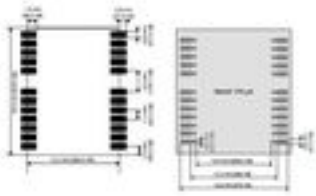
Castellated / Half-Vias

Screaming Circuits

[1] Modules with castellated mounting holes [2] are showing up more and more these days. I've also heard it called a "half-via" setup. Both seem to fit. The copper mounting pads on the bottom of the module's little PCB wrap up the side of the PCB with a half-via. Thus, the name "half-via." If looked at from the base, the edge does look a bit like the outline of the top of a castle wall, so that makes sense too.



[3] Whatever. The name isn't that important. There are a few things that are important though, such as the land pattern and the solder deposition. I hadn't heard any special requirements for using this type of part until recently when I ran across a GPS receiver module from ublox [4]. What they say is that you need more solder on the outside of the pad, than on the underside of the pad, so that it can properly wet up the half-via. That makes perfect sense. There are probably multiple ways of doing this, but you can see their take on it in the image here on the right that came from their data sheet.

Obviously, follow the datasheet that comes with your specific part, but if you don't have any official guidance and can't get word from your part manufacturer's applications engineers, you might take a hint from this method. The copper land is just a standard rectangle, as is the solder mask. The paste layer, however, is not. It's wider toward the outside of the part. This will help create a proper fillet up the via while reducing the chance of solder balls and other messy things that can happen when you have too much solder under a part.

Duane Benson

SOURCE [5]

Source URL (retrieved on *03/09/2014 - 7:23pm*):
http://www.ecnmag.com/news/2010/04/castellated/half-vias

Links:
[1] http://screamingcircuits.typepad.com/.a/6a00d8341c008a53ef0133ec9321df970b-popup
[2] http://blog.screamingcircuits.com/2008/11/castellated-mounting-holes.html
[3] http://screamingcircuits.typepad.com/.a/6a00d8341c008a53ef0133ec9319fa970b-popup
[4] http://www.u-blox.com/index.php
[5] http://blog.screamingcircuits.com/2010/04/castellated-halfvias.html