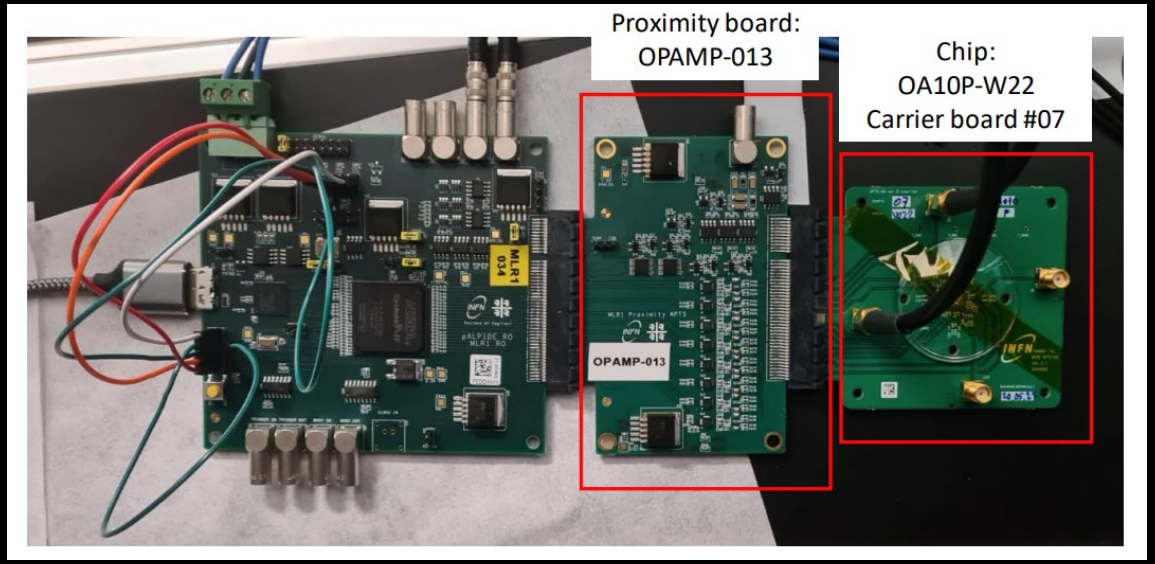


OpAmp Characterization Meeting

Arianna, Angelo, Francesco

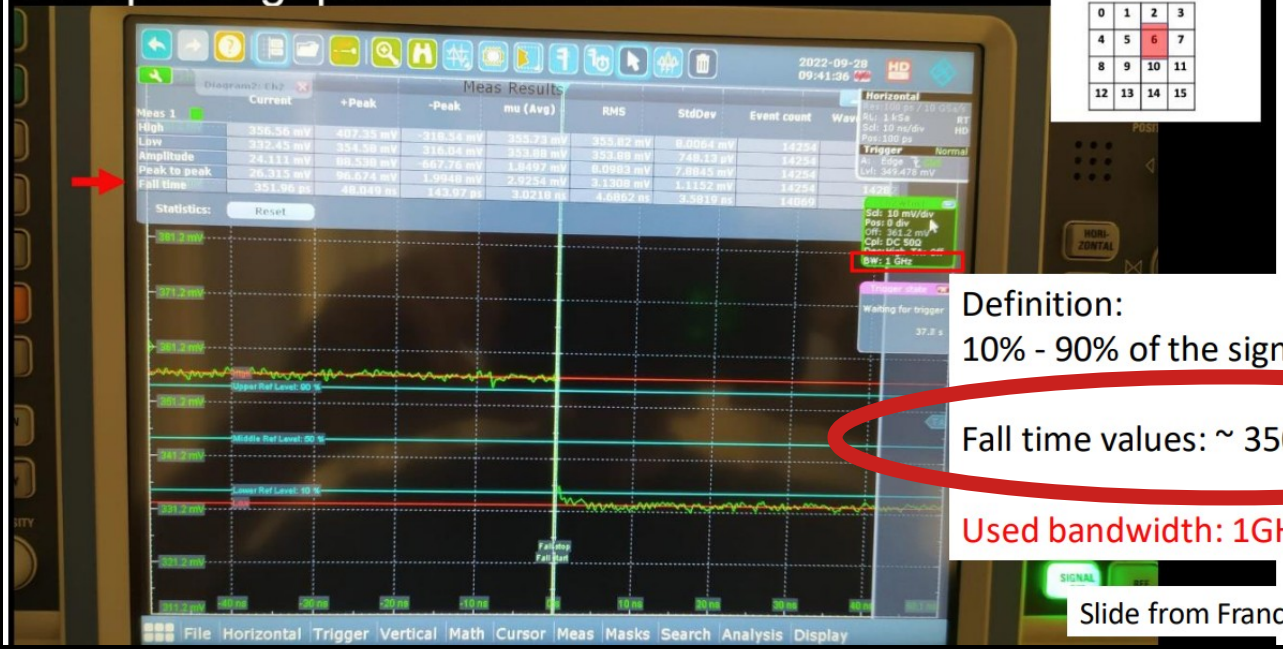
Reminder

Single matrix chip

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

Previous fall time measurements

Test pulsing: pixel under test J6



Definition:
10% - 90% of the signal amplitude.

Fall time values: ~ 350 ps

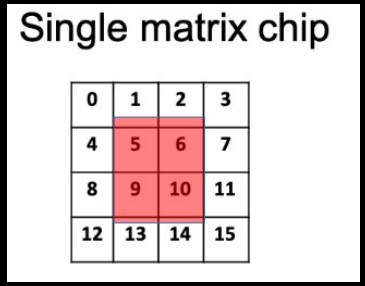
Used bandwidth: 1GHz / 4GHz

Slide from Francesco Barile

Bandwidth 1 GHz → 4 GHz

Test pulses (inner pixels)

2000 pulses - Bandwidth 4 GHz - 20 GSa/s

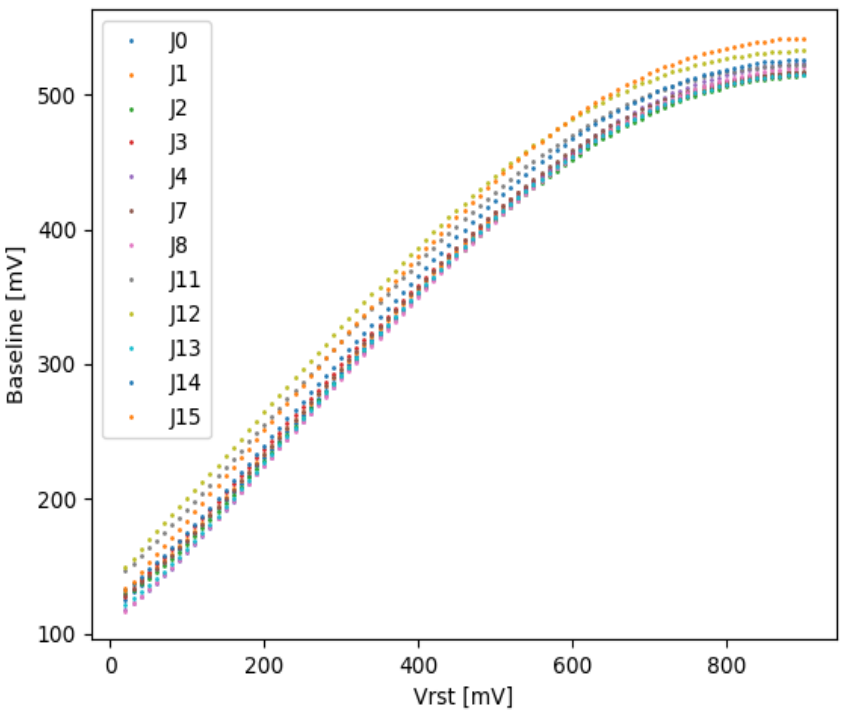


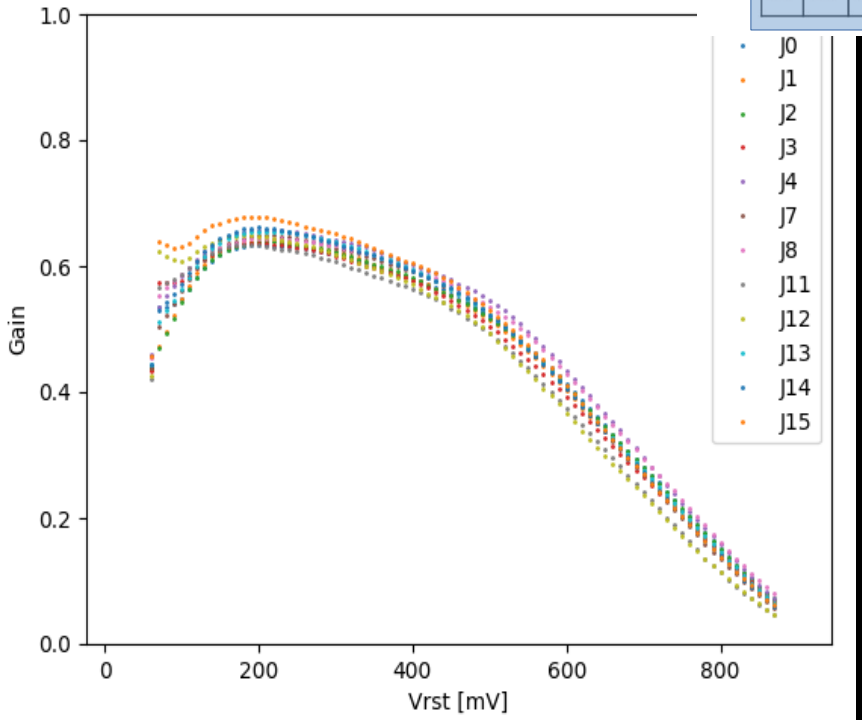
		Fall Time (ps)	Half Fall Time (ps)	Fall Time (ps)	
Pixel	Vbb (V)	90%-10%	90%-50%		
J5	0	149,0	71,1		142,2
J6	0	173,2	77,6	x2	155,2
J9	0	168,9	71,7		143,3
J10	0	153,9	70,3		140,7
		Fall Time (ps)	Half Fall Time (ps)	Fall Time (ps)	
Pixel	Vbb (V)	90%-10%	90%-50%		
J5	-2,4	215,1	95,4		190,8
J6	-2,4	229,0	98,8	x2	197,6
J9	-2,4	235,2	94,9		189,8
J10	-2,4	215,9	94,7		189,5

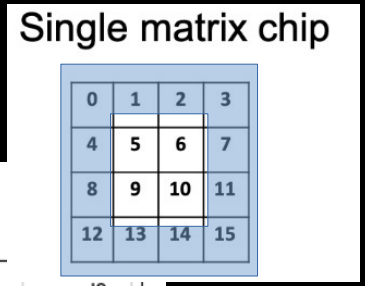
Gain (external pixels)

Bandwidth 4 GHz - 20 GSa/s

Vbb = 0V







Summary

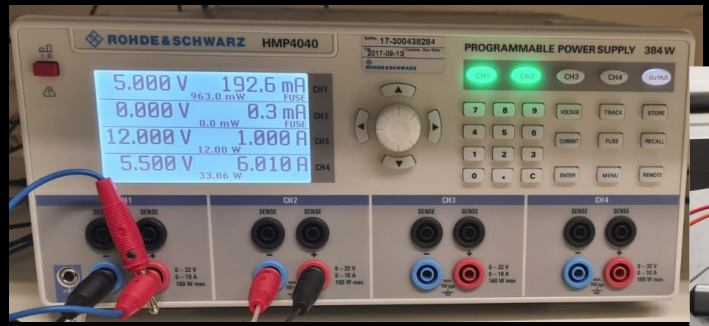
- Fall time inner pixels (scope @ 4 GHz)
  - 10% – 90%
  - (90% – 50%) x2

- Script to perform gain measurement (internal pixels) is ready


2022-11-15
10:07:23
Info
Diagram1: Ch2
Trigger state
Waiting for trigger since
33.9 s
Force trigger
Horizontal
Res:10 ps / 20 GSa/s
Scl: 4 ns/div
Pos:6.04 ns
Trigger
Normal
A: Edge Ch2
Lvl: 232.042 mV
Ch2Wfm1
Scl: 10 mV/div
Pos: 2.56 div
Off: 253.8 mV
Cpl: DC 50Ω
Bw: 4 GHz
Upper Ref Level: 90 %
Lower Ref Level: 10 %
Meas Results
Current
+Peak
-Peak
mu (Avg)
RMS
StdDev
Event count
Wave count
Meas 1
Fall time
226.17 ps
272.8 ps
198.92 ps
229 ps
229.22 ps
10.212 ps
1971
Meas 2
High
253.5 mV
257.05 mV
250.73 mV
254.06 mV
254.06 mV
889.75 µV
1971
Meas 3
Amplitude
61.66 mV
62.846 mV
61.265 mV
62.022 mV
62.022 mV
259.76 µV
1971
Statistics:
Reset
-4 ns
4 ns
8 ns
12 ns
16 ns
20 ns
24 ns
File
Horizontal
Trigger
Vertical
Math
Cursor
Meas
Masks
Search
Analysis
Display
RESOLUTION
RECORD LENGTH
POSITION
REF POINT
SCALE
VERTICAL
OFFSET
CH 1
CH 2
CH 3
CH 4
REF
MATH

Setup

- Oscilloscope: Rohde & Schwarz RTO 1044 4 GHz - 20 GSa/s
- Power Supply: HMP4040 Rohde & Schwarz
- MLR1 DAQ board + Proximity board + Carrier Board
  - Serial DAQ- 00090101054B2109
  - Proximity board OPAMP-013
  - Chip: AO10 P W22 (in Bari, 21 September 2022)



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