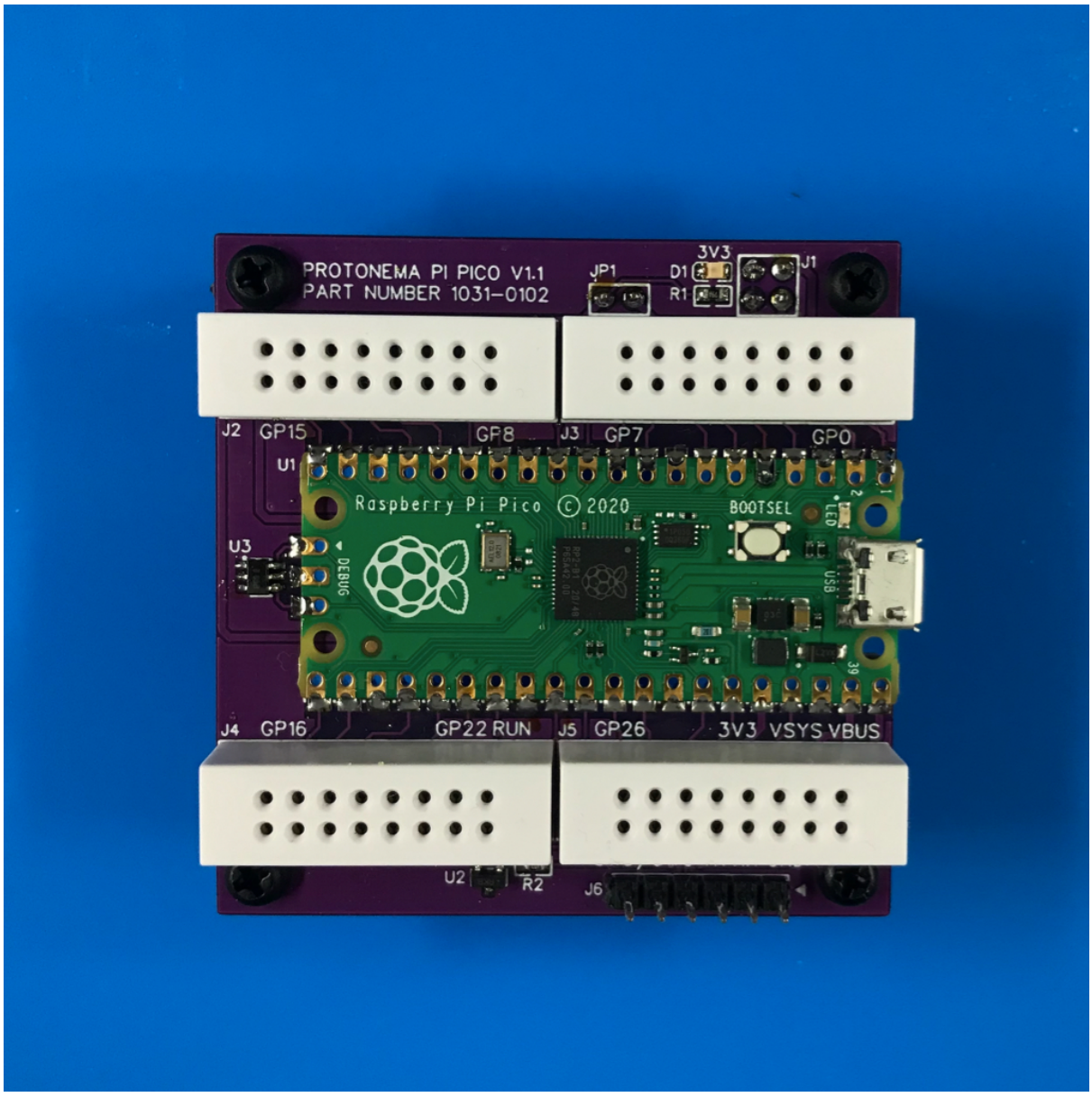
ASSEMBLY INSTRUCTIONS

1031A Raspberry Pi Pico Stamp



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ABSTRACT: This document provides instructions on how to assembly and test a 1031A Raspberry Pi Pico stamp. A complete bill of materials is included as an annex.

Suggestions and corrections should be directed to http://www.github.com/dslik/protonema/issues

Serial number: Assembly date: Assembled by:

USAGE

DISCLAIMER

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Revision history

Table 1: Document Revisions

Version	Date	Change	Approver
1.0.0-draft.1	2022-07-06	Initial draft for internal review	D. Slik
1.0.0-draft.2	2022-07-15	Packaging process updates	D. Slik
1.0.0-draft.3	2022-08-16	Added RoHS declarations	D. Slik
1.0.0-draft.4	2022-10-27	Upgrade of document build environment	D. Slik
1.1.0-draft.1	2022-12-10	Incorporated new board revision 1.1. Photos now using OSHW-compliant no-logo board variant. Updated to use new template.	D. Slik

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Part I

1031A assembly instructions

Section 1

Overview

This document describes the materials, processes, outcomes and verifications required to successfully assemble and test a 1031A Raspberry Pi Pico stamp, a sub-component of the Protonema electronics prototyping and learning system.

A first-time reader should carefully review section 2 - prerequisites, and section 3 - preparation before beginning the assembly process.

This document serves both as instructions and as a record of the assembly of the product. When you finish each step in this document, sign your name (or apply your stamp) in the “Signature/Stamp” box on the right to provide a record of completion.

When things go wrong, this document provides guidance for common issues that have been encountered in the past. When this document does not provide guidance, please contact your quality management representative, who will help you fill out an exception report. These reports help improve process quality and product quality, and these reports are incorporated into future revisions of this document.

Always remember: If you are unable to successfully complete these instructions, that means the processes supporting you (including this document) have failed you. Our processes are built for your success, and by improving our processes, we help everyone succeed.

Section 2

Prerequisites

2.1 Required safety training

The following safety training units must be completed before assembling this product.

By signing (or applying your stamp) on the right, you indicate that you have completed the following training:

Table 2: Safety training

Item #	Description	Signature/Stamp
2.1.1	0102-0100 - Safety reporting policies and procedures training Key topics: Understanding policies and procedures around how to identify, contain and report a safety-related issue in the workplace, including damaged or malfunctioning equipment, leaks, spills, and other occupational hazards.	Stamp or sign here
2.1.2	0102-0101 - Material safety data sheets training Key topics: Understanding how to read material safety data sheets (MSDS) for materials you will be handling during product assembly, how they can affect your health and the health of the enviroment, how to safely handle and dispose of them, and what to do if there is a spill or accidential exposure.	Stamp or sign here
2.1.3	0102-0102 - Solder handling and disposal policies and procedures training Key topics: Understanding policies and procedures related to handling solder and solder paste, stencil cleaning, and solder disposal.	Stamp or sign here
2.1.4	0102-0105 - Electro-static discharge controls policies and procedures training Key topics: Understanding policies and procedures related to protecting equipment and components fromm electro-static discharge, including clothing, protective equipment, material handling and labelling.	Stamp or sign here

2.2 Required skills training

The following skills training units must be completed before assembling this product.

By signing (or applying your stamp) on the right, you indicate that you have completed the following training:

Table 3: Skills training

Item #	Description	Signature/Stamp
2.2.1	0103-0202 - ANSI/ESD S20.20 Electro-static discharge controls Key topics: Understanding of ESD safety, the ESD control program, equipment and personnel grounding, EPAs, packaging and marking.	Stamp or sign here
2.2.2	0103-0203 - General components handling Key topics: Understanding of safe component handling, including reeled components, components in JEDEC trays, and loose components. Includes avoiding contamination, moisture control, and component inventory management.	Stamp or sign here
2.2.3	0103-0414 - 5040-XTS reflow station Key topics: Safe and effective use of the 5040-XTS reflow station, including use of the pre-heater, the hot air system, and the soldering iron. Covers inspection and verification, cleaning, preferred settings and best practice techniques.	Stamp or sign here
2.2.4	0103-0301 - IPC-A-610G - Acceptability of electronic assemblies Key topics: Covers visual acceptability requirements for electronic assemblies, including handling considerations, hardware installation, component placement, soldering, terminal connections, wiring, marking and cleanliness.	Stamp or sign here
2.2.5	0103-0302 - IPC-J-STD-001F - Soldered electrical connections Key topics: Covers soldering materials, general soldering and assembly requirements, wire and terminal connections, through-hole mounting, surface mounting of components, cleaning process requirements, PCB requirements, coatings and product assurance.	Stamp or sign here

Section 3

Preparation

3.1 Workspace

Before starting assembly, check out an assembly desk for a minimum of one hour. A single unit can be assembled in half an hour, with an additional ten minutes per additional unit.

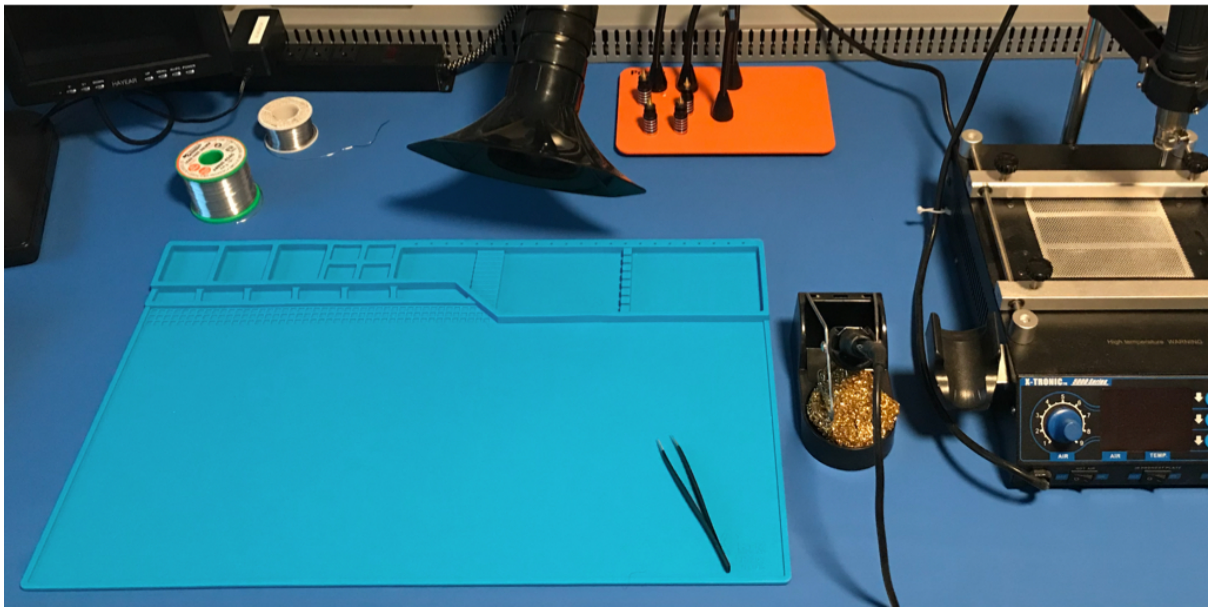

Fig. 1: Assembly Desk

Table 4: Prepare workspace

Step	Description	Signature/Stamp
3.1.1	Verify that the workspace has a clean assembly mat and anti-static mat, and that the cleaning record has been signed since last use.	Stamp or sign here
3.1.2	Verify that the HEPA fume extractor turns on, and you can feel air suction from the nozzle.	Stamp or sign here

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Table 4 – continued from previous page

Step	Description	Signature/Stamp
3.1.3	Verify that the 5040-XTS rework station soldering iron tip is not worn down. If it is worn down, obtain a new 900M-T-I tip from the stores department.	Stamp or sign here

3.2 Project consumables

Obtain each of the below consumable items from the stores department:

Table 5: Assembly consumables

Item #	Description	Signature/Stamp
3.2.1	 Fig. 2: 1 pair ESD gloves If you prefer to use your own pair of ESD gloves, make sure they are tested before use.	Stamp or sign here
3.2.2	 Fig. 3: 1 spool MG Chemicals 4900 Lead Free No-Clean Wire Solder Sn96.2Ag2.8Cu0.4 (96.2/2.8/0.4) 20 AWG	Stamp or sign here

3.3 Project tools

Obtain a tools container labelled “1XXX Assembly Tools” from the 1XXX section of the stores supply shelf. At your assembly desk, use Table 6 to verify that all the required tools are present.

If any required tools are missing, return all tools and the tools container to the stores department, and obtain another tools container.

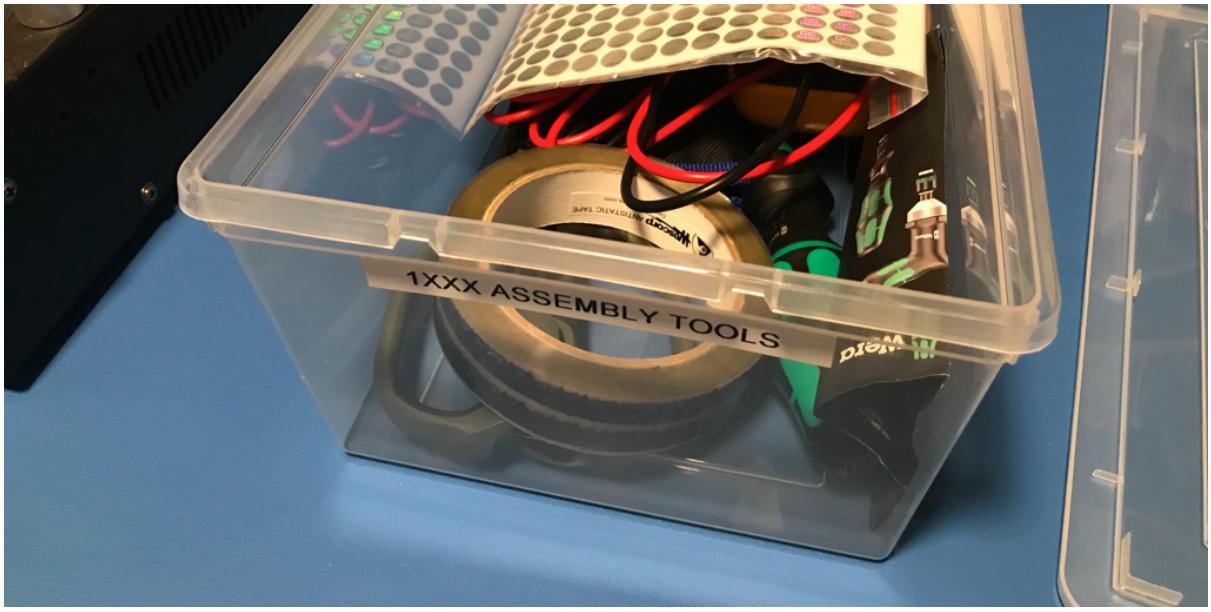

Fig. 4: Tools Container

Remove each of the following tools from the tools container, and place them on the anti-static mat of the assembly desk:

Table 6: Assembly tools

Item #	Description	Signature/Stamp
3.3.1	 Fig. 5: Hozan F-23 components tray	Stamp or sign here

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Table 6 – continued from previous page

Item #	Description	Signature/Stamp
3.3.2	 Fig. 6: 3mm Phillips adjustable torque screwdriver	Stamp or sign here
3.3.3	 Fig. 7: ESD tweezers	Stamp or sign here
3.3.4	 Fig. 8: Fine-tipped Sharpie marker	Stamp or sign here

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Table 6 – continued from previous page

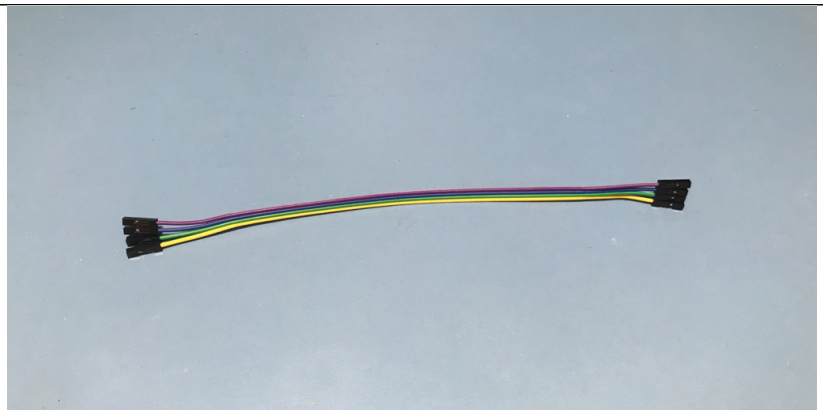
Item #	Description	Signature/Stamp
3.3.5	FPO Fig. 9: 1031A programmer	Stamp or sign here
3.3.6	 Fig. 10: Pi Pico programmer cable	Stamp or sign here
3.3.7	 Fig. 11: USB to Micro USB cable	Stamp or sign here

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Table 6 – continued from previous page

Item #	Description	Signature/Stamp
3.3.8	 Fig. 12: Sissors	Stamp or sign here

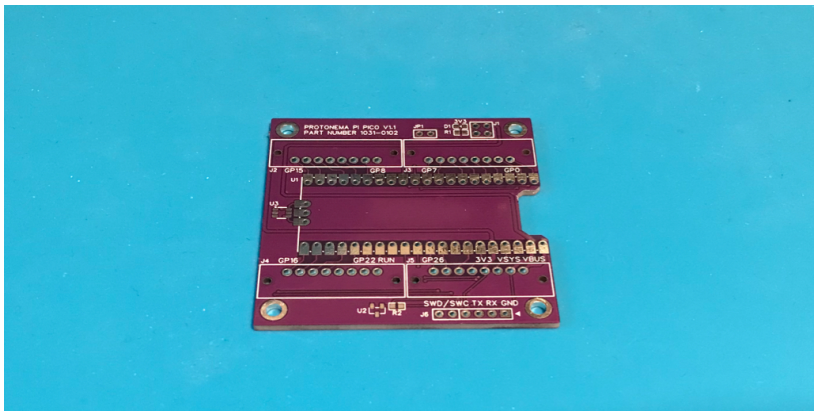
3.4 Parts preparation

3.4.1 PCBs and PCBAs

NOTICE: All PCBs and PCBAs must be handled with gloves to prevent marking with skin oils.

NOTICE: PCBs are removed from manufacturer packaging only when needed.

Table 7: PCBs and PCBAs

Item #	Description	Signature/Stamp
3.4.1.1	No marking required  Fig. 13: 1x 1031-0101 v1.1 - Raspberry Pi Pico Stamp PCB	Stamp or sign here

3.4.2 Reel cuttings

All reels are stored in the bin labelled “1XXX Reels” on the shelf labelled “1XXX Components”. As this is a manually assembled product (no automated pick-and-place), tape should be cut off as needed for the number of units being assembled, and placed in the assembly tray.

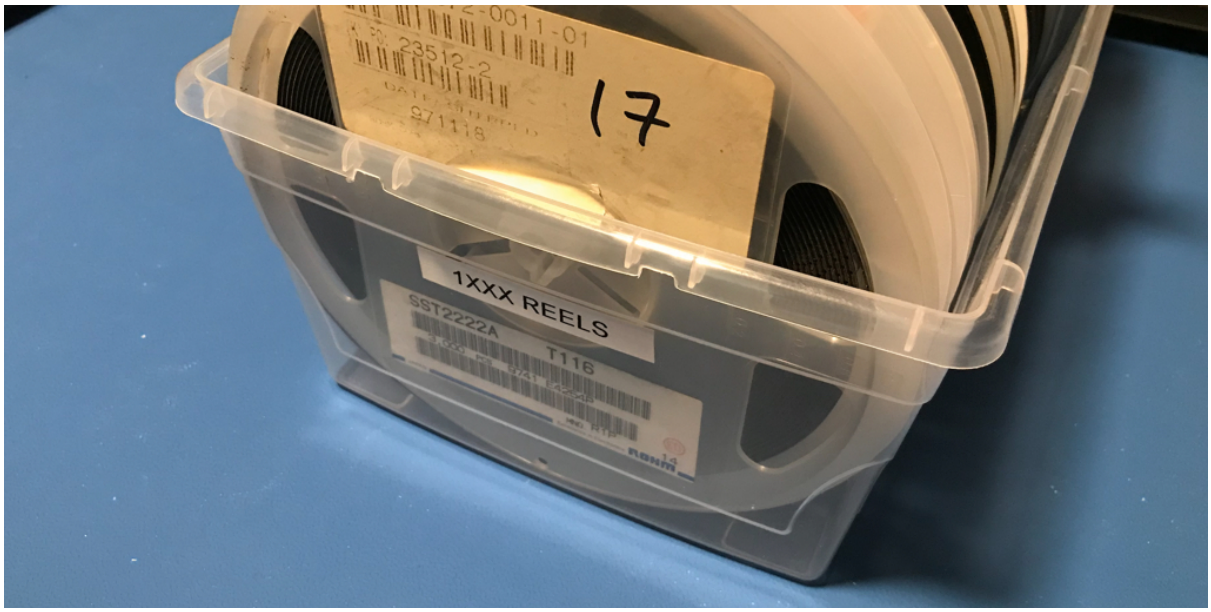


Fig. 14: Reels Container

Cut off the indicated number of parts (multipled by the number of units to be assembled), and mark them with the value:

Table 8: Assembly reels

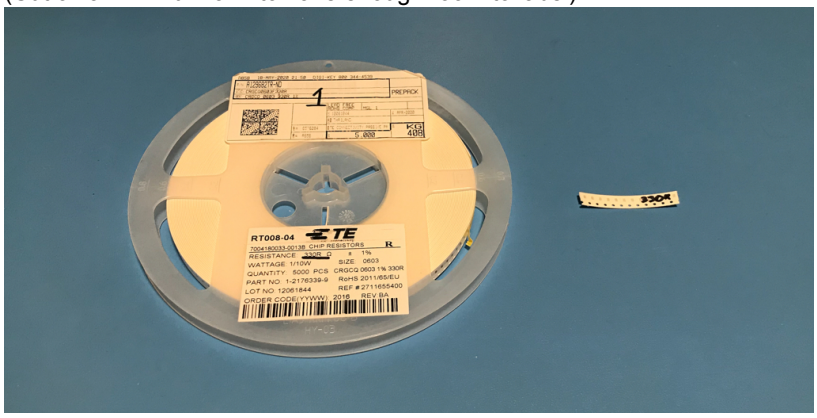
Reel #	Description	Signature/Stamp
1	Mark with “649R” (Cut off a minimum of 4 to have enough room to label)  Fig. 15: 1x 649 Ohm 0603 resistors	Stamp or sign here

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Table 8 – continued from previous page

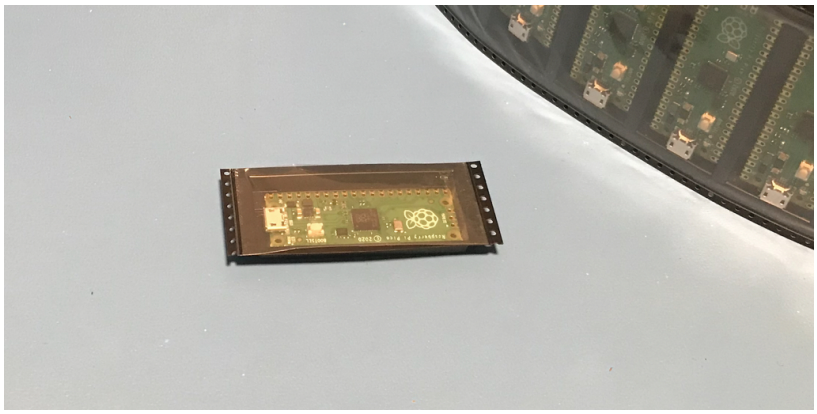
Reel #	Description	Signature/Stamp
3	Mark with “1KR” (Cut off a minimum of 4 to have enough room to label)  Fig. 16: 1x 1K Ohm 0603 resistors	Stamp or sign here
13	No marking required  Fig. 17: 1x SML-LXT0805GW-TR green LED	Stamp or sign here
14	No marking required  Fig. 18: 1x SC0915 Pi Pico module	Stamp or sign here

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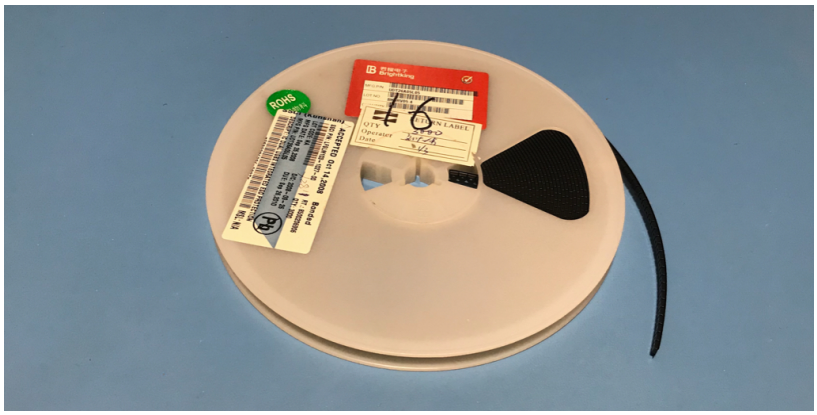
Table 8 – continued from previous page

Reel #	Description	Signature/Stamp
15	No marking required  Fig. 19: 1x LM4040BIM3-3.0 voltage reference	Stamp or sign here
16	No marking required  Fig. 20: 3x UDT26A05L05 ESD protection	Stamp or sign here

269 Be sure to return the 1XXX Reels bin as soon as you have finished cutting off the required parts.

3.4.3 Loose components

All loose components are stored on the shelf labelled “1XXX Components”. Take the components tray and obtain the following quanities of the folloiwng parts:

Table 9: Loose components

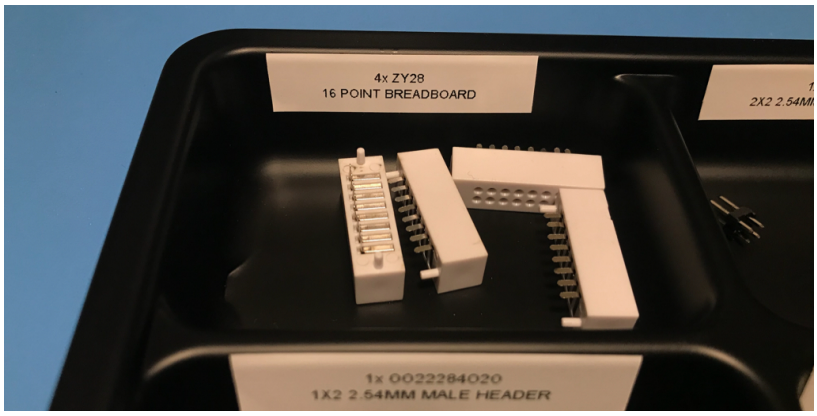
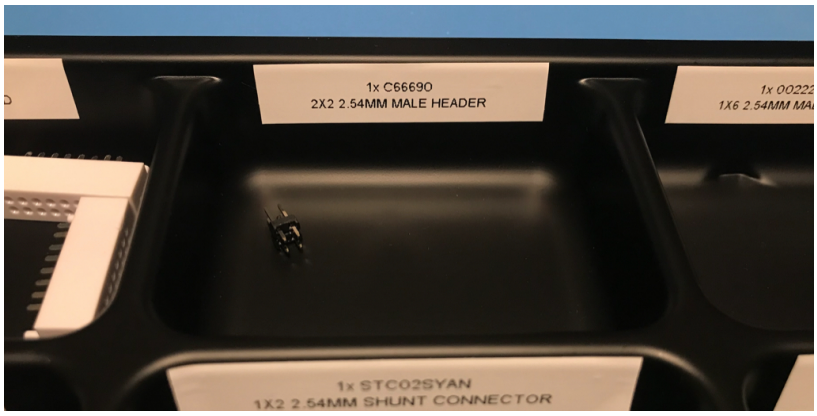
Item #	Description	Signature/Stamp
3.4.3.1	No marking required  Fig. 21: 4x ZY28 - 16 Point Breadboard	Stamp or sign here
3.4.3.2	No marking required  Fig. 22: 1x C66690 - 2x2 2.54mm Male Header	Stamp or sign here
3.4.3.3	No marking required  Fig. 23: 1x 0022284060 - 1x6 2.54mm Male Header	Stamp or sign here

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Table 9 – continued from previous page

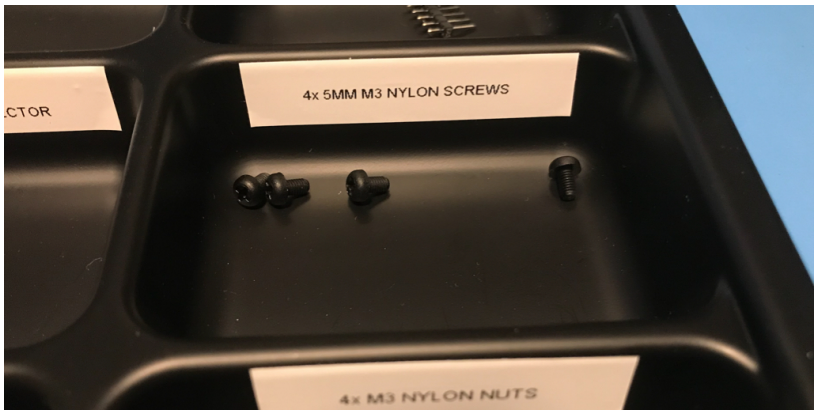
Item #	Description	Signature/Stamp
3.4.3.4	No marking required  Fig. 24: 1x 0022284020 - 1x2 2.54mm Male Header	Stamp or sign here
3.4.3.5	No marking required  Fig. 25: 1x STC02SYAN - 1x2 2.54mm Shunt Connector	Stamp or sign here
3.4.3.6	No marking required  Fig. 26: 4x 5mm M3 Nylon Screws	Stamp or sign here

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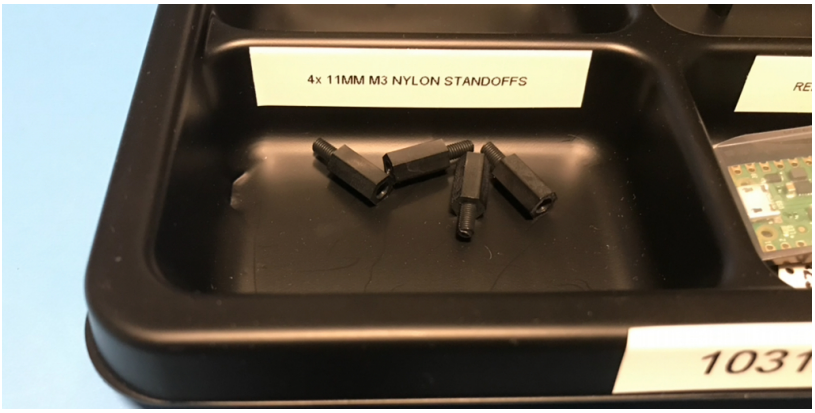
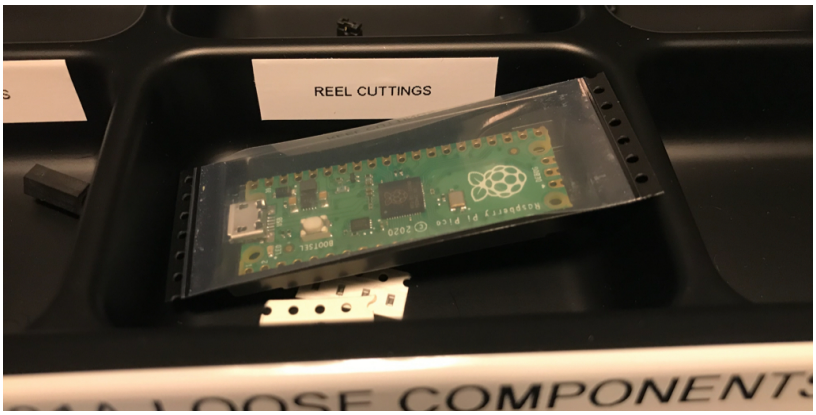
Table 9 – continued from previous page

Item #	Description	Signature/Stamp
3.4.3.7	No marking required  Fig. 27: 4x 11mm M3 Nylon Standoffs	Stamp or sign here
3.4.3.8	No marking required  Fig. 28: Reel cuttings	Stamp or sign here
3.4.3.9	No marking required  Fig. 29: 4x M3 Nylon Bolts	Stamp or sign here

3.4.4 Packaging materials

All packaging materials are stored on the shelf labelled “1XXX Components”. Take the packaging box and obtain the following quanities of the folloiwng materials:

Table 10: Packaging materials

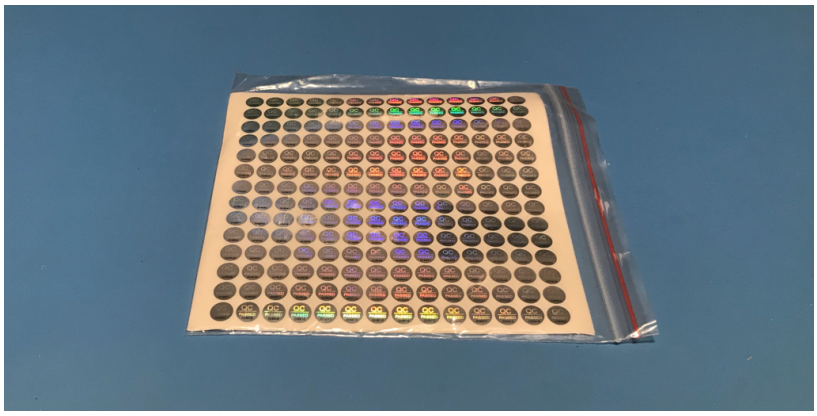
Item #	Description	Signature/Stamp
3.4.4.1	No marking required  Fig. 30: 1x QC Sticker	Stamp or sign here
3.4.4.2	No marking required  Fig. 31: 1x Medium size anti-static bag	Stamp or sign here
3.4.4.3	No marking required  Fig. 32: 1x Small size anti-static bag	Stamp or sign here

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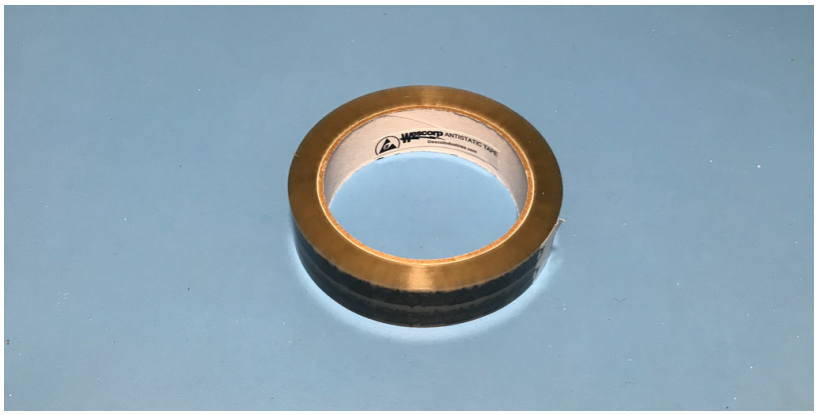
Table 10 – continued from previous page

Item #	Description	Signature/Stamp
3.4.4.4	No marking required  Fig. 33: 1x Packing box with foam inserts	Stamp or sign here
3.4.4.5	No marking required  Fig. 34: 2x 1031A Stickers	Stamp or sign here
3.4.4.6	No marking required  Fig. 35: Roll of packing tape	Stamp or sign here

Section 4

Assembly

4.1 1031A assembly

This assembly step takes 10 minutes.

Table 11: 1031A assembly steps

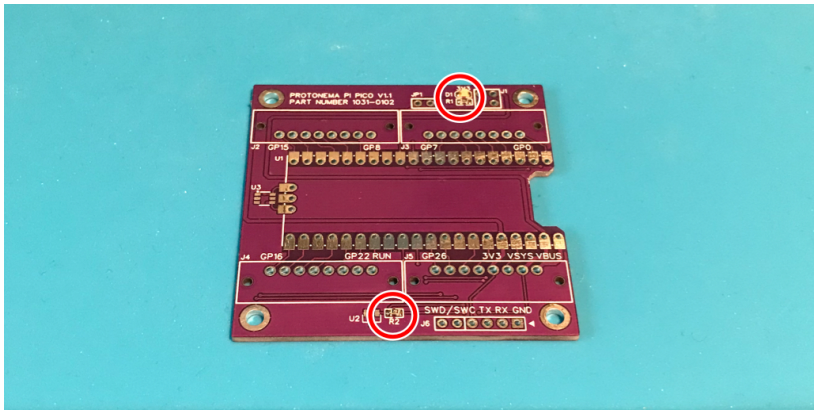
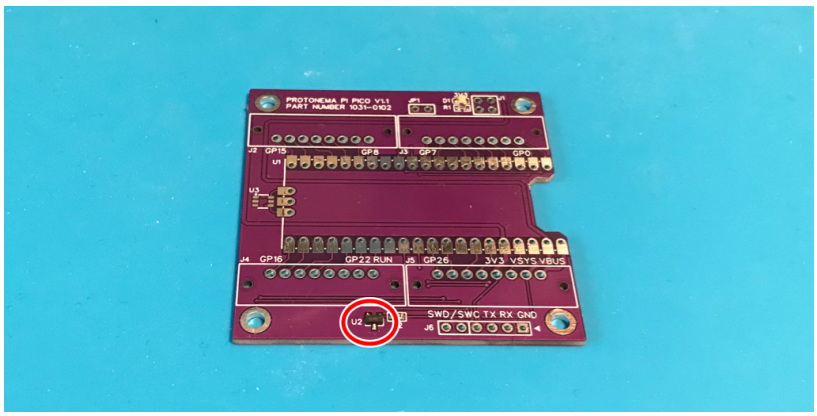
Step #	Description	Signature/Stamp
4.1.1	Solder R1, R2 and D1 onto the 1031-0101 PCB.  Fig. 36: 1031-0101 PCB with diodes and resistors soldered on.	Stamp or sign here
4.1.2	Solder U2 onto the 1031-0101 PCB.  Fig. 37: 1031-0101 PCB with U2 soldered on.	Stamp or sign here

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Table 11 – continued from previous page

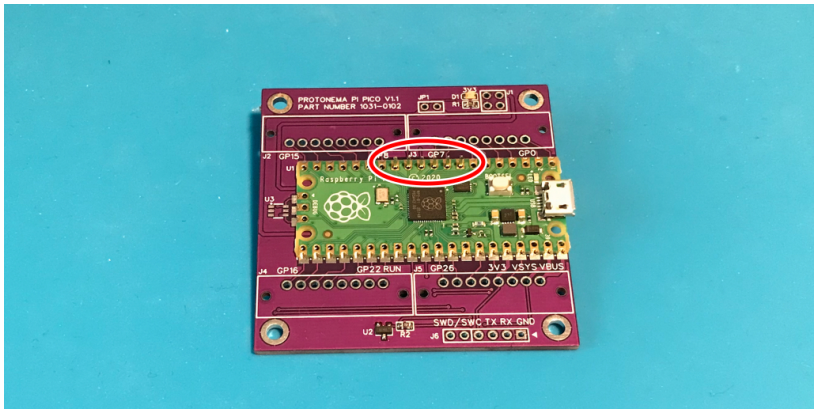
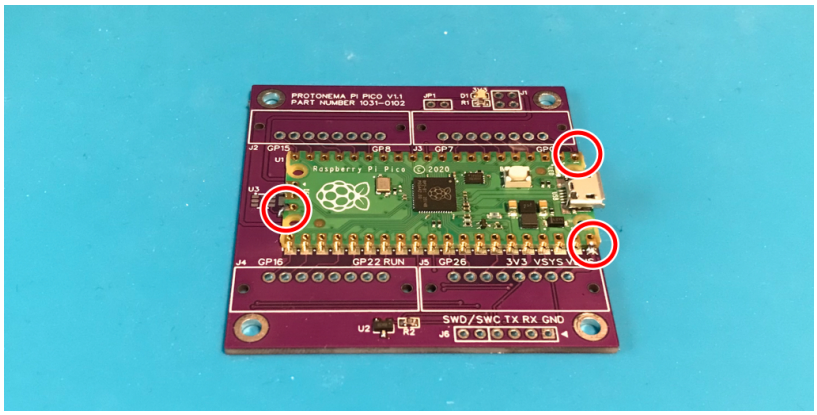
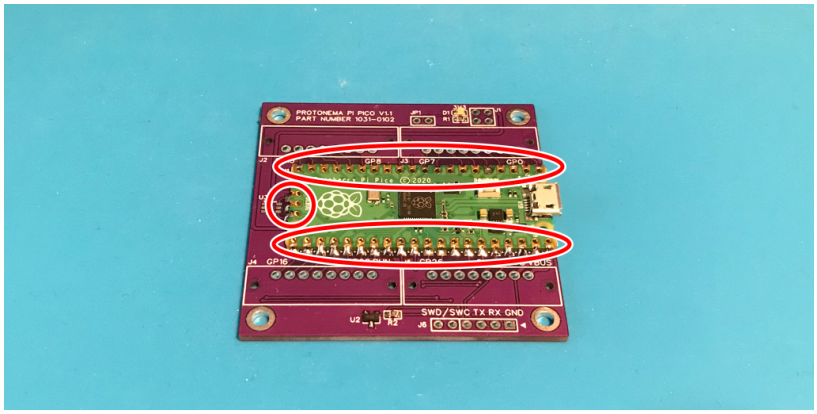
Step #	Description	Signature/Stamp
4.1.3	Using the 6 pin header, place and align the Pi Pico module.  Fig. 38: Pi Pico module aligned on the 1031-0101 PCB.	Stamp or sign here
4.1.4	Solder the center DEBUG castellated pad on the far left of the Pi Pico module, then the two corner castellated pads on the far right.  Fig. 39: 1031-0101 PCB with the debug and right corners of the Pi Pico module soldered on.	Stamp or sign here
4.1.5	Remove the 6 pin header, then solder the remainder of the castellated pads.  Fig. 40: 1031-0101 PCB with Pi Pico module fully soldered on.	Stamp or sign here

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Table 11 – continued from previous page

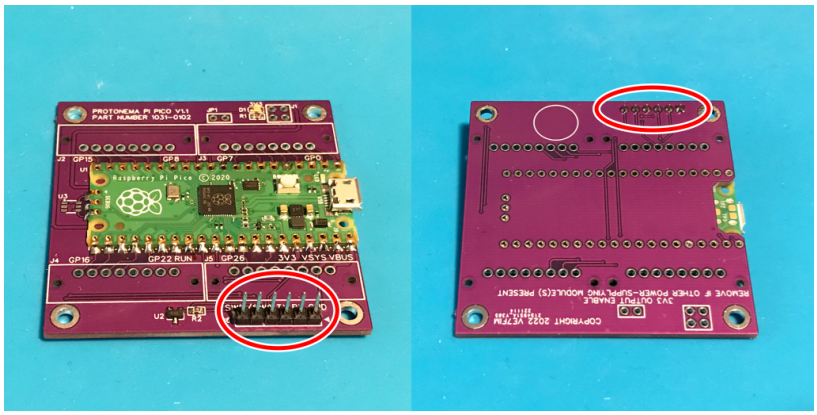
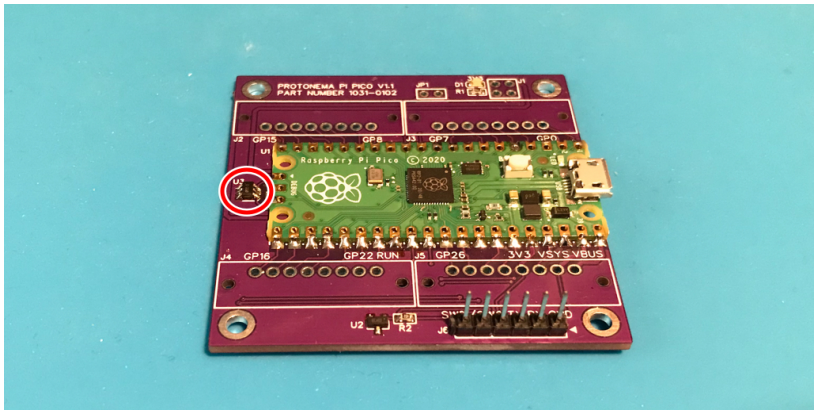
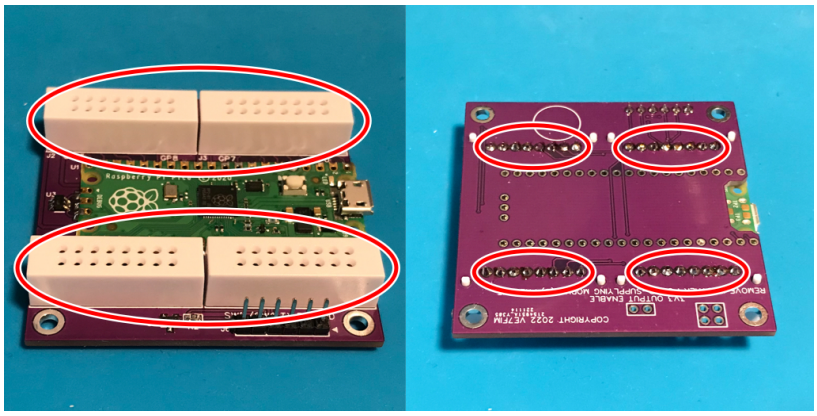
Step #	Description	Signature/Stamp
4.1.6	Insert the 6 pin header into J6 from the front of the board, flip the board, and solder the header on, making sure it is 90 degrees to the board.  Fig. 41: 1031-0101 PCB with J6 soldered on.	Stamp or sign here
4.1.7	Solder U3 onto the 1031-0101 PCB.  Fig. 42: 1031-0101 PCB with U3 soldered on.	Stamp or sign here
4.1.8	Insert all four breadboard modules, then solder.  Fig. 43: 1031-0101 PCB with all four breadboard modules soldered on.	Stamp or sign here

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Table 11 – continued from previous page

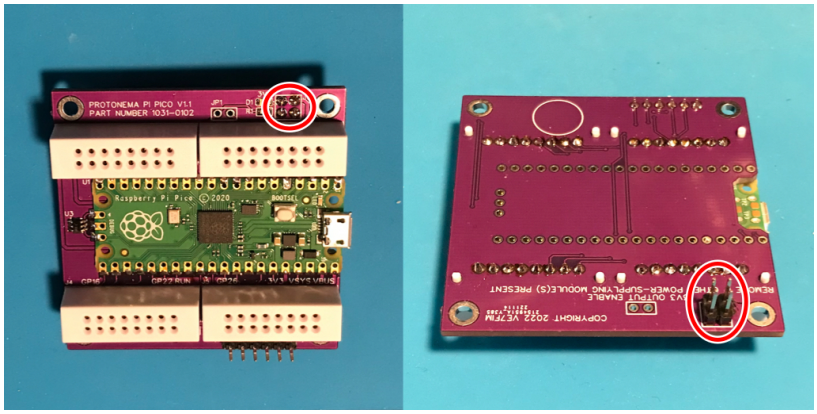
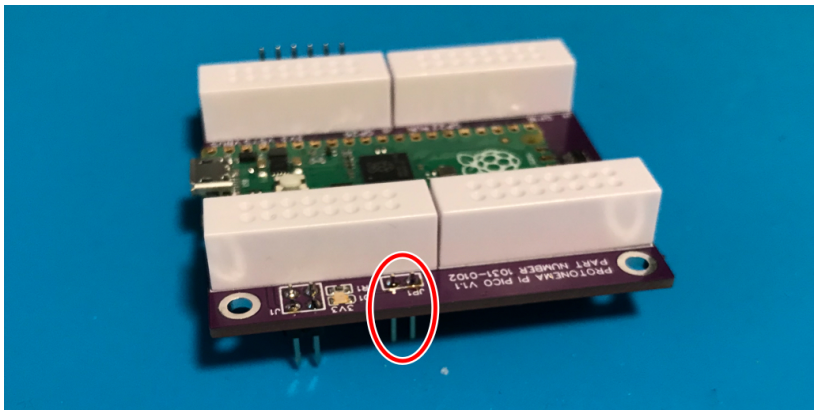
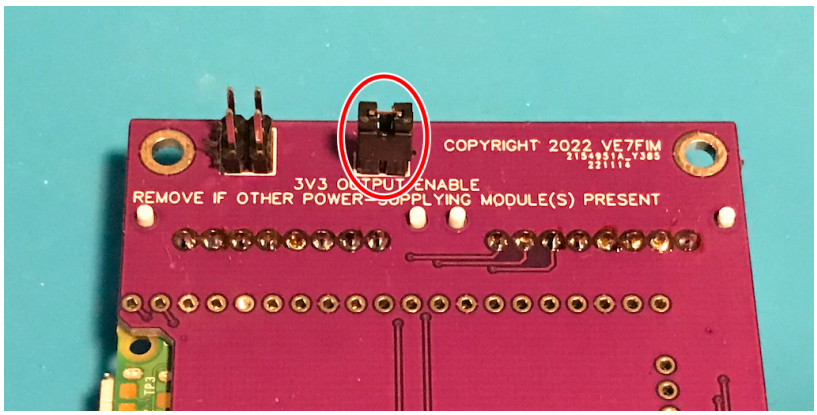
Step #	Description	Signature/Stamp
4.1.9	Insert the 4 pin header into J1 from the rear of the board, flip the board, and solder one pin of the header on, flip the board again and sure it is 90 degrees to the board, then solder the remaining three pins. Be careful not to touch the breadboard modules with the soldering iron.  Fig. 44: 1031-0101 PCB with J1 soldered on.	Stamp or sign here
4.1.10	Insert the 2 pin header into JP1 (Labelled as “3V3 OUTPUT ENABLE”¥) from the rear of the board, flip the board, and solder the header on, making sure it is 90 degrees to the board. Be careful not to touch the breadboard modules with the soldering iron.  Fig. 45: 1031-0101 PCB with JP1 soldered on.	Stamp or sign here
4.1.11	Insert the jumper onto the 2 pin JP1 header.  Fig. 46: 1031-0101 PCB with the jumper on JP1.	Stamp or sign here

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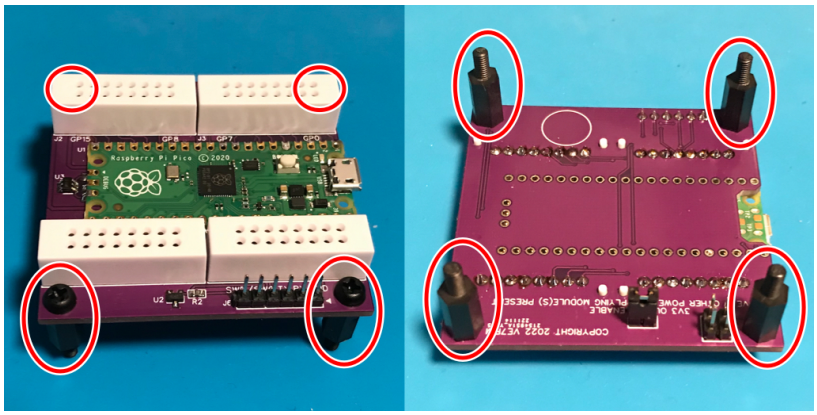
Table 11 – continued from previous page

Step #	Description	Signature/Stamp
4.1.12	For each of the four corner holes, attach a nylon screw to a nylon post through the hole.  Fig. 47: 1031-0101 PCB with four nylon posts attached.	Stamp or sign here

4.2 1031A programming

This assembly step takes 5 minutes.

Table 12: 1031A programming steps

Step #	Description	Signature/Stamp
4.2.1	Connect the programming cable connected to the 1031A programmer to the USB connector on the Pi Pico module on the 1031A board. FPO Fig. 48: Programmer connected to the 1031A board	Stamp or sign here

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Table 12 – continued from previous page

Step #	Description	Signature/Stamp
4.2.2	Connect the USB to Micro USB cable to the workstation USB power adapter and the 1031A programmer. Verify that the screen turns on.  Fig. 49: Powered up programmer.	Stamp or sign here
4.2.3	Wait for two minutes for the programmer to start up and program the 1031A. The LED on the 1031A Pi Pico module will start blinking once successfully programmed.  Fig. 50: 1031A blinking after being programmed.	Stamp or sign here
4.2.4	Disconnect the power USB connector from the programmer, then disconnect the programmer from the now programmed 1031A.  Fig. 51: Programmed 1031A	Stamp or sign here

Section 5

Test

5.1 Visual inspection

This test process takes 2 minutes.

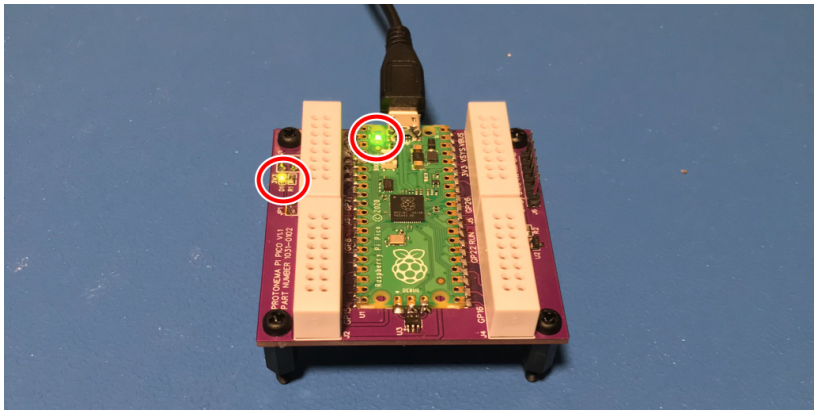
Table 13: 1031A visual inspection

Step #	Description	Signature/Stamp
5.1.1	Verify that there are no loose parts.	Stamp or sign here
5.1.2	Verify that there are no visible fingerprints.	Stamp or sign here

5.2 QC final check

This test process takes 2 minutes.

Table 14: 1031A QC final check

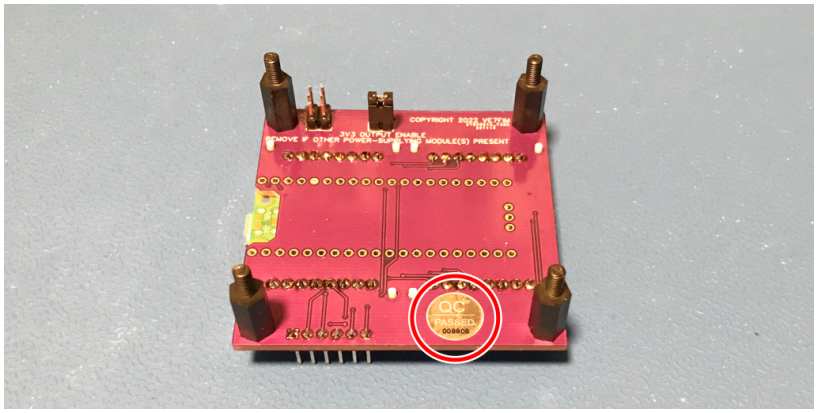
Step #	Description	Signature/Stamp
5.2.1	Connect the USB to Micro USB cable to the workstation USB power adapter and the Pi Pico mounted on the 1031-0101 PCB. Verify that the D1 LED lights up, and the LED on the Pi Pico module blinks. If test does not pass, write down the unexpected behaviour in the “Signature/Stamp” column on the right.  Fig. 52: Powered 1031-0101 PCB	Stamp or sign here

5.3 QC PASS

Only perform these steps if all QC checks have passed.

This test process takes 1 minutes.

Table 15: 1031A QC approval

Step #	Description	Signature/Stamp
5.3.1	Using the tweezers, affix QC Passed sticker in location shown below, then write down the serial number from the QC sticker below the “Signature/Stamp” in the column to the right.  Fig. 53: 1031A with QC Passed sticker	Stamp or sign here
5.3.2	Take two photographs, one of the front of the 1031A, and one of the back of the 1031A.	Stamp or sign here

5.4 QC FAIL

Only perform these steps if any QC check have failed.

This test process takes 2 minutes.

Table 16: 1031A QC fail

Step #	Description	Signature/Stamp
5.4.1	Place the 1031A module in the anti-static bag.  Fig. 54: 1031A in anti-static bag.	Stamp or sign here
5.4.2	Take an A4 plastic bag, and place the 1031A, along with this document, in the “QC Fail” bin FPO Fig. 55: 1031A in QC Fail bin.	Stamp or sign here

Section 6

Packaging

6.1 1031A packing

This packaging process takes 3 minutes.

Table 17: 1031A packaging

Step #	Description	Signature/Stamp
6.1.1	Place the 1031A module in the anti-static bag.  Fig. 56: 1031A in anti-static bag.	Stamp or sign here
6.1.2	Place four nylon nuts in a small anti-static bag, and add that bag to the bag the 1031A module is in.  Fig. 57: Anti-static bag with nylon nuts in the 1031A anti-static bag.	Stamp or sign here

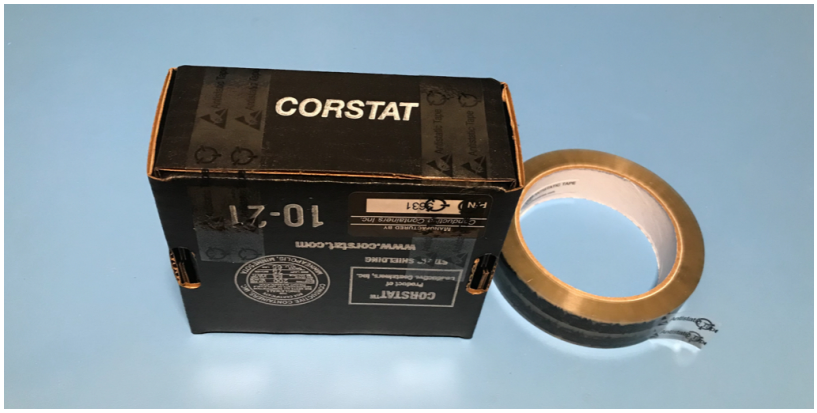
continues on next page

Table 17 – continued from previous page

Step #	Description	Signature/Stamp
6.1.3	Seal the anti-static bag with a 1031A sticker.  Fig. 58: 1031A in anti-static bag with sticker.	Stamp or sign here
6.1.4	Using the Sharpie pen, Write down the serial number of the 1031A on the sticker, at the end of the line listing the 1031A.  Fig. 59: Example photographs of the sealed box	Stamp or sign here
6.1.5	Place 1031A bag in the box on top of the bottom foam padding.  Fig. 60: 1031A in box.	Stamp or sign here
6.1.6	Take a photograph of the 1031A in the box.	Stamp or sign here

continues on next page

Table 17 – continued from previous page

Step #	Description	Signature/Stamp
6.1.7	Using the ESD tape, secure the lid of the box.  Fig. 61: 1031A in box, sealed with ESD tape.	Stamp or sign here
6.1.8	Affix a 1031A sticker to the lid of the box.  Fig. 62: 1031A in box with sticker.	Stamp or sign here
6.1.9	Using the Sharpie pen, Write down the serial number of the 1031A on the sticker, at the end of the line listing the 1031A.  Fig. 63: 1031A in box with sticker with serial number.	Stamp or sign here
6.1.10	Take a photograph of the sealed 1031A box.	Stamp or sign here

Section 7

Clean-up

7.1 Consumables

This packaging process takes 5 minutes.

Table 18: Consumables cleanup

Step #	Description	Signature/Stamp
7.1.1	If the ESD gloves have contacted solder paste, or are soiled, they shall be disposed of in the standard waste bin.	Stamp or sign here
7.1.2	If there is unused solder wire on the spool, it shall be returned to stores.	Stamp or sign here
7.1.3	Loose component packaging shall be disposed of in the standard waste bin.	Stamp or sign here

7.2 Tools

This cleanup process takes 5 minutes.

Table 19: Tools cleanup

Step #	Description	Signature/Stamp
7.2.1	All tools shall be returned to the assembly tools container, and returned to the stores supply shelf. If any tools are damaged or worn, return the container to stores, and let the manager know which tool is damaged or worn.	Stamp or sign here

continues on next page

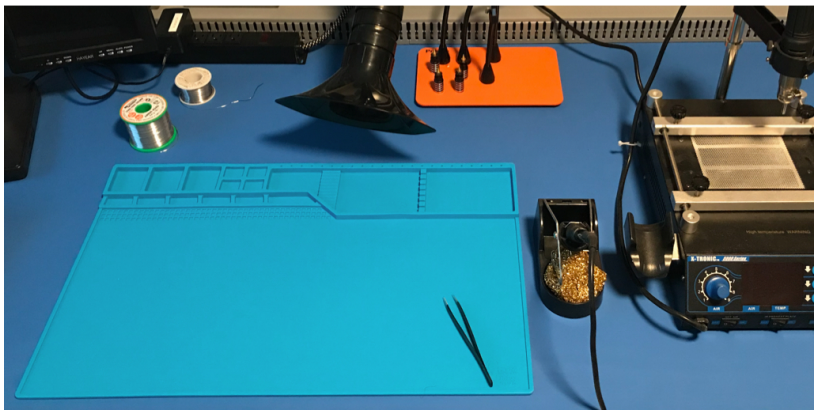
Table 19 – continued from previous page

Step #	Description	Signature/Stamp
7.2.2	Remove this document from the springback binder.	Stamp or sign here
7.2.3	Print a new copy of this document, and insert it into the springback binder that this document was originally in.	Stamp or sign here
7.2.4	Return the springback binder with the newly printed document to the 1031A section of the store supply shelf.	Stamp or sign here

7.3 Workspace

This packaging process takes 5 minutes.

Table 20: Workspace cleanup

Step #	Description	Signature/Stamp
7.3.1	Make sure that the workspace is clean and as it was when you started the assembly.  Fig. 64: Clean assembly workstation	Stamp or sign here

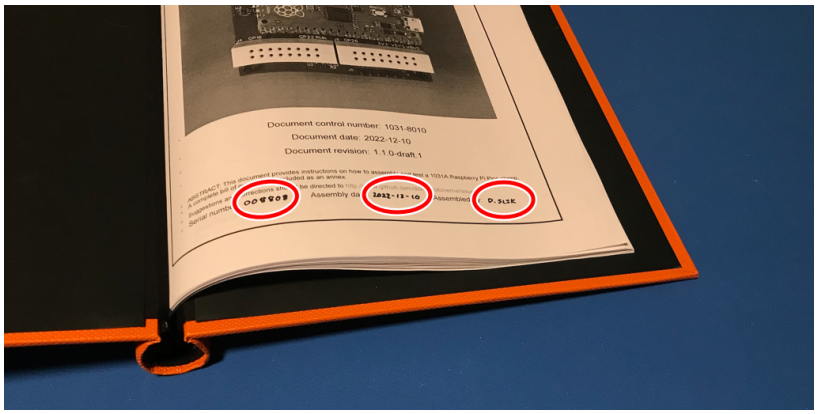
Section 8

Record keeping

8.1 1031A record keeping

This packaging process takes 5 minutes.

Table 21: 1031A record keeping

Step #	Description	Signature/Stamp
8.1.1	Write the serial number, the date, and your first and last name in large print on the bottom of the front cover of this document.  Fig. 65: Example of serial number on document cover	Stamp or sign here
8.1.2	Create a new folder under the 1031A folder, named with the serial number.	Stamp or sign here
8.1.3	Copy all photos taken during the assebly process into the newly created folder in step #2.	Stamp or sign here
8.1.4	Remove this document from the binding clamps, scan the document, and save the scanned PDF into the newly created folder in step #2, with the name “1031A-SNAAAAAA.pdf”, where AAAAAA is replaced with the serial number.	Stamp or sign here

continues on next page

Table 21 – continued from previous page

Step #	Description	Signature/Stamp
8.1.5	Three-hole punch the document, then file it at the end of the current month's assembly records binder.	Stamp or sign here
8.1.6	Add an entry to the assembly records binder, "<Date> - 1031A - SN# AAAAAA - <Your Name>", where <Date> is replaced with today's date in ISO-8601 YYYY-MM-DD, where AAAAAA is replaced with the serial number of the 1031A, and where <Your Name> is replaced with your first and last name.	Stamp or sign here

Section 9

Process improvement

9.1 Feedback

Please submit an issue to the Protonema Issue Repository (http://www.github.com/dslik/protonema/issues) if you encounter any of the below situations:

- Error in this document
- Unclear directions
- Suggested process improvements
- Results of QC failure investigations
- Tool change suggestions

Qualtiy processes and documentation is a team effort. This document would not exist without the participation and contributions of the entire assebly team.

Thank you for reading this assembly instructions document.

End of document.

Part II

1031A Annexes

Section 10

Printed Circuit Boards

10.1 1031-0101 PCB

Table 22: 1031-0101 PCB

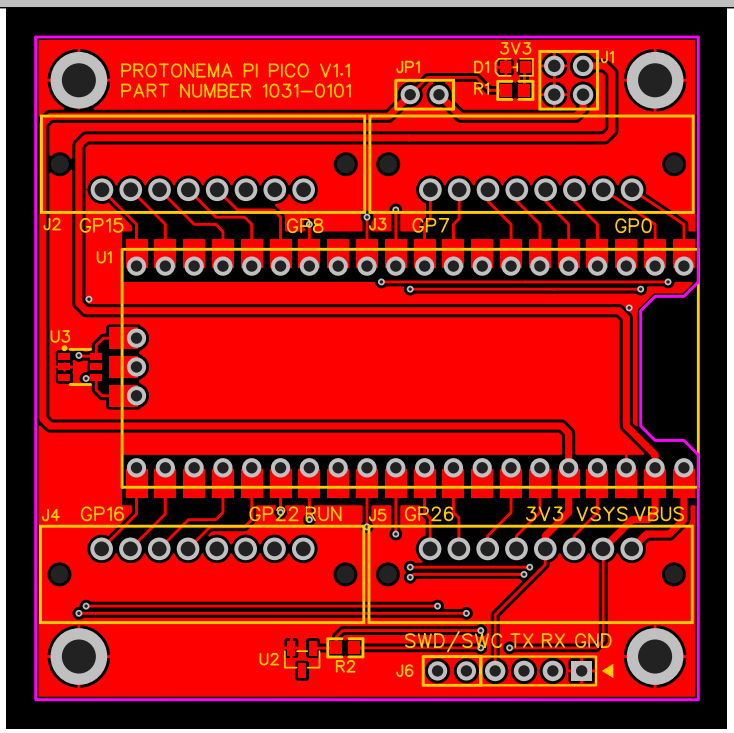
1031-0101 PCB


Fig. 66: 1031-0101 PCB Front

continues on next page

Table 22 – continued from previous page

1031-0101 PCB

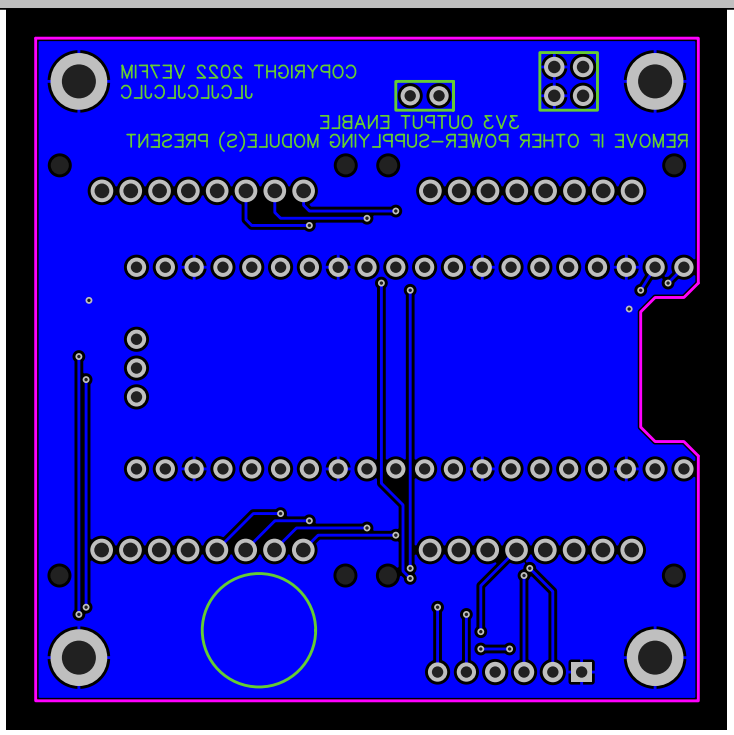


Fig. 67: 1031-0101 PCB Rear

Section 11

Bill of materials

11.1 1031A Raspberry Pi Pico Stamp

The parts required to assemble a 1031A are listed in Table 23.

Table 23: 1031A parts

Reference Designation	Qty	Description	Manufacturer	Manufacturer Part Number	Supplier	Cost
1031-0101	1	Stamp PCB	JLCPCB	Y208-2154951A	JLCPCB	$0.65 CAD
D1	1	Green LED Indication - Discrete 2V 0805 (2012 Metric)	Lumex Opto Components Inc.	SML-LXT0805GW-TR	Digikey	$0.57 CAD
J1	1	Straight 2x4 2.54mm Black Pin Headers	Molex	0010897041	Digikey	$0.64 CAD
J2-J5	4	16 Point solderless breadboard	Cixi Zhongyi Electronics Factory	ZY28	Zhongyi	$3.96 CAD
J6	1	Connector Header Through Hole 6 position 0.100” (2.54mm)	Molex	0022284060	Digikey	$0.36 CAD
J7	1	Connector Header Through Hole 2 position 0.100” (2.54mm)	Molex	0022284020	Digikey	$0.17 CAD
JMP1	1	2 (1 x 2) Position Shunt Connector Black Closed Top 0.100” (2.54mm)	Sullins Connector Solutions	STC02SYAN	Digikey	$0.15 CAD
R1	1	649 Ohms ±1% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric)	Stackpole Electronics Inc	RMCF0603FT649R	Digikey	$0.15 CAD
R2	1	1 kOhms ±5% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric)	TE Connectivity	CRGCQ0603J1K0	Digikey	$0.15 CAD
U1	1	RP2040 Raspberry Pi Pico series ARM® Cortex®-M0+ MCU 32-Bit Embedded Evaluation Board	Raspberry Pi	SC0915	Digikey	$5.53 CAD
U2	1	Shunt Voltage Reference IC Fixed 3.0V V ±0.2% 15 mA	Texas Instruments	LM4040BIM3-3.0/NOPB	Digikey	$2.99 CAD
U3	1	16V Clamp 5A (8/20µs) Ipp Tvs Diode Surface Mount SOT-23-6L	YAGEO	UDT26A05L05-LC1	Digikey	$0.97 CAD

continues on next page

Table 23 – continued from previous page

Reference Designation	Qty	Description	Manufacturer	Manufacturer Part Number	Supplier	Cost
MP1 - MP4	4	Screw - M3 5mm Black Nylon Phillips Socket Button Head	Order By Description			$0.25 CAD
MP5 - MP8	4	Standoff - M3 11mm+6 Black Nylon	Order By Description			$0.30 CAD
MP9 - MP12	4	Nut - M3 Black Nylon	Order By Description			$0.35 CAD
SK1	1	QC Sticker	Order by Description			$0.0094 CAD
Total						$17.20 CAD

11.2 1031A Packaging

The parts required to package a 1031A are listed in Table 24.

Table 24: 1031A packing parts

Reference Designation	Qty	Description	Manufacturer	Manufacturer Part Number	Supplier	Cost
N/A	1	Static Shielding Bag 4” X 4” Ziplock	SCS	30044	Digikey	$0.22 CAD
N/A	1	Static Shielding Bag 1.5” X 2.8” Ziplock	Order by Description			$0.06 CAD
N/A	1	CORREC-PAK SHIPPER 4 X 4 X 2” ID	Conductive Containers, Inc.	3631	Digikey	$7.99 CAD
1031-7001	2	1031A ESD Sticker	Jukebox Print			$4.00 CAD
Total						$12.27 CAD

Section 12

Reduction of Hazardous Materials

Compliance declarations, in BOM order.

12.1 MG Chemicals 4900

Table 25: MG Chemicals 4900 RoHS Compliance

Declaration for MG Chemicals 4900 -
https://www.mgchemicals.com/downloads/msds/01%20English%20Can-USA%20SDS/sds-4900-4917.pdf

MG Chemicals®

ISO 9001:2015 Quality Management System
SAI Global File #004008
Burlington, Ontario, Canada

SAC305 NO CLEAN SOLDER WIRE **4900–4917**

California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, USA)

This product does not contain any of the listed substances.

Europe

RoHS (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

WEEE (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

Section 16: Other Information

SDS Prepared by	MG Chemical's Regulatory Department
Date of Review	06 March 2020
Supersedes	09 July 2019

Reason for Changes: Update to the emergency phone number information.

Reference

1) ACGIH *2017 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices*, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2017).

2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

Section continued on the next page

12.2 JLC lead-free PCB

Table 26: JLC PCB RoHS Compliance

Declaration for JLCPCB lead-free PCBs - https://s3.amazonaws.com/helpscout.net/docs/assets/59f1de7804286313cffbb22c/images/5d4d09562c7d3a036965d6a3/ROHS-Certificate-of-Compliance.jpg

ROHS-Certificate-of-Compliance.jpg 566×800 pixels 2022-08-16, 23:45

Shenzhen BCWT Technology Co., Ltd
1309, Dragon Year Building, Longgang Street ,Longgang Shenzhen

BCWT

Certificate of Compliance

Certificate Number: BCWR190813316R

Applicant:	**Shenzhen JLC Electronics Co.,Ltd.** 27th Floor, Olympics Building, No.2 Shangbao Road, Futian District Shenzhen, Guangdong, China
Manufacturer:	**Shenzhen JLC Electronics Co.,Ltd.** 27th Floor, Olympics Building, No.2 Shangbao Road, Futian District Shenzhen, Guangdong, China
Product:	**PCB**
M/N:	**FR-4**
Test Standard:	**IEC 62321-4:2013+AMD1:2017,IEC 62321-5:2013, IEC62321-6:2015,IEC 62321-7-1:2015, IEC62321-7-2:2017,IEC 62321-8:2017**

The EUT deacribed above has been tested by us and found in compliance with the council RoHS 2 Directive 2011/65/EU Annex II (EU) 2015/863 as amended by Directive (EU) 2017/2102. It is only valid in connection with the test report number: BCWR190813316R.

RoHS

BCWT TECHNOLOGY CO.,LTD SHENZHEN
Aug. 07, 2019

This certificate of conformity is based on a single evaluation of the submitted sample(s) of the above mentioned product. it does not imply an assessment of the whole product and relevant. Directives have to be observed.
Tell: 0755-61954145 bcw@bcw-lab.com Http://bcw-lab.com

https://s3.amazonaws.com/helpscout.net/docs/assets/59f1de7804286...ages/5d4d09562c7d3a036965d6a3/ROHS-Certificate-of-Compliance.jpg Page 1 of 1

12.3 Lumex SML-LXT0805GW-TR

Table 27: Lumex SML-LXT0805GW-TR Compliance

Declaration for Lumex SML-LXT0805GW-TR - https://www.lumex.com/attachment/RoHS%203%20%20REACH%20223%20%20TSCA%20%20POPs%20CoC.pdf

LUMEX®
Creating LED and LCD Solutions Together™

ITW Electronic Component Solutions
Carol Stream, IL 60188
425 N. Gary Avenue
www.itwecs.com

Date : 2022/5/6

Declaration of Conformity to EU RoHS & TSCA

LUMEX parts are in compliance with Directive 2011/65/EU of the European Parliament and Directive 2015/863/EU of the Council of 4 June 2015 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (also known as "RoHS Recast").

LUMEX parts are also in compliance with China RoHS & US TSCA(*) & POPs(**).

RoHS	
Substance	Maximum Limit (ppm)
Lead (Pb)	1000
Cadmium (Cd)	100
Mercury (Hg)	1000
Hexavalent Chromium (Cr6+)	1000
Poly Brominated Biphenyls (PBB)	1000
Poly Brominated Diphenyl ethers (PBDE)	1000
Bis(2-Ethylhexyl) phthalate (DEHP)	1000
Benzyl butyl phthalate (BBP)	1000
Dibutyl phthalate (DBP)	1000
Diisobutyl phthalate (DIBP)	1000

Some Product meet RoHS exemptions, list as Appendix I.

TSCA		
Substance	CAS No.	EC No.
Phenol, isopropylated phosphate (PIP 3:1)	68937-41-7	273-066-3
Decabromodiphenylether (DecaBDE)	1163-19-5	214-604-9
2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP)	732-26-3	211-989-5
Hexachlorobutadiene (HCBD)	87-68-3	201-765-5
Pentachlorothiophenol (PCTP)	133-49-3	205-107-8

1

12.4 Molex 0010897041

Table 28: Molex 0010897041 RoHS Compliance

Declaration for Molex 0010897041 - https://www.molex.com/datasheets/rohspdf/0010897041_rohs.pdf

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RoHS Certificate of Compliance

07/11/2022

Molex is committed to managing the use of chemical substances in accordance with governmental regulations, industry standards, and customer-specific requirements in order to protect the environment. For each part listed, this document provides:

• **EU RoHS Compliance Status.** EU RoHS status is declared per Directive 2011/65/EU and its subsequent amendments, including the Directive EU 2015/863 which additionally prohibited four phthalates. Homogeneous materials of parts that are compliant to this legislation have less than 0.1% by weight each of lead, mercury, hexavalent chromium, PBB, PBDE, DBP, BBP, DIBP, DEHP, and 0.01% by weight of cadmium. In situations where an exemption applies, the preceding limits, corresponding to the exempted substance(s), may be higher.

Molex's sole liability for incorrectly certifying a product shall be either replacement of the Molex product or, alternatively and in the sole discretion of Molex, return of the purchase price paid for the relevant Molex product.

For additional information regarding Molex's environmental initiatives and further explanation of this information, please visit www.molex.com

Haim Eliyahu
Director, Global Product Stewardship

Table A

Molex Part Number	Part Description	RoHS Compliance Status
0010897041	2.54mm Pitch C-Grid Breakaway Header, Dual Row, Vertical, High Temperature, 4 Circuits, Tin (Sn) Plating, 2.72mm PC Tail Length	Compliant

12.5 Cixi ZY28

Table 29: Cixi ZY28 Compliance

Declaration for Cixi ZY28 - http://27696974.s21i.faiusr.com/2/ABUIABACGAAghLXJiwYogKav1QYwoAY46wg.jpg

BST | A RELIABLE TESTING FOR TRUST

GLOBAL TESTING AND CERTIFICATION PRECISION SERVICE CLOUD FACTORY

Certificate of Compliance

Certificate Number: BSTDG190612860702CC

Applicant	:	**CIXI ZHONGYI ELECTRONICS FACTORY** Yuxiang Road, Xiaolin Town 315321 Cixi City Zhejiang Province China
Manufacturer	:	**CIXI ZHONGYI ELECTRONICS FACTORY** Yuxiang Road, Xiaolin Town 315321 Cixi City Zhejiang Province China
Product Name	:	**BREAD BOARD**
Test Standard	:	**IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-6:2015, IEC 62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-8:2017**
As shown in the Test Report No.	:	**BSTDG190612860702CR**

The EUT described above has been tested by us and found in compliance with the council RoHS 2 Directive 2011/65/EU Annex II (EU) 2015/863 as last amended by Directive (EU) 2017/2102. This certificate is only valid in conjunction with the test report.

RoHS

Tony Qian
Approved Signatory
Jun.10, 2019

Dongguan BST Testing Co., Ltd
Add: A1201-1204 Xinsanqi of Dongbao Road, Dongcheng District, Dongguan, Guangdong, China
Certificate Search: http://www.bst-lab.com, Tel: 400-8829628, 800-9990305, E-mail: christina@bst-lab.com

12.6 Molex 0022284060

Table 30: Molex 0022284060 RoHS Compliance

Declaration for Molex 0022284060 - https://www.molex.com/datasheets/rohspdf/0022284060_rohs.pdf

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RoHS Certificate of Compliance

07/26/2022

Molex is committed to managing the use of chemical substances in accordance with governmental regulations, industry standards, and customer-specific requirements in order to protect the environment. For each part listed, this document provides:

• **EU RoHS Compliance Status.** EU RoHS status is declared per Directive 2011/65/EU and its subsequent amendments, including the Directive EU 2015/863 which additionally prohibited four phthalates. Homogeneous materials of parts that are compliant to this legislation have less than 0.1% by weight each of lead, mercury, hexavalent chromium, PBB, PBDE, DBP, BBP, DIBP, DEHP, and 0.01% by weight of cadmium. In situations where an exemption applies, the preceding limits, corresponding to the exempted substance(s), may be higher.

Molex's sole liability for incorrectly certifying a product shall be either replacement of the Molex product or, alternatively and in the sole discretion of Molex, return of the purchase price paid for the relevant Molex product.

For additional information regarding Molex's environmental initiatives and further explanation of this information, please visit www.molex.com

Haim Eliyahu
Director, Global Product Stewardship

Table A

Molex Part Number	Part Description	RoHS Compliance Status
0022284060	KK 254 Breakaway Header, Vertical, 6 Circuits, Tin (Sn) Plating, Mating Pin Length 6.09mm	Compliant

12.7 Molex 0022284020

Table 31: Molex 0022284020 RoHS Compliance

Declaration for Molex 0022284020 - https://www.molex.com/datasheets/rohspdf/0022284020_rohs.pdf

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RoHS Certificate of Compliance

06/29/2022

Molex is committed to managing the use of chemical substances in accordance with governmental regulations, industry standards, and customer-specific requirements in order to protect the environment. For each part listed, this document provides:

• **EU RoHS Compliance Status.** EU RoHS status is declared per Directive 2011/65/EU and its subsequent amendments, including the Directive EU 2015/863 which additionally prohibited four phthalates. Homogeneous materials of parts that are compliant to this legislation have less than 0.1% by weight each of lead, mercury, hexavalent chromium, PBB, PBDE, DBP, BBP, DIBP, DEHP, and 0.01% by weight of cadmium. In situations where an exemption applies, the preceding limits, corresponding to the exempted substance(s), may be higher.

Molex's sole liability for incorrectly certifying a product shall be either replacement of the Molex product or, alternatively and in the sole discretion of Molex, return of the purchase price paid for the relevant Molex product.

For additional information regarding Molex's environmental initiatives and further explanation of this information, please visit www.molex.com

Haim Eliyahu
Director, Global Product Stewardship

Table A

Molex Part Number	Part Description	RoHS Compliance Status
0022284020	KK 254 Breakaway Header, Vertical, 2 Circuits, Tin (Sn) Plating, Mating Pin Length 6.09mm	Compliant

12.8 Sullins STC02SYAN

Table 32: Sullins STC02SYAN RoHS Compliance

Declaration for Sullins STC02SYAN - https://www.sullinscorp.com/wp-content/uploads/2019/10/Sullins-RoHS-Compliant-Statement.pdf

SULLINS
CONNECTOR SOLUTIONS

RoHS3 Compliance Statement

10/3/2019

This statement certifies that all active assemblies manufactured by Sullins Connector Solutions are fully RoHS compliant in accordance with EU RoHS Directives 2011/65/EU through (EU) 2015/863 and the Council of 4 June 2015 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directives). We hereby declare the following materials or substances are not contained therein (the material/substance is not found above the threshold level listed other than exemptions approved by RoHS). The restricted substances and their limits per the RoHS Directive (EU) 2015/863 dated 4 June 2015 are as listed below:

Material/Substance	Threshold Level	Percent by Weight
Lead and Lead Components	1000 PPM	0.1% by weight in homogeneous materials
Mercury and Mercury Compounds	1000 PPM	0.1% by weight in homogeneous materials
Cadmium and Cadmium Compounds	100 PPM	0.01% by weight in homogeneous materials
Hexavalent Chromium Compounds	1000 PPM	0.1% by weight in homogeneous materials
Polybrominated Biphenyls, PBBs	1000 PPM	0.1% by weight in homogeneous materials
Polybrominated Diphenyl ethers, PBDEs including deca-BDE	1000 PPM	0.1% by weight in homogeneous materials
Bis (2- ethylhexyl) phthalate (DEHP)	1000 PPM	0.1% by weight in homogeneous materials
Butyl benzyl phthalate (BBP)	1000 PPM	0.1% by weight in homogeneous materials
Dibutyl phthalate (DBP)	1000 PPM	0.1% by weight in homogeneous materials
Diisobutyl Phthalate (DIBP)	1000 PPM	0.1% by weight in homogeneous materials

If you have questions about this request or the requirement, please do not hesitate to contact support@sullinscorp.com.

Ariana Castillo
Quality Management System Administrator
Sullins Connector Solutions

801 E Mission Rd, San Marcos CA 92069 | 760-744-0125 | www.sullinscorp.com

12.9 Stackpole RMCF0603FT649R

Table 33: Stackpole RMCF0603FT649R RoHS Compliance

Declaration for Stackpole RMCF0603FT649R -
https://www.seielect.com/catalog/SEI-RoHS_Compliance_Status.pdf

Stackpole Electronics, Inc.
Resistive Product Solutions

RoHS Compliance Status

Resistors						
Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
NSP	Ceramic Housed - Consumer Grade Leaded Resistor ***DISCONTINUED*** *(May 3, 2013)*	Axial	YES	99.3/0.7 Sn/Cu	Jan-04	04/01
NSZ	Ceramic Housed Wirewound Resistor with Specialty Leads	Radial	YES	99.3/0.7 Sn/Cu	Jan-04	04/01
NVM	Ceramic Housed Vertical Mount Wirewound Resistor (Standard WW)	Radial	YES	100% Matte Sn	Always	Always
NWW	General Purpose and Precision Leaded Wirewound Resistor - Conformal Coated - Non-Inductive	Axial	YES	100% Matte Sn	Jan-06	06/01
PCB	Ceramic Housed Leaded Wirewound Resistor - PC Mount ***DISCONTINUED*** *(July 1, 2014)*	Radial	YES	100% Matte Sn	Always	Always
RACF	Thick Film Surface Mount Chip Resistor Array Concave Terminations ***DISCONTINUED*** *(Nov. 15, 2019)*	SMD	YES(1)	100% Matte Sn over Ni	Jan-04	04/01
RAF	Thick Film Surface Mount Chip Resistor Array Flat Terminations	SMD	YES(1)	100% Matte Sn over Ni	Jul-04	04/27
RAVF	Thick Film Surface Mount Chip Resistor Array Convex Terminations	SMD	YES(1)	100% Matte Sn over Ni	Jan-04 (Japan) Jul-04 (Taiwan)	04/01 04/27
RAVS	Convex Anti-Sulfur Chip Resistor Array	SMD	YES(1)	100% Matte Sn over Ni	Always	Always
RC	Carbon Composition Leaded Resistor	Axial	YES	100% Matte Sn	Jan-86	86/01
RGC	Semi-Precision Thick Film Surface Mount Resistor	SMD	YES(1)	100% Matte Sn over Ni	Jul-04	04/27
RHC	High Power Thick Film Surface Mount Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Jul-04	04/27
RMCA	Automotive Grade Thick Film Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Always	Always
RMCF	General Purpose Thick Film Surface Mount Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Jan-04 (Japan) Jan-05 (Taiwan, China)	04/01 05/01
RMCG	Gold Barrier Thick Film Surface Mount Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Jan-06	06/01
RMCP	General Purpose High Power Thick Film Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Always	Always
RMCS	Sulfur Resistant Thick Film Surface Mount Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Always	Always
RMCW	Wide Termination Thick Film Chip Resistor	SMD	YES(1)	100% Matte Sn over Ni	Always	Always
RMEF	General Purpose Thick Film Surface Mount Chip Resistor 100% Lead Free	SMD	YES	100% Mtte Sn over Ni	Always	Always
RNCF	Precision Thin Film Surface Mount Chip Resistor	SMD	YES	100% Matte Sn over Ni	May-04	04/18
RNCH	Anti-Corrosive Tantalum Nitride Replacement Surface Mount Chip Resistor	SMD	YES	100% Matte Sn over Ni	Always	Always
RNCP	High Power Anti-Sulfur Thin Film Chip Resistor	SMD	YES	100% Matte Sn over Ni	Always	Always
RNCS	Anti-Corrosive Tantalum Nitride Replacement Surface Mount Chip Resistor	SMD	YES	100% Matte Sn over Ni	May-04	04/18
RNCW	Thin Film Wire-Bondable Chip Resistor - ***DISCONTINUED*** *(Jan. 17, 2018)*	SMD	YES	Gold Plating	Always	Always
RNF	General Purpose Metal Film Leaded Resistor	Axial	YES	99.3/0.7 Sn/Cu 100% Matte Sn	Apr-05 (Japan) Jan-04 (Taiwan, China)	05/14 04/01
RNMF	General Purpose Mini Metal Film Leaded Resistor	Axial	YES	99.3/0.7 Sn/Cu 100% Matte Sn	Apr-05 (Japan) Jan-04 (Taiwan, China)	05/14 04/01
RNS	Ultra-Miniature Metal Film Resistor	Axial	YES	100% Matte Sn	Always	Always

Note (1): RoHS Compliant by means of exemption 7c-I.

Rev Date: 3/1/2022 3 www.seielect.com
marketing@seielect.com

This specification may be changed at any time without prior notice.
Please confirm technical specifications before you order and/or use.

12.10 TE CRGCQ0603J1K0

Table 34: TE CRGCQ0603J1K0 RoHS Compliance

Declaration for TE CRGCQ0603J1K0 - https://www.te.com/commerce/alt/SinglePartSearch.do?PN=1-2176340-9&dest=stmt

Statement of Compliance

Requested Part

19 August 2022 **CRGCQ0603J1K0** (Part 1 of 1)

TE Internal Number:	1-2176340-9
Product Description:	CRGCQ 0603 1K0 5%
Part Status:	Active
Mil-Spec Certified:	No
EU RoHS Directive 2011/65/EU:	Compliant with Exemptions 7(c)-I - Pb- in glass or Ceramic Elec. Comps.

This declaration covers EU Directive 2011/65/EU incl. Delegated Directive 2015/863/EU.

EU ELV Directive: 2000/53/EC	Compliant with Exemptions System Problem
China RoHS: MIIT Order No 32, 2016	Restricted Materials Above Threshold
EU REACH SvHC Compliance: (EC) No. 1907/2006	Current ECHA Candidate List: **JUNE 2022 (224)** Candidate List Declared Against: **JUNE 2022 (224)** Does not contain REACH SVHC
Halogen Content:	Low Halogen - Br, Cl, F, I < 900 ppm per homogenous material. Also BFR/CFR/PVC Free
Solder Process Capability Code:	Reflow solder capable to 260°C
Material Declarations:	MD_1-2176340-9 MD_1-2176340-9

TE Connectivity Corporation
1050 Westlakes Drive
Berwyn, PA 19312

This information is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information they provided. This information is subject to change.

The part numbers that TE has identified as EU RoHS compliant have a maximum concentration of 0.1% by weight in homogenous materials for lead, hexavalent chromium, mercury, PBB, PBDE, DBP, BBP, DEHP, DIBP, and 0.01% for cadmium, or qualify for an exemption to these limits as defined in the Annexes of Directive 2011/65/EU (RoHS2). Finished electrical and electronic equipment products will be CE marked as required by Directive 2011/65/EU. Components may not be CE marked.

Additionally, the part numbers that TE has identified as EU ELV compliant have a maximum concentration of 0.1% by weight in homogenous materials for lead, hexavalent chromium, and mercury, and 0.01% for cadmium, or qualify for an exemption to these limits as defined in the Annexes of Directive 2000/53/EC (ELV).

Regarding the REACH Regulation, the information TE provides on SVHC in articles for this part number is based on the latest European Chemicals Agency (ECHA) 'Guidance on requirements for substances in articles' posted at this URL: https://echa.europa.eu/guidance-documents/guidance-on-reach

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12.11 Raspberry Pi SC0915

Table 35: Raspberry Pi SC0915 RoHS Compliance

Declaration for Raspberry Pi SC0915 - https://www.mouser.com/catalog/additional/Seeed_Studio_RaspberryPi_Pico_DOC_EU.pdf

DocuSign Envelope ID: 8567F569-D227-4A71-91F2-294D323D9222

Raspberry Pi Trading

Raspberry Pi Trading
Maurice Wilkes Building
Cowley Road
Cambridge
CB4 0DS

Web
http://raspberrypi.org

European Declaration of Conformity

Raspberry Pi (Trading) hereby declares under our own responsibility that the following product:

Raspberry Pi Pico

Are in conformity with the following applicable community harmonised legislation:

Electromagnetic Compatibility Directive (EMC) 2014/30/EU,
Restriction of Hazardous Substances (RoHS) Directive; The product complies with 2011/65/EU and all of its amendments as of the date of this document

The following harmonised standards have been used to demonstrate conformity to these standards:

EN 55032:2015

Signed on behalf of the Raspberry Pi (Trading) Limited.

DocuSigned by:
6412FB9CB8B3427...

07 April 2021 | 10:44 BST

James Adams
COO
Raspberry Pi (Trading) Limited

Date

12.12 TI LM4040BIM3-3.0

Table 36: TI LM4040BIM3-3.0 RoHS Compliance

Declaration for TI LM4040BIM3-3.0 - https://www.ti.com/lit/cr/szzq088p/szzq088p.pdf

DocuSign Envelope ID: CE6CFC3B-581B-4D54-83DD-78FDF6B88F4D

TEXAS INSTRUMENTS

Statement on Restriction of Hazardous Substances ("RoHS") for TI Products

TI products are designated as "RoHS-Compliant" when designated RoHS = Yes, or RoHS = Exempt, to comply with EU Directive 2011/65/EU (entered July 21, 2011) and the amended Directive (EU) 2015/863 (effective July 22, 2019) for Restriction of the Use of Hazardous Substances ("RoHS").

To the best of TI's knowledge, TI products that are declared as RoHS Compliant

- Do not contain restricted substances **above** the maximum threshold values shown in Table 1

OR

- Where applicable, may be subject to one of the RoHS Annex III exemptions for lead (Pb) as shown in Table 2. (For externally purchased components, other RoHS exemptions may apply):

TABLE 1

Substance	Threshold	EU RoHS Directive
Cadmium (Cd)	0.01% (100ppm)	2002/95/EC amended 2011/65/EU
Lead (Pb)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Mercury (Hg)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Hexavalent Chromium (Cr^6)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Polybrominated biphenyls (PBBs)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Polybrominated diphenylethers (PBDEs)	0.1% (1000ppm)	2002/95/EC amended 2011/65/EU
Bis(2-ethylhexyl) phthalate (DEHP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019
Butyl benzyl phthalate (BBP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019
Dibutyl phthalate (DBP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019
Diisobutyl phthalate (DIBP)	0.1% (1000ppm)	EU 2015/863, enforced 22 Jul 2019

TABLE 2

EU RoHS Exemption	Description	Category
7(a)	Lead in high melting temperature type solders (i.e. lead based alloys containing 85 % by weight or more lead)	2002/95/EC amended 2011/65/EU
7(c)-i	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	2002/95/EC amended 2011/65/EU
15(a)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: - A semiconductor technology node of 90 nm or larger; - A single die of 300 mm_2 or larger in any semiconductor node; - Stacked die packages with die of 300 mm_2 or larger, or silico interposers of 300 mm_2 or larger	2011/65/EU amended (EU) 2019/172: Categories 1 to 7 & 10
15	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages	2011/65/EU amended (EU) 2019/172: Categories 8, 9 & 11

1 Revised: September 2021

12.13 Yageo UDT26A05L05

Table 37: Yageo UDT26A05L05 RoHS Compliance

Declaration for Yageo UDT26A05L05 - N/A
FPO

12.14 M3 8mm Nylon Screw

Table 38: M3 8mm Nylon Screw RoHS Compliance

Declaration for M3 8mm Nylon Screw - N/A

12.15 M3 11mm Nylon Standoff

Table 39: M3 11mm Nylon Standoff RoHS Compliance

Declaration for M3 11mm Nylon Standoff - N/A

12.16 M3 Nylon Bolt

Table 40: M3 Nylon Bolt RoHS Compliance

Declaration for M3 Nylon Bolt - N/A