

# Re: Soldering bypass caps to QFP possible?

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- *From:* Spehro Pefhany <[speffSNIP@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:speffSNIP@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Sat, 26 Jan 2008 12:57:01 -0500
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On Sat, 26 Jan 2008 08:56:37 -0800, the renowned Joerg <[notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)> wrote:

John Larkin wrote:

On Sat, 26 Jan 2008 01:58:57 GMT, Joerg <[notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)> wrote:

John Larkin wrote:

On Sat, 26 Jan 2008 01:00:17 GMT, Joerg <[notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)> wrote:

Joel Koltner wrote:

"Joerg"  
<[notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)>  
wrote in  
message  
[news:Grvmj.664\\$R84.277@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:Grvmj.664$R84.277@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)

Except  
that  
there  
aren't  
any  
vias.  
The  
next  
one  
is  
about  
1-1/2  
inches  
away

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and  
that's  
also  
where  
the  
lone  
bypass  
cap  
dwelleth.  
Ground  
is  
almost  
as  
long  
and  
takes  
a  
different  
path  
:-(

Something  
I've done in  
the past is  
to make  
cover the  
top of the  
chip in solid  
copper foil  
tape,  
soldering  
the outer  
tape edges  
to all the  
ground pins  
you  
have  
available  
(using 30  
ga. wire).  
Then, solder  
a cap to this  
new ground  
plane on  
one side and  
run a 30 ga.  
wire from  
the other  
side down  
the few mm  
to

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the power  
pins (or any  
other pin  
you're  
looking to  
bypass).

This also  
makes for  
an excellent  
ground  
point if  
you're  
using, e.g.,  
FET  
probes with  
a ground  
"leg" that  
needs to be  
within a few  
cm of the  
probe tip  
because you  
actually  
want 1GHz  
response or  
whatever.

I thought about a copper  
tape lash-up. Unfortunately  
this stuff is used  
in a rather hot and humid  
climate and I am afraid the  
glue on that tape  
won't hold up.

Copper tape will stick forever.

But the main issue is  
soldering to those 0.5mm  
pitch pins.

Make a tiny PCB that has bypass caps, and  
glue it on top of the chip,  
and drop down ground and vcc wires.

That's a good idea, could be epoxied down. The wires would  
be a royal

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pain in the neck though. I know catheter assemblers who could do that but they are all cranking overtime as it is because there aren't enough of them. Pretty much all my clients with catheter manufacturing have permanent ads out.

Really, it wouldn't be hard to solder wires to those pins.

Hey, how about this:

<ftp://66.117.156.8/Break2.jpg>

<ftp://66.117.156.8/OnBoard.jpg>

Some Maxim SO-8 comparators started failing, so we made a pc board with a different, smaller part on it, plus some schottky diodes and resistors. It solders down into the SO-8 footprint. That saved roughly a megabuck worth of boards.

Nice! Unfortunately this already is a fine-pitch part, a 100-QFP with 0.5mm pitch. To avoid this capacitor stuff I could also muffle things from an ESD/RFI point of view if the front panel overlay in front of a large LCD was conductive. But it ain't. Placing another (conductive) film below would work but its glue side would face up and eventually stick to the current overlay. IME that turns yucky really quick.

Looks like one of those up the creek situations.

I would have no problem with doing one or a few for field tests, but actually shipping a whole bunch of those things with that kind of rework.. especially if the environment is not benign in the extreme (which the conformal coating would tend to indicate is NOT the case).. they should evaluate the cost per failure (from this point in time, water's already under the bridge) compared to redoing the boards salvaging whatever makes sense. The end users may be quite patient with a sure fix, but if they are shipped something else, which then fails, it may be the last time your client hears from them (maybe indirectly they might hear from their legal dept, but probably not AP). That's more of a business decision.. cost and risk management.

If you absolutely have to--- maybe strip the conformal coating, glue an 0805 or 0603 part to the top with a similar kind of cement as is used for gluing SMT parts to boards (Loctite XXX) and run a couple of fine wires (with some give in them) a few mm to the pins. Inspect the hell out of it, then conformally coat again to glob the wires and cap down.

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It still won't be as good as having a proper layout.

Best regards,  
Spehro Pefhany

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"it's the network..." "The Journey is the reward"

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