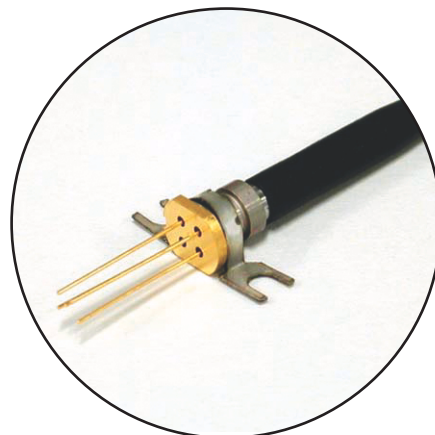


## FEATURES

- Data rate up to 2.7Gb/s
- Sensitivity: -25dBm (typ.)
- Small co-axial package with single-mode fiber
- Differential Electrical Output
- Preamplifier Power Supply Voltage: +3.3V
- Wide operating temperature range: -40 to +85°C



## APPLICATIONS

This PIN detector preamp is intended to function as an optical receiver in intermediate reach SONET, SDH, and DWDM systems operating up to 2.7Gb/s. The device operates in both the 1,310 and 1,550nm wavelength windows. The detector preamplifier is DC coupled and has a differential electrical output.

## DESCRIPTION

This PIN preamplifier uses an InGaAs PIN chip with GaAs transimpedance preamplifier. The HY package is secured by a vertical flange for easy assembly. The package is connected with a single-mode fiber by Nd: YAG welding. This device is in compliance with ITU-T recommendations and meets the Telcordia requirements.

### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C, unless otherwise specified)

| Parameter             | Symbol                | Ratings    | Unit |
|-----------------------|-----------------------|------------|------|
| Storage Temperature   | T <sub>stg</sub>      | -40 to +85 | °C   |
| Operating Temperature | T <sub>op</sub>       | -40 to +85 | °C   |
| Supply Voltage        | V <sub>DD</sub>       | 0 to 4.5   | V    |
| PIN Reverse Voltage   | V <sub>R</sub>        | 0 to 20    | V    |
| PIN Reverse Current   | I <sub>R</sub> (Peak) | 3.0        | mA   |

## OPTICAL &amp; ELECTRICAL CHARACTERISTICS

(T<sub>C</sub>=25°C, λ=1,550nm, V<sub>R</sub>=+5.0V or +3.3V, V<sub>DD</sub>=+3.3V, unless otherwise specified)

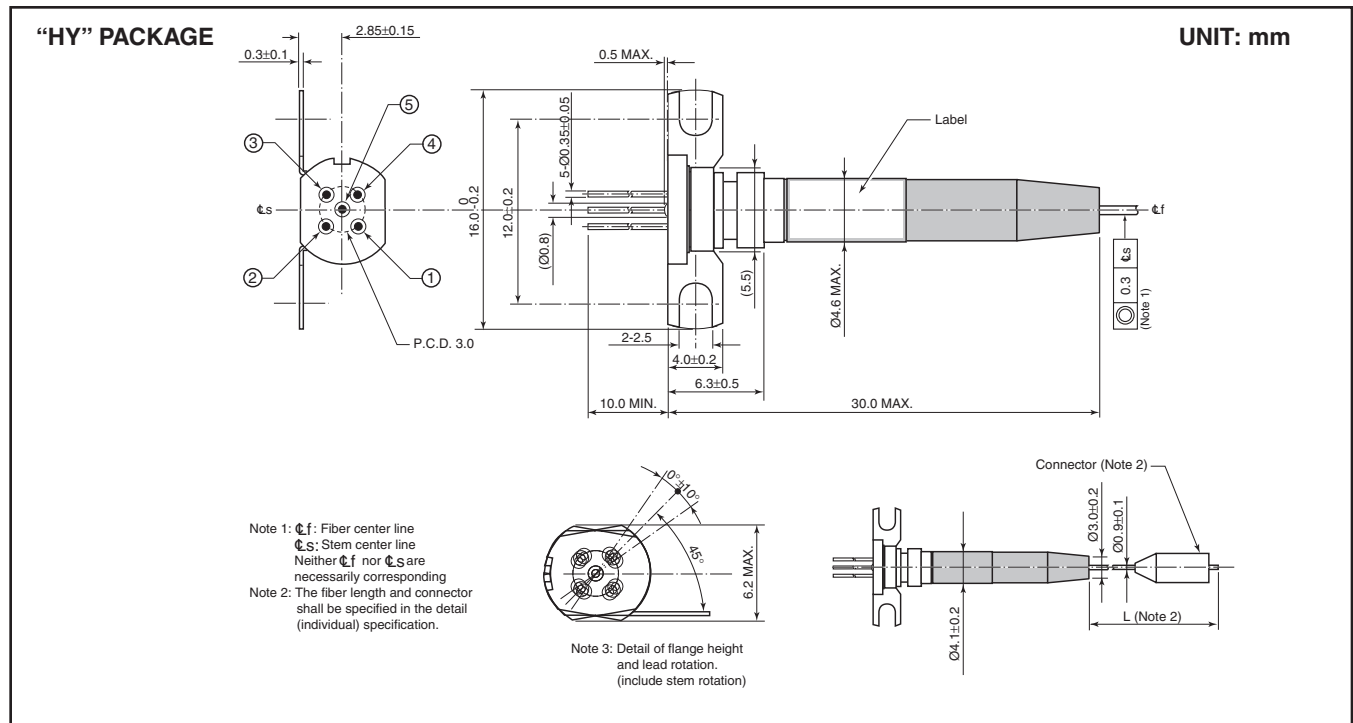
| Parameter                              | Symbol            | Test Conditions                                                                                               | Limits |      |      | Unit   |
|----------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------|--------|------|------|--------|
|                                        |                   |                                                                                                               | Min.   | Typ. | Max. |        |
| PIN-PD Responsivity                    | R13               | λ = 1,310nm, M=1                                                                                              | 0.75   | 0.80 | -    | A/W    |
|                                        | R15               | λ = 1,550nm, M=1                                                                                              | 0.80   | 0.85 | -    |        |
|                                        | R16               | λ = 1,610nm, M=1                                                                                              | -      | 0.70 | -    |        |
| AC Transimpedance                      | Z <sub>t</sub>    | Pin=-20dBm, f=100MHz, Single-ended                                                                            | 1800   | 2200 | 2600 | Ω      |
| Bandwidth                              | BW                | Pin=-20dBm, -3dBm from 1MHz                                                                                   | 2.2    | 2.5  | -    | GHz    |
| Lower Cut-off Frequency                | f <sub>cl</sub>   |                                                                                                               | -      | 50   | 75   | kHz    |
| Peaking                                | d <sub>pk</sub>   | Pin=-20dBm, from 1MHz                                                                                         | -      | -    | 2    | dB     |
| Group Delay Deviation                  | GD                | Pin=-20dBm, from 500MHz to 1.75GHz                                                                            | -      | 60   | -    | psec   |
| Output Return Loss                     | S22               | Up to 1.75GHz                                                                                                 | 10     | -    | -    | dB     |
|                                        |                   | Up to 2.5GHz                                                                                                  | 5      | -    | -    |        |
| Equivalent Input Noise Current Density | i <sub>n</sub>    | Average within 2.2GHz                                                                                         | -      | 9.5  | 11.0 | pA/√Hz |
| Sensitivity                            | P <sub>r</sub>    | 2.488Gb/s, NRZ, PRBS=2 <sup>23</sup> -1, B.E.R.=10 <sup>-10</sup> , Rext=-14dB, T <sub>C</sub> =25°C (Note 2) | -      | -25  | -24  | dBm    |
|                                        |                   | T <sub>C</sub> =-40 to +85°C (Note 2)                                                                         | -      | -24  | -22  |        |
| Maximum Overload                       | P <sub>max</sub>  | 2.488Gb/s, NRZ, PRBS=2 <sup>23</sup> -1, B.E.R.=10 <sup>-10</sup> ,                                           | 0      | -    | -    | dBm    |
|                                        |                   | (Note 3)                                                                                                      | -3     | -    | -    |        |
| Maximum Output Voltage Swing           | V <sub>clip</sub> | Saturated Output Voltage                                                                                      | 450    | 550  | 800  | mV     |
| Optical Return Loss                    | ORL               |                                                                                                               | 30     | -    | -    | dB     |
| Power Supply Current                   | I <sub>DD</sub>   |                                                                                                               | -      | 45   | 70   | mA     |
| Power Supply Voltage                   | V <sub>DD</sub>   |                                                                                                               | 3.15   | 3.30 | 3.45 | V      |

Note 1: All the parameters are measured with 50Ω AC-coupled.

Note 2: With f<sub>C</sub> = 1866 MHz Bessel filter.

Note 3: Defined by a 10% distortion of the wave form.

Notes



For further information please contact:

## Eudyna Devices USA Inc.

2355 Zanker Rd.  
 San Jose, CA 95131-1138, U.S.A.  
 TEL: (408) 232-9500  
 FAX: (408) 428-9111  
[www.us.eudyna.com](http://www.us.eudyna.com)

## Eudyna Devices Europe Ltd.

Network House  
 Norreys Drive  
 Maidenhead, Berkshire SL6 4FJ  
 United Kingdom  
 TEL: +44 (0) 1628 504800  
 FAX: +44 (0) 1628 504888

## Eudyna Devices Asia Pte Ltd.

Hong Kong Branch  
 Rm. 1101, Ocean Centre, 5 Canton Rd.  
 Tsim Sha Tsui, Kowloon, Hong Kong  
 TEL: +852-2377-0227  
 FAX: +852-2377-3921

## Eudyna Devices Inc.

Sales Division  
 1, Kanai-cho, Sakae-ku  
 Yokohama, 244-0845, Japan  
 TEL: +81-45-853-8156  
 FAX: +81-45-853-8170

## CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

Eudyna Devices Inc. reserves the right to change products and specifications without notice. The information does not convey any license under rights of Eudyna Devices Inc. or others.

© 2004 Eudyna Devices USA Inc.  
 Printed in U.S.A.