



SIC01L-B5

- UVB SiC photodiode
- PTB tested high chip stability
- Active area: 1.0 mm²
- TO5 hermetically sealed metal housing
- 1 isolated pin and 1 case pin
- 10 μW/cm² → photocurrent of ~12.5 nA



Description

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 (338°F). 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 with seven different active chip areas from 0.06 mm² up to 36 mm². Standard version is broadband UVA-UVB-UVC. Four filtered versions lead to a tighter sensitivity range. All photodiodes have a hermetically sealed metal housing (TO type), either a 5.5 mm diameter TO18 housing or a 9.2 mm TO5 housing. Further option is either a 2-pin header (1 isolated, 1 grounded) or a 3-pin header (2 isolated, 1 grounded).

Maximum Ratings (T = 25°C)

Parameter	Symbol	Values		Unit
		Min.	Max.	
Reverse Voltage	U _R		20	V
Operating Temperature	T _{opr}	-55	+170	°C
Storage Temperature	T _{stg}	-55	+170	°C
Soldering Temperature (max. 3s)	T _{sol}		+260	°C

General Characteristics (T = 25°C)

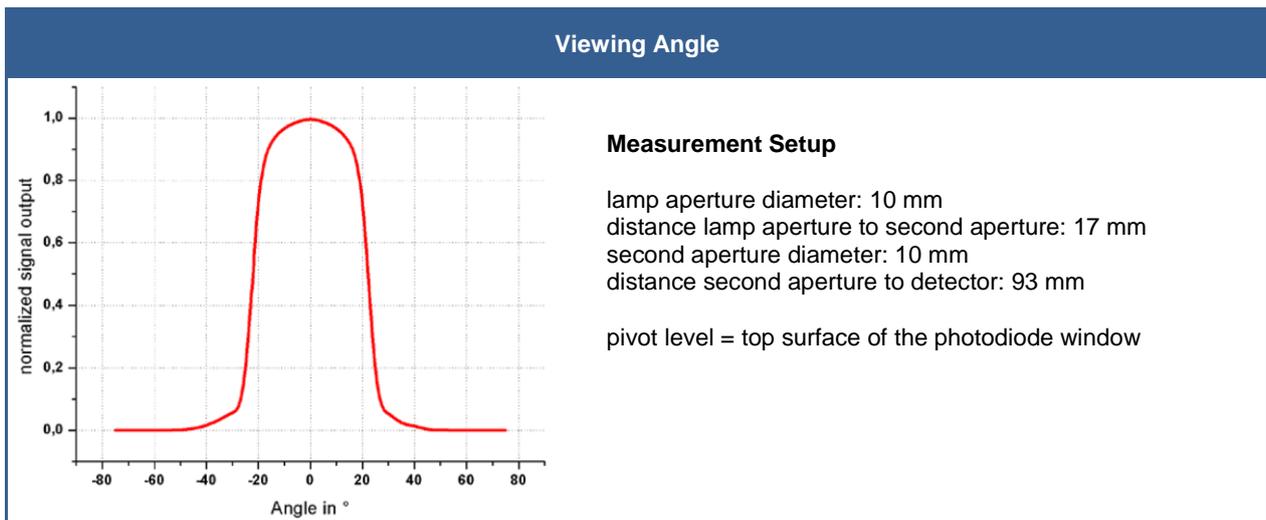
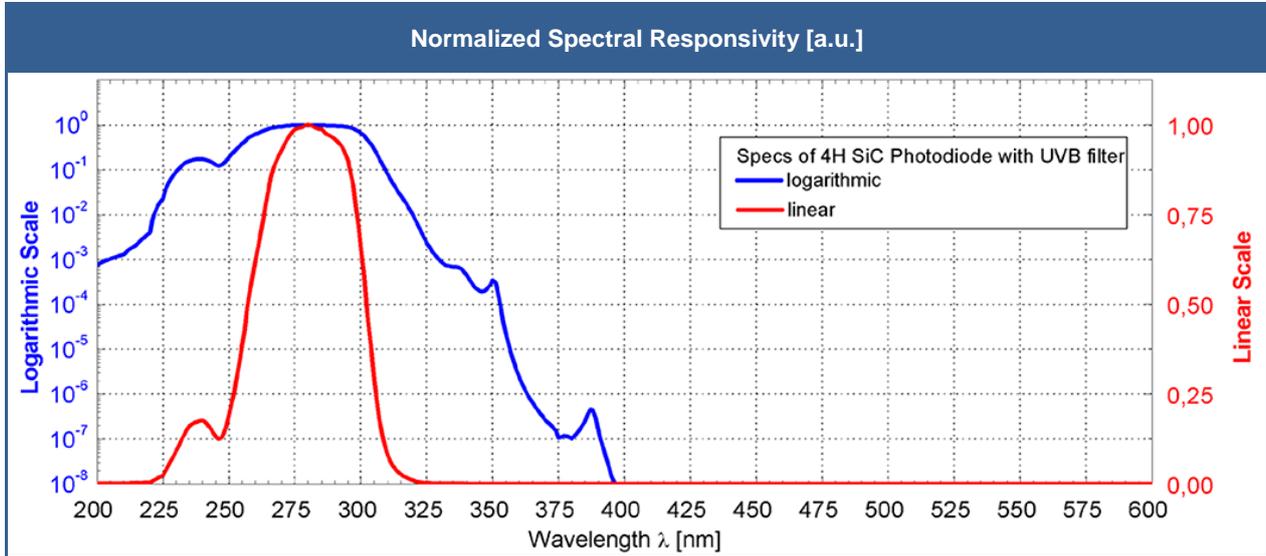
Parameter	Symbol	Min.	Values		Unit
			Typ.	Max.	
Active Area	A		1.0		mm ²
Dark current (1V reverse bias)	I _d		3.3		fA
Capacitance	C		250		pF
Short circuit (10μW/cm ² at peak)	I _D		12.5		nA
Temperature coefficient	T _C			0.1	%/K

Spectral Characteristics (T = 25°C)

Parameter	Symbol	Min.	Values		Unit
			Typ.	Max.	
Max. spectral responsivity	S _{max}		0.125		AW ⁻¹
Wavelength of max. spectral resp.	λ _{max}		280		nm
Responsivity range (S=0.1*S _{max})	-	231		309	nm
Visible blindness (S _{max} / S _{>405nm})	VB	10 ¹⁰			-

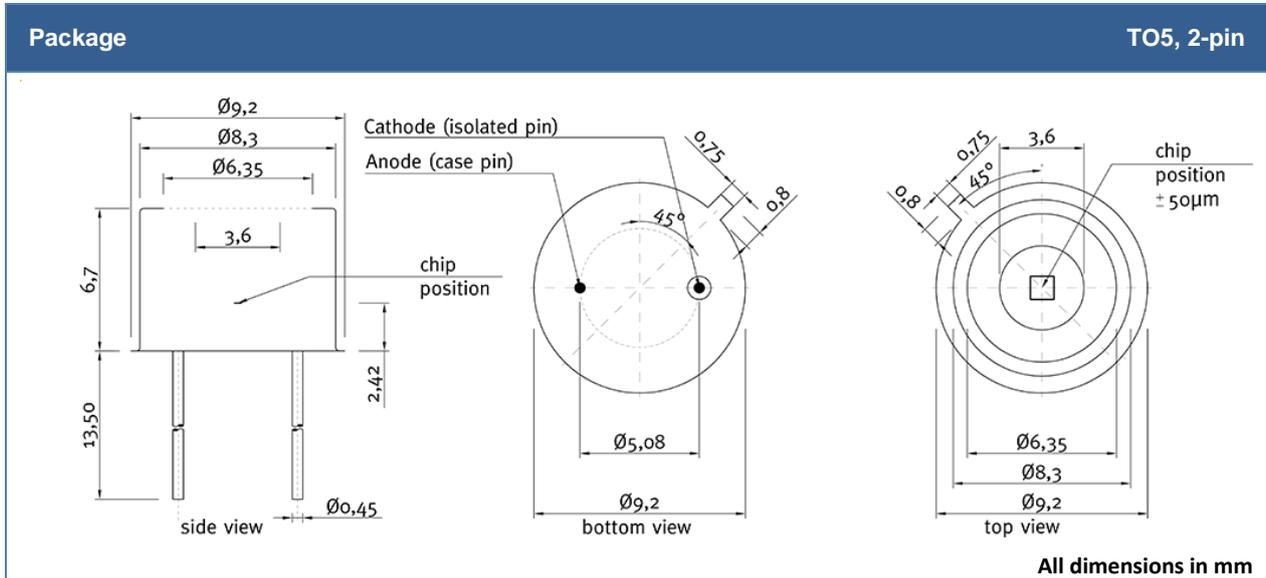


Performance Characteristics

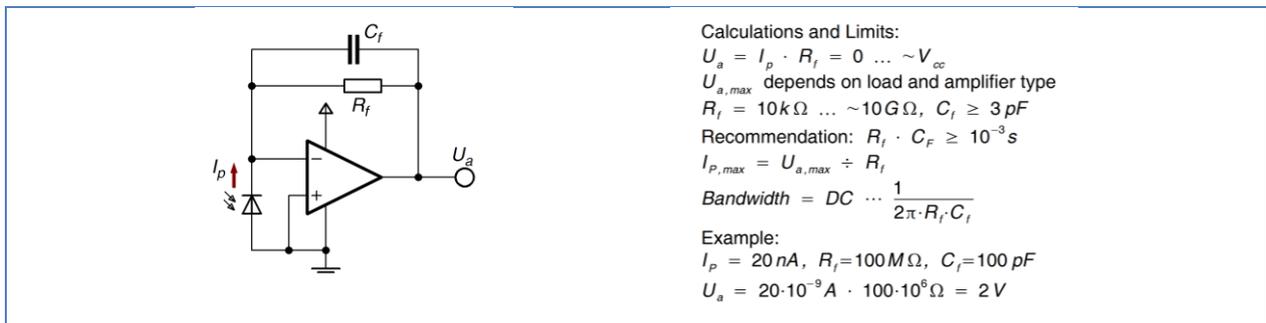




Outline Dimensions



Typical Circuit



Application Note

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 above.

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

UVTIAMO: SiC photodiodes with **integrated amplifier** (0-5V output), available for power intensities ranging from 1.8 pW/cm² to 18 W/cm² for UV broadband, UVA, UVB, UVC or Erythema (UV-Index) measurements. **No additional amplifier needed, direct connection to voltmeter, controller, etc.**

UV-probe: SiC based sensor modules in **customizable industry grade housings** (e.g. cosine response, water pressure proof, sapphire windows) and **different electronic output configurations** (voltage, current, USB, Can) to choose from.

→ Ask us for further details!