18P115, NV18GL, 64MB 128-BIT 4MX32-DDR, LFH, AGP8X-LP

RRR: HISTORY:

000 A: REPORT TO BOARD 180-10115-0000-A00
INITIAL VERSION
THE DESIGN IS BASED ON P113 WITH THE TMDS MOVE INTERNALLY,
POWER SUPPLY CHANGES, AND REMOVAL OF TV OUT TO REDUCE COST.

RRR:

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12-13 PARTS CROSS REFERENCE

SCHEMATIC BASE
602-10115-0000-RRR P115 WITH INTERNAL LFH OPTION

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DETAIL	P115 OVERVIEW		
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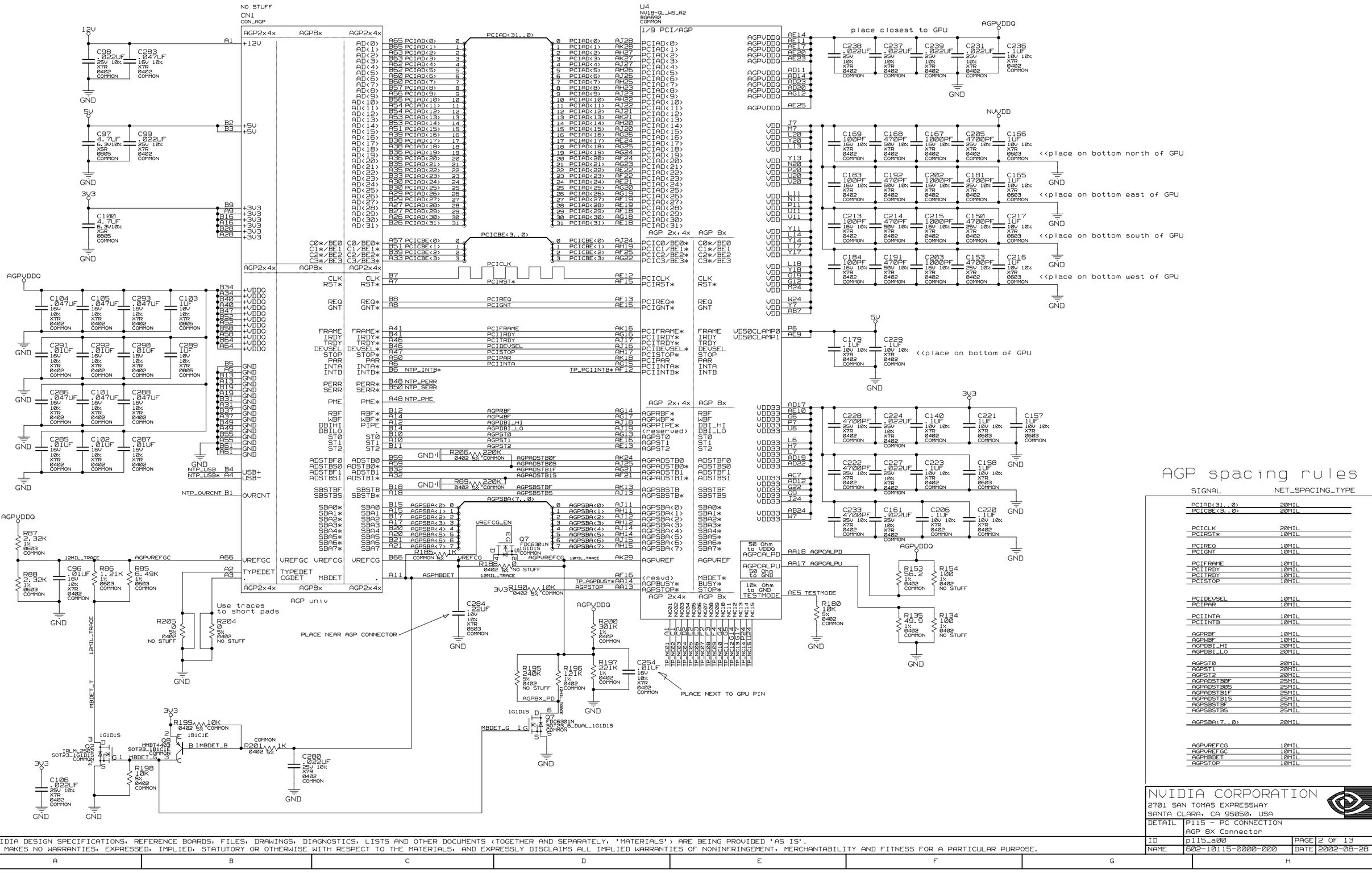

AGP spacing rules

SIGNAL	NET_SPACING_TYPE
PCIAD<31..0>	20MIL
PCICBE<3..0>	20MIL
PCICLK	20MIL
PCIRST*	10MIL
PCIREQ	10MIL
PCIGNT	10MIL
PCIFRAME	10MIL
PCIIRDY	10MIL
PCITRDY	10MIL
PCISTOP	10MIL
PCIDEVSEL	10MIL
PCIPAR	10MIL
PCIINTA	10MIL
PCIINTB	10MIL
AGPRBF	10MIL
AGPWBF	10MIL
AGPDBI_HI	20MIL
AGPDBI_LO	20MIL
AGPST0	20MIL
AGPST1	20MIL
AGPST2	20MIL
AGPADSTB0F	25MIL
AGPADSTB0S	25MIL
AGPADSTB1F	25MIL
AGPADSTB1S	25MIL
AGPSBSTBF	25MIL
AGPSBSTBS	25MIL
AGPSBA<7..0>	20MIL
AGPVREFCG	10MIL
AGPVREFGC	10MIL
AGPMBDET	10MIL
AGPSTOP	10MIL

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DETAIL	P115 - PC CONNECTION AGP 8X Connector		
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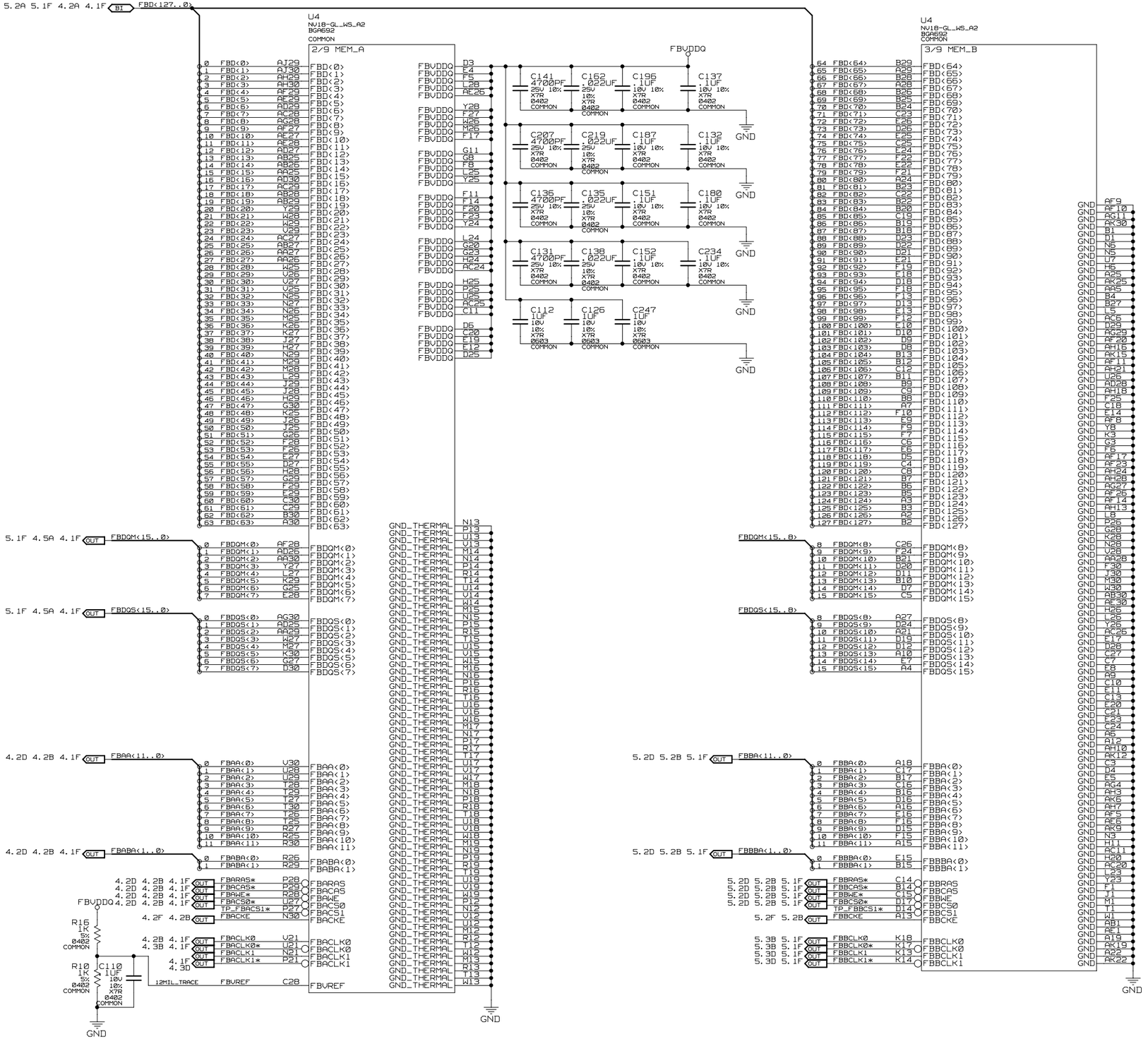

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DETAIL	P115 - MEMORY BUS NV18 MEM BUS INTERFACE		
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MEMORY 1st bank 0..63
PLACE ALL DISCRETE COMPONENTS AS CLOSE AS POSSIBLE TO MEMORY

ADD TPS FOR LONG & SHORT ADDRESS & CAS LINES FOR QUAL

NET Name	Diffpair	NET_SPACING_TYPE
4.2B 3.5B IN FBACLK0	FBACLK0	10MIL_G2G_25MIL
4.3B 3.5B IN FBACLK0*	FBACLK0	10MIL_G2G_25MIL
4.2D 3.5B IN FBACLK1	FBACLK1	10MIL_G2G_25MIL
4.3D 3.5B IN FBACLK1*	FBACLK1	10MIL_G2G_25MIL
4.2A 3.1B BI FBD<63..0>		10MIL
4.5A 3.3B IN FBDQM<7..0>		10MIL
4.5A 3.3B IN FBDQS<7..0>		15MIL
MFBD<63..0>		10MIL
MFBDQM<7..0>		10MIL
MFBDQS<7..0>		15MIL
4.2B 3.4B 4.2D IN FBAA<11..0>		10MIL
4.2D IN FBARAS*		10MIL
4.2B IN FBACAS*		10MIL
3.5B4.2D IN FBAWE*		10MIL
4.2D3.5B IN FBACS0*		10MIL
4.2B4.2B		
3.5B4.2D IN FBABA<0>		10MIL
4.2B 3.5B IN FBABA<1>		10MIL
4.2B 3.5B IN FBACKE		10MIL

U7 / U13 4MX32DDR-3.6 BGA144 COMMON

FBVDDQ

4.2D 4.1F 3.5B IN FBARAS* → RAS (M2)
4.2D 4.1F 3.5B IN FBACAS* → CAS (L3)
4.2D 4.1F 3.5B IN FBAWE* → WE (L2)
4.2D 4.1F 3.5B IN FBACS0* → CS (N2)

4.2D 4.1F 3.4B IN FBAA<11..0> → A<0> (N5) … A<11> (M7), NC/A<12> (L9)

4.2D 4.1F 3.5B IN FBABA<0> → BA<0> (N4)
3.5B IN FBABA<1> → BA<1> (M5)
TP_BA2_1 → NC/BA<2> (M10)

4.2F
3.5B IN FBACKE → CKE (N12)
3.5B IN FBACLK0 → CLK (M11)
4.1F IN FBACLK0* → CLK (M12)

FBD<63..0> BI 3.1B 4.1F

R193 150 5% 0402 STUFF
R194 68.1 1% 0603 COMMON
R192 150 5% 0402 NO STUFF

THERM (F6, F7, F8, F9, G5, G6, G7, G8, G9, H6, H7, H8, H9, J6, J7, J8, J9)

M13 Must be GND (NC NC NC NC NC NC NC NC)

N13 Vref → MEM0VREF
R186 1K 5% 0402 2 COMMON .25W
R189 1K 5% 0402 2 COMMON 2 PLL_TRACE
C275 .1UF 10V 10% X7R 0402 COMMON

GND

TP_A12_1 / TP_A12_2

4.1F 3.5B IN FBACLK1 → M11
4.1F 3.5B IN FBACLK1* → M12
PLACE AT T-POINT
R73 10K 1% 0402 COMMON → GND

R81 150 5% 0402 NO STUFF
R80 68.1 1% 0603 COMMON
R84 150 5% 0402 NO STUFF

MEM1VREF
R68 1K 5% 0402 2 COMMON .25W
R72 1K 5% 0402 2 COMMON 2 PLL_TRACE
C92 .1UF 10V 10% X7R 0402 COMMON

MFBD<63..0>

U7 / U13 4MX32DDR-3.6 BGA144 COMMON

MFBD<0..7>	G2, G3, F1, J1, J2, J3, K2, K3	MFBDQM<0>	H3
MFBD<8..15>	J12, J13, K12, K13, F13, G12, G13, H12	MFBDQS<0>	H2
MFBD<16..23>	E2, D3, C2, B5, C5, B6, B7, B3	MFBDQM<2>	B3
		MFBDQS<2>	B2
MFBD<24..31>	D13, C13, D12, F12, C9, B9, B8, B12	MFBDQM<1>	H12
		MFBDQS<1>	H13
MFBD<32..39>	B7, C6, B6, B5, C2, D2, E2, D3	MFBDQM<4>	B3
		MFBDQS<4>	B2
MFBD<40..47>	K13, K12, J13, J12, G13, G12, F13, F12	MFBDQM<3>	H12
		MFBDQS<3>	H13
MFBD<48..55>	F3, F2, G3, G2, J2, J3, K2, K3	MFBDQM<6>	H3
		MFBDQS<6>	H2
MFBD<56..63>	E13, D13, D12, C12, B10, C9, B9, B6	MFBDQM<5>	H12
		MFBDQS<5>	H13

DQ<0..7>, DQM, DQS

4.1F 3.3B IN FBDQM<0> → R160 15 5% 0402 COMMON → MFBDQM<0>
4.1F 3.3B IN FBDQM<1> → R82 15 5% 0402 COMMON → MFBDQM<1>
4.1F 3.3B IN FBDQM<2> → R59 15 5% 0402 COMMON → MFBDQM<2>
4.1F 3.3B IN FBDQM<3> → R67 15 5% 0402 COMMON → MFBDQM<3>
4.1F 3.3B IN FBDQM<4> → R61 15 5% 0402 COMMON → MFBDQM<4>
4.1F 3.3B IN FBDQM<5> → R79 15 5% 0402 COMMON → MFBDQM<5>
4.1F 3.3B IN FBDQM<6> → R150 15 5% 0402 COMMON → MFBDQM<6>
4.1F 3.3B IN FBDQM<7> → R69 15 5% 0402 COMMON → MFBDQM<7>

4.1F 3.3B IN FBDQS<0> → R159 15 5% 0402 COMMON → MFBDQS<0>
4.1F 3.3B IN FBDQS<1> → R83 15 5% 0402 COMMON → MFBDQS<1>
4.1F 3.3B IN FBDQS<2> → R56 15 5% 0402 COMMON → MFBDQS<2>
4.1F 3.3B IN FBDQS<3> → R70 15 5% 0402 COMMON → MFBDQS<3>
4.1F 3.3B IN FBDQS<4> → R58 15 5% 0402 COMMON → MFBDQS<4>
4.1F 3.3B IN FBDQS<5> → R78 15 5% 0402 COMMON → MFBDQS<5>
4.1F 3.3B IN FBDQS<6> → R151 15 5% 0402 COMMON → MFBDQS<6>
4.1F 3.3B IN FBDQS<7> → R71 15 5% 0402 COMMON → MFBDQS<7>

PLACE NEAR MEMORY

Decoupling for left MEMORY

Place around the MEM

C53 4.7UF 6.3V 10% X5R 0805 COMMON
C259 .1UF 10V 10% X7R 0402 COMMON
C257 .1UF 10V 10% X7R 0402 COMMON
C251 .1UF 10V 10% X7R 0402 COMMON
C267 .1UF 10V 10% X7R 0402 COMMON

Place under the MEM

C243 100PF 16V 10% X7R 0402 COMMON
C258 470PF 50V 10% X7R 0402 COMMON
C245 1000PF 16V 10% X7R 0402 COMMON
C260 4700PF 25V 10% X7R 0402 COMMON
C246 .01UF 25V 10% X7R 0402 COMMON

GND

FBVDDQ

C74 4.7UF 6.3V 10% X5R 0805 COMMON
C271 .1UF 10V 10% X7R 0402 COMMON
C255 .1UF 10V 10% X7R 0402 COMMON
C270 .1UF 10V 10% X7R 0402 COMMON
C273 .1UF 10V 10% X7R 0402 COMMON

C269 100PF 16V 10% X7R 0402 COMMON
C261 470PF 50V 10% X7R 0402 COMMON
C249 1000PF 16V 10% X7R 0402 COMMON
C274 4700PF 25V 10% X7R 0402 COMMON
C242 .01UF 25V 10% X7R 0402 COMMON
C272 .01UF 25V 10% X7R 0402 COMMON

C253 100PF 16V 10% X7R 0402 COMMON
C266 470PF 50V 10% X7R 0402 COMMON
C263 1000PF 16V 10% X7R 0402 COMMON
C256 4700PF 25V 10% X7R 0402 COMMON
C252 .01UF 25V 10% X7R 0402 COMMON
C244 .01UF 25V 10% X7R 0402 COMMON

GND

Decoupling for right MEMORY

Place around the MEM

C111 4.7UF 6.3V 10% X5R 0805 COMMON
C125 .1UF 10V 10% X7R 0402 COMMON
C139 .1UF 10V 10% X7R 0402 COMMON
C148 .1UF 10V 10% X7R 0402 COMMON
C160 .1UF 10V 10% X7R 0402 COMMON

Place under the MEM

C128 100PF 16V 10% X7R 0402 COMMON
C133 470PF 50V 10% X7R 0402 COMMON
C117 1000PF 16V 10% X7R 0402 COMMON
C118 4700PF 25V 10% X7R 0402 COMMON
C119 .01UF 25V 10% X7R 0402 COMMON
C143 .01UF 25V 10% X7R 0402 COMMON

GND

FBVDDQ

C10 4.7UF 6.3V 10% X5R 0805 COMMON
C175 .1UF 10V 10% X7R 0402 COMMON
C116 .1UF 10V 10% X7R 0402 COMMON
C174 .1UF 10V 10% X7R 0402 COMMON
C173 .1UF 10V 10% X7R 0402 COMMON

C171 100PF 16V 10% X7R 0402 COMMON
C172 470PF 50V 10% X7R 0402 COMMON
C124 1000PF 16V 10% X7R 0402 COMMON
C130 4700PF 25V 10% X7R 0402 COMMON
C154 .01UF 25V 10% X7R 0402 COMMON
C164 .01UF 25V 10% X7R 0402 COMMON

C120 100PF 16V 10% X7R 0402 COMMON
C155 470PF 50V 10% X7R 0402 COMMON
C156 1000PF 16V 10% X7R 0402 COMMON
C127 4700PF 25V 10% X7R 0402 COMMON
C144 .01UF 25V 10% X7R 0402 COMMON
C149 .01UF 25V 10% X7R 0402 COMMON

GND

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DETAIL	P115 - MEMORY MEM BANK A (0 .. 63)		
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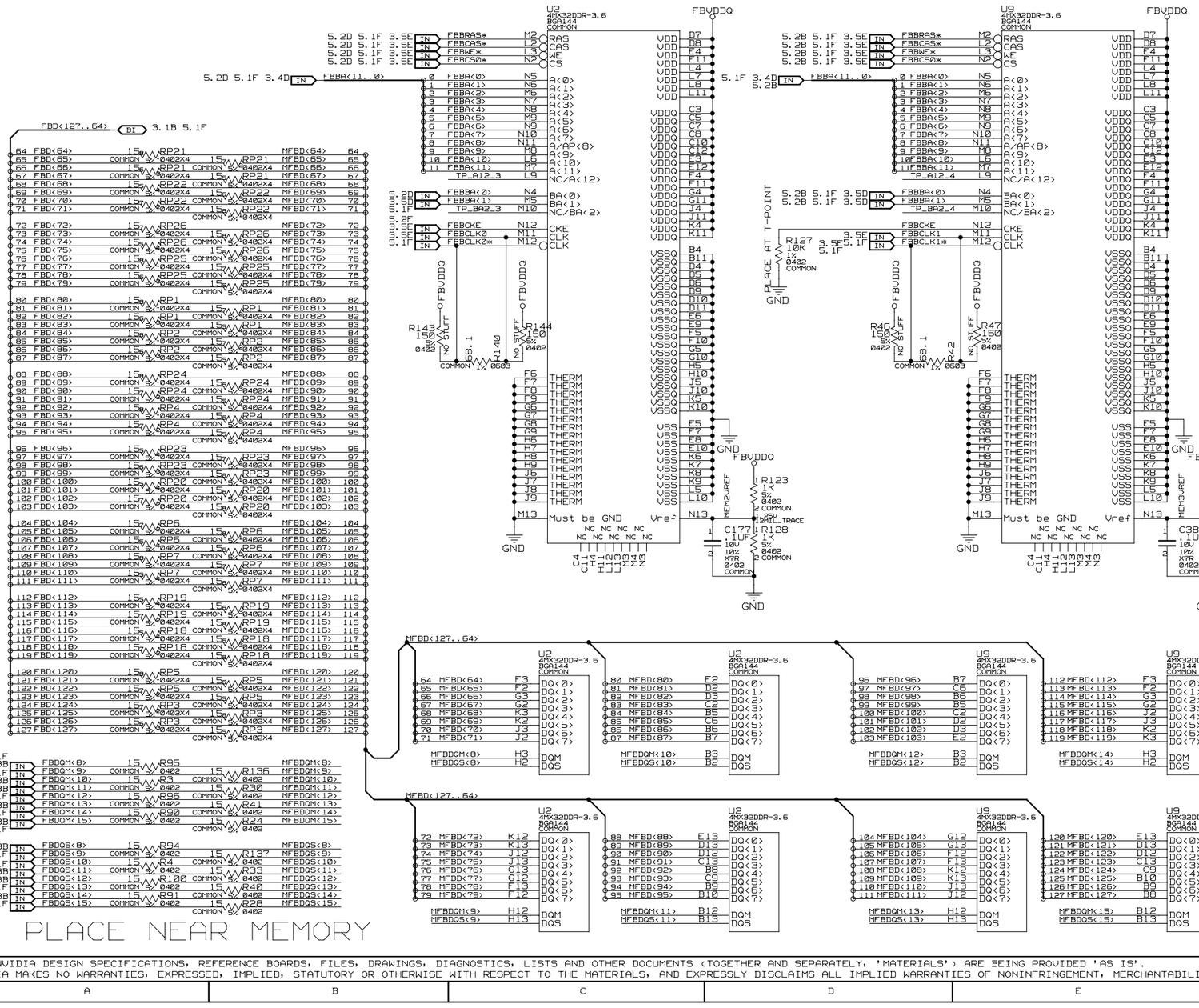
MEMORY 1st bank 64..127
PLACE ALL DISCRETE COMPONENTS AS CLOSE AS POSSIBLE TO MEMORY

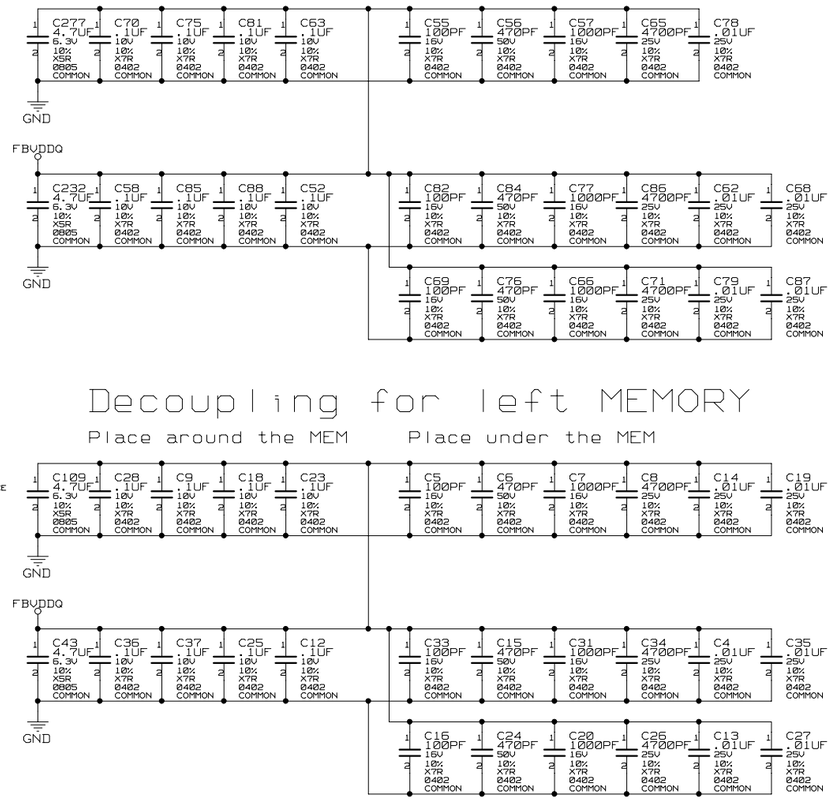
ADD TPS FOR LONG & SHORT ADDRESS & CAS LINES FOR QUAL

NET Name	Diffpair	NET_SPACING_TYPE
5.3B 3.5E IN FBBCLK0	FBBCLK0	10MIL_G2G_25MIL
5.3B 3.5E IN FBBCLK0*	FBBCLK0	10MIL_G2G_25MIL
5.3D 3.5E IN FBBCLK1	FBBCLK1	10MIL_G2G_25MIL
5.3D 3.5E IN FBBCLK1*	FBBCLK1	10MIL_G2G_25MIL
5.2A 3.1B BI FBD<127..64>		10MIL
5.5A 3.3B IN FBDQM<15..8>		10MIL
5.5A 3.3B IN FBDQS<15..8>		15MIL
MFBD<127..64>		10MIL
MFBDQM<15..8>		10MIL
MFBDQS<15..8>		15MIL
5.2D 5.2B 3.4D IN FBBA<11..0>		10MIL
5.2D 5.2B 3.5E IN FBBRAS*		10MIL
5.2D 5.2B 3.5E IN FBBCAS*		10MIL
5.2D 5.2B 3.5E IN FBBWE*		10MIL
5.2D 5.2B 3.5E IN FBBCS0*		10MIL
5.2D 5.2B 3.5D IN FBBBA<0>		10MIL
5.2D 5.2B 3.5D IN FBBBA<1>		10MIL
5.2B 3.5E IN FBBCKE		10MIL



Decoupling for left MEMORY

Place around the MEM Place under the MEM



Decoupling for left MEMORY

Place around the MEM Place under the MEM

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DETAIL	P115 - MEMORY MEM BANK B (64 .. 127)		
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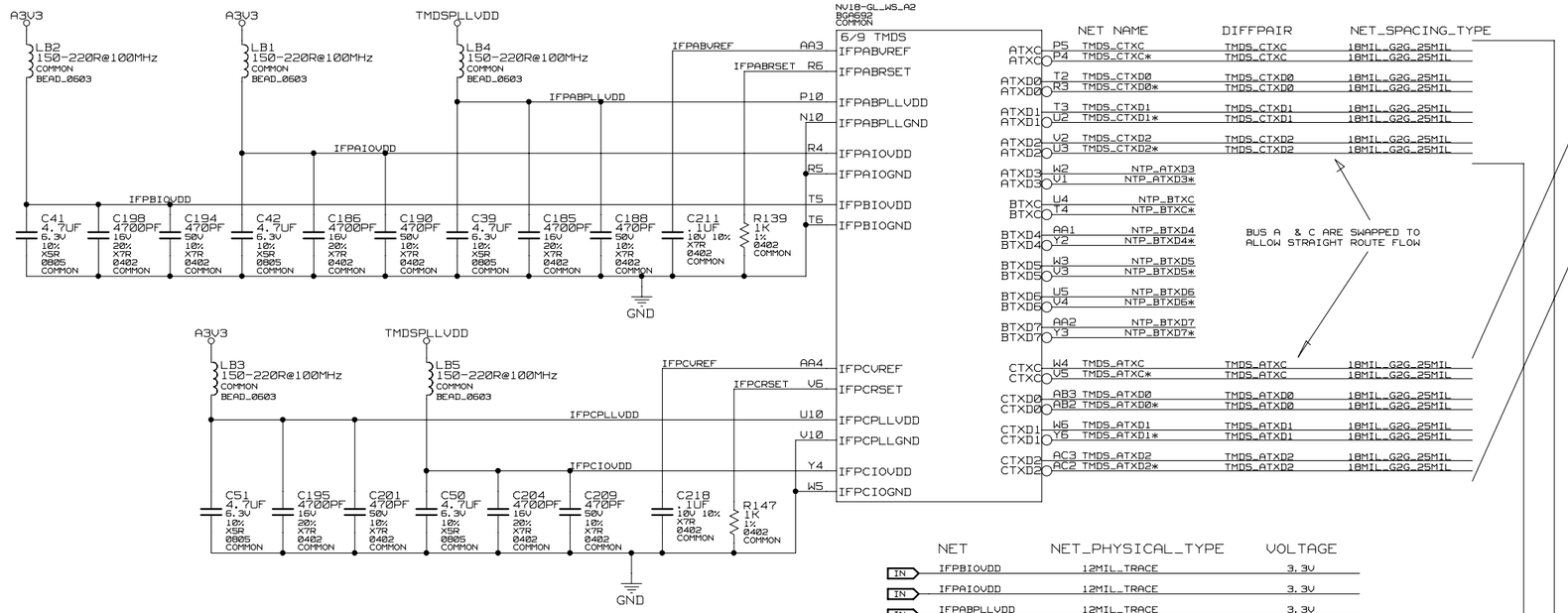
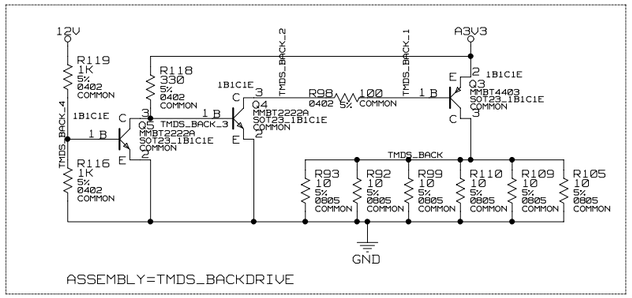
NET	NET_PHYSICAL_TYPE	VOLTAGE
SILA_AVCC	12MIL_TRACE	3.3V
SILA_VCC	12MIL_TRACE	3.3V
SILA_PVCC1	12MIL_TRACE	3.3V
SILA_PVCC2	12MIL_TRACE	3.3V
SILB_AVCC	12MIL_TRACE	3.3V
SILB_VCC	12MIL_TRACE	3.3V
SILB_PVCC1	12MIL_TRACE	3.3V
SILB_PVCC2	12MIL_TRACE	3.3V
TMDS_BACK	12MIL_TRACE	3.3V



NET	NET_PHYSICAL_TYPE	VOLTAGE
IN IFPBIOVDD	12MIL_TRACE	3.3V
IN IFPAIOVDD	12MIL_TRACE	3.3V
IN IFPABPLLVDD	12MIL_TRACE	3.3V

INT TMDS

TMDS BACKDRIVE PREVENTION



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DETAIL	P115 - INTERNAL TMDS LFH CONNECTION		
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NET	NET_PHYSICAL_TYPE	VOLTAGE	NET_SPACING_TYPE
DDC_VCC	12MIL_TRACE	5V	

NET	NET_PHYSICAL_TYPE	IMPEDANCE_RULE	NET_SPACING_TYPE
DACA_RED		::37.5	20MIL
DACA_GREEN		::37.5	20MIL
DACA_BLUE		::37.5	20MIL
FDACA_RED	10MIL_TRACE		20MIL
FDACA_REDRTN	10MIL_TRACE		20MIL
FDACA_GREEN	10MIL_TRACE		20MIL
FDACA_GRNRTN	10MIL_TRACE		20MIL
FDACA_BLUE	10MIL_TRACE		20MIL
FDACA_BLURTN	10MIL_TRACE		20MIL
DA_RED	10MIL_TRACE		20MIL
DA_GRN	10MIL_TRACE		20MIL
DA_BLU	10MIL_TRACE		20MIL

37.5 OHM TRACE TILL 75R RESISTORS

PLACE IN OUTPUT FILTER SECTION!

RGB-FILTER

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DETAIL	P115 - EXTERNAL IO DAC A - VGA CONNECTION		
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NET	NET_PHYSICAL_TYPE	IMPEDANCE_RULE	NET_SPACING_TYPE
8.3G 6.3G IN / 8.3G 6.4G IN — FDACB_RED	10MIL_TRACE		20MIL
FDACB_REDRTN	10MIL_TRACE		20MIL
8.3G 6.3G IN / 8.3G 6.4G IN — FDACB_GREEN	10MIL_TRACE		20MIL
FDACB_GRNRTN	10MIL_TRACE		20MIL
8.4G 6.4G IN / 8.4G 6.4G IN — FDACB_BLUE	10MIL_TRACE		20MIL
FDACB_BLURTN	10MIL_TRACE		20MIL
DB_RED	10MIL_TRACE		20MIL
DB_GRN	10MIL_TRACE		20MIL
DB_BLU	10MIL_TRACE		20MIL
DACB_RED		::37.5	20MIL
DACB_GREEN		::37.5	20MIL
DACB_BLUE		::37.5	20MIL

PLACE NEAR SOURCE NV18

R165 33 0402 5% COMMON — RI2CB_SCL
R166 33 0402 5% COMMON — RI2CB_SDA
R112 2.2K 5% 0402 COMMON (5V)
R18 2.2K 5% 0402 COMMON (GND)

L13 150-220R@100MHZ BEAD_0603 COMMON — FDACB_SCL OUT 6.3G
L2 150-220R@100MHZ BEAD_0603 COMMON — FDACB_SDA BI 6.3G
C134 22PF 50V 5% NPO 0603 COMMON
C30 22PF 50V 5% NPO 0603 COMMON
D12 BAV99 SOT23 100V 100MA NO STUFF
D3 BAV99 SOT23 100V 100MA NO STUFF

9.3F 8.2C 9.3F 8.2C IN DACB_HSYNC
9.3F 8.2C 9.3F 8.2C IN DACB_VSYNC

U5 74ACT08 (74ACT_SO COMMON)
R51 33 0402 5% COMMON — BUF_DACB_HS
R43 33 0402 5% COMMON — BUF_DACB_VS

L12 68NH 0603 COMMON — FDACB_HSYNC OUT 6.3G
L1 68NH 0603 COMMON — FDACB_VSYNC OUT 6.3G
C115 47PF 50V 1% NPO 0603 COMMON
C17 47PF 50V 1% NPO 0603 COMMON
D10 BAV99 SOT23 100V 100MA NO STUFF
D2 BAV99 SOT23 100V 100MA NO STUFF

A3V3 — 150-220R@100MHz LBB BEAD_0805 COMMON — 12MIL_TRACE — DACB_VDD

C230 4.7UF 6.3V 10% X5R 0805 COMMON
C226 4700PF 25V 10% X7R 0402 COMMON
C225 470PF 50V 10% X7R 0402 COMMON
C210 .01UF 16V 10% X7R 0402 COMMON
R157 118 1% 0603 COMMON

U4 NV18-GL-WS-A2 BGA692 COMMON — 5/9 DAC_B

DACB_VDD	AB4	DACB_VDD
DACB_VREF	Y5	DACB_VREF
DACB_RSET	AD3	DACB_RSET
I2CB_SCL	AF6	I2CB_SCL
I2CB_SDA	AG5	I2CB_SDA
DACB_HSYNC	AF3	DACB_HSYNC
DACB_VSYNC	AE3	DACB_VSYNC
DACB_RED	AE2	DACB_RED
DACB_GREEN	AD2	DACB_GREEN
DACB_BLUE	AD1	DACB_BLUE
DACB_DUMP	AC4	

37.5 OHM TRACE TILL 75R RESISTORS

MODE	RSET	OUTPUT LEVEL
VGA	118 OHM 1%	660 MV TO 770 MV
TV	??? OHM 1%	??? MV TO ??? MV

L17 68NH 0603 COMMON — DB_RED — WIRE_WOUND L16 350R@100MHZ CMFLTR4_2012 COMMON
R132 75 1% 0603 COMMON
C182 3.09K 50V 1% NPO 0603 CHANGED
D15 BAV99 SOT23 100V 100MA NO STUFF

L14 68NH 0603 COMMON — DB_GRN — WIRE_WOUND L15 350R@100MHZ CMFLTR4_2012 COMMON
R121 75 1% 0603 COMMON
C163 1.62K 50V 1% NPO 0603 CHANGED
D13 BAV99 SOT23 100V 100MA NO STUFF

L19 68NH 0603 COMMON — DB_BLU — CMFLTR4_2012 L18 350R@100MHZ WIRE_WOUND COMMON
R146 75 1% 0603 COMMON
C200 22PF 50V 5% NPO 0603 NO STUFF
D16 BAV99 SOT23 100V 100MA NO STUFF

FDACB_RED OUT 6.3G 8.1A
FDACB_REDRTN IN 6.4G 8.1A
FDACB_GREEN OUT 6.3G 8.1A
FDACB_GRNRTN IN 6.4G 8.1A
FDACB_BLUE OUT 6.4G 8.1A
FDACB_BLURTN IN 6.4G 8.1A

A3V3 — C113 4.7UF 6.3V 10% X5R 0805 COMMON
5V — C108 4.7UF 6.3V 10% X5R 0805 COMMON
PLACE IN OUTPUT FILTER SECTION!

RGB-FILTER

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

DETAIL	P115 - IO DAC B - VGA FILTER		
ID	p115_a00	PAGE	8 OF 13
NAME	602-10115-0000-000	DATE	2002-08-28

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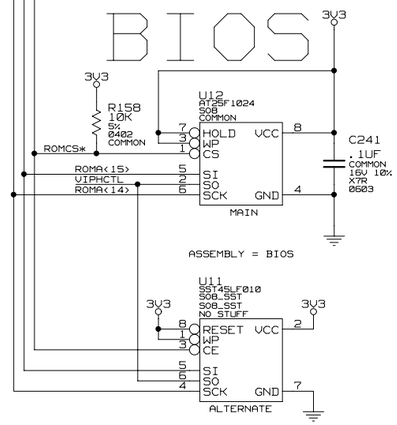
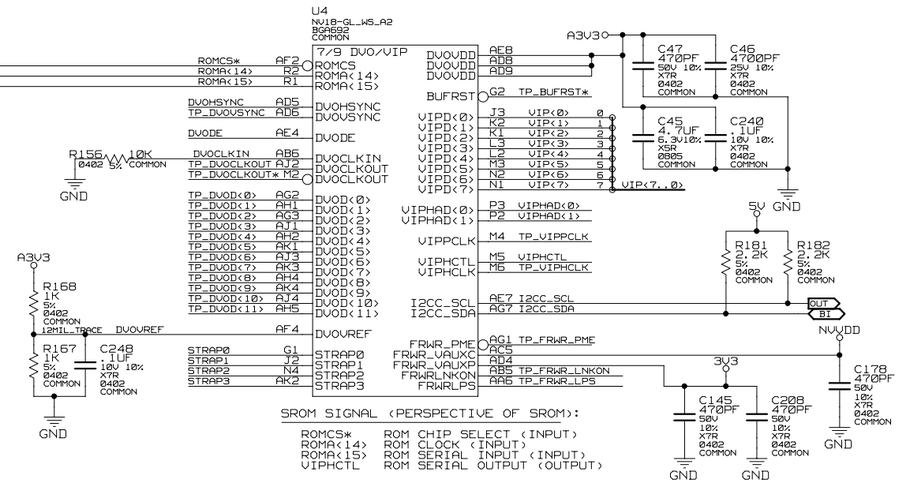
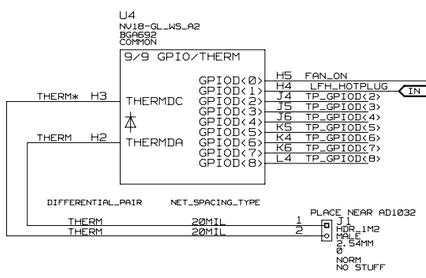


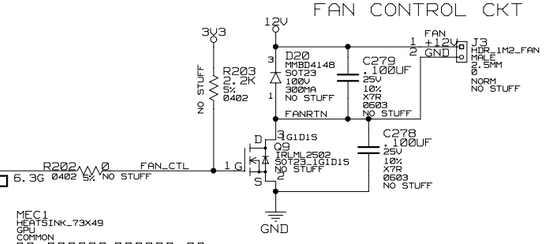


SROM SIGNAL (PERSPECTIVE OF SROM):

ROMCS*	ROM CHIP SELECT (INPUT)
ROMA<14>	ROM CLOCK (INPUT)
ROMA<15>	ROM SERIAL INPUT (INPUT)
VIPHCTL	ROM SERIAL OUTPUT (OUTPUT)

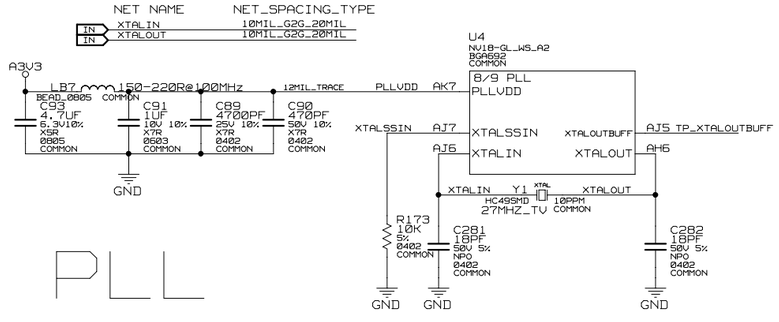
GPIO

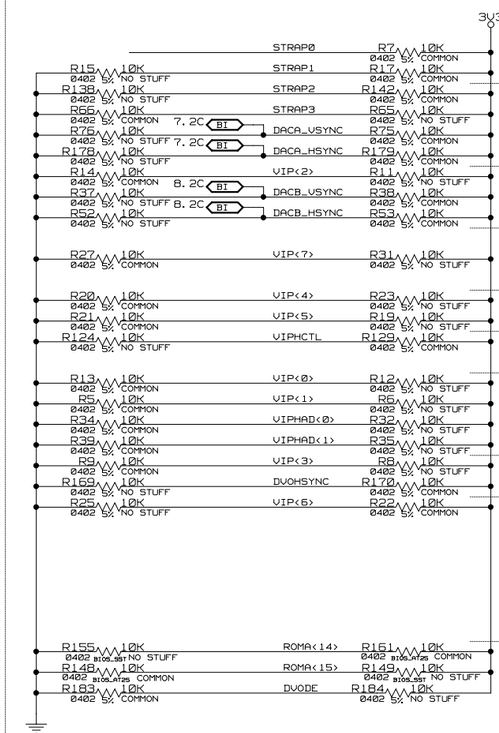




NET	NET_PHYSICAL_TYPE	VOLTAGE
FANRTN	12MIL_TRACE	0V

PLL





	BIT	DEFINITION
PCI_AD_SWAP	0	(1): PCI AD NORMAL
SUB_VENDOR	1	0: NO BIOS / (1): BIOS
RAM_CFG_0	5:2	RAM CONFIG
RAM_CFG_1		1101: 4MX32 DDR SDRAM, DQS PER 8 BITS, DLL-ON, LOW DRIVE STRENGTH
RAM_CFG_2		
RAM_CFG_3		
CRYSTAL_0	6	(0): 27 MHZ / 1: 14.318 MHZ
TV_MODE_0	8:7	0: SECAM / 1: NTSC 2: PAL - VGA SKU / (3): CRT - LFH SKU
TV_MODE_1		
AGP4x/8x	9	(0): ENABLE / 1: DISABLE
AGP_SBA	10	(0): ENABLE / 1: DISABLE
AGP_FASTWR	11	(0): ENABLE / 1: DISABLE
PCI_DEVID_0	13:12	DEVICE ID (PCI ID[3..0] = 8)
PCI_DEVID_1		
BUS_TYPE	14	0: PCI / (1): AGP
FP_IFACE	15	0: 24 BIT / 1: 12 BIT
USER_0	19:16	USER DEFINED
USER_1		0000: PC
USER_2		
USER_3		
PCI_DEVID_2	21:20	DEVICE ID (SEE ABOVE)
PCI_DEVID_3		
CRYSTAL_1	22	0: 13.5 MHZ / (1): 27.0 MHZ
FB_0	24:23	0: 64 MB / 1: 128MB
FB_1		2: 256 MB / 3: 512 MB
BR	25	0: DISABLE / 1: ENABLE
BR_128M	26	0: DISABLE / 1: ENABLE
BR_AGP	27	0: DISABLE / 1: ENABLE
BR_IO	28	0: DISABLE / 1: ENABLE
ROM_TYPE_0	30:29	0: PARALLEL / (1): SERIAL AT25F
ROM_TYPE_1		2: SERIAL SST45VF / 3: SERIAL (FUTURE)
DVO_A_MODE	0	(0): ENABLE DVO A / 1: ENABLE FIRE WIRE

NV18 STRAP

NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

DETAIL	P115 - IO NV18 BIOS, STRAPS, THERMAL, & PLL		
ID	p115_a00	PAGE	9 OF 13
NAME	602-10115-0000-000	DATE	2002-08-28

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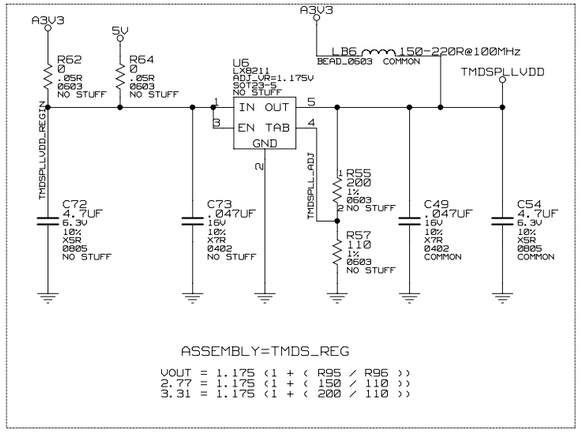
Power Supply

	NET	NET_PHYSICAL_TYPE	VOLTAGE
AGPVDDQ	AGPVDDQ	12MIL_TRACE	1.5V
3V3	3V3	12MIL_TRACE	3.3V
A3V3	A3V3	12MIL_TRACE	3.3V
FBVDD	FBVDD	12MIL_TRACE	2.5V
FBVDDQ	FBVDDQ	12MIL_TRACE	2.5V
	L_FB	12MIL_TRACE	2.5V
NVVDD	NVVDD	12MIL_TRACE	1.65V
	QNVVDD	12MIL_TRACE	1.65V
	SW_FETHS	12MIL_TRACE	1.65V
5V	5V	12MIL_TRACE	5V
	SW_5V	12MIL_TRACE	5V
12V	12V	12MIL_TRACE	12V
	SW_12V	12MIL_TRACE	12V
	TMDSPLLVDD_REGIN	12MIL_TRACE	3.3V
TMDSPLLVDD	TMDSPLLVDD	12MIL_TRACE	3.3V
	TMDSPLL_ADJ	12MIL_TRACE	3.3V
GND	GND	12MIL_TRACE	GND
	CGND	12MIL_TRACE	GND

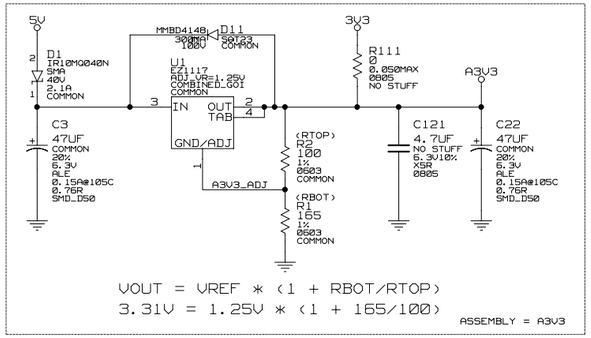
TMDS PLL SUPPLY



ASSEMBLY=TMDS_REG

VOUT = 1.175 (1 + (R95 / R96))
2.77 = 1.175 (1 + (150 / 110))
3.31 = 1.175 (1 + (200 / 110))

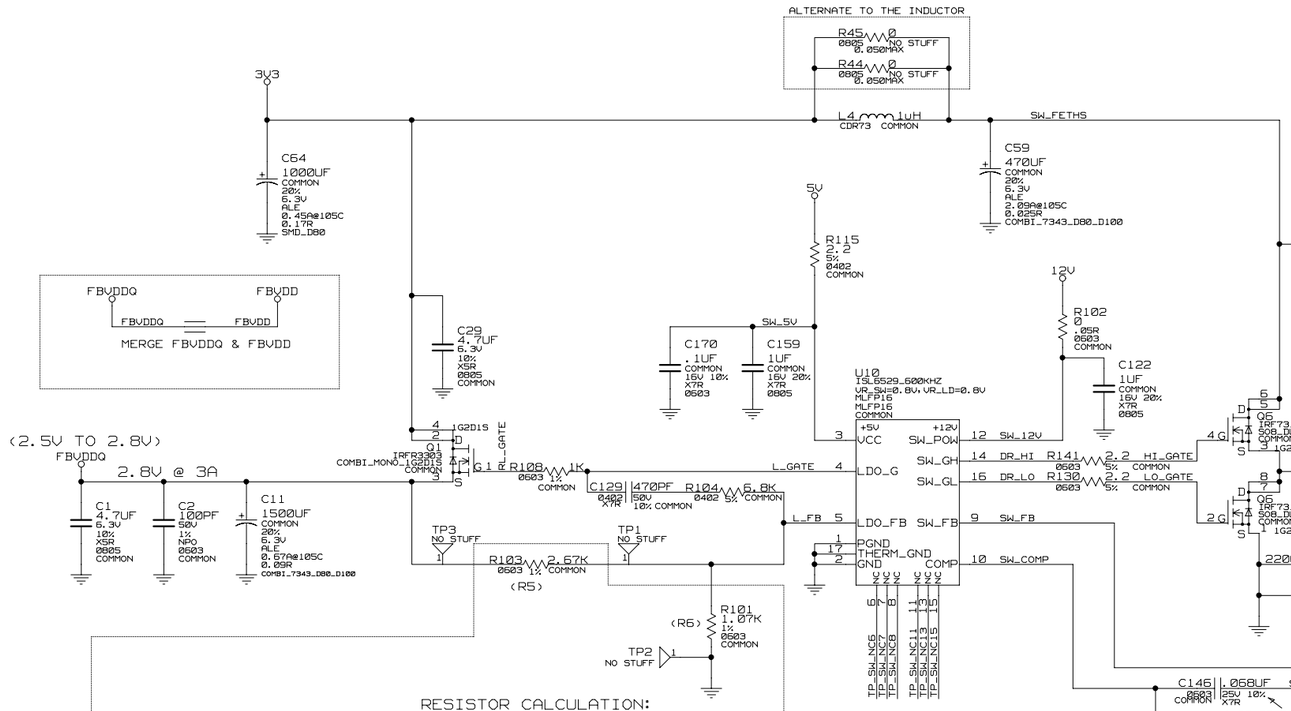
ANALOG 3V3



VOUT = VREF * (1 + RBOT/RTOP)
3.31V = 1.25V * (1 + 165/100)

ASSEMBLY = A3V3

NVDD-SWITCHER/FBVDDQ-LDO CONTROLER ISL6529



RESISTOR CALCULATION:

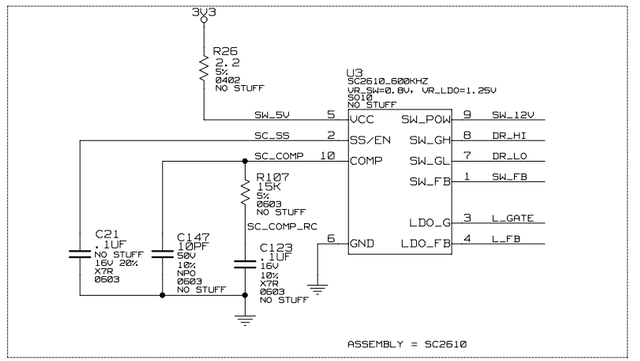
	VREF	R5	R6	VOUT
ISL6529	0.8	100	100	2.5
SC2610	1.25	2.4K	1.13K	2.5
ISL5629	0.8	2.67K	1.07K	2.80
SC2610	1.25	124	100	2.8

VOUT = VREF * (1 + R5/R6)
R5 = (VOUT / VREF) * RFB
R6 = R5 * VREF / (VOUT - VREF)

ISL6529:
RFB < 5K
VREF = 0.8V
VOUT @ R5=2.4K, R6=1.13K = 2.5V

SC2610:
VREF = 1.25V
VOUT @ R5=100, R6=100 = 2.5V

ALTERNATIVE TO ISL6529



ASSEMBLY = SC2610

COMPONENTS SELECTION:

R4 = (R1 * 0.8) / (VOUT - 0.8)
VOUT = 0.8 * (R1 + R4)/R4
VOUT @ R1=1.07K, R4=1K = 1.65V

COMPONENT SELECTION

	R1	R4
ISL6529	1.07K	1K
SC2610	10.7K	10K

R125 100 1% 0603 NO STUFF SW_FB_SNUB

C193 1UF NO STUFF 16V 20% X7R 0805 NO LOAD FOR ISL6529 SOLUTION

ASSEMBLY = SC2610

NVIDIA CORPORATION
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SANTA CLARA, CA 95050, USA

DETAIL	P115 POWER SUPPLIES		
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NAME	602-10115-0000-000	DATE	2002-08-28

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

DACA_HSYNC	7.2C 9.3F
DACA_VSYNC	7.2C 9.3F
DACB_HSYNC	8.2C 9.3F
DACB_VSYNC	8.2C 9.3F
DDC_VCC	6.1G 6.3G 7.1A 7.5G
FBAA<0>	3.4B 4.1F 4.2B 4.2D
FBAA<11..0>	3.4B 4.1F 4.2B 4.2D
FBAA<1>	3.4B 4.1F 4.2B 4.2D
FBAA<2>	3.4B 4.1F 4.2B 4.2D
FBAA<3>	3.4B 4.1F 4.2B 4.2D
FBAA<4>	3.4B 4.1F 4.2B 4.2D
FBAA<5>	3.4B 4.1F 4.2B 4.2D
FBAA<6>	3.4B 4.1F 4.2B 4.2D
FBAA<7>	3.4B 4.1F 4.2B 4.2D
FBAA<8>	3.4B 4.1F 4.2B 4.2D
FBAA<9>	3.4B 4.1F 4.2B 4.2D
FBAA<10>	3.4B 4.1F 4.2B 4.2D
FBAA<11>	3.4B 4.1F 4.2B 4.2D
FBABA<0>	3.5B 4.1F 4.2B 4.2D
FBABA<1..0>	3.5B 4.1F 4.2B 4.2D
FBABA<1>	3.5B 4.1F 4.2B 4.2D
FBACAS*	3.5B 4.1F 4.2B 4.2D
FBACKE	3.5B 4.2B 4.2F
FBACLK0	3.5B 4.1F 4.2B
FBACLK0*	3.5B 4.1F 4.3B
FBACLK1	3.5B 4.1F 4.2D
FBACLK1*	3.5B 4.1F 4.3D
FBACS0*	3.5B 4.1F 4.2B 4.2D
FBARAS*	3.5B 4.1F 4.2B 4.2D
FBAWE*	3.5B 4.1F 4.2B 4.2D
FBBA<0>	3.4D 5.1F 5.2B 5.2D
FBBA<11..0>	3.4D 5.1F 5.2B 5.2D
FBBA<1>	3.4D 5.1F 5.2B 5.2D
FBBA<2>	3.4D 5.1F 5.2B 5.2D
FBBA<3>	3.4D 5.1F 5.2B 5.2D
FBBA<4>	3.4D 5.1F 5.2B 5.2D
FBBA<5>	3.4D 5.1F 5.2B 5.2D
FBBA<6>	3.4D 5.1F 5.2B 5.2D
FBBA<7>	3.4D 5.1F 5.2B 5.2D
FBBA<8>	3.4D 5.1F 5.2B 5.2D
FBBA<9>	3.4D 5.1F 5.2B 5.2D
FBBA<10>	3.4D 5.1F 5.2B 5.2D
FBBA<11>	3.4D 5.1F 5.2B 5.2D
FBBBA<0>	3.5D 5.1F 5.2B 5.2D
FBBBA<1..0>	3.5D 5.1F 5.2B 5.2D
FBBBA<1>	3.5D 5.1F 5.2B 5.2D
FBBCAS*	3.5E 5.1F 5.2B 5.2D
FBBCKE	3.5E 5.2B 5.2F
FBBCLK0	3.5E 5.1F 5.3B
FBBCLK0*	3.5E 5.1F 5.3B
FBBCLK1	3.5E 5.1F 5.3D
FBBCLK1*	3.5E 5.1F 5.3D
FBBCS0*	3.5E 5.1F 5.2B 5.2D
FBBRAS*	3.5E 5.1F 5.2B 5.2D
FBBWE*	3.5E 5.1F 5.2B 5.2D
FBD<0>	3.1B 4.1F 4.2A
FBD<63..0>	3.1B 4.1F 4.2A
FBD<127..0>	3.1B 4.1F 4.2A 5.1F 5.2A
FBD<1>	3.1B 4.1F 4.2A
FBD<2>	3.1B 4.1F 4.2A
FBD<3>	3.1B 4.1F 4.2A
FBD<4>	3.1B 4.1F 4.2A
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FBD<32>	3.1B 4.1F 4.2A
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FBD<54>	3.1B 4.1F 4.2A
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FBD<127..64>	3.1B 5.1F 5.2A
FBD<65>	3.1B 5.1F 5.2A
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FBD<69>	3.1B 5.1F 5.2A
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FBD<71>	3.1B 5.1F 5.2A
FBD<72>	3.1B 5.1F 5.2A
FBD<73>	3.1B 5.1F 5.2A
FBD<74>	3.1B 5.1F 5.2A
FBD<75>	3.1B 5.1F 5.2A
FBD<76>	3.1B 5.1F 5.2A
FBD<77>	3.1B 5.1F 5.2A
FBD<78>	3.1B 5.1F 5.2A
FBD<79>	3.1B 5.1F 5.2A
FBD<80>	3.1B 5.1F 5.2A
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FBD<82>	3.1B 5.1F 5.2A
FBD<83>	3.1B 5.1F 5.2A
FBD<84>	3.1B 5.1F 5.2A
FBD<85>	3.1B 5.1F 5.2A
FBD<86>	3.1B 5.1F 5.2A
FBD<87>	3.1B 5.1F 5.2A
FBD<88>	3.1B 5.1F 5.2A
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FBD<90>	3.1B 5.1F 5.2A
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FBD<92>	3.1B 5.1F 5.2A
FBD<93>	3.1B 5.1F 5.2A
FBD<94>	3.1B 5.1F 5.2A
FBD<95>	3.1B 5.1F 5.2A
FBD<96>	3.1B 5.1F 5.2A
FBD<97>	3.1B 5.1F 5.2A
FBD<98>	3.1B 5.1F 5.2A
FBD<99>	3.1B 5.1F 5.2A
FBD<100>	3.1B 5.1F 5.2A
FBD<101>	3.1B 5.1F 5.2A
FBD<102>	3.1B 5.1F 5.2A
FBD<103>	3.1B 5.1F 5.2A
FBD<104>	3.1B 5.1F 5.2A
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FBD<109>	3.1B 5.1F 5.2A
FBD<110>	3.1B 5.1F 5.2A
FBD<111>	3.1B 5.1F 5.2A
FBD<112>	3.1B 5.1F 5.2A
FBD<113>	3.1B 5.1F 5.2A
FBD<114>	3.1B 5.1F 5.2A
FBD<115>	3.1B 5.1F 5.2A
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FBD<122>	3.1B 5.1F 5.2A
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FBD<127>	3.1B 5.1F 5.2A
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FBDQM<7..0>	3.3B 4.1F 4.5A
FBDQM<15..0>	3.3B 4.1F 4.5A 5.1F 5.5A
FBDQM<1>	3.3B 4.1F 4.5A
FBDQM<2>	3.3B 4.1F 4.5A
FBDQM<3>	3.3B 4.1F 4.5A
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FBDQM<8>	3.3B 5.1F 5.5A
FBDQM<15..8>	3.3B 5.1F 5.5A
FBDQM<9>	3.3B 5.1F 5.5A
FBDQM<10>	3.3B 5.1F 5.5A
FBDQM<11>	3.3B 5.1F 5.5A
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FBDQM<14>	3.3B 5.1F 5.5A
FBDQM<15>	3.3B 5.1F 5.5A
FBDQS<0>	3.3B 4.1F 4.5A
FBDQS<7..0>	3.3B 4.1F 4.5A
FBDQS<15..0>	3.3B 4.1F 4.5A 5.1F 5.5A
FBDQS<1>	3.3B 4.1F 4.5A
FBDQS<2>	3.3B 4.1F 4.5A
FBDQS<3>	3.3B 4.1F 4.5A
FBDQS<4>	3.3B 4.1F 4.5A
FBDQS<5>	3.3B 4.1F 4.5A
FBDQS<6>	3.3B 4.1F 4.5A
FBDQS<7>	3.3B 4.1F 4.5A
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FBDQS<12>	3.3B 5.1F 5.5A
FBDQS<13>	3.3B 5.1F 5.5A
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FBDQS<15>	3.3B 5.1F 5.5A
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FDACA_BLURTN	6.2G 7.1A 7.3G
FDACA_GREEN	6.1G 7.1A 7.3G
FDACA_GRNRTN	6.2G 7.1A 7.3G
FDACA_HSYNC	6.1G 7.2G
FDACA_RED	6.1G 7.1A 7.3G
FDACA_REDRTN	6.2G 7.1A 7.3G
FDACA_SCL	6.1G 7.1G
FDACA_SDA	6.1G 7.2G
FDACA_VSYNC	6.1G 7.2G
FDACB_BLUE	6.4G 8.1A 8.4G
FDACB_BLURTN	6.4G 8.1A 8.4G
FDACB_GREEN	6.3G 8.1A 8.3G
FDACB_GRNRTN	6.4G 8.1A 8.4G
FDACB_HSYNC	6.3G 8.2G
FDACB_RED	6.3G 8.1A 8.3G
FDACB_REDRTN	6.4G 8.1A 8.3G
FDACB_SCL	6.3G 8.1G
FDACB_SDA	6.3G 8.1G
FDACB_VSYNC	6.3G 8.2G
I2CC_SCL	9.2F
I2CC_SDA	9.2F
IFPABPLLVDD	6.3D
IFPAIOVDD	6.3D
IFPBIOVDD	6.3D
LFH_HOTPLUG	6.3G 9.4B
XTALIN	9.4C
XTALOUT	9.4C

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

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C5	C	5.4G
C6	C	5.4G
C7	C	5.4H
C8	C	5.4H
C9	C	5.4F
C10	C	4.4F
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C12	C	5.4G
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C16	C	5.4G
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C19	C	5.4H
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C277	C	5.2F
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D3	D_3PIN_AC	8.2E
D4	D_3PIN_AC	7.2E
D5	D_3PIN_AC	7.1E
D6	D_3PIN_AC	6.3F
D7	D_3PIN_AC	7.3E
D8	D_3PIN_AC	7.2E
D9	D_3PIN_AC	6.2F
D10	D_3PIN_AC	8.2E
D11	D	10.1G
D12	D_3PIN_AC	8.1E
D13	D_3PIN_AC	8.4E
D14	D_SCHOTTKY	10.4F
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D16	D_3PIN_AC	8.4E
D17	D_3PIN_AC	7.4E
D18	D_3PIN_AC	7.3E
D19	D_3PIN_AC	7.4E
D20	D	9.3C
F1	F_POLYSW	7.5E
J1	HDR_1X2	9.4B
J2	CON_LFH	6.1H 6.3H
J3	HDR_1X2	9.3D
L1	L	8.2E
L2	L	8.1F
L3	L	10.4F
L4	L	10.3D
L5	L	7.2E
L6	L	7.1E
L7	L	7.2E
L8	L	6.3F
L9	L	7.2E
L10	L	6.2F
L11	L	7.5F
L12	L	8.2E
L13	L	8.1F
L14	L	8.3F
L15	L_CMF_4P	8.3F
L16	L_CMF_4P	8.3F
L17	L	8.3F
L18	L_CMF_4P	8.4F
L19	L	8.4F
L20	L	7.4F
L21	L_CMF_4P	7.4F
L22	L	7.3F
L23	L_CMF_4P	7.3F
L24	L	7.3E
L25	L_CMF_4P	7.4F
LB1	L	6.1B
LB2	L	6.1A
LB3	L	6.2A
LB4	L	6.1B
LB5	L	6.2B
LB6	L	10.1F
LB7	L	9.5C
LB8	L	8.3A
LB9	L	7.3A
MEC1	HEATSINK	9.4B
Q1	Q_FET_N_ENH	10.4B
Q2	Q_FET_N_ENH	2.5A
Q3	Q_PNP	6.4B
Q4	Q_NPN	6.4B
Q5	Q_NPN	6.4A
Q6	Q_FET_N_ENH	10.4E
Q7	Q_FET_N_ENH	2.4D 2.5D
Q8	Q_PNP	2.5B
Q9	Q_FET_N_ENH	9.4C

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DETAIL	DRAWING DETAIL CONTINUED...		
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NAME	602-10115-0000-000	DATE	2002-08-28

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R4	R	5.5A
R5	R	9.4E
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R9	R	9.4E
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R22	R	9.4F
R23	R	9.3F
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R25	R	9.4E
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R28	R	5.5B
R29	R	5.3F
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R49	R	7.1E
R50	R	7.2D
R51	R	8.2D
R52	R	9.3E
R53	R	9.3F
R54	R	7.1E
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R68	R	4.3F
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R73	R	4.3D
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R107	R	10.3G
R108	R	10.4C
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R117	R	10.5F
R118	R	6.4B
R119	R	6.4A
R120	R	6.4G
R121	R	8.4F
R122	R	10.4F
R123	R	5.3D
R124	R	9.3E
R125	R	10.5F
R126	R	10.4F
R127	R	5.3D
R128	R	5.4D
R129	R	9.3F
R130	R	10.4D
R131	R	6.4G
R132	R	8.3F
R133	R	10.4E
R134	R	2.4F
R135	R	2.4F
R136	R	5.5B
R137	R	5.5B
R138	R	9.3E
R139	R	6.2C
R140	R	5.3C
R141	R	10.4D
R142	R	9.3F
R143	R	5.3B
R144	R	5.3C
R145	R	6.4G
R146	R	8.4F
R147	R	6.3C
R148	R	9.5E
R149	R	9.5F
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R152	R	6.2F
R153	R	2.4F
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R165	R	8.1D
R166	R	8.1D
R167	R	9.2C
R168	R	9.2C
R169	R	9.4E
R170	R	9.4F
R171	R	6.1F
R172	R	7.3B
R173	R	9.5D
R174	R	7.1D
R175	R	6.2F
R176	R	7.4E
R177	R	7.2D
R178	R	9.3E
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R180	R	2.4E
R181	R	9.1E
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R183	R	9.5E
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R185	R	2.4C
R186	R	4.3D
R187	R	6.5G
R188	R	2.4D
R189	R	4.4D
R190	R	2.4D
R191	R	6.4G
R192	R	4.3C
R193	R	4.3B
R194	R	4.3C
R195	R	2.4D
R196	R	2.4D
R197	R	2.4D
R198	R	2.5A
R199	R	2.5B
R200	R	2.4D
R201	R	2.5B
R202	R	9.4C
R203	R	9.3C
R204	R	2.4B
R205	R	2.4B
R206	R	2.3C
RP1	R_PAK	5.3A 5.3A 5.3B
RP2	R_PAK	5.3A 5.3B
RP3	R_PAK	5.4A 5.4B
RP4	R_PAK	5.3A 5.3B
RP5	R_PAK	5.4A 5.4B
RP6	R_PAK	5.4A 5.4B
RP7	R_PAK	5.4A 5.4A 5.4B
RP8	R_PAK	4.3A 4.3B
RP9	R_PAK	4.3A 4.3B 4.3B
RP10	R_PAK	4.3A 4.3B
RP11	R_PAK	4.4A 4.4B
RP12	R_PAK	4.4A 4.4B
RP13	R_PAK	4.4A 4.4B
RP14	R_PAK	4.4A 4.4B
RP15	R_PAK	4.2A 4.2B 4.3B
RP16	R_PAK	4.3A 4.3B
RP17	R_PAK	4.3A 4.3B
RP18	R_PAK	5.4A 5.4A 5.4B
RP19	R_PAK	5.4A 5.4B
RP20	R_PAK	5.3A 5.4A 5.4B
RP21	R_PAK	5.2A 5.2B
RP22	R_PAK	5.2A 5.2B
RP23	R_PAK	5.3A 5.3B 5.3B
RP24	R_PAK	5.3A 5.3B
RP25	R_PAK	5.3A 5.3B
RP26	R_PAK	5.2A 5.2B 5.3A 5.3B
RP27	R_PAK	4.4A 4.4A 4.4B
RP28	R_PAK	4.4A 4.4B
RP29	R_PAK	4.3A 4.3B 4.4A 4.4B
RP30	R_PAK	4.3A 4.3A 4.3B
RP31	R_PAK	4.2A 4.2B
RP32	R_PAK	4.2A 4.2B
TP1	TESTPOINT	10.4C
TP2	TESTPOINT	10.5C
TP3	TESTPOINT	10.4B
TP4	TESTPOINT	10.4F
TP5	TESTPOINT	10.4F
TP6	TESTPOINT	10.5F
U1	U_VREG_3PIN	10.1G
U2	U_MEM_SD_DDR_4MX32	5.2C 5.4C 5.4D 5.5C 5.5D
U3	U_SWREG_SC2610	10.3G
U4	U_GPU_NV18	2.1D 3.1C 3.1E 6.1C 7.3B 8.3B 9.1D 9.3A 9.4D
U5	U_AND_2IN	7.2D 7.3D 8.2D 8.3D
U6	U_VREG_5PIN	10.1E
U7	U_MEM_SD_DDR_4MX32	4.2C 4.4C 4.4D 4.5C 4.5D
U8	U_XOR_2IN	6.3G
U9	U_MEM_SD_DDR_4MX32	5.2E 5.4E 5.4E 5.5E 5.5E
U10	U_SWREG_ISL6529	10.4D
U11	U_MEM_FL_SER_128KX8	9.2B
U12	U_MEM_FL_SER_128KX8	9.2B
U13	U_MEM_SD_DDR_4MX32	4.2E 4.4E 4.4E 4.5E 4.5E
Y1	XTAL	9.5D

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