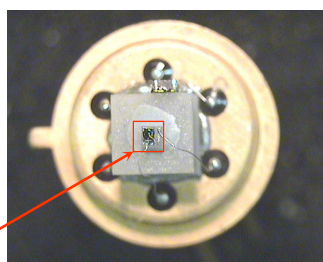


Features

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



Photodiode CHIP

Description

Photodiode **PD48-03-NS-TEC** 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.

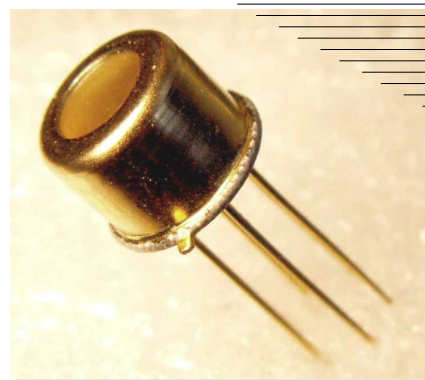
Photodiode **PD48-03-NS-TEC** has thermo electric cooler (TEC) and thermistor for a control of temperature. Components are integrated inside the standard 9.2 mm TO-5 package with TEC.

Diameter of the photosensitive area of **PD48-03-NS-TEC** is 300 μm . High speed of response makes it possible for detection of modulated radiation of laser diodes (LDs) and light-emitting diodes (LEDs).

Related products: **PD48-03-NS-TEC** can be used in optical pair with our [LED37FC](#), [LED375](#), [LED390](#), [LED405](#), [LED415](#), [LED445](#).

General characteristics

Package	Parameter	Symbol	Value	Unit
TO-5 with TEC	Sensitive area diameter	d	0.3	mm
	Weight	m	1.15	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	9.2	mm
		H	20.2	



Applications

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

Accessories (optional)

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

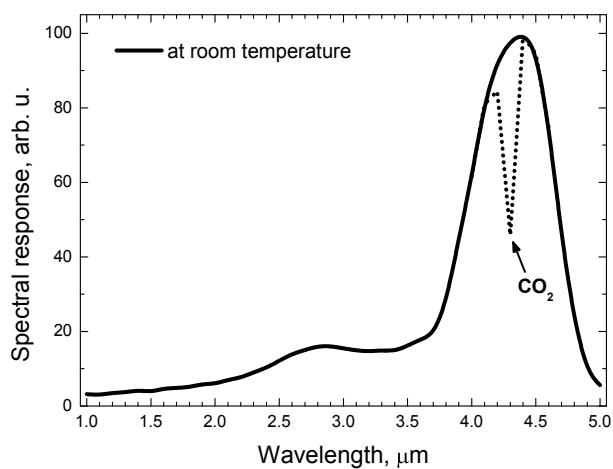
Electrical and optical characteristics

Parameter	Symbol	Element temperature			Unit
		0 °C	+ 20 °C	+ 40 °C	
Spectral sensitivity range (at level 10%)	λ	-	2.5 - 4.9	-	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^*	-	$[5 - 8] \cdot 10^8$	-	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$
Dark current ($V_b = - 0.1 \text{ V}$)	I_d	0.4 - 0.6	0.6 - 1.0	≥ 1	mA
Rise & Fall time	t_r	-	10 - 20	-	ns
Terminal capacitance ($V_b = - 0.1 \text{ V}$)	C	-	25 - 50	-	pF
Shunt resistance	R_0	800 - 1600	100 - 500	-	Ω
Noise equivalent power (at λ_p)	NEP	-	-	-	$\text{W} \cdot \text{Hz}^{-1/2}$

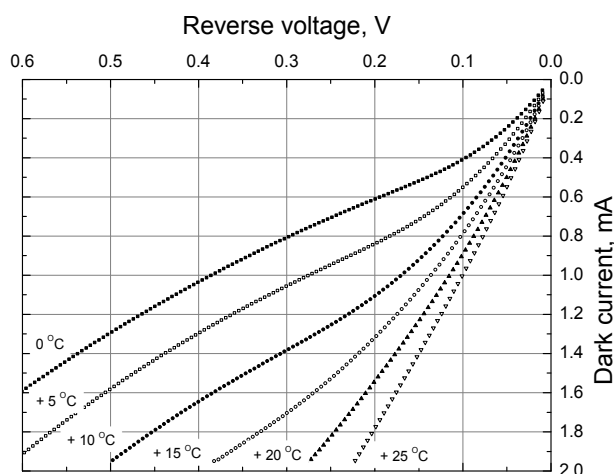
TEC TO506.1MC0400710.TB103 parameters (without load)

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 ($T = + 20 \text{ }^\circ\text{C}$)	R_t	10.00	k Ω

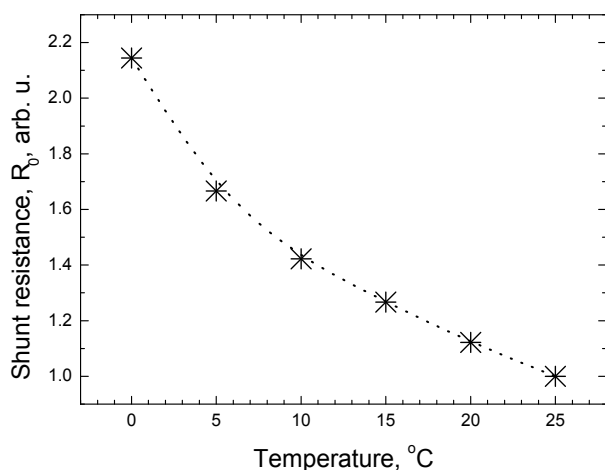
▼ Spectral response



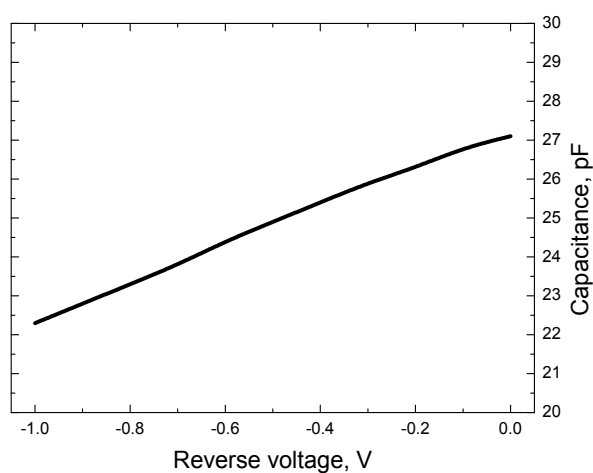
▼ Dark current vs. reverse voltage



▼ Shunt resistance vs. temperature



▼ Capacitance vs. reverse voltage



Thermoresistance vs. temperature

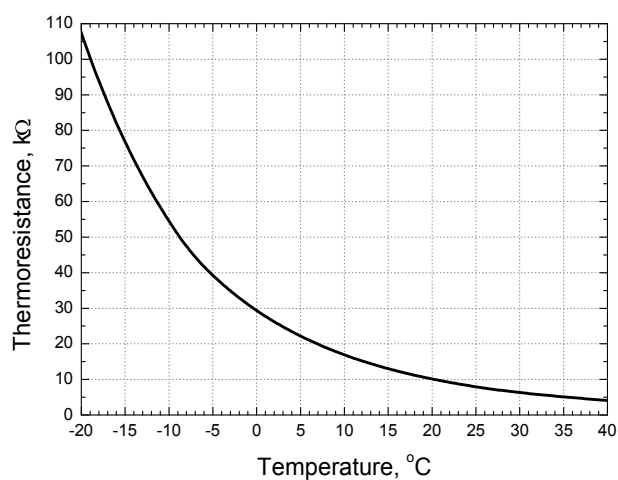
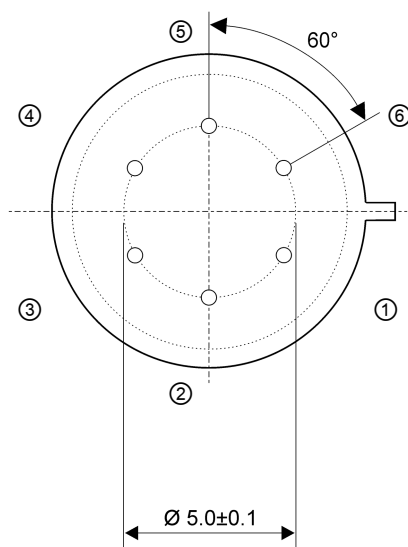
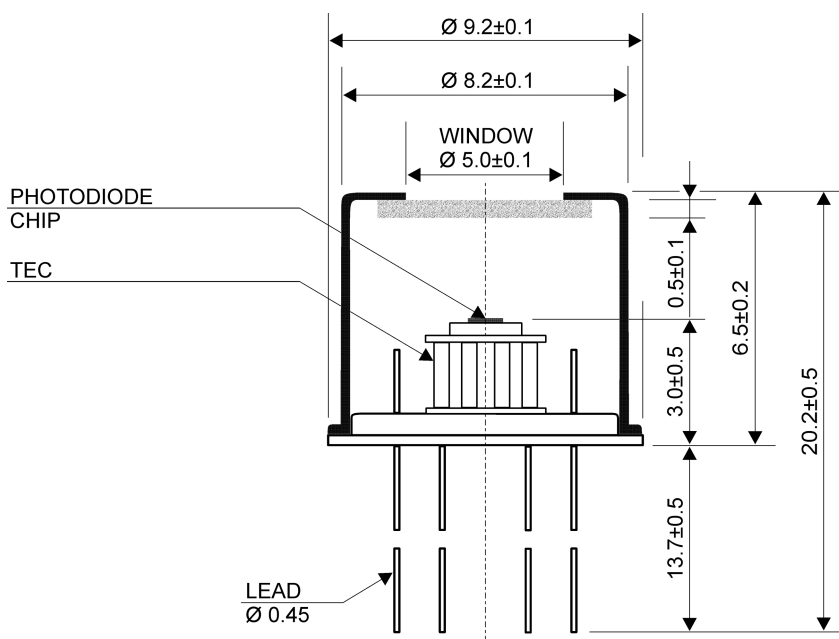


Photo sensitivity temperature characteristic

▼ T0-5 package with TEC dimensions (unit: mm)



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