

# Development of 12 Way VCSEL Array Opto-package for ROD

Ping-Kun Teng  
Academia Sinica

## Development of 12 Way Array Opto-package for ROD

- A 12-way array opto-package has been developed by MITEL  
The driver IC (BMP12) is in good shape.
- Why a new development?  
Long term support from MITEL is questionable  
Need a second source – or better yet, to own the technology  
→ AS packaging design + Truelight VCSEL array  
plus Radiantech assembly line

## Array Opto-package (cont.)

### ➤ **VCSEL Array Requirements:**

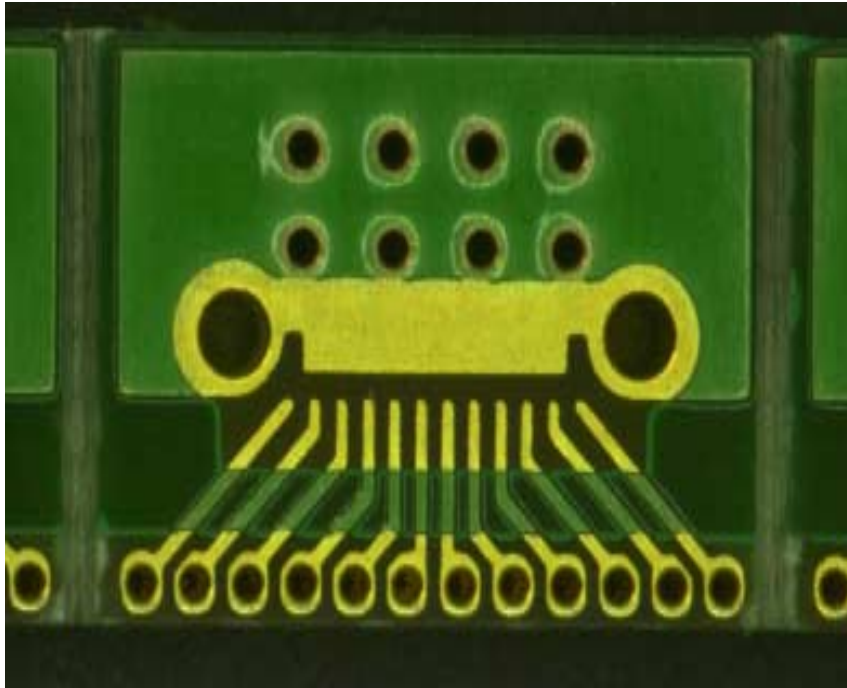
The 12 way VCSEL arrays should have common cathodes and individual anodes.

Power  $> 1\text{mW}@10\text{mA}$  for each channel

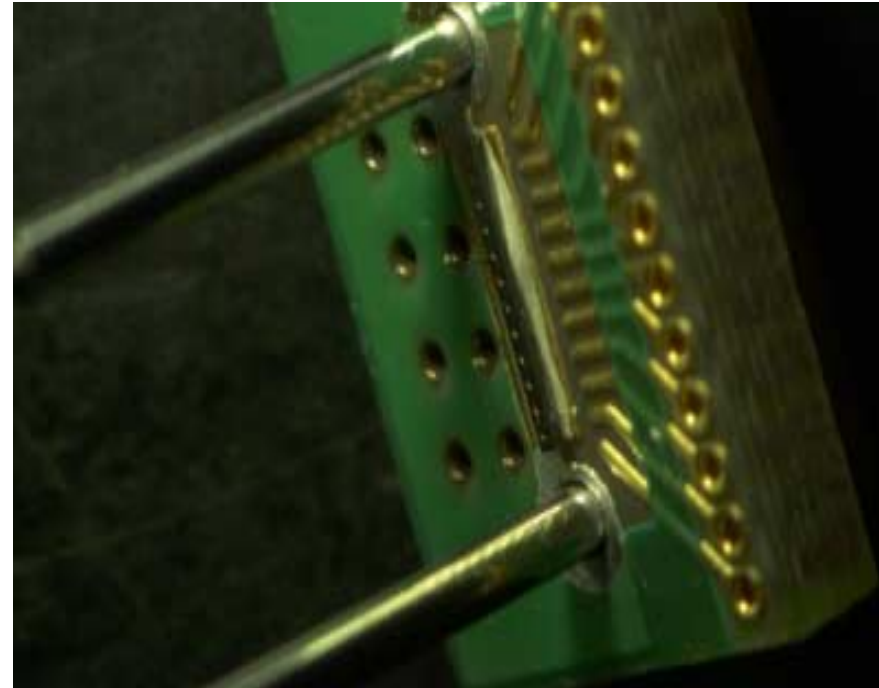
### ➤ **Packaging Specification:**

- VCSEL-arrays shall have an integral MT12 socket with alignment pins.
- The package should not exceed 10 mm by 12 mm.
- The height of the package should not exceed 12 mm.

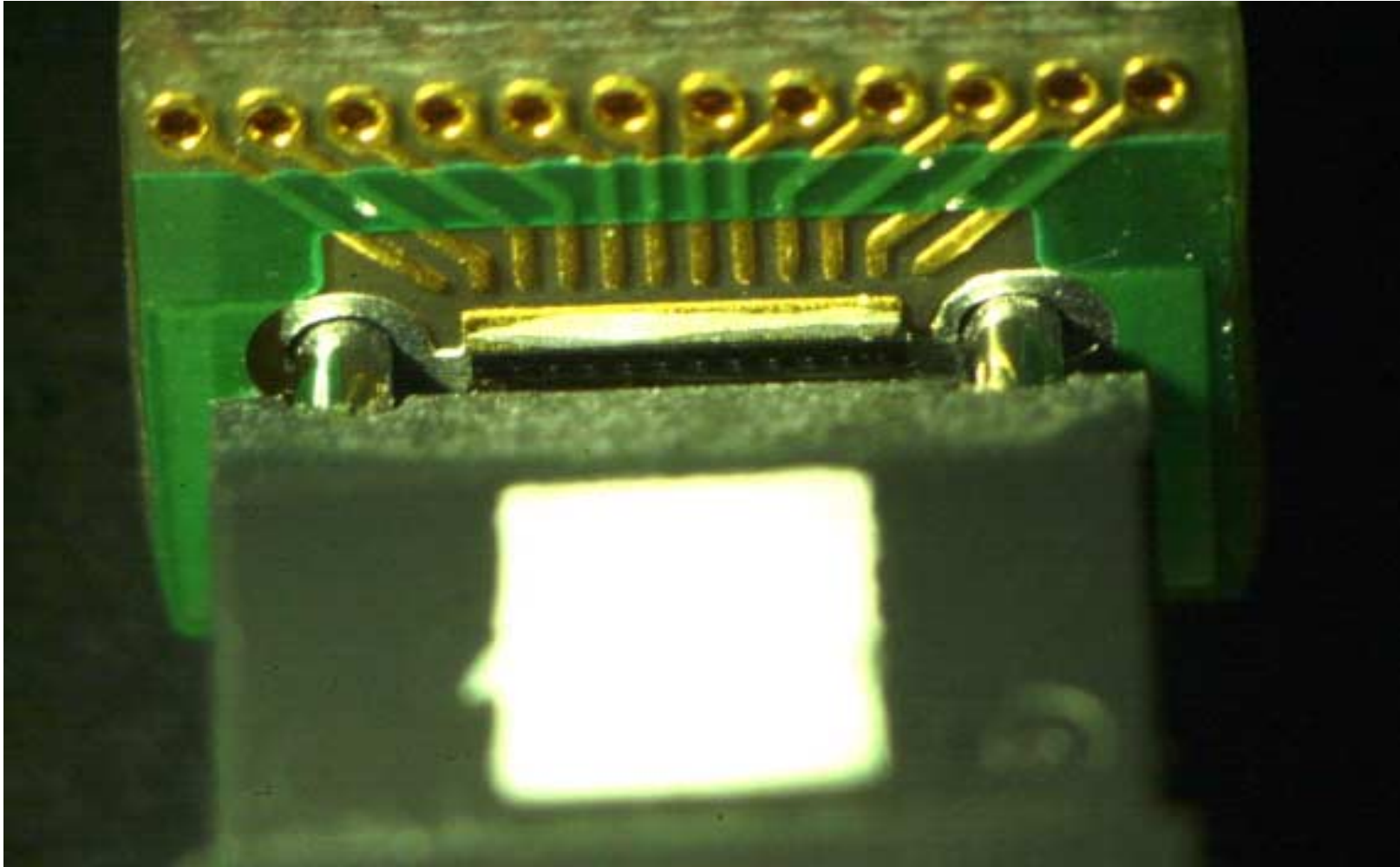
# Array Opto-package The Design



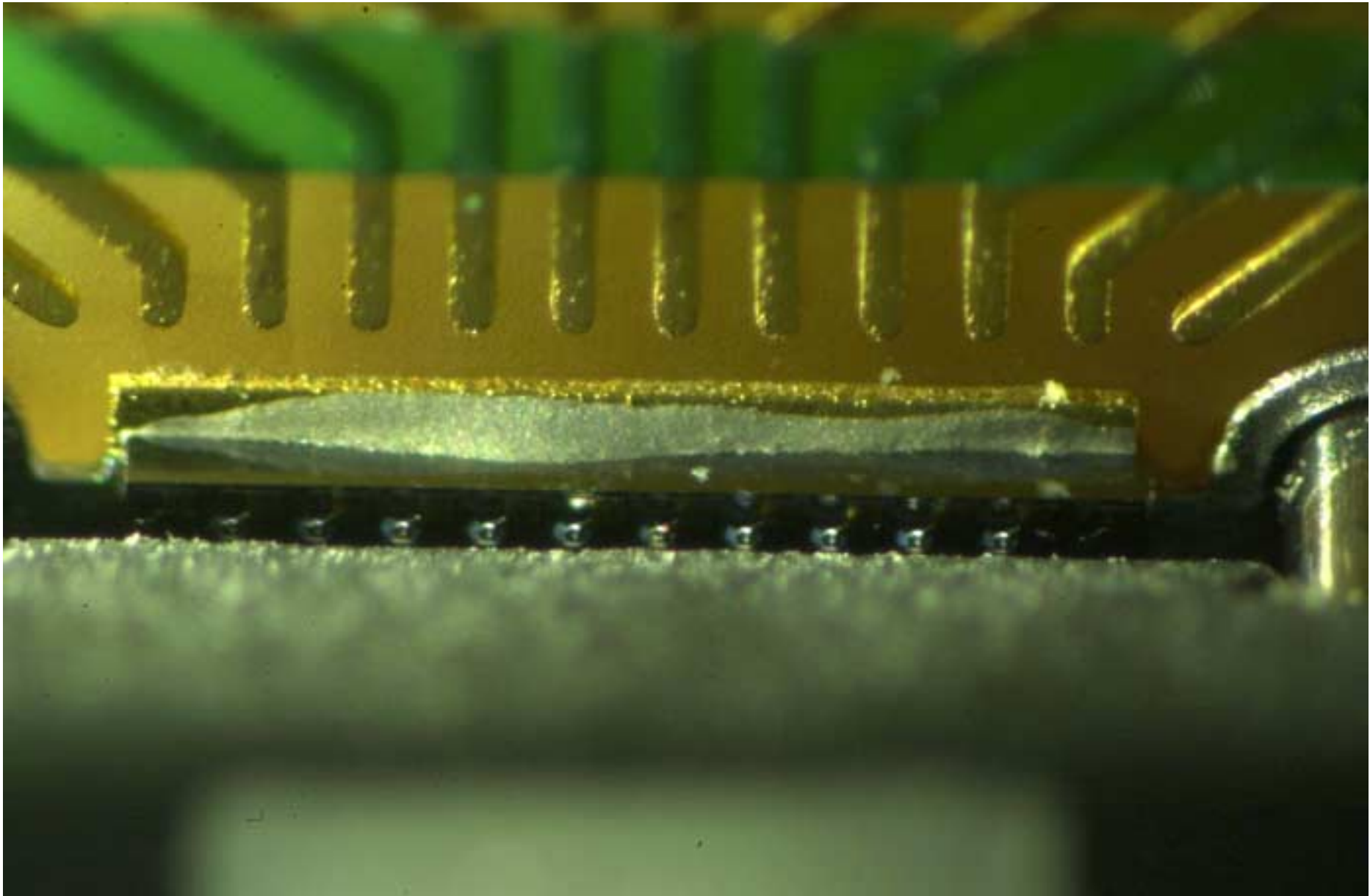
Base PCB for Array Opto



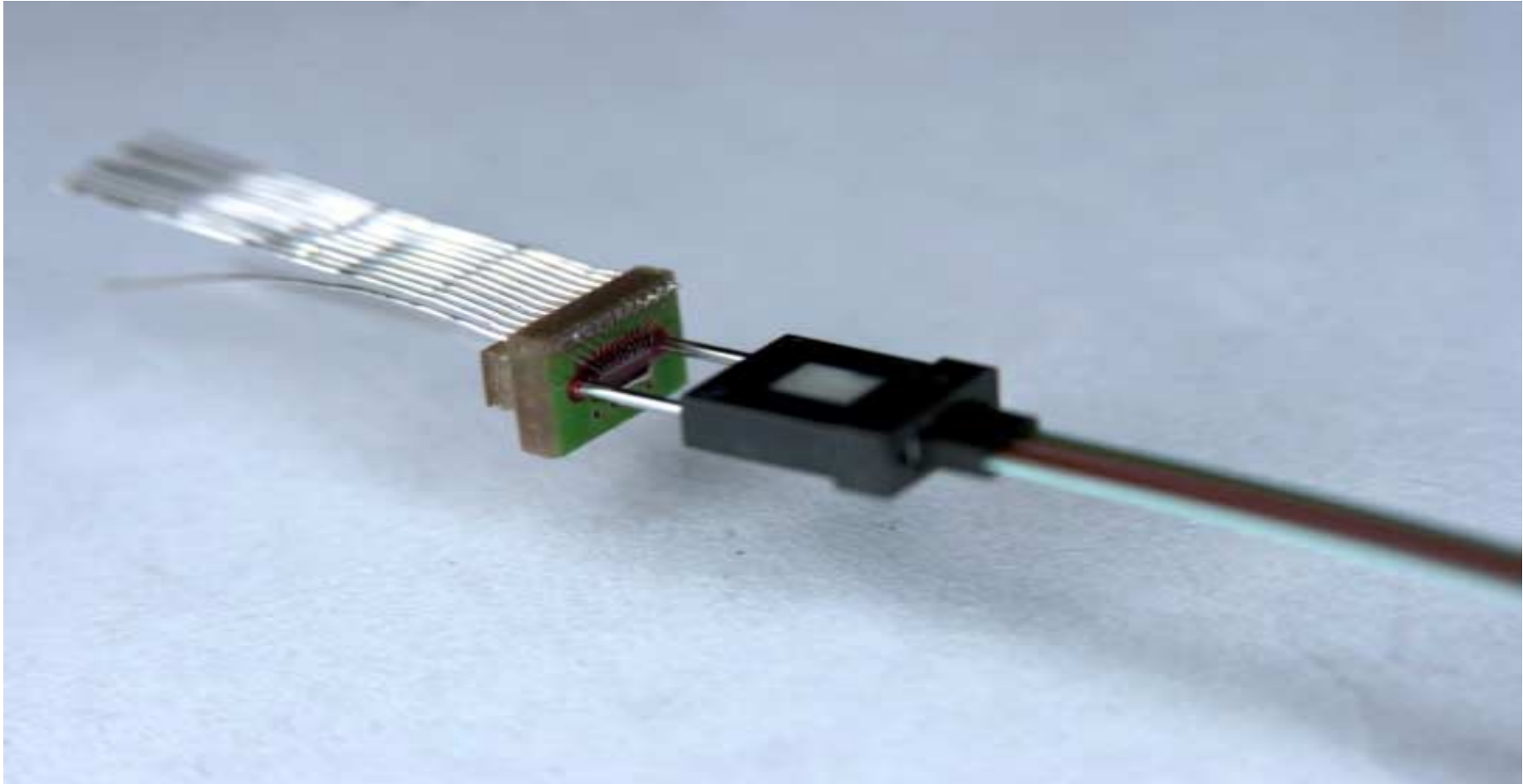
Alignment: Guide pins & VCSELarray



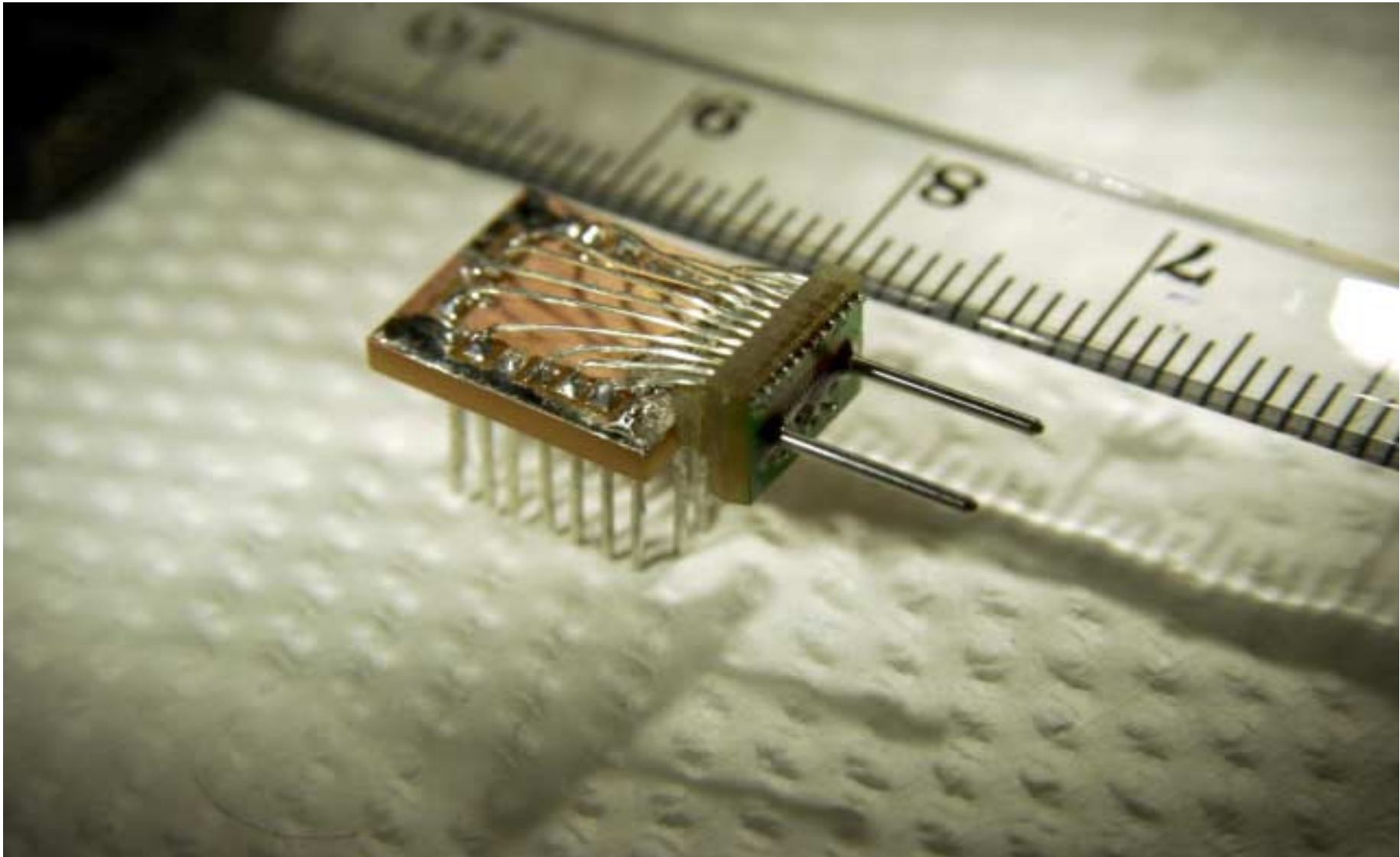
Optical coupling: Direct coupling from VCSEL to fibers  
(inside the MT Ferrule)



# Optical interface

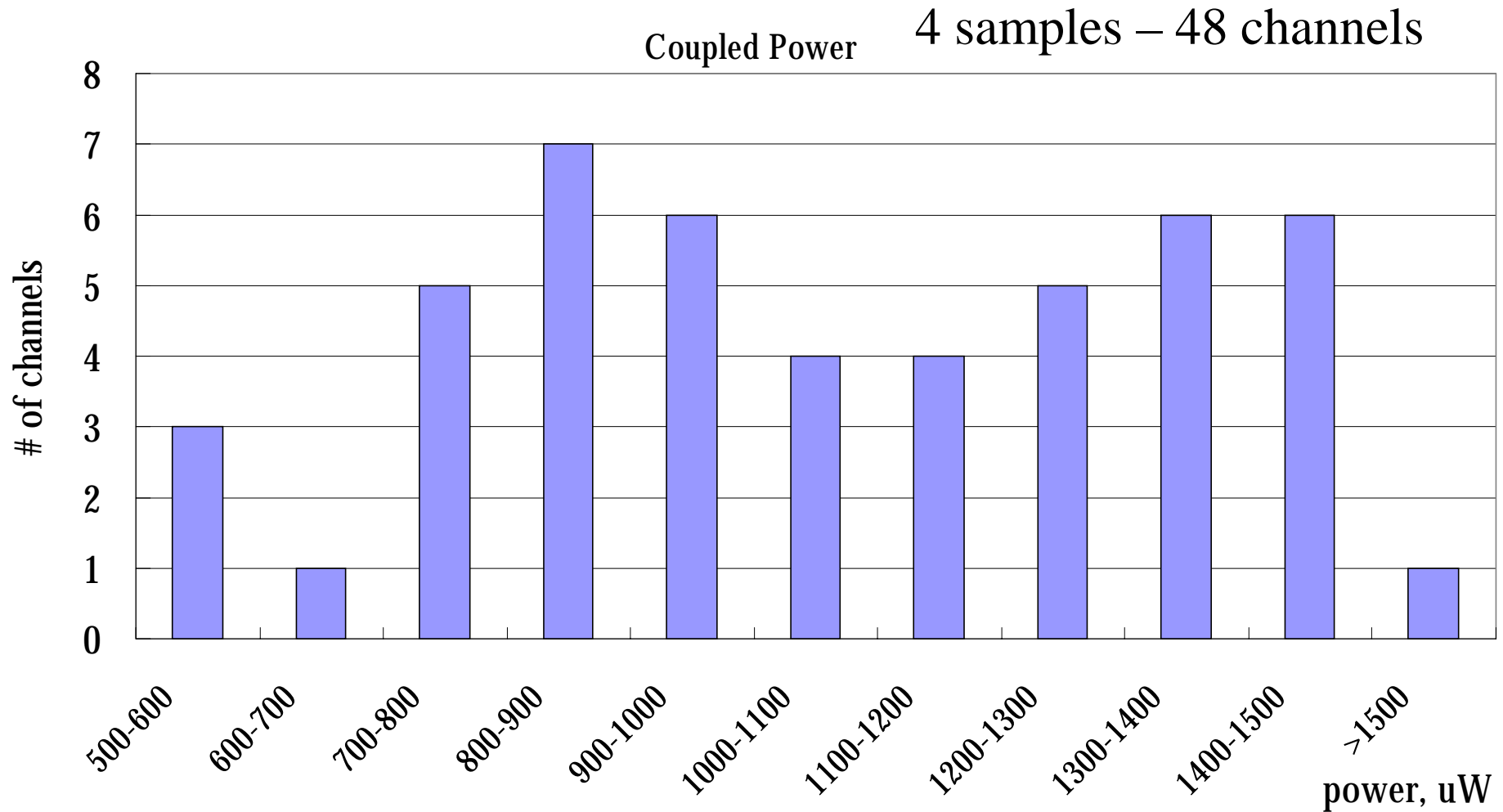


Receptacle style MT interface  
Opto array sub-assembly shown

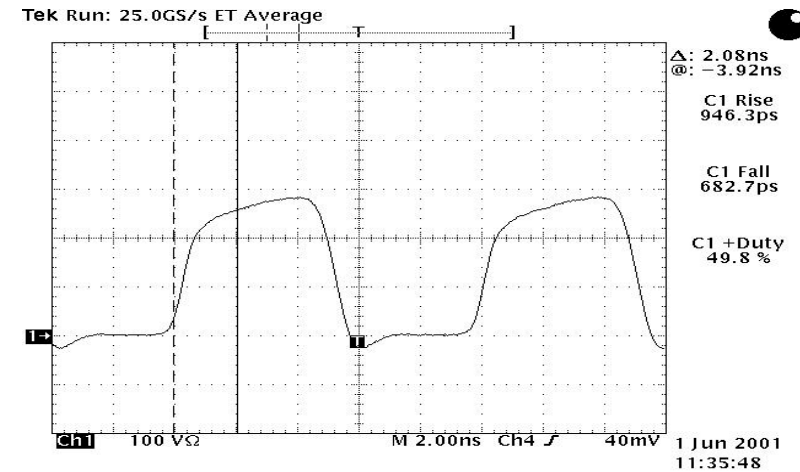
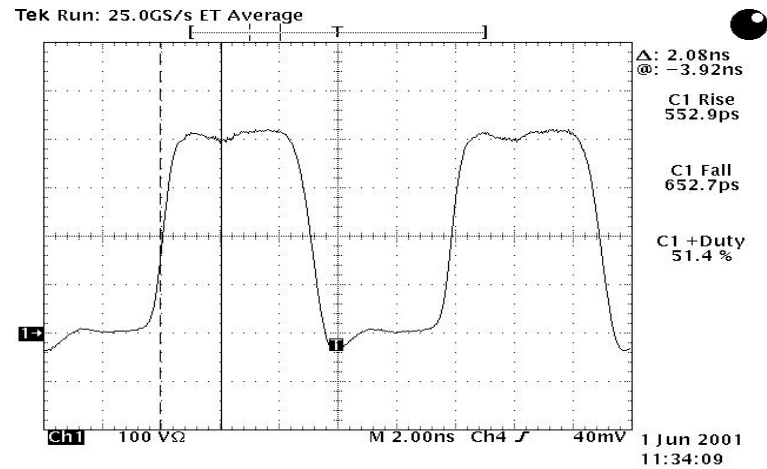
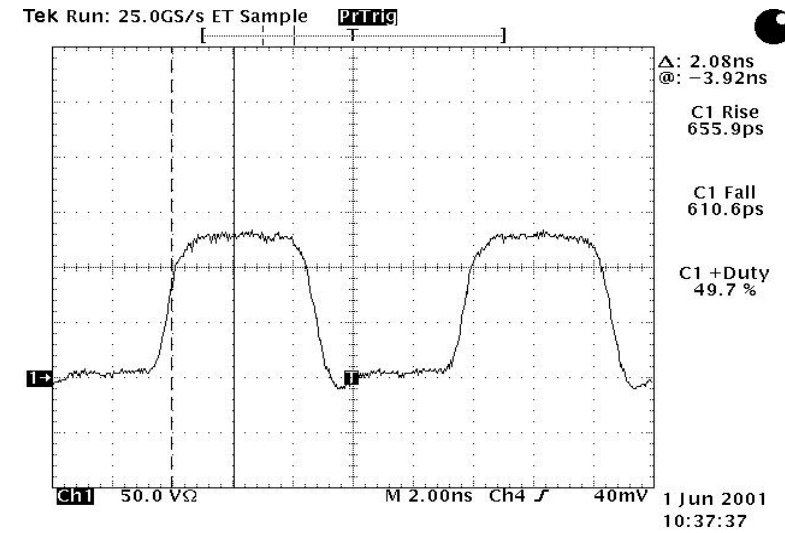
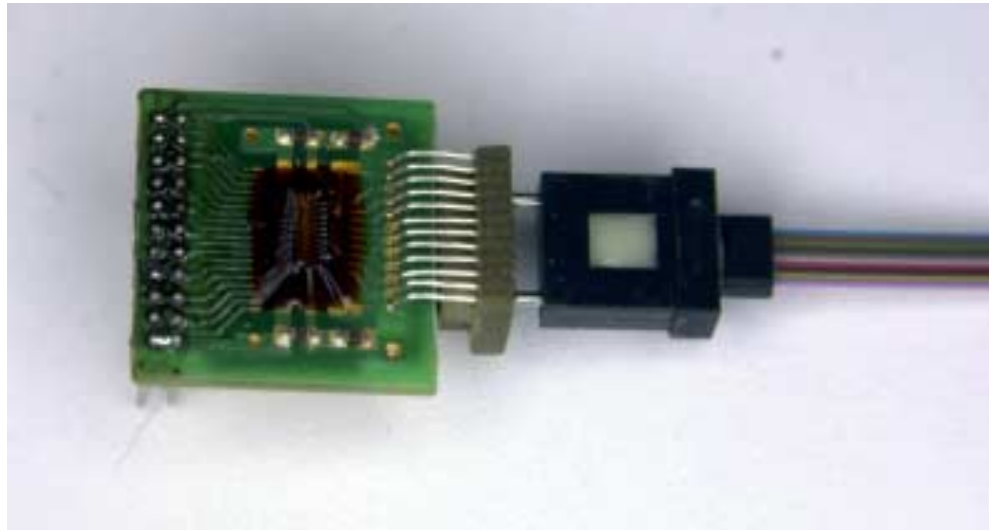


Example of connecting to horizontal PCB

# Test results – Power measurement



# Test results – AC waveform (I)

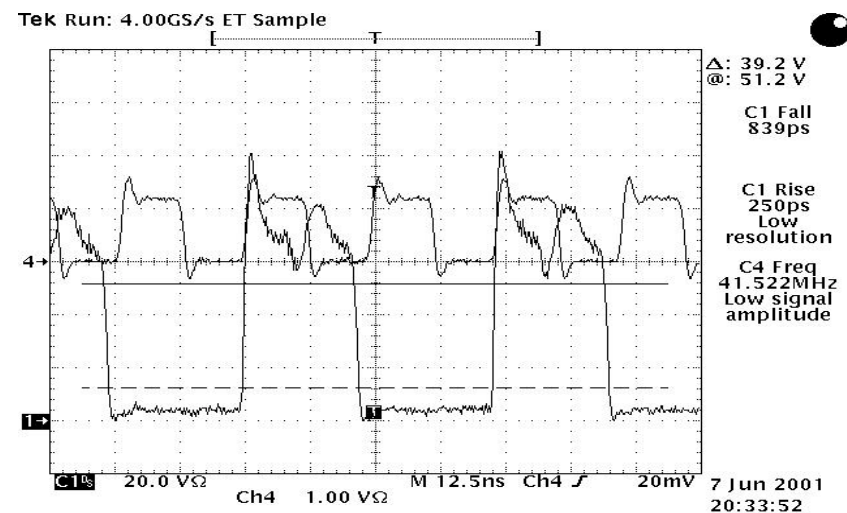
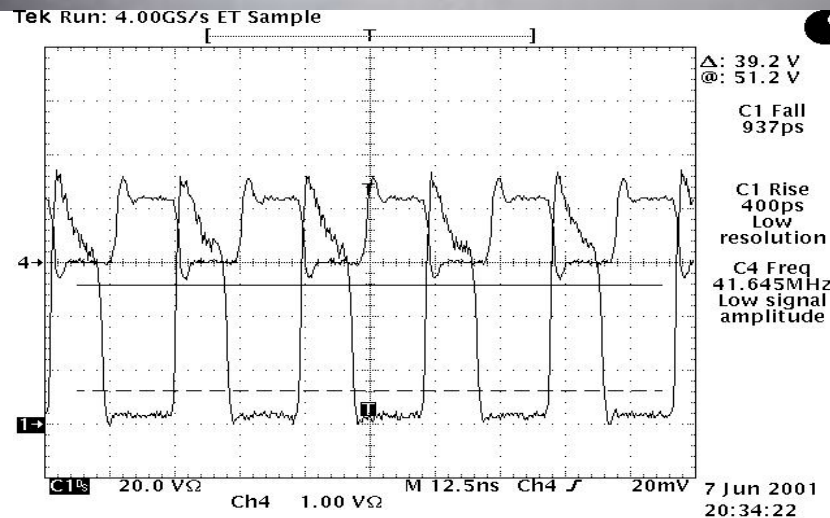


# Test results – AC waveform (II)



Array opto integrated with BPM-12 (SCT ROD)

Waveform of data input “1” (Lower left), and data input “0” (lower right)



## Array Opto - Summery

- A new design of array opto for ROD has been successfully developed:  
much better in both production and use
- Extremely simple alignment method used (passive, 12 ch together)
- Easy to use optical interface (MT12)
- Compact and rigid in package
- Low cost
- Electrical interface are on the horizontal PCB, different type of electrical interface can be designed
- Few samples were made. Test results are extremely promising
- ➔ More test needs to be done. Especially with BPM12 chip