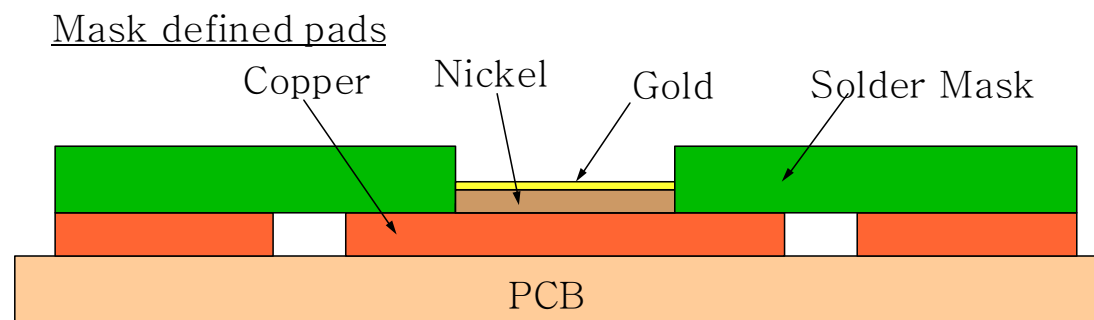
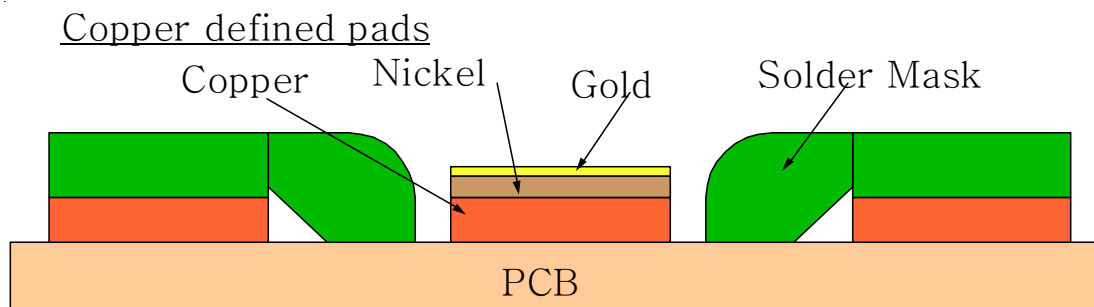


PCB recommendation:

Typically PCBs manufactured with socket footprint area covered by solder mask in non-contact area. Contact pads are either manufactured with solder mask defined or copper defined. Below pictures shows both concepts.

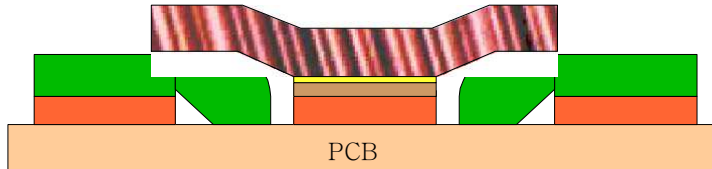


According to IPC 4552, typical Nickel plating is 3-6 micron and gold plating is minimum 0.05 micron. Solder mask thickness as per IPC-SM-840D is minimum 0.001" [0.025mm]. So, the solder mask is at least 25 microns. Ni+Au will be 3.05 microns minimum. With ENIG (Electroless Nickel Immersion Gold) plating, solder mask will be always above the contact pad area.

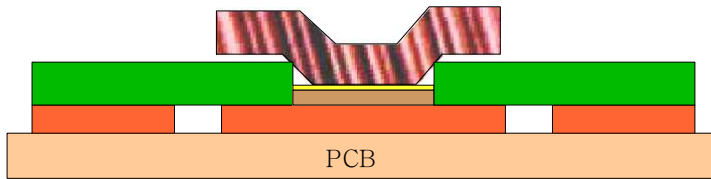
Elastomer is a contact technology that interfaces solder ball from device to contact pad in the PCB. The elastomer consists of a fine pitch matrix of gold plated wires, which are embedded at a 63-degree angle in a soft insulating sheet of silicone rubber. The gold-plated brass filaments protrude several microns from the top and bottom surfaces of the silicone sheet. Solder balls from the IC package come in contact with the top end of elastomer wire. The bottom end of the elastomer wire contacts the circuit board pad and thereby makes an electrical path for the signal. The number of wire filaments making contact depends on the solder ball and circuit board pad diameters.



Copper defined pads



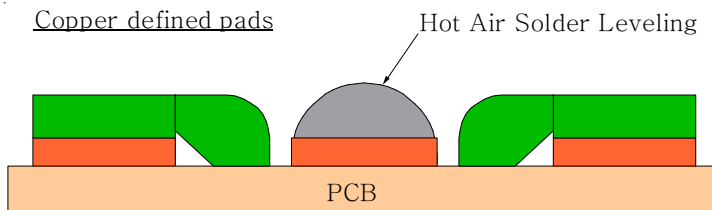
Mask defined pads



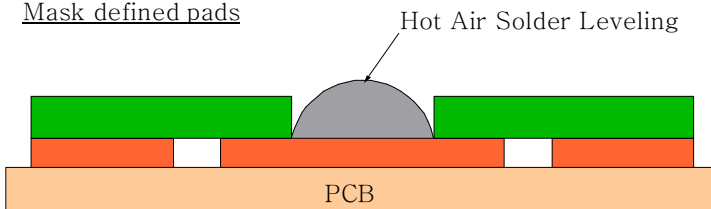
From the above pictures, it can be seen that copper defined pads are better than mask defined pads as it allows larger contact area. This phenomenon becomes further critical when the device pitch shrinks to 0.4mm due to contact pad sizes are 0.25mm. Stiffness of elastomer causes very difficult to deform and contact such a small contact pad. In those scenarios, PCB contact pad plating should be defined such that typical Nickel plating is 25-30 micron and gold plating is minimum 0.05 micron. This will raise the contact pad to same level as the solder mask which in turn enables the elastomer wires to utilize full contact pad area.

Alternate choice is to go with hot air solder leveling. Concept picture shown below. Solder dipping always add nice bump to the contact pad. This will raise the contact pad surface to same level of the solder mask. This will enable elastomer wires to utilize full contact pad area.

Copper defined pads



Mask defined pads



Alternate plating choices such as ENIPIG, hard gold plating can be acceptable as long as plating thicknesses are defined such that contact pad surface is same level as the solder mask surface.