# NV25, P80, DUAL DAC/TMDS, 128MB 4MX32 BGA DDR, TV IN/OUT, GOGGLES, AGP

## P80-A00: Based on P53-A00.

A00-X00:

Populate R1034 with 0.01 Ohm
Populate 68R parallel terminations on FBCLK/CLK#

A00-X01:
Isolated GND, AGND and Chassis GND
Corrected Multichip Strap
Changed sync buffers inputs from pin 2 to pin 1 for easy probing.
Corrected PWRGD_FBVDD on memory PS

A00-X02:
Combined CX and SA power filters.
Connected memory PS bootstrap to 12V.
X9R Hotplugs to GPIO1.
Isolated PLL_VDD from 3.3VL to get rid of 350mV stray voltage.
Combined GND, AGND and Chassis GND

A00-X03
Changed both TMDS digital powers from 3.3V to 3.3VL.
Added a resistor to base transistor PLL_VDD sequencer.
Added 2nd fan connector.
Added various placement and routing notes.

## P80-A01:

A02-X00
Fixed serial rom connections.
Added, again GND isolations.
Added testpoints to various (SAA7108) pins.
Changed DVO clocks series termination to 10R.

A02-X01
Moved VGA con and Bracket to new Sheet 3.2
Moved SROM to new Sheet 5.2
Moved SROM to new Sheet 5.2
Moved SEC-DVI Connector to Sheet 6.5
C1262, R1129 Changed to No_stuff.
131-60102-0063-02 is SUB for 131-10102-0061-006
R1072 is changed to 2.2K from 1.5K, Put in BOM.
R1204(Nostuff), R1205-0R Added for FBVDDQ Power sequence after 3.3VL
R207 Changed from 118R to 105 Ohm
R927 Changed from 118R to 102 Ohm
C1405, C1406 Value changed to 330uf

A02-X02
Design file under Perforce Control.
Changed DACA IDUMP resistor to 0402pkg

A02-X03
Turned DACA SYN buffers into "analog" to ease the AGND antietch.
Added 5 caps on VDDDVO pins.
Changed R1116 to 0402 pkg.
Enabled AGP Fast Write.
Changed PS snubber's resistor to 2.2R (from 100R) per Semtech recommendation.

A02-X04
Combined FCCDDCPWRVGA and DDC+5V nets (del. L711 and C1116) for ease of routing.

A02-X05
Changed R1115 and R1116 back to SMD0603

A02-X06
Isolate SC1175 and SC1102 AGNDs per Semtech recommendations.
Removed 5V power option from SC1102.
Changed crystal loading caps to 10pF and have them reference to digitial GND.

A02-X07
Changed snubber resistors to 0805 pkgs
Added RC to SC1102 VREF pin (NO_STUFF)
Removed extra X elements.

A02-X10
Added a 2A fuse on 12V input due to SC1102 current limit bug.

A02-X11
Added ICT to MCHIP_RST_ (GPU.AK5)
Removed SMD0805_SHORT symbols from PS pages (nets merged to GND)

## P80-A03: Re-spin

A03-X00

Add two 5-3.0 VR for DVOA and B BUS power supply and
change Flash Rom power to DVOA_PWR (3.0V) on Page
Change the decoupling cap. C1349,C1350,C1351,C1362,C907
connect to DVOA_PWR from 3.3V on page 5.1
Change the decoupling cap. C1443,C1444,C1445,C1446,C920
connect to DVOA_PWR from 3.3V on page 5.1
Change series P-ROM U505 power to DVOA_PWR (3.0V) on page 5.2
Change GPU pin AH1,AD1,AC7 connect to DVOA_PWR and change GPU
pin AH15,AP8,AP12 connect to DVOB_PWR on Page 6.0.
Connection AGND to GND on page 3.1
Remove R1179,R1180,R1183,R1184,R1198,R1199,C1447
Change R1196,R1197 to "NO STUFF" on page 3.2

## P80-A04: Schematics For P Release

A04-X00

Put NO_STUUF for C1123, C1126, C1129, C304, C307, C310
Replace C303, C306, C309, C1122, C1125, C1128 with
CAP NPO 0603 15PF 16V 5% (035-20150-0006-000)
Replace L715, L717, L719, L300, L305, L309 with
IND 0805 MTLR 5% 0.068UH (130-30680-0006-000)
Replace L716, L718, L720, L302, L306, L310 with
IND 0603 MTLR 5% 0.068UH (130-20680-0006-000)

A04-X01

Change C29, C30 value from 33PF to 27PF to improve the
color burst stability for conexent and philips TV chip
Change R23 to 12 Ohm from 1K Ohm

A04-X02

Clean up the page number

A04-X03

Clean up the Sch. part description dismatch with the BOM

COMMON -- ALL
NO_STUFF - NOT STUFFED
PRI_VGA - Primary VGA Support
PRI_DVI - Primary DVI-D (Digital) Support
PRI_DVI_I - Primary DVI-I - (Digital & Analog) Support
SEC_DVI_I - Secondary DVI-I (Digital & Analog) Support
PRI_PROT - Primary DVI-VGA protection diodes.
SEC_PROT - Secondary DVI-I protection diodes
MEM128 - 128MB EXTENDED MEMORY

NO_STUFF FOR FIRST BUILD
ROM_SER - Serial ROM used
ROM_PAR - Parallel ROM used.

STEREO - USED FOR STEREO GOOGLES
STEREOSYNC1 - USED FOR STEREO GOOGLES
STEREOSYNC2 - USED FOR STEREO GOOGLES
STEREOSYNCS - USED FOR STEREO SYNC BUFFERS
SAA8 - PHILIPS ENCODER/DECODER SAA7108
SAA2 - PHILIPS ENCODER SAA7102
CX - CONEXENT ENCODER CX25871

NO_STUFF FOR FIRST BUILD

EZ1586 - USED TO REGULATE FBVDDQ FROM FBVDD - LINEAR
SC1102 - USED TO REGULATE FBVDD FROM 12V - SWITCHER
SC1565 - USED TO REGULATE 3.3VL FROM 3.3V - LINEAR
SC1175 - USED TO REGULATE NVVDD FROM 3.3V AND 5V - SWITCHER

NO_STUFF FOR FIRST BUILD

PS_SEQ - USED FOR POWER SUPPLY SEQUENCE PROTECTION

VGA-TV-DVI - Used for Primary VGA / TV / Secondary DVI
VGA-DVI - Used for Primary VGA / Secodary DVI only
VGA-TV - Used for Primary VGA / TV
VGA - Used for Primary VGA only
DVI-TV-DVI - Used for Primary DVI / TV / Secondary DVI
DVI-DVI - Used for Primary DVI / Secondary DVI Only
DVI-TV - Used for Primary DVI / TV
DVI - Used for Secondary DVI
PASSIVE_HS - Used for Passive heat sink
FAN_HS - Used for Fan heat Sink
SOCKET - PARTS REMOVED WHEN USING A SOCKET

# 0. TOP PAGE

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

NVIDIA Corporation
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602-P0080-0000-A04

| Size | CAGE Code | DWG NO | Rev |
|---|---|---|---|
| Custom | | | 02 |

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Scale

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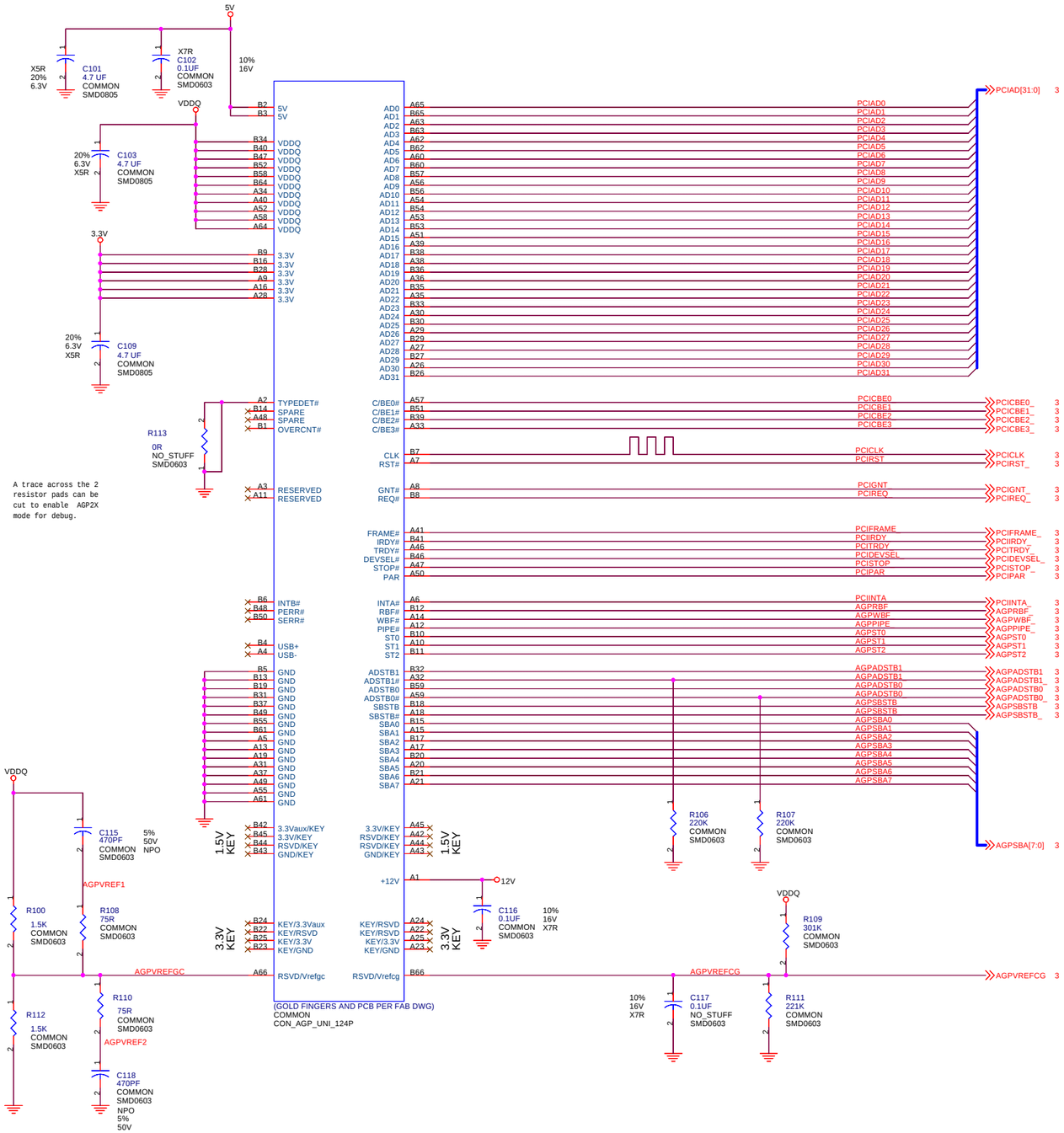


# 1.1 BUS I/O

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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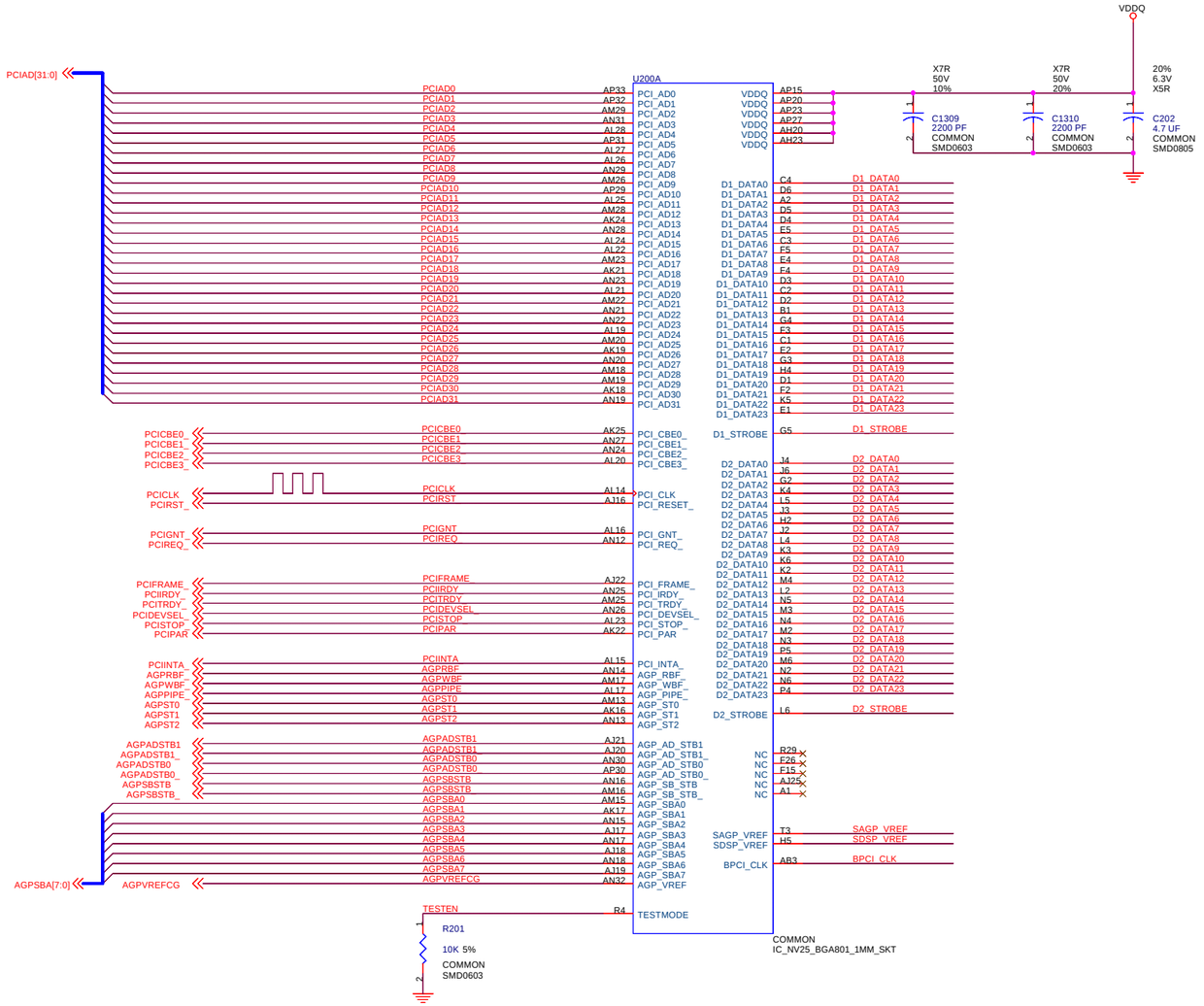


# 2.1 NV HOST IF

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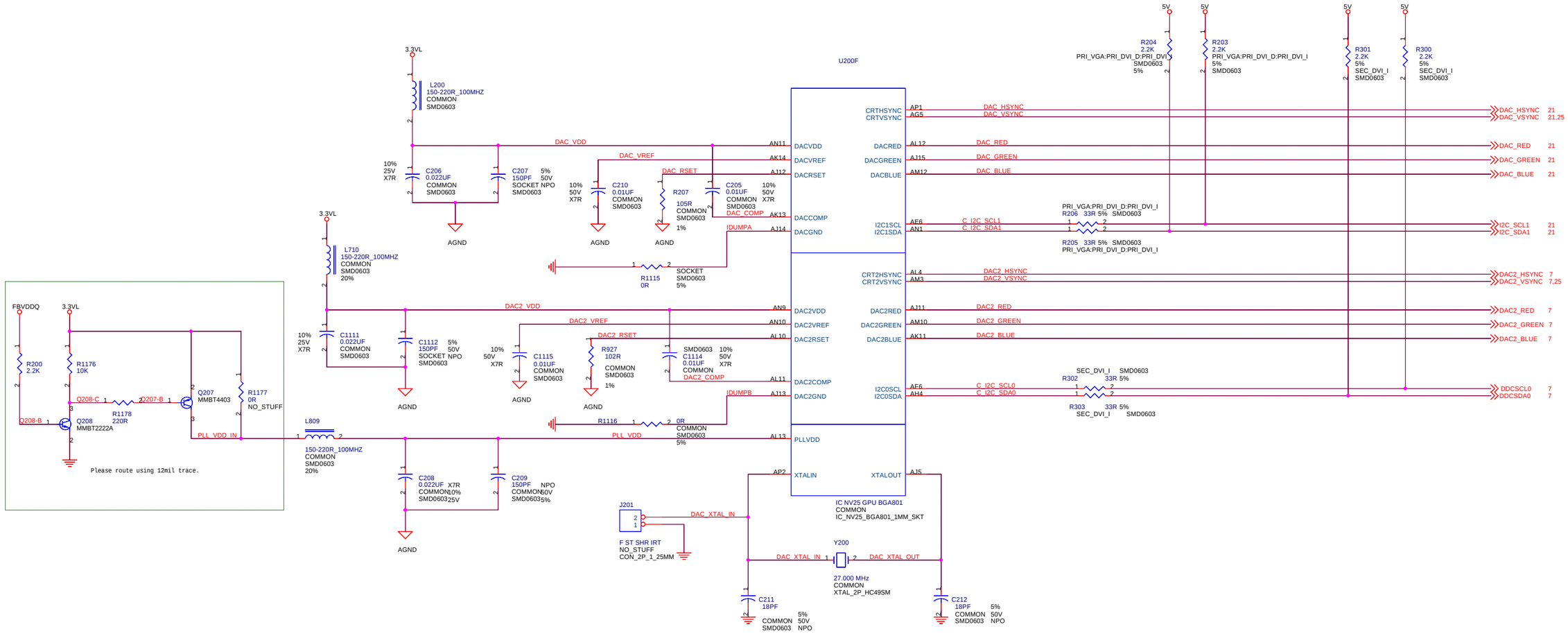
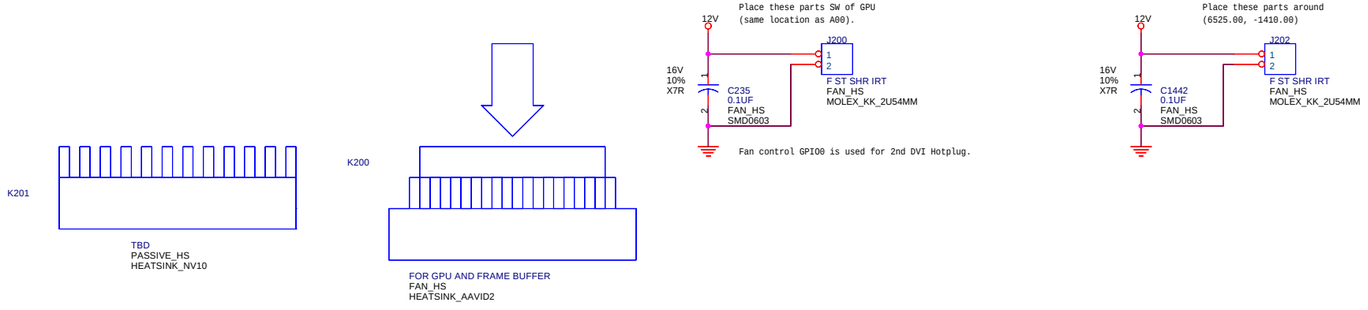



Use thick (non-impedance controlled) traces on XTALIN/OUT




# 2.2 NV DAC/PLL/I2C

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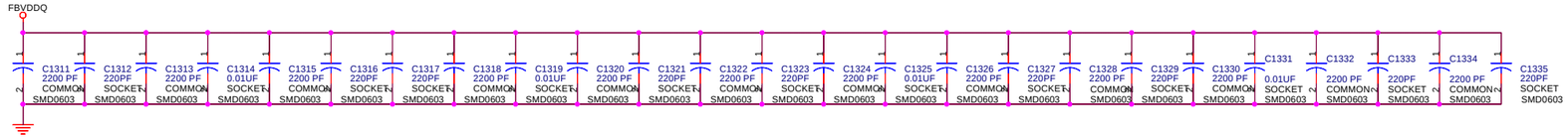
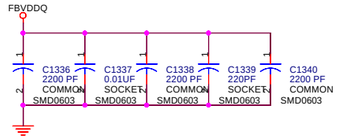
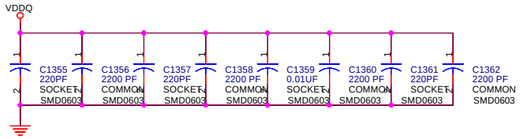
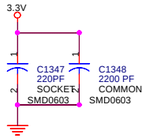
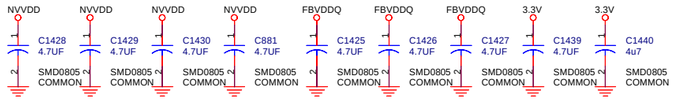


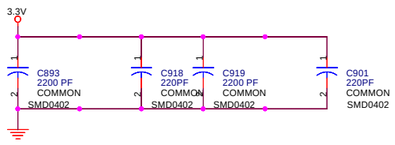



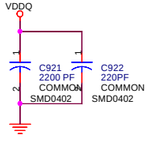



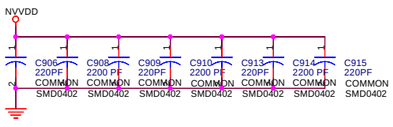

# TOP SIDE CAPS

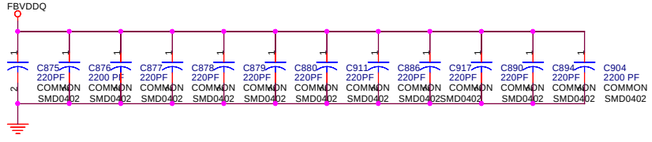


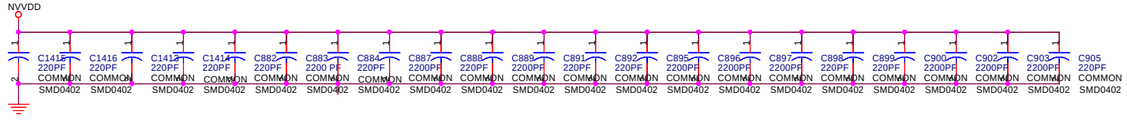

# BOT SIDE CAPS




# 2.3 NV DECOUPLING

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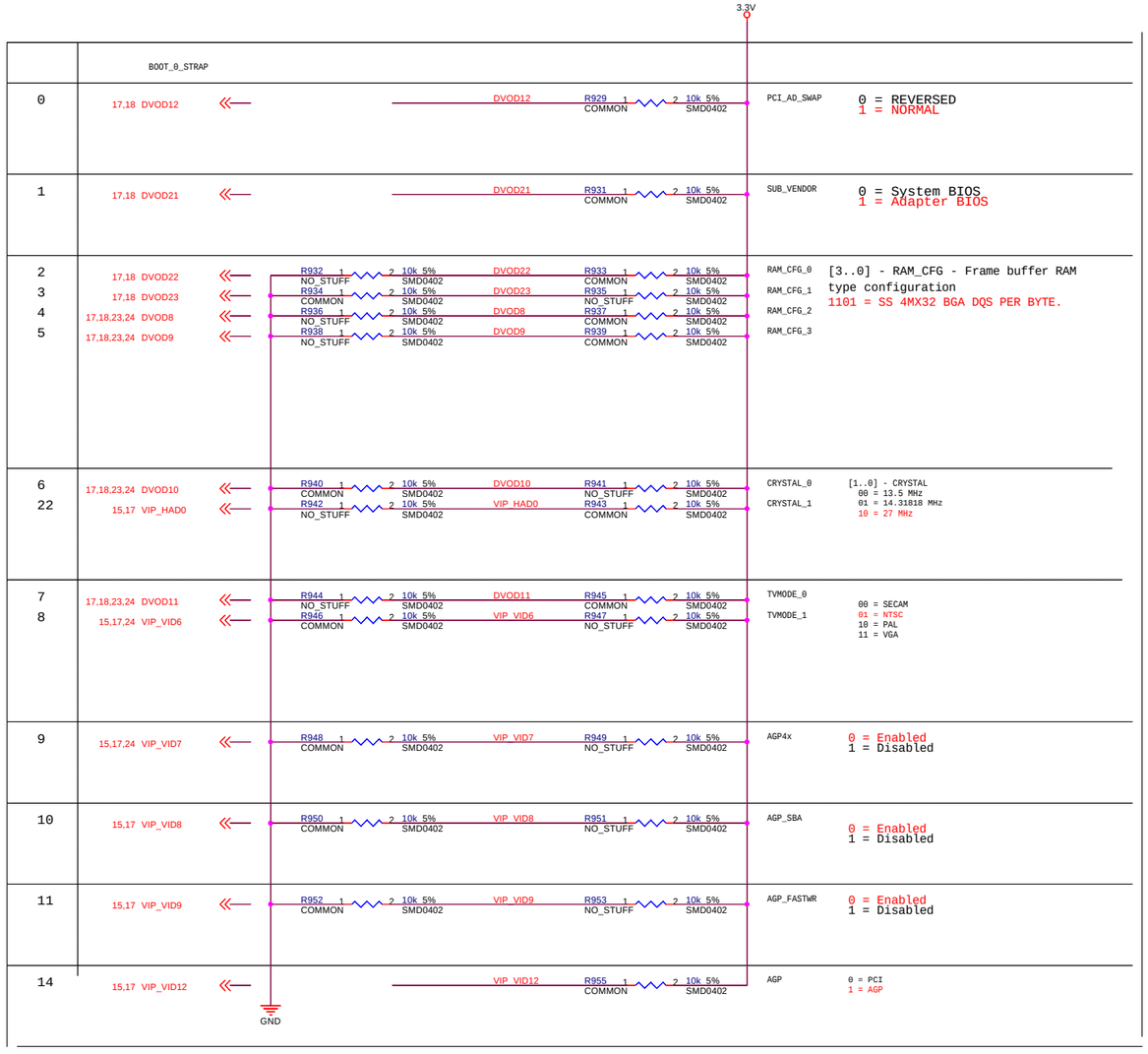
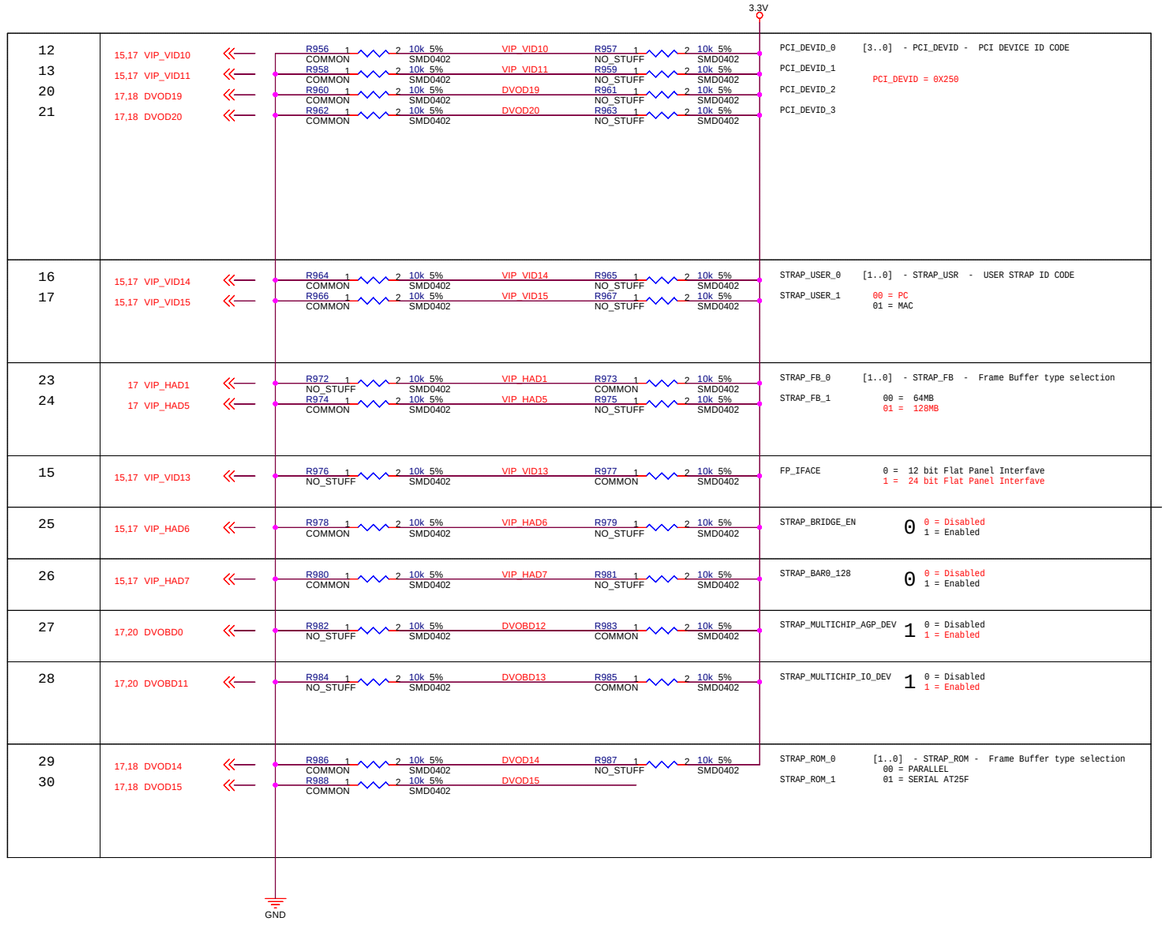
# NV25 BOOT STRAP REGISTER

[1..0] - TVMODE

0 =
Enabled




15,16,17,18,23,24 DVOD[23:0] → DVOD[23:0]
17,20 DVOBD[23:0] → DVOBD[23:0]
15,16,17,24 VIP_VID[15:0] → VIP_VID[15:0]

# 3.0 NV STRAP

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X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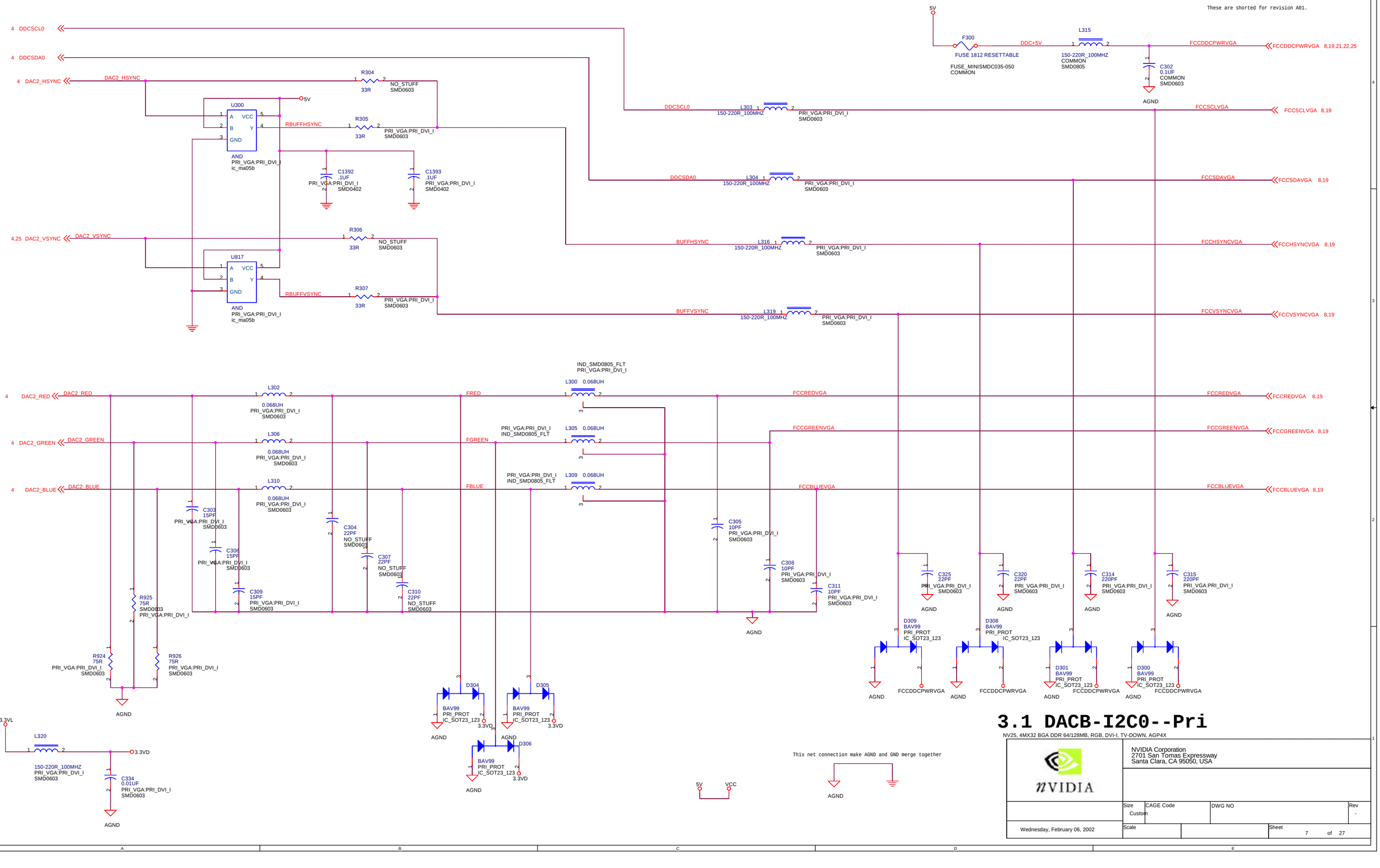
These are shorted for revision A01.
4 DDCSCL0
4 DDCSDA0
4 DAC2_HSYNC
DAC2_HSYNC
R304
33R
NO_STUFF
SMD0603
5V
U300
A
B
GND
VCC
Y
RBUFFHSYNC
R305
33R
PRI_VGA:PRI_DVI_I
SMD0603
AND
PRI_VGA:PRI_DVI_I
ic_ma05b
C1392
.1UF
PRI_VGA:PRI_DVI_I
SMD0402
C1393
.1UF
PRI_VGA:PRI_DVI_I
SMD0402
4,25 DAC2_VSYNC
DAC2_VSYNC
R306
33R
NO_STUFF
SMD0603
U817
RBUFFVSYNC
R307
33R
PRI_VGA:PRI_DVI_I
SMD0603
AND
PRI_VGA:PRI_DVI_I
ic_ma05b
5V
F300
FUSE 1812 RESETTABLE
FUSE_MINISMDC035-050
COMMON
DDC+5V
L315
150-220R_100MHZ
COMMON
SMD0805
FCCDDCPWRVGA
FCCDDCPWRVGA 8,19,21,22,25
C302
0.1UF
COMMON
SMD0603
AGND
DDCSCL0
L303
150-220R_100MHZ
PRI_VGA:PRI_DVI_I
SMD0603
FCCSCLVGA
FCCSCLVGA 8,19
DDCSDA0
L304
150-220R_100MHZ
PRI_VGA:PRI_DVI_I
SMD0603
FCCSDAVGA
FCCSDAVGA 8,19
BUFFHSYNC
L316
150-220R_100MHZ
PRI_VGA:PRI_DVI_I
SMD0603
FCCHSYNCVGA
FCCHSYNCVGA 8,19
BUFFVSYNC
L319
150-220R_100MHZ
PRI_VGA:PRI_DVI_I
SMD0603
FCCVSYNCVGA
FCCVSYNCVGA 8,19
IND_SMD0805_FLT
PRI_VGA:PRI_DVI_I
4 DAC2_RED
DAC2_RED
L302
0.068UH
PRI_VGA:PRI_DVI_I
SMD0603
FRED
L300 0.068UH
FCCREDVGA
FCCREDVGA
FCCREDVGA 8,19
4 DAC2_GREEN
DAC2_GREEN
L306
0.068UH
PRI_VGA:PRI_DVI_I
SMD0603
FGREEN
PRI_VGA:PRI_DVI_I
IND_SMD0805_FLT
L305 0.068UH
FCCGREENVGA
FCCGREENVGA
FCCGREENVGA 8,19
4 DAC2_BLUE
DAC2_BLUE
L310
0.068UH
PRI_VGA:PRI_DVI_I
SMD0603
FBLUE
PRI_VGA:PRI_DVI_I
IND_SMD0805_FLT
L309 0.068UH
FCCBLUEVGA
FCCBLUEVGA
FCCBLUEVGA 8,19
C303
15PF
PRI_VGA:PRI_DVI_I
SMD0603
C306
15PF
PRI_VGA:PRI_DVI_I
SMD0603
C309
15PF
PRI_VGA:PRI_DVI_I
SMD0603
C304
22PF
NO_STUFF
SMD0603
C307
22PF
NO_STUFF
SMD0603
C310
22PF
NO_STUFF
SMD0603
C305
10PF
PRI_VGA:PRI_DVI_I
SMD0603
C308
10PF
PRI_VGA:PRI_DVI_I
SMD0603
C311
10PF
PRI_VGA:PRI_DVI_I
SMD0603
R925
75R
SMD0603
PRI_VGA:PRI_DVI_I
R924
75R
PRI_VGA:PRI_DVI_I
SMD0603
R926
75R
PRI_VGA:PRI_DVI_I
SMD0603
AGND
D304
BAV99
PRI_PROT
IC_SOT23_123
3.3VD
D305
BAV99
PRI_PROT
IC_SOT23_123
3.3VD
D306
BAV99
PRI_PROT
IC_SOT23_123
3.3VD
3.3VL
L320
150-220R_100MHZ
PRI_VGA:PRI_DVI_I
SMD0603
C334
0.01UF
PRI_VGA:PRI_DVI_I
SMD0603
5V
VCC
This net connection make AGND and GND merge together
C325
22PF
PRI_VGA:PRI_DVI_I
SMD0603
C320
22PF
PRI_VGA:PRI_DVI_I
SMD0603
C314
220PF
PRI_VGA:PRI_DVI_I
SMD0603
C315
220PF
PRI_VGA:PRI_DVI_I
SMD0603
D309
BAV99
PRI_PROT
IC_SOT23_123
D308
BAV99
PRI_PROT
IC_SOT23_123
D301
BAV99
PRI_PROT
IC_SOT23_123
D300
BAV99
PRI_PROT
IC_SOT23_123
FCCDDCPWRVGA
3.1 DACB-I2C0--Pri
NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X
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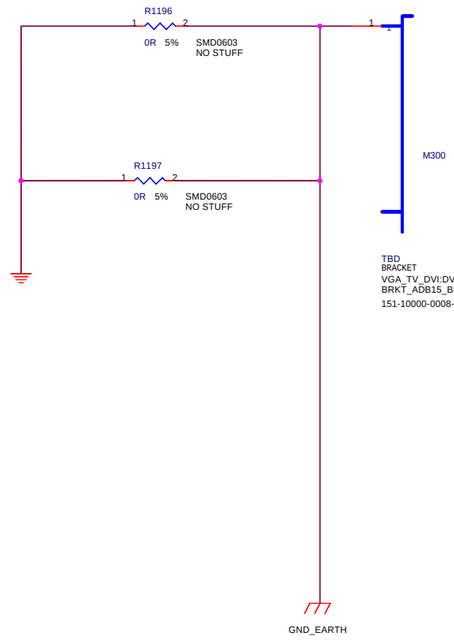
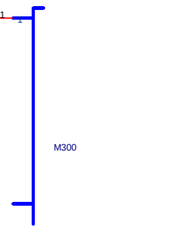
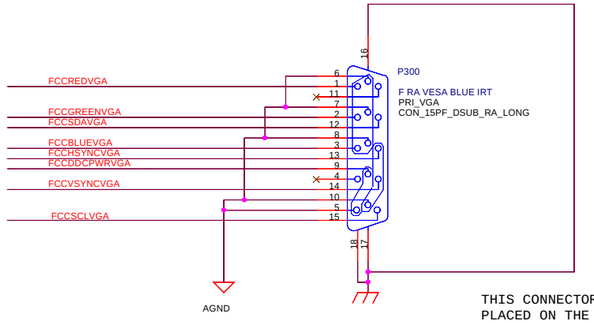
Single point connection for
digital and chassis GND.




TBD
BRACKET
VGA_TV_DVI:DVI_TV_DVI
BRKT_ADB15_BDIN9_ADVI_CDB15L
151-10000-0008-000:151-10000-0009-000

VGA-TV-DVI - Used for Primary VGA / TV / Secondary DVI
DVI-TV-DVI - Used for Primary DVI / TV / Secondary DVI




THIS CONNECTOR IS
PLACED ON THE NORTH
SIDE OF THE BOARD

FCCDDCPWRVGA 7,19,21,22,25
FCCBLUEVGA 7,19
FCCGREENVGA 7,19
FCCREDVGA 7,19
FCCSCLVGA 7,19
FCCSDAVGA 7,19
FCCHSYNCVGA 7,19
FCCVSYNCVGA 7,19

# 3.2 VGA CON, BRACKET

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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|---|---|---|---|
| Custom | | | - |

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# 4.1 NV FBA/B/C/D

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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| Size | CAGE Code | DWG NO | Rev |
|---|---|---|---|
| Custom | | | - |

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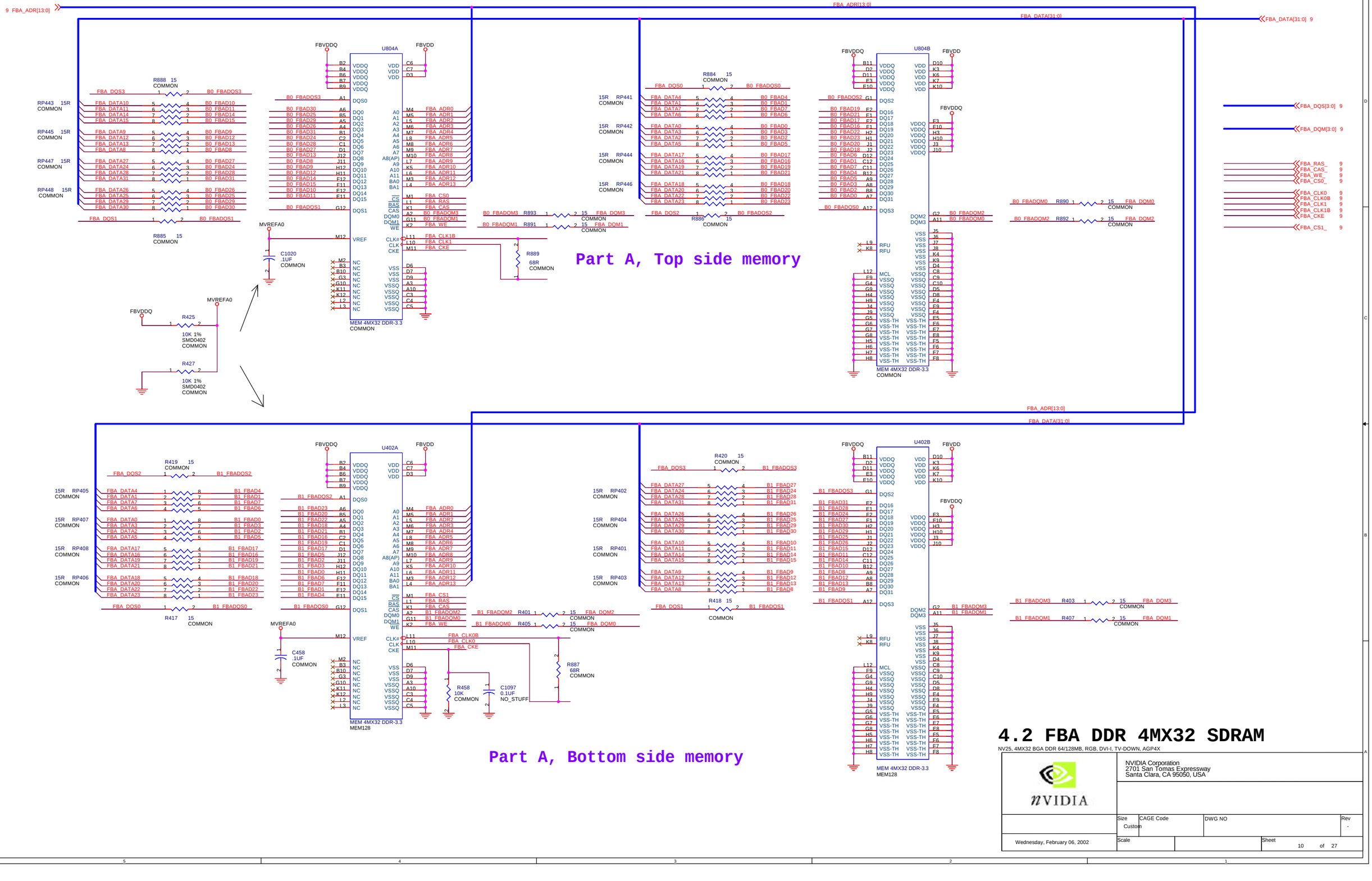


# 4.2 FBA DDR 4MX32 SDRAM

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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| Size | CAGE Code | DWG NO | Rev |
|---|---|---|---|
| Custom | | | - |

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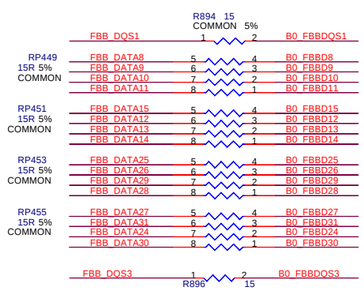
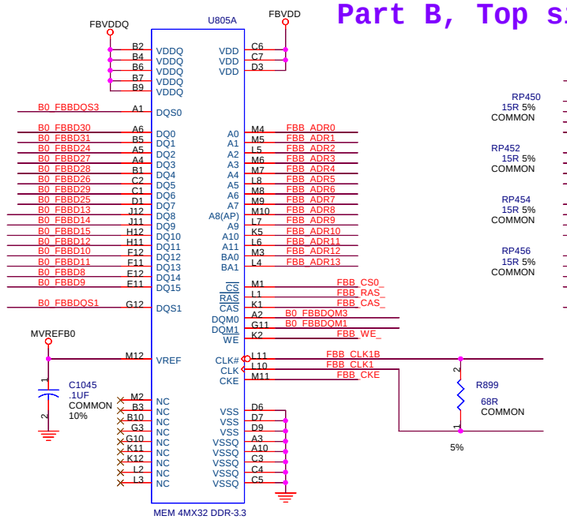
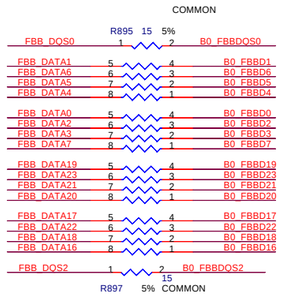
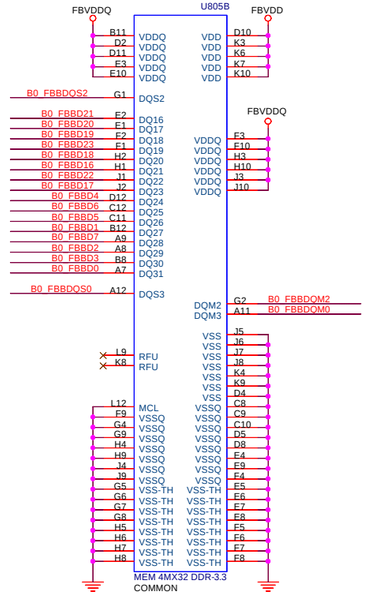
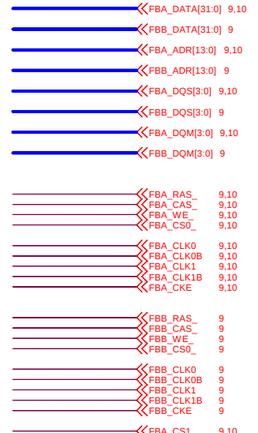
# Part B, Top side memory






















# Part B, Bottom side memory

# 4.3 FBB DDR 4MX32 SDRAM

NV25_4MX32 BGA DDR 64/128MB, RGB, DVI, TV-DOWN, AGP4X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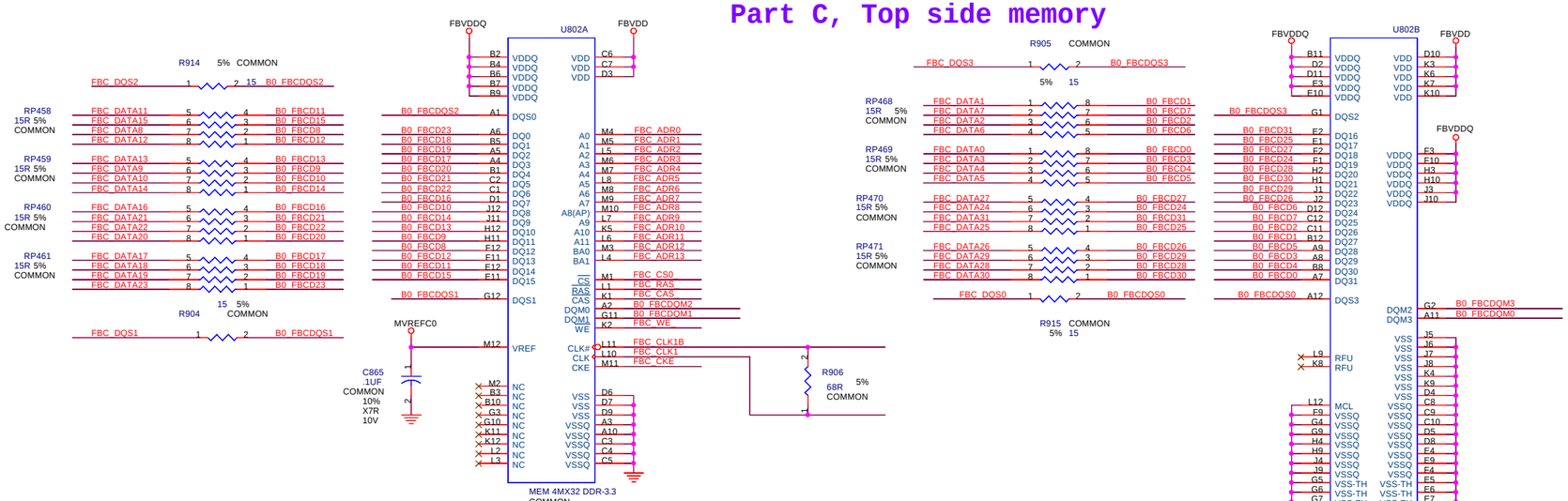
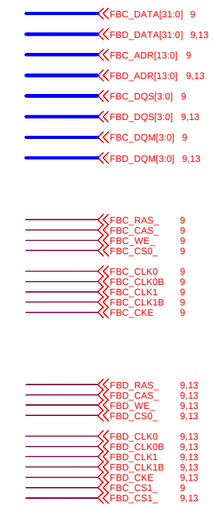
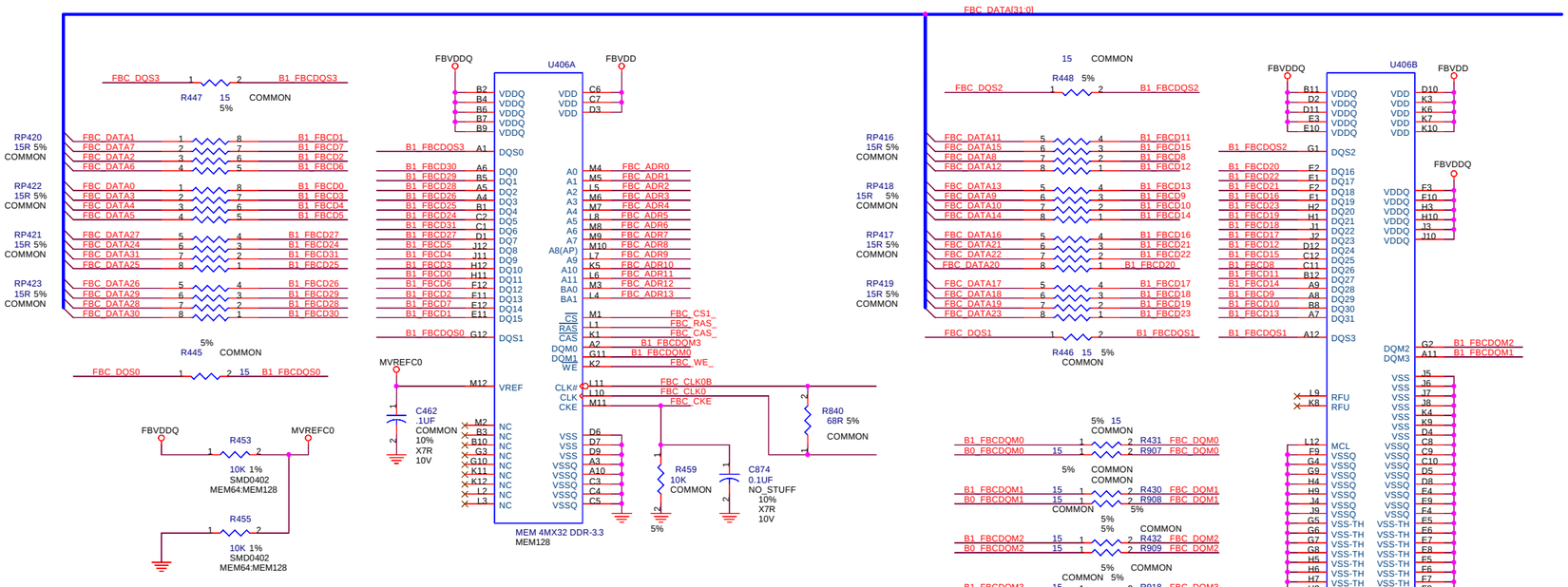
# Part C, Top side memory




# Part C, Bottom side memory

# 4.4 FBC DDR 4MX32 SDRAM

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X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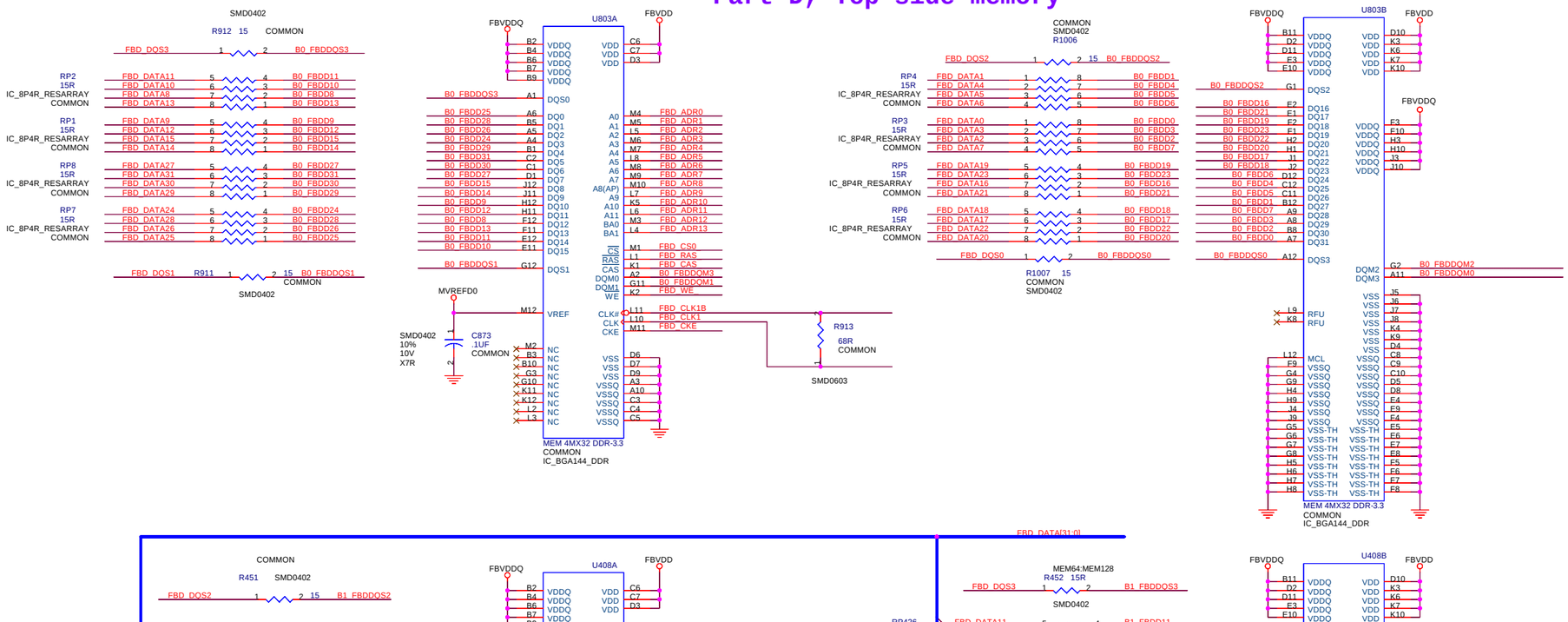
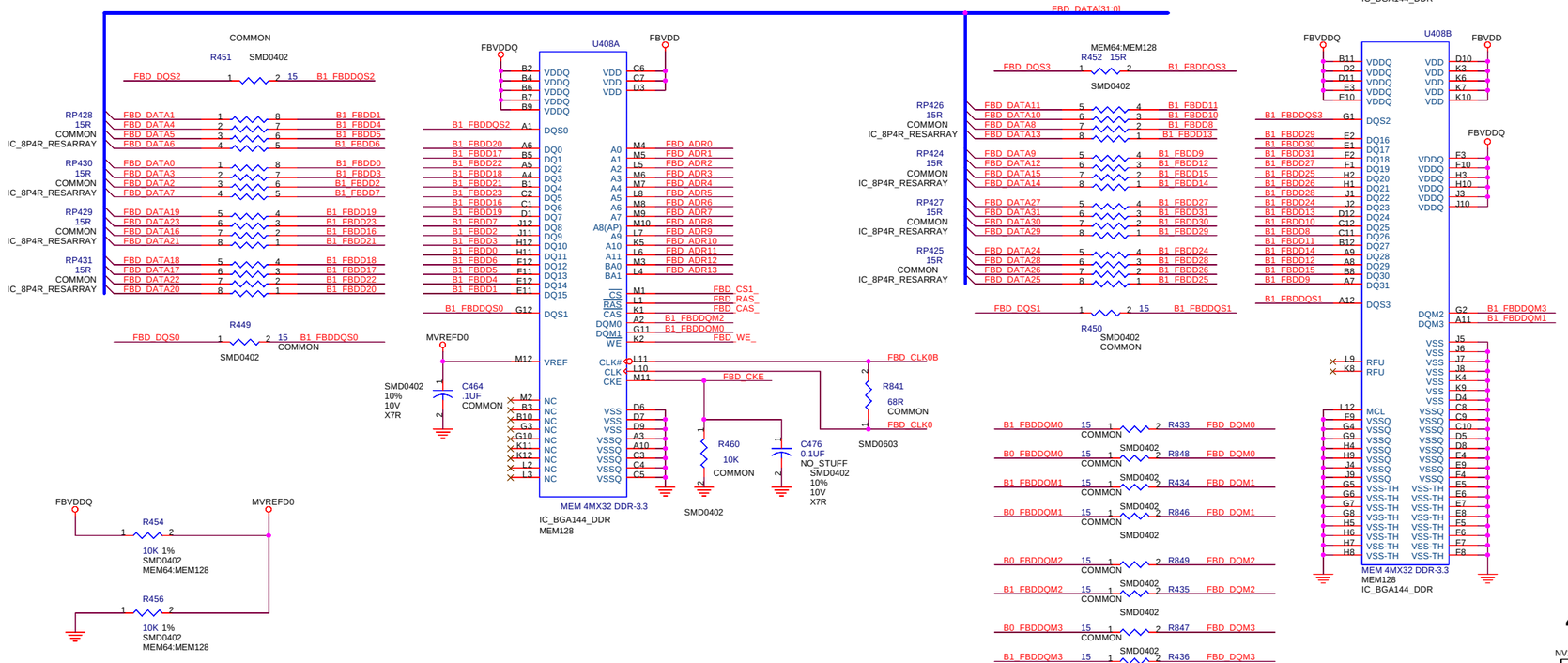
# Part D, Top side memory




# Part D, Bottom side memory

# 4.5 FBD DDR 4MX32 SDRAM

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X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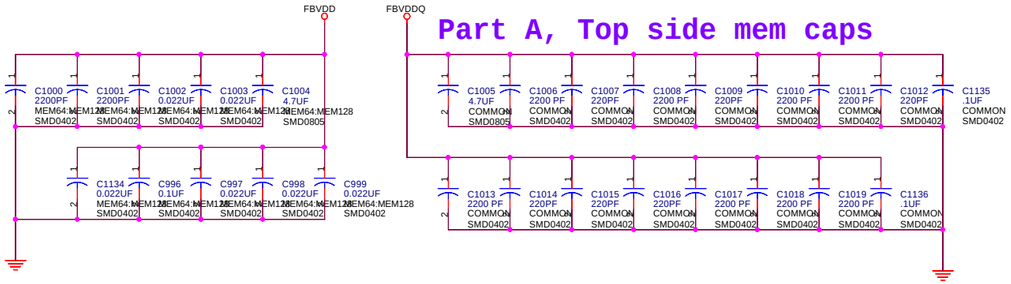
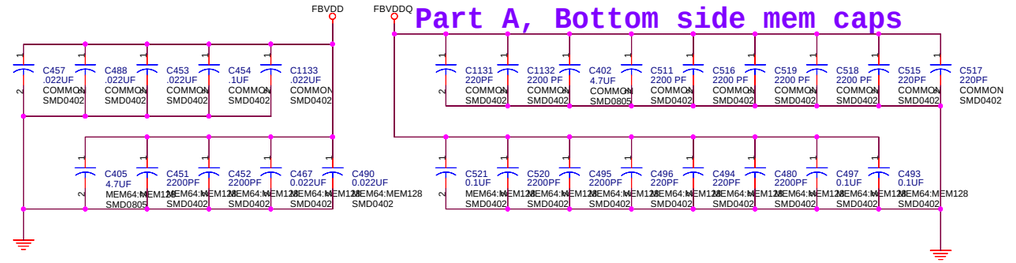
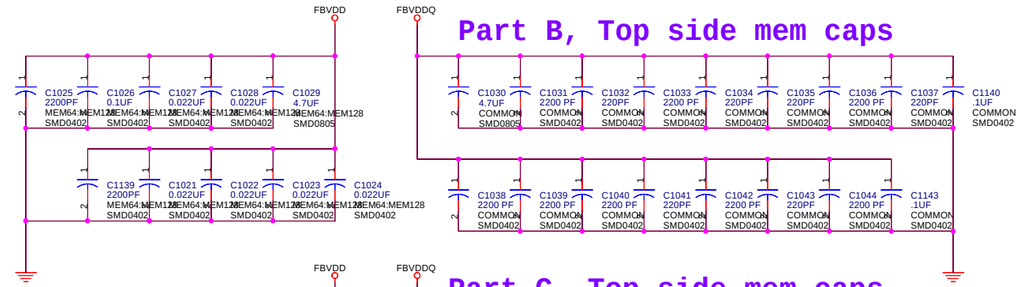
# Part A, Top side mem caps




# Part A, Bottom side mem caps




# Part B, Top side mem caps

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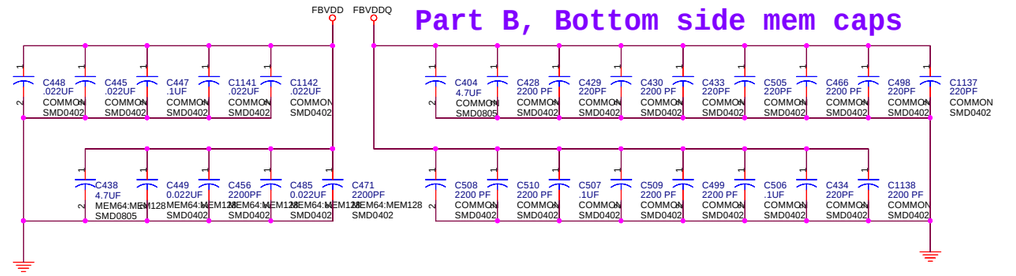
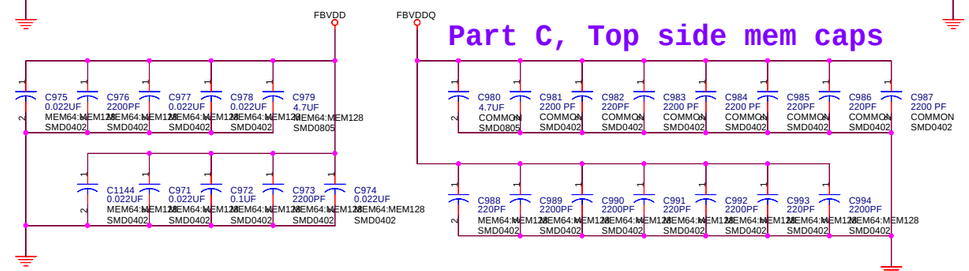
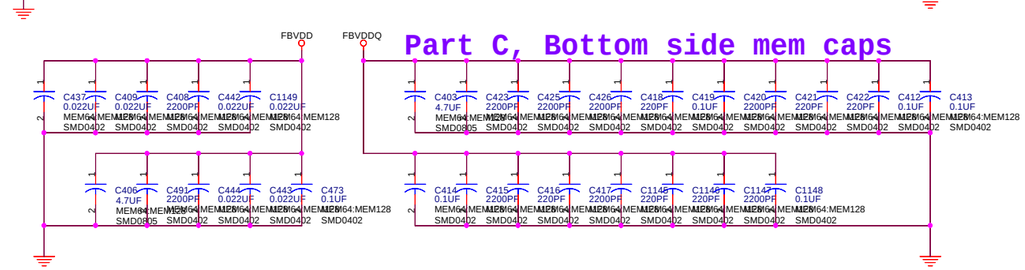


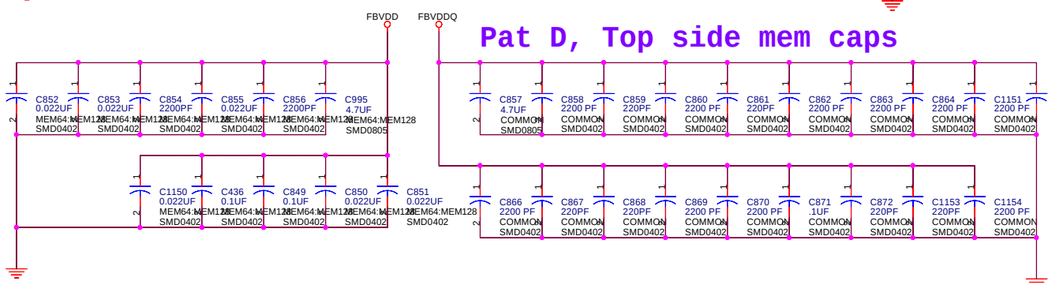

# Part C, Top side mem caps



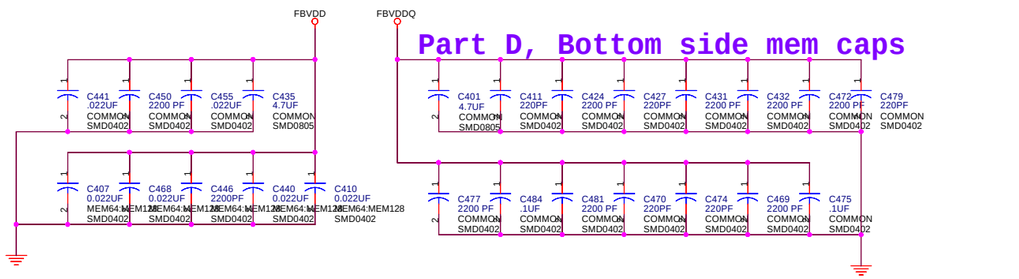

# Part C, Bottom side mem caps

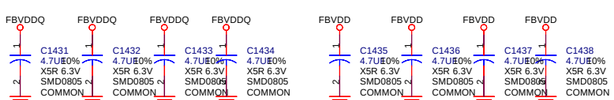



# Pat D, Top side mem caps




# Part D, Bottom side mem caps




# 4.6 BGA MEMORY DECOUPLING

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X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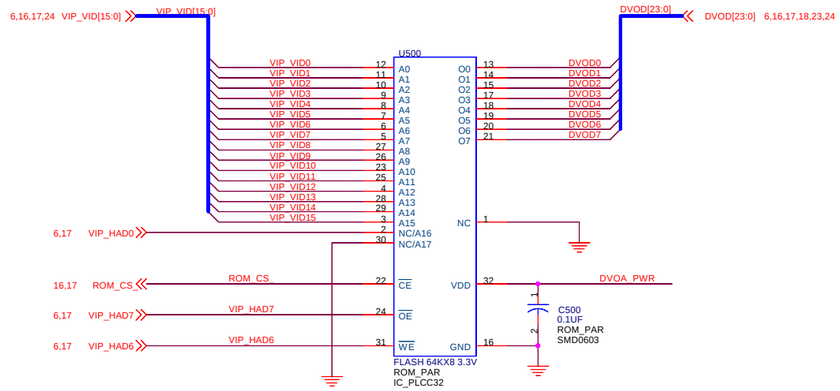


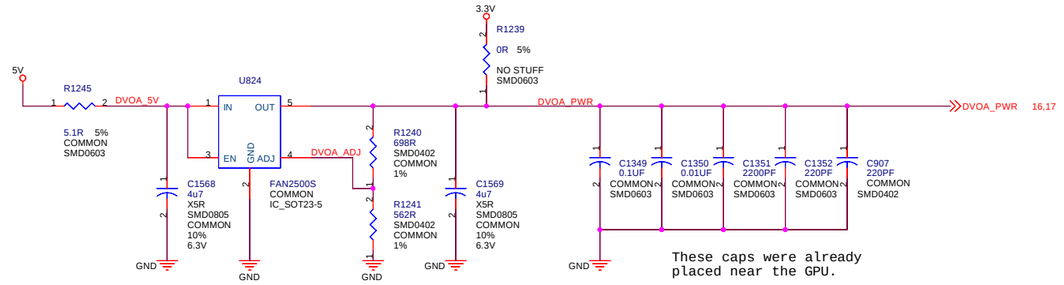


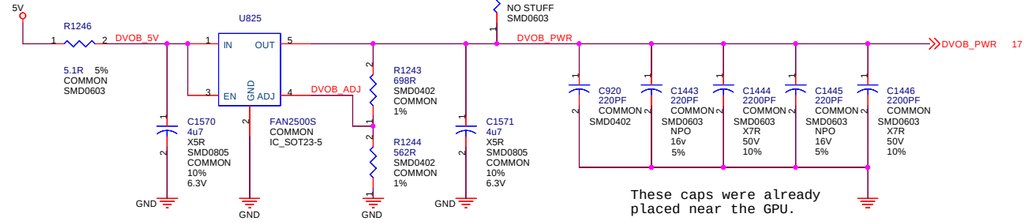


# 5.1 P-ROM

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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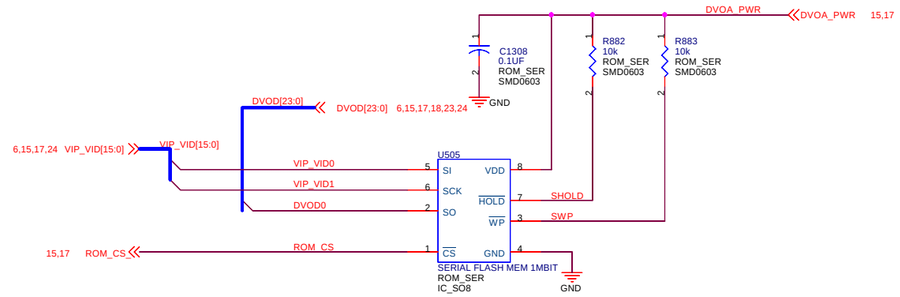


# 5.2 S-ROM

NV20, 4MX32 BGA DDR 32MB, RGB, DVI-I, TV-DOWN, TV I/F, AGP4X

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| Size | CAGE Code | DWG NO | Rev |
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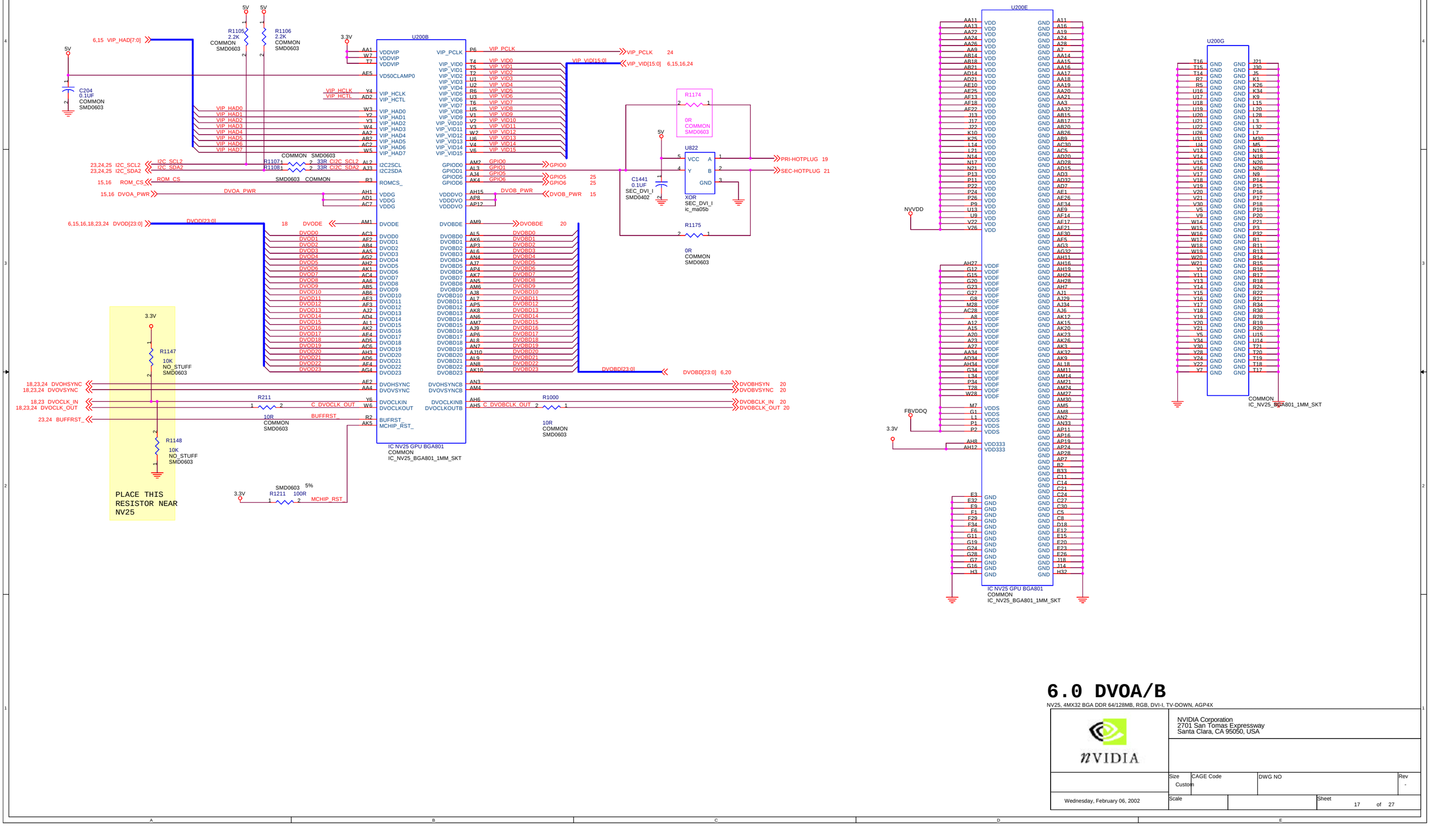


# 6.0 DVOA/B

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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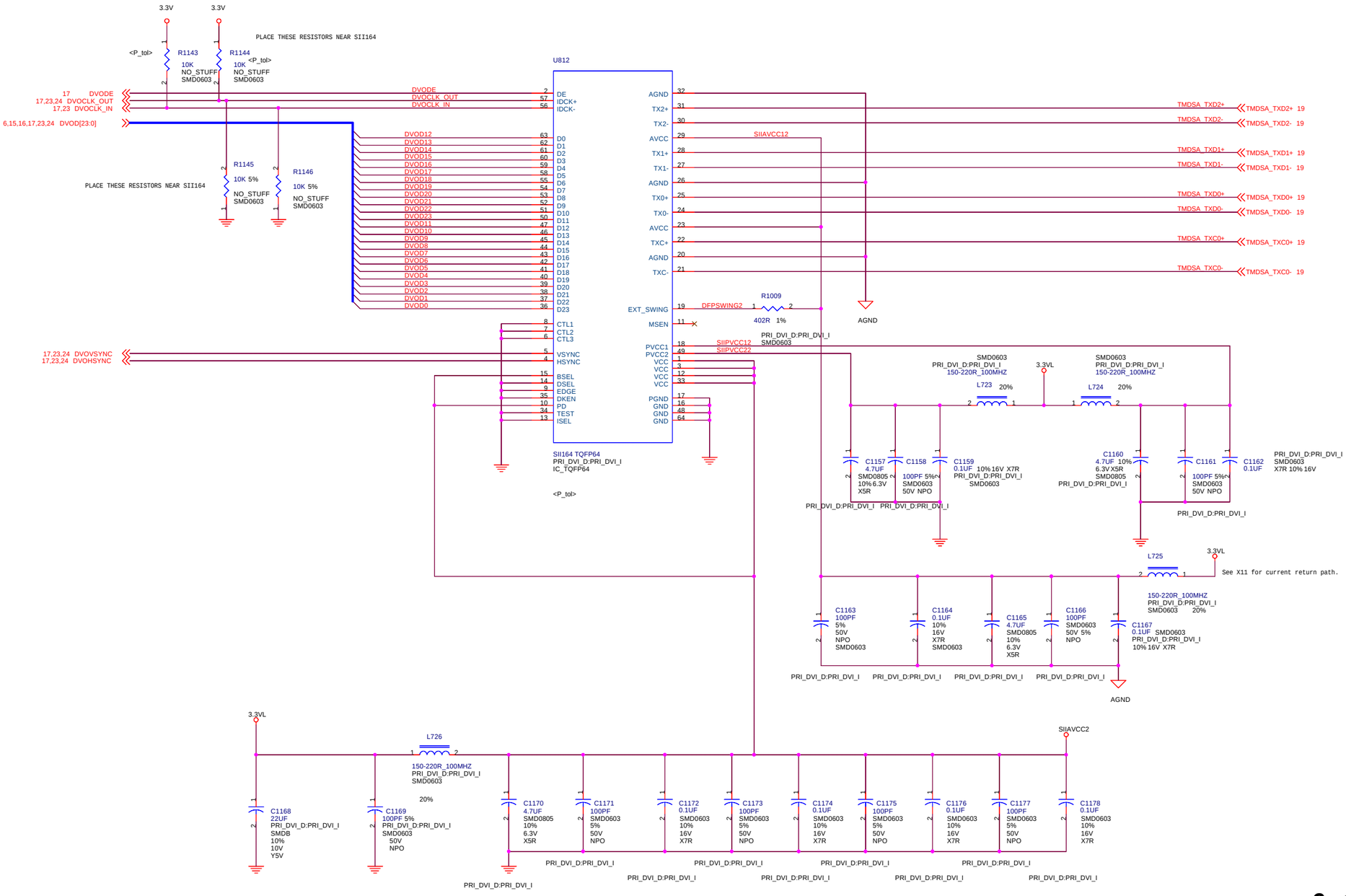


# 6.1 DVOA EXT. TMDSA PRI

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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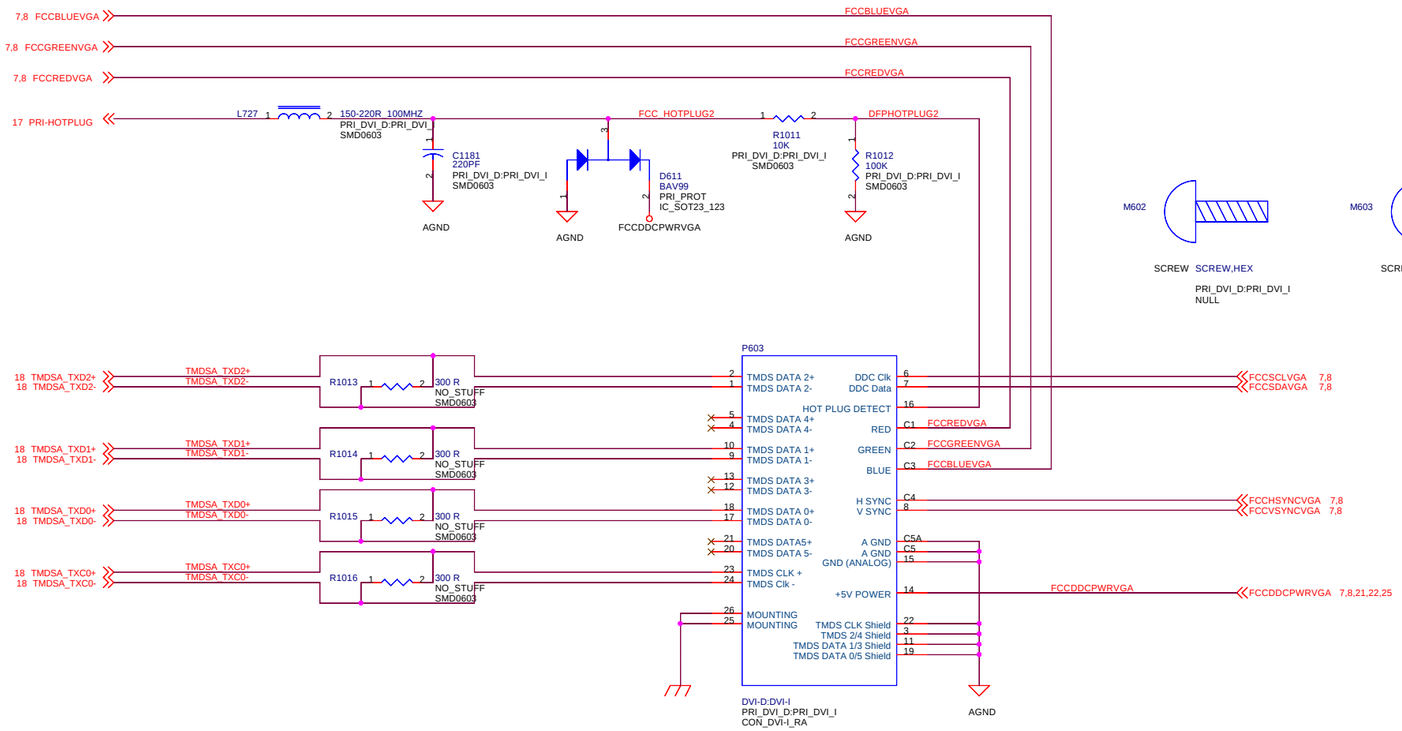


# 6.2 DVOA EXT. TMDSA I/O PRI

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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| Custom | | | - |

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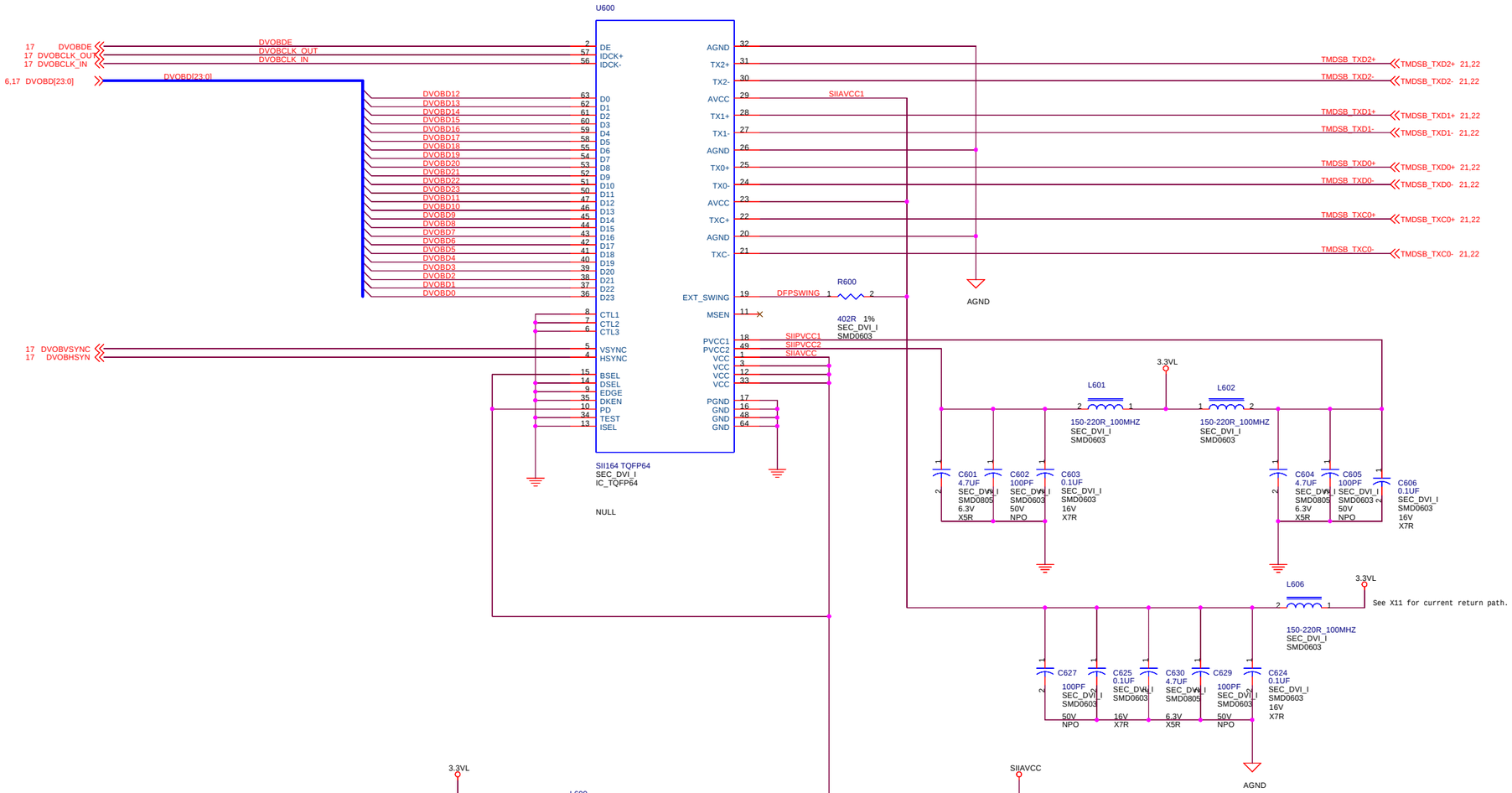


# 6.3 DVOB EXT. TMDSB SEC

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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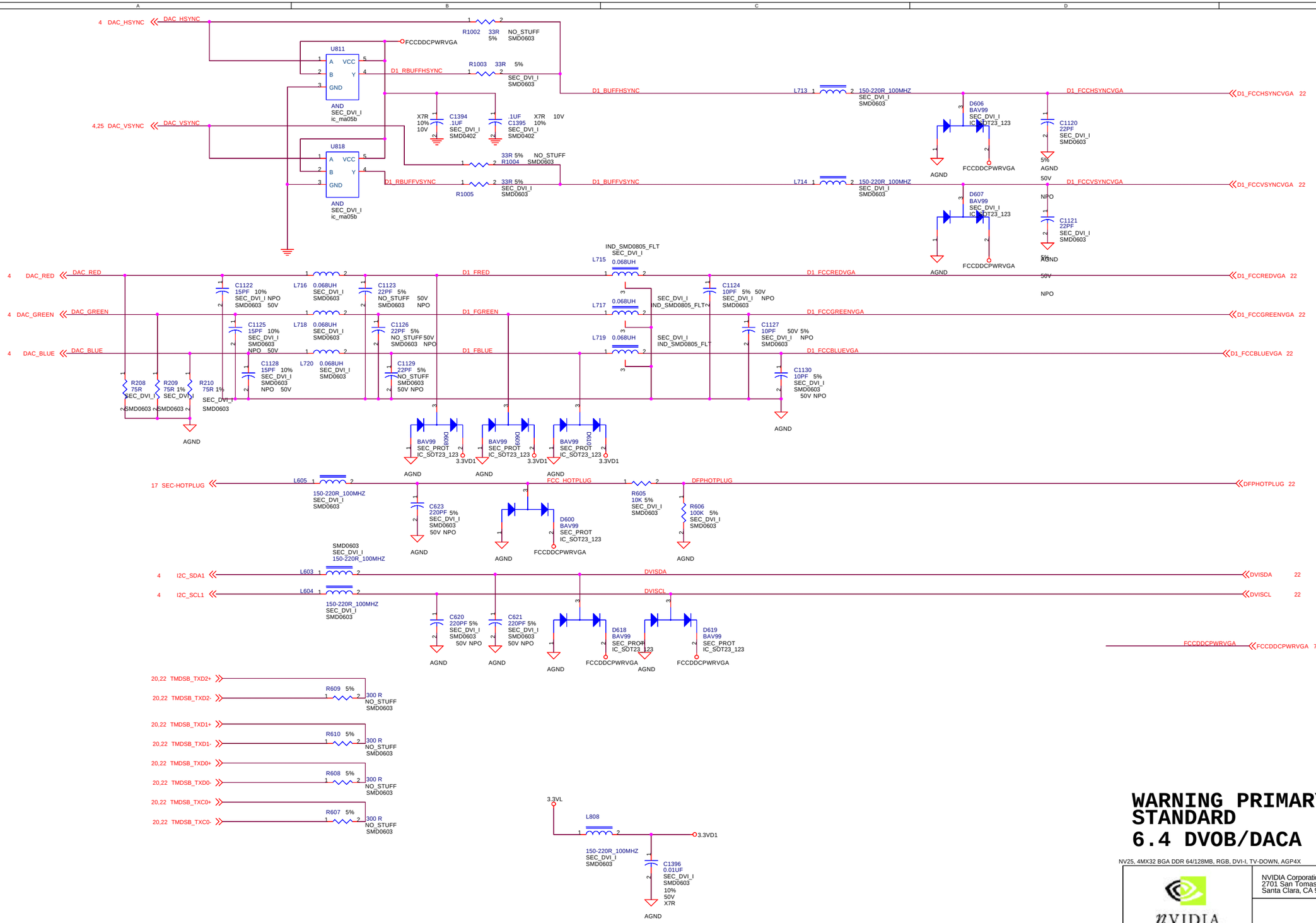


# WARNING PRIMARY AS PER STANDARD

# 6.4 DVOB/DACA I/O SEC

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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| Custom | | | - |

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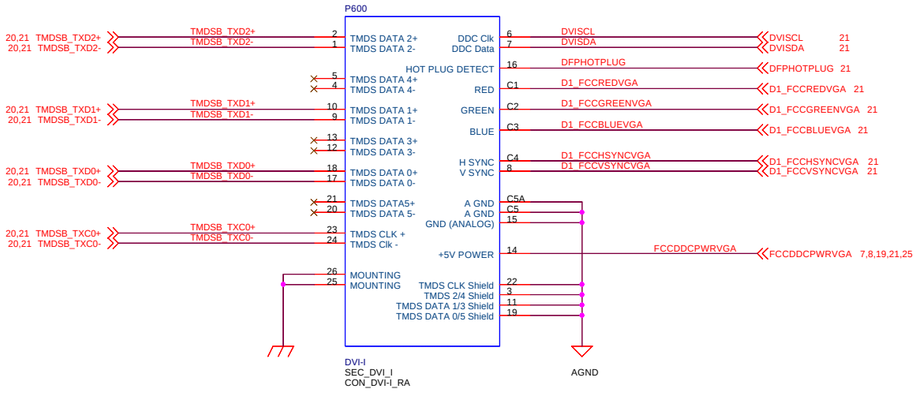
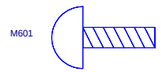
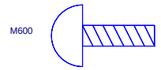



SCREW SCREW,HEX

SEC_DVI_I
NULL




SCREW SCREW,HEX

SEC_DVI_I
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# WARNING PRIMARY AS PER STANDARD 6.5 DVOB/DACA CONNECTOR

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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| Custom | | | - |

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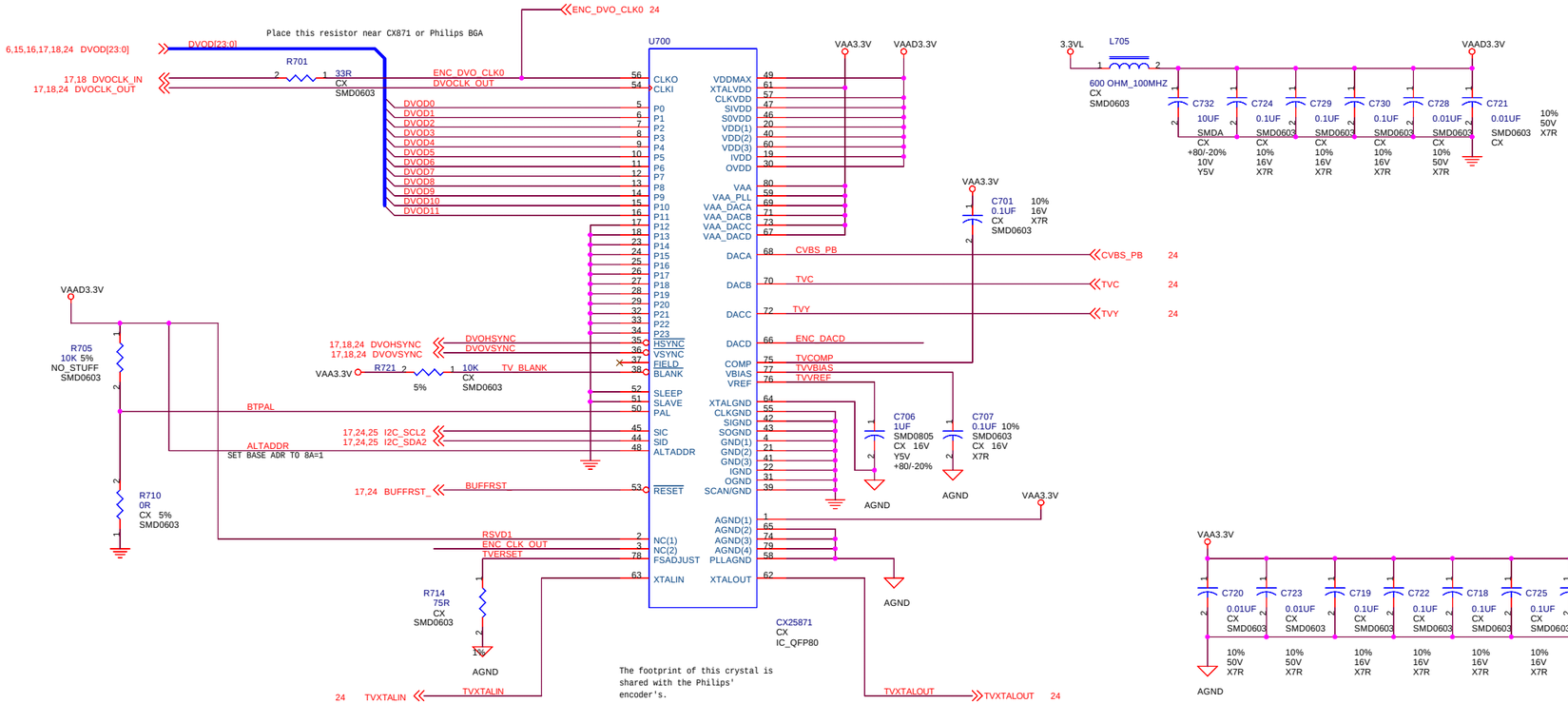


IC CX DIGITAL VIDEO ENCODER CX25871

# 7.1 TV-CX ENCODER

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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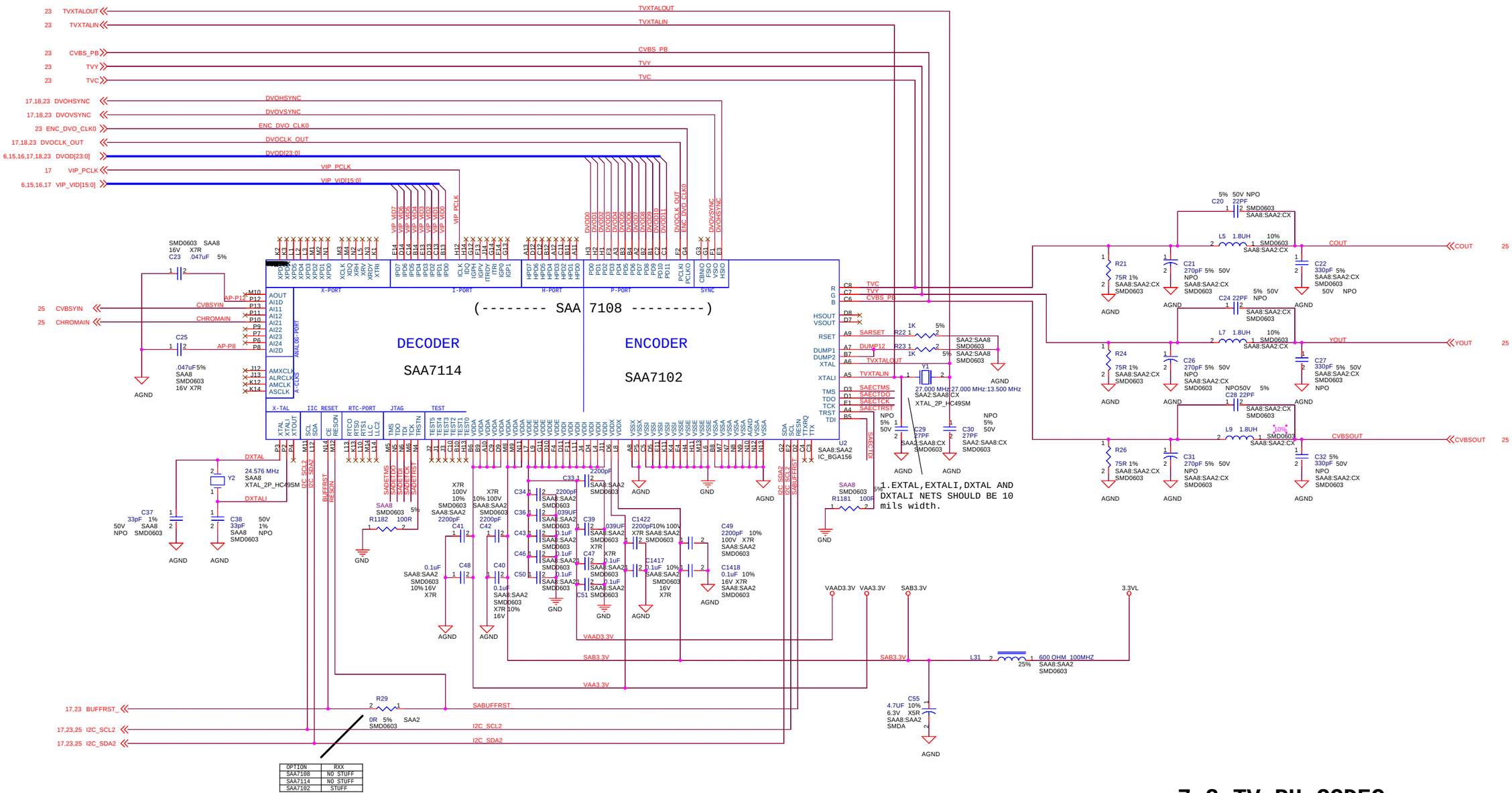


# 7.2 TV-PH CODEC

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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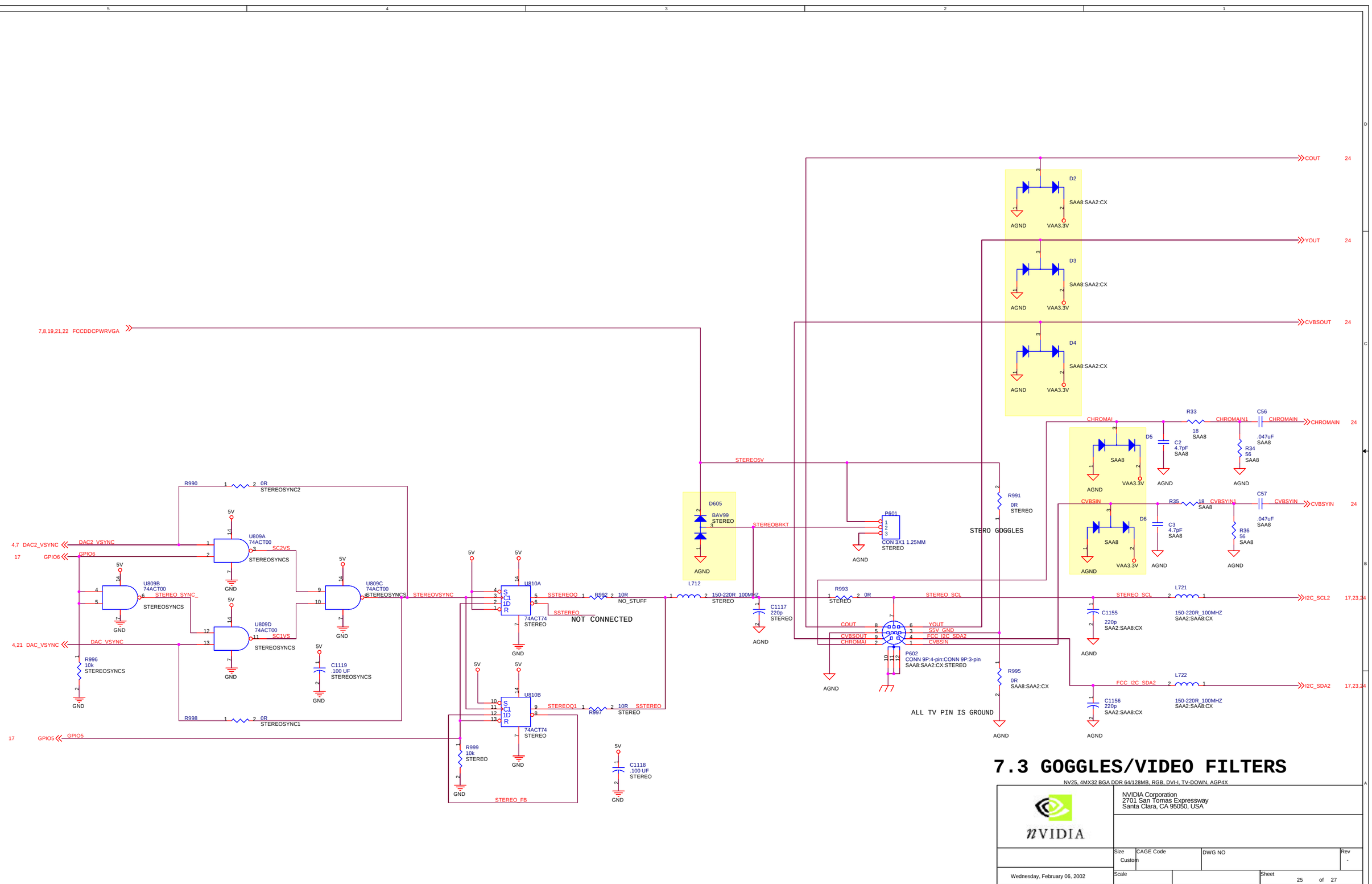


# 7.3 GOGGLES/VIDEO FILTERS

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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CHANGE TO THREE BAT54A'S ON NEXT REV

POWER SUPPLY SEQUENCE PROTECTION

ASSEMBLY: SC1175

SEE NOTES.

VOUT = 1.25 ( 1 + (ROUT/RGND) )

1.6725V = 1.25 ( 1 + (133/392 )

1.65V

Imaster_max=72mV/Rsense1

(8V-NOM ) + 1.5V = 9.5V TRIP

(2V-NOM ) + 1.5V = 3.5V TRIP

NO ADJ = 1.5V TRIP

**Please make ALL TPXX visible on silkscreen.**

# 8.1 NVVDD POWER SUPPLY

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X


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# Regulated 3.3V

Semtech SC1565 SO8
3.3V@500mA
Drop Out 225mV
Typ.

Vout=1.2*(1 + (Rout/Rgnd))
3.38V=1.2*(1 + ( 200+110))

Run trace thru resistor pads.

Large copper shape attached to the Reg. GND to act as heat sink to have RthJA within 65C/W.

CHANGE PACKAGE FOR C1407 AND C1408.. DO NOT USE 1208.. CHANGE THEM TO 0805

Can be placed on same location. Alternatice stuffing

TO-263 5-pin package
Semtech EZ1586,
Unisem US1150

2.5V@2A +/- 50mV

CAUTION - DEFAULT IS SEQUENCED

Can be placed on same location. Alternatice stuffing

PLADE THIS DIODE CLOSE TO SC1102

VOUT = 1.265 ( 1 + (ROUT/RGND) )
2.833 = 1.265 * ( 1 + ( 150/121))

2.8V

045-00827-0037-001 WAS SOUCED

Please make ALL TPXX visible on silkscreen.

# 8.3 MEM POWER SUPPLY

NV25, 4MX32 BGA DDR 64/128MB, RGB, DVI-I, TV-DOWN, AGP4X

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