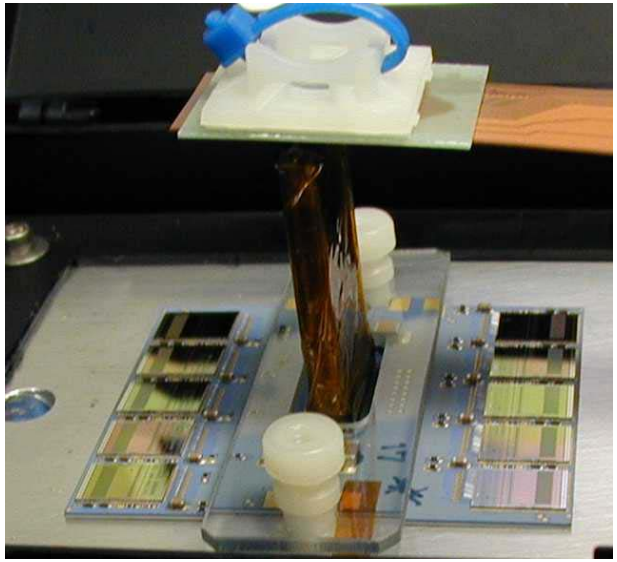
Hybrid Debugging

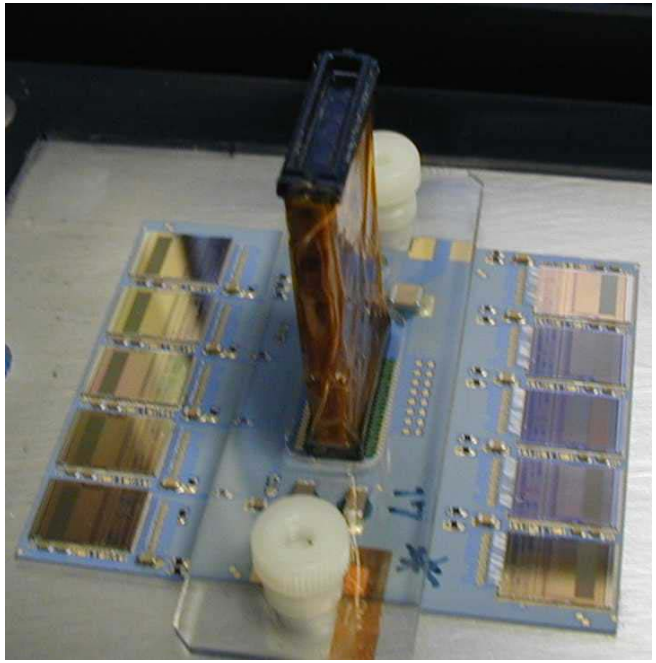
- Ringout Test
  - Switch System (Resistances between channels)
  - Baseline developed from working hybrid 2018. (L2A #18)
- Spreadsheet for SASeq tests
- Logic Analyzer

Hybrid Debugging

- AVX Extension

Can probe more easily





Hybrid Debugging

- L2A #4 (2004)
  - Visual inspection: Messy
  - SASeq test: No response
  - Ringout test: DVDD short to ground (expect 390 ohms)
    - Details

Original DVDD to ground resistance about 13 ohms

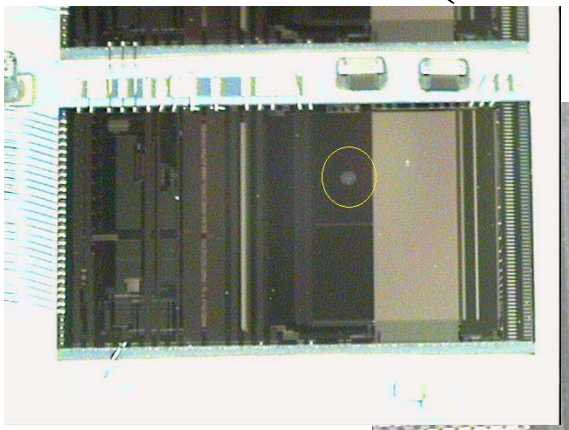
Disconnected Chip 4, resistance increased to 45 ohms

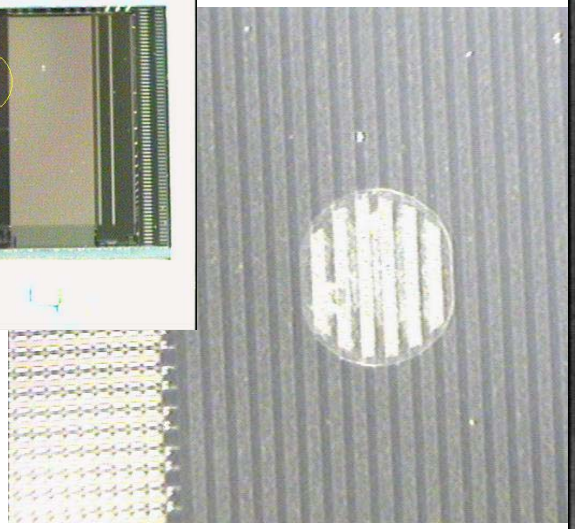
Disconnected Chip 1, resistance increased to 390 ohms

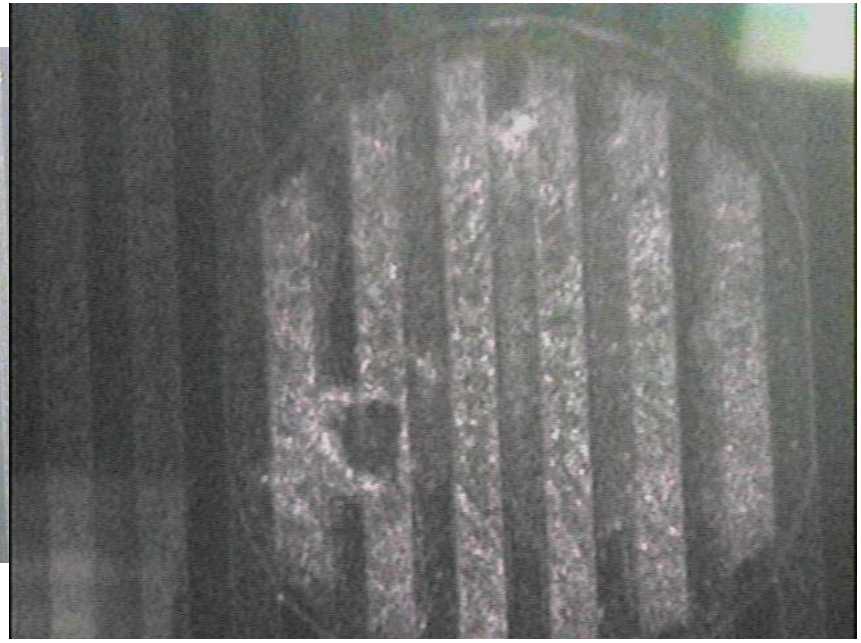
Reconnected Chip 4, good resistance (about 390 ohms)

Hybrid Debugging

- L2A #4 (2004) Chip 1 Pictures







Hybrid Debugging

- L2A #11 (2011)
  - Visual inspection: Messy
  - SASeq test: No response
  - Ringout test: DVDD short to ground (expect 390 ohms)
    - Details

      Original DVDD to ground resistance about 4 ohms

      Disconnected Chips 10 – 3; low resistance each time

      Disconnected Chip 2, resistance 470 ohms

      Reconnected 5 – 10, resistance to 20 ohms

      Disconnected Chip 10, resistance back to 390 ohms

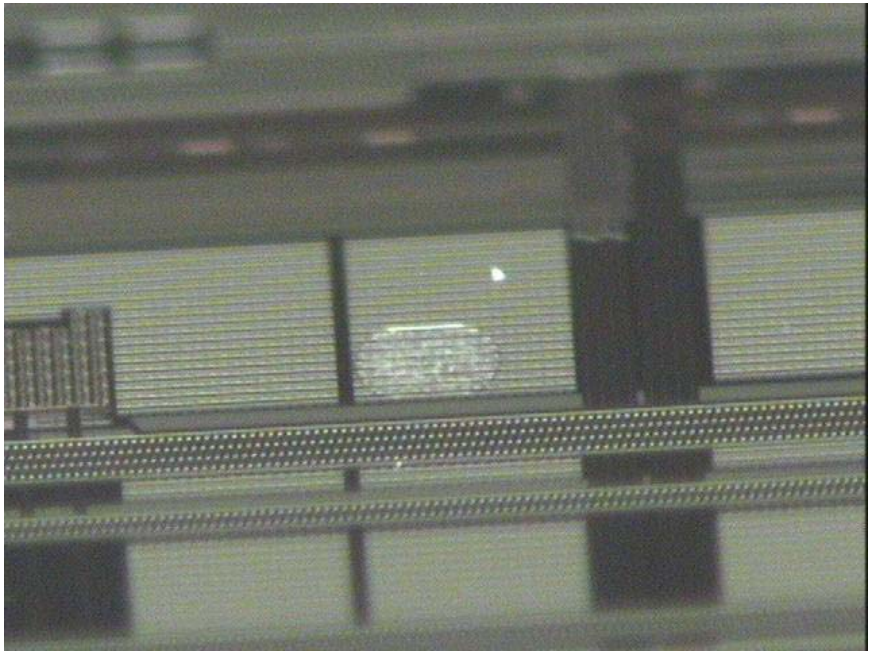
      Chip 9 (visibly disfigured) connected, resistance about 380 ohms

Hybrid Debugging

- L2A #11 (2011) Chip 9 Picture

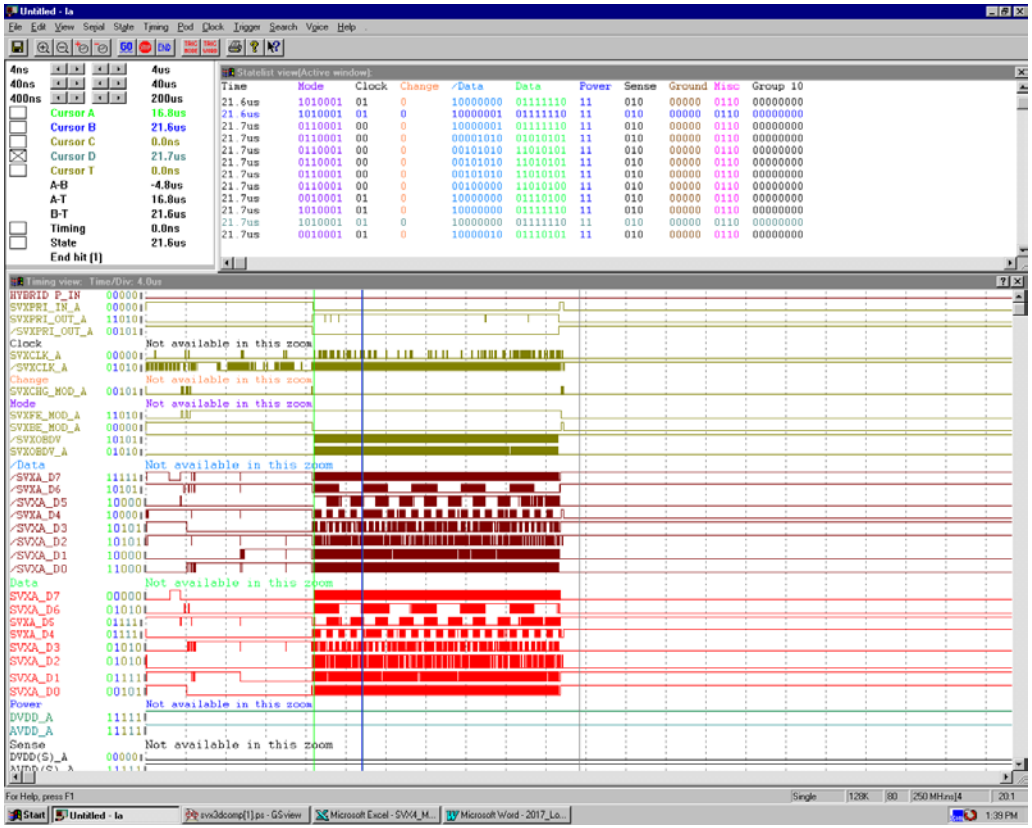
Appears similar to L2A #4 Chip 1

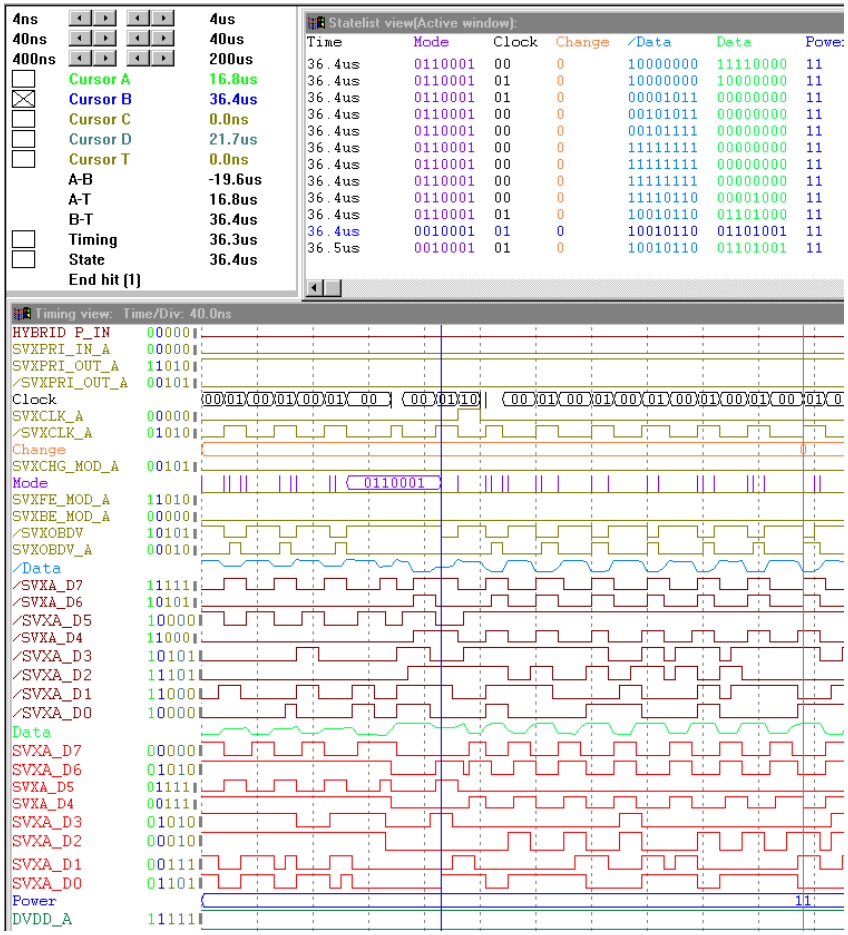
This chip is not the DVDD-GND problem



Hybrid Debugging

- L2A #17 (2017)
  - Hybrid downloads; zero readout
  - Used Logic Analyzer with SASeq test
  - Only testing 5 chips?



Hybrid Debugging

- L2A #17 (2017)
  - Testing Chips 65-69, or 01100101 - 01101001
  - Expect to see E0-E9
  - Note that E5-E9 is 11100101 - 11101001
  - Conclusion: Dropping a bit AND testing last 5 chips