DVI - FPD LINK II (DS90UR905Q / 906Q)
Demo Platform User Guide

General Description

The DVI-FPD LINK II demo platform takes the DVI signals as a video input, and deserializes the parallel RGB and control signals. The DS90UR905Q converts this 24-bit parallel RGB data and control data to a high-speed serialized (FPD-LINK II) over a single pair with up to 10m STP cable. The DS90UR906Q recovers the data (RGB) and control signals, and extracts the clock from the serial stream. The recovered RGB and control data are converted back to the DVI signals as a video output to any Displays (See *Figure 1*).

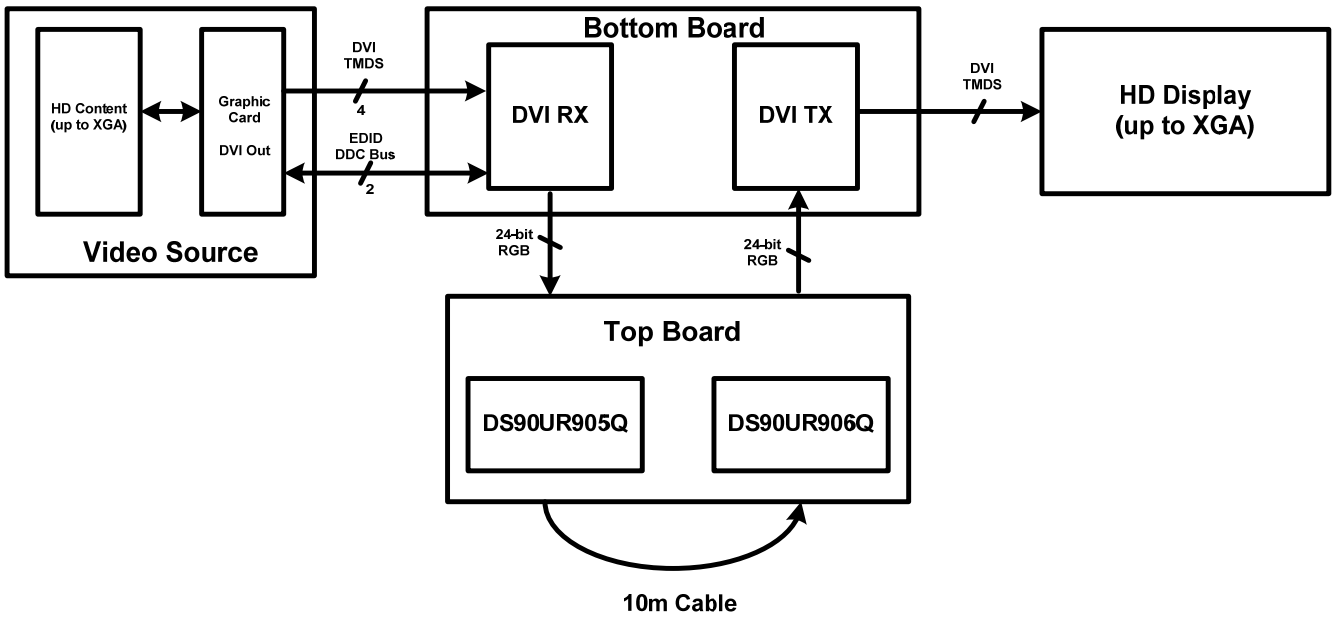

Figure 1. Block Diagram

Ordering Information
Parts: DS90UR905Q & DS90UR906Q
Demo boards: DVI-FPDLINKII-M (Molex Cable)
DVI-FPDLINKII-R (Rosenberger / Leoni Cable)

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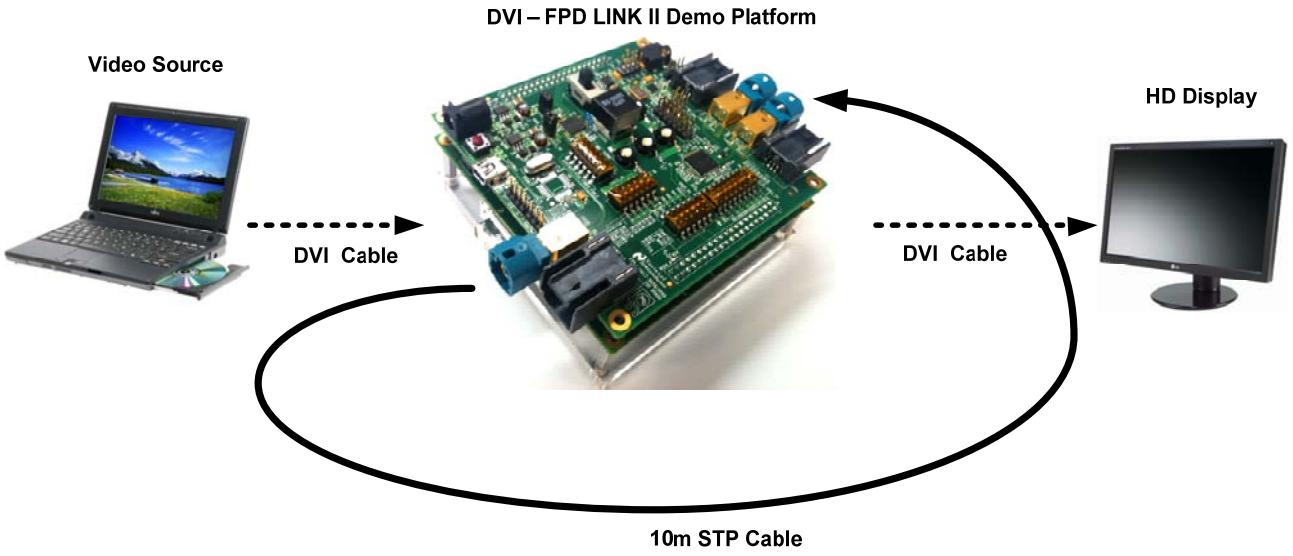

Figure 2. Setup Diagram

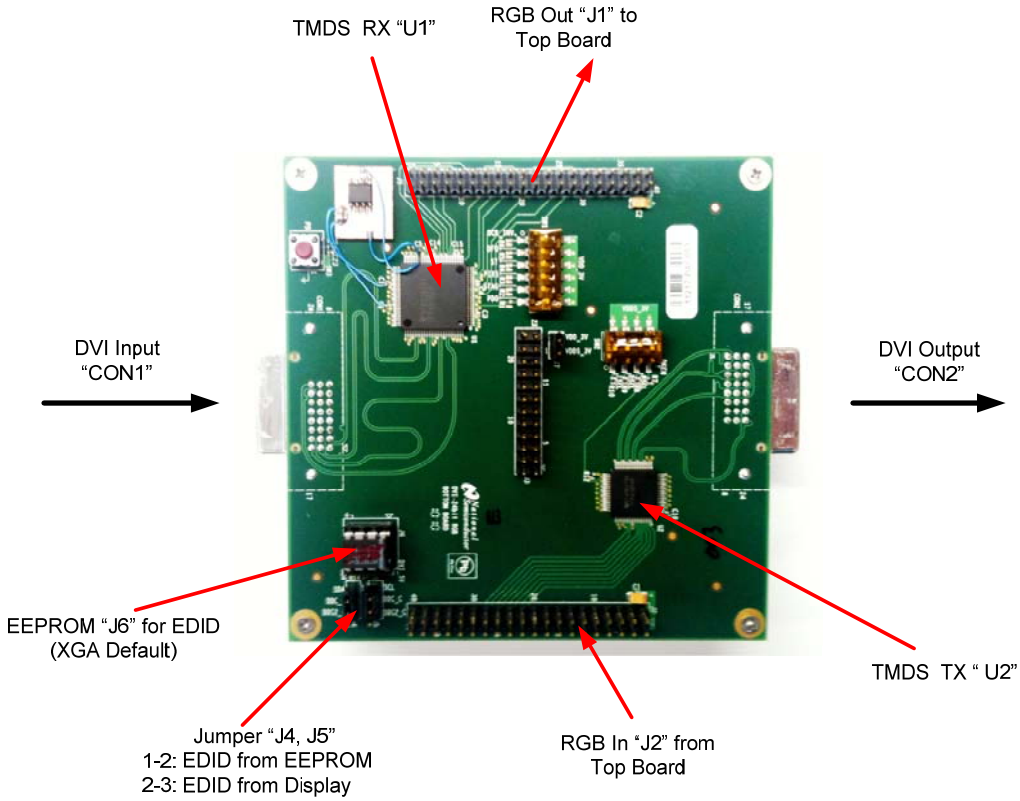

Figure 3. Bottom Board

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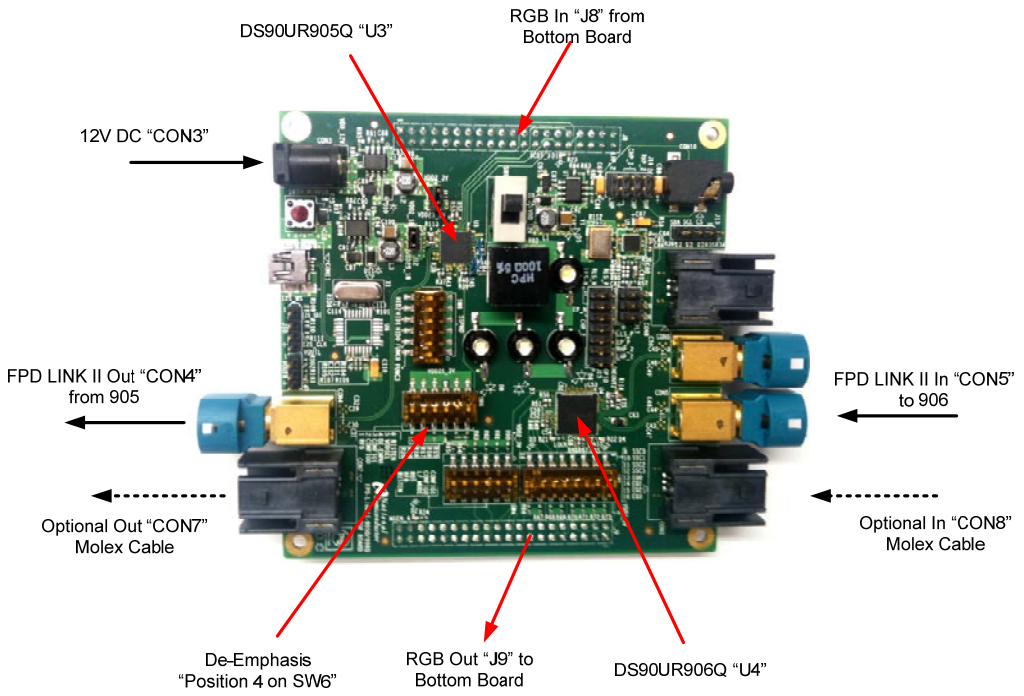

Figure 4. Top Board

Quick Start Guide

- The DVI – FPD Link II demo board consists of a "top board" and a "bottom" board
- The "Top board" has the DS90UR905 and DS90UR906 devices
- The "Bottom board" has the TI DVI TX and RX devices
- Connect the included 12V AC/DC power adapter to the "CON3" of the top board
- Connect the PC (DVI Source) to DVI connector "CON1" (inputs to TI RX) of the bottom board
- Connect the LCD to DVI connector "CON2" (outputs from TI TX) of the bottom board
- On DVI-FPDLINKII-R board, connect the Rosenberger/Leoni cable between "CON4" (from 905 output) and "CON5" (to 906 input) of the top board
- On DVI-FPDLINKII-M board, connect the Molex cable between "CON7" (from 905 output) and "CON8" (to 906 input) of the top board
- Three GREEN LEDs on the top board are ON and the picture should be seen on the LCD
  - D1 – "Lock" indication of TI DVI RX device
  - D3 – "Lock" indication of DS90UR906Q
  - D4 – "Pass" indication of DS90UR906Q

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Other Optional Notes

- Bypass EEPROM
  The resolution of video source is controlled by “EDID”. The EDID is provided by the display directly or an EEPROM.
  Configure Jumper “J4” and “J5” as shown in Figure 3.
  1-2: EDID from EEPROM
  2-3: EDID from Display (Default Setting)
- Long Cable Length
  VODSEL and De-Emphasis controls – Turn both positions “ON” as shown in Figure 4 when longer cable is used.

- SW6
  Control switch of DS90UR905Q (refer to the datasheet).
- SW4 & SW5
  Control switches of DS90UR906Q (refer to the datasheet).

Bill of Materials

#	Quat	Reference	Digikey PN	Manufacture PN	Descriptions
1	2	CON1,CON2	WM5601-ND	74320-4004	CONN RECEPT RT ANG DIGITAL DVI
2	1	CON3	CP-037BH-ND	PJ-037BH	CON PWR JACK 2.5 X 6.5MM
3	3	CON4,CON5,CON6	NA	D4S20D-40ML5-Z	HSD 2x2 MALE R/A
4	3	CON7,CON8,CON9	WM17535-ND	49616-0711	HDR USCAR MINI USB A R/A BLACK
5	1	CON10	CP1-3513SJCT-ND	SJ1-3513-SMT	CONN JACK STEREO 3POS 3.5MM SMD
6	1	CON11	WM5461CT-ND	67503-1020	CONN RECEPT MINIUSB R/A 5POS SMD
7	3	C1,C2,C110	495-2236-1-ND	B45196H3106K109	CAP TANTALUM 10UF 16V 10% SMD 1206
8	39	C3,C4,C5,C6,C7,C8,C9,C10,	PCC2336CT-ND	ECJ-ZEB0J104M	CAP CERAMIC .1UF 6.3V X5R 0201
		C11,C12,C13,C29,C30,C33,			
		C34,C35,C36,C37,C43,C44,			
		C45,C46,			
		C51,C52,C53,C54,C55,C56,			
		C57,C76,C77,C78,C101,C116			
		C102,C103,C104,C105,C106			
9	22	C14,C15,C16,C17,C18,C19,	PCC2136CT-ND	ECJ-ZEB0J103K	CAP .01UF 6.3V CERAMIC X5R 0201
		C20,C21,C22,C38,C39,C40,			
		C41,C42,C58,C59,C60,C61,			
		C62,C79,C80,C117			
10	3	C89, C92 C94	0402ZD103KAT2A-ND	0402ZD103KAT2A	CAP CER 10000PF 10V X5R 0402
11	15	C70,C71,C72,C73,C74,	PCC2364CT-ND	ECJ-0EB1A105M	CAP CERAMIC 1UF 10V X5R 0402
		C75,C86,C87			
		C107,C108,C109,			
		C115,C118, C119			
12	2	C26,C27	511-1498-1-ND	TCTAL0J107M8R	CAP TANTALUM 100UF 6.3V 20% SMD 1206

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13	1	C23	1206ZD105MAT2A-ND	1206ZD105MAT2A	CAP CER 1.0UF 10V X5R 1206
14	2	C28,C95	511-1502-1-ND	TCTAL1C226M8R	CAP TANTALUM 22UF 16V 20% SMD 1206
15	2	C91,C97	587-1469-1-ND	LMK325B7106MN-T	CAP CER 10UF 10V X7R 1210
16	2	C98,C99	587-1387-1-ND	MK325BJ107MM-T	CAP CER 100UF 6.3V X5R 1210
17	2	C88,C93	490-3043-1-ND	GRM31MR60J475KC11L	CAP CER 4.7UF 6.3V 10% X5R 1206
18	1	C90	490-3161-1-ND	GRM033R61A152KA01D	CAP CER 1500PF 10V X5R 0201
19	1	C96	490-3163-1-ND	GRM033R61A332KA01D	CAP CER 3300PF 10V X5R 0201
20	25	R26,R27,R28,R29,R30,R31,			DNI - SMD 0402
		C82,R32,R33,R37,R39,			
		R41,R46,R48,R50,R53,R75,			
		R76,R77,R78,R79,R89,			
		R90,R91,R117			
21	6	C31,C32,C47,C48,C49,C50			DNI - SMD 0201
23	1	C63	511-1443-1-ND	TCP0J475M8R	CAP TANT 4.7UF 6.3V 20% SMD 0805
24	1	C64	PCC2421CT-ND	ECJ-0EB0J225M	CAP CERAMIC 2.2UF 6.3V X5R 0402
25	2	C65,C66	445-4993-1-ND	C1005X5R0J224K	CAP CER .22UF 6.3V X5R 0402
26	3	C67,C68,C69	478-5526-1-ND	TLNS227M004R3000	CAP TANT 220UF 4.0V SMD 1206
27	1	C81	PCC1748CT-ND	ECJ-1VB1A154K	CAP .15UF 10V CERAMIC X5R 0603
28	3	C83,C84,C85	587-1455-1-ND	LMK105BJ474KV-F	CAP CER .47UF 10V X5R 0402
29	2	C111,C112	399-3014-1-ND	C0402C223K9PACTU	CAP 22000PF 6.3V CERAM X5R 0402
30	2	C113,C114	04026D100JAT2A-ND	04026D100JAT2A	CAP CER 10PF 6.3V X5R 0402
31	3	D1,D3,D4	511-1592-1-ND	SML-P12PTT86	LED GREEN 0.2MM 13MCD 0402 SMD
32	1	D2	511-1594-1-ND	SML-P12VTT86	LED RED 0.2MM 60MCD 0402 SMD
33	4	D5,D6,D7,D8	160-1816-1-ND	LTPL-P013WST1	LED 3 WATT COOL WHITE SMD
34	3	D9	568-4118-1-ND	PMEG2020EH,115	SCHOTTKY RECT 20V 2A SOD123F
35	2	J1,J2	3M9465-ND	961240-6404-AR	CONN HEADER VERT DUAL 40POS GOLD
22	2	J8,J9	3M9531-ND	960240-6202-AR	CONN SOCKET VERT DUAL 40POS GOLD
36	1	J3	3M9463-ND	961224-6404-AR	CONN HEADER VERT DUAL 24POS GOLD
37	3	J4,J5,J14	WM6503-ND	22-28-4033	CONN HEADER 3POS .100 VERT GOLD
38	1	J6	3M5473-ND	4808-3004-CP	SOCKET IC OPEN FRAME 8POS .3"
39	3	J7,J11,J12	WM6502-ND	22-28-4023	CONN HEADER 2POS .100 VERT GOLD
40	2	J10,J13	WM6504-ND	22-28-4043	CONN HEADER 4POS .100 VERT GOLD
41	1	J15	WM26814-ND	10-89-7142	CONN HDR DUAL 14POS .100 SRT AU
42	1	J16	WM26808-ND	10-89-7082	CONN HDR DUAL 8POS .100 SRT AU
43	1	J17	WM26806-ND	10-89-7062	CONN HDR DUAL 6POS .100 SRT AU
44	1	L1	732-1258-1-ND	744773122	INDUCTOR POWER 22UH 1.0A SMD
45	34	R1,R2,R3,R4,R5,R6,R7,R8,	RHM10.0KLCT-ND	MCR01MZPF1002	RES 10.0K OHM 1/16W 1% 0402 SMD
		R9,R10,R11,R15,R16,R18			
		R19,R20,R25,R52,R58,R60,			
		R61,R62,R63,R64,R65,R66,			
		R67,R68,R69,R70,R71,R72,			
		R73,R74			

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46	1	R17	RHM1.50KLCT-ND	MCR01MZPF1501	RES 1.5K OHM 1/16W 1% 0402 SMD
47	1	R12	P510LCT-ND	ERJ-2RKF5100X	RES 510 OHM 1/10W 1% 0402 SMD
48	5	R13,R14,R34,R35,R36	RHM4.7KJCT-ND	MCR01MZPJ472	RES 4.7K OHM 1/16W 5% 0402 SMD
49	1	R108	RHM1.50KLCT-ND	MCR01MZPF1501	RES 1.50K OHM 1/16W 1% 0402 SMD
50	4	R21,R22,R23,R24	RHM220LCT-ND	MCR01MZPF2200	RES 220 OHM 1/16W 1% 0402 SMD
51	17	R38,R40,R42,R43,R44,R45,	P0.0JCT-ND	ERJ-2GE0R00X	RES 0.0 OHM 1/10W 5% 0402 SMD
		R47,R49,R51,R54,R55,R56,			
		R109,R110,R111,R112,R118			
52	2	R113,R114	P0.0ACT-ND	ERJ-6GEY0R00V	RES 0.0 OHM 1/8W 5% 0805 SMD
53	1	R57	P422LCT-ND	ERJ-2RKF4220X	RES 422 OHM 1/10W 1% 0402 SMD
54	1	R80	P61.9KLCT-ND	ERJ-2RKF6192X	RES 61.9K OHM 1/10W 1% 0402 SMD
55	3	R83	P1.54KLCT-ND	ERJ-2RKF1541X	RES 1.54K OHM 1/10W 1% 0402 SMD
56	1	R84	P536LCT-ND	ERJ-2RKF5360X	RES 536 OHM 1/10W 1% 0402 SMD
59	1	R92	HPC12100JCT-ND	HPC 12 100 5% R	RES 100 OHM 5W 5% SMD
60	1	R101	P1.00MLCT-ND	ERJ-2RKF1004X	RES 1.00M OHM 1/10W 1% 0402 SMD
61	4	R102,R103,R104,R105	P3.30KLCT-ND	ERJ-2RKF3301X	RES 3.30K OHM 1/10W 1% 0402 SMD
62	2	R107,R106	P16.0LCT-ND	ERJ-2RKF16R0X	RES 16.0 OHM 1/10W 1% 0402 SMD
63	1	R115	P12.0KLCT-ND	ERJ-2RKF1202X	RES 12.0K OHM 1/10W 1% 0402 SMD
64	1	R116	P5.60KLCT-ND	ERJ-2RKF5601X	RES 5.60K OHM 1/10W 1% 0402 SMD
65	2	R81,R82	P5.1KJCT-ND	ERJ-2GEJ512X	RES 5.1K OHM 1/10W 5% 0402 SMD
66	2	R85,R87	P1.00KLCT-ND	ERJ-2RKF1001X	RES 1.00K OHM 1/10W 1% 0402 SMD
67	1	R86	P2.32KLCT-ND	ERJ-2RKF2321X	RES 2.32K OHM 1/10W 1% 0402 SMD
68	1	R88	P806LCT-ND	ERJ-2RKF8060X	RES 806 OHM 1/10W 1% 0402 SMD
69	4	SW1,SW4,SW6,SW8	CT2196MST-ND	219-6MST	SWITCH TAPE SEAL 6 POS SMD
70	1	SW2	CT2194MST-ND	219-4MST	SWITCH TAPE SEAL 4 POS SMD
71	2	SW3,SW7	P12225SCT-ND	EVQ-21505R	SWITCH LT 6MM 160GF 5MM HEIGHT
72	1	SW5	CT2198MST-ND	219-8MST	SWITCH TAPE SEAL 8 POS SMD
73	1	SW9	360-2131-ND	CS12ANW03	SWITCH SLIDE SPDT 3A 125VAC PCB
74	1	U1	296-9992-ND	TFP401PZP	IC PANELBUS DVI REC 100-HTQFP
75	1	U2	296-12666-ND	TFP410PAP	IC TRANSMITTER DIGITAL 64-HTQFP
76	1	U3	NA	DS90UR905Q	IC SERIALIZER 48-LLP
77	1	U4	NA	DS90UR906Q	IC DESERIALIZER 60-LLP
78	1	U5	LM4934RLCT-ND	LM4934RL	IC AUDIO SUBSYSTEM 1.2W 42USMDXT
79	1	U6	296-15275-5-ND	PCM2706PJT	IC STEREO AUD DAC W/USB 32-TQFP
80	2	U7	LM22680MRE-ADJCT-ND	LM22680MRE-ADJ/NOPB	IC VREG SW STP-DWN 2A ADJ 8-PSOP
81	1	U8,U9	LP3878MR-ADJ-ND	LP3878MR-ADJ/NOPB	IC VREG 800MA ADJ 8-PSOP
82	1	U10	428-2188-5-ND	CY2302SXI-1	IC CLK FREQ MULTI/ZDB 2OUT 8SOIC
83	1	X1	CTX410-ND	ATS120	CRYSTAL 12.0000 MHZ SERIES RES
84	1	Y1	CTX303LVCT-ND	CB3LV-3I-12M0000	OSC 12.0000 MHZ 3.3V SMD

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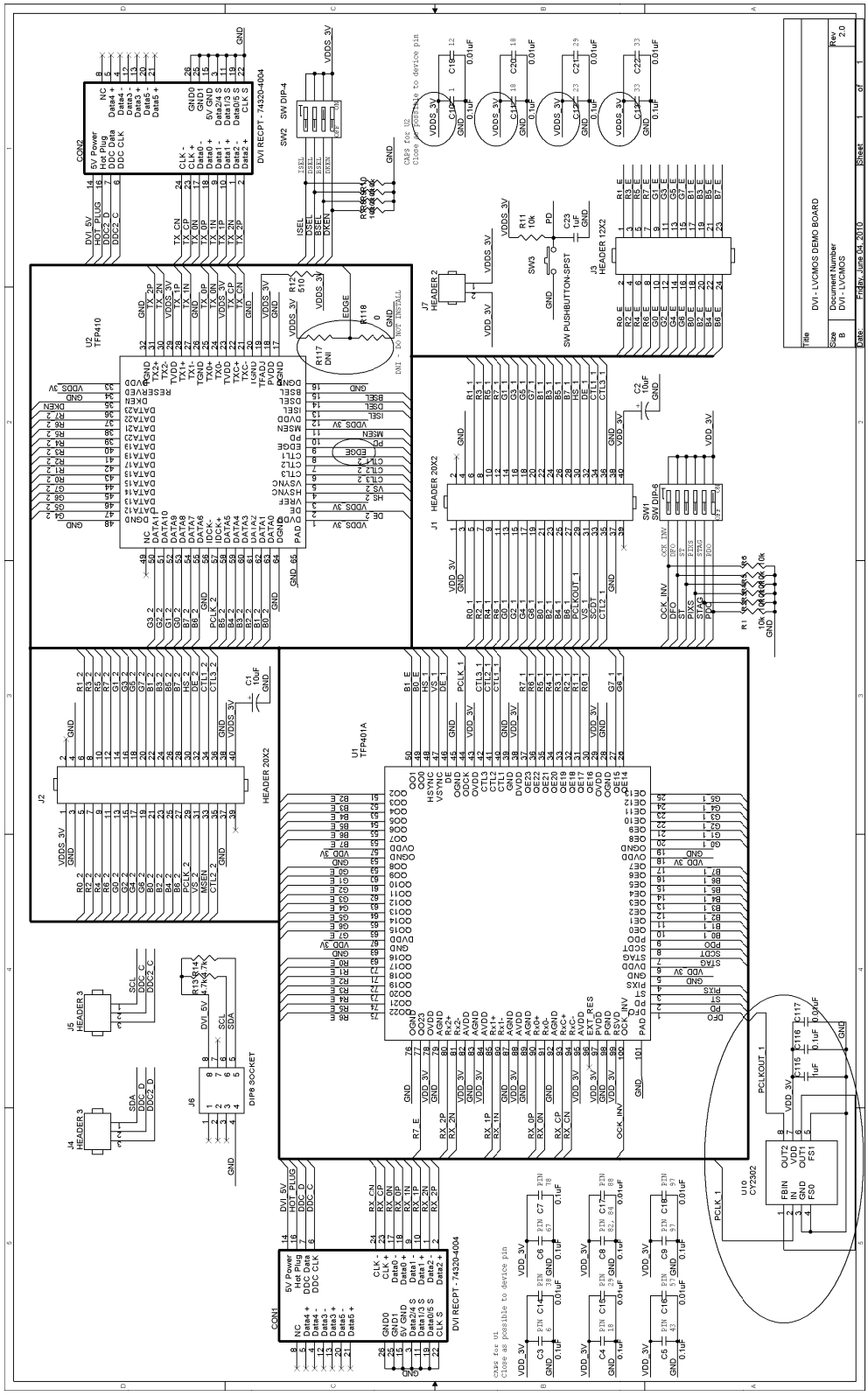
Schematics



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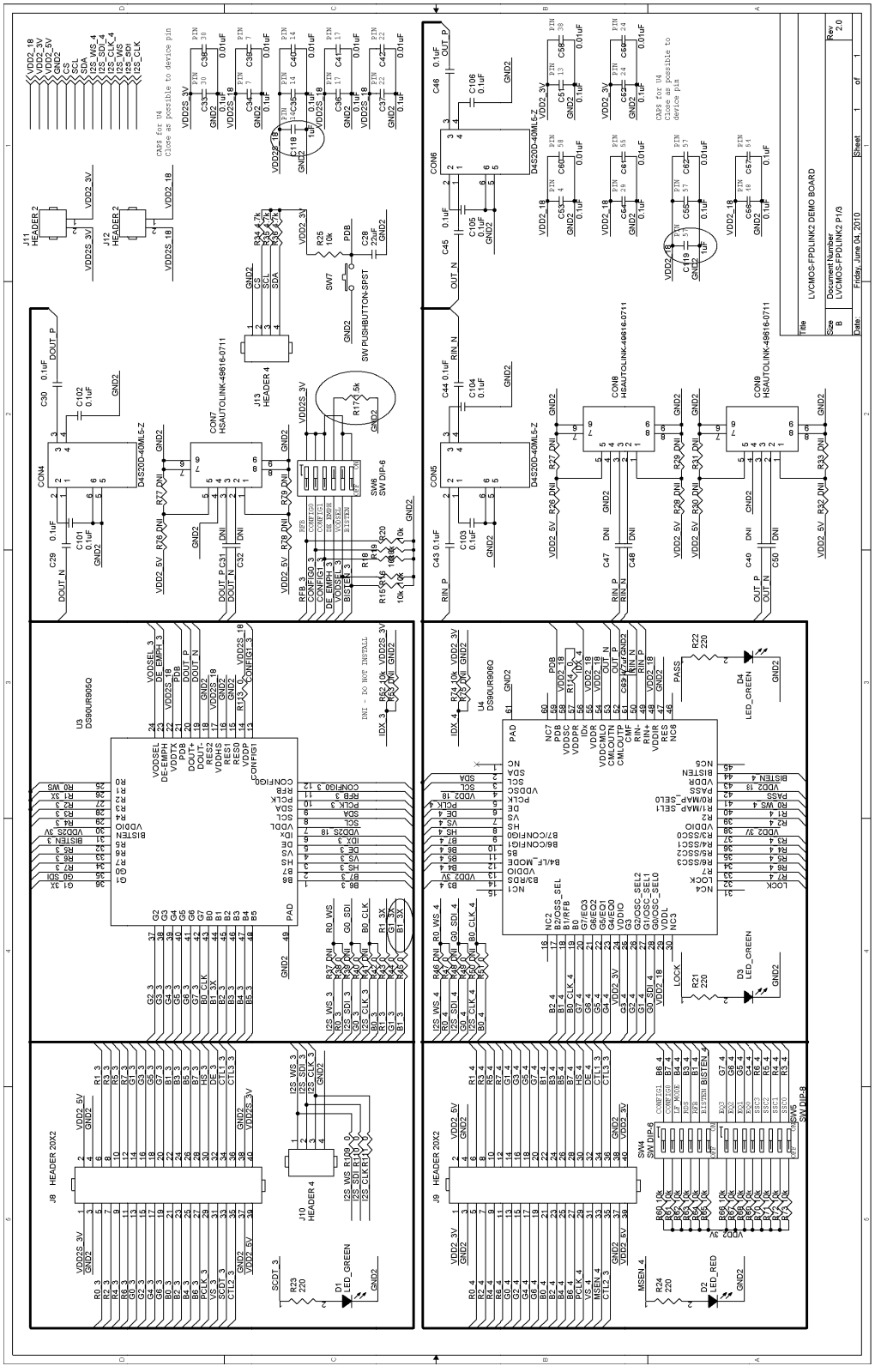

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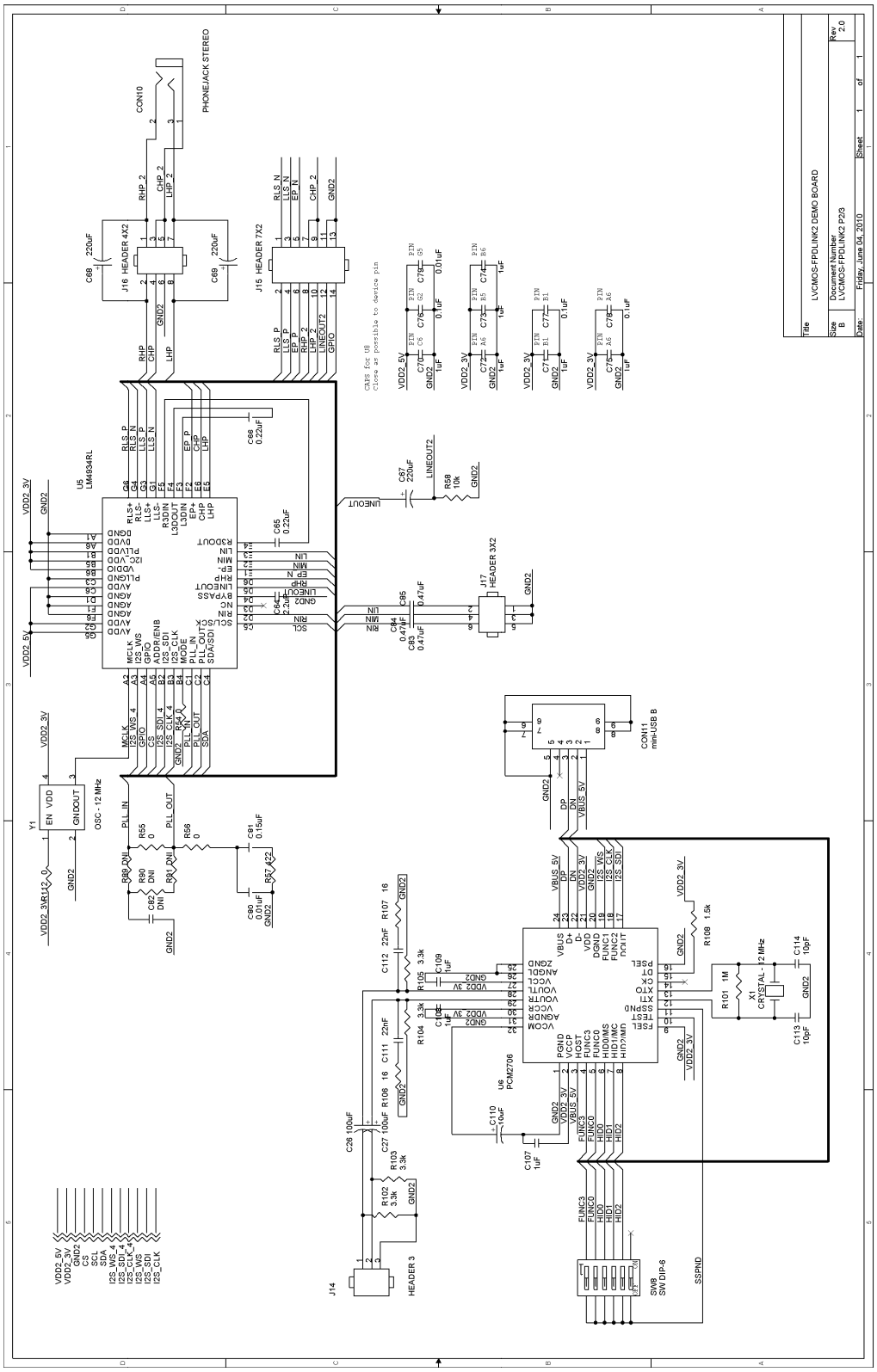

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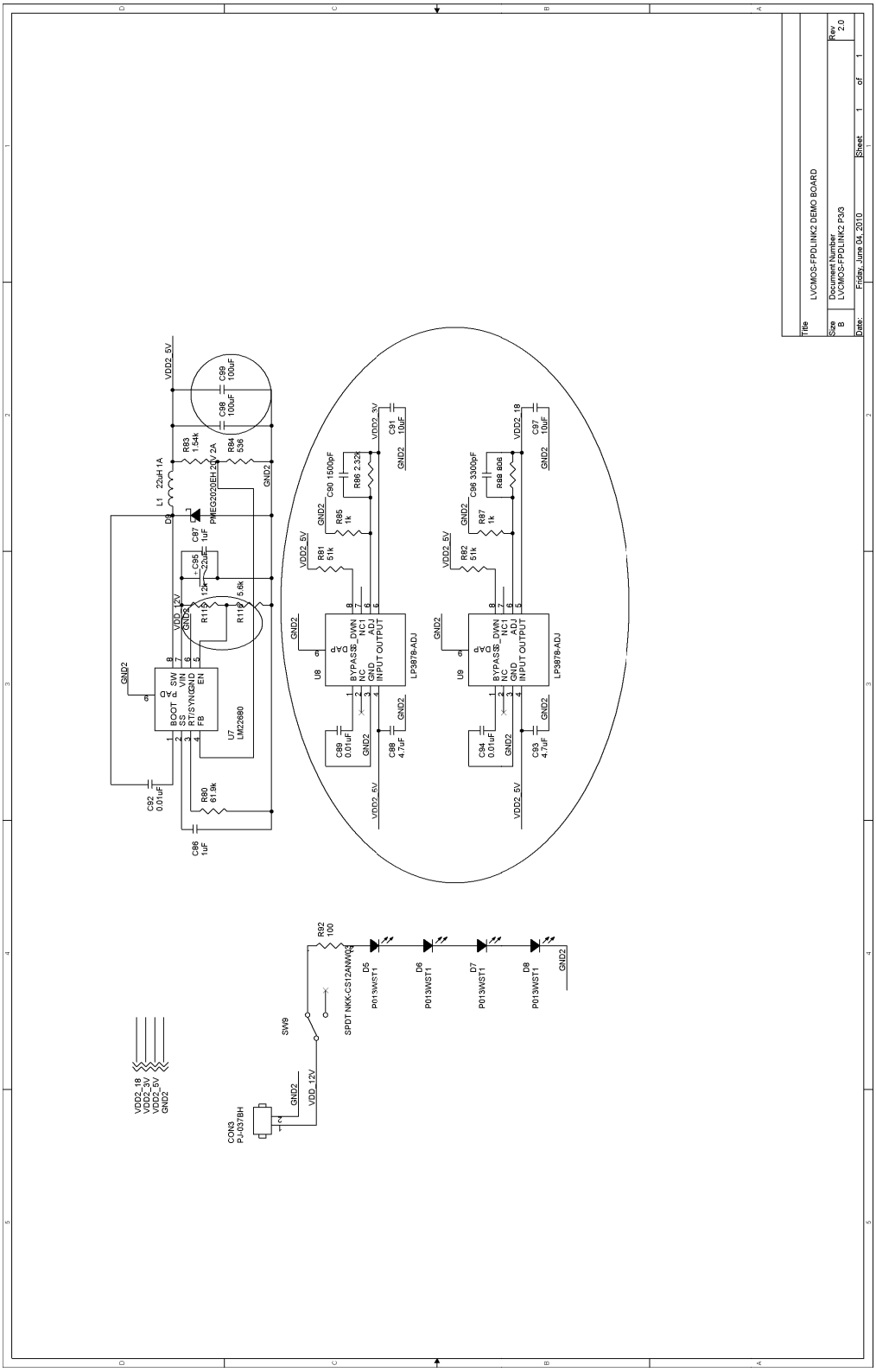

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Reference Layouts

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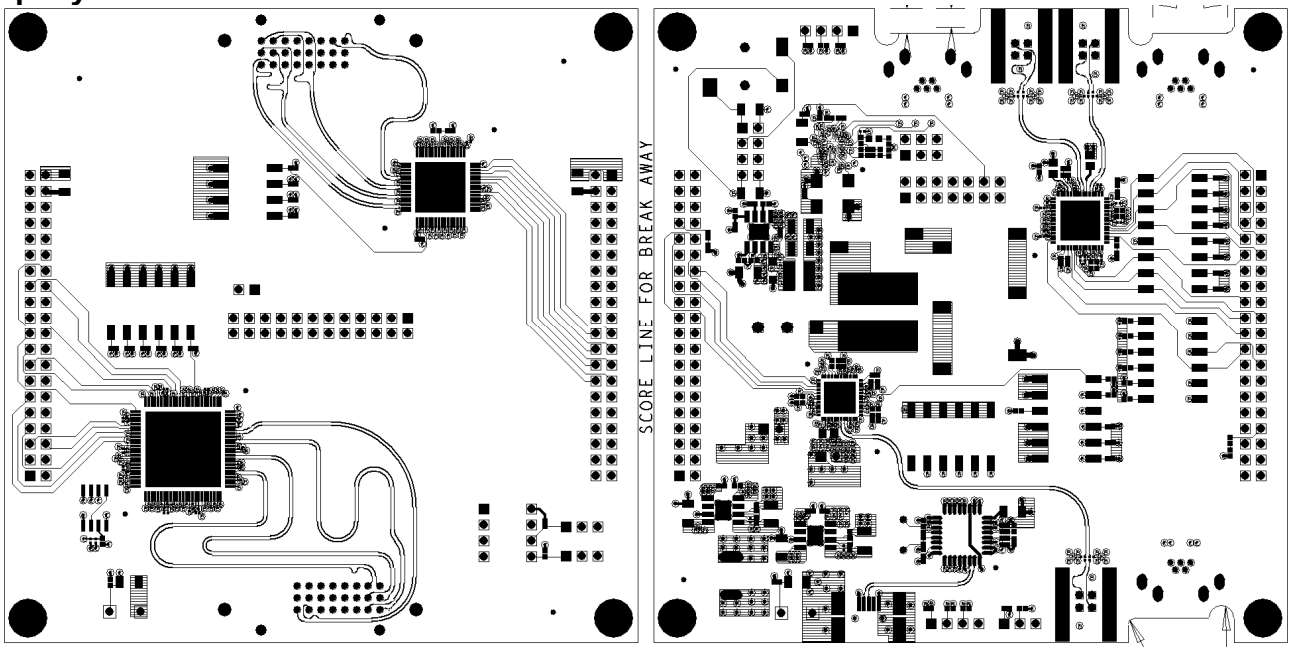
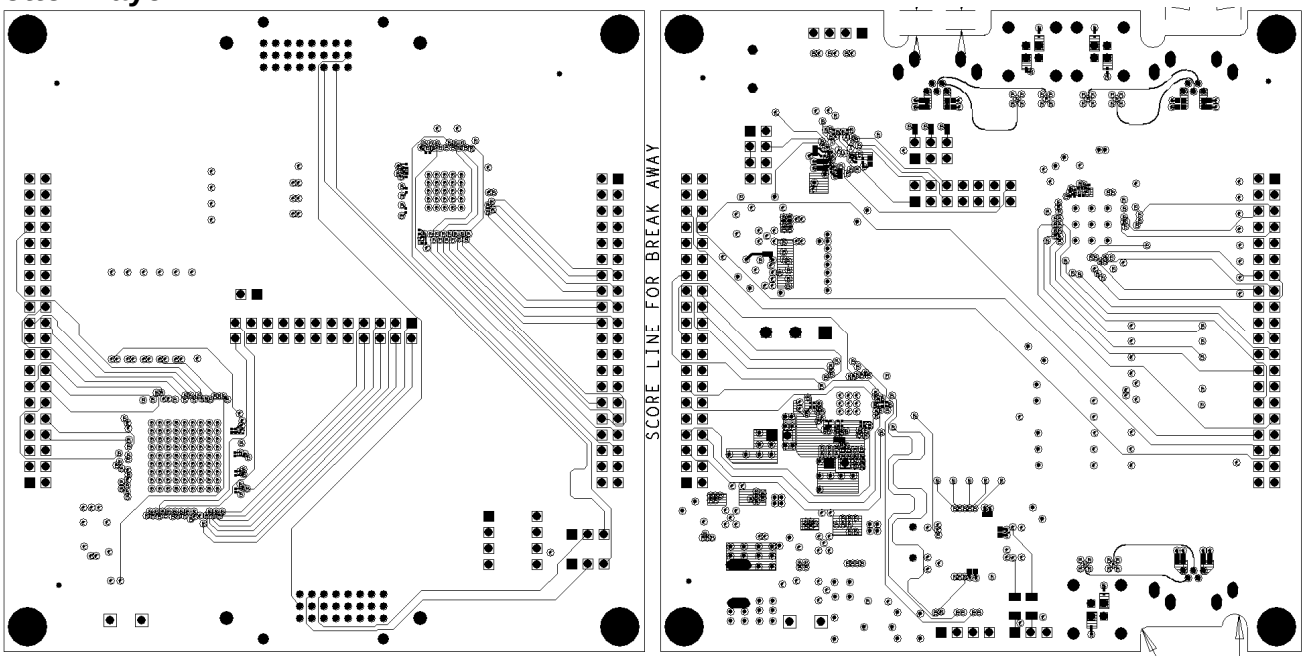


Bottom Board *Top Board*

Bottom layer



Bottom Board *Top Board*

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