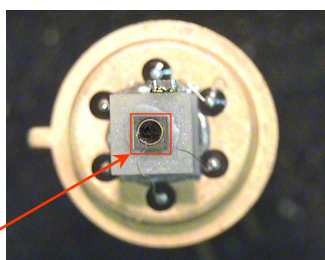


Features

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



Photodiode CHIP

Description

Photodiode **PD24-10-TEC** is a model of [photodetector](#) for detection of radiation at room temperature in the Middle Infrared (Mid-IR) spectral range from 1150 to 2400 nm.

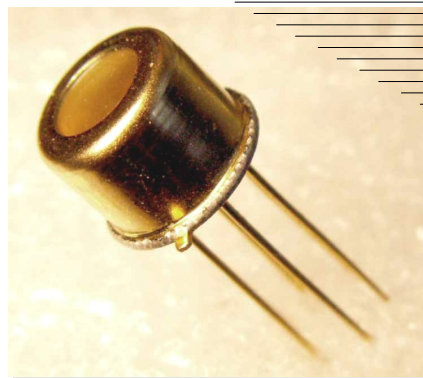
Photodiode **PD24-10-TEC** has thermo electric cooler (**TEC**) and thermistor for a control of temperature. Components are integrated inside the standard 9.2 mm TO-5 package with **TEC**.

Diameter of the photosensitive area of **PD24-10-TEC** is 1 mm. High speed of response makes it possible for detection of modulated radiation of laser diodes (LDs) and light-emitting diodes (LEDs).

Related products: **PD24-10-TEC** can be used in optical pair with our [LED11...LED23](#) and [LD200...LD230](#).

General characteristics

Package	Parameter	Symbol	Value	Unit
TO-5 with TEC	Sensitive area diameter	d	1.0	mm
	Weight	m	1.15	g
	Operating temperature	T _{opr}	- 20...+ 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	- 2.0	V
	Size	D	9.2	mm
		H	20.2	



Applications

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

Accessories (optional)

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

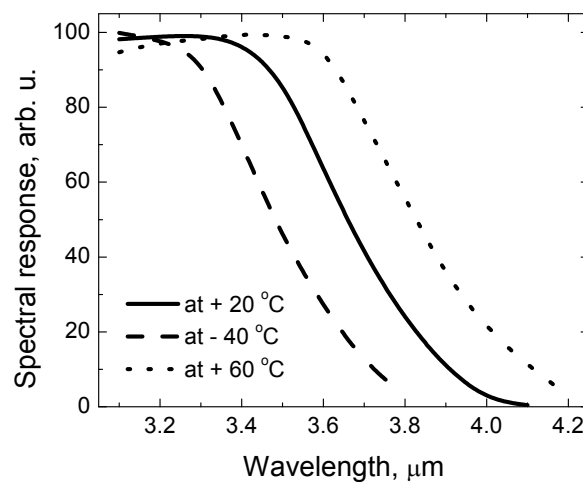
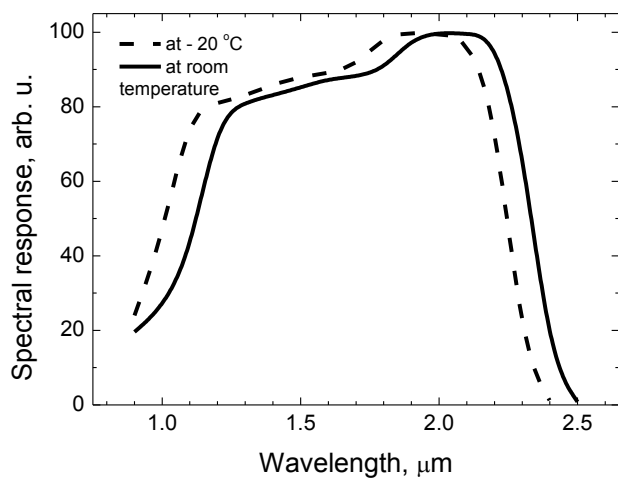
Electrical and optical characteristics

Parameter	Symbol	Condition	Element temperature			Unit
			- 20 °C	0 °C	+ 20 °C	
Spectral sensitivity range	λ	at level 10%	1.20 - 2.32	-	1.20 - 2.42	μm
Peak sensitivity wavelength	λ_p	at level 90%	1.63 - 2.14	-	1.85 - 2.24	μm
Photo sensitivity	S	at λ_p	0.9 - 1.1			A/W
Detectivity	D^*	at λ_p	$[1 - 2] \cdot 10^{11}$	-	$[5 - 8] \cdot 10^{10}$	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$
Dark current	I_d	$V = -0.2 \text{ V}$	1 - 5	-	20 - 60	μA
		$V = -0.5 \text{ V}$	3 - 10	-	30 - 100	
		$V = -1.0 \text{ V}$	7 - 30	-	50 - 150	
Capacitance	C	$V = 0 \text{ V}$ $f = 1 \text{ MHz}$	450 - 1500	-	500 - 2000	pF
Rise time	t_r	$V = 0 \text{ V}$ $R_L = 50 \Omega$	50 - 200			ns
Fall time	t_f					
Shunt resistance	R_0	$V \approx -10 \text{ mV}$	15 - 80	-	2 - 10	k Ω
Noise equivalent power	NEP	at D^*	$[1.8 - 8.9] \cdot 10^{-13}$	-	$[3.5 - 2.2] \cdot 10^{-12}$	$\text{W} \cdot \text{Hz}^{-1/2}$

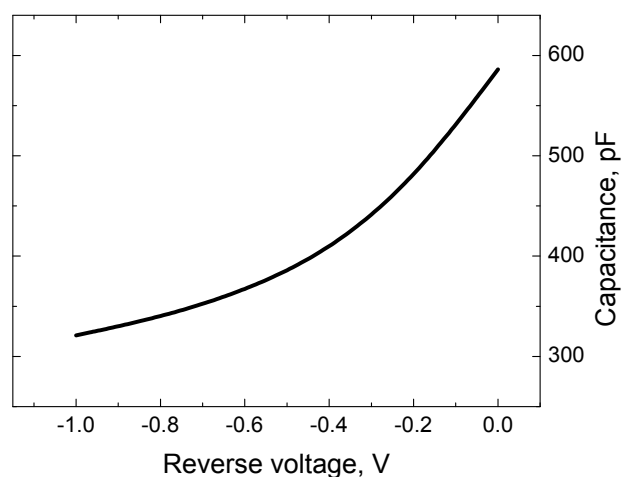
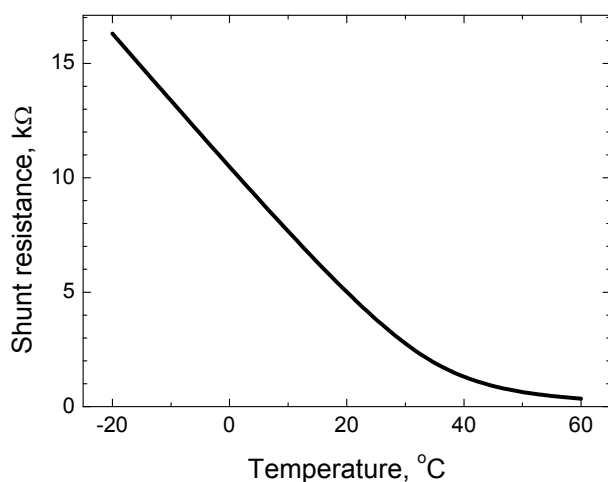
TEC TO506.1MC0400710.TB103 parameters (without load)

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

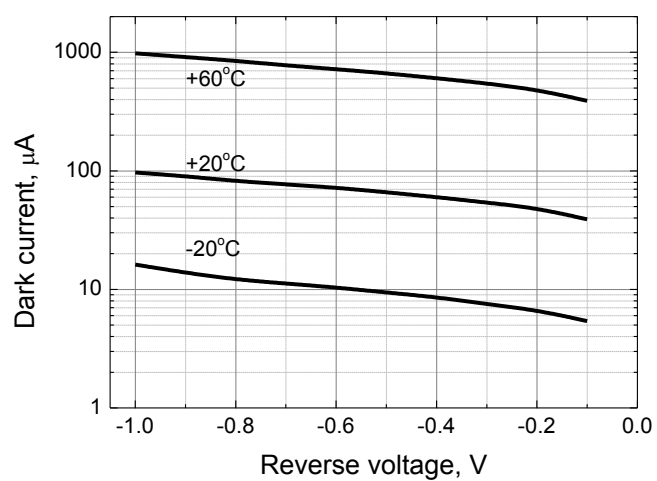
▼ Spectral response



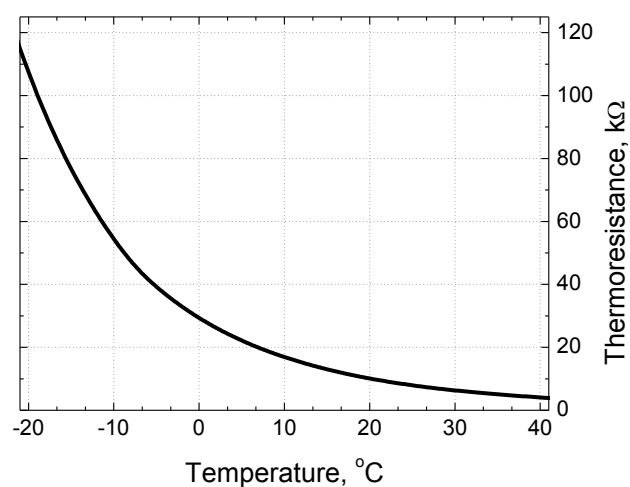
▼ Shunt resistance vs. element temperature ▼ Capacitance vs. reverse voltage



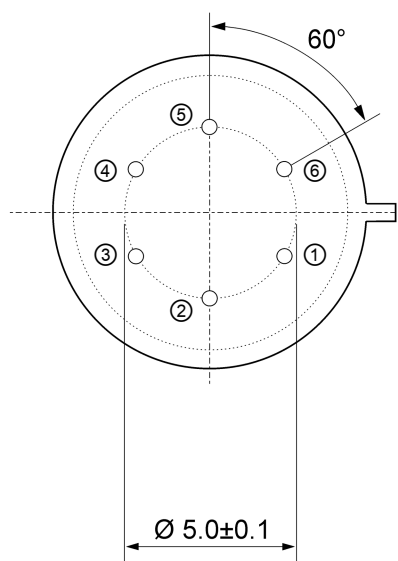
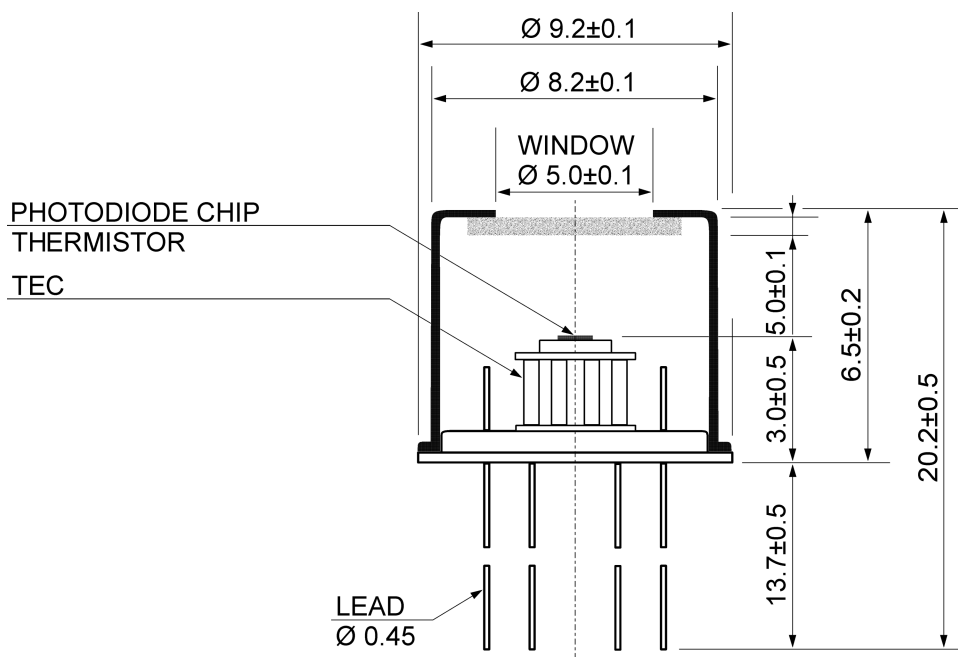
Dark current vs. reverse voltage



Thermoresistance vs. temperature



▼ TO-5 package with TEC 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.