Data Sheet
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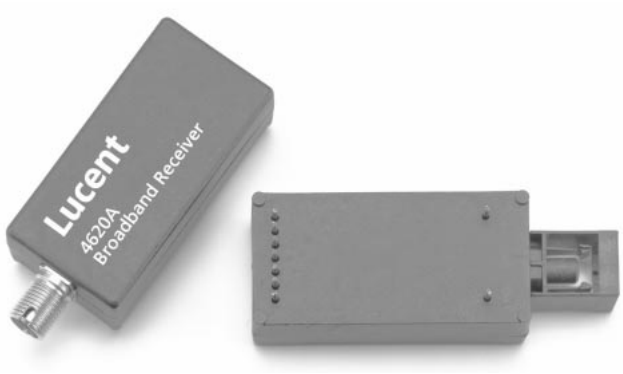
microelectronics group

Lucent Technologies
Bell Labs Innovations

# 4620A Broadband Fiber-Optic Receiver Module




## Features

- Up to 860 MHz
- Reduced power consumption
- Improved noise performance
- Flat response to ± 0.5 dB
- SC/APC or FC/APC receptacle

## Description

The 4620A incorporates a photodiode module with an integrated amplifier. Improved gain flatness, output return loss, and noise performance are inherent to the 4620A along with excellent linearity and low power consumption.

The 4620A is designed not only to excel in terms of performance but also in durability and flexibility. The absence of an integrated pigtail allows the package to be more tolerant of installation and maintenance handling. An FC/APC or SC/APC socket is integrated to the package, making installation faster and more reliable with less fiber handling.

Because the 4620A is designed to consume significantly less dc power than amplified receiver products, there is no need for a heat sink. The removal of this factor allows for more installation options to the customer, resulting in more cost-efficient designs.

## Pin Information

**Table 1. Pin Descriptions**

| Pin No. | Description |
|---|---|
| 1 | NC |
| 2 | Photodiode Current Monitor, 1 V/mA |
| 3 | Ground |
| 4 | RF Out |
| 5 | Ground |
| 6 | Amplifier Bias, 24 V |
| 7 | PD Bias, 24 V |
| 8 | Ground |
| 9 | Ground |

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Operating Case Temperature Range | $T_C$ | –40 | 85 | °C |
| Storage Temperature Range | Tstg | –40 | 85 | °C |
| Optical Input Power | $P_{IN}$ | — | 10 | mW |

## Characteristics

**Table 2. Electrical/Optical Characteristics** (Measured at 25 °C)

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Optical Wavelength Range | λ | — | 1310—1550 ± 20 | — | nm |
| Responsivity | — | —<br>— | ≥0.85 at 1310 nm,<br>≥0.95 at 1550 nm | —<br>— | mA/mW<br>mA/mW |
| Optical Return Loss | RL | — | ≥45 | — | dB |
| Bias Voltage | — | — | 24 | — | V |
| Dark Current | $I_D$ | — | — | 10 at 25 °C | nA |
| Power Consumption | $P_{DISS}$ | — | ≤1 | — | W |

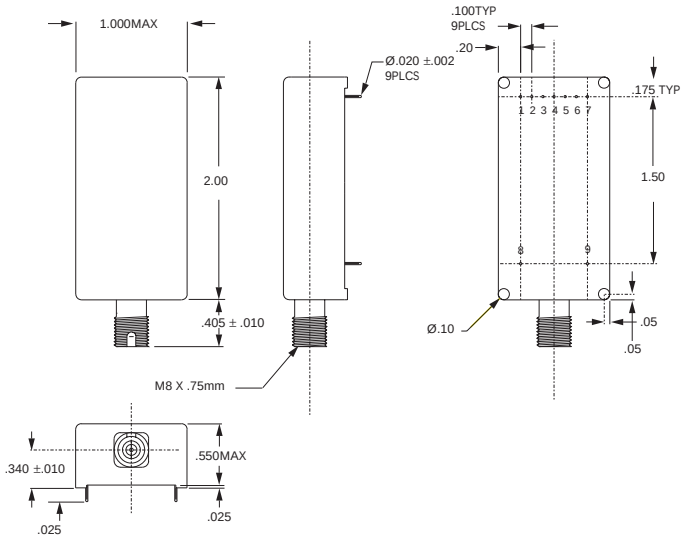
**Table 3. RF Characteristics** (Measured at 25 °C)

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Gain | G | ≥13.0 at 40 MHz | — | ≥13.5 at 860 MHz | dB<br>dB |
| Frequency Response[1] | — | — | ±0.5 | — | dB |
| Equivalent Noise Current | — | — | ≤7.0 | — | $pA/Hz^{1/2}$ |
| Distortion Products[2]:<br>Second Order<br>Third Order | <br>CSO<br>CTB | <br>—<br>— | <br>≤–70<br>≤–76 | <br>—<br>— | <br>dBc<br>dBc |
| Output Return Loss | RL | — | ≥12 | | dB |
| Output RF Level[3] | — | — | 5.5 | — | dBmV + Gain |

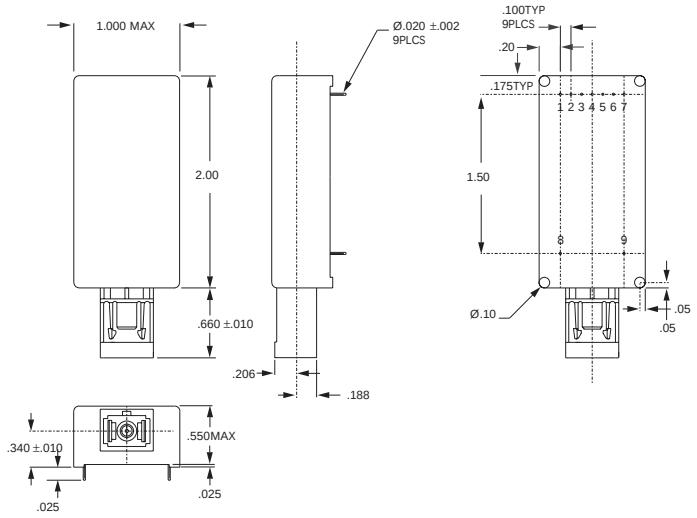
1. Deviation from 0.5 dB slope.
2. Two laser test. Each laser has 40% modulation index. Total received optical power is 0 dBm.
3. At 0 dBm optical power, 4% modulation index.

## Outline Diagram

Dimensions are in inches.




**4620A-020 with FC Connector Receptacle**




**4620A-024 with SC Connector Receptacle**

## Ordering Information

**Table 4. Ordering Information**[1]

| Device Code | Description | Connector Socket | Comcode |
|---|---|---|---|
| 4620A | Broadband Receiver Module | SC | 108867524 |
| 4620A | Broadband Receiver Module | FC Angle Polished[2] | 108867516 |

1. Other options available. For additional ordering information, please contact a Lucent account manager at Microelectronics Group, Optoelectronics Division, OPTO West, 1-800-362-3891 (for sales staff, please press option 2).
2. Flat-polished connectors will physically mate with the 4620A receiver, but will exhibit degraded return loss.

For additional information, contact your Microelectronics Group Account Manager or the following:
INTERNET: **http://www.lucent.com/micro**, or for Optoelectronics information, **http://www.lucent.com/micro/opto**
E-MAIL: **docmaster@micro.lucent.com**
N. AMERICA: Microelectronics Group, Lucent Technologies Inc., 555 Union Boulevard, Room 30L-15P-BA, Allentown, PA 18109-3286
**1-800-372-2447**, FAX 610-712-4106 (In CANADA: **1-800-553-2448**, FAX 610-712-4106)
ASIA PACIFIC: Microelectronics Group, Lucent Technologies Singapore Pte. Ltd., 77 Science Park Drive, #03-18 Cintech III, Singapore 118256
**Tel. (65) 778 8833**, FAX (65) 777 7495
CHINA: Microelectronics Group, Lucent Technologies (China) Co., Ltd., A-F2, 23/F, Zao Fong Universe Building, 1800 Zhong Shan Xi Road, Shanghai 200233 P. R. China **Tel. (86) 21 6440 0468**, **ext. 325**, FAX (86) 21 6440 0652
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