



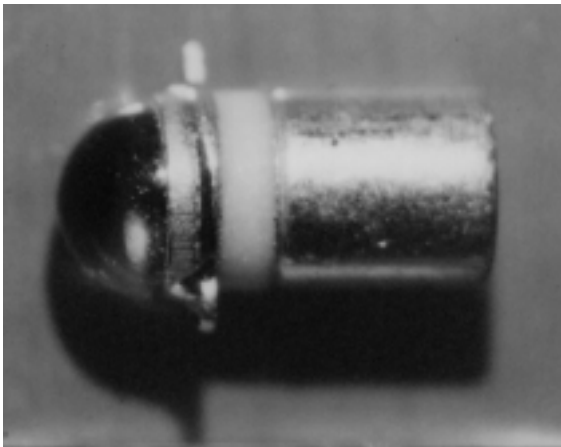
# **Status NIKHEF Opto Plugin for FWD System Test**

Optical links session SCT week, 1 December 1999

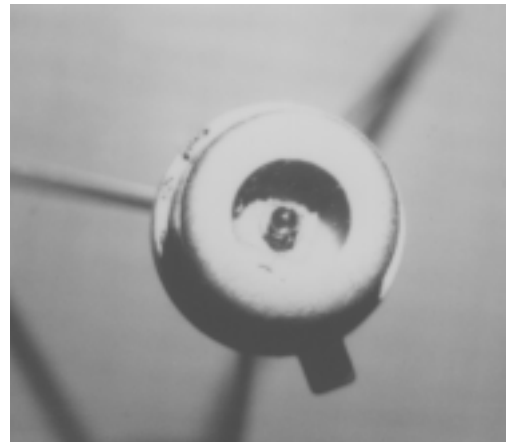
**Fred Hartjes**

# Design considerations

- ◆ Dimensions about equal to GEC plugin
- ◆ Pin-to-pin compatible with GEC plugin
- ◆ Intended as a temporary solution for the forward system test
- ◆ Based on packaged elements



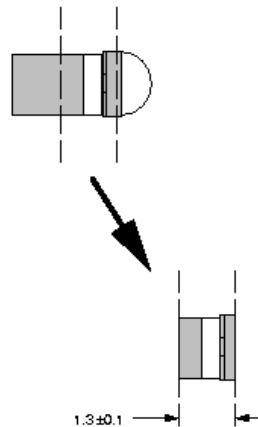
VCSEL in 'miniature pill'  
(SV 2637-001)



Pin diode HFD 3013 in TO46  
(TO46 still too big)

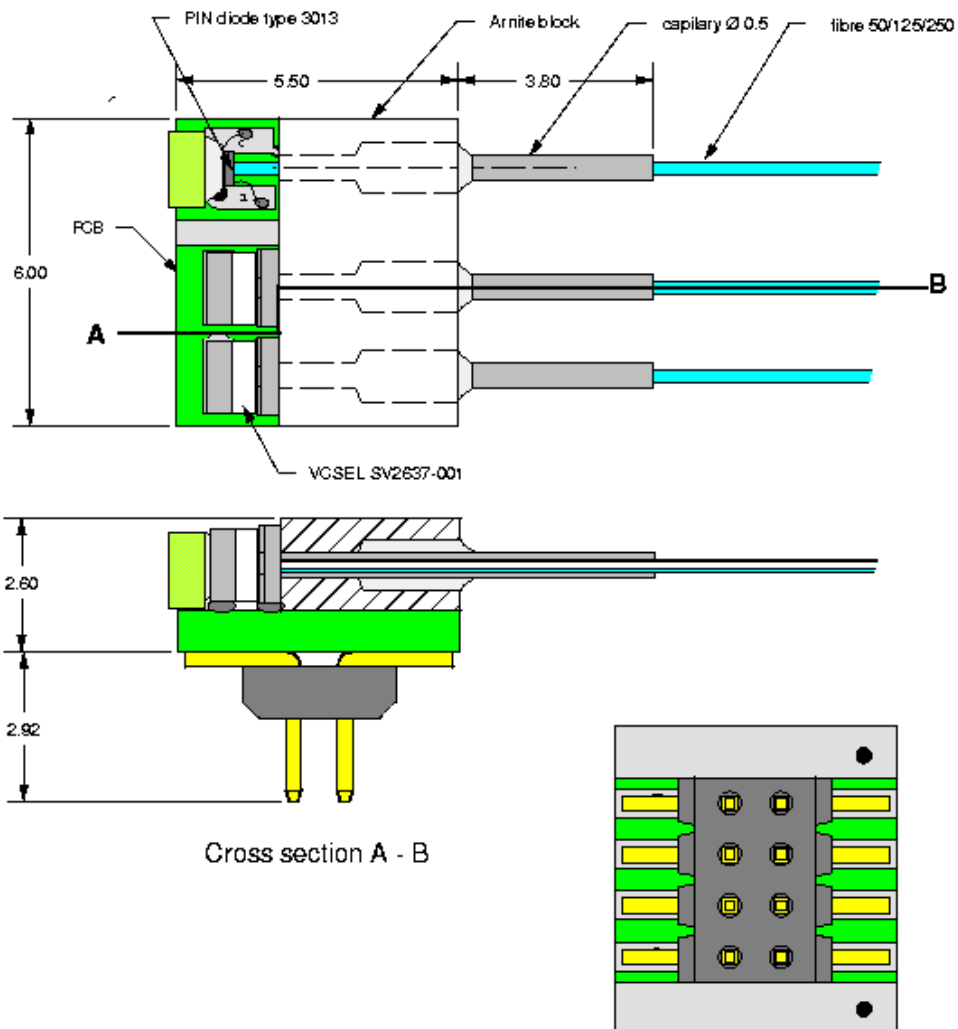
# Mechanical characteristics


- ◆ Remove most of VCSEL lens => better coupling to fibre



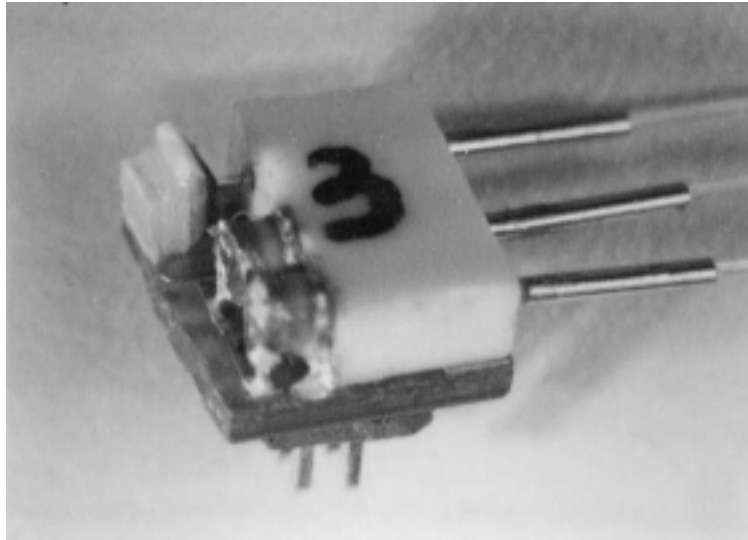
- ◆ Fibres hold by crimped capillary pipe ( $\varnothing$  0.5 mm).
- ◆ Electrical connection VCSELs and PIN diode by conductive glue
- ◆ Gluing VCSELs by transparent rapid curing Araldite
- ◆ Active alignment of VCSELs
- ◆ Strip PIN diode from TO 46 housing

# Geometry opto plugin



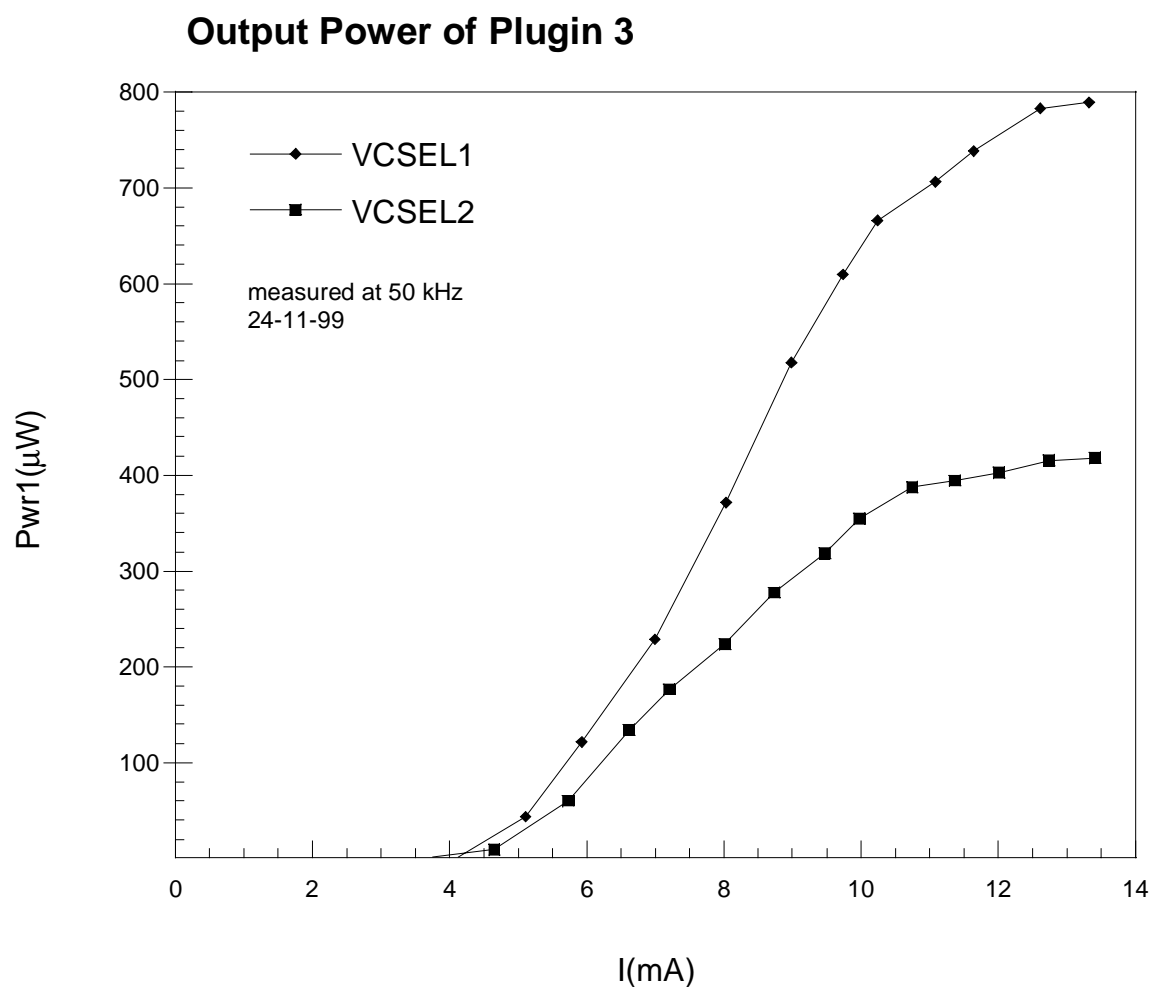
	Material	Dimensions in mm		<i>In preparation</i>
Title <b>Assembly FWD Opto Plugin</b>	Drawn by Fred Hartjes	Date 23-11-99	Scale 10 : 1	Notes

# Results first plugin

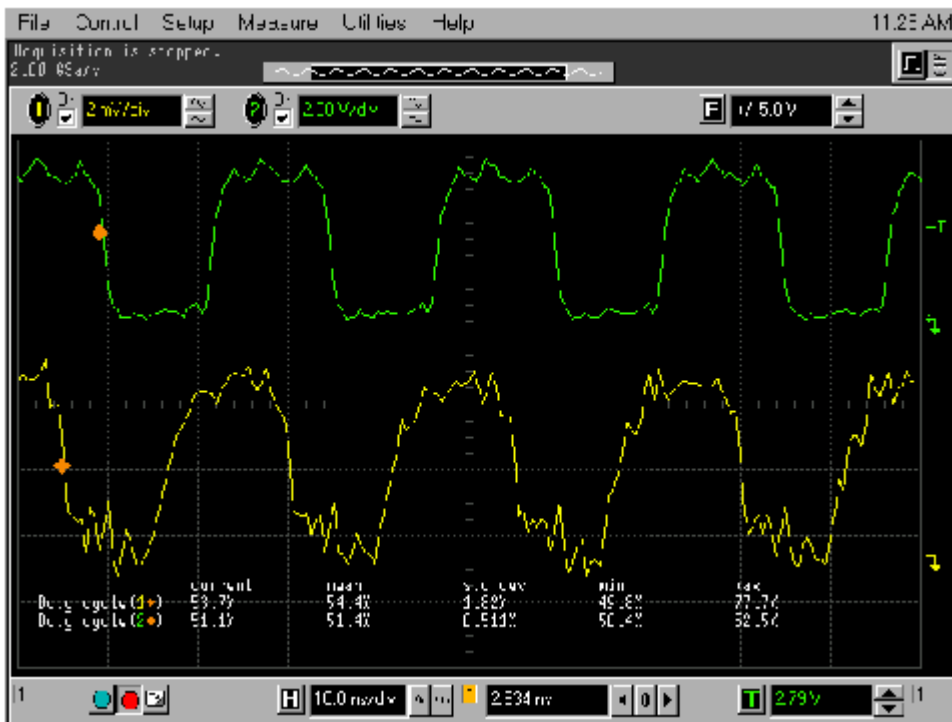


- ◆ Pin diode response so far 0.13 A/W
  - Pin diode in TO46: 0.33 A/W, too low value possibly partly caused by ST VCSEL
- ◆ VCSELs
  - Mechanical tolerance  $\perp$  fibre +/- 10  $\mu\text{m}$
  - Optical energy VCSEL according to specs: 1 mW @ 10 mA
  - UV glue on fibre to VCSEL acts as immersion oil => better coupling

# Optical energy from VCSELs



# Response from Pin diode



- ◆ Green: 40 MHz clock, TTL
- ◆ Yellow: pin output into  $50 \Omega$ , 2 mV/div  
=>  $100 \mu\text{A}$