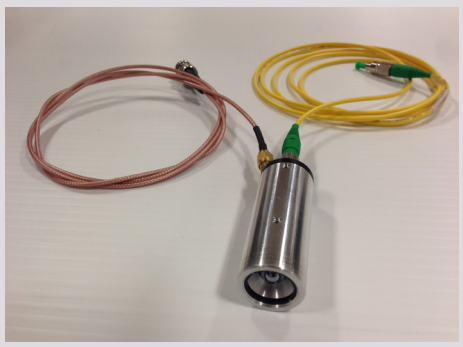
Terahertz Photoconductive Antennas (THz-PCAs)

T-Era-100A-1550-fiber



Key Features

- Fiber-coupled Enclosure
- Rugged Packaging
- Large 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-100A-1550-fiber terahertz photoconductive antenna (THz-PCA) is used to generate wideband terahertz pulses in terahertz time-domain systems. The T-Era-100A-1550-fiber THz-PCA is made on high resistive ultra-fast epitaxially grown multi-quantum well InGaAs-InAlAs substrates and is packaged in TeTechS’ patent pending terahertz chip fiber coupled enclosure module. The enclosure module houses the THz-PCA with a collimating high-resistive silicon lens attached to the back side of the THz-PCA chip, an FC/APC fiber connector and optical collimating and focusing lenses. 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 14 mW average optical power, the T-Era-100A-1550-fiber THz-PCA generates 200 pA peak terahertz photocurrent with more than 50dB terahertz power spectrum dynamic range.

Product Specifications

Optical Excitation Wavelength	1540 nm-1560 nm
Average Optical Power	1 mW-50 mW
Bias Voltage	2 V-60 V
Spectral Bandwidth	> 2.5 THz
Power Spectrum Dynamic Range	> 50 dB
Size (O.D., L)	1”, 2.5”

Typical THz Time-Domain Measurement Settings

Transmitter Module	T-Era-100A-1550-fiber
Receiver Module	T-Era-20D40P-1550-fiber
Optical Excitation Wavelength	1550 nm
Optical Pulse Duration	100 fs
Average Optical Power on Transmitter	14 mW
Average Optical Power on Receiver	8 mW
Bias Voltage on Transmitter	40 V

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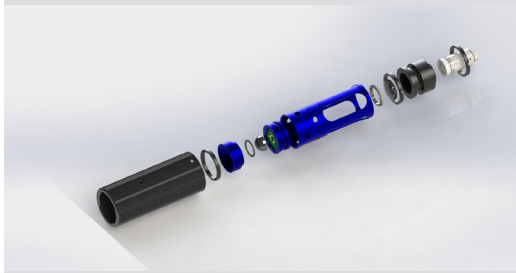
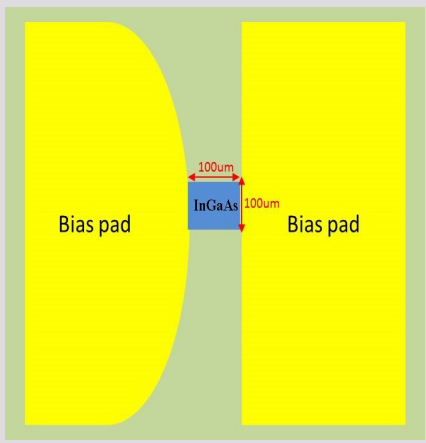
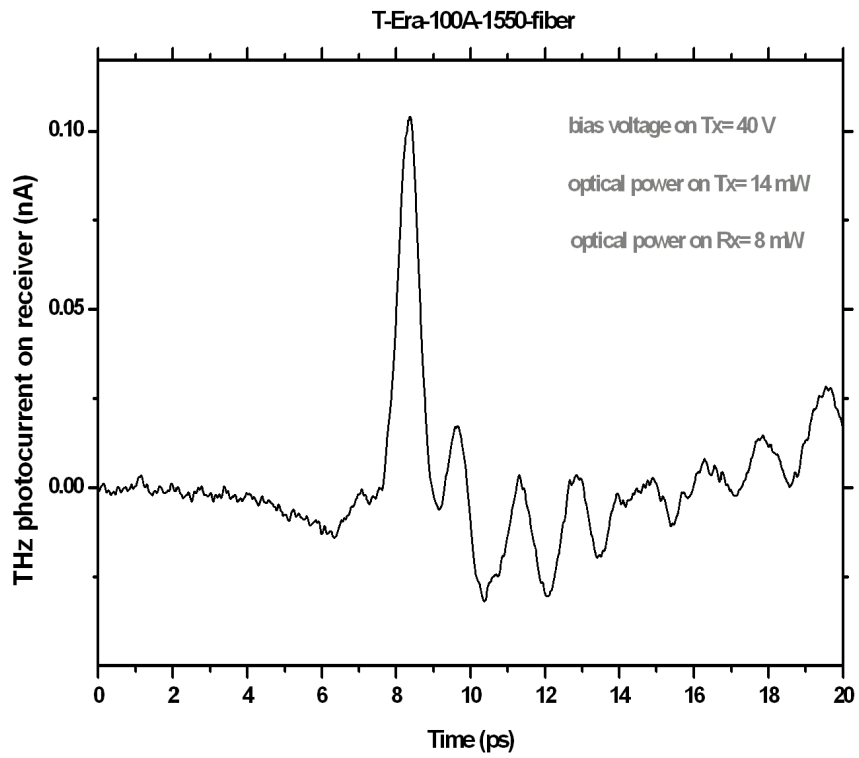
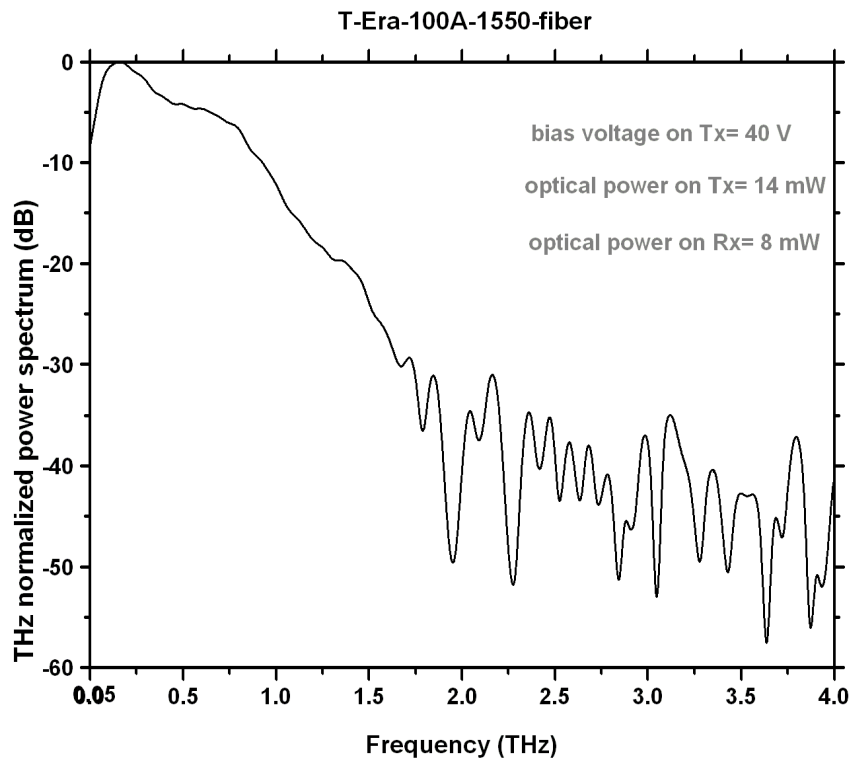




Excited by 100fs optical pulses with 14mW average power the T-Era-100A-1550-fiber THz-PCAs generate 200 pA peak terahertz photocurrent with more than 50dB THz power spectrum dynamic range.

A typical THz pulse and its corresponding power spectrum generated by a T-Era-100A-1550-fiber transmitter module and detected by a T-Era-20D40P-1550-fiber receiver module in a fiber coupled terahertz time-domain system.





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