

Re: Utility of copper pours on four-layer boards

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2008-04/msg01252.html>

- *From:* John Larkin <jjlarkin@xx>
 - *Date:* Mon, 07 Apr 2008 19:55:59 -0700
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On Mon, 07 Apr 2008 16:37:45 -0700, Joerg
<notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxx> wrote:

Joel Koltner wrote:

"John Larkin" <jjlarkin@xx> wrote in message
news:s16lv3tmf5nge0aljddeii2do85k2b8fre@xxxxxxxxxxx

Crazy... a professor who can't compute a wavelength.

In academia I think what happens is that if you haven't actually sat down and thoroughly analyzed the situation and published a paper about it, you often tend to err on the side of caution and assume that any small change may have some huge impact even if some quick "thought experiments" like calculating the wavelength don't immediately suggest otherwise. (I once worked at a place where we had an Asian software engineer -- English as a second language for him -- who couldn't quite describe the problem with some code he was looking at, but turned to me and another guy and told us it was, "some kind of dangerous." It's become a popular phrase since then... hence I think the professor felt that moving the SMA connector was some kind of dangerous. :-))

Of course there are plenty of "hands-on" professors in academia too, although their numbers seem to be dwindling as electronics becomes a "deeper" field and people specialize early on and many end up having never built a circuit outside of a simulator.

I just did a 4-layer FR4 board, and included a test trace:
thru-hole
SMA, 50 ohm traces on layers 1, 3, and 4 (2 is ground), then

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another
SMA. I included a couple of sharp right angles and a beveled
corner.
All the bends are invisible on 20 GHz TDR. The vias do
show up, but
not real bad.

Good information. I think the beveled corners are meant to tell others that
you're an Official Microwave Designer and not just a PCB layout hacker. :-)

Hmm, for some reason John's post didn't make it onto the Pacific Bell
news server. Strange. So if I don't respond to some stuff my apologies,
I might not be able to see all the posts.

WRT beveled or rounded traces it depends on the effective number of bits
of the TDR scope. Minute reflections may go under in the noise but they
sure can matter in some hot pulse-echo applications.

On FR4, at 20 GHz, the fiberglass weave makes more impedance bumps
than a right-angle trace bend. An 11801 will zoom, smooth, and signal
average enough to show stuff like this.

John

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