

Z50-HR(S204-SC) Schematics Document
Sandy Bridge
Intel PCH
2011-02-14
REV :-1

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N12M GS2 HYN1GB

緯創資通 **Wistron Corporation**
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Title

Cover Page

Size
A3

Document Number

Z50-HR { Huron River Platform}

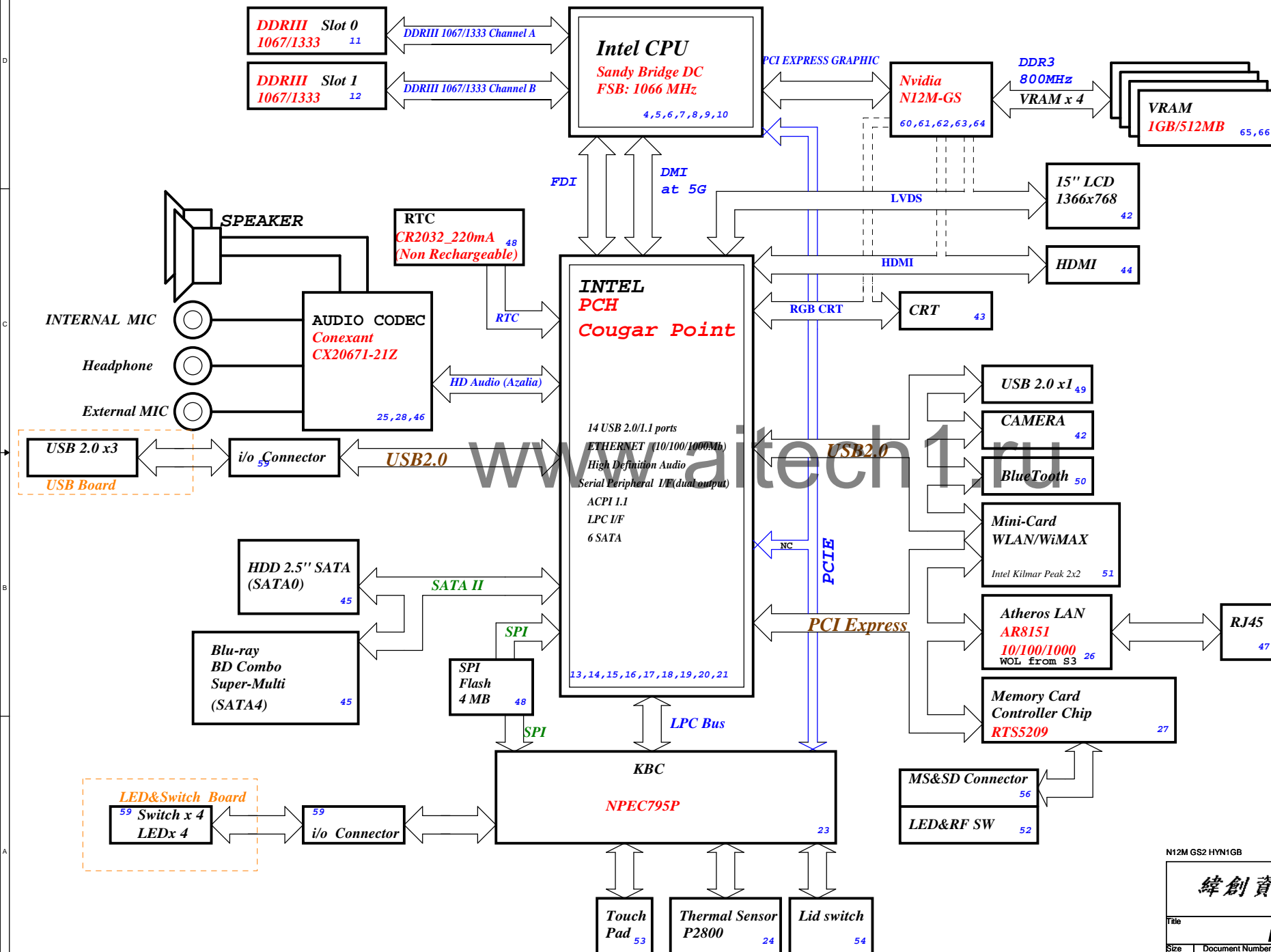
Rev

-1

Date: Wednesday, March 02, 2011

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Z50-HR Block Diagram



CPU DC/DC	
ISL95831 35,36,37	
INPUTS	OUTPUTS
DCBATOUT	VCC_CORE
SYSTEM DC/DC	
TPS51218D 38	
INPUTS	OUTPUTS
DCBATOUT	1D05V_VTT
SYSTEM DC/DC	
RT8223 34	
INPUTS	OUTPUTS
DCBATOUT	5V_AUX_S5 3D3V_AUX_S5 5V_S5 3D3V_S5
SYSTEM DC/DC	
RT8207 39	
INPUTS	OUTPUTS
DCBATOUT	1D5V_S3 0D75V_S0 DDR_VREF_S3
SYSTEM DC/DC	
ISL95831HRTZ 37	
INPUTS	OUTPUTS
DCBATOUT	VCC_GFXCORE
VGA	
RT8208A 67	
INPUTS	OUTPUTS
DCBATOUT	VGA_CORE
TI CHARGER	
BQ24725 33	
INPUTS	OUTPUTS
+DC_IN_S5 +PBATT	DCBATOUT
SYSTEM DC/DC	
RT9025 40	
INPUTS	OUTPUTS
3D3V_S0	1D8V_S0
SYSTEM DC/DC	
APL5916KAI-TRL-GP 41	
INPUTS	OUTPUTS
3D3V_S0	0D85V_S0
Switches	
29	
INPUTS	OUTPUTS
1D5V_S3 5V_S5 3D3V_S5	1D5V_S0 5V_S0 3D3V_S0
PCB LAYER	
L1:Top L4:Signal L2:VCC L5:GND L3:Signal L6:Bottom	

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Title			
Block Diagram			
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Name	Schematics Notes
SPKR	Reboot option at power-up Default Mode: Internal weak Pull-down. No Reboot Mode with TCO Disabled: Connect to Vcc3_3 with 8.2-kΩ - 10-kΩ weak pull-up resistor.
INIT3_3V#	Weak internal pull-up. Leave as "No Connect".
GNT3#/GPIO55 GNT2#/GPIO53 GNT1#/GPIO51	GNT[3:0]# functionality is not available on Mobile. Mobile: Used as GPIO only Pull-up resistors are not required on these signals. If pull-ups are used, they should be tied to the Vcc3_3power rail.
SPI_MOSI	Enable Danbury: Connect to Vcc3_3 with 8.2-k? weak pull-up resistor. Disable Danbury: Left floating, no pull-down required.
NV_ALE	Enable Danbury: Connect to +NVRAM_VCCQ with 8.2-kohm weak pull-up resistor [CRB has it pulled up with 1-kohm no-stuff resistor] Disable Danbury: Leave floating (internal pull-down)
NC_CLE	DMI termination voltage. Weak internal pull-up. Do not pull low.
HAD_DOCK_EN# /GPIO[33]	Low (0) - Flash Descriptor Security will be overridden. Also, when this signals is sampled on the rising edge of PWROK then it will also disable Intel ME and its features. High (1) - Security measure defined in the Flash Descriptor will be enabled. Platform design should provide appropriate pull-up or pull-down depending on the desired settings. If a jumper option is used to tie this signal to GND as required by the functional strap, the signal should be pulled low through a weak pull-down in order to avoid asserting HDA_DOCK_EN# inadvertently. Note: CRB recommends 1-kohm pull-down for FD Override. There is an internal pull-up of 20 kohm for DA_DOCK_EN# which is only enabled at boot/reset for strapping functions.
HDA_SDO	Weak internal pull-down. Do not pull high. Sampled at rising edge of RSMRST#.
HDA_SYNC	Weak internal pull-down. Do not pull high. Sampled at rising edge of RSMRST#.
GPIO15	Low (1) - Intel ME Crypto Transport Layer Security (TLS) cipher suite with no confidentiality High (1) - Intel ME Crypto Transport Layer Security (TLS) cipher suite with confidentiality Note : This is an un-muxed signal. This signal has a weak internal pull-down of 20 kohm which is enabled when PWROK is low. Sampled at rising edge of RSMRST#. CRB has a 1-kohm pull-up on this signal to +3.3VA rail.
GPIO8	GPIO8 on PCH is the Integrated Clock Enable strap and is required to be pulled-down using a 1k +/- 5% resistor. When this signal is sampled high at the rising edge of RSMRST#, Integrated Clocking is enabled, When sampled low, Buffer Through Mode is enabled.
GPIO27	Default = Do not connect (floating) High(1) = Enables the internal VccVRM to have a clean supply for analog rails. No need to use on-board filter circuit. Low (0) = Disables the VccVRM. Need to use on-board filter circuits for analog rails.

PCIE Routing

LANE1	Mini Card1(WLAN)
LANE2	Card Reader
LANE3	N/A
LANE4	GIGA LAN
LANE5	N/A
LANE6	N/A
LANE7	N/A
LANE8	N/A

SATA Table

SATA	
Pair	Device
0	HDD1
1	N/A
2	N/A
3	N/A
4	ODD
5	N/A

USB Table

Pair	Device	
0	USB Ext. port 2	OC#0
1	USB Ext. port 1	OC#1
2	USB Ext. port 4	OC#2
3		
4	USB Ext. port 3	OC#3
5	X	
6	X	
7	X	
8	X	
9	CAMERA	OC#5
10	X	
11	X	
12	Mini Card1 (WLAN)	
13	BLUETOOTH	

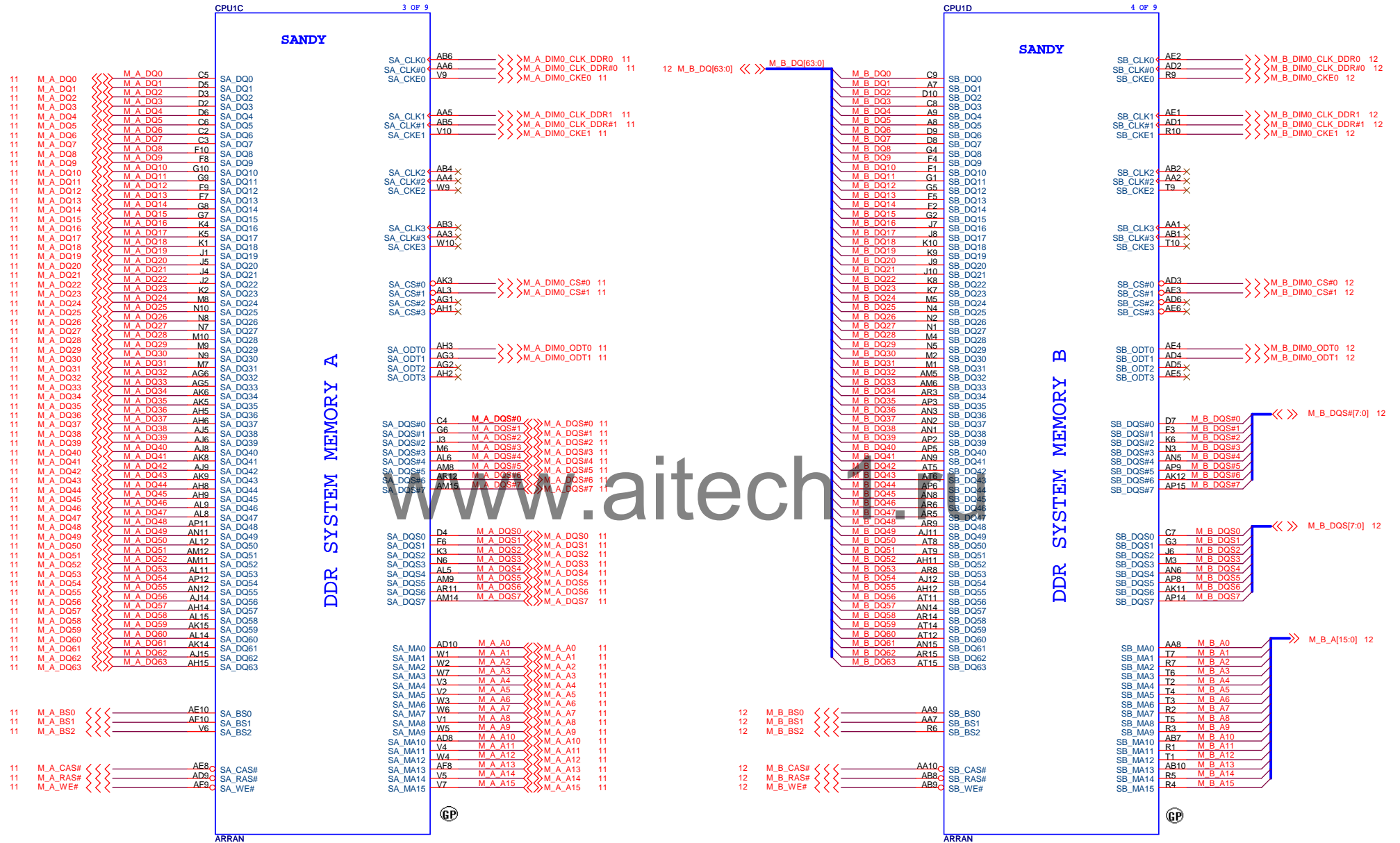
Pin Name	Strap Description	Configuration (Default value for each bit is 1 unless specified otherwise)	Default Value
CFG[2]	PCI-Express Static Lane Reversal	1: Normal Operation. 0: Lane Numbers Reversed 15 -> 0, 14 -> 1, ...	1
CFG[4]		Disabled - No Physical Display Port attached to 1: Embedded DisplayPort. Enabled - An external Display Port device is 0: connectd to the EMBEDDED display Port	0
CFG[6:5]	PCI-Express Port Bifurcation Straps	11 : x16 - Device 1 functions 1 and 2 disabled 10 : x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01 : Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00 : x8, x4, x4 - Device 1 functions 1 and 2 enabled	11
CFG[7]	PEG DEFER TRAINING	1: PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training	1

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Table			
Table of Content			
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SSID = CPU

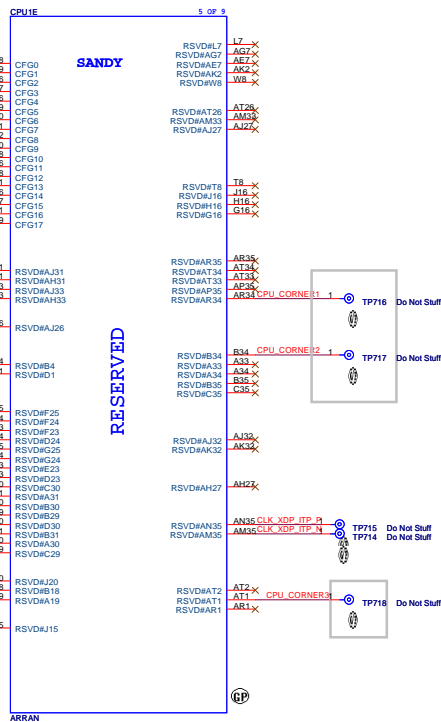
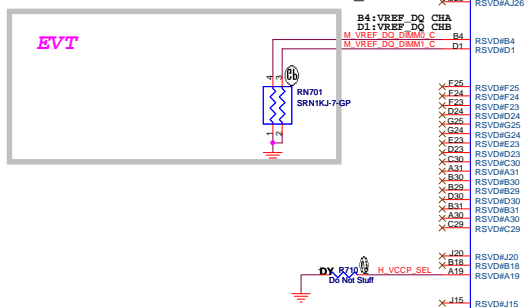


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Title		CPU (DDR)	
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M3 - Processor Generated SO-DIMM VREF_DQ



PEG Static Lane Reversal	
CFG0	Connect a series 1K ohm resistor on the critical CFG0 trace in a manner which does not introduce any stubs to CFG0 trace. Route as needed from the opposite side of this series isolation resistor to the debug port. ITP will drive the net to GND.

PEG Static Lane Reversal	
CFG2	1: Normal Operation: Lane # definition matches socket pin map definition 0: Lane Reversed

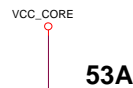
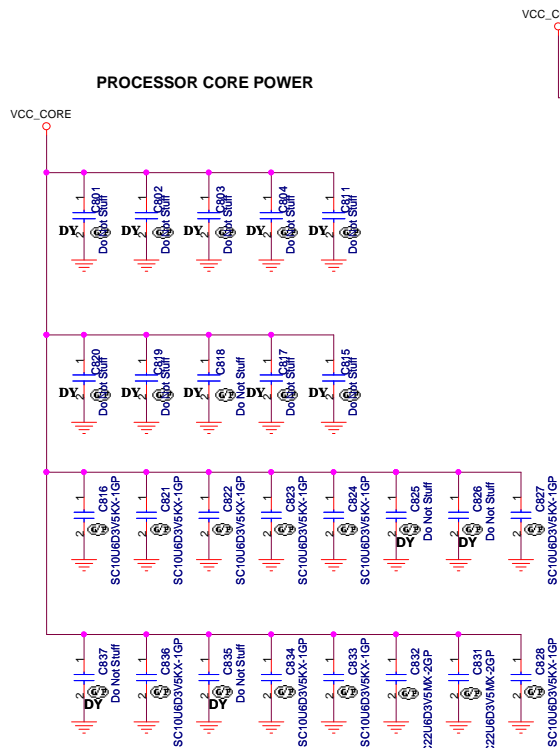
Display Port Presence Strap	
CFG4	1: Disabled: No Physical Display Port attached to Embedded Display Port Can Float on Processor if eDP interface is disabled 0: Enabled: An external Display Port device is connected to the Embedded Display Port

PCIe Port Bifurcation Straps	
CFG6	1: x16 - Device 1 functions 1 and 2 disabled 0: x8, x8 - Device 1 function 1 enabled ; function 2 disabled 0: Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00: x8, x4, x4 - Device 1 functions 1 and 2 enabled

PEG DEFER TRAINING	
CFG7	1: PEG Train immediately following xRESETB de assertion 0: PEG Wait for BIOS for training

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SSID = CPU



POWER

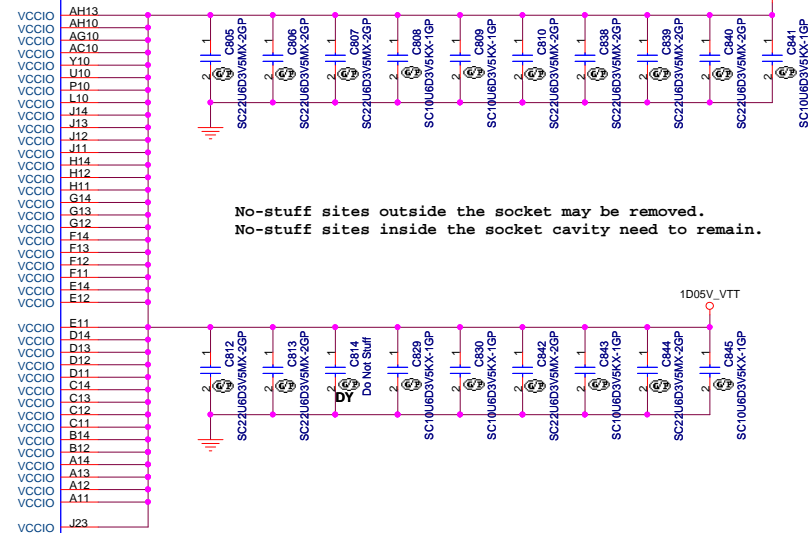
SANDY

PEG AND DDR

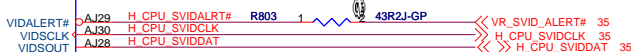
CORE SUPPLY

SVID

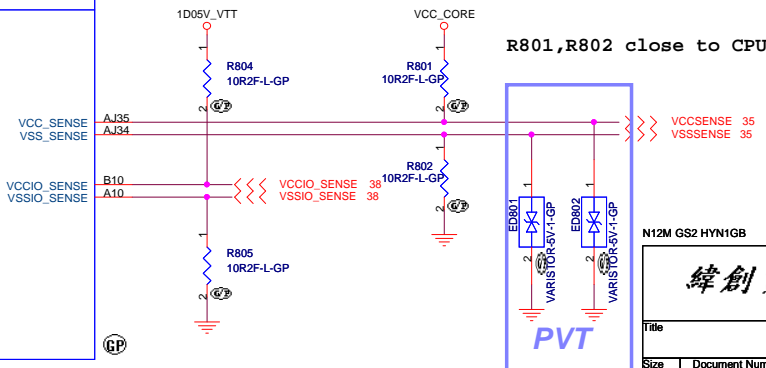
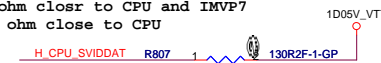
SENSE LINES



No-stuff sites outside the socket may be removed.
No-stuff sites inside the socket cavity need to remain.



For CRB VIDSOUT need to pull high 130 ohm closr to CPU and IMVP7
For CRB VIDALERT# need to pull high 75 ohm close to CPU



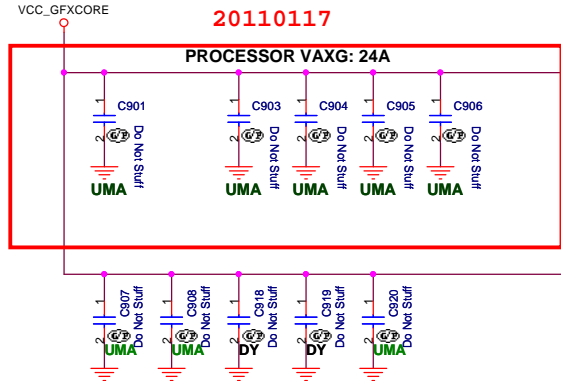
R801,R802 close to CPU

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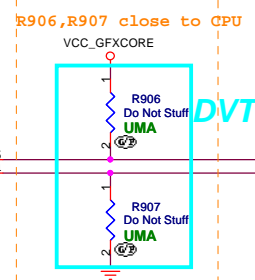
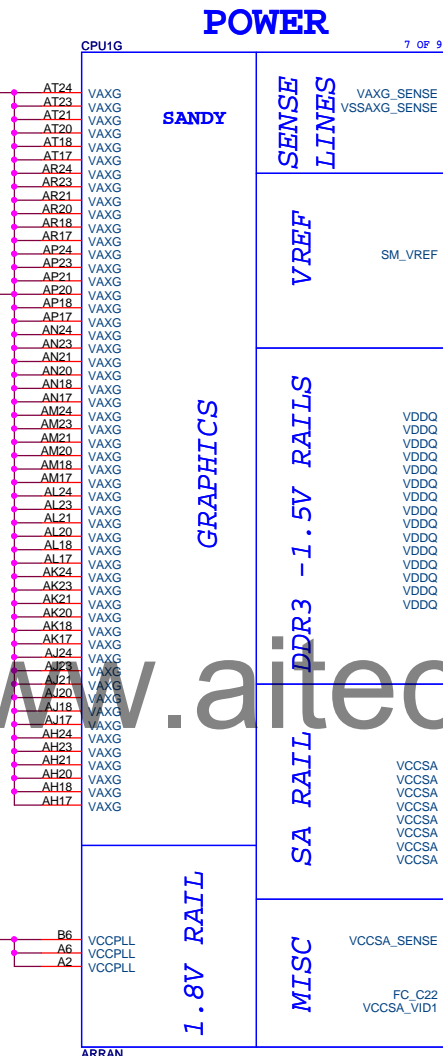
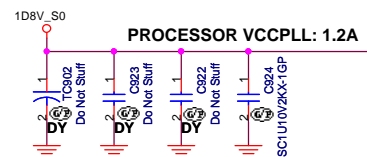
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Title			
CPU (VCC CORE)			
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SSID = CPU

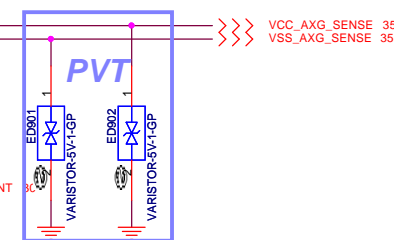


Disabling Guidelines for External Graphics Designs:
Can connect to GND if motherboard only supports external graphics and if GFX VR is not stuffed.
Can be left floating (Gfx VR keeps VAXG rail from floating) if the VR is stuffed

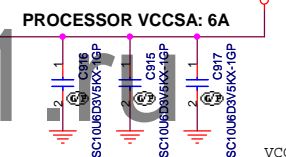
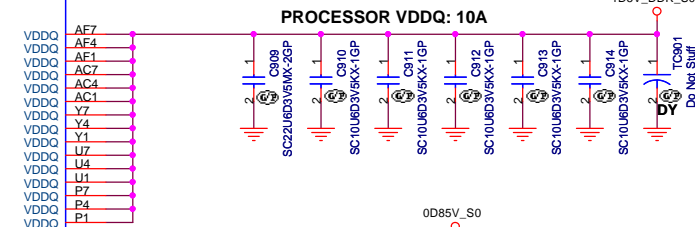


Refer to the latest Huron River Mainstream PDG (Doc# 436735) for more details on S3 power reduction implementation.

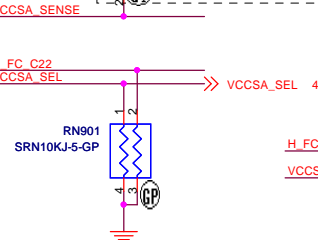
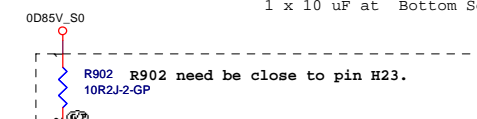
+V SM VREF CNT should have 10 mil trace width



Routing Guideline:
Power from DDR_VREF_S3 and +V_SM_VREF_CNT
should have 10 mils trace width.



VCCSA Output Decoupling Recommendation:
 1 x 330 uF
 2 x 10 uF at Bottom Socket Cavity
 1 x 10 uF at Bottom Socket Edge



H_FC_C22 1 TP901 Do Not Stuff

VCCSA_SENSE TP902 Do Not Stuff

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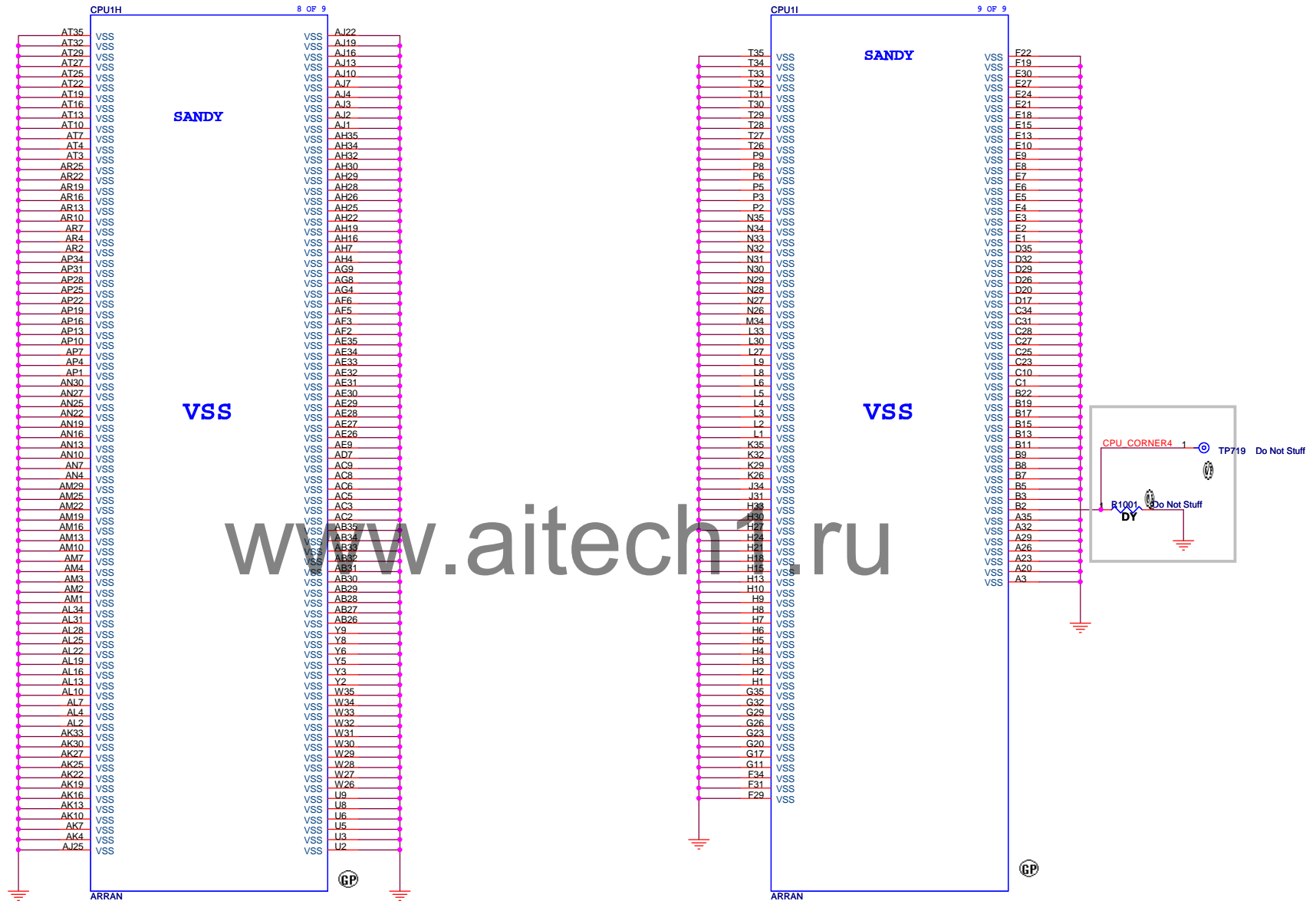
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Title	CPU (VCC_GFXCORE)
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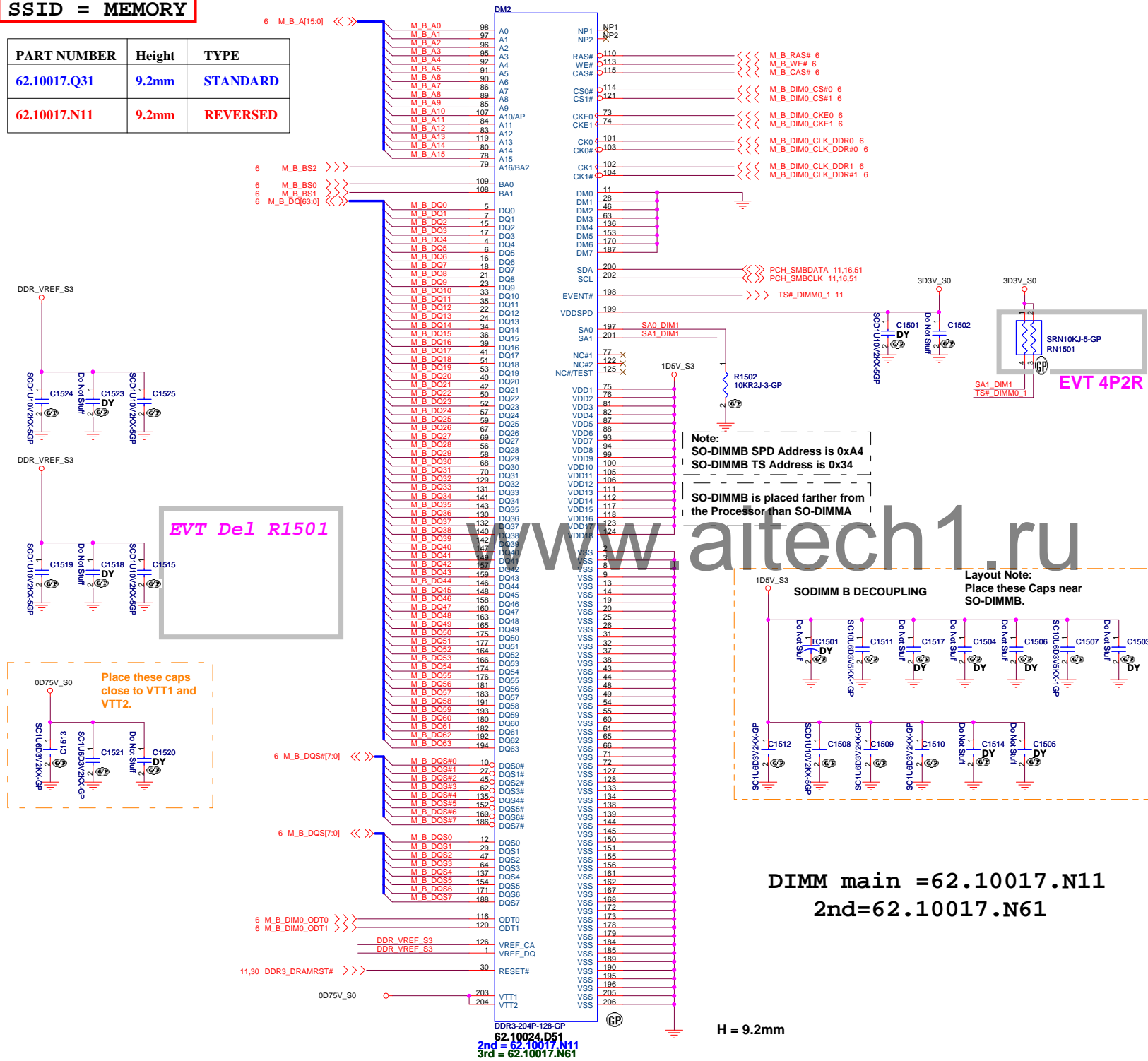
SSID = CPU



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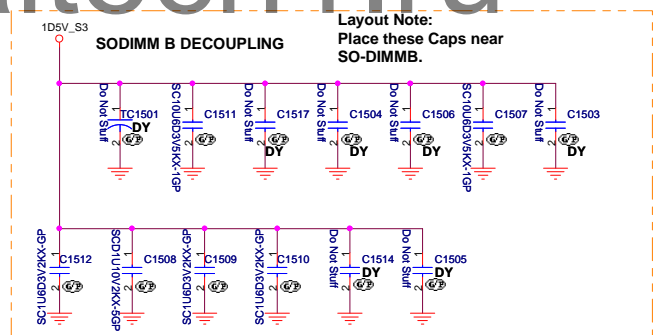
SSID = MEMORY

PART NUMBER	Height	TYPE
62.10017.Q31	9.2mm	STANDARD
62.10017.N11	9.2mm	REVERSED



Note:
SO-DIMMB SPD Address is 0xA4
SO-DIMMB TS Address is 0x34

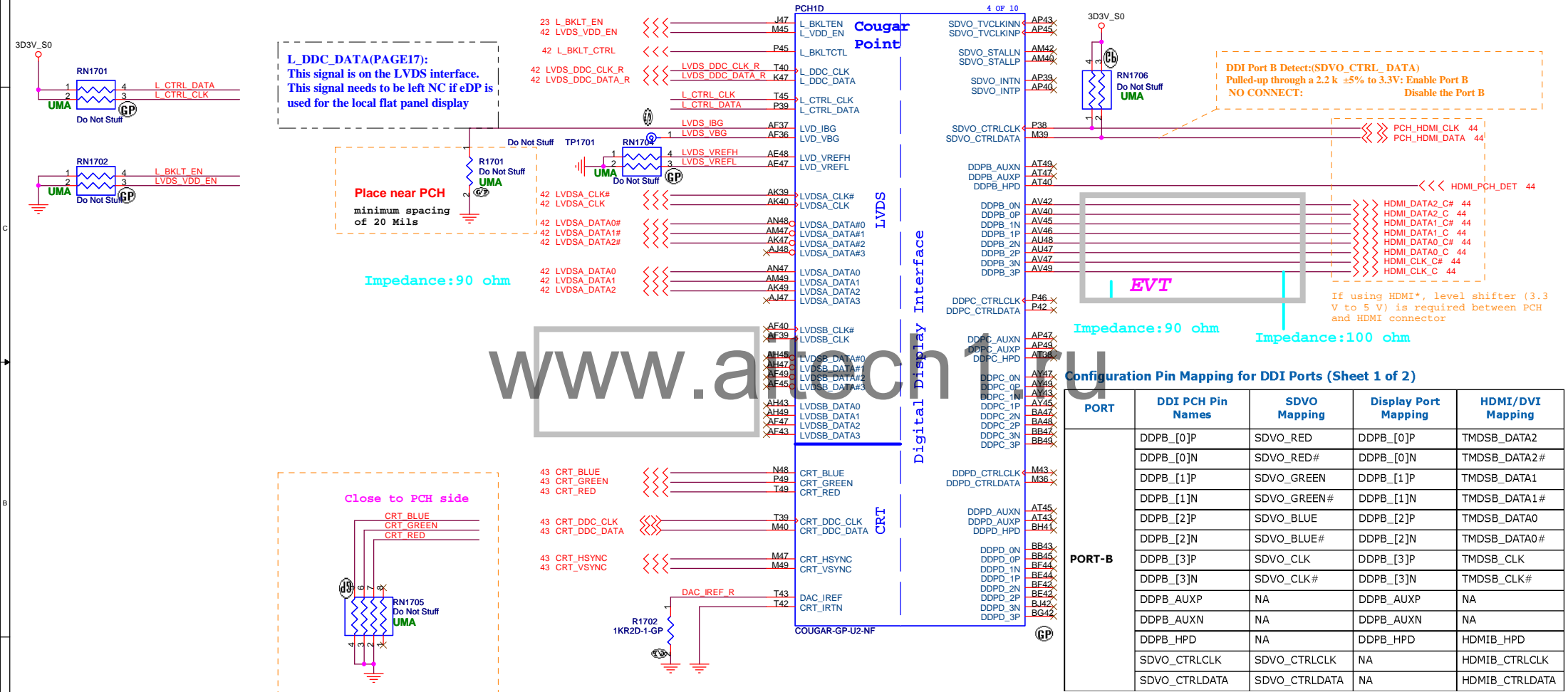
SO-DIMMB is placed farther from
the Processor than SO-DIMMA



DIMM main =62.10017.N11
2nd=62.10017.N61

H = 9.2mm

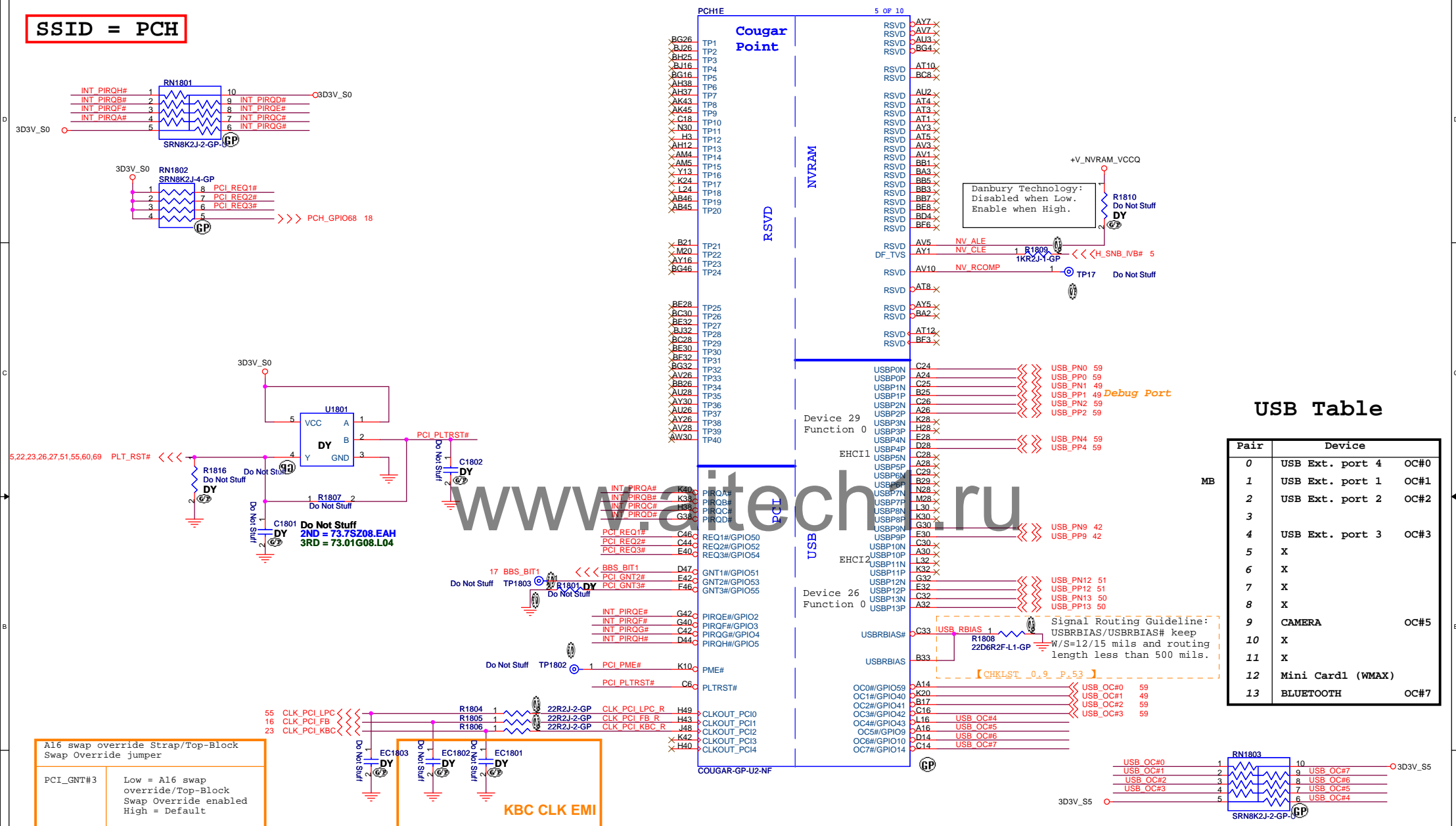
CHANGE TO 71.0HM65.00U



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SSID = PCH



USB Table

Pair	Device
0	USB Ext. port 4 OC#0
1	USB Ext. port 1 OC#1
2	USB Ext. port 2 OC#2
3	
4	USB Ext. port 3 OC#3
5	X
6	X
7	X
8	X
9	CAMERA OC#5
10	X
11	X
12	Mini Card1 (WMAX)
13	BLUETOOTH OC#7

Pin configuration diagram for the RN1803 module. The module is shown with 10 pins. Pin 1 is USB OC#0, Pin 2 is USB OC#1, Pin 3 is USB OC#2, Pin 4 is USB OC#3, Pin 5 is 3D3V_S5, Pin 6 is USB OC#4, Pin 7 is USB OC#5, Pin 8 is USB OC#6, Pin 9 is USB OC#7, and Pin 10 is 3D3V_S5. The module is labeled RN1803 and SPNRK2 L2-GP.

USB 2.0 Overcurrent Pin Default Usage

Pin	Default Port Mapping	Pin	Default Port Mapping
OC0#	Port 0, Port 1	OC4#	Port 8, Port 9
OC1#	Port 2, Port 3	OC5#	Port 10, Port 11
OC2#	Port 4, Port 5	OC6#	Port 12, Port 13
OC3#	Port 6, Port 7	OC7#	Not Used

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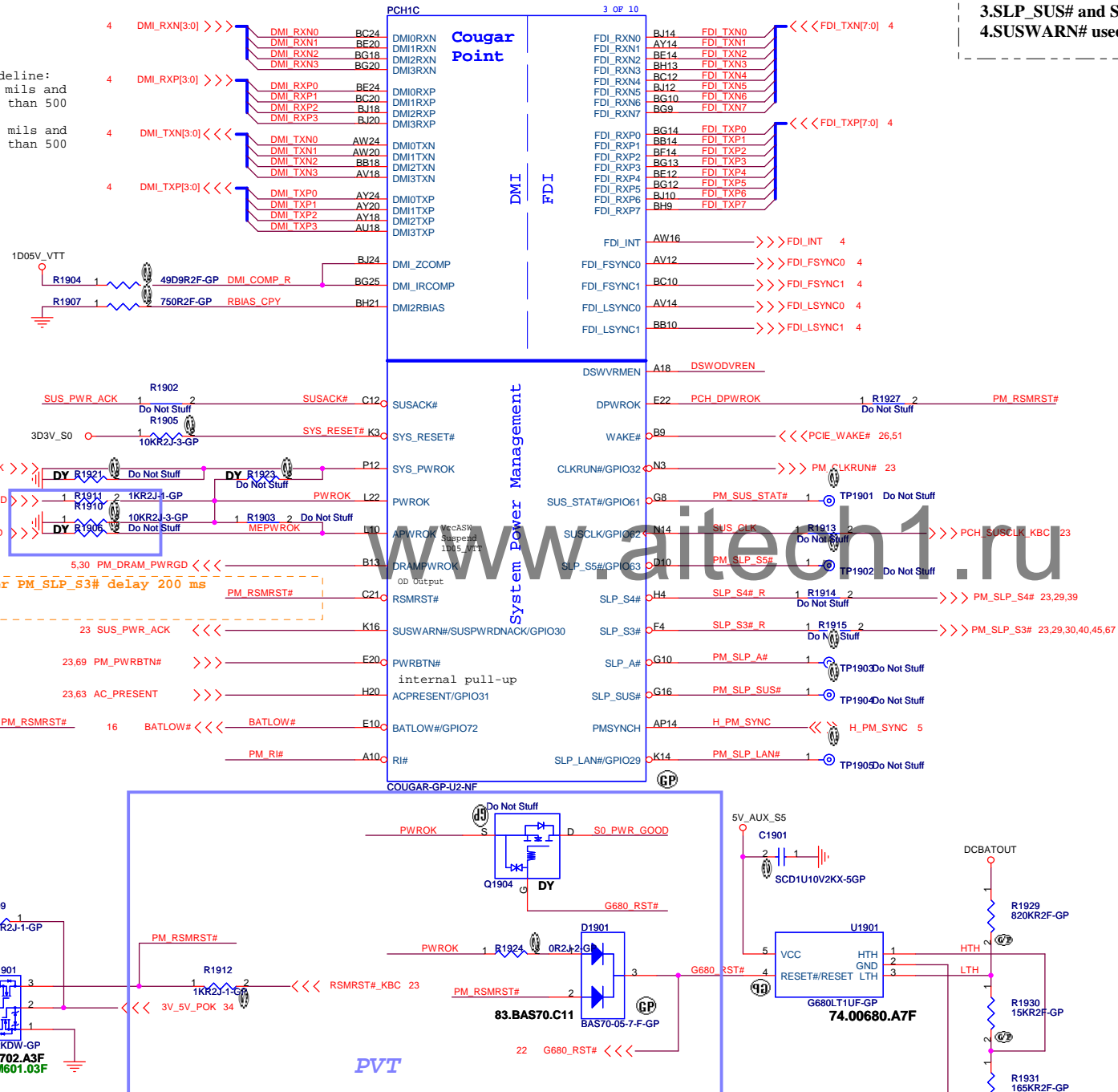
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	Title	PCH (PCI/USB/NVRAM)
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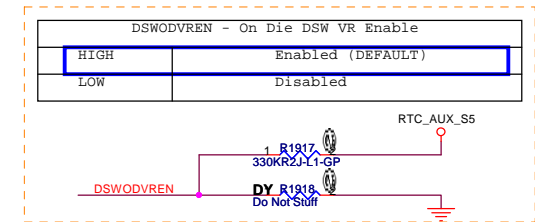
SSID = PCH

Signal Routing Guideline:
DMI_ZCOMP keep W=4 mils and routing length less than 500 mils.
DMI_IRCOMP keep W=4 mils and routing length less than 500 mils.



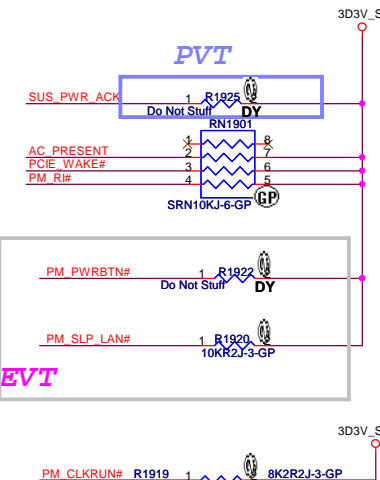
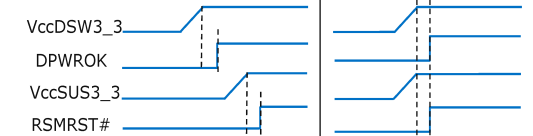
For platforms not supporting Deep S4/S5

- 1.VccSUS3_3 and VccDSW3_3 will rise at the same time (connected on board)
- 2.DPWROK and RSMRST# will rise at the same time (connected on board)
- 3.SLP_SUS# and SUSACK# are left as 'no connect'
- 4.SUSWARN# used as SUSPWRDNACK/GPIO30



Deep S4/S5 Supported

Deep S4/S5 **Not** Supported

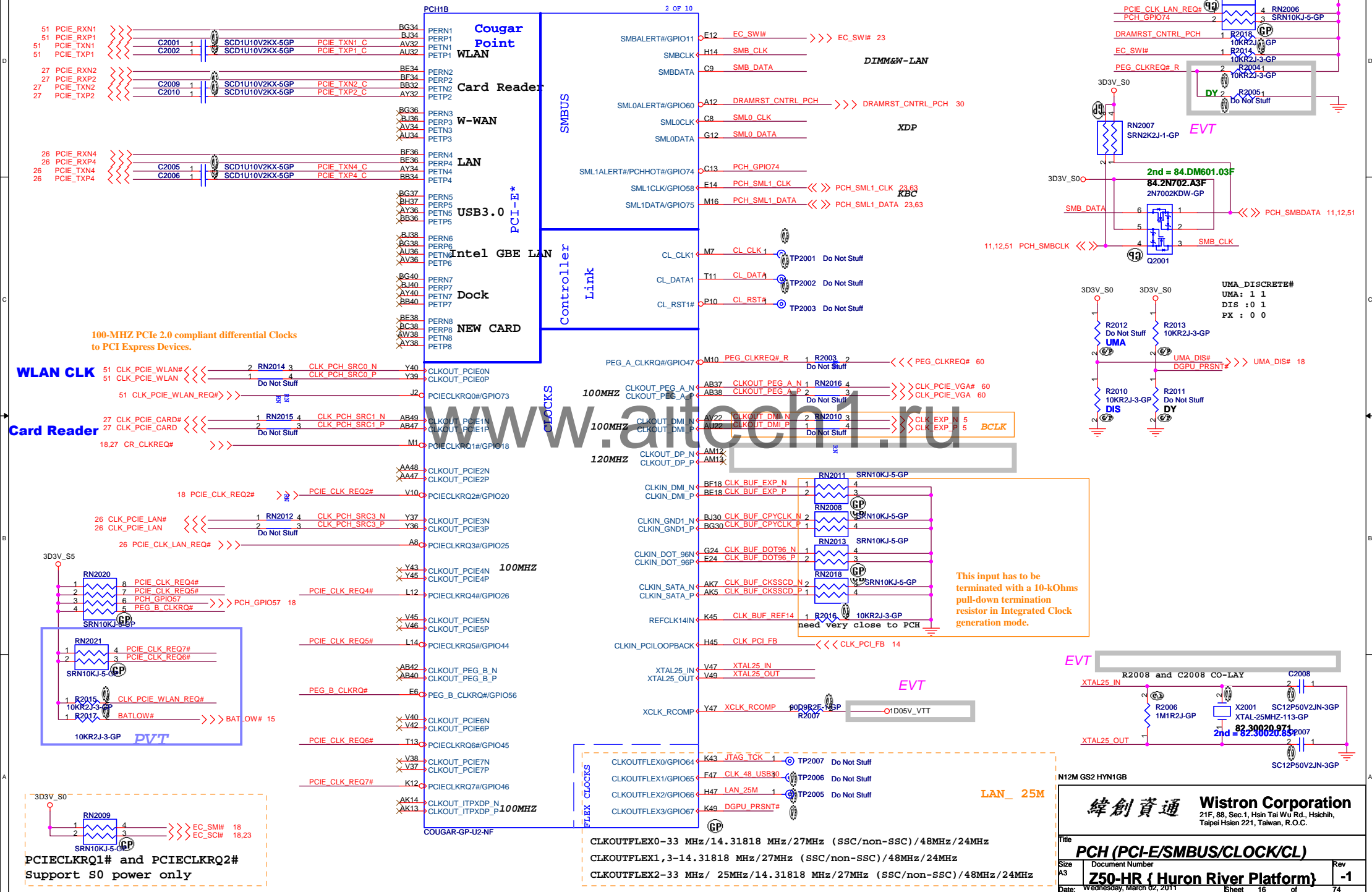


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Title			
PCH (DM I/FDI/PM)			
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SSID = PCH



Integrated Clock Chip Enable	
HIGH (R2211 DY)- DISABLED [DEFAULT]	
ICC_EN#	LOW (R2211)- ENABLED

GPIO8 has a weak[20K] internal pull up.
Integrated Clock Enable functionality is achieved via soft-strap. The default is integrated clock enable.

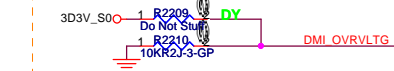
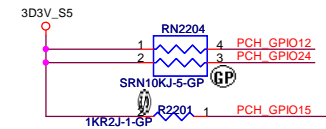
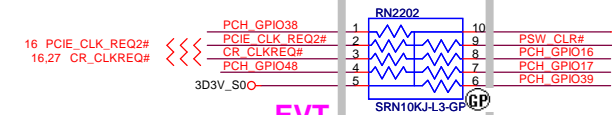
DY 1 R2205 Do Not Stuff PCH_GPIO27 [CKLIST P.66]

Deep Sleep	
GPIO27	HIGH (R2019 DY)- ENABLED [DEFAULT] LOW (R2019) - DISABLED

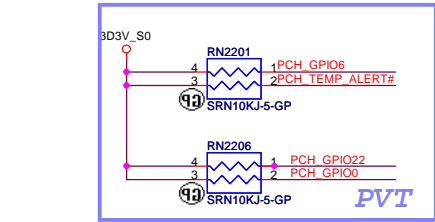
GPIO27 has a weak[20K] internal pull up.
If not used then use 8.2-kΩ to 10-kΩ pull-down to GND.

DY 1 R2212 Do Not Stuff PLL_ODVR_EN

The On-Die PLL voltage regulator
NOTE:This signal has a weak internal pull-up 20K
ENABLED -- HIGH (R2212 UNSTUFFED) DEFAULT
DISABLED -- LOW (R2212 STUFFED)
If not used, 8.2-kΩ to 10-kΩ pull-up to +V3.3A power-rail.

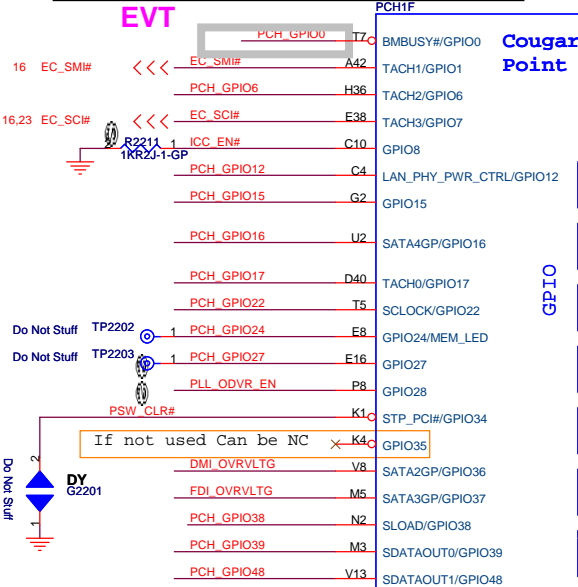


Integrated Clock Enable functionality is achieved via soft-strap. The default is integrated clock enable.
This signal has a weak internal pull-down.
NOTE: The internal pull-down is disabled after PLTRST# deasserts.
NOTE: This signal should not be pulled high when strap is sampled.



SSID = PCH

Note:
For PCH debug with XDP, need to NO STUFF R2218



23 PCH_TEMP_ALERT# <<<
16 PCH_GPIO57 >>> PCH_GPIO57
If not used, 8.2 to 10-kΩ pull-up to VccSusS1.3 (+V3.3A) OR pull-down to GND



Cougar Point

GPIO

CPU/MISC

NCTF

NCTF TEST PIN:

D1.D49, B1.B49, F1.F49

6 OF 10
TACH4#/GPIO68
TACH5#/GPIO69
TACH6#/GPIO70
TACH7#/GPIO71

A20GATE
PECI
RCIN#
PROC_PWRGD
THRMTMP#

TS_VSS1
TS_VSS2
TS_VSS3
TS_VSS4
NC_1

NCTF_VSS#BG2
NCTF_VSS#BG48
NCTF_VSS#BH3
NCTF_VSS#BH7
NCTF_VSS#BJ4
NCTF_VSS#BJ44
NCTF_VSS#BJ45
NCTF_VSS#BJ46
NCTF_VSS#BJ5
NCTF_VSS#BJ6

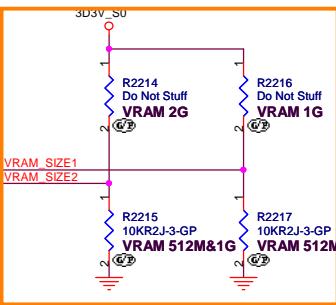
NCTF_VSS#C2
NCTF_VSS#C48
NCTF_VSS#D1
NCTF_VSS#D49
NCTF_VSS#E1
NCTF_VSS#E49
NCTF_VSS#F1
NCTF_VSS#F49

NCTF_VSS#A4
NCTF_VSS#A44
NCTF_VSS#A45
NCTF_VSS#A46
NCTF_VSS#A5
NCTF_VSS#A6
NCTF_VSS#B3
NCTF_VSS#B47
NCTF_VSS#BD1
NCTF_VSS#BD49
NCTF_VSS#BE1
NCTF_VSS#BE49
NCTF_VSS#BF1
NCTF_VSS#BF49

COUGAR-GP-U2-NF
3D3V_S0
DY 1 R2222 Do Not Stuff R2223 10KR2J-3-GP

This signal has a weak internal pull-down.
NOTE: The internal pull-down is disabled after PLTRST# deasserts.
NOTE: This signal should not be pulled high when strap is sampled.

[VRAM_SIZE1:VRAM_SIZE2]
LL=512M / HL=1G / LH=2G



DVT
20101029
This signal has a weak internal pull-up.
Note: The internal pull-up is disabled after PLTRST# deasserts.
NOTE: This signal should not be pulled low. Leave as "No Connect".

TS Signal Disable Guideline:
TS_VSS1, TS_VSS2, TS_VSS3 and TS_VSS4 should not float on the motherboard. They should be tied to GND directly.

Core power : 3D3V_S0
Core power : 3D3V_S0

PCH_THERMTRIP_R1
56R2J-4-GP
R2202
1D05V_VTT

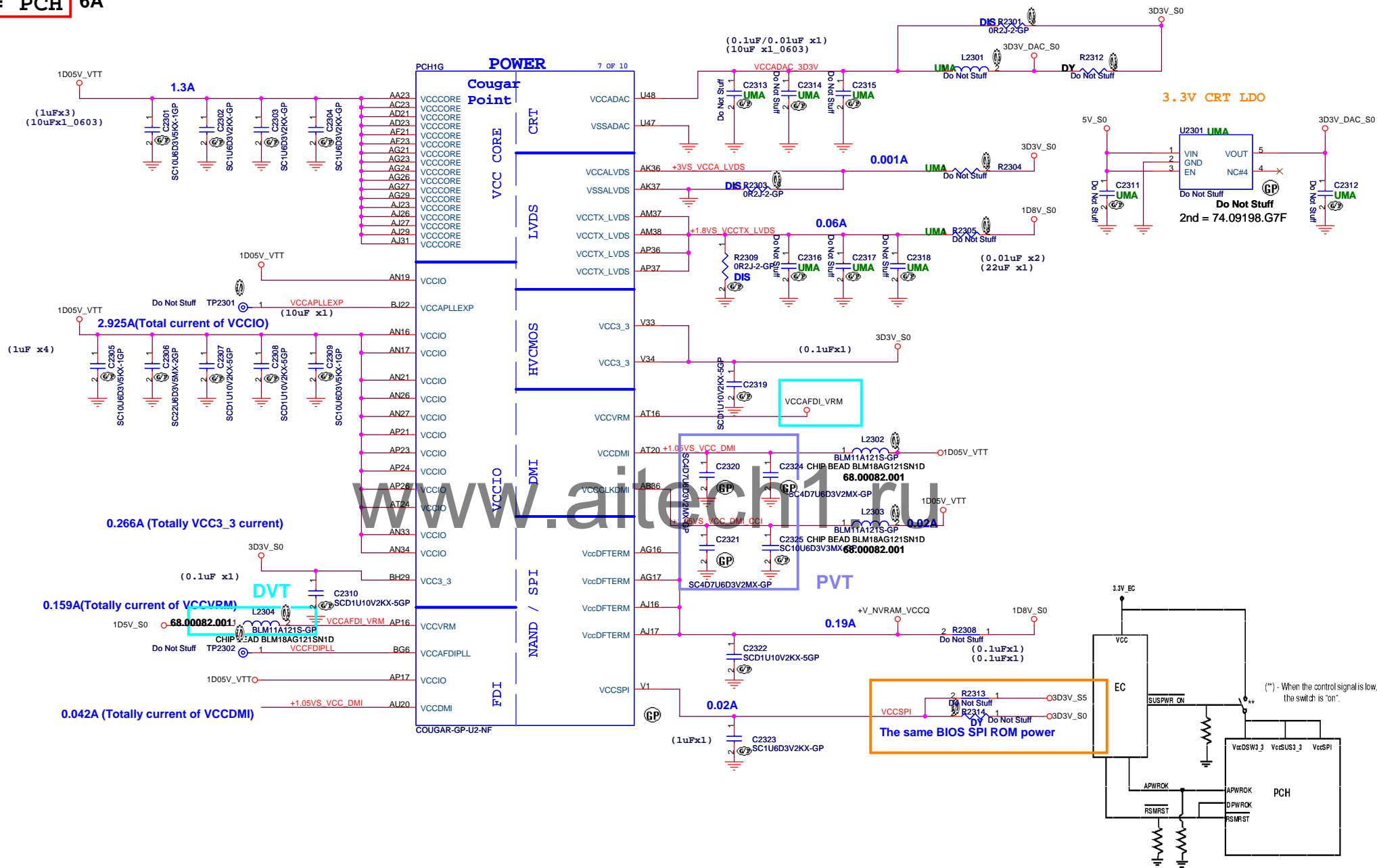


FDI TERMINATION VOLTAGE OVERRIDE	
GPIO37 (FDI_OVRVLTG)	LOW - Tx, Rx terminated to same voltage (DC Coupling Model DEFAULT)

W12M GS2 HYN1GB
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PCH (GPIO/CPU)		
Size A3	Document Number Z50-HR { Huron River Platform }	Rev -1
Date: Wednesday, March 02, 2011	Sheet 18 of 74	

SSID = PCH 6A

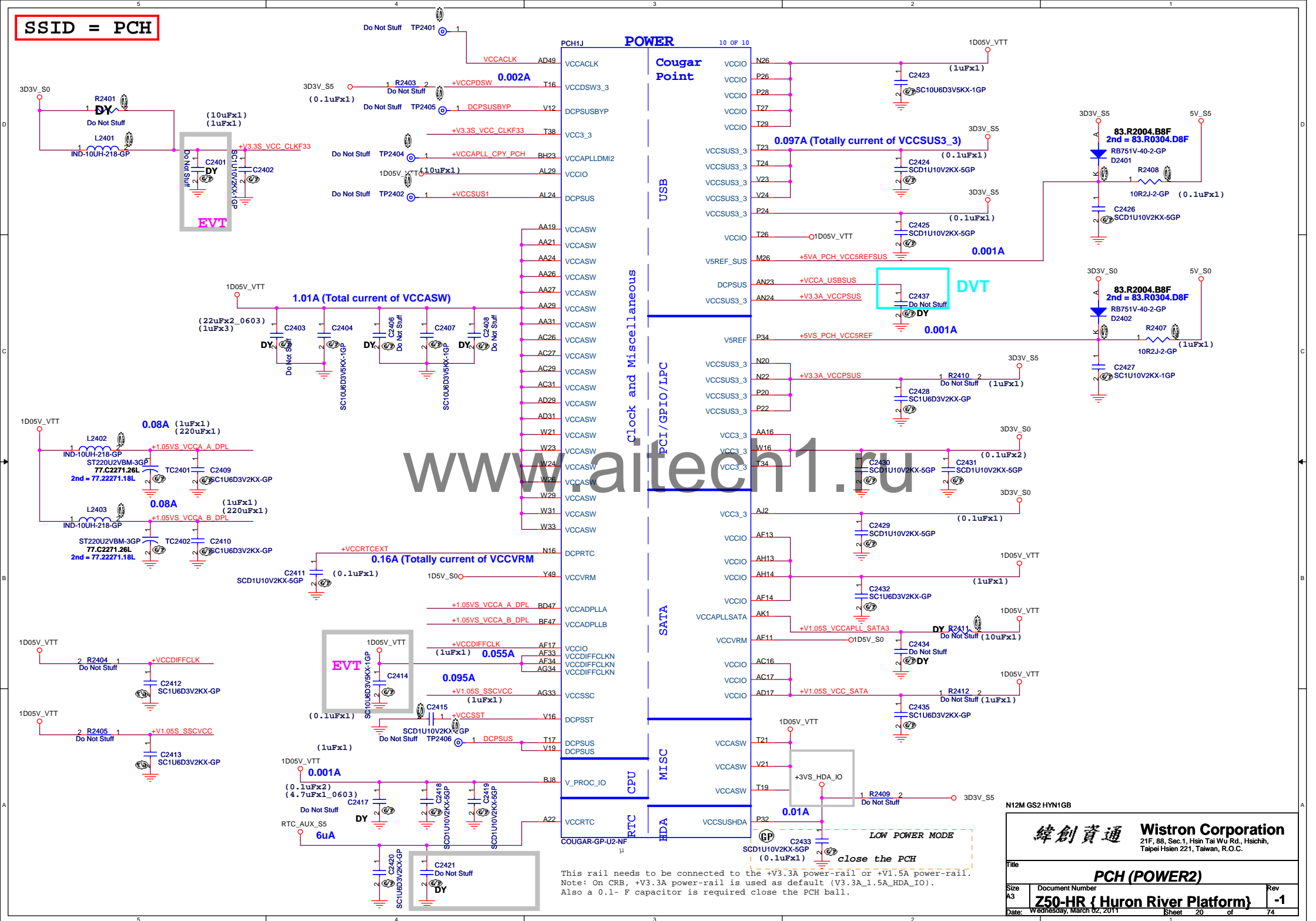


N12M GS2 HYN1GB

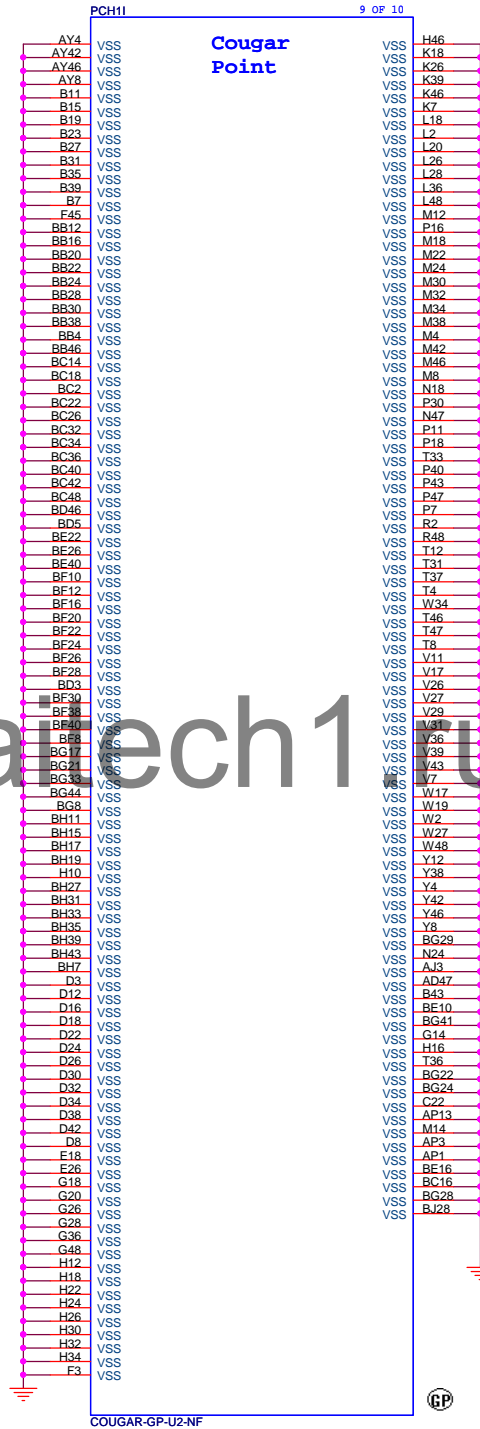
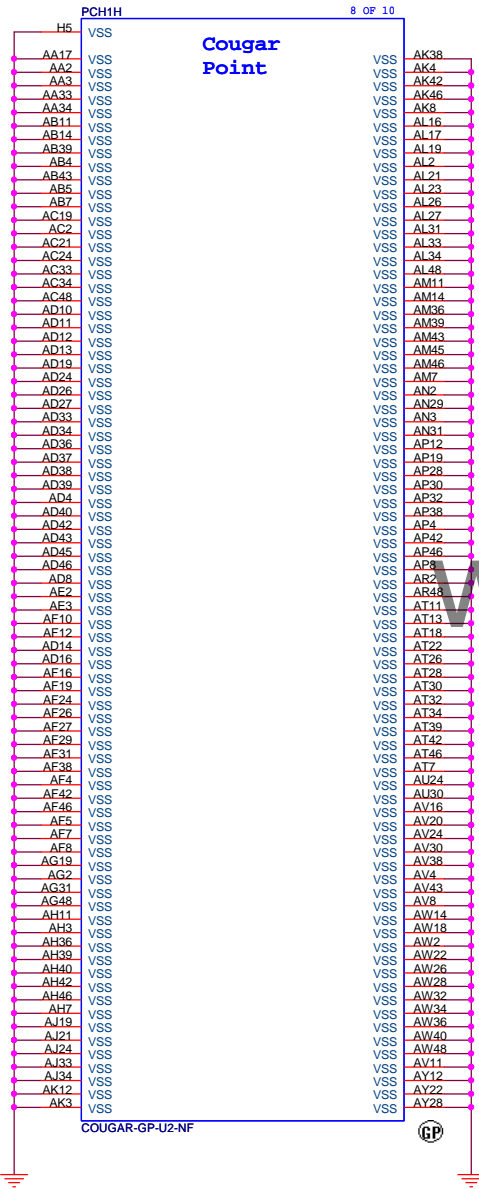
緯創資通 **Wistron Corporation**
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Taipei Hsien 221, Taiwan, R.O.C.

Title			
PCH (POWER1)			
Size A3	Document Number		Rev
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SSID = PCH

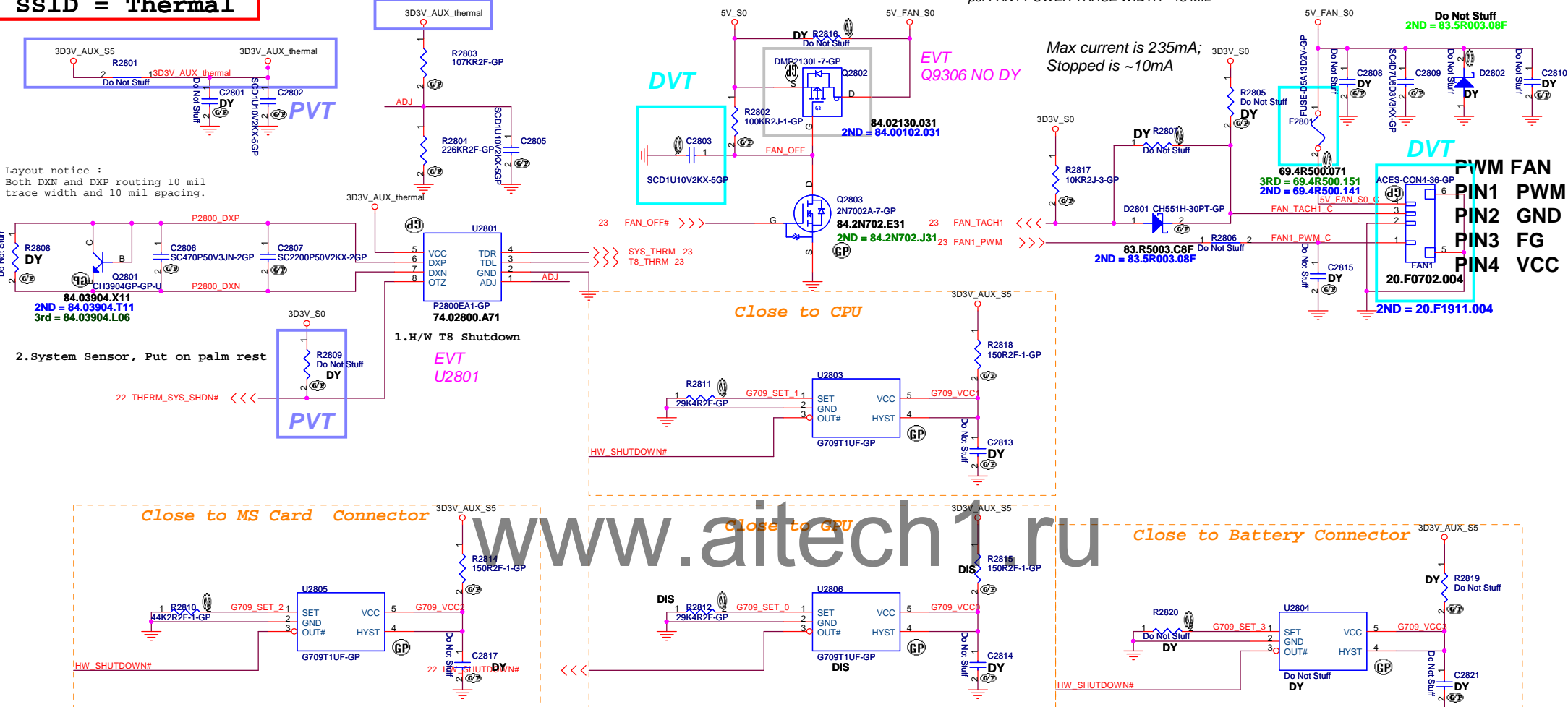


SSID = PCH



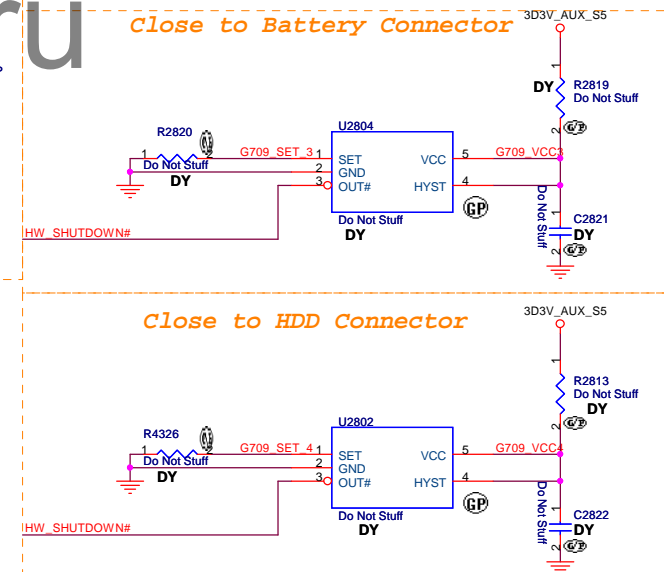
N12M GS2 HYN1GB

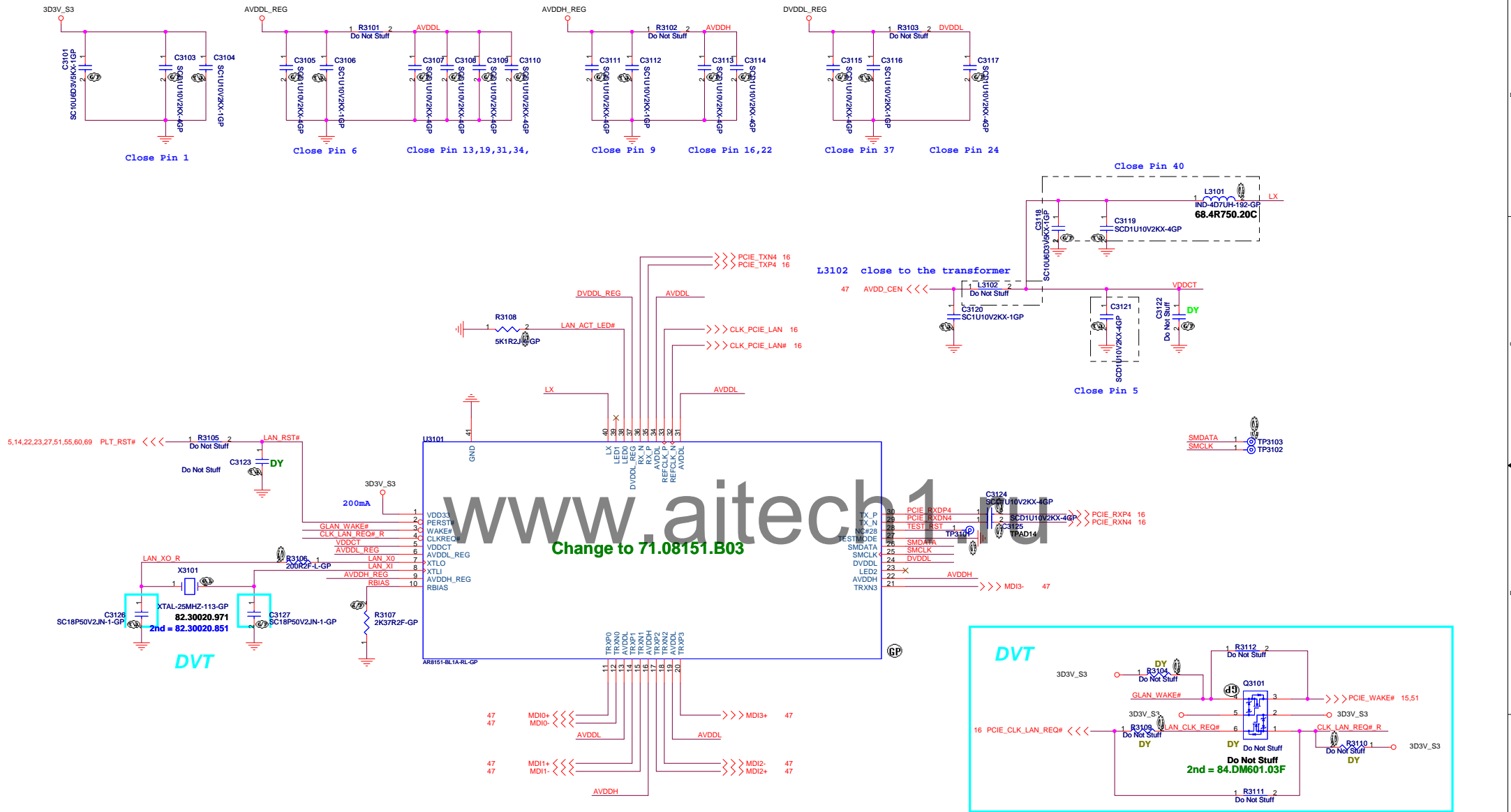
緯創資通		Wistron Corporation	
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Title			
PCH (VSS)			
Size	Document Number	Rev	
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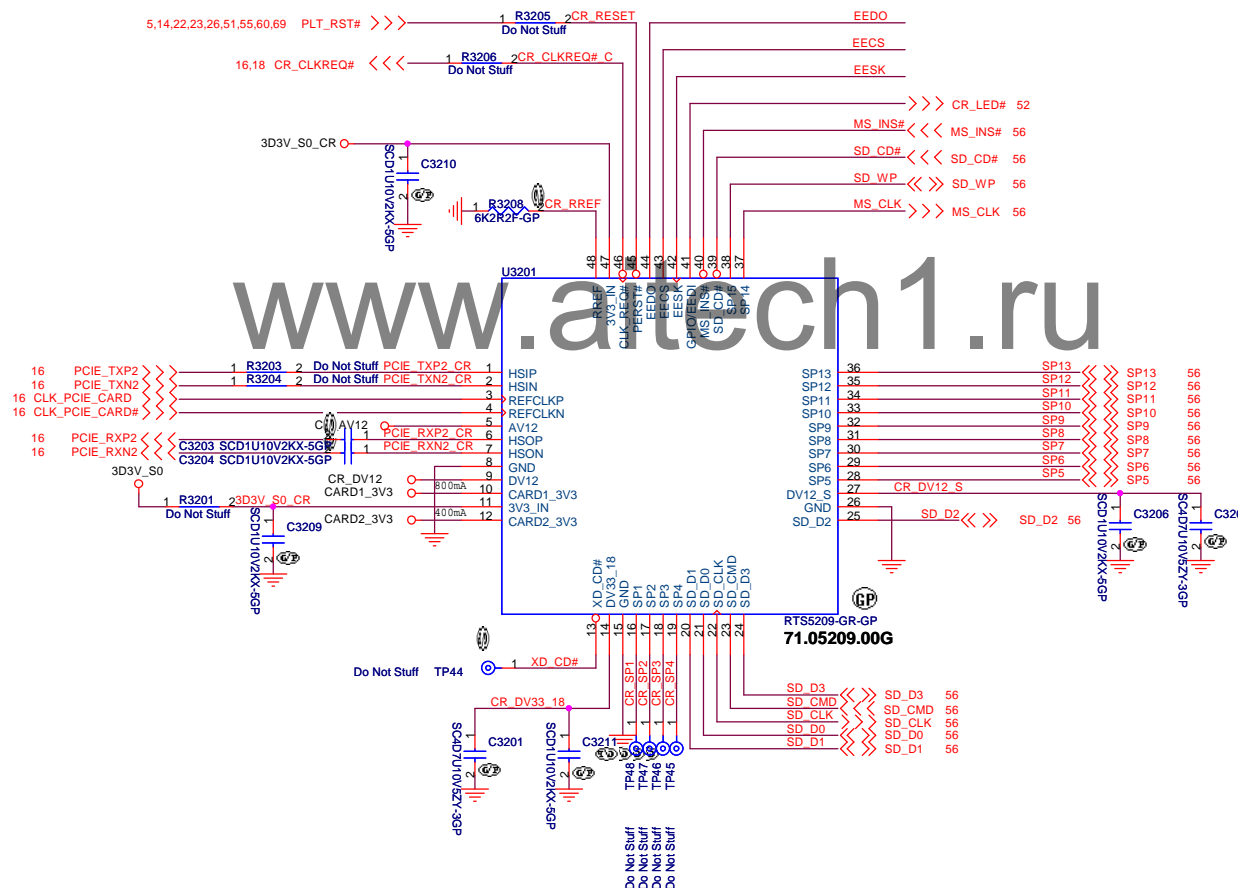
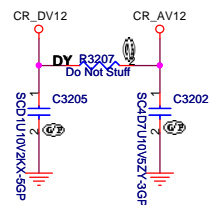
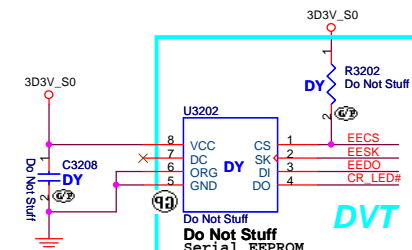
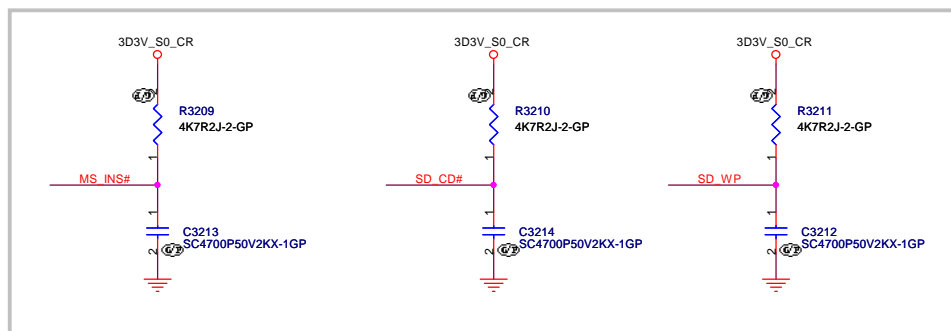


ADJ Table (Reference to SYNTON-TECH Metal Film Resistor E-96 $\pm 1\%$ Series)

RADJ1 (KΩ)	RADJ2 (KΩ)	VADJ (v)	OTZ Threshold Temperature (°C)
124	226	2.13	101
118	226	2.17	96.3
113	226	2.20	92.1
110	226	2.22	89.6
107	226	2.24	87
105	226	2.25	85.3
100	226	2.29	80.9







N12M GS2 HYN1GB

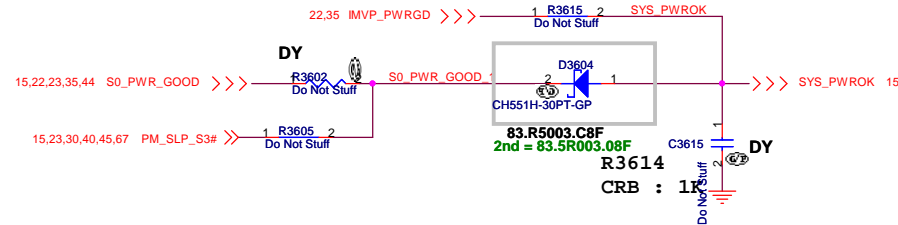
緯創資通 Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title			RTS5209 (CARD READER)	
Size	Document Number	Rev		
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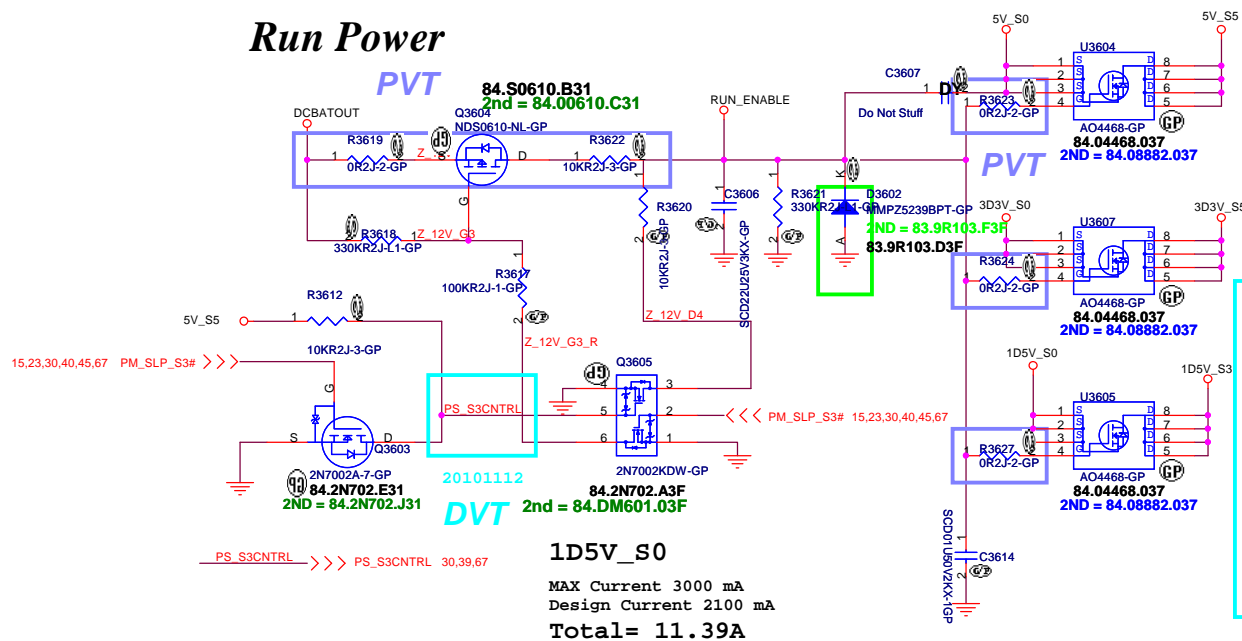
--

1 R3604 2 >>> ALL_SYS_PWROK 23,64
Do Not Stuff <<< PWR_VCCSA_PWRGD 15,35,41



Timing diagram for R3631 showing 1D5V_DDR_S0 and 1D5V_S0 signals. The diagram shows a transition from 'Do Not Stuff' to '1' and then to '2'.

PVT



PVT

U3601
AO4468-GP
84.04468.037
2ND = 84.08882.037

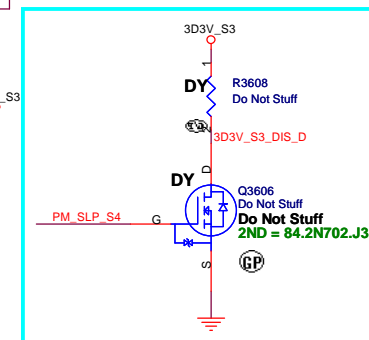
Q3601
2N7002-KDW-GP
84.2N702.A3F
2ND = 84.DM601.03F

R3607
100KR2J-1-GP

S3 ON1

5V_S5

PM_SLP S4



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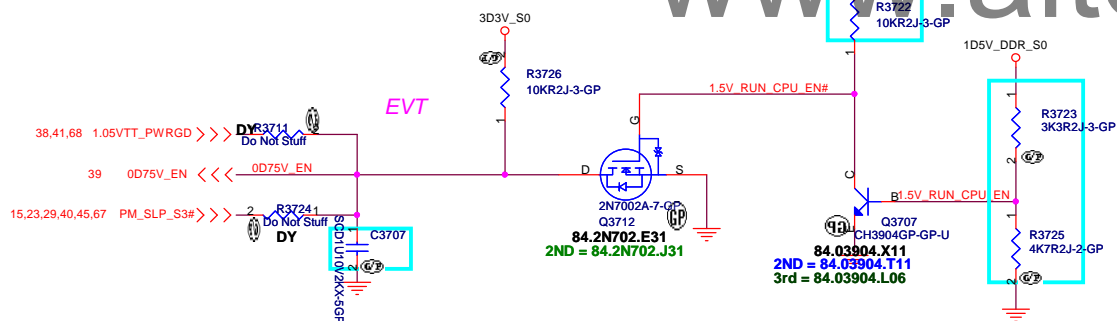
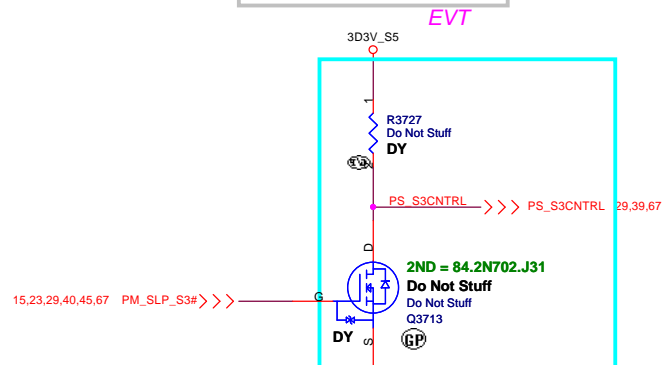
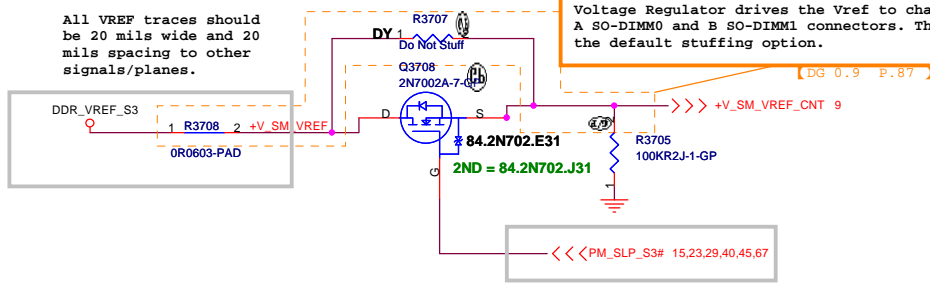
Title			
Power Plane Enable			
Size A3	Document Number		Rev
	Z50-HR { Huron River Platform}		-1
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Close to CPU S3 Power Reduction Circuit Processor VREF_DQ Implementation

All VREF traces should be 20 mils wide and 20 mils spacing to other signals/planes.

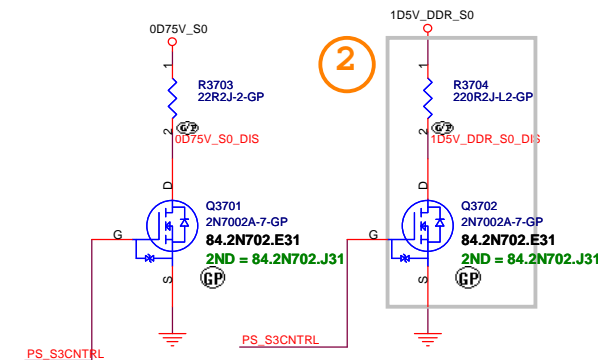
M1 :Fixed voltage resistor divider or DDR Voltage Regulator drives the Vref to channel A SO-DIMM0 and B SO-DIMM1 connectors. This is the default stuffing option.

[DG 0.9 P.87]



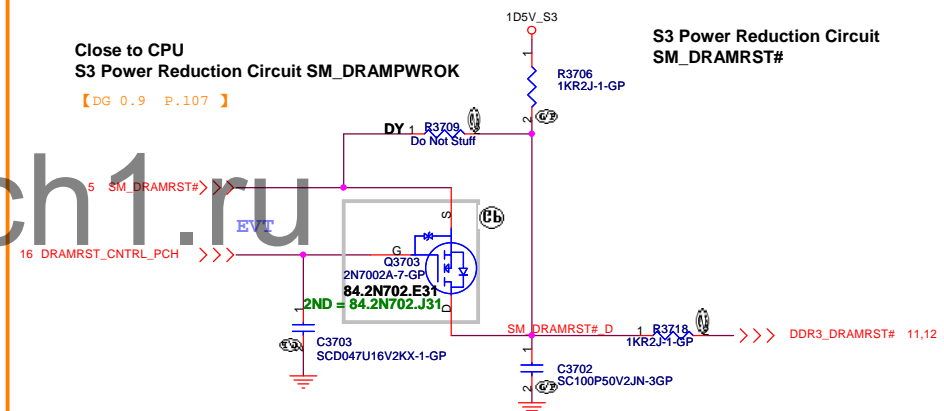
S3 Power Reduction Circuit

Close to DIMM
S3 Power Reduction Circuit RamPower discharge



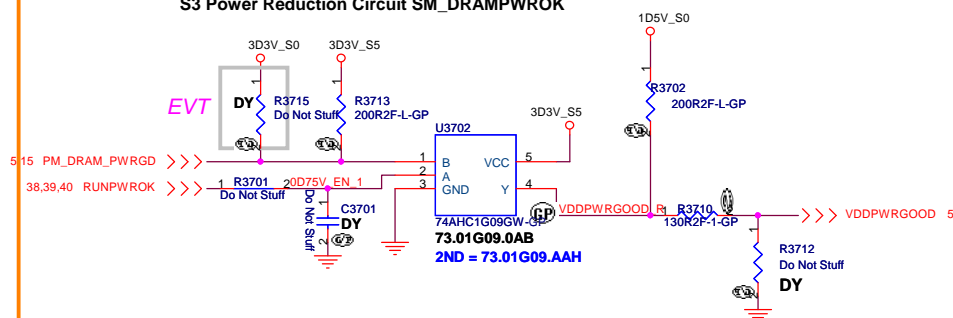
Close to CPU S3 Power Reduction Circuit SM_DRAMPWROK

[DG 0.9 P.107]



Signal Routing Guideline:
1. Maximal trace length from R_iso to any DRAM (on the S0 DIMM) is 6".
2. FET's Ron must be lower than 6 Ohms and pad capacitance lower than 30pF.

Close to CPU S3 Power Reduction Circuit SM_DRAMPWROK



Stand by Event

DRAMST_CNTRL_PCH

PM_SLP_S3#

SM_DRAMPWROK#

DDR3_DRAMPWROK#

1D5V_DDR_S0

0D75V_S0

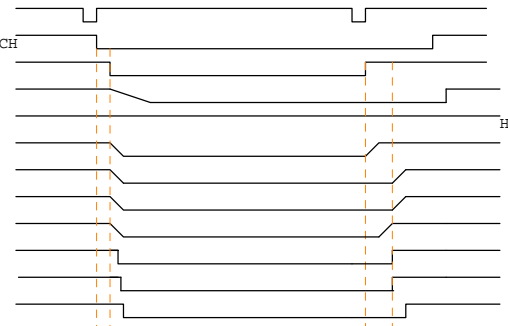
DDR_VREF_S3

1D05V_VTT

VTT_PWRGD

0D75V_EN

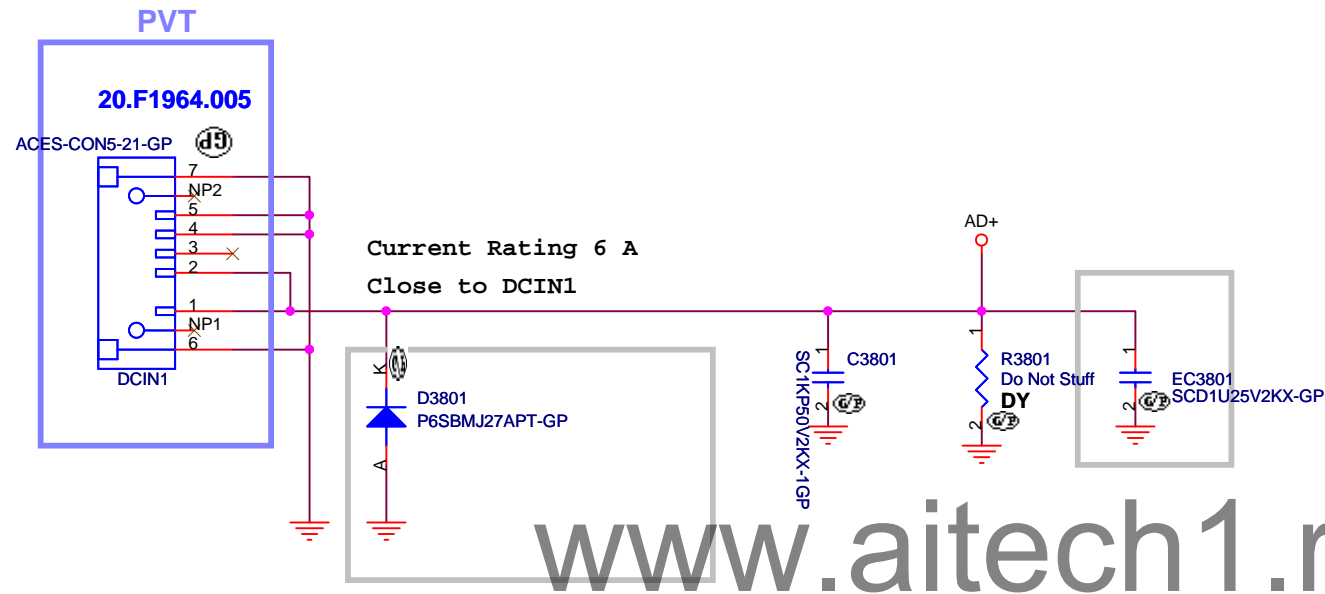
VDDPWRGOOD



N12M GS2 HYN1GB

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Adaptor in to generate DCBATOUT



N12M GS2 HYN1GB

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Title

DCIN JACK

Size

Document Number

Rev

A4

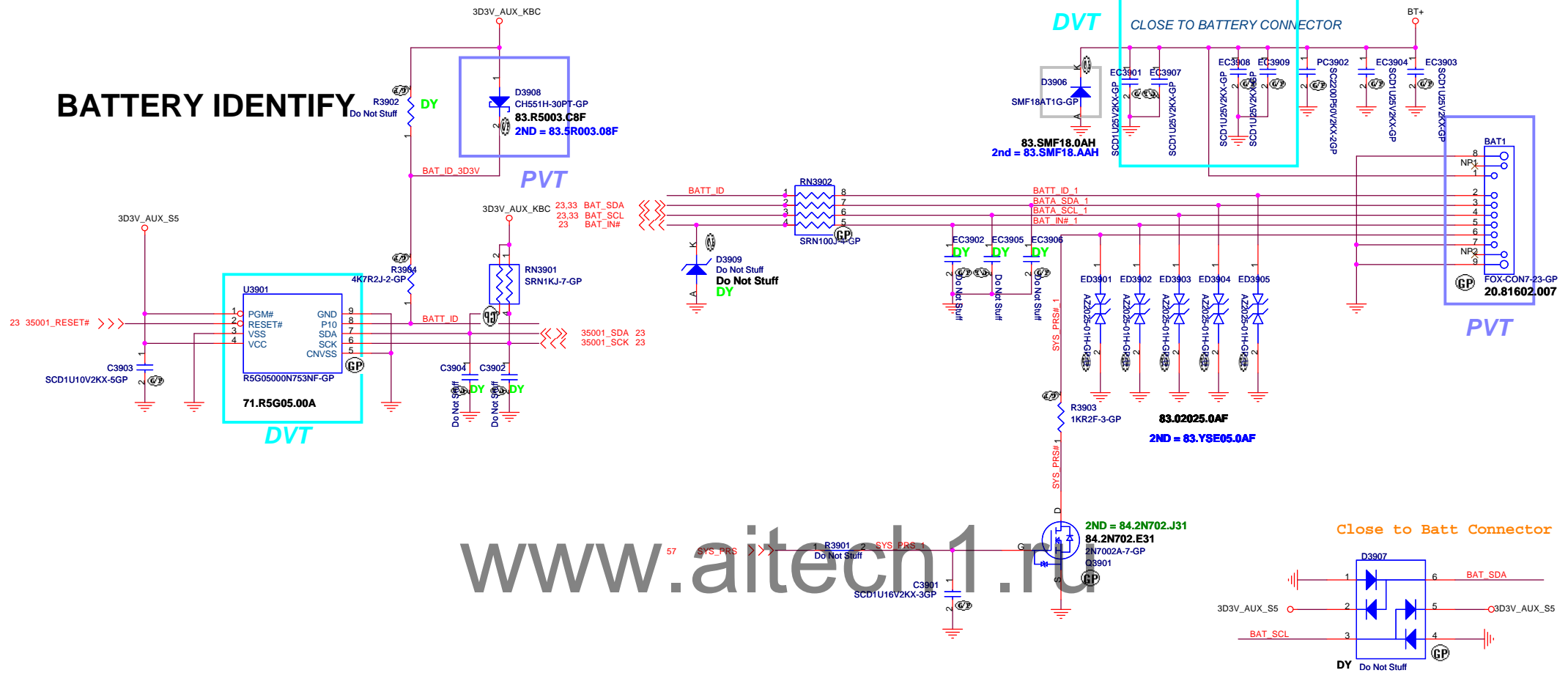
Z50-HR { Huron River Platform}

-1

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BATTERY IDENTIFY



N12M GS2 HYN1GB

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Title	Author	Date	Page	Page	Page	Page	Page	Page	Page	Page	Page

BATT CONN

Size

Document Number

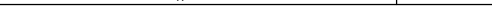
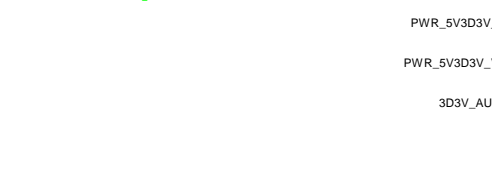
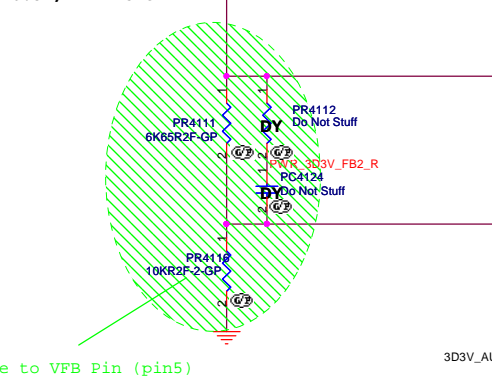
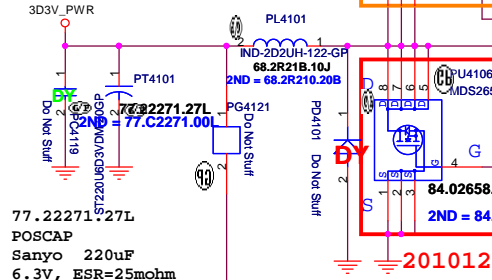
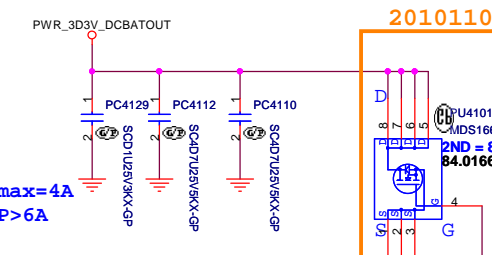
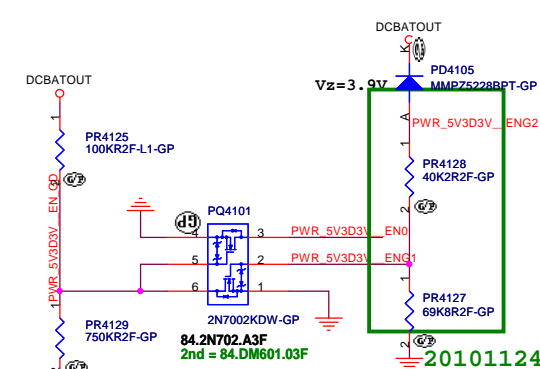
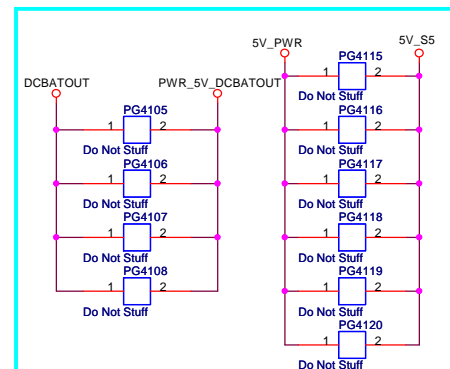
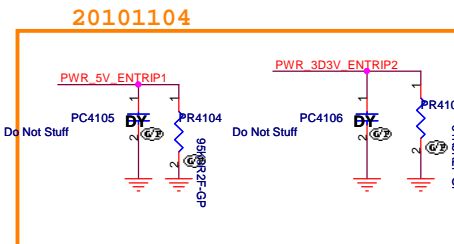
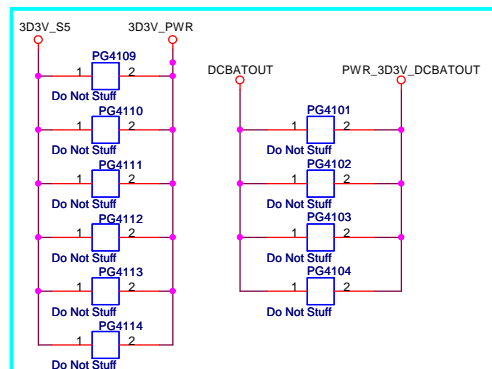
Z50-HR { Huron River Platform}

Rev

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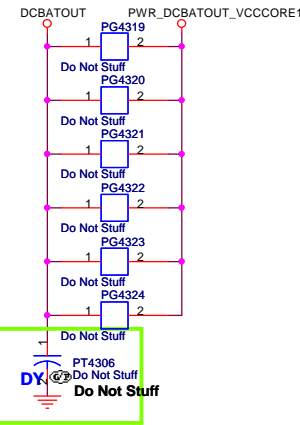
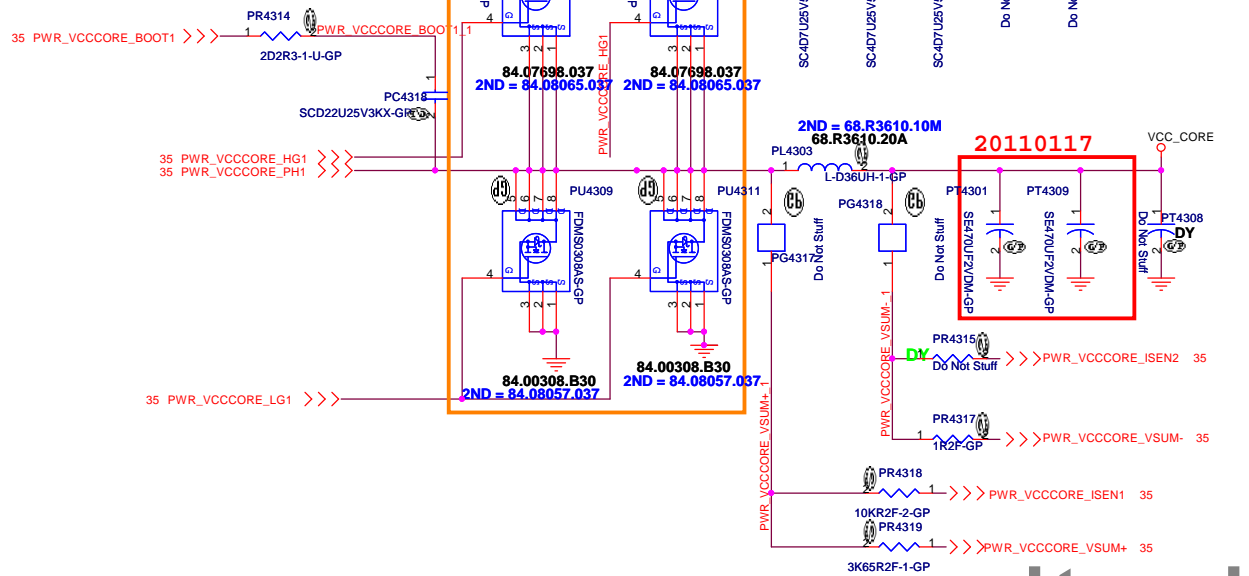
4





84.00172.037
SIR172DP-T1-GE3
Id=20A, Qg=9.8~15nC,
Rdson=10.3~12.4mohm

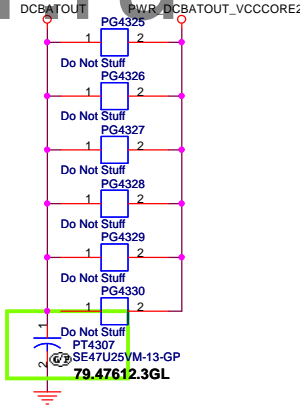
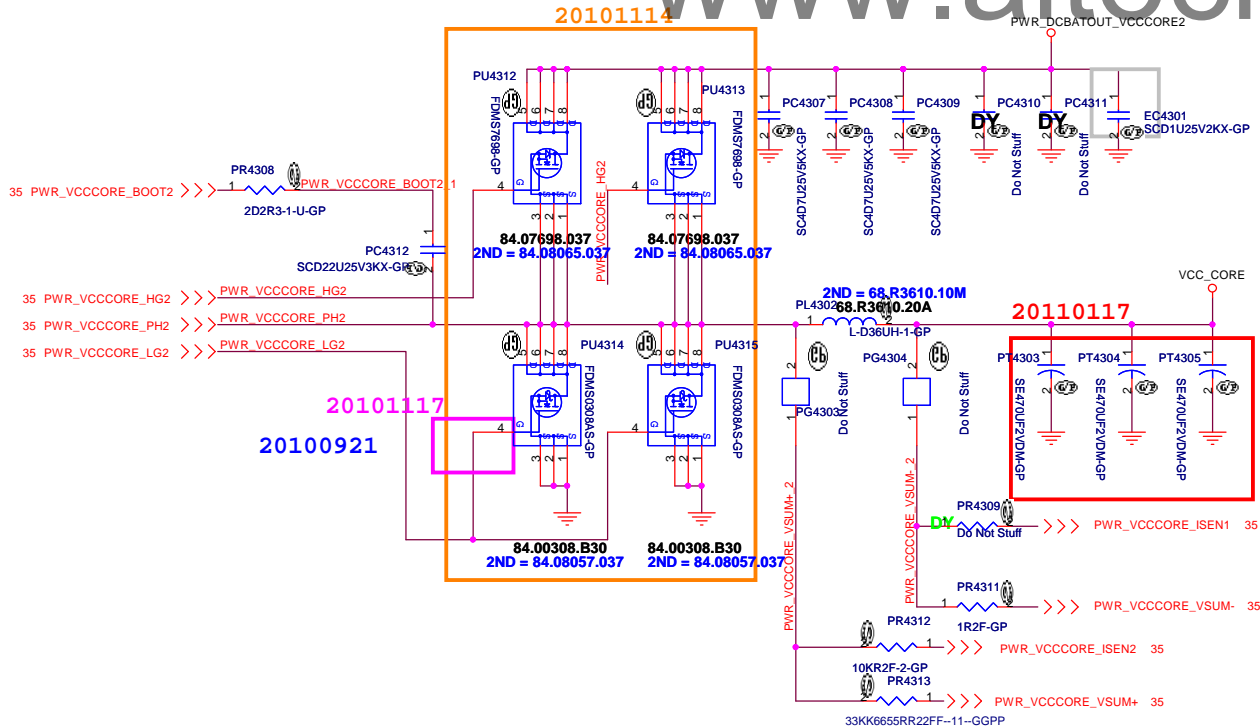
20101114



79.47612.3FL
OSCON
Lelon 47uF, 25V
ESR<440mΩ, Iripple=230mA

Vcc_core
Iomax=53A
OCP>80A

20101114

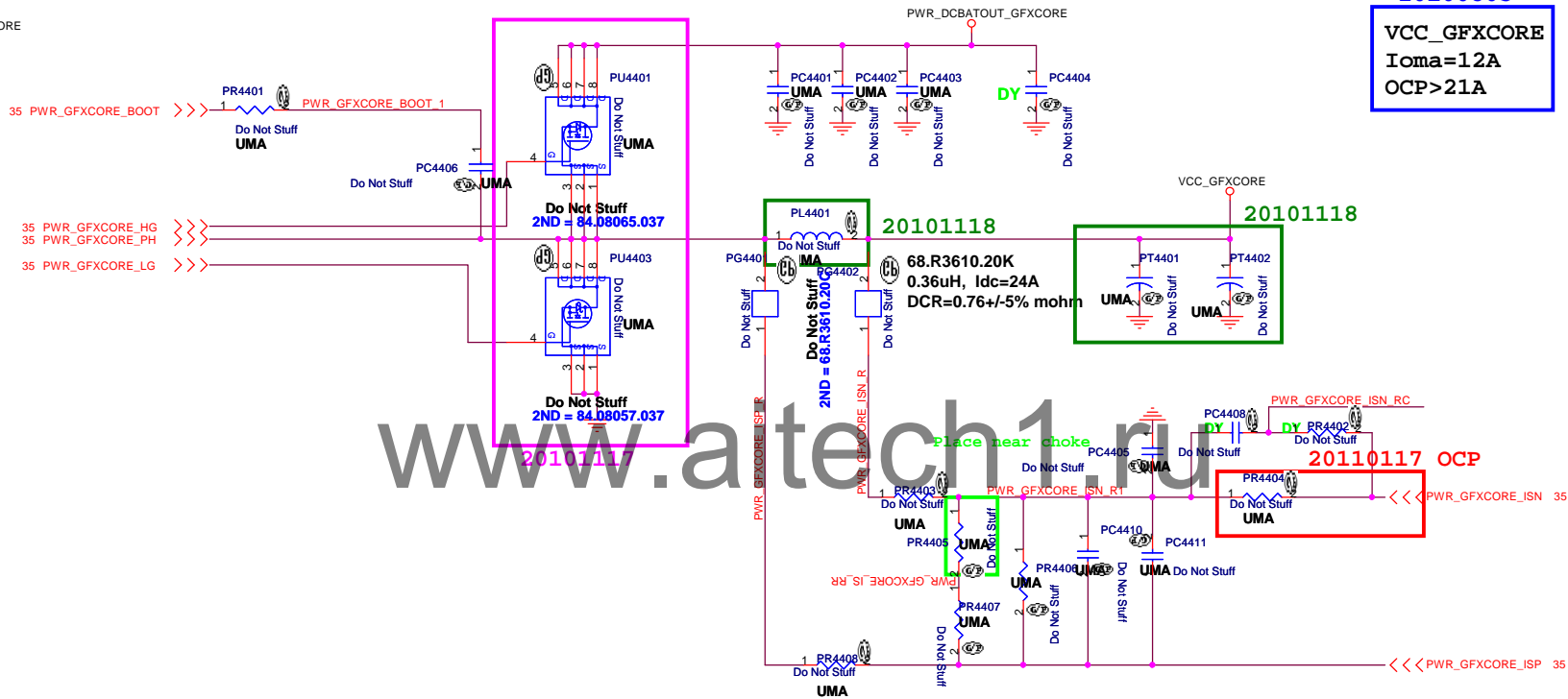
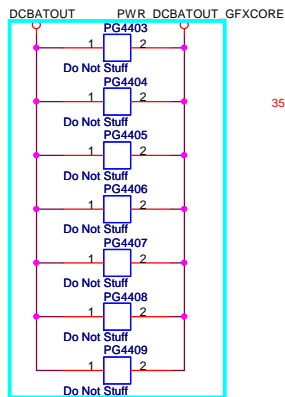


79.47612.3FL
OSCON
Lelon 47uF, 25V
ESR<440mΩ, Iripple=230mA

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Title			
CPU Core-2(ISL95831)			
Size	Document Number	Rev	
A3	Z50-HR { Huron River Platform}	-1	
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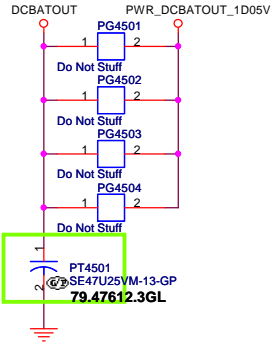


N12M GS2 HYN1GB

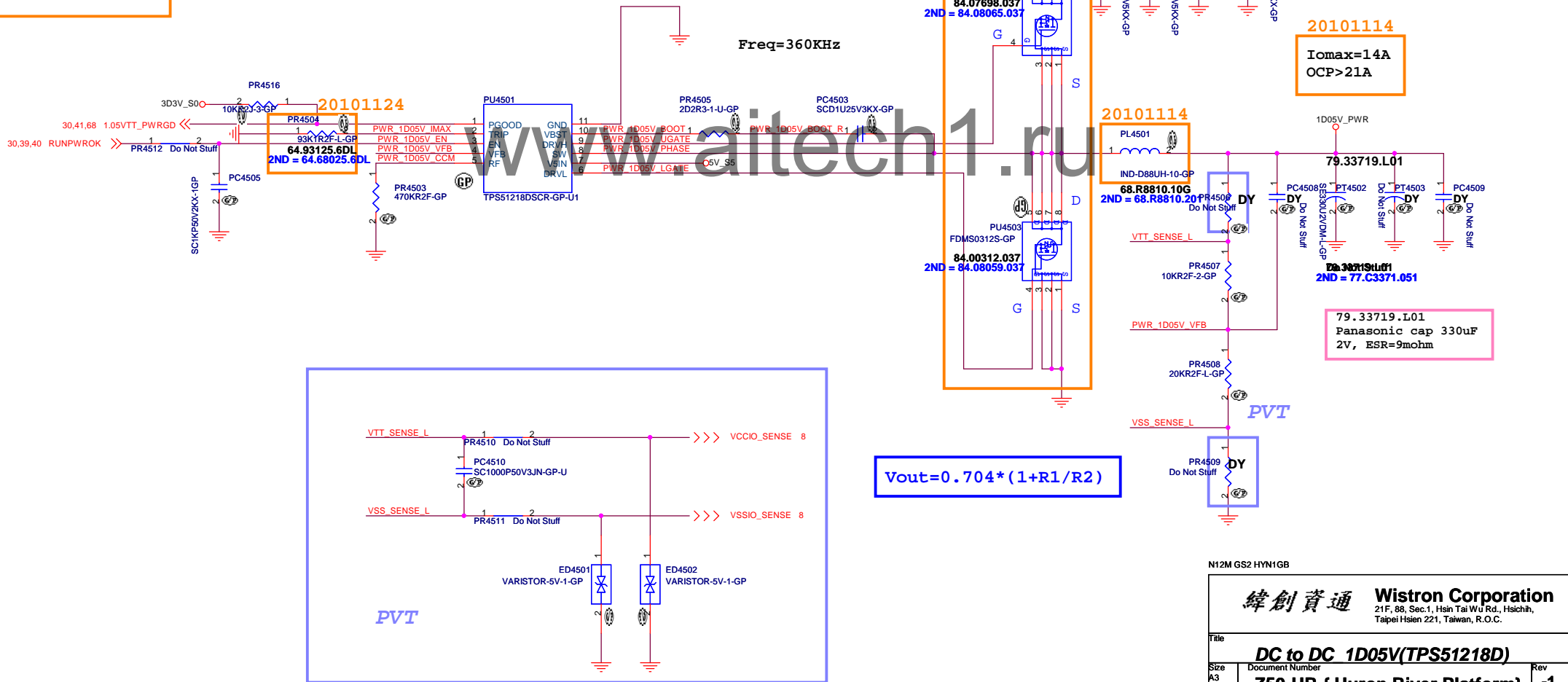
緯創資通 Wistron Corporation
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Taipei Hsien 221, Taiwan, R.O.C.

Title			CPU Core-3(ISL95831)	
Size	Document Number	Z50-HR { Huron River Platform}		Rev
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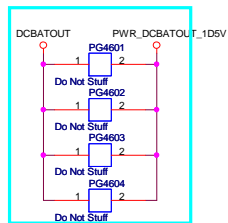
TPS51218D for 1D05V



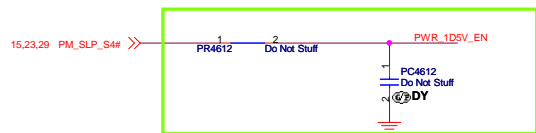
79.47612.3FL
OSCON
Lelon 47uF, 25V
ESR<440mΩ, Iripple=230mA



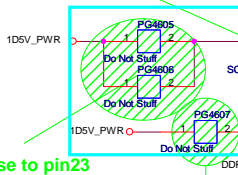

```
SSID = PWR.Plane.Regulator_1p5v0p75v
```



79.47612.3FL
OSCON
Lelon 47uF, 25V
ESR<440mΩ, Iripple=230mA



Close to pin23

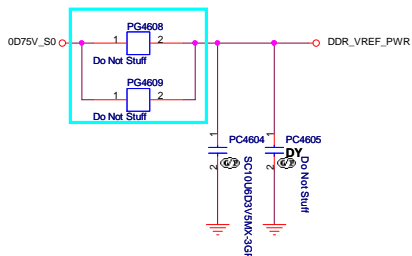


Close to pin23

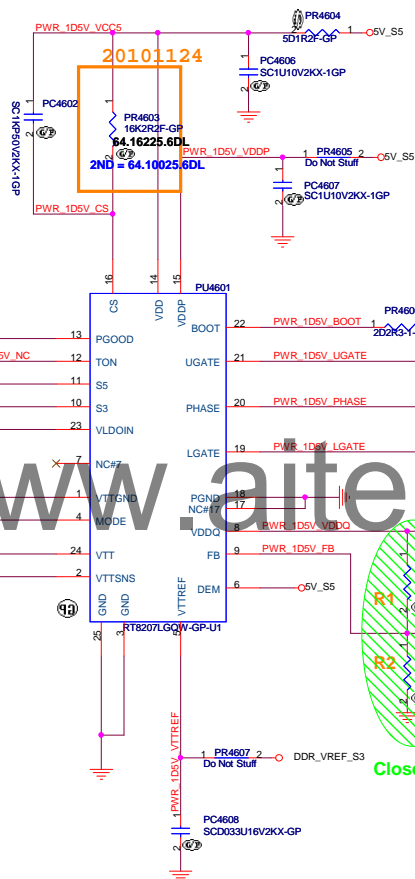
I_{omax}=1A
OCP>1.5A

Close to output cap pin1, not inside of the output cap

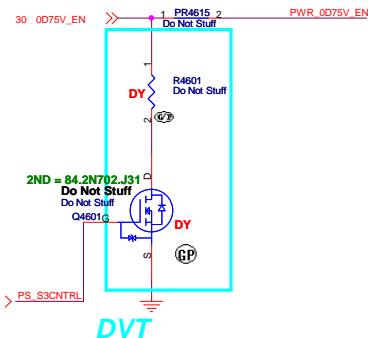
+0.75VS
Iomax: 1.2A



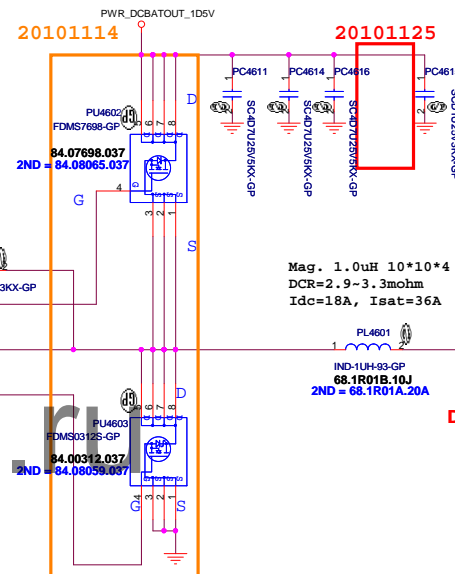
RT8207 for 1D5V and 0D75V



Close to PIN9



29,30,67 PS_S3CNTRL>>>PS_S3CNTRL



Mag. 1.0uH 10*10*4
DCR=2.9~3.3mohm
Idc=18A, Isat=36A

I_{omax}=12A
OCP>20A PVT

2ND = 68.1R01A.20A

1992 — 2000

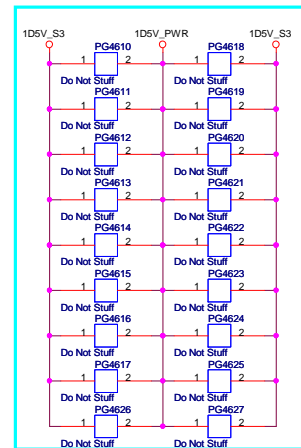
2ND = 77.63371.051

PC4613 PT4602 SES PT4603

Not: 79.33719.L01

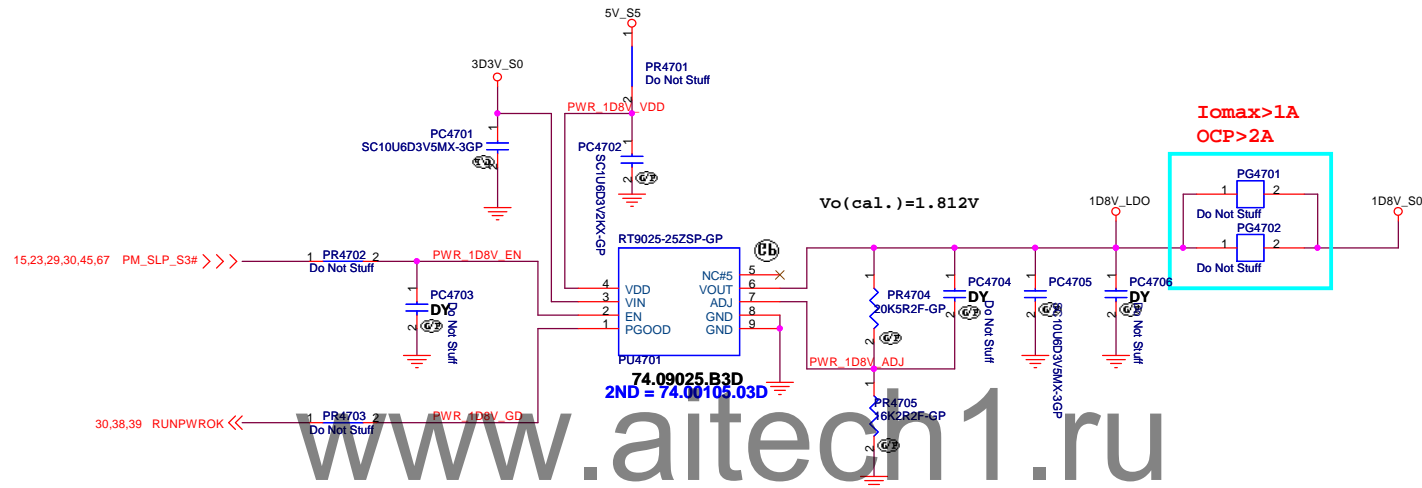
2ND = 77.C3371.051

79.33719.L01
Panasonic cap 330uF
2V, ESR=9mohm



SSID = PWR.Plane.Regulator_1p8v

RT9025 for 1D8V_S0

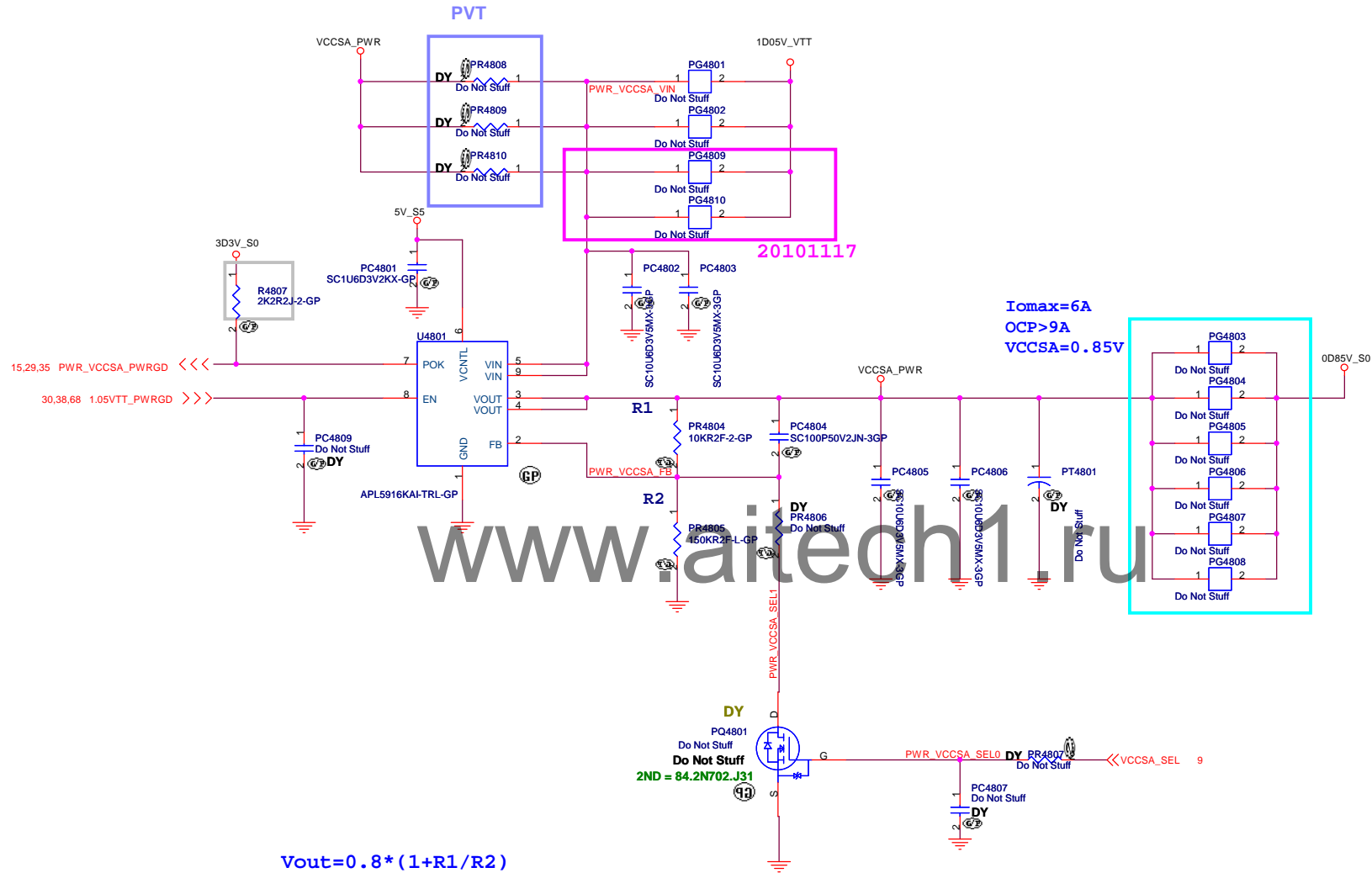


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Title			LDO 1D8V(RT9025)	
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A3	Z50-HR { Huron River Platform}	-1		
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APL5916 for VCCSA



N12M GS2 HYN1GB

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Taipei Hsien 221, Taiwan, R.O.C.

Title

LDO VCCSA(APL5916)

Size

Document Number

Z50-HR { Huron River Platform}

Rev

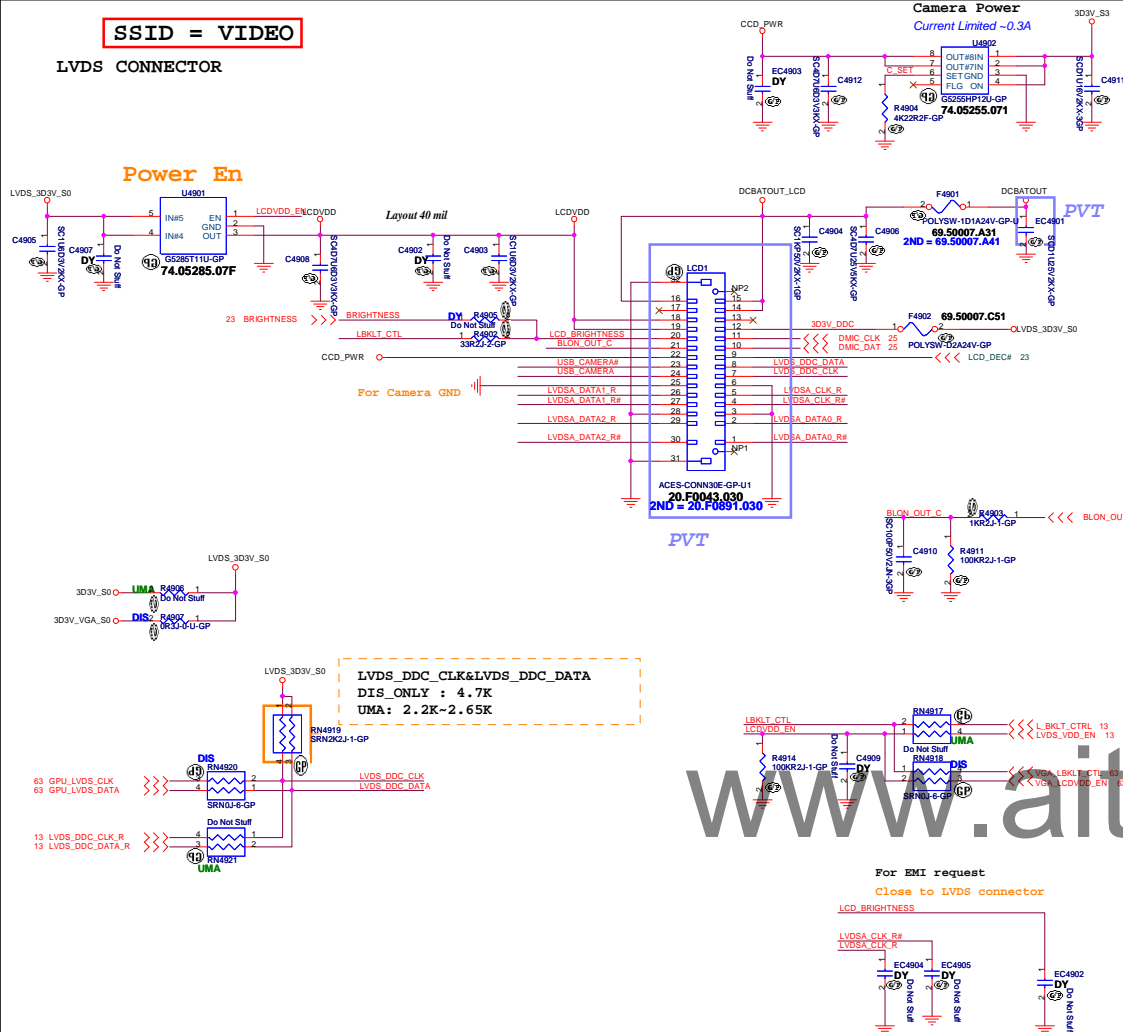
-1

Date: Wednesday, March 02, 2011

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SSID = VIDEO

LVDS CONNECTOR



N12M GS2 HYN1GB

緯創資通

Wistron Corporation

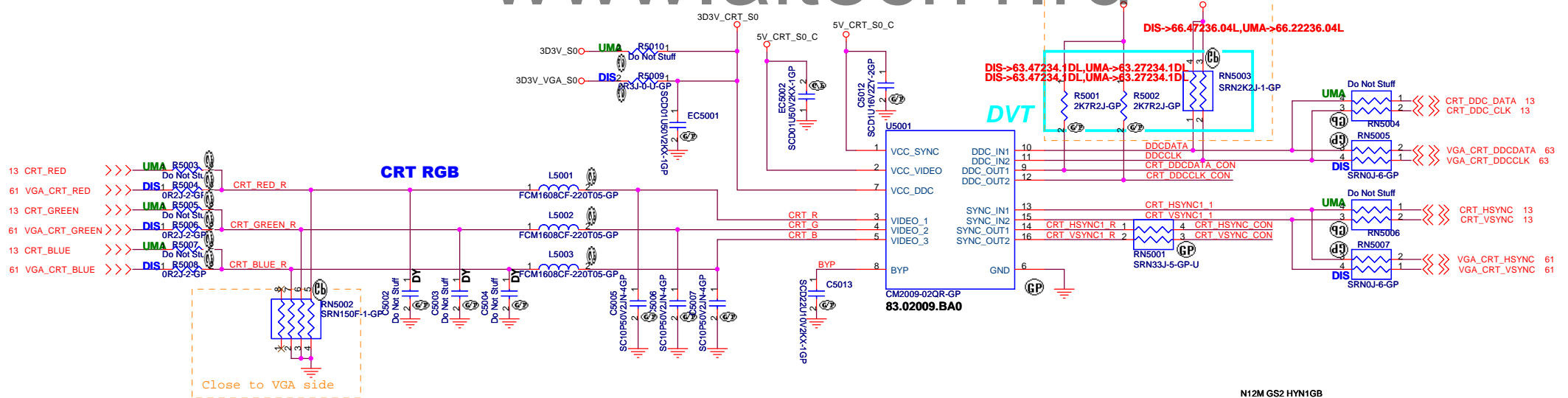
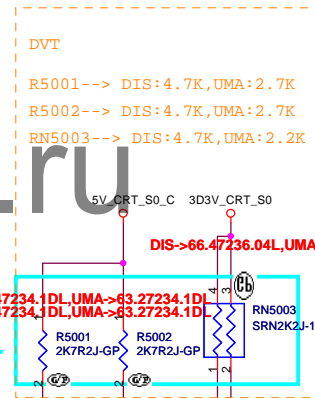
21F, 8B, Sec.1, Hsin Tai Wu Rd., Hsichin,
Taipei Hsien 221, Taiwan, R.O.C.

LCD Connector			
File	Document Number	Rev	
A2	Z50-HR (Huron River Platform)	-1	
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For EMI request
Close to CRT connector

The diagram illustrates the placement of EMI suppression components for three CRT connector signals: CRT_DDCDATA_CON, CRT_HSYNC_CON, and CRT_VSYNC_CON. Each signal line is connected to a series of components: a capacitor (C5008, C5009, C5010), a ferrite bead (represented by a toroid symbol), and another capacitor (C5009, C5010, C5011). The components are connected to ground (DY) through a series of capacitors (C5008, C5009, C5010) and ferrite beads. The ground connection is labeled 'Do Not Stuff'.

CRT_DDCDATA_CON
C5008
Do Not Stuff
DY
C5009
C5010
C5011
DY
Do Not Stuff
DY
Do Not Stuff
DY
Do Not Stuff



SSID = VIDEO

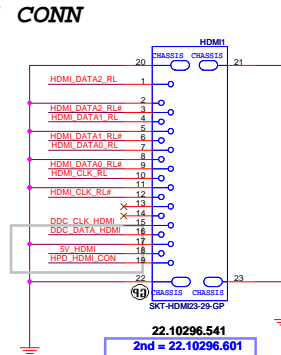
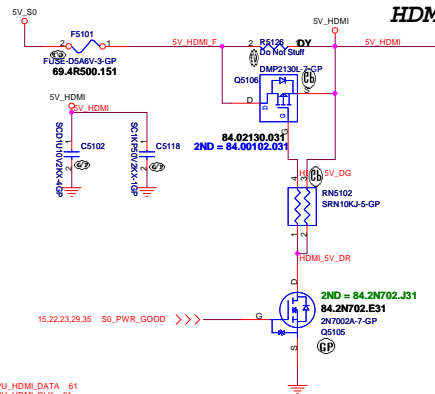
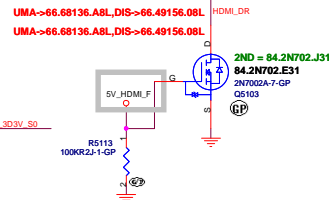
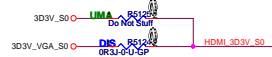
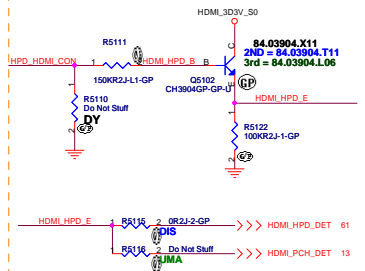
HDMI Level Shifter& CONNECTOR

13 HDMI_DATA2_C >>> C5119 1 >>> UMA Do Not Stuff HDMI_DATA2_R
 13 HDMI_DATA2_C# >>> C5120 1 >>> UMA Do Not Stuff HDMI_DATA2_R#
 13 HDMI_DATA1_C >>> C5121 1 >>> UMA Do Not Stuff HDMI_DATA1_R
 13 HDMI_DATA1_C# >>> C5122 1 >>> UMA Do Not Stuff HDMI_DATA1_R#
 13 HDMI_DATA0_C >>> C5123 1 >>> UMA Do Not Stuff HDMI_DATA0_R
 13 HDMI_DATA0_C# >>> C5124 1 >>> UMA Do Not Stuff HDMI_DATA0_R#
 13 HDMI_CLK_C >>> C5125 1 >>> UMA Do Not Stuff HDMI_CLK_R
 13 HDMI_CLK_C# >>> C5126 1 >>> UMA Do Not Stuff HDMI_CLK_R#

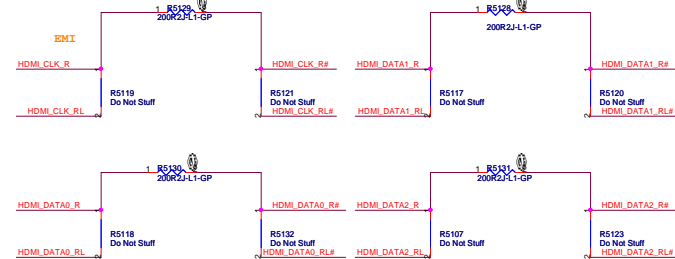
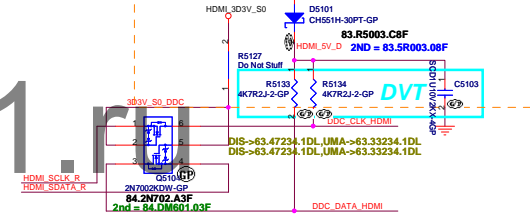
61 HDMI_CLK# >>> HDMI_CLK# C5127 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_CLK >>> HDMI_CLK C5128 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_DATA0# >>> HDMI_DATA0# C5129 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_DATA0 >>> HDMI_DATA0 C5130 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_DATA1# >>> HDMI_DATA1# C5131 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_DATA1 >>> HDMI_DATA1 C5132 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_DATA2# >>> HDMI_DATA2# C5133 1 >>> 8CD1U10V2KX-5GP DIS
 61 HDMI_DATA2 >>> HDMI_DATA2 C5134 1 >>> 8CD1U10V2KX-5GP DIS

RN5103,RN5104
 For Intel SPEC the resistor need stuff 680 ohm
 For VGA SPEC the resistor need stuff 499 ohm

DIS HDMI Detect



DVT
 R5133 DIS 4.7K pull up ,UMA 3.3K pull up
 R5134 DIS 4.7K pull up ,UMA 3.3K pull up



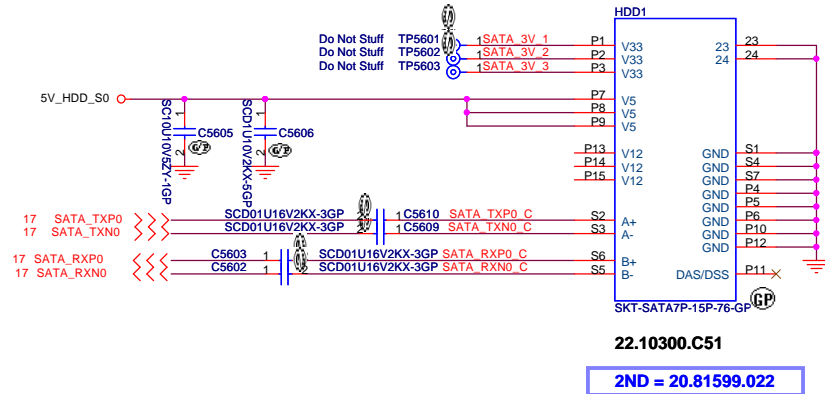
N12M GS2 HYN1GB

緯創資通 Wistron Corporation
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File: HDMI Level Shifter/Connector
 Size: 250-HR { Huron River Platform }
 Date: Wednesday, March 02, 2011 Sheet 44 of 74

SSID = SATA

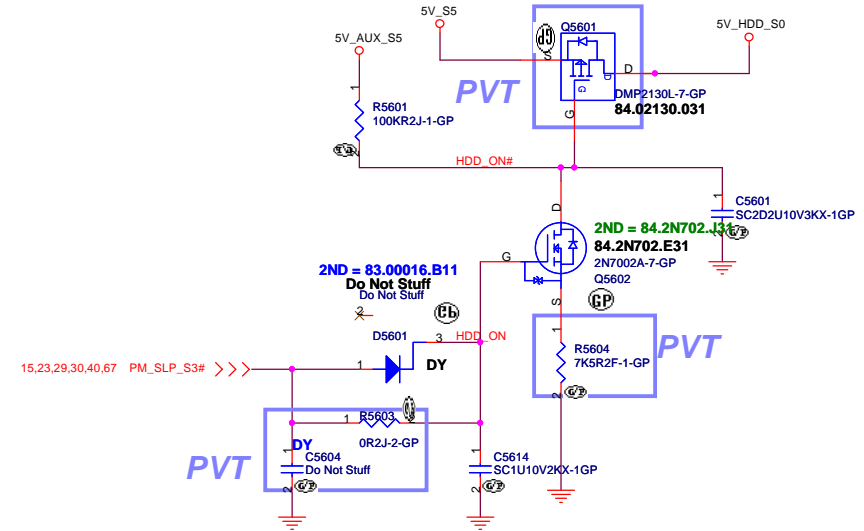
SATA HDD Connector



PVT

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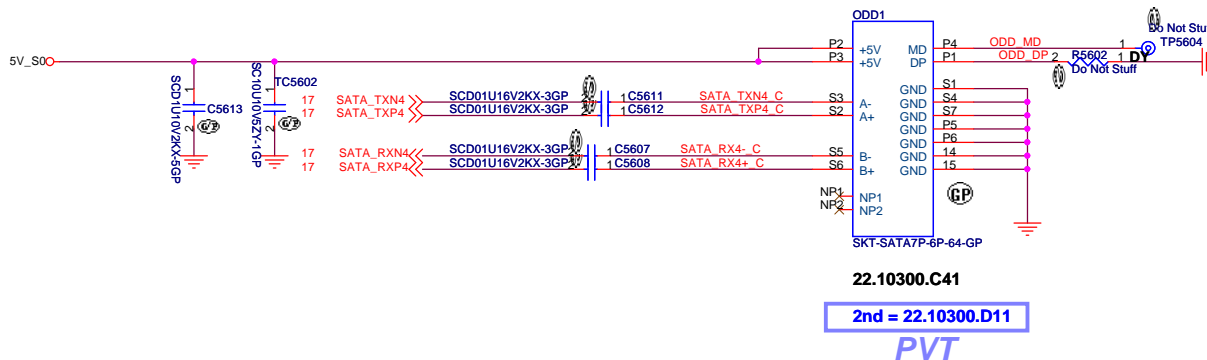
Delay HDD power



Delay HDD power off timing for 400ms after SATA controller shut down. Control the C5601 and R5601 to finally tune delay timing between 500ms and 400ms.

ODD Connector

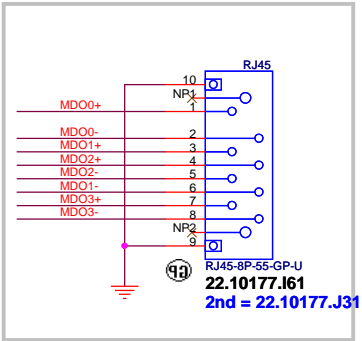
SATA_RX- and SATA_RX+ Trace
Length match within 20 mil



N12M GS2 HYN1GB

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21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.			
Title			
HDD/ODD			
Size	Document Number	Rev	
A3	Z50-HR { Huron River Platform}	-1	
Date:	Wednesday, March 02, 2011	Sheet	45 of 74

SSID = LOM



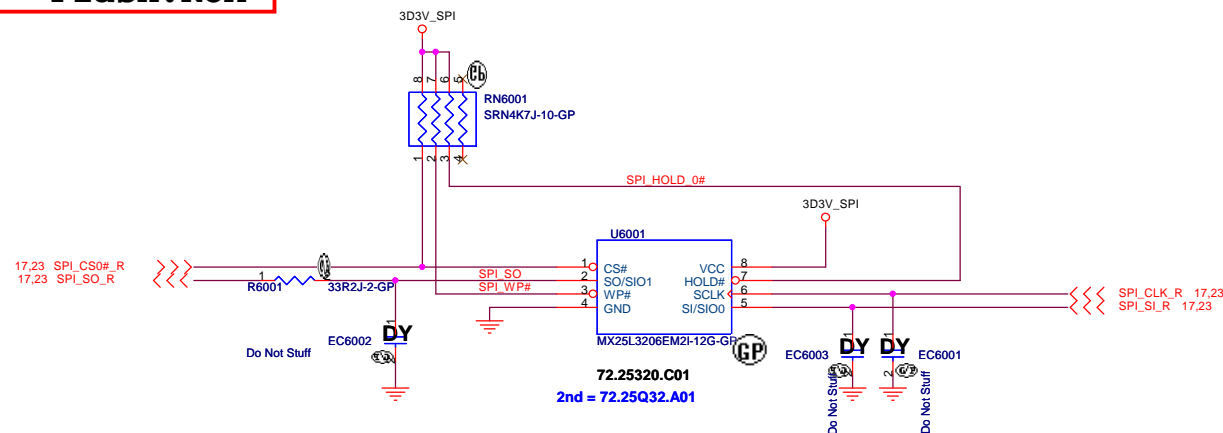
The diagrams show four identical circuit topologies for MDI0, MDI1, MDI2, and MDI3. Each circuit consists of a transformer with primary terminals 1 and 2, and secondary terminals 3 and 4. The secondary terminals are connected to a GP component (labeled RN5900, RN5901, RN5902, and RN5903 respectively). The GP component is then connected to a resistor network consisting of two resistors in series, labeled C5901, C5902, C5903, and C5904 respectively. The output terminals are labeled 1 and 2, and the output signal is labeled MID0 RC, MID1 RC, MID2 RC, and MID3 RC respectively. The output signal is connected to a resistor network consisting of two resistors in series, labeled SCD1U10V2KX-4GP, SCD1U10V2KX-4GP, SCD1U10V2KX-4GP, and SCD1U10V2KX-4GP respectively.

Timing diagram showing clock signals for MID0_RC, MID1_RC, MID2_RC, MID3_RC, AVDD_CEN, and AVDD_CEN. Each signal is a square wave with a period of 1 unit. The signals are labeled with their respective pin numbers and the text "Do Not Stuff".

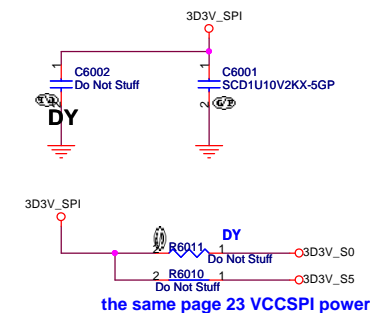
- MID0_RC (EC5901) Do Not Stuff
- MID1_RC (EC5902) Do Not Stuff
- MID2_RC (EC5903) Do Not Stuff
- MID3_RC (EC5904) Do Not Stuff
- AVDD_CEN (EC5905) Do Not Stuff
- AVDD_CEN (EC5906) Do Not Stuff
- AVDD_CEN (EC5907) Do Not Stuff
- AVDD_CEN (EC5908) Do Not Stuff

 緯創資通		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
LAN CONNECTOR			
Size A3	Document Number	Rev	
Z50-HR { Huron River Platform}		-1	
Date:	Wednesday, March 02, 2011	Sheet	47 of 74

SSID = Flash.ROM

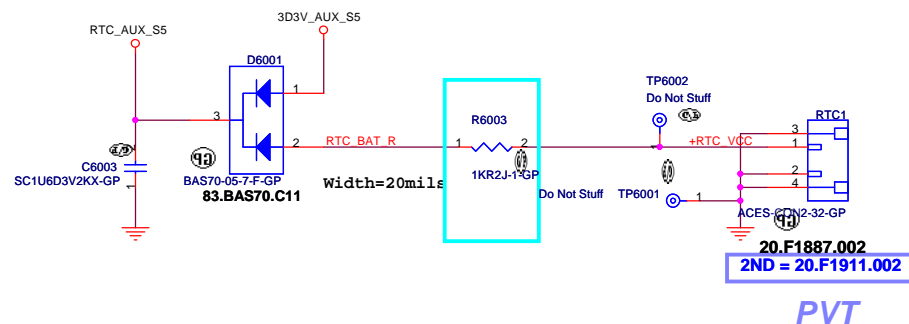
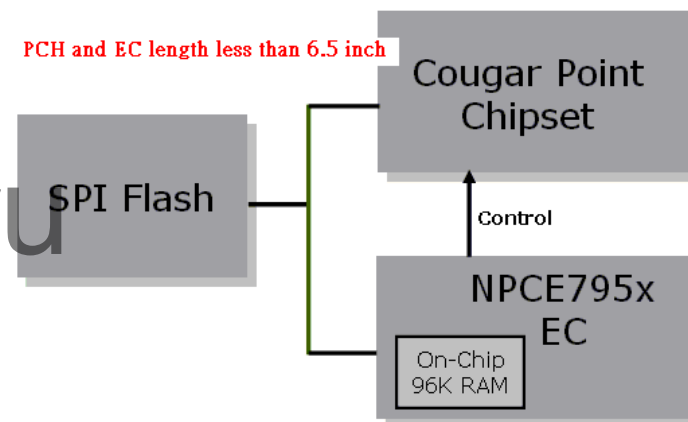


SYSTEM SPI ROM
Socket : 62.10089.001



SPI ROM Equal length need to less than 500mil

PCH and EC length less than 6.5 inch

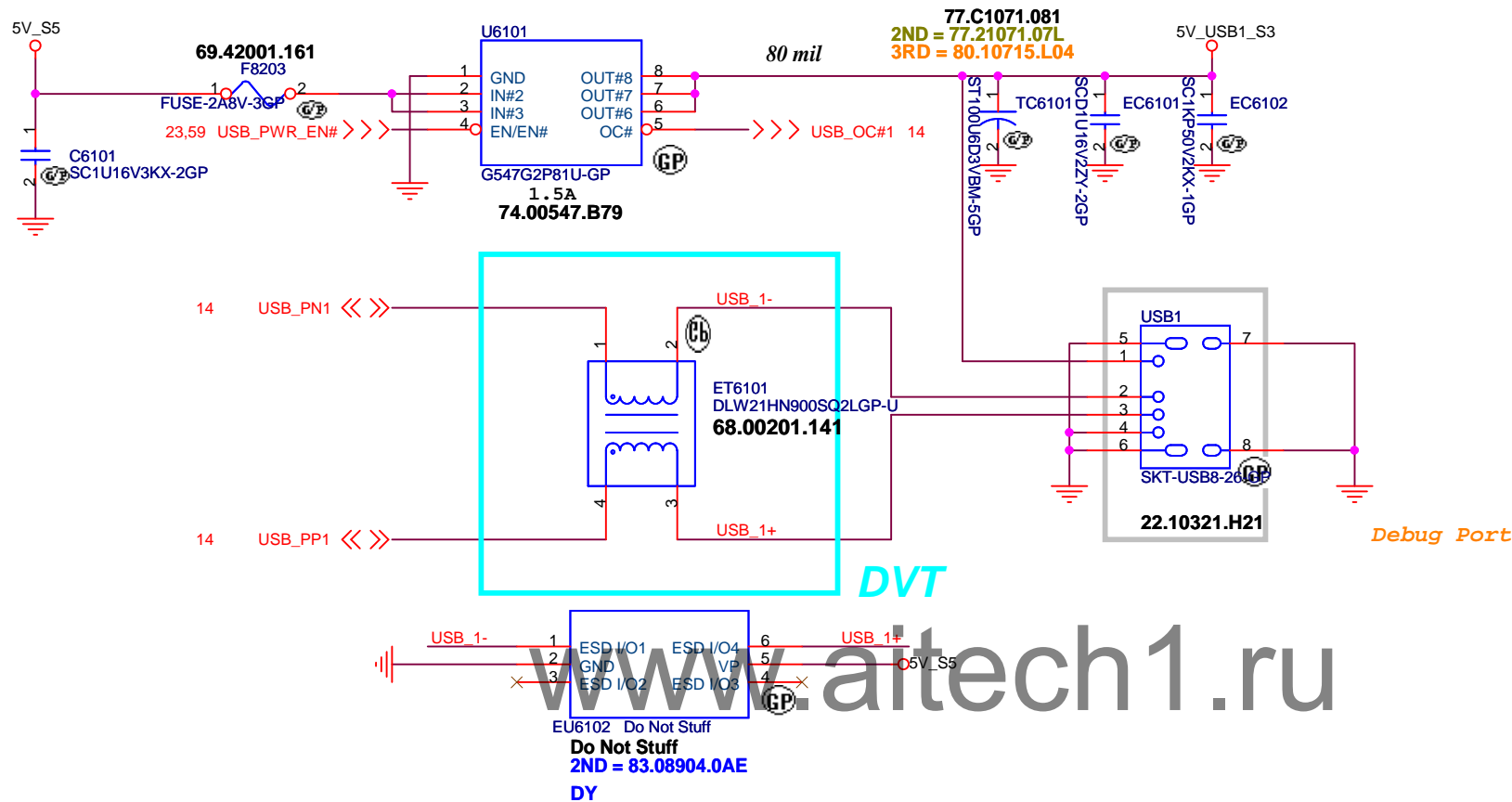


N12M GS2 HYN1GB

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21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title Flash(KBC+PCH)/RTC CONN

Size A3 Document Number Z50-HR (Huron River Platform) Rev -1
Date: Wednesday, March 02, 2011 Sheet 48 of 74



N12M GS2 HYN1GB

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Title

USB Power SW

Size
A4

Document Number

Z50-HR { Huron River Platform}

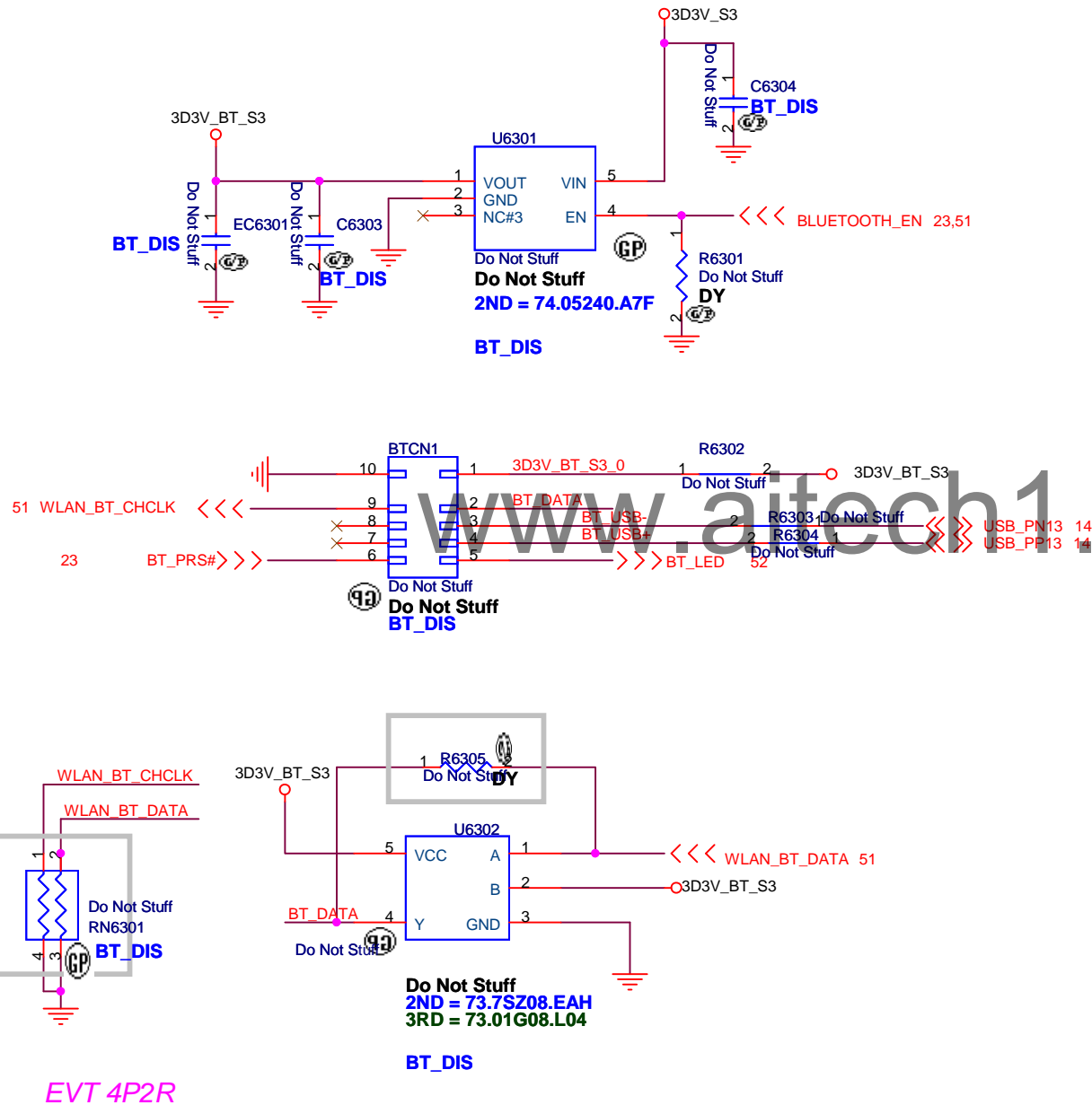
Rev
-1

Date: Wednesday, March 02, 2011

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SSID = User.Interface
Bluetooth Module conn.

Bluetooth



N12M GS2 HYN1GB

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Title

Bluetooth

Size
A4

Document Number

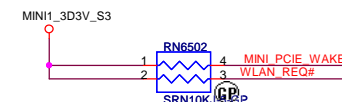
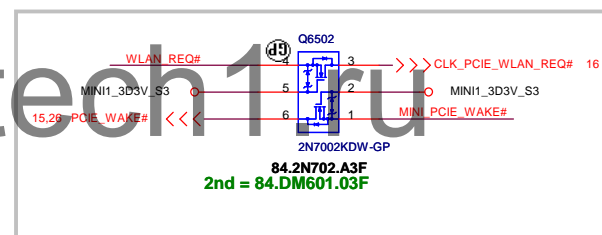
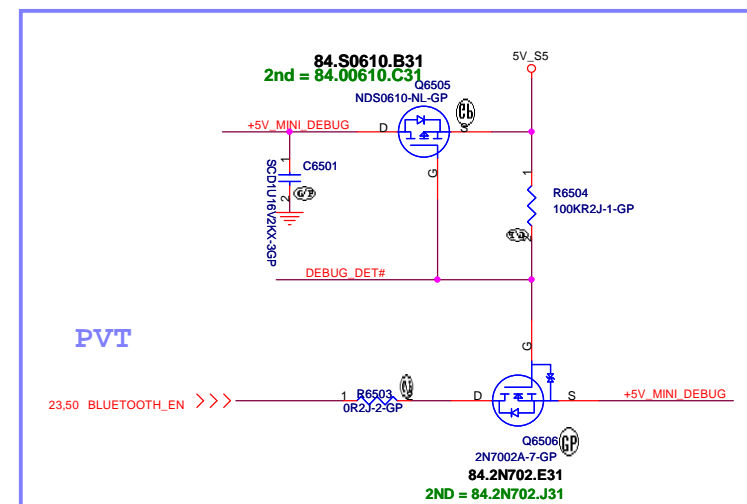
250-HR { Huron River Platform}

Rev
-1

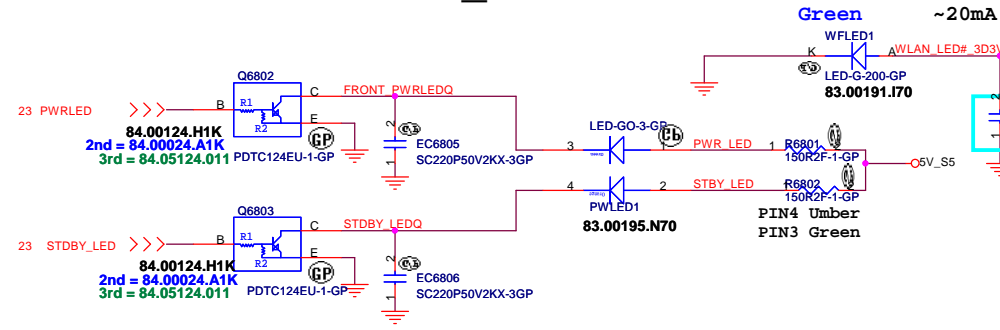
Date: Wednesday, March 02, 2011

Sheet 50 of 74

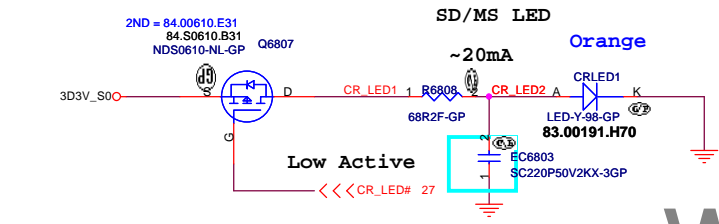
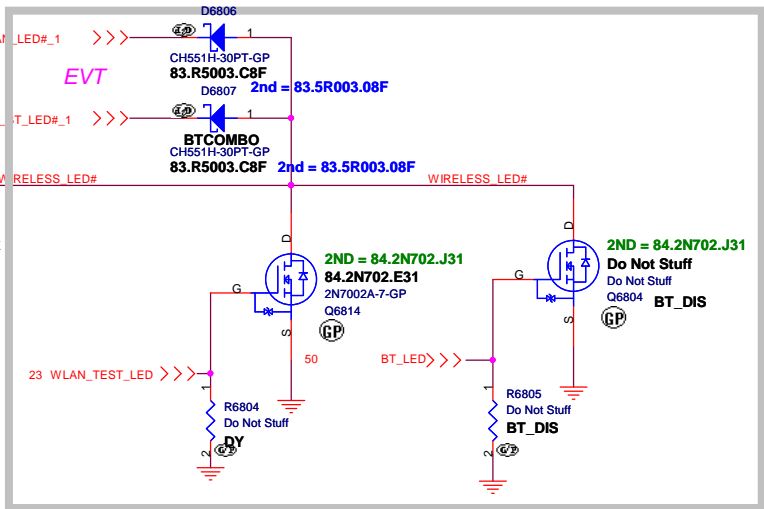
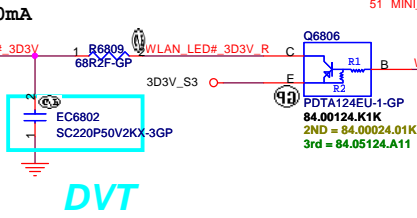
Mini Card Connector(802.11a/b/g/n)



Power button LED
Power STDBY_LED



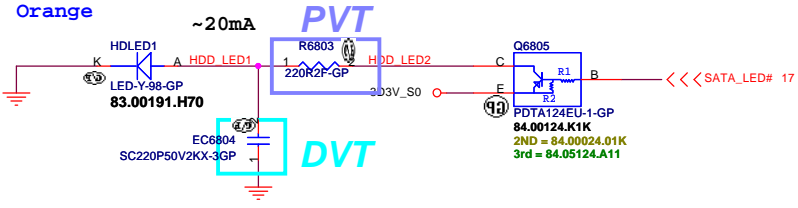
WLAN_LED



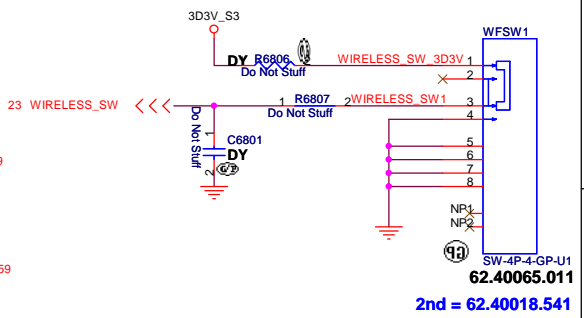
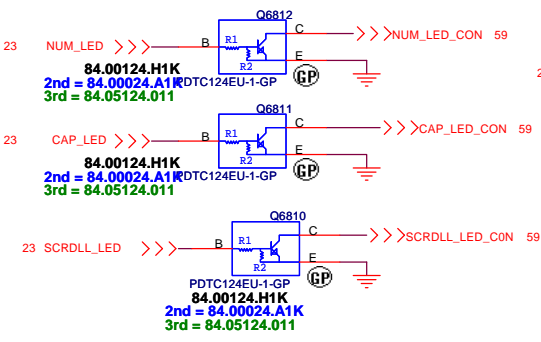
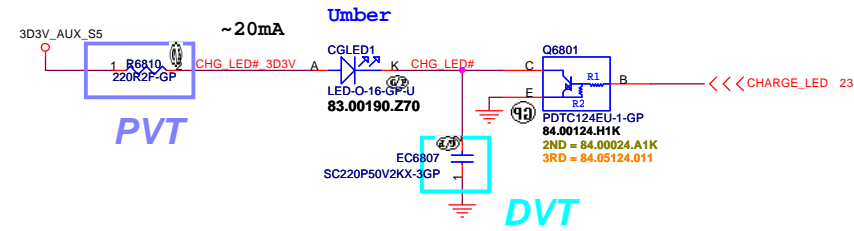
Common wireless SW(mechanical)	ON							
WLAN SW (software)	ON	OFF	ON	OFF	ON	OFF	ON	OFF
WWAN SW (software)	ON	ON	OFF	OFF	ON	ON	OFF	OFF
Bluetooth SW (software)	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
LED	TURN ON							

active	High	Low
WWAN(W_DISABLE#)	ON	OFF
WLAN(WLAN_LED#)	OFF	ON
Bluetooth(BT_LED)	ON	OFF

SATA HDD LED

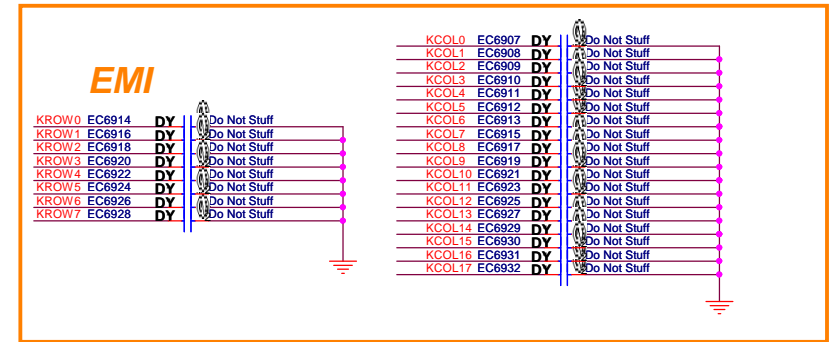
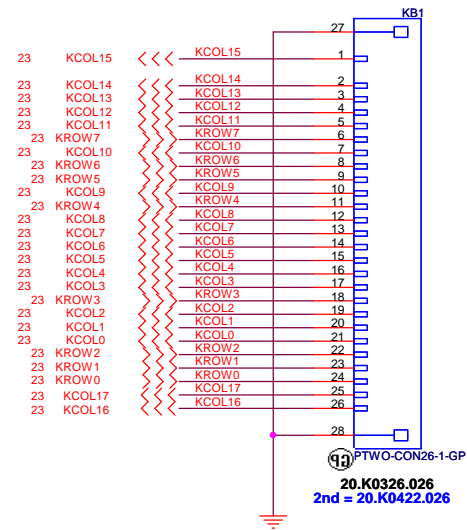


Battery LED1(CHARGE)

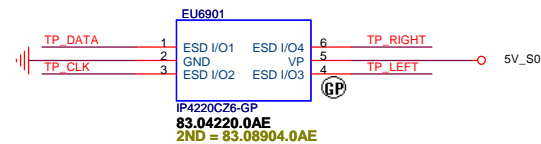
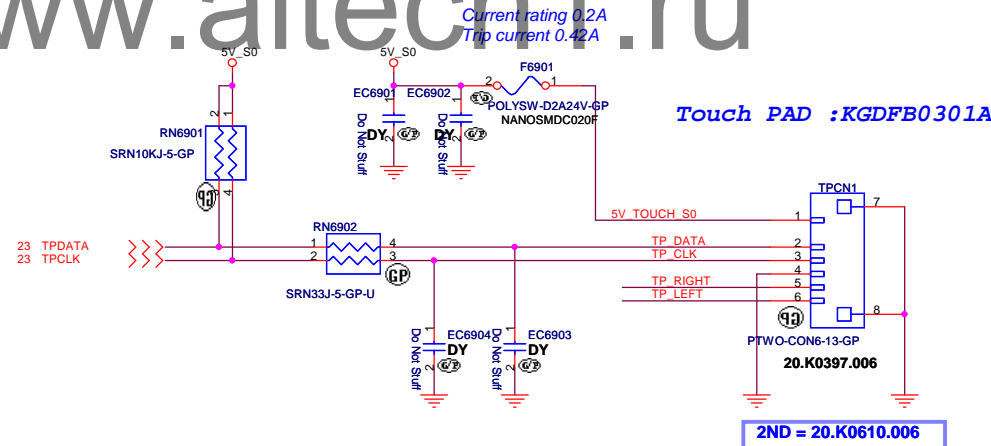
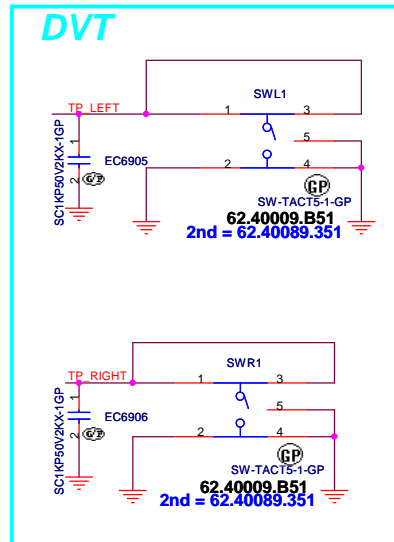


SSID = KBC

Internal KeyBoard Connector



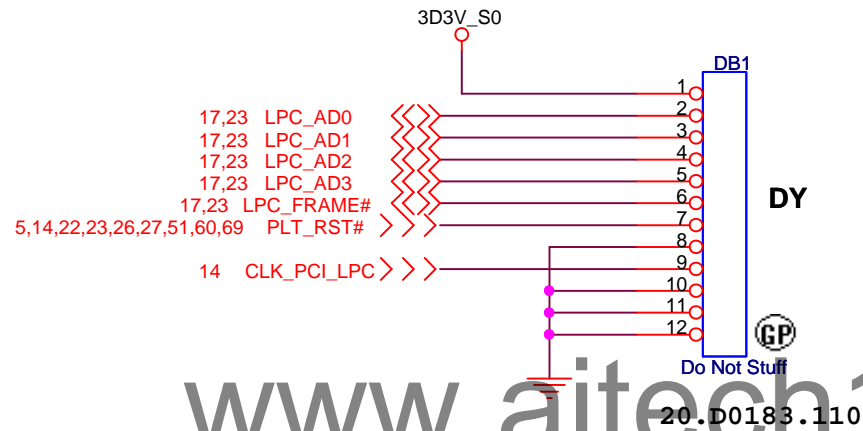
TOUCH PAD



N12M GS2 HYN1GB

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EVT



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Taipei Hsien 221, Taiwan, R.O.C.

Title

Dubug connector

Size
A

Document Number

Z50-HR { Huron River Platform}

Rev

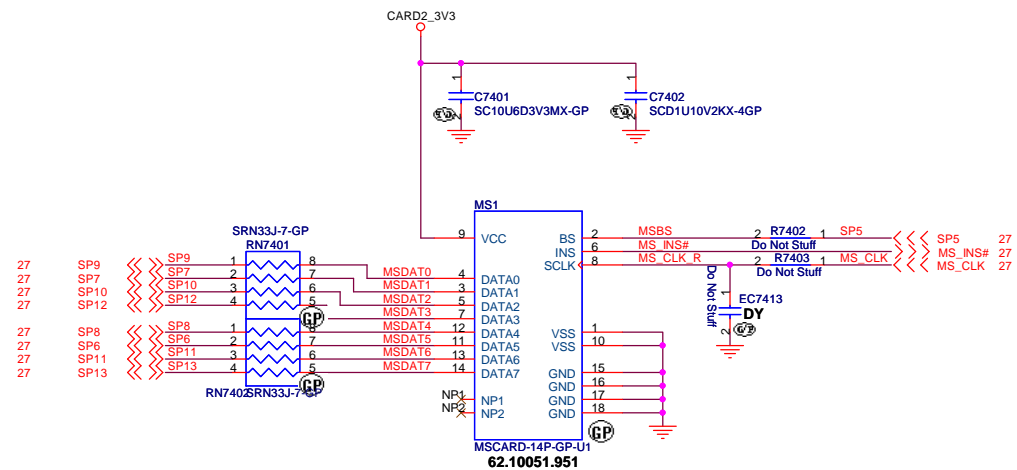
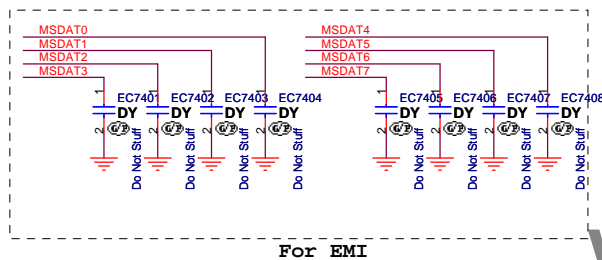
-1

Date: Wednesday, March 02, 2011

Sheet 55 of

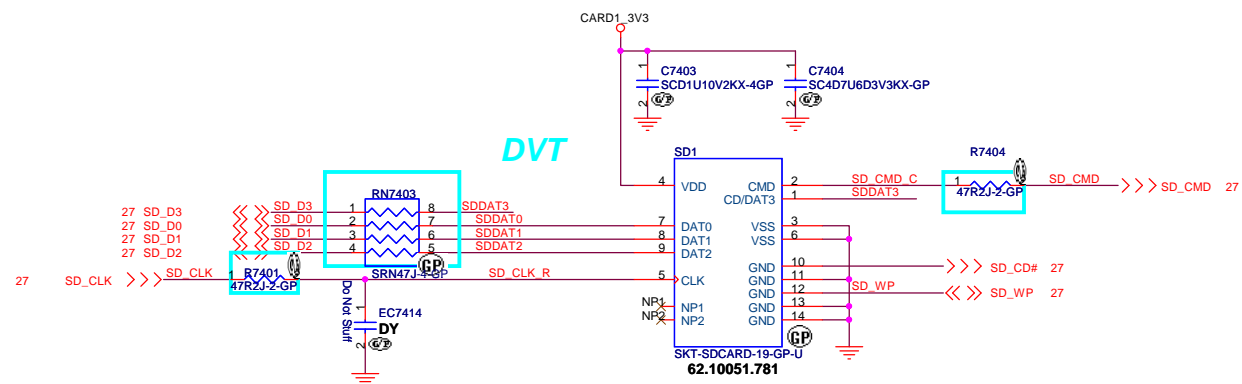
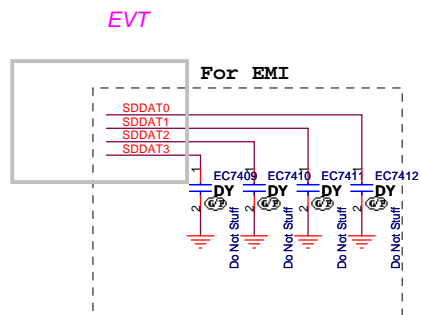
74

SD/MS Card Reader



MS CONN.

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SD CARD CONN.

N12M GS2 HYN1GB

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Taipei Hsien 221, Taiwan, R.O.C.

Title

CARD Reader CONN

Size

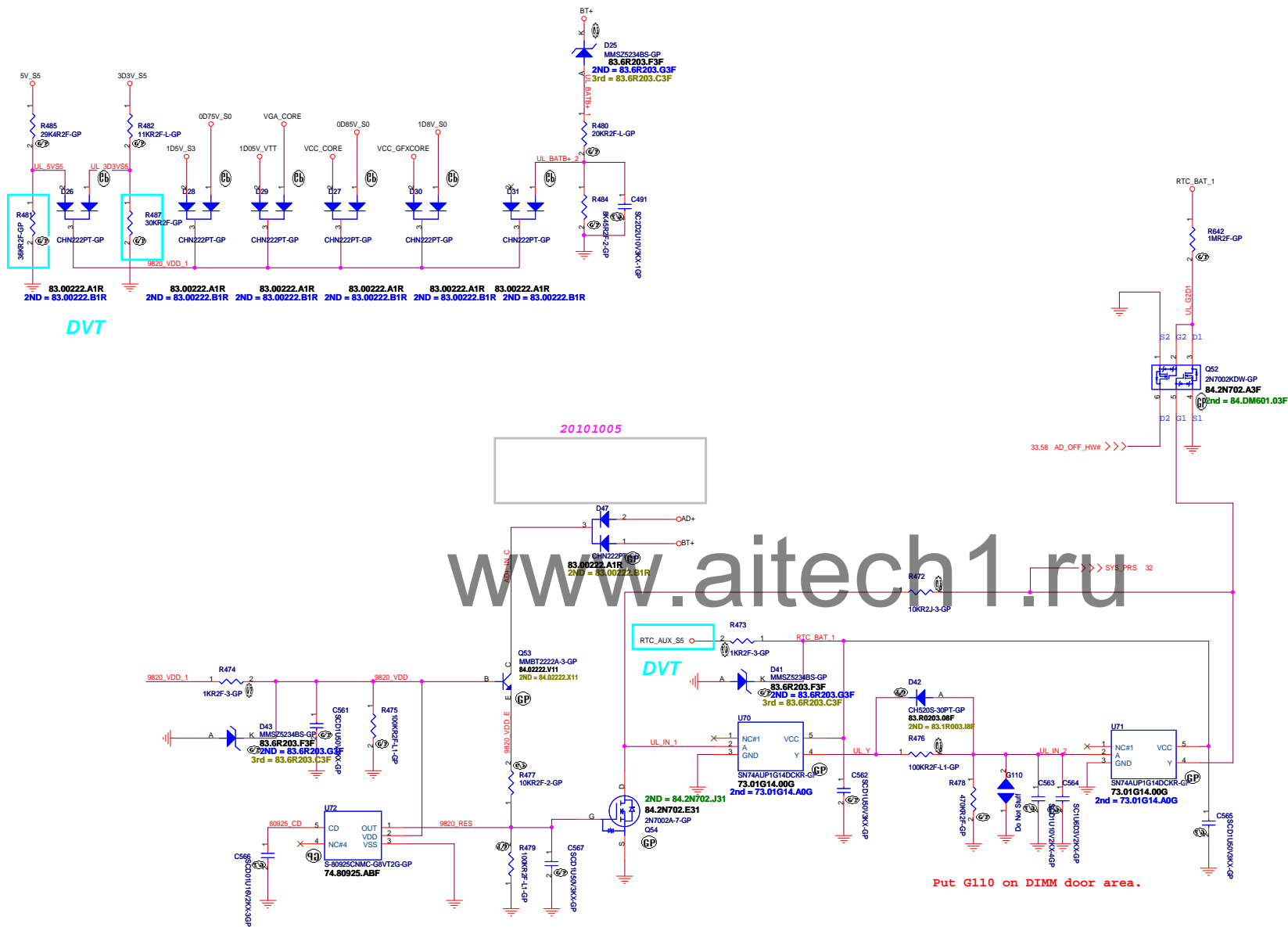
Document Number

Z50-HR { Huron River Platform}

Rev

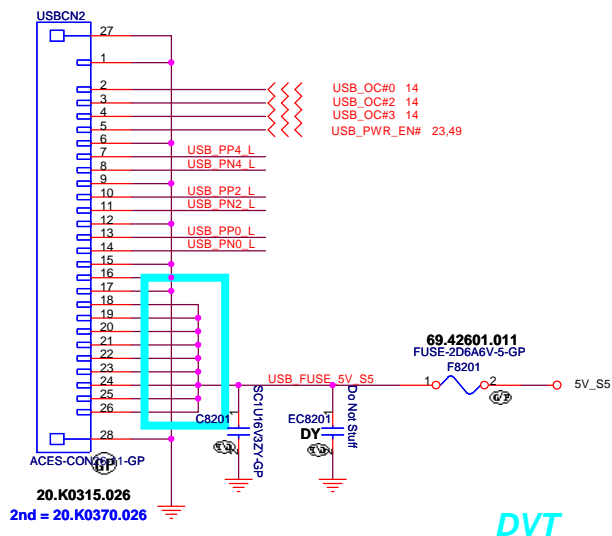
Date: Wednesday, March 02, 2011

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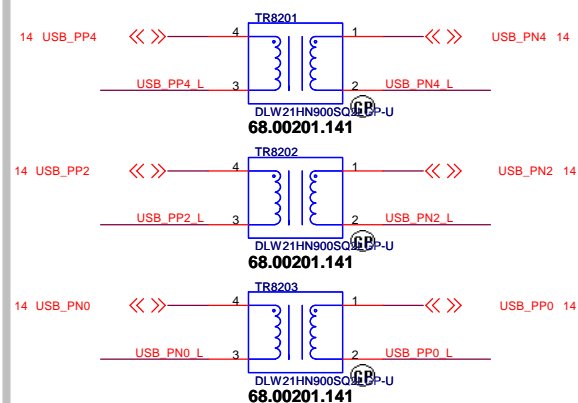


N12M GS2 HYH1G8

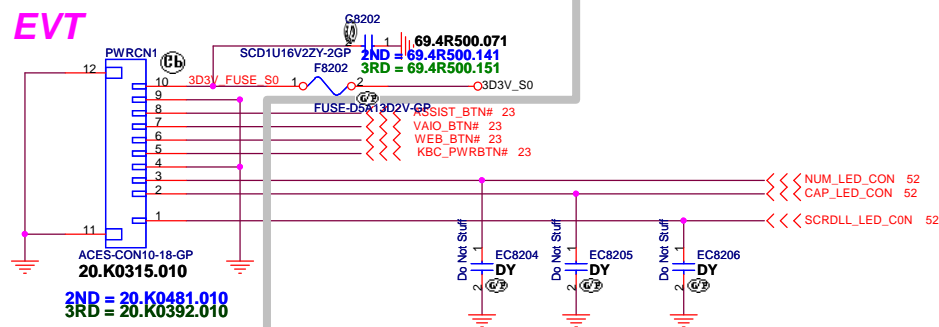
USB BTB CONN



EVT



LED BTB CONN

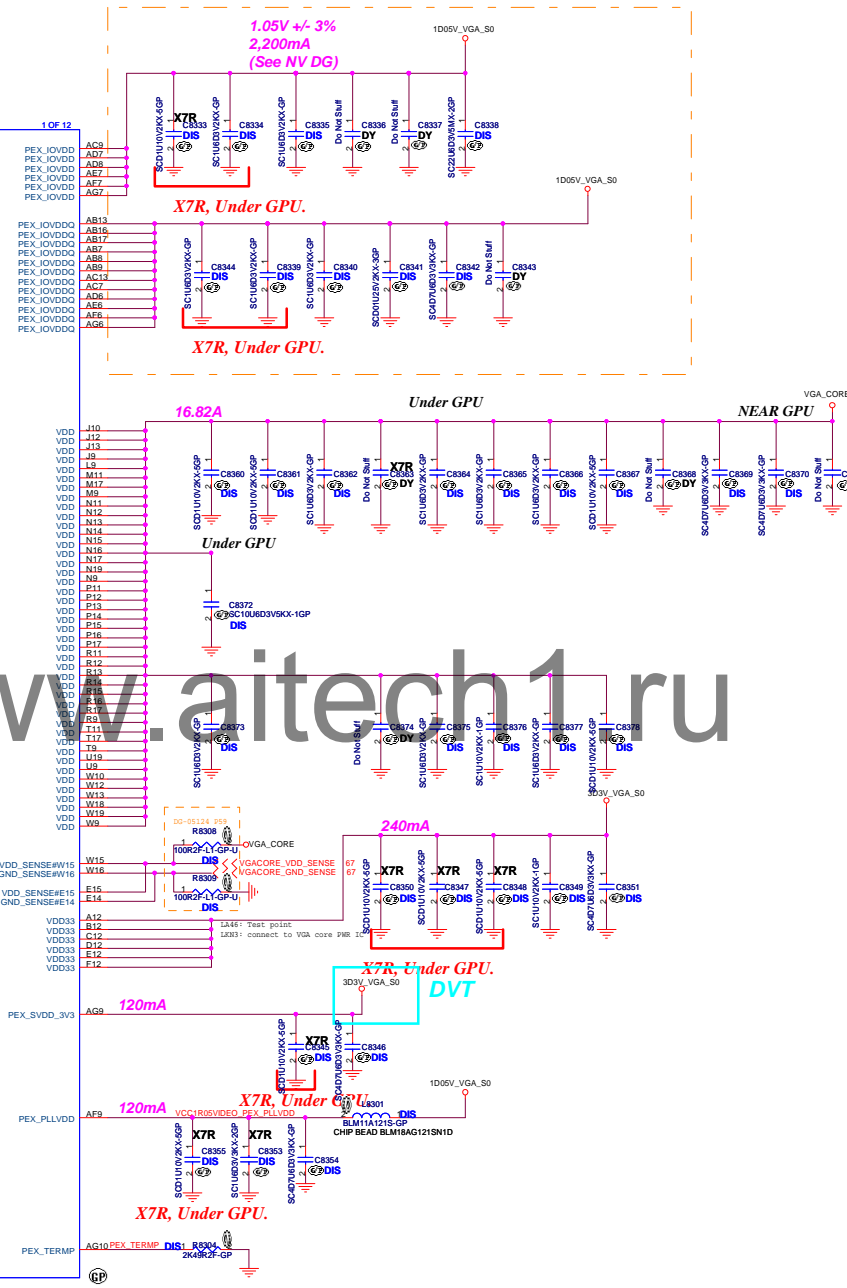


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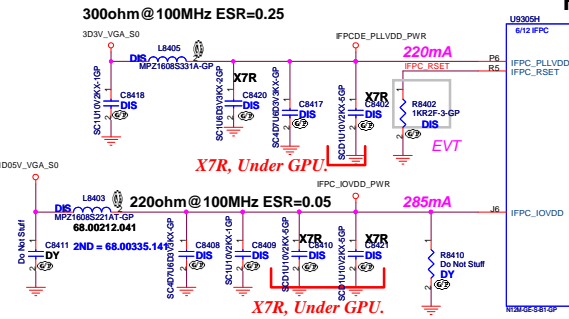
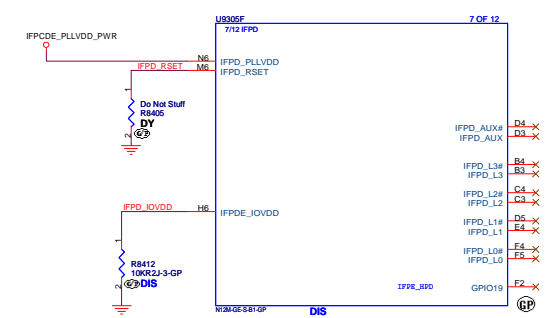
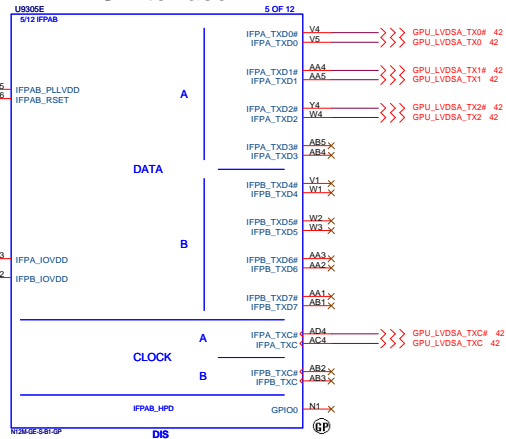
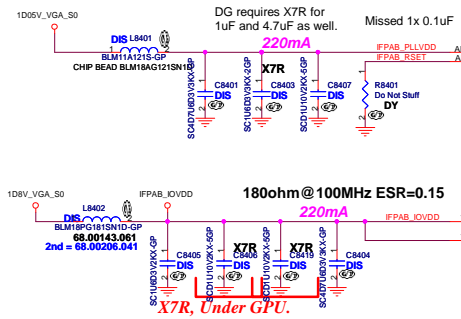
N12M GS2 HYN1GB

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Taipei Hsien 221, Taiwan, R.O.C.

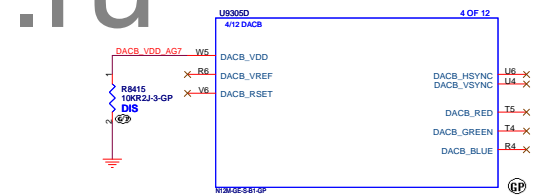
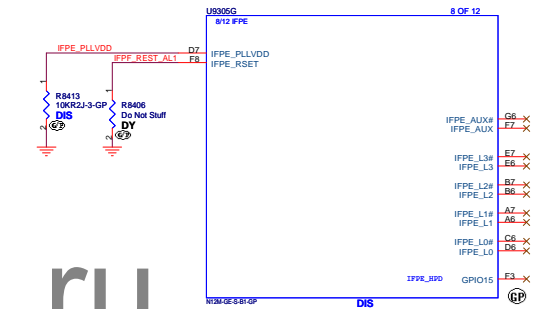
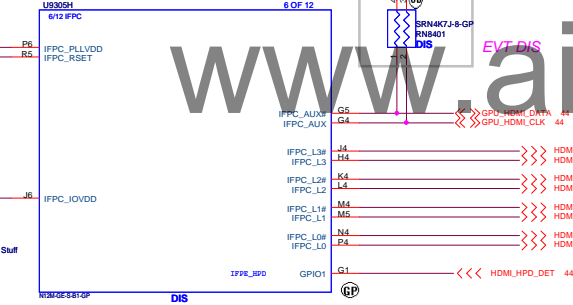
Title		
IO Board Connector		
Size	Document Number	Rev
A3	Z50-HR { Huron River Platform }	-1
Date: Wednesday, March 02, 2011	Sheet 59 of 74	



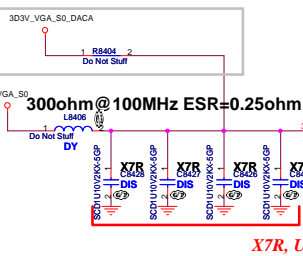
LVDS Interface



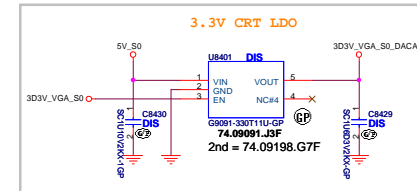
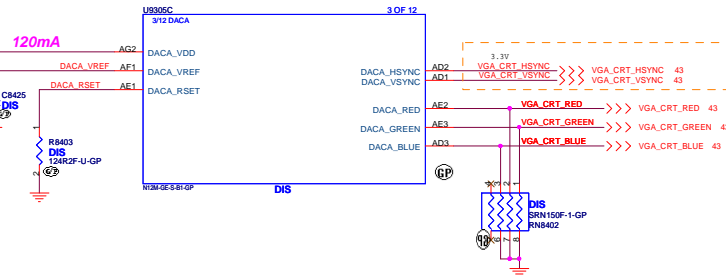
HDMI Interface



I2CA=>CRT, I2CC=>LVDS.

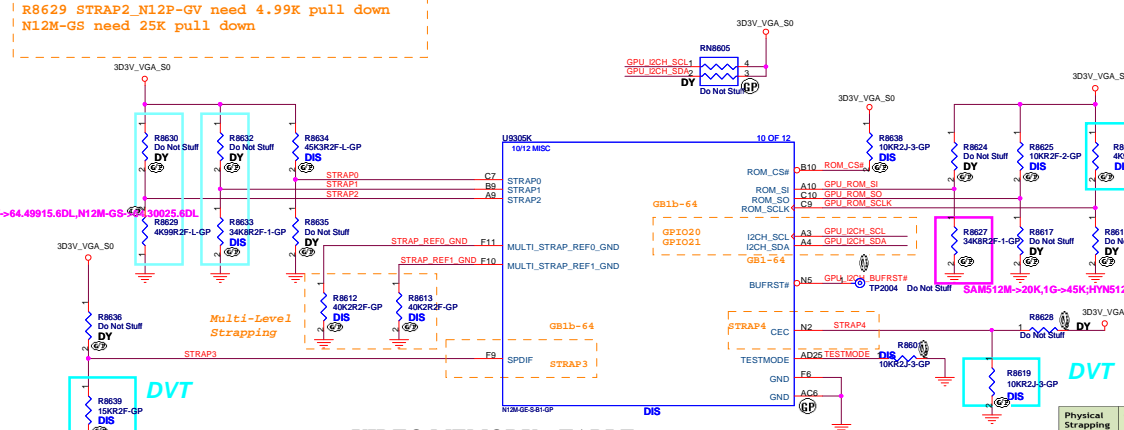


Missed 3x 0.1uF




```
|-----|
| DVT
| R8629 STRAP2_N12P-GV need 4.99K pull down
| N12M-GS need 25K pull down
```

→64.49915.6DL,N12M-GS-50430025.6DL



	Resistor Values	Pull-up to VDD	Pull-down to GND
	5 k Ω	1000	0000
	10 k Ω	0001	0001
HY101 (5120VRAM)	15 k Ω	1010	0010
	20 k Ω	1011	0011
	25 k Ω	1100	0100
	30 k Ω	1101	0101
HY201 (10VRAM)	35 k Ω	1110	0110
	40 k Ω	1111	0111

L-FGP

GPU_ROM_SI	for 1Gbitt Hynixk VGRAM	for 2Gbitt Hynixk VGRAM	for 1Gbitt Samsung VGRAM	for 2Gbitt Samsung VGRAM
	RAM_CFG[0]=0	RAM_CFG[0]=0	RAM_CFG[0]=1	RAM_CFG[0]=1
	RAM_CFG[1]=1	RAM_CFG[1]=1	RAM_CFG[1]=1	RAM_CFG[1]=1
	RAM_CFG[2]=0	RAM_CFG[2]=1	RAM_CFG[2]=0	RAM_CFG[2]=1
	RAM_CFG[3]=0	RAM_CFG[3]=0	RAM_CFG[3]=0	RAM_CFG[3]=0

GPU_ROM_SO

VGA_DEVICE	= 1 (low bit)
SMU_Alt_ADDR	= 0
FB_0_BA_SIZE	= 0
CXCLX_417	= 0 (High bit)

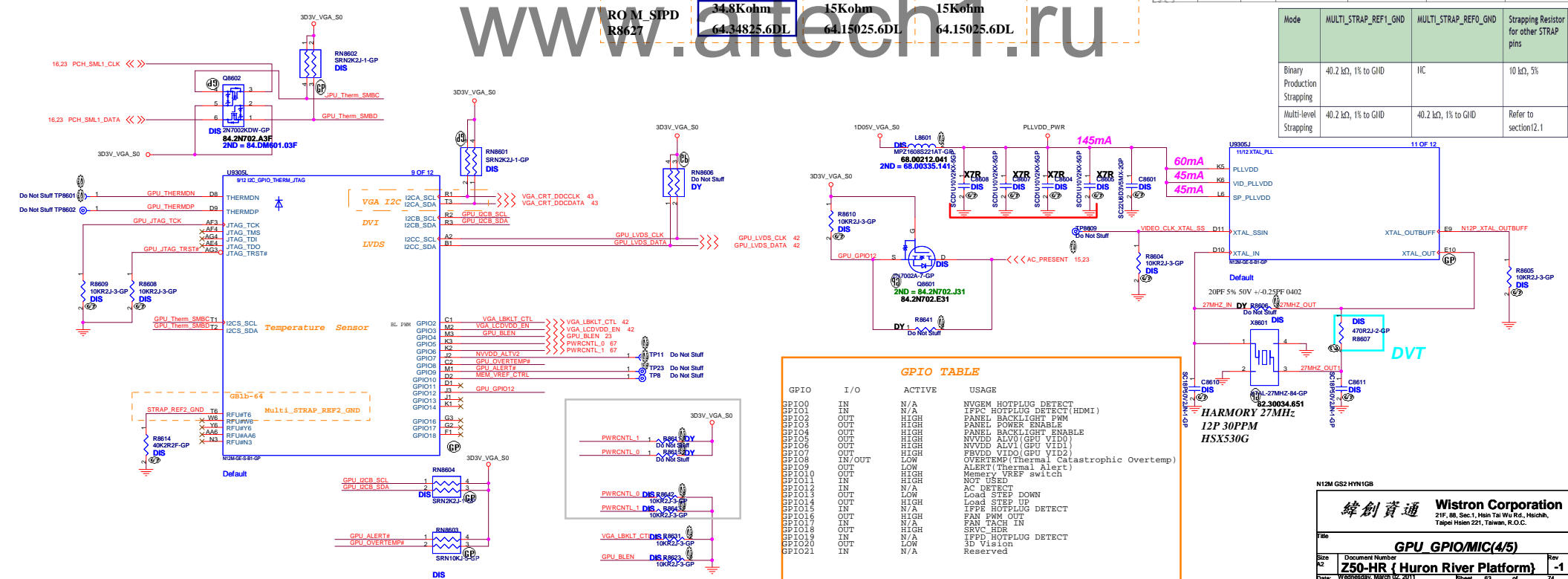
15K,16>=35K

GPU_ROM_SCLK	PEX_PLL_EN_TERM = 0
	SLOT_CLK_CFG = 1
	GPU_VENDOR = 0
	PCI_DEVID[4] = 1

it's the last bit of F from 0x00F

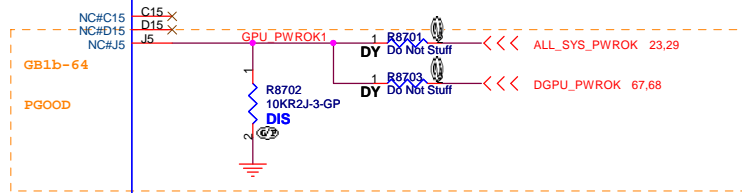
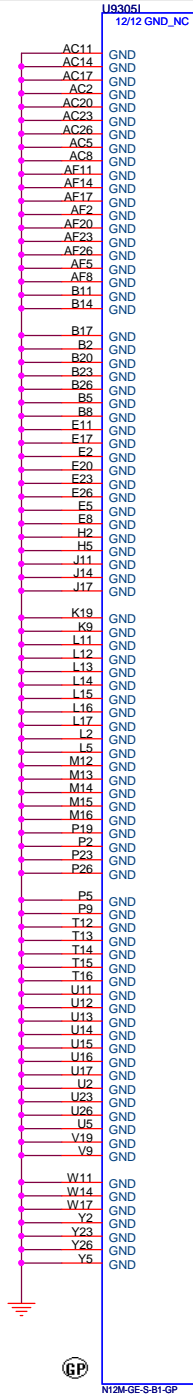
VIDEO MEMORY TABLE				
	HYNIX 128Mx16 0110	SAMSUNG 128Mx16 0111	HYNIX 64Mx16 0010	Samsung 64Mx16 0011
RO M_SIPD R8627	34.8Kohm 64.34825.6DL	45.3Kohm 64.45325.6DL	15Kohm 64.15025.6DL	20Kohm 64.20025.6DL

NVIDIA TABLE			
	N12P-Q1 ES DEV ID: 0x0DFE	N12P-Q1 QS DEV ID: 0x0DFA	N12P-Q3 DEV ID: 0x0DDA
RO M_SIPD R8627	34.8Kohm 64.34825.6DL	15Kohm 64.15025.6DL	15Kohm 64.15025.6DL



Mode	MULTI_STRAP_REF1_GND	MULTI_STRAP_REF0_GND	Strapping Resistor for other STRAP pins
Binary Production Strapping	40.2 k Ω , 1% to GND	IIC	10 k Ω , 5%
Multi-level Strapping	40.2 k Ω , 1% to GND	40.2 k Ω , 1% to GND	Refer to section 7.1

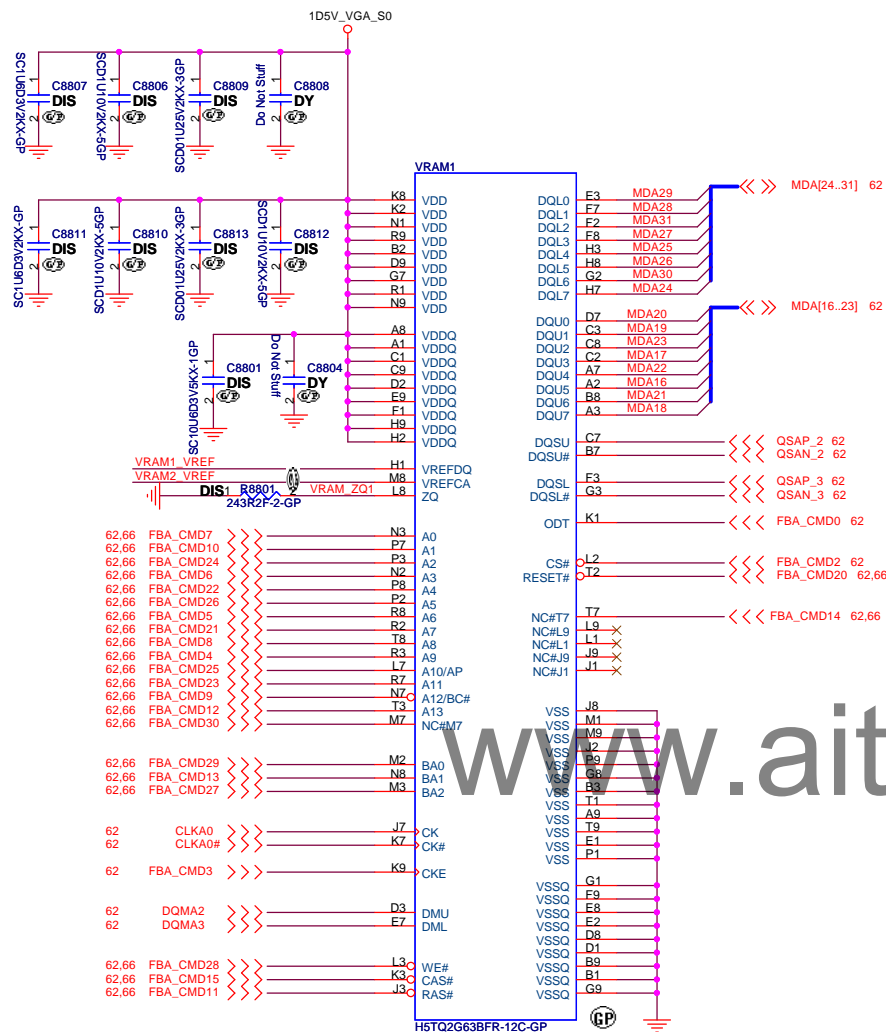
N12M GS2 HYW1IG8			
緯創資通		Wistron Corporation 21F, Sec. 1, Wen Tai Wu Rd., Hsichih, Tajpei Hsien 221, Tallowan, R.O.C.	
File			
GPU GPIO/MIC(4/5)			
Size A2	Document Number Z50-HR { Huron River Platform}		Rev 1
Date	2010/04/01		



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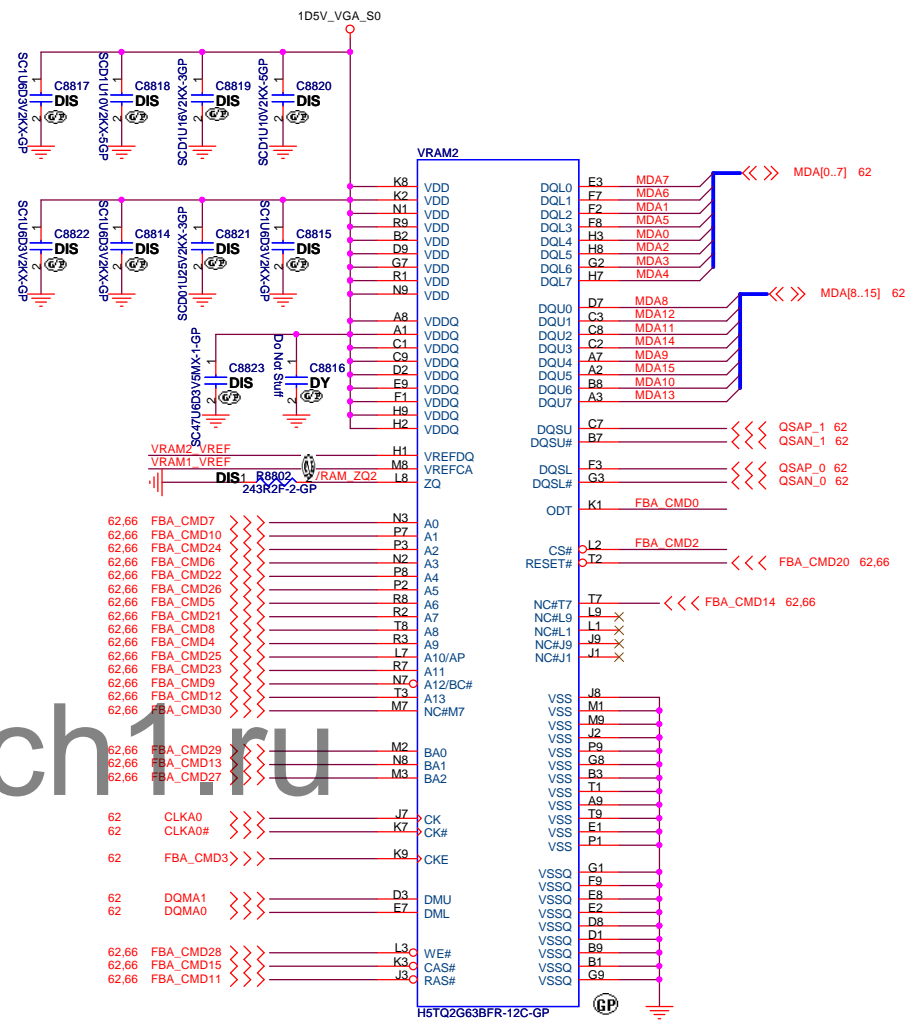
N12M GS2 HYN1GB

緯創資通		Wistron Corporation	
		21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
GPU GND(5/5)			
Size	Document Number	Rev	
A3	Z50-HR { Huron River Platform}	-1	
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VRAM

72.52G63.A0U



VRAM

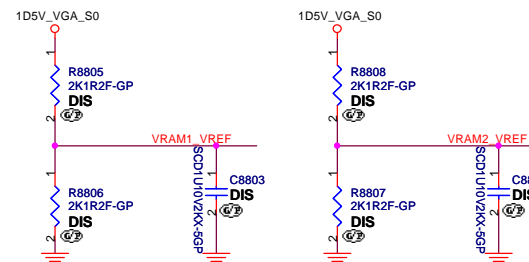
72.52G63.A0U

72.41646.Q0U K4W1G1646G-BC11 Samsung 1Gb

72.42164.D0U K4W2G1646C-HC11 Samsung 2Gb

72.51G63.H0U H5TQ1G63DFR-11C Hynix 1Gb

72.52G63.A0U H5TQ2G63BFR-11C Hynix 2Gb



N12M GS2 HYN1GB

緯創資通 Wistron Corporation

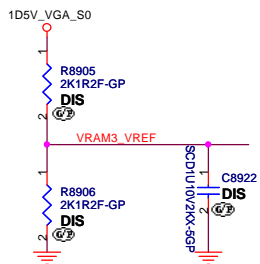
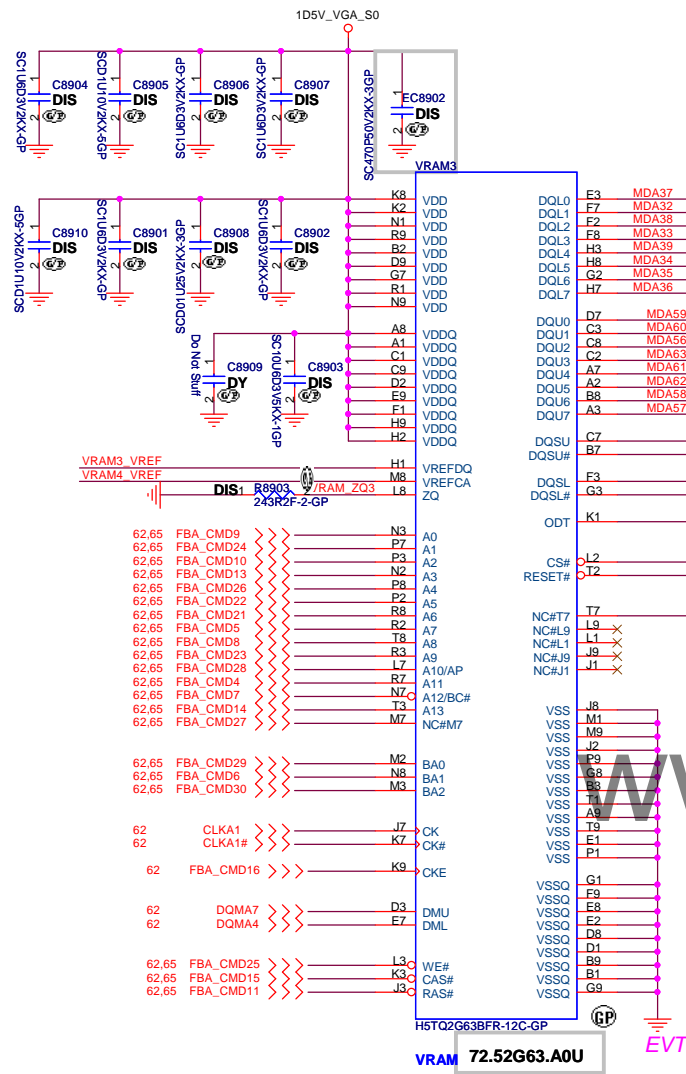
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Title GPU-VRAM1,2 (1/2)

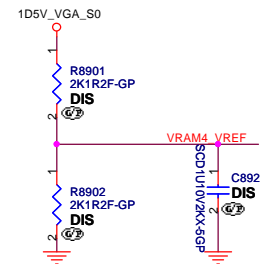
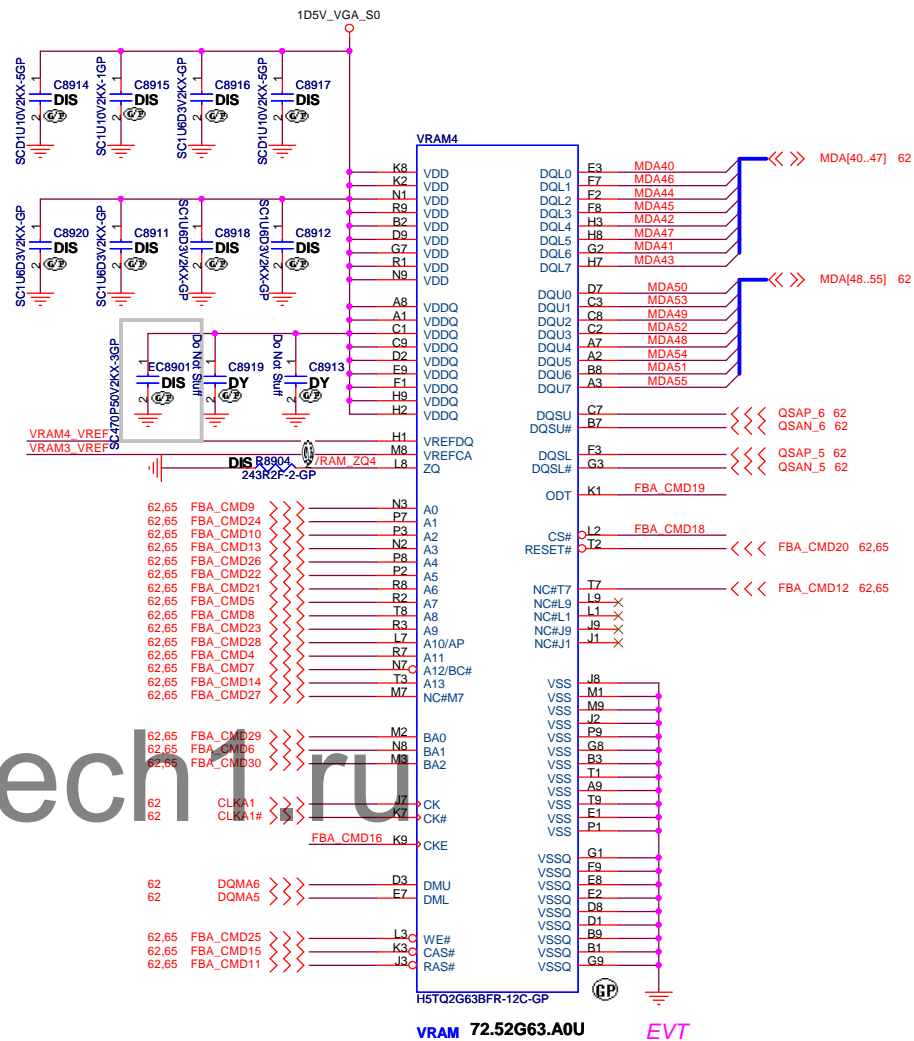
Size A3 Document Number 750-HR { Huron River Platform}

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72.41646.Q0U K4W1G1646G-BC11 Samsung 1Gb
 72.42164.D0U K4W2G1646C-HC11 Samsung 2Gb
 72.51G63.H0U H5TQ1G63DFR-11C Hynix 1Gb
 72.52G63.A0U H5TQ2G63BFR-11C Hynix 2Gb



N12M GS2 HYN1GB

SSID = PWR.Plane.Regulator_GFX

$$V_{out} = 0.75V * (R1 + R2) / R2$$

Design Current = 20A
24.14A < OCP < 24A

N12M-GS2

P-State	PWR_VGA_CORE_D1	PWR_VGA_CORE_D0	VGA_CORE_PWR
P8 Hot	L	L	0.875V
P0 Hot, P8 Cold	L	H	1.0V
P0 Cold	H	L	1.025V

Memory clock: P0->800MHz, P8->405MHz

Engine clock: P0->573.5MHz, P8->270MHz

N12P-GV

P-State	PWR_VGA_CORE_D1	PWR_VGA_CORE_D0	VGA_CORE_PWR
P8 Hot	L	L	0.85V
P0 Hot, P8 Cold	L	H	1.0V
P0 Cold	H	L	1.025V

Memory clock: P0->800MHz, P8->405MHz

Engine clock: P0->740MHz, P8->270MHz

P0 Hot--> over 60 °C
P0 Cold--> under 60 °C

Switching freq-->350KHz

Frequency setting
470K -->165KHz
200K -->323KHz
100K -->500KHz

I/P cap: 10U 25V K1206 X5R/ 78.10622.52L
Inductor: 1.5UH PCMC104T-1R5MN Cyntec DCR:4.2mohm Isat =33Arms 68.1R510.10J
O/P cap: 330U 2V EEF5X0D331ER 9mOhm 3Arms Panasonic/ 79.33719.L01
H/S: SI7686DP/ POWERPAK-8/11mOhm/14mOhm@4.5Vgs/ 84.07686.037
L/S: SI1460DP/ POWERPAK-8/ 4.9mOhm/6.1mohm@4.5Vgs/ 84.00460.037

RT8208A	RT8208B	G0	G1	G0	G1	Output Voltage Equation
0	0	1	1	1	1	$V_{out} = \frac{R1+R2}{R2} \times 0.75$
1	0	0	1	1	0	$V_{out} = \frac{R1+(R2/R3)}{(R2/R3)} \times 0.75$
0	1	1	0	1	0	$V_{out} = \frac{R1+(R2/R4)}{(R2/R4)} \times 0.75$
1	1	0	0	1	0	$V_{out} = \frac{R1+(R2/R3/R4)}{(R2/R3/R4)} \times 0.75$

N12M GS2 HYN1GB

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Title

RT8208B +VGA CORE

Size

Document Number

Z50-HR { Huron River Platform} -1

Date

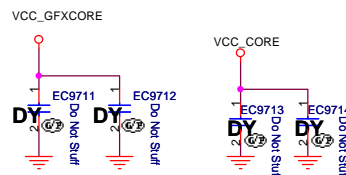
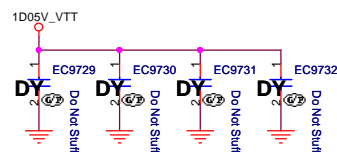
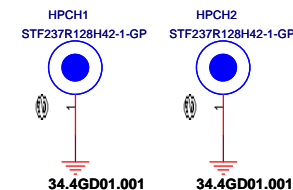
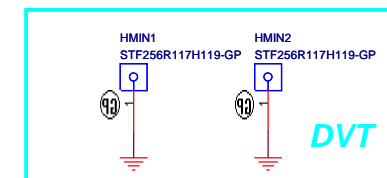
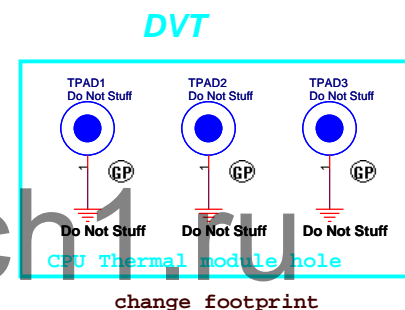
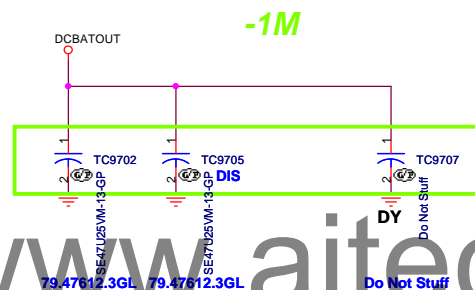
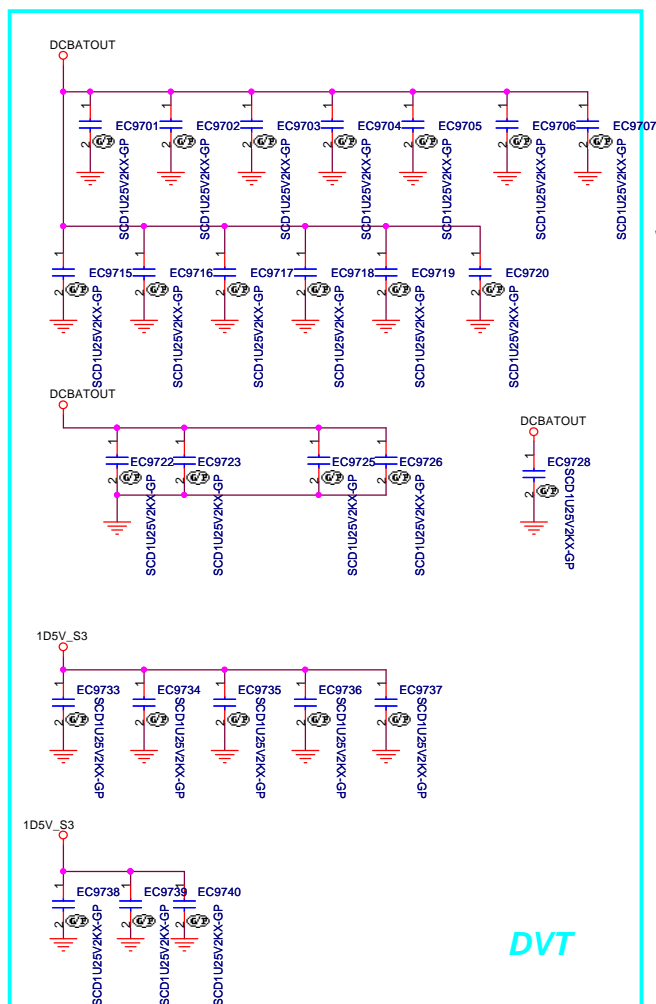
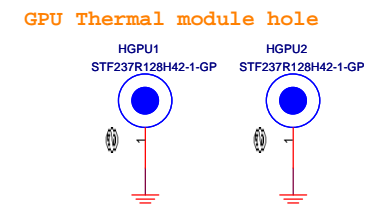
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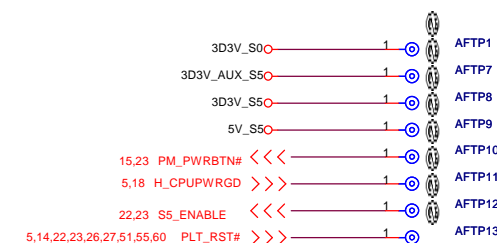
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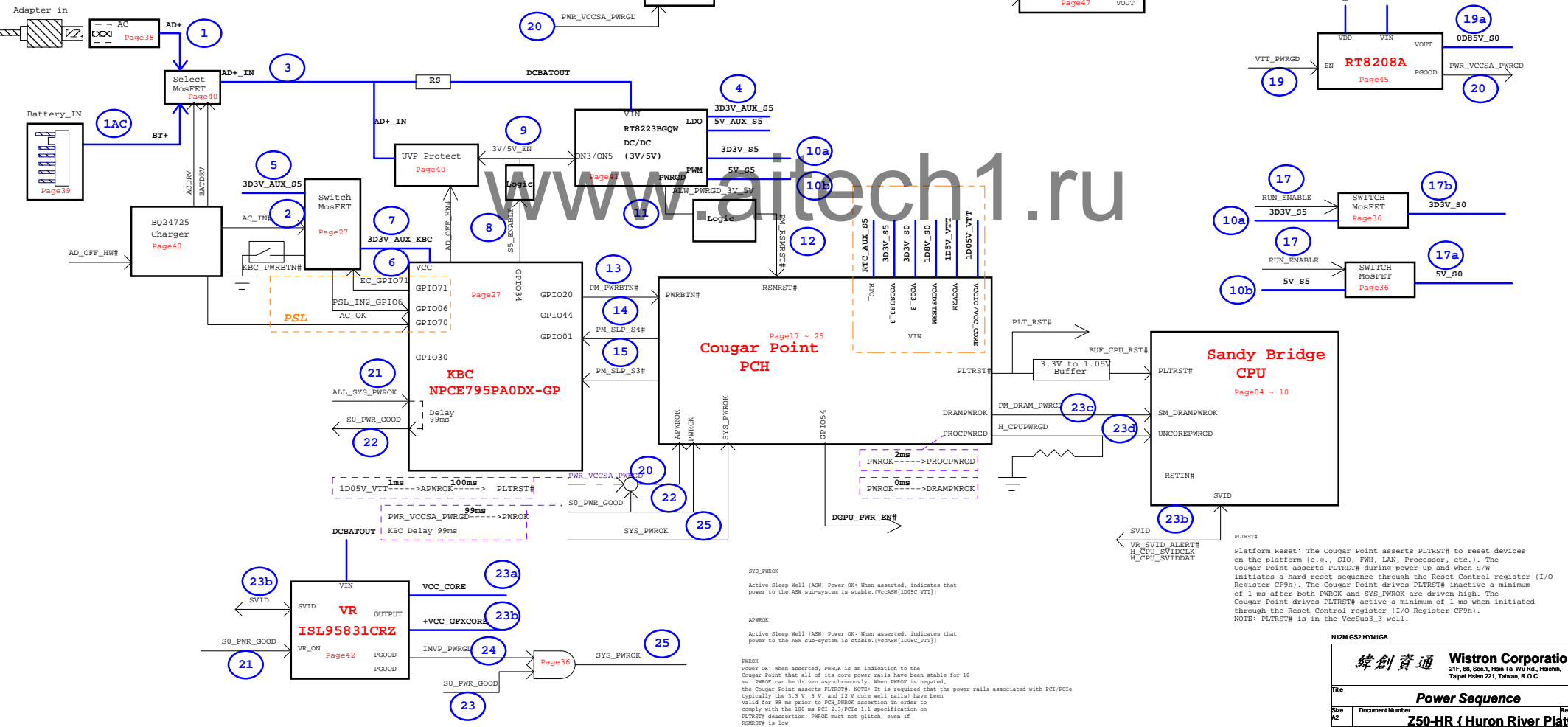
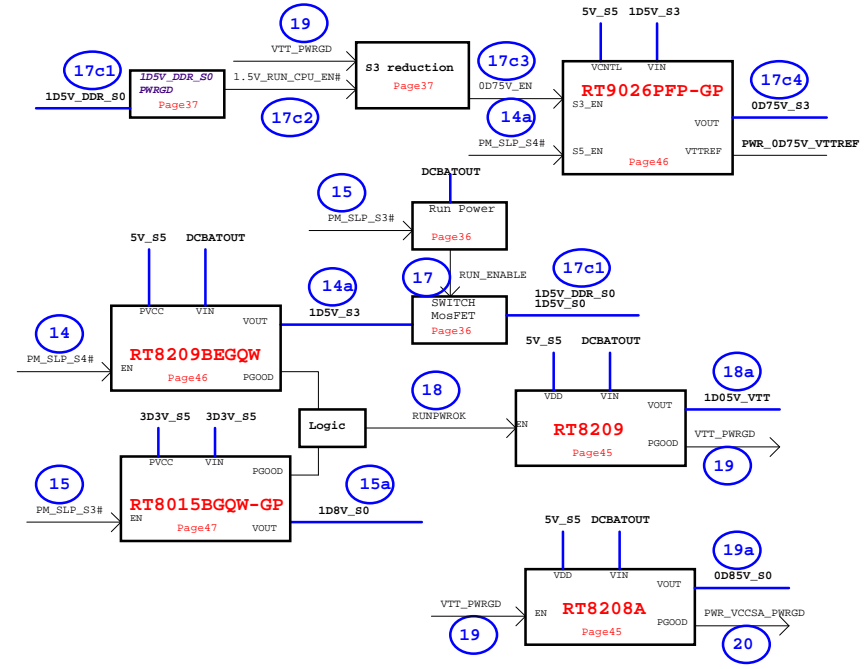
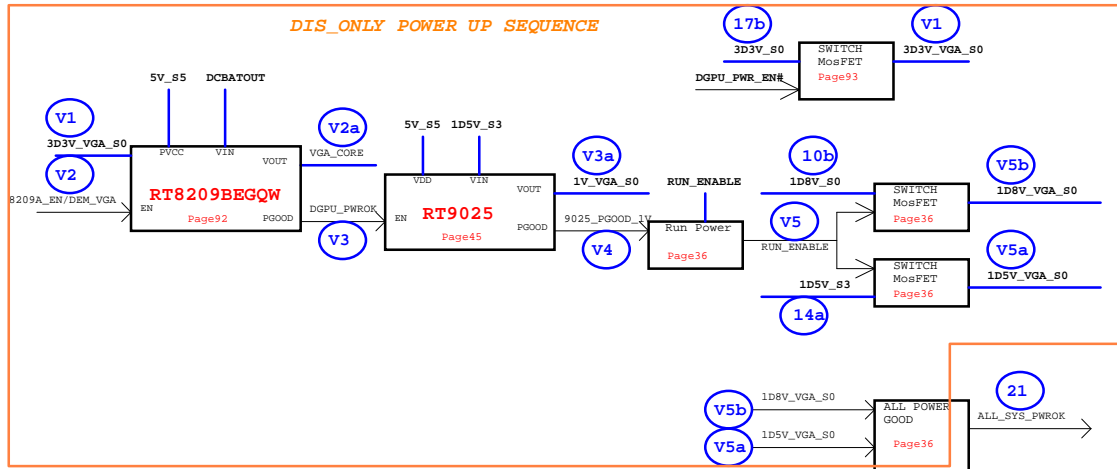


Check test point



Z15-HR POWER UP SEQUENCE DIAGRAM

DIS_ONLY POWER UP SEQUENCE



Reversion History

EVT

(2010/09/28)

P.5 CPU (THERMAL/CLOCK/PM)

P.7 CPU (RESERVED)

P.9 CPU (VCC_GFXCORE)

P.13 PCH (LVDS/CRT/DDI)

P.14 PCH (PCI/USB/NVRAM)

P.15 PCH (DM I/FDI/PM)

P.16 PCH (PCI-E/SMBUS/CLOCK/CL)

P.17 PCH (SPI/RTC/LPC/SATA/IHDA)

P.18 PCH (GPIO/CPU)

P.22 KBC_Reset

P.23 KBC Nuvoton NPCE795

P.24 Thermal P2800

P.21 Audio Codec_CX20671-21Z

P.22 Atheros 8151

P.27 RTS5209 (CARD READER)

P.28 Audio DE-POP Circuit

P.29 Power Plane Enable

P.30 S3 reduction

P.32 BATT CONN

P.34 CPU Core-1(1SL95831)

P.42 [LCD Connector]

P.42 [LCD Connector]

P.44 [HDMI Level Shifter/Conn]

P.45 [HDD/ODD]

P.46 [Audio Jack]

P.46 [Audio Jack]

P.47 [LAN Connector]

P.51 [MINICARD]

P.52 [LED Board/Power Button]

P.52 [LED Board/Power Button]

P.52 [LED Board/Power Button]

P.52 [Key Board/Touch Pad]

P.55 [Debug connector]

P.58 [UVP Protect]

P.58 [UVP Protect]

P.58 [UVP Protect]

P.59 [IO Board Connector]

P.59 [IO Board Connector]

P.59 [IO Board Connector]

P.59 [IO Board Connector]

P.61 [GPU HDMI/LVDS/CRT(2/5)]

P.61 [GPU HDMI/LVDS/CRT(2/5)]

P.63 [GPU_GPIO/MIC(4/5)]

P.63 [GPU_GPIO/MIC(4/5)]

P.67 [RT8208B_+VGA_CORE]

P.69 [UNUSED PARTS/EMI Capacitors]

P.69 [UNUSED PARTS/EMI Capacitors]

(2010/09/29)

P.15 PCH (DMI/FDI/PM)

P.22 KBC_Reset

P.60 [RTC Connector]

P.11(DDR3-SODIMM1)

P.12 (DDR3-SODIMM2)

P.31 DCIN JACK

DUMMY RN501 pull high 1D05V_VTT for intel bebug use

Delete R706~R709 for no M3 function

Delete R904,R905,R901 , because R902 has pull low

Delete LVBS B channel for Z70

Reserved EC1803 for EMI

1.DUMMY R1922 ,internal already pull high,2 Del R1925 for intel debug.

1.Delete RN2017 for no display port,2 R2005 dummy, R2004 mount for PEG_CLKREQ# need pull high

DEL R2115~R2120,for intel JTAG no use

Add PCH_GPIO22 for VRAM Frequency 800MHZ ro 900MHZ

Add VEDS_VEVS_Thermal_System_Protection_Rev1.0.0

1.ADD GPIO:FAN_PROTECT_DISABLE#,

2.ADD MODEL_ID for Z40,Z50 model,

3.ADD R2757 for vendor suggest ,

4.R2724 CHANGE TO 20K for SB Ver.

5.ADD BT_PRS2# for BT present.

1.CHANGE FAN PIN DEFINE,2.MOUNT D2802 for Vbemf(back emf),

3.U2802~U2806 pin4 connector to pin5 pull high follow Thermal_System_Protection_Rev1.0.0

CHANGE Codec to CX20671

CHANGE LAN to Atheros 8151

DUMMY R3202 for use external EEPROM

Add Q3301,R333 for CODEC multi-function

Change r3626 to 20k for 3D3V_S3 Leakage

1.Del R577 for double pull low,2.Change Q3708_G net to PM_SLP_S3# for Sequence

3.DUMMY R3724 mount Q3712,R3726,R3722,R3723,Q3707,C3706 for 0D75_EN timing.

1.ADD D3906 for battery Protection,2.MOUNT D3901~D3905 for EMI

1.ADD PR4231,PC4233,PR4236,PC4234,MOUNT PR4221,PR4222,PR4420 ,Intel spec update for feedback compensate.

2.mount PR4221,PR4222,PR4420,PR4233~PR4235 for sensor MOS temperature.

Change LCD1 to 30pin and pin define

Add TR4901 for EMI

F5101 change to 69.4R500.151 POLYSWITCH

Change R5601 to 147K for delay timing

Add SPKR1 small board move to MB

R5808 and R5809 change to 3.0K for Conexant FAE suggestion

XF1 change to 68.89246.301 common part

Add WLAN/BT COMBO function

1.PWRLED1 change to 83.00195.N70 for green color

Add WLAN/BT COMBO LED signal pin

Delete Q86 and Q85 for function board no PWR/STDBY LED

Add EC6905 and EC6906 for EMI

Add DB1 for SW debug

Change net from UL_AD_OFF_4 to UL_AD_OFF_41 net name wrong

RN67 separate to R7816 1Mohm and R7817 80Kohm for change shutdown voltage detect

Add C7801 10UF/25V for change shutdown voltage detect

USBCN2 change to 26pin for USB board add G709 thermal sensor

Add F8201, F8202 and F8203 POLYSWITCH for comtmr request

Add TR8201, TR8202 and TR8203 for EMI

PWRCN1 change to 10pin for function board no SPKR1 and PWR/STDBY LED

Add LDO 3D3V_VGA_S0_DACA power for INCREASE POWER

Mount R8402 BOM error becouse HDMI no display

R8630 change to 45K for N12P-GV Device ID 0x107F

R8627 change to 45K for Samsung VRAM 2Gbit size

Add PU9205 low-side mosfet for N12P-GV NVVDD 20.02A

Add TPSPR1 for EMI

Mount EC9740 for EMI

Add U1901, D1901, D1902, C1901, R1929~R1931 for

RSMRST#. PWROK must be "Low" earlier than PCH power down.

D2603 change to 83.R5003.C8F

D6001 change to 83.BAS70.011 for customer request

Del R1401 for use DDR_VREF_S3 POWER

Del R1501 for use DDR_VREF_S3 POWER

Change D3801(TVS) for surge voltage

(2010/09/30)

P.29 Power Plane Enable

P.25 Audio Codec_CX20671-21Z

P.67 [RT8208B_+VGA_CORE]

P.68 [DISCRETE VGA POWER]

(2010/10/01)

P.20 [PCH (POWER2)]

P.22 [KBC_Reset]

P.24 Thermal P8200

P.25 Audio Codec_CX20671-21Z

P.28 Audio DE-POP Circuit

P.30 S3 reduction

P.32 BATT CONN

P.48 Flash(KBC+PCH)

P.50 BLUETOOTH

P.63 [GPU_GPIO/MIC(4/5)]

(2010/10/04)

P.15 PCH (DMI/FDI/PM)

P.27 RTS5209 (CARD READER)

P.29 Power Plane Enable

P.33 CHARGER BQ24725

P.51 [MINICARD]

P.30 S3 reduction

(2010/10/05)

P.7 CPU (RESERVED)

P.18 PCH (GPIO/CPU)

P.33 CHARGER BQ24725

P.57 [UVP Protect]

P.58 [UVP Protect]

P.44 [HDMI Level Shifter/Conn]

P.67 [RT8208B_+VGA_CORE]

P.63 [GPU_GPIO/MIC(4/5)]

P.63 [GPU_GPIO/MIC(4/5)]

(2010/10/07)

P.49 USB Power SW

P.17 PCH /P.24

P.44 [HDMI Level Shifter/Conn]

(2010/10/14)

P.18 PCH (GPIO/CPU)

Add D3603 for protect FET AO4468

Add C2905, C2925 and R2923(DY), R2924(DY) for vendor request

PR9203 change to 10R, PR9208 change to 15K for VGA_CORE keep 0.9V

R9302 change to 20K for 1D05V_VTT enbale timing

D2401, D2402 change to 83.R2004.B8F for common part

Q2602 change to 84.02222.V11, Q2601 change to 84.C3906.A11 for common part

Q2801 change to 84.03904.X11 for common part

D2901, D2902 change to 83.R2004.B8F for common part

Q19 change to 84.C3906.A11, Q20 change to 84.03904.X11

Q18 change to 84.09114.A11, Q25 change to 84.C3906.A11 for common part

Q3707 change to 84.03904.X11, U3702 change to 73.01G09.0AB for common part

D3908 change to 83.00016.F11 for common part

U6001 change to 72.25320.C01 for common part

U6301 change to 74.07534.A7F, U6302 change to 73.01G08.EHG for common part

X8601 change to 82.30034.641 for common part

Mount R1920, GPIO pin need to Pull Hi for PCH GPIO multi-function

Add R3209~R3211,C3212~C3214 for customer request

D3604 change to schottky for customer request

PD4002 change to 83.10004.08M for common part

Change R6505 to 0805 size for meet PCIE MINI card max power spec

Mount R3704, Q3702 for Huron River S3 reduction Desing Guide

ADD corner test point for CPU

ADD corner test point for PCH

ADD PU4006,PR4017,PR4018,PQ4001

ADD PU4006,PR4017,PR4018,PQ4001

(Q56 pin D connect to AD+)

(R9316 pin 1 connect to AD+)

add R9320 and DUMMY it. (Part number 64.10045.6DL)

connect R9320 pin 1 to ACP_UVP.

change C568 to the part number 78.10620.51L

add C9322 component.(part number 78.10620.51L)

HDMI_CONN pin17 connect to GND

PR9208 change to 17.8k

P8603 change to 15k

R8617 DUMMY, R8625 PU 10K for vendor suggest

Add F6101 POLYSWISH 2A for USB power

Change net name from "+3VS_+1.5VS_HDA_IO" to "+3VS_HDA_IO"

Del HDMI Level Shifter

R2204 BOM change to 390ohm for intel spec

N12M GS2 HYN1GB

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Title

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Custom

Date:

Wednesday, March 02, 2011

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Change History

750-HR (Huron River Platform) -1

Reversion History

DVT

(2010/11/16-2010/11/17)

P17--C2101, C2102 change to 6pF
Reason: Crystal vendor suggestion (32.768K)
Possible Risk: Rework OK

P17--Add R2126 ~ R2130 and C2105-C2110.
Reason: Reserver for LPC debug by EC VEVS
Possible Risk:

P18--DUMMY R2204
Reason: For customer request THERMTRIP# Shutdown Policy
Possible Risk: Rework OK

P22--R2604 stuff to IMVP_PWRGD, Q2602 change to 2N7002
Reason: For customer request THERMTRIP# Shutdown Policy
Possible Risk: Rework OK

P23--BT_PRS# add R2729 pull-up to 3D3V_S5
Reason: The VEVS request BT_PRS# signal be high when Module is not present so we add it.
Possible Risk:We already rework to finish BT VEVS report.

P23-- R2724 change to 33K
Reason: For SC version
Possible Risk:

P23--PCH_SML1_CLK,PCH_SML1_DATA Change power source to 3D3V_S5
Reason: If PH 3D3V_AUX_S5. When DC mode will cause leakage Problem
Possible Risk: Rework OK.

P24-- Add C2803=0.1uF
Reason: 5V has drop when fan power on so add a cap for soft start
Possible Risk: Rework OK.

P25--Stuff EC2901,EC2902
Reason:FOR EMI request
Possible Risk:

P25--DUMMY R2919 ,stuff R2922
Reason: "codec verb table" set mute functio is high active so we change it..
Possible Risk: Rework OK.

P26--DUMMY Q3101 R3104,R3110,ADD R3112,R3111
Reason:LAN_CLK_REQ# and PCIE_WAKE# no leakage on S3.
Possible Risk: Rework OK.

P26--Change C3126, C3127 to 18pF
Reason: Crystal vendor suggestion (25MHz for LAN)
Possible Risk: Rework OK.

P27--Dummy U3202, mount R3202
Reason: Use card reader IC internal EFUSE
Possible Risk: Rework OK

P29--R3626 change to 0ohm
Reason:First we use resistor to do voltage divider for protecting U3601 (let gate voltage < spec) but it is not safty so we add Zener diode D3603 to protect U3601.So Voltage divider do not need.
Possible Risk: Rework OK.

P29--Add Q3606, R3608 (DY)
Reason: Reserve 3D3V_S3 discharge circuit
Possible Risk: Rework OK

P30--DUMMY R3714,Q3704
Reason:When enter S3, DDR_VREF_S3 still have power. So it cannot do discharge when enter S3.
Possible Risk:

P30--DUMMY R3727,Q3713 ,replace PM_SLP_S3 net by PS_S3CNTRL .
Reason:PS_S3CNTRL control S3 discharge can instead of R3612,Q3603
Possible Risk:

P30--R3722 change to 10k,R3723 change to 3.3k,C3706 change to 4.7kohm, stuff C3707.
Reason:for S3 resume issue and sequence timing(ID 0547)
Possible Risk:Rework OK.

P32--add EC3901.EC3907,EC3908,EC3909
Reason:for EMI request
Possible Risk:

P43--R5001, R5002, RN5003 change to 4.7K for DIS SKU
R5001, R5002=2.7K, RN5003=2.2K for UMA SKU
Reason: For CRT DDC signal VEVS report
Possible Risk: Rework OK

P44-- R5133,R5134 change 3.3K for UMA sku, 4.7K for DIS SKU
Reason: For HDMI DDC signal VEVS report
Possible Risk: Rework OK

P45--R5601 change to 100k,R5603 change to 220k,C5614,C5604 change to 1u
Reason:for delay HDD power off timing
Possible Risk:Rework OK

P46--R5805,R5806,R5807,R5810,R5811,R5812 change to 11ohm.
Reason:For VEVS audio full scale output vottage(FSOV) report
Possible Risk:Rework OK.

P46--Add EC5804,EC5805,EC5806,EC5807,ED5808,ED5809
Reason:for EMI request (ED is mean diode)
Possible Risk:

P49--Add TR6101
Reason:for EMI request
Possible Risk:Rework OK and USB eye diagram pass.

P56--Add SD DATA_CLK_CMD 47 ohm damping(RN7403,R7401,R7404)
Reason:For cardreader VEVS report overshoot and undershoot
Possible Risk: Rework OK.

P57--RTC_PWR change to RTC_AUX_S5 power
Reason: Unplug AC will auto shut down after Remove RTC battery
Possible Risk: Rework OK

P59--Change USB BD FFC CONN pin define
Reason:del G709 on USB BD then add one usb power and ground pin for USB voltage drop issue. (ID 0583)
Possible Risk:

P62--R8504, R8505 change to 162ohm
Reason: NV FAE suggestion
Possible Risk:

P63--Change GPU GPIO strap pin R8626 to 4.99K, R8619 to 10K, R8629 to 4.99K for N12P-GV, R8629 to 25K for N12M-GS2, Dummy R8630 Dummy R8632, mount R8633=35K
Reason: NV FAE suggestion for GPU HW strap pin
Possible Risk:

P63--R8607 change to 470ohm
Reason: Crystal vendor suggestion (27MHz)
Possible Risk:Rework OK

P63--R8639 change to15K ohm
Reason: Resolve ID 0617 no HDMI audio output
Possible Risk:Rework OK

P67--Change PR9206 to 49.9K; add PR9218,PQ9202 for VGA_CORE discharge circuit.
Reason:For GPU VEVS Sequence Issue (ID 01019)
Possible Risk: Rework ok.

P68--Change R9303 to 0ohm ,R9315 to 2.2K, C9309 to 1uF; Dummy C9304
Reason:For GPU VEVS Sequence Issue (ID 01019)
Possible Risk: Rework ok.

P69--add DCBATOUT and 1D5V_S3 POWER plane capacitance
Reason:For EMI request
Possible Risk:

(2010/11/22)

P18--Delete R2220, R2221
Reason: Only use 900MHz VRAM frequency
Possible Risk: Rework OK

P22--Add Q2610,Q2607,D2606,R2608,R2602,C2602
Reason: For UVP circuit Simplification and Verification by 3V_5V_EN
Possible Risk: Rework OK

P44--add C5103 0.1uF.
Reason: Resolve HDMI DDC/CEC Capacitance fail (Issue ID 1106)
Possible Risk: Rework OK

P69--Add SPR1
Reason: For EMI request
Possible Risk:

(2010/11/24)

P17--Add C2105,C2107 ~ C2110
Reason: Reserver for LPC debug by EC VEVS
Possible Risk:

P19--Add C2324,C2325,L2302,L2303,L2304
Reason: Improve DMI eye diagram
Possible Risk: Under Verify (ZM and ZG-I different)

P48--DelR6004,R6003 change to 1k
Reason: customer request do not need "RGT_PWR"net
Possible Risk: Rework OK

P60--PEX_SVDD_3V3 power rail from 1.05V change to 3.3V
Reason: NV FAE suggution for N12M-GS2/N12P-GV GPU
Possible Risk:

(2010/11/25)

P9--R906, R907 change to 10ohm
Reason: Customer requirement
Possible Risk:

P24-- Add F2801
Reason: 0.5A POLYSWITCH for FAN by Customer requirement
Possible Risk:

P35--Dummy PR4230, PR4250, PR4228, PR4229
Reason: Customer requirement
Possible Risk:

(2010/11/26)

P32--Change U3901 to R5G05000N753NF
Reason: Battery authentication IC package is shrunk and renamed as R5G05000N753NF.
Possible Risk:

(2010/11/29)

P58--dummy R9320
Reason: customer request
Possible Risk:

P58--R8629 change to 30k for N12M
Reason: N12M GPU change new device ID
Possible Risk:

N12M GS2 HYW1GB

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Change History			
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(POWER modify)

P8--R801, R802 change to 10ohm, reserve R804, R805=10ohm
Reason: Vendor suggation
Possible Risk:

P33--Add PR4019, PR4020
Reason: Vendor TI suggestion reserve
Possible Risk:

P33--PU4001, PU4002, PU4006 change to 84.02657.037
Reason: Low Rds(on), decrease consumption
Possible Risk:

P34--Change PU4101 PU4106 PU4104 PU4105
Reason: Material shortage issue
Possible Risk:

P34--PR4104 change to 95.3K, PR4103 change to 84.5K
Reason: OCP modify
Possible Risk:

P35--Change PR4205 to 2.26K, PR4227 to 3.74K
Reason: Load line
Possible Risk:

P35--Change PR4206 to 21.5K, PC4205 to 0.01uF, PR4218 to 36K
PC4207 to 0.01uF
Reason: Vendor Intersil suggestion for Imon=2.7V
Possible Risk:

P35--Dummy PC4224, PC4209
Reason: FAE suggestion for delay issue
Possible Risk:

P35--Change PR4239 to 1.69K
Reason: For Intel spec increase efficiency
Possible Risk:

P36--Delete PU4308, PU4311, PU4312, PU4314
change PL4303, PL4302 to 68.R3610.10X
Reason: Thermal issue, use low DCR
Possible Risk:

P36--Change PU4308~ PU4315
Reason: Material shortage issue
Possible Risk:

P37--Change PU4401 to 84.07698.037, PU4403 to 84.00308.B03
PL4401 to 68.R3610.10M
Reason: Material shortage issue
Possible Risk:

P37--Change PR4404 to 536ohm
Reason: OCP modify
Possible Risk:

P37--Change PC4405 TO 10K
Reason: Transient
Possible Risk:

P38--Change PR4504 to 93.1K
Reason: OCP modify
Possible Risk:

P38--Change PU4502 to 84.07698.037, PU4503 to 84.00312.037
Reason: Material shortage issue
Possible Risk:

P38--Change PL4501 to 68.R8810.10G
Reason: Increase ripple
Possible Risk:

P39--Change PR4603 to 32.4K
Reason: OCP modify
Possible Risk:

P39--Change PU4602 to 84.07698.037, PU4603 to 84.00312.037
Reason: Material shortage issue
Possible Risk:

P41--Add PG4810, PG4809
Reason: Increase input current
Possible Risk:

P67--Change PU9202, PU9304, PU9205 PL9201
Reason: Material shortage issue
Possible Risk:

P67--Mount PTC9203
Reason: Decrease output ripple
Possible Risk:

P58--Dummy D46
Reason: For UVP circuit by Customer requirement
Possible Risk:

P58--Add Q57
Reason: Prevent battery only, voltage through body diode return back
to adaptor, induce unknow risk
Possible Risk:

P67--Add PG9218~PG9220, PG9222~PG9224
Reason: Increase input current
Possible Risk:

P67--PR9208=13.3k, PR9210=78.7k, PR9209=78.7k, PR9213=66.5K for N12M-GS2
PR9208=10k, PR9210=75k, PR9209=49.9k, PR9213=42.2K for N12P-GV
Reason: Tune GPU P-State voltage
Possible Risk:

(ME Connector change)

1. Mini Card CONN: (MINI1)
Issue: The ANT cable's tube might
has risk to overlap with Low-case's shielding

Action: Changed the CONN height from 8.0 to 5.3mm

2. RTC & SPK & Fan CONN: (RTC1,SPKL1,SPKR1,FAN1)
Issue: Follow Sandra's request to
change the terminal with Gold plating

Action: change the CONN's terminal from Tin to Gold terminal

3. ODD & HDD CONN: (ODD1,HDD1)
Issue: Follow WKS's request to change
from SMT to DIP type for prevent Empty solder,
Floating solder Excess solder

Action: Changed the CONN from SMT to DIP type

4. TP Switch: (SWL1,SWR1)
Issue: Follow WKS's request to change
new Switch for prevent Empty solder,
Floating solder and Excess solder ect.

Action: Changed new switch.

5. WLA: (MINI1)
Issue: Issue: cost too high
Action: Changed size the same new connector.

N12M GS2 HYN1GB

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Title			
Change History			
Size	Document Number	Rev	
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Reversion History

PVT

(2010/10/28~2011/01/05)

P63_ Dummy RN8606
Reason: for double pull high
Possible Risk: Rework ok

P30_ Delete R3714, Q3704(Q00008)
Reason:customer request delete S3 error circuit
Possible Risk: Rework ok

P32_ change D3908 to Schottky diode(Q-00009)
Reason:customer request
Possible Risk: Rework ok

P58_ UVP R9316 change to 475K
Reason: customer request
Possible Risk: Rework ok

(2011/01/11~01/18)

P8_ Add R805,R804(Q00002)
Reason: customer request
Possible Risk: Rework ok

P15_ G680 reset_change D1901 to schottky diode(Q00003)
Reason: customer request
Possible Risk: Rework ok

P15_ Delete R1928
Reason: Customer request for DeepSleep issue
Possible Risk: Rework ok

P20_ Delete R2415
Reason: Customer request for DeepSleep issue
Possible Risk: Rework ok

P22_ R2604 change to 10.5K, R2635 change to 8.87K, Q2602 change to transistor 84.02222.V11, R2612 change to 100K, Mount R2616
Dummy Q2607, R2602, C2602, Q2607, C2613, Q2606, R2606, R2615, C2612, Q2604, RN2605, Q2601, R2613, Q2603,
Add R2619, Q2611, Q2612, D2605, R2611,R2617(Q00004)
Reason: Customer request
Possible Risk: Rework OK

P8, 9, 37_ Add ED801, ED802, ED901, ED902, ED4501, ED4502 Varistor
Reason: EMI request for ESD protect
Possible Risk: Rework OK

P24_ U2801 power plane change to 3D3V_AUX_S5
Dummy R2809, (Q-00035)
Reason: Customer request for Thermal Sensor P2800 Issue
Possible Risk: Rework OK

P24_ R2811&R2812 change to 29.4K, R2810 change to 44.2K
R2824 change to 33.2K, R2833 change to 36.5K(Q-00006)
Reason: Thermal request for G709 temperature protect
Possible Risk: Rework OK

P37_ Mount PR4510, PR4511,PC4510
Reason: Customer request for VCCIO sense function (Q00013)
Possible Risk: Rework OK

P42_ Change LCD1 connector and pin define
Reason: Fool-proof is not good (ME)
Possible Risk:

P44_ Delete U5102~U5105
Reason: Manufacturing request can not co-lay
Possible Risk:

P50_ R6803, R6810 change to 220 ohm
Reason: Adjust LED brightness
Possible Risk: Rework OK

P51_ Delete D6501, R6517, R6516; Add Q6505, Q6506, R6504,R6503
Reason: Manufacturing request can direct use debug card
Possible Risk: Rework OK

P58_ Mount D46 schottky diode(Q00033)
Reason: Customer request
Possible Risk: Rework OK

P68_ R9303 change to 4.7K, R9315 change to 7.5K
C9309 cgange to 0.47uF
Reason: For VEVs report GPU sequence timing
Possible Risk: Rework OK

(2011/01/17~01/25)

P32_ Change BAT1 connector to 20.81602.007
Reason: Solve hitting L-case or battery shutdown issue (ME)
Possible Risk:

P58_ D46 change to Schottky diode 83.R2004.B8F(Q00033)
Reason: Customer request
Possible Risk: Rework OK

P33, 58_ Delete Q57, Add PR4021~PR4023, PQ4008, PQ4009, PQ4011
Reason: Provide DCBATOUT short surge current (power team)
Possible Risk: Rework OK

P9_C901, C903, C904, C905 and C906 change to 22uF
Reason: For GFX power ripple
Possible Risk: Rework OK

P23_ R2707 change to 47K
Reason: For UMA 75W setting
Possible Risk:

P23_ R2724 change to 47K
Reason: For -1 version
Possible Risk:

P17_R2127~R2130 change to 47 ohm,R2130 change to 0 ohm
C2105, C2107, C2108, C2109 change to 22pF
Reason: For VEVs LPC report
Possible Risk:

P15_ D1901 change to dual schottky , dummy Q1904,
R1911 change to 1K, R1910 change to 10K ,add R1924(Q00003)
Reason: Customer request
Possible Risk: Rework OK

P29_R3619 change to 0 ohm, add R3622=10K
R3623, R3624, R3627, R3628=0 ohm, Dummy C3614
Reason: Customer request
Possible Risk: Rework OK

P25,P28 , 46_Dummy R2922 ,Q17~Q22, R329 R331 , R330, R333,C404,
R5801~R5804, C5801, C5804, C5805, C5806, U5801, U5802(Q00042)
Reason: Customer request for External De-pop Circuit Eliminating Trial (Q00043)
Possible Risk: Rework OK

P22_ Q2602 change to FET MOS
Reason: Customer request
Possible Risk: Rework OK

P33_ PR4404 change to 715
Reason: For VCC_GFXCORE OCP protect (power team)
Possible Risk:

P36_ PT4301,PT4303,PT4304,PT4305,PT4309, Dummy PT4308
Reason: For CPU transient (power team)
Possible Risk:

P35_ PR4227 change to 3.57K
Reason: For CPU load line (power team)
Possible Risk:

P35_ PR4218 change to 33.2K
Reason: For CPU lmon setting (power team)
Possible Risk:

P37_PR4404 change to 715 ohm
Reason: For 3/5V OCP protect (power team)
Possible Risk: Rework OK

P35_PR4205 change to 2.74K
Reason: For CPU load line (power team)
Possible Risk: Rework OK

P35_PR4206 change to 17.8K
Reason: For CPU lmon setting (power team)
Possible Risk: Rework OK

P45_Dummy C5604 ,R5603 change to 0 ohm,add R5604_7.5 ohm ,change Q5601(Q00011)
Reason: Customer request
Possible Risk: Rework OK

(2011/01/17~01/26)

P22_ R2635 change to 11K
Reason: Customer request
Possible Risk: Rework OK

P39_ PR4603 change to 16.2K
Reason: For 1.5V OCP protect (power team)
Possible Risk: Rework OK

P38_ PR4504 change to 93.1K
Reason: For 1.05V OCP protect (power team)
Possible Risk: Rework OK

P42_ Add EC4901
Reason:LDC connector DCBATOUT (EMI team)
Possible Risk: Rework OK

P58_ Add R496,R505,R499,C569,R495,R500,R518,R511
Reason:UVP protect(Customer request)
Possible Risk:

(2011/01/27)

P15_DUMMY R1925(SUSPWRDNACK)
Reason:intel HR schematic check list
Possible Risk:Rework OK

P15_ Q1904 change to 84.03k15.A31
Reason:Low VGS
Possible Risk:Rework OK

P58_ Del R496,R505,R499,C569,R495,R500,R518,R511
Dummy:C568, C9322 and D46
Reason:UVP protect(Customer request)
Possible Risk:

P33_ add PC4025,PC4024,PR4207,PR4220,PQ4010,PR4552,PR4026,PQ4015
Reason:UVP protect(Customer request)
Possible Risk:

(2011/01/31)

P38_ Dummy PR4509,PR4506
Reason:For 1.05v VCCIO_SENSE ,dummy 1.05v is better
Possible Risk:Rework OK

(2011/02/08)

P41_ Add PR4808, PR4809, PR4810(DUMMY)
Reason: for intel released
new spec of Celeron and Pentium CPU VCCSA_PWR
Possible Risk:

(2011/02/09)

Add Aluminum Solid Capacitors 2ND source
Reason: Material shortage issue
Possible Risk:

P58_ Add D46
Reason:
Possible Risk:

(2011/02/11)

P25_ Change RN2901 to 22 ohm
Reason: DMIC VEVs report
Possible Risk:

(2011/02/14)

P69_DUMMY SPR1
Reason: factory damage issue
Possible Risk:

P40_change PU4701 new version
Reason: old will EOL
Possible Risk:

P58_ ADD D46,R498 change to 1M ohm
Reason:UVP protect
Possible Risk:Rework ok

P33_ DUMMY PR4026,PQ4015,PR4252,PR4022,PQ4011
Reason:UVP protect
Possible Risk:Rework ok

P25_ Delete EC2901 and EC2902
Reason: For D-MIC record sound quietly
Possible Risk: Rework OK

Reversion History

-1M

(2011/03/02)

P23_R2724 change to 64.9K
Reason: For -1M version
Possible Risk:

MATSUKI capacitance 47U/ 25V change to NCC
Reason:MATSUKI test failure issue
Possible Risk:

N12M GS2 HYN1GB		
緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
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