Si3226/7MMB8/9-EVB

Evaluation Board for the Si3226/7 Dual ProSLIC®—Quasi-Cuk DC/DC Converter for Commercial Temperature Range

Description

This document describes the operation of the Silicon Laboratories Si3226/7 Dual ProSLIC® device evaluation platform. It covers the Silicon Labs Dual ProSLIC device coupled with an Si3208 (110 V) or Si3209 (135 V). Each is in a 40-pin QFN package. The Dual ProSLIC evaluation platform is designed to provide observation of the ProSLIC's functionality. The Dual ProSLIC platform consists of a Voice Motherboard, an Si3226/7 daughter card (Si3226DCxx-EVB), and the Dual GUI software. The Dual GUI software is a graphical user interface program that runs in the Microsoft Windows® environment.

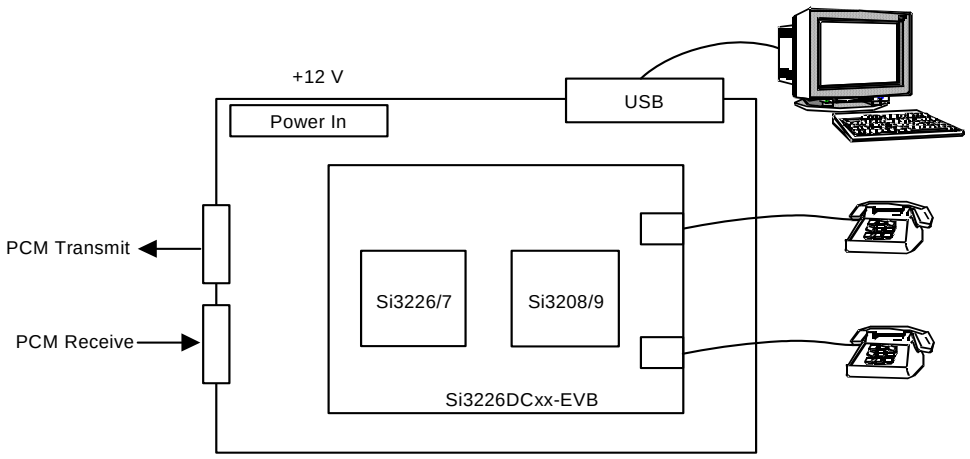
Equipment requirements:

- PC running Windows 95, 98, ME, NT, XP, or 2000
- 12 V, 2 A power supply
- Balanced audio generator and analyzer (optional) (e.g., Audio Precision System 2 and/or HP TIMS set and/or Wandel and Goltermann PCM-4)
- 8 kHz PCM signal generator and analyzer (optional) (e.g., Audio Precision System 2 and Audio Precision SIA-2322 and/or Wandel and Goltermann PCM-4)

Features

- Silicon Laboratories Dual ProSLIC device with high-voltage integrated linefeed IC.
- All components necessary for linecard implementation over the commercial temperature range
- Control I/O through standard USB port
- PCM I/O set up for Audio Precision System 2 or Wandel and Goltermann PCM-4
- Full access to PCM highway

Functional Block Diagram



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1. Voice Motherboard Setup

The voice motherboard has several jumpers that need to be set to enable proper operation of this board. JP1 and JP2 provide power to the board from the connectors. The jumpers should be set as follows:

JP1: +VIN->J1

JP2:+5V->J1

Set JP12:DTX->0

Set SW2:

X	X		X
		X	
1	2	3	4

2. Daughter Card Setup

The daughtercard has a single jumper that must be set. J5 is the 3.3 V power to the board. This jumper must be installed for the board to function.

3. Evaluation Software Installation and Use

Refer to “AN265: 2nd-Generation ProSLIC® GUI User’s Guide”.

4. Controlling the Linefeed State

The Linefeed state is controlled through Register 30. Upon completion of initialization, the linefeed state is set to forward active. The most common states are listed below. “AN317: Dual ProSLIC® Si3226/27 Designer’s Guide” provides detailed descriptions of the registers and modes.

Common Linefeed states are:

- 0 open: Linefeed is in a high-impedance state.
- 1 forward active: Linefeed will provide loop current with tip more positive than ring.
- 4 ring: Linefeed will produce a 55 V RMS, 48 Vdc ring signal.
- 5 reverse active: Linefeed will provide loop current with Ring more positive than tip.

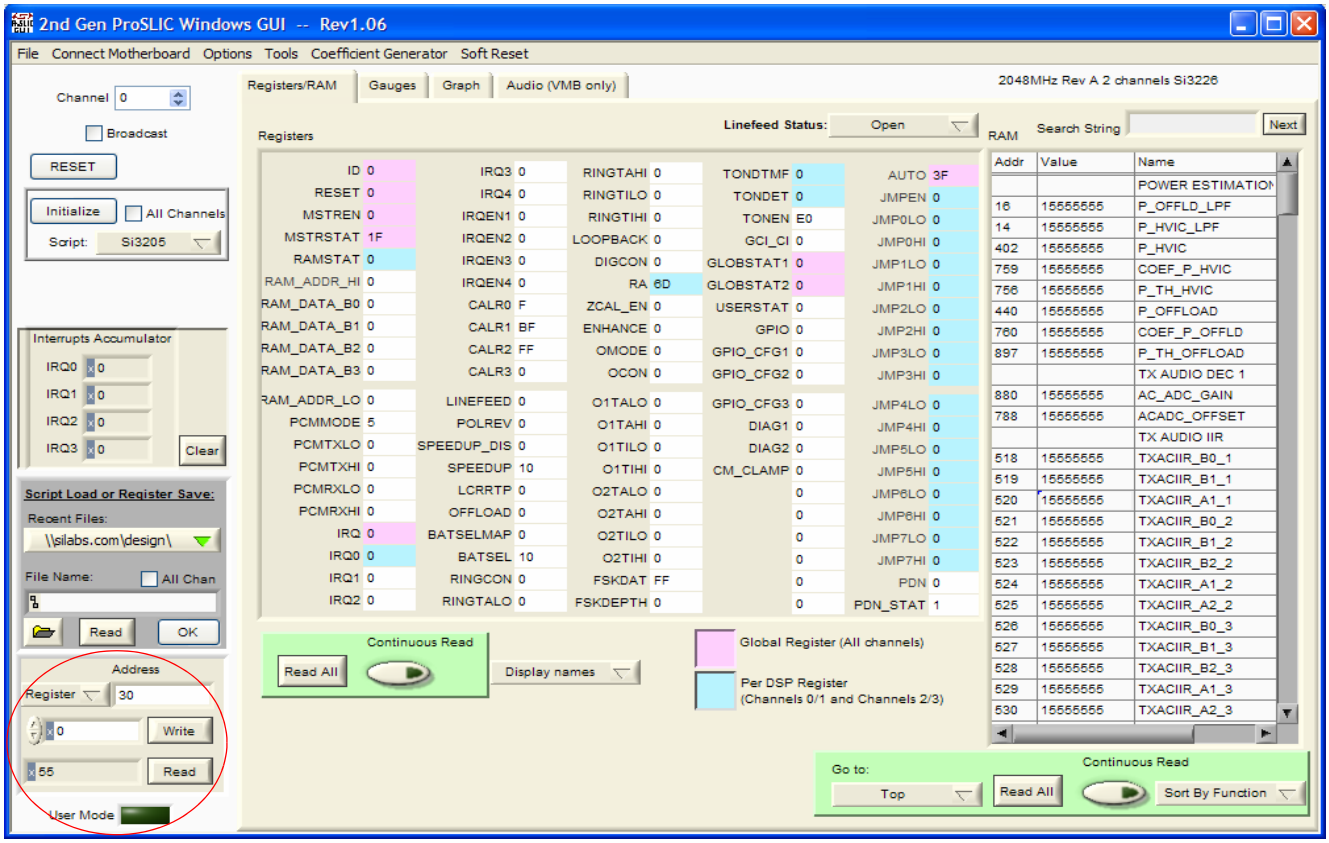

Figure 1. Linefeed State Control

The board is set up to ring with a +48 V dc offset. In order to ring, the line feed must be set to forward active (Register 30 = 1). Then the linefeed should be set to ringing (Register 30 = 4).

5. Changing Ringing Parameters

The Evaluation Software provides a tool to easily change the ringing parameters. The ringing tool can be accessed from the tool menu.

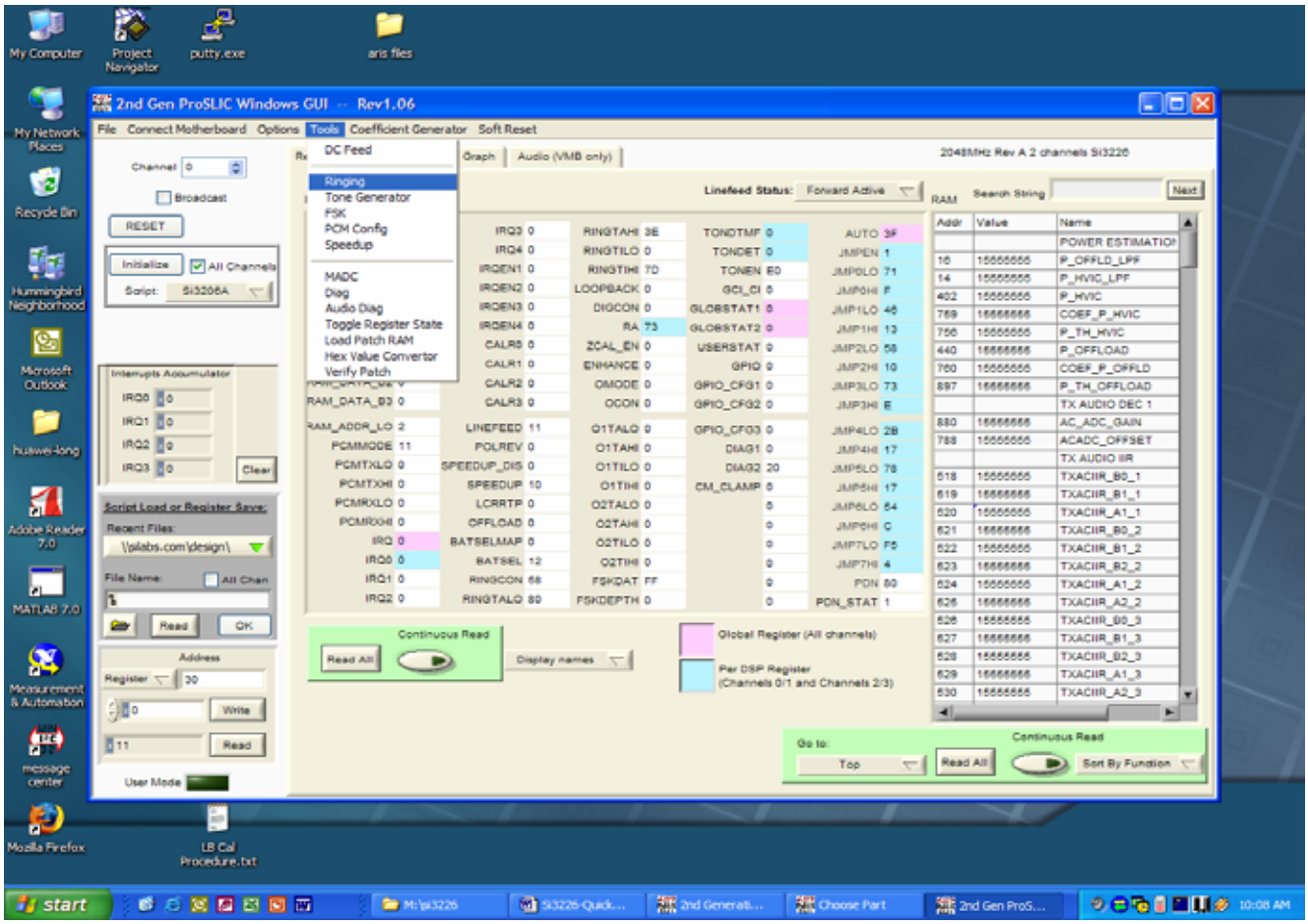

Figure 2. Ringing Parameters

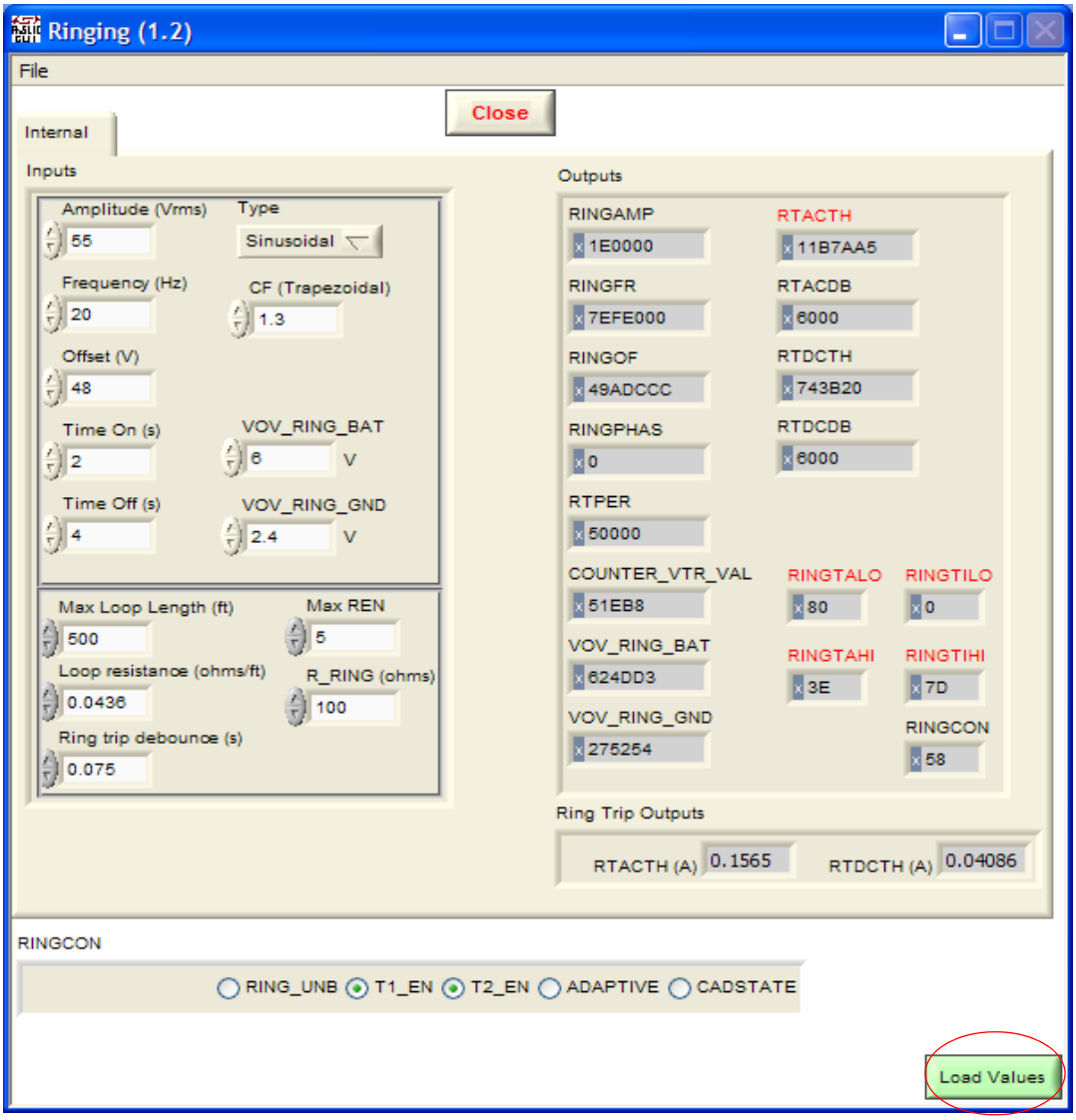

Figure 3. Load Values

The user provides the ring tool with a set of inputs. The outputs are the calculated values to be loaded into registers. The example above shows 55 Vrms sinusoidal ringing with a 48 V offset. The loop length is 500 ft. The load is 5 REN. The proper open circuit ring voltage will be calculated to meet the ringing requirements at the load. To load the calculated values press "Load Values".

6. Tone Generators

The GUI also provides a tool to control the Tone Generators. The settings below will enable a continuous dial tone.

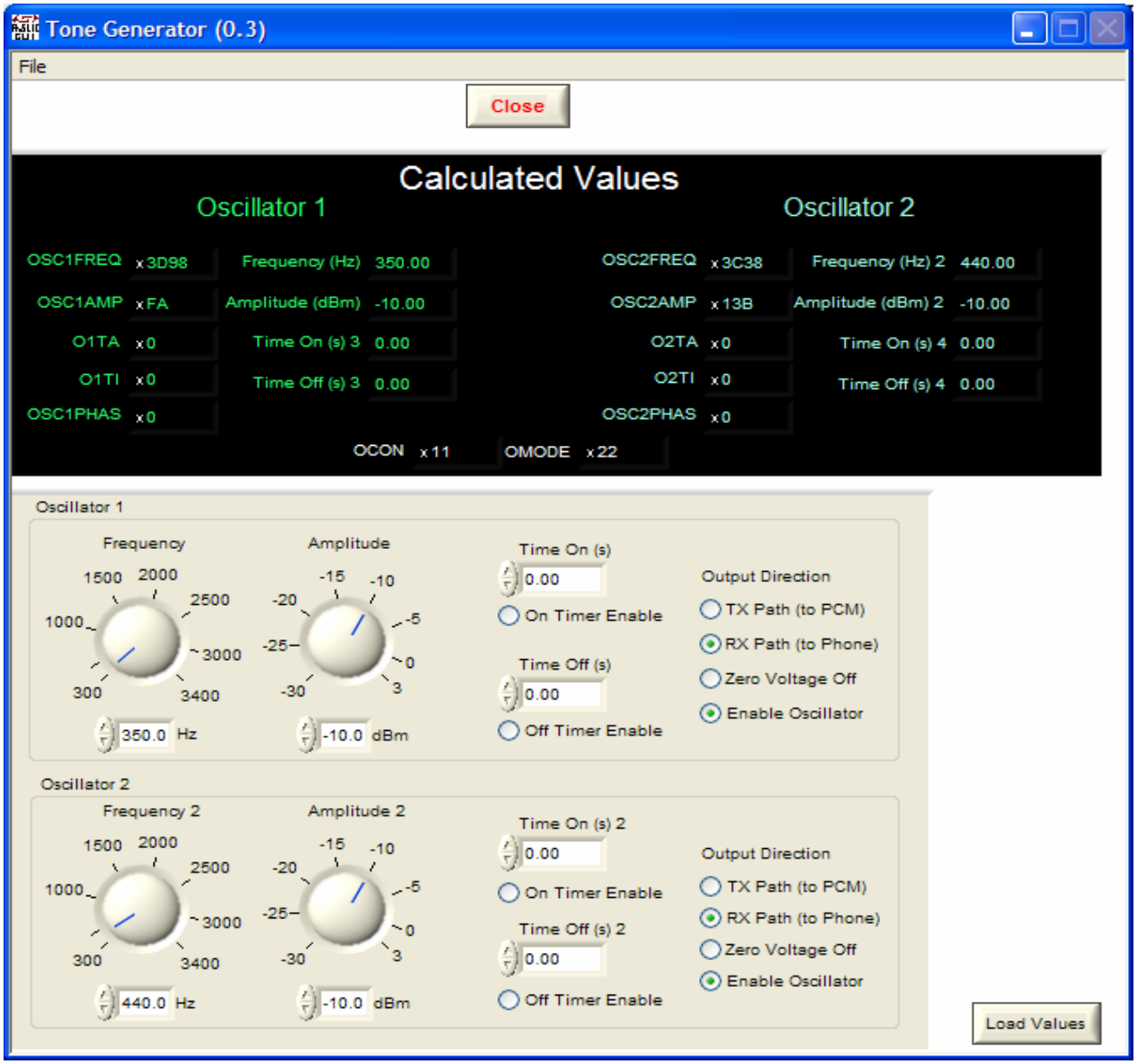

Figure 4. Calculated Values

The data path that the tone is sent on can be controlled. The tone amplitude and frequency are also controllable. In addition the tone can be pulsed on and off by the timers.

7. Si3226/7 Daughter Card Schematics

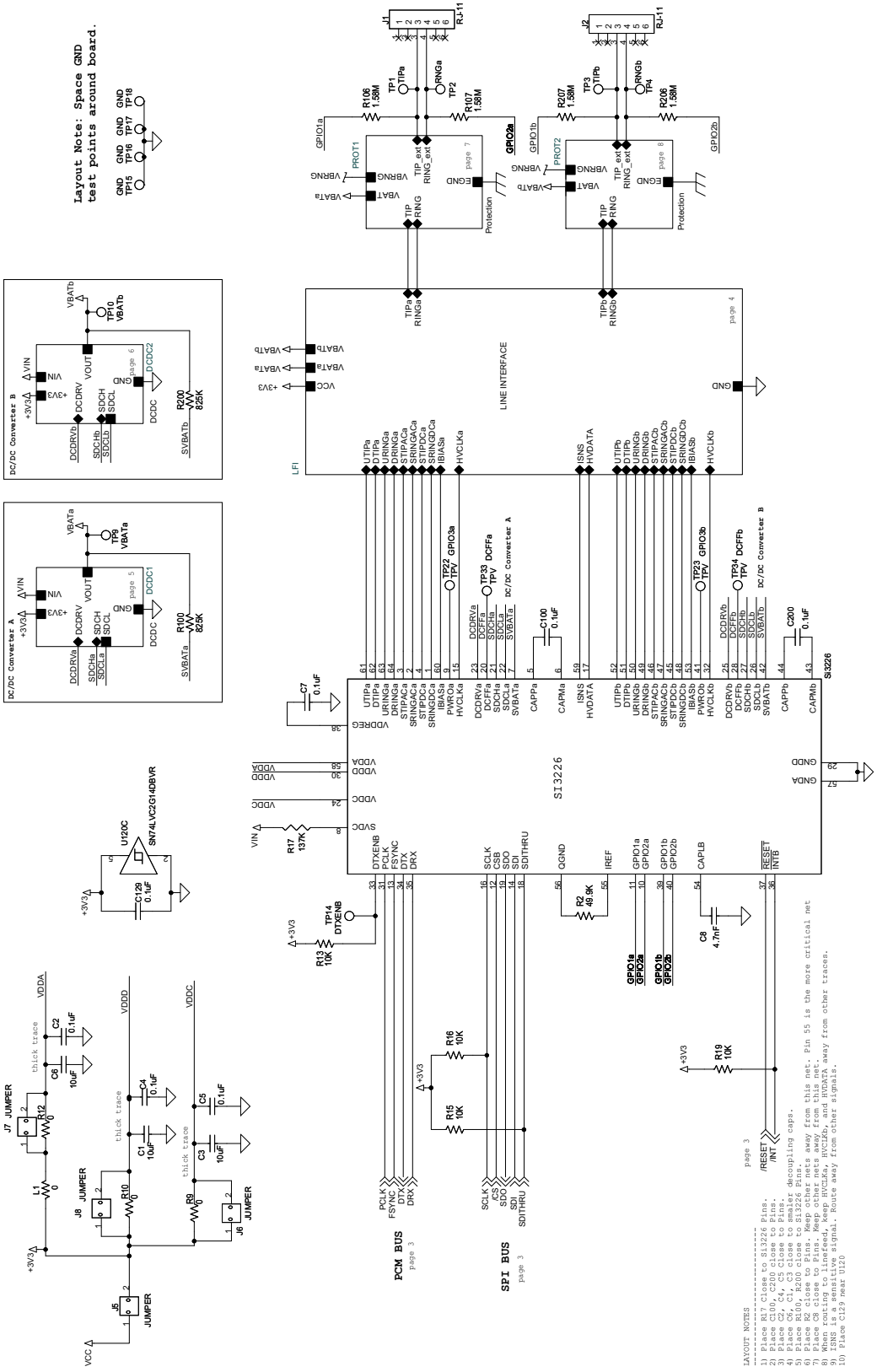

Figure 5. DC8 Primary Rev 3.7

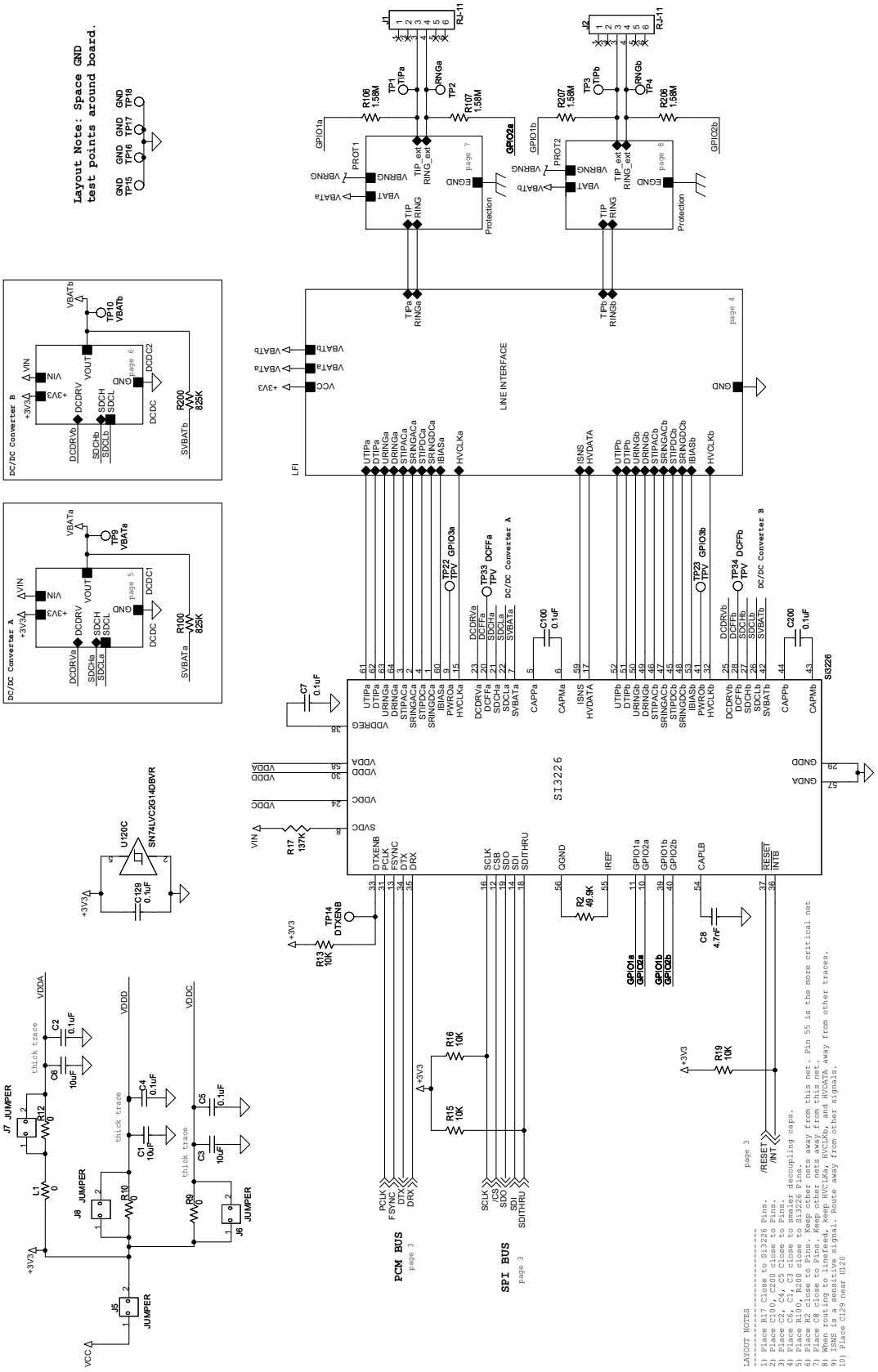

Figure 6. DC9 Primary Rev 3.7

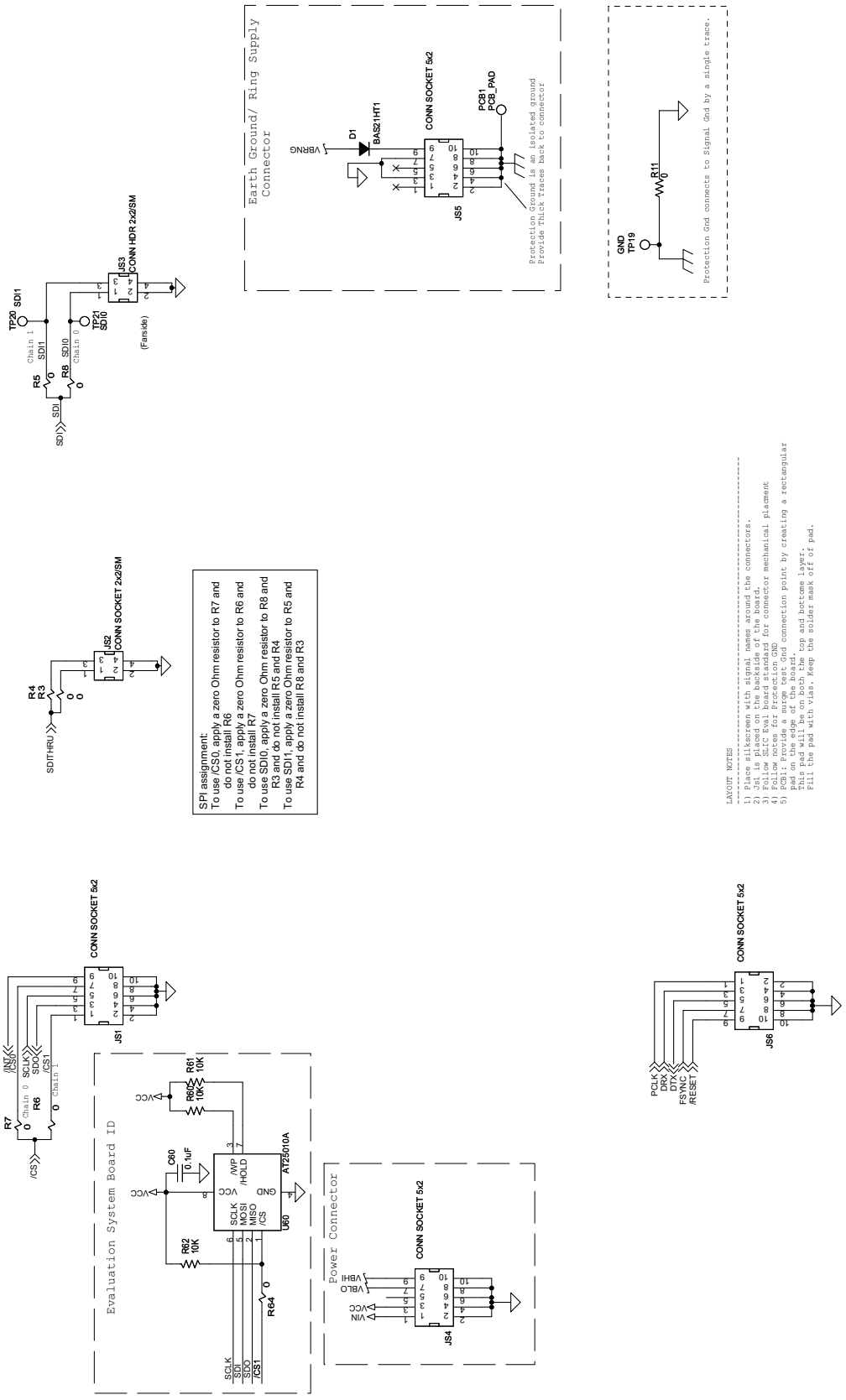

Figure 7. DC8 Interconnect Rev 3.7

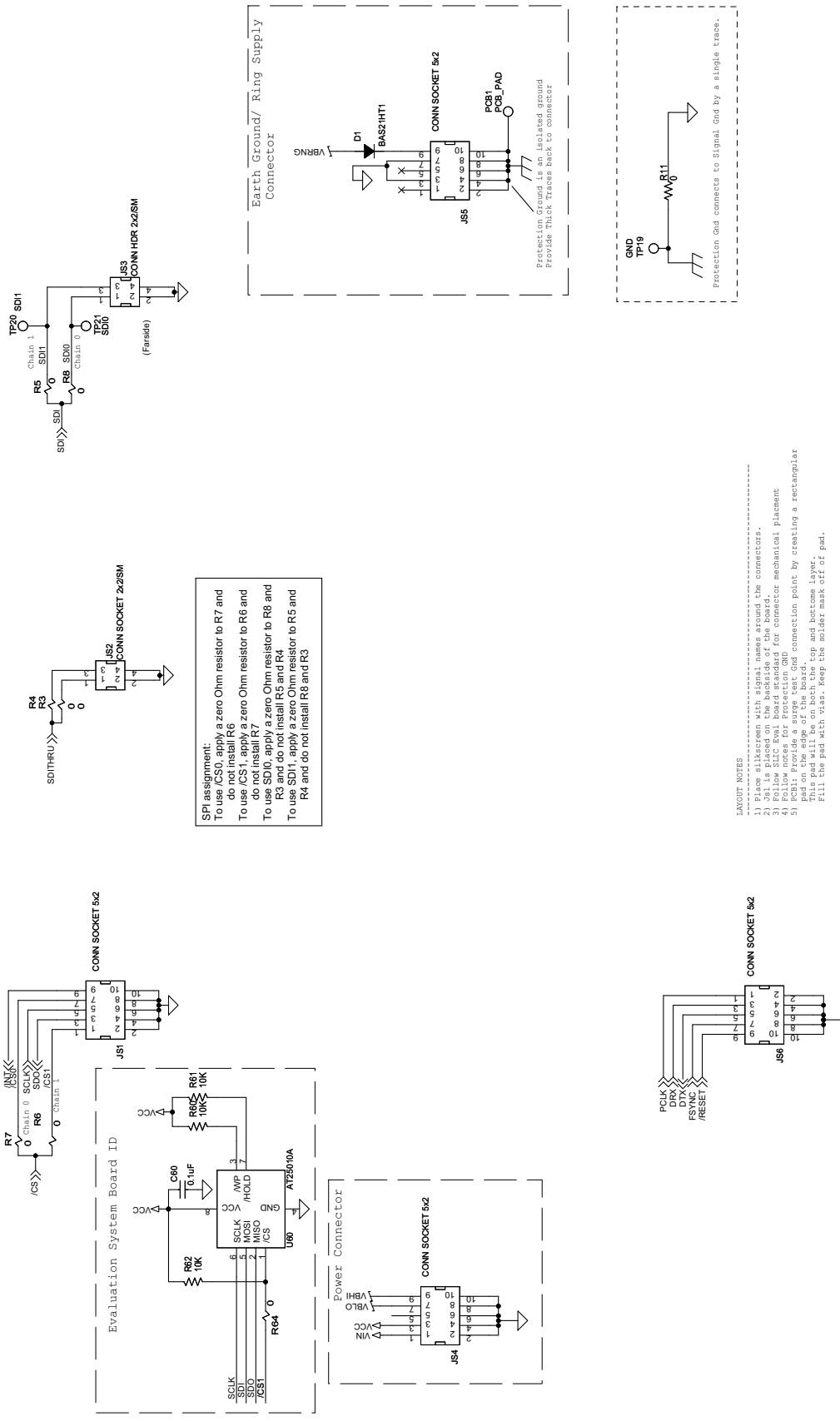

Figure 8. DC9 Interconnect Rev 3.7

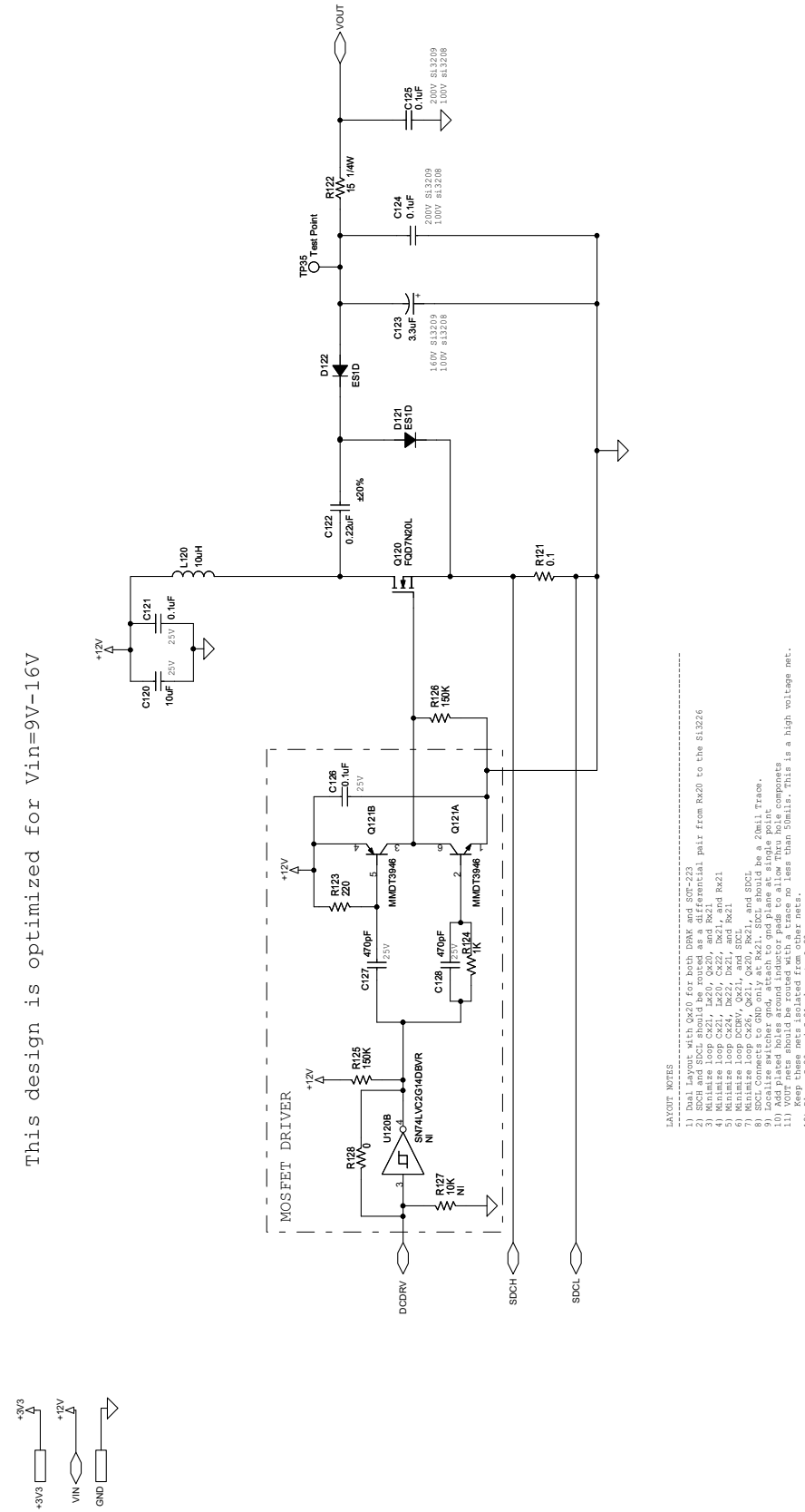

Figure 9. DC8 Converter Rev 3.7 (1 of 2)

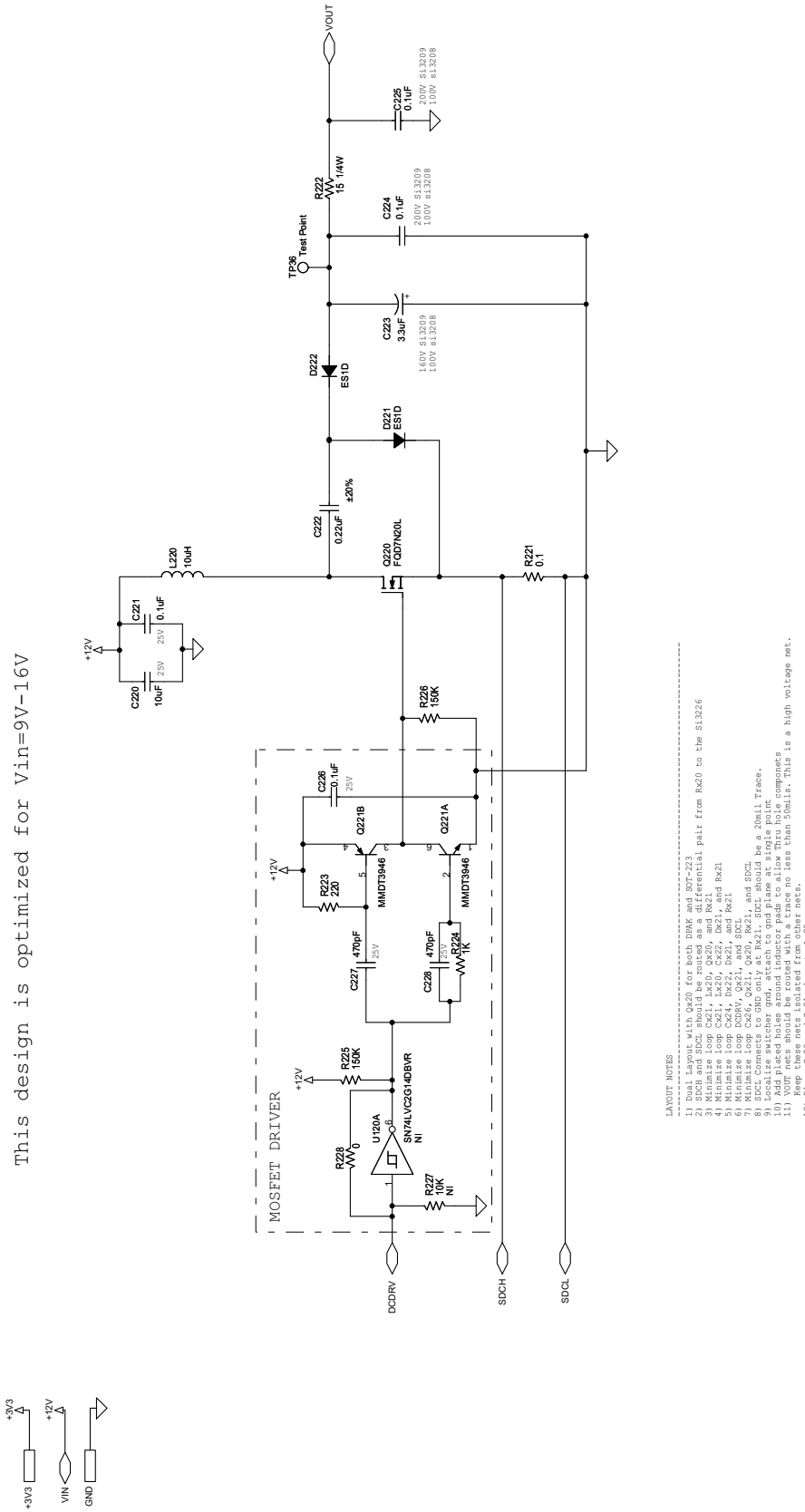

Figure 10. DC8 Converter Rev 3.7 (2 of 2)

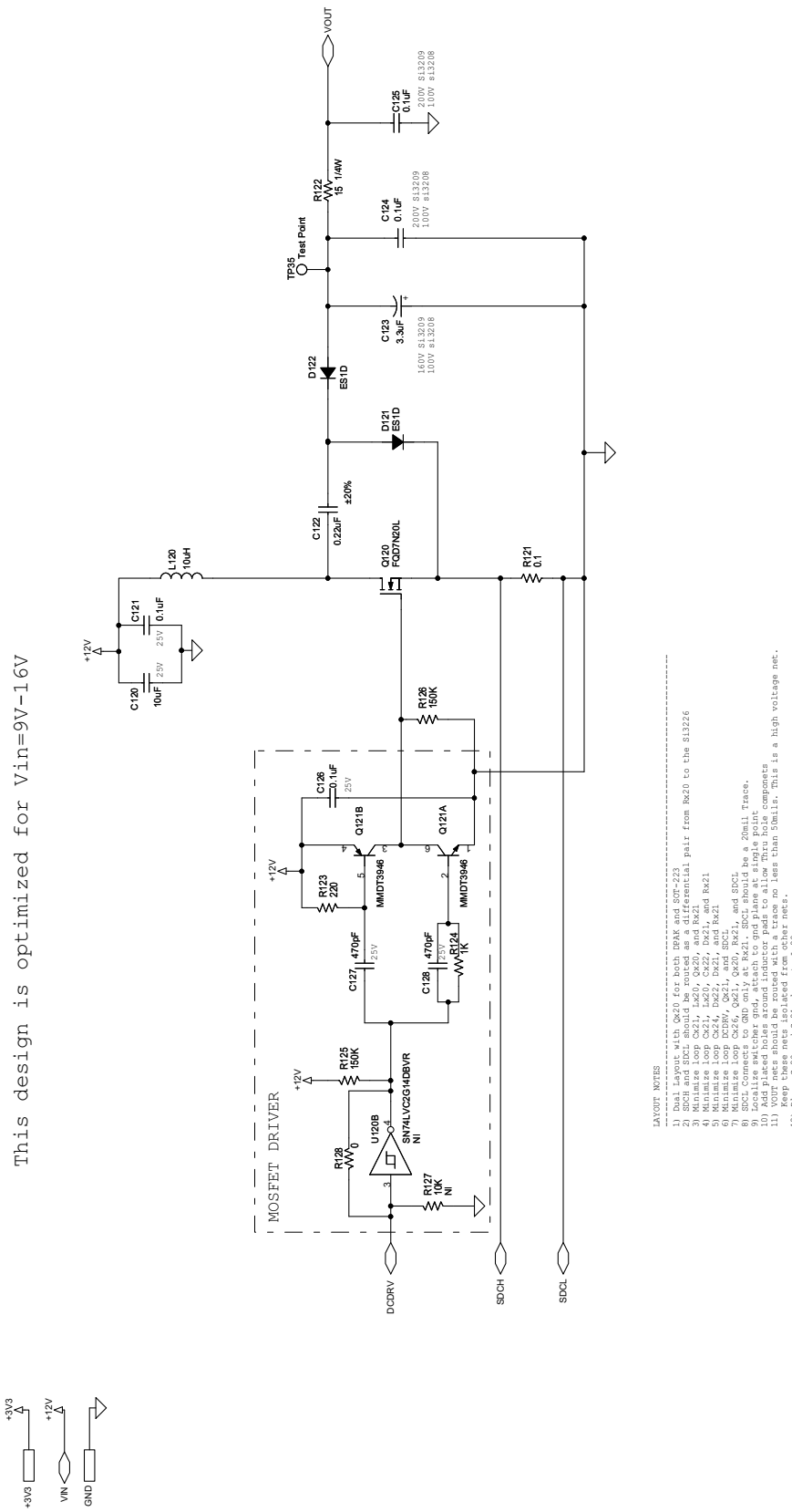

Figure 11. DC9 Converter Rev 3.7 (1 of 2)

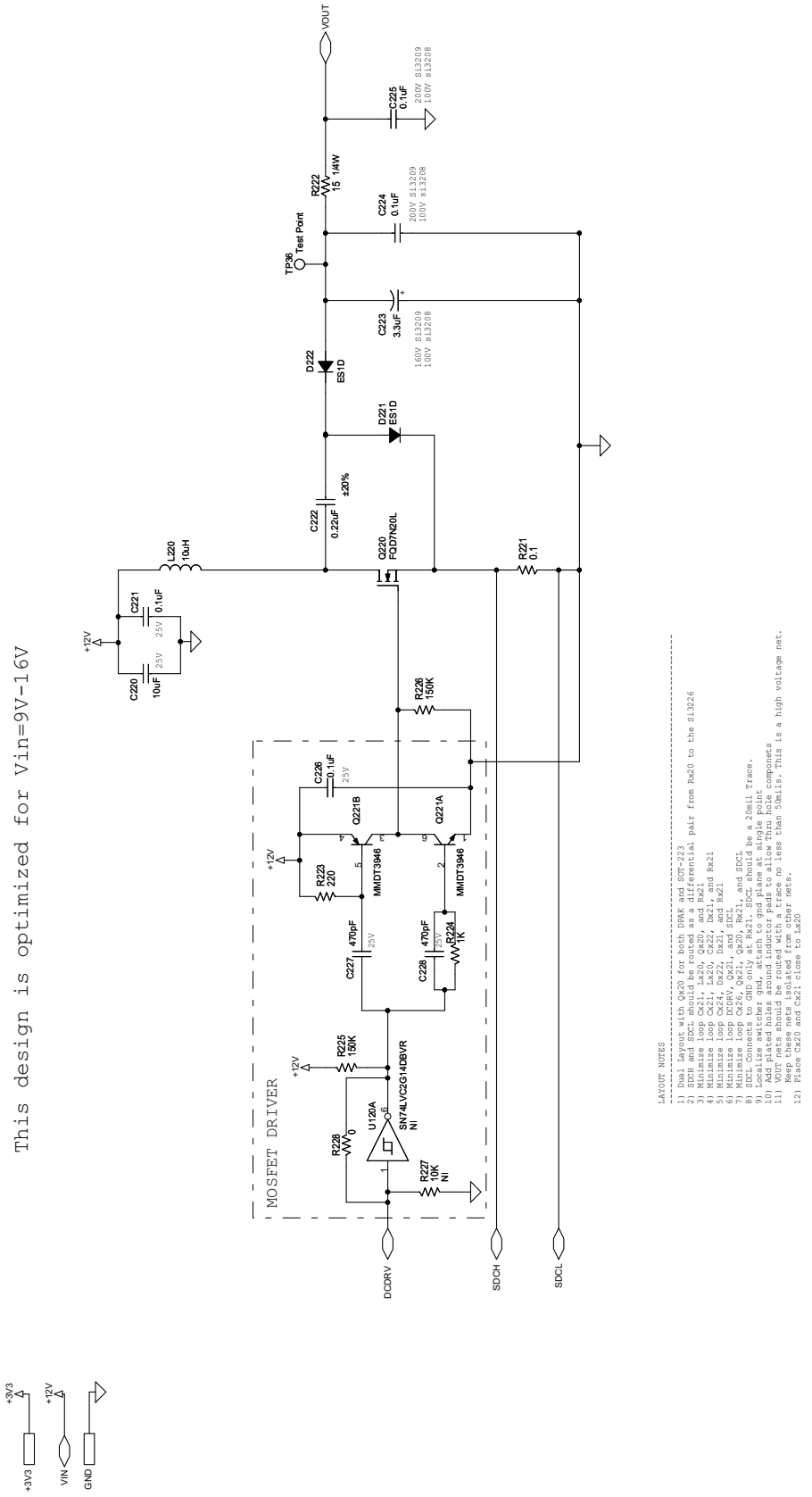

Figure 12. DC9 Converter Rev 3.7 (2 of 2)

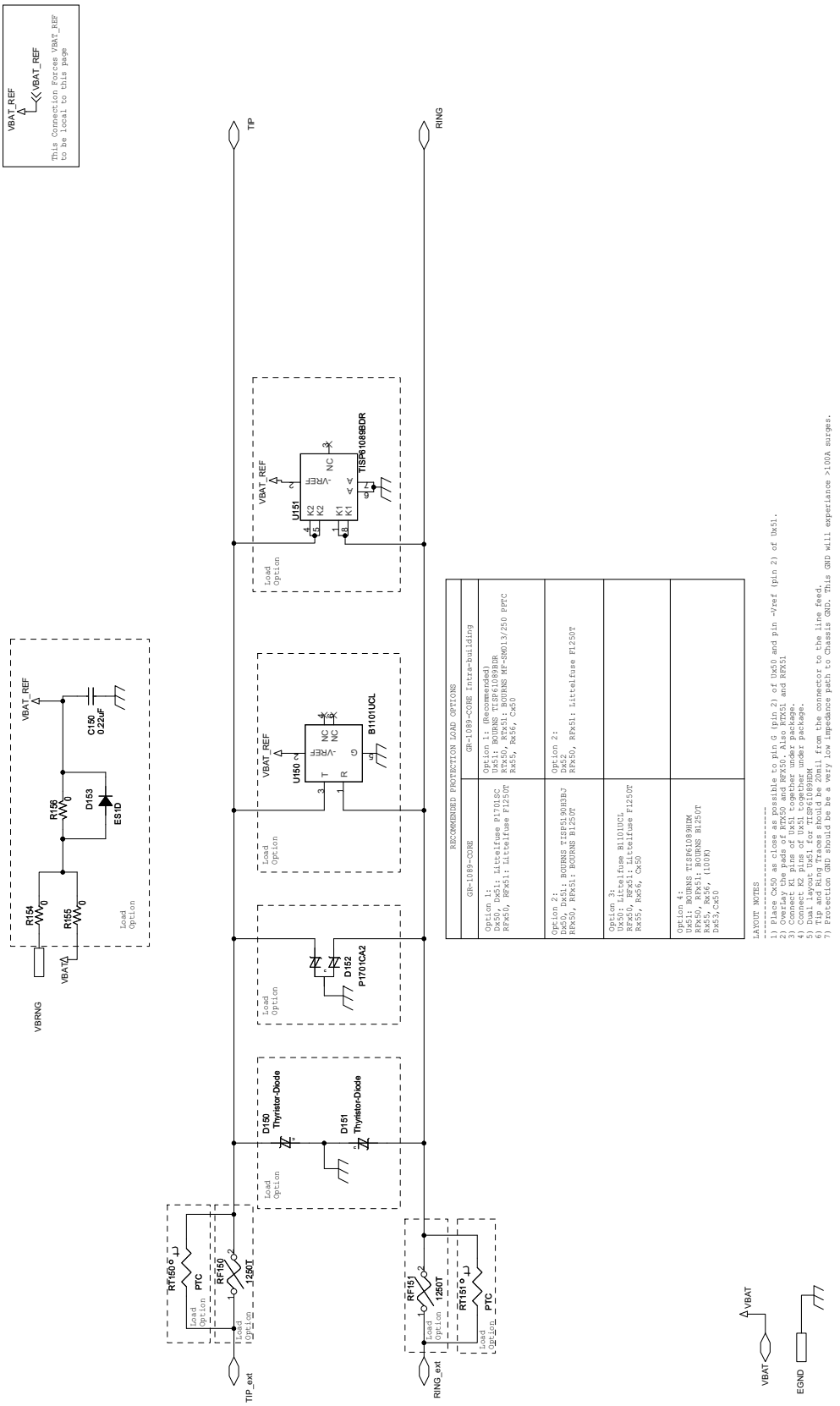

Figure 13. DC8 Line Protection Rev 3.7 (1 of 2)

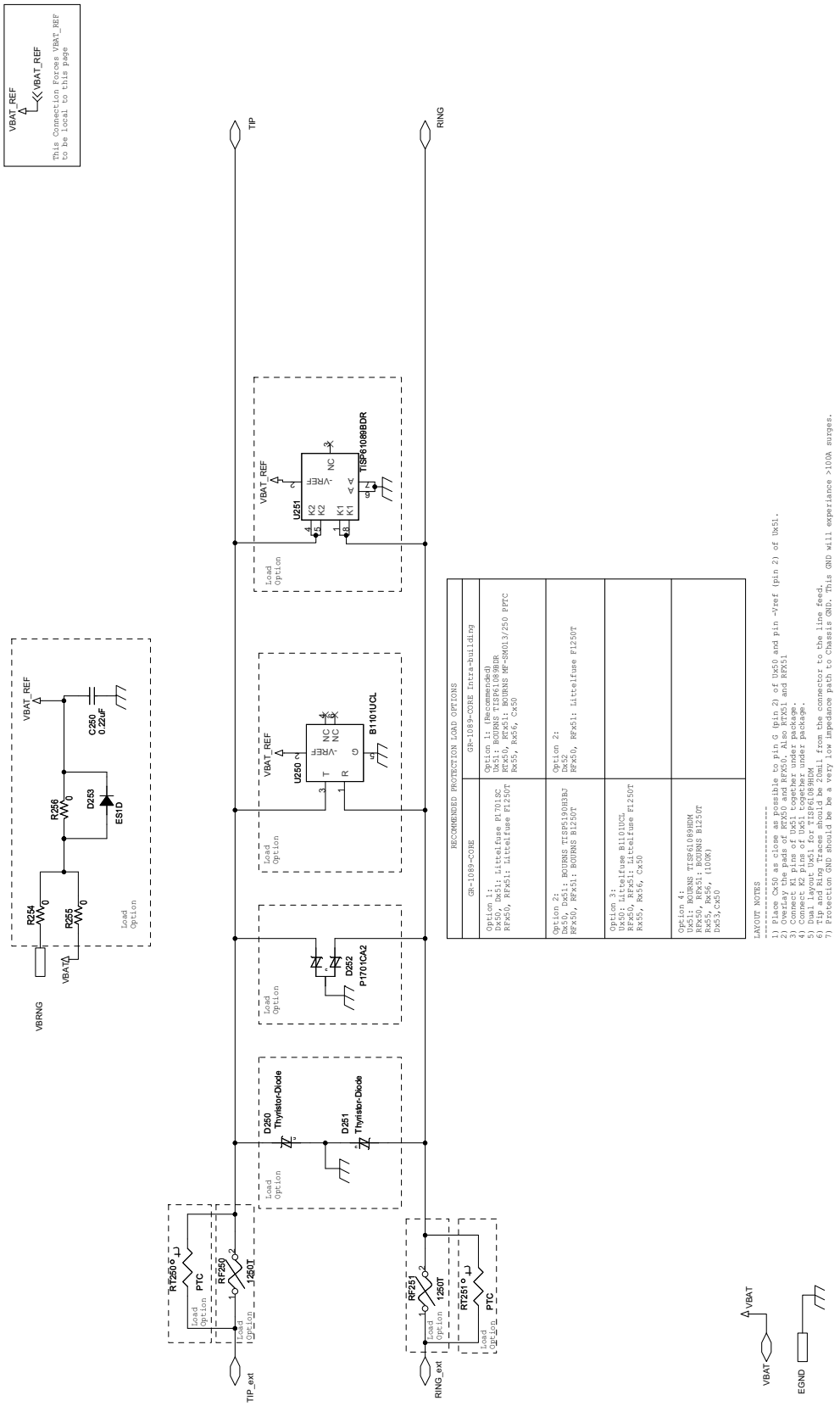

Figure 14. DC8 Line Protection Rev 3.7 (2 of 2)

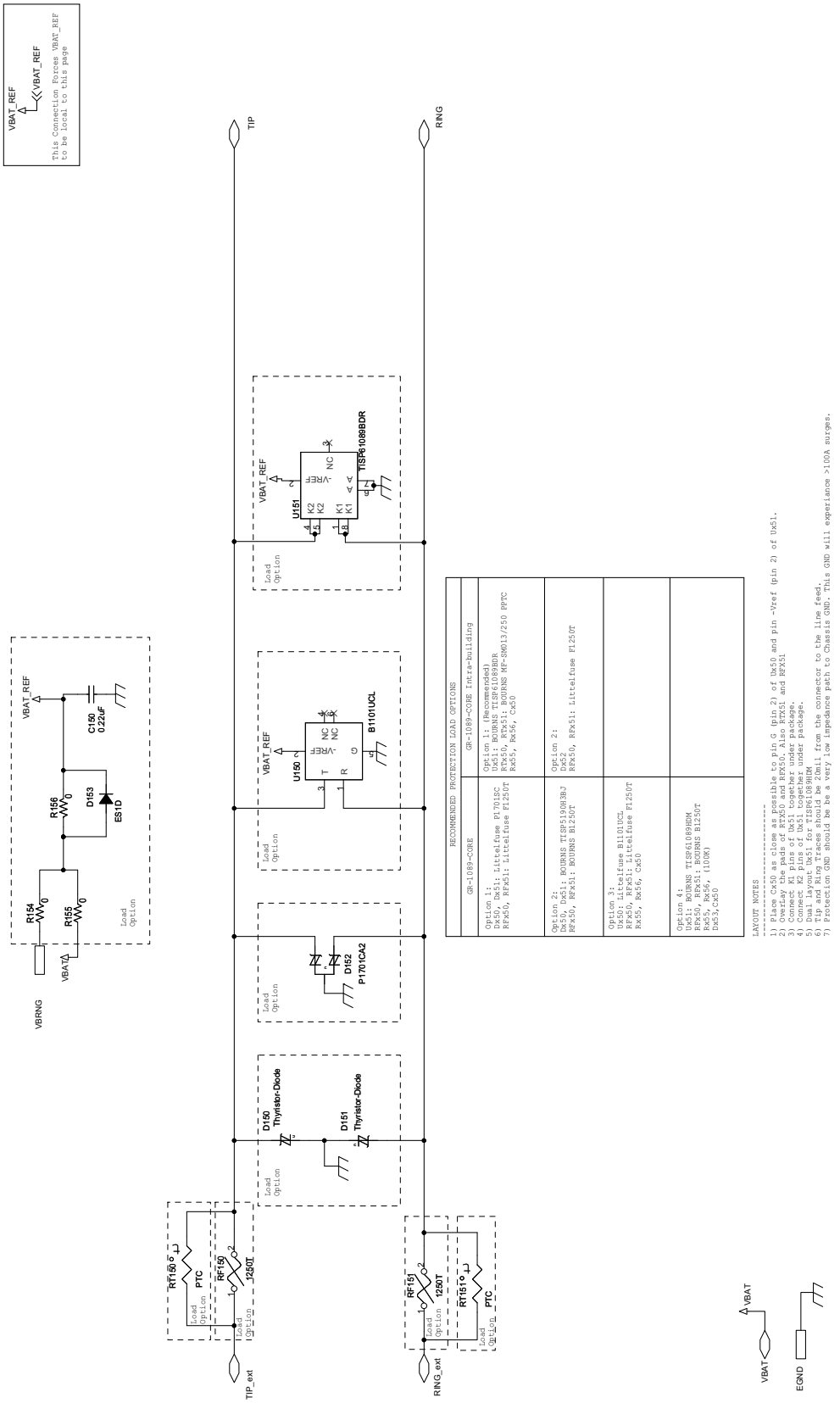

Figure 15. DC9 Line Protection Rev 3.7 (1 of 2)

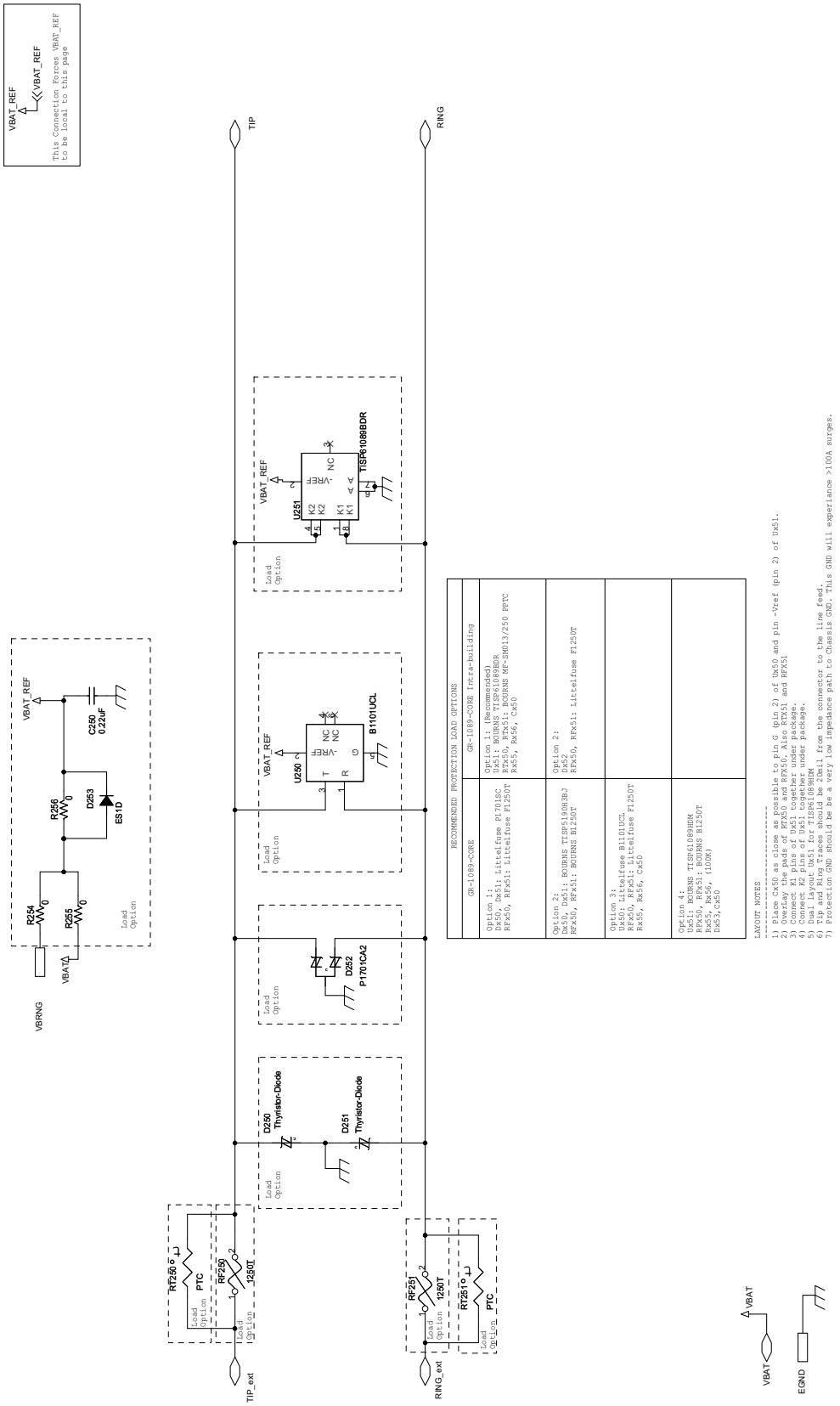

Figure 16. DC9 Line Protection Rev 3.7 (2 of 2)

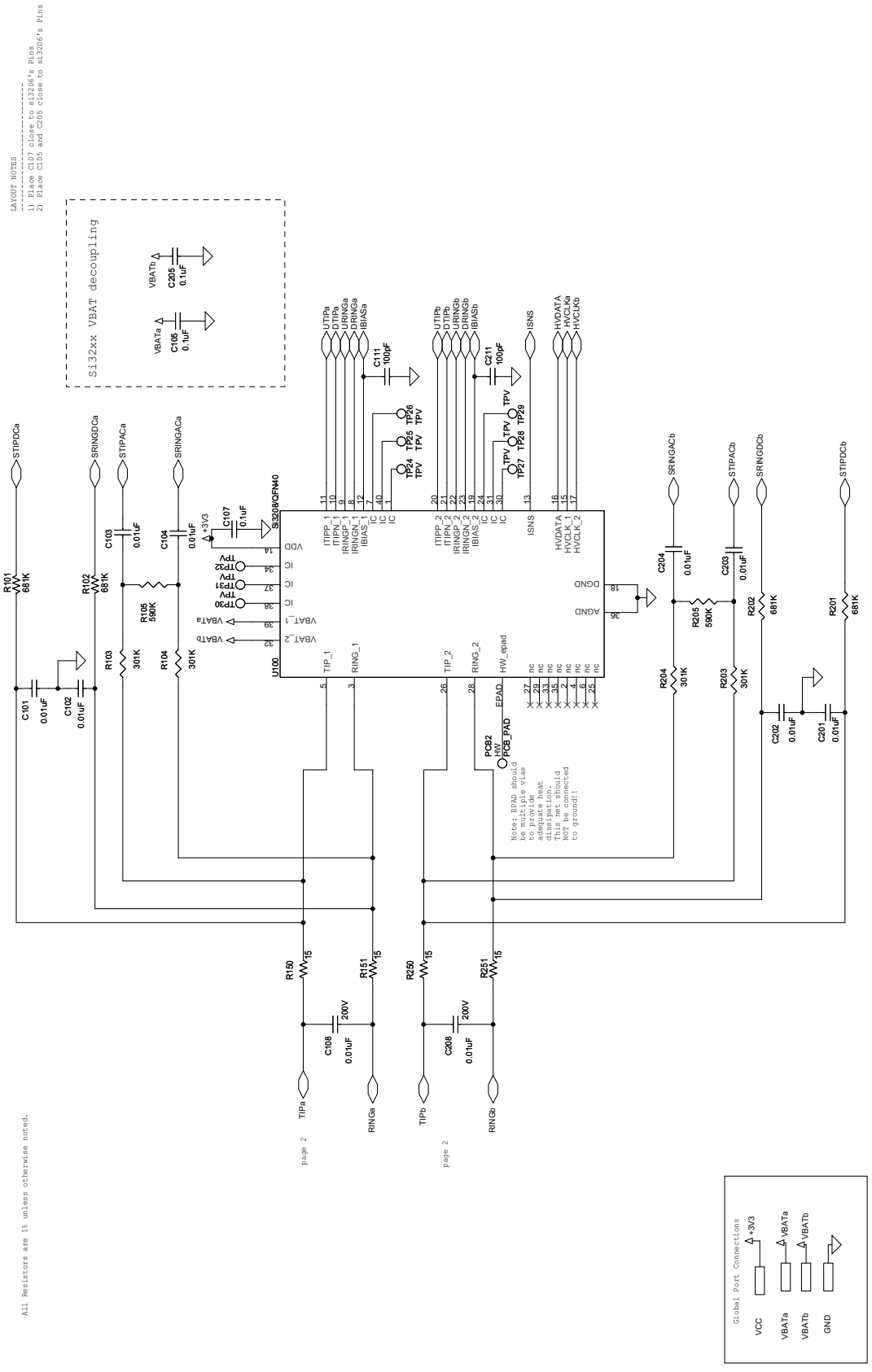

Figure 17. DC8 Line Interface Rev 3.7

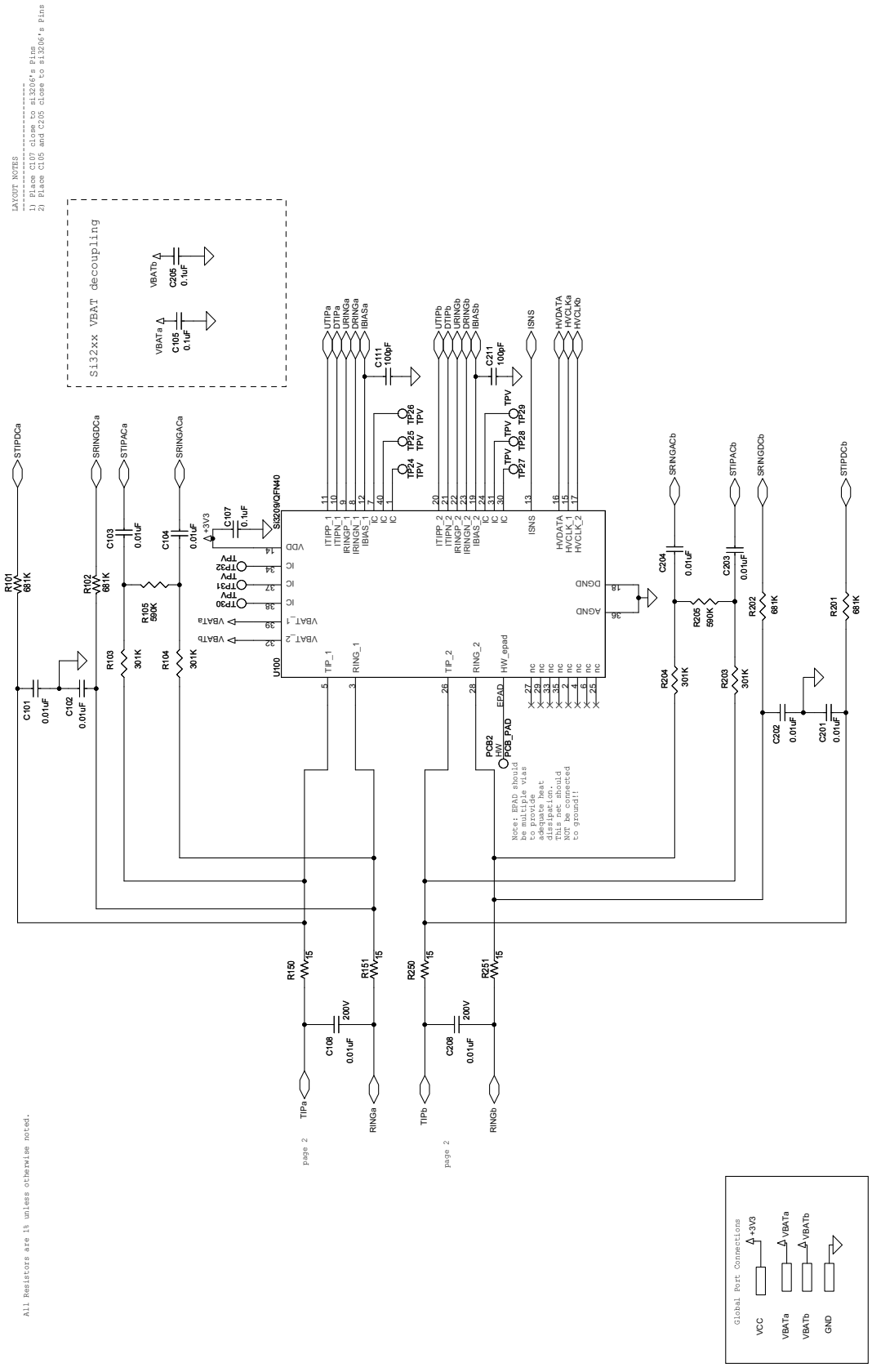

Figure 18. DC9 Line Interface Rev 3.7

8. Bill of Materials (Si3226/7DC8)

Table 1. Si3226/7DC8 Daughter Card Bill of Materials Rev 3.7

Item	NI	Qty	Reference	Value	Rating	Voltage	Tol	Type	PCB Footprint	Manufacturer Part #	Manufacturer
1		4	C1,C6,C120,C220	10 µF		25 V	±20%	X7R	C1210	C1210X7R250-106M	Venkel
2		12	C2,C4,C5,C7,C60,C100, C107,C121,C126,C200,C 221,C226	0.1 µF		25 V	±10%	X7R	C0603	C0603X7R250-104K	Venkel
4		1	C8	4.7 nF		16 V	±10%	X7R	C0603	C0603X7R160-472K	Venkel
5		10	C101,C102,C103,C104,C 108,C201,C202,C203,C2 04,C208	0.01 µF		200 V	±10%	X7R	C0805	C0805X7R201-103K	Venkel
6		6	C105,C124,C125,C205,C 224,C225	0.1 µF		250 V	±20%	X7R	C1210	C1210X7R251-104M	Venkel
8		2	C111,C211	100 pF		6 V	±10%	X7R	C0402	C0402X7R6R0-101K	Venkel
9		4	C122,C150,C222,C250	0.22 µF		250 V	±20%	X7R	C1812	C1812X7R251-224M	Venkel
10		2	C123,C223	3.3 µF		160 V	±20%	Alum_Elec	C2.5X6.3M M-RAD	ECA2CM3R3	Panasonic
11		4	C127,C128,C227,C228	470 pF		50 V	±20%	X7R	C0402	C0402X7R500-471M	Venkel
13		1	D1	BAS21HT1	200 mA	250 V		Single	SOD-323	BAS21HT1	On Semi
14		4	D121,D122,D221,D222	ES1D	1.0 A	200 V		Single	DO-214AC	ES1D	Diodes Inc
19		4	JS1,JS4,JS5,JS6	CONN SOCKET 5x2				Socket	CONN2X5-SSQ	SSQ-1-05-24-F-D	Samtec
20		1	JS2	CONN SOCKET 2x2/SM				Socket	CONN-2X2-SSM	SSM-102-L-DV	Samtec
21		1	JS3	CONN HDR 2x2/SM				Strip	CONN-2X2-TSM	TSM-102-02-T-DV	Samtec
22		2	J1,J2	RJ-11				RJ-11	RJ11-6-SMT	5555077-2	AMP
23		1	J5	JUMPER				Unshrouded	CONN-1X2	68000-402	Berg
25		1	L1	0	4A			ThickFilm	R1210	CR1210-4W-000	Venkel
26		2	L120,L220	10 µH	5.4A		±20%	Shielded	IND-SPD	CDRH127-100MC	Sumida
28		2	Q120,Q220	FQD7N20L	5.5A	200 V		Nchan	DPAK-GDS	FQD7N20L	Fairchild
29		2	Q121,Q221	MMDT3946	200mA	40 V		Array	SOT363-6N	MMDT3946	Diodes Inc
31		4	RT150,RT151, RT250,RT251	PTC	3A	250 V		TelCom	PTC-MF-SM 013	MF-SM013/250-2	Bourns
32		1	R2	49.9 kΩ	1/16W		±0.5%	ThickFilm	R0603	CR0603-16W-4992D	Venkel

Table 1. Si3226/7DC8 Daughter Card Bill of Materials Rev 3.7 (Continued)

Item	NI	Qty	Reference	Value	Rating	Voltage	Tol	Type	PCB Footprint	Manufacturer Part #	Manufacturer
33		7	R3,R7,R8,R9,R10,R12,R64	0 Ω	1 A			ThickFilm	R0603	CR0603-10W-000	Venkel
35		3	R11,R155,R255	0 Ω	2 A			ThickFilm	R0805	CR0805-10W-000	Venkel
36		4	R13,R15,R16,R19	10 kΩ	1/10 W		±5%	ThickFilm	R0603	CR0603-10W-103J	Venkel
37		1	R17	137 kΩ	1/16 W		±1%	ThickFilm	R0603	CR0603-16W-1373F	Venkel
38		3	R60,R61,R62	10 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-103J	Venkel
39		2	R100,R200	825 kΩ	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-8253F	Venkel
40		4	R101,R102,R201,R202	681 kΩ	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-6813F	Venkel
41		4	R103,R104,R203,R204	301 kΩ	1/16 W		±1%	ThickFilm	R0603	CR0603-16W-3013F	Venkel
42		2	R105,R205	590 kΩ	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-5903F	Venkel
43		4	R106,R107,R206,R207	1.58 MΩ	1/8 W		±5%	ThickFilm	R0805	CR0805-8W-1584J	Venkel
44		2	R121,R221	0.1 Ω	1/2 W		±1%	ThickFilm	R1210	LCR1210-R100F	Venkel
45		2	R122,R222	15 Ω	1/4 W		±5%	ThickFilm	R1206	CR1206-4W-150J	Venkel
46		2	R123,R223	220 Ω	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-221J	Venkel
47		2	R124,R224	1 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-102J	Venkel
48		4	R125,R126,R225,R226	150 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-154J	Venkel
50		2	R128,R228	0 Ω	1 A			ThickFilm	R0402	CR0402-16W-000	Venkel
51		4	R150,R151,R250,R251	15 Ω	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-15R0F	Venkel
53		2	R156,R256	0 Ω	2 A			ThickFilm	R1206	CR1206-4W-000	Venkel
54		6	TP1,TP2,TP3,TP4,TP9,TP10	Test Point				White	TESTPOINT	151-201	Kobiconn
57		1	TP17	Test Point				Black	TESTPOINT	151-230	Kobiconn
59		1	U1	Si3226		3.3 V		SLIC	QFP64EN12X12P0.5	Si3226-D-FQ	SiLabs
60		1	U60	AT25010A		5 V		Serial	SO8	AT25010A	ATMEL
61		1	U100	Si3208/QFN40		–135 V		SLIC	QFN40N6X6P0.5	Si3208-B-FM	SiLabs
64		2	U151,U251	TISP61089BDR		–170 V		SLIC	SO8	TISP61089BDR	Bourns
Not Installed Components											
3	NI	1	C3	10 µF		25 V	±20%	X7R	C1210	C1210X7R250-106M	Venkel
12	NI	1	C129	0.1 µF		25 V	±10%	X7R	C0603	C0603X7R250-104K	Venkel
15	NI	4	D150,D151,D250,D251	Thyristor-Diode		–160 V		Thyristors	DO-214AA	P1701SC	Littelfuse

Table 1. Si3226/7DC8 Daughter Card Bill of Materials Rev 3.7 (Continued)

Item	NI	Qty	Reference	Value	Rating	Voltage	Tol	Type	PCB Footprint	Manufacturer Part #	Manufacturer
16	NI	2	D152,D252	P1701CA2		–160 V		Thyristors	DO-214AA-3	P1701CA2	Littelfuse
17	NI	2	D153,D253	ES1D	1.0 A	200 V		Single	DO-214AC	ES1D	Diodes Inc
24	NI	3	J6,J7,J8	JUMPER				Unshrouded	CONN-1X2	68000-402	Berg
30	NI	4	RF150,RF151,RF250, RF251	1250T	1.25 A	600 V		TelCom	FUSE-F1250T	F1250T	Littelfuse
34	NI	3	R4,R5,R6	0 Ω	1 A			ThickFilm	R0603	CR0603-10W-000	Venkel
49	NI	2	R127,R227	10 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-103J	Venkel
52	NI	2	R154,R254	0 Ω	2 A			ThickFilm	R0805	CR0805-10W-000	Venkel
55	NI	5	TP14,TP20,TP21,TP35,TP36	Test Point				White	TESTPOINT	151-201	Kobiconn
56	NI	4	TP15,TP16,TP18,TP19	Test Point				Black	TESTPOINT	151-230	Kobiconn
62	NI	1	U120	SN74LVC2G14DBVR		5 V		Inverter	SOT23-6N	SN74LVC2G14DBVR	TI
63	NI	2	U150,U250	B1101UCL		–200 V		SLIC	MS-013	B1101UCL	Littelfuse

9. Bill of Materials (Si3226/7DC9)

Table 2. Si3226/7DC9 Daughter Card Bill of Materials Rev 3.7

Item	NI	Qty	Reference	Value	Rating	Voltage	Tol	Type	PCB Footprint	Manufacturer Part #	Manufacturer
1		4	C1,C6,C120,C220	10 µF		25 V	±20%	X7R	C1210	C1210X7R250-106M	Venkel
2		12	C2,C4,C5,C7,C60, C100,C107,C121, C126,C200,C221, C226	0.1 µF		25 V	±10%	X7R	C0603	C0603X7R250-104K	Venkel
4		1	C8	4.7 nF		16 V	±10%	X7R	C0603	C0603X7R160-472K	Venkel
5		10	C101,C102,C103, C104,C108,C201, C202,C203,C204, C208	0.01 µF		200 V	±10%	X7R	C0805	C0805X7R201-103K	Venkel
6		6	C105,C124,C125, C205,C224,C225	0.1 µF		250 V	±20%	X7R	C1210	C1210X7R251-104M	Venkel
8		2	C111,C211	100 pF		6 V	±10%	X7R	C0402	C0402X7R6R0-101K	Venkel
9		4	C122,C150,C222, C250	0.22 µF		250 V	±20%	X7R	C1812	C1812X7R251-224M	Venkel
10		2	C123,C223	3.3 µF		160 V	±20%	Alum_Elec	C2.5X6.3 MM-RAD	ECA2CM3R3	Panasonic
11		4	C127,C128,C227, C228	470 pF		50 V	±20%	X7R	C0402	C0402X7R500-471M	Venkel
13		1	D1	BAS21HT1	200 mA	250 V		Single	SOD-323	BAS21HT1	On Semi
14		4	D121,D122, D221,D222	ES1D	1.0 A	200 V		Single	DO-214AC	ES1D	Diodes Inc
19		4	JS1,JS4,JS5,JS6	CONN SOCKET 5x2				Socket	CONN2X5 -SSQ	SSQ-1-05-24-F-D	Samtec
20		1	JS2	CONN SOCKET 2x2/SM				Socket	CONN-2X 2-SSM	SSM-102-L-DV	Samtec
21		1	JS3	CONN HDR 2x2/SM				Strip	CONN-2X 2-TSM	TSM-102-02-T-DV	Samtec
22		2	J1,J2	RJ-11				RJ-11	RJ11-6-S MT	5555077-2	AMP
23		1	J5	JUMPER				Unshrouded	CONN-1X 2	68000-402	Berg
25		1	L1	0	4 A			ThickFilm	R1210	CR1210-4W-000	Venkel
26		2	L120,L220	10 µH	5.4 A		±20%	Shielded	IND-SPD	CDRH127-100MC	Sumida
28		2	Q120,Q220	FQD7N20L	5.5 A	200 V		Nchan	DPAK-GD S	FQD7N20L	Fairchild

Table 2. Si3226/7DC9 Daughter Card Bill of Materials Rev 3.7 (Continued)

Item	NI	Qty	Reference	Value	Rating	Voltage	Tol	Type	PCB Footprint	Manufacturer Part #	Manufacturer
29		2	Q121,Q221	MMDT3946	200 mA	40 V		Array	SOT363-6N	MMDT3946	Diodes Inc
31		4	RT150,RT151,RT250,RT251	PTC	3 A	250 V		TelCom	PTC-MF-SM013	MF-SM013/250-2	Bourns
32		1	R2	49.9 kΩ	1/16 W		±0.5%	ThickFilm	R0603	CR0603-16W-4992D	Venkel
33		7	R3,R7,R8,R9,R10,R12,R64	0 Ω	1 A			ThickFilm	R0603	CR0603-10W-000	Venkel
35		3	R11,R155,R255	0 Ω	2 A			ThickFilm	R0805	CR0805-10W-000	Venkel
36		4	R13,R15,R16,R19	10 kΩ	1/10 W		±5%	ThickFilm	R0603	CR0603-10W-103J	Venkel
37		1	R17	137 kΩ	1/16 W		±1%	ThickFilm	R0603	CR0603-16W-1373F	Venkel
38		3	R60,R61,R62	10 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-103J	Venkel
39		2	R100,R200	825 kΩ	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-8253F	Venkel
40		4	R101,R102,R201,R202	681 kΩ	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-6813F	Venkel
41		4	R103,R104,R203,R204	301 kΩ	1/16 W		±1%	ThickFilm	R0603	CR0603-16W-3013F	Venkel
42		2	R105,R205	590 kΩ	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-5903F	Venkel
43		4	R106,R107,R206,R207	1.58 MΩ	1/8 W		±5%	ThickFilm	R0805	CR0805-8W-1584J	Venkel
44		2	R121,R221	0.1 Ω	1/2 W		±1%	ThickFilm	R1210	LCR1210-R100F	Venkel
45		2	R122,R222	15 Ω	1/4 W		±5%	ThickFilm	R1206	CR1206-4W-150J	Venkel
46		2	R123,R223	220 Ω	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-221J	Venkel
47		2	R124,R224	1 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-102J	Venkel
48		4	R125,R126,R225,R226	150 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-154J	Venkel
50		2	R128,R228	0 Ω	1 A			ThickFilm	R0402	CR0402-16W-000	Venkel
51		4	R150,R151,R250,R251	15 Ω	1/10 W		±1%	ThickFilm	R0805	CR0805-10W-15R0F	Venkel
53		2	R156,R256	0 Ω	2 A			ThickFilm	R1206	CR1206-4W-000	Venkel
54		6	TP1,TP2,TP3,TP4,TP9,TP10	Test Point				White	TESTPOINT	151-201	Kobiconn
57		1	TP17	Test Point				Black	TESTPOINT	151-230	Kobiconn
59		1	U1	Si3226		3.3 V		SLIC	QFP64EN12X12P0.5	Si3226-D-FQ	SiLabs
60		1	U60	AT25010A		5 V		Serial	SO8	AT25010A	ATMEL

Table 2. Si3226/7DC9 Daughter Card Bill of Materials Rev 3.7 (Continued)

Item	NI	Qty	Reference	Value	Rating	Voltage	Tol	Type	PCB Footprint	Manufacturer Part #	Manufacturer
61		1	U100	Si3209/QFN40		–135 V		SLIC	QFN40N6X6P0.5	Si3209-B-FM	SiLabs
64		2	U151,U251	TISP61089BDR		–170 V		SLIC	SO8	TISP61089BDR	Bourns
Not Installed Components											
3	NI	1	C3	10 µF		25 V	±20%	X7R	C1210	C1210X7R250-106M	Venkel
12	NI	1	C129	0.1 µF		25 V	±10%	X7R	C0603	C0603X7R250-104K	Venkel
15	NI	4	D150,D151,D250,D251	Thyristor-Diode		–160 V		Thyristors	DO-214AA	P1701SC	Littelfuse
16	NI	2	D152,D252	P1701CA2		–160 V		Thyristors	DO-214AA-3	P1701CA2	Littelfuse
17	NI	2	D153,D253	ES1D	1.0 A	200 V		Single	DO-214AC	ES1D	Diodes Inc
24	NI	3	J6,J7,J8	JUMPER				Unshrouded	CONN-1X2	68000-402	Berg
30	NI	4	RF150,RF151,RF250,RF251	1250T	1.25 A	600 V		TelCom	FUSE-F1250T	F1250T	Littelfuse
34	NI	3	R4,R5,R6	0 Ω	1 A			ThickFilm	R0603	CR0603-10W-000	Venkel
49	NI	2	R127,R227	10 kΩ	1/16 W		±5%	ThickFilm	R0402	CR0402-16W-103J	Venkel
52	NI	2	R154,R254	0 Ω	2 A			ThickFilm	R0805	CR0805-10W-000	Venkel
55	NI	5	TP14,TP20,TP21,TP35,TP36	Test Point				White	TESTPOINT	151-201	Kobiconn
56	NI	4	TP15,TP16,TP18,TP19	Test Point				Black	TESTPOINT	151-230	Kobiconn
62	NI	1	U120	SN74LVC2G14DBVR		5 V		Inverter	SOT23-6N	SN74LVC2G14DBVR	TI
63	NI	2	U150,U250	B1101UCL		–200 V		SLIC	MS-013	B1101UCL	Littelfuse

10. Daughter Card Layout

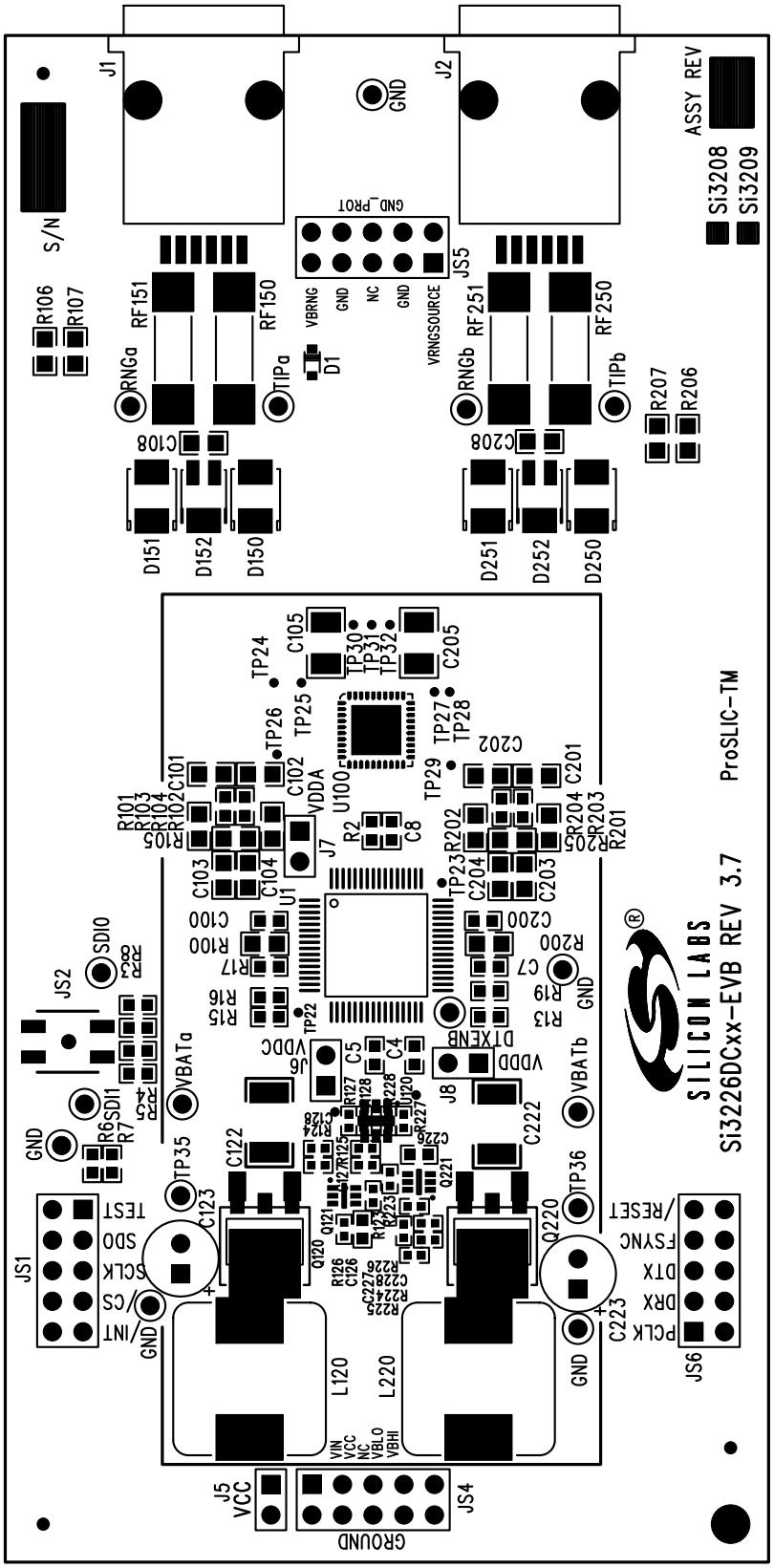

Figure 19. Daughter Card Primary Assembly

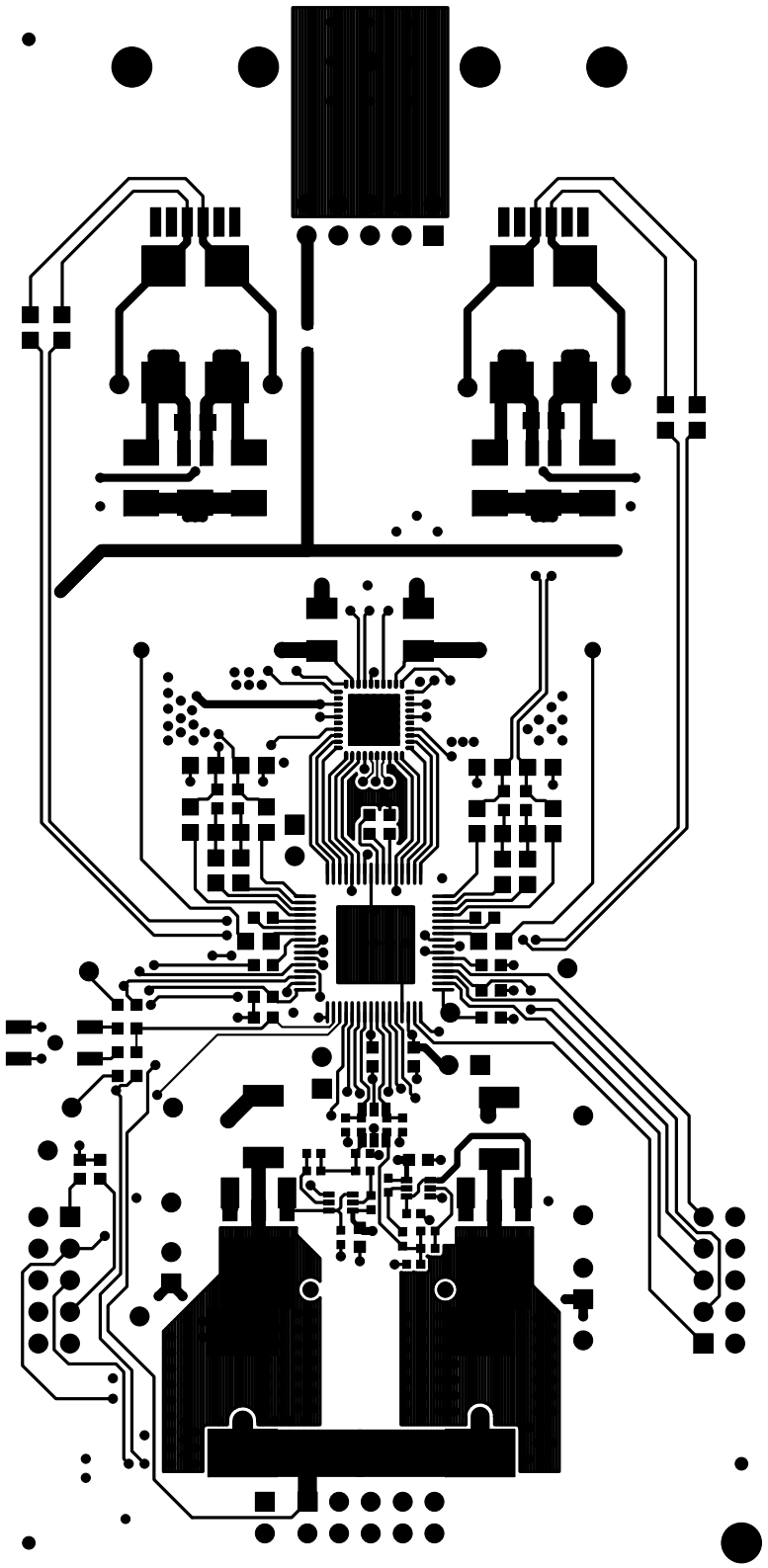

Figure 20. Daughter Card Primary Side

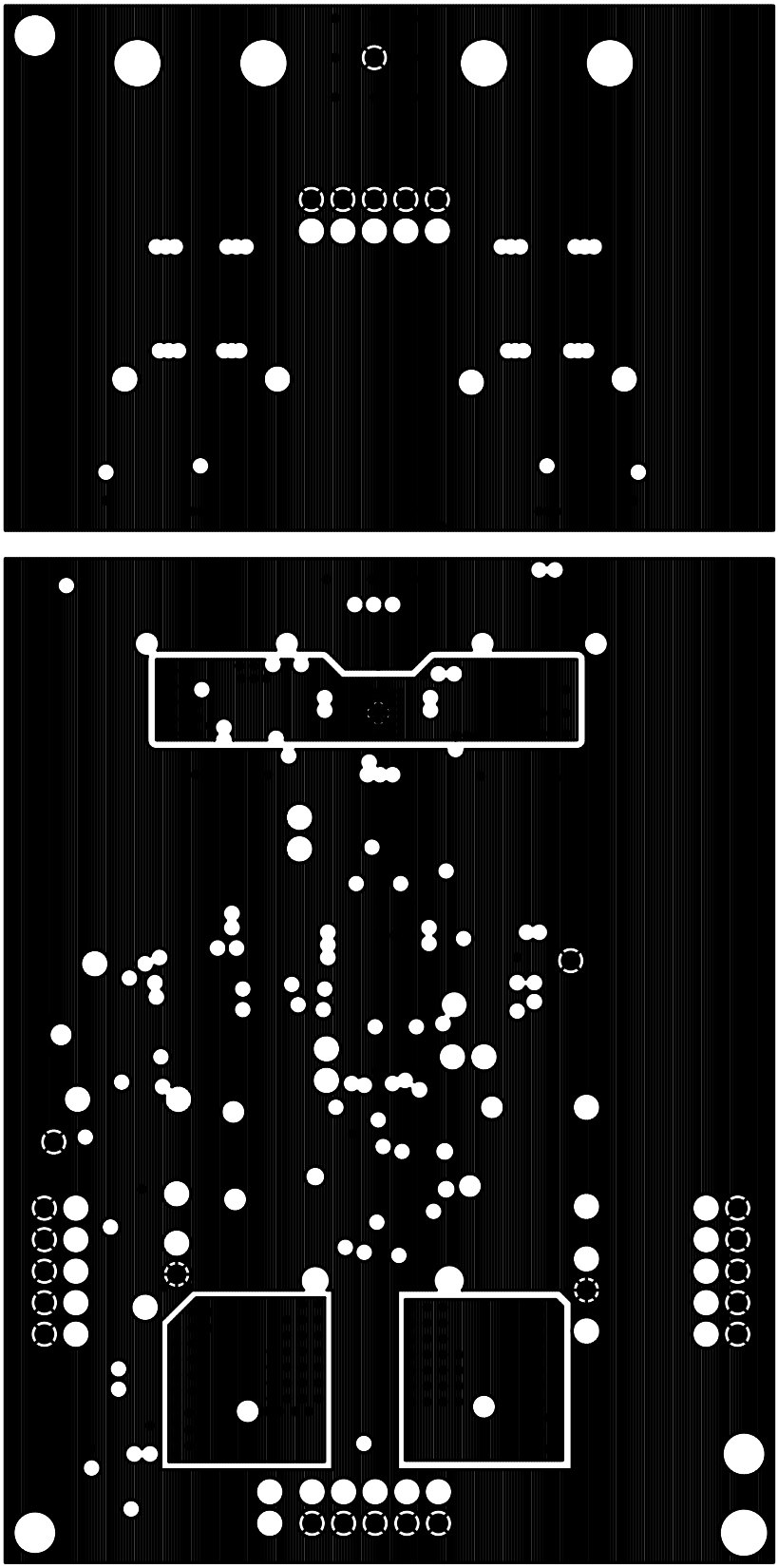

Figure 21. Daughter Card Layer 2

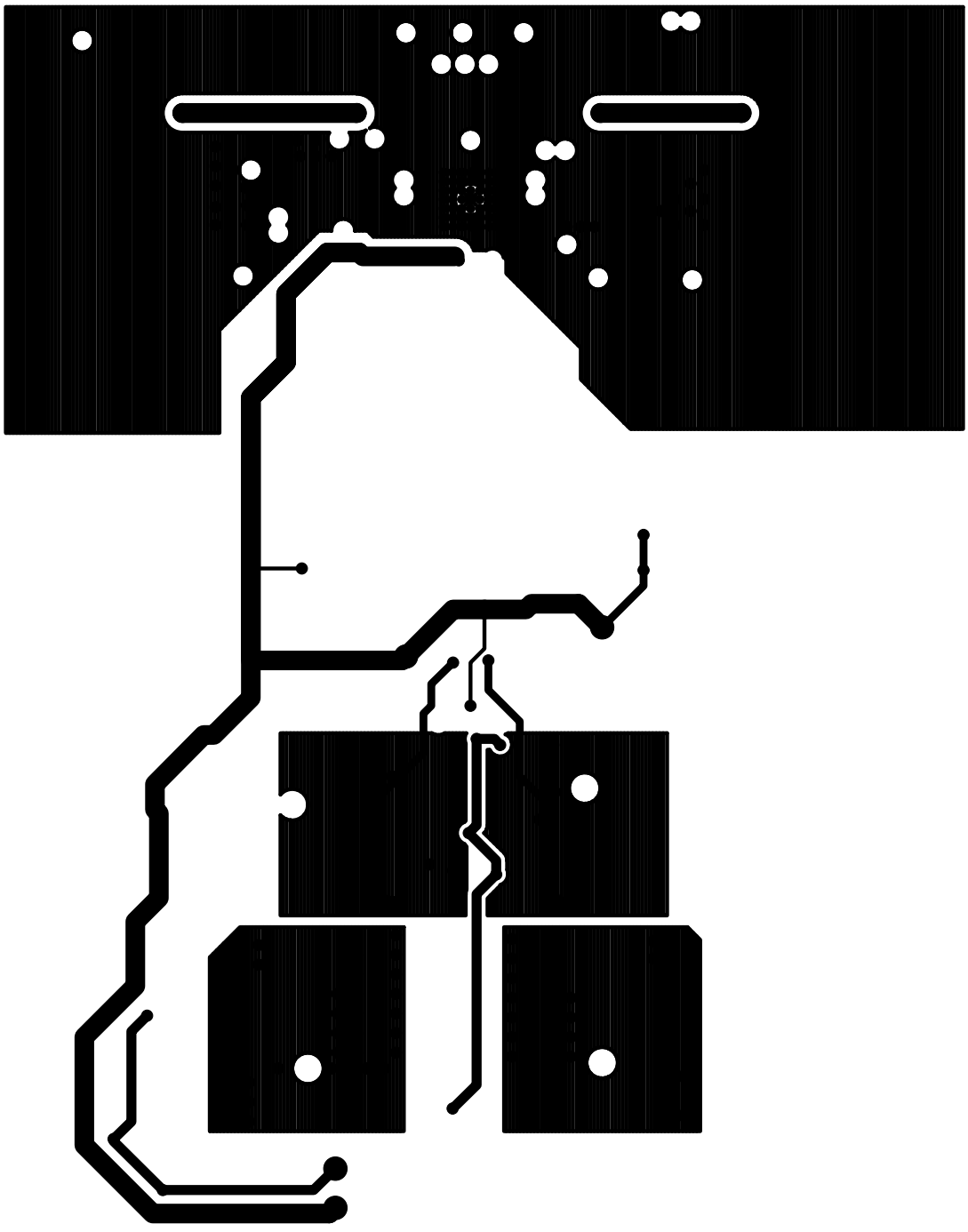

Figure 22. Daughter Card Layer 3

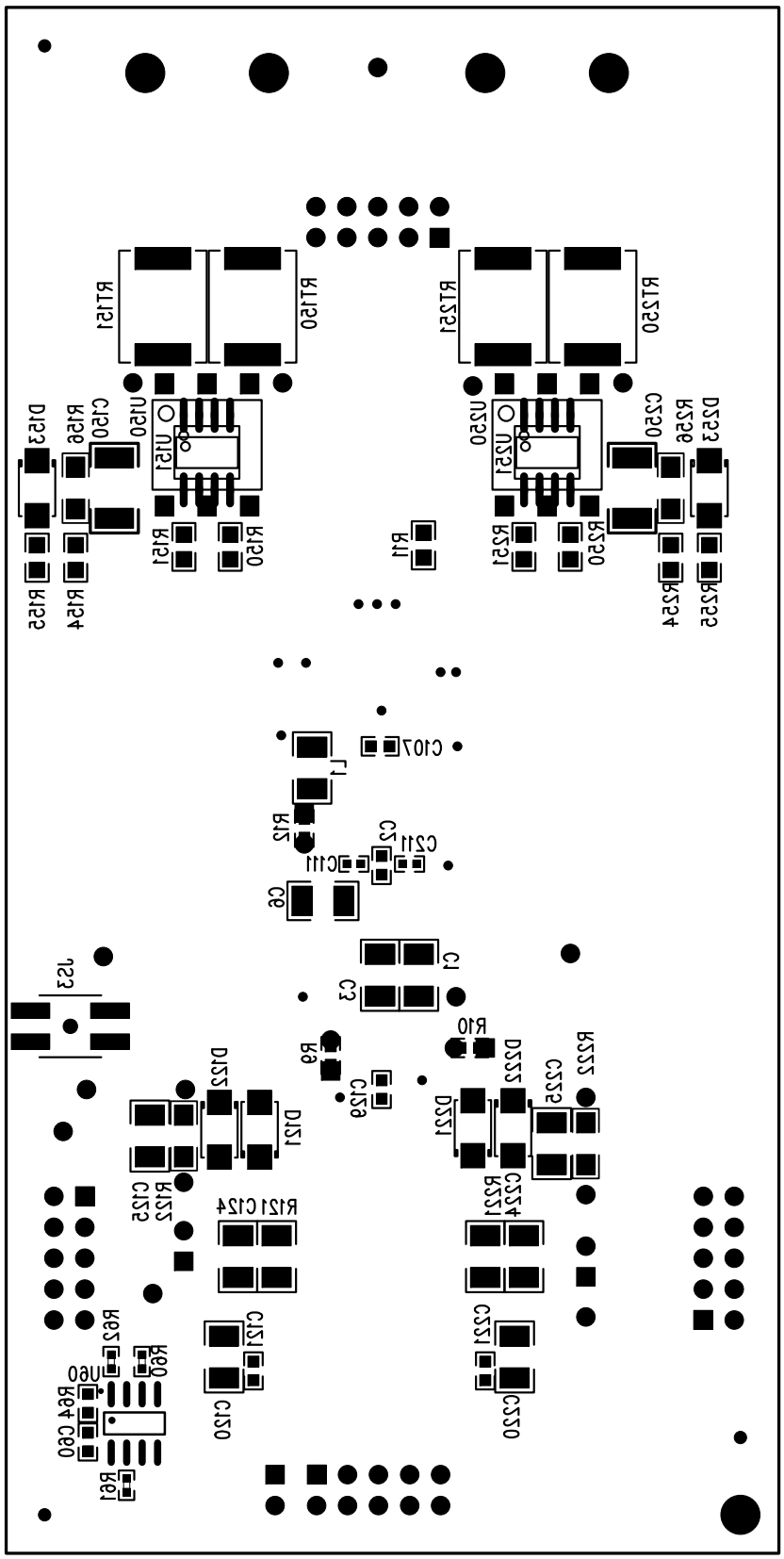

Figure 23. Daughter Card Secondary Assembly

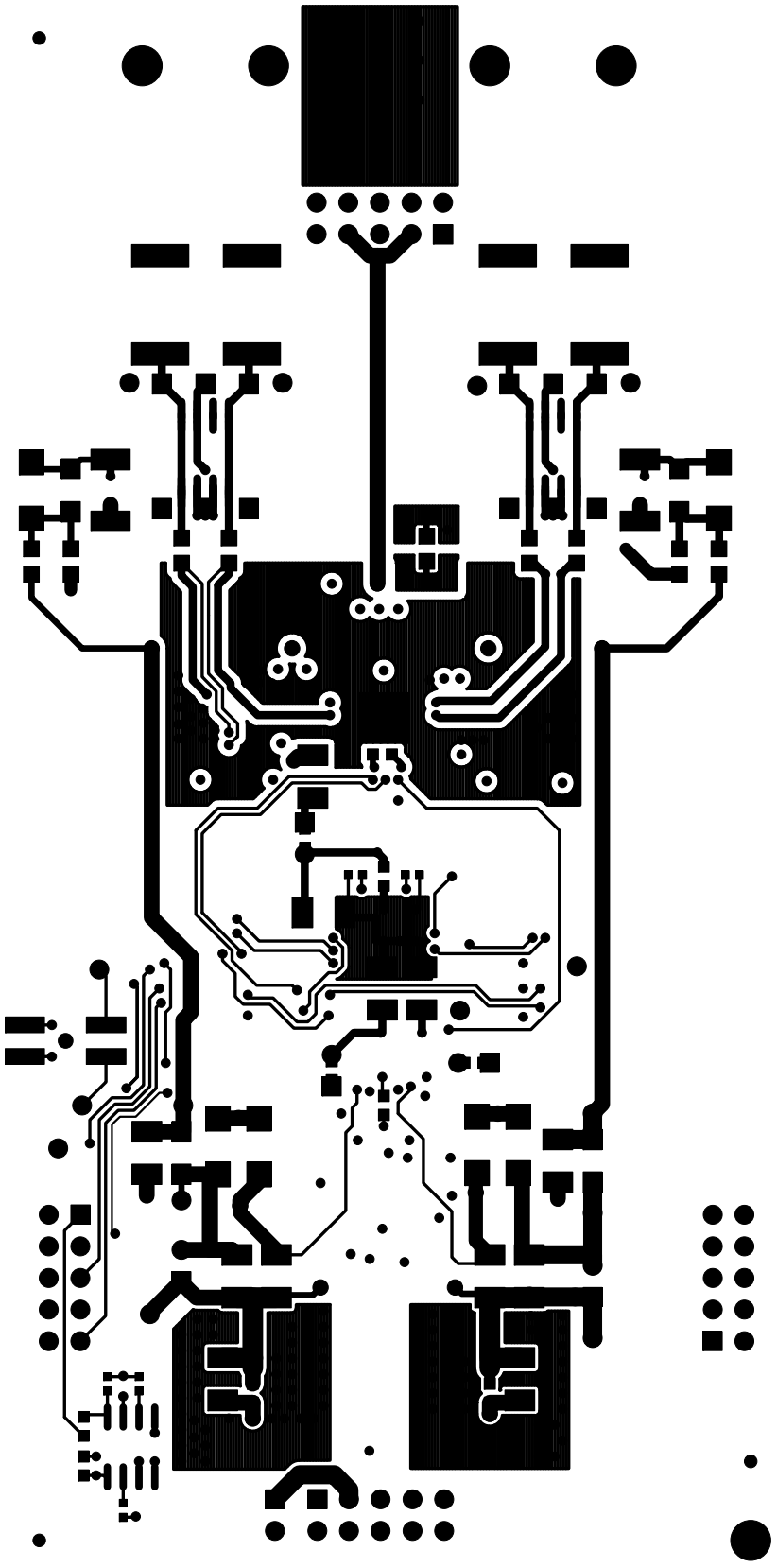

Figure 24. Daughter Card Secondary Side

11. Motherboard Schematics

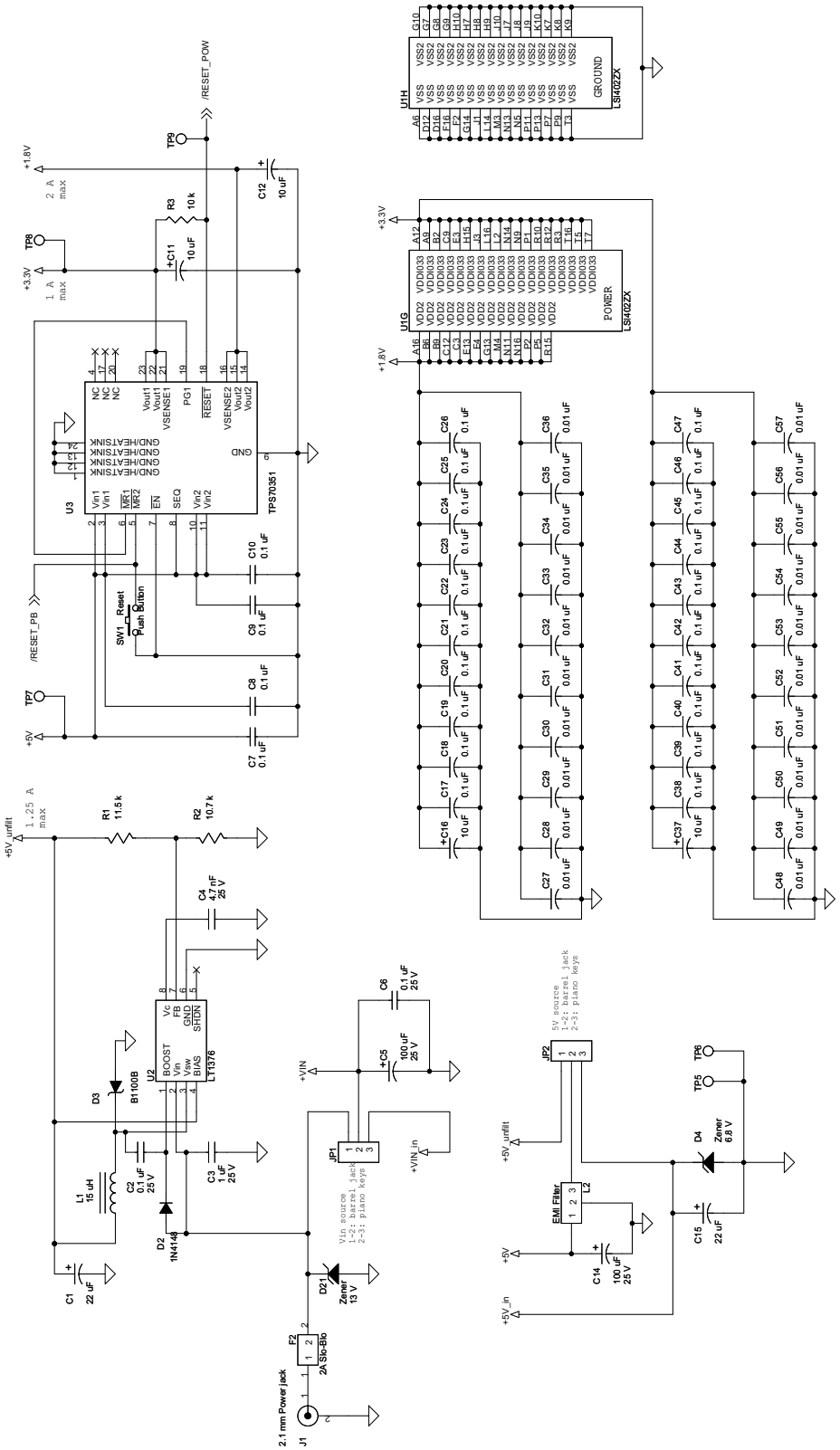

Figure 25. Motherboard Power Circuit Rev 1.2

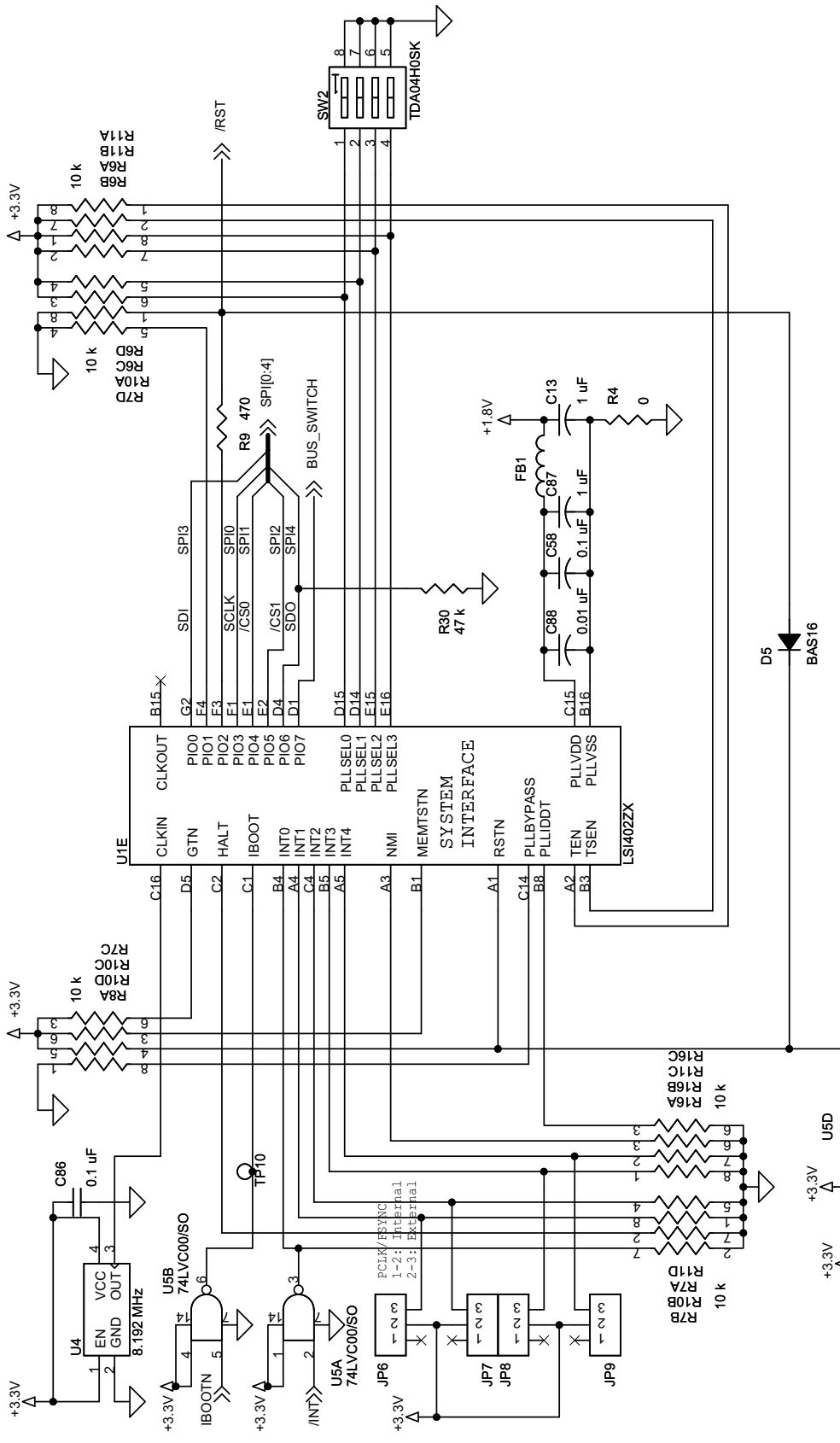

Figure 26. Motherboard DSP System Interface Rev 1.2

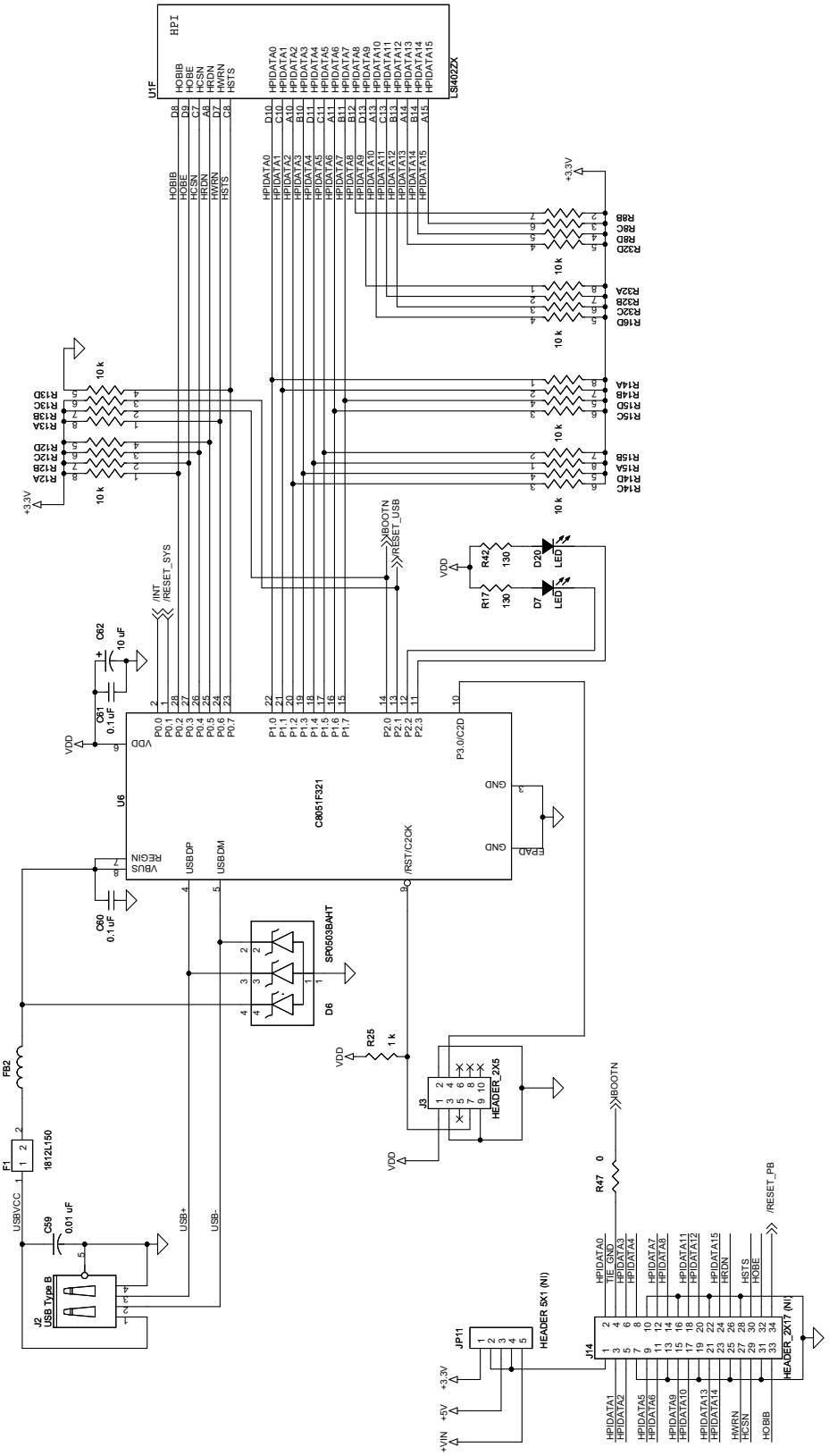

Figure 27. Motherboard USB to DSP Interface Rev 1.2

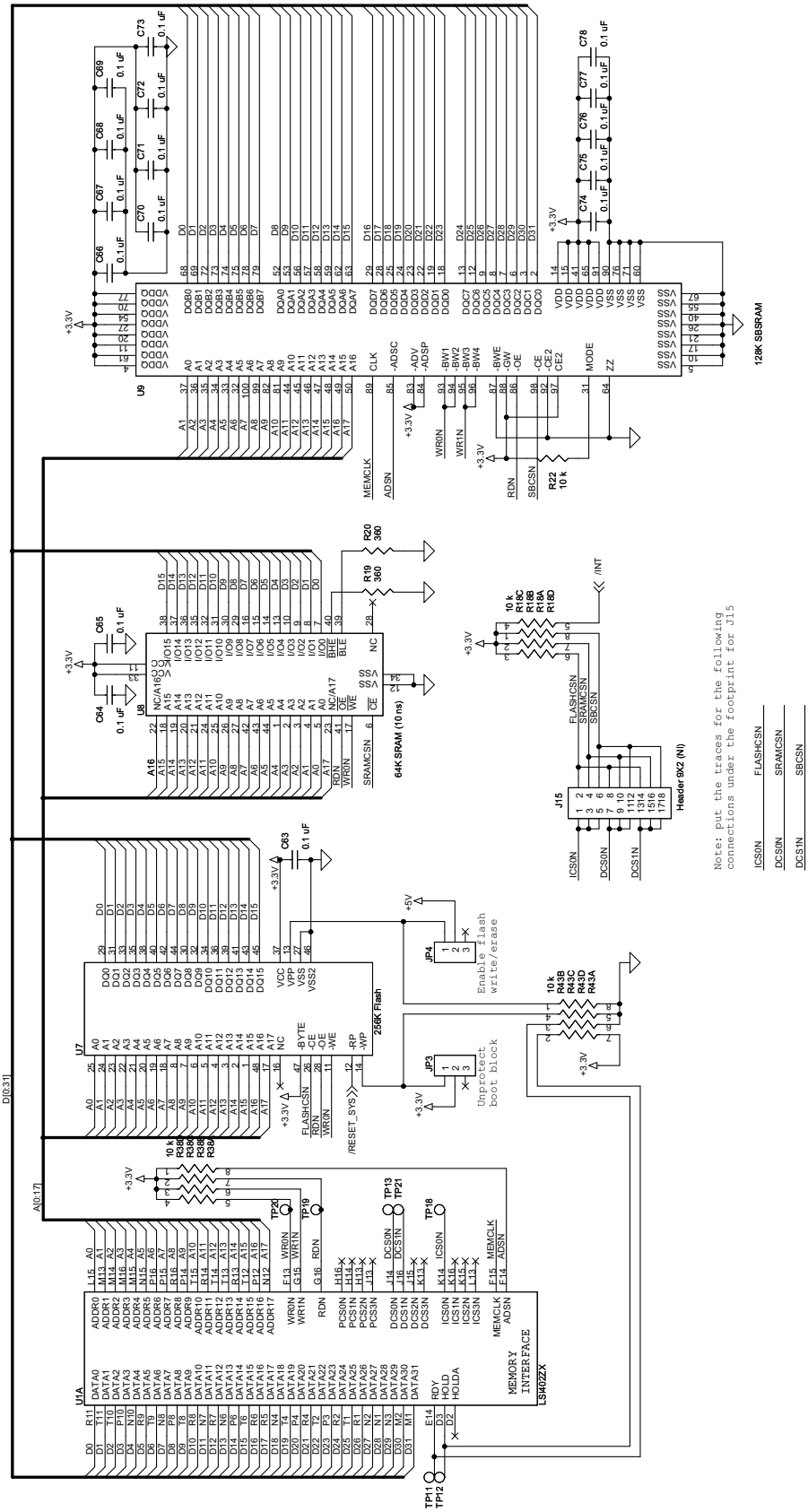

Figure 28. Motherboard Memory to DSP Interface Rev 1.2

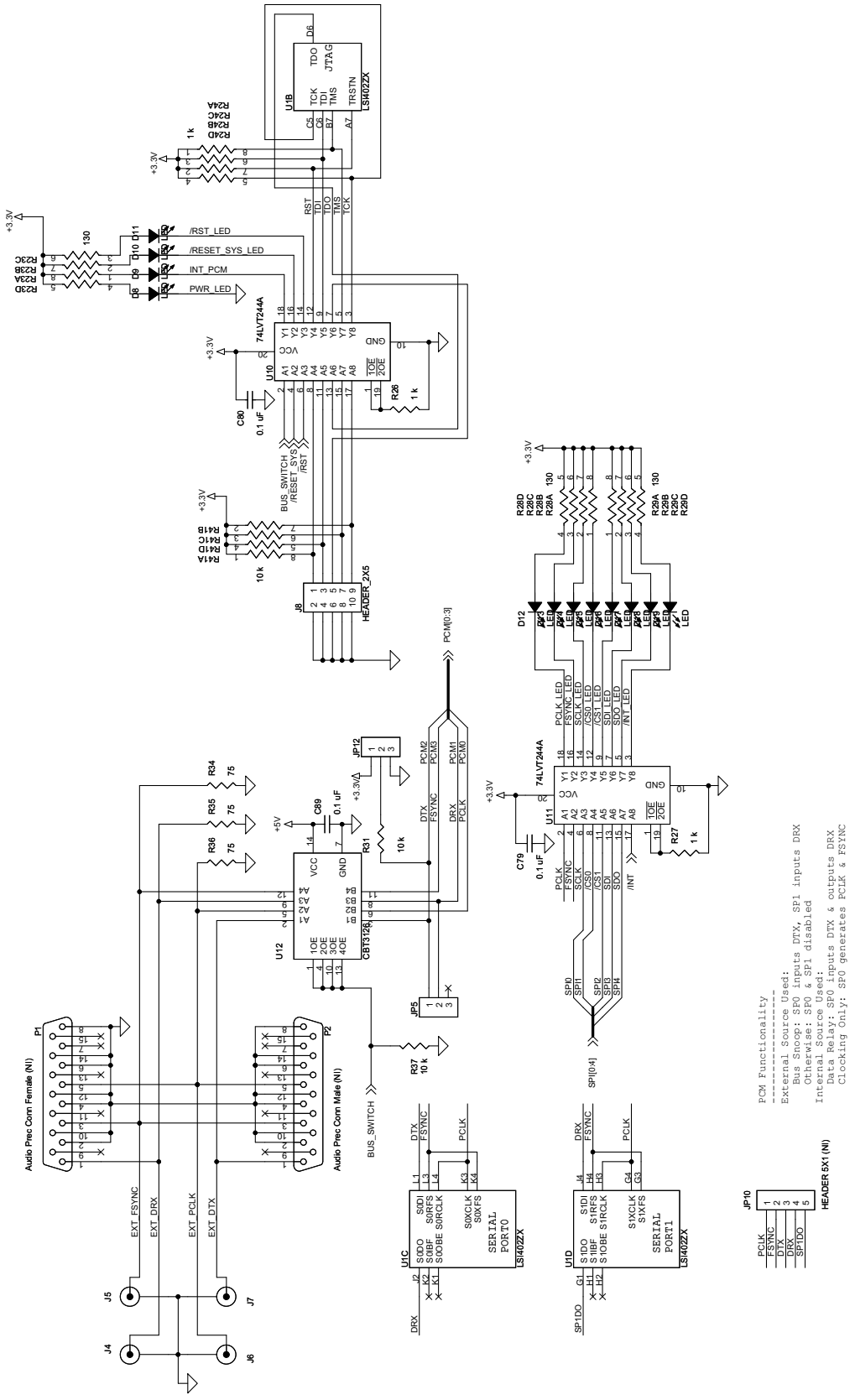

Figure 29. Motherboard DSP Serial Port Interface Rev 1.2

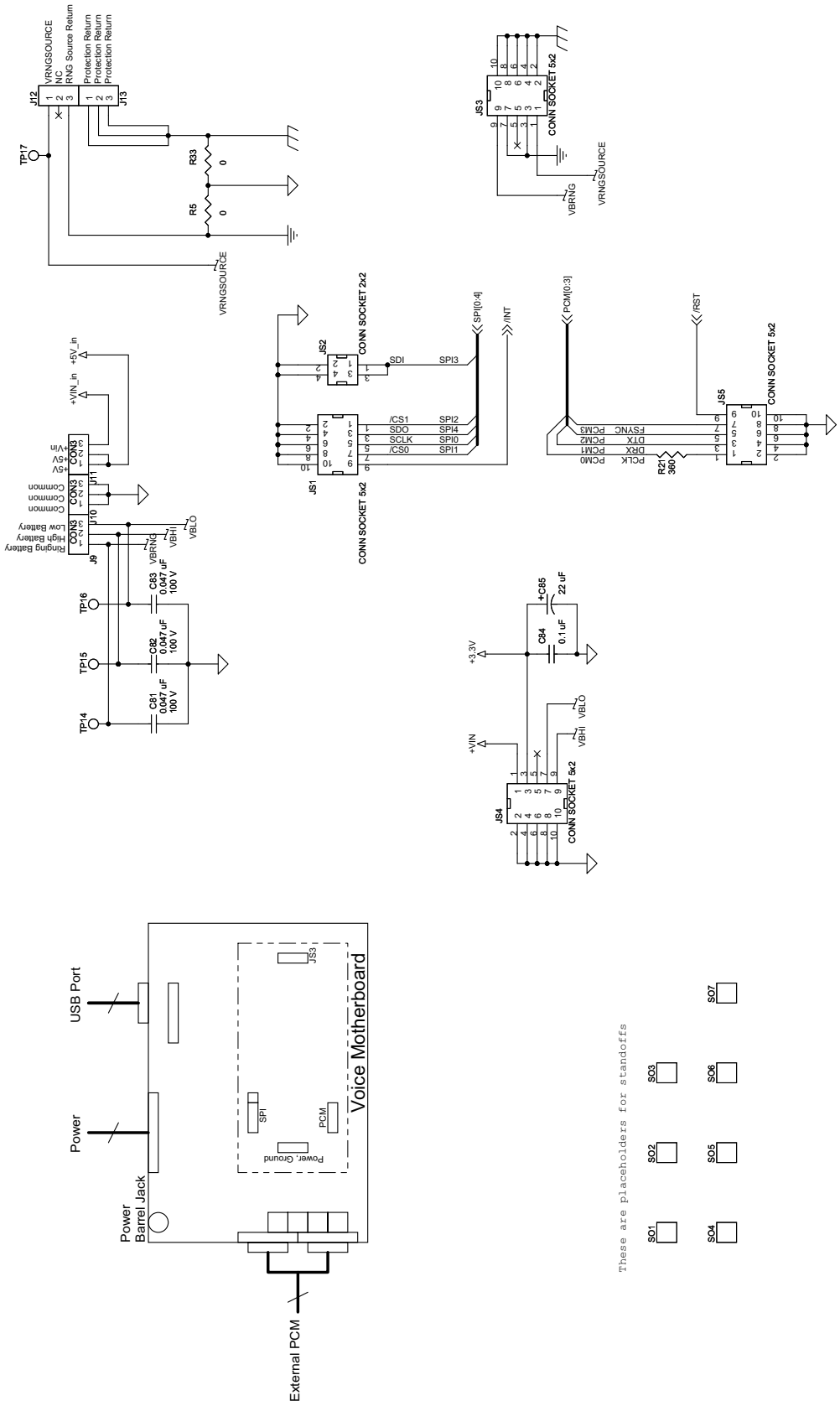

Figure 30. Motherboard Interconnect Rev 1.2

12. Bill of Materials (Motherboard)

Table 3. Si3226/7DC8/9 Motherboard Bill of Materials Rev 1.2

Item	Qty	Reference	Value	Material	Tol	Rating	Part Number	Manufacturer	PCB Footprint
1	3	C1,C15,C85	22 µF	Tantalum	±20%	10 V	ECST1AX226R	Panasonic	3528_EIAB
2	2	C2,C6	0.1 µF	X7R	±10%	25 V	08053C104KAT2A	AVX	CC0805
3	3	C81,C82,C83	47 nF	X7R	±10%	100 V	08051C473KAT2A	AVX	CC0805
4	1	C3	1 µF	X7R	±10%	25 V	12063C105KAT2A	AVX	CC1206
5	1	C4	4.7 nF	X7R	±10%	25 V	08053C472KAT2A	AVX	CC0805
6	2	C5,C14	100 µF	Electrolytic	±20%	25 V	ECA1EM101	Panasonic	C2.5X6.3MM-RAD
7	48	C7,C8,C9,C10,C17, C18,C19,C20,C21,C22, C23,C24,C25,C26,C38, C39,C40,C41,C42,C43, C44,C45,C46,C47,C58, C60,C61,C63,C64,C65, C66,C67,C68,C69,C70, C71,C72,C73,C74,C75, C76,C77,C78,C79,C80, C84,C86,C89	0.1 µF	X7R	±20%	16 V	C0603X7R160-104MNE	Venkel	CC0603
8	5	C11,C12,C16, C37,C62	10 µF	Tantalum	±20%	10 V	ECST1AX106R	Panasonic	3528_EIAB
9	2	C13,C87	1 µF	X7R	±20%	10 V	C0805X7R100-105MNE	Venkel	CC0805
10	22	C27,C28,C29,C30,C31, C32,C33,C34,C35,C36, C48,C49,C50,C51,C52, C53,C54,C55,C56,C57, C59,C88	0.01 µF	X7R	±20%	10 V	C0603X7R100-103MNE	Venkel	CC0603
11	1	D2	1N4148				MMBD914LT1	ON Semi	SOT-23
12	1	D3	B1100B			100 V, 1 A	B1100LB-13	Diodes, Inc.	DIO-SMB
13	1	D4	Zener			6.8 V	P6KE6.8A	Vishay	DO-15
14	1	D5	BAS16				BAS16	Fairchild Semiconductor	SOT-23
15	1	D6	SP0503BAHT				SP0503BAHT	Littelfuse	SOT-143

Table 3. Si3226/7DC8/9 Motherboard Bill of Materials Rev 1.2 (Continued)

Item	Qty	Reference	Value	Material	Tol	Rating	Part Number	Manufacturer	PCB Footprint
16	14	D7,D8,D9,D10,D11, D12,D13,D14,D15,D16, D17,D18,D19,D20	LED			2 V, 30 mA	SML-LXT0805IW-TR	Lumex	LED-0805
17	1	D21	Zener			13 V	P6KE13A	Vishay	DO-15
18	2	FB1,FB2	Ferrite Bead			800 mA	LI0805H121R-00	Steward	RC0805
19	1	F1	1812L150				1812L150	Littelfuse	FUSE-1812L150
20	1	F2	2A Slo-Blo			2 A, 63 V	0430002.WR	Littelfuse	1206
21	10	JP1,JP2,JP3,JP4, JP5,JP6,JP7,JP8, JP9,JP12	HEADER 3X1				2303-6111TN	3M	CONN-1X3
22	4	JS1,JS3,JS4,JS5	CONN SOCKET 5x2				SSW-105-01-T-D	Samtec	CONN2X5[6240]SKT
23	1	JS2	CONN SOCKET 2x2				SSW-102-01-T-D	Samtec	CONN2X2[6240]SKT
24	1	J1	2.1 mm power jack				ADC-002-1	Adam Tech	CONN3[175120]PWR
25	1	J2	USB Type B				897-30-004-90-000000	Mill-Max	CONN-USB-B
26	2	J3,J8	HEADER_2X5				2510-6002UB	3M	CONN2X5-4W
27	1	J9	CON3				2SV-03	Thomas & Betts	CONN3-2SV-03
28	3	J10,J11,J13	CON3				2SV-03	Thomas&Betts	CONN3-2SV-03
29	1	J12	CON3				2SV-03	Thomas&Betts	CONN3-2SV-03A
30	1	L1	15 µH			1.8 A	DR73-150	Coiltronics	IND-DR73
31	1	L2	EMI Filter				ELK-E103FA	Panasonic	ELKE-3218
32	1	R1	11.5 kΩ		±1%	125 mW	CR0805-8W-1152FT	Venkel	RC0805
33	1	R2	10.7 kΩ		±1%	63 mW	CR0603-16W-1072FT	Venkel	RC0603
34	3	R3,R22,R37	10 kΩ		±5%	63 mW	CR0603-16W-103JT	Venkel	RC0603
35	2	R4,R47	0 Ω			1.0 A	CR0603-16W-000T	Venkel	RC0603
36	2	R5,R33	0 Ω			2.0 A	CR1206-8W-000T	Venkel	RC1206
37	16	R6,R7,R8,R10,R11, R12,R13,R14,R15,R16, R18,R31,R32,R38,R41, R43	10 kΩ		±5%	63 mW per element	EXB38V103JV	Panasonic	RP8-EXB38V

Table 3. Si3226/7DC8/9 Motherboard Bill of Materials Rev 1.2 (Continued)

Item	Qty	Reference	Value	Material	Tol	Rating	Part Number	Manufacturer	PCB Footprint
38	1	R9	470 Ω		±1%	100 mW	CR0603-10W-4700FT	Venkel	RC0603
39	2	R17,R42	130 Ω		±5%	63 mW	CR0603-16W-131JT	Venkel	RC0603
40	3	R19,R20,R21	360 Ω		±5%	63 mW	CR0603-16W-361JT	Venkel	RC0603
41	3	R23,R28,R29	130 Ω		±5%	63 mW per element	EXB38V131JV	Panasonic	RP8-EXB38V
42	1	R24	1 kΩ		±5%	63 mW per element	EXB38V102JV	Panasonic	RP8-EXB38V
43	3	R25,R26,R27	1 kΩ		±5%	63 mW	CR0603-16W-102JT	Venkel	RC0603
44	1	R30	47 kΩ		±5%	63 mW	CR0603-16W-473JT	Venkel	RC0603
45	3	R34,R35,R36	75 Ω		±5%	125 mW	CR0805-8W-75R0FT	Venkel	RC0805
46	7	SO1,SO2,SO3,SO4, SO5,SO6,SO7	Standoff and Screw				561-P440.25, 561-K4.50	Eagle Plastic Devices	MH[125]
47	1	SW1	Push Button				101-0161	Mouser	SW4[6240]PB
48	1	SW2	TDA04H0SK				TDA04H0SK	C&K	SW4-DIP-SMT
49	1	U1	LSI402ZX				LSI402ZX	LSI Logic	BGA256N17X17-1.0P
50	1	U2	LT1376				LT1376HVCS8	LTC	SO8
51	1	U3	TPS70351				TPS70351PWP	TI	TSSOP24N6.4-0.65P-TPAD
52	1	U4	8.192 MHz				OSC_SG-636	Epson	OSC_SG-636
53	1	U5	74LVC00/SO				74LVC00APW	Philips	TSSOP14
54	1	U6	C8051F321				C8051F321	Silicon Labs	MLP28N5X5-0.5P
55	1	U7	256K Flash				MT28F400B3WG-8T	Micron	TSOP48
57	2	U10,U11	74LVT244A				74LVT244A-DB	Philips	SSOP20
58	1	U12	CBT3126				CBT3126PW	Philips	TSSOP14
Not Installed Components									
59	2	JP10,JP11	HEADER 5X1 (NI)				2303-6111TN	3M	CONN-1X5
60	4	J4,J5,J6,J7	BNC Conn (NI)				73133	Molex	CONN-BNC
61	1	J14	HEADER_ 2X17 (NI)				2534-6002UB	3M	CONN2X17-4W

Table 3. Si3226/7DC8/9 Motherboard Bill of Materials Rev 1.2 (Continued)

Item	Qty	Reference	Value	Material	Tol	Rating	Part Number	Manufacturer	PCB Footprint
62	1	J15	Header 9X2 (NI)				2303-6111TN	3M	CONN-2X9
63	1	P1	Audio Prec Conn Female (NI)				747845-4	Amp	CONN15[6543]DBF
64	1	P2	Audio Prec Conn Male (NI)				747841-4	Amp	CONN15[6543]DBM
65	17	TP5,TP6,TP7,TP8,TP9, TP10,TP11,TP12,TP13, TP14,TP15,TP16,TP17, TP18,TP19,TP20,TP21	Test Point (NI)				151-207	Mouser	TESTPOINT
56	1	U8	64K SRAM (10 ns)				CY7C1021CV33-10VC	Cypress	SOJ44
66	1	U9	128K SBSRAM				CY7C1339F-133AC	Cypress	QFP100N16X22-65P

13. Motherboard Layout

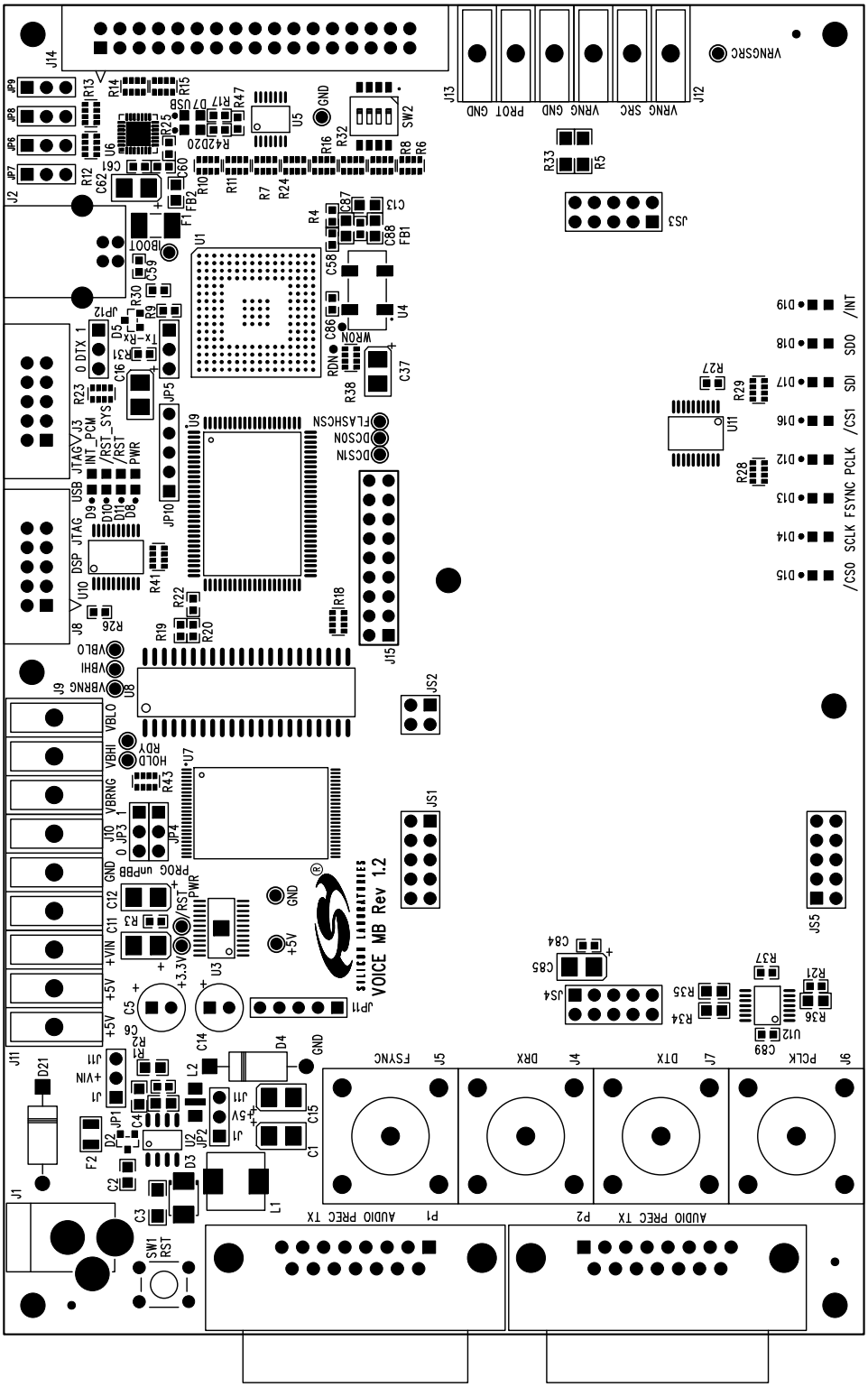

Figure 31. Motherboard Primary Assembly

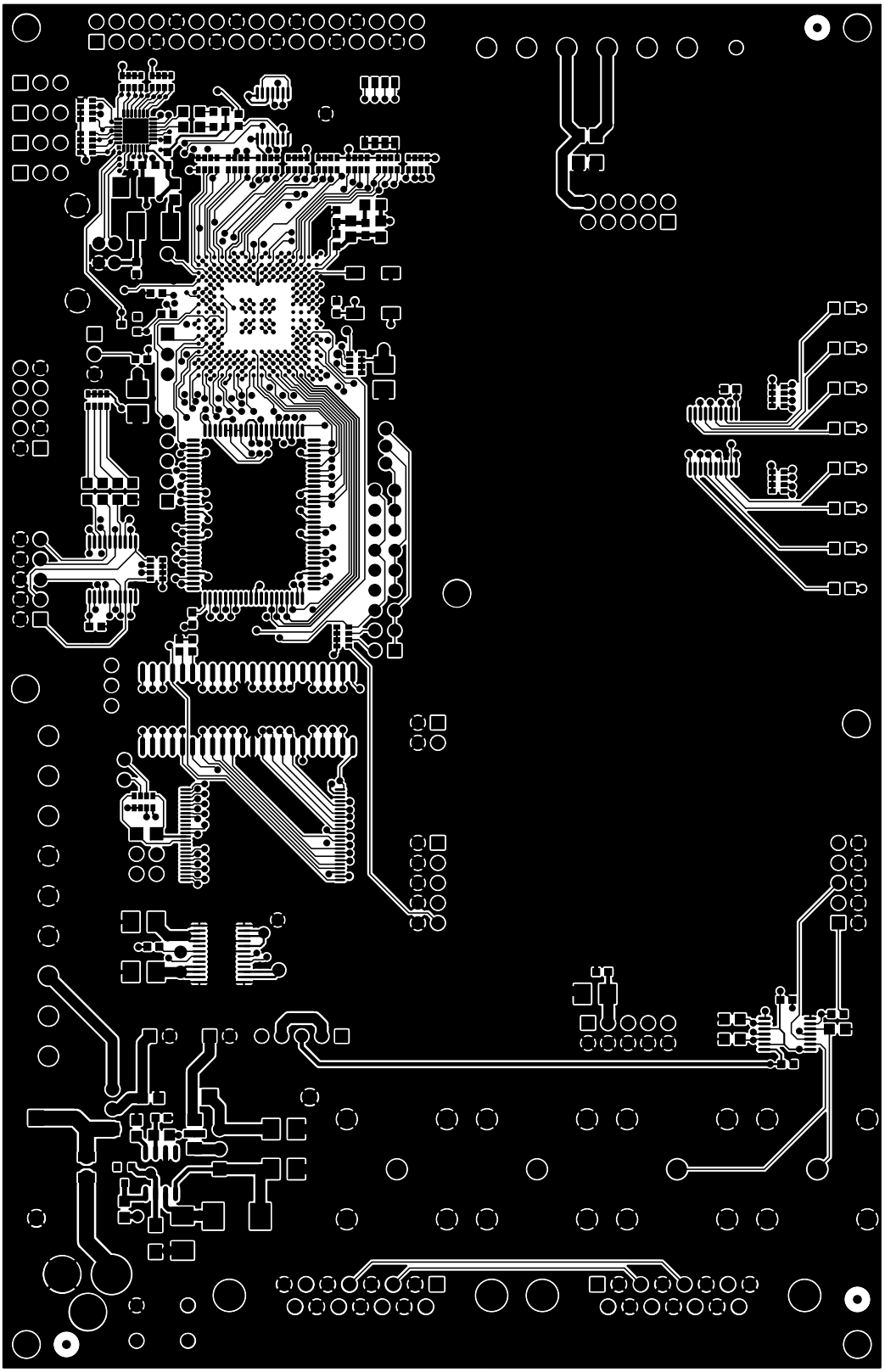

Figure 32. Motherboard Primary Side

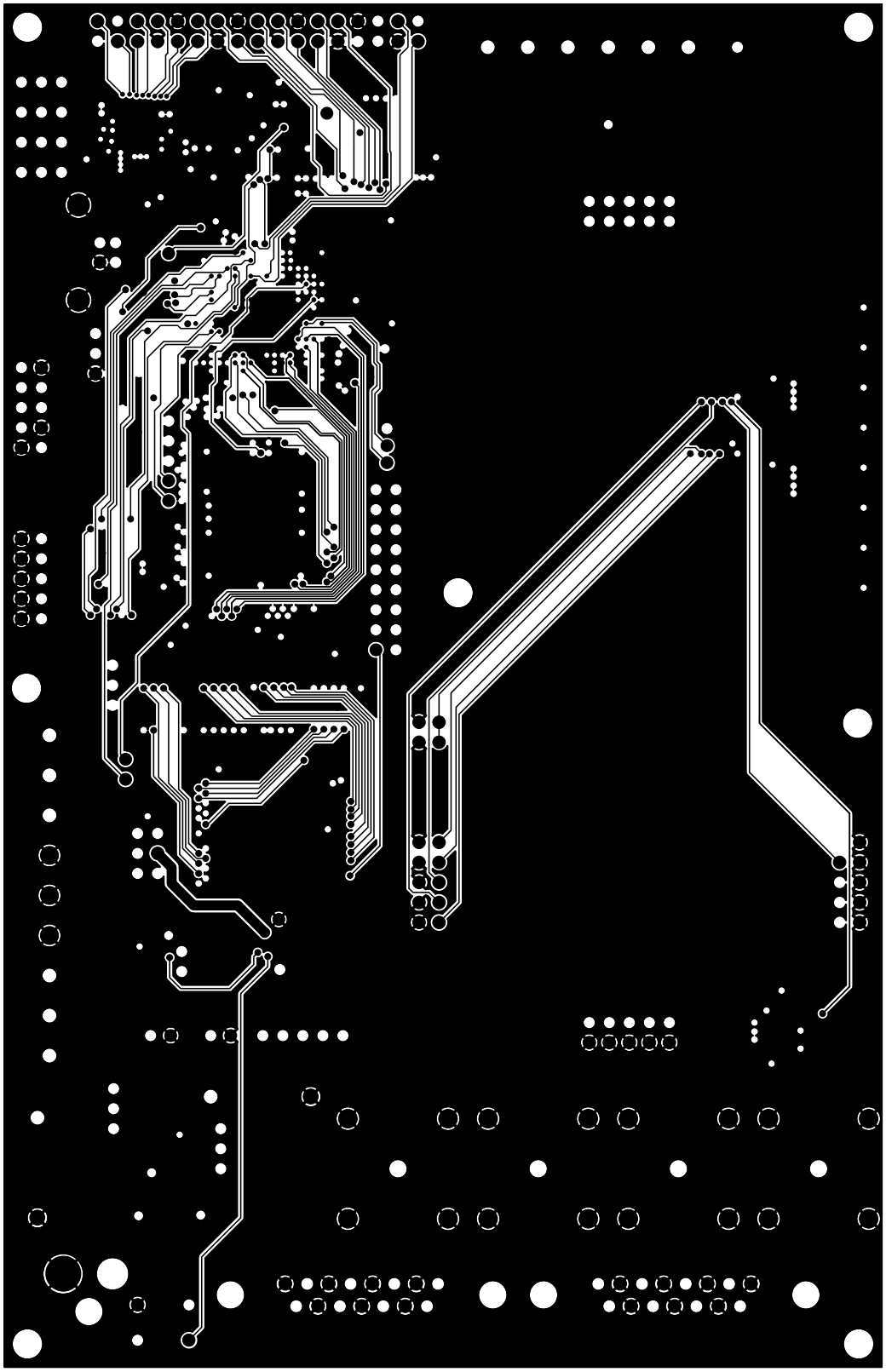

Figure 33. Motherboard Signal 1

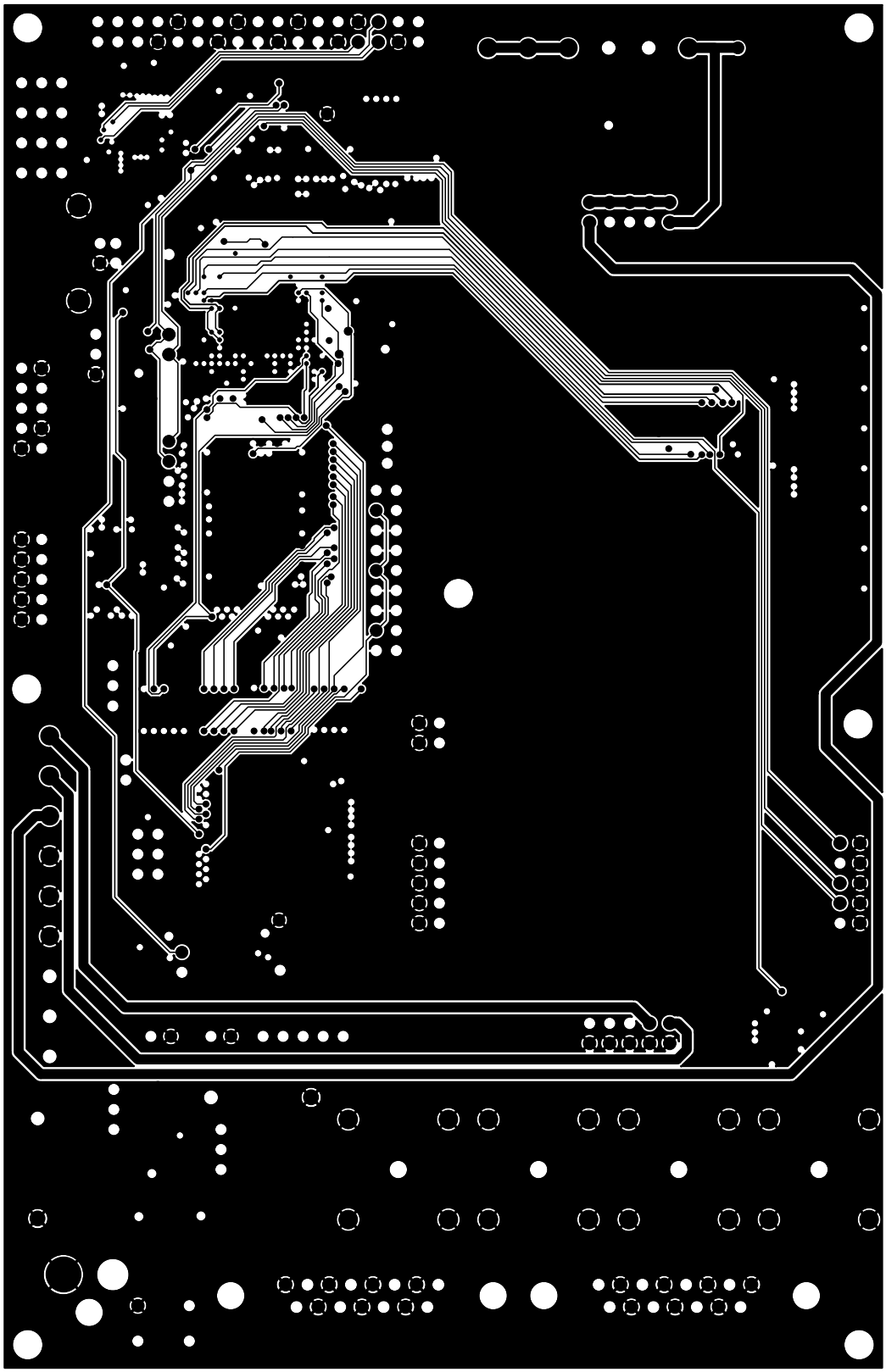

Figure 34. Motherboard Signal 2

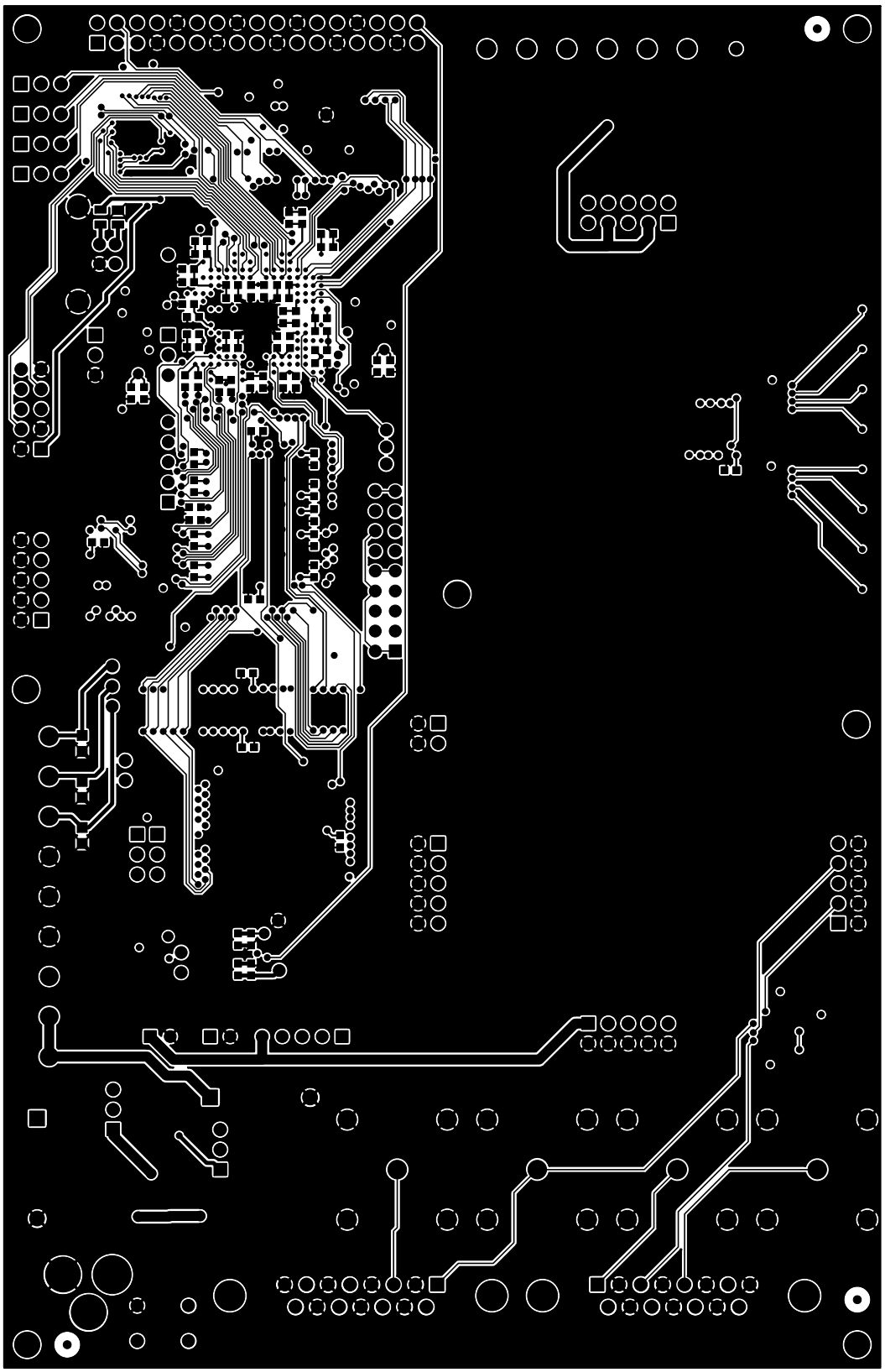

Figure 35. Motherboard Secondary Side

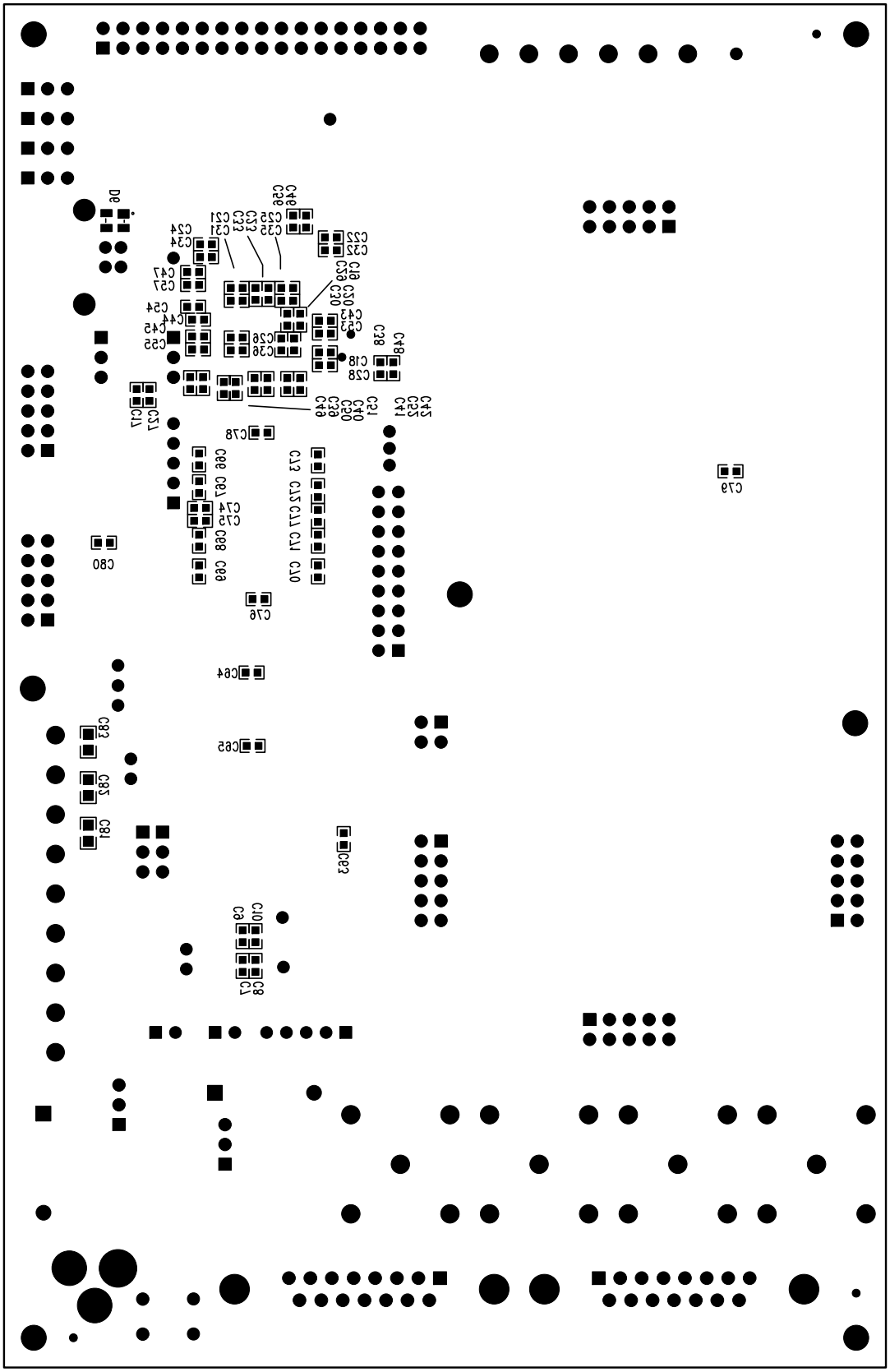

Figure 36. Motherboard Secondary Assembly

14. Additional Reference Resources

- Si3226 Data Sheet
- AN39: Connecting the Si321x and Si322x ProSLIC® to the W&G PCM-4
- AN265: 2nd Generation ProSLIC® GUI User's Guide
- AN317: Dual ProSLIC® Si3226/27 Designer's Guide

DOCUMENT CHANGE LIST

Revision 0.2 to Revision 0.3

- Updated schematic and BOM to Rev 3.4. (Si3226 Rev B to Rev C transition).
- Updated BOM format.

Revision 0.3 to Revision 0.4

- Updated Feature list to “Commercial Temperature Range”.
- Abbreviated "3.Evaluation Software Installation and Use," on page 4
- Deleted Section 4 and renumbered subsequent sections.
- Updated schematics and Bill of Materials to Rev 3.7 (Si3226 Rev C to Rev D transition).
- Updated Daughter Card Layout to Rev 3.7.

NOTES:

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