

Re: Differential probes

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2006-06/msg04202.html>

- *From:* John Larkin <jjlarkin@xx>
 - *Date:* Mon, 19 Jun 2006 17:40:38 -0700
-

On Mon, 19 Jun 2006 16:49:57 -0700, Chris Carlen
<crcarleRemoveThis@xxxxxxxxxxxxxxxx> wrote:

Hi:

I have a Tek P5205 1:50/1:500 100MHz probe. I just tested it with a 1MHz square wave and it gives nice clean edges with little ringing.

However, a Fluke DP120 20MHz 1:20/1:200 probe loaned to me by an Agilent sales rep. gives miserably ringing edges. The Fluke is kind of silly in having 4 ft. long heavy cables with huge probes that look suitable for heavy duty power distribution probing. Not very convenient for little stuff.

But worse, the Fluke gives horribly ringing edges. I tried making the test cables into a twist-pair, which helped a little but not much. Do the designers ever really think that the thing can give meaningful measurements of 20MHz signals with such a huge pickup loop area! Also, the FP120 is about 4x more noisy than the Tek. The Fluke must have a power supply in there to generate a negative supply, whereas the Tek just pulls clean power from the scope.

Ugh!

The problem with the Tek is it can only work with the scope. But I need to look at a filtered signal to get better RMS measurements of PWM BLDC motor terminal voltages.

Although the FLuke gave a little better 1MHz CMRR of about -66dB vs. Tek -49dB.

There are also a bunch of probes on the market that look like this:

- <http://www.probemaster.com/activedifferential.html>
- <http://www.linkinstruments.com/adf25.htm>

Re: Differential probes

I wonder how they perform?

Oh well, just deliberating in public.

Thanks for input.

We just got a new Tek TPS2024 scope. It's a 4-channel, 200 MHz color scope and all four channels plus the trigger inputs are isolated. So you can use regular 1:1 or 10:1 probes for off-ground measurements at millivolt sensitivity. Slick.

The 50:1 attenuation of the P5205 turns low-level stuff to mush.

John

.