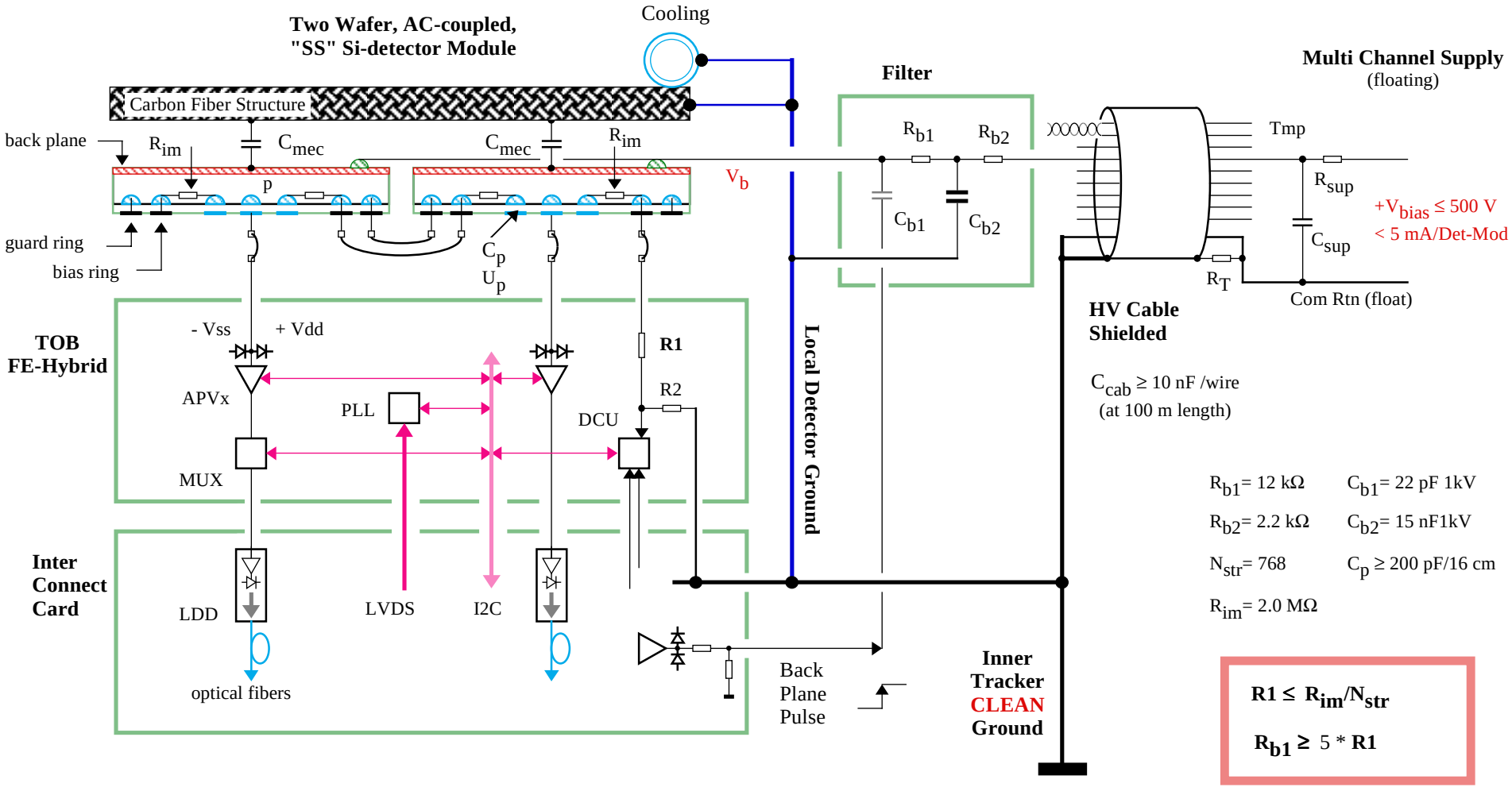

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Si-detector Safe Biasing [SS-TOB]

(electrical diagram)

N_{str}= 768

$C_{mec} \geq 175$ pF

$C_p \geq 200$ pF/16 cm

U_p =
implant to pick-up
electrode voltage

R1 = 2.2 kΩ
R_{b1} = 12 kΩ
R_{b2} = 2.2 kΩ

Total Detector Break-down

(first instant t=0) **:**

$\Sigma C = 2*C_{mec} + C_{b1}$ ($\geq$ 0.5 nF)

$U_p(0) = V_b * \Sigma C / (\Sigma C + C_p * Nstr)$

$U_p(0) \geq 500 * 0.5 / (0.5 + 153.6) \approx$ **1.6** (V)

Vbias recovery and Strip voltage rise

(Detector still shorted, **Cp** charges up, **Vb** = const) **:**

$\tau = [Rb1 // (Rim/Nstr+R1)] * [\Sigma C + C_p * Nstr] = 183$ µs

$U_p(t) = U_p(0)*e^{(-t/\tau)} + V_b * [Rim/Nstr+R1]/[Rb1+Rim/Nstr+R1] * [1 - e^{(-t/\tau)}]$ (V)

$U_p(100\ \mu s) = 0.93 + 500 * 0.28 * [1- e^{(-100/183)}] \approx$ **60** (V)

$U_p(1000\ \mu s) \approx$ **140** (V)

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