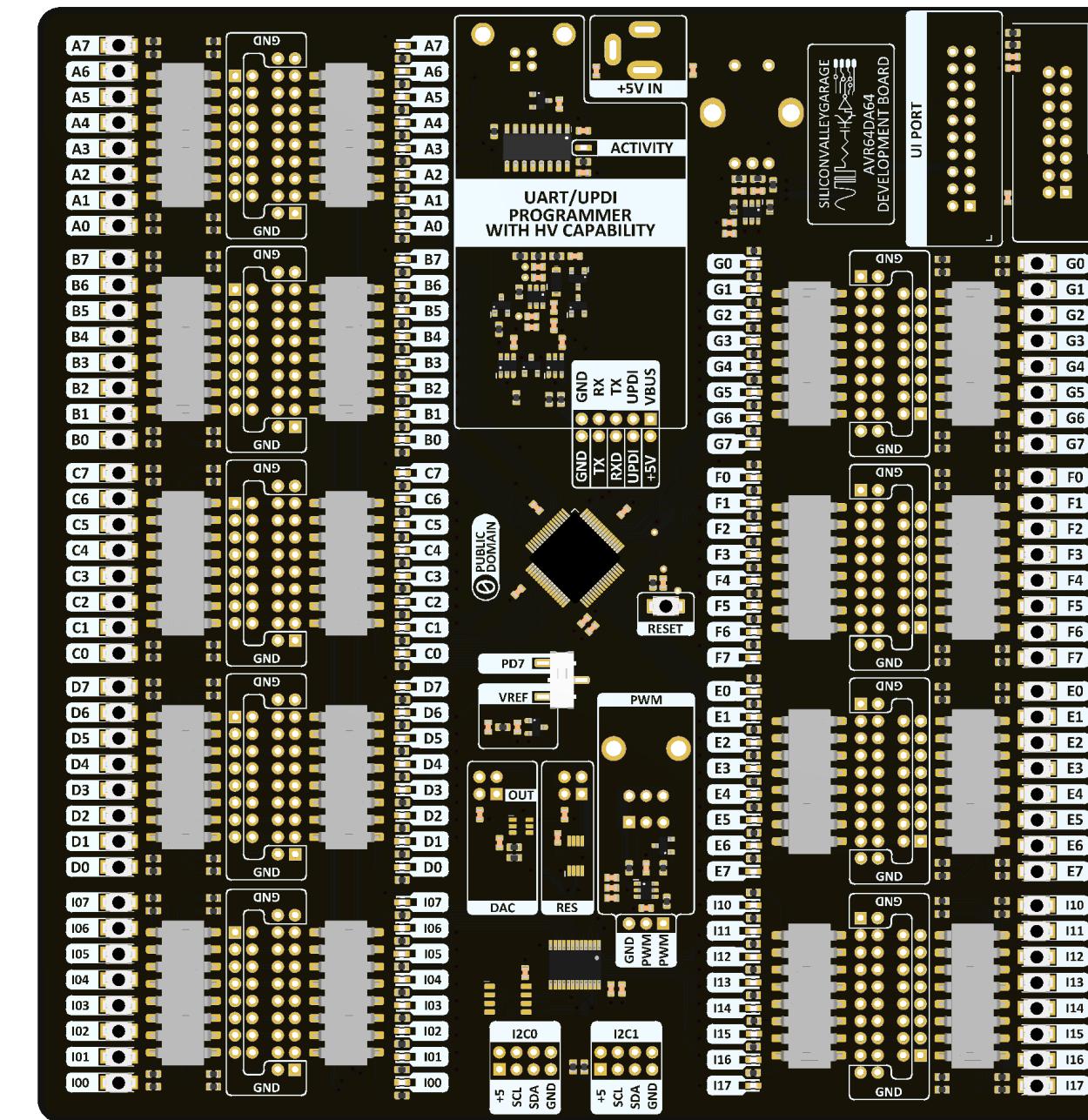


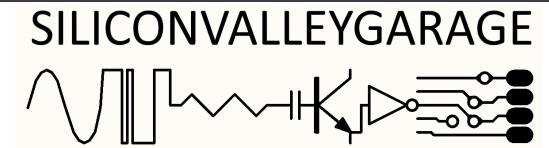
## AVR64DA64-BREAKOUT.PrjPcb

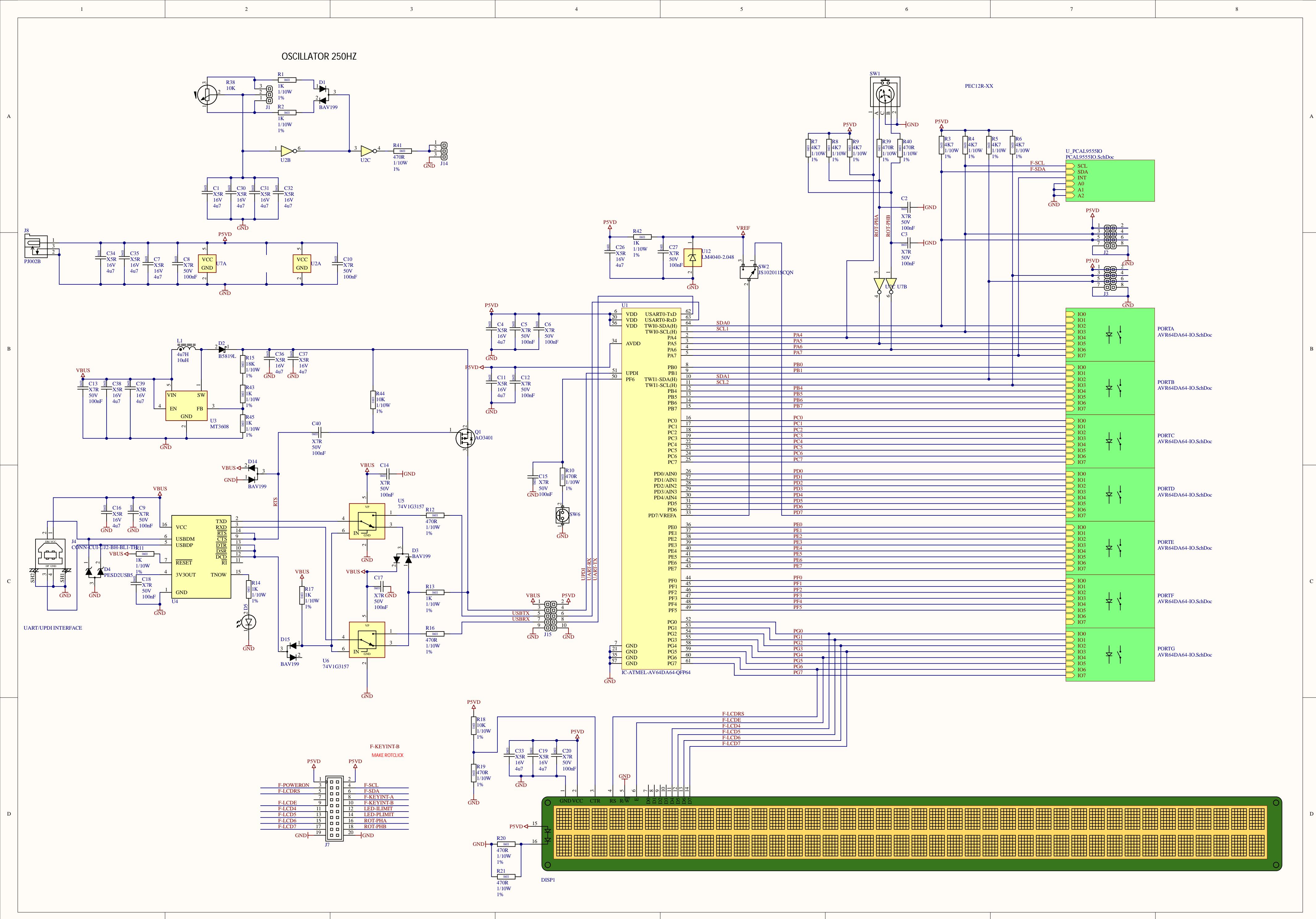
Realistic View



Document Creation Date: 9/19/2025

Design : =SCHdrafter





A

A

B

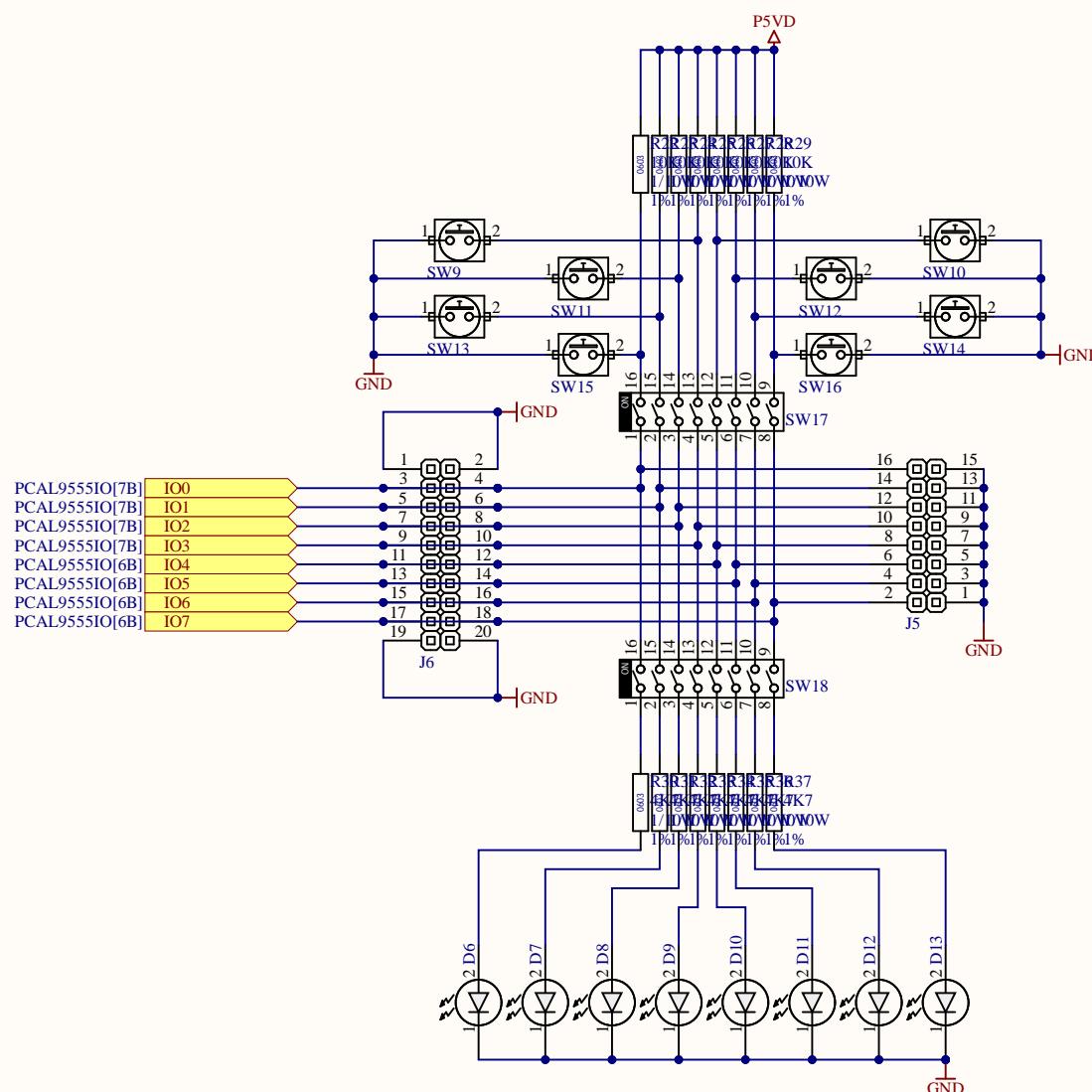
B

C

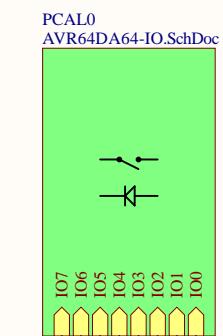
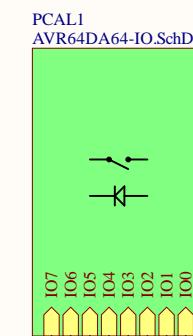
C

D

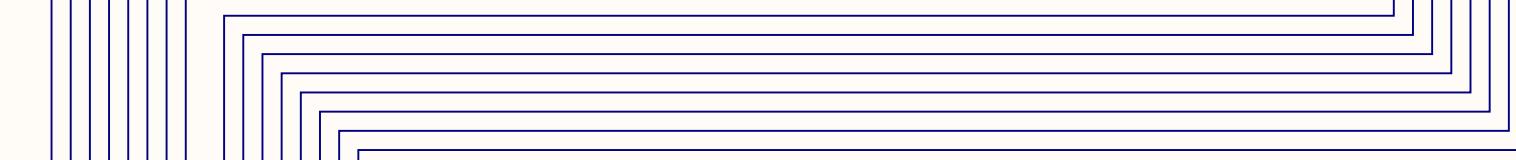
D



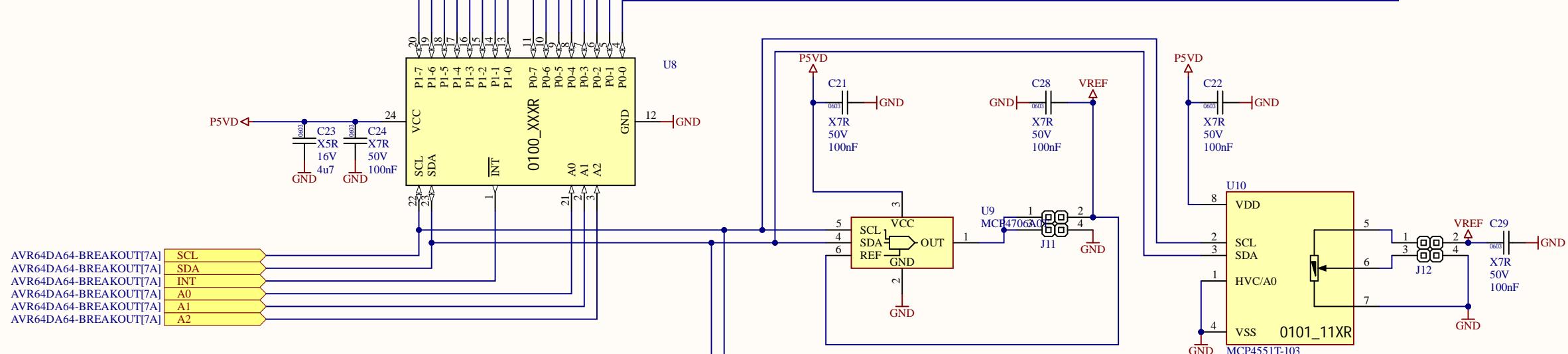
A



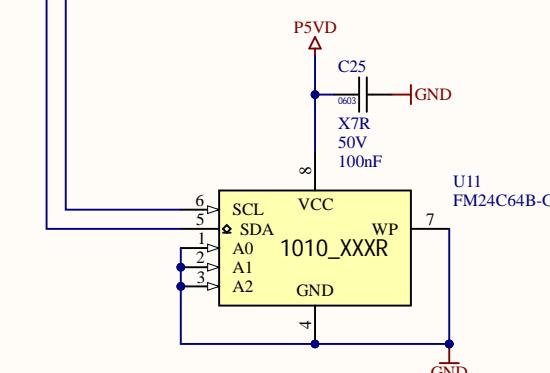
B



C



D



# GENERAL

## GENERAL

1. DO NOT ALTER SUPPLIED COPPER OR DRILL DATA
2. NO COPPER BALANCING OR REMOVAL OF UNUSED PADS ALLOWED.
3. SILKSCREEN MAY BE CLIPPED / TRIMMED TO EXPOSE COPPER
4. PCB DESIGN AND ACCEPTANCE CRITERIA SHALL FOLLOW THE REQUIREMENTS OF IPC-2221, IPC-2222, AND IPC-6012 CLASS 2
5. ALL SPECIFICATIONS SHALL BE THE LATEST STANDARDS, UNLESS OTHERWISE NOTED
6. ALL MODIFICATIONS MUST BE COMMUNICATED AND APPROVED IN WRITING.

## MATERIALS

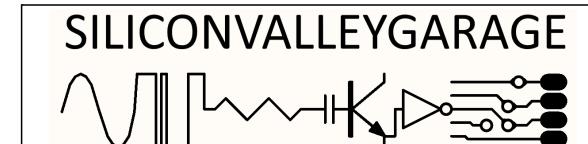
7. MATERIALS SHALL BE ACCORDING TO THE STACKUP DRAWING IN THIS DOCUMENT.
8. MATERIAL SHALL HAVE A FLAMABILITY RATING OF UL 94V-0 OR BETTER
9. SURFACE FINISH : HASL
10. SOLDER MASK COLOR : BLACK
11. SOLDERMASK MAX REGISTRATION ERROR : 0.05mm
12. SILKSCREEN COLOR : WHITE

## STACKUP / IMPEDANCE CONTROL

13. THICKNESS LISTED IN LAYER STACK LEGEND REPRESENT FINAL PRESSED VALUES FOR THE PREPREG
14. IMPEDANCE CONTROL, IF ANY, SHALL BE PER LISTED TABLE WITH A MAX TOLERANCE OF +/-10%

## QA, ELECTRICAL TEST AND MARKINGS

15. PCB SHALL BE 100% ELECTRICALLY TESTED FOR SHORTS AND CONTINUITY



SILICONVALLEYGARAGE

Project AVR64DA64-BREAKOUT.PjPcb

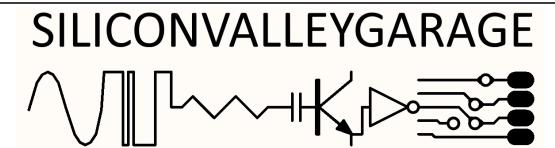
Version: | Variant AVR64DA64-BREAKOUT-JLCPCB

FABRICATION DRAWING

# LAYER STACK

## Layer Stack Legend

	Material	Layer	Thickness	Dielectric Material Type	Gerber Dk	Weight	Constructions	Df Resin
A	Top Overlay	Top Overlay		Legend	GTO			
B	Surface Material	Top Solder	0.010mm(0.400mil)	Solder Resist	Solder Mask	GTS	3.5	
C	<b>Copper</b>	<b>Top Layer</b>	<b>0.036mm(1.400mil)</b>		Signal	<b>GTL</b>	<b>1oz</b>	
D				1.520mm(59.843mil) FR-4	Dielectric		4.8	
E								
F	<b>Copper</b>	<b>Bottom Layer</b>	<b>0.036mm(1.400mil)</b>		Signal	<b>GBL</b>	<b>1oz</b>	
G	Surface Material	Bottom Solder	0.010mm(0.400mil)	Solder Resist	Solder Mask	GBS	3.5	
H	Bottom Overlay			Legend	GBO			
	Total thickness: 1.611mm(63.443mil)							



**Project AVR64DA64-BREAKOUT.PjPcb**  
Version: | Variant AVR64DA64-BREAKOUT-JLCPCB  
**FABRICATION DRAWING**

# DRILL LEGEND

**Drill Table**

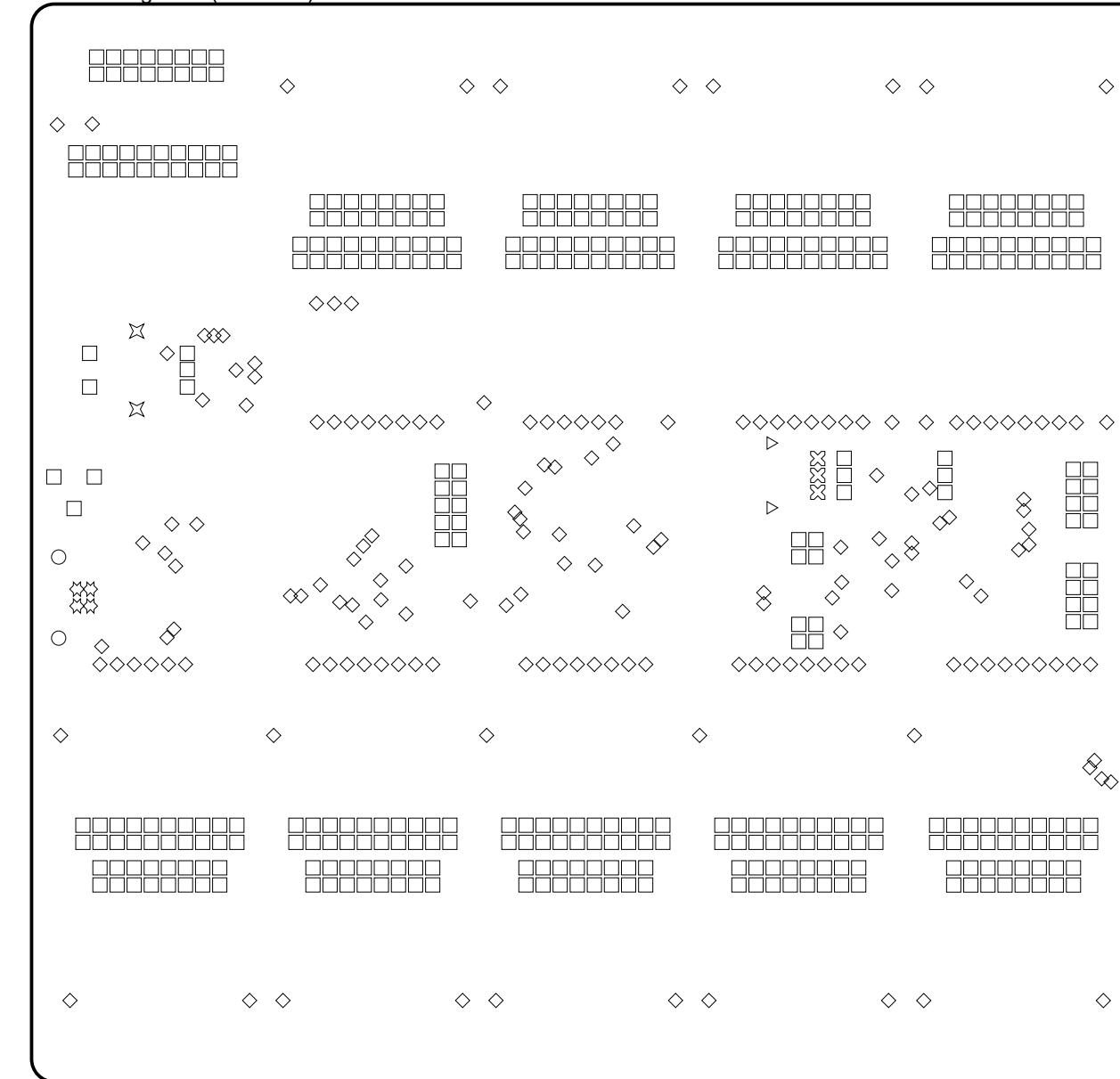
Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via / Pad	Pad Shape	Description	Hole Tolerance	Via Type	Via Feature
◇	177	0.500mm(19.685mil)	Plated	Round	Top Layer - Bottom Layer	Via				(Mixed)	(Mixed)
⊗	4	0.920mm(36.221mil)	Plated	Round	Top Layer - Bottom Layer	Pad	(Mixed)				
□	408	1.000mm(39.370mil)	Plated	(Mixed)	Top Layer - Bottom Layer	Pad	(Mixed)				
☒	3	1.100mm(43.307mil)	Plated	Round	Top Layer - Bottom Layer	Pad	Rounded				
▽	2	2.300mm(90.551mil)	Non-Plated	Round	Top Layer - Bottom Layer	Pad	Rounded				
○	2	2.300mm(90.551mil)	Plated	Round	Top Layer - Bottom Layer	Pad	Rounded				
⊗	2	2.600mm(102.362mil)	Plated	Round	Top Layer - Bottom Layer	Pad	Rounded				
<b>598 Total</b>											

# DRILL DRAWING

A

A

Drill Drawing View (Scale 1:1)



B

B

C

C

D

D

# COMPOSITE VIEW FRONT

A

A

B

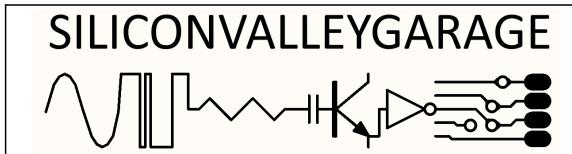
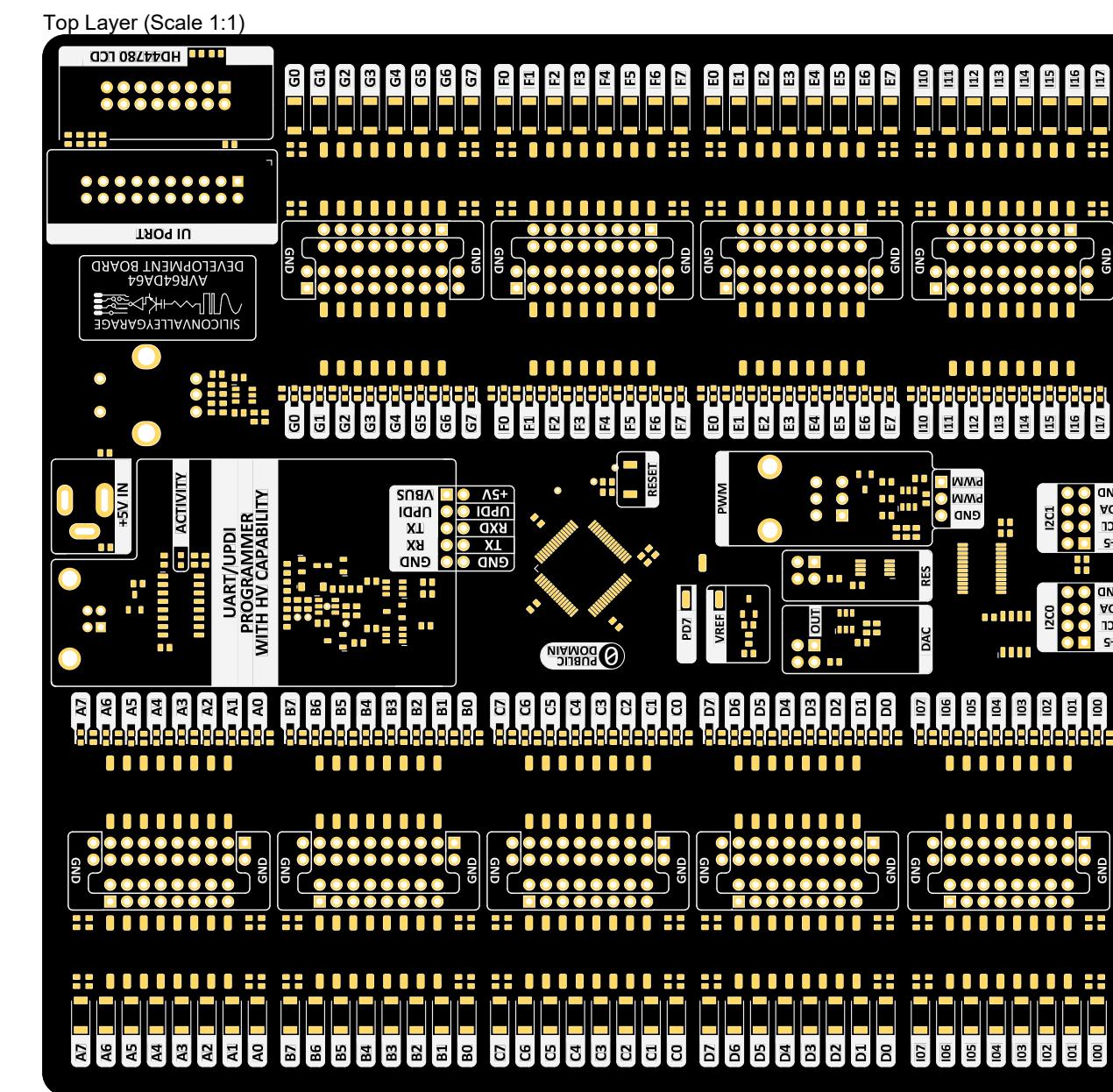
B

C

C

D

D



**Project AVR64DA64-BREAKOUT.PjPcb**

Version: | Variant AVR64DA64-BREAKOUT-JLCPCB

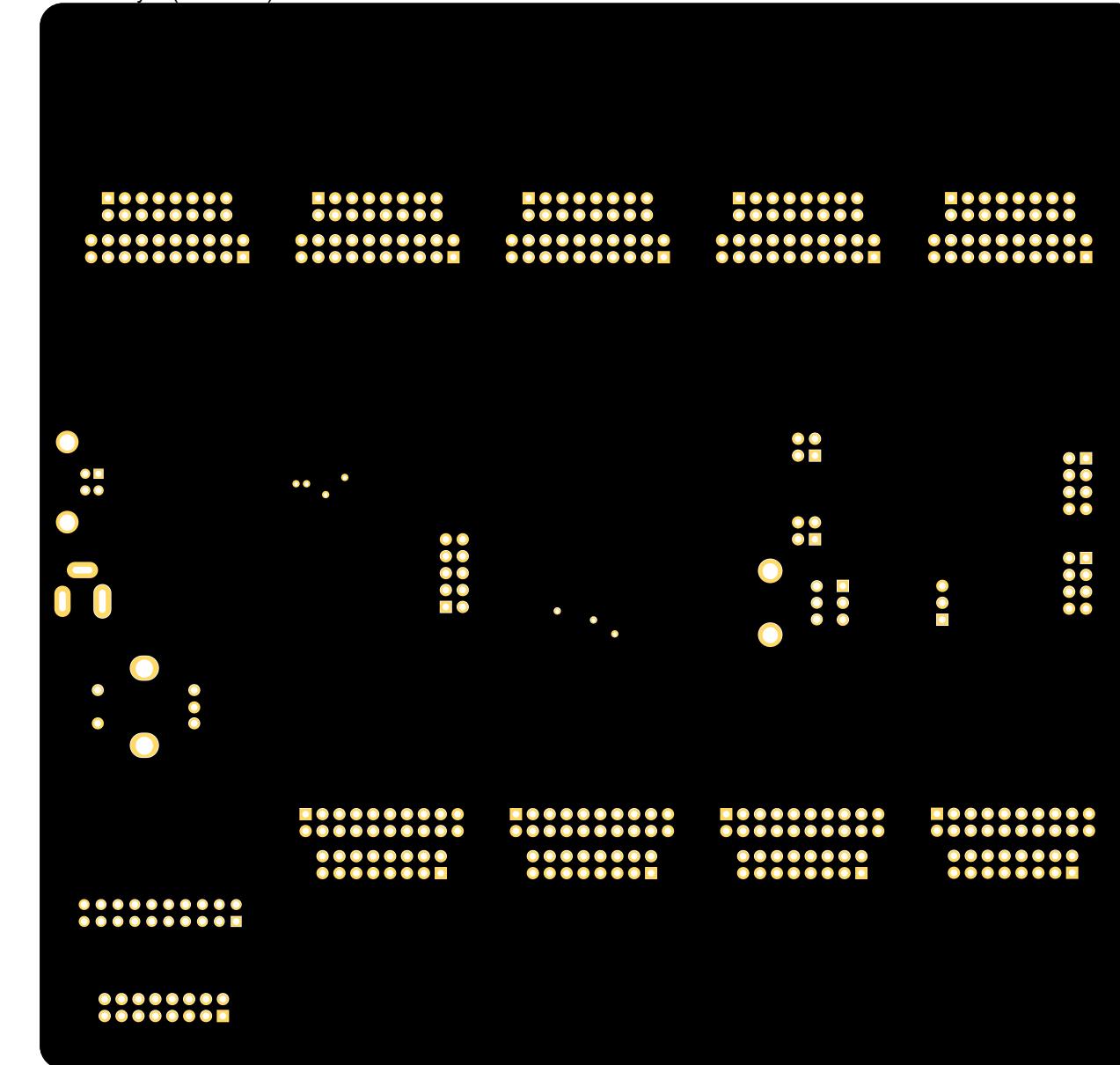
FABRICATION DRAWING

## COMPOSITE VIEW BACK

A

A

Bottom Layer (Scale 1:1)



B

B

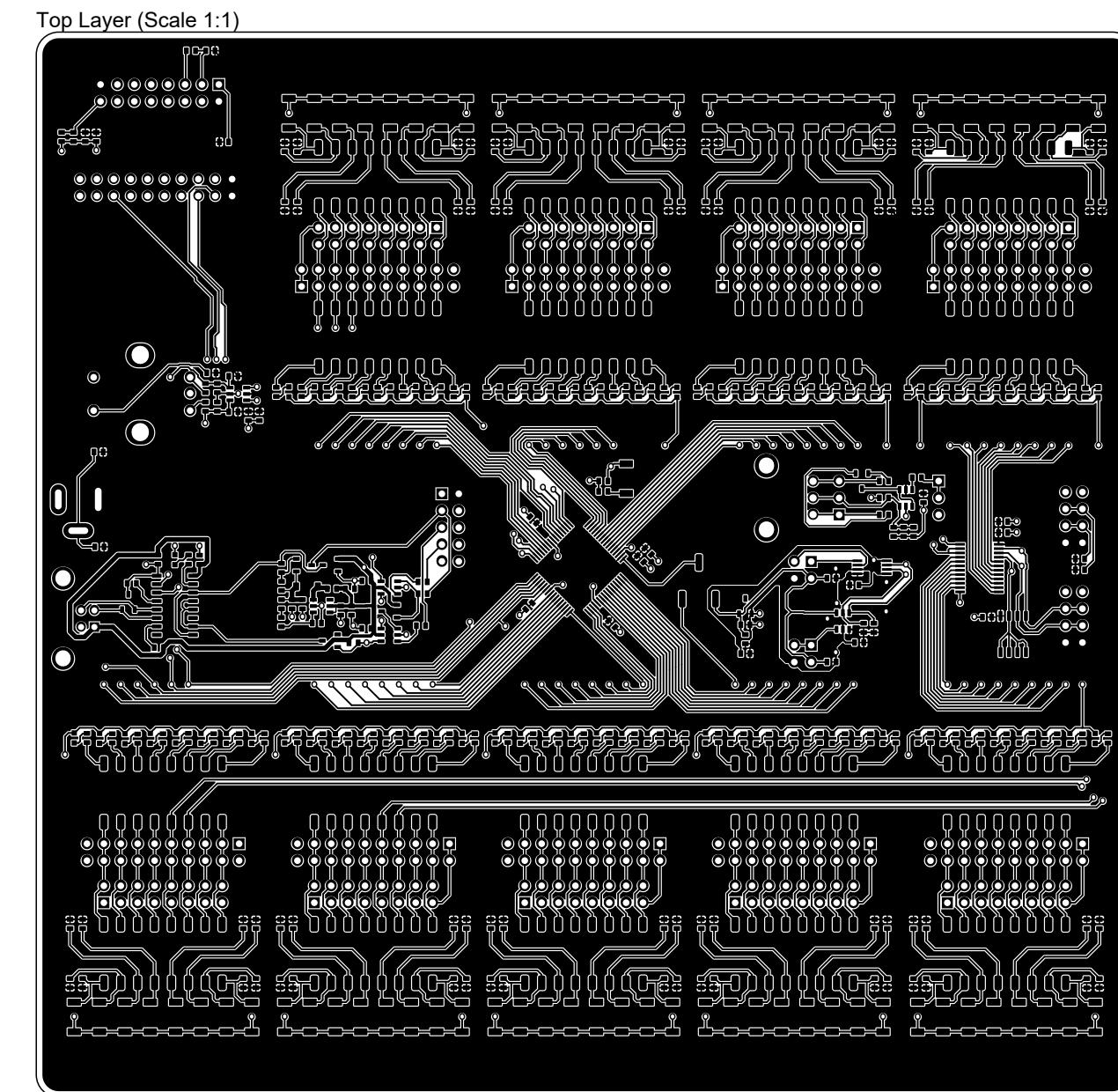
C

C

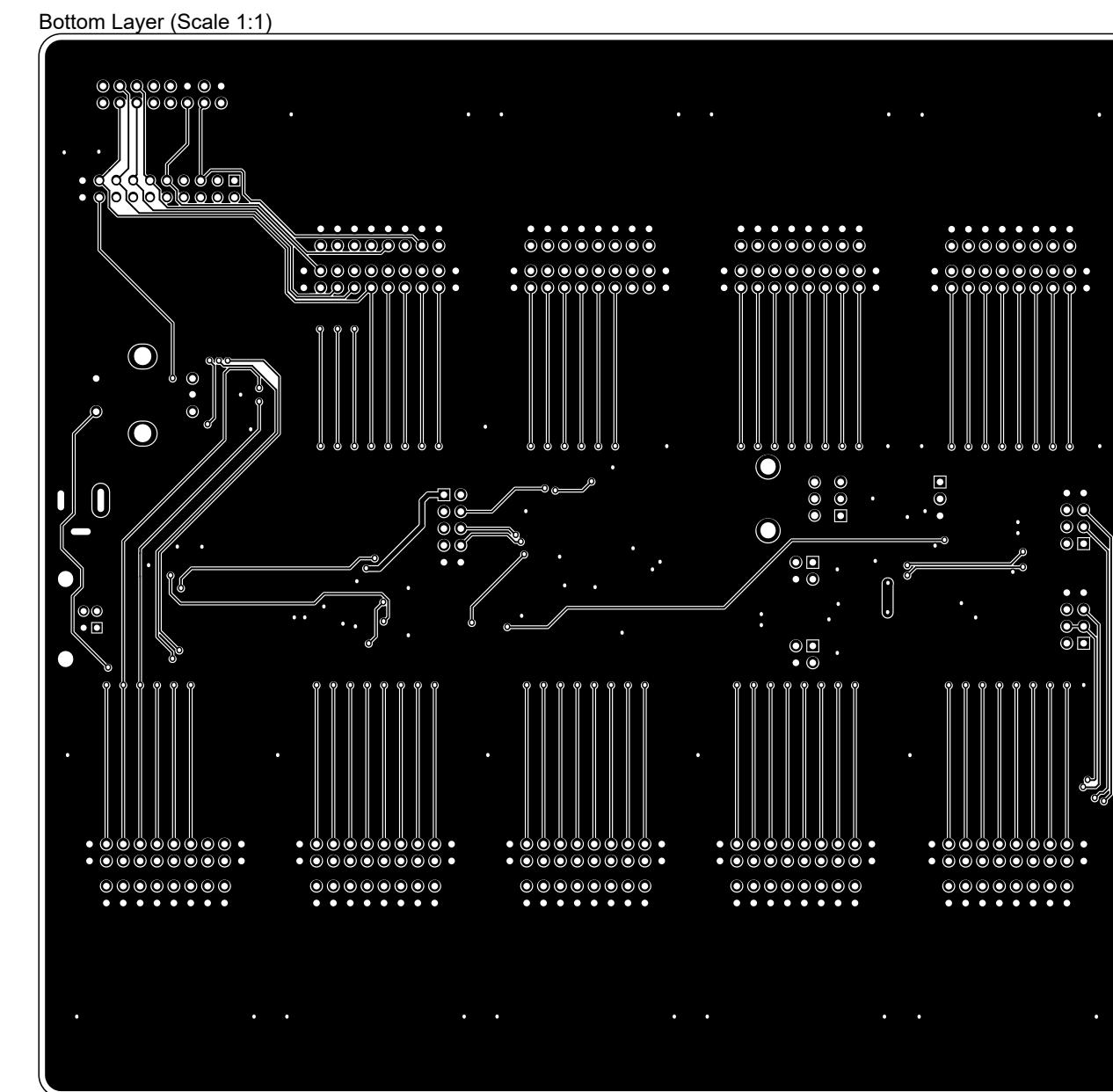
D

D

# LAYER VIEW : TOP LAYER



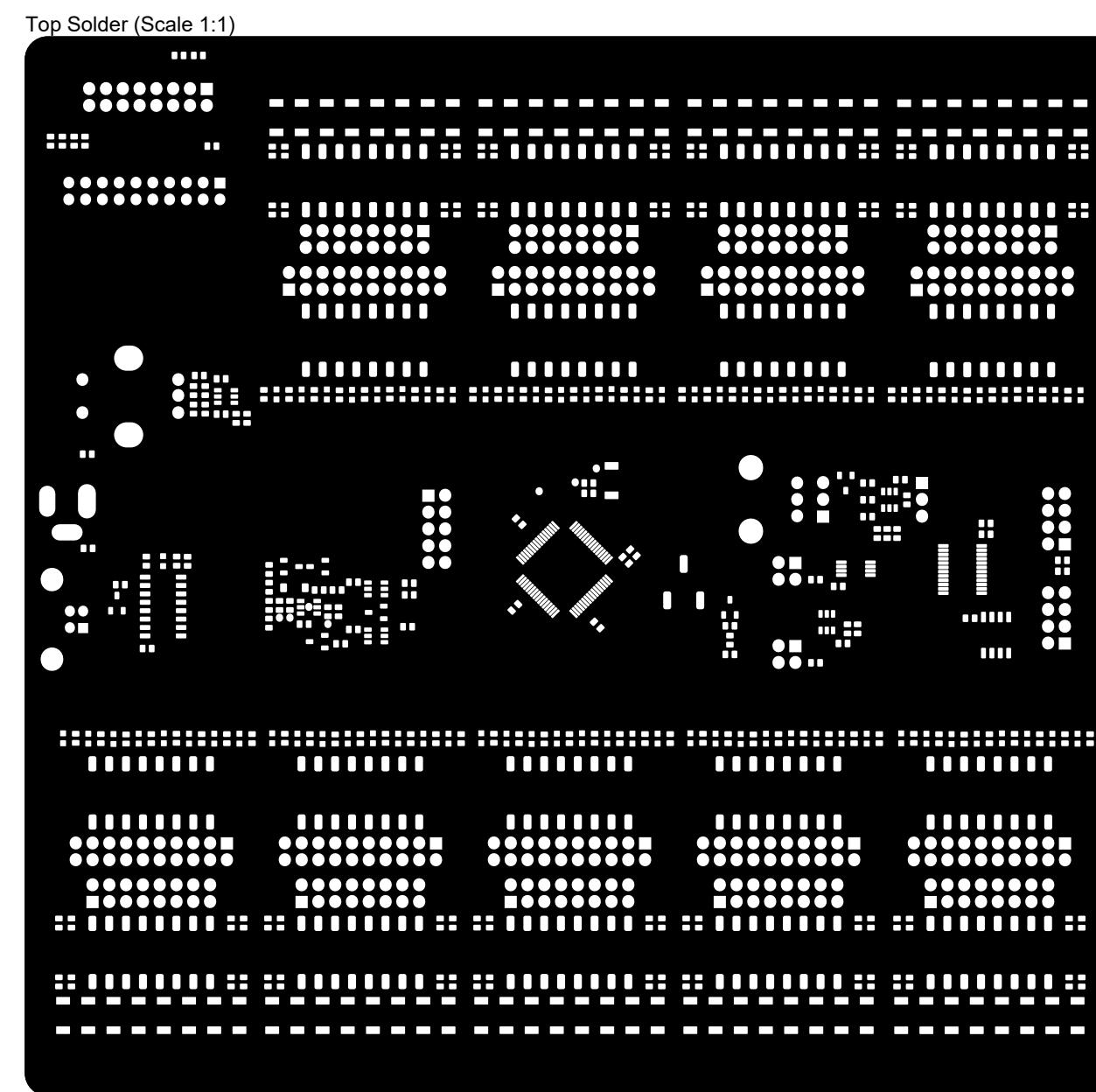
# LAYER VIEW : BOTTOM LAYER



# LAYER VIEW : TOP SOLDER MASK

A

A



B

B

C

C

D

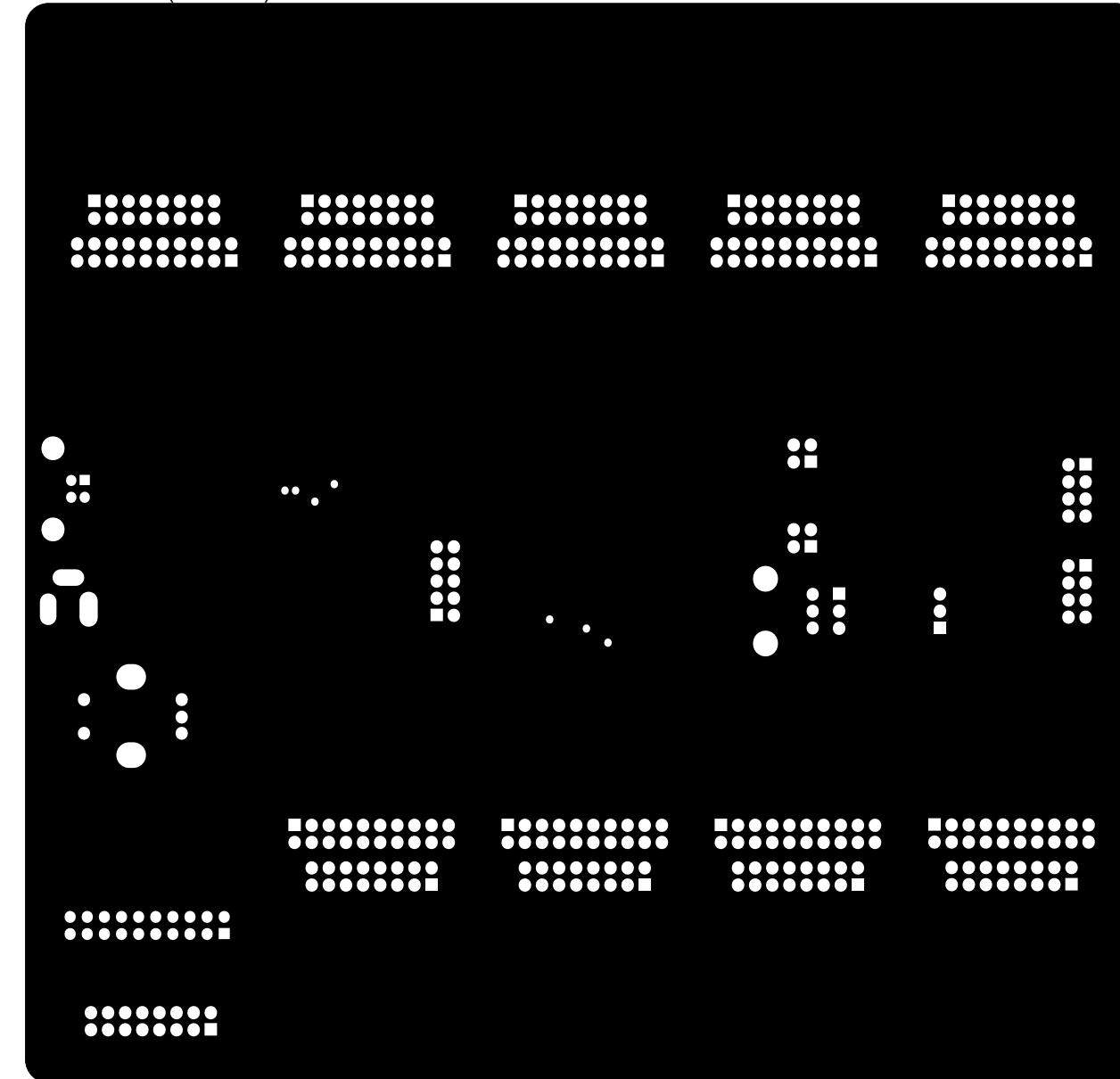
D

# LAYER VIEW : BOTTOM SOLDER MASK

A

A

Bottom Solder (Scale 1:1)



B

B

C

C

D

D

# LAYER VIEW : TOP SILKSCREEN (LEGEND)

A

A

B

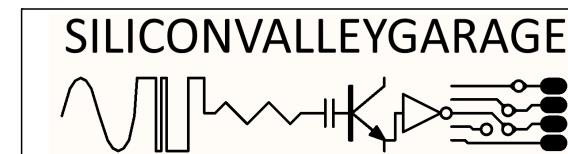
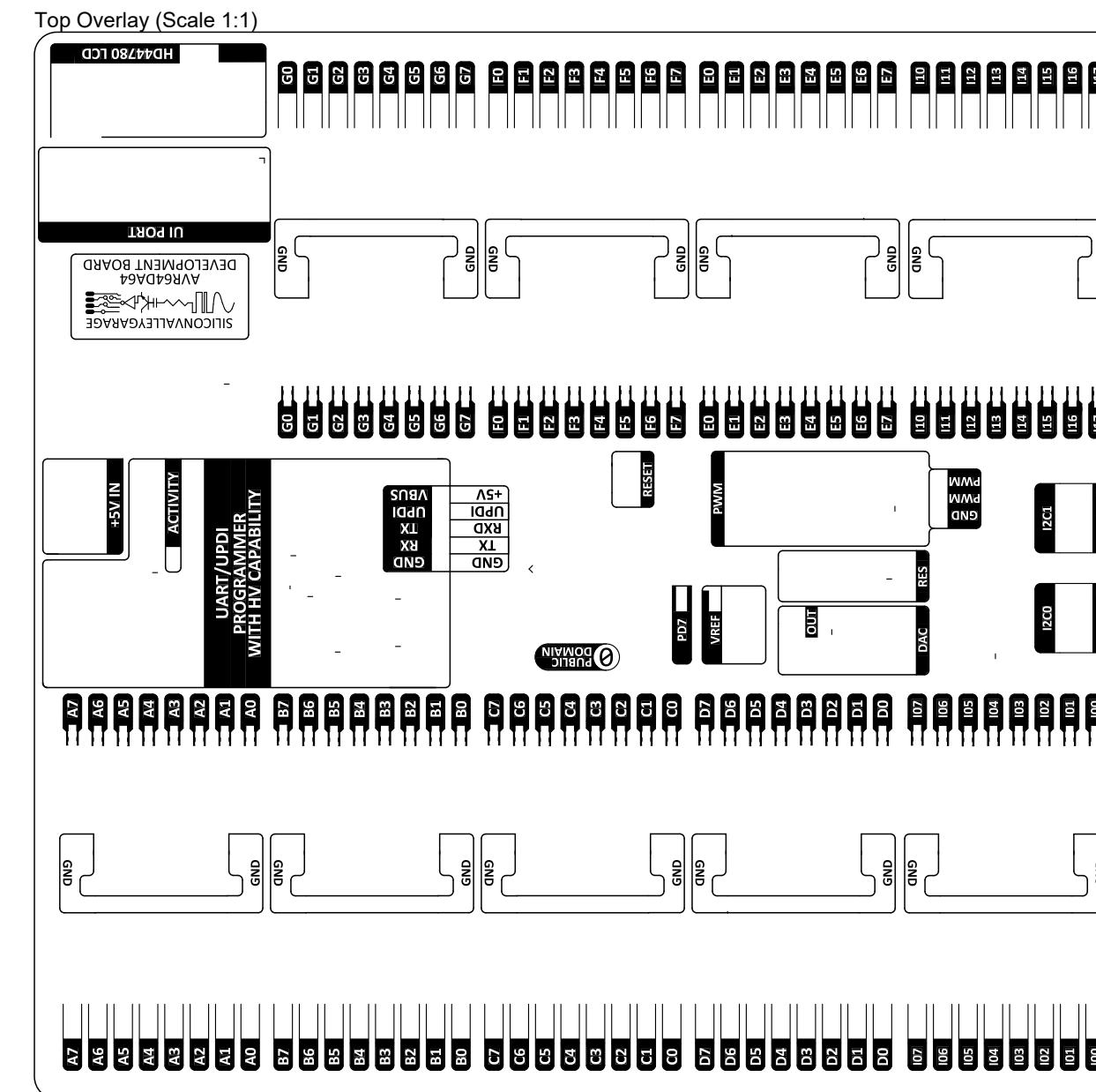
B

C

C

D

D



**Project AVR64DA64-BREAKOUT.PjPcb**

Version: | Variant AVR64DA64-BREAKOUT-JLCPCB

FABRICATION DRAWING

# LAYER VIEW : BOTTOM SILKSCREEN (LEGEND)

A

A

B

B

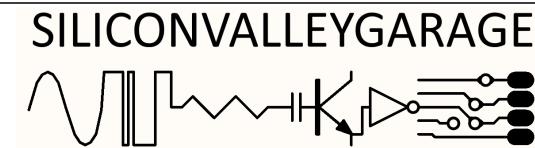
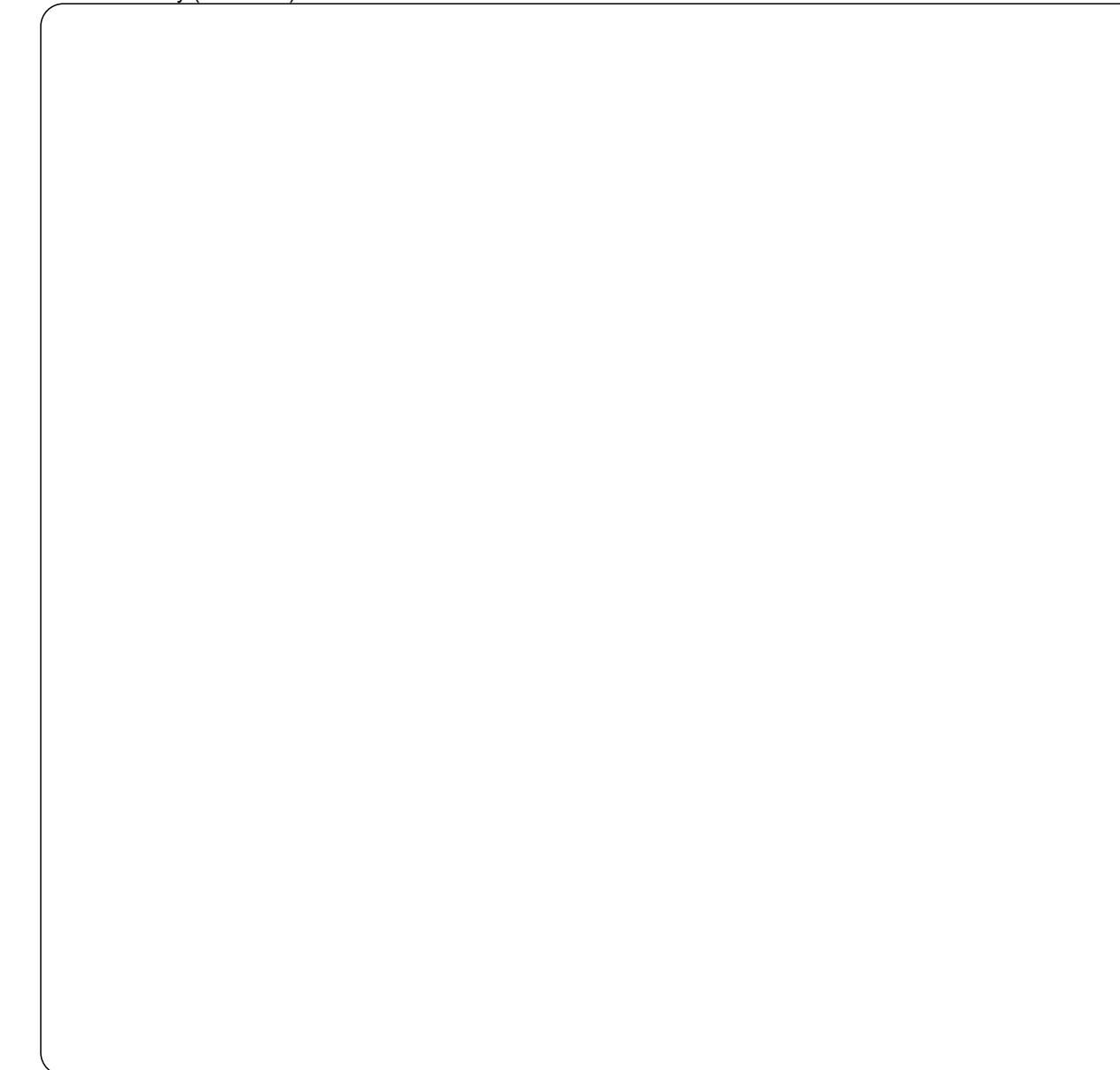
C

C

D

D

Bottom Overlay (Scale 1:1)



**Project AVR64DA64-BREAKOUT.PjPcb**

Version: | Variant AVR64DA64-BREAKOUT-JLCPCB

FABRICATION DRAWING

# GENERAL



## A Unless otherwise specified the following rules apply:

1. DO NOT DEVIATE FROM ARTWORK OR BOM WITHOUT PRIOR AUTHORIZATION.
2. ASSEMBLE AND INSPECT PER IPC-610 CLASS 2

## B Bill of Materials and Material Handling

3. THE BOM CONTAINED IN THIS DOCUMENT IS AS-BUILT. NON-INSTALLED PARTS HAVE BEEN REMOVED. ADDITIONAL BOM FORMATS ARE AVAILABLE IN THE PROJECT FILES
4. ANY PART SUBSTITUTIONS MUST BE APPROVED IN WRITING BEFORE ASSEMBLY
5. ALL MATERIALS MUST BE PROCURED FROM MANUFACTURER AUTHORIZED DISTRIBUTORS OR THE ORIGINAL MANUFACTURER
6. ALL COMPONENTS AND BOARDS TO BE HANDLED AND STORED ACCORDING TO IPC GUIDELINES
7. ESD CONTROL PER IPC RULES

## B Soldering

8. SOLDERING TO BE DONE USING SN37PB63 ALLOY USING ALLOY MANUFACTURER RECOMMENDED NO-CLEAN FLUX
9. BGA COMPONENTS WITH LEAD-FREE CONNECTIONS NEED TO BE REBALLED WITH SN63PB37. MIXING OF ALLOYS IS NOT PERMITTED.
10. SOLDERING PREFERABLY TO BE DONE USING NITROGEN ATMOSPHERE
11. SURPLUS COMPONENTS TO VACUUM SEALED WITH DESSICANT IN ANTISTATIC BAGS
12. INCOMING MATERIAL (BOARDS AND COMPONENTS) NEEDS TO BE INSPECTED FOR HUMIDITY AND BAKED IF NEEDED PRIOR TO USE.
13. MANUAL REWORK / TOUCHUP TO BE DONE USING SAME ALLOY AND APPROPRIATE FLUX. FLUX MUST BE REMOVED.

# 2D VIEW

A

A

B

B

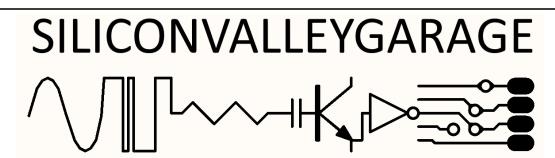
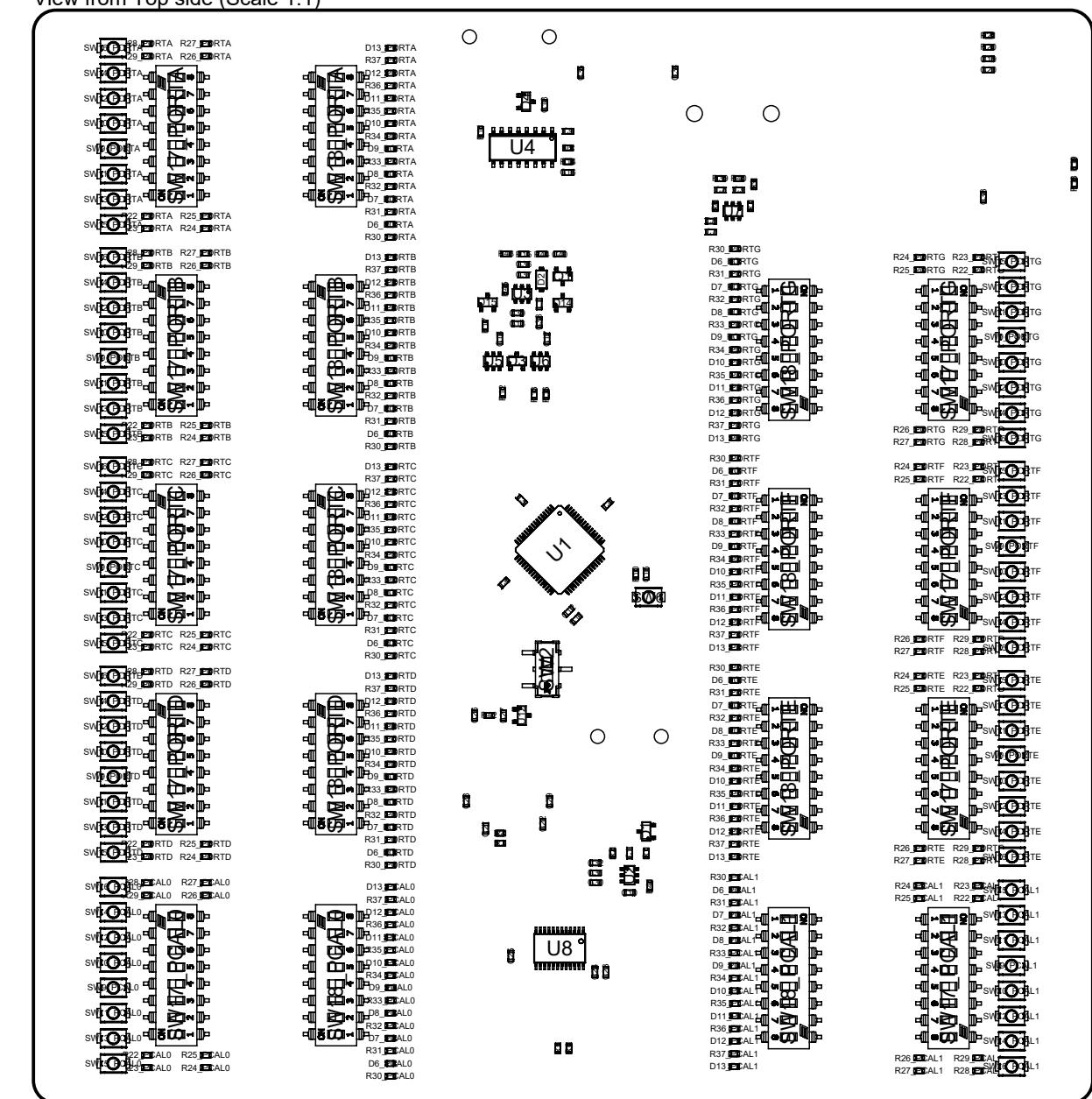
C

C

D

D

View from Top side (Scale 1:1)



Project AVR64DA64-BREAKOUT.PrbPcb

Version: | Variant AVR64DA64-BREAKOUT-JLCPCB

ASSEMBLY DRAWING

1

2

3

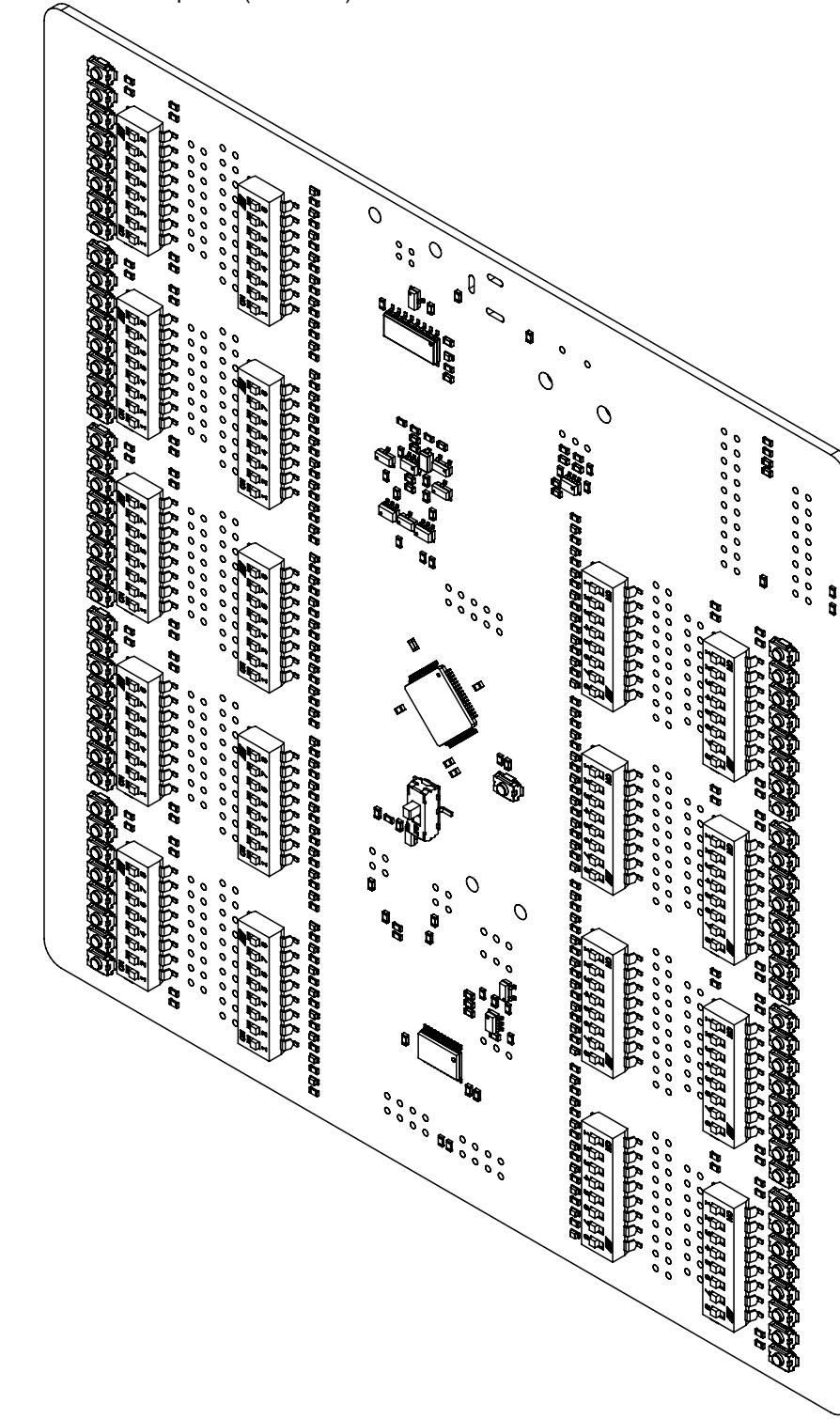
4

5

6

# 3D VIEW

View from Top side (Scale 1:1)



A

A

B

B

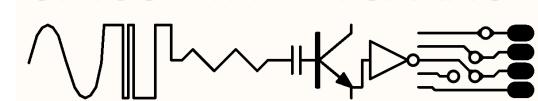
C

C

D

D

SILICONVALLEYGARAGE



Project AVR64DA64-BREAKOUT.PrjPcb

Version: | Variant AVR64DA64-BREAKOUT-JLCPCB

ASSEMBLY DRAWING

1

2

3

4

5

6

# Bill Of Materials

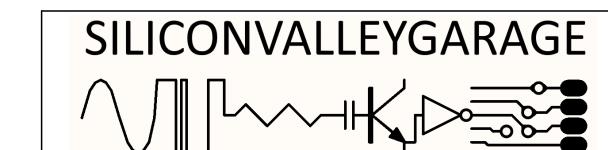
A

Quantity	Designator	Description	LCSC
18	C1, C4, C7, C11, C16, C19, C23, C26, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39	CAPACITOR,CERAMIC,4u7,16V,X5R,0603	C19666
22	C2, C3, C5, C6, C8, C9, C10, C12, C13, C14, C15, C17, C18, C20, C21, C22, C24, C25, C27, C28, C29, C40	CAPACITOR,CERAMIC,100nF,50V,X7R,0603	C14663
4	D1, D3, D14, D15	DIODE,75V,215mA,SOT23,LOW LEAKAGE	C2500
1	D2	DIODE,SCHOTTKY,40V,1B5819,SOD123	C8598
1	D4	DIODE,TVS,DUAL,NIDIRETINAL,USB,PESD2USB5UX-TR,SOT23	C3709087
73	D5, D6_PCAL0, D6_PCAL1, D6_PORTA, D6_PORTB, D6_PORTC, D6_PORTD, D6_PORTE, D6_PORTF, D6_PORTG, D7_PCAL0, D7_PCAL1, D7_PORTA, D7_PORTB, D7_PORTC, D7_PORTD, D7_PORTE, D7_PORTF, D7_PORTG, D8_PCAL0, D8_PCAL1, D8_PORTA, D8_PORTB, D8_PORTC, D8_PORTD, D8_PORTE, D8_PORTF, D8_PORTG, D9_PCAL0, D9_PCAL1, D9_PORTA, D9_PORTB, D9_PORTC, D9_PORTD, D9_PORTE, D9_PORTF, D9_PORTG, D10_PCAL0, D10_PCAL1, D10_PORTA, D10_PORTB, D10_PORTC, D10_PORTD, D10_PORTE, D10_PORTF, D10_PORTG, D11_PCAL0, D11_PCAL1, D11_PORTA, D11_PORTB, D11_PORTC, D11_PORTD, D11_PORTE, D11_PORTF, D11_PORTG, D12_PCAL0, D12_PCAL1, D12_PORTA, D12_PORTB, D12_PORTC, D12_PORTD, D12_PORTE, D12_PORTF, D12_PORTG, D13_PCAL0, D13_PCAL1, D13_PORTA, D13_PORTB, D13_PORTC, D13_PORTD, D13_PORTE, D13_PORTF, D13_PORTG	LED,SMD,WHITE,42mCd,0603	C2290
1	L1	IND,4u7H,0.6A,0603, LLQM18PN4R7MFRL	C114862
1	Q1	XSTR,PMOS,30V,4A,AO3401,SOT23	C15127
9	R1, R2, R11, R13, R14, R17, R42, R43, R45	RESISTOR,1K,1%,100mW,0603 (1608)	C21190
79	R3, R4, R5, R6, R7, R8, R9, R30_PCAL0, R30_PCAL1, R30_PORTA, R30_PORTB, R30_PORTC, R30_PORTD, R30_PORTE, R30_PORTF, R30_PORTG, R31_PCAL0, R31_PCAL1, R31_PORTA, R31_PORTB, R31_PORTC, R31_PORTD, R31_PORTE, R31_PORTF, R31_PORTG, R32_PCAL0, R32_PCAL1, R32_PORTA, R32_PORTB, R32_PORTC, R32_PORTD, R32_PORTE, R32_PORTF, R32_PORTG, R33_PCAL0, R33_PCAL1, R33_PORTA, R33_PORTB, R33_PORTC, R33_PORTD, R33_PORTE, R33_PORTF, R33_PORTG, R34_PCAL0, R34_PCAL1, R34_PORTA, R34_PORTB, R34_PORTC, R34_PORTD, R34_PORTE, R34_PORTF, R34_PORTG, R35_PCAL0, R35_PCAL1, R35_PORTA, R35_PORTB, R35_PORTC, R35_PORTD, R35_PORTE, R35_PORTF, R35_PORTG, R36_PCAL0, R36_PCAL1, R36_PORTA, R36_PORTB, R36_PORTC, R36_PORTD, R36_PORTE, R36_PORTF, R36_PORTG, R37_PCAL0, R37_PCAL1, R37_PORTA, R37_PORTB, R37_PORTC, R37_PORTD, R37_PORTE, R37_PORTF, R37_PORTG	RESISTOR,4K7,1%,100mW,0603 (1608)	C23162
9	R10, R12, R16, R19, R20, R21, R39, R40, R41	RESISTOR,470R,1%,100mW,0603 (1608)	C23179
1	R15	RESISTOR,18K,1%,100mW,0603 (1608)	C25810

B

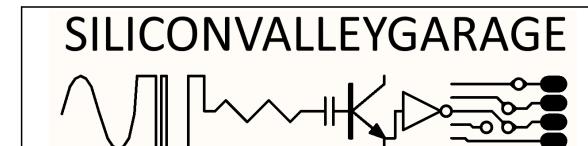
C

D



# Bill Of Materials

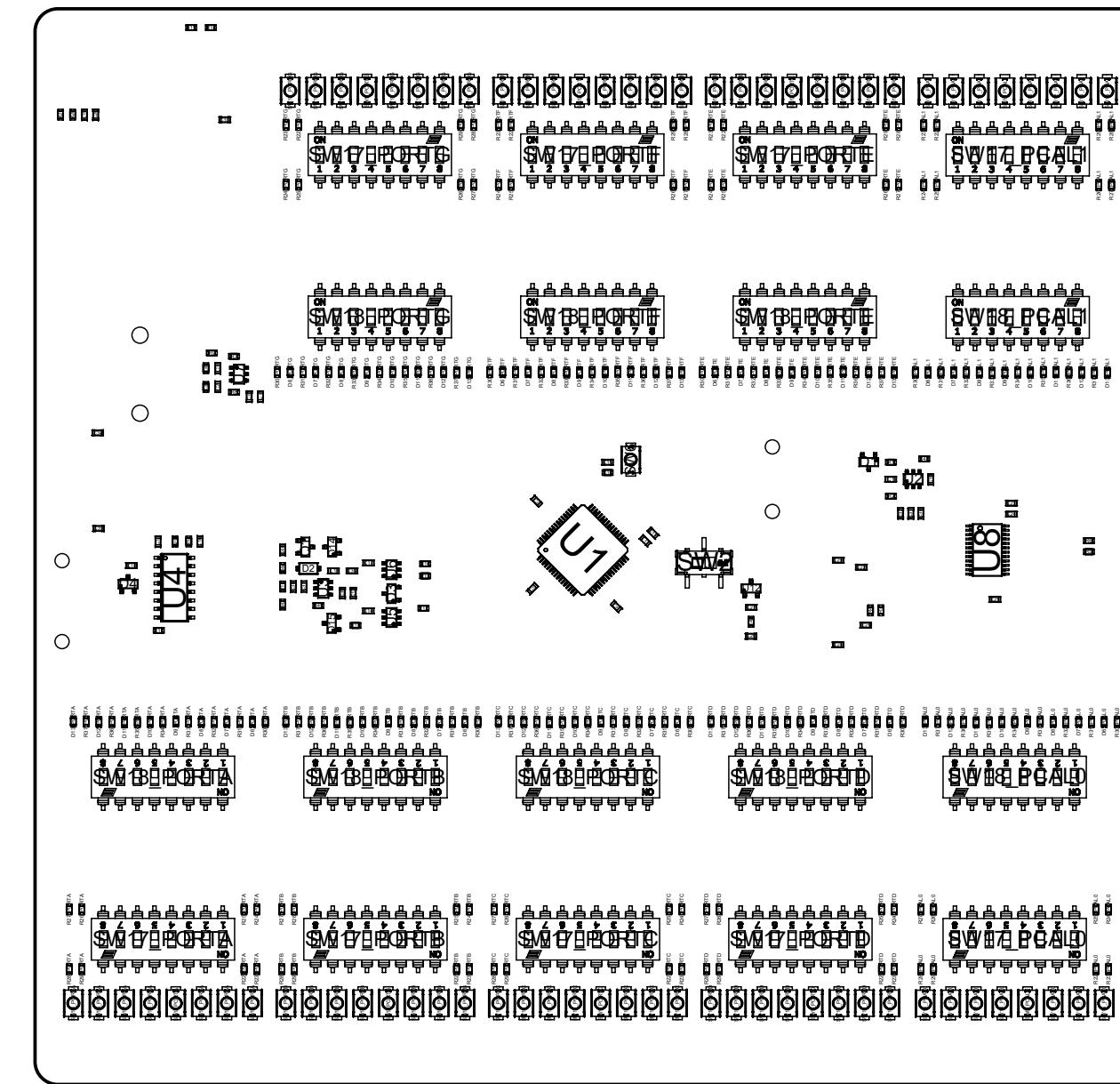
Quantity	Designator	Description	LCSC
74	R18, R22_PCAL0, R22_PCAL1, R22_PORTA, R22_PORTB, R22_PORTC, R22_PORTD, R22 PORTE, R22_PORTF, R22_PORTG, R23_PCAL0, R23_PCAL1, R23_PORTA, R23_PORTB, R23_PORTC, R23_PORTD, R23 PORTE, R23_PORTF, R23_PORTG, R24_PCAL0, R24_PCAL1, R24_PORTA, R24_PORTB, R24_PORTC, R24_PORTD, R24 PORTE, R24_PORTF, R24_PORTG, R25_PCAL0, R25_PCAL1, R25_PORTA, R25_PORTB, R25_PORTC, R25_PORTD, R25 PORTE, R25_PORTF, R25_PORTG, R26_PCAL0, R26_PCAL1, R26 PORTA, R26_PORTB, R26_PORTC, R26_PORTD, R26 PORTE, R26_PORTF, R26_PORTG, R27_PCAL0, R27_PCAL1, R27_PORTA, R27_PORTB, R27_PORTC, R27_PORTD, R27 PORTE, R27_PORTF, R27_PORTG, R28_PCAL0, R28_PCAL1, R28_PORTA, R28_PORTB, R28_PORTC, R28_PORTD, R28 PORTE, R28_PORTF, R28_PORTG, R29_PCAL0, R29_PCAL1, R29_PORTA, R29_PORTB, R29_PORTC, R29_PORTD, R29 PORTE, R29_PORTF, R29_PORTG, R44	RESISTOR,10K,1%,100mW,0603 (1608)	C25804
1	SW2	SWITCH,SPST,SLIDE,SMD	C2875122
73	SW6, SW9_PCAL0, SW9_PCAL1, SW9_PORTA, SW9_PORTB, SW9_PORTC, SW9_PORTD, SW9 PORTE, SW9_PORTF, SW9_PORTG, SW10_PCAL0, SW10_PCAL1, SW10_PORTA, SW10_PORTB, SW10_PORTC, SW10_PORTD, SW10 PORTE, SW10_PORTF, SW10_PORTG, SW11_PCAL0, SW11_PCAL1, SW11_PORTA, SW11_PORTB, SW11_PORTC, SW11_PORTD, SW11 PORTE, SW11_PORTF, SW11_PORTG, SW12_PCAL0, SW12_PCAL1, SW12_PORTA, SW12_PORTB, SW12_PORTC, SW12_PORTD, SW12 PORTE, SW12_PORTF, SW12_PORTG, SW13_PCAL0, SW13_PCAL1, SW13_PORTA, SW13_PORTB, SW13_PORTC, SW13_PORTD, SW13 PORTE, SW13_PORTF, SW13_PORTG, SW14_PCAL0, SW14_PCAL1, SW14_PORTA, SW14_PORTB, SW14_PORTC, SW14_PORTD, SW14 PORTE, SW14_PORTF, SW14_PORTG, SW15_PCAL0, SW15_PCAL1, SW15_PORTA, SW15_PORTB, SW15_PORTC, SW15_PORTD, SW15 PORTE, SW15_PORTF, SW15_PORTG, SW16_PCAL0, SW16_PCAL1, SW16_PORTA, SW16_PORTB, SW16_PORTC, SW16_PORTD, SW16 PORTE, SW16_PORTF, SW16_PORTG	SWITCH,TACT,SMD,2PIN,SMT,TOP ACTUATOR	C720477
18	SW17_PCAL0, SW17_PCAL1, SW17_PORTA, SW17_PORTB, SW17_PORTC, SW17_PORTD, SW17 PORTE, SW17_PORTF, SW17_PORTG, SW18_PCAL0, SW18_PCAL1, SW18_PORTA, SW18_PORTB, SW18_PORTC, SW18_PORTD, SW18 PORTE, SW18_PORTF, SW18_PORTG	SWITCH,DIP,NOX8,SMD,2.54	C319032
1	U1	IC,CPU,ATMEL,AVR64DA64,TQFP64	C5227841
2	U2, U7	IC,LOGIC,SINGLEGATE,DUAL SCHMITT-TRIGER,INVERTER,SOT23-6	C19829598
1	U3	IC,REG,BOOST,AEROSEMI,MT3608	C84817
1	U4	IC,XCVR,USB UART WITH XTAL AND EEPROM,WCH,CH340G-SO16	CH340B
2	U5, U6	IC,ANALOG,SPDT ANALOG SWITCH,SINGLEGATE,TI,SN74LVC1G3157DBVR,SOT23-6	C2673494
1	U8	I2C,16BIT AGILE I/O EXPANDER,INT,NEXPERIA,PCAL95555,TSSOP24	C2669740
1	U12	IC,VOLTAGE REFERENCE,2.048V	C2156884



Project AVR64DA64-BREAKOUT.PjPcb  
Version: | Variant AVR64DA64-BREAKOUT-JLCPCB  
ASSEMBLY DRAWING

# DESIGNATORS FRONT

View from Top side (Scale 1:1)



# PASTE MASK TOP

Top Paste (Scale 1:1)

