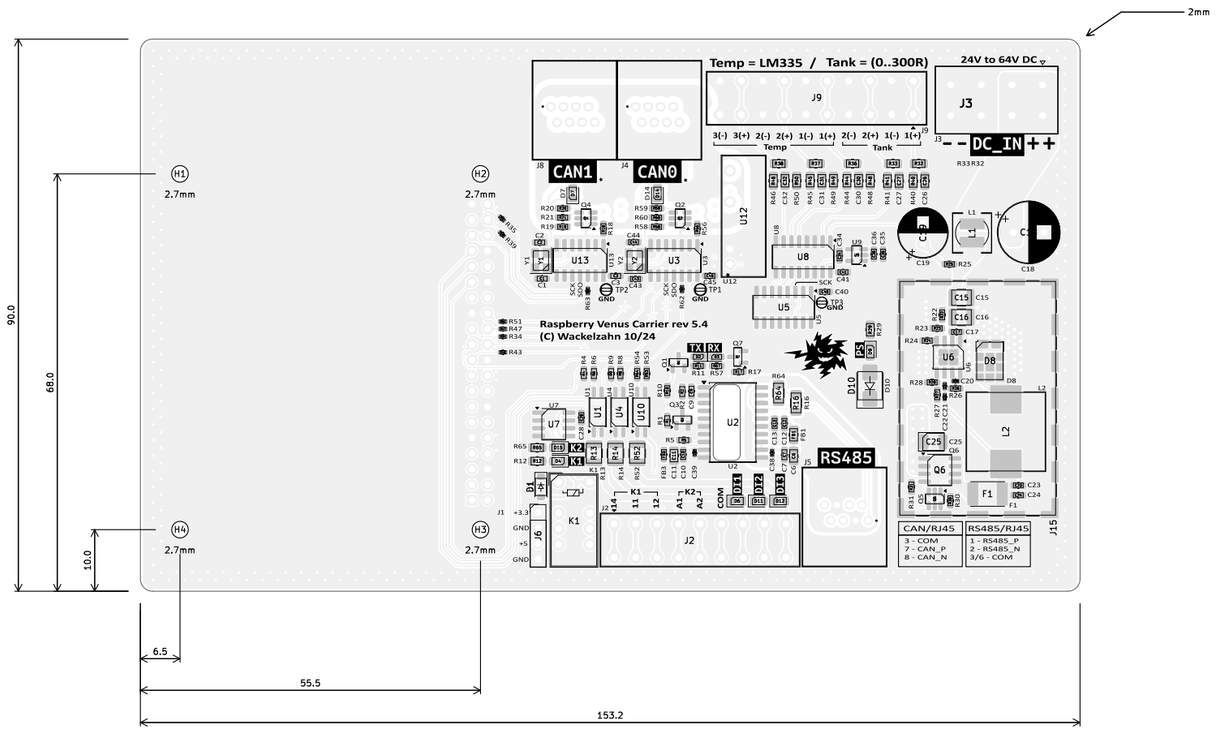
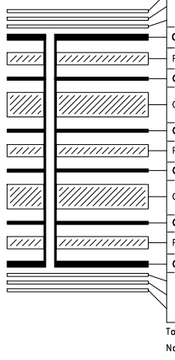


All dimensions are in millimeters unless otherwise specified.

	Wackelzahn Critical Engineering	Orig: schne01m Chk: Appr: Mod:
Sheet: Dimensions File: Raspi_Supply.kicad_pcb		
Title: RpiVenusCarrier		
Size: A3	Scale: 1:1	Date: 2024-10-07 **Rev: hw5.4**
KiCad E.D.A. 8.0.5		Id: 1/1

Layer Stackup

Layers: 6
Manufacturer: JLCPCB
JLCPCB Spec: JLC06161H-3313A



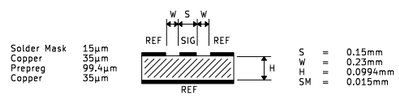
Material	Layer	Thickness	Dielectric Material	Type	Er
	F.Silkscreen F.Paste F.Mask	0.015mm	Solder Resist	Legend Paste Mask Solder Mask	3.8
Copper	**L1 (Sig. PWR)**	**0.035mm (1oz)**		**Signal**	
Prepreg		0.0994mm	3313*1	Dielectric	4.1
Copper	**L2 (GND)**	**0.0152mm (1/2oz)**		**Internal Plane**	
Core		0.55mm	FR-4	Dielectric	4.6
Copper	**L3 (Sig. PWR)**	**0.0152mm (1/2oz)**		**Signal**	
Prepreg		0.1088mm	2116*1	Dielectric	4.16
Copper	**L4 (Sig. PWR)**	**0.0152mm (1/2oz)**		**Signal**	
Core		0.55mm	FR-4	Dielectric	4.6
Copper	**L5 (GND)**	**0.0152mm (1/2oz)**		**Internal Plane**	
Prepreg		0.0994mm	3314*1	Dielectric	4.1
Copper	**L6 (Sig. PWR)**	**0.035mm (1oz)**		**Signal**	
	B.Mask B.Paste B.Silkscreen		Solder Resist	Solder Mask Paste Mask Legend	3.8

Total thickness: 1.62mm

Note: external layer thicknesses are specified after plating.

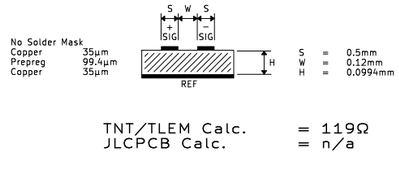
Trace Impedance Control

Type1: Coplanar Waveguide 50Ω
with Groundplane



TNT/TLEM Calc. = 49Ω
JLCPCB Calc. = 50Ω

Type2: Coupled Microstrip Zdiff=120Ω
with Groundplane



TNT/TLEM Calc. = 119Ω
JLCPCB Calc. = n/a

FABRICATION NOTES (UNLESS OTHERWISE SPECIFIED)

1) OUTLINE DEFINED IN SEPARATE GERBER FILE WITH "Edge_Cuts.GBR" SUFFIX.
DIMENSIONS OF CIRCUMSIZED RECTANGLE SHOWN ON THIS DWG FOR REF ONLY.

2) SEE SEPARATE DRILL FILES WITH ".DRL" SUFFIX FOR HOLE LOCATIONS.
SELECTED HOLE LOCATIONS SHOWN ON THW DWG FOR REF ONLY.

3) IMPEDANCE CONTROL
Microstrip 120-Ohm Differential (L1 ref. L2 / L6 ref. L5)
--> for CAN Bus and RS485 Bus
Coplanaer Microstrip 50-Ohm (L1 ref. L2 / L6 ref. L5)
--> for signal traces

4) Material Type: FR4-Standard TG 135-140

5) Surface Finish: ENIG Gold Fingers: 2U"

6) VIA covering: Epoxy Filled & Capped

7) DESIGN GEOMETRY MINIMUM FEATURE SIZES:

TRACE WIDTH	0.15 mm
TRACE TO TRACE	0.20 mm
MIN. HOLE (PTH)	0.30 mm
MIN. HOLE (NPTH)	0.60 mm
ANNULAR RING	0.15 mm
COPPER TO HOLE	0.25 mm
COPPER TO EDGE	0.40 mm
HOLE TO HOLE	0.25 mm

Wackelzahn
Critical Engineering

Orig: schne01m
Chk:
Appr:
Mod:

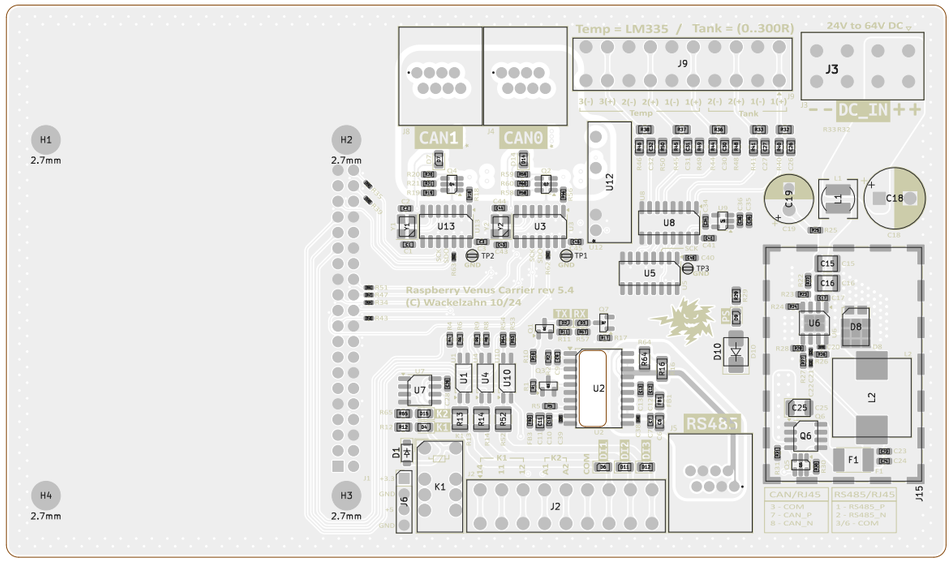
Sheet: Layer Stackup - PCB specifications
File: Raspi_Supply.kicad_pcb

Title: RpiVenusCarrier

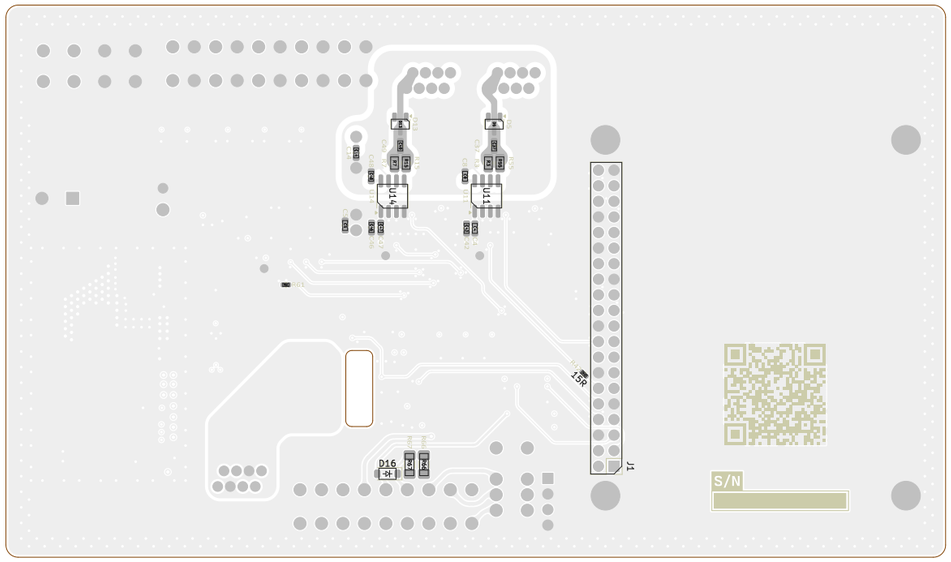
Size: A3	Scale: 1:1	Date: 2024-10-07	**Rev: hw5.4**
KiCad E.D.A. 8.0.5			Id: 1/1

Front Layer BOM

no.	References	Value	Footprint	Quantity
1	C3, C9, C12, C17, C28 C36, C40, C41, C45	100n	C_0603_1608Metric	9
2	C26, C27, C30, C31, C32	100n	R_0805_2012Metric	5
3	C1, C2, C43, C44	20p	C_0603_1608Metric	4
4	C13, C34, C35	10u	C_0603_1608Metric	3
5	C6, C11	10u	C_0805_2012Metric	2
6	C7, C10	1u	C_0603_1608Metric	2
7	C15, C16	2.2u	C_1210_3225Metric	2
8	C23, C24	22u	C_0603_1608Metric	2
9	C38, C39	10n	C_0402_1005Metric	2
10	C18	82u	CP_Radial_D10.0mm_P5.00mm	1
11	C19	10u	CP_Radial_D8.0mm_P3.50mm	1
12	C20	2.2n	C_0402_1005Metric	1
13	C21	100p	C_0402_1005Metric	1
14	C22	3.3n	C_0402_1005Metric	1
15	C25	47u	CP_EIA-3528-12_Kemet-T	1
16	R6, R8, R18, R19, R20 R30, R53, R56, R58, R59	10k	R_0603_1608Metric	10
17	R34, R35, R39, R43, R47 R51, R62, R63	15R	R_0402_1005Metric	8
18	R1, R2, R5, R10, R17	4.7k	R_0603_1608Metric	5
19	R40, R41, R44, R45, R46	10k	R_0805_2012Metric	5
20	R4, R9, R54	220R	R_0603_1608Metric	3
21	R12, R29, R65	1k	R_0805_2012Metric	3
22	R13, R14, R52	3.3k	R_1210_3225Metric	3
23	R36, R37, R38	1k2	R_0805_2012Metric	3
24	R48, R49, R50	4k7	R_0805_2012Metric	3
25	R11, R57	680R	R_0603_1608Metric	2
26	R16, R64	60R	R_1206_3216Metric	2
27	R21, R60	360R	R_0603_1608Metric	2
28	R32, R33	680R	R_0805_2012Metric	2
29	R22	1M	R_0603_1608Metric	1
30	R23	330k	R_0603_1608Metric	1
31	R24	41.2k	R_0603_1608Metric	1
32	R25	0.1R	R_0603_1608Metric	1
33	R26	274k	R_0603_1608Metric	1
34	R27	158k	R_0603_1608Metric	1
35	R28	49.9k	R_0603_1608Metric	1
36	R31	47k	R_0603_1608Metric	1
37	L1	1.6uH	L_TDK	1
38	L2	22uH	L_Wuerth_HCI-1365	1
39	D4, D6, D7, D11, D12 D14, D15	red	LED_0805_2012Metric	7
40	D1	D	D_SOD-123	1
41	D2	orange	LED_0603_1608Metric	1
42	D3	green	LED_0603_1608Metric	1
43	D8	D	TO-277A	1
44	D9	green	LED_0805_2012Metric	1
45	D10	D	D_SMB	1
46	U1, U4, U10	TLP291	SOIC-4_4.55x2.6mm_P1.27mm	3
47	U3, U13	MCP2518	SO-14_3.9x8.65mm_P1.27mm	2
48	U2	ISOW1412	SOIC-20W_7.5x12.8mm_P1.27mm	1
49	U5	CD74HC405	SOIC-16_3.9x9.9mm_P1.27mm	1
50	U6	LM5012	SOIC-8-1EP_3.9x4.9mm_P1.27	1
51	U7	SN75477DR	SOIC-8_3.9x4.9mm_P1.27mm	1
52	U8	MCP3208	SOIC-16_3.9x9.9mm_P1.27mm	1
53	U9	LM4132-1.8	SOT-23-5	1
54	U12	RFMM-0505S	RFMM_RCP	1
55	Y1, Y2	40MHZ	FA238V-4Pin_3.2x2.5mm	2
56	F1	MF-MSMF250	Fuse_Bourns_MF-MSMF25016X	1
57	H1, H2, H3, H4	2.7mm	MountingHole_2.7mm	4
58	TP1, TP2, TP3	TestPoint	do_not_populate	3
59	Q1, Q7	BSS84-7-F	SOT-23	2
60	Q2, Q4	PJS6812-S1	SOT-23-6	2
61	FB1	Ferrite	C_0805_2012Metric	1
62	FB3	Ferrite	C_0603_1608Metric	1
63	K1	G6S-2 DC5	Relay_DPDT_Omron_G6S-2	1
64	Q3	BSS138-7-F	SOT-23	1
65	Q5	BC856DS-TP	SOT-23-6	1
66	Q6	FDS4465	SOIC-8_3.9x4.9mm_P1.27mm	1
67	J4, J5, J8	615008149521M	615008149521M	3
68	J2	Conn_01x09	1825710000	1
69	J3	Conn_01x04	1071050	1
70	J6	Conn_01x04	PinHeader_1x04_P2.54mm	1
71	J9	Conn_01x10	CONN10_1825720000_WED	1
72	J15	BMI-S-205-F & BMI-S-205-C	Laird	1



	Wackelzahn Critical Engineering	Orig: schne01m Chk: Appr: Mod:
Sheet: Top Bill of Material / Part placement File: Raspi_Supply.kicad_pcb		
Title: RpiVenusCarrier		
Size: A3	Scale: 1:1	Date: 2024-10-07 / **Rev: hw5.4**
KiCad E.D.A. 8.0.5		Id: 1/1



Bottom Layer Bill of Material

no.	References	Value	Footprint	Quantity
1	C4, C8, C42, C46, C47, C48	100n	C_0603_1608Metric	6
2	C5, C14	10u	C_0603_1608Metric	2
3	C37, C49	4.7n	C_0603_1608Metric	2
4	R3, R7, R15, R55	60R	R_0805_2012Metric	4
5	R42, R61	15R	R_0402_1005Metric	2
6	R66, R67	56R	R_MiniMELF_MMA-0204	2
7	D5, D13	PESD2CANFD27	SOT-23-3	2
8	D16	SBR0560S1-7	D_SOD-123	1
9	U11, U14	ISO1044BDR	SOIC-8_3.9x4.9mm_P1.27mm	2
10	J1	Raspberry_Pi_4b	PinHeader_2x20_P2.54mm_Vertical	1

Wackelzahn
Critical Engineering

Orig: schne01m
Chk:
Appr:
Mod:

Sheet: Bottom Bill of Material / Part placement
File: Raspi_Supply.kicad_pcb

Title: RpiVenusCarrier

Size: A3	Scale: 1:1	Date: 2024-10-07	**Rev: hw5.4**
KiCad E.D.A. 8.0.5			Id: 1/1