

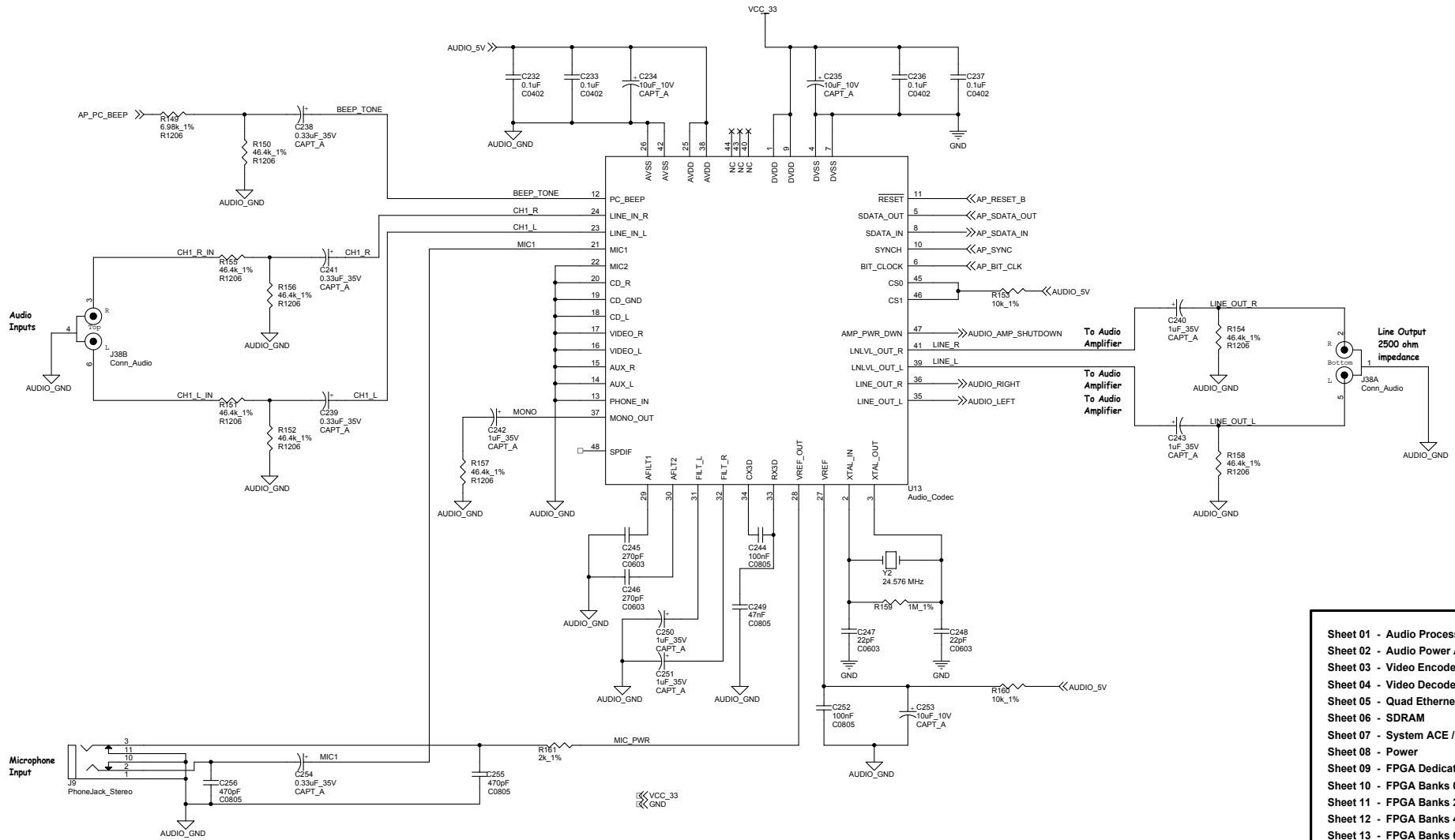
Calinx EECS150 FPGA Lab Board

SCHEMATICS & Bill of Material

Page 2	(Sheet 1)	Audio Processor
Page 3	(Sheet 2)	Audio Power Amplifier
Page 4	(Sheet 3)	Video Encoder
Page 5	(Sheet 4)	Video Decoder
Page 6	(Sheet 5)	Quad Ethernet
Page 7	(Sheet 6)	SDRAM
Page 8	(Sheet 7)	System ACE / CompactFlash
Page 9	(Sheet 8)	Power
Page 10	(Sheet 9)	FPGA Dedicated Pins
Page 11	(Sheet 10)	FPGA Banks 0 & 1
Page 12	(Sheet 11)	FPGA Banks 2 & 3
Page 13	(Sheet 12)	FPGA Banks 4 & 5
Page 14	(Sheet 13)	FPGA Banks 6 & 7
Pages 15 thru 20		Bill of Material

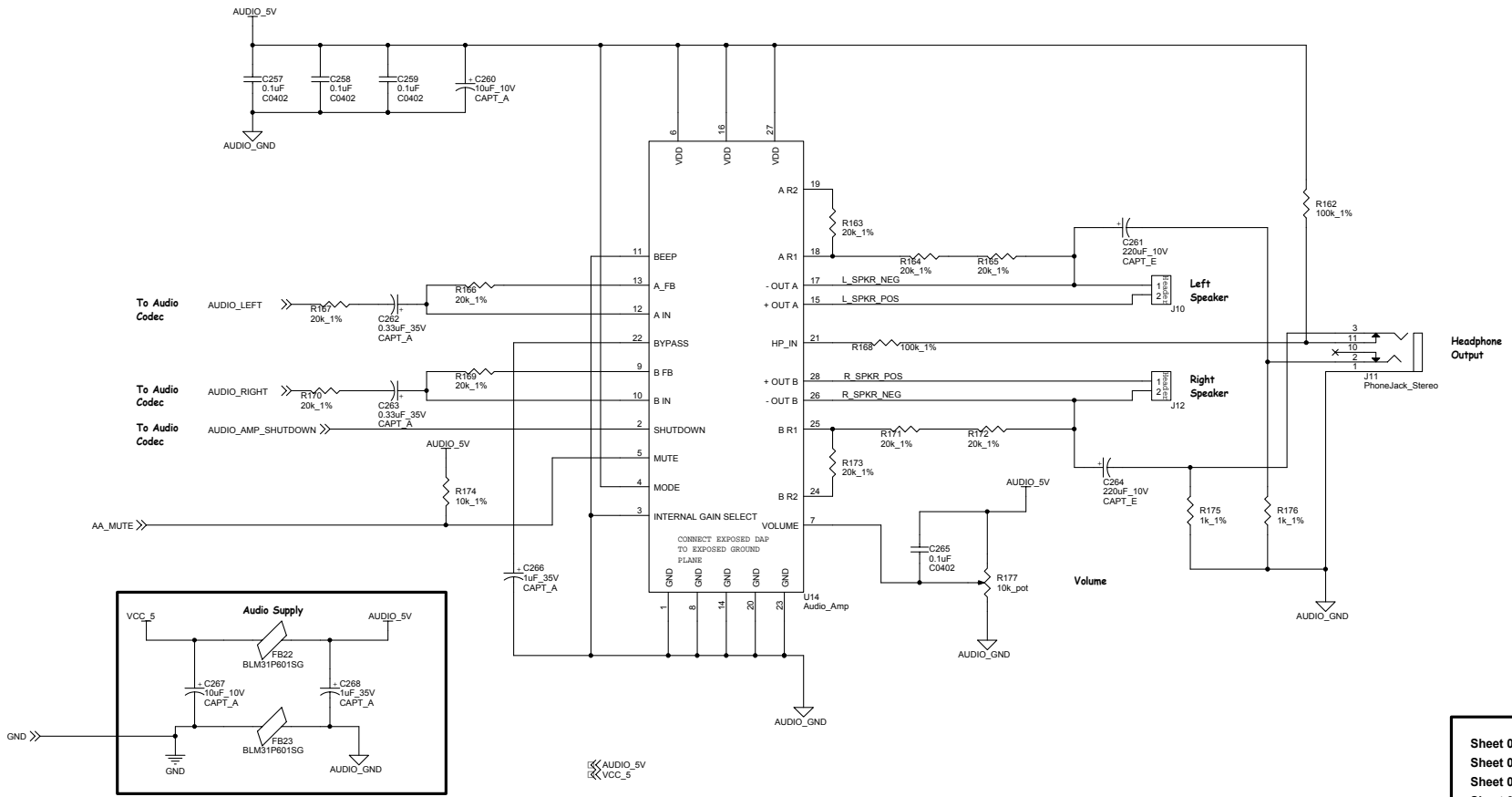
October 30, 2002

NOTES :
 ALL AP_* OFF PAGE CONNECTORS GO TO FPGA BANK 1.



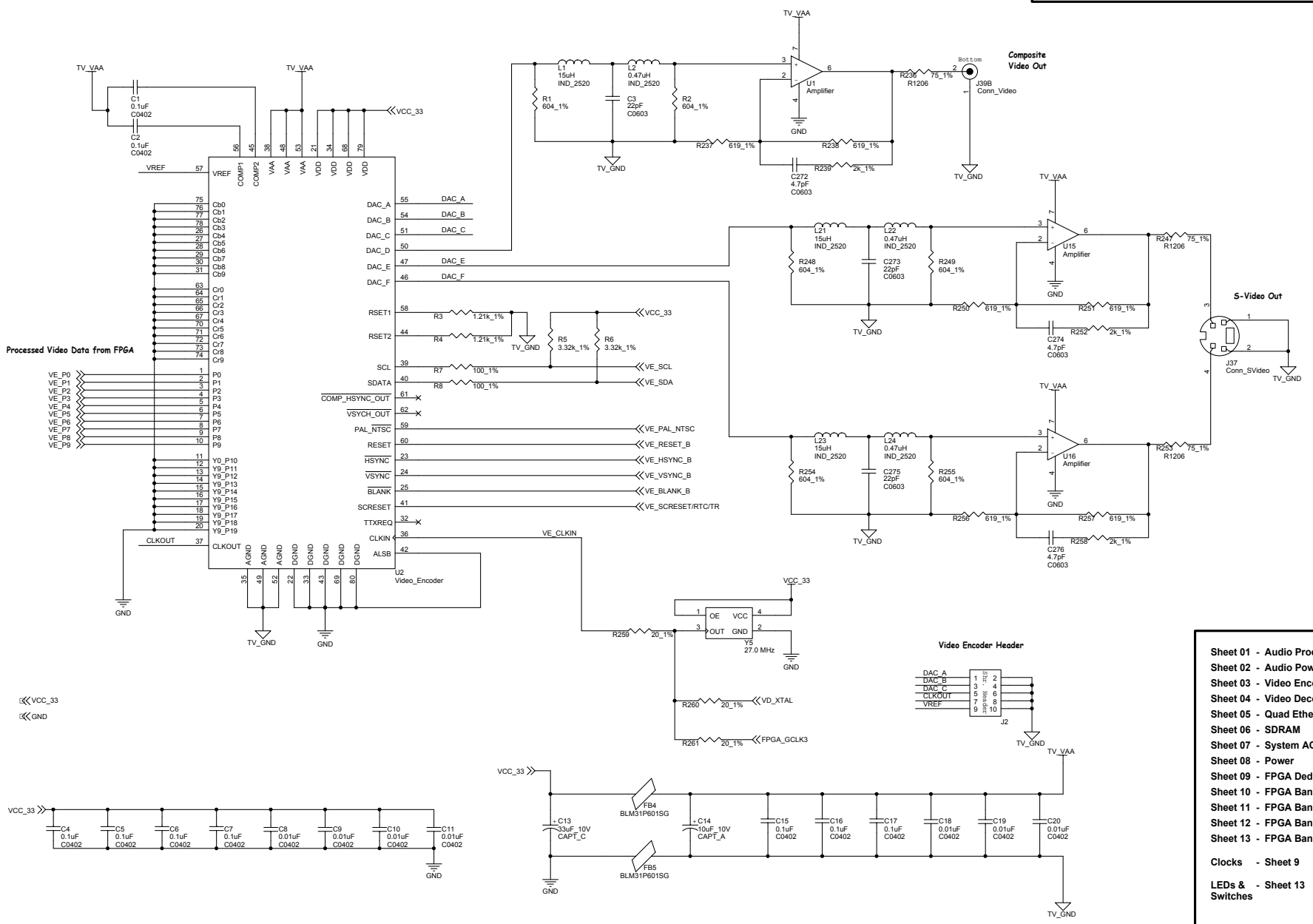
- Sheet 01 - Audio Processor
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NOTES :
 ALL AA_* OFF PAGE CONNECTORS GO TO FPGA BANK 2.



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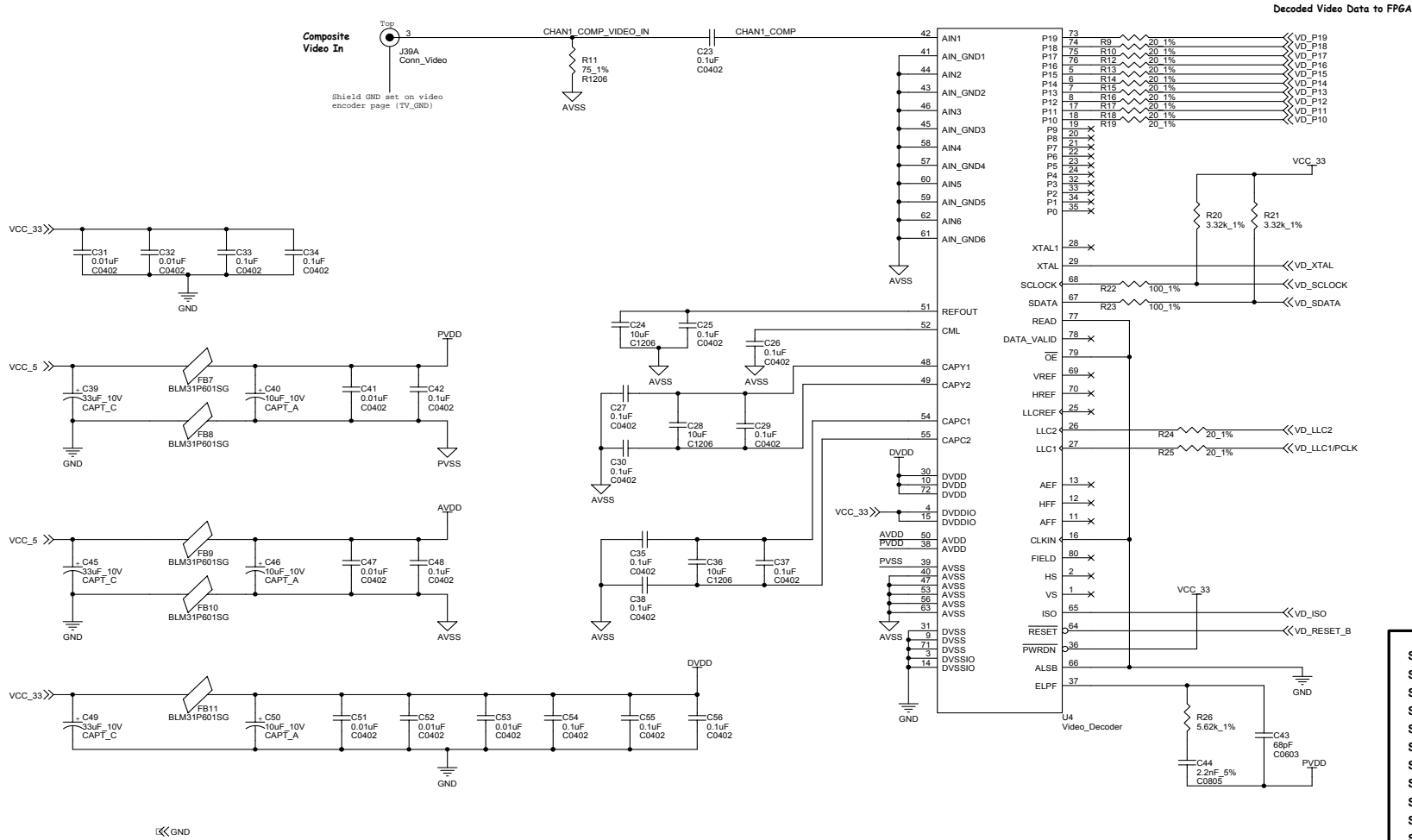
NOTES :
 ALL VE_* OFF PAGE CONNECTORS GO TO FPGA BANK 3.



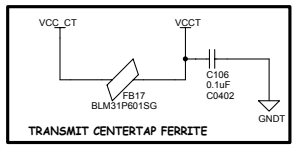
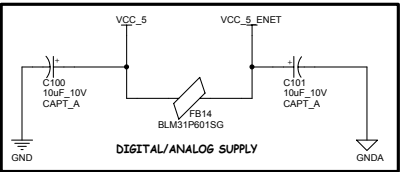
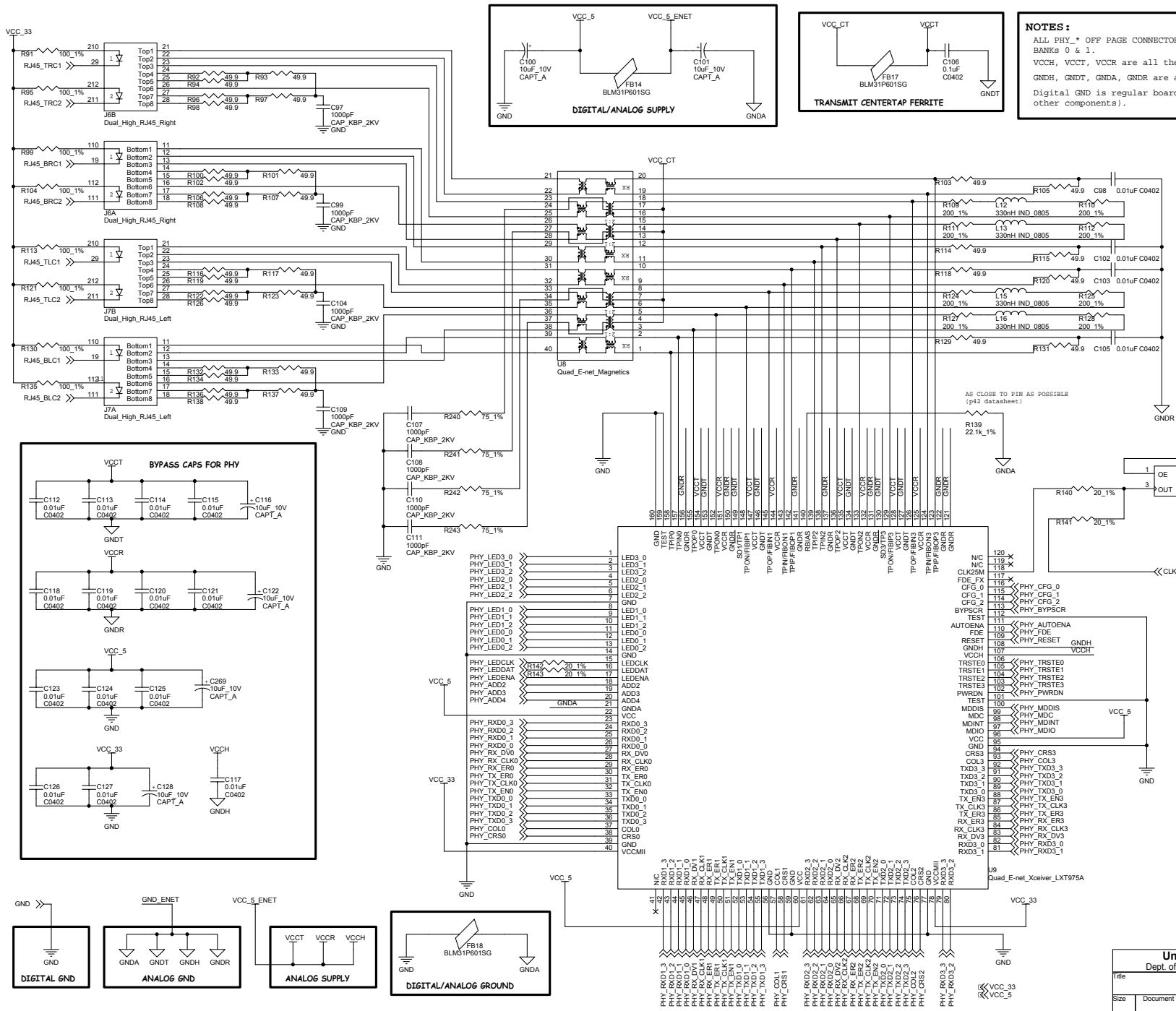
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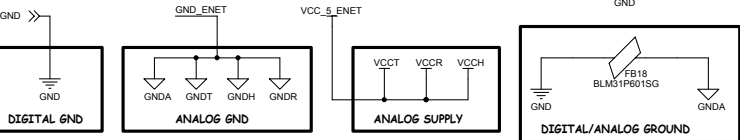
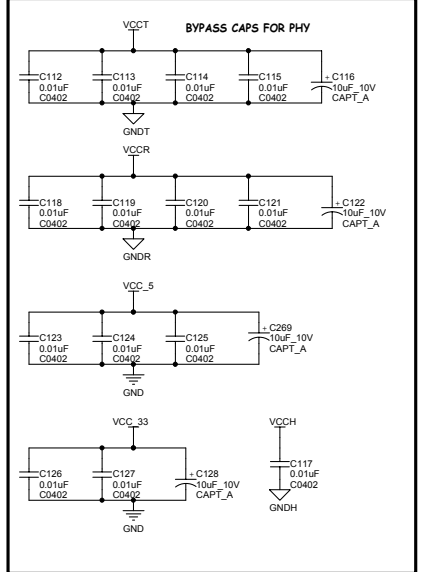
ALL VD_* OFF PAGE CONNECTORS GO TO FPGA BANKS 2 & 3.



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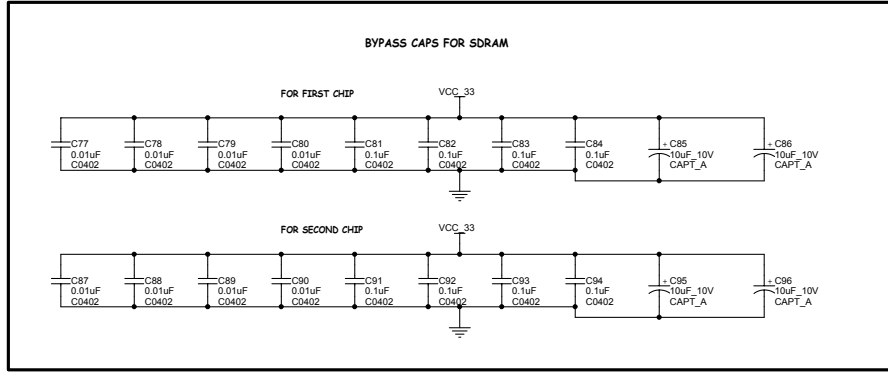
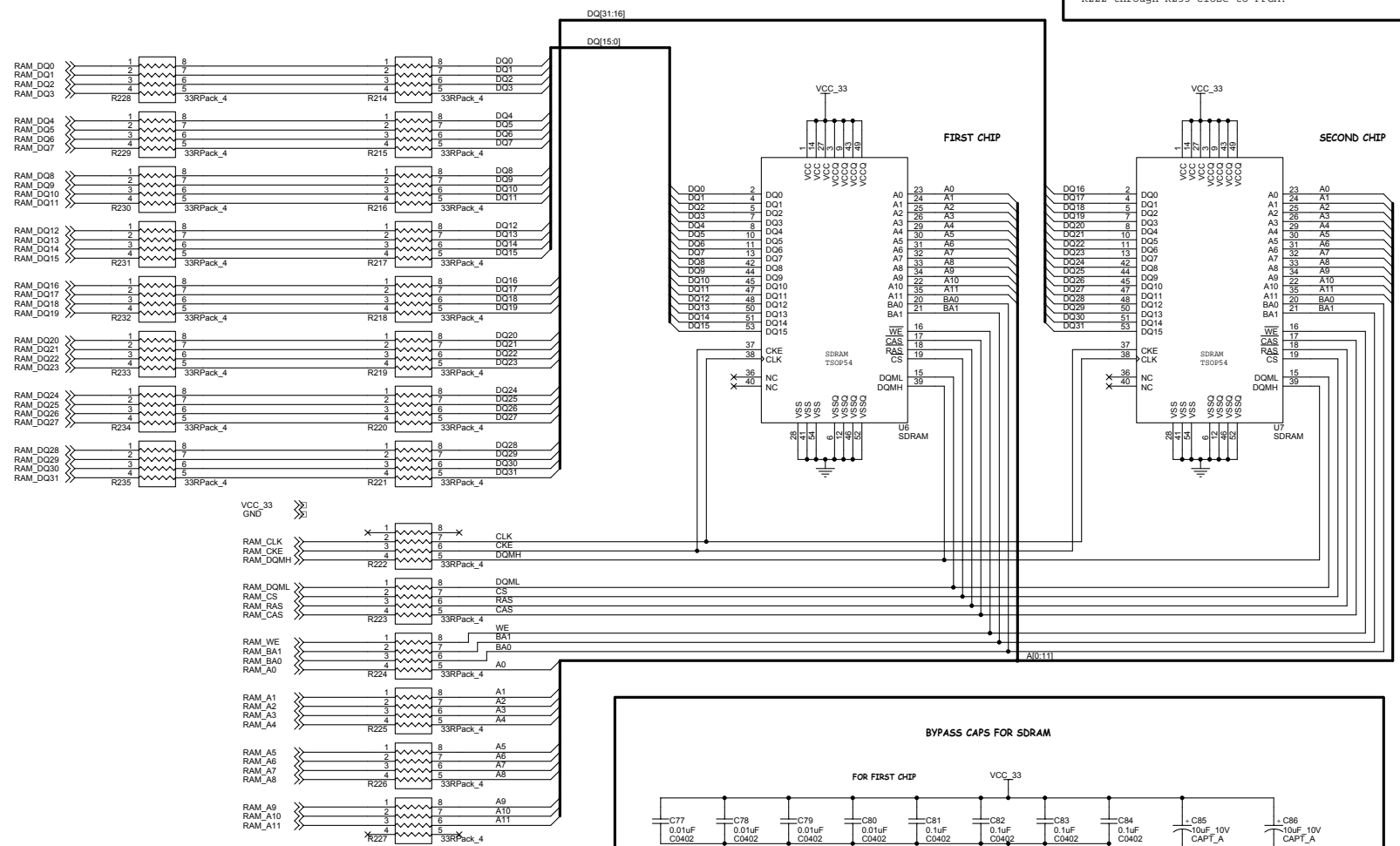


NOTES:
 ALL PHY_* OFF PAGE CONNECTORS GO TO FPGA BANKS 0 & 1.
 VCC, VCC, VCCR are all the same 'analog' plane.
 GNDH, GNDT, GND, GNDR are all the same GND.
 Digital GND is regular board GND (GND to all other components).



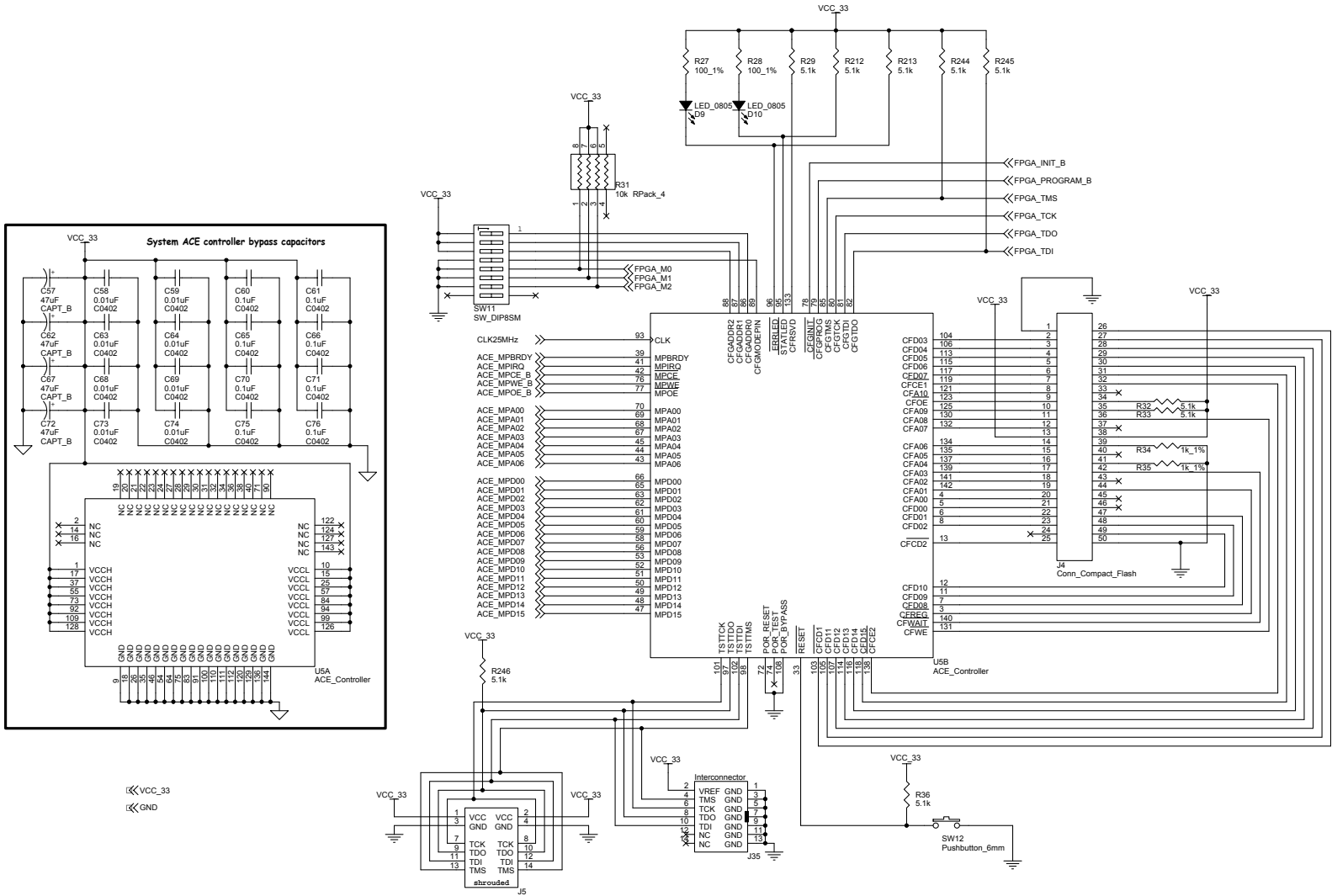
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NOTES:
 ALL RAM_* OFF PAGE CONNECTORS GO TO FPGA BANK 7.
 R214, R215, R216, R217 close to U6.
 R218, R219, R220, R221 close to U7.
 R222 through R235 close to FPGA.

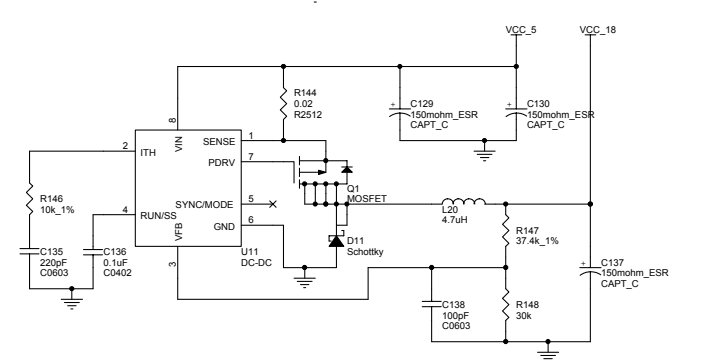
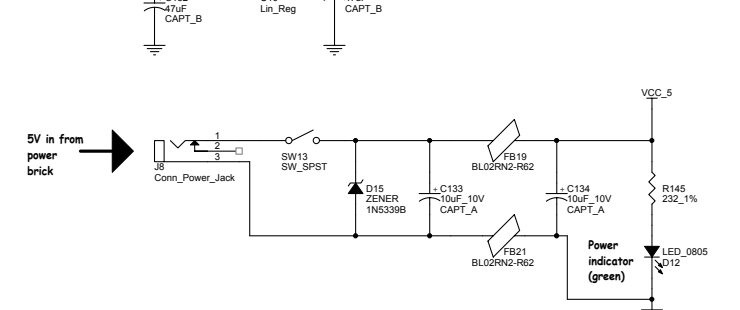
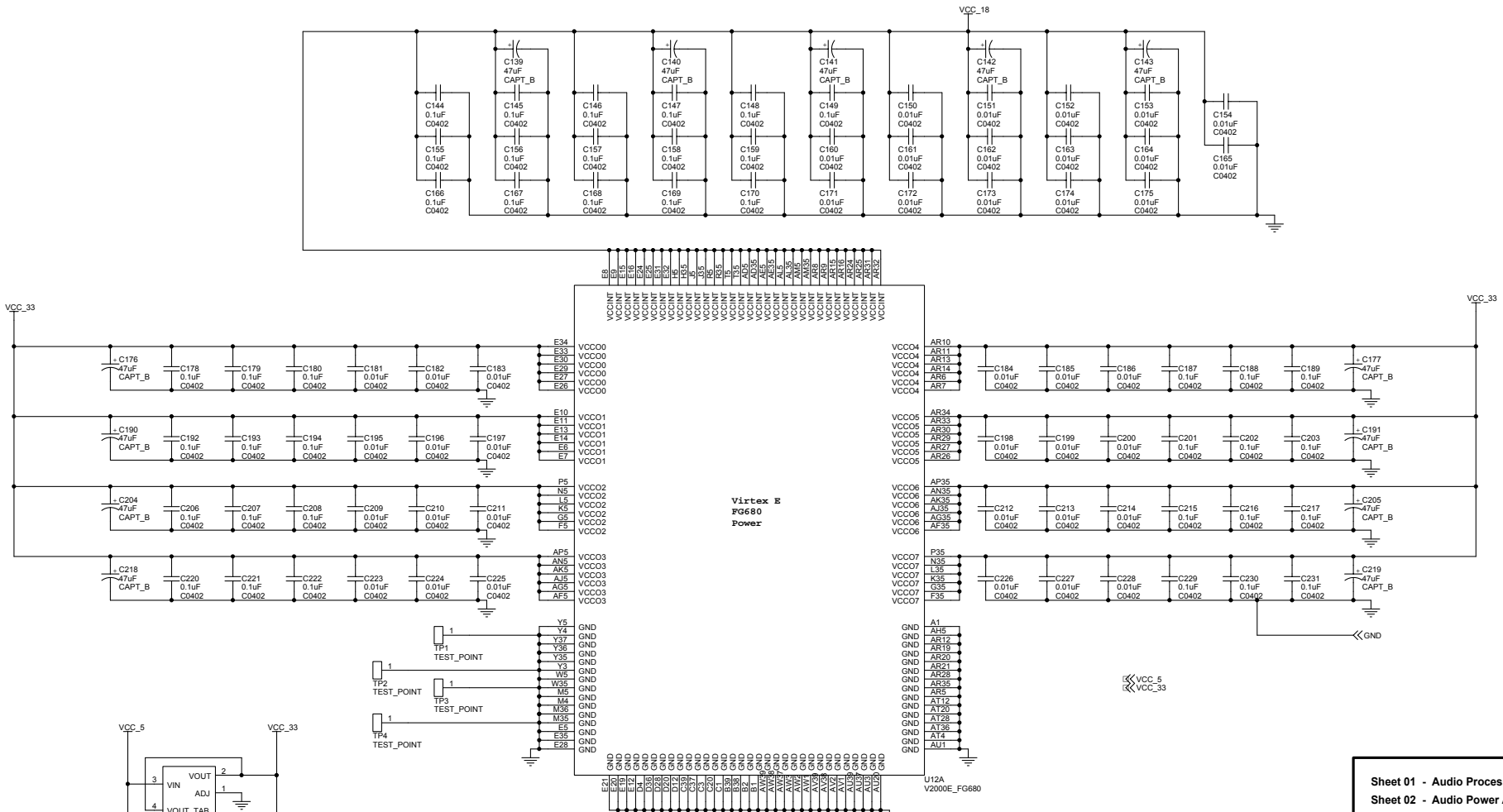


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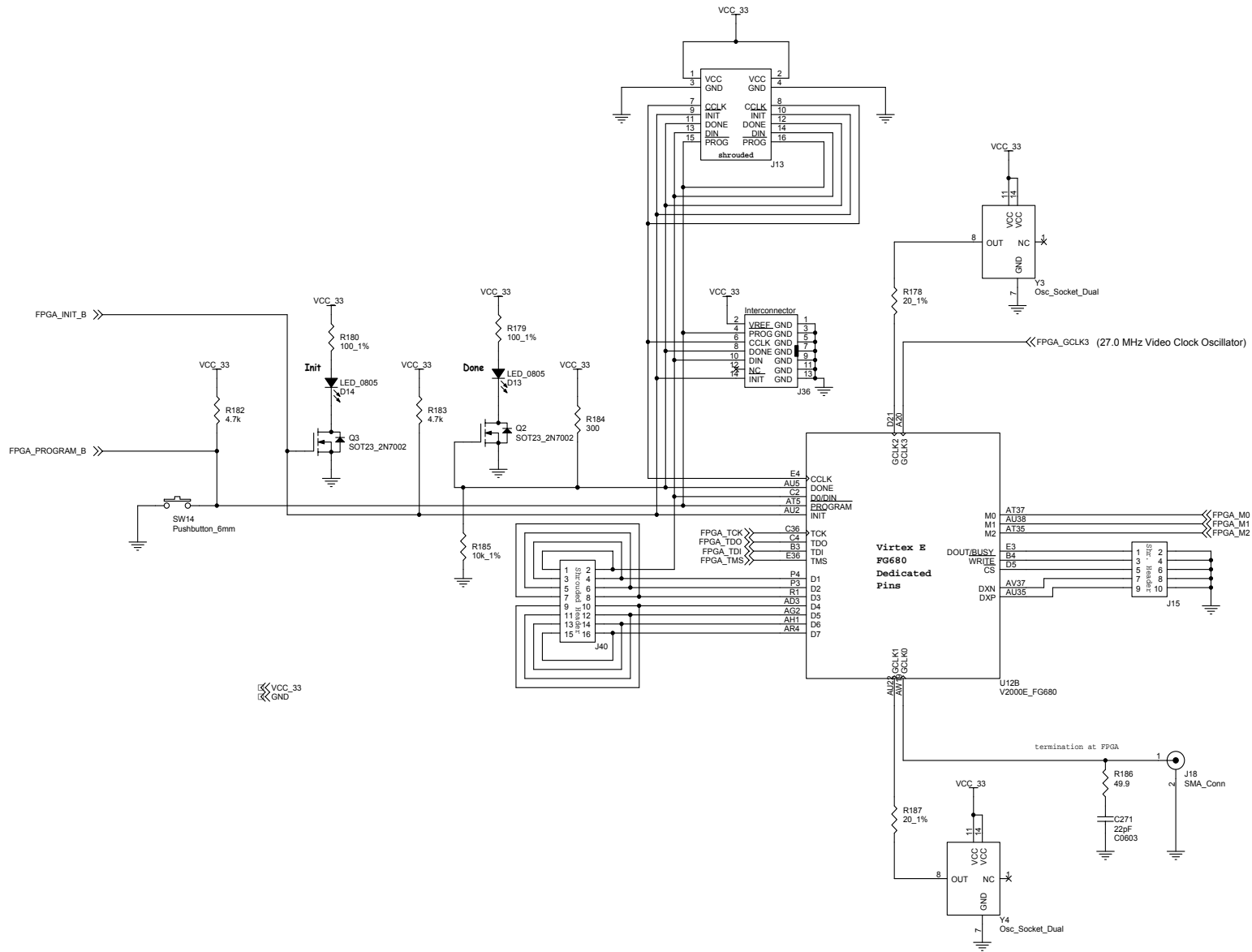
NOTES:
ALL ACE_* PINS GO TO FPGA BANK 2.



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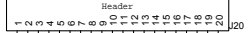
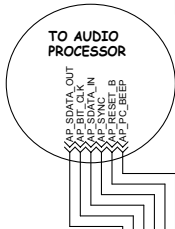
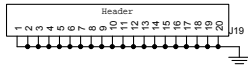


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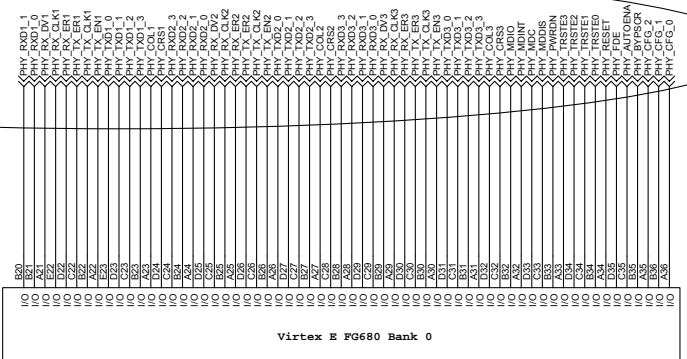
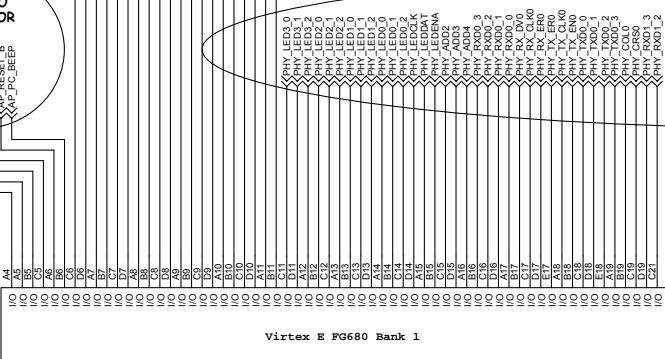
Ethernet Transceiver		
Transceiver Pin Name	Transceiver Pin Number	FPGA Pin Number
ADD3	18	C15
ADD3	19	D15
ADD4	20	A16
AUTOENA	111	C35
BYPSCR	113	B35
CFG_0	116	A36
CFG_1	115	B36
CFG_2	114	A35
COL0	37	B19
COL1	57	A23
COL2	75	A27
COL3	93	D32
CRS0	38	C19
CRS1	58	D24
CRS2	76	C28
CRS3	94	C32
FDE	110	D35
LED0_0	11	A14
LED0_1	12	B14
LED0_2	13	C14
LED1_0	8	B13
LED1_1	9	C13
LED1_2	10	D13
LED2_0	4	B12
LED2_1	5	C12
LED2_2	6	A13
LED3_0	1	C11
LED3_1	2	D11
LED3_2	3	A12
LEDCLK	15	D14
LEDDAT	16	A15
LEDENA	17	B15
MDC	99	D33
MDDIS	100	C33
MDINT	98	A32
MDIO	97	B32
PWRDN	102	B33
RESET	109	A34
RXD0_0	26	A17
RXD0_1	25	D16
RXD0_2	24	C16
RXD0_3	23	B16
RXD1_0	45	B21
RXD1_1	44	B20
RXD1_2	43	C21
RXD1_3	42	D19
RXD2_0	64	D25
RXD2_1	63	A24
RXD2_2	62	B24

Ethernet Transceiver (cont.)		
Transceiver Pin Name	Transceiver Pin Number	FPGA Pin Number
TXD2_3	61	C24
RXD3_0	82	C29
RXD3_1	81	D29
RXD3_2	80	A28
RXD3_3	79	B28
RX_CLK0	28	C17
RX_CLK1	47	B22
RX_CLK2	66	B25
RX_CLK3	84	A29
RX_DV0	27	B17
RX_DV1	46	A21
RX_DV2	65	C25
RX_DV3	83	B29
RX_ER0	29	D17
RX_ER1	48	D22
RX_ER2	67	A25
RX_ER3	85	D30
TRSTE0	106	B34
TRSTE1	105	C34
TRSTE2	104	D34
TRSTE3	103	A33
TX_CLK0	31	A18
TX_CLK1	50	B22
TX_CLK2	69	C26
TX_CLK3	87	B30
TXD0_0	33	C18
TXD0_1	34	D18
TXD0_2	35	E18
TXD0_3	36	A19
TXD1_0	52	B23
TXD1_1	53	D23
TXD1_2	54	C23
TXD1_3	55	B23
TXD2_0	71	A26
TXD2_1	72	D27
TXD2_2	73	C27
TXD2_3	74	B27
TXD3_0	89	D31
TXD3_1	90	C31
TXD3_2	91	B31
TXD3_3	92	A31
TX_EN0	32	B18
TX_EN1	51	A22
TX_EN2	70	B26
TX_EN3	88	A30
TX_ER0	30	E17
TX_ER1	49	C22
TX_ER2	68	D26
TX_ER3	86	C30

Audio Codec		
Codec Pin Name	Codec Pin Number	FPGA Pin Number
BIT_CLK	6	A5
PC_BEEP	12	B6
RESET_B	11	A6
SDATA_IN	8	B5
SDATA_OUT	5	A4
SYNC	10	C5



TO ETHERNET TRANSCEIVER



←← GND

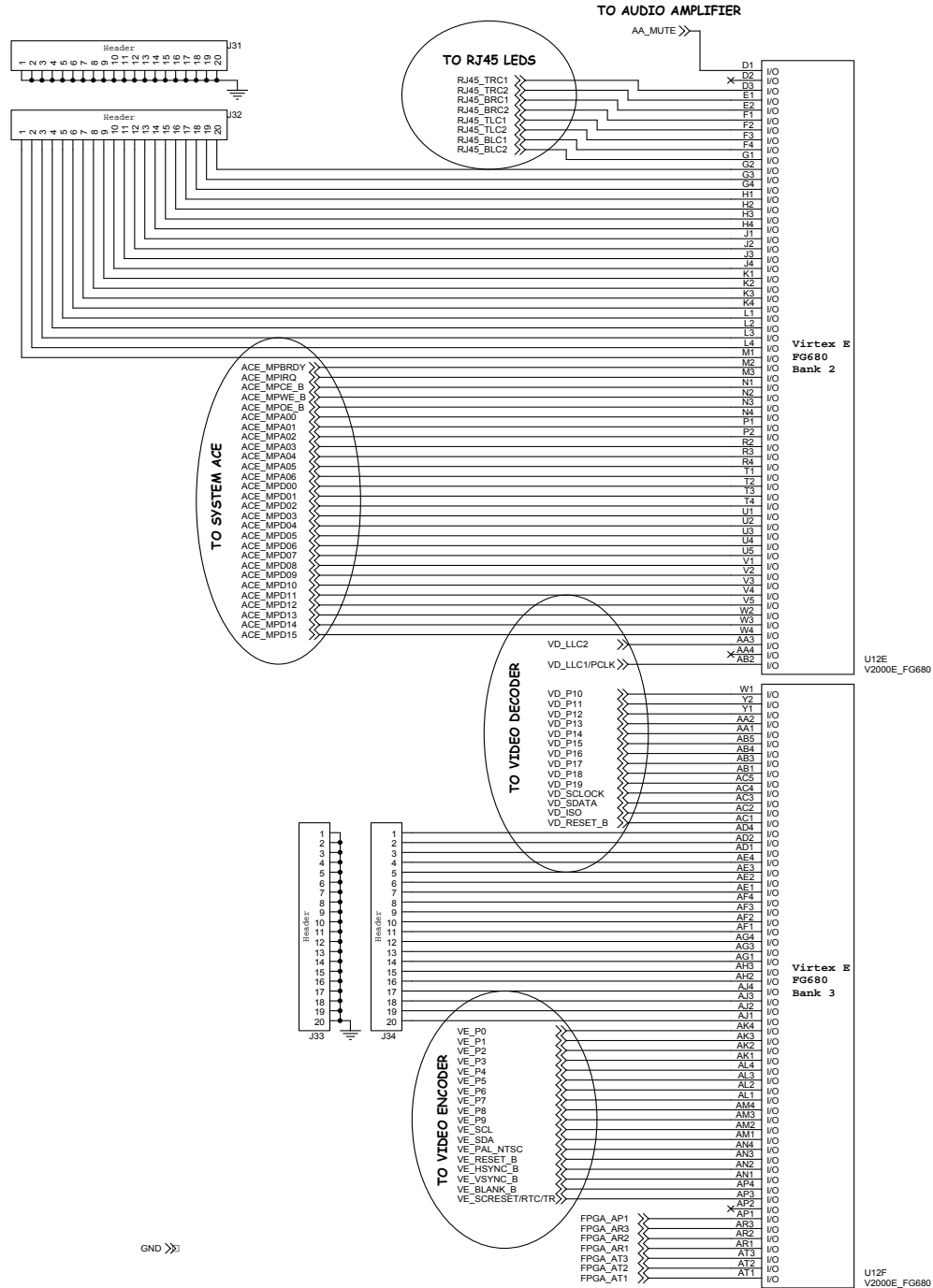
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SystemACE		
ACE Pin Name	ACE Pin Number	FPGA Pin Number
MFA00	70	V4
MFA01	69	P1
MFA02	68	P2
MFA03	67	R2
MFA04	45	R3
MFA05	44	R4
MFA06	43	T1
MPBRDY	39	M2
MPCE_B	42	N1
MPD00	66	T2
MPD01	65	T3
MPD02	63	T4
MPD03	62	U1
MPD04	61	U2
MPD05	60	U3
MPD06	59	U4
MPD07	58	U5
MPD08	56	V1
MPD09	53	V2
MPD10	52	V3
MPD11	51	V4
MPD12	50	V5
MPD13	49	W2
MPD14	48	W3
MPD15	47	W4
MPIRQ	41	M3
MPOE_B	77	N3
MPWE_B	76	N2

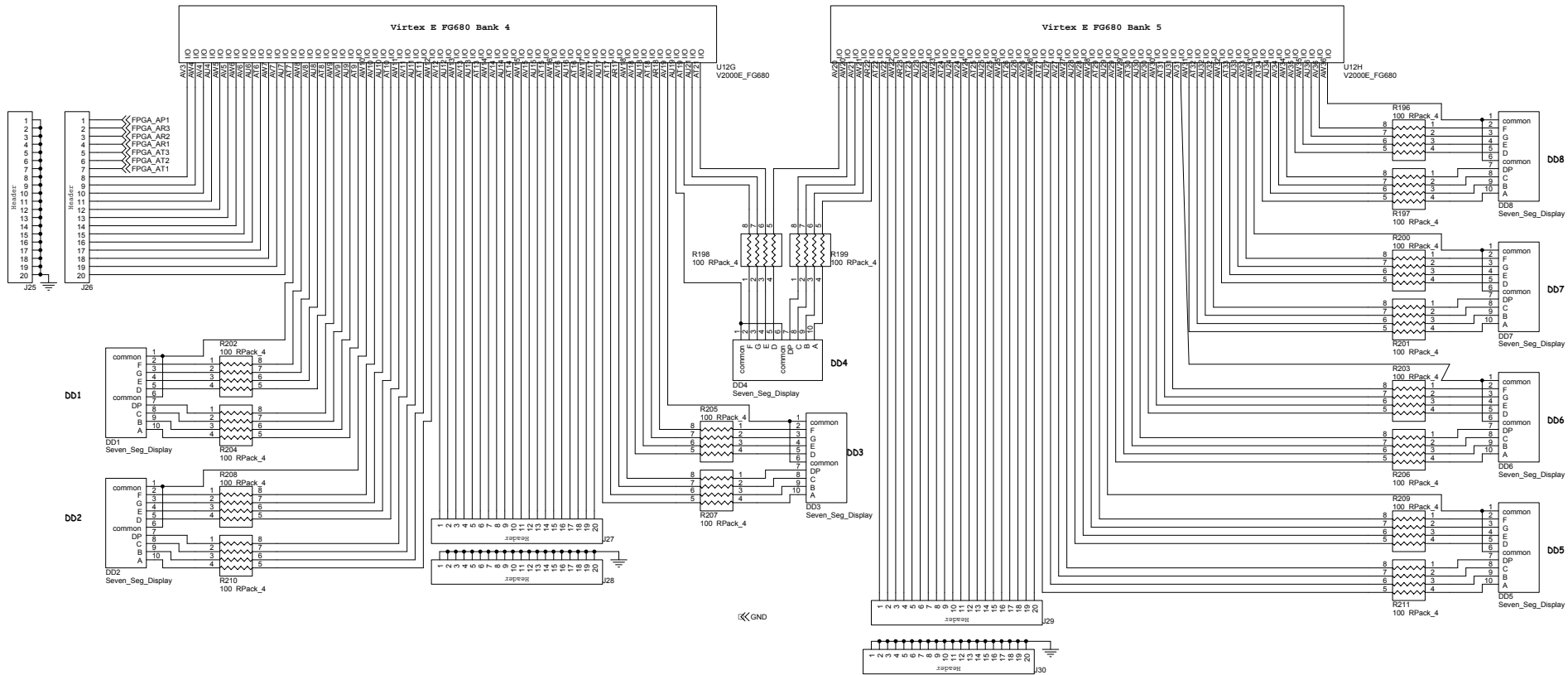
Audio Amplifier		
Audio Amp Pin Name	Audio Amp Pin Number	FPGA Pin Number
MUTE		D1

Video Decoder		
Video Decoder Pin Name	Video Decoder Pin Number	FPGA Pin Number
ISO	55	AC2
LLC1/PCLK	27	AB2
LLC2	26	AA3
P10	18	W1
P11	17	Y2
P12	8	Y1
P13	7	AA2
P14	6	AA1
P15	5	AB5
P16	76	AB4
P17	75	AB3
P18	74	AB1
P19	73	AC5
RESSET_B	64	AC1
SCLOCK	68	AC4
SDATA	67	AC3
XTAL	29	AA4

Video Encoder		
Video Encoder Pin Name	Video Encoder Pin Number	FPGA Pin Number
BLANK_B	25	AP4
CLKIN	36	AP2
HSYNC_B	24	AM2
P0	1	AK4
P1	2	AK3
P2	3	AK2
P3	4	AK1
P4	5	AL4
P5	6	AL3
P6	7	AL2
P7	8	AL1
P8	9	AM4
P9	10	AM3
PAL_NTSC	59	AN4
RESSET_B	60	AN3
SCL	39	AM2
SCRRESSET/RTC/TR	41	AP3
SDA	40	AM1
VSYNC_B	23	AN1

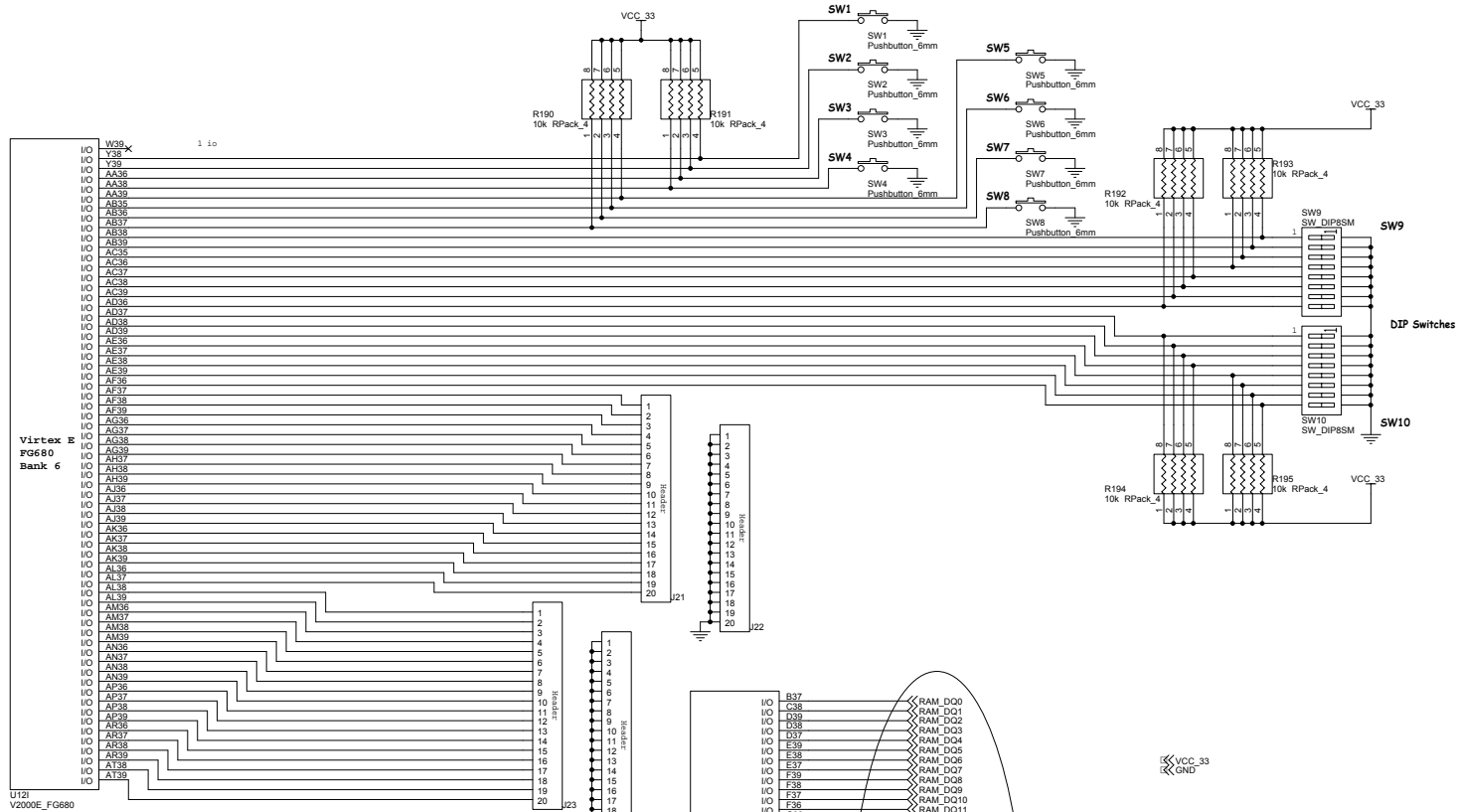


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Seven Segment Displays															
Display	FPGA Pin	Display	FPGA Pin	Display	FPGA Pin	Display	FPGA Pin	Display	FPGA Pin	Display	FPGA Pin	Display	FPGA Pin	Display	FPGA Pin
A	AT9	A	AW12	A	AU17	A	AR22	A	AT27	A	AV29	A	AW31	A	AT34
B	AU9	B	AT11	B	AT17	B	AW21	B	AU27	B	AV29	B	AT32	B	AU34
C	AV9	C	AU11	C	AR17	C	AV21	C	AV27	C	AT30	C	AU32	C	AV34
D	AT8	D	AW11	D	AV18	D	AV20	D	AU28	D	AV30	D	AW32	D	AV35
E	AU8	E	AT10	E	AU18	E	AT21	E	AV28	E	AW30	E	AT33	E	AW35
F	AW8	F	AV10	F	AR18	F	AT19	F	AT29	F	AU31	F	AV33	F	AV36
G	AV8	G	AU10	G	AT18	G	AU21	G	AW28	G	AT31	G	AU33	G	AU36
Common Point	AT7	Common Point	AW10	Common Point	AV19	Common Point	AU19	Common Point	AU29	Common Point	AV31	Common Point	AW33	Common Point	AW36
	AW9		AV11		AW18		AW20		AW27		AU30		AV32		AW34

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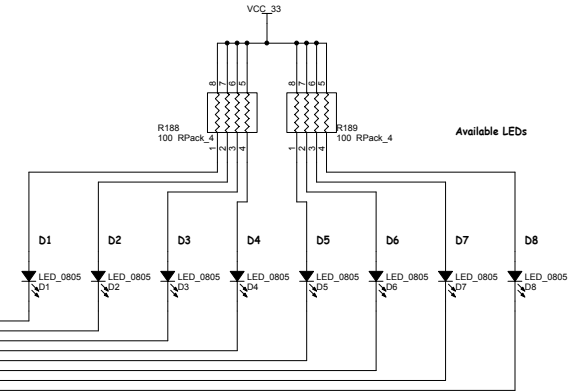
SDRAM		
SDRAM Pin	SDRAM Pin	FPGA Pin
Name	Number	Pin
A1	24 A&B	F36
A2	25 A&B	F39
A3	26 A&B	F37
A4	29 A&B	F36
A5	30 A&B	T39
A6	31 A&B	T38
A7	32 A&B	T37
A8	33 A&B	T36
A9	34 A&B	T39
A10	22 A&B	U38
A11	35 A&B	U37
BA0	20 A&B	P37
BA1	21 A&B	P38
CAS	17 A&B	N36
CKE	37 A&B	M38
CLK	38 A&B	M39
CS	19 A&B	N38
DQ0	2 A	B37
DQ1	4 A	C38
DQ2	5 A	D39
DQ3	7 A	D38
DQ4	8 A	D37
DQ5	10 A	E39
DQ6	11 A	E38
DQ7	13 A	E37
DQ8	42 A	F39
DQ9	44 A	F38
DQ10	45 A	F37
DQ11	47 A	F36
DQ12	48 A	G39
DQ13	50 A	G38
DQ14	51 A	G37
DQ15	53 A	G36
DQ16	2 B	H39
DQ17	4 B	H38
DQ18	5 B	H37
DQ19	7 B	H36
DQ20	8 B	J39
DQ21	10 B	J38
DQ22	11 B	J37
DQ23	13 B	J36
DQ24	42 B	K39
DQ25	44 B	K38
DQ26	45 B	K37
DQ27	47 B	K36
DQ28	48 B	L39
DQ29	50 B	L38
DQ30	51 B	L37
DQ31	53 B	L36
DQM1	39 A&B	M37
DQML	15 A&B	N39
RAS	18 A&B	N37
WE	16 A&B	P39

LEDs (Active Low)	
LED Number	FPGA Pin
D1	U35
D2	U35
D3	V39
D4	V38
D5	V37
D6	V36
D7	V35
D8	W38

DIP Switches (Active Low)	
Switch Number	FPGA Pin
SW9-1	AB38
SW9-2	AB39
SW9-3	AC35
SW9-4	AC36
SW9-5	AC37
SW9-6	AC38
SW9-7	AC39
SW9-8	AD36
SW10-1	AD37
SW10-2	AD38
SW10-3	AD39
SW10-4	AE36
SW10-5	AE37
SW10-6	AE38
SW10-7	AE39
SW10-8	AF36

Pushbutton Switches (Active Low)	
Switch Number	FPGA Pin
SW1	Y38
SW2	V39
SW3	AA36
SW4	AA38
SW5	AA39
SW6	AA35
SW7	AB36
SW8	AB37

IO B37	<< RAM_DQ0
IO C38	<< RAM_DQ1
IO D39	<< RAM_DQ2
IO E38	<< RAM_DQ3
IO F39	<< RAM_DQ4
IO G38	<< RAM_DQ5
IO H39	<< RAM_DQ6
IO I37	<< RAM_DQ7
IO J38	<< RAM_DQ8
IO K39	<< RAM_DQ9
IO L37	<< RAM_DQ10
IO M38	<< RAM_DQ11
IO N39	<< RAM_DQ12
IO O38	<< RAM_DQ13
IO P39	<< RAM_DQ14
IO Q38	<< RAM_DQ15
IO R39	<< RAM_DQ16
IO S38	<< RAM_DQ17
IO T39	<< RAM_DQ18
IO U38	<< RAM_DQ19
IO V39	<< RAM_DQ20
IO W38	<< RAM_DQ21
IO X39	<< RAM_DQ22
IO Y38	<< RAM_DQ23
IO Z39	<< RAM_DQ24
IO AA38	<< RAM_DQ25
IO AB39	<< RAM_DQ26
IO AC38	<< RAM_DQ27
IO AD39	<< RAM_DQ28
IO AE38	<< RAM_DQ29
IO AF39	<< RAM_DQ30
IO AG38	<< RAM_DQ31
IO AH39	<< RAM_CLK
IO AI38	<< RAM_CKE
IO AJ39	<< RAM_DQM#
IO AK38	<< RAM_DQML
IO AL39	<< RAM_CS
IO AM38	<< RAM_RAS
IO AN39	<< RAM_CAS
IO AO38	<< RAM_WE
IO AP39	<< RAM_BA1
IO AQ38	<< RAM_BA0
IO AR39	<< RAM_A0
IO AS38	<< RAM_A1
IO AT39	<< RAM_A2
IO AU38	<< RAM_A3
IO AV39	<< RAM_A4
IO AW38	<< RAM_A5
IO AX39	<< RAM_A6
IO AY38	<< RAM_A7
IO AZ39	<< RAM_A8
IO BA38	<< RAM_A9
IO BB39	<< RAM_A10
IO BC38	<< RAM_A11
IO BD39	
IO BE38	
IO BF39	
IO BG38	
IO BH39	
IO BI38	
IO BJ39	
IO BK38	
IO BL39	
IO BM38	
IO BN39	
IO BO38	
IO BP39	
IO BQ38	
IO BR39	
IO BS38	
IO BT39	
IO BU38	
IO BV39	
IO BW38	
IO BX39	
IO BY38	
IO BZ39	
IO CA38	



- Sheet 01 - Audio Processor
 - Sheet 02 - Audio Power Amp.
 - Sheet 03 - Video Encoder
 - Sheet 04 - Video Decoder
 - Sheet 05 - Quad Ethernet
 - Sheet 06 - SDRAM
 - Sheet 07 - System ACE / CF
 - Sheet 08 - Power
 - Sheet 09 - FPGA Dedicated Pins
 - Sheet 10 - FPGA Banks 0 & 1
 - Sheet 11 - FPGA Banks 2 & 3
 - Sheet 12 - FPGA Banks 4 & 5
 - Sheet 13 - FPGA Banks 6 & 7
- Clocks - Sheet 9
- LEDs & Switches - Sheet 13

"CAL_BEARS_002" Bill of Material - Made from Rev: A11 - August 26, 2002 (see changes below)

Quan Per	Reference	Part Value	Footprint	Manufacturer	Part Number
91	C1,C2,C4,C5,C6,C7,C15, C16,C17,C23,C25,C26,C27, C29,C30,C33,C34,C35,C37, C38,C42,C48,C54,C55,C56, C60,C61,C65,C66,C70,C71, C75,C76,C81,C82,C83,C84, C91,C92,C93,C94,C106, C136,C144,C145,C146,C147, C148,C149,C155,C156,C157, C158,C159,C166,C167,C168, C169,C170,C178,C179,C180, C187,C188,C189,C192,C193, C194,C201,C202,C203,C206, C207,C208,C215,C216,C217, C220,C221,C222,C229,C230, C231,C232,C233,C236,C237, C257,C258,C259,C265	0.1uF	C0402	Phycomp	04022F104Z7B20D
6	C3,C247,C248,C271,C273, C275	22pF	C0603	AVX	6035A220JAT
88	C8,C9,C10,C11,C18,C19, C20,C31,C32,C41,C47,C51, C52,C53,C58,C59,C63,C64, C68,C69,C73,C74,C77,C78, C79,C80,C87,C88,C89,C90, C98,C102,C103,C105,C112, C113,C114,C115,C117,C118, C119,C120,C121,C123,C124, C125,C126,C127,C150,C151, C152,C153,C154,C160,C161, C162,C163,C164,C165,C171, C172,C173,C174,C175,C181, C182,C183,C184,C185,C186, C195,C196,C197,C198,C199, C200,C209,C210,C211,C212, C213,C214,C223,C224,C225, C226,C227,C228	0.01uF	C0402	Panasonic	ECJ-0EF1H103Z
4	C13,C39,C45,C49	33uF_10V	CAPT_C	AVX	TAJ3336K010R

21	C14,C40,C46,C50,C85,C86, C95,C96,C100,C101,C116, C122,C128,C133,C134,C234, C235,C253,C260,C267,C269	10uF_10V	CAPT_A	Panasonic	ECS-T1AY106R
3	C24,C28,C36	10uF	C1206	Panasonic	ECJ-3YF1A106Z
1	C43	68pF	C0603	AVX	06035A680JAT
1	C44	2.2nF_5%	C0805	AVX	08051C222JAT
19	C57,C62,C67,C72,C131, C132,C139,C140,C141,C142, C143,C176,C177,C190,C191, C204,C205,C218,C219	47uF	CAPT_B	Panasonic	ECS-T0JX476R
8	C97,C99,C104,C107,C108, C109,C110,C111	1000pF 2KV	Thruhole	Panasonic	ECK-D3D102KBP
3	C129,C130,C137	150mohm_ESR	CAPT_C	Kemet	T495C107M006AS
1	C135	220pF	C0603	Phycomp	06032R221K9B20D
1	C138	100pF	C0603	Phycomp	0603CG101J9B200
6	C238,C239,C241,C254,C262, C263	0.33uF_35V	CAPT_A	Panasonic	ECS-T1VY334R
7	C240,C242,C243,C250,C251, C266,C268	1uF_35V	CAPT_A	Panasonic	ECS-T1VY105R
2	C252,C244	100nF	C0805	AVX	08055C104JAT
2	C246,C245	270pF	C0603	AVX	08055A271KAT
1	C249	47nF	C0805	Panasonic	ECJ-2YB1H473K
2	C256,C255	470pF	C0805	AVX	08051A471JAT
2	C261,C264	220uF_10V	CAPT_E	AVX	TAJE227K010
3	C272,C274,C276	4.7pF	C0603	Vishay	VJ0603A4R7KXAA
8	DD1,DD2,DD3,DD4,DD5,DD6, DD7,DD8	7_Seg_Display	LED_7SEG_MIN	Agilent	HDSP-7503
9	D1,D2,D3,D4,D5,D6,D7,D8, D9	LED_0805	LED0805	Lumex	SML-LXT0805IW

4	D10,D12,D13,D14	LED_0805	LED0805	Lumex	SML-LXT0805GW
1	D11	Schottky	DPAK(TO-252AA)	Int. Rect.	50WQ03FN
1	D15	ZENER	T-18	Microsemi	1N5339B
12	FB4,FB5,FB7,FB8,FB9,FB10,FB11,FB14,FB17,FB18,FB22,FB23	BLM31P601SG	IND_1206	muRata	BLM31P601SG
2	FB21,FB19	BL02RN2-R62	IND_EMIFIL	muRata	BL02RN2-R62
2	J2,J15	Header_2x5_Shrd	HDR_2X5_SHROUD	3M	2510-6002UB
1	J4	Conn_C_Flash	2600077	3M	N7E50-7516HG-50
1	J5	JTAG_Dual_Shrd	HDR_2X7_SHROUD	3M	2514-6002UB
1	J6	Dual_Hi_RJ45_Rt	CON_AMP_P861CF	Amphenol	RJSA-5381-02
1	J7	Dual_Hi_RJ45_Lft	CON_AMP_P861CF	Amphenol	RJSA-5381-02
1	J8	Conn_Power_Jack	CON_ADC002_SLOT	Switchcraft	RAPC722
2	J9,J11	PhoneJack_Stereo	CON_PHN_STER	Switchcraft	35RAPC4BHN2
2	J10,J12	Header_2_Pin	HDR_1X2	3M	929834-02-36
2	J40,J13	Header_2x8_Shrd	HDR_2X8_SHROUD	3M	2516-6002UB
1	J18	SMA_Conn	CON_SMA_ST	Amphenol	901-144-8-RFX
16	J19,J20,J21,J22,J23,J24,J25,J26,J27,J28,J29,J30,J31,J32,J33,J34	Header_20_Pin	HDR_1X20	3M	929834-02-36
2	J35,J36	Interconnector	CON_MOL_2MM_142	Molex	87331-1420
1	J37	Conn_SVideo	CON_CUI_MD40SM	CUI Stack	MD-40SM
1	J38	Conn_Audio	CON_CUI_RCJ_412233	CUI Stack	RCJ-412233
1	J39	Conn_Video	CON_CUI_RCJ_2234	CUI Stack	RCJ02234
3	L1,L21,L23	15uH	IND_2520	Panasonic	ELJ-FC150KF
3	L2,L22,L24	0.47uH	IND_2520	Panasonic	ELJ-FCR47KF
4	L12,L13,L15,L16	330nH	IND_0805	Jaro Comp	HFI-201209-R33J

1	L20	4.7uH	DO3316	JWMiller	PM3316-4R7M
1	Q1	MOSFET	TSOP-6	Siliconix	Si3441DV
2	Q3,Q2	SOT23_2N7002	SOT23	Fairchild	2N7002
6	R1,R2,R248,R249,R254, R255	604_1%	R0805	Panasonic	ERJ-6ENF6040
2	R4,R3	1.21k_1%	R0805	Panasonic	ERJ-6ENF1211
4	R5,R6,R20,R21	3.32k_1%	R0805	Panasonic	ERJ-6ENF3321
16	R7,R8,R22,R23,R27,R28, R91,R95,R99,R104,R113, R121,R130,R135,R179,R180	100_1%	R0805	Panasonic	ERJ-6ENF1000
21	R9,R10,R12,R13,R14,R15, R16,R17,R18,R19,R24,R25, R140,R141,R142,R143,R178, R187,R259,R260,R261	20_1%	R0805	Panasonic	ERJ-6ENF20R0
4	R11,R236,R247,R253	75_1%	R1206	Phycomp	9C12063A75R0FKHFT
1	R26	5.62k_1%	R0805	Panasonic	ERJ-6ENF5621
9	R29,R32,R33,R36,R212, R213,R244,R245,R246	5.1k_5%	R0805	Panasonic	ERJ-6GEYJ512
7	R31,R190,R191,R192,R193, R194,R195	10k R-PAC	CTS743_8P	CTS Corp	743C083103J
4	R34,R35,R175,R176	1k_1%	R0805	Panasonic	ERJ-6ENF1001
33	R92,R93,R94,R96,R97,R98, R100,R101,R102,R103,R105, R106,R107,R108,R114,R115, R116,R117,R118,R119,R120, R122,R123,R126,R129,R131, R132,R133,R134,R136,R137, R138,R186	49.9_1%	R0805	Panasonic	ERJ-6ENF49R9
8	R109,R110,R111,R112,R124, R125,R127,R128	200_1%	R0805	Panasonic	ERJ-6ENF2000
1	R139	22.1k_1%	R0805	Panasonic	ERJ-6ENF2212
1	R144	0.020 OHM	R2512	Panasonic	ERJ-M1WSJ20M

1	R145	232_1%	R0805	Panasonic	ERJ-6ENF2320
5	R146,R153,R160,R174,R185	10k_1%	R0805	Panasonic	ERJ-6ENF1002
1	R147	37.4k_1%	R0805	Panasonic	ERJ-6ENF3742
1	R148	30k_5%	R0805	Phycomp	9C08052A3002JLHFT
1	R149	6.98k_1%	R1206	Phycomp	9C12063A6981FKHFT
8	R150,R151,R152,R154,R155, R156,R157,R158	46.4k_1%	R1206	Phycomp	9C12063A4642FKHFT
1	R159	1M_1%	R0805	Panasonic	ERJ-6ENF1004
4	R161,R239,R252,R258	2k_1%	R0805	Panasonic	ERJ-6ENF2001
2	R168,R162	100k_1%	R0805	Panasonic	ERJ-6ENF1003
10	R163,R164,R165,R166,R167, R169,R170,R171,R172,R173	20k_1%	R0805	Panasonic	ERJ-6ENF2002
1	R177	10k_pot	VRES_3310Y_001	Bourns	3310Y-1-103
2	R183,R182	4.7k_5%	R0805	Panasonic	ERJ-6GEYJ472
1	R184	300_5%	R0805	Panasonic	ERJ-6GEYJ301
18	R188,R189,R196,R197,R198, R199,R200,R201,R202,R203, R204,R205,R206,R207,R208, R209,R210,R211	100 Ohm R-PAC	CTS743_8P	CTS Corp	743C083101J
22	R214,R215,R216,R217,R218, R219,R220,R221,R222,R223, R224,R225,R226,R227,R228, R229,R230,R231,R232,R233, R234,R235	33 Ohm R-PAC	CTS742_8P	CTS Corp	743C083330J
6	R237,R238,R250,R251,R256, R257	619_1%	R0805	Vishay	CRCW08056190
4	R240,R241,R242,R243	75_1%	R0805	Vishay	
10	SW1,SW2,SW3,SW4,SW5,SW6, SW7,SW8,SW12,SW14	PB Sw_6mm	SW_PB_6MM	Panasonic	EVQ-11L07K
3	SW9,SW10,SW11	SW_DIP8SM	DIPSW_SM16_C&K	C&K Comp	SDA08H1SKD

1	SW13	SW_SPST	SW_SPDT_S3	E-Switch	600SP1S3M1Q
4	TP1,TP2,TP3,TP4	TEST_POINT	JACK_95_145	Concord Elec	10-109-3
3	U1,U15,U16	Amplifier	SO8	Analog Dev	AD8051AR
1	U2	Video_Encoder	LQFP80	Analog Dev	ADV7194KST
1	U4	Video_Decoder	LQFP80	Analog Dev	ADV7185
1	U5	ACE_Controller	SYSTEMACE	Xilinx	XCCACE-TQ144I
2	U6,U7	SDRAM	TSOP54	Micron	MT48LC8M16A2TG
1	U8	Quad_Enet_Mag	NX40	Delta Corp	LF8701B
1	U9	Quad_E-net_IC_LXT975A	PQFP160	Intel	LXT975A
1	U10	Lin_Reg	TO_263	National	LM1084IS-3.3
1	U11	DC-DC	MSOP8	Linear Tech	LTC1622
1	U12	V2000E_FG680	FG680	Xilinx	XCV2000E-FG680
1	U13	Audio_Codec	LQFP48	National	LM4549VH
1	U14	Audio_Amp	TSSOP28_DAP	National	LM4835MTE
1	Y1	25.0 MHz	OSC_865X14	Citizen	CMX309FLC25.0
1	Y2	24.576 MHz	OSC_75X50_FE	Fox	FE245F-20
2	Y4,Y3	Osc_Socket_Dual	DIP4(14)	Aires	4236-118-14
1	Y5	27.0 MHz	OSC_865X14	Citizen	CMX309FLC27.0

Changes to Bill of Material, dated August 26, 2002

1.	C272, 274, 276	now	5 pf
2.	J2, J15	now	Digikey # MHB10K
3.	J5	now	Digikey # MHB14K
4.	J40, J13	now	Digikey # MHB1K
5.	J19 thru J34	now	EIGHT Digikey S2211-20
6.	R214 thru R235	now	Part number is now 742 etc. NOT 743.
7.	U10	now	LM1085.....
8.	U8	now	Halo TG110-S422NX