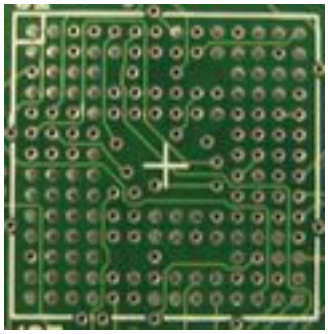
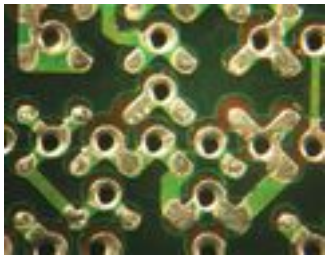
How not to treat your BGA friends

Screaming Circuits

Over the years, most of what we see are good PC boards. But some standout in the other direction as examples of what not to do. Some didn't make it through the board house alive. Some were unknowingly rendered useless in layout and some were just held on to too long or not stored properly.



[1]In this first image, we see a guaranteed not to work example. Open vias in BGA pads will ruin your whole day. And you can't just cap them with solder mask either. For BGAs, the only two via solutions are to have them filled and plated over at the board house, or not be in the pads at all. Having a via in a BGA pad is like trying to cook scrambled eggs over a camp fire without a skillet. The eggs will in fact cook, but they'll be all mixed in with the fire and coals and stuff and you won't be able to eat them.



[2]This next guaranteed not to work example shows a valiant attempt at keeping the vias out of the pads. But, as we used to say on the playground: "close only counts in horseshoes and hand grenades - and sometimes atom bombs." Here on the right, first, the mask registration is way off. That's not good but doesn't necessarily spell BGA death on its own. What will kill this assembly is the clear metal path between some of the pads and the vias. You need to have some soldermask blocking the metal path between the pad and the via. If you don't, it's almost as bad as putting the via in the pad. This board has a few places where there is a thin solder mask dam between the via and the pad. But, in the cases where there is no mask, the solder and solder ball will most likely migrate over to and down through the via.

Duane Benson
Close might also count with badgers.

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