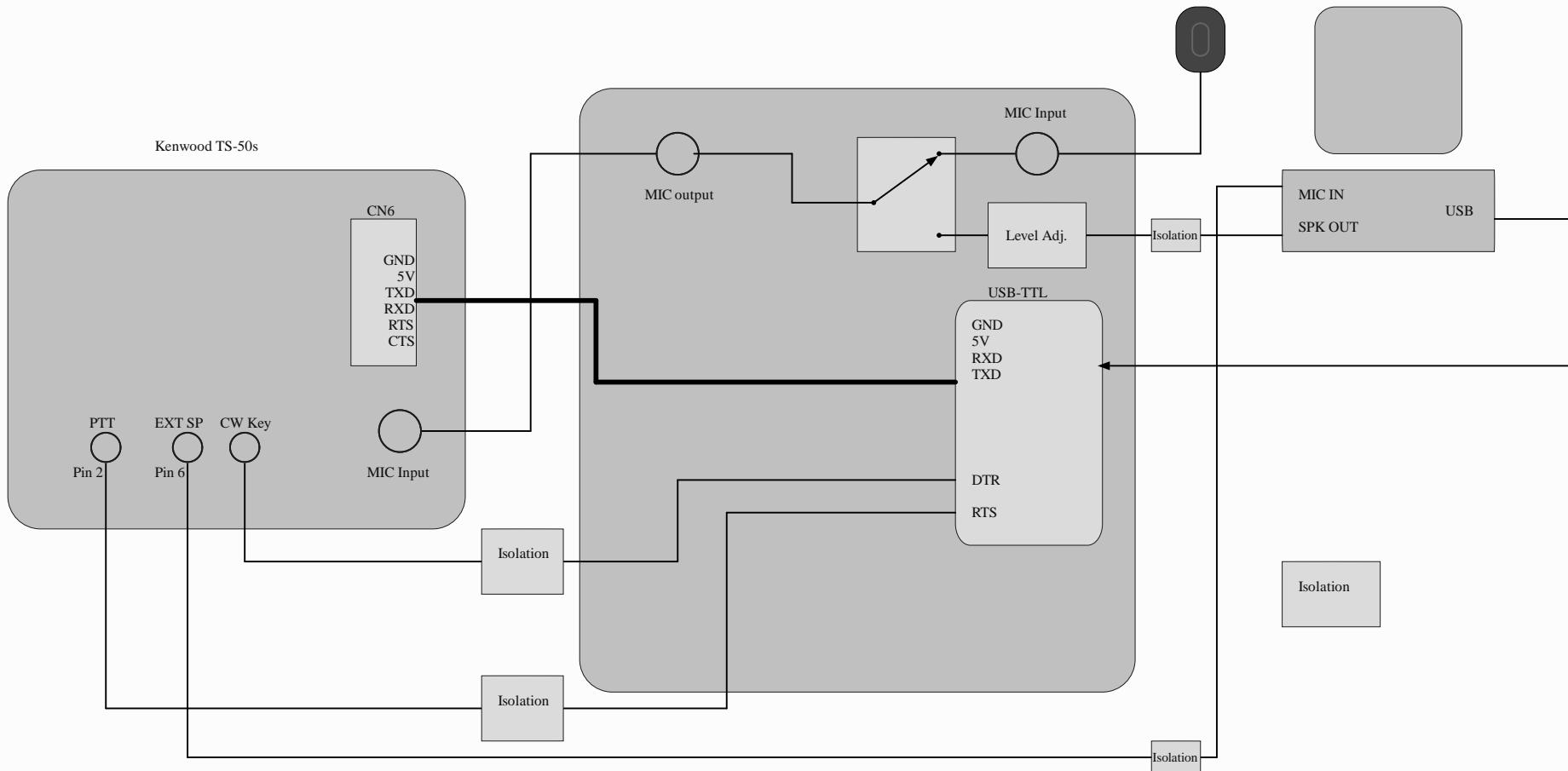
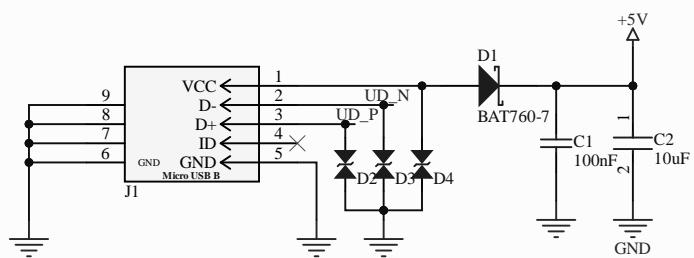


A

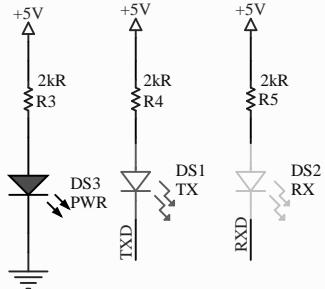
A



A



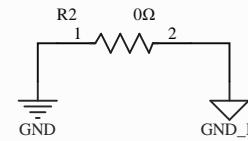
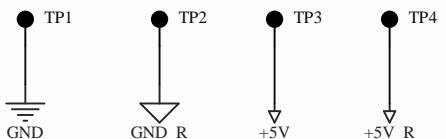
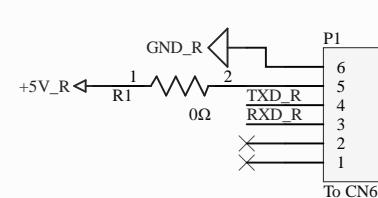
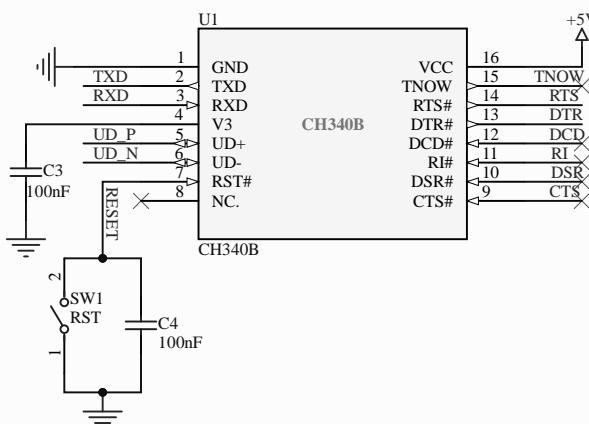
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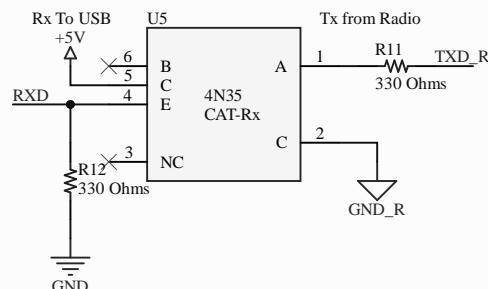
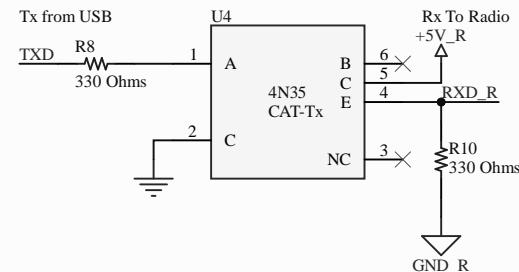
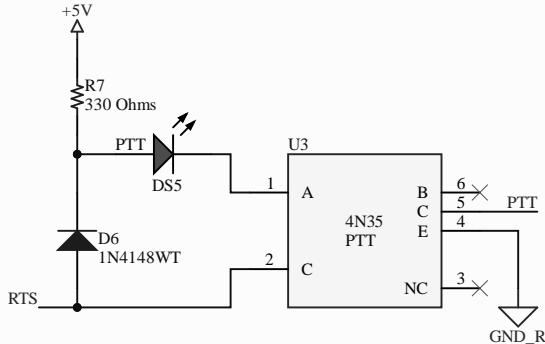
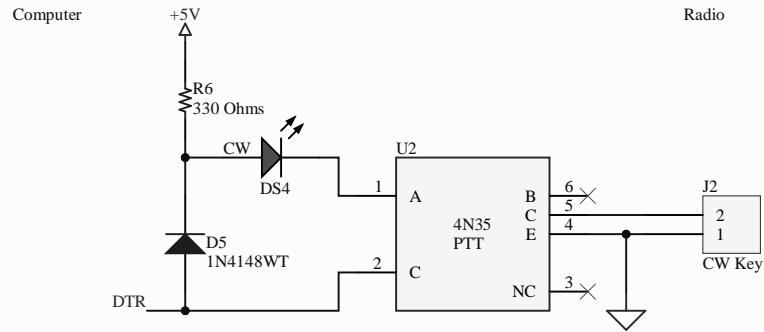


C

△ CW--DTR
PTT-RTS
+5V from Computer
+5V_R from Radio

Check if TXD/RXD is Active low/high
Add POT for SPK OUT
Add Hardware & TPs





Radio

Pinout diagram for a GX-8 Male microphone input:

- Pin 8: GND_R
- Pin 7: IC-GND
- Pin 6: J4
- Pin 5: Mic Input
- Pin 4: UP
- Pin 3: DOWN
- Pin 2: PTT
- Pin 1: PHONE

The diagram shows a circuit connection between four components: PHONE, DIGI, SW2, and MIC. The PHONE and DIGI lines are connected to the common ground rail. The MIC line is also connected to ground. SW2 is a two-pole switch. Pole 1 connects PHONE to the MIC line. Pole 2 connects the MIC line to the DIGI line. Pole 3 connects the DIGI line back to the PHONE line. Labels "PHONE", "DIGI", "SW2", and "MIC" are placed above their respective components, and "Voice <-> Digital, CW" is written below the MIC line.

The circuit diagram illustrates the connection between a Radio and a Computer. The Radio's SPK-OUT terminal is connected to ground through a 100pF capacitor C5. The signal then passes through a series of three coupled coils (T1). The output of T1 is rectified by a diode bridge rectifier. The resulting DC voltage is connected to the Computer's Line In terminal via a switch P2.

The circuit diagram shows the Line Out section. The DIGI signal is connected to the base of transistor T2. A 100pF capacitor (C6) is connected between the DIGI line and ground. The collector of T2 is connected to the base of VR1. The collector of VR1 is connected to one end of resistor R9 (1 kOhms). The other end of R9 is connected to the output terminal of P3. The output of P3 is labeled "Line Out".

2

Kenwood TS50s Digital Interface

4S6TMF
Sri Lanka

4S6TMP
www.4s6tmp.com

A

A

B

B

C

C

D

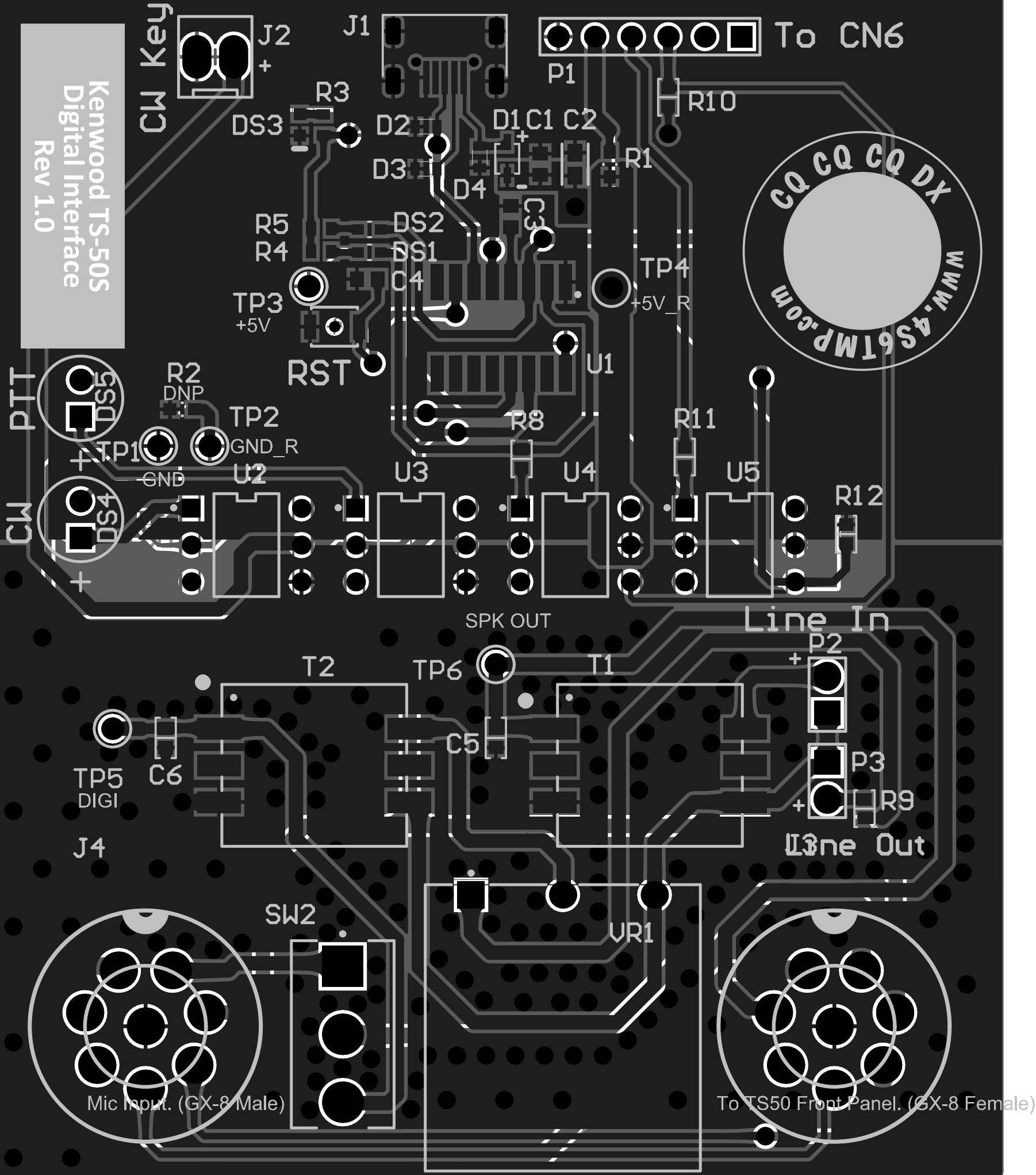
D

Logo1
PCB Logo
4S6TMP

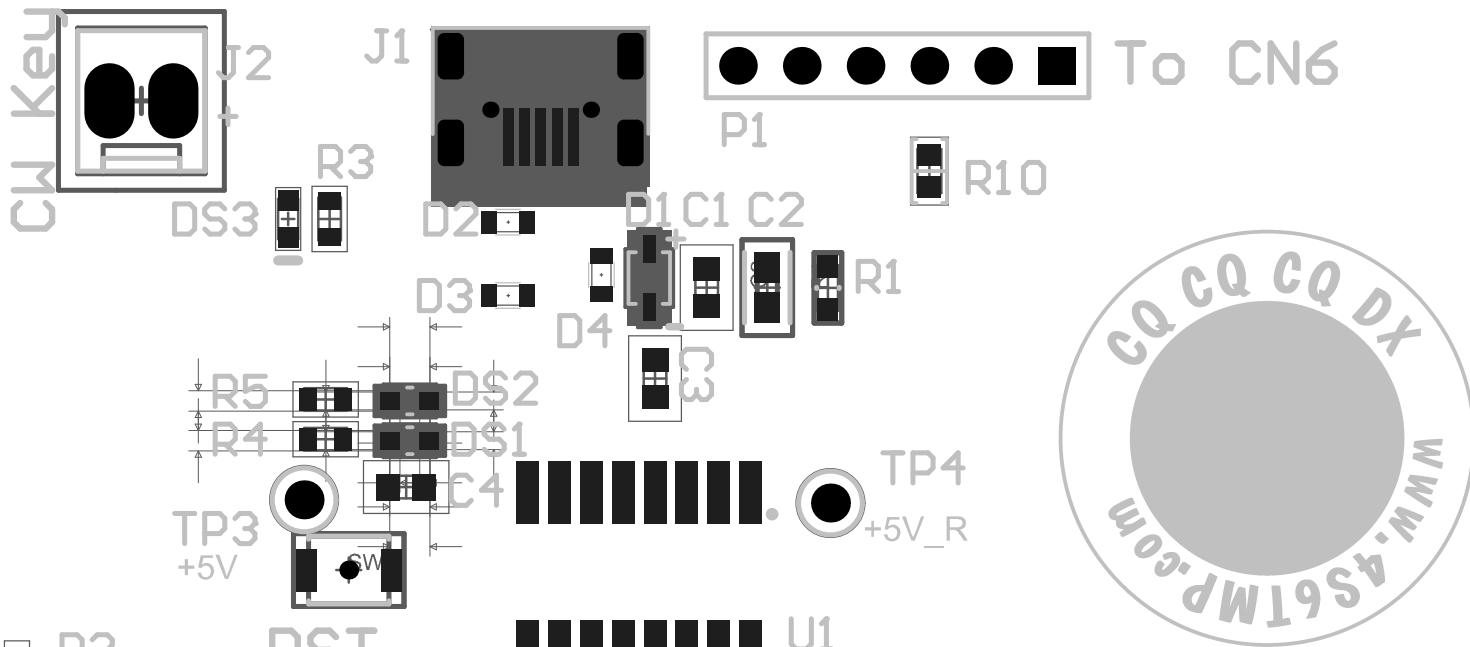
Title Hardware		
Size: A4	Number:4	Revision: 1
Date: 31/01/2022	Time: 12:20:56	Sheet 4 of 4
File: C:\Users\tmadu\Documents\Amateur Radio\Kenwood-TS50s-Digi-Interface\Kenwood-TS50s-Digi-Interface\Hardware.SchDoc		



Kenwood TS-50S Digital Interface Rev 1.0

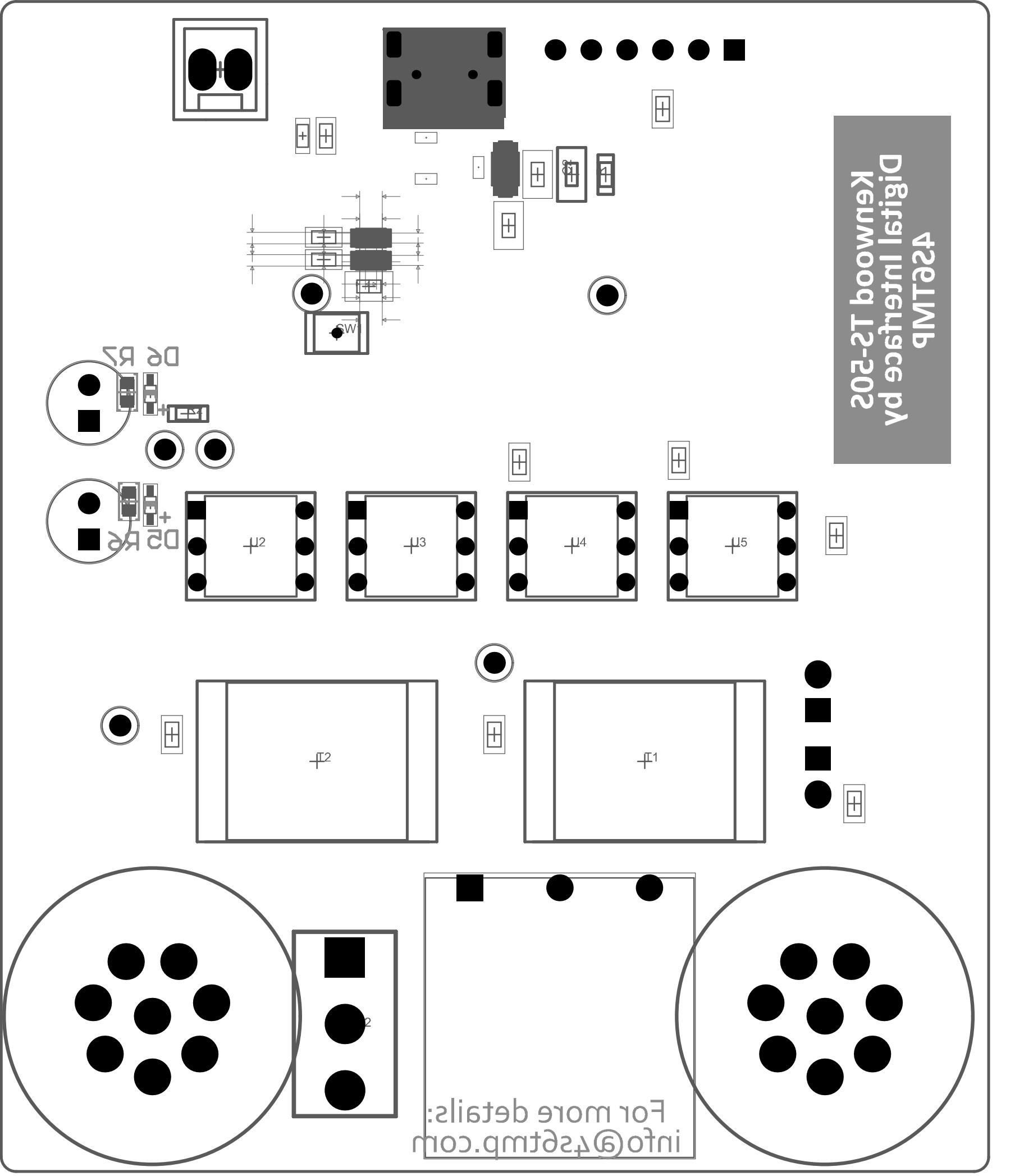


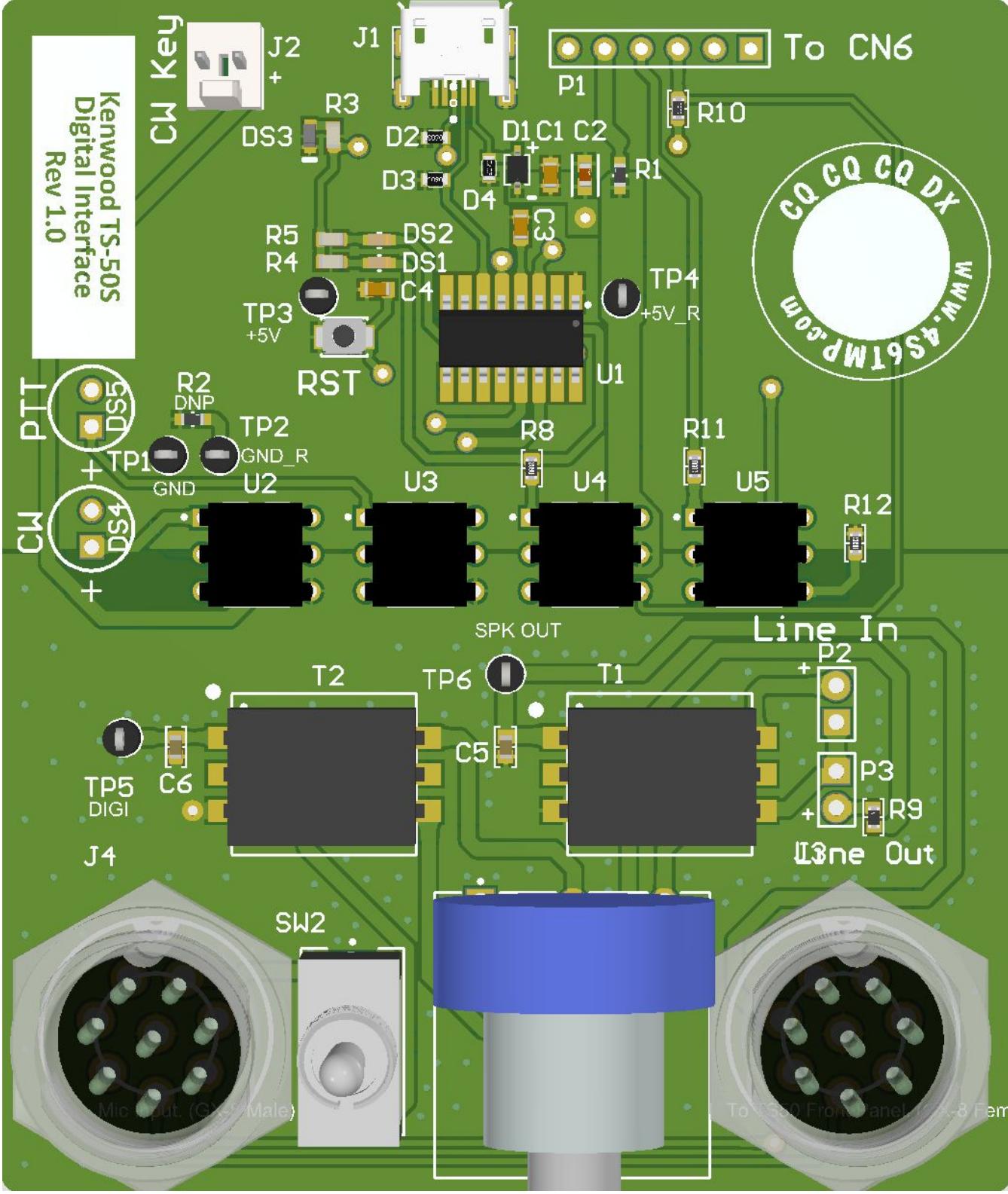
Kenwood TS-50S
Digital Interface
Rev 1.0

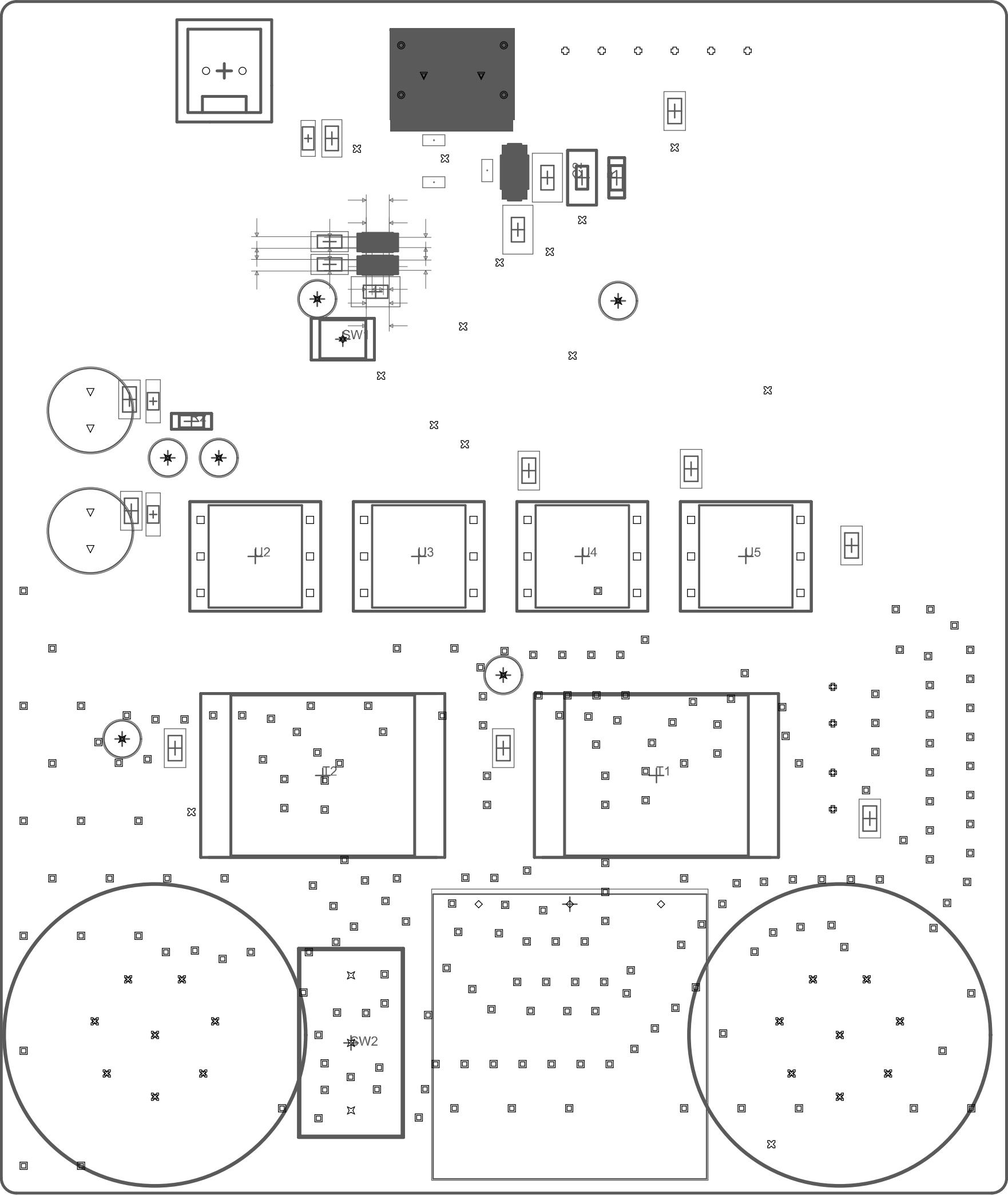


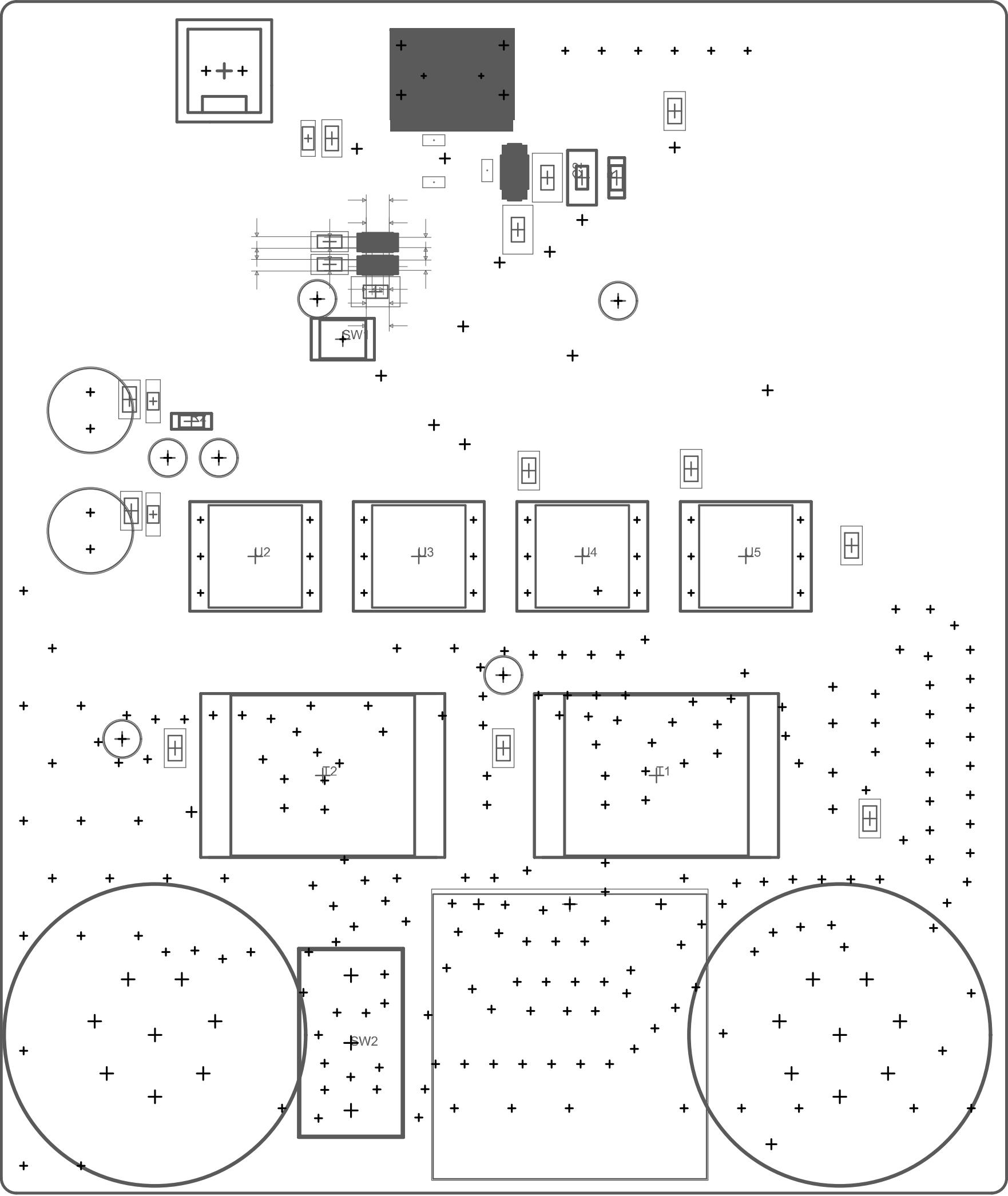
Digital Interface Kewmooq 12-25

For more details:
info@segfmb.com

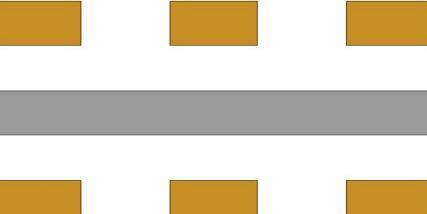








Board Stack Report

Stack Up		Layer Stack			
Layer	Board Layer Stack	Name	Material	Thickness	Constant
1		Top Paste			
2		Top Overlay			
3		Top Solder	Solder Resist	0.40mil	3.5
4		Top Layer	Copper	1.40mil	
5		Dielectric 1	FR-4	12.60mil	4.8
6		Bottom Layer	Copper	1.40mil	
7		Bottom Solder	Solder Resist	0.40mil	3.5
8		Bottom Overlay			
9		Bottom Paste			
Height : 16.20mil					

Design Rules Verification Report

Filename : C:\Users\lmadu\Documents\Amateur Radio\Kenwood-TS50s-Digi-Interface\Kenwood-TS50s-Digi-Interface\ts-50s-digi-interface.PcbDoc

Warnings 0

Rule Violations 0

Warnings	
Total	0
Rule Violations	
Clearance Constraint (Gap=0.254mm) (All), (All)	0
Short-Circuit Constraint (Allowed=No) (All), (All)	0
Un-Routed Net Constraint (All))	0
Modified Polygon (Allow modified: No), (Allow shelved: No)	0
Width Constraint (Min=0.254mm) (Max=1mm) (Preferred=0.45mm) (All)	0
Power Plane Connect Rule(Relief Connect)(Expansion=0.508mm) (Conductor Width=0.254mm) (Air Gap=0.254mm)	0
Hole Size Constraint (Min=0.025mm) (Max=2.54mm) (All)	0
Hole To Hole Clearance (Gap=0.254mm) (All), (All)	0
Minimum Solder Mask Sliver (Gap=0.05mm) (Disabled)(All), (All)	0
Silk To Solder Mask (Clearance=0.01mm) (Disabled)(IsPad), (All)	0
Silk to Silk (Clearance=0.1mm) (Disabled)(All), (All)	0
Net Antennae (Tolerance=0mm) (All)	0
Room Hardware (Bounding Region = (166.497mm, 472.694mm, 222.885mm, 497.078mm)	0
Room ts-50s-digi-interface (Bounding Region = (38.735mm, 314.579mm, 108.077mm, 374.015mm)	0
Room CAT-PTT (Bounding Region = (39.141mm, 314.706mm, 108.61mm, 396.748mm)	0
Height Constraint (Min=0mm) (Max=25.4mm) (Preferred=12.7mm) (All)	0
Total	0

Electrical Rules Check Report

Class	Document	Message
Warning	CAT-PTT.SchDoc	Component C1 at 3500mil,5950mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C1: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C2 at 4000mil,6100mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C2: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C3 at 5900mil,5800mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C3: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C4 at 6300mil,4900mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component C4: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component D5 1N4148WT at 1200mil,6000mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component D5 1N4148WT: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component D6 1N4148WT at 1200mil,4200mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component D6 1N4148WT: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component DS3 PWR at 900mil,3700mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component DS3 PWR: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component DS4 CW at 1700mil,6600mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component DS4 CW: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component DS5 PTT at 1700mil,4800mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R1 at 9600mil,6200mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R1: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R2 at 8700mil,4000mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R2: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R3 at 700mil,4000mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R3: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R4 at 1260mil,4000mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R4: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component R5 at 1860mil,4000mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..

Class	Document	Message
Warning	CAT-PTT.SchDoc	is expired..
Warning	CAT-PTT.SchDoc	Component R5: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component SW1 RST at 6000mil,4700mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component SW1 RST: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component SW2 Voice <--> Digital, CW at 5700mil,4700mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component SW2 Voice <--> Digital, CW: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP1 GND at 6600mil,2900mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP1 GND: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP2 GND_R at 7300mil,2900mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP2 GND_R: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP3 +5V at 7900mil,2900mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP3 +5V: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP4 +5V_R at 8500mil,2900mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Component TP4 +5V_R: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component TP5 DIGI at 5600mil,1500mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component TP5 DIGI: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component TP6 SPK OUT at 6000mil,1500mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component TP6 SPK OUT: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component VR1 3852A-282-103AL at 9600mil,2200mil: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	ts-50s-digi-interface.SchDoc	Component VR1 3852A-282-103AL: Can't perform revision status validation: Access denied! User login required for this service. Session is expired..
Warning	CAT-PTT.SchDoc	Net RESET has no driving source (Pin C4-2, Pin SW1-2, Pin U1-7)
Warning	CAT-PTT.SchDoc	Net RXD has no driving source (Pin DS2-1, Pin R12-1, Pin U1-3, Pin U5-4)
Warning	ts-50s-digi-interface.SchDoc	Off grid J3 at 9723.071mil,6162.122mil
Warning	Hardware.SchDoc	Off grid Logo1 at 69.23mm,86.23mm
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label DOWN at 6722.047mil,5942.52mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label DOWN at 10023.859mil,6004.642mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label MIC at 10105.748mil,6319.602mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label MIC-GND at 5677.953mil,6257.48mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label MIC-GND at 9001.024mil,6319.602mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label PHONE at 6700mil,6257.48mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label PTT at 10123.071mil,6162.122mil

Class	Document	Message
Warning	CAT-PTT.SchDoc	Off grid Net Label RESET at 6200mil,5673.677mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label SPK-OUT at 8923.071mil,6162.122mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Net Label UP at 10038.032mil,5822.752mil
Warning	ts-50s-digi-interface.SchDoc	Off grid No ERC at 6177.953mil,5942.52mil
Warning	ts-50s-digi-interface.SchDoc	Off grid No ERC at 9501.024mil,6004.642mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-1 at 9945.118mil,6319.602mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-2 at 10023.071mil,6162.122mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-3 at 9945.118mil,6004.642mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-4 at 9723.071mil,5862.122mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-5 at 9501.024mil,6004.642mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-6 at 9423.071mil,6162.122mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-7 at 9501.024mil,6319.602mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J3-8 at 9723.071mil,6462.122mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J4-1 at 6622.047mil,6257.48mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J4-3 at 6622.047mil,5942.52mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J4-5 at 6177.953mil,5942.52mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Pin J4-7 at 6177.953mil,6257.48mil
Warning	ts-50s-digi-interface.SchDoc	Off grid Power Object GND_R at 9300mil,6717.083mil

Comment	Description	Designator	Footprint	LibRef	Quantity	Capacitance	Resistance (Ohms)	Resistance	Value	Manufacturer Part Number	Manufacturer Part Number 1	Manufacturer Part Number 2	Part Number	PartNumber
100nF	Chip Capacitor, 100 pF, +/- 10%, 50V, -55 to 125 degC, 0603 (1608 Metric), RoHS, Tape and Reel	C1, C3, C4	CAP1608X90X35ML10T15	CMP-2006-02375-5		3 100nF				GCM188R71H104K A57D				
10uF	Chip Multilayer Ceramic Capacitors for General Purpose, 0603, 10uF, X5R, 15%, 20%, 6.3V	C2	FP-G8M188-0_1-e0_2_0_55-IPC_A	CMP-2006-02792-2		1 10uF								
100pF	CAP CER 100PF 50V COG/NPO 0603	C5, C6	CAP 0603_1608	500R14N101J4T		2 100pF			100pF					500R14N101J4T
BAT760-7	30V 1A 550mV @ 1A SOD-323 Schottky Barrier Diodes (SBD) RoHS	D1	SOD323_DIO	BAT760-7		1				BAT760-7				
ESD Diode	Bidirectional - 50V - 5V 0603 ESD Protection Devices ROHS	D2, D3, D4	0603ESDA-05N	0603ESDA-05N		3								
1N4148WT	High Conduction Fast Switching Diode, 75V, -55 to 150 degC, 2-Pin SOD523, RoHS	D5, D6	FAIR-SOD-523F-2_V	CMP-0881-00001-1		2								1N4148WT
TX	No Description Available	D51	LED_19-217/GHC-YR1S2/3T_EVE	19-217/GHC-YR1S2/3T		1								
RX	Yellow 590nm LED Indication - Discrete 2V 0603 (1608 Metric)	D52	LED_19-217/GHC-YR1S2/3T_EVE	19-217/YSC-AP1Q2/3T		1								
PWR	Chip LED, Red, 5V, 25 mA, -40 to 85 degC, 2-Pin SMD (0603), RoHS, Tape and Reel	D53	EVRL-0603-2_V	CMP-2100-03578-1		1								
CW	E-1 3/4 (5mm) Diffused LED Lamp, 1.9V, -40 to 100 degC, 2-Pin THD, RoHS, Bulk	D54	AVAG-HLMP-3301-2	CMP-2000-04411-1		1								
PTT	E-1 3/4 (5mm) Diffused LED Lamp, 1.9V, -40 to 100 degC, 2-Pin THD, RoHS, Bulk	D55	AVAG-HLMP-3301-2	CMP-2000-04411-1		1								
U254-051N-4Bh806	USB - Micro B Female USB 2.5 SMD USB Connectors RoHS	J1	CONN_10103594-0001LF_AMP	U254-051N-4Bh806		1								
CW Key	CONN HEADER VERT ZPOS 2.54MM	J2	MOLEX KK 022272021	022272021		1								022272021
To T550 Front Panel, (GX-8-Female)	8 Position Circular Connector Receptacle, Male Pins Solder	J3	GX-8	GX-8		1								
Mic Input, (GX-8 Male)	8 Position Circular Connector Receptacle, Male Pins Solder	J4	GX-8	GX-8		1								
To CN6	Header, 6-Pin	P1	HDR1X6	Header 6		1								
Line In	3.5mm Mono	P2	HDR1X2	Header 2		1								
Line Out	3.5mm Mono	P3	HDR1X2	Header 2		1								
0Ω	RES SMD 0Ω OHM JUMPER 1/10W 0603, DIN	R1, R2	FP-RCO0603-MFG	CMP-2000-06925-2		2			0Ω	0Ω	RC0603FR-070RL			
2kR		R3, R4, R5	RESC1608X55X25NL10T15	CMP-2000-04259-1		3			2kR		RC0603JR-072KL			RC0603JR-072KL
330 Ohms	RES SMD 330 OHM 1% 1/10W 0603	R6, R7, R8, R10, R11, R12	RES 0603_1608	AC0603FR-07330RL		6			330 Ohms	330 Ohms				AC0603FR-07330RL
1kOhms	RES SMD 1k OHM 1% 1/10W 0603	R9	RES 0603_1608	AT0603FR071KL		1			1 kOhms	1 kOhms				AT0603FR071KL
RST	SWITCH TACTILE SPST NO 0.05A 12V	SW1	FP-B3U-1000P-B-MFG	CMP-08834-00005-1		1								
Voice <-> Digital, CW	SWITCH TOGGLE SPDT SA 12V	SW2	FP-A101SDCQ04-MFG	CMP-03408-00002-1		1								
SM-LP-5001	TRANSFORMER LINE MATCHING SMA	T1, T2	SM-LP-5001	CMP-07264-00002-1		2								
GND	Test Point, Black, 1-Pin THD, RoHS, Bulk	TP1	KSTN-5001	CMP-2000-05181-1		1								
GND_R	Test Point, Black, 1-Pin THD, RoHS, Bulk	TP2	KSTN-5001	CMP-2000-05181-1		1								
+5V	Test Point, Black, 1-Pin THD, RoHS, Bulk	TP3	KSTN-5001	CMP-2000-05181-1		1								
+5V_R	Test Point, Black, 1-Pin THD, RoHS, Bulk	TP4	KSTN-5001	CMP-2000-05181-1		1								
DIGI	Test Point, Black, 1-Pin THD, RoHS, Bulk	TP5	KSTN-5001	CMP-2000-05181-1		1								
SPK OUT	Test Point, Black, 1-Pin THD, RoHS, Bulk	TP6	KSTN-5001	CMP-2000-05181-1		1								
CH340B	Transceiver USB 2.0 2Mbps SOP-16, 150mil USB ICs RoHS	U1	SOIC-16	CH340B		1								
PTT	IC OPTOISO 5KV TRANS W/BASE 60IP	U2, U3	Vishay_AN35_0	IC_Vishay_AN35_eec		2								4N35
CAT-Tx	IC OPTOISO 5KV TRANS W/BASE 60IP	U4	Vishay_AN35_0	IC_Vishay_AN35_eec		1								4N35
CAT-Rx	IC OPTOISO 5KV TRANS W/BASE 60IP	U5	Vishay_AN35_0	IC_Vishay_AN35_eec		1								4N35
3852A-282-103AL	Diameter Panel Control, 100 Kohm, +/-10%, 2W, -10 to +25 degC, 3-Pin THD, RoHS	VR1	BOUR-3852A-282-103AL-3_V	CMP-2000-05079-1		1		100k						