



# Electro Optical Components, Inc.

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## Mid-Infrared (MIR) Photodiode Series with a glass cover Lms43PD-03-CG series

3.0 - 4.6  $\mu\text{m}$

Device parameters	Symbol	Value	Units
Sensitive area diameter	d	0,3	mm
Storage temperature	T <sub>stg</sub>	0..+50	°C
Operating temperature	T <sub>opr</sub>	0..+50	°C
Lead soldering temperature (time < 3 seconds, 3 mm from case)	T <sub>sol</sub>	+180	°C
Reverse voltage	V <sub>r</sub>	0.1	V



Photodiode parameters	Conditions	Symbol	Value	Units
Cut-off wavelength	T = 25 °C	$\lambda_{\text{cut}}$	4.4 - 4.8	$\mu\text{m}$
Max. sensitivity range (>80%)	T = 25 °C	$\lambda_p$	3.6 - 4.1	$\mu\text{m}$
Dark current	T = 25 °C; V <sub>reverse</sub> = 0.1 V	I <sub>d</sub>	1 - 6	mA
Shunt resistance	T = 25 °C; V <sub>reverse</sub> = 10 mV	R <sub>sh</sub>	10 - 50	$\Omega$
Capacitance	T = 25 °C; $\lambda = \lambda_p$	C	1300 - 2600	pF

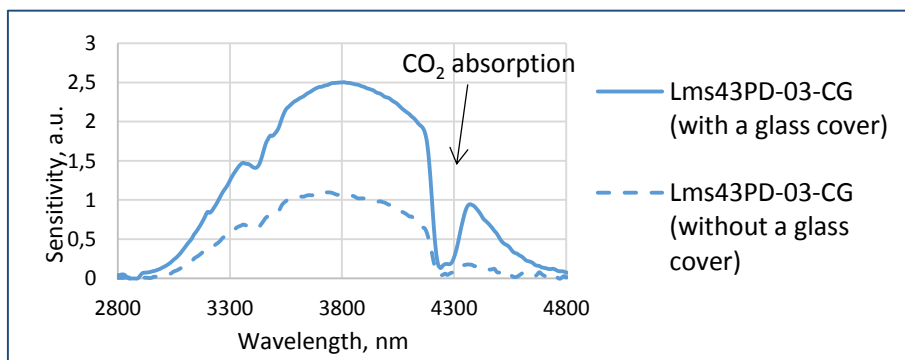
All specifications are for photodiode operation at 25°C unless otherwise stated

Photodiodes Lms43PD-03-CG series are fabricated from narrow band-gap InAsSbP/InAs-based heterostructures lattice matched to InAs substrate.

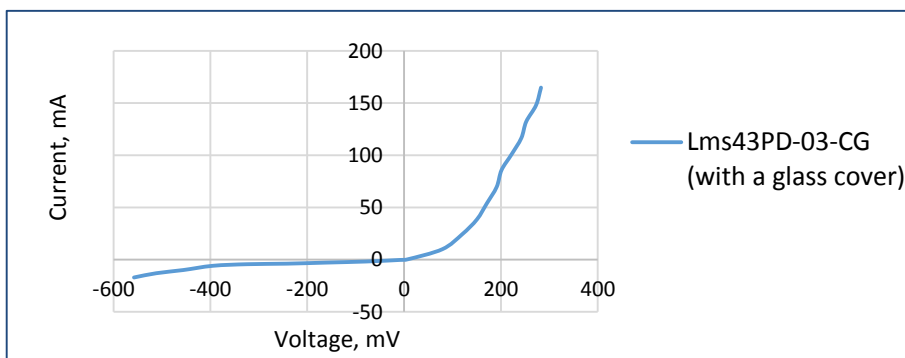
**Photodiode with a glass cover provides a signal that is minimum 3 times higher** than the signal from the same photodiode without a glass cover due to:

- increase of the photodiode effective sensitive area with a glass cover
- increase of the emission got inside the PD crystal

Typical spectral response



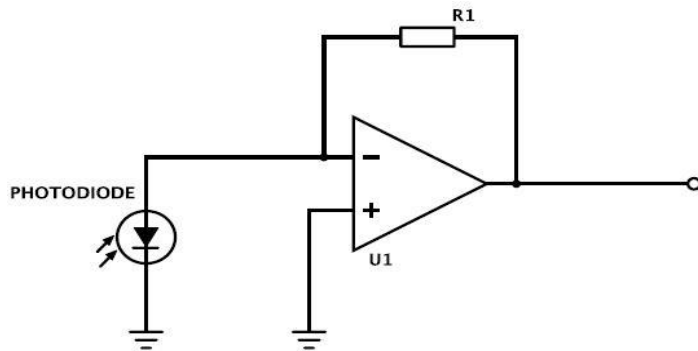
Typical current-voltage characteristic



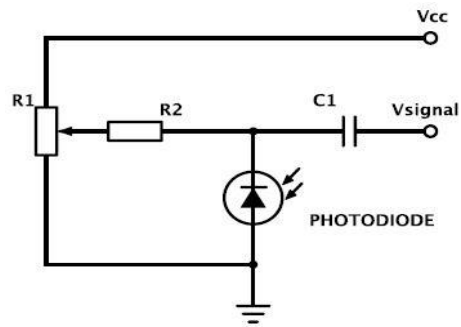
Packages	Model
TO-18 with a glass covering	Lms MIR PD-03-CG
PD with a built-in preamplifier; TO-18 with a glass covering and a parabolic reflector without a window in an aluminium tube	Lms MIR PD-03-CG-R-PA

Recommended modes of PD operation

PD used as a current source (photovoltaic mode)



PD used in a photoconductive mode (under reverse bias)



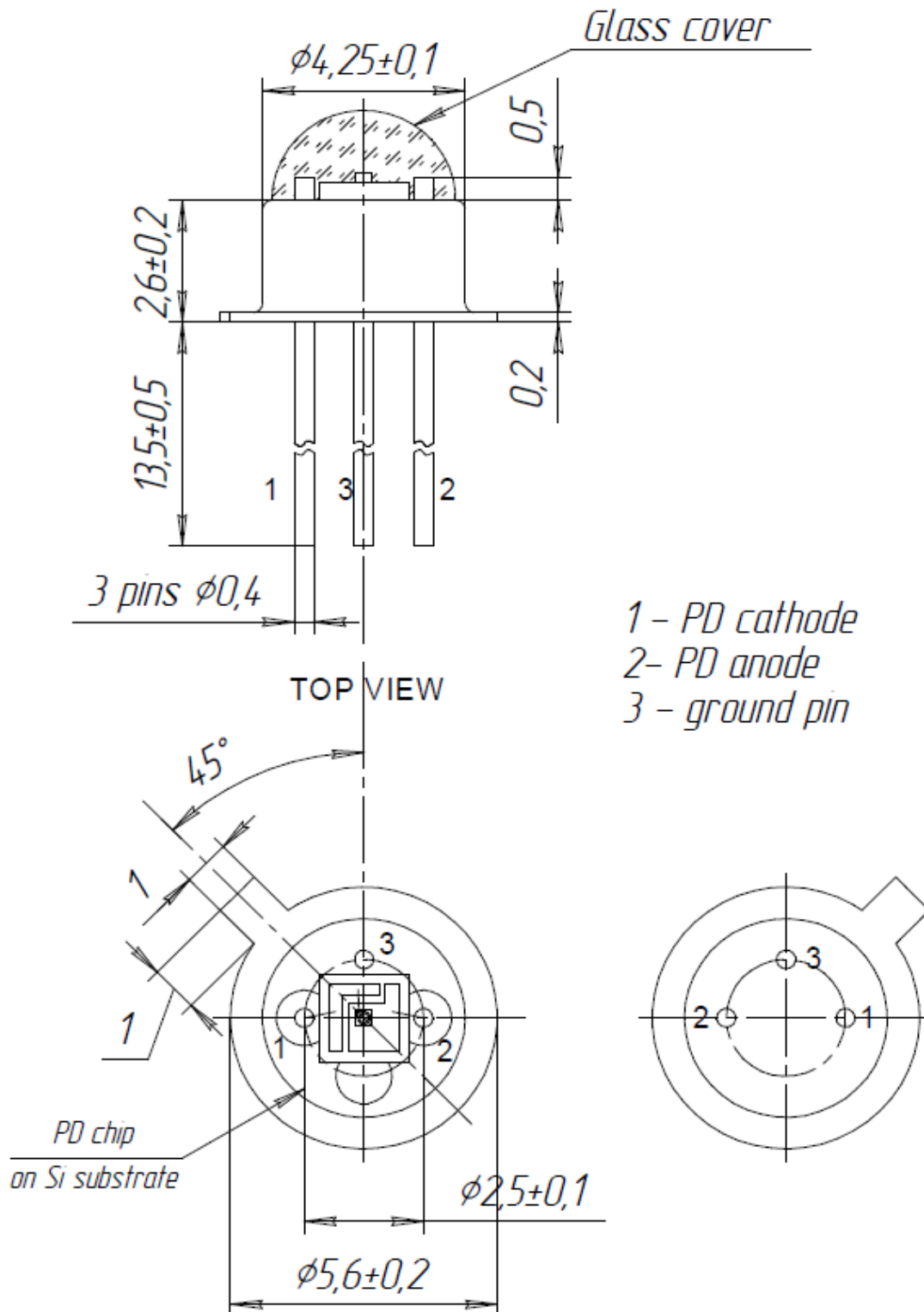
We recommend using **photovoltaic mode**, when PD is used under no reverse bias.  
Use photoconductive mode (mode with reverse bias) with caution.

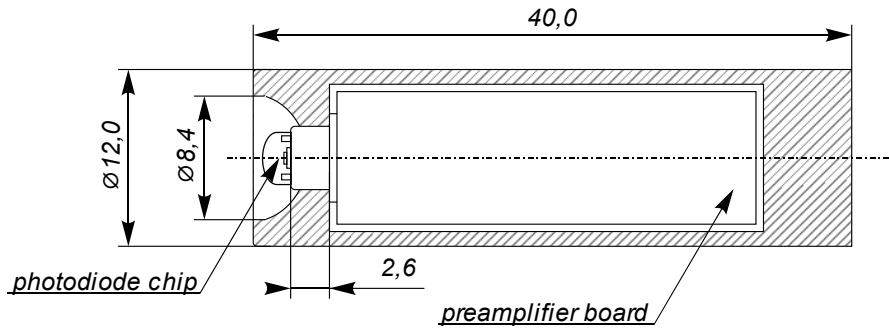
**IMPORTANT CAUTIONS:**

- 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:

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





#### 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.