Instruction manual and data sheet PCA-870-05-10-1550-x

Photoconductive THz antenna for laser excitation wavelengths λ ~ 1000 nm … 1550 nm

PCA – Photoconductive Antenna

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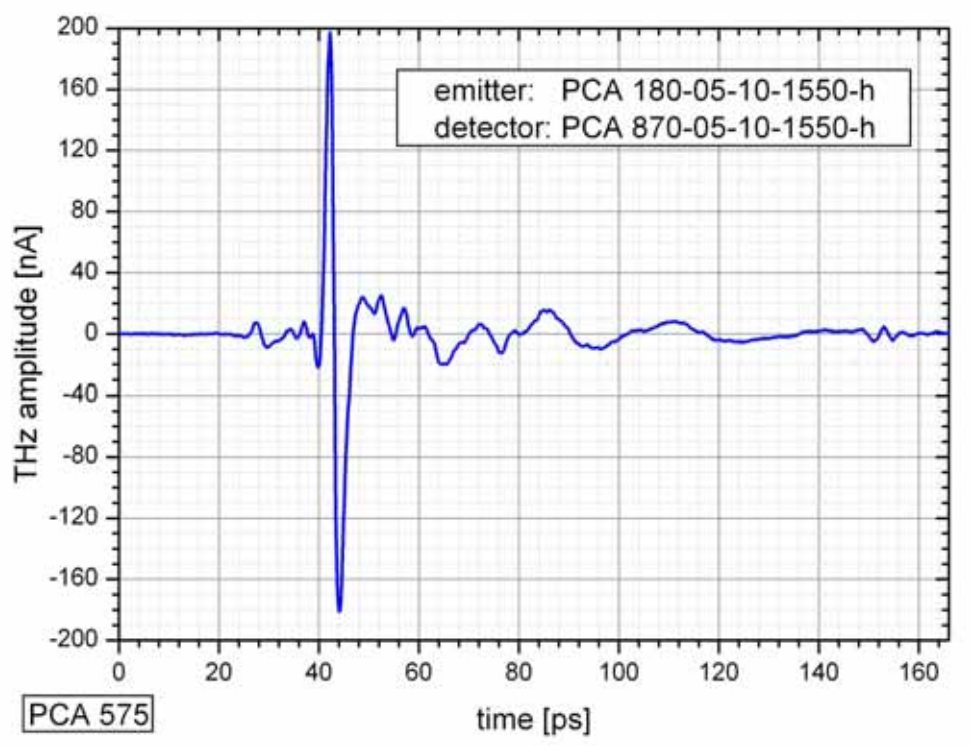
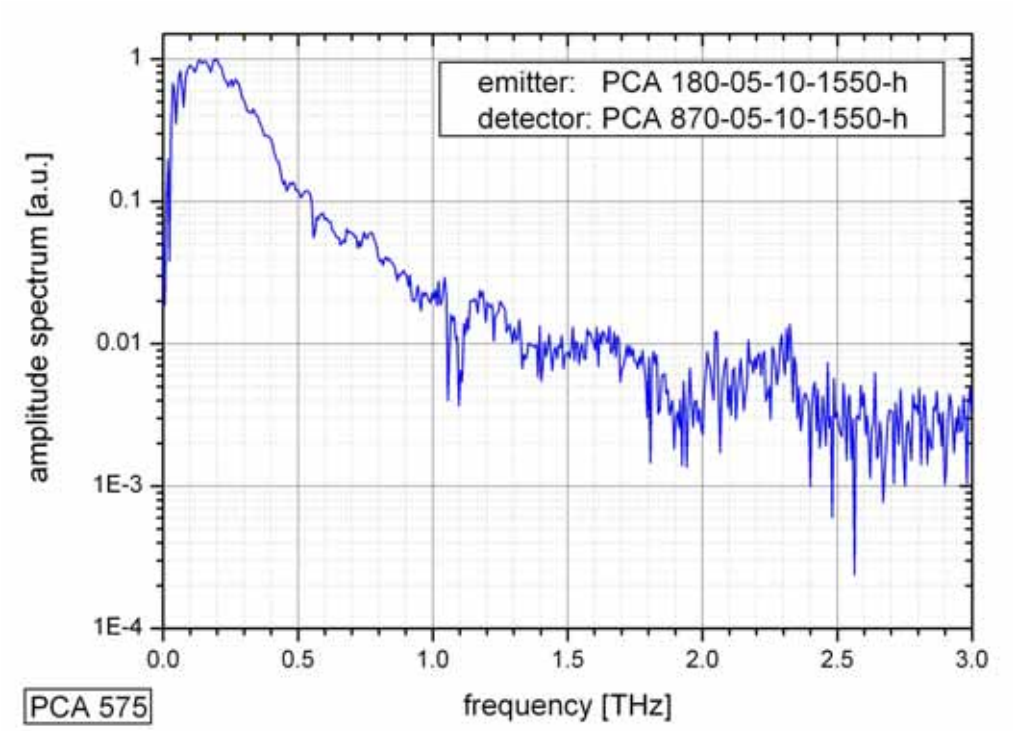
1. Spectral performance

measurement from Philips-University Marburg, group Prof.. Koch in Germany

laser excitation wavelength: 1550 nm





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2. Antenna parameters

Parameter	minimum ratings	standard	maximum ratings
Dark resistance	4 kΩ	20 kΩ	40 kΩ
Voltage		5 V	6 V
Optical mean power @ 50 – 100 MHz repetition rate		15 mW	20 mW
Pulse fluence		300 µJ/cm^2	500 µJ/cm^2

Attention: The F-number of the optical lens focusing the laser beam onto the antenna gap must be larger then a certain value to avoid too high pulse fluence. This means, that the minimum diameter of the focused beam waist must be about 120 % of the gap distance g. For a Gaussian beam the minimum focus length f_{min} of the optical lens can be estimated as

$$f_{\min} = \frac{0.3 \cdot \pi \cdot g \cdot D}{\lambda}$$

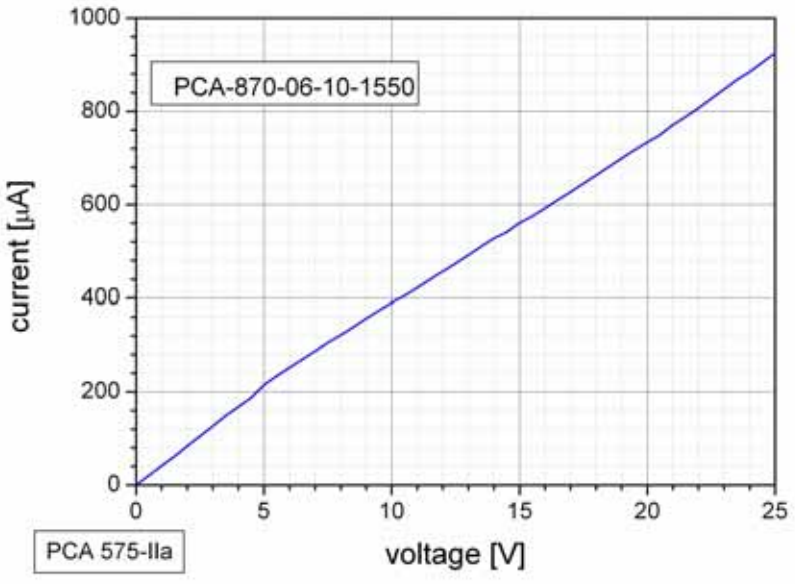
with g – gap distance of the antenna

λ - laser wavelength

D – diameter of the laser beam hitting the focusing lens.

For λ = 1,5 µm and g = 5 µm the minimum possible F-number of the lens is $f_{min}/D = \pi$.

Dark current voltage characteristic



3. Antenna design

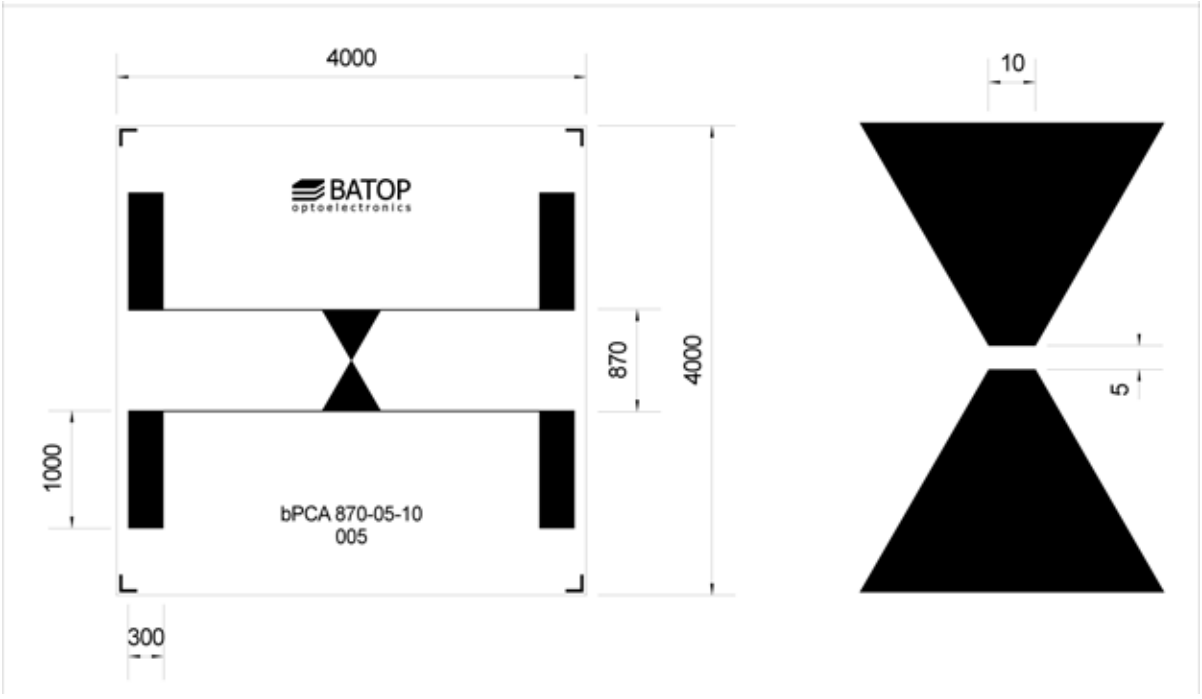


Photo PCA 870-05-10-1550 (survey)

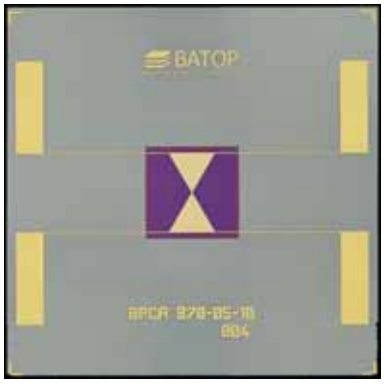


Photo PCA 870-05-10-1550

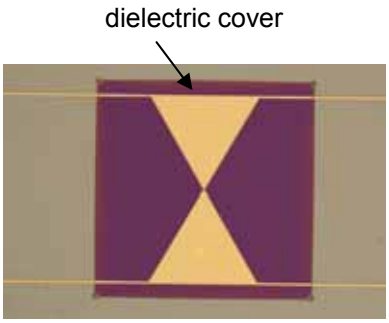


Photo PCA 870-05-10-1550 (detail)

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4. Order information

PCA-870-05-10-1550-**x**

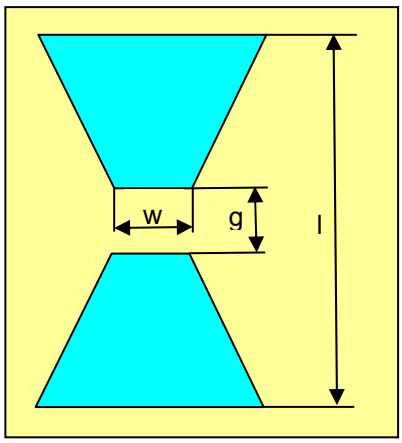
Photoconductive antenna

length l = 870 µm

gap g = 5 µm

width w = 10 µm

laser wavelength λ = 1550 nm
(1000 nm … 1550 nm)



x denotes the type of mounting as follows:

x = 0	unmounted chip 2 mm x 2 mm with 4 bond contact pads
x = h	mounted on an Al disc with 25.4 mm ∅ and hyperhemispherical silicon substrate lens, 1m coaxial cable with BNC or SMA connector
x = a	mounted on an Al disc with 25.4 mm ∅ and aspheric focusing silicon substrate lens, 1m coaxial cable with BNC or SMA connector
x = c	mounted on an Al disc with 25.4 mm ∅ and aspheric collimating silicon substrate lens CL-12 for 12 mm THz beam diameter, 1m coaxial cable with BNC or SMA connector
x = h-f	fiber coupled antenna with hyperhemispherical silicon substrate lens
x = l	with aspheric focusing optical lens for free space laser excitation
x = p	with preamplifier for detector antenna

For information about THz beam guiding possibilities please click here

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