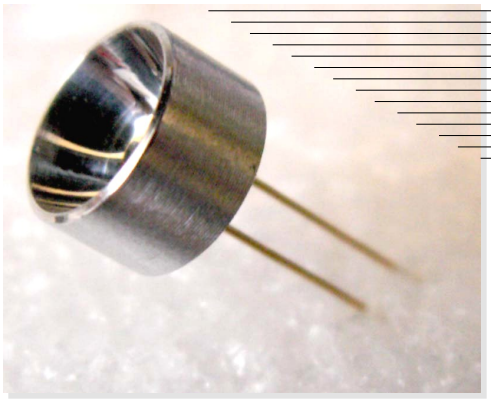
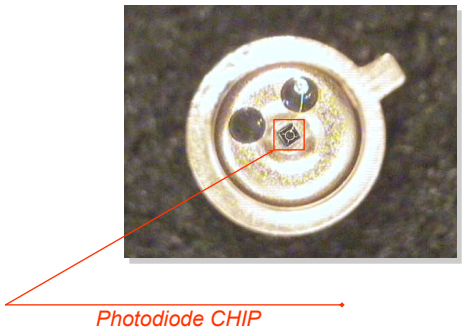
Mid infrared IBSG Optoelectronics



Features

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



Applications

- **Invironment measurements**
- **Gas analysis (CH_4, CO, CO_2)**
- **Infared spectrophotometry**
- **Analytical instruments**

Accessories (optional)

- **Amplifier AM-07M**

Description

Photodiode **PD48-05-WS-PRW** is a model of photodetector with wide spectral range (**WS**) for detection of radiation at room temperature in the Middle Infrared (Mid-IR) spectral range from 800 to 4800 nm.

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

Photosensitive area of the photosensitive area of **PD48-05-WS-PRW** is 0.45×0.45 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

WS - wide spectrum

Package	Parameter	Symbol	Value	Unit
TO-18 with **PR W**	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	sapphire glass		
	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	

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Electrical and optical characteristics

Parameter	Symbol	Condition T ≈ +20°C	Min.	Typ.	Max.	Unit
Spectral sensitivity range	λ	at level 10%		0.8 - 4.8		µm
Peak sensitivity wavelength	λ_p	at level 90%		3.9 - 4.2		µm
Photo sensitivity	S	at λ_P	0.6	0.7	0.8	A/W
Detectivity	D*	at λ_P	$5 \cdot 10^8$	$7 \cdot 10^8$	$9 \cdot 10^8$	$cm \cdot Hz^{½} \cdot W^{-1}$
Dark current	I_d	V = −0.1 V	1.0	1.5	3.0	mA
Capacitance	C	V = 0 V, f = 1 MHz	40	55	60	pF
Rise time	t_r	V = 0 V, R_L = 50 Ω		≤20		ns
Fall time	t_f					
Shunt resistance	R_0	V ≈ −10 mV	50	80	150	Ω
Noise equivalent power	NEP	at D*	$9.0 \cdot 10^{-11}$	$6.4 \cdot 10^{-11}$	$5.0 \cdot 10^{-11}$	$W \cdot Hz^{-½}$

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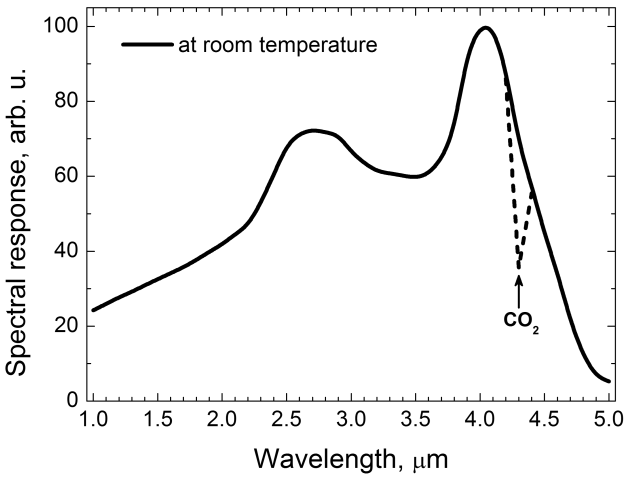
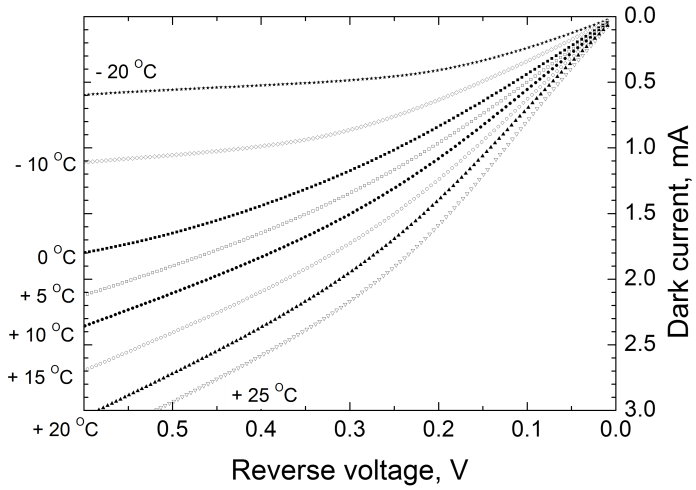
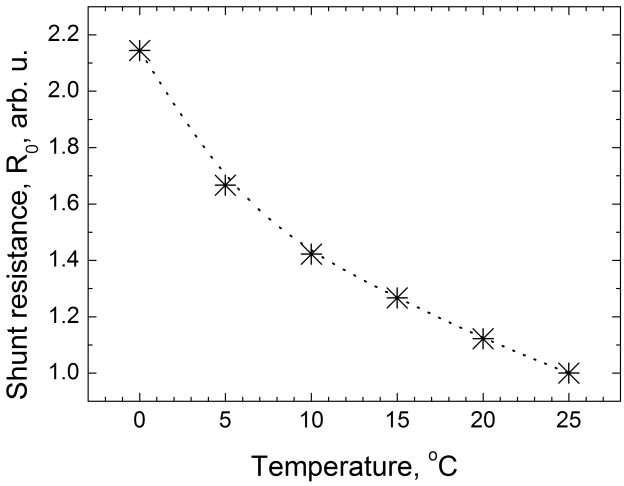
Spectral response



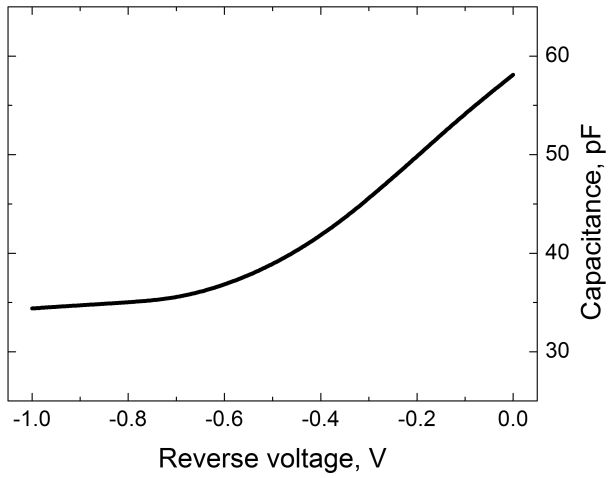
Dark current vs. reverse voltage



Shunt resistance vs. element temperature



Capacitance vs. reverse voltage



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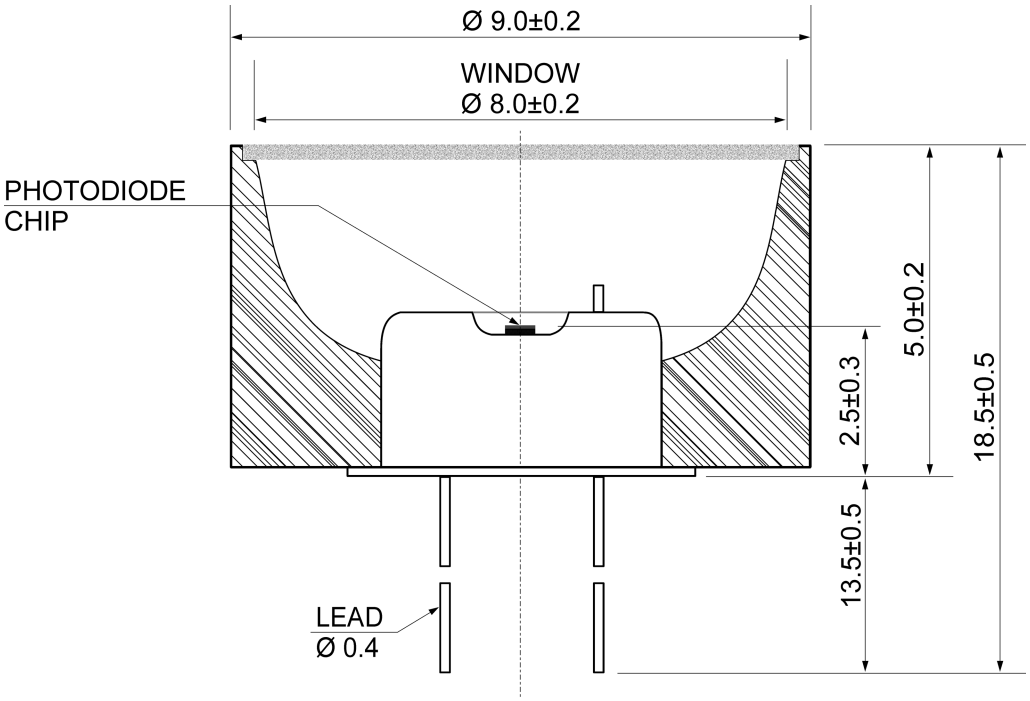
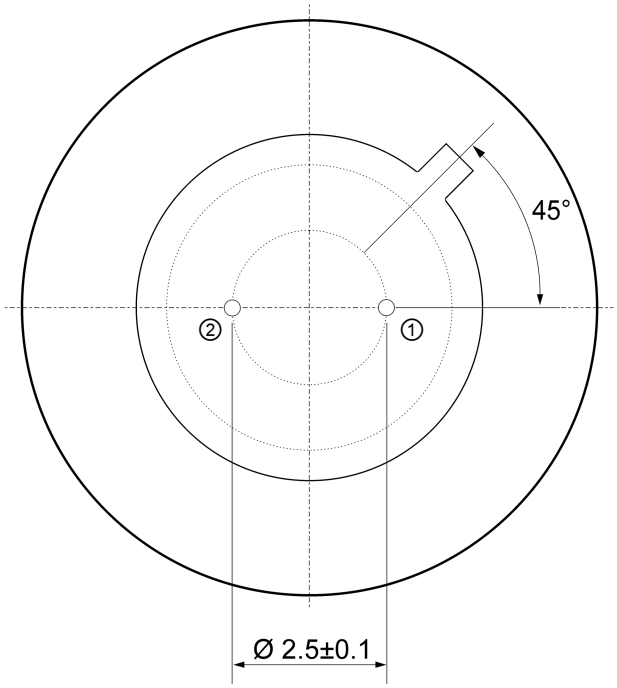
TO-18 package with PR & W dimensions (unit: mm)





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

*Special order: the pin polarity can be changed.

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