

# 1 Metallization

## 1.1 Requirements on metallization

The metallization realizes contacts to the doped regions in semiconductor manufacturing with conducting paths. From here the connectors are lead to the edge of the microchip to finally connect it to the package or for testing reasons.

Following requirements are essential for metallizations in integrated micro electronic devices:

- excellent adhesion on silicon oxides (insulators between metallization layers)
- high ampacity, low resistance
- low contact resistance between metal and semiconductor
- simple processes to deposit the metallization layers
- low susceptibility to corrosion for long life times
- excellent contacting with wire bonds
- possibility to integrate stacked layers
- high purity of the metal

Aluminum meets many of this requirements and therefore has been the material of choice for many years. However, since structures are getting smaller and smaller, aluminum can't fulfill the requirements any longer. For this reason, copper will replace aluminum in the future.