Ultraviolet (Broadband) TOCON Datasheets

- **UV photodiode with integrated preamplifier**
- **SiC based UV sensors with 0 to 5 V voltage output**
- **measures intensities from 1.8pW/cm² up to 18W/cm²**

sglux
The UV Experts

BostonElectronics

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TOCON_ABC1

Broadband SiC based UV photodetector with integrated amplifier

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GENERAL FEATURES

Properties of the TOCON_ABC1

- Broadband SiC based UV photodetector in TO5 housing with concentrator lens cap
- 0 ... 5 V voltage output
- peak wavelength at 280 nm
- max. radiation (saturation limit) at peak is 18 nW/cm², minimum radiation (resolution limit) is 1,8 pW/cm²
- Applications: very low UV radiation, flame 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_{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, $\lambda = \lambda_{peak}$)**
	ABC = broadband λ_{max} = 290 nm $\lambda_{S10\%}$ = 227 nm ... 360 nm	**1** = 1,8 pW/cm² ... 18 nW/cm²
	A = UVA λ_{max} = 331 nm $\lambda_{S10\%}$ = 309 nm ... 367 nm	**2** = 18 pW/cm² ... 180 nW/cm² **3** = 180 pW/cm² ... 1,8 µW/cm²
	B = UVB λ_{max} = 280 nm $\lambda_{S10\%}$ = 243 nm ... 303 nm	**4** = 1,8 nW/cm² ... 18 µW/cm² **5** = 18 nW/cm² ... 180 µW/cm²
	C = UVC λ_{max} = 275 nm $\lambda_{S10\%}$ = 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 $\lambda_{S10\%}$ = 390 nm ... 515 nm	**8** = 18 µW/cm² ... 180 mW/cm² **9** = 180 µW/cm² ... 1,8 W/cm²
	Gap λ_{max} = 445 nm $\lambda_{S10\%}$ = 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

TOCON_ABC1

Broadband SiC based UV photodetector with integrated amplifier

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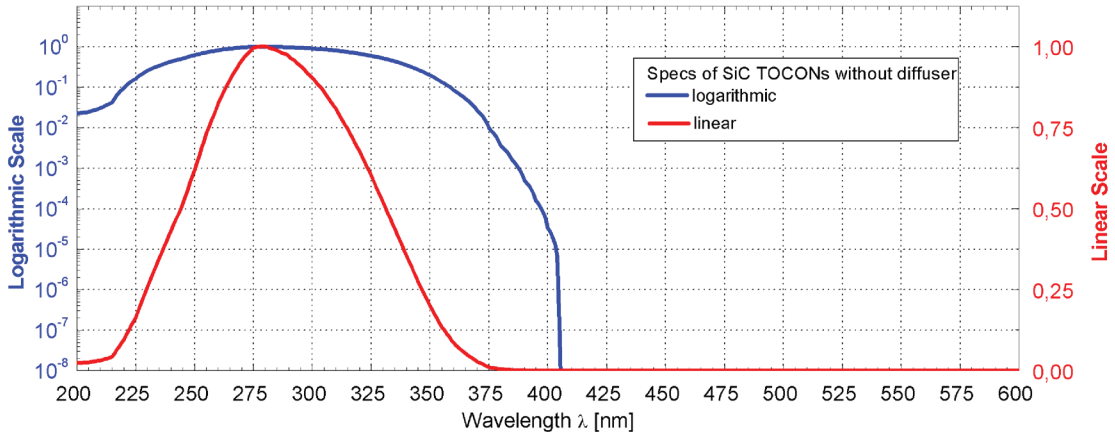
SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	280	mV/nW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	280	nm
Responsivity Range (S=0,1*S_{max})	–	221 ... 358	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}	700	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}	0,182	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



TOCON_ABC1

Broadband SiC based UV photodetector with integrated amplifier

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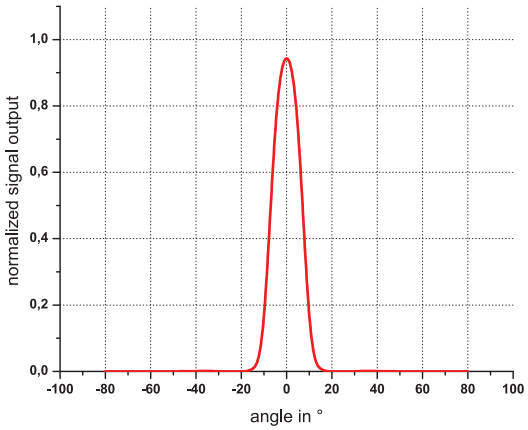
FIELD OF VIEW

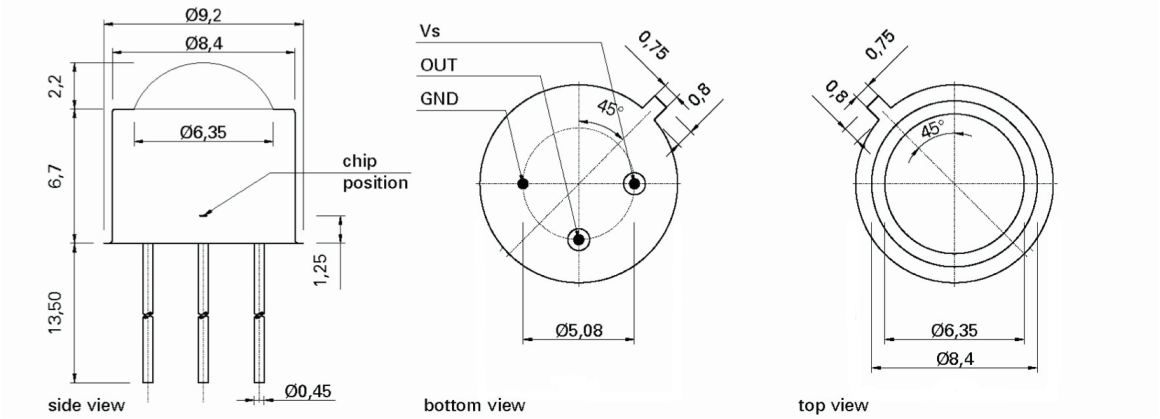


Measurement Setup:

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



TOCON_ABC1

Broadband SiC based UV photodetector with integrated amplifier

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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

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

TOCON_ABC2

Broadband SiC based UV photodetector with integrated amplifier

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GENERAL FEATURES

Properties of the TOCON_ABC2

- Broadband SiC based UV photodetector in TO5 housing with concentrator lens cap
- 0 ... 5 V voltage output
- peak wavelength at 280 nm
- max. radiation (saturation limit) at peak is 180 nW/cm², minimum radiation (resolution limit) is 18 pW/cm²
- Applications: low UV radiation, occupational safety

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, $\lambda = \lambda_{peak}$)**
	ABC = broadband λ_{max} = 290 nm $\lambda_{S10\%}$ = 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 $\lambda_{S10\%}$ = 309 nm ... 367 nm	**3** = 180 pW/cm² ... 1,8 µW/cm²
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	B = UVB λ_{max} = 280 nm $\lambda_{S10\%}$ = 243 nm ... 303 nm	**5** = 18 nW/cm² ... 180 µW/cm²
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	Blue λ_{max} = 445 nm $\lambda_{S10\%}$ = 390 nm ... 515 nm	**8** = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
	Gap λ_{max} = 445 nm $\lambda_{S10\%}$ = 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

TOCON_ABC2

Broadband SiC based UV photodetector with integrated amplifier

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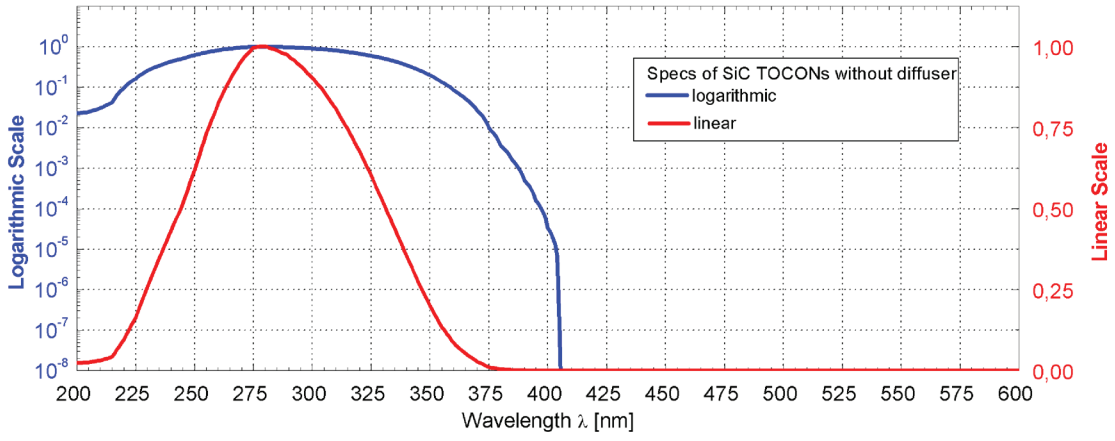
SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	28	mV/nW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	280	nm
Responsivity Range (S=0,1*S_{max})	–	221 ... 358	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}	0,066	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

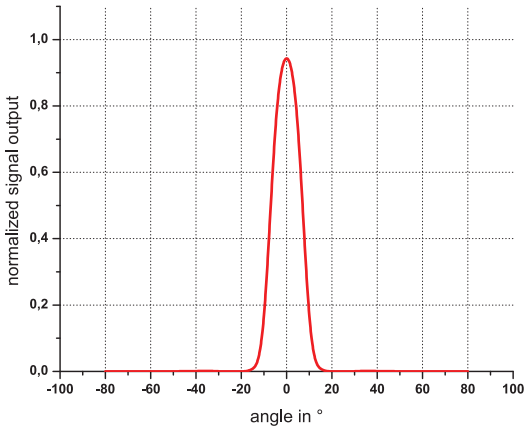
NORMALIZED SPECTRAL RESPONSIVITY



TOCON_ABC2

Broadband SiC based UV photodetector with integrated amplifier

FIELD OF VIEW

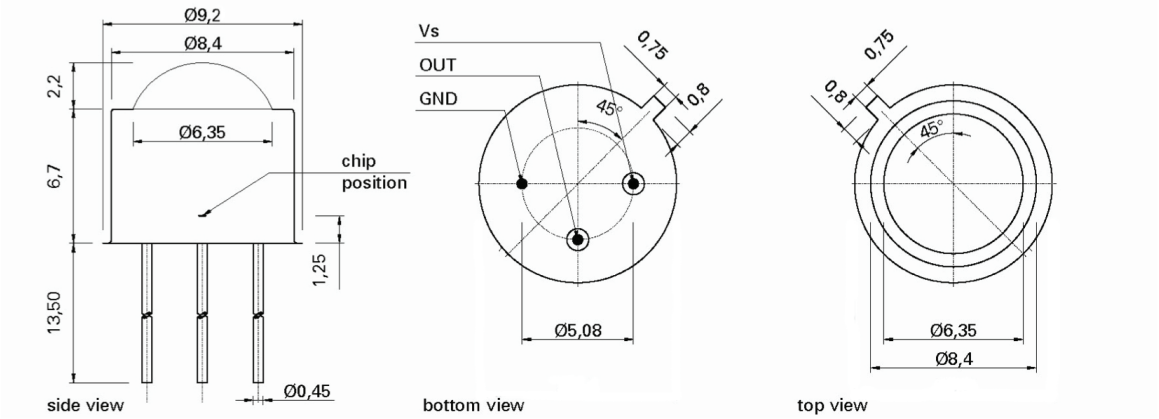


Measurement Setup:

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



TOCON_ABC2

Broadband SiC based UV photodetector with integrated amplifier

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

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

TOCON_ABC3

Broadband SiC based UV photodetector with integrated amplifier

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Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC3

- Broadband SiC based UV photodetector in TO5 housing with diffusor
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 1,8 µW/cm², minimum radiation (resolution limit) is 180 pW/cm²
- Applications: UV radiation detection, occupational safety

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
	A = UVA $λ_{max}$ = 331 nm $λ_{S10\%}$ = 309 nm ... 367 nm	**2** = 18 pW/cm² ... 180 nW/cm²
	B = UVB $λ_{max}$ = 280 nm $λ_{S10\%}$ = 243 nm ... 303 nm	**3** = 180 pW/cm² ... 1,8 µW/cm²
	C = UVC $λ_{max}$ = 275 nm $λ_{S10\%}$ = 225 nm ... 287 nm	**4** = 1,8 nW/cm² ... 18 µW/cm²
	Blue $λ_{max}$ = 445 nm $λ_{S10\%}$ = 390 nm ... 515 nm	**5** = 18 nW/cm² ... 180 µW/cm²
	Gap $λ_{max}$ = 445 nm $λ_{S10\%}$ = 190 nm ... 570 nm	**6** = 180 nW/cm² ... 1,8 mW/cm²
		7 = 1,8 µW/cm² ... 18 mW/cm²
		8 = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
		10 = 1,8 mW/cm² ... 18 W/cm²
	E = UV-Index spectral response according to CIE087	**2** = 0 UVI ... 30 UVI

Rev. 3.1 Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

TOCON_ABC3

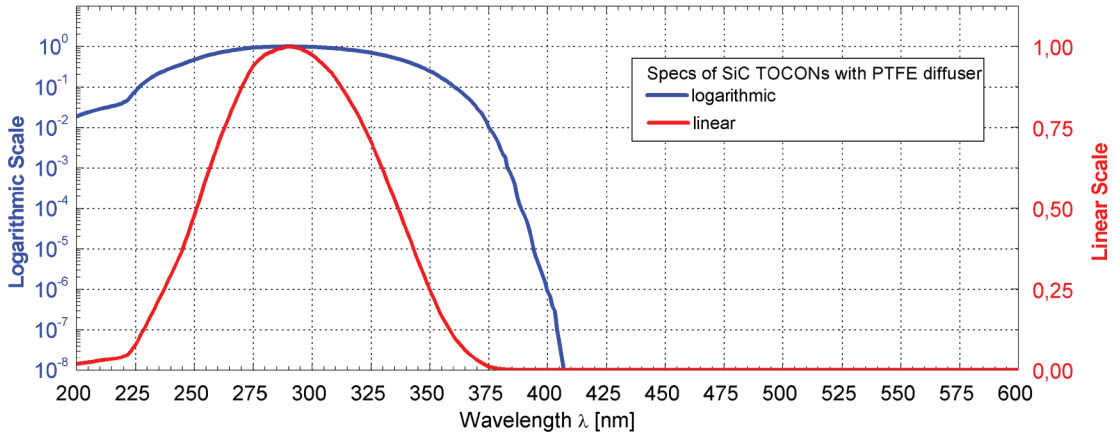
Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	2,8	mV/nW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	700	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}	0,182	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



TOCON_ABC3

Broadband SiC based UV photodetector with integrated amplifier

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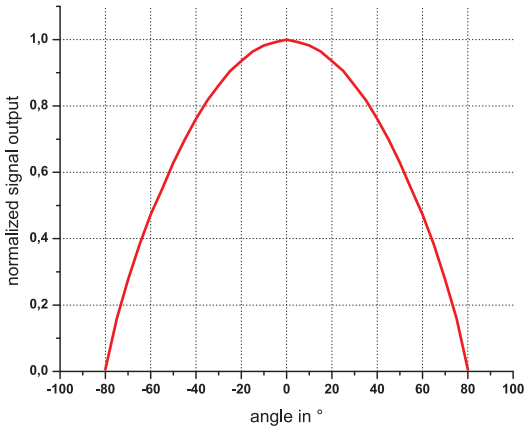
FIELD OF VIEW

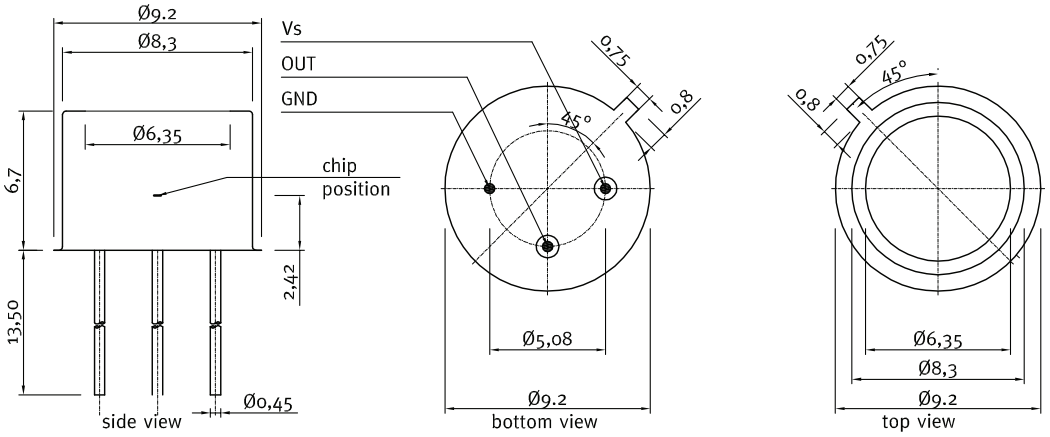


Measurement Setup:

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



TOCON_ABC3

Broadband SiC based UV photodetector with integrated amplifier

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APPLICATION NOTE FOR TOCONs

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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

Rev. 3.1 Due to our strive for continuous improvement, specifications are subject to change within our PCN policy according to JESD46C.

TOCON_ABC4

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC4

- Broadband SiC based UV photodetector in TO5 housing with diffusor
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 18 µW/cm², minimum radiation (resolution limit) is 1,8 nW/cm²
- Applications: UV irradiation measurement

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

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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
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	E = UV-Index spectral response according to CIE087	**2** = 0 UVI ... 30 UVI

TOCON_ABC4

Broadband SiC based UV photodetector with integrated amplifier

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SPECIFICATIONS

Parameter	Symbol	Value	Unit
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Typical Responsivity at Peak Wavelength	S_{max}	280	mV/µW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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
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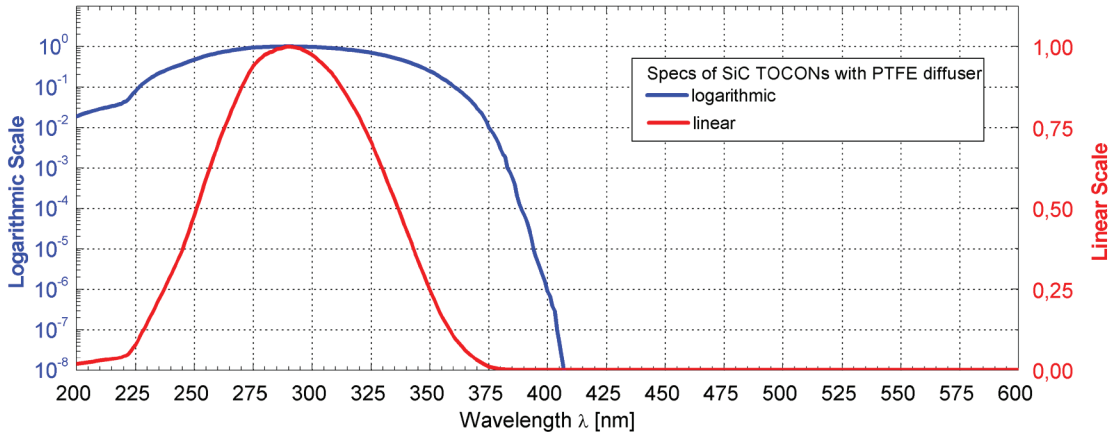
Current Consumption	I	150	µA
Bandwidth (-3 dB)	B	15	Hz
Risetime (10-90%)	t_{rise}	0,066	s
(other risetimes on request)			
Maximum Ratings			
Operating Temperature	T_{opt}	–25 ... +85	°C
Storage Temperature	T_{stor}	–40 ... +100	°C
Soldering Temperature (3s)	T_{sold}	300	°C

NORMALIZED SPECTRAL RESPONSIVITY



TOCON_ABC4

Broadband SiC based UV photodetector with integrated amplifier

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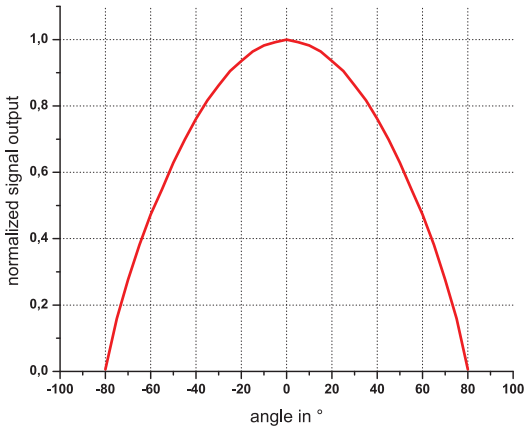
FIELD OF VIEW

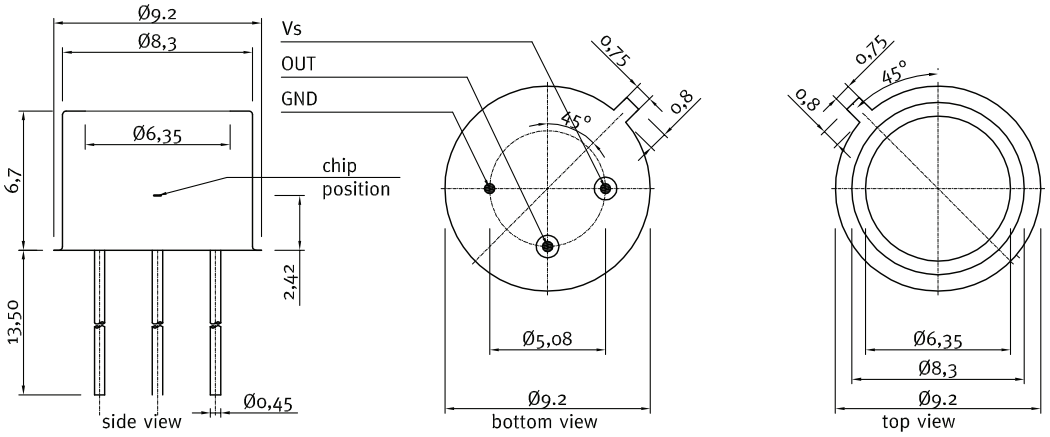


Measurement Setup:

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



TOCON_ABC4

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

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

TOCON_ABC5

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC5

- Broadband SiC based UV photodetector in TO5 housing with diffusor
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 180 µW/cm², minimum radiation (resolution limit) is 18 nW/cm²
- Applications: UV irradiation measurement

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

TOCON_ABC5

Broadband SiC based UV photodetector with integrated amplifier

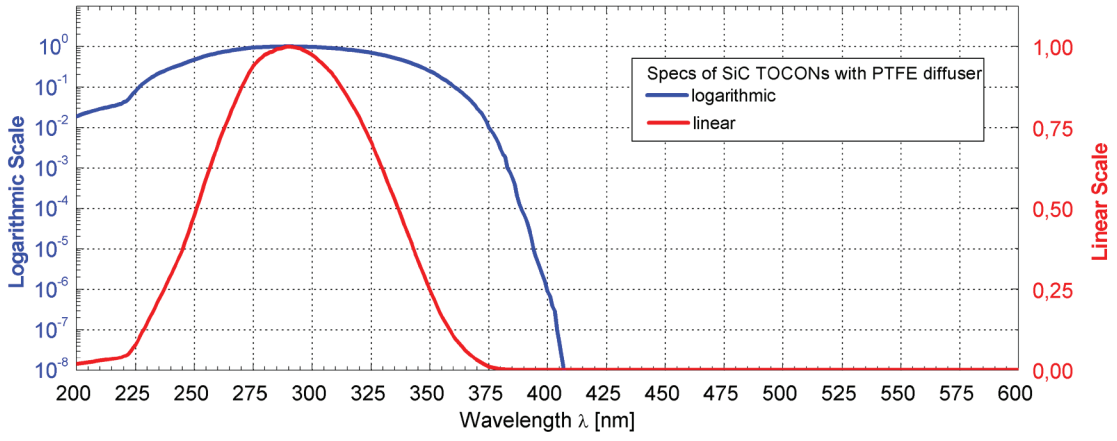
sglux The UV Experts

Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	28	mV/µW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	0,066	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

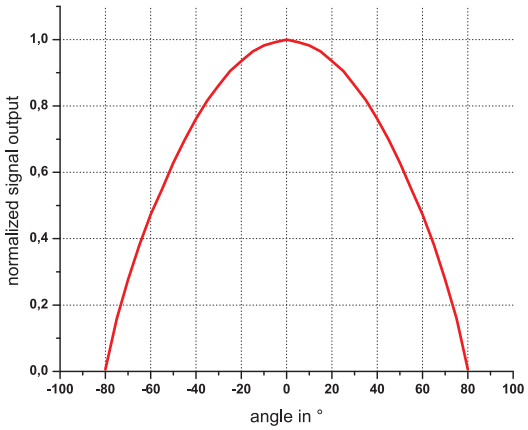
NORMALIZED SPECTRAL RESPONSIVITY



TOCON_ABC5

Broadband SiC based UV photodetector with integrated amplifier

FIELD OF VIEW

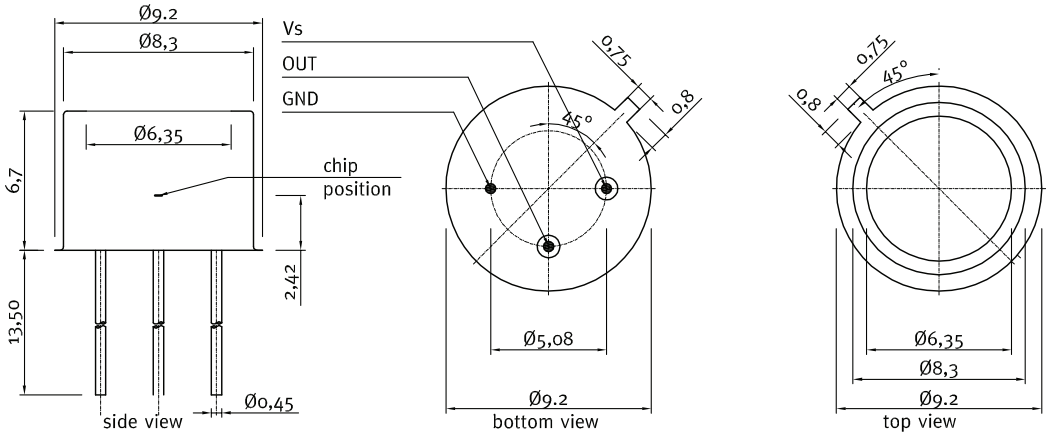


Measurement Setup:

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



TOCON_ABC5

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

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

TOCON_ABC6

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC6

- Broadband SiC based UV photodetector in TO5 housing with diffusor
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 1,8 mW/cm², minimum radiation (resolution limit) is 180 nW/cm²
- Applications: UV irradiation measurement, optimized for total sun UV measurements

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, $\lambda = \lambda_{peak}$)**
	ABC = broadband λ_{max} = 290 nm $\lambda_{S10\%}$ = 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 $\lambda_{S10\%}$ = 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 $\lambda_{S10\%}$ = 243 nm ... 303 nm	**5** = 18 nW/cm² ... 180 µW/cm²
	C = UVC λ_{max} = 275 nm $\lambda_{S10\%}$ = 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 $\lambda_{S10\%}$ = 390 nm ... 515 nm	**8** = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
	Gap λ_{max} = 445 nm $\lambda_{S10\%}$ = 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

TOCON_ABC6

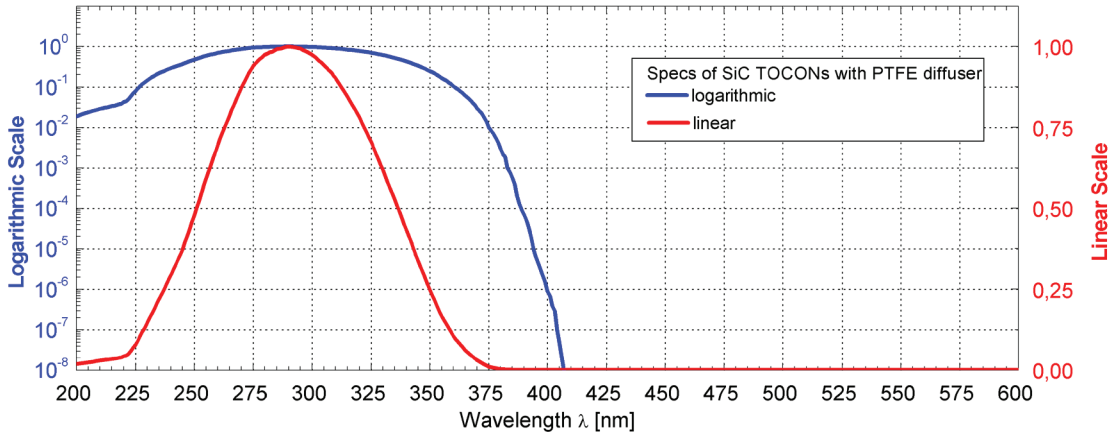
Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts
Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	2,8	mV/µW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	0,073	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

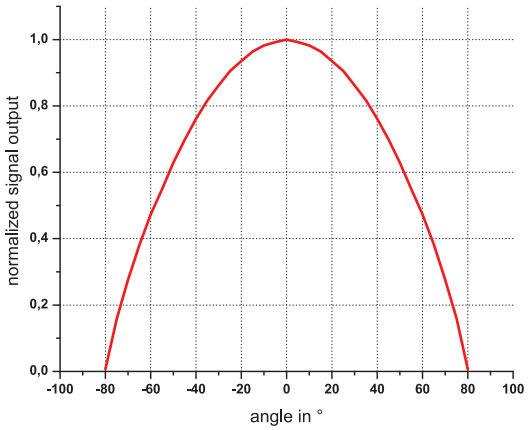
NORMALIZED SPECTRAL RESPONSIVITY



TOCON_ABC6

Broadband SiC based UV photodetector with integrated amplifier

FIELD OF VIEW

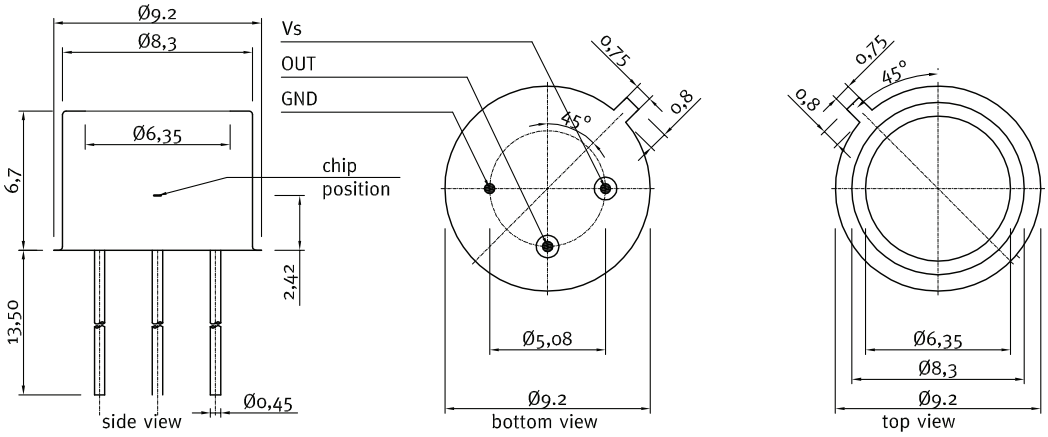


Measurement Setup:

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



TOCON_ABC6

Broadband SiC based UV photodetector with integrated amplifier

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

TOCON_ABC7

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC7

- Broadband SiC based UV photodetector in TO5 housing with diffusor
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 18 mW/cm², minimum radiation (resolution limit) is 1,8 µW/cm²
- Applications: UV irradiation measurement

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
	A = UVA $λ_{max}$ = 331 nm $λ_{S10\%}$ = 309 nm ... 367 nm	**2** = 18 pW/cm² ... 180 nW/cm²
	B = UVB $λ_{max}$ = 280 nm $λ_{S10\%}$ = 243 nm ... 303 nm	**3** = 180 pW/cm² ... 1,8 µW/cm²
	C = UVC $λ_{max}$ = 275 nm $λ_{S10\%}$ = 225 nm ... 287 nm	**4** = 1,8 nW/cm² ... 18 µW/cm²
	Blue $λ_{max}$ = 445 nm $λ_{S10\%}$ = 390 nm ... 515 nm	**5** = 18 nW/cm² ... 180 µW/cm²
	Gap $λ_{max}$ = 445 nm $λ_{S10\%}$ = 190 nm ... 570 nm	**6** = 180 nW/cm² ... 1,8 mW/cm²
		7 = 1,8 µW/cm² ... 18 mW/cm²
		8 = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
		10 = 1,8 mW/cm² ... 18 W/cm²
	E = UV-Index spectral response according to CIE087	**2** = 0 UVI ... 30 UVI

TOCON_ABC7

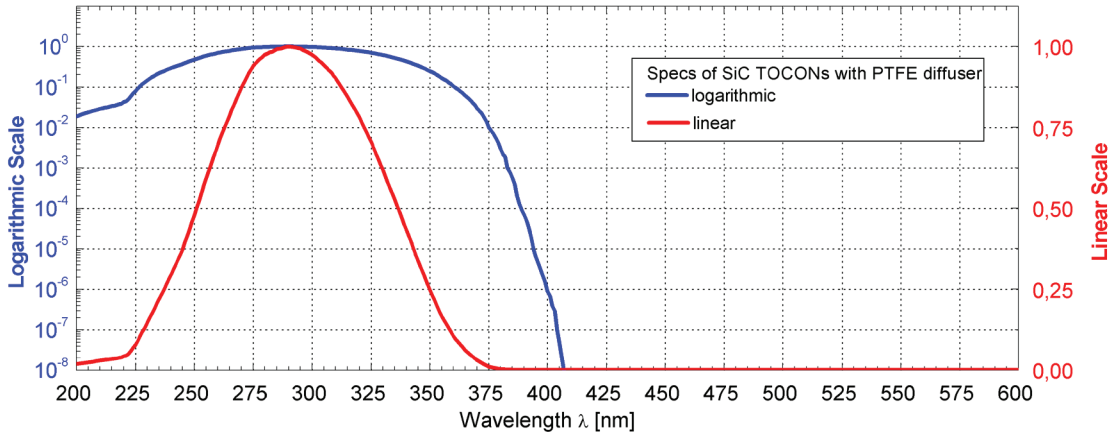
Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts
Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	280	mV/mW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	0,073	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

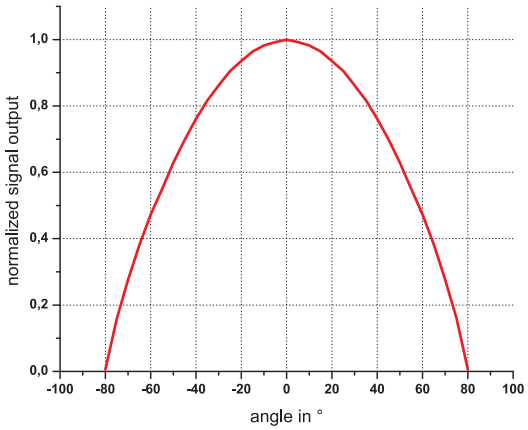
NORMALIZED SPECTRAL RESPONSIVITY



TOCON_ABC7

Broadband SiC based UV photodetector with integrated amplifier

FIELD OF VIEW

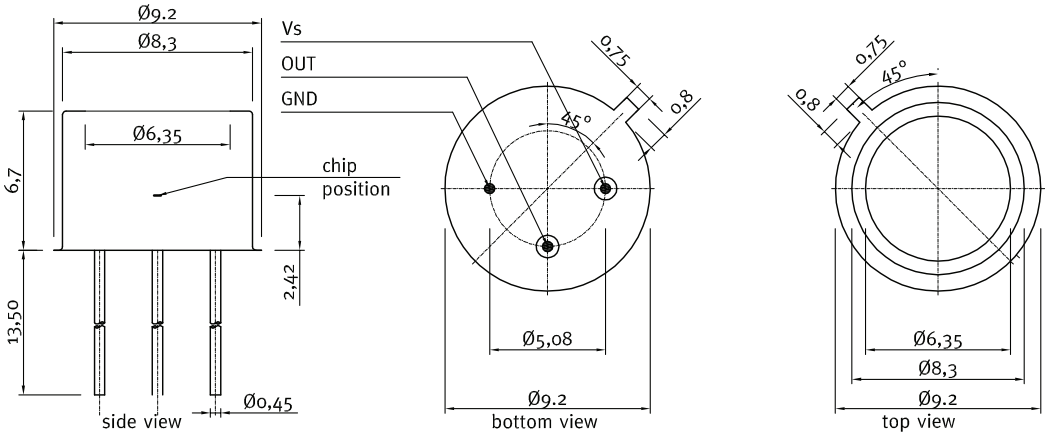


Measurement Setup:

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



TOCON_ABC7

Broadband SiC based UV photodetector with integrated amplifier

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

TOCON_ABC8

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC8

- Broadband SiC based UV photodetector in TO5 housing with attenuator
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 180 mW/cm², minimum radiation (resolution limit) is 18 µW/cm²
- Applications: curing 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
	A = UVA $λ_{max}$ = 331 nm $λ_{S10\%}$ = 309 nm ... 367 nm	**2** = 18 pW/cm² ... 180 nW/cm²
	B = UVB $λ_{max}$ = 280 nm $λ_{S10\%}$ = 243 nm ... 303 nm	**3** = 180 pW/cm² ... 1,8 µW/cm²
	C = UVC $λ_{max}$ = 275 nm $λ_{S10\%}$ = 225 nm ... 287 nm	**4** = 1,8 nW/cm² ... 18 µW/cm²
	Blue $λ_{max}$ = 445 nm $λ_{S10\%}$ = 390 nm ... 515 nm	**5** = 18 nW/cm² ... 180 µW/cm²
	Gap $λ_{max}$ = 445 nm $λ_{S10\%}$ = 190 nm ... 570 nm	**6** = 180 nW/cm² ... 1,8 mW/cm²
		7 = 1,8 µW/cm² ... 18 mW/cm²
		8 = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
		10 = 1,8 mW/cm² ... 18 W/cm²
	E = UV-Index spectral response according to CIE087	**2** = 0 UVI ... 30 UVI

TOCON_ABC8

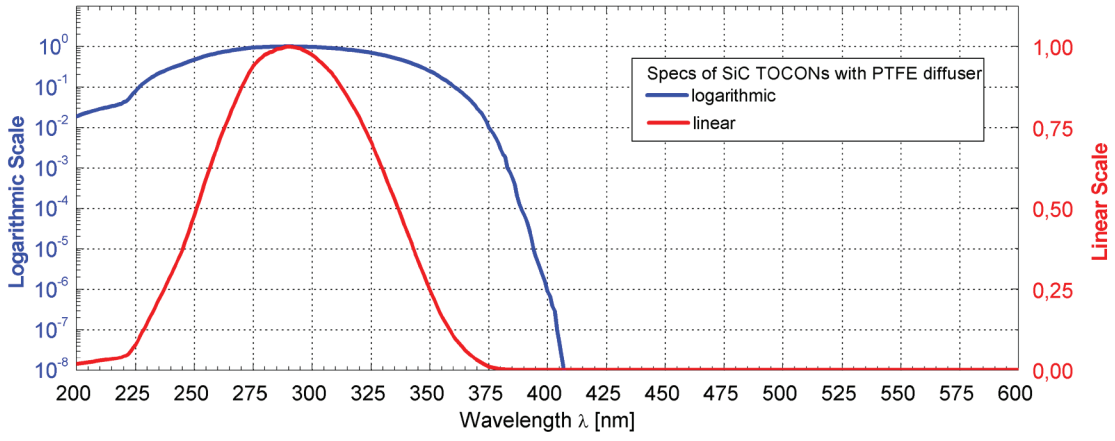
Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	28	mV/mW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	0,069	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

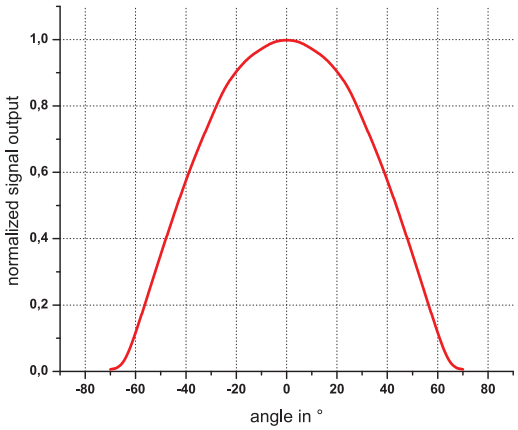


TOCON_ABC8

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts Boston Electronics

FIELD OF VIEW

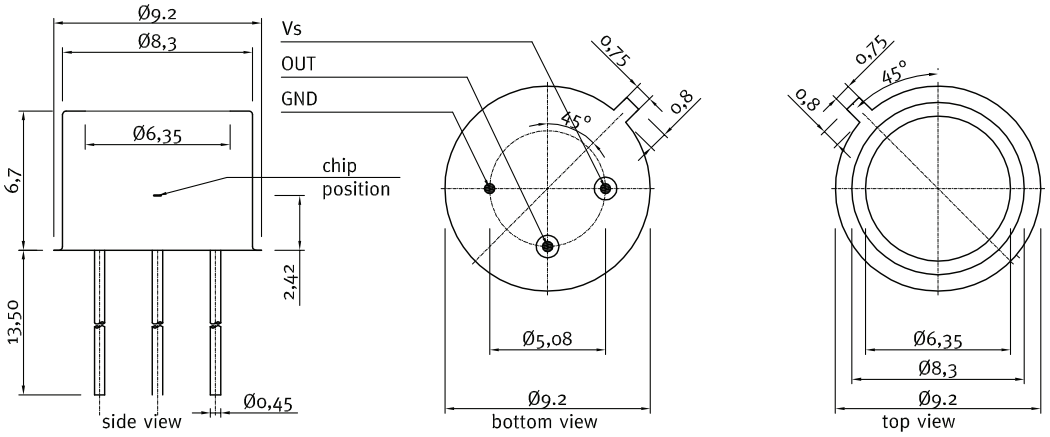


Measurement Setup:

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



TOCON_ABC8

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

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

TOCON_ABC9

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC9

- Broadband SiC based UV photodetector in TO5 housing with attenuator
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 1,8 W/cm², minimum radiation (resolution limit) is 180 µW/cm²
- Applications: curing 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, $\lambda = \lambda_{peak}$)**
	ABC = broadband λ_{max} = 290 nm $\lambda_{S10\%}$ = 227 nm ... 360 nm	**1** = 1,8 pW/cm² ... 18 nW/cm²
	A = UVA λ_{max} = 331 nm $\lambda_{S10\%}$ = 309 nm ... 367 nm	**2** = 18 pW/cm² ... 180 nW/cm²
	B = UVB λ_{max} = 280 nm $\lambda_{S10\%}$ = 243 nm ... 303 nm	**3** = 180 pW/cm² ... 1,8 µW/cm²
	C = UVC λ_{max} = 275 nm $\lambda_{S10\%}$ = 225 nm ... 287 nm	**4** = 1,8 nW/cm² ... 18 µW/cm²
	Blue λ_{max} = 445 nm $\lambda_{S10\%}$ = 390 nm ... 515 nm	**5** = 18 nW/cm² ... 180 µW/cm²
	Gap λ_{max} = 445 nm $\lambda_{S10\%}$ = 190 nm ... 570 nm	**6** = 180 nW/cm² ... 1,8 mW/cm²
		7 = 1,8 µW/cm² ... 18 mW/cm²
		8 = 18 µW/cm² ... 180 mW/cm²
		9 = 180 µW/cm² ... 1,8 W/cm²
		10 = 1,8 mW/cm² ... 18 W/cm²
	E = UV-Index spectral response according to CIE087	**2** = 0 UVI ... 30 UVI

TOCON_ABC9

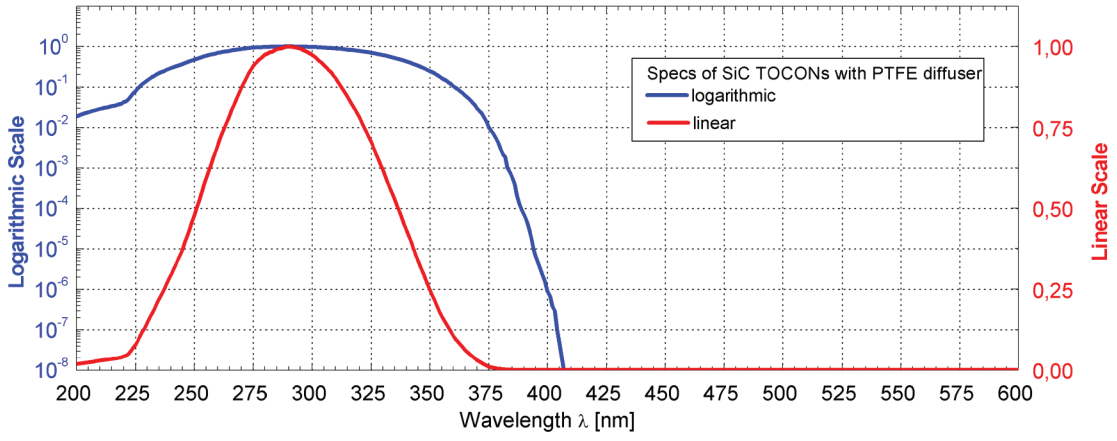
Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	2,8	mV/mW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	0,069	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



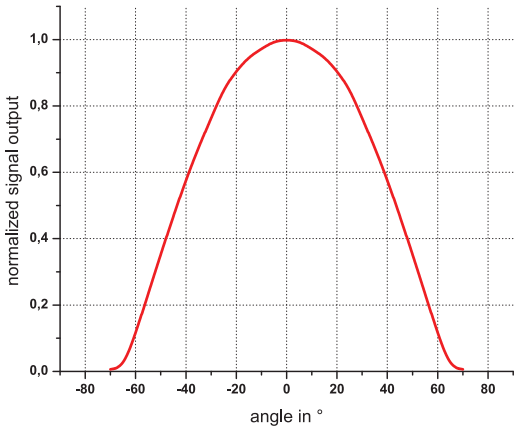
TOCON_ABC9

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

FIELD OF VIEW

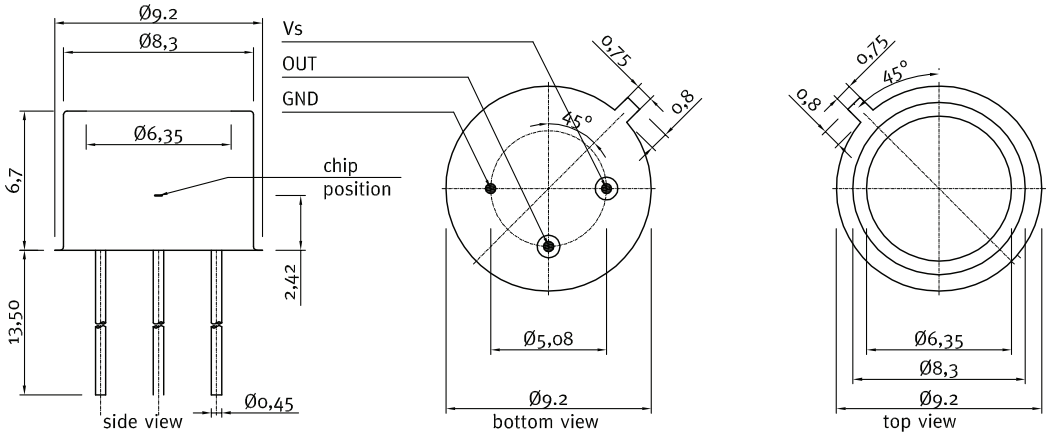


Measurement Setup:

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



TOCON_ABC9

Broadband SiC based UV photodetector with integrated amplifier

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APPLICATION NOTE FOR TOCONs

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- 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

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- UV probes in small plastic housings with a TOCON inside
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Water pressure proof TOCON housing

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- Easy to mount and to connect
- Integrated sensor connector (Binder 5-Pin plug)
- Cable available

TOCON_ABC10

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts

Boston Electronics

GENERAL FEATURES

Properties of the TOCON_ABC10

- Broadband SiC based UV photodetector in TO5 housing with attenuator
- 0 ... 5 V voltage output
- peak wavelength at 290 nm
- max. radiation (saturation limit) at peak is 18 W/cm², minimum radiation (resolution limit) is 1,8 mW/cm²
- Applications: UV hardening control and other very high UV radiation sources

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.

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	ABC = broadband λ_{max} = 290 nm $\lambda_{S10\%}$ = 227 nm ... 360 nm	**1** = 1,8 pW/cm² ... 18 nW/cm²
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TOCON_ABC10

Broadband SiC based UV photodetector with integrated amplifier

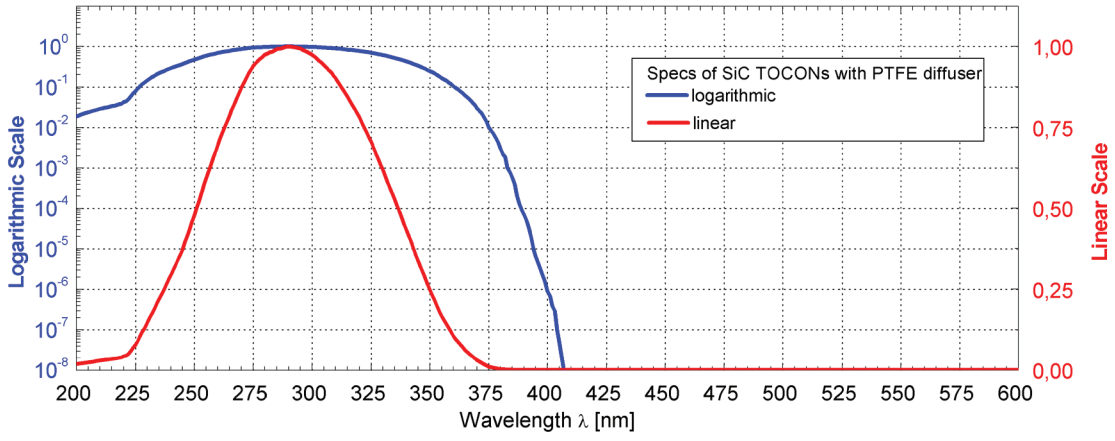
sglux The UV Experts

Boston Electronics

SPECIFICATIONS

Parameter	Symbol	Value	Unit
Spectral Characteristics			
Typical Responsivity at Peak Wavelength	S_{max}	0,28	mV/mW/cm²
Wavelength of max. Spectral Responsivity	λ_{max}	290	nm
Responsivity Range (S=0,1*S_{max})	–	227 ... 360	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}	0,069	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

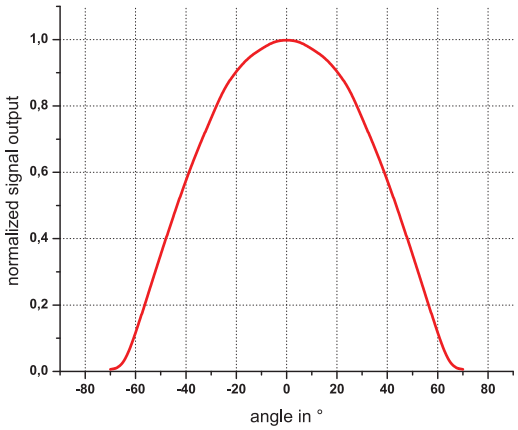


TOCON_ABC10

Broadband SiC based UV photodetector with integrated amplifier

sglux The UV Experts
Boston Electronics

FIELD OF VIEW



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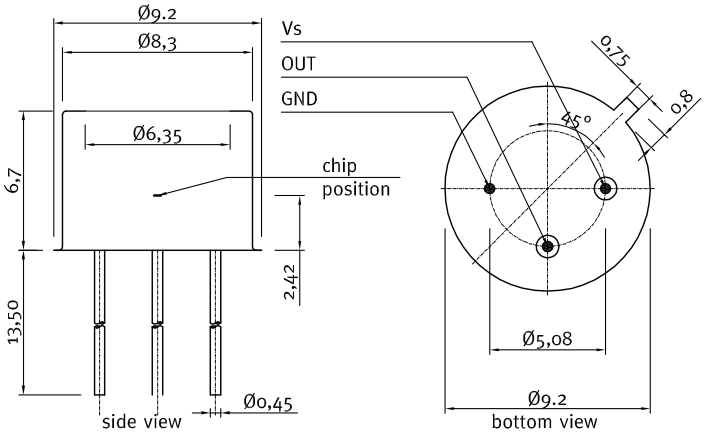
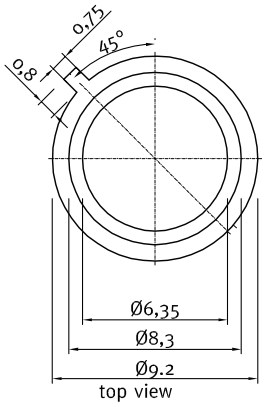
DRAWING





TOCON_ABC10

Broadband SiC based UV photodetector with integrated amplifier

APPLICATION NOTE FOR TOCONs

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- Optional feature for all TOCON detectors without concentrator lens
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