

IPCA 光电导天线阵列(iPCA-interdigital array)

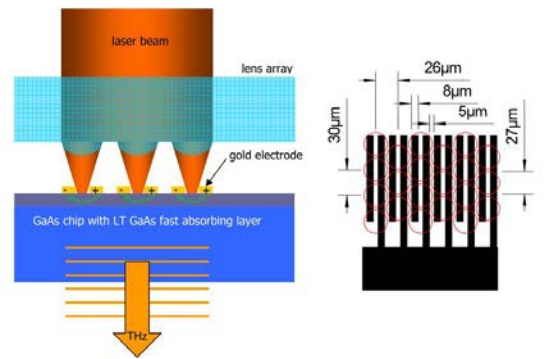
品牌： Batop

型号： IPCA

BATOP 不仅提供单带隙天线，还包括整合了微透镜的高能大狭缝交叉天线阵列和整套的太赫兹光谱仪。

产品特点：

- 高太赫兹输出功率（最高可至 280uW）
- 大面积发射/探测
- 高的转换效率~ 10^{-4} (100 μ W THz / 1 W optical power)
- 谱宽 0.1 – 3 THz
- 封装有超半球 Si 透镜和 SiO₂ 透镜阵列

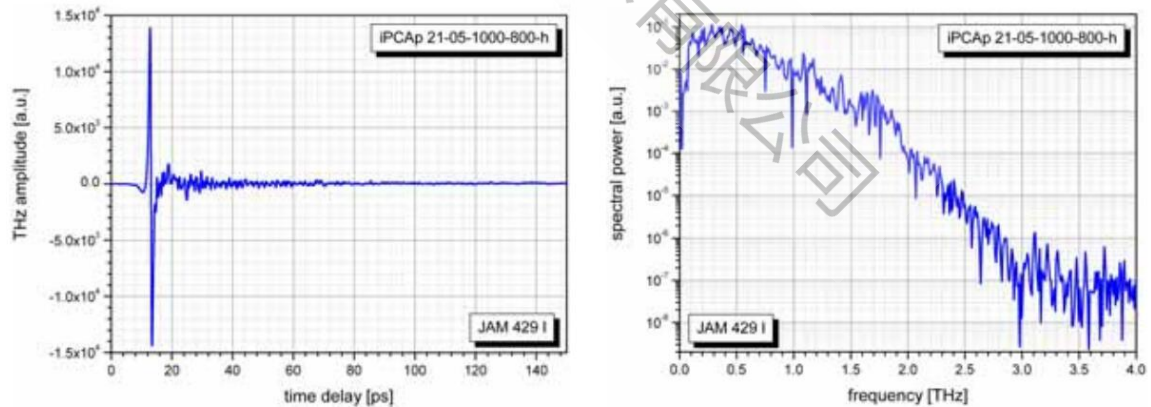


Part No.	Delivery time	l (μm)	g (μm)	w (μm)	Description
iPCA-21-05-300-800-h	1 week	21	05	300	interdigital photoconductive terahertz antenna, resonance frequency 2 THz, gap distance 5 μm, active area 300 μm x 300 μm, optical excitation wavelength λ= 800 nm, with adjusted hyperhemispherical silicon lens, BNC connector
iPCA-21-05-1000-800-h	1 week	21	05	1000	interdigital photoconductive terahertz antenna, resonance frequency 2 THz, gap distance 5 μm, active area 1 mm x 1 mm, optical excitation wavelength λ= 800 nm, with adjusted hyperhemispherical silicon lens, BNC connector

iPCA working principle

An extended gap along the finger electrodes of the iPCA is illuminated by a short pulse laser beam. By using the microlens array only every second gap between the finger structure is excited by the laser. The fill factor of the lens array of 73.5 % ensures, that nearly the total optical laser energy is used for excitation of carriers. Despite of the large emitting area the needed voltage for the carrier excitation is low (< 35 V) because of the small gap of only $5 \mu\text{m}$. The coherent excitation of the single emitters located at every microlens spot results in a constructive interference of the radiated THz waves in the far field.

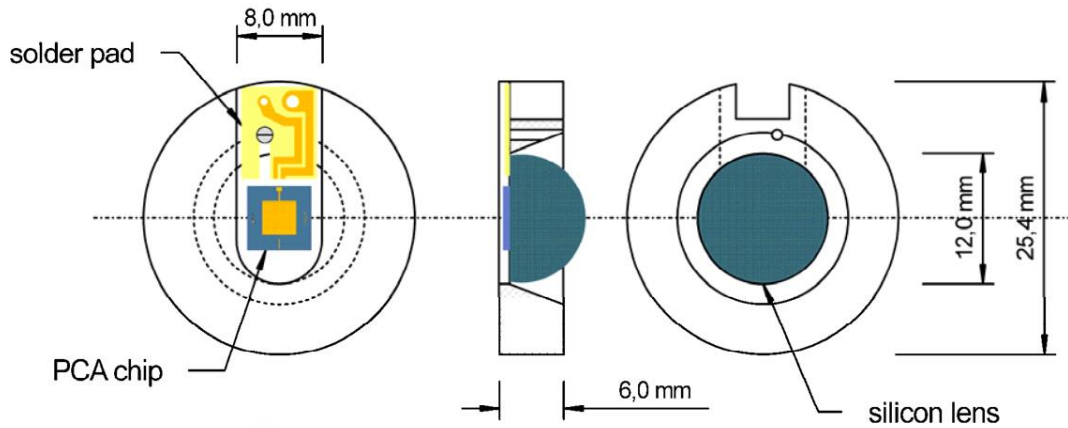
THz-spectrum:



THz pulse: measured by B. Pradarutti, Fraunhofer-Institut Angewandte Optik und Feinmechanik, Jena, Germany

Mounting:

iPCA chip, size $4 \text{ mm} \times 4 \text{ mm}$, thickness $625 \mu\text{m}$, mounted on 25.4 mm diameter black aluminium mount with prealigned hyperhemispherical silicon lens $\varnothing 12 \text{ mm}$ and prealigned fused silica lens array, size $2 \text{ mm} \times 2 \text{ mm}$, and 1 m coaxial cable (RG 178) with BNC or SMA connector.



Part No. example	Description
iPCA-21-05-1000-800-h	interdigital PhotoConductive Antenna
iPCA-21-05-1000-800-h	length $l = 21 \mu\text{m}$
iPCA-21-05-1000-800-h	gap distance $g = 5 \mu\text{m}$
iPCA-21-05-1000-800-h	width $w = 1000 \mu\text{m}$
iPCA-21-05-1000-800-h	laser excitation wavelength $\lambda \sim 800 \text{ nm}$
iPCA-21-05-300-800-h	mounted on a hyperhemispherical Si lens with 12 mm diameter
iPCA-21-05-1000-800-h	mounted on a hyperhemispherical Si lens with 12 mm diameter
	additional options:
iPCA-21-05-1000-800-c	mounted on an collimating aspheric Si substrate lens with 12 mm diameter download THz beam guiding information
iPCA-21-05-1000-800-a	mounted on an aspheric focusing Si lens with 12 mm diameter download THz beam guiding information
iPCA-21-05-1000-800-h-f	fiber coupled antenna with FC/PC connector

