

## SG01L-C5

### UVC-only SiC based UV photodiode $A = 1,0 \text{ mm}^2$



## General Features



### Properties of the SG01L-C5 UV photodiode

- UVC sensitivity according to DVGW W294
- Active Area  $A = 1,0 \text{ mm}^2$
- TO5 hermetically sealed housing
- $10\mu\text{W}/\text{cm}^2$  radiation at 254nm results a current of approx. 6,2 nA

### About the material Silicon Carbide (SiC)

SiC provides the unique property of extreme radiation hardness, near-perfect visible blindness, low dark current, high speed and low noise. These features make SiC the best available material for visible blind semiconductor UV detectors. The SiC detectors can be permanently operated at up to 170°C. The temperature coefficient of signal (responsivity) is also low,  $<0,1\%/K$ . Because of the low noise (dark current, in the fA range), very low UV radiation intensities can be measured reliably. Please note that this device needs an appropriate amplifier (see circuit on following page). SiC photodiodes are available as unfiltered broadband devices or with optical filters providing UV-A, UV-B, or UV-C-only sensitivity, or erythema action curve compliance.

## Specifications

| Parameter   | Symbol                 | Value        | Unit             |
|---|------------------------|--------------|------------------|
| <b>Maximum Ratings</b>  |                        |              |                  |
| Operating Temperature Range                                       | $T_{\text{opt}}$       | -55 ... +170 | °C               |
| Storage Temperature Range   | $T_{\text{stor}}$      | -55 ... +170 | °C               |
| Soldering Temperature (3s)  | $T_{\text{sold}}$      | 260          | °C               |
| Reverse voltage   | $V_{\text{Rmax}}$      | 20           | V                |
| <b>General Characteristics (<math>T=25^\circ\text{C}</math>)</b>  |                        |              |                  |
| Active Area   | $A$                    | 1,0          | $\text{mm}^2$    |
| Dark current (1V reverse bias)                                    | $I_{\text{d}}$         | 5            | fA               |
| Capacitance   | $C$                    | 200          | pF               |
| Short circuit ( $10\mu\text{W}/\text{cm}^2$ at 254nm)             | $I_0$                  | 6,2          | nA               |
| Temperature coefficient   | $Tc$                   | $<+0,1$      | %/K              |
| <b>Spectral Characteristics (<math>T=25^\circ\text{C}</math>)</b> |                        |              |                  |
| Max. spectral responsivity  | $S_{\text{max}}$       | 0,110        | $\text{AW}^{-1}$ |
| Wavelength of max. spectral resp.                                 | $\lambda_{\text{max}}$ | 270          | nm               |
| Responsivity range ( $S=0,1 \cdot S_{\text{max}}$ )               | -                      | 230 ... 285  | nm               |

Rev. 5.0 specifications subject to change without notice

Page 1 [4]

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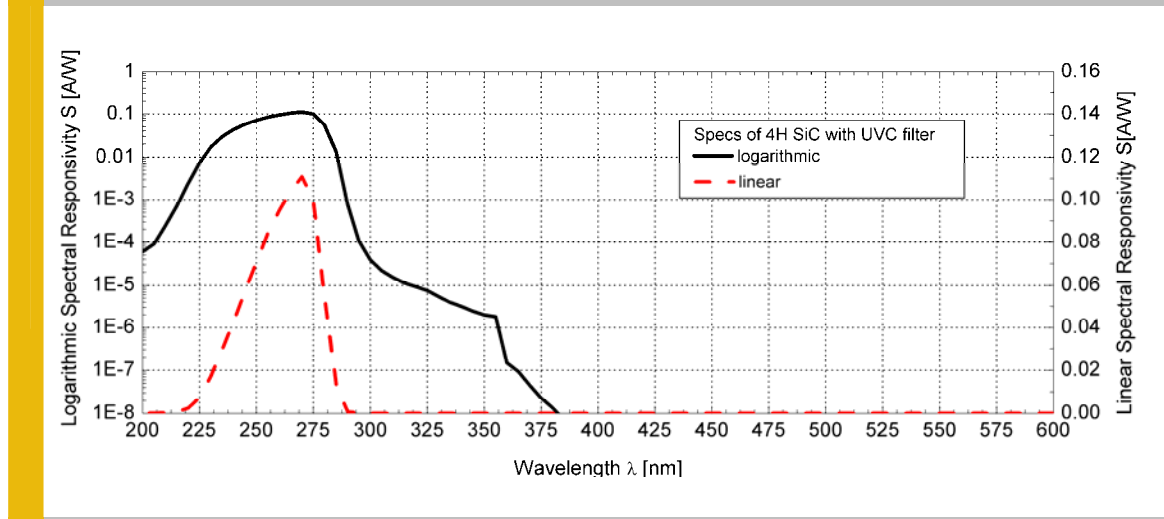
# SG01L-C5

## UVC-only SiC based UV photodiode $A = 1,0 \text{ mm}^2$

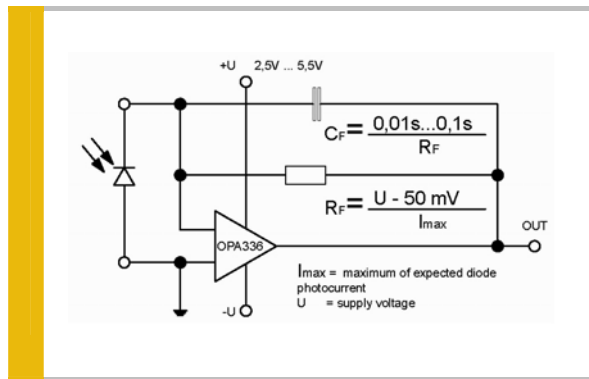


Visible blindness ( $S_{\text{max}} / S_{>405\text{nm}}$ )      VB       $10^{10}$       -

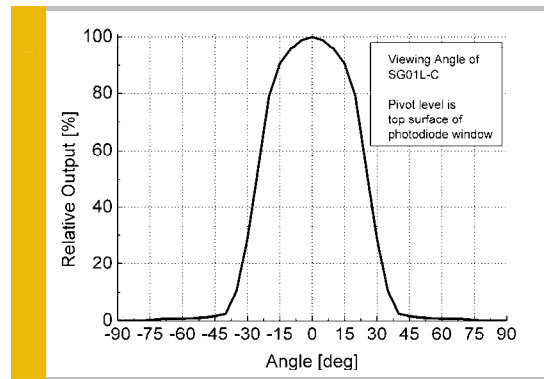
### Spectral Response



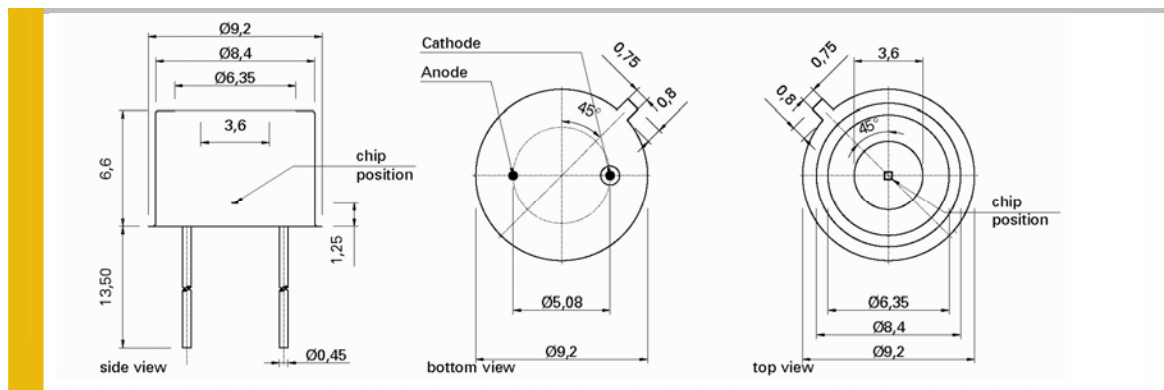
### Circuit



### Viewing Angle



### Drawing



## SG01L-C5 UVC-only SiC based UV photodiode A = 1,0 mm<sup>2</sup>



### **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.

To make the photodiode running reliably, in particular in harsh environment, EMC compatibility and protection against dust, water and mechanical influences is needed. Below listed modules base on a SiC photodiode and guarantee this protection and safety.

### **TOCONs = UV Sensors with integrated amplifier**



- SiC based UV hybrid detector with pre-amplifier (0-15V output), no additional amplifier needed, direct connection to controller, voltmeter, etc.
- Measures intensities from 3,6 pW/cm<sup>2</sup> up to 54 W/cm<sup>2</sup>
- UV broadband, UVA, UVB, UVC or Erythema measurements
- Upgrade to M12x1 housing with Hirschmann connector available

### **Industrial UV probes**



- Different housings e.g. with cosine response, water pressure proof or Sapphire windows
- Different electronic outputs configurable (voltage, current, USB, CAN, LAN)

### **Laboratory Equipment & Calibration**



The below listed sglux products & services are helpful if you like to learn more about the UV radiation generated by your UV source:

- UV Radiometers for intensity check
- UV Dosimeters for dose control, e.g. curing applications
- UV Controllers to control lamps, valves etc.
- NIST and PTB traceable calibration for all sglux sensors

**SG01L-C5**  
**UVC-only SiC based UV photodiode A = 1,0 mm<sup>2</sup>**

