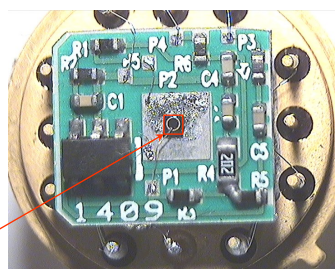
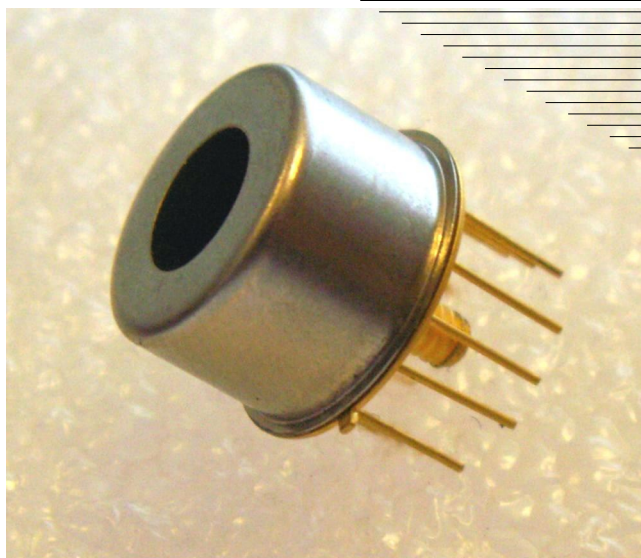


Features

- High sensitivity
- High reliability
- Superior linearity
- Thermo stability



Photodiode CHIP



Applications

- Optical measurement equipment
- Analytical instruments

Description

Photodiode amplifier with TEC **AMP48-05-NS** is a model of [photodetector](#), consist of [photodiode](#) PD48-05-NS, pre-amplifier, thermoelectric cooler (TEC) and thermistor for a control of temperature. Components are integrated inside the standard 15.2 mm TO-8 package with TEC.

Photodiode amplifier with TEC **AMP48-05-NS** is designed for detection of radiation in the Middle Infrared (Mid-IR) spectral range from 3700 to 4800 nm. [Heterostructures](#) with the InAsSbP active layer are grown on InAs substrates.

Photosensitive area of **AMP48-05-NS** is $0.45 \times 0.45 \text{ mm}^2$. Fast response makes it possible for detection of modulated radiation of laser diodes (LDs) and light-emitting diodes (LEDs).

Related products: **AMP48-05-NS** can be used in optical pair with our [LED38...LED46](#).

General characteristics

NS - narrow spectrum

Package	Parameter	Symbol	Value	Unit
TO-8 with TEC	Chip size (photosensitive area)	A	0.45×0.45	mm ²
	Weight	m	4.0	g
	Operating temperature	T _{opr}	0...+30	°C
	Window material	Sapphire glass		
	Cooling	One-stage TE-cooled		
	Soldering temperature	T _s	+230	°C
	Storage temperature	T _{stg}	-20...+40	°C
	Size	D	15.2	mm
		H	16	

▼ Electrical and optical characteristics (absolute maximum values at +20°C)

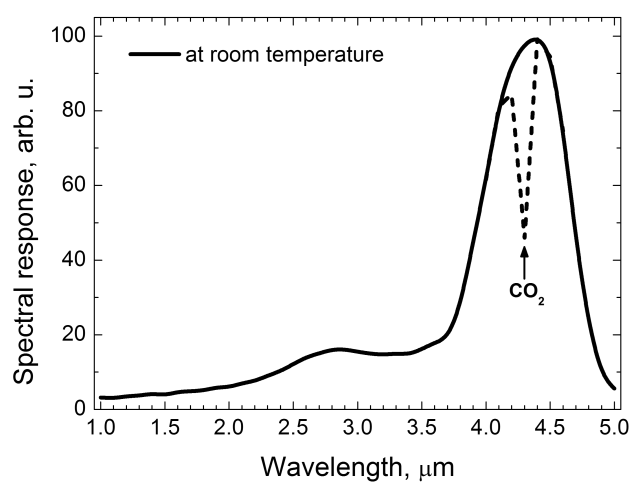
Parameter	Symbol	Value	Unit
Spectral sensitivity range (at level 10%)	λ	2.5-4.9	μm
Peak sensitivity wavelength	λ_p	4.3-4.6	μm
Volt sensitivity	S_v	$4 \cdot 10^4$	V/A
Detection threshold (at λ_{max})	P	10^{-7}	W
Detectivity	D^*	$[5 \cdot 10] \cdot 10^8$	$\text{cm} \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$
Frequency range	Δf	0.15-30	kHz
Rise time	t_r	120	μs
Fall time	t_f	120	μs
Output impedance	R	20	Ω
Maximal amplitude of output signal	V_{amp}	<2.5	V
External power supply	V_p	5-6 (stabilized)	V
Output noise voltage (peak to peak at $\Delta f \approx 30$ kHz)	V_N	10	mV
Output signal		AC	
Output polarity		Negative	

▼ TEC 1MC06-018-08 parameters (without load)

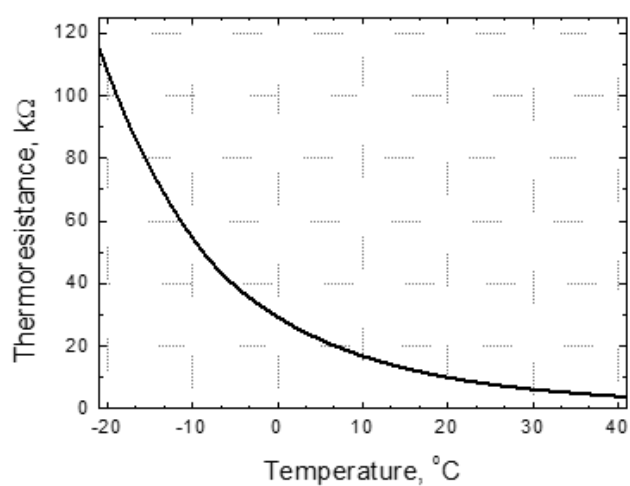
Parameter	Symbol	Value	Unit
Current (ΔT_{max})	I_{max}	2.20	A
Voltage (ΔT_{max})	U_{max}	2.20	V
Cooling energy	Q_{max}	2.65	W
Temperature range (vacuum)	ΔT_{max}	70	K
Thermistor resistance (+20°C)	R_t	10.00	k Ω

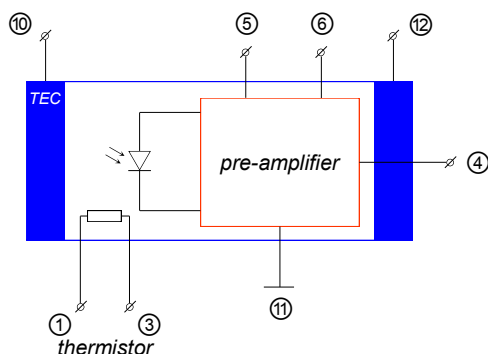
* Recommend to use all capacitances type of TKE: "X7R"

▼ Spectral response



▼ Thermoresistance vs. temperature

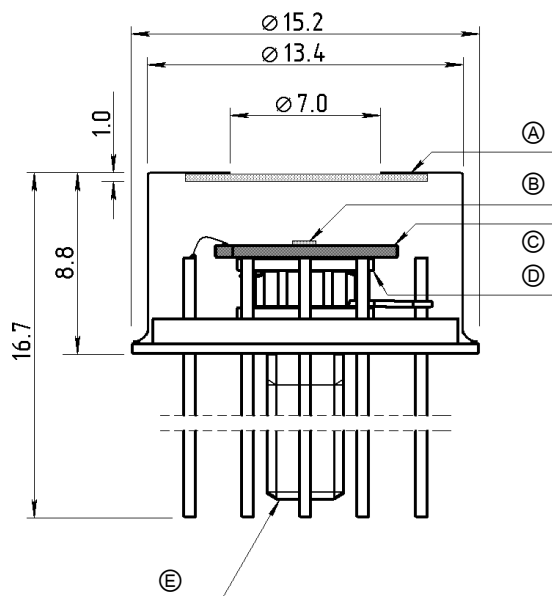




Pin	Description
①	Thermistor TC103
③	
④	Signal output
⑤	+5 V
⑥	0 V
⑩	TEC -
⑫	TEC +
⑪	GND
②, ⑦, ⑧, ⑨	Not applicable

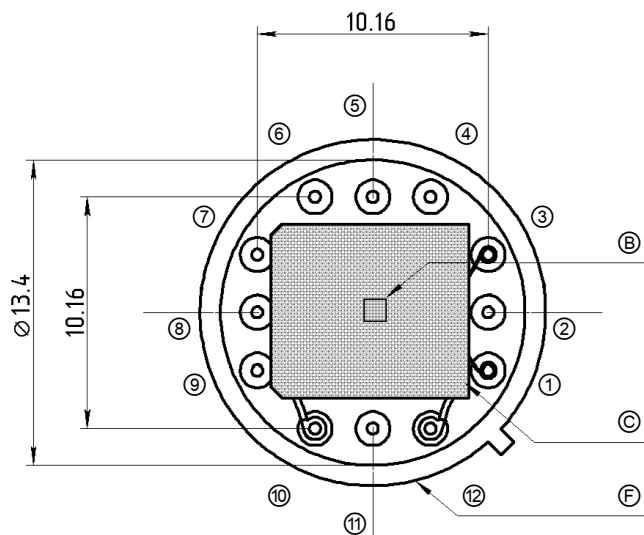
▼ Package dimensions (unit: mm)

PROFILE SIDE VIEW



- Ⓐ WINDOW
- Ⓑ Photodiode CHIP
- Ⓒ Pre-amplifier

TOP SIDE VIEW (without cap)



- Ⓓ TEC 1MC06-018-08
- Ⓔ 4-40 UNC
- Ⓕ TO-8 12 pin header

