

ROF-PR-11M-B

Si adjustable gain photodetector

The ROF-PR-11M-B is a silicon (Si) photodetector with amplification and adjustable gain, designed for detecting optical signals ranging from 320nm to 1100nm. It features an 8-position rotary switch, enabling users to adjust gain in 10dB steps. The buffer can drive high-impedance loads with an output of up to 10V and delivers 5V under a 50Ω load. The housing of the ROF-PR-11M-B includes a detachable threaded connector (SM1T1) and a fixed ring (SM1RR), which are compatible with optical accessories of the same specifications via internal or external threads. This facilitates the easy installation of external optical filters and provides a straightforward mounting mechanism.

Feature

- Spectral range: 320nm~1100nm
- 3dB bandwidth: up to 11MHz
- Maximum gain setting: 4.75×10^6 V/A (high-impedance load)
- Low noise
- Spatial optical coupling input, fiber coupling optional

Application

- Weak light detection
- Fiber optic sensing system
- Space optical communication



Ordering information

| Model | ROF-PR-11M-B | ROF-PR-13M-A |
|-----------------------------------|---------------------------------|---------------------------------|
| Response frequency | DC-11MHz | DC-13MHz |
| Type | Silicon(Si) | Indium Gallium Arsenide(InGaAs) |
| Sensitivity to light ¹ | 320nm~1100nm | 900nm~1700nm |
| Photosensitive area | Ø9.8 mm (75.4 mm ²) | Ø1.0 mm (0.8 mm ²) |

Note 1: Approximate value; The actual wavelength value may vary

Parameter

| Performance Specifications 2 (KG-PR-11M-B) | | | |
|--|--------------------------------|-----------------------------|--------------------------------|
| 0dB setting | | 40dB setting | |
| Gain (high resistance>5k Ω) | 1.50 x 10 ³ V/A ±2% | Gain (high resistance>5k Ω) | 1.50 x 10 ⁵ V/A ±2% |
| Gain (50 Ω) | 0.75 x 10 ³ V/A ±2% | Gain (50 Ω) | 0.75 x 10 ⁵ V/A ±2% |
| 3dB bandwidth ³ | 11 MHz | 3dB bandwidth | 150K |
| Noise (RMS) | 400uV | Noise (RMS) | 500uV |
| bias | ±8 mV (Typ.) ±20mV (Max.) | bias | ±8 mV (Typ.) ±20mV (Max.) |
| 10dB setting | | 50dB setting | |
| Gain (high resistance>5k Ω) | 4.75 x 10 ³ V/A ±2% | Gain (high resistance>5k Ω) | 4.75 x 10 ⁵ V/A ±2% |
| Gain (50 Ω) | 2.38 x 10 ³ V/A ±2% | Gain (50 Ω) | 2.38 x 10 ⁵ V/A ±2% |
| 3dB bandwidth | 1.4 MHz | 3dB bandwidth | 50K |
| Noise (RMS) | 350uV | Noise (RMS) | 520 uV |
| bias | ±8 mV (Typ.) ±20mV (Max.) | bias | ±8 mV (Typ.) ±20mV (Max.) |
| 20dB setting | | 60dB setting | |
| Gain (high resistance>5k Ω) | 1.50 x 10 ⁴ V/A ±2% | Gain (high resistance>5k Ω) | 1.50 x 10 ⁶ V/A ±2% |
| Gain (50 Ω) | 0.75 x 10 ⁴ V/A ±2% | Gain (50 Ω) | 0.75 x 10 ⁶ V/A ±2% |
| 3dB bandwidth | 1.0MHz | 3dB bandwidth | 20K |
| Noise (RMS) | 380uV | Noise (RMS) | 760 uV |
| bias | ±8 mV (Typ.) ±20mV (Max.) | bias | ±8 mV (Typ.) ±20mV (Max.) |
| 30dB setting | | 70dB setting | |
| Gain (high resistance>5k Ω) | 4.75 x 10 ⁴ V/A ±2% | Gain (high resistance>5k Ω) | 4.75 x 10 ⁶ V/A ±2% |
| Gain (50 Ω) | 2.38 x 10 ⁴ V/A ±2% | Gain (50 Ω) | 2.38 x 10 ⁶ V/A ±2% |
| 3dB bandwidth | 400K | 3dB bandwidth | 10K |
| Noise (RMS) | 380uV | Noise (RMS) | 1.43mV |
| bias | ±8 mV (Typ.) ±20mV (Max.) | bias | ±8 mV (Typ.) ±20mV (Max.) |

Note 2: ROF-PR-11M-B has a 50 Ω series terminating resistor (i.e. connected in series with the amplifier output). This forms a voltage divider with any load impedance (such as a 50 Ω load splitting the signal in half).

Note 3: Conduct the test at a wavelength of 850nm. For near-infrared wavelengths, the rise time of photodiode components will become slower, which may limit the effective bandwidth of the amplification detector

General Parameters

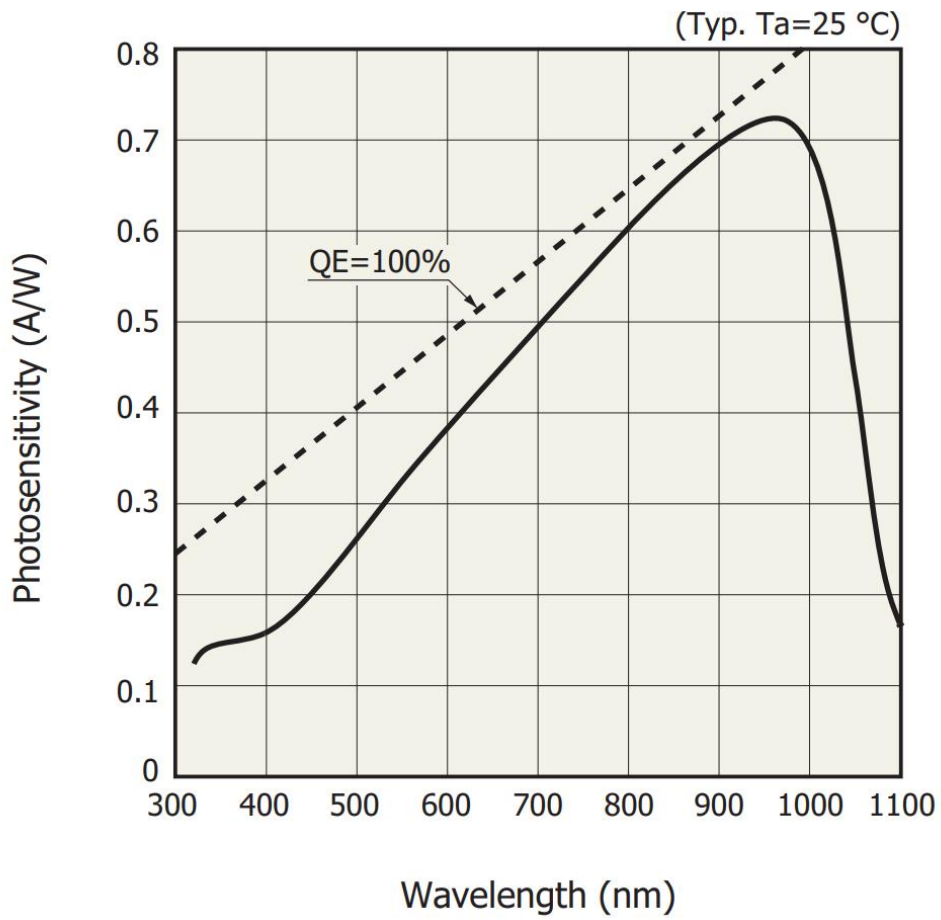
| Project | sym | value |
|----------------------------------|------------------|--|
| Detector type | - | Si |
| Photosensitive surface | - | Ø9.8 mm (75.4 mm ²) |
| Peak wavelength | λ_p | 960 nm (Typ.) |
| Peak response | $\Re(\lambda_p)$ | 0.72 A/W (Typ.) |
| Output impedance | - | 50Ω |
| Maximum output current amplitude | I _{max} | 100mA |
| Maximum output voltage amplitude | V _{max} | 10.00V @ high impedance 5.00V@50 Ω load |
| Load range | - | >50 Ω |
| Range of gain adjustment | - | 0dB~70dB |
| Gain step | - | 10 dB |
| Power switch | - | side |
| Gain switch | - | 8th gear |
| Output | - | SMA (DC Coupling) |
| Product dimensions | - | 66.6mm*52.2mm*22.4mm |
| PD surface depth 4 | - | 6.1mm |
| Weight (excluding accessories) | - | 70g |
| Accessories | - | SM1T1 coupling, SM1RR retaining ring |
| Power supply | - | AC-DC ± 12V adapter |
| Power supply wattage | - | 6 W 100V/120V/230V, 50-60 Hz |

Note 4: The approximate height from the surface of the housing structure to the surface of the photodiode may result in installation errors in practice.

Limiting condition

| Parameter | sym | Unit | Min | Typical | Max |
|-----------------------|-----------------|------|-------|---------|-------|
| Input optical power | P _{in} | mW | - | - | 25 |
| Working Voltage | V _{op} | V | ±10.8 | ±12 | ±13.2 |
| Operating Temperature | T _{op} | °C | -10 | - | 60 |
| Storage temperature | T _{st} | °C | -40 | - | 85 |
| humidity | RH | % | 5 | - | 90 |

Characteristic curve



ROF-PR-11M-B Sensitivity response diagram

Package size(mm)

