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AOH burn-in and testing strategy

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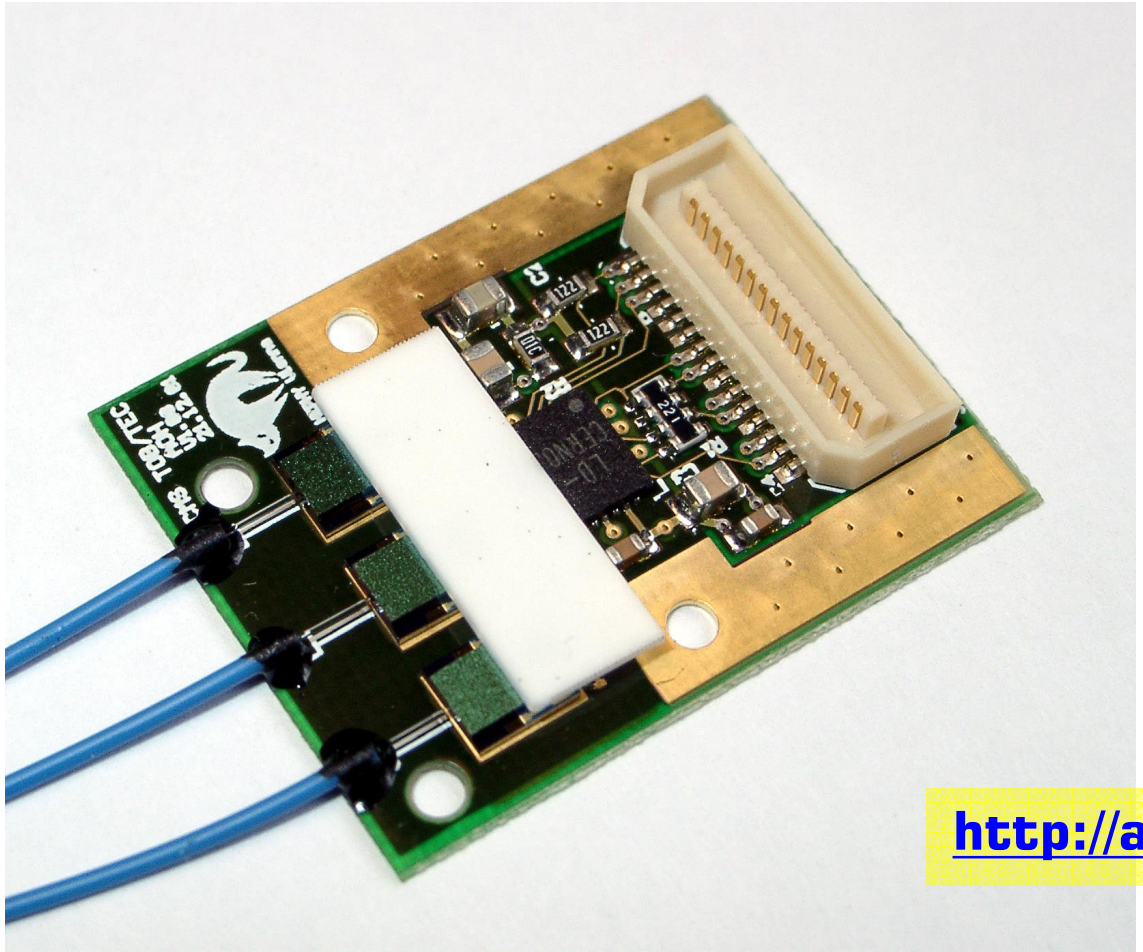

http://aoh.hephy.at

Overview

Aim

Get estimate of electrical and mechanical failure rates of optohybrids

Numbers

HEPHY Vienna: ~13k devices for TOB and TEC
INFN Perugia: ~4k devices for TIB and TID

Manufactured at companies (Kapsch, G&A)

Pre-production

HEPHY Vienna: 132 devices
INFN Perugia: 50 devices

Tests being performed on preproduction AOHs by institutes

General

Restrictions

- VIE and PG infrastructure only allows to measure one AOH at a time (automated test setups built by Vienna)
- Parallel testing would imply CMS systems (FEC, CCU, …) we do not have

Cooling Device

- HEPHY Vienna: Cooling Box
- INFN Perugia: Climatic Chamber

Components

- Laser Diodes are tested and burnt-in at ST
- Linear Laser Drivers are only tested at room temperature

4 Tests

- Passive thermal cycling
- Low temperature performance
- Long-term performance at low temperature
- Long-term performance at room temperature

Passive Thermal Cycling

Aim	Measure mechanical failure rate
Description	Many devices in the cooling box or climatic chamber undergo 15 cycles between -20 and +25°C with 2 hours per cycle.
# of devices	Full pre-production (132+50)
Comments	Optohybrids are not powered during this test. Devices are checked before and after this test.

Low temperature performance

Aim	Measure characteristics at operating temperature
Description	Optohybrid is cooled down from room temperature and tested at +10,+5,0,-5,-10,-15°C.
# of devices	5 AOH for each VIE and PG (10 in total)
Comments	Threshold shift and efficiency changes are of particular interest.

Long-term performance at low temperature

Aim	Measure electrical failure rate
Description	Optohybrid remains at -15°C after previous test over night while being measured periodically.
# of devices	5 AOH for each VIE and PG (10 in total)

Long-term performance at room temperature

Aim	Measure electrical failure rate
Description	Equipped TOB rods will be operated for several hours to days at room temperature with CMS system.
# of devices	TOB preproduction optohybrids (132 devices)
Comments	Results will be valid for all AOH types since they are electrically equal. Many thanks to Duccio for offering this test!

Summary

Overview

Test	Aim	#
Passive thermal cycling	mechanical	182
Low temperature performance	characteristics	10
Long-term performance at low temperature	electrical	10
Long-term performance at room temperature	electrical	132

Outlook

Tests will start in April

Failure rates will allow estimate of production yield