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Author Topic: Tek TDS3000 series and Dallas NVRAM (Read 7705 times)

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MarkL
Supporter
Posts: 1658
Country:

Tek TDS3000 series and Dallas NVRAM
« **on:** September 25, 2014, 04:10:03 pm »

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I was performing a minor repair on a TDS3054 (not B or C version), and I noticed a "Dallas DS1742W-150 Timekeeping RAM" soldered onto the main board. The date code is 1999, and the Dallas datasheet claims a minimum of 10 year life expectancy for the battery.

Does anyone know if the cal data or other critical information is stored there? Is there any known backup procedure besides unsoldering it and reading it out on a programmer? Perhaps via the GPIB?

Has anyone seen any TDS3000 NVRAM go bad?

Given the actual lifetime reported on other Dallas NVRAM parts in other scopes, I probably still have many years left before I have to deal with it, assuming I keep the scope that long.

And a side note... The repair was to replace the CCFL tubes on the display which was getting very dim. There are two CCFL tubes and they slide out as modules. It's a trivial repair, although getting to the display itself requires a bit of disassembly. Display is part #NEC NL6448AC20–06, CCFL modules are 65LHS–3L. You can also get bare CCFL tubes (2.6mm x 153mm) and solder them in the modules yourself for much less. FYI.

Report to moderator Logged

voltsandjolts
Supporter
Posts: 891
Country:

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #1 on:** September 26, 2014, 09:18:20 pm »

Say Thanks Reply Quote

I replaced the NVRAM in my TDS3034 as a precaution - I didn't know if there was any critical info in there.
Turns out there isn't, so its safe to let the NVRAM battery die before replacing it.
The only difference I could see by fitting a new blank NVRAM was the "number of powerups" in scope

diagnostics was reset to zero.
I think the NVRAM just stores scope setups, timebase, volts per division etc.

Thanks for the display and CCFL PNs, hopefully I won't need them!

Report to moderator Logged

David Hess
Super Contributor
Posts: 11389
Country:
DavidH

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #2 on:** September 26, 2014, 10:19:18 pm »
Say Thanks Reply Quote

Wow, that is good to know.

Earlier Tektronix oscilloscopes stored the calibration data in the NVRAM leading to a difficult or costly problem if the contents were lost.

Report to moderator Logged

HighVoltage
Super Contributor
DANGER HIGH VOLTAGE
Posts: 4451
Country:

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #3 on:** September 26, 2014, 10:25:19 pm »
Say Thanks Reply Quote

Quote from: voltsandjolts on September 26, 2014, 09:18:20 pm

> I replaced the NVRAM in my TDS3034 as a precaution - I didn't know if there was any critical info in there.
> Turns out there isn't, so its safe to let the NVRAM battery die before replacing it.
> The only difference I could see by fitting a new blank NVRAM was the "number of powerups" in scope diagnostics was reset to zero.
> I think the NVRAM just stores scope setups, timebase, volts per division etc.
>
> Thanks for the display and CCFL PNs, hopefully I won't need them!

I also have an older TDS3034 and may be I should replace the NVRAM.
Did you replace it with the same "Dallas DS1742W-150 Timekeeping RAM" or are there alternatives?

Thanks for this great information.

Report to moderator Logged

There are 3 kinds of people in this world, those who can count and those who can not.

David Hess
Super Contributor
Posts: 11389
Country:
DavidH

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #4 on:** September 26, 2014, 10:56:45 pm »
Say Thanks Reply Quote

Quote from: HighVoltage on September 26, 2014, 10:25:19 pm

> I also have an older TDS3034 and may be I should replace the NVRAM.
> Did you replace it with the same "Dallas DS1742W-150 Timekeeping RAM" or are there alternatives?
>
> Thanks for this great information.

You can use a faster one to replace a slower one. I see plenty available at Mouser and Digi-Key although they cost more than $20 each.

I am not aware of any third party equivalent replacements. I know this issue has come up for older Dallas Timekeeping RAMs which they no longer produce. In those cases, the Timekeeping RAMs were replaced with standard NVRAMs and the oscilloscope still worked but without the time and date functions.

Report to moderator Logged

MarkL
Supporter
Posts: 1658
Country:

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #5 on:** September 27, 2014, 01:57:42 am »
Say Thanks Reply Quote

Thanks for the info on the NVRAM, voltsandjolts!

It's good to know design mistakes of the past don't always repeat themselves.

Report to moderator Logged

voltsandjolts
Supporter
Posts: 891
Country:

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #6 on:** September 27, 2014, 08:40:30 am »
Say Thanks Reply Quote

@HighVoltage
"Did you replace it with the same "Dallas DS1742W-150 Timekeeping RAM" or are there alternatives?"

Yes, I used that Dallas part. Not cheap.

Report to moderator Logged

prot_brot
Contributor

Posts: 13
Country:

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #7 on:** February 10, 2015, 04:10:46 pm »
Say Thanks Reply Quote

Will DS1642 work? it has the same 2k x 8 ram and pinout as the DS1742 at half the price

Report to moderator Logged

Jwalling
Supporter

Posts: 1345
Country:

This is work?

Re: Tek TDS3000 series and Dallas NVRAM
« **Reply #8 on:** August 09, 2016, 05:06:35 pm »
Say Thanks Reply Quote

Quote from: MarkL on September 25, 2014, 04:10:03 pm

I was performing a minor repair on a TDS3054 (not B or C version), and I noticed a "Dallas DS1742W-150 Timekeeping RAM" soldered onto the main board. The date code is 1999, and the Dallas datasheet claims a minimum of 10 year life expectancy for the battery.

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Has anyone seen any TDS3000 NVRAM go bad?

Given the actual lifetime reported on other Dallas NVRAM parts in other scopes, I probably still have many years left before I have to deal with it, assuming I keep the scope that long.

Had an opportunity to read out the contents of the Dallas chip in a TDS3014B
Is it possible that there is a back-door into these? I'm no hacker, completely clueless even.

I've attached the binary as well.

EDIT: Typo. Always a friggin' typo!
Jay

```
00000650  00 00 03 e6  00 00 02 31  00 00 02 eb  00 00 03 73  ...æ...1...ë...s
00000660  00 00 02 2e  00 00 02 e5  00 00 03 1a  00 00 02 30  .......å.......0
00000670  00 68 12 83  00 00 00 08  00 00 00 00  00 00 00 01  .h.ƒ............
00000680  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ................
00000690  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ................
000006a0  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ................
000006b0  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 01  ................
000006c0  00 00 00 03  00 00 00 02  00 00 00 01  00 00 27 10  ..............'.
000006d0  00 00 00 01  00 00 00 00  00 00 00 05  00 00 00 00  ................
000006e0  00 05 13 36  01 ff 00 00  02 00 00 00  00 00 00 00  ...6.ÿ..........
000006f0  08 00 11 17  d3 71 00 00  00 00 00 03  00 00 00 29  ....Óq.........)
00000700  71 75 28 30  2c 30 29 6e  61 74 61 73  68 61 3a 2f  qu(0,0)natasha:/
00000710  6c 6f 67 69  6e 2f 65 74  61 73 77 2f  70 61 63 6d  login/etasw/pacm
00000720  61 6e 2f 64  65 76 65 6c  53 57 2f 76  78 57 6f 72  an/develSW/vxWor
00000730  6b 73 2e 67  39 65 2e 73  74 20 65 3d  3a 66 66 66  ks.g9e.st e=:fff
00000740  66 66 66 30  30 20 68 3d  31 32 38 2e  31 38 31 2e  fff00 h=128.181.
00000750  31 31 37 2e  35 35 20 75  3d 64 73 61  69 6c 6f 72  117.55 u=dsailor
00000760  20 73 3d 73  74 61 72 74  75 70 2e 67  39 65 00 73   s=startup.g9e.s
00000770  74 61 72 74  75 70 2e 67  39 65 00 67  39 65 00 73  tartup.g9e.g9e.s
00000780  3d 73 74 61  72 74 75 70  2e 67 39 65  00 73 74 61  =startup.g9e.sta
00000790  72 74 75 70  2e 67 39 65  00 6b 73 2e  67 39 65 2e  rtup.g9e.ks.g9e.
000007a0  73 74 00 00  00 00 00 00  00 00 00 00  00 00 00 00  st..............
000007b0  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ................
000007c0  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ................
000007d0  00 00 00 00  00 00 00 00  00 00 00 00  00 00 00 00  ................
000007e0  00 01 04 a5  00 00 5b 39  00 01 04 a5  00 00 00 00  ...¥..[9...¥....
000007f0  00 01 00 01  00 00 00 00  20 17 57 06  02 09 08 16  ........ .W.....
```

3014b.jpg (153.78 kB, 591x485 - viewed 875 times.)
TDS3014B Dallas DS1742.zip (0.38 kB - downloaded 414 times.)

« *Last Edit: August 09, 2016, 05:08:32 pm by Jwalling* »

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Jay

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