

EIFys PD100s

Photodetector Datasheet



1. Product Description and Key Features

EIFys PD series photodiode products consist of EIFys patented Black Silicon Induced Junction Technology. Product patent information can be found at <https://www.elfys.fi/index.php/technology/patent/>. EIFys PD series photodiode products provide superior performance in photosensitivity across wide spectrum of wavelengths, from deep UV, Vis to NIR. EIFys PD series photodiode products are suitable for various high precision photometry applications.

Key features:

- Enhanced photosensitivity to UV, Vis and NIR
- H model provides low capacitance
- M model provides low dark current
- G presents the Guard ring design which offers capability of working under high reverse bias voltage with low dark current.

Part number	Photosensitive area (mm)	Chip Outline Dimension (mm)	Reverse Voltage (V) Max.	Guard ring Connection	Packaging Options	Window / Filter Options
PD100sH	10.0 x 10.0	11.0 x 11.0	20	No	Chip / PCB / Ceramic	No window
PD100sM						
PD100sHG		11.5 x 11.5	100	Yes		
PD100sMG						

Note: The environmental protection of the photodetector depends on the selected packaging option. EIFys provides customized packaging solutions based on customer specifications.

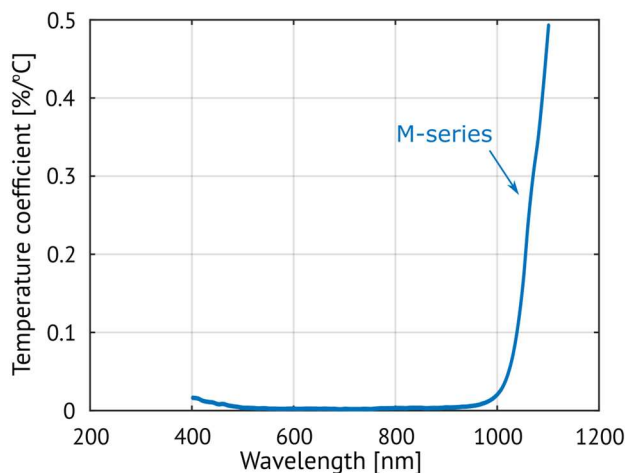
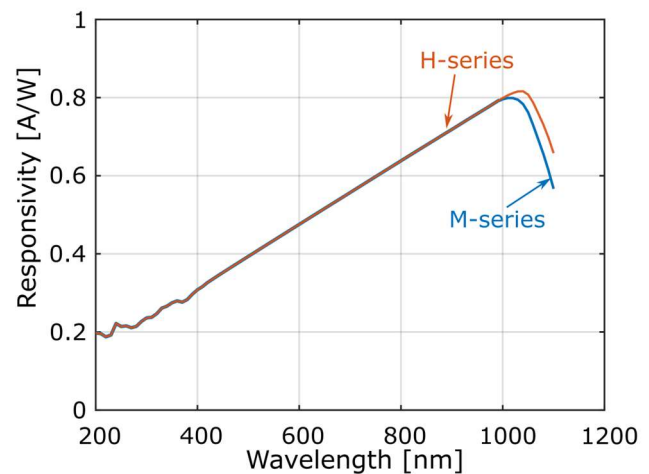
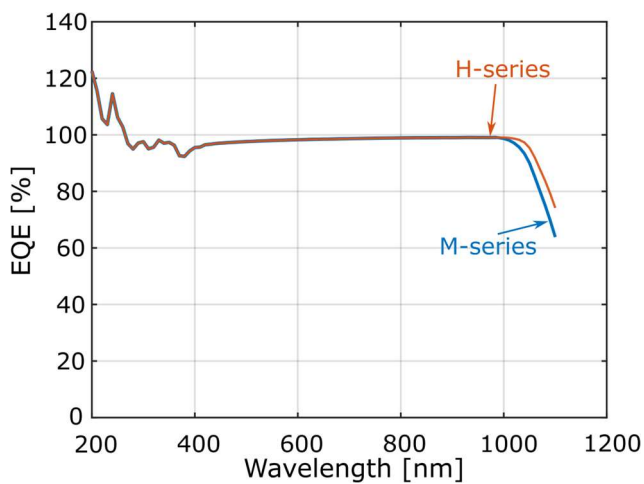


2. Electrical and Optical Performance

Part number	Spectral response range	Peak response wavelength, λ_p	Photosensitivity				Dark current @ $V_R=10\text{mV}$, Max.	Capacitance @ $V_R=0\text{V}$, $f=100\text{kHz}$, Typ.	Shunt resistance @ $V_R=10\text{mV}$, Min.	Noise equivalent power NEP @ λ_p , Max.
			λ_p Typ.	200 nm Typ.	630 nm Typ.	930 nm Typ.				
	nm	nm	A/W	A/W	A/W	A/W	pA	pF	M Ω	W/ $\sqrt{\text{Hz}}$
PD100sH	170-1100	1040	0.81	0.20	0.50	0.74	1500	340	6.6	6.4×10^{-14}
PD100sHG										
PD100sM		1010	0.80			0.73	60	1200	160	1.3×10^{-14}
PD100sMG										

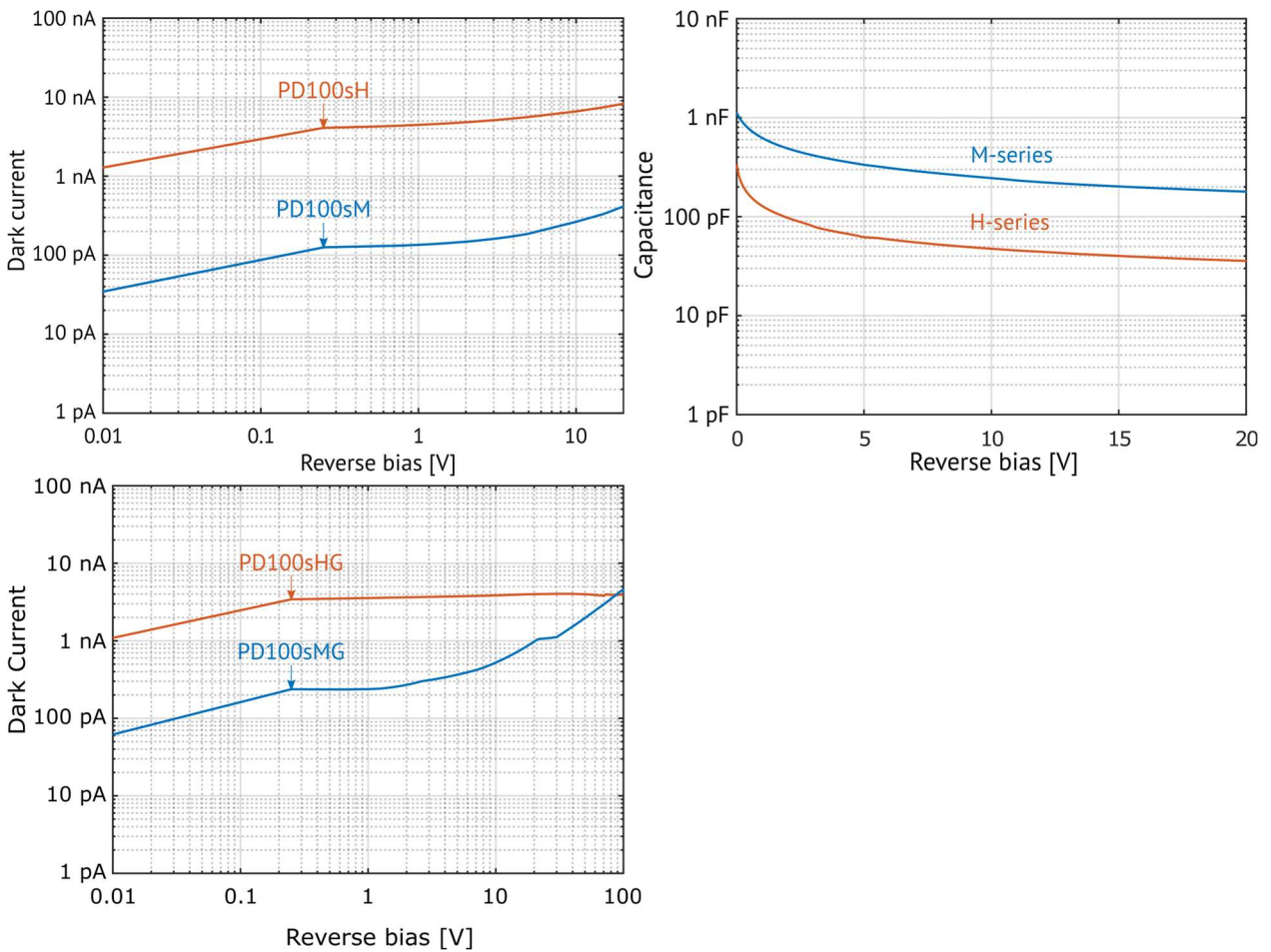
Note: All data are specified at typical ambient temperature (25°C) and under normal working conditions. Photosensitivity performance will be affected by the optical properties of the window and filter applied in the packaging or end application. Photodiode characteristics, including photosensitivity may degrade when exposed to UV below 240nm. Potential degradation depends on total exposure dose and ambient conditions.

3. Spectral Response (Typical)

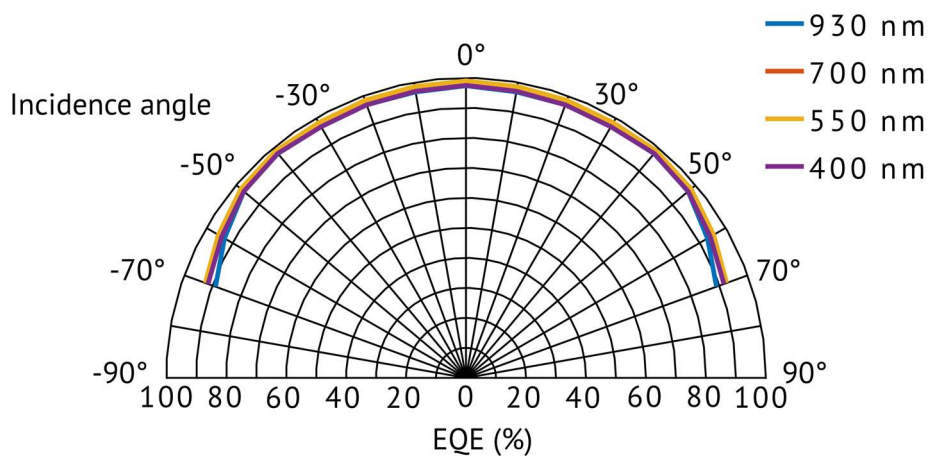


Note: the temperature coefficient in the range 200-400 nm can be provided upon customer request.

4. Dark Current and Capacitance vs Reverse Bias (Typical)



5. Angular Responsivity (Typical)



Note: Angle-dependent photosensitivity is measured from a process control monitor photodiode without window or filter.

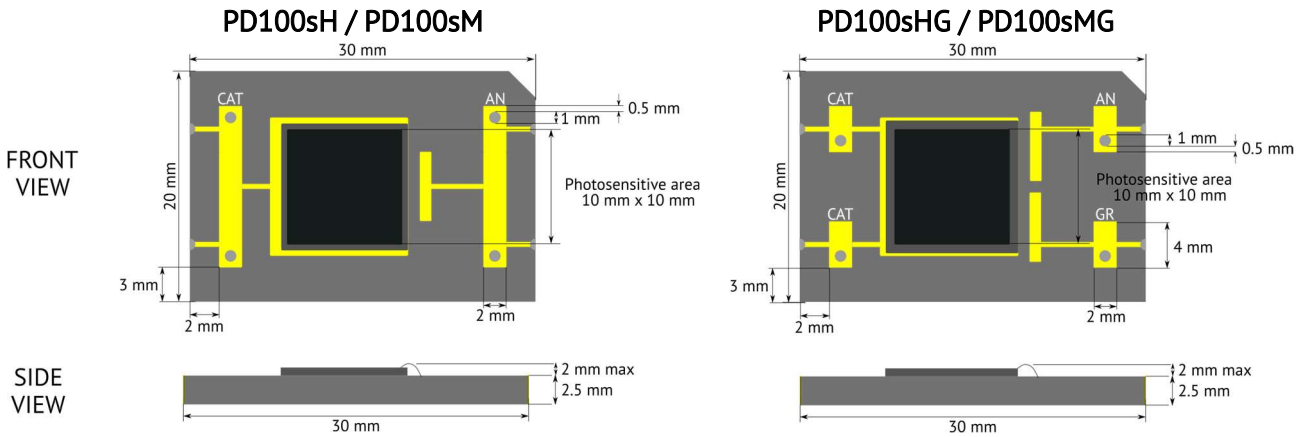


6. Packaging Options

PCB

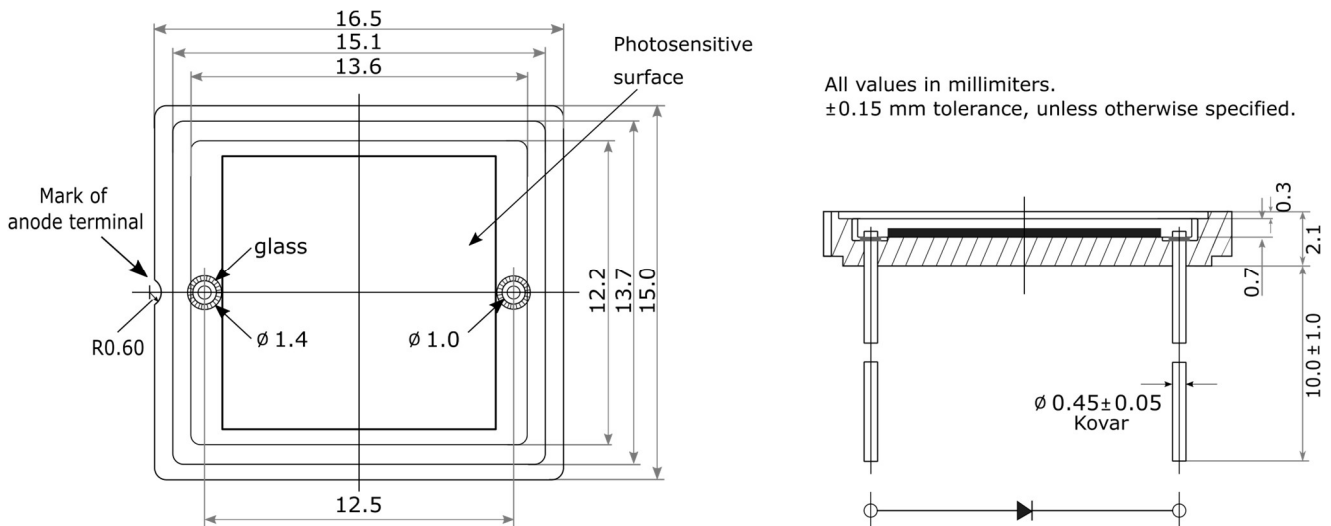
The photodetector is available by default on a demonstration board (30mm x 20mm). Customized demonstration board is available upon request according to customer specifications.

The electrical connections for PD100sH and PD100sM are anode (AN) and cathode (CAT); for PD100sHG and PD100sMG the connections are anode (AN), cathode (CAT) and guard ring (GR). The default demonstration board is suitable for Surface Mount, Through Hole Mount, and Soldering Wire.



Ceramic substrate (Preliminary release for evaluation purposes)

PD100sH and PD100sM are available on a ceramic substrate. The electrical connections are anode (wire bonded front contact) and cathode (back contact). By default, the bonding wire of anode is protected by glob top. The default packaging does not include window / filter on top of photodiode surface. The photodiode surface can be protected upon request with optical resin filling the ceramic substrate pocket.



ELFYS, Inc. reserves the right to change product specification without prior notice.

