

# Video Input Output Daughter Card Block Diagram

TESTPOINT TABLE

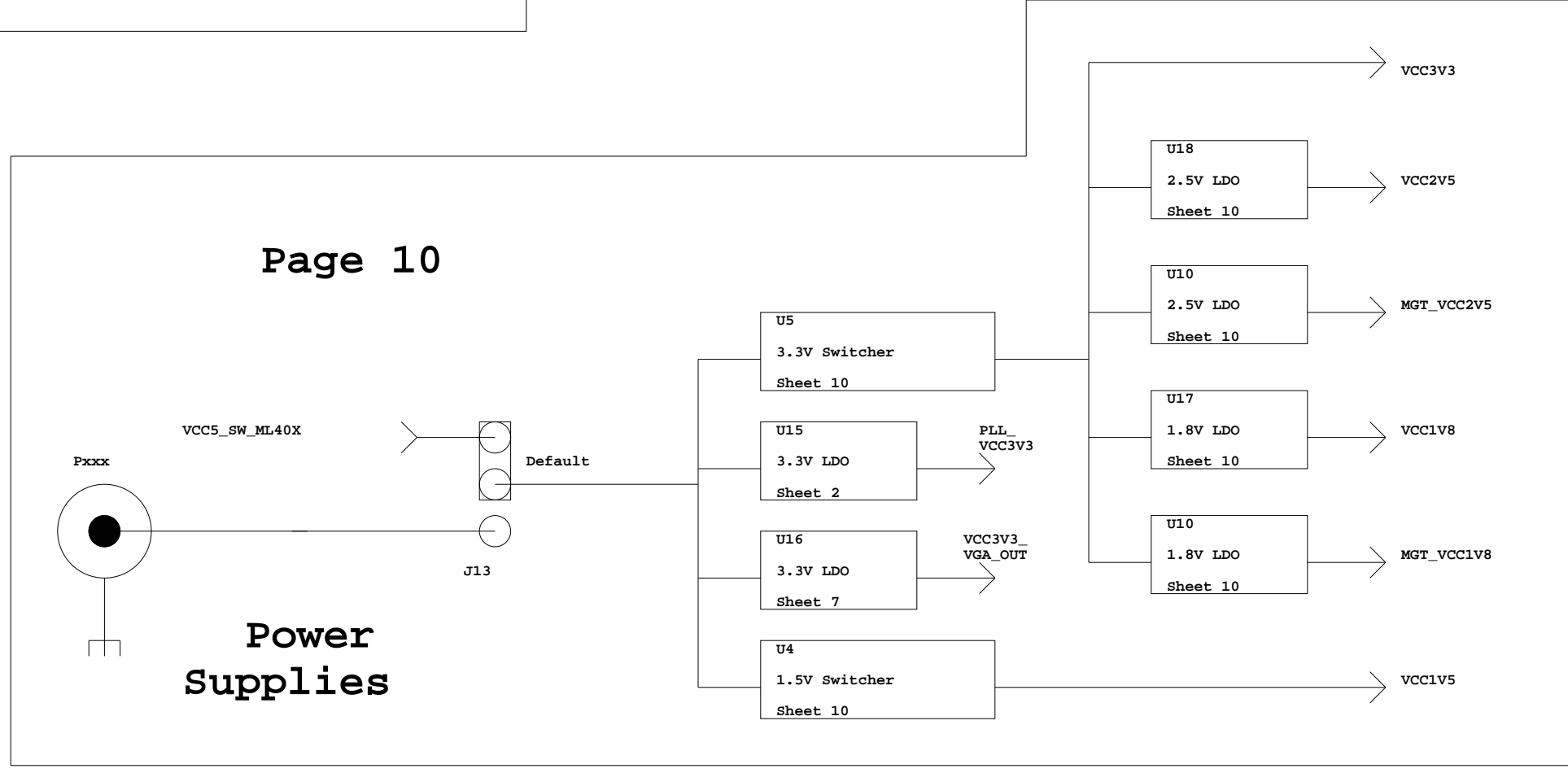
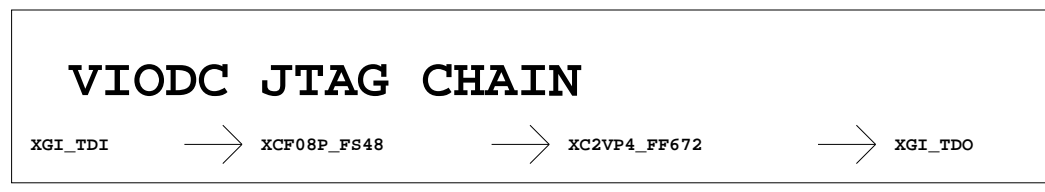
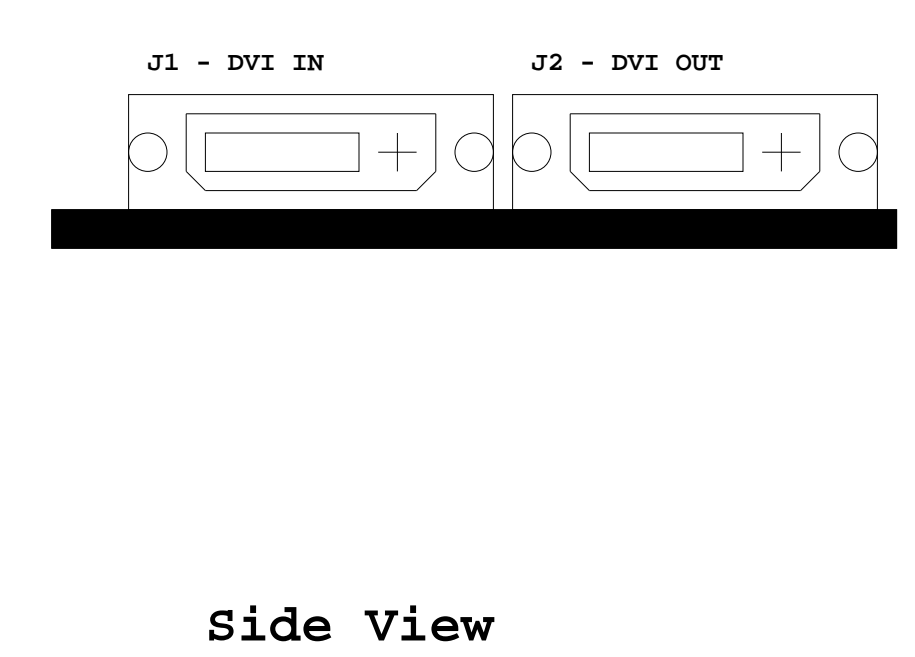
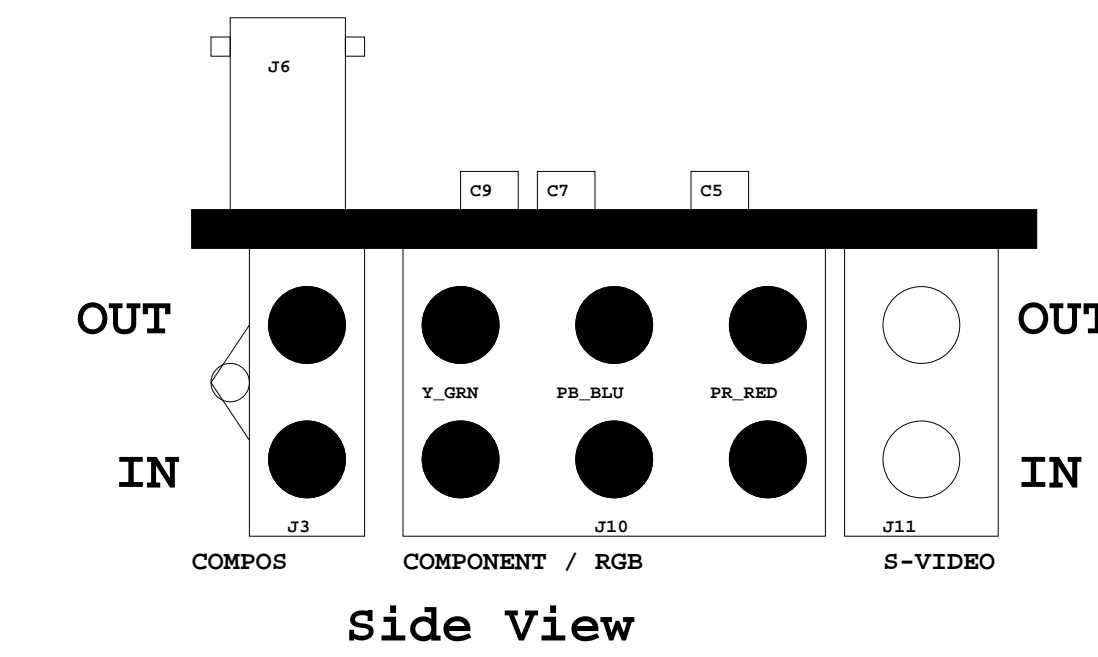
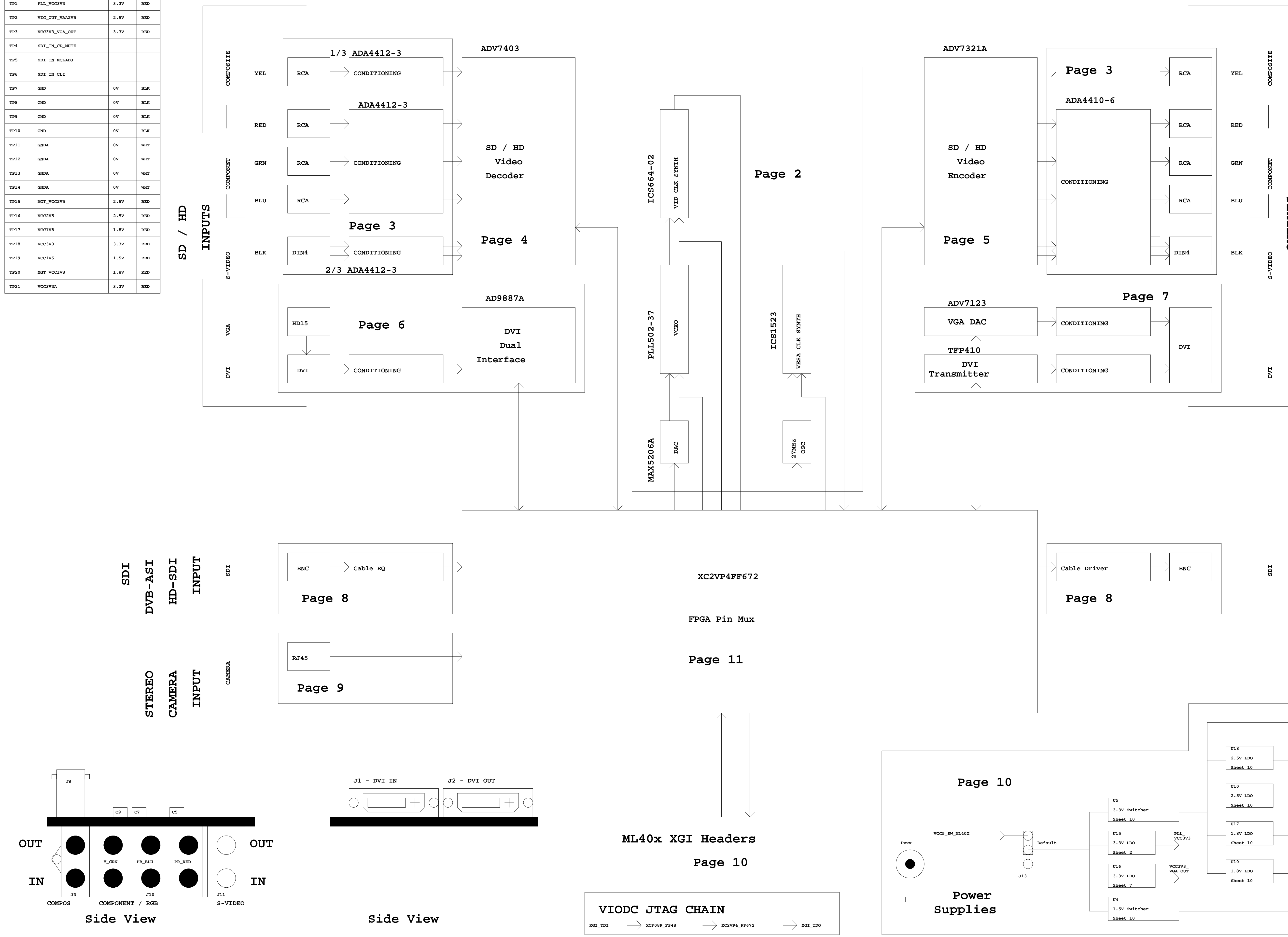
TP #	NET NAME	VOLT	CLR
TP1	PLL_VCC3V3	3.3V	RED
TP2	VIC_OUT_VAA2V5	2.5V	RED
TP3	VCC3V3_VGA_OUT	3.3V	RED
TP4	SDI_IN_CD_MUTE		
TP5	SDI_IN_MCLADJ		
TP6	SDI_IN_CLK		
TP7	GND	0V	BLK
TP8	GND	0V	BLK
TP9	GND	0V	BLK
TP10	GND	0V	BLK
TP11	GND	0V	WHT
TP12	GND	0V	WHT
TP13	GND	0V	WHT
TP14	GND	0V	WHT
TP15	MGT_VCC2V5	2.5V	RED
TP16	VCC2V5	2.5V	RED
TP17	VCC1V8	1.8V	RED
TP18	VCC3V3	3.3V	RED
TP19	VCC1V5	1.5V	RED
TP20	MGT_VCC1V8	1.8V	RED
TP21	VCC3V3A	3.3V	RED

IIC ADDR TABLE

FUNC	ADDRESS		COMPONENT
	WRITE	READ	
VID DECODE	0x20	0x21	ADV7403 VBI
VID DECODE	0x40	0x41	ADV7403 CTL
SDI PLL	0x4C	0x4D	IC61523
VID ENCODE	0x54	0x55	ADV7321B
DVI OUT	0x70	0x71	TFP410
DVI IN	0x9A	0x9B	AD9887A
DVI IN	0xA0	0xA1	HDCP ROM (AD9887A)
VGA IN HD15	0xNN	0xNN	VESA SPBC
DDC DVI OUT	0xNN	0xNN	DVI SPBC

CONNECTOR TABLE

J1	DVI & Analog Video Input
J2	DVI & Analog Video Output
J3	Composite Video In / Out
J8	XCI Recepticals
J5	
J4	
J9	
J6	HD / SD SDI Input
J7	HD / SD SDI Output
J10	Component & RGB In / Out
J11	S-Video In / Out
J12	DC Power Jack
J13	Power Source Selector
J14	IC61523 Clock Source Selector
J15	Fan Header
J16	IIC Monitor Header
J17	User Output Header
J18	PC4 Header for stand-alone use
P1	VGA Input Connector
P2	Stereo Camera Input (NOT for Ethernet)



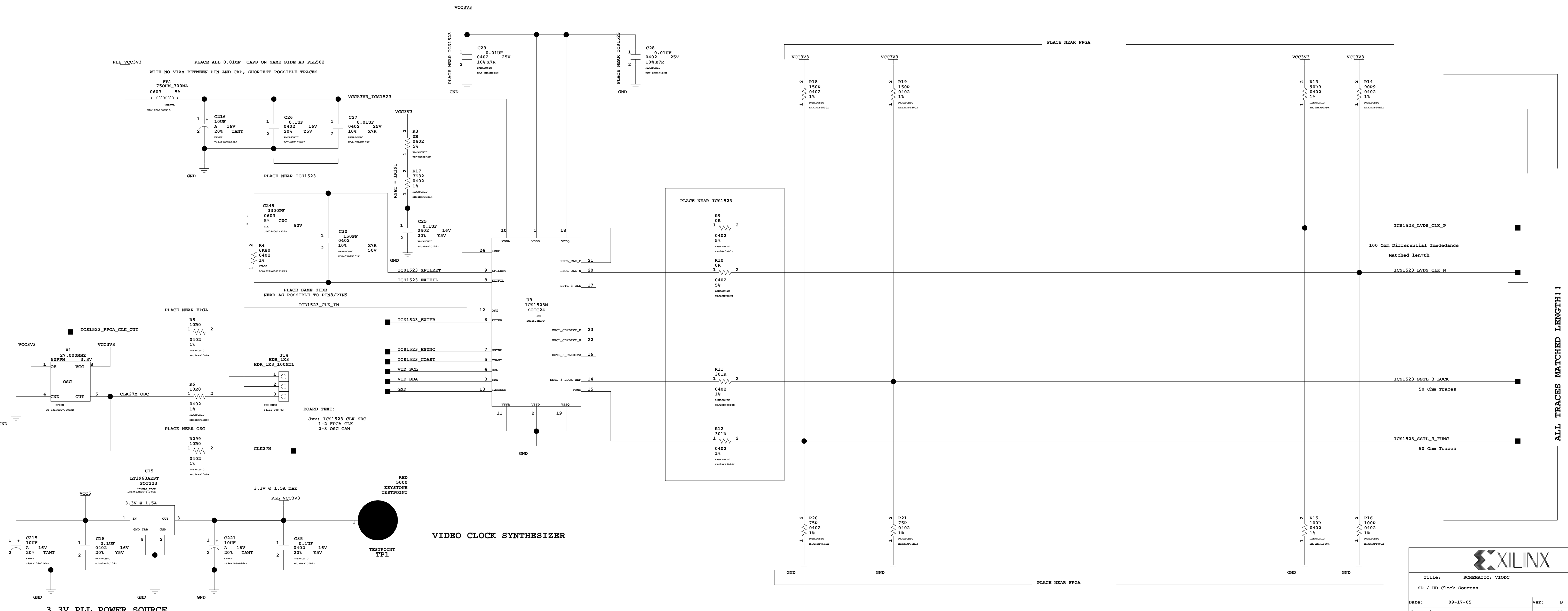
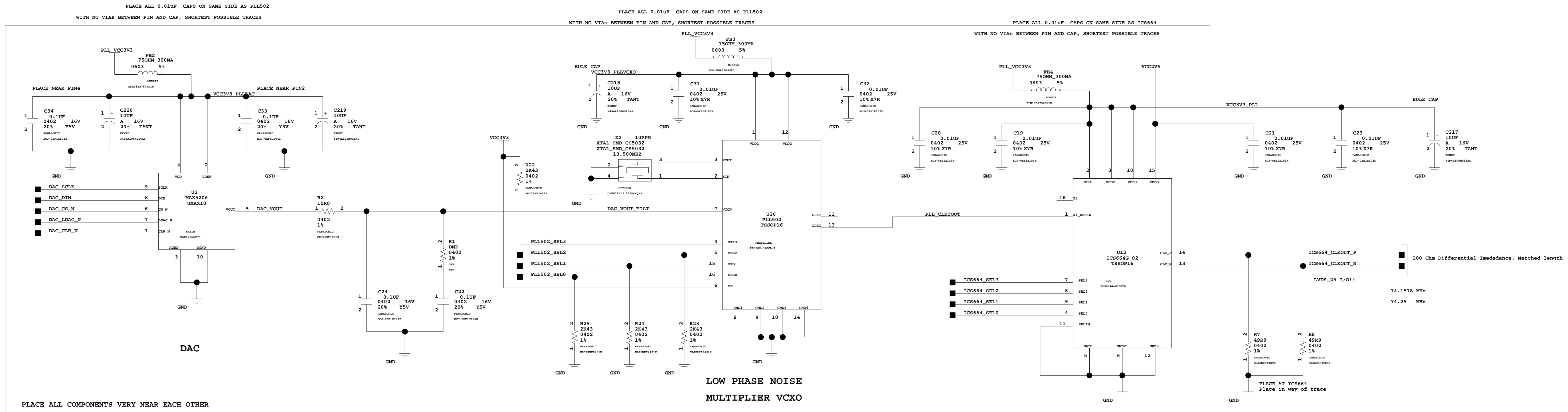
PCB: PM-1280391  
ASSEMBLY: PM-041372  
TESTING: SPEC\_NUM=TSS0093

Part Numbers  
0381221 - Schematic  
0531562 - PCB Gerber Plots  
1280391 - Printed Circuit Board part #  
041372 - PCB Assembly

**XILINX**

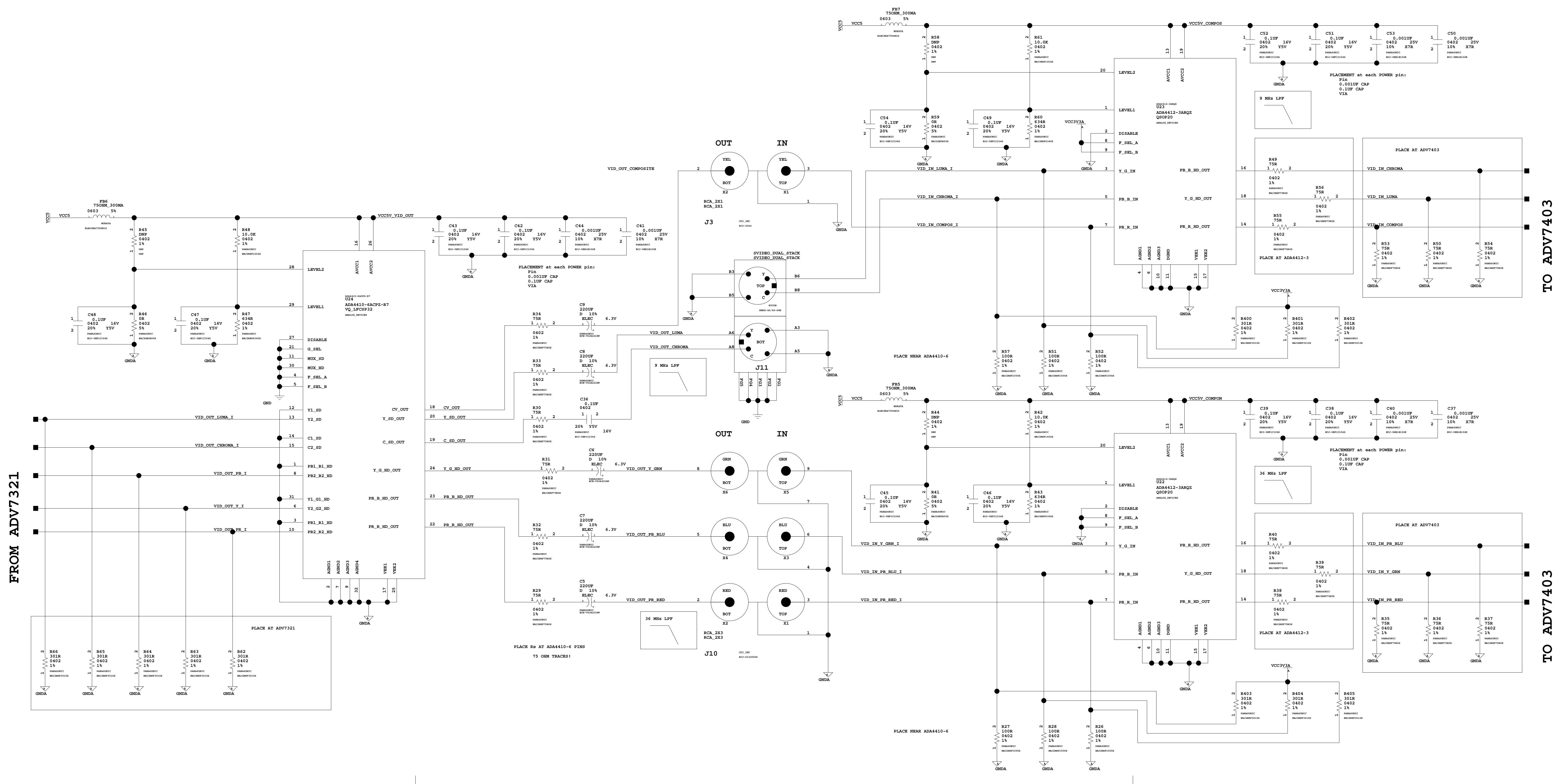
Title: SCHEMATIC: VIODC  
Block Diagram  
Date: 09-17-05 Ver: B  
Sheet Size: D Rev: 02  
Sheet 1 of 13 Drawn By: GAB

# Clock Sources



# SD and HD Video Input / Output Filters

NOTE:  
These circuits must be near the  
ADV74x2, and must follow analog  
layout rules.



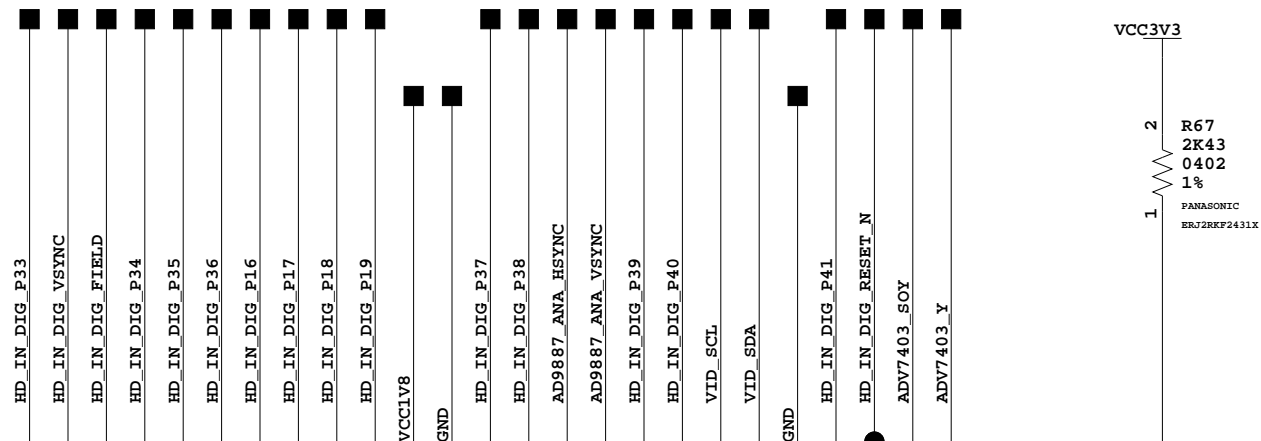
FROM ADV7321

TO ADV7403

TO ADV7403

ALL TRACES 75 OHM HERE!!!

SD / HD Video Decoder

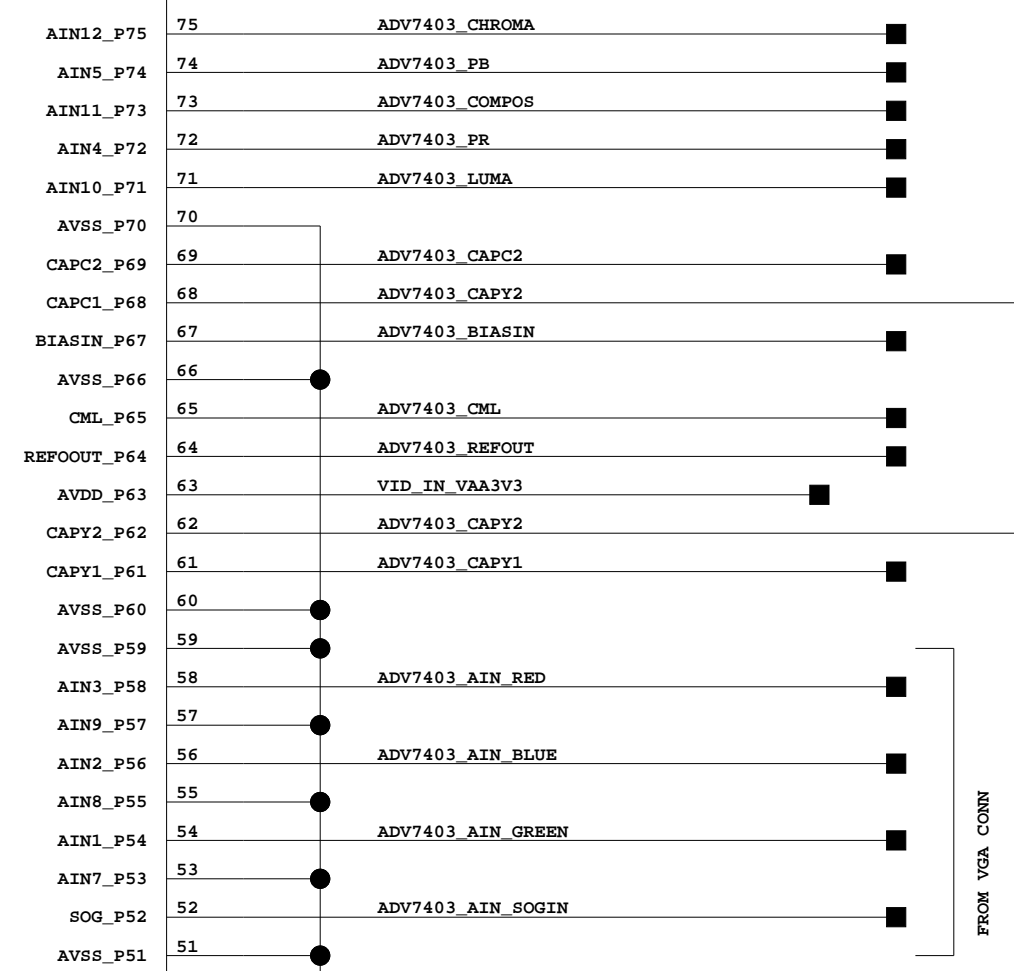


ADV7403KSTZ-140

ANALOG DEVICES

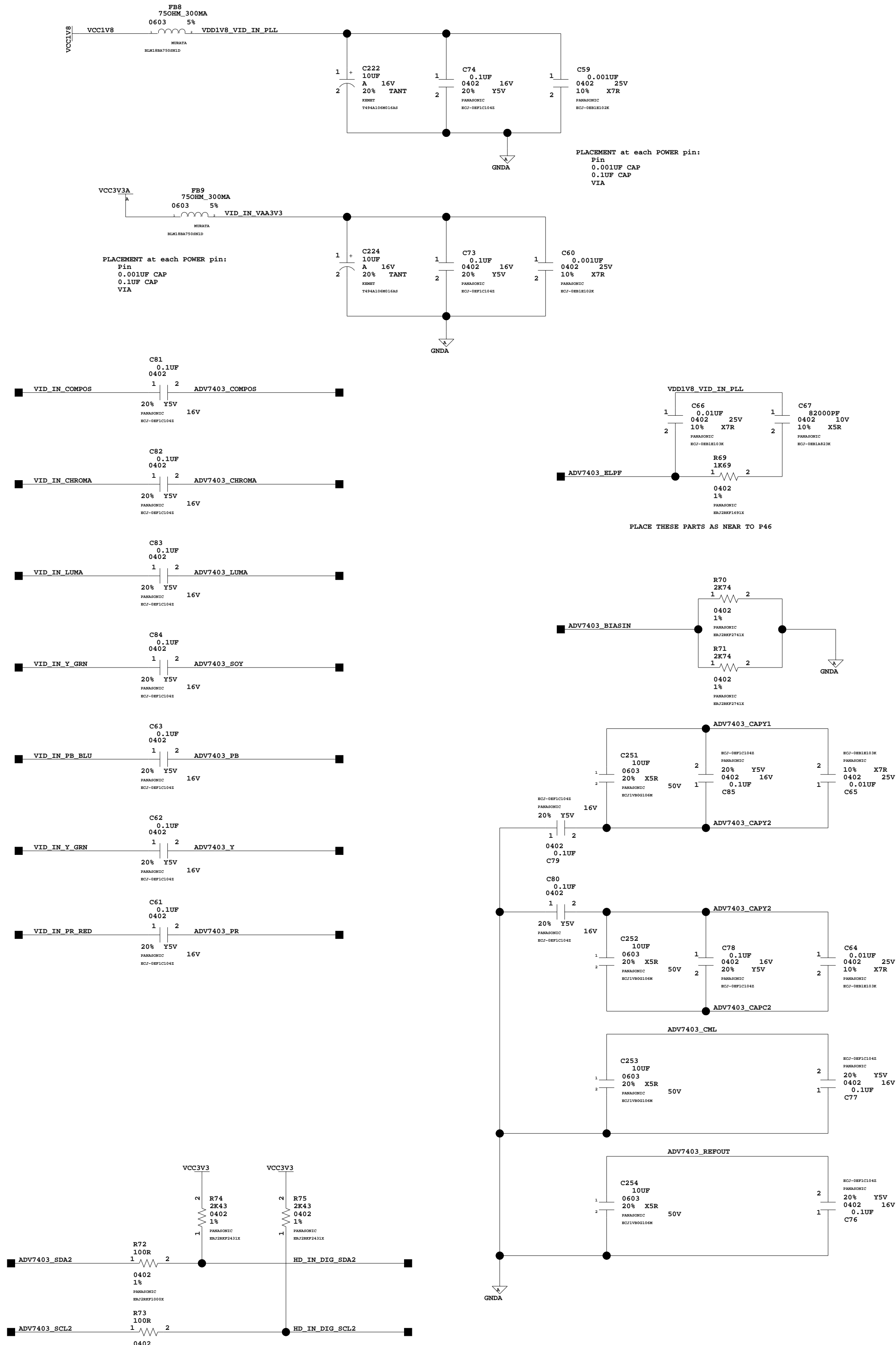
ADV7403KSTZ

U14



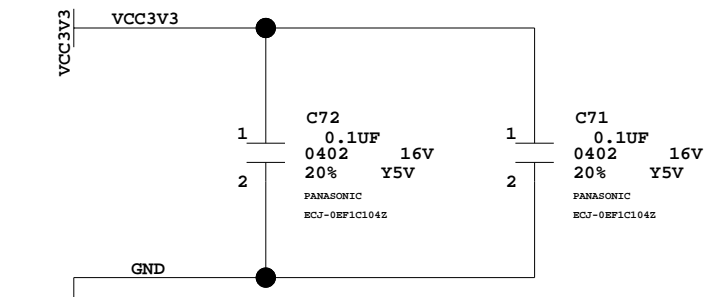
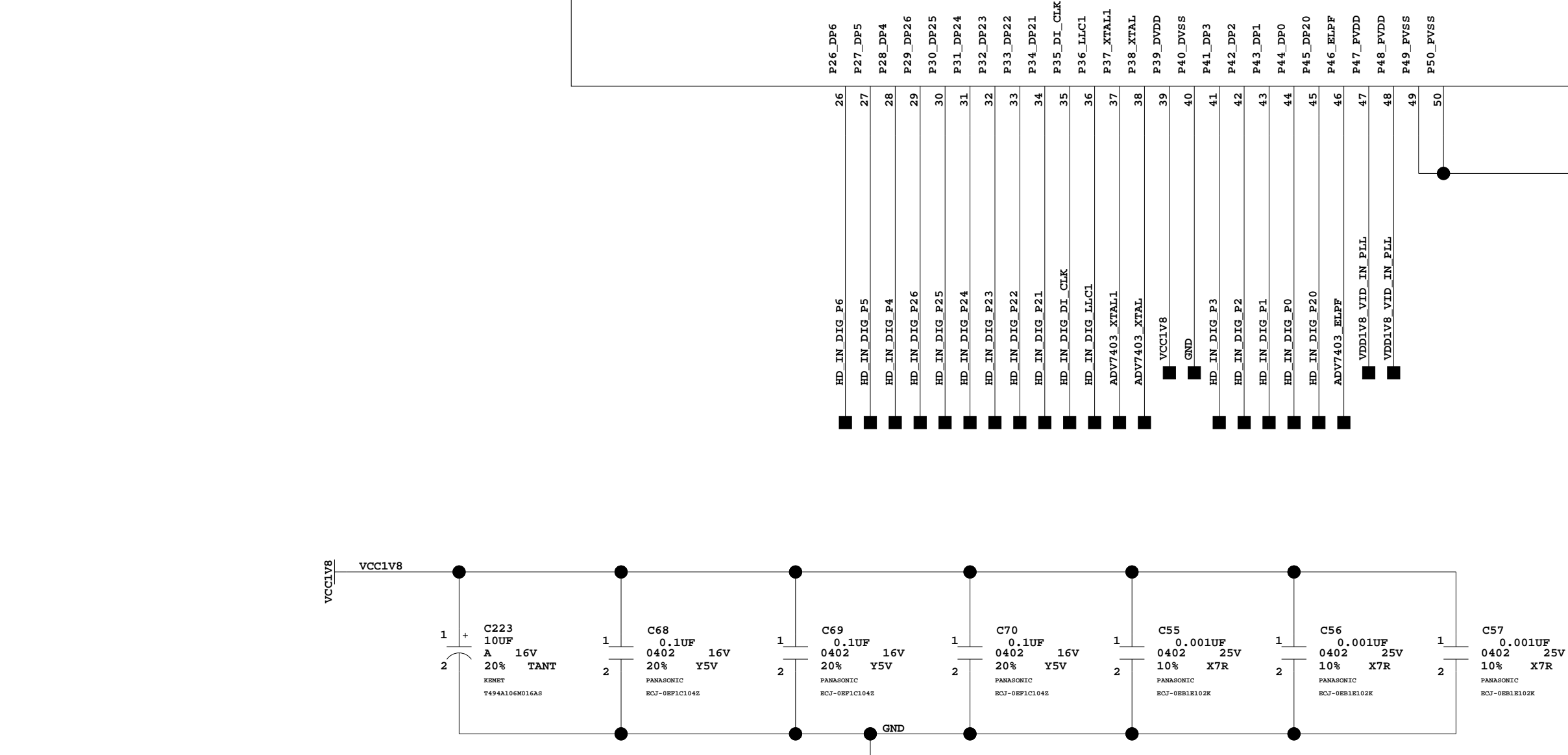
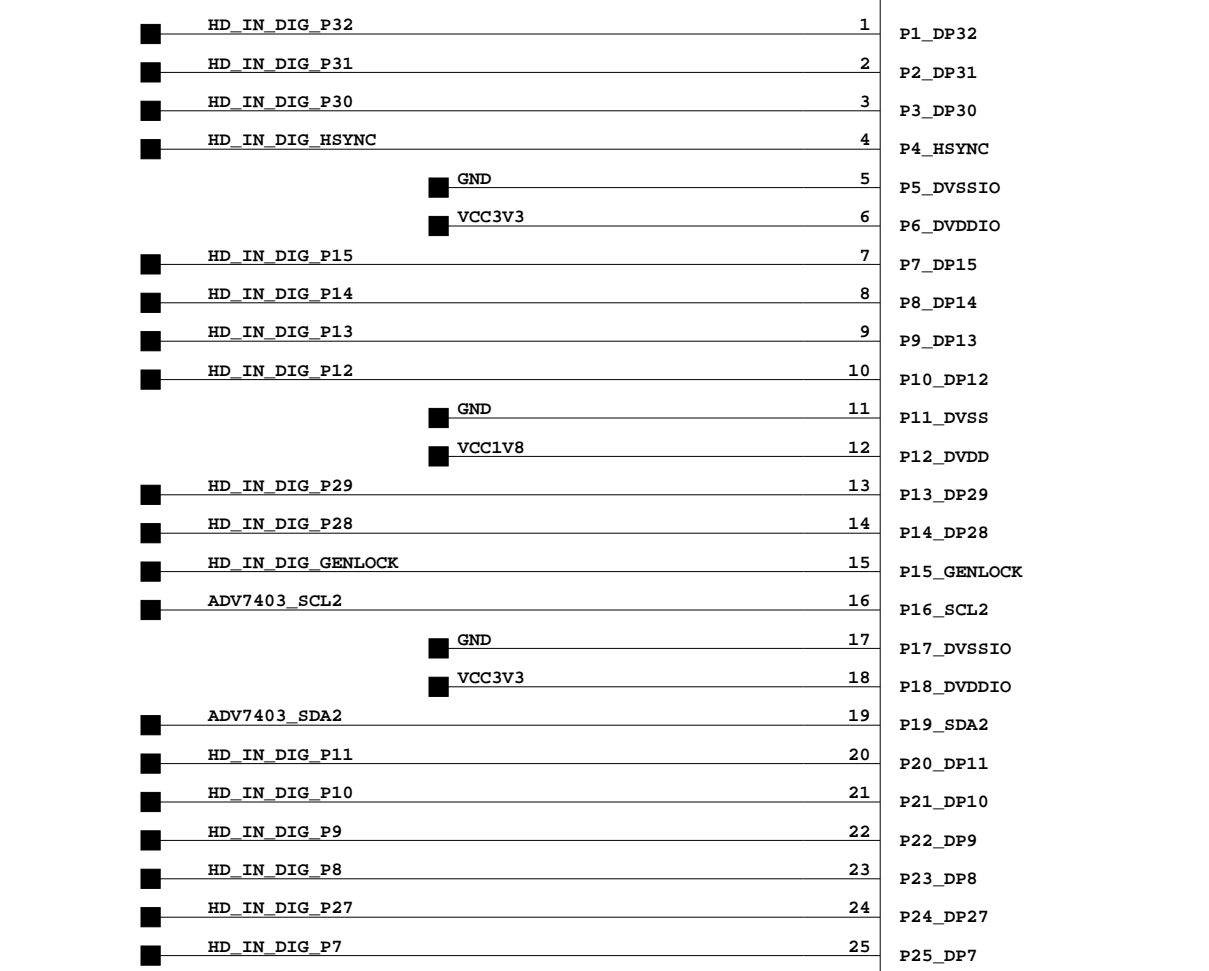
SHORT AT ADV7403I1

FROM VDDA COMB



IIC ADDR:  
0x40/0x41 CTL  
0x20/0x21 VBI

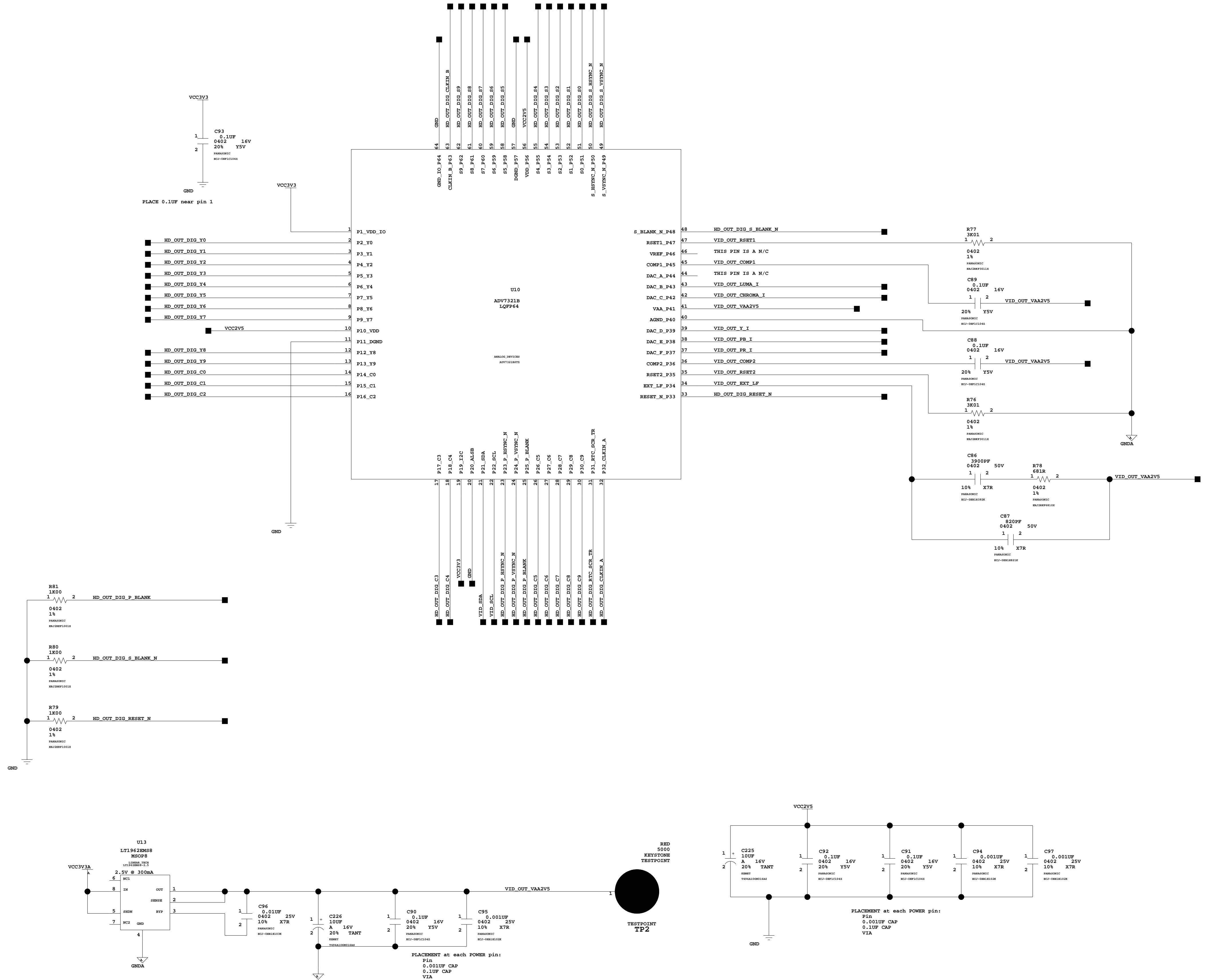
XILINX logo and title block information: Title: SCHEMATIC: VIODC, SD / HD Video Decoder, Date: 09-17-05, Ver: B, Sheet Size: D, Rev: 02, Sheet 4 of 13, Drawn By: GAB



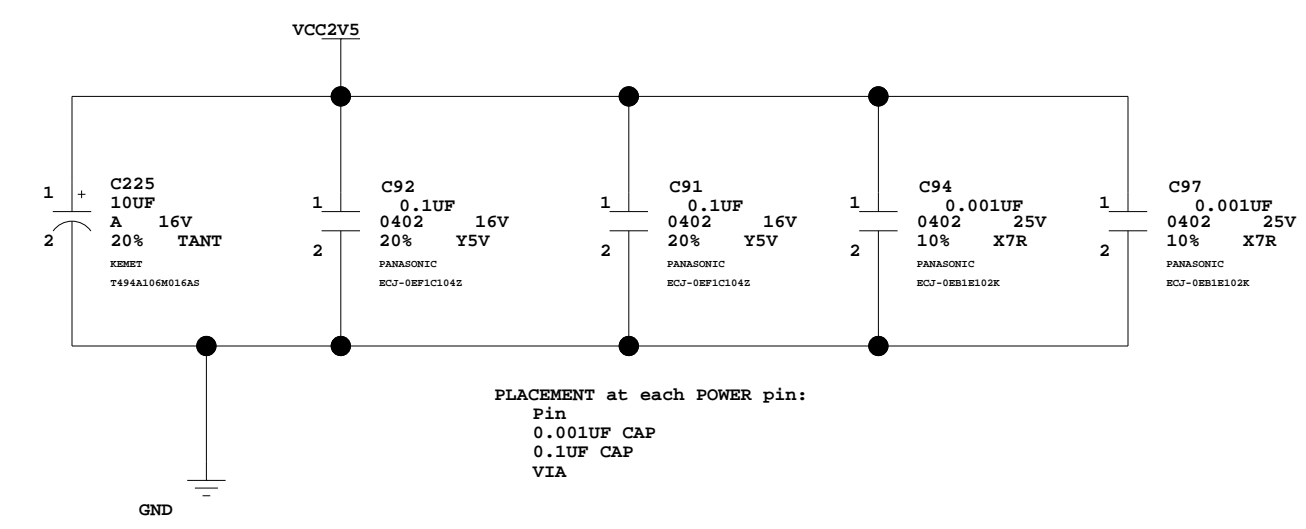
Place 0.1uF Caps as close as possible to pins

MIX FPGA # OF PINS USED = 53 I/Os (1.3V)

# SD / HD Video Encoder



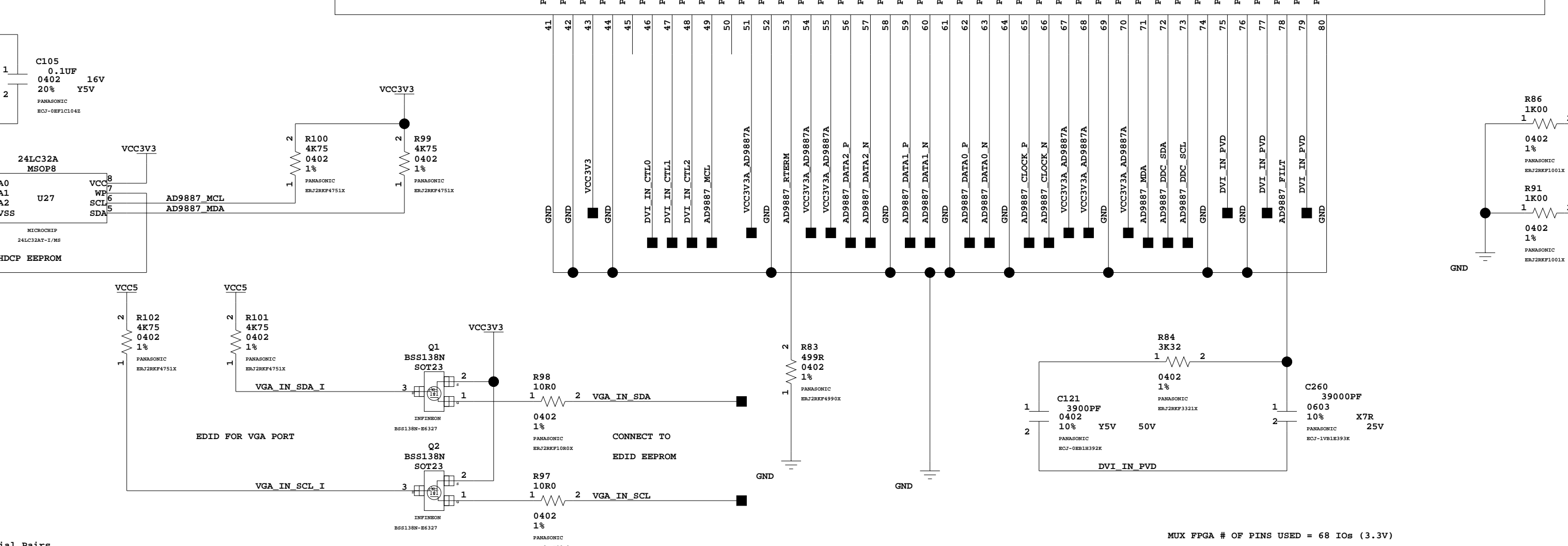
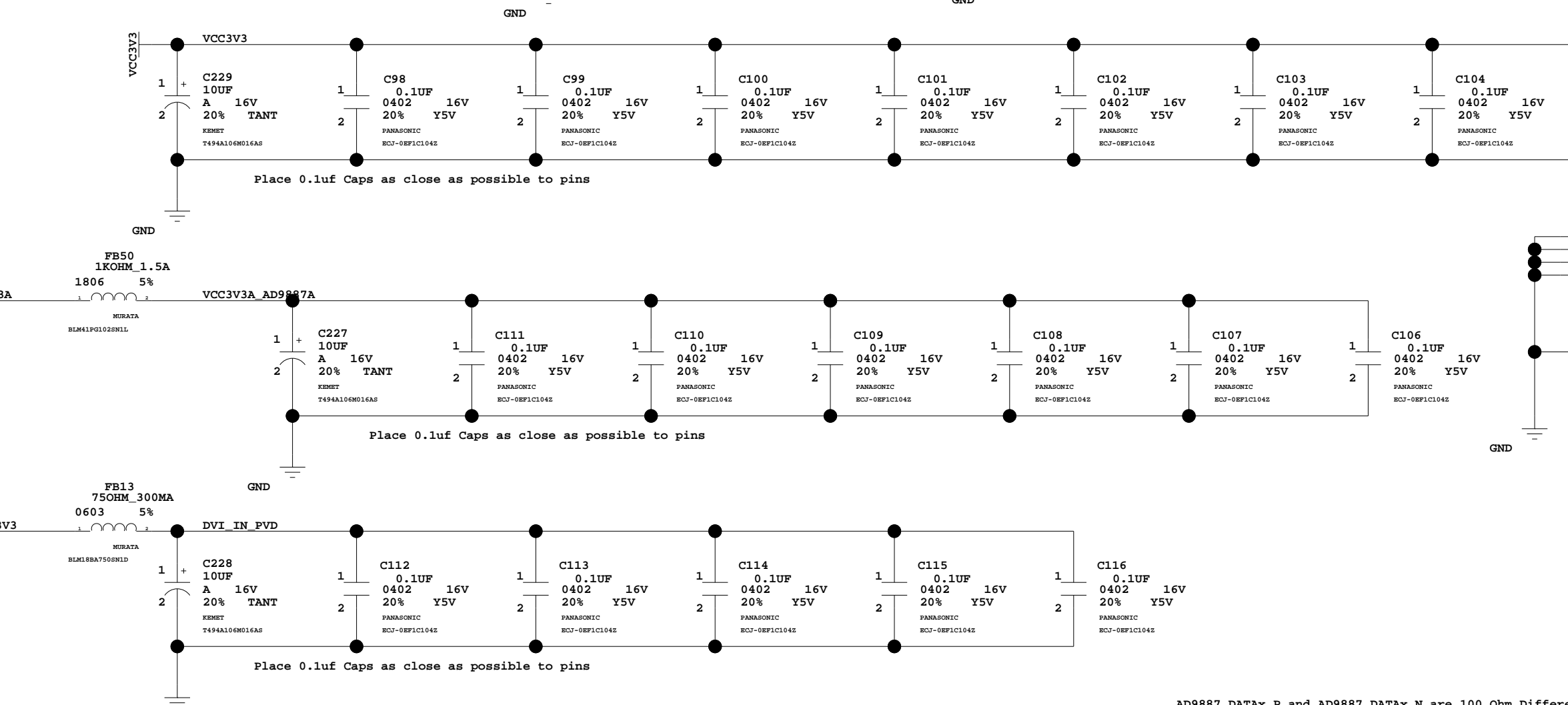
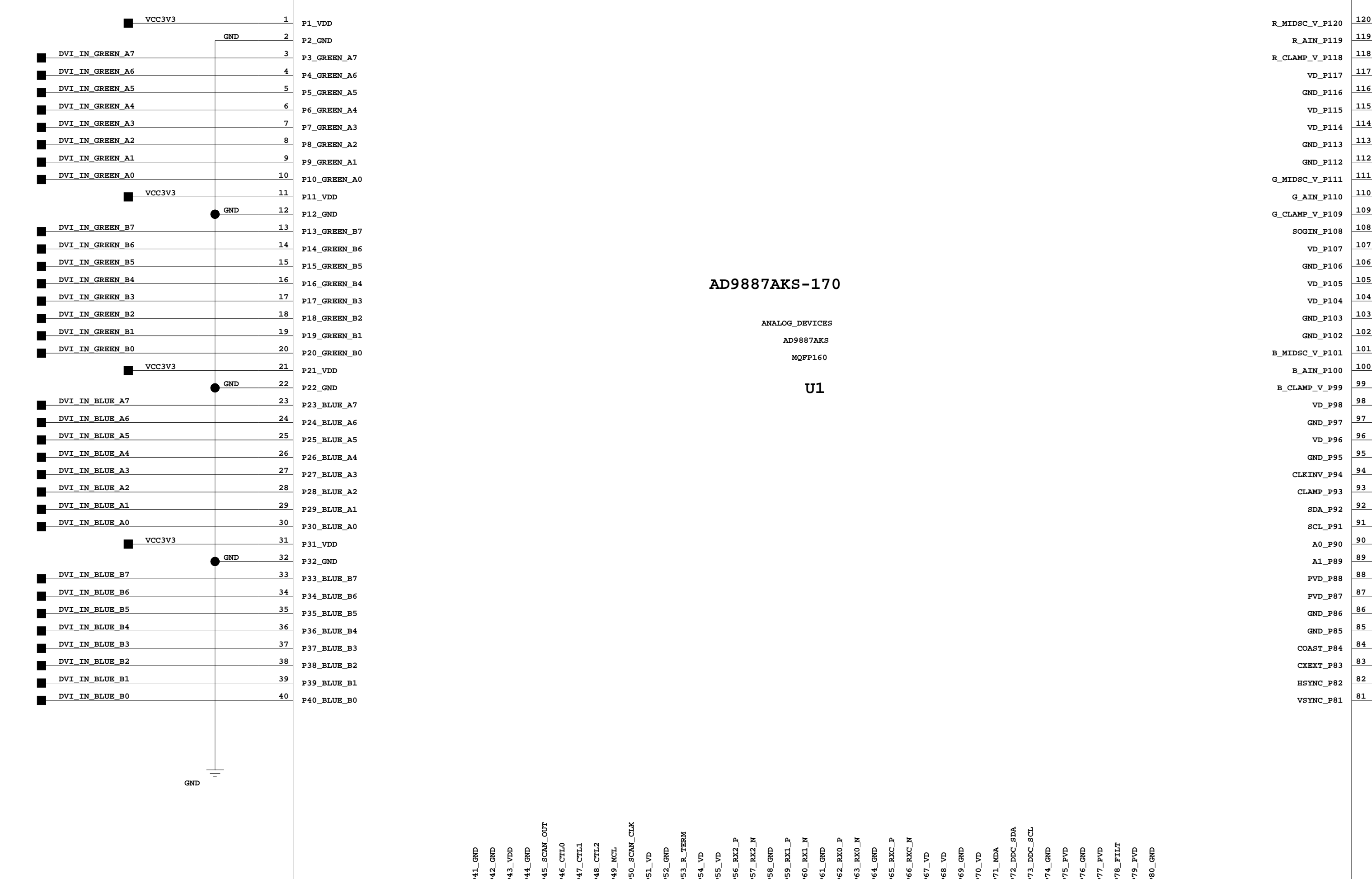
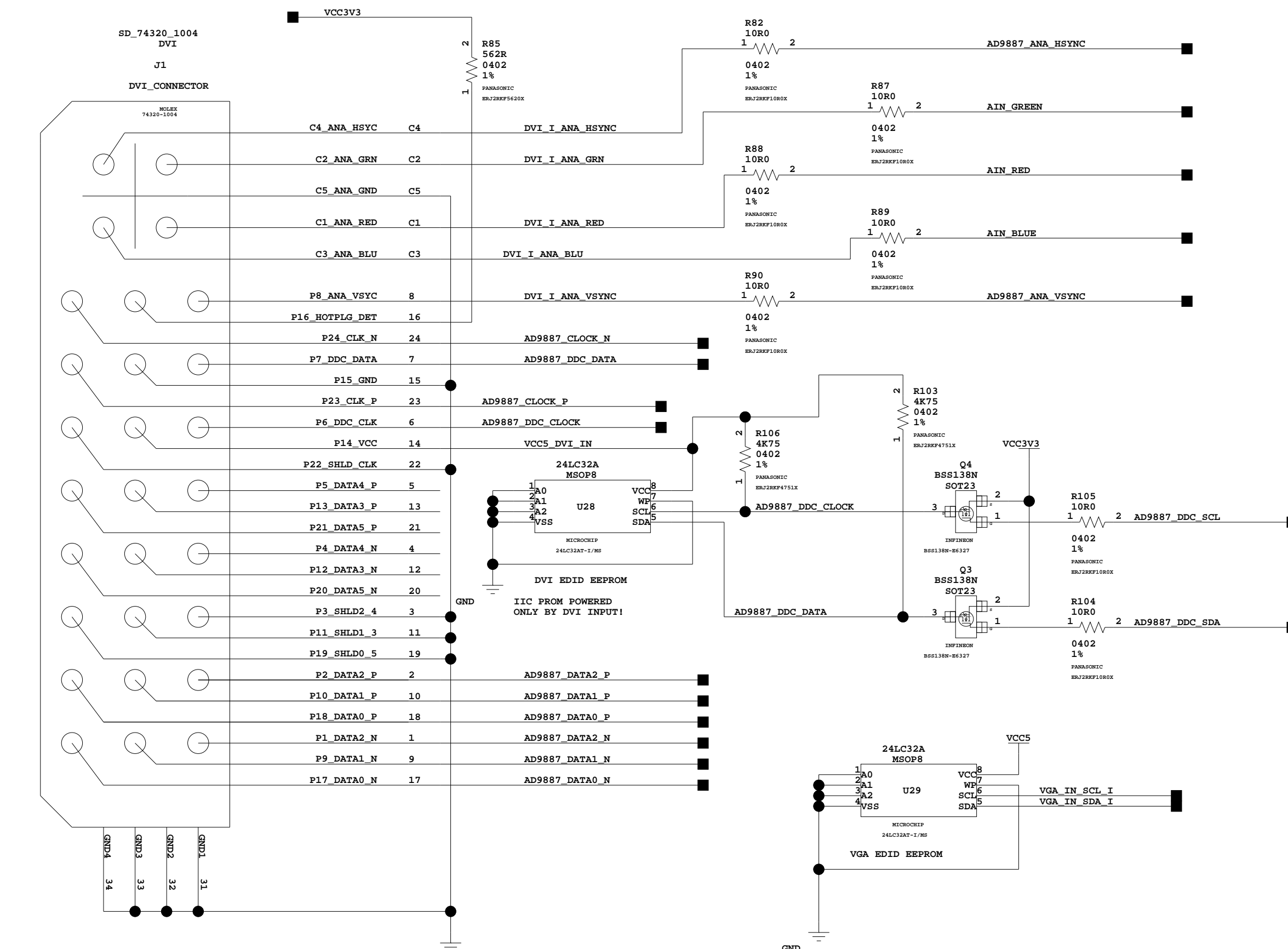
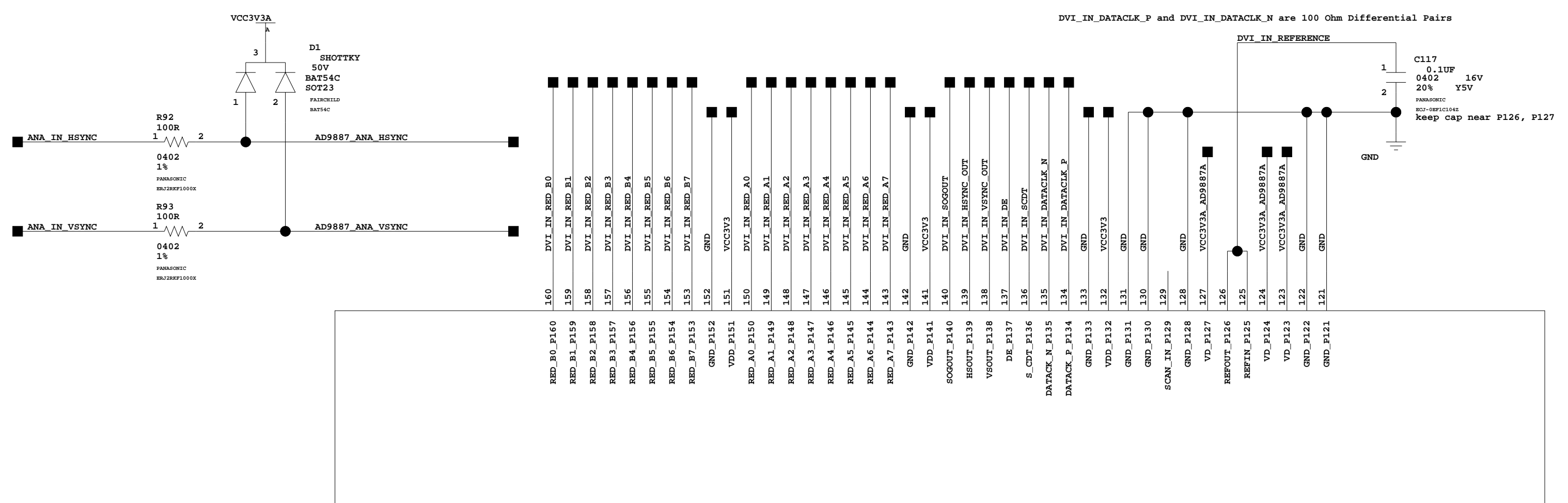
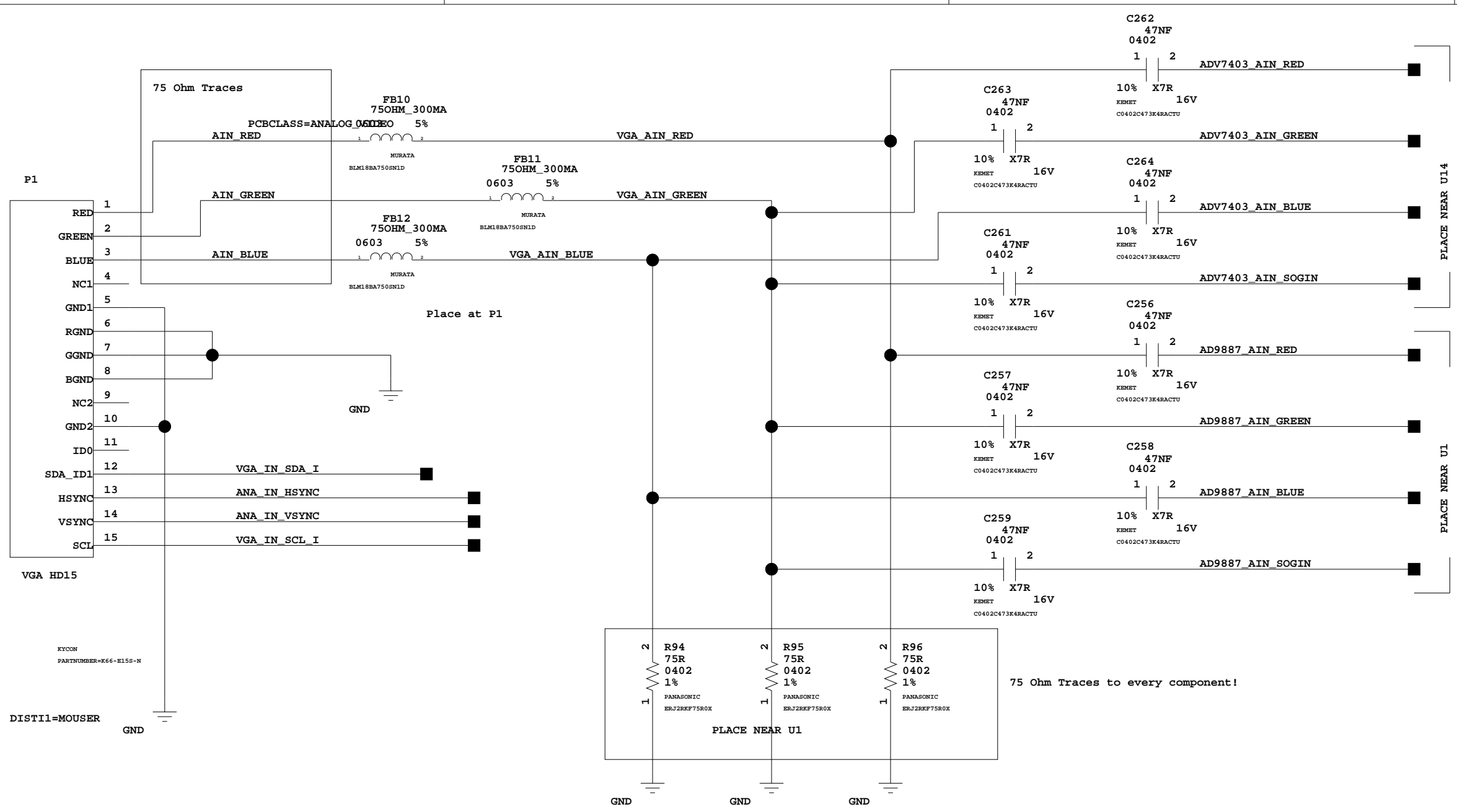
VIDEO ENCODER 2.5V POWER SOURCE



IIC ADDR:  
0x54/0x55

Title: SCHEMATIC: VIODC	
SD / HD Video Encoder	
Date: 09-17-05	Ver: B
Sheet Size: D	Rev: 02
Sheet 5 of 13	Drawn By GAB

# Digital Visual Interface (DVI) Input

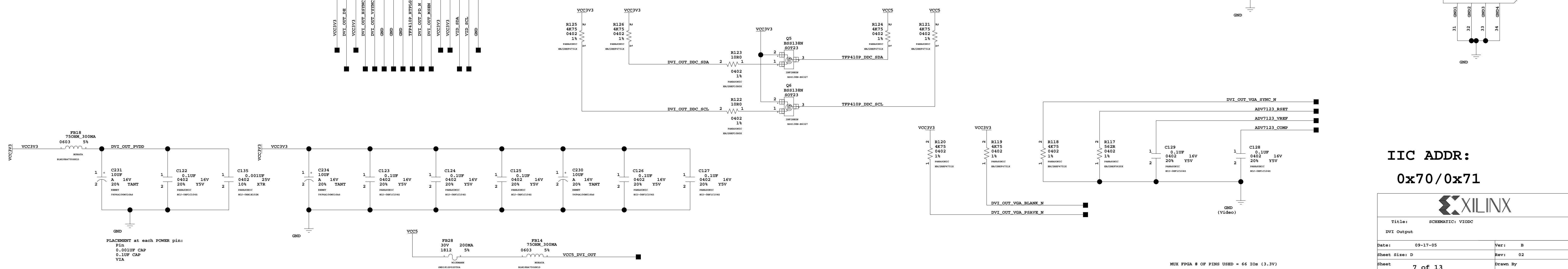
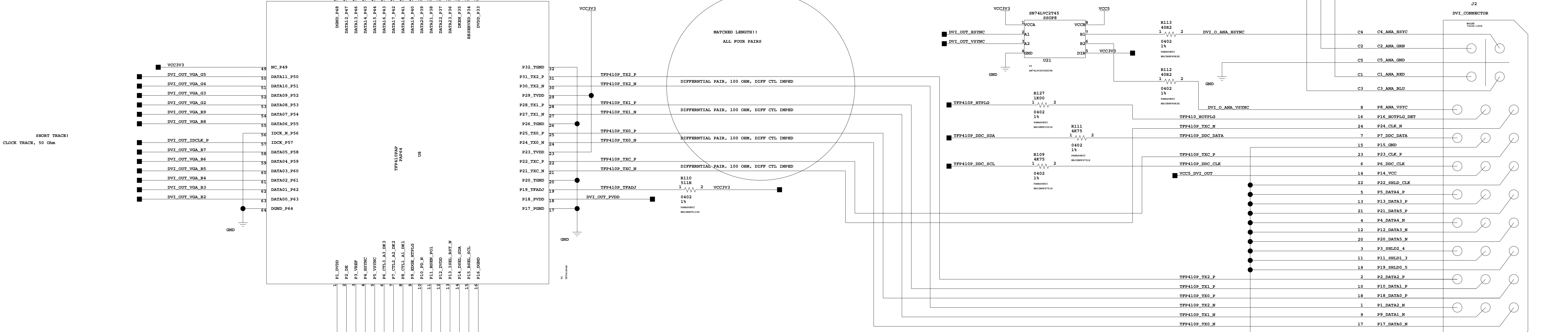
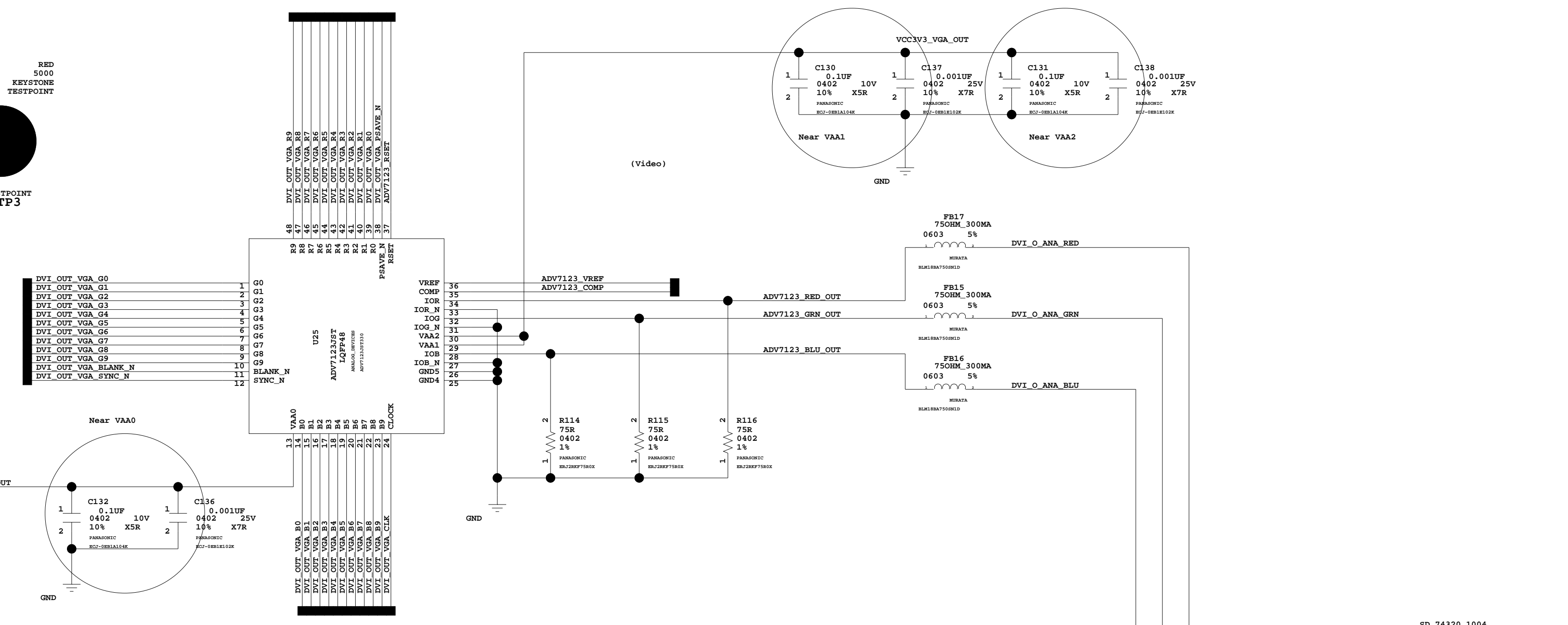
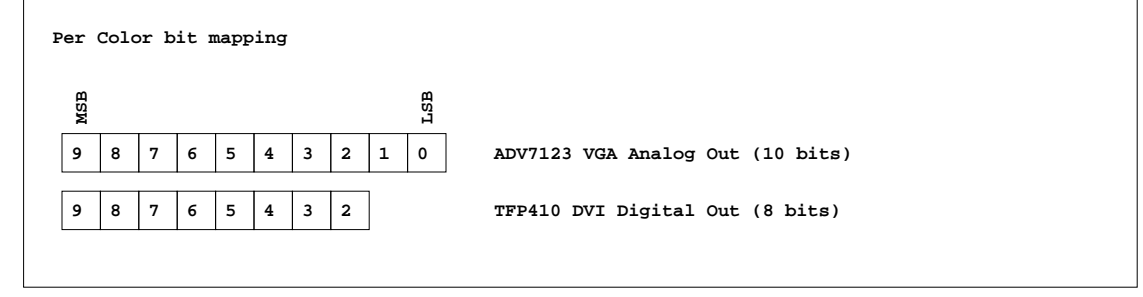
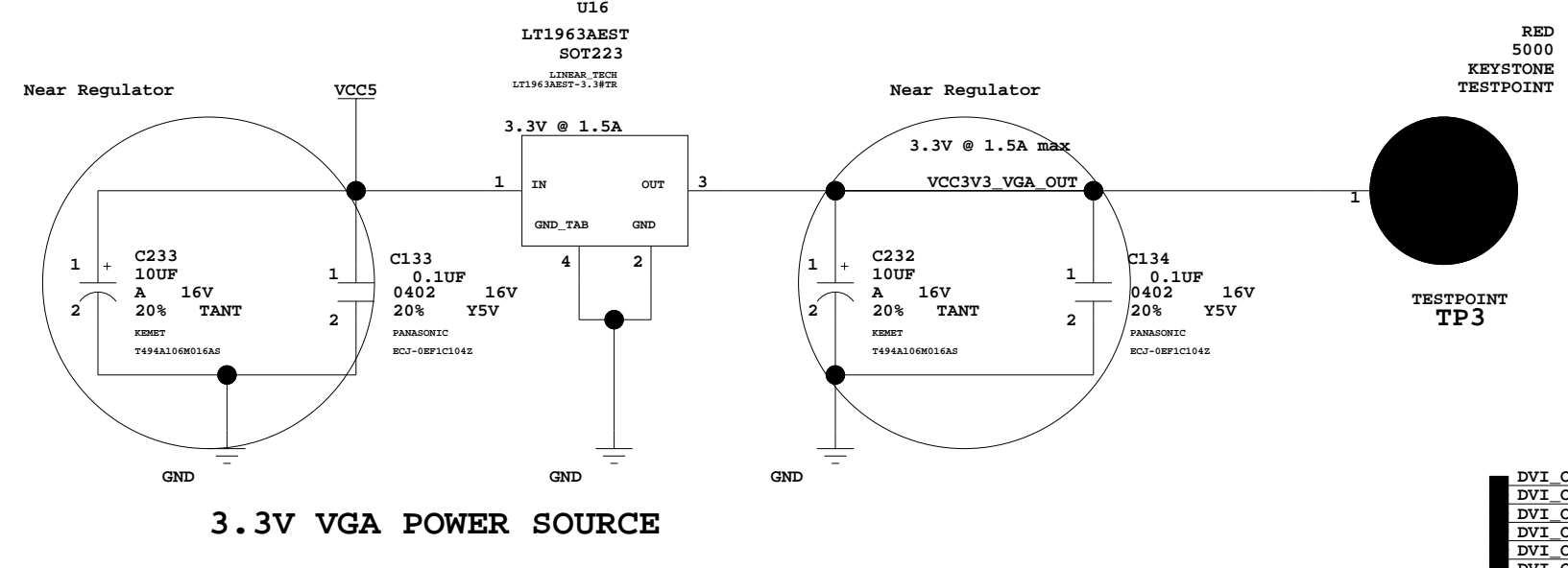


**IIC ADDR:**  
**0x9A/0x9B**

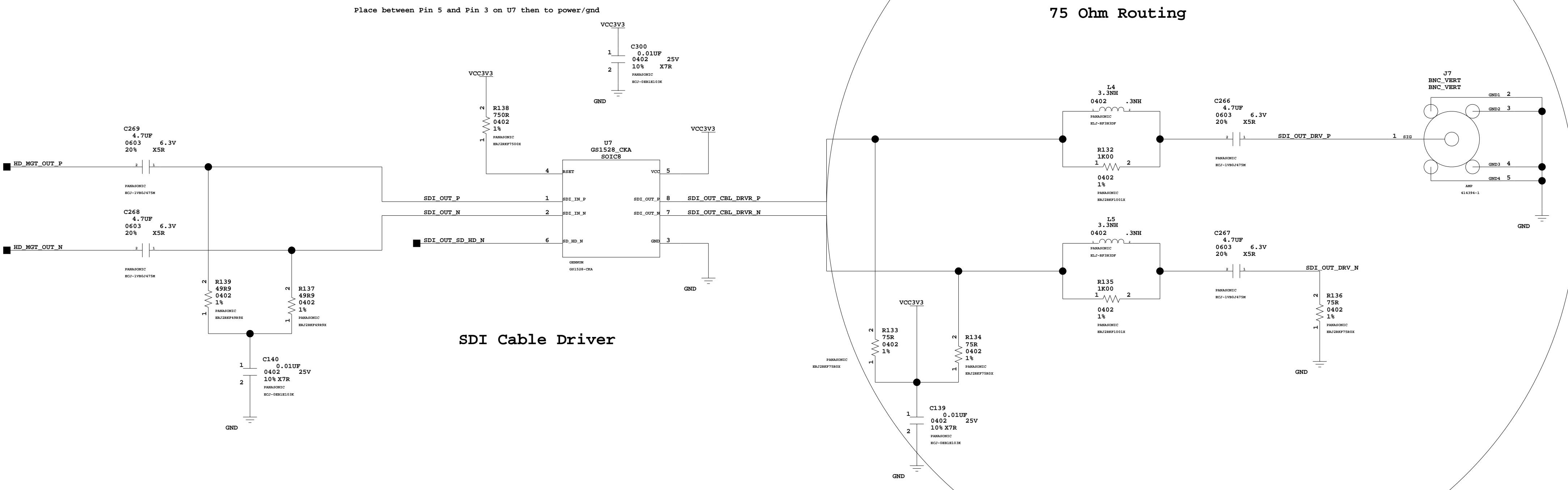
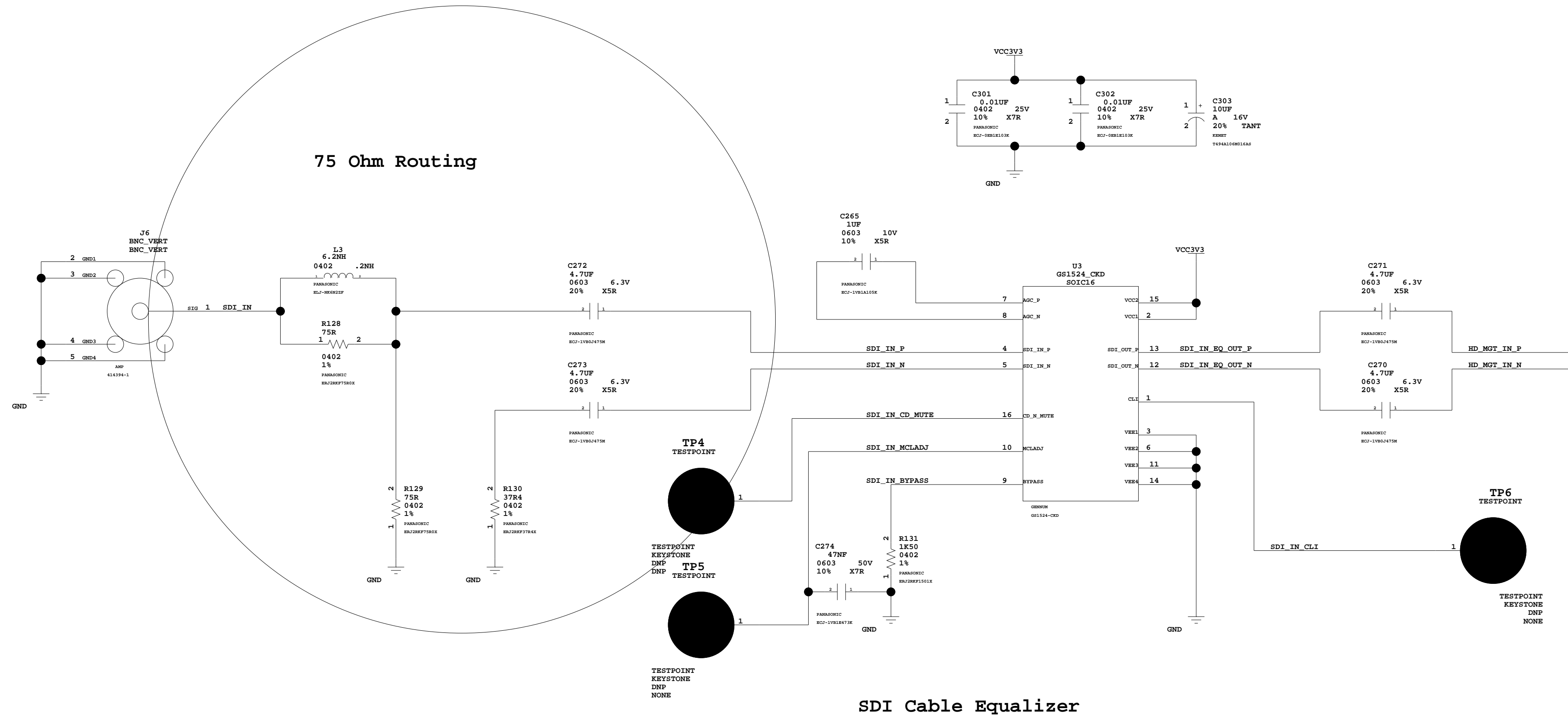
Title: SCHEMATIC: VIIOC  
DVI Input

Date: 09-17-05	Ver: B
Sheet Size: D	Rev: 02
Sheet: 6 of 13	Drawn By: GAB

# Digital Video Interface (DVI) Output

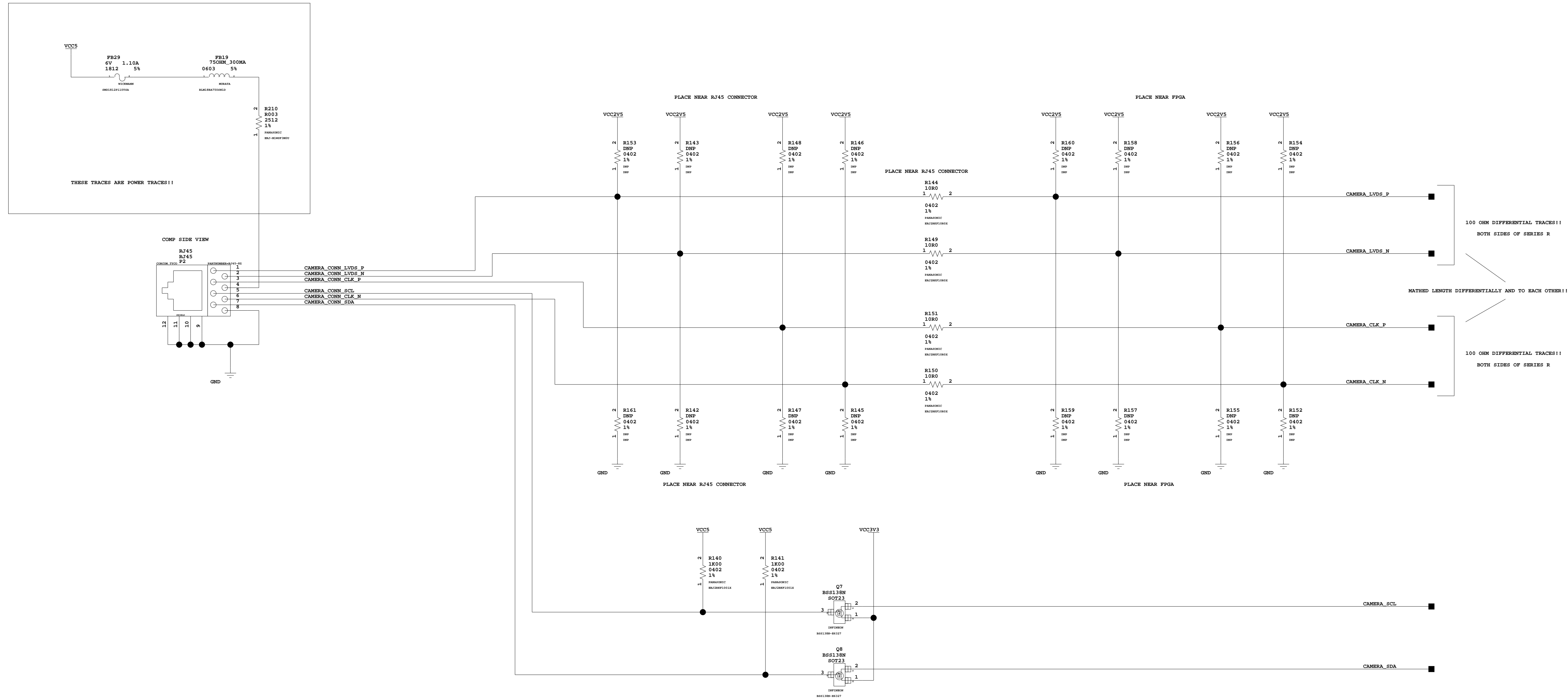


# SDI Video Input and Output Circuits





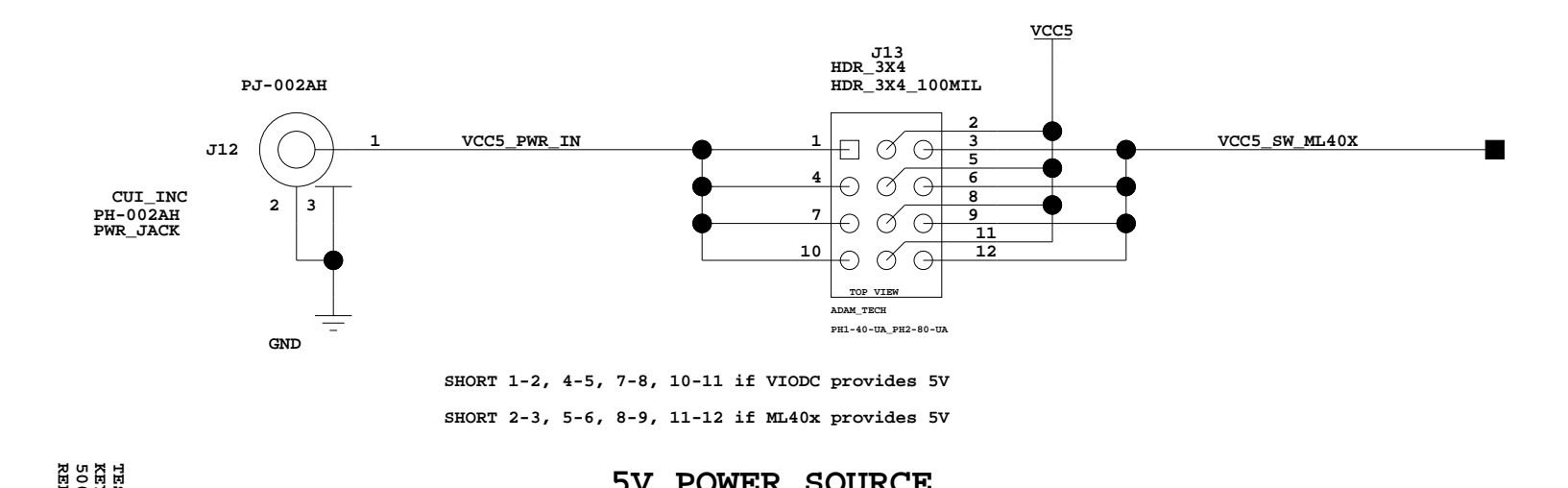
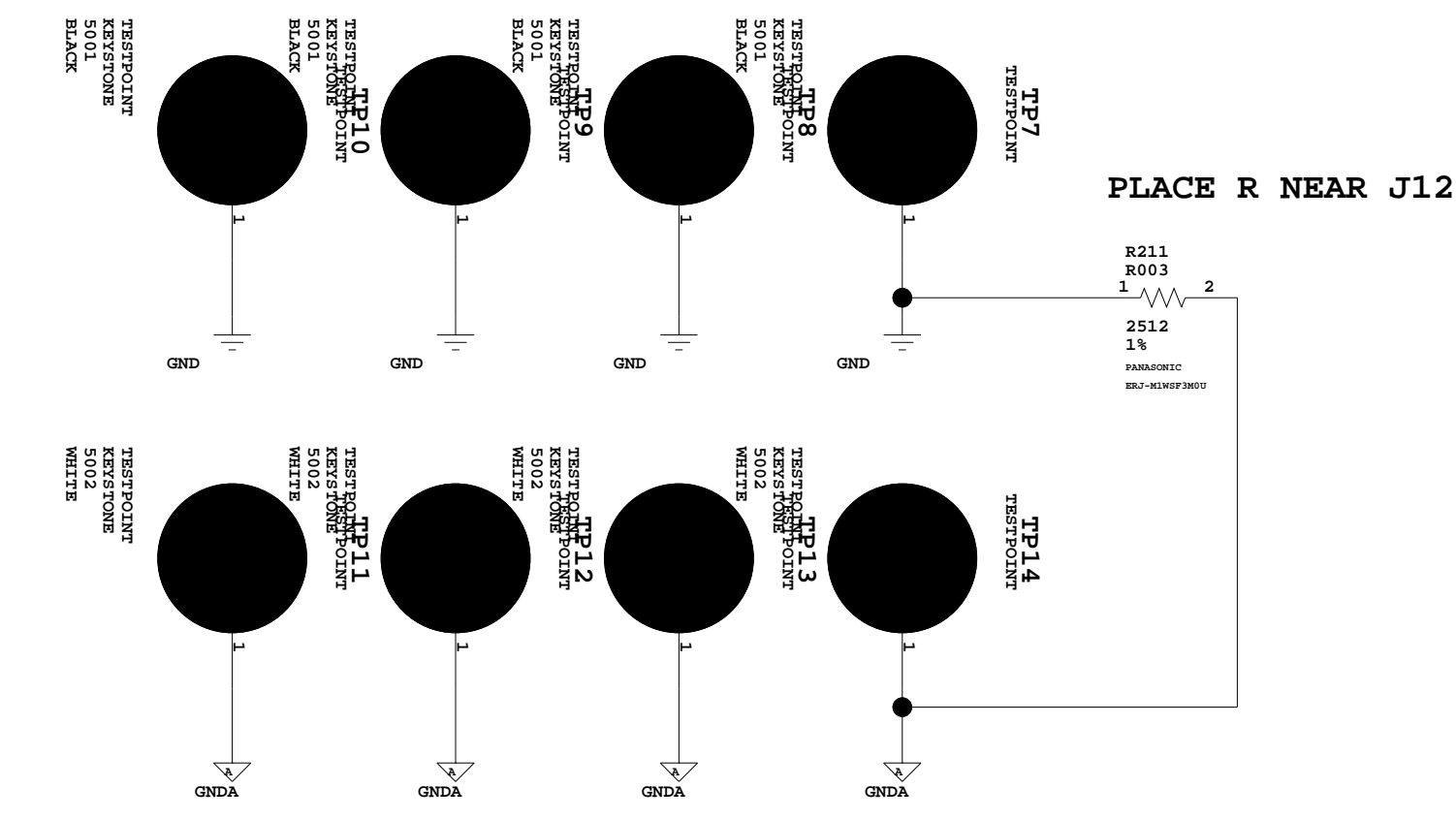
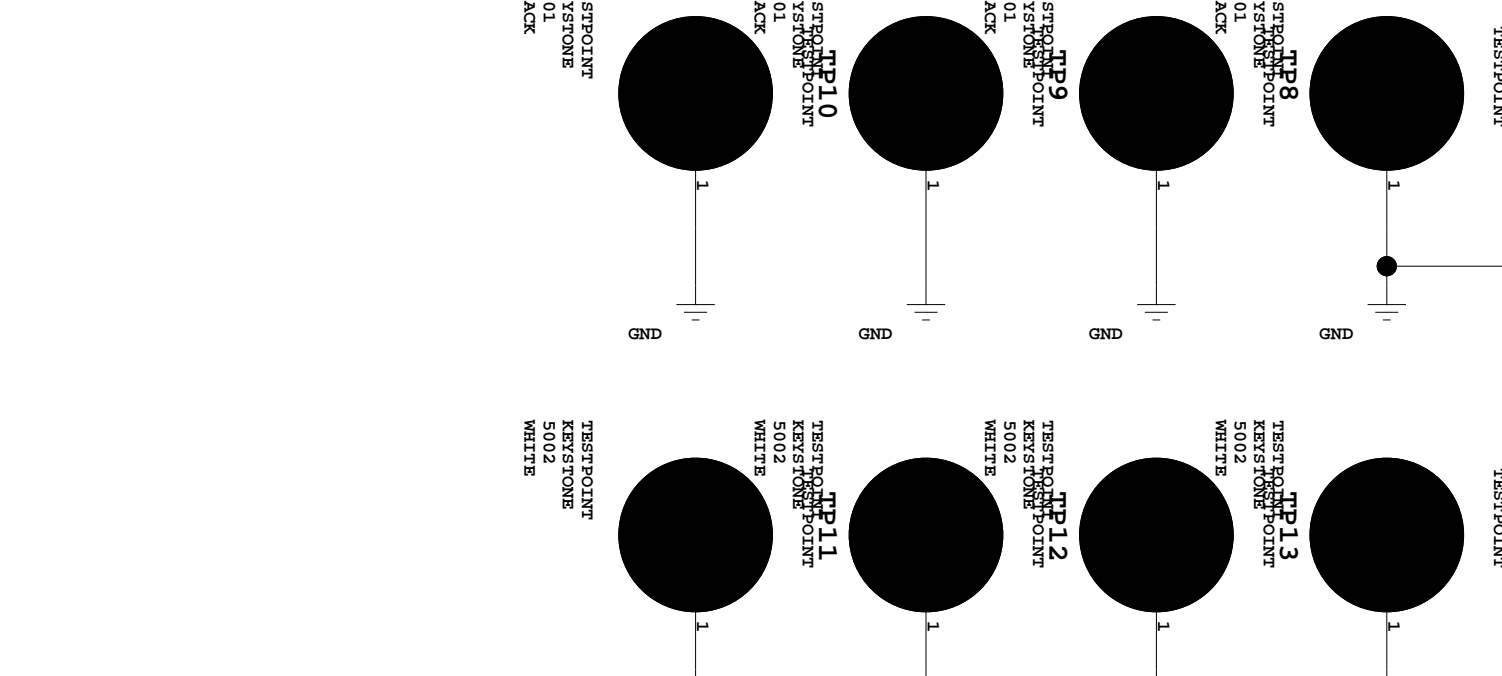
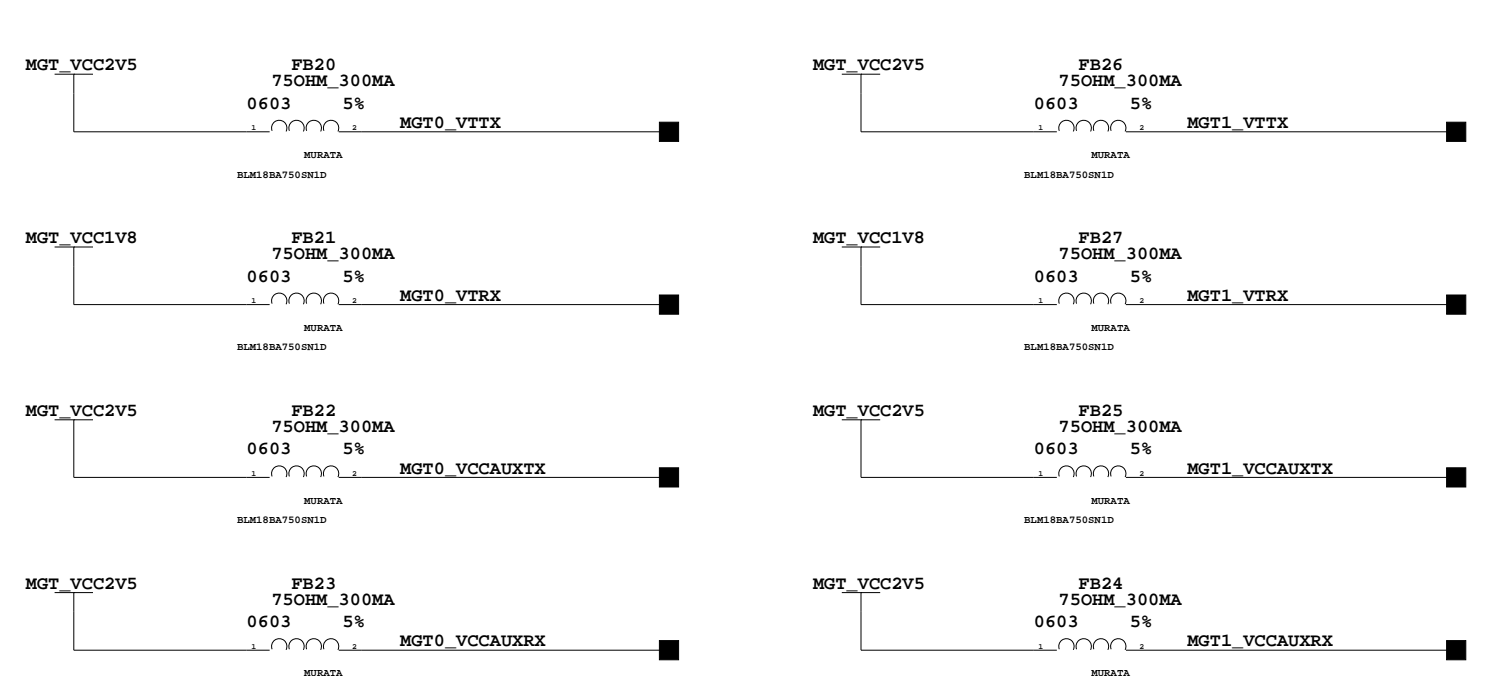
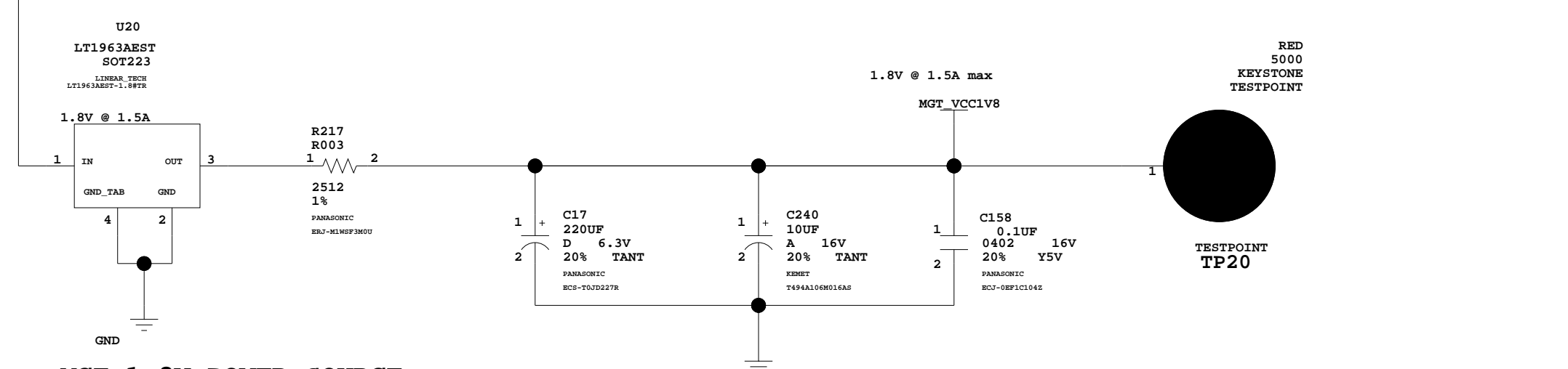
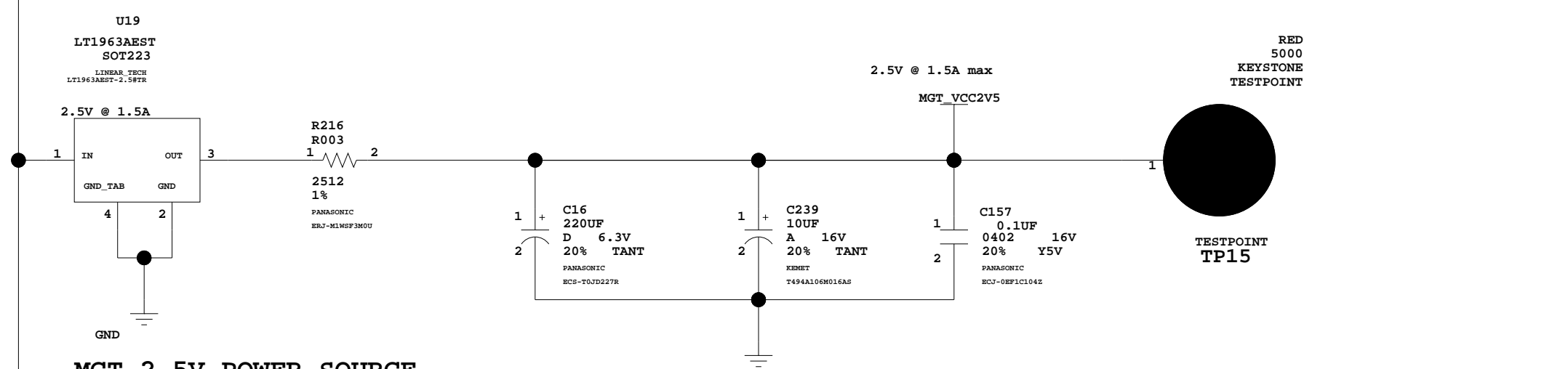
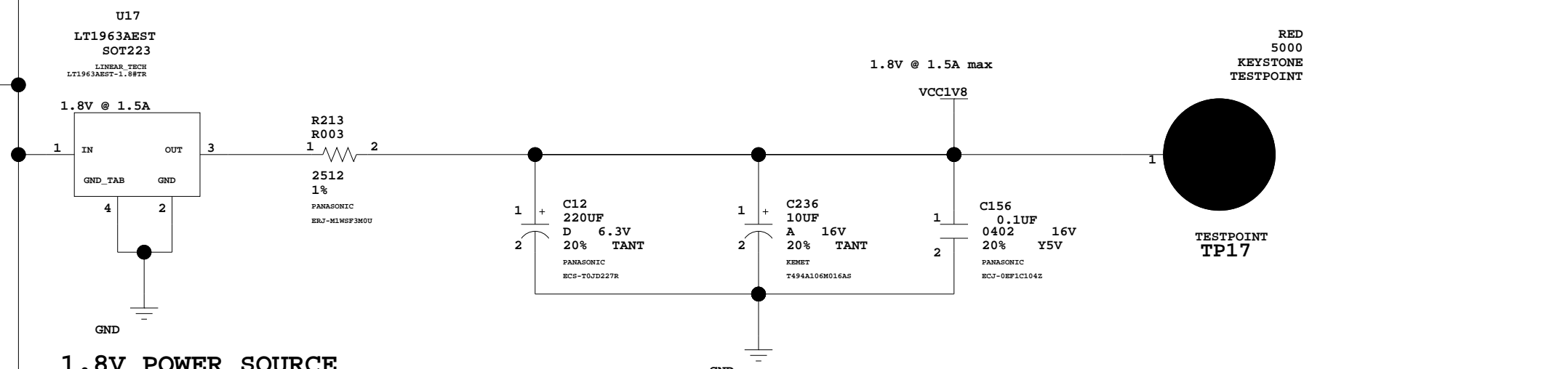
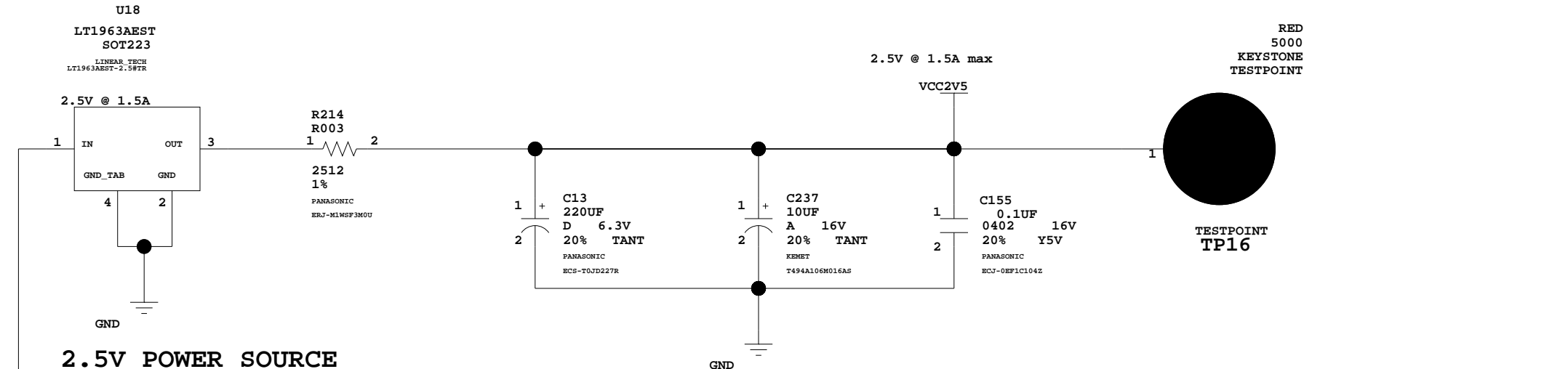
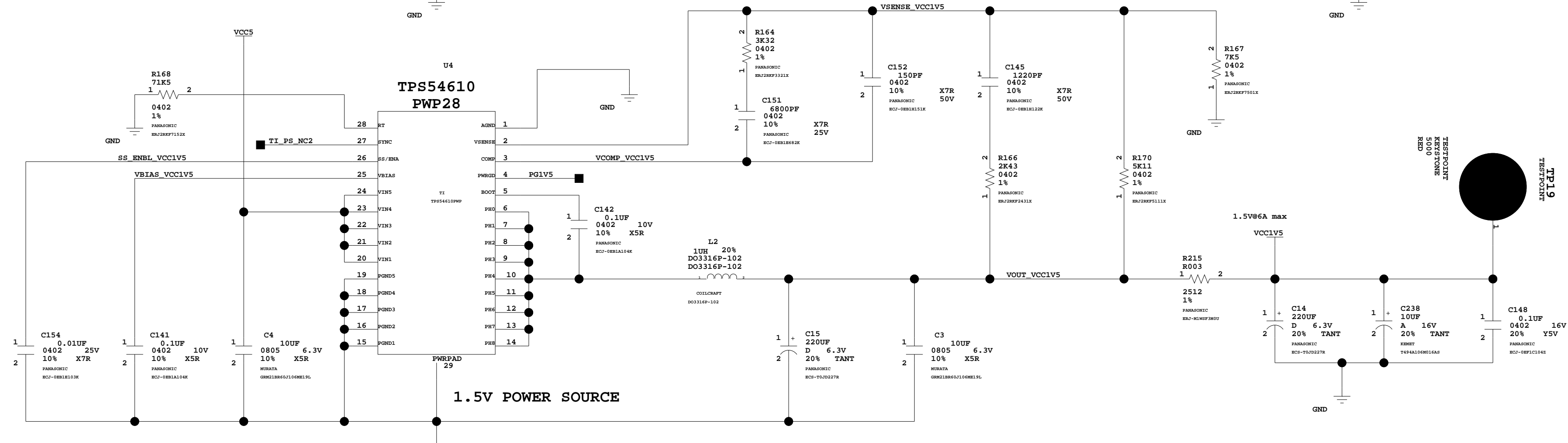
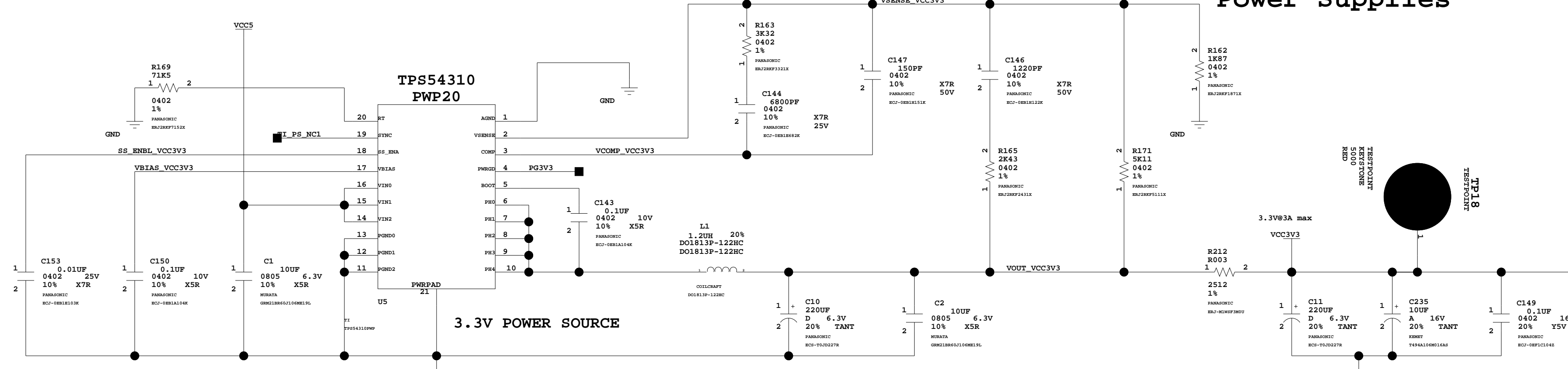
# Stereo Camera Input



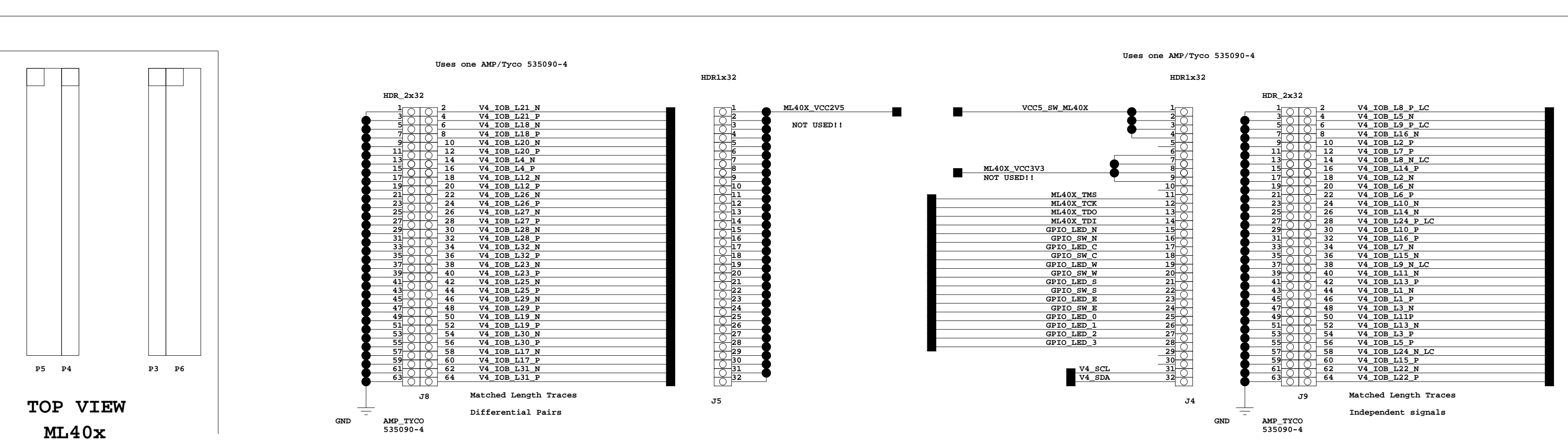
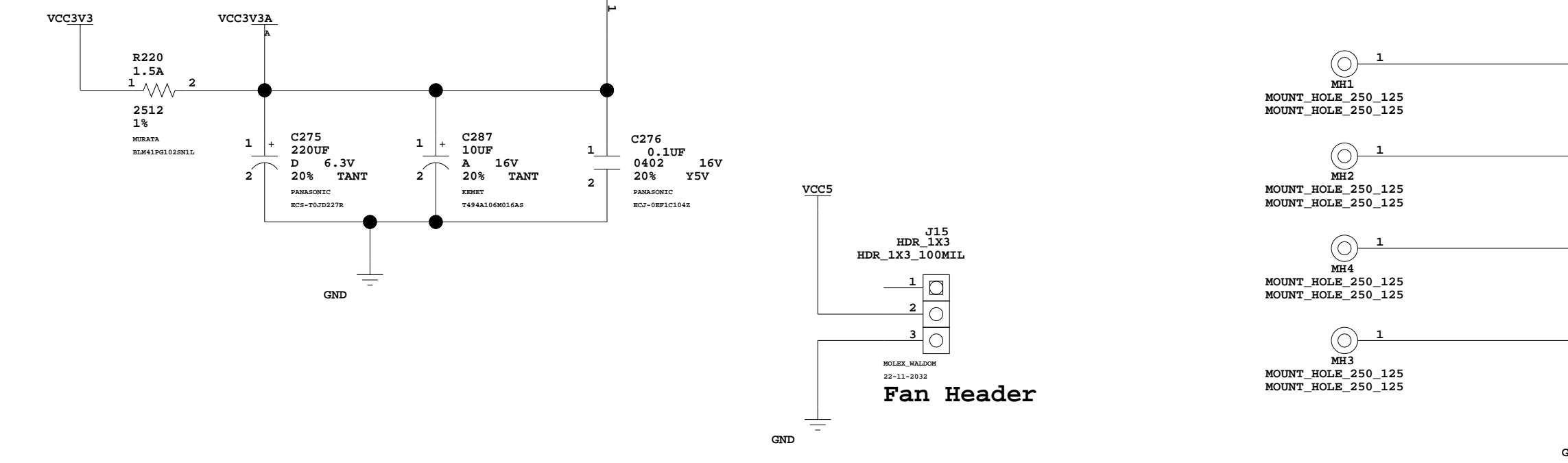
Title: SCHEMATIC: VIODC Stereo Camera Input	
Date: 09-17-05	Ver: B
Sheet Size: D	Rev: 02
Sheet: 9 of 13	Drawn By: GAB

MIX FPGA # OF PINS USED = 2 IO# (3.3V)  
MIX FPGA # OF PINS USED = 4 IO# (2.5V)

# Power Supplies



NOTE: R220 is an 1806 Package Ferrite Bead



TOP VIEW  
ML40x

**XILINX**

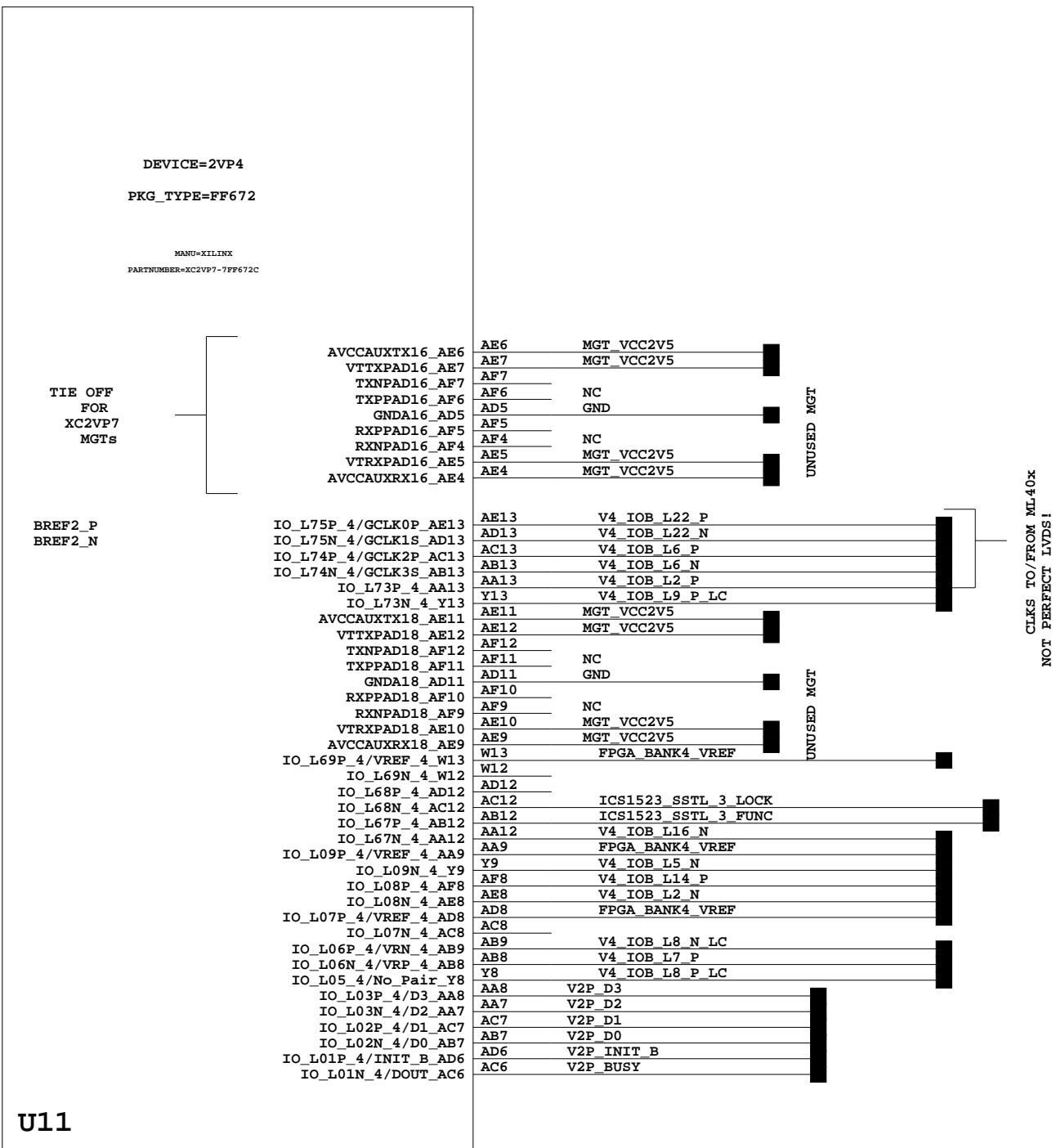
Title: SCHEMATIC: VIODC  
Pwr Supplies and ML40x Expansion Header

Date: 09-17-05 Ver: B  
Sheet Size: D Rev: 02  
Sheet 10 of 13 Drawn By: GAB

CHECK ML40x SCHEMATICS TO MAKE SURE  
3.3V I/Os REALLY ARE!!!

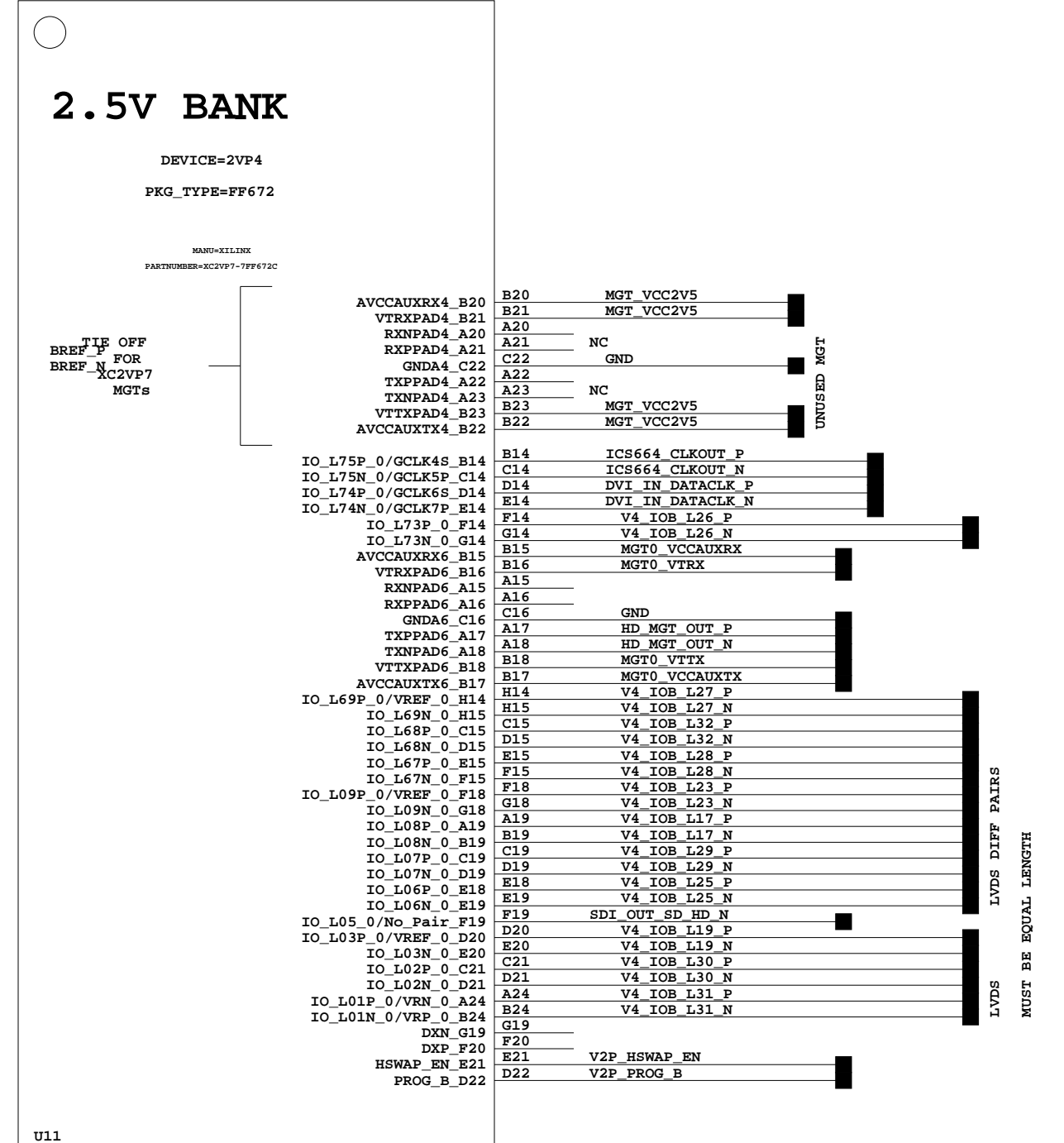
MIX FPGA # OF PINS USED = 14 I/Os (3.3V)  
MIX FPGA # OF PINS USED = 64 I/Os (2.5V)

2.5V BANK

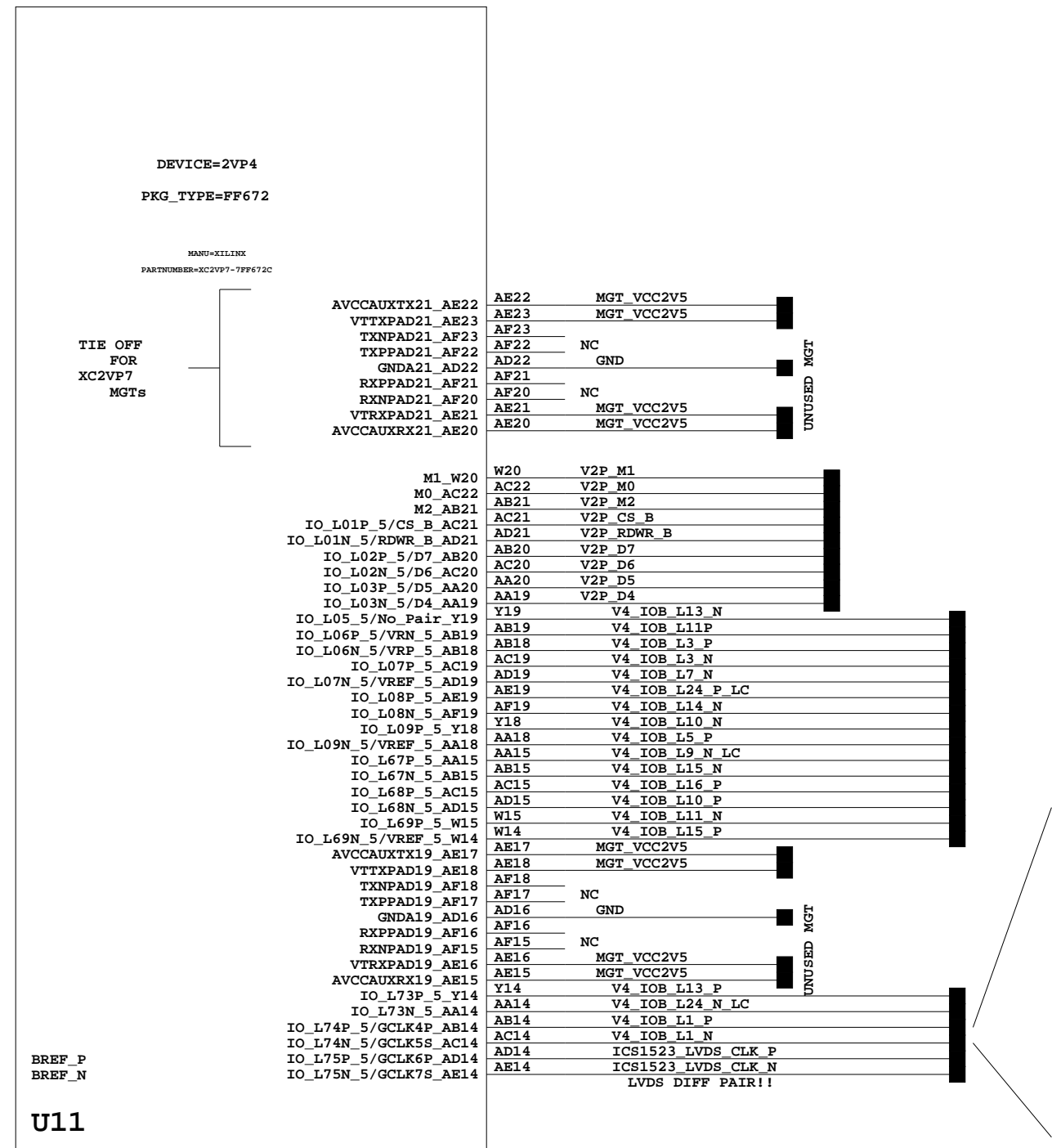


XC2VP4-bank4  
FF672  
(DIE DOWN)

XC2VP4-bank0  
FF672  
(DIE DOWN)

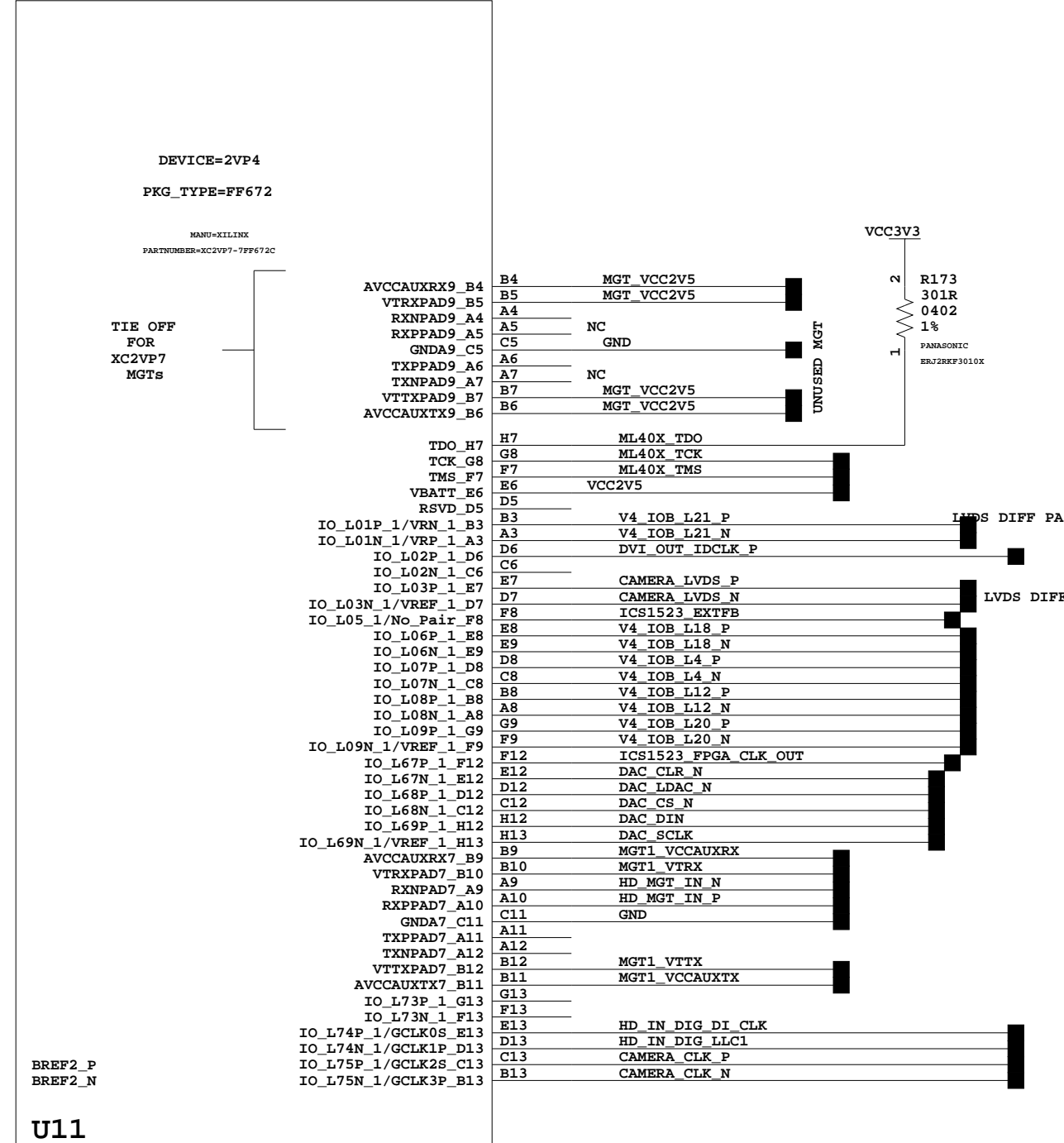


2.5V BANK

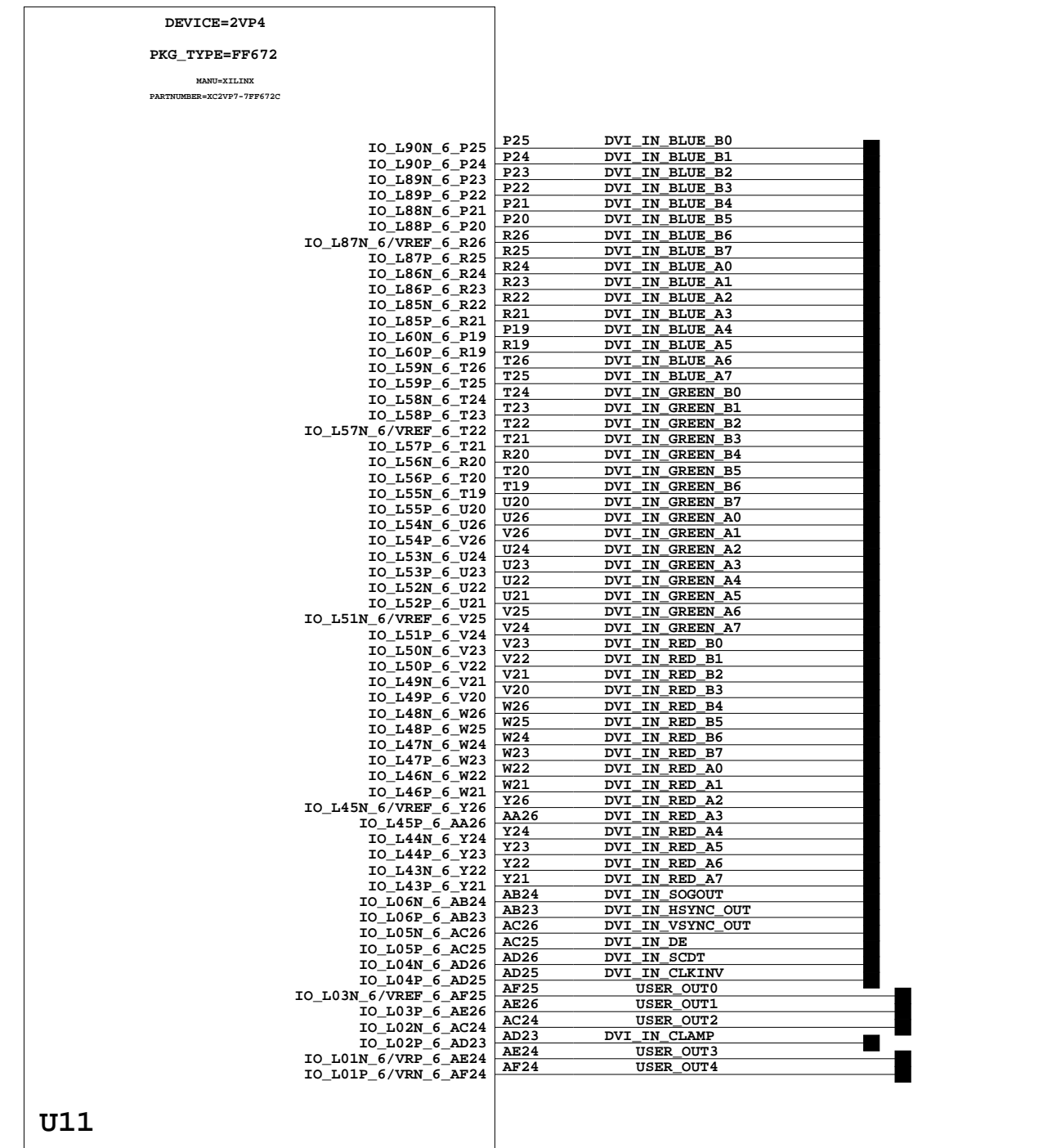


XC2VP4-bank5  
FF672  
(DIE DOWN)

XC2VP4-bank1  
FF672  
(DIE DOWN)

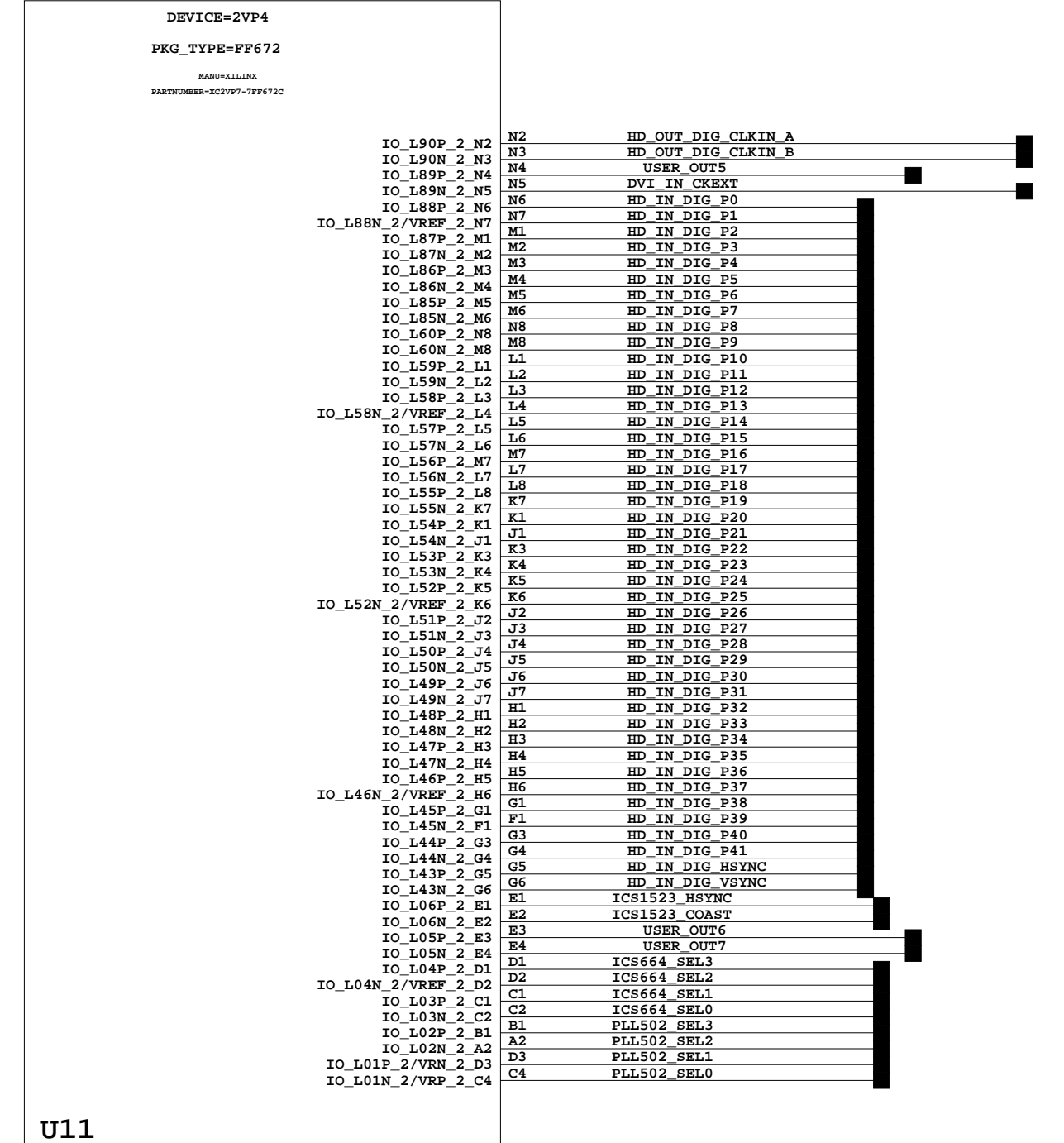


3.3V BANK

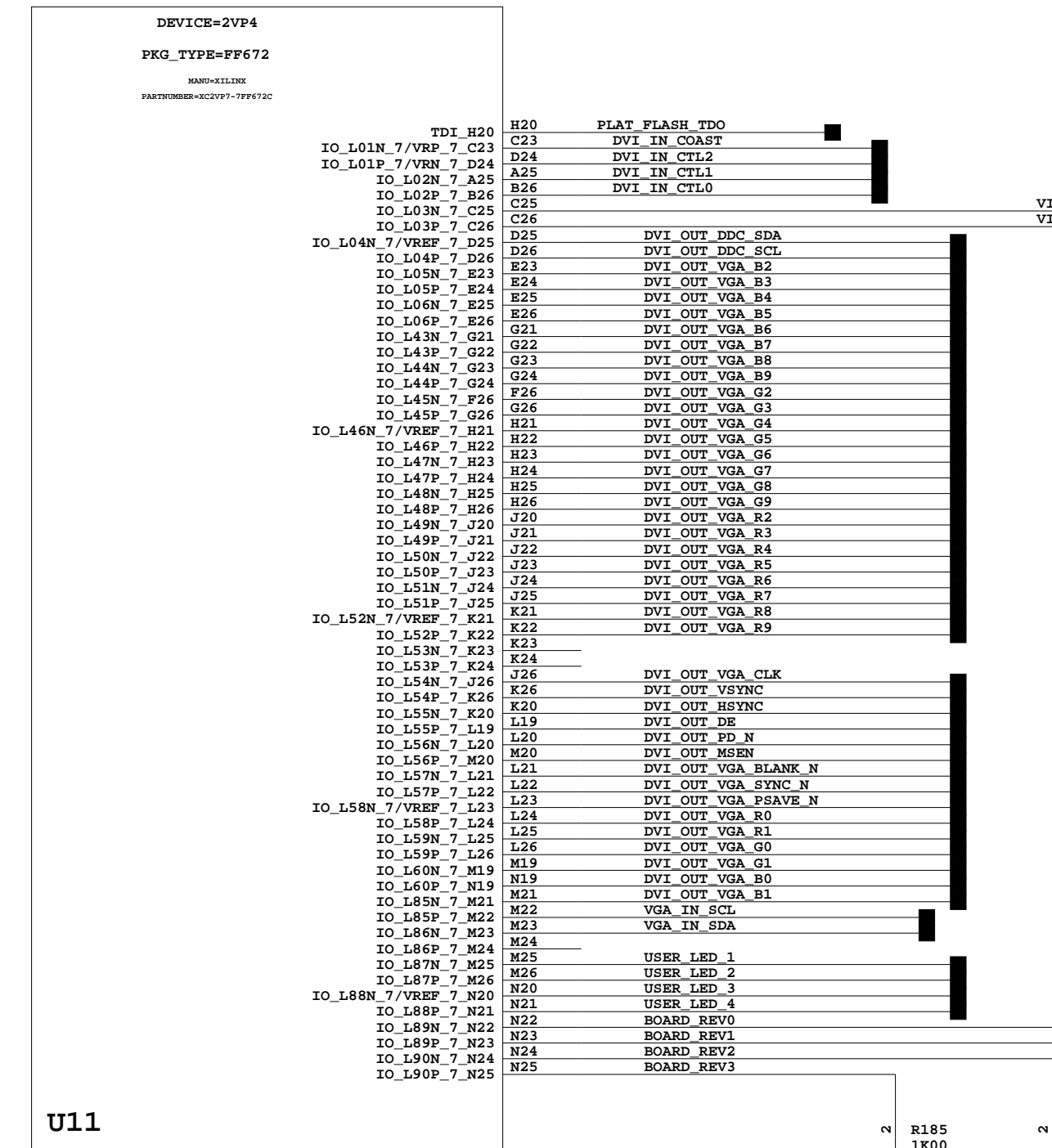


XC2VP4-bank6  
FF672  
(DIE DOWN)

XC2VP4-bank2  
FF672  
(DIE DOWN)

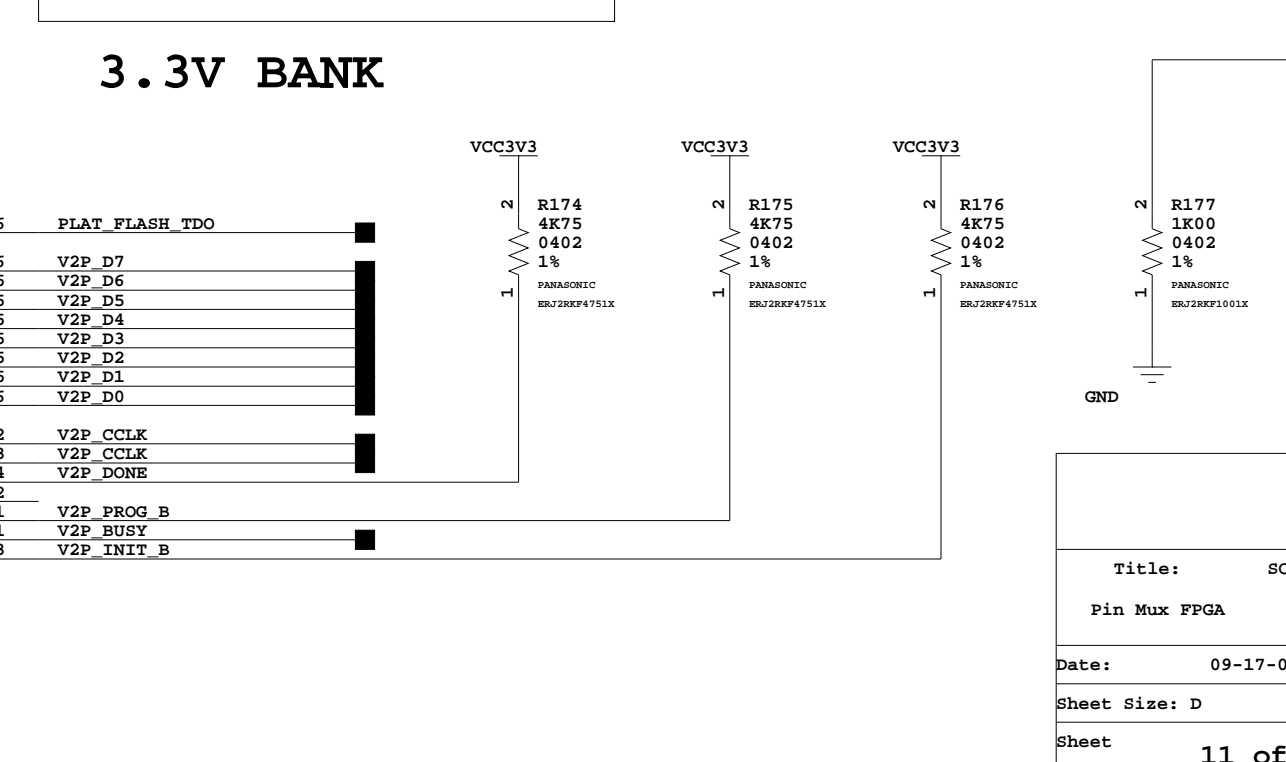
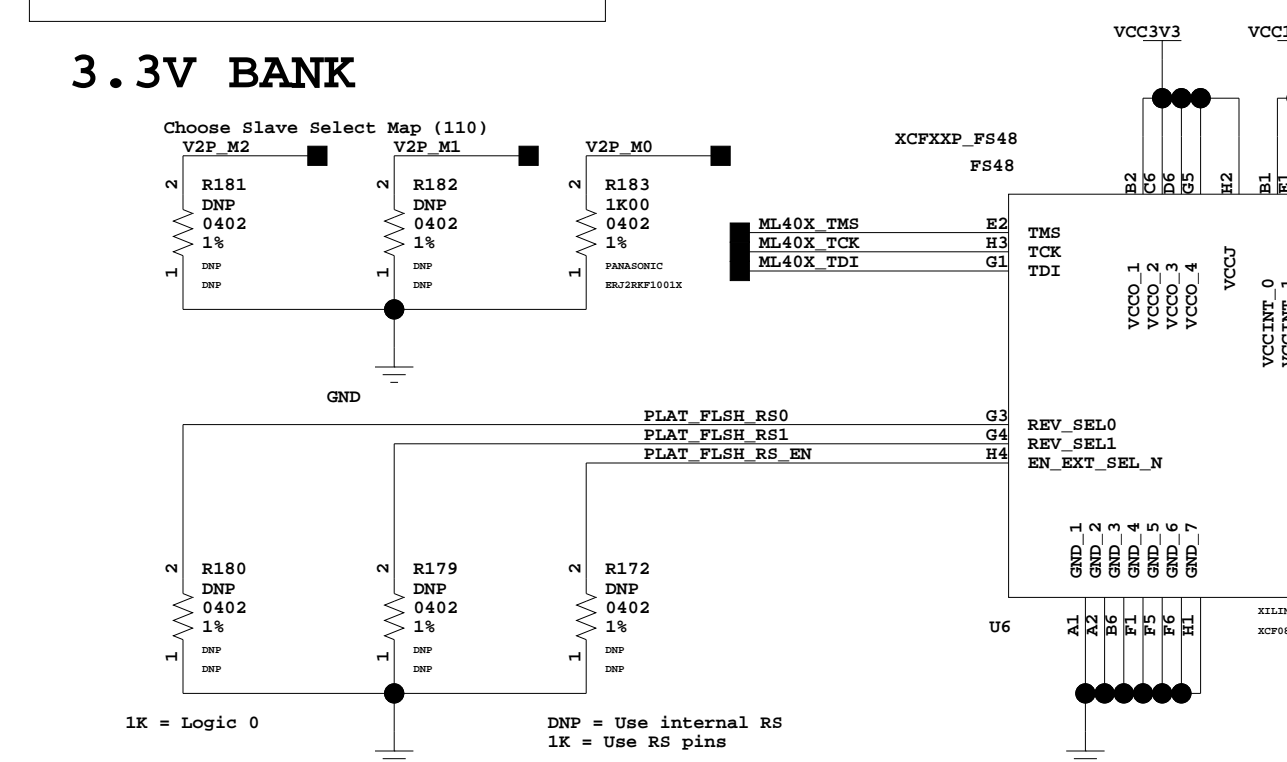
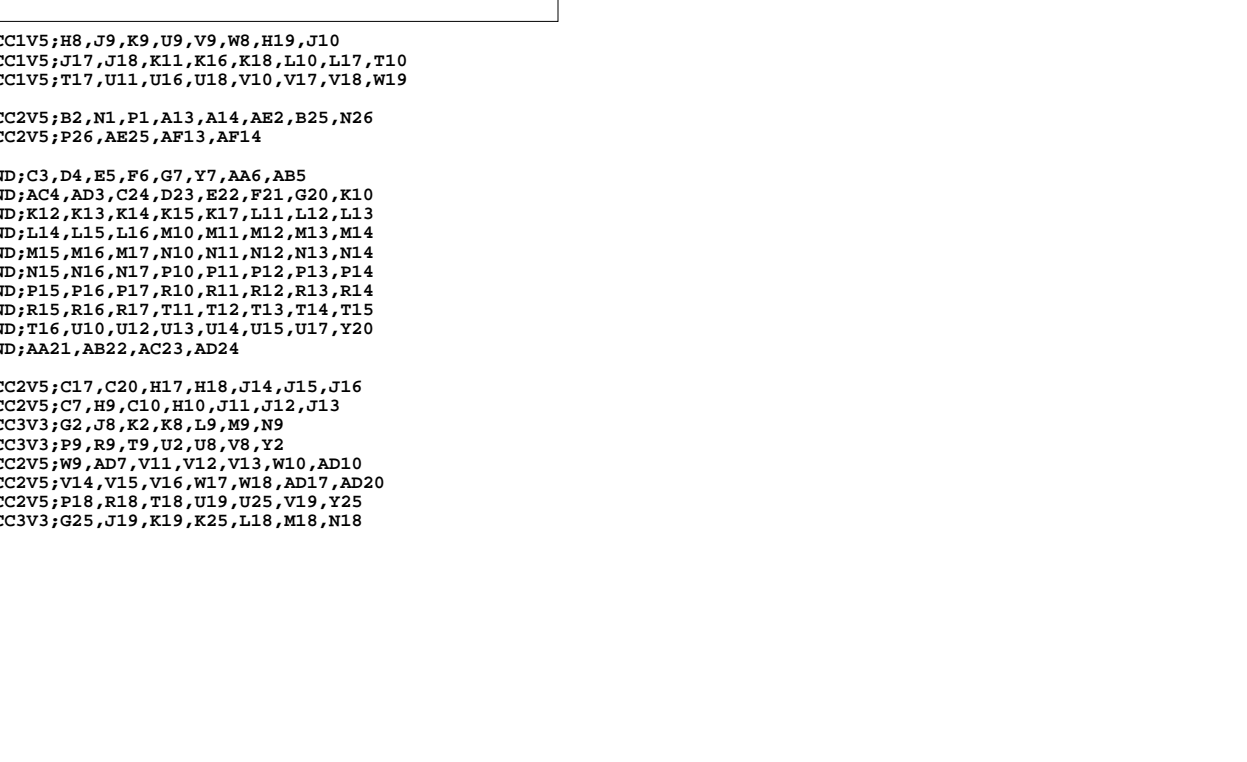
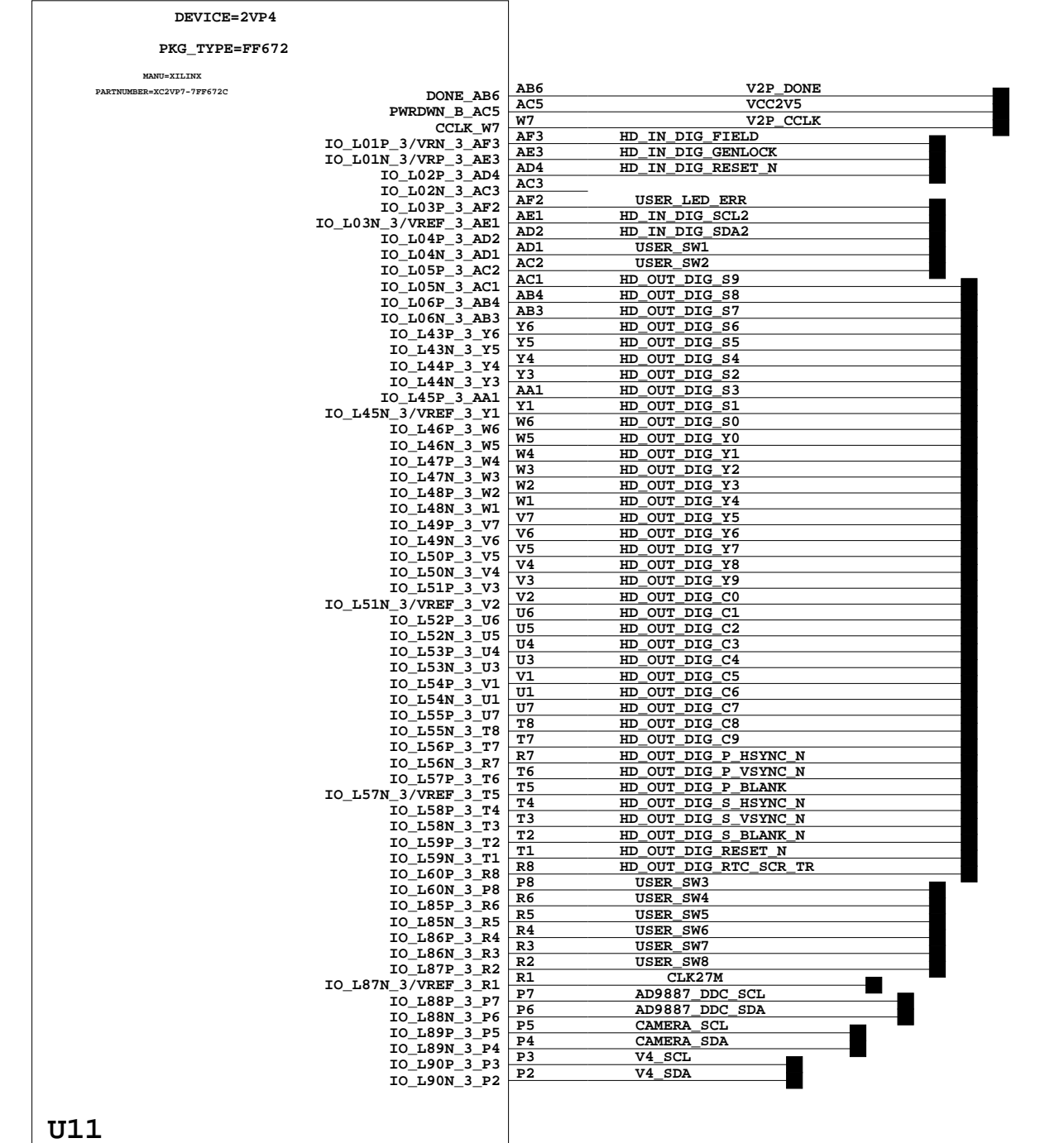


3.3V BANK

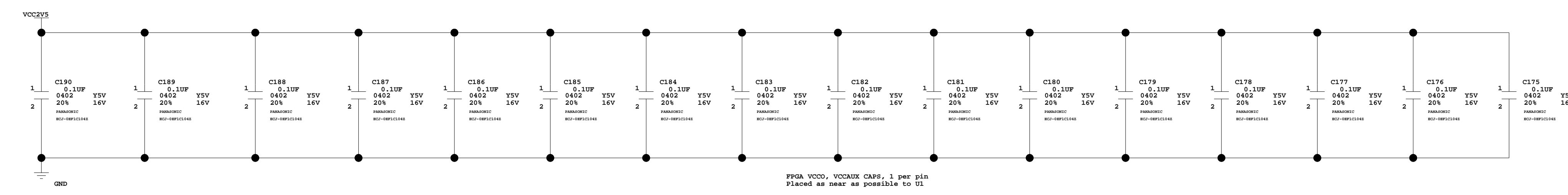
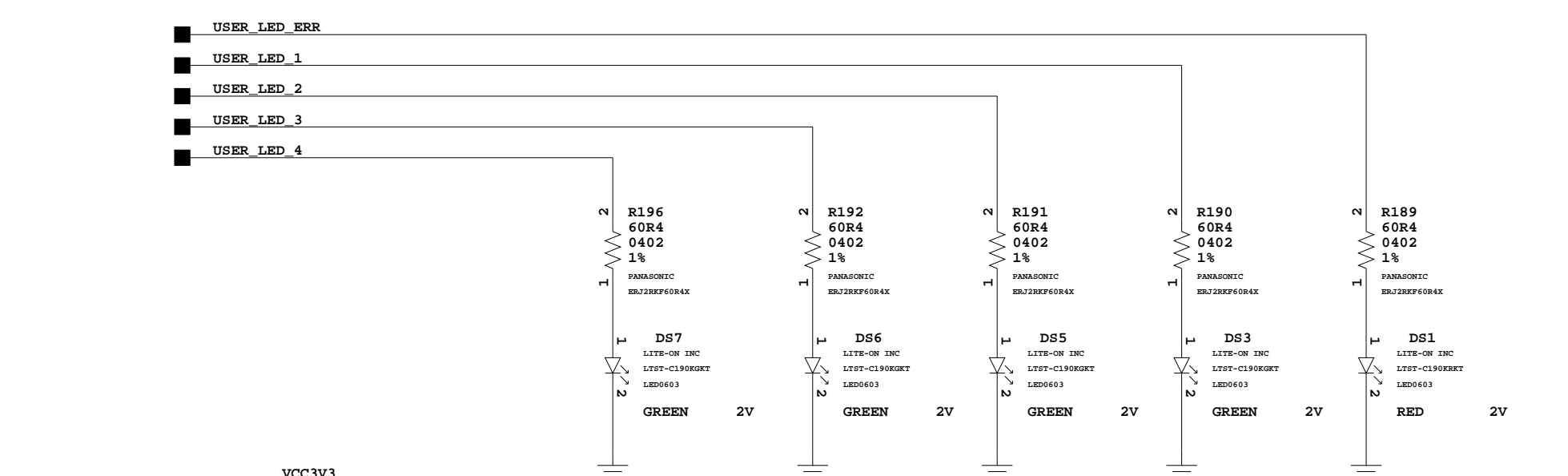
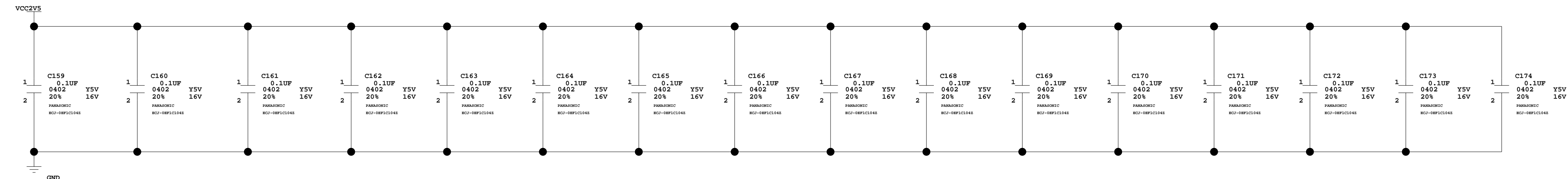
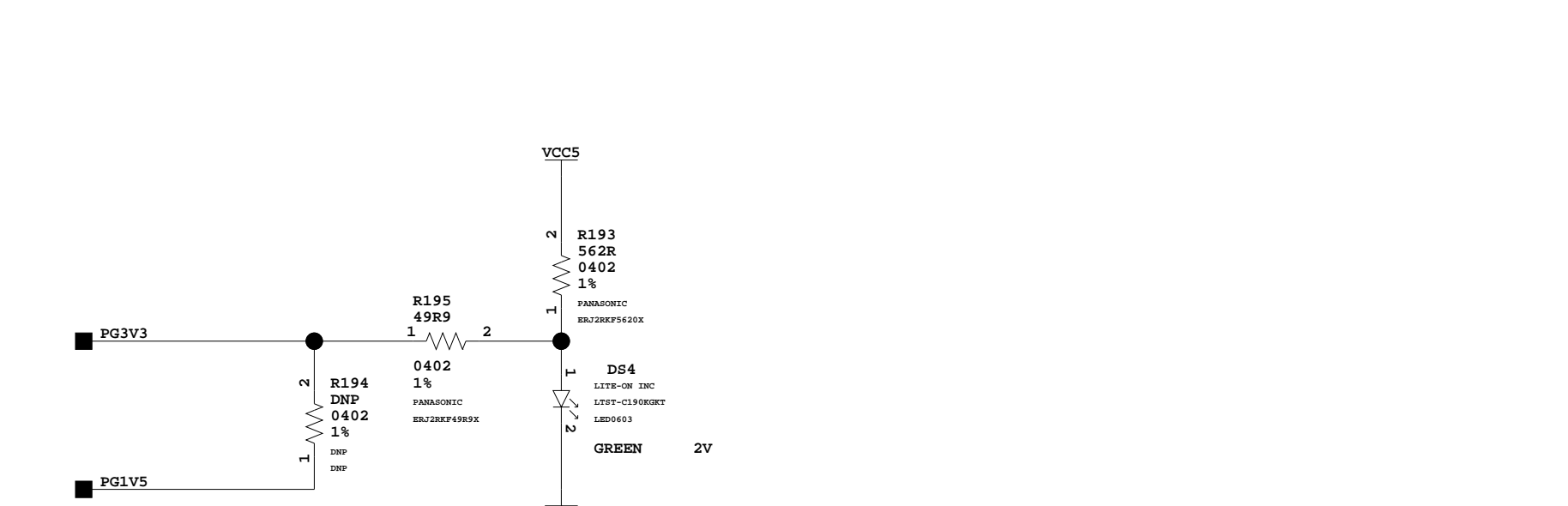
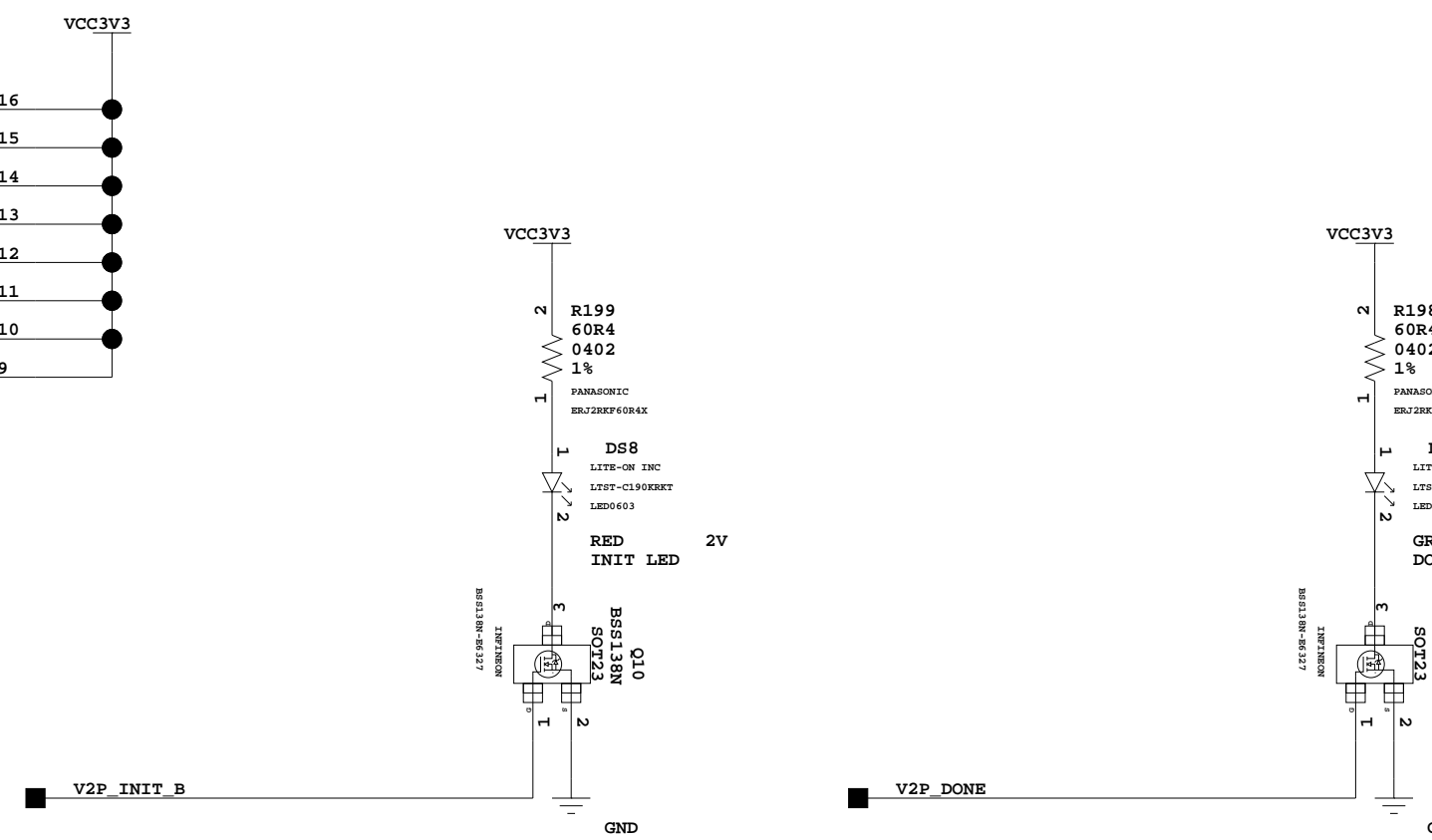
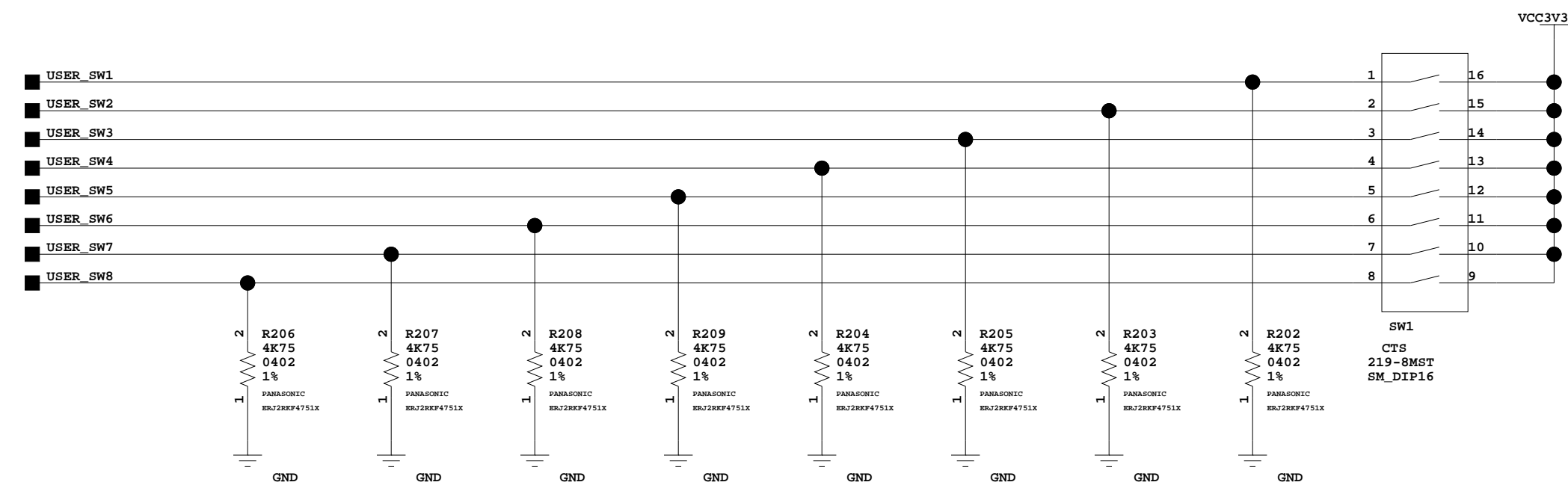


XC2VP4-bank7  
FF672  
(DIE DOWN)

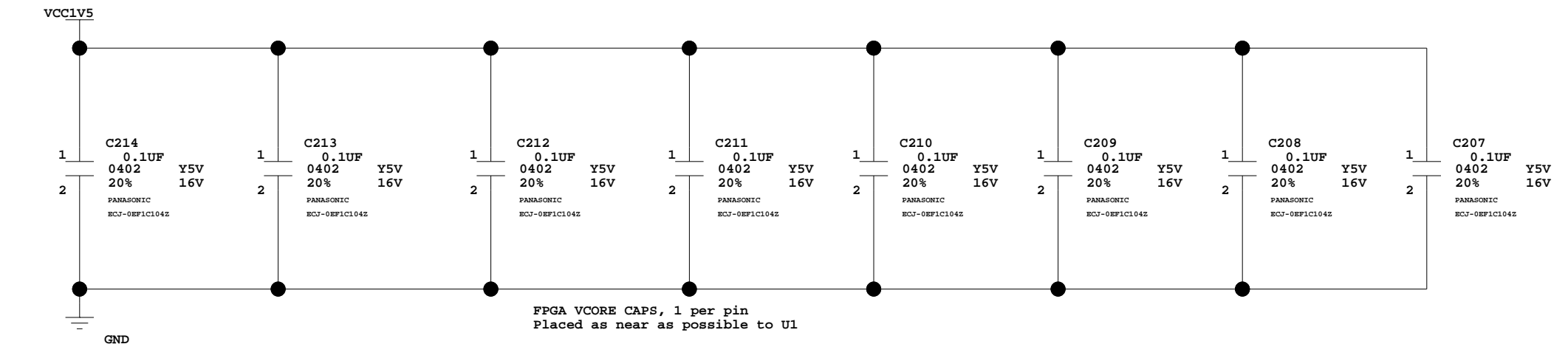
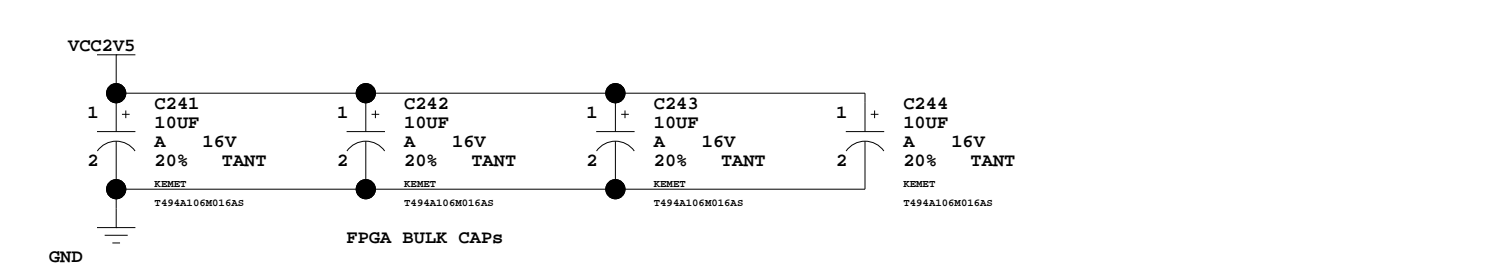
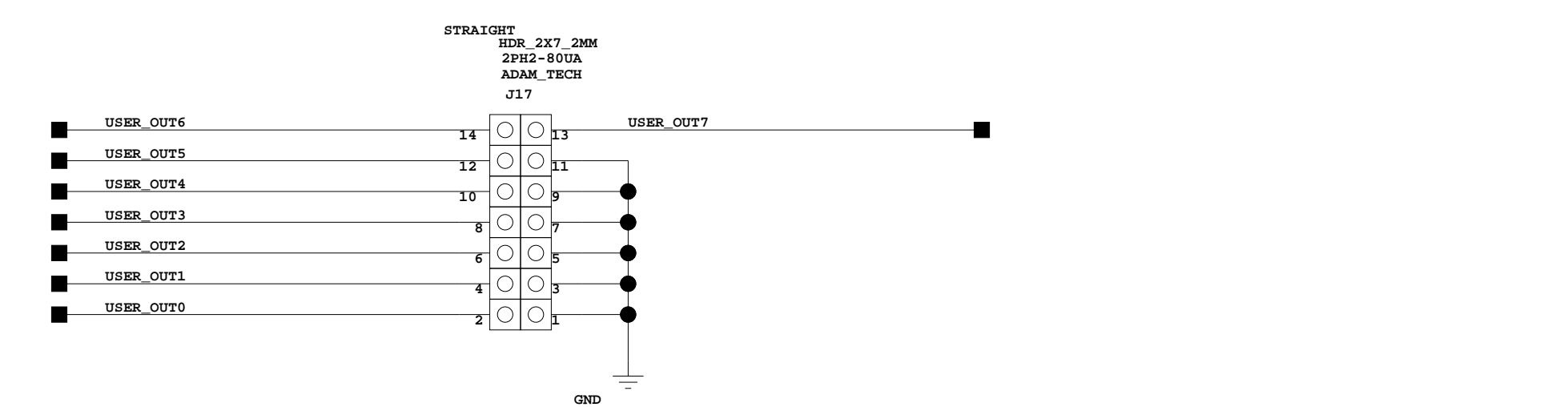
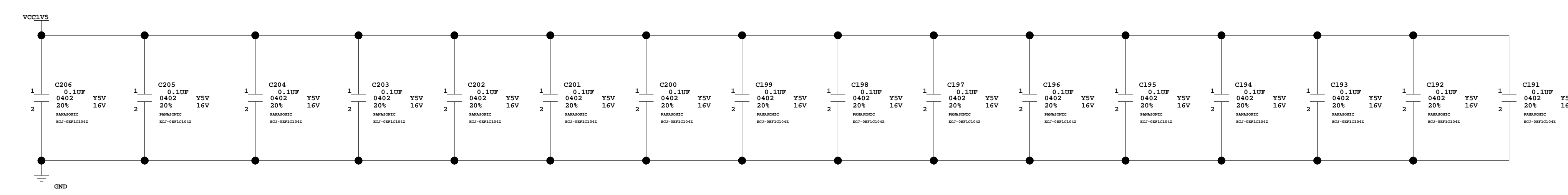
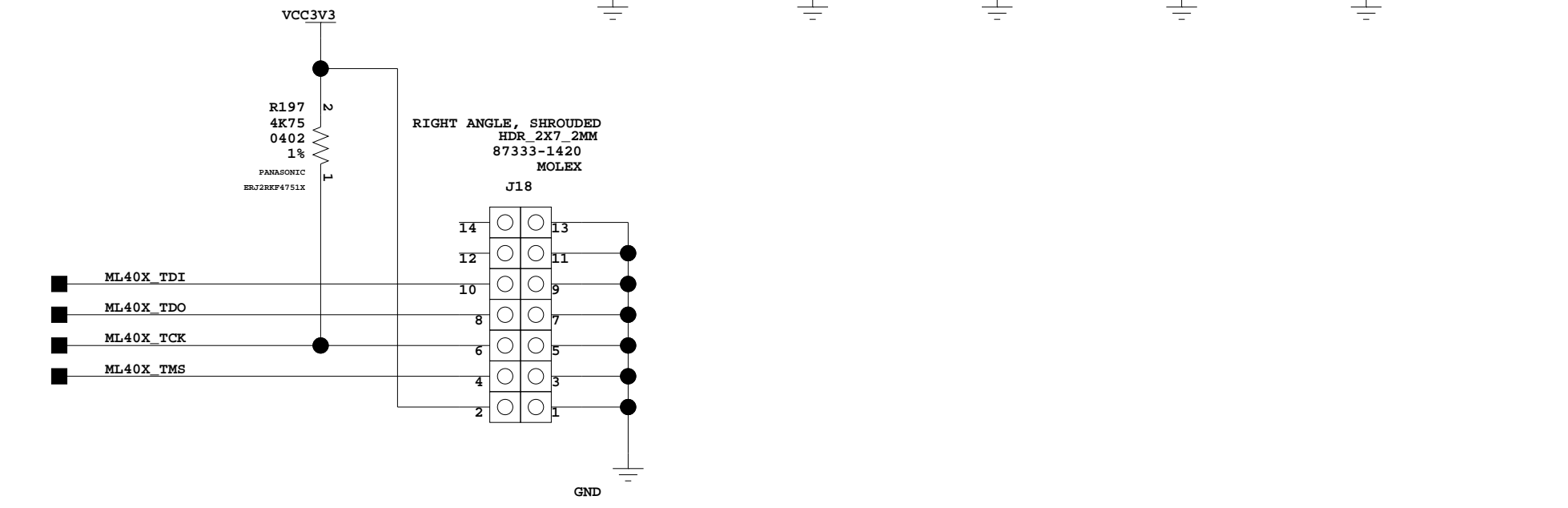
XC2VP4-bank3  
FF672  
(DIE DOWN)



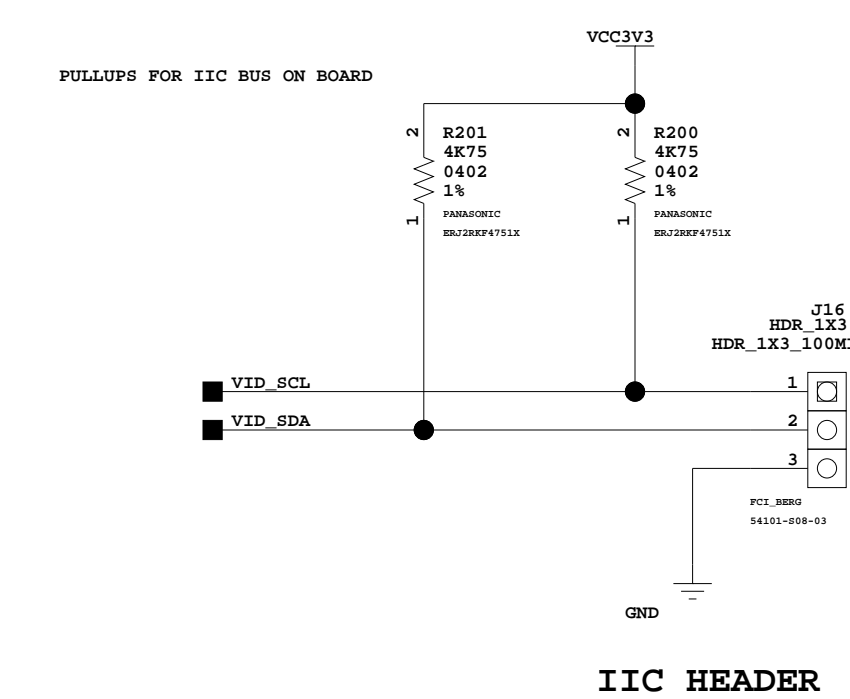
# FPGA Bypass Caps, User and PWR\_GOOD LEDs, PC4 Header



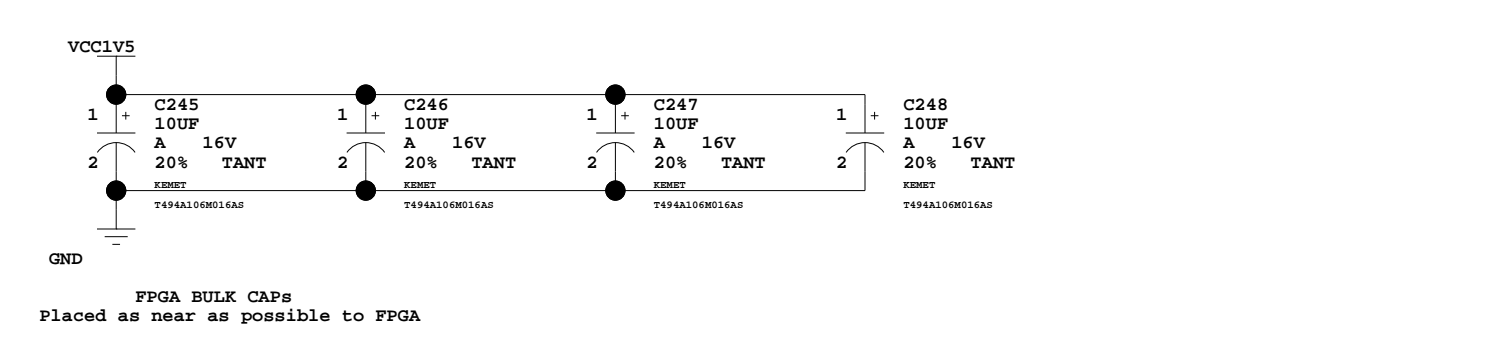
FPGA VCC0, VCCAUX CAPS, 1 per pin  
Placed as near as possible to U1



FPGA VCC0RE CAPS, 1 per pin  
Placed as near as possible to U1



IIC HEADER



FPGA BULK CAPS  
Placed as near as possible to FPGA

# Video Input Output Daughter Card Bill Of Materials

ITEM	QTY	REFDES	VALUE	TOLER	VOLTS	MANUFACTURE	MANU PART NUM	DEVICE	PACKAGE
1	1	MSB71							
2	4	C1, C2, C3, C4	100PF	10%	6.3V	MURATA	GRM21BE60J106ME19L	C0805	0805
3	4	C5, C6, C7, C8, C9	2200PF	10%	6.3V	PANASONIC	EECF-V0J2200M	CAPT_D	D
4	9	C10, C11, C12, C13, C14, C15, C16, C17, C17S	2200PF	20%	6.3V	PANASONIC	ECS-T0J227R	CAPT_D	D
5	143	C18, C22, C24, C25, C26, C33, C34, C35, C36, C38, C39, C42, C43, C45, C46, C47, C48, C49, C51, C52, C54, C61, C62, C63, C68, C69, C70, C71, C72, C73, C74, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C88, C89, C90, C91, C92, C93, C98, C99, C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C133, C134, C148, C149, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C276	0.10UF	20%	16V	PANASONIC	ECJ-0EFC1042	C0402	0402
6	20	C19, C20, C21, C23, C27, C28, C29, C31, C32, C34, C35, C36, C38, C39, C42, C43, C45, C46, C47, C48, C49, C51, C52, C54, C61, C62, C63, C68, C69, C70, C71, C72, C73, C74, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C88, C89, C90, C91, C92, C93, C98, C99, C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C133, C134, C148, C149, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C276	0.010UF	10%	25V	PANASONIC	ECJ-0EHL1013K	C0402	0402
7	18	C37, C40, C41, C44, C50, C53, C55, C56, C57, C59, C60, C94, C95, C97, C135, C136, C137, C138	0.0010UF	10%	25V	PANASONIC	ECJ-0EHL1013K	C0402	0402
8	18	C37, C40, C41, C44, C50, C53, C55, C56, C57, C59, C60, C94, C95, C97, C135, C136, C137, C138	0.0010UF	10%	25V	PANASONIC	ECJ-0EHL1013K	C0402	0402
9	18	C37, C40, C41, C44, C50, C53, C55, C56, C57, C59, C60, C94, C95, C97, C135, C136, C137, C138	0.0010UF	10%	25V	PANASONIC	ECJ-0EHL1013K	C0402	0402
10	2	C86, C121	39000PF	10%	50V	PANASONIC	ECJ-0EHL1392K	C0402	0402
11	1	C87	82000PF	10%	50V	PANASONIC	ECJ-0EHL1392K	C0402	0402
12	7	C130, C131, C132, C141, C142, C143, C150	8200PF	10%	50V	PANASONIC	ECJ-0EHL1392K	C0402	0402
13	2	C144, C151	8200PF	10%	25V	PANASONIC	ECJ-0EHL1392K	C0402	0402
14	2	C145, C146	12200PF	10%	50V	PANASONIC	ECJ-0EHL1392K	C0402	0402
15	36	C215, C216, C217, C218, C219, C220, C221, C222, C223, C224, C225, C226, C227, C228, C229, C230, C231, C232, C233, C234, C235, C236, C237, C238, C239, C240, C241, C242, C243, C244, C245, C246, C247, C248, C287, C303	100PF	20%	16V	KEMET	T49AL06016AS	CAPT_A	A
16	2	C249	33000PF	5%	50V	TEK	CL680C018132J	C0603	0603
17	2	C250, C255	27PF	5%	50V	YAGEO	CC0402J2RNP09B270	C0402	0402
18	4	C251, C252, C253, C254	100PF	20%	50V	PANASONIC	ECJ1VB0106M	C0603	0603
19	8	C256, C257, C258, C259, C261, C262, C263, C264	470PF	10%	16V	KEMET	C0402CCT3KARATU0	C0402	0402
20	1	C260	39000PF	10%	25V	PANASONIC	ECJ-1VBL1393K	C0603	0603
21	1	C265	10PF	10%	16V	PANASONIC	ECJ-1VBL1393K	C0603	0603
22	8	C266, C267, C268, C269, C270, C271, C272, C273	4.70UF	20%	6.3V	PANASONIC	ECJ-1VB0J475M	C0603	0603
23	1	C274	470PF	10%	50V	PANASONIC	ECJ-1VBL18473K	C0603	0603
24	1	D1	50V			FAIRCHILD	BAT54C	SO123	
25	2	D81, D88	RED		2V	LT97-C190KMT	LED0603	LED0603	
26	6	D82, D83, D84, D85, D86, D87	GREEN		2V	LT97-C190KMT	LED0603	LED0603	
27	27	F81, F82, F83, F84, F85, F86, F87, F88, F89, F810, F811, F812, F813, F814, F815, F816, F817, F818, F819, F820, F821, F822, F823, F824, F825, F826, F827	750UM 300MA	5%	30V	MURATA	BUM18BA7500N1D	L0603	0603
28	1	F89	200MA	5%	30V	WICOMANN	SHD1812P107SA	R1812	1812
29	1	F829	1.10A	5%	6V	WICOMANN	SHD1812P107SA	R1812	1812
30	1	F850	1.10A	5%	6V	WICOMANN	SHD1812P107SA	R1812	1812
31	2	J1, J2	1KOHM 1.5A	5%		MOLEX	74320-1004	DVI	
32	1	J3				CVI_INC	RCJ-2244	NCA_2X1	NCA_2X1
33	2	J4, J5				CVI_INC	RCJ-2244	NCA_2X1	NCA_2X1
34	2	J6, J7				AMP	414394-1	MMC_VERT	MMC_VERT
35	1	J8, J9				AMP_TYCO	515050-4	MMC_VERT	MMC_VERT
36	1	J10				CVI_INC	RCJ-61225566	NCA_2X3	NCA_2X3
37	1	J11				RYCON	R80S-48/48-84N	DVI280_DUAL_STACK	DVI280_DUAL_STACK
38	1	J12				CVI_INC	PH-002AM	PWR_JACK	PWR_JACK
39	1	J13				ADAM_TECH	PH1-40-0A_P92-80-0A	HDR_3X4	HDR_3X4_100MIL
40	2	J14, J16				PCI_BERG	54101-08H-03	HDR_1X3	HDR_1X3_100MIL
41	1	J15				MOLLEX_MALDOM	22-11-2032	HDR_1X3	HDR_1X3_100MIL
42	1	J17				ADAM_TECH	2802-801A	HDR_2X7_2MM	HDR_2X7_2MM
43	1	J18				MOLLEX	87333-1420	HDR_2X7_2MM	HDR_2X7_2MM
44	1	J19	1.2MM	20%		COLLIDRAFT	DO316P-12ZHC	DO316P-12ZHC	DO316P-12ZHC
45	1	J2	1.0H	20%		COLLIDRAFT	DO316P-10Z	DO316P-10Z	DO316P-10Z
46	1	J3	6.2MM	20%		PANASONIC	ECJ-0EHL1013K	L0402	0402
47	1	J4, J5	1.3MM	20%		PANASONIC	ECJ-0EHL1013K	L0402	0402
48	4	MH1, MH2, MH3, MH4				KYCON	K66-8158-N	MMOUNT_HOAR_250_125	MMOUNT_HOAR_250_125
49	1	P1				CONCOM_TYCO	RJ45-82	BD15	CONCOM_VIA_MDI15
50	1	P2				CONCOM_TYCO	RJ45-82	BD15	CONCOM_VIA_MDI15
51	1	PCB1				INFINEON	BSS138N-R6327	SOT23	
52	10	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10	DMP	1%		DMP	DMP	R0402	0402
53	27	R1, R44, R45, R58, R142, R143, R145, R146, R147, R148, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R172, R179, R180, R181, R182, R188, R194	1000	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
54	19	R2, R5, R6, R82, R87, R88, R89, R90, R97, R98, R104, R105, R122, R123, R144, R149, R150, R151, R239	6K80	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
55	6	R3, R9, R10, R41, R46, R59	6K80	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
56	1	R4	4989	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
57	5	R7, R8, R137, R139, R195	4989	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
58	14	R11, R12, R62, R63, R64, R65, R66, R173, R400, R401, R402, R403, R404, R405	301R	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
59	2	R13, R14	9089	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
60	12	R15, R16, R26, R27, R28, R51, R52, R57, R72, R73, R92, R93	100R	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
61	4	R17, R86, R163, R164	3K12	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
62	2	R18, R19	150R	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
63	13	R20, R21, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R49, R50, R53, R54, R55, R56, R94, R95, R96, R114, R115, R116, R128, R129, R133, R134, R136	75R	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
64	9	R22, R23, R24, R25, R67, R74, R75, R165, R166	2K43	1%		PANASONIC	ERJ2RKF2431X	R0402	0402
65	3	R42, R48, R61	10.0K	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
66	1	R43, R47, R60	634K	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
67	1	R68	1M	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
68	1	R69	1K69	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
69	2	R70, R71	2K74	1%		PANASONIC	ERJ2RKF2741X	R0402	0402
70	2	R76, R77	3K01	1%		PANASONIC	ERJ2RKF3011X	R0402	0402
71	1	R78	681R	1%		PANASONIC	ERJ2RKF6810X	R0402	0402
72	17	R79, R80, R81, R86, R91, R127, R132, R135, R140, R141, R177, R178, R183, R184, R185, R186, R187	1K50	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
73	1	R83	4989	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
74	3	R85, R117, R193	562R	1%		PANASONIC	ERJ2RKF5620X	R0402	0402
75	29	R99, R101, R101, R102, R103, R106, R109, R111, R118, R119, R120, R121, R124, R125, R126, R174, R175, R176, R197, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209	4K75	1%		PANASONIC	ERJ2RKF4751X	R0402	0402
76	1	R110	511R	1%		PANASONIC	ERJ2RKF5110X	R0402	0402
77	2	R112, R113	4082	1%		PANASONIC	ERJ2RKF408X	R0402	0402
78	1	R130	3784	1%		PANASONIC	ERJ2RKF3784X	R0402	0402
79	1	R131	1K50	1%		PANASONIC	ERJ2RKF1000X	R0402	0402
80	1	R138	750R	1%		PANASONIC	ERJ2RKF7500X	R0402	0402
81	1	R162	1K87	1%		PANASONIC	ERJ2RKF1871X	R0402	0402
82	1	R167	7K5	1%		PANASONIC	ERJ2RKF7501X	R0402	0402
83	2	R168, R169	71K5	1%		PANASONIC	ERJ2RKF7152X	R0402	0402
84	2	R170, R171	5K11	1%		PANASONIC	ERJ2RKF5111X	R0402	0402
85	7	R189, R190, R191, R192, R196, R198, R199	6084	1%		PANASONIC	ERJ2RKF6084X	R0402	0402
86	8	R210, R211, R212, R213, R214, R215, R216, R217	R003	1%		PANASONIC	ERJ2RKF0030X	R2512	2512
87	1	R220	1.5A	1%		MURATA	BUM18P0102N1L	R2512	2512
88	1	SM1				CTS	219-8MST	SMW_SM_DIP	SM_DIP16
89	1	TEST1							
90	10	TP1, TP2, TP3, TP15, TP16, TP17, TP18, TP19, TP20, TP21	KEYSTONE	5000		KEYSTONE	5000	TESTPOINT	TESTPOINT
91	3	TP4, TP5, TP6	KEYSTONE	DMP		KEYSTONE	DMP	TESTPOINT	TESTPOINT
92	4	TP7, TP8, TP9, TP10	KEYSTONE	5001		KEYSTONE	5001	TESTPOINT	TESTPOINT
93	4	TP11, TP12, TP13, TP14	KEYSTONE	5002		KEYSTONE	5002	TESTPOINT	TESTPOINT
94	1	U1	ANALOG_DEVICIS	AD9887AKS-170		ANALOG_DEVICIS	AD9887AKS-170	MS08P160	
95	1	U2							