TOCON_C5

UVC-only SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

GENERAL FEATURES



Properties of the TOCON_C5

- UVC-only SiC based UV photodetector in TO5 housing with diffusor
- spectral response compliant with DVGW W294
- 0 ... 5 V voltage output, peak wavelength at 275 nm
- max. radiation (saturation limit) at 254 nm is 180 µW/cm², minimum radiation (resolution limit) is 18 nW/cm²
- Applications: purification lamp control

What is a TOCON?

A TOCON is a 5 Volt powered UV photodetector with integrated amplifier converting UV radiation into a 0 ... 5V voltage output. The V_{out} pin of the TOCON can be directly connected to a controller, a voltmeter or any other data analyzing device with voltage input. Highly modern electronic components and a hermetically sealed metal housing with UV glass window eliminates noise caused by parasitic resistance paths inside the package or EMI. A TOCON is a perfect solution for each industrial UV sensing application starting from flame detection at pW/cm² level up to UV curing lamp control at W/cm² level. This thirteen orders of magnitude range is covered by ten different TOCONs that differ by their sensitivity. The TOCONs are produced as UV broadband sensors or with filters for selective measurement.

Silicon Carbide (SiC) detector chip inside

Sophisticated electronics make a TOCON a reliable component in harsh environments as well as for extremely low or extremely high UV radiation. But what makes the TOCON a quasi eternally living sensor is the sglux in-house produced SiC detector chip featured by a PTB-reported extreme radiation hardness.

NOMENCLATURE

TOCON_	ABC, A, B, C, blue or GaP	1 ... 10
	Spectral response	**Irradiance limits (V_{supply}=5V, λ = $λ_{peak}$)**
	ABC = broadband $λ_{max}$ = 290 nm $λ_{S10\%}$ = 227 nm ... 360 nm	**1** = 1,8 pW/cm² ... 18 nW/cm²
		2 = 18 pW/cm² ... 180 nW/cm²
	A = UVA $λ_{max}$ = 331 nm $λ_{S10\%}$ = 309 nm ... 367 nm	**3** = 180 pW/cm² ... 1,8 µW/cm²
		4 = 1,8 nW/cm² ... 18 µW/cm²
	B = UVB $λ_{max}$ = 280 nm $λ_{S10\%}$ = 243 nm ... 303 nm	**5** = 18 nW/cm² ... 180 µW/cm²
	C = UVC $λ_{max}$ = 275 nm $λ_{S10\%}$ = 225 nm ... 287 nm	**6** = 180 nW/cm² ... 1,8 mW/cm²
		7 = 1,8 µW/cm² ... 18 mW/cm²
	Blue $λ_{max}$ = 445 nm $λ_{S10\%}$ = 390 nm ... 515 nm	**8** = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
	Gap $λ_{max}$ = 445 nm $λ_{S10\%}$ = 190 nm ... 570 nm	**10** = 1,8 mW/cm² ... 18 W/cm²
	E = UV-Index spectral response according to CIE087	**2** = 0 UVI ... 30 UVI

Rev. 3.2 Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

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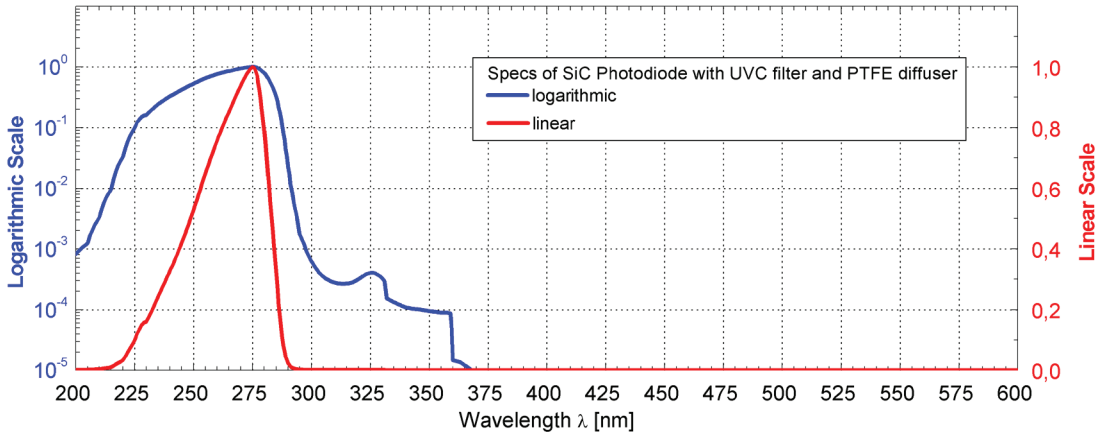
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SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Wavelength 254 nm	S_{max}	28	mV/µW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	275	nm
Responsivity Range (S=0,1*S_{max})	–	225 ... 287	nm
Visible Blindness ($S_{max}/S_{>405nm}$)	VB	> 10^{10}	–
General Characteristics (T=25°C, V_{supply}=+5 V)			
Supply Voltage	V_{Supply}	2,5 ... 5	V
Saturation Voltage	V_{Sat}	V_{Supply} - 5%	V
Dark Offset Voltage	V_{Offset}	50	µV
Temperature Coefficient at Peak	T_c	< -0,3	%/K
Current Consumption	I	150	µA
Bandwidth (-3 dB)	B	15	Hz
Risetime (10-90%)	t_{rise}	0,062	s
(other risetimes on request)			
Maximum Ratings			
Operating Temperature	T_{opt}	–25 ... +85	°C
Storage Temperature	T_{stor}	–40 ... +100	°C
Soldering Temperature (3s)	T_{sold}	300	°C

NORMALIZED SPECTRAL RESPONSIVITY

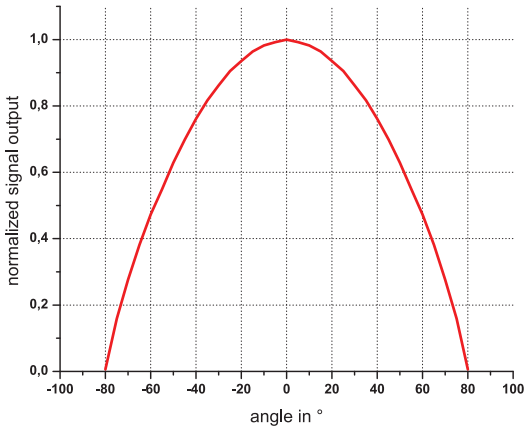


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FIELD OF VIEW

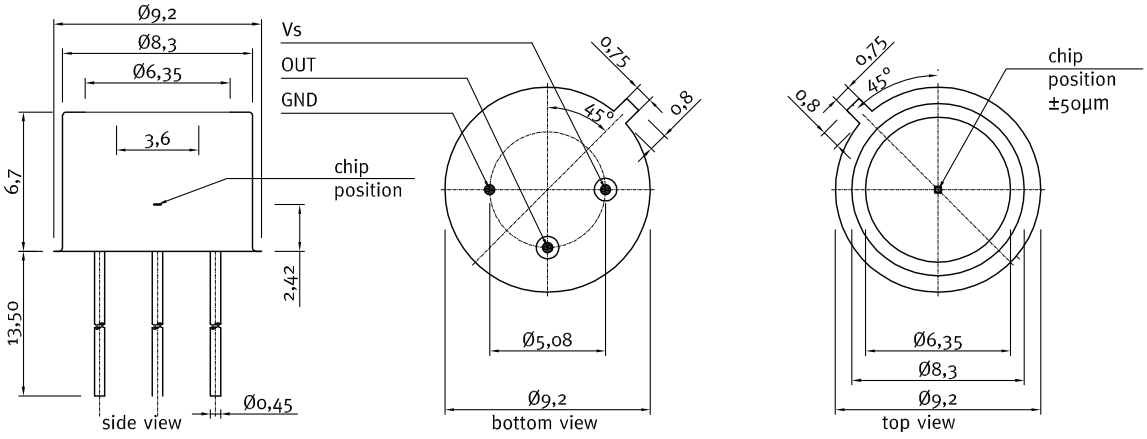


Measurement Setup:

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 detector window

DRAWING



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APPLICATION NOTE FOR TOCONs

The TOCONs need a supply voltage of V_{supply}=2,5 ... 5V_{DC} and can be directly connected to a controller or voltmeter. Please note that the theoretic maximum signal output is always a little less (approx. 5%) than the supply voltage. To learn more about perfect use of the TOCONs please refer to the TOCON FAQ list published at www.sglux.com.

CAUTION! Wrong wiring leads to destruction of the device.
For easy setup of the device please ask for a TOCON starter kit.



Miniature steel housing with M12x1 thread for the TOCON series

- Optional feature for all TOCON detectors
- Robust stainless steel M12x1 thread body, length 32 mm
- Integrated sensor connector (Binder 4-Pin plug) with 2m connector cable
- Easy to mount and to connect



Miniature PTFE housing with M12x1 thread for the TOCON series

- Optional feature for all TOCON detectors without concentrator lens
- Teflon (PTFE) M12x1 thread body, length 31 mm
- Wide field of view, dirt-repellant, water proof at wet side (IP 68)
- Integrated sensor connector (Binder 4-Pin plug) with 2m connector cable
- Easy to mount and connect, cleanable

The PTFE housing reduces the signal output by approx. 95%. Please consider this while selecting the TOCON's sensitivity range.



Plastic probes

- Optional feature for all TOCON detectors
- UV probes in small plastic housings with a TOCON inside
- Customized housings available
- Easy to mount and to connect
- Integrated sensor connector (Binder 4-Pin plug)
- Cable available



Water pressure proof TOCON housing

- Optional feature for all TOCON detectors without concentrator lens
- G1/4" thread, 10 bar water pressure proof
- Customized housings available
- Easy to mount and to connect
- Integrated sensor connector (Binder 5-Pin plug)
- Cable available

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