Re: Debouncing....at About 1Mhz

Source: http://sci.tech−archive.net/Archive/sci.electronics.design/2007−11/msg01326.html

- *From*: John Fields <jfields@xxxxxxxxxxxxxxxxxxxx>
- *Date*: Sat, 10 Nov 2007 09:13:06 −0600

On Fri, 09 Nov 2007 17:38:26 −0800, John Larkin
<jjlarkin@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote:

> On Fri, 09 Nov 2007 18:46:37 −0600, John Fields
> <jfields@xxxxxxxxxxxxxxxxxxxx> wrote:
>
> > −−−
> > Hazard free? There still remains the RFI issue from all that
> > chatter, which you haven't adequately addressed.
>
> I was referring to timing hazards, which all of the hairball circuits
> have. And I can't understand your fears about running signals through
> gates. How are you ever going to do logic if you're afraid to run
> signals through gates? "All that chatter" is in fact the input signal.
>
> −−−

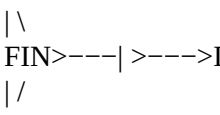
I'm surprised that you don't seem to know this, but if you have a signal with sharp edges then, at each transition, a multiplicity of harmonics will be generated and radiated into space.

Look at it like this:

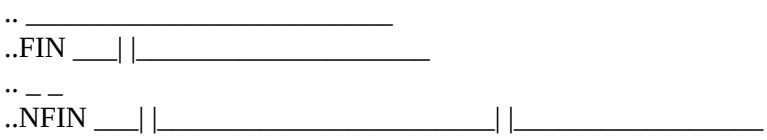
```
.. _____________________________
..FIN ___| |_____________________
.. _ _
..NFIN____| |_____________________| |_____________________
```

where FIN is the input signal and NFIN represents the spectral products generated by FIN's transitions, i.e. noise, if you have no use for the harmonics.

Now, if that signal is delayed by sending it through a gate:



we'll have:



on the input to the gate, and: