

Re: Hi speed USB PCB layout

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2008-02/msg00790.html>

- *From:* Phil Endecott <spam_from_usenet_0606@xxxxxxxxxxxxx>
 - *Date:* Wed, 06 Feb 2008 19:39:20 GMT
-

Tony wrote:

My company is trying to add hispeed USB host to an existing product (its not a PC) and need Hi-Speed level data rates, eg 20MB/s.

There are a number of mechanical issues which mean a flying lead socket would be ideal, plugging into the PCB just like many PC motherboard USB connections and screws holding it to the front panel.

Our Hardware Engineer is very uncomfortable with this and is insisting on a main PCB mounted SMT socket, needing a precision tunnel dug through 3 chassis parts and a PCB with the additional cost of the extra FR4 4 layer. He won't even entertain a through hole socket. His argument is that PC companies have lots of expensive equipment that we don't have to continually monitor and qualify such cables. We will rent this equipment for the design but not during production. The flying lead cables will be bought in.

I need a second opinion before I go digging through the parts to make this happen.

I've done similar designs. I suspect that the PC companies don't do as much testing as you might imagine, and often the connectors that are on flying leads are less reliable than others. The first response to a question on the Linux USB users mailing lists is often "try a socket that's on the motherboard". The Linux USB driver source code is full of retry code to work around potentially-flakey hardware.

Having said that, my experience with USB chips is that they exceed the spec's requirements by enough to give you some flexibility. Our most recent board puts high-speed USB over a 1mm-pitch pin header to a mezzanine board, i.e. USB chip – tracks – 1mm header – tracks – connector, and it seems to work (the tracks are maybe 5cm long and are impedance-matched pairs). We have always used through-hole connectors with no problems.

Phil.

.