# P621-A02: G98-GB1-64, MXM-I, 256/128MB GDDR2 (32M/16Mx16), LVDS, HDMI, TV_OUT, VGA, HD Audio, DP option

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| SKU | VARIANT | NVPN | ASSEMBLY |
|---|---|---|---|
| B | Base | 600-10621-0000-200 | BASE LEVEL GENERIC SCHEMATIC ONLY |
| 1 | SKU0001 | 600-10621-0001-200 | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| 2 | SKU0002 | 600-10621-0002-200 | Cancelled 128MB version |
| 3 | SKU0003 | 600-10621-0003-200 | NB9M-GE G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| 4 | SKU9998 | 600-10621-9998-200 | All components |
| 5 | SKU0500 | 600-50621-0500-200 | G98-920 (G98-GLM) WORKSTATION SKU, DUAL TMDS, 256MB 32X16 DDR2 |
| 6 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 7 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 8 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 9 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 10 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 11 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 12 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 13 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 14 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |
| 15 | <UNDEFINED> | <UNDEFINED> | <UNDEFINED> |

| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | PAGE OVERVIEW |


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|---|---|---|---|
| NV_PN | 600-10621-0001-200 A | | |
| ID | p621 | PAGE | 1 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

# PCI-EXPRESS

CN1
CON_MXM_X16_EDGE
NONPHY-X16
NONPHY-X16
COMMON

1/2 PCI-Express, Power

3V3_RUN
C2 .1UF 10V 10% X5R 0402 COMMON
C3 .1UF 10V 10% X5R 0402 COMMON
238 3V3RUN (1.5A)

1V8_RUN
C535 .1UF 10V 10% X5R 0402 COMMON
2 1V8RUN (3.5A)

PWR_SRC
C531 4.7UF 25V 10% X5R 1206 COMMON
1 PWR_SRC (4A)

2V5_RUN
C29 .1UF 10V 10% X5R 0402 COMMON
234 2V5RUN (0.5A)

5V_RUN
C536 .1UF 10V 10% X5R 0402 COMMON
18 5VRUN (0.5A)

17 20 41 44 47 50 53 56 59 62 65 68 71 74 77 80 83 86 89 92 95 98 101 104 107 110 113 116 119 122 125 128 131 138 142 150 154 158 163 164 175 176 181 182 187 188 192 199 205 206 211 212 218 223 229 235 236 241 GND

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CLK_REQ | 137 | | | | | | | | | | | | | |
| PEX_RST | 139 | PEX_RST | | | | | | | | | | | | |
| PEX_REFCLK | 135 | NET_NAME | DIFF_PAIR | NV_CRITICAL_NET | NV_IMPEDANCE | 100DIFF | | | | | | | | |
| PEX_REFCLK | 133 | | | | | 100DIFF | | | | | | | | |
| PEX_RX0 | 129 | PEX_TX0_C | PEX_TX0_C | 1 | 90DIFF | C622 .1UF 10V 10% X5R COMMON 0402 | C612 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX0 | PEX_TX0 | AD10 | PEX_TX0 | |
| PEX_RX0 | 127 | PEX_TX0_C* | PEX_TX0_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX0 | PEX_TX0* | AD11 | PEX_TX0 | |
| PEX_TX0 | 132 | | | | 90DIFF | | | | 1 | PEX_RX0 | PEX_RX0 | AE12 | PEX_RX0 | |
| PEX_TX0 | 130 | | | | 90DIFF | | | | 1 | PEX_RX0 | PEX_RX0* | AF12 | PEX_RX0 | |
| PEX_RX1 | 123 | PEX_TX1_C | PEX_TX1_C | 1 | 90DIFF | C611 .1UF 10V 10% X5R COMMON 0402 | C602 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX1 | PEX_TX1 | AD12 | PEX_TX1 | |
| PEX_RX1 | 121 | PEX_TX1_C* | PEX_TX1_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX1 | PEX_TX1* | AC12 | PEX_TX1 | |
| PEX_TX1 | 126 | | | | 90DIFF | | | | 1 | PEX_RX1 | PEX_RX1 | AG12 | PEX_RX1 | |
| PEX_TX1 | 124 | | | | 90DIFF | | | | 1 | PEX_RX1 | PEX_RX1* | AG13 | PEX_RX1 | |
| PEX_RX2 | 117 | PEX_TX2_C | PEX_TX2_C | 1 | 90DIFF | C601 .1UF 10V 10% X5R COMMON 0402 | C594 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX2 | PEX_TX2 | AB11 | PEX_TX2 | |
| PEX_RX2 | 115 | PEX_TX2_C* | PEX_TX2_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX2 | PEX_TX2* | AB12 | PEX_TX2 | |
| PEX_TX2 | 120 | | | | 90DIFF | | | | 1 | PEX_RX2 | PEX_RX2 | AF13 | PEX_RX2 | |
| PEX_TX2 | 118 | | | | 90DIFF | | | | 1 | PEX_RX2 | PEX_RX2* | AE13 | PEX_RX2 | |
| PEX_RX3 | 111 | PEX_TX3_C | PEX_TX3_C | 1 | 90DIFF | C593 .1UF 10V 10% X5R COMMON 0402 | C589 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX3 | PEX_TX3 | AD13 | PEX_TX3 | |
| PEX_RX3 | 109 | PEX_TX3_C* | PEX_TX3_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX3 | PEX_TX3* | AD14 | PEX_TX3 | |
| PEX_TX3 | 114 | | | | 90DIFF | | | | 1 | PEX_RX3 | PEX_RX3 | AE15 | PEX_RX3 | |
| PEX_TX3 | 112 | | | | 90DIFF | | | | 1 | PEX_RX3 | PEX_RX3* | AF15 | PEX_RX3 | |
| PEX_RX4 | 105 | PEX_TX4_C | PEX_TX4_C | 1 | 90DIFF | C587 .1UF 10V 10% X5R COMMON 0402 | C581 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX4 | PEX_TX4 | AD15 | PEX_TX4 | |
| PEX_RX4 | 103 | PEX_TX4_C* | PEX_TX4_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX4 | PEX_TX4* | AC15 | PEX_TX4 | |
| PEX_TX4 | 108 | | | | 90DIFF | | | | 1 | PEX_RX4 | PEX_RX4 | AG15 | PEX_RX4 | |
| PEX_TX4 | 106 | | | | 90DIFF | | | | 1 | PEX_RX4 | PEX_RX4* | AG16 | PEX_RX4 | |
| PEX_RX5 | 99 | PEX_TX5_C | PEX_TX5_C | 1 | 90DIFF | C579 .1UF 10V 10% X5R COMMON 0402 | C578 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX5 | PEX_TX5 | AB14 | PEX_TX5 | |
| PEX_RX5 | 97 | PEX_TX5_C* | PEX_TX5_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX5 | PEX_TX5* | AB15 | PEX_TX5 | |
| PEX_TX5 | 102 | | | | 90DIFF | | | | 1 | PEX_RX5 | PEX_RX5 | AF16 | PEX_RX5 | |
| PEX_TX5 | 100 | | | | 90DIFF | | | | 1 | PEX_RX5 | PEX_RX5* | AE16 | PEX_RX5 | |
| PEX_RX6 | 93 | PEX_TX6_C | PEX_TX6_C | 1 | 90DIFF | C575 .1UF 10V 10% X5R COMMON 0402 | C573 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX6 | PEX_TX6 | AC16 | PEX_TX6 | |
| PEX_RX6 | 91 | PEX_TX6_C* | PEX_TX6_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX6 | PEX_TX6* | AD16 | PEX_TX6 | |
| PEX_TX6 | 96 | | | | 90DIFF | | | | 1 | PEX_RX6 | PEX_RX6 | AE18 | PEX_RX6 | |
| PEX_TX6 | 94 | | | | 90DIFF | | | | 1 | PEX_RX6 | PEX_RX6* | AF18 | PEX_RX6 | |
| PEX_RX7 | 87 | PEX_TX7_C | PEX_TX7_C | 1 | 90DIFF | C570 .1UF 10V 10% X5R COMMON 0402 | C569 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX7 | PEX_TX7 | AD17 | PEX_TX7 | |
| PEX_RX7 | 85 | PEX_TX7_C* | PEX_TX7_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX7 | PEX_TX7* | AD18 | PEX_TX7 | |
| PEX_TX7 | 90 | | | | 90DIFF | | | | 1 | PEX_RX7 | PEX_RX7 | AG18 | PEX_RX7 | |
| PEX_TX7 | 88 | | | | 90DIFF | | | | 1 | PEX_RX7 | PEX_RX7* | AG19 | PEX_RX7 | |
| PEX_RX8 | 81 | PEX_TX8_C | PEX_TX8_C | 1 | 90DIFF | C568 .1UF 10V 10% X5R COMMON 0402 | C567 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX8 | PEX_TX8 | AC18 | PEX_TX8 | |
| PEX_RX8 | 79 | PEX_TX8_C* | PEX_TX8_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX8 | PEX_TX8* | AB18 | PEX_TX8 | |
| PEX_TX8 | 84 | | | | 90DIFF | | | | 1 | PEX_RX8 | PEX_RX8 | AF19 | PEX_RX8 | |
| PEX_TX8 | 82 | | | | 90DIFF | | | | 1 | PEX_RX8 | PEX_RX8* | AE19 | PEX_RX8 | |
| PEX_RX9 | 75 | PEX_TX9_C | PEX_TX9_C | 1 | 90DIFF | C566 .1UF 10V 10% X5R COMMON 0402 | C565 .1UF 10V 10% X5R NO_STUFF 0402 | 90DIFF | 1 | PEX_TX9 | PEX_TX9 | AB19 | PEX_TX9 | |
| PEX_RX9 | 73 | PEX_TX9_C* | PEX_TX9_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX9 | PEX_TX9* | AB20 | PEX_TX9 | |
| PEX_TX9 | 78 | | | | 90DIFF | | | | 1 | PEX_RX9 | PEX_RX9 | AE21 | PEX_RX9 | |
| PEX_TX9 | 76 | | | | 90DIFF | | | | 1 | PEX_RX9 | PEX_RX9* | AF21 | PEX_RX9 | |
| PEX_RX10 | 69 | PEX_TX10_C | PEX_TX10_C | 1 | 90DIFF | C564 .1UF 10V 10% X5R COMMON 0402 | C563 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX10 | PEX_TX10 | AD19 | PEX_TX10 | |
| PEX_RX10 | 67 | PEX_TX10_C* | PEX_TX10_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX10 | PEX_TX10* | AD20 | PEX_TX10 | |
| PEX_TX10 | 72 | | | | 90DIFF | | | | 1 | PEX_RX10 | PEX_RX10 | AG21 | PEX_RX10 | |
| PEX_TX10 | 70 | | | | 90DIFF | | | | 1 | PEX_RX10 | PEX_RX10* | AG22 | PEX_RX10 | |
| PEX_RX11 | 63 | PEX_TX11_C | PEX_TX11_C | 1 | 90DIFF | C562 .1UF 10V 10% X5R COMMON 0402 | C561 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX11 | PEX_TX11 | AD21 | PEX_TX11 | |
| PEX_RX11 | 61 | PEX_TX11_C* | PEX_TX11_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX11 | PEX_TX11* | AC21 | PEX_TX11 | |
| PEX_TX11 | 66 | | | | 90DIFF | | | | 1 | PEX_RX11 | PEX_RX11 | AF22 | PEX_RX11 | |
| PEX_TX11 | 64 | | | | 90DIFF | | | | 1 | PEX_RX11 | PEX_RX11* | AE22 | PEX_RX11 | |
| PEX_RX12 | 57 | PEX_TX12_C | PEX_TX12_C | 1 | 90DIFF | C560 .1UF 10V 10% X5R COMMON 0402 | C559 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX12 | PEX_TX12 | AB21 | PEX_TX12 | |
| PEX_RX12 | 55 | PEX_TX12_C* | PEX_TX12_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX12 | PEX_TX12* | AB22 | PEX_TX12 | |
| PEX_TX12 | 60 | | | | 90DIFF | | | | 1 | PEX_RX12 | PEX_RX12 | AE24 | PEX_RX12 | |
| PEX_TX12 | 58 | | | | 90DIFF | | | | 1 | PEX_RX12 | PEX_RX12* | AF24 | PEX_RX12 | |
| PEX_RX13 | 51 | PEX_TX13_C | PEX_TX13_C | 1 | 90DIFF | C558 .1UF 10V 10% X5R COMMON 0402 | C557 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX13 | PEX_TX13 | AC22 | PEX_TX13 | |
| PEX_RX13 | 49 | PEX_TX13_C* | PEX_TX13_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX13 | PEX_TX13* | AD22 | PEX_TX13 | |
| PEX_TX13 | 54 | | | | 90DIFF | | | | 1 | PEX_RX13 | PEX_RX13 | AG24 | PEX_RX13 | |
| PEX_TX13 | 52 | | | | 90DIFF | | | | 1 | PEX_RX13 | PEX_RX13* | AF25 | PEX_RX13 | |
| PEX_RX14 | 45 | PEX_TX14_C | PEX_TX14_C | 1 | 90DIFF | C553 .1UF 10V 10% X5R COMMON 0402 | C549 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX14 | PEX_TX14 | AD23 | PEX_TX14 | |
| PEX_RX14 | 43 | PEX_TX14_C* | PEX_TX14_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX14 | PEX_TX14* | AD24 | PEX_TX14 | |
| PEX_TX14 | 48 | | | | 90DIFF | | | | 1 | PEX_RX14 | PEX_RX14 | AG25 | PEX_RX14 | |
| PEX_TX14 | 46 | | | | 90DIFF | | | | 1 | PEX_RX14 | PEX_RX14* | AG26 | PEX_RX14 | |
| PEX_RX15 | 39 | PEX_TX15_C | PEX_TX15_C | 1 | 90DIFF | C545 .1UF 10V 10% X5R COMMON 0402 | C541 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_TX15 | PEX_TX15 | AE25 | PEX_TX15 | |
| PEX_RX15 | 37 | PEX_TX15_C* | PEX_TX15_C | 1 | 90DIFF | | | 90DIFF | 1 | PEX_TX15 | PEX_TX15* | AE26 | PEX_TX15 | |
| PEX_TX15 | 42 | | | | 90DIFF | | | | 1 | PEX_RX15 | PEX_RX15 | AF27 | PEX_RX15 | |
| PEX_TX15 | 40 | | | | 90DIFF | | | | 1 | PEX_RX15 | PEX_RX15* | AE27 | PEX_RX15 | |

PRSNT1 134
PEX_LSW 38 — PEX_PRSNT2 — R83 0 5% 0402 COMMON — PEX_PRSNT2_R — OUT 14<

G1
G98-630-U1 NB
BGA533
CHANGED

1/13 PCI_EXPRESS

SNN_RFU_AE9 AE9 RFU
PEX_RST AD9 PEX_RST

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PEX_REFCLK | AB10 | PEX_RCLK | PEX_REFCLK | 1 | 100DIFF | | | | | | | | | |
| PEX_REFCLK | AC10 | PEX_RCLK | PEX_REFCLK* | 1 | 100DIFF | | | | | | | | | |
| PEX_TX0 | AD10 | PEX_TX0 | PEX_TX0 | 1 | 90DIFF | C612 .1UF 10V 10% X5R COMMON 0402 | C622 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX0 | PEX_RX0 | AE12 | PEX_RX0 | |
| PEX_TX0 | AD11 | PEX_TX0 | PEX_TX0* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX0 | PEX_RX0* | AF12 | PEX_RX0 | |
| PEX_TX1 | AD12 | PEX_TX1 | PEX_TX1 | 1 | 90DIFF | C602 .1UF 10V 10% X5R COMMON 0402 | C611 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX1 | PEX_RX1 | AG12 | PEX_RX1 | |
| PEX_TX1 | AC12 | PEX_TX1 | PEX_TX1* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX1 | PEX_RX1* | AG13 | PEX_RX1 | |
| PEX_TX2 | AB11 | PEX_TX2 | PEX_TX2 | 1 | 90DIFF | C594 .1UF 10V 10% X5R COMMON 0402 | C601 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX2 | PEX_RX2 | AF13 | PEX_RX2 | |
| PEX_TX2 | AB12 | PEX_TX2 | PEX_TX2* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX2 | PEX_RX2* | AE13 | PEX_RX2 | |
| PEX_TX3 | AD13 | PEX_TX3 | PEX_TX3 | 1 | 90DIFF | C589 .1UF 10V 10% X5R COMMON 0402 | C593 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX3 | PEX_RX3 | AE15 | PEX_RX3 | |
| PEX_TX3 | AD14 | PEX_TX3 | PEX_TX3* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX3 | PEX_RX3* | AF15 | PEX_RX3 | |
| PEX_TX4 | AD15 | PEX_TX4 | PEX_TX4 | 1 | 90DIFF | C581 .1UF 10V 10% X5R COMMON 0402 | C587 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX4 | PEX_RX4 | AG15 | PEX_RX4 | |
| PEX_TX4 | AC15 | PEX_TX4 | PEX_TX4* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX4 | PEX_RX4* | AG16 | PEX_RX4 | |
| PEX_TX5 | AB14 | PEX_TX5 | PEX_TX5 | 1 | 90DIFF | C578 .1UF 10V 10% X5R COMMON 0402 | C579 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX5 | PEX_RX5 | AF16 | PEX_RX5 | |
| PEX_TX5 | AB15 | PEX_TX5 | PEX_TX5* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX5 | PEX_RX5* | AE16 | PEX_RX5 | |
| PEX_TX6 | AC16 | PEX_TX6 | PEX_TX6 | 1 | 90DIFF | C573 .1UF 10V 10% X5R COMMON 0402 | C575 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX6 | PEX_RX6 | AE18 | PEX_RX6 | |
| PEX_TX6 | AD16 | PEX_TX6 | PEX_TX6* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX6 | PEX_RX6* | AF18 | PEX_RX6 | |
| PEX_TX7 | AD17 | PEX_TX7 | PEX_TX7 | 1 | 90DIFF | C569 .1UF 10V 10% X5R COMMON 0402 | C570 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX7 | PEX_RX7 | AG18 | PEX_RX7 | |
| PEX_TX7 | AD18 | PEX_TX7 | PEX_TX7* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX7 | PEX_RX7* | AG19 | PEX_RX7 | |
| PEX_TX8 | AC18 | PEX_TX8 | PEX_TX8 | 1 | 90DIFF | C567 .1UF 10V 10% X5R COMMON 0402 | C568 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX8 | PEX_RX8 | AF19 | PEX_RX8 | |
| PEX_TX8 | AB18 | PEX_TX8 | PEX_TX8* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX8 | PEX_RX8* | AE19 | PEX_RX8 | |
| PEX_TX9 | AB19 | PEX_TX9 | PEX_TX9 | 1 | 90DIFF | C565 .1UF 10V 10% X5R NO_STUFF 0402 | C566 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX9 | PEX_RX9 | AE21 | PEX_RX9 | |
| PEX_TX9 | AB20 | PEX_TX9 | PEX_TX9* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX9 | PEX_RX9* | AF21 | PEX_RX9 | |
| PEX_TX10 | AD19 | PEX_TX10 | PEX_TX10 | 1 | 90DIFF | C563 .1UF 10V 10% X5R COMMON 0402 | C564 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX10 | PEX_RX10 | AG21 | PEX_RX10 | |
| PEX_TX10 | AD20 | PEX_TX10 | PEX_TX10* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX10 | PEX_RX10* | AG22 | PEX_RX10 | |
| PEX_TX11 | AD21 | PEX_TX11 | PEX_TX11 | 1 | 90DIFF | C561 .1UF 10V 10% X5R COMMON 0402 | C562 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX11 | PEX_RX11 | AF22 | PEX_RX11 | |
| PEX_TX11 | AC21 | PEX_TX11 | PEX_TX11* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX11 | PEX_RX11* | AE22 | PEX_RX11 | |
| PEX_TX12 | AB21 | PEX_TX12 | PEX_TX12 | 1 | 90DIFF | C559 .1UF 10V 10% X5R COMMON 0402 | C560 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX12 | PEX_RX12 | AE24 | PEX_RX12 | |
| PEX_TX12 | AB22 | PEX_TX12 | PEX_TX12* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX12 | PEX_RX12* | AF24 | PEX_RX12 | |
| PEX_TX13 | AC22 | PEX_TX13 | PEX_TX13 | 1 | 90DIFF | C557 .1UF 10V 10% X5R COMMON 0402 | C558 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX13 | PEX_RX13 | AG24 | PEX_RX13 | |
| PEX_TX13 | AD22 | PEX_TX13 | PEX_TX13* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX13 | PEX_RX13* | AF25 | PEX_RX13 | |
| PEX_TX14 | AD23 | PEX_TX14 | PEX_TX14 | 1 | 90DIFF | C549 .1UF 10V 10% X5R COMMON 0402 | C553 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX14 | PEX_RX14 | AG25 | PEX_RX14 | |
| PEX_TX14 | AD24 | PEX_TX14 | PEX_TX14* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX14 | PEX_RX14* | AG26 | PEX_RX14 | |
| PEX_TX15 | AE25 | PEX_TX15 | PEX_TX15 | 1 | 90DIFF | C541 .1UF 10V 10% X5R COMMON 0402 | C545 .1UF 10V 10% X5R COMMON 0402 | 90DIFF | 1 | PEX_RX15 | PEX_RX15 | AF27 | PEX_RX15 | |
| PEX_TX15 | AE26 | PEX_TX15 | PEX_TX15* | 1 | 90DIFF | | | 90DIFF | 1 | PEX_RX15 | PEX_RX15* | AE27 | PEX_RX15 | |

PEX_IOVDD AC9 AD7 AD8 AE7 AF7 AG7
PEX_IOVDDQ AB13 AB16 AB17 AB7 AB8 AB9 AC13 AC7 AD6 AE6 AF6 AG6

PLACE UNDER GPU (near BALLS)
C632 .47UF 6.3V 10% X5R 0402 COMMON
C629 .1UF 16V 10% X7R 0402 COMMON
C634 1UF 6.3V 10% X5R 0402 COMMON
C640 1UF 6.3V 10% X5R 0402 COMMON

PLACE near GPU
PEX_VDD
C30 4.7UF 6.3V 10% X5R 0603 COMMON
C28 22UF 6.3V 20% X5R 0805 COMMON
GND

PLACE UNDER GPU (near BALLS)
C626 .47UF 6.3V 10% X5R 0402 COMMON
C619 .1UF 16V 10% X7R 0402 COMMON
C31 1UF 6.3V 10% X5R 0402 COMMON
C606 1UF 6.3V 10% X5R 0402 COMMON

PLACE near GPU
PEX_VDD
C537 4.7UF 6.3V 10% X5R 0603 COMMON
C32 22UF 6.3V 20% X5R 0805 COMMON
GND

PLACE UNDER GPU (near BALLS)
NVVDD
C618 .022UF 6.3V 10% X5R 0402 COMMON
C596 .022UF 6.3V 10% X5R 0402 COMMON
C614 .022UF 6.3V 10% X5R 0402 COMMON
C613 .022UF 6.3V 10% X5R 0402 COMMON
C631 .022UF 6.3V 10% X5R 0402 COMMON
C616 .022UF 6.3V 10% X5R 0402 COMMON
C625 .1UF 6.3V 10% X7R 0402 COMMON
C627 .1UF 6.3V 10% X7R 0402 COMMON
C609 .1UF 6.3V 10% X7R 0402 COMMON
C592 .1UF 6.3V 10% X7R 0402 COMMON
C610 .47UF 6.3V 10% X7R 0603 COMMON
C598 1UF 6.3V 10% X7R 0603 COMMON
C607 4.7UF 6.3V 10% X5R 0603 COMMON
C600 .1UF 6.3V 10% X7R 0402 COMMON
C628 .1UF 6.3V 10% X7R 0402 COMMON
C624 .1UF 6.3V 10% X7R 0402 COMMON
C597 .1UF 6.3V 10% X7R 0402 COMMON
C49 10UF 6.3V 20% X5R 0805 COMMON
C45 22UF 6.3V 20% X5R 0805 COMMON
C48 47UF 4V 20% X5R 0805 COMMON
GND

VDD J10 J12 J13 J9 L9 M11 M17 M9 N11 N12 N13 N14 N15 N16 N17 N19 N9 P11 P12 P13 P14 P15 P16 P17 R11 R12 R13 R14 R15 R16 R17 R9 T11 T17 T9 U19 U9 W10 W12 W13 W18 W19 W9

VDD_SENSE W15 NVVDD_SENSE — 1 — B1 — 12<>
GND_SENSE W16 GND_SENSE — TP6

3V3_RUN
PLACE UNDER GPU
VDD33 A12 B12 C12 D12 E12 F12
C37 .1UF 6.3V 10% X7R 0402 COMMON
C621 .1UF 6.3V 10% X7R 0402 COMMON
C620 1UF 6.3V 10% X5R 0402 COMMON
GND

PEX_VDD
PLACE UNDER GPU
PEX_PLLVDD AF9 PEX_PLLVDD — 1.1V 16MIL — LB3 10nH 0603 COMMON
C35 .01UF 6.3V 10% X5R 0402 COMMON
C33 .1UF 6.3V 10% X5R 0402 COMMON
C34 1UF 6.3V 10% X5R 0402 COMMON
C36 4.7UF 6.3V 10% X5R 0603 COMMON
GND

PEX_TSTCLK_OUT AF10 PEX_TCLK — PEX_TCLK 1 100DIFF
PEX_TSTCLK_OUT AE10 PEX_TCLK* — PEX_TCLK 1 100DIFF
R70 200 0402 NO STUFF
GND

RFU AG9 SNN_RFU_AG9

PEX_TERMP AG10 PEX_TERMP
R71 2.49K 0402 1% COMMON
GND

| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | PCI EXPRESS INTERFACE |

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| NV_PN | 600-10621-0001-200 A | | |
| ID | p621 | PAGE | 2 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

# GPU MEMORY INTERFACE

## GPU MEMORY CONSTRAINTS

| NET | NV_IMPEDANCE | NV_CRITICAL |
|---|---|---|
| FB_CAL_PD_VDDQ | 500HM | 2 |
| FB_CAL_PU_GND | 500HM | 2 |
| FB_CAL_TERM_GND | 500HM | 2 |

| NET | VOLTAGE | MIN_LINE_WIDTH |
|---|---|---|
| FB_VREF | 0.9V | 16.00 |
| FB_PLLAVDD | 1.1V | 16.00 |

G1
G98-630-U1 NB
BGA533
CHANGED

2/13 FRAME_BUFFER

FBA_D<63..0>

| | | | |
|---|---|---|---|
| 0 | FBA_D<0> | D21 | FBA_D0 |
| 1 | FBA_D<1> | C22 | FBA_D1 |
| 2 | FBA_D<2> | B22 | FBA_D2 |
| 3 | FBA_D<3> | A22 | FBA_D3 |
| 4 | FBA_D<4> | C24 | FBA_D4 |
| 5 | FBA_D<5> | B25 | FBA_D5 |
| 6 | FBA_D<6> | A25 | FBA_D6 |
| 7 | FBA_D<7> | A26 | FBA_D7 |
| 8 | FBA_D<8> | D22 | FBA_D8 |
| 9 | FBA_D<9> | E22 | FBA_D9 |
| 10 | FBA_D<10> | E24 | FBA_D10 |
| 11 | FBA_D<11> | D24 | FBA_D11 |
| 12 | FBA_D<12> | D26 | FBA_D12 |
| 13 | FBA_D<13> | D27 | FBA_D13 |
| 14 | FBA_D<14> | C27 | FBA_D14 |
| 15 | FBA_D<15> | B27 | FBA_D15 |
| 16 | FBA_D<16> | D16 | FBA_D16 |
| 17 | FBA_D<17> | E16 | FBA_D17 |
| 18 | FBA_D<18> | D17 | FBA_D18 |
| 19 | FBA_D<19> | F18 | FBA_D19 |
| 20 | FBA_D<20> | D20 | FBA_D20 |
| 21 | FBA_D<21> | F20 | FBA_D21 |
| 22 | FBA_D<22> | E21 | FBA_D22 |
| 23 | FBA_D<23> | F21 | FBA_D23 |
| 24 | FBA_D<24> | C16 | FBA_D24 |
| 25 | FBA_D<25> | B18 | FBA_D25 |
| 26 | FBA_D<26> | C18 | FBA_D26 |
| 27 | FBA_D<27> | D18 | FBA_D27 |
| 28 | FBA_D<28> | C19 | FBA_D28 |
| 29 | FBA_D<29> | C21 | FBA_D29 |
| 30 | FBA_D<30> | B21 | FBA_D30 |
| 31 | FBA_D<31> | A21 | FBA_D31 |
| 32 | FBA_D<32> | P22 | FBA_D32 |
| 33 | FBA_D<33> | P24 | FBA_D33 |
| 34 | FBA_D<34> | R23 | FBA_D34 |
| 35 | FBA_D<35> | R24 | FBA_D35 |
| 36 | FBA_D<36> | T23 | FBA_D36 |
| 37 | FBA_D<37> | U24 | FBA_D37 |
| 38 | FBA_D<38> | V23 | FBA_D38 |
| 39 | FBA_D<39> | V24 | FBA_D39 |
| 40 | FBA_D<40> | N25 | FBA_D40 |
| 41 | FBA_D<41> | N26 | FBA_D41 |
| 42 | FBA_D<42> | R25 | FBA_D42 |
| 43 | FBA_D<43> | R26 | FBA_D43 |
| 44 | FBA_D<44> | T25 | FBA_D44 |
| 45 | FBA_D<45> | V26 | FBA_D45 |
| 46 | FBA_D<46> | V25 | FBA_D46 |
| 47 | FBA_D<47> | V27 | FBA_D47 |
| 48 | FBA_D<48> | V22 | FBA_D48 |
| 49 | FBA_D<49> | W22 | FBA_D49 |
| 50 | FBA_D<50> | W23 | FBA_D50 |
| 51 | FBA_D<51> | W24 | FBA_D51 |
| 52 | FBA_D<52> | AA22 | FBA_D52 |
| 53 | FBA_D<53> | AB23 | FBA_D53 |
| 54 | FBA_D<54> | AB24 | FBA_D54 |
| 55 | FBA_D<55> | AC24 | FBA_D55 |
| 56 | FBA_D<56> | W25 | FBA_D56 |
| 57 | FBA_D<57> | W26 | FBA_D57 |
| 58 | FBA_D<58> | W27 | FBA_D58 |
| 59 | FBA_D<59> | AA25 | FBA_D59 |
| 60 | FBA_D<60> | AB25 | FBA_D60 |
| 61 | FBA_D<61> | AB26 | FBA_D61 |
| 62 | FBA_D<62> | AD26 | FBA_D62 |
| 63 | FBA_D<63> | AD27 | FBA_D63 |

FBA_DQM<7..0>

| | | | |
|---|---|---|---|
| 0 | FBA_DQM<0> | D23 | FBA_DQM0 |
| 1 | FBA_DQM<1> | C26 | FBA_DQM1 |
| 2 | FBA_DQM<2> | D19 | FBA_DQM2 |
| 3 | FBA_DQM<3> | B19 | FBA_DQM3 |
| 4 | FBA_DQM<4> | T24 | FBA_DQM4 |
| 5 | FBA_DQM<5> | T26 | FBA_DQM5 |
| 6 | FBA_DQM<6> | AA23 | FBA_DQM6 |
| 7 | FBA_DQM<7> | AB27 | FBA_DQM7 |

| | | | |
|---|---|---|---|
| FBA_DQS_WP0 | A24 | FBA_DQS_WP0 |
| FBA_DQS_WP1 | C25 | FBA_DQS_WP1 |
| FBA_DQS_WP2 | E19 | FBA_DQS_WP2 |
| FBA_DQS_WP3 | A19 | FBA_DQS_WP3 |
| FBA_DQS_WP4 | T22 | FBA_DQS_WP4 |
| FBA_DQS_WP5 | T27 | FBA_DQS_WP5 |
| FBA_DQS_WP6 | AA24 | FBA_DQS_WP6 |
| FBA_DQS_WP7 | AA26 | FBA_DQS_WP7 |

| | | | |
|---|---|---|---|
| FBA_DQS_RN0 | B24 | FBA_DQS_RN0 |
| FBA_DQS_RN1 | D25 | FBA_DQS_RN1 |
| FBA_DQS_RN2 | E18 | FBA_DQS_RN2 |
| FBA_DQS_RN3 | A18 | FBA_DQS_RN3 |
| FBA_DQS_RN4 | R22 | FBA_DQS_RN4 |
| FBA_DQS_RN5 | R27 | FBA_DQS_RN5 |
| FBA_DQS_RN6 | Y24 | FBA_DQS_RN6 |
| FBA_DQS_RN7 | AA27 | FBA_DQS_RN7 |

FBVDDQ

| | |
|---|---|
| FBVDDQ | A13 |
| FBVDDQ | B13 |
| FBVDDQ | C13 |
| FBVDDQ | D13 |
| FBVDDQ | D14 |
| FBVDDQ | E13 |
| FBVDDQ | F13 |
| FBVDDQ | F14 |
| FBVDDQ | F15 |
| FBVDDQ | F16 |
| FBVDDQ | F17 |
| FBVDDQ | F19 |
| FBVDDQ | F22 |
| FBVDDQ | H23 |
| FBVDDQ | H26 |
| FBVDDQ | J15 |
| FBVDDQ | J16 |
| FBVDDQ | J18 |
| FBVDDQ | J19 |
| FBVDDQ | L19 |
| FBVDDQ | L23 |
| FBVDDQ | L26 |
| FBVDDQ | M19 |
| FBVDDQ | N22 |
| FBVDDQ | U22 |
| FBVDDQ | Y22 |

PLACE UNDER GPU

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C604 .022UF 16V 10% X7R 0402 COMMON | C605 .022UF 16V 10% X7R 0402 COMMON | C580 .022UF 16V 10% X7R 0402 COMMON | C617 .022UF 16V 10% X7R 0402 COMMON | C584 .022UF 16V 10% X7R 0402 COMMON | C585 .022UF 16V 10% X7R 0402 COMMON | C504 1UF 6.3V 10% X5R 0402 COMMON | C54 4.7UF 6.3V 10% X5R 0603 COMMON | GND | |
| C519 .1UF 10V 10% X5R 0402 COMMON | C595 .1UF 10V 10% X5R 0402 COMMON | C508 .1UF 10V 10% X5R 0402 COMMON | C603 .1UF 10V 10% X5R 0402 COMMON | C583 .1UF 10V 10% X5R 0402 COMMON | C65 .1UF 10V 10% X5R 0402 COMMON | C588 1UF 6.3V 10% X5R 0402 COMMON | C534 4.7UF 6.3V 10% X5R 0603 COMMON | GND | |
| C571 4700PF 25V 10% X7R 0402 COMMON | C586 4700PF 25V 10% X7R 0402 COMMON | C591 4700PF 25V 10% X7R 0402 COMMON | C582 4700PF 25V 10% X7R 0402 COMMON | C574 4700PF 25V 10% X7R 0402 COMMON | GND | | | | |

FBA_CMD<27..0> OUT 4< 5<

| | | | |
|---|---|---|---|
| FBA_CMD0 | F26 | FBA_CMD<0> | 0 |
| FBA_CMD1 | J24 | FBA_CMD<1> | 1 |
| FBA_CMD2 | F25 | FBA_CMD<2> | 2 |
| FBA_CMD3 | M23 | FBA_CMD<3> | 3 |
| FBA_CMD4 | N27 | FBA_CMD<4> | 4 |
| FBA_CMD5 | M27 | FBA_CMD<5> | 5 |
| FBA_CMD6 | K26 | FBA_CMD<6> | 6 |
| FBA_CMD7 | J25 | SNN_FBA_CMD7 | |
| FBA_CMD8 | J27 | FBA_CMD<8> | 8 |
| FBA_CMD9 | G23 | FBA_CMD<9> | 9 |
| FBA_CMD10 | G26 | FBA_CMD<10> | 10 |
| FBA_CMD11 | J23 | FBA_CMD<11> | 11 |
| FBA_CMD12 | M25 | FBA_CMD<12> | 12 |
| FBA_CMD13 | K27 | FBA_CMD<13> | 13 |
| FBA_CMD14 | G25 | FBA_CMD<14> | 14 |
| FBA_CMD15 | L24 | FBA_CMD<15> | 15 |
| FBA_CMD16 | K23 | FBA_CMD<16> | 16 |
| FBA_CMD17 | K24 | FBA_CMD<17> | 17 |
| FBA_CMD18 | G22 | FBA_CMD<18> | 18 |
| FBA_CMD19 | K25 | FBA_CMD<19> | 19 |
| FBA_CMD20 | H22 | FBA_CMD<20> | 20 |
| FBA_CMD21 | M26 | FBA_CMD<21> | 21 |
| FBA_CMD22 | H24 | FBA_CMD<22> | 22 |
| FBA_CMD23 | F27 | FBA_CMD<23> | 23 |
| FBA_CMD24 | J26 | FBA_CMD<24> | 24 |
| FBA_CMD25 | G24 | FBA_CMD<25> | 25 |
| FBA_CMD26 | G27 | SNN_FBA_CMND26 | |
| FBA_CMD27 | M24 | FBA_CMD<27> | 27 |
| FBA_CMD28 | K22 | SNN_FBA_CMND28 | |
| RFU | J22 | SNN_FBA_RFU_1 | |
| RFU | L22 | SNN_FBA_RFU_2 | |

FBA_CMD<11>
CKE PD
R515 10K 5% 0402 COMMON
GND

FBA_CMD<12>
ODT/RST PD
R516 10K 5% 0402 COMMON
GND

| | | | |
|---|---|---|---|
| FBA_CLK0 | F24 | FBA_CLK0 | OUT 4< |
| FBA_CLK0 | F23 | FBA_CLK0* | OUT 4< |
| FBA_CLK1 | N24 | FBA_CLK1 | OUT 5< |
| FBA_CLK1 | N23 | FBA_CLK1* | OUT 5< |

FBVDDQ

| | | | | | |
|---|---|---|---|---|---|
| FB_CAL_PD_VDDQ | B15 | FB_CAL_PD_VDDQ | R77 | 30.1 1% 0402 COMMON | |
| FB_CAL_PU_GND | A15 | FB_CAL_PU_GND | R79 | 30.1 1% 0402 COMMON | |
| FB_CAL_TERM_GND | B16 | FB_CAL_TERM_GND | R80 | 60.4 1% 0402 NO STUFF | GND GND |

| | | | | | |
|---|---|---|---|---|---|
| FBA_DEBUG | M22 | FBA_DEBUG | 50OHM | 3 | R521 10K 5% 0402 COMMON FBVDDQ |

| | | | |
|---|---|---|---|
| FB_PLLAVDD | R19 | FB_PLLAVDD | 16.00 |
| FB_DLLAVDD | T19 | | |

PEX_VDD
LB4 220R@100MHz BEAD_0603 COMMON

C590 1UF 6.3V 10% X5R 0402 COMMON GND
PLACE NEAR BALLS

C41 .1UF 6.3V 10% X5R 0402 COMMON GND
C43 4.7UF 6.3V 10% X5R 0603 COMMON
PLACE NEAR GPU

C47 4.7UF 6.3V 10% X5R 0603 COMMON GND

FBVDDQ
VREF = FBVDDQ * Rbot/(Rtop + Rbot)
R531 1.05K 1% 0402 COMMON Rtop
R530 1.05K 1% 0402 COMMON Rbot
C608 .1UF 10V 10% X5R 0402 COMMON
GND

FB_VREF 16.00 A16 FB_VREF

## COMMAND BUS MAPPING DDR2-FBGA84

| CMD | FB[31..0] | FB[63..32] | CMD | FB[31..0] | FB[63..32] |
|---|---|---|---|---|---|
| CMD0 | A3 | - | CMD16 | A11 | A11 |
| CMD1 | A0 | A0 | CMD17 | A10 | A10 |
| CMD2 | A2 | - | CMD18 | BA1 | BA1 |
| CMD3 | A1 | A1 | CMD19 | A8 | A8 |
| CMD4 | - | A3 | CMD20 | A9 | A9 |
| CMD5 | - | A4 | CMD21 | A6 | A6 |
| CMD6 | - | A5 | CMD22 | A5 | - |
| CMD7 | CS1*(BA2) | CS1*(BA2) | CMD23 | A7 | A7 |
| CMD8 | CS0* | CS0* | CMD24 | A4 | - |
| CMD9 | WE* | WE* | CMD25 | CAS* | CAS* |
| CMD10 | BA0 | BA0 | CMD26 | A13 | A13 |
| CMD11 | CKE | CKE | CMD27 | BA2 | BA2 |
| CMD12 | RST/ODT | RST/ODT | CMD28 | RFU0 | RFU0 |
| CMD13 | - | A2 | CMD29 | RFU1 | RFU1 |
| CMD14 | A12 | A12 | CMD30 | RFU2 | RFU2 |
| CMD15 | RAS* | RAS* | | | |

| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | GPU MEMORY INTERFACE |

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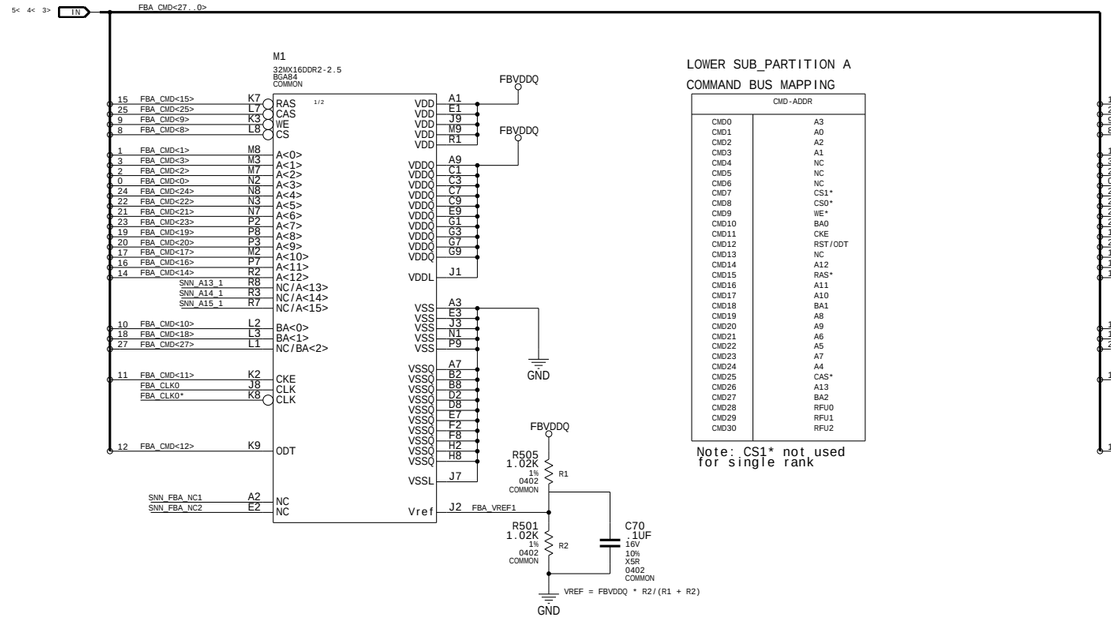
|---|---|---|---|
| NV_PN | 600-10621-0001-200 A | | |
| ID | p621 | PAGE | 3 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

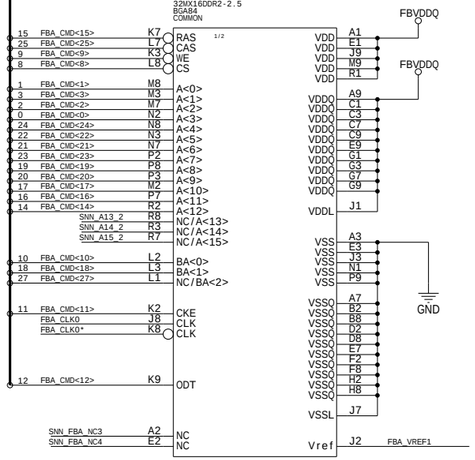
# MEMORY LOWER SUB-PARTITION INTERFACE D<31..0>

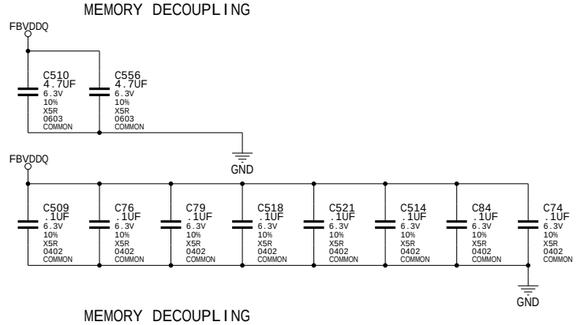


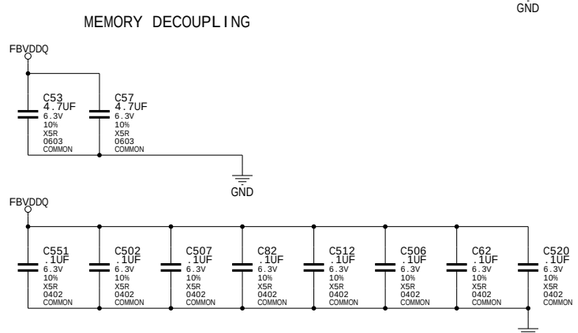

LOWER SUB_PARTITION A
COMMAND BUS MAPPING

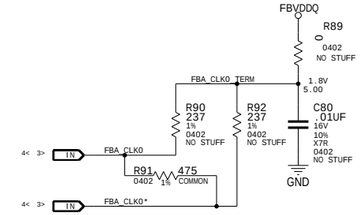
| CMD-ADDR | |
|---|---|
| CMD0 | A3 |
| CMD1 | A0 |
| CMD2 | A2 |
| CMD3 | A1 |
| CMD4 | NC |
| CMD5 | NC |
| CMD6 | NC |
| CMD7 | CS1* |
| CMD8 | CS0* |
| CMD9 | WE* |
| CMD10 | BA0 |
| CMD11 | CKE |
| CMD12 | RST/ODT |
| CMD13 | NC |
| CMD14 | A12 |
| CMD15 | RAS* |
| CMD16 | A11 |
| CMD17 | A10 |
| CMD18 | BA1 |
| CMD19 | A8 |
| CMD20 | A9 |
| CMD21 | A6 |
| CMD22 | A5 |
| CMD23 | A7 |
| CMD24 | A4 |
| CMD25 | CAS* |
| CMD26 | A13 |
| CMD27 | BA2 |
| CMD28 | RFU0 |
| CMD29 | RFU1 |
| CMD30 | RFU2 |

Note: CS1* not used
for single rank

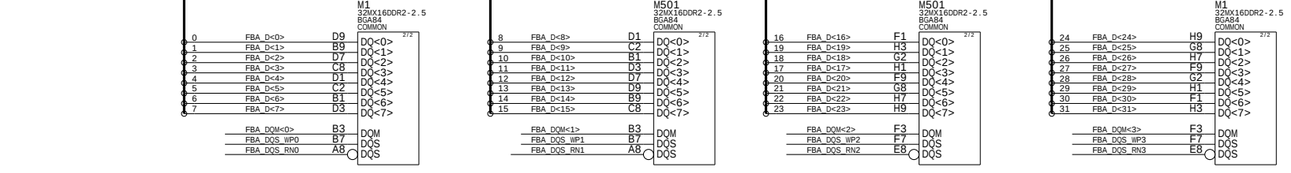



PLACE close to memorires so as to
Minimize the stub length!!
Single resistor termination to be placed on
same pads as 2 resistor termination



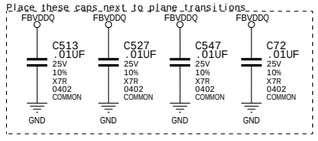

Place vias for both DQS, longest, and shortest
bit of each byte just outside the memory packaged body.

## MEMORY CONSTRAINTS

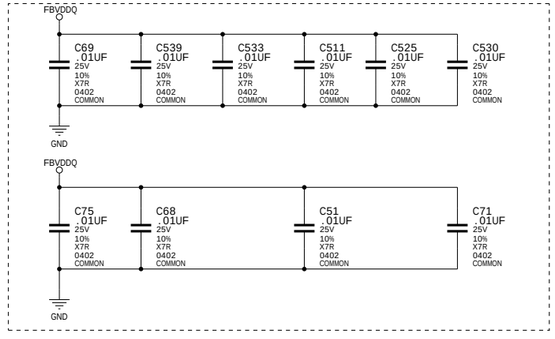
| | NET | MIN_LINE_WIDTH | VOLTAGE |
|---|---|---|---|
| B1 | FBA_VREF1 | 16MIL | 0.9V |

| | NET | DIFFPAIR | CRITICAL | IMPEDANCE |
|---|---|---|---|---|
| 4< 3> IN | FBA_CLK0 | FBA_CLK0 | 1 | 100DIFF |
| 4< 3> IN | FBA_CLK0* | FBA_CLK0 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP0 | FBADQS0 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN0 | FBADQS0 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP1 | FBADQS1 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN1 | FBADQS1 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP2 | FBADQS2 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN2 | FBADQS2 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP3 | FBADQS3 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN3 | FBADQS3 | 1 | 100DIFF |
| 5< 4< 3> IN | FBA_CMD<27..0> | | 2 | 50OHM |
| 4<> 3<> B1 | FBA_D<31..0> | | 2 | 50OHM |
| 4<> 3<> B1 | FBA_DQM<3..0> | | 2 | 50OHM |

Place these caps next to plane transitions.




X-cap for CMD BUS




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | MEMORY LOWER SUB-PARTITION INTERFACE |

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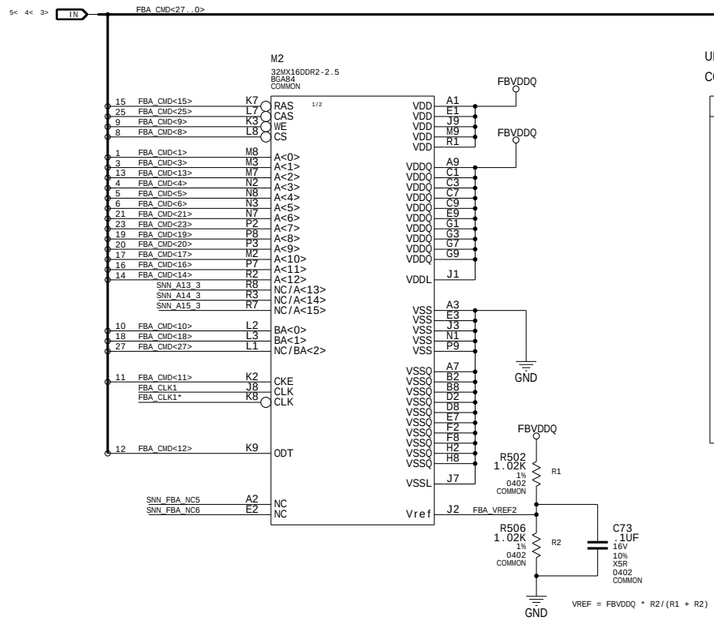
| | | | |
|---|---|---|---|
| NV_PN | 600-10621-0001-200 A | | |
| ID | p621 | PAGE | 4 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

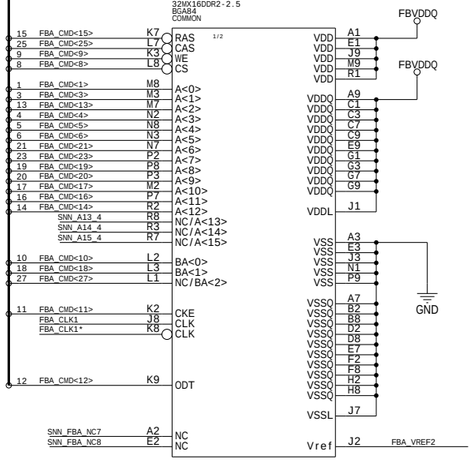
# MEMORY UPPER SUB-PARTITION INTERFACE D<63..32>



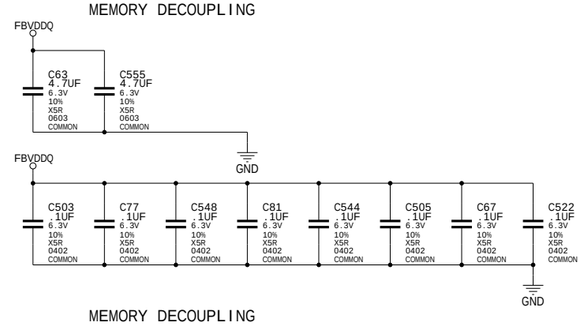

UPPER SUB_PARTITION A
COMMAND BUS MAPPING

| CMD-ADDR | |
|---|---|
| CMD0 | NC |
| CMD1 | A0 |
| CMD2 | NC |
| CMD3 | A1 |
| CMD4 | A3 |
| CMD5 | A4 |
| CMD6 | A5 |
| CMD7 | CS1* |
| CMD8 | CS0* |
| CMD9 | WE* |
| CMD10 | BA0 |
| CMD11 | CKE |
| CMD12 | RST/ODT |
| CMD13 | A2 |
| CMD14 | A12 |
| CMD15 | RAS* |
| CMD16 | A11 |
| CMD17 | A10 |
| CMD18 | BA1 |
| CMD19 | A8 |
| CMD20 | A9 |
| CMD21 | A6 |
| CMD22 | NC |
| CMD23 | A7 |
| CMD24 | NC |
| CMD25 | CAS* |
| CMD26 | A13 |
| CMD27 | BA2 |
| CMD28 | RFU0 |
| CMD29 | RFU1 |
| CMD30 | RFU2 |

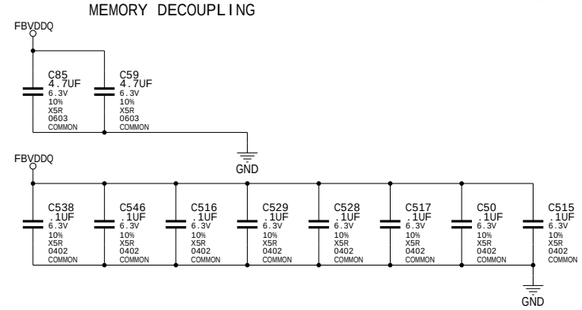
Note: CS1* not used
for single rank

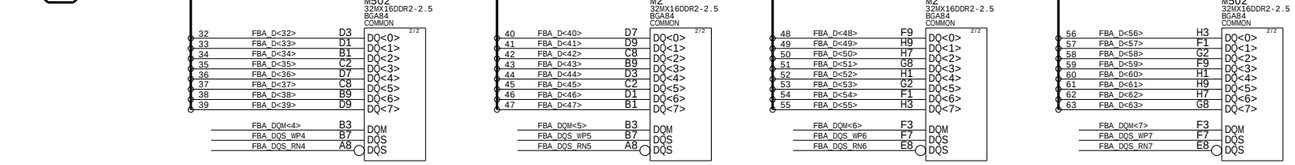



MEMORY DECOUPLING

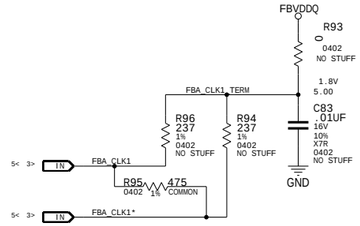



MEMORY DECOUPLING




Place vias for both DQS, longest, and shortest
bit of each byte just outside the memory packaged body.



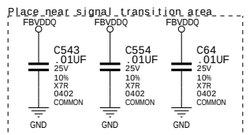

PLACE close to memorires so as to
Minimize the stub length!!
Single resistor termination to be placed on
same pads as 2 resistor termination

## MEMORY CONSTRAINTS

| | NET | MIN_LINE_WIDTH | VOLTAGE |
|---|---|---|---|
| BI | FBA_VREF2 | 16MIL | 0.9V |

| | NET | DIFFPAIR | CRITICAL | IMPEDANCE |
|---|---|---|---|---|
| 5< 3> IN | FBA_CLK1 | FBA_CLK1 | 1 | 100DIFF |
| 5< 3> IN | FBA_CLK1* | FBA_CLK1 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP4 | FBADQS4 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN4 | FBADQS4 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP5 | FBADQS5 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN5 | FBADQS5 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP6 | FBADQS6 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN6 | FBADQS6 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_WP7 | FBADQS7 | 1 | 100DIFF |
| 3<> IN | FBA_DQS_RN7 | FBADQS7 | 1 | 100DIFF |
| 5< 4< 3> IN | FBA_CMD<27..0> | | 2 | 50OHM |
| 5<> 3<> BI | FBA_D<63..32> | | 2 | 50OHM |
| 5<> 3<> BI | FBA_DQM<7..4> | | 2 | 50OHM |

Place near signal transition area




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | MEMORY UPPER SUB-PARTITION INTERFACE |

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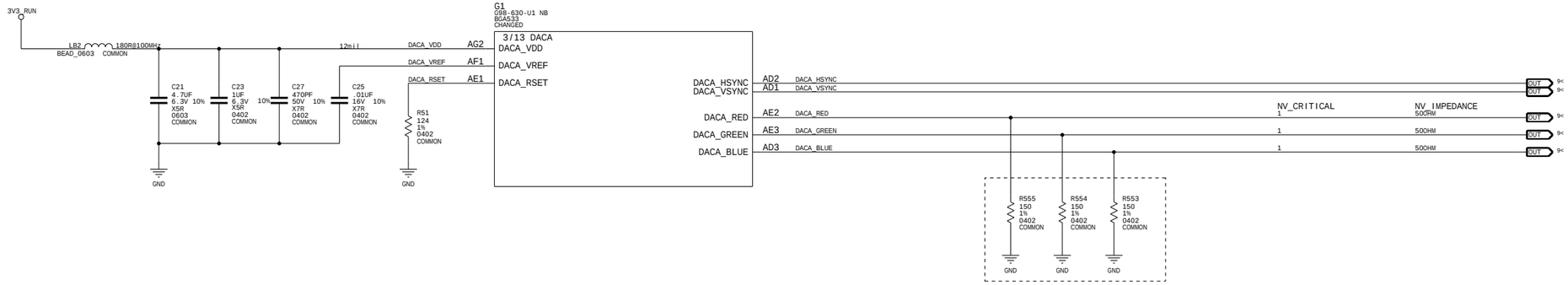
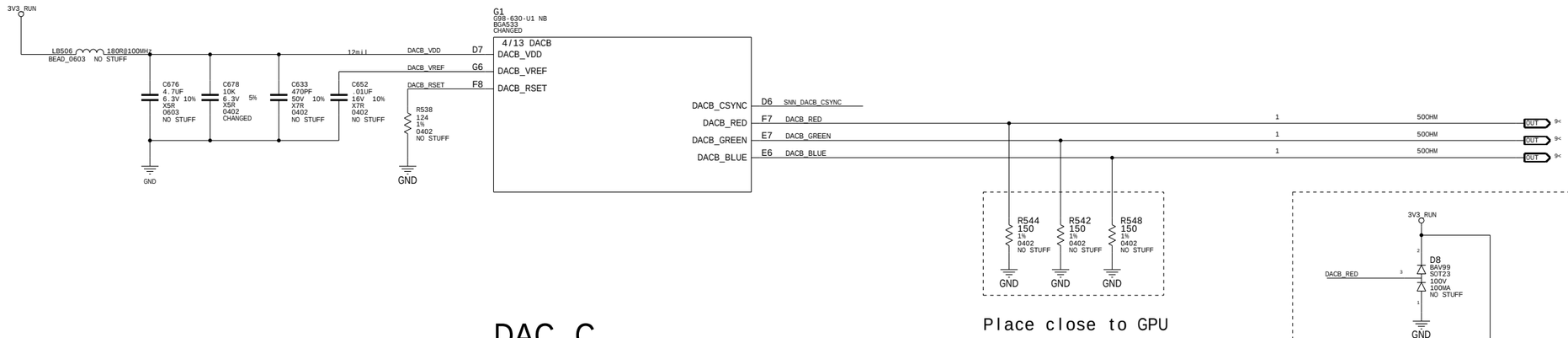
| | | | |
|---|---|---|---|
| NV_PN | 600-10621-0001-200 A | | |
| ID | p621 | PAGE | 5 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

# DAC_A



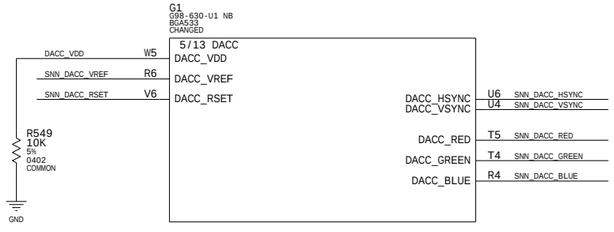

Place close to GPU

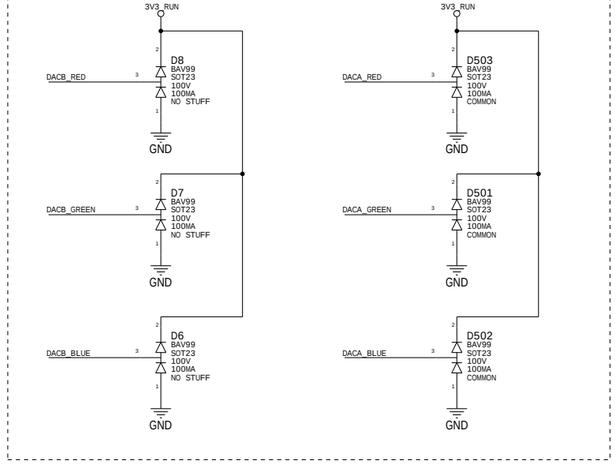
# DAC_B




Place close to GPU

# DAC_C




TV DAC ESD PROTECTION

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| | |
|---|---|
| ASSEMBLY | |
| PAGE DETAIL | DAC A/B |

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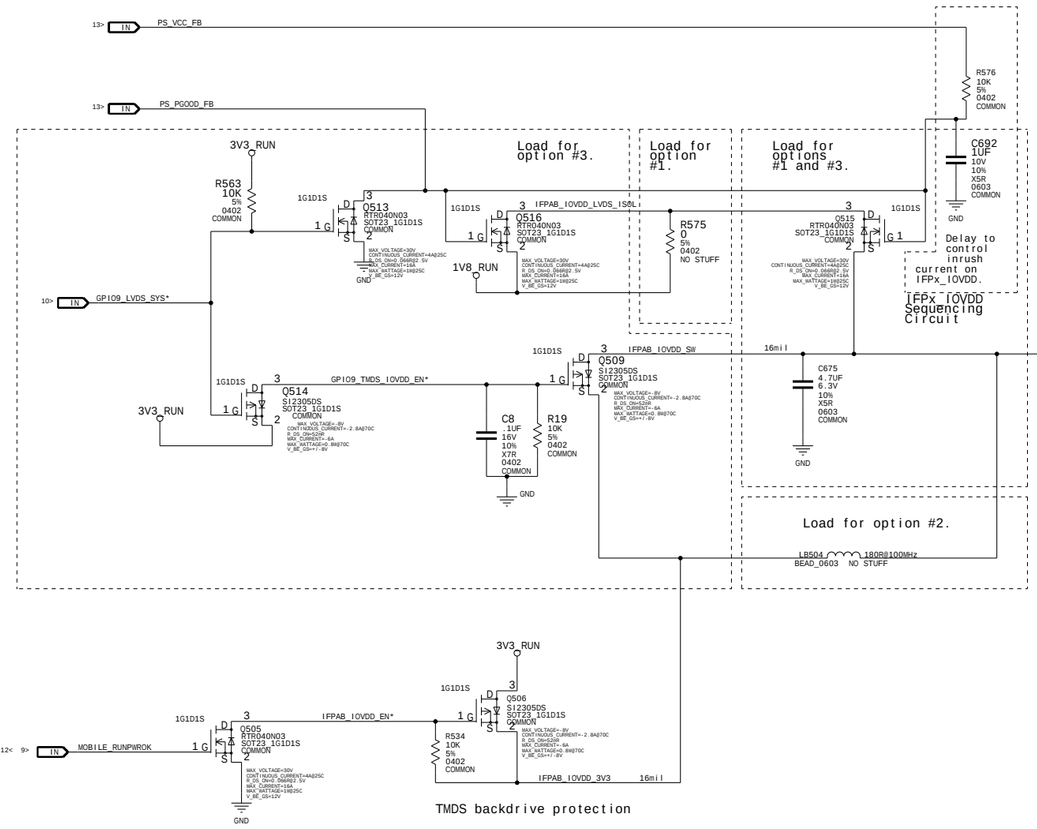
| | | | |
|---|---|---|---|
| NV_PN | 600-10621-0001-200 A | | |
| ID | p621 | PAGE | 6 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

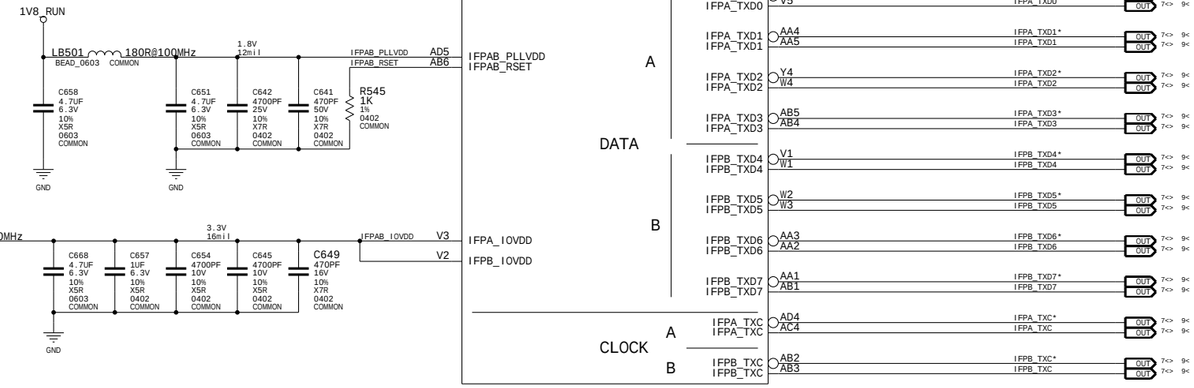
## Loading options for IFPAB outputs

Option #1) IFPAB outputs to LVDS only.
Option #2) IFPAB outputs to DVI-C only.
Option #3) Controlled with GPIO9, IFPAB dynamically outputs to LVDS or DVI-C.

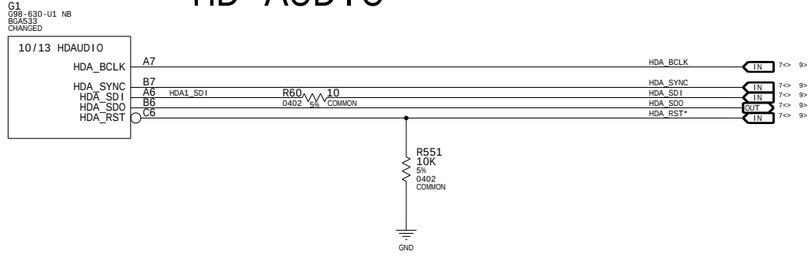



TMDS backdrive protection

# LVDS/TMDS(link A&B)




# HD AUDIO




# (LVDS & HD AUDIO CONSTRAINTS)

| NET NAME | DIFFPAIR | NV_CRITICAL_NET | NV_IMPEDANCE |
|---|---|---|---|
| IFPA_TXD0* | IFPATXD0 | 1 | 100DIFF |
| IFPA_TXD0 | IFPATXD0 | 1 | 100DIFF |
| IFPA_TXD1* | IFPATXD1 | 1 | 100DIFF |
| IFPA_TXD1 | IFPATXD1 | 1 | 100DIFF |
| IFPA_TXD2* | IFPATXD2 | 1 | 100DIFF |
| IFPA_TXD2 | IFPATXD2 | 1 | 100DIFF |
| IFPA_TXD3* | IFPATXD3 | 1 | 100DIFF |
| IFPA_TXD3 | IFPATXD3 | 1 | 100DIFF |
| IFPB_TXD4* | IFPBTXD4 | 1 | 100DIFF |
| IFPB_TXD4 | IFPBTXD4 | 1 | 100DIFF |
| IFPB_TXD5* | IFPBTXD5 | 1 | 100DIFF |
| IFPB_TXD5 | IFPBTXD5 | 1 | 100DIFF |
| IFPB_TXD6* | IFPBTXD6 | 1 | 100DIFF |
| IFPB_TXD6 | IFPBTXD6 | 1 | 100DIFF |
| IFPB_TXD7* | IFPBTXD7 | 1 | 100DIFF |
| IFPB_TXD7 | IFPBTXD7 | 1 | 100DIFF |
| IFPA_TXC* | IFPATXC | 1 | 100DIFF |
| IFPA_TXC | IFPATXC | 1 | 100DIFF |
| IFPB_TXC* | IFPBTXC | 1 | 100DIFF |
| IFPB_TXC | IFPBTXC | 1 | 100DIFF |

| NET NAME | NV_CRITICAL_NET | NV_IMPEDANCE |
|---|---|---|
| HDA1_BCLK | 2 | 50OHM |
| HDA1_SYNC | 2 | 50OHM |
| HDA1_SDI | 2 | 50OHM |
| HDA1_SDO | 2 | 50OHM |
| HDA1_RST* | 2 | 50OHM |
| HDA_BCLK | 2 | 50OHM |
| HDA_SYNC | 2 | 50OHM |
| HDA_SDI | 2 | 50OHM |
| HDA_SDO | 2 | 50OHM |
| HDA_RST* | 2 | 50OHM |

| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | LVDS(LINK A/B), HD AUDIO |

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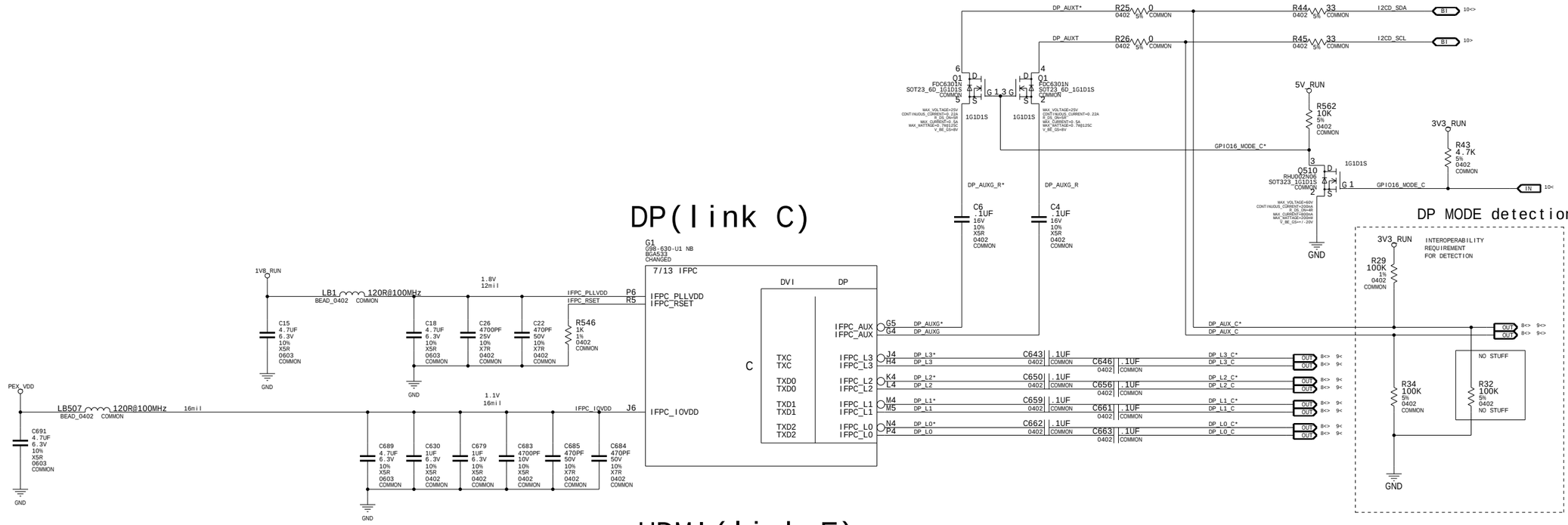
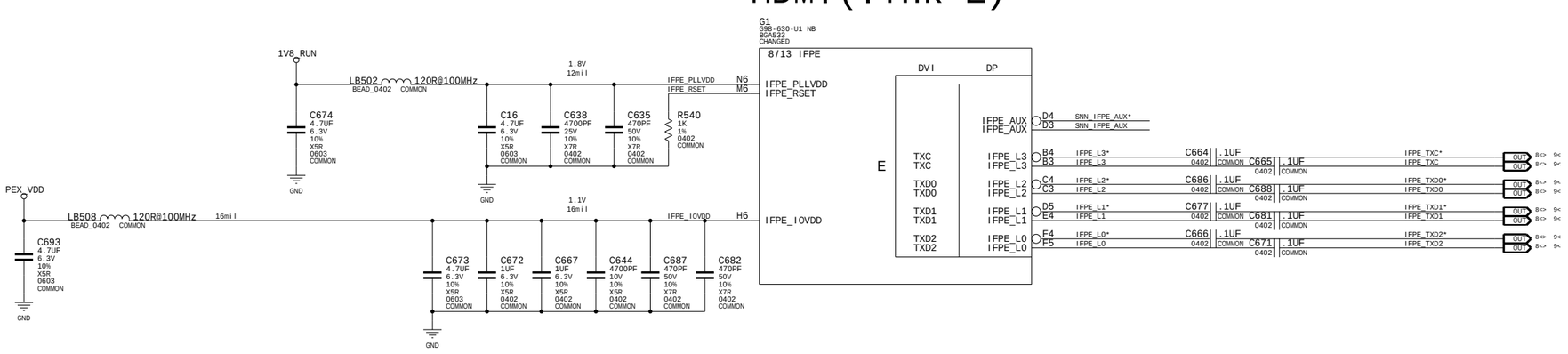
| ID | p621 | PAGE | 7 OF 16 |
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

# DP(link C)




# HDMI(link E)




# (HDMI / DP CONSTRAINTS)

| NET NAME | DIFFPAIR | NV_CRITICAL_NET | NV_IMPEDANCE |
|---|---|---|---|
| IFPE_L3* | IFPE_L3 | 1 | 100DIFF |
| IFPE_L3 | IFPE_L3 | 1 | 100DIFF |
| IFPE_L2* | IFPE_L2 | 1 | 100DIFF |
| IFPE_L2 | IFPE_L2 | 1 | 100DIFF |
| IFPE_L1* | IFPE_L1 | 1 | 100DIFF |
| IFPE_L1 | IFPE_L1 | 1 | 100DIFF |
| IFPE_L0* | IFPE_L0 | 1 | 100DIFF |
| IFPE_L0 | IFPE_L0 | 1 | 100DIFF |
| IFPE_TXC* | IFPETXC | 1 | 100DIFF |
| IFPE_TXC | IFPETXC | 1 | 100DIFF |
| IFPE_TXD0* | IFPETXD0 | 1 | 100DIFF |
| IFPE_TXD0 | IFPETXD0 | 1 | 100DIFF |
| IFPE_TXD1* | IFPETXD1 | 1 | 100DIFF |
| IFPE_TXD1 | IFPETXD1 | 1 | 100DIFF |
| IFPE_TXD2* | IFPETXD2 | 1 | 100DIFF |
| IFPE_TXD2 | IFPETXD2 | 1 | 100DIFF |

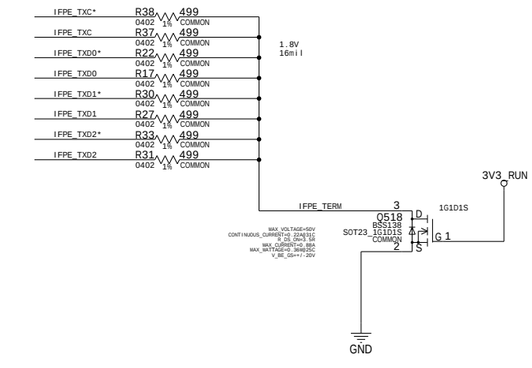
| NET NAME | DIFFPAIR | NV_CRITICAL_NET | NV_IMPEDANCE |
|---|---|---|---|
| DP_AUXG* | DP_AUX | 1 | 100DIFF |
| DP_AUXG | DP_AUX | 1 | 100DIFF |
| DP_AUXG_R* | DP_AUX1 | 1 | 100DIFF |
| DP_AUXG_R | DP_AUX1 | 1 | 100DIFF |
| DP_L3* | DP_L3 | 1 | 100DIFF |
| DP_L3 | DP_L3 | 1 | 100DIFF |
| DP_L2* | DP_L2 | 1 | 100DIFF |
| DP_L2 | DP_L3 | 1 | 100DIFF |
| DP_L1* | DP_L1 | 1 | 100DIFF |
| DP_L1 | DP_L1 | 1 | 100DIFF |
| DP_L0* | DP_L0 | 1 | 100DIFF |
| DP_L0 | DP_L0 | 1 | 100DIFF |

| NET NAME | DIFFPAIR | NV_CRITICAL_NET | NV_IMPEDANCE |
|---|---|---|---|
| DP_AUX_C* | DP_AUX3 | 1 | 100DIFF |
| DP_AUX_C | DP_AUX3 | 1 | 100DIFF |
| DP_AUXT* | DP_AUX2 | 1 | 100DIFF |
| DP_AUXT | DP_AUX2 | 1 | 100DIFF |
| DP_L3_C* | DPL3C | 1 | 100DIFF |
| DP_L3_C | DPL3C | 1 | 100DIFF |
| DP_L2_C* | DPL2C | 1 | 100DIFF |
| DP_L2_C | DPL2C | 1 | 100DIFF |
| DP_L1_C* | DPL1C | 1 | 100DIFF |
| DP_L1_C | DPL1C | 1 | 100DIFF |
| DP_L0_C* | DPL0C | 1 | 100DIFF |
| DP_L0_C | DPL0C | 1 | 100DIFF |

## DP MODE detection by SW




## LinkE BIAS




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | HDMI, DP |

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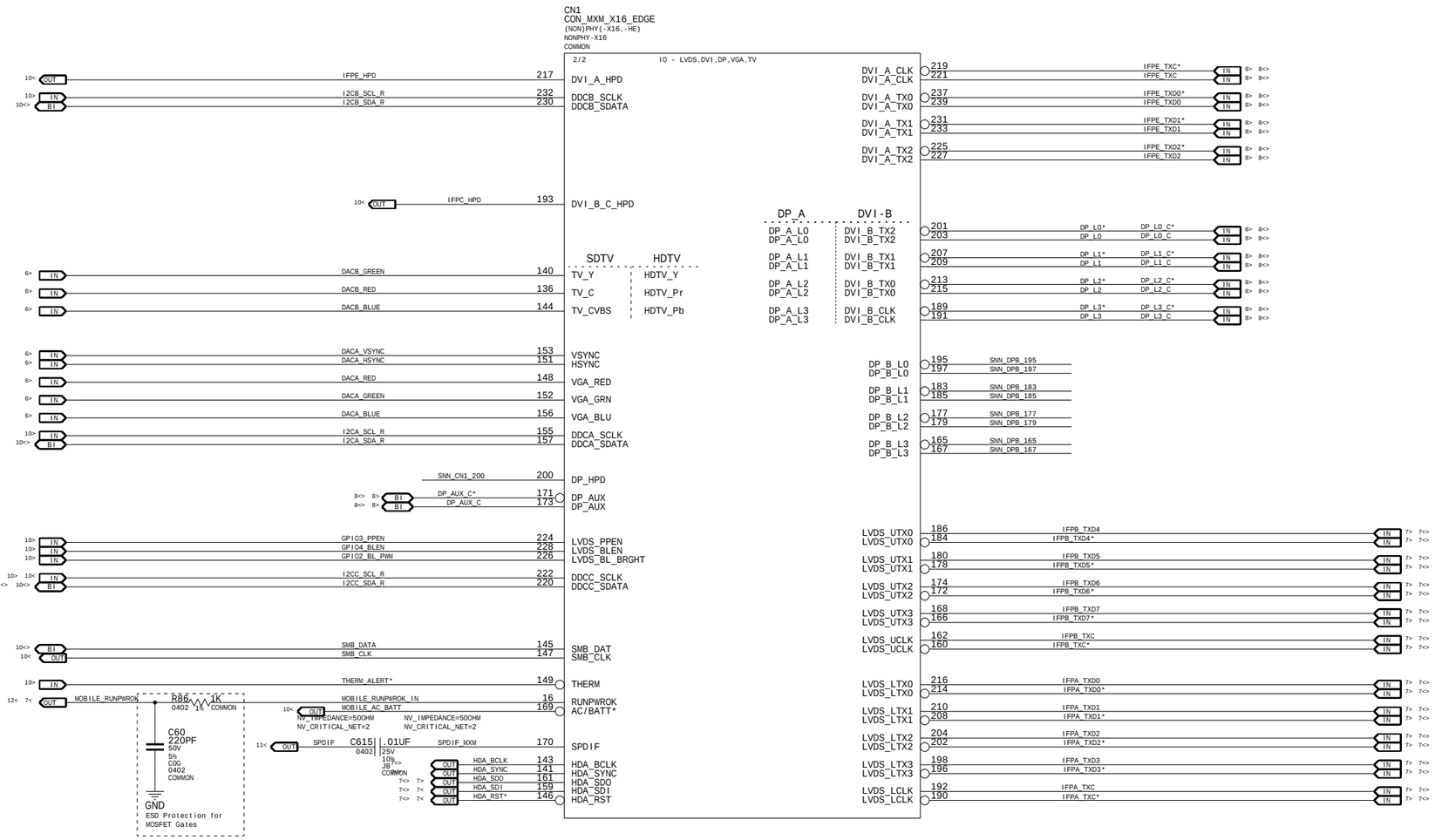
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

# MXM CONNECTOR




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | MXM CONNECTOR |

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# GPIO, TEMP SENSOR, JTAG

## I2C ADDRESS: 0x98H

NOSTUFF for internal sensor

Stuff for connecting ExtThermalSensor to DDCC

U503 MAX6649MUA SO8_122MIL COMMON

C690 .1UF 16V 10% X7R 0603 COMMON

C680 2200PF 0402 X5R 10V 10% COMMON

G98-630-U1 NB BGA533 CHANGED

9/13 I2C_GPIO_THERM_JTAG

R574 0 0402 5% *NO STUFF

R570 0 0402 5% *NO STUFF

R564 200 0402 5% COMMON

R565 0 0402 5% COMMON

R566 0 0402 5% COMMON

R569 10K 0402 5% COMMON

R568 2.2K 0402 5% COMMON

R567 0 0402 5% COMMON

R582 0 0402 5% COMMON

R55 180 0402 5% COMMON

R59 10K 0402 5% COMMON

R58 10K 0402 5% COMMON

R56 270 0402 5% COMMON

R57 10K 0402 5% COMMON

R572 47K 0402 5% NO STUFF

R578 47K 0402 5% NO STUFF

R579 0 0402 5% NO STUFF

R581 0 0402 5% NO STUFF

R580 47K 0402 5% COMMON

R573 47K 0402 5% COMMON

ONLY for IntThermalSensor tied to SMBus

ONLY FOR IntThermalSensor NOT connected

Place lab TP together

NOSTUFF except to connect SMBus to external sensor.

R48 33 0402 5% COMMON

R49 33 0402 5% COMMON

R47 33 0402 5% COMMON

R46 33 0402 5% COMMON

R53 33 0402 5% COMMON

R54 33 0402 5% COMMON

R40 0 0402 5% COMMON

R41 10K 0402 5% COMMON

R4 10K 0402 5% COMMON

R21 10K 0402 5% COMMON

R11 10K 0402 5% COMMON

R35 4.7K 0402 5% COMMON

R36 4.7K 0402 5% COMMON

R1 4.7K 0402 5% COMMON

R7 4.7K 0402 5% COMMON

R3 2.2K 0402 5% COMMON

R8 2.2K 0402 5% COMMON

R6 10K 0402 5% COMMON

R5 100K 0402 5% COMMON

R13 10K 0402 5% COMMON

R50 100K 0402 5% COMMON

D2 BAV99 SOT23 70V 215MA COMMON

D4 BAV99 SOT23 70V 215MA COMMON

Q511 FDC638N 1GD1S SOT23_6D_1GD1S2 COMMON

Q512 FDC638N 1GD1S SOT23_6D_1GD1S2 COMMON

Q513 BTD4004N3 1GD1S COMMON

as per HDMI spec
1k5 < R < 2k2

| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | GPIO, JTAG, TEMP SENSOR |

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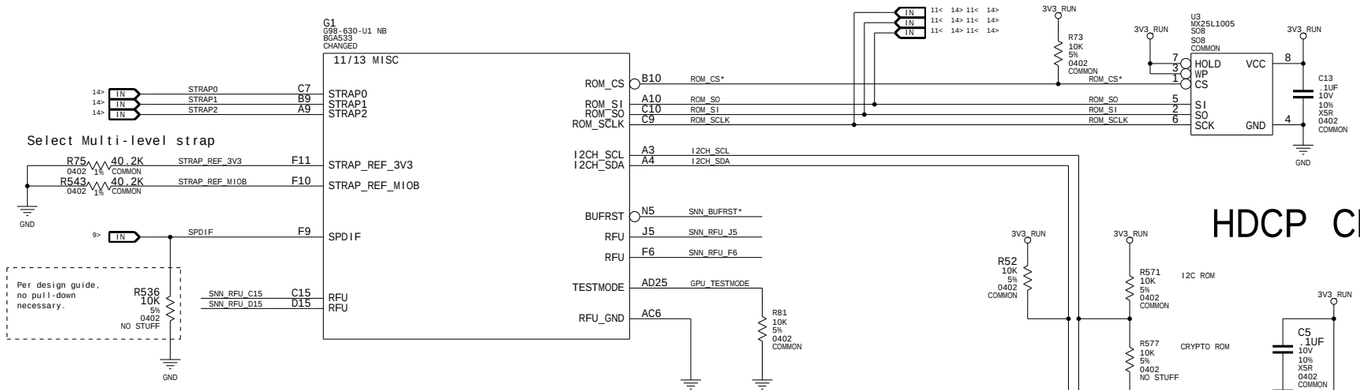
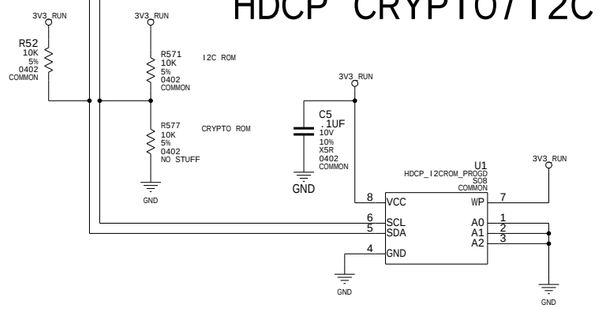
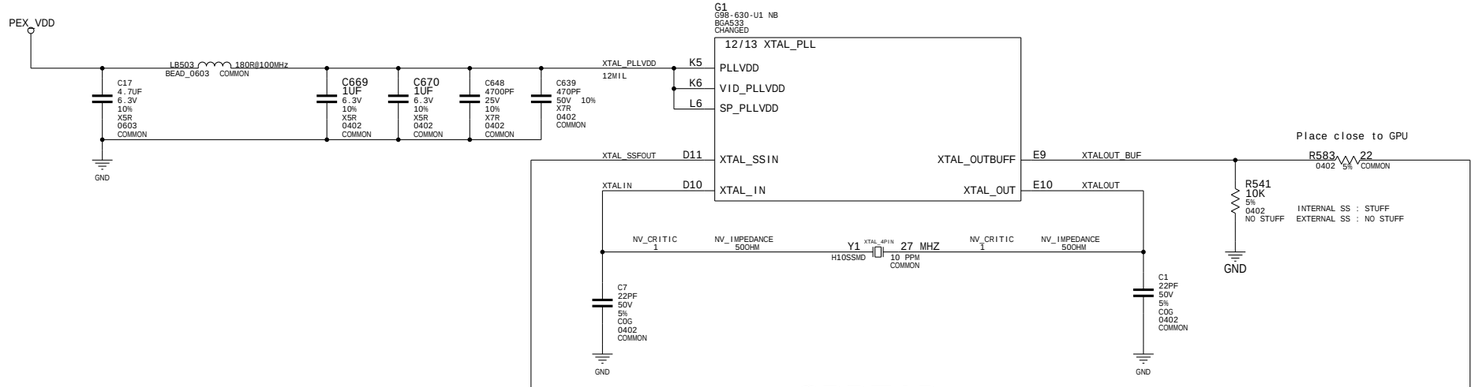
# VBIOS ROM



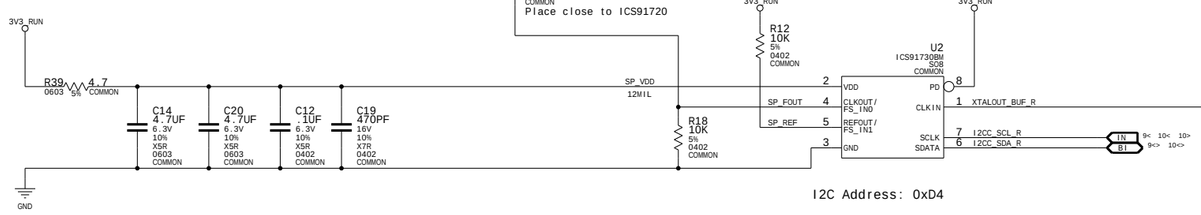

# HDCP CRYPTO/I2C ROM



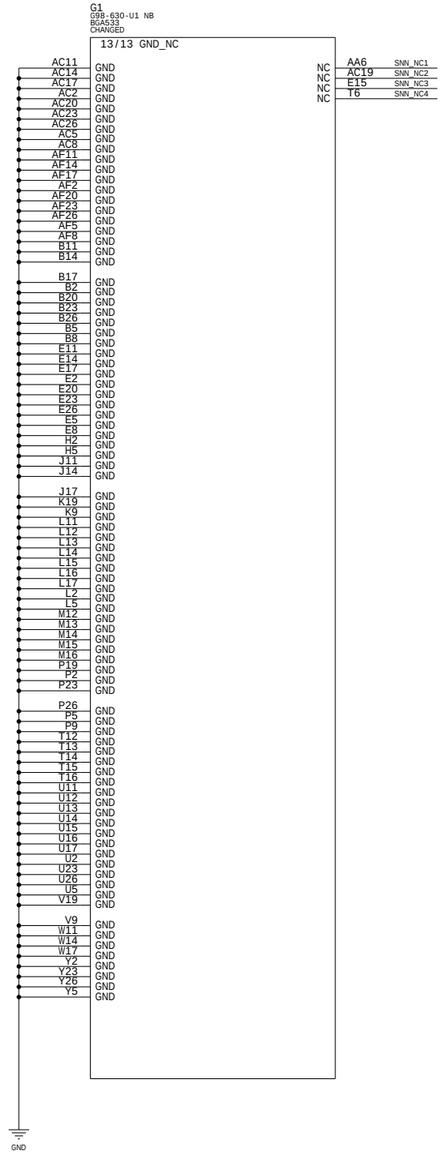

# XTAL




# SPREAD




I2C Address: 0xD4




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | VBIOS & HDCP ROM, XTAL, SPREAD SPECTRUM, SPDIF |

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# NVVDD SWITCHER

Input Ripple approx 3.7A

NVVDD = 0.9V ~ 1.2V

Vout = (1 + Rt/Rb) x 0.6

U502
ISL6269ACRZ
VR SB=0.6V
WLFP16
WLFP16
CHANGED

445kHz

## VOLTAGE NODE PROPERTIES

| | VOLTAGE | SOURCE POWER NET | MIN LINE WIDTH | MAX CURRENT | |
|---|---|---|---|---|---|
| 3V3_RUN | 3.3V | TRUE | 12MIL | 1.5A | 3V3_RUN |
| 1V8_RUN | 1.8V | TRUE | 16MIL | 3.5A | 1V8_RUN |
| 5V_RUN | 5.0V | TRUE | 12MIL | 0.5A | 5V_RUN |
| PWR_SRC | 22V | TRUE | 30MIL | 4A | PWR_SRC |
| NVVDD | 1.2V | | 16MIL | 10A | NVVDD |
| PEX_VDD | 1.1V | | 16MIL | 2.5A | PEX_VDD |
| FBVDDQ | 1.8V | | 12MIL | 5A | FBVDDQ |

0V 12MIL GND GND

| G98M | RTop | RBot | GPIO5 | GPIO6 |
|---|---|---|---|---|
| 0.9V | 3k01 | 5k9 | Low | Low |
| **STARTUP VOLTAGE 1.09V | 3k01 | 5k9 \|\| 9.7K | LOW | HIGH |
| NOT VALID | 3k01 | NOT VALID | HIGH | LOW |
| 1.17V | 3k01 | 5k9 \|\| 19k1 \|\|8k87 | HIGH | HIGH |

| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | NVVDD POWER SUPPLY |

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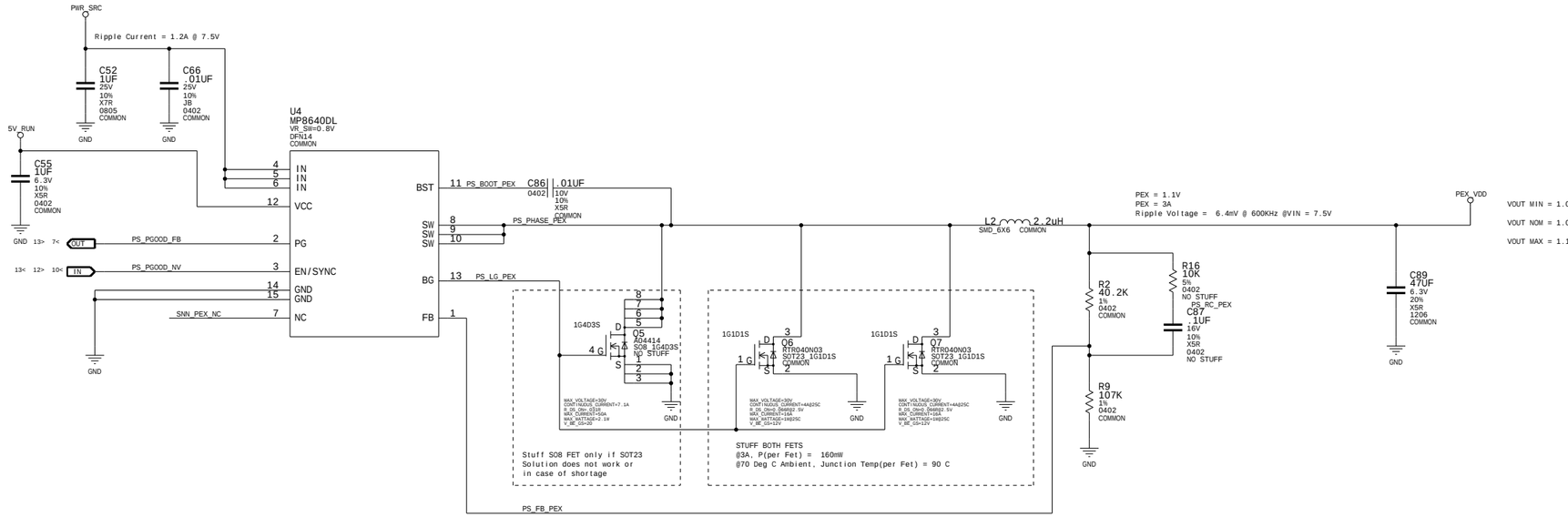
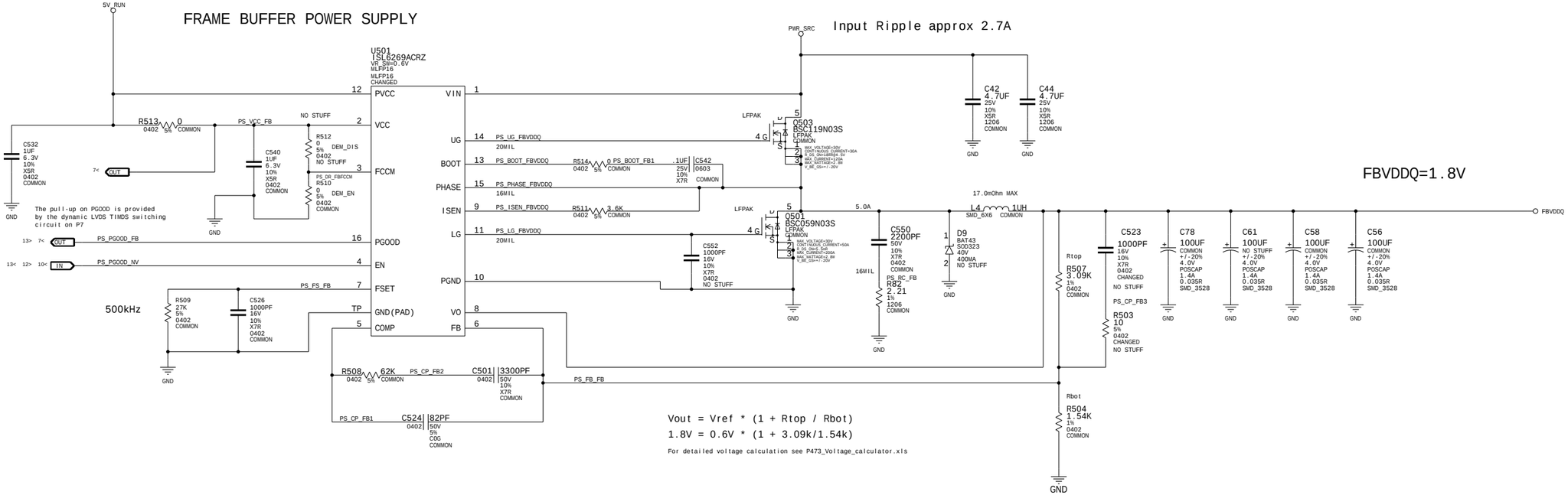
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

# FBVDDQ & PEX Power Supplies

## PEX POWER SUPPLY




## FRAME BUFFER POWER SUPPLY




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | PEX, FBVDDQ POWER SUPPLY |

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| NV_PN | 600-10621-0001-200 A | | |
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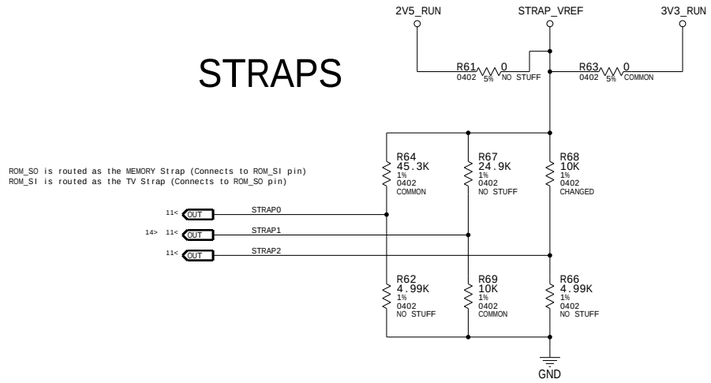
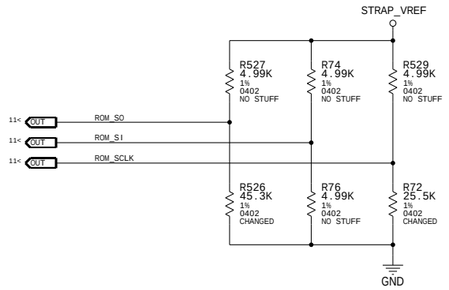
| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

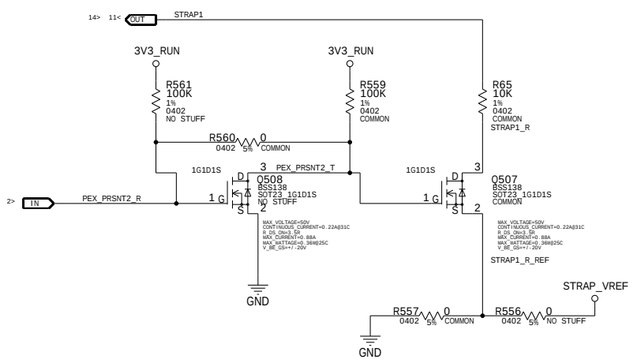
# STRAPS



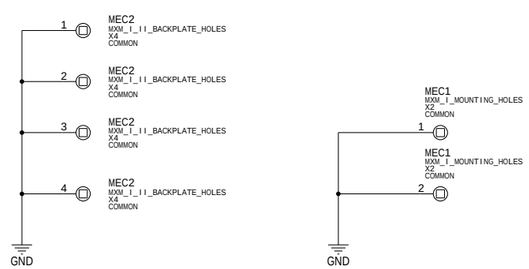

| | | |
|---|---|---|
| STRAP0 | USER_BIT0<br>USER_BIT1<br>USER_BIT2<br>USER_BIT3 | 0xF: 45K PU (unused) |
| STRAP1 | 3GIO_PADCFG_LUT_ADR0<br>3GIO_PADCFG_LUT_ADR1<br>3GIO_PADCFG_LUT_ADR2<br>3GIO_PADCFG_LUT_ADR3 | 0x0: Desktop default (normal swing) - 5k PD<br>0x1: Mobile default (low swing) - 10k PD<br>acc. to //hw/tesla_g98b/manuals/dev_ext_devices.ref |
| STRAP2 | PCI_DEVID_0<br>PCI_DEVID_1<br>PCI_DEVID_2<br>PCI_DEVID_3 | all 4 bits set by HW strapping<br>0x06E8: 5K PU (NB9M-GE)<br>0x06E9: 10K PU (NB9M-GS) |
| ROM_SO | TV_MODE_BIT0<br>TV_MODE_BIT1<br>TV_MODE_BIT2<br>XCLK_277 | 0x0: NTSC-M<br>5K PU<br>1: |
| ROM_SI | RAM_CFG_0<br>RAM_CFG_1<br>RAM_CFG_2<br>RAM_CFG_3 | 128 MB (4pcs. 16Mx16)<br>RAM_CFG[3:0] Definitions<br>0000 Elpida<br>0001 Samsung<br>0010 Qimonda<br>0011 Hynix<br>0100 Nanya<br>256 MB (4pcs. 32Mx16)<br>RAM_CFG[3:0] Definitions<br>0100 25k PD Elpida<br>0101 30k PD Samsung<br>0110 35k PD Qimonda<br>0111 45k PD Hynix |
| ROM_SCLK | PCI_DEVID_EXT<br>SUB_VENDOR<br>SLOT_CLK_CONFIG<br>PEX_PLL_EN_TERM100 | 0:<br>1: SUB_VENDOR BIOS<br>0:<br>0: TERM100 DISABLED<br>25K PD |

# PEX SWING LEVEL




| | | |
|---|---|---|
| PEX_PRSNT2_R | R_STRAP1 | 3_GIO_PADCFG_LUT<3..0> |
| GND | 10k | 0x1 MOBILE_DEFAULT |
| FLOAT | 5k (10k \|\| 10k) | 0x0 DESKTOP_DEFAULT |

# MECHANIC




| | |
|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
| PAGE DETAIL | STRAPS |

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| NAME | Thorsten Freund | DATE | 11-DEC-2007 |

Title: Basenet Report
Design: p621
Date: Dec 11 12:08:17 2007

Base nets and synonyms for
p621_lib.P621(@p621_lib.p621(sch_1))

| Base Signal | Location([Zone][dir]) |
|---|---|
| DACA_BLUE | 6.1G> 6.4G 9.3A< |
| DACA_GREEN | 6.1G> 6.4G 9.3A< |
| DACA_HSYNC | 6.1G> 9.3A< |
| DACA_RED | 6.1G> 6.3G 9.3A< |
| DACA_RSET | 6.1C |
| DACA_VDD | 6.1C |
| DACA_VREF | 6.1C |
| DACA_VSYNC | 6.1G> 9.3A< |
| DACB_BLUE | 6.3G> 6.4F 9.3A< |
| DACB_GREEN | 6.3G> 6.4F 9.2A< |
| DACB_RED | 6.3F 6.3G> 9.3A< |
| DACB_RSET | 6.2C |
| DACB_VDD | 6.2C |
| DACB_VREF | 6.2C |
| DACC_VDD | 6.4C |
| DP_AUXG | 8.2E 8.5D<> |
| DP_AUXG* | 8.2E 8.5D<> |
| DP_AUXG_R | 8.1E 8.5D<> |
| DP_AUXG_R* | 8.1E 8.5D<> |
| DP_AUXT | 8.1E 8.5F<> |
| DP_AUXT* | 8.1E 8.5F<> |
| DP_AUX_C | 8.2G> 8.5F<> 9.3C<> |
| DP_AUX_C* | 8.2G> 8.5F<> 9.3C<> |
| DP_L0 | 8.2E 8.5D<> |
| DP_L0* | 8.2E 8.5D<> |
| DP_L0_C | 8.2F> 8.5F<> 9.2F< |
| DP_L0_C* | 8.2F> 8.5F<> 9.2F< |
| DP_L1 | 8.2E 8.5D<> |
| DP_L1* | 8.2E 8.5D<> |
| DP_L1_C | 8.2F> 8.5F<> 9.2F< |
| DP_L1_C* | 8.2F> 8.5F<> 9.2F< |
| DP_L2 | 8.2E 8.5D<> |
| DP_L2* | 8.2E 8.5D<> |
| DP_L2_C | 8.2F> 8.5F<> 9.3F< |
| DP_L2_C* | 8.2F> 8.5F<> 9.2F< |
| DP_L3 | 8.2E 8.5D<> |
| DP_L3* | 8.2E 8.5D<> |
| DP_L3_C | 8.2F> 8.5F<> 9.3F< |
| DP_L3_C* | 8.2F> 8.5F<> 9.3F< |
| FBA_CLK0 | 3.3E> 4.2A 4.2E 4.3G< 4.5A< |
| FBA_CLK0* | 3.3E> 4.2A 4.2E 4.3G< 4.5A< |
| FBA_CLK0_TERM | 4.3G |
| FBA_CLK1 | 3.3E> 5.2A 5.2E 5.4G< 5.5A< |
| FBA_CLK1* | 3.3E> 5.2A 5.2E 5.4G< 5.5A< |
| FBA_CLK1_TERM | 5.3G |
| FBA_CMD<0> | 3.2E 4.1A 4.1E |
| FBA_CMD<27..0> | 3.2F> 4.1A< 4.5A< 5.1A< 5.5A< |
| FBA_CMD<1> | 3.2E 4.1A 4.1E 5.1A 5.1E |
| FBA_CMD<2> | 3.2E 4.1A 4.1E |
| FBA_CMD<3> | 3.2E 4.1A 4.1E 5.1A 5.1E |
| FBA_CMD<4> | 3.2E 5.1A 5.1E |
| FBA_CMD<5> | 3.2E 5.1A 5.1E |
| FBA_CMD<6> | 3.2E 5.1A 5.1E |
| FBA_CMD<8> | 3.2E 4.1A 4.1E 5.1A 5.1E |
| FBA_CMD<9> | 3.2E 4.1A 4.1E 5.1A 5.1E |
| FBA_CMD<10> | 3.2E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<11> | 3.2E 3.2F 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<12> | 3.3E 3.3F 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<13> | 3.3E 5.1A 5.1E |
| FBA_CMD<14> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<15> | 3.3E 4.1A 4.1E 5.1A 5.1E |
| FBA_CMD<16> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<17> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<18> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<19> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<20> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<21> | 3.3E 4.1A 4.1E 5.2A 5.2E |
| FBA_CMD<22> | 3.3E 4.1A 4.1E |
| FBA_CMD<23> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_CMD<24> | 3.3E 4.1A 4.1E |
| FBA_CMD<25> | 3.3E 4.1A 4.1E 5.1A 5.1E |
| FBA_CMD<27> | 3.3E 4.2A 4.2E 5.2A 5.2E |
| FBA_D<0> | 3.1C 4.3B |
| FBA_D<31..0> | 4.3A<> 4.5A<> 3.1C<> |
| FBA_D<63..0> | 3.1C<> 5.3A<> 5.5A<> |
| FBA_D<1> | 3.1C 4.3B |
| FBA_D<2> | 3.1C 4.3B |
| FBA_D<3> | 3.1C 4.3B |
| FBA_D<4> | 3.1C 4.3B |
| FBA_D<5> | 3.1C 4.3B |
| FBA_D<6> | 3.1C 4.3B |
| FBA_D<7> | 3.1C 4.3B |
| FBA_D<8> | 3.1C 4.3C |
| FBA_D<9> | 3.1C 4.3C |
| FBA_D<10> | 3.1C 4.3C |
| FBA_D<11> | 3.1C 4.3C |
| FBA_D<12> | 3.1C 4.3C |
| FBA_D<13> | 3.1C 4.3C |
| FBA_D<14> | 3.1C 4.3C |
| FBA_D<15> | 3.1C 4.3C |
| FBA_D<16> | 3.1C 4.3D |
| FBA_D<17> | 3.1C 4.3D |
| FBA_D<18> | 3.1C 4.3D |
| FBA_D<19> | 3.1C 4.3D |
| FBA_D<20> | 3.1C 4.3D |
| FBA_D<21> | 3.2C 4.3D |
| FBA_D<22> | 3.2C 4.3D |
| FBA_D<23> | 3.2C 4.3D |
| FBA_D<24> | 3.2C 4.3D |
| FBA_D<25> | 3.2C 4.3D |
| FBA_D<26> | 3.2C 4.3D |
| FBA_D<27> | 3.2C 4.3D |
| FBA_D<28> | 3.2C 4.3D |
| FBA_D<29> | 3.2C 4.3D |
| FBA_D<30> | 3.2C 4.3D |
| FBA_D<31> | 3.2C 4.3D |
| FBA_D<32> | 3.2C 5.3B |
| FBA_D<63..32> | 3.1C<> 5.3A<> 5.5A<> |
| FBA_D<33> | 3.2C 5.3B |
| FBA_D<34> | 3.2C 5.3B |
| FBA_D<35> | 3.2C 5.3B |
| FBA_D<36> | 3.2C 5.3B |
| FBA_D<37> | 3.2C 5.3B |
| FBA_D<38> | 3.2C 5.3B |
| FBA_D<39> | 3.2C 5.3B |
| FBA_D<40> | 3.2C 5.3C |
| FBA_D<41> | 3.2C 5.3C |
| FBA_D<42> | 3.2C 5.3C |
| FBA_D<43> | 3.2C 5.3C |
| FBA_D<44> | 3.2C 5.3C |
| FBA_D<45> | 3.2C 5.3C |
| FBA_D<46> | 3.2C 5.3C |
| FBA_D<47> | 3.2C 5.3C |
| FBA_D<48> | 3.2C 5.3D |
| FBA_D<49> | 3.2C 5.3D |
| FBA_D<50> | 3.2C 5.3D |
| FBA_D<51> | 3.3C 5.3D |
| FBA_D<52> | 3.3C 5.3D |
| FBA_D<53> | 3.3C 5.3D |
| FBA_D<54> | 3.3C 5.3D |
| FBA_D<55> | 3.3C 5.3D |
| FBA_D<56> | 3.3C 5.3E |
| FBA_D<57> | 3.3C 5.3E |
| FBA_D<58> | 3.3C 5.3E |
| FBA_D<59> | 3.3C 5.3E |
| FBA_D<60> | 3.3C 5.3E |
| FBA_D<61> | 3.3C 5.3E |
| FBA_D<62> | 3.3C 5.3E |
| FBA_D<63> | 3.3C 5.3E |
| FBA_DEBUG | 3.4E |
| FBA_DQM<0> | 3.3C 4.4B |
| FBA_DQM<3..0> | 4.3A<> 4.5A<> 3.3C<> |
| FBA_DQM<7..0> | 3.3C<> 5.3A<> 5.5A<> |
| FBA_DQM<1> | 3.3C 4.4C |
| FBA_DQM<2> | 3.3C 4.4D |
| FBA_DQM<3> | 3.3C 4.4D |
| FBA_DQM<4> | 3.3C 5.4B |
| FBA_DQM<7..4> | 3.3C<> 5.3A<> 5.5A<> |
| FBA_DQM<5> | 3.3C 5.4C |
| FBA_DQM<6> | 3.3C 5.4D |
| FBA_DQM<7> | 3.3C 5.4E |
| FBA_DQS_RN0 | 3.4C<> 4.4B 4.5A< |
| FBA_DQS_RN1 | 3.4C<> 4.4C 4.5A< |
| FBA_DQS_RN2 | 3.4C<> 4.4D 4.5A< |
| FBA_DQS_RN3 | 3.4C<> 4.4D 4.5A< |
| FBA_DQS_RN4 | 3.4C<> 5.4B 5.5A< |
| FBA_DQS_RN5 | 3.4C<> 5.4C 5.5A< |
| FBA_DQS_RN6 | 3.4C<> 5.4D 5.5A< |
| FBA_DQS_RN7 | 3.4C<> 5.4E 5.5A< |
| FBA_DQS_WP0 | 3.3C<> 4.4B 4.5A< |
| FBA_DQS_WP1 | 3.3C<> 4.4C 4.5A< |
| FBA_DQS_WP2 | 3.3C<> 4.4D 4.5A< |
| FBA_DQS_WP3 | 3.3C<> 4.4D 4.5A< |
| FBA_DQS_WP4 | 3.4C<> 5.4B 5.5A< |
| FBA_DQS_WP5 | 3.4C<> 5.4C 5.5A< |
| FBA_DQS_WP6 | 3.4C<> 5.4D 5.5A< |
| FBA_DQS_WP7 | 3.4C<> 5.4E 5.5A< |
| FBA_VREF1 | 4.2C 4.2F 4.4A<> |
| FBA_VREF2 | 5.2B 5.2F 5.4A<> |
| FB_CAL_PD_VDDQ | 3.1A<> 3.4E |
| FB_CAL_PU_GND | 3.2A<> 3.4E |
| FB_CAL_TERM_GND | 3.2A<> 3.4E |
| FB_PLLAVDD | 3.2A<> 3.4E |
| FB_VREF | 3.2A<> 3.5C |
| GND_SENSE | 2.4F |
| GPIO1_DP_HPDC | 10.3D |
| GPIO2_BL_PWM | 9.4A< 10.3F> |
| GPIO3_PPEN | 9.3A< 10.3F> |
| GPIO3_PPEN_GPU | 10.3D |
| GPIO4_BLEN | 9.3A< 10.3F> |
| GPIO4_BLEN_GPU | 10.3D |
| GPIO5_NVVDDCTL0 | 10.3F> 12.4A< |
| GPIO6_NVVDDCTL1 | 10.3F> 12.4A< |
| GPIO8_SLOWDOWNM* | 10.2D |
| GPIO8_THERM_ALERT* | 10.3D |
| GPIO9_LVDS_SYS* | 7.2A< 10.3E> |
| GPIO9_TMDS_IOVDD_E N* | 7.2B |
| GPIO12_AC_DET | 10.3D |
| GPIO15_DVI_A_HPDE | 10.3D |
| GPIO16_MODE_C | 8.1G< 10.3E< |
| GPIO16_MODE_C* | 8.1F |
| GPU_TESTMODE | 11.2C |
| HDA1_BCLK | 7.5D<> |
| HDA1_RST* | 7.5D<> |
| HDA1_SDI | 7.4F 7.5D<> |
| HDA1_SDO | 7.5D<> |
| HDA1_SYNC | 7.5D<> |
| HDA_BCLK | 7.4H< 7.5D<> 9.4C> |
| HDA_RST* | 7.4H< 7.5D<> 9.4C> |
| HDA_SDI | 7.4H< 7.5D<> 9.4C> |
| HDA_SDO | 7.4H> 7.5D<> 9.4C> |
| HDA_SYNC | 7.4H< 7.5D<> 9.4C> |
| I2CA_SCL | 10.2D |
| I2CA_SCL_R | 9.3A< 10.2H> |
| I2CA_SDA | 10.2D |
| I2CA_SDA_R | 9.3A<> 10.2H<> |
| I2CB_SCL | 10.2D |
| I2CB_SCL_R | 9.2A< 10.3H> |
| I2CB_SDA | 10.3D |
| I2CB_SDA_R | 9.2A<> 10.3H<> |
| I2CC_SCL | 10.3D |
| I2CC_SCL_R | 9.4A< 10.2A< 10.3H> 11.5E< |
| I2CC_SDA | 10.3D |
| I2CC_SDA_R | 9.4A<> 10.2A<> 10.3H<> 11.5E<> |
| I2CD_SCL | 8.1G<> 10.3H> |
| I2CD_SDA | 8.1G<> 10.3H<> |
| I2CH_SCL | 11.1C |
| I2CH_SDA | 11.2C |
| I2CS_SCL | 10.3C |
| I2CS_SDA | 10.3C |
| IFPAB_IOVDD | 7.2F |
| IFPAB_IOVDD_3V3 | 7.3B |
| IFPAB_IOVDD_EN* | 7.3B |
| IFPAB_IOVDD_LVDS_I SOL | 7.2B |
| IFPAB_IOVDD_SW | 7.2C |
| IFPAB_PLLVDD | 7.1F |
| IFPAB_RSET | 7.1F |
| IFPA_TXC | 7.2H> 7.5B<> 9.4F< |
| IFPA_TXC* | 7.2H> 7.5B<> 9.4F< |
| IFPA_TXD0 | 7.1H> 7.4B<> 9.4F< |
| IFPA_TXD0* | 7.1H> 7.4B<> 9.4F< |
| IFPA_TXD1 | 7.1H> 7.4B<> 9.4F< |
| IFPA_TXD1* | 7.1H> 7.4B<> 9.4F< |
| IFPA_TXD2 | 7.2H> 7.5B<> 9.4F< |
| IFPA_TXD2* | 7.2H> 7.5B<> 9.4F< |
| IFPA_TXD3 | 7.2H> 7.5B<> 9.4F< |
| IFPA_TXD3* | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXC | 7.3H> 7.5B<> 9.4F< |
| IFPB_TXC* | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXD4 | 7.2H> 7.5B<> 9.3F< |
| IFPB_TXD4* | 7.2H> 7.5B<> 9.3F< |
| IFPB_TXD5 | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXD5* | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXD6 | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXD6* | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXD7 | 7.2H> 7.5B<> 9.4F< |
| IFPB_TXD7* | 7.2H> 7.5B<> 9.4F< |
| IFPC_HPD | 9.2C> 10.3H< |
| IFPC_IOVDD | 8.2C |
| IFPC_PLLVDD | 8.2C |
| IFPC_RSET | 8.2C |
| IFPE_HPD | 9.2A> 10.3H< |
| IFPE_IOVDD | 8.4C |
| IFPE_L0 | 8.4E 8.5B<> |
| IFPE_L0* | 8.4E 8.5B<> |
| IFPE_L1 | 8.4E 8.5B<> |
| IFPE_L1* | 8.4E 8.5B<> |
| IFPE_L2 | 8.4E 8.5B<> |
| IFPE_L2* | 8.4E 8.5B<> |
| IFPE_L3 | 8.3E 8.5B<> |
| IFPE_L3* | 8.3E 8.5B<> |
| IFPE_PLLVDD | 8.3C |
| IFPE_RSET | 8.3C |
| IFPE_TERM | 8.4H |
| IFPE_TXC | 8.3G 8.4F> 8.5B<> 9.2F< |
| IFPE_TXC* | 8.3F> 8.3G 8.5B<> 9.2F< |
| IFPE_TXD0 | 8.4F> 8.4G 8.5B<> 9.2F< |
| IFPE_TXD0* | 8.3G 8.4F> 8.5B<> 9.2F< |
| IFPE_TXD1 | 8.4F> 8.4G 8.5B<> 9.2F< |
| IFPE_TXD1* | 8.4F> 8.4G 8.5B<> 9.2F< |
| IFPE_TXD2 | 8.4F> 8.4G 8.5B<> 9.2F< |
| IFPE_TXD2* | 8.4F> 8.4G 8.5B<> 9.2F< |
| JTAG_TCLK | 10.3C |
| JTAG_TDI | 10.3C |
| JTAG_TDO | 10.3C |
| JTAG_TMS | 10.3C |
| JTAG_TRST | 10.3C |
| MOBILE_AC_BATT | 9.4B> 10.3E< |
| MOBILE_RUNPWROK | 7.3A< 9.4A> 12.2A< |
| MOBILE_RUNPWROK_IN | 9.4B |
| NVVDD | 12.2F |
| NVVDD_CTL0 | 12.4C |
| NVVDD_CTL0_R | 12.4C |
| NVVDD_CTL1 | 12.4C |
| NVVDD_CTL1_R | 12.4C |
| NVVDD_SENSE | 2.4G<> 12.3E<> |
| PEX_PLLVDD | 2.4F |
| PEX_PRSNT2 | 2.5C |
| PEX_PRSNT2_R | 2.5D> 14.4A< |
| PEX_PRSNT2_T | 14.4B |
| PEX_REFCLK | 2.2E |
| PEX_REFCLK* | 2.2E |
| PEX_RST | 2.2D |
| PEX_RX0 | 2.2E |
| PEX_RX0* | 2.2E |
| PEX_RX1 | 2.2E |
| PEX_RX1* | 2.2E |
| PEX_RX2 | 2.2E |
| PEX_RX2* | 2.2E |
| PEX_RX3 | 2.3E |
| PEX_RX3* | 2.3E |
| PEX_RX4 | 2.3E |
| PEX_RX4* | 2.3E |
| PEX_RX5 | 2.3E |
| PEX_RX5* | 2.3E |
| PEX_RX6 | 2.3E |
| PEX_RX6* | 2.3E |
| PEX_RX7 | 2.3E |
| PEX_RX7* | 2.3E |
| PEX_RX8 | 2.4E |
| PEX_RX8* | 2.4E |
| PEX_RX9 | 2.4E |
| PEX_RX9* | 2.4E |
| PEX_RX10 | 2.4E |
| PEX_RX10* | 2.4E |
| PEX_RX11 | 2.4E |
| PEX_RX11* | 2.4E |
| PEX_RX12 | 2.4E |
| PEX_RX12* | 2.4E |
| PEX_RX13 | 2.5E |
| PEX_RX13* | 2.5E |
| PEX_RX14 | 2.5E |
| PEX_RX14* | 2.5E |
| PEX_RX15 | 2.5E |
| PEX_RX15* | 2.5E |
| PEX_TCLK | 2.5F |
| PEX_TCLK* | 2.5F |
| PEX_TERMP | 2.5F |
| PEX_TX0 | 2.2E |
| PEX_TX0* | 2.2E |
| PEX_TX0_C | 2.2C |
| PEX_TX0_C* | 2.2C |
| PEX_TX1 | 2.2E |
| PEX_TX1* | 2.2E |
| PEX_TX1_C | 2.2C |
| PEX_TX1_C* | 2.2C |
| PEX_TX2 | 2.2E |
| PEX_TX2* | 2.2E |
| PEX_TX2_C | 2.2C |
| PEX_TX2_C* | 2.2C |
| PEX_TX3 | 2.2E |
| PEX_TX3* | 2.2E |
| PEX_TX3_C | 2.2C |
| PEX_TX3_C* | 2.2C |
| PEX_TX4 | 2.3E |
| PEX_TX4* | 2.3E |
| PEX_TX4_C | 2.3C |
| PEX_TX4_C* | 2.3C |
| PEX_TX5 | 2.3E |
| PEX_TX5* | 2.3E |
| PEX_TX5_C | 2.3C |
| PEX_TX5_C* | 2.3C |
| PEX_TX6 | 2.3E |
| PEX_TX6* | 2.3E |
| PEX_TX6_C | 2.3C |
| PEX_TX6_C* | 2.3C |
| PEX_TX7 | 2.3E |
| PEX_TX7* | 2.3E |
| PEX_TX7_C | 2.3C |
| PEX_TX7_C* | 2.3C |
| PEX_TX8 | 2.3E |
| PEX_TX8* | 2.3E |
| PEX_TX8_C | 2.3C |
| PEX_TX8_C* | 2.3C |
| PEX_TX9 | 2.4E |
| PEX_TX9* | 2.4E |
| PEX_TX9_C | 2.4C |
| PEX_TX9_C* | 2.4C |
| PEX_TX10 | 2.4E |
| PEX_TX10* | 2.4E |
| PEX_TX10_C | 2.4C |
| PEX_TX10_C* | 2.4C |
| PEX_TX11 | 2.4E |
| PEX_TX11* | 2.4E |
| PEX_TX11_C | 2.4C |
| PEX_TX11_C* | 2.4C |
| PEX_TX12 | 2.4E |
| PEX_TX12* | 2.4E |
| PEX_TX12_C | 2.4C |
| PEX_TX12_C* | 2.4C |
| PEX_TX13 | 2.4E |
| PEX_TX13* | 2.4E |
| PEX_TX13_C | 2.4C |
| PEX_TX13_C* | 2.4C |
| PEX_TX14 | 2.5E |
| PEX_TX14* | 2.5E |
| PEX_TX14_C | 2.5C |
| PEX_TX14_C* | 2.5C |
| PEX_TX15 | 2.5E |
| PEX_TX15* | 2.5E |
| PEX_TX15_C | 2.5C |
| PEX_TX15_C* | 2.5C |
| PS_BOOT_FB1 | 13.3C |
| PS_BOOT_FBVDDQ | 13.3C |
| PS_BOOT_NV1 | 12.2C |
| PS_BOOT_NVVDD | 12.2C |
| PS_BOOT_PEX | 13.2C |
| PS_CP_FB1 | 13.5B |
| PS_CP_FB2 | 13.4B |
| PS_CP_FB3 | 13.4E |
| PS_CP_NVVDD1 | 12.3B |
| PS_CP_NVVDD2 | 12.3B |
| PS_CP_NVVDD3 | 12.3D |
| PS_DR_FBFCCM | 13.4B |
| PS_DR_NVFCCM | 12.2B |
| PS_FB_FB | 13.4C |
| PS_FB_NVVDD | 12.4D |
| PS_FB_PEX | 13.3C |
| PS_FS_FB | 13.4B |
| PS_FS_NVVDD | 12.3B |
| PS_ISEN_FBVDDQ | 13.4C |
| PS_ISEN_NVVDD | 12.2C |
| PS_LG_FBVDDQ | 13.4C |
| PS_LG_NVVDD | 12.2C |
| PS_LG_PEX | 13.2C |
| PS_PGOOD_FB | 7.1A< 13.2A> 13.4A> |
| PS_PGOOD_NV | 10.2F< 12.2A> 13.2A< 13.4A< |
| PS_PHASE_FBVDDQ | 13.4C |
| PS_PHASE_NVVDD | 12.2C |
| PS_PHASE_PEX | 13.2C |
| PS_RC_FB | 13.4D |
| PS_RC_NVVDD | 12.3E |
| PS_RC_PEX | 13.2E |
| PS_UG_FBVDDQ | 13.3C |
| PS_UG_NVVDD | 12.2C |
| PS_VCC_FB | 7.1A< 13.4A> |
| PS_VCC_NVVDD | 12.2B |
| ROM_CS* | 11.1C 11.1D |
| ROM_SCLK | 11.1D< 11.1D< 14.3A> |
| ROM_SI | 11.1D< 11.1D< 14.3A> |
| ROM_SO | 11.1D< 11.1D< 14.3A> |
| SMB_CLK | 9.4A> 10.4B< |
| SMB_DATA | 9.4A<> 10.4B<> |
| SNN_A13_1 | 4.2B |
| SNN_A13_2 | 4.2E |
| SNN_A13_3 | 5.2A |
| SNN_A13_4 | 5.2E |
| SNN_A14_1 | 4.2B |
| SNN_A14_2 | 4.2E |
| SNN_A14_3 | 5.2A |
| SNN_A14_4 | 5.2E |
| SNN_A15_1 | 4.2B |
| SNN_A15_2 | 4.2E |
| SNN_A15_3 | 5.2A |
| SNN_A15_4 | 5.2E |
| SNN_BUFRST* | 11.2C |
| SNN_CN1_200 | 9.3C |
| SNN_DACB_CSYNC | 6.3D |
| SNN_DACC_BLUE | 6.4D |
| SNN_DACC_GREEN | 6.4D |
| SNN_DACC_HSYNC | 6.4D |
| SNN_DACC_RED | 6.4D |
| SNN_DACC_RSET | 6.4C |
| SNN_DACC_VREF | 6.4C |
| SNN_DACC_VSYNC | 6.4D |
| SNN_DPB_165 | 9.3E |
| SNN_DPB_167 | 9.3E |
| SNN_DPB_177 | 9.3E |
| SNN_DPB_179 | 9.3E |
| SNN_DPB_183 | 9.3E |
| SNN_DPB_185 | 9.3E |
| SNN_DPB_195 | 9.3E |
| SNN_DPB_197 | 9.3E |
| SNN_FBA_CMD7 | 3.2E |
| SNN_FBA_CMND26 | 3.3E |
| SNN_FBA_CMND28 | 3.3E |
| SNN_FBA_NC1 | 4.2A |
| SNN_FBA_NC2 | 4.2A |
| SNN_FBA_NC3 | 4.2E |
| SNN_FBA_NC4 | 4.2E |
| SNN_FBA_NC5 | 5.2A |
| SNN_FBA_NC6 | 5.2A |
| SNN_FBA_NC7 | 5.2E |
| SNN_FBA_NC8 | 5.2E |
| SNN_FBA_RFU_1 | 3.3E |
| SNN_FBA_RFU_2 | 3.3E |
| SNN_GPIO7 | 10.3D |
| SNN_GPIO10 | 10.3D |
| SNN_GPIO11 | 10.3D |
| SNN_GPIO13 | 10.3D |
| SNN_GPIO14 | 10.3D |
| SNN_GPIO17_CEC_DET_C | 10.3D |
| SNN_GPIO18_MODE_E | 10.4D |
| SNN_GPIO19_CEC_DET_E | 10.4D |
| SNN_I2CE_SCL | 10.3D |
| SNN_I2CE_SDA | 10.3D |
| SNN_IFPE_AUX | 8.3E |
| SNN_IFPE_AUX* | 8.3E |
| SNN_NC1 | 11.1H |
| SNN_NC2 | 11.1H |
| SNN_NC3 | 11.1H |
| SNN_NC4 | 11.1H |
| SNN_PEX_NC | 13.2B |
| SNN_RFU_AE9 | 2.1E |
| SNN_RFU_AG9 | 2.5F |
| SNN_RFU_C15 | 11.2A |
| SNN_RFU_D15 | 11.2A |
| SNN_RFU_F6 | 11.2C |
| SNN_RFU_J5 | 11.2C |
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| THERM_SCL | 10.2C |
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| THERM_VDD | 10.2D |
| XTALIN | 11.4C |
| XTALOUT | 11.4E |
| XTALOUT_BUF | 11.4E |
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| XTAL_SSFOUT | 11.4C |

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| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
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|---|---|
| ASSEMBLY | NB9M-GS G98M ?/400MHz, 256MB(64bit) GDDR2 32Mx16 84FBGA, LVDS + HDMI + SD/HD(TV_OUT) + VGA |
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