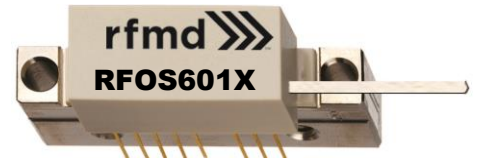
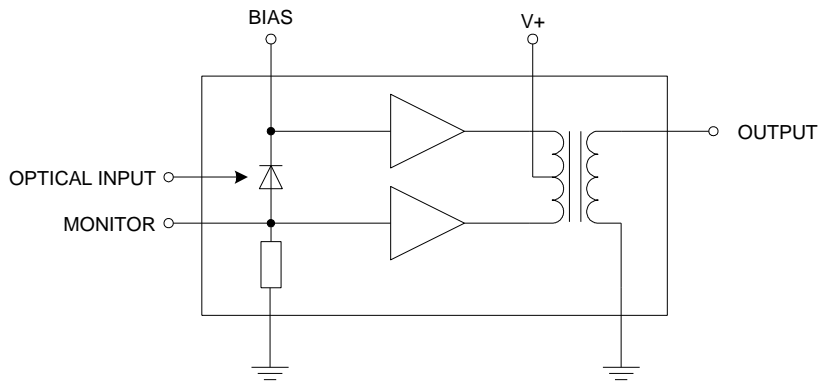


RFOS601X

GaAs Optical Receiver
45MHz to 1200MHz

RFOS601X is a hybrid high dynamic range optical receiver module. Two of the module pins are for connection to 24V (DC), one for amplifier supply voltage, the other for the PIN diode bias. The module contains a single mode optical input suitable for wavelengths from 1290nm to 1600nm, a terminal to monitor the PIN diode current and an electrical output with an impedance of 75Ω.



Package: SOT-115J

Features

- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Very Low EINC
- 30.0dB A/W Min. at 1200MHz
- 250mA Max. at 24V+

Applications

- 45MHz to 1200MHz CATV Amplifier Systems

Ordering Information

| | |
|----------|-------------------|
| RFOS6012 | Box with 3 Pieces |
| RFOS6013 | Box with 3 Pieces |

See Page 3

Absolute Maximum Ratings

| Parameter | Rating | Unit |
|---|------------|------|
| Optical Input Power | 5 | mW |
| DC Supply Over-Voltage (5 minutes) | 30 | V |
| ESD Sensitivity, Acc. MIL-Standard 1686C (human body model; R = 1.5kΩ, C = 100pF) | 500 | V |
| Storage Temperature | -40 to +85 | °C |
| Operating Mounting Base Temperature | -20 to +85 | °C |
| Minimum Fiber Bending Radius | 35 | mm |
| Maximum Tensile Strength | 5 | N |



Caution! ESD sensitive device.



RoHS (Restriction of Hazardous Substances): Compliant per EU Directive 2011/65/EU.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

Nominal Operating Parameters

| Parameter | Specification | | | Unit | Condition |
|--|---------------|------|------|--------|--|
| | Min | Typ | Max | | |
| General Performance | | | | | V+ = 24V; T_{MB} = 30°C; Z_L = 75Ω |
| Responsivity | 2400 | 2650 | | V/W | f = 1200MHz, λ = 1310nm |
| | 30.0 | 31.0 | | dB A/W | |
| Slope ^[1] | 0 | | 2 | dB | f = 45MHz to 1200MHz |
| Flatness of O/E Response | | <0.7 | 1.0 | dB | f = 45MHz to 1200MHz (peak to valley) |
| Optical Return Loss | 45 | | | dB | |
| Output Return Loss | 15 | 17 | | dB | f = 45MHz to 1200MHz |
| Equivalent Input Noise | | 4.2 | 4.6 | pA/√Hz | f = 50MHz to 1200MHz |
| Spectral Sensitivity | 0.90 | | | A/W | λ = (1310± 20)nm |
| | 0.90 | | | A/W | λ = (1550± 20)nm |
| Optical Wavelength | 1290 | | 1600 | nm | |
| Total DC Current | | 245 | 250 | mA | module pin 4 and pin 5 connected to V+ |
| PIN Diode Bias Current | | 1.5 | 5 | mA | |
| Distortion Data | | | | | V+ = 24V; T_{MB} = 30°C; Z_L = 75Ω |
| Second Order Distortion ^[2] | | -75 | -71 | dBc | f _m = 54MHz; f ₁ = 187.25MHz; f ₂ = 133.25MHz |
| | | -75 | -70 | dBc | f _m = 446.5MHz; f ₁ = 97.25MHz; f ₂ = 349.25MHz |
| | | -70 | -65 | dBc | f _m = 548.5MHz; f ₁ = 109.25MHz; f ₂ = 439.25MHz |
| | | -68 | -63 | dBc | f _m = 746.5MHz; f ₁ = 133.25MHz; f ₂ = 613.25MHz |
| | | -68 | -63 | dBc | f _m = 854.5MHz; f ₁ = 133.25MHz; f ₂ = 721.25MHz |
| | | -66 | -63 | dBc | f _m = 986.5MHz; f ₁ = 133.25MHz; f ₂ = 853.25MHz |
| Third Order Distortion ^[3] | | -78 | -75 | dBc | f _m = 55.25MHz; f ₁ = 109.25MHz; f ₂ = 133.25MHz; f ₃ = 187.25MHz |
| | | -78 | -75 | dBc | f _m = 445.25MHz; f ₁ = 193.25MHz; f ₂ = 349.25MHz; f ₃ = 97.25MHz |
| | | -78 | -75 | dBc | f _m = 547.25MHz; f ₁ = 217.25MHz; f ₂ = 439.2MHz; f ₃ = 109.25MHz |
| | | -78 | -75 | dBc | f _m = 745.25MHz; f ₁ = 133.25MHz; f ₂ = 265.25MHz; f ₃ = 613.25MHz |
| | | -78 | -75 | dBc | f _m = 853.25MHz; f ₁ = 133.25MHz; f ₂ = 265.25MHz; f ₃ = 721.25MHz |
| | | -78 | -75 | dBc | f _m = 985.25MHz; f ₁ = 133.25MHz; f ₂ = 265.25MHz; f ₃ = 853.25MHz |

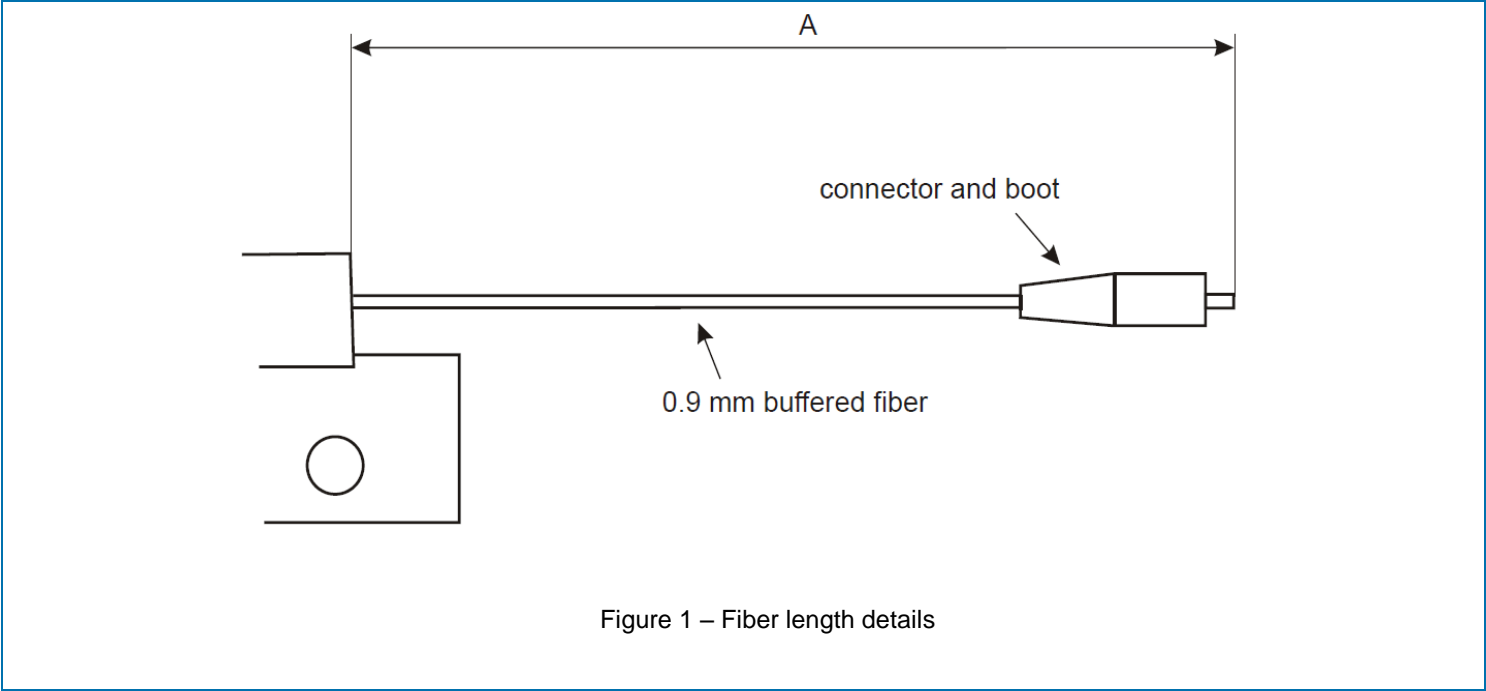
1. The slope is defined as the difference between the O/E response at the start frequency (45MHz) and the O/E response at the stop frequency (1200MHz).

2. Two laser test; each laser with 40% OMI; P_{opt} = 1mW (total).

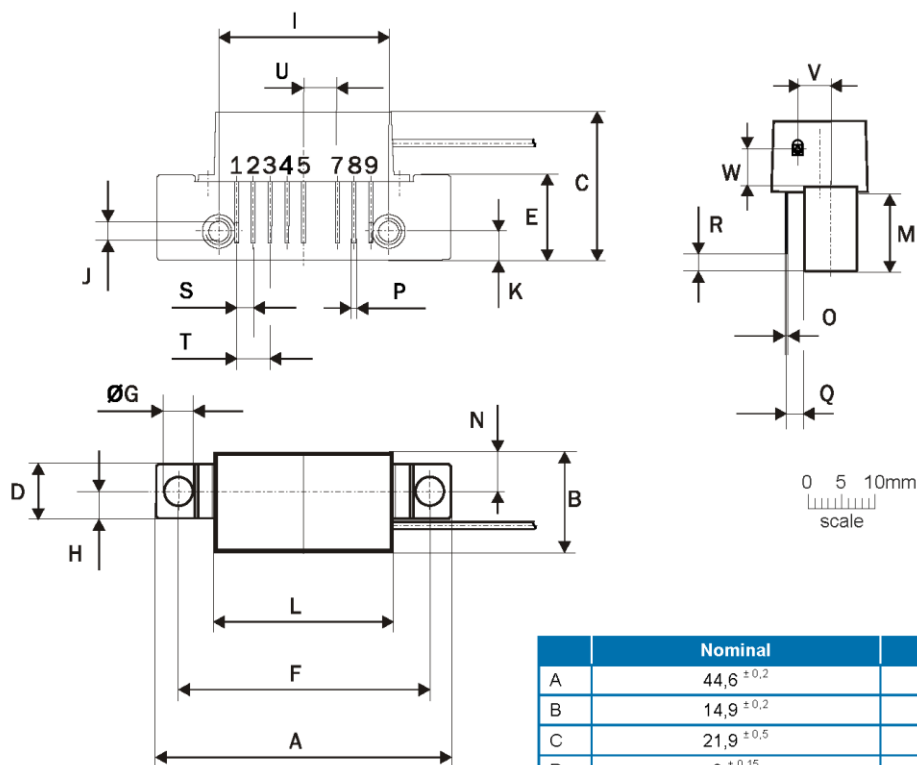
3. Three laser test; each laser with 60% OMI; P_{opt} = 1mW (total).

Cable Lengths and Connector Types

| Type | Dimension A, See Figure 1 | | | | Optical Connector Type |
|----------|---------------------------|------------|-----|-------------|------------------------|
| | Inches | Tolerance | mm | Tolerance | |
| RFOS6012 | 33.4 | -4 to +0.5 | 848 | -102 to +13 | FC/APC |
| RFOS6013 | 33.4 | -4 to +0.5 | 848 | -102 to +13 | SC/APC |

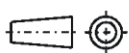


Package Drawing (Dimensions in millimeters)



Notes:

European
Projection



Pinning:

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

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

Mouser Electronics

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