

## Lms43PD-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..+40	$^{\circ}\text{C}$
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.

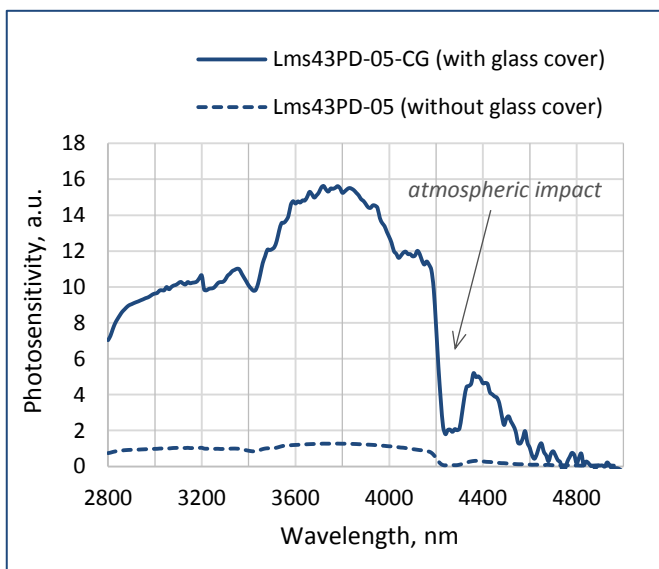
Photodiode parameters	Conditions	Symbol	Value	Units
Cut-off wavelength (at 10% level) <sup>1</sup>	-	$\lambda_{cut}$	4.5 - 4.8	$\mu\text{m}$
Max. sensitivity range (at 80% level) <sup>1</sup>	-	$\lambda_p$	3.5 - 4.2	$\mu\text{m}$
Dark current (typical/ maximal) <sup>2</sup>	$V_r = 0.1 \text{ V}$	$I_d$	typ 15 / max 25	mA
Shunt resistance (minimal/ typical) <sup>2</sup>	$V_r = 10 \text{ mV}$	$R_{sh}$	min 4 / typ 5	$\Omega$
Capacitance (typical/ maximal) <sup>1</sup>	$V_r = 10 \text{ mV}$	C	N/A	pF
Noise equivalent power (typical/ maximal) <sup>2,3</sup>	$\lambda = 4.1 \mu\text{m}$	NEP	typ $4.8 \cdot 10^{-12}$ / max $1.1 \cdot 10^{-11}$	$\text{W}/\text{Hz}^{1/2}$
Detectivity (minimal/ typical) <sup>2,3</sup>	$\lambda = 4.1 \mu\text{m}$	$D^*$	min $3.9 \cdot 10^9$ / typ $8.8 \cdot 10^9$	$\text{cm}^2 \cdot \text{Hz}^{1/2} \cdot \text{W}^{-1}$

<sup>1</sup> Parameter tested for representative sampling.

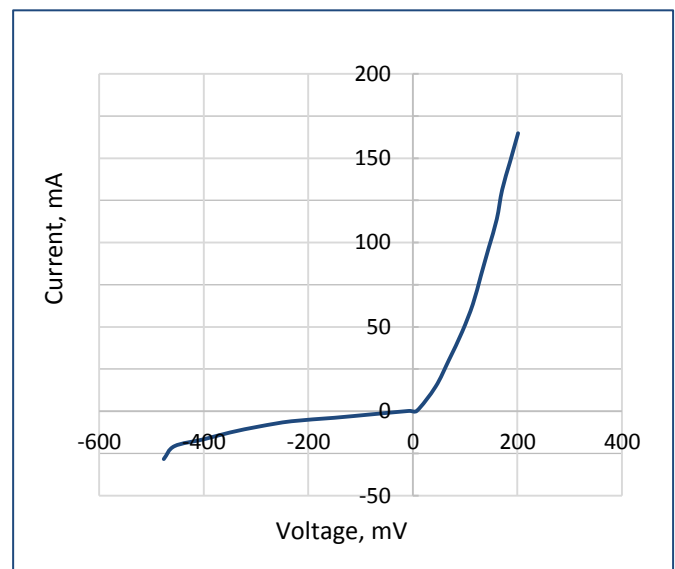
<sup>2</sup> Parameter tested for each device.

<sup>3</sup> 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

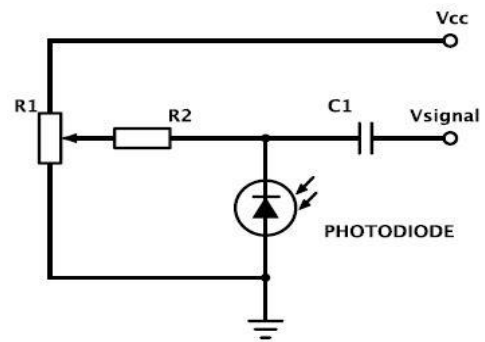
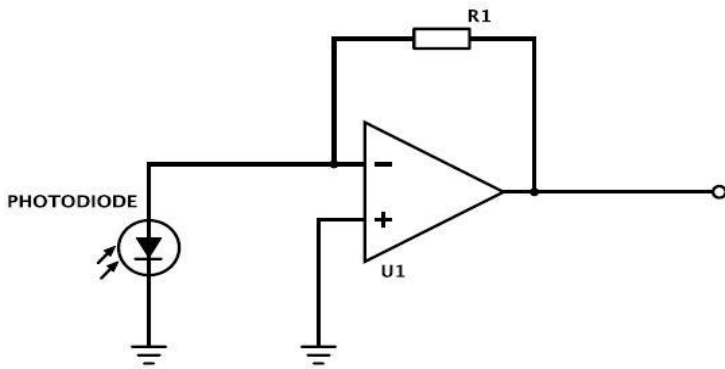


Packages	Model
TO-18 with a glass cover	Lms43PD-05-CG
PD with a built-in preamplifier; TO-18 with a glass cover and a parabolic reflector without a window in an aluminium tube	Lms43PD-05-CG-R-PA

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:**

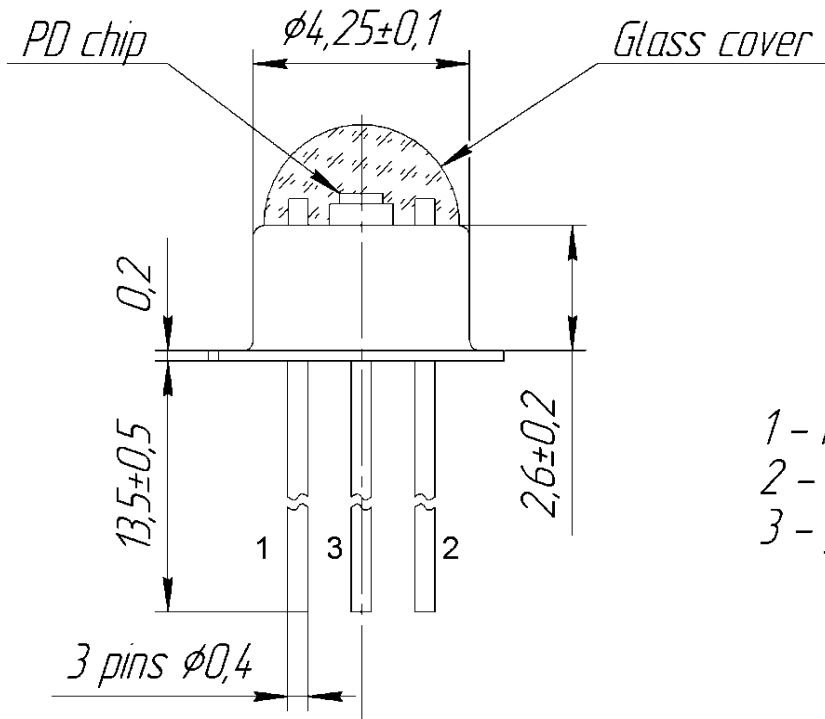
- check your connection circuit before turning on the PD;
- mind the PD polarity: PD anode is marked with a RED dot;
- do not connect the PD to the multimeter;
- do not touch the glass covering and do not apply any force to it;
- observe the allowable operating temperature range, exceeding this range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

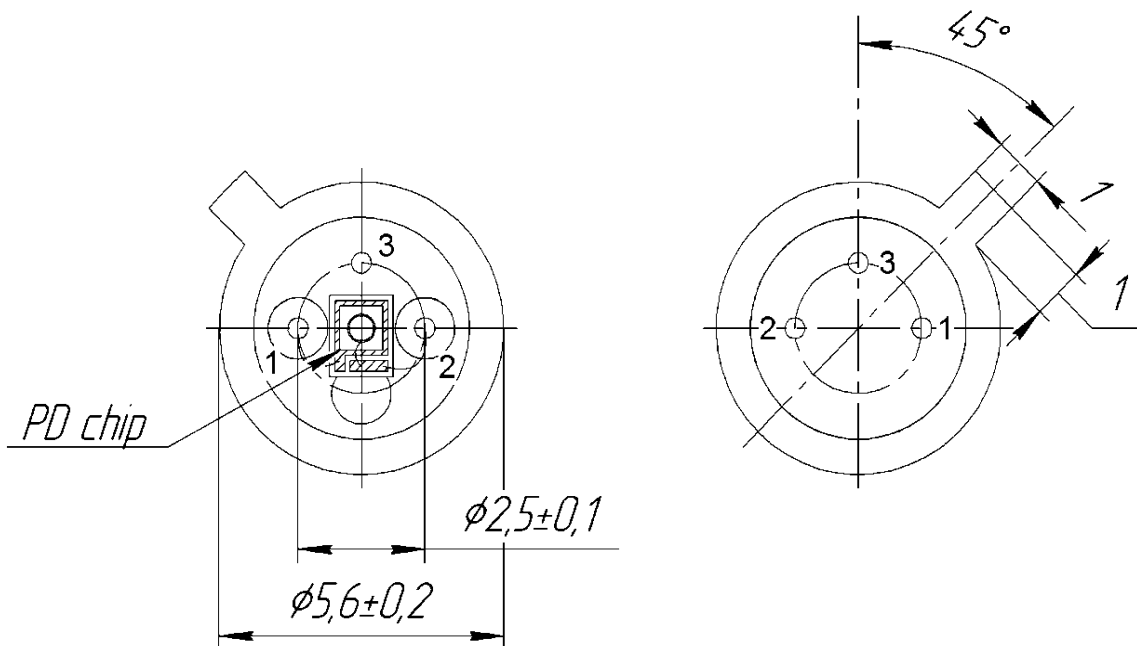
Lms43PD-05-CG



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

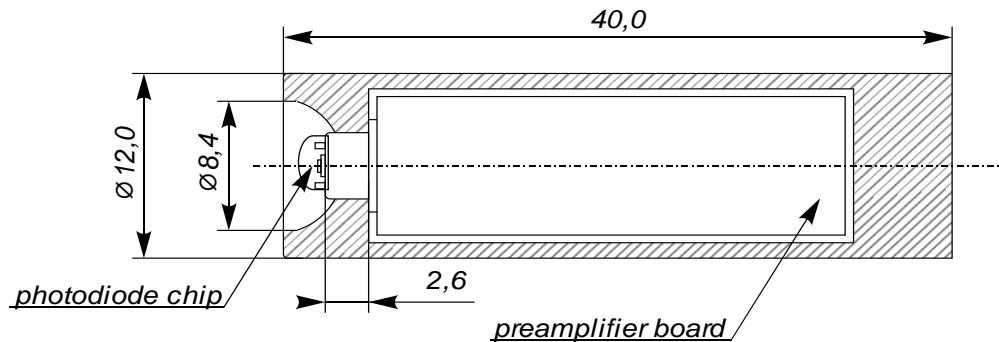
TOP VIEW

BOTTOM VIEW



Technical Drawings

Lms43PD-05-CG-R-PA



**Power input voltage:** +5 V, stabilized;

**Connections:**

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

- "+" 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.**