

KL3A Intel Calpella Platform with Discrete GFX(4 core)

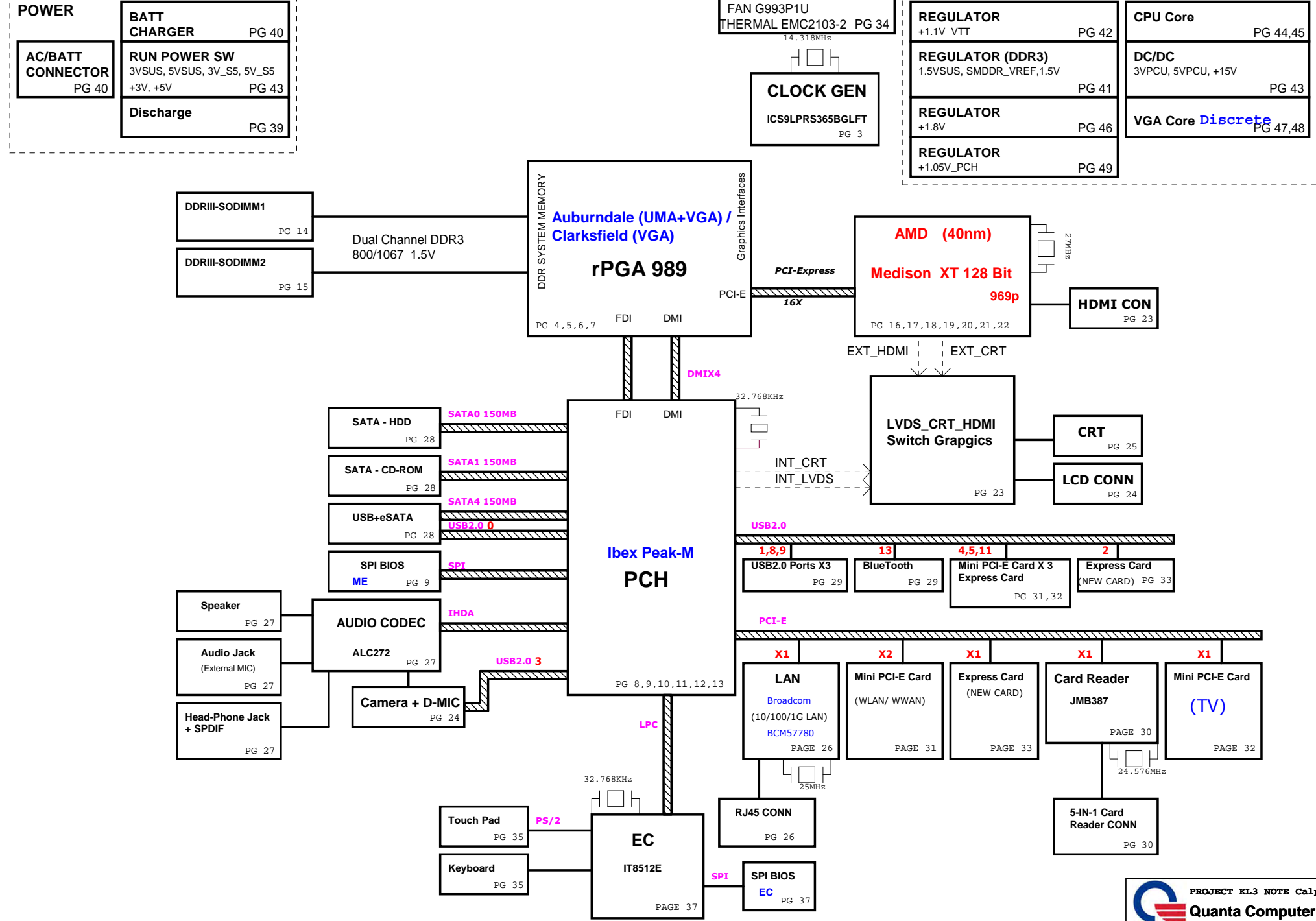
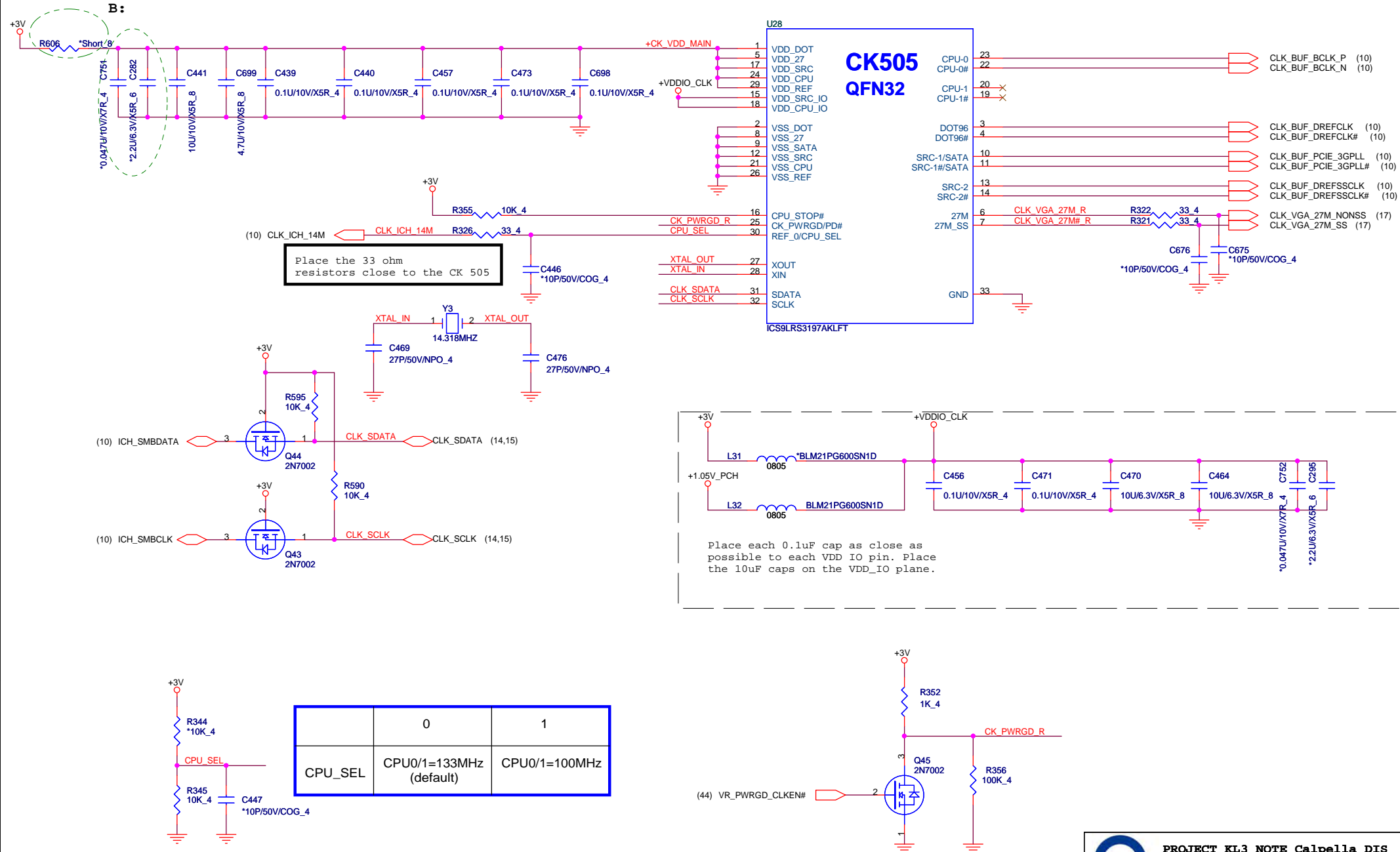


Table of Contents

PAGE	DESCRIPTION
1	Schematic Block Diagram
2	Front Page
3	CLOCK GENERATOR
4-7	Auburndale CPU
8-13	Ibex Peak-M
14-15	DDRIII SO-DIMM
16-22	Discreate VGA (M92-XT)
23	LCD + Camera Conn.
24	HDMI Conn.
25	CRT Conn.
26	Audio Codec ALC269
27	RTL8111DL
28	SATA HDD & ODD
29	USB x 2 & ESATA
30	USB X2/SIM_CARD/LEDs/RF
31	MINI-Card (UWB & WWAN)
32	MINI-Card (WLAN)
33	ONFI
34	Express Card
35	K/B & T/P
36	BLUETOOTH
37	FAN & Thermal
38	G-Sensor
39	B To B Conn.
40	iTPM & RFID EEPROM
41	KBC IT8502E
42	HOLD & SKEW
43	Discharge
44	Charger
45	DDR3 (TPS5116REGR)
46	1.05V_VTT & 1.05_PCH (RT8204)
47	3V/5V (MAX17101)
48	CPU (MAX17082)
49	DIS_GFX_VCC (MAX8792)
50	DIS_1.8V_RUN (OZ8116LN)
51	Power Block Dianram
52	XDP
53	Revision & Schematic Value Description
54	BOM Matrix Table

Power States

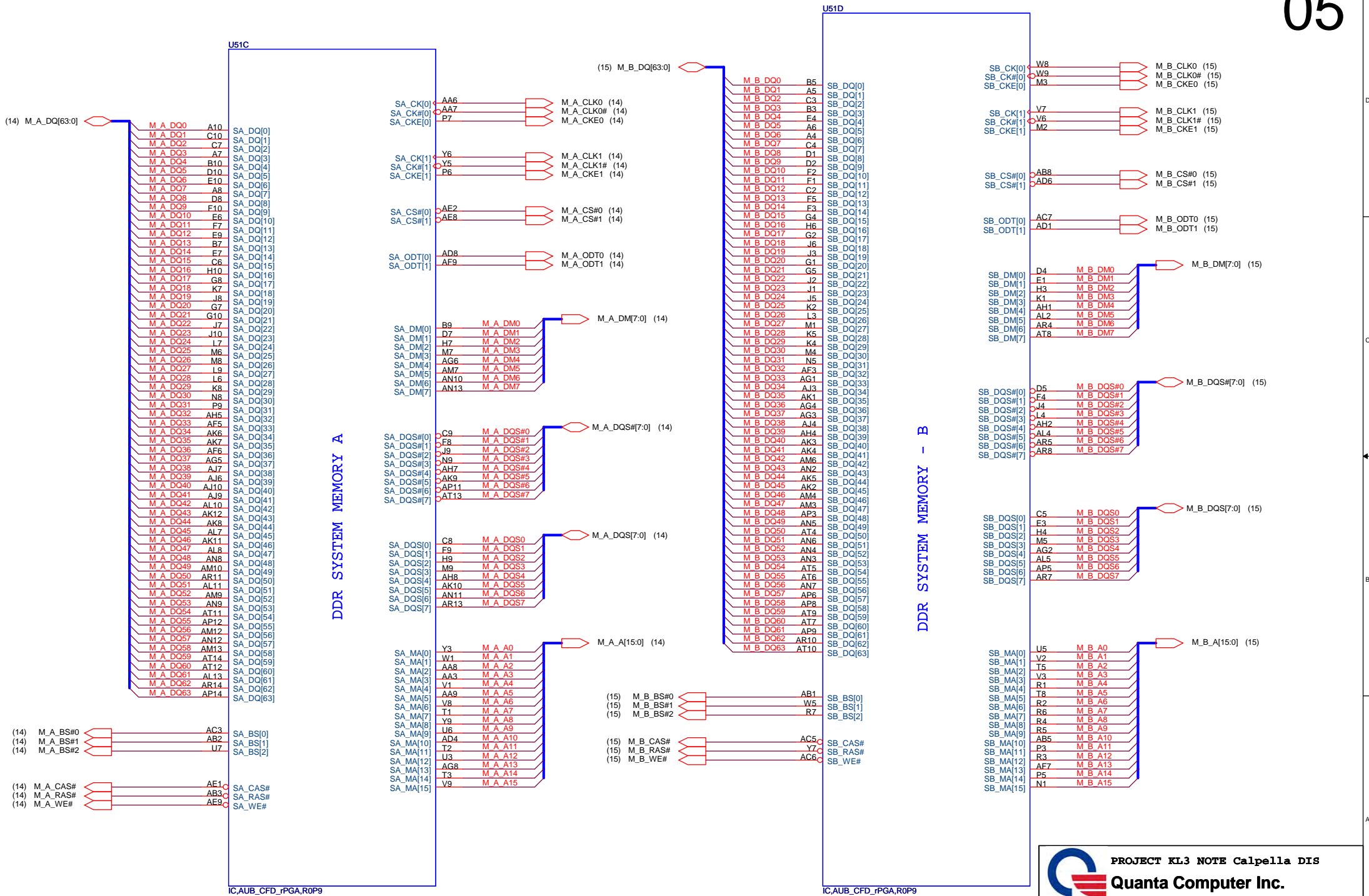
POWER PLANE	VOLTAGE	PAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
VIN	10V~+20V	23,32,43,44,45,46,47,48,49,50	MAIN POWER		S0~S5
+3VRTC	+3.0V~+3.3V	9,12,41	RTC		S0~S5
3VPCU	+3.3V	9,23,27,30,32,35,39,41,43,44,47	ITE8052 POWER	3V5V_EN	S0~S5
5VPCU	+5V	14,43,44,45,46,47,49,50	DC/DC POWER IC SOURCE	3V5V_EN	S0~S5
+15V	+15V	23,38,43,45,46,47	LARGE POWER	3V5V_EN	S0~S5
LANVCC	+3.3V	27,43	LAN POWER	LAN_ON	
5V_S5	+5V	12,29,30,43	PCH SUS POWER	S5_ON	S0~S3
3V_S5	+3.3V	8,9,10,11,12,43,52	Sys Management,PCH Resume Well, Intel HD Audio,USB,WLAN WiMAX POWER	S5_ON	S0~S3
5VSUS	+5V	23,39,43,48	SLP_S4# CTRLD POWER	SUSON	S0~S3
3VSUS	+3.3V	14,15,30,34,41,43,49	SLP_S4# CTRLD POWER	SUSON	S0~S3
1.5VSUS	+1.5V	4,6,14,15,43,45,46,49,50	SODIMM POWER	SUSON	S0~S3
0.75VSMDDR_VTERM	+0.75V	14,15,43,45	DDR3 SODIMM REFERENCE POWER	MAIN_ON	S0
+5V	+5V	12,18,23,24,25,26,28,35,37,41,43,44	SLP_S3# CTRLD POWER	MAIN_ON	S0
+3V	+3.3V	3,4,8,9,10,11,12,14,15,17,23,25,26,27,28,29,30,31,32,33,34,36,37,38,39,40,41,43,44,45,46,47,48,50,52	SLP_S3# CTRLD POWER	MAIN_ON	S0
+1.8V	+1.8V	6,12,17,18,21,22,33,43,50	LVDS,NVM POWER	MAIN_ON	S0
+1.5V	+1.5V	12,18,19,20,31,32,34,45,46	Mini PCIe,Express Card POWER	MAIN_ON	S0
+1.05V_VTT	+1.05V	4,6,11,12,43,46,48,52	AuBurndale VTT POWER	MAIN_ON	S0
+1.05V_PCH	+1.05V	3,10,12,43,46,52	PCH CORE POWER	1.05V_RUN_ON	S0
+VCC_GFX_CORE	+0.9V~+1.2V	18,21,43,49	VGA CORE POWER	GFXVR_EN	S0
VCC_CORE		6,43,48	CPU CORE POWER	VRON	S0
LCDVCC	+3.3V	23	LCD Power	ENVDD	S0
+5V_ODD	+5V	28	ODD Power	MAIN_ON	S0
+5V_HDD	+5V	28	HDD Power	MAIN_ON	S0
BAT-V	+10V~+17V	44	MAIN BATTERY	CHG_PBATT	S0~S5





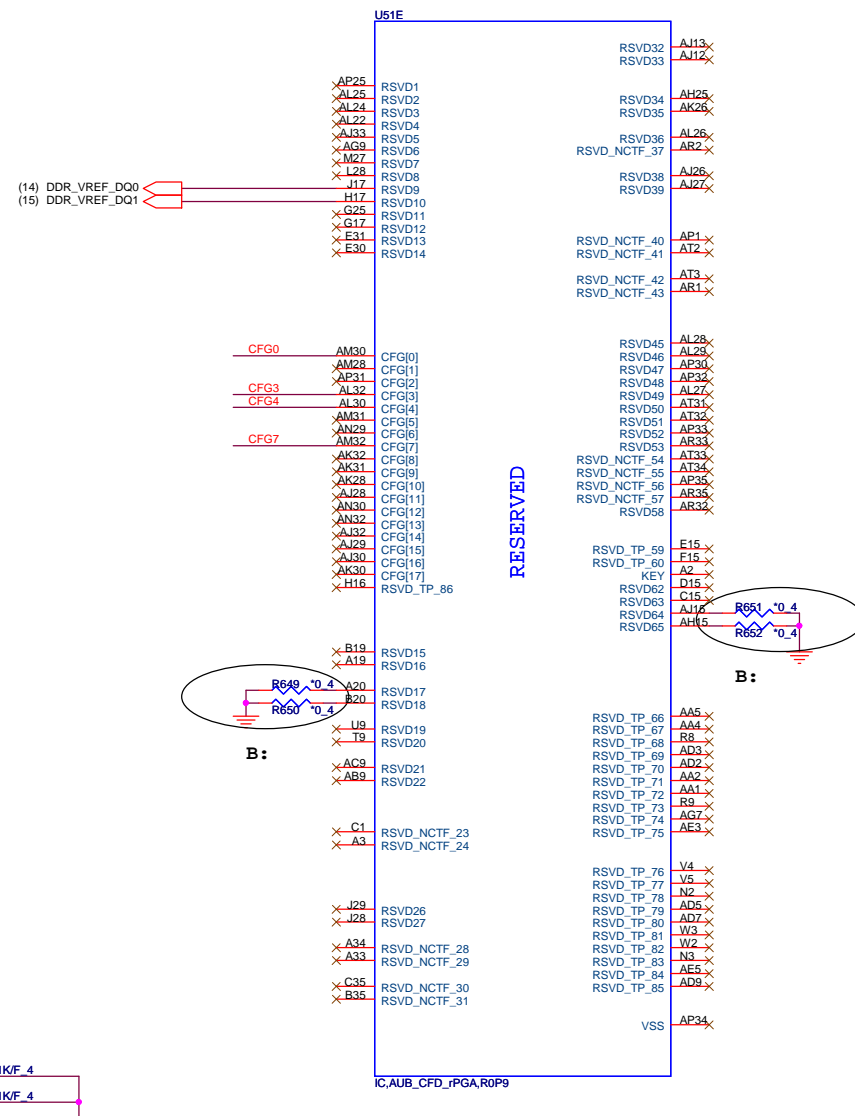
## AUBURNDALE PROCESSOR (DDR3)

05









CFG4 R201 \*3.01K/F 4

CFG0 R202 \*3.01K/F 4

CFG3 R200 \*3.01K/F 4


CFG7 R133 \*3.01K/F 4

CFG[ 1:0 ] - PCI\_Epress Configuration Select

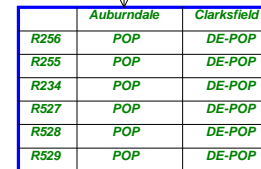
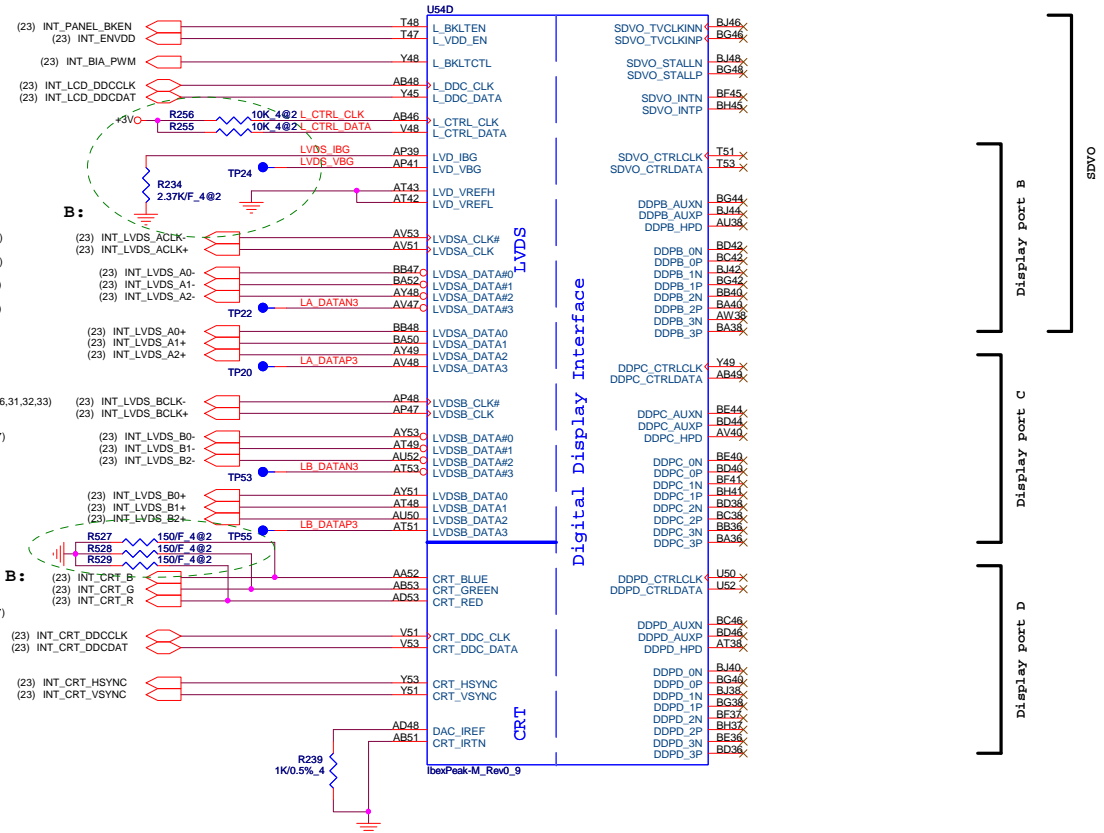
\* 11= 1 x 16 PEG

\* 10= 2 x 8 PEG

IC\_AUB\_CFD\_rPGA,R0P9

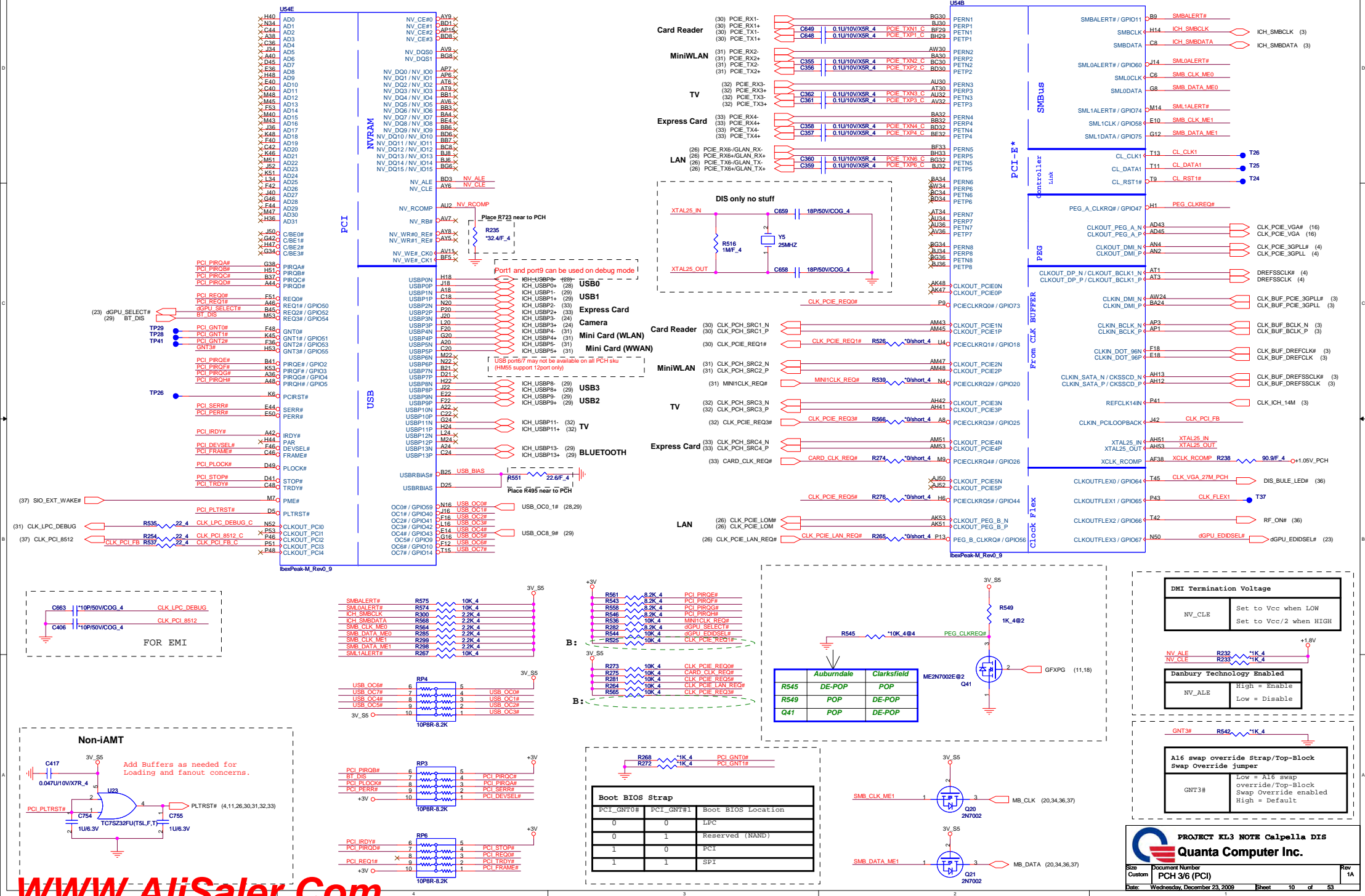
	PROJECT KL3 NOTE Calpella DIS		
	Quanta Computer Inc.		
Size Custom	Document Number PROCESSOR 4/4(GND)		Rev 1A
Date:	Wednesday, December 23, 2009	Sheet	7 of 53

## SDVO





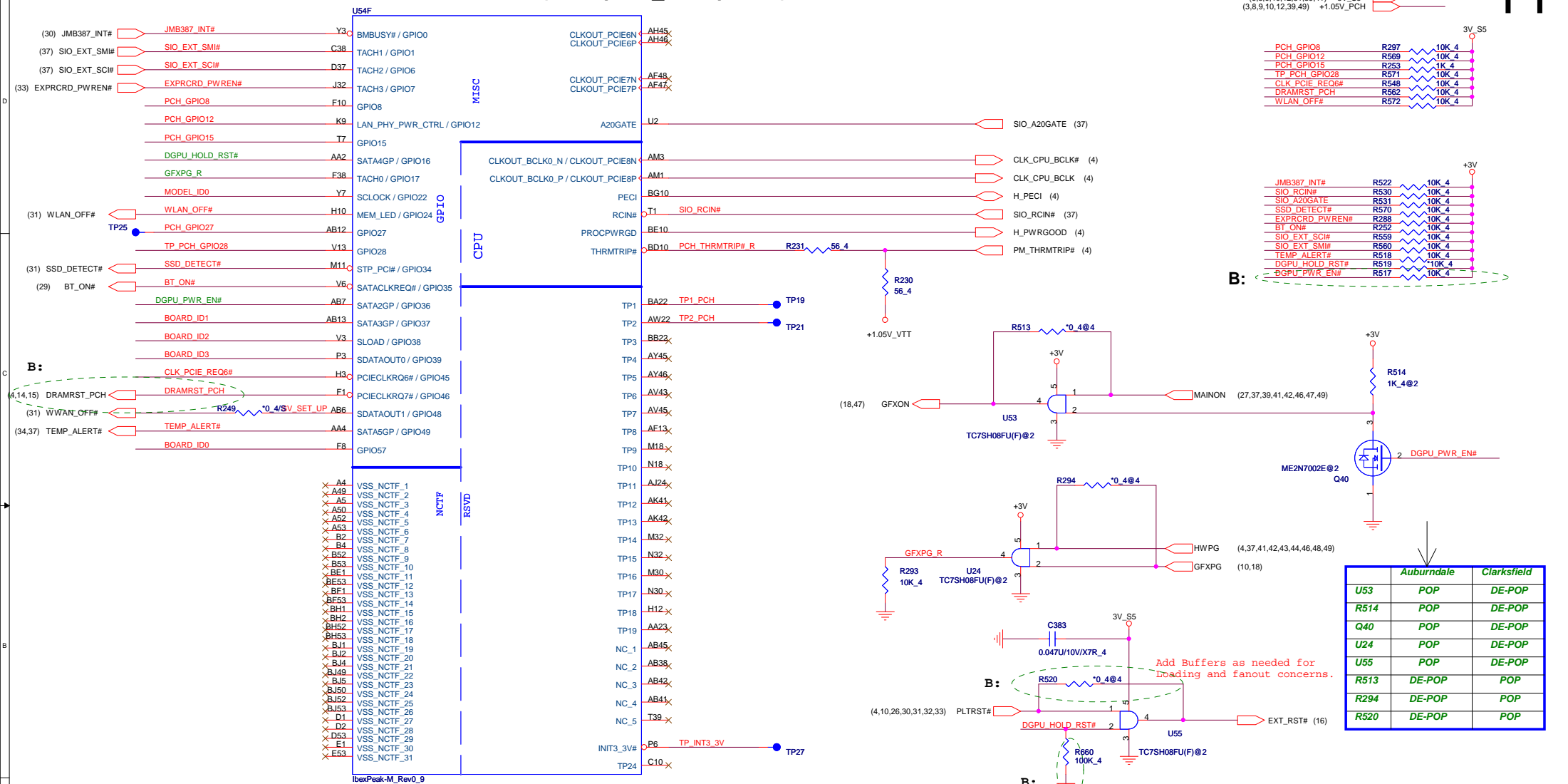




# IBEX PEAK-M (GPIO,VSS\_NCTF,RSVD)

(3,4,8,9,10,12,14,15,18,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,39,40,44,47)  
(6,8,9,10,12,31,39,41) +3V  
(3,8,9,10,12,38,49) +1.05V\_PCH

11



B:

B:

B:

B:

## Board ID

Board ID For Function	ID3 GPIO39	ID2 GPIO38	ID1 GPIO37	ID0 GPIO36
SDV	0	0	0	0
SIV	0	0	0	1
SIT	0	0	1	0
SVT	0	1	0	0
SOVP	1	0	0	0

## Model ID

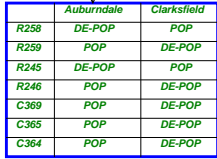
Model ID	MODEL_ID0	MODEL_ID1
14"	0	1
15"	1	0
Default	1	1

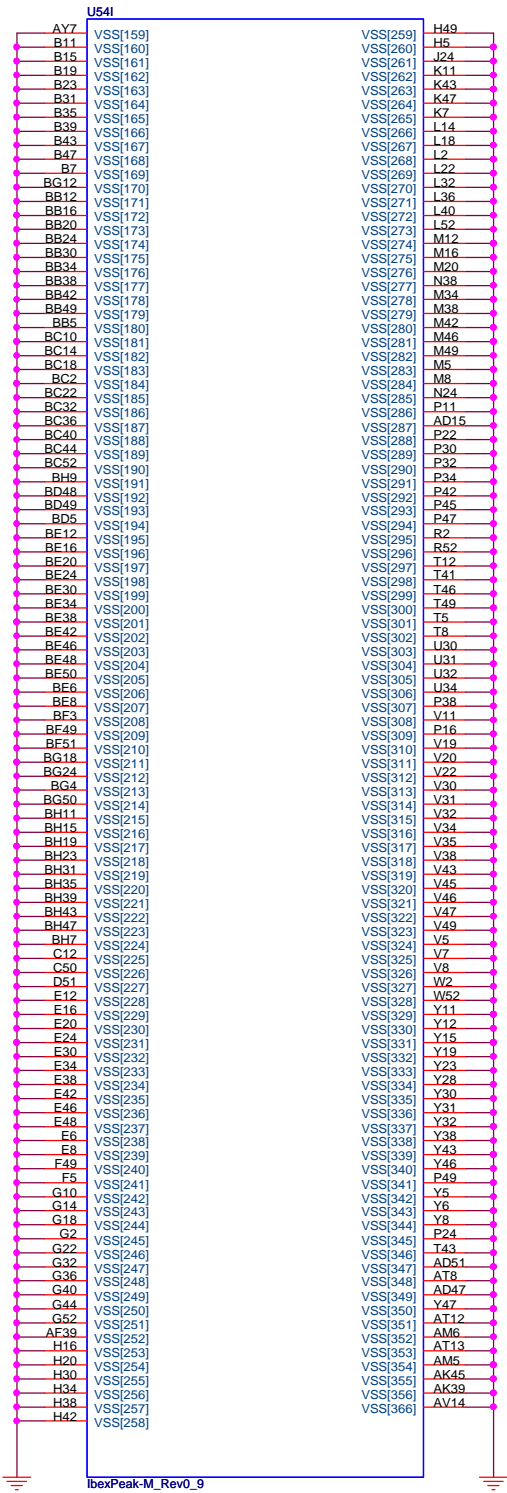
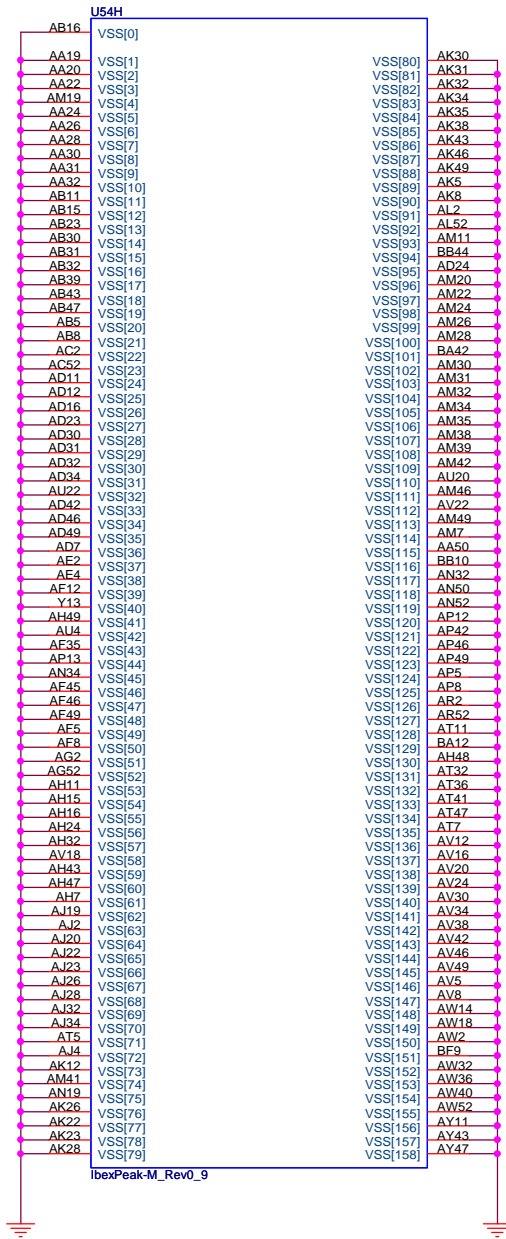
**PROJECT KL3 NOTE Calpella DIS**  
**Quanta Computer Inc.**

Size Custom Document Number PCH 4/6 (GPIO)

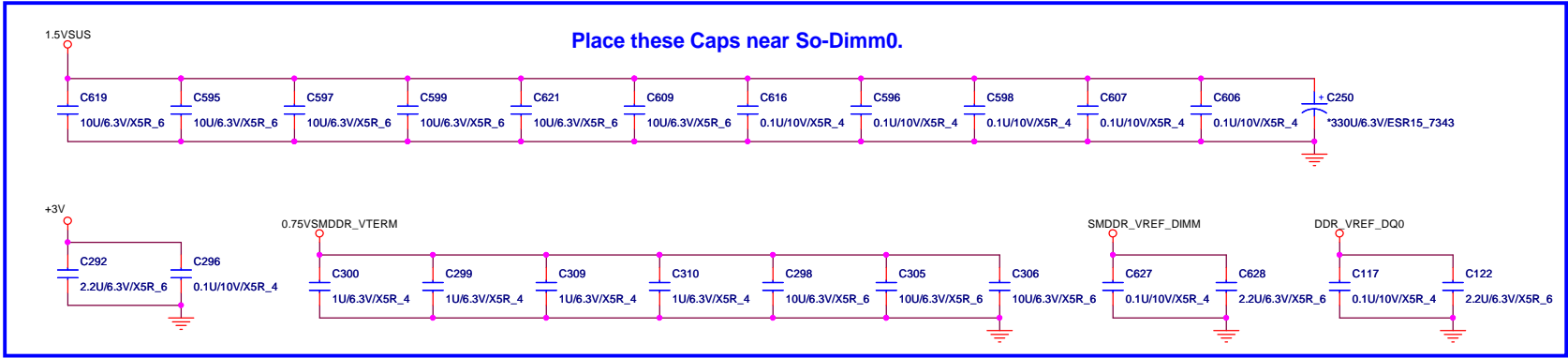
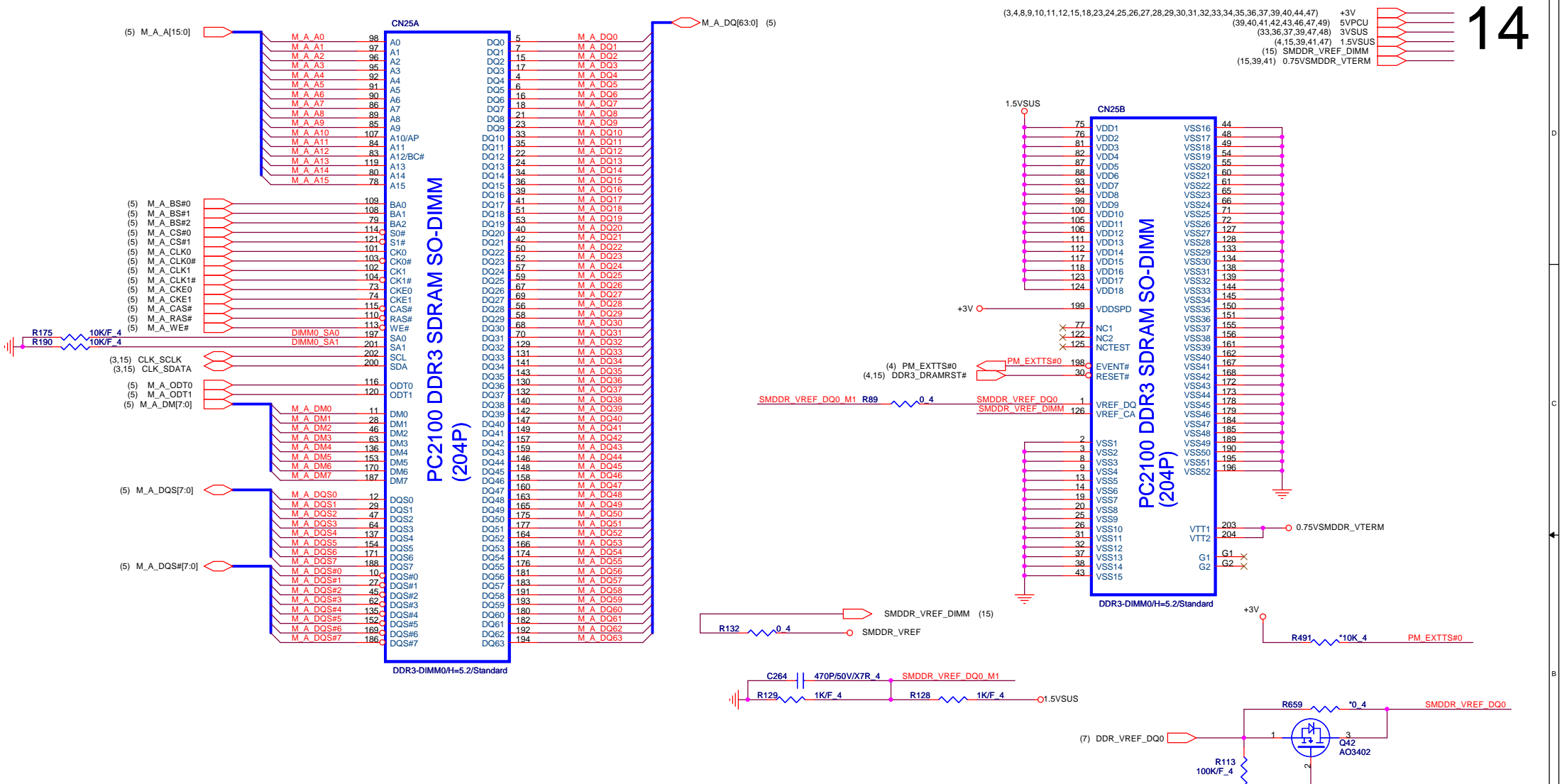
Date: Wednesday, December 23, 2009 Sheet 11 of 53

Rev 1A



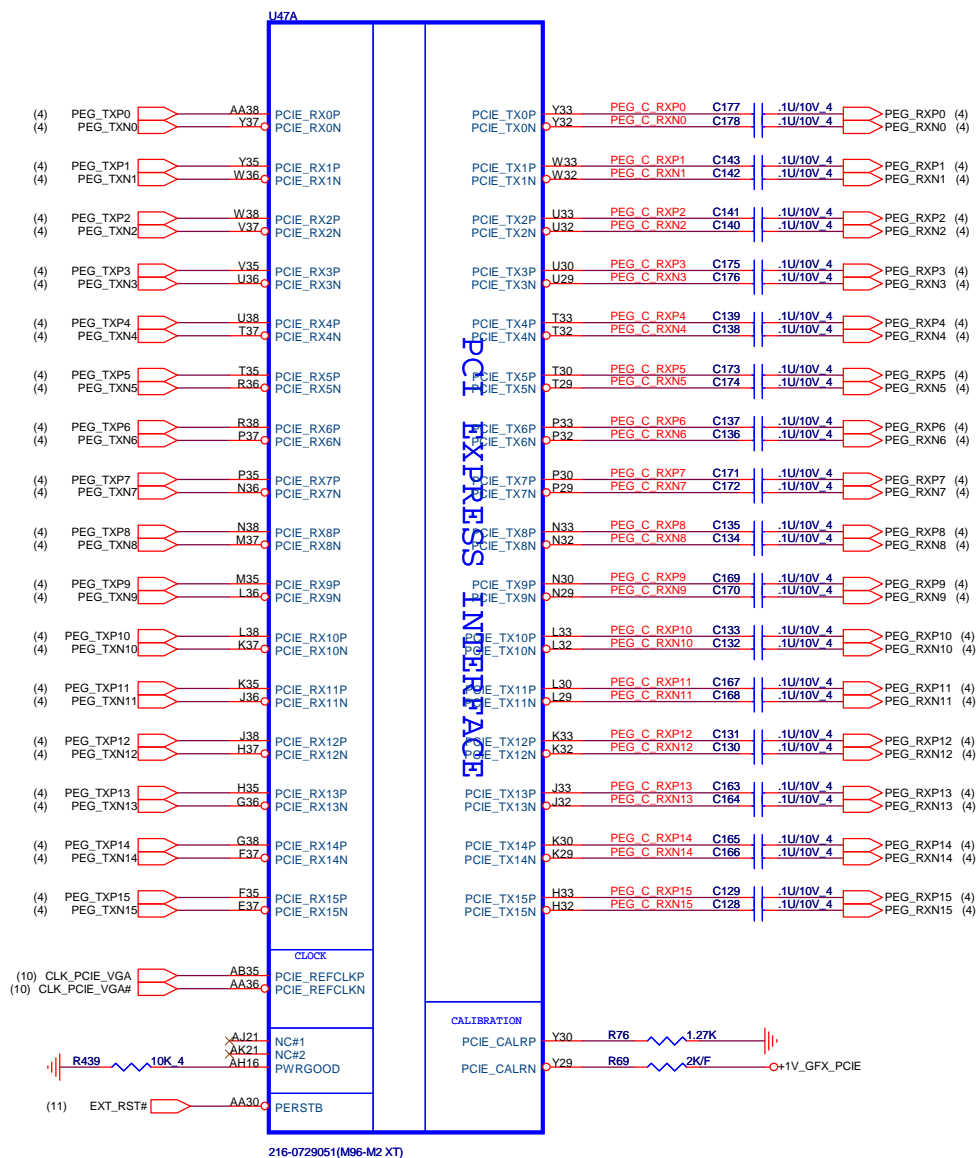












Note : Required Frequency = 800 MHz



+3.3V\_DELAY

R435 \*10K 4 GFX CORE CNTRL0

R436 \*10K 4 GFX CORE CNTRL1

R48 10K 4 GPIO0

R41 10K 4 GPIO1

R35 \*10K 4 GPIO2

R60 \*10K 4 GPIO3

R55 \*10K 4 GPIO4

R37 \*10K 4 GPIO5

R45 \*10K 4 GPIO6

R28 \*10K 4 GPIO8

R31 \*10K 4 GPIO9

R34 \*10K 4 GPIO10

R99 10K 4 EXT CRT HSYNC

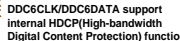
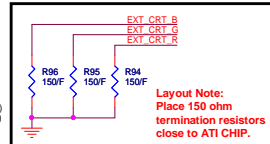
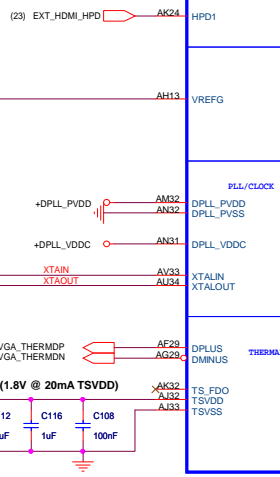
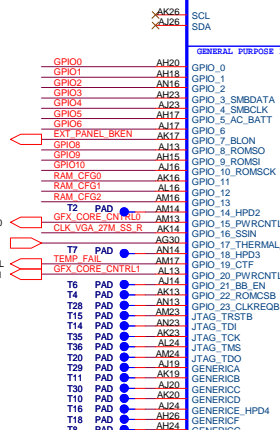
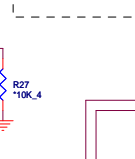
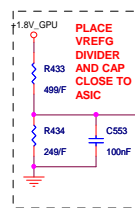
R96 10K 4 EXT CRT VSYNC

R73 \*10K 4 VGAHSYNC

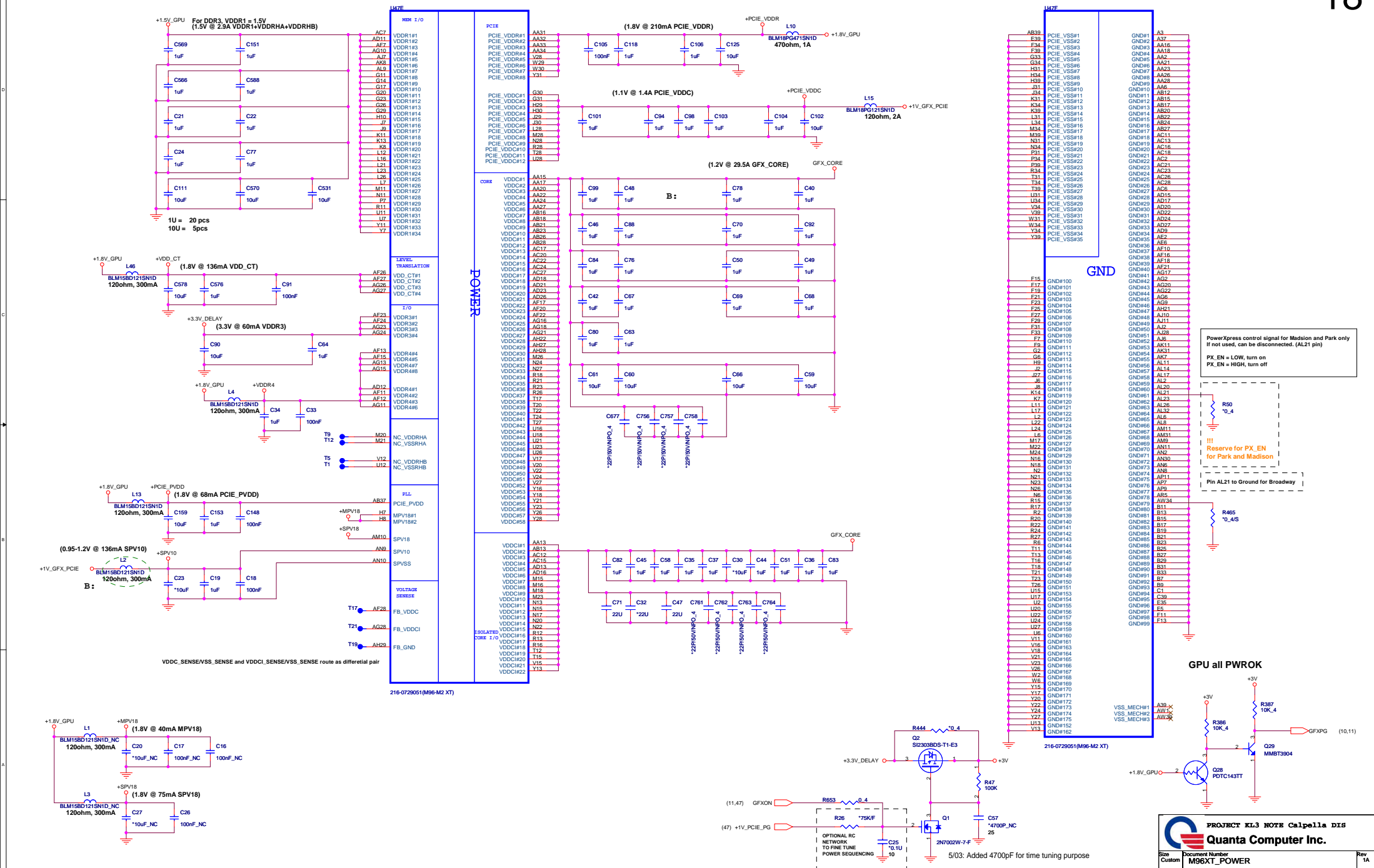
R74 \*10K 4 VAGNEN



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



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]	VGAAHSYNC 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

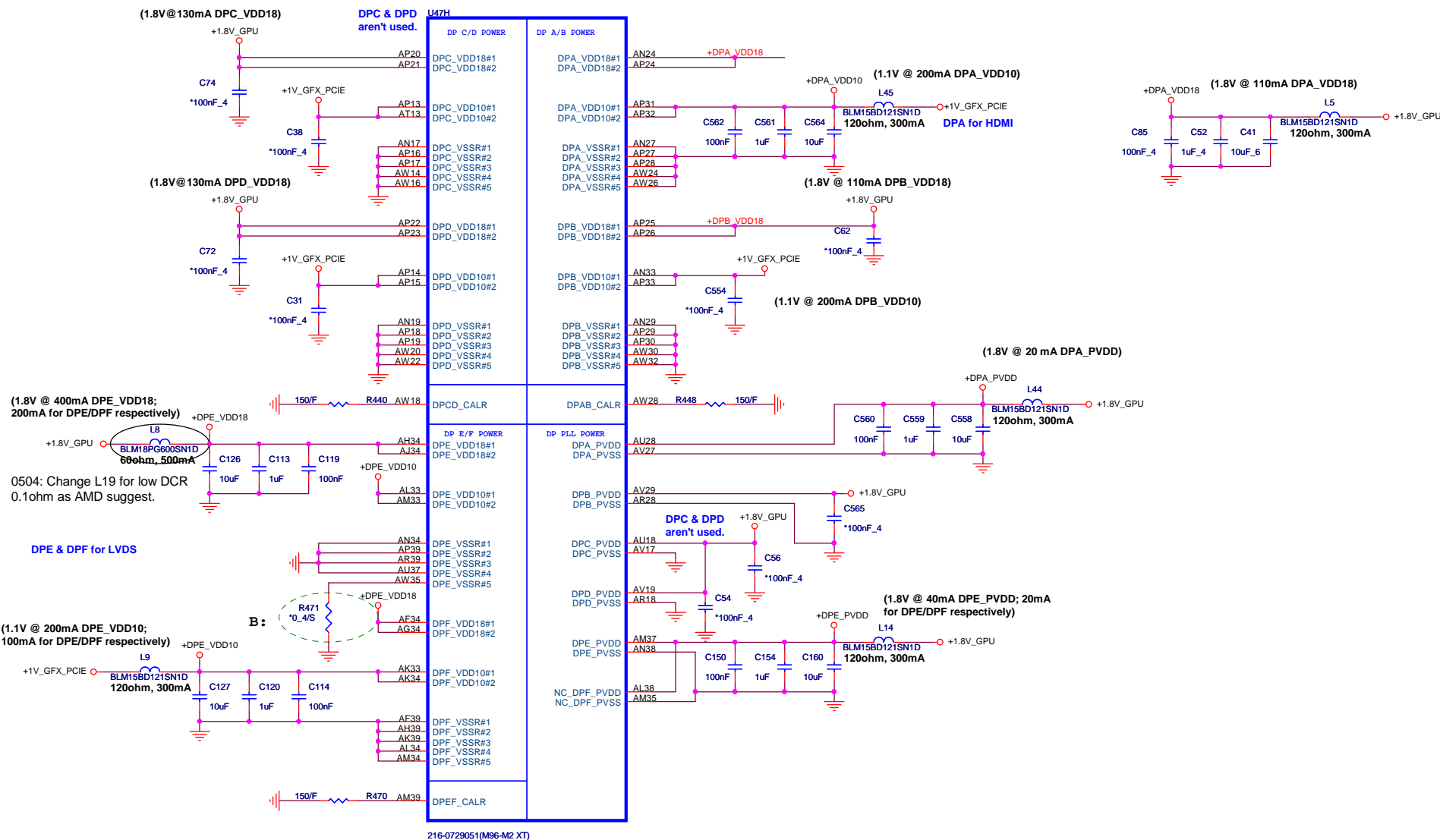


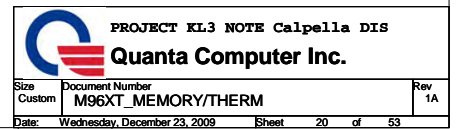
PowerXpress control signal for Madison and Park only  
If not used, can be disconnected. (AL21 pin)  
PX\_EN = LOW, turn on  
PX\_EN = HIGH, turn off

!!! Reserve for PX\_EN for Park and Madison  
Pin AL21 to Ground for Broadway

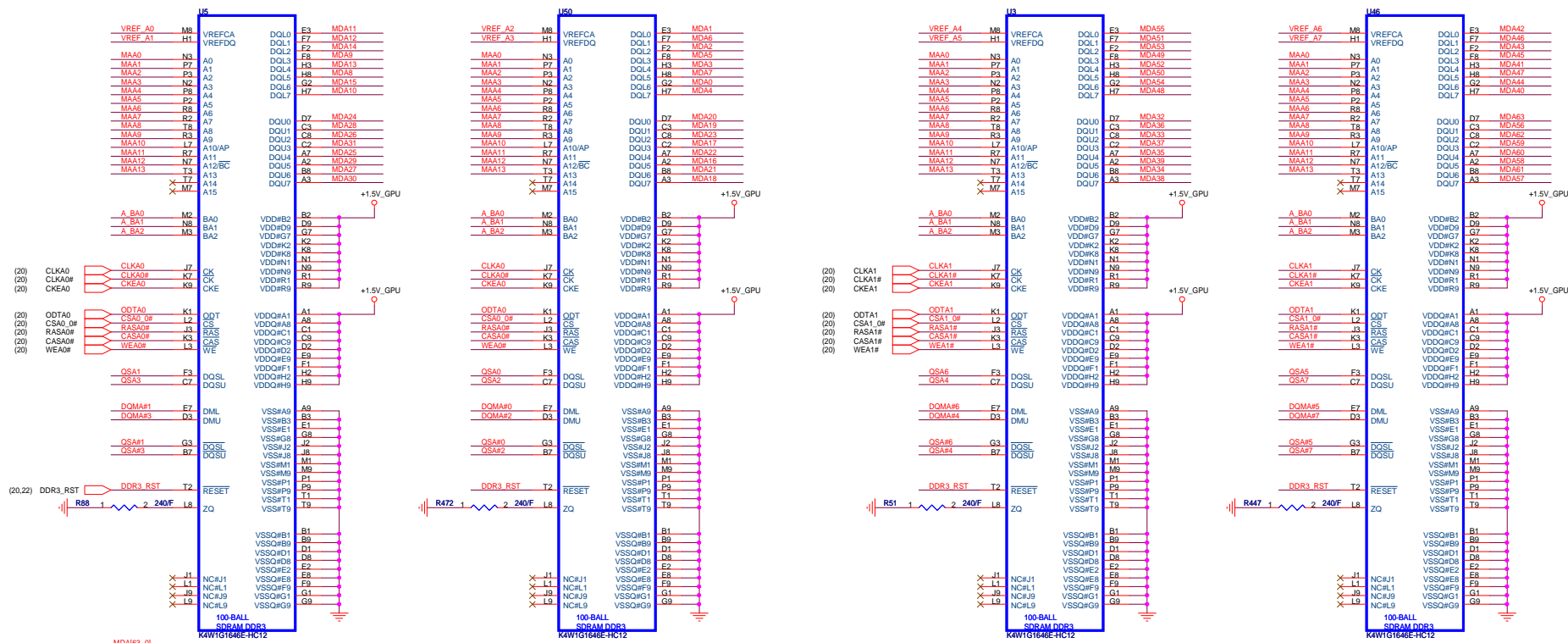
GPU all PWROK

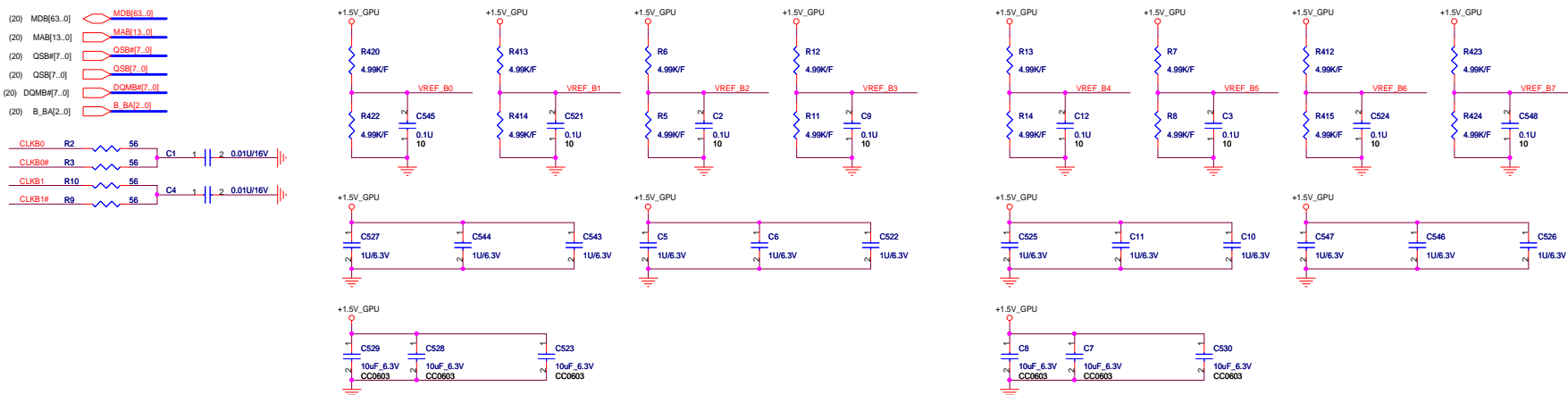
!!!  
For M96/92, DPx\_VDD10 = 1.1V  
For M97 DPx VDD10 = 1.0V

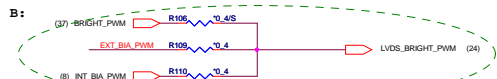




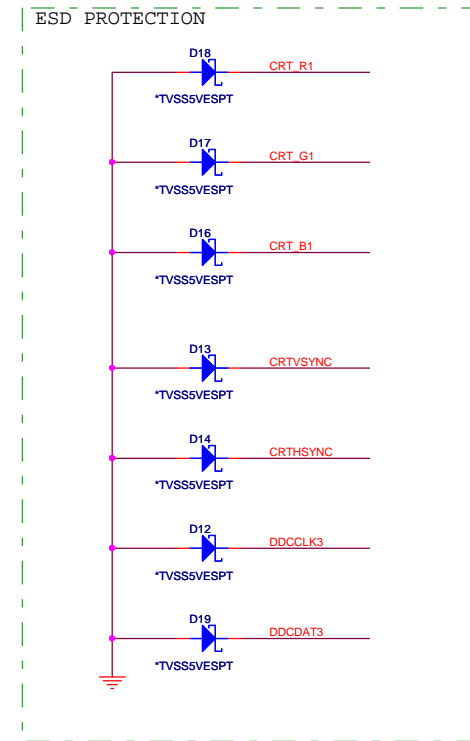
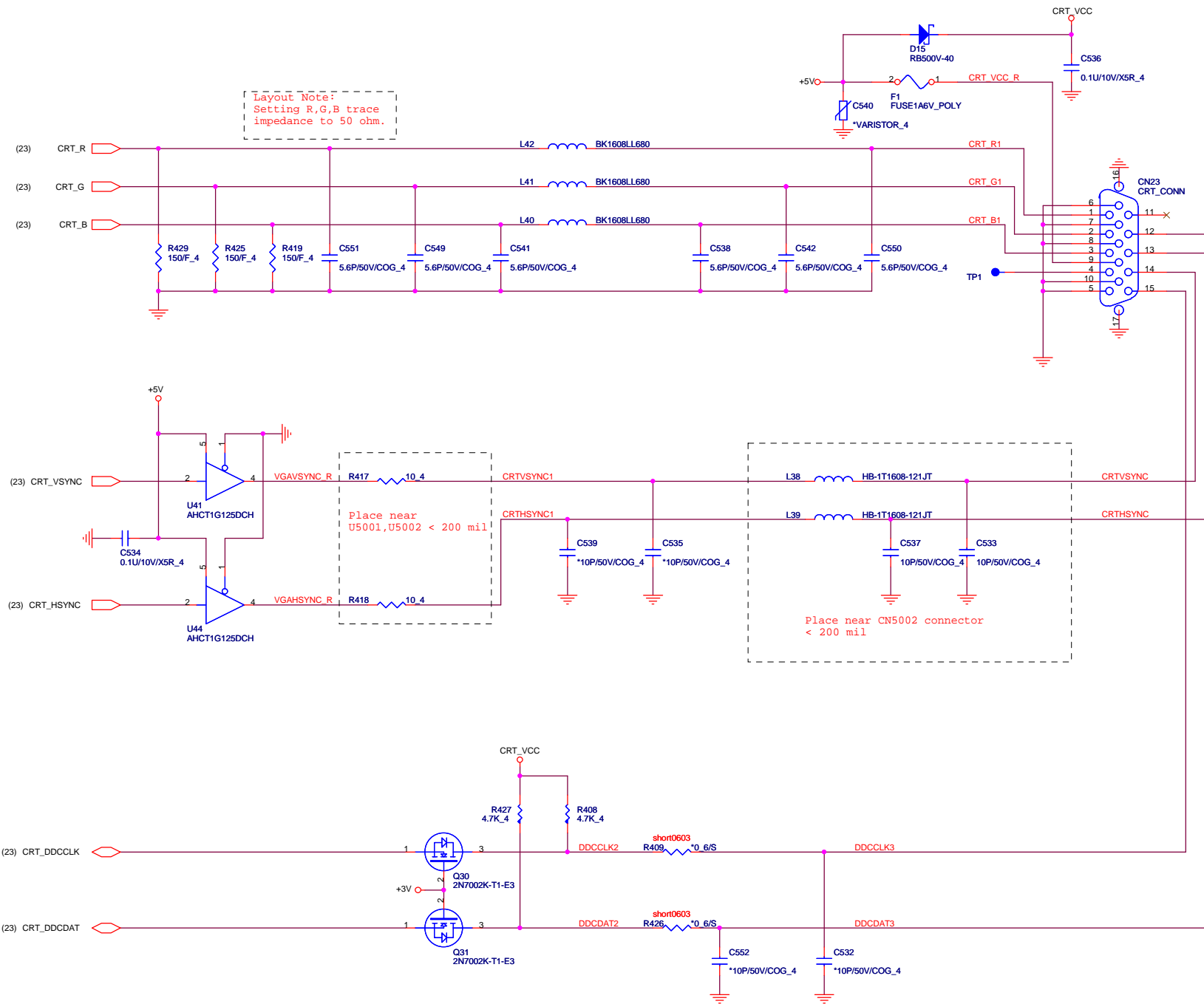


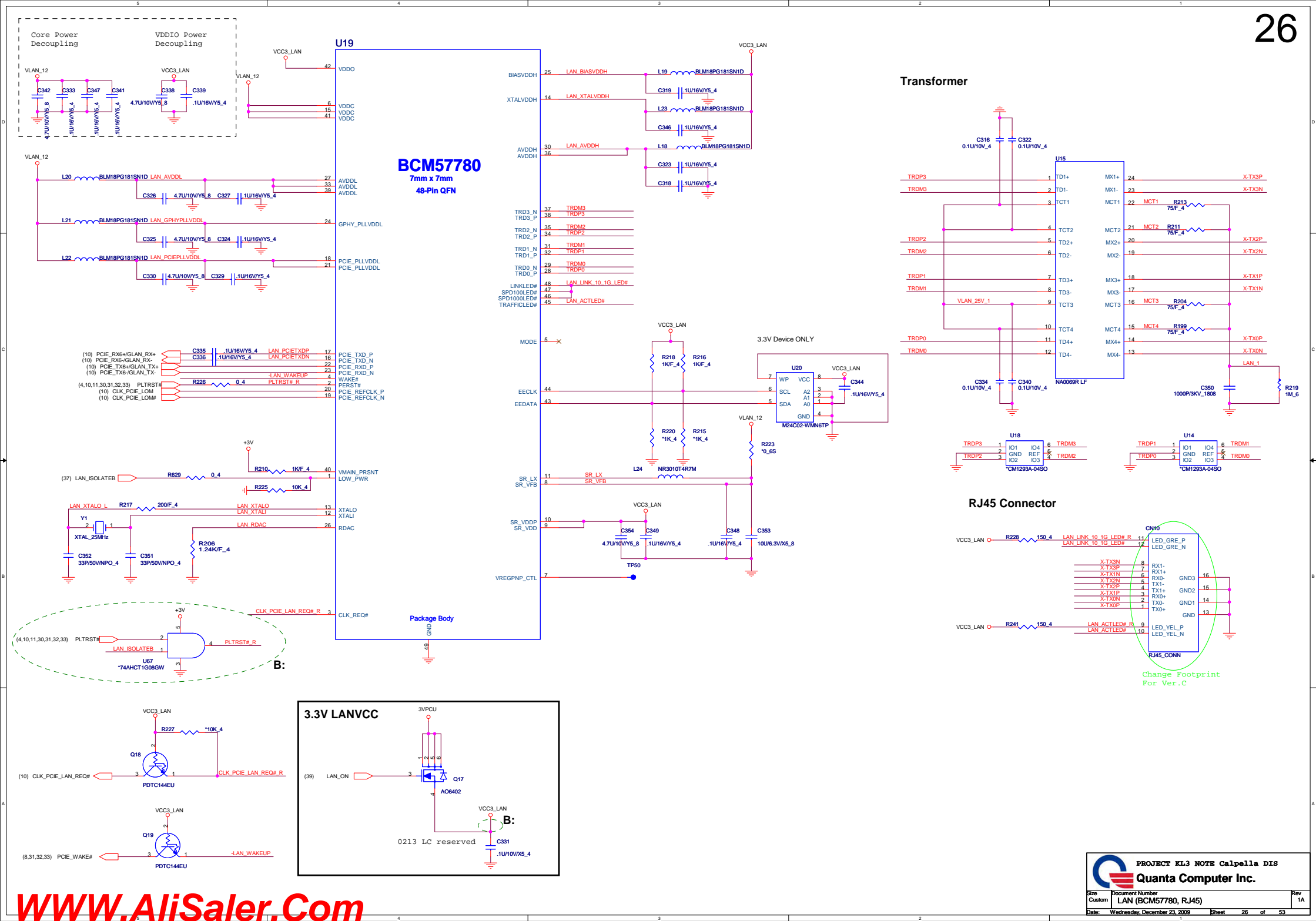








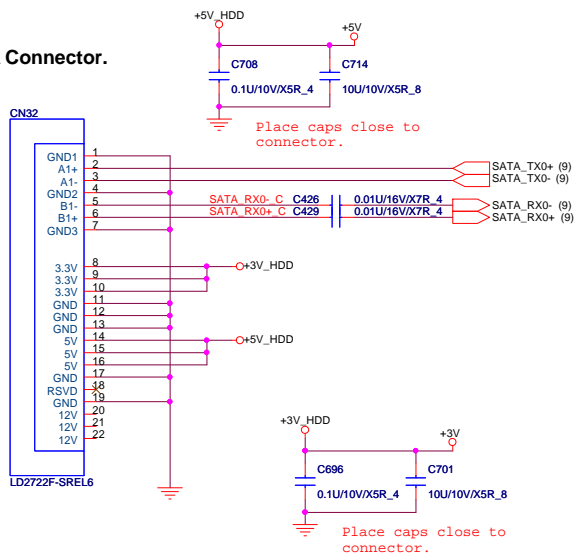




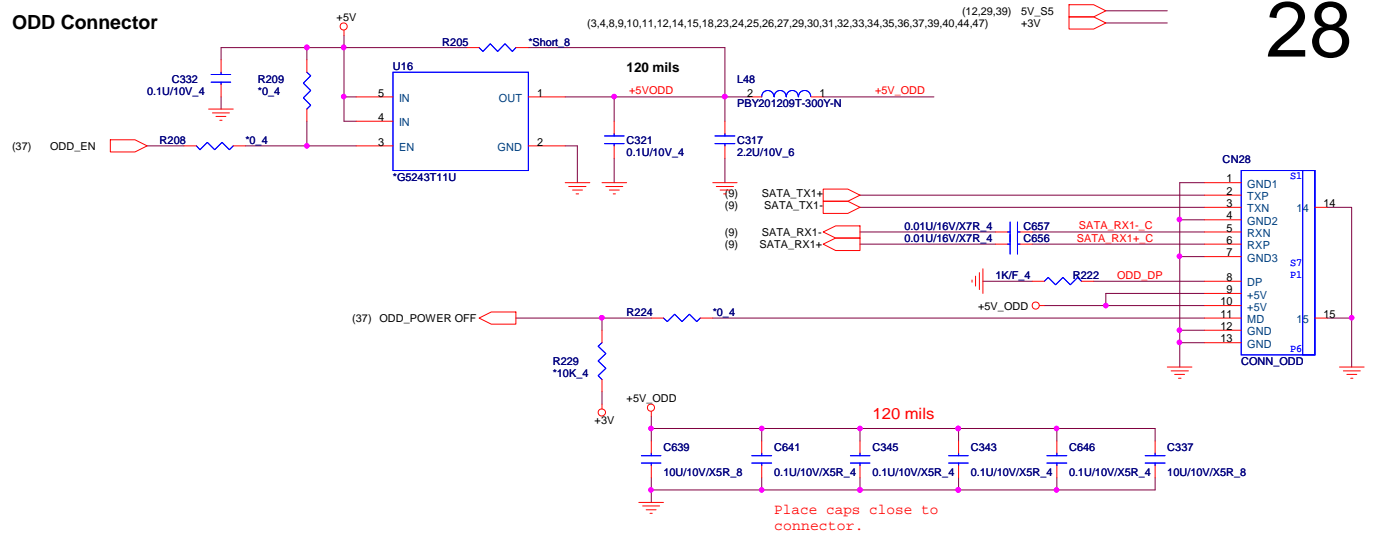




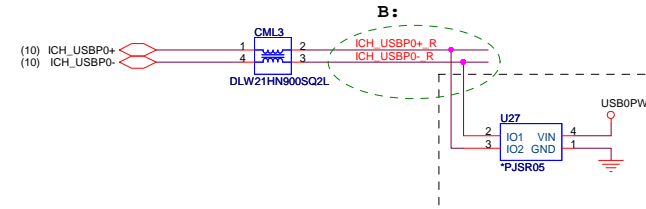
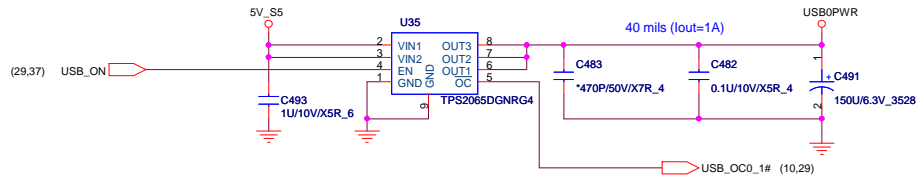
## SATA Connector.



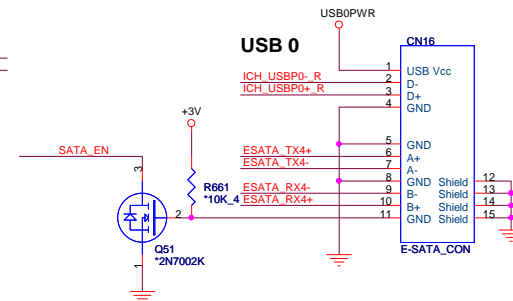
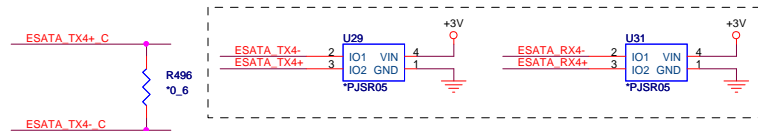
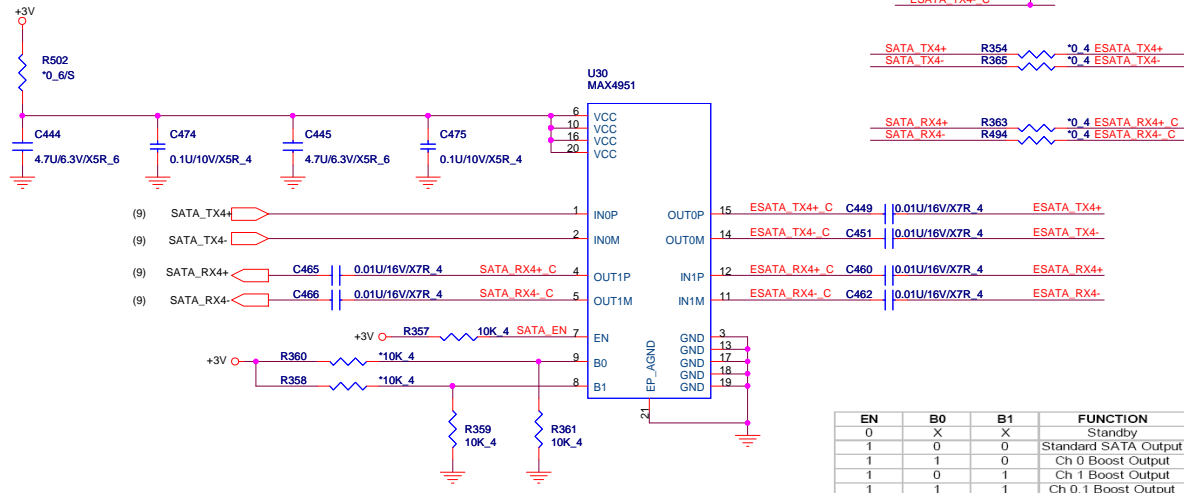
## ODD Connector



## USB + E-SATA



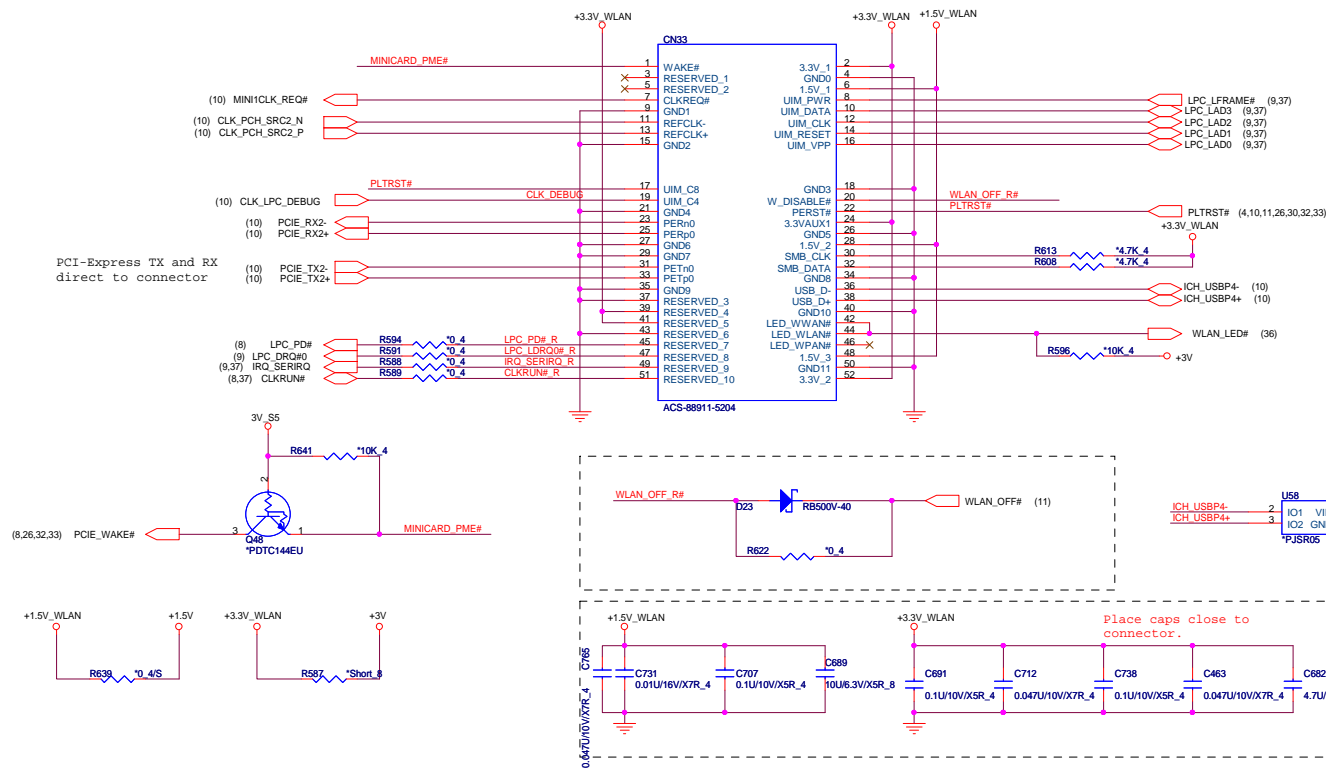
## E-SATA RE-DRIVER



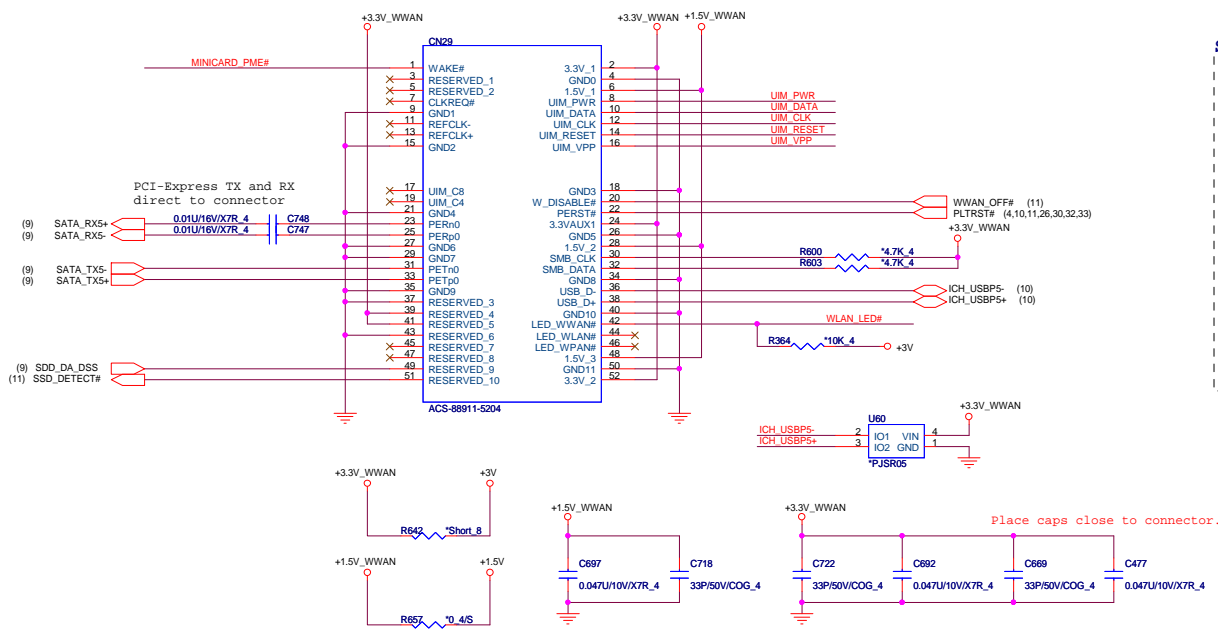




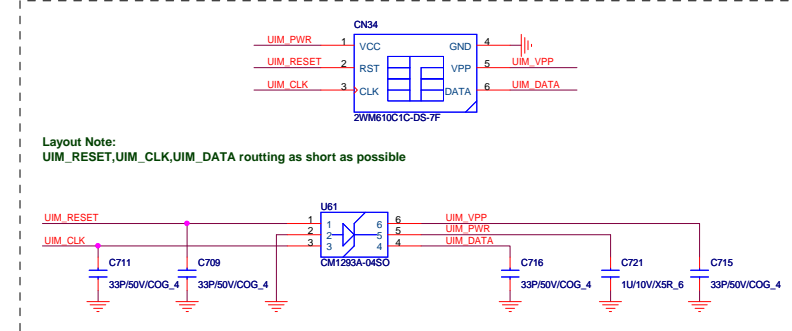
# MiniCard WLA connector



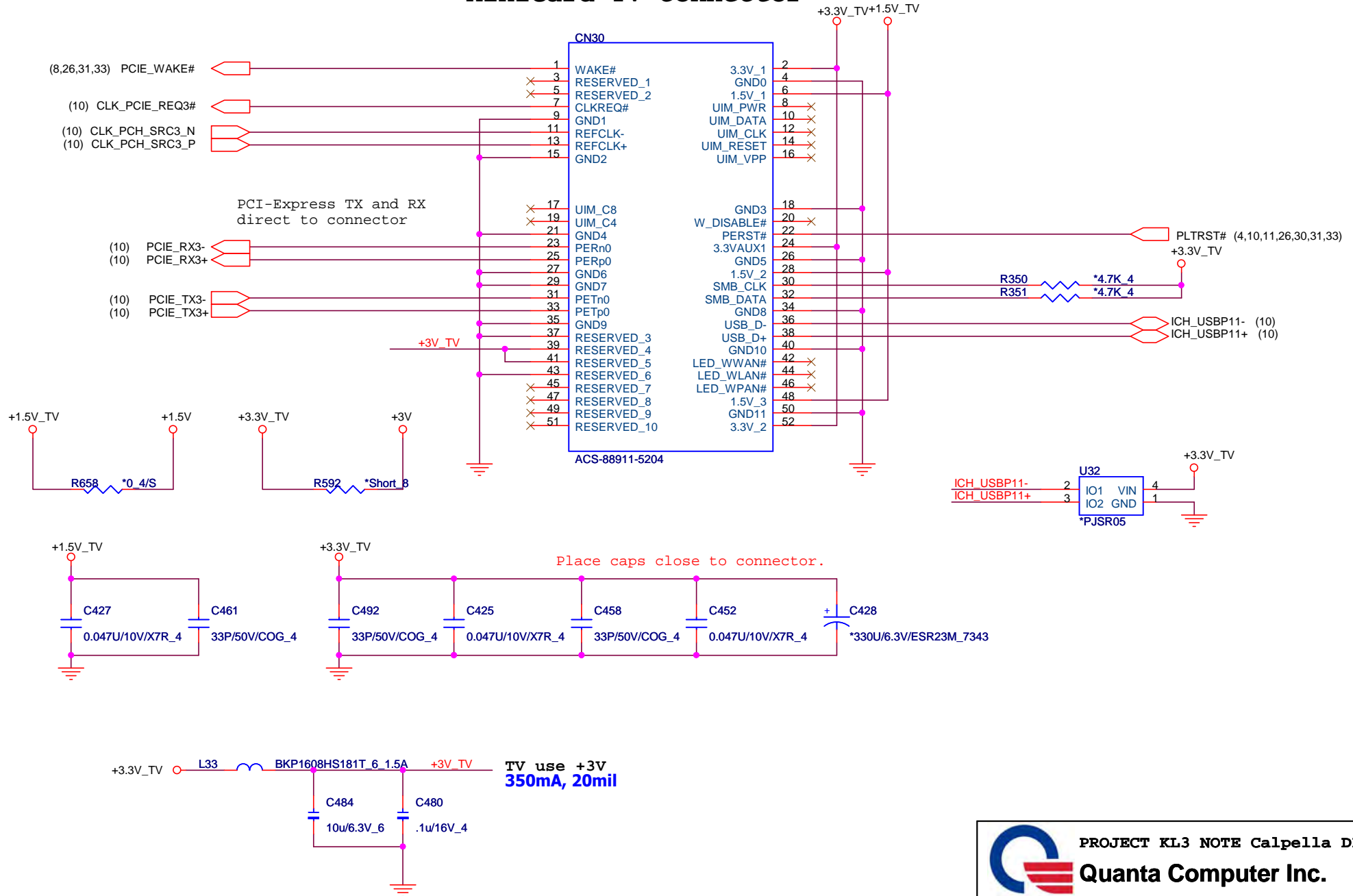
# MiniCard WWAN/SATA SSD connector



## SIM Card CONN



## MiniCard TV connector

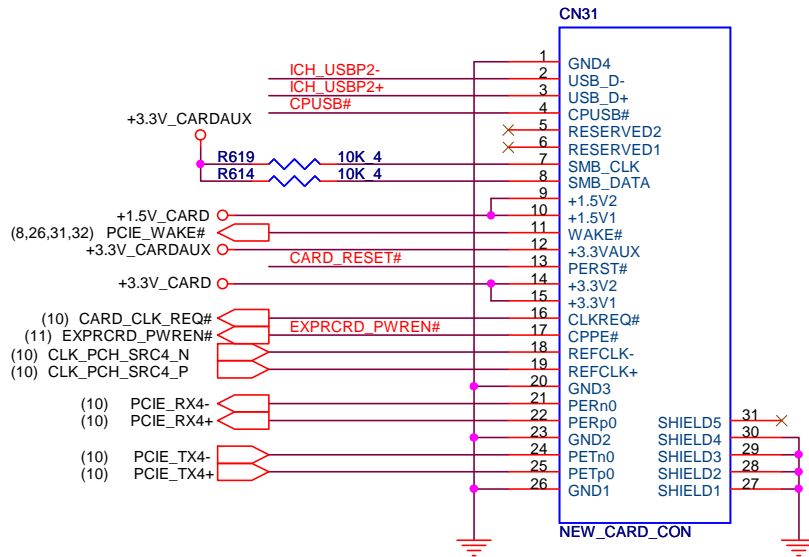
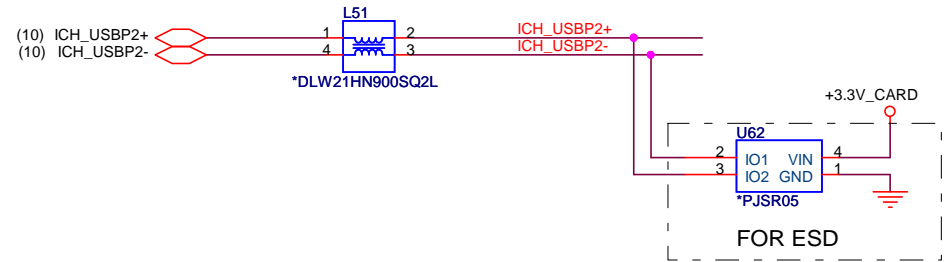




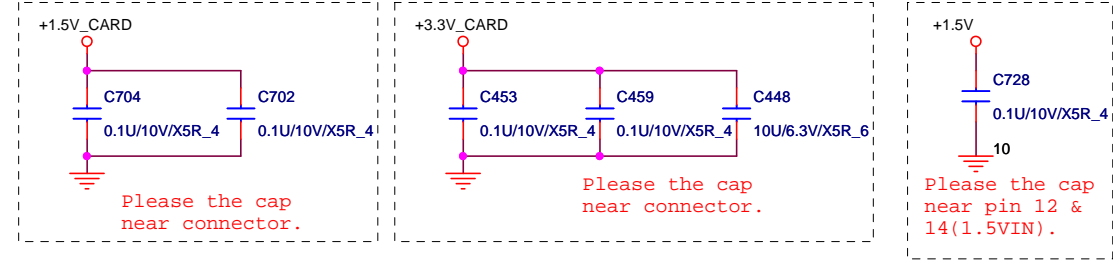
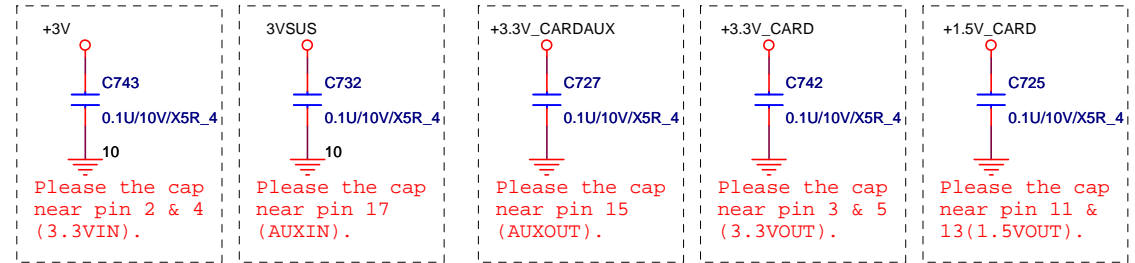
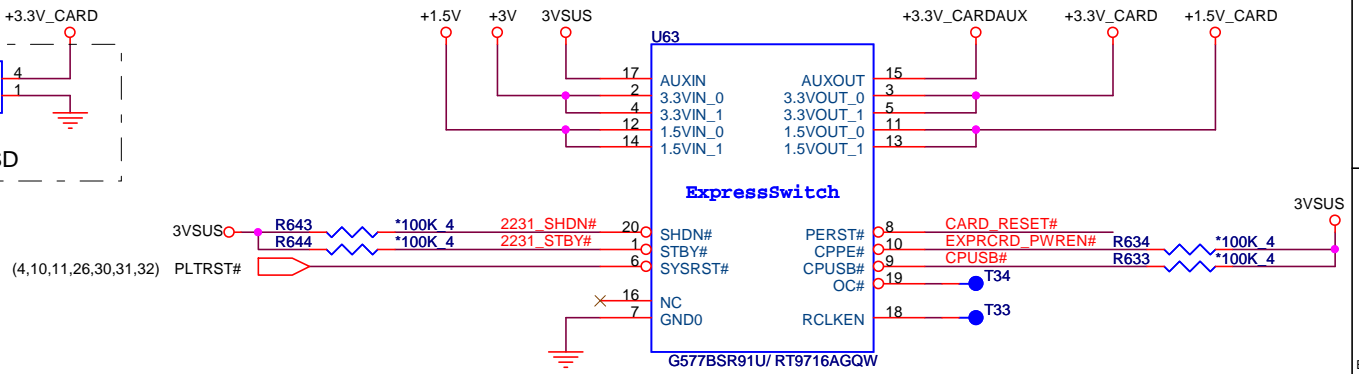
Express Card

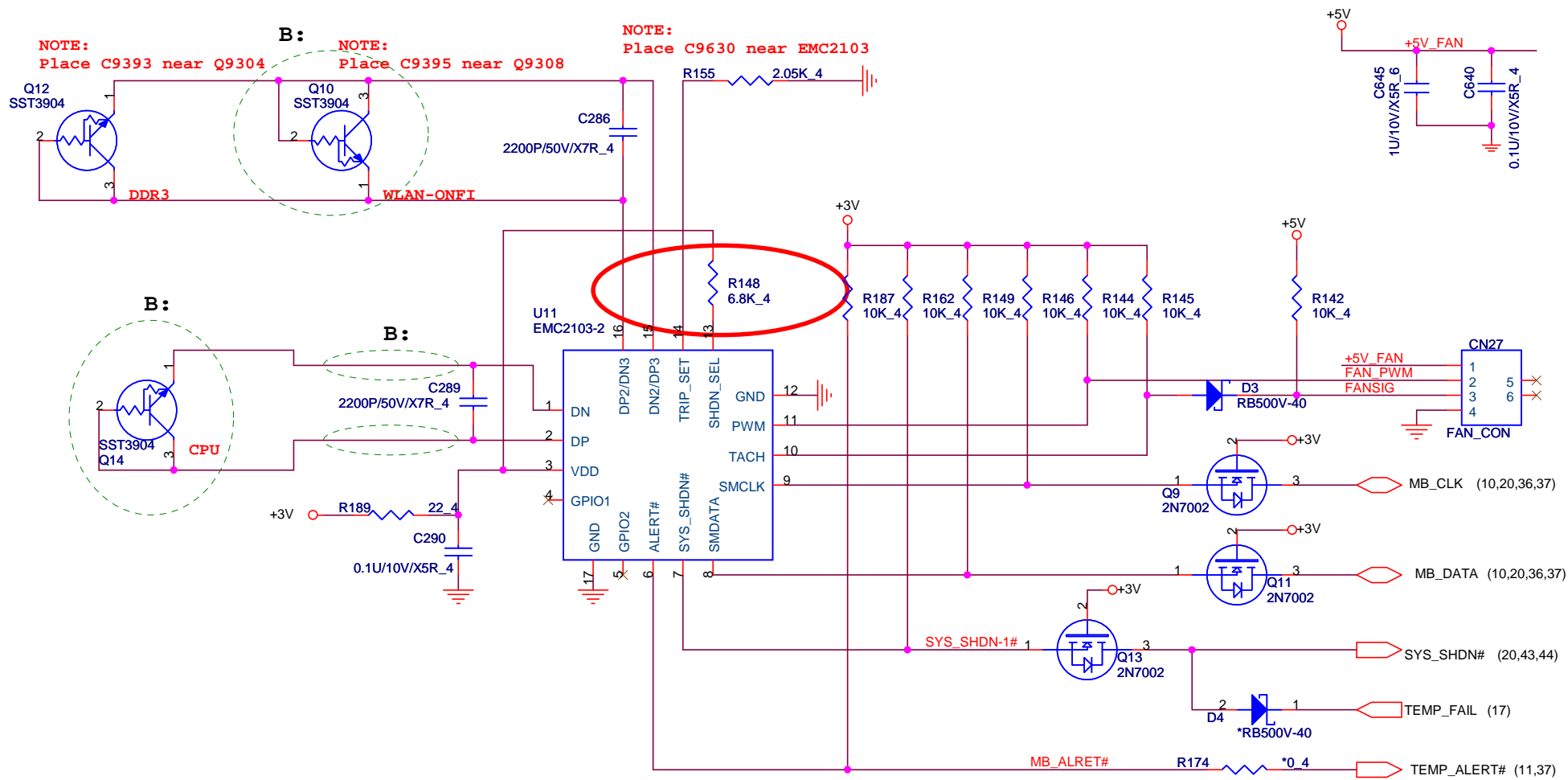
(3,4,8,9,10,11,12,14,15,18,23,24,25,26,27,28,29,30,31,32,34,35,36,37,39,40,44,47) +3V  
(31,32,41) +1.5V  
(36,37,39,47,48) 3VSUS

+1.5V\_CARD Max. 650mA, Average 500mA.  
+3.3V\_CARD Max. 1300mA, Average 1000mA.

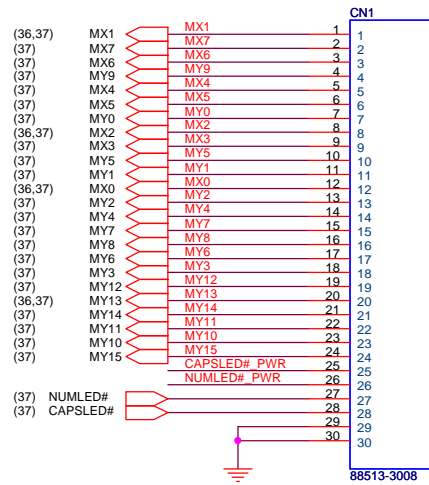


PCI-Express TX and RX direct to connector.  
JAE PX10FS16PH-26P



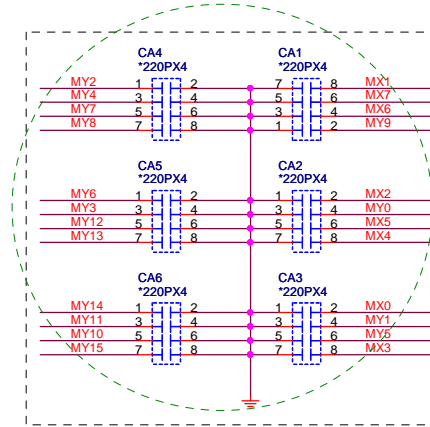


## KEYBOARD



(12,23,24,25,27,28,34,37,39,40,45)  
(9,24,26,36,37,39,40,43,47)

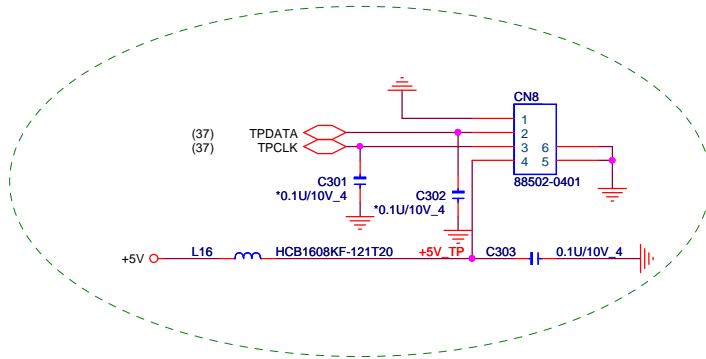
B:



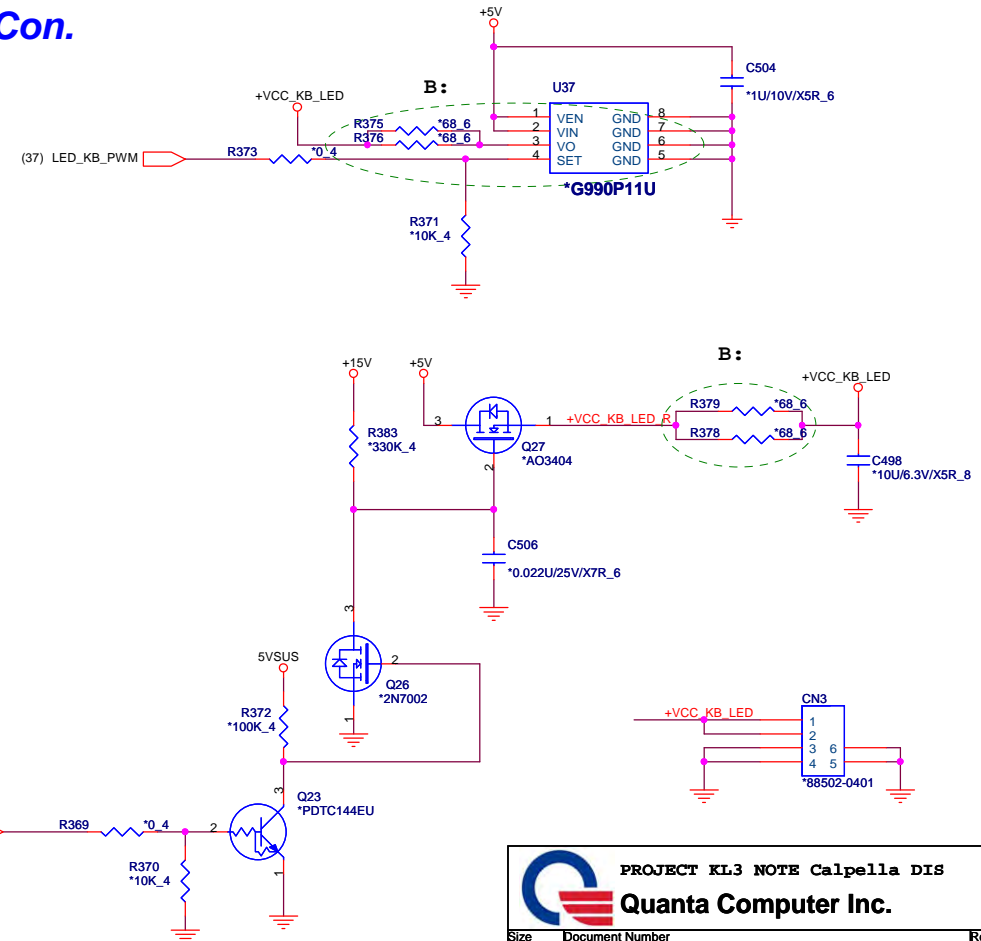
For EMI request

## Touch pad

B:



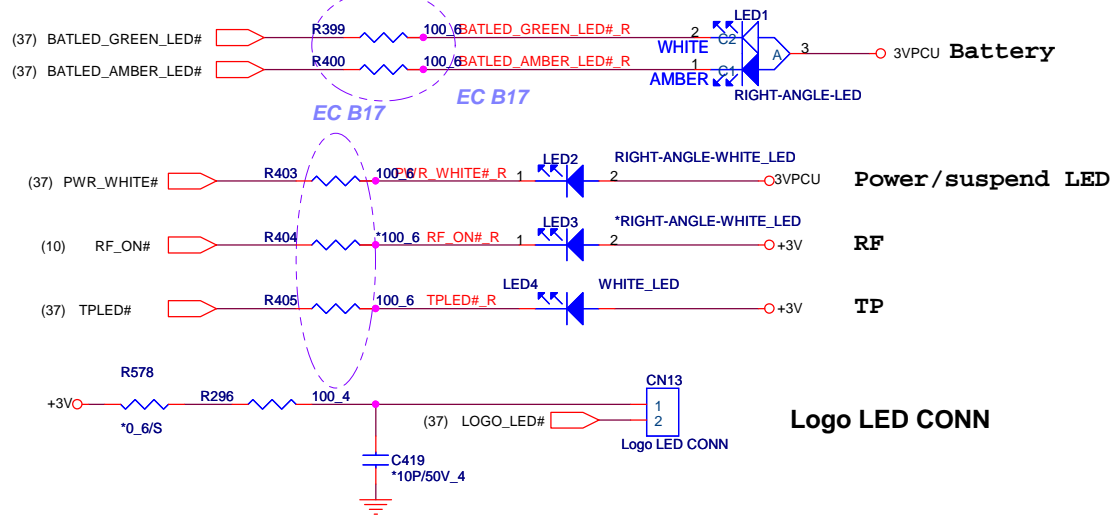
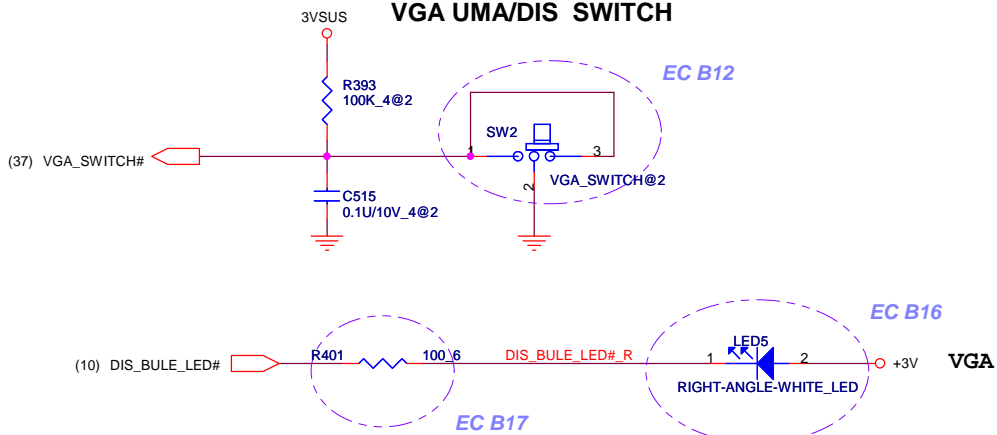
## Backlight Keyboard Con.



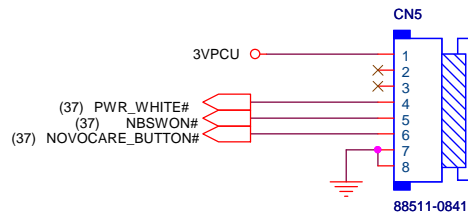
EC PWM Pin

(37) LED\_KB\_PWM

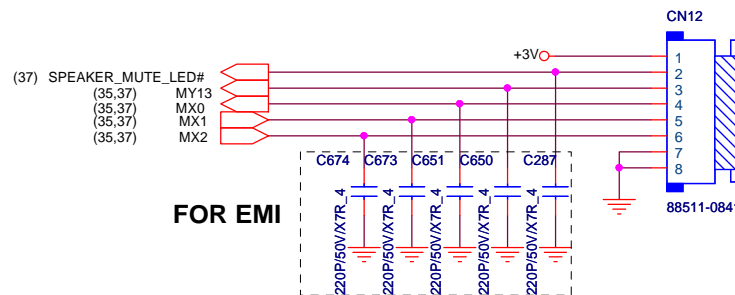
## VGA UMA/DIS SWITCH



## LEFT POWER BOARD



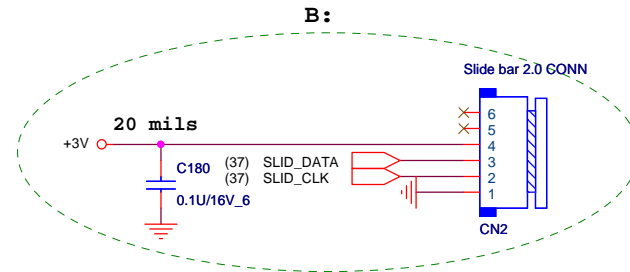
## RIGHT VOLUME BOARD



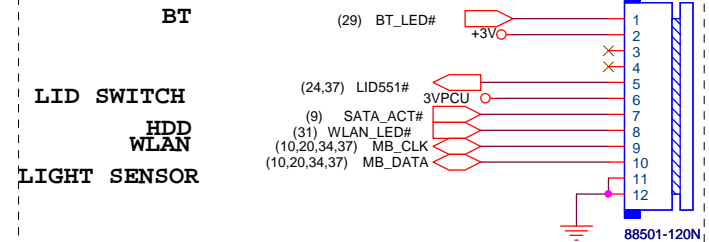
(9,24,26,35,37,39,40,43,47) 3VPCU

(3,4,8,9,10,11,12,14,15,18,23,24,25,26,27,28,29,30,31,32,33,34,35,37,39,40,44,47) +3V

## Slide bar 2.0



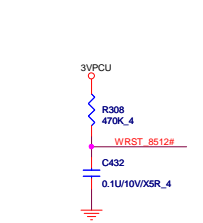
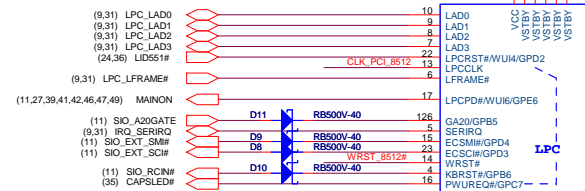
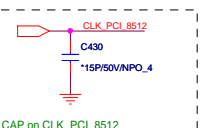
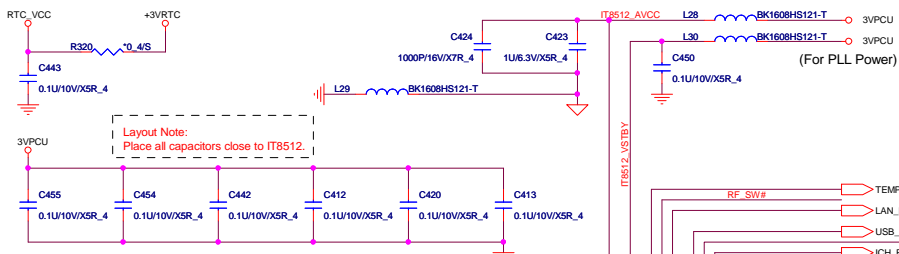
## UP LED BOARD



PROJECT KL3 NOTE Calpella DIS

Quanta Computer Inc.

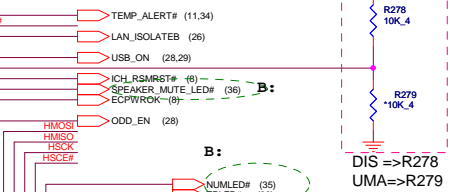
Size	Document Number	Rev
Custom	B TO B CON/LED	1A
Date:	Wednesday, December 23, 2009	Sheet 36 of 53



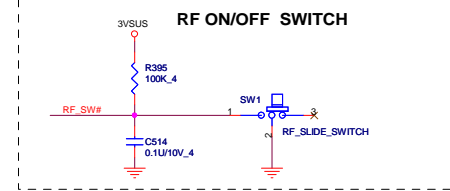
Note 1 : Since all GPIO belong to VSTBY power domain, and there are some special considerations below:  
(1) If it is output to external VCC derived power domain circuit, this signal should be isolated by a diode such as KBRST# and GA20.  
(2) If it is input from external VCC derived power domain circuit, this external circuit must consider not to float the GPIO input.

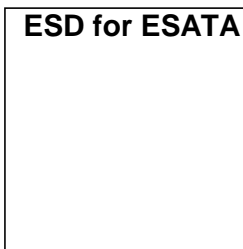
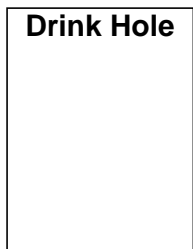
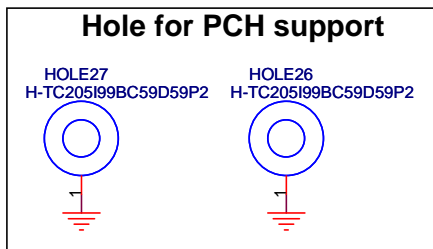
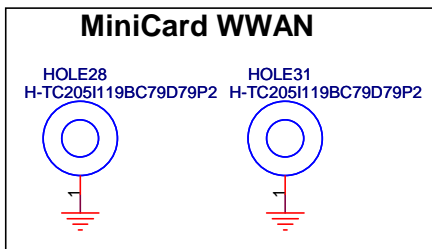
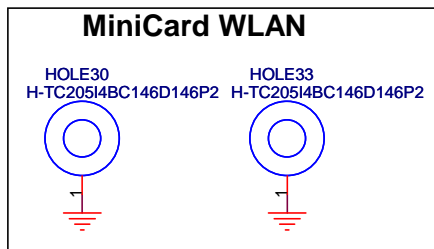
Note 2 :  
(1) Each input pin should be driven or pulled.  
(2) Each output-drain output pin should be pulled.

# IT8512

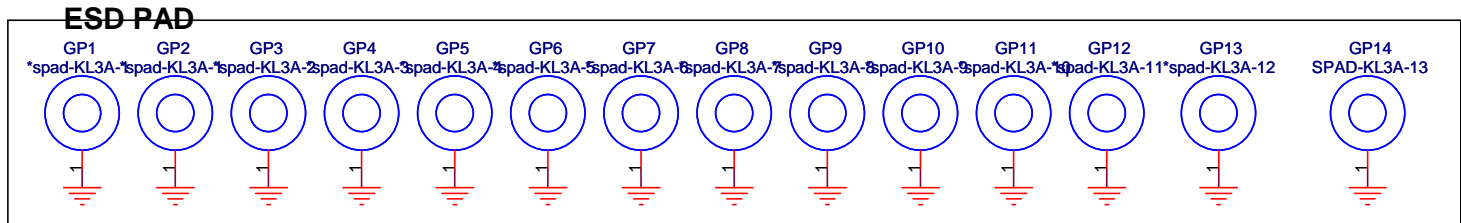
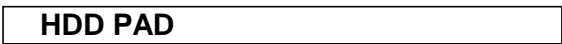
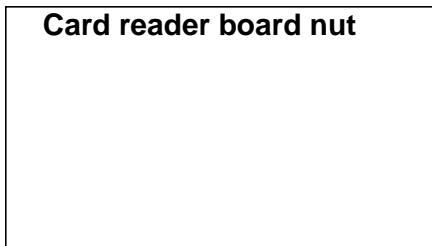
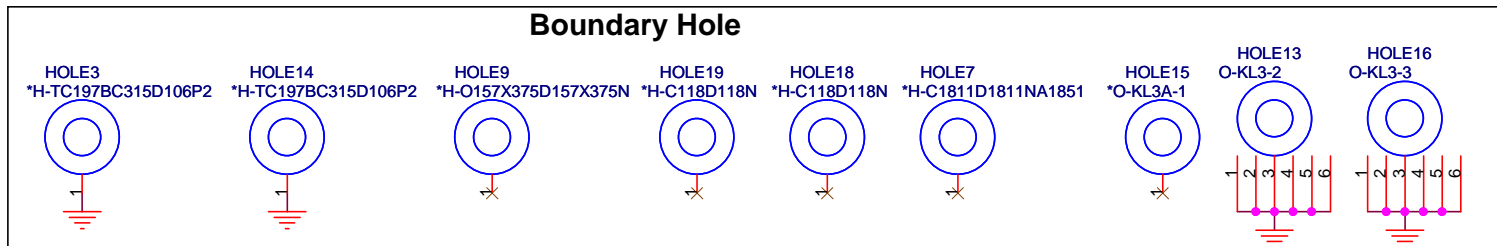
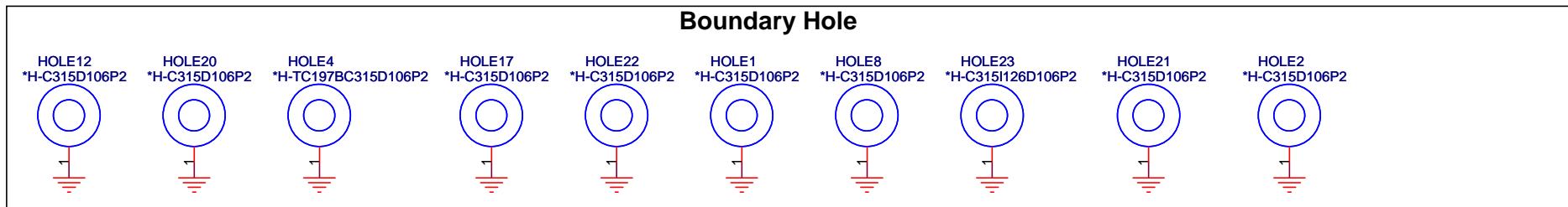
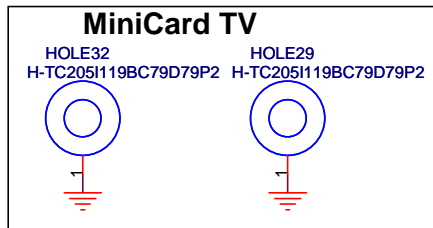
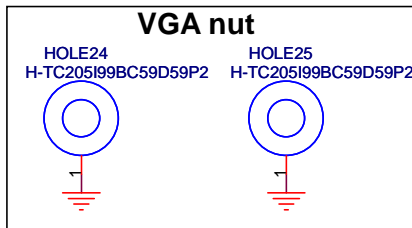
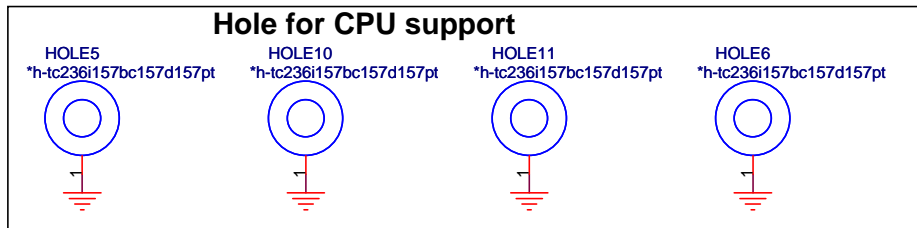



DIS=>R278  
UMA=>R279





38





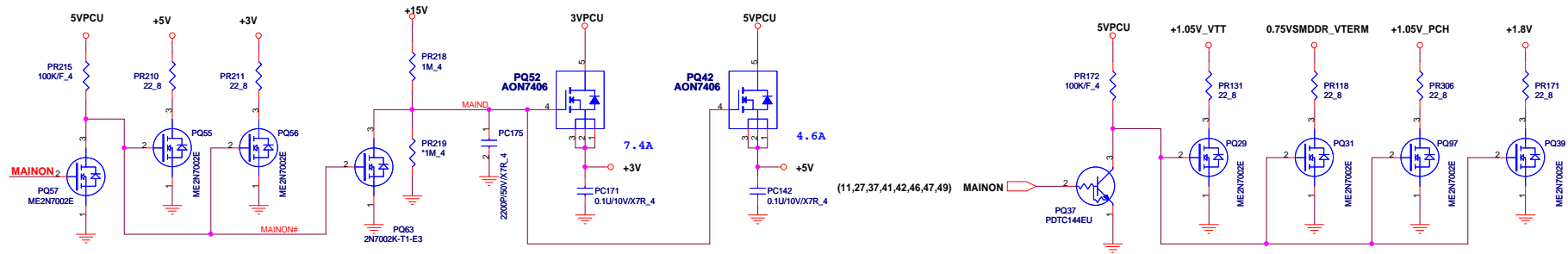
PROJECT KL3 NOTE Calpella DIS

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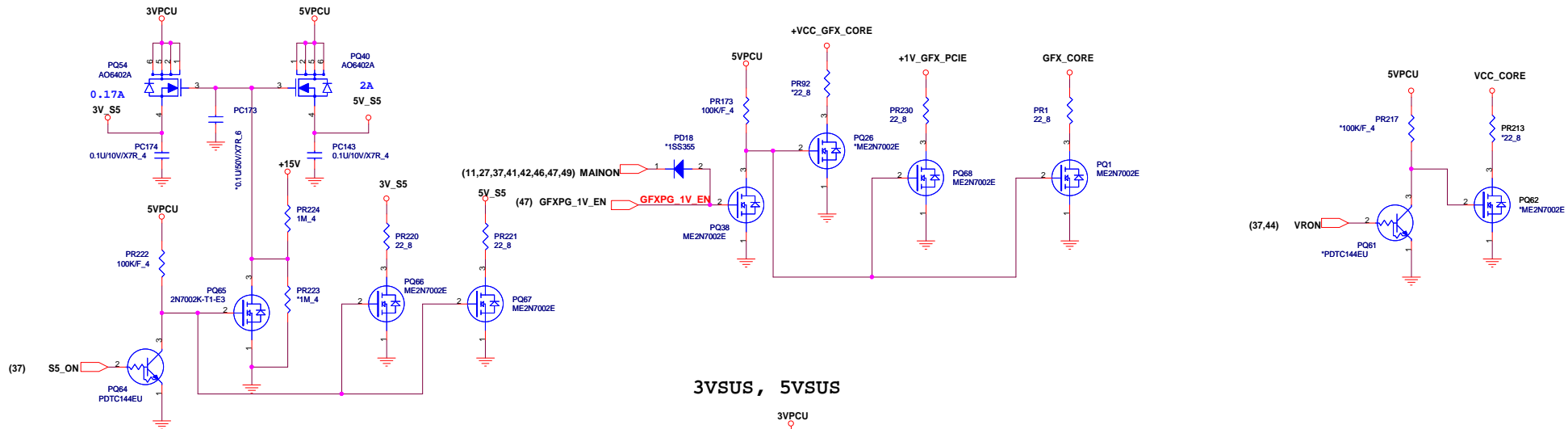
Size Custom	Document Number <b>HOLD &amp; SKEW</b>	Rev 1A
Date: Wednesday, December 23, 2009	Sheet 38	of 53



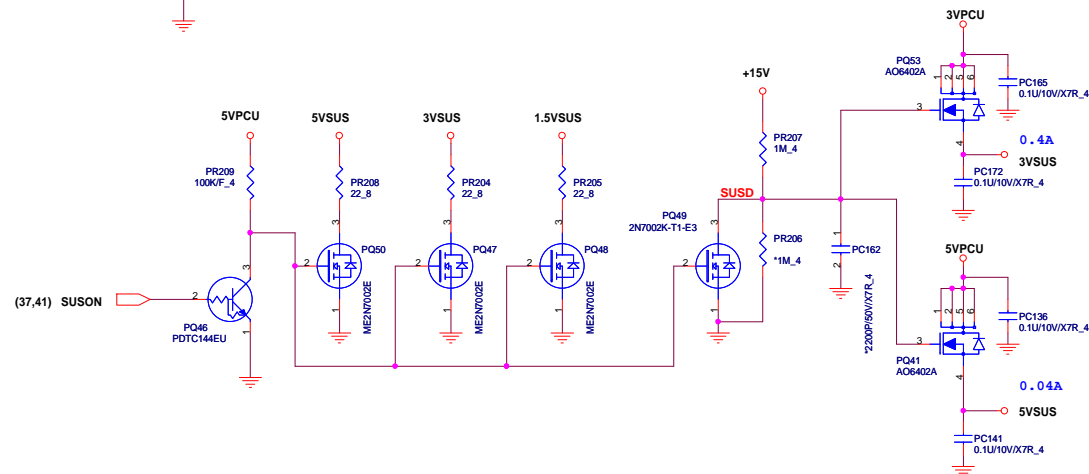
+3V, +5V



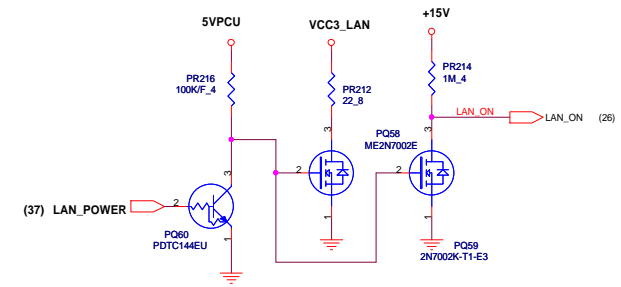
3V\_S5, 5V\_S5



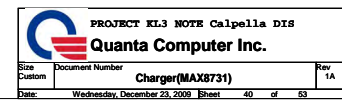
3VSUS, 5VSUS

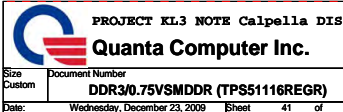


LANVCC

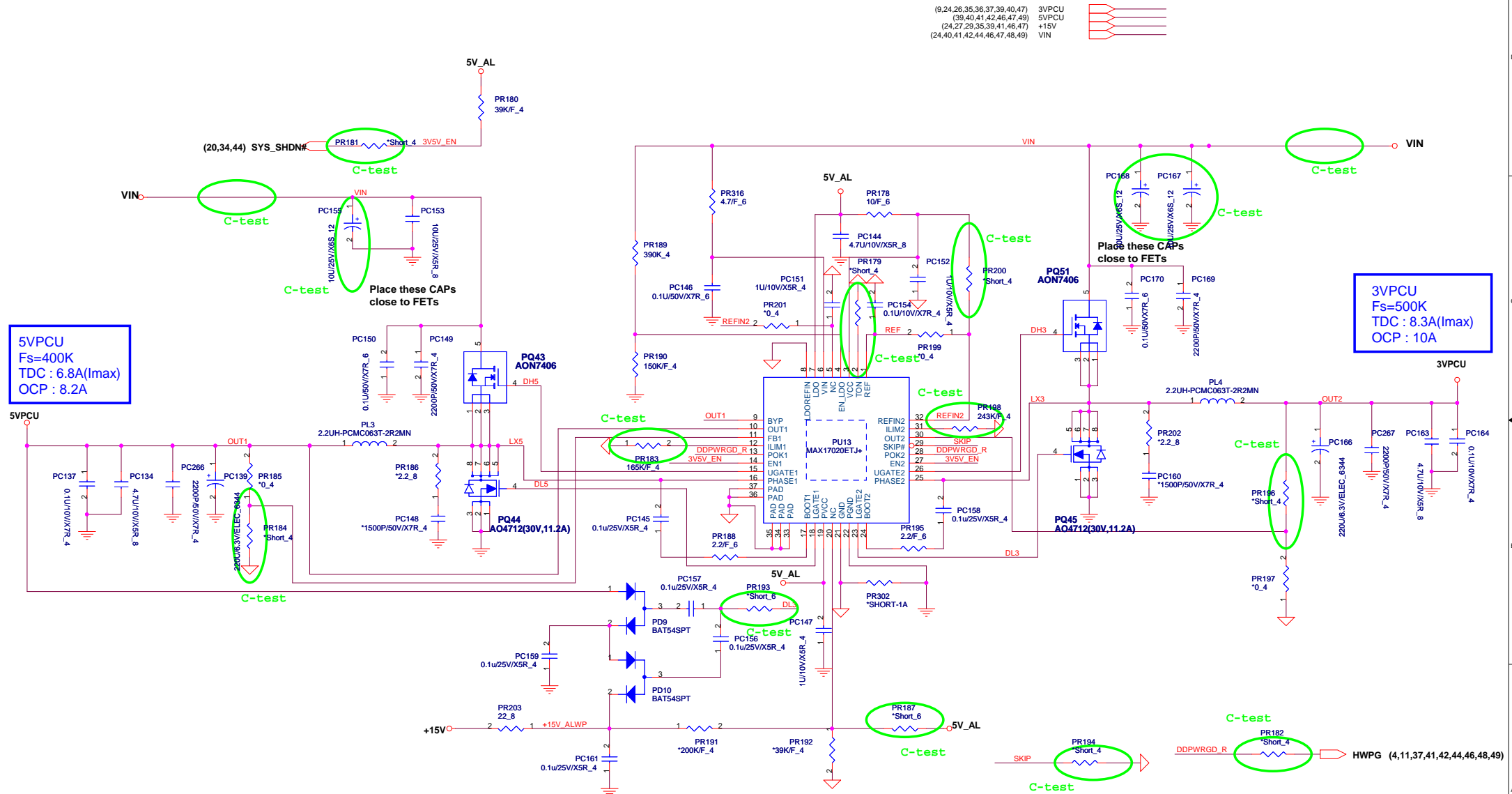


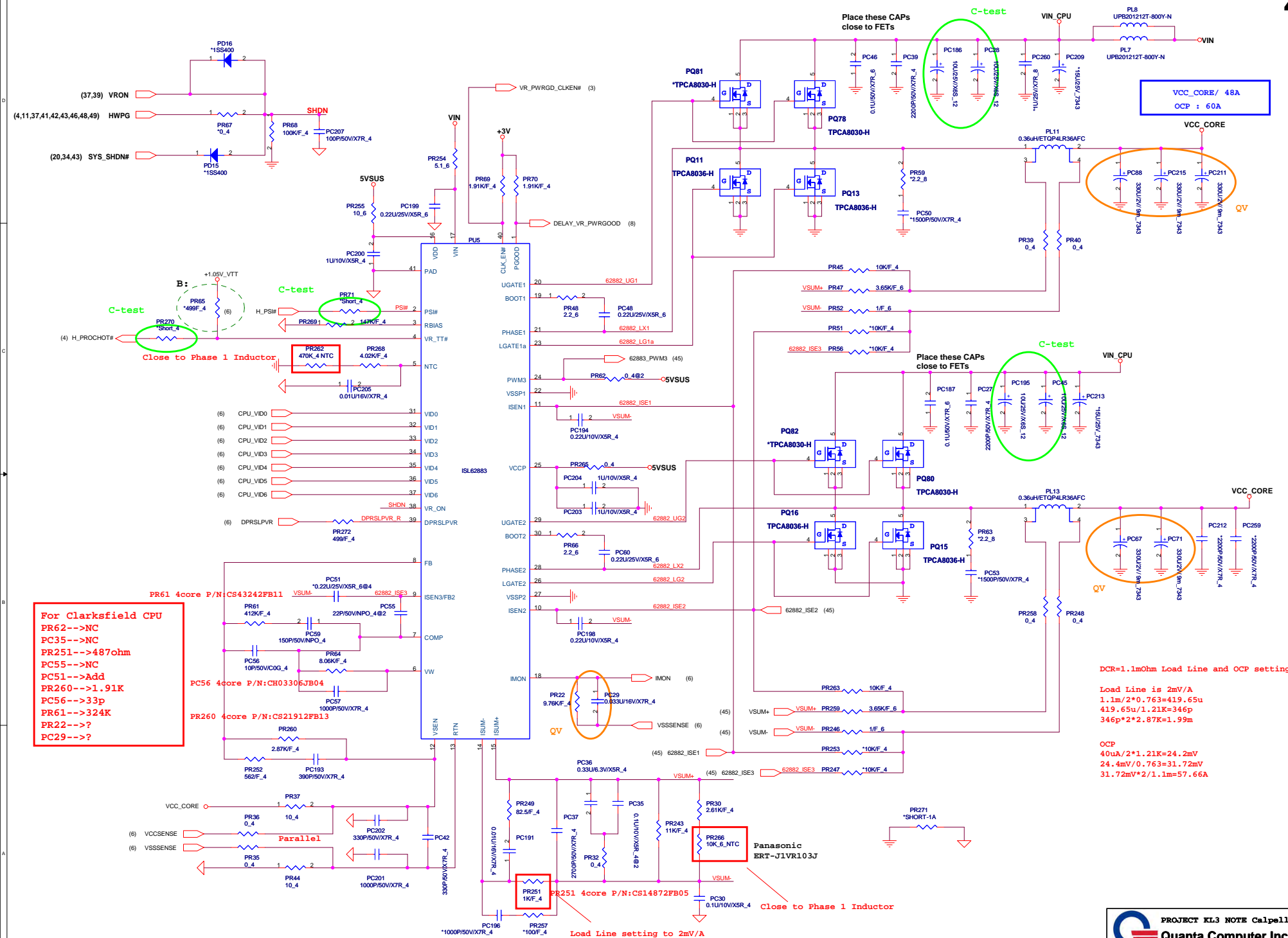
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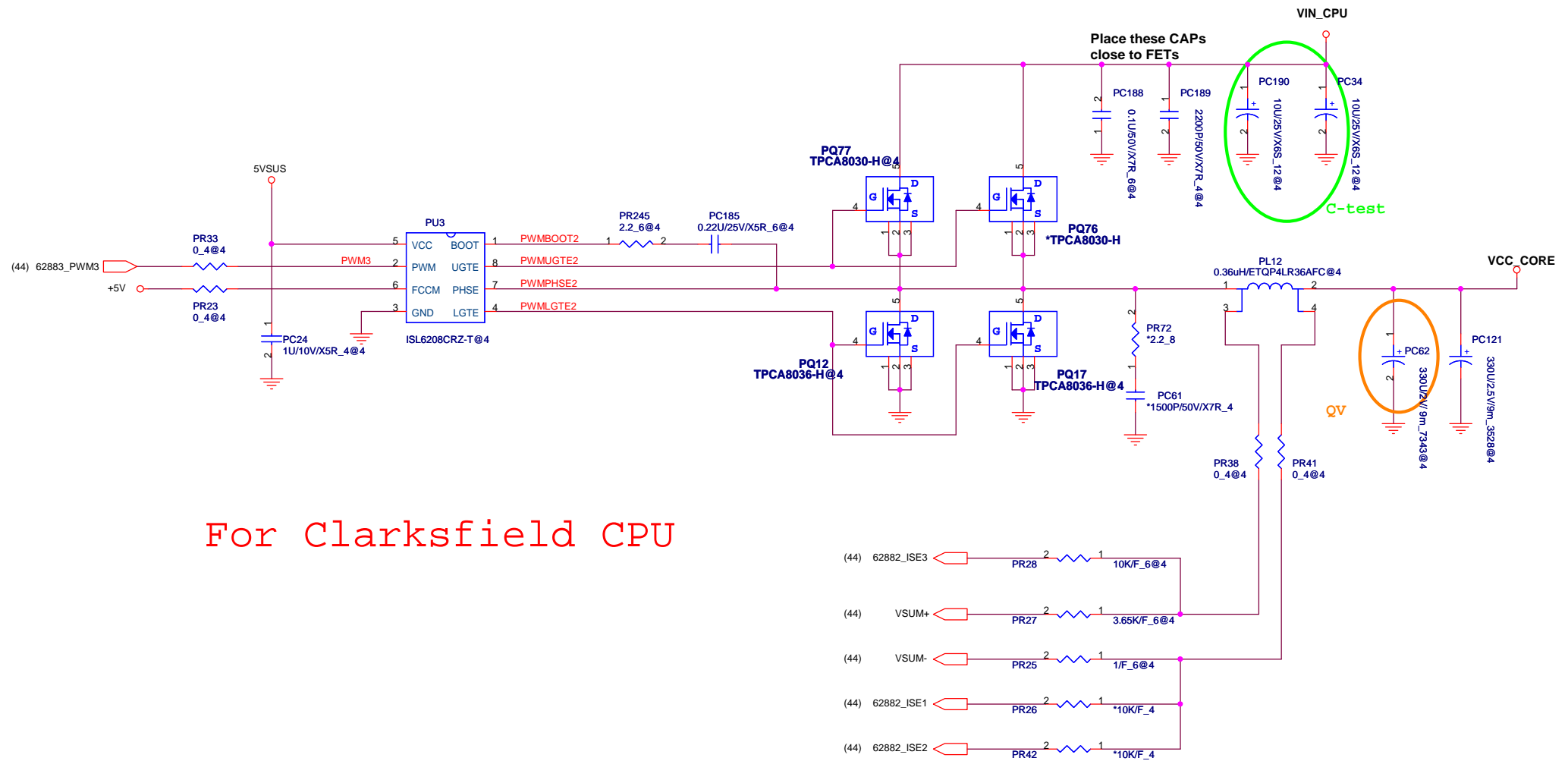


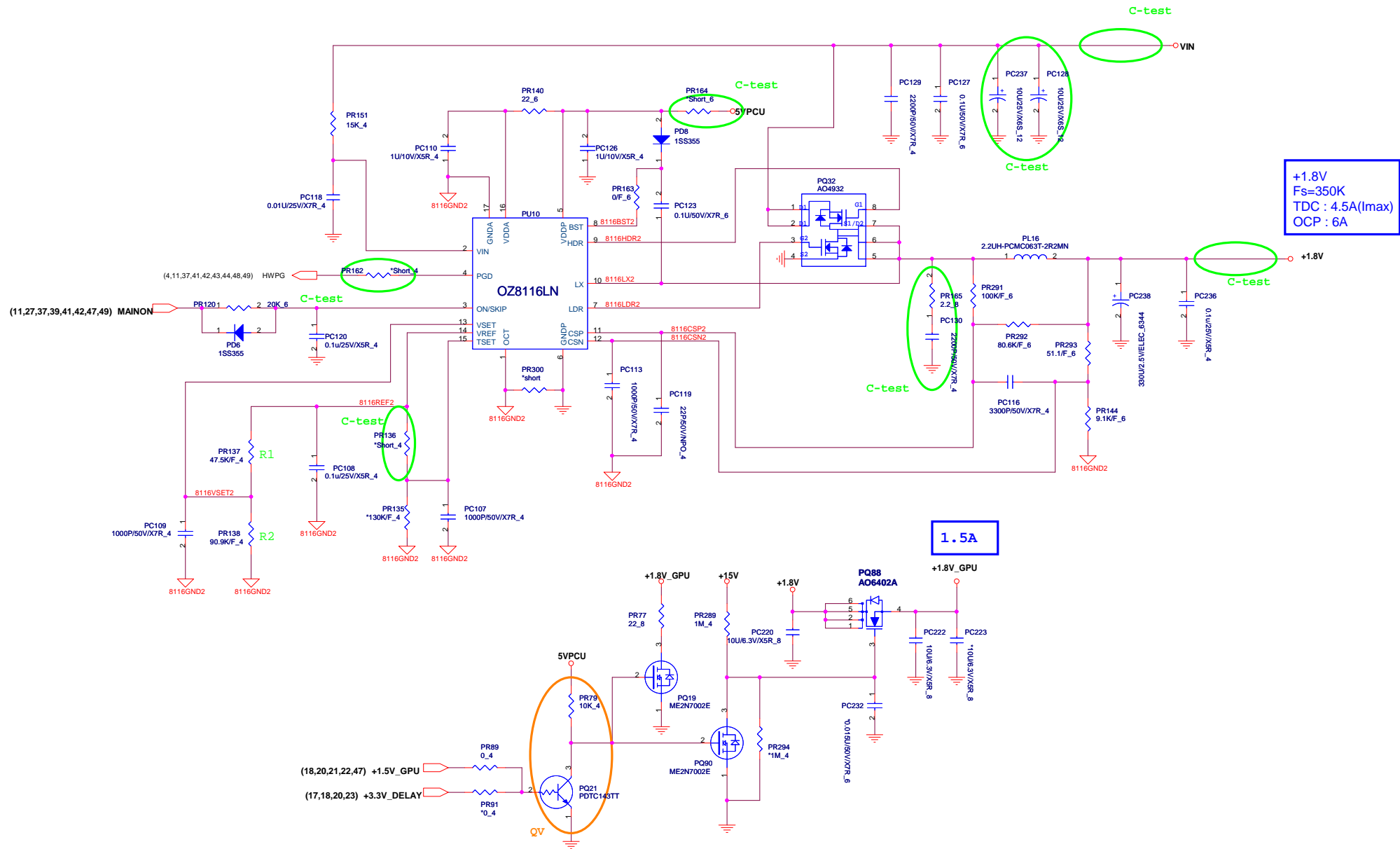


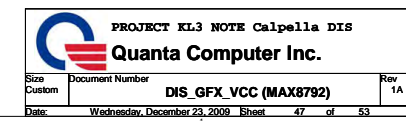


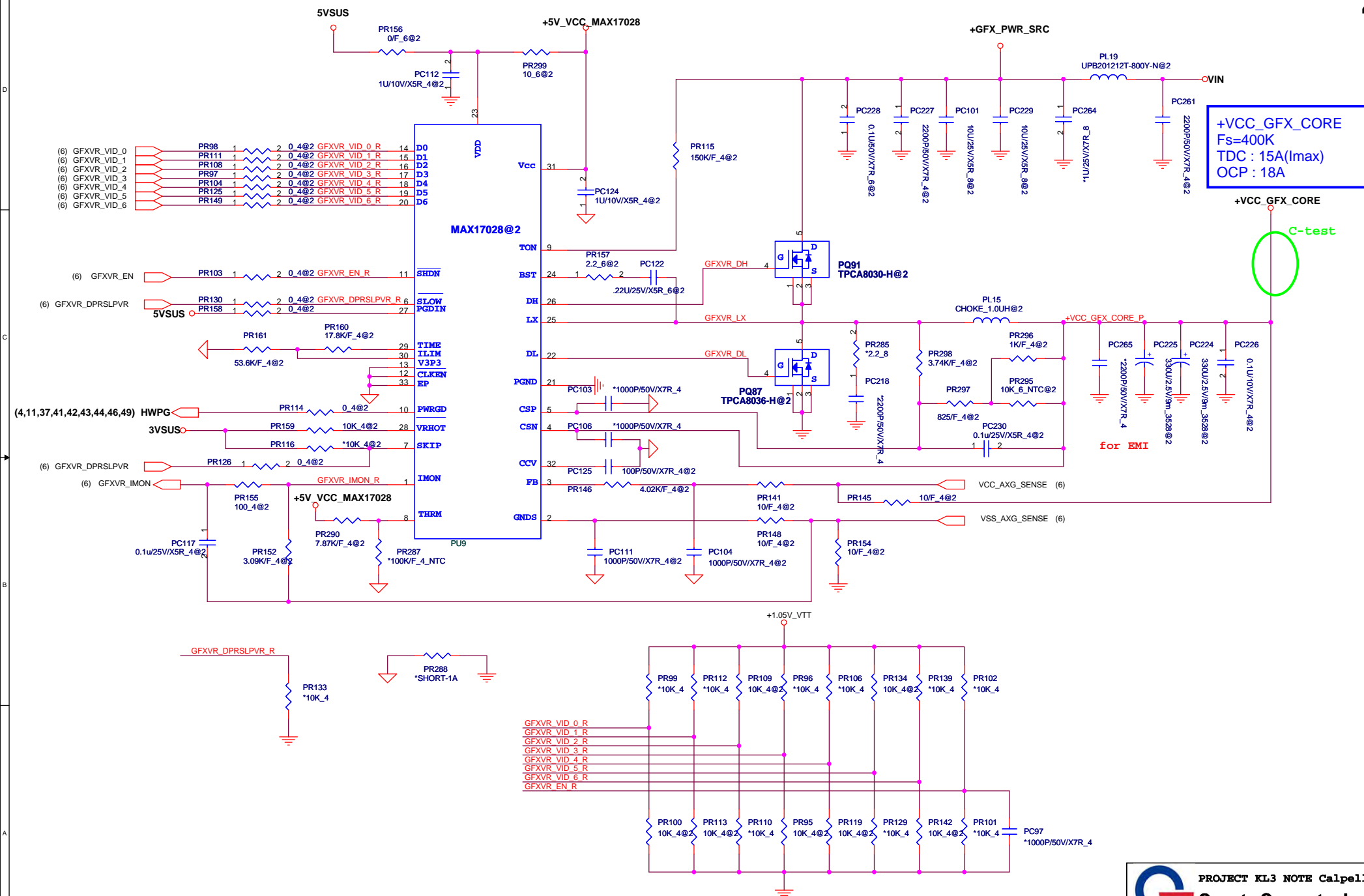


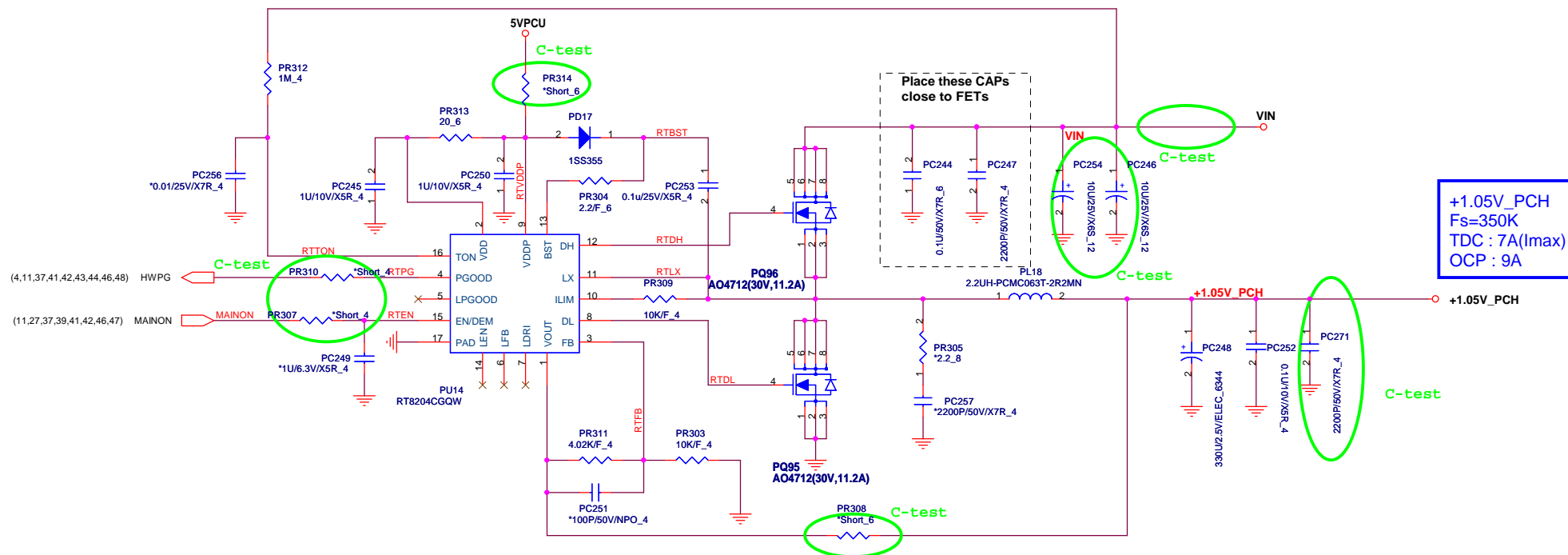












Revision History

Revision	Date	Phase	Change List	Release Schematic Date	Release Gerber File Date
1A		DV	Initial release		

Schematic Value Explanation Description :

RESISTOR

Value	F	4	6	8	12	1210	*	Description
*1K/F_4	1%	0402 (1005 )					DE POP	1K ohm 1% SMD 0402 package and DE POP
1K_6	5%		0603 (1608 )				POP	1K ohm 5% SMD 0603 package and POP
1K_8	5%			0805 (2125 )			POP	1K ohm 5% SMD 0805 package and POP
1K_12	5%				1206 (3216 )		POP	1K ohm 5% SMD 1206 package and POP
1K_1210	5%					1210 (3225 )	POP	1K ohm 5% SMD 1210 package and POP

CAPACITOR

Value	Voltage	Material	6				*	Description
*0.1U/10V/X5R_4	10V	X5R	0402 (1005 )				DE POP	0.1UF 10V X5R SMD 0402 package DE POP
1U/25V/X7R_6	25V	X7R	0603 (1608 )				POP	0.1UF 25V X7R SMD 0603 package POP

[illegible]



D

D

C


C

B

B

A

A

		PROJECT KL3 NOTE Calpella DIS	
		Quanta Computer Inc.	
Size Custom	Document Number POWER BLOCK		Rev 1A
Date:	Wednesday, December 23, 2009	Sheet	52 of 53

EC #	Page	Description	Part Affected
EC-A-01	12	0 ohm change to DEL for reduce 1.05V drop	R261
EC-A-02	35	Change footprint and schematic for design request	CN5
EC-A-03	35	DEL R126 and connect CN5.25 to GND directly	R126
EC-A-04	38	Add 10 ohm for reduce noise	R577
EC-A-05	39	DEL CN2 for combine with GC4/GC5	CN2
EC-A-06	10	25MHz X'tal ICG support removed from POR	Y6,R478,C671,C670
EC-A-07	12	Based on Intel DG V1.5 page320, remove external LC filter for VCCAClk, VccapIEXP, VCCFDIPLL, VCCSATAPLL.	L45,C692,L46,C697,L47,C712, C715,L21,C329,C331
EC-A-08	14	Based on Intel DG V1.5 page100 ,remove DDR3 Vref control circuit M2 option.	U1 etc...
EC-A-09	15	Based on Intel DG V1.5 page100 ,remove DDR3 Vref control circuit M2 option.	U46 etc...
EC-A-10	23	Change from 0 ohm to bead for EMI request	R150
EC-A-11	26	Change from 0 ohm to bead for EMI request	R237,R238,R239,R240
EC-A-12	43	Del +1.05V_PCH discharge	PR219,PQ11
EC-A-13	43	Add charger PTC	PR263
EC-A-14	43	Change Footprint	PQ66
EC-A-15	43	Modify OTP circuit	PD34
EC-A-16	44	Del NO ASM circuit	PU16 etc...
EC-A-17	46	Del +1.05V_PCH circuit	PQ133 etc...
EC-A-18	46	Reduce +1.05V power rail impedance	PJP13,PJP4
EC-A-19	46	Reserve for current derating	PL23
EC-A-20	46	Reduce transient regulation	PL20
EC-A-21	47	Reduce ripple voltage	PC216
EC-A-22	49	Add to separate enable from protect circuit	PR264
EC-A-23	49	Reserve for sequence	PR265
EC-A-24	29	ESD suggestion because ESATA don't CDE test so we DEL U7,U8 and add a GND shielding in board file	U7,U8