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

Page Overview

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 dividor 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, 5VSENSE 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 pinusage 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

A02

X00: Changed AGPVREF_CG rule to 12mil tracewidth
Page2: changed AGPVREF_CG generation for 8X mode
Page6: Added series resistor in FRWR_PME_

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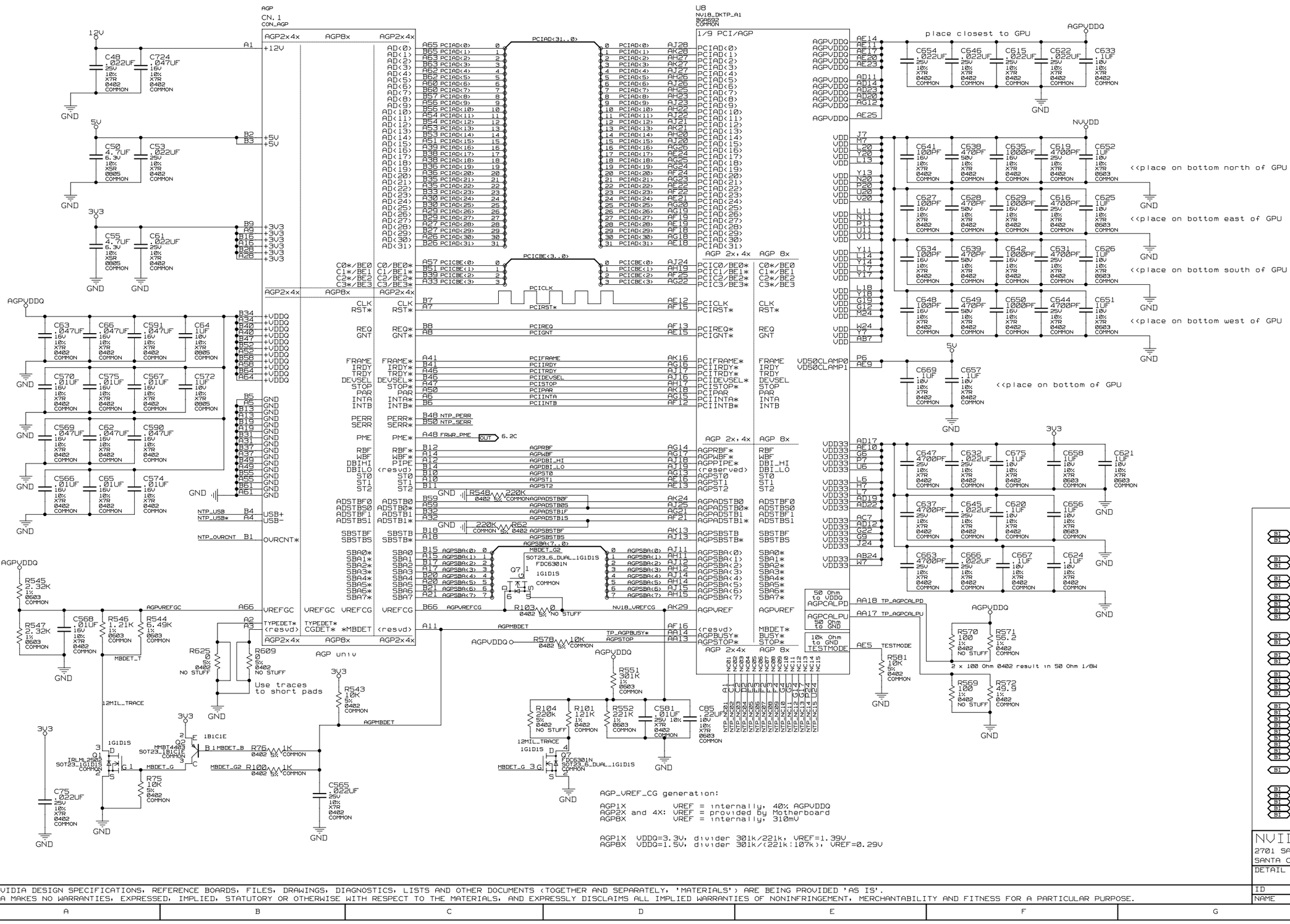
NV18 AGP SECTION AND AGP CONNECTOR



AGP rules

	Net Name	Net Spacing	Net Physical
BI	PCIAD<31..0>	20MIL	
BI	PCICBE<3..0>	20MIL	
BI	PCICLK	20MIL	
BI	PCIRST*	10MIL	
BI	PCIREQ	10MIL	
BI	PCIGNT	10MIL	
BI	PCIFRAME	10MIL	
BI	PCIIRDY	10MIL	
BI	PCITRDY	10MIL	
BI	PCISTOP	10MIL	
BI	PCIDEVSEL	10MIL	
BI	PCIPAR	10MIL	
BI	PCIINTA	10MIL	
BI	PCIINTB	10MIL	
BI	AGPRBF	10MIL	
BI	AGPWBF	10MIL	
BI	AGPDBI_HI	20MIL	
BI	AGPDBI_LO	20MIL	
BI	AGPST0	15MIL	
BI	AGPST1	15MIL	
BI	AGPST2	15MIL	
BI	AGPADSTB0F	25MIL	
BI	AGPADSTB0S	25MIL	
BI	AGPADSTB1F	25MIL	
BI	AGPADSTB1S	25MIL	
BI	AGPSBSTBF	25MIL	
BI	AGPSBSTBS	25MIL	
BI	AGPSBA<7..0>	20MIL	
BI	NV18_VREFCG	10MIL	12MIL_TRACE
BI	AGPVREFCG	10MIL	12MIL_TRACE
BI	AGPVREFGC	10MIL	12MIL_TRACE
BI	AGPMBDET	10MIL	
BI	AGPSTOP	10MIL	

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DETAIL	NV18 AGP Section and AGP connector		
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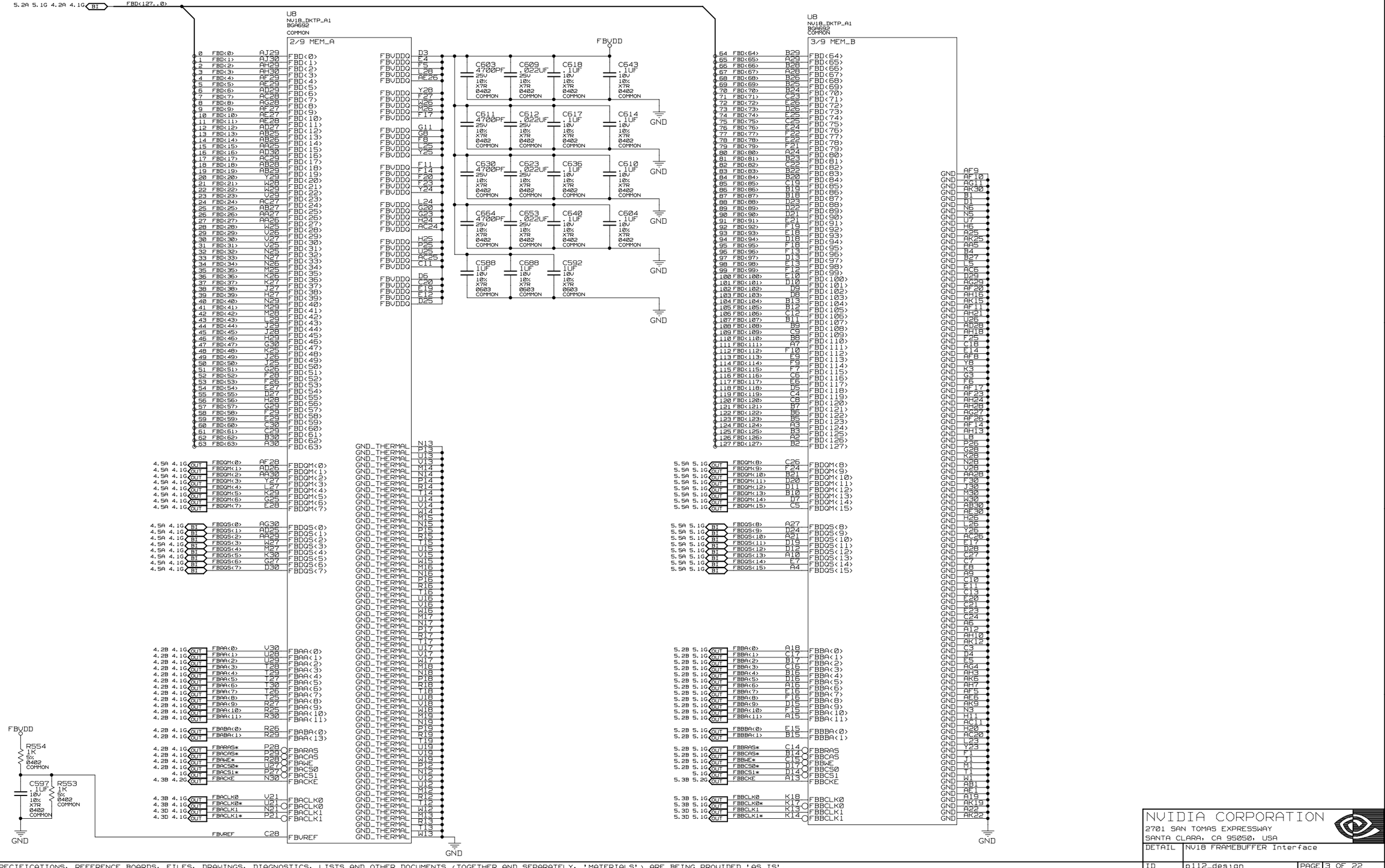
NV18 FRAMEBUFFER INTERFACE AND DECOUPLING



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DETAIL	NV18 FRAMEBUFFER Interface		
ID	p112_design	PAGE	3 OF 22
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MEMORY 64MB; 4Mx32DDR bits 0..63
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

NET	Diffpair	NET_SPACING_RULE
4.3B 3.5B BI FBACLK0	FBACLK0	20MIL_G2G_30MIL
4.3B 3.5B BI FBACLK0*	FBACLK0	20MIL_G2G_30MIL
4.3D 3.5B BI FBACLK1	FBACLK1	20MIL_G2G_30MIL
4.3D 3.5B BI FBACLK1*	FBACLK1	20MIL_G2G_30MIL
5.2A 4.2A 3.1A BI FBD<63..0>		10MIL
4.5A 3.4B 3.3B BI FBDQM<7..0>		10MIL
4.5A 3.4B BI FBDQS<7..0>		15MIL
BI MFBD<63..0>		10MIL
BI MFBDQM<7..0>		10MIL
BI MFBDQS<7..0>		15MIL
4.2B 3.5B 3.4B BI FBAA<11..0>		10MIL
4.2B 3.5B BI FBARAS*		10MIL
4.2B 3.5B BI FBACAS*		10MIL
4.2B 3.5B BI FBAWE*		10MIL
4.2B 3.5B BI FBACS0*		10MIL
3.5B BI FBACS1*		10MIL
4.2B 3.5B BI FBABA<0>		10MIL
4.2B 3.5B BI FBABA<1>		10MIL
4.3B 3.5B BI FBACKE		10MIL

FBVDD

R525 240 5% 0402 NO STUFF
R519 240 5% 0402 NO STUFF
R518 240 5% 0402 NO STUFF
R524 240 5% 0402 NO STUFF
FBACLK0
FBACLK0*
R511 240 5% 0402 NO STUFF
R507 240 5% 0402 NO STUFF
R510 240 5% 0402 NO STUFF
R505 240 5% 0402 NO STUFF

GND

left MEMORY

U11 4MX32DDR-3.6 BGA144 COMMON

4.1G 3.5B IN FBARAS* → RAS
4.1G 3.5B IN FBACAS* → CAS
4.1G 3.5B IN FBAWE* → WE
4.1G 3.5B IN FBACS0* → CS
4.1G 3.5B 3.4B IN FBAA<11..0>
FBAA<0> N5 A<0>
FBAA<1> N6 A<1>
FBAA<2> M6 A<2>
FBAA<3> N7 A<3>
FBAA<4> N8 A<4>
FBAA<5> M8 A<5>
FBAA<6> N9 A<6>
FBAA<7> N10 A<7>
FBAA<8> N11 A/AP<8>
FBAA<9> M9 A<9>
FBAA<10> L6 A<10>
FBAA<11> M7 A<11>
TP_A12_1 L9 NC/A<12>
4.1G 3.5B IN FBABA<0> N4 BA<0>
4.1G 3.5B IN FBABA<1> M5 BA<1>
TP_BA2_1 M10 NC/BA<2>
4.2G 3.5B IN FBACKE N12 CKE
4.1G 3.5B IN FBACLK0 M11 CLK
4.1G 3.5B IN FBACLK0* M12 CLK

VDD D7 D8 E4 E11 L4 L7 L8 L11
VDDQ C3 C5 C7 C8 C10 C12 E3 E12 F4 F11 G4 G11 J4 J11 K4 K11
VSSQ B4 B11 D4 D5 D8 D9 D10 D11 E5 F3 F10 G5 G10 H5 H10 J5 J10 K5 K10
VSS E5 E7 E8 E10 K6 K7 K8 K9 L5 L10

FBVDD
R528 200 5% 0402 COMMON
R523 200 5% 0402 COMMON
R79 10K 5% 0402 COMMON
GND
THERM F6 F7 F8 F9 G6 G7 G8 G9 H6 H7 H8 H9 J6 J7 J8 J9
M13 Must be GND
Vref N13
NC NC NC NC NC NC NC NC NC
R514 1K 5% 0402 COMMON
C507 .1UF 10V 10% X7R 0402 COMMON
R515 1K 5% 0402 NO STUFF
GND
C4 C11 H4 H11 L1 L2 L3 L12 M1 M2 M3 M4 N1 N2 N3 N4 N5 N6 N7 N8 N9 P1 P2 P3 P4 P5 P6 P7 P8 P9

FBVDD

R523 240 5% 0402 NO STUFF
R517 240 5% 0402 NO STUFF
R522 240 5% 0402 NO STUFF
R516 240 5% 0402 NO STUFF
FBACLK1
FBACLK1*
R509 240 5% 0402 NO STUFF
R505 240 5% 0402 NO STUFF
R508 240 5% 0402 NO STUFF
R504 240 5% 0402 NO STUFF

GND

right MEMORY

U10 4MX32DDR-3.6 BGA144 COMMON

FBARAS* → RAS
FBACAS* → CAS
FBAWE* → WE
FBACS0* → CS
FBAA<11..0>
FBAA<0> N5 A<0>
FBAA<1> N6 A<1>
FBAA<2> M6 A<2>
FBAA<3> N7 A<3>
FBAA<4> N8 A<4>
FBAA<5> M8 A<5>
FBAA<6> N9 A<6>
FBAA<7> N10 A<7>
FBAA<8> N11 A/AP<8>
FBAA<9> M9 A<9>
FBAA<10> L6 A<10>
FBAA<11> M7 A<11>
TP_A12_2 L9 NC/A<12>
FBABA<0> N4 BA<0>
FBABA<1> M5 BA<1>
TP_BA2_2 M10 NC/BA<2>
4.1G 3.5B IN FBACKE N12 CKE
4.1G 3.5B IN FBACLK1 M11 CLK
4.1G 3.5B IN FBACLK1* M12 CLK

VDD D7 D8 E4 E11 L4 L7 L8 L11
VDDQ C3 C5 C7 C8 C10 C12 E3 E12 F4 F11 G4 G11 J4 J11 K4 K11
VSSQ B4 B11 D4 D5 D8 D9 D10 D11 E5 F3 F10 G5 G10 H5 H10 J5 J10 K5 K10
VSS E5 E7 E8 E10 K6 K7 K8 K9 L5 L10

FBVDD
R526 200 5% 0402 COMMON
R527 200 5% 0402 COMMON
F6 F7 F8 F9 G6 G7 G8 G9 H6 H7 H8 H9 J6 J7 J8 J9
THERM
M13 Must be GND
Vref N13
NC NC NC NC NC NC NC NC NC
R512 1K 5% 0402 COMMON
C506 .1UF 10V 10% X7R 0402 COMMON
R513 1K 5% 0402 COMMON
GND
C4 C11 H4 H11 L1 L2 L3 L12 M1 M2 M3 M4 N1 N2 N3 N4 N5 N6 N7 N8 N9 P1 P2 P3 P4 P5 P6 P7 P8 P9

Decoupling for left MEMORY

FBVDD — Place around the MEM — Place under the MEM

C512 4.7UF 6.3V 10% X5R 0805 COMMON
C521 .1UF 10V 10% X7R 0402 COMMON
C550 .1UF 10V 10% X7R 0402 COMMON
C518 .1UF 10V 10% X7R 0402 COMMON
C528 100PF 16V 10% X7R 0402 COMMON
C551 470PF 50V 10% X7R 0402 COMMON
C527 1000PF 16V 10% X7R 0402 COMMON
C519 4700PF 25V 10% X7R 0402 COMMON
C520 .01UF 25V 10% X7R 0402 COMMON
C549 .01UF 25V 10% X7R 0402 COMMON
GND

FBVDD

C509 4.7UF 6.3V 10% X5R 0805 COMMON
C564 .1UF 10V 10% X7R 0402 COMMON
C559 .1UF 10V 10% X7R 0402 COMMON
C526 .1UF 10V 10% X7R 0402 COMMON
C529 .1UF 10V 10% X7R 0402 COMMON
C548 100PF 16V 10% X7R 0402 COMMON
C542 470PF 50V 10% X7R 0402 COMMON
C536 1000PF 16V 10% X7R 0402 COMMON
C561 4700PF 25V 10% X7R 0402 COMMON
C563 .01UF 25V 10% X7R 0402 COMMON
C533 .01UF 25V 10% X7R 0402 COMMON
C552 100PF 16V 10% X7R 0402 COMMON
C541 470PF 50V 10% X7R 0402 COMMON
C562 1000PF 16V 10% X7R 0402 COMMON
C537 4700PF 25V 10% X7R 0402 COMMON
C560 .01UF 25V 10% X7R 0402 COMMON
C532 .01UF 25V 10% X7R 0402 COMMON
GND

Decoupling for right MEMORY

FBVDD — Place around the MEM — Place under the MEM

C511 4.7UF 6.3V 10% X5R 0805 COMMON
C545 .1UF 10V 10% X7R 0402 COMMON
C514 .1UF 10V 10% X7R 0402 COMMON
C517 .1UF 10V 10% X7R 0402 COMMON
C524 100PF 16V 10% X7R 0402 COMMON
C546 470PF 50V 10% X7R 0402 COMMON
C523 1000PF 16V 10% X7R 0402 COMMON
C515 4700PF 25V 10% X7R 0402 COMMON
C544 .01UF 25V 10% X7R 0402 COMMON
C516 .01UF 25V 10% X7R 0402 COMMON
GND

FBVDD

C508 4.7UF 6.3V 10% X5R 0805 COMMON
C558 .1UF 10V 10% X7R 0402 COMMON
C553 .1UF 10V 10% X7R 0402 COMMON
C525 .1UF 10V 10% X7R 0402 COMMON
C522 .1UF 10V 10% X7R 0402 COMMON
C547 100PF 16V 10% X7R 0402 COMMON
C540 470PF 50V 10% X7R 0402 COMMON
C556 1000PF 16V 10% X7R 0402 COMMON
C555 4700PF 25V 10% X7R 0402 COMMON
C557 .01UF 25V 10% X7R 0402 COMMON
C554 .01UF 25V 10% X7R 0402 COMMON
C543 100PF 16V 10% X7R 0402 COMMON
C539 470PF 50V 10% X7R 0402 COMMON
C534 1000PF 16V 10% X7R 0402 COMMON
C535 4700PF 25V 10% X7R 0402 COMMON
C530 .01UF 25V 10% X7R 0402 COMMON
C531 .01UF 25V 10% X7R 0402 COMMON
GND

BI FBD<127..0>

FBD<0> RP18 MFBD<0> 0
FBD<1> RP18 MFBD<1> 1
FBD<2> RP18 MFBD<2> 2
FBD<3> RP18 MFBD<3> 3
FBD<4> RP17 MFBD<4> 4
FBD<5> RP17 MFBD<5> 5
FBD<6> RP17 MFBD<6> 6
FBD<7> RP17 MFBD<7> 7
FBD<8> RP502 MFBD<8> 8
FBD<9> RP502 MFBD<9> 9
FBD<10> RP502 MFBD<10> 10
FBD<11> RP502 MFBD<11> 11
FBD<12> RP508 MFBD<12> 12
FBD<13> RP508 MFBD<13> 13
FBD<14> RP508 MFBD<14> 14
FBD<15> RP508 MFBD<15> 15
FBD<16> RP16 MFBD<16> 16
FBD<17> RP16 MFBD<17> 17
FBD<18> RP16 MFBD<18> 18
FBD<19> RP16 MFBD<19> 19
FBD<20> RP15 MFBD<20> 20
FBD<21> RP15 MFBD<21> 21
FBD<22> RP15 MFBD<22> 22
FBD<23> RP15 MFBD<23> 23
FBD<24> RP507 MFBD<24> 24
FBD<25> RP507 MFBD<25> 25
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FBD<27> RP507 MFBD<27> 27
FBD<28> RP504 MFBD<28> 28
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FBD<32> RP501 MFBD<32> 32
FBD<33> RP501 MFBD<33> 33
FBD<34> RP501 MFBD<34> 34
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FBD<40> RP14 MFBD<40> 40
FBD<41> RP14 MFBD<41> 41
FBD<42> RP14 MFBD<42> 42
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FBD<51> RP505 MFBD<51> 51
FBD<52> RP503 MFBD<52> 52
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FBD<55> RP503 MFBD<55> 55
FBD<56> RP12 MFBD<56> 56
FBD<57> RP12 MFBD<57> 57
FBD<58> RP12 MFBD<58> 58
FBD<59> RP12 MFBD<59> 59
FBD<60> RP11 MFBD<60> 60
FBD<61> RP11 MFBD<61> 61
FBD<62> RP11 MFBD<62> 62
FBD<63> RP11 MFBD<63> 63

All: 15 Ω, 0402 ×4, 5%, COMMON

4.1G 3.3B IN FBDQM<0> R73 15 0402 5% COMMON MFBDQM<0>
4.1G 3.3B IN FBDQM<1> R541 15 0402 5% COMMON MFBDQM<1>
4.1G 3.3B IN FBDQM<2> R72 15 0402 5% COMMON MFBDQM<2>
4.1G 3.3B IN FBDQM<3> R540 15 0402 5% COMMON MFBDQM<3>
4.1G 3.3B IN FBDQM<4> R537 15 0402 5% COMMON MFBDQM<4>
4.1G 3.3B IN FBDQM<5> R69 15 0402 5% COMMON MFBDQM<5>
4.1G 3.3B IN FBDQM<6> R536 15 0402 5% COMMON MFBDQM<6>
4.1G 3.4B IN FBDQM<7> R68 15 0402 5% COMMON MFBDQM<7>

4.1G 3.4B BI FBDQS<0> R74 15 0402 5% COMMON MFBDQS<0>
4.1G 3.4B BI FBDQS<1> R542 15 0402 5% COMMON MFBDQS<1>
4.1G 3.4B BI FBDQS<2> R71 15 0402 5% COMMON MFBDQS<2>
4.1G 3.4B BI FBDQS<3> R539 15 0402 5% COMMON MFBDQS<3>
4.1G 3.4B BI FBDQS<4> R538 15 0402 5% COMMON MFBDQS<4>
4.1G 3.4B BI FBDQS<5> R70 15 0402 5% COMMON MFBDQS<5>
4.1G 3.4B BI FBDQS<6> R535 15 0402 5% COMMON MFBDQS<6>
4.1G 3.4B BI FBDQS<7> R67 15 0402 5% COMMON MFBDQS<7>

PLACE NEAR MEMORY

MFBD<63..0>

U11 4MX32DDR-3.6 BGA144 COMMON

MFBD<0> E2 MFBD<1> D3 MFBD<2> D2 MFBD<3> C2 MFBD<4> B5 MFBD<5> C6 MFBD<6> B6 MFBD<7> B7
MFBDQM<0> B3 MFBDQS<0> B2
MFBD<16> B8 MFBD<17> B9 MFBD<18> C9 MFBD<19> B10 MFBD<20> C13 MFBD<21> D13 MFBD<22> D12 MFBD<23> E13
MFBDQM<2> B12 MFBDQS<2> B13
MFBD<32> K3 MFBD<33> K2 MFBD<34> J3 MFBD<35> J2 MFBD<36> G2 MFBD<37> G3 MFBD<38> F3 MFBD<39> F2
MFBDQM<4> H3 MFBDQS<4> H2
MFBD<48> F13 MFBD<49> F12 MFBD<50> G13 MFBD<51> G12 MFBD<52> J13 MFBD<53> J12 MFBD<54> K13 MFBD<55> K12
MFBDQM<6> H12 MFBDQS<6> H13

MFBD<63..0>

U11 4MX32DDR-3.6 BGA144 COMMON

MFBD<8> K3 MFBD<9> K2 MFBD<10> J3 MFBD<11> J2 MFBD<12> G2 MFBD<13> G3 MFBD<14> F3 MFBD<15> F2
MFBDQM<1> H3 MFBDQS<1> H2
MFBD<24> F13 MFBD<25> F12 MFBD<26> G13 MFBD<27> G12 MFBD<28> J13 MFBD<29> J12 MFBD<30> K13 MFBD<31> K12
MFBDQM<3> H12 MFBDQS<3> H13
MFBD<40> E2 MFBD<41> D3 MFBD<42> D2 MFBD<43> C2 MFBD<44> B5 MFBD<45> C6 MFBD<46> B6 MFBD<47> B7
MFBDQM<5> B3 MFBDQS<5> B2
MFBD<56> B8 MFBD<57> B9 MFBD<58> C9 MFBD<59> B10 MFBD<60> C13 MFBD<61> D13 MFBD<62> D12 MFBD<63> E13
MFBDQM<7> B12 MFBDQS<7> B13

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DETAIL	MEMORY 64MB, 4Mx32DDR Bits 0..63		
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NAME	602-10112-0002-002	DATE	AUG-02 2002

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

NET	Diffpair	NET_SPACING_RULE
5.3B 3.5E BI FBBCLK0	FBBCLK0	20MIL_G2G_30MIL
5.3B 3.5E BI FBBCLK0*	FBBCLK0	20MIL_G2G_30MIL
5.3D 3.5E BI FBBCLK1	FBBCLK1	20MIL_G2G_30MIL
5.3D 3.5E BI FBBCLK1*	FBBCLK1	20MIL_G2G_30MIL
5.2A 4.2A 3.1A BI FBD<127..64>		10MIL
5.5A 3.4E 3.3E BI FBDQM<15..8>		10MIL
5.5A 3.4E BI FBDQS<15..8>		15MIL
BI MFBD<127..64>		10MIL
BI MFBDQM<15..8>		10MIL
BI MFBDQS<15..8>		15MIL
5.2B 3.5E 3.4E BI FBBA<11..0>		10MIL
5.2B 3.5E BI FBBRAS*		10MIL
5.2B 3.5E BI FBBCAS*		10MIL
5.2B 3.5E BI FBBWE*		10MIL
5.2B 3.5E BI FBBCS0*		10MIL
3.5E BI FBBCS1*		10MIL
5.2B 3.5E BI FBBBA<0>		10MIL
5.2B 3.5E BI FBBBA<1>		10MIL
5.3B 3.5E BI FBBCKE		10MIL

FBVDD

R561 240 5% 0402 NO STUFF
R562 240 5% 0402 NO STUFF
R568 240 5% 0402 NO STUFF
R567 240 5% 0402 NO STUFF
FBBCLK0
FBBCLK0*
R560 240 5% 0402 NO STUFF
R559 240 5% 0402 NO STUFF
R565 240 5% 0402 NO STUFF
R566 240 5% 0402 NO STUFF
GND

left MEMORY

U9 4MX32DDR-3.6 BGA144 COMMON

5.1G 3.5E IN FBBRAS* → RAS
5.1G 3.5E IN FBBCAS* → CAS
5.1G 3.5E IN FBBWE* → WE
5.1G 3.5E IN FBBCS0* → CS
5.1G 3.5E 3.4E IN FBBA<11..0> → A<0> A<1> A<2> A<3> A<4> A<5> A<6> A<7> A/AP<8> A<9> A<10> A<11> NC/A<12>
5.1G 3.5E IN FBBBA<0> → BA<0>
5.1G 3.5E IN FBBBA<1> → BA<1>
TP_BA2_3 → NC/BA<2>
5.2G 3.5E IN FBBCKE → CKE
5.1G 3.5E IN FBBCLK0 → CLK
5.1G 3.5E IN FBBCLK0* → CLK

VDD D7 D8 E4 E11 L4 L7 L8 L11 FBVDD
VDDQ C3 C5 C7 C8 C10 C12 E3 E12 F4 F11 G4 G11 J4 J11 K4 K11
VSSQ B4 B11 D4 D5 D8 D9 D10 D11 E5 E9 F5 F10 G5 G10 H5 H10 J5 J10 K5 K10
VSS E5 E7 E8 E10 K6 K7 K8 K9 L5 L10 GND

R558 200 5% 0402 COMMON
R556 200 5% 0402 COMMON
R61 10K 5% 0402 COMMON
F6 F7 F8 F9 G6 G7 G8 G9 H6 H7 H8 H9 J6 J7 J8 J9 THERM
M13 Must be GND
N13 Vref
NC NC NC NC NC NC NC NC NC
C602 .1UF 10V 10% X7R 0402 COMMON
R555 1K 5% 0402 COMMON
GND

right MEMORY

U7 4MX32DDR-3.6 BGA144 COMMON

FBBRAS* → RAS
FBBCAS* → CAS
FBBWE* → WE
FBBCS0* → CS
FBBA<11..0> → A<0> A<1> A<2> A<3> A<4> A<5> A<6> A<7> A/AP<8> A<9> A<10> A<11> NC/A<12>
FBBBA<0> → BA<0>
FBBBA<1> → BA<1>
TP_BA2_4 → NC/BA<2>
5.1G 3.5E IN FBBCKE → CKE
5.1G 3.5E IN FBBCLK1 → CLK
5.1G 3.5E IN FBBCLK1* → CLK

VDD D7 D8 E4 E11 L4 L7 L8 L11 FBVDD
VDDQ C3 C5 C7 C8 C10 C12 E3 E12 F4 F11 G4 G11 J4 J11 K4 K11
VSSQ B4 B11 D4 D5 D8 D9 D10 D11 E5 E9 F5 F10 G5 G10 H5 H10 J5 J10 K5 K10
VSS E5 E7 E8 E10 K6 K7 K8 K9 L5 L10 GND

R589 200 5% 0402 COMMON
R592 200 5% 0402 COMMON
F6 F7 F8 F9 G6 G7 G8 G9 H6 H7 H8 H9 J6 J7 J8 J9 THERM
M13 Must be GND
N13 Vref
NC NC NC NC NC NC NC NC NC
C707 .1UF 10V 10% X7R 0402 COMMON
R588 1K 5% 0402 COMMON
GND

FBVDD

R596 240 5% 0402 NO STUFF
R597 240 5% 0402 NO STUFF
R603 240 5% 0402 NO STUFF
R604 240 5% 0402 NO STUFF
FBBCLK1
FBBCLK1*
R595 240 5% 0402 NO STUFF
R594 240 5% 0402 NO STUFF
R602 240 5% 0402 NO STUFF
R601 240 5% 0402 NO STUFF
GND

Decoupling for left MEMORY

FBVDD — Place around the MEM — Place under the MEM

C576 4.7UF 6.3V 10% X5R 0805 COMMON
C583 .1UF 10V 10% X7R 0402 COMMON
C593 .1UF 10V 10% X7R 0402 COMMON
C600 .1UF 10V 10% X7R 0402 COMMON
C584 100PF 16V 10% X7R 0402 COMMON
C585 470PF 50V 10% X7R 0402 COMMON
C598 1000PF 16V 10% X7R 0402 COMMON
C594 4700PF 25V 10% X7R 0402 COMMON
C589 .01UF 25V 10% X7R 0402 COMMON
C599 .01UF 25V 10% X7R 0402 COMMON
GND

C571 4.7UF 6.3V 10% X5R 0805 COMMON
C573 .1UF 10V 10% X7R 0402 COMMON
C613 .1UF 10V 10% X7R 0402 COMMON
C605 .1UF 10V 10% X7R 0402 COMMON
C577 .1UF 10V 10% X7R 0402 COMMON
C608 100PF 16V 10% X7R 0402 COMMON
C579 470PF 50V 10% X7R 0402 COMMON
C595 1000PF 16V 10% X7R 0402 COMMON
C596 4700PF 25V 10% X7R 0402 COMMON
C582 .01UF 25V 10% X7R 0402 COMMON
C578 .01UF 25V 10% X7R 0402 COMMON
C580 100PF 16V 10% X7R 0402 COMMON
C507 470PF 50V 10% X7R 0402 COMMON
C586 1000PF 16V 10% X7R 0402 COMMON
C587 4700PF 25V 10% X7R 0402 COMMON
C601 .01UF 25V 10% X7R 0402 COMMON
C606 .01UF 25V 10% X7R 0402 COMMON
GND

Decoupling for left MEMORY

FBVDD — Place around the MEM — Place under the MEM

C670 4.7UF 6.3V 10% X5R 0805 COMMON
C690 .1UF 10V 10% X7R 0402 COMMON
C702 .1UF 10V 10% X7R 0402 COMMON
C680 .1UF 10V 10% X7R 0402 COMMON
C682 100PF 16V 10% X7R 0402 COMMON
C683 470PF 50V 10% X7R 0402 COMMON
C700 1000PF 16V 10% X7R 0402 COMMON
C696 4700PF 25V 10% X7R 0402 COMMON
C701 .01UF 25V 10% X7R 0402 COMMON
C685 .01UF 25V 10% X7R 0402 COMMON
GND

C655 4.7UF 6.3V 10% X5R 0805 COMMON
C668 .1UF 10V 10% X7R 0402 COMMON
C713 .1UF 10V 10% X7R 0402 COMMON
C671 .1UF 10V 10% X7R 0402 COMMON
C708 .1UF 10V 10% X7R 0402 COMMON
C674 100PF 16V 10% X7R 0402 COMMON
C673 470PF 50V 10% X7R 0402 COMMON
C684 1000PF 16V 10% X7R 0402 COMMON
C699 4700PF 25V 10% X7R 0402 COMMON
C678 .01UF 25V 10% X7R 0402 COMMON
C703 .01UF 25V 10% X7R 0402 COMMON
C711 100PF 16V 10% X7R 0402 COMMON
C710 470PF 50V 10% X7R 0402 COMMON
C698 1000PF 16V 10% X7R 0402 COMMON
C685 4700PF 25V 10% X7R 0402 COMMON
C709 .01UF 25V 10% X7R 0402 COMMON
C672 .01UF 25V 10% X7R 0402 COMMON
GND

4.2B 3.1G 4.1G 5.1G BI FBD<127..0>

64 FBD<64> RP10 MFBD<64> 64
65 FBD<65> 0402X4 MFBD<65> 65
66 FBD<66> RP10 MFBD<66> 66
67 FBD<67> 0402X4 MFBD<67> 67
68 FBD<68> RP9 MFBD<68> 68
69 FBD<69> 0402X4 MFBD<69> 69
70 FBD<70> RP9 MFBD<70> 70
71 FBD<71> 0402X4 MFBD<71> 71
72 FBD<72> RP509 MFBD<72> 72
73 FBD<73> 0402X4 MFBD<73> 73
74 FBD<74> RP509 MFBD<74> 74
75 FBD<75> 0402X4 MFBD<75> 75
76 FBD<76> RP510 MFBD<76> 76
77 FBD<77> 0402X4 MFBD<77> 77
78 FBD<78> RP510 MFBD<78> 78
79 FBD<79> 0402X4 MFBD<79> 79
80 FBD<80> RP8 MFBD<80> 80
81 FBD<81> 0402X4 MFBD<81> 81
82 FBD<82> RP8 MFBD<82> 82
83 FBD<83> 0402X4 MFBD<83> 83
84 FBD<84> RP7 MFBD<84> 84
85 FBD<85> 0402X4 MFBD<85> 85
86 FBD<86> RP7 MFBD<86> 86
87 FBD<87> 0402X4 MFBD<87> 87
88 FBD<88> RP511 MFBD<88> 88
89 FBD<89> 0402X4 MFBD<89> 89
90 FBD<90> RP511 MFBD<90> 90
91 FBD<91> 0402X4 MFBD<91> 91
92 FBD<92> RP512 MFBD<92> 92
93 FBD<93> 0402X4 MFBD<93> 93
94 FBD<94> RP512 MFBD<94> 94
95 FBD<95> 0402X4 MFBD<95> 95
96 FBD<96> RP513 MFBD<96> 96
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101 FBD<101> 0402X4 MFBD<101> 101
102 FBD<102> RP514 MFBD<102> 102
103 FBD<103> 0402X4 MFBD<103> 103
104 FBD<104> RP6 MFBD<104> 104
105 FBD<105> 0402X4 MFBD<105> 105
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108 FBD<108> RP5 MFBD<108> 108
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111 FBD<111> 0402X4 MFBD<111> 111
112 FBD<112> RP515 MFBD<112> 112
113 FBD<113> 0402X4 MFBD<113> 113
114 FBD<114> RP515 MFBD<114> 114
115 FBD<115> 0402X4 MFBD<115> 115
116 FBD<116> RP516 MFBD<116> 116
117 FBD<117> 0402X4 MFBD<117> 117
118 FBD<118> RP516 MFBD<118> 118
119 FBD<119> 0402X4 MFBD<119> 119
120 FBD<120> RP4 MFBD<120> 120
121 FBD<121> 0402X4 MFBD<121> 121
122 FBD<122> RP4 MFBD<122> 122
123 FBD<123> 0402X4 MFBD<123> 123
124 FBD<124> RP3 MFBD<124> 124
125 FBD<125> 0402X4 MFBD<125> 125
126 FBD<126> RP3 MFBD<126> 126
127 FBD<127> 0402X4 MFBD<127> 127

5.1G 3.3E IN FBDQM<8> R65 MFBDQM<8>
5.1G 3.3E IN FBDQM<9> 0402 R550 MFBDQM<9>
5.1G 3.3E IN FBDQM<10> R64 MFBDQM<10>
5.1G 3.3E IN FBDQM<11> 0402 R563 MFBDQM<11>
5.1G 3.3E IN FBDQM<12> R574 MFBDQM<12>
5.1G 3.3E IN FBDQM<13> 0402 R59 MFBDQM<13>
5.1G 3.3E IN FBDQM<14> R598 MFBDQM<14>
5.1G 3.4E IN FBDQM<15> 0402 R58 MFBDQM<15>

5.1G 3.4E BI FBDQS<8> R65 MFBDQS<8>
5.1G 3.4E BI FBDQS<9> 0402 R549 MFBDQS<9>
5.1G 3.4E BI FBDQS<10> R63 MFBDQS<10>
5.1G 3.4E BI FBDQS<11> 0402 R564 MFBDQS<11>
5.1G 3.4E BI FBDQS<12> R573 MFBDQS<12>
5.1G 3.4E BI FBDQS<13> 0402 R60 MFBDQS<13>
5.1G 3.4E BI FBDQS<14> R600 MFBDQS<14>
5.1G 3.4E BI FBDQS<15> 0402 R57 MFBDQS<15>

0402 5% COMMON

MFBD<127..64>

U9 4MX32DDR-3.6 BGA144 COMMON
64 MFBD<64> 65 MFBD<65> 66 MFBD<66> 67 MFBD<67> 68 MFBD<68> 69 MFBD<69> 70 MFBD<70> 71 MFBD<71> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<8> MFBDQS<8> → DQM DQS

U9 4MX32DDR-3.6 BGA144 COMMON
00 MFBD<80> 81 MFBD<81> 82 MFBD<82> 83 MFBD<83> 84 MFBD<84> 85 MFBD<85> 86 MFBD<86> 87 MFBD<87> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<10> MFBDQS<10> → DQM DQS

U7 4MX32DDR-3.6 BGA144 COMMON
96 MFBD<96> 97 MFBD<97> 98 MFBD<98> 99 MFBD<99> 100 MFBD<100> 101 MFBD<101> 102 MFBD<102> 103 MFBD<103> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<12> MFBDQS<12> → DQM DQS

U7 4MX32DDR-3.6 BGA144 COMMON
112 MFBD<112> 113 MFBD<113> 114 MFBD<114> 115 MFBD<115> 116 MFBD<116> 117 MFBD<117> 118 MFBD<118> 119 MFBD<119> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<14> MFBDQS<14> → DQM DQS

MFBD<127..64>

U9 4MX32DDR-3.6 BGA144 COMMON
72 MFBD<72> 73 MFBD<73> 74 MFBD<74> 75 MFBD<75> 76 MFBD<76> 77 MFBD<77> 78 MFBD<78> 79 MFBD<79> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<9> MFBDQS<9> → DQM DQS

U9 4MX32DDR-3.6 BGA144 COMMON
88 MFBD<88> 89 MFBD<89> 90 MFBD<90> 91 MFBD<91> 92 MFBD<92> 93 MFBD<93> 94 MFBD<94> 95 MFBD<95> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<11> MFBDQS<11> → DQM DQS

U7 4MX32DDR-3.6 BGA144 COMMON
104 MFBD<104> 105 MFBD<105> 106 MFBD<106> 107 MFBD<107> 108 MFBD<108> 109 MFBD<109> 110 MFBD<110> 111 MFBD<111> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<13> MFBDQS<13> → DQM DQS

U7 4MX32DDR-3.6 BGA144 COMMON
120 MFBD<120> 121 MFBD<121> 122 MFBD<122> 123 MFBD<123> 124 MFBD<124> 125 MFBD<125> 126 MFBD<126> 127 MFBD<127> → DQ<0> DQ<1> DQ<2> DQ<3> DQ<4> DQ<5> DQ<6> DQ<7>
MFBDQM<15> MFBDQS<15> → DQM DQS

PLACE NEAR MEMORY

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

DETAIL	MEMORY 64MB, 4Mx32DDR Bits 64..127		
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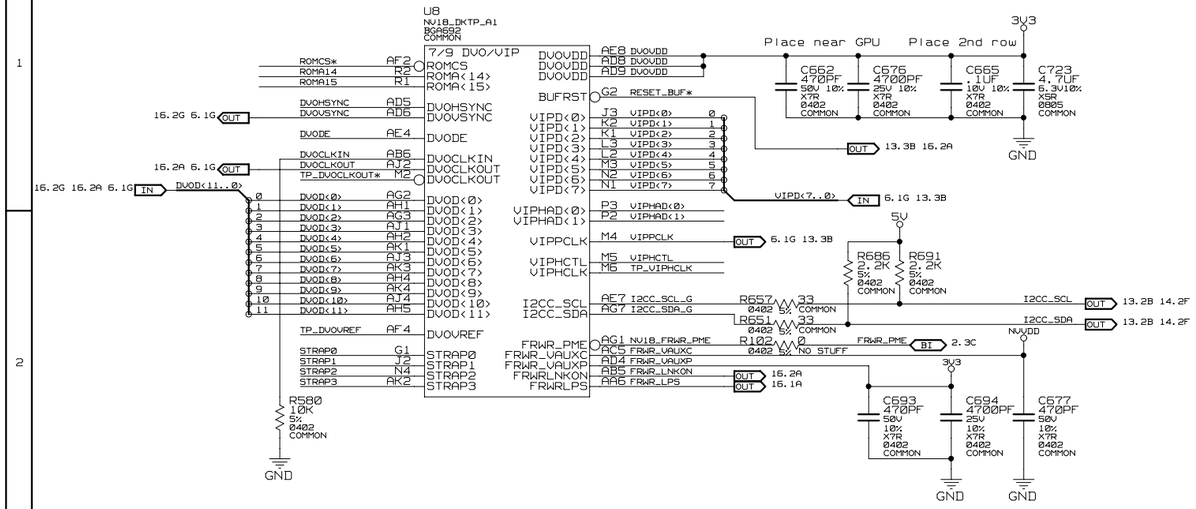
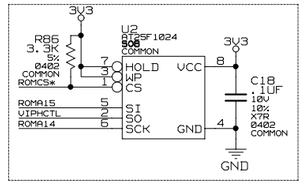
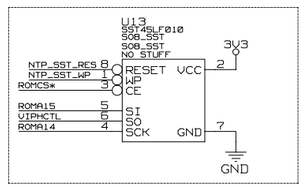
NV18 STRAPPING, I/O INTERFACE, BIOS, FAN CONTROL AND TEMP SENSOR



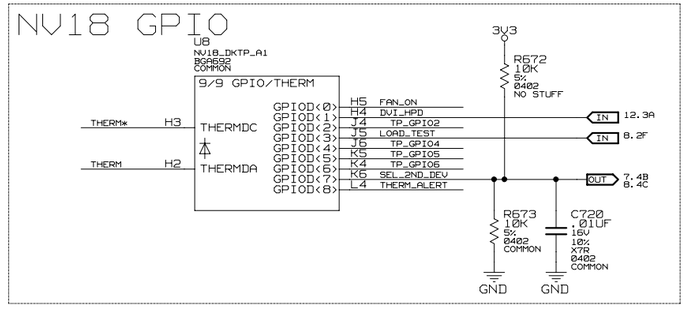
BIOS (serial)



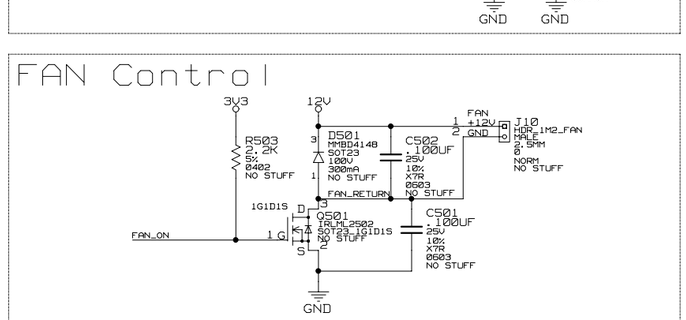
BIOS (alternative)



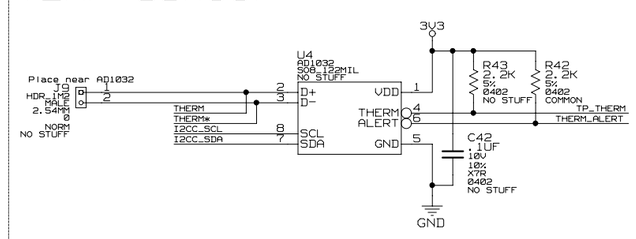
NV18 GPIO



FAN Control



TEMP Sensor



STRAPPING OPTIONS

Bit	Signal	VALUE_ID	VALUEs		
00:	PCI_AD_SWAP	PCI_AD	0 REVERSED 1 NORMAL		
01:	SUB_VENDOR	SUB_VENDOR	0 NO_BIOS 1 read from BIOS		
02:	RAM_CFG_0	RAMCFG[3:0]	0000 2Mx32 SDR	1000 2Mx32 DDR	
			0001 4Mx16 SDR	1001 2Mx32 DDR	
03:	RAM_CFG_1		0010 RFU	1010 4Mx16 DDR	
			0011 RFU	1011 8Mx16 DDR	
04:	RAM_CFG_2		0100 RFU	1100 1Mx32 DDR	
			0101 4Mx32 SDR	1101 4Mx32 DDR	
05:	RAM_CFG_3		0110 8Mx16 SDR	1110 RFU	
			0111 2Mx32 DDR	1111 4Mx32 DDR	
06:	CRYSTAL_0	CRYSTAL[1:0]	00 13.500 Mhz	10 27.000 Mhz	
			01 14.31818 Mhz	11 unknown	
07:	TV_MODE_0	TVMODE[1:0]	00 SECAM		
08:	TV_MODE_1		01 NTSC 10 PAL 11 CRT		
09:	AGP4x/8x				
10:	AGP_SBA	AGP_SBA	0 SBA enabled 1 SBA disabled		
11:	AGP_FASTWR				
12:	PCI_DEVID_0	PCI_DEVID[3:0]	0000 0x0180 ... 1111 0x018F		
13:	PCI_DEVID_1				
14:	BUS_TYPE	BUS_TYPE[0]	0 PCI 1 AGP		
15:	FP_IFACE				
16:	USER_0				
17:	USER_1				
18:	USER_2				
19:	USER_3				
20:	PCI_DEVID_2				
21:	PCI_DEVID_3				
22:	CRYSTAL_1				
23:	FB_0				
24:	FB_1				
25:	BR				
26:	BR_128M				
27:	BR_AGP				
28:	BR_IO				
29:	ROM_TYPE_0	ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F		
30:	ROM_TYPE_1		10 Serial_SST45VF 11 RFU		
01:	1394_EN_0	1394[0]	0 disabled 1 enabled		

NET	NET_PHYSICAL_TYPE	VOLTAGE
FAN_RETURN	12MIL_TRACE	3.3V
THERM	10MIL_TRACE	
THERM*	10MIL_TRACE	

NET	Diffpair	NET_SPACING_RULE
THERM		10MIL
THERM*		10MIL
DVOD<11..0>		10MIL
DVOCLKOUT		20MIL_G2G_30MIL
DVODE		10MIL
DVOHSYNC		10MIL
DVOVSYNC		10MIL
VIPD<7..0>		10MIL
VIPPCLK		20MIL_G2G_30MIL

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DETAIL	NV18 STRAPPING, I/O Interface BIOS, FAN CONTROL, THERMAL SENSOR
ID	p112_design
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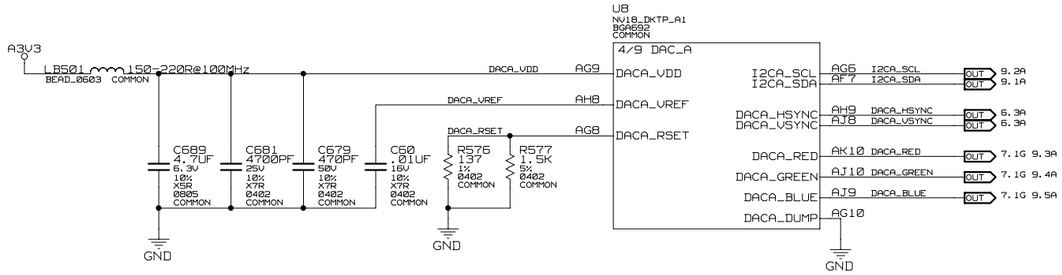
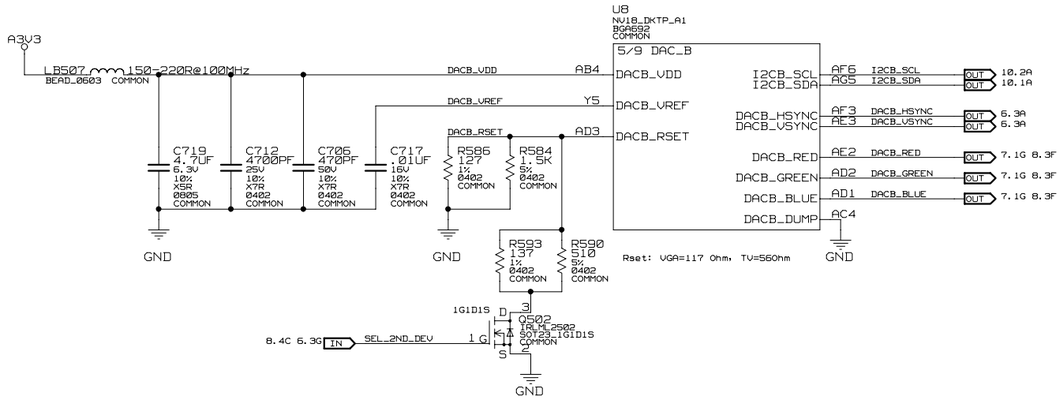
NV18 DAC_A; DAC_B; PLL; SYNC AMPL

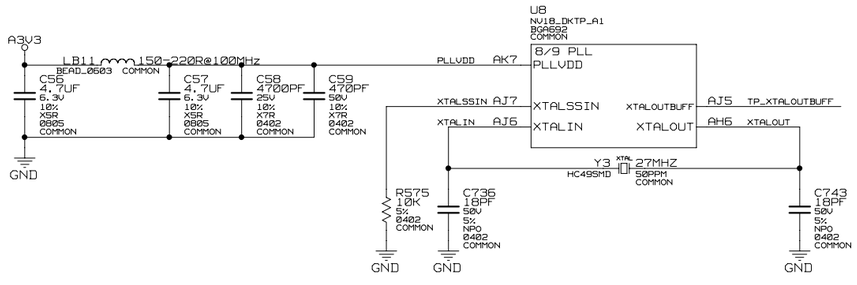
NV18 DAC_A



NV18 DAC_B with RSet select



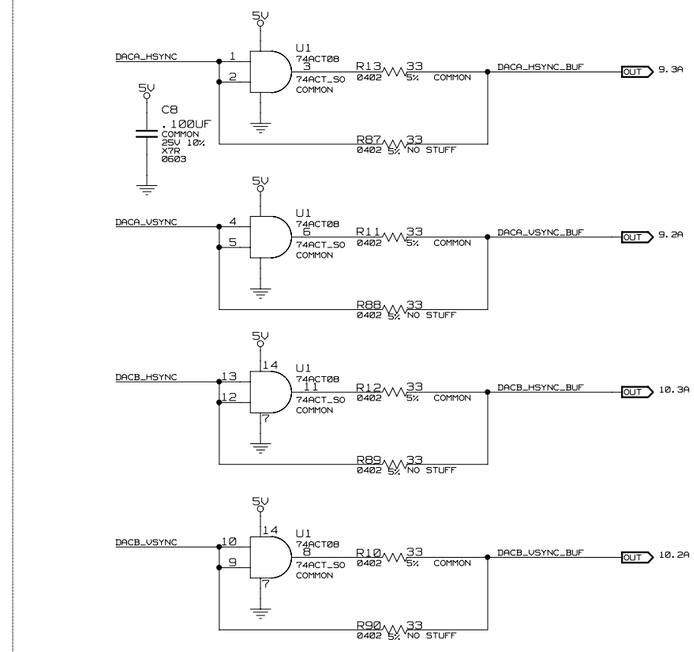
NV18 PLL



NET	NET_PHYSICAL_TYPE	VOLTAGE
DACA_VDD	12MIL_TRACE	3.3V
DACA_VREF	5MIL_TRACE	
DACA_RSET	5MIL_TRACE	
DACB_VDD	12MIL_TRACE	3.3V
DACB_VREF	5MIL_TRACE	
DACB_RSET	5MIL_TRACE	
PLLVDD	12MIL_TRACE	3.3V

NET	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

SYNC Amplifier



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2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

DETAIL	NV18 DACA, DACB output, SYNC amplifier PLL Section		
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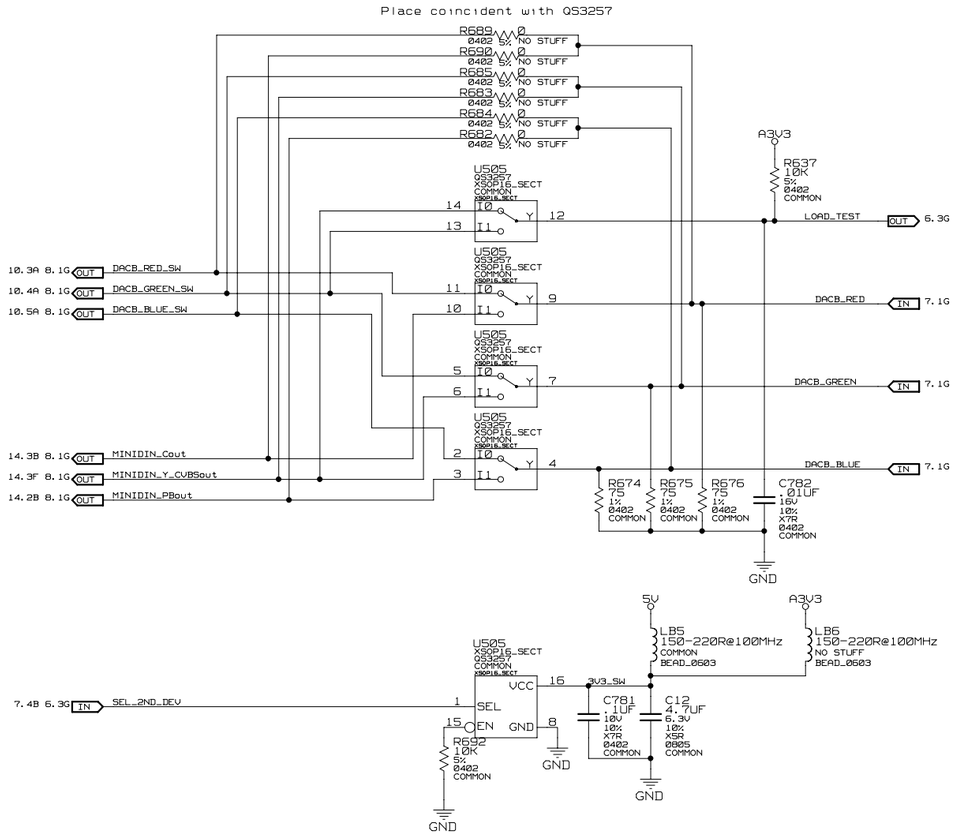
DACB SWITCH BETWEEN VGA OUT AND TV OUT

NET	Diffpair	NET_SPACING_RULE
10.3A 8.2C BI	DACB_RED_SW	20MIL_G2G_30MIL
10.4A 8.2C BI	DACB_GREEN_SW	20MIL_G2G_30MIL
10.5A 8.3C BI	DACB_BLUE_SW	20MIL_G2G_30MIL
14.3B 8.3C BI	MINIDIN_Cout	20MIL_G2G_30MIL
14.3F 8.3C BI	MINIDIN_Y_CVBSout	20MIL_G2G_30MIL
14.2B 8.3C BI	MINIDIN_PBout	20MIL_G2G_30MIL



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2701 SAN TOMAS EXPRESSWAY
SANTA CLARA, CA 95050, USA

DETAIL	DACB MULTIPLEXER		
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DACA output

NET	Diffpair	NET_SPACING_RULE
BI AAF		20MIL_G2G_30MIL
BI AGF		20MIL_G2G_30MIL
BI ABF		20MIL_G2G_30MIL
12.3D BI DACA_RED_C		20MIL_G2G_30MIL
12.4D BI DACA_GREEN_C		20MIL_G2G_30MIL
12.4D BI DACA_BLUE_C		20MIL_G2G_30MIL

EMI-FILTER

7.2D IN I2CA_SDA — R702 33 5% 0402 COMMON — I2CA_SDA_T — LB515 150-220R@100MHZ BEAD_0603 COMMON — I2CA_SDA_C
- R705 2.2K 5% 0402 COMMON (5V)
- C823 220PF COMMON 50V 5% NPO 0603
- D523 BAV99 SOT23 100V 100mA COMMON

7.2D IN I2CA_SCL — R701 33 5% 0402 COMMON — I2CA_SCL_T — LB512 150-220R@100MHZ BEAD_0603 COMMON — I2CA_SCL_C
- R704 2.2K 5% 0402 COMMON
- C820 220PF COMMON 50V 5% NPO 0603
- D520 BAV99 SOT23 100V 100mA COMMON

7.3G IN DACA_VSYNC_BUF — LB513 150-220R@100MHZ BEAD_0603 COMMON — DACA_VSYNC_C
- C821 22PF COMMON 50V 5% NPO 0603
- D521 BAV99 SOT23 100V 100mA COMMON

7.2G IN DACA_HSYNC_BUF — LB514 150-220R@100MHZ BEAD_0603 COMMON — DACA_HSYNC_C
- C822 22PF COMMON 50V 5% NPO 0603
- D522 BAV99 SOT23 100V 100mA COMMON

7.2D 7.1G IN DACA_RED — L503 68nH 0603 COMMON — L506 68nH 0603 COMMON (AAF) — DACA_RED_C
- R651 2.2K 5% 0402 NO STUFF
- R666 75 1% 0402 COMMON
- C757 10PF 50V 5% NPO 0603 COMMON
- C750 4.7PF 50V +/-0.25PF COG 0603 NO STUFF
- C759 10PF 50V 5% NPO 0603 COMMON
- D510 BAV99 SOT23 100V 100mA COMMON (A3V3)

7.2D 7.1G IN DACA_GREEN — L502 68nH 0603 COMMON — L505 68nH 0603 COMMON (AGF) — DACA_GREEN_C
- R660 1.8K 5% 0402 SKU0002
- R665 75 1% 0402 COMMON
- C756 10PF 50V 5% NPO 0603 COMMON
- C759 4.7PF 50V +/-0.25PF COG 0603 NO STUFF
- C758 10PF 50V 5% NPO 0603 COMMON
- D509 BAV99 SOT23 100V 100mA COMMON (A3V3)

7.2D 7.1G IN DACA_BLUE — L501 68nH 0603 COMMON — L504 68nH 0603 COMMON (ABF) — DACA_BLUE_C
- R659 2.2K 5% 0402 NO STUFF
- R664 75 1% 0402 COMMON
- C755 10PF 50V 5% NPO 0603 COMMON
- C758 4.7PF 50V +/-0.25PF COG 0603 NO STUFF
- C767 10PF 50V 5% NPO 0603 COMMON
- D508 BAV99 SOT23 100V 100mA COMMON (A3V3)

place nearest to connector

R687 0 .05R COMMON 0603 — CGND_VGA2

J5 CON_DSUB15HD VGA_LONG VGA_LONG COMMON

16	SHIELD		
		ID2 4	NTP_A_MON_ID2
		ID0 11	NTP_A_MON_ID0
DACA_RED_C	1 R		
DACA_GREEN_C	2 G		
DACA_BLUE_C	3 B	HSYNC 13	DACA_HSYNC_C
DDC_5V		VSYNC 14	DACA_VSYNC_C
	9 5V	SCL 15	I2CA_SCL_C
		SDA 12	I2CA_SDA_C
CGND_VGA1	17 SHIELD		
	18 SHIELD		
	5 GND		
	10 GND		
	8 GND_B		
	7 GND_G		
	6 GND_R		

R688 0 .05R 0603 COMMON — R714 0 .05R 0603 COMMON (CGND)

5V C808 4.7UF COMMON 6.3V10% X5R 0805

A3V3 C776 4.7UF COMMON 6.3V10% X5R 0805

Place in output filter section!

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

DETAIL	PRIMARY DISPLAY Filter and Connector		
ID	p112_design	PAGE	9 OF 22
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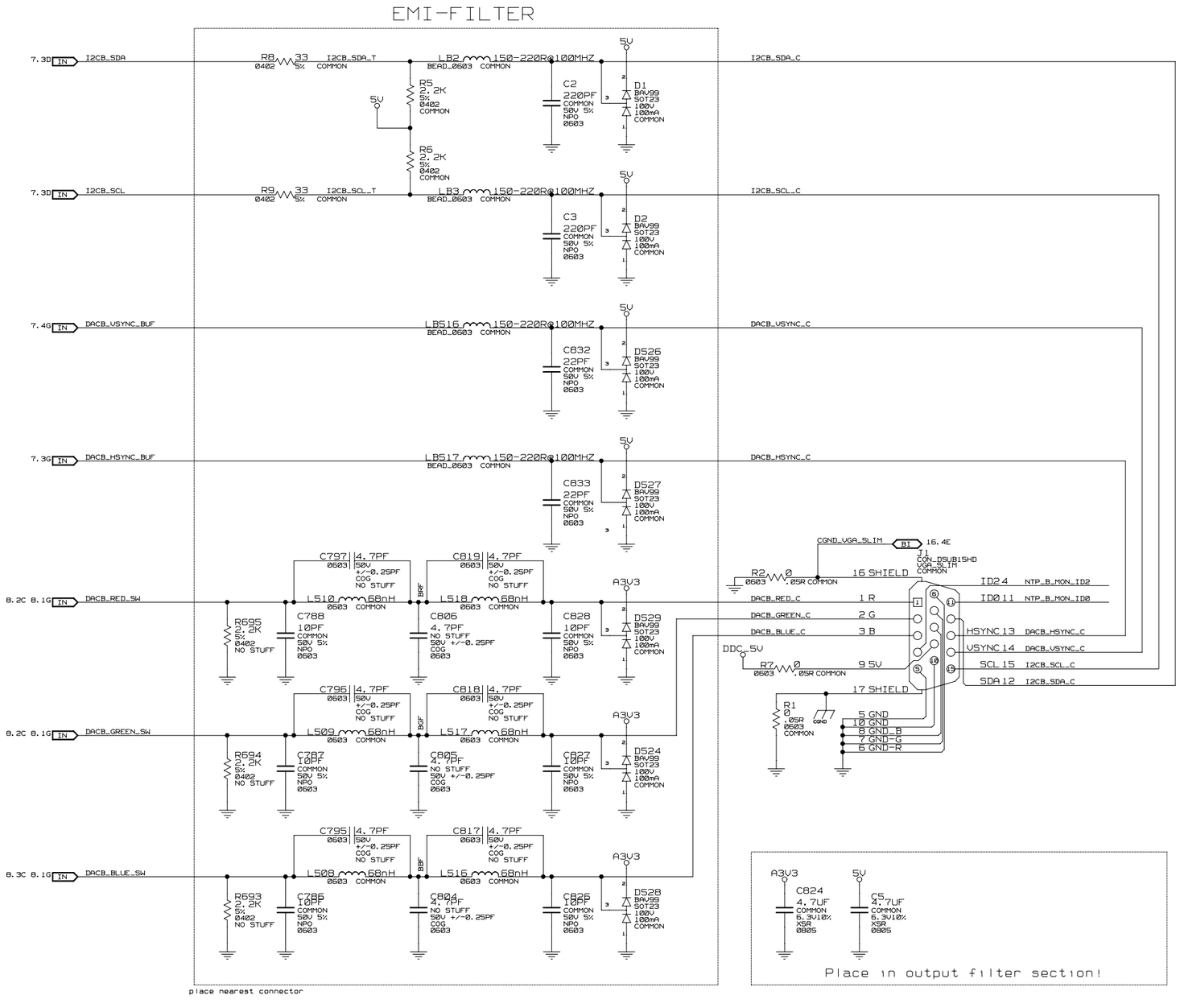
DACB output

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



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

DETAIL	SECONDARY DISPLAY Filter and Connector		
ID	p112_design	PAGE	10 OF 22
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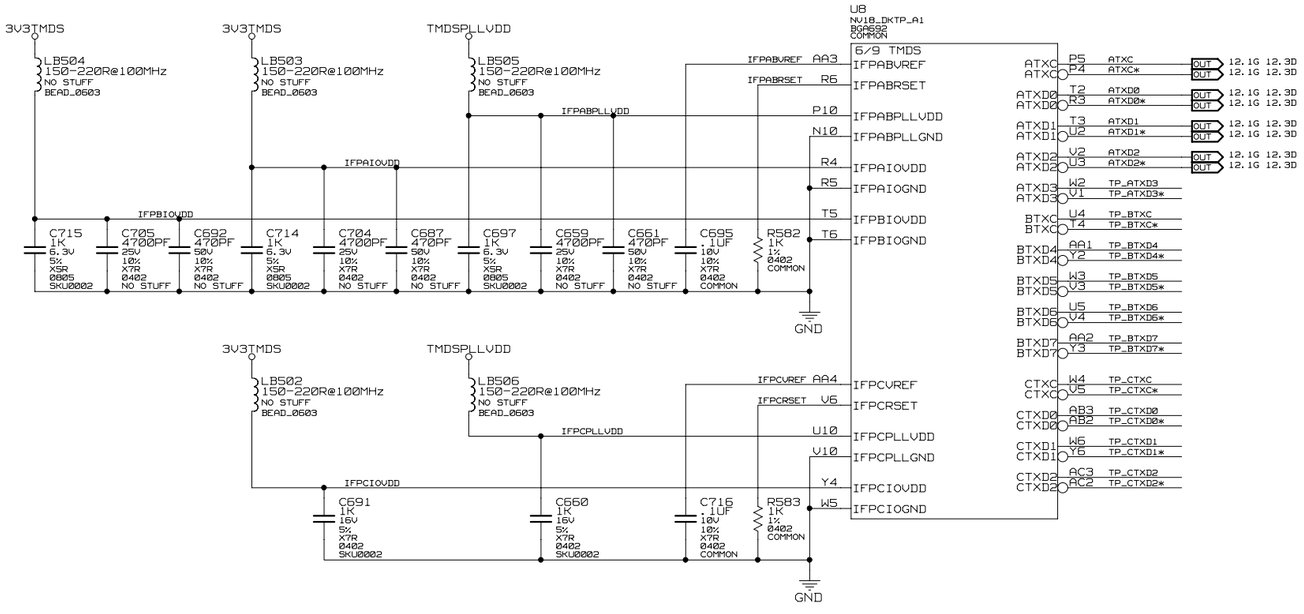
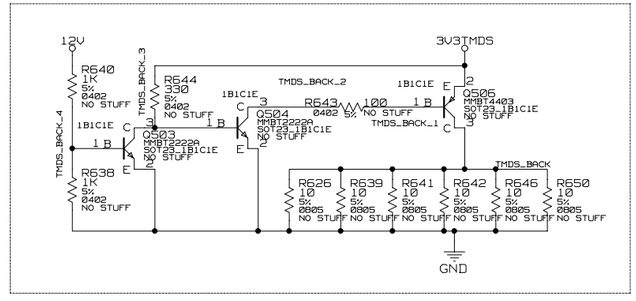
INTERNAL TMDS POWER AND DECOUPLING

	NET	NET_PHYSICAL_TYPE	VOLTAGE
BI	IFPABVREF	12MIL_TRACE	3.3V
BI	IFPABPLLVDD	12MIL_TRACE	3.3V
BI	IFPAIOVDD	12MIL_TRACE	3.3V
BI	IFPBIOVDD	12MIL_TRACE	3.3V
BI	IFPCVREF	12MIL_TRACE	3.3V
BI	IFPCPLLVDD	12MIL_TRACE	3.3V
BI	IFPCIOVDD	12MIL_TRACE	3.3V
BI	FAN_RETURN	12MIL_TRACE	3.3V
6.1G BI	TMDS_BACK	12MIL_TRACE	3.3V



TMDS backdrive prevention



NVIDIA CORPORATION
2701 SAN TOMAS EXPRESSWAY
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DETAIL	NV18 INTERNAL TMDS Power and Output TMDS Backdrive circuit		
ID	p112_design	PAGE	11 OF 22
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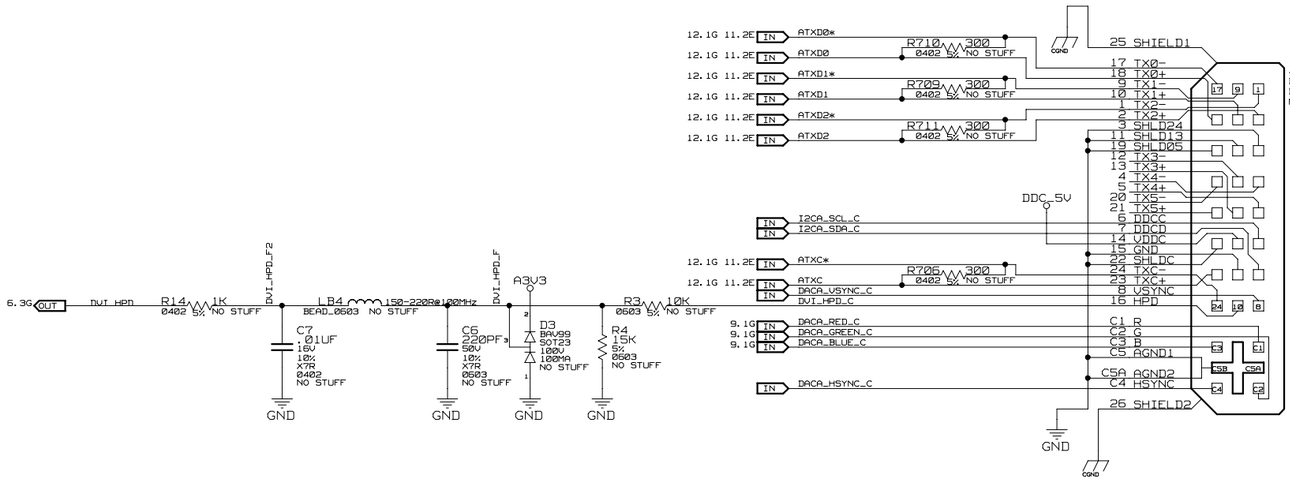
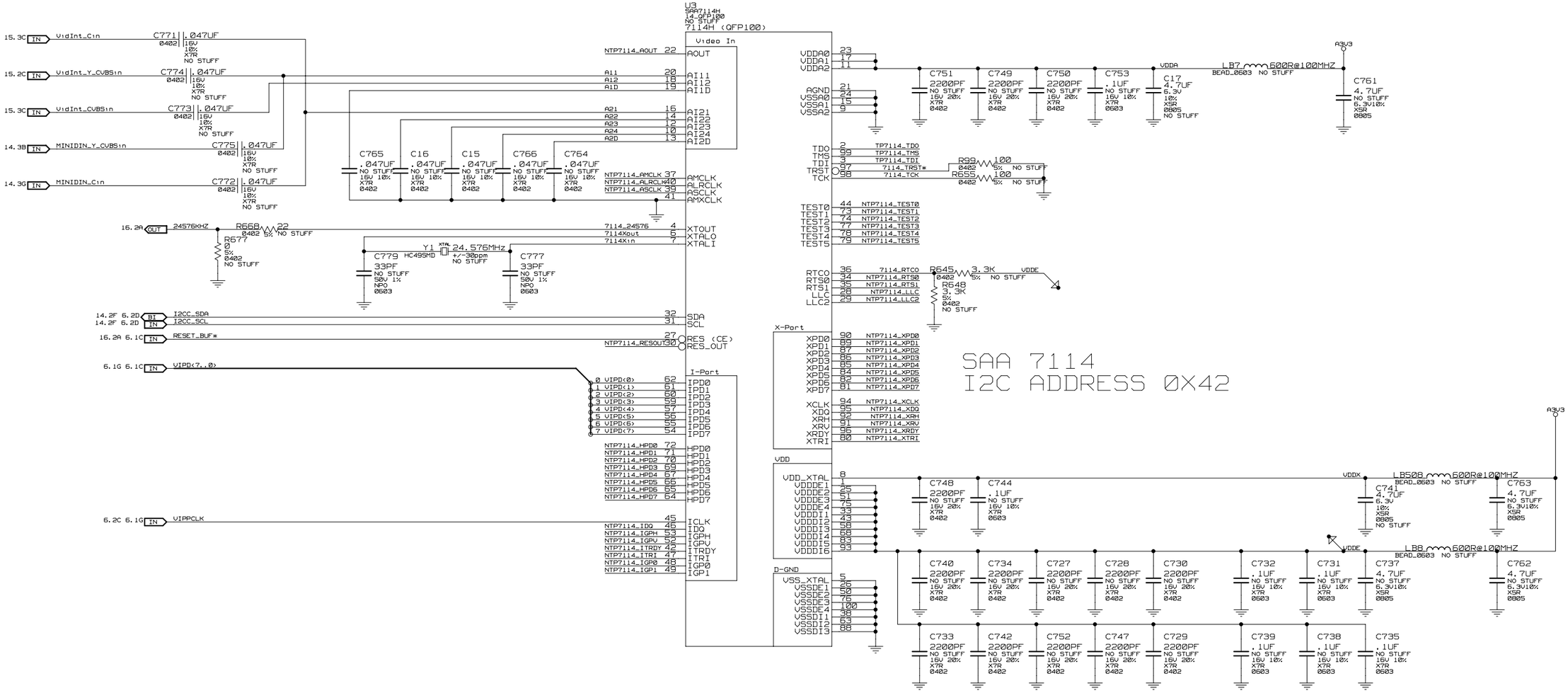
DVI_I OUTPUT

NET	Diffpair	NET_SPACING_RULE
ATXD0	ATX0	20MIL_G2G_30MIL
ATXD0*	ATX0	20MIL_G2G_30MIL
ATXD1	ATX1	20MIL_G2G_30MIL
ATXD1*	ATX1	20MIL_G2G_30MIL
ATXD2	ATX2	20MIL_G2G_30MIL
ATXD2*	ATX2	20MIL_G2G_30MIL
ATXC	ATXC	20MIL_G2G_30MIL
ATXC*	ATXC	20MIL_G2G_30MIL



NVIDIA CORPORATION 2701 SAN TOMAS EXPRESSWAY SANTA CLARA, CA 95050, USA			
DETAIL	PRIMARY DISPLAY DVI-I option Hotplug detection and Connector		
ID	p112_design	PAGE	12 OF 22
NAME	602-10112-0002-002	DATE	AUG-02 2002

VIDEO CAPTURE



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

DETAIL	VIDEO CAPTURE Philips 7114 I/O		
ID	p112_design	PAGE	13 OF 22
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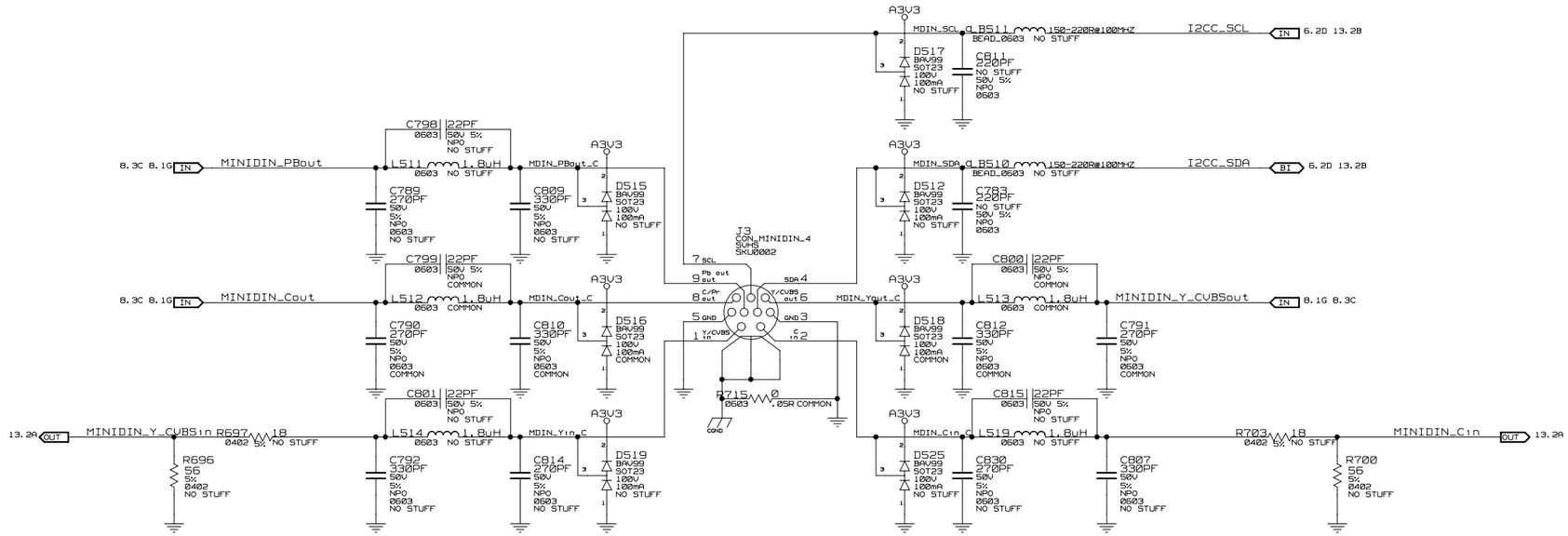
VIDEO IN/OUT CONNECTOR



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

DETAIL	VIDEO IN/OUT, Filter and Connector		
ID	p112_design	PAGE	14 OF 22
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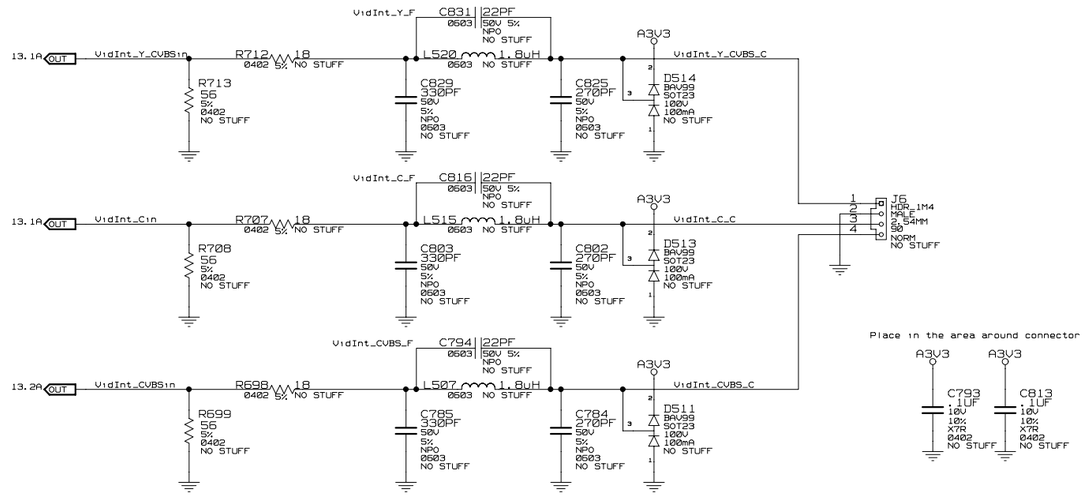
INTERNAL VIDEO CAPTURE CONNECTOR



NVIDIA CORPORATION
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DETAIL	VIDEO INTERNAL Input Filter and Connector		
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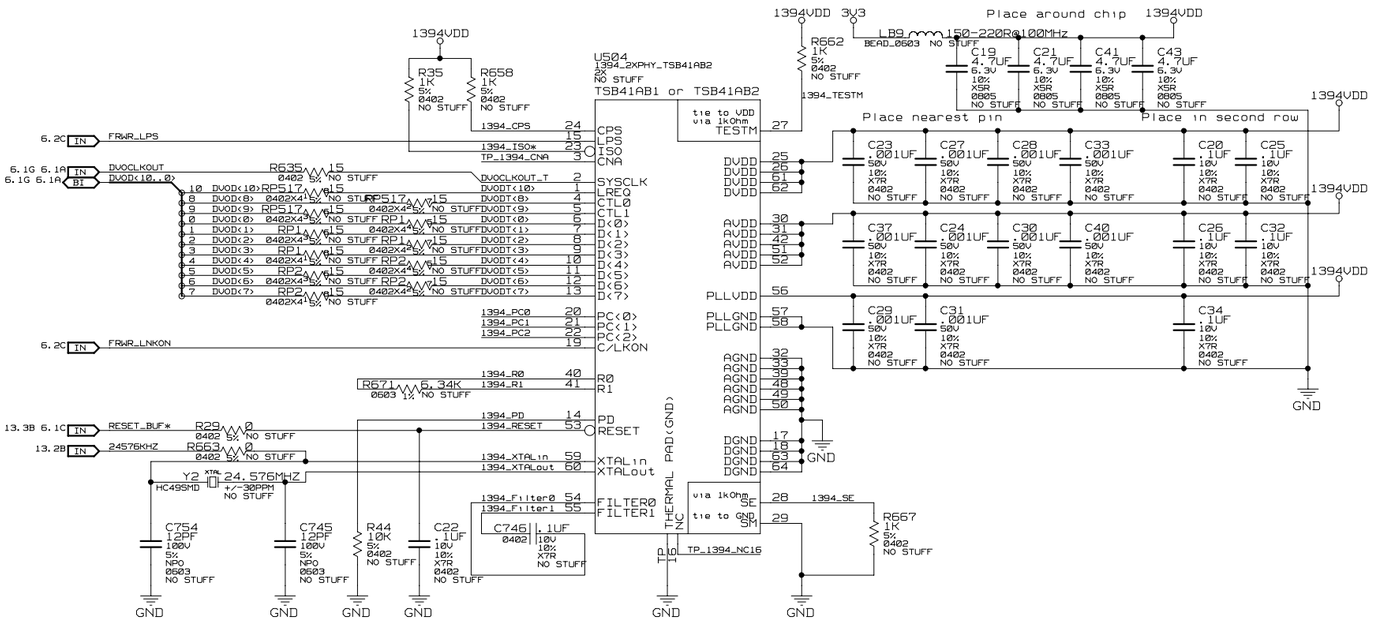
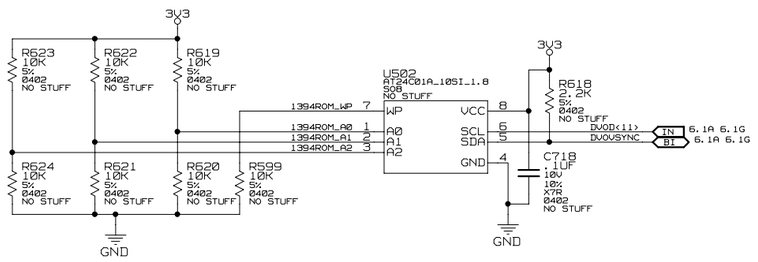
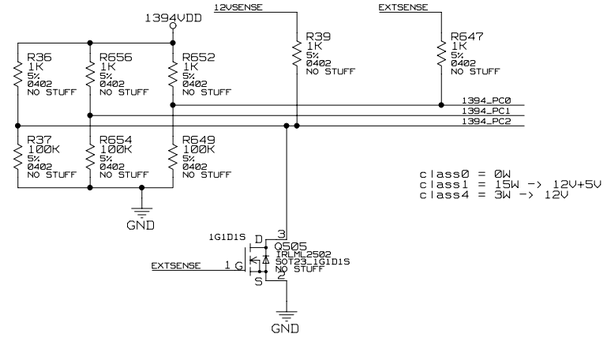
1394 INTERFACE AND CONNECTORS

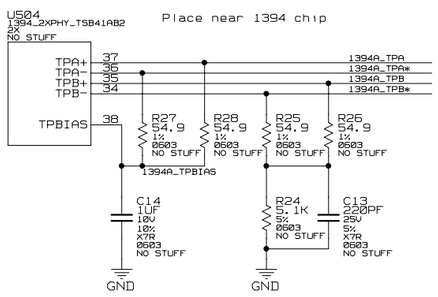
NET	Diffpair	NET_SPACING_RULE
1394A_TPA	1394A_TPA	20MIL_G2G_30MIL_110OHM_DIFF
1394A_TPA*	1394A_TPA	20MIL_G2G_30MIL_110OHM_DIFF
1394A_TPB	1394A_TPB	20MIL_G2G_30MIL_110OHM_DIFF
1394A_TPB*	1394A_TPB	20MIL_G2G_30MIL_110OHM_DIFF
1394B_TPA	1394B_TPA	20MIL_G2G_30MIL_110OHM_DIFF
1394B_TPA*	1394B_TPA	20MIL_G2G_30MIL_110OHM_DIFF
1394B_TPB	1394B_TPB	20MIL_G2G_30MIL_110OHM_DIFF
1394B_TPB*	1394B_TPB	20MIL_G2G_30MIL_110OHM_DIFF
DVODT<10..0>		10MIL

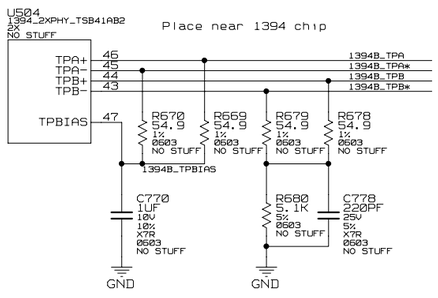
NET	NET_PHYSICAL_TYPE	VOLTAGE
12V_AUX	30MIL_TRACE	12V
1394_12V_A	30MIL_TRACE	12V
1394_12V_B	30MIL_TRACE	12V
12V_AGP	30MIL_TRACE	12V

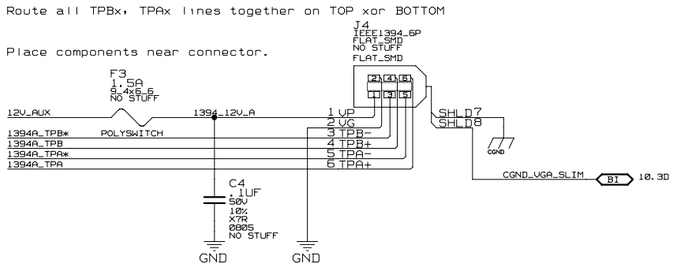


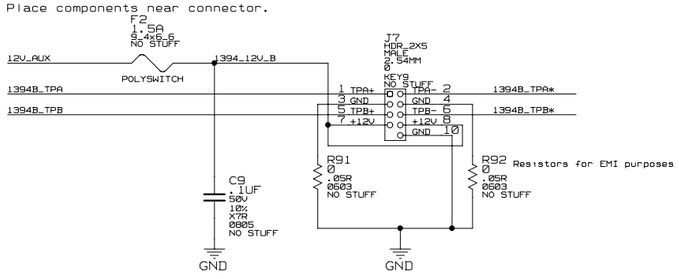


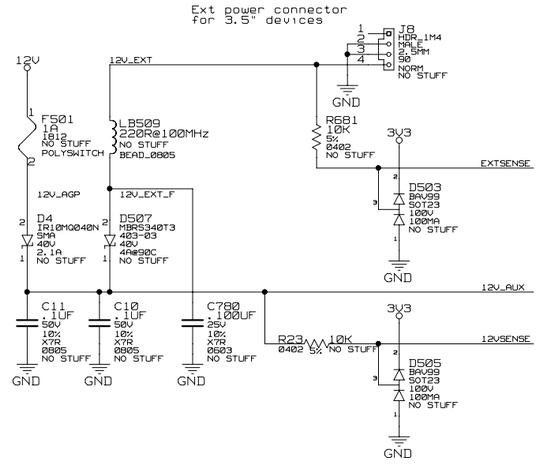












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DETAIL	1394 TEXAS TSB41AB2, PowerRails, I/O, Internal and external connector		
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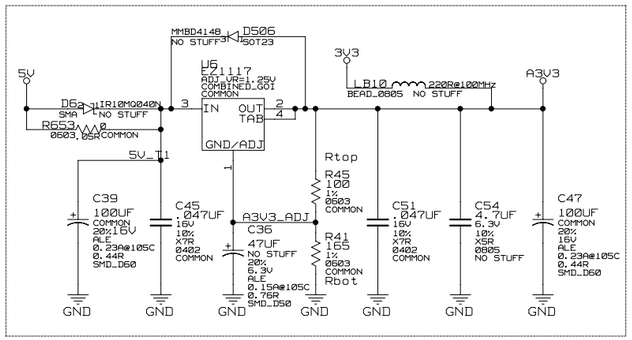
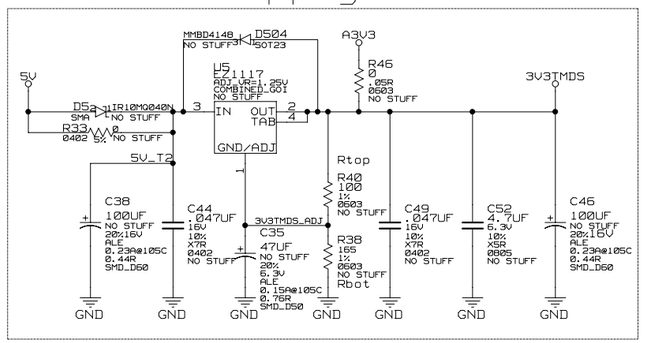
POWER SUPPLY

ANALOG 3V3



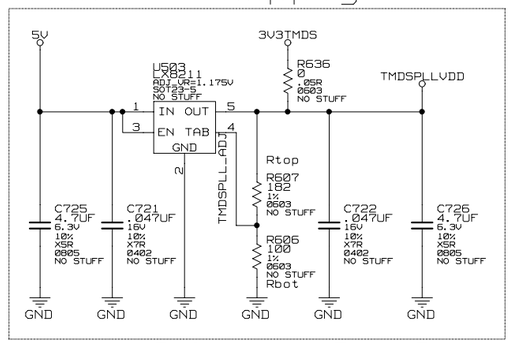
Vout = VRef * (1+Rbot/Rtop)
3.31V = 1.25V * (1+(165/100))

TMDS 3V3 Supply



Vout = VRef * (1+Rbot/Rtop)
3.31V = 1.25V * (1+(165/100))

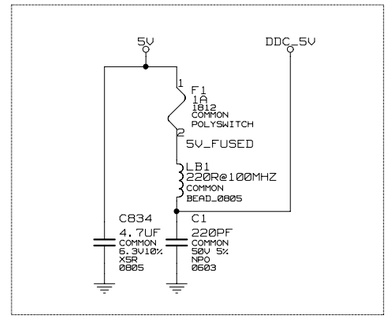
TMDS PLL Supply



Vout = VRef * (1+Rtop/Rbot)
3.31V = 1.175V * (1+(100/182))

	NET	NET_PHYSICAL_TYPE	VOLTAGE
3V3	3V3	12MIL_TRACE	3.3V
A3V3	A3V3	12MIL_TRACE	3.3V
3V3TMDS	3V3TMDS	12MIL_TRACE	3.3V
BI	FBVDD	12MIL_TRACE	2.5V
BI	NVVDD	12MIL_TRACE	1.65V
5V	5V	12MIL_TRACE	5V
12V	12V	12MIL_TRACE	12V
BI	3V3_F	12MIL_TRACE	3.3V
BI	12V_F	12MIL_TRACE	12V
BI	5V_FUSED	12MIL_TRACE	5V
DDC_5V	DDC_5V	12MIL_TRACE	5V
BI	SW_12V	10MIL_TRACE	12V
BI	SW_5V	10MIL_TRACE	5V
BI	DR_HI	10MIL_TRACE	
BI	DR_LO	10MIL_TRACE	
BI	SW_FB	10MIL_TRACE	
BI	SW_COMP	10MIL_TRACE	
BI	A3V3_ADJ	10MIL_TRACE	
BI	3V3TMDS_ADJ	10MIL_TRACE	
BI	TMDSPLL_ADJ	10MIL_TRACE	
TMDSPLLVDD	TMDSPLLVDD	12MIL_TRACE	3.3V

DDC 5V



NVDD-SWITCHER / FBVDD-LDO CONTROLER ISL6529

FBVDD = VRef * (1+Rtop/Rbot)

ISL6529	2.5V	= 0.800V	* (1+2.4k/1.13k)
SC2610	2.5V	= 1.250V	* (1+ 100/ 100)
ISL6529	2.8V	= 0.800V	* (1+2.67k/1.07k)

ALTERNATIVE TO ISL6529

NVVDD = VRef * (1+Rtop/Rbot)

ISL6529	1.656V	= 0.800V	* (1+1070/1000)
SC2610	1.656V	= 0.800V	* (1+1070/1000)

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DETAIL	POWER SUPPLY NVVDD, MEM_VDD, A3V3, TMDS3V3, TMDSPLL		
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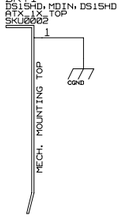
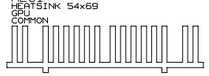
MECHANICS

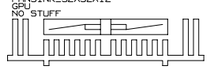
BKT1
DS15HD, MDIN, DS15HD
ATX_1X_TOP
SKU#0002



MEC1
HEATSINK 54x69
GRU
COMMON



MEC2
FANSINK_52X52X12
GRU
NO STUFF



MEC3
HEX_JACK_SCREW
STD
COMMON

MEC4
HEX_JACK_SCREW
STD
COMMON

MEC5
HEX_JACK_SCREW
STD
COMMON

MEC6
HEX_JACK_SCREW
STD
COMMON

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

3V3TMDS_ADJ	17.1G
3V3_F	17.1G
5V_FUSED	17.1G
12V_AGP	16.1G
12V_AUX	16.1G
12V_F	17.1G
1394A_TPA	16.1G
1394A_TPA*	16.1G
1394A_TPB	16.1G
1394A_TPB*	16.1G
1394B_TPA	16.1G
1394B_TPA*	16.1G
1394B_TPB	16.1G
1394B_TPB*	16.1G
1394_12V_A	16.1G
1394_12V_B	16.1G
24576KHZ	13.2B 16.2A
A3V3_ADJ	17.1G
ABF	9.1G
AGF	9.1G
AGPADSTB0F	2.5G
AGPADSTB0S	2.5G
AGPADSTB1F	2.5G
AGPADSTB1S	2.5G
AGPDBI_HI	2.4G
AGPDBI_LO	2.4G
AGPMBDET	2.5G
AGPRBF	2.4G
AGPSBA<0>	2.5G
AGPSBA<7..0>	2.5G
AGPSBA<1>	2.5G
AGPSBA<2>	2.5G
AGPSBA<3>	2.5G
AGPSBA<4>	2.5G
AGPSBA<5>	2.5G
AGPSBA<6>	2.5G
AGPSBA<7>	2.5G
AGPSBSTBF	2.5G
AGPSBSTBS	2.5G
AGPST0	2.4G
AGPST1	2.5G
AGPST2	2.5G
AGPSTOP	2.5G
AGPVREFCG	2.5G
AGPVREFGC	2.5G
AGPWBF	2.4G
ARF	9.1G
ATXC	11.2E 12.1G 12.3D
ATXC*	11.2E 12.1G 12.3D
ATXD0	11.2E 12.1G 12.3D
ATXD0*	11.2E 12.1G 12.3D
ATXD1	11.2E 12.1G 12.3D
ATXD1*	11.2E 12.1G 12.3D
ATXD2	11.2E 12.1G 12.3D
ATXD2*	11.2E 12.1G 12.3D
BBF	10.1G
BGF	10.1G
BRF	10.1G
CGND_VGA_SLIM	10.3D 16.4E
DACA_BLUE	7.1G 7.2D 9.5A
DACA_BLUE_C	9.1G 12.4D
DACA_GREEN	7.1G 7.2D 9.4A
DACA_GREEN_C	9.1G 12.4D
DACA_HSYNC	6.3A 7.2D
DACA_HSYNC_BUF	7.2G 9.3A
DACA_HSYNC_C	12.4D
DACA_RED	7.1G 7.2D 9.3A
DACA_RED_C	9.1G 12.3D
DACA_RSET	7.1G
DACA_VDD	7.1G
DACA_VREF	7.1G
DACA_VSYNC	6.3A 7.2D
DACA_VSYNC_BUF	7.3G 9.2A
DACA_VSYNC_C	12.3D
DACB_BLUE	7.1G 7.3D 8.3F
DACB_BLUE_C	10.1G
DACB_BLUE_SW	8.1G 8.3C 10.5A
DACB_GREEN	7.1G 7.3D 8.3F
DACB_GREEN_C	10.1G
DACB_GREEN_SW	8.1G 8.2C 10.4A
DACB_HSYNC	6.3A 7.3D
DACB_HSYNC_BUF	7.3G 10.3A
DACB_RED	7.1G 7.3D 8.3F
DACB_RED_C	10.1G
DACB_RED_SW	8.1G 8.2C 10.3A
DACB_RSET	7.1G
DACB_VDD	7.1G
DACB_VREF	7.1G
DACB_VSYNC	6.3A 7.3D
DACB_VSYNC_BUF	7.4G 10.2A
DR_HI	17.1G
DR_LO	17.1G
DVI_HPD	6.3G 12.3A
DVOCLKOUT	6.1A 6.1G 16.2A
DVOD<0>	6.1A 6.1G 16.2A
DVOD<10..0>	6.1A 6.1G 16.2A
DVOD<11..0>	6.1A 6.1G 16.2A 16.2G
DVOD<1>	6.1A 6.1G 16.2A
DVOD<2>	6.1A 6.1G 16.2A
DVOD<3>	6.1A 6.1G 16.2A
DVOD<4>	6.1A 6.1G 16.2A
DVOD<5>	6.1A 6.1G 16.2A
DVOD<6>	6.1A 6.1G 16.2A
DVOD<7>	6.1A 6.1G 16.2A
DVOD<8>	6.1A 6.1G 16.2A
DVOD<9>	6.1A 6.1G 16.2A
DVOD<10>	6.1A 6.1G 16.2A
DVOD<11>	6.1A 6.1G 16.2G
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DVOVSYNC	6.1A 6.1G 16.2G
FAN_RETURN	6.1G 11.1G
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FBACLK0	3.5B 4.1G 4.3B
FBACLK0*	3.5B 4.1G 4.3B
FBACLK1	3.5B 4.1G 4.3D
FBACLK1*	3.5B 4.1G 4.3D
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FBACS1*	3.5B 4.1G
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FBBCLK1	3.5E 5.1G 5.3D
FBBCLK1*	3.5E 5.1G 5.3D
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FRWR_LPS	6.2C 16.1A
FRWR_PME	2.3C 6.2C
I2CA_SCL	7.2D 9.2A
I2CA_SCL_C	12.3D
I2CA_SDA	7.2D 9.1A
I2CA_SDA_C	12.3D
I2CB_SCL	7.3D 10.2A
I2CB_SDA	7.3D 10.1A
I2CC_SCL	6.2D 13.2B 14.2F
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IFPABPLLVDD	11.1G
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MINIDIN_PBOUT	8.1G 8.3C 14.2B
MINIDIN_Y_CVBSIN	13.2A 14.3B
MINIDIN_Y_CVBSOUT	8.1G 8.3C 14.3F
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NVIDIA CORPORATION
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PCICLK	2.4G
PCIDEVSEL	2.4G
PCIFRAME	2.4G
PCIGNT	2.4G
PCIINTA	2.4G
PCIINTB	2.4G
PCIIRDY	2.4G
PCIPAR	2.4G
PCIREQ	2.4G
PCIRST*	2.4G
PCISTOP	2.4G
PCITRDY	2.4G
PLLVDD	7.1G
RESET_BUF*	6.1C 13.3B 16.2A
SEL_2ND_DEV	6.3G 7.4B 8.4C
SW_5V	17.1G
SW_12V	17.1G
SW_COMP	17.1G
SW_FB	17.1G
THERM	6.1G
THERM*	6.1G
TMDSPLL_ADJ	17.1G
TMDS_BACK	11.1G
VIDINT_CIN	13.1A 15.3C
VIDINT_CVBSIN	13.2A 15.3C
VIDINT_Y_CVBSIN	13.1A 15.2C
VIPD<0>	6.1C 6.1G 13.3B
VIPD<7..0>	6.1C 6.1G 13.3B
VIPD<1>	6.1C 6.1G 13.3B
VIPD<2>	6.1C 6.1G 13.3B
VIPD<3>	6.1C 6.1G 13.3B
VIPD<4>	6.1C 6.1G 13.3B
VIPD<5>	6.1C 6.1G 13.3B
VIPD<6>	6.1C 6.1G 13.3B
VIPD<7>	6.1C 6.1G 13.3B
VIPPCLK	6.1G 6.2C 13.3B

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

BKT1	BRACKET	18.1B
C1	C	17.2H
C2	C	10.1C
C3	C	10.2C
C4	C	16.4C
C5	C	10.5D
C6	C	12.3C
C7	C	12.3B
C8	C	7.2F
C9	C	16.5C
C10	C	16.5F
C11	C	16.5F
C12	C	8.4E
C13	C	16.4B
C14	C	16.4A
C15	C	13.2C
C16	C	13.2C
C17	C	13.1F
C18	C	6.1E
C19	C	16.1D
C20	C	16.1D
C21	C	16.1D
C22	C	16.3B
C23	C	16.1C
C24	C	16.2D
C25	C	16.1E
C26	C	16.2D
C27	C	16.1D
C28	C	16.1D
C29	C	16.2C
C30	C	16.2D
C31	C	16.2D
C32	C	16.2E
C33	C	16.1D
C34	C	16.2D
C35	C_POL	17.2D
C36	C_POL	17.2A
C37	C	16.2C
C38	C_POL	17.2C
C39	C_POL	17.2A
C40	C	16.2D
C41	C	16.1D
C42	C	6.5F
C43	C	16.1D
C44	C	17.2C
C45	C	17.2A
C46	C_POL	17.2E
C47	C_POL	17.2B
C48	C	2.1A
C49	C	17.2D
C50	C	2.2A
C51	C	17.2B
C52	C	17.2D
C53	C	2.2A
C54	C	17.2B
C55	C	2.2A
C56	C	7.4B
C57	C	7.4B
C58	C	7.4B
C59	C	7.4C
C60	C	7.2B
C61	C	2.2A
C62	C	2.3A
C63	C	2.2A
C64	C	2.2B
C65	C	2.3A
C66	C	2.2A
C67	C_POL	17.4G
C68	C_POL	17.4A
C69	C_POL	17.5F
C70	C_POL	17.5G
C71	C_POL	17.4F
C72	C_POL	17.4A
C73	C	17.4B
C74	C	17.4F
C75	C	2.5A
C76	C	17.3F
C77	C	17.3F
C78	C	17.3F
C79	C	17.4B
C80	C	17.3D
C81	C_POL	17.3C
C82	C_POL	17.3C
C83	C_POL	17.3A
C84	C_POL	17.3A
C85	C	2.4C
C86	C	17.4B
C501	C	6.4F
C502	C	6.4F
C503	C	17.4D
C504	C	17.5E
C505	C	17.4D
C506	C	4.4E
C507	C	4.4D
C508	C	4.4F
C509	C	4.3F
C510	C	17.5D
C511	C	4.4F
C512	C	4.2F
C513	C	17.4B
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C515	C	4.4H
C516	C	4.4H
C517	C	4.4G
C518	C	4.2G
C519	C	4.2H
C520	C	4.2H
C521	C	4.2F
C522	C	4.4G
C523	C	4.4H
C524	C	4.4G
C525	C	4.4G
C526	C	4.3G
C527	C	4.2H
C528	C	4.2G
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C531	C	4.4H
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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	4.4H
C558	C	4.4F
C559	C	4.3F
C560	C	4.3H
C561	C	4.3H
C562	C	4.3H
C563	C	4.3H
C564	C	4.3F
C565	C	2.5B
C566	C	2.3A
C567	C	2.3A
C568	C	2.4A
C569	C	2.3A
C570	C	2.3A
C571	C	5.3F
C572	C	2.3B
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	3.5A
C598	C	5.2H
C599	C	5.2H
C600	C	5.2G
C601	C	5.3H
C602	C	5.4D
C603	C	3.1D
C604	C	3.2D
C605	C	5.3G
C606	C	5.3H
C607	C	5.3G
C608	C	5.3G
C609	C	3.1D
C610	C	3.2D
C611	C	3.1D
C612	C	3.1D
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C620	C	2.3F
C621	C	2.3F
C622	C	2.1F
C623	C	3.2D
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C628	C	2.2F
C629	C	2.2F
C630	C	3.2D
C631	C	2.2F
C632	C	2.3F
C633	C	2.1F
C634	C	2.2E
C635	C	2.2F
C636	C	3.2D
C637	C	2.3E
C638	C	2.2F
C639	C	2.2F
C640	C	3.2D
C641	C	2.2E
C642	C	2.2F
C643	C	3.1D
C644	C	2.2F
C645	C	2.3F
C646	C	2.1F
C647	C	2.3E
C648	C	2.2E
C649	C	2.2F
C650	C	2.2F
C651	C	2.2F
C652	C	2.2F
C653	C	3.2D
C654	C	2.1E
C655	C	5.4F
C656	C	2.3F
C657	C	2.3F
C658	C	2.3F
C659	C	11.3C
C660	C	11.4C
C661	C	11.3C
C662	C	6.1C
C663	C	2.4E
C664	C	3.2D
C665	C	6.1D
C666	C	2.4F
C667	C	2.4F
C668	C	5.4F
C669	C	2.3E
C670	C	5.4F
C671	C	5.4G
C672	C	5.4H
C673	C	5.4G
C674	C	5.4G
C675	C	2.3F
C676	C	6.1C
C677	C	6.2D
C678	C	5.4H
C679	C	7.2B
C680	C	5.4G
C681	C	7.2B
C682	C	5.4G
C683	C	5.4G
C684	C	5.4H
C685	C	5.4H
C686	C	5.4H
C687	C	11.3B
C688	C	3.2D
C689	C	7.2B
C690	C	5.4F
C691	C	11.4B
C692	C	11.3B
C693	C	6.2C
C694	C	6.2D
C695	C	11.3C
C696	C	5.4H
C697	C	11.3C
C698	C	5.4H
C699	C	5.4H
C700	C	5.4H
C701	C	5.4H
C702	C	5.4F
C703	C	5.4H
C704	C	11.3B
C705	C	11.3B
C706	C	7.3B
C707	C	5.4E
C708	C	5.4G
C709	C	5.4H
C710	C	5.4G
C711	C	5.4G
C712	C	7.3B
C713	C	5.4F
C714	C	11.3B
C715	C	11.3A
C716	C	11.4C
C717	C	7.3B
C718	C	16.2G
C719	C	7.3B
C720	C	6.3G
C721	C	17.2E
C722	C	17.2F
C723	C	6.1D
C724	C	2.1A
C725	C	17.2E
C726	C	17.2F
C727	C	13.4F
C728	C	13.4F
C729	C	13.4F
C730	C	13.4F
C731	C	13.4G
C732	C	13.4G
C733	C	13.4E
C734	C	13.4F
C735	C	13.4G
C736	C	7.5C
C737	C	13.4G
C738	C	13.4G
C739	C	13.4G
C740	C	13.4E
C741	C	13.3G
C742	C	13.4F
C743	C	7.5D
C744	C	13.3F
C745	C	16.3B
C746	C	16.3B
C747	C	13.4F
C748	C	13.3E
C749	C	13.1F
C750	C	13.1F
C751	C	13.1E
C752	C	13.4F
C753	C	13.1F
C754	C	16.3A
C755	C	9.5B
C756	C	9.4B
C757	C	9.4B
C758	C	9.5B
C759	C	9.4B
C760	C	9.4B
C761	C	13.1G
C762	C	13.4H
C763	C	13.3H
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	16.5A
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	16.5B
C779	C	13.2C
C780	C	16.5F
C781	C	8.4E
C782	C	8.3E
C783	C	14.3E
C784	C	15.4E
C785	C	15.4D
C786	C	10.5B
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_DVI_I	12.3E
J3	CON_MINIDIN_9	14.3D
J4	CON_1394	16.3D
J5	CON_DSUB15HD	9.3D
J6	HDR_1X4	15.3F
J7	HDR_2X5	16.4D
J8	HDR_1X4	16.4G
J9	HDR_1X2	6.5E
J10	HDR_1X2	6.3F
L1	L	17.4E
L2	L	17.3B
L501	L	9.5B
L502	L	9.4B
L503	L	9.3B
L504	L	9.5C
L505	L	9.4C
L506	L	9.3C
L507	L	15.3E
L508	L	10.5B
L509	L	10.4B
L510	L	10.3B
L511	L	14.2C
L512	L	14.3C
L513	L	14.3E
L514	L	14.3C
L515	L	15.3E
L516	L	10.5C
L517	L	10.4C
L518	L	10.3C
L519	L	14.3E
L520	L	15.2E
LB1	L	17.2H
LB2	L	10.1C
LB3	L	10.2C
LB4	L	12.3B
LB5	L	8.4E
LB6	L	8.4E
LB7	L	13.1G
LB8	L	13.3H
LB9	L	16.1D
LB10	L	17.1B
LB11	L	7.4B
LB501	L	7.2A
LB502	L	11.3B
LB503	L	11.2B
LB504	L	11.2A
LB505	L	11.2C
LB506	L	11.3C
LB507	L	7.3A
LB508	L	13.3H
LB509	L	16.4F
LB510	L	14.2E
LB511	L	14.2E
LB512	L	9.2C
LB513	L	9.2C
LB514	L	9.3C
LB515	L	9.1C
LB516	L	10.2C
LB517	L	10.3C
MEC1	HEATSINK	18.1B
MEC2	HEATSINK	18.1C
MEC3	MEC_SCREW	18.2B
MEC4	MEC_SCREW	18.2B
MEC5	MEC_SCREW	18.2B
MEC6	MEC_SCREW	18.2B
Q1	Q_FET_N_ENH	2.5A
Q2	Q_PNP	2.5B
Q3	Q_FET_N_ENH	17.4B
Q4	Q_FET_N_ENH	17.4D
Q5	Q_NPN	17.3E
Q6	Q_NPN	17.3E
Q501	Q_FET_N_ENH	6.4F
Q502	Q_FET_N_ENH	7.4C
Q503	Q_NPN	11.3F
Q504	Q_NPN	11.3G
Q505	Q_FET_N_ENH	16.3F
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

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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	16.2A
R30	R	6.4A
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	6.4A
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	5.3C
R559	R	5.1C
R560	R	5.1B
R561	R	5.1B
R562	R	5.1C
R563	R	5.5B
R564	R	5.5B
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	6.5B
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	6.2C
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	16.5B
R670	R	16.5A
R671	R	16.2B
R672	R	6.2F
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	6.2C
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_VDEC_SAA71XX	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_EE_8X256	16.2F
U503	U_VREG_5PIN	17.1E
U504	U_1394PHY_TSB41ABX	16.1C 16.3A 16.4A
U505	U_SW_ANA_3257	8.2D 8.3D 8.4D
Y1	XTAL	13.2C
Y2	XTAL	16.3A
Y3	XTAL	7.5C

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