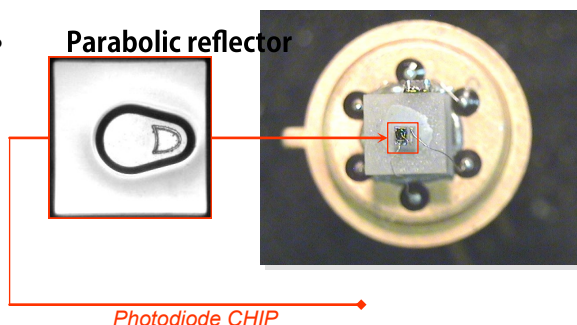


## Features

- High reliability
- Superior linearity
- Thermo stability
- Easy-to-use detector/amplifier modules are also available

- Parabolic reflector



## Description

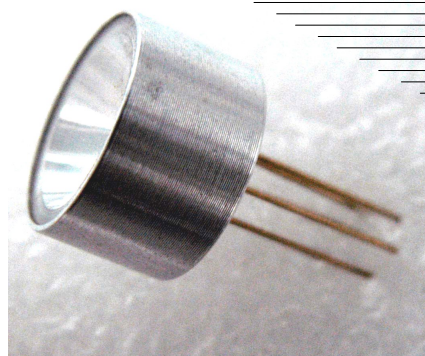
Photodiode **PD36-01-TEC-PRW** is a model of [photodetector](#) for detection of radiation at room temperature in the Middle Infrared (Mid-IR) spectral range from 1500 to 3800 nm.

Photodiode **PD36-01-TEC-PRW** has thermo electric cooler (TEC) and thermistor for a control of temperature. Components are integrated inside the standard 9.2 mm TO-5 package with TEC, parabolic reflector (PR) and window (W).

Diameter of the photosensitive area of **PD36-01-TEC-PRW** is 100  $\mu\text{m}$ . 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

Package	Parameter	Symbol	Value	Unit
TO-5 with TEC PR W	Sensitive area diameter	d	0.1	mm
	Weight	m	3.65	g
	Operating temperature	T <sub>opr</sub>	- 20...+ 40	°C
	Window material		sapphire glass	
	Cooling		one-stage TE-cooled	
	Soldering temperature	T <sub>s</sub>	+ 230	°C
	Storage temperature	T <sub>stg</sub>	- 20...+ 50	°C
	Maximum reverse bias voltage	V	- 1.0	V
	Size		D	10.5
		H	23.0	



## Applications

- Environment measurements
- Infrared spectrophotometry
- Laser detection
- Analytical instruments

## Accessories (optional)

- [Amplifier with temperature controller AMT-07M](#)

▼ **Electrical and optical characteristics**

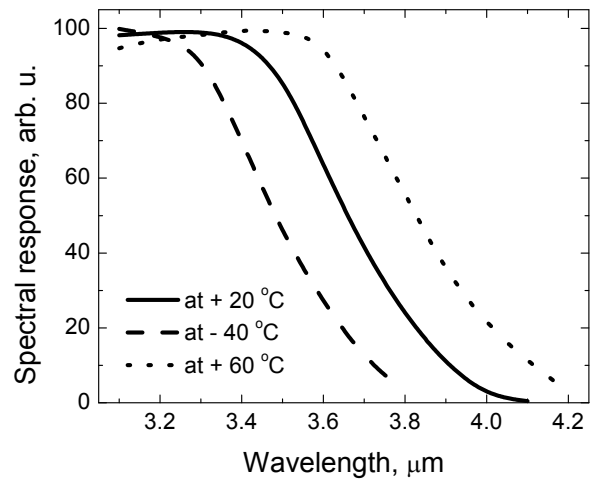
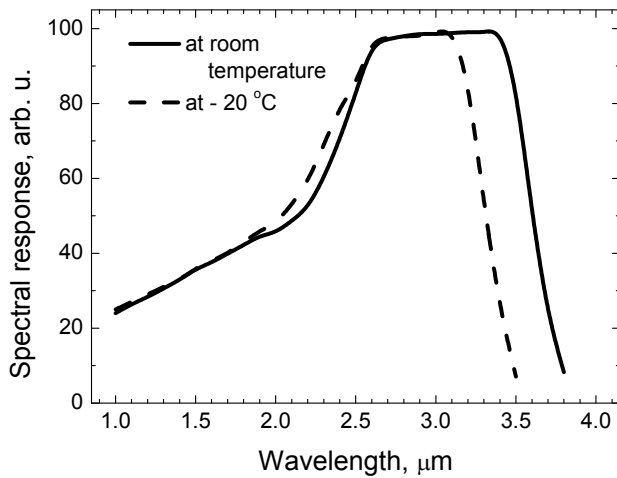
Parameter	Symbol	Condition	Element temperature			Unit	
			- 10 °C	0 °C	+ 20 °C		
Spectral sensitivity range	$\lambda$	at level 10%	1.5* - 3.6	-	1.5* - 3.8	$\mu\text{m}$	
Peak sensitivity wavelength	$\lambda_p$	at level 90%	2.5 - 3.3	-	2.6 - 3.4	$\mu\text{m}$	
Photo sensitivity	S	at $\lambda_p$	0.9 - 1.0			A/W	
Detectivity	$D^*$	at $\lambda_p$	$[4 - 8] \cdot 10^9$	-	$[2 - 5] \cdot 10^9$	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$	
Dark current	$I_d$	$V = - 0.2 \text{ V}$	10 - 20	-	30 - 80	$\mu\text{A}$	
		$V = - 0.4 \text{ V}$	60 - 90	-	100 - 200		
Capacitance	C	$V = 0 \text{ V}$ , $f = 1 \text{ MHz}$	15 - 30			pF	
Rise time	$t_r$	$V = 0 \text{ V}$ , $R_L = 50 \Omega$ $V = - 0.5 \text{ V}$	10 - 20		2 - 10		ns
Fall time	$t_f$						
Shunt resistance	$R_0$	$V \approx - 10 \text{ mV}$	4 - 12	-	1 - 3	k $\Omega$	
Noise equivalent power	NEP	at $\lambda_p$	$[4.4 - 2.2] \cdot 10^{-12}$	-	$[8.9 - 3.5] \cdot 10^{-12}$	$\text{W} \cdot \text{Hz}^{-1/2}$	

▼ **TEC TO506.1MC0400710.TB103 parameters (without load)**

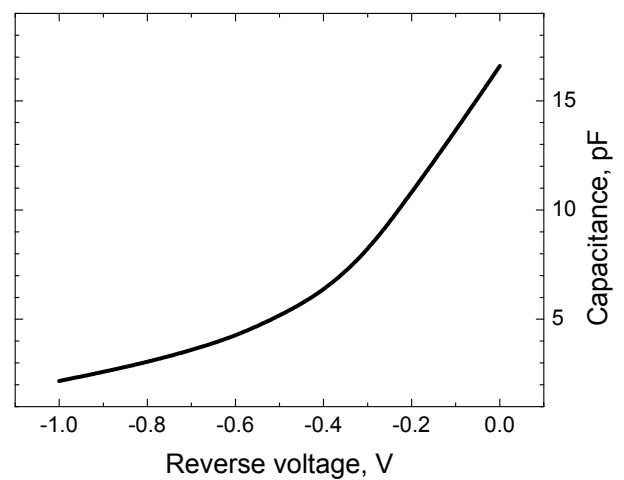
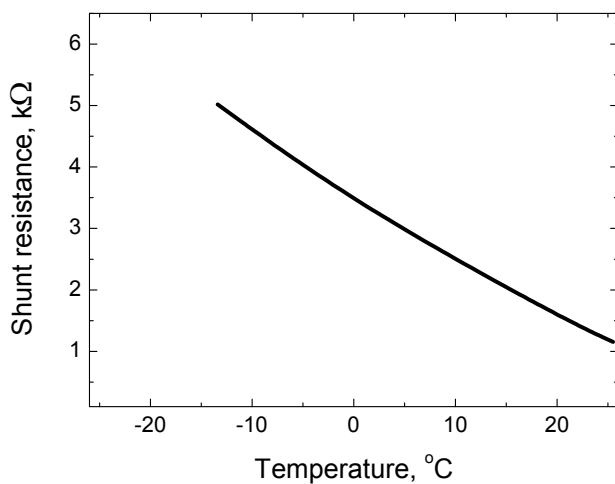
Parameter	Symbol	Condition	Value	Unit
Current power	$I_{\text{max}}$	$\Delta T_{\text{max}}$	1.50	A
Voltage	$U_{\text{max}}$	$\Delta T_{\text{max}}$	0.80	V
Cooling energy	$Q_{\text{max}}$	-	1.30	W
Temperature range	$\Delta T_{\text{max}}$	vacuum	70	K
Thermistor resistance	$R_t$	at + 20 °C	10.00	k $\Omega$

\* Not at level 10%

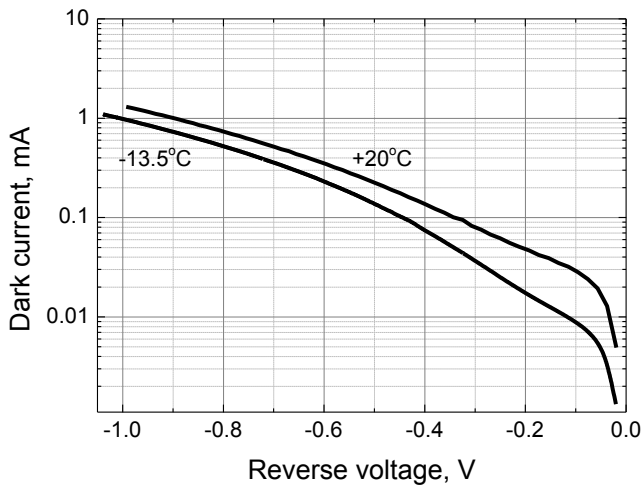
▼ Spectral response



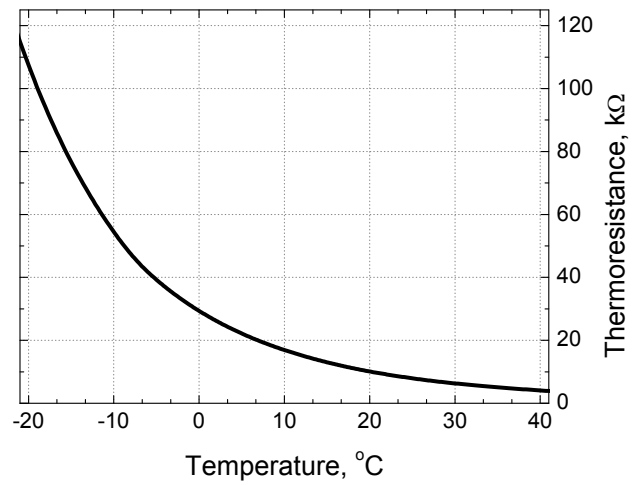
▼ Shunt resistance vs. element temperature    ▼ Capacitance vs. reverse voltage



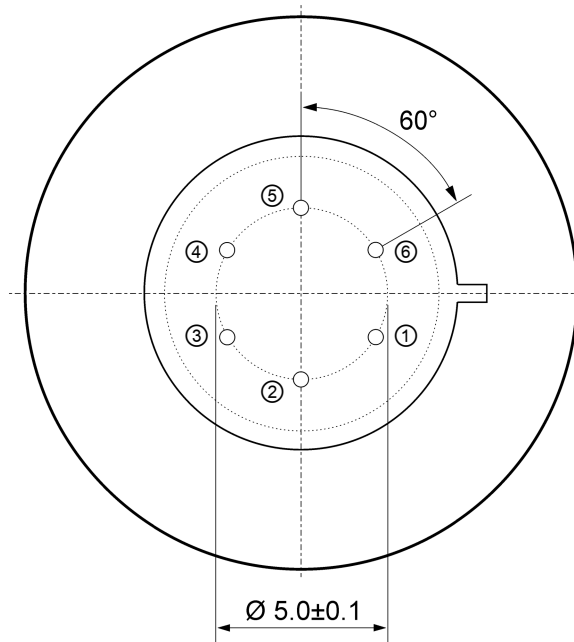
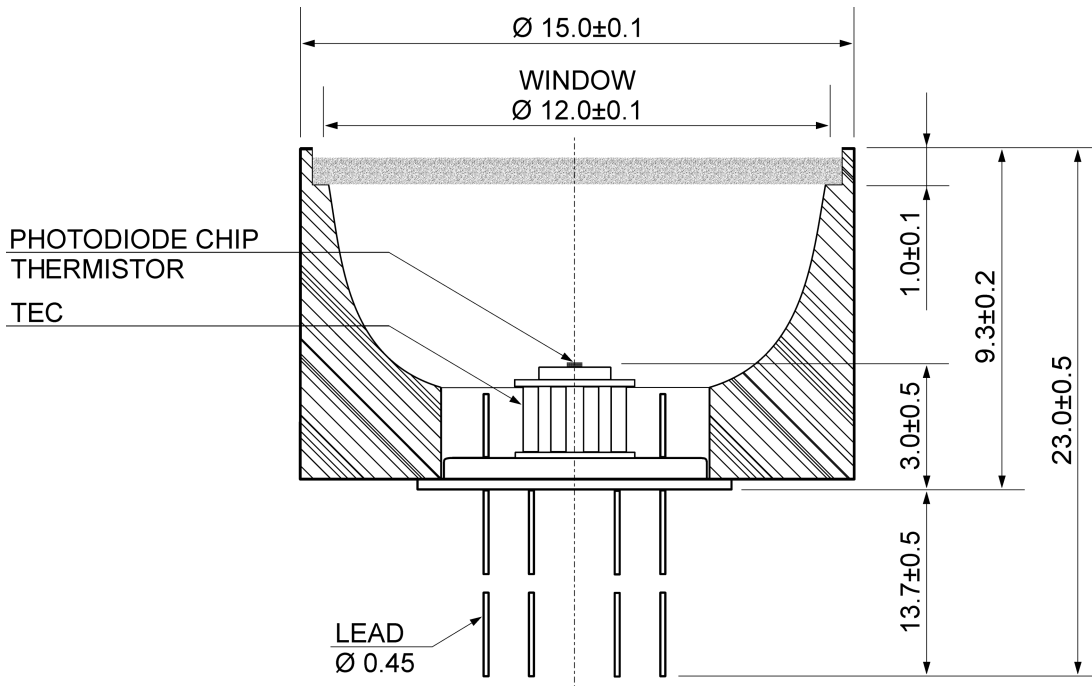
Dark current vs. reverse voltage



Thermoresistance vs. temperature



▼ TO-5 package with TEC & PR dimensions (unit: mm)



Pin	Description
①	TEC (anode)
②	Detector (anode)*
③	Detector (cathode)*
④	Thermistor TC103
⑤	
⑥	TEC (cathode)

\*Special order: the pin polarity can be changed.