

## PCB STACK UP

LAYER 1 : TOP  
LAYER 2 : GND  
LAYER 3 : IN1  
LAYER 4 : SVCC  
LAYER 5 : IN2  
LAYER 6 : IN3  
LAYER 7 : GND  
LAYER 8 : BOT

## BD9 FT3 Kabini Block Diagram

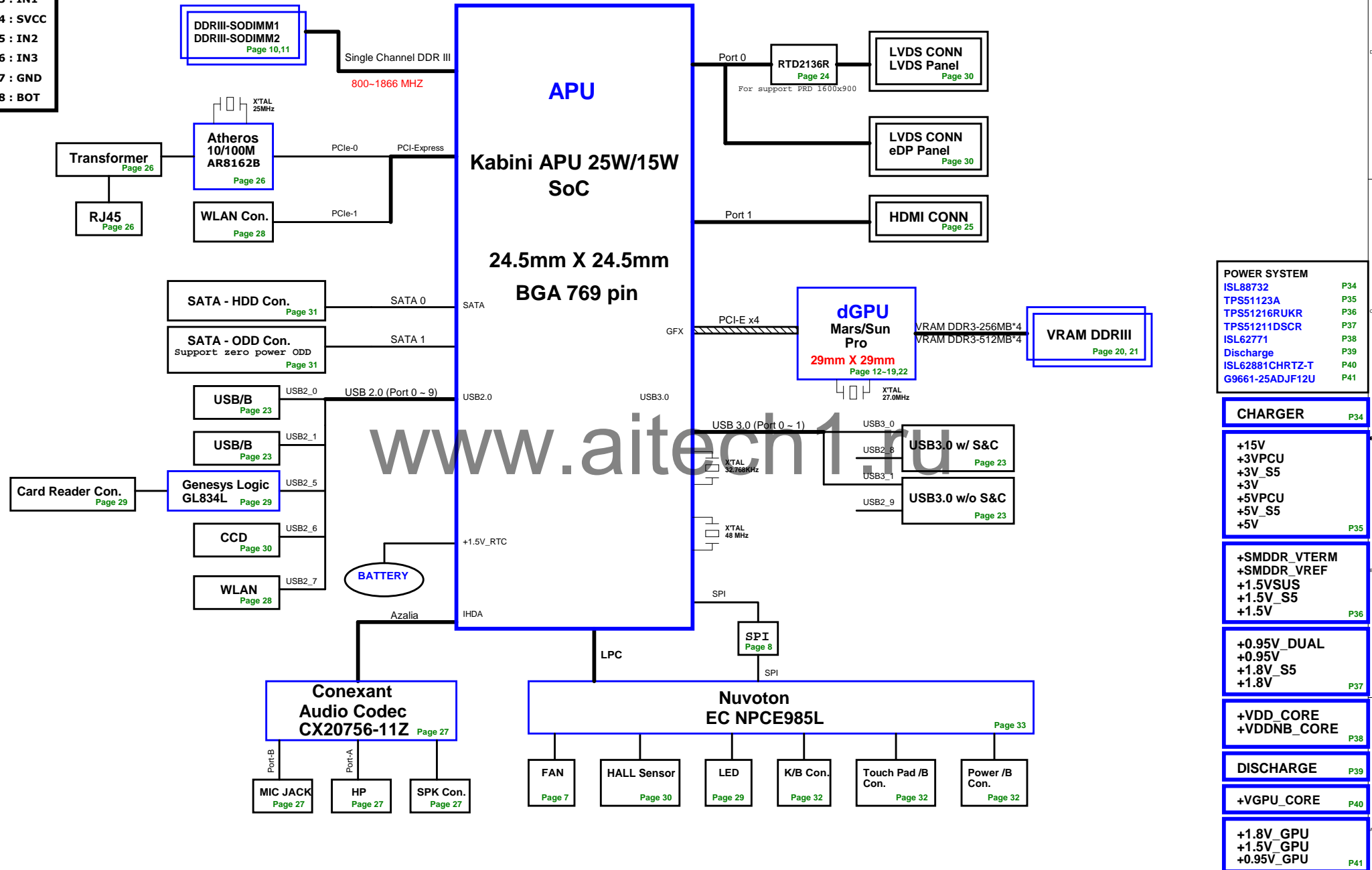







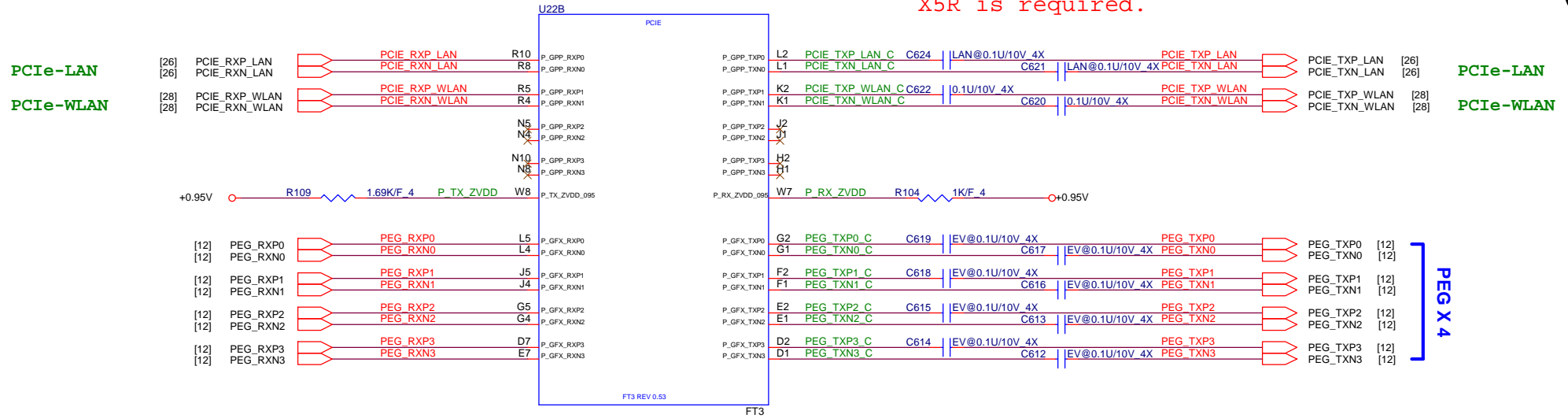
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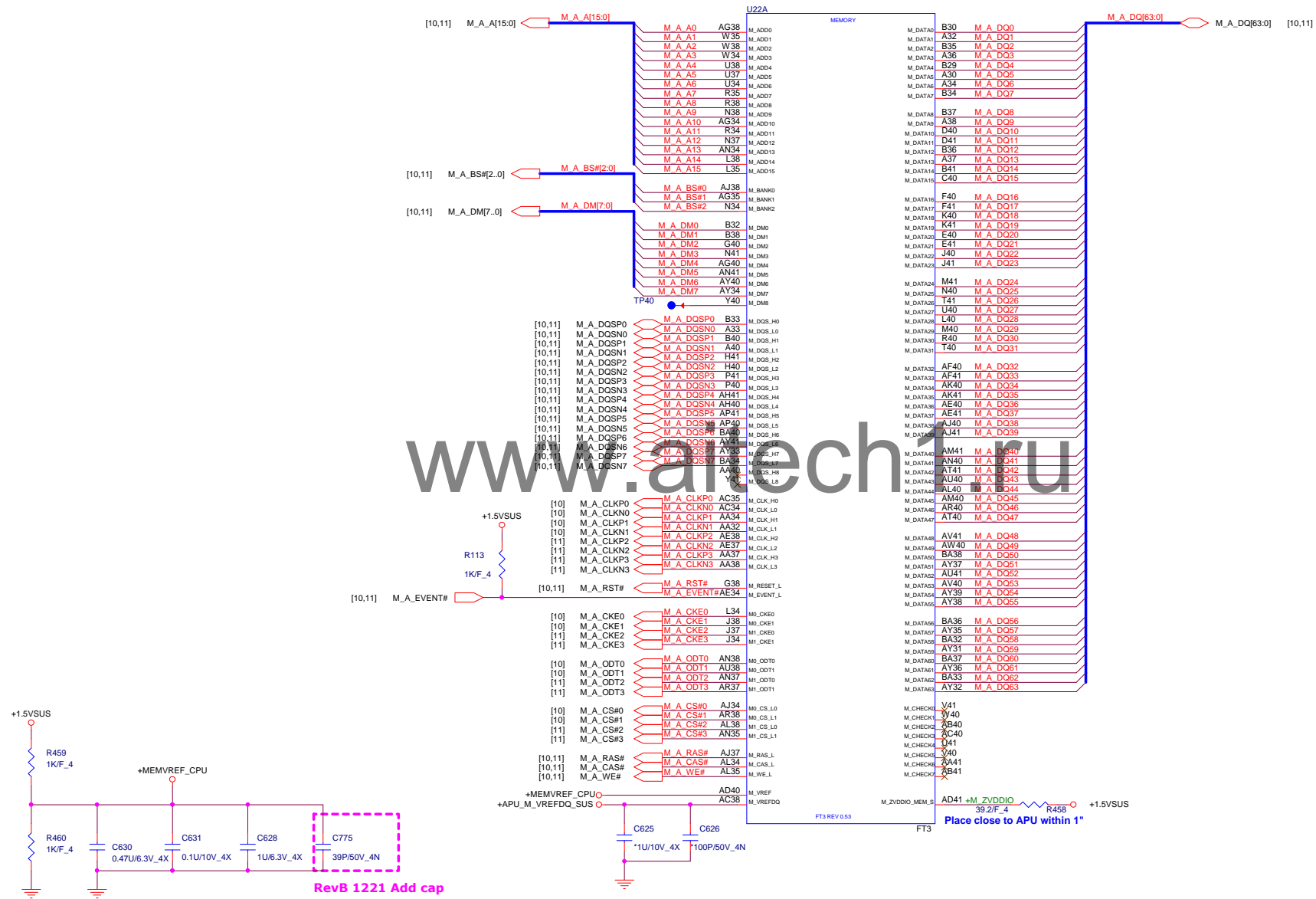
PAGE	DESCRIPTION	BOI-FUNCTION
1	Schematic Block Diagram	
2	Power Stage	
3 - 8	Processor	CPU
9	Straps	CPU
10	SO-DIMM 1	DDR
11	SO-DIMM 2	DDR
12 - 19	Mars/Sun Pro(M2)	VGA
20 - 21	VRAM - DDR3	VGA
22	PX5	VGA
23	USB	U3B/USB
24	eDP to LVDS(RTD2136R)	LDS
25	HDMI/Touch Screen	HDM/TSN
26	LAN(1A8162B)	LAN
27	Codec (CX20756-11Z)	ADO
28	MINI CARD (WLAN)	MNW
29	CARD READER(GL834L)/LED	MMC/LED
30	LDS/CRT/CCD	LDS/CRT/CCD
31	HDD/ODD	HDD/ODD
32	KB/TouchPad	KBC/TPD
33	EC 985L	KBC
34	Charger (ISL88731CHRTZ-T)	CHR
35	System 5V/3V	PWM
36	DDR 1.5V	PWM
37	+0.95V_DUAL	PWM
38	+VCC_CORE	PWM
39	Discharge	PWM
40	GPU_CORE	PWM
41	+0.95V_GPU/+1.8V_GPU/+1.5V_GPU/+3V_GPU	PWM

GND PLANE	PAGE
 GND_SIGNAL	
 8769GND	
	
 GND	ALL
 ADOGND	

POWER PLANE	VOLTAGE	CONTROL SIGNAL	Power States ACTIVE IN
VIN	10V~+19V		S0~S5
+VCCRTC	+1.5V		S0~S5
+3V	+3.3V	MAIND	S0
+3V_S5	+3.3V	S5_ON	S0~S5
+3VPCU	+3.3V	AC/DC Insert enable	S0~S5
+5V	+5V	MAIND	S0
+5V_S5	+5V	S5_ON	S0~S5
+5VPCU	+5V	AC/DC Insert enable	S0~S5
+WIMAX_P	+3.3V	IOAC_EN	S0
+1.5VSUS	+1.5V	SUSON	S0~S3
+1.5V	+1.5V	MAIND	S0
+1.8V_S5	+1.8V	PE_PWRGD ^ PE_GPIO1	S0~S5
+0.95V_DUAL	+0.95V	+0.95V_DUAL_EN	S0~S5
+0.95V	+0.95V	MAIND	S0
+VDD_CORE	~	VRON	S0
+VDDNB_CORE	~	VRON	S0
+VGPU_CORE		GPU_MAINON ^ PE_GPIO1	S0
+1.8V_GPU	+1.8V	GPU_MAIND	S0
+0.95V_GPU	+0.95V	GPU_MAINON ^ PE_GPIO1	S0
+3V_GPU	+3.3V	GPU_MAIND	S0
+1.5V_GPU	+1.5V	GPU_MAIND	S0

Coupling Caps Note:  
X5R is required.





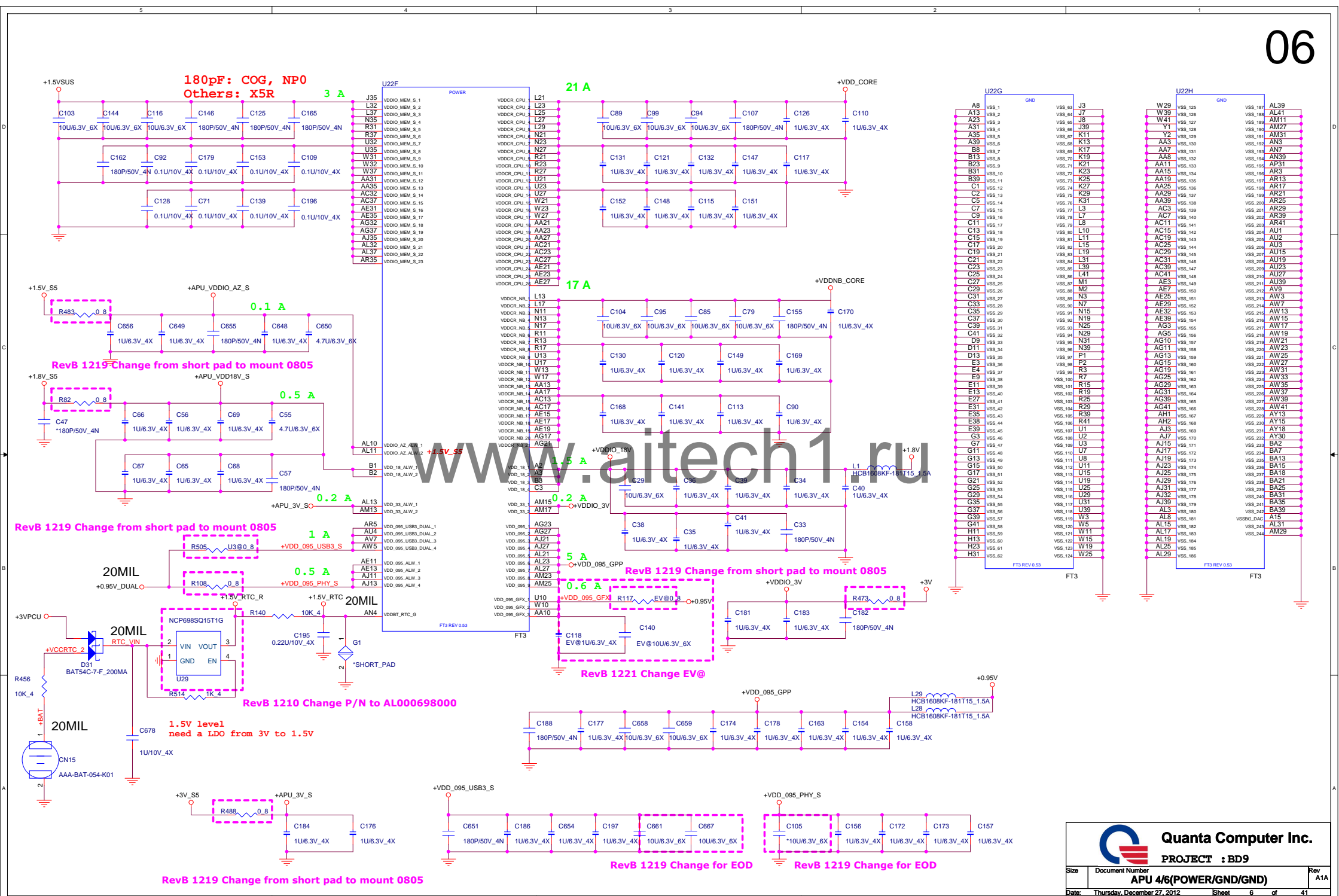
Quanta Computer Inc.

PROJECT : BD9

Size Document Number APU 2/6(DDR3 MEM) Rev A1A

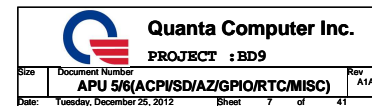
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CLK Source	GPP_Clk	Clk_Req	GPIO
GFX	GFX_CLKLP/N	Clk_ReqG	GPIO65
Lan	GPP_CLK0P/N	Clk_Req0	GPIO60
WLAN	GPP_CLK1P/N	Clk_Req1	GPIO61





SATA HDD

SATA ODD

Reference GND  
Do not change layer  
and cross plane

RevB 1222 Change cap value for vendor suggestion

For EMI

## BOARD ID SETTING

Board ID	ID1	ID2	ID3	ID4	ID5	ID6	ID7	ID8	ID9	ID10	ID11	ID12	ID13
UMA SKU	H	L											
PX SKU													
VRAM 1GHZ			H	L									
VRAM 900M													
USB3.0				H	L								
USB2.0													
14" MTN													
17" BD9													
W/O S&C													
W S&C													
N-METAL (W/O KBLED)													
METAL (W/ KBLED)													
N-Brand													
Brand (ONKYO)													
W/O HDMI													
W HDMI													
N-Brand													
Brand (Harman/Kardon)													
Metal/IMR													
TEXTURE													
RSVD													
RSVD													

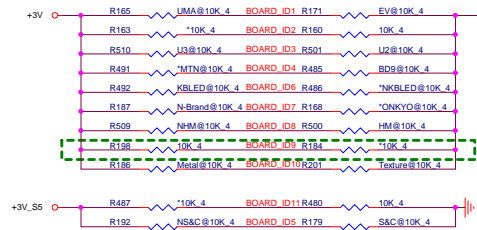
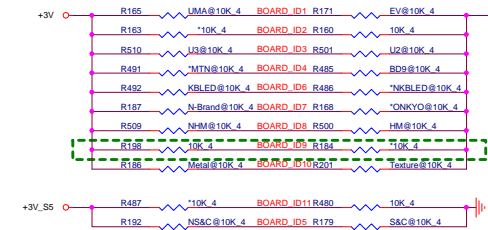
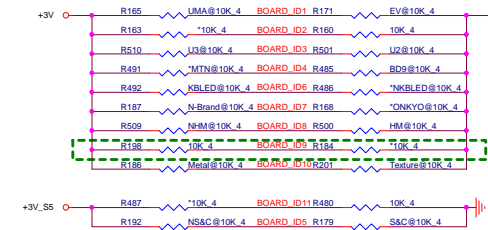
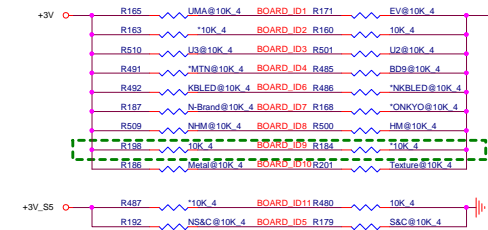
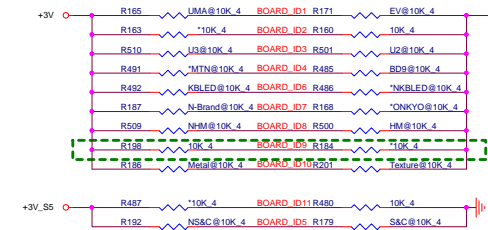
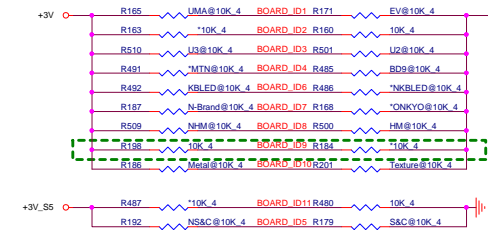
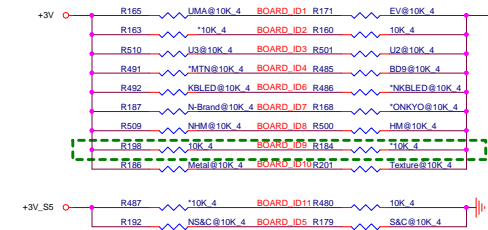
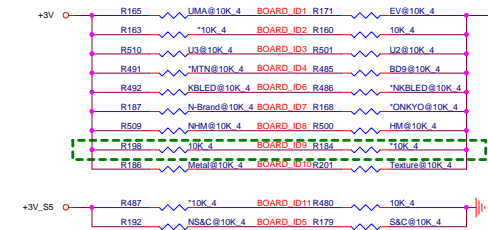
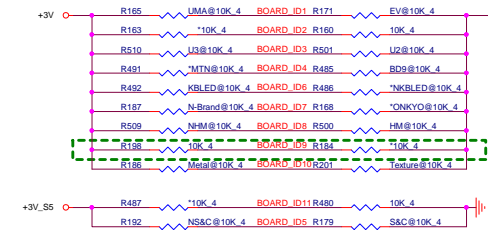
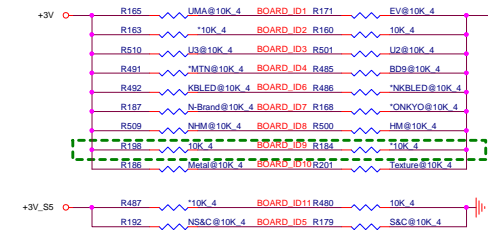
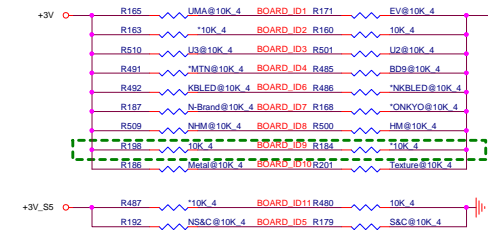
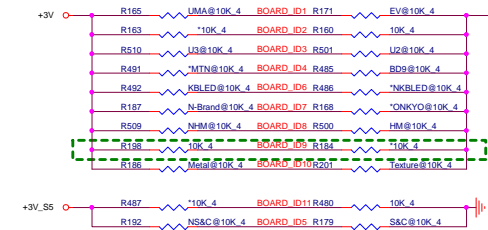
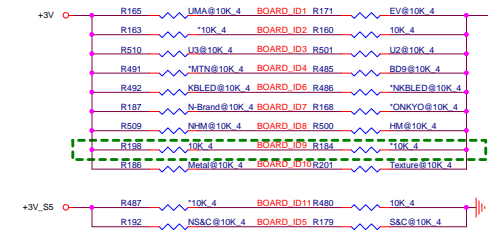
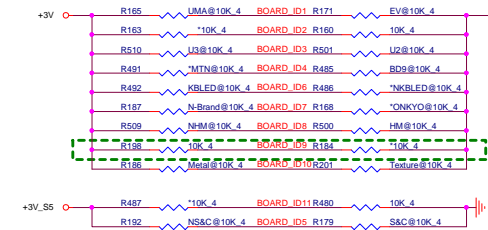
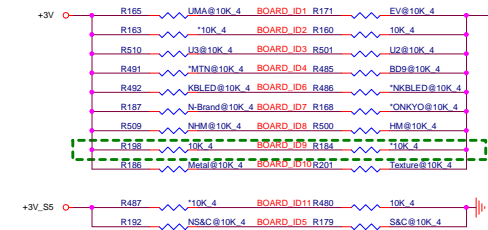
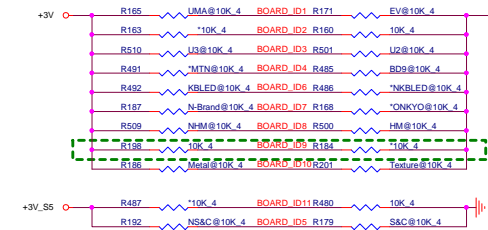
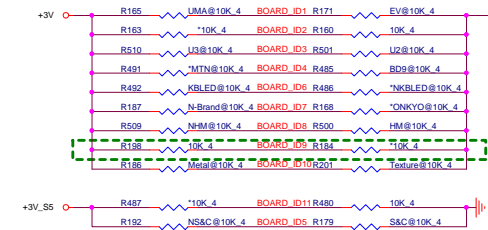
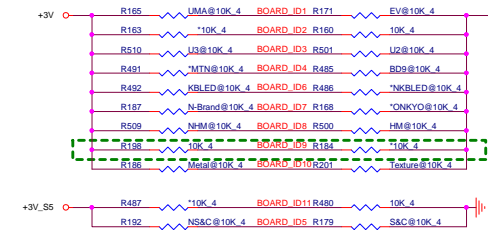
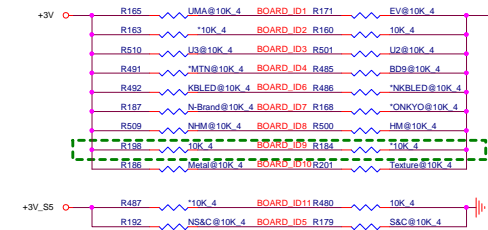
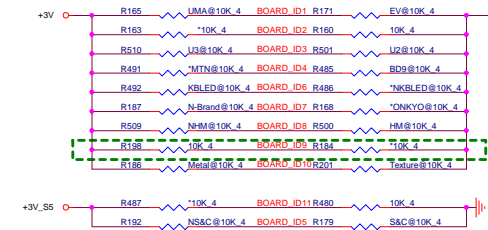
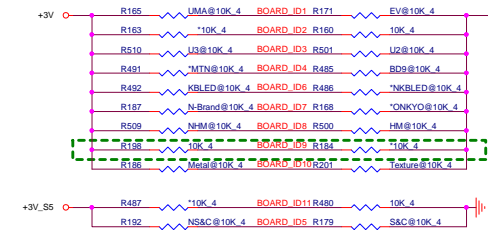
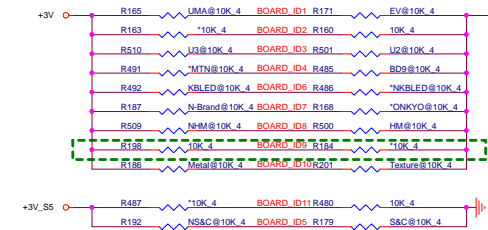
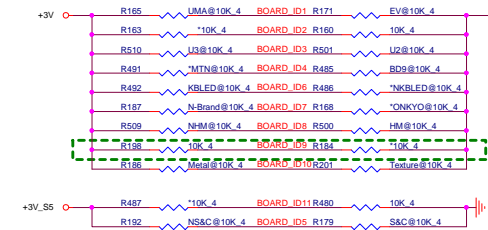
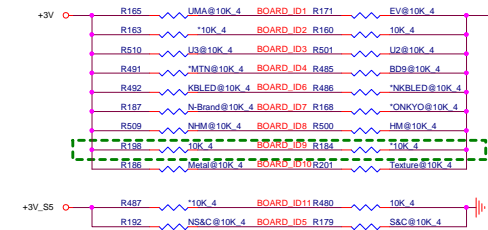
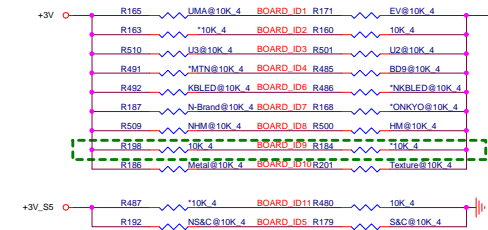
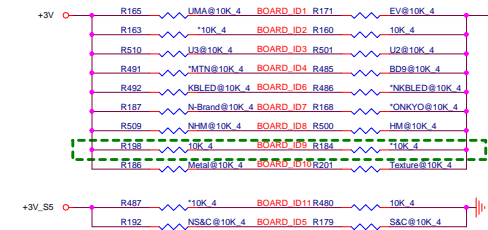
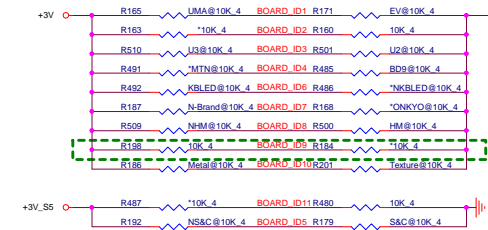
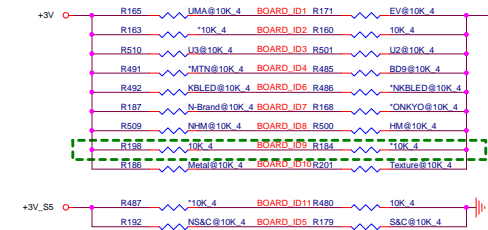
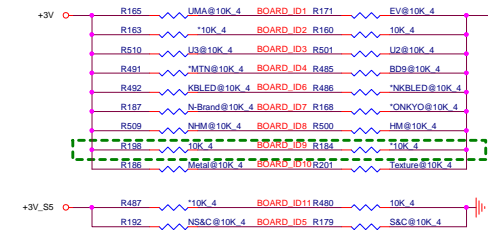
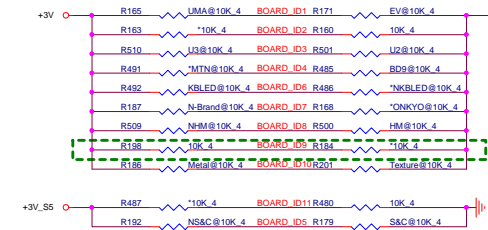
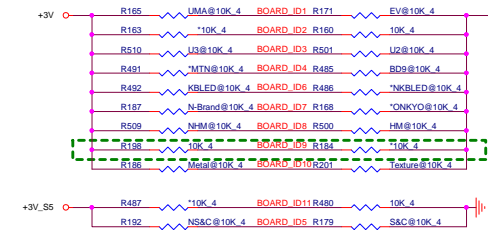
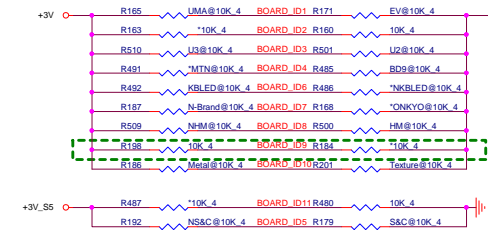
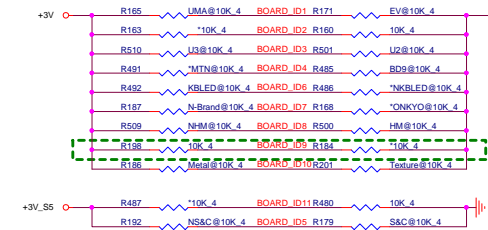
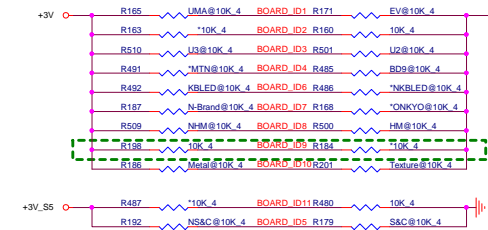
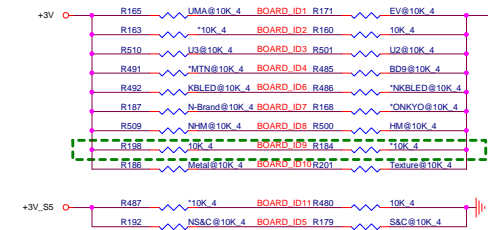
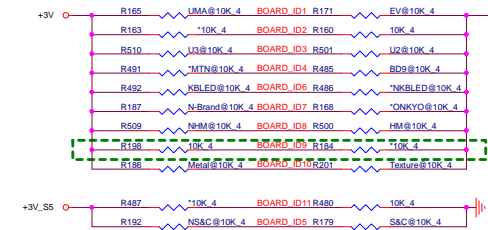
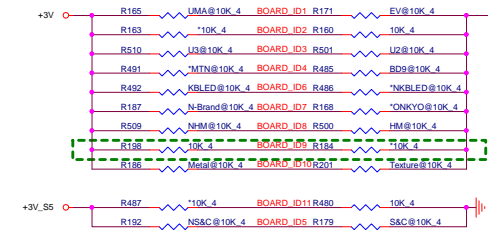
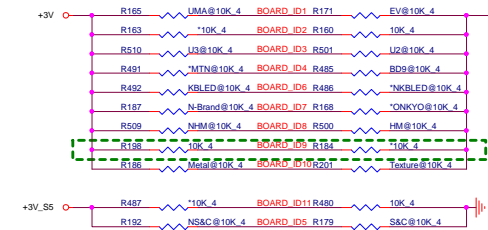
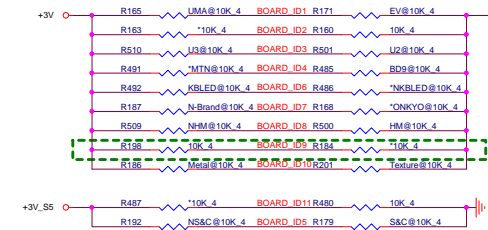
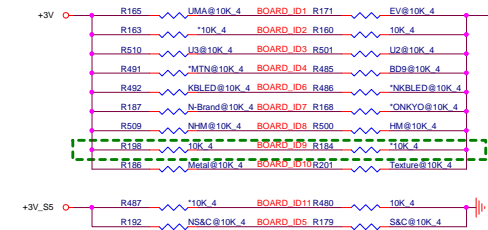
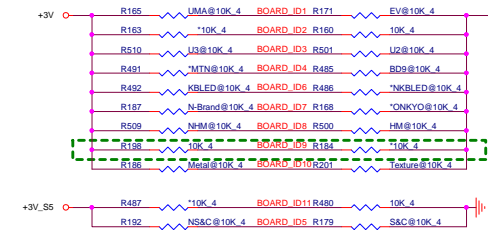
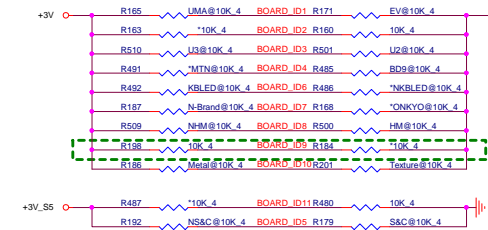
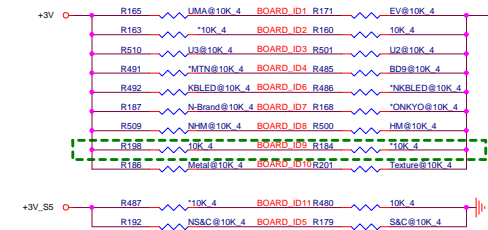
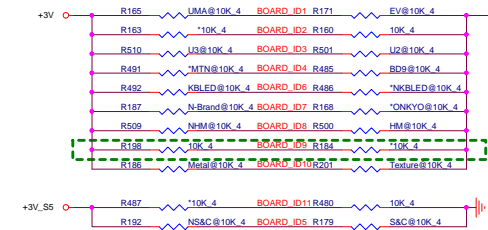
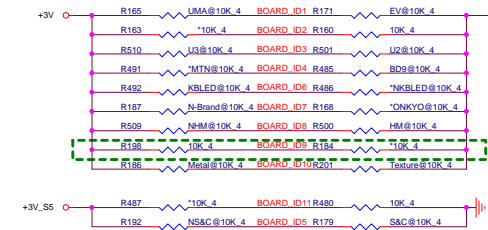
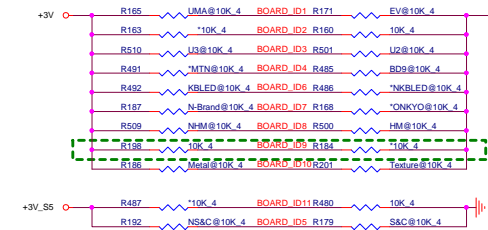
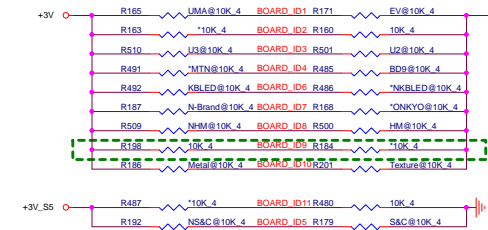
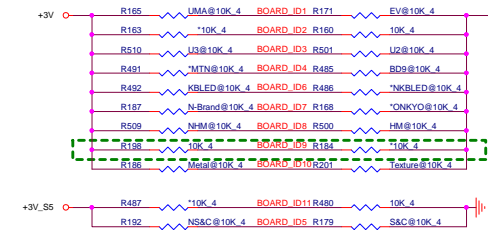
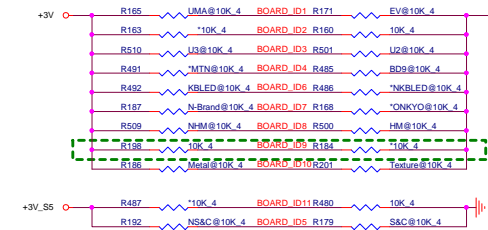
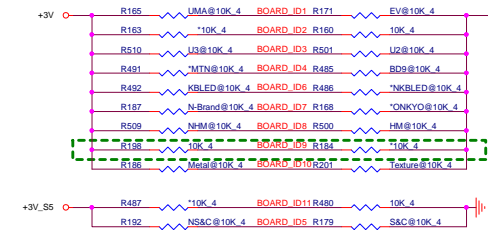
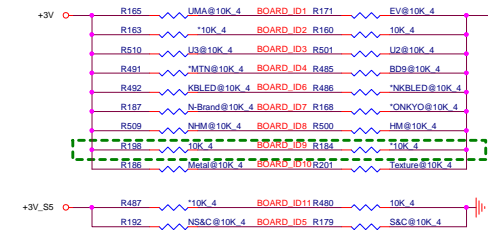
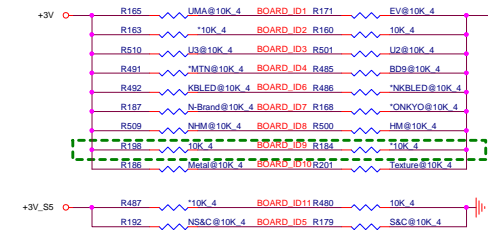
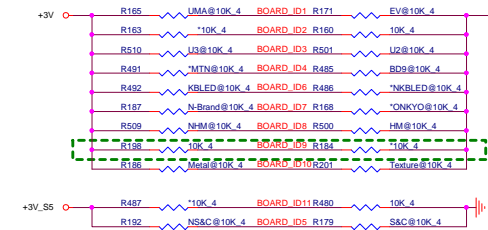
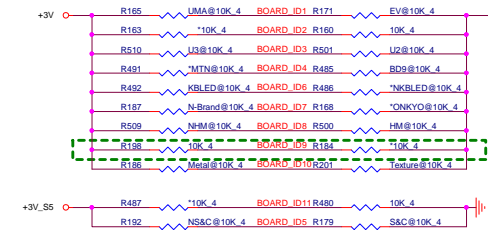
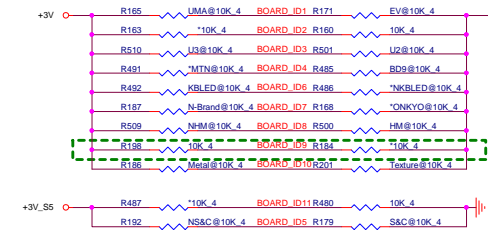
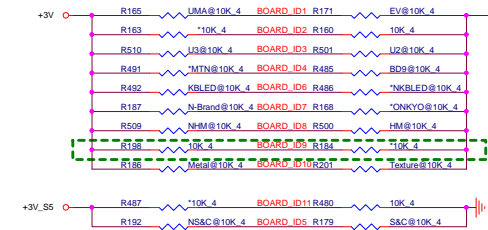
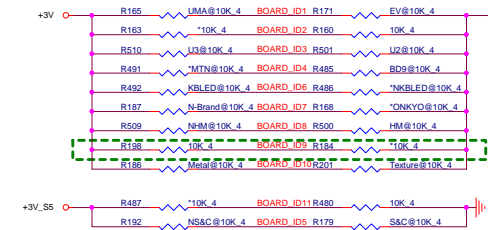
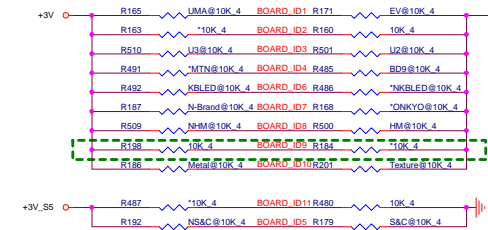
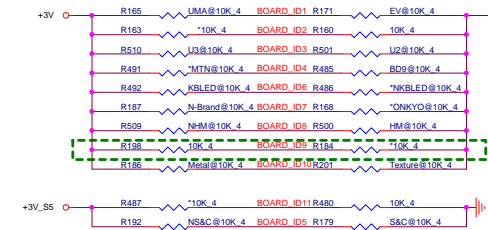
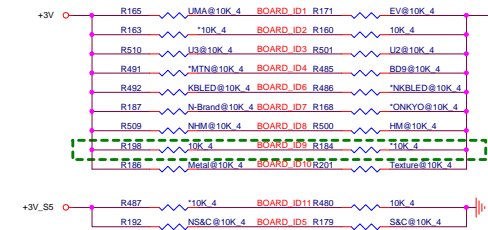
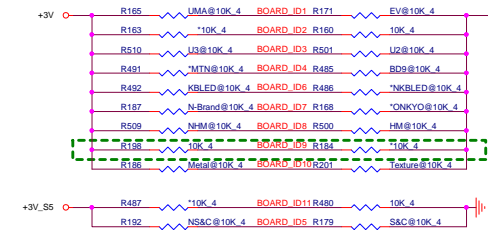
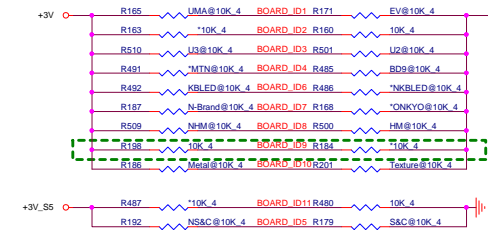
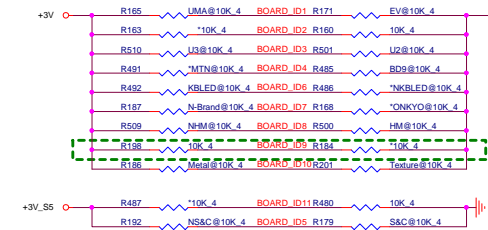
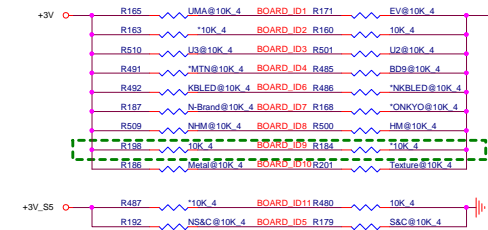
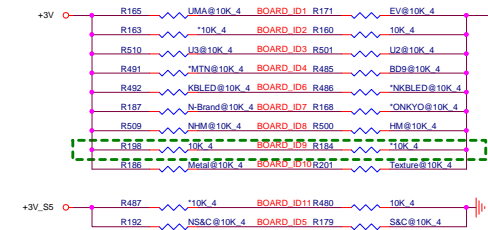
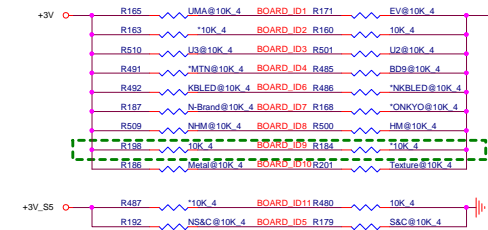
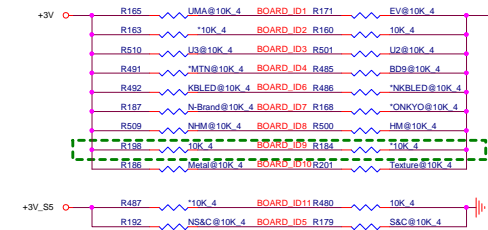
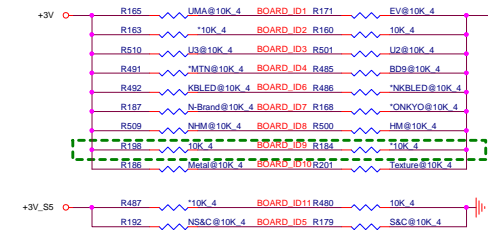
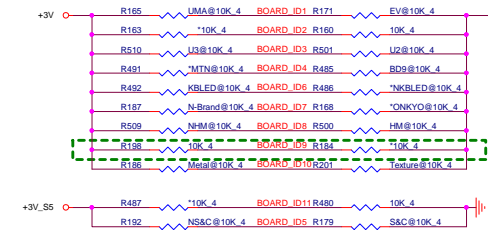
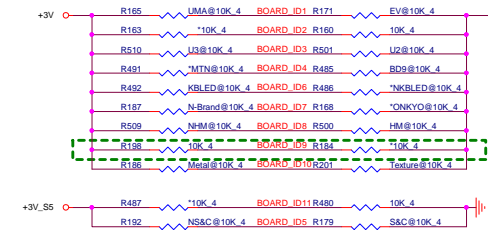
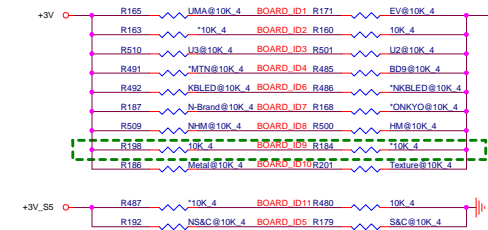
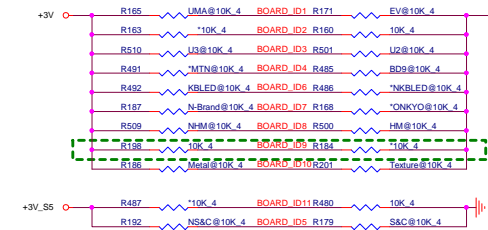
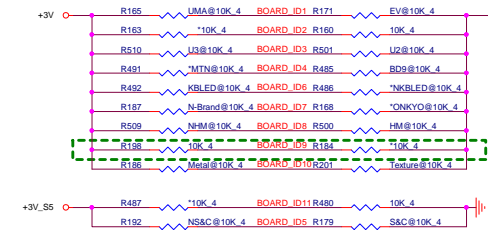
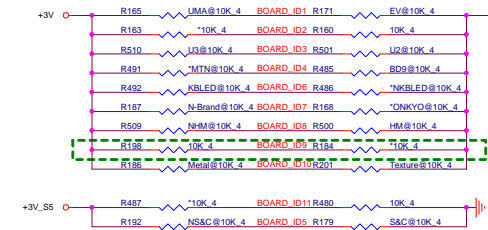
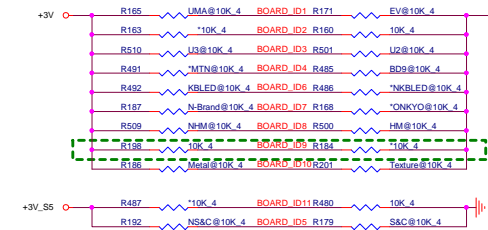
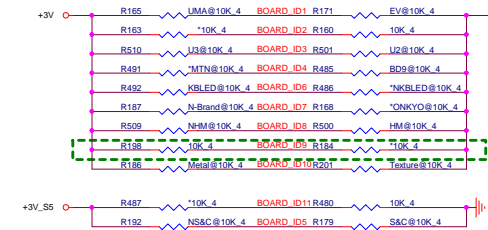
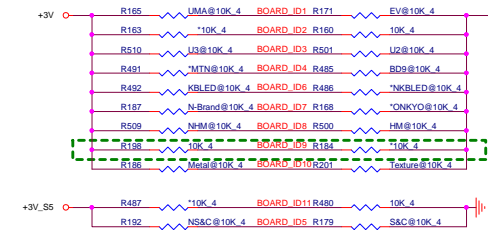
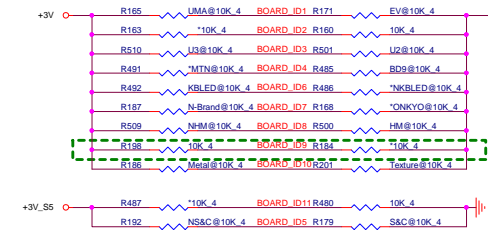
RevB 1221 Modify Board ID

RevC 0130 Change Board ID setting

Reserve PD

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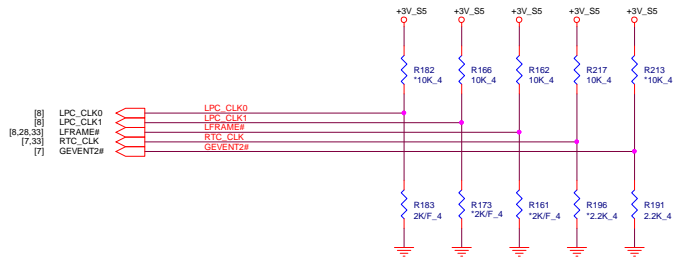
(7,27,32) BOARD\_ID[1:11]

RevC 0130 Change Board ID 9 for Harman-Kardon  
Stuff R198, Remove R184



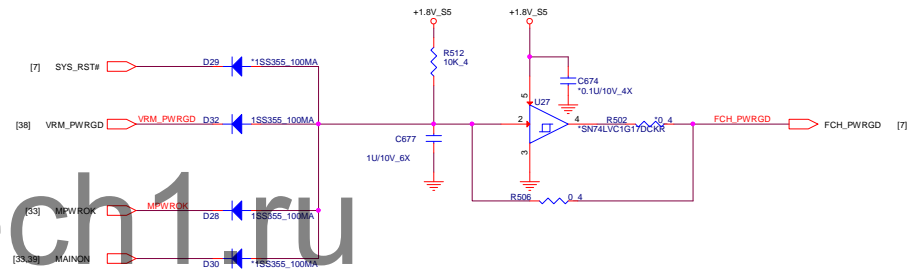
STRAPS PINS

09



REQUIRED STRAPS

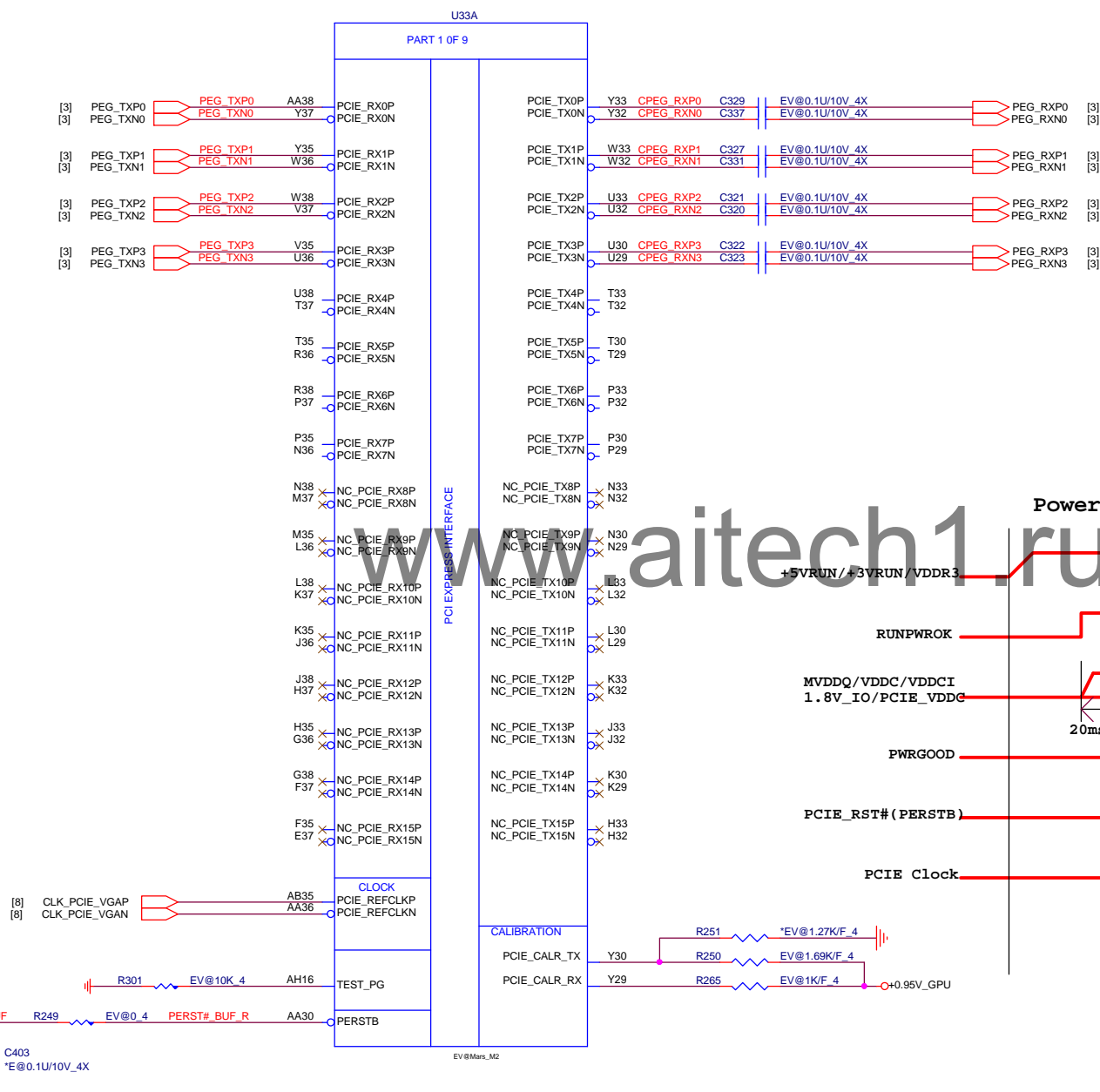
	LPC_CLK0	LPC_CLK1	LFRAME#	RTC_CLK	GEVENT2#
PULL HIGH	BOOT Fail Timer ENABLE	Internal CLKGEN ENABLE DEFAULT	SPI ROM DEFAULT	Normal Power Timing ENABLE DEFAULT	SPI Voltage 1.8V DEFAULT
PULL LOW	BOOT Fail Timer DISABLE DEFAULT	Internal CLKGEN DISABLE	LPC ROM	Normal Power Timing DISABLE	SPI Voltage 3.3V DEFAULT



PWRGD CIRCUIT







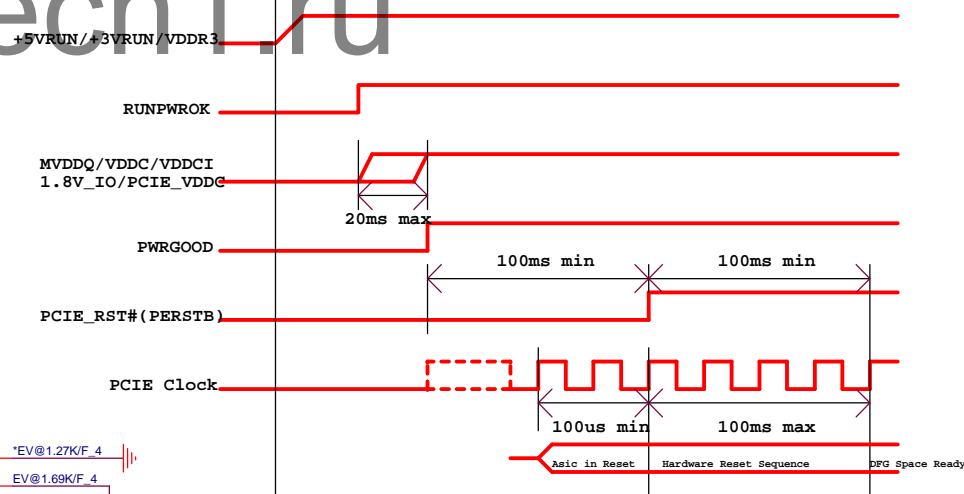
### Mars Power-on sequence

- 1 => +3V\_GPU
- 2 => +VDDC,+VDDCI,+1.5V\_GPU,+0.95V\_GPU
- 3 => +1.8V\_GPU

### PEG

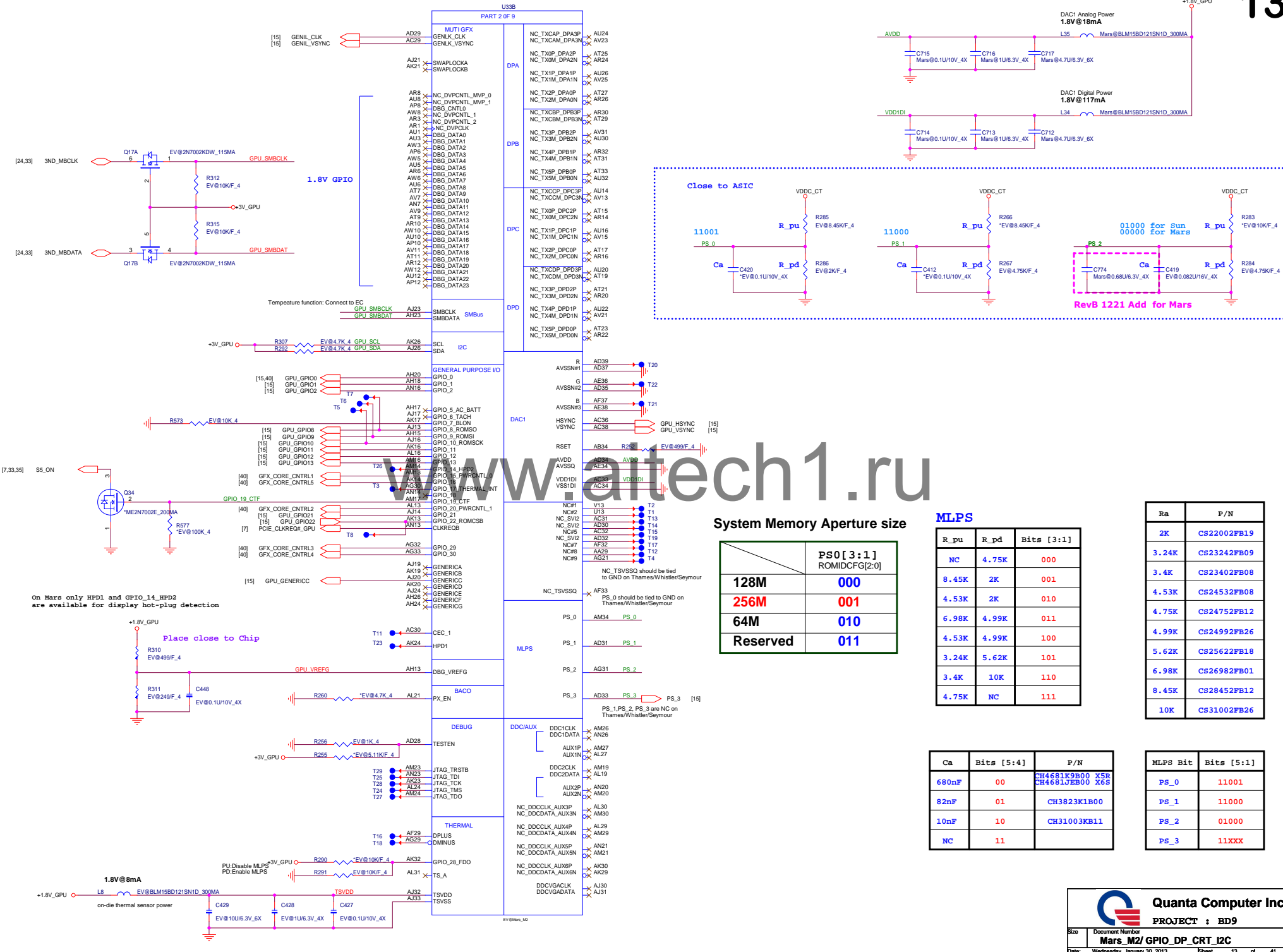
Intel platform: Lane0 ~ Lane15  
Brazos platform: Lane12 ~ Lane15  
Comal and Sabine platform: Lane8 ~ Lane15  
Richland and Kabini platform: Lane0 ~ Lane7

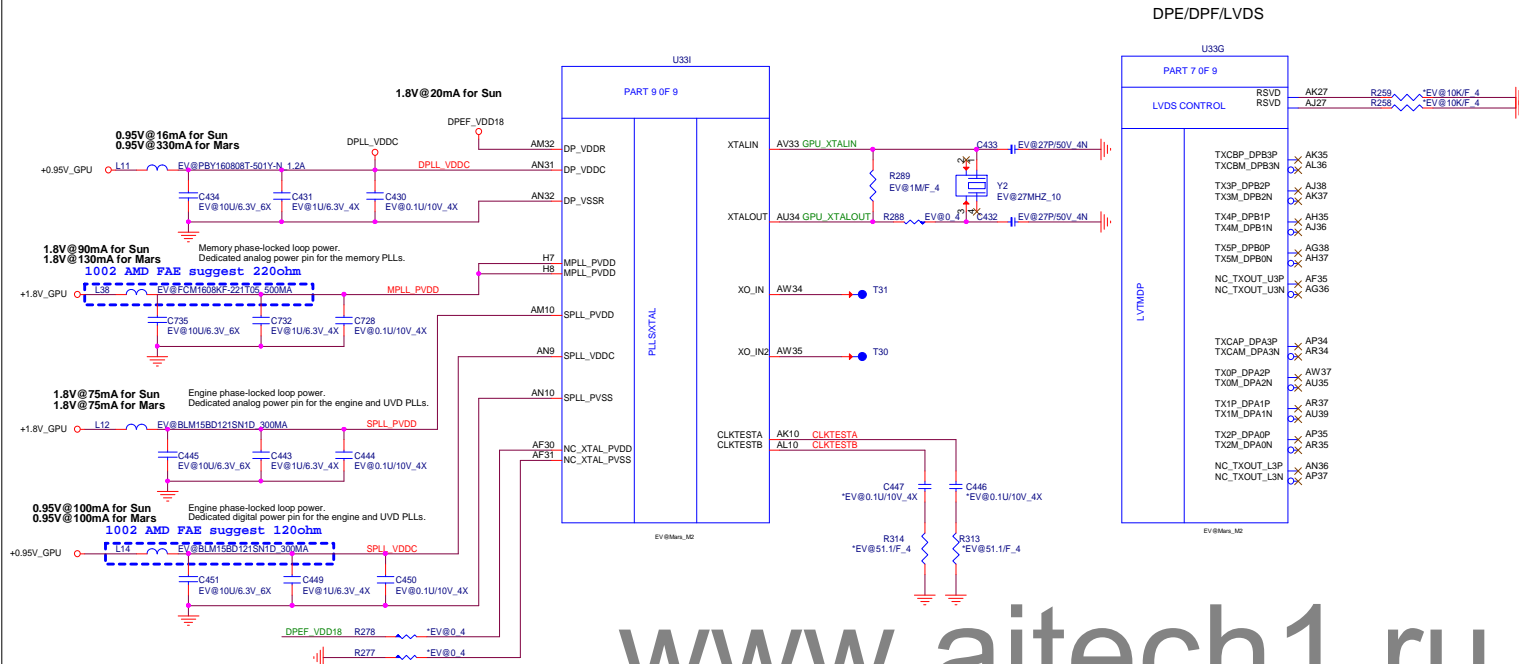
### Power Up Reset Sequence



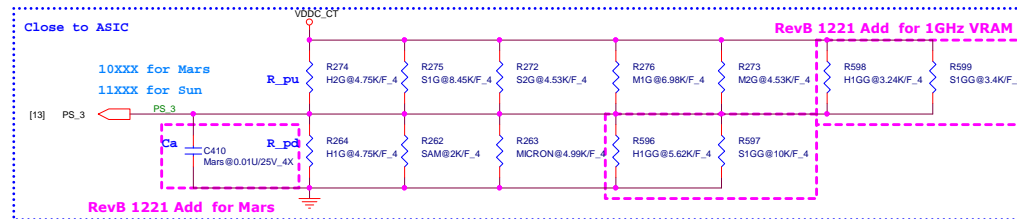
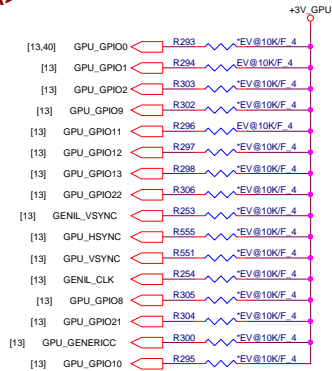
Quanta Computer Inc.  
PROJECT : BD9

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	Mars_M2/PEG*8	A1A
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## &lt;VGA&gt;



## MLPS

R_pu	R_pd	Bits [3:1]
NC	4.75K	000
8.45K	2K	001
4.53K	2K	010
6.98K	4.99K	011
4.53K	4.99K	100
3.24K	5.62K	101
3.4K	10K	110
4.75K	NC	111

Ca	Bits [5:4]	P/N
680nF	00	CH4651K9B00
82nF	01	CH3823K1B00
10nF	10	CH31003KB11
NC	11	

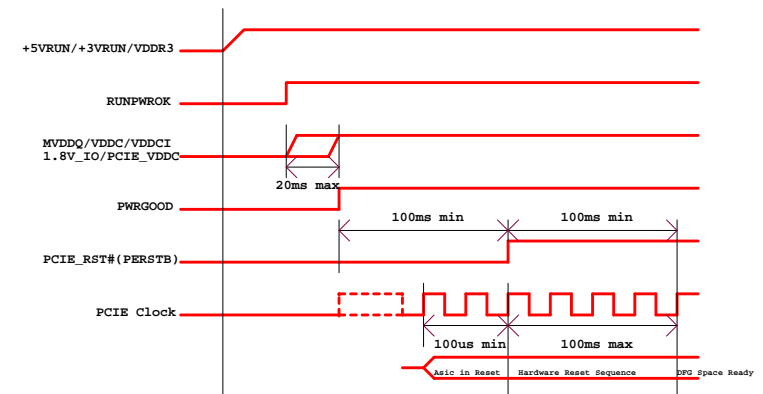
## DDR3 Memory TYPE

Ra	P/N
2K	CS22002FB19
3.24K	CS23242FB09
3.4K	CS23402FB08
4.53K	CS24532FB08
4.75K	CS24752FB12
4.99K	CS24992FB26
5.62K	CS25622FB18
6.98K	CS26982FB01
8.45K	CS28452FB12
10K	CS31002FB26

Vendor	Vendor P/N	B/S P/N (QC1 P/N)	Size	MLPS
Hynix	H5TQ2G63DFR-11C (128M*16)	AKD5MGWTW16 * 4	1GB	000
	H5TC4G63AFR-11C (256M*16)	AKD5PGWTW05 * 4	2GB	111
Micron	MT41J128M16JT-107G:K (128M*16)	AKD5DGSTL00 * 4	1GB	011
	MT41K256M16HA-107G:E (256M*16)	AKD5PGSTL00 * 4	2GB	100
Samsung	K4W2G1646E-BC11 (128M*16)		1GB	001
	K4W4G1646B-HC11 (256M*16)		2GB	010

CONFIGURATION STRAPS -- SEE EACH DATABASE FOR STRAP DETAILS ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOs ARE USED, THEY MUST NOT CONFLICT DURING RESET				Default Setting
STRAPS	MLPS	GPIO PIN	DESCRIPTION OF DEFAULT SETTINGS	
MLPS_DISABLE	NA	GPIO_28_FDO	Enable MLPS, NA for Thames/Whistler/Seymour 0: Enable MLPS, disable GPIO PINSTRAP 1: Disable MLPS, enable GPIO PINSTRAP	0
STRAP_TX_CFG_DRV_FULL_SWING	PS_1[4]		Control the transmitter full-half swing mode 0: 50% Tx output swing 1: Full Tx output swing	1
STRAP_TX_DEEMPH_EN	PS_1[5]		PCIe transmitter, de-emphasis enable 0: Tx de-emphasis disabled 1: Tx de-emphasis enabled	1
STRAP_BIF_GEN3_EN_A	PS_1[1]		PCIe GEN3 Capability 0: GEN3 not supported at power-on 1: GEN3 supported at power-on	0 for Kabini
STRAP_BIF_VGA_DIS	PS_2[4]		VGA disable determines whether or not the card will be recognized as the system's VGA controller (through the SUBCLASS field in the PCI configuration space) 0: VGA controller capacity enabled 1: The device will not be recognized as the system's VGA controller	0
ROM_CONFIG[2:0]	PS_0[3..1]		Serial ROM type or Memory Aperture Size Select  If GPIO22 = 0, defines memory aperture size If GPIO22 = 1, defines ROM type 100 - 512Kbit M25P05A (ST) 101 - 1Mbit M25P10A (ST) 101 - 2Mbit M25P20 (ST) 101 - 4Mbit M25P40 (ST) 101 - 8Mbit M25P80 (ST) 100 - 512Kbit Pm25LV512 (Chingis) 101 - 1Mbit Pm25LV010 (Chingis)	XXX
STRAP_BIOS_ROM_EN	PS_2[3]		Enable external BIOS ROM device 0: Disabled 1: Enabled	0
AUD[1] AUD[0]	NA NA	HSYNC VSYNC	00 - No audio function 01 - Audio for DP only 10 - Audio for DP and HDMI if dongle is detected 11 - Audio for both DP and HDMI HDMI must only be enabled on systems that are legally entitled. It is the responsibility of the system designer to ensure that the system is entitled to support this feature.	XX
N/A	PS_0[4]		Reserved for internal use only. Must be 1 at reset	1
N/A	PS_1[3]	GENLK_CLK	Reserved	0
STRAP_BIF_CLK_PM_EN	PS_1[2]	GPIO8	PCIe reference clock power management capability is reported in the PCI 0: The CLKREQ power management capability is disabled 1: The CLKREQ power management capability is enabled	0
RESERVED RESERVED	NA NA	GPIO21 GENERICC	Reserved Reserved (for Thames/Whistler/Seymour only)	0 0
AUD_PORT_CONN_PINSTRAP[2] AUD_PORT_CONN_PINSTRAP[1] AUD_PORT_CONN_PINSTRAP[0]	PS_3[5] PS_3[4] PS_0[5]	NA NA NA	STRAPS TO INDICATE THE NUMBER OF AUDIO CAPABLE DISPLAY OUTPUTS 111 = 0 usable endpoints 110 = 1 usable endpoints 101 = 2 usable endpoints 100 = 3 usable endpoints 011 = 4 usable endpoints 010 = 5 usable endpoints 001 = 6 usable endpoints 000 = all endpoints are usable	XXX

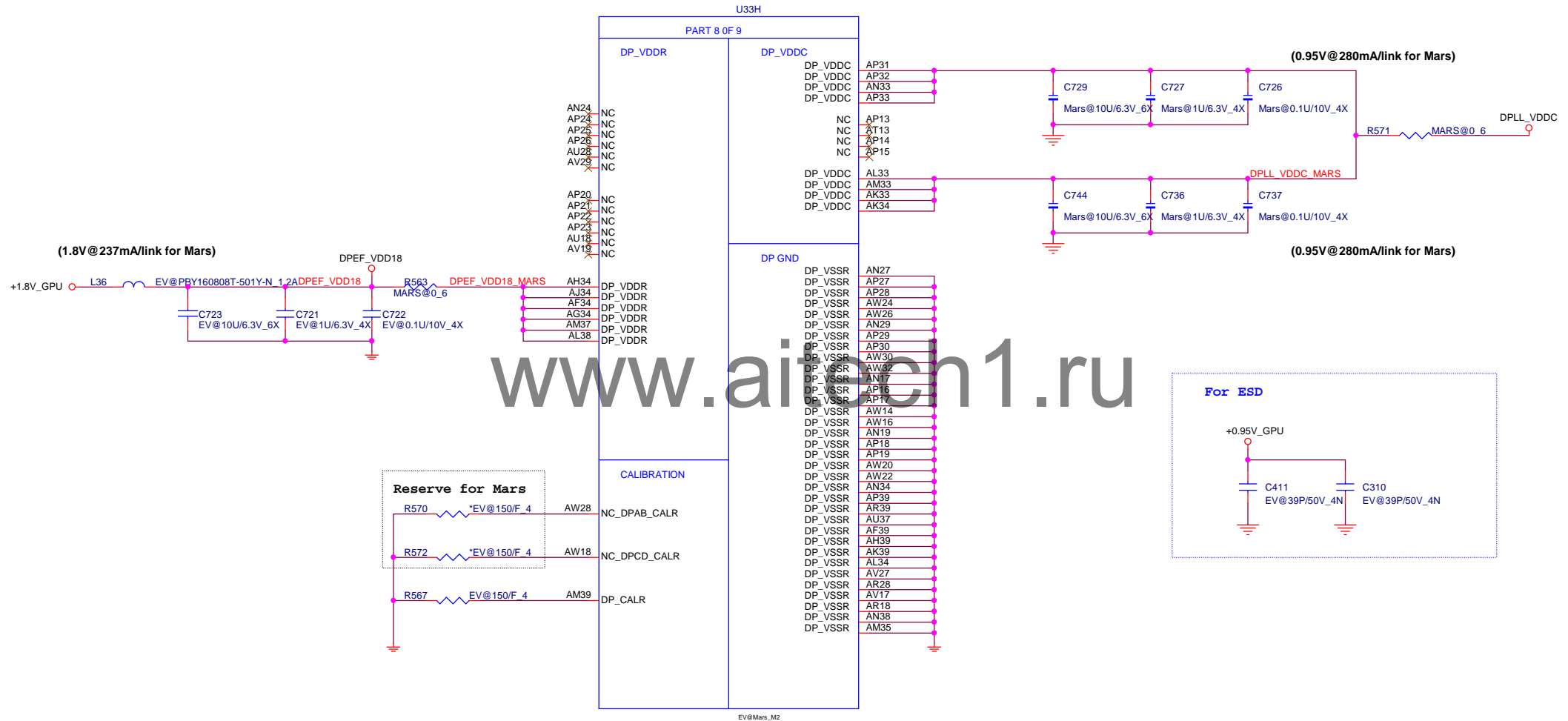
## Power Up Reset Sequence







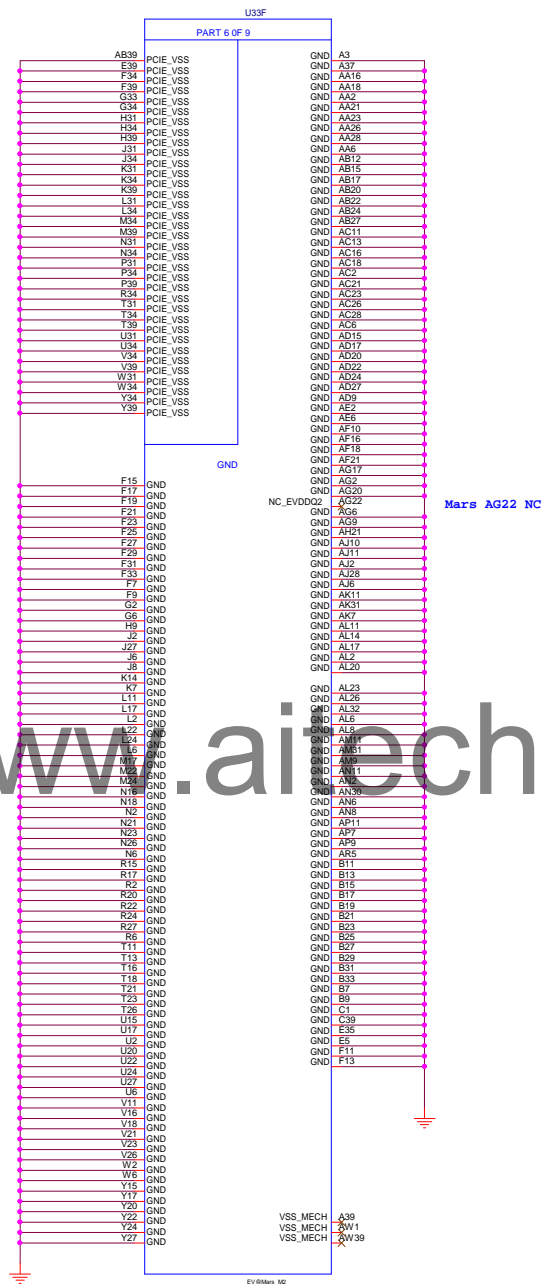
&lt;VGA&gt;



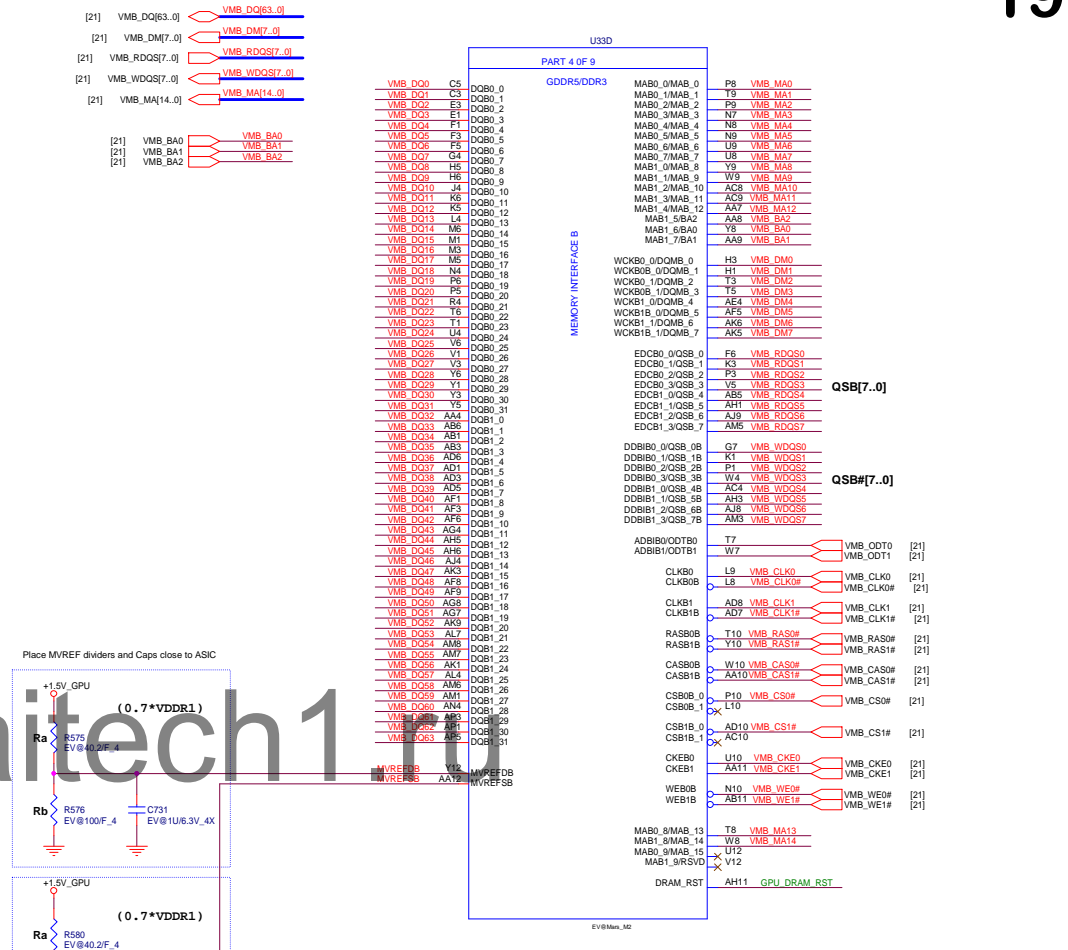
Quanta Computer Inc.

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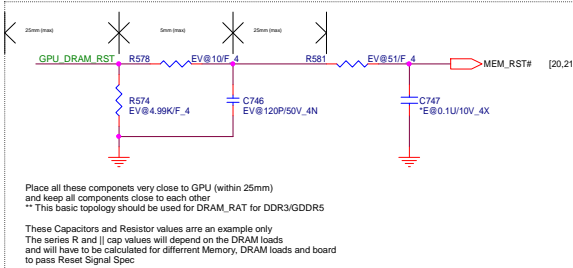
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	Mars_M2/ DP_Powers	A1A
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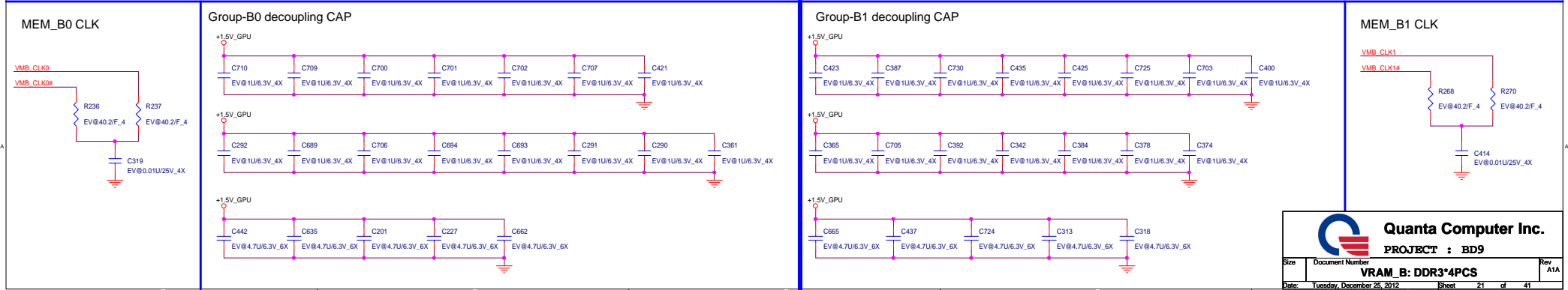
Ball Name	Thames	Seymour	Mars
MEM_CALRNO	243R	X	X
MEM_CALRNI	X	243R	X
MEM_CALRN2	243R	X	X
MEM_CALRP0	243R	X	120R
MEM_CALRP1	X	243R	X
MEM_CALRP2	243R	X	X

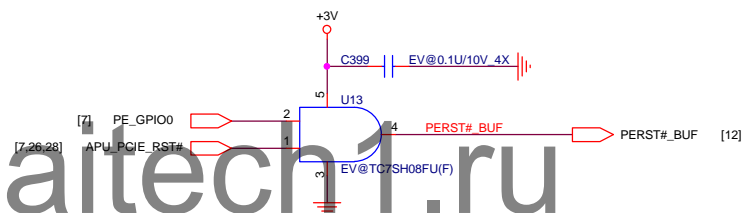






BOT Up







<USB> <U3B>



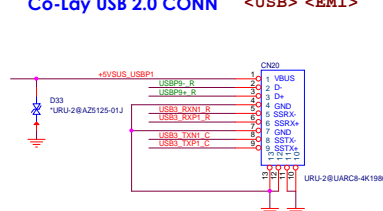
	Charger , AM
	Charger , FM
	USB , PM
	USB , CM

	Charger ,
	Charger ,
	USB , PM
	USB , CM


Right-Up Side  
USB3.0/USB2.0 Co-layer  
CN19

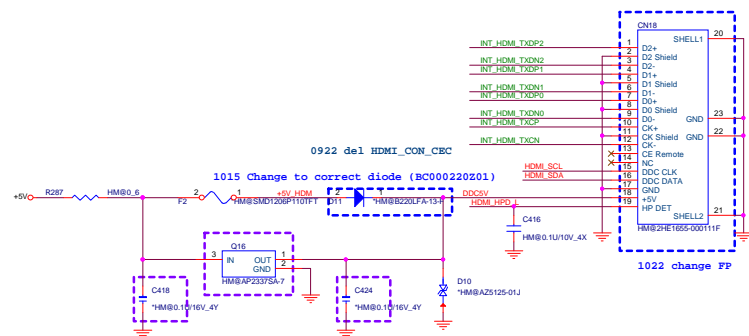


	Co-Lay USB 2.0 CONN	<USB>	<EMI>
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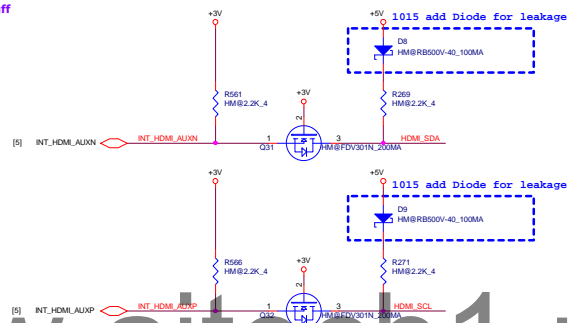
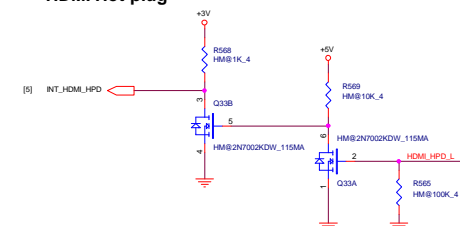




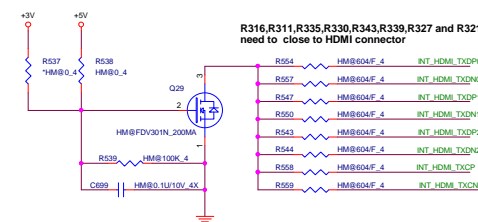
 <b>Quanta Computer Inc.</b> <b>PROJECT : BD9</b>		
Size	Document Number	Rev
	<b>TRAVIS RTD2136R</b>	A1A
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## HDMI Hot-plug

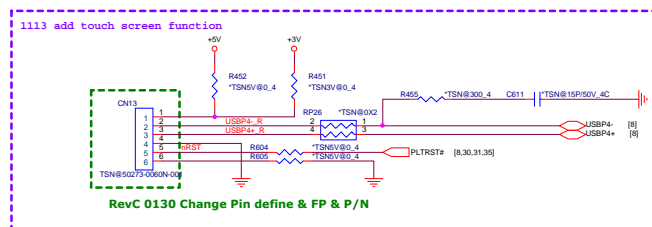


R316,R311,R335,R330,R343,R339,R327 and R321  
need to close to HDMI connector



Timing diagram for the SPI interface. The diagram shows the relationship between the chip select (CS), the serial clock (SCL), and the data bus (D[7:0]). The chip select is active-low. The data bus shows the transfer of 8 bits of data. The diagram is labeled with 'www.aitech1.ru'.

Touch Screen <TSN>

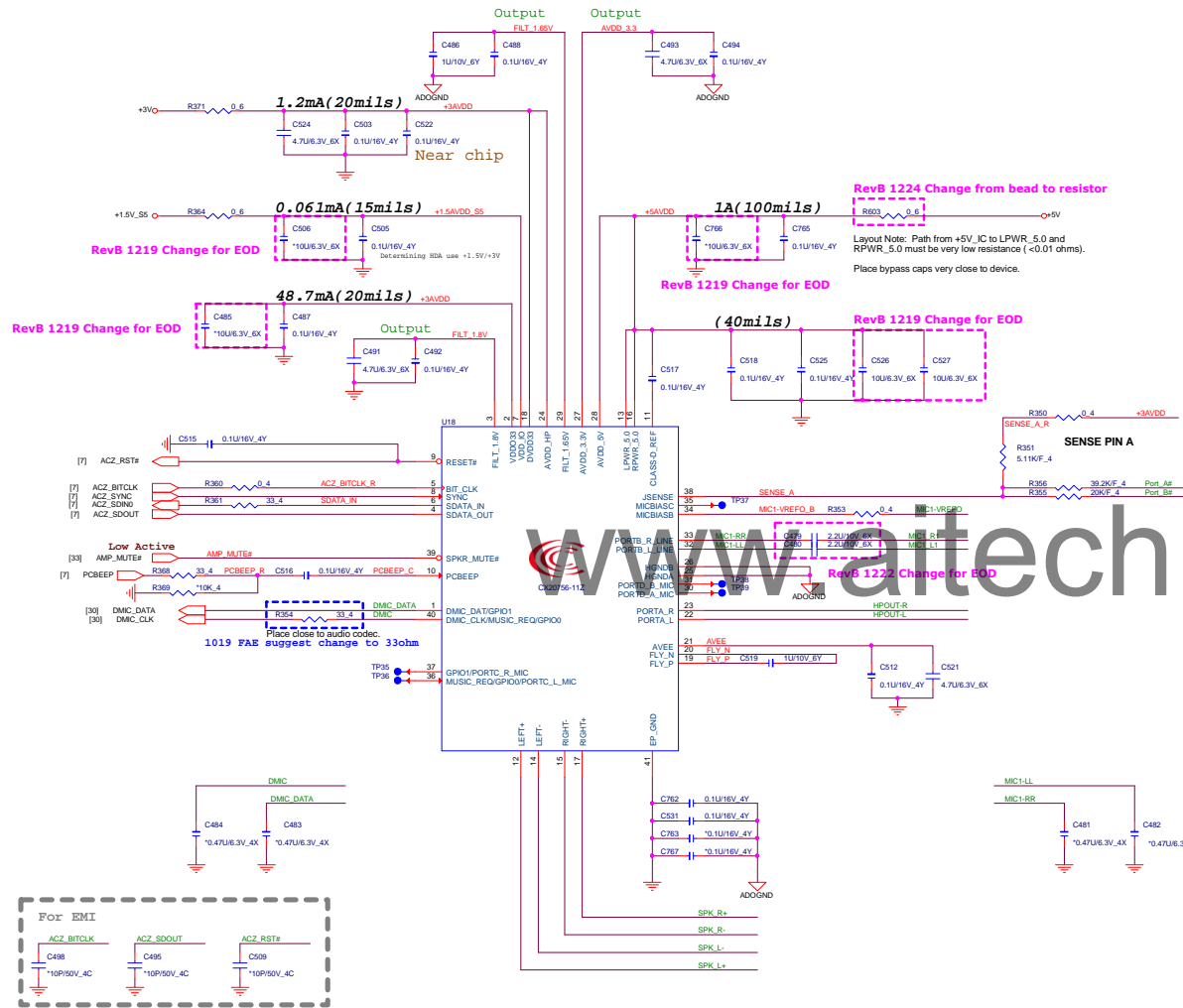


**RevB 1220 Co-lay L41 & RP26 for EMI**

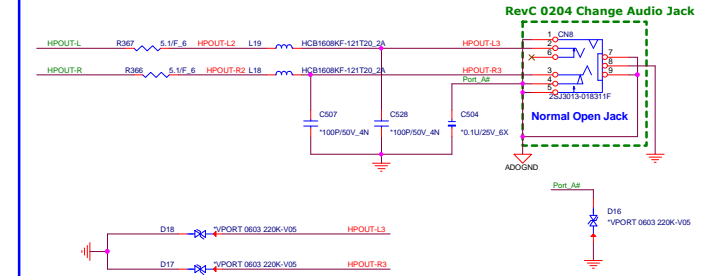




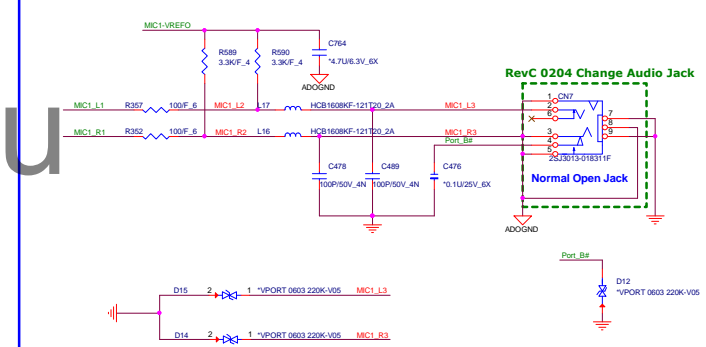
**Codec (CX20756-11Z)** <ADO> <EMI>



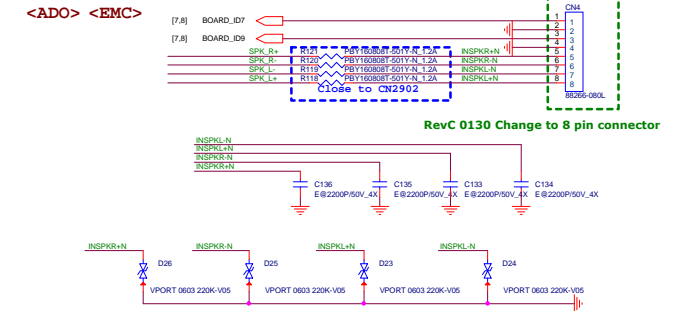
HP <ADO> <EMC>

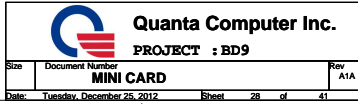


**External MIC** <ADO> <EMC>

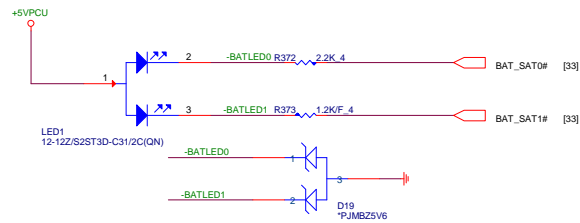


## Internal Speaker

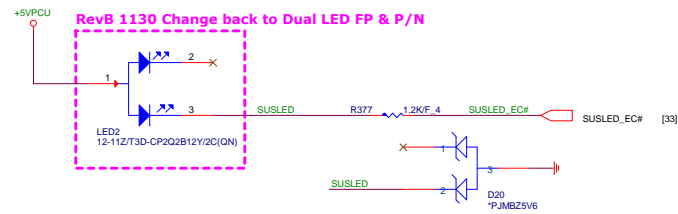




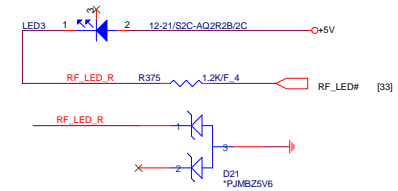
## BATTERY



## POWER

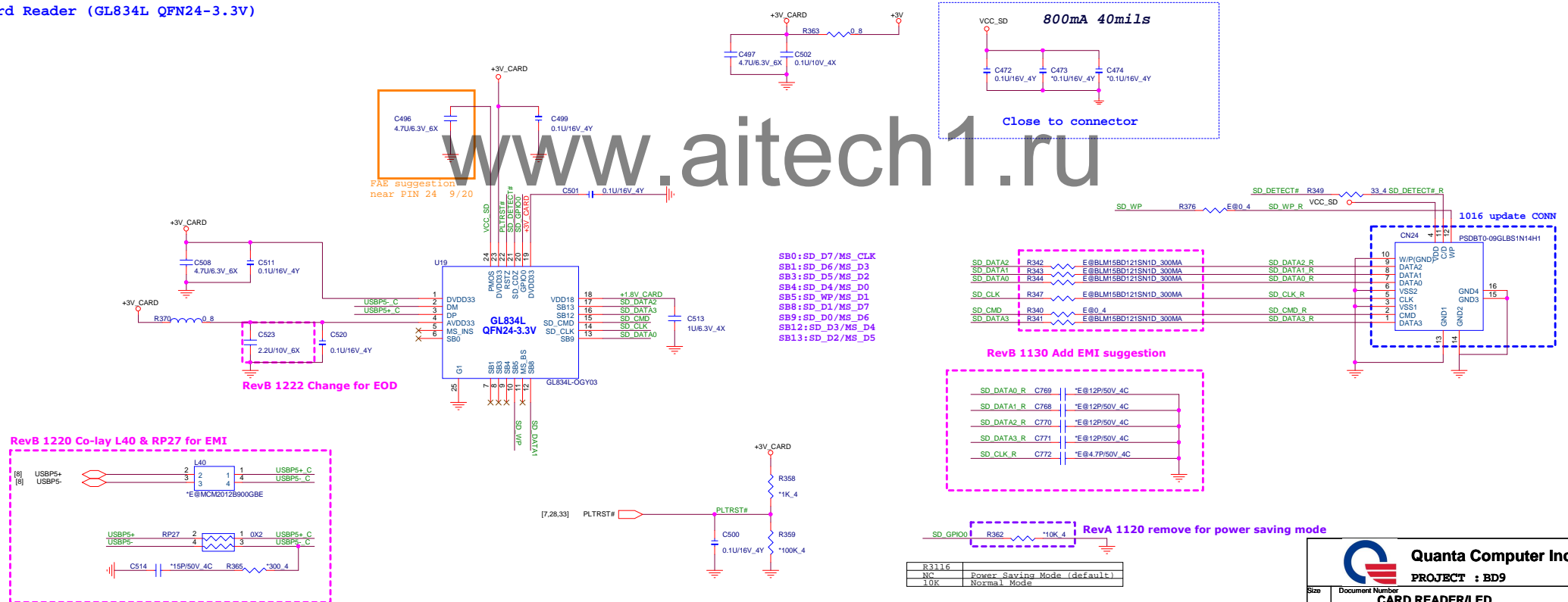


## RF LED



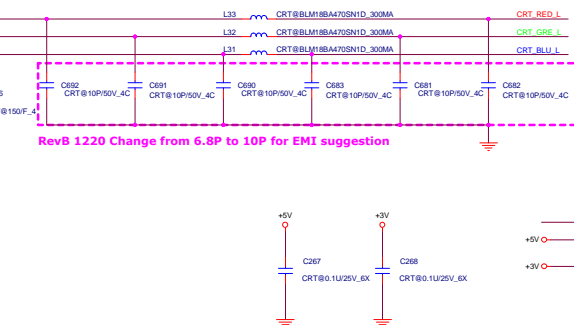
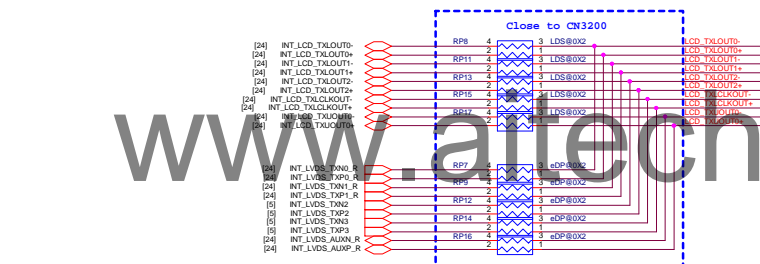
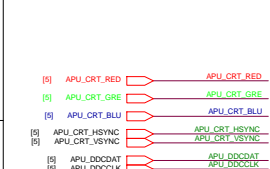
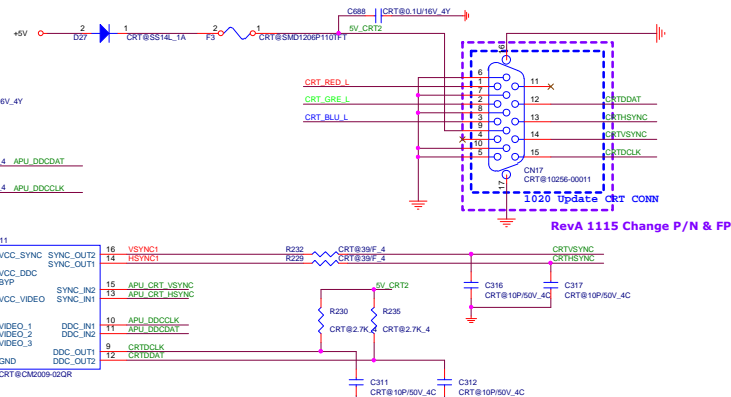
## 2 IN 1 CARD READER (Type: MS/SD) &lt;MMC&gt;

Card Reader (GL834L QFN24-3.3V)

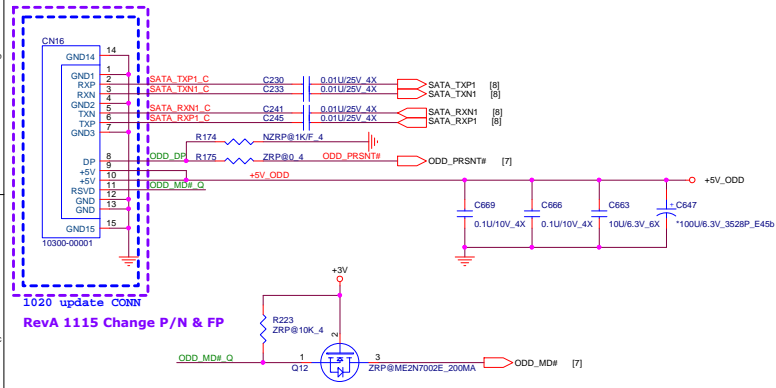




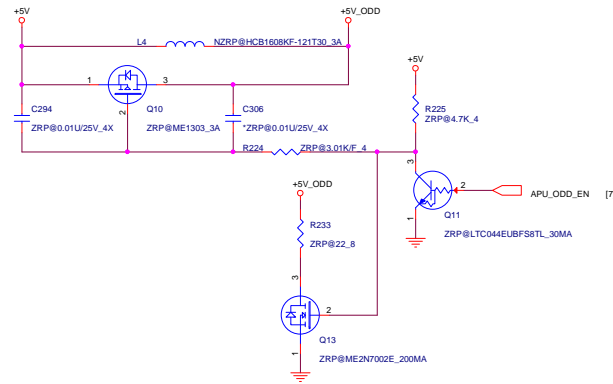
CRT [CRT]

[illegible]

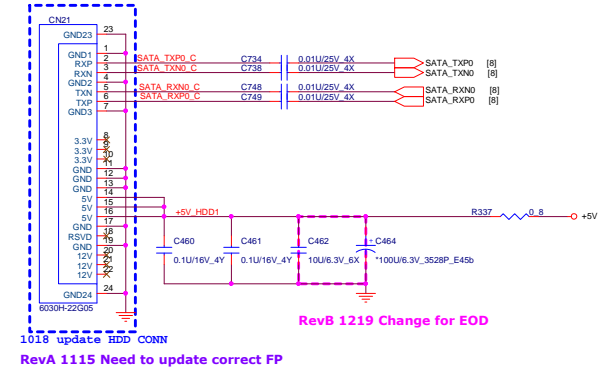
### SATA ODD [ODD]



### ODD Zero power <OZP>



### SATA HDD [HDD]



### 3D-LDO Power <GSR>

### 3D-u-micro P <GSR>

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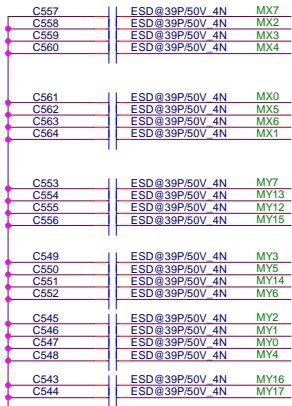
### 3D-SMBus <GSR>

### 3D-Sensor IC <GSR>

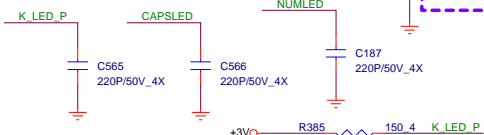
# KEY BOARD Connector <KBC> <EMI>

# TOUCH PAD BOARD <TPD> <EMI>

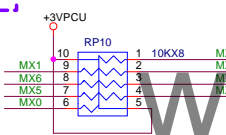
## INT KeyBoard



## ESD Issue



## RevA 1115 Change P/N

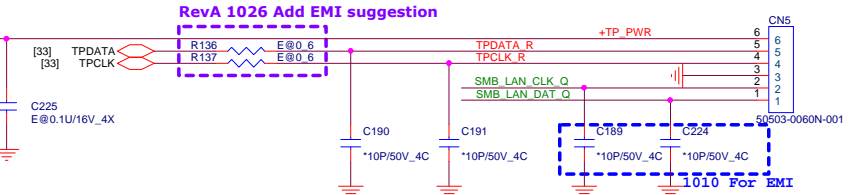


ID_Detect	default
Metal	+3.3V
TEXTURE	+5V

## BOM option

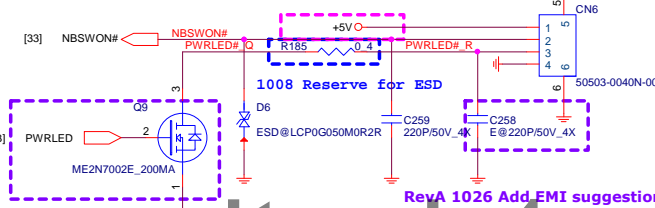


## RevA 1026 Add EMI suggestion



## Power Board (UIF) <PSW>

### RevB 1204 Change power rail from +5VPCU to +5V

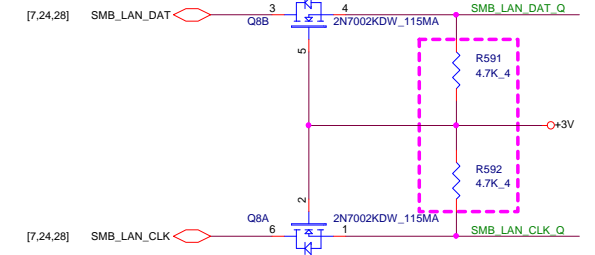


### RevA 1114 Add Q3402 for PWRLED

### RevA 1026 Add EMI suggestion

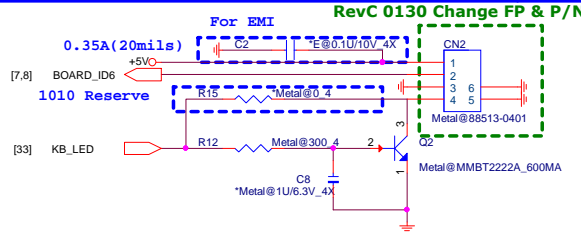
## TP board <TPD>

### RevB 1130 Add 4.7K PU



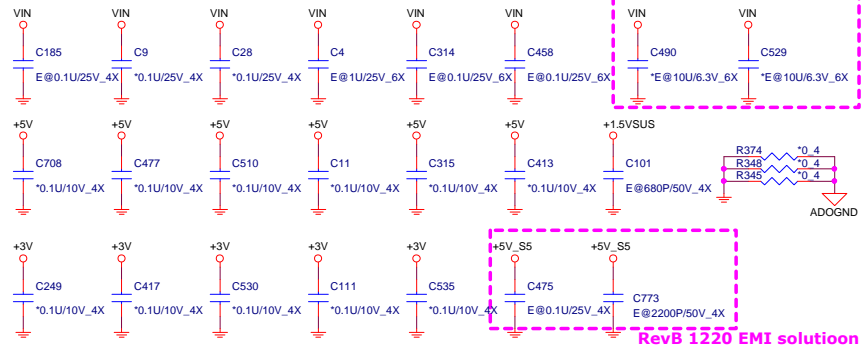
## KEY BOARD LED

### <KBP> <EMI>



### RevC 0130 Change FP & P/N

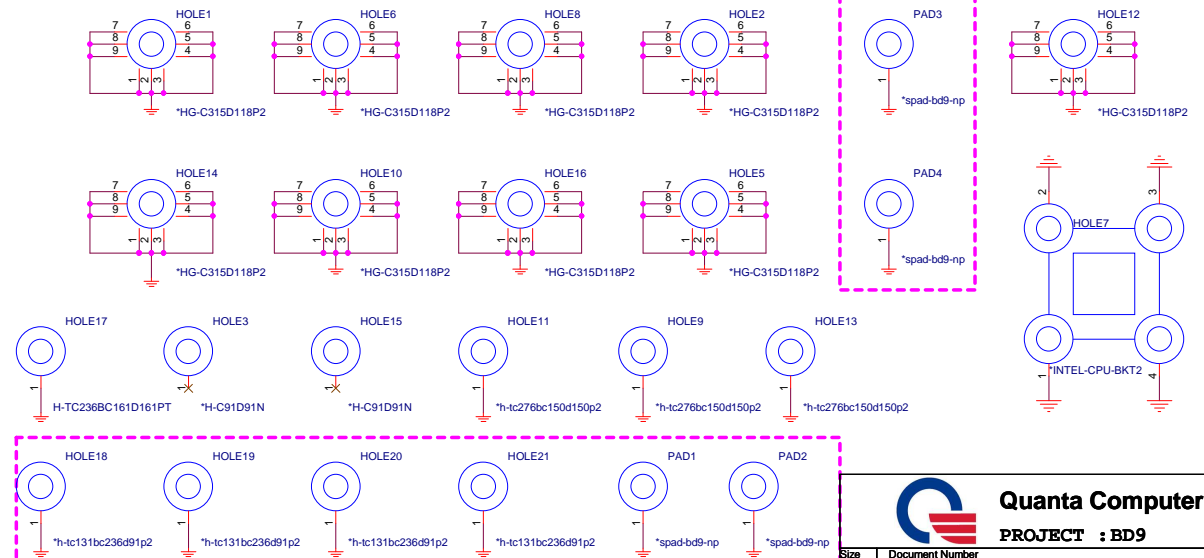
## EMI PAD <EMI>



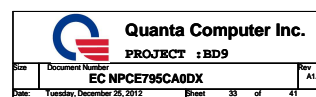
### RevB 1219 Change for EOD

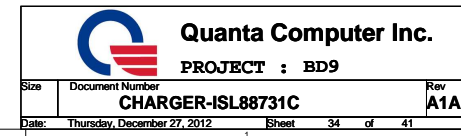
### RevB 1220 EMI solution

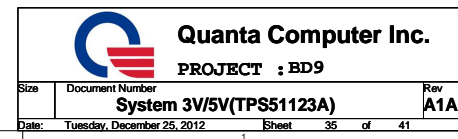
## HOLE <OTH>

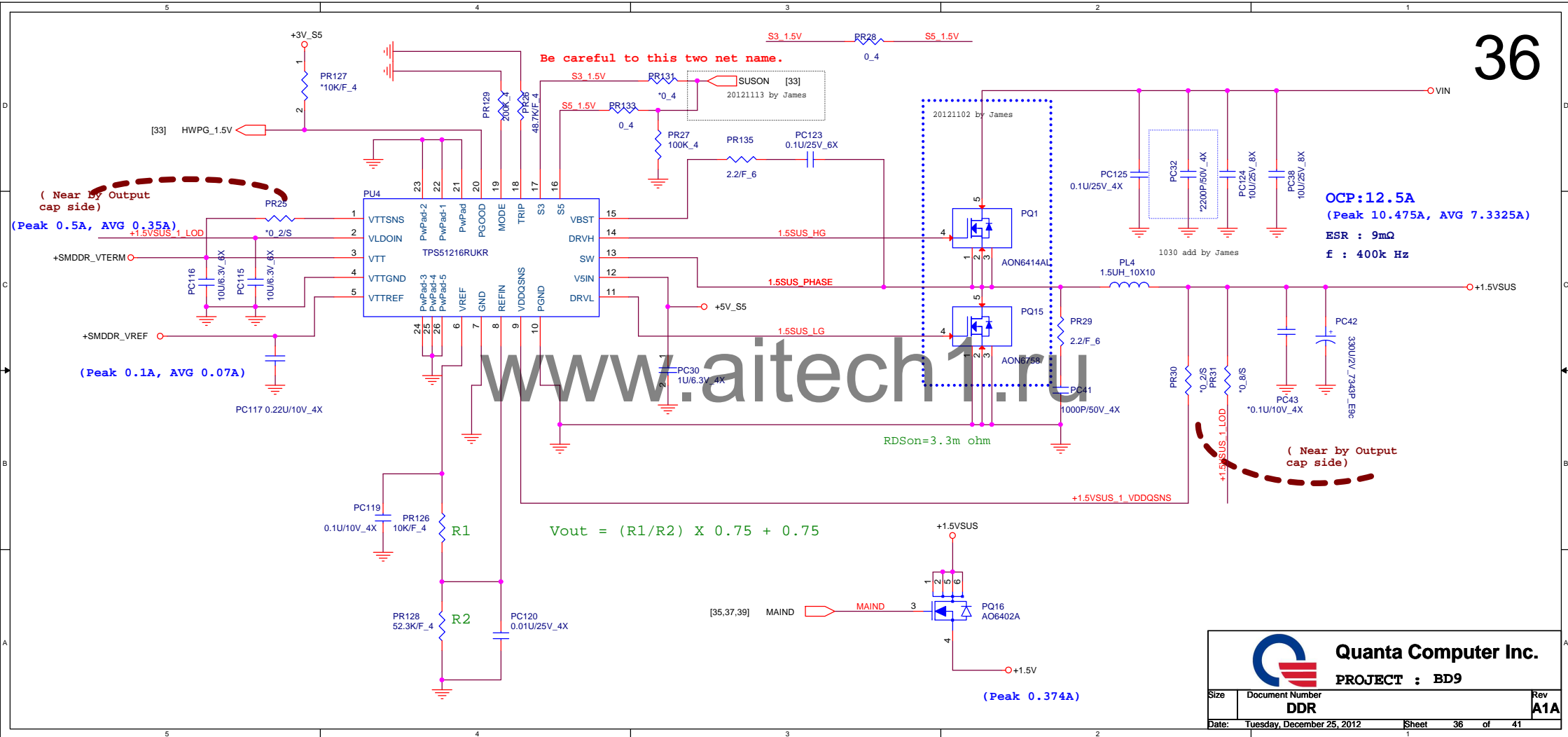


### RevB 1224 Remove Hole & Add PAD for ME







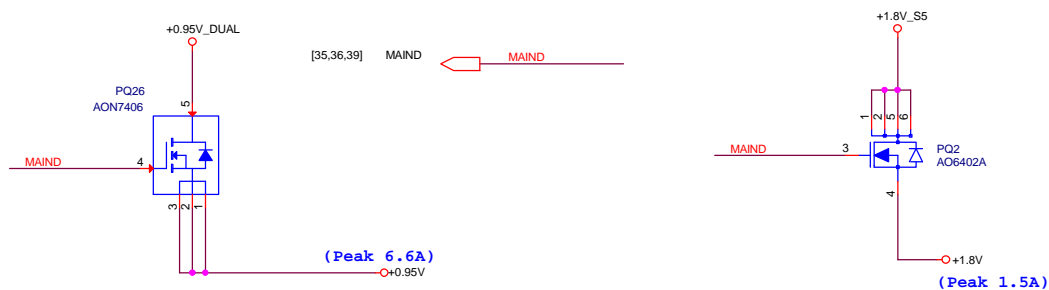
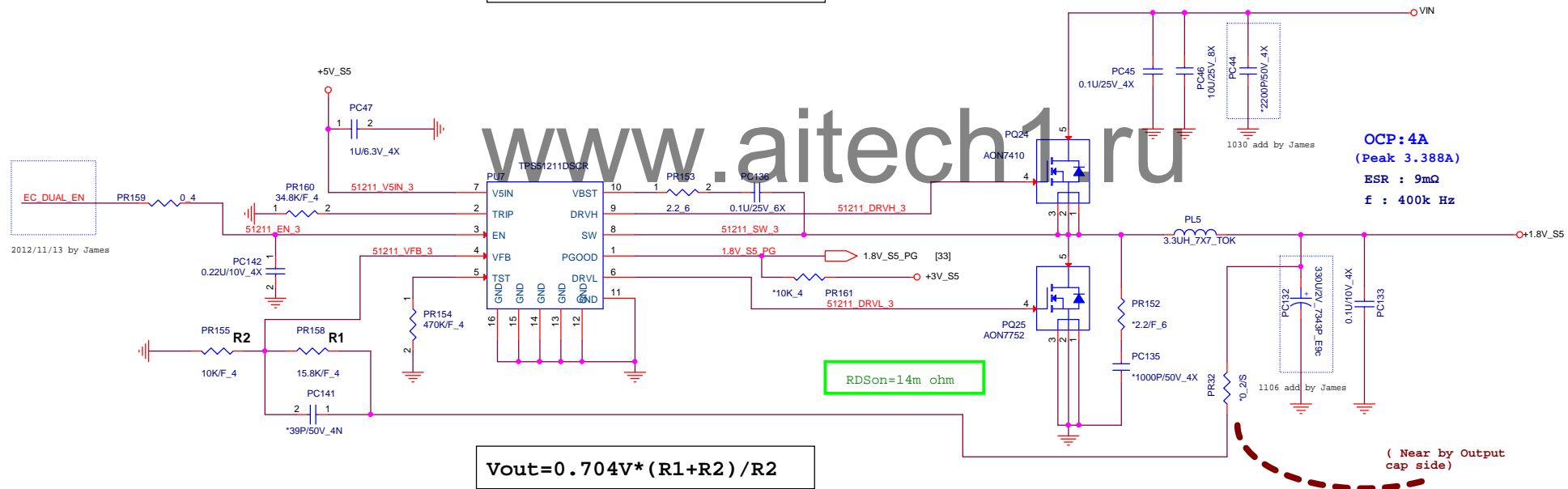
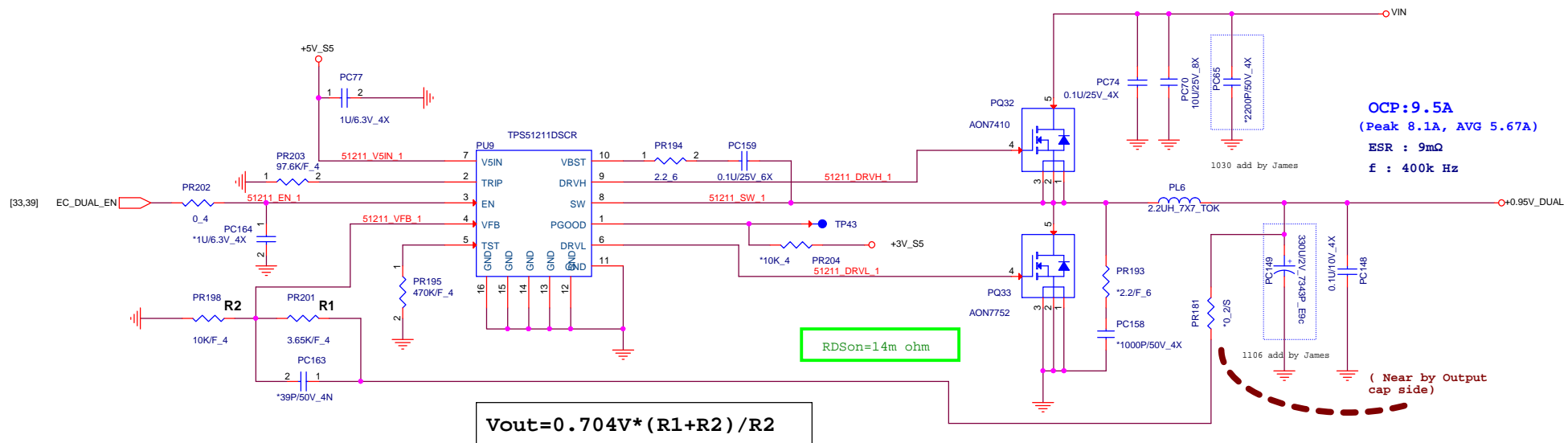


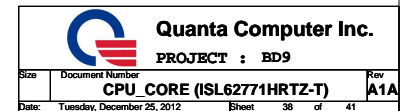
Quanta Computer Inc.

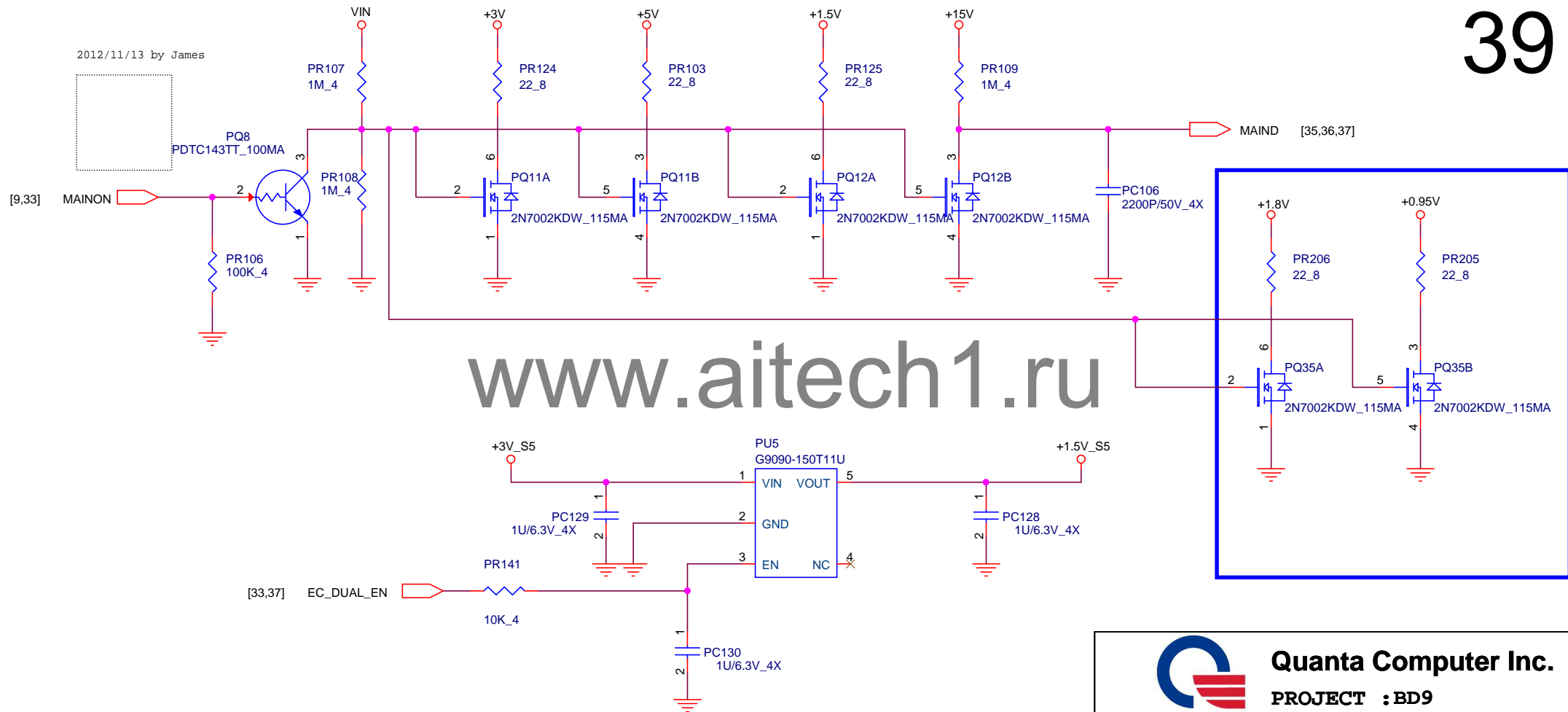
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	Discharge	A1A

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VDDC(V)	GFX_CORE_CNTRL5 (VID5)	GFX_CORE_CNTRL4 (VID4)	GFX_CORE_CNTRL3 (VID3)	GFX_CORE_CNTRL2 (VID2)	GFX_CORE_CNTRL1 (VID1)
1.175	0	1	1	0	1
1.150	0	1	1	1	0
1.125	0	1	1	1	1
1.100	1	0	0	0	0
1.075	1	0	0	0	1
1.050	1	0	0	1	0
1.025	1	0	0	1	1
1.000	1	0	1	0	0
0.975	1	0	1	0	1
0.950	1	0	1	1	0
0.925	1	0	1	1	1
0.900	1	1	0	0	0
0.875	1	1	0	0	1
0.850	1	1	0	1	0
0.825	1	1	0	1	1
0.800	1	1	1	0	0
0.775	1	1	1	0	1

