0.4mm Pitch BGAs - Staggered?

Screaming Circuits

I wrote not long ago [1] and not far, far away about the type of pad recommended for 0.4mm pitch BGAs, as in non-soldermask defined vs. soldermask defined (NSMD vs SMD). The wisdom being that with the pads being so close on a 0.4mm pitch land, the BGA balls may be too close together and may bridge [2] if the pads are NSMD.

I got a comment from an engineer stating that not all 0.4mm pitch BGAs are

[3] created equal, that some have staggered lands which would still require NSMD pads. I searched and couldn't find a picture of such a part or corresponding land - too many millions to go through - so I simulated what that might look like in this image.

IPC calls this an "Interspersed array" (IPC-7095B, March 2008, Figure 6-13) or a "Staggered Matrix" (IPC-7351A, February 2007, Figure 14-8)

The thought being that, when staggered like this, the center to center distance between the pads is 0.57mm even though the column center to center distance is 0.4mm and that would put it back in the realm of getting better results with NSMD pads because 0.5's and above generally want NSMD pads.

Hmmm. Makes sense. Thanks Mr. Pythagoras for the extra 0.1656854mm of space.

Duane Benson
Use the reflow, Luke. Use the reflow

SOURCE [4]

Source URL (retrieved on *12/28/2014 - 9:49pm*):
http://www.ecnmag.com/news/2010/07/04mm-pitch-bgas-staggered?qt-video_of_the_day=0

Links:
[1] http://blog.screamingcircuits.com/2010/06/extra-fine-pitch-bga-pads.html
[2] http://blog.screamingcircuits.com/2009/04/04mm-pitch-bga-pads.html?cid=6a00d8341c008a53ef0133ecd0b3cc970b

[3] http://screamingcircuits.typepad.com/.a/6a00d8341c008a53ef0133f2b0bfbe970b-popup
[4] http://blog.screamingcircuits.com/2010/07/04mm-pitch-bgas-staggered.html