Schematics for a TDS 3052 ?

Jim Ford — Jan 16 (https://groups.io/g/TekScopes/message/189913)

Ha, Artesyn! Funny story: years ago, probably in the mid to late 1990's, I was at a seminar, and at lunch I happened to sit next to a guy from Artesyn. For some reason, we were discussing work disasters. I mentioned a recent incident in which a board had caught fire in the lab while a customer was visiting (of course!). The Artesyn engineer said, "Oh, I can beat that! I caught a customer's hair on fair one time!" Yeeeeahh, that's bad!

Jim Ford

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ThreeReefs — Jan 16 (https://groups.io/g/TekScopes/message/189912)

Just to close the loop on this - I watched the YT video with the guy repairing a TDS3052 (thanks for the pointer durechenew) - having established that it was the SMPS that was at fault, I thought I would check the same path he took, and, uncannily, my fault was exactly as his - the same resistor in the same pair gone open-circuit. Easy fix and the PSU comes to life and the 'scope powers up. Almost like it's a common fault with that Artesyn board.
Thanks for the pointers and advice, everyone.
Richard

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1 person liked this

durechenew@... — Jan 11 (https://groups.io/g/TekScopes/message/189706)

Jared,
I collected (when I was in big need) these files from different places, none was made by me.
Given the lack of information about this family of scopes it might be that other people know about or have other helpful files for those desperately looking for some help.
TT

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Jared Cabot — Jan 11 (https://groups.io/g/TekScopes/message/189695)

On Tue, Jan 11, 2022 at 04:56 AM, <durechenew@yahoo.com> wrote:

> Added two more files (one in Mandarin, I believe; a Google translation that
> seems rough and I don't trust; maybe someone with knowledge could make it
> better).
> TT
> P.S. Someone sent me a private E-mail about an YouTube video about repairing a
> TDS30xx power supply; I'm aware of that but the original poster may not;
> fairly easy to find, IIRC. Not necessarily that OP has the same issue,
> described and solved there, though.
> TT

If you like, I can upload the files to the relevant place on tekwiki.

Regards,
Jared.

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durechenew@... Jan 10 (https://groups.io/g/TekScopes/message/189679)

This one on YouTube:

https://www.youtube.com/watch?v=i1UjxgIGues (https://www.youtube.com/watch?v=i1UjxgIGues)

TT

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durechenew@... Jan 10 (https://groups.io/g/TekScopes/message/189676)

Added two more files (one in Mandarin, I believe; a Google translation that seems rough and I don't trust; maybe someone with knowledge could make it better).
TT
P.S. Someone sent me a private E-mail about an YouTube video about repairing a TDS30xx power supply; I'm aware of that but the original poster may not; fairly easy to find, IIRC. Not necessarily that OP has the same issue, described and solved there, though.
TT

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durechenew@... Jan 10 (https://groups.io/g/TekScopes/message/189658)

Correcting myself: it won't work for other type of files. I created another folder in Files, same name; added two files.
TT

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durechenew@... Jan 10 (https://groups.io/g/TekScopes/message/189655)

Actually, that folder is open for anyone having additional information or schematics that would be helpful to other to add it. I'll put there what I have at this moment.
TT

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ThreeReefs Jan 10 (https://groups.io/g/TekScopes/message/189652)

"Some good Samaritan took the time to reverse engineer this PS. Added to Photos (it's a .JPG file), album "Schematics for a TDS 3052""

Thanks !

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durechenew@... Jan 9 (https://groups.io/g/TekScopes/message/189626)

Some good Samaritan took the time to reverse engineer this PS. Added to Photos (it's a .JPG file), album "Schematics for a TDS 3052"
TT

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ThreeReefs Jan 9 (https://groups.io/g/TekScopes/message/189617)

"Did you look at the model number, and manufacturer of the power supply... maybe Artisyn? Those were single voltage, multiple output, high current SMPS. You can still buy some of them, or get them used on Ebay."

Oh ! Hadn't occurred to me that Tek would use an off-the-shelf PSU. But it makes complete sense. It's an Artesyn NAN40-7615 which does indeed seem to be available from a number of suppliers. And since that means there are also specs available, I can test the outputs against those. Fab, thanks for the pointer, Roy.

Richard

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1 person liked this

John Kolb

Jan 9 (https://groups.io/g/TekScopes/message/189615)

When I was in the navy, a R-1051 receiver failed. I called for an ET, who brought up his box of spare boards. He replaced each board, one at a time and didn't fix it. Placed all the removed boards into another receiver, all good. I tilted up the chassis and inspected. Found one of the sockets in a connector had popped out of the connector body.

Moral - board swaps usually work.

John

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Roy Thistle

Jan 8 (https://groups.io/g/TekScopes/message/189614)

On Sat, Jan 8, 2022 at 05:47 PM, ThreeReefs wrote:

> I was hoping to be able to find some schematics at least of the power supplies
> to check what voltages should be

AFAI recall... some TDS3000 series used power supplies sourced in the U.S. ... but, manufactured in Asia (Maybe Taiwan.) Did you look at the model number, and manufacturer of the power supply... maybe Artisyn? Those were single voltage, multiple output, high current SMPS. You can still buy some of them, or get them used on Ebay.
Before 'troubleshooting' ... I would do the obvious... If you can... find out who made the power supply (look on the power supply) ... what the model is... and whether there is a datasheet for it.
Do you have a current limited.... 'high current' , adjustable power supply?

--
Roy Thistle

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Harvey White

Jan 8 (https://groups.io/g/TekScopes/message/189609)

I'll get up on my inch and a half soapbox for a moment.

The main problem is that the circuitry has gotten too complex. The pinouts for a chip can easily exceed 100 without blinking an eye. While flat packs (think a postage stamp with legs out all four sides) are reasonable, there's a lot of wasted area in that kind of package. With the desire for smaller chips, smaller equipment, more complex electronics, the BGA was born (amongst others). BGA is a postage stamp with lots of little solder balls on the back in a rectangular array. Smaller chip with lots more connections. Needs more layers on the board, though.

For a flat pack can be dealt with by home equipment (and it's possible to hand solder them, I do), the BGA is another matter. You have to heat the whole chip up till the solder melts on the bottom, then when it cools down, you hope that the solder has bonded to the corresponding pad. Commercial board houses just xray the board looking for gaps.

While it is possible to do this at home (minus the xray), and I've seen videos of phone hackers doing such, it's not necessarily all that reliable. They're doing it to get the information from the phone, and only once, accurately, is enough.

So you have a complex board that has to be returned to the factory to be repaired reliably. The chips are likely custom. When I design something with an FPGA (uses the same flat pack package, or a processor, ditto), while the chips may be standard, the FPGA has to be programmed (FPGA = Field Programmable Gate Array, which is a chip programmed to behave as if it were a lot of chips wired together. You could build a complete processor with one, or perhaps an entire 500 Mhz counter to simulate a 7D15).

The average home shop, while perhaps capable of replacing the chip, wouldn't have the contents, nor perhaps a way of programming the chip, even IF Tektronix were to make the data available. If the chip were specifically built to the task, forget it.

So there are some good reasons why boards are difficult to repair.

Not discounting greed, and the like, though.....

My stuff, well, I know what's there, why it is, and I don't build anything I can't repair. But I don't have the same design requirements as Keysight, Tektronix, etc....

Harvey

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Ken Eckert (/g/TekScopes/profile/1866426) Jan 8 (https://groups.io/g/TekScopes/message/189608)

Sometimes manufacturers will have a 'pool" of ready to go boards for swapping in. When the number of boards that have been swapped out reaches a set number, the boards are sent to their own facility or a contractor for automated testing (usually on a bed of nails fixture), and X number of boards are repaired, checked out and returned back to the ready pool.

That is why you will get an instrument/item back from repair that will exhibit other issues after a period of time.

testing and repairs this way is not very good at catching intermittent failures whether it is hot/cold related or other external influences....

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stevenhorii Jan 8 (https://groups.io/g/TekScopes/message/189606)

Am I just too cynical or are the later Tektronix digital scopes designed for “board replacement repair” as are so many digital items you get now? I use ultrasound machines that cost over $200,000. When the repair guys come in for something (the machines are fairly reliable) they can troubleshoot to a particular board and just swap it out. I asked what they do with the bad boards. In many cases, they are just scrapped. They do some board-level component repairs on some boards but certainly not all of them. I’m sure in terms of downtime for the machines and because the service contracts on the machines are profitable for the companies, it is more cost effective for them to do board swaps rather than component-level repairs.

Steve H.

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Jeff Dutky (/g/TekScopes/profile/@jdutky) Jan 8 (https://groups.io/g/TekScopes/message/189605)

Richard,

There is a service manual for the TDS3000 series scopes on the TekWiki (https://w140.com/tekwiki/wiki/TDS3052 (https://w140.com/tekwiki/wiki/TDS3052)) but it does not contain schematics (Tek stopped providing schematics in the early to mid 90s, and this scope was introduced in 1998). It does contain troubleshooting flow charts, which may be of some help, at least in isolating the fault.

-- Jeff Dutky

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ThreeReefs Jan 8 (https://groups.io/g/TekScopes/message/189604)

Hi All -

Just acquired a non-functional TDS 3052 as a first Tek scope to get into. Not a classic, but compact and will be a neat tool if I can get it working.

I'm taking as a good sign that it's completely dead - the fan doesn't spin up, no activity anywhere. So, I think the PSU is the place to start, which is a sight simpler than the logic board. There seem to be two boards for the PSU - one of which has a pair of power resistors in series that look to have become sufficiently over-hot their track has separated from the PCB (brown-white-white-with-a-stripe which I can't work out). So that's something to look at.

I was hoping to be able to find some schematics at least of the power supplies to check what voltages should be where - but it sounds like they're hard to find. Any suggestions ?

Thanks!
Richard

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→ (https://groups.io/g/TekScopes/topic/88470742?p=,,,20,0,0,0::recentpostdate/sticky,,,20,2,0,88470742)

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