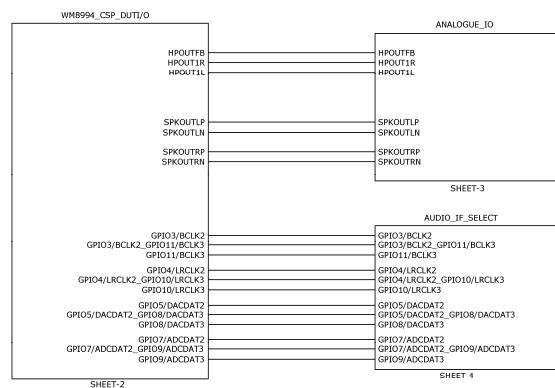


DOC TYPE:	SCHEMATIC AND LAYOUT
BOARD REFERENCE:	WM8994-6220-CS72-M
BOARD TYPE:	Customer Mini
WOLFSON DEVICE(S):	WM8994
DATE:	May 2009
DOC REVISION:	Rev 1.0

SCHEMATIC

Sheet 1: Functional Diagram





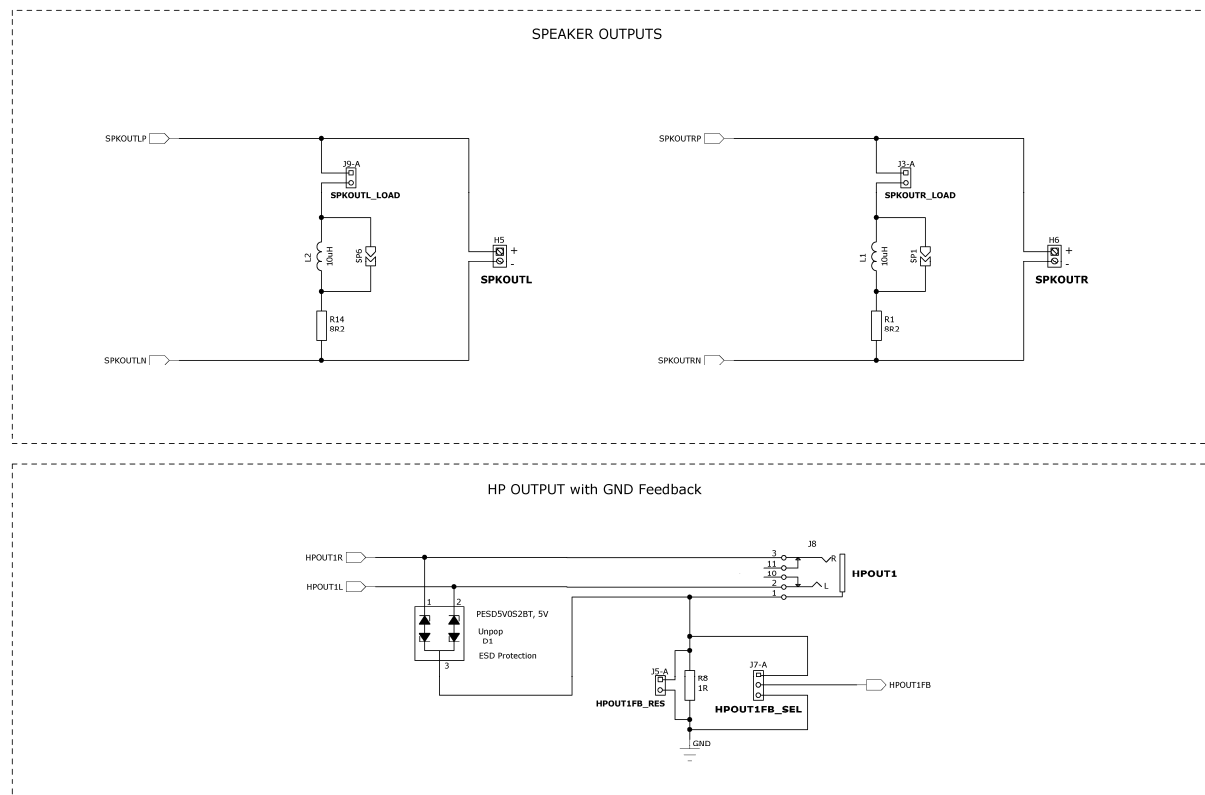
The schematic diagram illustrates the internal structure and connections of the WM8994 72-CSP ID: 0001. The central component is the WM8994 72-CSP ID: 0001, which is connected to various external components and internal blocks.

Functional Blocks and Connections:

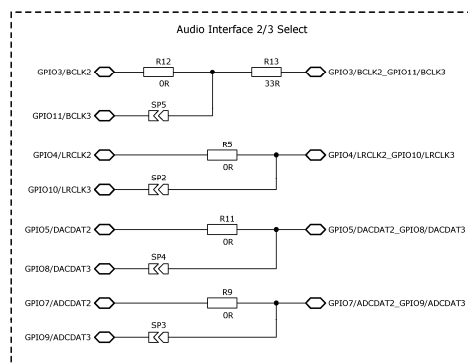
- Power Supply Jumper:** This block shows the connection of power supply jumpers (SPKVD01_2, AVDD01, AVDD02, VBAT, CPVDD0, DVDD0, DVDD0_SHORT, CPVDD0_DVDD0_SHORT) to the internal power supply pins (LD01VDD, LD01ENA, LD02ENA, LD02VDD, LD02ENA, LD03VDD, LD03ENA, LD04VDD, LD04ENA, LD05VDD, LD05ENA, LD06VDD, LD06ENA, LD07VDD, LD07ENA, LD08VDD, LD08ENA, LD09VDD, LD09ENA, LD10VDD, LD10ENA, LD11VDD, LD11ENA, LD12VDD, LD12ENA, LD13VDD, LD13ENA, LD14VDD, LD14ENA, LD15VDD, LD15ENA, LD16VDD, LD16ENA, LD17VDD, LD17ENA, LD18VDD, LD18ENA, LD19VDD, LD19ENA, LD20VDD, LD20ENA, LD21VDD, LD21ENA, LD22VDD, LD22ENA, LD23VDD, LD23ENA, LD24VDD, LD24ENA, LD25VDD, LD25ENA, LD26VDD, LD26ENA, LD27VDD, LD27ENA, LD28VDD, LD28ENA, LD29VDD, LD29ENA, LD30VDD, LD30ENA, LD31VDD, LD31ENA, LD32VDD, LD32ENA, LD33VDD, LD33ENA, LD34VDD, LD34ENA, LD35VDD, LD35ENA, LD36VDD, LD36ENA, LD37VDD, LD37ENA, LD38VDD, LD38ENA, LD39VDD, LD39ENA, LD40VDD, LD40ENA, LD41VDD, LD41ENA, LD42VDD, LD42ENA, LD43VDD, LD43ENA, LD44VDD, LD44ENA, LD45VDD, LD45ENA, LD46VDD, LD46ENA, LD47VDD, LD47ENA, LD48VDD, LD48ENA, LD49VDD, LD49ENA, LD50VDD, LD50ENA, LD51VDD, LD51ENA, LD52VDD, LD52ENA, LD53VDD, LD53ENA, LD54VDD, LD54ENA, LD55VDD, LD55ENA, LD56VDD, LD56ENA, LD57VDD, LD57ENA, LD58VDD, LD58ENA, LD59VDD, LD59ENA, LD60VDD, LD60ENA, LD61VDD, LD61ENA, LD62VDD, LD62ENA, LD63VDD, LD63ENA, LD64VDD, LD64ENA, LD65VDD, LD65ENA, LD66VDD, LD66ENA, LD67VDD, LD67ENA, LD68VDD, LD68ENA, LD69VDD, LD69ENA, LD70VDD, LD70ENA, LD71VDD, LD71ENA, LD72VDD, LD72ENA).
- Ground Testpoints:** This block shows the connection of ground testpoints (TP1, TP2, TP3, TP4) to the internal ground pins (GND).
- LDO Control:** This block shows the connection of LDO control pins (LD01EN, LD02EN, LD03EN, LD04EN, LD05EN, LD06EN, LD07EN, LD08EN, LD09EN, LD10EN, LD11EN, LD12EN, LD13EN, LD14EN, LD15EN, LD16EN, LD17EN, LD18EN, LD19EN, LD20EN, LD21EN, LD22EN, LD23EN, LD24EN, LD25EN, LD26EN, LD27EN, LD28EN, LD29EN, LD30EN, LD31EN, LD32EN, LD33EN, LD34EN, LD35EN, LD36EN, LD37EN, LD38EN, LD39EN, LD40EN, LD41EN, LD42EN, LD43EN, LD44EN, LD45EN, LD46EN, LD47EN, LD48EN, LD49EN, LD50EN, LD51EN, LD52EN, LD53EN, LD54EN, LD55EN, LD56EN, LD57EN, LD58EN, LD59EN, LD60EN, LD61EN, LD62EN, LD63EN, LD64EN, LD65EN, LD66EN, LD67EN, LD68EN, LD69EN, LD70EN, LD71EN, LD72EN) to the internal LDO control pins (LD01EN, LD02EN, LD03EN, LD04EN, LD05EN, LD06EN, LD07EN, LD08EN, LD09EN, LD10EN, LD11EN, LD12EN, LD13EN, LD14EN, LD15EN, LD16EN, LD17EN, LD18EN, LD19EN, LD20EN, LD21EN, LD22EN, LD23EN, LD24EN, LD25EN, LD26EN, LD27EN, LD28EN, LD29EN, LD30EN, LD31EN, LD32EN, LD33EN, LD34EN, LD35EN, LD36EN, LD37EN, LD38EN, LD39EN, LD40EN, LD41EN, LD42EN, LD43EN, LD44EN, LD45EN, LD46EN, LD47EN, LD48EN, LD49EN, LD50EN, LD51EN, LD52EN, LD53EN, LD54EN, LD55EN, LD56EN, LD57EN, LD58EN, LD59EN, LD60EN, LD61EN, LD62EN, LD63EN, LD64EN, LD65EN, LD66EN, LD67EN, LD68EN, LD69EN, LD70EN, LD71EN, LD72EN).
- Output Zobel Networks:** This block shows the connection of output Zobel networks (Z1, Z2, Z3, Z4, Z5, Z6, Z7, Z8, Z9, Z10, Z11, Z12, Z13, Z14, Z15, Z16, Z17, Z18, Z19, Z20, Z21, Z22, Z23, Z24, Z25, Z26, Z27, Z28, Z29, Z30, Z31, Z32, Z33, Z34, Z35, Z36, Z37, Z38, Z39, Z40, Z41, Z42, Z43, Z44, Z45, Z46, Z47, Z48, Z49, Z50, Z51, Z52, Z53, Z54, Z55, Z56, Z57, Z58, Z59, Z60, Z61, Z62, Z63, Z64, Z65, Z66, Z67, Z68, Z69, Z70, Z71, Z72) to the internal output pins (H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11, H12, H13, H14, H15, H16, H17, H18, H19, H20, H21, H22, H23, H24, H25, H26, H27, H28, H29, H30, H31, H32, H33, H34, H35, H36, H37, H38, H39, H40, H41, H42, H43, H44, H45, H46, H47, H48, H49, H50, H51, H52, H53, H54, H55, H56, H57, H58, H59, H60, H61, H62, H63, H64, H65, H66, H67, H68, H69, H70, H71, H72).

The diagram also shows the connection of various external components (resistors, capacitors, inductors) to the internal pins of the WM8994 72-CSP ID: 0001.

Sheet 3: Analogue Outputs



Sheet 4: Audio Interface 2/3 Select



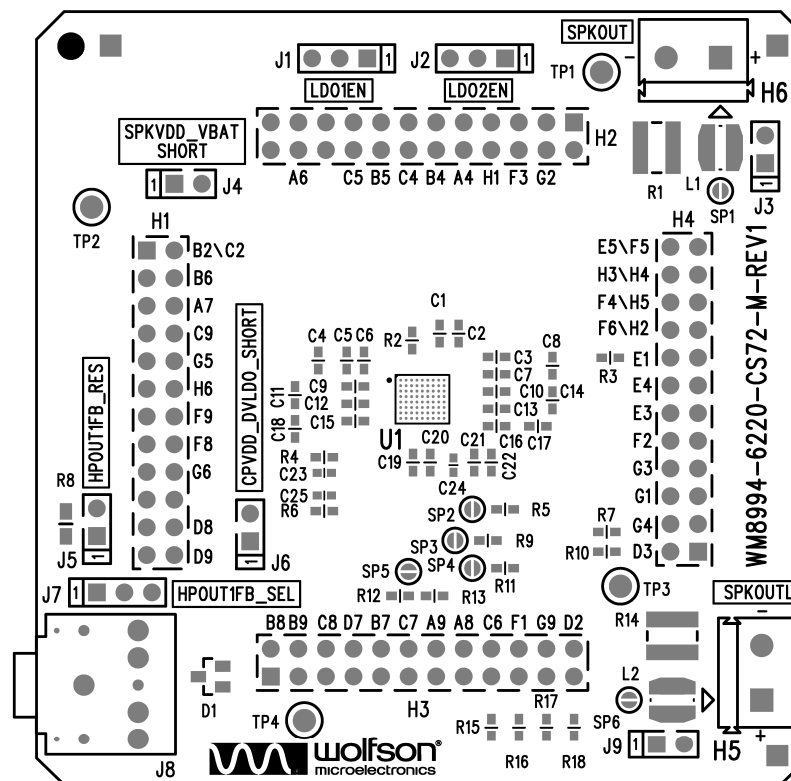
Sheet 5: Reference Tables

TABLES FOR REFERENCE			
	Short	Open	LNK9
J9-B	8R + 10uH	No Load	YELLOW
PCB Ref:	SPKOUTL_LOAD		Short
	Short	Open	LNK3
J3-B	8R + 10uH	No Load	YELLOW
PCB Ref:	SPKOUTR_LOAD		Short
	Short	Open	LNK5
J5-B	No resistor in circuit	Resistor in circuit	YELLOW
PCB Ref:	HPOUT1FB_RES		Short
	Short 1-2	Short 2-3	LNK7
J7-B	Pre Resistor	Post Resistor	YELLOW
PCB Ref:	HPOUT1FB_SEL		1-2
	Short 1-2	Short 2-3	LNK1
J1-B	LDO 1 Enabled	LDO 1 Disabled	YELLOW
PCB Ref:	LDO1EN		1-2
	Short 1-2	Short 2-3	LNK2
J2-B	LDO 2 Enabled	LDO 2 Disabled	YELLOW
PCB Ref:	LDO2EN		1-2
	Short	Open	LNK4
J4-B	VBAT Connected	VBAT Disconnected	RED
PCB Ref:	SPKVDD_VBAT_SHORT		Short
	Short	Open	LNK6
J6-B	DVLDO Connected	DVLDO Disconnected	RED
PCB Ref:	CPVDD_DVLDO_SHORT		Short

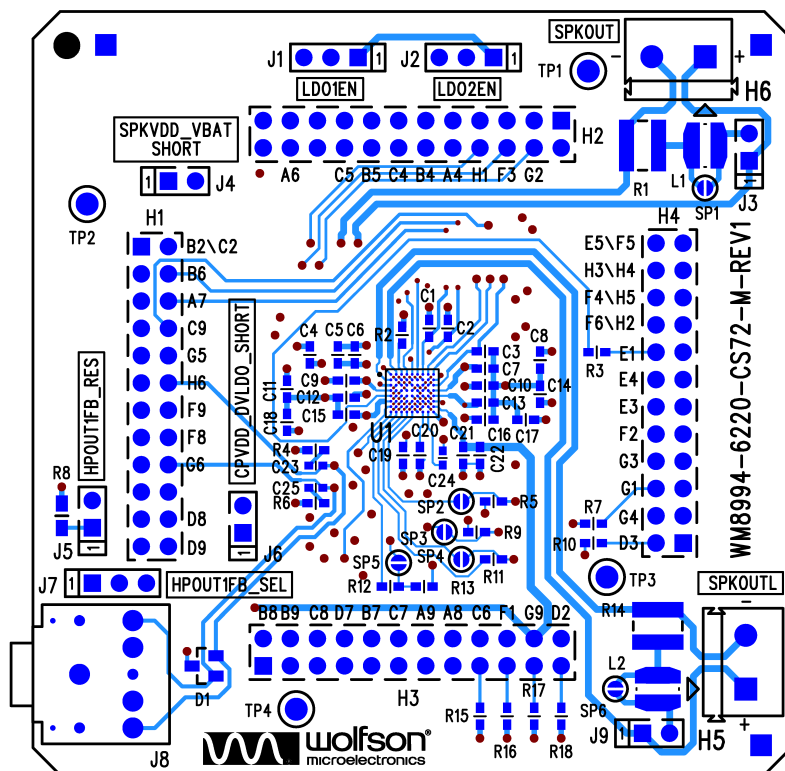
BILL OF MATERIALS (BOM)

<i>Item</i>	<i>RefDes</i>	<i>Description</i>	<i>Manufacturer</i>	<i>Manufacturer's Part Number</i>
1	L1 L2	10uH Shielded SM Power 1.1A Inductor ' LPS4018 series'	Coilcraft	LPS4018-103ML
2	J8	3.5mm Jack Socket 6.5mm Centre Height	Technik Industrial	TSH-3565-PBT-TIC-T
3	C19 C20	2.2uF 0603 SMD Ceramic Capacitor 10V X5R	MuRata	GRM188R61A225KE34D
4	C1 C2 C3 C4 C5 C8 C11 C14 C16 C17 C22	4.7uF 0603 SMD Ceramic Capacitor 6.3V X5R	MuRata	GRM188R60J475KE19D
5	MISC2	Lead-free label, 15mm round	Brady	Y436425
6	J3 J4 J5 J6 J9	1x2 PCB Pin Header 0.1" VERTICAL	Harwin	M20-9990245
7	J1 J2 J7	1x3 2.54mm Header Vertical	Harwin	M20-9990345
8	R8	1R 0805 SMD chip resistor 2% 0.1W	Meggitt	CRL1220 1R0
9	H5 H6	PCB mount 1X2 terminal block for 2.5mm wire guage	LUMBERG	KRM 02
10	C24	2.2uF 0402 SMD Ceramic Capacitor 6.3V X5R	Kemet	C0402C225M9PAC
11	C6 C7 C9 C10 C12 C13 C15 C21	0.1uF 0603 SMD Ceramic Capacitor 16V X7R	Phycomp	2238 786 15649
12	TP1 TP2 TP3 TP4	1.32mm PCB Test Terminal BLACK	Vero	20-2136
13	C23 C25	0.1uF 0402 SMD Ceramic Capacitor 16V X7R	MuRata	GRM155R71C104KA88D
14	R1 R14	8R2 1218 SMD chip resistor 1% 1W	Phycomp	2322 7357 8208
15	R4 R6	20R 0603 SMD chip resistor 1% 0.063W	Multicomp	MC 0.063W 0603 1% 20R
16	R3 R7 R10 R13	33R 0603 SMD chip resistor 1% 0.063W	Multicomp	MC 0.063W 0603 1% 33R
17	R2 R5 R9 R11 R12 R16 R17 R18	0R 0603 SMD chip resistor 1% 0.063W	Multicomp	MC 0.063W 0603 0R
18	LNK4 LNK6	0.1" OPEN JUMPER LINK RED	Protech	22-3565
19	LNK1 LNK2 LNK3 LNK5 LNK7 LNK9	0.1" OPEN JUMPER LINK YELLOW	Protech	22-3570
20	C18	1uF 0603 SMD Ceramic Capacitor 6.3V X5R	MuRata	GRM188R60J105KA01D
21	H1 H2 H3 H4	2x12 2.54mm pitch PCB Pin Socket VERTICAL	Samtec	SSQ-112-03-G-D
22	PCB1	PCB	Kelan Circuits Ltd	WM8994-6220-CS72-M-REV1
23	U1	WM8994 Multi-Channel Audio Hub CODEC for Smartphones	Wolfson Microelectronics	WM8994ECS
Unpop				
24	D1	TVS Diode PESD5V0S2BT Vrrm=5V dual ESD Protection SOT23	Philips	PESD5V0S2BT
25	R15	0R 0603 SMD chip resistor 1% 0.063W	Multicomp	MC 0.063W 0603 0R
26	SP1 SP2 SP3 SP4 SP5 SP6	Surface mount shorting point	N/A	N/A

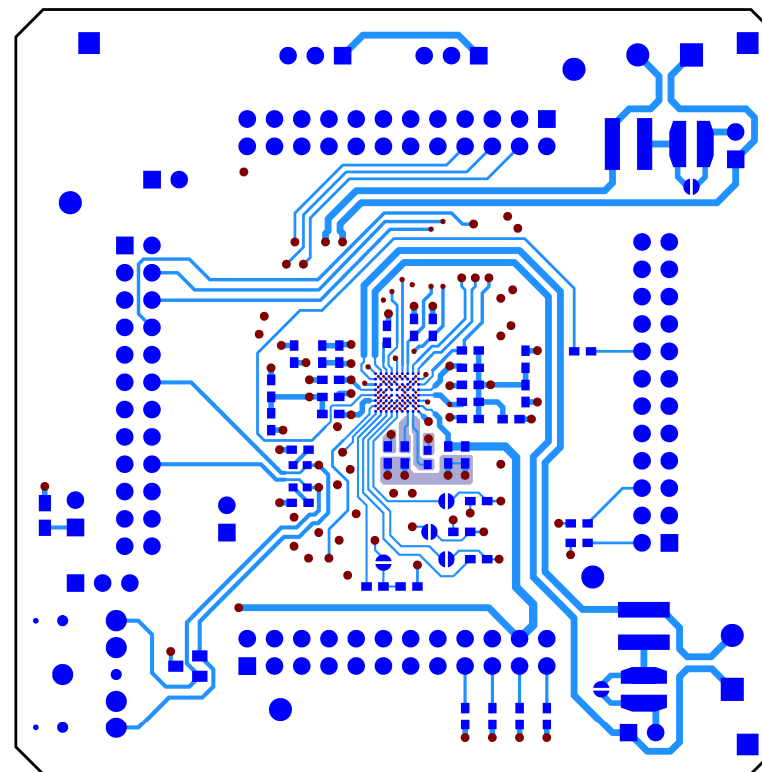
PCB LAYOUT



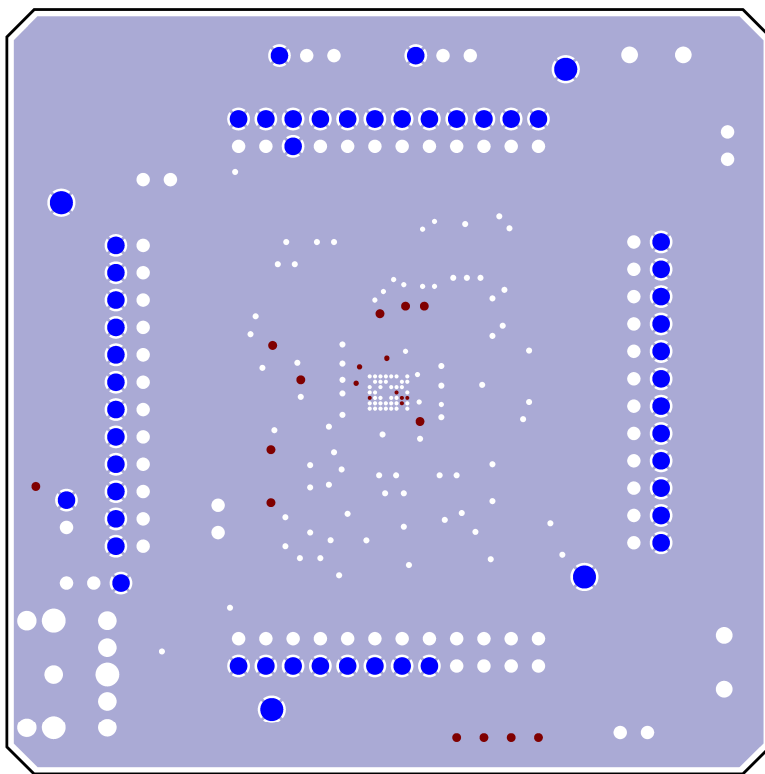
Top Layer: Overview



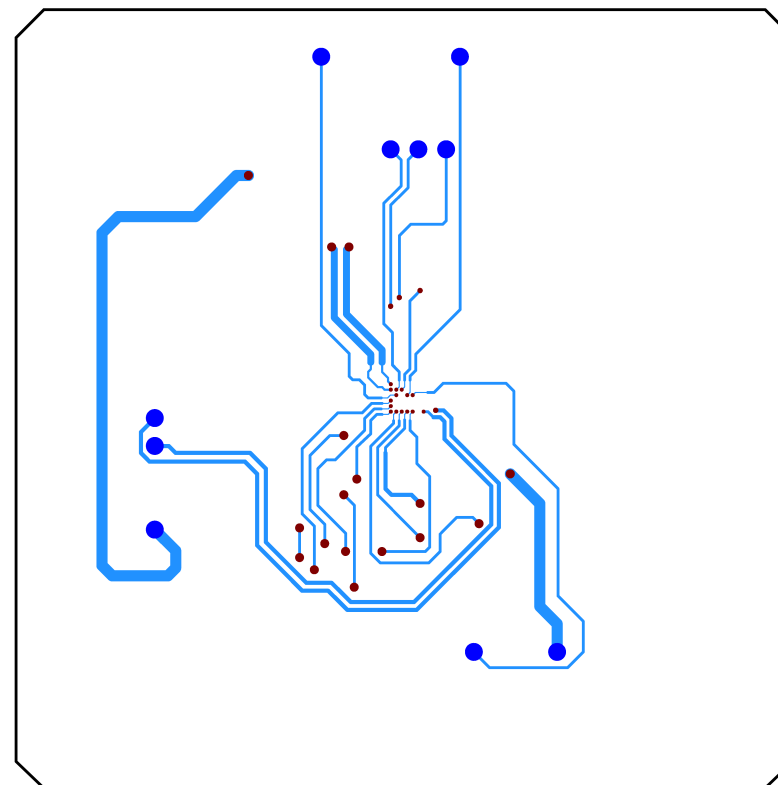
Top Layer: Silkscreen + Copper



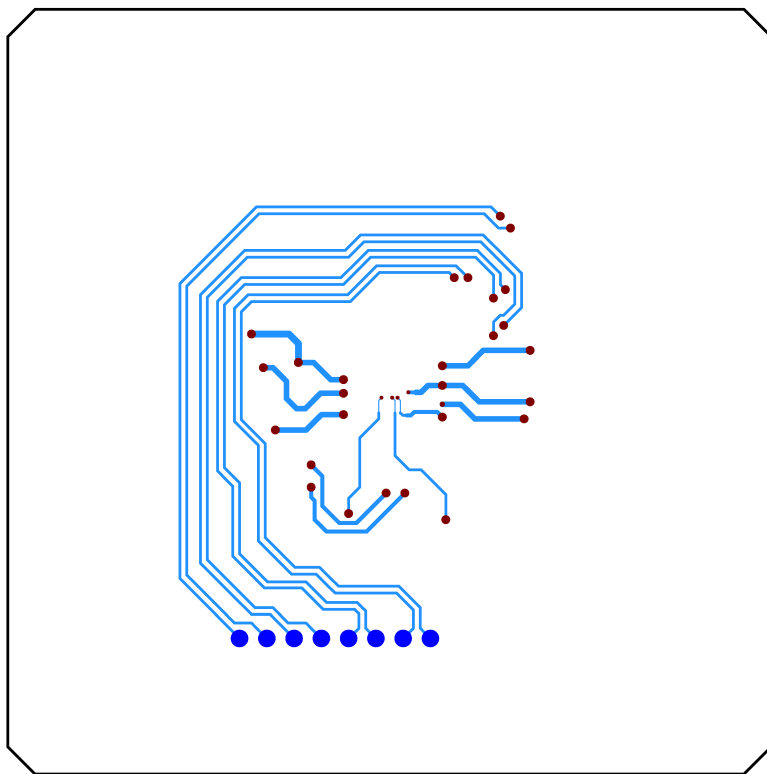
Top Layer: Copper



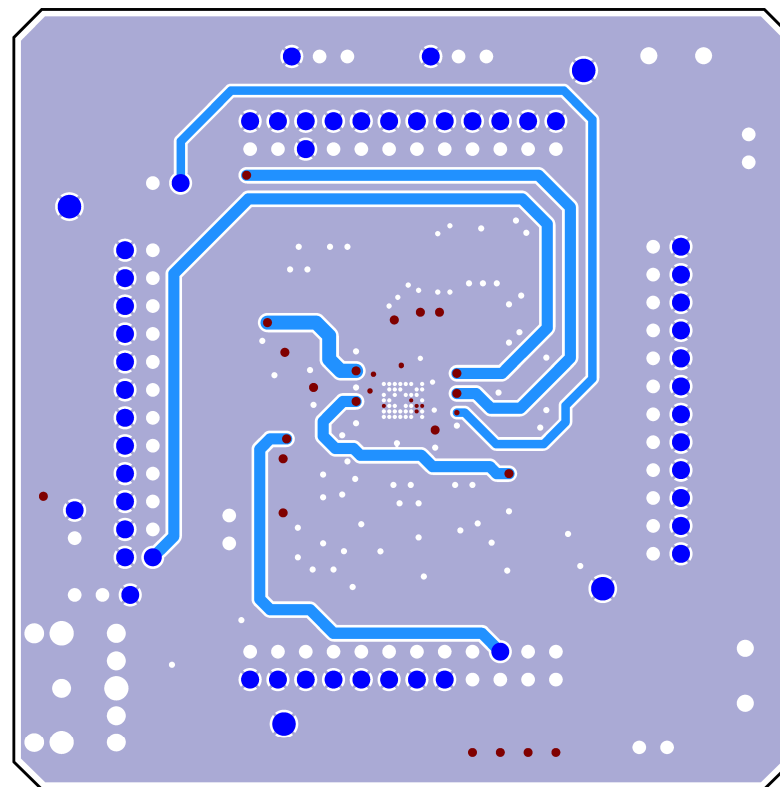
Layer 2: Copper



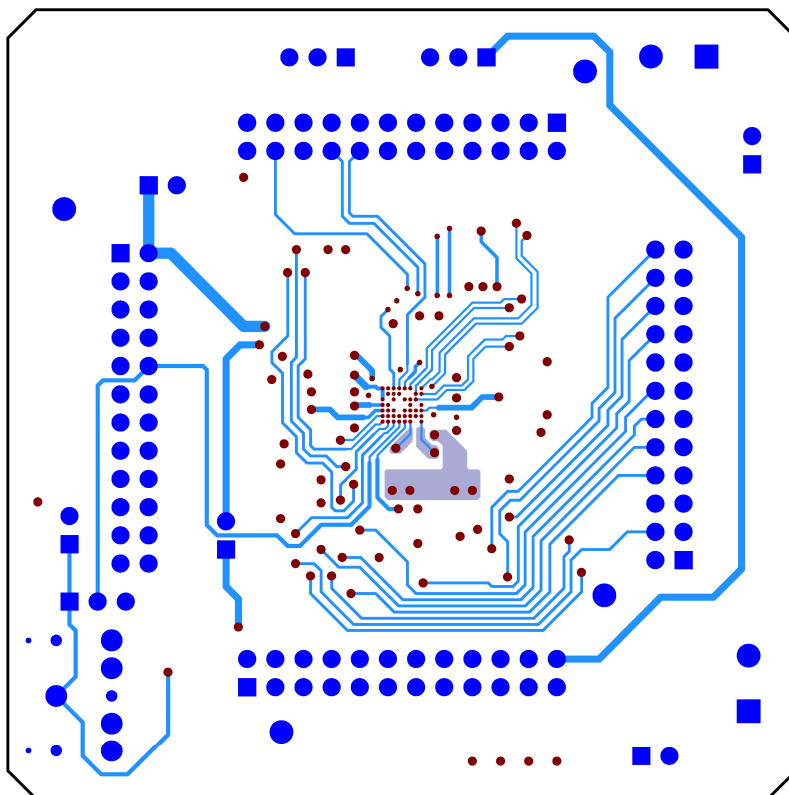
Layer 3: Copper



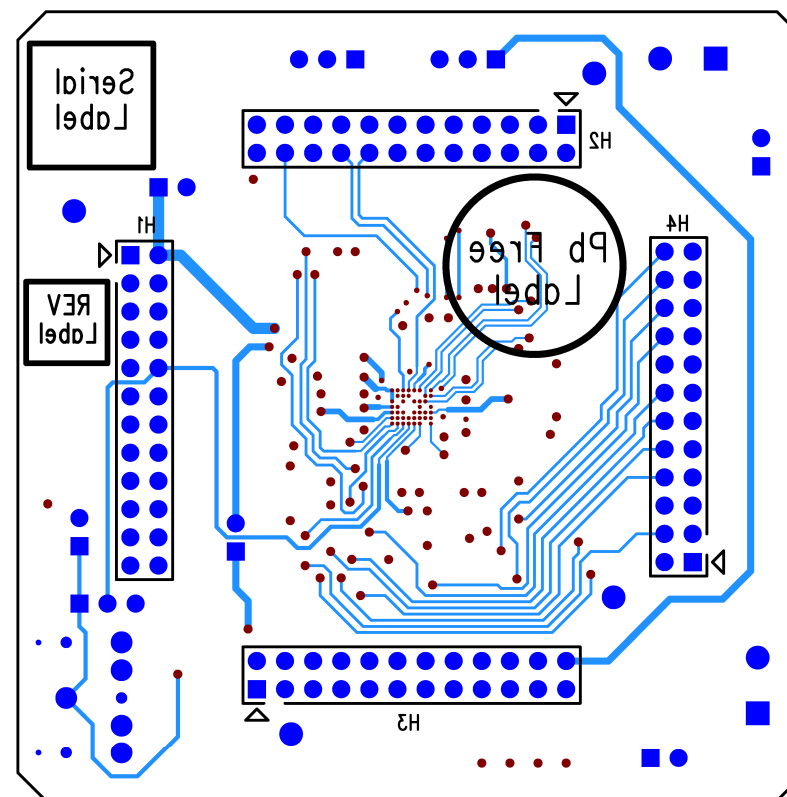
Layer 4: Copper



Layer 5: Copper



Bottom Layer: Copper



Bottom Layer: Silkscreen + Copper

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