Re: breadboarding fast, tiny stuff

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- *From*: John Larkin <jjlarkin@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Date*: Sat, 01 Mar 2008 12:48:43 −0800

On Sat, 01 Mar 2008 19:30:21 GMT, Joerg
<notthisjoergsch@xxxxxxxxxxxxxxxxxxxx> wrote:

> John Larkin wrote:
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> > On Sat, 01 Mar 2008 18:58:28 GMT, JosephKK
> > <quiettechblue@xxxxxxxxx>
> > wrote:
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> > > John Larkin wrote:
> > >
> > > > We got some samples of an NEC hj fet and
> > > > were wondering what its
> > > > time−domain response might be like. The
> > > > part is only 2x2 mm and the
> > > > leads are 1.2 mm pitch, and I hadn't
> > > > previously had a lot of luck
> > > > breadboarding stuff like this.
> > > >
> > > > We found two tricks:
> > > >
> > > > Get a piece of copperclad, epoxy−glass or
> > > > preferably teflon; the
> > > > teflon is easier to cut. Cut out "pads" with a
> > > > very sharp xacto knife,
> > > > under a Mantis magnifier. This will make
> > > > horrible burrs and shorts, so
> > > > the first trick is to scrub it really hard with a
> > > > Scotchbrite pad
> > > > between cuts. This cleans it up beautifully.
> > > >
> > > > The second trick is to use small patches of
> > > > kapton tape as insulators.
> > > > like where parts join or whatever. Soldering
> > > > doesn't bother it at all.
> > > >
> > > > ftp://66.117.156.8/FetTest.zip

> Here, the fet is in a first−pass test circuit,
> just to see how fast we
> can turn it on and off. The TDR pulse from
> the sampling head is the
> gate drive, 0 (Idss) to −0.5 (pretty much off)
> at 50 ohms source z.
>
> The drain is pulled up through a 47 ohm
> resistor, and the 150 ohm
> resistor off to the side is an "attenuator" into
> the other scope
> channel. The turnon fall is very clean, no
> nasty ringing or whatever,
> with a 190 ps fall time. Turnoff is similar;
> these things don't store
> charge! The TDR of the gate (lower trace)
> indicates that the gate
> capacitance is loading the drive, so we need
> a bigger gate swing, from
> a lower source impedance, to make this
> thing switch really fast. That
> will be next.
>
> John

Hell, you have a webpage to work with post gif's not zip's.

I'm offering free data and advice, and you're whining about the price.

And it's not a web page, it's an FTP site.

And my camera makes jpeg's, not gif's.

Did I leave anything out?

Yes, one item: It works :−)

(Both the web site and the circuit)

I'm right now doing the next version, a new board, with (I hope)
improved copper−hacking technique [1]. It will include an MC10EL gate
driver, SO−8, to really wail the thing. I'd post more pics, if I
didn't think I was boring people.

John

[1] Score two parallel lines in the copper with an x−acto, and cut the ends, to make, say, a long, skinny rectangle, like a 50 ohm CPW gap for example. Tin the strip, or dab it with liquid flux. Now place a soldering iron near one end, and lift the trace; this is the tricky part, getting started. Once the end is free, pull it up gently with tweezers and run the iron along the trace, peeling up behind the tip. The heat softens the epoxy and the copper comes off like a zipper. Very clean cutouts of, say, 30 mil width or bigger can be done.

Do they make really tiny Dremel router bits? That could be interesting.

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