PRIMARY ** VGA1 DAC_A ** I2C_A(1).
SECONDARY ** VGA2 DAC_B ** I2C_B(0).
VIDCAP ** VIP 7114 I2C_C(2).
9pin DIN ** RGB2 I2C_C(2).
I2C_x(Old H/W number).
See PDS for Hookup

P73, NV17, 4/8Mx16 DDR, 32/64MB, Dual RGB, TV-out, Video Capture, AGP4X

PCI DEVICE ID = 0X172 FOR GF4-MX420-XX.

NVIDIA

P73-A00-X01
Created SCH from P78-X16 for I/O Netlist only

P73-A00-X02
CREATED NX16 MEMORY, DECOUPLING FROM P78

P73-A00-X03
ADDED MEM & CORE FROM P70 PS FOR ISL6529
SAA7114 DECAPS ADDED AND CHANGED TO 0402

P73-A00-X04
PCB Footprint for RAM added

P73-A00-X05
C620, C621 Removed
Extra Mem Decaps removed

P73-A00-X06
PCB Footprint for Inductor, Stacked DB15, ISL6529 added
PCB Footprint for L305, L307, L308, L316-L324 changed to 0603 from 0805.
Added X-Comp R750, R751.

P73-A00-X07
TV-XTAL should be 18pf CL.
Each memory with separate clock

P73-A00-X08
U700-Parallel ROM and C700 decap Removed for space

P73-A00-X09
0603 to 0402 Package Changes for 49 components

P73-A00-X10
Design Review Updates
0603 to 0402 Package Changes for 33 components
0805 to 0603 Package Changes for 17 components
0402 to 0603 Package Changes for 10 components
Removed 25 components

P73-A00-X11
Swaps in Memory termination RN201, RN203, RN205, RN207

P73-A00-X12
C606, C615 TH replacements, Removed for want of space.

P73-A00-X13
Memory bus swaps on 1/11/02-Swap 2

P73-A00-X14
Memory bus swaps on 1/12/02-Swap 3

P73-A00-X15
Memory bus byte swaps as per NV17-Ball arrangement

P73-A00-X16
Memory bus byte and bit swaps as per layout
TV Filter moved to VGA2 page with more routing notes

P73-A00-X17
The C397, C311, C318 changed to 0603 from 0402 for two trace routing near GPU break out.
P300-2 Mounting pins removed from CGND

P73-A00-X18
Added X Components C824 to C830 to FBVDDQ

P73-A00-X19
Added X Components C831 to C832 to FBVDDQ
R610, R612 for FBVDDQ re-fixed to have <5K for Rfb

P73-A00-X20- X-Rel Candidate
Clean-up for Agile upload
Memory de-coupling values modified as per layout.

P73-A00-X21- ECO-3893
Q600 Should be FET istead of BJT Transistor.

P73-A00-X22-
Corrected NV17-S sku in the table in this page

P73-A01-X01
The RED and GREEN signal to TV filter interchanged. Corrected by swapping CVBS_YOUT and COUT.

P73-A01-X02
Corrected by swapping CVBS_YOUT and COUT at DIN
Type 3 Compensation Values for ISL6529 changed
C616---NS---47nF
R614---NS---8.06K
C618---33nF---70nF
R611---16.2K---6.65K
C619---33nF----1.8nF

AGPSTOP to 3.3V
R616 -47R inseries to 12V for ISL6529 is too high, changed to 4.7R

P73-A01-X03-Final Netlist
R616 -4.7R inseries to 12V for ISL6529 is changed to 0R
R624 - Added 2.2R inseries to 5V for ISL6529.
ISL6529 Compensation Res to be Type 2 with Snubber coponents stuffed. Values under test.

P73-A01-X04-For X-Rel
The Type 2 Compensation works better than Type 3 Compensation.
C616. R614 No Stuff, R614 Nostuff, C618 3300pf, R611 16.2K, C619 33pF, R616 0R
Snubber values are
R626 2.2R, C617 2200PF

P73-A01-X05-ECO4193
The Type 3 Compensation works better than Type 2 Compensation in the new layout with new values tried at Intersil.
C616-47nF. R614-10R, C618 1000pf, R611-10K, C619 1500pF.

P73-A01-X06
NVVDD & FBVDDQ Voltage tolerance note updated for Vref +/-2%, Adj resistors 1%.

The NVPN for caps C329,C331,C332,C334,C335,C337, C338, C340, C341,C343, C344, C346 changed from 0603 to 0402

P73-A02-X01
Add Schmitt Inverter buffer to PCIRST signal.
Added U101.

P73-A02-X02 X-Released
Add D-FF buffer to PCIRST_ signal. Added U101.
Add R325, series termination res to XTALBUFF signal
Add R111, C145 smoothing ckt to PCIRST.
Add R112 to by pass D-FF ckt.

P73-A03-X01 X-Released
Add R113 & R114 to D-FF ckt and Asynchronously Reset the o/p D-FF using PCIRST_

Stuff Option	Meaning
COMMON	Common to all assemblies and 1st VGA comps
NO STUFF	Not present in any assembly
VIDCAP	Video In or Video Capture
VGA2	2nd VGA Components and Conenctor
DSUB	Standard single VGA Connector
TV	Second DAC channel goes to Svideo connector as TV Out
TVO	4pin DIN for TV Only
1117	Fixed 1117 linear regulator for A3.3V
1117_ADJ	Adjustable 1117 linear regulator for A3.3V
NO_1117	Connect A3.3V to 3.3V. No 1117 regulator.
CLAMP1	VGA1 Sync/I2C Clamping diodes
RGB_PROT	RGB Protection diodes on primary DAC outputs
CLAMP2	VGA2 Sync/I2C Clamping diodes
RGB2_PROT	RGB Protection diodes on secondary DAC outputs
CLAMP3	VIDCAP I2C/Video In Clamping diodes
TVCLAMP	TV Red/Green Clamping diodes
GPU	GPU ONLY
NV17-S	IDSTRAP OPTION-172H
MEMORY	Memory only
M2-8V	Memory PS output 2.8V
M2-5V	Memory PS output 2.5V
BUF_RESET	PCIRST through D-FF Circuit

PAGE OVERVIEW

140-10073-0000-A03
602-10073-0000-A03

NVIDIA Corporation
3535 Monroe St
Santa Clara, CA 95051, USA

P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

Size	CAGE Code	DWG NO	Rev
Custom			06

Monday, March 11, 2002 | Scale | Sheet 1 of 11

{Item}\t{Quantity}\t{Reference}\t{Value}\t{Assembly}\t{MAIN}\t{NVPN}\t{Source Package}\t{AVL1}\t{AVL2}\t{AVL3}\t{AVL4}\t{AVL5}
Item\tQuantity\tReference\tValue\tAssembly\tMAIN\tNVPN\tSource Package\tAVL1\tAVL2\tAVL3\tAVL4\tAVL5

1. AGP interface, core decoupling

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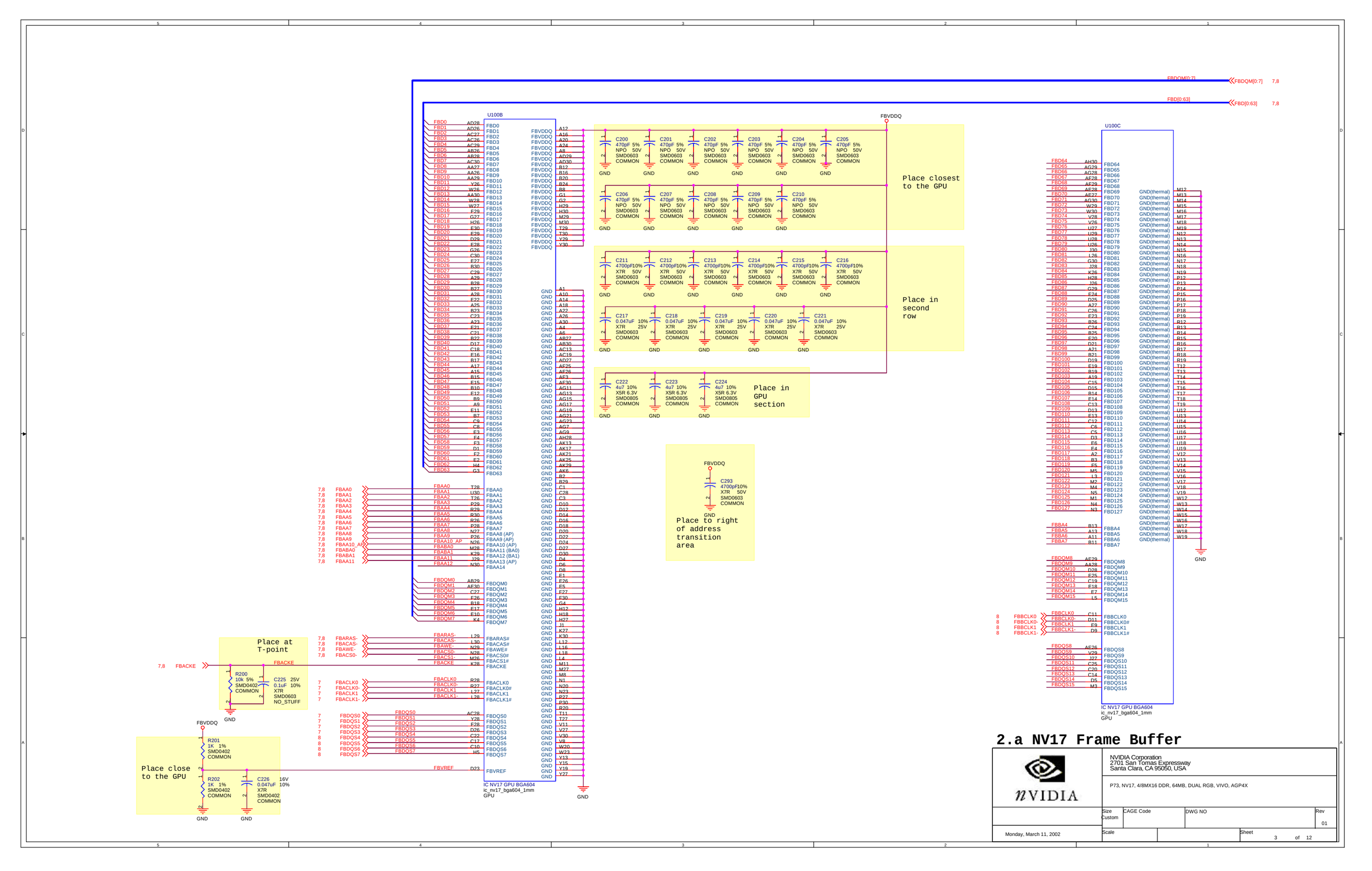
	P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X
Monday, March 11, 2002	Size: Custom; CAGE Code; DWG NO; Rev: 04 Scale; Sheet: 2 of 12


FBDQM[0:7]
FBDQM[0:7] 7,8
FBD[0:63]
FBD[0:63] 7,8
U100B
FBVDDQ
C200 470pF 5% NPO 50V SMD0603 COMMON
C201 470pF 5% NPO 50V SMD0603 COMMON
C202 470pF 5% NPO 50V SMD0603 COMMON
C203 470pF 5% NPO 50V SMD0603 COMMON
C204 470pF 5% NPO 50V SMD0603 COMMON
C205 470pF 5% NPO 50V SMD0603 COMMON
C206 470pF 5% NPO 50V SMD0603 COMMON
C207 470pF 5% NPO 50V SMD0603 COMMON
C208 470pF 5% NPO 50V SMD0603 COMMON
C209 470pF 5% NPO 50V SMD0603 COMMON
C210 470pF 5% NPO 50V SMD0603 COMMON
Place closest to the GPU
C211 4700pF 10% X7R 50V SMD0603 COMMON
C212 4700pF 10% X7R 50V SMD0603 COMMON
C213 4700pF 10% X7R 50V SMD0603 COMMON
C214 4700pF 10% X7R 50V SMD0603 COMMON
C215 4700pF 10% X7R 50V SMD0603 COMMON
C216 4700pF 10% X7R 50V SMD0603 COMMON
C217 0.047uF 10% X7R 25V SMD0603 COMMON
C218 0.047uF 10% X7R 25V SMD0603 COMMON
C219 0.047uF 10% X7R 25V SMD0603 COMMON
C220 0.047uF 10% X7R 25V SMD0603 COMMON
C221 0.047uF 10% X7R 25V SMD0603 COMMON
Place in second row
C222 4u7 10% X5R 6.3V SMD0805 COMMON
C223 4u7 10% X5R 6.3V SMD0805 COMMON
C224 4u7 10% X5R 6.3V SMD0805 COMMON
Place in GPU section
FBVDDQ
C293 4700pF 10% X7R 50V SMD0603 COMMON
Place to right of address transition area
U100C
GND(thermal)
IC NV17 GPU BGA604
ic_nv17_bga604_1mm
GPU
Place at T-point
R200 10k 5% SMD0402 COMMON
C225 25V 0.1uF 10% X7R SMD0603 NO_STUFF
FBACKE
FBVDDQ
R201 1K 1% SMD0402 COMMON
R202 1K 1% SMD0402 COMMON
C226 16V 0.047uF 10% X7R SMD0402 COMMON
Place close to the GPU
IC NV17 GPU BGA604
ic_nv17_bga604_1mm
GPU
2.a NV17 Frame Buffer
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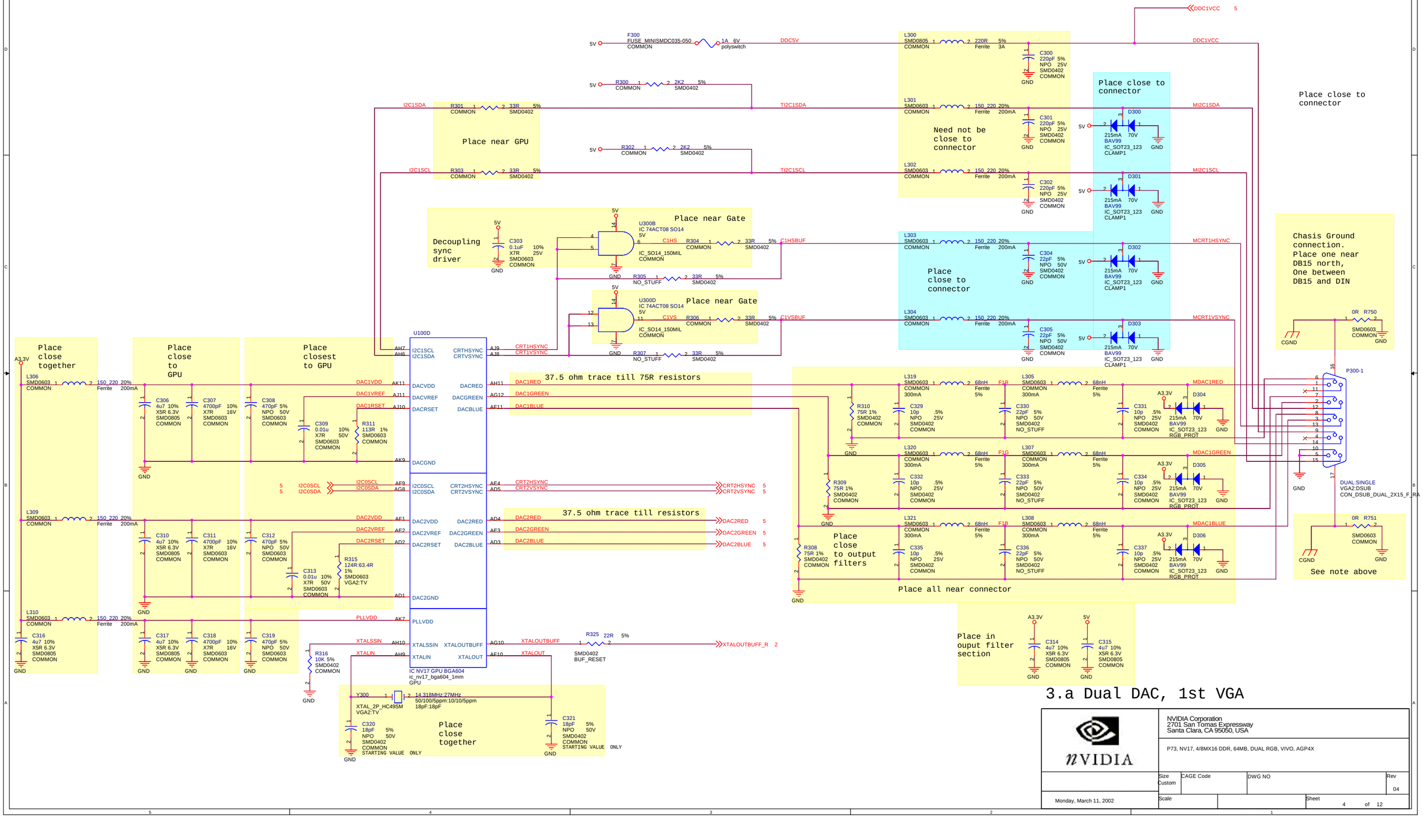
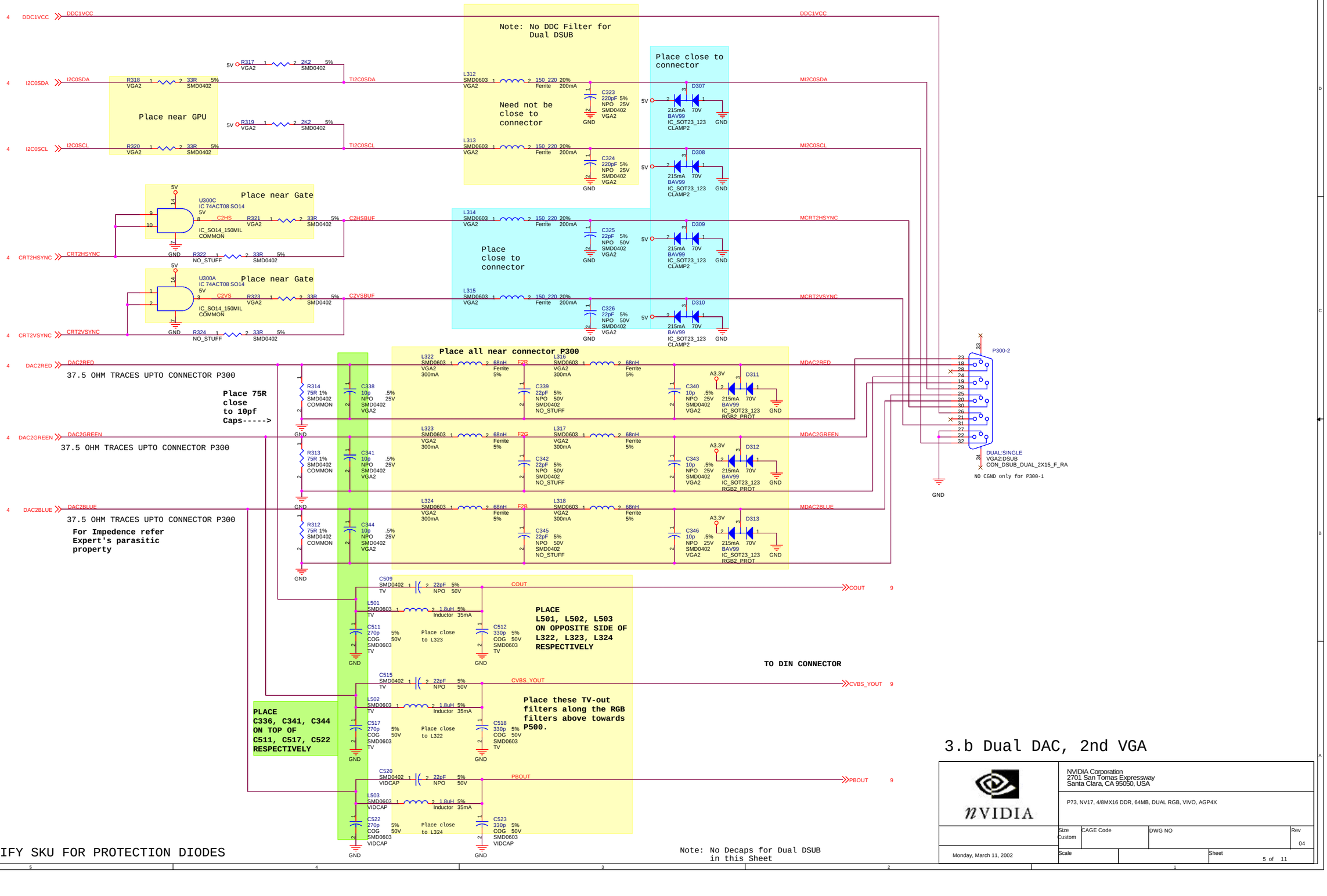
2701 San Tomas Expressway
Santa Clara, CA 95050, USA
P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X
Monday, March 11, 2002
Size Custom
CAGE Code
DWG NO
Rev 01
Scale
Sheet 3 of 12


F300 FUSE_MINISMDC035-050 COMMON
1A 6V polyswitch
DDC5V
DDC1VCC
L300 SMD0805 COMMON
220R 5% Ferrite 3A
C300 220pF 5% NPO 25V SMD0402 COMMON
R300 COMMON 2K2 5% SMD0402
R302 COMMON 2K2 5% SMD0402
I2C1SDA
R301 COMMON 33R 5% SMD0402
TI2C1SDA
L301 SMD0603 COMMON
150_220_20% Ferrite 200mA
C301 220pF 5% NPO 25V SMD0402 COMMON
MI2C1SDA
Place near GPU
Need not be close to connector
Place close to connector
D300
215mA 70V BAV99 IC_SOT23_123 CLAMP1
I2C1SCL
R303 COMMON 33R 5% SMD0402
TI2C1SCL
L302 SMD0603 COMMON
C302 220pF 5% NPO 25V SMD0402 COMMON
MI2C1SCL
D301
Place near Gate
Decoupling sync driver
C303 0.1uF 10% X7R 25V SMD0603 COMMON
U300B IC 74ACT08 SO14 5V
C1HS
R304 COMMON 33R 5% SMD0402
C1HSBUF
IC_SO14_150MIL COMMON
R305 NO_STUFF 33R 5% SMD0402
L303 SMD0603 COMMON
C304 22pF 5% NPO 50V SMD0402 COMMON
MCRT1HSYNC
Place close to connector
D302
U300D IC 74ACT08 SO14 5V
C1VS
R306 COMMON 33R 5% SMD0402
C1VSBUF
R307 NO_STUFF 33R 5% SMD0402
L304 SMD0603 COMMON
C305 22pF 5% NPO 50V SMD0402 COMMON
MCRT1VSYNC
D303
U100D
IC NV17 GPU BGA604 ic_nv17_bga604_1mm GPU
I2C1SCL I2C1SDA
CRTHSYNC CRTVSYNC
CRT1HSYNC CRT1VSYNC
37.5 ohm trace till 75R resistors
DAC1VDD DAC1VREF DAC1RSET DACGND
DACVDD DACVREF DACRSET DACRED DACGREEN DACBLUE
DAC1RED DAC1GREEN DAC1BLUE
L319 SMD0603 COMMON 300mA
68nH Ferrite 5%
F1R
L305 SMD0603 COMMON 300mA
MDAC1RED
R310 75R 1% SMD0402 COMMON
C329 10p .5% NPO 25V SMD0402 COMMON
C330 22pF 5% NPO 50V SMD0402 NO_STUFF
C331 10p .5% NPO 25V SMD0402 COMMON
D304
215mA 70V BAV99 IC_SOT23_123 RGB_PROT
L320 SMD0603 COMMON 300mA
F1G
L307 SMD0603 COMMON 300mA
MDAC1GREEN
R309 75R 1% SMD0402 COMMON
C332 10p .5% NPO 25V SMD0402 COMMON
C333 22pF 5% NPO 50V SMD0402 NO_STUFF
C334 10p .5% NPO 25V SMD0402 COMMON
D305
L321 SMD0603 COMMON 300mA
F1B
L308 SMD0603 COMMON 300mA
MDAC1BLUE
R308 75R 1% SMD0402 COMMON
C335 10p .5% NPO 25V SMD0402 COMMON
C336 22pF 5% NPO 50V SMD0402 NO_STUFF
C337 10p .5% NPO 25V SMD0402 COMMON
D306
Place close to output filters
Place all near connector
Chasis Ground connection. Place one near DB15 north, One between DB15 and DIN
0R R750 SMD0603 COMMON
CGND
P300-1
DUAL:SINGLE VGA2:DSUB CON_DSUB_DUAL_2X15_F_RA
0R R751
See note above
Place close together
A3.3V
L306 SMD0603 COMMON
150_220_20% Ferrite 200mA
C306 4u7 10% X5R 6.3V SMD0805 COMMON
C307 4700pF 10% X7R 16V SMD0603 COMMON
C308 470pF 5% NPO 50V SMD0603 COMMON
C309 0.01u 10% X7R 50V SMD0603 COMMON
R311 113R 1% SMD0603 COMMON
DAC1VDD DAC1VREF DAC1RSET DACGND
Place close to GPU
Place closest to GPU
5 I2C0SCL I2C0SDA
I2C0SCL I2C0SDA
CRT2HSYNC CRT2VSYNC
CRT2HSYNC CRT2VSYNC
37.5 ohm trace till resistors
DAC2VDD DAC2VREF DAC2RSET DAC2GND
DAC2RED DAC2GREEN DAC2BLUE
L309 SMD0603 COMMON
150_220_20% Ferrite 200mA
C310 4u7 10% X5R 6.3V SMD0805 COMMON
C311 4700pF 10% X7R 16V SMD0603 COMMON
C312 470pF 5% NPO 50V SMD0603 COMMON
C313 0.01u 10% X7R 50V SMD0603 COMMON
R315 124R:63.4R 1% SMD0603 VGA2:TV
L310 SMD0603 COMMON
150_220_20% Ferrite 200mA
C316 4u7 10% X5R 6.3V SMD0805 COMMON
C317 4u7 10% X5R 6.3V SMD0805 COMMON
C318 4700pF 10% X7R 16V SMD0603 COMMON
C319 470pF 5% NPO 50V SMD0603 COMMON
PLLVDD
XTALSSIN XTALIN XTALOUTBUFF XTALOUT
R316 10K 5% SMD0402 COMMON
R325 22R 5% SMD0402 BUF_RESET
XTALOUTBUFF_R
Y300 XTAL_2P_HC49SM VGA2:TV
14.318MHz:27MHz 50/100/5ppm:10/10/5ppm 18pF:18pF
C320 18pF 5% NPO 50V SMD0402 COMMON STARTING VALUE ONLY
C321 18pF 5% NPO 50V SMD0402 COMMON STARTING VALUE ONLY
Place close together
Place in ouput filter section
C314 4u7 10% X5R 6.3V SMD0805 COMMON
C315 4u7 10% X5R 6.3V SMD0805 COMMON
3.a Dual DAC, 1st VGA
NVIDIA Corporation
2701 San Tomas Expressway
Santa Clara, CA 95050, USA
P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X
Size Custom
CAGE Code
DWG NO
Rev 04
Monday, March 11, 2002
Scale
Sheet 4 of 12



3.b Dual DAC, 2nd VGA

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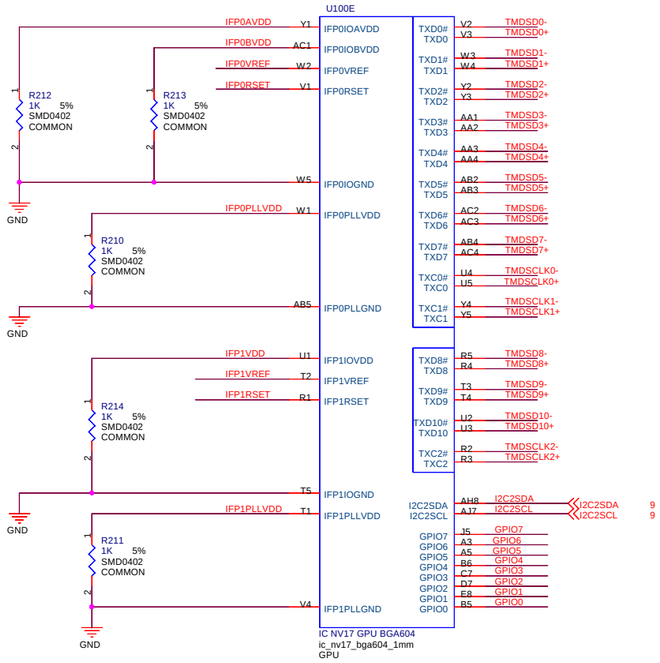
P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

Size	CAGE Code	DWG NO	Rev
Custom			04

Monday, March 11, 2002 — Scale — Sheet 5 of 11



Place
close
together

3.c TMDS_NV17

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P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

Size	CAGE Code	DWG NO	Rev
Custom			5

Monday, March 11, 2002

Scale

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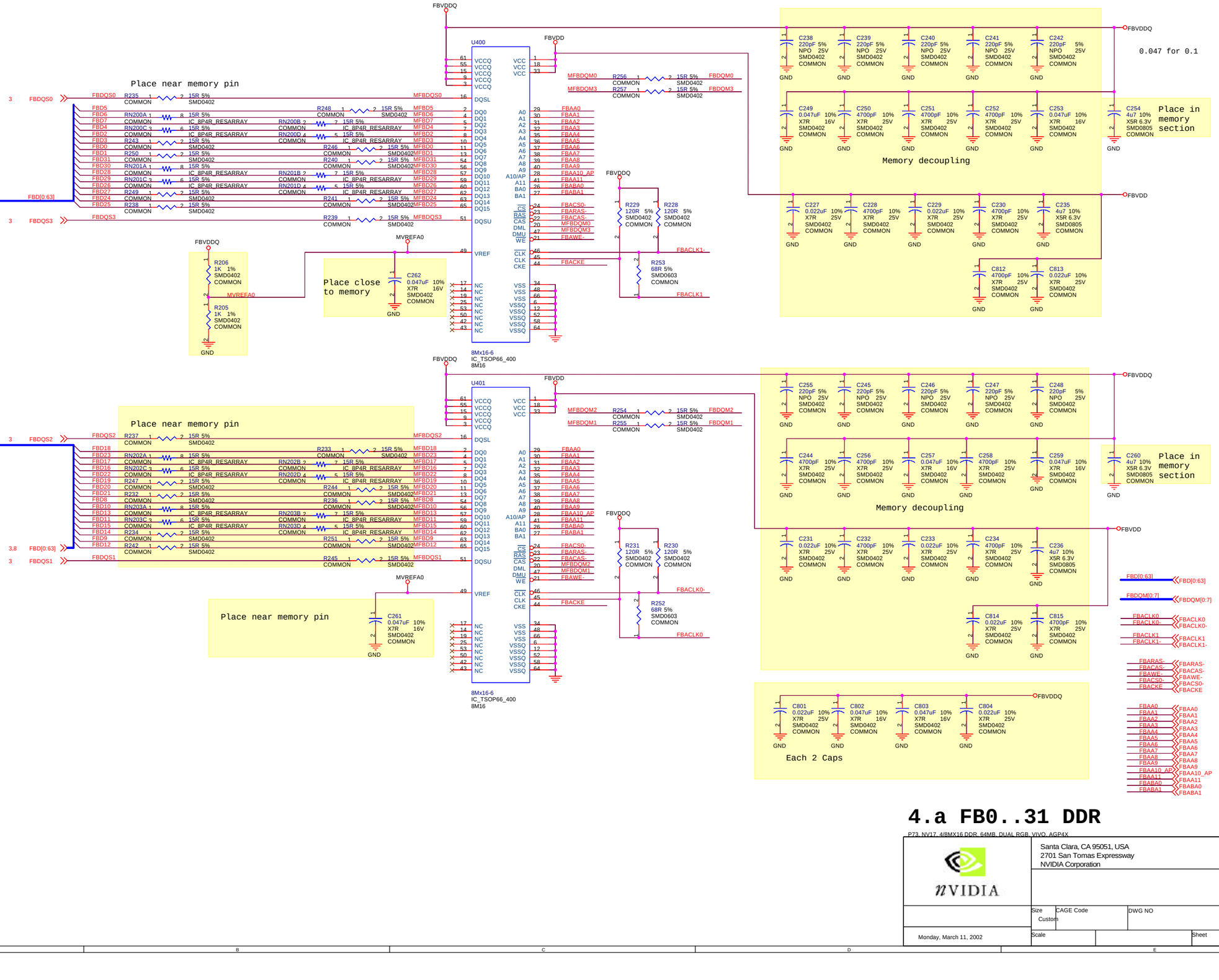

4.a FB0..31 DDR

P73_NV17_4/8MX16 DDR 64MB, DUAL RGB, VIVO, AGP4X

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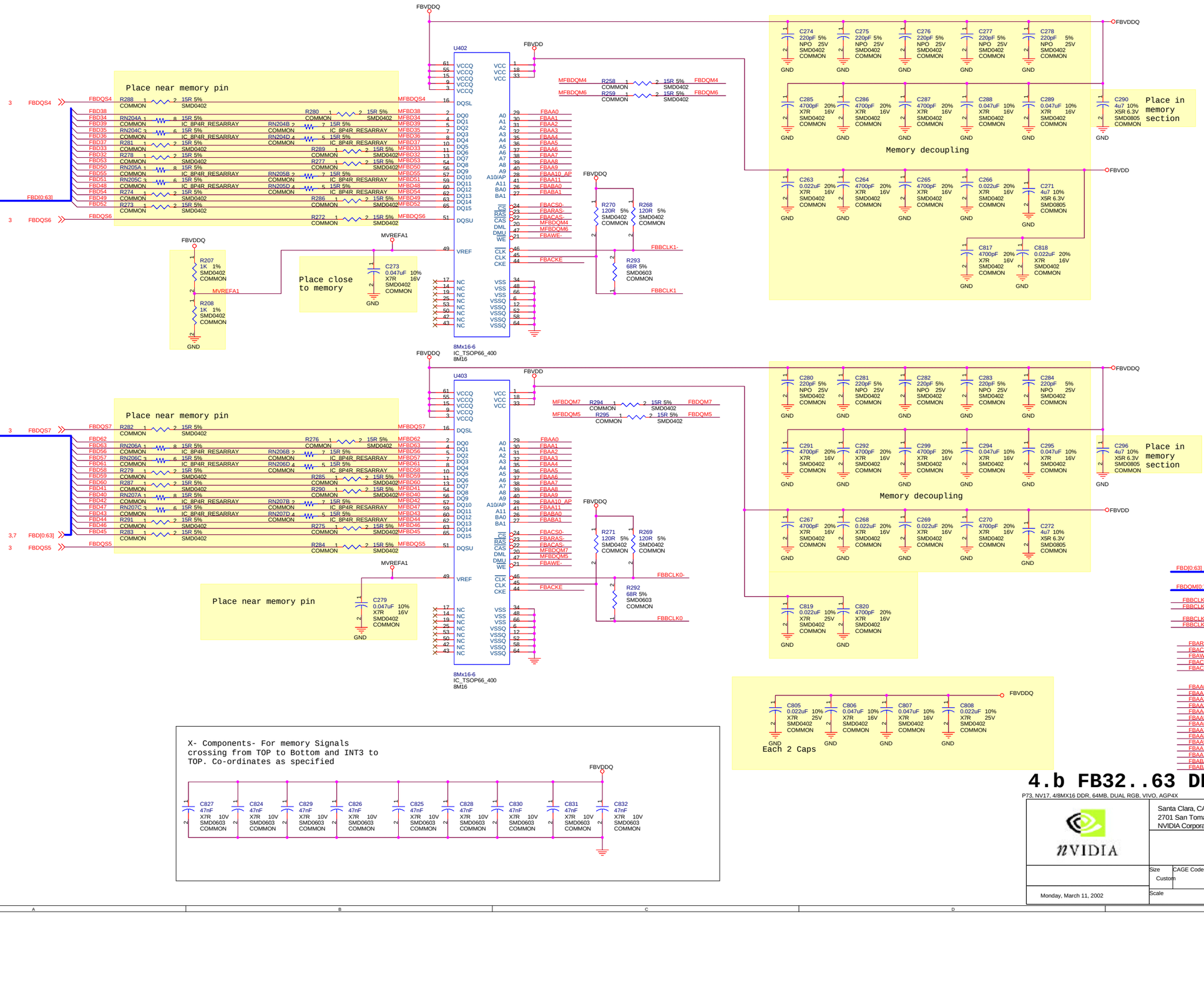
NVIDIA Corporation

Size	CAGE Code	DWG NO	Rev
Custom			A
Monday, March 11, 2002	Scale	Sheet 7 of 12	



4.b FB32..63 DDR

P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

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2701 San Tomas Expressway
NVIDIA Corporation

Size	CAGE Code	DWG NO	Rev
Custom			A
Monday, March 11, 2002	Scale		Sheet 8 of 12

I2C SLAVE ADDR
OFF- 42H/43H- Default
ON - 40H/41H
R510 1 2 3.3K SMD0402 NO_STUFF
A3.3V
R500 1k 5% SMD0402 NO_STUFF

170mA-MAX

U100F
IC NV17 GPU BGA604
ic_nv17_bga604_1mm
GPU

U500
SAA7114H
VIDCAP
IC_TQ100_16X16MM
PAL/NTSC/SECAM-DECODER

Unused inputs and
Unused outputs 1pin
away from power will
not have ICT points

Place close to P500

Place close U500

Place south west of GPU.

5 COUT
5 CVBS_YOUT
5 PBOUT
D502 D503 D504
215mA 70V BAV99 IC_SOT23_123 TVCLAMP / CLAMP3

CVBS_YIN D500
CIN D501

MI2C2SCL
COUT CVBS_YOUT
GND MI2C2SDA
PBOUT CVBS_YIN
CIN
P500 9-Pin:4-Pin CON_S_VIDEO_9P_STD VIDCAP:TVO
CGND

I2C2SCL R512 2k2 R513 33R L504 150_220 Ferrite 200mA C533 220p D505
I2C2SDA R514 2k2 R515 33R L505 150_220 Ferrite 200mA C534 220p D506
215mA 70V BAV99 IC_SOT23_123 CLAMP3

C501 4u7 X5R 6.3V SMD0805 VIDCAP
C502 0.1uF X7R 10V SMD0402 VIDCAP
C503 0.1uF X7R 10V SMD0402 VIDCAP
C504 0.1uF X7R 10V SMD0402 VIDCAP
C525 2200pF X7R 16V SMD0402 VIDCAP
C526 2200pF X7R 16V SMD0402 VIDCAP
C527 2200pF X7R 16V SMD0402 VIDCAP
C535 0.01uF X7R 16V SMD0402 VIDCAP
C536 0.01uF X7R 16V SMD0402 VIDCAP
C537 0.01uF X7R 16V SMD0402 VIDCAP
C528 0.1uF X7R 10V SMD0402 VIDCAP
C531 0.1uF X7R 10V SMD0402 VIDCAP
C532 0.1uF X7R 10V SMD0402 VIDCAP

L500 600 OHM 100MHZ VIDCAP SMD0603
C500 4u7 X5R 6.3V SMD0805 VIDCAP
C505 0.1uF X7R 10V SMD0402 VIDCAP
C506 2200pF X7R 16V SMD0402 VIDCAP
C538 2200pF X7R 16V SMD0402 VIDCAP
C539 2200pF X7R 16V SMD0402 VIDCAP
C507 0.1uF X7R 10V SMD0402 VIDCAP
C508 0.1uF X7R 10V SMD0402 VIDCAP

5. TV out,video capture

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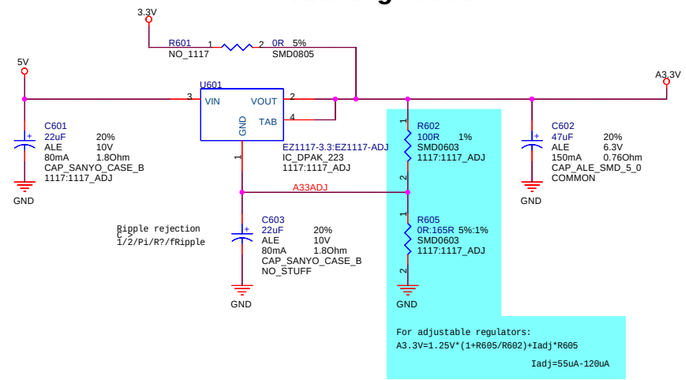
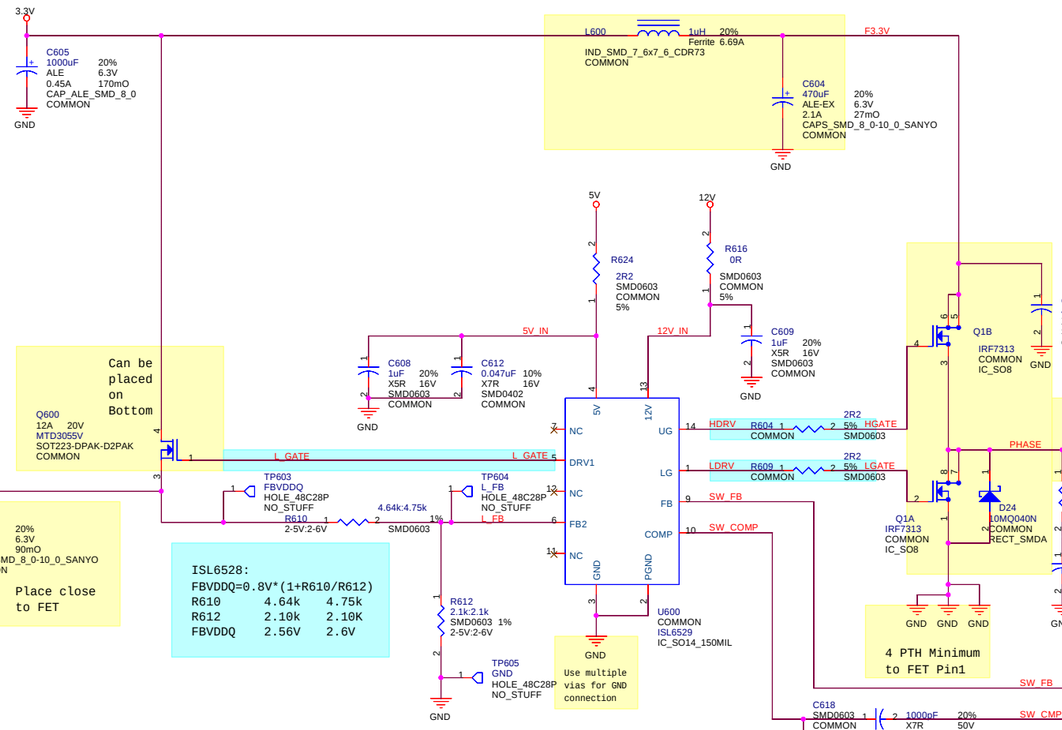
2701 San Tomas Expressway
Santa Clara, CA 95050, USA

P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

Size	CAGE Code	DWG NO	Rev
Custom			08
Monday, March 11, 2002	Scale		Sheet 9 of 12

Analog 3.3V





FOR DESKTOP-NV17
NVVDD DESIGN TARGET 1.552min/1.648max
NVVDD QUAL TARGET 1.550min/1.700max

NVVDD=1.60V +/-50mV /4A

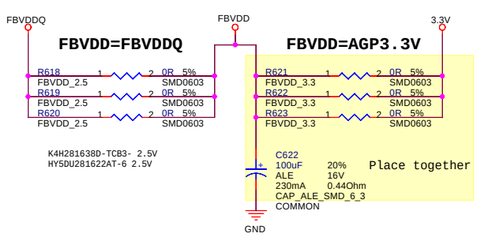
FBVDDQ=2.57V +/-80mV

FBVDDQ-2.482*2.568*2.655 (2.568 +/- 87 mV)

2.5V

ISL6528:
FBVDDQ=0.8V*(1+R610/R612)

R610	4.64k	4.75k
R612	2.10k	2.10K
FBVDDQ	2.56V	2.6V



FBVDD

The FBVDD can take either FBVDDQ or AGP3.3V. Place the resistors accordingly for plane split.

USE MAX WIDTH OF TRACES AS POSSIBLE

6. Power supply

NVIDIA Corporation
2701 San Tomas Expressway
Santa Clara, CA 95050, USA

P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

Size	CAGE Code	DWG NO	Rev
Custom			6

Monday, March 11, 2002

Scale

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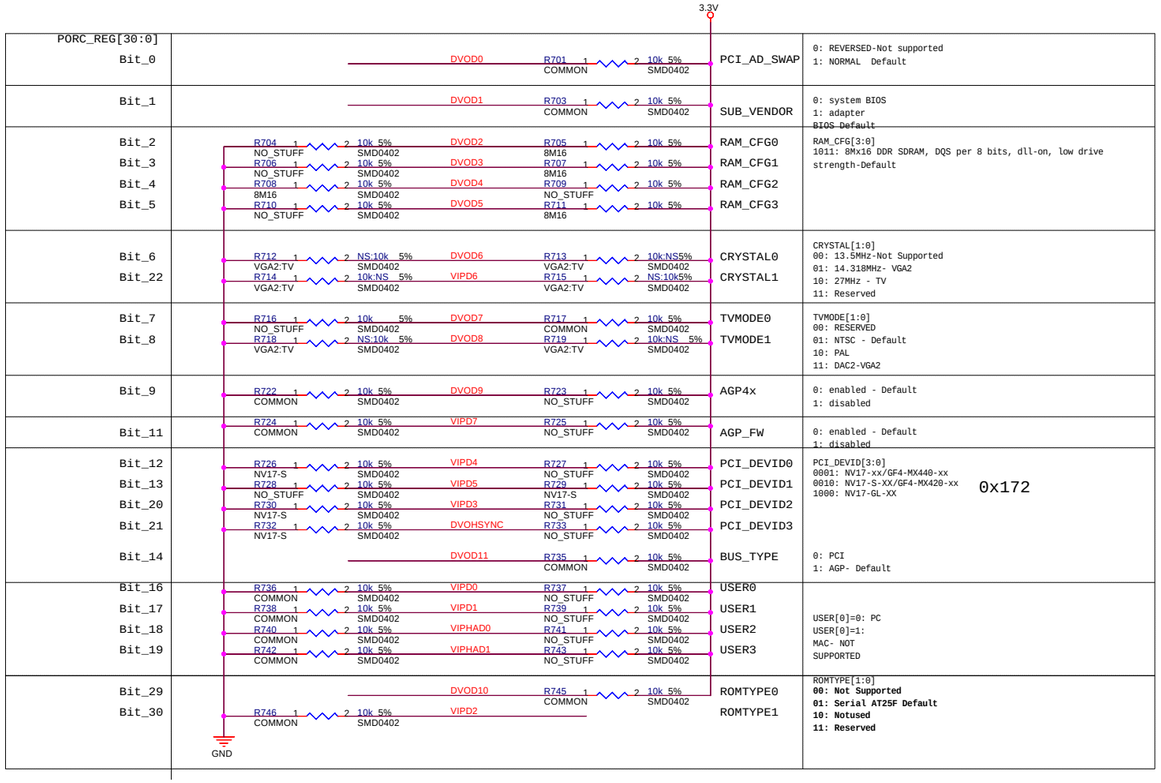

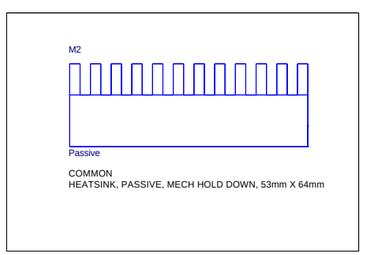

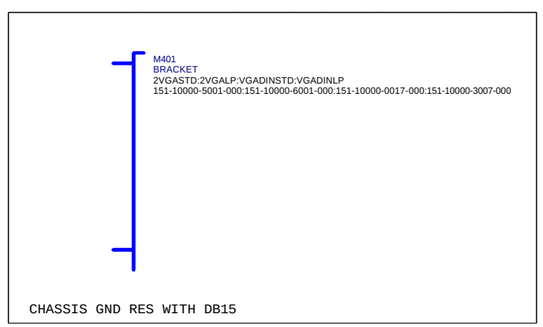

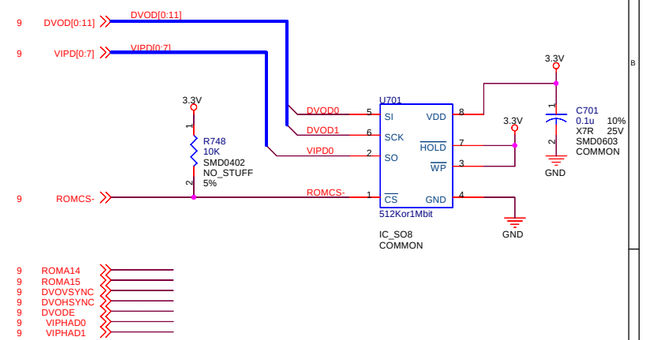

7. BIOS, Strapping, Mech

NVIDIA Corporation
2701 San Tomas Expressway
Santa Clara, CA 95050, USA

P73, NV17, 4/8MX16 DDR, 64MB, DUAL RGB, VIVO, AGP4X

Size	CAGE Code	DWG NO	Rev
Custom			08

Monday, March 11, 2002

Scale

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