List of changes in the design of Forward Hybrid K4 w.r.t. K3

- VISet line removed
- RC filters associated with VISet around each chip are removed
- The splitted groundpad under each chip is now only one pad with AGND potential
- The new footprint design accomodates only ABCD chips (no CAFE/ABC)
- Chip location has moved
- The pull down resistor on the SELECT line is removed
- The addressing (ID's and MASTER) of each chip position is now hardwired
- HV lines and filter components are now on the top side only. Between „open" pads we have a gap of 1mm at least, between encapsulated lines there are 0,5mm at least. HV connection to the detectors is made only in just one place: top side, close to E5 chip position.
- „Full" readout and bypass scheme is implemented now. The lenght of the longest trace is: <75mm
- A „via" is implemented between the AGND close to the connector and the backside AGND (reference).
- There are two options to glue the chips:

  1.) cut out full size windows to glue the chips direct onto the substrate ==> connection of substrate to AGND via the U-shaped contact surface on L3/4.
  2.) cut out small circular windows (diameter 2.5mm) under the chips ==> connection via silver loaded epoxy in this hole.

  The option 2.) is very similar to the K3 configuration. Option 1.) should improve electrical and thermal contacts and reduce material. As a backup for the AGND – substrate connection there are „chimneys" close to each chip which can be filled with silver loaded epoxy. „Chimney" means a small hole through the flex surrounded by contact area (AGND) on top surface.

- Close to each chip there are „chimneys" to connect the substrate to AGND using silverloaded glue.

- Also the detector backplane cap is tied to the substrate using a chimney.
- The path of the VCC to each chip is a massiv trace now with a mininum width of 650µm. This should let to a max. voltagedrop of 21 mV between connector and farest chip.
- The position of the VDC chip is shifted and rotated by 90°.
- Connector SK1 is now reduced to 26 pin size. It’s pinout is changed as Tony Smith proposed. Connector SK2 is shifted and rotated a little.
- HV-filter 2 x 5kOhm resistors are now 1206 sized.
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