

18P112, NV18, 4Mx32DDR, 64MB, Video IN/OUT, 1394, DVI-I, VGA

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HISTORY:

A00

X00: INITIAL VERSION
 X01: Removed MBDET circuit bypass resistor
 STRAP resistors, stuffing options set
 STRAP resistors, USER strap :=0
 DACB RSET modification resistor 1%→5%
 SYNC amplifier, bypass resistors removed
 DACB RGB filter, bypass capacitors set to NO STUFF
 DVI-HPD signal, voltage divisor 10k/15k set near DVI
 24MHZ signal to 1394, changed stuffing option to disable trace
 VIDEO in connector internal, added A3V3 decoupling caps.
 DVOCLKOUT signal, series termination added
 PD input 1394, stuffing option of series resistor set to NO STUFF
 LDOS, calculation information added
 LDO for TMDSPLL, changed resistor values to create 3V3
 LDO for TMDSPLL, complex bypass resistors simplified.
 1394 POWERCLASS, SVSENSE signal renamed to EXTsense and generated from 12VEXT
 ADDED OFFPAGE SYMBOLS, OPTICAL IMPROVEMENTS

A01

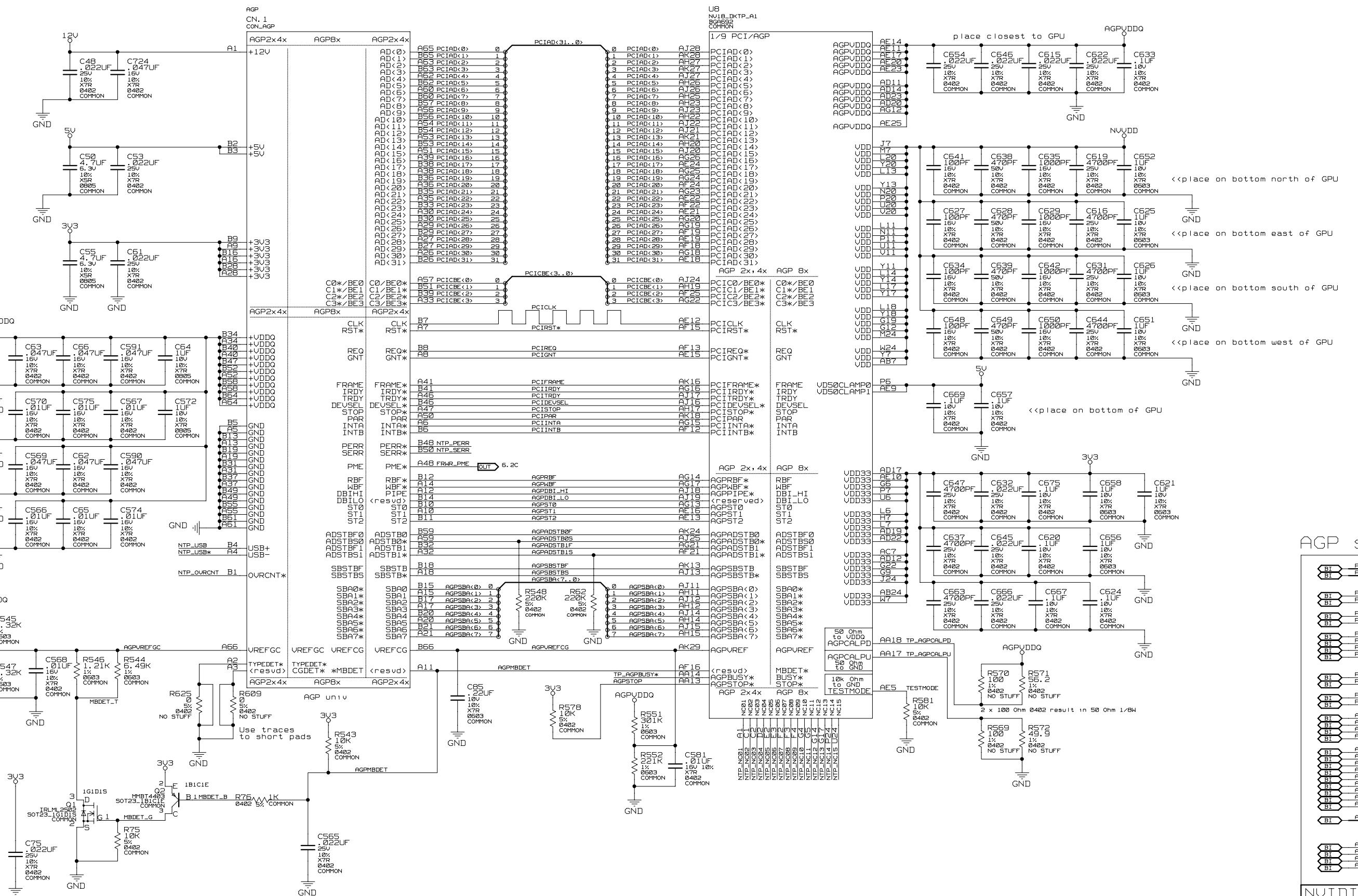
X00: Replaced NV18 symbol_9. Pin changes Thermal sensor
 Changed TMDS constraints to 10MIL_G2G_30MIL
 Changed THERM, THERM* constraints to 10MIL_G2G_10MIL
 Added SST45VF BIOS type with necessary strap resistors.
 Added Pullup on ROMCS*
 Replaced backdrive diode TMDS3V3 by SCHOTTKY type with 1A
 Added bypass resistors to Sync Amplifier
 Changed GND pin usage on internal 1394 connector
 Added compensation to FBVDD regulator
 Added supply rail from 3V3 for switching regulator to solve 3V3 shutdown
 Added alternative circuit to solve switch reg. 3v3 shutdown
 Added hex jack screws as symbols
 Added cap for CG_VREF on AGP
 Added bypass resistors for primary inductor of switch regulator
 Added pulldown for 7114 TRST Jtag signal

602-10112-0002-A01 for SKU 801-10112-0002-000

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SANTA CLARA, CA 95050, USA	
ID	PAGE
NAME	10112-0002-A01
DETAIL	18P112 OVERVIEW
DATE	JUL-02 2002

NV18 AGP SECTION AND AGP CONNECTOR

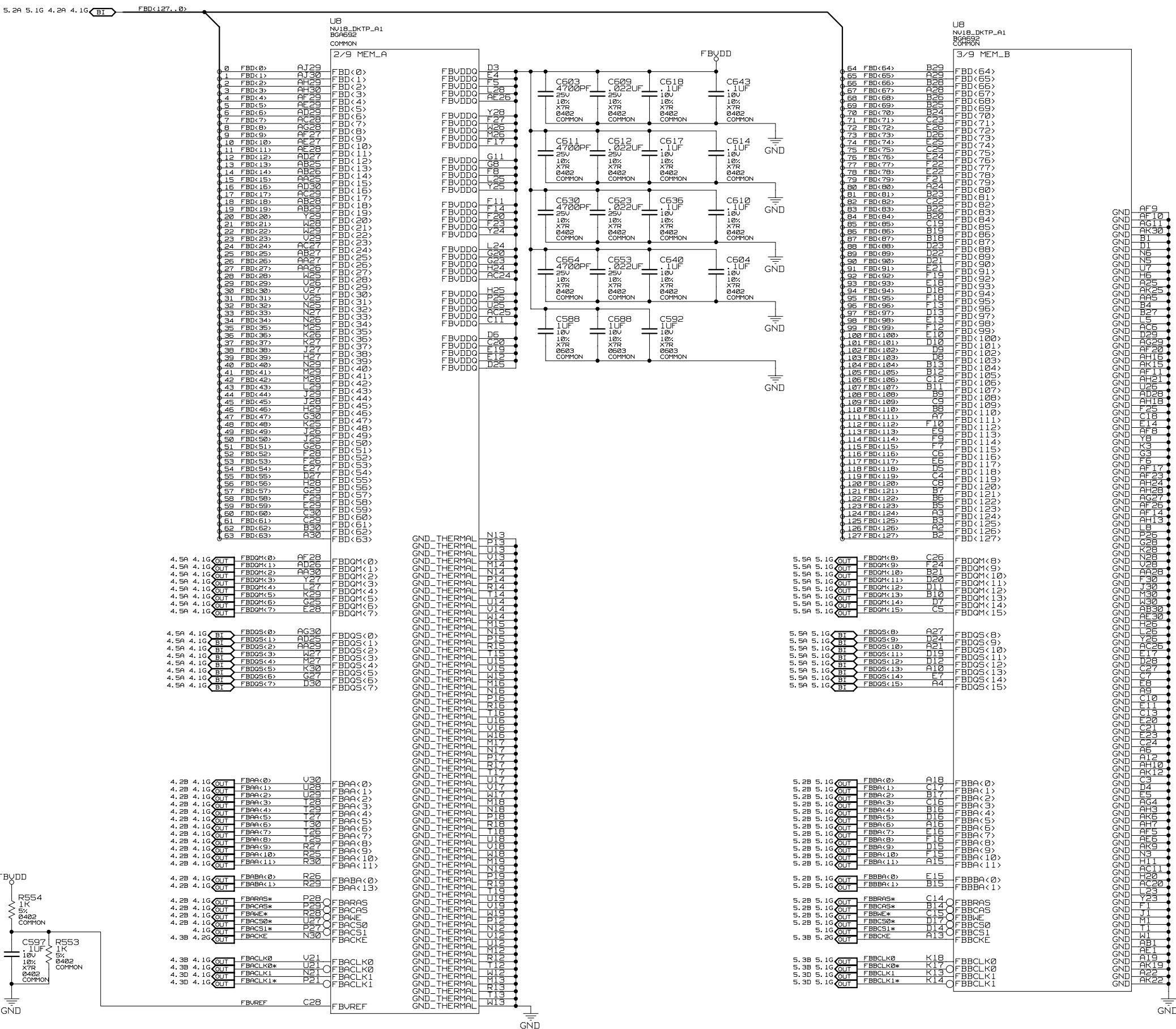


AGP spacing rules

BT	PCIAD<31..0>	20MIL
BI	PCICBRE<3..0>	20MIL
BT	PCICLK	20MIL
BI	PCIRST*	10MIL
BT	PCIREQ	10MIL
BI	PCIGNT	10MIL
BT	PCIFRAME	10MIL
BI	PCIIIRDY	10MIL
BI	PCITRDY	10MIL
BI	PCISTOP	10MIL
BT	PCIDEVSEL	10MIL
BI	PCIPAR	10MIL
BT	PCIINTA	10MIL
BI	PCIINTB	10MIL
BT	AGPRBF	10MIL
BI	AGPVBF	10MIL
BI	AGPDBI_HI	20MIL
BI	AGPDBI_LO	20MIL
BT	AGPST0	15MIL
BT	AGPST1	15MIL
BT	AGPST2	15MIL
BT	AGPADSTB0F	25MIL
BT	AGPADSTB0S	25MIL
BT	AGPADSTB1F	25MIL
BT	AGPSB1B1S	25MIL
BT	AGPSB1B1F	25MIL
BT	AGPSB1TB5	25MIL
BT	AGPSBAA<7..0>	20MIL
BT	AGPUREFCG	10MIL
BI	AGPUREFGC	10MIL
BI	AGPMBDT	10MIL

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NV18 FRAMEBUFFER INTERFACE AND DECOUPLING

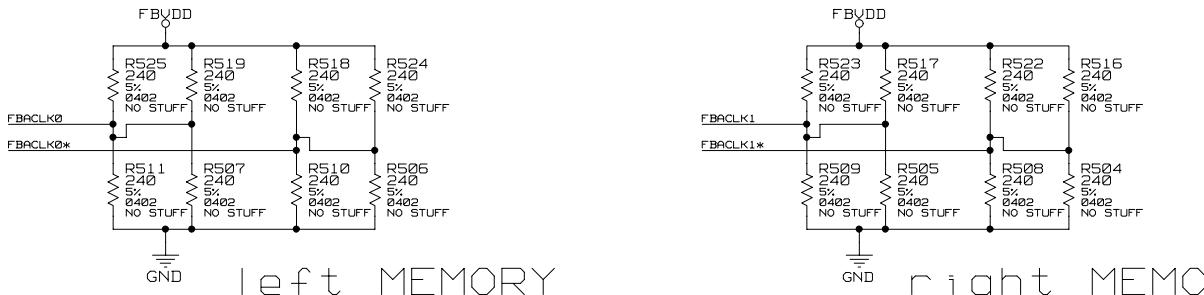


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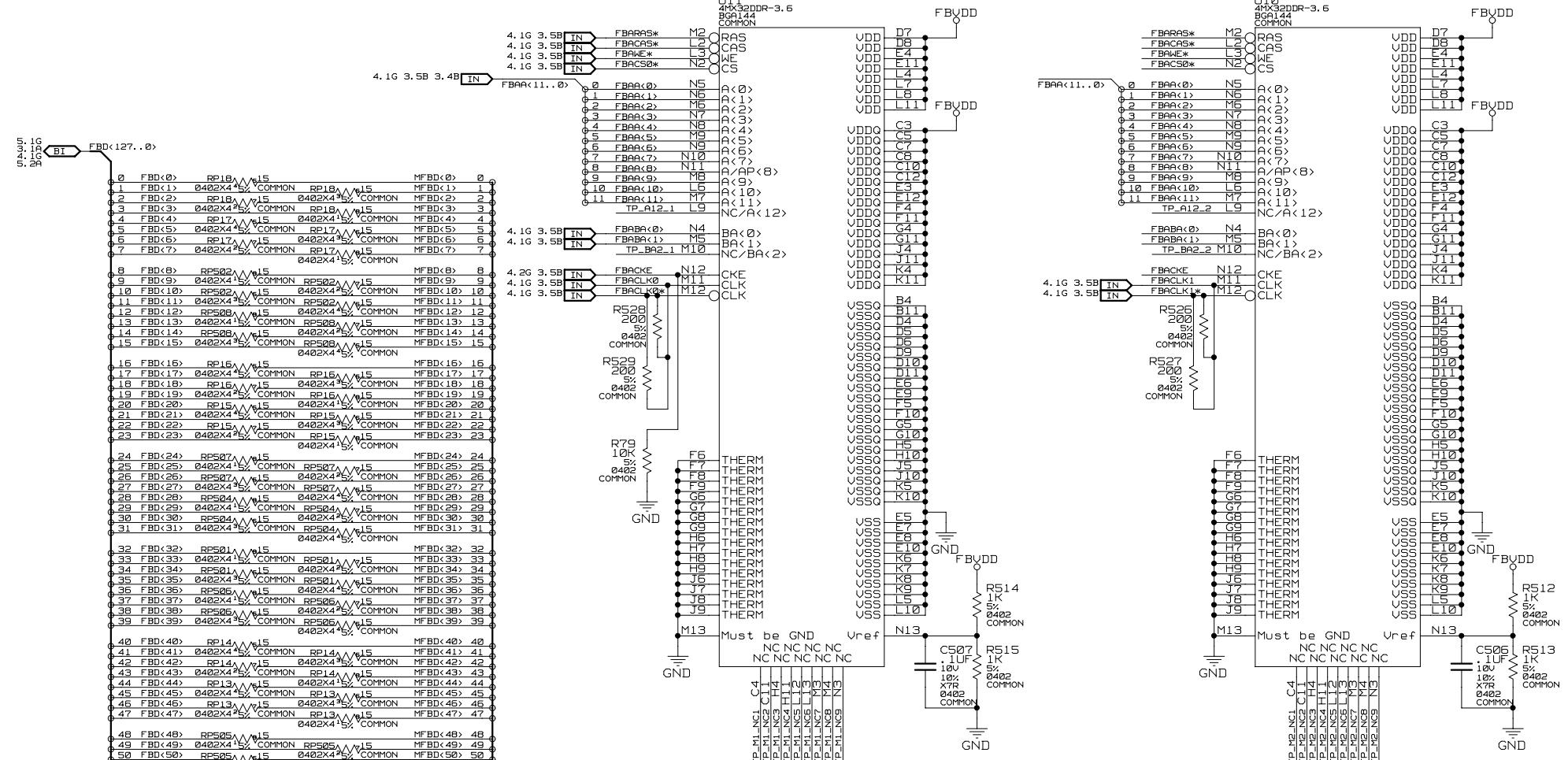
DETAIL NV18 FRAMEBUFFER Interface

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MEMORY 64MB, 4Mx32DDR bits 0..63
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



left MEMORY

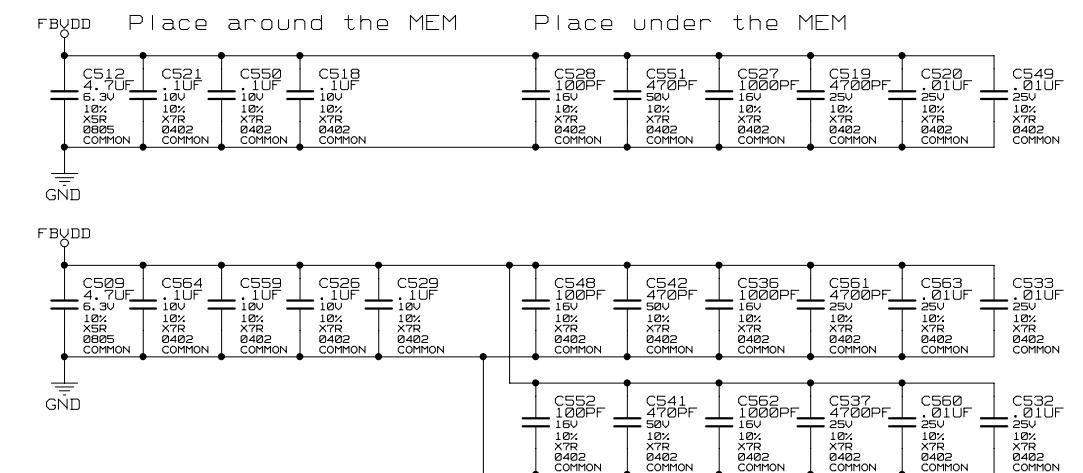


PLACE NEAR MEMORY

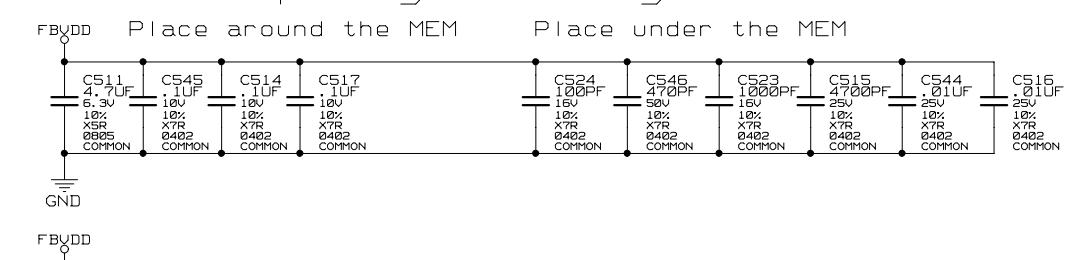
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NET	Difffpair	NET_SPACING_RULE
FBACLK0	FBACLK0	20MIL_G2G_30MIL
FBACLK0	FBACLK0	20MIL_G2G_30MIL
FBACLK1	FBACLK1	20MIL_G2G_30MIL
FBACLK1*	FBACLK1	20MIL_G2G_30MIL
FBD<63..0>		10MIL
FBDDOM<7..0>		10MIL
FBDDOS<7..0>		15MIL
MFBDX<63..0>		10MIL
MFBDQMR<7..0>		10MIL
MFBDQS<7..0>		15MIL
FBAK<11..0>		10MIL
FBARAS*		10MIL
FBACAS*		10MIL
FBAKE*		10MIL
FBACS*		10MIL
FBCS1*		10MIL
FBAK1		10MIL
FBARA1>		12MIL
FBARC1>		12MIL

Decoupling for left MEMORY



Decoupling for right MEMORY



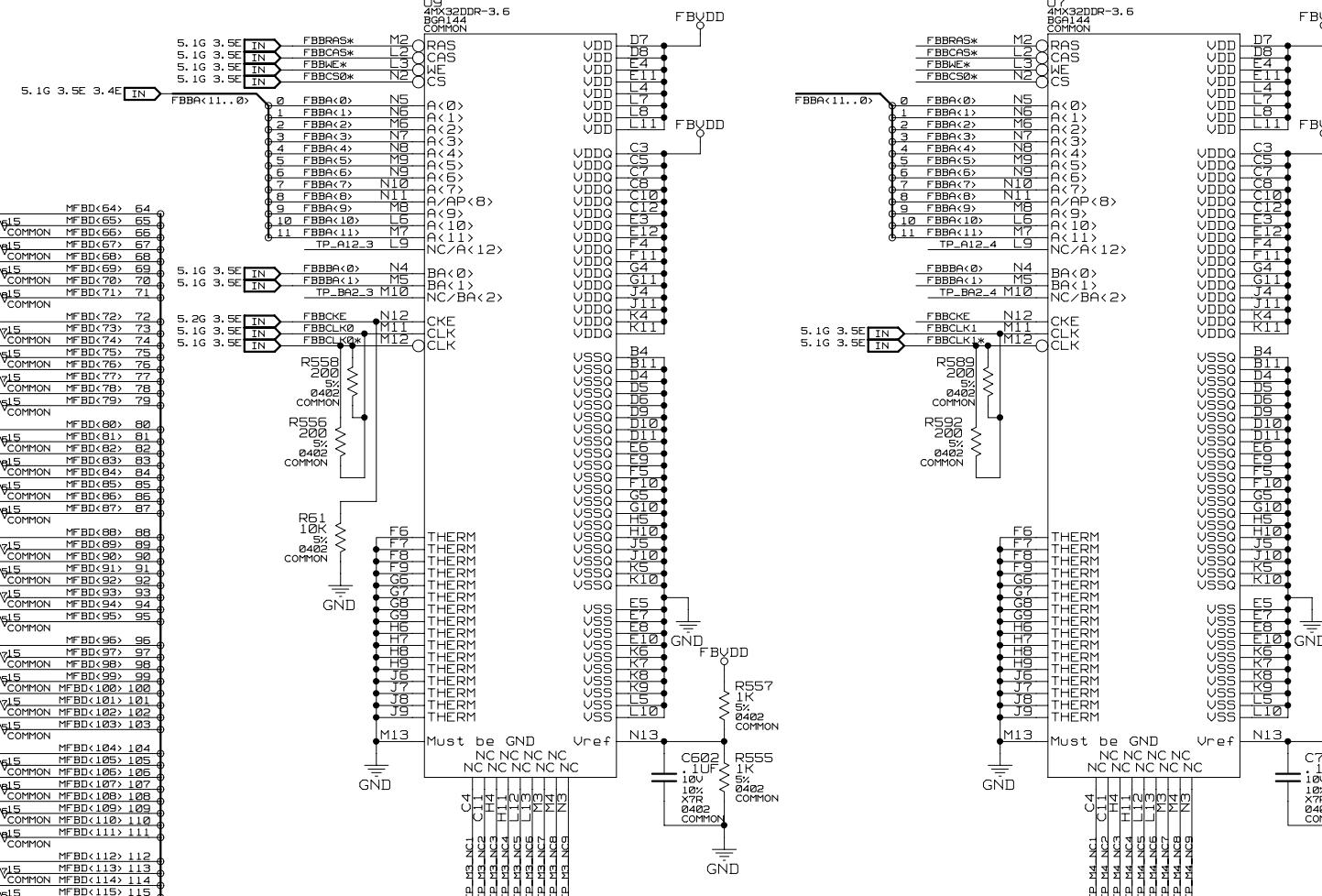
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TEL MEMORY 64MB, 4mx32DDR Bits 0..63

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REF 602-10112-0002-A01 DATE TUE -02 200

MEMORY 64MB, 4Mx32DDR, bits 64..127
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



Left MEMORY

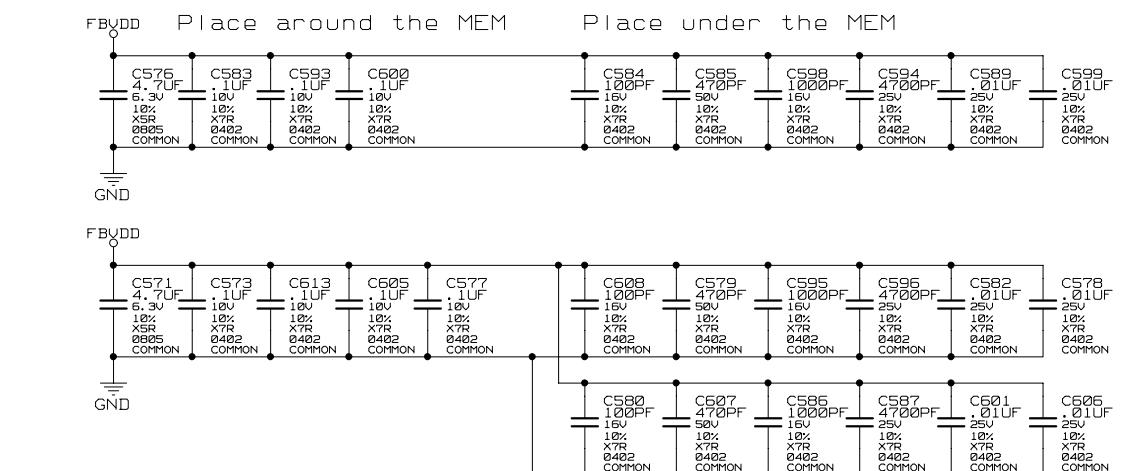


PLACE NEAR MEMORY

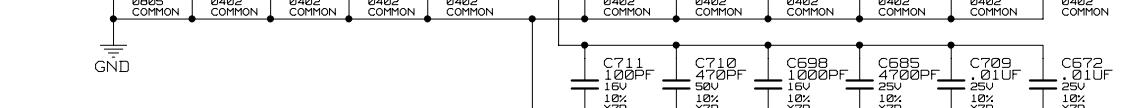
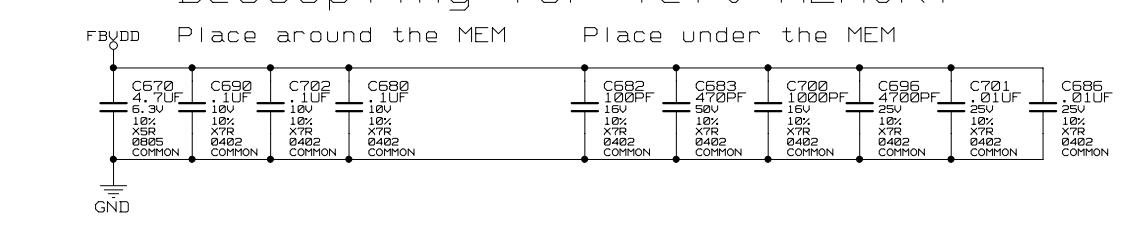
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NET	Difffpair	NET_SPACING_RULE
BT	FBBCLK0	20MIL_G2G_30MIL
BT	FBBCLK0*	20MIL_G2G_30MIL
BT	FBBCLK1	20MIL_G2G_30MIL
BT	FBBCLK1*	20MIL_G2G_30MIL
BT	FBD<127..64>	10MIL
BT	FBDOM<15..8>	10MIL
BT	FBDOS<15..8>	15MIL
BT	MFBDK<127..64>	10MIL
BT	MFBDQK<15..8>	10MIL
BT	MFBDQS<15..8>	15MIL
BT	FBBR<11..0>	10MIL
BT	FBBR0\$K	10MIL
BT	FBBRC\$K	10MIL
BT	FBBRN\$K	10MIL
BT	FBCS1\$K	10MIL
BT	FBBBA<0>	10MIL
BT	FBBBA<1>	10MIL
BT	FBBBCKE	10MIL

Decoupling for left MEMORY



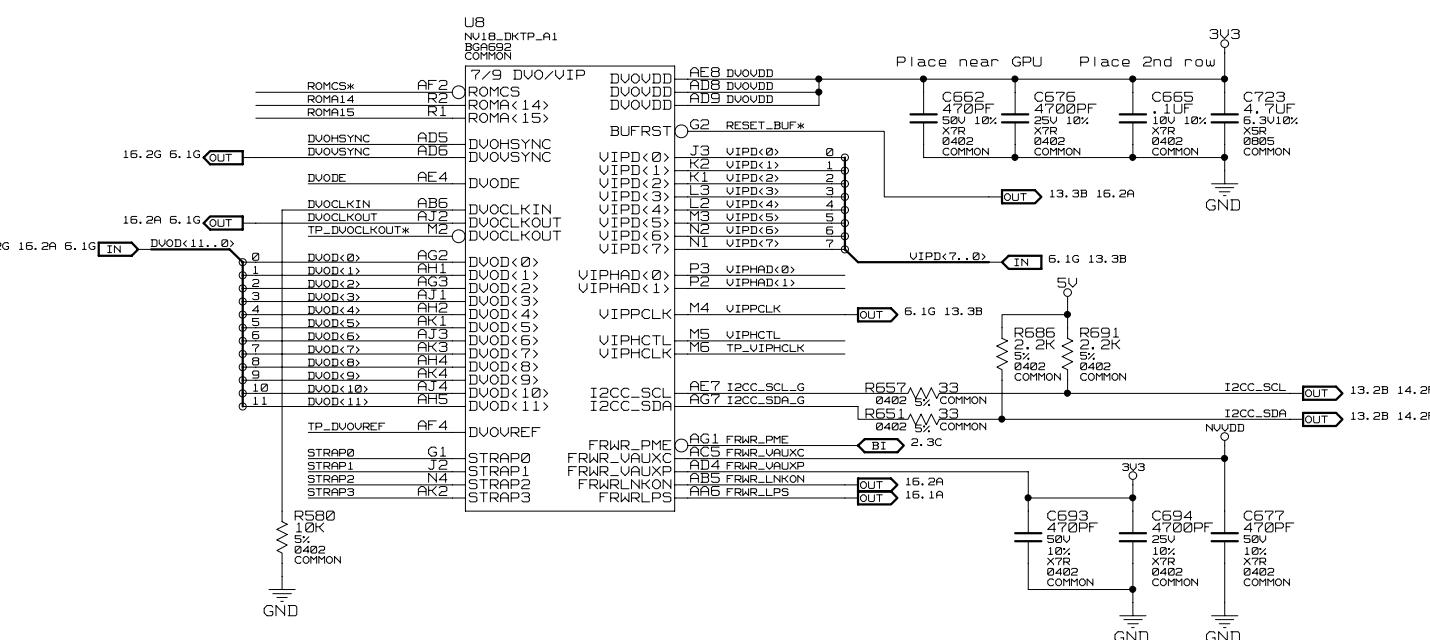
Decoupling for left MEMORY



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DETAIL MEMORY 64MB, 4MHz 32DDR Bits 64.127

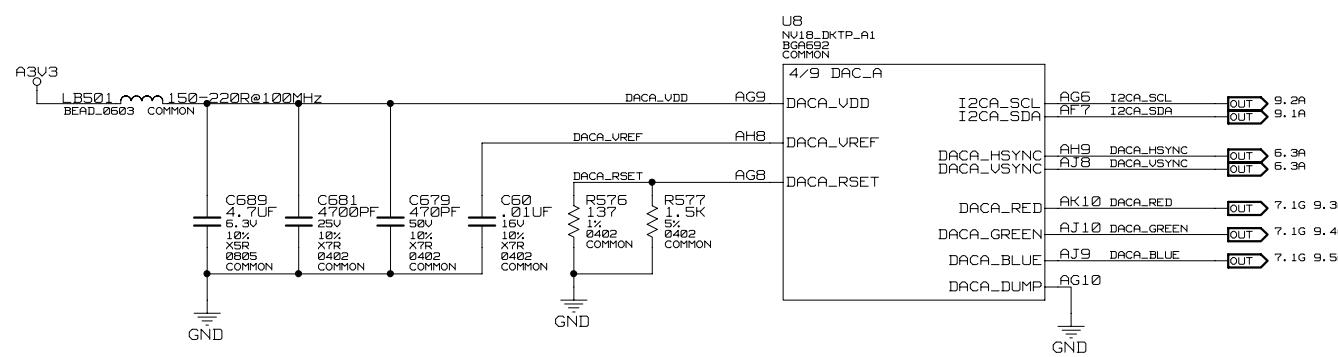
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NV18 STRAPPING, I/O INTERFACE, BIOS, FAN CONTROL AND TEMP SENSOR

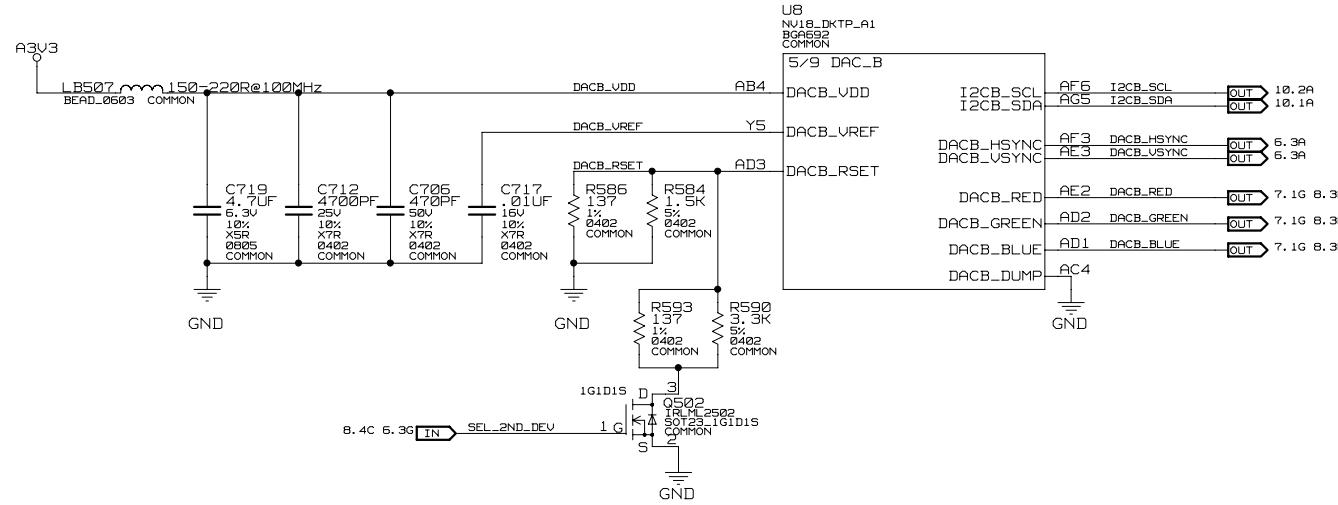


NV18 DAC_A, DAC_B, PLL, SYNC AMPL

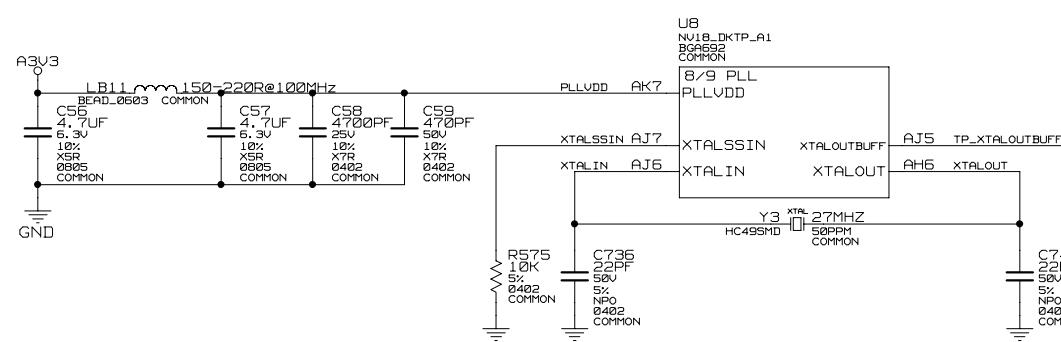
NV18 DAC_A



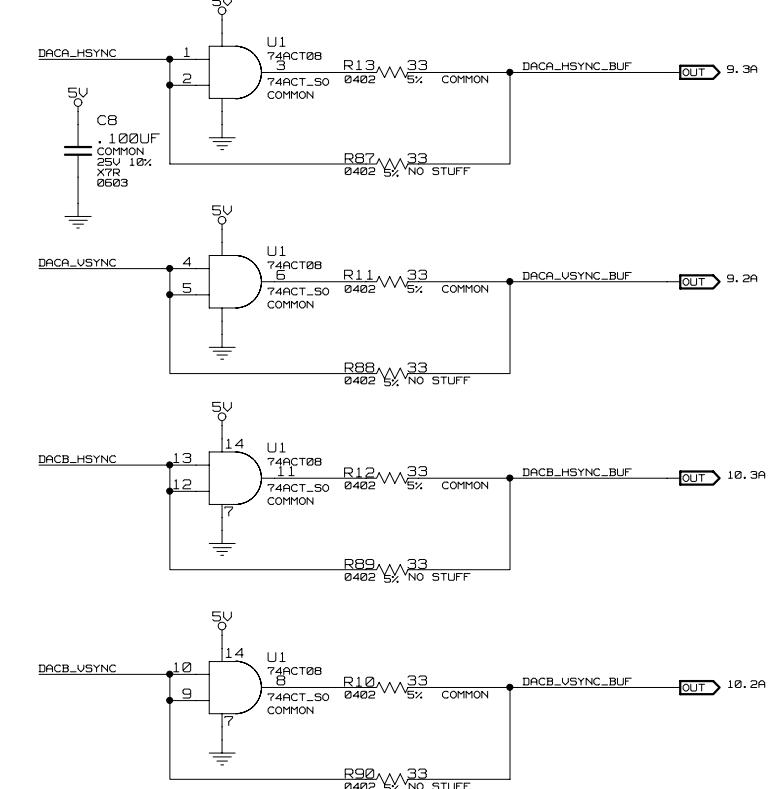
NV18 DAC_B with RSet select



NV18 PLL



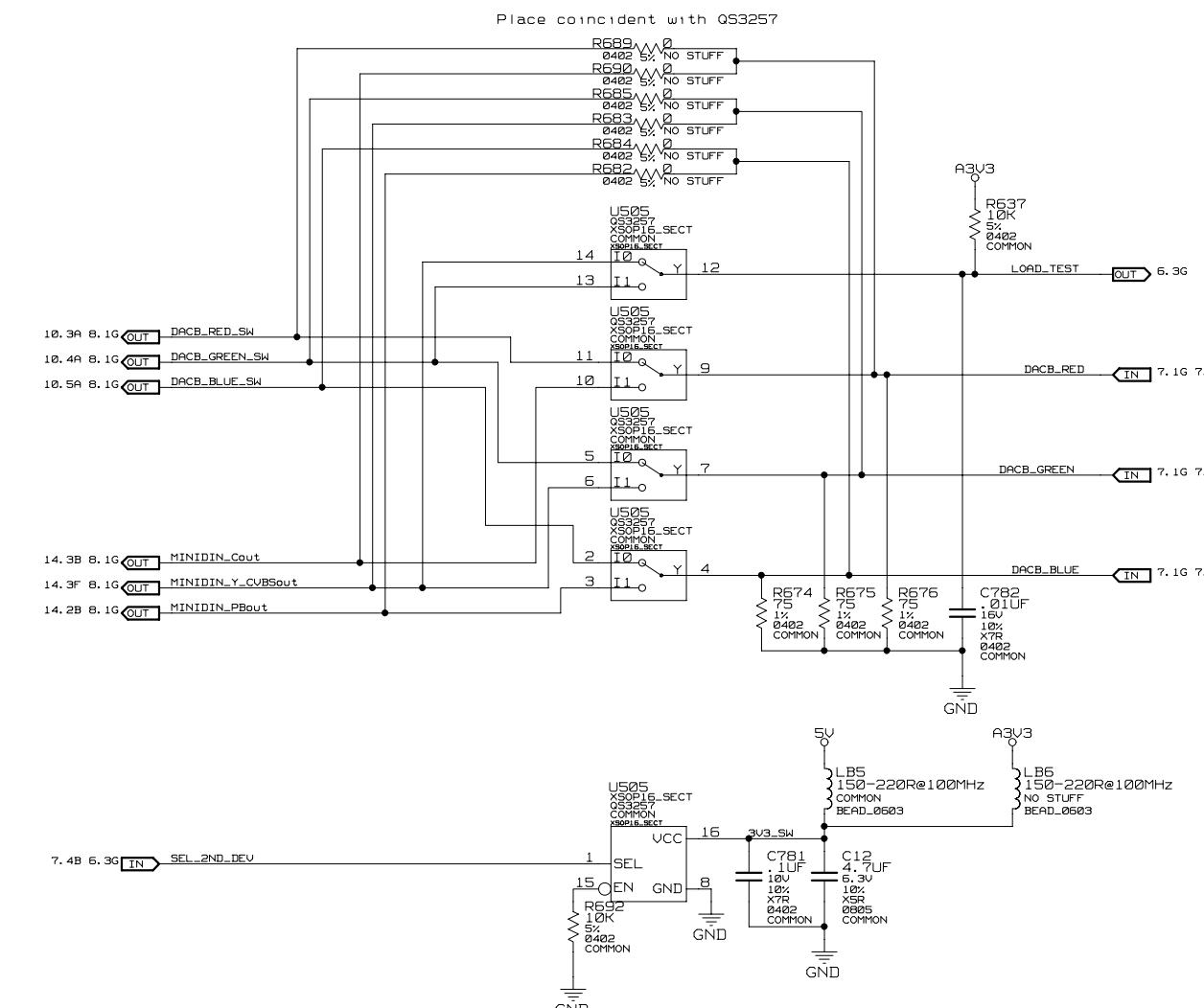
SYNC Amplifier



NET	NET_PHYSICAL_TYPE	VOLTAGE
DACA_VDD	12MIL_TRACE	3.3V
DACA_VREF	5MIL_TRACE	
DACA_RSET	5MIL_TRACE	3.3V
DACB_VDD	12MIL_TRACE	
DACB_VREF	5MIL_TRACE	
DACB_RSET	5MIL_TRACE	
PLL_VDD	12MIL_TRACE	3.3V
Diffpair	NET_SPACING_RULE	
DACA_RED	20MIL_G2G_30MIL	
DACA_GREEN	20MIL_G2G_30MIL	
DACA_BLUE	20MIL_G2G_30MIL	
DACB_RED	20MIL_G2G_30MIL	
DACB_GREEN	20MIL_G2G_30MIL	
DACB_BLUE	20MIL_G2G_30MIL	

DACB SWITCH BETWEEN VGA OUT AND TV OUT

NET	Diffpair	NET_SPACING_RULE
0..3A 8..2C	DACB_RED_SW	20MIL_G2G_30MIL
0..4A 8..2C	DACB_GREEN_SW	20MIL_G2G_30MIL
0..5A 8..3C	DACB_BLUE_SW	20MIL_G2G_30MIL
4..3B 8..3C	MINIDIN_Cout	20MIL_G2G_30MIL
4..3F 8..3C	MINIDIN_Y_CVB5out	20MIL_G2G_30MIL
4..2B 8..3C	MINIDIN_PBus	20MIL_G2G_30MIL

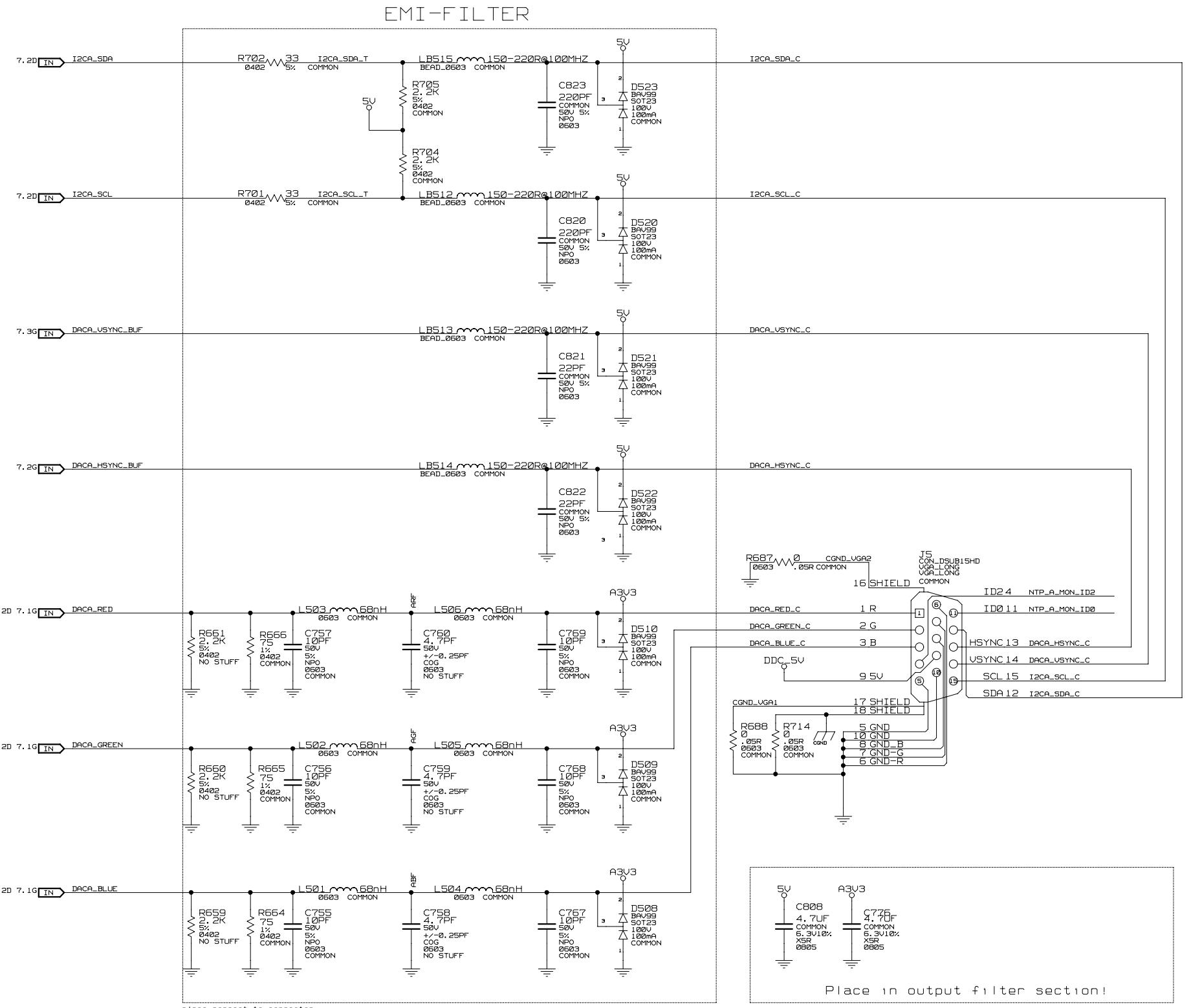


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TELETEL DACB MULTIPLEXER

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DACA output

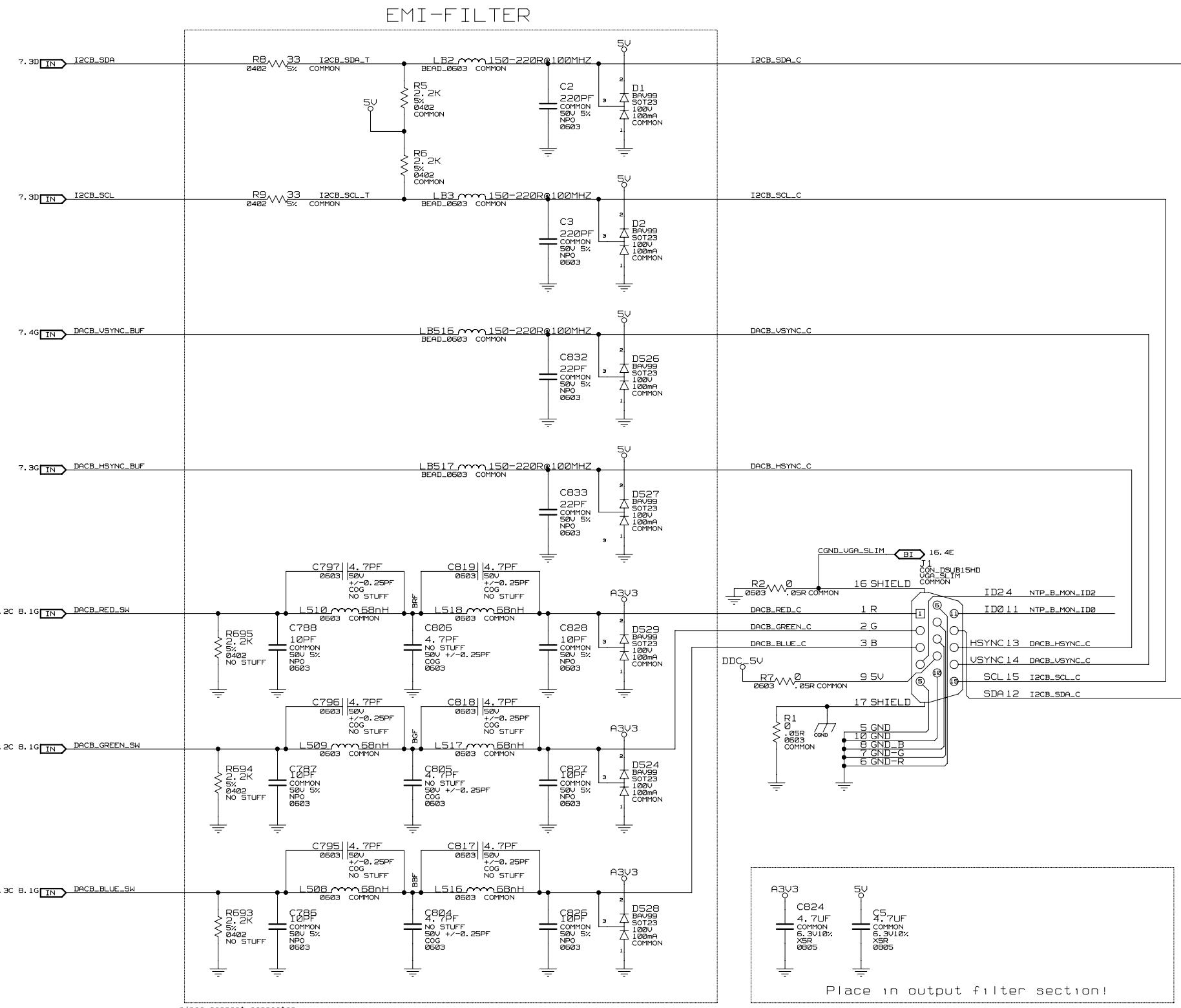


NET	Diffpair	NET_SPACING_RULE
BT	ARF	20MIL_G2G_30MIL
BT	AGF	20MIL_G2G_30MIL
BT	ABF	20MIL_G2G_30MIL
12.30 BT	DACA_RED_C	20MIL_G2G_30MIL
12.40 BT	DACA_GREEN_C	20MIL_G2G_30MIL
12.40 BT	DACA_BLUE_C	20MIL_G2G_30MIL



DACB output

NET	Diffpair	NET_SPACING_RULE
OUT	BRF	20MIL_G2G_30MIL
OUT	BGF	20MIL_G2G_30MIL
OUT	BBF	20MIL_G2G_30MIL
OUT	DACB_RED_C	20MIL_G2G_30MIL
OUT	DACB_GREEN_C	20MIL_G2G_30MIL
OUT	DACB_BLUE_C	20MIL_G2G_30MIL



Place in output filter section!

place nearest connector

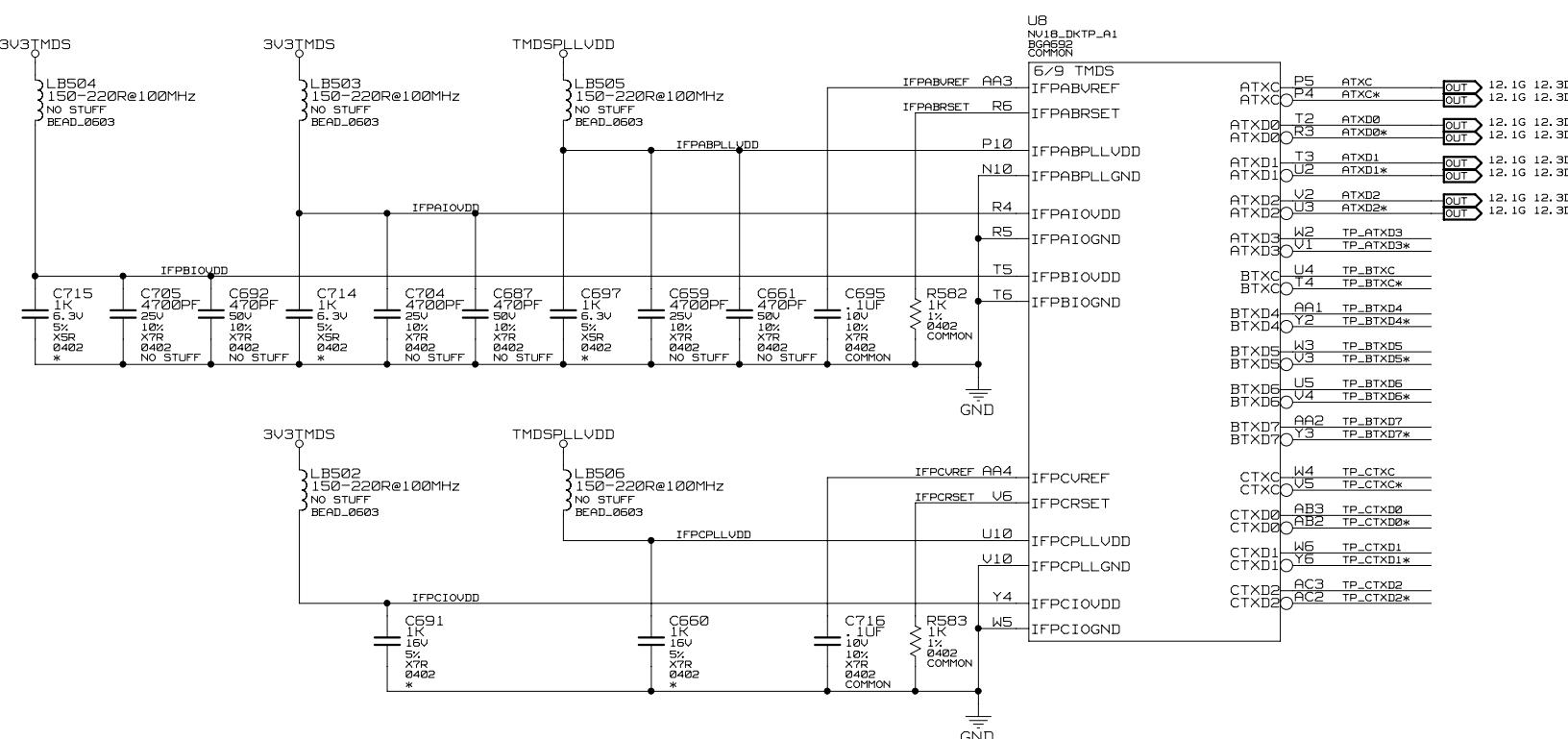
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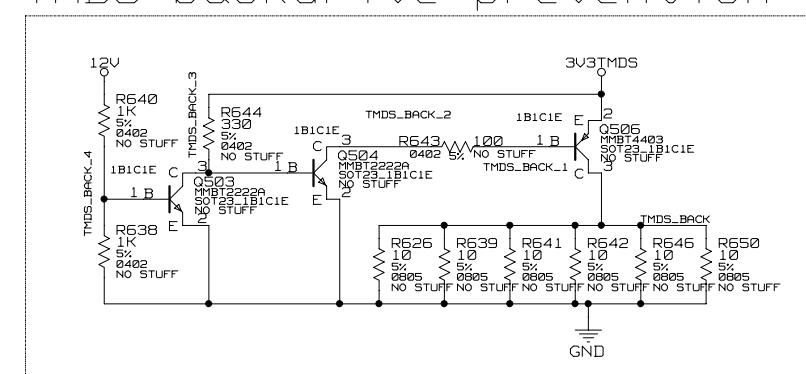
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INTERNAL TMDS POWER AND DECOUPLING

NET	NET_PHYSICAL_TYPE	VOLTAGE
IFPABUREF	12MIL_TRACE	3.3V
IFPABPLLVDD	12MIL_TRACE	3.3V
IFPAIOUDD	12MIL_TRACE	3.3V
IFPBIOUDD	12MIL_TRACE	3.3V
IFPCIOUDD	12MIL_TRACE	3.3V
IFPCPLLVDD	12MIL_TRACE	3.3V
IFPCIOVDD	12MIL_TRACE	3.3V
FAN_RETURN	12MIL_TRACE	3.3V
TMDS_BACK	12MIL_TRACE	3.3V

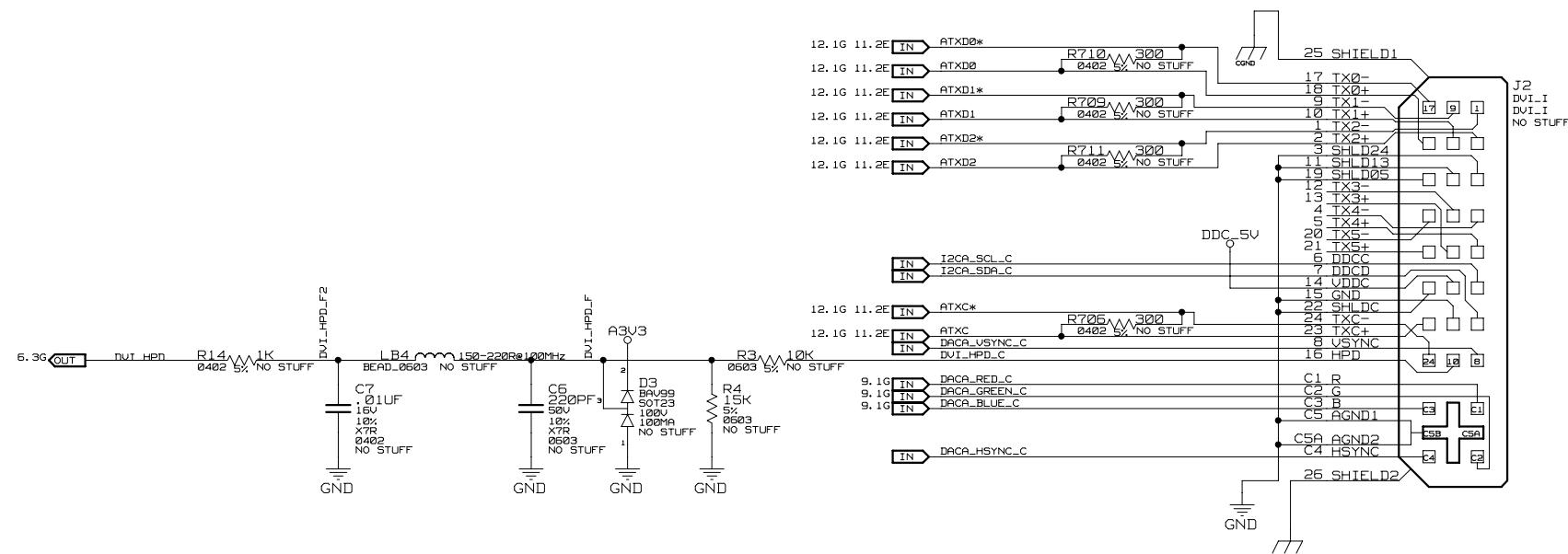


TMDS backdrive prevention



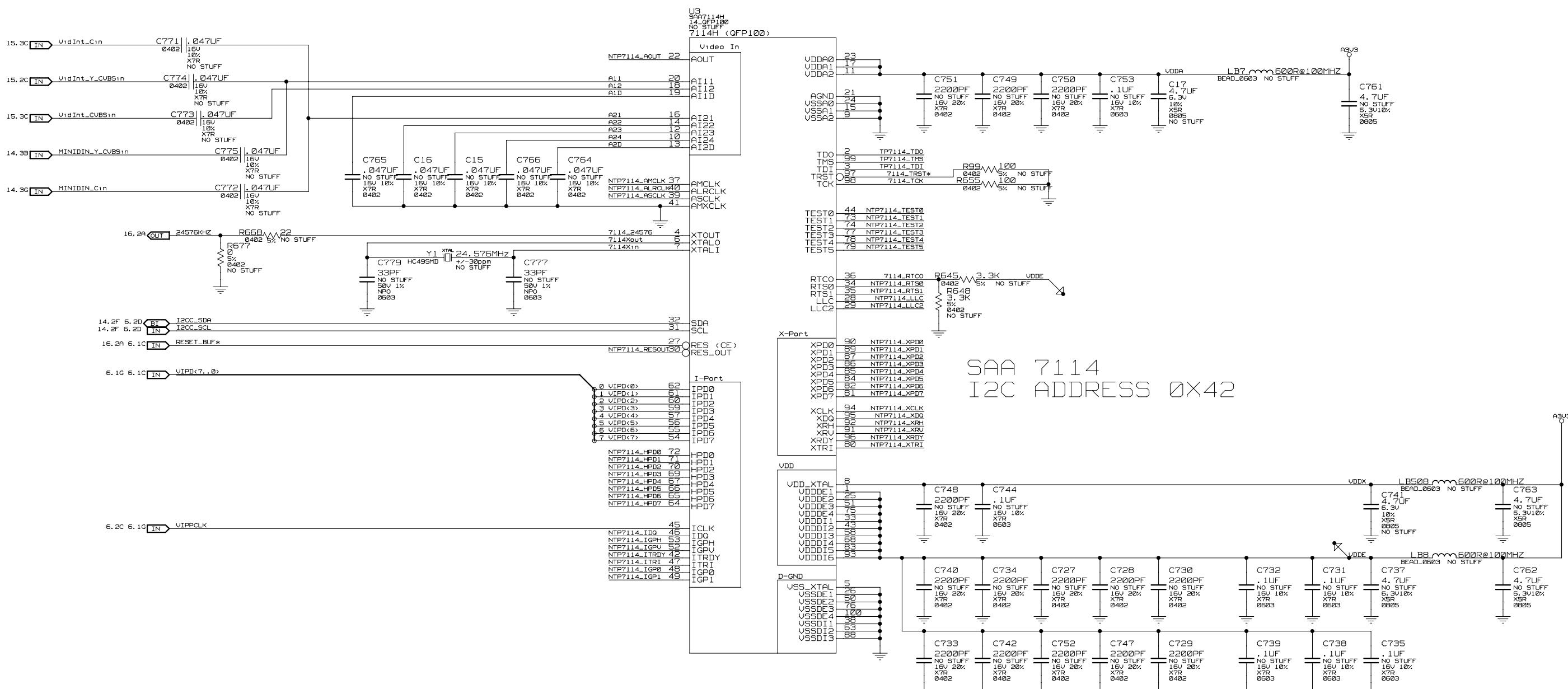
DVI-I OUTPUT

NET	Diffpair	NET_SPACING_RULE
12.3D 11.2E BT	ATXD0	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXD0*	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXD1	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXD1*	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXD2	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXD2*	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXC	20MIL_G2G_30MIL
12.3D 11.2E BT	ATXC*	20MIL_G2G_30MIL



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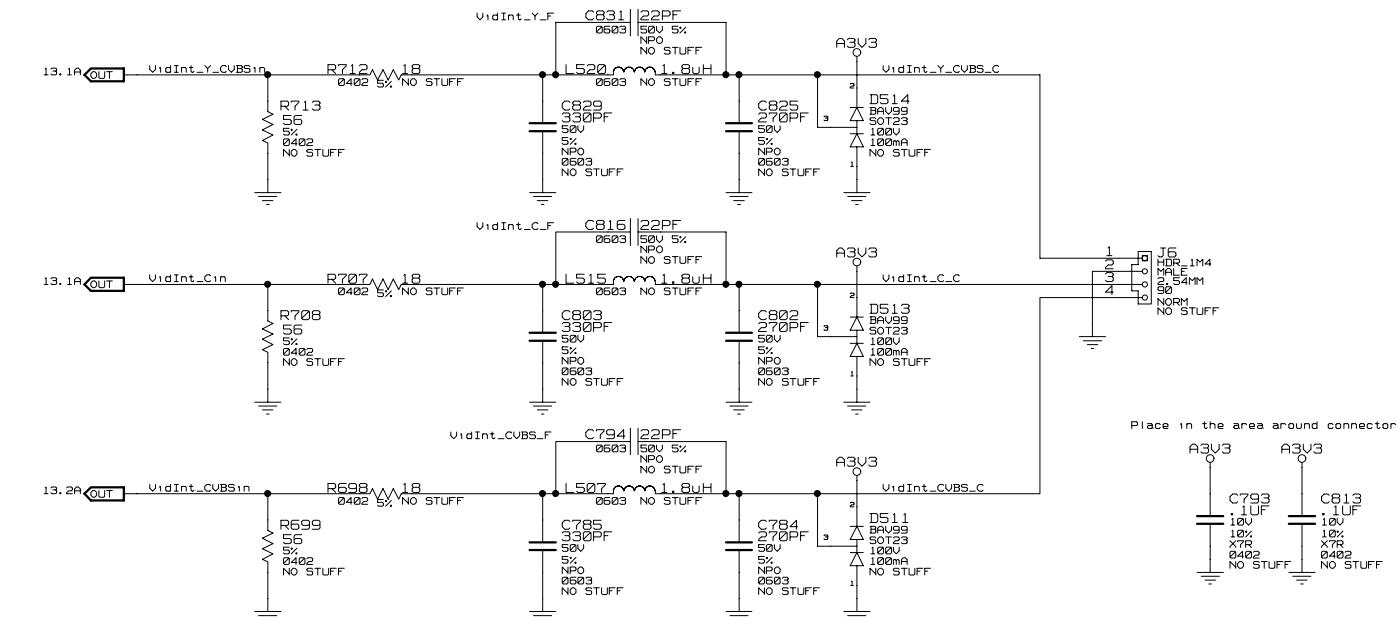
VIDEO CAPTURE



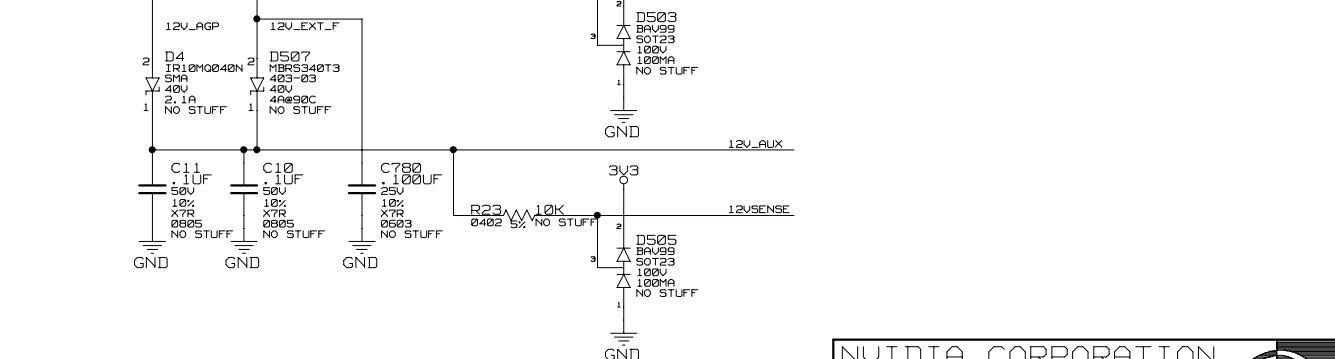
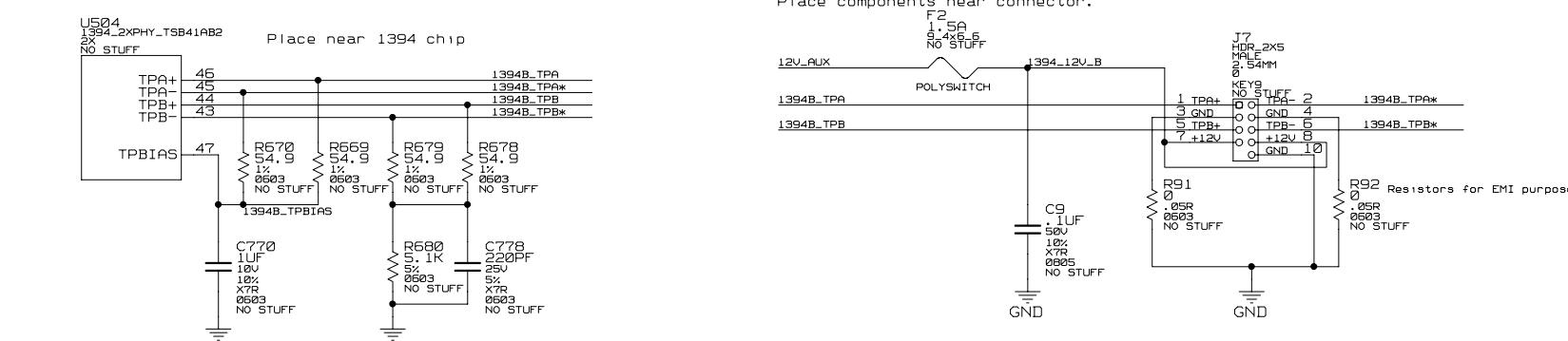
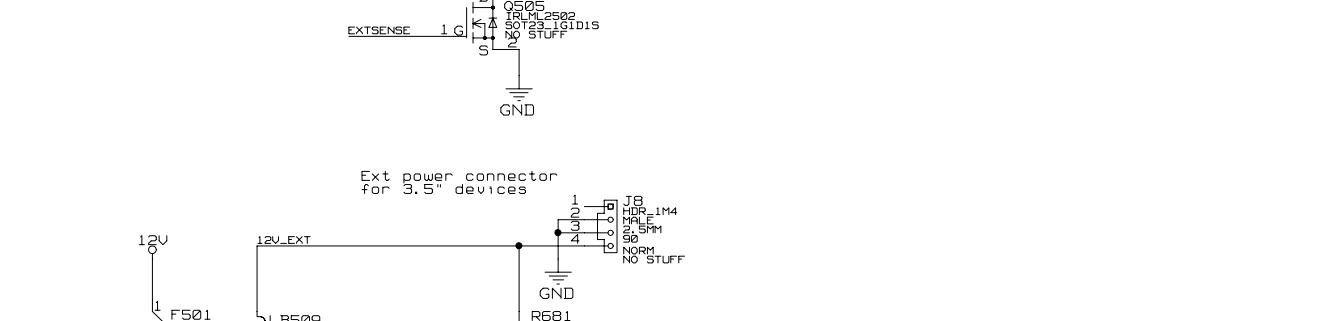
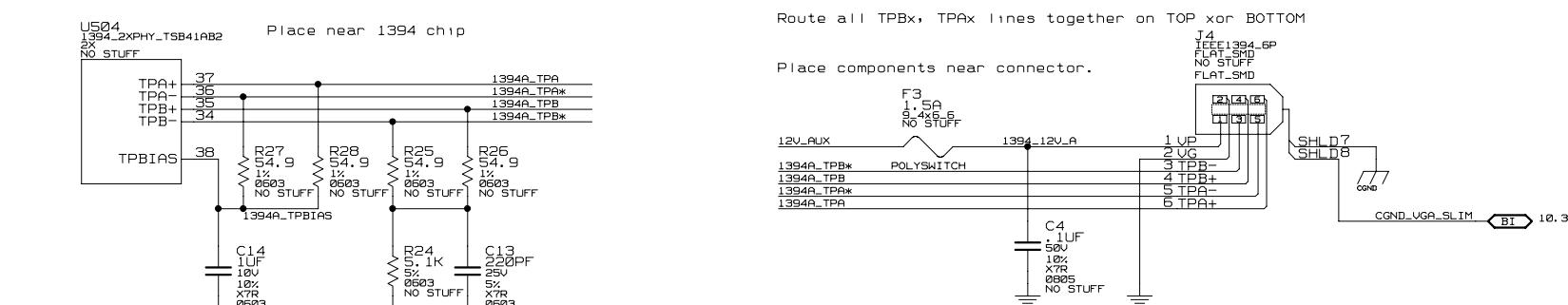
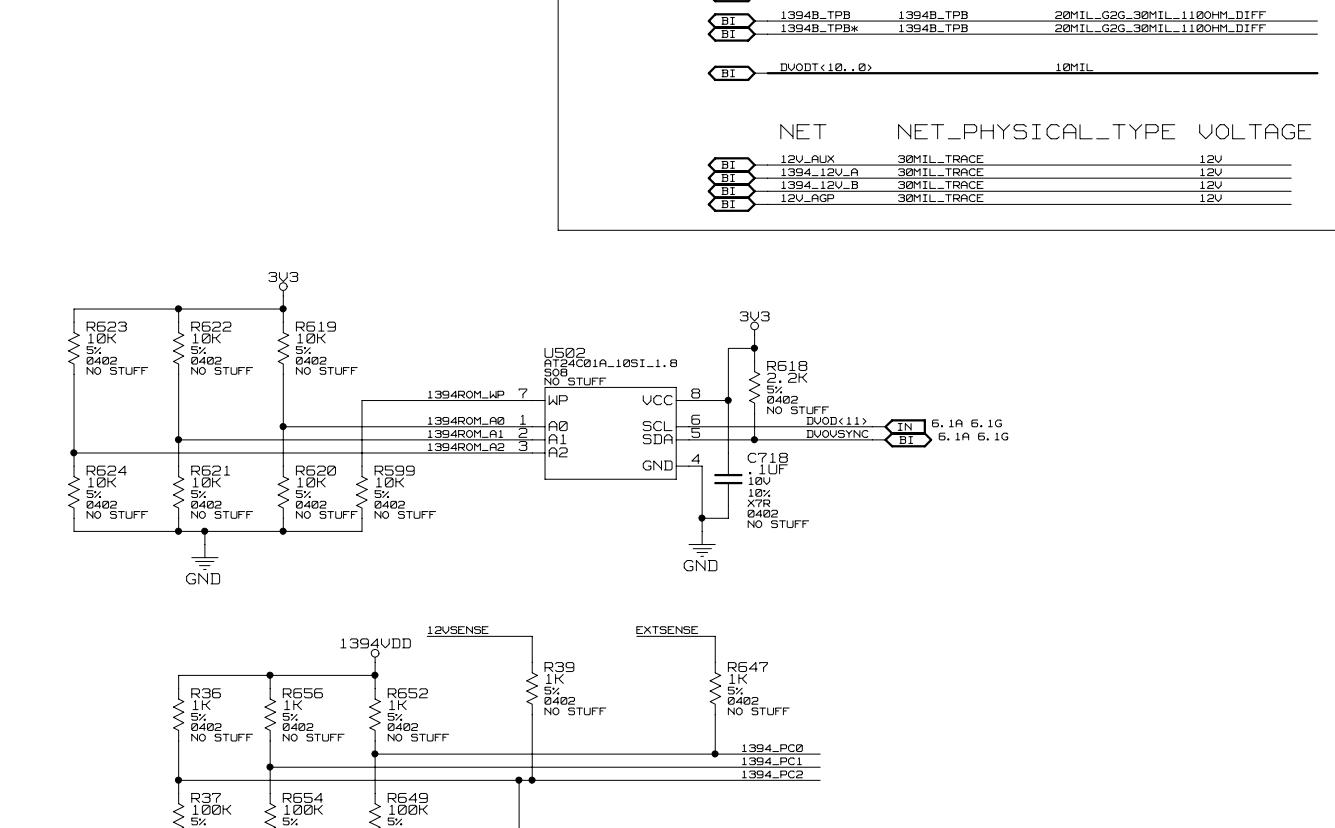
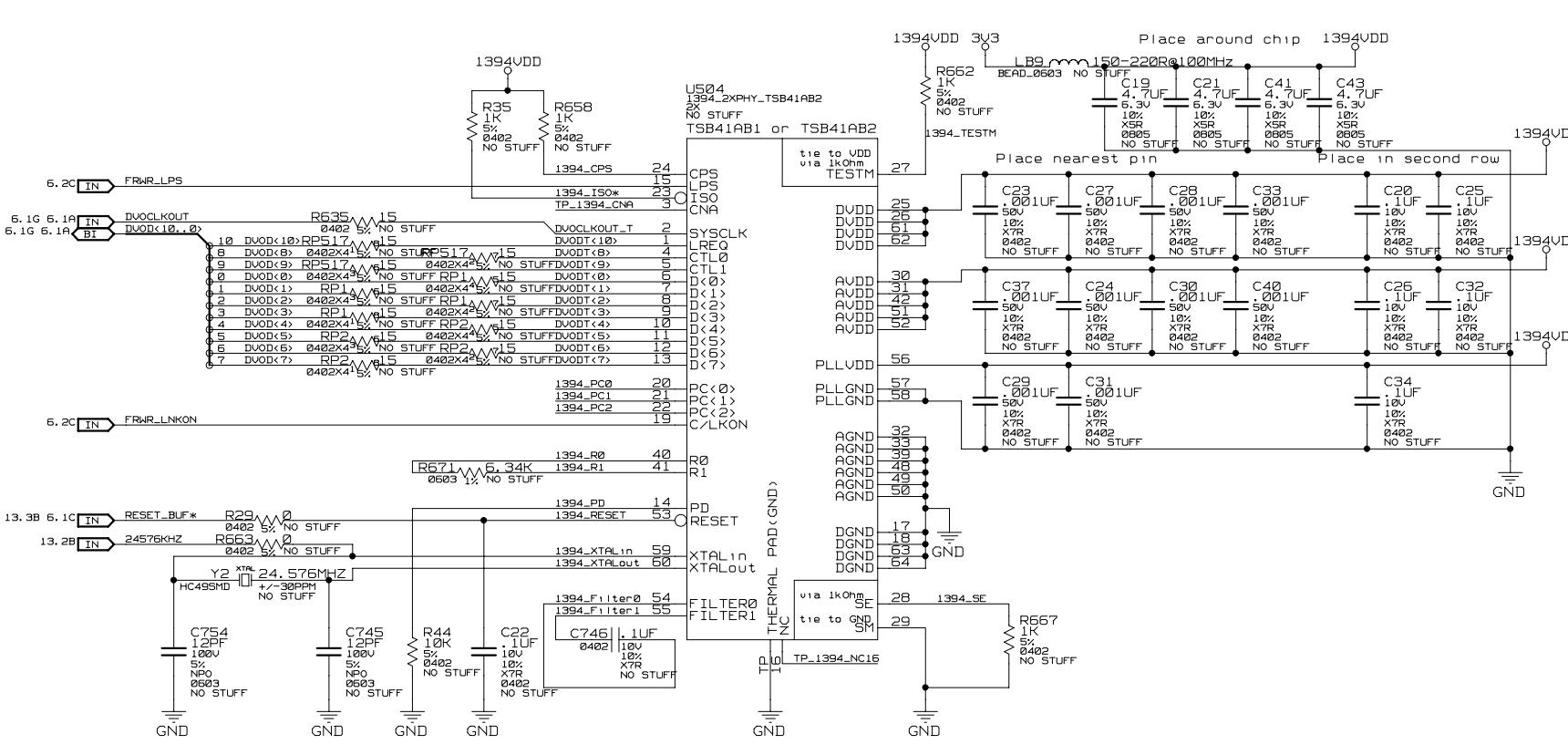
SAA 7114
I2C ADDRESS 0x42

A B C D E F G H

INTERNAL VIDEO CAPTURE CONNECTOR



1394 INTERFACE AND CONNECTORS

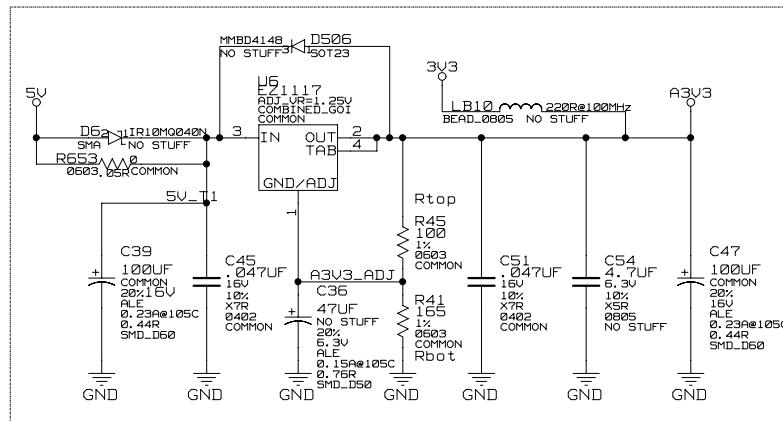


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2701 SAN TOMAS EXPRESSWAY
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DETAIL 1394 TEXAS TSB41AB2, PowerRails,
I/O, Internal and external connector

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POWER SUPPLY

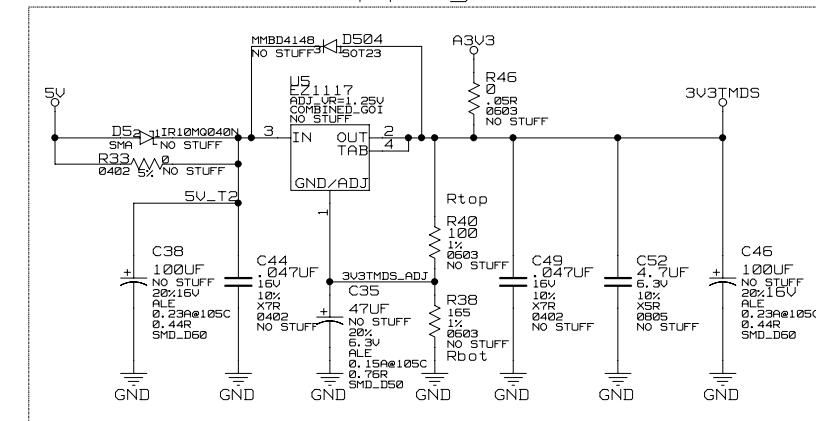
ANALOG 3V3



$$V_{out} = V_{Ref} * (1 + R_{bot}/R_{top})$$

$$3.31V = 1.25V * (1 + (165/100))$$

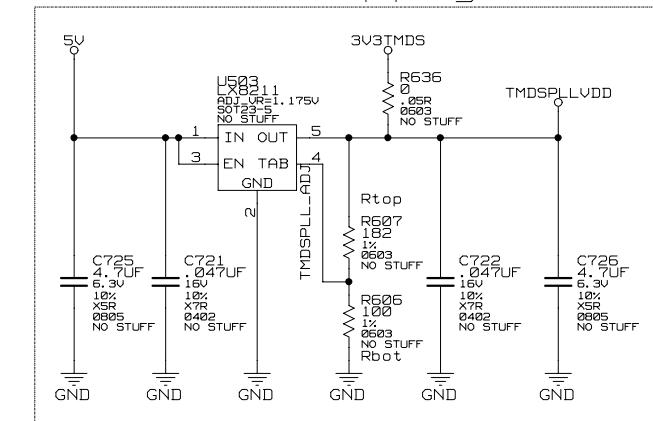
TMDS 3V3 Supply



$$V_{out} = V_{Ref} * (1 + R_{bot}/R_{top})$$

$$3.31V = 1.25V * (1 + (165/100))$$

TMDS PLL Supply

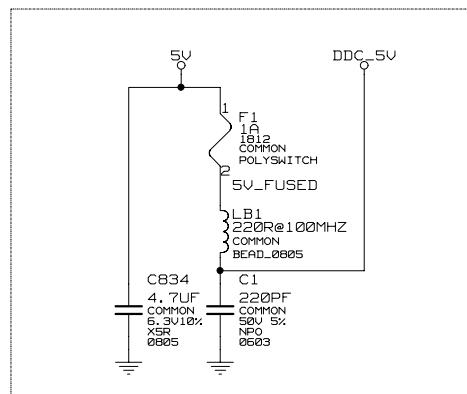


$$V_{out} = V_{Ref} * (1 + R_{top}/R_{bot})$$

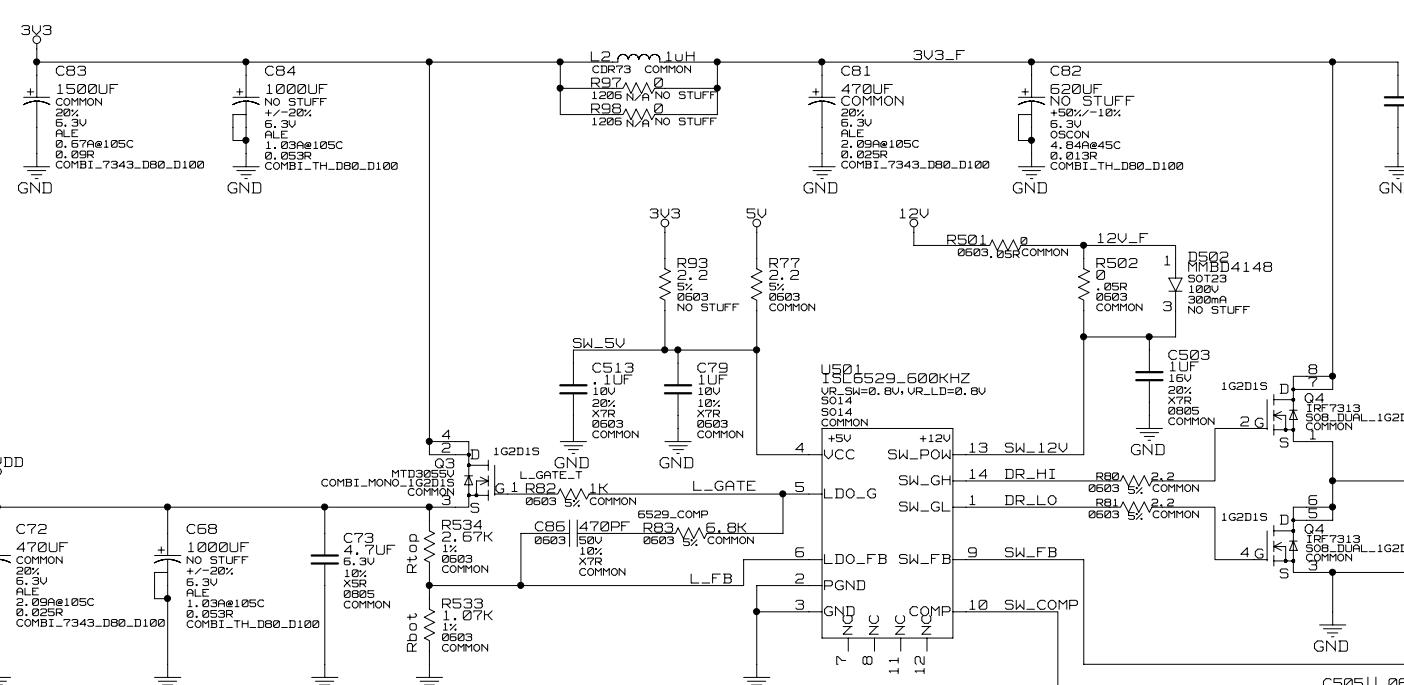
$$3.31V = 1.175V * (1 + (100/182))$$

NET	NET_PHYSICAL_TYPE	VOLTAGE
3V3_O	3V3	3.3V
A3V3_O	3V3	3.3V
3V3TMDSDS	3V3TMDSDS	3.3V
BIT	FBVDD	1.65V
BIT	NVDD	1.65V
5V_O	5V	5V
12V_O	12V	12V
3V3_F	12V_F	12V
BIT	12V_F	12V
5V_FUSED	12V_FUSED	12V
DDC_5V_O	DDC_5V	5V
SW_12V	10MIL_TRACE	12V
SW_5V	10MIL_TRACE	5V
DR_HI	10MIL_TRACE	
DR_LO	10MIL_TRACE	
SW_FB	10MIL_TRACE	
SW_COMP	10MIL_TRACE	
BIT	A3V3-ADJ	10MIL_TRACE
BIT	3V3TMDSDS-ADJ	10MIL_TRACE
BIT	TMDSPLL-ADJ	10MIL_TRACE
TMDSPLLVDD_O	TMDSPLLVDD	12MIL_TRACE

DDC 5V



NVDD-SWITCHER / FBVDD-LDO CONTROLLER ISL6529



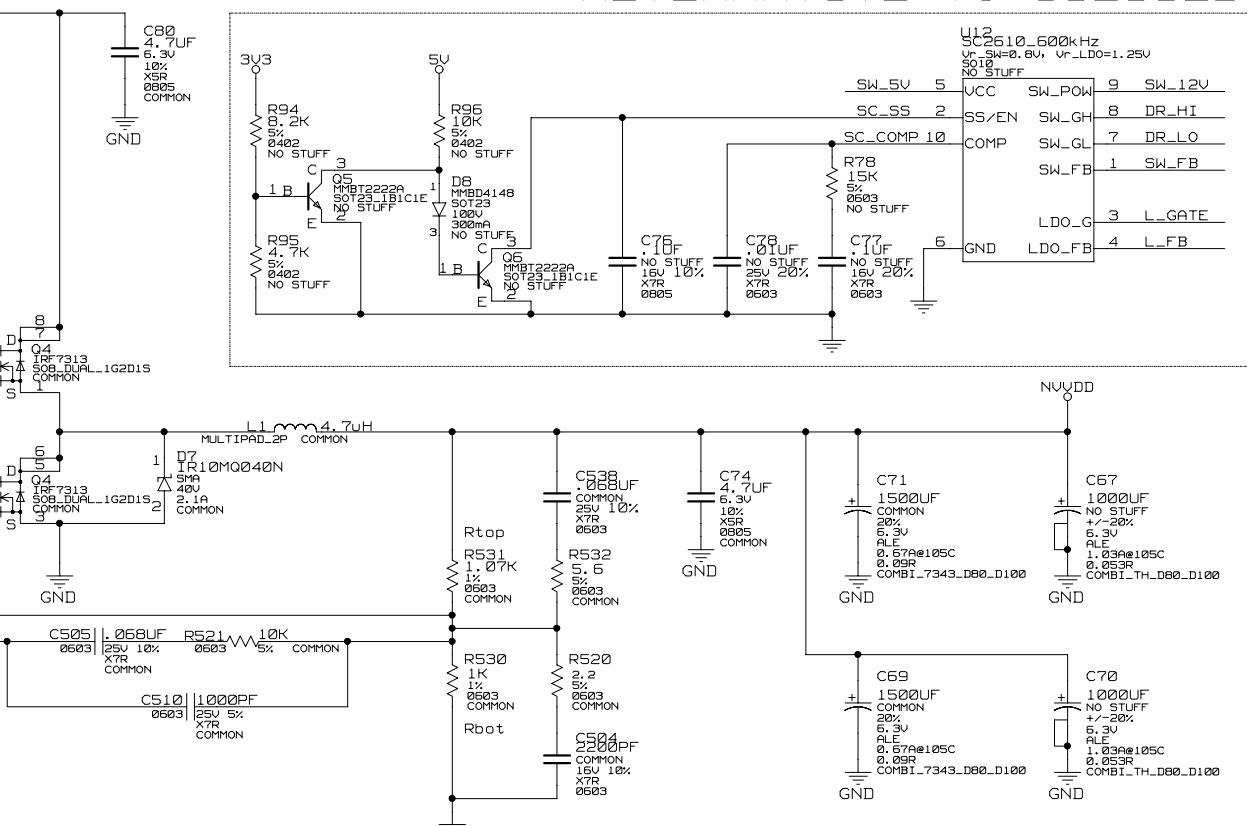
$$FBVDD = V_{Ref} * (1 + R_{top}/ R_{bot})$$

$$2.5V = 0.800V * (1 + 2.4k/1.13k)$$

$$2.5V = 1.250V * (1 + 100/100)$$

$$2.8V = 0.800V * (1 + 2.67k/1.07k)$$

ALTERNATIVE TO ISL6529



$$NVDD = V_{Ref} * (1 + R_{top}/ R_{bot})$$

$$1.656V = 0.800V * (1 + 1070/1000)$$

$$1.656V = 0.800V * (1 + 1070/1000)$$

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

DETAIL	POWER_SUPPLY
ID	p112_design
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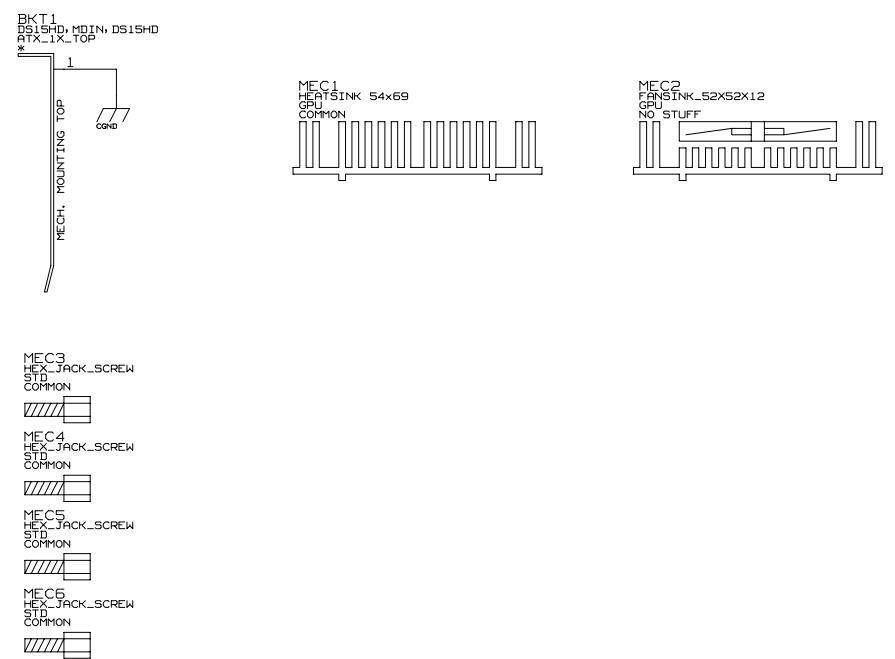
E

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MECHANICS



MEC3
HEX JACK SCREW
STD
COMMON

MEC4
HEX JACK SCREW
COMMON

MEC5
HEX JACK SCREW
STD
COMMON

MEC6
HEX JACK SCREW
STD
COMMON

NVIDIA CORPORATION	
2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA	
DETAIL	MECHANICS
ID	p112_design

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1	*** Part Cross-Reference for the entire design ***	C525 C 4, 4G C526 C 4, 3G C527 C 4, 2H C528 C 4, 2G C529 C 4, 3G C530 C 4, 4H C531 C 4, 4H C532 C 4, 3H C533 C 4, 3H C534 C 4, 4H C535 C 4, 4H C536 C 4, 3H C537 C 4, 3H C538 C 17, 4E C539 C 4, 4G C540 C 4, 4G C541 C 4, 3G C542 C 4, 3G C543 C 4, 4G C544 C 4, 4H C545 C 4, 4F C546 C 4, 4G C547 C 4, 4G C548 C 4, 3G C549 C 4, 2H C550 C 4, 2F C551 C 4, 2G C552 C 4, 3G C553 C 4, 4F C554 C 4, 4H C555 C 4, 4H C556 C 4, 4H C557 C 4, 3F C558 C 4, 4F C559 C 4, 3F C560 C 4, 3H C561 C 11, 3C C562 C 6, 1C C563 C 6, 1C C564 C 2, 4E C565 C 3, 2D C566 C 6, 1D C567 C 2, 4F C568 C 2, 4F C569 C 5, 4F C570 C 2, 3E C571 C 5, 4F C572 C 5, 4H C573 C 5, 3F C574 C 2, 3A C575 C 2, 3A C576 C 5, 2F C577 C 5, 3G C578 C 5, 3H C579 C 5, 3G C580 C 5, 3G C581 C 2, 4D C582 C 5, 3H C583 C 5, 2F C584 C 5, 2G C585 C 5, 2G C586 C 5, 3H C587 C 5, 3H C588 C 3, 2D C589 C 5, 2H C590 C 2, 3A C591 C 2, 2A C592 C 3, 2D C593 C 5, 2F C594 C 5, 2H C595 C 5, 3H C596 C 5, 3H C597 C 3, 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3H C764 C 13, 2D C765 C 13, 2C C766 C 13, 2C C767 C 9, 5C C768 C 9, 4C C769 C 9, 4C C770 C 15, 5A C771 C 13, 1B C772 C 13, 2B C773 C 13, 1B C774 C 13, 1B C775 C 13, 2B C776 C 9, 5D C777 C 13, 2C C778 C 15, 5B C779 C 13, 2C C780 C 15, 5F C781 C 8, 4E C782 C 8, 3E C783 C 14, 3E C784 C 15, 4E C785 C 15, 4D C786 C 16, 5B C787 C 10, 4B C788 C 10, 4B C789 C 14, 3C C790 C 14, 3C C791 C 14, 3F C792 C 14, 3C C793 C 15, 3F C794 C 15, 3E C795 C 10, 4B C796 C 10, 4B C797 C 10, 3B C798 C 14, 2C C799 C 14, 3C C800 C 14, 3E C801 C 14, 3C C802 C 15, 3E C803 C 15, 3D C804 C 10, 5B C805 C 10, 4B C806 C 10, 4B C807 C 14, 3F C808 C 9, 5D C809 C 14, 3D C810 C 14, 3D C811 C 14, 2E C812 C 14, 3E C813 C 15, 3F C814 C 14, 3D C815 C 14, 3E C816 C 15, 3E C817 C 10, 4C C818 C 10, 4C C819 C 10, 3C C820 C 9, 2C C821 C 9, 2C C822 C 9, 3C C823 C 9, 1C C824 C 10, 5D C825 C 15, 2E C826 C 10, 5C C827 C 10, 4C C828 C 10, 4C C829 C 15, 2D C830 C 14, 3E C831 C 15, 2E C832 C 10, 2C C833 C 10, 3C C834 C 17, 2G CN_1 CON_AGP 2, 1B D1 D_3PIN_AC 10, 1C D2 D_3PIN_AC 10, 2C D3 D_3PIN_AC 12, 3C D4 D_SCHOTTKY 16, 4F D5 D_SCHOTTKY 17, 1C D6 D_SCHOTTKY 17, 1A D7 D_SCHOTTKY 17, 4D D8 D 17, 3E D501 D 6, 4F D502 D 17, 3D D503 D_3PIN_AC 16, 4G D504 D 17, 1D D505 D_3PIN_AC 16, 5G D506 D 17, 1A D507 D_SCHOTTKY 16, 4F D508 D_3PIN_AC 9, 5C D509 D_3PIN_AC 9, 4C D510 D_3PIN_AC 9, 4C D511 D_3PIN_AC 15, 4E D512 D_3PIN_AC 14, 3E D513 D_3PIN_AC 15, 3E D514 D_3PIN_AC 15, 2E D515 D_3PIN_AC 14, 3D D516 D_3PIN_AC 14, 3D D517 D_3PIN_AC 14, 2E D518 D_3PIN_AC 14, 3E D519 D_3PIN_AC 14, 3D D520 D_3PIN_AC 9, 2C	D521 D_3PIN_AC 9, 2C D522 D_3PIN_AC 9, 3C D523 D_3PIN_AC 9, 1C D524 D_3PIN_AC 10, 4C D525 D_3PIN_AC 14, 3E D526 D_3PIN_AC 10, 2C D527 D_3PIN_AC 10, 3C D528 D_3PIN_AC 10, 5C D529 D_3PIN_AC 10, 4C F1 F_POLYSW 17, 2H F2 F_POLYSW 16, 4C F3 F_POLYSW 16, 4C F501 F_POLYSW 16, 4F J1 CON_DSUB15HD 10, 3D J2 CON_DV1_I_12, 3E J3 CON_MINIDIN_9 14, 3D J4 CON_1399 16, 3D J5 CON_DSUB15HD 9, 3D J6 HDR_1X4 15, 3F J7 HDR_2X5 16, 4D J8 HDR_1X4 16, 4G 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Q_FET_NLENH 7, 4C Q503 Q_NPN 11, 3F Q504 Q_NPN 11, 3G Q505 Q_FET_NLENH 15, 3F Q506 Q_PNP 11, 3G R1 R 10, 4D R2 R 10, 3D R3 R 12, 3C R4 R 12, 3C R5 R 10, 1B R6 R 10, 2B R7 R 10, 4D R8 R 10, 1B R9 R 10, 2B R10 R 7, 4F R11 R 7, 3F R12 R 7, 3F R13 R 7, 2F R14 R 12, 3B R15 R 6, 3A R16 R 6, 3A R17 R 6, 3A R18 R 6, 3A R19 R 6, 3B R20 R 6, 3B R21 R 6, 3B R22 R 6, 3B	NVIDIA CORPORATION 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050 USA 	DETAIL DRAWING DETAIL CONTINUED...
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1	R23 R 16.5F R24 R 16.4B R25 R 16.4B R26 R 16.4B R27 R 16.4A R28 R 16.4B R29 R 16.2H R30 R 5.4A R31 R 6.4B R32 R 6.5B R33 R 17.1C R34 R 6.5A R35 R 16.1B R36 R 16.3F R37 R 16.3F R38 R 17.2D R39 R 16.3F R40 R 17.2D R41 R 17.2B R42 R 6.5F R43 R 6.5F R44 R 16.3B R45 R 17.2B R46 R 17.1D R47 R 6.3B R48 R 6.3B R49 R 6.4B R50 R 6.4B R51 R 6.3B R52 R 6.3A R53 R 6.3A R54 R 5.4A R55 R 6.4A R56 R 6.3A R57 R 5.5B R58 R 5.5B R59 R 5.5B R60 R 5.5B R61 R 5.3C R62 R 2.4D R63 R 5.5A R64 R 5.5A R65 R 5.5A R66 R 5.5A R67 R 4.5B R68 R 4.5B R69 R 4.5B R70 R 4.5B R71 R 4.5A R72 R 4.5A R73 R 4.5A R74 R 4.5A R75 R 2.5A R76 R 2.5B R77 R 17.3C R78 R 17.3F R79 R 4.3C R80 R 17.4D R81 R 17.4D R82 R 17.4B R83 R 17.4B R84 R 6.5A R85 R 6.5B R86 R 6.1E R87 R 7.2F R88 R 7.3F R89 R 7.3F R90 R 7.4F R91 R 16.5D R92 R 16.5D R93 R 17.3B R94 R 17.3E R95 R 17.3E R96 R 17.3E R97 R 17.3B R98 R 17.3B R99 R 13.2E R501 R 17.3C R502 R 17.3C R503 R 6.4E R504 R 4.1E R505 R 4.1D R506 R 4.1C R507 R 4.1C R508 R 4.1E R509 R 4.1D R510 R 4.1C R511 R 4.1B R512 R 4.4E R513 R 4.4E R514 R 4.4D R515 R 4.4D R516 R 4.1E R517 R 4.1D R518 R 4.1C R519 R 4.1C R520 R 17.4E R521 R 17.4D R522 R 4.1E R523 R 4.1D R524 R 4.1C R525 R 4.1B R526 R 4.3D R527 R 4.3D R528 R 4.3C R529 R 4.3C R530 R 17.4E R531 R 17.4E R532 R 17.4E R533 R 17.4B R534 R 17.4B R535 R 4.5A R536 R 4.5A	R537 R 4.5A R538 R 4.5A R539 R 4.5B R540 R 4.5B R541 R 4.5B R542 R 4.5B R543 R 2.4B R544 R 2.4A R545 R 2.4A R546 R 2.4A R547 R 2.4A R548 R 2.4C R549 R 5.5B R550 R 5.5B R551 R 2.4D R552 R 2.4D R553 R 3.5A R554 R 3.5A R555 R 5.4D R556 R 5.3C R557 R 5.4D R558 R 5.1B R559 R 9.5B R560 R 9.4B R561 R 9.4B R562 R 16.1C R563 R 16.2A R564 R 9.5B R565 R 5.1C R566 R 5.1C R567 R 5.1C R568 R 5.1C R569 R 2.4F R570 R 2.4F R571 R 2.4F R572 R 2.4F R573 R 5.5A R574 R 5.5A R575 R 7.5C R576 R 7.2C R577 R 7.2C R578 R 2.4D R579 R 6.3B R580 R 6.2A R581 R 2.4E R582 R 11.3C R583 R 11.4C R584 R 7.3C R585 R 6.5A R586 R 7.3C R587 R 5.5B R588 R 5.4E R589 R 5.3D R590 R 7.3C R591 R 5.4E R592 R 5.3D R593 R 7.3C R594 R 5.1D R595 R 5.1D R596 R 5.1D R597 R 5.1D R598 R 5.5A R599 R 16.2F R600 R 5.5A R601 R 5.1E R602 R 5.1E R603 R 5.1E R604 R 5.1E R605 R 6.4A R606 R 17.2F R607 R 17.2F R608 R 6.4B R609 R 2.4B R610 R 6.3B R611 R 6.4B R612 R 6.4B R613 R 6.4B R614 R 6.4B R615 R 6.4B R616 R 6.4B R617 R 6.4B R618 R 16.2G R619 R 16.2F R620 R 16.2F R621 R 16.2F R622 R 16.2F R623 R 16.2E R624 R 16.2E R625 R 2.4B R626 R 11.3G R627 R 6.4A R628 R 6.4A R629 R 6.3A R630 R 6.4A R631 R 6.4A R632 R 6.4A R633 R 6.4A R634 R 6.4A R635 R 16.2B R636 R 17.1F R637 R 8.2E R638 R 11.3F R639 R 11.3G R640 R 11.3F R641 R 11.3G R642 R 11.3G R643 R 11.3G R644 R 11.3F R645 R 13.2E R646 R 11.3G R647 R 16.3G R648 R 13.2E R649 R 16.3F	R650 R 11.3H R651 R 6.2C R652 R 16.3F R653 R 17.1A R654 R 16.3F R655 R 13.2E R656 R 16.3F R657 R 5.2C R658 R 16.1B R659 R 9.5B R660 R 9.4B R661 R 9.4B R662 R 16.1C R663 R 16.2A R664 R 9.5B R665 R 9.4B R666 R 9.4B R667 R 16.3C R668 R 13.2B R669 R 15.5B R670 R 16.5A R671 R 16.2B R672 R 5.2F R673 R 6.3F R674 R 8.3E R675 R 8.3E R676 R 8.3E R677 R 13.2B R678 R 16.5B R679 R 16.5B R680 R 16.5B R681 R 16.4F R682 R 8.2D R683 R 8.2D R684 R 8.2D R685 R 8.2D R686 R 6.2D R687 R 9.3D R688 R 9.4D R689 R 8.2D R690 R 8.2D R691 R 6.2C R692 R 8.4D R693 R 10.5B R694 R 10.4B R695 R 10.4B R696 R 14.3B R697 R 14.3C R698 R 15.3D R699 R 15.4D R700 R 14.3G R701 R 9.2B R702 R 9.1B R703 R 14.3F R704 R 9.2B R705 R 9.1B R706 R 12.3D R707 R 15.3D R708 R 15.3D R709 R 12.3D R710 R 12.3D R711 R 12.3D R712 R 15.2D R713 R 15.2D R714 R 9.4D R715 R 14.3D RP1 R_PAK 16.2B RP2 R_PAK 16.2B RP3 R_PAK 5.4A 5.4B 5.5B RP4 R_PAK 5.4A 5.4B RP5 R_PAK 5.4A 5.4B RP6 R_PAK 5.4A 5.4B RP7 R_PAK 5.3A 5.3B RP8 R_PAK 5.3A 5.3A 5.3B RP9 R_PAK 5.2A 5.2B RP10 R_PAK 5.2A 5.2B RP11 R_PAK 4.4A 4.4B 4.5B RP12 R_PAK 4.4A 4.4B RP13 R_PAK 4.4A 4.4B RP14 R_PAK 4.4A 4.4B RP15 R_PAK 4.3A 4.3B RP16 R_PAK 4.3A 4.3A 4.3B RP17 R_PAK 4.2A 4.2B RP18 R_PAK 4.2A 4.2B RP501 R_PAK 4.3A 4.3B 4.3B RP502 R_PAK 4.2A 4.3A 4.3B RP503 R_PAK 4.4A 4.4A 4.4B RP504 R_PAK 4.3A 4.3B RP505 R_PAK 4.4A 4.4B RP506 R_PAK 4.4A 4.4B RP507 R_PAK 4.3A 4.3B RP508 R_PAK 4.3A 4.3B RP509 R_PAK 5.2A 5.3A 5.3B RP510 R_PAK 5.3A 5.3B RP511 R_PAK 5.3A 5.3B RP512 R_PAK 5.3A 5.3B RP513 R_PAK 5.3A 5.3B 5.3B RP514 R_PAK 5.4A 5.4B RP515 R_PAK 5.4A 5.4B RP516 R_PAK 5.4A 5.4A 5.4B RP517 R_PAK 16.2B U1 U_AND_2IN_7.2F_7.3F_7.4F U2 U_MEM_FL_SER_128KX8 6.1E U3 U_UDEC_SAR71XX 13.1D U4 U_TEMP_AD1032 6.5F U5 U_VREG_3PIN 17.1C U6 U_VREG_3PIN 17.1A U7 U_MEM_SD_DDR_4MX32 5.2E 5.4E 5.4E 5.5E 5.5E U8 U_GPU_NV18 2.1D 3.1C 3.1E 6.1B 6.2E 7.1C 7.3C 7.4C 11.2D U9 U_MEM_SD_DDR_4MX32 5.2C 5.4C 5.4D 5.5C 5.5D U10 U_MEM_SD_DDR_4MX32 4.2E 4.4E 4.4E 4.5E 4.5E U11 U_MEM_SD_DDR_4MX32 4.2C 4.4C 4.4D 4.5C 4.5D	U12 U_SWREG_SC2610 17.3F U13 U_MEM_FL_SER_128KX8 6.2E U501 U_SWREG_ISL6529 17.4C U502 U_MEM_EF_8X256 16.2F U503 U_VREG_3PIN 17.1E U504 U_1394PHY_TS841ABX 16.1C 16.3A 16.4A U505 U_SA_ANA_3257 8.2D 8.3D 8.4D Y1 XTAL 13.2C Y2 XTAL 16.3A Y3 XTAL 7.5C				
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