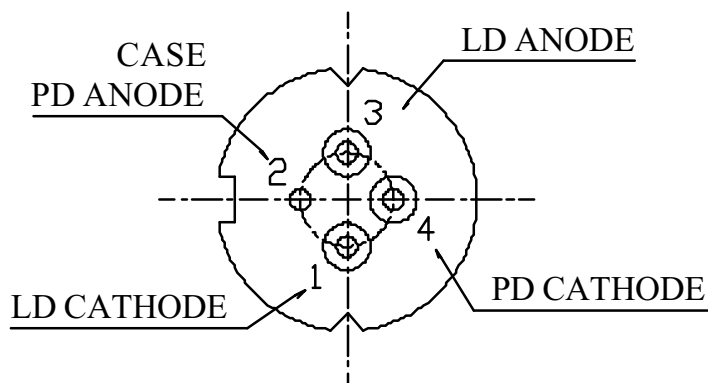


## G Type

## Bottom view



## J Type



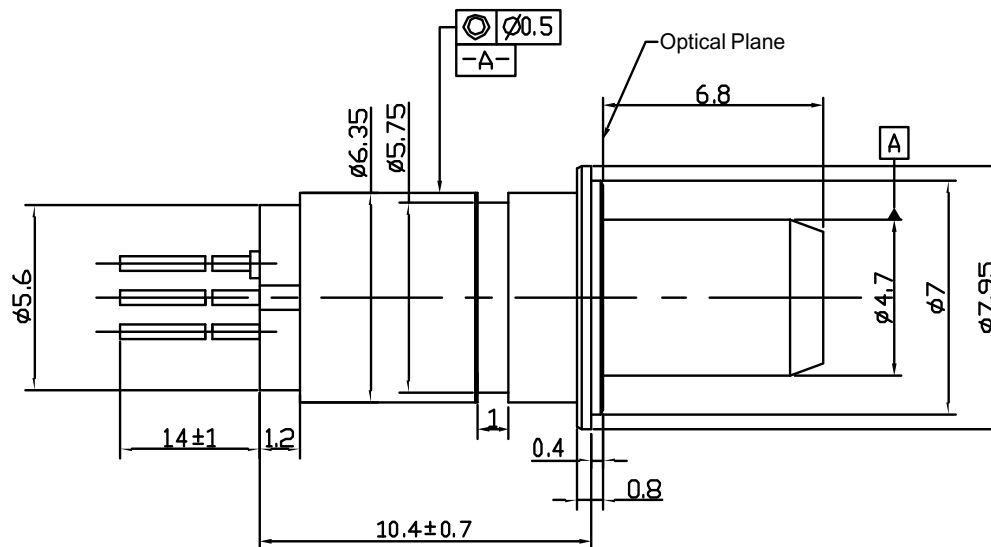
## K Type

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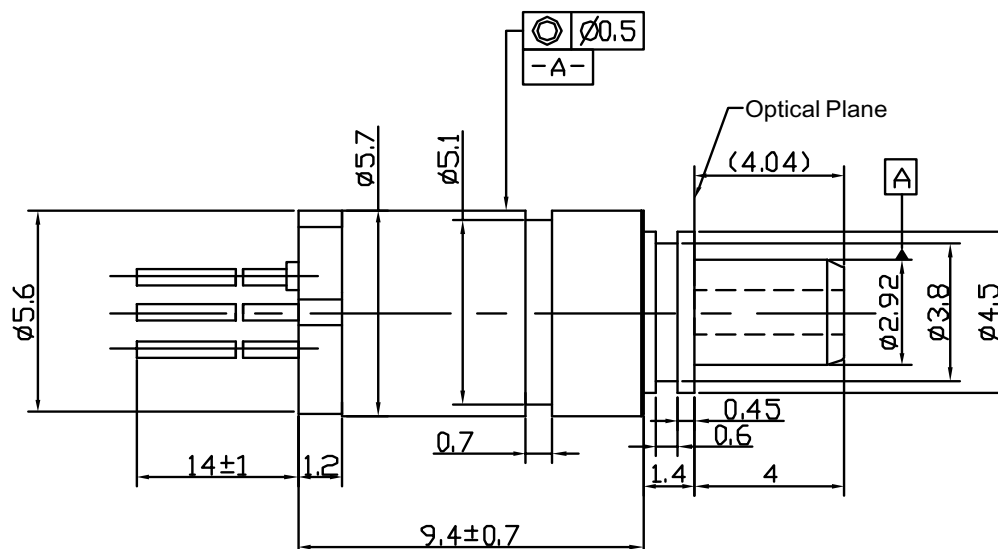
Packaging Dimensions

Units in mm

C-13-DFB10-TX-SSC2I-HT



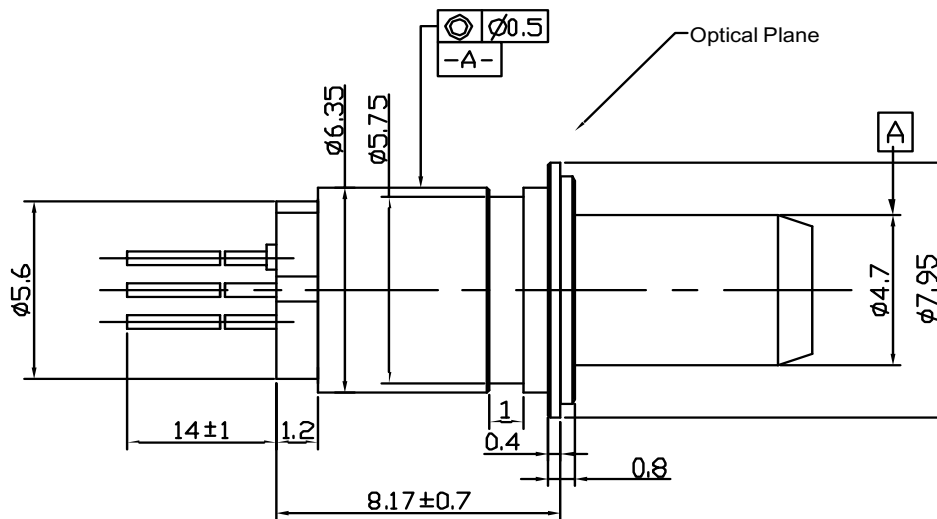
C-13-DFB10-TX-SLC2I-HT



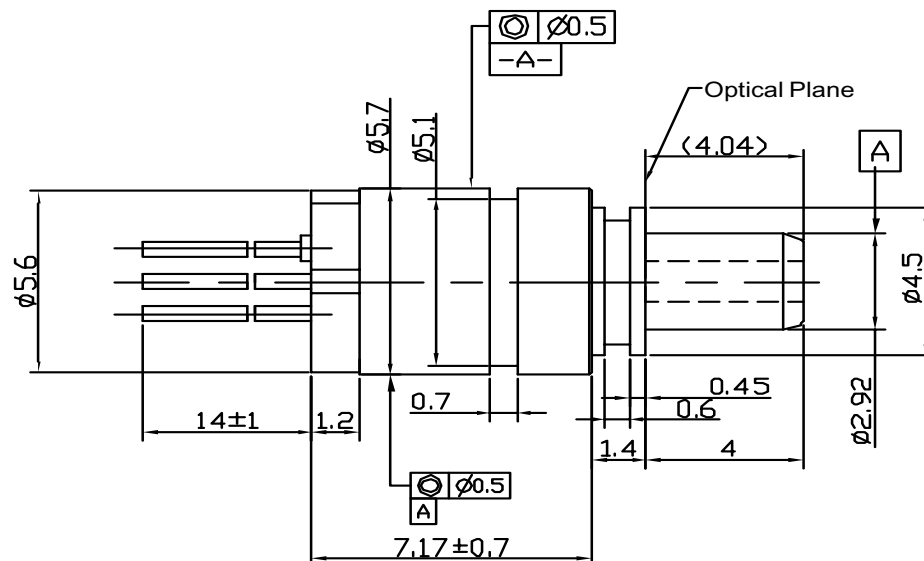
C-13-DFB10-TX-SXXXX-HT

Units in mm

C-13-DFB10-TX-SSCMI-HT



C-13-DFB10-TX-SLCMI-HT



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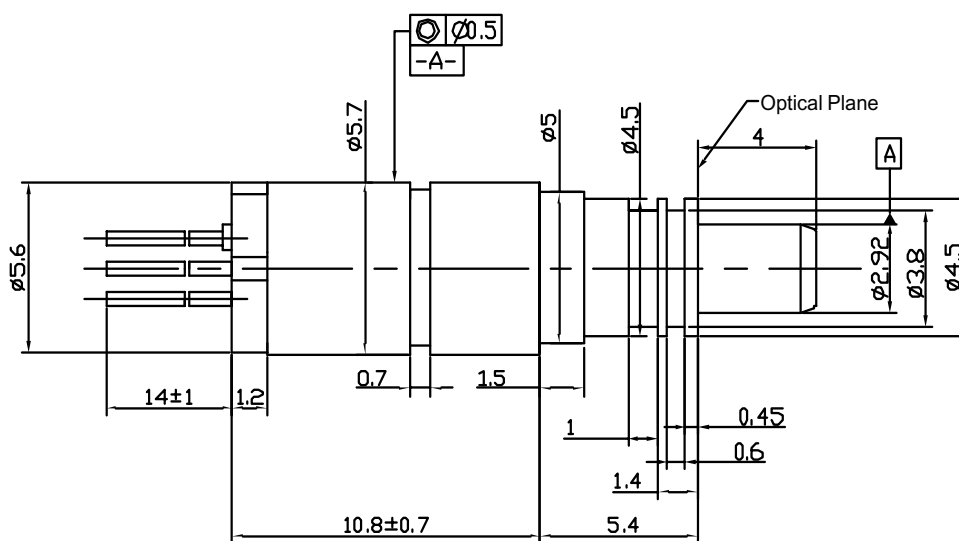
Technical drawing of a mechanical part with dimensions and tolerances. The drawing shows a cross-section of a cylindrical component with various diameters and lengths. Key dimensions include:

- Overall length:  $10.8 \pm 0.7$
- Overall diameter:  $\phi 7.95$
- Internal diameters:  $\phi 6.35$ ,  $\phi 5.75$ ,  $\phi 5.5$ ,  $\phi 6.35$
- Lengths:  $14 \pm 1$ ,  $1.2$ ,  $1$ ,  $0.8$ ,  $4$ ,  $6.8$
- Surface finish:  $R_{\text{A}} 0.5$
- Optical Plane: Indicated by a line pointing to the right side of the part.
- Feature A: A rectangular feature on the right side with a width of  $\phi 4.75$ .

C-13-DFB10-TX-SXXXX-HT

Units in mm

C-13-DFB10-TX-SLCMB-HT  
C-13-DFB10-TX-SLC2B-HT



C-13-DFB10-TX-SXXXX-HT

Ordering Information

Available Options:  
C-13-DFB10-TX-SXXXX-HT

Note1 : TX = TA / TG / TJ / TK

Note2 : SXXXX = SSCMI / SLCMI / SSC2I / SLC2I / SSCMB / SLCMB / SSC2B / SLC2B

| C             | - 13       | -DFB    | 10          | - T    | X                | - S           | XX        | X                        | X                                   | - HT        |
|---------------|------------|---------|-------------|--------|------------------|---------------|-----------|--------------------------|-------------------------------------|-------------|
| Application   | Wavelength | Device  | Application | Type   | Pinout           | Fiber type    | Connector | Power                    | Isolator & Fiber stub               | Temperature |
| Communication | 13=1310nm  | DFB=DFB | 10=10Gbps   | T=TOSA | A<br>G<br>J<br>K | S=Single mode | SC<br>LC  | M=0.3~1mW<br>2=1.5~2.5mW | I=Isolator<br>B=Both (I+Fiber stub) | HT=0~85°C   |

**Handling Precautions:** This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

**Laser Safety:** Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

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