P362: NV44A, TSOP MEMORY x16

SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-f0ppp-xxxx-vvv	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	0000	600-10362-0000-000	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
2	0001	600-10362-0001-000	<UNDEFINED>
3	0002	600-10362-0002-000	<UNDEFINED>
4	0003	600-10362-0003-000	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out, VIDEO IN
5	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
6	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
7	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
8	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
9	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
10	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
11	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
12	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
13	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
14	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>
15	<UNDEFINED>	<UNDEFINED>	<UNDEFINED>

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	P362 Overview

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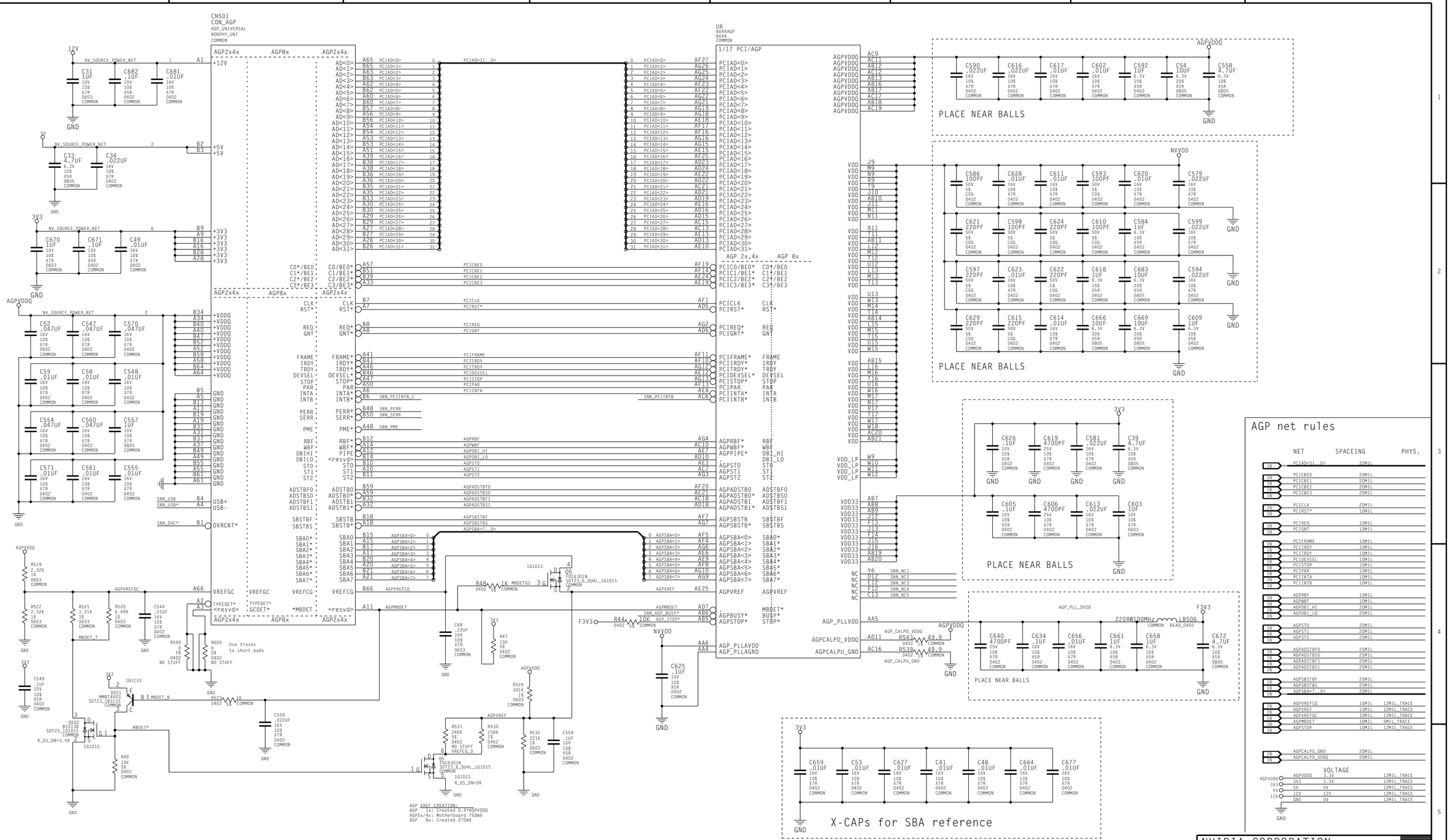

AGP net rules

	NET	SPACEING	PHYS.
IN	PCIAD<31..0>	20MIL	
IN	PCICBE0	20MIL	
IN	PCICBE1	20MIL	
IN	PCICBE2	20MIL	
IN	PCICBE3	20MIL	
IN	PCICLK	20MIL	
IN	PCIRST*	10MIL	
IN	PCIREQ	10MIL	
IN	PCIGNT	10MIL	
IN	PCIFRAME	10MIL	
IN	PCIIRDY	10MIL	
IN	PCITRDY	10MIL	
IN	PCIDEVSEL	10MIL	
IN	PCISTOP	10MIL	
IN	PCIPAR	10MIL	
IN	PCIINTA	10MIL	
IN	PCIINTB	10MIL	
IN	AGPRBF	10MIL	
IN	AGPWBF	10MIL	
IN	AGPDBI_HI	20MIL	
IN	AGPDBI_LO	20MIL	
IN	AGPSTO	20MIL	
IN	AGPST1	20MIL	
IN	AGPST2	20MIL	
IN	AGPADSTBF0	25MIL	
IN	AGPADSTBS0	25MIL	
IN	AGPADSTBF1	25MIL	
IN	AGPADSTBS1	25MIL	
IN	AGPSBSTBF	25MIL	
IN	AGPSBSTBS	25MIL	
IN	AGPSBA<7..0>	20MIL	
IN	AGPVREFCG	10MIL	12MIL_TRACE
IN	AGPVREF	10MIL	12MIL_TRACE
IN	AGPVREFGC	10MIL	12MIL_TRACE
IN	AGPMBDET	10MIL	5MIL_TRACE
IN	AGPSTOP	10MIL	12MIL_TRACE
IN	AGPCALPU_GND	20MIL	
IN	AGPCALPD_VDDQ	20MIL	

VOLTAGE

AGPVDDQ	AGPVDDQ	3.3V	12MIL_TRACE
3V3	3V3	3.3V	12MIL_TRACE
5V	5V	5V	12MIL_TRACE
12V	12V	12V	12MIL_TRACE
GND	GND	0V	12MIL_TRACE

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	AGP Interface

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GPU: FB-Interface

U6
NV44AGP
NV44
COMMON

2/11 FRAME_BUFFER

4<> 4<	B1	FBD<31..0>	0 FBD<0> A26	FB_DQ0
			1 FBD<1> C24	FB_DQ1
			2 FBD<2> B24	FB_DQ2
			3 FBD<3> A24	FB_DQ3
			4 FBD<4> C22	FB_DQ4
			5 FBD<5> A25	FB_DQ5
			6 FBD<6> B25	FB_DQ6
			7 FBD<7> D23	FB_DQ7
			8 FBD<8> G22	FB_DQ8
			9 FBD<9> J23	FB_DQ9
			10 FBD<10> E24	FB_DQ10
			11 FBD<11> F23	FB_DQ11
			12 FBD<12> J24	FB_DQ12
			13 FBD<13> F24	FB_DQ13
			14 FBD<14> G23	FB_DQ14
			15 FBD<15> H24	FB_DQ15
			16 FBD<16> D16	FB_DQ16
			17 FBD<17> E16	FB_DQ17
			18 FBD<18> D17	FB_DQ18
			19 FBD<19> F18	FB_DQ19
			20 FBD<20> E19	FB_DQ20
			21 FBD<21> E18	FB_DQ21
			22 FBD<22> D20	FB_DQ22
			23 FBD<23> D19	FB_DQ23
			24 FBD<24> A18	FB_DQ24
			25 FBD<25> B18	FB_DQ25
			26 FBD<26> A19	FB_DQ26
			27 FBD<27> B19	FB_DQ27
			28 FBD<28> D18	FB_DQ28
			29 FBD<29> C19	FB_DQ29
			30 FBD<30> C16	FB_DQ30
			31 FBD<31> C18	FB_DQ31
5<> 5<	B1	FBD<63..32>	32 FBD<32> N26	FB_DQ32
			33 FBD<33> N25	FB_DQ33
			34 FBD<34> R25	FB_DQ34
			35 FBD<35> R26	FB_DQ35
			36 FBD<36> R27	FB_DQ36
			37 FBD<37> T25	FB_DQ37
			38 FBD<38> T27	FB_DQ38
			39 FBD<39> T26	FB_DQ39
			40 FBD<40> AB23	FB_DQ40
			41 FBD<41> Y24	FB_DQ41
			42 FBD<42> AB24	FB_DQ42
			43 FBD<43> AB22	FB_DQ43
			44 FBD<44> AC24	FB_DQ44
			45 FBD<45> AC22	FB_DQ45
			46 FBD<46> AA23	FB_DQ46
			47 FBD<47> AA22	FB_DQ47
			48 FBD<48> Y24	FB_DQ48
			49 FBD<49> T23	FB_DQ49
			50 FBD<50> R24	FB_DQ50
			51 FBD<51> R23	FB_DQ51
			52 FBD<52> R22	FB_DQ52
			53 FBD<53> T22	FB_DQ53
			54 FBD<54> N23	FB_DQ54
			55 FBD<55> P24	FB_DQ55
			56 FBD<56> AA24	FB_DQ56
			57 FBD<57> AA27	FB_DQ57
			58 FBD<58> AA26	FB_DQ58
			59 FBD<59> AB25	FB_DQ59
			60 FBD<60> AB26	FB_DQ60
			61 FBD<61> AB27	FB_DQ61
			62 FBD<62> AA25	FB_DQ62
			63 FBD<63> W25	FB_DQ63
5< 4<	OUT	FBDQM<7..0>	0 FBDQM<0> D21	FB_DQM0
			1 FBDQM<1> F22	FB_DQM1
			2 FBDQM<2> F20	FB_DQM2
			3 FBDQM<3> A21	FB_DQM3
			4 FBDQM<4> V27	FB_DQM4
			5 FBDQM<5> W22	FB_DQM5
			6 FBDQM<6> V22	FB_DQM6
			7 FBDQM<7> V24	FB_DQM7
5< 4<> 4< 5<>	B1	FBDQS<7..0>	0 FBDQS<0> B22	FB_DQS_WP0
			1 FBDQS<1> D22	FB_DQS_WP1
			2 FBDQS<2> E21	FB_DQS_WP2
			3 FBDQS<3> C21	FB_DQS_WP3
			4 FBDQS<4> V25	FB_DQS_WP4
			5 FBDQS<5> W24	FB_DQS_WP5
			6 FBDQS<6> U24	FB_DQS_WP6
			7 FBDQS<7> W26	FB_DQS_WP7
		SNN_FBDQS<0>*	A22	FB_DQS_RN0
		SNN_FBDQS<1>*	E22	FB_DQS_RN1
		SNN_FBDQS<2>*	F21	FB_DQS_RN2
		SNN_FBDQS<3>*	B21	FB_DQS_RN3
		SNN_FBDQS<4>*	V26	FB_DQS_RN4
		SNN_FBDQS<5>*	W23	FB_DQS_RN5
		SNN_FBDQS<6>*	V23	FB_DQS_RN6
		SNN_FBDQS<7>*	W27	FB_DQS_RN7

FB_VTT	E15		
FB_VTT	F15		
FB_VTT	F16		
FB_VTT	J17		
FB_VTT	J18		
FB_VTT	L19		
FB_VTT	N19		
FB_VTT	R19		
FB_VTT	U19		
FB_VTT	W19		
FB_VDDQ	F17		
FB_VDDQ	F19		
FB_VDDQ	J19		
FB_VDDQ	M19		
FB_VDDQ	T19		
FB_VDDQ	J22		
FB_VDDQ	L22		
FB_VDDQ	P22		
FB_VDDQ	U22		
FB_VDDQ	Y22		

FB_CMD<26..0> OUT 4< 5<

FB_CMD0	G27	FB_CMD<0>	0
FB_CMD1	D25	FB_CMD<1>	1
FB_CMD2	F26	FB_CMD<2>	2
FB_CMD3	F25	FB_CMD<3>	3
FB_CMD4	G25	FB_CMD<4>	4
FB_CMD5	J25	FB_CMD<5>	5
FB_CMD6	J27	FB_CMD<6>	6
FB_CMD7	M26	FB_CMD<7>	
FB_CMD8	C27	FB_CMD<8>	8
FB_CMD9	C25	FB_CMD<9>	9
FB_CMD10	D24	FB_CMD<10>	10
FB_CMD11	N27	FB_CMD<11>	11
FB_CMD12	G24	FB_CMD<12>	
FB_CMD13	J26	FB_CMD<13>	13
FB_CMD14	M27	FB_CMD<14>	14
FB_CMD15	C26	FB_CMD<15>	15
FB_CMD16	M25	FB_CMD<16>	16
FB_CMD17	D26	FB_CMD<17>	17
FB_CMD18	D27	FB_CMD<18>	18
FB_CMD19	K26	FB_CMD<19>	19
FB_CMD20	K25	FB_CMD<20>	20
FB_CMD21	K24	FB_CMD<21>	21
FB_CMD22	F27	FB_CMD<22>	22
FB_CMD23	K27	FB_CMD<23>	23
FB_CMD24	G26	FB_CMD<24>	24
FB_CMD25	B27	FB_CMD<25>	25
FB_CMD26	N24	FB_CMD<26>	

TP10 TP14 TP13

FB_CLK0	L24	FBACLK0	OUT	4<
FB_CLK0	K23	FBACLK0*	OUT	4<
FB_CLK1	M22	FBACLK1	OUT	5<
FB_CLK1	N22	FBACLK1*	OUT	5<
FB_CAL_PD_VDDQ	D15	FBCAL_PD_VDDQ		
FB_CAL_PU_GND	E13	FBCAL_PU_GND		
FB_CAL_TERM_GND	H22	FBCAL_TERM_GND		
FB_DEBUG	K22	FBA_DEBUG	TP5	
FB_REFCLK	M23	FBA_REFCLK	TP7	
FB_REFCLK	M24	FBA_REFCLK*	TP6	
FB_PLLVDD	D14	FBA_PLLVDD		
FB_PLLAVDD	D13	FBA_PLLAVDD		
FB_PLLGND	C15			
FB_VREF	A16			

FBVDDQ
R537 40.2 1% 0402 COMMON
R542 40.2 1% 0402 COMMON
R533 0 0402 5% COMMON
GND GND

FBVREF = FBVDDQ * Rb/(Rt + Rb)

VREF = 0.5 * FBVDDQ
DDR: 1.25V = 2.5V * 1K/(1K + 1K)

FBVDDQ
R536 1K 1% 0402 COMMON (Rt)
R538 1K 1% 0402 COMMON (Rb)
C604 .1UF 10V 10% X5R 0402 COMMON
GND

PLACE NEAR BGA

FBVDDQ

C583	.01UF	16V	10%	X7R 0402 COMMON
C596	.01UF	16V	10%	X7R 0402 COMMON
C580	.01UF	16V	10%	X7R 0402 COMMON
C582	.01UF	16V	10%	X7R 0402 COMMON
C556	4.7UF	6.3V	10%	X5R 0805 COMMON
C585	4.7UF	6.3V	10%	X5R 0805 COMMON

FBVTT connected to FBVDDQ for unterminated DDR1

GND

PLACE BELOW GPU

FBVDDQ

C574	4700PF	25V	10%	X7R 0402 COMMON
C591	.022UF	16V	10%	X7R 0402 COMMON
C565	.1UF	10V	10%	X5R 0402 COMMON
C587	4700PF	25V	10%	X7R 0402 COMMON
C569	.1UF	10V	10%	X5R 0402 COMMON
C576	1UF	6.3V	10%	X5R 0402 COMMON
C595	4700PF	25V	10%	X7R 0402 COMMON
C567	.022UF	16V	10%	X7R 0402 COMMON
C562	.1UF	10V	10%	X5R 0402 COMMON
C588	4700PF	25V	10%	X7R 0402 COMMON
C566	.022UF	16V	10%	X7R 0402 COMMON
C563	.1UF	10V	10%	X5R 0402 COMMON
C577	4700PF	25V	10%	X7R 0402 COMMON
C568	.022UF	16V	10%	X7R 0402 COMMON
C564	.1UF	10V	10%	X5R 0402 COMMON
C578	.022UF	16V	10%	X7R 0402 COMMON
C572	.1UF	10V	10%	X5R 0402 COMMON
C589	1UF	6.3V	10%	X5R 0402 COMMON

GND

PLACE NEAR BALLS

C601	.01UF	16V	10%	X7R 0402 COMMON
C608	.01UF	16V	10%	X7R 0402 COMMON

PLACE NEAR GPU

F3V3
LB501 220R@100MHz BEAD_0402 COMMON
C600 1UF 6.3V 10% X5R 0402 COMMON
C60 4.7UF 6.3V 10% X5R 0805 COMMON
GND

NVVDD
LB502 220R@100MHz BEAD_0402 COMMON
C607 1UF 6.3V 10% X5R 0402 COMMON
C57 4.7UF 6.3V 10% X5R 0805 COMMON
GND

Net Name — NET_SPACING_RULE

IN	FBCAL_PD_VDDQ	10MIL
IN	FBCAL_PU_GND	10MIL
IN	FBCAL_TERM_GND	10MIL
IN	FB_DLLVDD	10MIL
IN	FBA_PLLAVDD	10MIL
IN	FBVREF	10MIL

X-Caps for FB_CMD BUS

FBVDDQ	C105	.01UF	16V	10% X7R 0402 COMMON — GND
FBVDDQ	C110	.01UF	16V	10% X7R 0402 COMMON — GND
FBVDDQ	C507	.01UF	16V	10% X7R 0402 COMMON — GND
FBVDDQ	C508	.01UF	16V	10% X7R 0402 COMMON — GND

LABTESTPOINTS

TP4	FBDQS<0>	TP3
TP2	FBDQS<1>	
	FBDQS<2>	
	FBDQS<3>	TP1
TP9	FBDQS<4>	
TP11	FBDQS<5>	
TP13	FBDQS<6>	
TP8	FBDQS<7>	

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	Frame Buffer Interface

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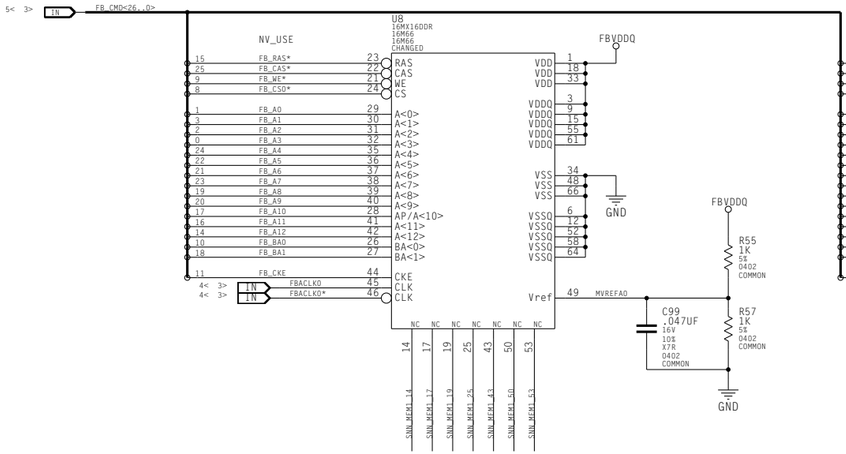
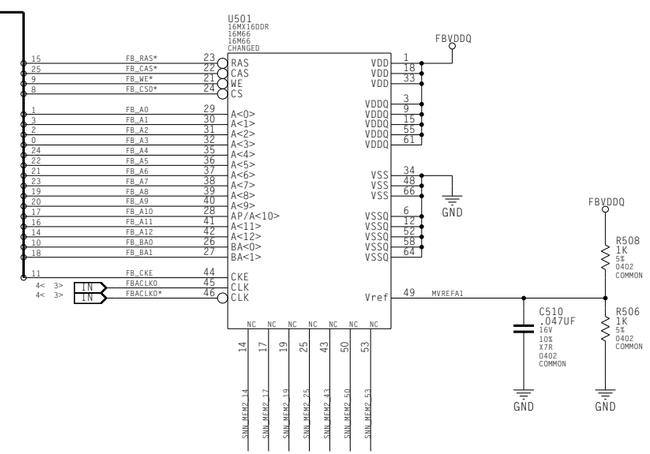
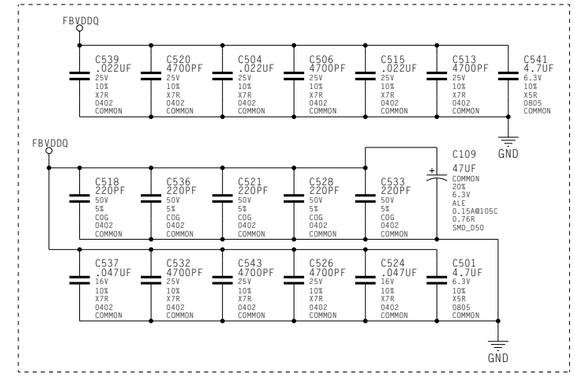
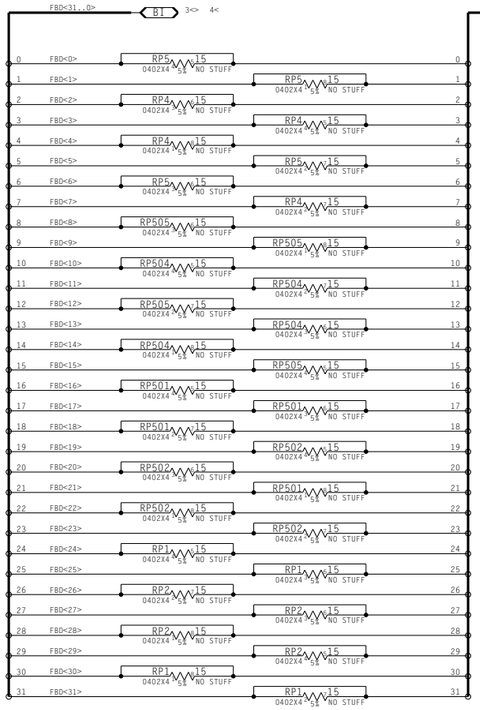
Memory Bit 0..31

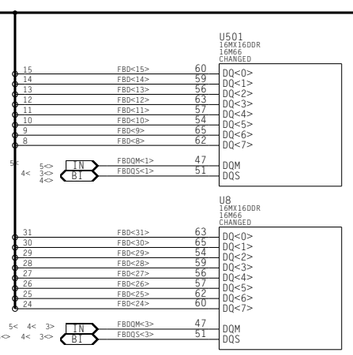
Net Name	Diffpair	NET_SPACING_RULE
FBACLKO	FBACLKO	25MIL
FBACLKO*	FBACLKO	25MIL
FBD<31..0>		10MIL
FBDQM<3..0>		10MIL
FBDQS<3..0>		10MIL
FBCMD<26..0>		10MIL

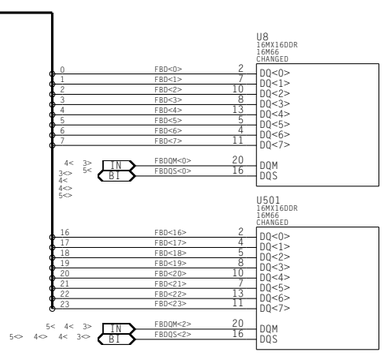


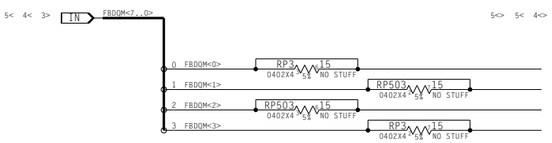


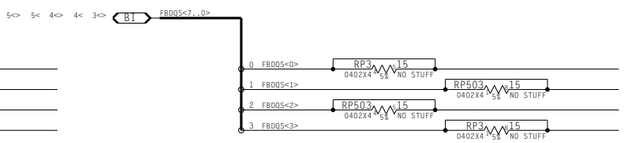


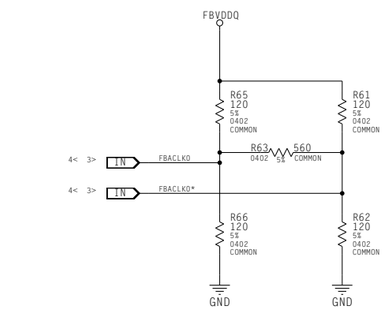












ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	Memory 1st bank 0..31

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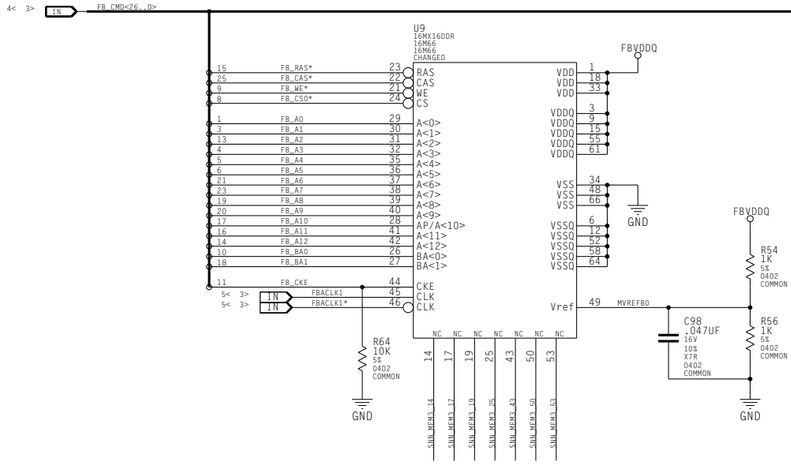
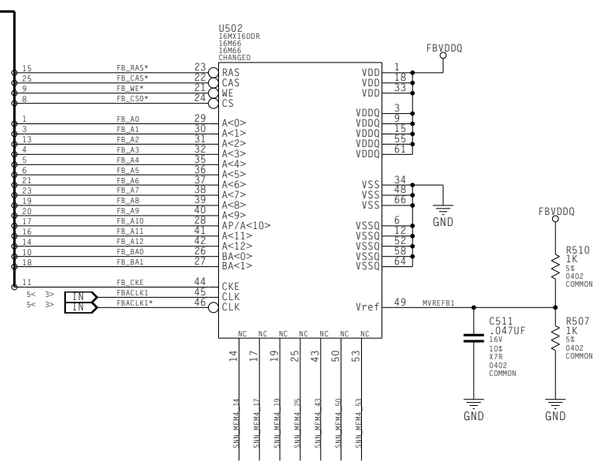
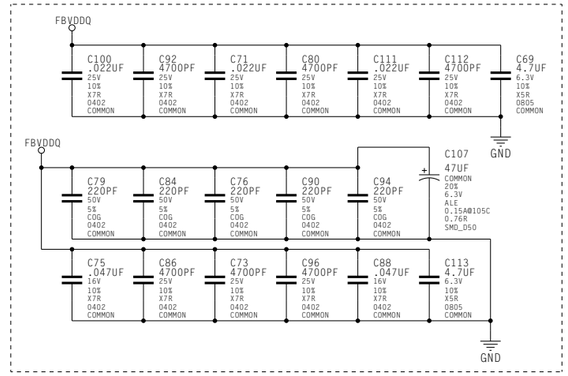
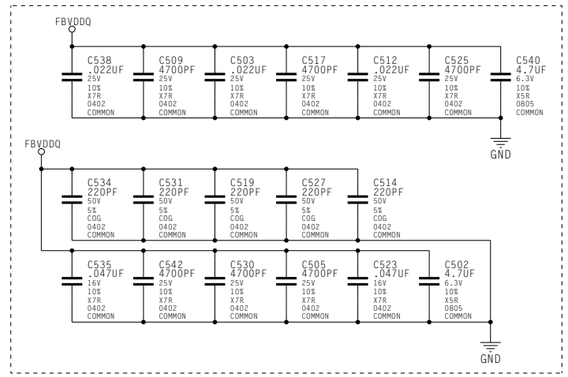
Memory Bit 32..63

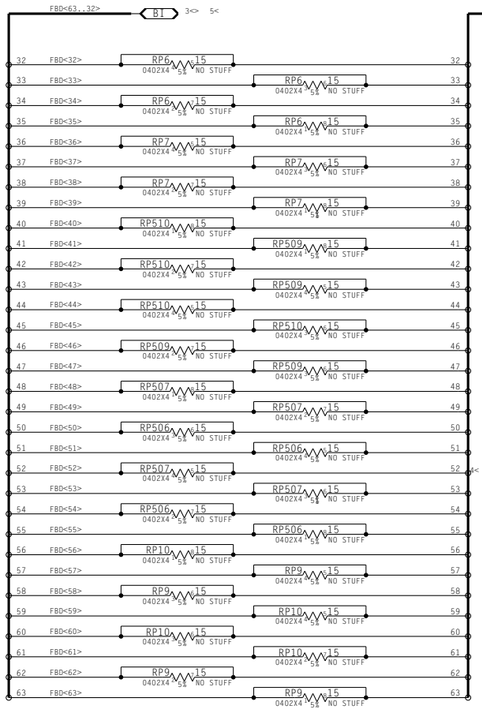
Net Name	Diffpair	NET_SPACING_RULE
FBACLK1	FBACLK1	25MIL
FBACLK1*	FBACLK1	25MIL
FBD<63..32>		10MIL
FBDQM<7..4>		15MIL
FBDQS<7..4>		15MIL

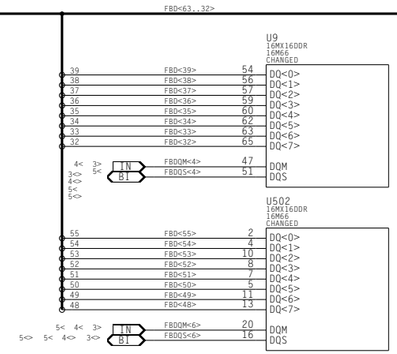


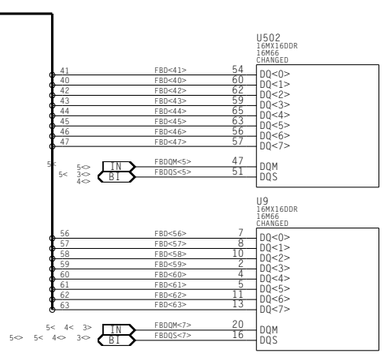


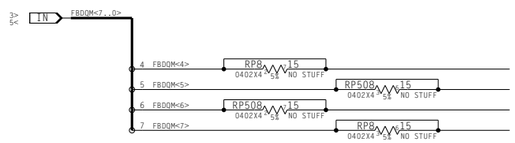


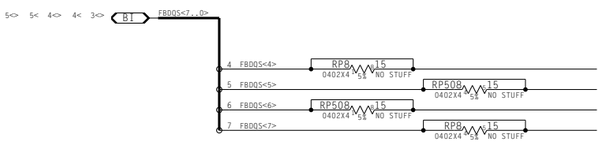


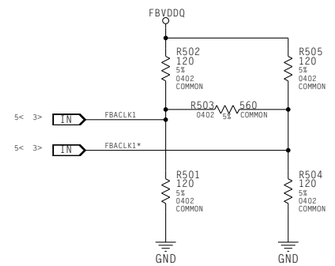












ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	Memory 1st bank 32..63

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DAC-A, DB15 Connector

Net Name	MIN_LINE_WIDTH	NET_SPACING_TYPE
I2CA_SCL		10MIL
I2CA_SDA		10MIL
DACA_HSYNC		10MIL
DACA_VSYNC		10MIL
DACA_RED		20MIL
DACA_GREEN		20MIL
DACA_BLUE		20MIL
DACA_VDD	12MIL	10MIL
DACA_R_F		20MIL
DACA_G_F		20MIL
DACA_B_F		20MIL
DACA_RED_C		20MIL
DACA_GREEN_C		20MIL
DACA_BLUE_C		20MIL

C17 100UF 25V 10% X7R 0603 COMMON — GND

CAP for Sync Buffer

F3V3 — C665 4.7UF 6.3V 10% X5R 0805 COMMON — GND

LB504 220R@100MHz COMMON BEAD_0402

C649 1UF 6.3V 10% X5R 0402 COMMON
C653 1UF 6.3V 10% X5R 0402 COMMON
C644 4700PF 25V 10% X7R 0402 COMMON
C643 470PF 50V 10% X7R 0402 COMMON
C647 1UF 6.3V 10% X5R 0402 COMMON
R555 127 1% 0402 COMMON

U6 NV44AGP NV44 COMMON — DACA

3/11 DAC_A			
DAC_A_VDD	DACA_VDD	AE2	
DAC_A_VREF	DACA_VREF	AB4	
DAC_A_RSET	DACA_RSET	AD3	
I2CA_SCL		D10	I2CA_SCL
I2CA_SDA		E10	I2CA_SDA
DAC_A_HSYNC		AD4	DACA_HSYNC
DAC_A_VSYNC		AC4	DACA_VSYNC
DAC_A_RED		AE1	DACA_RED
DAC_A_GREEN		AD1	DACA_GREEN
DAC_A_BLUE		AD2	DACA_BLUE
DAC_A_IDUMP		U9	

R556 33 0402 5% COMMON — I2CA_SCL_T
R557 33 0402 5% COMMON — I2CA_SDA_T
R18 2.2K 5% 0402 COMMON (5V)
R19 2.2K 5% 0402 COMMON (5V)

LB7 150-220R@100MHz BEAD_0603 COMMON — I2CA_SCL_C
LB8 150-220R@100MHz BEAD_0603 COMMON — I2CA_SDA_C

D5 BAV99 SOT23 100V 100MA COMMON (5V) — GND
D8 BAV99 SOT23 100V 100MA COMMON (5V) — GND

C11 22PF 50V 5% NPO 0603 COMMON — GND
C14 22PF 50V 5% NPO 0603 COMMON — GND

R2 15 0402 5% NO STUFF
R12 15 0402 5% NO STUFF

U1 74ACT08 B 74ACT_SO COMMON (5V) — GND
U1 74ACT08 A 74ACT_SO COMMON (5V) — GND

AHB — R1 33 0402 5% COMMON — DACA_HSYNC_BUF
AVB — R11 33 0402 5% COMMON — DACA_VSYNC_BUF

L4 27nH 0603 COMMON — DACA_HSYNC_C
L3 27nH 0603 COMMON — DACA_VSYNC_C

D7 BAV99 SOT23 100V 100MA COMMON (5V) — GND
D6 BAV99 SOT23 100V 100MA COMMON (5V) — GND

C13 12PF 50V 5% NPO 0603 COMMON — GND
C12 12PF 50V 5% NPO 0603 COMMON — GND

DDC_5V

J4 CON_DSUB15HD VGA COMMON

16			
6	GND-R	11	IDO — SNN_A_IDO
1	R	12	SDA
7	GND-G	13	HSYNC
2	G	14	VSYNC
8	GND_B	15	SCL
3	B		
9	5V		
4	IDZ		
10	GND		
5	GND		
17	SHIELD		

DACA_RED_C, DACA_GREEN_C, DACA_BLUE_C, SNN_A_IDO

R662 0 0603 .05W COMMON — DACA_R_F — L506 27nH 0603 COMMON
R661 0 0603 .05W COMMON — DACA_G_F — L505 27nH 0603 COMMON
R660 0 0603 .05W COMMON — DACA_B_F — L504 27nH 0603 COMMON

R571 150 1% 0402 COMMON — C726 22PF 50V 5% NPO 0402 NO STUFF — C735 22PF 50V 5% NPO 0402 NO STUFF — C738 22PF 50V 5% NPO 0402 NO STUFF
R656 2.2K 5% 0402 NO STUFF
R659 150 1% 0402 COMMON

R570 150 1% 0402 COMMON — C725 22PF 50V 5% NPO 0402 NO STUFF — C734 22PF 50V 5% NPO 0402 NO STUFF — C737 22PF 50V 5% NPO 0402 NO STUFF
R655 2.2K 5% 0402 NO STUFF
R658 150 1% 0402 COMMON

R569 150 1% 0402 COMMON — C724 22PF 50V 5% NPO 0402 NO STUFF — C733 22PF 50V 5% NPO 0402 NO STUFF — C736 22PF 50V 5% NPO 0402 NO STUFF
R654 2.2K 5% 0402 NO STUFF
R657 150 1% 0402 COMMON

PLACE NEAR OUTPUT FILTERS

F3V3 — C23 4.7UF 6.3V 10% X5R 0805 COMMON — GND
5V — C719 4.7UF 6.3V 10% X5R 0805 COMMON — GND

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	DAC-A, DB15 Connector

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DAC-B, MUX, DB15

DACB

U6 NV444AGP NV44 COMMON
4/11 DAC_B
DAC_B_VDD F8
DAC_B_VREF E7
DAC_B_RSET D6
I2CB_SCL F9
I2CB_SDA F10
DAC_B_HSYNC E6
DAC_B_VSYNC F5
DAC_B_RED F4
DAC_B_GREEN E4
DAC_B_BLUE D5
DAC_B_IDUMP L9

F3V3
LB503 220R@100MHz COMMON BEAD_0402
DACB_VDD
C636 1UF 6.3V 10% X5R 0402 COMMON
C635 1UF 6.3V 10% X5R 0402 COMMON
C637 4700PF 25V 10% X7R 0402 COMMON
C638 470PF 50V 10% X7R 0402 COMMON
C630 1UF 6.3V 10% X5R 0402 COMMON
DACB_VREF
DACB_RSET
R549 127 1% 0402 COMMON
HDTV_SDTV
R548 301 0402 1% COMMON
R550 301 1% 0402 COMMON
DACB_SW
1G1D1S
Q505 FDC6301N SOT23_6_DUAL_1G1D1S COMMON
11> SEL_HDTV_SDTV
SEL_2ND_DEV
R626 10K 5% 0402 NO STUFF
R627 10K 5% 0402 COMMON
U506 X5DP16_SECT Q53257 COMMON
MUX_VDD
LB512 220R@100MHz COMMON BEAD_0402
C706 .1UF 10V 10% X5R 0402 COMMON
LOAD_TEST
R612 100K 5% 0402 COMMON
C707 .01UF 16V 10% X7R 0402 COMMON
GND

DACB_RED
R567 150 1% 0402 COMMON
R622 2.2K 5% 0402 NO STUFF
R625 150 1% 0402 COMMON
R634 0 0402 5% NO STUFF
U506 Q53257 COMMON
C_MUX
R639 0 0402 5% NO STUFF
DACB_RED_SW
R665 0 0603 .05R COMMON
DACB_RED_F
L509 27nH 0603 COMMON
C732 22PF 50V 5% NPO 0402 NO STUFF
C744 22PF 50V 5% NPO 0402 NO STUFF
C750 22PF 50V 5% NPO 0402 NO STUFF
15<

DACB_GREEN
R572 150 1% 0402 COMMON
R621 2.2K 5% 0402 NO STUFF
R624 150 1% 0402 COMMON
R638 0 0402 5% NO STUFF
CVBS_Y_MUX
R630 0 0402 5% NO STUFF
DACB_GREEN_SW
R664 0 0603 .05R COMMON
DACB_GREEN_F
L508 27nH 0603 COMMON
C731 22PF 50V 5% NPO 0402 NO STUFF
C743 22PF 50V 5% NPO 0402 NO STUFF
C749 22PF 50V 5% NPO 0402 NO STUFF

R633 10K 5% 0402 COMMON
LOAD_VIDEO
LOAD_VGA
R642 10K 5% 0402 COMMON
R628 10K 5% 0402 COMMON

DACB_BLUE
R573 150 1% 0402 COMMON
R620 2.2K 5% 0402 NO STUFF
R623 150 1% 0402 COMMON
R635 0 0402 5% NO STUFF
CVBS_PB_MUX
R629 0 0402 5% NO STUFF
DACB_BLUE_SW
R663 0 0603 .05R COMMON
DACB_BLUE_F
L507 27nH 0603 COMMON
C730 22PF 50V 5% NPO 0402 NO STUFF
C742 22PF 50V 5% NPO 0402 NO STUFF
C748 22PF 50V 5% NPO 0402 NO STUFF

I2CB_SCL
R559 33 0402 5% COMMON
I2CB_SCL_T
R4 2.2K 5% 0402 COMMON
R5 2.2K 5% 0402 COMMON
LB1 150-220R@100MHz BEAD_0603 COMMON
D1 BAV99 SOT23 100V 100MA COMMON
C2 220PF 50V 5% NPO 0603 COMMON
I2CB_SCL_C

I2CB_SDA
R558 33 0402 5% COMMON
I2CB_SDA_T
LB2 150-220R@100MHz BEAD_0603 COMMON
D4 BAV99 SOT23 100V 100MA COMMON
C5 220PF 50V 5% NPO 0603 COMMON
I2CB_SDA_C

DACB_HSYNC
R6 15 0402 5% NO STUFF
U1 74ACT08 74ACT_SO COMMON
BHB
R3 33 0402 5% COMMON
DACB_HSYNC_BUF
L2 27nH 0603 COMMON
D3 BAV99 SOT23 100V 100MA COMMON
C4 12PF 50V 5% NPO 0603 COMMON
DACB_HSYNC_C

DACB_VSYNC
R14 15 0402 5% NO STUFF
U1 74ACT08 74ACT_SO COMMON
BVB
R13 33 0402 5% COMMON
DACB_VSYNC_BUF
L1 27nH 0603 COMMON
D2 BAV99 SOT23 100V 100MA COMMON
C3 12PF 50V 5% NPO 0603 COMMON
DACB_VSYNC_C

DDC_5V
J1 CON_DSUB15HD VGA_SLIM_DVIMTG VGA_SLIM_DVIMTG NO STUFF
6 GND-R
1 R
7 GND-G
2 G
8 GND_B
3 B
9 5V
4 ID2
10 GND
5 GND
11 ID0
12 SDA
13 HSYNC
14 VSYNC
15 SCL
SNN_B_ID0
DACB_RED_C
DACB_GREEN_C
DACB_BLUE_C
SNN_B_ID2
DACB_VSYNC_C
I2CB_SDA_C
DACB_HSYNC_C
I2CB_SCL_C

PLACE NEAR OUTPUT FILTERS
C6 4.7UF 6.3V 10% X5R 0805 COMMON

DACB_RED		20MIL
DACB_GREEN		20MIL
DACB_BLUE		20MIL
DACB_VDD	12MIL	10MIL
DACB_VREF	12MIL	10MIL
DACB_RSET	12MIL	10MIL

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	DAC-B, MUX, DB15

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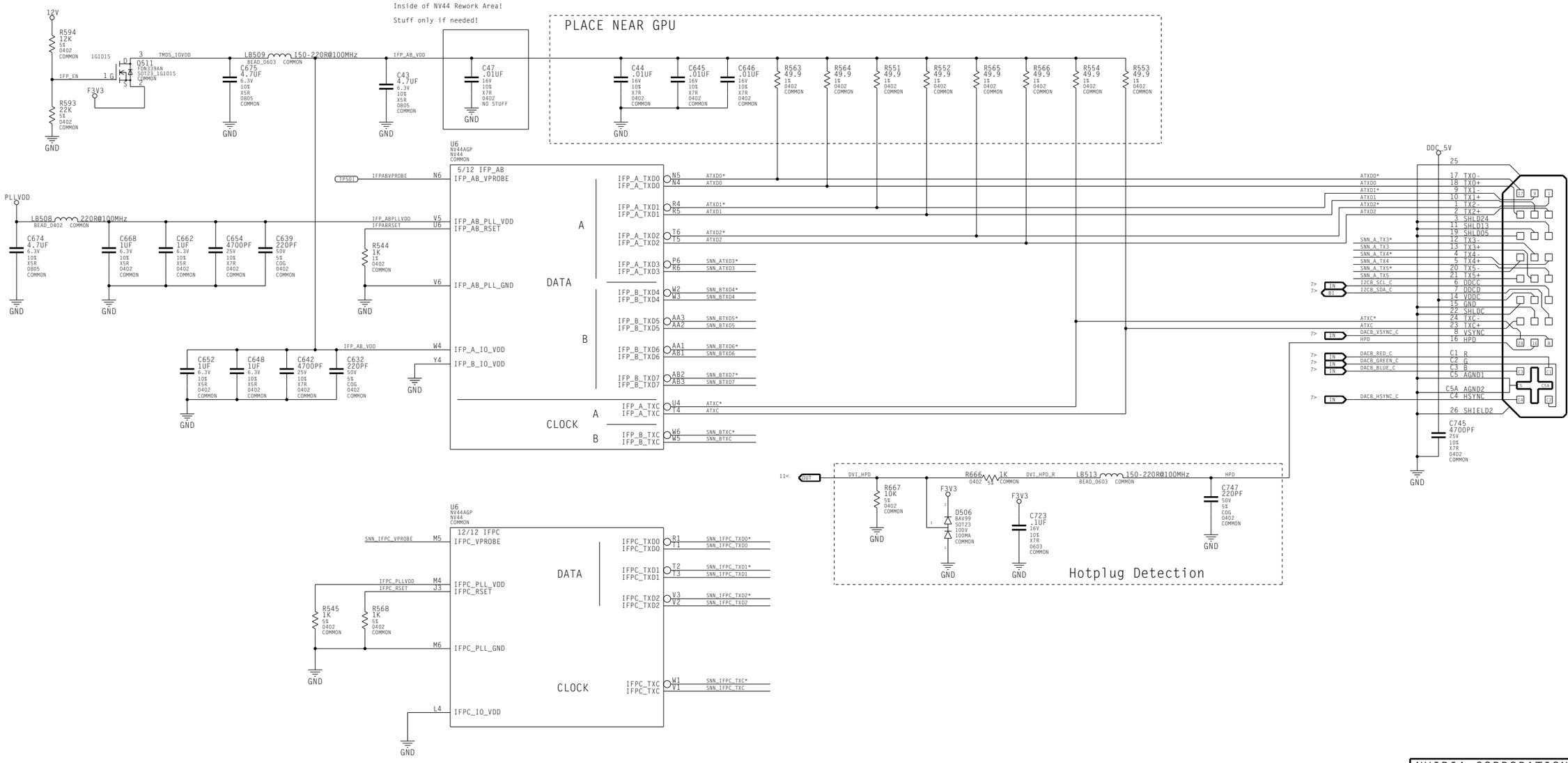
Internal TMDS, DVI-Connector

Net Name	Diffpair	NET_SPACING_RULE	Voltage
IFP_ABPLLVDD			3.3V
IFP_AB_VDD			3.3V
ATXC	ATXC	20MIL_G2G_30MIL	
ATXC*	ATXC	20MIL_G2G_30MIL	
ATXD0	ATXD0	20MIL_G2G_30MIL	
ATXD0*	ATXD0	20MIL_G2G_30MIL	
ATXD1	ATXD1	20MIL_G2G_30MIL	
ATXD1*	ATXD1	20MIL_G2G_30MIL	
ATXD2	ATXD2	20MIL_G2G_30MIL	
ATXD2*	ATXD2	20MIL_G2G_30MIL	



ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	TMDS Interface

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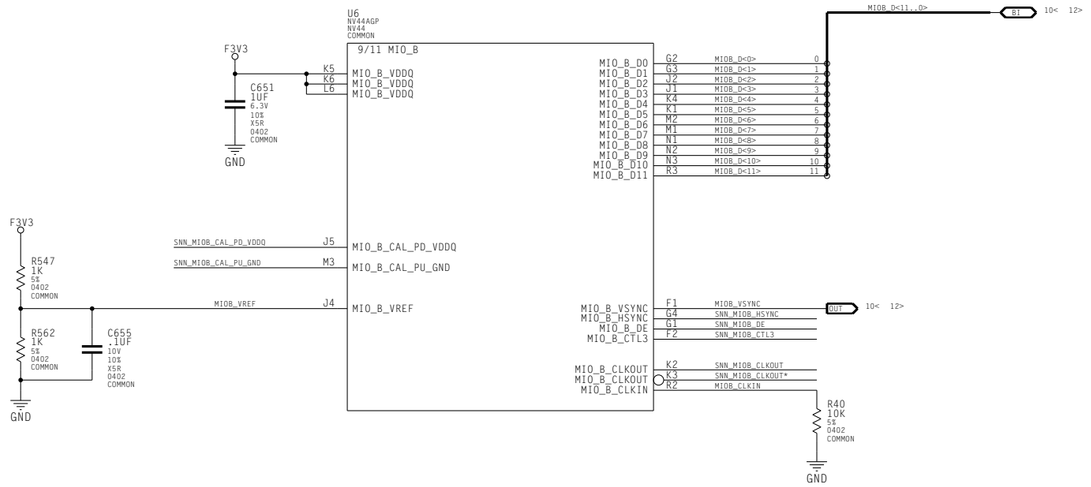
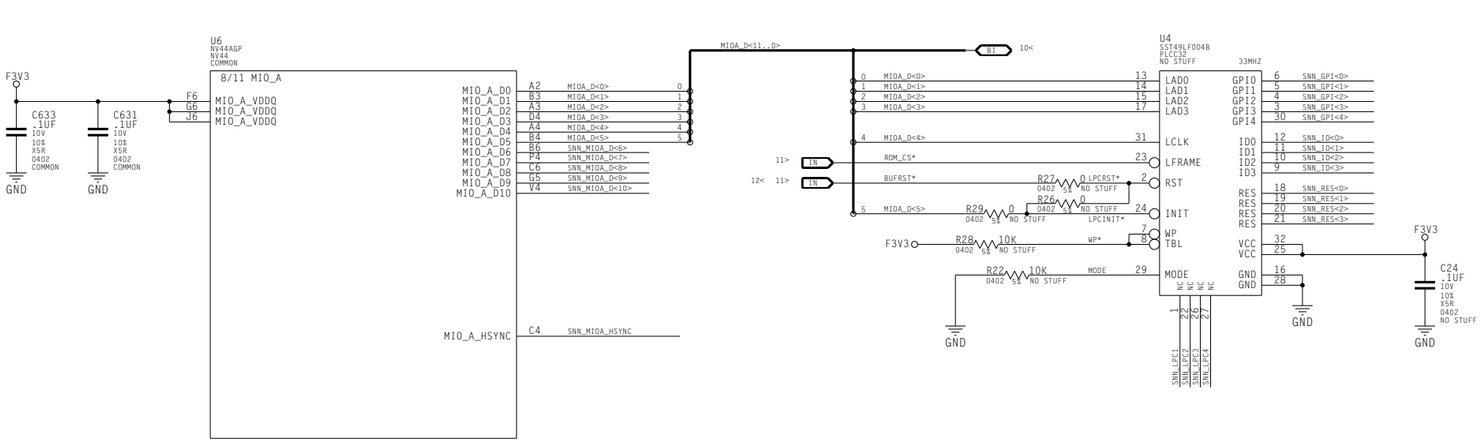
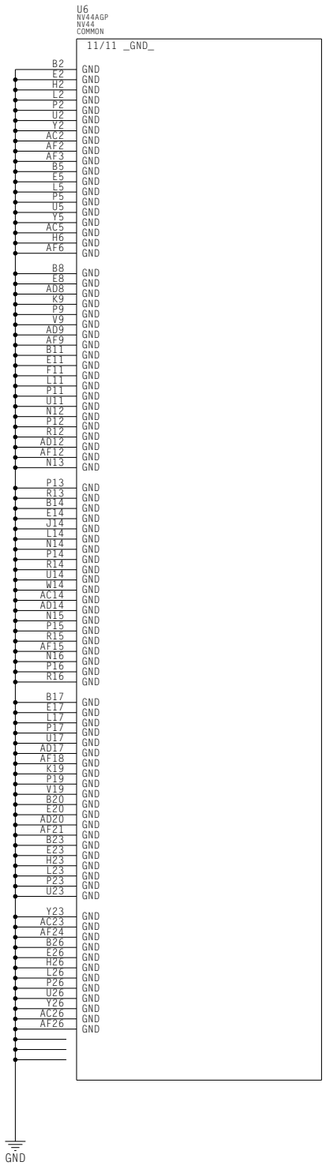
MIOA, MIOB Interface, LPC-ROM







ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	MIOA, MIOB Interface, LPC-ROM

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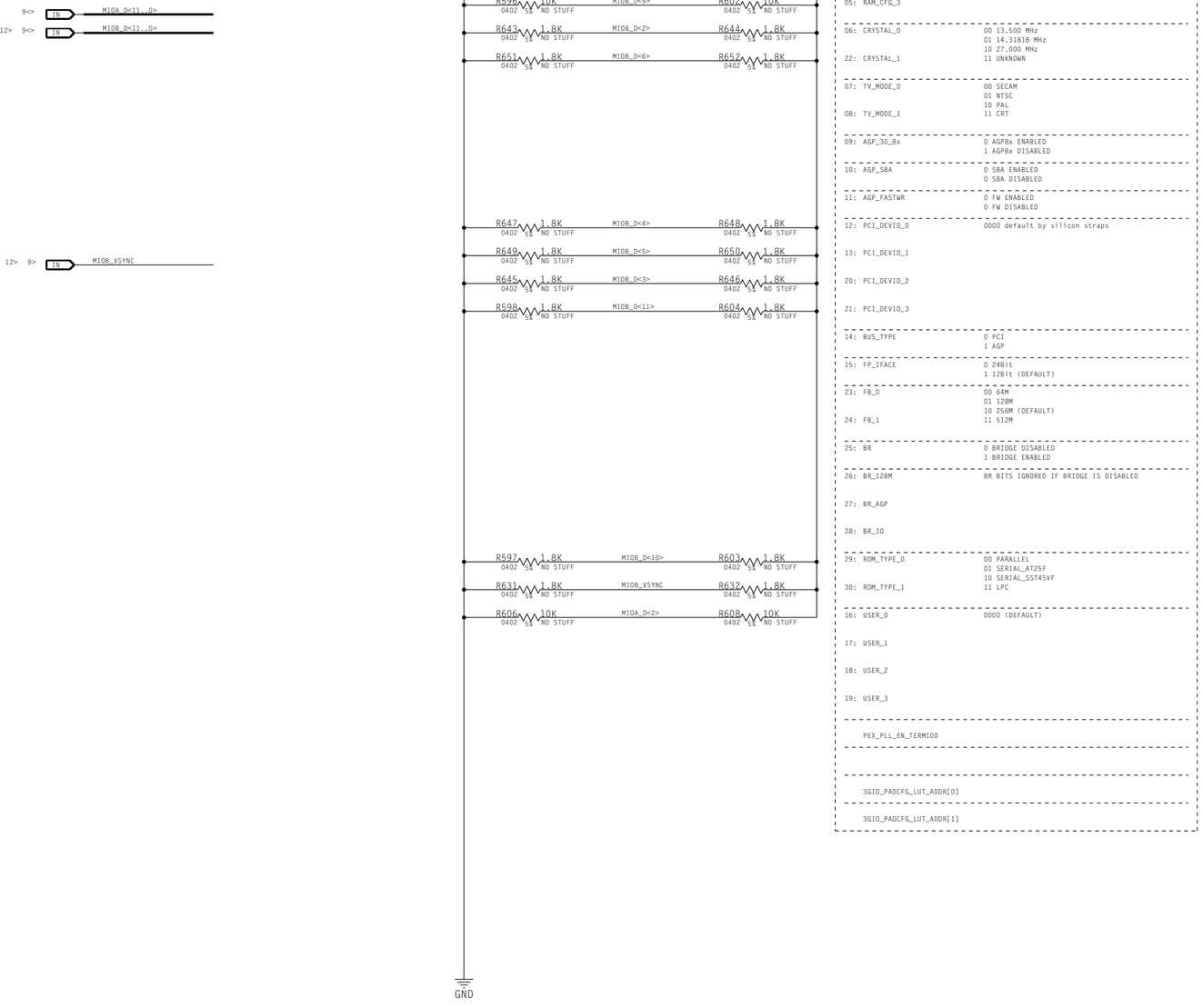
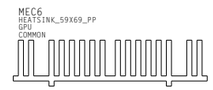
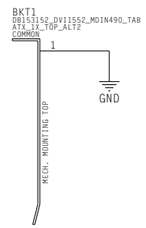
STRAPS, Mechanical Parts

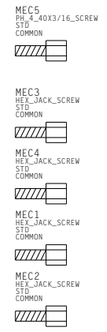
NV44 STRAPS



Bit	Signal	Values
00:	PCI_AD_SWAP	0 REVERSED 1 NORMAL
01:	SUB_VENDOR	0 NO_BIOS 1 READ FROM BIOS
02:	RAM_CFG_0	See http://syseng/Perforce/Projects/... .../MemQual/Strap_Tables/ for details!
03:	RAM_CFG_1	
04:	RAM_CFG_2	
05:	RAM_CFG_3	
06:	CRYSTAL_0	00 13.500 MHz 01 14.31818 MHz 10 27.000 MHz 11 UNKNOWN
22:	CRYSTAL_1	
07:	TV_MODE_0	00 SECAM 01 NTSC 10 PAL 11 CRT
08:	TV_MODE_1	
09:	AGP_30_8x	0 AGP8x ENABLED 1 AGP8x DISABLED
10:	AGP_SBA	0 SBA ENABLED 0 SBA DISABLED
11:	AGP_FASTWR	0 FW ENABLED 0 FW DISABLED
12:	PCI_DEVID_0	0000 default by silicon straps
13:	PCI_DEVID_1	
20:	PCI_DEVID_2	
21:	PCI_DEVID_3	
14:	BUS_TYPE	0 PCI 1 AGP
15:	FP_IFACE	0 24Bit 1 12Bit (DEFAULT)
23:	FB_0	00 64M 01 128M 10 256M (DEFAULT) 11 512M
24:	FB_1	
25:	BR	0 BRIDGE DISABLED 1 BRIDGE ENABLED
26:	BR_128M	BR BITS IGNORED IF BRIDGE IS DISABLED
27:	BR_AGP	
28:	BR_IO	
29:	ROM_TYPE_0	00 PARALLEL 01 SERIAL_AT25F 10 SERIAL_SST45VF
30:	ROM_TYPE_1	11 LPC
16:	USER_0	0000 (DEFAULT)
17:	USER_1	
18:	USER_2	
19:	USER_3	
	PEX_PLL_EN_TERM100	
	3GIO_PADCFG_LUT_ADDR[0]	
	3GIO_PADCFG_LUT_ADDR[1]	







ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	STRAPS, Mechanical Parts

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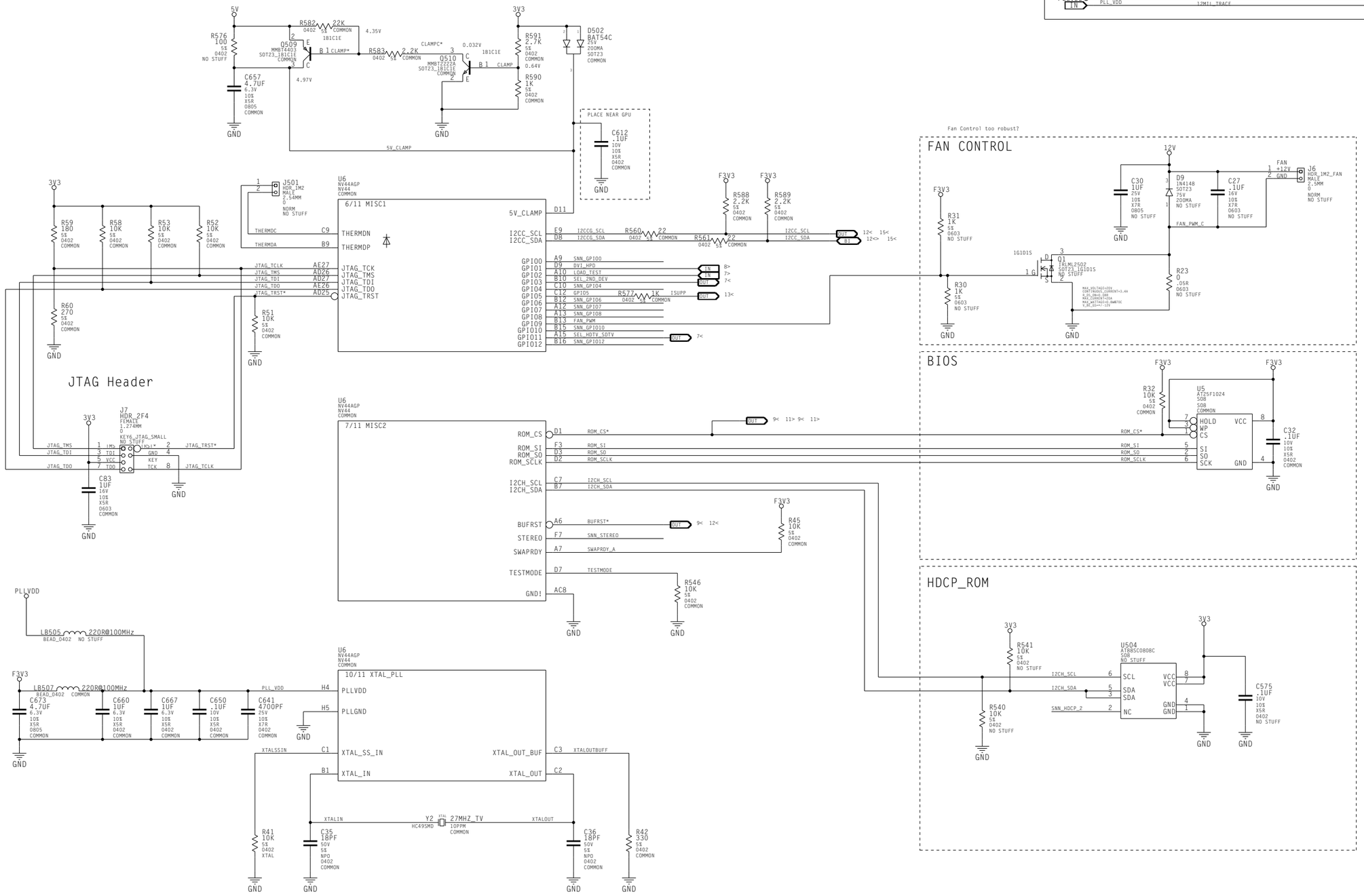
XTAL, GPIO, BIOS, Fan Control, JTAG Headers

Net Name	NET_PHYSICAL_TYPE	NET_SPACING_RULE
XTALIN	5MIL TRACE	20MIL
XTALOUT	5MIL TRACE	20MIL
PLLVDD	12MIL TRACE	10MIL
PLL_VDD	12MIL TRACE	10MIL



ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	XTAL, GPIO, BIOS, Fan Control, JTAG Headers

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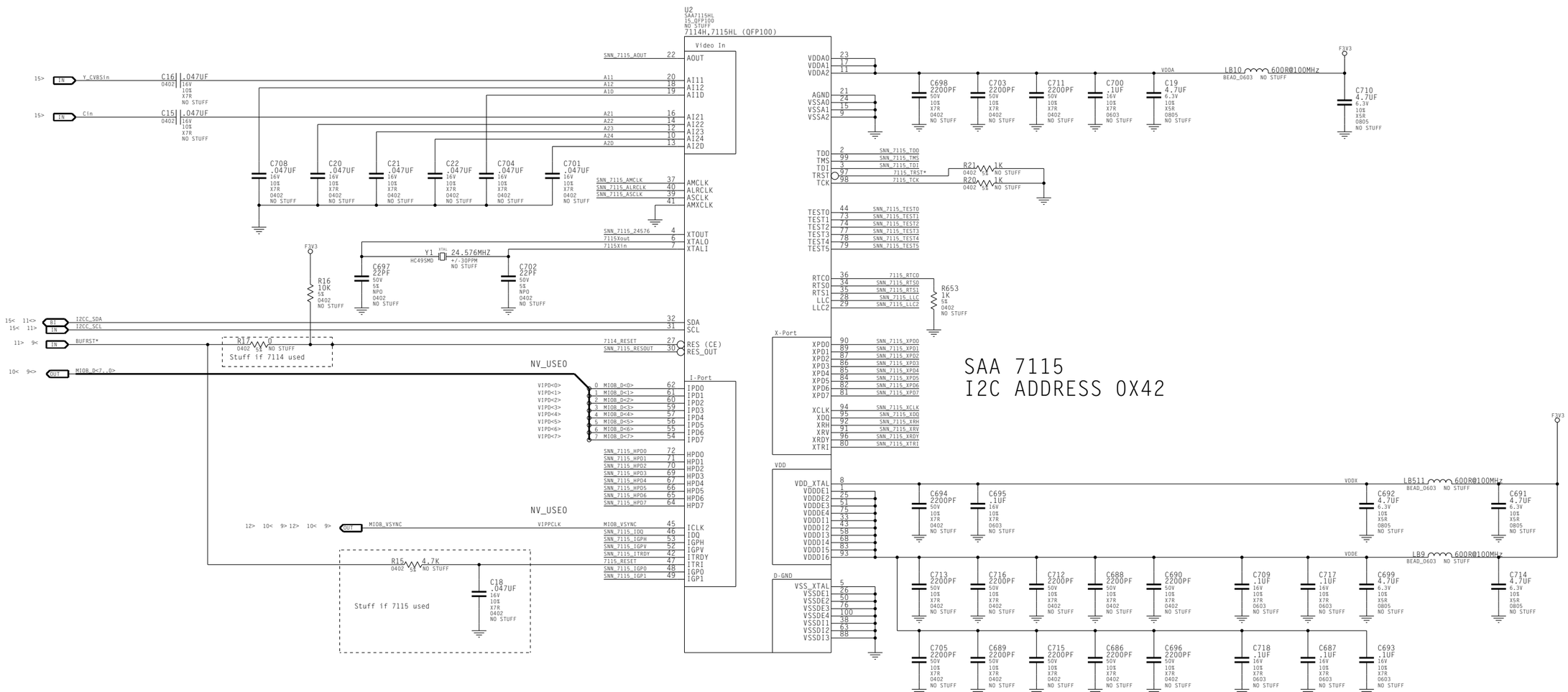
VIDEO CAPTURE: SAA7115



ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	VIDEO CAPTURE: SAA7115

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PowerSupplyI:
NVVDD, FBVDDQ

I_bypass = (1.7V * Rbot/(Rtop+Rbot)-0.7V)/ R_emitter
1A = (1.7V * 205/(100+205)-0.7V)/ 0.44 ohm

Stuff bypass if NVVDD current exceeds 10A!

Inductor Bypass

RT9218 (optional)

ISL6549 (SC2621(A))

FBVDDQ

Vout = VRef * (1+Rtop/Rbot)
2.5V = 0.8V * (1+(2.37/1.13k)) (ISL6549)
2.5V = 0.5V * (1+(4.02k/1k)) (SC2621A)

NVVDD

Vout = VRef * (1+Rtop/Rbot)
1.2V = 0.8V * (1+(1.54k/3.09k)) (ISL6549)
1.2V = 0.5V * (1+(1.43k/1.02k)) (SC2621A)

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	PowerSupplyI: NVVDD, FBVDDQ

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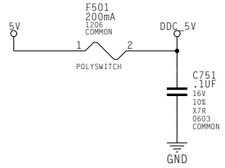
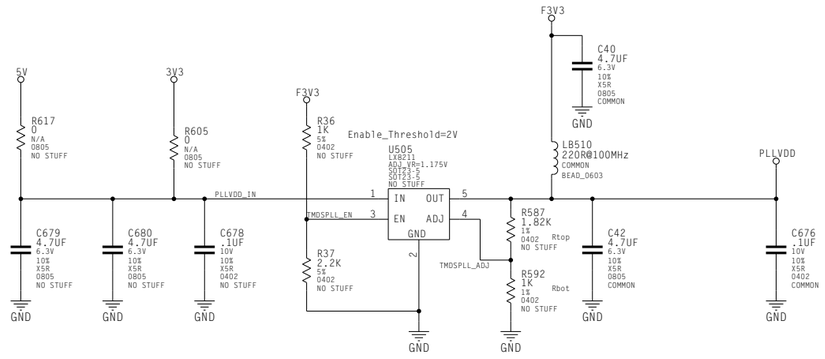
PowerSupplyII: DDC5V, F3V3, TMDS_PLLVDD

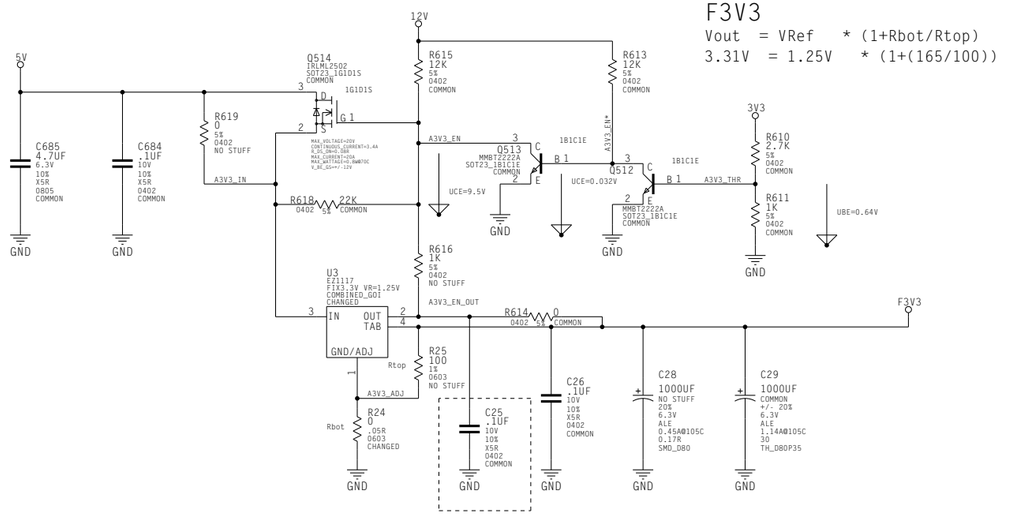




TMDS_PLLVDD

Vout = VRef * (1+Rtop/Rbot)

3.31V = 1.175V * (1+(1.82k/1k))



Ramp Up CAP for AQT1541

Net Name	NET_PHYSICAL_TYPE	Voltage
5V	12MIL	
DDC_5V	12MIL	5V
F3V3	12MIL	3.3V
PLLVDD	12MIL	3.3V
12V_IN	12MIL	12V

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	PowerSupplyII: 5V, DDC5V, A3V3, F3V3, TMDS_PLLVDD

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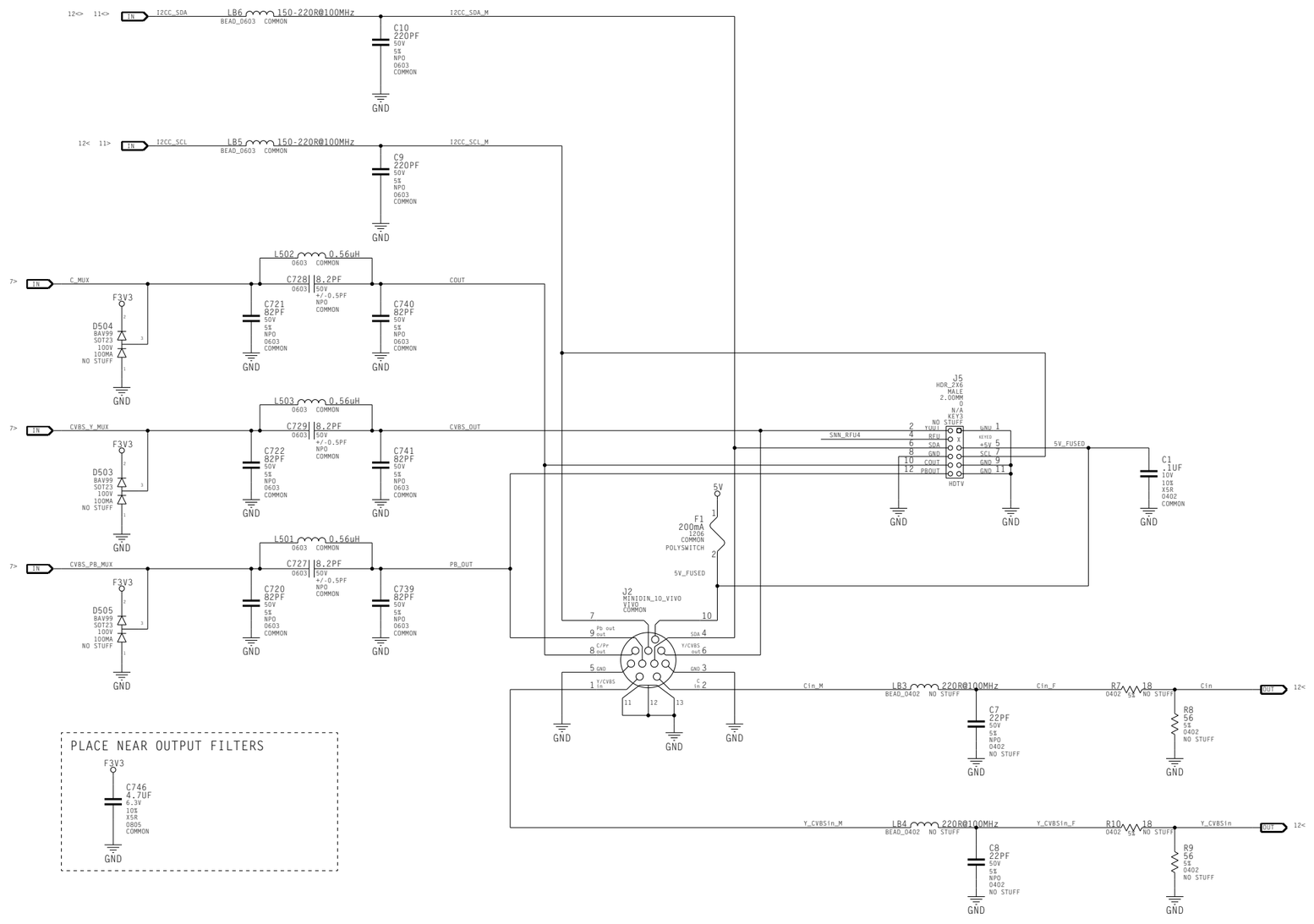
SANTA CLARA, CA 95050, USA

NV_PN	600-10362-0000-000		
ID	p362	PAGE	14 OF 18
NAME	xxx	DATE	20-DEC-2004

VIDEO CONNECTORS: MiniDIN, 2x6 HDR

IN 5V_FUSED 12MIL 5V



ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	VIDEO CONNECTORS: MiniDIN, 2x6 HDR

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*** Signal Cross-Reference for the entire design ***

5V_FUSED	15.1F< 15.3E 15.4C
12V_IN	14.5A<
AGPADSTBF0	2.3C 2.4H<
AGPADSTBF1	2.3C 2.4H<
AGPADSTBS0	2.3C 2.4H<
AGPADSTBS1	2.3C 2.4H<
AGPCALPD_VDDQ	2.5H<
AGPCALPU_GND	2.5H<
AGPDBI_H1	2.3C 2.4H<
AGPDBI_LO	2.3C 2.4H<
AGPMBDET	2.4C 2.4D 2.5H<
AGPRBF	2.3C 2.4H<
AGPSBA<0>	2.3C 2.3D
AGPSBA<7..0>	2.3C 2.4H<
AGPSBA<1>	2.3C 2.3D
AGPSBA<2>	2.4C 2.4D
AGPSBA<3>	2.4C 2.4D
AGPSBA<4>	2.4C 2.4D
AGPSBA<5>	2.4C 2.4D
AGPSBA<6>	2.4C 2.4D
AGPSBA<7>	2.4C 2.4D
AGPSBSTBF	2.3C 2.4H<
AGPSBSTBS	2.3C 2.4H<
AGPST0	2.3C 2.4H<
AGPST1	2.3C 2.4H<
AGPST2	2.3C 2.4H<
AGPSTOP	2.5H<
AGPVREF	2.4C 2.4D 2.4H<
AGPVREFCG	2.4C 2.4H<
AGPVREFGC	2.4A 2.4H<
AGPWBF	2.3C 2.4H<
ATXC	8.1F< 8.3D 8.3G
ATXC*	8.1F< 8.3D 8.3G
ATXDO	8.1F< 8.2D 8.2G
ATXDO*	8.1F< 8.2D 8.2G
ATXD1	8.1F< 8.2G 8.3D
ATXD1*	8.1F< 8.2G 8.3D
ATXD2	8.1F< 8.3D 8.3G
ATXD2*	8.1F< 8.3D 8.3G
BUFRST*	9.4D< 11.3D> 12.3A<
CIN	12.2A< 15.4F>
CVBS_PB_MUX	7.5E> 15.4A<
CVBS_Y_MUX	7.4E> 15.3A<
C_MUX	7.3E> 15.3A<
DACA_BLUE	6.2A< 6.5C
DACA_BLUE_C	6.2A< 6.4G
DACA_B_F	6.2A< 6.5F
DACA_GREEN	6.2A< 6.5C
DACA_GREEN_C	6.2A< 6.4G
DACA_G_F	6.2A< 6.4F
DACA_HSYNC	6.2A< 6.4C
DACA_HSYNC_C	6.2G>
DACA_RED	6.2A< 6.5C
DACA_RED_C	6.2A< 6.3G
DACA_R_F	6.2A< 6.3F
DACA_VDD	6.2A< 6.4B
DACA_VSYNC	6.2A< 6.4C
DACA_VSYNC_C	6.3G>
DACB_BLUE	7.5A< 7.5D
DACB_BLUE_C	7.3G> 8.3G<
DACB_GREEN	7.4D 7.5A<
DACB_GREEN_C	7.3G> 8.3G<
DACB_HSYNC_C	7.2G> 7.2G> 8.3G<
DACB_RED	7.3D 7.5A<
DACB_RED_C	7.3G> 8.3G<
DACB_RSET	7.3B 7.5A<
DACB_VDD	7.3B 7.5A<
DACB_VREF	7.3B 7.5A<
DACB_VSYNC_C	7.2G> 7.2G> 8.3G<
DVI_HPD	8.4D> 11.2D<
FBACLK0	3.4C> 4.1F< 4.2B< 4.2D< 4.4G<
FBACLK0*	3.4C> 4.1F< 4.2B< 4.2D< 4.5G<
FBACLK1	3.4C> 5.1F< 5.2B< 5.2D< 5.4G<
FBACLK1*	3.4C> 5.1F< 5.2B< 5.2D< 5.4G<
FBA_PLLAVDD	3.1G< 3.5C
FBCAL_PD_VDDQ	3.1G< 3.4C
FBCAL_PU_GND	3.1G< 3.4C
FBCAL_TERM_GND	3.1G< 3.4C
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FBD<0>	3.1A 4.3A 4.3E
FBD<31..0>	3.1A<> 4.1F< 4.3A<> 4.3C
FBD<1>	3.1A 4.3A 4.3E
FBD<2>	3.1A 4.3A 4.3E
FBD<3>	3.1A 4.3A 4.3E
FBD<4>	3.1A 4.3A 4.3E
FBD<5>	3.1A 4.3A 4.3E
FBD<6>	3.1A 4.3A 4.3E
FBD<7>	3.1A 4.3A 4.3E
FBD<8>	3.1A 4.3A 4.3C
FBD<9>	3.1A 4.3A 4.3C
FBD<10>	3.1A 4.3A 4.3C
FBD<11>	3.1A 4.3C 4.4A
FBD<12>	3.1A 4.3C 4.4A
FBD<13>	3.1A 4.3C 4.4A
FBD<14>	3.2A 4.3C 4.4A
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FBD<21>	3.2A 4.4A 4.4E
FBD<22>	3.2A 4.4A 4.4E
FBD<23>	3.2A 4.4A 4.4E
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FBD<26>	3.2A 4.4C 4.5A
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FBD<31>	3.2A 4.3C 4.5A
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FBD<63..32>	3.2A<> 5.1F< 5.3A<> 5.3C
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FBD<34>	3.2A 5.3A 5.3C
FBD<35>	3.2A 5.3A 5.3C
FBD<36>	3.2A 5.3A 5.3C
FBD<37>	3.2A 5.3A 5.3C
FBD<38>	3.2A 5.3A 5.3C
FBD<39>	3.2A 5.3A 5.3C
FBD<40>	3.2A 5.3A 5.3E
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FBDQM<3..0>	4.1F<
FBDQM<7..0>	3.3A> 4.4C< 5.4B<
FBDQM<1>	3.3A 4.3C< 4.4C
FBDQM<2>	3.3A 4.4C 4.4E<
FBDQM<3>	3.3A 4.4C< 4.5C
FBDQM<4>	3.3A 5.3C< 5.4C
FBDQM<7..4>	5.1F<
FBDQM<5>	3.3A 5.3E< 5.4C
FBDQM<6>	3.3A 5.4C< 5.4C
FBDQM<7>	3.3A 5.4E< 5.5C
FBDQS<0>	3.2G 3.4A 4.3E<> 4.4E
FBDQS<3..0>	4.1F<
FBDQS<7..0>	3.4A<> 4.4D<> 5.4D<>
FBDQS<1>	3.2G 3.4A 4.3C<> 4.4E
FBDQS<2>	3.2G 3.4A 4.4E<> 4.4E
FBDQS<3>	3.2G 3.4A 4.4C<> 4.5E
FBDQS<4>	3.2G 3.4A 5.3C<> 5.4E
FBDQS<7..4>	5.1F<
FBDQS<5>	3.2G 3.4A 5.3E<> 5.4E
FBDQS<6>	3.3G 3.4A 5.4C<> 5.4E
FBDQS<7>	3.3G 3.4A 5.4E<> 5.5E
FBVREF	3.1G< 3.5A
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FB_CMD<26..0>	3.3D> 4.1A< 5.1A<
FB_CMD<1>	3.3C
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FB_CMD<5>	3.3C
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FB_CMD<7>	3.3C
FB_CMD<8>	3.3C
FB_CMD<9>	3.3C
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FB_CMD<12>	3.3C
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FB_CMD<15>	3.3C
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FB_CMD<18>	3.3C
FB_CMD<19>	3.3C
FB_CMD<20>	3.3C
FB_CMD<21>	3.3C
FB_CMD<22>	3.4C
FB_CMD<23>	3.4C
FB_CMD<24>	3.4C
FB_CMD<25>	3.4C
FB_CMD<26>	3.4C
FB_DLLVDD	3.1G<
I2CA_SCL	6.1A< 6.4C
I2CA_SCL_C	6.1G>
I2CA_SDA	6.1A< 6.4C
I2CA_SDA_C	6.2G>
I2CB_SCL_C	7.1G> 7.1G> 8.3G<
I2CB_SDA_C	7.1G> 7.1G> 8.3G<>
I2CC_SCL	11.2E> 12.3A< 15.2A<
I2CC_SDA	11.2E<> 12.3A<> 15.2A<
IFP_ABPLLVDD	8.1F< 8.3B
IFP_AB_VDD	8.1F< 8.2B 8.3B
ISUPP	11.2D> 13.1D<
LOAD_TEST	7.4C> 11.2D<
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M10A_D<11..0>	9.3E<> 10.2A<
M10A_D<1>	9.3C 9.3D 10.1C
M10A_D<2>	9.3C 9.3D 10.4C
M10A_D<3>	9.3C 9.3D
M10A_D<4>	9.4C 9.4D
M10A_D<5>	9.4C 9.4D
M10B_D<0>	9.2C 10.1C 12.3D
M10B_D<7..0>	12.3A>
M10B_D<11..0>	9.1D<> 10.2A<
M10B_D<1>	9.2C 10.1C 12.3D
M10B_D<2>	9.2C 10.2C 12.3D
M10B_D<3>	9.2C 10.3C 12.3D
M10B_D<4>	9.2C 10.2C 12.3D
M10B_D<5>	9.2C 10.2C 12.3D
M10B_D<6>	9.2C 10.2C 12.3D
M10B_D<7>	9.2C 12.3D
M10B_D<8>	9.2C 10.1C
M10B_D<9>	9.2C 10.2C
M10B_D<10>	9.2C 10.4C
M10B_D<11>	9.2C 10.3C
M10B_VSYNC	9.2D> 10.2A< 10.4C 12.4B> 12.4B>
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PCIAD<1>	2.1C 2.1D
PCIAD<2>	2.1C 2.1D
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PCIAD<7>	2.1C 2.1D
PCIAD<8>	2.1C 2.1D
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PCIAD<17>	2.1C 2.1D
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PCIAD<21>	2.2C 2.2D
PCIAD<22>	2.2C 2.2D
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PCIAD<31>	2.2C 2.2D
PCICBE0	2.2C 2.3H<
PCICBE1	2.2C 2.3H<
PCICBE2	2.2C 2.3H<
PCICBE3	2.2C 2.3H<
PCICLK	2.2C 2.3H<
PCIDEVSEL	2.3C 2.4H<
PCIFRAME	2.2C 2.4H<
PCIGNT	2.2C 2.3H<
PCIINTA	2.3C 2.4H<
PCIINTB	2.4H<
PCIIRDY	2.2C 2.4H<
PCIPAR	2.3C 2.4H<
PCIREQ	2.2C 2.3H<
PCIRST*	2.2C 2.3H<
PCISTOP	2.3C 2.4H<
PCITRDY	2.3C 2.4H<
PLL_VDD	11.1F< 11.4B
ROM_CS*	9.4D< 11.3E> 11.3E>
SEL_2ND_DEV	7.4A< 11.2D>
SEL_HDTV_SDTV	7.3A< 11.2D>
XTALIN	11.1F< 11.5B
XTALOUT	11.1F< 11.5C
Y_CVBSIN	12.2A< 15.5F>

ASSEMBLY	NV44A, 350/250, 128MB/64-bit, 16Mx16, VGA+DVI-I+HDTV-out
PAGE DETAIL	<edit here to insert page detail>

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*** Part Cross-Reference for the entire design ***

BKT1	BRACKET	10
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C2	C	7
C3	C	7
C4	C	7
C5	C	7
C6	C	7
C7	C	15
C8	C	15
C9	C	15
C10	C	15
C11	C	6
C12	C	6
C13	C	6
C14	C	6
C15	C	12
C16	C	12
C17	C	6
C18	C	12
C19	C	12
C20	C	12
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C22	C	12
C23	C	6
C24	C	9
C25	C	14
C26	C	14
C27	C	11
C28	C_POL	14
C29	C_POL	14
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C32	C	11
C33	C	2
C34	C	2
C35	C	11
C36	C	11
C37	C_POL	13
C38	C_POL	13
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C40	C	14
C41	C	2
C42	C	14
C43	C	8
C44	C	8
C45	C_POL	13
C46	C_POL	13
C47	C	8
C48	C	2
C49	C	2
C50	C_POL	13
C51	C_POL	13
C52	C	2
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C54	C	2
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C58	C	2
C59	C	2
C60	C	3
C61	C_POL	13
C62	C_POL	13
C63	C	13
C64	C	13
C65	C_POL	13
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C68	C	2
C69	C	5
C70	C	4
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U5	U_MEM_FL_SER_128KX8	11
U6	U_GPU_G3AGP	2 3 6 7 8 9 11
U7	U_SWREG_RT921B	13
U8	U_MEM_SD_DDR_4_8MX16	4
U9	U_MEM_SD_DDR_4_8MX16	5
U501	U_MEM_SD_DDR_4_8MX16	4
U502	U_MEM_SD_DDR_4_8MX16	5
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U504	U_MEM_FE_CRYPT_8X128	11
U505	U_VREG_5PIN	14
U506	U_SW_ANA_3257	7
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