

CATV 1000 MHz Optical Receiver Module

1. Product profile

1.1 General description

High dynamic range optical receiver amplifier module is in a standard SOT115T package where the 0.9mm buffered fiber has an FC/APC or SC/APC connector. The amplifier supply voltage is 24 V (DC). The modules have a single mode optical input suitable for 1290 nm to 1600 nm wavelengths, output having a characteristic impedance of 75Ω.

CAUTION



This device is sensitive to Electro Static Discharge (ESD).. Therefore care should be taken during transport and handling.

1.2 Features and benefits

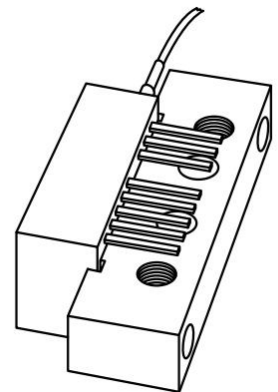
- Large range of optical power input
- Excellent linearity
- Low noise
- Excellent flatness
- Standard CATV outline

1.3 Applications

- CATV optical node systems operating in the 40 MHz to 1000 MHz frequency range.

1.4 Handling

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

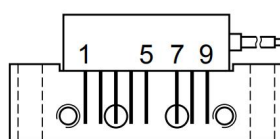


Product Outline

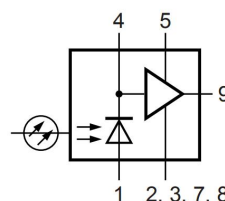
2. Pin information

| Pin | Description |
|-----|-----------------------|
| 1 | monitor current |
| 2 | Common |
| 3 | Common |
| 4 | +VB1 of the PIN diode |
| 5 | +VB2 of the amplifier |
| 7 | Common |
| 8 | Common |
| 9 | Output |

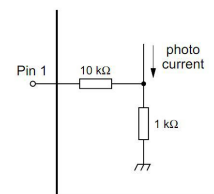
Simplified outline



Graphic symbol



Monitor current



3. Operating conditions

3.1 Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134) (TA = +25°C)

| Parameter | Symbol | Min | Max | Unit |
|----------------------------------|-----------------------------------|-----|------|------|
| Supply Voltage | V _{B1} , V _{B2} | - | 25 | V |
| Optical Input Power (continuous) | P _i | - | 3 | mW |
| Operating Case Temperature | T _c | -20 | +90 | °C |
| Storage Temperature | T _{stg} | -40 | +100 | °C |
| ESD sensitivity [1] | ESD | 500 | - | V |

[1] Human body model, R=1.5k, C = 100 pF

3.2 Recommended operating conditions (Z_S = Z_L = 75 Ω)

| Parameter | Symbol | Test Conditions | MIN. | TYP. | MAX. | Unit |
|----------------------------|------------------------------------|-----------------|------|------|------|------|
| Supply Voltage | V _{B1} V _{B2} | | 23.5 | 24.0 | 24.5 | V |
| Optical Input Power | P _i | Continuous | -8 | -2 | +2 | dBm |
| Operating Case Temperature | T _c | | -20 | +30 | +80 | °C |

4. Electrical characteristics

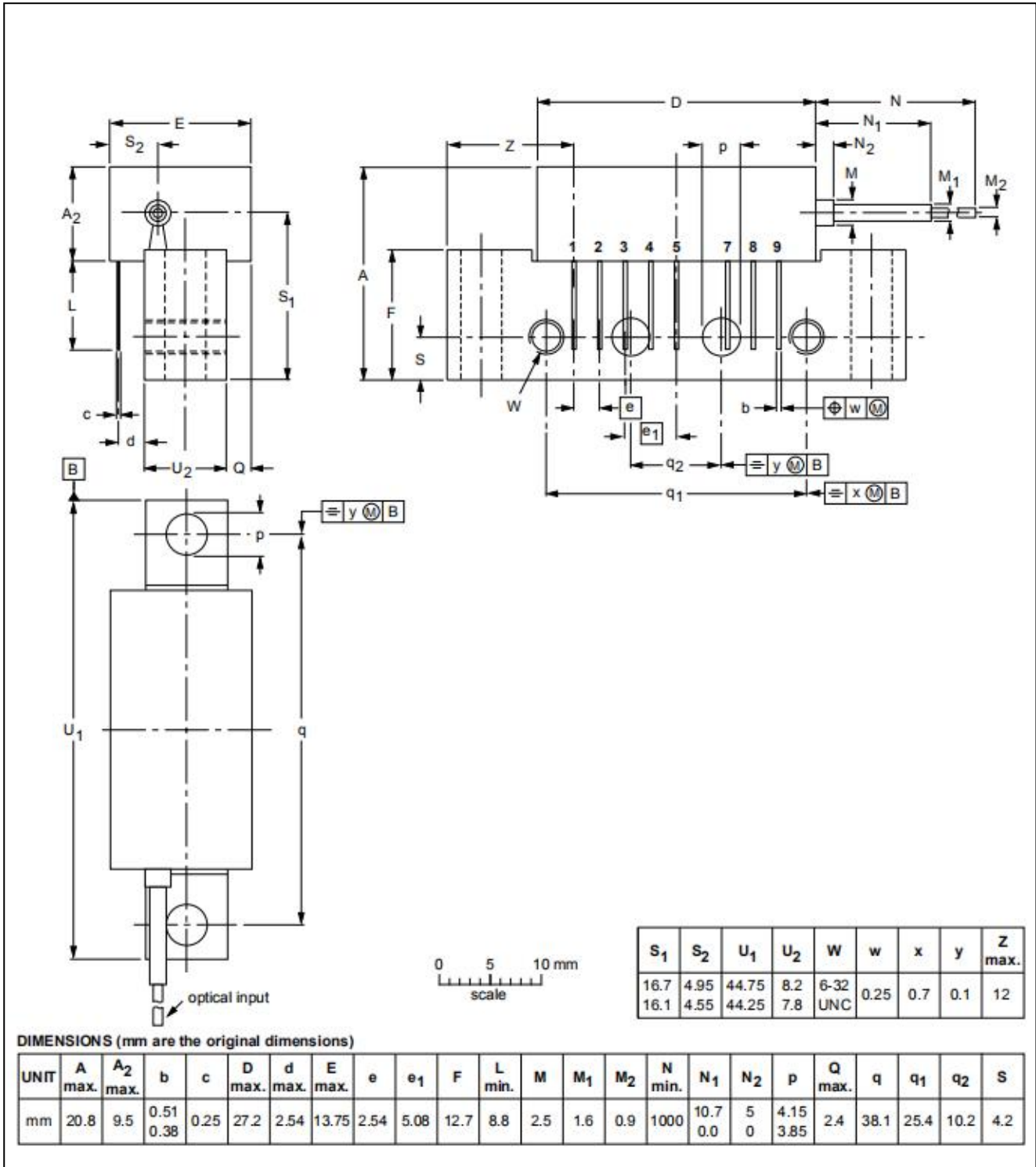
Bandwidth 40 to 1000 MHz, T_C = 30±5°C, Z_S = Z_L = 75 Ω

| Parameter | Symbol | Test Conditions | MIN. | TYP. | MAX. | Unit |
|---|-------------------|--|------|------|------|--------|
| Responsivity[1] | S | λ = 1300 nm, f = 1000MHz | 800 | - | 1000 | V/W |
| Flatness straight line (peak to valley) | FL | f = 40 to 1000 MHz | - | - | 1.0 | dB |
| Slope straight line | SL | f = 40 to 1000 MHz | 0 | 1.0 | 2.0 | dB |
| Output Level | V _o | Optical power receiving at 0dBm | - | 88 | - | dBuV |
| Optical input return losses | | | 45 | - | - | dB |
| Output Return Loss | S ₂₂ | f = 40 to 1000 MHz | 10 | - | - | dB |
| Composite Triple Beat | CTB | 60channels, m=3.7%, flat output level across the band, | - | -70 | - | dB |
| Composite 2nd Order Beat | CSO | P _i =0dBm, measured at 543.25 MHz, | - | -66 | - | dB |
| Equivalent noise input | F | f = 40 to 1000 MHz | - | - | 7 | pA/√Hz |
| Spectral sensitivity | S _λ | λ = 1310±20 nm | 0.85 | - | - | A/W |
| | | λ = 1550±20 nm | 0.90 | - | - | A/W |
| Operating Current | I _{tot} | V _{B2} =24VDC | 160 | 175 | 190 | mA |
| | | V _{B1} =24VDC | - | - | 25 | |
| Voltage of monitor current pin (pin1) | V _{pin1} | V _{B1} =24VDC, P _i =0dBm | 0.85 | - | 1.05 | V |
| Optical wavelength | λ | 1290 – 1600 nm | 1290 | - | 1600 | nm |
| Length of fiber; SM type; 9/125um | L | | 0.75 | - | 1.0 | m |

5. Package outline

Rectangular single-ended package; aluminum flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; 8 gold-plated in-line leads. Optical input with connector.

SOT115T



UNIT: mm

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