

Re: How inaccurate is a 555 or 7555 REALLY?

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- *From:* bill.sloman@xxxxxxxx
 - *Date:* 10 Dec 2006 15:52:54 -0800
-

John Fields wrote:

On 8 Dec 2006 14:06:22 -0800, bill.sloman@xxxxxxxx wrote:

John Fields wrote:

On 7 Dec 2006 17:30:41 -0800, bill.sloman@xxxxxxxx wrote:

John Fields wrote:

On 6 Dec 2006 16:18:51
-0800,
bill.sloman@xxxxxxxx
wrote:

John Fields
wrote:

On
5
Dec
2006
21:21:13
-0800,
bill.sloman@xxxxxxxx
wrote:

Phil
Allison

Re: How inaccurate is a 555 or 7555 REALLY?

wrote:

<bill.sloman@xxxxxxxx>

John
Fields:

<snip>

Yes. I've
seen them.
All very
nostalgic.
Your recent
exercise
with a
4024 (the
last post in
this thread)
reminds me
of stuff I
was doing
in
1974 with a
4040,
though I
didn't
decode with
three diodes
and a
resistor,
even back
then.

Didn't know how? It's just
an RDL AND...\$

Of course I knew how. But the resistors I
would have had to use were
0.6" long and 0.2" wide on the board, so it
would have wasted space,

Really?

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ISTR that 1/8 watt resistors and 1N914s were available back then, so the entire decoder would have used up the same real estate as an 8 pin DIP, as well as not using nearly the amount of power the TTL glue you'd have to otherwise make the decoder from would.

1N914s weren't a problem, but company policy had fixed on one style of 600mW Philips metal film resistor, and 1/8 watt resistors weren't an option.

Still, you could have mounted it Jap style.

Not according to the QA department. This stuff went into power stations and oli refineries and everybdy involved was rather picky.

Oh, well...

not to mention confusing the final test technicians and the service engineers.

LOL, you design to keep from confusing folks?

Of course. Unconfusing them takes time ande costs money. All other things being more or less equal, I'll go for the transparent design every time.

So you're a proponent of recurrent production costs in lieu of proper training? How much money do you think you've "saved" over the years by doing it that way?

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Quite a lot. In particular, service engineers who are prepared to travel all over the globe are a rare breed, and both George Kent and Cambridge Instruments hired as many as they could find. They could afford to be too picky about their trainability. The design engineers understood that keeping the service engineers happy was part of their job – if the service engineer got fractious, we were next in line to spend six weeks in Seoul.

The worst I copped was a week in Nice in the middle of winter, and that was sorting out a mess that the marketing department had got us into, but we were all encouraged to be careful.

Final test was a different kind of problem. They worked down the corridor, and if they got stuck the good ones had a tendency to stick their head around the door and ask for advice, which used up design time. The bad ones invented their own solutions to what they perceived as the problem, which you'd find out about when it appeared in the "proposed modifications" file – usually some two hundred items long, which appeared on the desk of any design engineer when he (or she) was between projects.

If the design wasn't transparent to the final test technicians, you always ran the risk of the machine going out the door distinctly maladjusted, and the quality of the final test technicians was always a bit erratic – if we were doing well, we'd just hired a bunch of new technicians of variable quality who were still being trained, and if we were doing badly, the good technicians would get themselves a more secure job somewhere else.

One time I designed a circuit that used an un-trimmed – thus cheap – Analog Devices multiplier to do a job, and wrote a procedure that let me set up the two trim pots required in about ten minutes. I got called into final test when the first machine went through to find that the boss of final test and his star technician had been fiddling all day trying to do the adjustments that I then did in the usual ten minutes.

Total cost (in technician time) was about \$300. I promptly modified the circuit to use the more expensive laser trimmed multiplier, and did the offsets on the rest of that batch (about 5 electron microscopes) myself. We weren't expecting to sell more than about fifty of that model before we obsoleted it with the first fully computer controlled electron microscope, so my blunder with the cheap part cost us more than I could have saved over the whole production run by using the cheaper part.

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Bill Sloman, Nijmegen (but in Sydney at the moment).

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