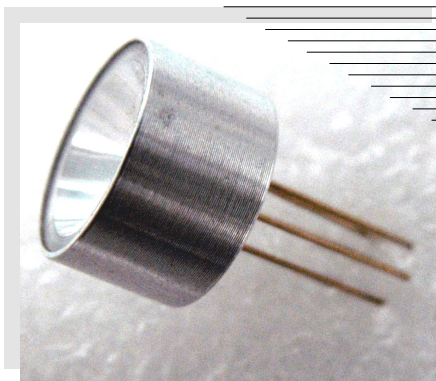


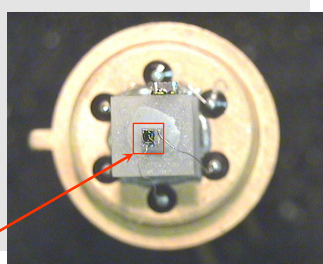


PHOTODIODE with TEC
PD48-03-TEC-PR



Features

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



Photodiode CHIP

Applications

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

Accessories (optional)

- **Amplifier with temperature controller AMT-07M**

Description

Photodiode **PD48-03-TEC-PR** is a model of **photodetector** with thermo electric cooler (TEC) and thermistor for a control of temperature. Components are integrated inside the standard 9.2 mm TO-5 package with parabolic reflector (PR).

Photodiode **PD48-03-TEC-PR** is designed for detection of radiation in the Middle Infrared (MIR) spectral range from 2500 to 4800 nm.

Diameter of the photosensitive area of **PD48-03-TEC-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).*It is possible to increase detectivity of the photodiode by a factor of 10 in the case of parallel beam of radiation.

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

General characteristics

Package	Parameter	Symbol	Value	Unit
TO-5 with TEC	Sensitive area diameter	d	0.3	mm
	Weight	m	3.65	g
	Operating temperature	T _{opr}	- 10...+ 40	°C
	Window material		Sapphire glass	
	Cooling		One-stage TE-cooled	
	Soldering temperature	T _s	230	°C
	Storage temperature	T _{stg}	- 20...+ 50	°C
	Maximum reverse bias voltage	V _b	- 0.5	V
	Size	D	15.0	mm
H		23.0		



Electrical and optical characteristics

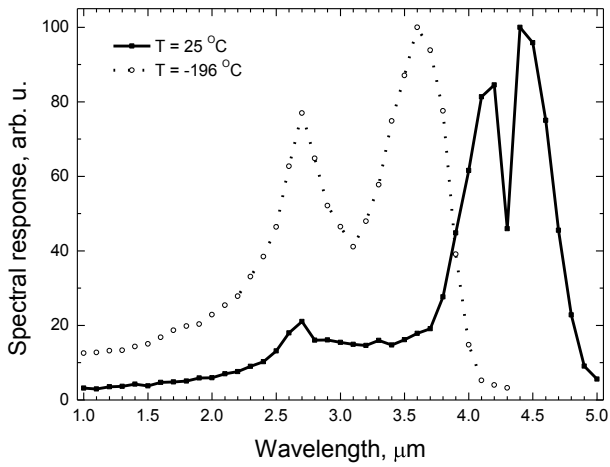
Parameter	Symbol	Element temperature			Unit
		0 °C	20 °C	40 °C	
Spectral sensitivity range (at level 10%)	λ	-	2.5 – 4.8	-	μm
Peak sensitivity wavelength (at level 90%)	λ_p	-	4.3 – 4.6	-	μm
Photo sensitivity (at λ_p)	S	-	0.6 – 0.8	-	A/W
Detectivity (at λ_p)	D^*	-	[5 – 8]·10 ⁸	-	$\text{cm}\cdot\text{Hz}^{1/2}\cdot\text{W}^{-1}$
Dark current (V = - 0.1 V)	I_d	0.4 – 0.6	0.6 – 1.0	≥ 1	mA
Rise time	t_r	-	10 – 20	-	ns
Terminal capacitance (V = - 0.1 V)	C	-	25 – 50	-	pF
Shunt resistance	R_0	800 – 1600	100 – 500	-	Ω
Noise equivalent power (at λ_p)	NEP	-	-	-	$\text{W}\cdot\text{Hz}^{-1/2}$

TEC T0506.1MC0400710.TB103 parameters (without load)

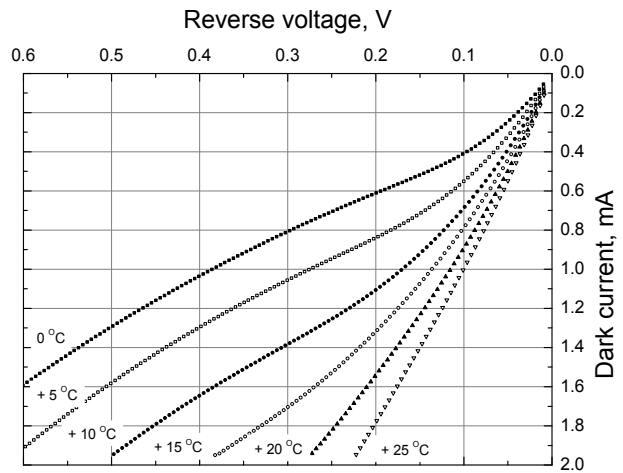
Parameter	Symbol	Value	Unit
Current power (Δt_{max})	I_{max}	1.50	A
Voltage (Δt_{max})	U_{max}	0.80	V
Cooling energy	Q_{max}	1.30	W
Temperature range (vacuum)	ΔT_{max}	70	K
Termistor resistance (t = 20 °C)	R_t	10.00	k Ω



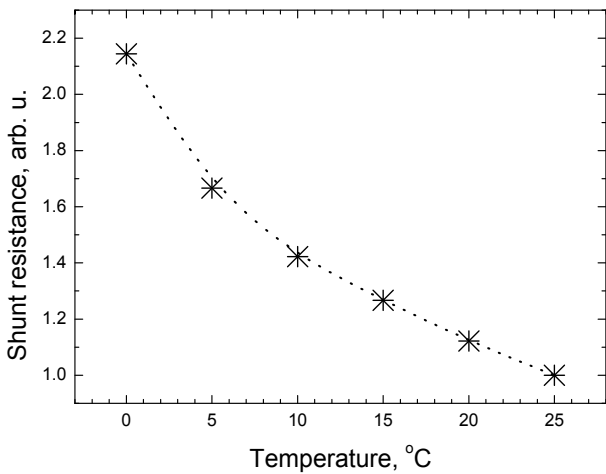
▼ Spectral response



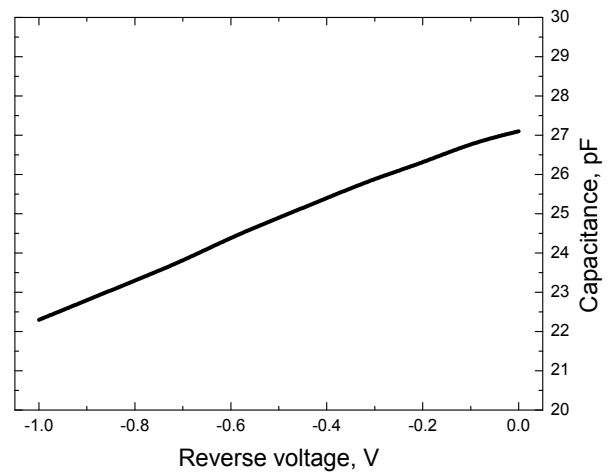
▼ Dark current vs. reverse voltage



▼ Shunt resistance vs. element temperature

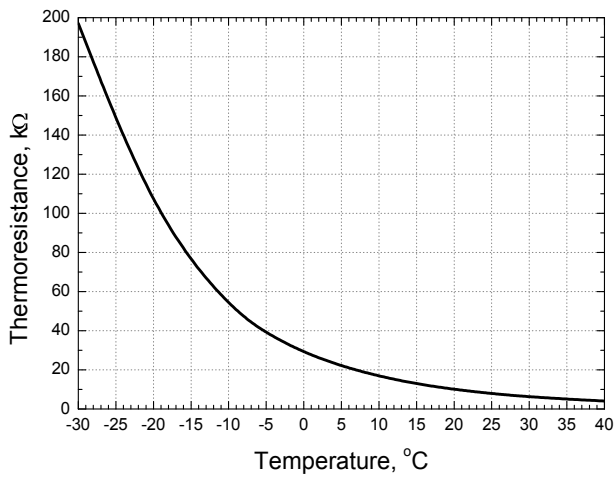


▼ Capacitance vs. reverse voltage





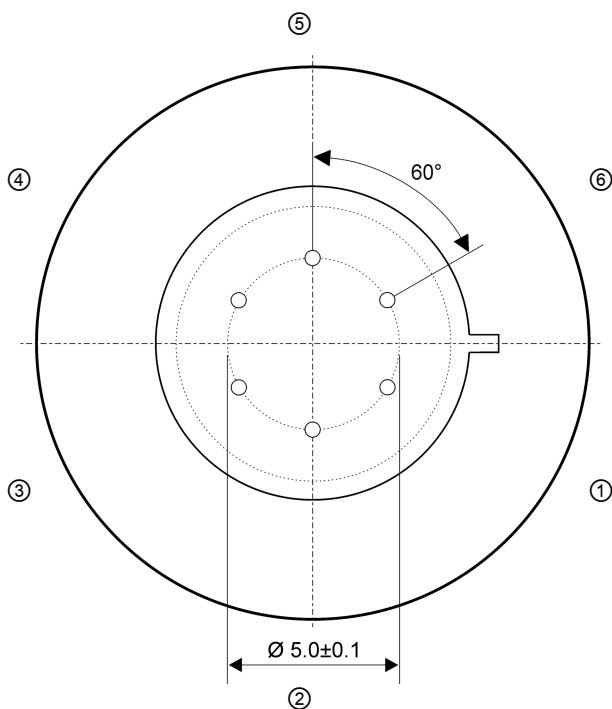
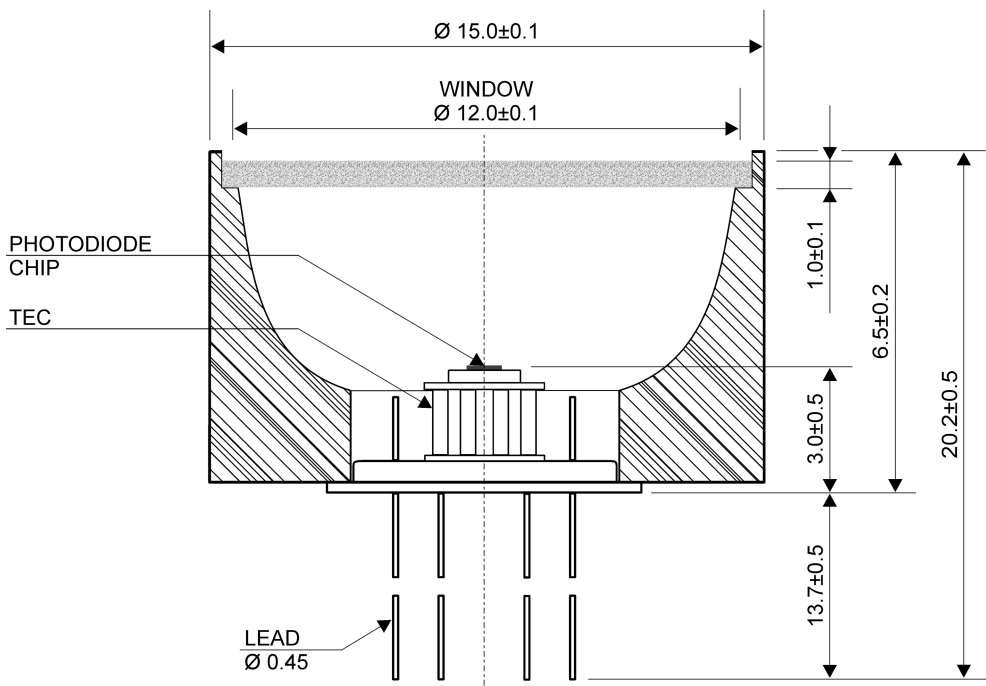
▼ Thermoresistance vs. temperature



▼ Photo sensitivity temperature characteristic



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



- ① TEC +
- ② PD +
- ③ PD -
- ④ Termistor TC103
- ⑤ Termistor TC103
- ⑥ TEC -