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Description:	<ul style="list-style-type: none"> • Data rate performance for 10G Ethernet, PoE capable • 75% smaller than RJ45 • Complies with IEC61076-3-124 	 Download Datasheet

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Author

Topic: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM (Read 6135 times)

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ArcticGeek

Regular Contributor



Posts: 81

Country:



Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

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« on: March 06, 2017, 03:31:00 pm »

Hello all,

I have a TDS3014B that no longer keeps the date/time...and I'm quite certain that the RTC NVRAM part has exhausted it's battery. The part is a 24 pin Maxim DS1742W-150, and I can't find anyplace that has them because it is now obsolete. I have found them on Ebay and Aliexpress, but I have been burned by counterfeit parts and would really prefer a place that is more of a real distributor. Digikey and Mouser both have small quantities of the DS1742 (no "W") part, but that is a 5V part and will not work. I need either the DS1742W-150 or DS1742W-120 part, and have had no luck.

I've also found a number of brokers that CLAIM they have thousands of these parts, but you have to fill in a request of how many and submit an RFQ. I personally think most of these sites are full of \$hit - and in the past I've had no luck purchasing parts from these types of places.

Does anyone know where to buy a couple of these parts?

Thanks



Maxim DS1742W.JPG (511.41 kB, 1632x1224 - viewed 822 times.)

Report to moderator Logged

MarkL

Supporter



Posts: 1658

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #1 on: March 06, 2017, 06:52:02 pm »

I don't know of a distributor source, but some of the ebay listings don't look too untrustworthy. One of them even has a US phone number so you call them to see what guarantee they can make about authenticity and the device date code:

<http://www.ebay.com/itm/282116689792>

Alternatively, it appears that the battery might be accessible without too much trouble (photo attached below of the ebay listing). The bulge from the battery is obvious. You might be able to dig through the encapsulation and replace the battery like this person did:

http://worldphaco.com/uploads/TEKTRONIX_2465b_OSCILLOSCOPE_CALIBRATION__REPOWERING_THE

I have a TDS3054 purchased in 1999. I'm sure I'll be facing the same problem soon.




DS1742W_ebay_282116689792.png (113.38 kB, 399x287 - viewed 779 times.)

Report to moderator Logged

JRosario

Contributor

Posts: 9

Country:  **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #2 on:** March 06, 2017, 07:25:11 pm »

Just wondering if there are criteria that you look for when going with an eBay seller?

Are their basic red flags or signs of quality? (I don't know if the reviews on the site are easy to fake).

The phone number seems like a good litmus test, but I am not sure how common that is.


I have not been burned too bad, but I would like to avoid it as long as possible.

[Report to moderator](#) Logged **MarkL**

Supporter



Posts: 1658

Country:  **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #3 on:** March 06, 2017, 08:42:38 pm »**Quote from: JRosario on March 06, 2017, 07:25:11 pm**

Just wondering if there are criteria that you look for when going with an eBay seller?

...

Unfortunately, I don't have magic formula. I've been burned too. I fully agree with the OP's sentiments and I personally won't order anything from China ever again. I've had to invoke ebay buyer protection too many times.

The previously referenced seller in HK looks like they've built a substantial business selling semiconductors. They've been around for 4 years, offer 60 day return/replacement, and make themselves available via phone to answer questions (presumably in english). It doesn't strike me as a typical "sell and run" operation.

I'd be willing to risk \$20 that their DS1742W is real and works. If not, there's plenty of avenues to resolve any issues.


Besides, it's only a clock chip. It's either going to work or not. And if they're not being completely honest about it being new, then it could be dead in a couple of years instead of 10, and the OP is no worse off. Hopefully the replacement hassle will include installation of a socket to try again, if needed.

[Report to moderator](#) Logged **Bushougoma**

Regular Contributor



Posts: 66

Country:  **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**[Say Thanks](#)[Reply](#)[Quote](#)« **Reply #4 on:** March 06, 2017, 08:51:42 pm »

I try to only use E-bay as a last resort way too many counterfeit reprinted parts. Sometimes you make out great other times you get burned. Here's one of my experiences.

I purchased a bunch of simple 27C128 ST CMOS EPROMs from a seller. I put one in my EPROM programmer and read the permanently embedded device code and it turns out it was a National Semiconductor NMOS EPROM 70 nanoseconds access time on an NMOS EPROM? Not a chance.

Upon closer inspection of a few of the parts I could see they scrubbed the original part numbers off apparently not well enough on some of them. I could still see the faint wavy double N National Semiconductor logo on some of them. Another giveaway is the pins were dipped in solder to make them look shiny and new something I've never seen on any IC that I've bought from a reputable distributor. I found other uses for them but I still was pretty pissed.

On a positive note I am better at inspecting ICs that I do have to buy from E-bay now.

On the Dallas ICs they like to scrub the old part numbers off and reprint them with a newer date code. Even though if you looked it up the date code will most likely be AFTER the manufacturer ceased production.

I suppose if you really wanted you could use the 5V part and install it on a custom PCB with a logic level converter you'd have to take the 5 volt supply from somewhere else on the board of course.

The simplest solution would be to carefully cut into the epoxy and extract the old battery you should then be able to solder some jumper wires from the IC to an external 2032 battery holder which you could then superglue to the case. I recommend a BRxxxx series (lithium carbon monofluoride) cell it's what they used from the factory due to their relatively stable voltage as they discharge they also have a very low self discharge rate when compared to the more common CRxxxx series. Look at the discharge curves of a CR and BR series battery and you'll see what I mean.

« Last Edit: March 06, 2017, 09:29:20 pm by Bushougoma »

Report to moderator Logged

ArcticGeek

Regular Contributor



Posts: 81

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #5 on: March 06, 2017, 09:57:37 pm »

That is interesting with the ebay seller having the USA contact number, I didn't notice that. What's odd is that I sent a question to that seller via Ebay asking what date code the parts are, and the response I got was in "Chenglish" saying that they did not know what datecode the parts are. My concern is that since these parts have internal lithium batteries I don't want something with a date code of 2002. I might give the telephone number a call.

I have been burned too many times on Ebay with fake components, so I really hesitate to buy anything from China unless it's absolutely the last resort. It's not so much the money I'm worried about, its just the hassle of installing a new part only to find out it doesn't work 2 days later. I did consider the daughter-board approach and am still thinking about that. There is a DS1744W part that is identical except it has 32K or memory instead of 2k, and that part is still available from Digikey and Mouser. I could build a smaller daughter card adapter that tied all the unused address pins to VCC and it should work - but that's a hassle as well as the \$50 or so to design the daughtercard.

Report to moderator Logged

MarkL

Supporter



Posts: 1658

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #6 on: March 06, 2017, 10:42:14 pm »

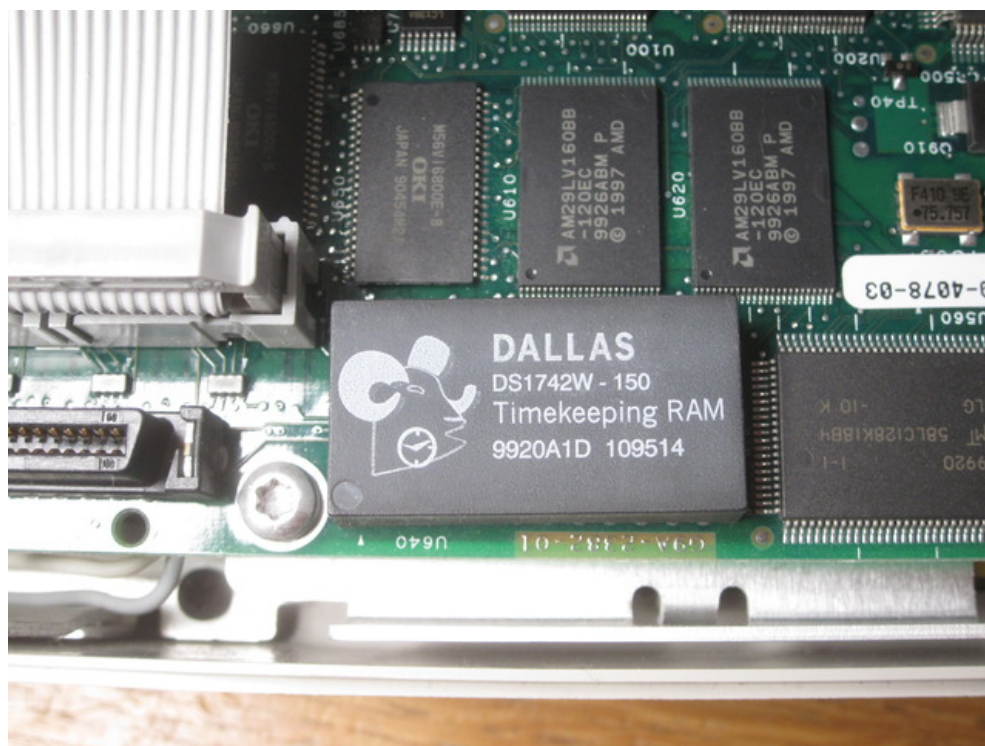
The first number on the fourth line is definitely a date code. Below is a photo of mine, from 1999.

It appears Dallas/Maxim stopped production last year, as per the attached doc. And the seller is showing a part with a 2014 date code, so they apparently have recent stock and it doesn't say something inconsistent like 2017.

If they don't send you one that's recent like the one they've pictured, that's "not as described" and you get your \$20 back. The adapter card approach seems like a lot more work.

Interesting that the EOL notice says last delivery "21-Apr-2018", so does that mean someone is still taking delivery of these? Maybe those brokers are buying them all up now while they can.

EDIT: I'll mention again, but more explicitly, that no matter what I'd highly recommend soldering in a socket once you go through the trouble of removing the old part. If the replacement dies it's not a big deal to pop it out.



img_5232_640x480.jpg (109.07 kB, 640x480 - viewed 784 times.)

DS1742_EOL_M000829.pdf (17.54 kB - downloaded 390 times.)

« Last Edit: March 06, 2017, 10:50:39 pm by MarkL »

Report to moderator Logged

Bushougoma

Regular Contributor



Posts: 66

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #7 on: March 06, 2017, 11:02:25 pm »

Quote from: MarkL on March 06, 2017, 10:42:14 pm

EDIT: I'll mention again, but more explicitly, that no matter what I'd highly recommend soldering in a socket once you go through the trouble of removing the old part. If the replacement dies it's not a big deal to pop it out.

Make sure it's a dual wipe socket and not a machine pin socket the pins on these ICs are very thin and it doesn't take much to bend them. Machine pin sockets require significantly more force to insert the IC.

« Last Edit: March 06, 2017, 11:31:30 pm by Bushougoma »

Report to moderator Logged

MarkL

Supporter



Posts: 1658

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #8 on: March 07, 2017, 04:07:44 pm »

Ok, so I decided to order one from the HK seller while they're still available at sane prices. They accepted an offer of \$10.00. I know a dead battery is waiting for me in my very near future. Fortunately, according to another eevblog thread, the cal data is not stored in this device.

When I get it I'll check for any indications of date code scrubbing, but I'm not going to install it until I have to. I'll post back to this thread what date code I received.

Report to moderator Logged

ArcticGeek

Regular Contributor



Posts: 81

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #9 on: March 07, 2017, 10:49:46 pm »

I actually ordered 2 from a different China seller off Ebay, I'll post my results as well when I receive them and get a chance to install them in the scope.

Report to moderator Logged

james_s

Super Contributor



Posts: 12251

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #10 on: March 07, 2017, 10:52:54 pm »

If you can't find a suitable replacement, you can actually replace the batteries in these, or at least disconnect them and glue a lithium coin cell holder on top. You have to grind into the end or top, Dremel type rotary tool with a sanding drum works well. I've seen pictures online and videos on youtube that make it a bit easier. The battery is on top under a layer of epoxy.

Report to moderator Logged

drussell

Super Contributor



Posts: 1334

Country:

Hardcore Geek



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #11 on: March 08, 2017, 03:51:12 am »

With the Dallas parts, even when they are older stock, if they have never been powered up they will last longer than you might expect because they have a system in there to keep the battery disconnected and "freshness sealed" until you power it the first time.

I keep meaning to build a little board with power to a bunch of sockets to stick all the battery backed NVRAMs that I don't use regularly but still have some juice left into so that they don't drain the remaining battery power any faster than necessary also... I really should get around to doing that (and backing up the CURRENT contents!) before I lose the contents on various old equipment...

Report to moderator Logged

Bushougoma

Regular Contributor



Posts: 66

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #12 on: March 12, 2017, 03:03:18 am »

Quote from: drussell on March 08, 2017, 03:51:12 am

With the Dallas parts, even when they are older stock, if they have never been powered up they will last longer than you might expect because they have a system in there to keep the battery disconnected and "freshness sealed" until you power it the first time.

Only the newer Dallas components have this "freshness seal" as they call it older parts don't and have the battery connected from the factory. I can't seem to find what year they first introduced this feature.

I replace these on sight in any old test gear I buy since I find they are at least 20 years old at a minimum. Rule of thumb if your NVSRAM is almost old enough for a drink replace it 🤔.

If you don't have a programmer to backup and copy the contents get a TL866. When I first bought it I had a few other programmers that were more expensive and I thought I wouldn't use it often but it quickly became the go to programmer on my bench it definitely punches above its weight.

« Last Edit: March 12, 2017, 03:34:35 am by Bushougoma »

Report to moderator  Logged

Pinkus

Frequent Contributor



Posts: 653



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks

Reply

Quote

« Reply #13 on: March 20, 2017, 12:32:19 pm »

Quote from: james_s on March 07, 2017, 10:52:54 pm

If you can't find a suitable replacement, you can actually replace the batteries in these, or at least disconnect them and glue a lithium coin cell holder on top. You have to grind into the end or top, Dremel type rotary tool with a sanding drum works well. I've seen pictures online and videos on youtube that make it a bit easier. The battery is on top under a layer of epoxy.

+1

done this several times. It is not very difficult, the battery is located on the top. Just start using the dremel at the top and you will find the battery quickly.


Report to moderator  Logged

MarkL

Supporter



Posts: 1658

Country: 



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks

Reply

Quote

« Reply #14 on: March 24, 2017, 02:02:21 am »

Ok, as promised I'm posting back to the thread with photos of the DS1742W-120 I received from this listing:

<http://www.ebay.com/itm/282116689792>


The date code is 1410 (10th week of 2014). The padded envelope it came in was from Futian Shenzhen and not Hong Kong, which is where the seller said it was shipping from. That's exactly what I was trying to avoid. Oh well.

Also, the customs declaration said it was Fashion Jewelry. I wasn't planning on wearing it, but I suppose it would make an interesting conversation piece. Perhaps by some stretch it could be considered a time piece.

I'm no expert in counterfeit parts, but I don't see anything that makes me believe this is fake. The date stamp looks like it was done at the same time as the rest of the markings. And the pins look untouched, so it's not a pull.

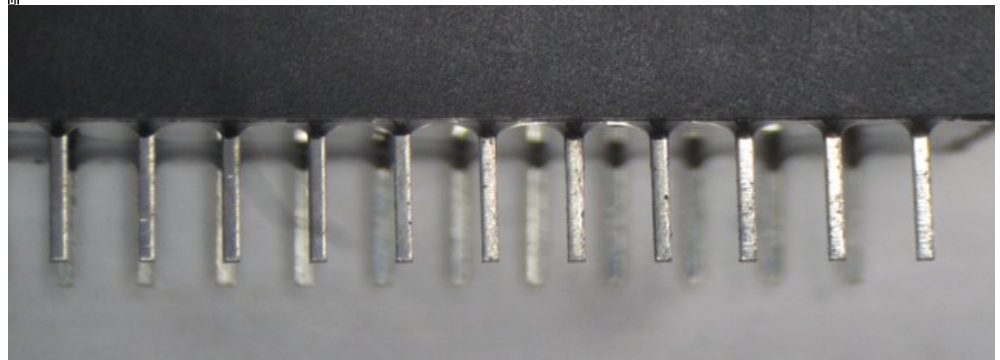
Any other opinions welcome. As I mentioned, I'm not installing this until I have to, so I guess it will have to keep it's battery freshness seal until then.



 img_5337_crop_640x480.jpg (43.3 kB, 640x299 - viewed 611 times.)



img_5338_crop.jpg (356.25 kB, 1840x1026 - viewed 600 times.)



img_5341_crop_640x480.jpg (32.6 kB, 640x231 - viewed 524 times.)

Report to moderator Logged

Armadillo

Super Contributor



Posts: 1725

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks

Reply

Quote

« Reply #15 on: March 24, 2017, 03:14:24 am »

The surface don't look like it comes from the mold. Looks like a fresh blacktopping with fine glass additive - the peak and valley are too uniform, pointing to the direction of spray, example largely unidirectional.

Can you look thru the microscope of the surfaces and compare the two?

« Last Edit: March 24, 2017, 03:39:35 am by Armadillo »

Report to moderator Logged

Armadillo

Super Contributor



Posts: 1725

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks

Reply

Quote

« Reply #16 on: March 24, 2017, 11:34:29 am »

From the photos, seem like the distance and depth are different.



H3.JPG (50.26 kB, 502x546 - viewed 870 times.)

[Report to moderator](#)

james_s

Super Contributor



Posts: 12251

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #17 on:** March 24, 2017, 03:27:35 pm »

The font is different between those two parts. I'm skeptical of it being genuine, although that's not to say it won't work. It could be counterfeit, or it could be a remark, hard to say for sure.

[Report to moderator](#)

pamphonica

Regular Contributor



Posts: 53

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #18 on:** January 04, 2018, 04:41:23 pm »

Were you successful with your NVRAM replacement?

I'm about to do the same, although there are no signs (yet) of problems holding date and time. My NVRAM code shows Year 2000 Manufacture. I've ordered one from China/HK. Let's see...

By the way, does anyone know if you can dump the DS1742W-120+ NVRAM contents (cal data etc presumably) via an EPROM programmer, in case I need them for the new NVRAM. My programmers are all elderly so don't list Dallas/Maxim devices like this and I assume I'll need something a bit modern anyway as it uses a 3.3V rail. Don't want to blow it up.

Any hints gratefully received.

Happy New Year all.

[Report to moderator](#)

james_s

Super Contributor



Posts: 12251

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

[Say Thanks](#) [Reply](#) [Quote](#)

« **Reply #19 on:** January 04, 2018, 08:05:49 pm »

I have bought several DSxxxx parts from China and so far none have been what they said they were. Two were genuine but old stock that had been relabeled and the others are obvious fakes, in all cases confirmed with xrays compared to known genuine parts. Of the about half of them turned out to be defective.

I'm honestly not sure why they fake them, for the prices they ask I would gladly buy generic "compatible" parts that do not pretend to be genuine and then I would not feel cheated when they turn out not to be. Of course they need to be functional as well, but I suspect that's mostly down to the quality of the soldering inside.


Report to moderator  Logged

MarkL

Supporter



Posts: 1658

Country: 



 **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**

Say Thanks

Reply

Quote

« **Reply #20 on:** January 05, 2018, 12:10:27 am »

According to a report from another forum user, the NVRAM does not store the calibration data. It is used for settings, ref waveforms, other miscellaneous storage and, obviously, time-of-day.

I can't locate the post that talked about this, but you could try removing the old NVRAM, installing a socket as was discussed above, and plugging in the new NVRAM. The worst that could happen is that the post about the calibration data was wrong, and then you'll have to find a way to read the old one anyway.

I have a replacement NVRAM waiting for the one in my TDS3054 to die, which it hasn't yet. I may have an unpleasant surprise that it's a fake and doesn't work, in which case I'll try to find a genuine one or try the "dig out the old battery" method. And if it does die and the information about the calibration data was wrong, I'll be looking at a re-cal.

EDIT: Found the post on the calibration data (sounds like reliable info to me):

<https://www.eevblog.com/forum/testgear/tek-tds3000-series-and-dallas-nvram/>

« Last Edit: January 05, 2018, 12:21:31 am by MarkL »


Report to moderator  Logged

JacquesBBB

Frequent Contributor



Posts: 784

Country: 



 **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**

Say Thanks

Reply

Quote

« **Reply #21 on:** January 05, 2018, 01:49:49 pm »

Here is an example where I rescued a similar chip, the DS1220 by digging into the chip to access the battery.

Remove it, and replaced it by an external one.
Not the most elegant, but it works.

<https://www.eevblog.com/forum/repair/hp-54601a-failed-checksum-test/msg548141/#msg548141>


Report to moderator  Logged

voltsandjolts

Supporter



Posts: 906

Country: 



 **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**

Say Thanks

Reply

Quote

« **Reply #22 on:** January 05, 2018, 03:06:18 pm »

Quote from: MarkL on January 05, 2018, 12:10:27 am

EDIT: Found the post on the calibration data (sounds like reliable info to me):

<https://www.eevblog.com/forum/testgear/tek-tds3000-series-and-dallas-nvram/>

Yeh, that was me and I stand by that.

Report to moderator  Logged

texaspyro

Super Contributor



Posts: 1391



 **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**

Say Thanks

Reply

Quote

« **Reply #23 on:** January 07, 2018, 04:30:30 am »

Quote from: ArcticGeek on March 06, 2017, 03:31:00 pm

I've also found a number of brokers that CLAIM they have thousands of these parts, but you have to fill in a request of how many and submit an RFQ. I personally think most of these sites are full of \$hit.

I once did a broker test looking for the part "FUK-U-2" (or something similar). Low and behold it started showing up available from several brokers.

Report to moderator  Logged

james_s

Super Contributor



Posts: 12251

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #24 on: January 08, 2018, 08:16:26 pm »

Quote from: texaspyro on January 07, 2018, 04:30:30 am

Quote from: ArcticGeek on March 06, 2017, 03:31:00 pm

I've also found a number of brokers that CLAIM they have thousands of these parts, but you have to fill in a request of how many and submit an RFQ. I personally think most of these sites are full of \$hit.

I once did a broker test looking for the part "FUK-U-2" (or something similar). Low and behold it started showing up available from several brokers.

LOL! It would be funny to ask them for a datasheet.

Report to moderator Logged

MarkL

Supporter



Posts: 1658

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #25 on: August 26, 2019, 04:19:55 pm »

Well, it finally happened. The DS1742W battery died in my TDS3054. The scope was purchased in 1999, so that's 20 years. Not too bad. The symptoms were that the settings and SPC constants were retained, but the clock stopped when the scope was powered off. The time when the scope was powered off was retained.

As mentioned in the above posts from two years ago, I purchased a backup DS1742W from an HK seller knowing this would eventually happen.

After removing the dead DS1742W, placing it next to the replacement made it quite obvious it was a fake. See photos below. I hadn't noticed the size difference before and it's significantly larger than stated in the Maxim datasheet. I also noticed that there was no battery bump visible on the bottom of the original.

[attach=1]

[attach=2]

For the record, the ebay seller was "crystal830303".

I soldered in a 24-pin socket and plugged in the fake. To no surprise, the battery was dead in the fake. It behaved in the same way; settings were retained, but the clock wouldn't run when the scope was powered off.

Since I had nothing to lose, I proceeded to cut into the old DS1742W. Placing a strong, small magnet against the case allowed me to locate the battery near the top on the right hand side. I sliced the top off with a razor saw, dug out the old battery, and replaced it with an external one. Photos below.

It took a couple of hours and works great now. Maybe that will hold for the next 20 years, at which point I probably won't care anymore.

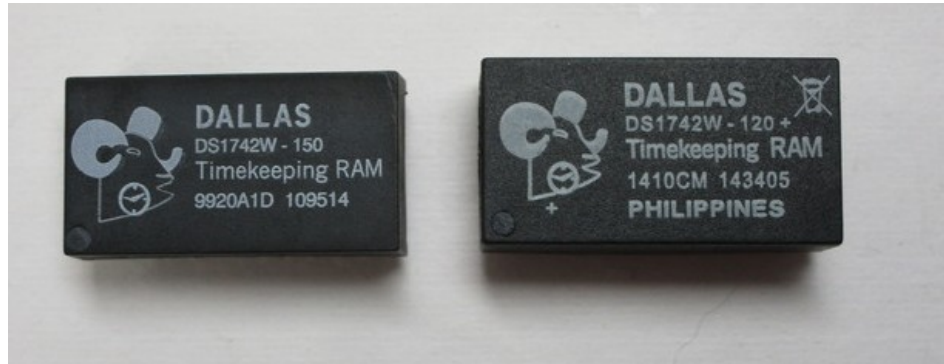
[attach=3]

[attach=7]

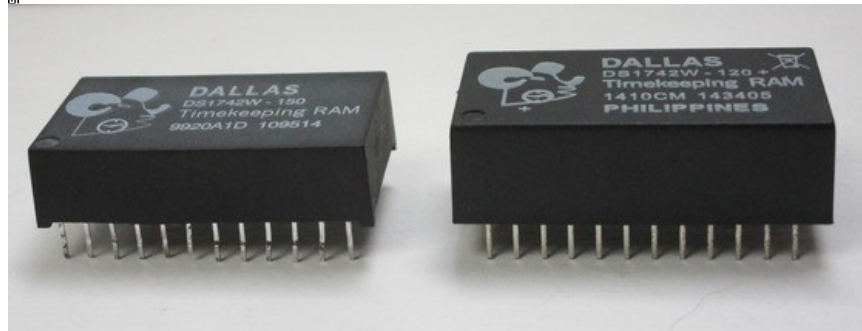
[attach=4]

[attach=5]

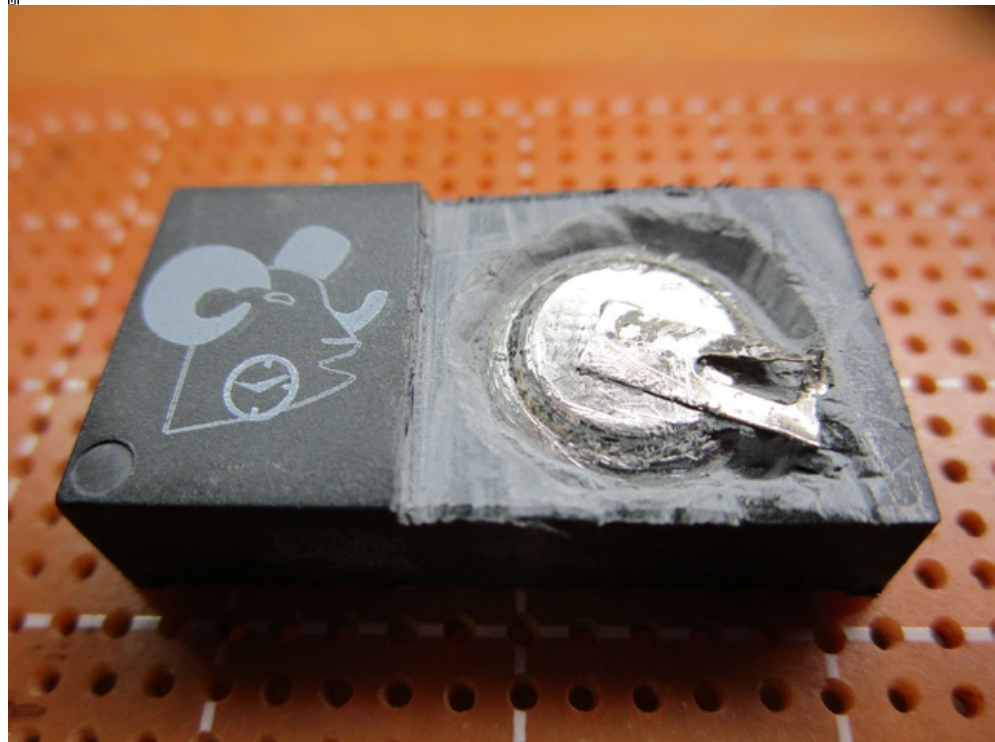
[attach=6]



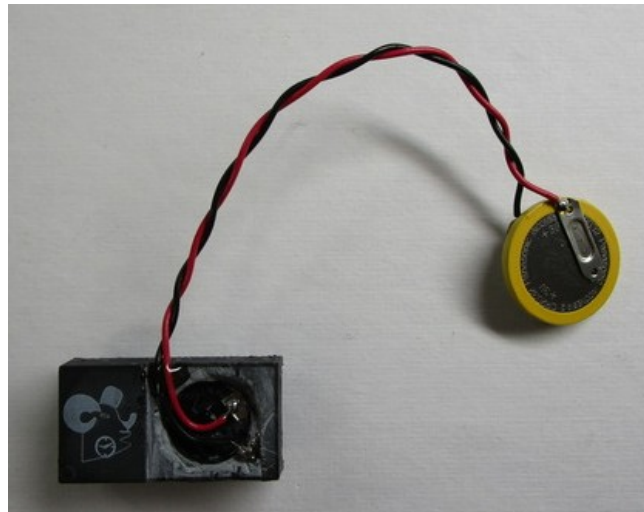
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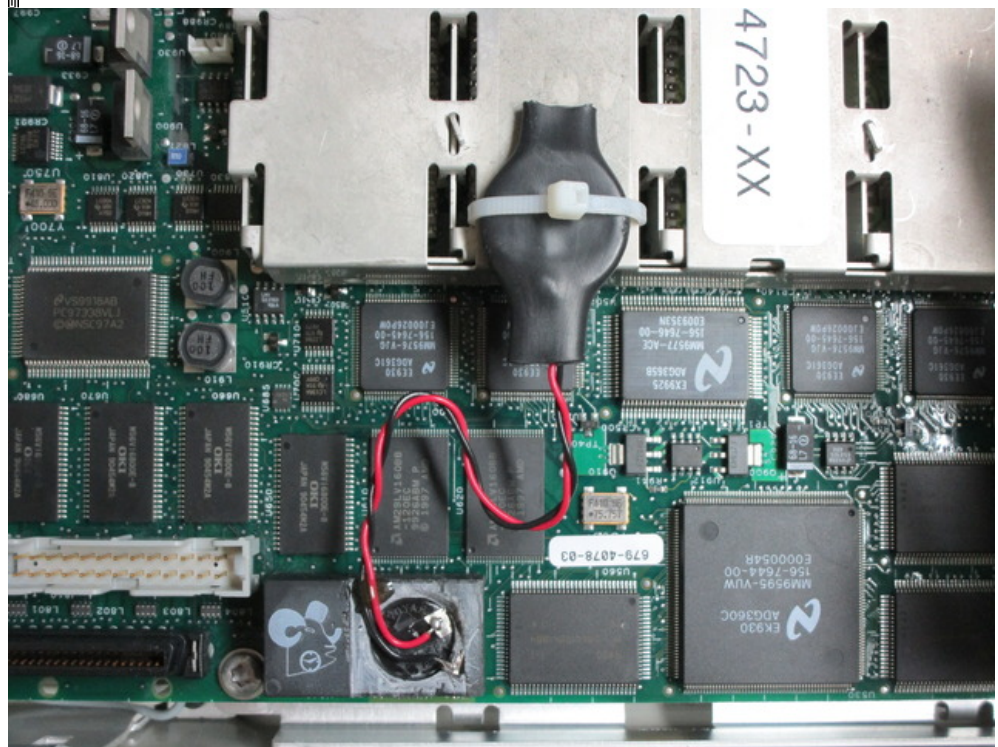
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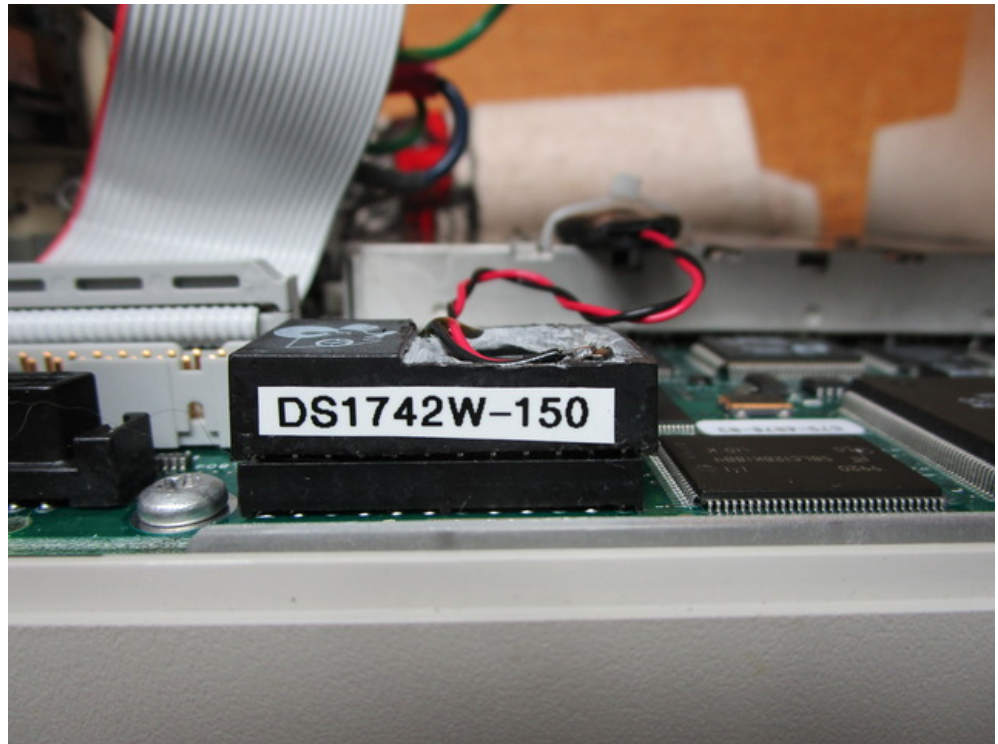
top_off.jpg (106.14 kB, 640x480 - viewed 264 times.)



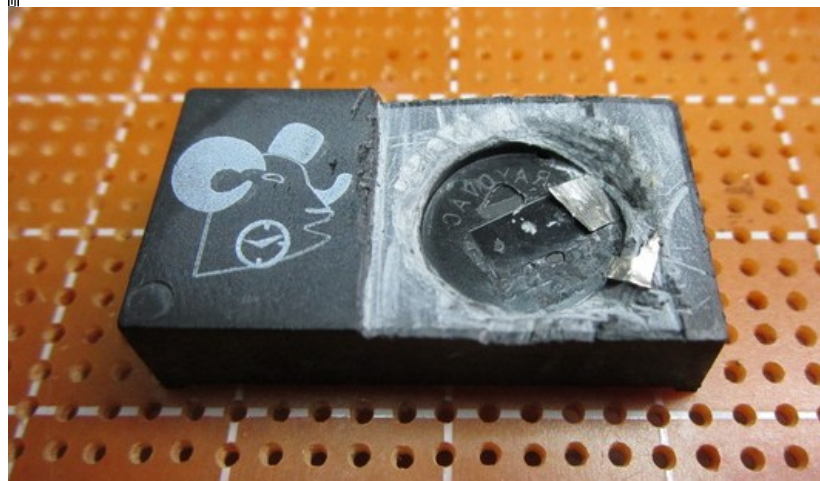
assembled.jpg (34.4 kB, 419x330 - viewed 231 times.)



installed_1.jpg (154.58 kB, 640x480 - viewed 238 times.)



installed_2.jpg (103.09 kB, 640x480 - viewed 135 times.)



battery_removed.jpg (63.31 kB, 533x307 - viewed 237 times.)

« Last Edit: August 26, 2019, 04:23:46 pm by MarkL »

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The following users thanked this post: Jwalling, f14

Jwalling

Supporter



Posts: 1361

Country:

This is work?



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

« Reply #26 on: August 26, 2019, 05:30:41 pm »

Say Thanks

Reply

Quote

Nice work!

That seller is still selling them. Looks identical to the one you bought.
<https://www.ebay.com/itm/282116689792?>

87 sold!
6 positive feedbacks on it. WTF?

- by 9***s
During past 6 months
Beijing to SanFran: 25days slow! Bag: anti-static. Foam, Bubble: not. Items OK.
- by e***o
During past 6 months
Fast shipping, excellent packaging, items as described, highly recommended!
- by z***2
During past 6 months

Good communication, Fast shipping, Great eBayer, Thanks!
 by z***2
 During past year
 Good communication, Fast shipping, Great eBayer, Thanks!
 by i***o
 During past year
 Ok
 by l***y
 During past year
 Got the order ontime and in good condition

Report to moderator Logged

Jay

System error. Strike any user to continue.

MarkL

Supporter



Posts: 1658

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #27 on: August 27, 2019, 12:22:16 am »

Quote from: Jwalling on August 26, 2019, 05:30:41 pm

Nice work!

Thanks!

Quote

That seller is still selling them. Looks identical to the one you bought.
<https://www.ebay.com/itm/282116689792?>

87 sold!
6 positive feedbacks on it. WTF?

Fake reviews? Or maybe they work long enough for people to give it a good review? Mine sat around in the packing tube for 2 years. With a real DS1742 with that date code, 2 years wouldn't have mattered.

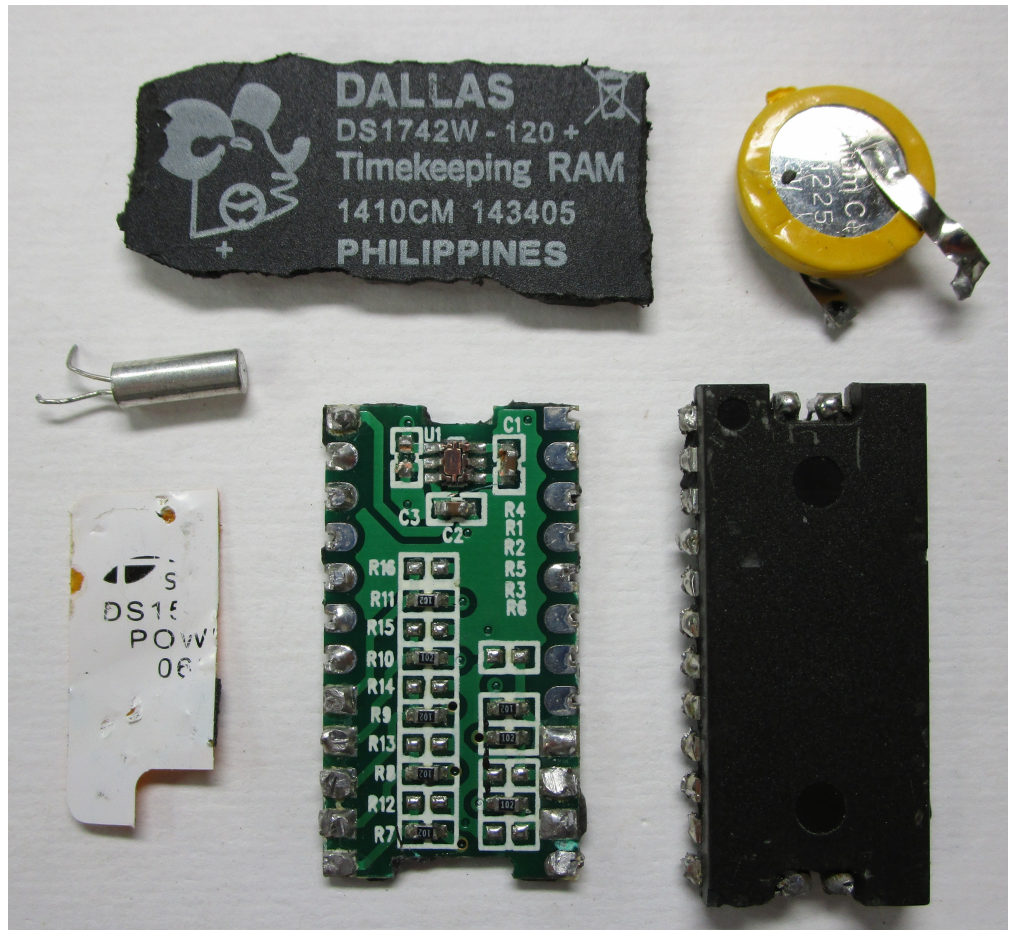
Since I wasn't ever going to use it, I broke my fake one open with a sharp chisel. Somewhat less finesse than my work in the previous post, but definitely satisfying.

The main chip was an unmarked 24-pin DIP with two extra connections on either end (never saw that before!). One pair was connected to the crystal and the other pair to the battery (or was at least involved somehow with the battery).

It sat on a PCB with some resistors and one 6-pin chip (U1). U1 was marked with "10A45". I didn't bother trying to track down the code to find out what it was. The main chip's 24 legs were extended through the PCB to the external pins.

There was nothing that identified who really made it. Even the battery had no manufacturer name on it (except a small "SC" under the yellow wrap). The voltage on the battery was 0.87V.

High-res photo below of the extracted pieces, if it's of any interest/help.



img_9292_crop.jpg (2450.2 kB, 3711x3449 - viewed 320 times.)

Report to moderator Logged

The following users thanked this post: Jwalling, james_s, f14

f14
Contributor
Posts: 22
Country:

Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #28 on: August 27, 2019, 12:52:21 am »

seem in my case I think I will mod external battery in old chip and don't need wait the new chip arrived . when new chip arrived I will test this working or not 🤔
btw I think a fake chip use too much current make internal battery runs out of power sooner . it is very usual in cheap chinese caliber the battery dead after some months even turn off

« Last Edit: August 27, 2019, 12:57:21 am by f14 »

Report to moderator Logged

Jwalling
Supporter

Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #29 on: August 27, 2019, 09:42:42 am »

They spend quite a bit of effort to do this. I just don't understand why they don't make a product that friggin' works! 🤔

All those TDS3K scopes are reaching the age where they are going to need those chips replaced. Tek sold a ton of them, there's real money to be made - you could easily get \$30 each for a working unit...

Report to moderator Logged

Jay


System error. Strike any user to continue.

MarkL
Supporter

Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

Say Thanks Reply Quote

« Reply #30 on: August 27, 2019, 03:55:29 pm »

Posts: 1658
Country: 
  

I can think of a few other possibilities for DS1742W replacements.

The first is to use the DS1744W. The DS1744W has more SRAM than is needed and is in a 28-pin DIP package. An adapter board could be designed which grounds pulls high the unused address pins and, in the case of the TDS3000 series, moves the package out of the way of the chassis.

The DS1746W and DS1747W are also possible, but are even bigger with 32 pins. But it looks like they would still fit in the space available with an adapter board.

The DS1744WP could also be used similarly. The package is a module which is meant to be surface mounted, and then the battery and crystal are snapped on top after reflow. It's more expensive than the DIP version, but maybe the battery cap could be removed and replaced after it was depleted. I don't know for sure since I've never actually seen one in person.

Alternatively, the chips are exposed on the DS1744WP module and they could be removed and remounted onto a smaller board that would have the same dimensions as the original DS1742W, with of course a crystal and battery.

Unfortunately, I wasn't able to find any matches for the RTC chip just by itself that has the same register layout as the DS174x series. That would be nice. I'm guessing the RTC chip has an SRAM controller on it which handles the power down and addressing, so probably any SRAM would do. Maybe ordering and examining a DS1744WP would reveal which RTC chip was being used.

Lastly, the access is slow enough for the -150 and -120 parts that maybe some really fast microcontroller could emulate the RTC and SRAM. But that would take a lot more work, and probably get ripped off instantly by the counterfeiters.

The DS1744W and later parts are currently available, at least for the time being, according to the EOL/NRND spreadsheet at Maxim:

<https://www.maximintegrated.com/en/products/nla/index.mvp>

Any of these solutions would probably end up being in the \$40-\$50 range (at least).

EDIT: Fixed unused pins description.

« Last Edit: September 08, 2019, 04:32:22 pm by MarkL »

Report to moderator  Logged

MarkL

Supporter



Posts: 1658

Country: 



 **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**

« Reply #31 on: September 08, 2019, 04:30:44 pm »

Say Thanks

Reply

Quote

I said:

Quote from: MarkL on August 27, 2019, 03:55:29 pm

...

The first is to use the DS1744W. The DS1744W has more SRAM than is needed and is in a 28-pin DIP package. An adapter board could be designed which grounds the unused address pins and, in the case of the TDS3000 series, moves the package out of the way of the chassis.

...

No one caught this, but since the clock registers are at the high addresses in memory, the unused (highest order) address pins need to be pulled high, not grounded. Otherwise the clock registers would not be accessible.


Not sure anyone is interested in this option, but I didn't want to leave bad information out there.

Report to moderator  Logged

steve_01

Newbie

Posts: 3

Country: 



 **Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM**

« Reply #32 on: May 31, 2020, 01:47:23 pm »

Say Thanks

Reply

Quote

Hi,

Annoying as it IS but quite expected. I did order and recieved a blacktopped DS1742W-120! It was a really bad blacktopped device, seems to be original part - but grinded away original marking!

Tried to choose someone serious with low neg. feedback, but there is none I guess.

I have grinded off the CR1225 as MarkL did show on the original part. Thanks, havnt finalized it yet - but there is + and - solderable bits!

As suggested, there must be tons of TDS3xxx - out there with bad lithium batterys ; witch is a pretty

good scope even today. I have the 3032-300MHz one!

Really isnt there a working replacement part yet!? Like MarkL is suggest - it should not be difficult to make a emulator using a fast microprocessor with DMA and low RTC current. its very possible to make, but more difficult to get it *CE/FCC* approved. Well, I guess Dallas got some big \$ for disable all replacement parts from Techtronics and many other manufactories. The registers are not the same on any other DS-xxxx device i have looked on, how annoying - and expected!

/Steve

« Last Edit: May 31, 2020, 01:50:32 pm by steve_01 »

Report to moderator Logged

MarkL

Supporter



Posts: 1658

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

« Reply #33 on: May 31, 2020, 05:57:02 pm »

Say Thanks Reply Quote

You might be interested in this series of posts:

[https://www.eevblog.com/forum/repair/tds3014-adventures-\(seeking-75-75mhz-oscillator\)/msg2733286/#msg2733286](https://www.eevblog.com/forum/repair/tds3014-adventures-(seeking-75-75mhz-oscillator)/msg2733286/#msg2733286)

Instead of just musing on what could be done, user james_s went to the trouble of actually making an adapter board for a DS1744WP module to replace the DS1742W. The board files are up on github. The adapter board is a much more eloquent route if you don't mind spending a little extra.

Report to moderator Logged

steve_01

Newbie

Posts: 3

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

« Reply #34 on: June 01, 2020, 11:51:54 am »

Say Thanks Reply Quote

Hi Mark!

Thanks for the heads up. Actually I did finalize the DS1742W-150 modified original with a CR2032. Should last for the rest of my life!
And you should have the credit for that rev-eng. digging. The dude on the other thread has access to a X-Ray .. that would be a nice tool!
Having astma - and many times did use nitric acid fumes to hack into such things.. 😊

And for the other thread and using a overprices Black Box Time Keeper, is not anything I would ever do. Dallas/Maxims weird prices on those is outrages! 😞

Looked on a suitable microcontroller with DMA and sleep-mode for RTC and 8K SRAM - with 10 microamps current in sleep mode, and a 110 mA lithium should last more that 20 years. This processor is priced 1.5 USD (BGA) and I could do this very good on a simple board - and be even smaller than the black boxes for USD 25!?

I spend a lot of time doing stuff just like that above, just for fun and liking rev-eng. stuff. Done my whole life! Stupid - but fun! 😊

We will se if I finalize such a board, i put the project in a pile of other to-do-maybe projects .. 😊

Report to moderator Logged

james_s

Super Contributor



Posts: 12251

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

« Reply #35 on: June 01, 2020, 06:37:14 pm »

Say Thanks Reply Quote

I'm certainly not opposed to having alternatives to the Dallas parts, although the PowerCap versions of their products are not potted, they're exposed PCBs with a replaceable battery. It's true that they're not cheap as ICs go, but with these scopes regularly selling for ~\$1k+ spending <\$100 on a long term repair seems cheap to me. I see it as a permanent fix, buy it once and it should last the life of the scope, 10 years from now you can pop the cap off and solder in a new coin cell. I only have one TDS3000 scope so the adapter was by far the cheapest solution even if I only value my time at minimum wage.

Report to moderator Logged

steve_01

Newbie

Posts: 3

Country:



Re: Repair of Tek TDS3014B - need a source for a DS1742W NVRAM

« Reply #36 on: June 02, 2020, 04:25:14 pm »

Say Thanks Reply Quote

I'm certainly not opposed for you making those adapter boards. But like you said, its not sure they fit in any other devices using the DS1742.

For the supply of those expensive Time Keepers, Maxim have maybe decided to keep this device active or not!?

A bit confusing, stating the DS1744 is NLA - No longer active on this link (searching for DS1744) :

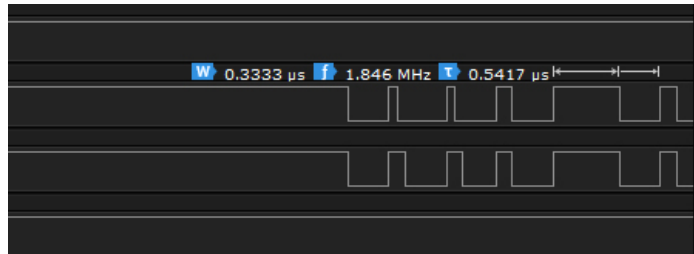
<https://www.maximintegrated.com/en/products/nla/index.mvp>

But active in this link:

<https://www.maximintegrated.com/en/products/analog/real-time-clocks/DS1744.html>

However, I did some quick timing test (on CE/OE) - just to see how fast my Techtronics TDS3032 was accessing the NVRAM. And its about 250 nanoseconds, some strange timing makes it harder to emulate the DS174X - so I most certainly dont proceed with this project.

And when i bouht my TDS in the 90's it was prices around 5K USD , so its like you say \$100 is not much money.



timing.jpg (36.41 kB, 451x162 - viewed 12 times.)

« Last Edit: June 02, 2020, 04:32:43 pm by steve_01 »

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