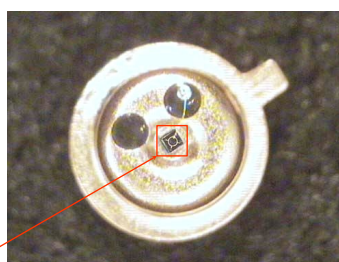


Features

- High reliability
- Superior linearity
- Easy-to-use detector/amplifier modules are also available
- Parabolic reflector



Photodiode CHIP

Description

Photodiode **PD48-05-NS-PR** is a model of **photodetector** with narrow spectral range (**NS**) for detection of radiation at room temperature in the Middle Infrared (Mid-IR) spectral range from 3700 to 4800 nm.

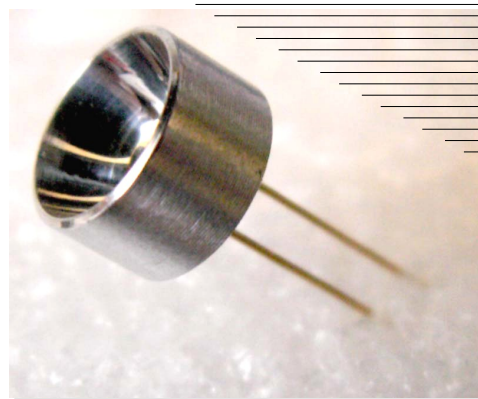
Photodiode chip is disposed inside the standard 5.5 mm TO-18 package with parabolic reflector (**PR**).

Photosensitive area of the photosensitive area of **PD48-05-NS-PR** is $0.45 \times 0.45 \text{ mm}^2$. High speed of response makes it possible for detection of modulated radiation of laser diodes (LDs) and light-emitting diodes (LEDs). **PR** allows to increase detectivity of the photodiode by a factor of 10 in the case of parallel beam of radiation.

General characteristics

NS - narrow spectrum

Package	Parameter	Symbol	Value	Unit
TO-18 with PR	Chip size (photosensitive area)	A	0.45×0.45	mm ²
	Weight	m	0.65	g
	Operating temperature	T _{opr}	−200...+60	°C
	Window material		no	
	Soldering temperature	T _s	+230	°C
	Storage temperature	T _{stg}	−55...+70	°C
	Maximum reverse bias voltage	V	−0.5	V
	Size	D	9.0	mm
		H	18.5	



Applications

- Environment measurements
- Gas analysis (CH₄, CO, CO₂)
- Infrared spectrophotometry
- Analytical instruments

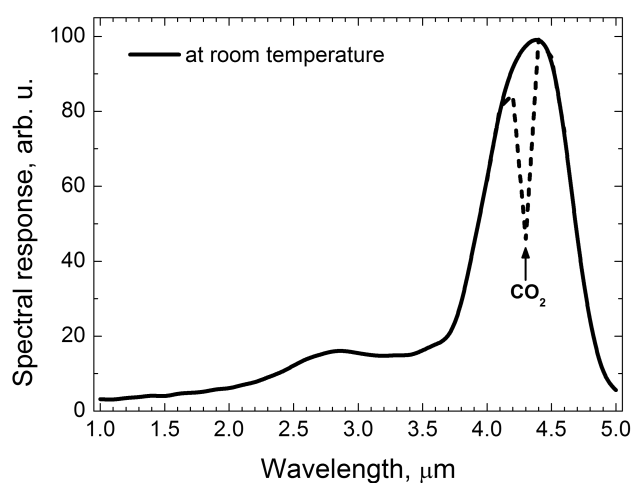
Accessories (optional)

- **Amplifier AM-07M**

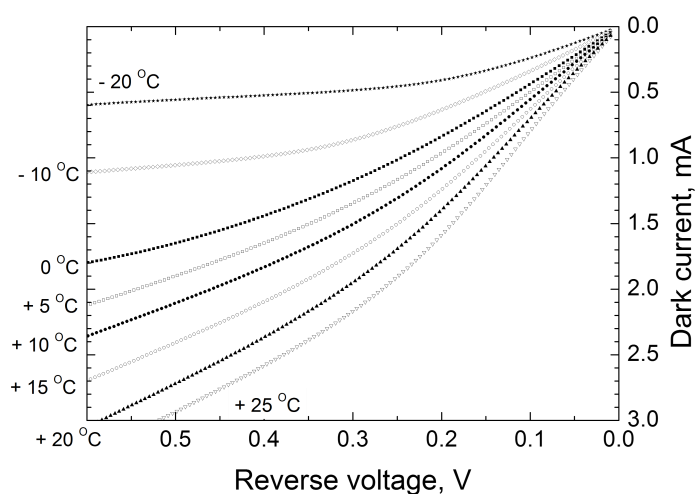
▼ Electrical and optical characteristics

Parameter	Symbol	Condition $T \approx +20^\circ\text{C}$	Min.	Typ.	Max.	Unit
Spectral sensitivity range	λ	at level 10%	2.5 - 4.9			μm
Peak sensitivity wavelength	λ_p	at level 90%	4.3 - 4.6			μm
Photo sensitivity	S	at λ_p	0.6	0.7	0.9	A/W
Detectivity	D^*	at λ_p	$5 \cdot 10^8$	$7 \cdot 10^8$	$9 \cdot 10^8$	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$
Dark current	I_d	$V = -0.1 \text{ V}$	1.0	1.5	3.0	mA
Capacitance	C	$V = 0 \text{ V}$, $f = 1 \text{ MHz}$	40	55	60	pF
Rise time	t_r	$V = 0 \text{ V}$, $R_L = 50 \Omega$	≤ 20			ns
Fall time	t_f					
Shunt resistance	R_0	$V \approx -10 \text{ mV}$	50	80	150	Ω
Noise equivalent power	NEP	at D^*	$9.0 \cdot 10^{-11}$	$6.4 \cdot 10^{-11}$	$9.9 \cdot 10^{-11}$	$\text{W} \cdot \text{Hz}^{-1/2}$

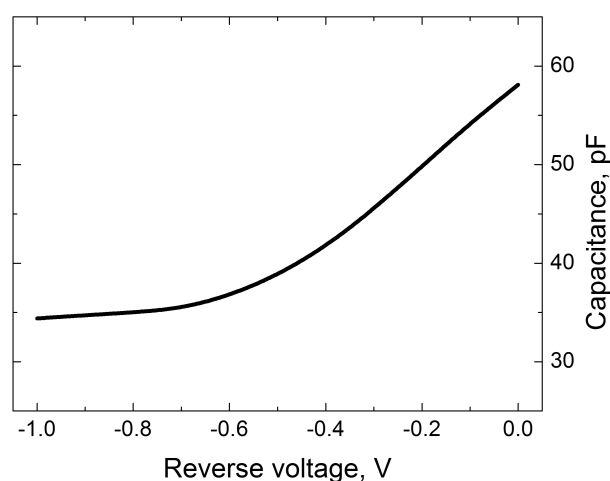
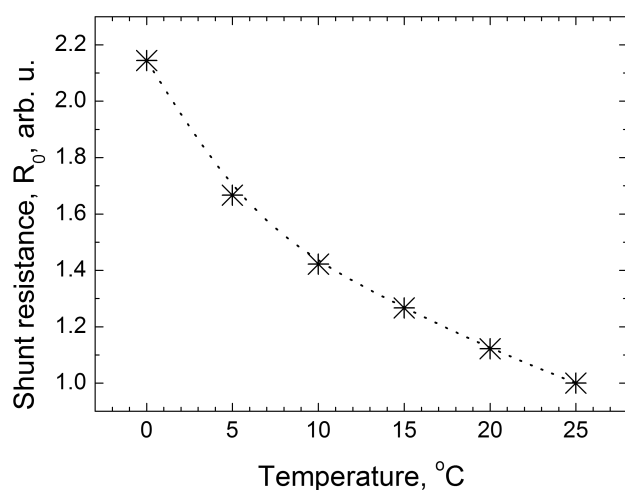
▼ Spectral response



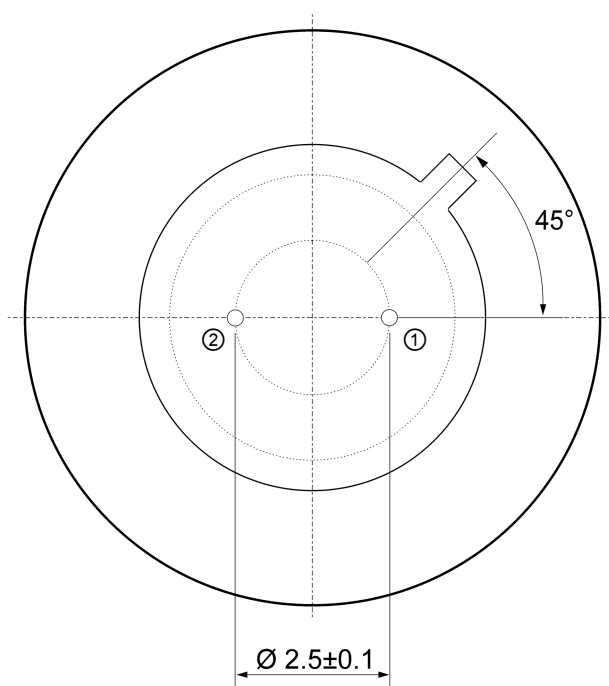
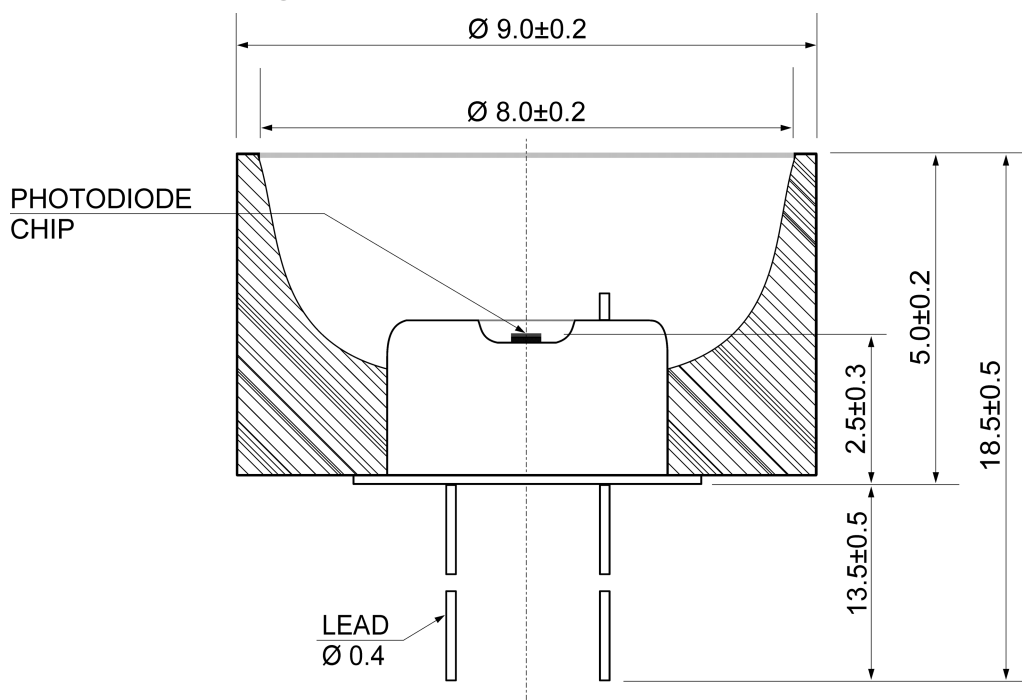
▼ Dark current vs. reverse voltage



▼ Shunt resistance vs. element temperature ▼ Capacitance vs. reverse voltage



▼ TO-18 package with PR dimensions (unit: mm)



Pin	Description
①	Detector (anode)*
②	Detector (cathode)*

*Special order: the pin polarity can be changed.