

# TOCON\_C1

UVC-only SiC based UV photodetector with integrated amplifier

## GENERAL FEATURES



### Properties of the TOCON\_C1

- UVC-only SiC based UV photodetector in TO5 housing
- 0...5 V voltage output
- peak wavelength at 275 nm
- max. radiation (saturation limit) at 275 nm is 135 nW/cm<sup>2</sup>, minimum radiation (resolution limit) is 14 pW/cm<sup>2</sup>
- Applications: UVA blind fire detection

### 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<sub>out</sub> 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/cm<sup>2</sup> level up to UV curing lamp control at W/cm<sup>2</sup> 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
	<b>Spectral response</b>	<b>Irradiance limits (V<sub>supply</sub>=5V, λ = λ<sub>peak</sub>)</b>
	<b>ABC = broadband</b> λ <sub>max</sub> = 290 nm λ <sub>S10%</sub> = 227 nm ... 360 nm	<b>1</b> = 1,8 pW/cm <sup>2</sup> ... 18 nW/cm <sup>2</sup>
	<b>A = UVA</b> λ <sub>max</sub> = 331 nm λ <sub>S10%</sub> = 309 nm ... 367 nm	<b>2</b> = 18 pW/cm <sup>2</sup> ... 180 nW/cm <sup>2</sup>
	<b>B = UVB</b> λ <sub>max</sub> = 280 nm λ <sub>S10%</sub> = 243 nm ... 303 nm	<b>3</b> = 180 pW/cm <sup>2</sup> ... 1,8 μW/cm <sup>2</sup>
	<b>C = UVC</b> λ <sub>max</sub> = 275 nm λ <sub>S10%</sub> = 225 nm ... 287 nm	<b>4</b> = 1,8 nW/cm <sup>2</sup> ... 18 μW/cm <sup>2</sup>
	<b>Blue</b> λ <sub>max</sub> = 445 nm λ <sub>S10%</sub> = 390 nm ... 515 nm	<b>5</b> = 18 nW/cm <sup>2</sup> ... 180 μW/cm <sup>2</sup>
	<b>Gap</b> λ <sub>max</sub> = 445 nm λ <sub>S10%</sub> = 190 nm ... 570 nm	<b>6</b> = 180 nW/cm <sup>2</sup> ... 1,8 mW/cm <sup>2</sup>
	<b>E = UV-Index</b> spectral response according to CIE087	<b>7</b> = 1,8 μW/cm <sup>2</sup> ... 18 mW/cm <sup>2</sup>
		<b>8</b> = 18 μW/cm <sup>2</sup> ... 180 mW/cm <sup>2</sup>
		<b>9</b> = 180 μW/cm <sup>2</sup> ... 1,8 W/cm <sup>2</sup>
		<b>10</b> = 1,8 mW/cm <sup>2</sup> ... 18 W/cm <sup>2</sup>
		<b>2</b> = 0 UVI ... 30 UVI

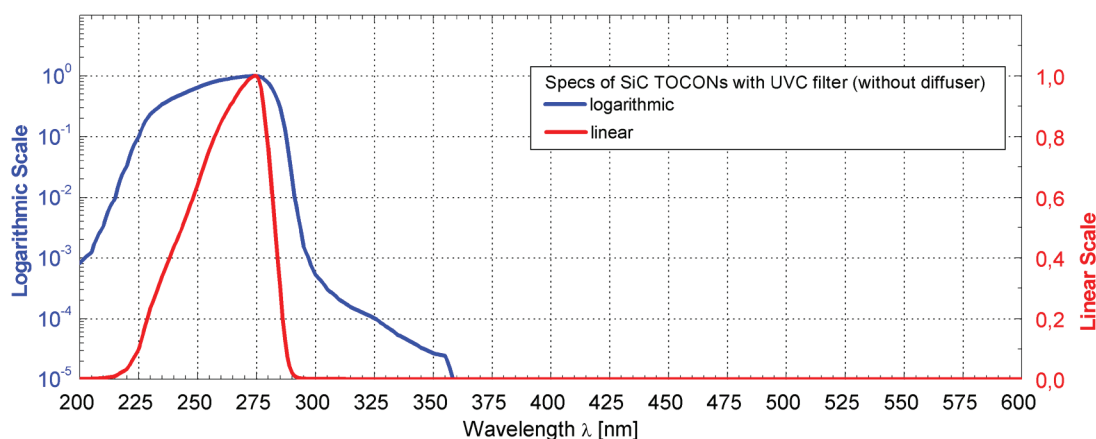
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## SPECIFICATIONS

Parameter	Symbol	Value	Unit
<b>Spectral Characteristics</b>			
Typical Responsivity at Wavelength 275 nm	$S_{max}$	21	mV/nW/cm <sup>2</sup>
Wavelength of max. Spectral Responsivity	$\lambda_{max}$	275	nm
Responsivity Range ( $S=0,1*S_{max}$ )	–	225 ... 287	nm
Visible Blindness ( $S_{max}/S_{>405nm}$ )	VB	$> 10^{10}$	–
<b>General Characteristics (T=25°C, V<sub>supply</sub> =+5 V)</b>			
Supply Voltage	V <sub>Supply</sub>	2,5 ... 5	V
Saturation Voltage	V <sub>Sat</sub>	V <sub>Supply</sub> - 5%	V
Dark Offset Voltage	V <sub>Offset</sub>	50	μV
Temperature Coefficient at Peak	T <sub>c</sub>	< -0,3	%/K
Current Consumption	I	150	μA
Bandwidth (-3 dB)	B	15	Hz
Risetime (10-90%)	t <sub>rise</sub>	0,075	s
<i>(OTHER RISETIMES ON REQUEST)</i>			
<b>Maximum Ratings</b>			
Operating Temperature	T <sub>opt</sub>	-25 ... +85	°C
Storage Temperature	T <sub>stor</sub>	-40 ... +100	°C
Soldering Temperature (3s)	T <sub>sold</sub>	300	°C

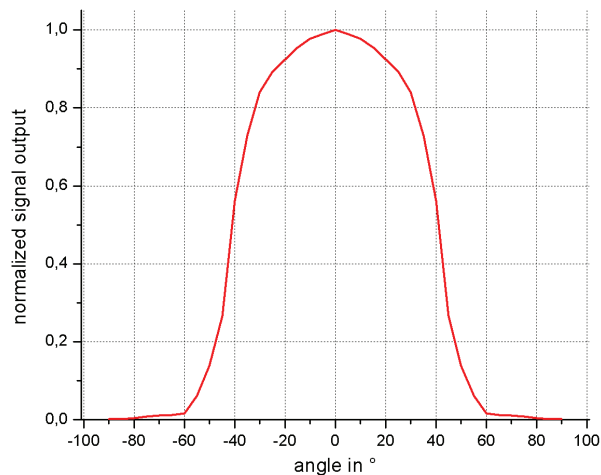
## NORMALIZED SPECTRAL RESPONSIVITY



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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

