

# HRPPD photosensor assembly

Fused silica window



MCPs, spacers, etc



Side wall



Anode plate (Y03h),  
a pre-routing ceramic circuit board



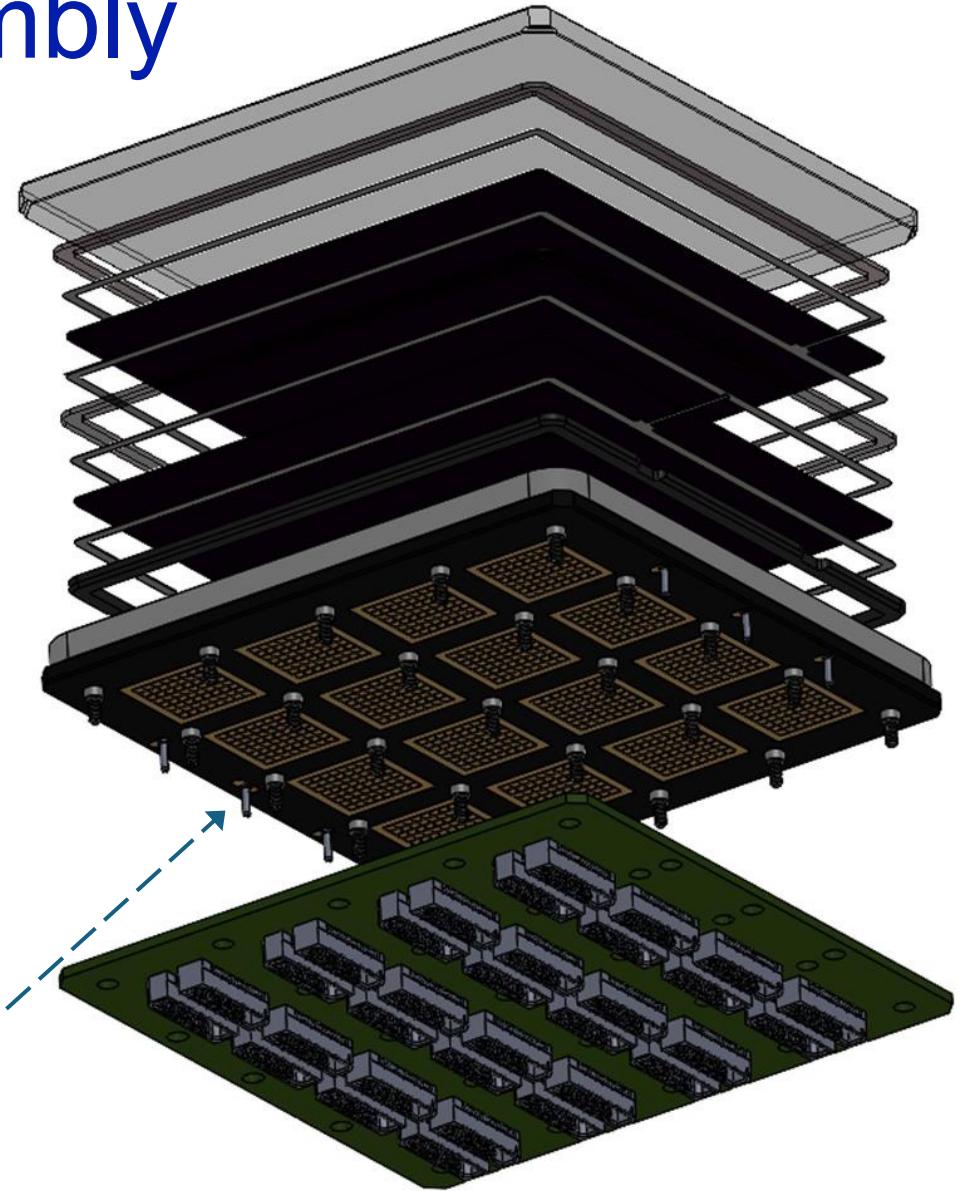
Compression interposers  
(not shown)



Interface PCB (Y05f)



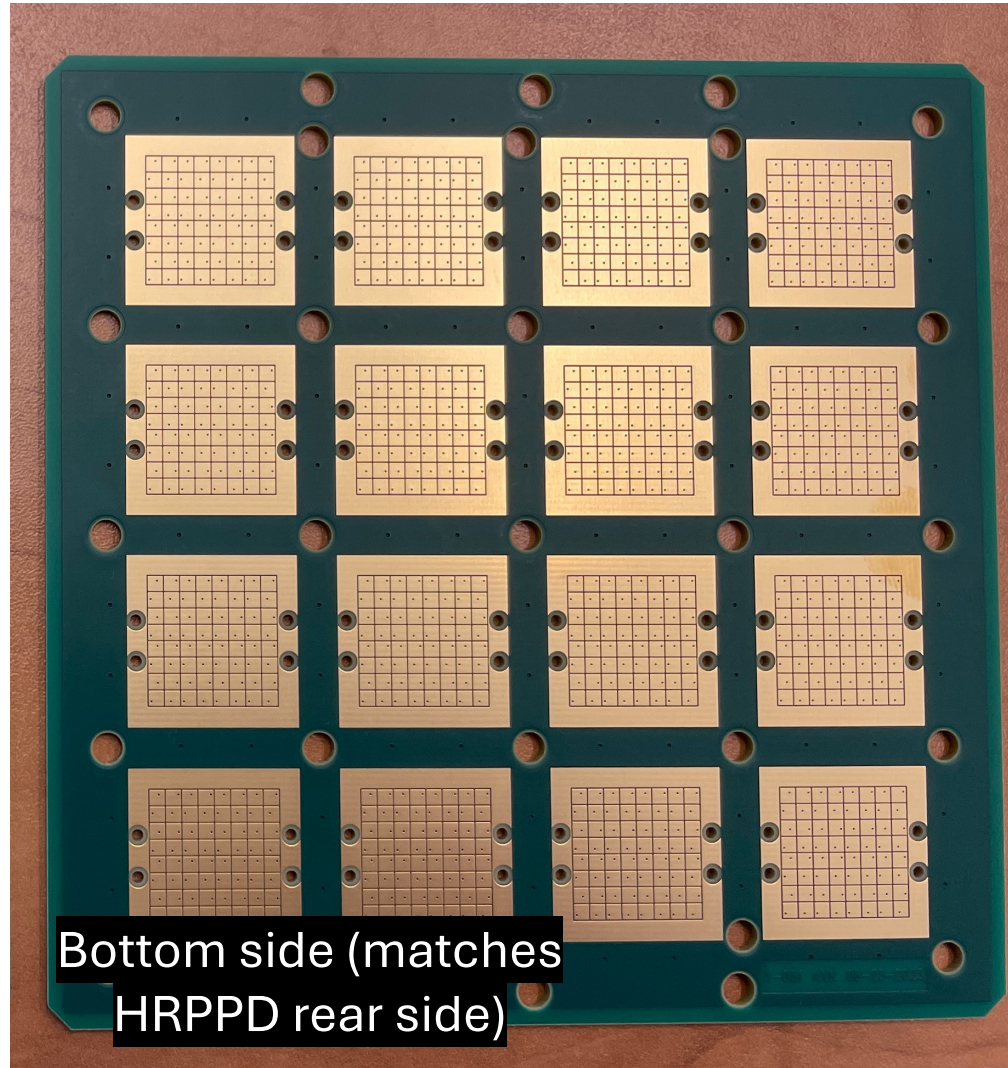
4x4 spots, each with 8x8 square pads; 3.25mm pitch



**Charge path: inner side anode pads -> anode plane stackup -> outer pads -> compression interposers -> interface PCB -> MMCX adapter PCB -> pigtail RG-316 (?) cables -> 6" RG-174 cables -> V1742 digitizer**



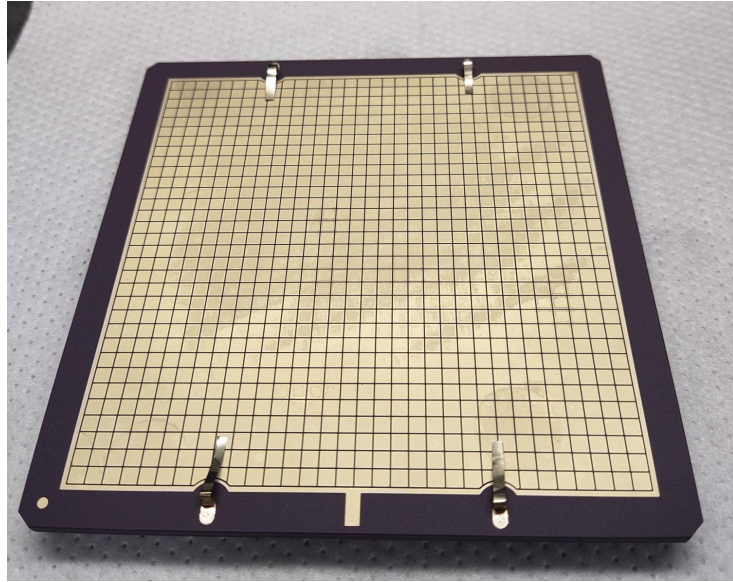
# HRPPD passive interface PCB (Y05f)



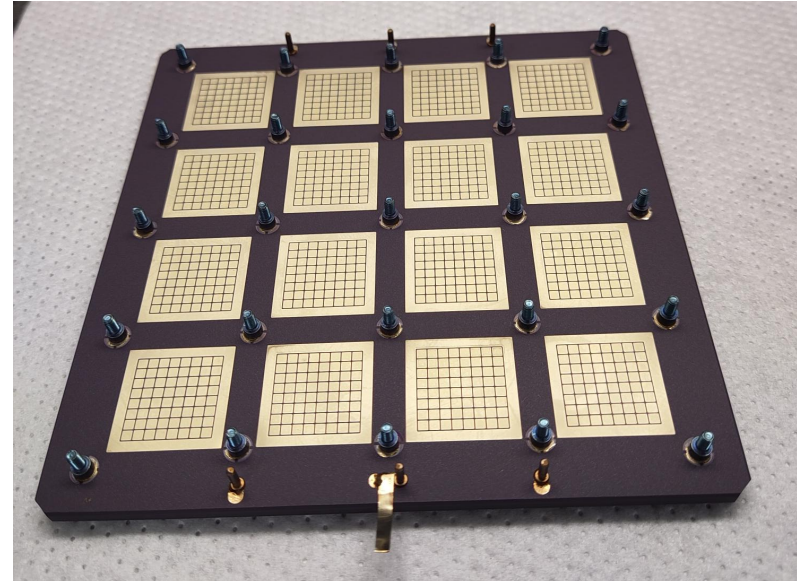
- A simple 119mm x 119mm two-layer board with Samtec ERF8 connectors



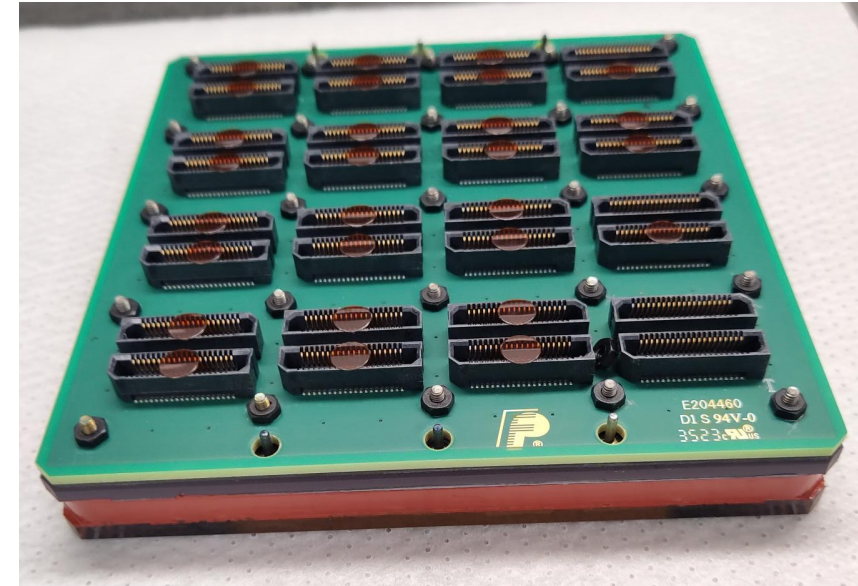
# Picture gallery



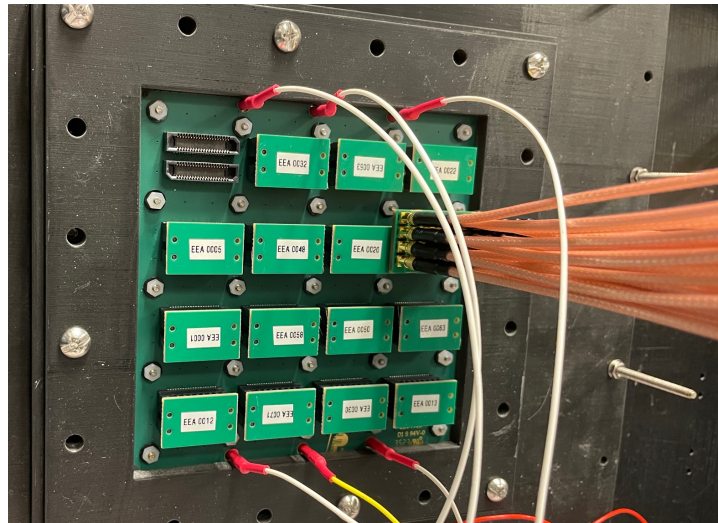
Anode plate vacuum side



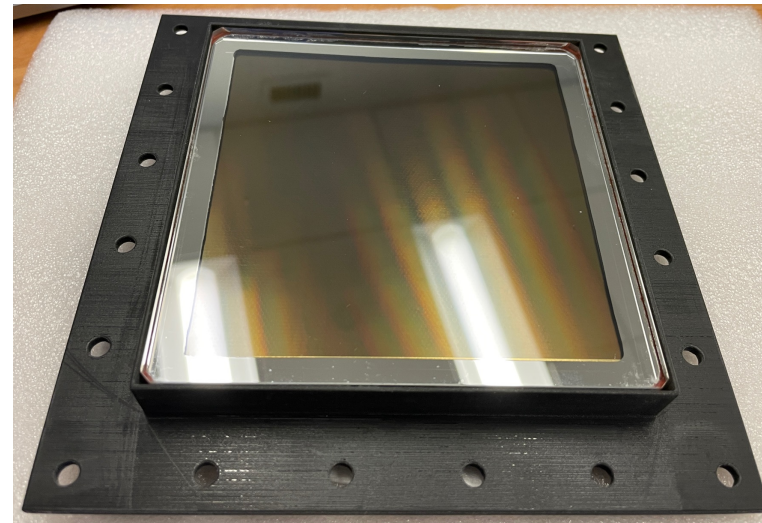
Anode plate air side



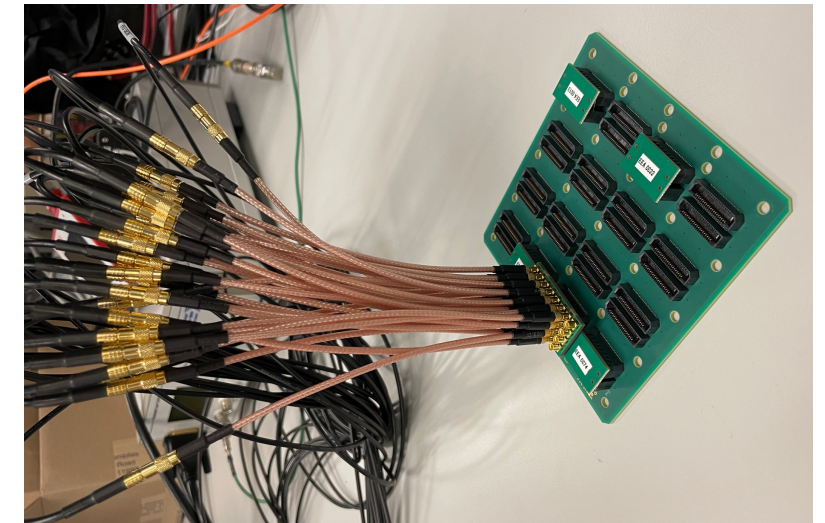
With Y05f board mounted



With MMCX interface



Fused silica window



MMCX -> MCX pigtail cables

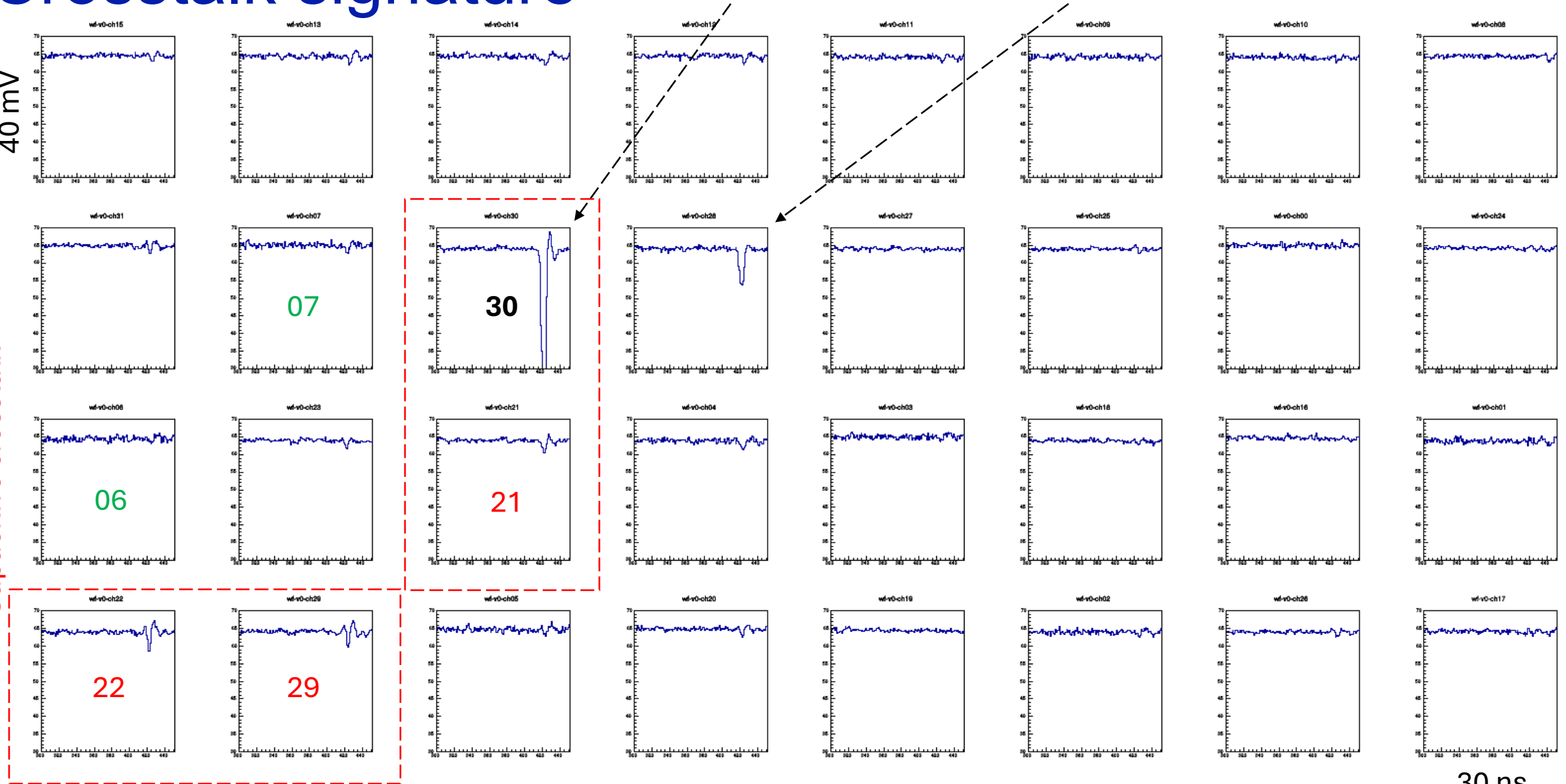
# Crosstalk signature

Laser spot here

“Normal” charge sharing

40 mV

Capacitive crosstalk



These four pads are neighbors on a Samtec ERF8 connector

Waveforms (single event): bottom half of one 8x8 pixel field

30 ns



# Electronics channel routing of a single 4x8 pad area

Channel numbering 00 .. 31 as connected to a single V1742 digitizer

15	07	G	14	06	13	05	G	12	04	11	03	G	10	02	09	01	G	08	00
31	23	G	30	22	29	21	G	28	20	27	19	G	26	18	25	17	G	24	16

Samtec ERF8 / ERM8 connector pinout

Neighbor on the air side anode surface

15	14	13	12	11	10	09	08
07	06	05	04	03	02	01	00
31	30	29	28	27	26	25	24
23	22	21	20	19	18	17	16

Y05f -> HRPPD interface

Neighbor on the vacuum side anode surface

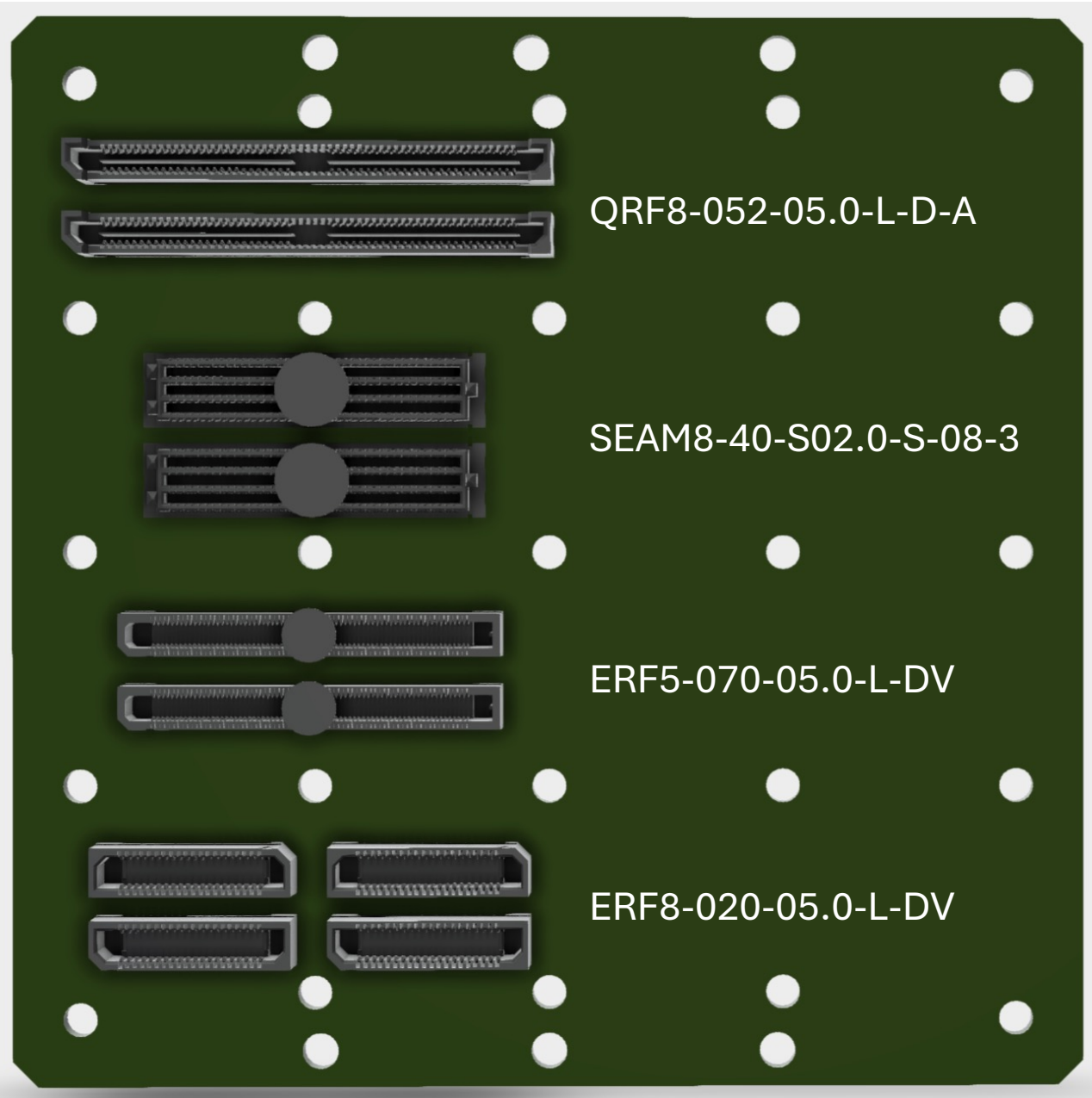
15	13	14	12	11	09	10	08
31	07	30	28	27	25	00	24
06	23	21	04	03	18	16	01
22	29	05	20	19	02	26	17

Physical HRPPD pad map

(bottom half of one of the sixteen 8x8 pad spots, as seen on the previous slide)



# Some connector options for two 8x8 pad spots



- 800 um pitch
- Native ground plane
- Exists in a “DP” variation (same footprint; SG-pairs separated by blank positions)
- ~\$220 / board



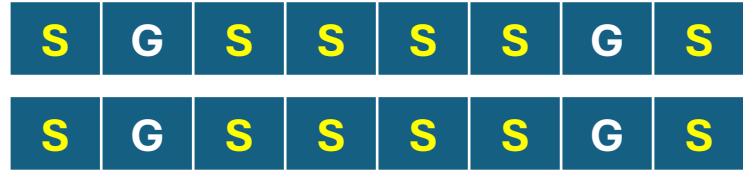
- 800 um pitch
- 8x40 pin arrays
- Chessboard-like Signal/Ground pins?
- ~\$250 / board



- 500 um pitch
- ~\$150 / board



- 800 um pitch
- Present version (crosstalk)
- ~\$250 / board



**Other ideas?**