

Re: Soldering bypass caps to QFP possible?

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Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2008-01/msg04121.html>

- *From:* Joerg <notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Sat, 26 Jan 2008 18:05:45 GMT
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Spehro Pefhany wrote:

On Sat, 26 Jan 2008 08:56:37 -0800, the renowned Joerg
<notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxx> wrote:

John Larkin wrote:

On Sat, 26 Jan 2008 01:58:57 GMT, Joerg
<notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxx> wrote:

John Larkin wrote:

On Sat, 26 Jan 2008
01:00:17 GMT, Joerg
<notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxx>
wrote:

Joel Koltner
wrote:

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

Except
that
there
aren't
any
vias.
The
next
one

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is
about
1-1/2
inches
away
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

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

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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

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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 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

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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 probablyh not AP). That's more of a business decision.. cost and risk management.

It's not just that, also turn-around time. A re-layout and new run realistically takes many weeks. Rework is actually quite common. When I took apart an aircraft (!) radio from a mainstream manufacturer in that market I was initially shocked by the amount of rework in there. Especially when considering the production volume. Then a service tech told me that this is quite "normal".

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

Either that or a 01005 cap soldered directly.

Regards, Joerg

<http://www.analogconsultants.com/>

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