

Product Specification

50 GHz dual-window Photodetector

XPDV2320R

PRODUCT FEATURES

- 50 GHz electrical 3 dB bandwidth
- Excellent flat response within 3 dB bandwidth
- Support of 1310 and 1550nm
- Well matched 50 Ω output
- Unique on-chip integrated bias network

APPLICATIONS

- Communication system at 40 Gb/s
- High-speed lightwave characterization
- Microwave photonics up to 60 GHz

The XPDV23x0R platform exhibits an optimized frequency response in both, power and phase. It is ideally suited for OC-768/STM-256 long haul systems. The on-chip integrated bias network with optimized design ensures an undisturbed frequency response to the 3dB cut-off frequency and saves costs for internal bias-tees. The module is especially designed for both optical windows at 1310nm and 1550nm. Further advantage of the waveguide structure is the unbeatable RF high-power behavior. The photodetector shows a linear response up to an optical input power of 10dBm, resulting in a high output voltage swing avoiding the need for electrical amplification



ORDERING INFORMATION

XPDV2320R-Vx-yy

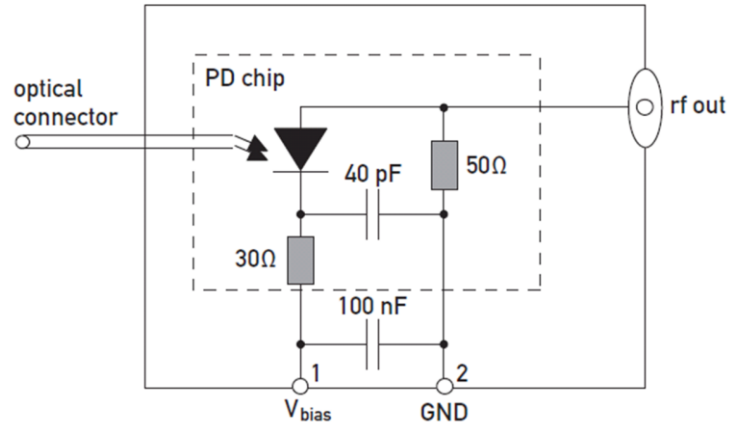
Vx: F = V connector® female (standard)
 M = V connector® male

yy: FP = FC/PC (standard)
 other connectors available upon request

I. Pin Description

| # Pin | Symbol | Description |
|-------|------------|-------------------------------|
| 1 | V_{bias} | PD bias supply, typical 2.8 V |
| 2 | GND | case ground |

II. Block Diagram



III. Absolute Maximum Ratings

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------------|------------|----------------------------|------|------|------|------|
| Photodiode Bias Voltage | V_{PD} | | 0 | | 3.5 | V |
| Average Optical Input Power | P_{opt} | CW or NRZ | | | 13 | dBm |
| Max. Output peak voltage | V_{peak} | | | | 1.5 | V |
| Electro Static Discharge | V_{ESD} | C=100 pF, R= 1.5 kΩ HBM | -250 | | 250 | V |
| Fiber Bend Radius | | | 16 | | | mm |



Notice

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

IV. Environmental Conditions

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------|------------------|----------------|------|------|------|------|
| Relative Humidity | RH | non condensing | 5 | | 85 | % |
| Storage Temperature | T _{sto} | | -40 | | 85 | °C |

V. Operating Conditions

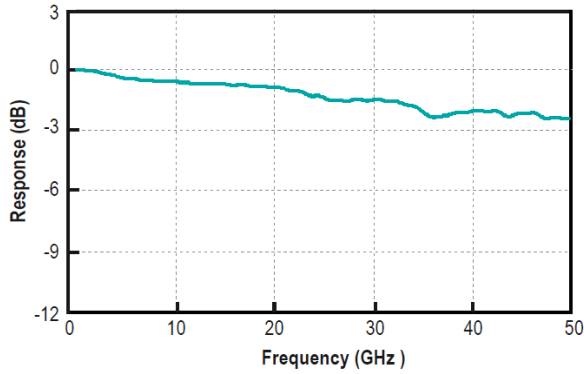
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------------|-------------------|-----------|--------------|------|--------------|------|
| Operating Case Temperature | T _{Case} | | 0 | | 75 | °C |
| Operating Wavelength Range | λ | | 1300 1530 | | 1330 1620 | nm |
| Avg. Optical Input Power Range | P _{OPT} | | | | 10 | dBm |
| Photodiode Bias Voltage | V _{PD} | | 2.0 | 2.8 | 3.3 | V |

VI. Electro-Optical Specifications

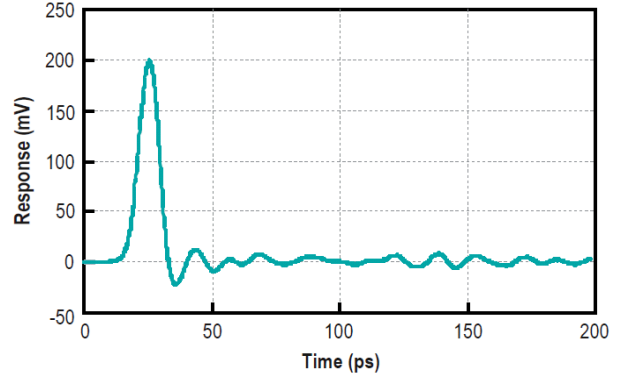
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--|-------------------|----------------|------|------|------|------|
| Photodiode DC Responsivity | R | 1310nm | | 0.45 | | A/W |
| | | 1550nm | | 0.65 | | |
| Polarization Dependent Loss | PDL | 1310nm | | 0.4 | 0.7 | dB |
| | | 1550nm | | 0.3 | 0.5 | |
| Optical Return Loss ¹ | ORL | 1310nm | 24 | | | dB |
| | | 1550nm | 27 | | | |
| 3dB Cut-off Frequency ² | f _{3dB} | | 45 | 50 | | GHz |
| Output Reflection Coefficient | S ₂₂ | 0.05 ... 50GHz | | -10 | -8 | dB |
| Photodiode Dark Current | I _{dark} | | | 5 | 200 | nA |
| Pulse Width | | | | 9 | 10 | ps |
| Notes: | | | | | | |
| 1. $\lambda = 1550 \text{ nm or } 1310 \text{ nm, } T_{\text{case}} = 25 \text{ }^\circ\text{C}$ | | | | | | |
| 2. measured using Agilent 86030A 50 GHz Lightwave component analyzer | | | | | | |

VII. Typical Performance Curves

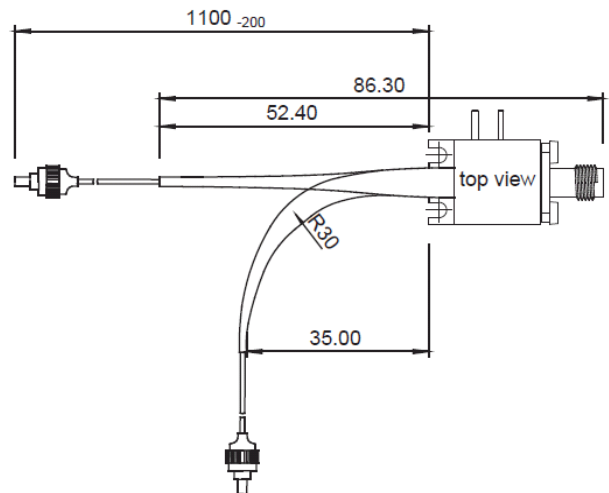
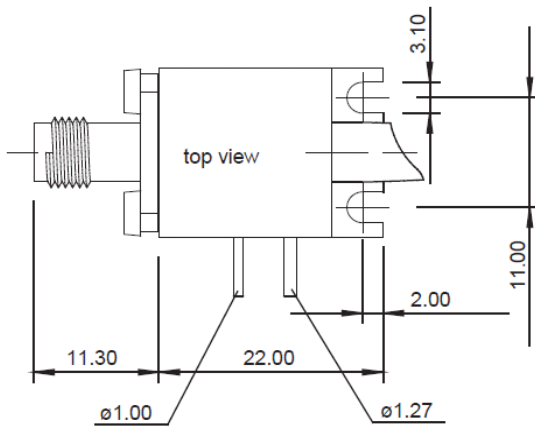
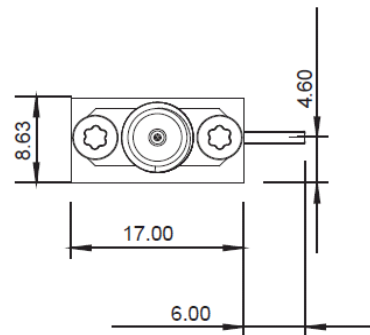
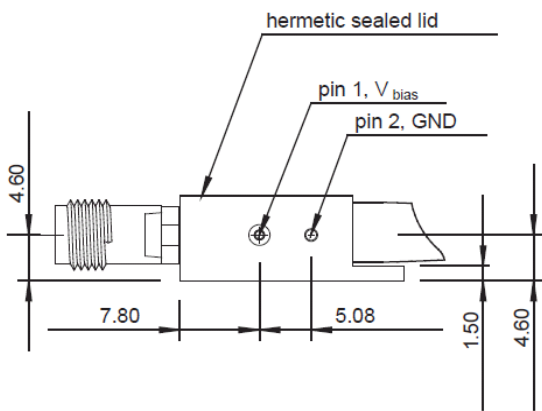
Frequency Response



Pulse Response



VIII. Mechanical Specifications



IX. Accessories

We recommend usage of our individually accessible photodetector power supply (PPS), in particular for optimized performance at high optical input levels. As portable device it provides stable biasing voltage supply and a front display for review on photocurrent.

ORDERING INFORMATION

PPS-03-X

- X: Power supply for XPDV21xxR series
Consists of 1x PPS and 1x cable X-type,
all PPS versions include two 1.5 V
batteries and a BNC-to-female connector
plug cable



X. Revision History

| Revision | Date | Description |
|----------|------------|-------------------------|
| A1 | 07/24/2014 | • Document created |
| A2 | 12/15/2014 | • Block diagram revised |

Notes

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- Finisar Corporation reserves the right to make changes without notice.

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