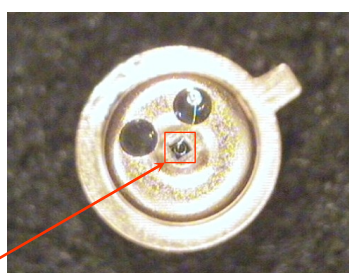


Features

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



Photodiode CHIP

Description

Photodiode **PD48-03-NS-PR** is a model of photodetector with narrow spectral range (**NS**) for detection of radiation in the Middle Infrared (Mid-IR) spectral range from 3700 to 4800 nm operating at room temperature.

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

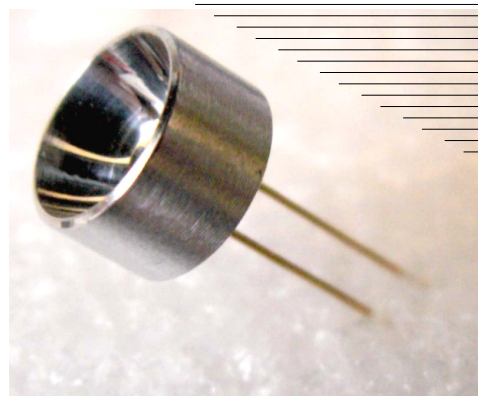
Diameter of the photosensitive area of **PD48-03-NS-PR** is 300 μm . High speed of response makes it possible for detection of modulated radiation of laser diodes (LDs) and light-emitting diodes (LEDs). **PR** allows to increase detectivity of the photodiode by a factor of 10 in the case of parallel beam of radiation.

Related products: **PD48-03-NS-PR** can be used in optical pair with our **LED37**, **LED38**, **LED39**, **LED41**, **LED43**, **LED46**.

General characteristics

NS - narrow spectrum

Package	Parameter	Symbol	Value	Unit
TO-18 with PR	Sensitive area diameter	d	0.3	mm
	Weight	m	0.65	g
	Operating temperature	T _{opr}	- 20...+ 40	°C
	Window material		no or sapphire glass	
	Soldering temperature	T _s	+ 230	°C
	Storage temperature	T _{stg}	- 55...+ 60	°C
	Maximum reverse bias voltage	V _b	- 0.5	V
	Size	D	9.0	mm
		H	18.5	



Applications

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

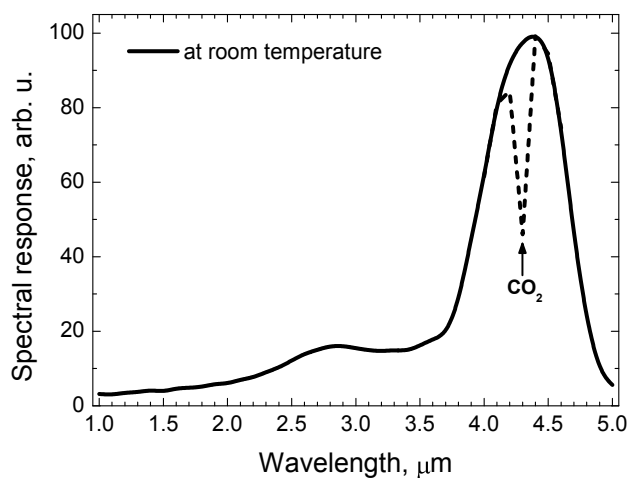
Accessories (optional)

- Sapphire glass window
- Amplifier AM-07M

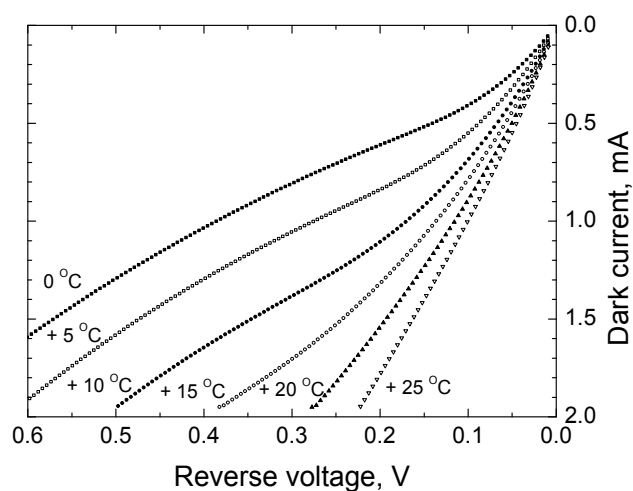
Electrical and optical characteristics

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	0.8	A/W
Detectivity	D^*	at λ_p	$5 \cdot 10^8$	$7 \cdot 10^8$	$8 \cdot 10^8$	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$
Dark current	I_d	$V_b = - 0.1 \text{ V}$	0.6	0.9	1.2	mA
Rise time	t_r	$V_b = 0 \text{ V}, R_L = 50 \Omega$	≤ 20			ns
Fall time	t_f					
Capacitance	C	$V_b = 0 \text{ V}, f = 1 \text{ MHz}$	25	30	50	pF
Shunt resistance	R_0	$V_b \approx \pm [5 - 10] \text{ mV}$	100	150 - 200	500	Ω
Noise equivalent power	NEP	at λ_p	-	-	-	$\text{W} \cdot \text{Hz}^{-1/2}$

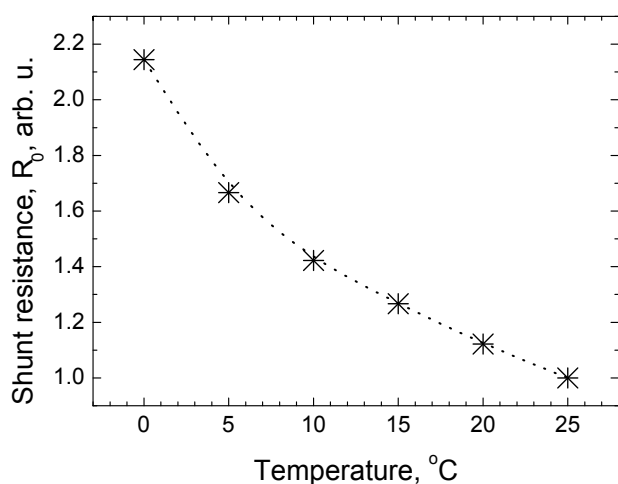
▼ Spectral response



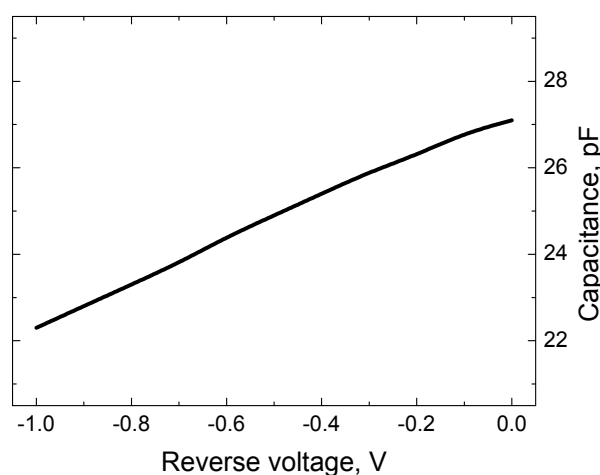
▼ Dark current vs. reverse voltage



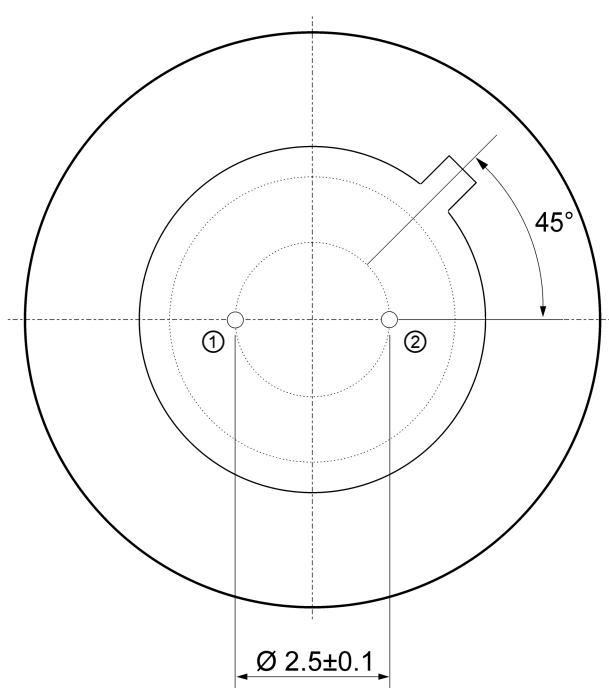
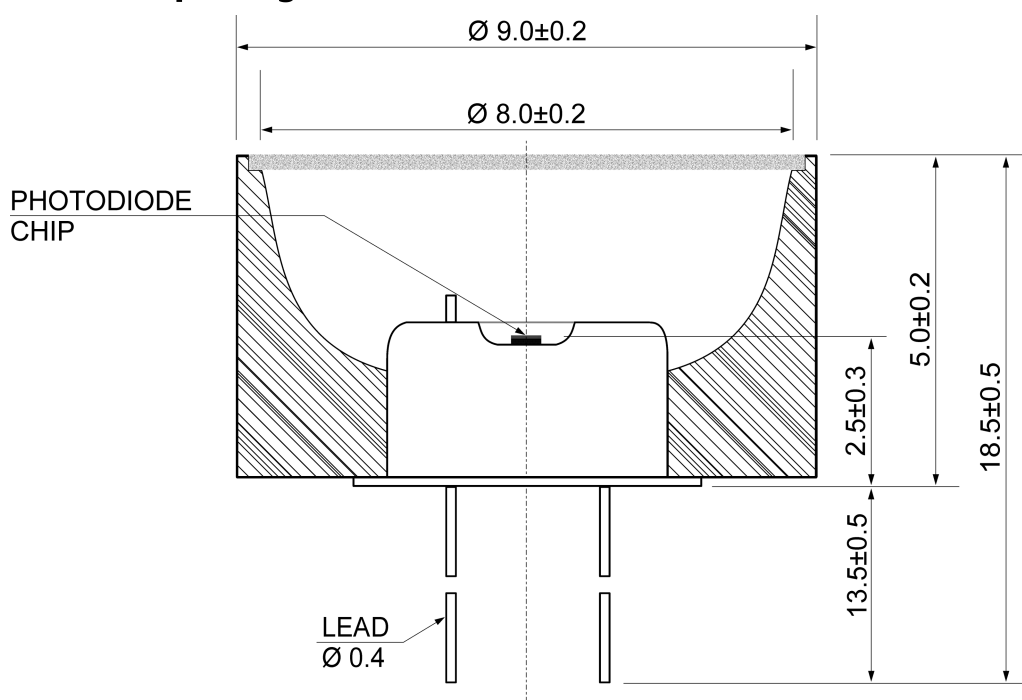
▼ Shunt resistance vs. temperature



▼ Capacitance vs. reverse voltage



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



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

*Special order: the pin polarity can be changed.