



# SG01D-5LENS

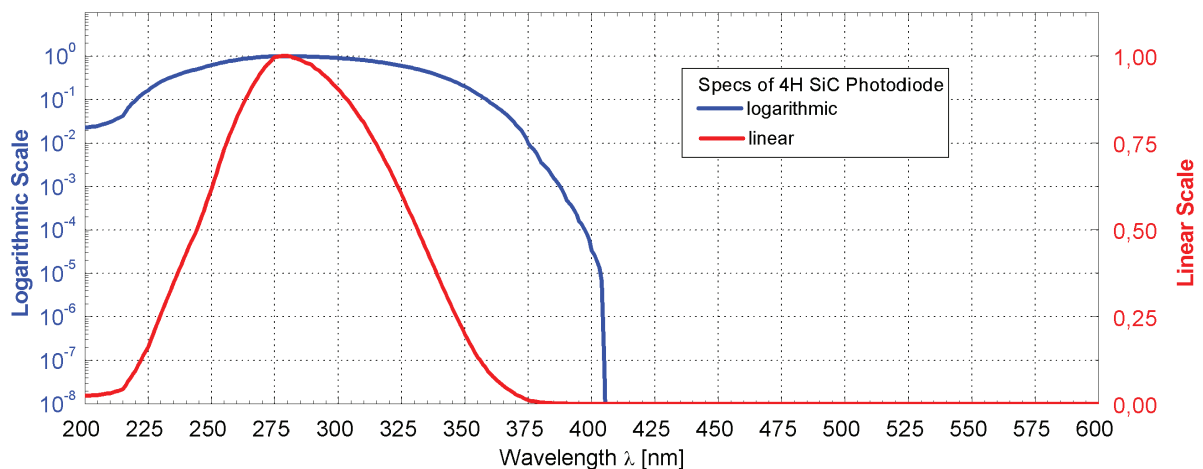
Concentrator lens SiC based UV photodiode  $A_{\text{virtual}} = 27.5 \text{ mm}^2$



## SPECIFICATIONS

Parameter	Symbol	Value	Unit
<b>Spectral Characteristics</b>			
Typical Responsivity at Peak Wavelength	$S_{\text{max}}$	0,130	$\text{AW}^{-1}$
Wavelength of max. Spectral Responsivity	$\lambda_{\text{max}}$	280	nm
Responsivity Range ( $S=0,1 \cdot S_{\text{max}}$ )	–	221 ... 358	nm
Visible Blindness ( $S_{\text{max}}/S_{>405\text{nm}}$ )	VB	$> 10^{10}$	–
<b>General Characteristics (T=25°C)</b>			
Sensitive Area (chip size = 0,50 mm <sup>2</sup> )	A	27,5	mm <sup>2</sup>
Dark Current (1V reverse bias)	$I_{\text{d}}$	1,7	fA
Capacitance	C	125	pF
Short Circuit (10μW/cm <sup>2</sup> at peak)	$I_{\text{o}}$	350	nA
Temperature Coefficient	$T_{\text{c}}$	$< 0,1$	%/K
<b>Maximum Ratings</b>			
Operating Temperature	$T_{\text{opt}}$	-55 ... +170	°C
Storage Temperature	$T_{\text{stor}}$	-55 ... +170	°C
Soldering Temperature (3s)	$T_{\text{sold}}$	260	°C
Reverse Voltage	$V_{\text{Rmax}}$	20	V

## NORMALIZED SPECTRAL RESPONSIVITY



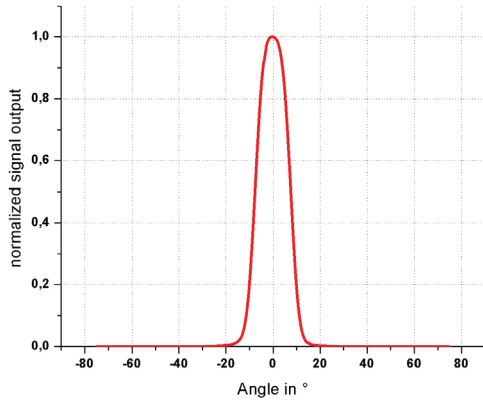
BOSTON ELECTRONICS | [www.boselec.com](http://www.boselec.com) | [boselec@boselec.com](mailto:boselec@boselec.com) | 617-566-3821

Rev. 6.3 Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

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## FIELD OF VIEW

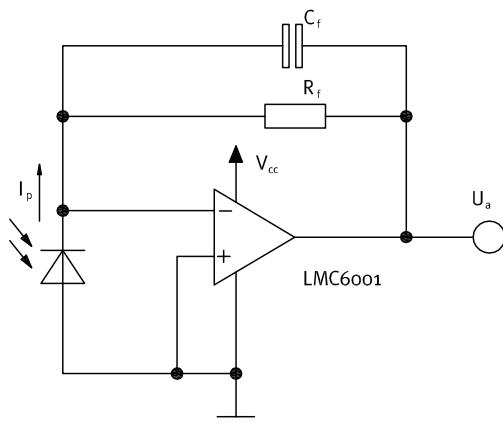


Measurement Setup:

lamp aperture diameter: 10 mm  
distance lamp aperture to second aperture: 17 mm  
second aperture diameter: 10 mm  
distance second aperture to detector: 93 mm

pivot level = top surface of the photodiode window

## TYPICAL CIRCUIT



Calculations and Limits:

$$U_a = I_p \times R_f = 0 \dots \sim V_{cc}$$

$U_{a,max}$  depends on load and amplifier type

$R_f = 10k\Omega \dots \sim 10G\Omega$ ,  $C_f \geq 3pF$   
Recommendation:  $R_f \times C_f \geq 10^{-3}s$

$$I_{p,max} = U_{a,max} \div R_f$$

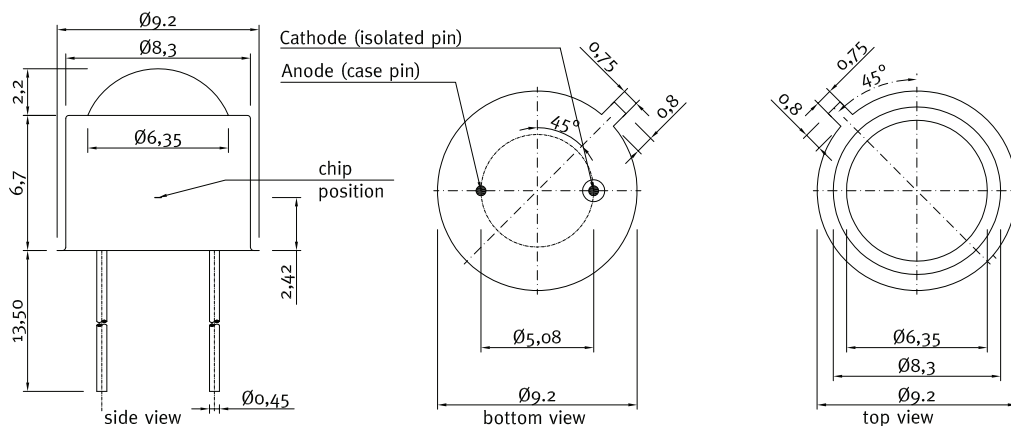
$$\text{Bandwidth} = DC \dots \frac{1}{2\pi \times R_f \times C_f}$$

Example:

$$I_p = 20nA, R_f = 100M\Omega, C_f = 100pF$$

$$U_a = 20 \times 10^{-9}A \times 100 \times 10^6\Omega = 2V$$

## DRAWINGS



# SG01D-5LENS

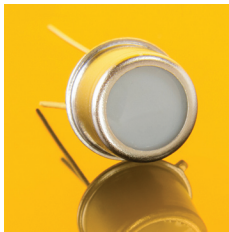
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## APPLICATION NOTE FOR PHOTODIODES

For correct reading of the photodiode the current (and NOT the voltage) must be analyzed. This requires a short circuiting of the photodiode. Usual approaches are using a **Picoamperemeter** or a **transimpedance amplifier** circuit as shown on page 3.

## UPGRADE TO A TOCON OR A PROBE



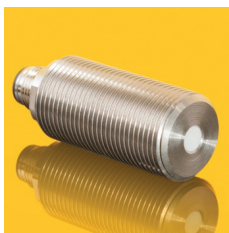
### TOCONs = UV sensors with integrated amplifier

- SiC based UV hybrid detector with amplifier (0–5V output), no additional amplifier needed, direct connection to controller, voltmeter, etc.
- Measures intensities from 1,8 pW/cm<sup>2</sup> up to 18 W/cm<sup>2</sup>
- UV broadband, UVA, UVB, UVC or Erythema measurements



### Miniature housing with M12x1 thread for the TOCON series

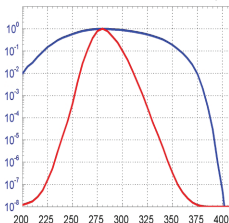
- Optional feature for all TOCON detectors
- Robust stainless steel M12x1 thread body
- Integrated sensor connector (Binder 5-Pin plug) with 2m connector cable
- Easy to mount and connect



### Industrial UV probes

- Different housings e.g. with cosine response, water pressure proof or sapphire windows
- Different electronic outputs configurable (voltage, current, USB, CAN)
- Good EMC safety for industrial applications

## CALIBRATION SERVICE



- Different NIST and PTB traceable calibrations and measurements for all sglux sensors
- Calibration of sensors for irradiation measurements
- Calibration of UV sensors on discrete wavelengths
- Determination of a specific spectral sensor responsivity