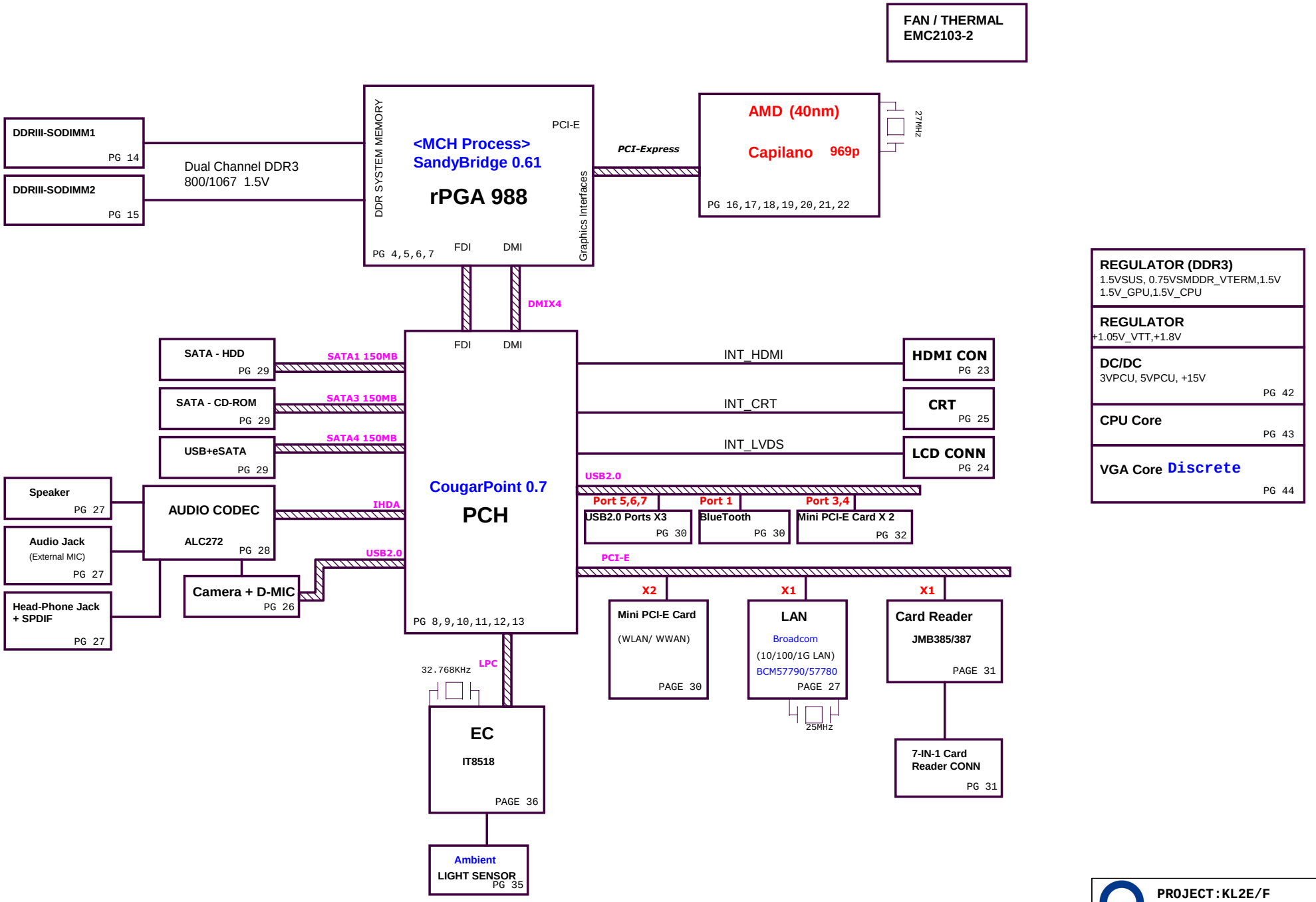
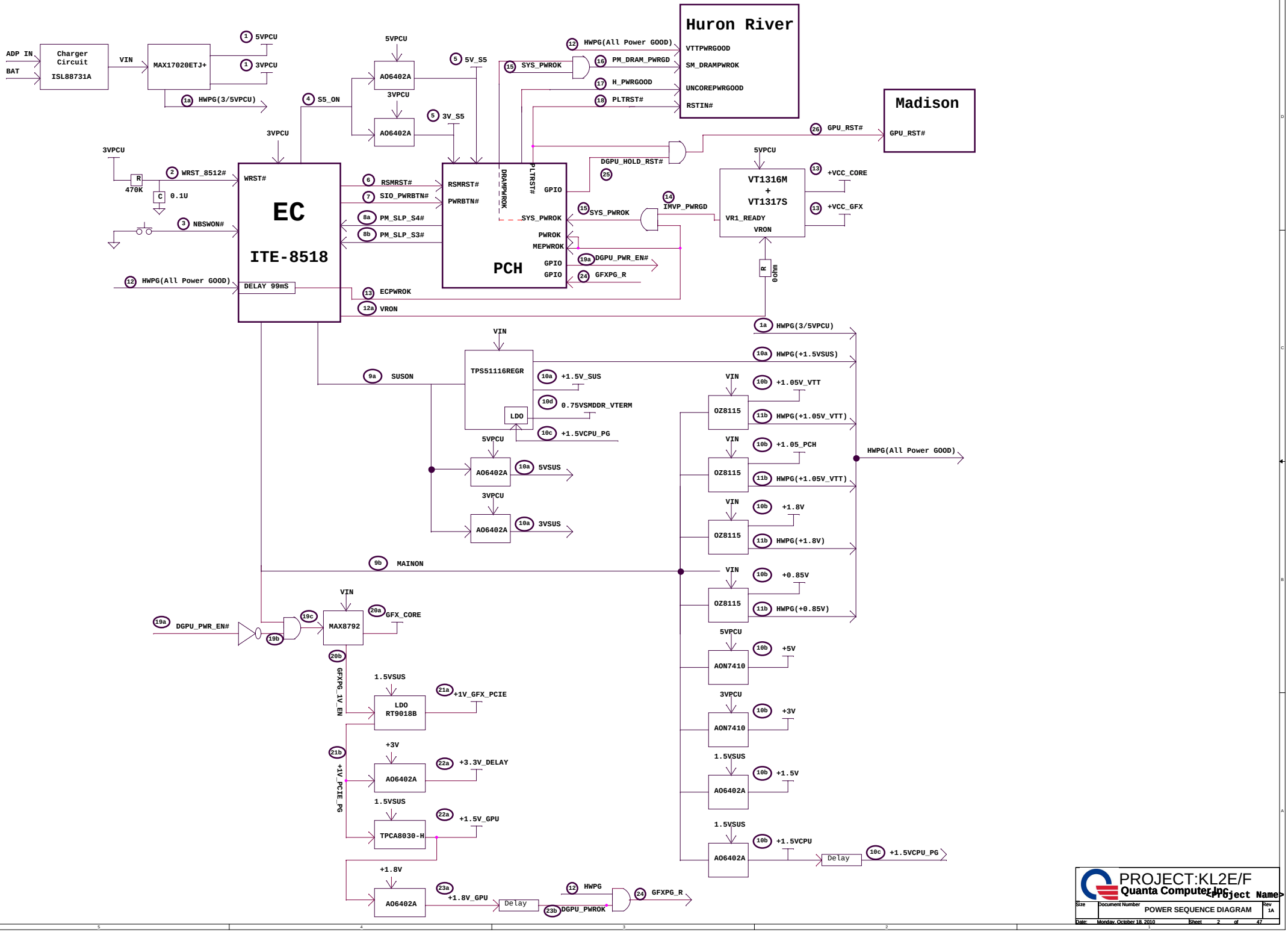


PROJECT : KL2E/F
Quanta Computer Inc.

Size	Document Number	Rev
Custom	BLOCK DIAGRAM	1A

Date: Monday, October 18, 2010 Sheet 1 of 47



PROJECT:KL2E/F
Quanta Computer Inc.
<Project Name>

Size	Document Number	Rev
	POWER SEQUENCE DIAGRAM	1A
Date: Monday, October 18, 2010	Sheet 2 of 47	

CLK Gen(CLK)

03

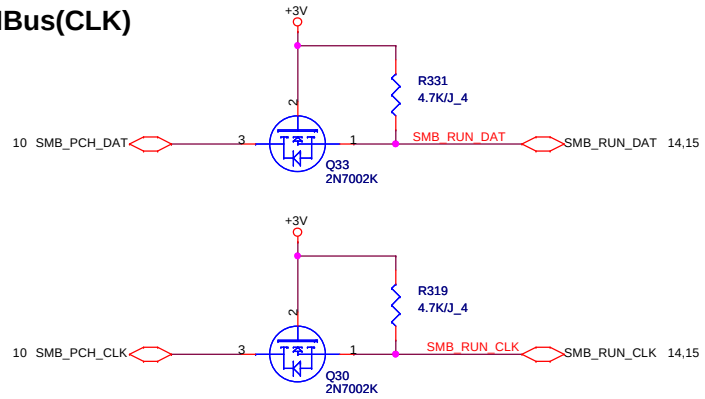
02/20 DEL for Pre-ES1

CPU_CLK select(CLK)

02/20 DEL for Pre-ES1

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

SMBus(CLK)



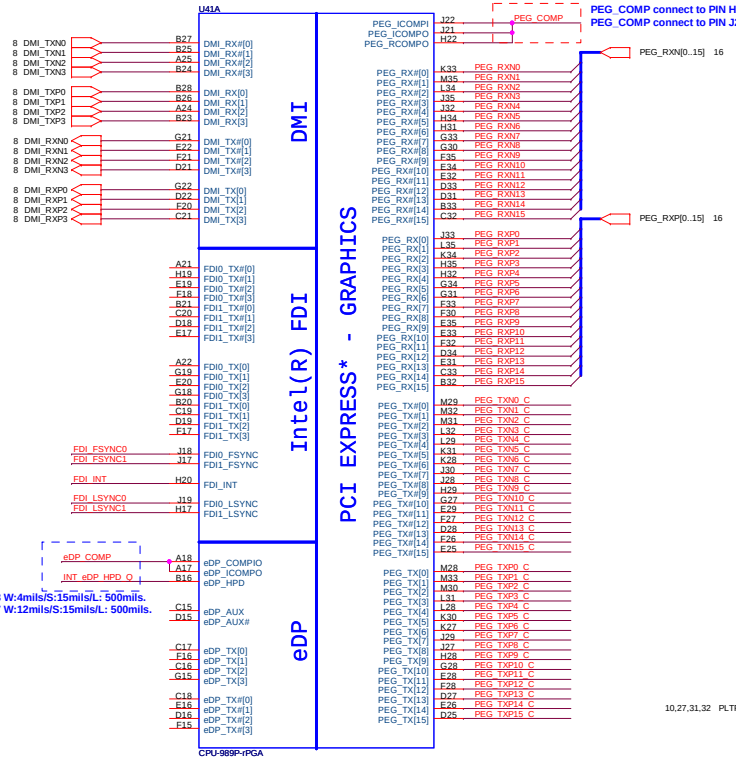
PROJECT:KL2E/F

Quanta Computer Inc.

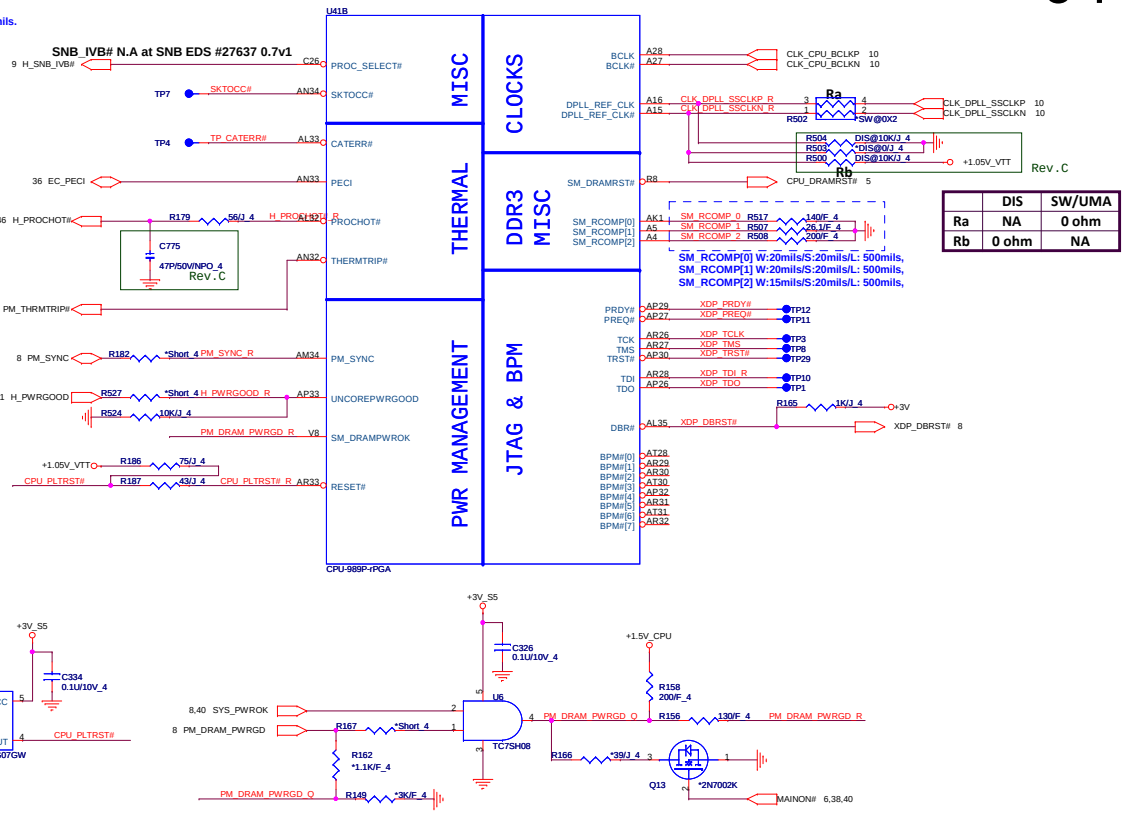
Size	Document Number	Rev
	Clock Generator	1A

Date: Monday, October 18, 2010 Sheet 3 of 47

Sandy Bridge Processor (DMI,PEG,FDI)



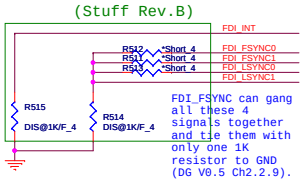
Sandy Bridge Processor (CLK,MISC,JTAG)



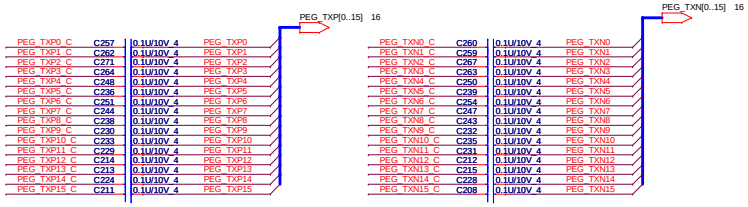
	DIS	SW/UMA
Ra	NA	0 ohm
Rb	0 ohm	NA

04

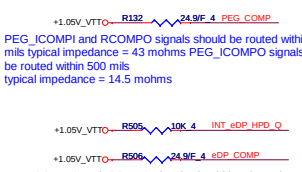
FDI Disable



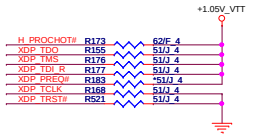
PEG x16 (UMA Non-stuff)



DP & PEG Compensation



Processor pull-up(CPU)

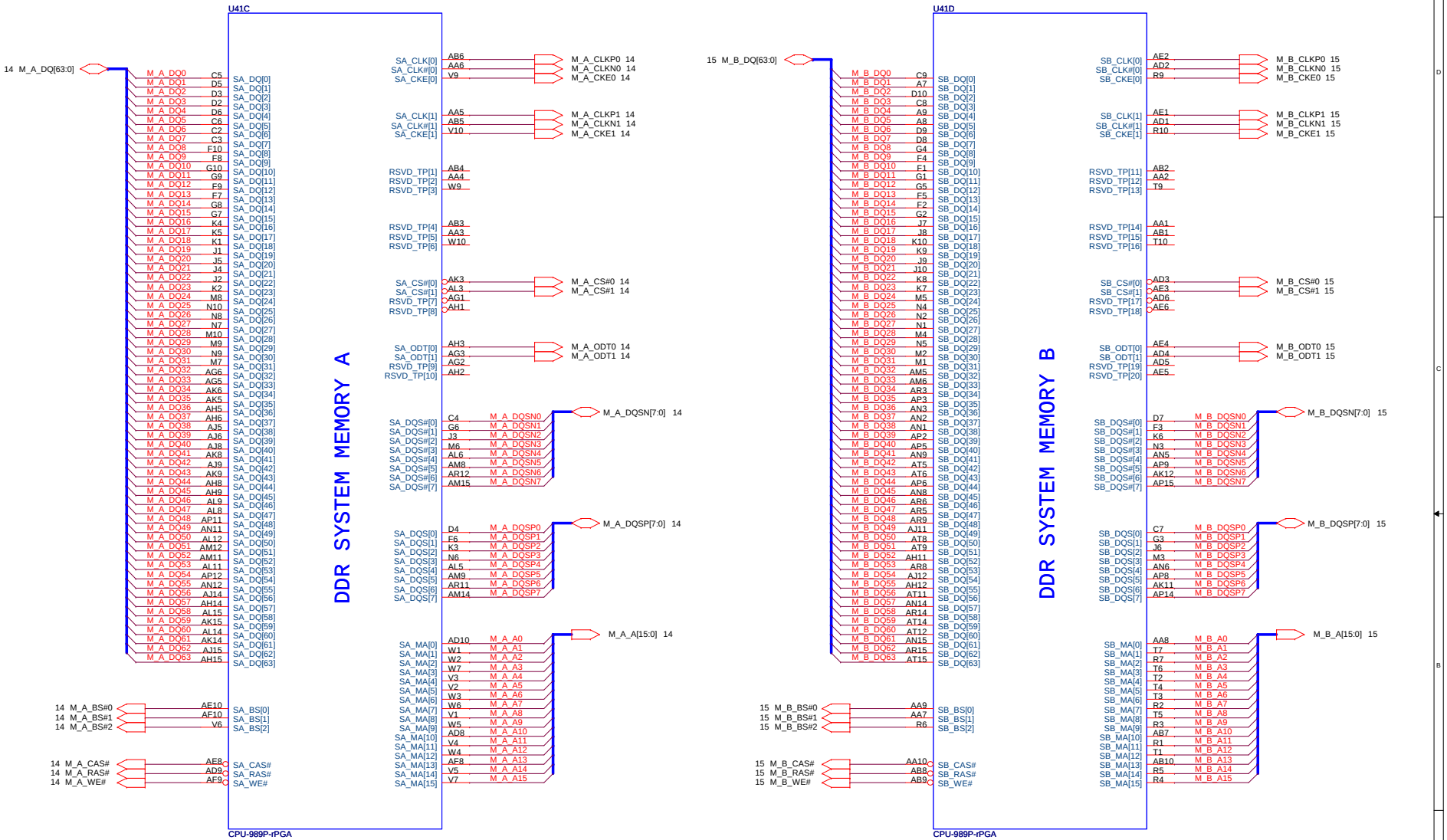


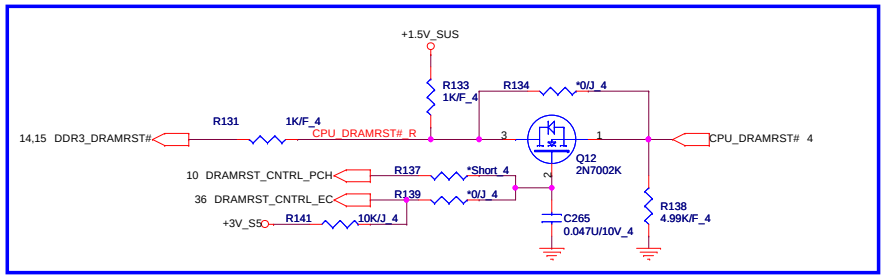
PROJECT:KL2E/F
Quanta Computer Inc.

Size	Document Number	Rev
	Sandy Bridge 1/4	1A

Date: Monday, October 18, 2010 Sheet 4 of 47

Sandy Bridge Processor (DDR3)





PROJECT : KL2E/F			
Quanta Computer Inc.			
Size	Document Number		Rev
	Sandy Bridge 2/4		1A
Date: Monday, October 18, 2010	Sheet 5 of 47		

Sandy Bridge Processor (POWER)

Sandy Bridge Processor (GRAPHIC POWER)

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

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

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

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

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

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

U41F — POWER
CORE SUPPLY | PEG AND DDR | SVID | SENSE LINES
CPU-989P-rPGA

U41G — POWER
SENSE LINES | VREF | GRAPHICS | DDR3 -1.5V RAILS | SA RAIL | 1.8V RAIL | MISC
CPU-989P-rPGA

Reserved
C313 *22U/6.3V_8 C301 *22U/6.3V_8 C580 *22U/6.3V_8

R161 Ra *Short \4

	DIS	SW
Ra	0 ohm	NA

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

SVID CLK — Close to VR — R479 54.9/F_4 — H_CPU_SVIDCLK R163 *Short_4 VR_SVID_CLK 46

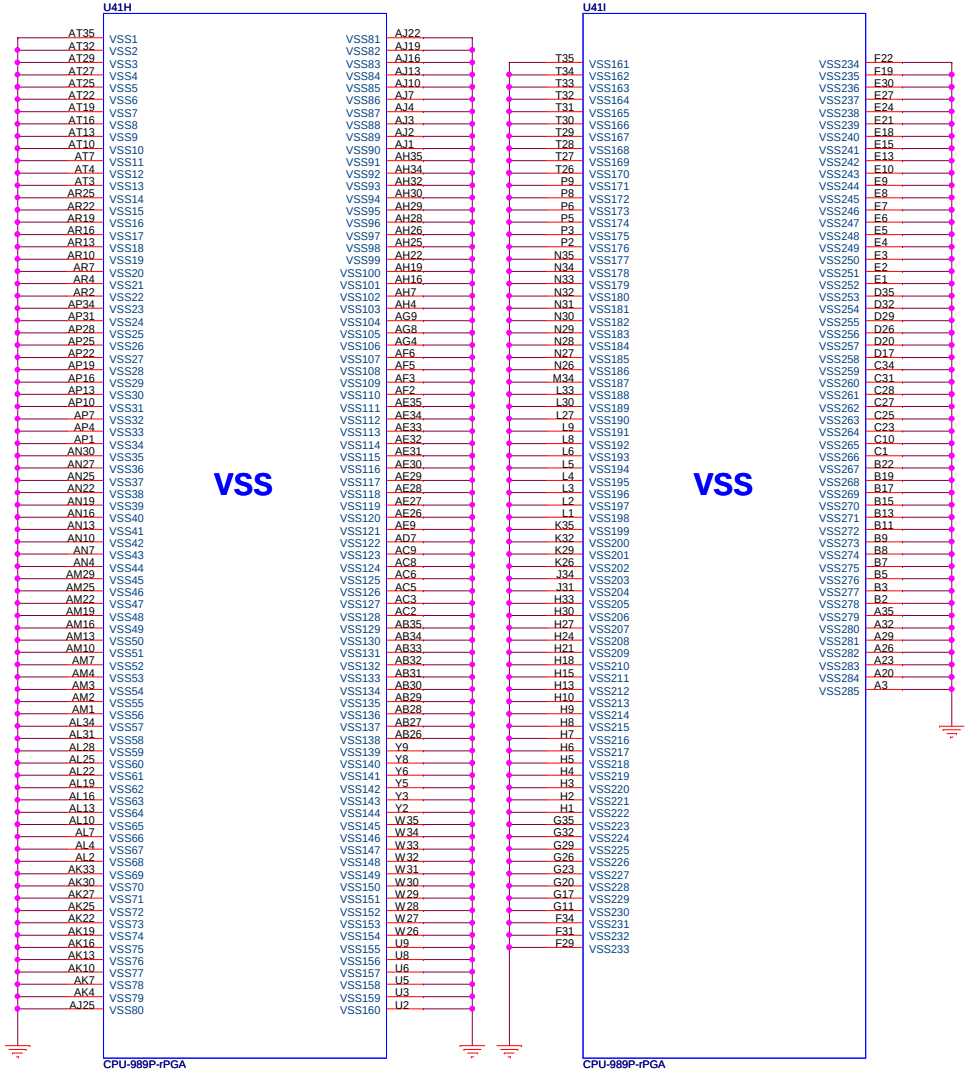
SVID DATA — Place PU resistor close to CPU — R151 130/F_4 — Close to VR — R484 130/F_4 — H_CPU_SVIDDAT R150 *Short_4 VR_SVID_DATA 46

SVID ALERT — Place PU resistor close to CPU — R152 75/J_4 — H_CPU_SVIDALRT# R148 43/J_4 R154 *Short_4 VR_SVID_ALERT# 46

4.5A
JP1 POWER_JP
Q19 AO4496
Q16 DMN601K-7
C323 *470P/50V_4
R146 220/J_8
C625 C626 C627 C628 0.1U/10V_4
3/26 DB add for Intel. Placement close to CPU.

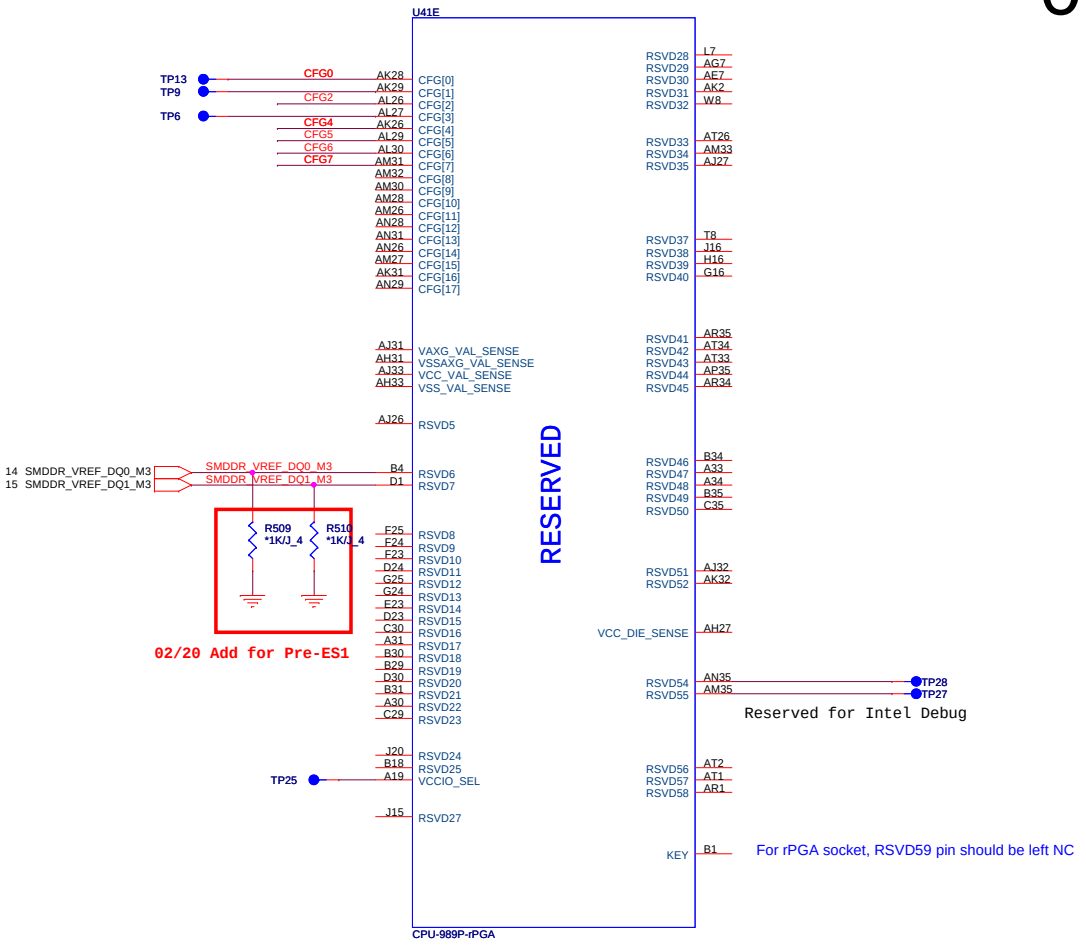
PROJECT : KL2E
Quanta Computer Inc.
Size | Document Number: Sandy Bridge 3/4 | Rev: 1A
Date: Monday, October 18, 2010 | Sheet 6 of 47

Sandy Bridge Processor (GND)



Sandy Bridge Processor (RESERVED, CFG)

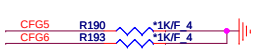
07



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



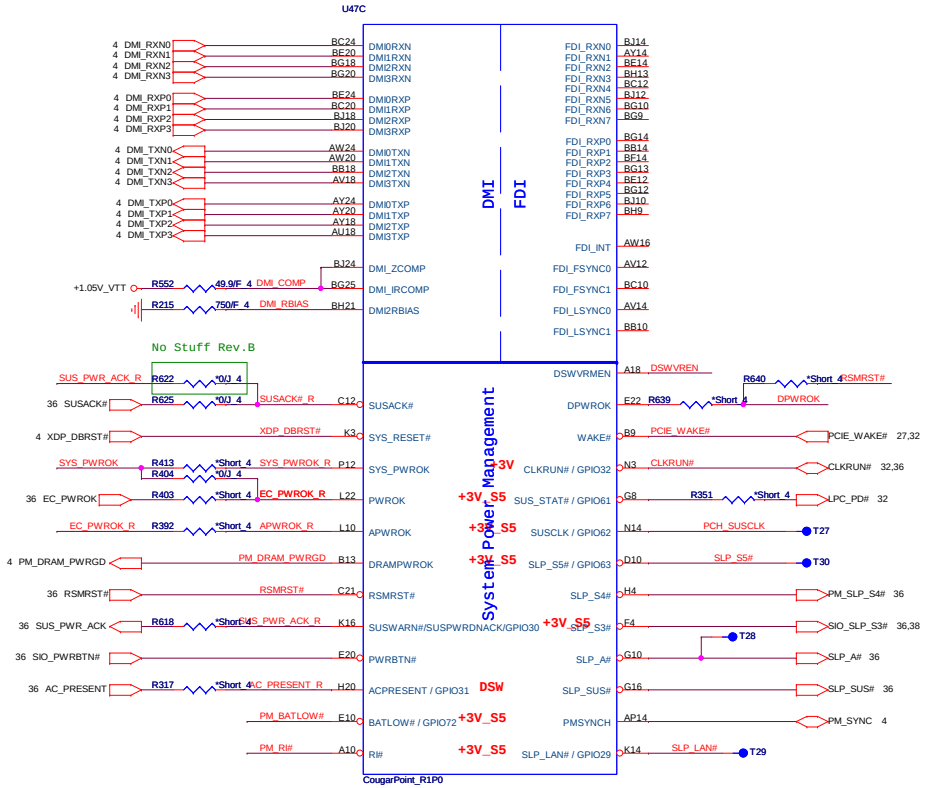
CFG[6:5] (PCIE Port Bifurcation Straps)

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

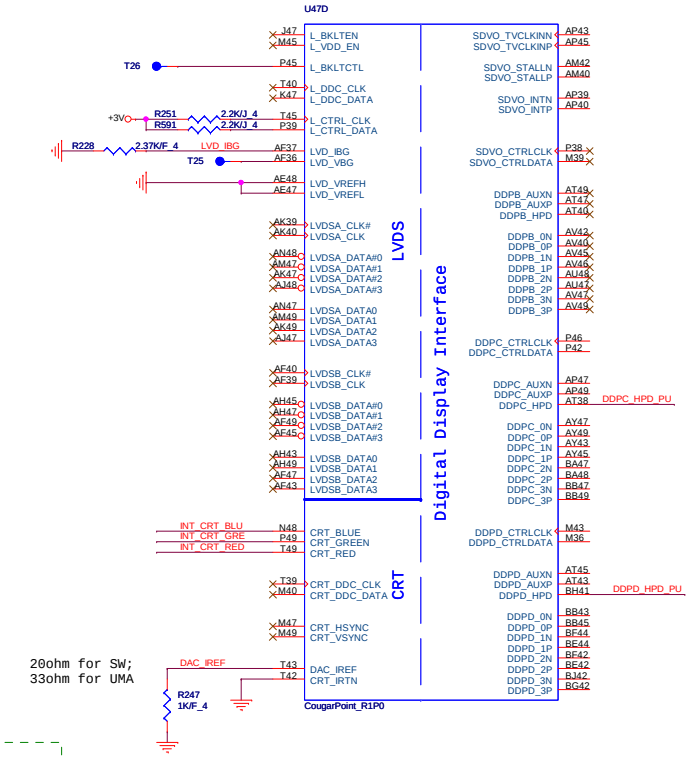
PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
	Sandy Bridge 4/4	1A
Date: Monday, October 18, 2010	Sheet 7 of 47	

Cougar Point (DMI,FDI,PM)



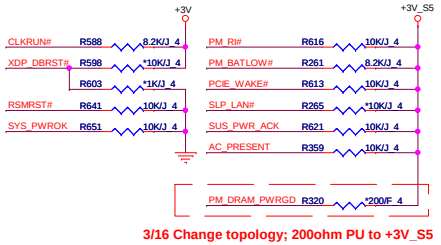
Cougar Point (LVDS,DDI)



R place close to PCH

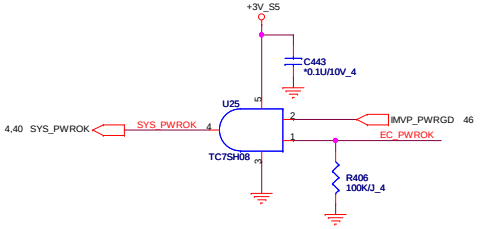
R587 150/F_4 INT_CRT_BLU
R586 150/F_4 INT_CRT_GRE
R585 150/F_4 INT_CRT_RED

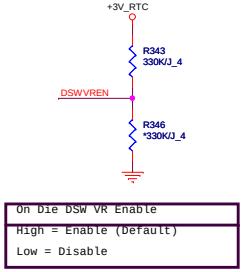
PCH Pull-high/low(CLG)



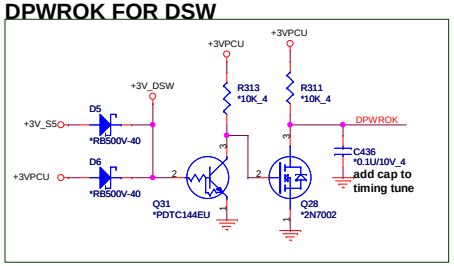
3/16 Change topology; 200ohm PU to +3V_S5

System PWR_OK(CLG)

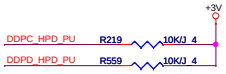




DPWROK FOR DSW



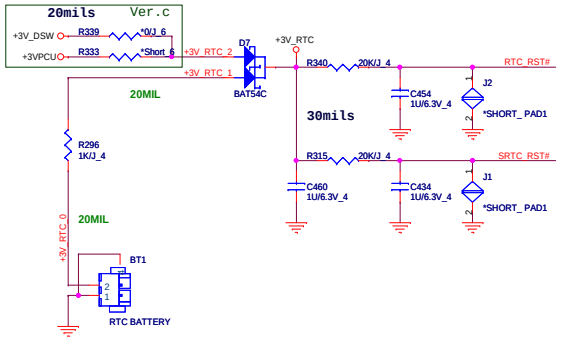
No Stuff Rev.c



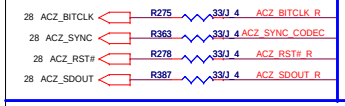
PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
	Cougar Point 1/6	1A
Date: Monday, October 18, 2010	Sheet 8 of 47	

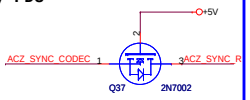
RTC Circuitry(RTC)



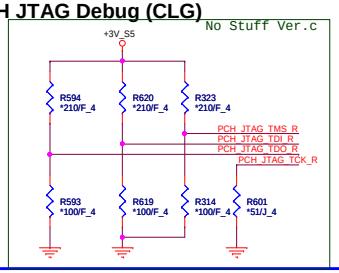
HDA Bus(CLG)



To Separate Codec Sync by PD3

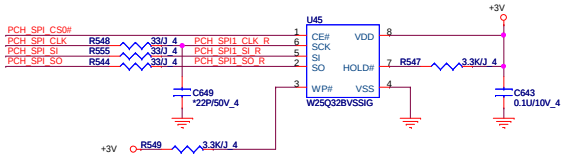


PCH JTAG Debug (CLG)



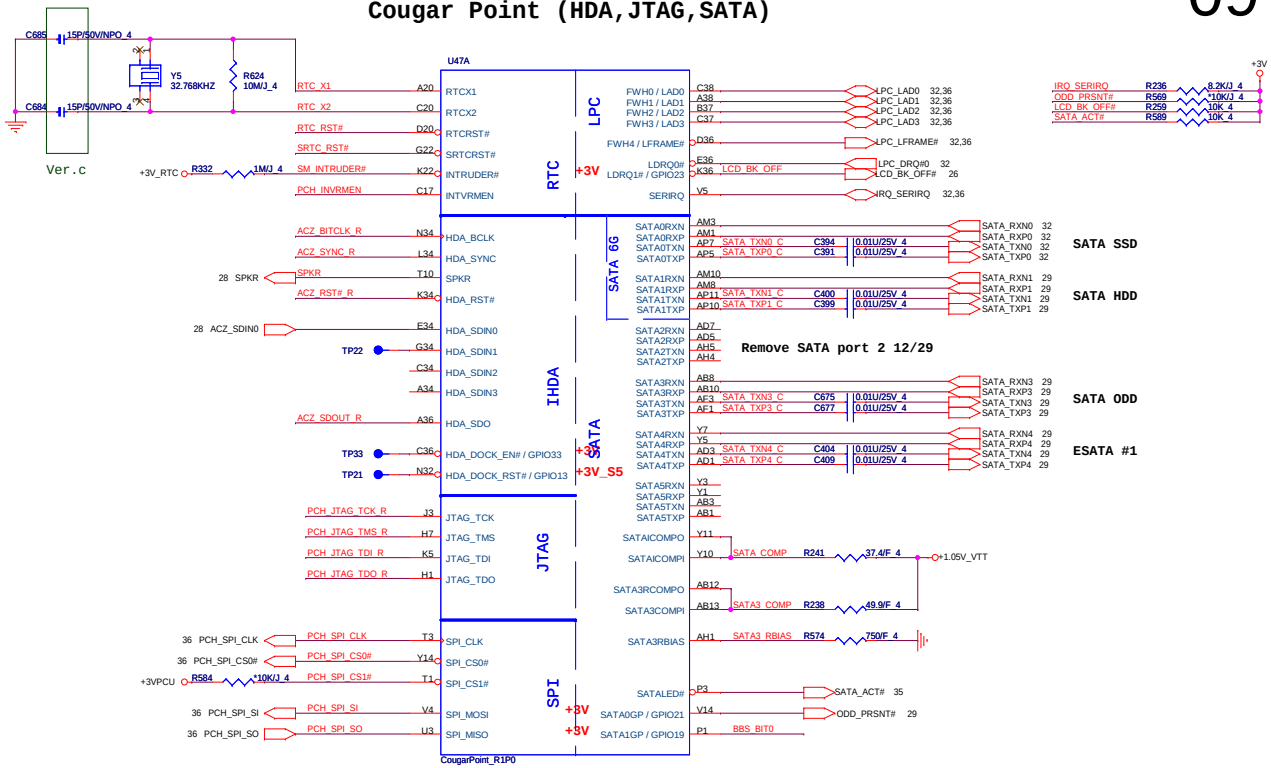
PCH Dual SPI (CLG)

MX25L3205DM2I-12G: AKE39FP0Z00
W25X32VSSIG: AKE39ZP0N00
Socket: DG008000031



PCH2(CLG)

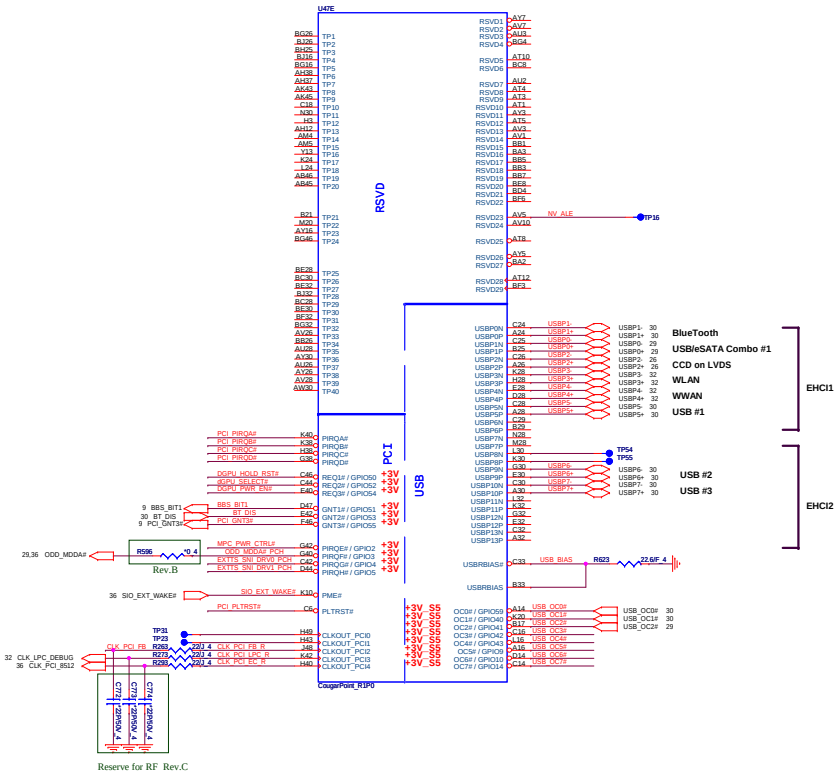
Cougar Point (HDA,JTAG,SATA)



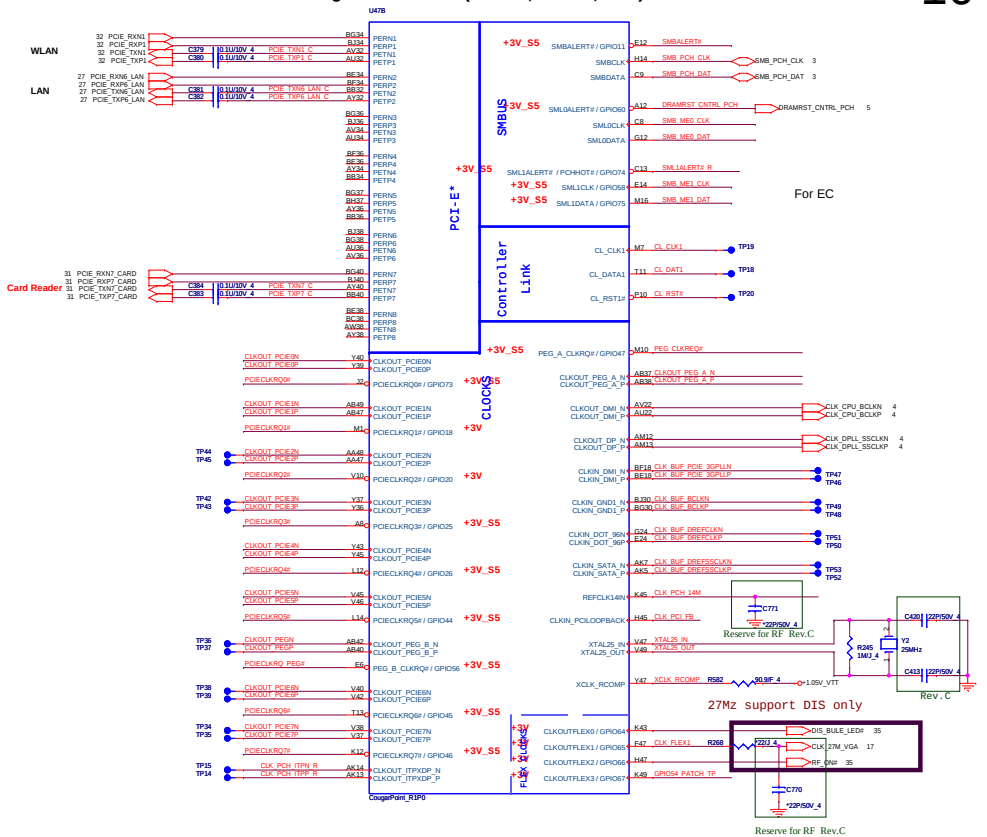
PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	+3V R583 *1K/J_4 SPKR
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)	R606 *1K/J_4 PCI_GNT3# 10
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+3V_RTC R312 330K/J_4 PCH_INVRMEN
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	GNT1# / GNT0# / Boot Location: 1 / 1 / SPI *; 0 / 0 / LPC	**Default weak pull-up on GNT0/1# [Need external pull-down for LPC BIOS]**
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK		R604 *1K/J_4 BBS_BIT1 10 R590 *1K/J_4 BBS_BIT0
HDA_SDO	Flash Descriptor Security	RSMRST	0 = Override 1 = Default (weak pull-up 20K)	+3V_S5 R390 *1K/J_4 ACZ_SDOUT_R
DF_TVS	DMI/FDI Termination voltage	PWROK	**0 = Set to Vss** **1 = Set to Vcc (weak pull-down 20K)**	R566 2.2K/J_4 R570 4.7K/J_4 +1.8V DF_TVS 11 H_SNB_IVB# 4
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (Default)	R394 *1K/J_4 PLL_ODVR_EN 11,36
HDA_SYNC	On-Die PLL VR Voltage Select	RSMRST	**0 = Support by 1.8V (weak pull-down)** **1 = Support by 1.5V**	+3V_S5 R355 1K/J_4 ACZ_SYNC_R
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	+3V R554 *1K/J_4 PCH_SPI_SI
NV_ALE	Intel Anti-Theft HDD protection	PWROK	0 = Disable (Internal pull-down 20kohm)	

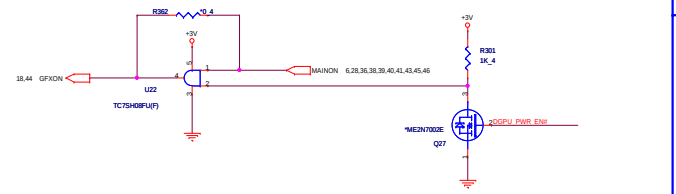
Cougar Point-M (PCI,USB,NVRAM)



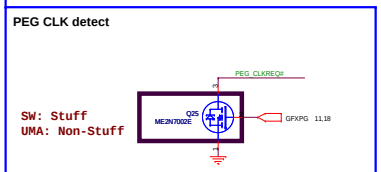
Cougar Point-M (PCI-E,SMBUS,CLK)



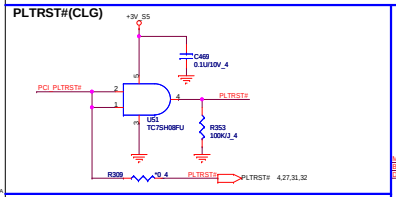
DGPU Power ON



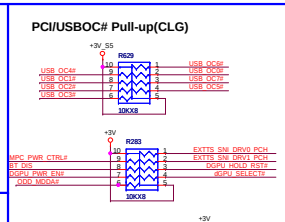
PEG CLK detect



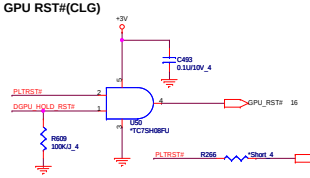
PLTRST#(CLG)



PCI/USBOC# Pull-up(CLG)

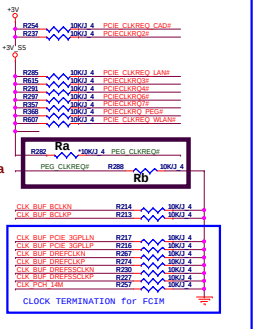


GPU RST#(CLG)

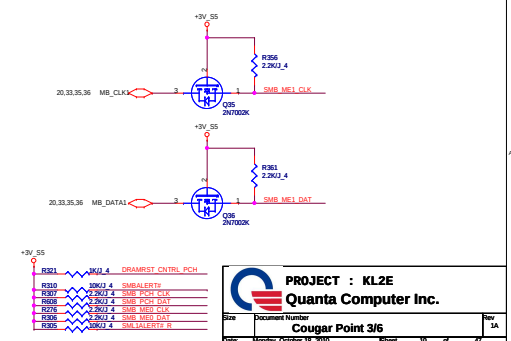


WLAN / LAN / Card Reader

CLK_REQ/Strap Pin(CLG)



SMBus/Pull-up(CLG)



PROJECT :	KL2E
Quanta Computer Inc.	
Size	Document Number: Cougar Point 3/6 — Rev: 1A
Date: Monday, October 18, 2010	Sheet 19 of 47

Cougar Point (GPIO,VSS_NCTF,RSVD)

U47F

S_GPIO R376 100_4 — T7 BMBUSY# / GPIO0 +3V
36 EC_EXT_SMI# — EC_EXT_SMI# — A42 TACH1 / GPIO1 +3V
BOARD_ID1 — H36 TACH2 / GPIO6 +3V
36 EC_EXT_SCI# — EC_EXT_SCI# — E38 TACH3 / GPIO7 +3V
SYSTEM_ID — C10 GPIO8 +3V_S5
32 LAN_DISABLE# — LAN_DISABLE# — C4 LAN_PHY_PWR_CTRL / GPIO12 +3V_S5
HOST_ALERT#1_R — G2 GPIO15 +3V_S5
BOARD_ID0 — U2 SATA4GP / GPIO16 +3V
GFXPG_R — D40 TACH0 / GPIO17 +3V
BIOS_REC — T5 SCLOCK / GPIO22 +3V
32 WWAN_OFF# — R269 *Short_4 WWAN_OFF#_R — E8 GPIO24 / MEM_LED +3V_S5
GPIO27 — E16 GPIO27 DSW
9,36 PLL_ODVR_EN — R388 *Short_4 PLL_ODVR_EN_R — P8 GPIO28 +3V_S5
STP_PCI# — K1 STP_PCI# / GPIO34 +3V
30 BT_ON# — BT_ON# — K4 GPIO35 +3V
32 SDD_DA_DSS — SDD_DA_DSS — V8 SATA2GP / GPIO36 +3V
FDI_OVRVLTG — M5 SATA3GP / GPIO37 +3V
MFG_MODE — N2 SLOAD / GPIO38 +3V
DGPU_PRSNT# — M3 SDATAOUT0 / GPIO39 +3V
TEST_SET_UP — V13 SDATAOUT1 / GPIO48 +3V
33,36 TEMP_ALERT# — V3 SATA5GP / GPIO49 +3V
SV_DET — D6 GPIO57 +3V_S5

GPIO

C40 TACH4 / GPIO68 +3V — SSD_DETECT# 32
B41 R612 1.5K/F_4 — TACH5 / GPIO69 +3V
C41 TACH6 / GPIO70 +3V — SATA_ODD_PWR_EN 29
A40 TACH7 / GPIO71 +3V — BOARD_ID2

CPU/MISC

P4 A20GATE — EC_A20GATE 36
AU16 PECI — TP17
P5 RCIN# — EC_RCIN# — EC_RCIN# 36
AY11 PROCPWRGD — H_PWRGOOD 4
AY10 THRMTRIP# — PCH_THRMTRIP# R221 390/J_4 — PM_THRMTRIP# 4
T14 INIT3_3V#
AY1 DF_TVS — DF_TVS 9

AH8 TS_VSS1
AK11 TS_VSS2
AH10 TS_VSS3
AK10 TS_VSS4
P37 NC_1

NCTF

A4 VSS_NCTF_1
A44 VSS_NCTF_2
A45 VSS_NCTF_3
A46 VSS_NCTF_4
A5 VSS_NCTF_5
A6 VSS_NCTF_6
B3 VSS_NCTF_7
B47 VSS_NCTF_8
BD1 VSS_NCTF_9
BD49 VSS_NCTF_10
BE1 VSS_NCTF_11
BE49 VSS_NCTF_12
BF1 VSS_NCTF_13
BF49 VSS_NCTF_14
BG2 VSS_NCTF_15
BG48 VSS_NCTF_16
BH3 VSS_NCTF_17
BH47 VSS_NCTF_18
BJ4 VSS_NCTF_19
BJ44 VSS_NCTF_20
BJ45 VSS_NCTF_21
BJ46 VSS_NCTF_22
BJ5 VSS_NCTF_23
BJ6 VSS_NCTF_24
C2 VSS_NCTF_25
C48 VSS_NCTF_26
D1 VSS_NCTF_27
D49 VSS_NCTF_28
E1 VSS_NCTF_29
E49 VSS_NCTF_30
F1 VSS_NCTF_31
F49 VSS_NCTF_32

CougarPoint_R1P0

3/16 Connected to GND
DG rev0.9

R264 *0_4 — +3V
GFXPG_R — U15 TC7SH08FU(F) — HWPG 36,40,41,42,43,45 — GFXPG 10,18

GPIO Pull-up/Pull-down(CLG)

+3V_S5
LAN_DISABLE# R610 10K/J_4
WWAN_OFF#_R R271 10K/J_4

+3V
EC_EXT_SMI# R614 10K/J_4
EC_EXT_SCI# R294 10K/J_4
SSD_DETECT# R671 10K/J_4
STP_PCI# R597 10K/J_4
EC_A20GATE R253 10K/J_4
EC_RCIN# R303 10K/J_4
TEMP_ALERT# R576 10K/J_4
BT_ON# R256 10K/J_4
SATA_ODD_PWR_EN R292 10K/J_4

GPIO27 R322 10K/J_4
GFXPG_R R290 *10K/J_4

Model	BOARD_ID2	BOARD_ID1	BOARD_ID0
Reserve	0	0	0
UMA	0	0	1
Muxless	0	1	0
Discrete	0	1	1
Reserve	1	0	0
Reserve	1	0	1
Reserve	1	1	0

+3V
R580 *10K/J_4 BOARD_ID0 R581 10K/J_4
R299 *10K/J_4 BOARD_ID1 R300 10K/J_4
R295 10K/J_4 BOARD_ID2 R302 *10K/J_4
R308 10K/J_4 SYSTEM_ID R304 *10K/J_4

SV_SET_UP
High = Strong (Default)

TEST_SET_UP — R242 10K/J_4 — R244 *0/J_4 — +3V

+3V
R270 *10K/J_4 SV_DET R262 100K/J_4

HOST_ALERT#1_R R605 1K/J_4 — +3V_S5

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

	SWITCHABLE	UMA
Stuff	R599	R600
No Stuff	R600	R599

+3V
R599 *10K/J_4 DGPU_PRSNT# R600 100K/J_4

SGPIO

S_GPIO R382 10K/J_4 R389 *0/J_4 — +3V

R260 100K/J_4 FDI_OVRVLTG R255 *1K/F_4 — +3V

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

SDD_DA_DSS R240 200K/F_4 — +3V

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

BIOS_REC R246 10K/J_4 R248 *0/J_4 — +3V

BIOS RECOVERY	High = Disable (Default) Low = Enable

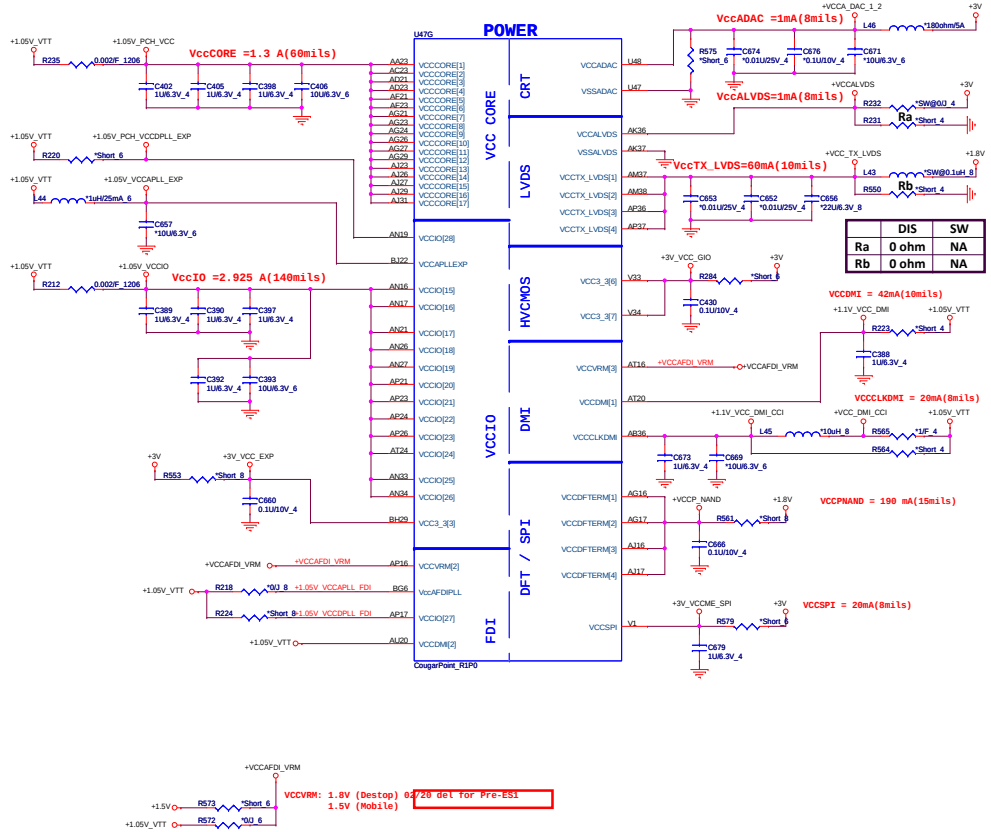
MFG-TEST

MFG_MODE R595 10K/J_4 R592 *0/J_4 — +3V

PROJECT : KL2E
Quanta Computer Inc.

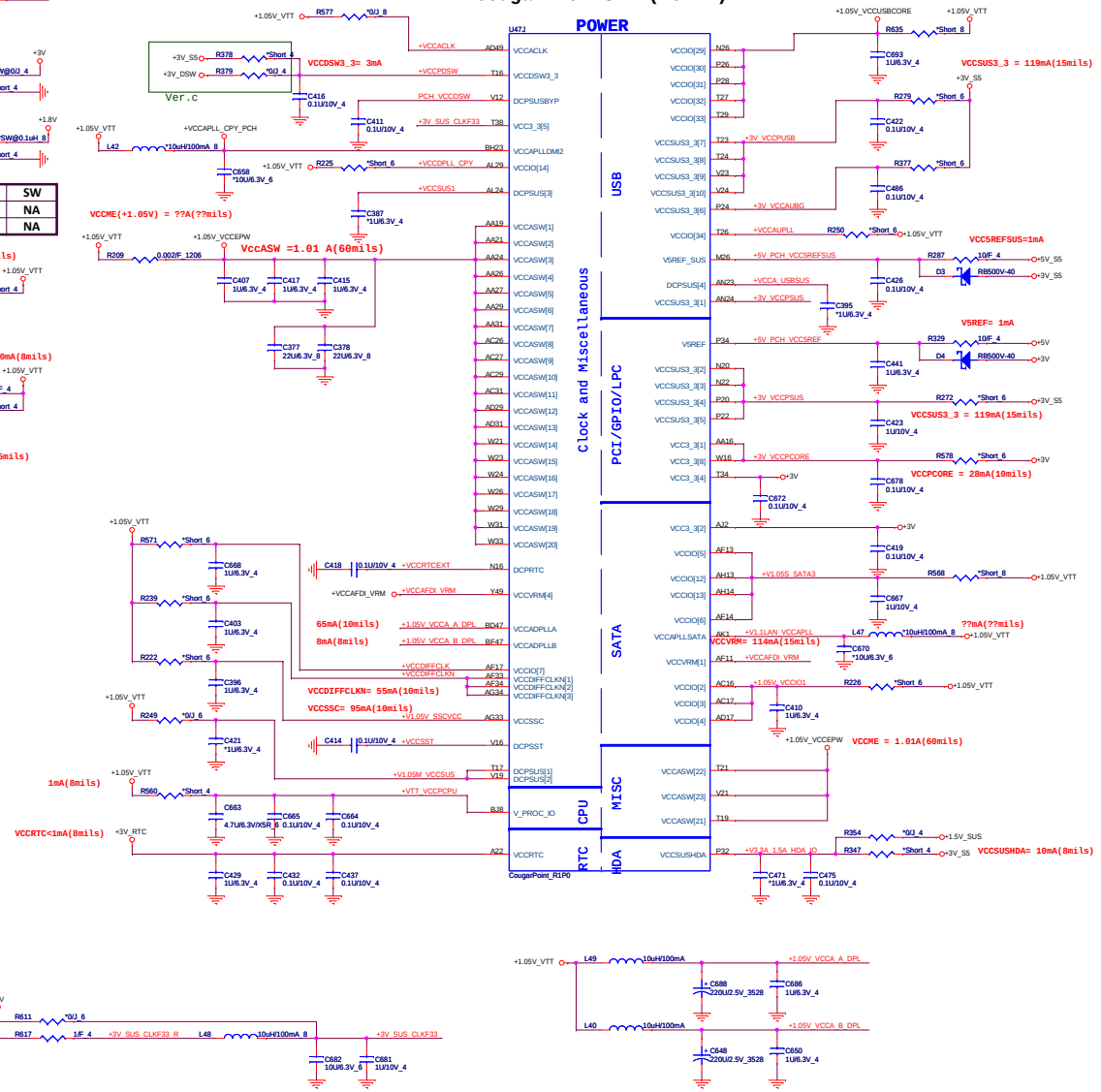
Size	Document Number	Rev
	Cougar Point 4/6	1A
Date: Monday, October 18, 2010	Sheet 11 of 47	

COUGAR POINT (POWER)



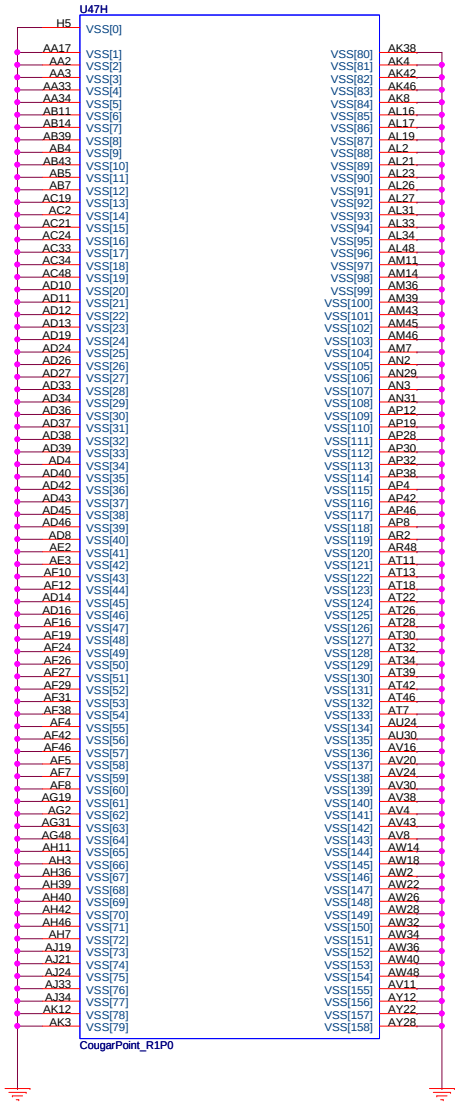
	DIS	SW
Ra	0 ohm	NA
Rb	0 ohm	NA

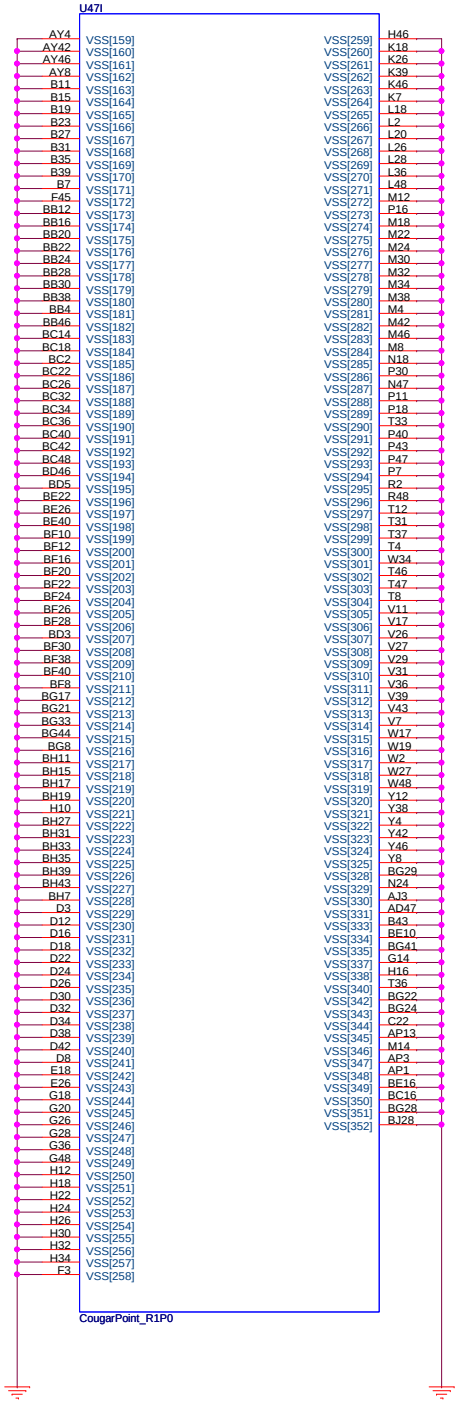
Cougar Point-M (POWER)



PROJECT : KL2E		
Quanta Computer Inc.		
Size	Document Number: Cougar Point 5/6	Rev: 1A
Date: Monday, October 18, 2010	Sheet 12 of 47	

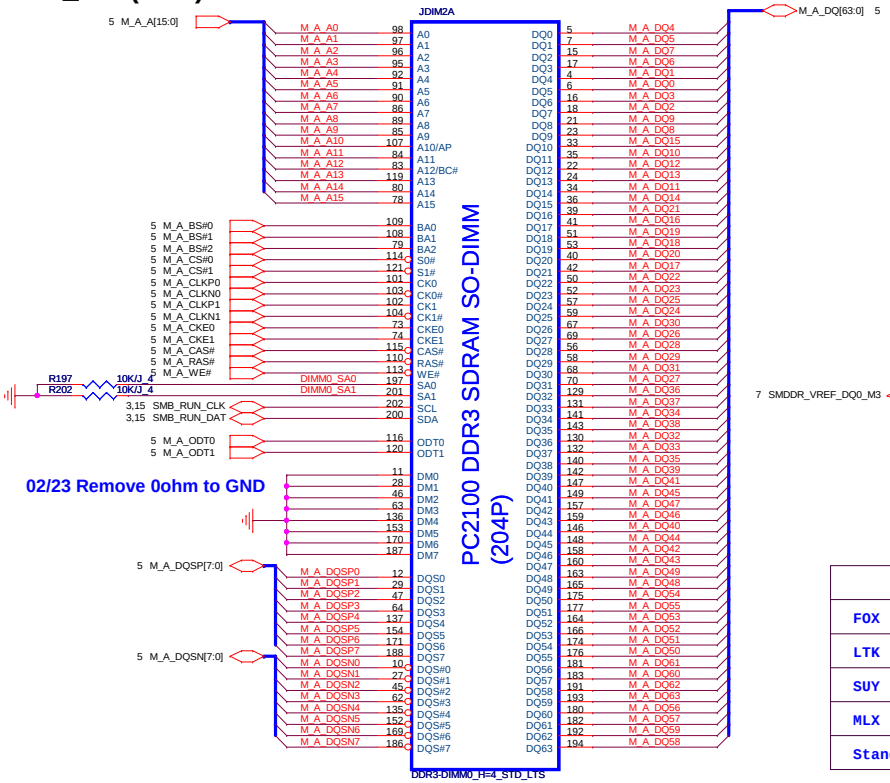
IBEX PEAK-M (GND)



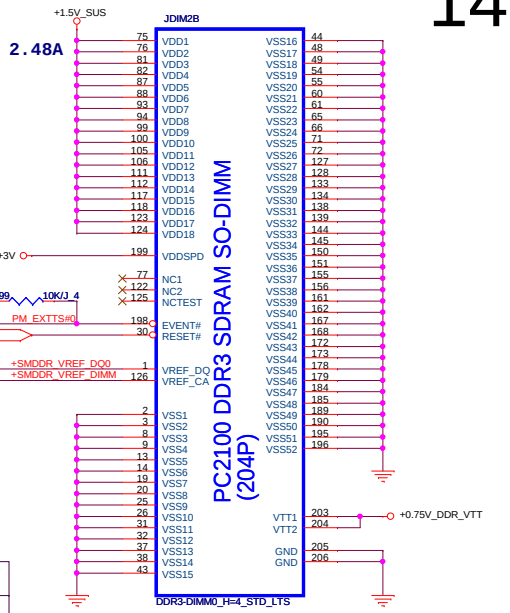


PROJECT : KL2E		
Quanta Computer Inc.		
Size	Document Number: Cougar Point 6/6	Rev: 1A
Date: Monday, October 18, 2010	Sheet 13 of 47	

DDR_STD(DDR)



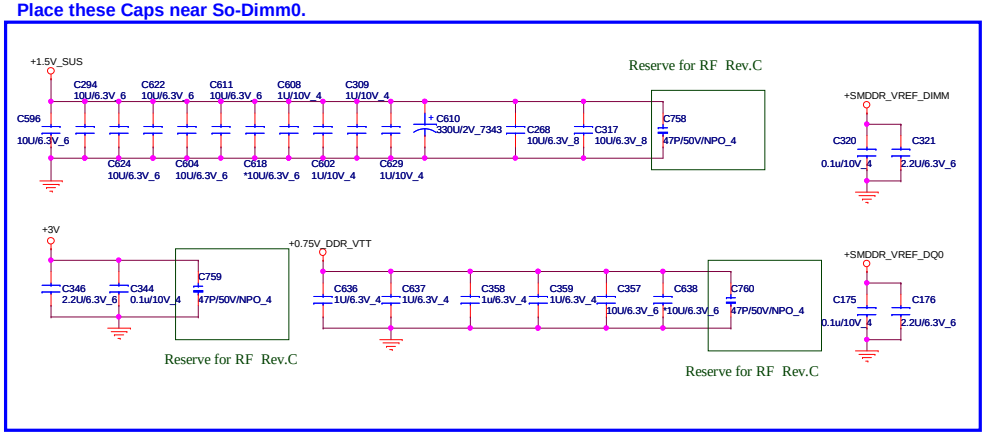
02/23 Remove 0ohm to GND



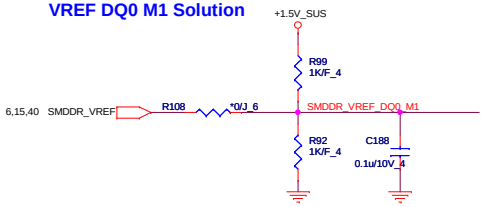
	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080
Standard 4H type:DDR-C-2013289-204p		

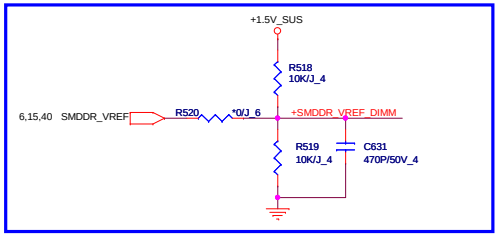
VREF DQ0 M2 Solution

Place these Caps near So-Dimm0.



VREF DQ0 M1 Solution

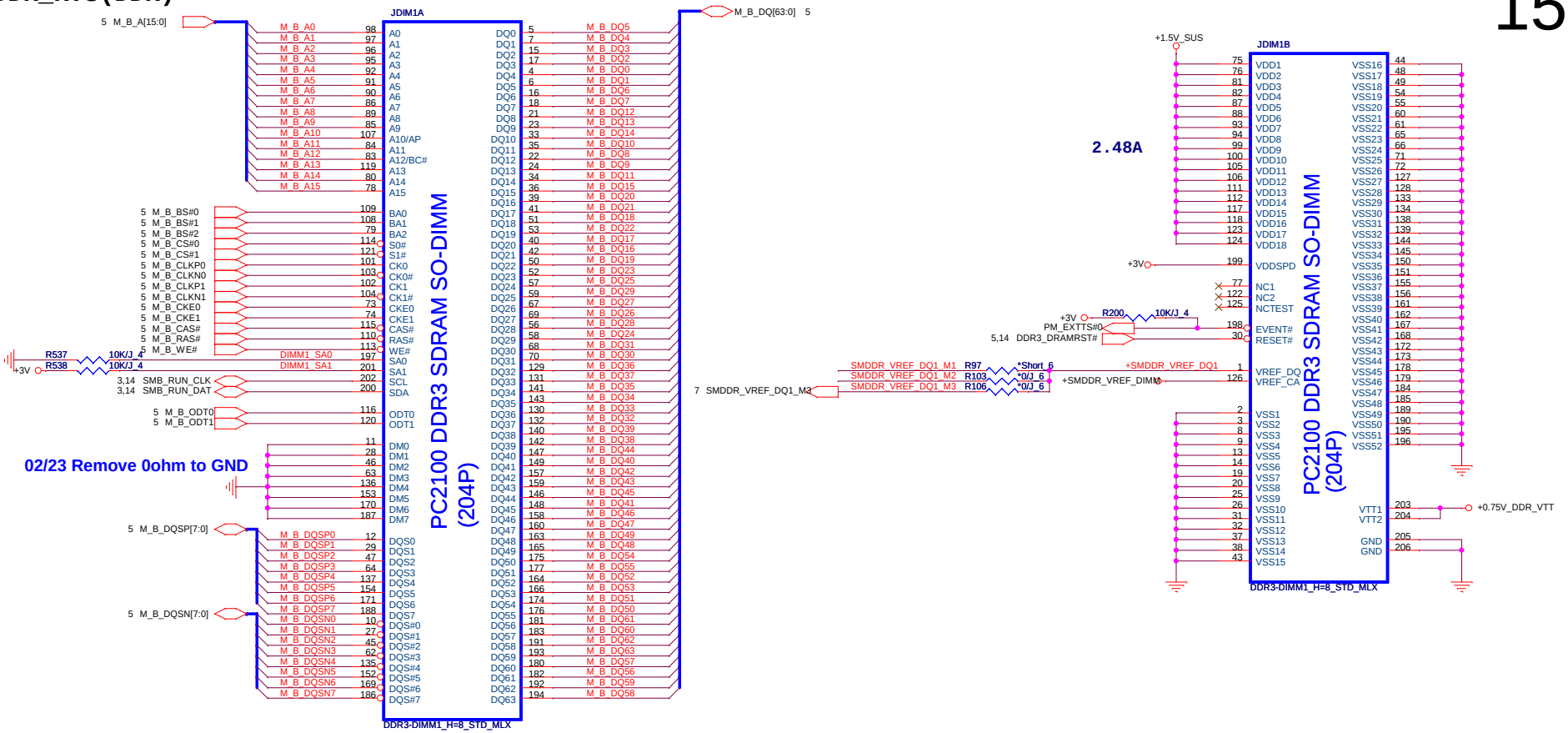




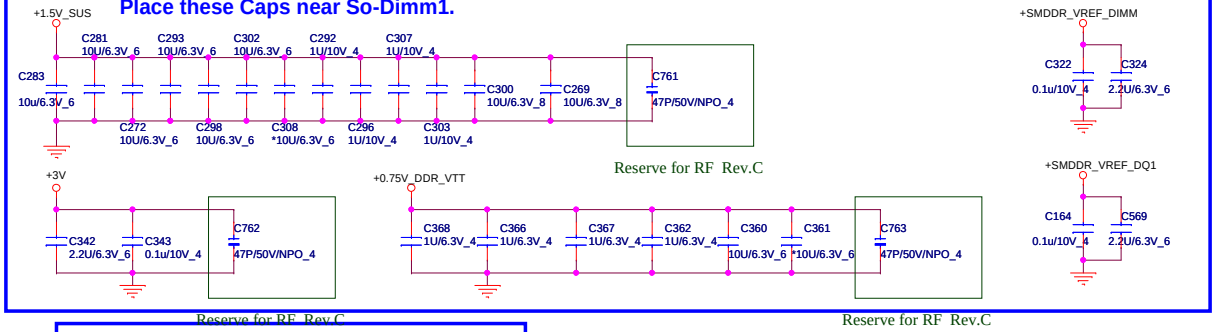
PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
	DDRIII SO-DIMM-0	1A
Date: Monday, October 18, 2010	Sheet 14 of 47	

DDR_RVS(DDR)

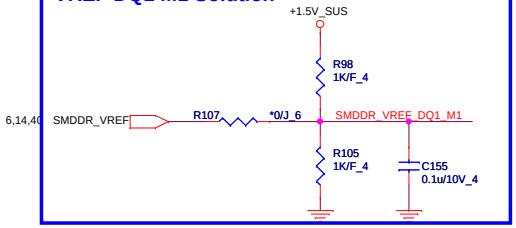


Place these Caps near So-Dimm1.



VREF DQ1 M2 Solution

VREF DQ1 M1 Solution



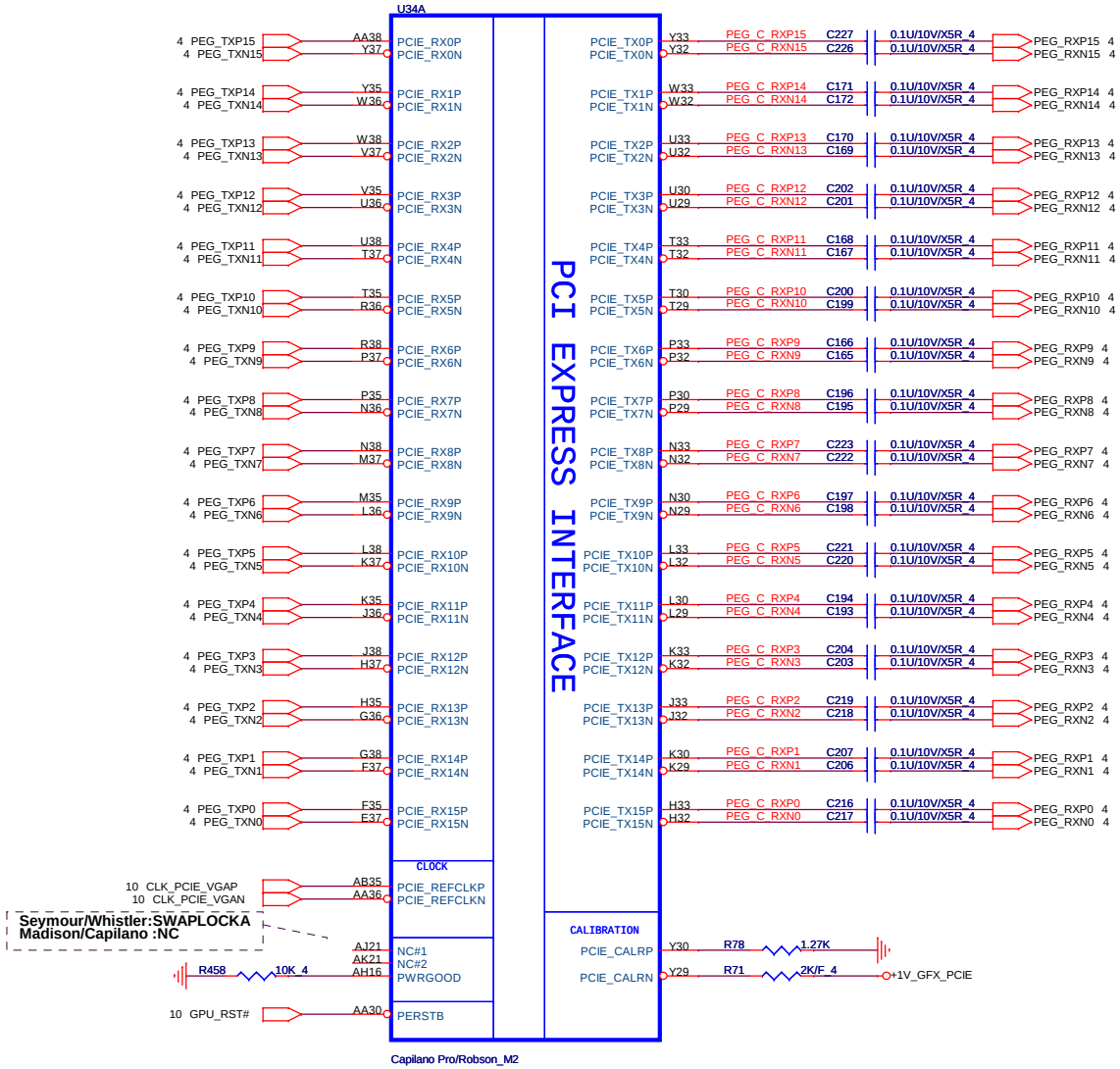
	STD 4H	STD 8H
FOX		
LTK	DGMK4000004	DGMK4000097
SUY		
MLX	DGMK4000011	DGMK4000080

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

PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
	DDRIII SO-DIMM-1	1A

Date: Monday, October 18, 2010 Sheet 15 of 47



PROJECT : KL2E

Quanta Computer Inc.

Size	Document Number	Rev
Custom	Madison PCIE I/F	1A
Date: Monday, October 18, 2010	Sheet 16 of 47	

Memory Straps		RAM_TYPE_CFG3	RAM_TYPE_CFG2	RAM_TYPE_CFG1	RAM_TYPE_CFG0
800 MHz 1GB(64M*16) Hynix_Orion die	H5TQ1G63BFR-12C	0	0	0	0
800 MHz 1GB(64M*16) Samsung_E die	K4W1G1646E-HC12	0	0	0	1
		0	0	1	0
		0	0	1	1
		0	1	0	0
		0	1	0	1

Note : Required Frequency = 800 MHz

VRAM TYPE

APERTURE SIZE

MEMORY APERTURE SIZE SELECT			
MEMORY SIZE	CFG2 GPIO13	CFG1 GPIO12	CFG0 GPIO11
128MB	0	0	0
256MB	0	0	1
64MB	0	1	0

NC FOR PARK

NC FOR PARK

NC FOR PARK

Accss to SCL and SDA is mandatory on BACO design for debug purposes.

LVDS

Power PWM config

GPU Power-on sequence

1 => +VGPU_CORE
2 => +VGPU_IO
3 => +1V
4 => +1.5V_GPU
5 => +3V_D
6 => +1.8V_GPU
7 => dGPU_PWROK

GenericF/G is NC on PARK

PLACE VREFG DIVIDER AND CAP CLOSE TO ASIC

1.0V @ 150mA DPLL_VDDC

Use 27Mhz Crystal for A test Danny0518

NC on Seymour/Whistler

!!! NC when M92-M2/PARK

!!! NC when M92-M2/PARK

HDMI

CRT

DDC6CLK/DDC6DATA support internal HDCP(High-bandwidth Digital Content Protection) function.

Capilano Pro/Robson_M2

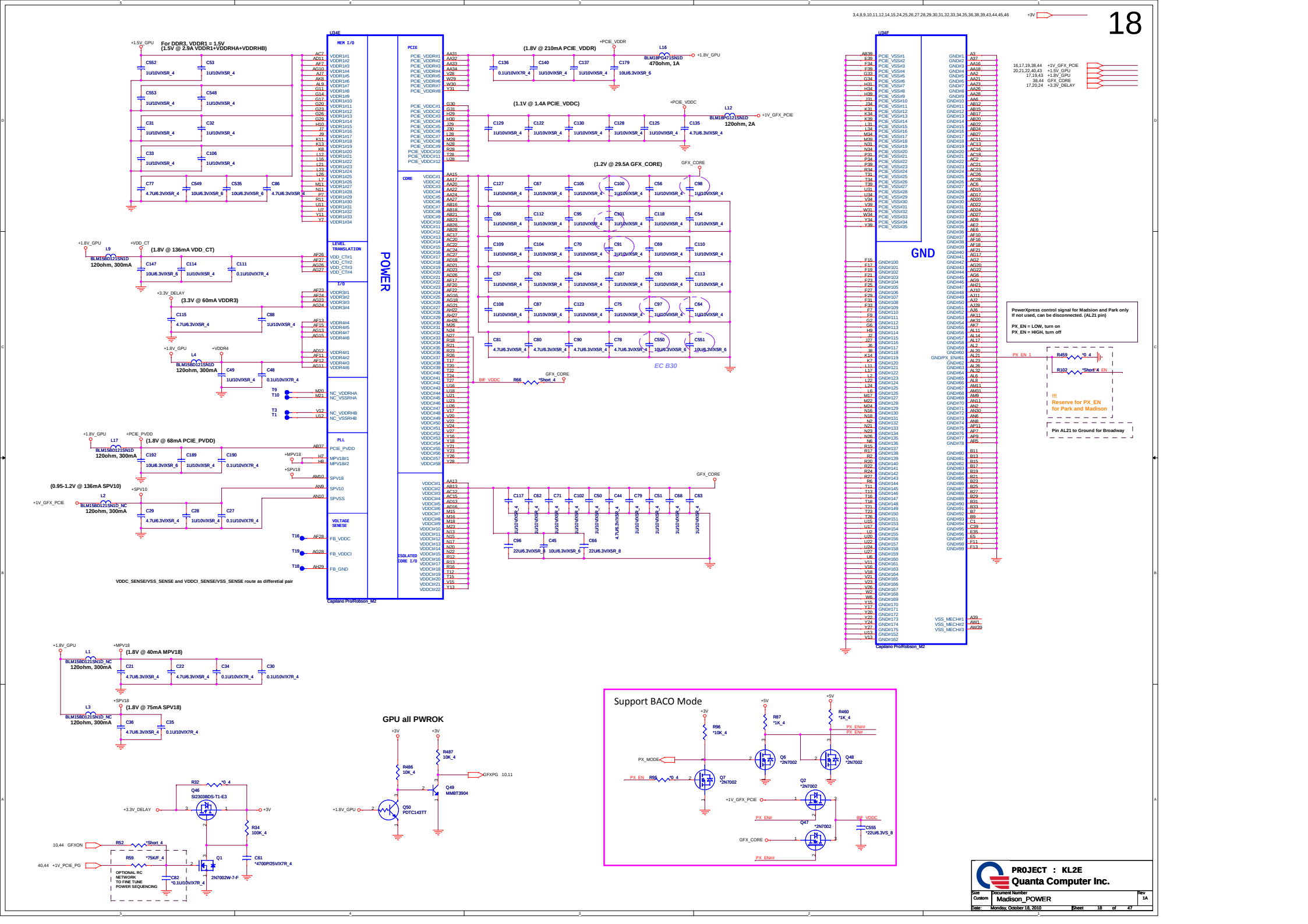
CONFIGURATION STRAPS			
STRAPS	PIN	DESCRIPTION	SET
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING 0 = 50% Tx output swing 1 = Full Tx output swing	1
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED 0 = Disable ; 1 = Enable	1
BIF_GEN2_EN_A	GPIO2	0 = Advertises the PCIe device as 2.5 GT/s capable at power-on. 1 = Advertises the PCIe device as 5.0 GT/s capable at power-on.	0
GPIO_5_AC_BATT (M96-M2)	GPIO5	1 = AC (Performance mode) 0 = Battery saving mode	1
VGA_DIS	GPIO9	0: VGA Controller capacity enabled 1: The device will not be recognized as the system's VGA controller	0
BIOS_ROM_EN	GPIO22	Enable external BIOS ROM device 0 = Disable ; 1 = Enable	0
AUD[1] AUD[0]	VGAHSYNC VGAVSYNC	AUD[1:0]: 00 - No audio function; 01 - Audio for DisplayPort only; 10 - Audio for DisplayPort and HDMI if dongle is detected; 11 - Audio for both DisplayPort and HDMI.	11
VIP_DEVICE_STRAP_EN	BIOS_ROM_EN	VIP Device Strap Enable 0 = Disable ; 1 = Enable	0

Layout Note: Place 150 ohm termination resistors close to ATI CHIP.

PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
C	Madison_IO&STRAP	1A

Date: Monday, October 18, 2010 Sheet 17 of 47


POWER
GND
U34E
U34F
MEM I/O
PCIE
CORE
LEVEL TRANSLATION
I/O
PLL
VOLTAGE SENSE
ISOLATED CORE I/O
Capilano ProRobson_M2
For DDR3, VDDR1 = 1.5V
(1.5V @ 2.9A VDDR1+VDDRHA+VDDRHB)
(1.8V @ 210mA PCIE_VDDR)
(1.1V @ 1.4A PCIE_VDDC)
(1.2V @ 29.5A GFX_CORE)
(1.8V @ 136mA VDD_CT)
(3.3V @ 60mA VDDR3)
(1.8V @ 68mA PCIE_PVDD)
(0.95-1.2V @ 136mA SPV10)
VDDC_SENSE/VSS_SENSE and VDDCI_SENSE/VSS_SENSE route as differetial pair
EC B30
PowerXpress control signal for Madsion and Park only
If not used, can be disconnected. (AL21 pin)
PX_EN = LOW, turn on
PX_EN = HIGH, turn off
!!!
Reserve for PX_EN
for Park and Madison
Pin AL21 to Ground for Broadway
(1.8V @ 40mA MPV18)
(1.8V @ 75mA SPV18)
GPU all PWROK
Support BACO Mode
PROJECT : KL2E
Quanta Computer Inc.
Madison_POWER
Monday, October 18, 2010

16,17,18,38,44 +1V_GFX_PCIE
17,18,43 +1.8V_GPU

!!!
For M96/92, DPx_VDD10 = 1.1V
For M97 DPx_VDD10 = 1.0V

U34H

DP C/D POWER | DP A/B POWER | DP E/F POWER | DP PLL POWER

(1.8V@130mA DPC_VDD18)
DPC & DPD aren't used.
+1.8V_GPU
AP20 DPC_VDD18#1
AP21 DPC_VDD18#2
C84 *0.1U/10V/X7R_4
+1V_GFX_PCIE
AP13 DPC_VDD10#1
AT13 DPC_VDD10#2
C41 *0.1U/10V/X7R_4
AN17 DPC_VSSR#1
AP16 DPC_VSSR#2
AP17 DPC_VSSR#3
AW14 DPC_VSSR#4
AW16 DPC_VSSR#5

(1.8V@130mA DPD_VDD18)
+1.8V_GPU
AP22 DPD_VDD18#1
AP23 DPD_VDD18#2
C83 *0.1U/10V/X7R_4
+1V_GFX_PCIE
AP14 DPD_VDD10#1
AP15 DPD_VDD10#2
C43 *0.1U/10V/X7R_4
AN19 DPD_VSSR#1
AP18 DPD_VSSR#2
AP19 DPD_VSSR#3
AW20 DPD_VSSR#4
AW22 DPD_VSSR#5

(1.8V @ 400mA DPE_VDD18; 200mA for DPE/DPF respectively)
+1.8V_GPU
L15 BLM18PG600SN1D 60ohm, 500mA
+DPE_VDD18
C162 10U/6.3V/X5R_6
C154 1U/10V/X5R_4
C151 0.1U/10V/X7R_4
150/F_4 R457
AW18 DPCD_CALR
AH34 DPE_VDD18#1
AJ34 DPE_VDD18#2
+DPE_VDD10
AL33 DPE_VDD10#1
AM33 DPE_VDD10#2
DPE & DPF for LVDS
AN34 DPE_VSSR#1
AP39 DPE_VSSR#2
AR39 DPE_VSSR#3
AU37 DPE_VSSR#4

(1.1V @ 200mA DPE_VDD10; 100mA for DPE/DPF respectively)
+1V_GFX_PCIE
L10 BLM15BD121SN1D 120ohm, 300mA
+DPE_VDD10
C152 10U/6.3V/X5R_6
C148 1U/10V/X5R_4
C145 0.1U/10V/X7R_4
+DPE_VDD18
AE34 DPF_VDD18#1
AG34 DPF_VDD18#2
AK33 DPF_VDD10#1
AK34 DPF_VDD10#2
AF39 DPF_VSSR#1
AH39 DPF_VSSR#2
AK39 DPF_VSSR#3
AL34 DPF_VSSR#4
AM34 DPF_VSSR#5
150/F_4 R100
AM39 DPEF_CALR

DPA_VDD18#1 AN24
DPA_VDD18#2 AP24
+DPA_VDD18
(1.1V @ 200mA DPA_VDD10)
+DPA_VDD10
L6 BLM15BD121SN1D 120ohm, 300mA
+1V_GFX_PCIE
DPA for HDMI
DPA_VDD10#1 AP31
DPA_VDD10#2 AP32
C119 0.1U/10V/X7R_4
C121 1U/10V/X5R_4
C120 4.7U/6.3V/X5R_4
DPA_VSSR#1 AN27
DPA_VSSR#2 AP27
DPA_VSSR#3 AP28
DPA_VSSR#4 AW24
DPA_VSSR#5 AW26

(1.8V @ 110mA DPB_VDD18)
+1.8V_GPU
C76 *0.1U/10V/X7R_4
DPB_VDD18#1 AP25
DPB_VDD18#2 AP26
+DPB_VDD18
+1V_GFX_PCIE
DPB_VDD10#1 AN33
DPB_VDD10#2 AP33
C149 *0.1U/10V/X7R_4
(1.1V @ 200mA DPB_VDD10)
DPB_VSSR#1 AN29
DPB_VSSR#2 AP29
DPB_VSSR#3 AP30
DPB_VSSR#4 AW30
DPB_VSSR#5 AW32

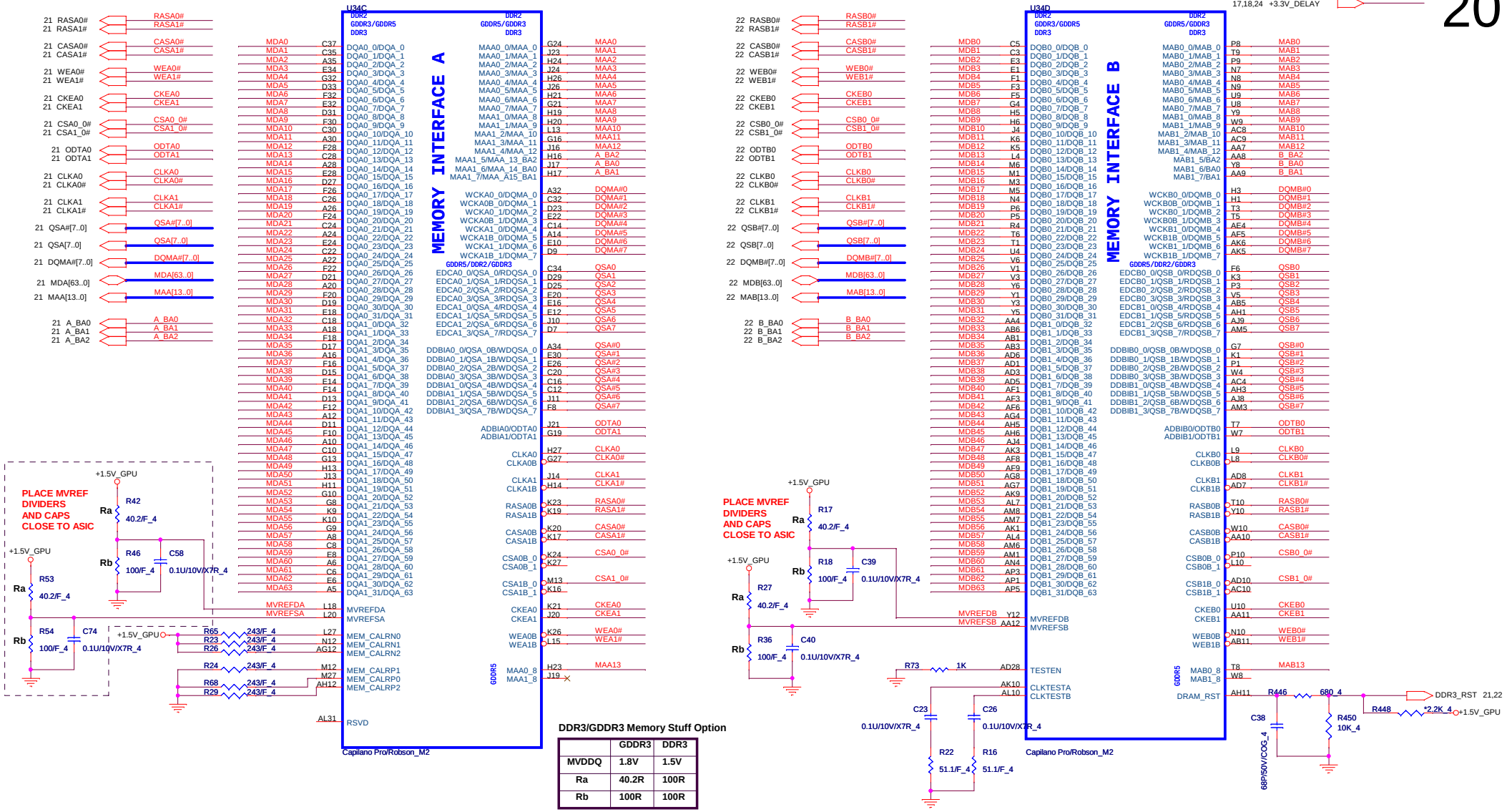
(1.8V @ 20 mA DPA_PVDD)
+DPA_PVDD
L39 BLM15BD121SN1D 120ohm, 300mA
+1.8V_GPU
C557 0.1U/10V/X7R_4
C556 1U/10V/X5R_4
C558 10U/6.3V/X5R_6
DPA_CALR AW28 R467 150/F_4
DPA_PVDD AU28
DPA_PVSS AV27
DPB_PVDD AV29
DPB_PVSS AW28
C559 *0.1U/10V/X7R_4
(1.8V @ 20 mA DPB_PVDD)
DPC & DPD aren't used.
+1.8V_GPU
DPC_PVDD AU18
DPC_PVSS AV17
C55 *0.1U/10V/X7R_4
DPD_PVDD AV19
DPD_PVSS AR18
C60 *0.1U/10V/X7R_4
(1.8V @ 40mA DPE_PVDD; 20mA for DPE/DPF respectively)
+DPE_PVDD
L19 BLM15BD121SN1D 120ohm, 300mA
+1.8V_GPU
DPE_PVDD AM37
DPE_PVSS AN38
C177 0.1U/10V/X7R_4
C182 1U/10V/X5R_4
C185 10U/6.3V/X5R_6
NC_DPF_PVDD AL38
NC_DPF_PVSS AM35

(1.8V @ 110mA DPA_VDD18)
+DPA_VDD18
L5 BLM15BD121SN1D 120ohm, 300mA
+1.8V_GPU
C103 0.1U/10V/X7R_4
C99 1U/10V/X5R_4
C89 4.7U/6.3V/X5R_4

Capilano Pro/Robson_M2

PROJECT : KL2E
Quanta Computer Inc.

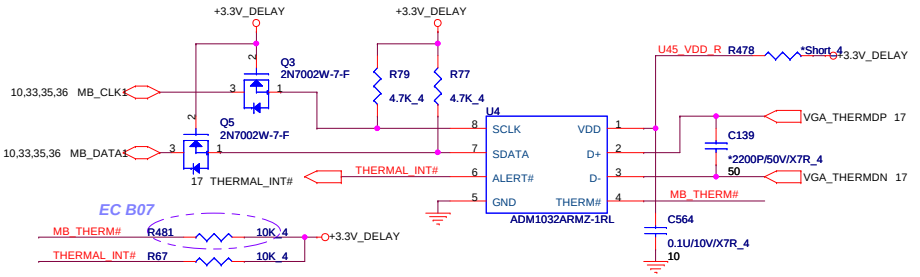
Size	Document Number	Rev
Custom	Madison_DP_POWER	1A
Date: Monday, October 18, 2010	Sheet 19 of 47	



DDR3/GDDR3 Memory Stuff Option

	GDDR3	DDR3
MVDDQ	1.8V	1.5V
Ra	40.2R	100R
Rb	100R	100R

THERMAL MONITOR



PROJECT : KL2E
Quanta Computer Inc.
Size Custom
Document Number Madison_MEMORY/THERM
Rev 1A
Date: Monday, October 18, 2010
Sheet 20 of 47

DDR3 64MX16, CH A : 512MB

18,20,22,40,43 +1.5V_GPU

U5 / U38 / U3 / U35 — K4W1G1646E-HC12 — 100-BALL SDRAM DDR3

20 CLKA0 / 20 CLKA0# / 20 CKEA0 — 20 CLKA1 / 20 CLKA1# / 20 CKEA1

20 ODTA0 / 20 CSA0_0# / 20 RASA0# / 20 CASA0# / 20 WEA0# — 20 ODTA1 / 20 CSA1_0# / 20 RASA1# / 20 CASA1# / 20 WEA1#

20,22 DDR3_RST — R93 240/F_4 — R490 240/F_4 — R70 240/F_4 — R461 240/F_4

20 MDA[63..0]
20 MAA[13..0]
20 QSA#[7..0]
20 QSA[7..0]
20 DQMA#[7..0]
20 A_BA[2..0]

Placement has to be close to VRAM

CLKA0 R104 56_4 C184 0.01U/16V/X7R_4
CLKA0# R101 56_4
CLKA1 R45 56_4 C52 0.01U/16V/X7R_4
CLKA1# R50 56_4

+1.5V_GPU

R85 4.99K/F_4 — R91 4.99K/F_4 — C156 0.1U/10V/X7R_4 — VREF_A0
R83 4.99K/F_4 — R84 4.99K/F_4 — C150 0.1U/10V/X7R_4 — VREF_A1
R483 4.99K/F_4 — R485 4.99K/F_4 — C570 0.1U/10V/X7R_4 — VREF_A2
R492 4.99K/F_4 — R493 4.99K/F_4 — C578 0.1U/10V/X7R_4 — VREF_A3
R61 4.99K/F_4 — R63 4.99K/F_4 — C116 0.1U/10V/X7R_4 — VREF_A4
R60 4.99K/F_4 — R55 4.99K/F_4 — C85 0.1U/10V/X7R_4 — VREF_A5
R468 4.99K/F_4 — R464 4.99K/F_4 — C554 0.1U/10V/X7R_4 — VREF_A6
R463 4.99K/F_4 — R466 4.99K/F_4 — C560 0.1U/10V/X7R_4 — VREF_A7

Close to U4

C566 C205 C583 C582 C191 — 1U/6.3V/X5R_4 — *1U/6.3V/X5R_4

Close to U44

C595 C567 C565 C573 C571 — 1U/6.3V/X5R_4 — *1U/6.3V/X5R_4

Close to U3

C59 C138 C37 C42 C47 — 1U/6.3V/X5R_4 — *1U/6.3V/X5R_4

Close to U41

C547 C568 C562 C579 C561 — 1U/6.3V/X5R_4 — *1U/6.3V/X5R_4

Close to U4 & U44

C225 — 10U/6.3V/X5R_6
C124 — 4.7U/6.3V/X5R_4
C572 — 10U/6.3V/X5R_6
C146 — *10U/6.3V/X5R_6
C133 — 4.7U/6.3V/X5R_4

Close to U3 & U41

C72 — 4.7U/6.3V/X5R_4
C594 — 10U/6.3V/X5R_6
C563 — 10U/6.3V/X5R_6
C46 — *10U/6.3V/X5R_6
C73 — 4.7U/6.3V/X5R_4

PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
C	Madison_DDR3_A_512M	1A

Date: Monday, October 18, 2010 Sheet 21 of 47

DDR3 64MX16, CH B : 512MB

18,20,21,40,43 +1.5V_GPU

U30 / U1 / U2 / U29 — K4W1G1646E-HC12 — 100-BALL SDRAM DDR3

20 MDB[63..0]
20 MAB[13..0]
20 QSB#[7..0]
20 QSB[7..0]
20 DQMB#[7..0]
20 B_BA[2..0]

Placement has to be close to VRAM

CLKB0 R2 56.4 C7 0.01U/16V/X7R_4
CLKB0# R3 56.4
CLKB1 R8 56.4 C5 0.01U/16V/X7R_4
CLKB1# R1 56.4

Close to U35

C525 1U/6.3V/X5R_4 C522 1U/6.3V/X5R_4 C520 1U/6.3V/X5R_4 C521 *1U/6.3V/X5R_4 C538 1U/6.3V/X5R_4

Close to U1

C18 1U/6.3V/X5R_4 C1 *1U/6.3V/X5R_4 C6 1U/6.3V/X5R_4 C2 *1U/6.3V/X5R_4 C523 1U/6.3V/X5R_4

Close to U2

C515 1U/6.3V/X5R_4 C3 *1U/6.3V/X5R_4 C16 1U/6.3V/X5R_4 C4 *1U/6.3V/X5R_4 C12 1U/6.3V/X5R_4

Close to U36

C514 1U/6.3V/X5R_4 C518 *1U/6.3V/X5R_4 C531 1U/6.3V/X5R_4 C519 *1U/6.3V/X5R_4 C516 1U/6.3V/X5R_4

Close to U35 & U1

C513 10U/6.3V/X5R_6 C542 10U/6.3V/X5R_6 C11 10U/6.3V/X5R_6 C17 4.7U/6.3V/X5R_4 C19 *4.7U/6.3V/X5R_4

Close to U2 &U36

C14 4.7U/6.3V/X5R_4 C532 10U/6.3V/X5R_6 C512 10U/6.3V/X5R_6 C10 *10U/6.3V/X5R_6 C13 4.7U/6.3V/X5R_4

R449 4.99K/F_4	R436 4.99K/F_4	R4 4.99K/F_4	R13 4.99K/F_4	
VREF_B0	VREF_B1	VREF_B2	VREF_B3	
R447 4.99K/F_4 C537 0.1U/10V/X7R_4	R435 4.99K/F_4 C524 0.1U/10V/X7R_4	R5 4.99K/F_4 C8 0.1U/10V/X7R_4	R14 4.99K/F_4 C20 0.1U/10V/X7R_4	
R11 4.99K/F_4	R6 4.99K/F_4	R437 4.99K/F_4	R445 4.99K/F_4	
VREF_B4	VREF_B5	VREF_B6	VREF_B7	
R10 4.99K/F_4 C15 0.1U/10V/X7R_4	R7 4.99K/F_4 C9 0.1U/10V/X7R_4	R434 4.99K/F_4 C517 0.1U/10V/X7R_4	R444 4.99K/F_4 C536 0.1U/10V/X7R_4	

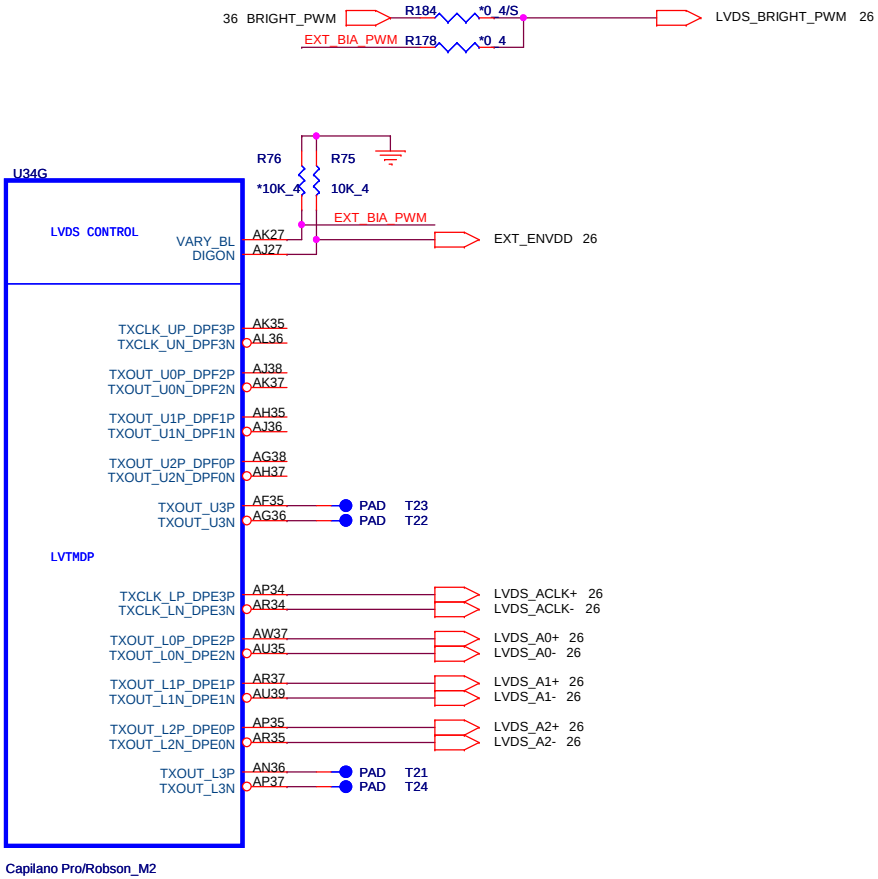
R440 240/F_4 — R9 240/F_4 — R12 240/F_4 — R438 240/F_4

PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
C	Madison_DDR3_B_512M	1A

Date: Monday, October 18, 2010 Sheet 22 of 47

CRT SWITCH

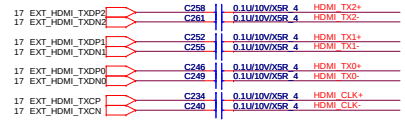


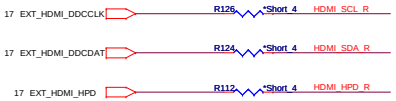
PROJECT : KL2E

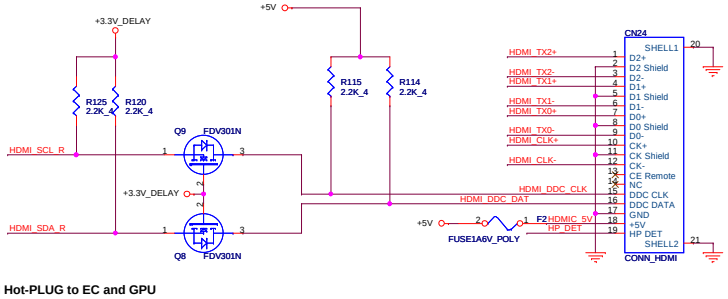
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Madison_LVDS/HDMI/CRT switchable	1A
Date: Monday, October 18, 2010	Sheet 23 of 47	

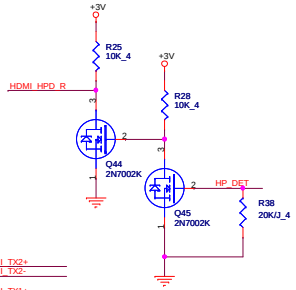
DIS/SG HDMI



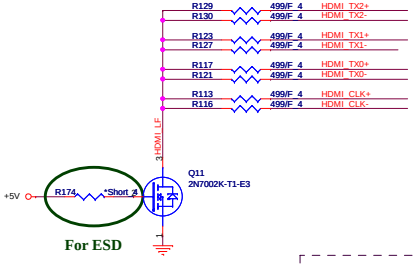




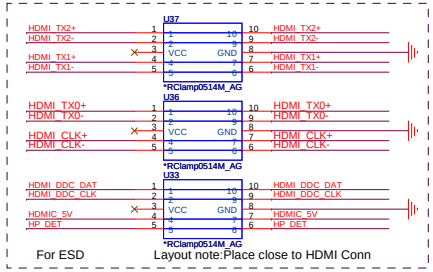
HDMI Hot-PLUG to EC and GPU



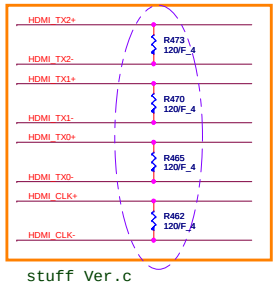
UMA Only / Muxless HDMI



For ESD



EMI reserve for HDMI



stuff Ver.c

9,12,18,25,26,28,29,33,34,36,38,39 +5V
3,4,8,9,10,11,12,14,15,18,25,26,27,28,29,30,31,32,33,34,35,36,38,39,43,44,45,46 +3V
17,18,20 +3.3V_DELAY

PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Madison_LVDS/HDMI/CRT switchable	1A

Date: Monday, October 18, 2010 Sheet 24 of 47

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

17 EXT_CRT_R
17 EXT_CRT_G
17 EXT_CRT_B
L36 BK1608LL680
L35 BK1608LL680
L34 BK1608LL680
CRT_R1
CRT_G1
CRT_B1
R442 150/F_4
R441 150/F_4
R439 150/F_4
C534 5.6P/50V/COG_4
C530 5.6P/50V/COG_4
C528 5.6P/50V/COG_4
C527 5.6P/50V/COG_4
C529 5.6P/50V/COG_4
C533 5.6P/50V/COG_4
TP24
CRT_VCC
D19 RB500V-40
C25 0.1U/10V/X5R_4
+5V
F1 FUSE1A6V_POLY
C545 *VARISTOR_4
CRT_VCC_R
CN14 CRT_CONN

+5V
R180 *Short_4
For ESD

17 EXT_CRT_VSYNC
17 EXT_CRT_HSYNC
U31 AHCT1G125DCH
U32 AHCT1G125DCH
C546 0.1U/10V/X5R_4
VGAVSYNC_R
VGAHSYNC_R
R452 10_4
R451 10_4
Place near U37,U38 < 200 mil
CRTVSYNC1
CRTHSYNC1
C544 *10P/50V/COG_4
C543 *10P/50V/COG_4
L37 HB-1T1608-121JT
L38 HB-1T1608-121JT
CRTVSYNC
CRTHSYNC
C540 10P/50V/COG_4
C541 10P/50V/COG_4
Place near CN5002 connector < 200 mil

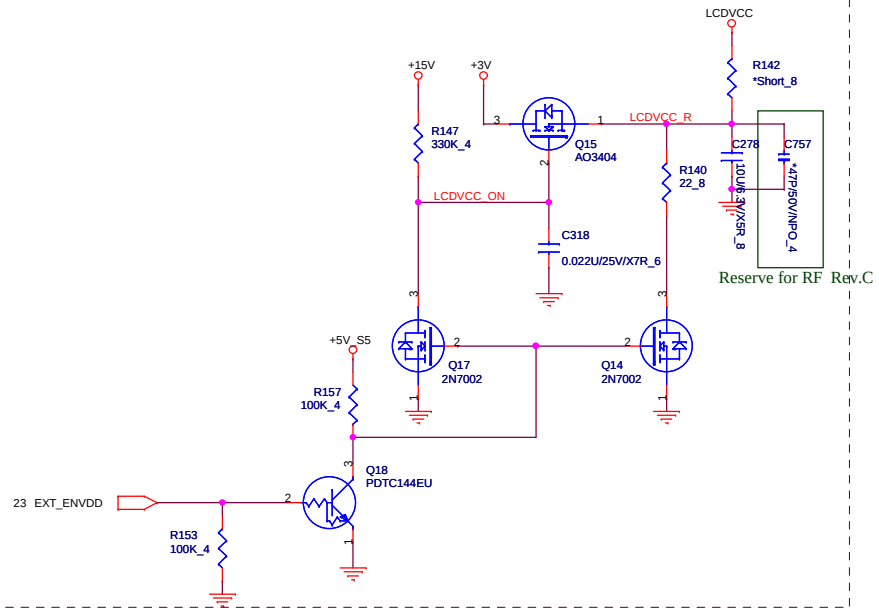
+3V
R21 2.2K_4
R20 2.2K_4
CRT_VCC
R433 4.7K_4
R443 4.7K_4
17 EXT_CRT_DDCCLK
17 EXT_CRT_DDCDAT
Q43 2N7002K-T1-E3
Q42 2N7002K-T1-E3
DDCCLK
DDCDAT
C526 *10P/50V/COG_4
C539 *10P/50V/COG_4

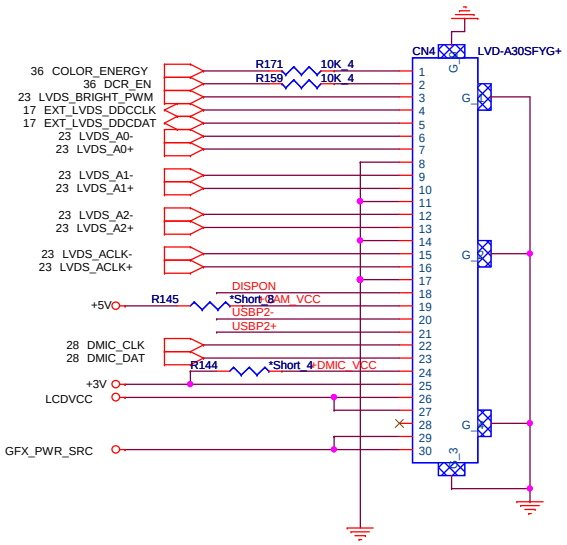
ESD PROTECTION
D17 *TVSS5VESPT CRT_R1
D15 *TVSS5VESPT CRT_G1
D13 *TVSS5VESPT CRT_B1
D14 *TVSS5VESPT CRTVSYNC
D16 *TVSS5VESPT CRTHSYNC
D18 *TVSS5VESPT DDCCLK
D12 *TVSS5VESPT DDCDAT

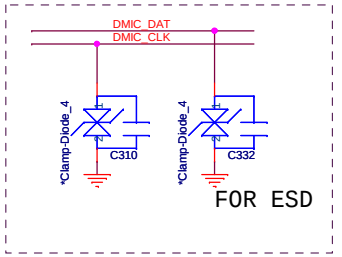
PROJECT : KL2E
Quanta Computer Inc.
Size Custom | Document Number CRT CONN | Rev 1A
Date: Monday, October 18, 2010 | Sheet 25 of 47

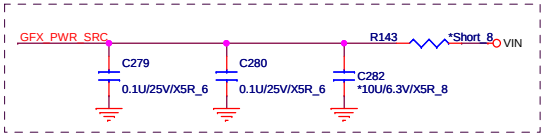
3,4,8,9,10,11,12,14,15,18,24,25,27,28,29,30,31,32,33,34,35,36,38,39,43,44,45,46 +3V
28,29,30,38,40,42,43 +15V
39,40,41,42,43,44,45 VIN
9,12,18,24,25,28,29,33,34,36,38,39 +5V

LCDVCC

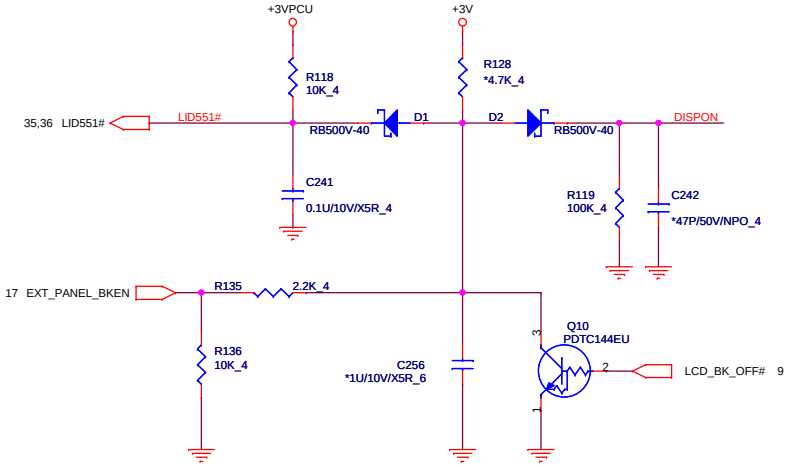


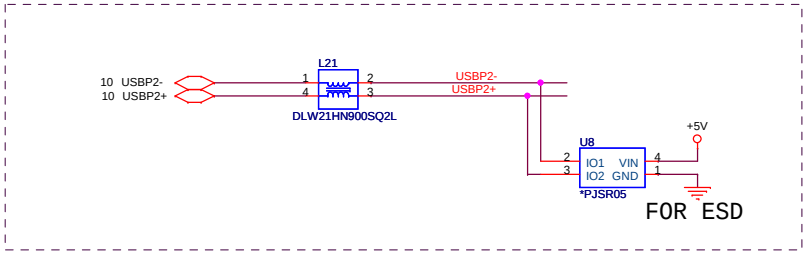






back light





PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
Custom	LCD CONN	1A

Date: Monday, October 18, 2010 Sheet 26 of 47

8,9,26,29,34,35,36,38,39,42,44,46 +3VPCU
3,4,8,9,10,11,12,14,15,18,24,25,26,28,29,30,31,32,33,34,35,36,38,39,43,44,45,46 +3V

Core Power Decoupling

VDDIO Power Decoupling

VLAN_12
VCC3_LAN
C364 4.7U/10V/X5R_8
C351 0.1U/10V/X5R_4
C372 0.1U/10V/X5R_4
C363 0.1U/10V/X5R_4
C354 4.7U/10V/X5R_8
C355 0.1U/10V/X5R_4

U13

BCM57780
7mm x 7mm
48-Pin QFN
Package Body

VDDO 42
VDDC 6, 15, 41
AVDDL 27, 33, 39
GPHY_PLLVDDL 24
PCIE_PLLVDDL 18, 21
PCIE_TXD_P 17
PCIE_TXD_N 16
PCIE_RXD_P 22
PCIE_RXD_N 23
WAKE# 4
PERST# 2
PCIE_REFCLK_P 20
PCIE_REFCLK_N 19
VMAIN_PRSNT 40
LOW_PWR 1
XTALO 13
XTALI 12
RDAC 26
CLK_REQ# 3
GND 49

L24 BLM18PG181SN1D LAN_AVDDL
C347 4.7U/10V/X5R_8
C348 0.1U/10V/X5R_4
L26 BLM18PG181SN1D LAN_GPHYPLLVDDL
C340 4.7U/10V/X5R_8
C341 0.1U/10V/X5R_4
L25 BLM18PG181SN1D LAN_PCIEPLLVDDL
C349 4.7U/10V/X5R_8
C350 0.1U/10V/X5R_4

BIASVDDH 25 LAN_BIASVDDH
L23 BLM18PG181SN1D
C338 0.1U/10V/X5R_4
XTALVDDH 14 LAN_XTALVDDH
L27 BLM18PG181SN1D
C369 0.1U/10V/X5R_4
AVDDH 30, 36 LAN_AVDDH
L22 BLM18PG181SN1D
C339 0.1U/10V/X5R_4
C337 0.1U/10V/X5R_4

TRD3_N 37 TRDM3
TRD3_P 38 TRDP3
TRD2_N 35 TRDM2
TRD2_P 34 TRDP2
TRD1_N 31 TRDM1
TRD1_P 32 TRDP1
TRD0_N 29 TRDM0
TRD0_P 28 TRDP0
LINKLED# 48 LAN_LINK_10_1G_LED#
SPD100LED# 47
SPD1000LED# 46
TRAFFICLED# 45 LAN_ACTLED#

MODE 5
EECLK 44
EEDATA 43
SR_LX 11 SR_LX
SR_VFB 8 SR_VFB
SR_VDDP 10
SR_VDD 9
VREGPNP_CTL 7 LAN REGCTL12

10 PCIE_RXP6_LAN
10 PCIE_RXN6_LAN
10 PCIE_TXP6_LAN
10 PCIE_TXN6_LAN
C352 0.1U/10V/X5R_4 LAN_PCIETXDP
C356 0.1U/10V/X5R_4 LAN_PCIETXDN
-LAN_WAKEUP
4,10,31,32 PLTRST#
R539 *Short_4 PLTRST#_R
10 CLK_PCIE_LANP
10 CLK_PCIE_LANN

+3V
36 LAN_ISOLATEB
R543 *Short_4
R201 1K/F_4
R206 10K_4

LAN_XTALO_L
R207 200/F_4
LAN_XTALO
LAN_XTALI
Y1 25MHz
LAN_RDAC
C370 33P/50V/NPO_4
C374 33P/50V/NPO_4
R196 1.24K/F_4

CLK_PCIE_LAN_REQ#_R

+3V
4,10,31,32 PLTRST#
LAN_ISOLATEB
PLTRST#_R
U44 *74AHCT1G08GW

VCC3_LAN
R545 *10K_4
Q57
10 PCIE_CLKREQ_LAN#
CLK_PCIE_LAN_REQ#_R
PDTC144EU

VCC3_LAN
R210 *10K_4
Q24
8,32 PCIE_WAKE#
-LAN_WAKEUP
PDTC144EU

3.3V LANVCC

+3VPCU
38 LAN_ON
Q23
AO6402
VCC3_LAN
C353 0.1U/10V/X5R_4

VCC3_LAN
R205 *1K/F_4
R204 1K/F_4
R208 1K_4
R203 *1K_4
VLAN_12
R211 *0_6S

3.3V Device ONLY
U14 *M24C02-WMN6TP
WP VCC SCL A2 A1 SDA A0 GND
C365 *0.1U/10V/X5R_4
No stuff Rev.C

SR_LX L28 NR3010T4R7M
C373 10U/6.3V/X5R_8
C376
C375 4.7U/10V/X5R_8
C371 0.1U/10V/X5R_4
0.1U/10V/X5R_4
TP30

Transformer

C345 0.1U/10V/X5R_4
C335 0.1U/10V/X5R_4
U11 LFE9292A-R
TRDP3 TD1+ MX1+ X-TX3P
TRDM3 TD1- MX1- X-TX3N
TCT1 MCT1 R198 *75/F_4
TRDP2 TD2+ MX2+ X-TX2P
TRDM2 TD2- MX2- X-TX2N
TCT2 MCT2 R195 *75/F_4
TRDP1 TD3+ MX3+ X-TX1P
TRDM1 TD3- MX3- X-TX1N
VLAN_25V_1
TCT3 MCT3 R192 *75/F_4
TRDP0 TD4+ MX4+ X-TX0P
TRDM0 TD4- MX4- X-TX0N
TCT4 MCT4 R189 *75/F_4
LAN_1
C333 0.1U/10V/X5R_4
C336 0.1U/10V/X5R_4
D26 *TVSS5VESPT
C640 *10P3KV/NPO_1808
R541 *1M/F_6
QV
No stuff Rev.C

U12 *CM1293A-04SO
TRDP3 IO1 IO4 TRDM3
GND REF
TRDP2 IO2 IO3 TRDM2
U10 *CM1293A-04SO
TRDP1 IO1 IO4 TRDM1
GND REF
TRDP0 IO2 IO3 TRDM0

RJ45 Connector

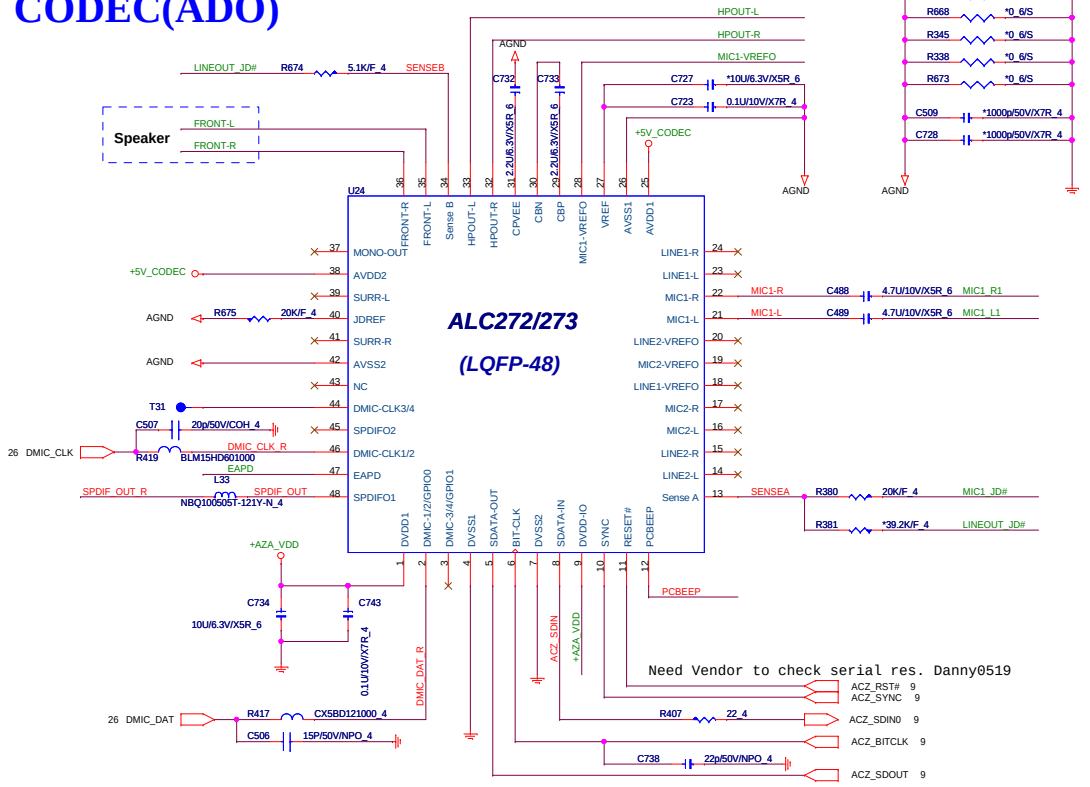
CN17 JM36113-N4525-7F
VCC3_LAN
R556 150/F_4
LAN_LINK_10_1G_LED#_R
LAN_LINK_10_1G_LED#
LED_GRE_P
LED_GRE_N
C654 0.1U/10V/X5R_4
X-TX3N X-TX3P X-TX1N X-TX2N X-TX2P X-TX1P X-TX0N X-TX0P
RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+
GND3 GND2 GND1 GND
VCC3_LAN
R558 150/F_4
LAN_ACTLED#_R
LAN_ACTLED#
LED_YEL_P
LED_YEL_N
C661 0.1U/10V/X5R_4

PROJECT : KL2E
Quanta Computer Inc.

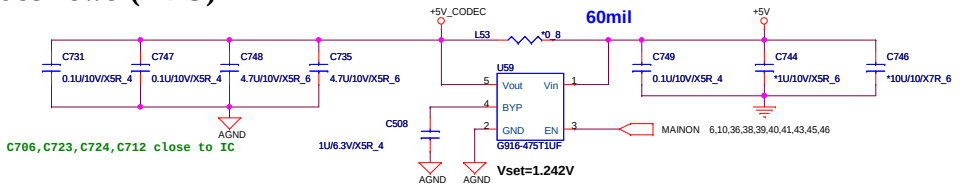
Size	Document Number	Rev
Custom	LAN (BCM57780, RJ45)	1A

Date: Monday, October 18, 2010 Sheet 27 of 47

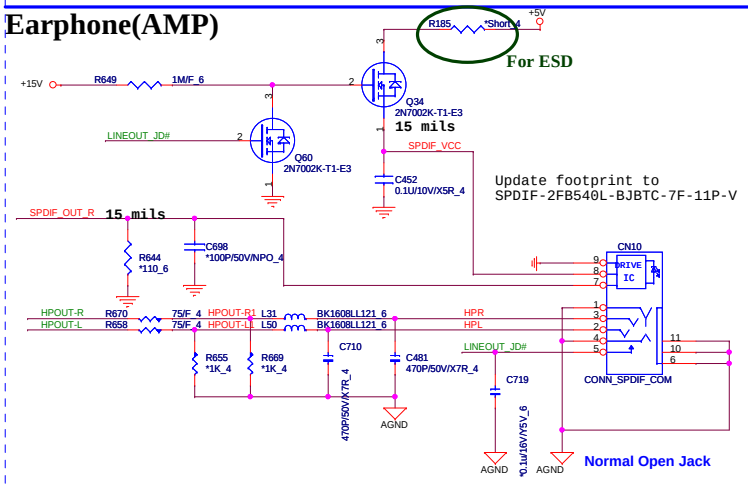
CODEC(ADO)



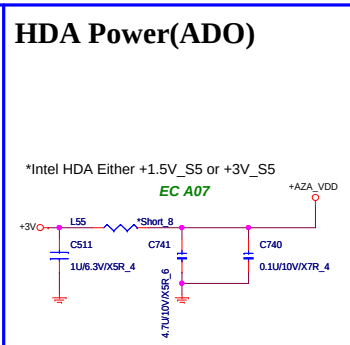
Codec Power(ADO)



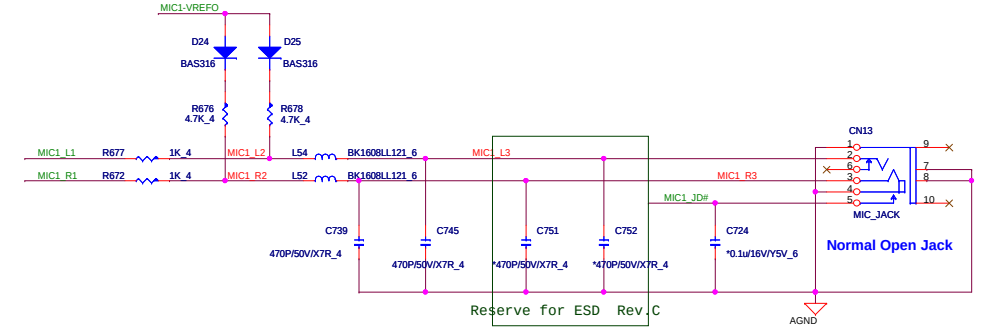
Earphone(AMP)



HDA Power(ADO)

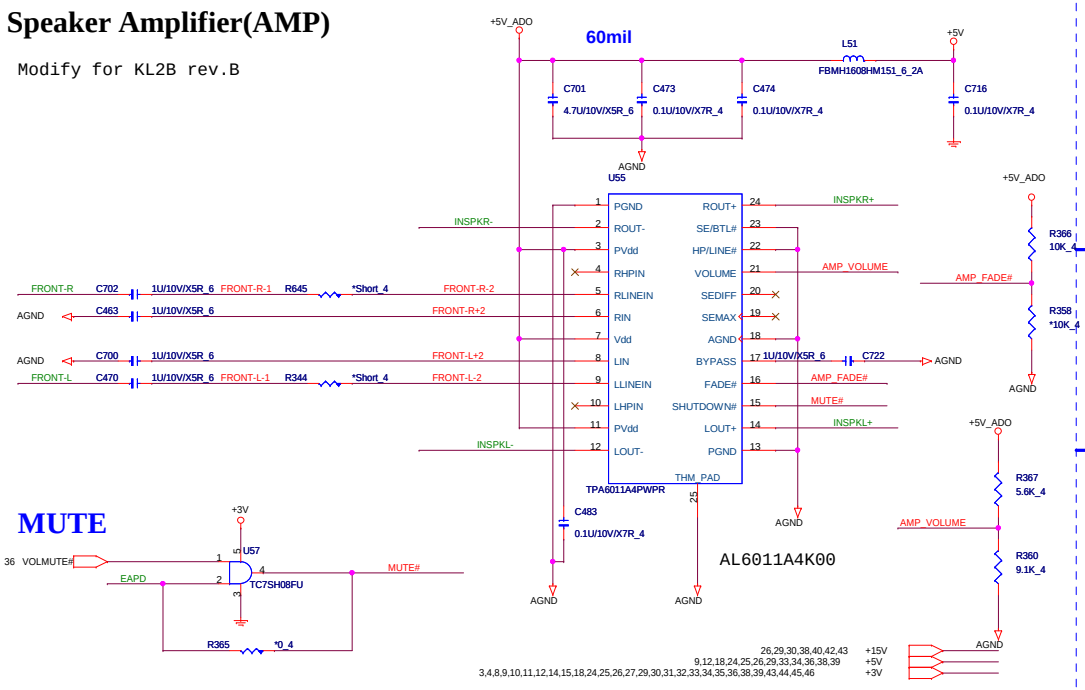


System MIC(AMP)



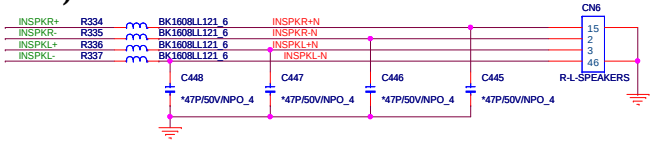
Speaker Amplifier(AMP)

Modify for KL2B rev.B

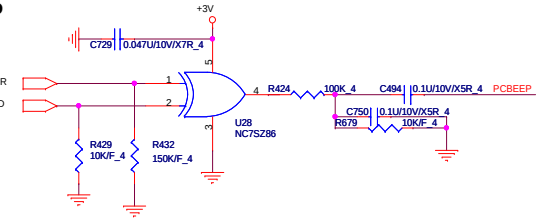


MUTE

Speaker(AMP)



PC BEEP

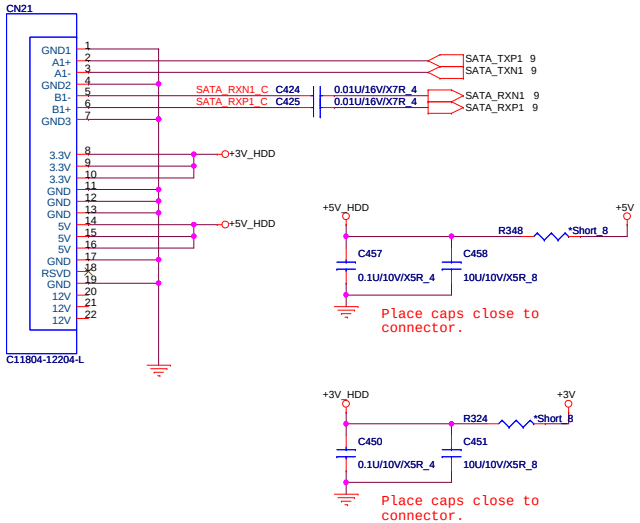


PROJECT : KL2E
Quanta Computer Inc.

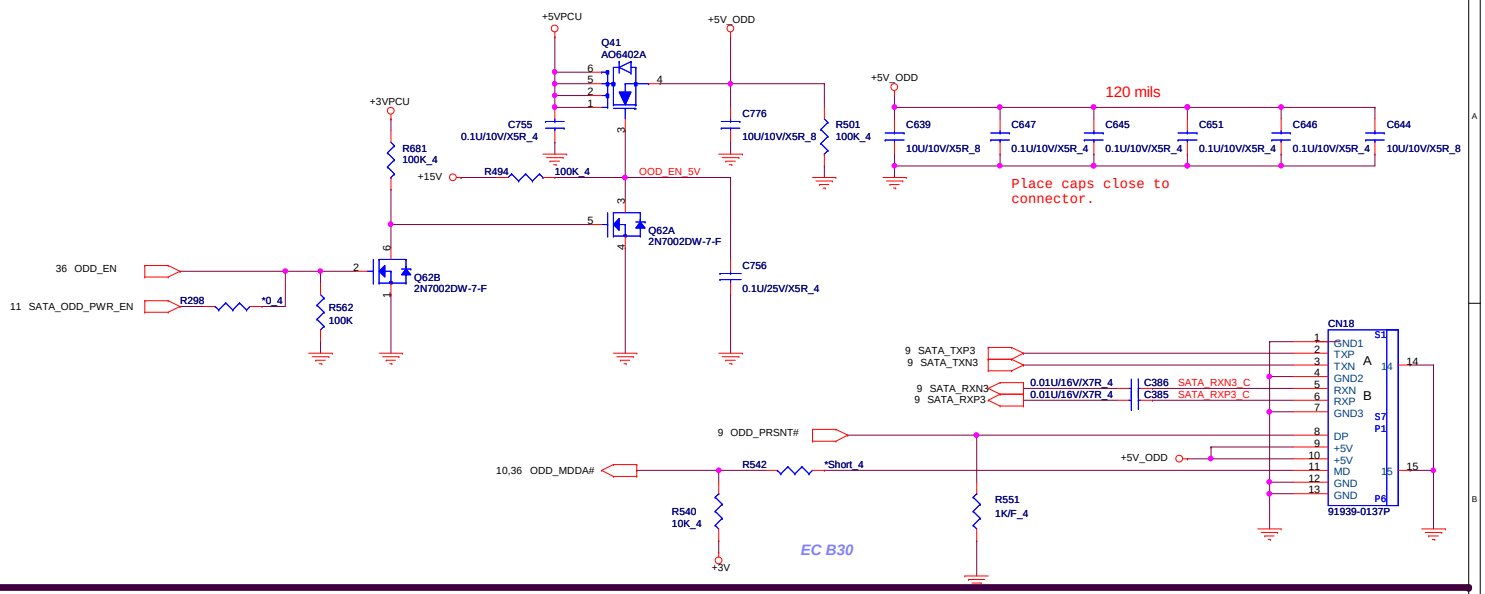
Size	Document Number	Rev
Custom	AL272/AMP/MIC/LINE-OUT	1A

Date: Monday, October 18, 2010 Sheet 28 of 47

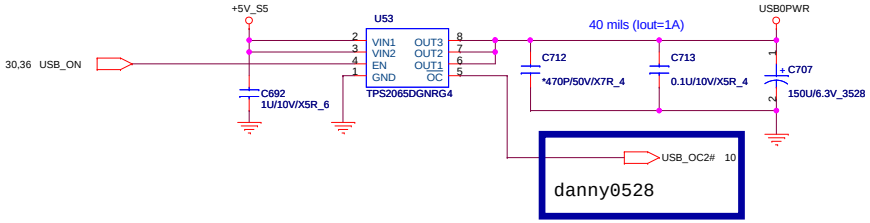
SATA HDD Connector.

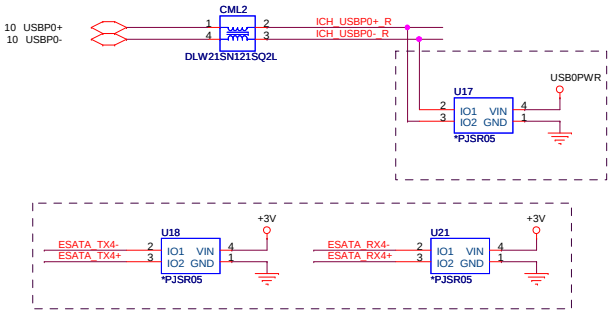


SATA ODD Connector.

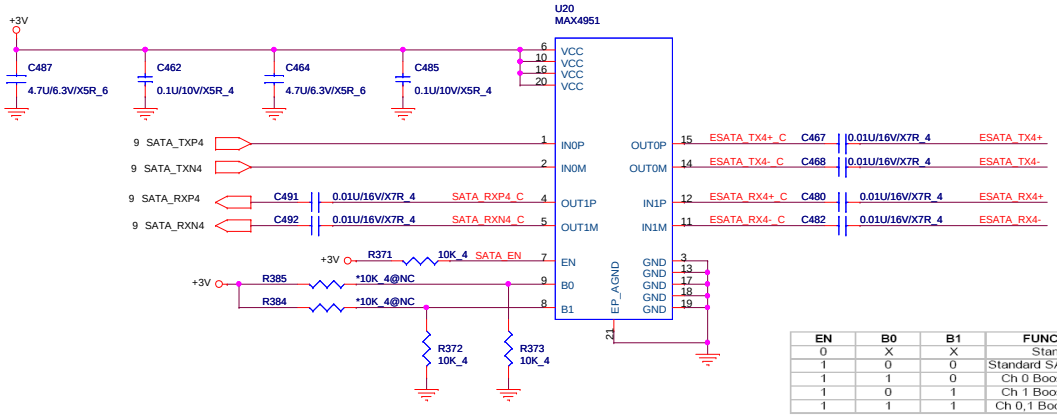


USB + E-SATA

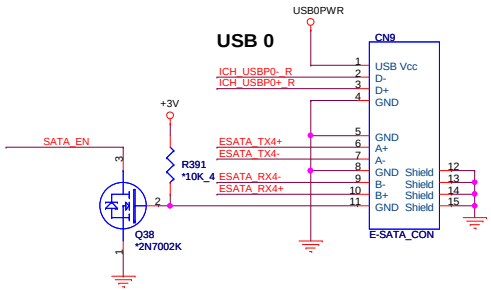




E-SATA RE-DRIVER



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

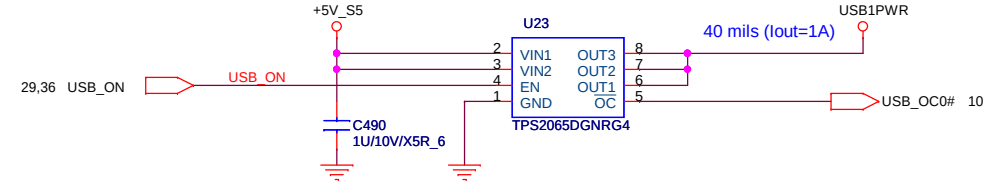


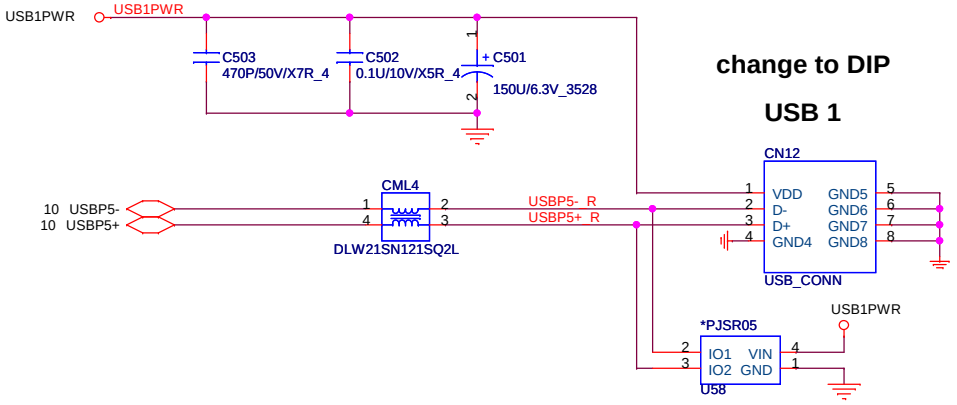
PROJECT : KL2E
Quanta Computer Inc.

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

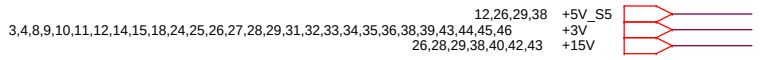
Date: Monday, October 18, 2010 Sheet 29 of 47

USBX3

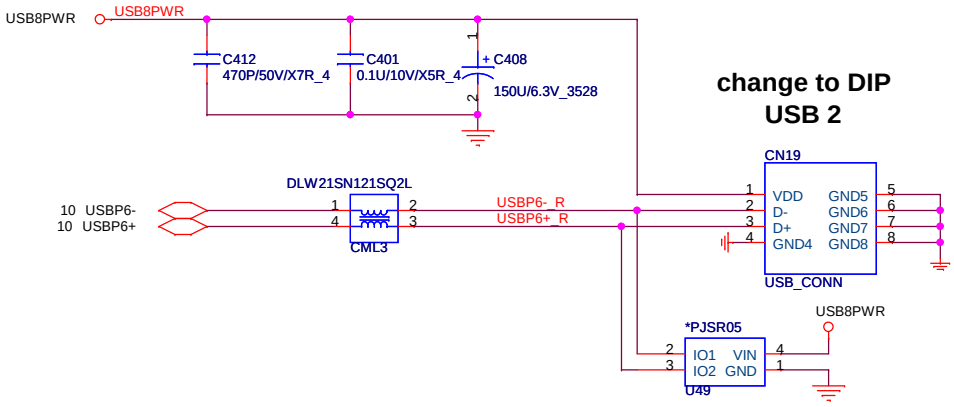


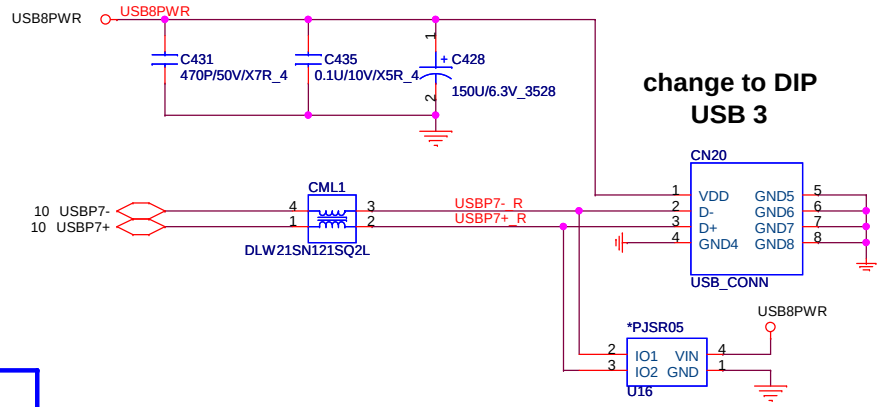


USB 1

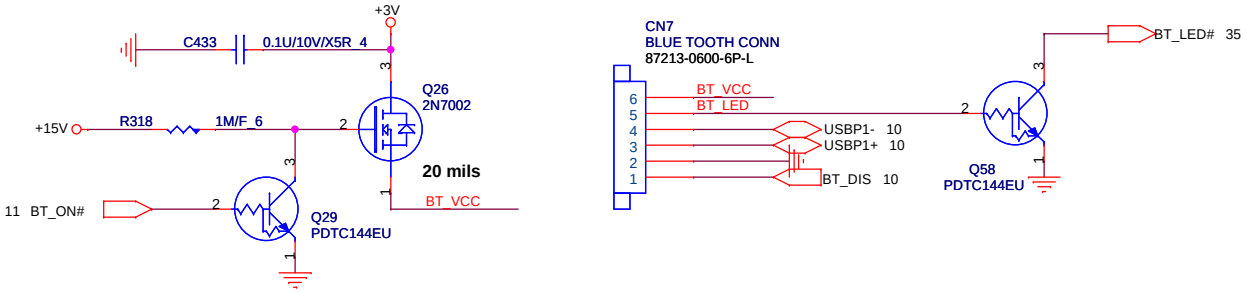


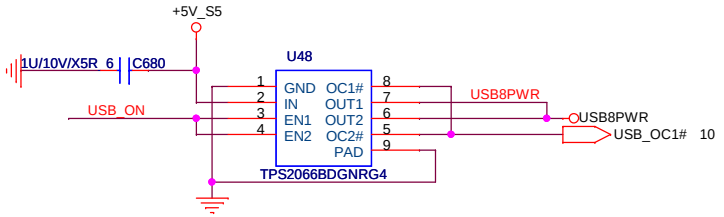
29





BLUETOOTH





PROJECT : KL2E

Quanta Computer Inc.

Size	Document Number	Rev
Custom	USB X3/BT	1A

Date: Monday, October 18, 2010 Sheet 30 of 47

3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,30,32,33,34,35,36,38,39,43,44,45,46 +3V

7 IN 1 CARD READER

C640 & C639 close to APVDD(pin5)
(length must under 120mil) and
trace width = 30mil, after C640,
pls put one more 0.1uF for it.

+1.8V_VDD
C449 10U/6.3V/X5R_6
C455 0.1U/10V/X5R_4
C453 0.1U/10V/X5R_4
C718 0.1U/10V/X5R_4
C704 1000P/50V/X7R_4

+3V
R637 *Short_8
C714 10U/6.3V/X5R_6
C708 0.1U/10V/X5R_4
C699 0.1U/10V/X5R_4
C705 0.1U/10V/X5R_4
C696 0.1U/10V/X5R_4
+3V_CARD

JMB385 C Only
R664 *0_4

JMB387 A Only
R657 0_4

U54
JMB385 C
JMB387 A
JMICRON

XD_D4/MS_D4
XD_D5/MS_D5
XD_D6/MS_D6
XD_D7/MS_D7
XD_RE#
XD_R/B#
XD_ALE
PWR_CTRL
SD_MMC_CD#
MS_CD#
xD_CD#
CR_CPPE#
R634 *0_4/S
EC C01
PCIE_CLKREQ_CAD# 10

XD_CLE
XD_WP#/SD_WP/MMC_WP#
XD_CE#/MS_SCLK/SD_CLK_L
XD_WE#/MS_BS/SD_CMD
XD_D3/MS_D3/SD_D3
XD_D2/MS_D2/SD_D2
XD_D1/MS_D1/SD_D1
XD_D0/MS_D0/SD_D0

4,10,27,32 PLTRST#

PCIE_RX7+_C C690 0.1U/10V/X5R_4
PCIE_RX7-_C C691 0.1U/10V/X5R_4
PCIE_RXP7_CARD 10
PCIE_RXN7_CARD 10
PCIE_TXN7_CARD 10
PCIE_TXP7_CARD 10

10 CLK_PCIE_CADN
10 CLK_PCIE_CADP
R632 9.1K_4
PREXT
Trace width = 12mil" at PREXT

CN11
R015-212-LM

XD_R/B#	1	(2)XD-R/B	(3)MS-DATA1
XD_RE#	2	(3)XD-RE	(2)MS-BS
XD_CE#/MS_SCLK/SD_CLK	3	(4)XD-CE	4IN1-GND2
XD_CLE	4	(5)XD-CLE	(4)SD-VCC
XD_ALE	5	(6)XD-ALE	(5)SD-CLK
XD_WE#/MS_BS/SD_CMD	6	(7)XD-WE	(7)SD-DAT0
XD_WP#/SD_WP/MMC_WP#	7	(8)XD-WP	(12)XD-D2
XD_D0/MS_D0/SD_D0	8	(10)XD-D0	(13)XD-D3
XD_D1/MS_D1/SD_D1	9	(11)XD-D1	(14)XD-D4
XD_D2/MS_D2/SD_D2	10	(9)SD-DAT2	(8)SD-DAT1
XD_D3/MS_D3/SD_D3	11	(1)SD-DAT3	(15)XD-D5
XD_WE#/MS_BS/SD_CMD	12	(2)SD-CMD	(16)XD-D6
	13	4IN1-GND1	(17)XD-D7
VCC_XD	14	(9)MS-VCC	(18)XD-VCC
XD_CE#/MS_SCLK/SD_CLK	15	(8)MS-SCLK	(19)XD-CD-SW
XD_D3/MS_D3/SD_D3	16	(7)MS-DATA3	SD-WP-SW
MS_CD#	17	(6)MS-INS	SD-CD-SW
XD_D2/MS_D2/SD_D2	18	(5)MS-DATA2	
XD_D0/MS_D0/SD_D0	19	(4)MS-DATA0	
	20		XD_D1/MS_D1/SD_D1
	21		XD_WE#/MS_BS/SD_CMD
	22		
VCC_XD	23		
XD_CE#/MS_SCLK/SD_CLK	24		
XD_D0/MS_D0/SD_D0	25		
XD_D2/MS_D2/SD_D2	26		
XD_D3/MS_D3/SD_D3	27		
XD_D4/MS_D4	28		
XD_D1/MS_D1/SD_D1	29		
XD_D5/MS_D5	30		
XD_D6/MS_D6	31		
XD_D7/MS_D7	32		
VCC_XD	33		
XD_CD#	34		
XD_WP#/SD_WP/MMC_WP#	35		
SD_MMC_CD#	36		
	37	SHIELD1-GND	
	38	SHIELD2-GND	
	41	SHIELD3-GND	
	42	SHIELD4-GND	

Memory Card Power Supply

250mA
PWR_CTRL
VCC_XD

Use 0805 type and
Trace width = 30 mil"
at MC_PWR_CTRL#,

C703 0.1U/10V/X5R_4
C442 10U/6.3V/X5R_6
C439 1U/6.3V/X5R_4

XD_CE#/MS_SCLK/SD_CLK_L
R648 BLM15BD121SN1D
XD_CE#/MS_SCLK/SD_CLK
C709 *20P/50V/COG_4
Ver.c

VCC_XD
R342 10K_4 XD_WE#/MS_BS/SD_CMD
R660 1K_4 XD_R/B#
R349 10K_4 XD_WP#/SD_WP/MMC_WP#

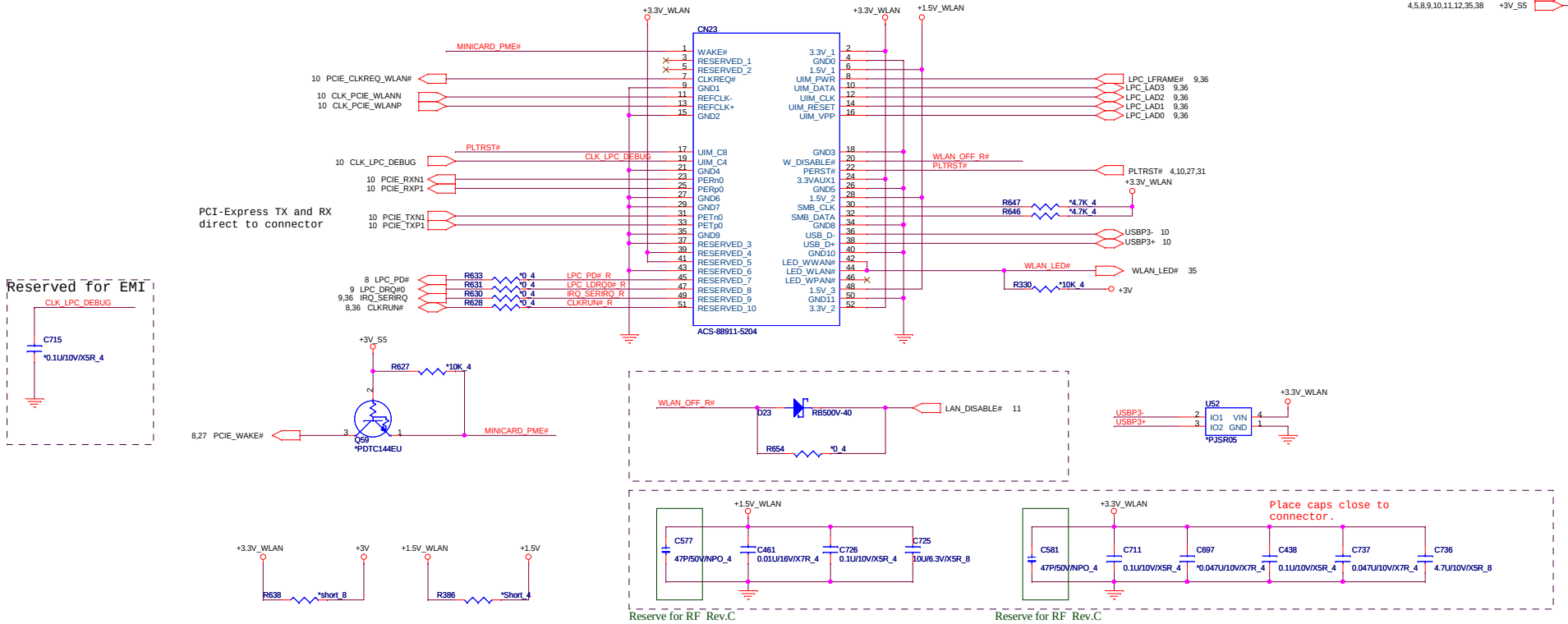
XD_RE# R663 200K_4
XD_ALE R656 200K_4

+3V_CARD
R636 4.7K_4 xD_CD#
R642 4.7K_4 MS_CD#
R643 4.7K_4 SD_MMC_CD#
R653 10K_4 XD_CLE

PROJECT : KL2E
Quanta Computer Inc.

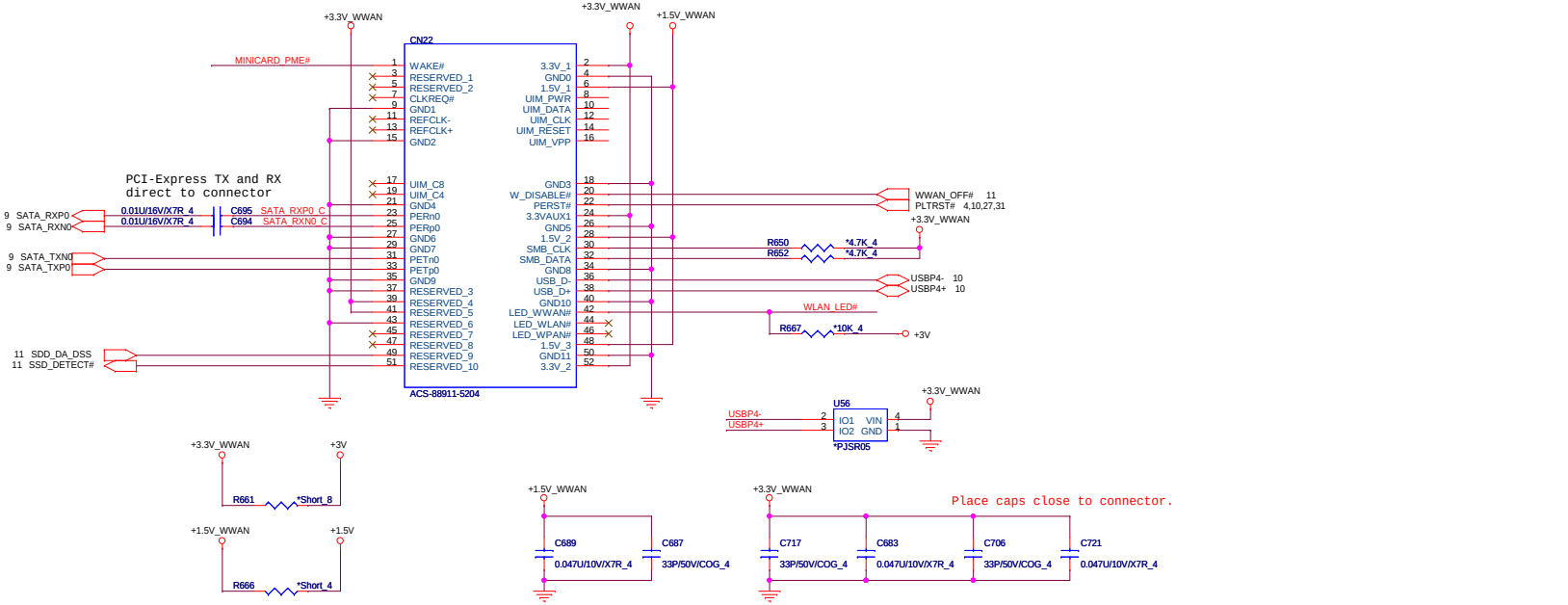
Size	Document Number	Rev
Custom	JMB385/387 Card Reader	1A
Date: Monday, October 18, 2010	Sheet 31 of 47	

MiniCard WLA connector



MiniCard WWAN/SATA SSD connector

SIM Card CONN

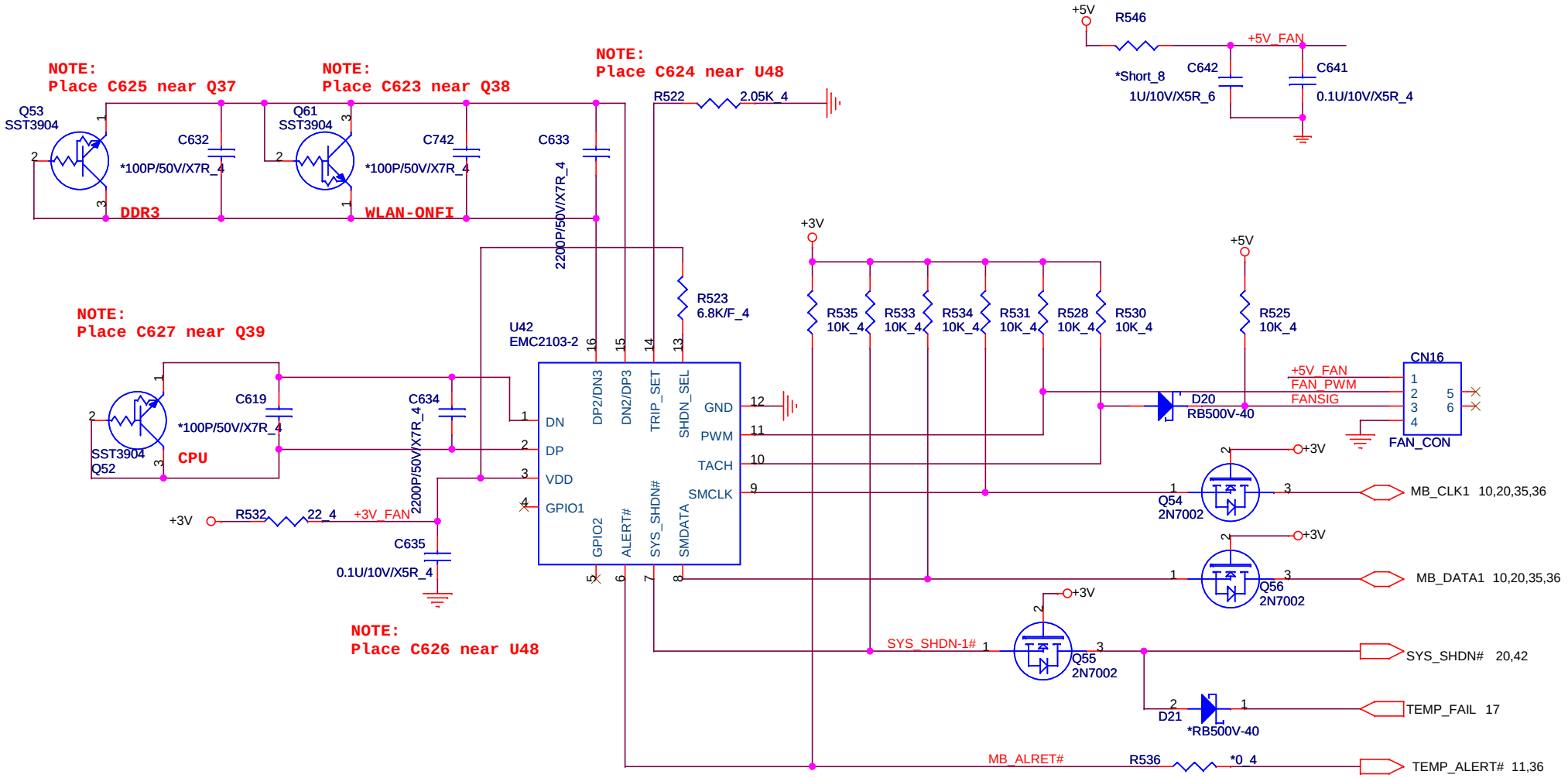


PROJECT :	KL2E
Quanta Computer Inc.	
Size: Custom	Document Number: MINI-Card (WLAN/WWAN) Rev: 1A
Date: Monday, October 18, 2010	Sheet 32 of 47

FAN CONTROL

3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,30,31,32,34,35,36,38,39,43,44,45,46 +3V
9,12,18,24,25,26,28,29,34,36,38,39 +5V

33

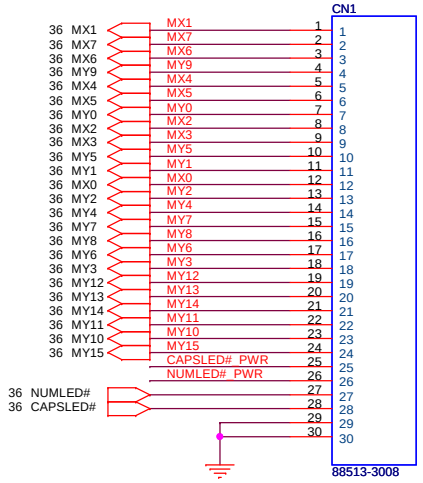


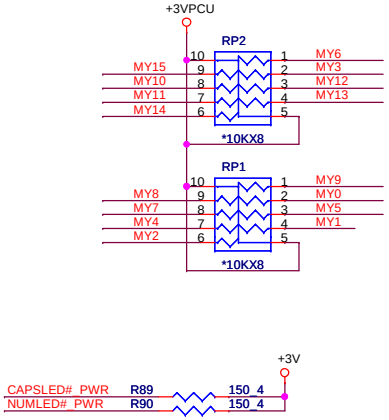
PROJECT : KL2E

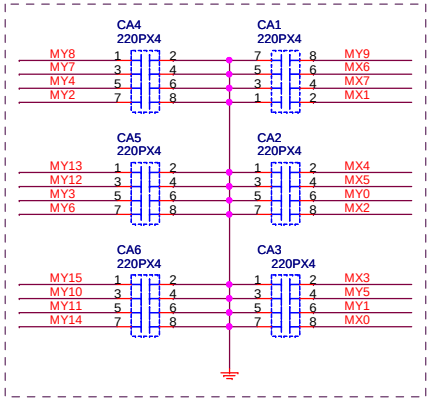
Quanta Computer Inc.

Size	Document Number	Rev
Custom	FAN /THERMAL	1A
Date: Monday, October 18, 2010	Sheet 33 of 47	

KEYBOARD



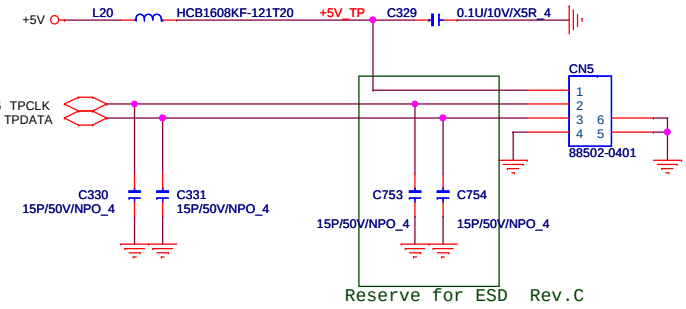




For EMI request

9,12,18,24,25,26,28,29,33,36,38,39 +5V
8,9,26,27,29,35,36,38,39,42,44,46 +3VPCU
26,28,29,30,38,40,42,43 +15V
3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,30,31,32,33,35,36,38,39,43,44,45,46 +3V

Touch pad

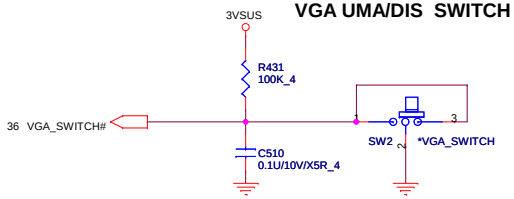


Reserve for ESD Rev.C

Backlight Keybaord Con.

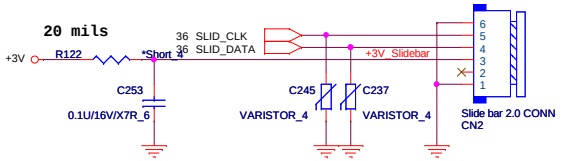
PROJECT : KL2E		
Quanta Computer Inc.		
Size: Custom	Document Number: K/B, T/P	Rev: 1A
Date: Monday, October 18, 2010	Sheet 34 of 47	

VGA UMA/DIS SWITCH



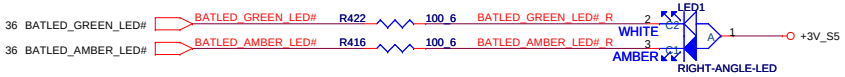
8,9,26,27,29,34,36,38,39,42,44,46 +3VPCU
3,4,8,9,10,11,12,14,15,18,24,25,26,27,28,29,30,31,32,33,34,36,38,39,43,44,45,46 +3V
36,38,44 3VSUS

Slide bar 2.0

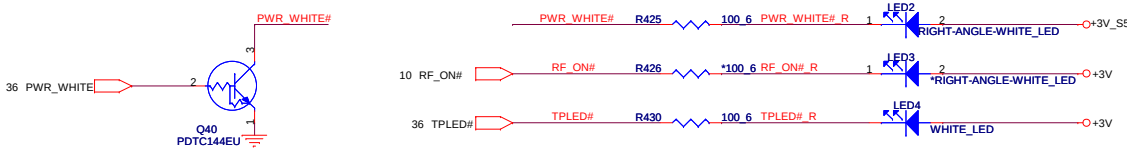


VGA

Battery



Power/suspend LED



RF

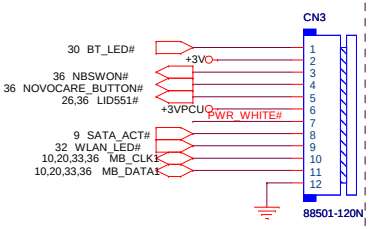
TP

POWER BOARD

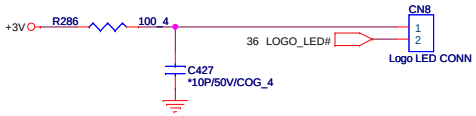
BT

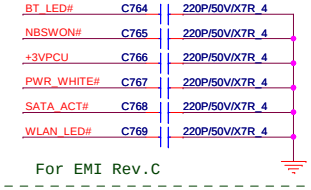
WWAN
HDD
WLAN

LIGHT SENSOR



Logo LED CONN





5VPCU Cable for CPU Core Power

PROJECT : KL2E
Quanta Computer Inc.

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

Date: Monday, October 18, 2010 Sheet 35 of 47

IT8518 IT8519

Reserve for RF Rev.C

Layout Note:
Place all capacitors close to IT8512.

Reserve for ESD Rev.C

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

EMI suggestion:
Add a 15p bypass CAP on CLK_PCI_8512

(For PLL Power)

RF ON/OFF SWITCH

POWER SWITCH/ NOVO BUTTON

16Mbit (2M Byte), SPI

Winbond	AKE38ZP0N00
SST	AKE28FP0K07
MX	AKE37FP0Z13

Reserve for RF Rev.C

Borad ID

DIS =>R325
SW/UMA=>R328

PROJECT	KL2E
Quanta Computer Inc.	
Size: Custom	Document Number: KBC IT8512E
Rev: 1A	
Date: Monday, October 18, 2010	Sheet 36 of 47

MiniCard WLAN

HOLE28 H-TC197D79PT
HOLE29 H-TC197D79PT

MiniCard WWAN

HOLE30 H-TC197D79PT

Hole for PCH support

HOLE24 H-TC197D59PT
HOLE27 H-TC197D59PT

HOLE31 H-TC197D79PT
HOLE32 H-TC197D79PT
HOLE33 H-TC197D79PT
HOLE34 H-TC197D79PT
HOLE35 H-TC197D79PT
HOLE36 H-TC197D79PT

Hole for CPU support

HOLE4 *H-C142D142N
HOLE8 *H-C142D142N
HOLE5 *H-C142D142N
HOLE7 *h-bc142tc221d142pt

VGA nut

HOLE20 H-TC197BC138I102D102P2
HOLE22 H-TC197BC138I102D102P2

PAD

HOLE26 *SPAD-S79
HOLE25 *SPAD-S79
HOLE21 *SPAD-S83X71
HOLE23 *SPAD-S87X73

Boundary Hole

HOLE1 *h-sd106p2-kl2
HOLE11 *H-C315I3146BO378D106P2
HOLE15 *H-C118D118N
HOLE18 *H-C315I126D106P2
HOLE19 *H-C315I126D106P2
HOLE13 *H-TC197BC256D106P2
HOLE17 *H-C315I126D106P2
HOLE16 *H-C315I126D106P2
HOLE14 *H-C118D118N
HOLE9 *H-TC197BC256D106P2
HOLE3 *H-C315I126D106P2

ESD Mask Copper

CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9 CO10 CO11 CO12
CO13 CO14 CO15 CO16 CO17 CO18 CO19 CO20 CO21 CO22

Boundary Hole

HOLE2 *H-TC197BC256D106P2
HOLE6 *O-KL2-1
HOLE12 *O-KL2-2

HDD PAD

EC QV08

HOLE10 *H-O158X355D158X355N

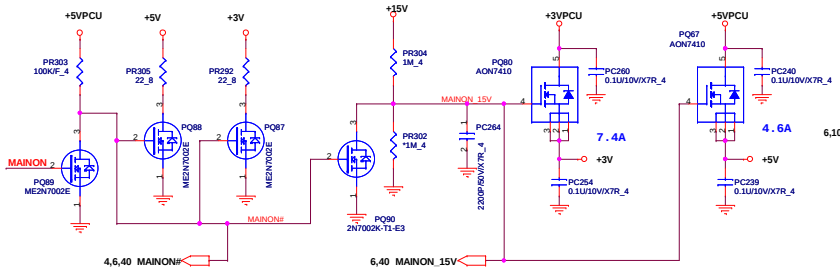
PROJECT : KL2E
Quanta Computer Inc.

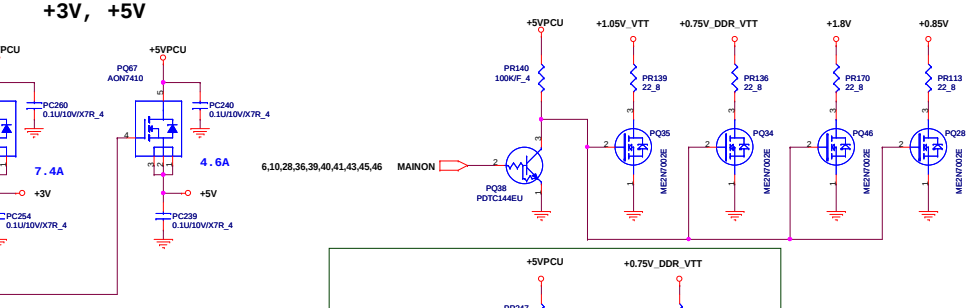
Size	Document Number	Rev
Custom	HOLD & SKEW	1A

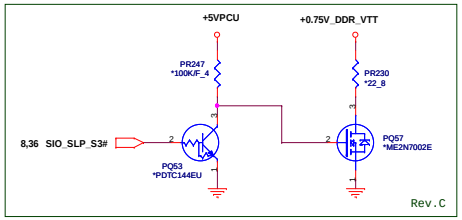
Date: Monday, October 18, 2010 Sheet 37 of 47

DISCHARGE

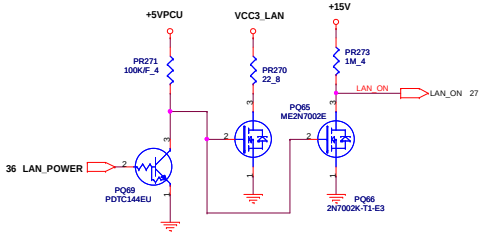
+3V, +5V



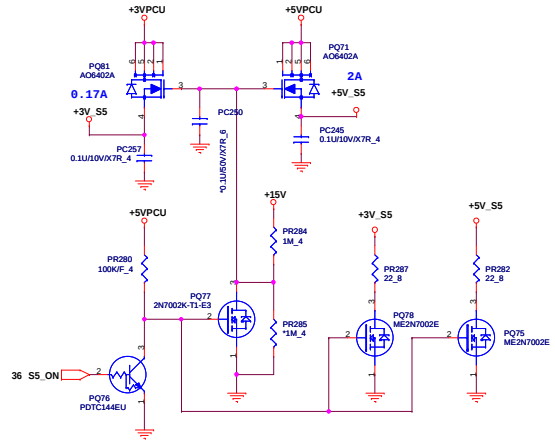


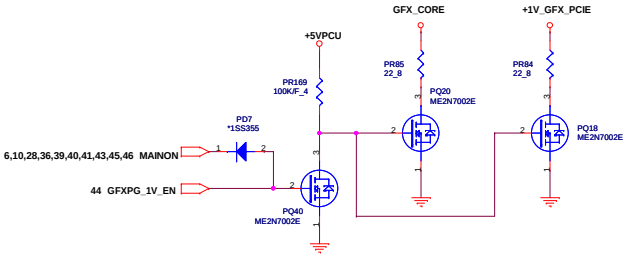


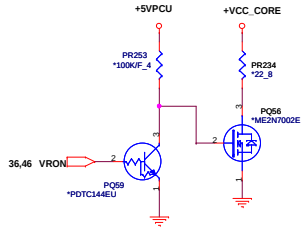
LANVCC



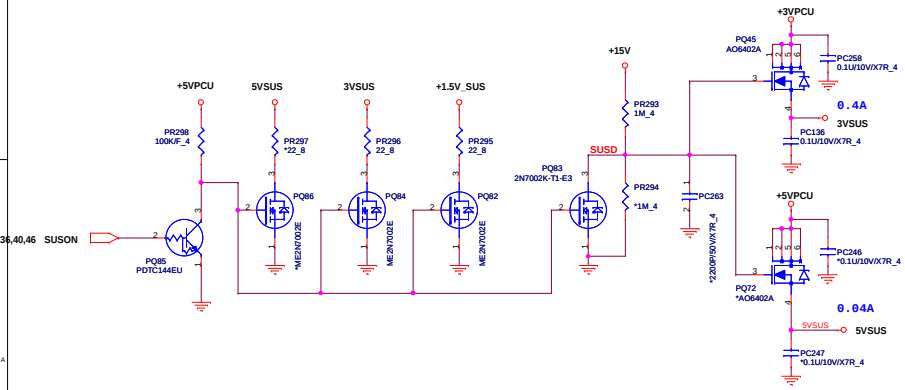
3V_S5, 5V_S5

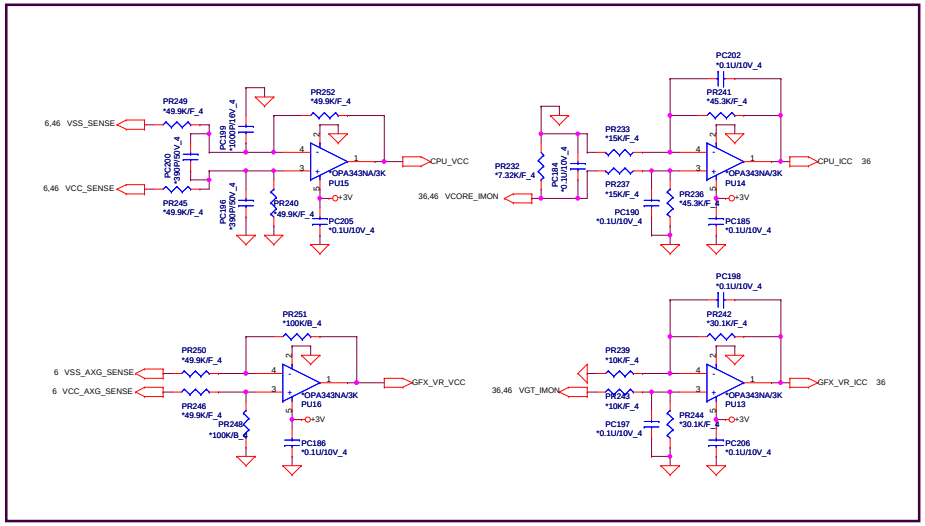






3VSUS, 5VSUS

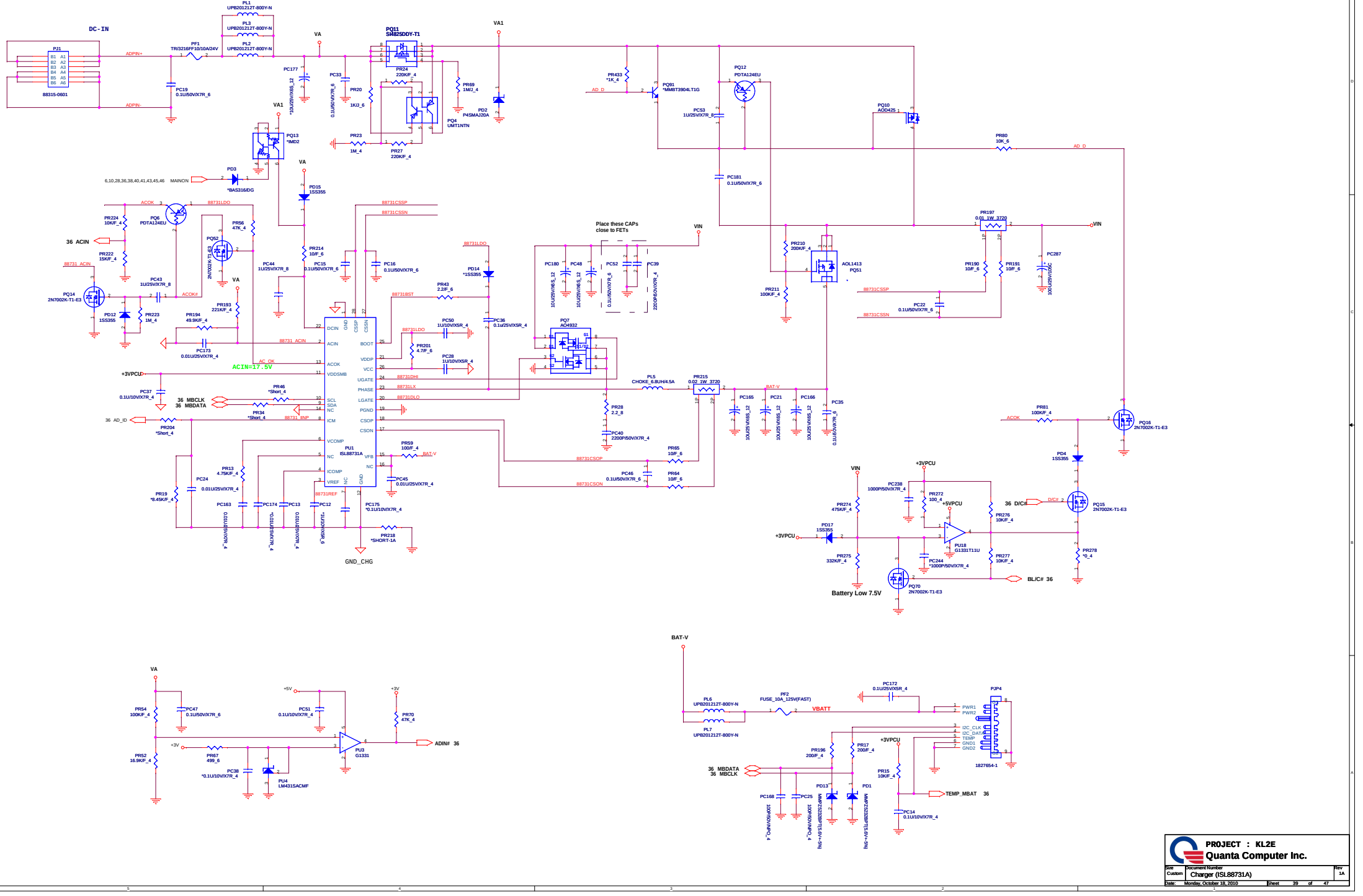




PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Discharge	1A

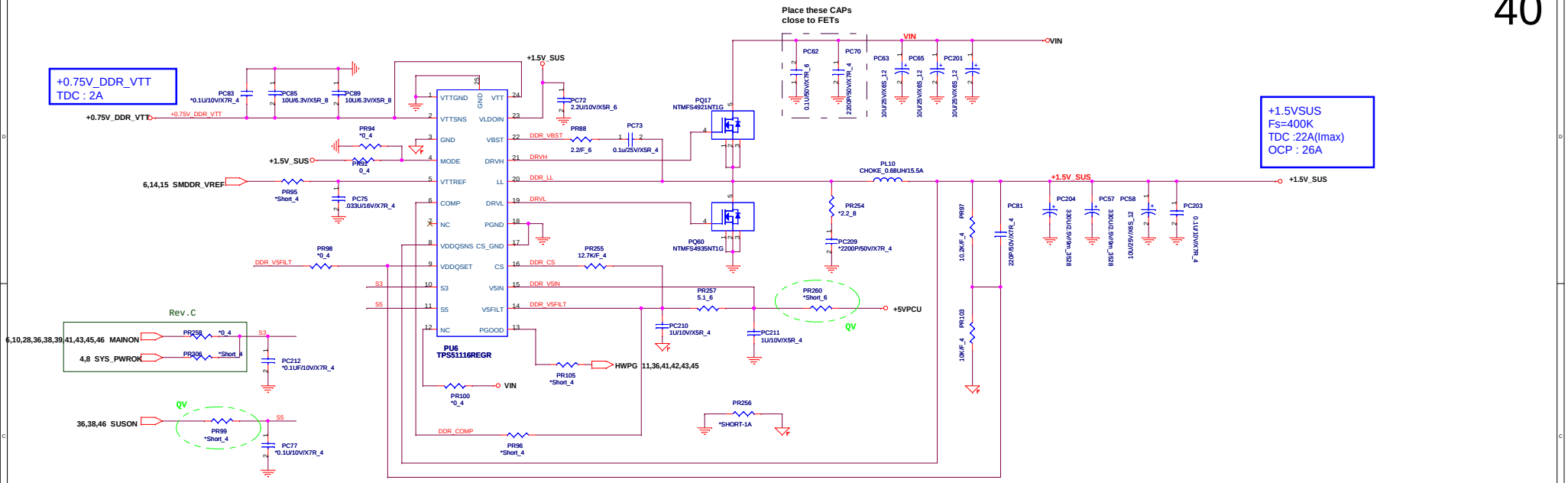
Date: Monday, October 18, 2010 Sheet 38 of 47

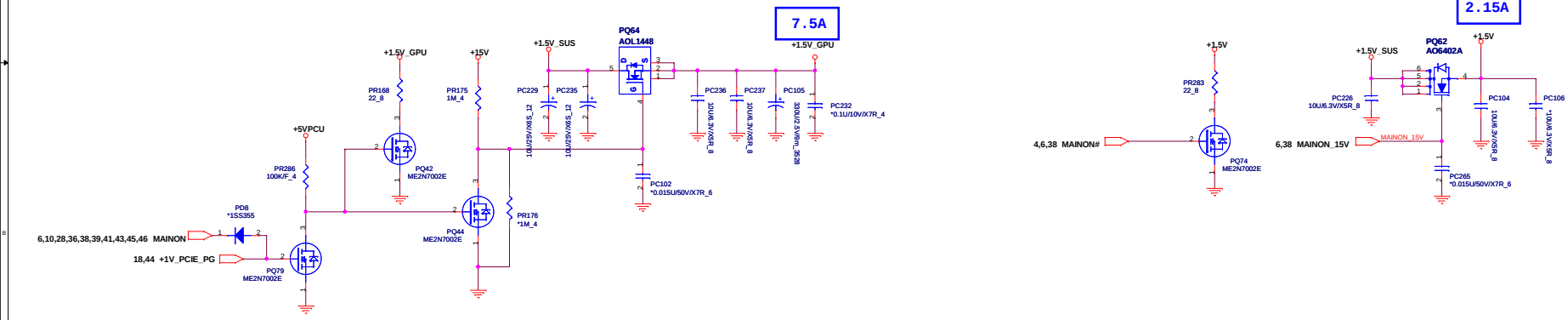


PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Charger (ISL88731A)	1A

Date: Monday, October 18, 2010 Sheet 39 of 47

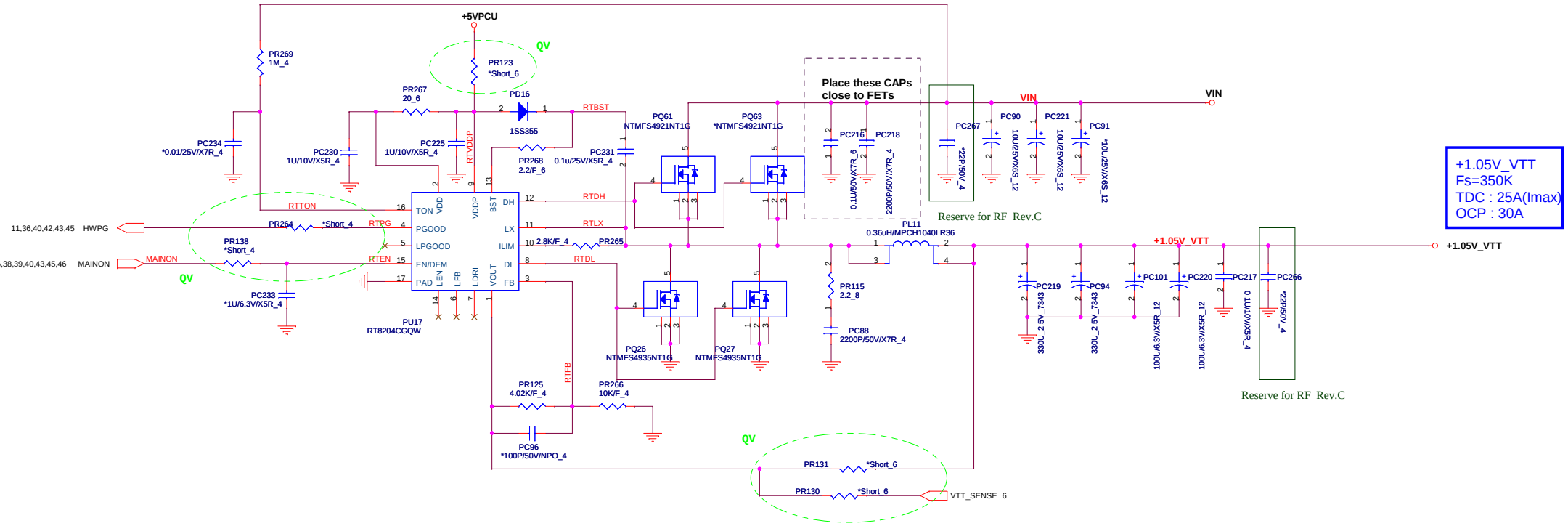




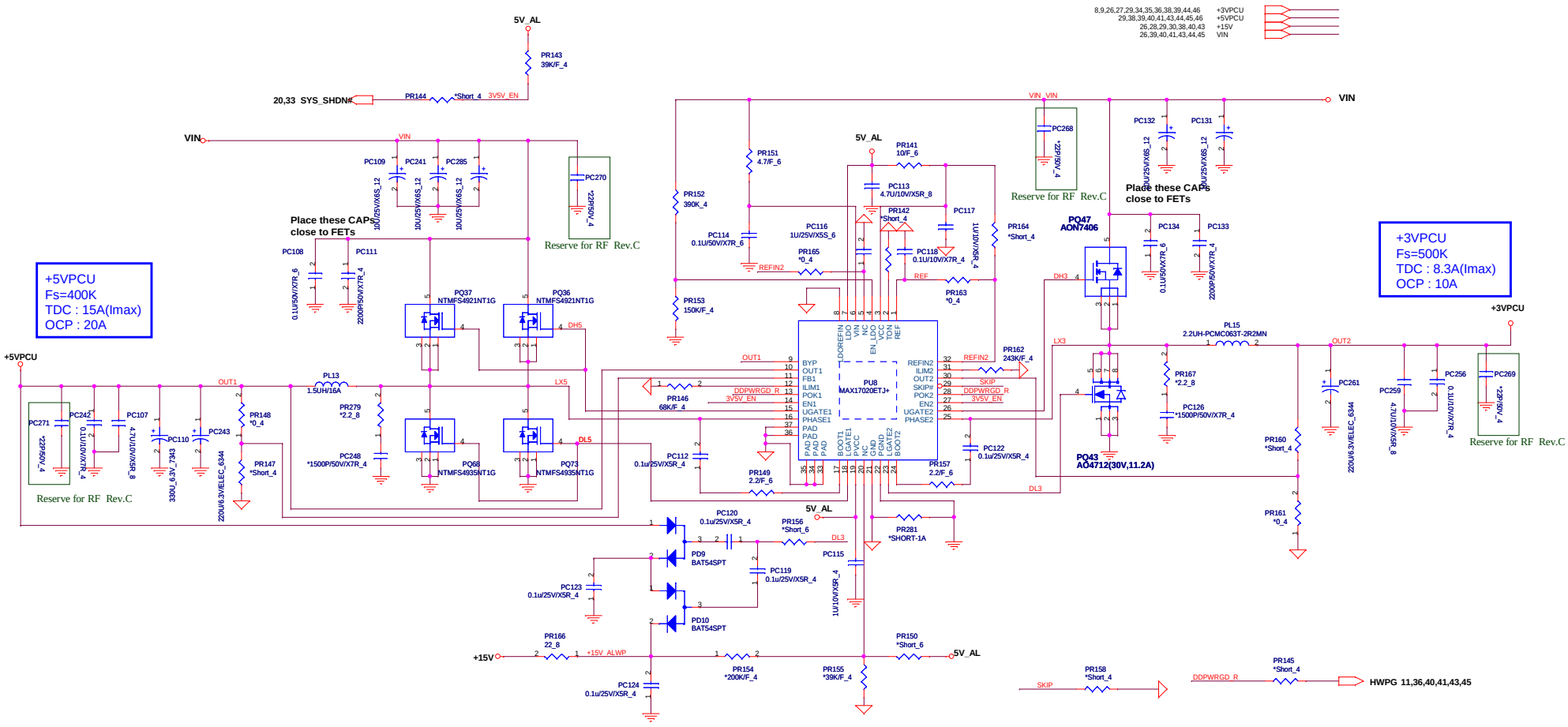
For S3 Power Saving

PROJECT : KL2E
Quanta Computer Inc.

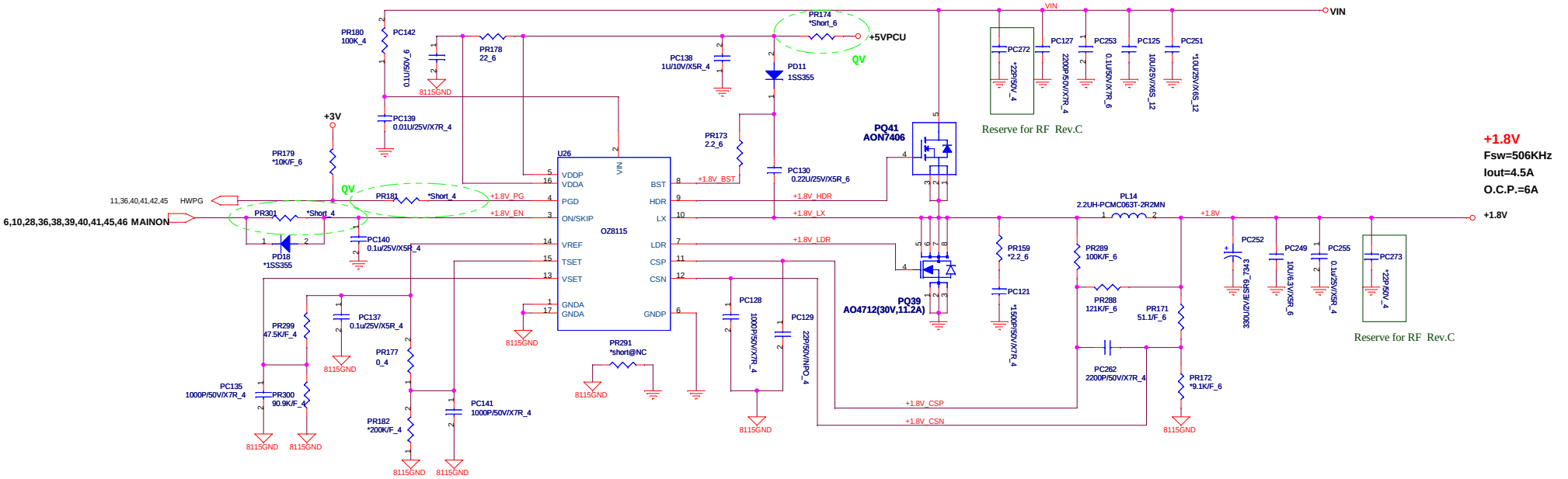
Size	Document Number	Rev
Custom	DDR3/0.75V (TPS51116REGR)	1A
Date: Monday, October 18, 2010	Sheet 40 of 47	



PROJECT : KL2E			
Quanta Computer Inc.			
Size: Custom	Document Number: 1.05V_VTT (RT8204)		Rev: 1A
Date: Monday, October 18, 2010	Sheet 41 of 47		

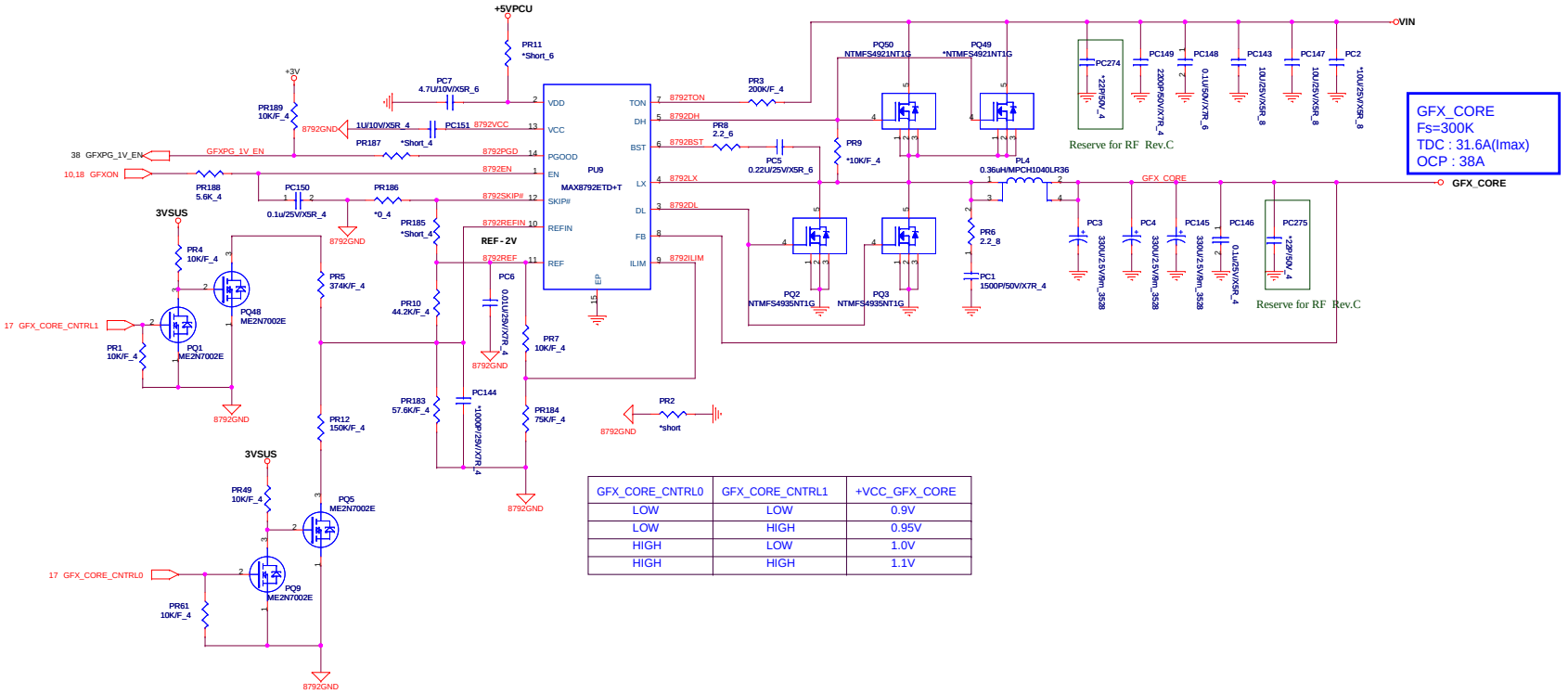


PROJECT : KL2E	
Quanta Computer Inc.	
Size: C	Document Number: 3V/5V (MAX17020ETJ+)
Rev: 1A	
Date: Monday, October 18, 2010	Sheet 42 of 47

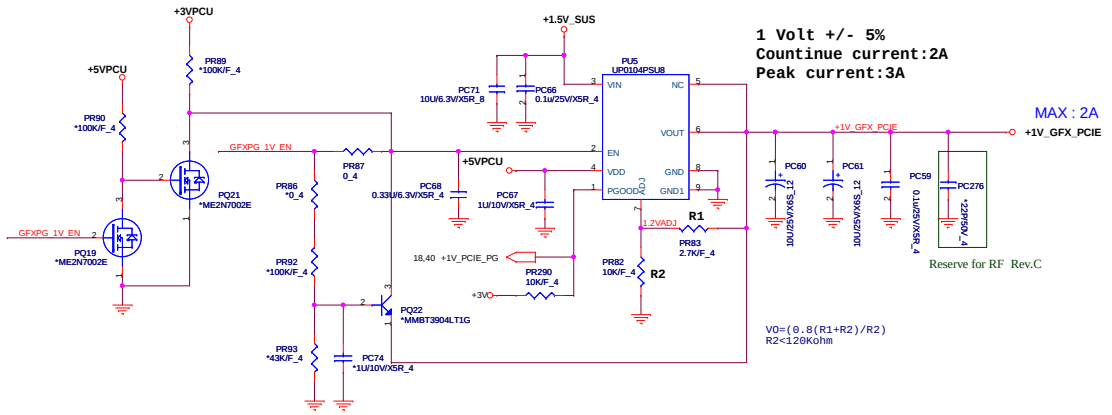


PROJECT : KL2E
Quanta Computer Inc.

Size: Custom | Document Number | Rev: A
Date: Monday, October 18, 2010 | Sheet 43 of 47



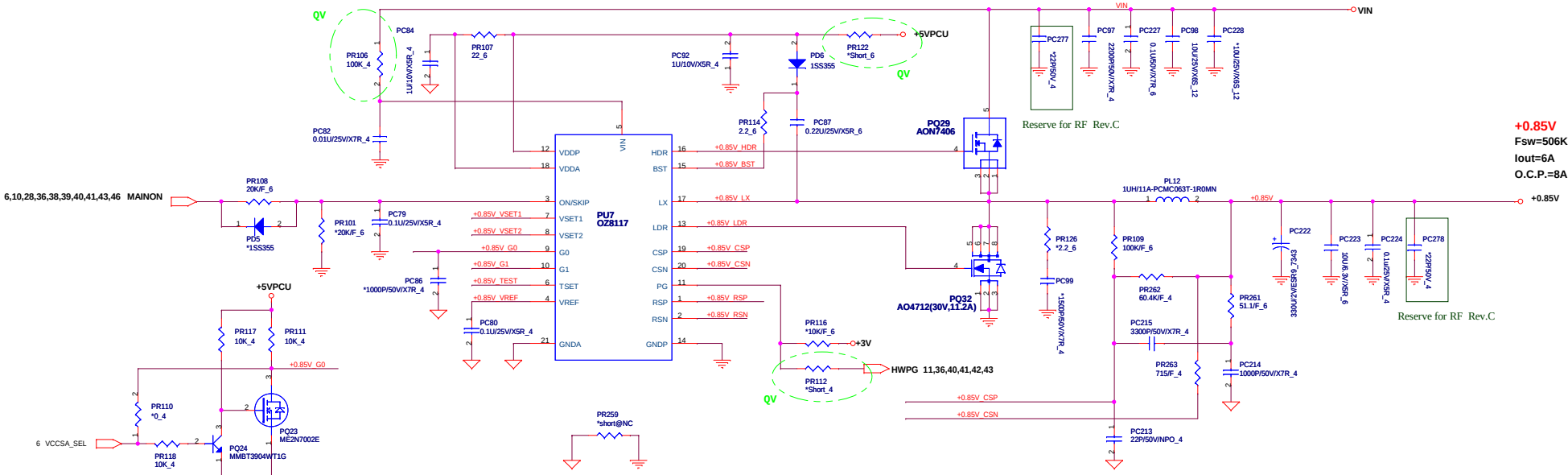
GFX_CORE_CNTRL0	GFX_CORE_CNTRL1	+VCC_GFX_CORE
LOW	LOW	0.9V
LOW	HIGH	0.95V
HIGH	LOW	1.0V
HIGH	HIGH	1.1V



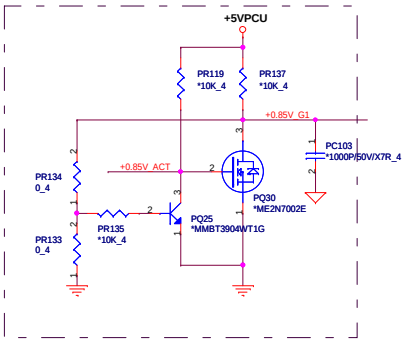
PROJECT : KL2E
Quanta Computer Inc.

Size	Document Number	Rev
Custom	DIS_GFX_VCC (MAX8792)	1A

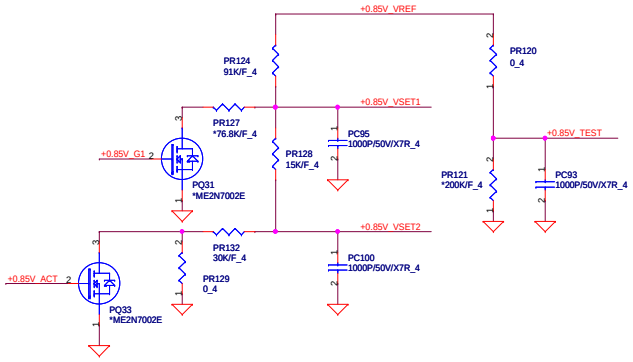
Date: Monday, October 18, 2010 Sheet 44 of 47

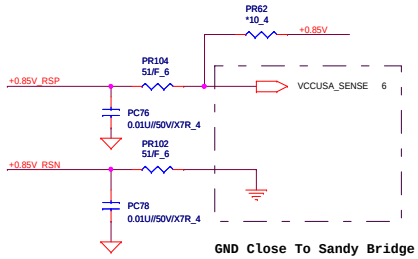


	VCCSA_SEL	VCCUA(+0.85V)
0	0	0.9V
0	1	0.8V



For Sandy Bridge And IV Bridge VID Select



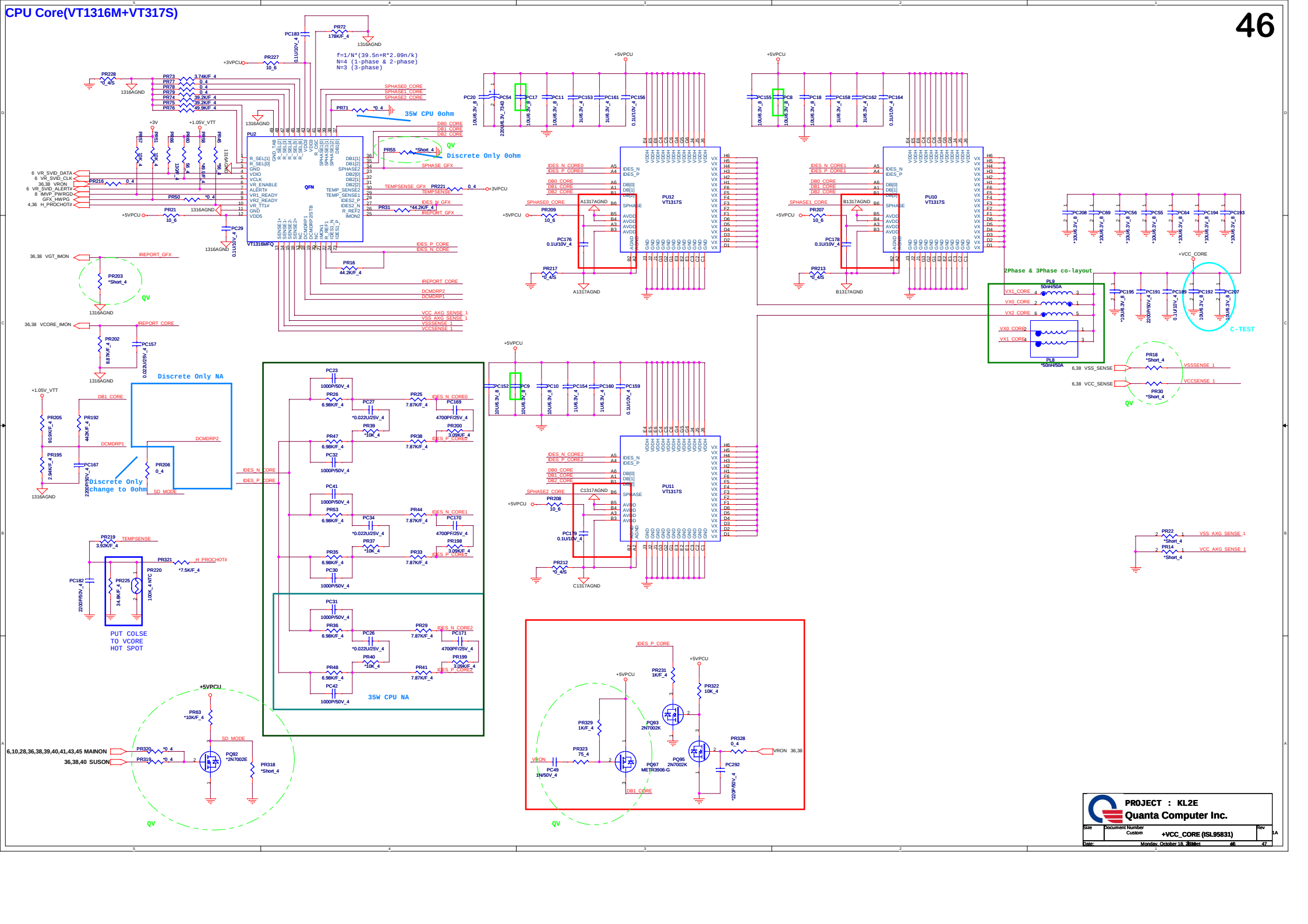


GND Close To Sandy Bridge Processor (POWER) Side

PROJECT : KL2E
Quanta Computer Inc. <Project Name>

Size	Document Number	Rev
	+0.85V (uP6112)	1A

Date: Monday, October 18, 2010 Sheet 45 of 47


f=1/N*(39.5n+R*2.09n/k)
N=4 (1-phase & 2-phase)
N=3 (3-phase)
35W CPU 0ohm
QV
Discrete Only 0ohm
Discrete Only NA
Discrete Only change to 0ohm
35W CPU NA
2Phase & 3Phase co-layout
C-TEST
PUT COLSE TO VCORE HOT SPOT
PROJECT : KL2E
Quanta Computer Inc.
+VCC_CORE (ISL95831)
Monday, October 18, 2010
Sheet 46 47

EC #	Page	Description	Part Affected