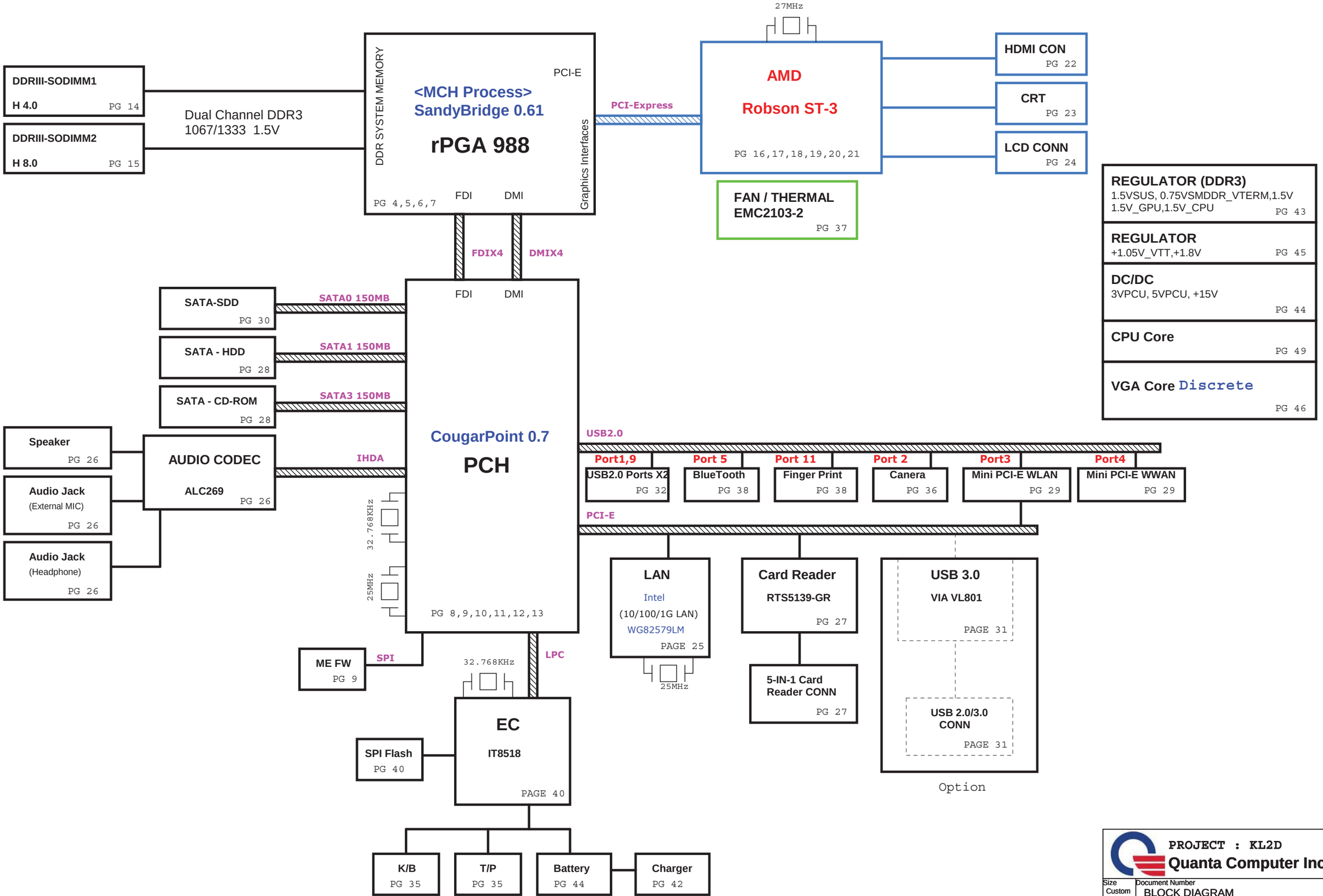
KL9A Intel Huron River Platform with AMD Discrete GFX



PROJECT : KL2D

Quanta Computer Inc.

Size	Document Number	Rev
Custom	BLOCK DIAGRAM	1A

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ADP IN
BAT
Charger Circuit
ISL88731A
VIN
MAX17020ETJ+
1 5VPCU
1 3VPCU
1a HWPG(3/5VPCU)
4 S5_ON
5VPCU
AO6402A
3VPCU
AO6402A
5 5V_S5
5 3V_S5
12 HWPG(All Power GOOD)
15 SYS_PWROK
16 PM_DRAM_PWRGD
17 H_PWRGOOD
18 PLTRST#
Yukon River
VTTPWRGOOD
SM_DRAMPWROK
UNCOREPWRGOOD
RSTIN#
Madison
GPU_RST#
26 GPU_RST#
3VPCU
R 470K
C 0.1U
2 WRST_8512#
3 NBSWON#
WRST#
EC
ITE-8518
DELAY 99mS
12 HWPG(All Power GOOD)
6 RSMST#
7 SIO_PWRBTN#
8a PM_SLP_S4#
8b PM_SLP_S3#
13 ECPWROK
12a VRON
RSMRST#
PWRBTN#
DRAMPWROK
PLTRST#
GPIO
SYS_PWROK
PWROK
MEPWROK
GPIO
GPIO
PCH
19a DGPU_PWR_EN#
24 GFXPG_R
DGPU_HOLD_RST#
25
15 SYS_PWROK
14 IMVP_PWRGD
5VPCU
VT1316M + VT1317S
VR1_READY
VRON
13 +VCC_CORE
13 +VCC_GFX
R 0ohm
VIN
TPS51116REGR
LDO
9a SUSON
10a +1.5V_SUS
10d 0.75VSMDDR_VTERM
10c +1.5VCPU_PG
5VPCU
AO6402A
10a 5VSUS
3VPCU
AO6402A
10a 3VSUS
9b MAINON
1a HWPG(3/5VPCU)
10a HWPG(+1.5VSUS)
VIN
OZ8115
10b +1.05V_VTT
11b HWPG(+1.05V_VTT)
VIN
OZ8115
10b +1.05_PCH
11b HWPG(+1.05V_VTT)
HWPG(All Power GOOD)
VIN
OZ8115
10b +1.8V
11b HWPG(+1.8V)
VIN
OZ8115
10b +0.85V
11b HWPG(+0.85V)
5VPCU
AON7410
10b +5V
3VPCU
AON7410
10b +3V
1.5VSUS
AO6402A
10b +1.5V
1.5VSUS
AO6402A
10b +1.5VCPU
Delay
10c +1.5VCPU_PG
VIN
MAX8792
19a DGPU_PWR_EN#
19b
19c
20a GFX_CORE
20b GFXPG_1V_EN
1.5VSUS
LDO RT9018B
21a +1V_GFX_PCIE
21b +1V_PCIE_PG
+3V
AO6402A
22a +3.3V_DELAY
1.5VSUS
TPCA8030-H
22a +1.5V_GPU
+1.8V
AO6402A
23a +1.8V_GPU
Delay
23b DGPU_PWROK
12 HWPG
24 GFXPG_R

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Quanta Computer Inc.
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CLK Gen(CLK)

03

02/20 DEL for Pre-ES1

CPU_CLK select(CLK)

02/20 DEL for Pre-ES1

	0	1
CPU_SEL	CPU0/1=133MHz (default)	CPU0/1=100MHz

PROJECT : KL2D

Quanta Computer Inc.

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Sandy Bridge Processor (DMI,PEG,FDI)

U32A

DMI_TXN0 B27 / DMI_TXN1 B25 / DMI_TXN2 A25 / DMI_TXN3 B24 → DMI_RX#[0..3]
DMI_TXP0 B28 / DMI_TXP1 B26 / DMI_TXP2 A24 / DMI_TXP3 B23 → DMI_RX[0..3]
DMI_RXN0 G21 / DMI_RXN1 E22 / DMI_RXN2 F21 / DMI_RXN3 D21 → DMI_TX#[0..3]
DMI_RXP0 G22 / DMI_RXP1 D22 / DMI_RXP2 F20 / DMI_RXP3 C21 → DMI_TX[0..3]

DMI

FDI_TXN0 A21 / FDI_TXN1 H19 / FDI_TXN2 E19 / FDI_TXN3 F18 / FDI_TXN4 B21 / FDI_TXN5 C20 / FDI_TXN6 D18 / FDI_TXN7 E17 → FDI0_TX#[0..7]
FDI_TXP0 A22 / FDI_TXP1 G19 / FDI_TXP2 E20 / FDI_TXP3 G18 / FDI_TXP4 B20 / FDI_TXP5 C19 / FDI_TXP6 D19 / FDI_TXP7 F17 → FDI0_TX[0..7]
FDI_FSYNC0 J18 / FDI_FSYNC1 J17 → FDI0_FSYNC, FDI1_FSYNC
FDI_INT H20 → FDI_INT
FDI_LSYNC0 J19 / FDI_LSYNC1 H17 → FDI0_LSYNC, FDI1_LSYNC

Intel(R) FDI

eDP_COMP A18 / INT_eDP_HPD_Q B16 → eDP_COMPIO, eDP_ICOMPO, eDP_HPD
C15 / D15 → eDP_AUX, eDP_AUX#
C17 / F16 / C16 / G15 → eDP_TX[0..3]
C18 / E16 / D16 / F15 → eDP_TX#[0..3]

eDP

eDP_COMP connect to PIN A18 W:4mils/S:15mils/L: 500mils.
eDP_COMP connect to PIN A17 W:12mils/S:15mils/L: 500mils.

CPU-989P-rPGA

PEG_ICOMPI J22 / PEG_ICOMPO J21 / PEG_RCOMPO H22 → PEG_COMP

PEG_RX#[0..15] → PEG_RXN0 K33, PEG_RXN1 M35, PEG_RXN2 L34, PEG_RXN3 J35, PEG_RXN4 J32, PEG_RXN5 H34, PEG_RXN6 H31, PEG_RXN7 G33, PEG_RXN8 G30, PEG_RXN9 E35, PEG_RXN10 E34, PEG_RXN11 E32, PEG_RXN12 D33, PEG_RXN13 D31, PEG_RXN14 B33, PEG_RXN15 C32
PEG_RX[0..15] → PEG_RXP0 J33, PEG_RXP1 L35, PEG_RXP2 K34, PEG_RXP3 H35, PEG_RXP4 H32, PEG_RXP5 G34, PEG_RXP6 G31, PEG_RXP7 F33, PEG_RXP8 F30, PEG_RXP9 E35, PEG_RXP10 E33, PEG_RXP11 F32, PEG_RXP12 D34, PEG_RXP13 E31, PEG_RXP14 C33, PEG_RXP15 B32
PEG_TX#[0..15] → PEG_TXN0_C M29, PEG_TXN1_C M32, PEG_TXN2_C M31, PEG_TXN3_C L32, PEG_TXN4_C L29, PEG_TXN5_C K31, PEG_TXN6_C K28, PEG_TXN7_C J30, PEG_TXN8_C J28, PEG_TXN9_C H29, PEG_TXN10_C G27, PEG_TXN11_C E29, PEG_TXN12_C F27, PEG_TXN13_C D28, PEG_TXN14_C F26, PEG_TXN15_C E25
PEG_TX[0..15] → PEG_TXP0_C M28, PEG_TXP1_C M33, PEG_TXP2_C M30, PEG_TXP3_C L31, PEG_TXP4_C L28, PEG_TXP5_C K30, PEG_TXP6_C K27, PEG_TXP7_C J29, PEG_TXP8_C J27, PEG_TXP9_C H28, PEG_TXP10_C G28, PEG_TXP11_C E28, PEG_TXP12_C F28, PEG_TXP13_C D27, PEG_TXP14_C E26, PEG_TXP15_C D25

PCI EXPRESS* - GRAPHICS

PEG_COMP connect to PIN H22&J22 W:4mils/S:15mils/L: 500mils.
PEG_COMP connect to PIN J21 W:12mils/S:15mils/L: 500mils.

PEG_RXN[0..15] (16)
PEG_RXP[0..15] (16)

Sandy Bridge Processor (CLK,MISC,JTAG)

04

SNB_IVB# N.A at SNB EDS #27637 0.7v1

(9) H_SNB_IVB# → C26 PROC_SELECT#
TP11 SKTOCC# → AN34 SKTOCC#
TP12 TP_CATERR# → AL33 CATERR#
(40) EC_PECI → AN33 PECI
(40,49) H_PROCHOT# R269 56/J_4 H_PROCHOT#_R → AL32 PROCHOT#
(11) PM_THRMTRIP# → AN32 THERMTRIP#

MISC / THERMAL

EC-C-15
(8) PM_SYNC R592 *SHORT_4 PM_SYNC_R → AM34 PM_SYNC
(11) H_PWRGOOD R608 *SHORT_4 H_PWRGOOD_R → AP33 UNCOREPWRGOOD
EC-QV-07 C900 *0.1U/10V_4, R607 10K/J_4
PM_DRAM_PWRGD_R → V8 SM_DRAMPWROK
+1.05V_PCH R606 75/J_4 CPU_PLTRST# R605 43/J_4 CPU_PLTRST#_R → AR33 RESET#
RV12 *EGA-0002

PWR MANAGEMENT

CPU-989P-rPGA

CLOCKS

BCLK A28 CLK_CPU_BCLKP_R R632 0/J_4 → CLK_CPU_BCLKP (10)
BCLK# A27 CLK_CPU_BCLKN_R R633 0/J_4 → CLK_CPU_BCLKN (10)
DPLL_REF_CLK A16 CLK_DPLL_SSCLKP_R R293 Ra *0X2 → CLK_DPLL_SSCLKP (10)
DPLL_REF_CLK# A15 CLK_DPLL_SSCLKN_R R297 Rb 1K/F_4, R290 Rc 1K/F_4 → CLK_DPLL_SSCLKN (10)

EC-B-31

	DIS	UMA
Ra	NA	0 ohm
Rb	1K ohm	NA
Rc	1K ohm	NA

DDR3 MISC

SM_DRAMRST# R8 → CPU_DRAMRST# (5)
SM_RCOMP[0] AK1 SM_RCOMP_0 R626 140/F_4
SM_RCOMP[1] A5 SM_RCOMP_1 R315 25.5/F_4
SM_RCOMP[2] A4 SM_RCOMP_2 R316 200/F_4

EC-C-21

SM_RCOMP[0] W:20mils/S:20mils/L: 500mils,
SM_RCOMP[1] W:20mils/S:20mils/L: 500mils,
SM_RCOMP[2] W:15mils/S:20mils/L: 500mils,

JTAG & BPM

PRDY# AP29 XDP_PRDY# → TP13
PREQ# AP27 XDP_PREQ# → TP15
TCK AR26 XDP_TCLK → TP6
TMS AR27 XDP_TMS → TP7
TRST# AP30 XDP_TRST# → TP10
TDI AR28 XDP_TDI_R → TP8
TDO AP26 XDP_TDO → TP50
DBR# AL35 XDP_DBRST# → XDP_DBRST# (8)

EC-B-34

BPM#[0..7] AT28, AR29, AR30, AT30, AP32, AR31, AT31, AR32

EC-B-31

CLK_CPU_BCLKN: C705 *22P/50V_4
CLK_CPU_BCLKP: C704 *22P/50V_4
CLK_DPLL_SSCLKN_R: C706 *22P/50V_4
CLK_DPLL_SSCLKP_R: C713 *22P/50V_4
RF reserved

+3V_S5
U31 74LVC1G07GW: NC, VCC, IN, GNDOUT
C636 0.1U/10V_4
(10,16,25,29,31) PLTRST# → CPU_PLTRST#

EC-C-08

+3V_S5
C366 *0.1U/10V_4
U18 *74AHC1G09
(8,43) SYS_PWROK
(8) PM_DRAM_PWRGD → R314 *0/J_4 → PM_DRAM_PWRGD_Q
R313 0/J_4
PM_DRAM_PWRGD_Q → R312 *3K/F_4
+1.5VCPU
R324 200/F_4
PM_DRAM_PWRGD_Q → R322 130/F_4 → PM_DRAM_PWRGD_R
R325 39/J_4
Q29 2N7002K
EC-QV-08
MAINON# (41)

FDI Enable

FDI_INT
R282 DIS@0/J_4 FDI_FSYNC0
R284 DIS@0/J_4 FDI_FSYNC1
R277 DIS@0/J_4 FDI_LSYNC0
FDI_LSYNC1
R276 DIS@1K/F_4
R288 *DIS@1K/F_4

FDI_FSYNC can gang all these 4 signals together and tie them with only one 1K resistor to GND (DG V0.5 Ch2.2.9).

PEG x16 (UMA Non-stuff)

PEG_TXP[0..15] (16) → PEG_TXP0_C C667 … PEG_TXP15_C C651
PEG_TXN[0..15] (16) → PEG_TXN0_C C668 … PEG_TXN15_C C652
0.1U/10V_4

DP & PEG Compensation

PEG_ICOMPI and RCOMPO signals should be routed within 500 mils typical impedance = 43 mohms PEG_ICOMPO signals should be routed within 500 mils
typical impedance = 14.5 mohms

+1.05V_PCH R613 24.9/F_4 PEG_COMP
+1.05V_PCH R615 10K_4 INT_eDP_HPD_Q
+1.05V_PCH R614 24.9/F_4 eDP_COMP

eDP_COMPIO and ICOMPO signals should be shorted near balls and routed with typical impedance <25 mohms

Processor pull-up(CPU)

+1.05V_PCH
H_PROCHOT# R268 62/F_4
XDP_TDO R610 51/J_4
XDP_TMS R243 51/J_4
XDP_TDI_R R251 51/J_4
XDP_PREQ# R271 *51/J_4
XDP_TCLK R240 51/J_4
XDP_TRST# R260 51/J_4

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Sandy Bridge Processor (DDR3)

U32C

(15) M_A_DQ[63:0]

M_A_DQ0	C5	SA_DQ[0]
M_A_DQ1	D5	SA_DQ[1]
M_A_DQ2	D3	SA_DQ[2]
M_A_DQ3	D2	SA_DQ[3]
M_A_DQ4	D6	SA_DQ[4]
M_A_DQ5	C6	SA_DQ[5]
M_A_DQ6	C2	SA_DQ[6]
M_A_DQ7	C3	SA_DQ[7]
M_A_DQ8	F10	SA_DQ[8]
M_A_DQ9	F8	SA_DQ[9]
M_A_DQ10	G10	SA_DQ[10]
M_A_DQ11	G9	SA_DQ[11]
M_A_DQ12	F9	SA_DQ[12]
M_A_DQ13	F7	SA_DQ[13]
M_A_DQ14	G8	SA_DQ[14]
M_A_DQ15	G7	SA_DQ[15]
M_A_DQ16	K4	SA_DQ[16]
M_A_DQ17	K5	SA_DQ[17]
M_A_DQ18	K1	SA_DQ[18]
M_A_DQ19	J1	SA_DQ[19]
M_A_DQ20	J5	SA_DQ[20]
M_A_DQ21	J4	SA_DQ[21]
M_A_DQ22	J2	SA_DQ[22]
M_A_DQ23	K2	SA_DQ[23]
M_A_DQ24	M8	SA_DQ[24]
M_A_DQ25	N10	SA_DQ[25]
M_A_DQ26	N8	SA_DQ[26]
M_A_DQ27	N7	SA_DQ[27]
M_A_DQ28	M10	SA_DQ[28]
M_A_DQ29	M9	SA_DQ[29]
M_A_DQ30	N9	SA_DQ[30]
M_A_DQ31	M7	SA_DQ[31]
M_A_DQ32	AG6	SA_DQ[32]
M_A_DQ33	AG5	SA_DQ[33]
M_A_DQ34	AK6	SA_DQ[34]
M_A_DQ35	AK5	SA_DQ[35]
M_A_DQ36	AH5	SA_DQ[36]
M_A_DQ37	AH6	SA_DQ[37]
M_A_DQ38	AJ5	SA_DQ[38]
M_A_DQ39	AJ6	SA_DQ[39]
M_A_DQ40	AJ8	SA_DQ[40]
M_A_DQ41	AK8	SA_DQ[41]
M_A_DQ42	AJ9	SA_DQ[42]
M_A_DQ43	AK9	SA_DQ[43]
M_A_DQ44	AH8	SA_DQ[44]
M_A_DQ45	AH9	SA_DQ[45]
M_A_DQ46	AL9	SA_DQ[46]
M_A_DQ47	AL8	SA_DQ[47]
M_A_DQ48	AP11	SA_DQ[48]
M_A_DQ49	AN11	SA_DQ[49]
M_A_DQ50	AL12	SA_DQ[50]
M_A_DQ51	AM12	SA_DQ[51]
M_A_DQ52	AM11	SA_DQ[52]
M_A_DQ53	AL11	SA_DQ[53]
M_A_DQ54	AP12	SA_DQ[54]
M_A_DQ55	AN12	SA_DQ[55]
M_A_DQ56	AJ14	SA_DQ[56]
M_A_DQ57	AH14	SA_DQ[57]
M_A_DQ58	AL15	SA_DQ[58]
M_A_DQ59	AK15	SA_DQ[59]
M_A_DQ60	AL14	SA_DQ[60]
M_A_DQ61	AK14	SA_DQ[61]
M_A_DQ62	AJ15	SA_DQ[62]
M_A_DQ63	AH15	SA_DQ[63]

DDR SYSTEM MEMORY A

SA_CLK[0]	AB6	M_A_CLKP0 (15)
SA_CLK#[0]	AA6	M_A_CLKN0 (15)
SA_CKE[0]	V9	M_A_CKE0 (15)
SA_CLK[1]	AA5	M_A_CLKP1 (15)
SA_CLK#[1]	AB5	M_A_CLKN1 (15)
SA_CKE[1]	V10	M_A_CKE1 (15)
RSVD_TP[1]	AB4	
RSVD_TP[2]	AA4	
RSVD_TP[3]	W9	
RSVD_TP[4]	AB3	
RSVD_TP[5]	AA3	
RSVD_TP[6]	W10	
SA_CS#[0]	AK3	M_A_CS#0 (15)
SA_CS#[1]	AL3	M_A_CS#1 (15)
RSVD_TP[7]	AG1	
RSVD_TP[8]	AH1	
SA_ODT[0]	AH3	M_A_ODT0 (15)
SA_ODT[1]	AG3	M_A_ODT1 (15)
RSVD_TP[9]	AG2	
RSVD_TP[10]	AH2	

SA_DQS#[0]	C4	M_A_DQSN0	M_A_DQSN[7:0] (15)
SA_DQS#[1]	G6	M_A_DQSN1	
SA_DQS#[2]	J3	M_A_DQSN2	
SA_DQS#[3]	M6	M_A_DQSN3	
SA_DQS#[4]	AL6	M_A_DQSN4	
SA_DQS#[5]	AM8	M_A_DQSN5	
SA_DQS#[6]	AR12	M_A_DQSN6	
SA_DQS#[7]	AM15	M_A_DQSN7	
SA_DQS[0]	D4	M_A_DQSP0	M_A_DQSP[7:0] (15)
SA_DQS[1]	F6	M_A_DQSP1	
SA_DQS[2]	K3	M_A_DQSP2	
SA_DQS[3]	N6	M_A_DQSP3	
SA_DQS[4]	AL5	M_A_DQSP4	
SA_DQS[5]	AM9	M_A_DQSP5	
SA_DQS[6]	AR11	M_A_DQSP6	
SA_DQS[7]	AM14	M_A_DQSP7	

SA_MA[0]	AD10	M_A_A0	M_A_A[15:0] (15)
SA_MA[1]	W1	M_A_A1	
SA_MA[2]	W2	M_A_A2	
SA_MA[3]	W7	M_A_A3	
SA_MA[4]	V3	M_A_A4	
SA_MA[5]	V2	M_A_A5	
SA_MA[6]	W3	M_A_A6	
SA_MA[7]	W6	M_A_A7	
SA_MA[8]	V1	M_A_A8	
SA_MA[9]	W5	M_A_A9	
SA_MA[10]	AD8	M_A_A10	
SA_MA[11]	V4	M_A_A11	
SA_MA[12]	W4	M_A_A12	
SA_MA[13]	AF8	M_A_A13	
SA_MA[14]	V5	M_A_A14	
SA_MA[15]	V7	M_A_A15	

(15) M_A_BS#0	AE10	SA_BS[0]
(15) M_A_BS#1	AE10	SA_BS[1]
(15) M_A_BS#2	V6	SA_BS[2]
(15) M_A_CAS#	AE8	SA_CAS#
(15) M_A_RAS#	AD9	SA_RAS#
(15) M_A_WE#	AF9	SA_WE#

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U32D

(14) M_B_DQ[63:0]

M_B_DQ0	C9	SB_DQ[0]
M_B_DQ1	A7	SB_DQ[1]
M_B_DQ2	D10	SB_DQ[2]
M_B_DQ3	C8	SB_DQ[3]
M_B_DQ4	A9	SB_DQ[4]
M_B_DQ5	A8	SB_DQ[5]
M_B_DQ6	D9	SB_DQ[6]
M_B_DQ7	D8	SB_DQ[7]
M_B_DQ8	G4	SB_DQ[8]
M_B_DQ9	F4	SB_DQ[9]
M_B_DQ10	F1	SB_DQ[10]
M_B_DQ11	G1	SB_DQ[11]
M_B_DQ12	G5	SB_DQ[12]
M_B_DQ13	F5	SB_DQ[13]
M_B_DQ14	F2	SB_DQ[14]
M_B_DQ15	G2	SB_DQ[15]
M_B_DQ16	J7	SB_DQ[16]
M_B_DQ17	J8	SB_DQ[17]
M_B_DQ18	K10	SB_DQ[18]
M_B_DQ19	K9	SB_DQ[19]
M_B_DQ20	J9	SB_DQ[20]
M_B_DQ21	J10	SB_DQ[21]
M_B_DQ22	K8	SB_DQ[22]
M_B_DQ23	K7	SB_DQ[23]
M_B_DQ24	M5	SB_DQ[24]
M_B_DQ25	N4	SB_DQ[25]
M_B_DQ26	N2	SB_DQ[26]
M_B_DQ27	N1	SB_DQ[27]
M_B_DQ28	M4	SB_DQ[28]
M_B_DQ29	N5	SB_DQ[29]
M_B_DQ30	M2	SB_DQ[30]
M_B_DQ31	M1	SB_DQ[31]
M_B_DQ32	AM5	SB_DQ[32]
M_B_DQ33	AM6	SB_DQ[33]
M_B_DQ34	AR3	SB_DQ[34]
M_B_DQ35	AP3	SB_DQ[35]
M_B_DQ36	AN3	SB_DQ[36]
M_B_DQ37	AN2	SB_DQ[37]
M_B_DQ38	AN1	SB_DQ[38]
M_B_DQ39	AP2	SB_DQ[39]
M_B_DQ40	AP5	SB_DQ[40]
M_B_DQ41	AN9	SB_DQ[41]
M_B_DQ42	AT5	SB_DQ[42]
M_B_DQ43	AT6	SB_DQ[43]
M_B_DQ44	AP6	SB_DQ[44]
M_B_DQ45	AN8	SB_DQ[45]
M_B_DQ46	AR6	SB_DQ[46]
M_B_DQ47	AR5	SB_DQ[47]
M_B_DQ48	AR9	SB_DQ[48]
M_B_DQ49	AJ11	SB_DQ[49]
M_B_DQ50	AT8	SB_DQ[50]
M_B_DQ51	AT9	SB_DQ[51]
M_B_DQ52	AH11	SB_DQ[52]
M_B_DQ53	AR8	SB_DQ[53]
M_B_DQ54	AJ12	SB_DQ[54]
M_B_DQ55	AH12	SB_DQ[55]
M_B_DQ56	AT11	SB_DQ[56]
M_B_DQ57	AN14	SB_DQ[57]
M_B_DQ58	AR14	SB_DQ[58]
M_B_DQ59	AT14	SB_DQ[59]
M_B_DQ60	AT12	SB_DQ[60]
M_B_DQ61	AN15	SB_DQ[61]
M_B_DQ62	AR15	SB_DQ[62]
M_B_DQ63	AT15	SB_DQ[63]

DDR SYSTEM MEMORY B

SB_CLK[0]	AE2	M_B_CLKP0 (14)
SB_CLK#[0]	AD2	M_B_CLKN0 (14)
SB_CKE[0]	R9	M_B_CKE0 (14)
SB_CLK[1]	AE1	M_B_CLKP1 (14)
SB_CLK#[1]	AD1	M_B_CLKN1 (14)
SB_CKE[1]	R10	M_B_CKE1 (14)
RSVD_TP[11]	AB2	
RSVD_TP[12]	AA2	
RSVD_TP[13]	T9	
RSVD_TP[14]	AA1	
RSVD_TP[15]	AB1	
RSVD_TP[16]	T10	
SB_CS#[0]	AD3	M_B_CS#0 (14)
SB_CS#[1]	AE3	M_B_CS#1 (14)
RSVD_TP[17]	AD6	
RSVD_TP[18]	AE6	
SB_ODT[0]	AE4	M_B_ODT0 (14)
SB_ODT[1]	AD4	M_B_ODT1 (14)
RSVD_TP[19]	AD5	
RSVD_TP[20]	AE5	

SB_DQS#[0]	D7	M_B_DQSN0	M_B_DQSN[7:0] (14)
SB_DQS#[1]	F3	M_B_DQSN1	
SB_DQS#[2]	K6	M_B_DQSN2	
SB_DQS#[3]	N3	M_B_DQSN3	
SB_DQS#[4]	AN5	M_B_DQSN4	
SB_DQS#[5]	AP9	M_B_DQSN5	
SB_DQS#[6]	AK12	M_B_DQSN6	
SB_DQS#[7]	AP15	M_B_DQSN7	
SB_DQS[0]	C7	M_B_DQSP0	M_B_DQSP[7:0] (14)
SB_DQS[1]	G3	M_B_DQSP1	
SB_DQS[2]	J6	M_B_DQSP2	
SB_DQS[3]	M3	M_B_DQSP3	
SB_DQS[4]	AN6	M_B_DQSP4	
SB_DQS[5]	AP8	M_B_DQSP5	
SB_DQS[6]	AK11	M_B_DQSP6	
SB_DQS[7]	AP14	M_B_DQSP7	

SB_MA[0]	AA8	M_B_A0	M_B_A[15:0] (14)
SB_MA[1]	T7	M_B_A1	
SB_MA[2]	R7	M_B_A2	
SB_MA[3]	T6	M_B_A3	
SB_MA[4]	T2	M_B_A4	
SB_MA[5]	T4	M_B_A5	
SB_MA[6]	T3	M_B_A6	
SB_MA[7]	R2	M_B_A7	
SB_MA[8]	T5	M_B_A8	
SB_MA[9]	R3	M_B_A9	
SB_MA[10]	AB7	M_B_A10	
SB_MA[11]	R1	M_B_A11	
SB_MA[12]	T1	M_B_A12	
SB_MA[13]	AB10	M_B_A13	
SB_MA[14]	R5	M_B_A14	
SB_MA[15]	R4	M_B_A15	

(14) M_B_BS#0	AA9	SB_BS[0]
(14) M_B_BS#1	AA7	SB_BS[1]
(14) M_B_BS#2	R6	SB_BS[2]
(14) M_B_CAS#	AA10	SB_CAS#
(14) M_B_RAS#	AB8	SB_RAS#
(14) M_B_WE#	AB9	SB_WE#

CPU-989P-rPGA

+1.5V_SUS

R330 1K/F_4

R311 *0/J_4

R332 1K/F_4

(14,15) DDR3_DRAMRST#

CPU_DRAMRST# R

Q28 2N7002K

CPU_DRAMRST# (4)

(10) DRAMRST_CNTRL_PCH

R326 *SHORT_4

EC-C-15

C362 0.047U/10V_4

R320 4.99K/F_4

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Sandy Bridge Processor (POWER)

Sandy Bridge Processor (GRAPHIC POWER)

CPU Core Power
SNB 45W:55A
22uF x 32
22uF x 3 (Non-stuff)

+VCC_CORE

C309 22U/6.3V_8, C308 22U/6.3V_8, C307 22U/6.3V_8, C297 22U/6.3V_8
C306 22U/6.3V_8, C296 22U/6.3V_8, C316 22U/6.3V_8, C264 22U/6.3V_8
C295 22U/6.3V_8, C294 22U/6.3V_8, C293 22U/6.3V_8, C669 22U/6.3V_8
C317 22U/6.3V_8, C318 22U/6.3V_8, C284 22U/6.3V_8, C282 22U/6.3V_8
C305 22U/6.3V_8, C688 22U/6.3V_8, C689 22U/6.3V_8, C261 22U/6.3V_8
C298 22U/6.3V_8, C276 22U/6.3V_8, C299 22U/6.3V_8, C292 22U/6.3V_8
C676 22U/6.3V_8, C281 22U/6.3V_8, C277 22U/6.3V_8, C670 22U/6.3V_8
C275 22U/6.3V_8, C266 22U/6.3V_8, C263 22U/6.3V_8, C267 22U/6.3V_8

Reserved
C262 *22U/6.3V_8, C274 *22U/6.3V_8, C258 *22U/6.3V_8

U32F

AG35 VCC1, AG34 VCC2, AG33 VCC3, AG32 VCC4, AG31 VCC5, AG30 VCC6, AG29 VCC7, AG28 VCC8, AG27 VCC9, AG26 VCC10, AF35 VCC11, AF34 VCC12, AF33 VCC13, AF32 VCC14, AF31 VCC15, AF30 VCC16, AF29 VCC17, AF28 VCC18, AF27 VCC19, AF26 VCC20, AD35 VCC21, AD34 VCC22, AD33 VCC23, AD32 VCC24, AD31 VCC25, AD30 VCC26, AD29 VCC27, AD28 VCC28, AD27 VCC29, AD26 VCC30, AC35 VCC31, AC34 VCC32, AC33 VCC33, AC32 VCC34, AC31 VCC35, AC30 VCC36, AC29 VCC37, AC28 VCC38, AC27 VCC39, AC26 VCC40, AA35 VCC41, AA34 VCC42, AA33 VCC43, AA32 VCC44, AA31 VCC45, AA30 VCC46, AA29 VCC47, AA28 VCC48, AA27 VCC49, AA26 VCC50, Y35 VCC51, Y34 VCC52, Y33 VCC53, Y32 VCC54, Y31 VCC55, Y30 VCC56, Y29 VCC57, Y28 VCC58, Y27 VCC59, Y26 VCC60, V35 VCC61, V34 VCC62, V33 VCC63, V32 VCC64, V31 VCC65, V30 VCC66, V29 VCC67, V28 VCC68, V27 VCC69, V26 VCC70, U35 VCC71, U34 VCC72, U33 VCC73, U32 VCC74, U31 VCC75, U30 VCC76, U29 VCC77, U28 VCC78, U27 VCC79, U26 VCC80, R35 VCC81, R34 VCC82, R33 VCC83, R32 VCC84, R31 VCC85, R30 VCC86, R29 VCC87, R28 VCC88, R27 VCC89, R26 VCC90, P35 VCC91, P34 VCC92, P33 VCC93, P32 VCC94, P31 VCC95, P30 VCC96, P29 VCC97, P28 VCC98, P27 VCC99, P26 VCC100

CPU-989P-rPGA

POWER

CORE SUPPLY

PEG AND DDR

SVID

SENSE LINES

CPU VTT
SNB 45W:8.5A
22uF x 10
22uF x 6 (Non-stuff)

+1.05V_PCH

VCCIO1 AH13, VCCIO2 AH10, VCCIO3 AG10, VCCIO4 AC10, VCCIO5 Y10, VCCIO6 U10, VCCIO7 P10, VCCIO8 L10, VCCIO9 J14, VCCIO10 J13, VCCIO11 J12, VCCIO12 J11, VCCIO13 H14, VCCIO14 H12, VCCIO15 H11, VCCIO16 G14, VCCIO17 G13, VCCIO18 G12, VCCIO19 F14, VCCIO20 F13, VCCIO21 F12, VCCIO22 F11, VCCIO23 E14, VCCIO24 E12, VCCIO25 E11, VCCIO26 D14, VCCIO27 D13, VCCIO28 D12, VCCIO29 D11, VCCIO30 C14, VCCIO31 C13, VCCIO32 C12, VCCIO33 C11, VCCIO34 B14, VCCIO35 B12, VCCIO36 A14, VCCIO37 A13, VCCIO38 A12, VCCIO39 A11, VCCIO40 J23

C330 22U/6.3V_8, C336 10U/6.3V_6, C331 22U/6.3V_8, C329 22U/6.3V_8, C328 22U/6.3V_8, C327 22U/6.3V_8
C699 *22U/6.3V_8, C700 *22U/6.3V_8, C701 22U/6.3V_8, C335 10U/6.3V_6, C324 10U/6.3V_6, C332 22U/6.3V_8

22uF (Reserved)
C695 *22U/6.3V_8, C696 *22U/6.3V_8, C697 *22U/6.3V_8, C698 *22U/6.3V_8

+1.05V_VTT_40 — R612 *0/short_4 — +1.05V_PCH

VIDALERT# AJ29 H_CPU_SVIDALRT#
VIDSCLK AJ30 H_CPU_SVIDCLK
VIDSOUT AJ28 H_CPU_SVIDDAT

VCC_SENSE AJ35, VSS_SENSE AJ34
R590 100/J_4 +VCC_CORE
R596 100/J_4
VCC_SENSE (49), VSS_SENSE (49)

VCCIO_SENSE B10, VSSIO_SENSE A10
VTT_SENSE (48)
TP53

(14,15,43) SMDDR_VREF — R629 *0/J_8 — +VDDR_REF_CPU
Q44 2N7002K
(41,43) MAINON_15V — R627 100K/J_4

CPU VCCPL
SNB 45W:3A
330uF/7mohm x 1
10uF x 1
1uF x 2

+1.8V

C710 10U/6.3V_6, C708 1U/6.3V_4, C707 1U/6.3V_4, C712 *330U/2V_7343

B6 VCCPLL1, A6 VCCPLL2, A2 VCCPLL3

CPU VGT
SNB 45W:22A
22uF x 12
22uF x 4 (Reserved)

EC-B-44

+VCC_GFX

C684 *22U/6.3V_8, C685 *22U/6.3V_8, C690 *22U/6.3V_8, C682 *22U/6.3V_8
C302 *22U/6.3V_8, C310 *22U/6.3V_8, C313 *22U/6.3V_8, C319 *22U/6.3V_8
C314 *22U/6.3V_8, C693 *22U/6.3V_8, C323 *22U/6.3V_8, C315 *22U/6.3V_8
C325 *22U/6.3V_8, C326 *22U/6.3V_8, C692 *22U/6.3V_8, C691 *22U/6.3V_8

R294 Ra 0/J_4

Ra	DIS	SW
	0 ohm	NA

U32G

AT24 VAXG1, AT23 VAXG2, AT21 VAXG3, AT20 VAXG4, AT18 VAXG5, AT17 VAXG6, AR24 VAXG7, AR23 VAXG8, AR21 VAXG9, AR20 VAXG10, AR18 VAXG11, AR17 VAXG12, AP24 VAXG13, AP23 VAXG14, AP21 VAXG15, AP20 VAXG16, AP18 VAXG17, AP17 VAXG18, AN24 VAXG19, AN23 VAXG20, AN21 VAXG21, AN20 VAXG22, AN18 VAXG23, AM24 VAXG24, AM23 VAXG25, AM21 VAXG26, AM20 VAXG27, AM18 VAXG28, AM17 VAXG29, AL24 VAXG30, AL23 VAXG31, AL21 VAXG32, AL20 VAXG33, AL18 VAXG34, AL17 VAXG35, AK24 VAXG36, AK23 VAXG37, AK21 VAXG38, AK20 VAXG39, AK18 VAXG40, AK17 VAXG41, AJ24 VAXG42, AJ23 VAXG43, AJ21 VAXG44, AJ20 VAXG45, AJ18 VAXG46, AJ17 VAXG47, AH24 VAXG48, AH23 VAXG49, AH21 VAXG50, AH20 VAXG51, AH18 VAXG52, AH17 VAXG53 VAXG54

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GRAPHICS

1.8V RAIL

POWER

SENSE LINES

VAXG_SENSE, VSSAXG_SENSE
AK35, AK34
TP48, TP45
R597 *100/J_4 +VCC_GFX
R591 *100/J_4
VCC_AXG_SENSE (49)
VSS_AXG_SENSE (49)

EC-B-44

VREF

SM_VREF — AL1 — +VDDR_REF_CPU — +VDDR_REF_CPU

CAD Note: +VDDR_REF_CPU should have 10 mil trace width

DDR3 -1.5V RAILS

CPU MCH
SNB 45W: 5A
330uF/6mohm x 1
10uF x 6

VDDQ1 AF7, VDDQ2 AF4, VDDQ3 AF1, VDDQ4 AC7, VDDQ5 AC4, VDDQ6 AC1, VDDQ7 Y7, VDDQ8 Y4, VDDQ9 Y1, VDDQ10 U7, VDDQ11 U4, VDDQ12 U1, VDDQ13 P7, VDDQ14 P4, VDDQ15 P1

+1.5VCPU

C353 10U/6.3V_6, C361 10U/6.3V_6, C352 10U/6.3V_6, C354 10U/6.3V_6
C351 10U/6.3V_6, C358 10U/6.3V_6, C359 *330U/2V_7343, C368 22U/6.3V_8, C367 22U/6.3V_8

22uF (Reserved)

SA RAIL

VCCSA1 M27, VCCSA2 M26, VCCSA3 L26, VCCSA4 J26, VCCSA5 J25, VCCSA6 J24, VCCSA7 H26, VCCSA8 H25

+0.85V

C303 10U/6.3V_6, C304 10U/6.3V_6, C680 10U/6.3V_6, C681 *10U/6.3V_6

CPU SA
SNB 45W: 6A
330uF/7mohm x 1
10uF x 3

MISC

VCCSA_SENSE — H23 — VCCUSA_SENSE (47)

FC_C22 C22, VCCSA_VID1 C24
H_FC_C22 — R273 10K/J_4 — VCCSA_SEL (47)
R598 10K/J_4

EC-B-35

Layout note: need routing together and ALERT need between CLK and DATA

SVID CLK
+1.05V_PCH — Close to VR — R291 54.9/F_4
EC-C-15
H_CPU_SVIDCLK — R292 *SHORT_4 — VR_SVID_CLK (49)

SVID DATA
Place PU resistor close to CPU
+1.05V_PCH — R283 130/F_4 — EC-C-15
+1.05V_PCH — Close to VR — R286 130/F_4 — EC-C-22
H_CPU_SVIDDAT — R287 *SHORT_4 — VR_SVID_DATA (49)

SVID ALERT
Place PU resistor close to CPU
+1.05V_PCH — R275 75/J_4 — EC-C-15
H_CPU_SVIDALRT# — R279 43/J_4 — R274 *SHORT_4 — VR_SVID_ALERT# (49)

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Sandy Bridge Processor (GND)

U32H

VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 VSS7 VSS8 VSS9 VSS10 VSS11 VSS12 VSS13 VSS14 VSS15 VSS16 VSS17 VSS18 VSS19 VSS20 VSS21 VSS22 VSS23 VSS24 VSS25 VSS26 VSS27 VSS28 VSS29 VSS30 VSS31 VSS32 VSS33 VSS34 VSS35 VSS36 VSS37 VSS38 VSS39 VSS40 VSS41 VSS42 VSS43 VSS44 VSS45 VSS46 VSS47 VSS48 VSS49 VSS50 VSS51 VSS52 VSS53 VSS54 VSS55 VSS56 VSS57 VSS58 VSS59 VSS60 VSS61 VSS62 VSS63 VSS64 VSS65 VSS66 VSS67 VSS68 VSS69 VSS70 VSS71 VSS72 VSS73 VSS74 VSS75 VSS76 VSS77 VSS78 VSS79 VSS80

VSS81 VSS82 VSS83 VSS84 VSS85 VSS86 VSS87 VSS88 VSS89 VSS90 VSS91 VSS92 VSS93 VSS94 VSS95 VSS96 VSS97 VSS98 VSS99 VSS100 VSS101 VSS102 VSS103 VSS104 VSS105 VSS106 VSS107 VSS108 VSS109 VSS110 VSS111 VSS112 VSS113 VSS114 VSS115 VSS116 VSS117 VSS118 VSS119 VSS120 VSS121 VSS122 VSS123 VSS124 VSS125 VSS126 VSS127 VSS128 VSS129 VSS130 VSS131 VSS132 VSS133 VSS134 VSS135 VSS136 VSS137 VSS138 VSS139 VSS140 VSS141 VSS142 VSS143 VSS144 VSS145 VSS146 VSS147 VSS148 VSS149 VSS150 VSS151 VSS152 VSS153 VSS154 VSS155 VSS156 VSS157 VSS158 VSS159 VSS160

VSS

CPU-989P-rPGA

U32I

VSS161 VSS162 VSS163 VSS164 VSS165 VSS166 VSS167 VSS168 VSS169 VSS170 VSS171 VSS172 VSS173 VSS174 VSS175 VSS176 VSS177 VSS178 VSS179 VSS180 VSS181 VSS182 VSS183 VSS184 VSS185 VSS186 VSS187 VSS188 VSS189 VSS190 VSS191 VSS192 VSS193 VSS194 VSS195 VSS196 VSS197 VSS198 VSS199 VSS200 VSS201 VSS202 VSS203 VSS204 VSS205 VSS206 VSS207 VSS208 VSS209 VSS210 VSS211 VSS212 VSS213 VSS214 VSS215 VSS216 VSS217 VSS218 VSS219 VSS220 VSS221 VSS222 VSS223 VSS224 VSS225 VSS226 VSS227 VSS228 VSS229 VSS230 VSS231 VSS232 VSS233

VSS

VSS234 VSS235 VSS236 VSS237 VSS238 VSS239 VSS240 VSS241 VSS242 VSS243 VSS244 VSS245 VSS246 VSS247 VSS248 VSS249 VSS250 VSS251 VSS252 VSS253 VSS254 VSS255 VSS256 VSS257 VSS258 VSS259 VSS260 VSS261 VSS262 VSS263 VSS264 VSS265 VSS266 VSS267 VSS268 VSS269 VSS270 VSS271 VSS272 VSS273 VSS274 VSS275 VSS276 VSS277 VSS278 VSS279 VSS280 VSS281 VSS282 VSS283 VSS284 VSS285

CPU-989P-rPGA

Sandy Bridge Processor (RESERVED, CFG)

U32E

TP17 TP14 TP16

CFG0 CFG2 CFG4 CFG5 CFG6 CFG7

CFG[0] CFG[1] CFG[2] CFG[3] CFG[4] CFG[5] CFG[6] CFG[7] CFG[8] CFG[9] CFG[10] CFG[11] CFG[12] CFG[13] CFG[14] CFG[15] CFG[16] CFG[17]

VAXG_VAL_SENSE
VSSAXG_VAL_SENSE
VCC_VAL_SENSE
VSS_VAL_SENSE

(15) SMDDR_VREF_DQ0_M3
(14) SMDDR_VREF_DQ1_M3

SMDDR_VREF_DQ0_M3
SMDDR_VREF_DQ1_M3

R318 *1K/J_4
R317 *1K/J_4

02/20 Add for Pre-ES1

RESERVED

RSVD5 RSVD6 RSVD7 RSVD8 RSVD9 RSVD10 RSVD11 RSVD12 RSVD13 RSVD14 RSVD15 RSVD16 RSVD17 RSVD18 RSVD19 RSVD20 RSVD21 RSVD22 RSVD23 RSVD24 RSVD25 RSVD27

VCCIO_SEL

TP52

KEY

RSVD28 RSVD29 RSVD30 RSVD31 RSVD32 RSVD33 RSVD34 RSVD35 RSVD37 RSVD38 RSVD39 RSVD40 RSVD41 RSVD42 RSVD43 RSVD44 RSVD45 RSVD46 RSVD47 RSVD48 RSVD49 RSVD50 RSVD51 RSVD52 VCC_DIE_SENSE RSVD54 RSVD55 RSVD56 RSVD57 RSVD58

TP9 TP49

Reserved for Intel Debug

For rPGA socket, RSVD59 pin should be left NC

CPU-989P-rPGA

Processor Strapping

The CFG signals have a default value of '1' if not terminated on the board.

	1	0
CFG2 (PEG Static Lane Reversal)	Normal Operation	Lane Reversed
CFG4 (DP Presence Strap)	Disable; No physical DP attached to eDP	Enable; An ext DP device is connected to eDP
CFG7 (PEG Defer Training)	PEG train immediately following xxRESETB de assertion	PEG wait for BIOS training

CFG2 R295 1K/F_4
CFG4 R296 *1K/F_4
CFG7 R264 *1K/F_4

CFG5 R270 *1K/F_4
CFG6 R267 *1K/F_4

CFG[6:5] (PCIE Port Bifurcation Straps)

11: (Default) x16 - Device 1 functions 1 and 2 disabled
10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled
01: Reserved - (Device 1 function 1 disabled ; function 2 enabled)
00: x8,x4,x4 - Device 1 functions 1 and 2 enabled

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Quanta Computer Inc.

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Cougar Point (DMI,FDI,PM)

U14C

DMI_RXN0 (4) → BC24 DMI0RXN
DMI_RXN1 (4) → BE20 DMI1RXN
DMI_RXN2 (4) → BG18 DMI2RXN
DMI_RXN3 (4) → BG20 DMI3RXN

DMI_RXP0 (4) → BE24 DMI0RXP
DMI_RXP1 (4) → BC20 DMI1RXP
DMI_RXP2 (4) → BJ18 DMI2RXP
DMI_RXP3 (4) → BJ20 DMI3RXP

DMI_TXN0 (4) → AW24 DMI0TXN
DMI_TXN1 (4) → AW20 DMI1TXN
DMI_TXN2 (4) → BB18 DMI2TXN
DMI_TXN3 (4) → AV18 DMI3TXN

DMI_TXP0 (4) → AY24 DMI0TXP
DMI_TXP1 (4) → AY20 DMI1TXP
DMI_TXP2 (4) → AV18 DMI2TXP
DMI_TXP3 (4) → AU18 DMI3TXP

+1.05V_PCH → R255 49.9/F_4 DMI_COMP → BJ24 DMI_ZCOMP
R604 750/F_4 DMI_RBIAS → BG25 DMI_IRCOMP
BH21 DMI2RBIAS

DMI

FDI_RXN0 BJ14 → FDI_TXN0 (4)
FDI_RXN1 AY14 → FDI_TXN1 (4)
FDI_RXN2 BE14 → FDI_TXN2 (4)
FDI_RXN3 BH13 → FDI_TXN3 (4)
FDI_RXN4 BC12 → FDI_TXN4 (4)
FDI_RXN5 BJ12 → FDI_TXN5 (4)
FDI_RXN6 BG10 → FDI_TXN6 (4)
FDI_RXN7 BG9 → FDI_TXN7 (4)

FDI_RXP0 BG14 → FDI_TXP0 (4)
FDI_RXP1 BB14 → FDI_TXP1 (4)
FDI_RXP2 BF14 → FDI_TXP2 (4)
FDI_RXP3 BG13 → FDI_TXP3 (4)
FDI_RXP4 BE12 → FDI_TXP4 (4)
FDI_RXP5 BG12 → FDI_TXP5 (4)
FDI_RXP6 BJ10 → FDI_TXP6 (4)
FDI_RXP7 BH9 → FDI_TXP7 (4)

FDI_INT AW16 → FDI_INT (4)
FDI_FSYNC0 AV12 → FDI_FSYNC0 (4)
FDI_FSYNC1 BC10 → FDI_FSYNC1 (4)
FDI_LSYNC0 AV14 → FDI_LSYNC0 (4)
FDI_LSYNC1 BB10 → FDI_LSYNC1 (4)

FDI

EC-C-15

SUS_PWR_ACK_R → R512 *0_4 → C12 SUSACK#
(4) XDP_DBRST# → XDP_DBRST# K3 SYS_RESET#
SYS_PWROK → R527 *SHORT_4 SYS_PWROK_R P12 SYS_PWROK
C901 *1U/10V_4
(40) EC_PWROK → R505 *SHORT_4 EC_PWROK_R L22 PWROK
EC_PWROK_R → R521 *SHORT_4 APWROK_R L10 APWROK
(4) PM_DRAM_PWRGD → PM_DRAM_PWRGD B13 DRAMPWROK
(40) RSMRST# → RSMRST# C21 RSMRST#
(40) SUS_PWR_ACK → R513 *SHORT_4 SUS_PWR_ACK_R K16 SUSWARN#/SUSPWRDNACK/GPIO30
(40) SIO_PWRBTN# → PWRBTN# E20
(40) AC_PRESENT → R502 *SHORT_4 PRESENT_R H20 ACPRESENT / GPIO31
PM_BATLOW# E10 BATLOW# / GPIO72
PM_RI# A10 RI#
CougarPoint_R1P0

EC-QV-09
EC-B-40
RV16 *EGA-0402

System Power Management

DSWVRMEN A18 ← DSWVREN ← R91 *SHORT_4 ← RSMRST#
DPWROK E22 ← R504 *SHORT_4 ← DPWROK
WAKE# B9 ← PCIE_WAKE# ← PCIE_WAKE# (19,31)
CLKRUN# / GPIO32 N3 ← CLKRUN# ← CLKRUN# (40)
SUS_STAT# / GPIO61 G8 → LPC_PD# → T33
SUSCLK / GPIO62 N14 → PCH_SUSCLK → T29
SLP_S5# / GPIO63 D10 → SLP_S5# → T27
SLP_S4# H4 → PM_SLP_S4# (40)
SLP_S3# F4 → SIO_SLP_S3# (40)
SLP_A# G10 → SLP_A# → T38
SLP_SUS# G16 → T25
PMSYNCH AP14 → PM_SYNC (4)
SLP_LAN# / GPIO29 K14 → SLP_LAN# → T26 → SLP_LAN# (25)

+3V
+3V_S5
DSW

EC-C-15
EC-B-36

Cougar Point (LVDS,DDI)

U14D

EC-B-31

(24) INT_LVDS_BLON → R662 0/J_4
(24) INT_LVDS_VDDEN → R664 0/J_4
C564 *0.1U/10V_4
C563 *0.1U/10V_4
RF reserved close to PCH

(24) LVDS_BRIGHT_PWM → P45 L_BKLTCTL
INT_EDIDCLK_R → T40 L_DDC_CLK
INT_EDIDDAT_R → K47 L_DDC_DATA
+3V → R556 2.2K/J_4
R562 2.2K/J_4
P39 L_CTRL_CLK
L_CTRL_DATA
R573 2.37K/F_4 LVD_IBG → AF37 LVD_IBG
T30 → AF36 LVD_VBG
AE48 LVD_VREFH
AE47 LVD_VREFL

INT_TXLCLKOUTN_R → AK39 LVDSA_CLK#
INT_TXLCLKOUTP_R → AK40 LVDSA_CLK
(24) INT_TXLOUTN0 → INT_TXLOUTN0 → AN48 LVDSA_DATA#0
(24) INT_TXLOUTN1 → INT_TXLOUTN1 → AM47 LVDSA_DATA#1
(24) INT_TXLOUTN2 → INT_TXLOUTN2 → AK47 LVDSA_DATA#2
AJ48 LVDSA_DATA#3
(24) INT_TXLOUTP0 → INT_TXLOUTP0 → AN47 LVDSA_DATA0
(24) INT_TXLOUTP1 → INT_TXLOUTP1 → AM49 LVDSA_DATA1
(24) INT_TXLOUTP2 → INT_TXLOUTP2 → AK49 LVDSA_DATA2
AJ47 LVDSA_DATA3
AF40 LVDSB_CLK#
AF39 LVDSB_CLK
AH45 LVDSB_DATA#0
AH47 LVDSB_DATA#1
AF49 LVDSB_DATA#2
AF45 LVDSB_DATA#3
AH43 LVDSB_DATA0
AH49 LVDSB_DATA1
AF47 LVDSB_DATA2
AF43 LVDSB_DATA3

LVDS

EC-B-31

(24) INT_EDIDCLK → R678 0/J_4 INT_EDIDCLK_R
(24) INT_EDIDDAT → R699 0/J_4 INT_EDIDDAT_R
C717 *22P/50V_4
C718 *22P/50V_4
(24) INT_TXLCLKOUTN → R700 0/J_4 INT_TXLCLKOUTN_R
(24) INT_TXLCLKOUTP → R701 0/J_4 INT_TXLCLKOUTP_R
C715 *22P/50V_4
C714 *22P/50V_4
RF reserved

(23) INT_CRT_BLU → N48 CRT_BLUE
(23) INT_CRT_GRE → P49 CRT_GREEN
(23) INT_CRT_RED → T49 CRT_RED
(23) INT_DDCCLK → T39 CRT_DDC_CLK
(23) INT_DDCDAT → M40 CRT_DDC_DATA
(23) INT_CRT_HSYNC → R536 33/J_4 INT_CRT_HSYNC_R → M47 CRT_HSYNC
(23) INT_CRT_VSYNC → R541 33/J_4 INT_CRT_VSYNC_R → M49 CRT_VSYNC
DAC_IREF → T43 DAC_IREF
T42 CRT_IRTN

CRT

20ohm for SW;
33ohm for UMA

R551 1K/F_4

CougarPoint_R1P0

Digital Display Interface

SDVO_TVCLKINN AP43
SDVO_TVCLKINP AP45
SDVO_STALLN AM42
SDVO_STALLP AM40
SDVO_INTN AP39
SDVO_INTP AP40
SDVO_CTRLCLK P38
SDVO_CTRLDATA M39
DDPB_AUXN AT49
DDPB_AUXP AT47
DDPB_HPD AT40 INT_HDMI_HPD_Q
DDPB_0N AV42
DDPB_0P AV40
DDPB_1N AV45
DDPB_1P AV46
DDPB_2N AU48
DDPB_2P AU47
DDPB_3N AV47
DDPB_3P AV49
DDPC_CTRLCLK P46
DDPC_CTRLDATA P42
DDPC_AUXN AP47
DDPC_AUXP AP49
DDPC_HPD AT38 DDPC_HPD_PU
DDPC_0N AY47
DDPC_0P AY49
DDPC_1N AY43
DDPC_1P AY45
DDPC_2N BA47
DDPC_2P BA48
DDPC_3N BB47
DDPC_3P BB49
DDPD_CTRLCLK M43
DDPD_CTRLDATA M36
DDPD_AUXN AT45
DDPD_AUXP AT43
DDPD_HPD BH41 DDPD_HPD_PU
DDPD_0N BB43
DDPD_0P BB45
DDPD_1N BF44
DDPD_1P BE44
DDPD_2N BF42
DDPD_2P BE42
DDPD_3N BJ42
DDPD_3P BG42

CougarPoint_R1P0

EC-B-31 RF reserved close to PCH

R702 0/J_4 INT_HDMI_SCL (22)
R703 0/J_4 INT_HDMI_SDA (22)
C617 *0.1U/10V_4
C608 *0.1U/10V_4

INT_HDMI_TXDN2 (22)
INT_HDMI_TXDP2 (22)
INT_HDMI_TXDN1 (22)
INT_HDMI_TXDP1 (22)
INT_HDMI_TXDN0 (22)
INT_HDMI_TXDP0 (22)
INT_HDMI_TXCN (22)
INT_HDMI_TXCP (22)

INT. HDMI

+5V
INT_HDMI_HPD_Q → 1 Q21 2N7002K 3 → INT_HDMI_HPD (22)
R599 *100K/J_4
R244 100K/J_4

R place close to PCH

R189 150/F_4 INT_CRT_BLU
R198 150/F_4 INT_CRT_GRE
R203 150/F_4 INT_CRT_RED

Deep sleep option	Support	Not support
SUS_PWR_ACK	To PCH SUSACK# (Pop R597)	EC or NC (Non-pop R597)
DPWROK	DSWPWRGD (Pop Q54, R663, Q55, R677)	RSMRST (Pop R639)
SLP_SUS	EC	NC

PCH Pull-high/low(CLG)

+3V
CLKRUN# R194 8.2K/J_4
XDP_DBRST# R192 10K/J_4
R195 *1K/J_4
RSMRST# R111 10K/J_4
SYS_PWROK R519 10K/J_4

+3V_S5
PM_RI# R136 10K/J_4
PM_BATLOW# R520 8.2K/J_4
PCIE_WAKE# R143 10K/J_4
SLP_LAN# R495 *10K/J_4
SUS_PWR_ACK R508 10K/J_4
AC_PRESENT R489 10K/J_4

EC-QV-10
PM_DRAM_PWRGD R493 *200/F_4

3/16 Change topology; 200ohm PU to +3V_S5

System PWR_OK(CLG)

+3V_S5
C113 *0.1U/10V_4
U9 TC7SH08
(4,43) SYS_PWROK → SYS_PWROK
IMVP_PWRGD (49)
EC_PWROK
R478 100K/J_4

+3V_RTC
R93 330K/J_4
DSWVREN
R104 *330K/J_4

On Die DSW VR Enable
High = Enable (Default)
Low = Disable

DPWROK FOR DSW

+3VPCU
+3V_DSW
+3V_S5 → D6 *RB500V-40
+3VPCU → D5 *RB500V-40
R80 *10K_4
R106 *10K_4
Q11 *PDTC144EU
Q12 *2N7002
DPWROK
C106 *0.1U/10V_4
add cap to timing tune

+3V
DDPC_HPD_PU R589 10K/J_4
DDPD_HPD_PU R253 10K/J_4
INT_EDIDCLK R199 2.2K/J_4
INT_EDIDDAT R191 2.2K/J_4
Follow PDG eDP disable guide

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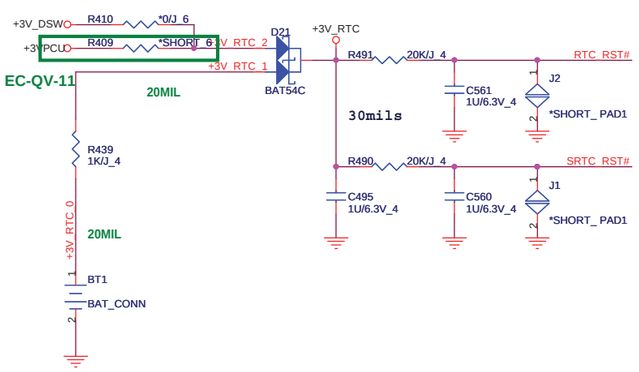
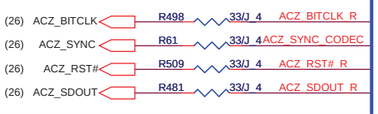
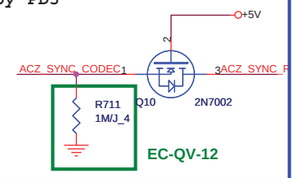
RTC Circuitry(RTC)



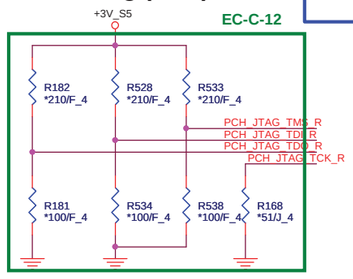
HDA Bus(CLG)



To Separate Codec Sync by PD3

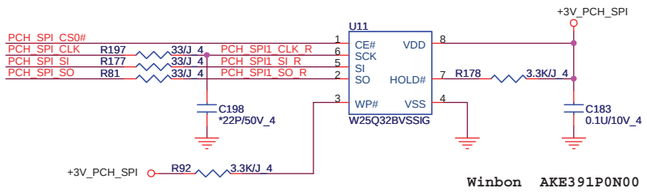


PCH JTAG Debug (CLG)

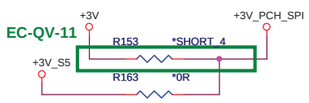


PCH Dual SPI (CLG)

32Mbit (4M Byte), SPI

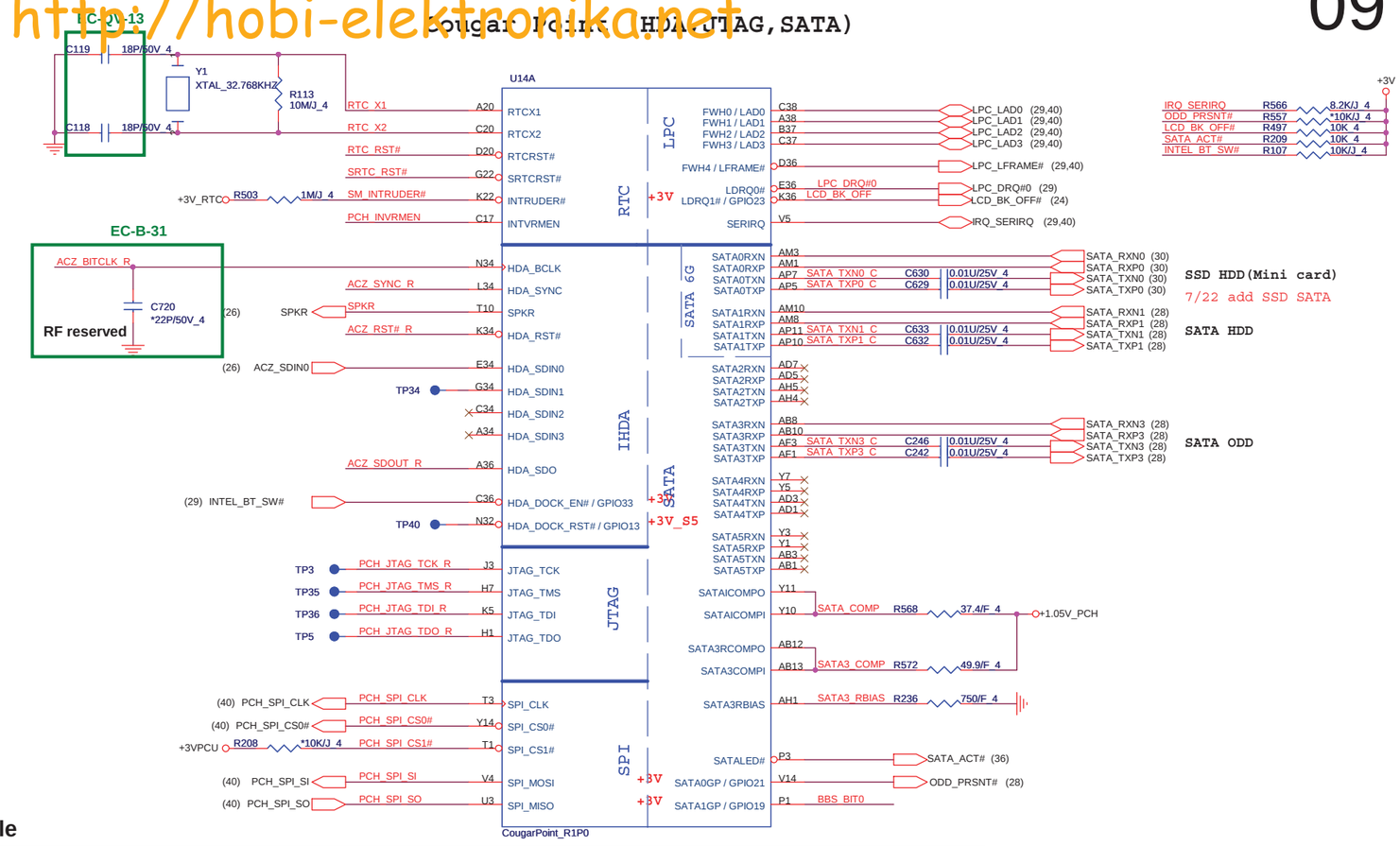


Winbon AKE391P0N00



PCH2 (CLG)

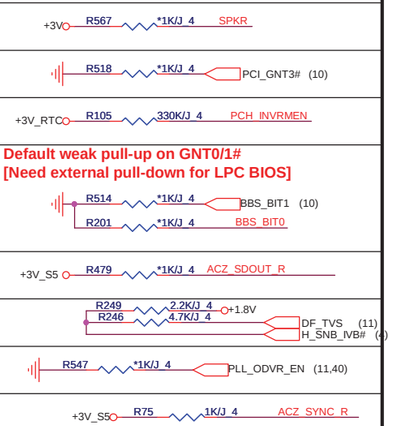
CougarPoint (HDA,JTAG,SATA)



PCH Strap Table

Pin Name	Strap description	Sampled	Configuration
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	GNT1# / GNT0# / Boot Location: 1 / 1 / SPI * 0 / 0 / LPC
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK	
HDA_SDO	Flash Descriptor Security	RSMRST	0 = Override 1 = Default (weak pull-up 20K)
DF_TVS	**DMI/FDI Termination voltage**	**PWROK**	**0 = Set to Vss** **1 = Set to Vcc (weak pull-down 20K)**
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)
HDA_SYNC	**On-Die PLL VR Voltage Select**	**RSMRST**	**0 = Support by 1.8V (weak pull-down)** **1 = Support by 1.5V**
GPIO8	Integrated Clock Chip Enable	RSMRST#	Should be pull-down (weak pull-up 20K)
SPI_MOSI	iTPM function Disable	APWROK	0 = Default (weak pull-down 20K) 1 = Enable
NV_ALE	Intel Anti-Theft HDD protection	PWROK	0 = Disable (Internal pull-down 20kohm)

Default weak pull-up on GNT0/1#
[Need external pull-down for LPC BIOS]



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Cougar Point-M (PCI,USB,NVRAM)

U14E

RSVD

TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10 TP11 TP12 TP13 TP14 TP15 TP16 TP17 TP18 TP19 TP20 TP21 TP22 TP23 TP24 TP25 TP26 TP27 TP28 TP29 TP30 TP31 TP32 TP33 TP34 TP35 TP36 TP37 TP38 TP39 TP40

RSVD1 RSVD2 RSVD3 RSVD4 RSVD5 RSVD6 RSVD7 RSVD8 RSVD9 RSVD10 RSVD11 RSVD12 RSVD13 RSVD14 RSVD15 RSVD16 RSVD17 RSVD18 RSVD19 RSVD20 RSVD21 RSVD22 RSVD23 RSVD24 RSVD25 RSVD26 RSVD27 RSVD28 RSVD29

NV_ALE → TP47

PCI

PIRQA# PIRQB# PIRQC# PIRQD#

PCI_PIRQA# PCI_PIRQB# PCI_PIRQC# PCI_PIRQD#

(11) BOARD_ID3 → BOARD_ID3
(36) RF_ON
(11) BOARD_ID4 → BOARD_ID4
(9) BBS_BIT1
(38) BT_DIS → BT_DIS
(9) PCI_GNT3# → PCI_GNT3#

REQ1# / GPIO50 +3V
REQ2# / GPIO52 +3V
REQ3# / GPIO54 +3V
GNT1# / GPIO51 +3V
GNT2# / GPIO53 +3V
GNT3# / GPIO55 +3V

(28,40) ODD_MDDA# → EXTTS_SNI_DRV0_PCH, EXTTS_SNI_DRV1_PCH

MPC_PWR_CTRL#

PIRQE# / GPIO2 +3V
PIRQF# / GPIO3 +3V
PIRQG# / GPIO4 +3V
PIRQH# / GPIO5 +3V

PME#

PCI_PLTRST# → PLTRST#

USB

USBP0N USBP0P USBP1N USBP1P USBP2N USBP2P USBP3N USBP3P USBP4N USBP4P USBP5N USBP5P USBP6N USBP6P USBP7N USBP7P USBP8N USBP8P USBP9N USBP9P USBP10N USBP10P USBP11N USBP11P USBP12N USBP12P USBP13N USBP13P

USBP0- USBP0+ USBP1- USBP1+ USBP2- USBP2+ USBP3- USBP3+ USBP4- USBP4+ USBP5- USBP5+

USB#0/eSATA Combo #1(Phoenix debug)
USB#1-> (External L side/BIOS debug)
CCD
WLAN
WWAN
BlueTooth

EHCI1

USB #2 Reserved)
USB#4 (External R side&BIOS debug)
Card Reader
Figer Print
WiMax
USIM

EHCI2

USBRBIAS# → USB_BIAS → R86 22.6/F_4
USBRBIAS

OC0# / GPIO59 +3V_S5
OC1# / GPIO40 +3V_S5
OC2# / GPIO41 +3V_S5
OC3# / GPIO42 +3V_S5
OC4# / GPIO43 +3V_S5
OC5# / GPIO9 +3V_S5
OC6# / GPIO10 +3V_S5
OC7# / GPIO14 +3V_S5

USB_OC0# (33)
USB_OC1# (32)
USB_OC2# (31)
USB_OC4# (32)
USB30_EXT_SMI# (31)

USB_OC0# -->USB Port#0 ESATA OC pin
USB_OC1# -->USB Port#1 OC pin
USB_OC2# -->Reserved
USB_OC4# -->USB Port #3 OC pin

EC-C-13

CougarPoint_R1P0

EC-B-01

TP4 TP5 CLK_LPC_TPM_C H43
CLK_PCI_FB R510 22/J_4 CLK_PCI_FB_R J48
R506 22/J_4 CLK_PCI_LPC_R K42
R510 22/J_4 CLK_PCI_EC_R H40
(29) CLK_LPC_DEBUG
(40) CLK_PCI_8512

CLKOUT_PCI0 CLKOUT_PCI1 CLKOUT_PCI2 CLKOUT_PCI3 CLKOUT_PCI4

EC-B-27

EC11 EC12
10P/50V/C0G_4 10P/50V/C0G_4

EC-B-31

CLK_PCI_FB
C811 *22P/50V_4
RF reserved

Cougar Point-M (PCI-E,SMBUS,CLK)

PCI-E*

LAN
(25) PCIE_RXN2_LAN
(25) PCIE_RXP2_LAN
(25) PCIE_TXN2_LAN
(25) PCIE_TXP2_LAN
C634 0.1U/10V_4 PCIE_TXN2_LAN_C
C635 0.1U/10V_4 PCIE_TXP2_LAN_C

WLAN
(29) PCIE_RXN3
(29) PCIE_RXP3
(29) PCIE_TXN3
(29) PCIE_TXP3
C673 0.1U/10V_4 PCIE_TXN3_C
C672 0.1U/10V_4 PCIE_TXP3_C

WWAN only use USB interface.

USB3.0
(31) PCIE_RXN5
(31) PCIE_RXP5
(31) PCIE_TXN5
(31) PCIE_TXP5
C674 0.1U/16V_4 PCIE_TXN5_C
C675 0.1U/16V_4 PCIE_TXP5_C

PERN1 PERP1 PETN1 PETP1 PERN2 PERP2 PETN2 PETP2 PERN3 PERP3 PETN3 PETP3 PERN4 PERP4 PETN4 PETP4 PERN5 PERP5 PETN5 PETP5 PERN6 PERP6 PETN6 PETP6 PERN7 PERP7 PETN7 PETP7 PERN8 PERP8 PETN8 PETP8

+3V_S5

SMBUS

SMBALERT# / GPIO11 +3V_S5 → E12 SMBALERT#
SMBCLK → H14 SMB_PCH_CLK
SMBDATA → C9 SMB_PCH_DAT
SML0ALERT# / GPIO60 +3V_S5 → A12 DRAMRST_CNTRL_PCH → DRAMRST_CNTRL_PCH (5)
SML0CLK → C8 SMB_CLK_ME0 → SMB_CLK_ME0 (30)
SML0DATA → G12 SMB_DATA_ME0 → SMB_DATA_ME0 (30)
SML1ALERT# / PCHHOT# / GPIO74 +3V_S5 → C13 SMLIALERT#_R
SML1CLK / GPIO58 +3V_S5 → E14 SMB_ME1_CLK
SML1DATA / GPIO75 +3V_S5 → M16 SMB_ME1_DAT

For LAN

EC-B-31

SMB_PCH_CLK → C727 *22P/50V_4
SMB_CLK_ME0 → C809 *22P/50V_4
SMB_ME1_CLK → C810 *22P/50V_4
RF reserved

For EC

Controller link

CL_CLK1 → M7 CL_CLK1 → TP38
CL_DATA1 → T11 CL_DAT1 → TP42
CL_RST1# → P10 CL_RST# → TP41

CLOCKS

CLKOUT_PCIE0N CLKOUT_PCIE0P
PCIECLKRQ0# / GPIO73 +3V_S5 → J2 PCIECLKRQ0# (EC-B-30)
CLKOUT_PCIE1N CLKOUT_PCIE1P
PCIECLKRQ1# / GPIO18 +3V
CLKOUT_PCIE2N CLKOUT_PCIE2P
PCIECLKRQ2# / GPIO20 +3V
CLKOUT_PCIE3N CLKOUT_PCIE3P
PCIECLKRQ3# / GPIO25 +3V_S5
CLKOUT_PCIE4N CLKOUT_PCIE4P
PCIECLKRQ4# / GPIO26 +3V_S5
CLKOUT_PCIE5N CLKOUT_PCIE5P
PCIECLKRQ5# / GPIO44 +3V_S5
CLKOUT_PEG_B_N CLKOUT_PEG_B_P
PEG_B_CLKRQ# / GPIO56 +3V_S5
CLKOUT_PCIE6N CLKOUT_PCIE6P
PCIECLKRQ6# / GPIO45 +3V_S5
CLKOUT_PCIE7N CLKOUT_PCIE7P
PCIECLKRQ7# / GPIO46 +3V_S5
CLKOUT_ITPXDP_N CLKOUT_ITPXDP_P

LAN: CLKOUT_PCIE0N, CLKOUT_PCIE1N, PCIECLKRQ0#
WLAN: CLKOUT_PCIE1N, CLKOUT_PCIE2N, PCIECLKRQ1#
WWAN only use USB interface.
USB3.0: CLKOUT_PCIE3N, CLKOUT_PCIE4N, PCIECLKRQ3#

EC-B-30 EC-B-30 EC-B-30 EC-B-30 EC-B-30 EC-B-02 EC-B-30

TP44 TP43 CLK_PCH_ITPN_R CLK_PCH_ITPP_R AK14 AK13

CougarPoint_R1P0

PEG_A_CLKRQ# / GPIO47 +3V_S5 → M10 PEG_CLKREQ#

CLKOUT_PEG_A_N AB37
CLKOUT_PEG_A_P AB38
CLKOUT_DMI_N AV22
CLKOUT_DMI_P AU22
CLKOUT_DP_N AM12
CLKOUT_DP_P AM13
CLKIN_DMI_N BF18
CLKIN_DMI_P BE18
CLKIN_GND1_N BJ30
CLKIN_GND1_P BG30
CLKIN_DOT_96N G24
CLKIN_DOT_96P E24
CLKIN_SATA_N AK7
CLKIN_SATA_P AK5
REFCLK14IN K45
CLKIN_PCILOOPBACK H45
XTAL25_IN V47
XTAL25_OUT V49
XCLK_RCOMP Y47 R211 90.9/F_4 +1.05V_PCH

CLK_CPU_BCLKN (4)
CLK_CPU_BCLKP (4)
CLK_DPLL_SSCLKN (4)
CLK_DPLL_SSCLKP (4)
CLK_BUF_PCIE_3GPLLN
CLK_BUF_PCIE_3GPLLP
CLK_BUF_BCLKN
CLK_BUF_BCLKP
CLK_BUF_DREFCLKN
CLK_BUF_DREFCLKP
CLK_BUF_DREFSSCLKN
CLK_BUF_DREFSSCLKP
CLK_PCH_14M
CLK_PCI_FB

C247 18P/50V_4
R224 1M/J_4
Y2 25MHz
C221 18P/50V_4

27Mz support DIS only
Reserve to cost down crystal.

CLKOUTFLEX0 / GPIO64 +3V
CLKOUTFLEX1 / GPIO65 +3V
CLKOUTFLEX2 / GPIO66 +3V
CLKOUTFLEX3 / GPIO67 +3V

TP37 K43
CLK_27M_VGA_1 F47 R523 *0_4 CLK_27M_VGA (17)
CLK_25M H47 TP84
CLK_48M_CARD C_R180 22_4 CLK_48M_CARD (27)

EC-B-33
EC-C-13

SMBus(CLK)

+3V
R281 4.7K/J_4
SMB_PCH_DAT → Q23 2N7002K → SMB_RUN_DAT → SMB_RUN_DAT (14,15)

+3V
R280 4.7K/J_4
SMB_PCH_CLK → Q22 2N7002K → SMB_RUN_CLK → SMB_RUN_CLK (14,15)

PLTRST#(CLG)

+3V_S5
C114 0.1U/10V_4
PCI_PLTRST# → U10 TC7SH08FU → PLTRST#
R67 100K/J_4
R68 *0_4 PLTRST# → PLTRST# (4,16,25,29,31)

(11) DGPU_PWR_EN#

PCI/USBOC# Pull-up(CLG)

+3V_S5
R116 10KX8
USB_OC4# USB_OC1# USB_OC2# USB_OC3# → USB_OC6# USB_OC0# USB_OC7# USB_OC5#

+3V
R99 10KX8
MPC_PWR_CTRL# BT_DIS DGPU_PWR_EN# ODD_MDDA# → EXTTS_SNI_DRV0_PCH EXTTS_SNI_DRV1_PCH

+3V
PCI_PIRQA# R535 8.2K/J_4
PCI_PIRQB# R540 8.2K/J_4
PCI_PIRQC# R485 8.2K/J_4
PCI_PIRQD# R486 8.2K/J_4

EC-C-18

LAN / WLAN / USB3.0

LAN
(25) CLK_PCIE_LANP
(25) CLK_PCIE_LANN
(25) PCIE_CLKREQ_LAN#
R234 SW@0X2
CLKOUT_PCIE0P CLKOUT_PCIE0N
R174 0_4 PCIECLKRQ0#

WLAN
(29) CLK_PCIE_WLANN
(29) CLK_PCIE_WLANP
(29) PCIE_CLKREQ_WLAN#
R231 SW@0X2
CLKOUT_PCIE1N CLKOUT_PCIE1P
R190 0_4 PCIECLKRQ1#

USB3.0
(31) CLK_PCIE_USB30N
(31) CLK_PCIE_USB30P
PCIE_CLKREQ_USB30#
R570 SW@0X2
CLKOUT_PCIE3N CLKOUT_PCIE3P
R150 0_4 PCIECLKRQ3#

(16) CLK_PCIE_VGAN
(16) CLK_PCIE_VGAP
R569 SW@0X2
CLKOUT_PEG_A_N CLKOUT_PEG_A_P

DIS:Stuff
UMA:Non-stuff

MPC Switch Control

MPC_PWR_CTRL#	Low = MPC ON High = MPC OFF (Default)

MPC_PWR_CTRL# R145 *1K/J_4

CLK_REQ/Strap Pin(CLG)

+3V_S5
R631 10K/J_4 PCIECLKRQ9#
R379 10K/J_4 PCIECLKRQ5#
R620 10K/J_4 PCIECLKRQ6#
R621 10K/J_4 PCIECLKRQ7#
R622 10K/J_4 PCIECLKRQ8#
R149 10K/J_4 PCIE_CLKREQ_USB30#

EC-B-30

UMA:Ra
DIS:Rb

R529 Ra *10K/J_4 PEG_CLKREQ#
PEG_CLKREQ# R539 10K/J_4 Rb

CLK_BUF_BCLKN R256 10K/J_4
CLK_BUF_BCLKP R257 10K/J_4
CLK_BUF_PCIE_3GPLLN R601 10K/J_4
CLK_BUF_PCIE_3GPLLP R602 10K/J_4
CLK_BUF_DREFCLKN R516 10K/J_4
CLK_BUF_DREFCLKP R517 10K/J_4
CLK_BUF_DREFSSCLKN R585 10K/J_4
CLK_BUF_DREFSSCLKP R580 10K/J_4
CLK_PCH_14M R543 10K/J_4

CLOCK TERMINATION for FCIM

+3V
R544 10K/J_4 PCIE_CLKREQ_WLAN#
R173 10K/J_4 PCIE_CLKREQ_LAN#

SMBus/Pull-up(CLG)

+3V_S5
R69 2.2K/J_4
(17,37,40) MB_CLK1 → Q8 2N7002K → SMB_ME1_CLK

+3V_S5
R64 2.2K/J_4
(17,37,40) MB_DATA1 → Q9 2N7002K → SMB_ME1_DAT

+3V_S5
R494 1K/J_4 DRAMRST_CNTRL_PCH
R492 10K/J_4 SMBALERT#
R265 2.2K/J_4 SMB_PCH_CLK
R266 2.2K/J_4 SMB_PCH_DAT
R496 10K/J_4 SML1ALERT#_R

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Cougar Point (GPIO,VSS_NCTF,RSVD)

U14F

S_GPIO	R553 100_4	T7	BMBUSY# / GPIO0	+3V	+3V	TACH4 / GPIO68	C40
(40) EC_EXT_SMI#	EC_EXT_SMI#	A42	TACH1 / GPIO1	+3V	+3V	TACH5 / GPIO69	B41
	BOARD_ID0 EC-B-03	H36	TACH2 / GPIO6	+3V	+3V	TACH6 / GPIO70	C41
(40) EC_EXT_SCI#	EC_EXT_SCI#	E38	TACH3 / GPIO7	+3V	+3V	TACH7 / GPIO71	A40
	SYSTEM_ID	C10	GPIO8	+3V_S5			
(25) LAN_DISABLE#	LAN_DISABLE#	C4	LAN_PHY_PWR_CTRL / GPIO12	+3V_S5			
	HOST_ALERT#1_R	G2	GPIO15	+3V_S5		A20GATE	P4
EC-B-04 (29) WLAN_OFF#		U2	SATA4GP / GPIO16	+3V		PECI	AU16
DGPU_PWROK	DGPU_PWROK	D40	TACH0 / GPIO17	+3V		RCIN#	P5
+3V Follow DMRB4, need check	BIOS_REC	T5	SCLOCK / GPIO22	+3V		PROCPWRGD	AY11
R542 *10K	(30) SDD_DA_DSS SDD_DA_DSS	E8	GPIO24 / MEM_LED	+3V_S5		THRMTRIP#	AY10
	GPIO27	E16	GPIO27	DSW		INIT3_3V#	T14
(9,40) PLL_ODVR_EN R546 *0/J_4	PLL_ODVR_EN_R	P8	GPIO28	+3V_S5		DF_TVS	AY1
	STP_PCI#	K1	STP_PCI# / GPIO34	+3V		TS_VSS1	AH8
(38) BT_ON#	BT_ON#	K4	GPIO35	+3V		TS_VSS2	AK11
(10) DGPU_PWR_EN#		V8	SATA2GP / GPIO36	+3V		TS_VSS3	AH10
Need check EC-B-04 EC-C-19	(29) WWAN_OFF#	M5	SATA3GP / GPIO37	+3V		TS_VSS4	AK10
	MFG_MODE	N2	SLOAD / GPIO38	+3V		NC_1	P37
	FDI_OVRVLTG	M3	SDATAOUT0 / GPIO39	+3V			
	TEST_SET_UP	V13	SDATAOUT1 / GPIO48	+3V		VSS_NCTF_15	BG2
(37,40) TEMP_ALERT#		V3	SATA5GP / GPIO49	+3V		VSS_NCTF_16	BG48
	SV_DET	D6	GPIO57	+3V_S5		VSS_NCTF_17	BH3
						VSS_NCTF_18	BH47
		A4	VSS_NCTF_1			VSS_NCTF_19	BJ4
		A44	VSS_NCTF_2			VSS_NCTF_20	BJ44
		A45	VSS_NCTF_3			VSS_NCTF_21	BJ45
		A46	VSS_NCTF_4			VSS_NCTF_22	BJ46
		A5	VSS_NCTF_5			VSS_NCTF_23	BJ5
		A6	VSS_NCTF_6			VSS_NCTF_24	BJ6
		B3	VSS_NCTF_7			VSS_NCTF_25	C2
		B47	VSS_NCTF_8			VSS_NCTF_26	C48
		BD1	VSS_NCTF_9			VSS_NCTF_27	D1
		BD49	VSS_NCTF_10			VSS_NCTF_28	D49
		BE1	VSS_NCTF_11			VSS_NCTF_29	E1
		BE49	VSS_NCTF_12			VSS_NCTF_30	E49
		BF1	VSS_NCTF_13			VSS_NCTF_31	F1
		BF49	VSS_NCTF_14			VSS_NCTF_32	F49

GPIO | CPU/MISC | NCTF

CougarPoint_R1P0

BOARD_ID1 EC-B-03

T24

SSD_DETECT# (30)

BOARD_ID2

EC_A20GATE (40)

TP46

EC_RCIN# (40)

H_PWRGOOD (4)

PCH_THRMTRIP# R595 390/J_4 PM_THRMTRIP# (4)

DF_TVS (9)

3/16 Connected to GND
DG rev0.9

SGPIO

+3V
S_GPIO R560 10K/J_4
R561 *0/J_4

GPIO Pull-up/Pull-down(CLG)

+3V_S5
LAN_DISABLE# R157 10K/J_4

+3V
EC_EXT_SMI# R89 10K/J_4
EC_EXT_SCI# R487 10K/J_4
SSD_DETECT# R110 10K/J_4
STP_PCI# R193 10K/J_4
EC_A20GATE R550 10K/J_4
EC_RCIN# R549 10K/J_4
TEMP_ALERT# R217 10K/J_4
BT_ON# R537 10K/J_4
DGPU_PWROK R500 10K/J_4
EC-B-04 WLAN_OFF# R530 10K/J_4

GPIO27 R515 10K/J_4

	GPIO71	GPIO68	GPIO6
	BOARD_ID2	BOARD_ID1	BOARD_ID0
KL7	0	0	0
KL8	0	1	0
KL9	1	0	0
KL8A	0	1	1
KL9A	1	0	1

EC-B-05

+3V
R108 *10K/J_4 BOARD_ID0 R87 10K/J_4
R488 10K/J_4 BOARD_ID1 R480 *10K/J_4
R109 *10K/J_4 BOARD_ID2 R88 10K/J_4
R507 10K/J_4 BOARD_ID3 R501 *10K/J_4
R483 10K/J_4 BOARD_ID4 R484 *10K/J_4
R142 10K/J_4 SYSTEM_ID R144 *10K/J_4

(10) BOARD_ID3 BOARD_ID3
(10) BOARD_ID4 BOARD_ID4

SV_SET_UP
High = Strong (Default)

+3V
TEST_SET_UP R559 10K/J_4
R565 *0/J_4

EC-QV-03

+3V_S5
R526 *10K/J_4 SV_DET R524 100K/J_4

+3V_S5
HOST_ALERT#1_R R525 1K/J_4

Intel ME Crypto Transport Layer Security (TLS) cipher suite
Low = Disable (Default)
High = Enable

+3V
R548 100K/J_4 FDI_OVRVLTG R545 *1K/F_4

FDI TERMINATION VOLTAGE OVERRIDE	LOW - Tx, Rx terminated to same voltage

+3V
SDD_DA_DSS R681 *200K/F_4

DMI TERMINATION VOLTAGE OVERRIDE	Low = Tx, Rx terminated to same voltage (DC Coupling Mode) (DEFAULT)

+3V
BIOS_REC R564 10K/J_4
R558 *0/J_4

BIOS RECOVERY	High = Disable (Default) Low = Enable

MFG-TEST

+3V
MFG_MODE R202 10K/J_4
R200 *0/J_4

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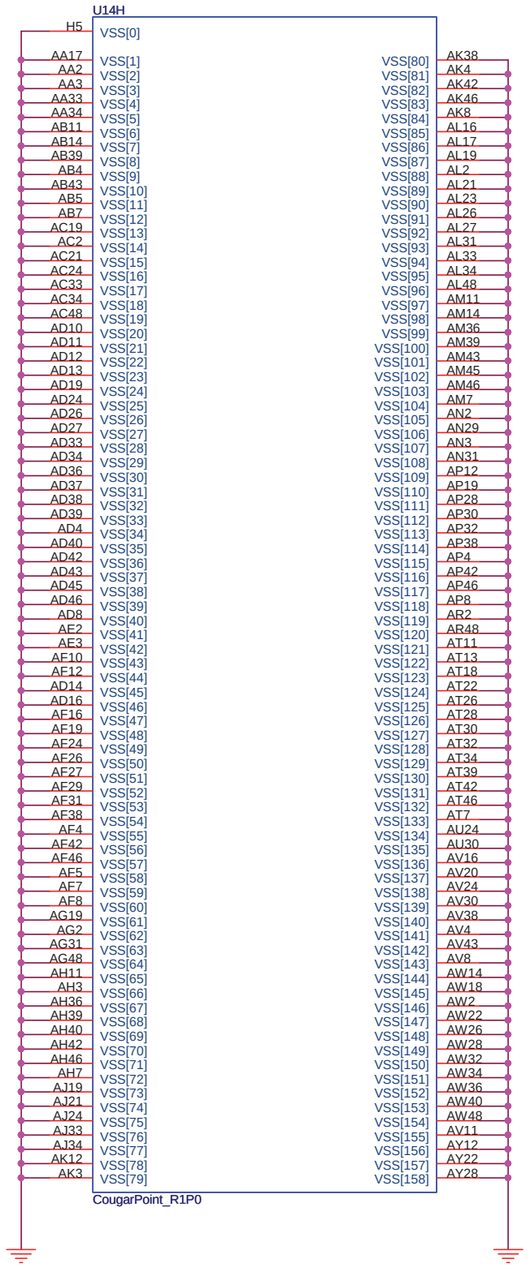
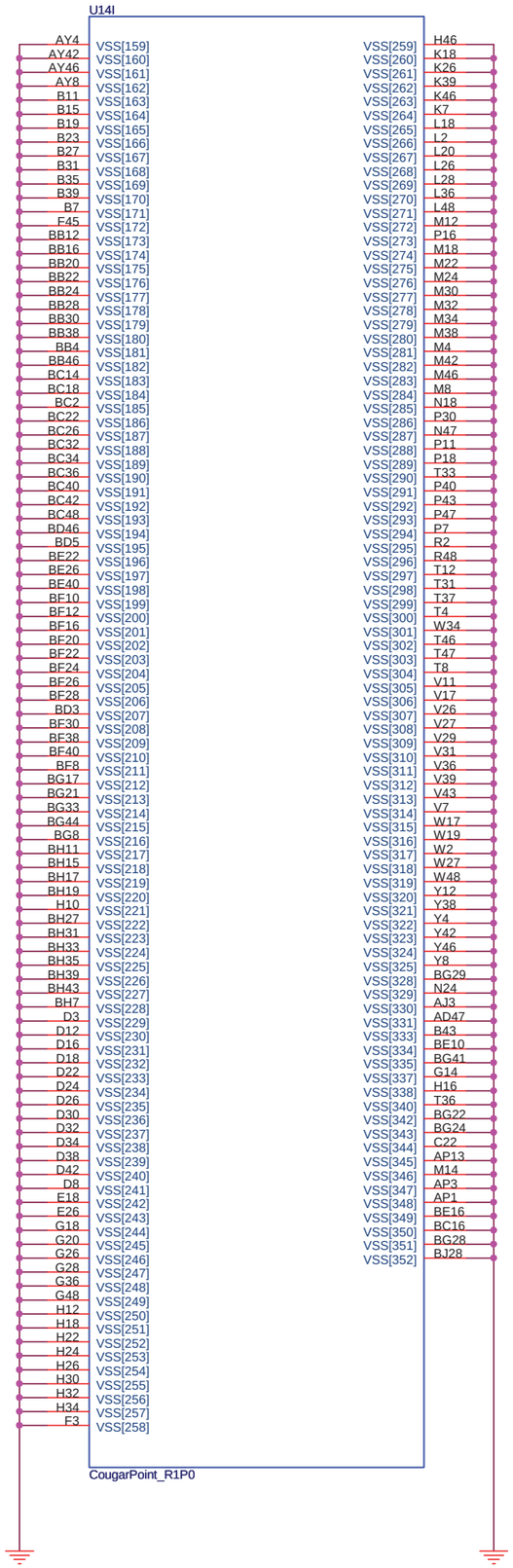
COUGAR POINT (POWER)

Cougar Point-M (POWER)

	DIS	UMA
Ra	R594	R593
Rb	R584	L28

IBEX PEAK-M (GND)





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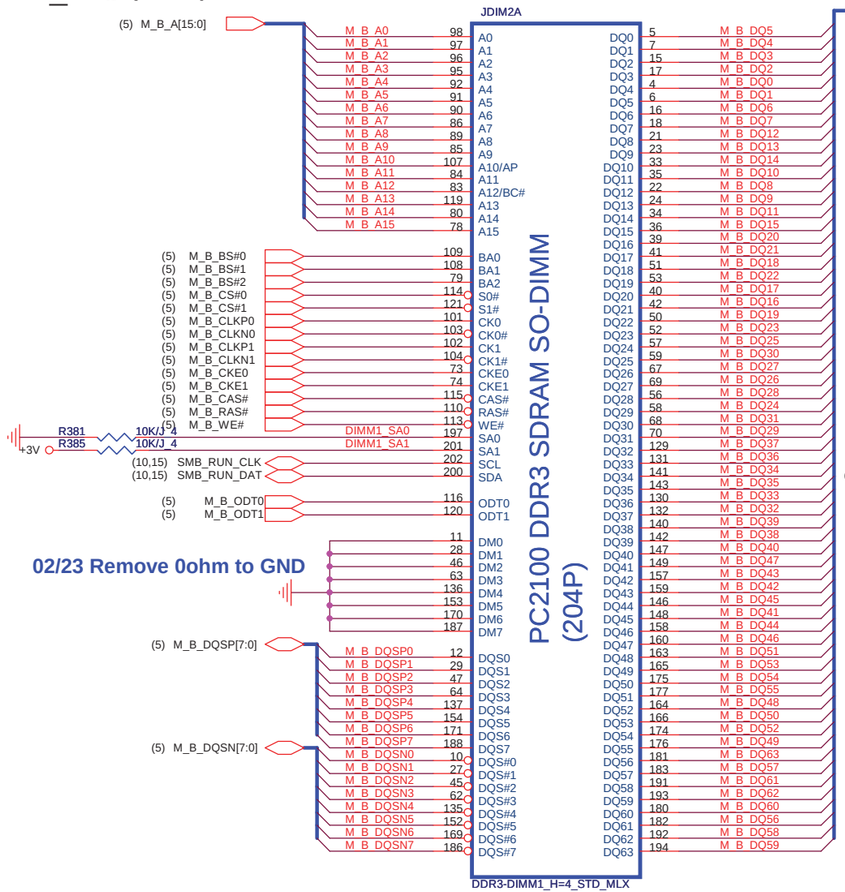
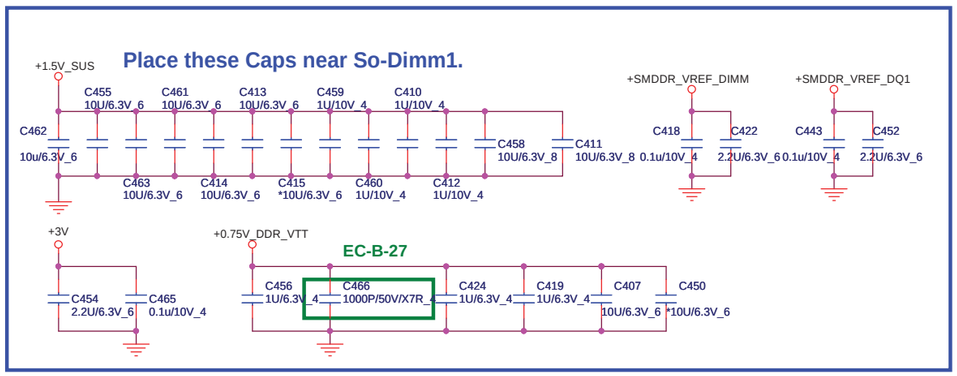
DDR_RVS (DDR)

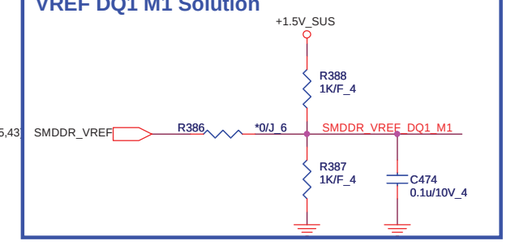




VREF DQ1 M2 Solution

6/22 Remove M2 Solution by MOW26

A16



	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080

Standard 8H type:DDR-C-2013310-204p-1

PROJECT KL5A

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Custom	DDRIII SO-DIMM-0	1A

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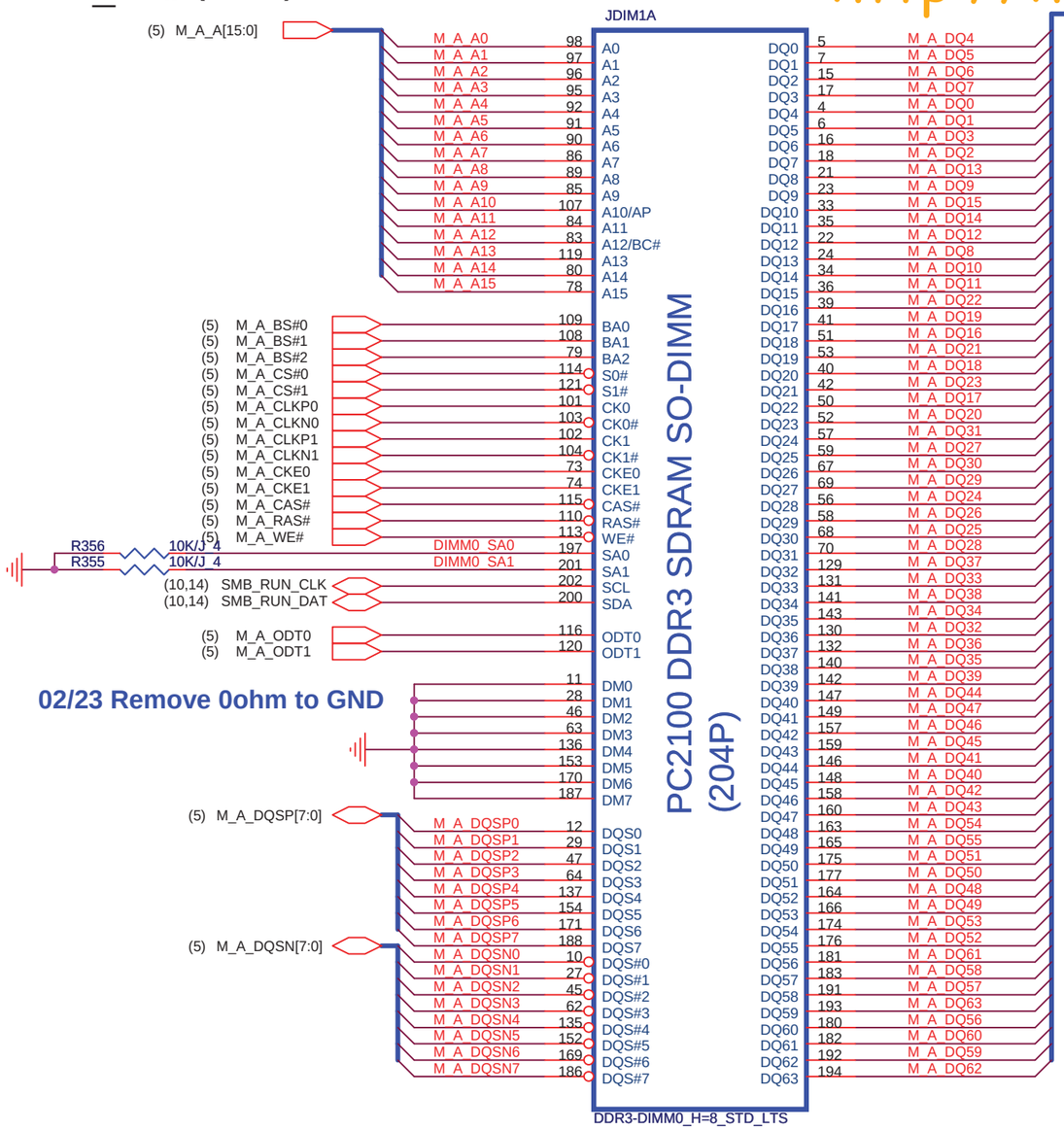
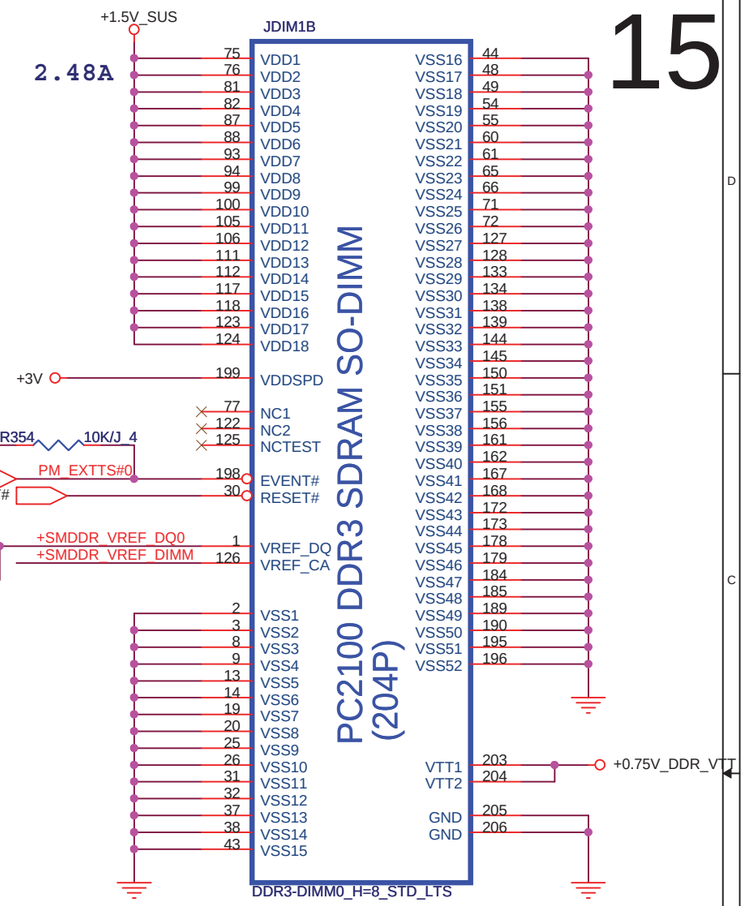
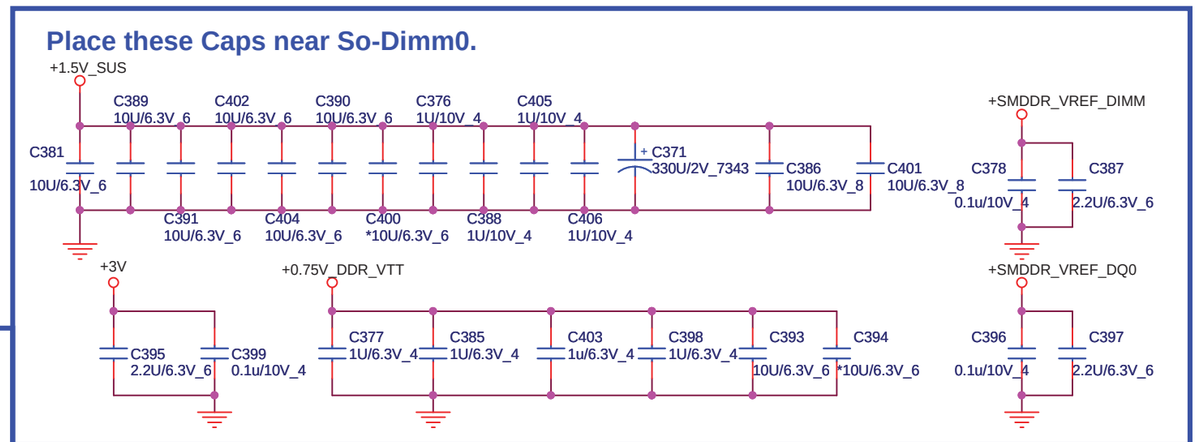
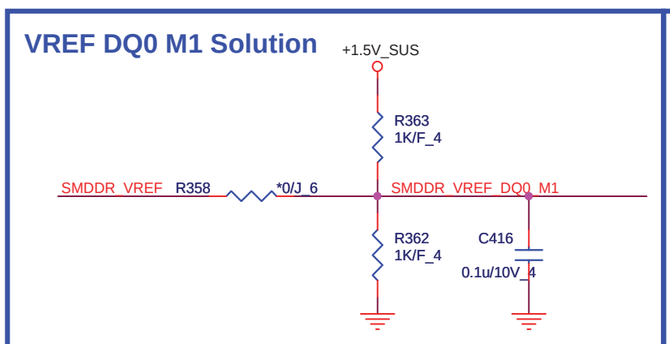


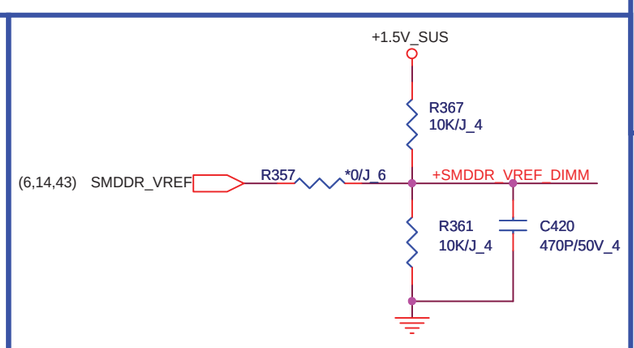
02/23 Remove 0ohm to GND

	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080
Standard 4H type:DDR-C-2013289-204p		









PROJECT KL5A

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B	DDRIII SO-DIMM-1	1A
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POWER
+PCIE_VDDR=1.0V
+VDD_MEM1.8V=1.8V
+VGA_CORE=0.9~1.2V

2.5GT/s bit rate

U30A

(4) PEG_TXP15	PEG_TXP15	AF30	PCIE_RX0P	PCIE_TX0P	AH30	C_PEG_RXP15 C218 0.1U/10V_4	PEG_RXP15 (4)
(4) PEG_TXN15	PEG_TXN15	AE31	PCIE_RX0N	PCIE_TX0N	AG31	C_PEG_RXN15 C208 0.1U/10V_4	PEG_RXN15 (4)
(4) PEG_TXP14	PEG_TXP14	AE29	PCIE_RX1P	PCIE_TX1P	AG29	C_PEG_RXP14 C205 0.1U/10V_4	PEG_RXP14 (4)
(4) PEG_TXN14	PEG_TXN14	AD28	PCIE_RX1N	PCIE_TX1N	AF28	C_PEG_RXN14 C203 0.1U/10V_4	PEG_RXN14 (4)
(4) PEG_TXP13	PEG_TXP13	AD30	PCIE_RX2P	PCIE_TX2P	AF27	C_PEG_RXP13 C230 0.1U/10V_4	PEG_RXP13 (4)
(4) PEG_TXN13	PEG_TXN13	AC31	PCIE_RX2N	PCIE_TX2N	AF26	C_PEG_RXN13 C229 0.1U/10V_4	PEG_RXN13 (4)
(4) PEG_TXP12	PEG_TXP12	AC29	PCIE_RX3P	PCIE_TX3P	AD27	C_PEG_RXP12 C195 0.1U/10V_4	PEG_RXP12 (4)
(4) PEG_TXN12	PEG_TXN12	AB28	PCIE_RX3N	PCIE_TX3N	AD26	C_PEG_RXN12 C201 0.1U/10V_4	PEG_RXN12 (4)
(4) PEG_TXP11	PEG_TXP11	AB30	PCIE_RX4P	PCIE_TX4P	AC25	C_PEG_RXP11 C194 0.1U/10V_4	PEG_RXP11 (4)
(4) PEG_TXN11	PEG_TXN11	AA31	PCIE_RX4N	PCIE_TX4N	AB25	C_PEG_RXN11 C188 0.1U/10V_4	PEG_RXN11 (4)
(4) PEG_TXP10	PEG_TXP10	AA29	PCIE_RX5P	PCIE_TX5P	Y23	C_PEG_RXP10 C169 0.1U/10V_4	PEG_RXP10 (4)
(4) PEG_TXN10	PEG_TXN10	Y28	PCIE_RX5N	PCIE_TX5N	Y24	C_PEG_RXN10 C181 0.1U/10V_4	PEG_RXN10 (4)
(4) PEG_TXP9	PEG_TXP9	Y30	PCIE_RX6P	PCIE_TX6P	AB27	C_PEG_RXP9 C184 0.1U/10V_4	PEG_RXP9 (4)
(4) PEG_TXN9	PEG_TXN9	W31	PCIE_RX6N	PCIE_TX6N	AB26	C_PEG_RXN9 C186 0.1U/10V_4	PEG_RXN9 (4)
(4) PEG_TXP8	PEG_TXP8	W29	PCIE_RX7P	PCIE_TX7P	W27	C_PEG_RXP8 C163 0.1U/10V_4	PEG_RXP8 (4)
(4) PEG_TXN8	PEG_TXN8	V28	PCIE_RX7N	PCIE_TX7N	V26	C_PEG_RXN8 C168 0.1U/10V_4	PEG_RXN8 (4)
(4) PEG_TXP7	PEG_TXP7	V30	PCIE_RX8P	PCIE_TX8P	W24	C_PEG_RXP7 C162 0.1U/10V_4	PEG_RXP7 (4)
(4) PEG_TXN7	PEG_TXN7	U31	PCIE_RX8N	PCIE_TX8N	W23	C_PEG_RXN7 C153 0.1U/10V_4	PEG_RXN7 (4)
(4) PEG_TXP6	PEG_TXP6	U29	PCIE_RX9P	PCIE_TX9P	V27	C_PEG_RXP6 C148 0.1U/10V_4	PEG_RXP6 (4)
(4) PEG_TXN6	PEG_TXN6	T28	PCIE_RX9N	PCIE_TX9N	V26	C_PEG_RXN6 C151 0.1U/10V_4	PEG_RXN6 (4)
(4) PEG_TXP5	PEG_TXP5	T30	PCIE_RX10P	PCIE_TX10P	U24	C_PEG_RXP5 C145 0.1U/10V_4	PEG_RXP5 (4)
(4) PEG_TXN5	PEG_TXN5	R31	PCIE_RX10N	PCIE_TX10N	U23	C_PEG_RXN5 C138 0.1U/10V_4	PEG_RXN5 (4)
(4) PEG_TXP4	PEG_TXP4	R29	PCIE_RX11P	PCIE_TX11P	T26	C_PEG_RXP4 C137 0.1U/10V_4	PEG_RXP4 (4)
(4) PEG_TXN4	PEG_TXN4	P28	PCIE_RX11N	PCIE_TX11N	T27	C_PEG_RXN4 C127 0.1U/10V_4	PEG_RXN4 (4)
(4) PEG_TXP3	PEG_TXP3	P30	PCIE_RX12P	PCIE_TX12P	T24	C_PEG_RXP3 C115 0.1U/10V_4	PEG_RXP3 (4)
(4) PEG_TXN3	PEG_TXN3	N31	PCIE_RX12N	PCIE_TX12N	T23	C_PEG_RXN3 C125 0.1U/10V_4	PEG_RXN3 (4)
(4) PEG_TXP2	PEG_TXP2	N29	PCIE_RX13P	PCIE_TX13P	P27	C_PEG_RXP2 C111 0.1U/10V_4	PEG_RXP2 (4)
(4) PEG_TXN2	PEG_TXN2	M28	PCIE_RX13N	PCIE_TX13N	P26	C_PEG_RXN2 C105 0.1U/10V_4	PEG_RXN2 (4)
(4) PEG_TXP1	PEG_TXP1	M30	PCIE_RX14P	PCIE_TX14P	P24	C_PEG_RXP1 C101 0.1U/10V_4	PEG_RXP1 (4)
(4) PEG_TXN1	PEG_TXN1	L31	PCIE_RX14N	PCIE_TX14N	P23	C_PEG_RXN1 C95 0.1U/10V_4	PEG_RXN1 (4)
(4) PEG_TXP0	PEG_TXP0	L29	PCIE_RX15P	PCIE_TX15P	M27	C_PEG_RXP0 C88 0.1U/10V_4	PEG_RXP0 (4)
(4) PEG_TXN0	PEG_TXN0	K30	PCIE_RX15N	PCIE_TX15N	N26	C_PEG_RXN0 C83 0.1U/10V_4	PEG_RXN0 (4)

CLOCK

(10) CLK_PCIE_VGAP	AK30	PCIE_REFCLKP
(10) CLK_PCIE_VGAN	AK32	PCIE_REFCLKN

M93-S3--NC
PARK-S3--install
10K/F_4 1 2 R119 N10 NC_PWRGOOD

(4,10,25,29,31) PLTRST# AL27 PERSTB

CALIBRATION

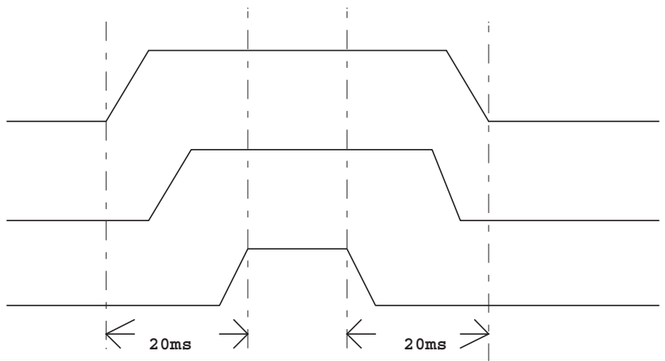
PCIE_CALRP Y22 M72_PCIE_CALRP R134 1.27K/F_4
PCIE_CALRN AA22 M72_PCIE_CALRN R218 2K/F_4 +1.1V_GPU

PARK

PCI EXPRESS INTERFACE

100MHz (+/-300ppm) input frequency
0-0.7V single-ended swing

VGA Core	BPP
VGA Core	VDDC
+1.8V	PCIE_VDDR
+1.8V	PCIE_PVDD
+1.8V	VDDR1
+3V_VGA	VDDR3



U30G

DP E/F POWER

+1.8V_DPE_VDD18	AG15 DPE_VDD18#1	
	AG16 DPE_VDD18#2	
+1.1V_DPE_VDD10	AG20 DPE_VDD10#1	
	AG21 DPE_VDD10#2	
	AG14 DPE_VSSR#1	
	AH14 DPE_VSSR#2	
	AM14 DPE_VSSR#3	
	AM16 DPE_VSSR#4	
	AM18 DPE_VSSR#5	
+1.8V_DPE_VDD18	AF16 DPF_VDD18#1	
	AG17 DPF_VDD18#2	
+1.1V_DPE_VDD10	AF22 DPF_VDD10#1	
	AF23 DPF_VDD10#2	
	AG23 DPF_VSSR#1	
	AM20 DPF_VSSR#2	
	AM22 DPF_VSSR#3	
	AM24 DPF_VSSR#4	
	DPF_VSSR#5	
R186 150/F_4 DPEF_CALR	AF17 DPEF_CALR	
+1.8V_DPE_PVDD +1.8V_DPE_PVDD	AG18 DPE_PVDD	
	AF19 DPE_PVSS	
+1.8V_DPF_PVDD R185 0_4	AG19 NC_DPF_PVDD	
M93-S3--NC PARK-S3--install	AF20 NC_DPF_PVSS	

DP A/B POWER

	AE11 NC_DPA_VDD18#1	+1.8V_DPA_VDD18
	AF11 NC_DPA_VDD18#2	
	AF6 DPA_VDD10#1	+1.1V_DPB_VDD10
	AF7 DPA_VDD10#2	
	AE1 DPA_VSSR#1	
	AE3 DPA_VSSR#2	
	AG1 DPA_VSSR#3	
	AG6 DPA_VSSR#4	
	AH5 DPA_VSSR#5	
	AE13 NC_DPB_VDD18#1	+1.8V_DPA_VDD18
	AF13 NC_DPB_VDD18#2	
	AE8 DPB_VDD10#1	+1.1V_DPB_VDD10
	AF9 DPB_VDD10#2	
	AE10 DPB_VSSR#1	
	AG9 DPB_VSSR#2	
	AH8 DPB_VSSR#3	
	AM6 DPB_VSSR#4	
	AM8 DPB_VSSR#5	
	AE10 DPAB_CALR	R575 150/F_4
	AG8 DPA_PVDD	+1.8V_DPA_PVDD
	AG7 DPA_PVSS	
	AG10 DPB_PVDD	+1.8V_DPA_PVDD
	AG11 DPB_PVSS	

PARK

BLM18PG181SN1D(180,1.5A)_6
L14 +1.1V_DPB_VDD10 → +1.1V_GPU
1.1V(S100,D200mA)
C204 0.1U/10V_4 C216 10U/6.3V_6S C206 1U/10V_4

(Park-S3:110mA@1.0V)
(M9X-S2/S3:200mA@1.1V)

+1.1V_DPE_VDD10 → +1.1V_DPE_VDD10 → L45 BLM18PG181SN1D(180,1.5A)_6 → +1.1V_GPU
C239 0.1U/10V_4 C214 1U/10V_4 C251 10U/6.3V_6S

+1.8V_DPE_VDD18 → C202 0.1U/10V_4 C604 1U/10V_4 → 1.8V -(440mA) → C618 10U/6.3V_6S → L42 BLM18PG181SN1D(180,1.5A)_6 → +1.8V_GPU

+1.8V_DPA_VDD18 → +1.8V_DPA_VDD18 → L15 BLM18PG181SN1D(180,1.5A)_6 → +1.8V_GPU
1.8V(130mA)
C199 0.1U/10V_4 C223 1U/10V_4 C232 10U/6.3V_6S
M93-S3--NC
PARK-S3--install

+1.8V_DPA_PVDD → +1.8V_DPA_PVDD → L13 BLM18PG181SN1D(180,1.5A)_6 → +1.8V_GPU
1.8V(20mA)
C217 0.1U/10V_4 C215 1U/10V_4 C222 10U/6.3V_6S

+1.8V_DPF_PVDD → +1.8V_DPF_PVDD → L18 BLM18PG181SN1D(180,1.5A)_6 → +1.8V_GPU
1.8V(20mA)
C212 0.1U/10V_4 C237 1U/10V_4 C252 10U/6.3V_6S
M93-S3--NC
PARK-S3--install

+1.8V_DPE_PVDD → +1.8V_DPE_PVDD → L19 BLM18PG181SN1D(180,1.5A)_6 → +1.8V_GPU
1.8V(20mA)
C213 0.1U/10V_4 C231 1U/10V_4 C253 10U/6.3V_6S

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	Robson_PCIE_Interface	1A
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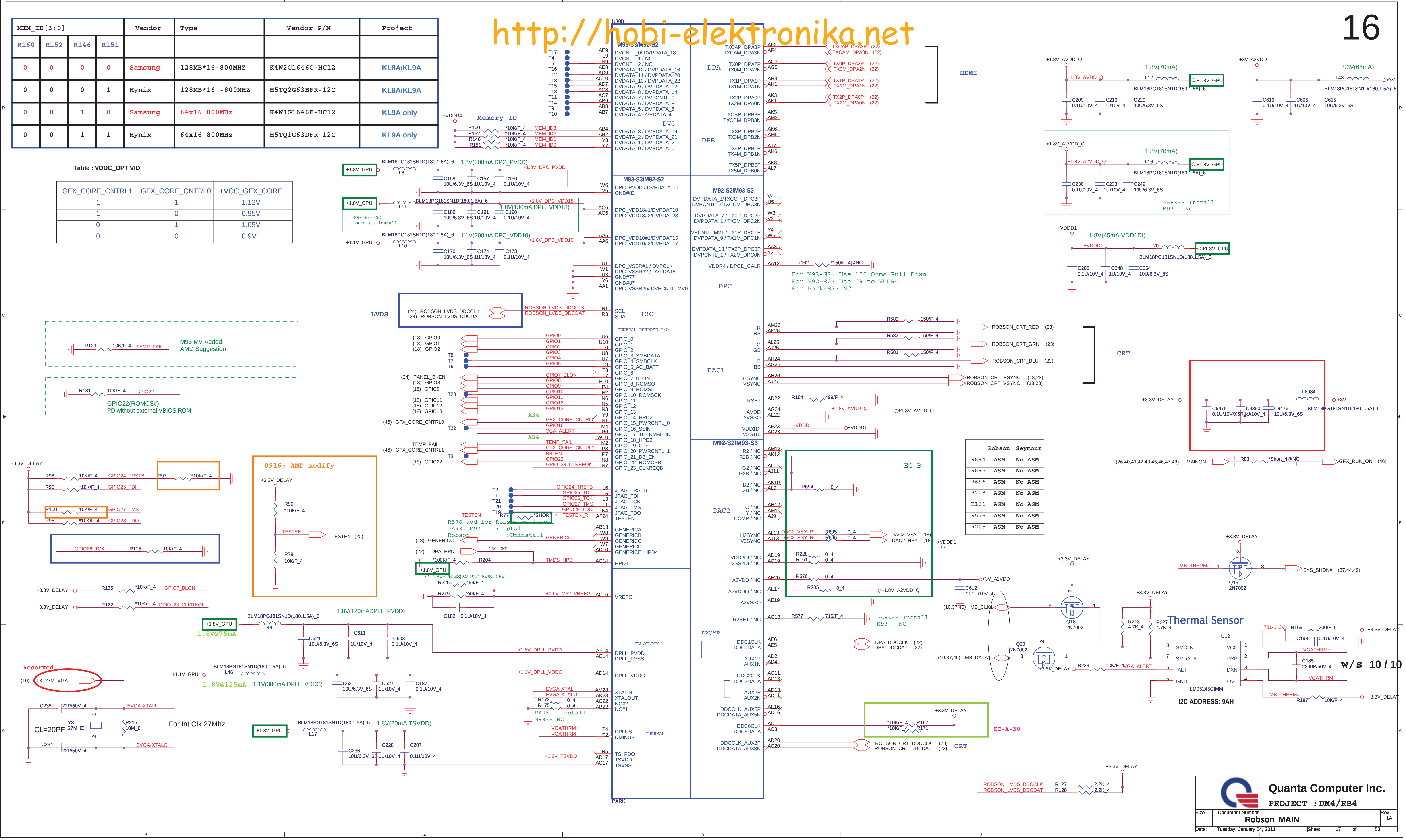
MEM_ID[3:0]				Vendor	Type	Vendor P/N	Project
R160	R152	R146	R151				
0	0	0	0	Samsung	128MB*16-800MHZ	K4W2G1646C-HC12	KL8A/KL9A
0	0	0	1	Hynix	128MB*16 -800MHZ	H5TQ2G63BFR-12C	KL8A/KL9A
0	0	1	0	Samsung	64x16 800MHz	K4W1G1646E-HC12	KL9A only
0	0	1	1	Hynix	64x16 800MHz	H5TQ1G63DFR-12C	KL9A only

Table : VDDC_OPT VID

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	+VCC_GFX_CORE
1	1	1.12V
1	0	0.95V
0	1	1.05V
0	0	0.9V

	Robson	Seymour
R694	ASM	No ASM
R695	ASM	No ASM
R696	ASM	No ASM
R228	ASM	No ASM
R161	ASM	No ASM
R576	ASM	No ASM
R205	ASM	No ASM



Quanta Computer Inc.
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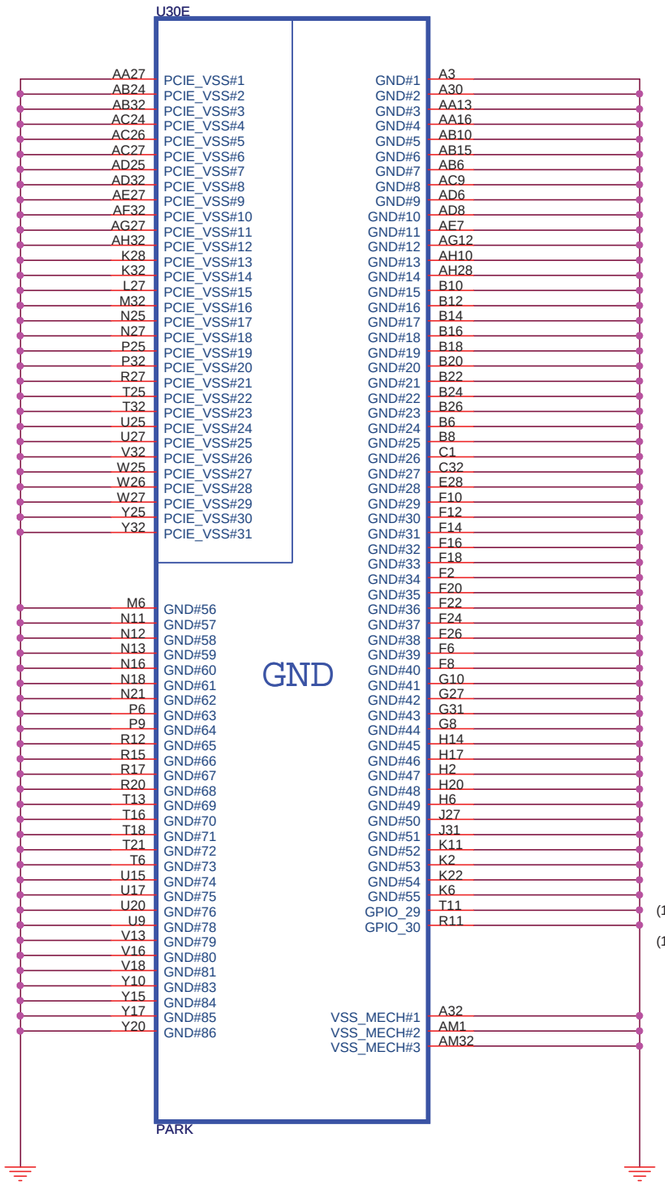
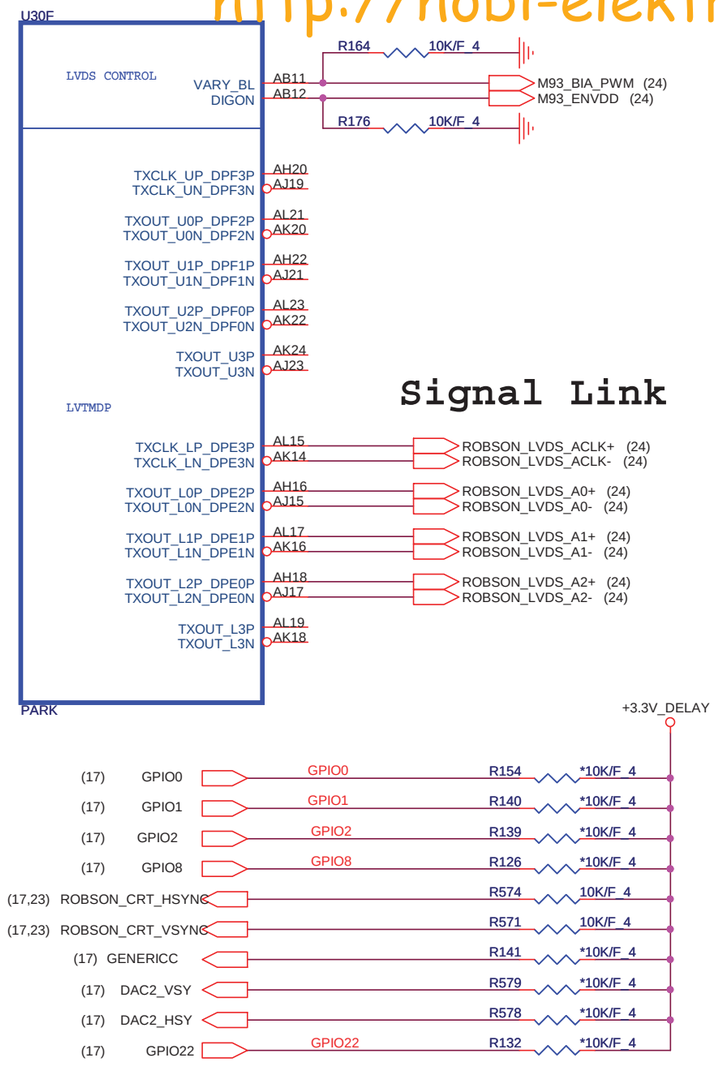
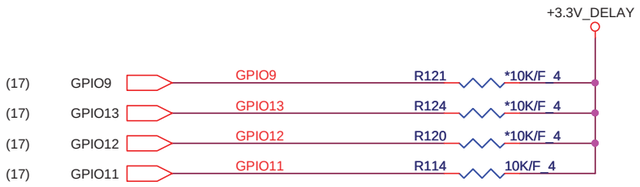




Signal Link



CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

RECOMMENDED SETTINGS
0= DO NOT INSTALL RESISTOR
1 = INSTALL 10K RESISTOR
X = DESIGN DEPENDANT
NA = NOT APPLICABLE

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	
TX_PWRS_ENB	GPIO0	**Transmitter Power Savings Enable** 0: 50% Tx output swing for mobile mode 1: full Tx output swing (Default setting for Desktop)	1
TX_DEEMPH_EN	GPIO1	**PCI Express Transmitter De-emphasis Enable** 0: Tx de-emphasis disabled for mobile mode 1: Tx de-emphasis enabled (Default setting for Desktop)	1
BIF_GEN2_EN_A	GPIO2	Enable CLKREQ# Power Management 0 - CLKREQ# power management capability is disabled 1 - CLKREQ# power management capability is enabled	0
RSVD BIF_VGA_DIS RSVD	GPIO8 GPIO9 GPIO21	VGA ENABLED	0 0 0
BIOS_ROM_EN ROMIDCFG(2:0) VIP_DEVICE_STRAP_ENA	GPIO_22_ROMCSB GPIO[13:11] V2SYNC	ENABLE EXTERNAL BIOS ROM SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT IGNORE VIP DEVICE STRAPS	0 0 0 1 0
RSVD AUD[1] AUD[0]	GENERICC HSYNC VSYNC	AUD[1] AUD[0] 0 0 No audio function 0 1 Audio for DisplayPort and HDMI if dongle is detected 1 0 Audio for DisplayPort only 1 1 Audio for both DisplayPort and HDMI	0 0 11

AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

H2SYNC GENERICC

PULLUP PADS ARE NOT REQUIRED FOR THESE STRAPS BUT IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

GPIO21_BB_EN

Memory Aperture size

GPIO9 BIOSROM		GPIO13 ROMIDCFG2	GPIO12 ROMIDCFG1	GPIO11 ROMIDCFG0
0	128M	0	0	0
0	256M	0	0	1
0	64M	0	1	0
0	32M	0	1	1
0	512M	1	0	0
0	1G	1	0	1
0	2G	1	1	0
0	4G	1	1	1

It is a shared pin strap with CONFIG[2:0] if BIOS_ROM_EN is set to 0.

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VDD_CT -- Level translation between core and I/O, excluding memory receivers.1.8 V ± 5%

PCIE_VDDR--PCI-E I/O power. 1.8 V ± 5%

+1.5V_GPU

1.5V (DDR3, MVDDQ = 1.5V@2.0A3)

C10 1U/10V_4, C550 1U/10V_4, C12 1U/10V_4, C76 1U/10V_4, C90 1U/10V_4, C91 1U/10V_4, C45 1U/10V_4, C543 1U/10V_4, C52 1U/10V_4, C21 1U/10V_4, C108 1U/10V_4, C85 1U/10V_4, C97 1U/10V_4, C87 1U/10V_4

C536 10U/6.3V_6S, C6 10U/6.3V_6S, C71 10U/6.3V_6S, C4 10U/6.3V_6S, C535 10U/6.3V_6S, C110 0.1U/10V_4, C92 0.1U/10V_4, C103 0.1U/10V_4, C89 0.1U/10V_4, C50 0.1U/10V_4, C120 1U/10V_4

1.8V(136mA VDD_CT)

+1.8V_GPU — L3 BLM18PG181SN1D(180,1.5A)_6 — +1.8V_VDD_CT

C78 10U/6.3V_6S, C178 1U/10V_4, C94 1U/10V_4, C164 1U/10V_4, C84 0.1U/10V_4

+1.8V_VDD_CT — +1.8V_VDD_CT

+3.3V_DELAY

C243 1U/10V_4, C250 1U/10V_4, C179 1U/10V_4, C255 10U/6.3V_6S

+VDDR4

+1.8V_GPU — L9 — BLM18PG181SN1D(180,1.5A)_6

1.8V(170mA VDDR4)

C171 10U/6.3V_6S, C175 1U/10V_4, C152 0.1U/10V_4

R156 0_4

TP1 — L17

TP2 — L16

+1.8V_GPU — L40 — BLM18PG181SN1D(180,1.5A)_6 — +PCIE_PVDD

1.8V(40mA PCIE_PVDD)

C600 10U/6.3V_6S, C599 1U/10V_4, C598 0.1U/10V_4

MPV18

SPV18

0.95V~1.1V(100mA SPV10)

+1.1V_GPU — L5 — BLM18PG181SN1D(180,1.5A)_6 — +VGA_CORE_SPV10

C102 10U/6.3V_6S, C100 0.1U/10V_4, C99 1U/10V_4

MV

+VGPU_CORE

1.5/1.8V 120mA

C142 1U/10V_4, C126 0.1U/10V_4

U30D

MEM I/O		
VDDR1#1	H13	
VDDR1#2	H16	
VDDR1#3	H19	
VDDR1#4	J10	
VDDR1#5	J23	
VDDR1#6	J24	
VDDR1#7	J9	
VDDR1#8	K10	
VDDR1#9	K23	
VDDR1#10	K24	
VDDR1#11	K9	
VDDR1#12	L11	
VDDR1#13	L12	
VDDR1#14	L13	
VDDR1#15	L20	
VDDR1#16	L21	
VDDR1#17	L22	
LEVEL TRANSLATION		
VDD_CT#1	AA20	
VDD_CT#2	AA21	
VDD_CT#3	AB20	
VDD_CT#4	AB21	
M93-S3/M92-S2 I/O		
VDDR3#1	AA17	
VDDR3#2	AA18	
VDDR3#3	AB17	
VDDR3#4	AB18	
VDDR4#1 / VDDR5	V12	
VDDR4#2	Y12	
VDDR4#3 / VDDR5	U12	
NC#1 / VDDR4	AA11	
DVCLK / VDDR4	Y11	
NC#3 / VDDR5	V11	
NC#4 / VDDR5	U11	
MEM CLK		
VDDRHA	L17	
VSSRHA	L16	
PLL		
PCIE_PVDD	AM30	
NC_MPV18	L8	
NC_SPV18	H7	
SPV10	H8	
SPVSS	J7	
BACK BIAS		
BBP#1	M11	
BBP#2	M12	

PARK

POWER

PCIE

PCIE_VDDR#1	AB23
PCIE_VDDR#2	AC23
PCIE_VDDR#3	AD24
PCIE_VDDR#4	AE24
PCIE_VDDR#5	AE25
PCIE_VDDR#6	AE26
PCIE_VDDR#7	AE25
PCIE_VDDR#8	AG26

+1.8V_PCIE_VDDR

+1.8V_PCIE_VDDR

1.8V(500mA)

BLM18PG181SN1D(180,1.5A)_6 — L39 — +1.8V_GPU

C180 0.1U/10V_4, C192 0.1U/10V_4, C590 1U/10V_4, C591 1U/10V_4, C587 1U/10V_4, C176 1U/10V_4, C588 1U/10V_4, C577 10U/6.3V_6S

+1.1V_PCIE_VDDC

1.1V(2.0A)

BLM21PG221SN1D(220,100M,2A)_8 — L2 — +1.1V_GPU

+1.1V_PCIE_VDDC

C79 1U/10V_4, C149 1U/10V_4, C135 1U/10V_4, C121 1U/10V_4, C72 1U/10V_4, C143 1U/10V_4, C112 1U/10V_4, C69 10U/6.3V_6S

PCIE_VDDC#1	L23
PCIE_VDDC#2	L24
PCIE_VDDC#3	L25
PCIE_VDDC#4	L26
PCIE_VDDC#5	M22
PCIE_VDDC#6	N22
PCIE_VDDC#7	N23
PCIE_VDDC#8	N24
PCIE_VDDC#9	R22
PCIE_VDDC#10	T22
PCIE_VDDC#11	U22
PCIE_VDDC#12	V22

VDDC+VDDCI

0.95~1.1V(15A peak)(Ripple < 87.2mV)

+VGPU_CORE

CORE

VDDC#1	AA15
VDDC#2	N15
VDDC#3	N17
VDDC#4	R13
VDDC#5	R16
VDDC#6	R18
VDDC#7	R21
VDDC#8	T12
VDDC#9	T15
VDDC#10	T17
VDDC#11	T20
VDDC#12	U13
VDDC#13	U16
VDDC#14	U18
VDDC#15	U21
VDDC#16	V15
VDDC#17	V17
VDDC#18	V20
VDDC#19	Y13
VDDC#20	Y16
VDDC#21	Y18
VDDC#22	Y21
VDDC#23	

C141 1U/10V_4, C167 1U/10V_4, C161 1U/10V_4, C166 1U/10V_4, C165 1U/10V_4, C159 1U/10V_4, C147 1U/10V_4, C140 1U/10V_4, C73 10U/6.3V_6S

C131 1U/10V_4, C154 1U/10V_4, C144 1U/10V_4, C139 1U/10V_4, C155 1U/10V_4, C124 1U/10V_4, C136 22U/6.3V_6, C74 22U/6.3V_6

M93 MV,for meet AC transient SPEC add C844, C845 and del C277

C160 1U/10V_4, C146 1U/10V_4, C77 1U/10V_4, C134 1U/10V_4, C68 10U/6.3V_6S, C150 10U/6.3V_6S, C66 10U/6.3V_6S, C67 10U/6.3V_6S

C123 1U/10V_4, C172 1U/10V_4

ISOLATED CORE I/O

VDDCI#1	M13
VDDCI#2	M15
VDDCI#3	M16
VDDCI#4	M17
VDDCI#5	M18
VDDCI#6	M20
VDDCI#7	M21
VDDCI#8	N20

0.95V~1.1V(2A VDDCI)

+VDDCI — L4 — BLM18SG121TN1D(120,100M,3A)_8 — +VGPU_CORE

C109 1U/10V_4, C122 1U/10V_4, C117 1U/10V_4, C81 10U/6.3V_6S, C82 10U/6.3V_6S, C80 10U/6.3V_6S

VDDCI--Isolated (clean) core power for the I/O logic. Voltage level should match that of VDDC. POWER Same as VDDC

VDDC--Dedicated core power, provides power to the internal logic. 0.9 V - 1.2 V (± 5%)

PCIE_VDDC--PCI-E Digital Power Supply (Either 1.0 V or 1.1 V) 1.0 V -5% to 1.1 V +5%

+1.1V_PCIE_VDDC — C116 1U/10V_4

+1.8V_PCIE_VDDR — C177 0.1U/10V_4, C589 1U/10V_4

Reserve for PARK

1.8V(75mA MPV18)

+1.8V_GPU — L7 — BLM18PG181SN1D(180,1.5A)_6 — MPV18

C128 1U/10V_4, C129 0.1U/10V_4

1.8V(90mA SPV18)

+1.8V_GPU — L6 — BLM18PG181SN1D(180,1.5A)_6 — SPV18

C98 1U/10V_4, C93 0.1U/10V_4

+VGPU_CORE (38,41,46)

Quanta Computer Inc.

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	Robson_Power_and_NC	1A

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(21) VMA_ODT0 — VMA_ODT0
(21) VMA_ODT1 — VMA_ODT1

(21) VMA_RAS0# — VMA_RAS0#
(21) VMA_RAS1# — VMA_RAS1#

(21) VMA_CAS0# — VMA_CAS0#
(21) VMA_CAS1# — VMA_CAS1#

(21) VMA_WE0# — VMA_WE0#
(21) VMA_WE1# — VMA_WE1#

(21) VMA_CS0# — VMA_CS0#

(21) VMA_CS1# — VMA_CS1#

(21) VMA_CKE0 — VMA_CKE0
(21) VMA_CKE1 — VMA_CKE1

(21) VMA_CLK0 — VMA_CLK0
(21) VMA_CLK0# — VMA_CLK0#

(21) VMA_CLK1 — VMA_CLK1
(21) VMA_CLK1# — VMA_CLK1#

(21) VMA_WDQS[7..0] — VMA_WDQS[7..0]

(21) VMA_RDQS[7..0] — VMA_RDQS[7..0]

(21) VMA_DM[7..0] — VMA_DM[7..0]

(21) VMA_DQ[63..0] — VMA_DQ[63..0]

(21) VMA_MA[13..0] — VMA_MA[13..0]

(21) VMA_BA0 — VMA_BA0
(21) VMA_BA1 — VMA_BA1
(21) VMA_BA2 — VMA_BA2

support 1Gbit
VRAM (64M X 16)

DIVIDER RESISTORS	ROBSON
MVREF TO 1.8V (Rd)	40.2R
MVREF TO GND (Re)	100R

+1.5V_GPU
Rd R58 40.2/F_4

PLACE MVREFD DIVIDERS
AND CAPS CLOSE TO ASIC

MVREFD
Re R63 100/F_4
C64 0.1U/10V_4

+1.5V_GPU
Rd R73 40.2/F_4
MVREFS
Re R74 100/F_4
C96 0.1U/10V_4

+1.5V_GPU — Note 1 — R70 240_4 — MEM_CALRN0
(17) TESTEN — Note 3 — K7 — MEM_CALRP1/DPC_CALR
R85 5.11K
R72 150/F_4 — Note 2 — J8
R84 240_4 — Note 1 — K25

DRAM_RST — L10 — DRAM_RST

CLKTESTA — K8 — CLKTESTA
CLKTESTB — L7 — CLKTESTB

C133 0.1U/10V_4
C132 0.1U/10V_4
R125 51.1/F_4
R112 51.1/F_4

route 50ohms
single-ended/100ohms diff
and keep short
For PARK-S3 only

U30C — MEMORY INTERFACE

VMA_DQ0	K27	DQA_0	MAA_0	K17	VMA_MA0
VMA_DQ1	J29	DQA_1	MAA_1	J20	VMA_MA1
VMA_DQ2	H30	DQA_2	MAA_2	H23	VMA_MA2
VMA_DQ3	H32	DQA_3	MAA_3	G23	VMA_MA3
VMA_DQ4	G29	DQA_4	MAA_4	G24	VMA_MA4
VMA_DQ5	F28	DQA_5	MAA_5	H24	VMA_MA5
VMA_DQ6	F32	DQA_6	MAA_6	J19	VMA_MA6
VMA_DQ7	F30	DQA_7	MAA_7	K19	VMA_MA7
VMA_DQ8	C30	DQA_8	MAA_8	J14	VMA_MA8
VMA_DQ9	F27	DQA_9	MAA_9	K14	VMA_MA9
VMA_DQ10	A28	DQA_10	MAA_10	J11	VMA_MA10
VMA_DQ11	C28	DQA_11	MAA_11	J13	VMA_MA11
VMA_DQ12	E27	DQA_12	MAA_12	H11	VMA_MA12
VMA_DQ13	G26	DQA_13	MAA_13/BA2	G11	VMA_BA2
VMA_DQ14	D26	DQA_14	MAA_14/BA0	J16	VMA_BA0
VMA_DQ15	F25	DQA_15	MAA_15/BA1	L15	VMA_BA1
VMA_DQ16	A25	DQA_16			
VMA_DQ17	C25	DQA_17	DQMA_0	E32	VMA_DM0
VMA_DQ18	E25	DQA_18	DQMA_1	E30	VMA_DM1
VMA_DQ19	D24	DQA_19	DQMA_2	A21	VMA_DM2
VMA_DQ20	E23	DQA_20	DQMA_3	C21	VMA_DM3
VMA_DQ21	F23	DQA_21	DQMA_4	E13	VMA_DM4
VMA_DQ22	D22	DQA_22	DQMA_5	D12	VMA_DM5
VMA_DQ23	F21	DQA_23	DQMA_6	E3	VMA_DM6
VMA_DQ24	E21	DQA_24	DQMA_7	F4	VMA_DM7
VMA_DQ25	D20	DQA_25			
VMA_DQ26	F19	DQA_26	RDQSA_0	H28	VMA_RDQS0
VMA_DQ27	A19	DQA_27	RDQSA_1	C27	VMA_RDQS1
VMA_DQ28	D18	DQA_28	RDQSA_2	A23	VMA_RDQS2
VMA_DQ29	F17	DQA_29	RDQSA_3	E19	VMA_RDQS3
VMA_DQ30	A17	DQA_30	RDQSA_4	E15	VMA_RDQS4
VMA_DQ31	C17	DQA_31	RDQSA_5	D10	VMA_RDQS5
VMA_DQ32	E17	DQA_32	RDQSA_6	D6	VMA_RDQS6
VMA_DQ33	D16	DQA_33	RDQSA_7	G5	VMA_RDQS7
VMA_DQ34	F15	DQA_34			
VMA_DQ35	A15	DQA_35	WDQSA_0	H27	VMA_WDQS0
VMA_DQ36	D14	DQA_36	WDQSA_1	A27	VMA_WDQS1
VMA_DQ37	F13	DQA_37	WDQSA_2	C23	VMA_WDQS2
VMA_DQ38	A13	DQA_38	WDQSA_3	C19	VMA_WDQS3
VMA_DQ39	C13	DQA_39	WDQSA_4	C15	VMA_WDQS4
VMA_DQ40	E11	DQA_40	WDQSA_5	E9	VMA_WDQS5
VMA_DQ41	A11	DQA_41	WDQSA_6	C5	VMA_WDQS6
VMA_DQ42	C11	DQA_42	WDQSA_7	H4	VMA_WDQS7
VMA_DQ43	F11	DQA_43			
VMA_DQ44	A9	DQA_44	ODTA0	L18	VMA_ODT0
VMA_DQ45	C9	DQA_45	ODTA1	K16	VMA_ODT1
VMA_DQ46	F9	DQA_46			
VMA_DQ47	D8	DQA_47	CLKA0	H26	VMA_CLK0
VMA_DQ48	E7	DQA_48	CLKA0B	H25	VMA_CLK0#
VMA_DQ49	A7	DQA_49			
VMA_DQ50	C7	DQA_50	CLKA1	G9	VMA_CLK1
VMA_DQ51	F7	DQA_51	CLKA1B	H9	VMA_CLK1#
VMA_DQ52	A5	DQA_52			
VMA_DQ53	E5	DQA_53	RASA0B	G22	VMA_RAS0#
VMA_DQ54	C3	DQA_54	RASA1B	G17	VMA_RAS1#
VMA_DQ55	E1	DQA_55			
VMA_DQ56	G7	DQA_56	CASA0B	G19	VMA_CAS0#
VMA_DQ57	G6	DQA_57	CASA1B	G16	VMA_CAS1#
VMA_DQ58	G1	DQA_58			
VMA_DQ59	G3	DQA_59	CSA0B_0	H22	VMA_CS0#
VMA_DQ60	J6	DQA_60	CSA0B_1	J22	
VMA_DQ61	J1	DQA_61			
VMA_DQ62	J3	DQA_62	CSA1B_0	G13	VMA_CS1#
VMA_DQ63	J5	DQA_63	CSA1B_1	K13	
	K26	MVREFDA	CKEA0	K20	VMA_CKE0
	J26	MVREFSA	CKEA1	J17	VMA_CKE1
	J25	MEM_CALRN0	WEA0B	G25	VMA_WE0#
	K7	NC/TESTEN#2	WEA1B	H10	VMA_WE1#
	J8	MEM_CALRP1/DPC_CALR	PX_EN	AB16	
	K25	NC_MEM_CALRP0	RSVD#2	G14	
	L10	DRAM_RST	RSVD#3	G20	VMA_MA13
	K8	CLKTESTA			
	L7	CLKTESTB			

PARK

For PARK-S3 only
For M9X-S2/S3 with
DDR3: this pin is
not in use.

+1.5V_GPU
Rc R28 2.2K_4
Rb
DRAM_RST — R29 0_4 — MEM_RST (21)
R30 *10K/F_4
Ra
C19 2200P/50V_4
Ca

Ra Rb Rc Rd

Place all these components very close to GPU (Within 25mm) and keep all component close to each Other (within 5mm) except Rser2

This basic topology should be used for DRAM_RST for DDR3/GDDR5.These Capacitors and Resistor values are an example only. The Series R and || Cap values will depend on the DRAM load and will have to be calculated for different Memory ,DRAM Load and board to pass Reset Signal Spec.

Note 1 :Do not Install for M9X-S2/S3, Install 240 Ohms 0.5% Resistor for PARK-S3.
Note 2 :For M9X-S2/S3,J8 Pin Connect to VSS through 240 Ohms(0.5%) resistor.
For Park-S3,J8 Pin Connect to VSS through 150 Ohms(1%) resistor for DPC_CALR
Note 3 :For M9X-92/93, K7 Pin (NC_MEM_CALRP1) is Not connected.
For PARK-S3, K7 Pin (TESTEN#2) connect to TEST_EN Signal At AF24
R575 for Robson only

Quanta Computer Inc.
PROJECT :DM4/RB4

Size	Document Number	Rev
	Robson_MEM_Interface	1A
Date: Tuesday, January 04, 2011	Sheet 20 of 53	

(20) VMA_MA[13..0]
(20) VMA_DM[7..0]
VMA_MA[13..0]
(20) VMA_DQ[63..0]
(20) VMA_WDQS[7..0]
(20) VMA_RDQS[7..0]

1GB DDR3 2GB DDR3(128MB x16bit) x 4pcs

U29

EC-C-07

VREFC_VMA1
VREFD_VMA1
VMA_MA0
VMA_MA1
VMA_MA2
VMA_MA3
VMA_MA4
VMA_MA5
VMA_MA6
VMA_MA7
VMA_MA8
VMA_MA9
VMA_MA10
VMA_MA11
VMA_MA12
VMA_MA13
(20) VMA_BA0
(20) VMA_BA1
(20) VMA_BA2
(20) VMA_CLK0
(20) VMA_CLK0#
(20) VMA_CKE0
(20) VMA_ODT0
(20) VMA_CS0#
(20) VMA_RAS0#
(20) VMA_CAS0#
(20) VMA_WE0#
VMA_RDQS3
VMA_RDQS0
VMA_DM3
VMA_DM0
VMA_WDQS3
VMA_WDQS0
(20) MEM_RST
VMA_ZQ1
R48 240
VMA_DQ27 VMA_DQ28 VMA_DQ25 VMA_DQ30 VMA_DQ26 VMA_DQ29 VMA_DQ24 VMA_DQ31
VMA_DQ0 VMA_DQ2 VMA_DQ1 VMA_DQ6 VMA_DQ5 VMA_DQ7 VMA_DQ4 VMA_DQ3
+1.5V_GPU
VRAM _DDR3
100-BALL SDRAM DDR3

U4

EC-C-07

VREFC_VMA2
VREFD_VMA2
VMA_MA0
VMA_MA1
VMA_MA2
VMA_MA3
VMA_MA4
VMA_MA5
VMA_MA6
VMA_MA7
VMA_MA8
VMA_MA9
VMA_MA10
VMA_MA11
VMA_MA12
VMA_MA13
VMA_BA0
VMA_BA1
VMA_BA2
VMA_CLK0
VMA_CLK0#
VMA_CKE0
VMA_ODT0
VMA_CS0#
VMA_RAS0#
VMA_CAS0#
VMA_WE0#
VMA_RDQS2
VMA_RDQS1
VMA_DM2
VMA_DM1
VMA_WDQS2
VMA_WDQS1
MEM_RST
VMA_ZQ2
R25 240
VMA_DQ21 VMA_DQ18 VMA_DQ20 VMA_DQ17 VMA_DQ23 VMA_DQ16 VMA_DQ22 VMA_DQ19
VMA_DQ14 VMA_DQ15 VMA_DQ11 VMA_DQ13 VMA_DQ10 VMA_DQ9 VMA_DQ8 VMA_DQ12
+1.5V_GPU
VRAM _DDR3
100-BALL SDRAM DDR3

U5

EC-C-07

VREFC_VMA3
VREFD_VMA3
VMA_MA0
VMA_MA1
VMA_MA2
VMA_MA3
VMA_MA4
VMA_MA5
VMA_MA6
VMA_MA7
VMA_MA8
VMA_MA9
VMA_MA10
VMA_MA11
VMA_MA12
VMA_MA13
VMA_BA0
VMA_BA1
VMA_BA2
(20) VMA_CLK1
(20) VMA_CLK1#
(20) VMA_CKE1
(20) VMA_ODT1
(20) VMA_CS1#
(20) VMA_RAS1#
(20) VMA_CAS1#
(20) VMA_WE1#
VMA_RDQS7
VMA_RDQS6
VMA_DM7
VMA_DM6
VMA_WDQS7
VMA_WDQS6
MEM_RST
VMA_ZQ3
R59 240
VMA_DQ61 VMA_DQ59 VMA_DQ63 VMA_DQ57 VMA_DQ58 VMA_DQ56 VMA_DQ62 VMA_DQ60
VMA_DQ51 VMA_DQ52 VMA_DQ48 VMA_DQ55 VMA_DQ50 VMA_DQ54 VMA_DQ49 VMA_DQ53
+1.5V_GPU
VRAM _DDR3
100-BALL SDRAM DDR3

U28

EC-C-07

VREFC_VMA4
VREFD_VMA4
VMA_MA0
VMA_MA1
VMA_MA2
VMA_MA3
VMA_MA4
VMA_MA5
VMA_MA6
VMA_MA7
VMA_MA8
VMA_MA9
VMA_MA10
VMA_MA11
VMA_MA12
VMA_MA13
VMA_BA0
VMA_BA1
VMA_BA2
VMA_CLK1
VMA_CLK1#
VMA_CKE1
VMA_ODT1
VMA_CS1#
VMA_RAS1#
VMA_CAS1#
VMA_WE1#
VMA_RDQS4
VMA_RDQS5
VMA_DM4
VMA_DM5
VMA_WDQS4
VMA_WDQS5
MEM_RST
VMA_ZQ4
R467 240
VMA_DQ36 VMA_DQ38 VMA_DQ33 VMA_DQ39 VMA_DQ32 VMA_DQ37 VMA_DQ35 VMA_DQ34
VMA_DQ44 VMA_DQ43 VMA_DQ47 VMA_DQ40 VMA_DQ45 VMA_DQ41 VMA_DQ46 VMA_DQ42
+1.5V_GPU
VRAM _DDR3
100-BALL SDRAM DDR3

VREF 分壓電阻與濾波電容

+1.5V_GPU
R476 4.99K/F_4
R477 4.99K/F_4
VREFC_VMA1
C559 .1U/10V_4
R472 4.99K/F_4
R473 4.99K/F_4
VREFD_VMA1
C549 .1U/10V_4
R27 4.99K/F_4
R26 4.99K/F_4
VREFC_VMA2
C18 .1U/10V_4
R52 4.99K/F_4
R54 4.99K/F_4
VREFD_VMA2
C60 .1U/10V_4
R56 4.99K/F_4
R55 4.99K/F_4
VREFC_VMA3
C53 .1U/10V_4
R31 4.99K/F_4
R32 4.99K/F_4
VREFD_VMA3
C24 .1U/10V_4
R471 4.99K/F_4
R470 4.99K/F_4
VREFC_VMA4
C541 .1U/10V_4
R53 4.99K/F_4
R57 4.99K/F_4
VREFD_VMA4
C58 .1U/10V_4

時鐘差分對端接

VMA_CLK0
R475 56.2/F_4
VMA_CLK0_COMM
C532 .01U/16V_4
R474 56.2/F_4
VMA_CLK0#
VMA_CLK1
R468 56.2/F_4
VMA_CLK1_COMM
C531 .01U/16V_4
R469 56.2/F_4
VMA_CLK1#

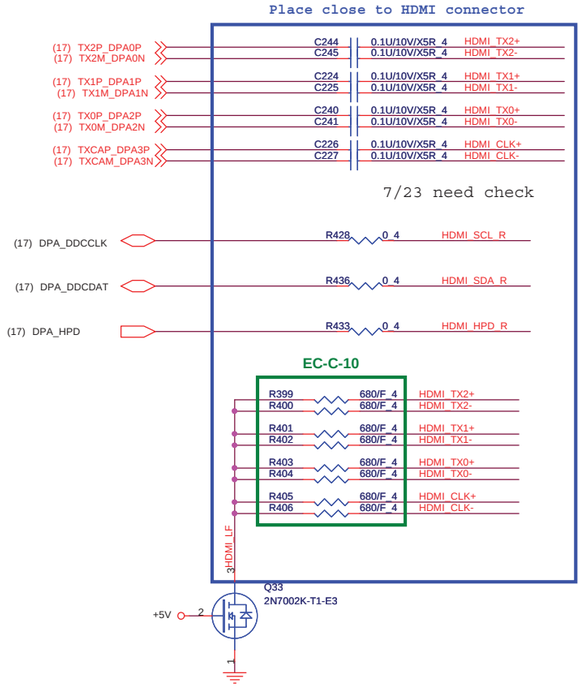
去耦電容

+1.5V_GPU
C552 1U/6.3V_4 C26 1U/6.3V_4 C17 1U/6.3V_4 C539 1U/6.3V_4 C16 1U/6.3V_4 C540 1U/6.3V_4 C556 1U/6.3V_4 C544 1U/6.3V_4
C542 1U/6.3V_4 C25 1U/6.3V_4 C20 1U/6.3V_4 C46 1U/6.3V_4 C38 1U/6.3V_4 C51 1U/6.3V_4 C42 1U/6.3V_4 C56 1U/6.3V_4
C557 1U/6.3V_4 C546 1U/6.3V_4 C548 1U/6.3V_4 C547 1U/6.3V_4 C545 1U/6.3V_4 C22 1U/6.3V_4 C23 1U/6.3V_4 C555 1U/6.3V_4
C15 1U/6.3V_4 C13 1U/6.3V_4 C14 1U/6.3V_4 C11 1U/6.3V_4 C41 1U/6.3V_4 C551 1U/6.3V_4 C48 1U/6.3V_4 C57 1U/6.3V_4
C54 10U/6.3V_6S C538 10U/6.3V_6S C537 10U/6.3V_6S C9 10U/6.3V_6S C5 10U/6.3V_6S
C7 10U/6.3V_6S C8 10U/6.3V_6S C558 10U/6.3V_6S C34 10U/6.3V_6S C554 10U/6.3V_6S C533 10U/6.3V_6S C534 10U/6.3V_6S

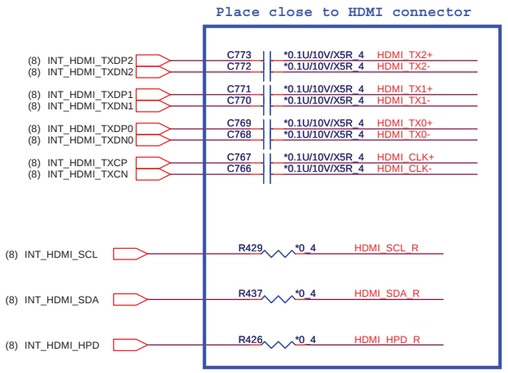
Quanta Computer Inc.
PROJECT :DM4/RB4

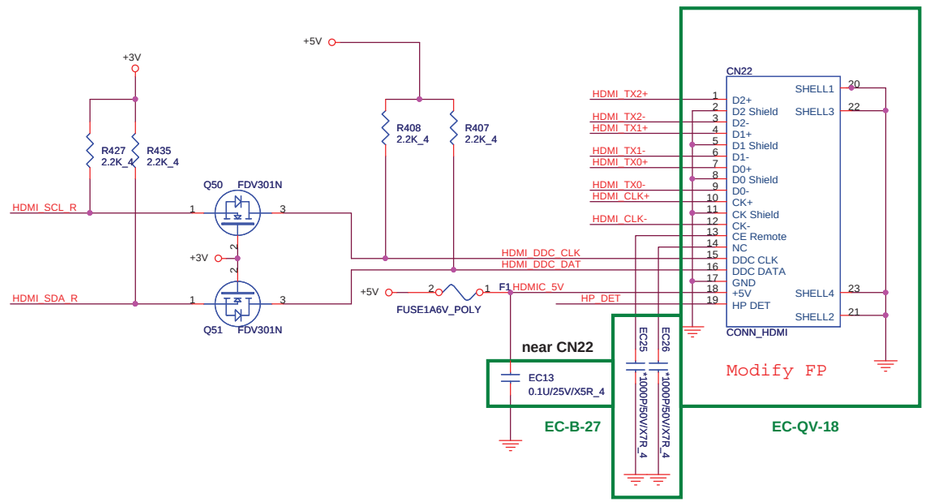
Size	Document Number	Rev
	Robson/VRAM_A0,A1	1A
Date: Friday, November 19, 2010	Sheet 21 of 53	

DIS HDMI

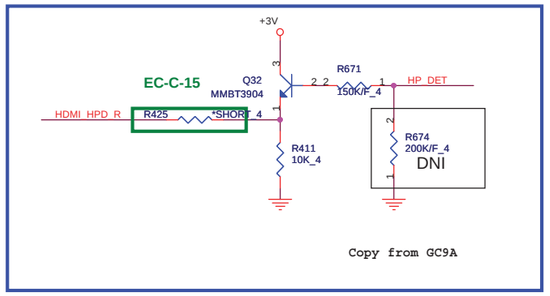


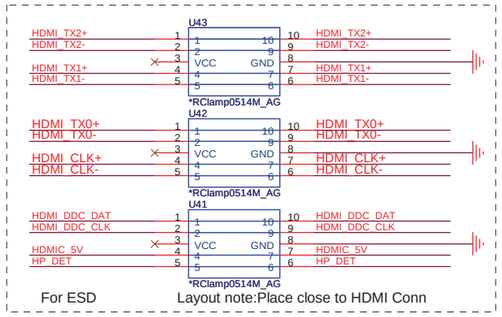
UMA Only



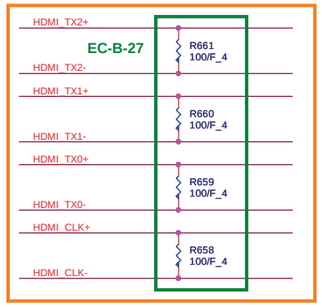


HDMI Hot-PLUG to EC and GPU





EMI reserve for HDMI



(8,9,12,23,26,28,35,36,37,38,40,41,42,49) +5V
(8,9,10,11,12,14,15,17,23,24,26,27,28,29,30,31,36,37,38,40,41,42,46,47,48,49) +3V

PROJECT : KL2D
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Madison_LVDS/HDMI/CRT switchable	1A
Date: Tuesday, January 04, 2011	Sheet 22 of 53	

(3,9,12,22,26,28,35,36,37,38,40,41,42,49) +5V
(8,9,10,11,12,14,15,17,22,24,26,27,28,29,30,31,36,37,38,40,41,42,46,47,48,49) +3V

EC-B-06

ESD PROTECTION

U47
CRT_R1 — IO1 IO4 — CRT_G1
DDCDAT — GND REF
IO2 IO3 — CRT_B1
TVLST2304AD0

U48
CRT_VCC_R — IO1 IO4 — DDCCLK
CRTHSYNC — GND REF
IO2 IO3 — CRTVSYNC
TVLST2304AD0

Layout Note:
Setting R,G,B trace impedance to 50 ohm.

CRT_VCC
D24 RB500V-40
C683 0.1U/10V/X5R_4
+5V — F2 FUSE1A6V_POLY — CRT_VCC_R
C687 *VARISTOR_4

ROBSON_CRT_RED_R — L33 BK1608LL680 — CRT_R1
ROBSON_CRT_GRN_R — L32 BK1608LL680 — CRT_G1
ROBSON_CRT_BLU_R — L31 BK1608LL680 — CRT_B1
R298 150/F_4
R289 150/F_4
R278 150/F_4
C334 5.6P/50V/COG_4
C321 5.6P/50V/COG_4
C312 5.6P/50V/COG_4
C311 5.6P/50V/COG_4
C320 5.6P/50V/COG_4
C333 5.6P/50V/COG_4
TP51

CN17 CRT_CONN
16
6 1 7 2 8 3 9 4 10 5
11 12 13 14 15
17

+5V
U15 AHCT1G125DCH
ROBSON_CRT_VSYNC_R — VGAVSYNC_R — R262 10_4 — CRTVSYNC1
C285 0.1U/10V/X5R_4
U16 AHCT1G125DCH
ROBSON_CRT_HSYNC_R — VGAHSYNC_R — R263 10_4 — CRTHSYNC1
Place near U37,U38 < 200 mil
C291 *10P/50V/COG_4
C290 *10P/50V/COG_4
L29 HB-1T1608-121JT — CRTVSYNC
L30 HB-1T1608-121JT — CRTHSYNC
C301 10P/50V/COG_4
C300 10P/50V/COG_4
Place near CN5002 connector < 200 mil

DIS

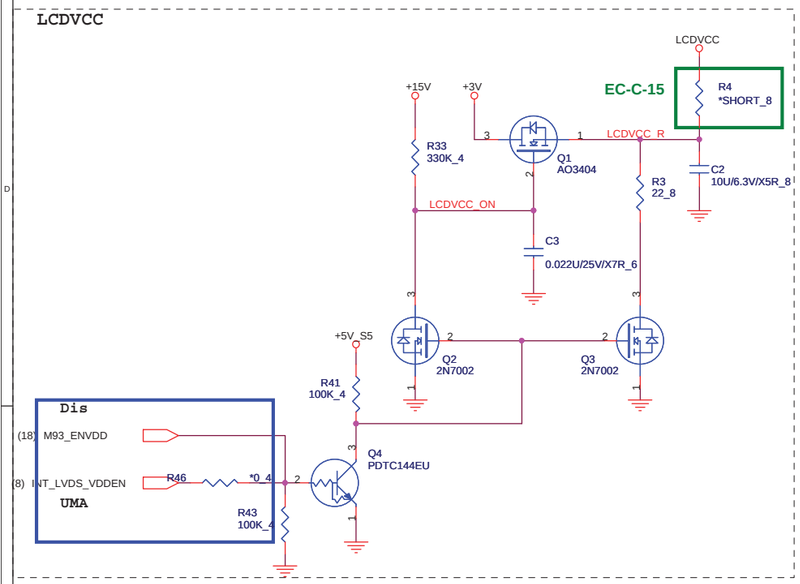
(8) INT_CRT_VSYNC	R103 / R102	*0_4 / 0_4	ROBSON_CRT_VSYNC_R
(17,18) ROBSON_CRT_VSYNC			
(8) INT_CRT_HSYNC	R118 / R117	*0_4 / 0_4	ROBSON_CRT_HSYNC_R
(17,18) ROBSON_CRT_HSYNC			
(8) INT_DDCCLK	R166 / R165	*0_4 / 0_4	ROBSON_CRT_DDCCLK_R
(17) ROBSON_CRT_DDCCLK			
(8) INT_DDCDAT	R159 / R158	*0_4 / 0_4	ROBSON_CRT_DDCDAT_R
(17) ROBSON_CRT_DDCDAT			
(8) INT_CRT_RED	R148 / R147	*0_4 / 0_4	ROBSON_CRT_RED_R
(17) ROBSON_CRT_RED			
(8) INT_CRT_GRE	R138 / R137	*0_4 / 0_4	ROBSON_CRT_GRN_R
(17) ROBSON_CRT_GRN			
(8) INT_CRT_BLU	R130 / R129	*0_4 / 0_4	ROBSON_CRT_BLU_R
(17) ROBSON_CRT_BLU			

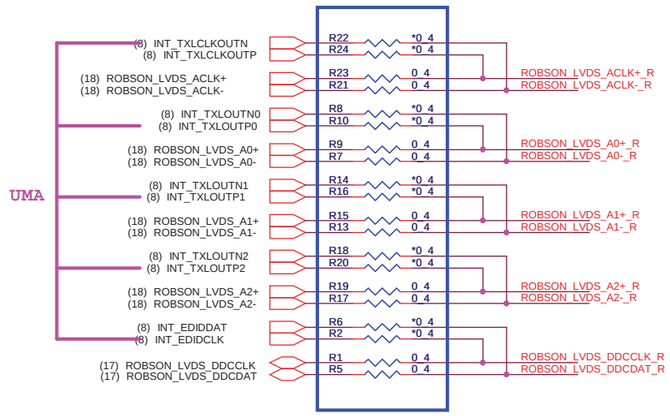
+3V
R619 2.2K_4
R609 2.2K_4
CRT_VCC
R616 4.7K_4
R611 4.7K_4
ROBSON_CRT_DDCCLK_R — Q41 2N7002K-T1-E3 — DDCCLK
+3V
ROBSON_CRT_DDCDAT_R — Q43 2N7002K-T1-E3 — DDCDAT
C694 *10P/50V/COG_4
C679 *10P/50V/COG_4

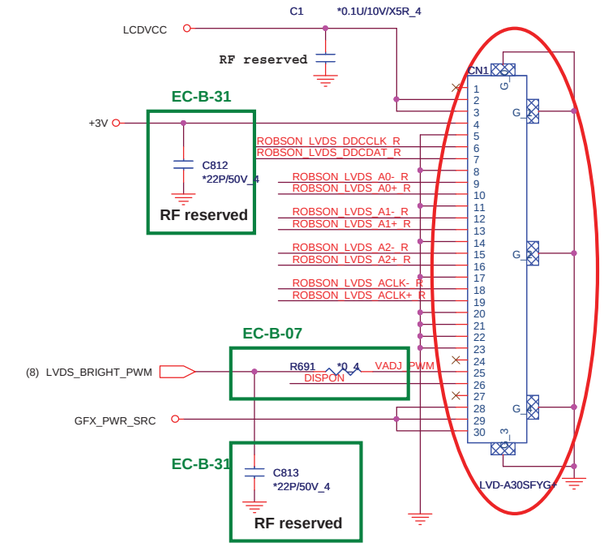
PROJECT : KL2D
Quanta Computer Inc.

Size	Document Number	Rev
C	CRT CONN	1A
Date: Tuesday, January 04, 2011	Sheet 23 of 53	

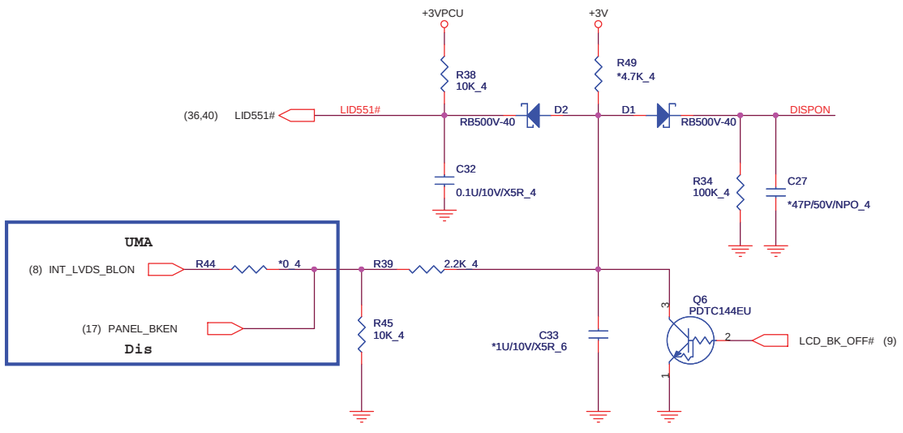
Layout Note : Place resister close to LVDS connector

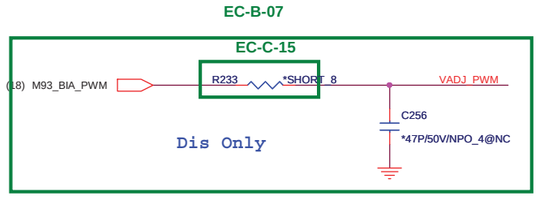


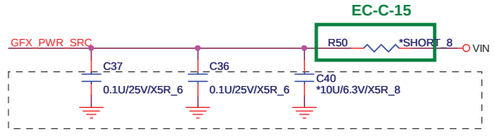




Back light







PROJECT : KL2D
Quanta Computer Inc.

Size	Document Number	Rev
C	LCD CONN	1A

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(4,8,9,10,11,12,29,31,36,40,41) +3V_S5
(4,6,8,9,10,12,31,38,41,48) +1.05V_PCH
(8,9,24,28,35,36,38,40,41,42,44,45,46) +3VPCU

LANVCC

+3VPCU
Q48 AO6402A
(8) SLP_LAN#
(41) LAN_ON
R666 *0_4
R663 *0_4_short
EC-C-15
+3.3V_LAN
+3.3V_LAN_R
R652 *SHORT_8
C738 0.1U/10V/X5R_4

Core Power Decoupling

+1.0V_LOM
C721 4.7U/6.3V/X5R_6
C746 0.1U/10V/X5R_4
C731 0.1U/10V/X5R_4
C726 0.1U/10V/X5R_4
C725 0.1U/10V/X5R_4
C740 0.1U/10V/X5R_4
C743 0.1U/10V/X5R_4
C744 0.1U/10V/X5R_4
C745 0.1U/10V/X5R_4

VDDIO Power Decoupling

+3.3V_LAN
C737 4.7U/6.3V/X5R_6
C732 0.1U/10V/X5R_4
C733 0.1U/10V/X5R_4
C735 0.1U/10V/X5R_4
C747 10U/10V/X5R_8

U38

(10) PCIE_CLKREQ_LAN# → CLK_REQ_N (48)
(4,10,16,29,31) PLTRST# → PE_RST_N (36)
(10) CLK_PCIE_LANP → PE_CLKP (44)
(10) CLK_PCIE_LANN → PE_CLKN (45)
(10) PCIE_RXP2_LAN → C741 0.1U/10V/X5R_4 LAN_PCIETXDP → PETp (38)
(10) PCIE_RXN2_LAN → C742 0.1U/10V/X5R_4 LAN_PCIETXDN → PETn (39)
(10) PCIE_TXP2_LAN → PERp (41)
(10) PCIE_TXN2_LAN → PERn (42)

PCIE

MDI_PLUS0 / MDI_MINUS0 → TRD0+ / TRD0- (13/14)
MDI_PLUS1 / MDI_MINUS1 → TRD1+ / TRD1- (17/18)
MDI_PLUS2 / MDI_MINUS2 → TRD2+ / TRD2- (20/21)
MDI_PLUS3 / MDI_MINUS3 → TRD3+ / TRD3- (23/24)

MDI

+3.3V_LAN
R647 *10K_4
EC-C-15
R648 *SHORT_4
(11) LAN_DISABLE#
R645 *10K_4
LAN_DISABLE#
is active low.

SMB_CLK_ME0_R → SMB_CLK (28)
SMB_DAT_ME0_R → SMB_DATA (31)

SMBUS

LAN_DISABLE_N (3)

ACTLED# → LED0 (26)
LINKLED → LED1 (27)
LED2 (25)

LED

+3.3V_LAN
R644 10K_4
R646 10K_4
JTAG_TDI (32)
JTAG_TDO (34)
JTAG_TMS (33)
JTAG_TCK (35)

JTAG

LAN_XTALO (9)
LAN_XTALI (10)
XTAL_OUT
XTAL_IN
TEST_EN (30)
RBIAS (12)
R640 1K_4
R635 3.01K/F_4
82579LM/LC

VCT (6)
RSVD_VCC3P3_1 / RSVD_VCC3P3_2 (1/2)
R653 4.7K_4
R650 4.7K_4
+3.3V_LAN
VDD3P3_IN (5)
VDD3P3_OUT (4)
+V3.3M_LAN_OUT
VDD3P3_15 / VDD3P3_19 / VDD3P3_29 (15/19/29)
C730 0.1U/10V/X5R_4

VDD1P0_47 / VDD1P0_46 / VDD1P0_37 (47/46/37)
+1.0V_LOM
VDD1P0_43 (43)
VDD1P0_11 (11)
VDD1P0_40 / VDD1P0_22 / VDD1P0_16 / VDD1P0_8 (40/22/16/8)
C724 0.01U/16V/X7R_4
C722 10U/10V/X5R_8
C723 *10U/10V/X5R_8
Added CAP,Total = 20uF - 07/23
Rev1.2 - Intel 431786

CTRL_1P0 (7)
EC-QV-04
L37 4.7uH/510mA_12
Close to CTRL_1P0 (PIN7)
VSS_EPAD (49)

+1.0V_LOM
R634 *0_6
+1.05V_PCH

U36
TRD0+ (1) / TRD1- (3) / TRD2+ (1) / TRD3- (3)
IO1 IO4 GND REF IO2 IO3
TRD0- (6) / TRD1+ (4) / TRD2- (6) / TRD3+ (4)
CM1293A-04SO

U35
CM1293A-04SO

LAN_XTALO_R
R639 0_4
LAN_XTALO
Y7 25MHZ
LAN_XTALI
C729 33P/50V/NPO_4
C728 33P/50V/NPO_4

EC-B-33

Tramsformer

U33
TRD0- (12) / TRD0+ (11) / TRD1- (9) / TRD1+ (8) / TRD2- (6) / TRD2+ (5) / TRD3- (3) / TRD3+ (2)
C379 0.1U/10V/X5R_4
C380 0.1U/10V/X5R_4
C384 0.1U/10V/X5R_4
C382 0.1U/10V/X5R_4
C383 1U/10V/X5R_6
Place near to Transformer
TD4- TD4+ TCT4 TD3- TD3+ TCT3 TD2- TD2+ TCT2 TD1- TD1+ TCT1
MX4- MX4+ MCT4 MX3- MX3+ MCT3 MX2- MX2+ MCT2 MX1- MX1+ MCT1
LAN_MX0- / LAN_MX0+ / LAN_MCT0 / LAN_MX1- / LAN_MX1+ / LAN_MCT1 / LAN_MX2- / LAN_MX2+ / LAN_MCT2 / LAN_MX3- / LAN_MX3+ / LAN_MCT3
R307 75/F_4
R308 75/F_4
R309 75/F_4
R310 75/F_4
LANCT3
NS892405

EC-B-27
R306 1M_6
C711 10P/3KV/NPO_18

RJ45 Connector

EMI:close RJ45
C719 *0.1U/10V/X5R_4@NC
CN19
+3.3V_LAN
R630 150/F_4
LAN_YLED → 9+
ACTLED# → 10
EC-B-40
C816 *0.1U/10V/X5R_4
LAN_MX0+ (1) / LAN_MX0- (2) / LAN_MX1+ (3) / LAN_MX2+ (4) / LAN_MX2- (5) / LAN_MX1- (6) / LAN_MX3+ (7) / LAN_MX3- (8)
+3.3V_LAN
R628 150/F_4
LAN_GLED → 11+
LINKLED → 12-
C815 *0.1U/10V/X5R_4
G3 (15) / G2 (16) / G1 (14) / G0 (13)
100073FR012S176ZL
C709 *0.1U/10V/X5R_4@NC
EMI:close RJ45

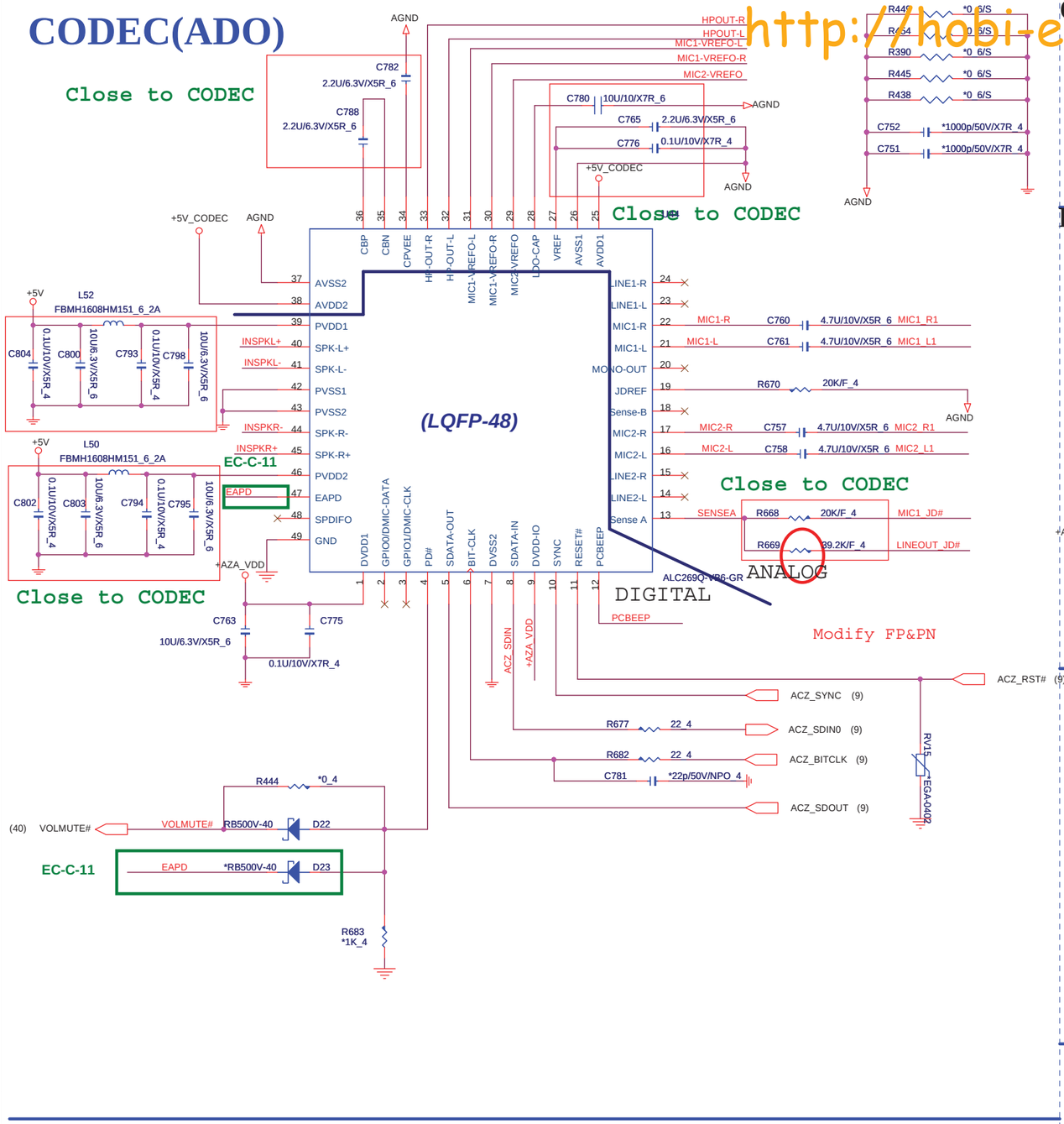
SMBUS address
0XC8

+3.3V_LAN
R643 2.2K_4
R638 2.2K_4
+3V_S5
(10) SMB_DATA_ME0
Q47 2N7002
SMB_DAT_ME0_R
+3V_S5
(10) SMB_CLK_ME0
Q46 2N7002
SMB_CLK_ME0_R

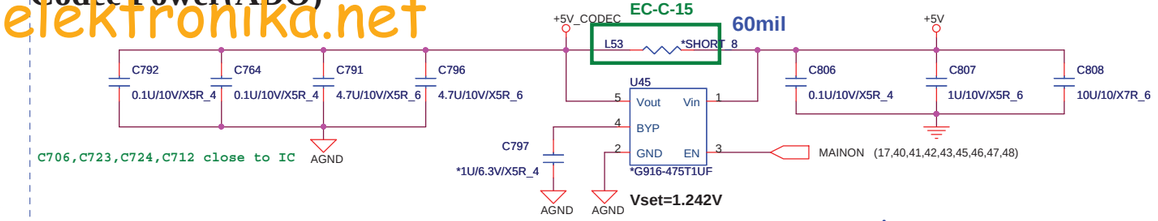
PROJECT : LL3A
Quanta Computer Inc.

Size	Document Number	Rev
Custom	LAN(82577LM)	1E
Date: Tuesday, January 04, 2011	Sheet 25 of 53	

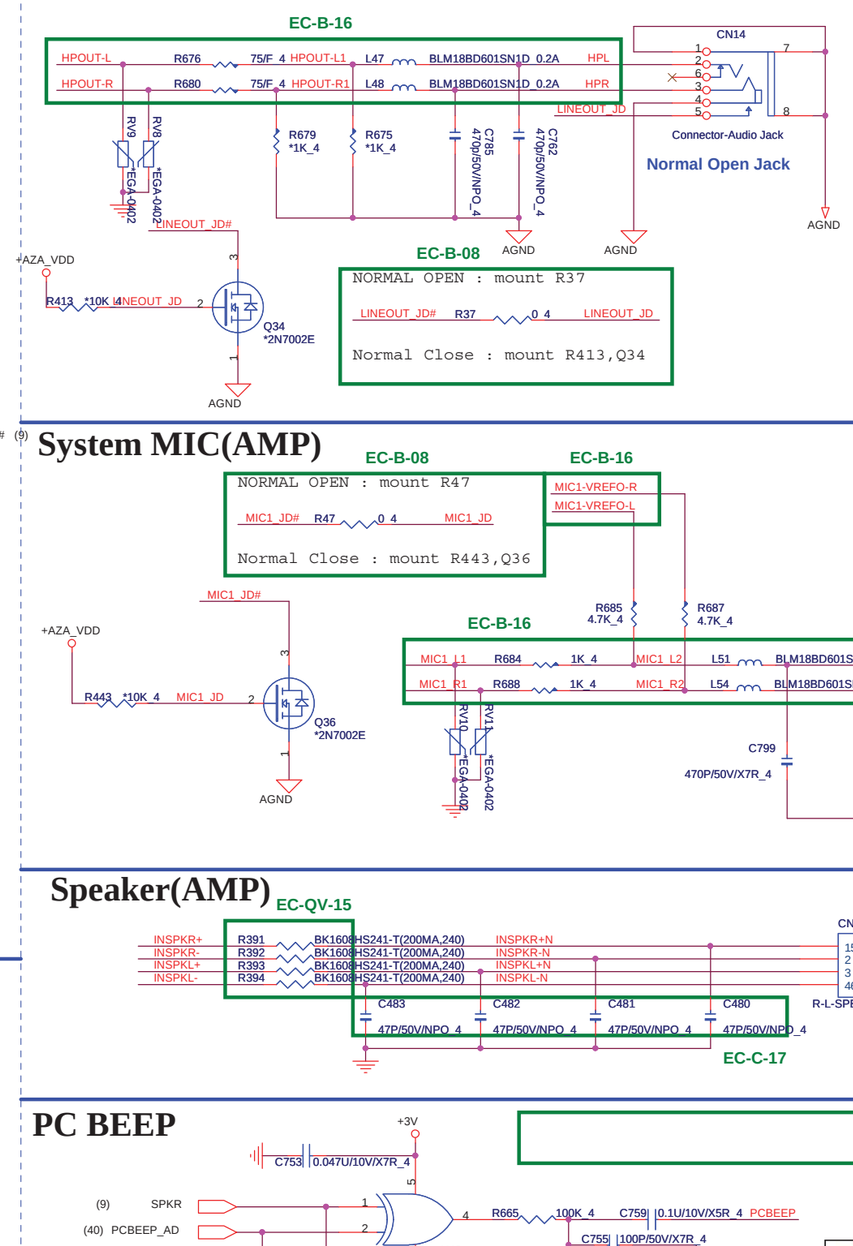
CODEC(ADO)



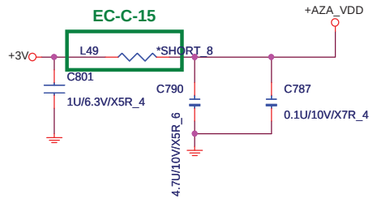
Codec Power(ADO)



Earphone(AMP)



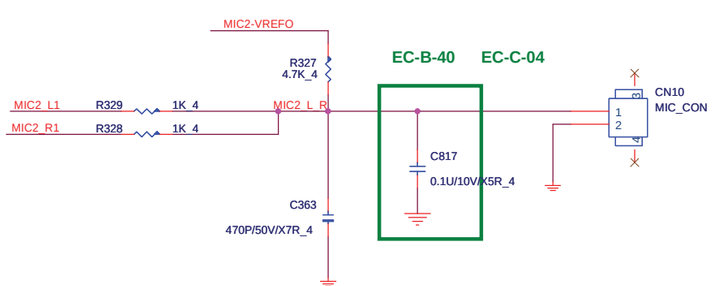
HDA Power(ADO)



System MIC(AMP)

Speaker(AMP)

INTERNAL MIC

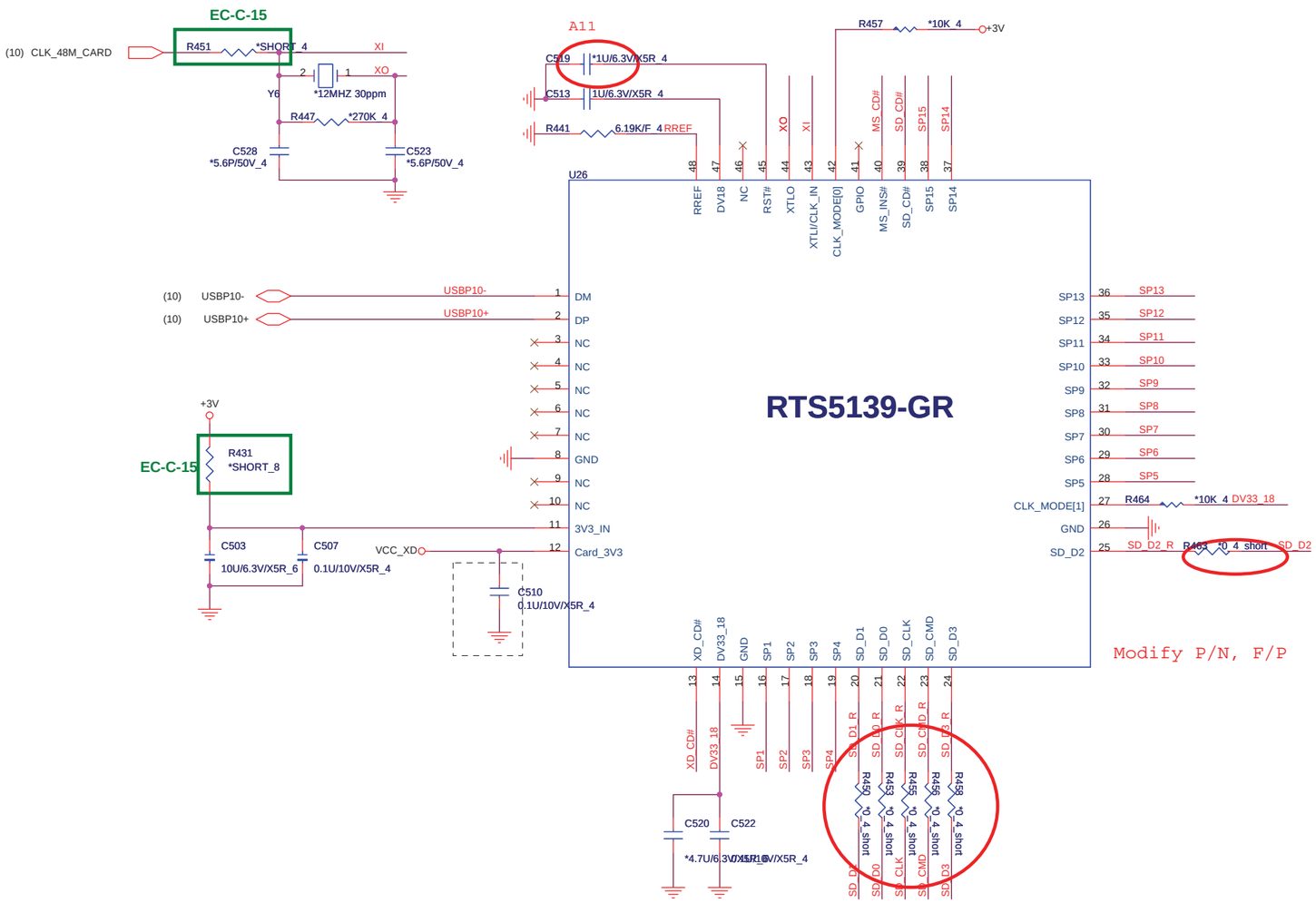


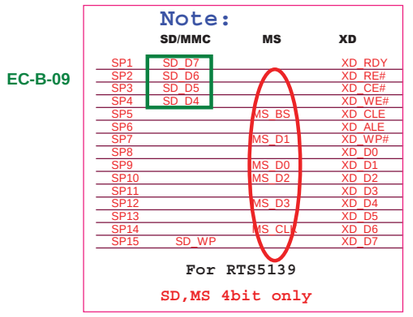
PC BEEP

PROJECT KL5A
Quanta Computer Inc.

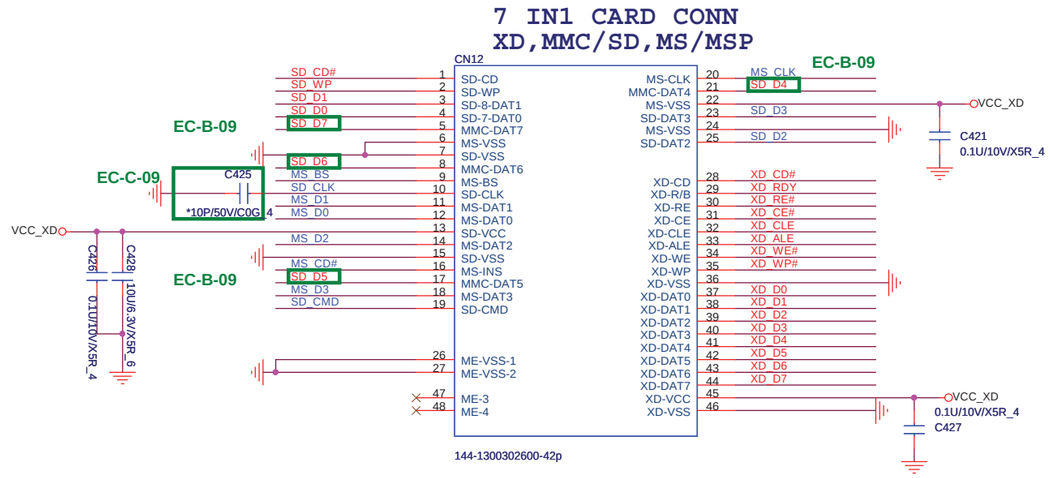
Size	Document Number	Rev
Custom	AL269/MIC/Line out	1A
Date: Tuesday, January 04, 2011	Sheet 26 of 53	

Clock Mode strap	R9287	R9307
48MHz	X	X
24MHz	X	O
12MHz	O	X
12MHz (Crystal)	O	O



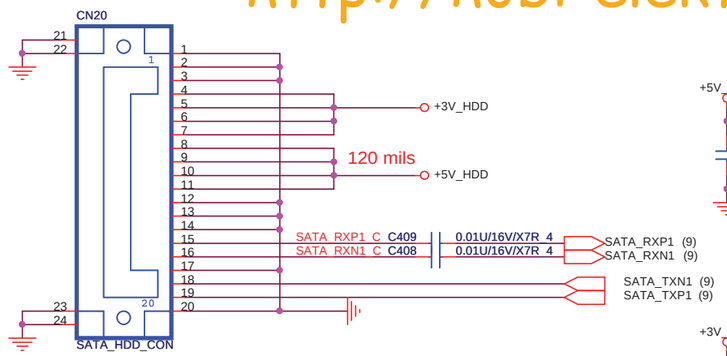


EC-B-09



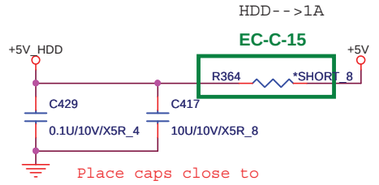
PROJECT KL5A			
Quanta Computer Inc.			
Size: Custom	Document Number: Card Reader (RTS5159)		Rev: 1A
Date: Friday, November 19, 2010	Sheet 27 of 53		

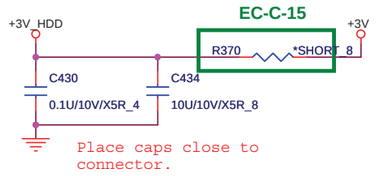
SATA HDD Connector.



Modify PN&FP(LL7 OK)

HDD-->1A



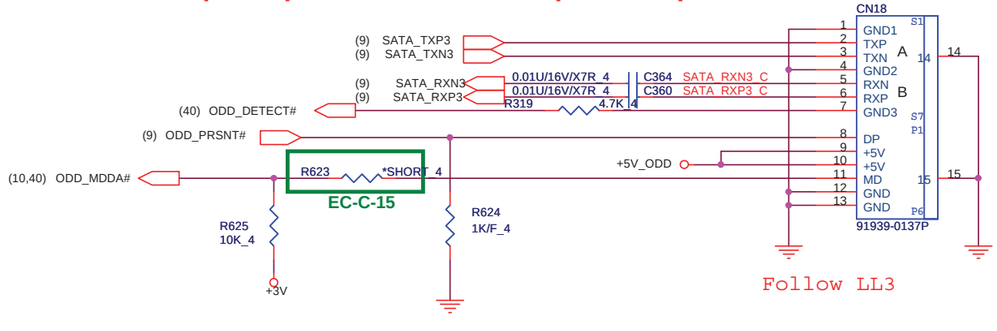


EN	B0	B1	FUNCTION
0	X	X	Standby
1	0	0	Standard SATA Output
1	1	0	Ch 0 Boost Output
1	0	1	Ch 1 Boost Output
1	1	1	Ch 0,1 Boost Output

SATA ODD Connector.

HDD-->1.5A(burning)

EC-B-10



Follow LL3

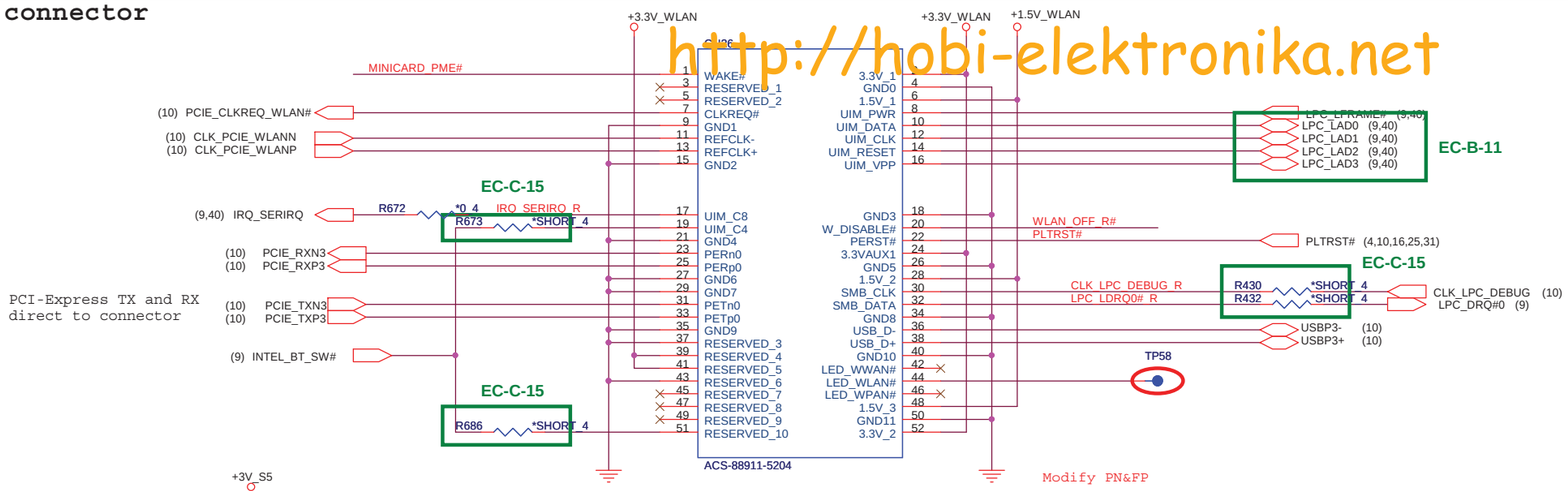
PROJECT KL5A

Quanta Computer Inc.

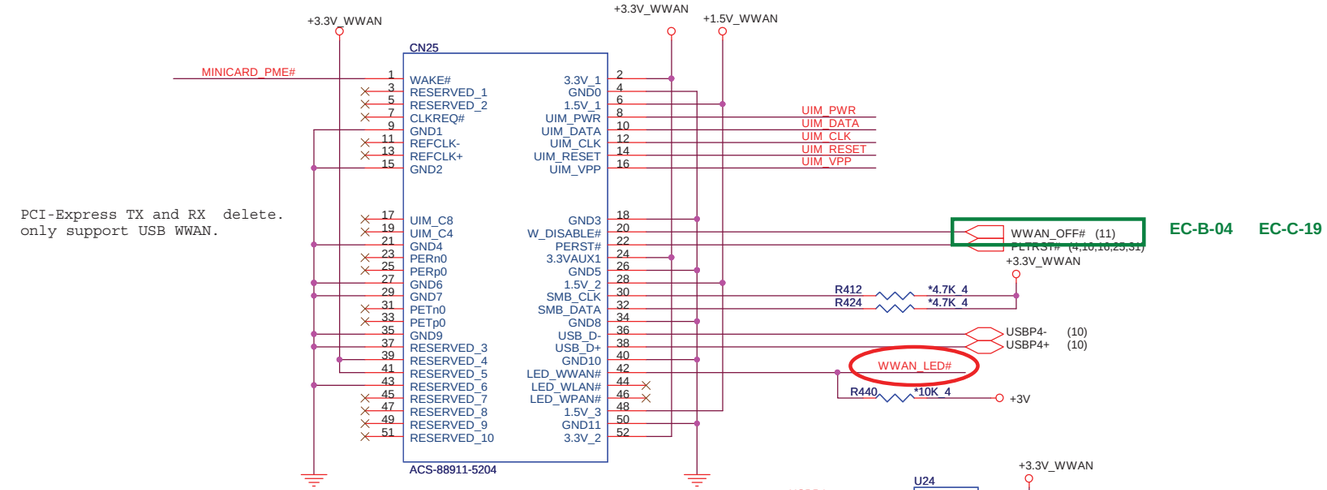
Size	Document Number	Rev
Custom	SATA HDD/ESATA/CD-ROM	1A

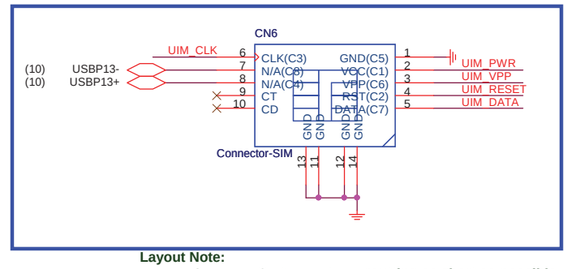
Date: Tuesday, January 04, 2011 Sheet 28 of 53

MiniCard WLAN connector

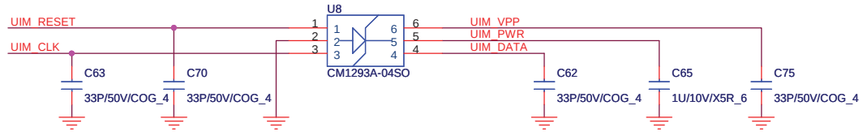


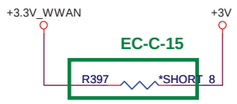
MiniCard WWAN (Reserved for KL9)

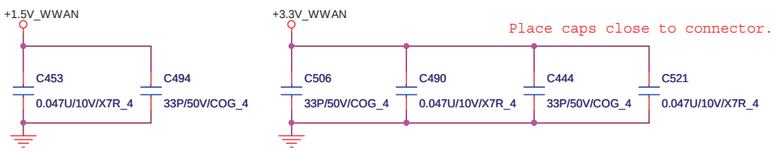




Layout Note:
UIM_RESET,UIM_CLK,UIM_DATA routting as short as possible







PROJECT : KL2D		
Quanta Computer Inc.		
Size: Custom	Document Number: MINI-Card (WLAN/WWAN)	Rev: 1A
Date: Wednesday, January 05, 2011	Sheet 29 of 53	

Mini PCI-E Card 3 SSD

EC-B-13

(12,29,38,41,43) +1.5V
(8,9,10,11,12,14,15,17,22,23,24,26,27,28,29,31,36,37,38,40,41,42,46,47,48,49) +3V

+3.3V_SSD +3.3V_SSD +1.5V_WIMAX

CN24

1	WAKE#		3.3V_1	2	
3	RESERVED_1		GND0	4	
5	RESERVED_2		1.5V_1	6	
7	CLKREQ#		UIM_PWR	8	
9	GND1		UIM_DATA	10	
11	REFCLK-		UIM_CLK	12	
13	REFCLK+		UIM_RESET	14	
15	GND2		UIM_VPP	16	
17	UIM_C8		GND3	18	
19	UIM_C4		W_DISABLE#	20	
21	GND4		PERST#	22	
23	PERn0		3.3VAUX1	24	
25	PERp0		GND5	26	
27	GND6		1.5V_2	28	
29	GND7		SMB_CLK	30	
31	PETn0		SMB_DATA	32	
33	PETp0		GND8	34	
35	GND9		USB_D-	36	USBP12-
37	RESERVED_3		USB_D+	38	USBP12+
39	RESERVED_4		GND10	40	
41	RESERVED_5		LED_WWAN#	42	
43	RESERVED_6		LED_WLAN#	44	
45	RESERVED_7		LED_WPAN#	46	
47	RESERVED_8		1.5V_3	48	
49	RESERVED_9		GND11	50	
51	RESERVED_10		3.3V_2	52	

ACS-88911-5204

(9) SATA_RXP0
(9) SATA_RXN0
0.01U/16V/X7R_4 C756 SATA_RXP0_C
0.01U/16V/X7R_4 C754 SATA_RXN0_C

(9) SATA_TXN0
(9) SATA_TXP0

(11) SDD_DA_DSS
(11) SSD_DETECT#

USBP12- (10)
USBP12+ (10)

EC-B-12

+1.5V_WIMAX

Place caps close to connector.

C736 *0.01U/16V/X7R_4
C784 *0.1U/10V/X5R_4
C783 *10U/6.3V/X5R_8

EC-B-12

+3.3V_SSD

Place caps close to connector.

C739 0.1U/10V/X5R_4
C778 0.047U/10V/X7R_4
C779 0.1U/10V/X5R_4
C777 0.047U/10V/X7R_4
C774 4.7U/10V/X5R_8

+3.3V_SSD +3V

EC-C-15

R384 *SHORT_8

+1.5V_WIMAX +1.5V

EC-C-15

R366 *SHORT_4

PROJECT :LL3A
Quanta Computer Inc.

Size	Document Number	Rev
Custom	MINI Card (SSD)	1E
Date: Tuesday, January 04, 2011	Sheet 30 of 53	

USB30_SM#
R712 *0/J_4
D28 RB500V-40
(10) USB30_EXT_SMI#
EC-QV-17

+3.3VAUX
EC-C-13
R420 10K/F_4
R419 10K/F_4
R418 10K/F_4
R637 10K/F_4
R657 10K/F_4
R704 10K/F_4
R705 *10K/F_4
PCIE_WAKE#
USB30_SMI#
JTAGCK
GPIO3
LOPWREN#
RMTWKEN#
EC-C-13

+3.3VAUX
R423 10K/F_4
R422 10K/F_4
TP30
TP29
SMDAT
SMCLK
For debug only.
Don't connect to
system SMBus

OVCUR1#
OVCUR3#
OVCUR4#
OVCUR2#
R417 10K_4
R416 10K_4
EC-QV-17

+3V_USB30
R396 10K/F_4
U22
SPICS# 1 CE# VDD 8
SPICLK 6 SCK
SPISI 5 SI
SPISO 2 SO HOLD# 7
WP# 3 VSS 4
MX25L512MC-12G
SPI Flash ROM
8/13 P/N: AKE34ZN0501

ESD
U20
USB30_RX1- 1 Z1 NC 10 USB30_RX1-
USB30_RX1+ 2 Z2 NC 9 USB30_RX1+
GND 3 NC 8 USB2PWR
USB30_TX1- 4 Z3 VCC 7 USB30_TX1-
USB30_TX1+ 5 Z4 NC 6 USB30_TX1+
*RClamp0544.TBT
msop10-4_9-5

Co-layout USB
PORT for 2.0&3.0
USB 3.0 function reserved

EC-C-13
USB30_RX1-
USB30_RX1+
USB30_TX1-
USB30_TX1+
TP20
TP21
TP22
TP23
EC-C-14

EC-C-13
USB3.0 : Install
USB2.0 : Remove
USB20_DM1
USB20_DP1
R371 0R_4
R365 0R_4
USB0_FB-
USB0_FB+

	USB3.0	USB2.0
R651	No-ASM	No-ASM
R649	No-ASM	No-ASM
CML4	No-ASM	ASM

EC-B-27
R651 *0_4
CML4
*DLW21SN121SQ2L
R649 *0_4
(10) USBP8-
(10) USBP8+
USB0_FB-
USB0_FB+
D27
D26
BC5V0U1BZ01
BC5V0U1BZ01

EC-C-13
USB2PWR
CN23
USB0_FB- 1 VBUS
USB0_FB+ 2 D-
3 D+
4 GND
USB30_RX1- 5 RX-
USB30_RX1+ 6 RX+
7 GND
USB30_TX1- 8 TX-
USB30_TX1+ 9 TX+
10 11 12 13
USB2.0/3.0 CONN

U21
VL800 / VL801 QFN88
VL800 4PORT
VL801 2PORT

Near PCIEx Slot
VSUS33 44
USBHPE2# 43 PWREN2 +3.3VAUX TP28
USBHPE3# 42 PWREN3 TP27
USBHPE4# 41 PWREN4 TP26
SPISO 40 SPISO
SPISI 39 SPISI
SPISCLK 38 SPISCLK
SPICS# 37 SPICS#
VDD 36 1.0VL
VCCA33PEXTX 35 P3V3_USB30
PEXTX0- 34 PCIE_RXN5_C 0.1U/16V_4 C479 PCIE_RXN5 (10)
PEXTX0+ 33 PCIE_RXP5_C 0.1U/16V_4 C477 PCIE_RXP5 (10)
VCCA33PEXM 32 P3V3_USB30
PEXRX0- 31 PCIE_TXN5 (10)
PEXRX0+ 30 PCIE_TXP5 (10)
VCCA33PEXRX 29 P3V3_USB30
PEXCLK- 28 CLK_PCIE_USB30N (10)
PEXCLK+ 27 CLK_PCIE_USB30P (10)
VCCA33REG12 26 P3V3_USB30
PEXREXT 25 PEXREXT
VCCA33REG25 24 P3V3_USB30
VDD 23 1.0VL

1.0VL
1.0VE
+3.3VAUX
USB30_TX1+ C486 0.1U/16V_4
USB30_TX1- C484 0.1U/16V_4
U3TXDP1
U3TXDN1
USB30_RX1+ R395 0R_4
USB30_RX1- R389 0R_4
U3RXDP1
U3RXDN1
USB20_DP1
USB20_DM1
SSXI
SSXO

EC-B-14
+5V_S5
(32,40) USB_ON
USB_ON
C734 1U/10V/X5R_6
U39
VIN1 2 OUT3 8
VIN2 3 OUT2 7
EN 4 OUT1 6
GND OC 5
G547G1P81U(MSOP-8)
80 mils (Iout=2A)
R642 0_4
USB3.0 : Install
USB2.0 : Remove
OVCUR2#
To USB3.0 IC
R641 *0_4
USB3.0 : Remove
USB2.0 : Install
USB_OC2# (10)
To PCH
C750 470P/50V/X7R_4
C749 0.1U/10V/X5R_4
C748 150U/6.3V_3528
USB2PWR
Mount R9969 with VL801
Mount R9970 without VL801

EC-QV-17
PLTRST_PCIE_N_USB
10K_4 R421
PLTRST# (4,10,16,25,29)
C828 *0.1U/10V/X5R_4
EC-C-13

EC-C-13
C830 *0.1U/10V/X5R_4
SSREXT
+3.3VAUX
1.0VE
+3.3VAUX
+3.3VAUX
1.0VE
+3.3VAUX

EC-QV-17
PLTRST_PCIE_N_USB
R713 0_4
C952 *0.1U/10V/X5R_4
+3.3VAUX
R707 100K/F_4
Q58 ME2303T1
C829 1U/6.3V_4
+3.3VAUX
R714 *100K/F_4
Q61 *ME2303T1
R719 100K/F_4
COREPWRDN
C953 *0.1U/10V_4

Remove LDO and connector
+1.05V_PCH to P1V05_SUS
+1.05V_PCH
P1V05_SUS
R374 0_8 0.6A

X'tal 25MHz EC-B-33 EC-C-13
27P/50V_4 C433
R372 0R_6 SSXI
Y5 25MHz/20pF/30ppm
27P/50V_4 C432
SSXO
BG625000486
XTL-5_3X3_2-3_8-1_2H
Crystal foot print must be reserved
in case 25MHz clock from clock
generator is not stable enough.

EC-C-13
From M/B
+3V_SUS
FB5
+3.3VAUX
BLM18PG300SN1D
C509 4.7uF/6.3V_6
C512 0.1U/16V_4
C511 4.7uF/6.3V_6
C508 0.1U/16V_4

EC-QV-17
From M/B
+3V
FB4
BLM18PG300SN1D
C467 4.7uF/6.3V_6
C471 0.1U/16V_4
COREPWRDN
R716 *0_4
*ME2303T1
Q62
C950 *1U/6.3V_4
P3V3_USB30
C468 4.7uF/6.3V_6
C469 0.1U/16V_4

From M/B
P1V05_SUS
C447 4.7uF/6.3V_6
C440 0.1U/16V_4
FB3
BLM18PG300SN1D
P/N:CX11P300000
*ME2303T1
Q63
COREPWRDN R717 *0_4
C951 *1U/6.3V_4
1.0V
FB1
BLM18PG300SN1D
FB2
BLM18PG300SN1D
C435 0.1U/16V_4
C431 4.7uF/6.3V_6
C441 0.1U/16V_4
C448 4.7uF/6.3V_6
1.0VE
1.0VL
EC-QV-17

+3.3VAUX
C492 C502 C500 C501 C491 C489 C470 C445 C436 C439
1.0VL
C449 C498 C487 C499 C504 C505
P3V3_USB30
C451 C472 C475 C485 C476
+3.3VAUX
C446 C437 C473
1.0VE
C442 C438 C464 C478 C496
(41) SUSON#

EC-C-13
+15V
R706 1M_4
Q54 2N7002K
C826 *0.1U/50V/X7R_6
+3V_S5
Q53 AO6402A
+3V_SUS
C827 0.1U/10V/X7R_4

Power sequence for Host.
+3.3VSUS
+3.3V
Reset
+1.0VSUS
+1.0V

PROJECT : KL2D
Quanta Computer Inc.
Size: Custom
Document Number: SATA HDD/ESATA/CD-ROM
Rev: 1A
Date: Tuesday, January 04, 2011
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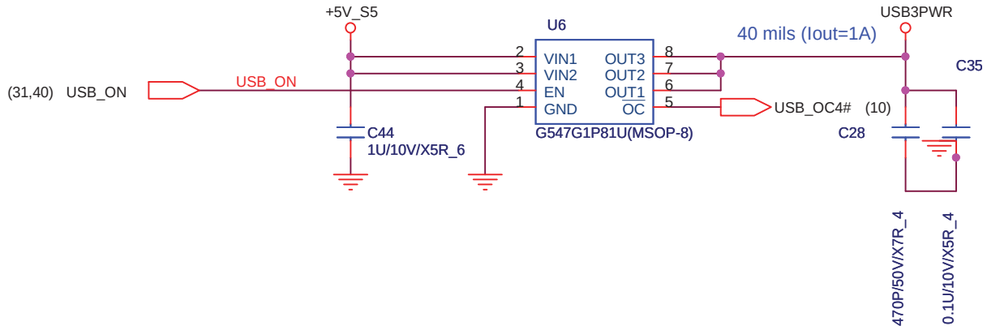
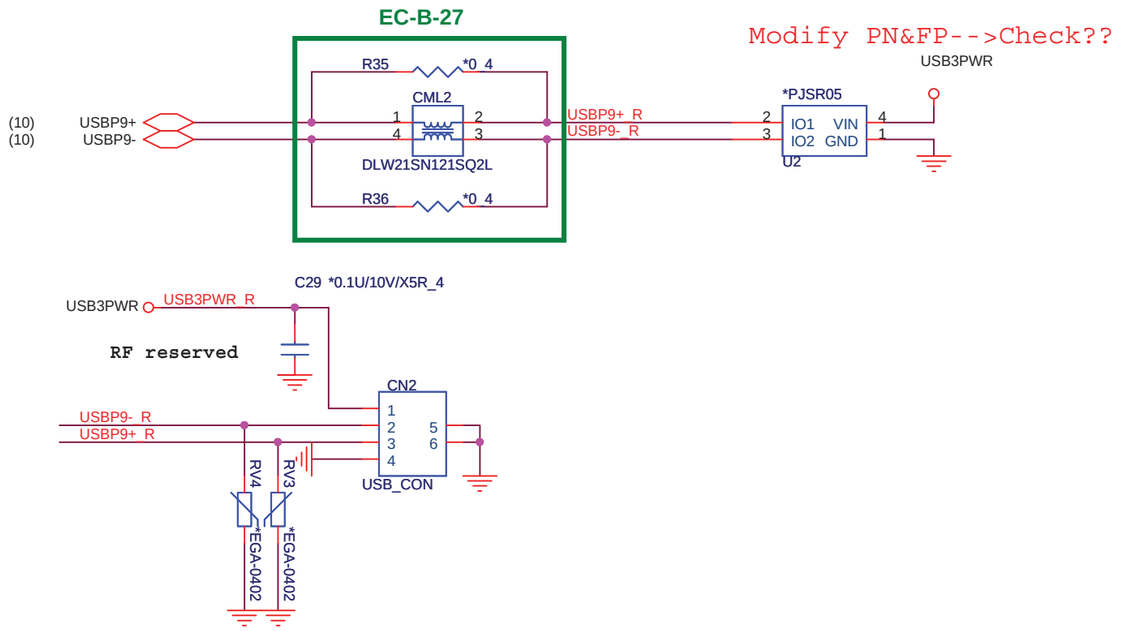
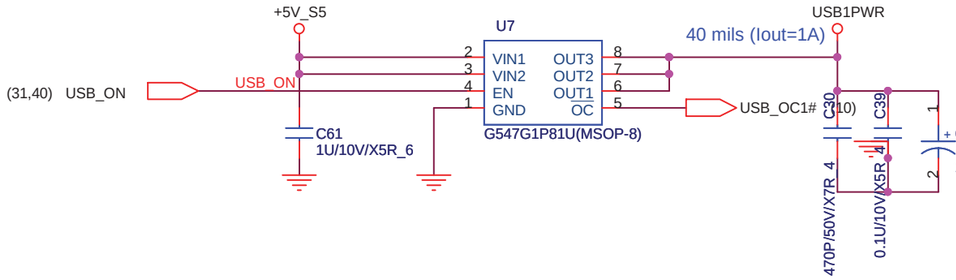
USB2.0*2

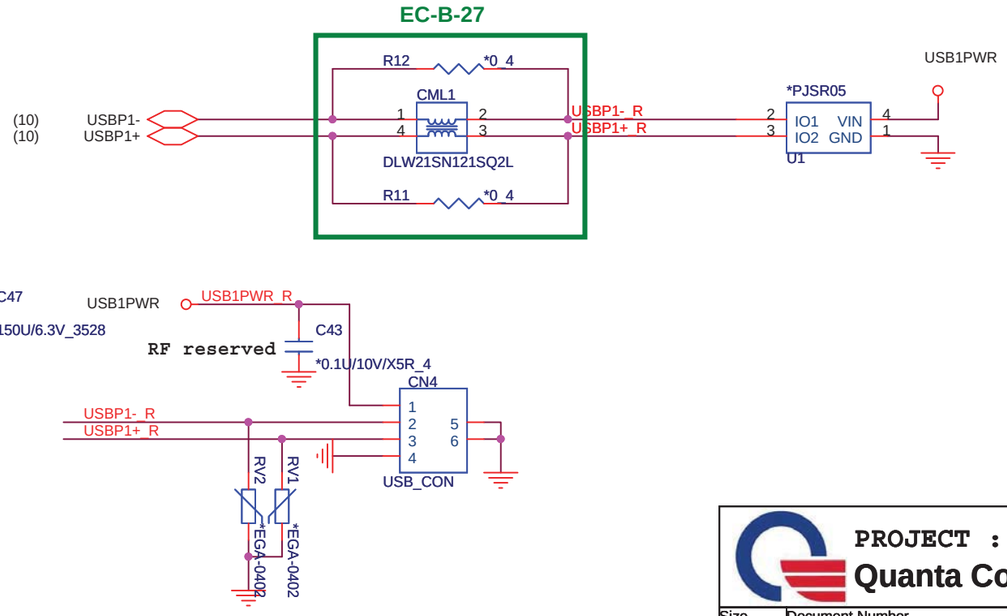
External (R side) USB*1





External (L side) USB*1





PROJECT : KL2D		
Quanta Computer Inc.		
Size: B	Document Number: MINI-Card (WLAN/WWAN)	Rev: 1A
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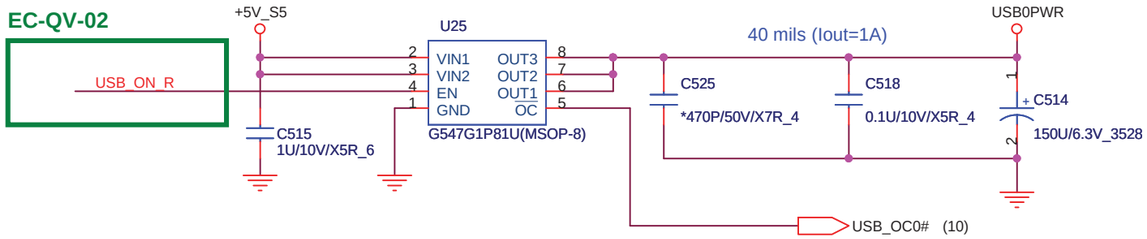
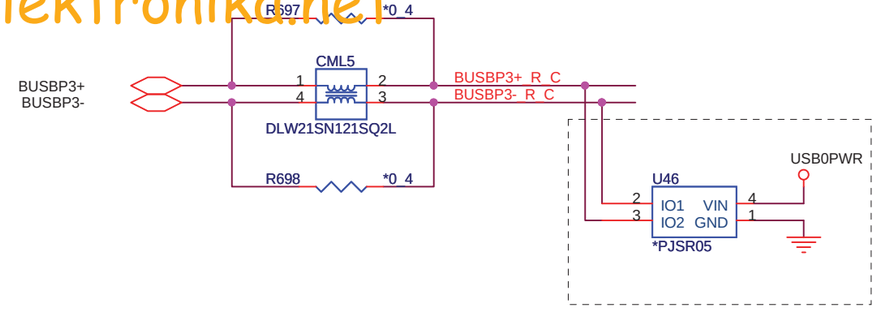
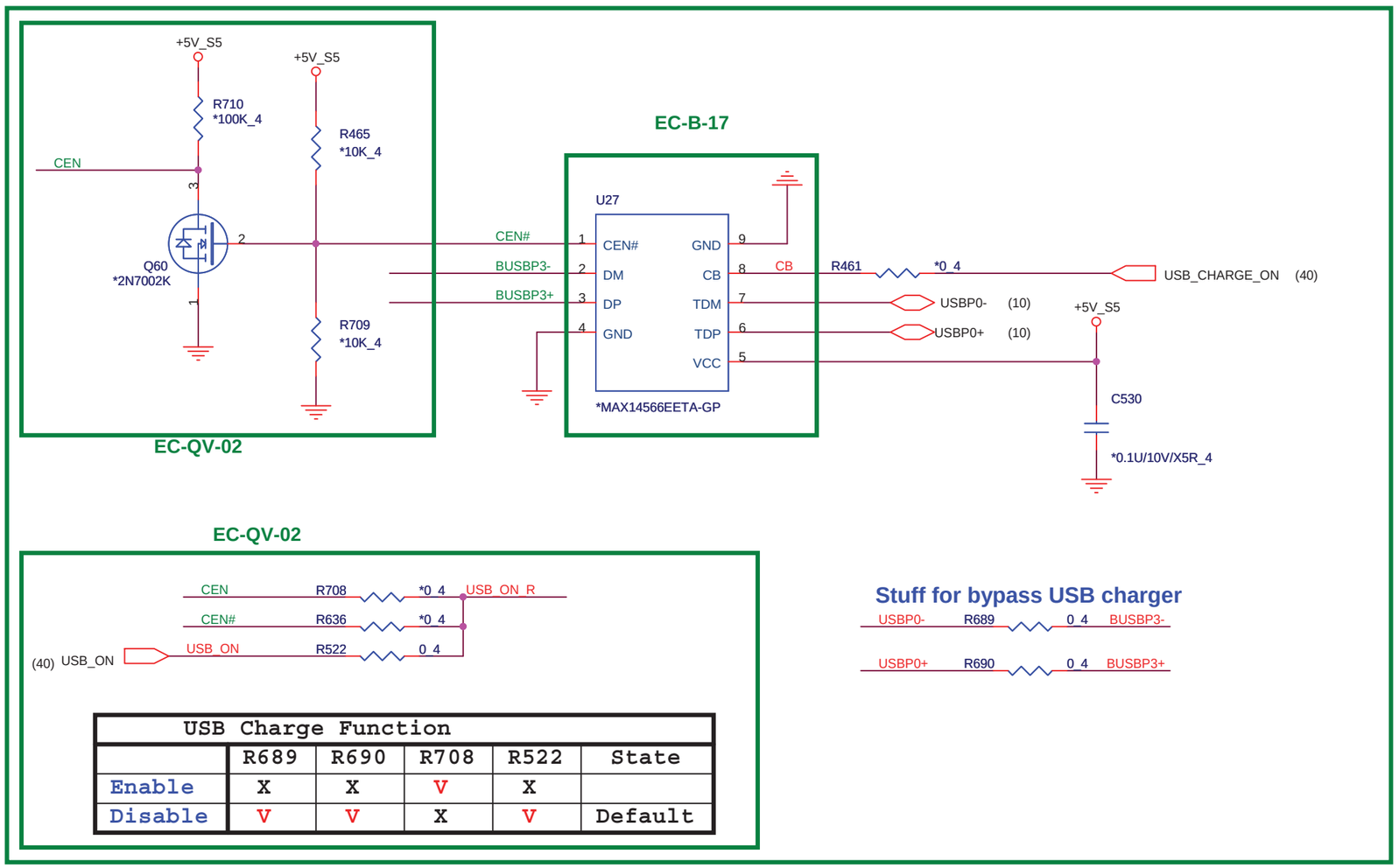
USB



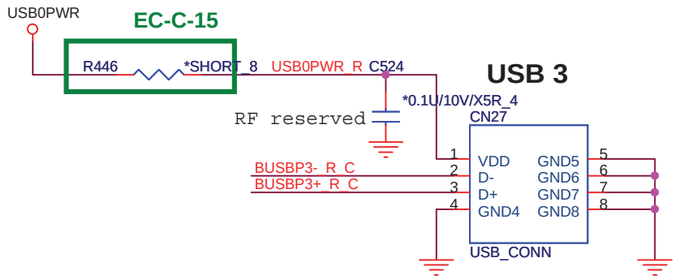


USB charger



USB Charge Function					
	R689	R690	R708	R522	State
Enable	X	X	V	X	
Disable	V	V	X	V	Default

Stuff for bypass USB charger



PROJECT KL5A

Quanta Computer Inc.

Size	Document Number	Rev
B	USB Discharge	1A

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G-SENSOR (3-Axial)

(8,9,10,21,12,14,15,17,22,23,24,26,27,28,29,30,31,36,37,38,40,41,42,46,47,48,49) +3V
(24,28,31,38,41,43,44,45) +15V

EC-B-18

PROJECT : LL3A		
Quanta Computer Inc.		
Size: Custom	Document Number: G-SENSOR	Rev: 1E
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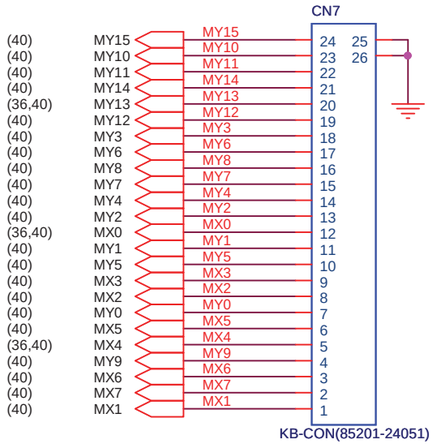
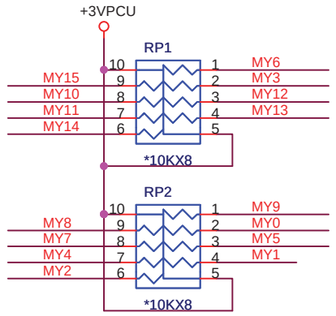
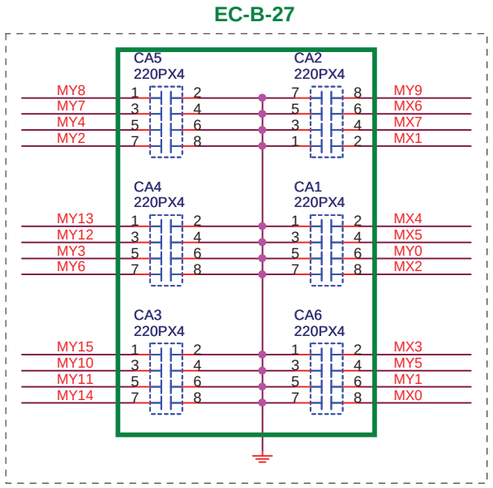
KEYBOARD



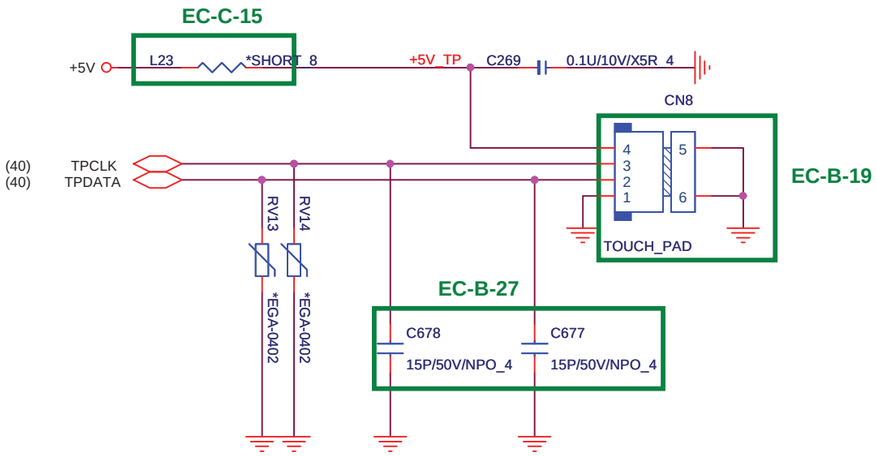
Follow LL3 KB





For EMI request

Touch pad



PROJECT KL5A

Quanta Computer Inc.

Size	Document Number	Rev
Custom	K/B, T/P	1A
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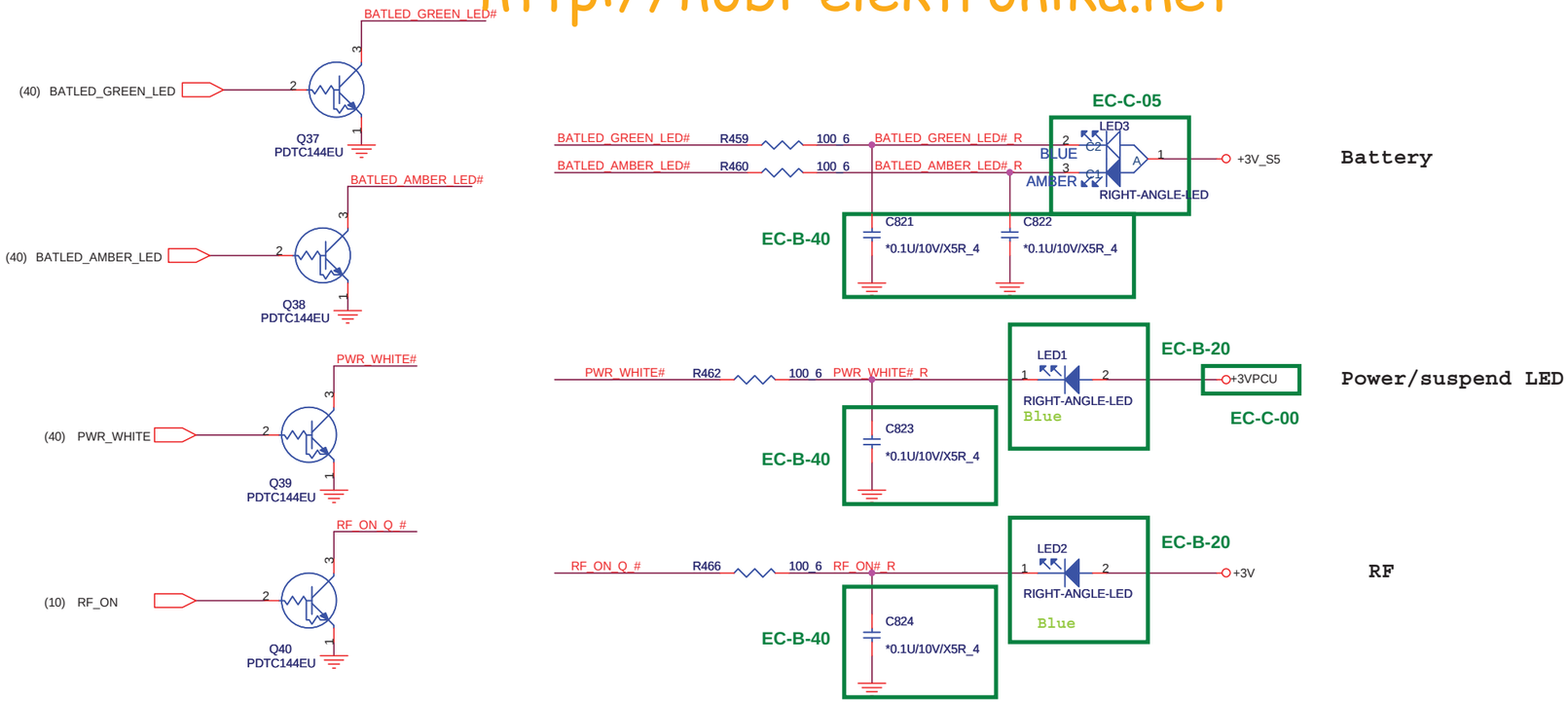
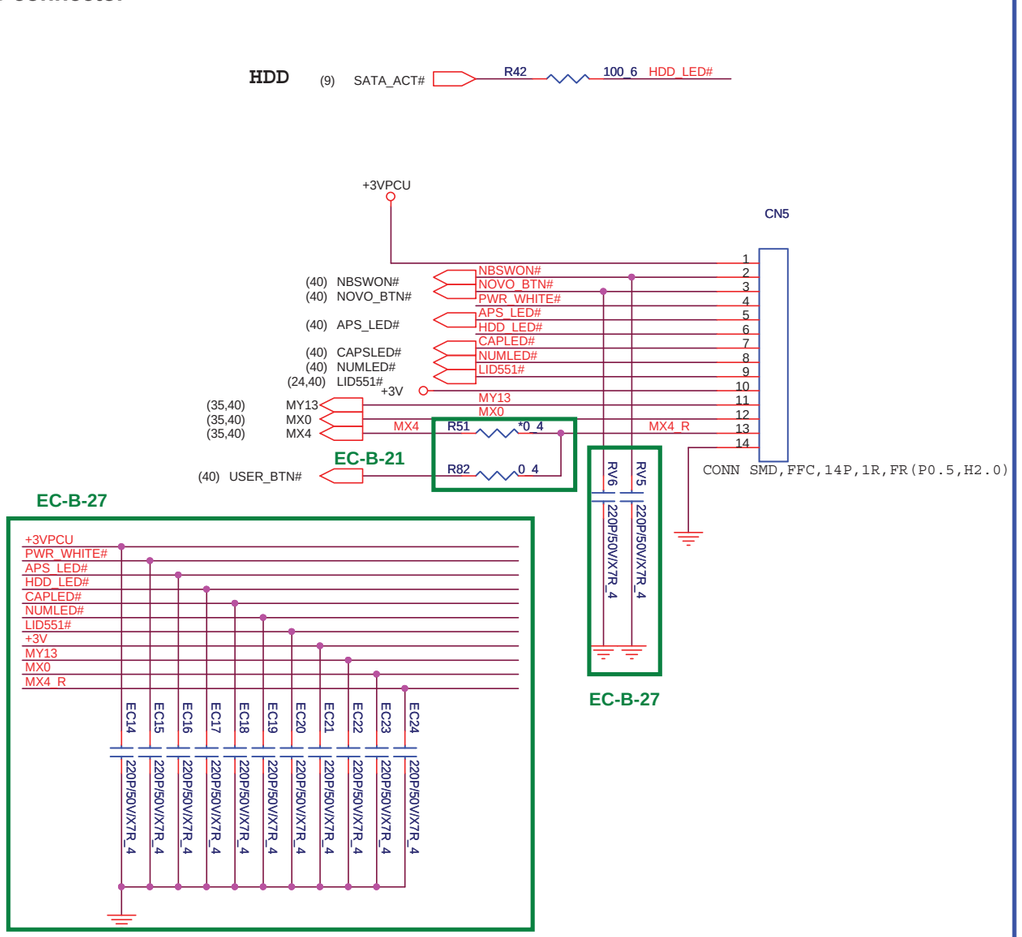
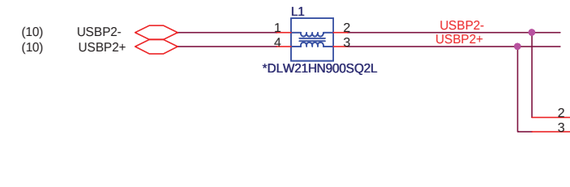
POWER / Battery /RF LED

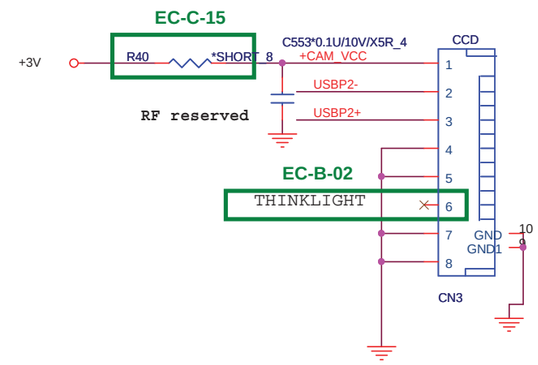


B to B connector



CAMERA & Keyboard light





PROJECT : KL2D

Quanta Computer Inc.

Size	Document Number	Rev
Custom	B TO B CON/LED/CCD	1A

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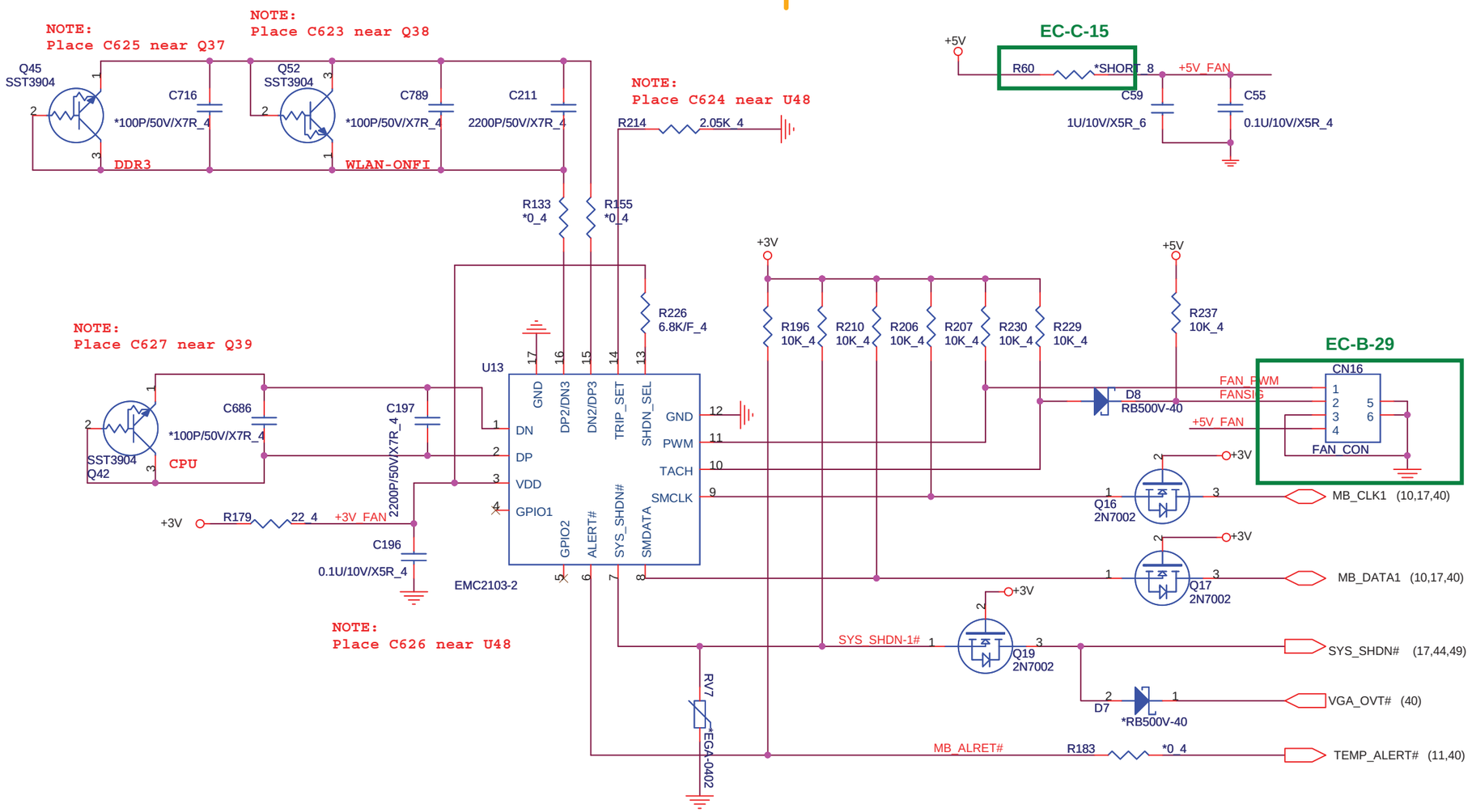
FAN CONTROL



PROJECT KL5A		
Quanta Computer Inc.		
Size: B	Document Number: FAN /THERMAL	Rev: 1A
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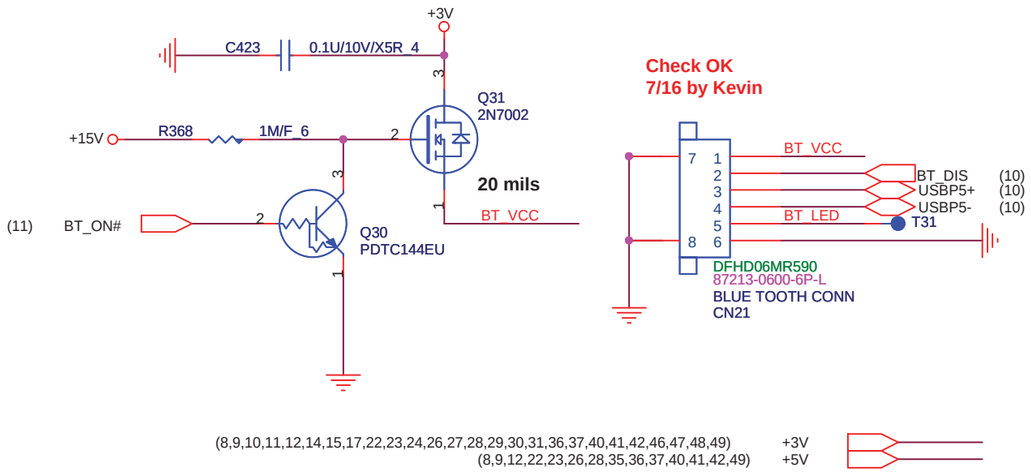
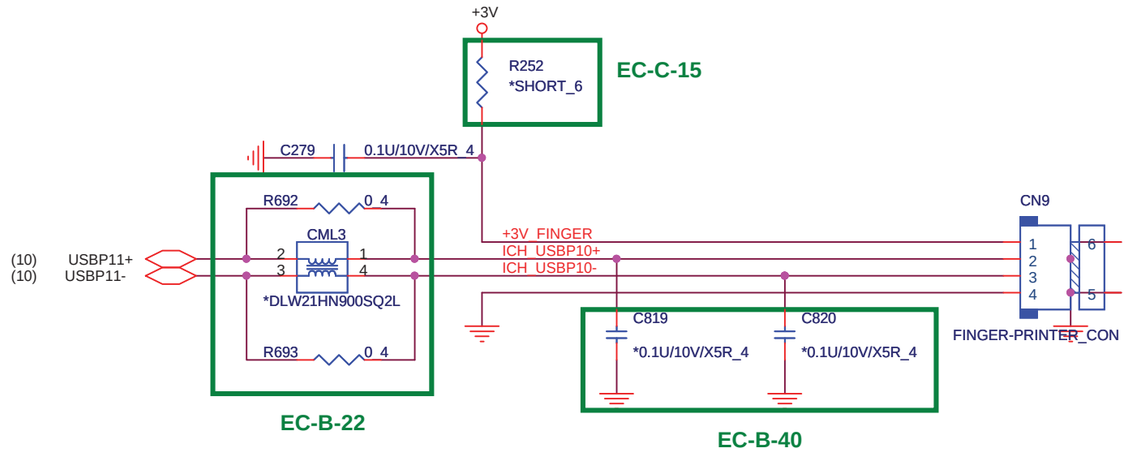
BLUETOOTH



FINGER PRINTER

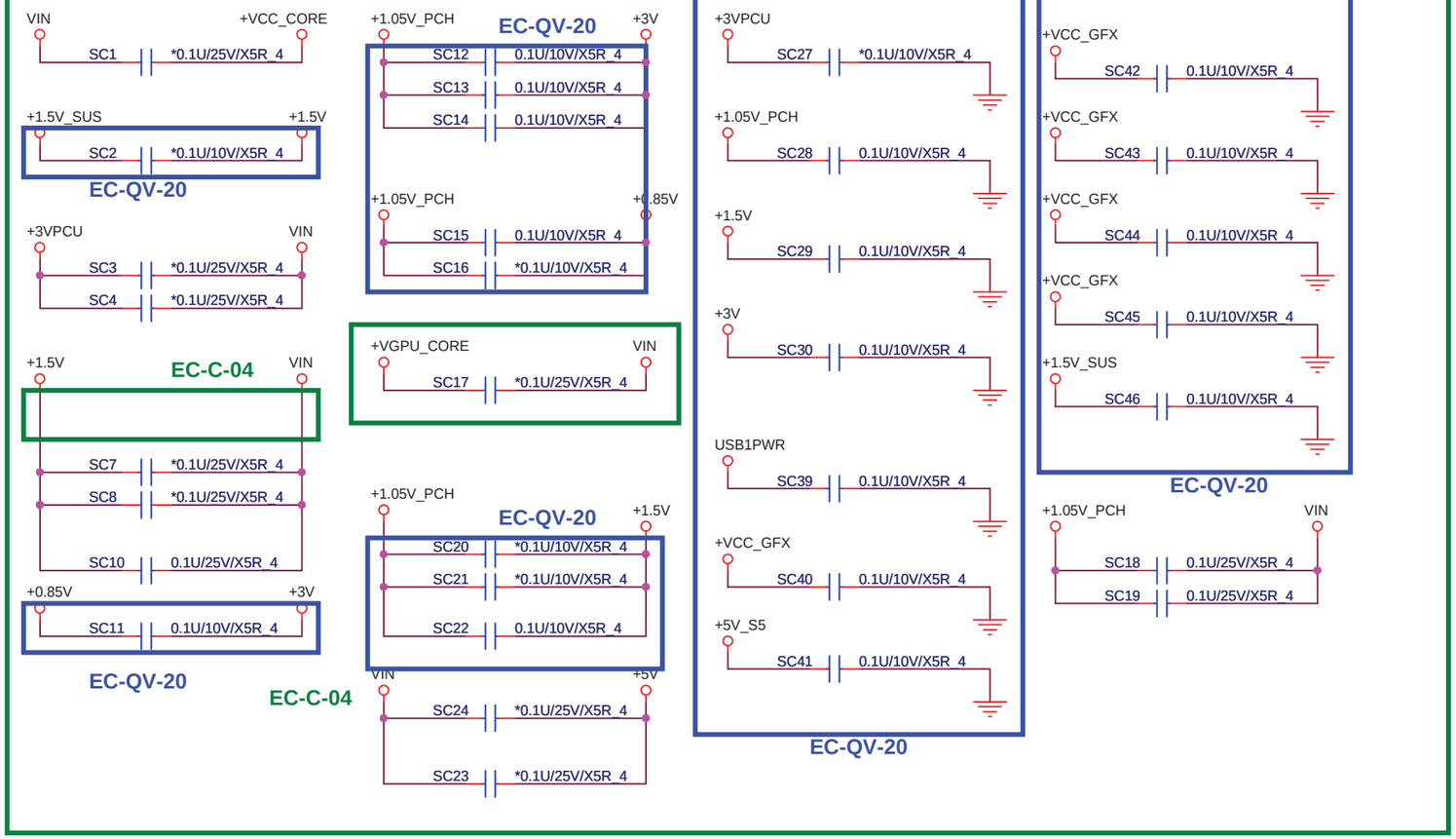


TPM

EC-B-23

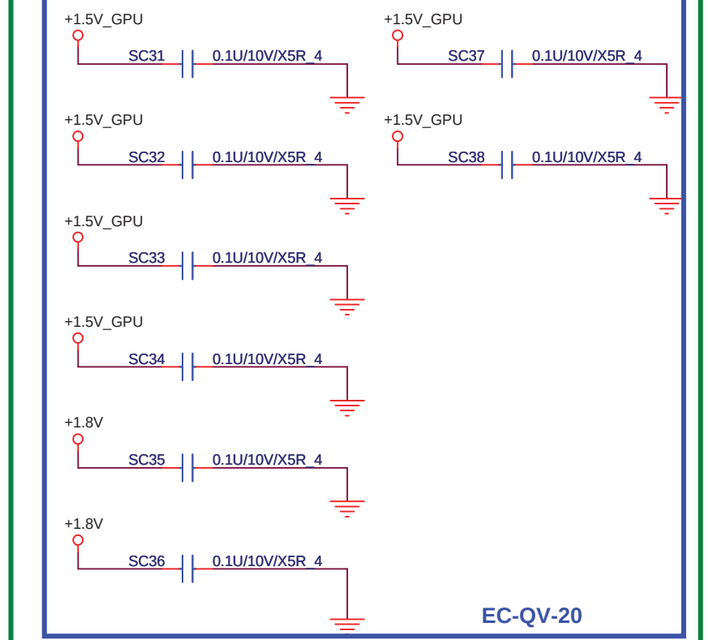
ESD suggestions

EC-B-28



EMI suggestions

EC-C-01



PROJECT :LL3A
Quanta Computer Inc.

Size	Document Number	Rev
B	BT/FP/TPM	1E
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WLAN/WWAN/Mini-SSD Nuts

EC-B-37

HOLE3
*h-tc315bc118d118p2

HOLE5
*H-TC315BC110D110P2

EC-C-02

HOLE9
*hg-e315x268d110p2

PAD1
*spad-spe236x766np

HOLE22
H-TC217BC142D102P2

HOLE23
H-TC217BC142D102P2

HOLE24
H-TC217BC142D102P2

HOLE26
H-TC217BC75I75D35P2

HOLE27
H-TC217BC75I75D35P2

HOLE25
H-TC217BC75I75D35P2

EC-QV-16

HOLE8
*h-o315x334d315x334n

HOLE7
*h-o276x866d276x866n

EC-B-40

CPU BKT

BKT1

cpu-bracket

EC-B-37

VGA Nuts

HOLE21
h-tc142bc217d102p2

HOLE15
*h-c118d118n

HOLE18
*h-c118d118n

FAN Hole

HOLE4
*h-c1260d1260na1300

EC-C-02

HOLE1
*hg-c315d110p2

HOLE2
*hg-c315d110p2

HOLE6
*hg-c315d110p2

HOLE14
*hg-c315d110p2

HOLE16
*hg-c315d110p2

HOLE17
*hg-c315d110p2

HOLE20
*hg-c315d110p2

EC-B-40 EC-C-02

HOLE19
*hg-c315d110p2

AGND

PROJECT : KL2D

Quanta Computer Inc.

Size	Document Number	Rev
A	HOLD & SKEW	1A
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IT8518 IT8519

+3.3V_EC — EC-C-15 — R349 *SHORT_8 — +3VPCU

RTC_VCC — R333 *0_4 — +3V_RTC; R334 0_4

C344 1000P/16V/X7R_4; C343 1U/6.3V/X5R_4; IT8512_AVCC — L34 BK1608HS121-T — +3VPCU; L36 BK1608HS121-T — +3VPCU; C370 0.1U/10V/X5R_4; L35 BK1608HS121-T

(For PLL Power)

Layout Note:
Place all capacitors close to IT8512.

+3.3V_EC — C703 C365 C342 C702 C372 C373 — 0.1U/10V/X5R_4

IT8512_VSTBY

D17 RB500V-40

VGA_OVT# (37)
TEMP_ALERT# (11,37)
RF_SW#
ODD_EN (28)
NUMLED# (36)
USER_BTN# (36)
HMOSI
HMISO
HSCK
HSCE#
CLKRUN# (8)

(10) CLK_PCI_8512 — CLK_PCI_8512 — C350 *15P/50V/NPO_4

EMI suggestion:
Add a 15p bypass CAP on CLK_PCI_8512

Layout Note:
net "3VPCU" and "RTC_VCC"
minimum trace width 12mils.

+3V — +3.3V_EC — C355 0.1U/10V/X5R_4 — RTC_VCC

U17
IT8518

(9,29) LPC_LAD0
(9,29) LPC_LAD1
(9,29) LPC_LAD2
(9,29) LPC_LAD3
(24,36) LID551#
CLK_PCI_8512
(9,29) LPC_LFRAME#
(17,26,41,42,43,45,46,47,48) MAINON
(11) EC_A20GATE
(9,29) IRQ_SERIRQ
(11) EC_EXT_SMI#
(11) EC_EXT_SCI#
WRST_8512#
(11) EC_RCIN#
(36) CAPSLED#

D19 D16 D14 D18 — RB500V-40

LPC

GA20/GPB5(X)
SERIRQ/GPM6(X)
ECSMI#/GPD4(Up)
ECSCI#/GPD3(Up)
WRST#
KBRST#/GPB6(X)
PWUREQ#/BBO/SMCLK2ALT/GPC7(Up)

(42) D/C#
(41) LAN_POWER

CIR

CRX0/GPC0(Dn)
CTX0/TMA0/GPB2(Dn)

+3VPCU — R304 470K_4 — WRST_8512# — C345 0.1U/10V/X5R_4

(8) SIO_PWRBTN# — RB500V-40 — D15 — DNBSWON_R
(31,32) USB_ON
(8) RSMRST# — EC-B-36 — TP54
SLP_A#
(28) ODD_DETECT#
(9,11) PLL_ODVR_EN — PLL_ODVR_EN
(36) BATLED_AMBER_LED
(36) BATLED_GREEN_LED — BATLED_GREEN_LED

DAC4/DCD0#/GPJ4(X)
DSR0#/GPG6(X)
GINT/CTS0#/GPD5(Up)
PS2DAT1/RTS0#/GPF3(Up)
DAC5/RIG0#/GPJ5(X)
PS2CLK1/DTR0#/GPF2(Up)
TXD/SOUT0/GPB1(Up)
RXD/SIN0/GPB0(Up)

UART port

EC-B-18 — TP62 — GSENSOR_Y_R
(49) VCORE_IMON_EC
(49) VGT_IMON_EC
(36) NOVO_BTN# — NOVO_BTN#
(42) BL/C# — BL/C#
EC-B-18 — TP25 — GSENSOR_TST#
(8) PM_SLP_S4#
TP19 — TP_LED#

ADC5/DCD1#/WUI29/GPI5(X)
ADC6/DSR1#/WUI30/GPI6(X)
ADC7/CTS1#/WUI31/GPI7(X)
RTS1#/WUI5/GPE5(Dn)
PWM7/RIG1#/GPA7(Up)
DTR1#/SBUSY/GPG1/ID7(Dn)
CTX1/WUI18/SOUT1/GPH2/SMDAT3/ID2(Dn)
CRX1/WUI17/SIN1/SMCLK3/GPH1/ID1(Dn)

EXTERNAL SERIAL FLASH

FSCK
FSCE#
FMOSI
FMISO

(10,28) ODD_MDDA#
EC-B-15 — (33) USB_CHARGE_ON
BORAD_ID

KSO16/SMOSI/GPC3(Dn)
KSO17/SMISO/GPC5(Dn)
PWM6/SSCK/GPA6(Up)

SSCE0#/GPG2(X)
SSCE1#/GPG0(X)

SPI ENABLE

MY0 MY1 MY2 MY3 MY4 MY5 MY6 MY7 MY8 MY9 MY10 MY11 MY12 MY13 MY14 MY15

KSO0/PD0
KSO1/PD1
KSO2/PD2
KSO3/PD3
KSO4/PD4
KSO5/PD5
KSO6/PD6
KSO7/PD7
KSO8/ACK#
KSO9/BUSY
KSO10/PE
KSO11/ERR#
KSO12/SLCT
KSO13
KSO14
KSO15

KBMX

(35,36) MY[0..15]
(35,36) MX[0..7]

Borad ID
+3VPCU — R617 10K_4 — BORAD_ID — R618 *10K_4

SMCLK0/GPB3(X)
SMDAT0/GPB4(X)
SMCLK1/GPC1(X)
SMDAT1/GPC2(X)
PECI/SMCLK2/WUI22/GPF6(Up)
SMDAT2/WUI23/GPF7(Up)

SM BUS

PS2CLK0/TMB0/GPF0(Up)
PS2DAT0/TMB1/GPF1(Up)
PS2CLK2/WUI20/GPF4(Up)
PS2DAT2/WUI21/GPF5(Up)

PS/2

EGCLK/WUI27/GPE3(Dn)
EGCS#/WUI26/GPE2(Dn)
EGAD/WUI25/GPE1(Dn)
L80HLATBAO/WUI24/GPE0(Dn)
L80LLATWUI7/GPE7(Up)
HMOSI/GPH6/ID6(Dn)
HMISO/GPH5/ID5(Dn)
HSCK/GPH4/ID4(Dn)
HSCE#/WUI16/GPH0/ID0(Dn)
CLKRUN#/WUI16/GPH0/ID0(Dn)

GPIO

110 MBCLK — MBCLK (42)
111 MBDATA — MBDATA (42)
115 MB_CLK1 — MB_CLK1 (10,17,37)
116 MB_DATA1 — MB_DATA1 (10,17,37)
117 EC_PECI — R352 43/J_4 — EC_PECI (4)
118 VOLMUTE# (26)
85 EC_PWROK (8)
86 — TP55
89 TPCLK
90 TPDATA

+5V — R321 10K_4 — R323 10K_4

TPCLK (35)
TPDATA (35)

PWM0/GPA0(Up)
PWM1/GPA1(Up)
PWM2/GPA2(Up)
PWM3/GPA3(Up)
PWM4/GPA4(Up)
PWM5/GPA5(Up)

PWM

24 — TP63 — EC-B-32 — GUC_PWR_ACK (8)
25
28 H_PROCHOT# EC
29 — APS_LED# (36)
30 GSENSOR_ON# — TP59 — EC-B-18
31 — PCBEEP_AD (26)

TACH0A/GPD6(Dn)
TACH1A/TMA1/GPD7(Dn)

47 — PWR_WHITE (36) — EC-B-32
48 — VRON (41,48)

TMRI0/WUI2/GPC4(Dn)
TMRI1/WUI3/GPC6(Dn)

120 — ADIN# (42)
124 HWPG — HWPG (43,44,45,46,47,48,49)

PWRSW/GPE4(Up)
RI1#/WUI0/GPD0(Up)
RI2#/WUI1/GPD1(Up)

WAKE UP

125 NBSWON# — NBSWON# (36)
18 — SIO_SLP_S3# (8)
21 — ACIN (42)

RING#/PWRFAIL#/CK32KOUT/LPCRST#/GPB7(Dn)

112 — SUSON (41,43)

ADC0/GPI0(X)
ADC1/GPI1(X)
ADC2/GPI2(X)
ADC3/GPI3(X)
ADC4/WUI28/GPI4(X)

A/D D/A

66 — TEMP_MBAT (42)
67
68 — AD_ID (42)
69 GSENSOR_Z_R
70 GSENSOR_X_R — TP61 TP60 — EC-B-18

TACH2/GPJ0(X)
GPJ1(X)
DAC2/TACH0B/GPJ2(X)
DAC3/TACH1B/GPJ3(X)

76
77 — AC_PRESENT (8)
78 KB_MATRIX — TP18
79 — S5_ON (41)

CK32KE
CK32K

CLOCK

2 — IT8512_CK32KE
128 — IT8512_CK32K — EC-B-43

Y4
R336 0/J_4
C375 *XTAL_32.768KHZ *18P/50V/COG_4
C369 *18P/50V/COG_4

VSS VSS VSS VSS VSS VSS AVSS VCORE

P/N: AJ085180F02

C356 *1U/6.3V/X5R_4 — C357 0.1U/10V/X5R_4

RF ON/OFF SWITCH

+3V_S5 — R452 100K_4 — RF_SW# — C529 0.1U/10V/X5R_4
SW1 — RF_SLIDE_SWITCH

HMOSI R341 *0_4 — PCH_SPI_SI (9)
HMISO R335 *0_4 — PCH_SPI_SO (9)
HSCK R340 *0_4 — PCH_SPI_CLK (9)
HSCE# R331 *0_4 — PCH_SPI_CS0# (9)

+3VPCU
MB_CLK1 R351 4.7K_4
MB_DATA1 R337 4.7K_4
MBCLK R347 2.2K_4
MBDATA R348 2.2K_4
BATLED_AMBER_LED R346 *10K_4
BATLED_GREEN_LED R345 *10K_4
BL/C# R300 *10K_4
USER_BTN# R378 10K_4

EC-B-21

+3V — HWPG R338 10K_4

POWER SWITCH/ NOVO BUTTON

+3VPCU — R339 10K_4 — NBSWON# — C374 0.1U/10V/X5R_4
EC-B-24 — NOVO_BTN#
+3.3V_EC — R303 10K_4 — C341 0.1U/10V/X5R_4

4Mbit (512K Byte), SPI

Winbond AKE37FN0N01
MAX AKE37FP0Z00
EON AKE37ZN0Q01

+3VPCU — R350 10K_4 — R353 10K_4

8512_SCE# — R344 47_4 — 8512_SCK1
8512_SCK
8512_SI — R342 47_4 — 8512_SI1
8512_SO — R343 15_4 — 8512_SO1

U19
CE# VDD
SCK
SI
SO HOLD#
WP# VSS
W25X40BVSSIG

C392 0.1U/10V/X5R_4

C814 *22P/50V_4 — RF reserved — EC-B-31

EC-C-15

H_PROCHOT# Q — R301 *SHORT_4 — H_PROCHOT# (4,49)
H_PROCHOT# EC — R302 100K/J_4 — Q27 2N7002E

EC-B-25 — EC-B-18

+3VPCU — R376 10K_4 — KB_MATRIX — R377 *10K_4

KL9/9A mount R376
KL7 mount R377

PROJECT : KL2D
Quanta Computer Inc.

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Custom	KBC IT8512E	1A

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DISCHARGE

+3V, +5V

Del PQ95 , PC289 and +1.5V power

Add +1.1V_GPU_DISCHARGE

LANVCC

3V_S5, 5V_S5

Change net +VGPU_CORE

+1.5V_SUS

Del 3VSUS,5VSUS

EC-C-13

PROJECT KL5A
Quanta Computer Inc.

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D	Discharge	1A
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Modify FP&PN as LL7

DC-IN

PJ1 SSB-BH

EC-C-28

ADPIN+ SC26 *0.1U/25V/X5R_4

ESD suggestions

EL1 UPB201212T-800Y-N

EL2 UPB201212T-800Y-N

PF1 TR/3216FF10

PC181 0.1U/50V/X7R_6

PC182 0.1U/50V/X7R_6

PQ63 SI4825DDY-T1

PR155 220K/F_4

PR166 220K/F_4

PR159 1M_4

PR170 1K/J_6

PR171 1M/J_4

PD17 P4SMAJ20A

PQ61 UMT1NTN

PR162 *1K_4

PQ59 *MMBT3904LT1G

PC170 1U/25V/X7R_8

PQ62 PDTA124EU

PQ66 AOD425

PC175 0.1U/50V/X7R_6

PR9252 1.5K_6

PR164 10K_6

PD5 *1SS355

PD4 *1SS355

PD3 1SS355

PQ5 *IMD2

(17,26,40,41,43,45,46,47,48) MAINON

PR196 10K/F_4

PQ72 PDTA124EU

PR10 47K_4

PR8 10/F_6

PC18 0.1U/50V/X7R_6

PC17 0.1U/50V/X7R_6

PR197 15K/F_4

PQ73 2N7002K-T1-E3

PC8 1U/25V/X7R_8

PC197 1U/25V/X7R_8

PQ74 2N7002K-T1-E3

PD19 1SS355

PR198 1M_4

PR20 49.9K/F_4

PR22 221K/F_4

PC21 0.01U/25V/X7R_4

PR14 2.2/F_6

PC9 1U/10V/X5R_4

PR13 4.7/F_6

PC16 1U/10V/X5R_4

PC13 0.1U/50V/X7R_6

PD6 *1SS355

Place these CAPs close to FETs

C-test

PC7 10U/25V/X6S_12

PC192 10U/25V/X6S_12

PC191 0.1U/50V/X7R_6

PC6 2200P/50V/X7R_4

PQ71 MDV1660URH

PQ67 MDV1660URH

PL10 CHOKE_6.8UH/4.5A(7*7*3)

ER1 2.2_8

EC1 1500P/50V/X7R_4

PR193 0.02_1W_3720

PC188 10U/25V/X6S_12

PC190 10U/25V/X6S_12

PC5 10U/25V/X6S_12

PC4 0.1U/50V/X7R_6

PR178 200K/F_4

AOL1413 PQ70

PR180 100K/F_4

EC-C-41

PD22 SSM34PT

PR194 0.01_1W_3720

PR19 10/F_6

PR18 10/F_6

PC20 0.1U/50V/X7R_6

PR11 100K/F_4

PQ6 2N7002K-T1-E3

PU1 ISL88731A

PR21 4.75K_4

PC19 0.01U/25V/X7R_4

PR17 *8.45K/F_4

PC25 0.01U/25V/X7R_4

PC24 *0.01U/25V/X7R_4

PC23 0.01U/25V/X7R_4

PC22 *1U/10V/X5R_6

PC26 *0.1U/10V/X7R_4

PR9 100/F_4

PC10 0.01U/25V/X7R_4

PR6 10/F_6

PC11 0.1U/50V/X7R_6

PR7 10/F_6

PR195 *SHORT-1A

GND_CHG

PR12 0_4

PR16 0_4

PR15 0_4

PC12 0.1U/10V/X7R_4

ACIN=17.5V

PD7 1SS355

PQ7 2N7002K-T1-E3

PR26 *0_4

PR24 10K/F_4

PR25 10K/F_4

PC28 1000P/50V/X7R_4

PR23 100_4

PR28 475K/F_4

PD8 1SS355

PR27 332K/F_4

PC29 *1000P/50V/X7R_4

PQ8 2N7002K-T1-E3

PU2 G1331T11U

Battery Low 7.5V

BL/C# (40)

PL8 UPB201212T-800Y-N

PL9 UPB201212T-800Y-N

PF2 FUSE_10A_125V(FAST)

PC3 0.1U/25V/X5R_4

PJP13 1827654-1

PR5 200/F_4

PR4 200/F_4

PR67 10K/F_4

PC15 100P/50V/NPO_4

PC14 100P/50V/NPO_4

PD1 MMBZ5232BPT(5.6V+-5%)

PD2 MMBZ5232BPT(5.6V+-5%)

PC68 0.1U/10V/X7R_4

TEMP_MBAT (40)

Modify FP&PN as LL7

PC27 0.1U/50V/X7R_6

PC30 0.1U/50V/X7R_6

PR29 100K/F_4

PR30 16.9K/F_4

PR32 499_6

PC38 *0.1U/10V/X7R_4

PU4 LM431SACMF

PR31 47K_4

PU3 G1331

ADIN# (40)

PC9212

PR9253 475K/F_4

PR9254 100_4

PR9255 10K/F_4

PR9256 300K/F_4

PC9213 *1000P/50V/X7R_4

PD23 1SS355VM

PU13 G1331T11U

PQ9070 2N7002K

+0.75V_DDR_VTT
TDC : 2A

+1.5V_SUS
Fs=400K
TDC :19A(Imax)
OCP : 23A

Place these CAPs close to FETs

C-test

+0.75V_DDR_VTT
PC142 *0.1U/10V/X7R_4
PC139 10U/6.3V/X5R_8
PC134 10U/6.3V/X5R_8
+1.5V_SUS_P
PC143 2.2U/10V/X5R_6
PR122 *0_4
PR121 0_4
(6,14,15) SMDDR_VREF
PC138 .033U/16V/X7R_4
PU9 RT8207LGQW
VTTGND VTT VTTSNS VLDOIN GND VBST MODE DRVH VTTREF LL COMP DRVL NC PGND VDDQSNS CS_GND VDDQSET CS S3 V5IN S5 V5FILT NC PGOOD
DDR_VBST DRVH DDR_LL DRVL DDR_CS DDR_V5IN DDR_V5FILT
PR133 2.2/F_6
PC150 0.1U/50V/X7R_6
PR151 7.15K/F_4
PR142 5.1_6
PC157 1U/10V/X5R_4
PC158 1U/10V/X5R_4
PR145 620K_6
VIN_DDR
HWPG
(40,44,45,46,47,48,49)
DDR_COMP
PR258 *SHORT-1A
51116AGNA

VIN_DDR
PC137 0.1U/50V/X7R_6
PC136 2200P/50V/X7R_4
PC141 10U/25V/X6S_12
PC140 10U/25V/X6S_12
11Chil
VIN

PQ38 AON6428L
PQ41 AON6718L
PQ42 *AON6718L
EC-QV-05
PL6 0.36uH
ER5 *2.2_8
EC5 *1500P/50V/X7R_4
PR135 10.2K/F_4
PR130 10K/F_4
PC144 *1000P/50V/X7R_4
PC109 330U/2VLESR9_7343
PC115 220U/2.5V/ESR15_7343
PC99 *220U/2.5V/ESR15_7343
PC94 0.1U/10V/X7R_4
PC256 10U/6.3V_8
+1.5V_SUS_P
+1.5V_SUS

EC-C-39
(4,8) SYS_PWROK
PR266 0_4
(17,26,40,41,42,45,46,47,48) MAINON
PR138 *0_4
PC151 *0.1UF/10V/X7R_4
PR136 *0_4
DDR_V5FILT
S3
S5
(40,41) SUSON
PR150 0_4
PC155 *0.1U/10V/X7R_4

+5VPCU

Change to +5VPCU
+5VPCU
PR47 100K/F_4
PQ20 ME2N7002E
MAINON
PQ22 ME2N7002E
PQ21 ME2N7002E
PS_S3CNTRL
+1.5V
+15V
PR53 22_8
PR55 1M_4
PR59 *1M_4@NC
PD9 *1SS355@NC
(6,41) MAINON_15V
1.5V_ON
PR54 *0_4@NC
PC65 *0.015U/50V_6@NC
EC-A-07

+1.5V_SUS
PQ53 SI3456DDV
0.5A
+1.5V
PC147 10U/25V/X6S_12
PC164 10U/25V/X6S_12
PC154 10U/6.3V/X5R_8
PC153 10U/6.3V/X5R_8
PC161 *330U/2.5V/9m_3528
PC152 *0.1U/10V/X7R_4

Change to +1.5V_SUS
5A
+1.5V_SUS
PQ25 AOL1448
+1.5VCPU
PC84 10U/6.3V/X5R_6
1.5V_ON
PC77 10U/6.3V/X5R_6
PC74 10U/6.3V/X5R_6
PC81 *100U/6.3V_3528@NC
PC73 *0.015U/50V_6@NC

EC-C-26
6.8A
+1.5V_SUS
PQ9064 AOL1428A
+1.5V_GPU
PC9202 10U/6.3V/X5R_6
PR9246 100K_4
1.5V_ON
PC9206 0.015U/50V_6
PC9203 10U/6.3V/X5R_6
PC9204 10U/6.3V/X5R_6
PC9205 *100U/6.3V_3528@NC

PROJECT KL5A
Quanta Computer Inc.

Size	Document Number	Rev
Custom	DDR3/0.75V(RT8207AGQW)	1A

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+5VPCU
Fs=400K
TDC : 7.5A(Imax)
OCP : 11A

+3VPCU
Fs=500K
TDC :6A(Imax)
OCP : 9A

(8,9,24,25,28,35,36,38,40,41,42,45,46) +3VPCU
(28,41,42,43,45,46,47,48) +5VPCU
(24,28,31,38,41,43,45) +15V
(24,38,42,43,46,47,48,49) VIN

5V_AL
PR239 39K/F_4
(17,37,49) SYS_SHDN#
3V5V_EN
PR251 0_4
VIN
C-test
+DC1_PWR_SRC
PC116 10U/25V/X6S_12
PC241 10U/25V/X6S_12
Place these CAPs close to FETs
PC117 0.1U/50V/X7R_6
PC239 2200P/50V/X7R_4
PQ80 AON7406
DH5
EC-QV-05
PL15 2.2UH-PCMC063T-2R2MN
OUT1
LX5
DL5
PQ79 AON7702
ER4 *2.2_8
EC4 *1500P/50V/X7R_4
PC237 0.1U/10V/X7R_4
PC119 4.7U/10V/X5R_8
PC238 220U/6.3V/ESR25_7343
PR237 *0_4
PR238 0_4
PR241 196K/F_4
DDPWRGD_R
3V5V_EN
PU12 RT8206MGQW
LDOREFIN LDO VIN NC EN_LDO VCC TON REF
BYP OUT1 FB1 ILIM1 POK1 EN1 UGATE1 PHASE1 PAD PAD PAD
REFIN2 ILIM2 OUT2 SKIP# POK2 EN2 UGATE2 PHASE2
BOOT1 LGATE1 PVCC GND PGND LGATE2 BOOT2
PR244 4.7/F_6
PR246 390K_4
PC243 0.1U/50V/X7R_6
PC245 1U/25V/X5S_6
PR245 *0_4
PR248 150K/F_4
PC240 0.1U/50V_6
PR242 2.2/F_6
PC242 4.7U/10V/X5R_8
PR105 *10/F_6
PR249 0_4
PC246 1U/10V/X5R_4
PC248 0.1U/10V/X7R_4
PR256 0_4
REFIN2
REF
PR257 *0_4
PR255 174K/F_4
SKIP
PR250 2.2/F_6
PC247 0.1U/50V_6
DL3
5V_AL
PC254 0.1u/25V/X5R_4
PR261 0_6
PD20 BAT54SPT
PD21 BAT54SPT
PC252 0.1u/25V/X5R_4
PC255 0.1u/25V/X5R_4
PC244 1U/10V/X5R_4
PR109 *SHORT-1A
+15V
PR264 22_8
+15V_ALWP
PR263 *200K/F_4
PR247 *39K/F_4
PR262 *0_6
5V_AL
AGND_DC/DC
+DC2_PWR_SRC
VIN
C-test
PC251 10U/25V/X6S_12
PC148 *10U/25V/X6S_12
Place these CAPs close to FETs
PC146 0.1U/50V/X7R_6
PC249 2200P/50V/X7R_4
DH3
PQ81 AON7406
LX3
PQ82 AON7702
PL16 2.2UH-PCMC063T-2R2MN
OUT2
ER6 *2.2_8
EC6 *1500P/50V/X7R_4
PR253 0_4
PR254 *0_4
PC250 220U/6.3V/ESR25_7343
PC149 4.7U/10V/X5R_8
PC145 0.1U/10V/X7R_4
+3VPCU
SKIP
PR252 0_4
DDPWRGD_R
PR240 0_4
HWPG (40,43,45,46,47,48,49)

PROJECT KL5A
Quanta Computer Inc.

Size	Document Number	Rev
C	3V/5V (RT8206MGQW)	1A

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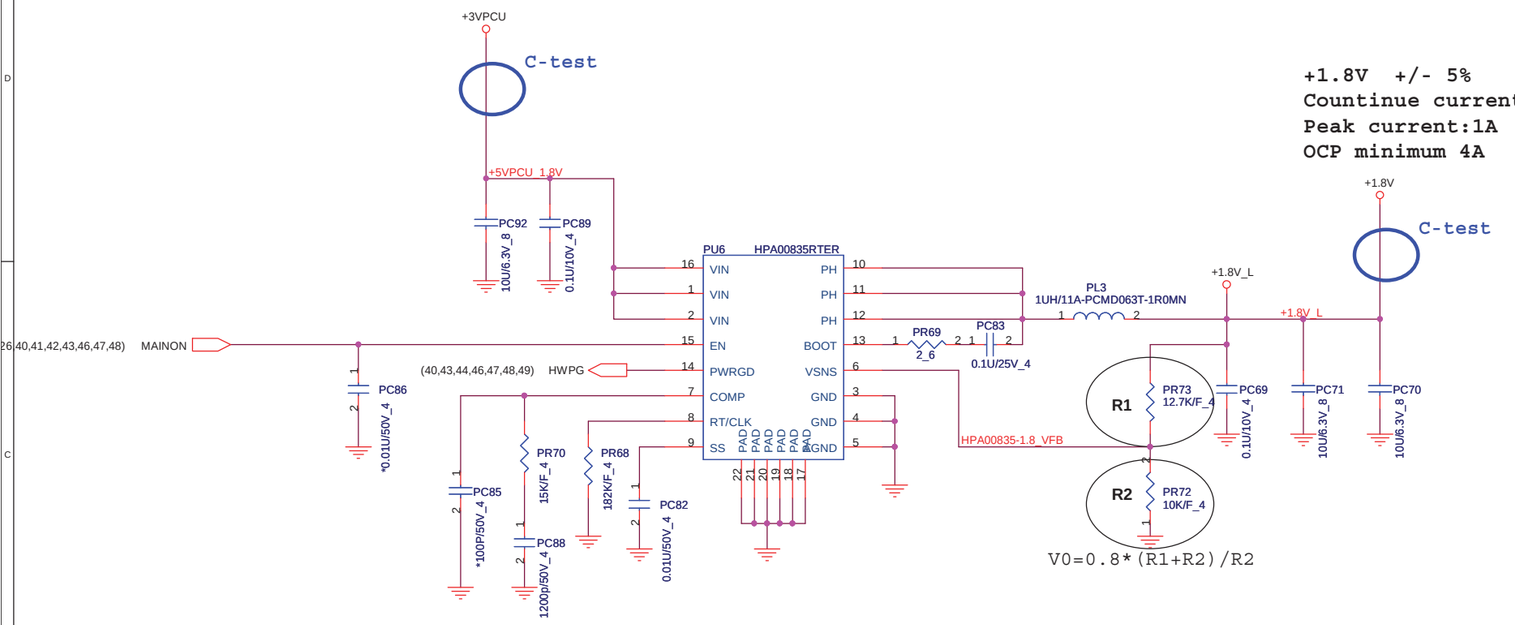
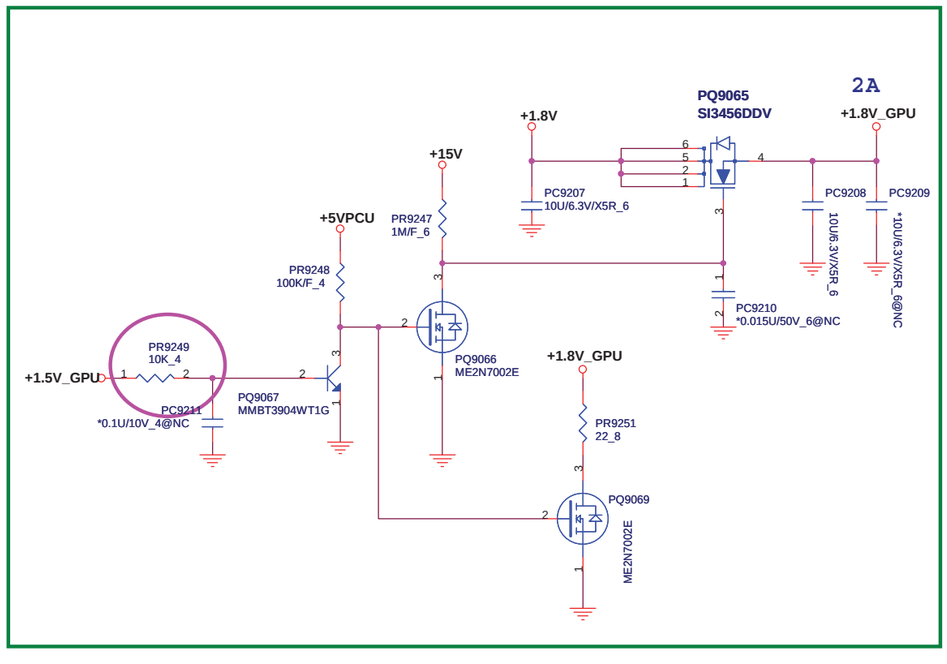


+1.8V +/- 5%
Countinue current:0.7A
Peak current:1A
OCP minimum 4A

EC-C-26



PROJECT KL5A
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.8V (HPA00835RTER)	1A
Date: Tuesday, January 04, 2011	Sheet 45 of 53	

+VGPU_CORE
Fs=300K
TDC : 16.8A(Imax)
OCP : 33.6A

Place these CAPs close to FETs

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	+VCC_GFX_CORE
1	1	1.12V
1	0	0.95V
0	1	1.05V
0	0	0.9V

PR179、PR188、PR184、PR189 will connect to 3VPCU and change to 10k at B stage layout(Same as KL8A),

PROJECT	KL5A
Quanta Computer Inc.	
Size: Custom	Document Number: +VGPU_CORE (OZ8117)
Rev	1A
Date:	Tuesday, January 04, 2011
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C-test

C-test

C-test

C-test

C-test

C-test

C-test

C-test

+0.85V
Fsw=506KHz
Iout=6A
O.C.P.=8A

(17,26,40,41,42,43,45,46,48) MAINON

+5VPCU

VIN_+0.85V

VIN

+0.85V

PU8
OZ8117

PQ30
AO4496(30V/10A)

PQ27
AO4712(30V,11.2A)

PL5
1UH/11A-PCMD063T-1R0MN

PR124
PR102 22_6
PR117 100K_4
PC124 .1U/10V/X5R_4
AGND_0.85V
PC129 0.01U/25V/X7R_4
PC120 1U/10V/X5R_4
PD14 1SS355
PR96 0/F_6
PC121 0.22U/25V/X5R_6
PC104 2200P/50V/X7R_4
PC107 0.1U/50V/X7R_6
PC106 10U/25V/X6S_12
PC105 *10U/25V/X6S_12
PC132 0.1U/25V/X5R_4
PD15 *1SS355
PC122 *1000P/50V/X7R_4@NC
PC133 0.1U/25V/X5R_4
PR101 0_4
PR94 *10K/F_4
+3V
HWPG (40,43,44,45,46,48,49)
ER3 *2.2_8
EC3 *1500P/50V/X7R_4
PR106 100K_4
PR111 60.4K/F_4
PR116 51.1/F_6
PC127 8200P/50V/X7R_4
PR265 604/F_4
PC135 1000P/50V/X7R_4
PC126 22P/50V/NPO_4
PC90 330U/2V/LESG_7343
PC93 10U/6.3V/X5R_6
PC95 0.1U/25V/X5R_4
+0.85V_P
+0.85V_CSP
+0.85V_CSN

+5VPCU
PR129 10K_4
PR128 10K_4
PR127 *0_4@NC
PQ44 ME2N7002E
(6) VCCSA_SEL
PR132 10K_4
PQ43 MMBT3904WT1G
PR243 *short@NC

	VCCSA_SEL	VCCUA(+0.85V)
0	0	0.9V
0	1	0.8V

PR125 10_4

PR113 91K/F_4
PR115 20K/F_4
PR108 15K/F_4
PR110 80.6K/F_4
PR103 28.7K/F_4
PC125 1000P/50V/X7R_4
PC123 1000P/50V/X7R_4
PC128 1000P/50V/X7R_4

PR118 51/F_6
PR123 51/F_6
PC130 0.01U/50V/X7R_4
PC131 0.01U/50V/X7R_4
VCCUSA_SENSE (6)

GND Close To Sandy Bridge Processor (POWER) Side

PROJECT KL5A
Quanta Computer Inc.

Size	Document Number	Rev
C	+0.85V (OZ8117)	1A
Date: Tuesday, January 04, 2011	Sheet 47 of 53	

The following voltage constraints must be satisfied at all times including power down after VDD33 has ramped up:

- NVVDD <= VDD33+0.5 V
- FBVDDQ <= VDD33+0.5 V

+1.05V_PCH

VIN=20V, FSW(KHZ)=226K
VIN=9V, FSW(KHZ)=210K
Iout=17.5A
O.C.P.=20A

(17,26,40,41,42,43,45,46,47) MAINON

+5VPCU

VIN

+1.05V_PCH

+3V

HWPG (40,43,44,45,46,47,49)

VTT_SENSE (6)

PU7 OZ8117

PQ23 AON6718L

PQ24 *AON6718L

PQ26 AON6428L

PD13 *1SS355

PD12 1SS355

PC100 1U/10V/X5R_4

PR78 22_6

PR81 100K_4

PC96 1U/10V/X5R_4

PC114 0.01U/25V/X7R_4

PR77 0/F_6

PC97 0.22U/25V/X5R_6

PC112 0.1U/25V/X5R_4

PC113 0.1U/25V/X5R_4

PR75 *10K/F_4

PR236 *short@NC

PC79 2200P/50V/X7R_4

PC78 0.1U/50V/X7R_6

PC76 10U/25V/X6S_12

PC75 10U/25V/X6S_12

PL4 0.36uH

ER2 *2.2_8

EC2 *150P/50V/X7R_4

PR82 20K/F_4

PR85 20K/F_4

PR267 10K/J_6_NTC

PR88 51.1/F_6

PC108 0.033U/50V/X7R_6

PR86 402/F_4

PC115 1000P/50V/X7R_4

PC103 22P/50V/NPO_4

PC80 330U/2V/LESG_7343

PC87 *330U/2V/LESG_7343

PC91 10U/6.3V/X5R_6

PC72 0.1U/25V/X5R_4

PC257 330U/2V/LESG_7343

PR90 10_4

PR89 51/F_6

PC110 0.01U/50V/X7R_4

PR87 51/F_6

PC111 0.01U/50V/X7R_4

1.05VPCH_VREF

1.05VPCH_VSET1

1.05VPCH_TEST

PR80 84.5K/F_4

PR84 20K/F_4

PR79 52.3K/F_4

PC98 1000P/50V/X7R_4

PR83 80.6K/F_4

PC101 1000P/50V/X7R_4

Change to AGND_1.05V_PCH

GND Close To Sandy Bridge Processor (POWER) Side

Del +1.5V SW

PROJECT KL5A		
Quanta Computer Inc.		
Size C	Document Number +1.05_PCH (OZ8117)	Rev 1A
Date: Tuesday, January 04, 2011	Sheet 48 of 53	

3+1 Phases design (45W CPU)
Vcore : 1 x HS-FET, 2 x LS-FET
VGT : 1 x HS-FET, 2 x LS-FET

	DIS	UMA
PR269	0 ohm	NA

45W CPU
Vcore Icc_MAX = 94A — PR7038 = OPEN
VGT Icc_MAX = 33A — PR7008 = OPEN

35W CPU
Vcore Icc_MAX = 53A — PR7038 = 7.87K
VGT Icc_MAX = 24A — PR7008 = 16.5K

NTC Place near the +VCC_CORE HS-FET

NTC Place near the +VCC_GFX HS-FET

NTC Place near the +VCC_GFX O/P Inductor

NTC Place near the +VCC_CORE phase 1 Inductor

Del PQ7013 — Del PQ7001 — Del PQ7007

Del PC74 , PC76

Close to ISL9583 Vin input point

EC #	Page	Description	Part Affected
EC-B-00	**4**	Change U18 output type from coms to open-drain.	**U18**
EC-B-01	**10**	Remove TPM funtion. (LPC interface)	**U14**
EC-B-02	**10,38**	Remove keyboard light funtion.	**U14,CN3**
EC-B-03	**11**	Switch pins between BOARD_ID0 and BOARD_ID1.	**U14**
EC-B-04	**11,31**	Change net name from WIMAX_OFF# TO WLAN_OFF#, also add pull high 10K with GPIO16	**U14,R530**
EC-B-05	**11**	Add board id table.	
EC-B-06	**25**	Change ESD protection components.	**U47,U48**
EC-B-07	**26**	Modify the DIS backlight pin connecting to LVDS connector.	**CN1**
EC-B-08	**28**	Add R37 and R47 for normal-open audio jack.	**R37,R47**
EC-B-09	**29**	Add SD_4~SD_7 to support SD 3.0	**CN12**
EC-B-10	**30**	Remove 2nd battery switch.It is only for KL8/8A.	
EC-B-11	**31**	Correct the LPC connection for debug card.	**CN26**
EC-C-12	**32**	change capacitors connection from +3V to +3.3V_SSD,+1.5V to +1.5V_WIMAX	
EC-B-13	**32**	Remove unused nets in SSD connector.	**CN24**
EC-B-14	**33**	Switch the PCIE_TXN5 , PCIE_TXP5 for the right connection.	**U21**
EC-B-15	**35**	Change control signal of U25 enable pin from USB_ON to USB_CHARGE_ON for usb charge function.	**U25**
EC-B-16	**28**	Modify left & right sound reverse issue	
EC-B-17	**35**	Correct USB charge IC footprint.	**U27**
EC-B-18	**36,42**	Remove G-sensor circuits.	**U17**
EC-B-19	**37**	Correct the pin connection of CN8.	**CN8**
EC-B-20	**38**	Correct LED footprint.	**LED1,LED2**
EC-B-21	**38**	Add R51,R82 for user button defined as a power button function.	**R51,R82,R378**
EC-B-22	**40**	Add R692,R693 and disable EMI solution "CML3".	**R692,R693,CML3**
EC-B-23	**40**	Remove TPM circuits.	
EC-B-24	**42**	Correct connection and net name of NOVO_BTN#	
EC-B-25	**42**	Add KB_MATRIX signal for different keyboard matrix selection between KL7 and KL9.	**R376,R377**
EC-B-26	**46,48**	Add a +1.5V_GPU and +1.8V_GPU circuits for GPU power sequence tuning.	**PQ9064,PC9202,PC9203,P9204,PC9205,PC9206,PR9246**
EC-B-27	**10,24,27 33,34,14 37,38**	Add EMI solution	**EC11,EC12,R658,R659,R660,R661,EC13,C711,CML1,R11,R12,CML2,R35,R36,CML4,R649,R651,C677,C678 CA1,CA2,CA3,CA4,CA5,CA6,EC14~EC26,C466**
EC-B-28	**40**	Add ESD solution	**SC1~SC30**
EC-B-29	**39**	Follow PDC standard parts pin definition	**CN16**

EC #	Page	Description	Part Affected
EC-B-30	**4,8**	Add net PCIECLKRQ5~9#	**U14**
EC-B-31	**4,8,9 10,26 42**	Add RF solutions	**R632,R633,C704,C705,C706,C713,R662,R664,R678,R699,R700,R701,R702,R703,C714,C715 C717,C718,C720,C727,C809,C810,C811,C812,C813,C814**
EC-B-32	**42**	Change EC GPIO	**U17**
EC-B-33	**10,33**	Change PCH GPIO66 net name to PCH_CLK_25M and connect to USB3.0 XTAL	**R636,R637**
EC-B-34	**4**	Delete XDP_DBRST# pull high RES	**U32,R598**
EC-B-35	**4**	Add VCCSA_SEL pulll down RES	**R598**
EC-B-36	**4**	Disconnect SLP_A# from PCH to EC	
EC-B-37	**41**	Modify hole footprint	**Hole21,Hole3**
EC-B-38	**35**	Un-stuff USB charger schematic	**R461,R465,C530,U27,R689,R690**
EC-B-39	**46**	Modify power sequence to fix S3 issue	**PR266**
EC-B-40	**8,27 28,53 40,38**	Reserve ESD solution	**RV16,C815,C816,C817,C818,C819,C820,C821,C822,C823,C824**
EC-B-41	**45**	Power add discharge current solution	**PD22**
EC-B-42	**9**	Follow vendor XTAL CAP suggestion	**C118,C119**
EC-B-43	**42**	Change EC PN & un-stuff XTAL	**Y4,C369,C375,R336,U17**
EC-B-44	**6 53**	Del +VCC_GFX power	**C684,C685,C690,C682,C302,C310,C313,C319,C314,C693,C323,C315,R597,R591 PL13,PC221,PC218,PC58,PC215,PQ75,PC232,PC62,PL14,PR56,PR58,ER10,EC10,PQ1,PQ19,PR209,PC210 PC64,PR52,PR212,PR51,PC57,PC56,PR229,PC220,PC217,PC219,PR221,PR220,PC223,PR112, PC258,PC233,PR225,PC234,PC227,PR227**

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EC #	Page	Description	Part Affected
EC-C-00	**36**	Change power LED pull high power plane to +3VPCU to fix system enter S3 can't flicker issue	**LED1**
EC-C-01	**38**	Add EMI solution	**SC31,SC32,SC33,SC34,SC35,SC36,SC37,SC38**
EC-C-02	**39**	Modify Hole footprint	**Hole1,Hole2,Hole6,Hole14,Hole16,Hole17,Hole20,Hole19,Hole9,Hole8**
EC-C-03	**12**	Reserve CAP for +VCCAFDI_VRM	**C825**
EC-C-04	**38**	Delete ESD solution SC9 due to +1.5V power plane was deleted & change SC17 power plane bridge, add some component	**SC9,SC17,SC25,SC39,SC40,SC41,SC42,SC43,SC44,SC45,SC14,SC18,SC19,SC28,SC29,SC30,SC10,SC11 SC12,SC13,SC15,SC22,SC46**
EC-C-05	**36**	Modify LED footprint to fix SMT issue	**LED3**
EC-C-06	**25**	Modify bead footprint to fix SMT issue	**L37**
EC-C-07	**21**	Modify VRAM footprint to fix SMT issue	**U4,U5,U28,U29**
EC-C-08	**4**	Un-stuff AND gate component	**U18,C366,R314,R313**
EC-C-09	**27**	Change SD_CLK CAP from 33p to 10p	**C425**
EC-C-10	**22**	Change RES value to fix HDMI test fail item	**R399,R400,R401,R402,R403,R404,R405,R406**
EC-C-11	**26**	Reserve diode for EAPD pin	**D23**
EC-C-12	**9**	Un-stuff JTAG RES	**R181,R182,R528,R534,R533,R538,R168**
EC-C-13	**31**	Add USB3.0 schematic	**CN23,R369,R371,CML4,R637,R657,R704,R705,Q53,Q54,C706,C826,C827,C828,R636,R155,R707,C829,Q58,C830**
EC-C-14	**31**	Modify TP footprint to 3050	**TP20,TP21,TP22,TP23**
EC-C-15		Modify 0 ohm RES to short pad	**R592,R608,R326,R274,R287,R292,R502,R504,R505,R512,R513,R521,R527,R91,R245,R258,R587,R301 R648,R451,R380,R442,R366,R425,R623,R673,R686,R77,R430,R432,R101,R212,R221,R232,R235,R239 R563,R586,R588,R600,R66,R71,R94,R391,R392,R393,R394,R252,R242,R248,R250,R603,R65,R233 R4,R50,R652,L49,L53,R431,R364,R370,R397,R448,R384,R446,L23,R40,R60,R349**
EC-C-16	**12**	Change 0.002 ohm RES to 0 ohm	**R247,R261,R254**
EC-C-17	**26**	Stuff ESD solution	**C480,C481,C482,C483**
EC-C-18	**10**	Remove RF_ON pull down RES	**R522**
EC-C-19	**29**	Add net WWAN_OFF# to disable WWAN function	
EC-C-20	**12**	Change 0 ohm RES to bead	**R222**
EC-C-21	**4**	For INTEL design guide definition and material shortage, will change to 25.5ohm	**R315**
EC-C-22	**6**	Stuff SVID DATA pull high RES	**R286**

EC #	Page	Description	Part Affected
EC-QV-00	**42**	Add power circuit for charge issue.	**PR9252,PR9253,PR9254,PR9255,PR9256,PC9212,PC9213,PD23,PU13,PQ9070**
EC-QV-01	**37**	Add 0 Ohm for thermal sensor of DDR & WWAN	**R133,R155**
EC-QV-02	**33**	Modify the USB charge circuit(Add option and reverse circuit, change the USB switch EN to USB_ON_R)	**R522,R636,R708,R709,R710,Q60**
EC-QV-03	**11**	Change the SV_DET pull high to +3V_S5 from +3V	
EC-QV-04	**25**	Change footprint of L37 for SMT request	**L37**
EC-QV-05	**43**	Change footprint of PL4, PL6, PL7, PL15, PL16	**PL4, PL6, PL7, PL15, PL16**
EC-QV-06	**49**	Add capacitor in +VCC_GFX	**PC260**
EC-QV-07	**4**	Add un-stuff capacitor on H_PWRGOOD_R	**C900**
EC-QV-08	**4**	Change to component stuff	**R325,Q29**
EC-QV-09	**8**	Add un-stuff capacitor on SYS_PWROK	**C901**
EC-QV-10	**8**	Change R493 to un-stuff	**R493**
EC-QV-11	**9**	Change footprint to shortpad	**R409,R153**
EC-QV-12	**9**	Add 1M ohm on ACZ_SYNC_CODEC	**R711**
EC-QV-13	**9**	Change C119,C118 to 18p from 6p for RTC issue	**C118,C119**
EC-QV-14	**30**	Change component to un-stuff.	**C783,C784,C736**
EC-QV-15	**26**	Change the footprint for EMI solution stuff BEAD	**R391,R392,R393,R394**
EC-QV-16	**39**	Change HOLE8 to NTPH	
EC-QV-17	**31**	Modify USB3.0 circuit for power saving.	**Q35,R414,R415, D28,R712,Q62,R716,C950,Q63,R717,C951,C952,R713,R714,Q61,C953,R715,R421**
EC-QV-18	**22**	Change the footprint to 4 GND PIN for HDMI	**CN22**
EC-QV-19	**49**	Change PC47 to stuff	**PC47**
EC-QV-20	**38**	Change the P/N for cost saving	**SC2,SC11,SC12,SC13,SC14,SC15,SC16,SC20,SC21,SC22,SC27,SC28,SC29,SC30,SC39,SC40,SC41,SC42 ,SC43,SC44,SC45,SC46,SC31,SC32,SC33,SC34,SC35,SC36,SC37,SC38**
EC-QV-21	**29**	Change C497 to stuff	**C497**

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