TX500/UTC

Fiber coupled THz guided emitter for 1550 nm

The TX500/UTC is the first commercially available ultra-broadband THz source for CW operation from 50 to 500 GHz coupled to a low loss silicon dielectric waveguide. The THz emitter packages a uni-travelling-carrier photodiode (UTC-PD) on a SiC substrate. This source is in the mW-class output power due to the improved heat transfer from the diode thanks to the SiC substrate. It features the ultra-broadband *LeapWave port*, covering continuously from 50 GHz to 500 GHz. The polarization maintaining (PM) coupling fiber ensures reliable and stable operation. The device is ESD protected.

This millimeter and sub-millimeter optoelectronic emitter is ideal for terahertz integrated circuits, tunable ultra-low noise oscillators and spectroscopy applications.

KEY SPECIFICATIONS

- Ultra-broadband waveguide Output
- > 450 GHz of usable bandwidth in single mode operation
- > 1mW @ 100 GHz output power
- PM Fiber Coupling

APPLICATIONS

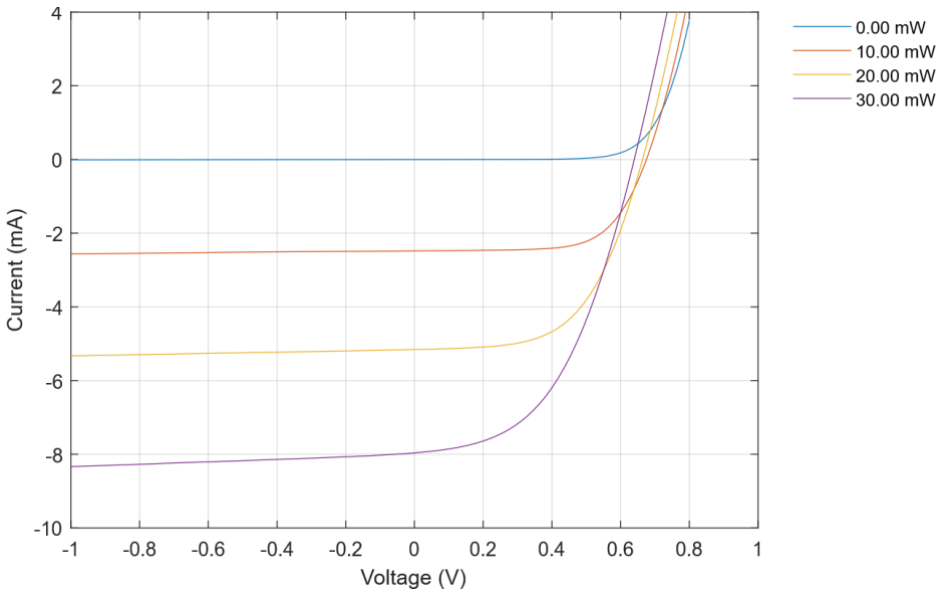
- Terahertz Integrated Circuits
- THz Generation
- THz Spectroscopy
- THz Imaging
- OEM Supplies

FEATURES

- Optimized for Lasers around 1550 nm
- Specific Emitter for Waveguided Applications
- Flange Standard UG387/U compatible
- Conventional rectangular waveguide form factor.
- -1 V Bias Voltage

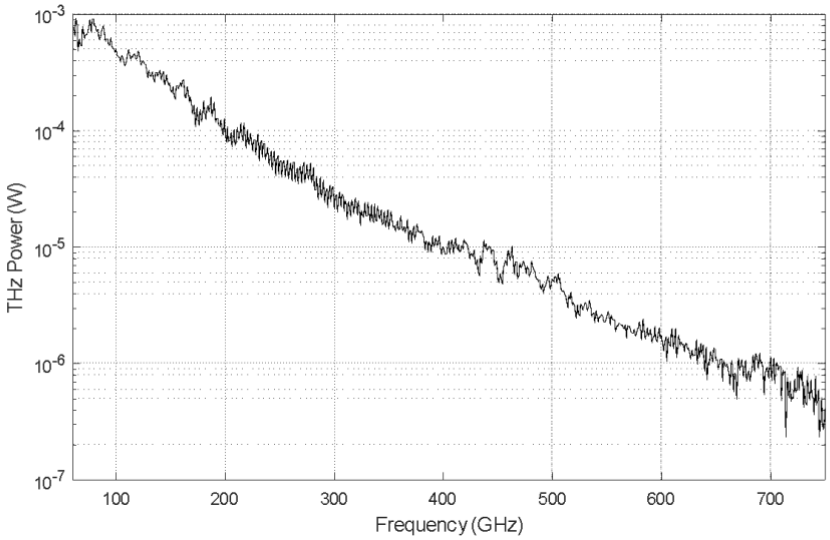
PERFORMANCE DATA

I-V Curves



Current is measured at 1550 nm laser wavelength. Optical power is measured before the photodiode.

Power Spectrum



THz power is measured with a pyroelectric detector (THZ20HS from Sensor und Lasertechnik calibrated by the German National Metrology Institute PTB). An interposer (antenna) is attached to the transmitted to launch the produced power into the front of the detector. The atmosphere is ambient air.

MEASUREMENT CONDITIONS		SPECTRUM CHARACTERISTICS	
Tx Voltage	-1V	**Max THz Power**	926.0 µW
Tx Optical Power	50 mW	**THz Power at 0.1 THz**	498.0 µW
Photocurrent	8 mA	**THz Power at 0.25 THz**	53.3 µW
Detector	Calibrated pyroelectric	**THz Power at 0.5 THz**	5.3 µW
Integration Time	300 ms		

ABSOLUTE MAXIMUM RATINGS

Max Applicable Optical Power	90 mW
Maximum Photocurrent	21 mA
Maximum Bias Voltage	-1.5 V

Exceeding the maximum rating will damage the device. Please refer to the recommended laser parameters and bias voltage. Improper use or experimental conditions are excluded from warranty.

SPECIFICATIONS

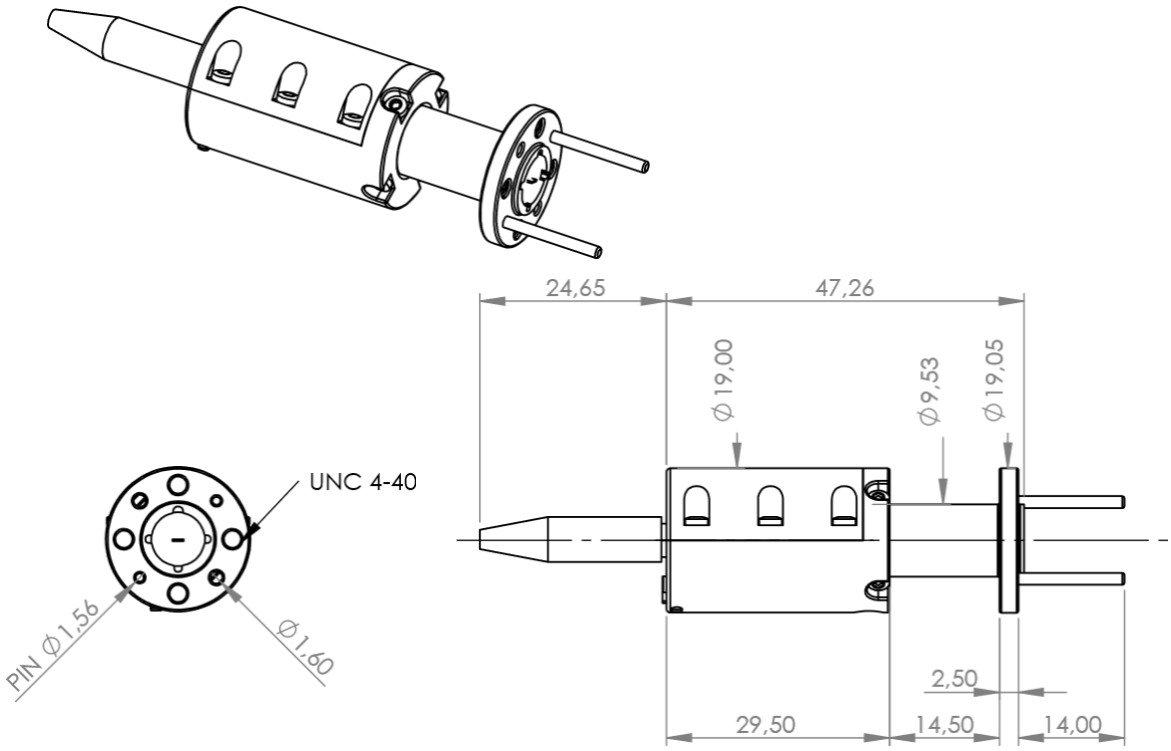
Photodiode type	UTC-PD on SiC substrate
Frequency range	50 GHz to 500 GHz (Unmatched)
THz output	LeapWave port (Dielectric Rod Waveguide)
THz power	> 1 mW @ 70 GHz
Electrical connection	MMCX (SMA adapter cable included)
Fiber patch cord	1 m FC/APC PM-PANDA fiber

OPERATION CONDITIONS

	Typical	**Maximum**
Laser wavelength	1550 nm	-
Bias voltage	-1 V	-1.5 V
Optical power	50 mW	90 mW
Photocurrent	8 mA	20 mA

DRAWINGS

Unless specified, all dimensions are in millimeters.



ORDERING INFORMATION

Product Code: TX500/UTC

Please call for pricing. Specifications are subject to change without notice. Custom modifications are available, please inquire.