

Re: Suggestions for analog switch to select feedback resistor in TIA

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2005-06/msg03583.html>

- *From:* "Kevin" <kevinjwhite@xxxxxxxxxxxx>
 - *Date:* 25 Jun 2005 18:53:10 -0700
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Joerg wrote:

> Hello Kevin,

>

> Not sure what you are trying to do but AD has lots of nice logamps. That
> and a low noise current to voltage converter might do.

>

> Anyway, if you are looking for a very low capacitance switch there is a
> nice quad array: SD5400. But it ain't cheap, several Dollars. For some
> reason the Vishay site doesn't seem to find it today but that site seems
> to have problems at times.

>

> Regards, Joerg

>

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

Joerg,

Thanks for the pointer to the SD5400, that looks promising.

We are using a scanning mirror to sequentially reflect a number of light beams over a single photo-detector to measure the optical power in the beams. From the scanning rate we want to use the bandwidth required is in the region of 1-2MHz, and we are looking for a 60dB dynamic range.

I have used the Analog Devices AD8305 log amp on a similar product where there was a photodetector per channel (no scanning) and they worked well but their bandwidth at 10nA photocurrent is less than 100KHz. In general a log amp has trouble maintaining a wide bandwidth over a large dynamic range as the compensation has to be selected to get stability at high currents which results in over compensation at low currents. I haven't yet looked into the more complex log-amp configurations that can avoid some of this problem.

I may also be able to use an integrating approach to measure the energy in the light beam but even there I have had trouble in that the charge injection from the best analog switches tends to be in the 1pC range and I am trying to measure something a couple of orders of magnitude less (10nA for 1us).

Re: Suggestions for analog switch to select feedback resistor in TIA

thanks

kevin

- *Follow-Ups:*

- ◆ *Re: Suggestions for analog switch to select feedback resistor in TIA*
◇ *From: Joerg*

- *References:*

- ◆ *Suggestions for analog switch to select feedback resistor in TIA*
◇ *From: Kevin*
- ◆ *Re: Suggestions for analog switch to select feedback resistor in TIA*
◇ *From: Joerg*

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