

## Preliminary Product Specification

**OR3005230W**

Si Optical Receiver, 5 – 300MHz, 190mA max. @ 24VDC

**FEATURES**

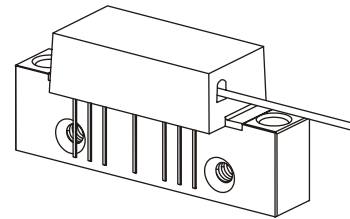
- Excellent linearity
- Superior return loss performance
- Extremely low distortion
- Optimal reliability
- Excellent price/performance ratio
- Low noise
- Excellent flatness

**APPLICATION**

- 5 to 300 MHz CATV reverse amplifier systems

**DESCRIPTION**

- Hybrid high dynamic range optical receiver amplifier module. The module contains a single mode optical input suitable for wavelengths from 1290 to 1600 nm, a terminal to monitor the PIN diode current and an electrical output with an impedance of 75  $\Omega$ .

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**5 – 300MHz**  
**190mA max. @ 24VDC**

**HANDLING**

- Fiberglass optical coupling: maximum tensile strength = 5 N; minimum bending radius = 35mm.

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134)

| SYMBOL           | PARAMETER  | MIN. | MAX. | UNIT |
|------------------|--|------|------|------|
| f                | frequency range  | 5    | 300  | MHz  |
| P <sub>in</sub>  | optical input power (continuous)                                       | -    | 5    | mW   |
| ESD              | ESD sensitivity<br>(human body model; R = 1.5 k $\Omega$ , C = 100 pF) | 500  |      | V    |
| T <sub>stg</sub> | storage temperature  | - 40 | + 85 | °C   |
| T <sub>mb</sub>  | operating mounting base temperature                                    | - 20 | + 85 | °C   |

**CHARACTERISTICS**Table 1: Bandwidth 5 to 300MHz; V<sub>B</sub> = 24V; T<sub>mb</sub> = 30°C; Z<sub>L</sub> = 75  $\Omega$ 

| SYMBOL                            | PARAMETER                                    | CONDITIONS                         | MIN.  | TYP. | MAX. | UNIT                   |
|-----------------------------------|--|------------------------------------|-------|------|------|------------------------|
| S                                 | responsivity                                 | $\lambda = 1310 \text{ nm}$        | 850.0 |      |      | V/W                    |
| SL                                | slope straight line                          | f = 5 to 300 MHz                   | 0.0   |      | 1.0  | dB                     |
| FL                                | flatness straight line                       | f = 5 to 300 MHz                   | -     | 0.4  | 0.6  | dB                     |
|                                   | optical input return loss                    |                                    | 45.0  |      | -    | dB                     |
| S <sub>22</sub>                   | output return loss                           | f = 5 to 300 MHz                   | 16.0  |      | -    | dB                     |
| EINC                              | equivalent input noise                       | f = 10 to 300 MHz                  |       |      | 7.5  | pA/ $\sqrt{\text{Hz}}$ |
| s <sub><math>\lambda</math></sub> | spectral sensitivity                         | $\lambda = 1310 \pm 20 \text{ nm}$ | 0.8   |      | -    | A/W                    |
|                                   |  | $\lambda = 1550 \pm 20 \text{ nm}$ | 0.90  |      | -    | A/W                    |
| $\lambda$                         | optical wavelength                           |                                    | 1290  |      | 1600 | nm                     |
| I <sub>tot</sub>                  | total current consumption (DC) <sup>5)</sup> |                                    | 160   |      | 190  | mA                     |

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**CHARACTERISTICS**

Table 2: Distortion data,  $V_B = 24V$ ;  $T_{mb} = 30^\circ C$ ;  $Z_L = 75 \Omega$

| SYMBOL | PARAMETER                             | CONDITIONS                               | MIN. | TYP. | MAX.  | UNIT |
|--------|---------------------------------------|--|------|------|-------|------|
| $d_2$  | second order distortion <sup>1)</sup> | $f_m = 54.25 \text{ MHz}$ <sup>3)</sup>  | -    |      | -70.0 | dBc  |
| $d_3$  | third order distortion <sup>2)</sup>  | $f_m = 100.25 \text{ MHz}$ <sup>4)</sup> | -    |      | -80.0 | dBc  |

Notes:

1. Two laser test; each laser with 25% modulation index;  $P_{opt} = 1 \text{ mW}$  (total).
2. Three laser test; each laser with 40% modulation index;  $P_{opt} = 1 \text{ mW}$  (total).
3.  $f_m = 54.25 \text{ MHz}$ ;  $f_1 = 20.25 \text{ MHz}$ ;  $f_2 = 34 \text{ MHz}$ , 0.5mW optical power each
4.  $f_m = 100.25 \text{ MHz}$ ;  $f_1 = 125.25 \text{ MHz}$ ;  $f_2 = 109.25 \text{ MHz}$ ,  $f_3 = 134.25 \text{ MHz}$ , 0.33mW optical power each
5.  $I_{tot}$  is total current into hybrid with pin 4 connected to  $V_B=24V$

**CABLE LENGTHS AND CONNECTOR TYPES**

Table 3:

| TAB  | Dimension A,<br>see Figure 1         |                                      | Optical Connector<br>Type |
|------|--------------------------------------|--------------------------------------|---------------------------|
|      | inches                               | mm                                   |                           |
| -012 | 33.4 <sup>+0.5</sup> / <sub>-4</sub> | 848 <sup>+13</sup> / <sub>-104</sub> | FC/APC                    |
| -013 | 33.4 <sup>+0.5</sup> / <sub>-4</sub> | 848 <sup>+13</sup> / <sub>-104</sub> | SC/APC                    |

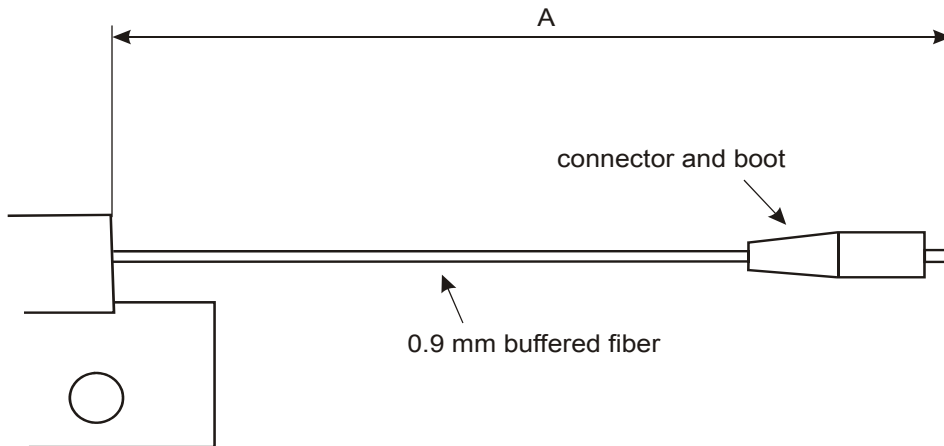
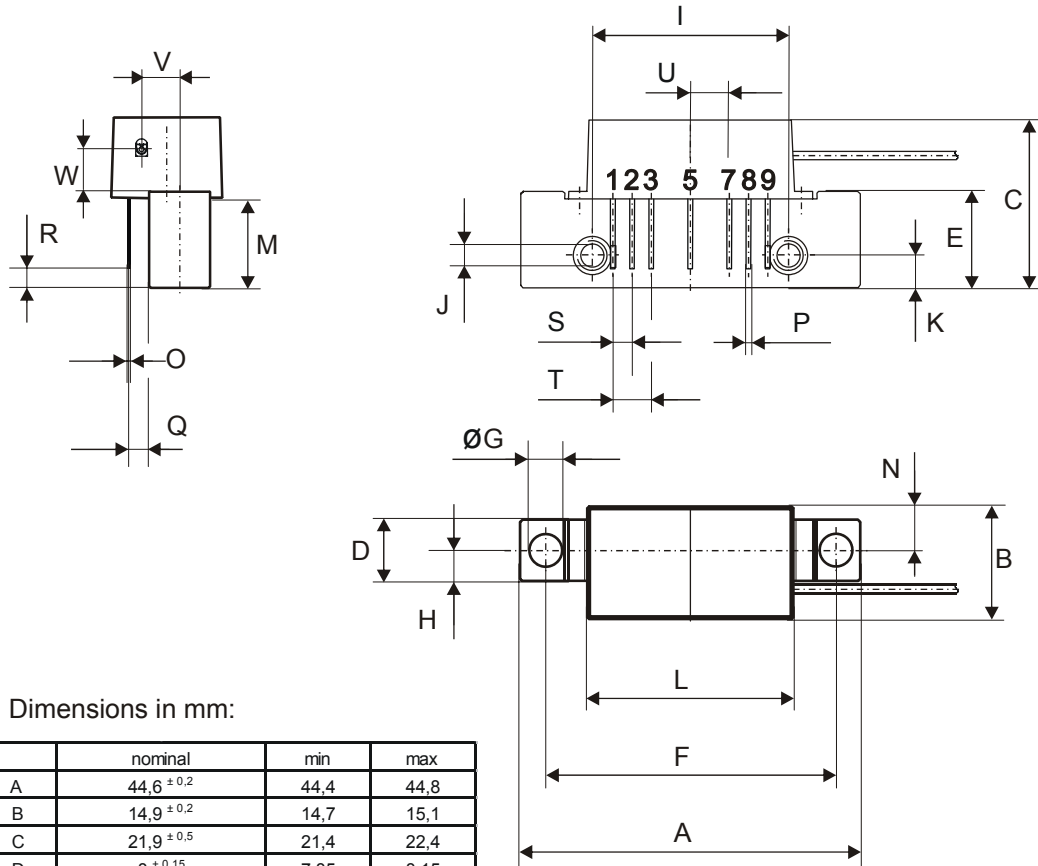


Figure 1: Detail of cable attachment

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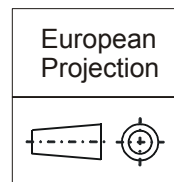
All Dimensions in mm:

|   | nominal                   | min   | max   |
|---|---------------------------|-------|-------|
| A | 44,6 ± 0,2                | 44,4  | 44,8  |
| B | 14,9 ± 0,2                | 14,7  | 15,1  |
| C | 21,9 ± 0,5                | 21,4  | 22,4  |
| D | 8 ± 0,15                  | 7,85  | 8,15  |
| E | 12,6 ± 0,15               | 12,45 | 12,75 |
| F | 38,1 ± 0,1                | 38,0  | 38,2  |
| G | 4 <sup>+0,2 / -0,05</sup> | 3,95  | 4,2   |
| H | 4 ± 0,2                   | 3,8   | 4,2   |
| I | 25,4 ± 0,2                | 25,2  | 25,6  |
| J | UNC 6-32                  | -     | -     |
| K | 4,2 ± 0,2                 | 4,0   | 4,4   |
| L | 28,7 ± 0,2                | 28,5  | 28,9  |
| M | 11,6 ± 0,5                | 11,1  | 12,1  |
| N | 5,8 ± 0,4                 | 5,4   | 6,2   |
| O | 0,25 ± 0,02               | 0,23  | 0,27  |
| P | 0,45 ± 0,03               | 0,42  | 0,48  |
| Q | 2,54 ± 0,3                | 2,24  | 2,84  |
| R | 2,54 ± 0,5                | 2,04  | 3,04  |
| S | 2,54 ± 0,25               | 2,29  | 2,79  |
| T | 5,08 ± 0,25               | 4,83  | 5,33  |
| U | 5,08 ± 0,25               | 4,83  | 5,33  |
| V | 5,0 ± 0,2                 | 4,8   | 5,2   |
| W | 5,35                      |       |       |

Pinning:

|   |                            |
|---|----------------------------|
| 1 | PHOTODIODE CURRENT MONITOR |
| 2 | GND                        |
| 3 | GND                        |
| 4 | PHOTODIODE BIAS            |
| 5 | +VB                        |
| 6 |                            |
| 7 | GND                        |
| 8 | GND                        |
| 9 | OUTPUT                     |

Notes:



0 5 10mm  
 scale

Figure 2: Mechanical dimensions

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## DEFINITIONS

| <b>Data Sheet Status</b>  |   |
|---|---|
| Objective Product Specification   | This data sheet contains target or goal specifications for product development.       |
| Preliminary Product Specification   | This data sheet contains preliminary data; supplementary data may be published later. |
| Product Specification   | This data sheet contains final product specifications.                                |
| <b>Limiting values</b>  |   |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. |   |
| <b>Application information</b>  |   |
| Where application information is given, it is advisory and does not form part of the specification.   |   |

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