

Re: Hans Camenzind's Book, Designing Analog Chips

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Hello Chris,

I reckon the layout would be much easier if you use MOSIS since then you are not stuck with the component placement you get, you are free to move stuff. Also you'll get several real metal layers so you don't have to mess around with resistive cross-unders. ...

True. But for simple circuits I'd be happy with fixed placement and cross-unders (provided there are enough of these). It's like gate arrays versus ASIC. A lot of times we did gate arrays, produced for a couple years or so and then had someone pour it into an ASIC. But that was because of the rather high cost of gate arrays, something that isn't true for discrete analog circuitry anymore.

Well, I am not complaining about tolerances since you can do ratios. It's ok if they are 30% or whatever but low power designs require at least one type in the 1M range. Dividers for low battery detect, other thresholds and so on. Can't do current sources everywhere, plus they eat from the rather small pool of NPN/PNP.

More reason to go MOSIS. You need to think about the total resistance in your circuit, so having one 1M resistor is a reasonable proposition, but asking for 20 of them is being greedy since for high value resistors (minimum width), the chip area is proportional to the resistance value.

Yes, they do eat real estate. I just wonder how a 'chip in a can' program can be successful these days with only 750ohm resistors. Lots of stuff needs to operate on little coin cells and that just won't work without high-Z dividers.

Maybe that's one reasons why many of my discrete designs are never transferred to chips although I always

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try to design stuff in a way that it would suit a CMOS or bipolar process. Clients usually say that the NRE for the design are too high and the chip designers claim that's because the SW tools are so expensive (which they probably are). It was different 20 years ago but nowadays the assembly of a discrete board has become so cheap that the NRE for a chip wouldn't amortize.

Regards, Joerg

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