

Terahertz Photoconductive Antennas (THz-PCAs)

T-Era-400A-800-air



Key Features

- Rugged Packaging
- Wideband THz Signal
- Integrated Silicon Lens
- Standard Ø1" Treaded Body
- Easy to Mount
- Ready to Use

Applications

- Terahertz Spectroscopy
- Terahertz Imaging
- Material characterization
- Material sensing
- Non-destructive test
- Terahertz spectroscopy
- Hidden object detection
- Product inspection
- Manufacturing quality control
- Material identification, such as: plastics; pulp and paper; gels organic powders; adhesives
- Thickness measurement and uniformity analysis
- Coating and thin film analysis
- Additives analysis
- Electronic chip fault analysis
- THz Time-domain Systems

Product Overview

The T-Era-400A-800-air terahertz photoconductive antenna (THz-PCA) is used to generate wideband THz pulses in terahertz time-domain systems. The T-Era-400A-800-air THz-PCA is made on high resistive ultra-fast epitaxially grown low-temperature GaAs (LT-GaAs) substrates packaged in TeTechS' patent pending THz chip enclosure module. The enclosure module houses the THz-PCA with a collimating high-resistive silicon lens attach to the back side of the THz-PCA chip. The device is packaged in a modular format so that it is easy to change the THz-PCA chip inside the enclosure at a fraction of cost. The device is shipped with the silicon lens aligned and packaged on the back side of the THz-PCA chip. The silicon lens can be re-aligned after changing the THz-PCA chip using our silicon lens setting fixtures.

An input bias voltage can be applied to the chip through an isolated MMCX connector. The standard Ø1" treaded body makes it convenient to attach the module to other standard optical components or mount it on an optical bench. When excited by optical pulses with 40 mW average optical power, the T-Era-400A-800-air THz-PCA generates 23 nA peak THz photocurrent with more than 60dB terahertz power spectrum dynamic range.

Product Specifications

| | |
|-------------------------------|---------------|
| Optical Excitation Wavelength | 750 nm-850 nm |
| Average Optical Power | 10 mW-100 mW |
| Bias Voltage | 5 V-200 V |
| Spectrum Bandwidth | >4.5 THz |
| Power Spectrum Dynamic Range | >50 dB |
| Size (O.D.) | 1" |

Typical THz Time-Domain Measurement Settings

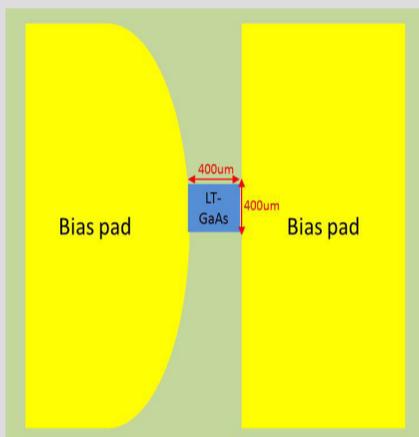
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| Transmitter Module | T-Era-400A-800-air |
| Receiver Module | T-Era-20D40P-800-air |
| Optical Excitation Wavelength | 800 nm |
| Optical Pulse Duration | 100 fs |
| Average Optical Power on Transmitter | 50 mW |
| Average Optical Power on Receiver | 15 mW |
| Bias Voltage on Transmitter | 60 V |

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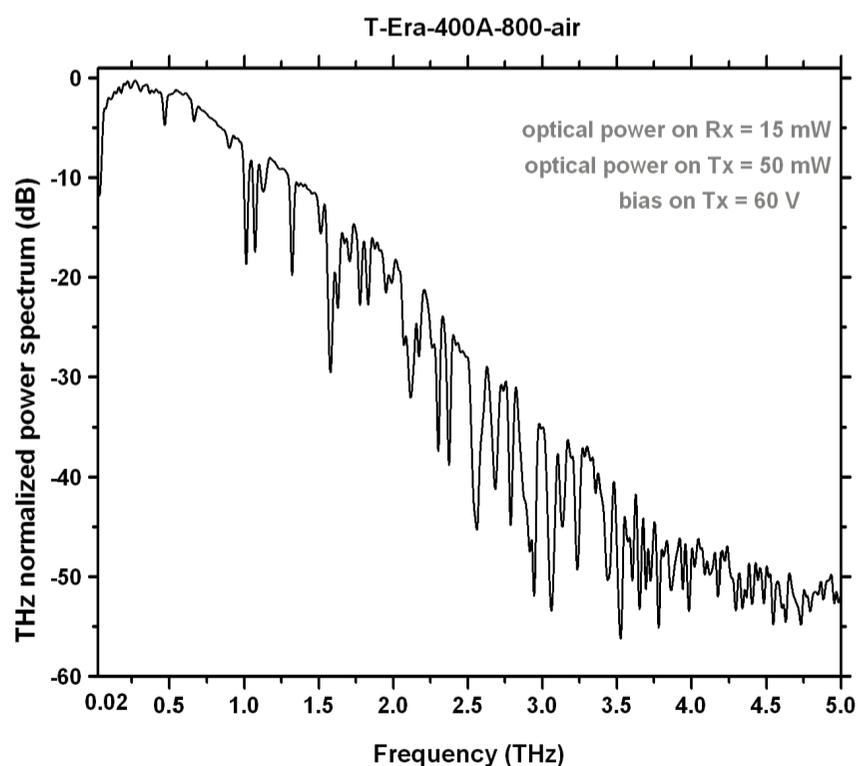
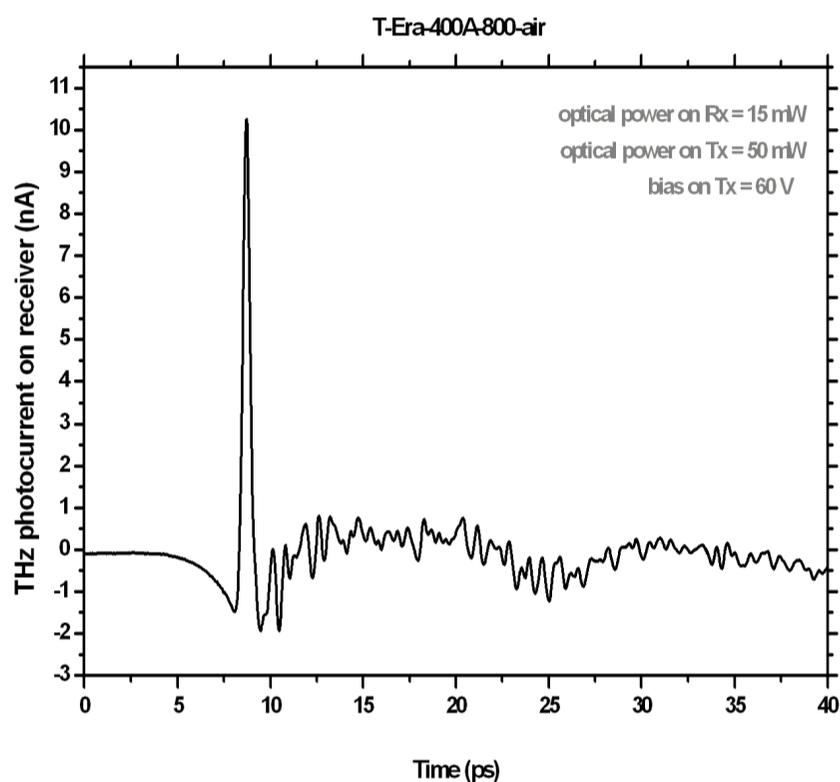
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Excited by 100fs optical pulses with 50mW average power the T-Era-400A-800-air THz-PCAs generate 23 nA peak terahertz photocurrent with more than 50dB THz power spectrum dynamic range.

A typical THz pulse and its corresponding power spectrum generated by a T-Era-400A-800-air transmitter module and detected by a T-Era-20D40P-800-air receiver module in a terahertz time-domain system.



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