LED Microsensor NT

Mid-Infrared (MIR) Photodiode

1.0 - 2.46 µm

Lms24PD-10 series

Device parameters	Symbol	Value	Units
Sensitive area diameter	d	1.0	mm
Storage temperature	T_{stg}	-50..+60*	°C
Operating temperature	T_{opr}	-60..+90*	°C
Reverse voltage	V_r	1.0	V

*Operating temperature for a PD with a built-in preamplifier is 0..+50 °C

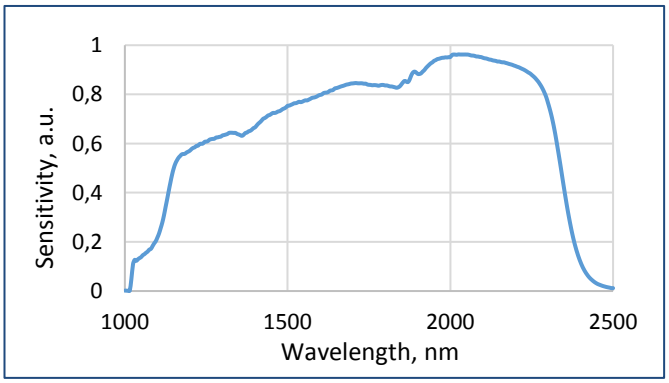
*PD design for higher storage/operating temperature is available under request

Photodiode parameters	Conditions	Symbol	Value	Units
Cut-off wavelength	T = 25 °C	λ_{cut}	2.40 - 2.46	µm
Max. sensitivity range (>80%)	T = 25 °C	λ_p	1.4 - 2.2	µm
Dark current	T = 25 °C; V_r = 1 V	I_d	100 - 300	µA
Shunt resistance	T = 25 °C; V_r = 10 mV	R_{sh}	1 - 3	kΩ
Capacitance	T = 25 °C; $\lambda = \lambda_p$	C	1000 - 5000	pF
Sensitivity	T = 25 °C; $\lambda = \lambda_p$	S	0.8 - 0.9	A/W
Noise equivalent power	T = 25 °C; $\lambda = \lambda_p$	NEP	$(2.5\text{-}5.0)*10^{-12}$	$W/Hz^{1/2}$
Detectivity	T = 25 °C; $\lambda = \lambda_p$	D*	$(2.0\text{-}3.5)*10^{10}$	$cm \cdot Hz^{1/2} \cdot W^{-1}$

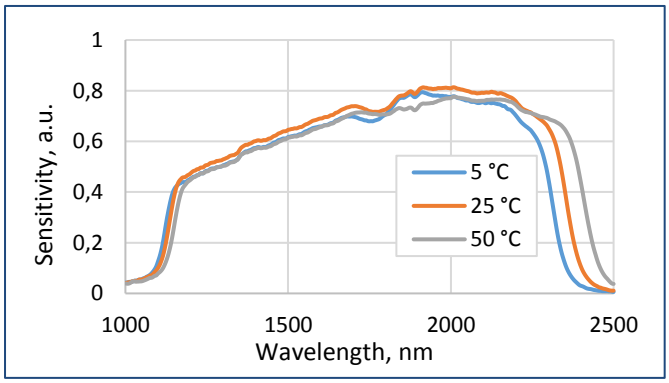
Photodiodes Lms24PD-10 series are fabricated from narrow band-gap GaInAsSb/AlGaAsSb-based heterostructures lattice matched to GaSb substrate.

All specifications are for photodiode operation at 25°C unless otherwise stated

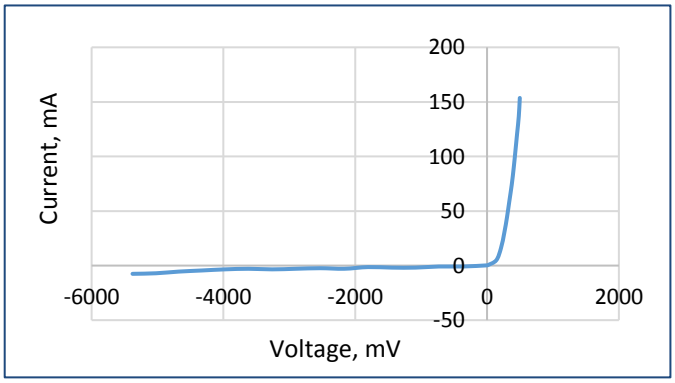
Typical spectral response



Temperature shift of spectral response



Typical current-voltage characteristic



HEAD OFFICE LED Microsensor NT, LLC and RnD CENTRE Microsensor Technology, LLC
10, A, Kurchatova str., 1N, St-Petersburg, 194223, Russia; info@lmsnt.com; www.lmsnt.com

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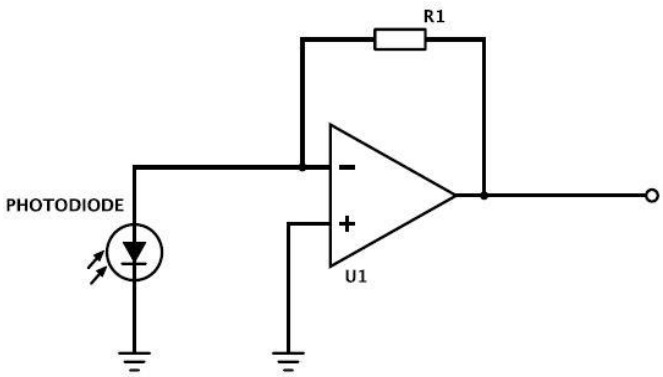
Mid-Infrared (MIR) Photodiode

1.0 - 2.46 µm

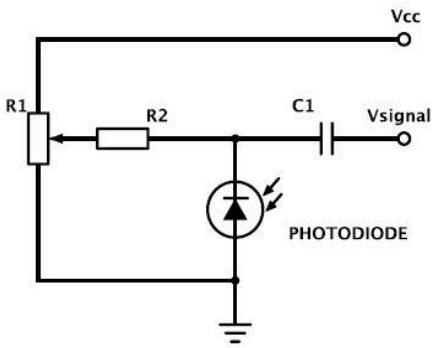
Packages	Model
TO-18 with a cap without a glass window	Lms24PD-10
TO-18 with a parabolic reflector without a glass window	Lms24PD-10-R
TO-18 with a parabolic reflector with a glass window	Lms24PD-10-RW
TO-5 with a built-in thermocooler and thermoresistor, covered by a cap with a glass window	Lms24PD-10-TEM
TO-5 with a built-in thermocooler and thermoresistor, covered by a parabolic reflector with a glass window	Lms24PD-10-TEM-R
PD with a built-in preamplifier; TO-18 with a parabolic reflector without a window in an aluminum tube	Lms24PD-10-R-PA
PD with a built-in preamplifier; TO-18 with a parabolic reflector with a window in an aluminum tube	Lms24PD-10-RW-PA

Recommended modes of PD operation

PD used as a current source (photovoltaic mode)



PD used in a photoconductive mode (under reverse bias)



We recommend using **photovoltaic mode**, when PD is used under no reverse bias.
Use photoconductive mode (mode with reverse bias) with caution.

IMPORTANT CAUTIONS:

- please check your connection circuit before turning on the PD;
- please mind the PD polarity: PD anode is marked with a RED dot;
- please do not connect the PD to the multimeter.

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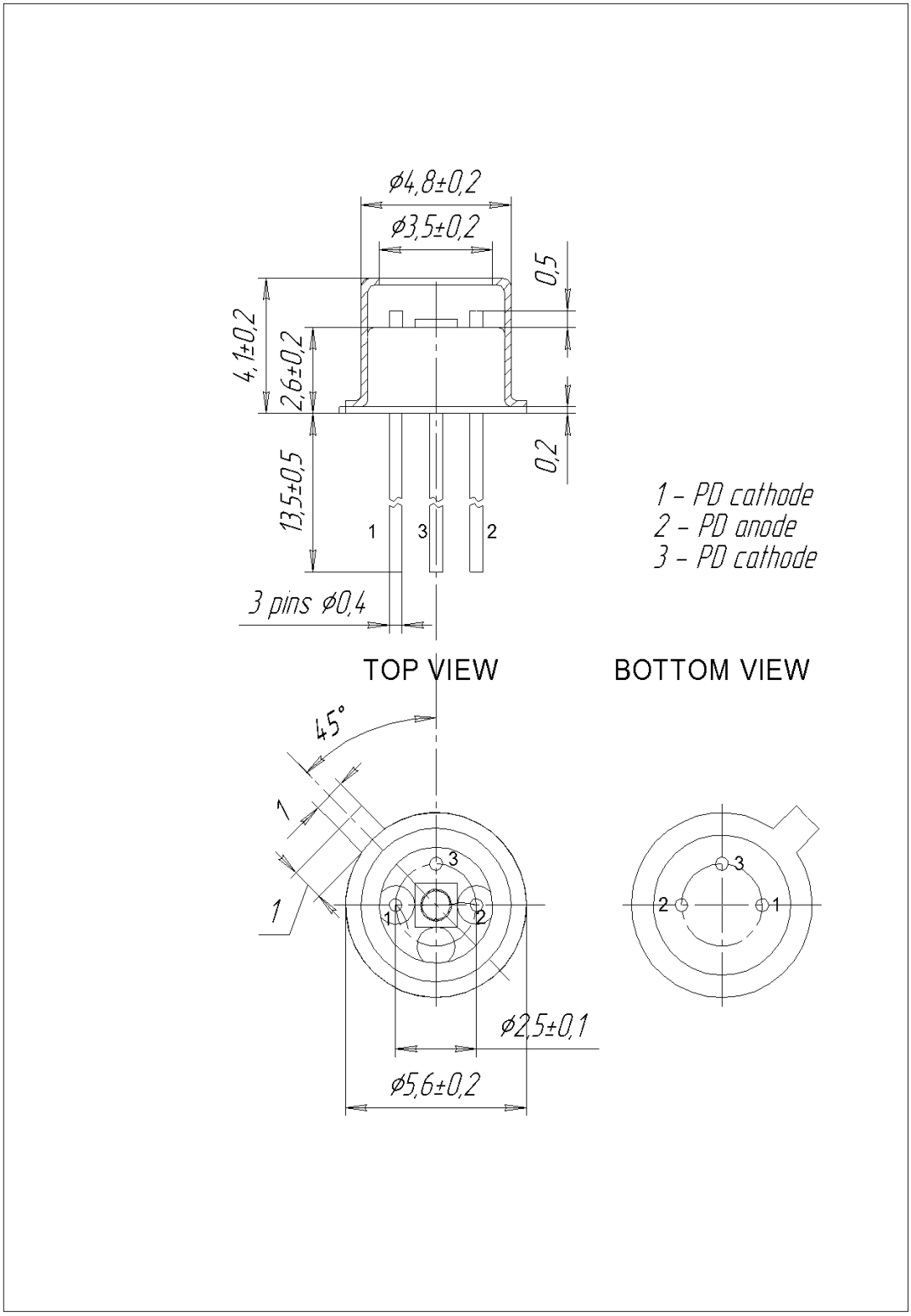
Technical Drawings

Lms24PD-10



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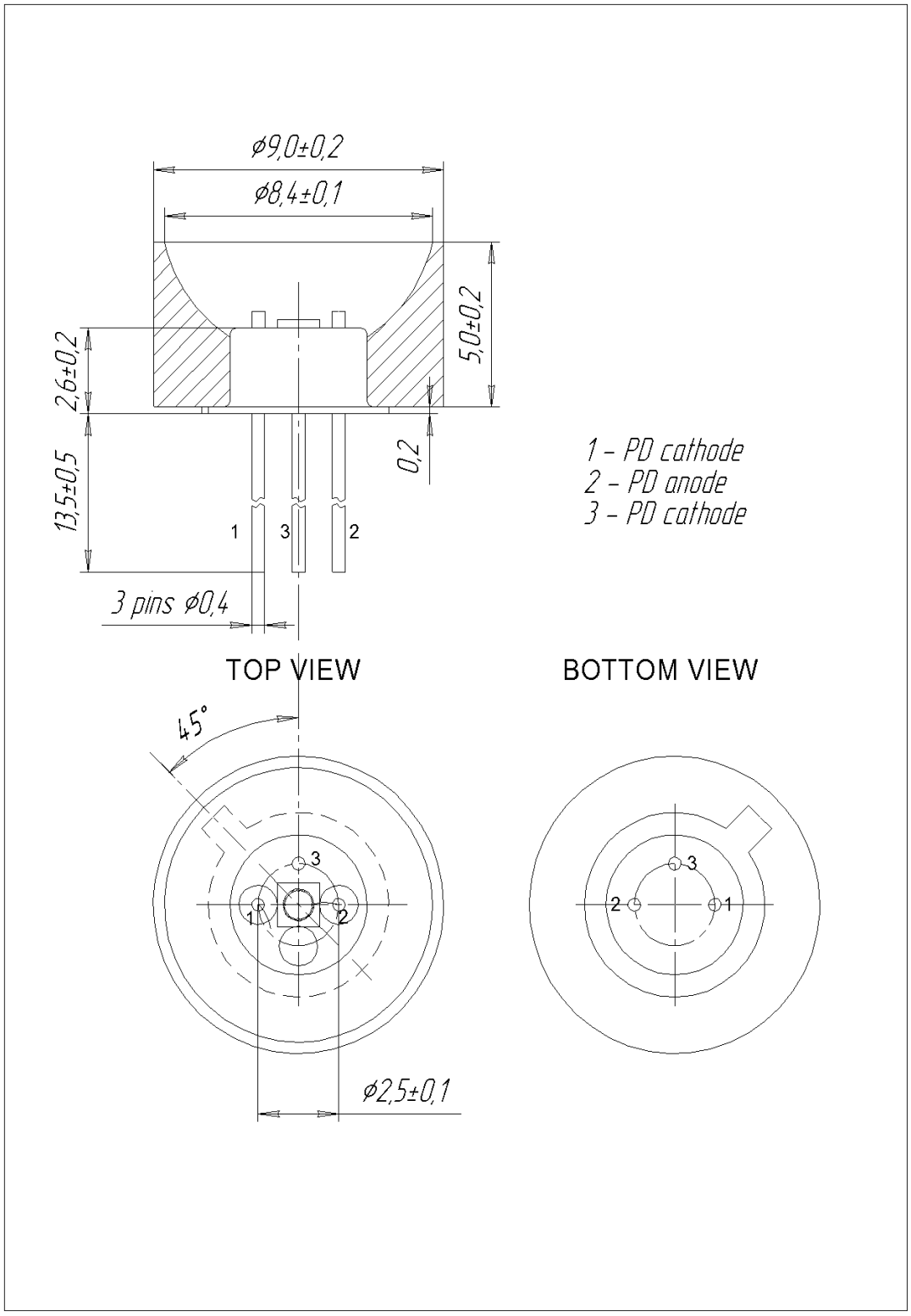
Technical Drawings

Lms24PD-10-R



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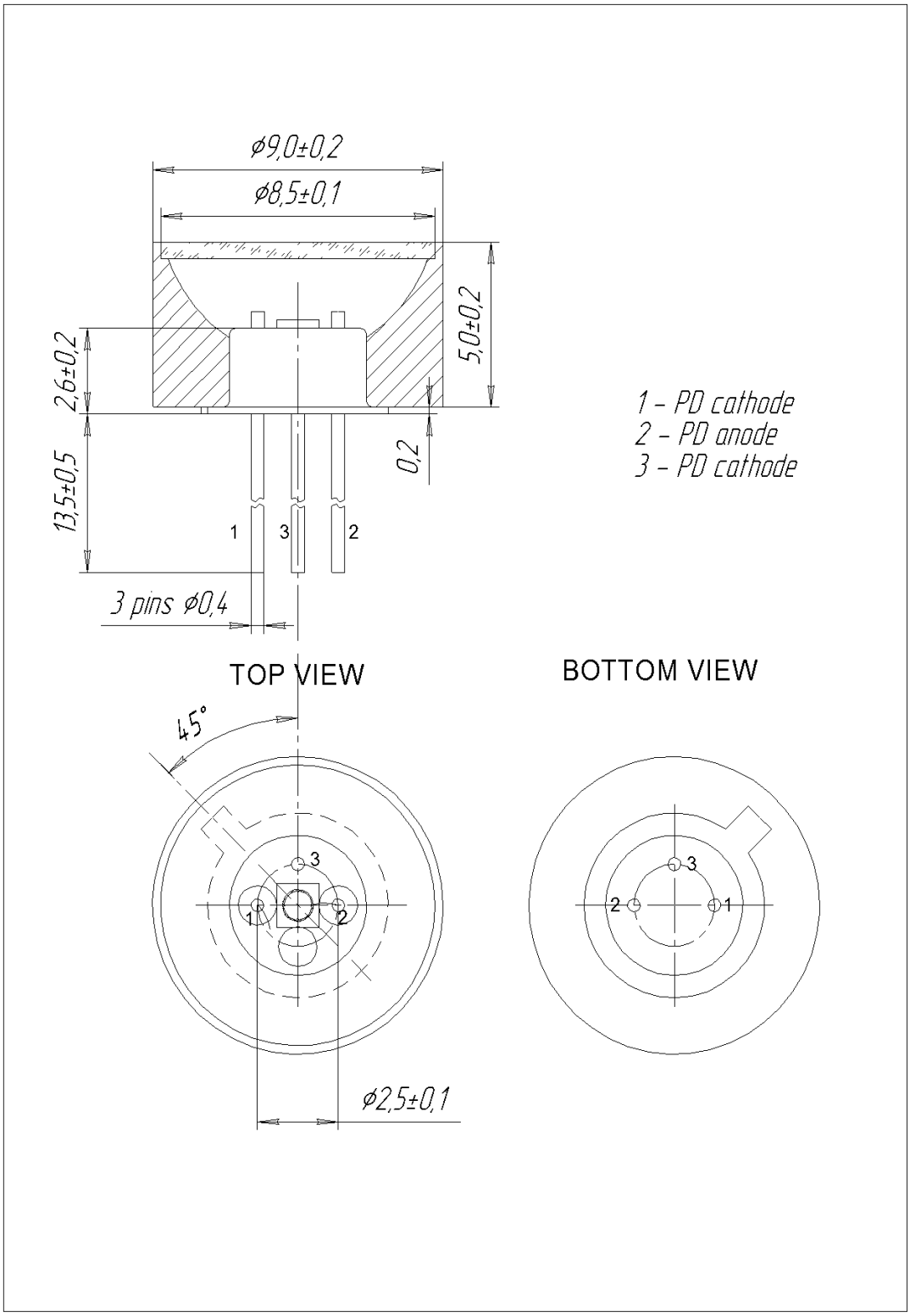
Technical Drawings

Lms24PD-10-RW



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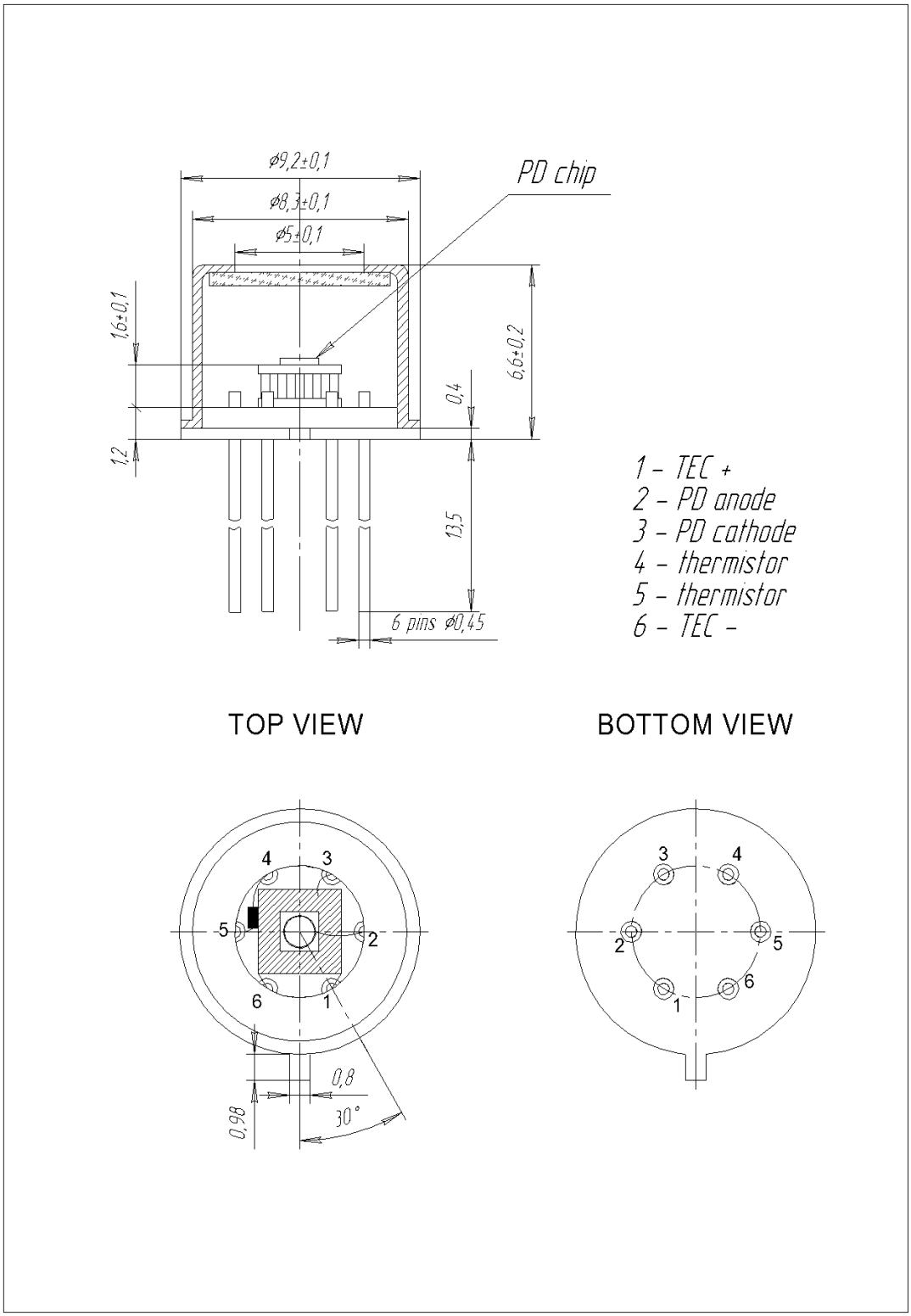
Technical Drawings

Lms24PD-10-TEM



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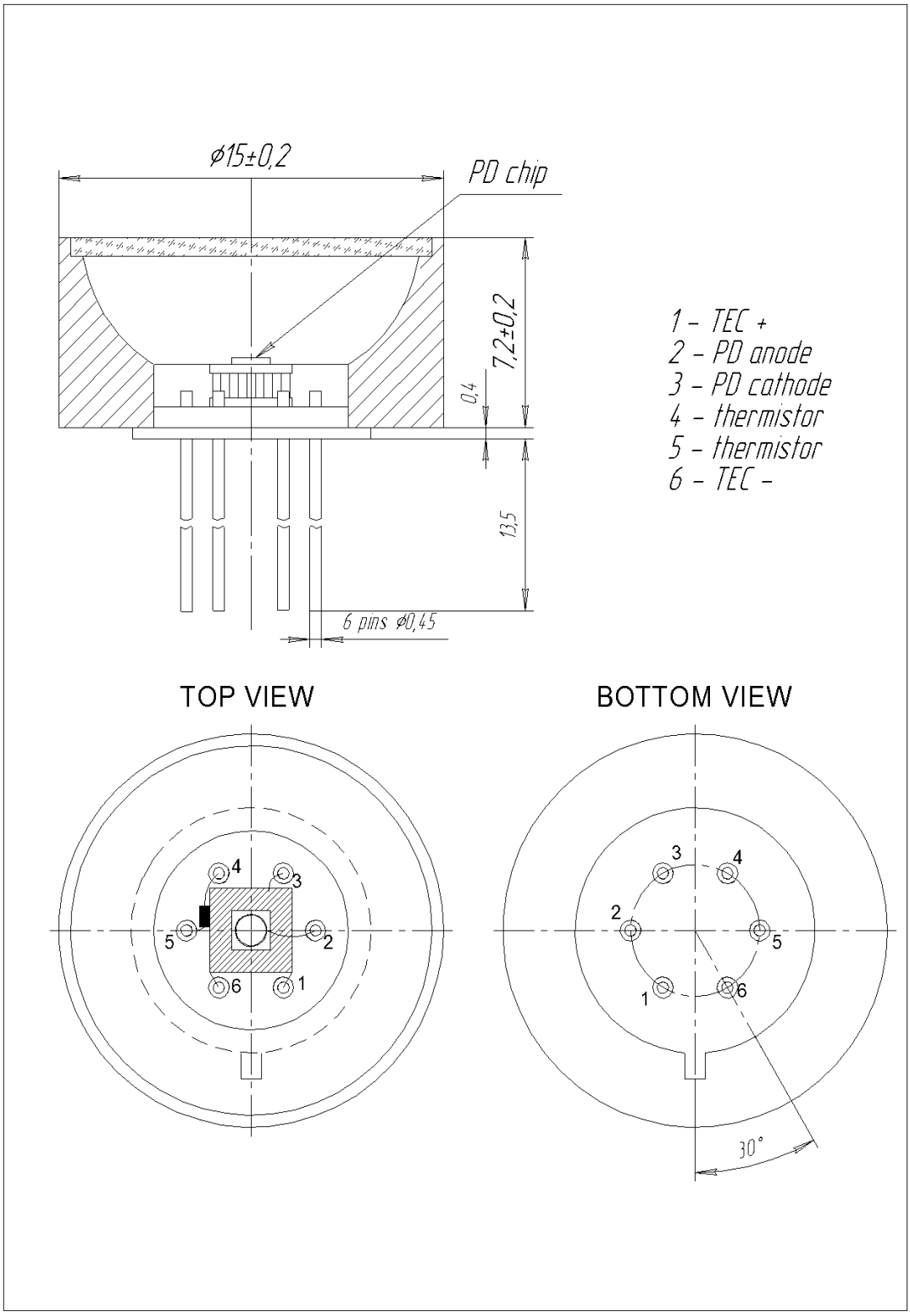
Technical Drawings

Lms24PD-10-TEM-R



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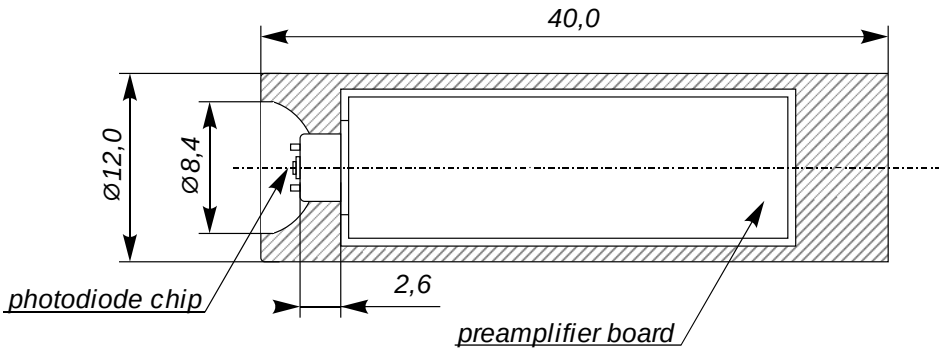
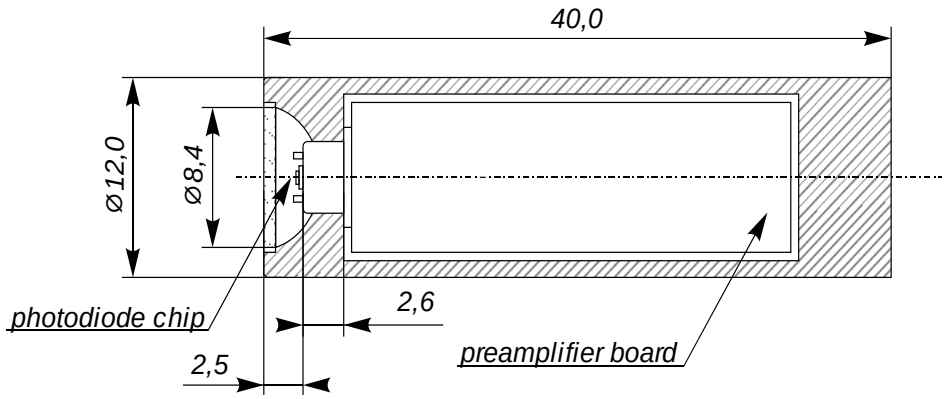
Technical Drawings

Lms24PD-10-R-PA



Lms24PD-10-RW-PA



Power input voltage: +5 V, stabilized;

Connections:

The output of PD with a built-in preamplifier has four wires:

- "+" power input (to the "+" of the power output terminal block of the SDM synchronous detector);
- "-" power input (to the "-" of the power output terminal block of the SDM synchronous detector);
- output photodiode signal (to the "-" of the signal input terminal block of the SDM synchronous detector);
- output photodiode signal (to the "+" of the signal input terminal block of the SDM synchronous detector).

For the proper connection mind colours of the wires pointed in the technical data provided with the photodiode.

Related products:

- **LEDs** - sources of mid-infrared radiation;
- **SDM** - synchronous detector for PD models with preamplifiers - Lms MIR PD-XX-R-PA and Lms MIR PD-XX-RW-PA.

SDM synchronous detector measures the voltage signal from the output of photodiode preamplifier and converts it to the DC voltage signal proportional to amplitude of voltage from input.

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