RMD 8x8 mm^2 APD Packaging on CERN Alumina Test Boards

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Magnetron Sputtering of the Titanium/Gold Contacts

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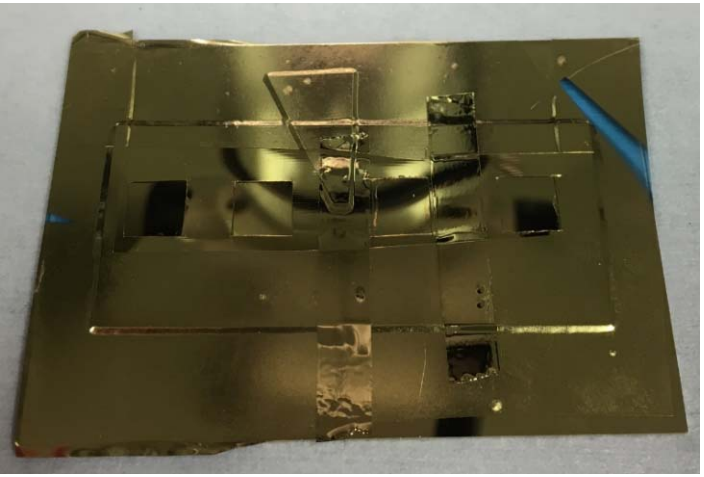
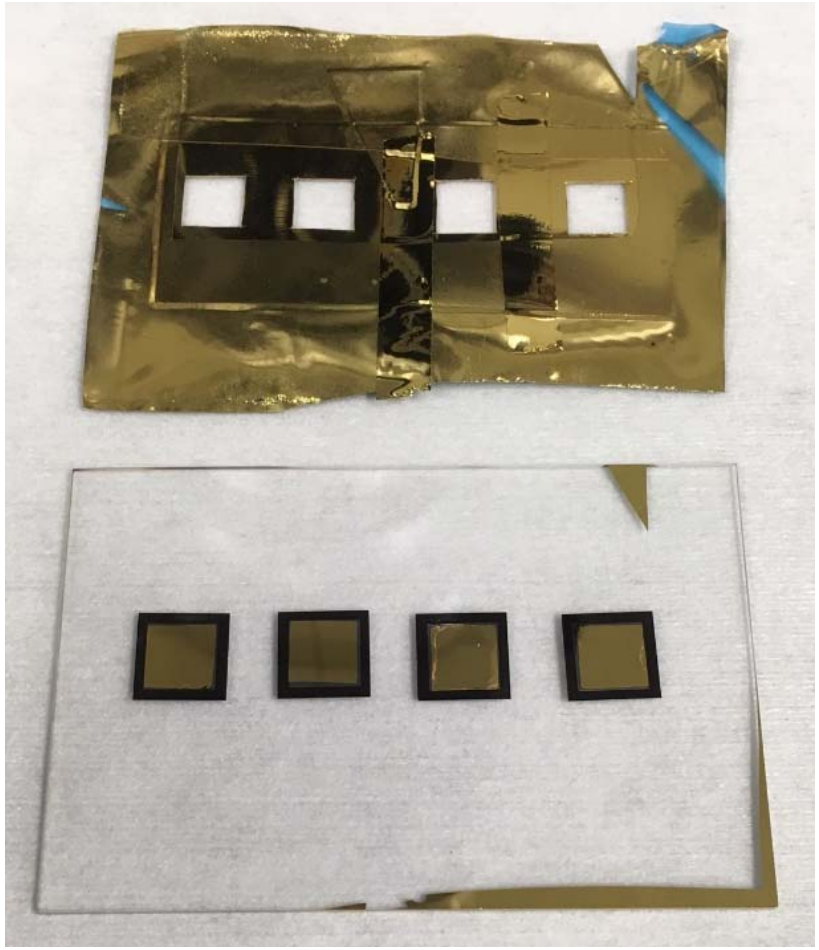
(Continued)

50/200-nm Ti/Au

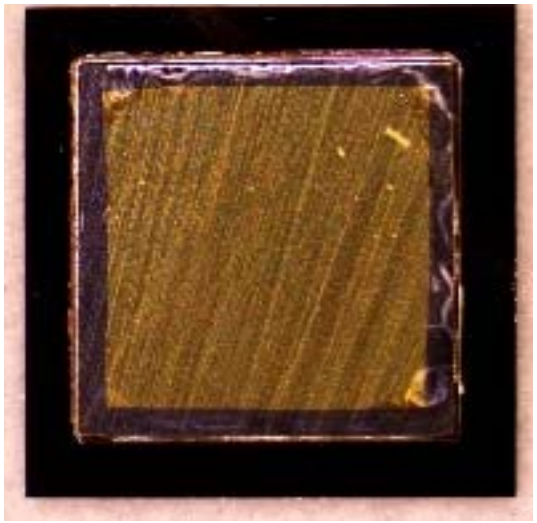


Shadow Mask

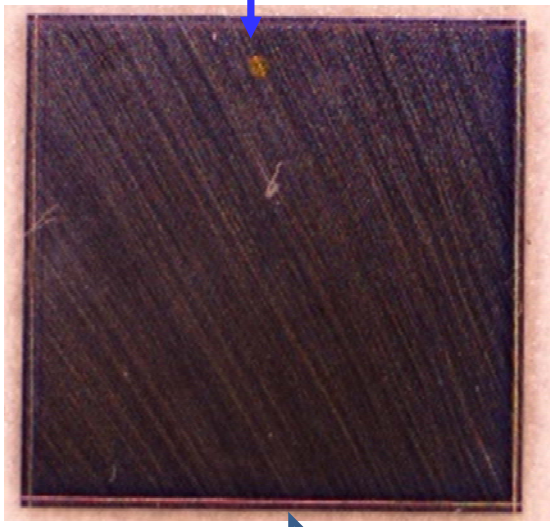


Mask Removal

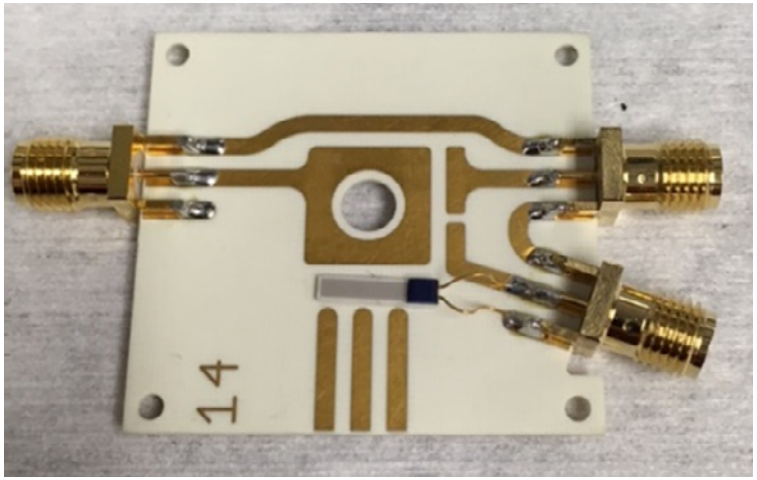
Back Contact



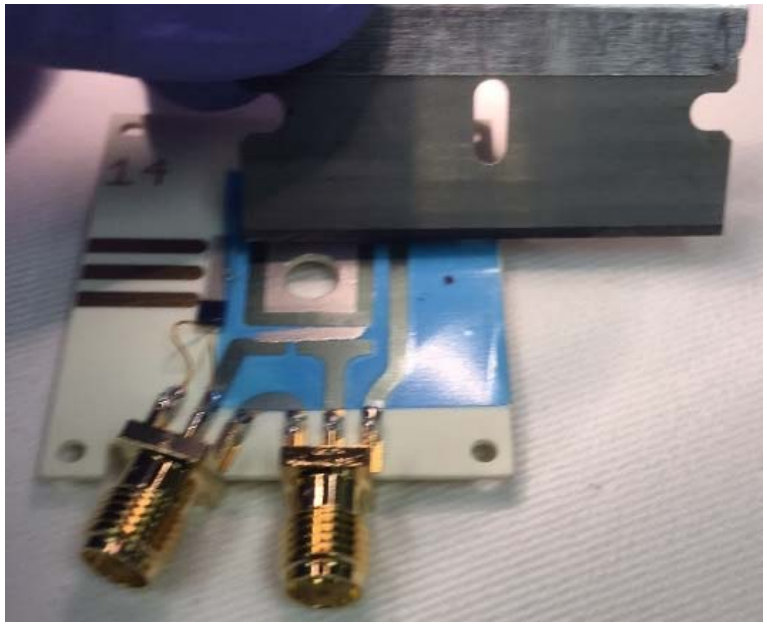
Top Contact



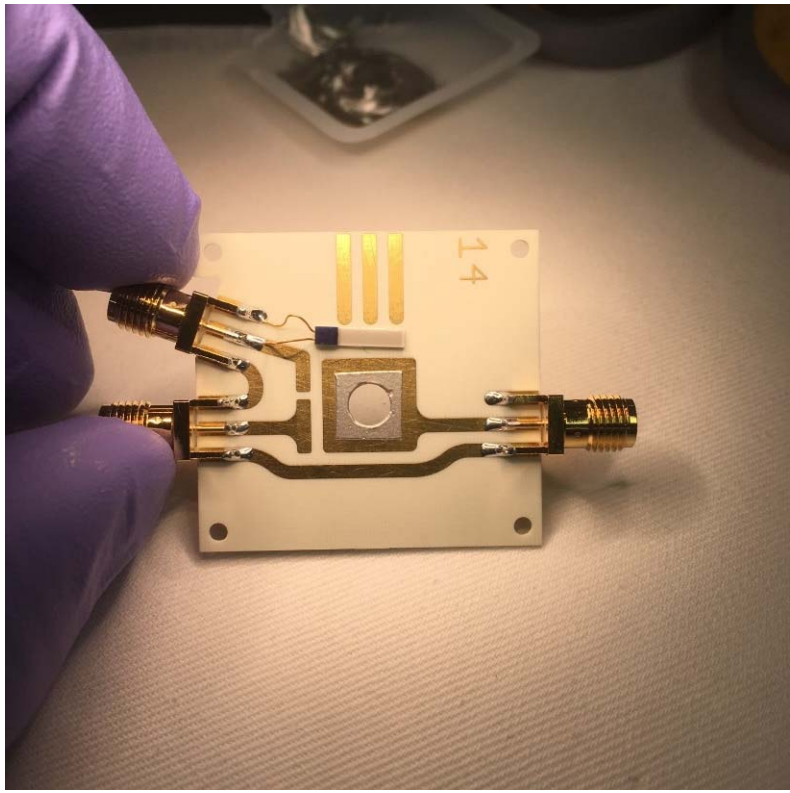
Mounting the APD to the Substrate with Epotek H22 Silver-Loaded Epoxy



CERN Alumina Substrate

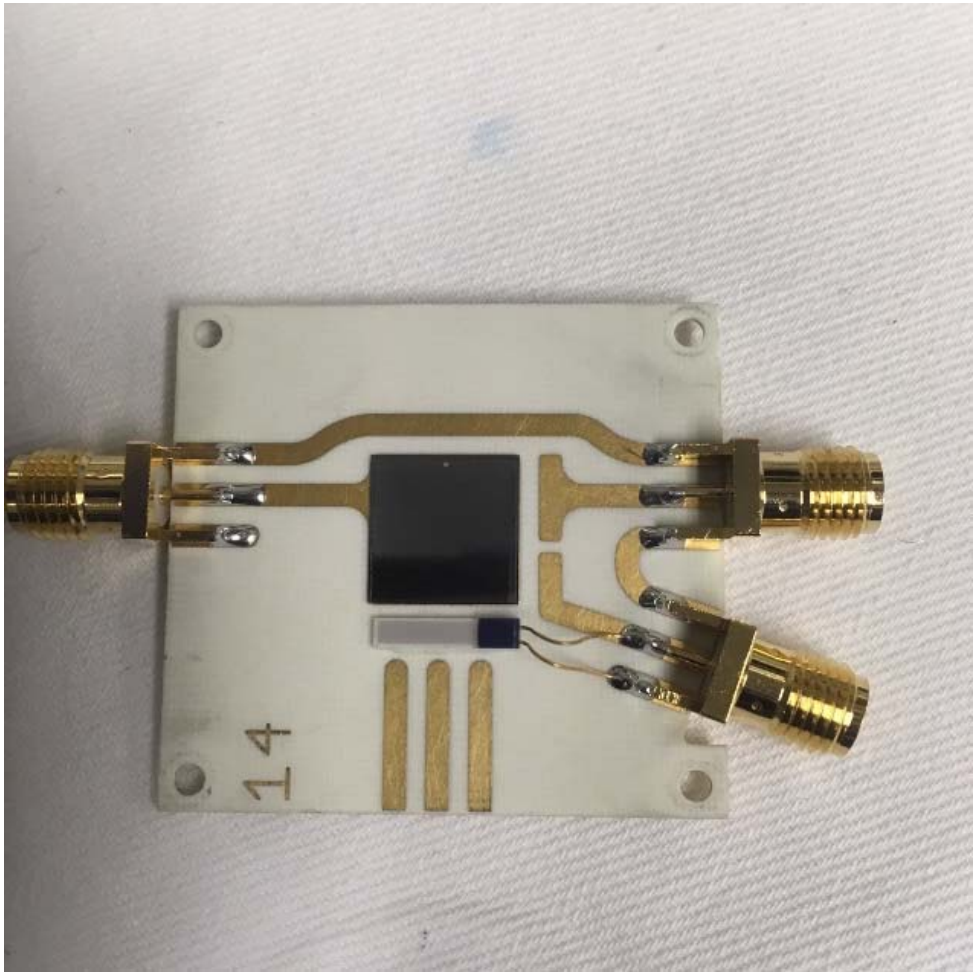


Screen, 50 μm of Silver Epoxy

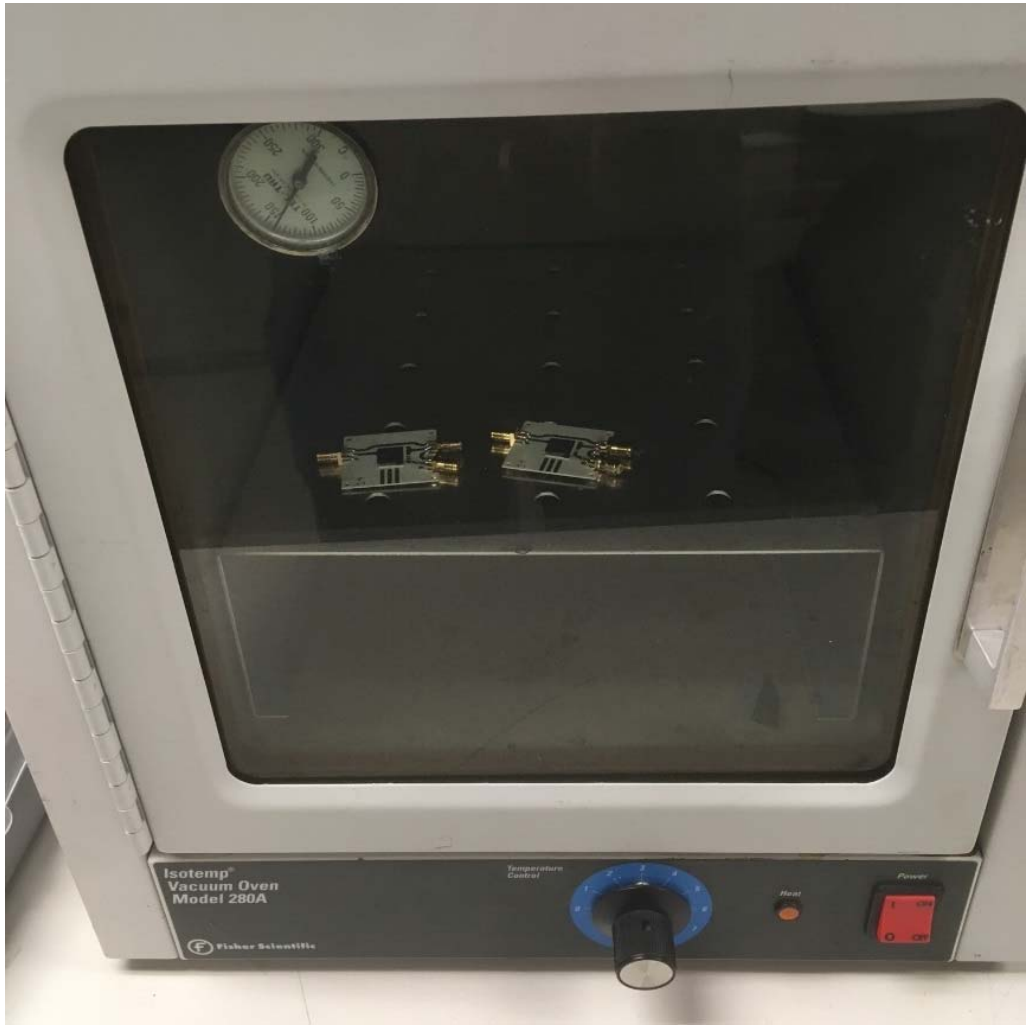


Remove 50-μm Mask

Mounting the APD to the Substrate with Epotek H22 Silver-Loaded Epoxy
(Continued)

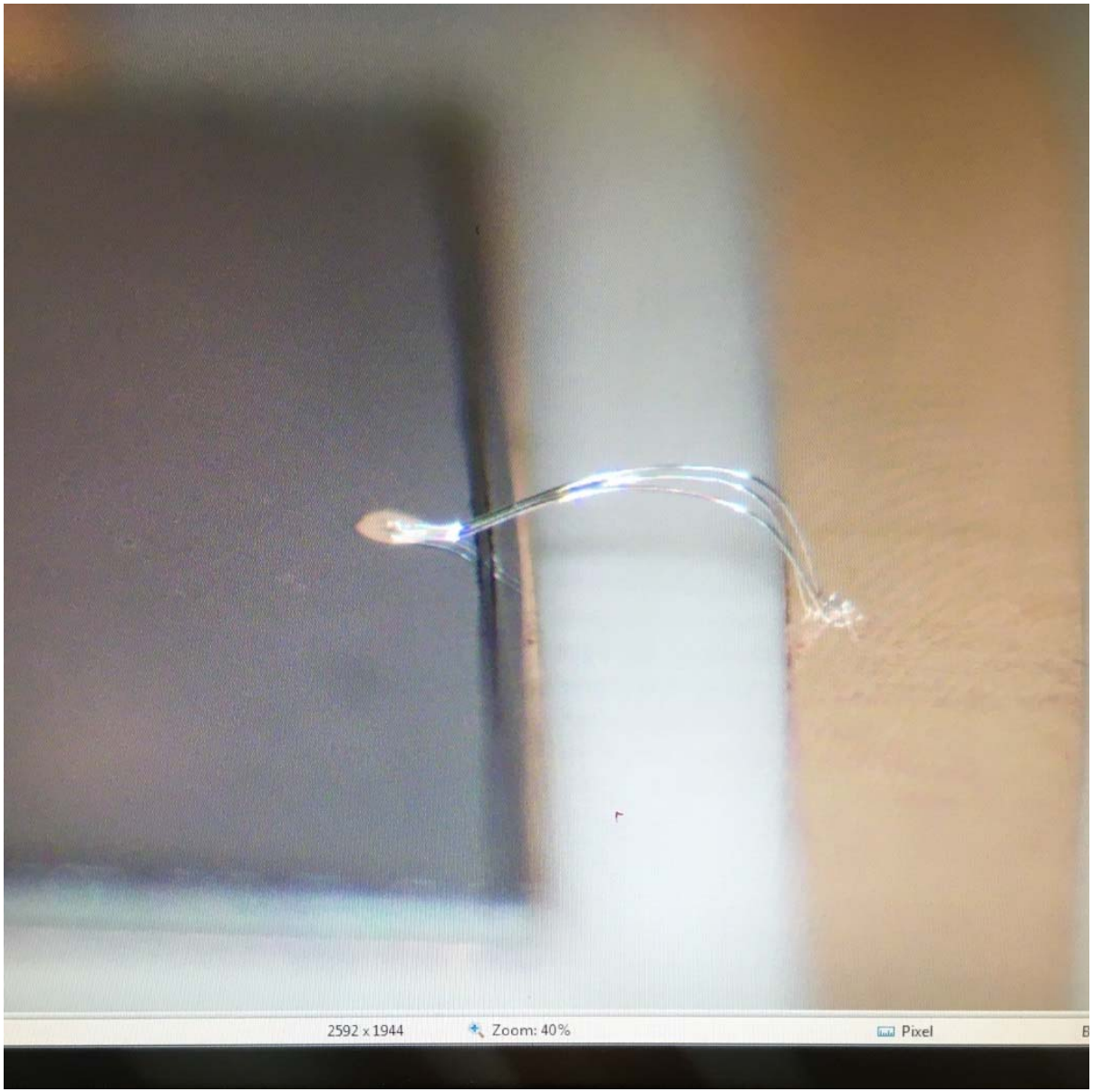


Die Bond (Place) APD onto Silver Epoxy



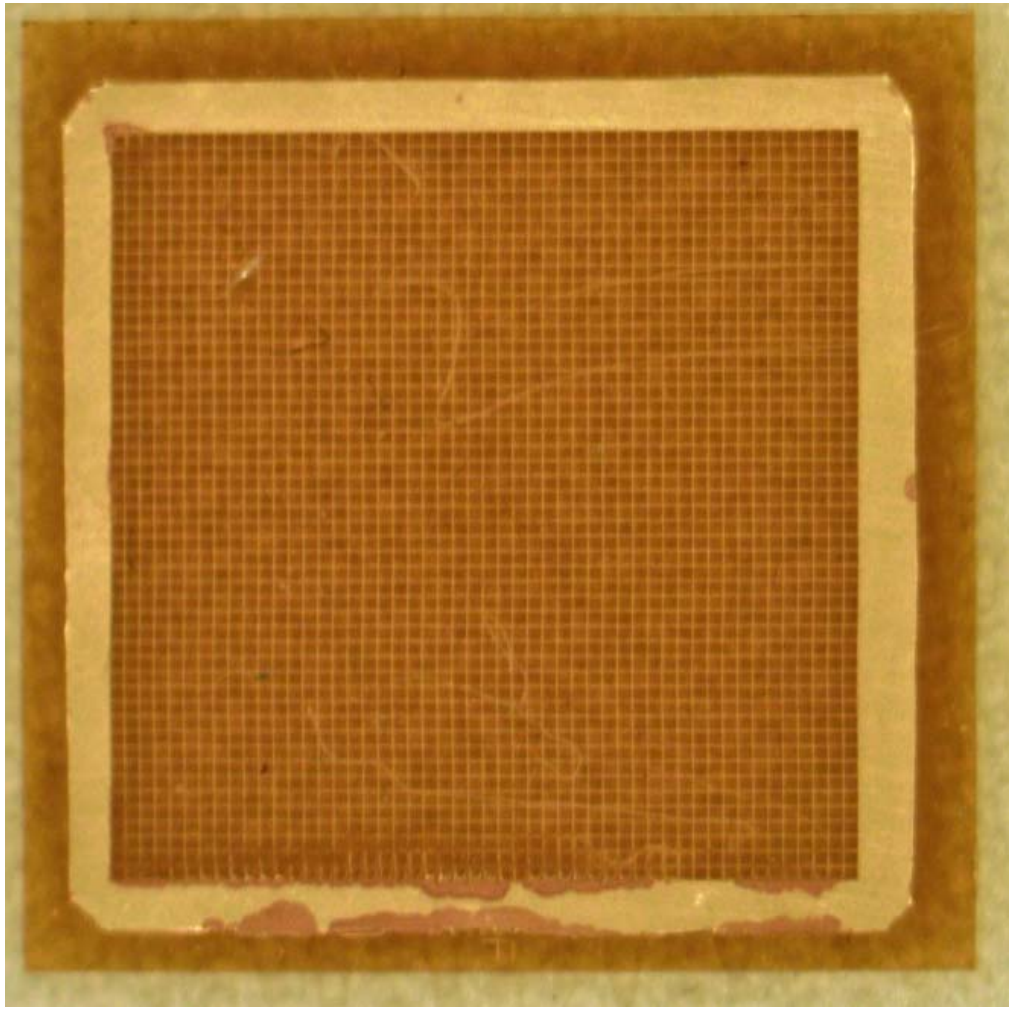
Cure Silver Epoxy @ 150C, 5 minutes

Ground 25-μm Aluminum Wirebonded Contact To Top Side

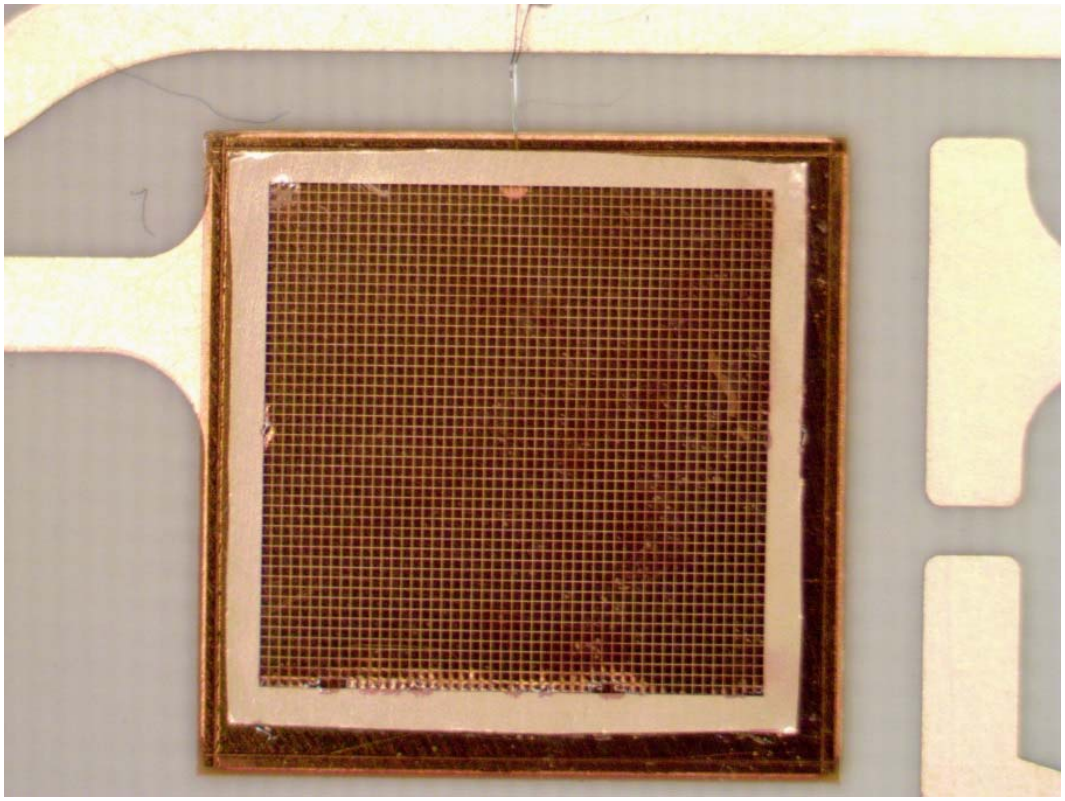


Bond the Mesh and Wirebond to the APD

Future version will have mesh fabricated on Kapton



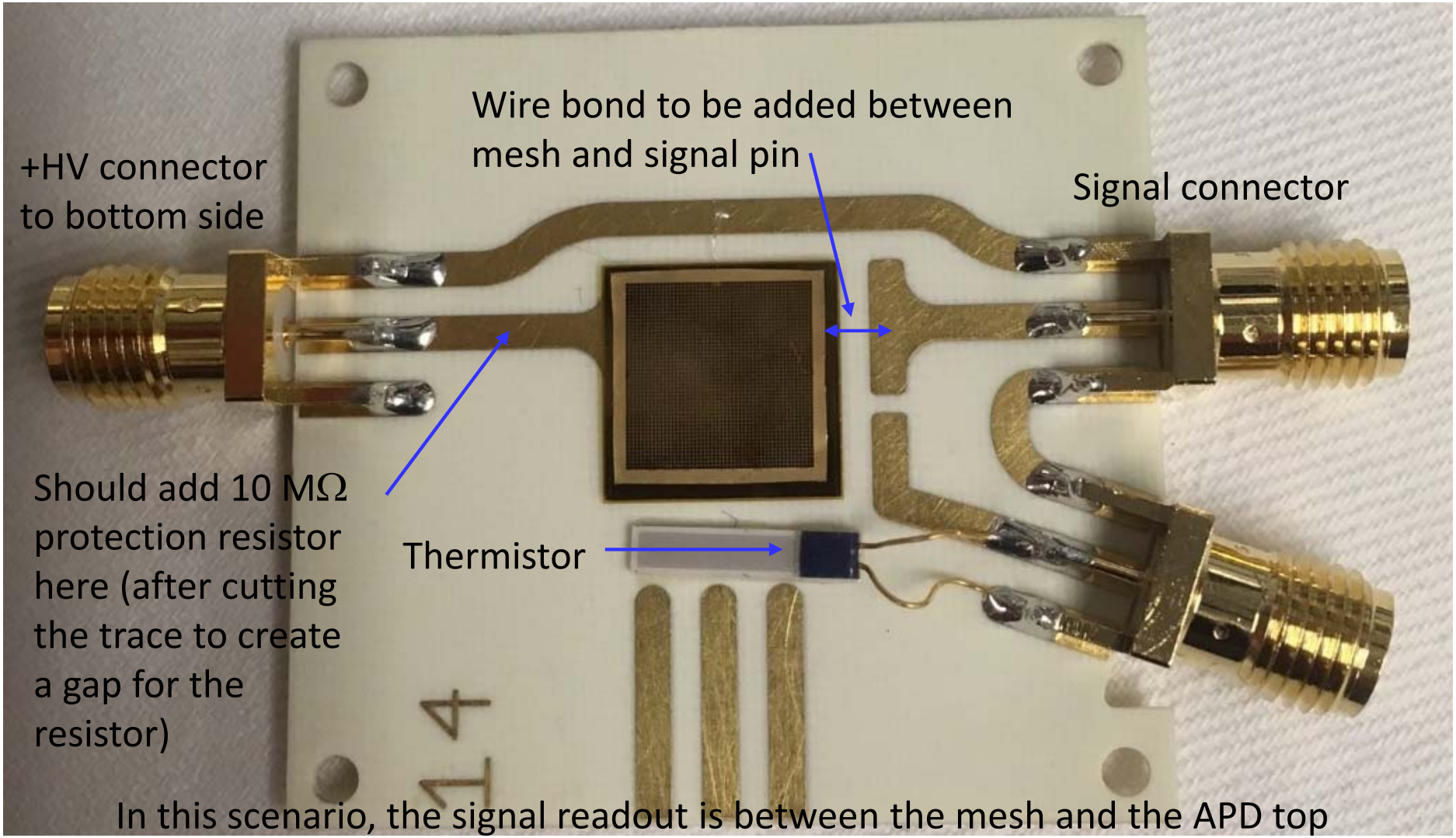
5-μm Nickel, Au-Flashed, 50-μm Kapton Mesh
Mesh is 9.5-mm square, 8/160-μm pitch
Kapton is 10.2-mm square



Mounted Mesh on APD
APD is 10 mm square

Future version will have a notch
in the mesh/Kapton for
the top contact/wirebond

Completed Package
Except for wirebond to top right SMA



In this scenario, the signal readout is between the mesh and the APD top contact, rather than between the mesh and the bottom contact.
As such, time walk and signal uniformity will be poor, due to the "high" resistivity of the top contact. Should instead have capacitive coupling between the signal pin and the bottom side contact.