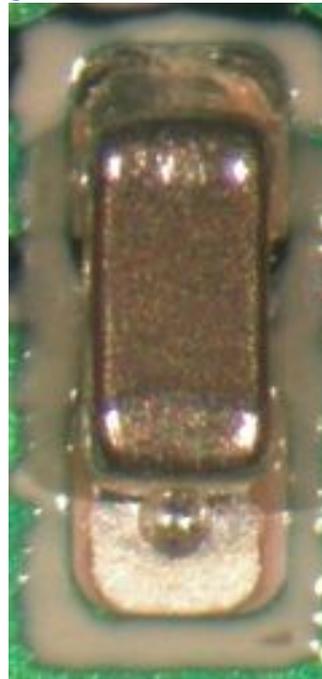


Via Shifting

Screaming Circuits

Here's an example of what via in pad can do for a small passive component. Other things can happen too, like tombstoning or [twisting](#) [1]. But take a close look at this photo. In doing so, you'll note that both sides of



[2] the part are soldered down. Sure, it's shifted, but who really cares? It's electrically connected. Right?

In this case, much of the solder on the lower pad flowed into the via. This led to an imbalance in surface tension between the two pads which shifted the part. Some logic might say that since both ends of the part are soldered in and there aren't any shorts, it's all cool.

It is all cool because it's been out of the reflow oven for quite a while, but it's not cool because it's not good workmanship. The IPC created standard IPC-A-610 for just such an issue. Class I is the loosest. This might pass that. I'm not sure though because we don't do anything with Class I here at Screaming Circuits except reject it. Class II is the typical commercial type standard and this shall not pass that standard. Nor would this pass Class III, an even tighter workmanship standard for higher-reliability requirements.

That's the real issue: reliability. With a good, symmetrical solder joint, you not only have a good electrical connection, but you also have a reliable mechanical connection. It will resist flexing and thermal expansion stress. This one may not. Give it some good thermal cycles or bounce it around in a race car engine computer and you may find yourself sidelined.

The moral of the story is to keep those vias out of your pads; even with passive

Via Shifting

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components. Or, put the vias there but fill and copper plate them at the board house.

Duane Benson
Balrogs in pad are bad too

[SOURCE](#) [3]

Source URL (retrieved on 03/09/2014 - 1:55am):

<http://www.ecnmag.com/news/2011/07/shifting>

Links:

[1] <http://blog.screamingcircuits.com/2010/11/little-chippy-challenges.html>

[2] <http://screamingcircuits.typepad.com/.a/6a00d8341c008a53ef015433b6975d970c-popup>

[3] <http://blog.screamingcircuits.com/2011/07/via-shifting.html>