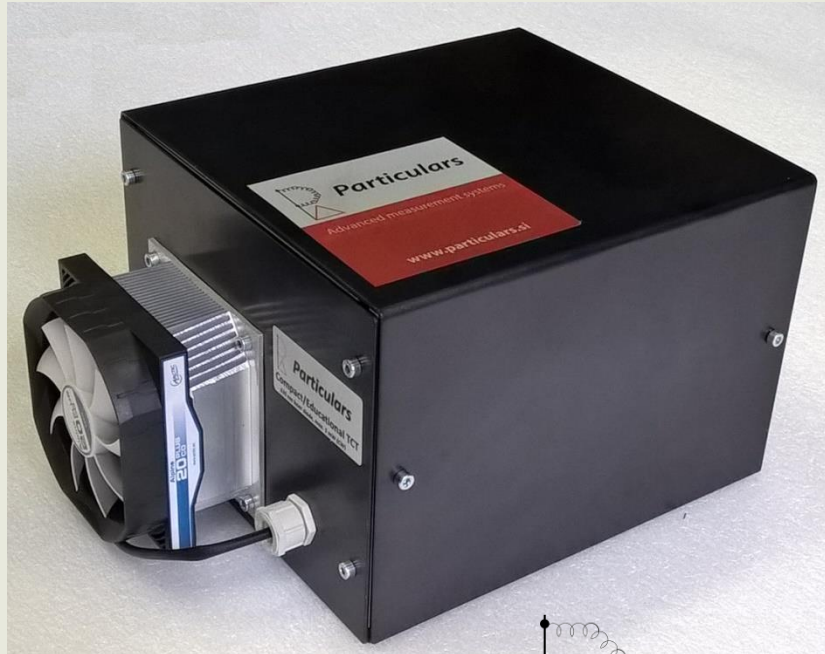




Compact TCT System



Particulars
Advanced Measurement Systems

OVERVIEW

Particulars Compact TCT System is a complete setup for measurements of transient currents generated in semiconductor with laser pulse. With ≈ 1 mm laser beam spot it is a perfect tool for measurements with pad-detectors for investigation of semiconductor material properties. The system is lightweight and portable and is also ideal teaching tool for university laboratory courses.

FEATURES

- Wide band current amplifier
- Bias-T
- High voltage low pass filter
- Laser diode (650 nm, 1064 nm), beam spot on DUT ≈ 1 mm
- Programmable laser driver for sub-nanosecond laser pulses
- DUT mounting plate fixed to air cooled Peltier element
- Aluminium closure for light and RF shielding and atmosphere control
- Dimensions: 30 cm x 20 cm x 15 cm
- Weight: 5 kg
- Laser control, data acquisition software
- ROOT based package for data analysis

Compact TCT System



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Amplifier

- Bandwidth 0.01 - 2000 MHz
- Bias 6 - 15 V
- Amplification 35 dB or 53 dB
- Input, output impedance: 50 Ω
- Dimensions: 7x5x1.5 cm³



Bias-T

- Max voltage 1 kV
- Freq. range: 0.01 - 2000 MHz
- Input, output impedance: 50 Ω
- Dimensions: 7x5x1.5 cm³



HV Low-pass filter

- Filter high frequency interferences from HV power supplies
- Max voltage 2 kV

Laser

- Different wavelengths: 405,660,935,1064,1310 nm
- Tunable pulse power equivalent to 10 MIP - 100 MIP in Si
- Tunable pulse width 0.4 ns - 4 ns
- Single pulse mode 50 Hz to 1 MHz
- 1024 bits deep pulse sequence
- NIM logic trigger output
- NIM external trigger
- USB control

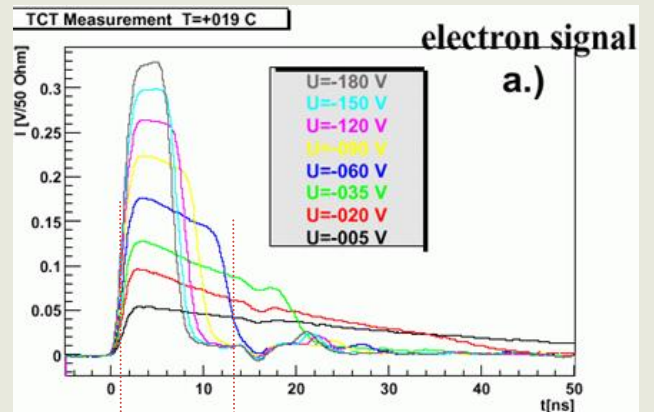


Software

Executables with GUI for complete measurement control: Laser control, stage movement, data acquisition
ROOT based package for analysis of TCT signals

Lab course example

- Observe waveforms from pad diode:
- Determine the junction/ohmic side of the diode and by that the type of device
 - Estimate the full depletion voltage
 - Measure carrier drift time
 - Plot carrier velocity vs. electric field and temperature



Pad diode detector

