

## Toyota is as Toyota does

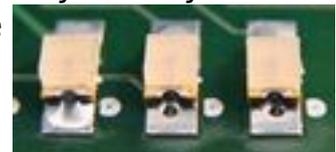
Screaming Circuits

Everyone else seems to be writing about Toyota sudden acceleration problems, so I should probably do that too.

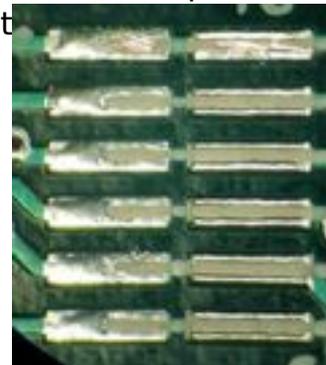
Or should I? Personally, I have absolutely no solid information about what's going on with Toyota cars. There's an awful lot written, much of it by people that also don't have any real information on the subject. Here's what I do know though:

- Some people (some with actual knowledge and some without) are speculating that electronics might have something to do with the problems.

That's about all I know relative to the specific concerns. On the soft side, I do know that people tend to pick on the big guy. Funny how none of this was big news until Toyota became the #1 car maker in the world. Coincidence? Maybe. Maybe not. I also know that in any system there are gobs of places where



[1]issues can lead to failures. Of course, to counter that, I know that good, well thought out design - both in the hardware and the software, can produce a quality product that will keep work. In summary, I really don't



[2] know

anything about the Toyota issues.

However, any time some sort of actual or potential technical problem makes big news, it's not a bad idea for those of us that design and build things to take a step back and evaluate our design practices. I've got software in my past, so I'd have to suggest a good solid code review, if you don't already do one, but today, I'm talking about hardware so I'll sample just a few things to double check.

- [Those pesky land patterns](#) [3]: Does the land pattern fit the part? Will the copper area and stencil opening allow for a good solid IPC-passing solder joint? It's so common (as you well know if you read here regularly) to re use

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or create new CAD part foot prints. Make sure the foot print, stencil, mask and silk layers fit properly.

- [Vias in pads](#) [4]: Plug them and plate over them when using small parts. If the solder surface is big enough, like with a power component, you might be able to just cap them, but don't leave the vias open. In some cases, you may be able to leave very tiny vias open on thermal pads, but it's best never to.
- [Thermal mass](#) [5]: This is important both for operation and for assembly. If you've got components that sink and/or generate lots of heat, make sure there is enough air flow to cool them during operation and make sure that the assembly house can build it. Put a couple of high thermal mass parts too close together and an otherwise perfect PCB assembly may end up with some cold solder joints or damaged components that later come back to bite you or your customers.

There are lot's of other things to check out too, but those three are just some of the more common traps to keep tabs on.

Duane Benson

I don't have a Toy Yoda. If I did, I'd sell in on eBay.

[SOURCE](#) [6]

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<http://www.ecnmag.com/news/2010/02/toyota-toyota-does>

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