Page	Title of schematic page	Rev.	Date
01	Page List	1A	
02	Block Diagram	1A	
03	Change List	1A	
04	FP2 1/4(PEG&UMI)	1A	
05	FP2 2/4(DDR3 I/F)	1A	
06	FP2 3/4(DP/MISC)	1A	
07	FP2 4/4(POWER/GND)	1A	
08	FCH 1/6(GPIO/USB/AZ)	1A	
09	FCH 2/6(UMI/PCIE/PCI/CLK)	1A	
10	FCH 3/6(SATA/VGA/SPI)	1A	
11	FCH 4/6(POWER)	1A	
12	FCH 5/6(Strap)	1A	
13	FCH 6/6(GND)	1A	
14	DDR3 DIMM-0-STD	1A	
15	DDR3 DIMM-1-STD	1A	
16	WPCE985L & FLASH	1A	
17	LVDS\TS\NFC	1A	
18	CARD READER(RTS5209)	1A	
19	HDMI/THERMAL	1A	
20	USB	1A	
21	LAN (RTL8111GS)	1A	
22	WLAN/KB-BL	1A	
23	HDD/ODD/G-SENSOR/TP/FAN	1A	
24	Audio ALC233-CG	1A	
25	LED/PS/DMIC\Camera	1A	
26	POWER +VCC_CORE (ISL62771)	1A	
27	POWER 3VPCU&RVCC5(TPS51427)	1A	
28	POWER 1.35VSUS/VTT_MEM	1A	
29	POWER +1.1V(G5602R41U)-5A	1A	
30	POWER VCC1.2/VCC2.5/Thermal	1A	
31	POWER(BAT IN / ADA IN/ UL)	1A	
32	POWER CHARGER (ISL88731C)	1A	
33	HOLE/EMI/KB	1A	
34	eDP to LVDS	1A	
35	IO PORT LIST	1A	

* : No mount
I@ : For native eDP output
D@ : For eDP to LVDS output

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HKA BLOCK DIAGRAM

02

DDR3L : 1.35V
DDR3 : 1.5V

Dual Channel

P14~P15

DDR SYSTEM MEMORY

AMD <CPU>
RICHLAND
BGA827
(31mm X 27mm)

P4~P7

eDP

eDP to LVDS
RTD2136R

LVDS

P35

P17

HDMI

P19

UMI

TOUCH SCREEN

P17

PORT5

Camera P25

PORT7

WiMax/BT P22

PORT6

USB I/O P20

PORT1

USB I/O P20

PORT0

USB I/O P20

PORT1

USB I/O P20

PORT0

PORT11

PORT10

USB 2.0

USB 3.0

P23 HDD SATA0 6Gb/s

P23 ODD SATA1 3Gb/s

AMD <FCH>
BOLTON-M3
BGA656
(24.5mm X 24.5mm)

SATA Gen3

SATA Gen2

USB

PCIE Interfaces

HDA

SPI

P8~P13

5GT/s

PCI-Express Gen2

PCIE2

PCIE0

PCIE1

Giga-LAN
RTL8111GS
P21

RJ45

P21

WLAN/BT P22

Card Reader
RTS5227E
P18

SD-XC

P18

Azalia

Audio CODEC
ALC233-CG
P24

SPI ROM
8MB P10

LPC

Thermal Sensor
Beside CPU
Beside HDD
Beside Audio Jack
P19

EC
NPCE985L
P16

I2C

NFC
Foxconn
T77H446 P17

Lid Switch
P16

Power LED
Charge LED
HDD Status LED
Caps Lock LED
Num Lock LED

Button
ASSIST#
Power SW

Woofer

P34

HP Jack

P24

MIC Jack

P24

SPK

P24

DMIC

P24

G Sensor
LIS331DLHTR
P23

SPI

PS2/SMBUS
P23

Touch Pad

P22,P33

Back Light Keyboard

Change List

MB_SCH_DVT_001

P21 Reserve U30,LR12,LR13,LC21

Reason : For LAN S5 wake up won't be supported.
Possible Risk: No.

MB_SCH_DVT_002

P25 Chang R198 and R309 resistor

Reason : Modify circuit for LED Light
Possible Risk: No.

MB_SCH_DVT_003

P22 Delete R333 0ohm and add F9(0.35A) fuse

P22 Delete R468[100K],Q33[2N7002]

Reason : Modify circuit for KB BL protection.
Possible Risk: No.

MB_SCH_DVT_004

P9 Change part of Crystal Y1 32.768K.

Reason : Original part is EOD.
Possible Risk: No.

MB_SCH_DVT_005

P8 Modify circuit for NFC function.

Change R865,R866 to R861,R864.
change NFC_EN from GPIO166 to GEVENT22#.

Reason : To enable NFC function.
Possible Risk: No.

MB_SCH_DVT_006

P16 Reserve diode KD4 for EC_PWRBTN#.

P22 Reserve diode D12 for WLAN_RF_ON.

Reason :For cost down.
Possible Risk: No.

MB_SCH_DVT_007

P20 Add choke for USB ports.

P25 Add choke for Camera USB interface.

Reason :EMI issue.
Possible Risk: No.

MB_SCH_DVT_008

P7,P11 Change capacitors 22U X5R 0805 to 22U X5R 0603.

Reason :To enlarge the distance between Cap. and Keyboard.
Possible Risk: No.

MB_SCH_DVT_009

P33 Change FCH NUT shape.

Reason :To fit screw's size.
Possible Risk: No.

MB_SCH_DVT_010

P16 Add KR42 10K ohm.

Reason :To fit LVDS panel power sequence.
Possible Risk: No.

MB_SCH_DVT_011

P8 Add SMBUS path from FCH to RTD2136R.

Reason :Reserve the way to flash RTD2136R eFuse.
Possible Risk: No.

MB_SCH_DVT_012

P9,P21 Change Capacitors for XTAL Y2, LY1.

Reason :For more precisely frequency of XTAL.
Possible Risk: No.

MB_SCH_DVT_013

P19 Change Resistor of HDMI signals resistors.

Reason :For better HDMI signal quality.
Possible Risk: No.

POWER

2A-P1
Change PC580 and PC599 from 0.047u to 0.068 for fine tune IC response

2A-P2
add PC617, PC618, PC619, PC620 for meet AMD SPEC of ripple

2A-P3
change PR58 from 255k to 196k for fine tune OCP

2A-P4
change from 3.75k to 3K for fine tune OCP

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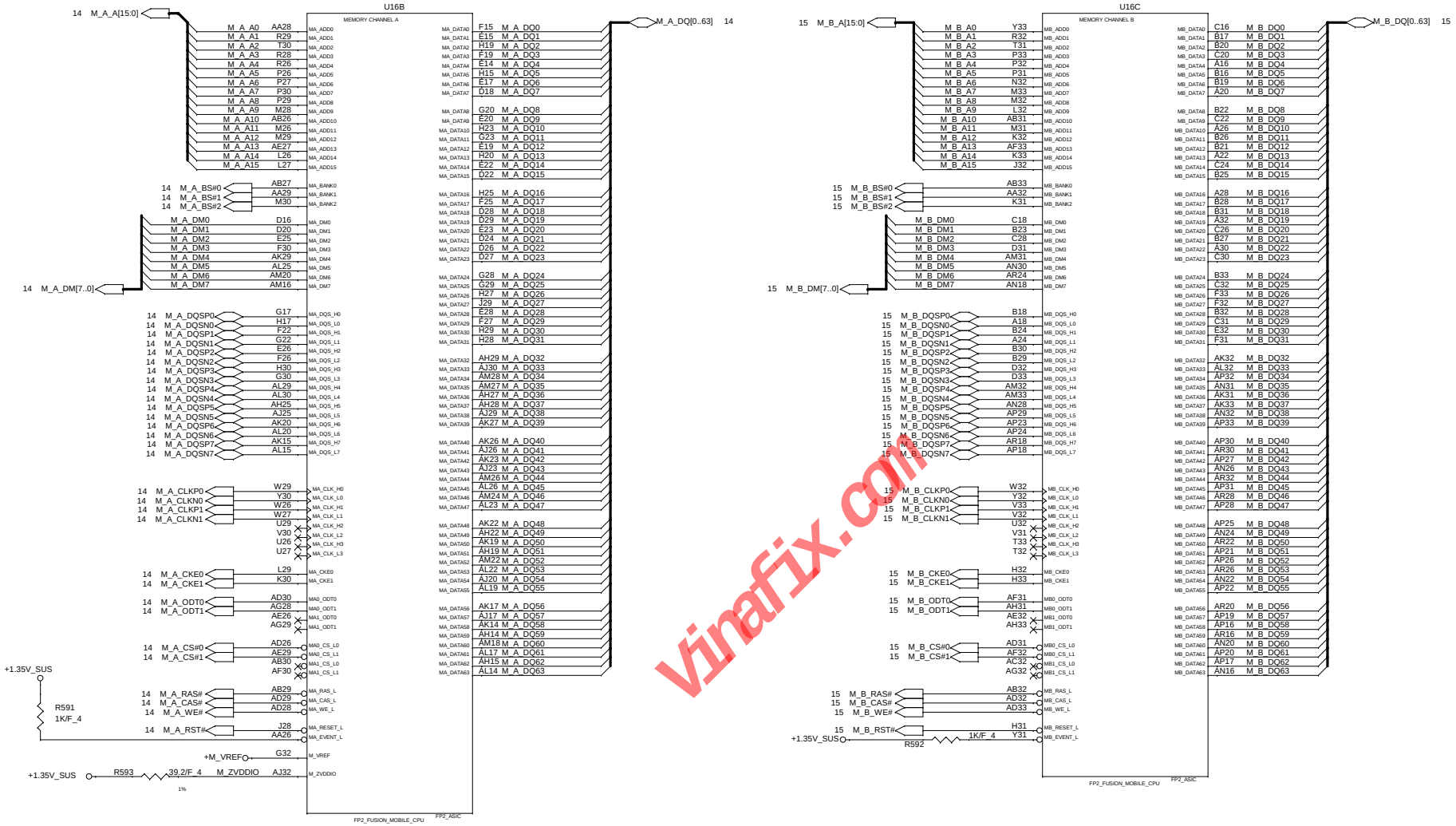
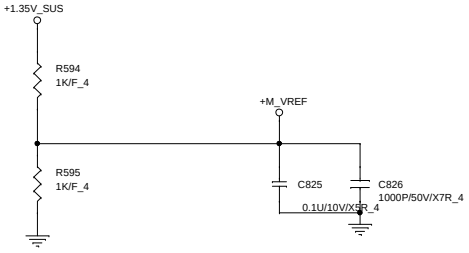
PROJECT : HKB

Size	Document Number	Rev
	FP2 1/4(PEG&UMI)	1A
Date: Tuesday, April 23, 2013	Sheet 4 of 36	





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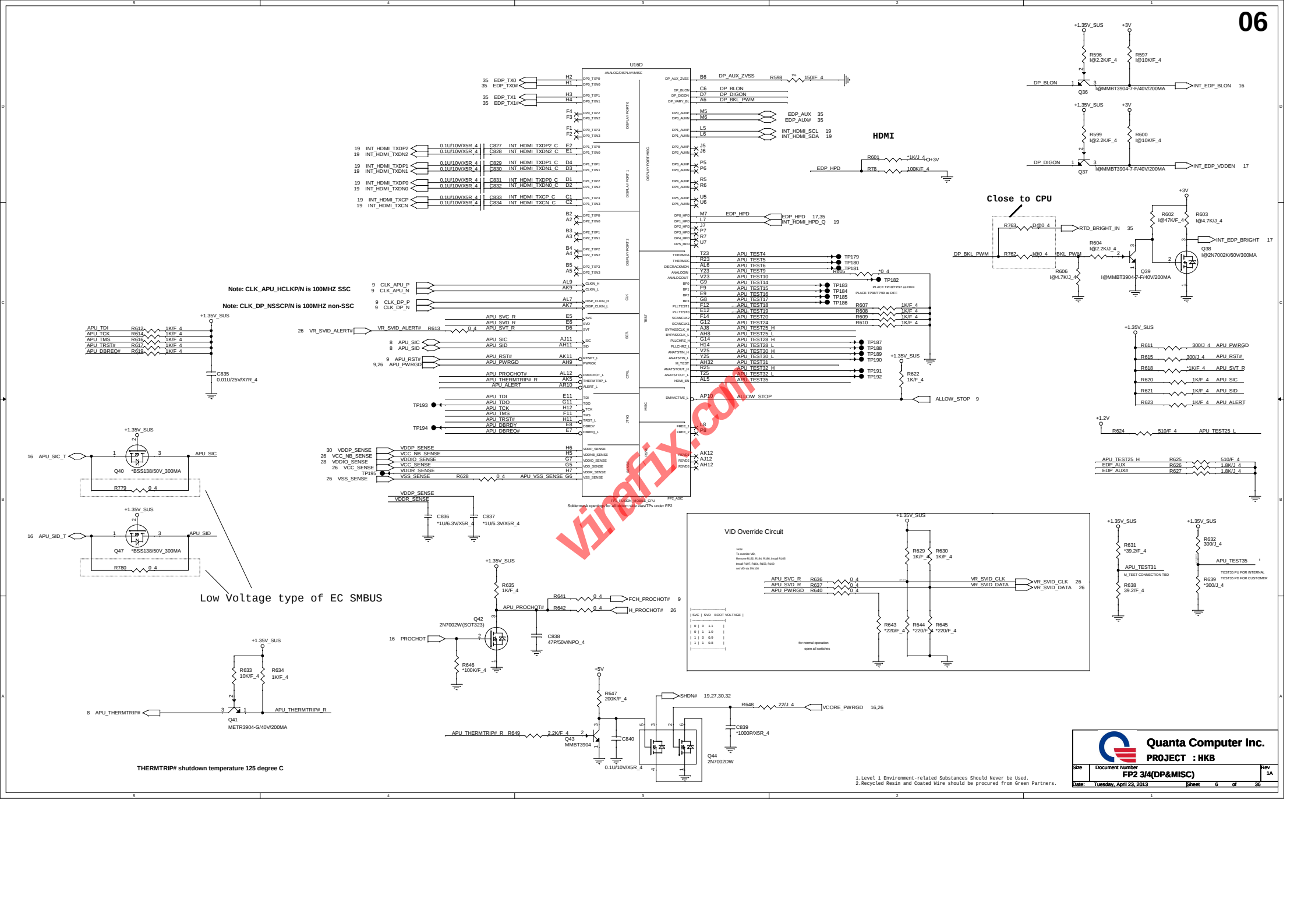
PROJECT : HKB

Size	Document Number	Rev
	FP2 2/4(DDR3 I/F)	1A
Date: Tuesday, April 23, 2013	Sheet 5 of 36	


U16D
ANALOG/DISPLAY/MISC
DISPLAY PORT 0
DISPLAY PORT L
DISPLAY PORT MISC
DISPLAY PORT 2
CLK
TEST
SER
CTRL
JTAG
MISC
POWER
GROUND
FP3_EGDON_MOBILE_CPU
FP2_ASIC
Note: CLK_APU_HCLKP/N is 100MHZ SSC
Note: CLK_DP_NSSCP/N is 100MHZ non-SSC
HDMI
Close to CPU
VID Override Circuit
Low Voltage type of EC SMBUS
THERMTRIP# shutdown temperature 125 degree C
Soldermask opening for all bottom side vias/TPs under FP2
Quanta Computer Inc.
PROJECT : HKB
FP2 3/4(DP&MISC)
Date: Tuesday, April 23, 2013
Sheet 6 of 36
1.Level 1 Environment-related Substances Should Never be Used.
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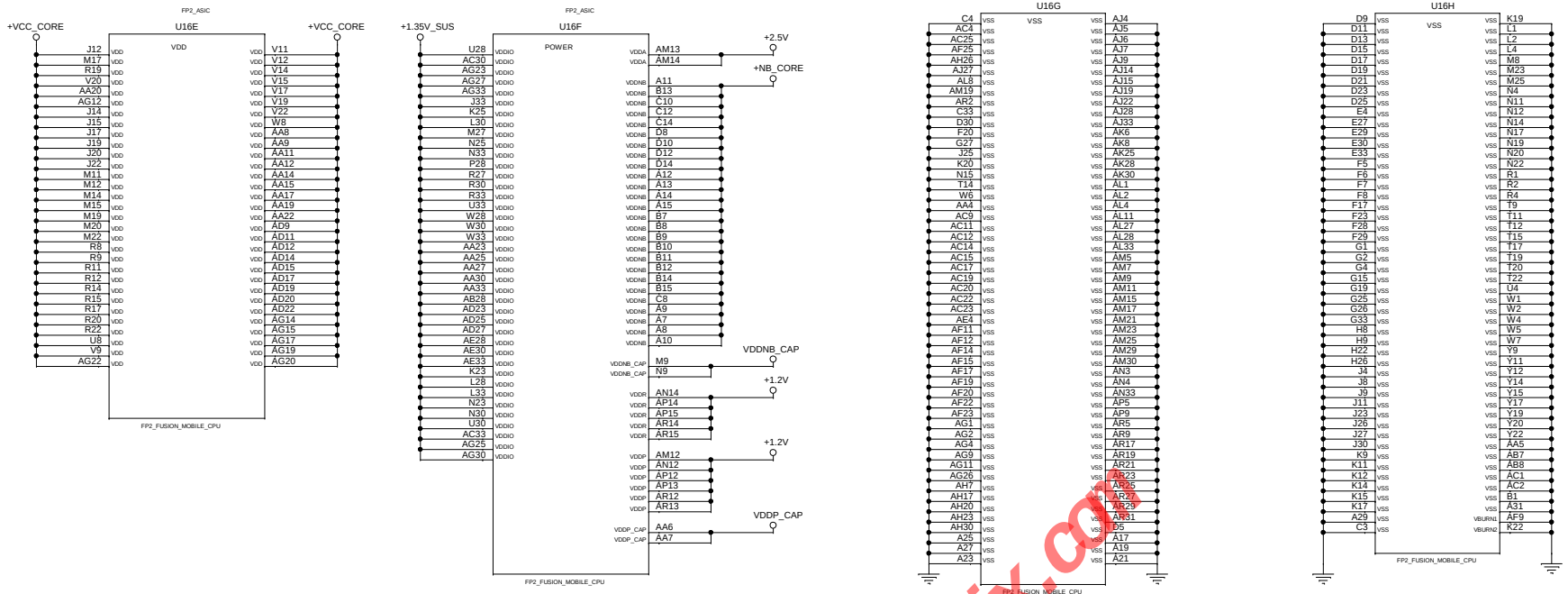

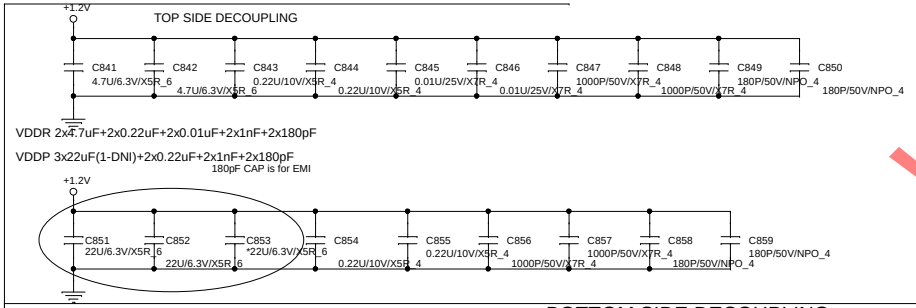

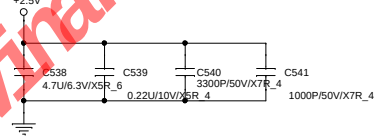

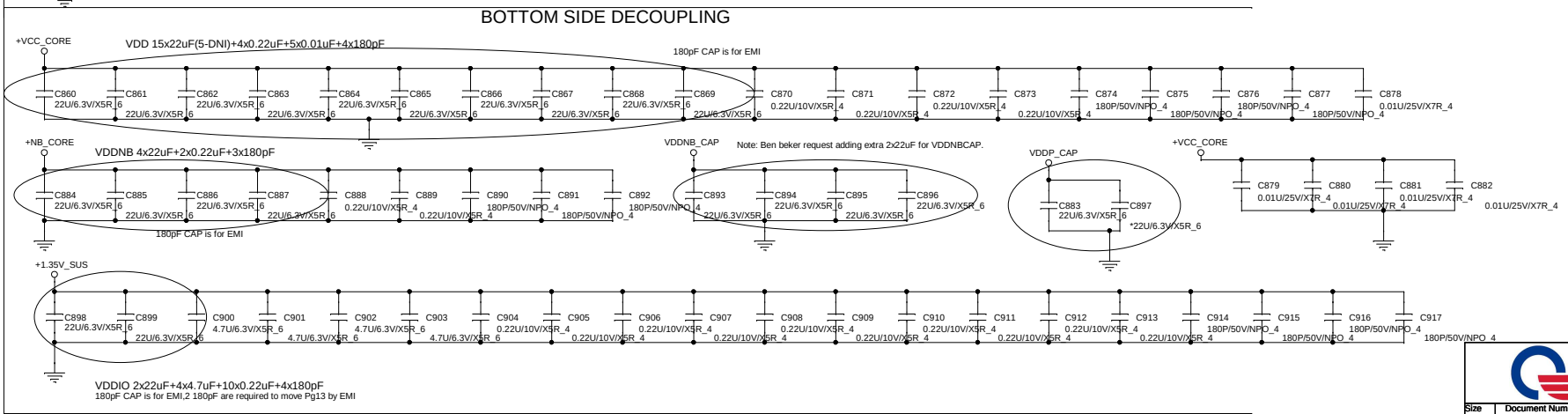

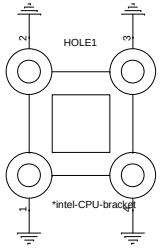

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PROJECT : HKB

Size	Document Number	Rev
	FP2 4/4(POWER&GND)	1A
Date: Thursday, April 25, 2013	Sheet 7 of 36	

FCH 1/5(GPIO/USB/AZ)

U15A

Bolton-M3
Part 4 of 5

PCIE_RST2#/GEVENT4#
RI#/GEVENT22#
SPI_CS3#/GBE_STAT1/GEVENT21#
SLP_S3#
SLP_S5#
PWR_BTN#
PWR_GOOD
TEST0
TEST1/TMS
TEST2
GA20IN/GEVENT0#
KBRST#/GEVENT1#
PME#/GEVENT3#
LPC_SMI#/GEVENT23#
LPC_PD#/GEVENT5#
SYS_RESET#/GEVENT19#
WAKE#/GEVENT8#
IR_RX1/GEVENT20#
THRMTRIP#/SMBALERT#/GEVENT2#
WD_PWRGD
RSMRST#
CLK_REQ4#/SATA_IS0#/GPIO64
CLK_REQ3#/SATA_IS1#/GPIO63
SMARTVOLT1/SATA_IS2#/GPIO50
CLK_REQ0#/SATA_IS3#/GPIO60
SATA_IS4#/FANOUT3/GPIO55
SATA_IS5#/FANIN3/GPIO59
SPKR/GPIO66
SCL0/GPIO43
SDA0/GPIO47
SCL1/GPIO227
SDA1/GPIO228
CLK_REQ2#/FANIN4/GPIO62
CLK_REQ1#/FANOUT4/GPIO61
IR_LED#/LLB#/GPIO184
SMARTVOLT2/SHUTDOWN#/GPIO51
DDR3_RST#/GEVENT7#/VGA_PD
GBE_LED0/GPIO183
SPI_HOLD#/GBE_LED1/GEVENT9#
GBE_LED2/GEVENT10#
GBE_STAT0/GEVENT11#
CLK_REQG#/GPIO65/OSCIN/IDLEEXIT#
BLINK/USB_OC7#/GEVENT18#
USB_OC6#/IR_TX1/GEVENT6#
USB_OC5#/IR_TX0/GEVENT17#
USB_OC4#/IR_RX0/GEVENT16#
USB_OC3#/AC_PRES/TDO/GEVENT15#
USB_OC2#/TCK/GEVENT14#
USB_OC1#/TDI/GEVENT13#
USB_OC0#/SPI_TPM_CS#/TRST#/GEVENT12#
AZ_BITCLK
AZ_SDOUT
AZ_SDIN0/GPIO167
AZ_SDIN1/GPIO168
AZ_SDIN2/GPIO169
AZ_SDIN3/GPIO170
AZ_SYNC
AZ_RST#
PS2_DAT/SDA4/GPIO187
PS2_CLK/CEC/SCL4/GPIO188
SPI_CS2#/GBE_STAT2/GPIO189
PS2KB_DAT/GPIO189
PS2KB_CLK/GPIO190
PS2M_DAT/GPIO191
PS2M_CLK/GPIO192
KSO_0/GPIO209
KSO_1/GPIO210
KSO_2/GPIO211
KSO_3/GPIO212
KSO_4/GPIO213
KSO_5/GPIO214
KSO_6/GPIO215
KSO_7/GPIO216
KSO_8/GPIO217
KSO_9/GPIO218
KSO_10/GPIO219
KSO_11/GPIO220
KSO_12/GPIO221
KSO_13/GPIO222
KSO_14/XDB0/GPIO223
KSO_15/XDB1/GPIO224
KSO_16/XDB2/GPIO225
KSO_17/XDB3/GPIO226

USBCLK/14M_25M_48M_OSC
USB_RCOMP
USB_FSD1P/GPIO186
USB_FSD1N
USB_FSD0P/GPIO185
USB_FSD0N
USB_HSD13P
USB_HSD13N
USB_HSD12P
USB_HSD12N
USB_HSD11P
USB_HSD11N
USB_HSD10P
USB_HSD10N
USB_HSD9P
USB_HSD9N
USB_HSD8P
USB_HSD8N
USB_HSD7P
USB_HSD7N
USB_HSD6P
USB_HSD6N
USB_HSD5P
USB_HSD5N
USB_HSD4P
USB_HSD4N
USB_HSD3P
USB_HSD3N
USB_HSD2P
USB_HSD2N
USB_HSD1P
USB_HSD1N
USB_HSD0P
USB_HSD0N
USBSS_CALRP
USBSS_CALRN
USB_SS_TX3P
USB_SS_TX3N
USB_SS_RX3P
USB_SS_RX3N
USB_SS_TX2P
USB_SS_TX2N
USB_SS_RX2P
USB_SS_RX2N
USB_SS_TX1P
USB_SS_TX1N
USB_SS_RX1P
USB_SS_RX1N
USB_SS_TX0P
USB_SS_TX0N
USB_SS_RX0P
USB_SS_RX0N
SCL2/GPIO193
SDA2/GPIO194
SCL3_LV/GPIO195
SDA3_LV/GPIO196
EC_PWM0/EC_TIMER0/GPIO197
EC_PWM1/EC_TIMER1/GPIO198
EC_PWM2/EC_TIMER2/WOL_EN/GPIO199
EC_PWM3/EC_TIMER3/GPIO200
KSI_0/GPIO201
KSI_1/GPIO202
KSI_2/GPIO203
KSI_3/GPIO204
KSI_4/GPIO205
KSI_5/GPIO206
KSI_6/GPIO207
KSI_7/GPIO208

USB_RCOMP_SB:35 ohm,<1"

USBSS_CALP/N:35 ohm,<1"

USB3.0 Connector

USB3.0 Connector IPOD

Carama USB

WLAN Min-Card

Touch screen

USB2.0 Connector
USB port 0 for Debug port

Q45 2N7002DW

Q46 2N7002W(SOT323)

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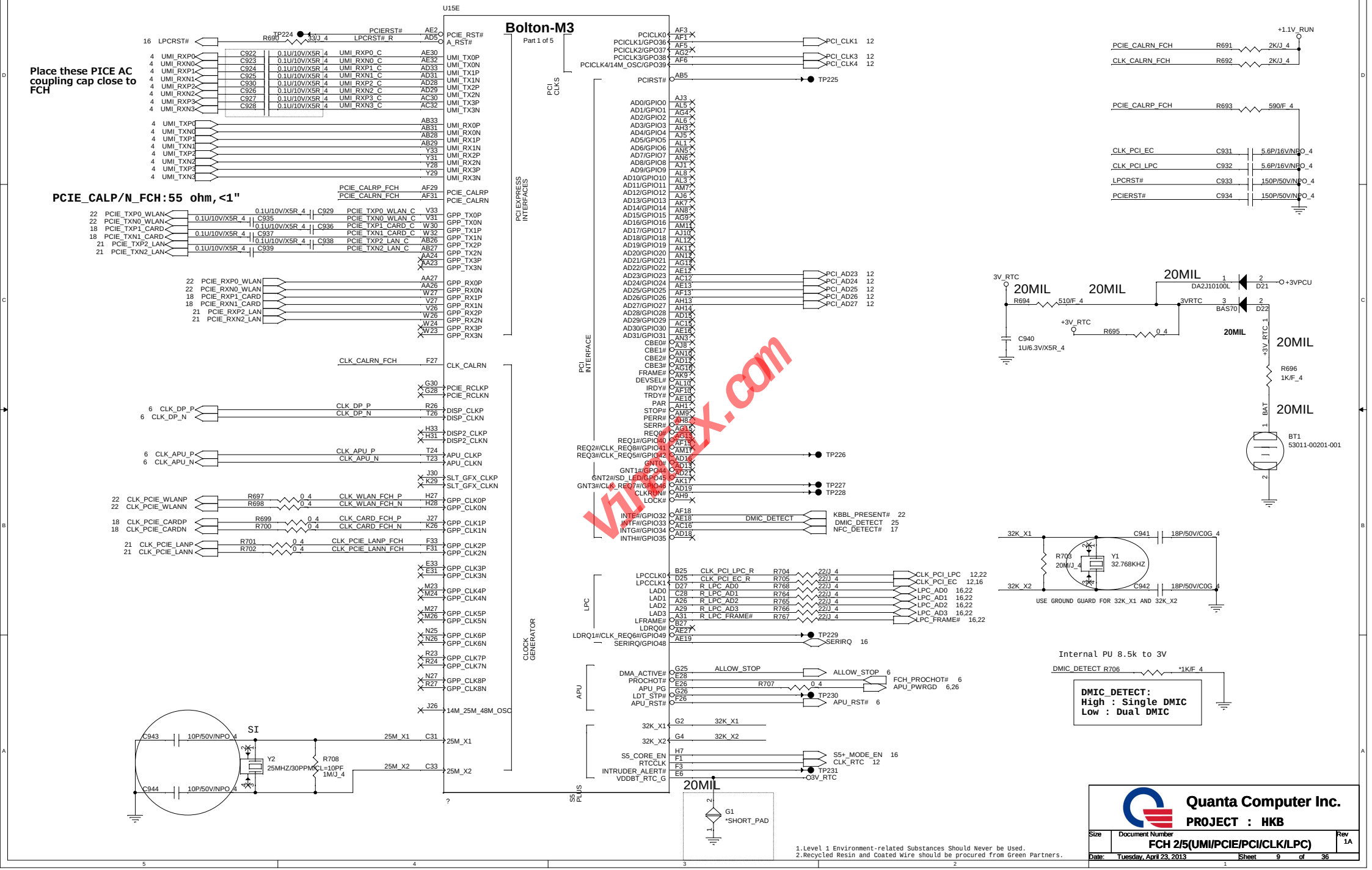
Quanta Computer Inc.
PROJECT : HKB

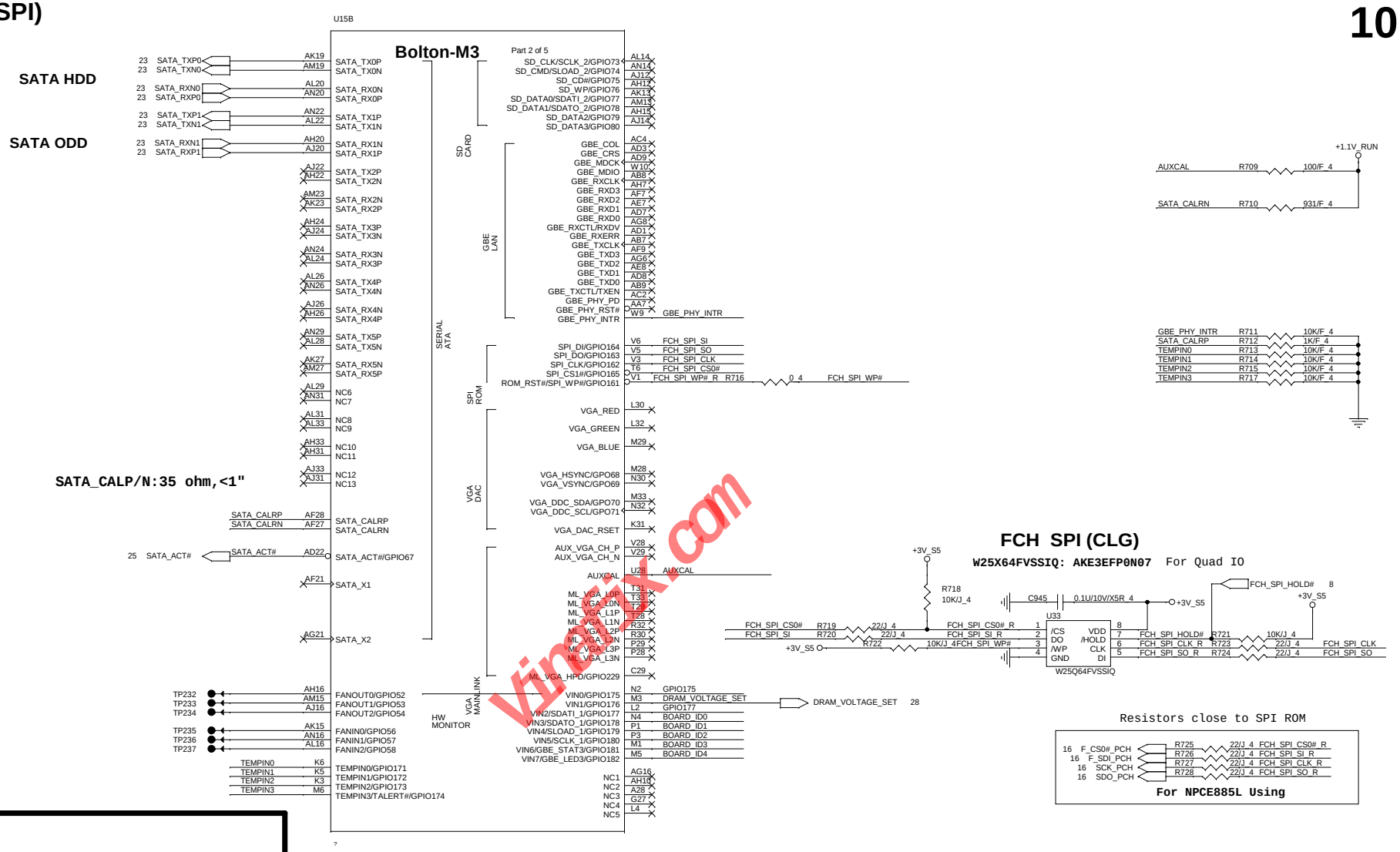
Size	Document Number	Rev
	FCH 1/6(GPIO/USB/AZ)	1A
Date: Tuesday, April 23, 2013	Sheet 8 of 36	

FCH 2/5(UMI/PCIE/PCI/CLK/LPC)



Quanta Computer Inc.			
PROJECT : HKB			
Size	Document Number		Rev
	FCH 2/5(UMI/PCIE/PCI/CLK/LPC)		1A
Date: Tuesday, April 23, 2013		Sheet 9 of 36	

FCH 3/5(SATA/VGA/SPI)



SIZE	Board ID0
HKA 14"	0
HKB 15"	1

I/F	Board ID1
eDP	0
LVDS	1

CPU	Board ID2	Board ID3
A4	0	0
A6	0	1
A8	1	0
A10	1	1

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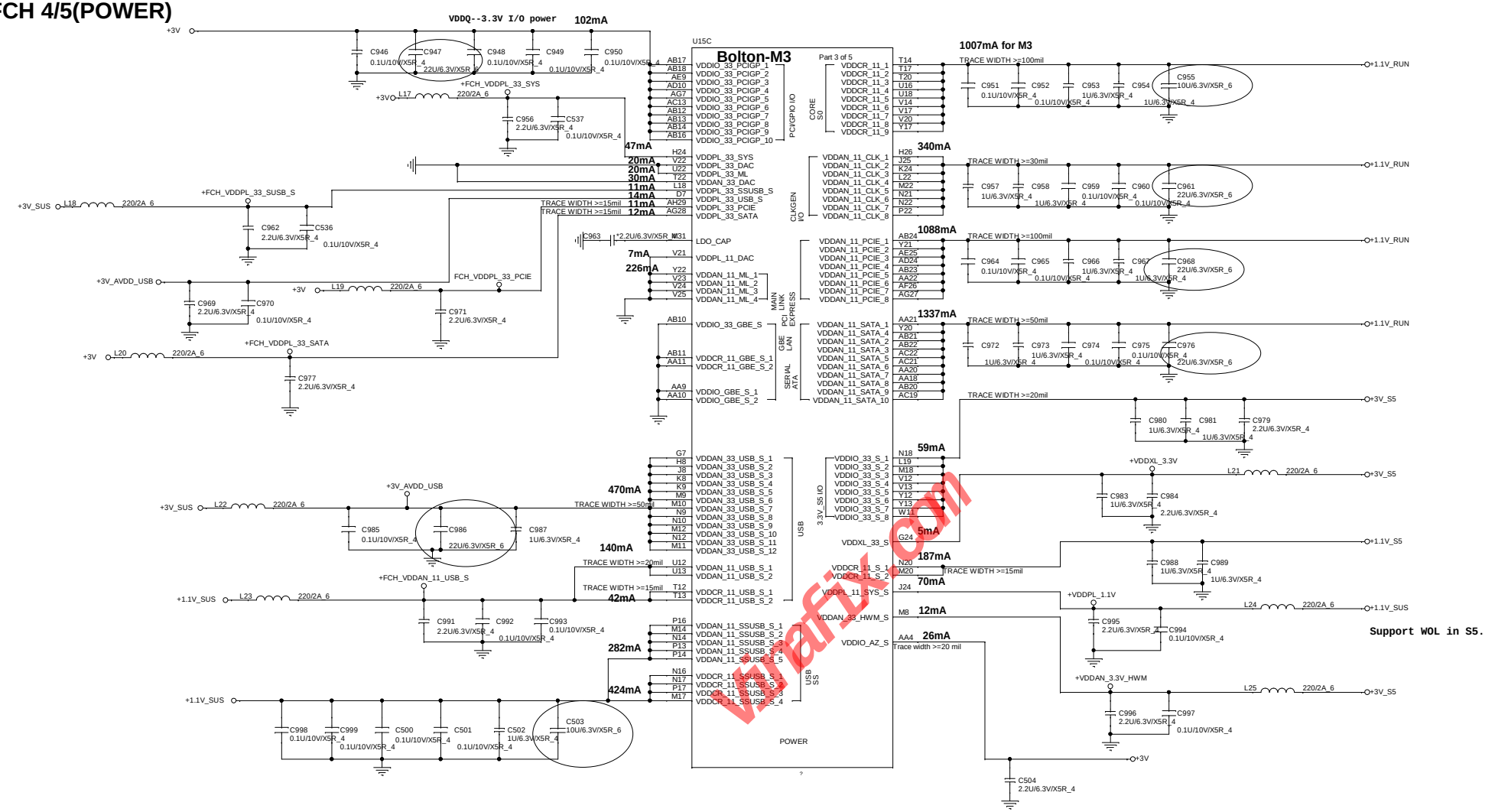
Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	FCH 3/6(SATA/VGA/SPI)	1A
Date: Tuesday, April 23, 2013	Sheet 10 of 36	

FCH 4/5(POWER)



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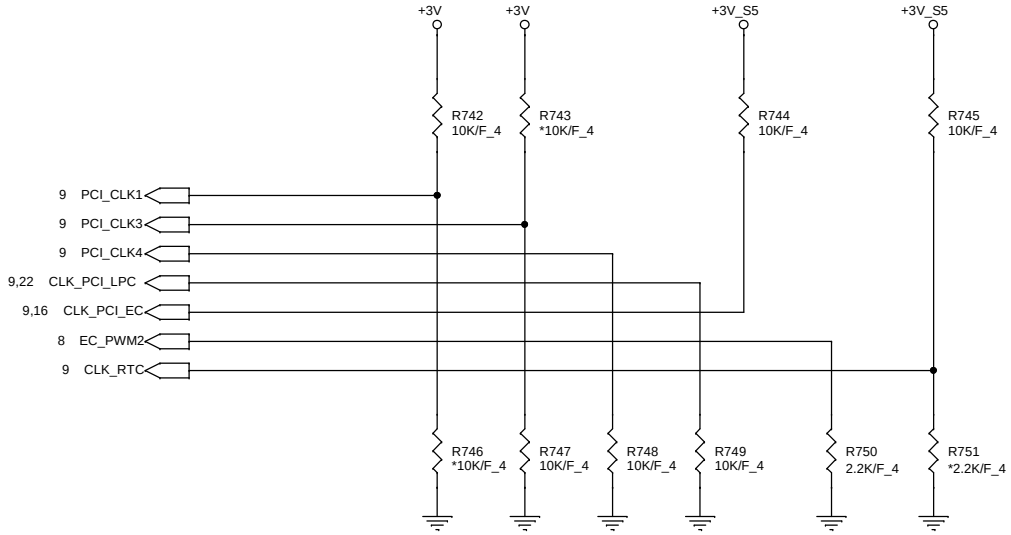
Quanta Computer Inc.
PROJECT : HKA

Size	Document Number	Rev
	FCH 4/6(POWER)	1A

Date: Tuesday, April 23, 2013 Sheet 11 of 36

STRAPS PINS

OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.



REQUIRED STRAPS

	--------	PCI_CLK1	--------	PCI_CLK3	PCI_CLK4	(LPCCLK0) CLK_PCI_LPC	(LPCCLK1) CLK_PCI_EC	EC_PWM2	CLK_RTC
PULL HIGH	--------	ALLOW PCIE Gen2 DEFAULT	--------	USE DEBUG STRAP	Reserved	AMD internal EC ENABLED	CLKGEN ENABLED DEFAULT	LPC ROM	S5 PLUS MODE DISABLED DEFAULT
PULL LOW	--------	FORCE PCIE Gen1	--------	IGNORE DEBUG STRAP DEFAULT	Required setting for integrated clock mode DEFAULT	EC DISABLED DEFAULT	CLKGEN DISABLED	SPI ROM DEFAULT	S5 PLUS MODE enble

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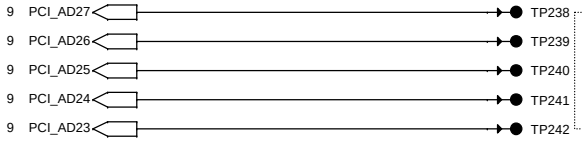
DEBUG STRAPS

12

FCH has 15K Internal Pull Up for PCI_AD[27:23]

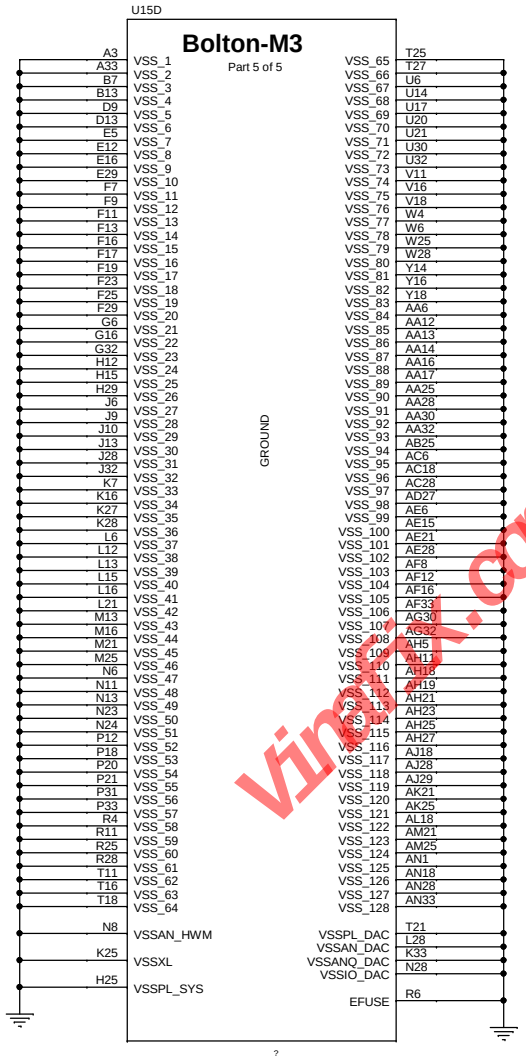


remove reserve pull low resistor
reserve test point only.

	PCI_AD27		PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE PCI PLL DEFAULT		normal REFCLK DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
PULL LOW	BYPASS PCI PLL		Inverted REFCLK	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT

Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	FCH 5/6(Strap)	1A
Date: Tuesday, April 23, 2013	Sheet 12 of 36	



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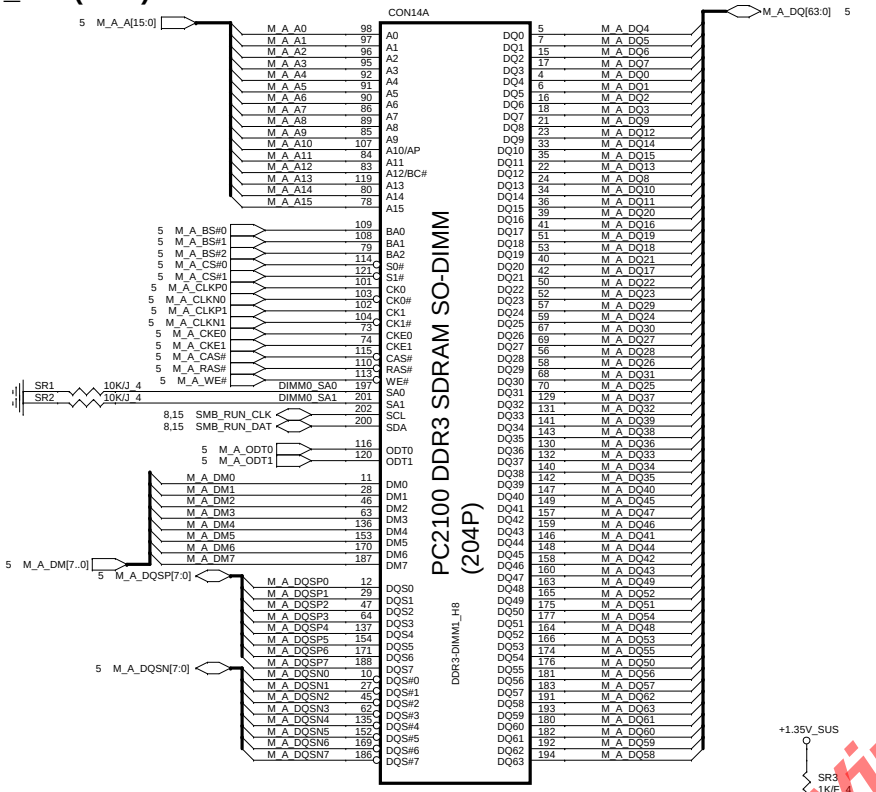
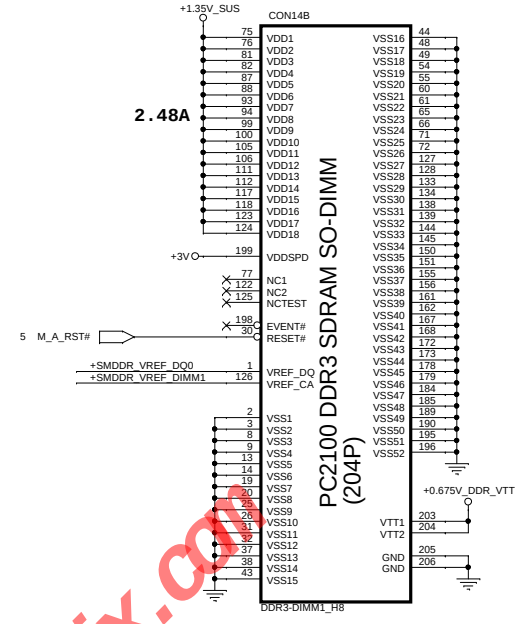
Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	FCH 6/6(GND)	1A
Date: Tuesday, April 23, 2013	Sheet 13 of 36	

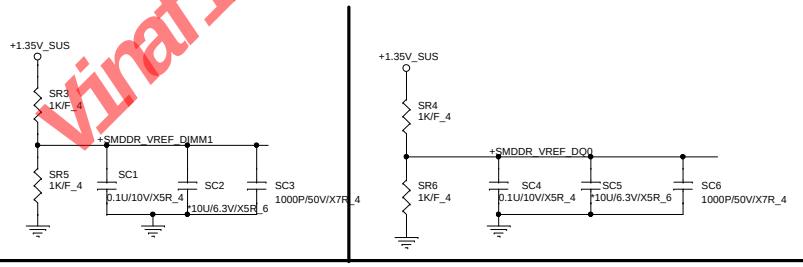
DDR_RVS(DDR)



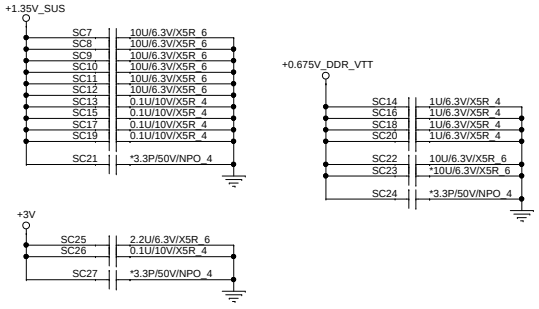
STD Type



STD Type



Place these Caps near So-Dimm1.



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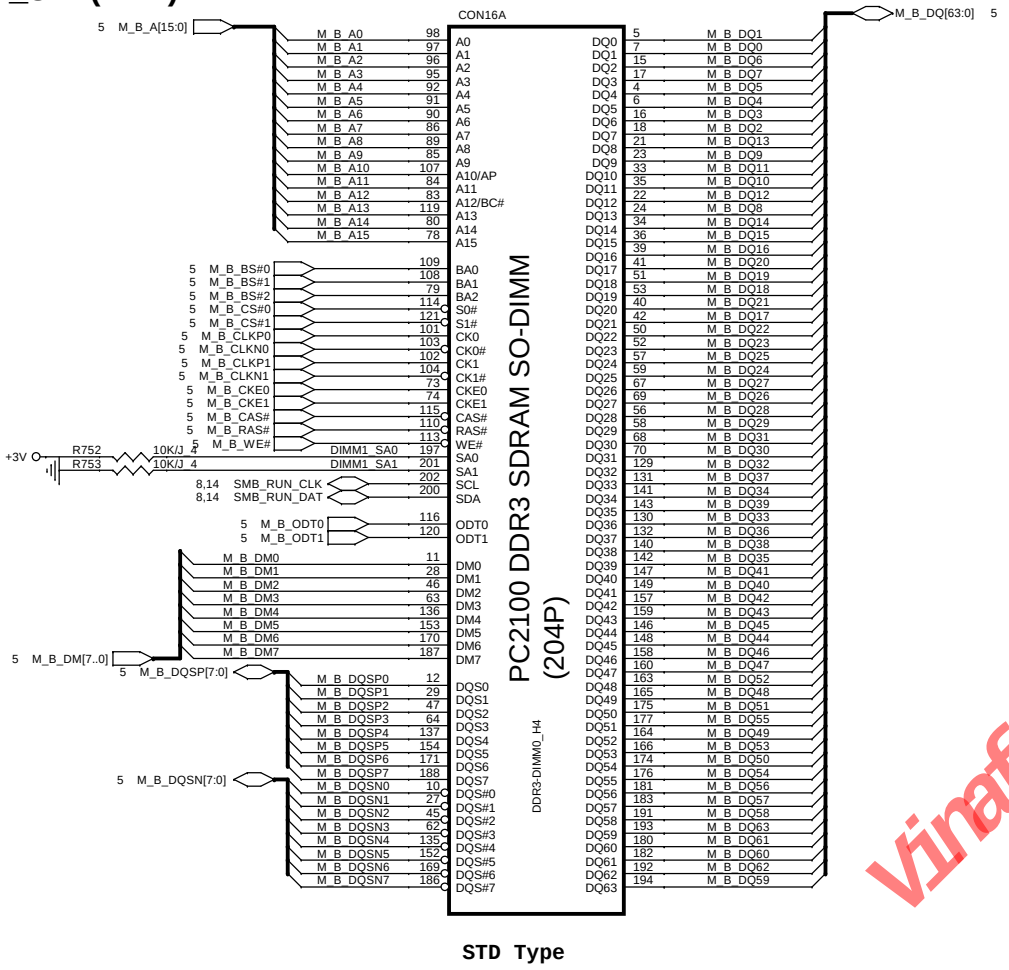
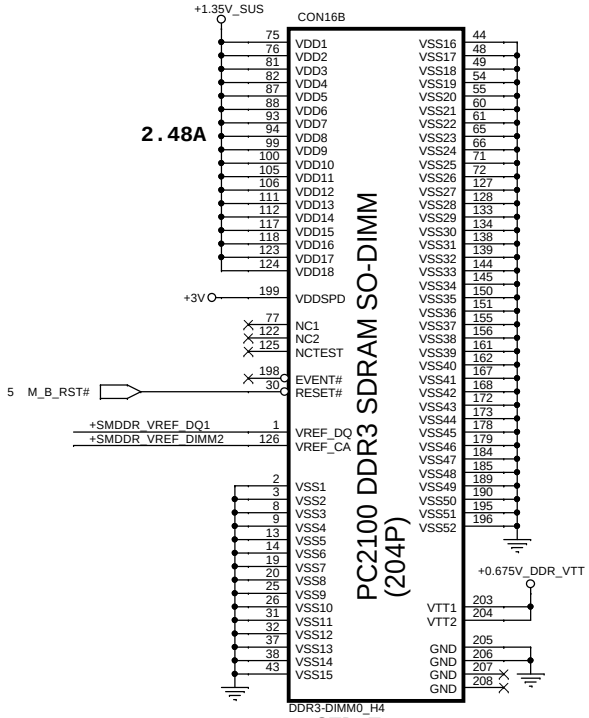
PROJECT : HKB		
Size	Document Number: DDRIII SO-DIMM-0	Rev: 1A
Date: Tuesday, April 23, 2013	Sheet 14 of 36	

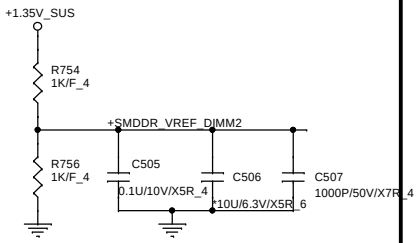
DDR_STD(DDR)

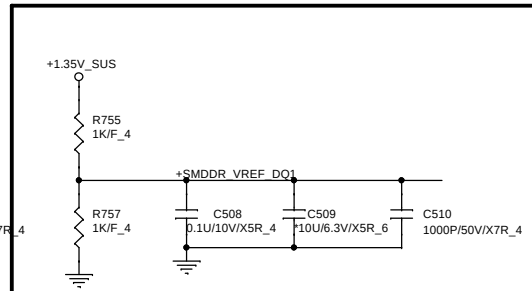


STD Type

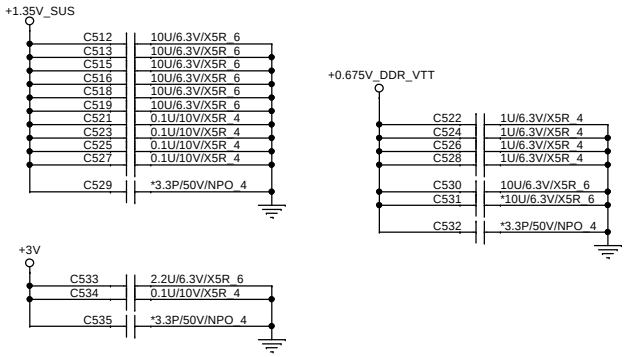


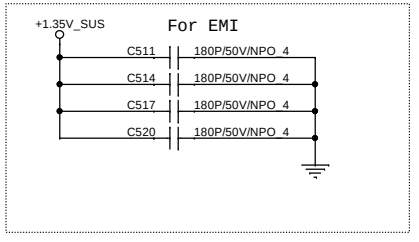
STD Type





Place these Caps near So-Dimm1.





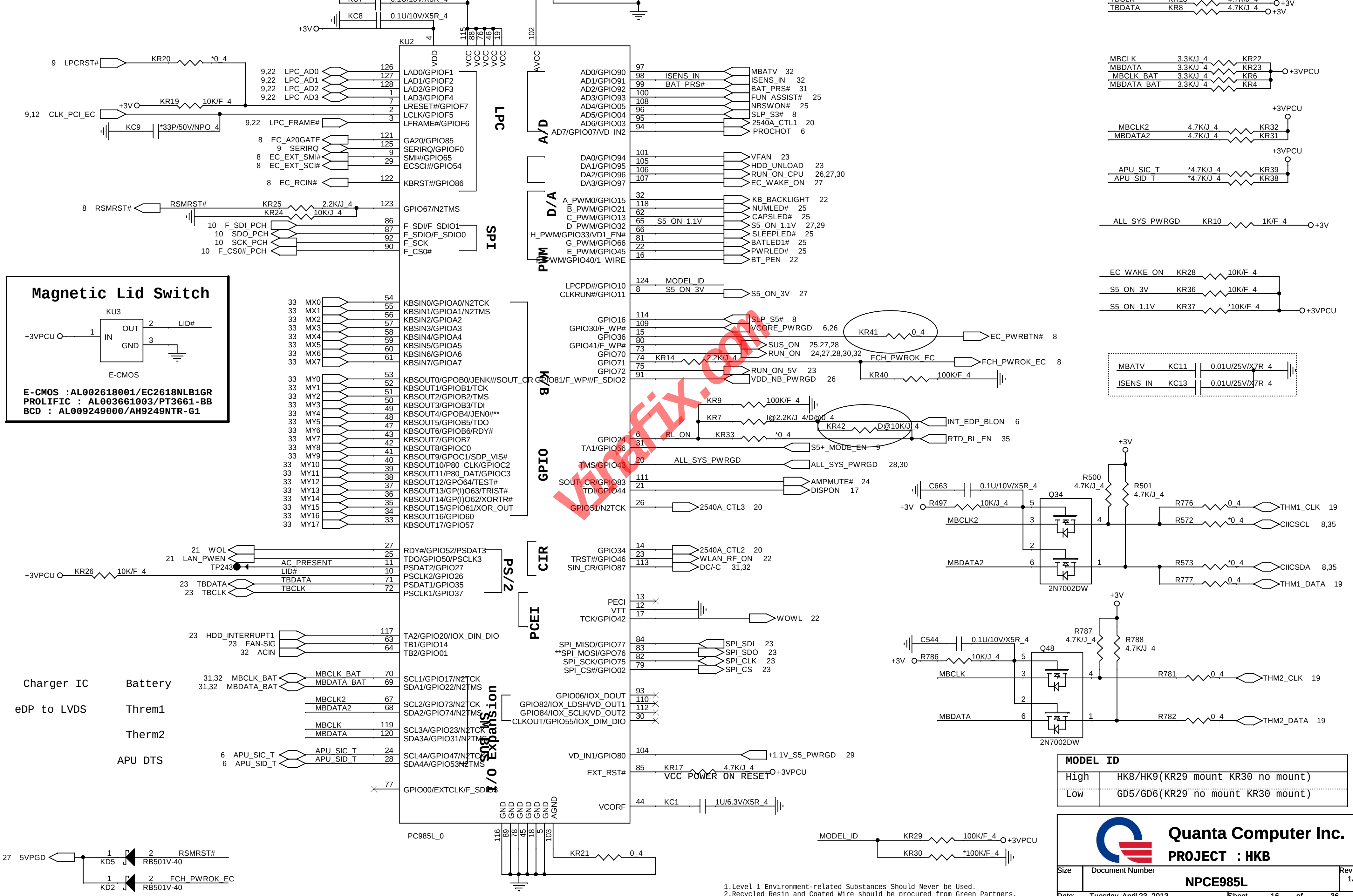
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	DDRIII SO-DIMM-1	1A
Date: Tuesday, April 23, 2013	Sheet 15 of 36	

** Straping Pin,Can not pull low.
Note the input leakage current to the strap pins must be less than 10uA.

Since ECSCI is OD, no need for a back-drive protection diode on this signal. But note there is internal PU in chipset at default



+3VPCU
KC14 *10U/6.3V/X5R_6
KC10 0.1U/10V/X5R_4
KC5 0.1U/10V/X5R_4
KC12 0.1U/10V/X5R_4
KC2 0.1U/10V/X5R_4
KC7 0.1U/10V/X5R_4
KC8 0.1U/10V/X5R_4
+3V
KL1 0_8
3VPCU_ITE_AVDD
KC16 *10U/6.3V/X5R_6
KC15 0.1U/10V/X5R_4
KU2
VDD VCC VCC VCC VCC VCC AVCC
LPC
A/D
D/A
SPI
PWM
KB
GPIO
CIR
PS/2
PCEI
SMBus Expansion
I/O
9 LPCRST#
KR20 *0_4
+3V KR19 10K/F_4
9,12 CLK_PCI_EC
KC9 *33P/50V/NPO_4
9,22 LPC_AD0
9,22 LPC_AD1
9,22 LPC_AD2
9,22 LPC_AD3
9,22 LPC_FRAME#
LAD0/GPIOF1
LAD1/GPIOF2
LAD2/GPIOF3
LAD3/GPIOF4
LRESET#/GPIOF7
LCLK/GPIOF5
LFRAME#/GPIOF6
8 EC_A20GATE
9 SERIRQ
8 EC_EXT_SMI#
8 EC_EXT_SCI#
8 EC_RCIN#
GA20/GPIO85
SERIRQ/GPIOF0
SMI#/GPIO65
ECSCI#/GPIO54
KBRST#/GPIO86
8 RSMRST#
RSMRST# KR25 2.2K/J_4
KR24 10K/J_4
GPIO67/N2TMS
10 F_SDI_PCH
10 SDO_PCH
10 SCK_PCH
10 F_CS0#_PCH
F_SDI/F_SDIO1
F_SDIO/F_SDIO0
F_SCK
F_CS0#
Magnetic Lid Switch
KU3
+3VPCU
IN OUT GND
LID#
E-CMOS
E-CMOS :AL002618001/EC2618NLB1GR
PROLIFIC : AL003661003/PT3661-BB
BCD : AL009249000/AH9249NTR-G1
33 MX0 … 33 MX7
KBSIN0/GPIOA0/N2TCK
KBSIN1/GPIOA1/N2TMS
KBSIN2/GPIOA2
KBSIN3/GPIOA3
KBSIN4/GPIOA4
KBSIN5/GPIOA5
KBSIN6/GPIOA6
KBSIN7/GPIOA7
33 MY0 … 33 MY17
KBSOUT0/GPOB0/JENK#/SOUT_CR
KBSOUT1/GPIOB1/TCK
KBSOUT2/GPIOB2/TMS
KBSOUT3/GPIOB3/TDI
KBSOUT4/GPOB4/JEN0#**
KBSOUT5/GPIOB5/TDO
KBSOUT6/GPIOB6/RDY#
KBSOUT7/GPIOB7
KBSOUT8/GPIOC0
KBSOUT9/GPOC1/SDP_VIS#
KBSOUT10/P80_CLK/GPIOC2
KBSOUT11/P80_DAT/GPIOC3
KBSOUT12/GPO64/TEST#
KBSOUT13/GP(I)O63/TRIST#
KBSOUT14/GP(I)O62/XORTR#
KBSOUT15/GPIO61/XOR_OUT
KBSOUT16/GPIO60
KBSOUT17/GPIO57
21 WOL
21 LAN_PWEN
TP243
AC_PRESENT
LID#
+3VPCU KR26 10K/F_4
23 TBDATA
23 TBCLK
RDY#/GPIO52/PSDAT3
TDO/GPIO50/PSCLK3
PSDAT2/GPIO27
PSCLK2/GPIO26
PSDAT1/GPIO35
PSCLK1/GPIO37
23 HDD_INTERRUPT1
23 FAN-SIG
32 ACIN
TA2/GPIO20/IOX_DIN_DIO
TB1/GPIO14
TB2/GPIO01
31,32 MBCLK_BAT
31,32 MBDATA_BAT
MBCLK2
MBDATA2
MBCLK
MBDATA
6 APU_SIC_T
6 APU_SID_T
SCL1/GPIO17/N2TCK
SDA1/GPIO22/N2TMS
SCL2/GPIO73/N2TCK
SDA2/GPIO74/N2TMS
SCL3A/GPIO23/N2TCK
SDA3A/GPIO31/N2TMS
SCL4A/GPIO47/N2TCK
SDA4A/GPIO53/N2TMS
GPIO00/EXTCLK/F_SDIO3
Charger IC
Battery
eDP to LVDS
Threm1
Therm2
APU DTS
PC985L_0
GND GND GND GND GND GND AGND
KR21 0_4
27 5VPGD
KD5 RB501V-40 RSMRST#
KD2 RB501V-40 FCH_PWROK_EC
AD0/GPIO90
AD1/GPIO91
AD2/GPIO92
AD3/GPIO93
AD4/GPIO95
AD5/GPIO04
AD6/GPIO03
AD7/GPIO07/VD_IN2
ISENS_IN
BAT_PRS#
MBATV 32
ISENS_IN 32
BAT_PRS# 31
FUN_ASSIST# 25
NBSWON# 25
SLP_S3# 8
2540A_CTL1 20
PROCHOT 6
DA0/GPIO94
DA1/GPIO95
DA2/GPIO96
DA3/GPIO97
VFAN 23
HDD_UNLOAD 23
RUN_ON_CPU 26,27,30
EC_WAKE_ON 27
A_PWM0/GPIO15
B_PWM/GPIO21
C_PWM/GPIO13
D_PWM/GPIO32
H_PWM/GPIO33/VD1_EN#
G_PWM/GPIO66
E_PWM/GPIO45
F_PWM/GPIO40/1_WIRE
S5_ON_1.1V
KB_BACKLIGHT 22
NUMLED# 25
CAPSLED# 25
S5_ON_1.1V 27,29
SLEEPLED# 25
BATLED1# 25
PWRLED# 25
BT_PEN 22
LPCPD#/GPIO10
CLKRUN#/GPIO11
MODEL_ID
S5_ON_3V
S5_ON_3V 27
GPIO16
GPIO30/F_WP#
GPIO36
GPIO41/F_WP#
GPIO70
GPIO71
GPIO72
GPIO81/F_WP#/F_SDIO2
SLP_S5# 8
VCORE_PWRGD 6,26
KR41 0_4
EC_PWRBTN# 8
SUS_ON 25,27,28
RUN_ON 24,27,28,30,32
KR14 2.2K/J_4
FCH_PWROK_EC
FCH_PWROK_EC 8
RUN_ON_5V 23
VDD_NB_PWRGD 26
KR40 100K/F_4
KR9 100K/F_4
KR7 I@2.2K/J_4/D@0_4
KR42 D@10K/J_4
INT_EDP_BLON 6
BL_ON
KR33 *0_4
RTD_BL_EN 35
GPIO24
TA1/GPIO56
S5+_MODE_EN 9
TMS/GPIO43
ALL_SYS_PWRGD
ALL_SYS_PWRGD 28,30
SOUT_CR/GPIO83
TDI/GPIO44
AMPMUTE# 24
DISPON 17
GPIO51/N2TCK
2540A_CTL3 20
GPIO34
TRST#/GPIO46
SIN_CR/GPIO87
2540A_CTL2 20
WLAN_RF_ON 22
DC/-C 31,32
PECI
VTT
TCK/GPIO42
WOWL 22
SPI_MISO/GPIO77
**SPI_MOSI/GPIO76
SPI_SCK/GPIO81
SPI_CS#/GPIO02
SPI_SDI 23
SPI_SDO 23
SPI_CLK 23
SPI_CS 23
GPIO06/IOX_DOUT
GPIO82/IOX_LDSH/VD_OUT1
GPIO84/IOX_SCLK/VD_OUT2
CLKOUT/GPIO55/IOX_DIM_DIO
VD_IN1/GPIO80
+1.1V_S5_PWRGD 29
EXT_RST#
KR17 4.7K/J_4
VCC POWER ON RESET
+3VPCU
VCORF
KC1 1U/6.3V/X5R_4
TBCLK KR13 4.7K/J_4 +3V
TBDATA KR8 4.7K/J_4 +3V
MBCLK 3.3K/J_4 KR22
MBDATA 3.3K/J_4 KR23
MBCLK_BAT 3.3K/J_4 KR6
MBDATA_BAT 3.3K/J_4 KR4
+3VPCU
MBCLK2 4.7K/J_4 KR32
MBDATA2 4.7K/J_4 KR31
APU_SIC_T *4.7K/J_4 KR39
APU_SID_T *4.7K/J_4 KR38
ALL_SYS_PWRGD KR10 1K/F_4 +3V
EC_WAKE_ON KR28 10K/F_4
S5_ON_3V KR36 10K/F_4
S5_ON_1.1V KR37 *10K/F_4
MBATV KC11 0.01U/25V/X7R_4
ISENS_IN KC13 0.01U/25V/X7R_4
C663 0.1U/10V/X5R_4
R500 4.7K/J_4
R501 4.7K/J_4
Q34
+3V R497 10K/J_4
R776 0_4 THM1_CLK 19
MBCLK2
R572 *0_4 CIICSCL 8,35
MBDATA2
R573 *0_4 CIICSDA 8,35
R777 0_4 THM1_DATA 19
2N7002DW
C544 0.1U/10V/X5R_4
R787 4.7K/J_4
R788 4.7K/J_4
Q48
+3V R786 10K/J_4
MBCLK
R781 0_4 THM2_CLK 19
MBDATA
R782 0_4 THM2_DATA 19
2N7002DW
MODEL_ID KR29 100K/F_4 +3VPCU
KR30 *100K/F_4

MODEL ID	
High	HK8/HK9(KR29 mount KR30 no mount)
Low	GD5/GD6(KR29 no mount KR30 mount)

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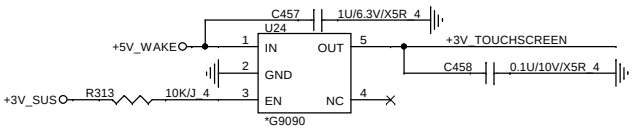
2.Recycled Resin and Coated Wire should be procured from Green Partners.

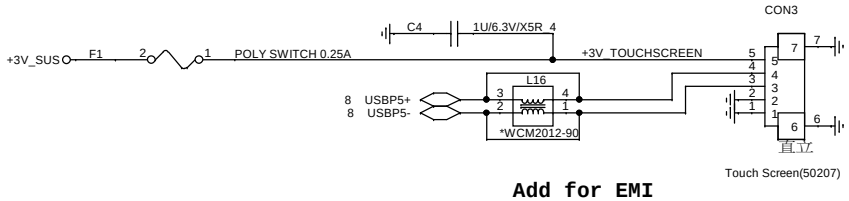
Quanta Computer Inc.

PROJECT : HKB

Size	Document Number	Rev
	NPCE985L	1A
Date: Tuesday, April 23, 2013	Sheet 16 of 36	

Touch Screen





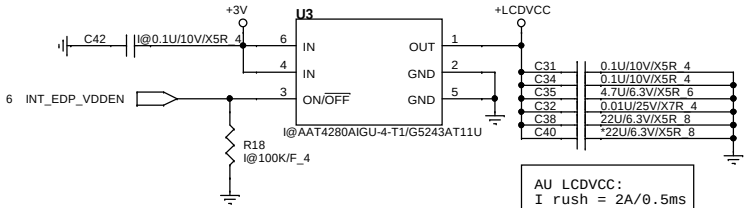
Add for EMI

Camera HD specification
Voltage: Max. 3.6V
Current : Max. 200mA
OCP: 200mA ~ 300mA

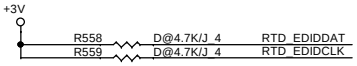
Distance between C268,C269,C270,C271 and CON5 must larger than 500 mils

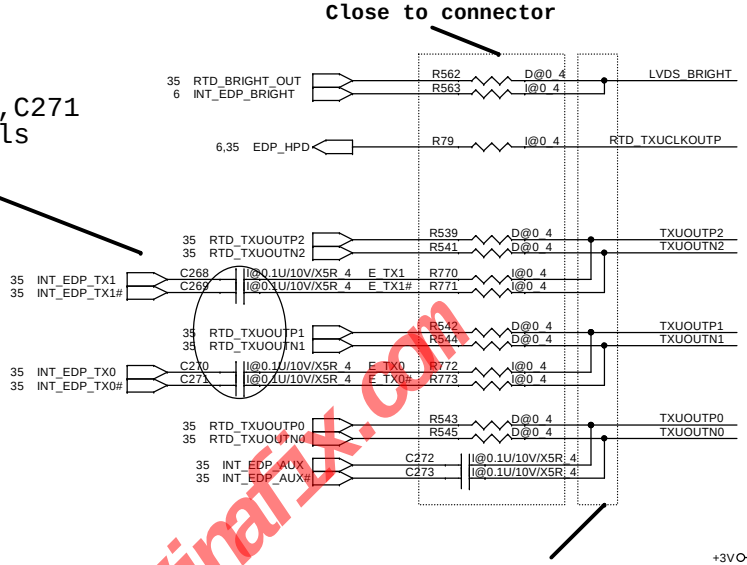
Close to connector

NB LVDS enable



AU LCDVCC:
I rush = 2A/0.5ms
IDD = 0.3A

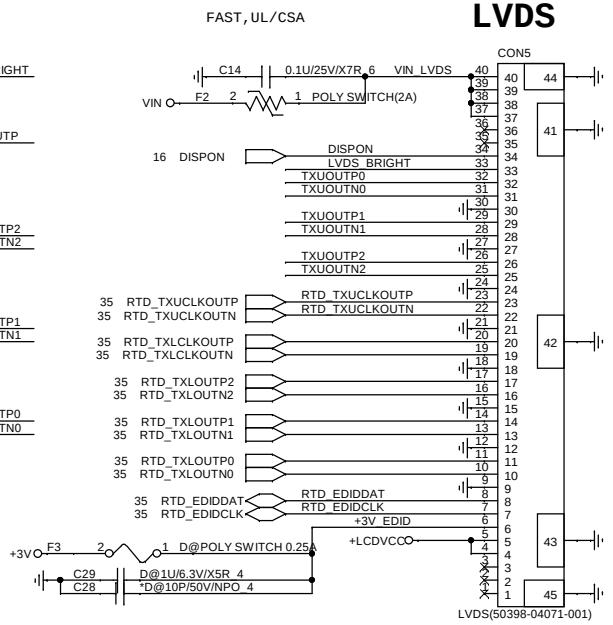




Branches are as short as possible!!

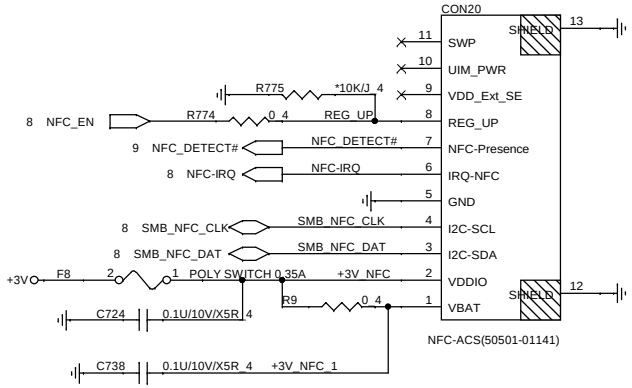
LVDS

FAST,UL/CSA

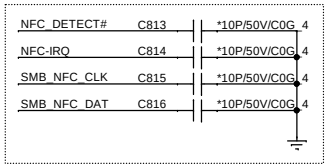


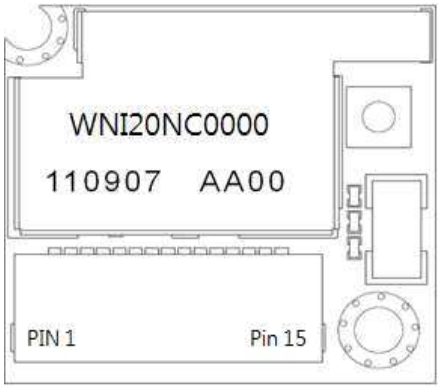
LVDS(50398-04071-001)

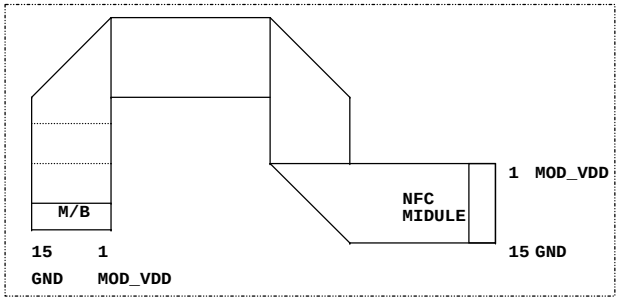
NFC



For EMI.
Close to CON20







NFC module :
Vender : Samsung SNC-i20
Power consumption : Max. 160mW/48mA
Power Ripple +/- 50mV

1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	LVDS\TS\NFC	1A

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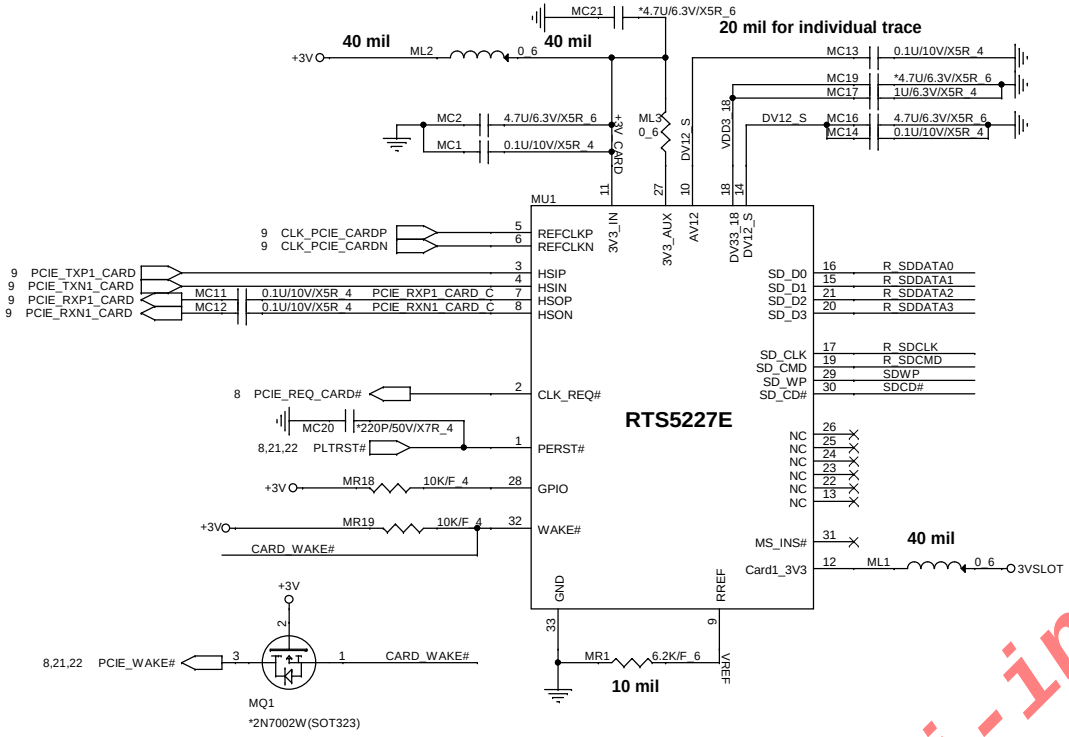
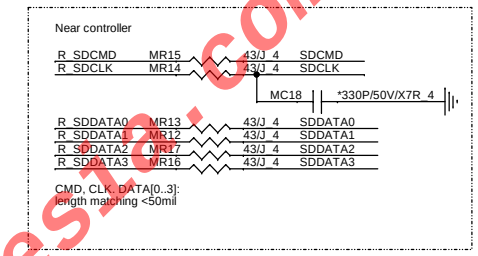
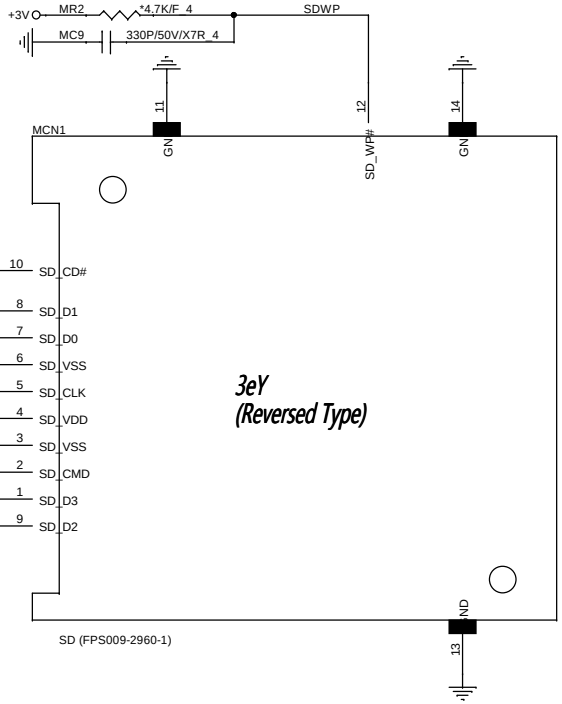
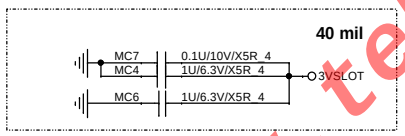






These component need to close to Slot



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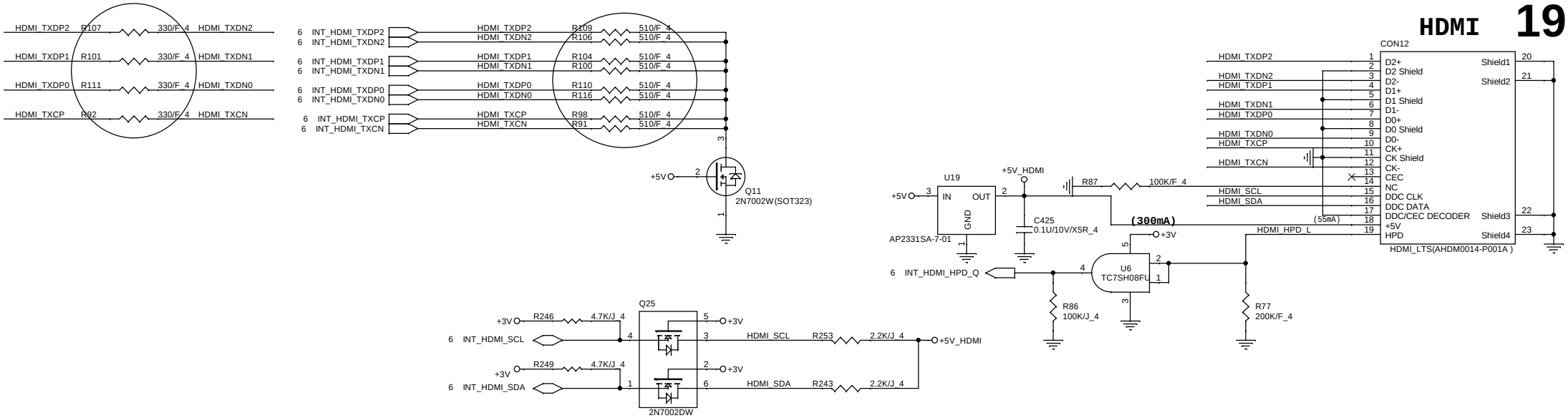
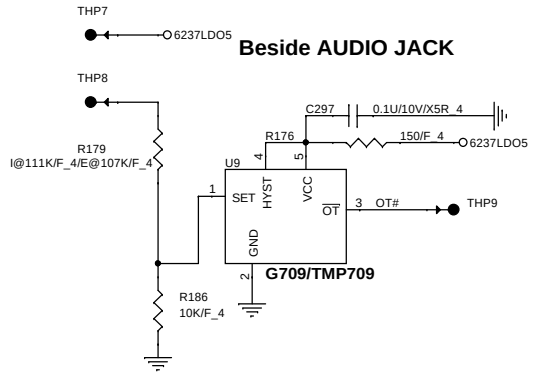
Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	Card Reader(RTS5227E)	1A
Date: Tuesday, April 23, 2013	Sheet 18 of 36	

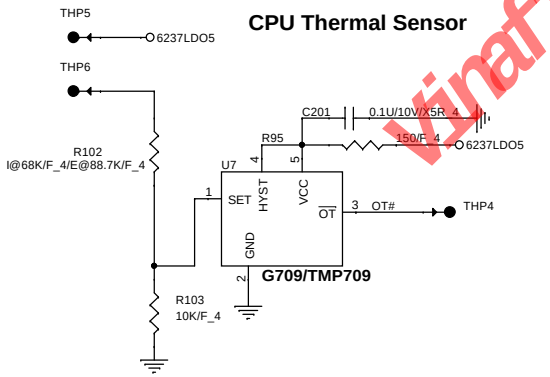


H/W Thermal Protect

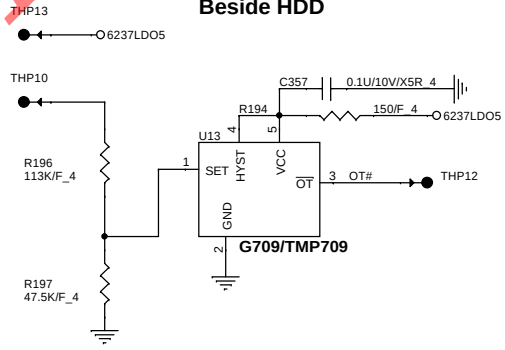
Beside AUDIO JACK



CPU Thermal Sensor



Beside HDD



RSET(kΩ)= 0.0012T2 – 0.9308T + 96.147

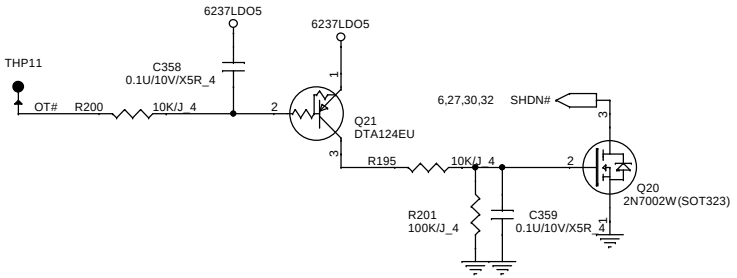
95	18.5K
100	15K
107	10.3K
110	8.2K

DIS SKU

Location of IC	Temp	R-Set	Parts in BOM	Max	Min
Near CPU sensor temp	70	R208=36.87K	36.5K	71	70
Near GFX sensor temp	65	R146=40.72K	40.2K	66.3	65.1
Near AUDIO sensor temp	60	R345=44.62K	44.2K	61.2	60

UMA SKU

Location of IC	Temp	R-Set	Parts in BOM	Max	Min
Near CPU sensor temp	81	R208=28.63K	28K	82.3	81.4
Near AUDIO sensor temp	58	R345=46.2K	46.4K	58.4	57.1



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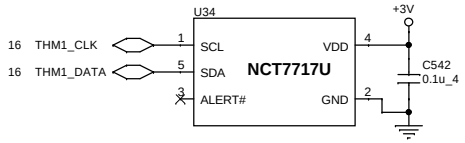
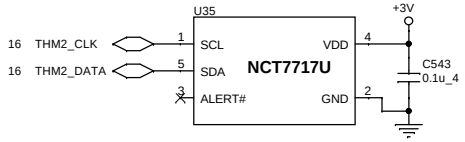
Thermal Request

Close to FIN



Far away heat portion



Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	HDMI/Thermal	1A

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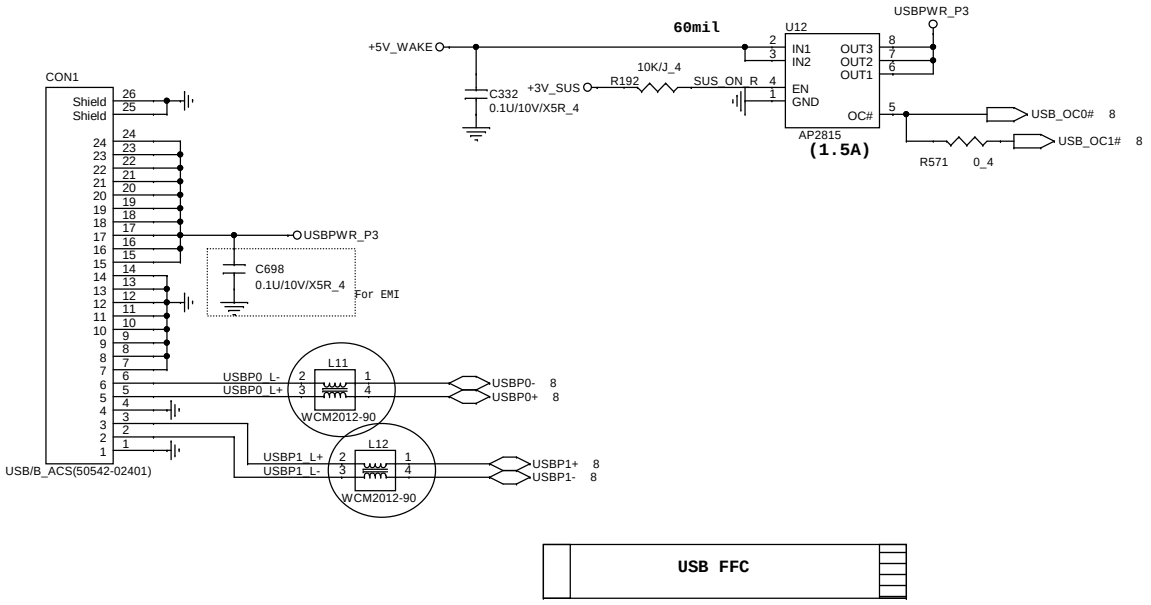
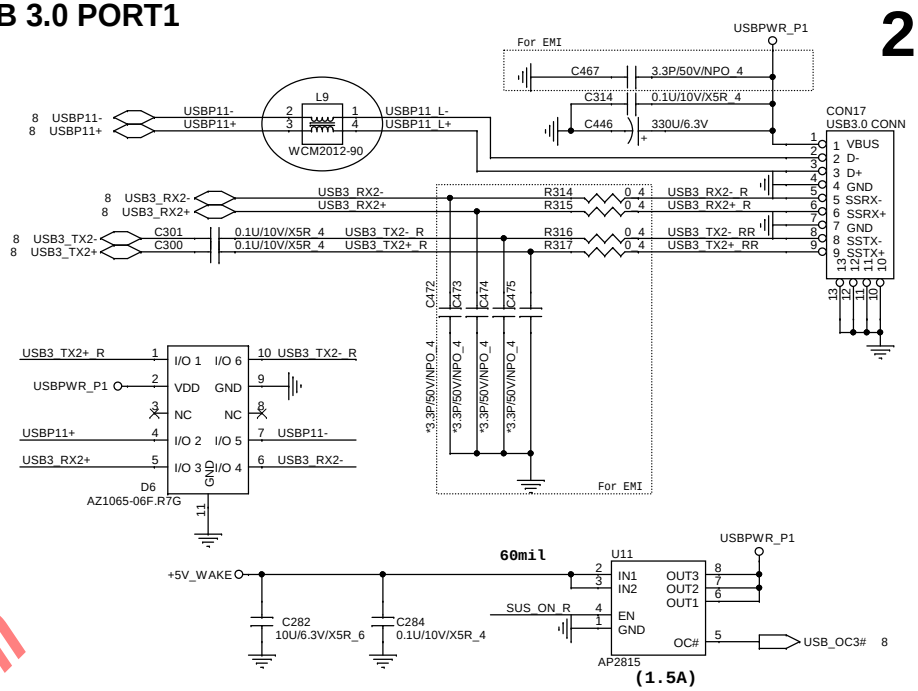
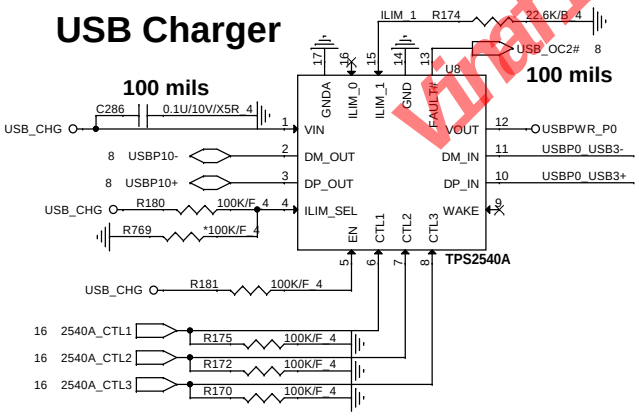
MB to USB board



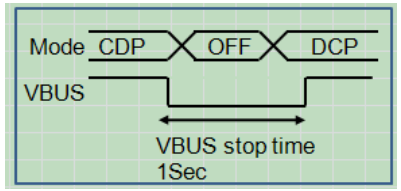
USB 3.0 PORT1



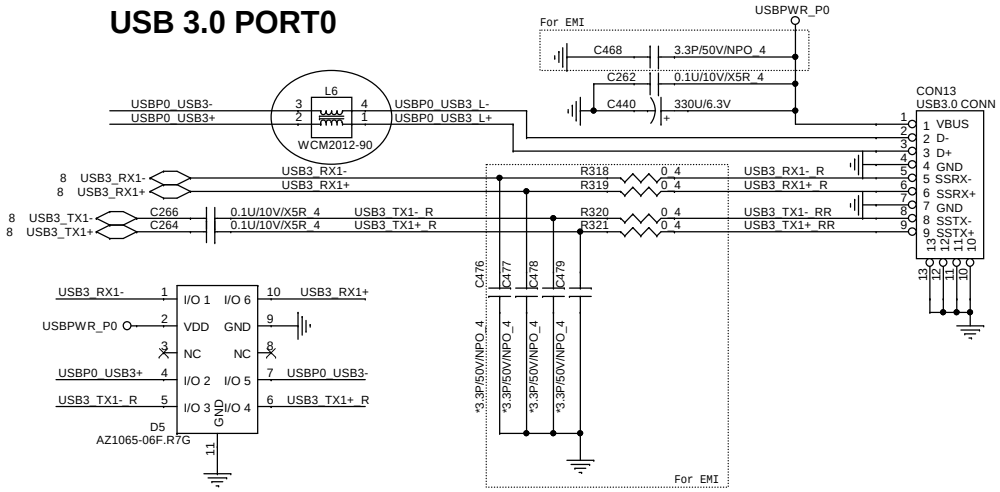
USB Charger



SDP : Standard Downstream Port
CDP : Charging downstream port
DCP : Dedicated Charging Port
Enable/Disable : setting by BIOS



USB 3.0 PORT0



CTL_1	CTL_2	CTL_3	TPS 2540A/2543 Truth Table
0	0	0	OUT discharge, power switch OFF
0	X	1	DCP,Auto-detect(S3/S4/S5, 1.5A)
X	1	0	SDP, USB2.0 mode(S0, 0.5A)
1	0	0	DCP, BC SPEC1.2 only(S3/Deep standby/S4/S5, 1.5A)
1	0	1	DCP, Divider mode only(S3/S4/S5, 1.5A)
1	1	1	CDP (S0, 1.5A)

System State	USB Battery Charging Setting			
	Disable	C(1 2 3)	Enable	C(1 2 3)
S0	SDP	(X 1 0)	CDP	(1 1 1)
S3	SDP	(X 1 0)	DCP BC	(1 0 0)
DS3	Charger OFF	(0 0 0)	DCP BC	(1 0 0)
S4	Charger OFF	(0 0 0)	DCP BC	(1 0 0)
S5	Charger OFF	(0 0 0)	DCP BC	(1 0 0)

ILIM_SEL	(I LIMIT(A)= 48000/R)	
HI	I_LIM_1	
LO	I_LIM_0	48000/22.6K=2.123A

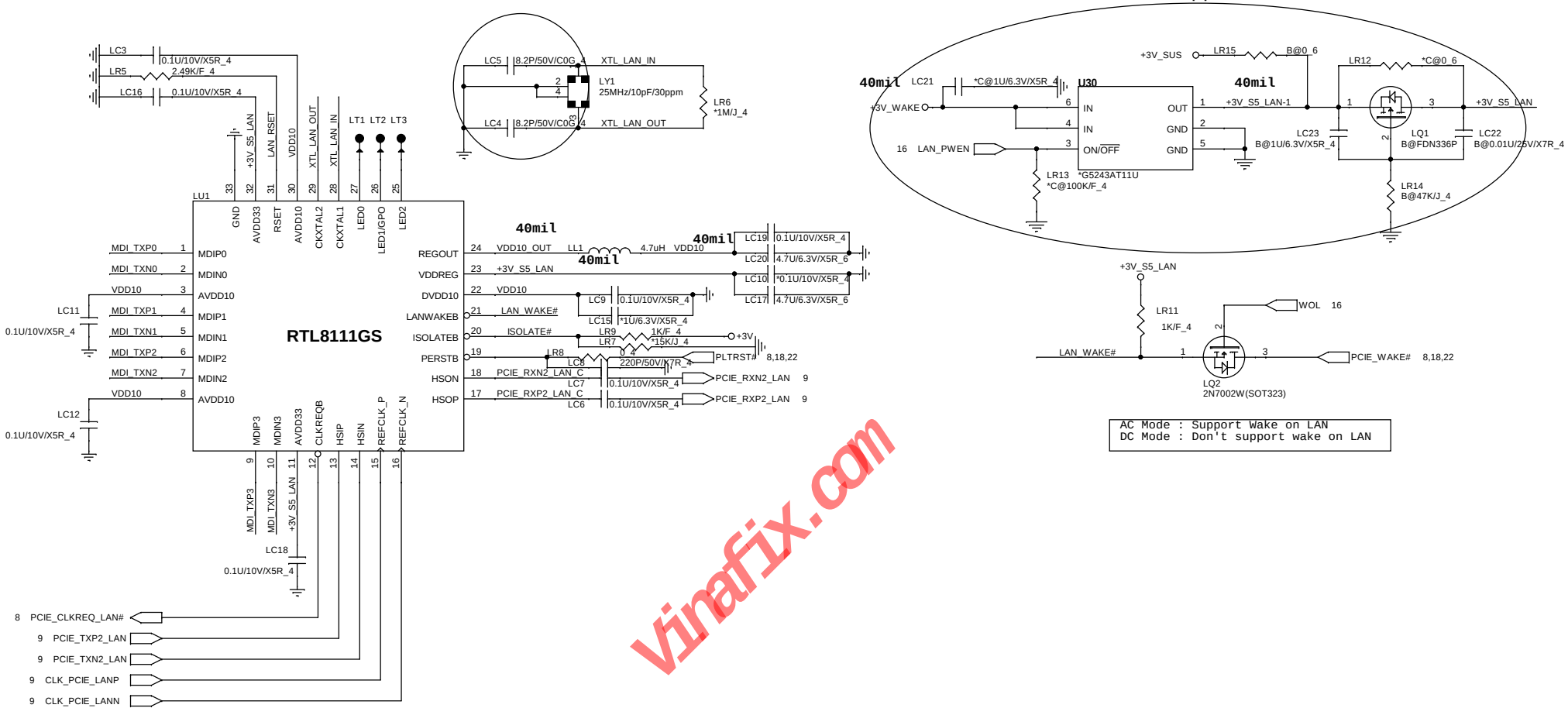
1.Level 1 Environment-Related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : HKB

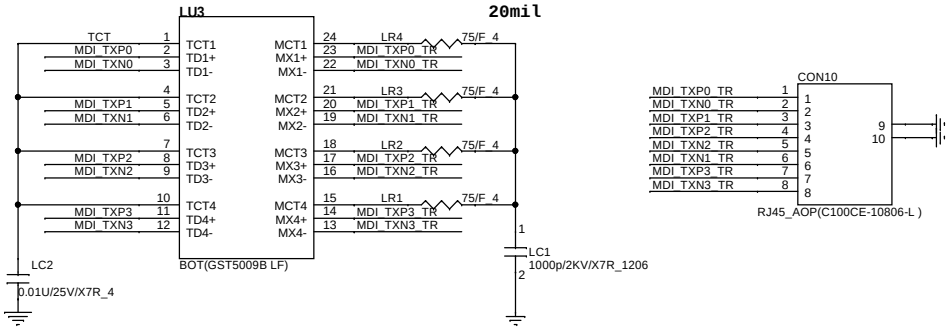
Size	Document Number	Rev
	USB/USB Charger	1A

Date: Tuesday, April 23, 2013 Sheet 20 of 36

B@ : Support S3 WOL
C@ : Support S5 WOL



AC Mode : Support Wake on LAN
DC Mode : Don't support wake on LAN

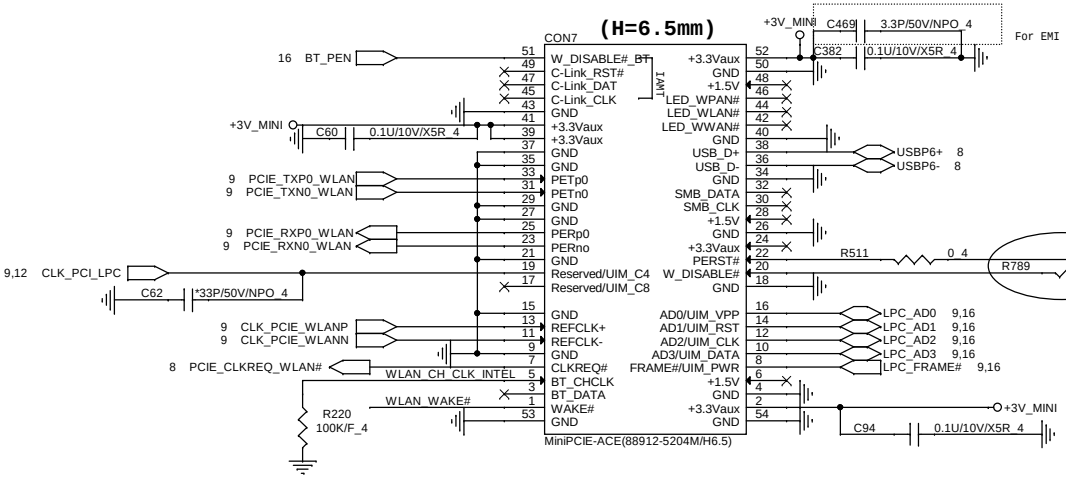


1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

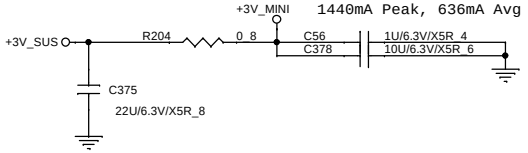
Quanta Computer Inc.
PROJECT : HKB

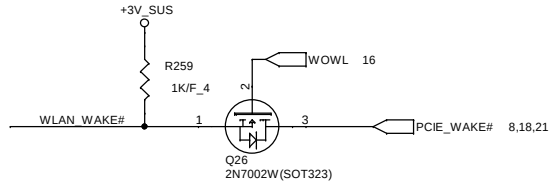
Size	Document Number	Rev
	LAN RTL8111GS	1A
Date: Thursday, April 25, 2013	Sheet 21 of 36	

WLAN/WIMAX/WIDI



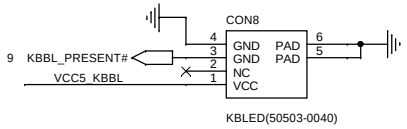
WLAN+Bluetooth
20 : Internal Pull high 25K ~ 58K

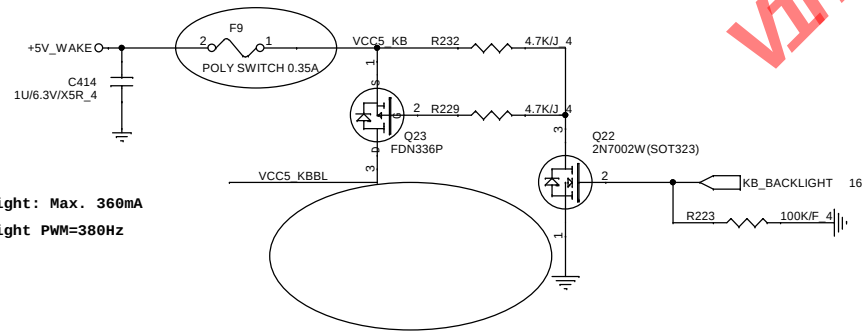




AC Mode : Support Wake on WLAN
DC Mode : Don't support wake on WLAN

KB BACKLIGHT





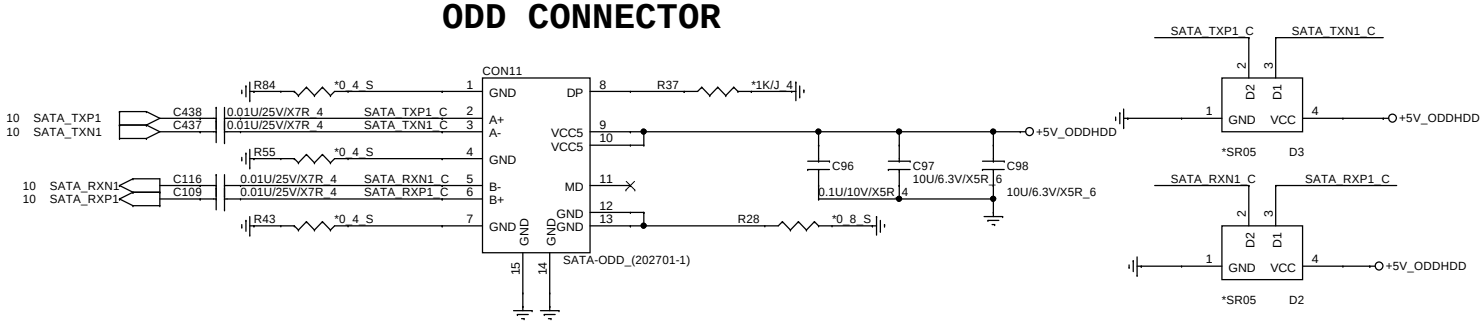
KB Backlight: Max. 360mA

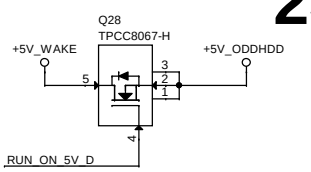
KB Backlight PWM=380Hz

1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

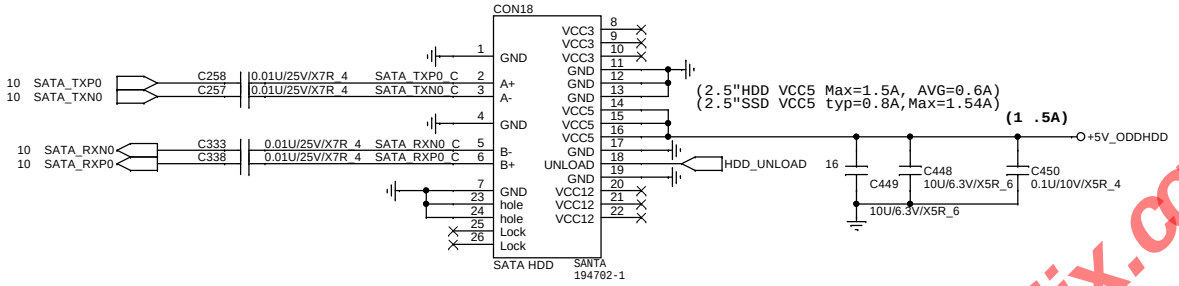
Quanta Computer Inc.		
PROJECT : HKB		
Size	Document Number: WLAN/KB-BL	Rev: 1A
Date: Tuesday, April 23, 2013	Sheet 22 of 36	

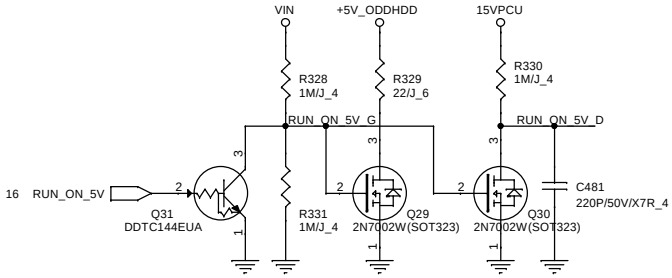
ODD CONNECTOR

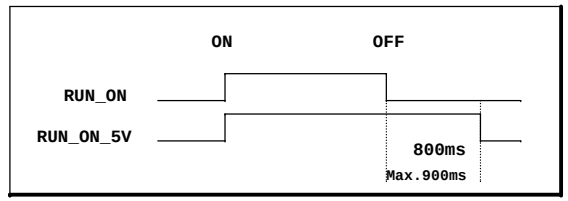




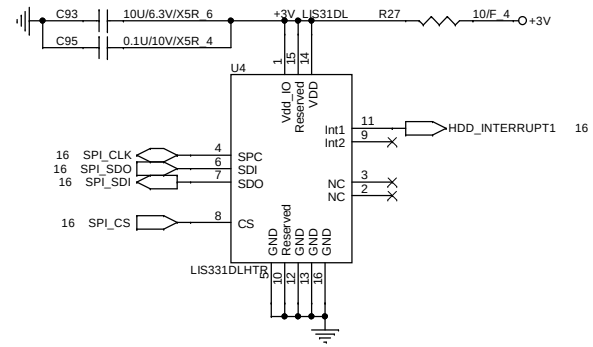
HDD CONNECTOR

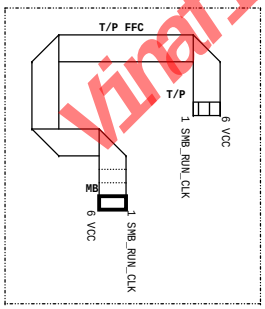




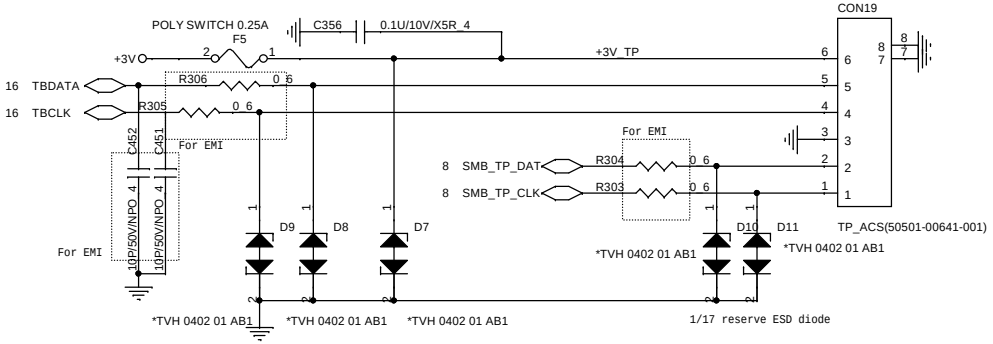


HDD PROTECT SPI INTERFACE

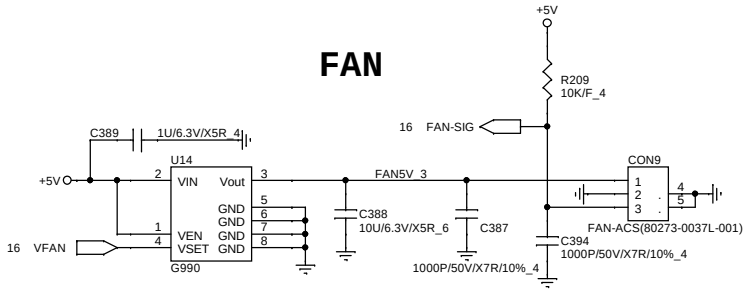




T/P Board to T/P

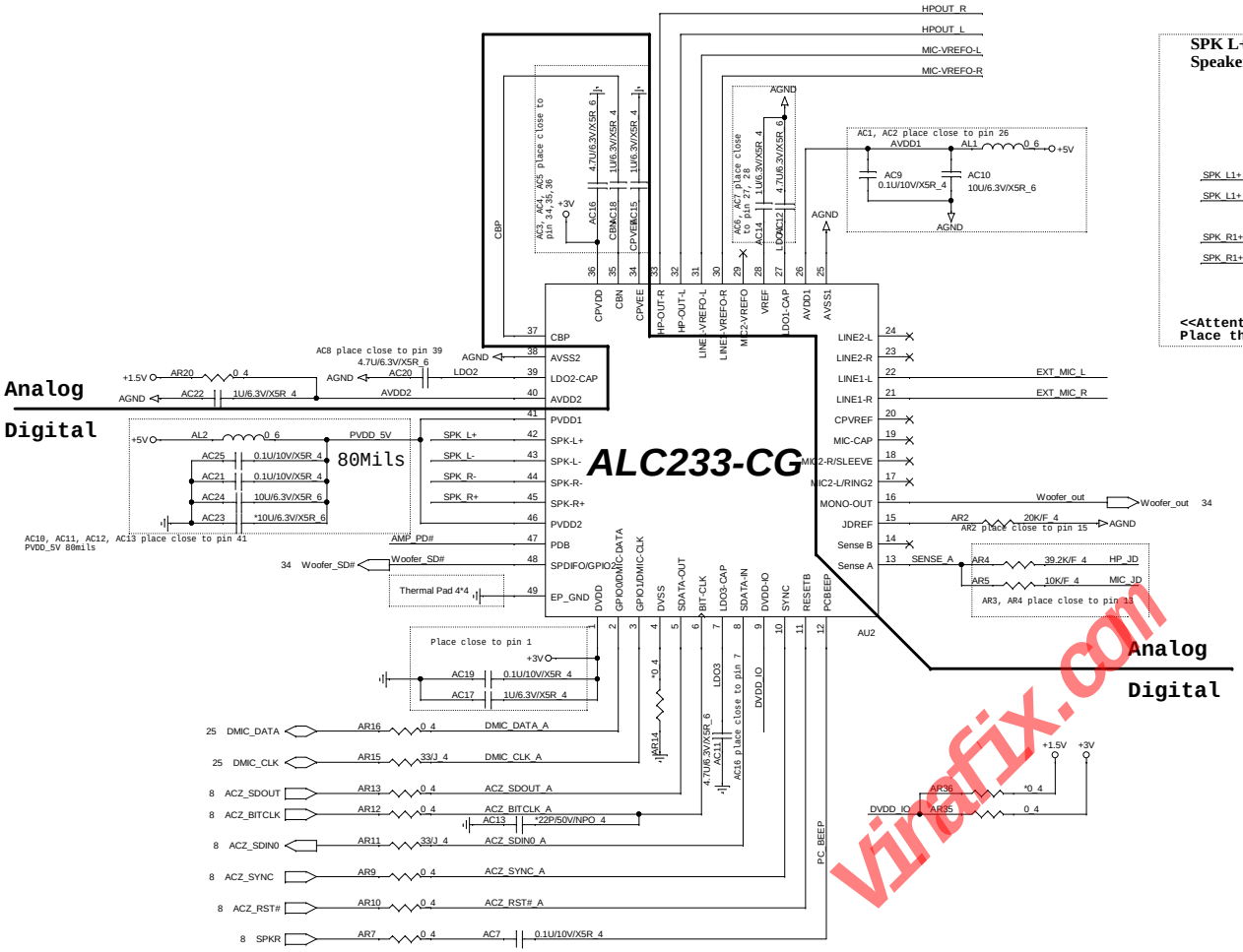


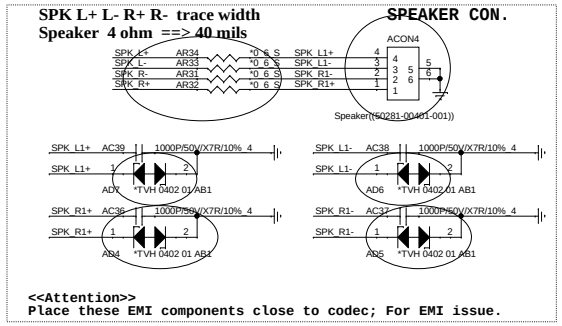
FAN

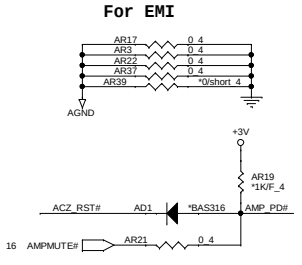


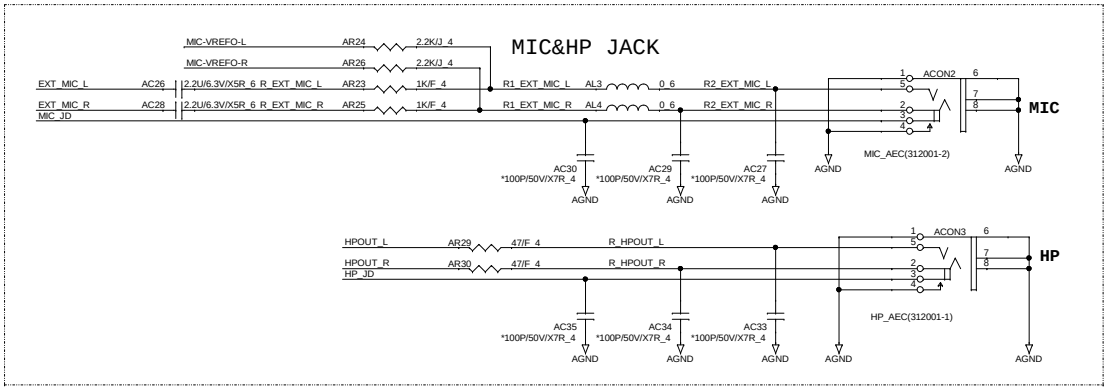
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

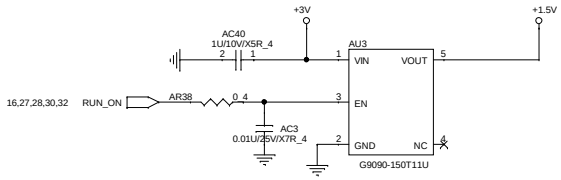
Quanta Computer Inc.		
PROJECT : HKB		
Size	Document Number: HDD/ODD/Gsensor/TP/FAN	Rev: 1A
Date: Tuesday, April 23, 2013	Sheet 23 of 36	











1.Level 1 Environment-related Substances Should Never be Used.
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Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	AUDIO(ALC233-CG)HP&MIC	1A
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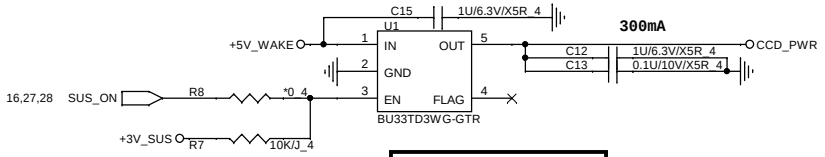
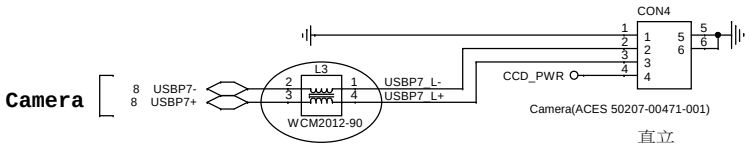
Camera

USB Camera Power

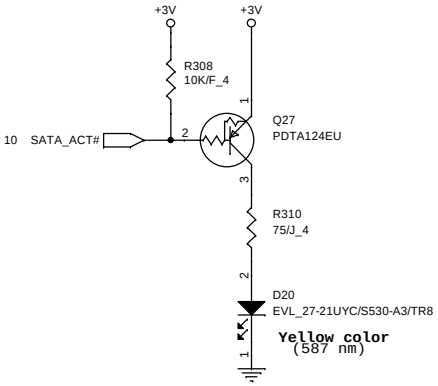


Camera HD specification
Voltage: Max. 3.6V
Current : Max. 200mA
OCP: 200mA ~ 300mA

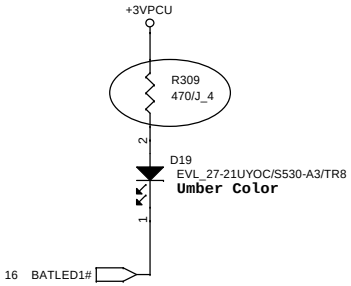
Camera



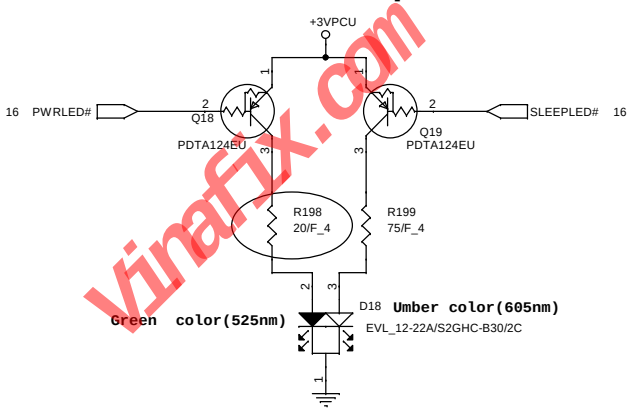
SATA LED



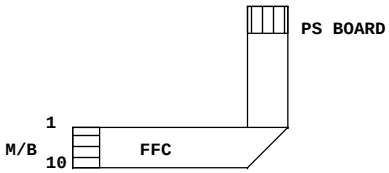
BATTERY LED



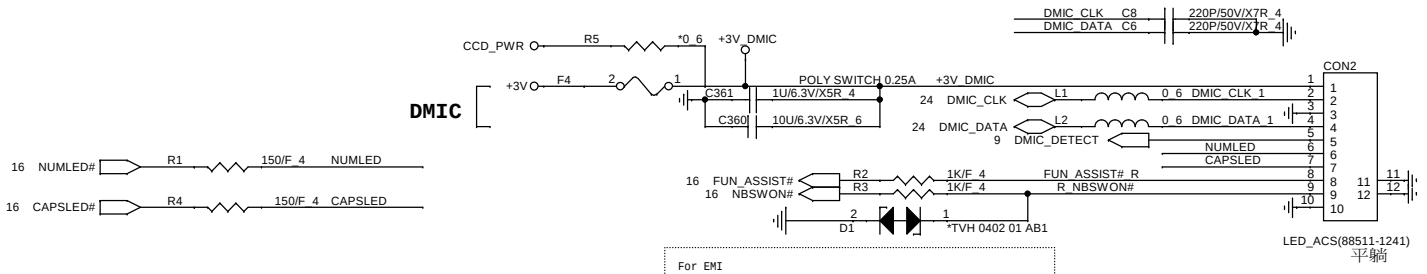
Power/Sleep LED



PS BOARD



Power SW Board Connector



1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : HKB

Size	Document Number	Rev
	LED/PS/DMIC\Camera	1A
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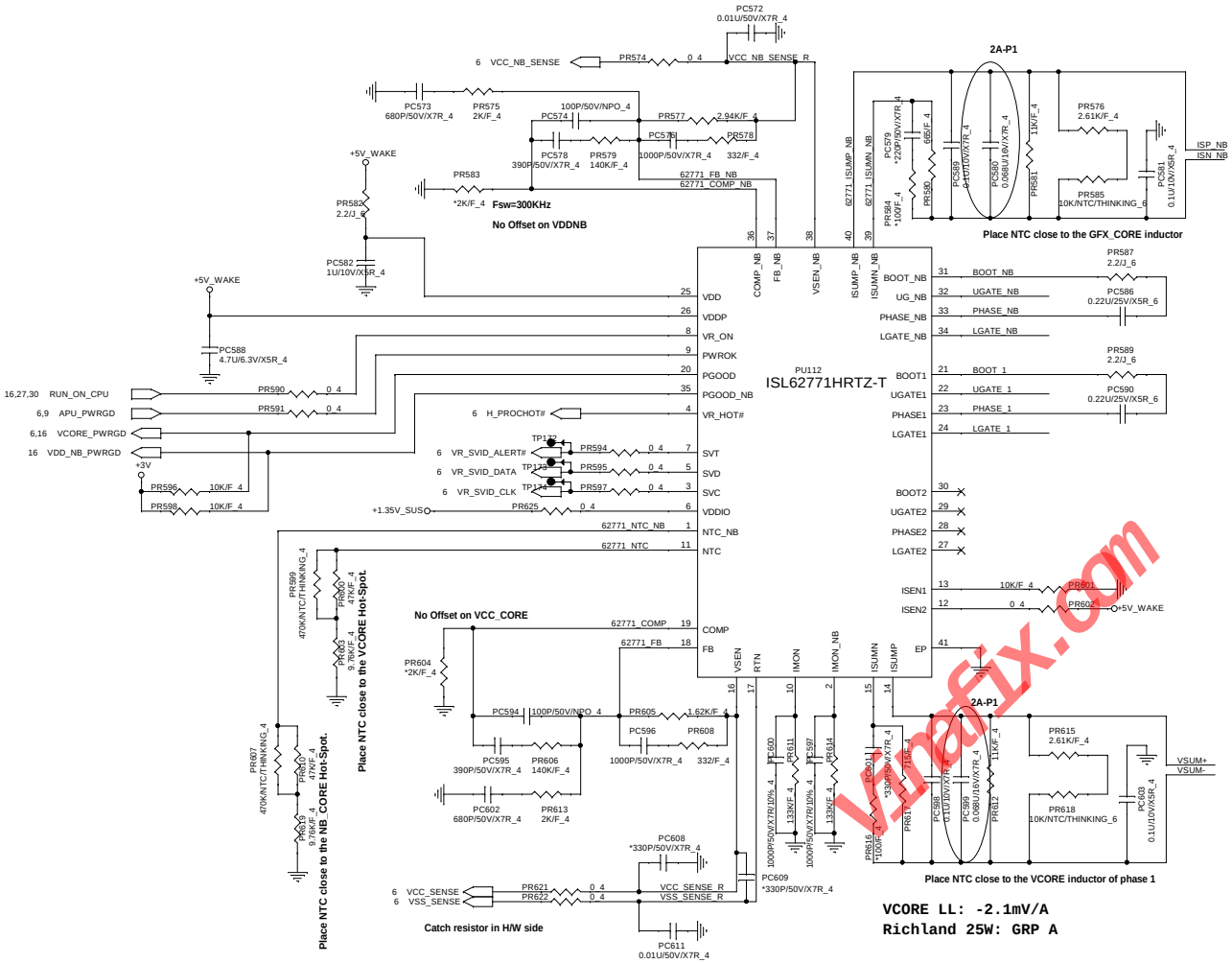
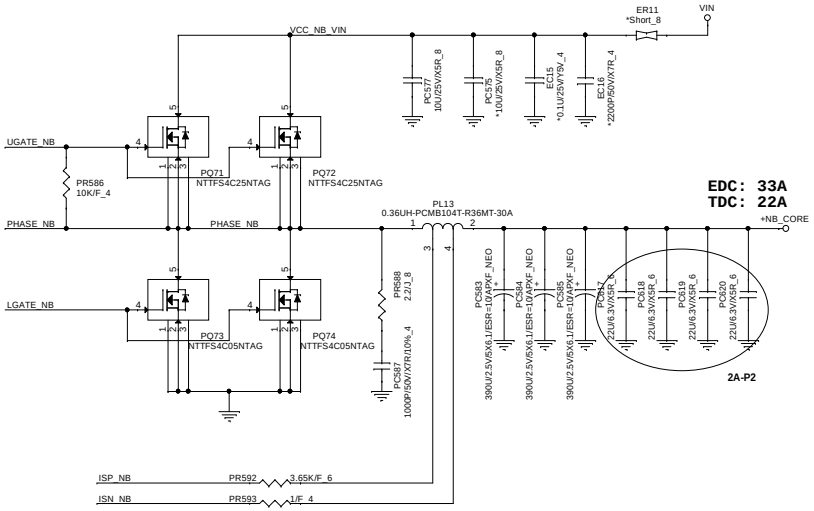
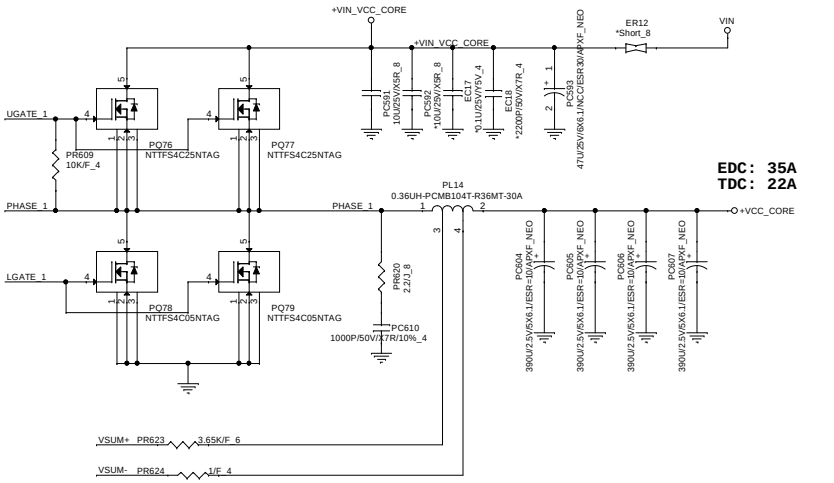
Richland 25W: GRP A
VDD_NB LL: -4.0mV/A



VCORE LL: -2.1mV/A
Richland 25W: GRP A





1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.		
PROJECT : HKA		
Size	Document Number: +VCC_CORE (ISL62771)	Rev: 1A
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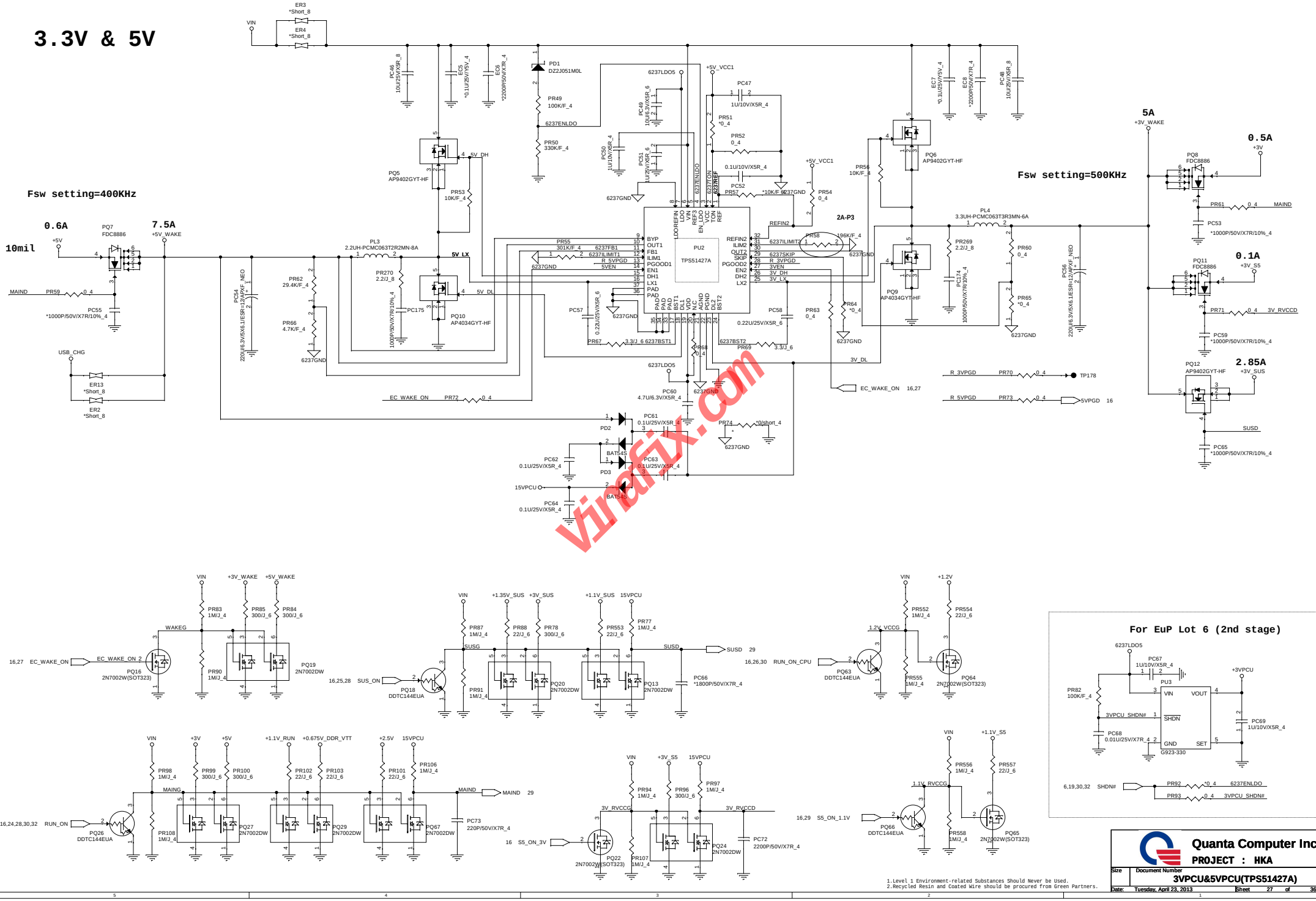
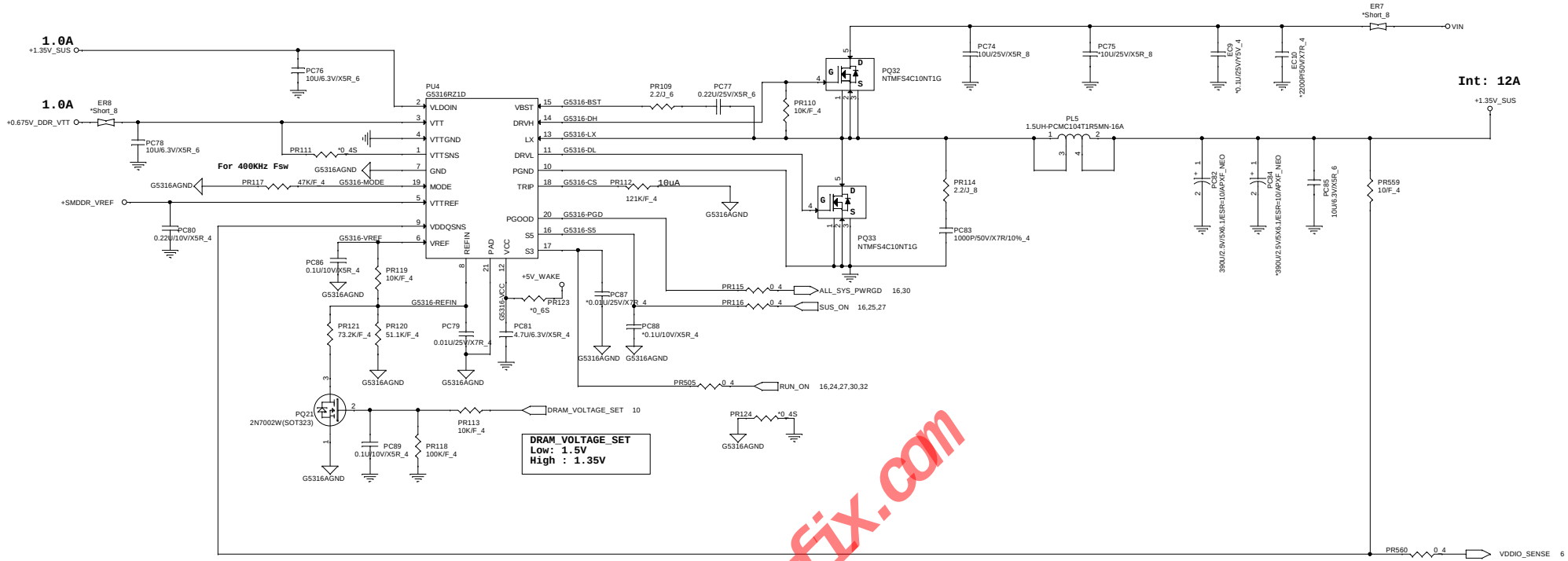
3.3V & 5V



1.35VSUS & VTT_MEM



MODE	Resistor on Mode	Fsw	Discharge Mode
3	200Kohm	400KHz	Tracking discharge
2	100Kohm	300KHz	
1	68Kohm	300KHz	**Non-tracking discharge**
0	**47Kohm**	**400KHz**	

STATE	S3	S5	1.5VSUS	VTTREF	VTT
S0	1	1	On	On	On
S3	0	1	On	On	Off/High Z
S4/S5	0	0	Off	Off	Off

1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
PROJECT : HKA

Size	Document Number	Rev
	1.35VSUS/VTT_MEM	1A

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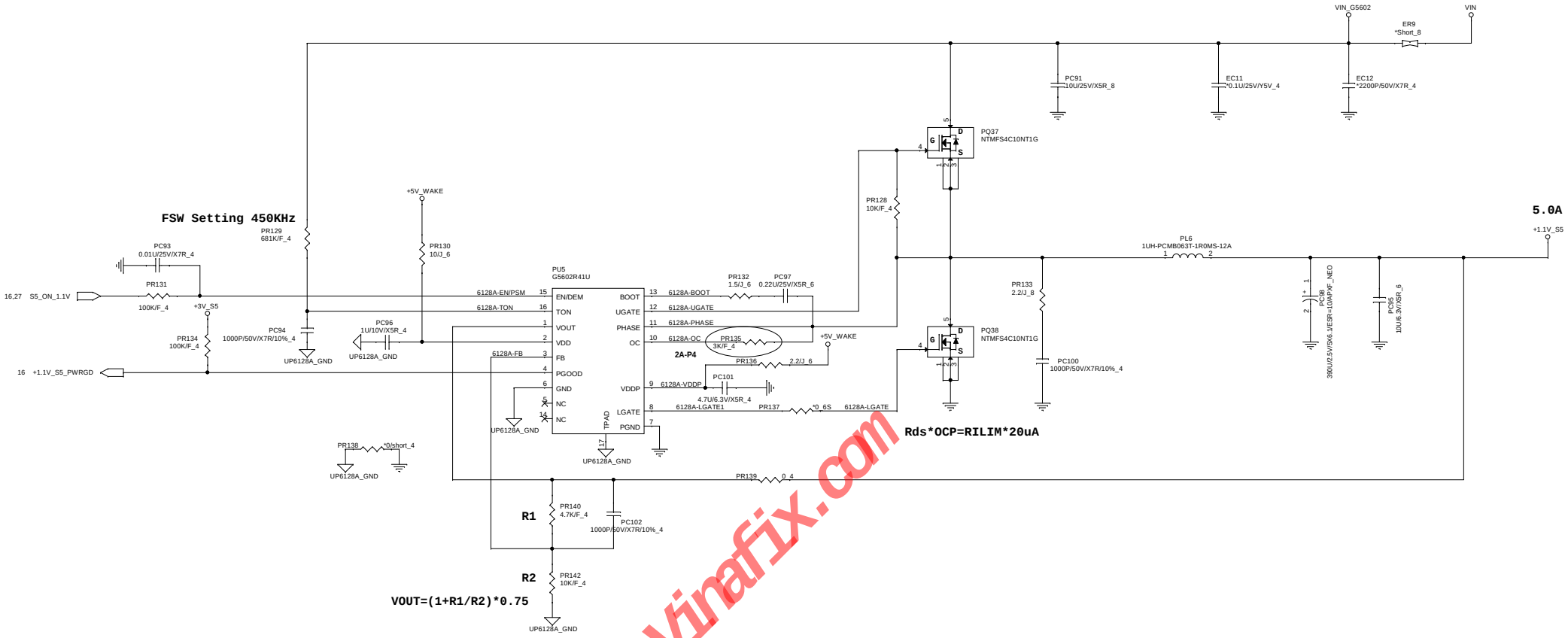
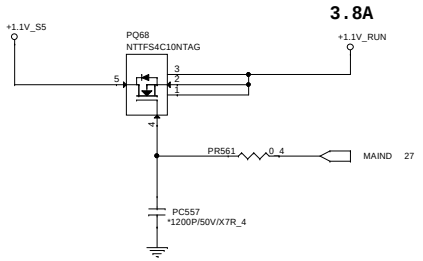
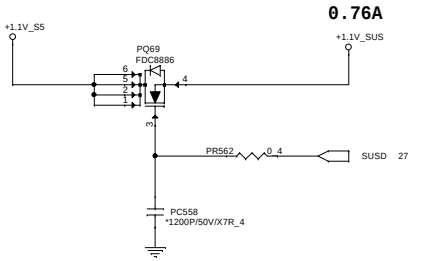


+1.1V



+1.1V_SUS



1.Level 1 Environment-related Substances Should Never be Used.
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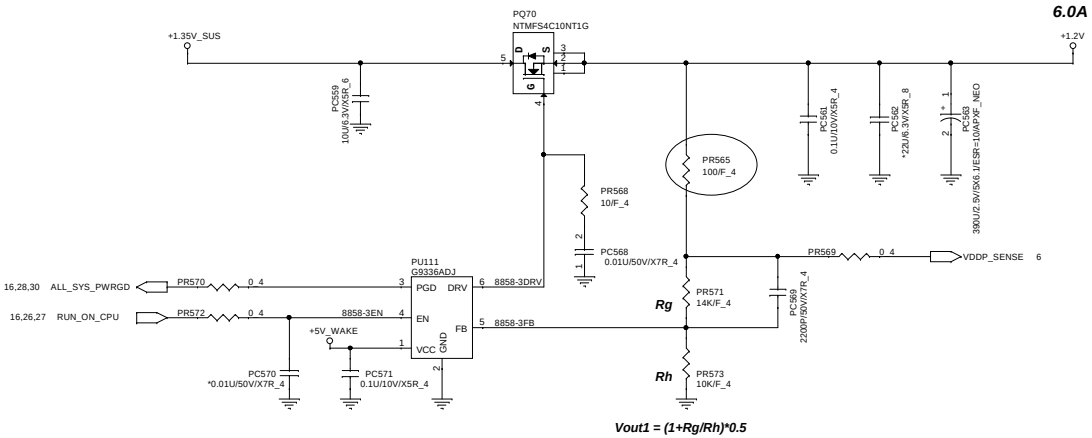
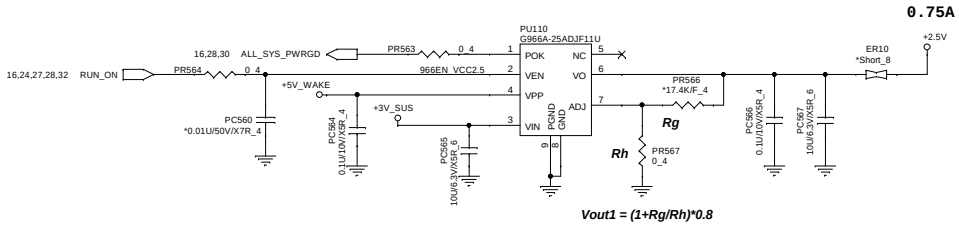
Quanta Computer Inc.
PROJECT : HKA

Size	Document Number	Rev
	+1.1V (UP1522RQDD)	1A
Date: Tuesday, April 23, 2013	Sheet 29 of 36	

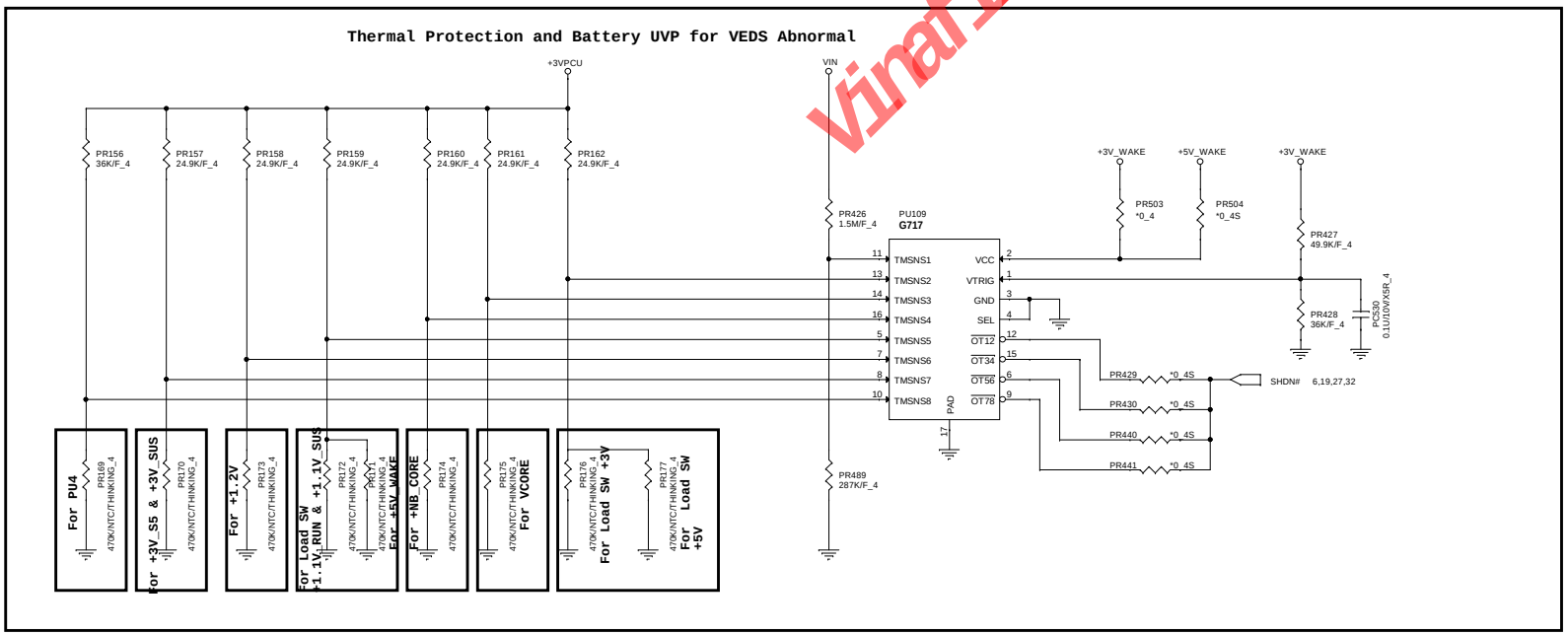
VCC1.2



VCC2.5



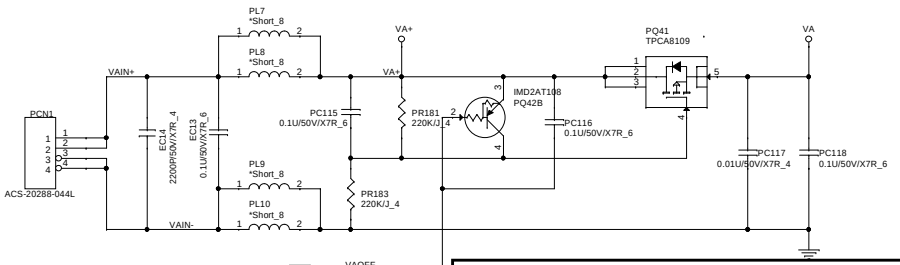
Thermal Protection and Battery UVP for VEDS Abnormal

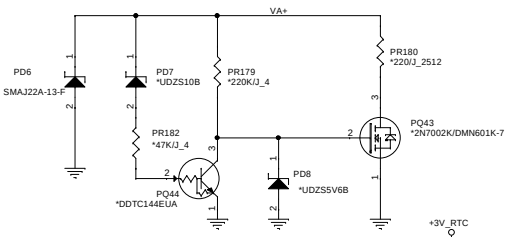


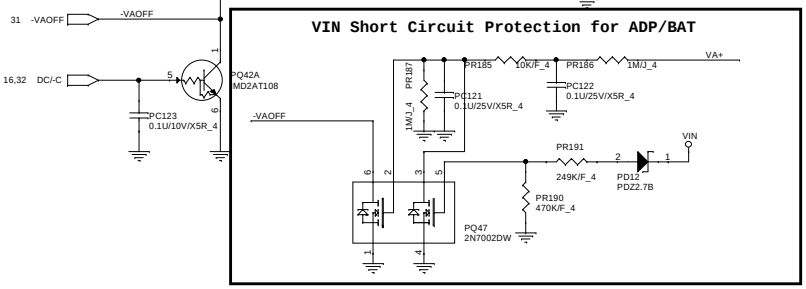
1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

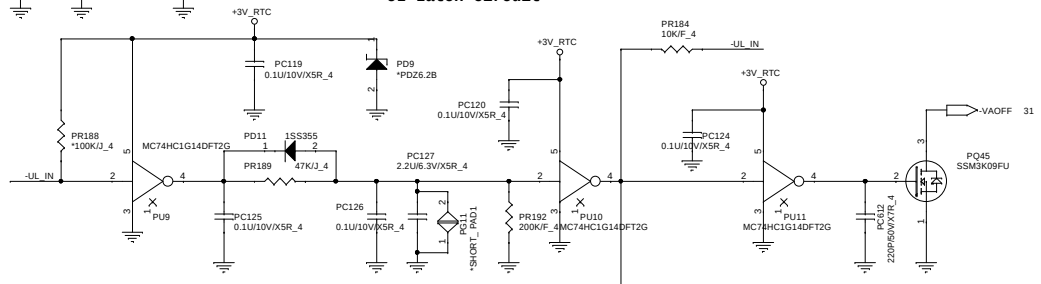
Quanta Computer Inc.
PROJECT : HKA

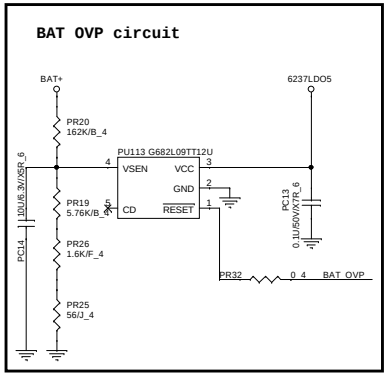
Size	Document Number	Rev
	VCC1.2/VCC2.5/Thermal	1A
Date: Tuesday, April 23, 2013	Sheet 30 of 36	

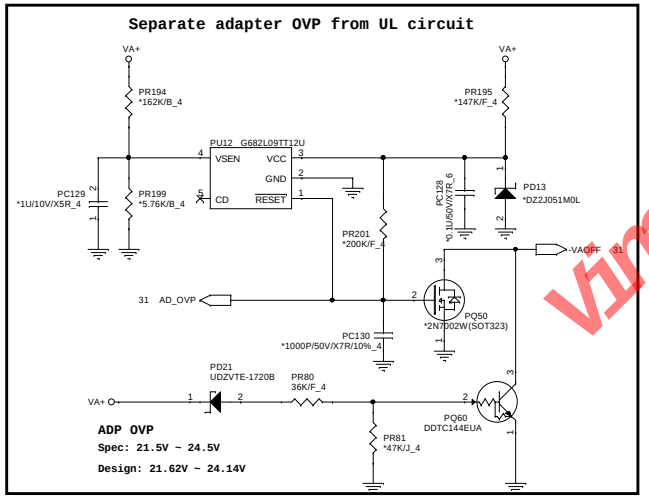


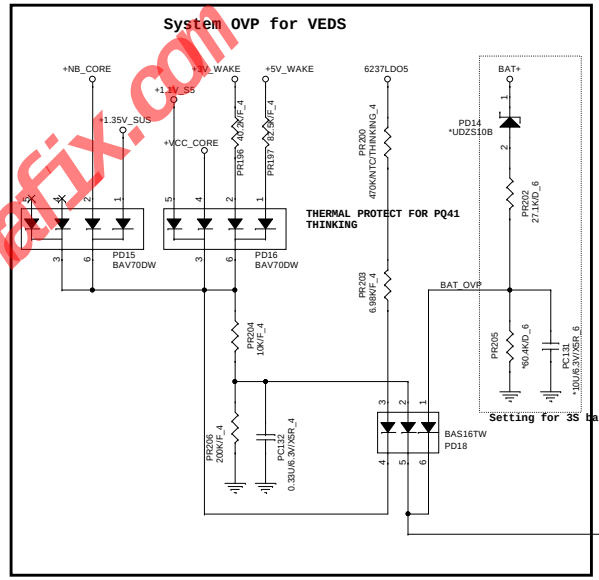


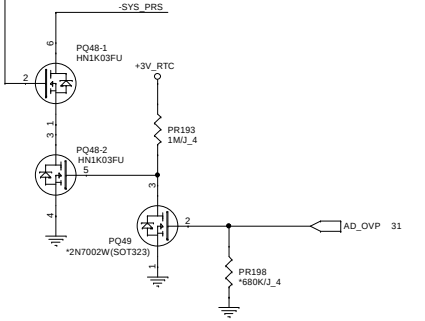


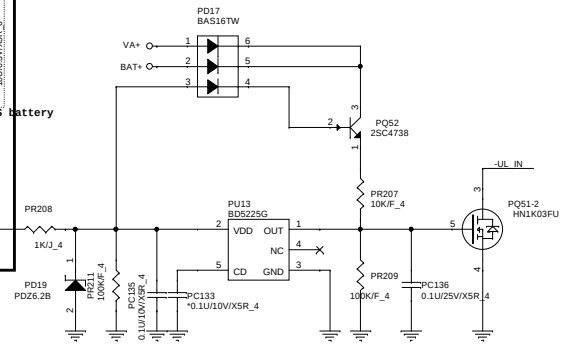


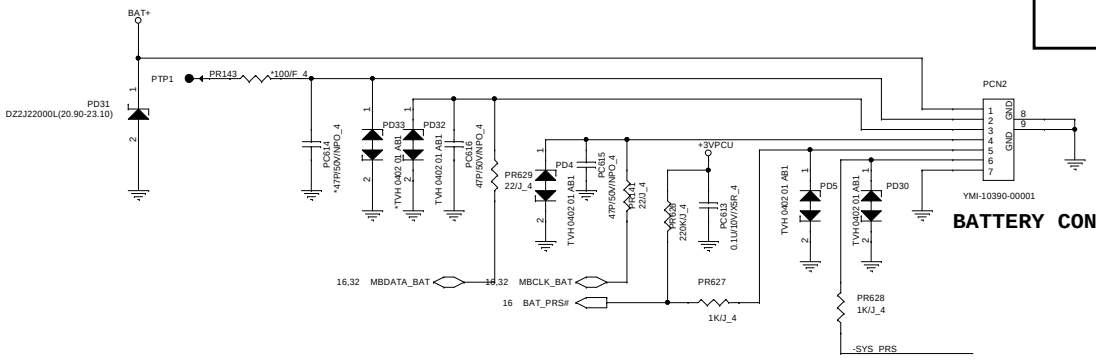












1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.
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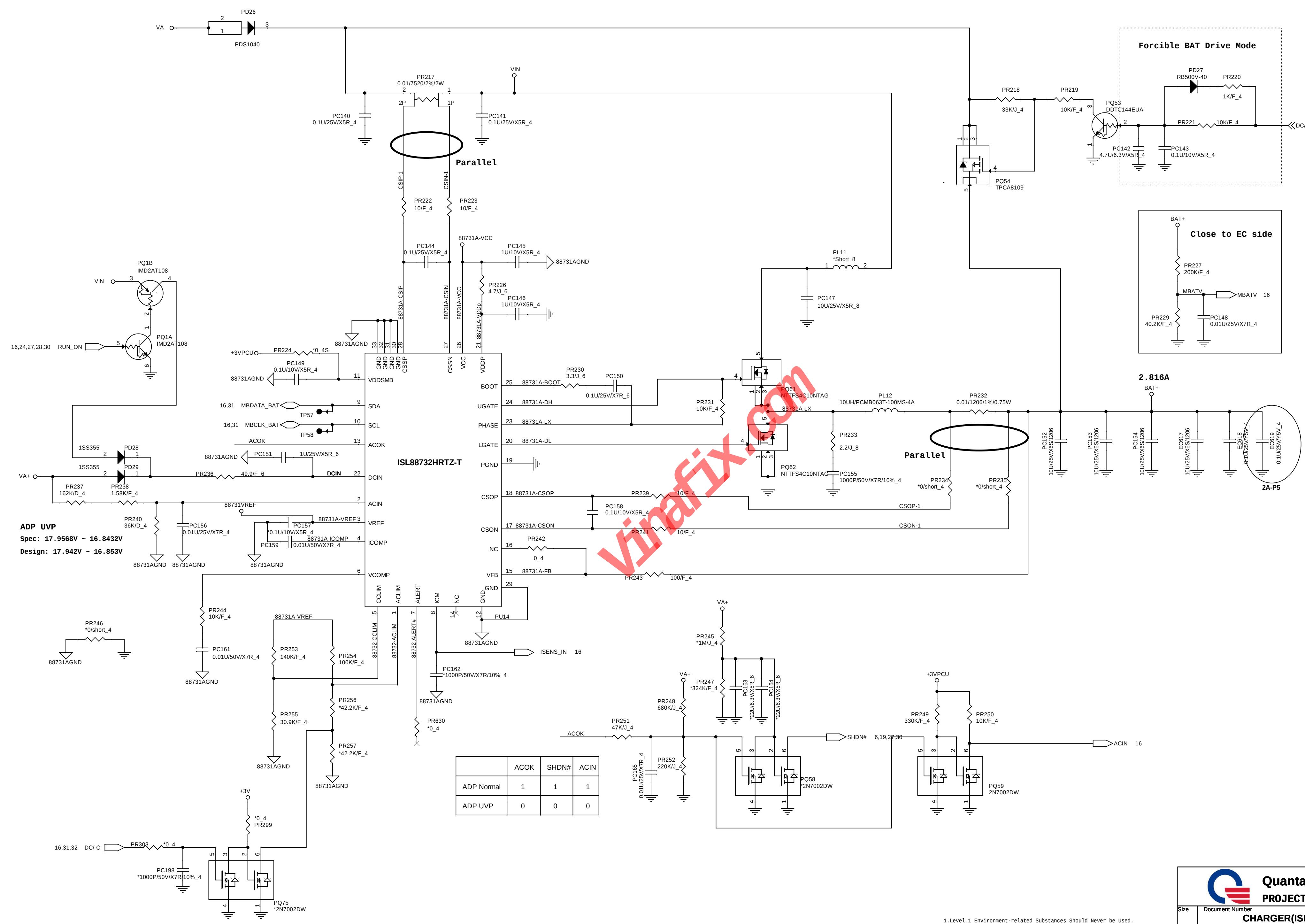

VA
PD26
PDS1040
PR217
0.01/7520/2%/2W
VIN
PC140
0.1U/25V/X5R_4
PC141
0.1U/25V/X5R_4
Parallel
CSIP-1
CSIN-1
PR222
10/F_4
PR223
10/F_4
PC144
0.1U/25V/X5R_4
88731A-VCC
PC145
1U/10V/X5R_4
88731AGND
PR226
4.7/J_6
PC146
1U/10V/X5R_4
88731A-CSIP
88731A-CSIN
88731A-VCC
88731A-VDDP
ISL88732HRTZ-T
GND
CSSP
CSSN
VCC
VDDP
VDDSMB
SDA
SCL
ACOK
DCIN
ACIN
VREF
ICOMP
VCOMP
CCLIM
ACLIM
ALERT
ICM
NC
BOOT
UGATE
PHASE
LGATE
PGND
CSOP
CSON
VFB
PQ1B
IMD2AT108
PQ1A
IMD2AT108
16,24,27,28,30
RUN_ON
+3VPCU
PR224
*0_4S
PC149
0.1U/10V/X5R_4
16,31
MBDATA_BAT
TP57
16,31
MBCLK_BAT
TP58
PC151
1U/25V/X5R_6
1SS355
PD28
1SS355
PD29
VA+
PR236
49.9/F_6
DCIN
PR237
162K/D_4
PR238
1.58K/F_4
88731VREF
88731A-VREF
PC157
*0.1U/10V/X5R_4
88731A-ICOMP
PC159
0.01U/50V/X7R_4
PR240
36K/D_4
PC156
0.01U/25V/X7R_4
ADP UVP
Spec: 17.9568V ~ 16.8432V
Design: 17.942V ~ 16.853V
PR230
3.3/J_6
PC150
0.1U/25V/X7R_6
88731A-BOOT
88731A-DH
88731A-LX
88731A-DL
88731A-CSOP
88731A-CSON
88731A-FB
PR231
10K/F_4
PQ61
NTTFS4C10NTAG
PQ62
NTTFS4C10NTAG
PL11
*Short_8
PC147
10U/25V/X5R_8
PL12
10UH/PCMB063T-100MS-4A
PR232
0.01/1206/1%/0.75W
PR233
2.2/J_8
PC155
1000P/50V/X7R/10%_4
Parallel
PR234
*0/short_4
PR235
*0/short_4
CSOP-1
CSON-1
PR239
10/F_4
PC158
0.1U/10V/X5R_4
PR241
10/F_4
PR242
0_4
PR243
100/F_4
PC152
10U/25V/X6S/1206
PC153
10U/25V/X6S/1206
PC154
10U/25V/X6S/1206
EC617
10U/25V/X6S/1206
EC618
0.1U/25V/Y5V_4
EC619
0.1U/25V/Y5V_4
2A-P5
2.816A
BAT+
PR218
33K/J_4
PR219
10K/F_4
PQ53
DDTC144EUA
PQ54
TPCA8109
Forcible BAT Drive Mode
PD27
RB500V-40
PR220
1K/F_4
PR221
10K/F_4
DC/-C
16,31,32
PC142
4.7U/6.3V/X5R_4
PC143
0.1U/10V/X5R_4
Close to EC side
BAT+
PR227
200K/F_4
MBATV
MBATV 16
PR229
40.2K/F_4
PC148
0.01U/25V/X7R_4
PR246
*0/short_4
88731AGND
PR244
10K/F_4
PC161
0.01U/50V/X7R_4
88731A-VREF
PR253
140K/F_4
PR254
100K/F_4
88732-CCLIM
88732-ACLIM
88732-ALERT#
PU14
ISENS_IN 16
PC162
*1000P/50V/X7R/10%_4
PR630
*0_4
PR255
30.9K/F_4
PR256
*42.2K/F_4
PR257
*42.2K/F_4
+3V
*0_4
PR299
16,31,32
DC/-C
PR303
*0_4
PC198
*1000P/50V/X7R/10%_4
PQ75
*2N7002DW
VA+
PR245
*1M/J_4
PR247
*324K/F_4
PC163
*22U/6.3V/X5R_6
PC164
*22U/6.3V/X5R_6
PR248
680K/J_4
ACOK
PR251
47K/J_4
PC165
0.01U/25V/X7R_4
PR252
220K/J_4
PQ58
*2N7002DW
SHDN#
6,19,27,30
+3VPCU
PR249
330K/F_4
PR250
10K/F_4
ACIN
16
PQ59
2N7002DW

	ACOK	SHDN#	ACIN
ADP Normal	1	1	1
ADP UVP	0	0	0

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Quanta Computer Inc.

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Size	Document Number	Rev
	CHARGER(ISL88731C)	1A

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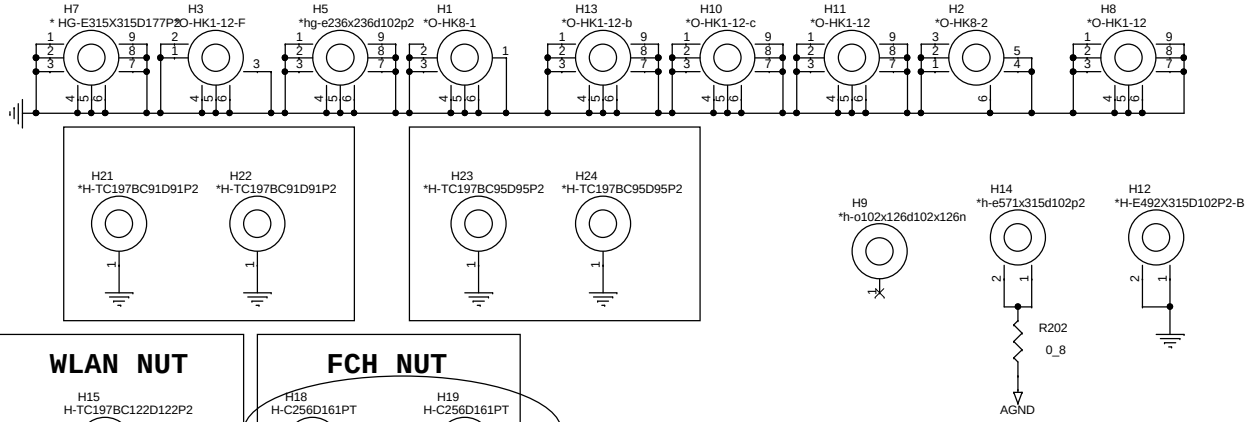
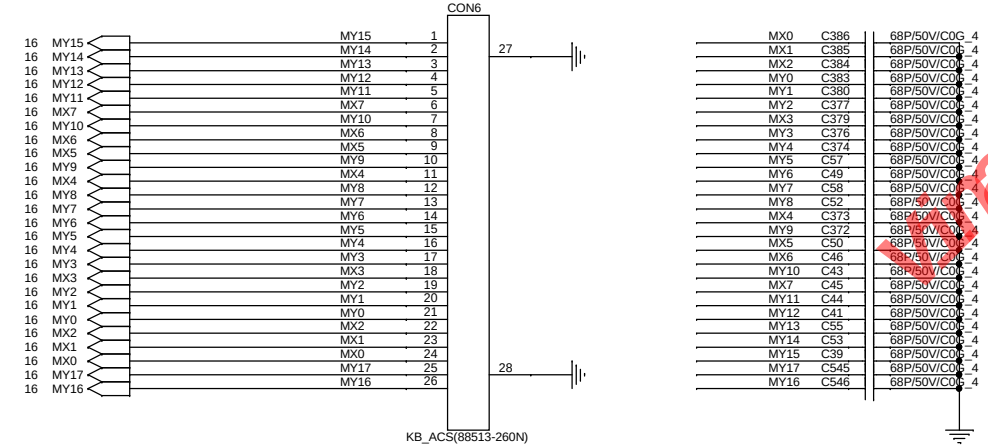
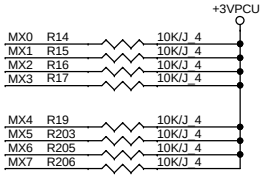
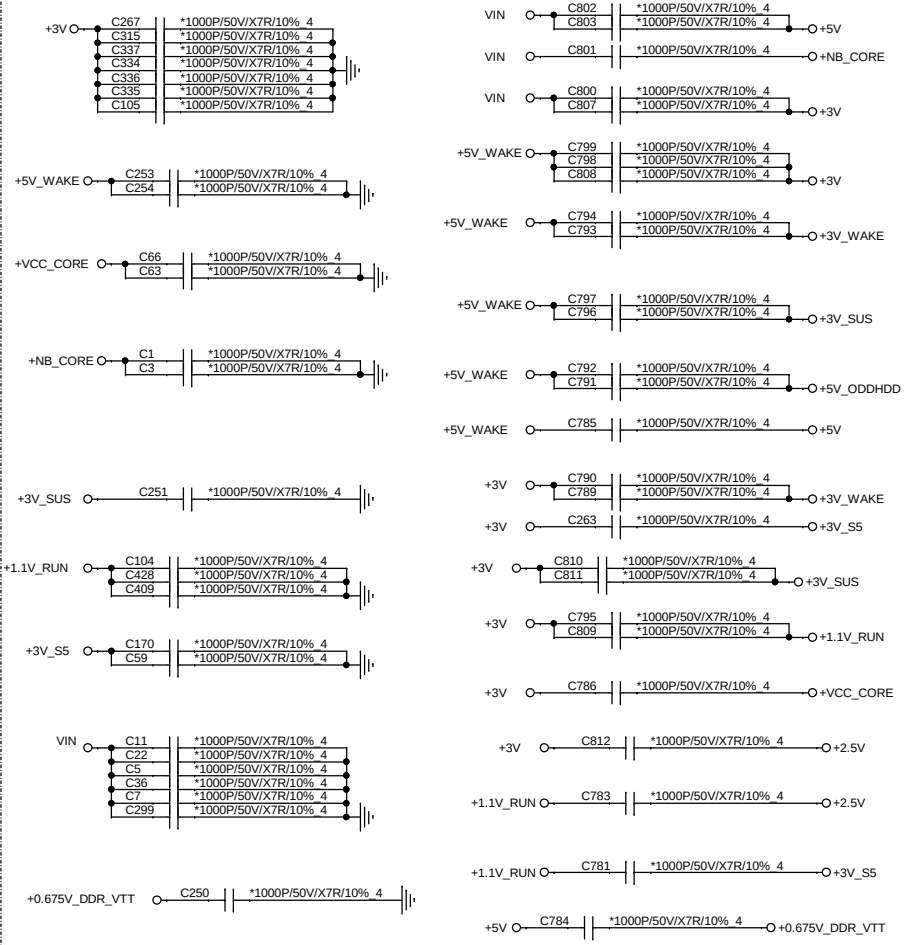


KEY BOARD Connector







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Size	Document Number	Rev
	HOLE/EMI/KB	1A
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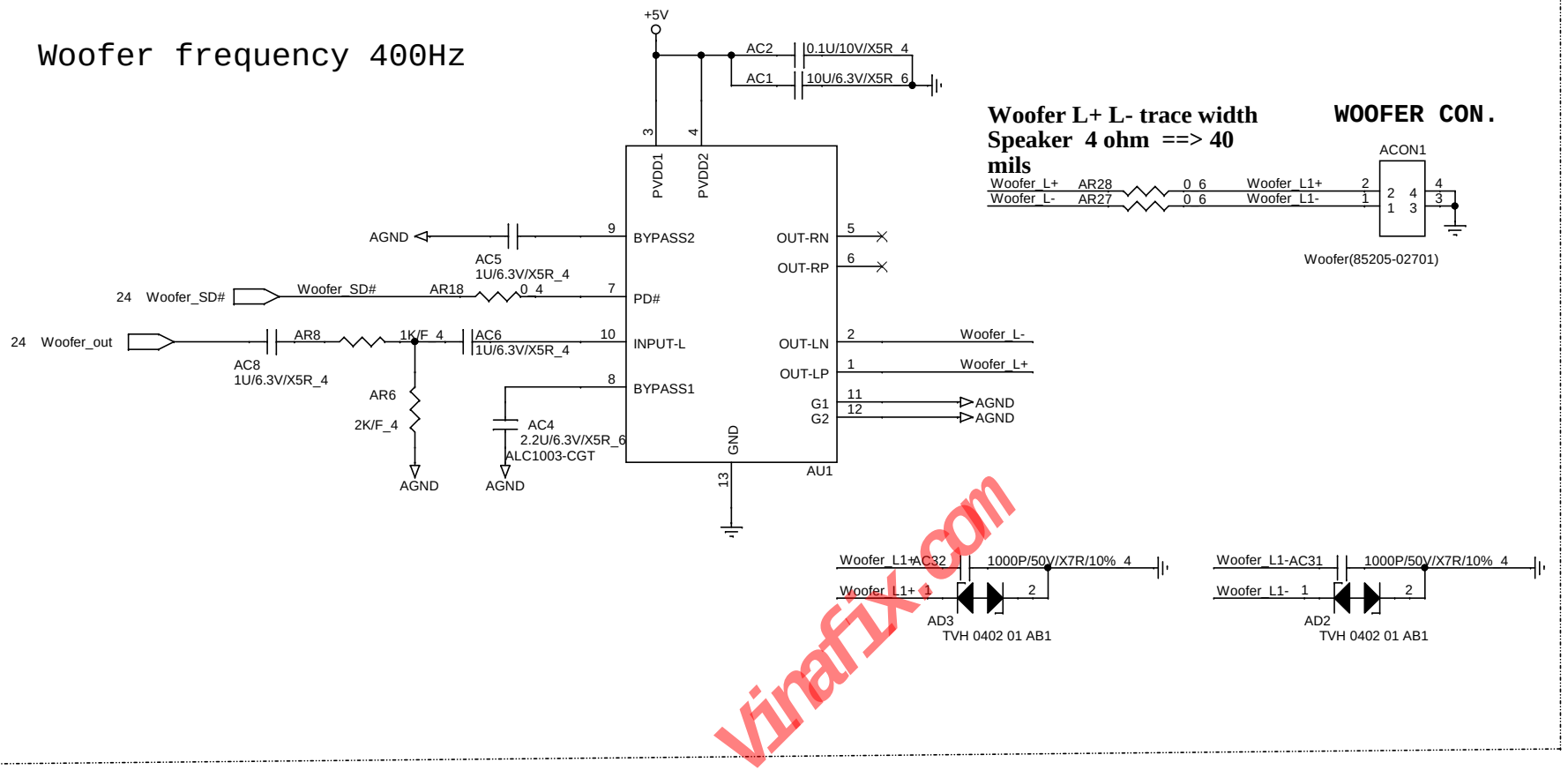
Woofer frequency 400Hz



Woofer L+ L- trace width
Speaker 4 ohm ==> 40 mils

WOOFER CON.

1.Level 1 Environment-related Substances Should Never be Used.
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Size	Document Number	Rev
	Woofer(ALC1003-CGT)	1A
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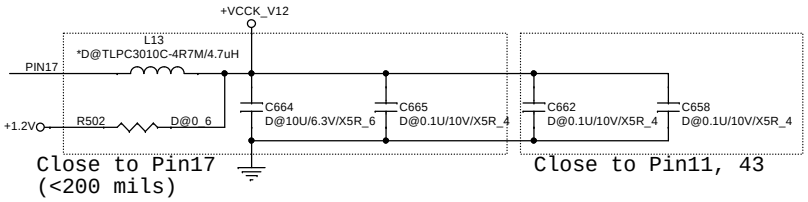
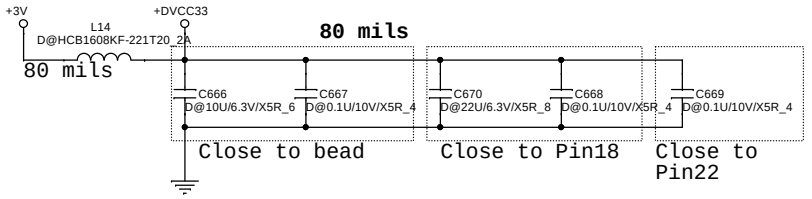
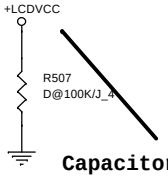
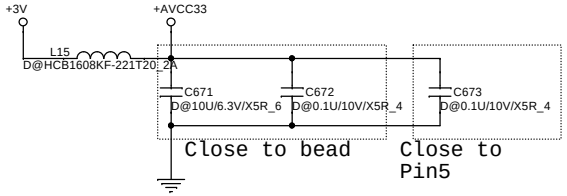
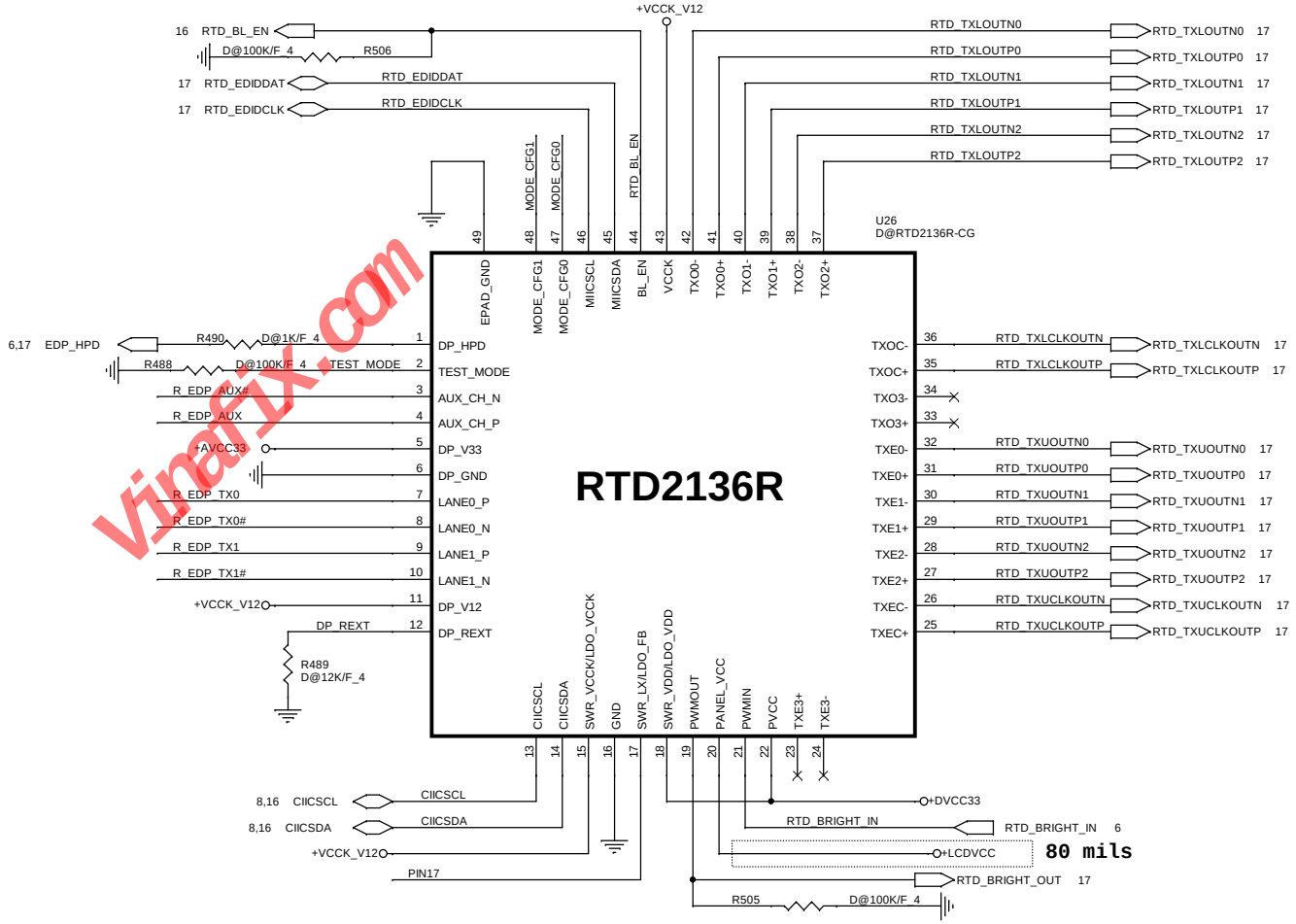


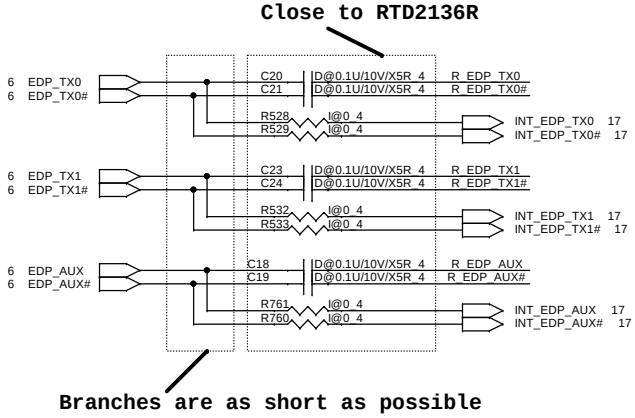


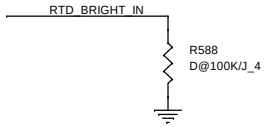


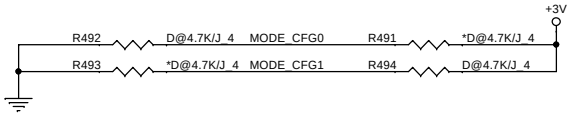
Capacitors are on Page 17.











		MODE_CFG0(PIN47)	
		0	1
MODE_CFG1(PIN48)	0	X	EP MODE
	1	ROM ONLY MODE	EEPROM MODE

1.Level 1 Environment-related Substances Should Never be Used.
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Quanta Computer Inc.
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	eDP to LVDS	1A
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I/O PORT LIST

USB PORT Architecture	
PORT 0	USB2.0
PORT 1	USB2.0
PORT 2	N/A
PORT 3	N/A
PORT 4	N/A
PORT 5	Touch Screen
PORT 6	WiMAX/BT
PORT 7	Camera
PORT 8	N/A
PORT 9	N/A
PORT 10	USB3.0
PORT 11	USB3.0
PORT 12	N/A
PORT 13	N/A

PCIE BUS	
PORT 0	WLAN Port
PORT 1	CARD READER
PORT 2	GLAN(RTL8111GS)
PORT 3	N/A

SATA BUS	
PORT 0	HDD
PORT 1	ODD
PORT 2	N/A
PORT 3	N/A
PORT 4	N/A
PORT 5	N/A

SM BUS LIST

SM BUS	MBCLK/MBDATA	WRITE	READ	Function
ISL88732HRTZ-T	0001 001X	0001 0010	0001 0011	Charger

SM BUS	MBCLK_BAT/MBDATA_BAT	WRITE	READ	Function
VGP-BPS35A	0001 011X	0001 0110	0001 0111	Battery

SM BUS	SMB0_RUN_CLK/SMB0_RUN_DAT	WRITE	READ	Function
DIMM Module 0	1010 000X	1010 0000	1010 0001	DDRIII
DIMM Module 1	1010 010X	1010 0100	1010 0101	DDRIII

SM BUS	SMB1_RUN_CLK/SMB1_RUN_DAT	WRITE	READ	Function
Synaptics	0010 110X	0010 1100	0010 1101	Click PAD

M/B ID LIST

SIZE	Board ID0
HKA 14"	0
HKB 15"	1

I/F	Board ID1
eDP	0
LVDS	1

CPU	Board ID2	Board ID3
A4	0	0
A6	0	1
A8	1	0
A10	1	1

POWER MAP

	S0	S3	S4	S5 (Charger Enable)	S5 (Charger Disable)
RUN_ON_CPU	H	L	L	L	L
+NB_CORE	H	L	L	L	L
+VCC_CORE	H	L	L	L	L
+1.2V	H	L	L	L	L
RUN_ON	H	L	L	L	L
+5V	H	L	L	L	L
+3V	H	L	L	L	L
+2.5V	H	L	L	L	L
+1.1V_RUN	H	L	L	L	L
+0.75V_DDR_VTT	H	L	L	L	L
SUS_ON	H	H	L	L	L
+1.35V_SUS	H	H	L	L	L
+3V_SUS	H	H	L	L	L
+1.1V_SUS	H	H	L	L	L
S5_ON_1.1V	H	H	*H/L	L	L
+1.1V_S5	H	H	*H/L	L	L
S5_ON_3V	H	H	*H/L	L	L
+3V_S5	H	H	*H/L	L	L
EC_WAKE_ON	H	H	*H/L	H	L
+3V_WAKE	H	H	*H/L	H	L
+5V_WAKE	H	H	*H/L	H	L
RUN_ON_5V	H	L	L	L	L
+5V_ODDHDD	H	L	L	L	L

* H: If wake up event exists.