

Lms40PD-05-CG series

Device parameters	Symbol	Value	Units
PD chip sensitive area diameter	d	0.5	mm
Operating temperature	T_{opr}	0..+50	$^{\circ}\text{C}$
Storage temperature	T_{stg}	0..+50	$^{\circ}\text{C}$
Soldering temperature (time < 3 seconds, 3 mm from the case)	T_{sol}	+180	$^{\circ}\text{C}$
Reverse voltage	V_r	0.1	V



All parameters refer to photodiode operation at ambient temperature 25 $^{\circ}\text{C}$ unless otherwise stated.

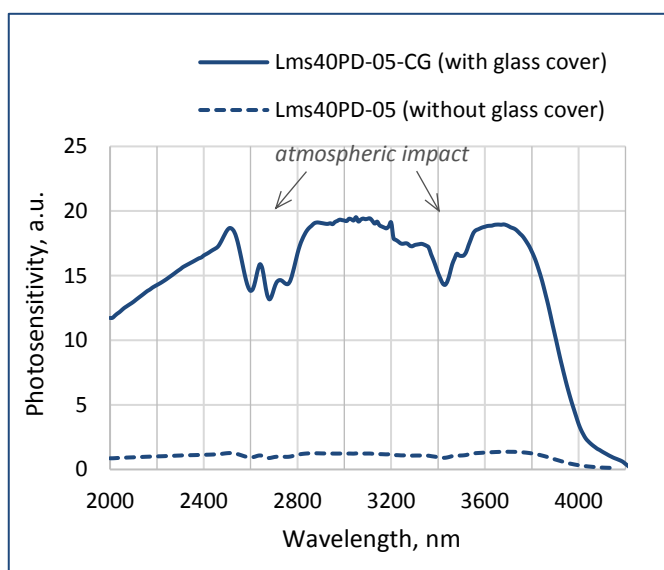
Photodiode parameters	Conditions	Symbol	Value	Units
Cut-off wavelength (at 10% level) ¹	-	λ_{cut}	≥ 4.0	μm
Max. sensitivity range (at 80% level) ¹	-	λ_p	2.3 - 3.85	μm
Dark current (typical/ maximal) ²	$V_r = 0.1 \text{ V}$	I_d	typ 1.1 / max 1.8	mA
Shunt resistance (minimal/ typical) ²	$V_r = 10 \text{ mV}$	R_{sh}	min 35 / typ 50	Ω
Capacitance (typical/ maximal) ¹	$V_r = 10 \text{ mV}$	C	N/A	pF
Noise equivalent power (typical/ maximal) ^{2, 3}	$\lambda = 4.1 \mu\text{m}$	NEP	typ $1.2 \cdot 10^{-12}$ / max $3.8 \cdot 10^{-12}$	$\text{W/Hz}^{1/2}$
Detectivity (minimal/ typical) ^{2, 3}	$\lambda = 4.1 \mu\text{m}$	D^*	min $1.1 \cdot 10^{10}$ / typ $3.5 \cdot 10^{10}$	$\text{cm}^2 \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$

¹ Parameter tested for representative sampling.

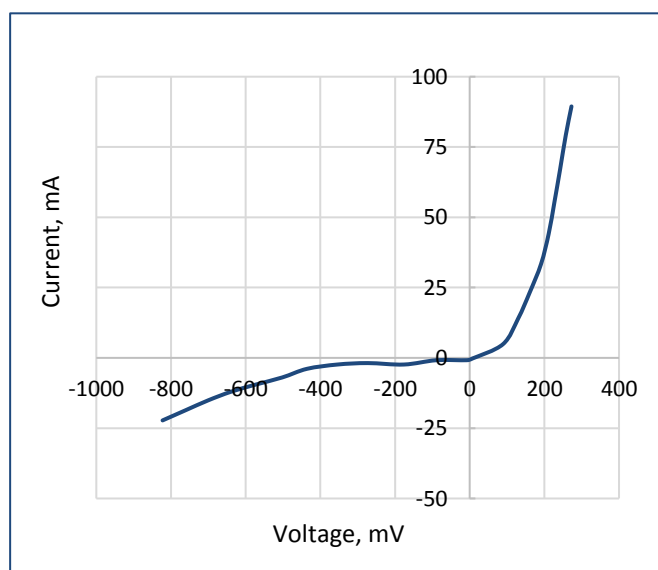
² Parameter tested for each device.

³ Parameters are calculated using photosensitivity value [A/W] obtained for the same photodiode prior to glass covering multiplied by the coefficient equal to the ratio of response of PD with and without glass covering (measured at $\lambda = 4.1 \mu\text{m}$).

Typical spectral response



Typical current-voltage characteristic

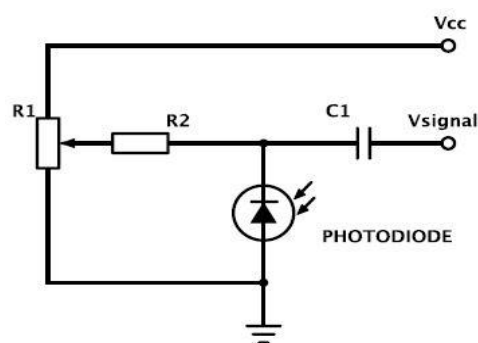
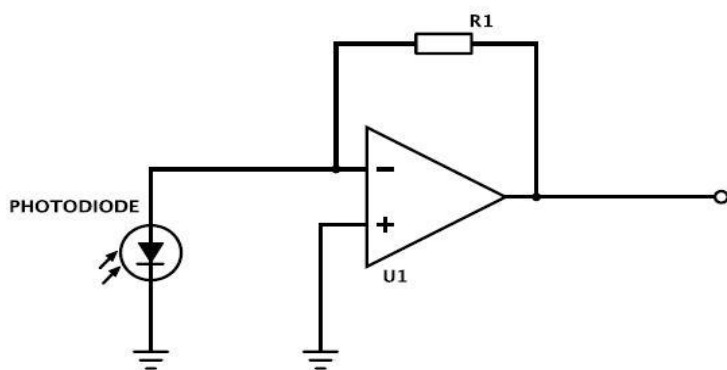


Packages	Model
TO-18 with a glass cover	Lms40PD-05-CG
PD with a built-in preamplifier; TO-18 with a glass cover and a parabolic reflector without a window in an aluminium tube	Lms40PD-05-CG-R-PA

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:

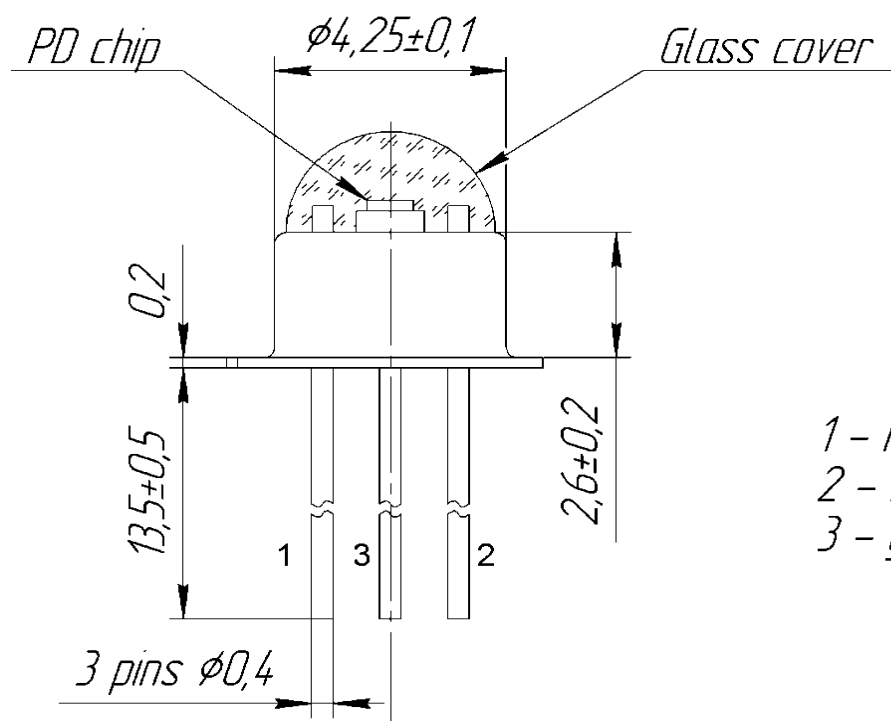
- check your connection circuit before turning on the PD;
- mind the PD polarity: PD anode is marked with a RED dot;
- do not connect the PD to the multimeter;
- do not touch the glass covering and do not apply any force to it;
- observe the allowable operating temperature range, exceeding this range may cause irreparable damage of the glass cover

Related products:

- **Light emitting diodes (LEDs)** - sources of IR radiation;
- **PAb preamplifier** - amplifies photocurrent generated by a PD and converts it into a voltage signal;
- **SDM synchronous detector** - enables synchronous operation of a PD coupled with a preamplifier and an LED coupled with a driver; performs conversion of an output PD preamplifier signal into DC voltage signal.

Technical Drawings

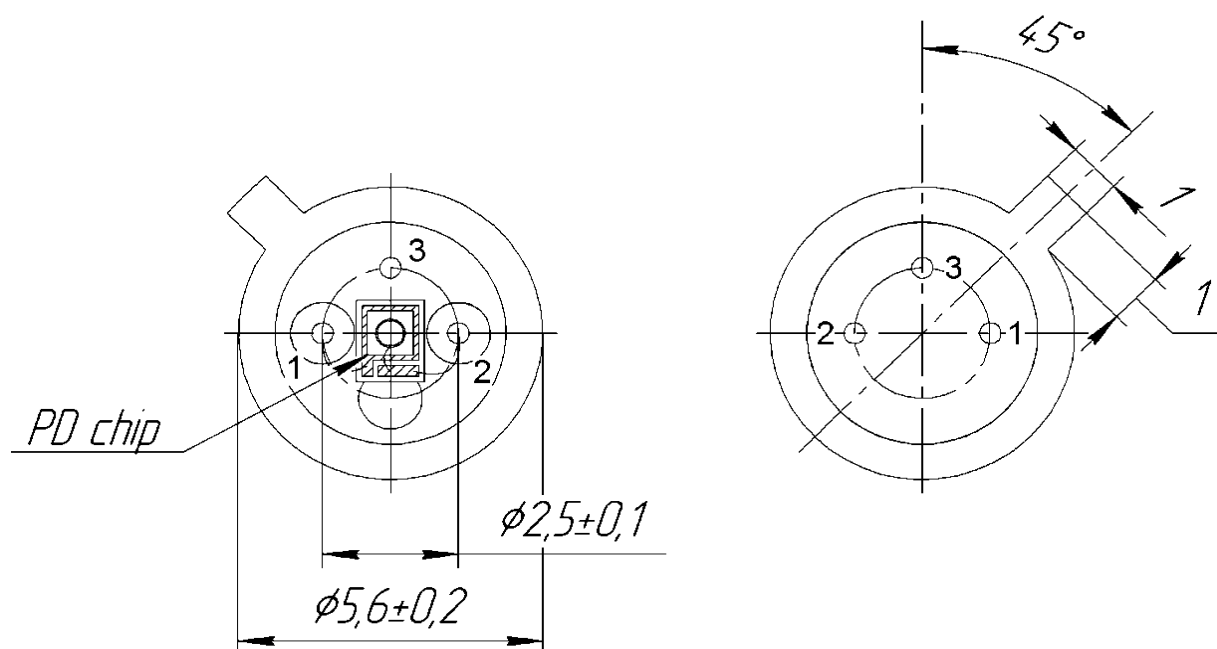
Lms40PD-05-CG



- 1 – PD cathode
- 2 – PD anode
- 3 – ground pin

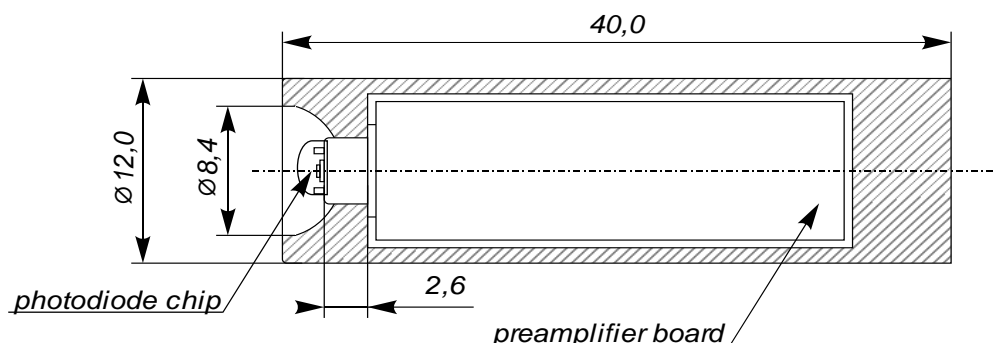
TOP VIEW

BOTTOM VIEW



Technical Drawings

Lms40PD-05-CG-R-PA



Power input voltage: +5 V, stabilized;

Connections:

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

- "+ Signal" power input (to the "+5V" of the power output terminal block of the SDM synchronous detector);
- "ground" power input (to the "0V" of the power output terminal block of the SDM synchronous detector);
- "ground" output photodiode signal (to the "0V" of the signal input terminal block of the SDM synchronous detector);
- "+" output photodiode signal (to the "IN" of the signal input terminal block of the SDM synchronous detector).

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