

Re: reversing a gate array

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- *From:* Joerg <notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
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Keith M wrote:

I've got an old gate array that was developed in the mid-80's. While most of the gate array function is documented, and available, a small portion of it is simply not mentioned in anything I've found yet. It was a custom (by definition?) chip used in a small number of products.

While it's a 48-pin DIP, the majority of the leads are used by the other documented functions. The remaining (4) input leads and (4) output leads are the ones I'm interested in.

Do you think that hooking a logic analyzer to the inputs and outputs would be sufficient to determine the function? I have pinout information and there appears to be a 1->1 relationship for input and output pins. The pins in question are not clocks, or address/data busses.

I've also thought about simulating the inputs, since there are only $2^4=16$ possibilities for input, and then recording the results at the output.

It usually doesn't work that way. There could be all kinds of sequential things happening in a gate array so that something might come out of it umpteen clock cycles after some input has been static.

There was no reason for obfuscation or encryption, etc --- just lack of documentation.

Or am I completely crazy and have no chance of this working?

Thanks for the psychiatric exam. :)

:~)

You best bet might be to

a. Try to understand the external stuff connected to those pins and deduce the required gate array behavior from that.

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b. Find at least one of the guys who worked on it 20+ years ago. Seriously, that's exactly what I once did during a first consulting project with a new client. I found that the system they produced needed additional filtering and a logarithmic function. Documentation of that part? Pretty much zilch. So we searched and found the guy, made him an offer, and bingo.

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Regards, Joerg

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