Enrico Caruso 14
Muxless/UMA Schematics Document
Sandy Bridge
Intel PCH
2011-04-07
REV : A00

DY :	None Installed
UMA:	UMA ONLY installed
PSL:	KBC795 PSL circuit for 10mW solution installed.
10mW:	External circuit for 10mW solution installed.
DIS:	MUXLESS solution installed.
Surge:	For GO Rural config stuff.
GIGA:	For GIGA LAN config stuff.
HDMI:	For HDMI config stuff.
DIS_CRT:	Pure DIS install

<Core Design>

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

Title: Cover Page

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Block Diagram (Discrete/UMA co-lay)

##OnMainBoard

Project code: 91.4IU01.001
PCB P/N : 48.4IU16.0SC
Revision : 10315-SC

VRAM gDDR3 900NHz
1GB (128Mx16x4)
512MB (64Mx16x4)
88,89,90,91

gDDR3 900MHz

Seymou-XT S3
83.84,85,86,87

PCIe x 8
(Discrete only)

Intel CPU
Sandy Bridge
4,5,6,7,8,9,10

DDRIII 1066/1333 Channel A
DDRIII 1066/1333 Channel B

DDRIII Slot 0 1066/1333 15
DDRIII Slot 1 1066/1333 14

FDIx4x2
DMIx4 1GB/s

Intel PCH
Cougar Point
14 USB 2.0/1.1 ports
ETHERNET (10/100/1000Mb)
High Definition Audio
SATA ports (6)
PCIE ports (8)
LPC I/F
ACPI 1.1
17,18,19,20,21,22,23,24,25

PCIE x 1
10/100 /1000 LOM
Realtek RTL8111E (Giga LAN)
Realtek RTL8105E (10M/100M) 31

RJ45 CONN 59

PCIE x 1
802.11a/b/g
Mini-Card WLAN+BT3.0 64

PCIE 100MHz 2.5Gbps

CRT 50
LCD 49
HDMI 51

CRT
LVDS
HDMI

USB 2.0 x 1
CAMERA 49

USB 2.0 480Mbps

USB 2.0 x 1
M/B USB x1 (Left) 61

USB 2.0 x 2
I/O board USB x2 (Right) 82

SD/MMC/MS/ MS Pro 74

CardReader
Realtek RTS5138 32

USB2.0

Audio board

Azalia CODEC
IDT 92HD87 29

AZALIA 24MHz

Internal Analog MIC 58

HP1 82
MIC IN

2CH SPEAKER 58

LPC Bus 33MHz

KBC
NUVOTON NPCE795BA0DX 27

PS/2
PS/2

Touch PAD 69
Int. KB 69

Thermal
ENE P2800 28

ENE P2793 Fan 28

SATA
SATA 3Gbps
SPI

HDD 56
ODD 56
Flash ROM 4MB 60

SYSTEM DC/DC APL5916 48	
INPUTS	OUTPUTS
DCBATOUT	0D85V_S0

CPU DC/DC VT1316+1314 42~44	
INPUTS	OUTPUTS
DCBATOUT	VCC_CORE

SYSTEM DC/DC TPS51218 45	
INPUTS	OUTPUTS
DCBATOUT	1D05V_VTT

SYSTEM DC/DC TPS51125 41	
INPUTS	OUTPUTS
DCBATOUT	5V_AUX_S5 3D3V_AUX_S5 5V_S5 3D3V_S5 15V_S5

SYSTEM DC/DC TPS51216R 46	
INPUTS	OUTPUTS
DCBATOUT	1D5V_S3 0D75V_S0 DDR_VREF_S3

GFX DC/DC VT1316+1317 44	
INPUTS	OUTPUTS
DCBATOUT	VCC_GFXCORE

VGA RT8208B 92	
INPUTS	OUTPUTS
DCBATOUT	VGA_CORE

TI CHARGER BQ24707 40	
INPUTS	OUTPUTS
+DC_IN_S5 +PBATT	DCBATOUT

SYSTEM DC/DC APW7153B 47	
INPUTS	OUTPUTS
3D3V_S5	1D8V_S0

SYSTEM DC/DC G9731 93	
INPUTS	OUTPUTS
1D5V_S3 3D3V_S0	1V_VGA_S0 1D8V_VGA_S0
Switches	
INPUTS	OUTPUTS
1D5V_S3 5V_S5 3D3V_S5	1D5V_S0 5V_S0 3D3V_S0

PCB LAYER

L1:Top L4:Signal
L2:GND L5:VCC
L3:Signal L6:Bottom

<Core Design>

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Title: Block Diagram
Size: A3
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PCH Strapping

Huron River Schematic Checklist Rev.0_7

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-k - 10-k 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.

Processor Strapping

Huron River Schematic Checklist Rev.0_7

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]		**1:** Disabled - No Physical Display Port attached to Embedded DisplayPort. **0:** Enabled - An external Display Port device is 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

POWER PLANE	VOLTAGE	Voltage Rails ACTIVE IN	DESCRIPTION
5V_S0 3D3V_S0 1D8V_S0 1D5V_S0 1D05V_VTT 0D85V_S0 0D75V_S0 VCC_CORE VCC_GFXCORE 1D8V_VGA_S0 3D3V_VGA_S0 1V_VGA_S0	5V 3.3V 1.8V 1.5V 1.05V 0.95 - 0.85V 0.75V 0.35V to 1.5V 0.4 to 1.25V 1.8V 3.3V 1V	S0	CPU Core Rail Graphics Core Rail
5V_USBX_S3 1D5V_S3 DDR_VREF_S3	5V 1.5V 0.75V	S3	
BT+ DCBATOUT 5V_S5 5V_AUX_S5 3D3V_S5 3D3V_AUX_S5	6V-14.1V 6V-14.1V 5V 5V 3.3V 3.3V	All S states	AC Brick Mode only
3D3V_LAN_S5	3.3V	WOL_EN	Legacy WOL
3D3V_AUX_KBC	3.3V	DSW, Sx	ON for supporting Deep Sleep states
3D3V_AUX_S5	3.3V	G3, Sx	Powered by Li Coin Cell in G3 and +V3ALW in Sx

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	X
1	USB Ext. port 2 (MB)
2	X
3	X
4	X
5	CARD READER
6	X
7	X
8	USB Ext. port 3
9	USB Ext. port 1
10	X
11	Mini Card1 (WLAN+BT)
12	CAMERA
13	X

SMBus ADDRESSES

I² C / SMBus Addresses Device	Ref Des	HURON RIVER ORB Address Hex Bus
EC SMBus 1 Battery CHARGER		BAT_SCL/BAT_SDA BAT_SCL/BAT_SDA BAT_SCL/BAT_SDA
EC SMBus 2 PCH eDP		SML1_CLK/SML1_DATA SML1_CLK/SML1_DATA SML1_CLK/SML1_DATA
PCH SMBus SO-DIMMA (SPD) SO-DIMMB (SPD) Digital Pot G-Sensor MINI		PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK

PCIE Routing

LANE1	X
LANE2	LAN
LANE3	X
LANE4	Wireless
LANE5	X
LANE6	X
LANE7	X
LANE8	X

DN15ATI Whistler

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Title: Table of Content

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SSID = CPU

Signal Routing Guideline:
PEG_ICOMPO keep W/S=12/15 mils and routing length less than 500 mils.
PEG_ICOMPI & PEG_RCOMPO keep W/S=4/15 mils and routing length less than 500 mils.

Note:
Intel DMI supports both Lane Reversal and polarity inversion but only at PCH side. This is enabled via a soft strap.

Note:
Intel FDI supports both Lane Reversal and polarity inversion but only at PCH side. This is enabled via a soft strap.

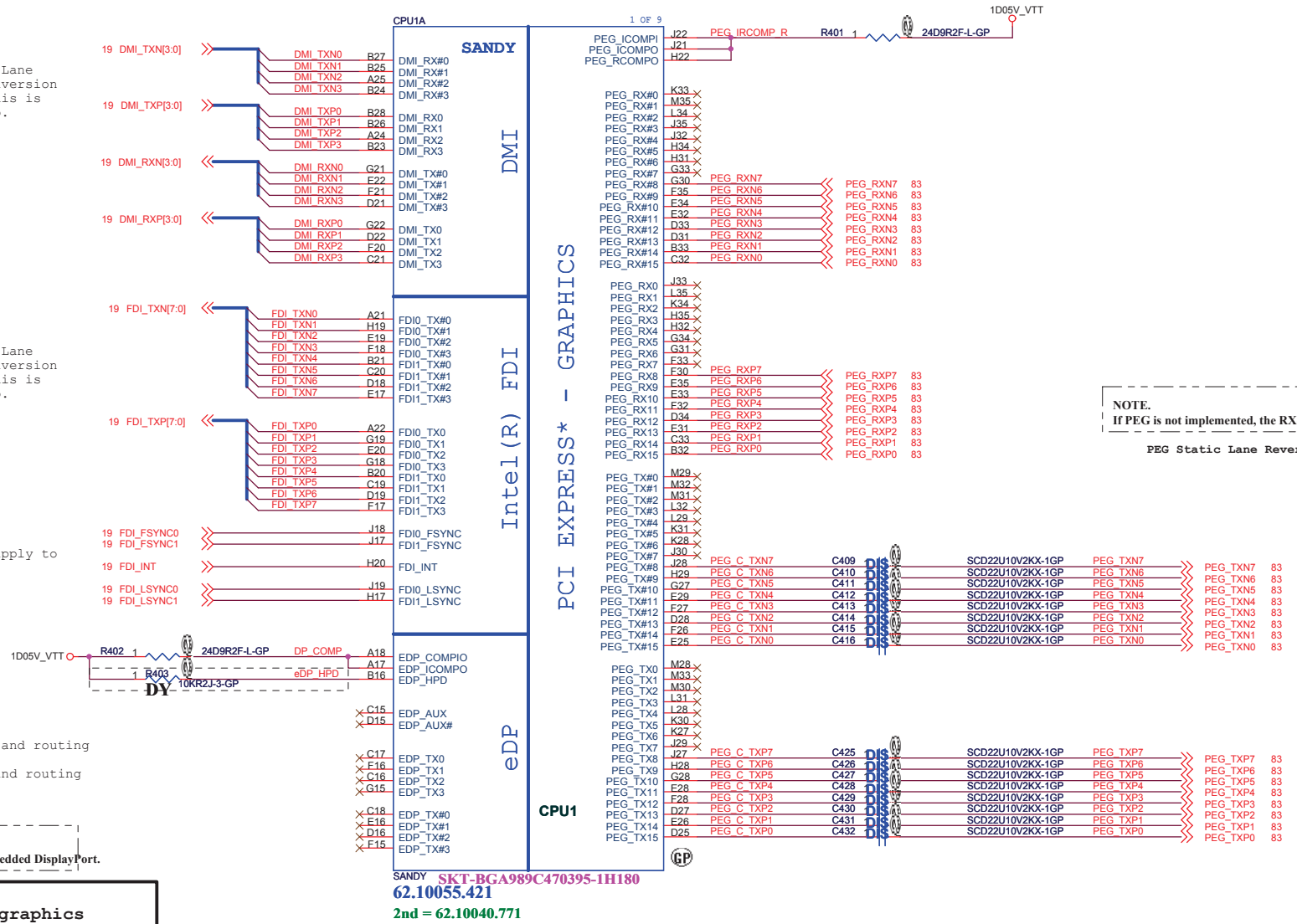
Note:
Lane reversal does not apply to FDI sideband signals.

Signal Routing Guideline:
EDP_ICOMPO keep W/S=12/15 mils and routing length less than 500 mils.
EDP_COMPIO keep W/S=4/15 mils and routing length less than 500 mils.

NOTE.
Processor strap CFG[4] should be pulled low to enable Embedded DisplayPort.

NOTE.
If PEG is not implemented, the RX&TX pairs can be left as No Connect

PEG Static Lane Reversal



SANDY SKT-BGA989C470395-1H180
62.10055.421
2nd = 62.10040.771

Stuff to disable internal graphics function for power saving.

NOTE:
Select a Fast FET similar to 2N7002E whose rise/ fall time is less than 6 ns. If HPD on eDP interface is disabled, connect it to CPU VCCIO via a 10-k pull-Up resistor on the motherboard.

DN15ATI Whistler

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Title: **CPU (PCIE/DMI/FDI)**

Size	Document Number	Rev
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SSID = CPU

Disabling Guidelines:
If motherboard only supports external graphics:
Connect DPLL_REF_SSCLK on Processor to GND through 1K +/- 5% resistor.
Connect DPLL_REF_SSCLK# on Processor to VCCP through 1K +/- 5% resistorpower (~15 mW) may be wasted.

CPU1B — 2 OF 9 — SANDY

MISC: SNB_IVB#, SKTOCC#
THERMAL: CATERR#, PECI, PROCHOT#, THERMTRIP#
PM_SYNC, UNCOREPWRGOOD, SM_DRAMPWROK, RESET#
CLOCKS: BCLK, BCLK#, DPLL_REF_SSCLK, DPLL_REF_SSCLK#
DDR3 MISC: SM_DRAMRST#, SM_RCOMP0, SM_RCOMP1, SM_RCOMP2
JTAG & BPM: PRDY#, PREQ#, TCK, TMS, TRST#, TDI, TDO, DBR#, BPM#0–BPM#7
PWR MANAGEMENT
CPU1

SANDY SKT-BGA989C470395-1H180
62.10055.421
2nd = 62.10040.771

1D05V_VTT
R501 62R2J-GP
H_PROCHOT#
C502 SC47P50V2JN-3GP
CRB : 47pf
CEKLT:43pf

TPAD14-GP TP501 — SKTOCC#_R — AN34
TPAD14-GP TP502 — H_CATERR# — AL33
22,27 H_PECI — AN33
27,40,42 H_PROCHOT# — R513 56R2J-4-GP — H_PROCHOT#_R — AL32
Connect EC to PROCHOT# through inverting OD buffer.
22,36,85 H_THERMTRIP# — AN32

19 H_PM_SYNC — AM34
22,36 H_CPUPWRGD — R504 0R0402-PAD — CPUPWRGD_R — AP33
R503 10KR2J-3-GP
X01-0127 Add C504 for noise couple.
C504 SCD1U10V2KX-5GP
19,37 PM_DRAM_PWRGD — R505 0R2J-2-GP DY — VDDPWRGOOD — V8
37 VDDPWRGOOD
18,27,31,65,71,83 PLT_RST# — R510 1K5R2F-2-GP — BUF_CPU_RST# — AR33
R509 750R2F-GP
C501 SC220P50V2KX-3GP DY

BCLK A28 — CLK_EXP_P 20
BCLK# A27 — CLK_EXP_N 20
DPLL_REF_SSCLK A16 — CLK_DP_P_R — RN502 4
DPLL_REF_SSCLK# A15 — CLK_DP_N_R — RN502 3
RN502 1 2 — 1D05V_VTT
SRN1KJ-7-GP
X01-0210 MergeR512 R514

SM_DRAMRST# R8 — R502 4K99R2F-L-GP — SM_DRAMRST# 37

SM_RCOMP0 AK1 — SM_RCOMP_0 — R506 140R2F-GP
SM_RCOMP1 A5 — SM_RCOMP_1 — R507 25D5R2F-GP
SM_RCOMP2 A4 — SM_RCOMP_2 — R508 200R2F-L-GP
Signal Routing Guideline:
SM_RCOMP keep routing length less than 500 mils.

PRDY# AP29 — XDP_PRDY# — TP511 TPAD14-GP
PREQ# AP27 — XDP_PREQ# — TP512 TPAD14-GP
11/16 remove TP for layout space
TCK AR26 — XDP_TCLK
TMS AR27 — XDP_TMS
TRST# AP30 — XDP_TRST#
TDI AR28 — XDP_TDI
TDO AP26 — XDP_TDO
DBR# AL35 — XDP_DBRESET#

BPM#0 AT28 — XDP_BPM0 — TP503 TPAD14-GP
BPM#1 AR29 — XDP_BPM1 — TP504 TPAD14-GP
BPM#2 AR30 — XDP_BPM2 — TP505 TPAD14-GP
BPM#3 AT30 — XDP_BPM3 — TP506 TPAD14-GP
BPM#4 AP32 — XDP_BPM4 — TP507 TPAD14-GP
BPM#5 AR31 — XDP_BPM5 — TP508 TPAD14-GP
BPM#6 AT31 — XDP_BPM6 — TP509 TPAD14-GP
BPM#7 AR32 — XDP_BPM7 — TP510 TPAD14-GP

12/6 swap net for layout
1D05V_VTT
RN501: XDP_TDI 1, XDP_TMS 2, XDP_TDO 3, XDP_TCLK 4 — 8, 7, 6, 5
SRN51J-1-GP
XDP_TRST# R511 51R2J-2-GP

3D3V_S0
19 XDP_DBRESET# — XDP_DBRESET# — R516 10KR2J-3-GP

Buffered reset to CPU
1D05V_VTT
R518 75R2J-1-GP DY
3D3V_S0
C503 SCD1U10V2KX-5GP DY
U501 74VHC1G09DFT2G-GP
IN B, VCC, IN A DY, GND, OUT Y
18,27,31,65,71,83 PLT_RST#
BUFO_CPU_RST#
R517 43R2J-GP DY
BUF_CPU_RST#
R515 0R2J-2-GP DY
73.01G09.AAH

<Core Design>
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21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title: CPU (THERMAL/CLOCK/PM)
Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00
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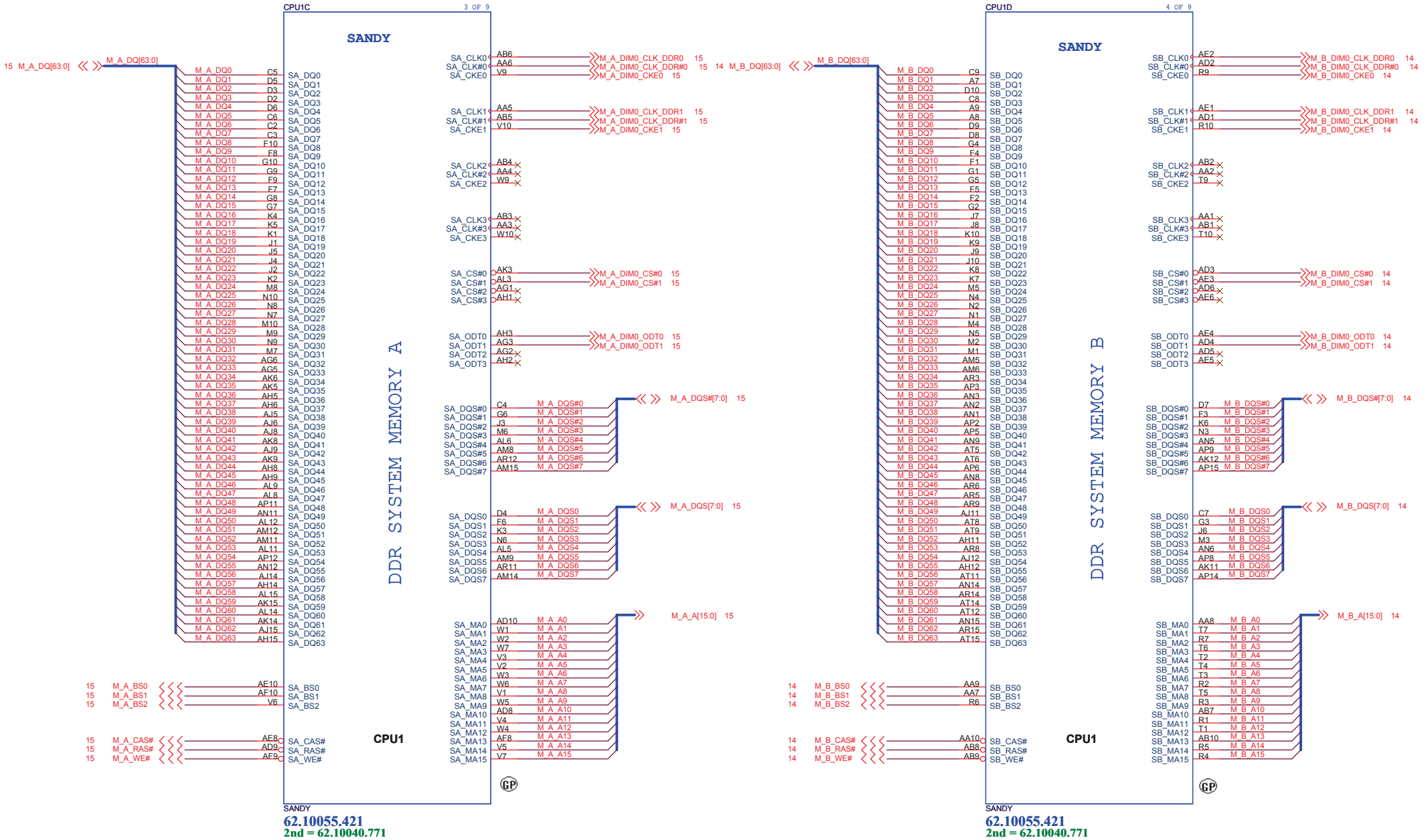
SSID = CPU



62.10055.421

2nd = 62.10040.771

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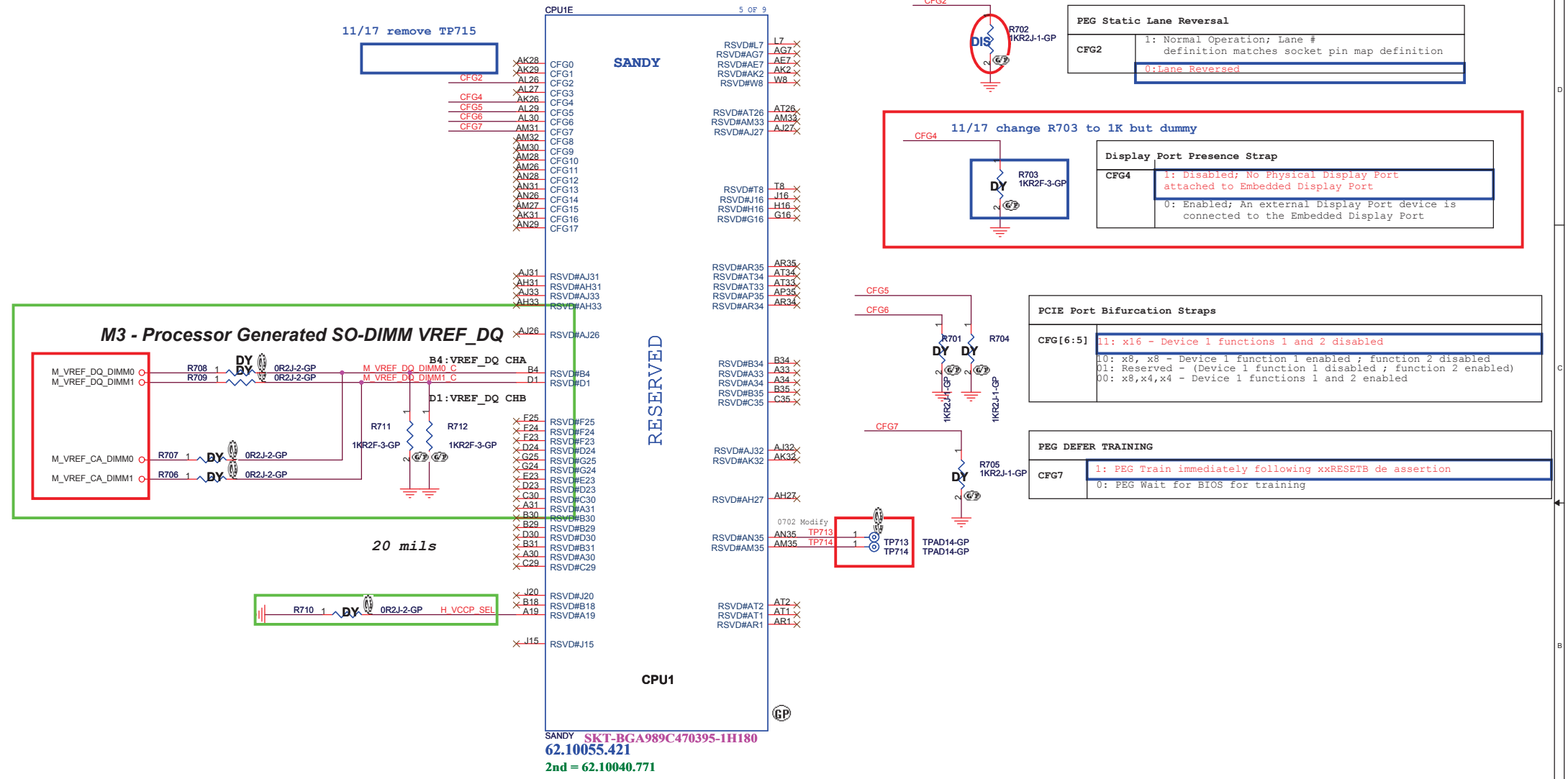
Taipei Hsien 221, Taiwan, R.O.C.

Title: CPU (DDR)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 6 of 105

SSID = CPU



DN15ATI Whistler

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Title: CPU (RESERVED)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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SSID = CPU

Voltage Rail	Voltage	Iccmax
VCC_CORE(QC)	0.8~1.35	94A
VCC_CORE(DC)	0.8~1.35	53A
VCCIO	1.05	8.5A
VDDQ	1.5	10A
VCCSA	0.75~0.9	6A
VCCPLL	1.8	1.2A
VAXG	0~1.52	33A

PROCESSOR CORE POWER

53A

11/15 change Caps to 78.22610.51L

12/23 stuff the capacities

12/28 Yellow mark for OPI change

VCC Output Decoupling Recommendation:
4 x 470 uF at Bottom Socket Edge
8 x 22 uF at Top Socket Cavity
8 x 22 uF at Top Socket Edge
8 x 22 uF at Bottom Socket Cavity

11/4 add Caps to 28 location as vendor recommand.

X01-0127 Stuff C812, C822, C831, C834
for VCC core noise issue.

X01-0217 Stuff C801=22uF
change C817 to 22uF

POWER

CPU1F

SANDY

6 OF 9

PEG AND DDR

CORE SUPPLY

SVID

SENSE LINES

CPU1

VCCIO Output Decoupling Recommendation:
2 x 330 uF (3 x 330 uF for 2012 capable designs)
5 x 22 uF & 5 x 0805 no-stuff at Bottom
7 x 22 uF & 2 x 0805 no-stuff at Top

12/28 Yellow mark for OPI change

PROCESSOR VCCIO: 8.5A

12/23 stuff the capacities

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

11/16 follow DN13 to meet schematic check list

These resistors need to close to power IC

11/17 change part refernce R807 to R805

VR_SVID_ALERT# R805 75R2J-1-GP

H_CPU_SVIDCLK R806 54D9R2F-L1-GP

H_CPU_SVIDDAT R804 130R2F-1-GP

VIDALERT# AJ29 H_CPU_SVIDALRT# R803 43R2J-GP

VIDSCLK AJ30 H_CPU_SVIDCLK

VIDSOUT AJ28 H_CPU_SVIDDAT

VCC_SENSE AJ35

VSS_SENSE AJ34

VCCIO_SENSE B10

VSSIO_SENSE A10

R801 100R2F-L1-GP-U

R802 100R2F-L1-GP-U

<Core Design>

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

Title: CPU (VCC_CORE)

Size: Custom | Document Number: Enrico Caruso 14 | Rev: A00

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SANDY

62.10055.421

2nd = 62.10040.771

SSID = CPU

VAXG Output Decoupling Recommendation:
2 x 470 uF at Bottom Socket Edge
2 x 22 uF at Top Socket Cavity
4 x 22 uF at Top Socket Edge
2 x 22 uF at Bottom Socket Cavity
4 x 22 uF at Bottom Socket Edge

Voltage Rail	Voltage	Iccmax
VCC_CORE(QC)	0.8~1.35	94A
VCC_CORE(DC)	0.8~1.35	53A
VCCIO	1.05	8.5A
VDDQ	1.5	10A
VCCSA	0.75~0.9	6A
VCCPLL	1.8	1.2A
VAXG	0~1.52	33A

POWER

CPU1G — 7 OF 9 — SANDY

GRAPHICS | DDR3 -1.5V RAILS | SA RAIL | 1.8V RAIL | MISC

VCC_GFXCORE

PROCESSOR VAXG: 33A

C901 SC407U6D3V5KX-3GP; C902 SC10U6D3V5KX-1GP; C904 SC10U6D3V5KX-1GP; C905 SC10U6D3V5KX-1GP; DY C906 SC10U6D3V5KX-1GP

12/28 Yellow mark for OPI

C908 SC407U6D3V3KX-GP; DY C920 SC407U6D3V3KX-GP; C921 SC407U6D3V3KX-GP

AT24 AT23 AT21 AT20 AT18 AT17 AR24 AR23 AR21 AR20 AR18 AR17 AP24 AP23 AP21 AP20 AP18 AP17 AN24 AN23 AN21 AN20 AN18 AN17 AM24 AM23 AM21 AM20 AM18 AM17 AL24 AL23 AL21 AL20 AL18 AL17 AK24 AK23 AK21 AK20 AK18 AK17 AJ24 AJ23 AJ21 AJ20 AJ18 AJ17 AH24 AH23 AH21 AH20 AH18 AH17 — VAXG

VAXG_SENSE AK35
VSSAXG_SENSE AK34
VCC_AXG_SENSE 42
VSS_AXG_SENSE 42

R906 100R2F-L1-GP-U
R907 100R2F-L1-GP-U
VCC_AXG_SENSE
VSS_AXG_SENSE

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

SM_VREF AL1 — +V_SM_VREF_CNT — +V_SM_VREF_CNT 37

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

1D5V_S0

PROCESSOR VDDQ: 10A

VDDQ: AF7 AF4 AF1 AC7 AC4 AC1 Y7 Y4 Y1 U7 U4 U1 P7 P4 P1

C909 DY SC10U6D3V3MX-GP; C910 DY SC10U6D3V3MX-GP; C911 DY SC10U6D3V3MX-GP; C912 SC4D7U6D3V5KX-3GP; C913 SC10U6D3V5KX-1GP; C914 SC10U6D3V5KX-1GP; TC901 ST330U2VDM-4-GP; C907 DY SCD1U10V2KX-5GP; C918 DY SCD1U10V2KX-5GP; C919 DY SCD1U10V2KX-5GP; C925 DY SCD1U10V2KX-5GP

1D5V_S3

12/28 Yellow mark for OPI

79.33719.20L
2nd = 77.C3371.13L

VDDQ Output Decoupling Recommendation:
1 x 330 uF
6 x 10 uF

0D85V_S0

PROCESSOR VCCSA: 6A

VCCSA: M27 M26 L26 J26 J25 J24 H26 H25

C916 SC10U6D3V5KX-1GP; C915 SC10U6D3V5KX-1GP; C917 SC10U6D3V5KX-1GP; DY EC902 SCD1U50V3KX-GP

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

11/16 Follow Annie team's schematic by power solution

VCCSA_SENSE H23 — VCCSA_SENSE — R910 10R2J-2-GP — 0D85V_S0

R910 close to pin H23.

FC_C22 C22
VCCSA_VID1 C24
H_FC_C22
VCCSA_SEL
VCCSA_SEL 48

DY RN901 SRN1KJ-7-GP

11/ 17 dummy RN901

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

1D8V_S0

PROCESSOR VCCPLL: 1.2A

C923 SC10U6D3V5KX-1GP; C922 SC1U10V2KX-1GP; C924 SC1U10V2KX-1GP

B6 A6 A2 — VCCPLL

VCCPLL Output Decoupling Recommendation:
1 x 330 uF
2 x 1 uF
1 x 10 uF

SANDY
62.10055.421
2nd = 62.10040.771

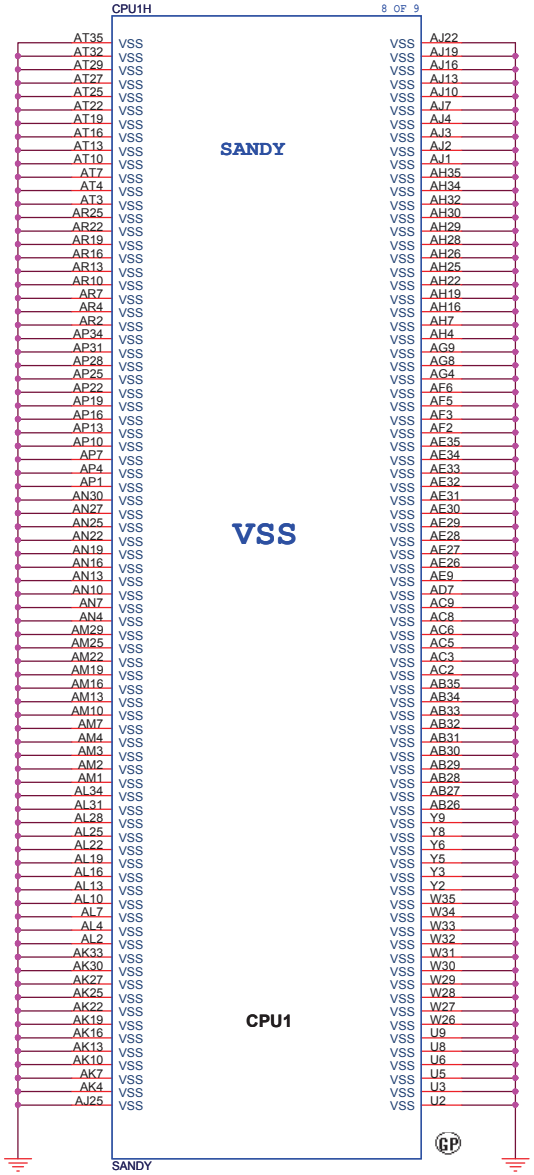
CPU1

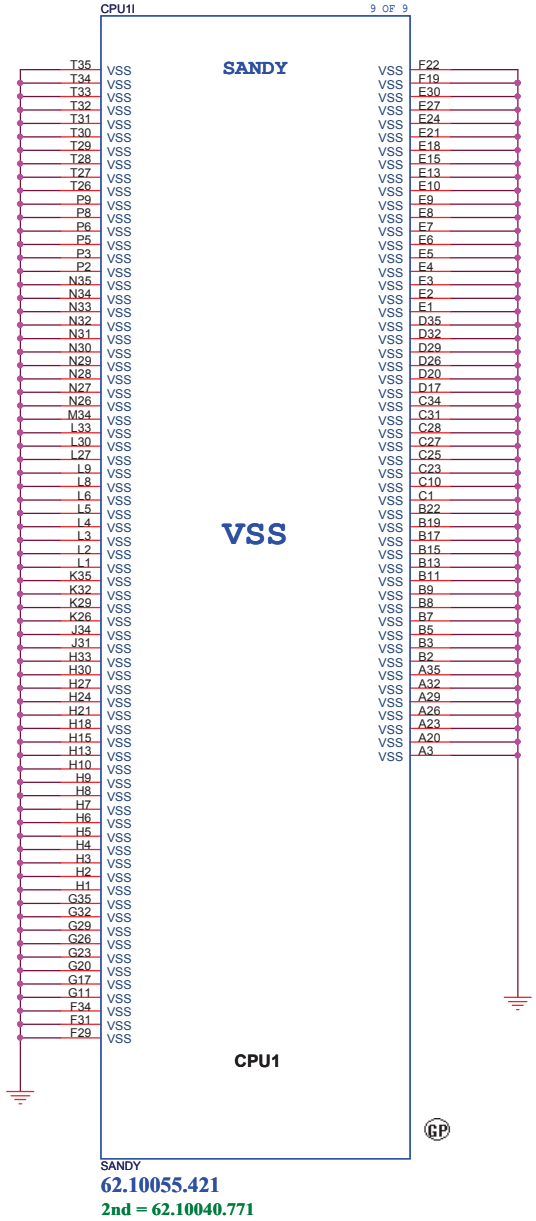
<Core Design>

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

Title: CPU (VCC_GFXCORE)
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 9 of 105

SSID = CPU





DN15ATI Whistler

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

Title: CPU (VSS)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 10 of 105

(Blanking)

DN15ATI Whistler

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

Title: XDP

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 11 of 105

(Blanking)

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Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 12 of 105

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

Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 13 of 105

SSID = MEMORY

DM2

DDR_VREF_S3
R1405 0R0402-PAD
M_VREF_CA_DIMM1
C1423 SCD1U10V2KX-5GP
C1425 DY SC2D2U10V3KX-1GP
C1424 SCD1U10V2KX-5GP

DDR_VREF_S3
R1404 0R0402-PAD
M_VREF_DQ_DIMM1
C1411 SCD1U10V2KX-5GP
C1412 DY SC2D2U10V3KX-1GP
C1413 SCD1U10V2KX-5GP

X02-0303 change 0R to short pad

M_B_A[15:0] 6

M_B_A0 98 A0
M_B_A1 97 A1
M_B_A2 96 A2
M_B_A3 95 A3
M_B_A4 92 A4
M_B_A5 91 A5
M_B_A6 90 A6
M_B_A7 86 A7
M_B_A8 89 A8
M_B_A9 85 A9
M_B_A10 107 A10/AP
M_B_A11 84 A11
M_B_A12 83 A12
M_B_A13 119 A13
M_B_A14 80 A14
M_B_A15 78 A15
79 A16/BA2

6 M_B_BS2
6 M_B_BS0 109 BA0
6 M_B_BS1 108 BA1
6 M_B_DQ[63:0]

M_B_DQ0 5 DQ0
M_B_DQ1 7 DQ1
M_B_DQ2 15 DQ2
M_B_DQ3 17 DQ3
M_B_DQ4 4 DQ4
M_B_DQ5 6 DQ5
M_B_DQ6 16 DQ6
M_B_DQ7 18 DQ7
M_B_DQ8 21 DQ8
M_B_DQ9 23 DQ9
M_B_DQ10 33 DQ10
M_B_DQ11 35 DQ11
M_B_DQ12 22 DQ12
M_B_DQ13 24 DQ13
M_B_DQ14 34 DQ14
M_B_DQ15 36 DQ15
M_B_DQ16 39 DQ16
M_B_DQ17 41 DQ17
M_B_DQ18 51 DQ18
M_B_DQ19 53 DQ19
M_B_DQ20 40 DQ20
M_B_DQ21 42 DQ21
M_B_DQ22 50 DQ22
M_B_DQ23 52 DQ23
M_B_DQ24 57 DQ24
M_B_DQ25 59 DQ25
M_B_DQ26 67 DQ26
M_B_DQ27 69 DQ27
M_B_DQ28 56 DQ28
M_B_DQ29 58 DQ29
M_B_DQ30 68 DQ30
M_B_DQ31 70 DQ31
M_B_DQ32 129 DQ32
M_B_DQ33 131 DQ33
M_B_DQ34 141 DQ34
M_B_DQ35 143 DQ35
M_B_DQ36 130 DQ36
M_B_DQ37 132 DQ37
M_B_DQ38 140 DQ38
M_B_DQ39 142 DQ39
M_B_DQ40 147 DQ40
M_B_DQ41 149 DQ41
M_B_DQ42 157 DQ42
M_B_DQ43 159 DQ43
M_B_DQ44 146 DQ44
M_B_DQ45 148 DQ45
M_B_DQ46 158 DQ46
M_B_DQ47 160 DQ47
M_B_DQ48 163 DQ48
M_B_DQ49 165 DQ49
M_B_DQ50 175 DQ50
M_B_DQ51 177 DQ51
M_B_DQ52 164 DQ52
M_B_DQ53 166 DQ53
M_B_DQ54 174 DQ54
M_B_DQ55 176 DQ55
M_B_DQ56 181 DQ56
M_B_DQ57 183 DQ57
M_B_DQ58 191 DQ58
M_B_DQ59 193 DQ59
M_B_DQ60 180 DQ60
M_B_DQ61 182 DQ61
M_B_DQ62 192 DQ62
M_B_DQ63 194 DQ63

M_B_DQS#0 10 DQS0#
M_B_DQS#1 27 DQS1#
M_B_DQS#2 45 DQS2#
M_B_DQS#3 62 DQS3#
M_B_DQS#4 135 DQS4#
M_B_DQS#5 152 DQS5#
M_B_DQS#6 169 DQS6#
M_B_DQS#7 186 DQS7#

M_B_DQS0 12 DQS0
M_B_DQS1 29 DQS1
M_B_DQS2 47 DQS2
M_B_DQS3 64 DQS3
M_B_DQS4 137 DQS4
M_B_DQS5 154 DQS5
M_B_DQS6 171 DQS6
M_B_DQS7 188 DQS7

M_B_DQS#[7:0] 6
M_B_DQS[7:0] 6

6 M_B_DIM0_ODT0 116 ODT0
6 M_B_DIM0_ODT1 120 ODT1

M_VREF_CA_DIMM1 126 VREF_CA
M_VREF_DQ_DIMM1 1 VREF_DQ

15,37 DDR3_DRAMRST# 30 RESET#

0D75V_S0 203 VTT1
204 VTT2

NP1 NP2

RAS# 110 M_B_RAS# 6
WE# 113 M_B_WE# 6
CAS# 115 M_B_CAS# 6

CS0# 114 M_B_DIM0_CS#0 6
CS1# 121 M_B_DIM0_CS#1 6

CKE0 73 M_B_DIM0_CKE0 6
CKE1 74 M_B_DIM0_CKE1 6

CK0 101 M_B_DIM0_CLK_DDR0 6
CK0# 103 M_B_DIM0_CLK_DDR#0 6

CK1 102 M_B_DIM0_CLK_DDR1 6
CK1# 104 M_B_DIM0_CLK_DDR#1 6

DM0 11
DM1 28
DM2 46
DM3 63
DM4 136
DM5 153
DM6 170
DM7 187

SDA 200 PCH_SMBDATA 15,20,65
SCL 202 PCH_SMBCLK 15,20,65

EVENT# 198 TS#_DIMM0_1 15

VDDSPD 199

SA0 197 SA0_DIM1
SA1 201 SA1_DIM1

NC#1 77
NC#2 122
NC#/TEST 125

VDD1 75
VDD2 76
VDD3 81
VDD4 82
VDD5 87
VDD6 88
VDD7 93
VDD8 94
VDD9 99
VDD10 100
VDD11 105
VDD12 106
VDD13 111
VDD14 112
VDD15 117
VDD16 118
VDD17 123
VDD18 124

VSS 2 3 8 9 13 14 19 20 25 26 31 32 37 38 43 44 48 49 54 55 60 61 65 66 71 72 127 128 133 134 138 139 144 145 150 151 155 156 161 162 167 168 172 173 178 179 184 185 189 190 195 196 205 206

DDR3-204P-135-GP
62.10024.E21

H =5.2mm

SWAP SA0_DM1 and SA1_DIM1 each other for DM2 can't boot up issue(only DN15/DQ15)

3D3V_S0
R1402 10KR2J-3-GP
SA1_DIM1
SA0_DIM1
R1401 10KR2J-3-GP

11/ 17 Change SMbus adress note

Note:
If SA0 DIM0 = 0, SA1_DIM0 = 0
SO-DIMMA SPD Address is 0xA0
SO-DIMMA TS Address is 0x30

If SA0 DIM0 = 0, SA1_DIM0 = 1
SO-DIMMA SPD Address is 0xA4
SO-DIMMA TS Address is 0x34

3D3V_S0
C1401 SCD1U10V2KX-5GP
C1402 DY SC2D2U10V3KX-1GP

Thermal EVENT

3D3V_S0
TS#_DIMM0_1 R1403 10KR2J-3-GP

1D5V_S3

SODIMM A DECOUPLING

TC1401 ST330U2VDM-4-GP
C1403 C1404 C1405 C1406 C1407 C1408 C1409 C1410 SC10U6D3V5KX-1GP
C1405 SC10U10V5ZY-1GP
C1408 SC10U10V5ZY-1GP

Layout Note:
Place these Caps near SO-DIMMA.

C1414 SC1U6D3V2KX-GP
C1415 SCD1U10V2KX-5GP
C1416 SCD1U10V2KX-5GP
C1417 SC1U6D3V2KX-GP

12/28 Yellow mark for OPI change

0D75V_S0

Place these caps close to VTT1 and VTT2.

C1419 C1420 C1421 C1422 SC1U6D3V2KX-GP
C1418 SC10U6D3V5KX-1GP

12/3 Change DM2 to 62.10024.E21
12/9 Change DM2 to 62.10017.K01
12/21 Change DM2 to 62.10017.P61
12/22 Change DM2 to 62.10024.E21

DN15ATI Whistler

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

Title: DDR3-SODIMM2

Size	Document Number	Rev
Custom	Enrico Caruso 14	A00

Date: Wednesday, April 13, 2011 Sheet 14 of 105

SSID = MEMORY

11/ 17 Change SMbus adress note

Note:
SO-DIMMB SPD Address is 0xA0
SO-DIMMB TS Address is 0x30

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

DM1

M_A_A[15:0] 6

M_A_A0 98
M_A_A1 97
M_A_A2 96
M_A_A3 95
M_A_A4 92
M_A_A5 91
M_A_A6 90
M_A_A7 86
M_A_A8 89
M_A_A9 85
M_A_A10 107
M_A_A11 84
M_A_A12 83
M_A_A13 119
M_A_A14 80
M_A_A15 78

A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10/AP A11 A12 A13 A14 A15 A16/BA2

6 M_A_BS2 79
6 M_A_BS0 109
6 M_A_BS1 108
BA0 BA1

6 M_A_DQ[63:0]

M_A_DQ0 5
M_A_DQ1 7
M_A_DQ2 15
M_A_DQ3 17
M_A_DQ4 4
M_A_DQ5 6
M_A_DQ6 16
M_A_DQ7 18
M_A_DQ8 21
M_A_DQ9 23
M_A_DQ10 33
M_A_DQ11 35
M_A_DQ12 22
M_A_DQ13 24
M_A_DQ14 34
M_A_DQ15 36
M_A_DQ16 39
M_A_DQ17 41
M_A_DQ18 51
M_A_DQ19 53
M_A_DQ20 40
M_A_DQ21 42
M_A_DQ22 50
M_A_DQ23 52
M_A_DQ24 57
M_A_DQ25 59
M_A_DQ26 67
M_A_DQ27 69
M_A_DQ28 56
M_A_DQ29 58
M_A_DQ30 68
M_A_DQ31 70
M_A_DQ32 129
M_A_DQ33 131
M_A_DQ34 141
M_A_DQ35 143
M_A_DQ36 130
M_A_DQ37 132
M_A_DQ38 140
M_A_DQ39 142
M_A_DQ40 147
M_A_DQ41 149
M_A_DQ42 157
M_A_DQ43 159
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M_A_DQ55 176
M_A_DQ56 181
M_A_DQ57 183
M_A_DQ58 191
M_A_DQ59 193
M_A_DQ60 180
M_A_DQ61 182
M_A_DQ62 192
M_A_DQ63 194

DQ0 DQ1 DQ2 DQ3 DQ4 DQ5 DQ6 DQ7 DQ8 DQ9 DQ10 DQ11 DQ12 DQ13 DQ14 DQ15 DQ16 DQ17 DQ18 DQ19 DQ20 DQ21 DQ22 DQ23 DQ24 DQ25 DQ26 DQ27 DQ28 DQ29 DQ30 DQ31 DQ32 DQ33 DQ34 DQ35 DQ36 DQ37 DQ38 DQ39 DQ40 DQ41 DQ42 DQ43 DQ44 DQ45 DQ46 DQ47 DQ48 DQ49 DQ50 DQ51 DQ52 DQ53 DQ54 DQ55 DQ56 DQ57 DQ58 DQ59 DQ60 DQ61 DQ62 DQ63

M_A_DQS#0 10
M_A_DQS#1 27
M_A_DQS#2 45
M_A_DQS#3 62
M_A_DQS#4 135
M_A_DQS#5 152
M_A_DQS#6 169
M_A_DQS#7 186

DQS0# DQS1# DQS2# DQS3# DQS4# DQS5# DQS6# DQS7#

M_A_DQS0 12
M_A_DQS1 29
M_A_DQS2 47
M_A_DQS3 64
M_A_DQS4 137
M_A_DQS5 154
M_A_DQS6 171
M_A_DQS7 188

DQS0 DQS1 DQS2 DQS3 DQS4 DQS5 DQS6 DQS7

6 M_A_DIM0_ODT0 116
6 M_A_DIM0_ODT1 120

ODT0 ODT1

M_VREF_CA_DIMM0 126
M_VREF_DQ_DIMM0 1

VREF_CA VREF_DQ

14,37 DDR3_DRAMRST# 30

RESET#

0D75V_S0 203 204

VTT1 VTT2

NP1 NP2

RAS# 110 — M_A_RAS# 6
WE# 113 — M_A_WE# 6
CAS# 115 — M_A_CAS# 6

CS0# 114 — M_A_DIM0_CS#0 6
CS1# 121 — M_A_DIM0_CS#1 6

CKE0 73 — M_A_DIM0_CKE0 6
CKE1 74 — M_A_DIM0_CKE1 6

CK0 101 — M_A_DIM0_CLK_DDR0 6
CK0# 103 — M_A_DIM0_CLK_DDR#0 6

CK1 102 — M_A_DIM0_CLK_DDR1 6
CK1# 104 — M_A_DIM0_CLK_DDR#1 6

M_A_DQS#[7:0] 6
M_A_DQS[7:0] 6

DM0 11
DM1 28
DM2 46
DM3 63
DM4 136
DM5 153
DM6 170
DM7 187

SDA 200 — PCH_SMBDATA 14,20,65
SCL 202 — PCH_SMBCLK 14,20,65

EVENT# 198 — TS#_DIMM0_1 14

VDDSPD 199

SA0 197 — SA0_DIM0
SA1 201 — SA1_DIM0

NC#1 77
NC#2 122
NC#/TEST 125

1D5V_S3

VDD1 75 VDD2 76 VDD3 81 VDD4 82 VDD5 87 VDD6 88 VDD7 93 VDD8 94 VDD9 99 VDD10 100 VDD11 105 VDD12 106 VDD13 111 VDD14 112 VDD15 117 VDD16 118 VDD17 123 VDD18 124

VSS 2 3 8 9 13 14 19 20 25 26 31 32 37 38 43 44 48 49 54 55 60 61 65 66 71 72 127 128 133 134 138 139 144 145 150 151 155 156 161 162 167 168 172 173 178 179 184 185 189 190 195 196 205 206

DDR3-204P-128-GP
62.10024.D51

H =9.2mm

SA1_DIM0
SA0_DIM0

R1502 10KR2J-3-GP
R1501 10KR2J-3-GP

3D3V_S0

C1501 SCD1U10V2KX-5GP
C1502 SC2D2U10V3KX-1GP DY

DDR_VREF_S3

R1504 0R0402-PAD
M_VREF_CA_DIMM0
C1523 SCD1U10V2KX-5GP DY
C1524 SC2D2U10V3KX-1GP
C1522 SCD1U10V2KX-5GP

DDR_VREF_S3

R1503 0R0402-PAD
M_VREF_DQ_DIMM0
C1515 SCD1U10V2KX-5GP DY
C1516 SC2D2U10V3KX-1GP
C1517 SCD1U10V2KX-5GP

X02-0303 change 0R to short pad

Place these caps close to VTT1 and VTT2.

0D75V_S0
C1518 SC1U6D3V2KX-GP DY
C1519 SC1U6D3V2KX-GP
C1520 SC1U6D3V2KX-GP DY
C1521 SC1U6D3V2KX-GP

1D5V_S3

SODIMM B DECOUPLING

12/28 Yellow mark for OPI change

C1503 SC10U10V5ZY-1GP DY
C1504 SC10U10V5ZY-1GP DY
C1505 SC10U6D3V5KX-1GP
C1506 SC10U6D3V5KX-1GP OPI
C1507 SC10U6D3V5KX-1GP
C1508 SC10U10V5ZY-1GP DY
C1509 SC10U6D3V5KX-1GP
C1510 SC10U6D3V5KX-1GP DY

C1511 SC1U6D3V2KX-GP
C1512 SCD1U10V2KX-5GP
C1513 SCD1U10V2KX-5GP
C1514 SCD1U10V2KX-5GP

Layout Note:
Place these Caps near SO-DIMMB.

12/7 Change DM1 to 62.10024.D51
12/9 Change DM1 to 62.10017.K11
12/17 Change DM1 to 62.10017.N11
12/21 Change DM1 to 62.10017.Q41
12/22 Change DM1 to 62.10024.D91
12/22 Change DM1 to 62.10024.D51

Note:
The symbol DM1 is change value and PN only.

DN15ATI Whistler

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

Title: DDR3-SODIMM1
Size: Custom
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 15 of 105

(Blanking)

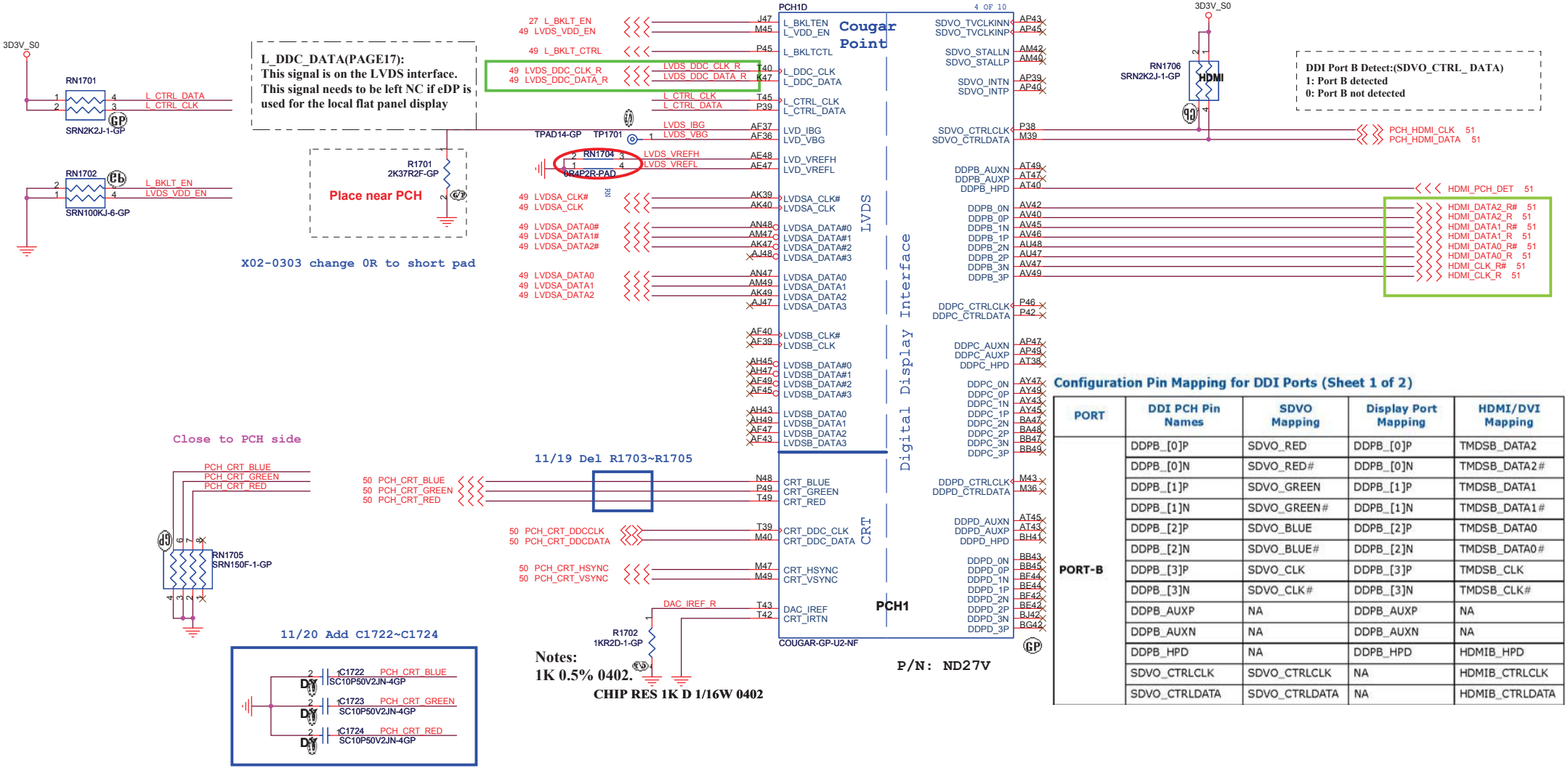
DN15ATI Whistler

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

Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 16 of 105



Configuration Pin Mapping for DDI Ports (Sheet 1 of 2)

PORT	DDI PCH Pin Names	SDVO Mapping	Display Port Mapping	HDMI/DVI Mapping
PORT-B	DDPB_[0]P	SDVO_RED	DDPB_[0]P	TMDSB_DATA2
	DDPB_[0]N	SDVO_RED#	DDPB_[0]N	TMDSB_DATA2#
	DDPB_[1]P	SDVO_GREEN	DDPB_[1]P	TMDSB_DATA1
	DDPB_[1]N	SDVO_GREEN#	DDPB_[1]N	TMDSB_DATA1#
	DDPB_[2]P	SDVO_BLUE	DDPB_[2]P	TMDSB_DATA0
	DDPB_[2]N	SDVO_BLUE#	DDPB_[2]N	TMDSB_DATA0#
	DDPB_[3]P	SDVO_CLK	DDPB_[3]P	TMDSB_CLK
	DDPB_[3]N	SDVO_CLK#	DDPB_[3]N	TMDSB_CLK#
	DDPB_AUXP	NA	DDPB_AUXP	NA
	DDPB_AUXN	NA	DDPB_AUXN	NA
	DDPB_HPD	NA	DDPB_HPD	HDMIB_HPD
	SDVO_CTRLCLK	SDVO_CTRLCLK	NA	HDMIB_CTRLCLK
	SDVO_CTRLDATA	SDVO_CTRLDATA	NA	HDMIB_CTRLDATA

<Core Design>

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

Title: PCH (LVDS/CRT/DDI)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 17 of 105

SSID = PCH

12/2 Net swap for layout

RN1801
INT_PIRQB# 1
INT_PIRQD# 2
INT_PIRQC# 3
INT_PIRQF# 4
5
10 3D3V_S0
9 INT_PIRQE#
8 INT_PIRQA#
7 INT_PIRQH#
6 INT_PIRQG#
3D3V_S0
SRN8K2J-2-GP-U1 GP

R1801 DY 1 4K7R2J-2-GP PCI_GNT3#

A16 swap override Strap/Top-Block Swap Override jumper	
PCI_GNT#3	Low = A16 swap override/Top-Block Swap Override enabled High = Default

R1802 DY 1 1KR2J-1-GP BBS_BIT1
R1803 DY 1 1KR2J-1-GP BBS_BIT0 <<< BBS_BIT0 21

BOOT BIOS Strap		
GNT1#/GPIO51	SATA1GP/GPIO19	BOOT BIOS Location
0	0	LPC
0	1	Reserved
1	0	Reserved
1	1	SPI (Default)

RN1803
DGPU_HOLD_RST# 1
DGPU_PWR_EN# 2
4
3
SRN10KJ-5-GP GP

PCH1E 5 OF 10
Cougar Point
RSVD
NVRAM
PCI
USB
PCH1
COUGAR-GP-U2-NF

TP1 BG26
TP2 BJ26
TP3 BH25
TP4 BJ16
TP5 BG16
TP6 AH38
TP7 AH37
TP8 AK43
TP9 AK45
TP10 C18
TP11 N30
TP12 H3
TP13 AH12
TP14 AM4
TP15 AM5
TP16 Y13
TP17 K24
TP18 L24
TP19 AB46
TP20 AB45
TP21 B21
TP22 M20
TP23 AY16
TP24 BG46
TP25 BE28
TP26 BC30
TP27 BE32
TP28 BJ32
TP29 BC28
TP30 BE30
TP31 BF32
TP32 BG32
TP33 AV26
TP34 BB26
TP35 AU28
TP36 AY30
TP37 AU26
TP38 AY26
TP39 AV28
TP40 AW30

RSVD AY7, AV7, AU3, BG4, AT10, BC8, AU2, AT4, AT3, AT1, AY3, AT5, AV3, AV1, BB1, BA3, BB5, BB3, BB7, BE8, BD4, BF6
RSVD AV5 NV_ALE
RSVD AY1 NV_CLE
DF_TVS
RSVD AV10 NV_RCOMP 1 TP1803 TPAD14-GP
RSVD AT8
RSVD AY5
RSVD BA2
RSVD AT12
RSVD BF3

USB Ext. port 1 (HS)
External debug port use on Huron river platform

USBP0N C24
USBP0P A24
USBP1N C25 USB_PN1 61
USBP1P B25 USB_PP1 61
USBP2N C26
USBP2P A26
USBP3N K28
USBP3P H28
USBP4N E28
USBP4P D28
USBP5N C28 USB_PN5 32
USBP5P A28 USB_PP5 32
USBP6N C29
USBP6P B29
USBP7N N28
USBP7P M28
USBP8N L30 USB_PN8 82
USBP8P K30 USB_PP8 82
USBP9N G30 USB_PN9 82
USBP9P E30 USB_PP9 82
USBP10N C30
USBP10P A30
USBP11N L32 USB_PN11 65
USBP11P K32 USB_PP11 65
USBP12N G32 USB_PN12 49
USBP12P E32 USB_PP12 49
USBP13N C32
USBP13P A32

USBRBIAS# C33 USB_RBIAS 1 R1811 22D6R2F-L1-GP
USBRBIAS B33

OC0#/GPIO59 A14 USB_OC#0_1 >>> USB_OC#0_1 61
OC1#/GPIO40 K20 USB_OC#2_3
OC2#/GPIO41 B17 USB_OC#4_5
OC3#/GPIO42 C16 USB_OC#6_7
OC4#/GPIO43 L16 USB_OC#8_9 >>> USB_OC#8_9 61
OC5#/GPIO9 A16 USB_OC#10_11
OC6#/GPIO10 D14 USB_OC#12_13
OC7#/GPIO14 C14 PCH_GPIO14

OC[3:0]# for Device 29 (Ports 0-7)
OC[7:4]# for Device 26 (Ports 8-13)

3D3V_S0
R1814 8K2R2J-3-GP
INT_PIRQA# K40 PIRQA#
INT_PIRQB# K38 PIRQB#
INT_PIRQC# H38 PIRQC#
INT_PIRQD# G38 PIRQD#
83 DGPU_HOLD_RST# TPAD14-GP TP1807 DGPU_SELECT# C46 REQ1#/GPIO50
93 DGPU_PWR_EN# DGPU_PWR_EN# C44 REQ2#/GPIO52
E40 REQ3#/GPIO54
TPAD14-GP TP1806 PCH_GPIO53 BBS_BIT1 D47 GNT1#/GPIO51
TPAD14-GP TP1801 PCI_GNT3# E42 GNT2#/GPIO53
F46 GNT3#/GPIO55
56 SATA_ODD_DA# R1813 0R0402-PAD INT_PIRQE# G42 PIRQE#/GPIO2
INT_PIRQF# G40 PIRQF#/GPIO3
INT_PIRQG# C42 PIRQG#/GPIO4
INT_PIRQH# D44 PIRQH#/GPIO5
TPAD14-GP TP1802 PCI_PME# K10 PME#
PCI_PLTRST# C6 PLTRST#

X02-0311 dummy R1804

71 CLK_PCI_LPC R1804 DY 22R2J-2-GP CLK_PCI_LPC_R H49 CLKOUT_PCI0
20 CLK_PCI_FB R1805 DY 22R2J-2-GP CLK_PCI_FB_R H43 CLKOUT_PCI1
27 CLK_PCI_KBC R1806 DY 22R2J-2-GP CLK_PCI_KBC_R J48 CLKOUT_PCI2
K42 CLKOUT_PCI3
H40 CLKOUT_PCI4

EC1802 DY SC4D7P50V2CN-1GP
EC1801 DY SC33P50V2JN-3GP
EC1803 DY SC33P50V2JN-3GP

KBC CLK EMI

X02-0303 change 0R to short pad

5,27,31,65,71,83 PLT_RST# R1807 0R0402-PAD PCI_PLTRST#
R1816 DY 100KR2J-3-GP
C1801 DY SC220P50V2KX-3GP

12/1 Swap net for layout
11/11 change to RN1802 to meet schematic check result.

RN1802
PCH_GPIO14 1
USB_OC#6_7 2
USB_OC#10_11 3
USB_OC#4_5 4
5
3D3V_S5
10 3D3V_S5
9 USB_OC#0_1
8 USB_OC#12_13
7 USB_OC#8_9
6 USB_OC#2_3
SRN8K2J-2-GP-U1 GP

1D8V_S0
R1808 2K2R2J-2-GP
R1809
NV_CLE 1 1KR2J-1-GP H_SNB_IVB# 5

DMI & FDI Termination Voltage	
NV_CLE	Set to Vss when LOW Set to Vcc when HIGH

1D8V_S0
Danbury Technology:
Disabled when Low.
Enable when High.
R1810 1KR2J-1-GP
NV_ALE

USB Table

Pair	Device
0	X
1	USB Ext. port 2 (MB)
2	X
3	X
4	X
5	CARD READER
6	X
7	X
8	USB Ext. port 3
9	USB Ext. port 1
10	X
11	Mini Card1 (WLAN+BT)
12	CAMERA
13	X

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

P/N: ND27V

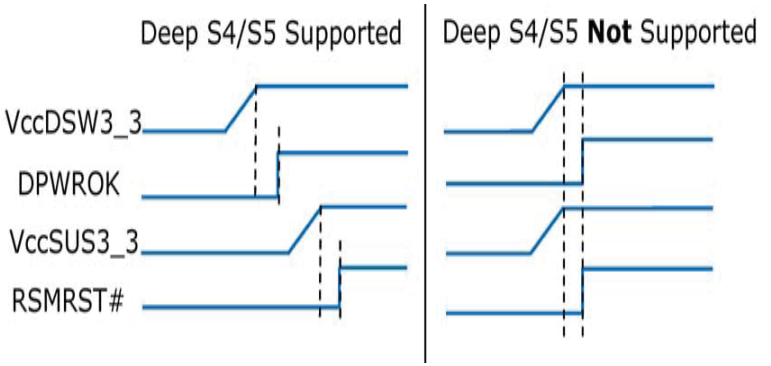
<Core Design>

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

Title: PCH (PCI/USB/NVRAM)
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 18 of 105

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

PCH1C — 3 OF 10 — Cougar Point — DMI — FDI — System Power Management — PCH1 — COUGAR-GP-U2-NF

X02-0303 change 0R to short pad

S0_PWR_GOOD after PM_SLP_S3# delay 200 ms

DSWODVREN - On Die DSW VR Enable	
HIGH	Enabled (DEFAULT)
LOW	Disabled

12/2 Swap net for layout

PCIE_WAKE#
CRB : 1K
CEKLT: 10K

P/N: ND27V

<Core Design>

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

Title: PCH (DM I/FDI/PM)
Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00
Date: Wednesday, April 13, 2011 | Sheet 19 of 105

SSID = PCH

PCH1B — Cougar Point

W-WAN
LAN
Card Reader
WLAN
USB3.0
Intel GBE LAN
Dock
NEW CARD

PCI-E*

SMBUS

Controller Link

CLOCKS

WWAN CLK
WLAN CLK
LAN CLK
USB3.0 CLK
NEWCARD CLK

FLEX CLOCKS

PCH1

COUGAR-GP-U2-NF

P/N: ND27V

12/2 Swap net for layout

RN2001 SRN10KJ-L3-GP

12/6 swap net for layout

A00-0413 SWAP RN2014 net for layout

PCIECLKRQ1# and PCIECLKRQ2#
Support S0 power only

11/1 Add EC2002~EC2007 for EMI request

PL 10K FOR Integrated CLOCK GEN mode.

12/6 swap net for layout

11/18 Del VGA 27M and change to TP2007

CRB : 1K
CEKLT: 10K

2nd = 84.DM601.03F
84.2N702.A3F
2N7002KDW-GP

11/29 change X2001 to 82.30020.D41
X01-0217 change C2008 , C2007 to 15pF

UMA_DISCRETE#
UMA: 1 1
DIS :0 1
SG(PX) : 0 0
Optimus(Muxless) : 1 0

Prioritize 27/14/24/48/25-MHz FLEX on FLEX1 and FLEX3
Do not configure 27/14/24/48/25-MHz FLEX clock on FLEX0 and FLEX2
if more than 2 PCI clocks + PCI loopback are routed

<Core Design>

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

Title: PCH (PCI-E/SMBUS/CLOCK/CL)
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 20 of 105

SSID = PCH

X01-0210 Merge R2115 R2116

INTVRMEN- Integrated SUS 1.05V VRM Enable
High - Enable internal VRs
Low - Enable external VRs

X01-0208 Add RN2101, R2127 for LPC EA result
X01-0210 change RN2101 to RN2104 RN2105

RTC_AUX_S5
RN2106 SRN20KJ-1-GP
C2103 SC1U6D3V2KX-GP
RTC_X1
RTC_X2
R2101 10MR2J-L-GP
X2101 X-32D768KHZ-67-GP
C2101 SC15P50V2JN-2-GP
C2102 SC15P50V2JN-2-GP
82.30001.A81
2nd = 82.30001.691
3rd = 82.30001.861
C2104 SC1U6D3V2KX-GP
G2101 CAP-OPEN
1M1R2J-GP R2104
R2105 330KR2F-L-GP
RTC_AUX_S5

29 HDA_CODEC_SDOUT → 33R2J-2-GP R2123 HDA_SDOUT
29 HDA_CODEC_RST# → RN2102 SRN33J-5-GP-0 → HDA_RST#
29 HDA_CODEC_BITCLK → RN2102 SRN33J-5-GP-0 → HDA_BITCLK

PCH1A — 1 OF 10 — Cougar Point

RTC_X1	A20	RTCX1	RTC
RTC_X2	C20	RTCX2	RTC
RTC_RST#	D20	RTCRST#	RTC
SRTC_RST#	G22	SRTCRST#	RTC
SM_INTRUDER#	K22	INTRUDER#	RTC
PCH_INTVRMEN	C17	INTVRMEN	RTC
HDA_BITCLK	N34	HDA_BCLK	IHDA
HDA_SYNC	L34	HDA_SYNC	IHDA
29 HDA_SPKR	T10	SPKR	IHDA
HDA_RST#	K34	HDA_RST#	IHDA
29 HDA_SDIN0	E34	HDA_SDIN0	IHDA
	G34	HDA_SDIN1	IHDA
	C34	HDA_SDIN2	IHDA
	A34	HDA_SDIN3	IHDA
HDA_SDOUT	A36	HDA_SDO	IHDA
PCH_GPIO33	C36	HDA_DOCK_EN#/GPIO33	IHDA
	N32	HDA_DOCK_RST#/GPIO13	IHDA
PCH_JTAG_TCK_BUF	J3	JTAG_TCK	JTAG
PCH_JTAG_TMS	H7	JTAG_TMS	JTAG
PCH_JTAG_TDI	K5	JTAG_TDI	JTAG
PCH_JTAG_TDO	H1	JTAG_TDO	JTAG
PCH_SPI_CLK	T3	SPI_CLK	SPI
PCH_SPI_CS0#	Y14	SPI_CS0#	SPI
	T1	SPI_CS1#	SPI
PCH_SPI_SI	V4	SPI_MOSI	SPI
PCH_SPI_SO	U3	SPI_MISO	SPI

PCH1
COUGAR-GP-U2-NF
P/N: ND27V

LPC_AD[0..3]	C38	FWH0/LAD0	LPC
LPC_AD1_R	A38	FWH1/LAD1	LPC
LPC_AD2_R	B37	FWH2/LAD2	LPC
LPC_AD3_R	C37	FWH3/LAD3	LPC
LPC_FRAME#	D36	FWH4/LFRAME#	LPC
	E36	LDRQ0#	LPC
KB_DET# 69	K36	LDRQ1#/GPIO23	LPC
INT_SERIRQ 27	V5	SERIRQ	LPC

RN2104 SRN33J-5-GP-U
RN2105 SRN33J-5-GP-U
R2127 33R2J-2-GP
LPC_AD[0..3] 27,71
LPC_FRAME# 27,71

HDD1

	AM3	SATA0RXN	SATA 6G
	AM1	SATA0RXP	SATA 6G
SATA_TXN0_C	AP7	SATA0TXN	SATA 6G
SATA_TXP0_C	AP5	SATA0TXP	SATA 6G
	AM10	SATA1RXN	SATA 6G
	AM8	SATA1RXP	SATA 6G
	AP11	SATA1TXN	SATA 6G
	AP10	SATA1TXP	SATA 6G
	AD7	SATA2RXN	SATA
	AD5	SATA2RXP	SATA
	AH5	SATA2TXN	SATA
	AH4	SATA2TXP	SATA
	AB8	SATA3RXN	SATA
	AB10	SATA3RXP	SATA
	AF3	SATA3TXN	SATA
	AF1	SATA3TXP	SATA
	Y7	SATA4RXN	SATA
	Y5	SATA4RXP	SATA
SATA_TXN4_C	AD3	SATA4TXN	SATA
SATA_TXP4_C	AD1	SATA4TXP	SATA
	Y3	SATA5RXN	SATA
	Y1	SATA5RXP	SATA
	AB3	SATA5TXN	SATA
	AB1	SATA5TXP	SATA
	Y11	SATAICOMPO	
SATA_COMP	Y10	SATAICOMPI	
	AB12	SATA3RCOMPO	
SATA3_COMP	AB13	SATA3COMPI	
RBIAS_SATA3	AH1	SATA3RBIAS	
SATA_LED# 68	P3	SATALED#	
SATA_DET#0	V14	SATA0GP/GPIO21	
BBS_BIT0	P1	SATA1GP/GPIO19	

SATA_RXN0 56
SATA_RXP0 56
SATA_TXN0 56
SATA_TXP0 56
C2114
C2113
SCD01U16V2KX-3GP
SATA_RXN4 56
SATA_RXP4 56
SATA_TXN4 56
SATA_TXP4 56
C2111
C2112
SCD01U16V2KX-3GP
1D05V_VTT
R2112 37D4R2F-GP
R2113 49D9R2F-GP
R2114 750R2F-GP

ODD

Notes:
ME_UNLOCK (HDA_SDO) connect to EC.
Make sure EC drive this pin "low" all the time.

27 ME_UNLOCK → R2107 1KR2J-1-GP → HDA_SDOUT

TP2105 TPAD14-GP
TP2101 TPAD14-GP
TP2102 TPAD14-GP
TP2103 TPAD14-GP
TP2104 TPAD14-GP

27,60 SPI_CLK_R → R2108 33R2J-2-GP → PCH_SPI_CLK
27,60 SPI_CS0#_R → R2109 33R2J-2-GP → PCH_SPI_CS0#
27,60 SPI_SI_R → R2110 33R2J-2-GP → PCH_SPI_SI
27,60 SPI_SO_R → ER2111 0R0402-PAD → PCH_SPI_SO

11/1 Add R2111 for EMI request
11/ 17 change R2111 from 33ohm to 0ohm and change to ER2111

Flash Descriptor Security Overide

HDA_SDOUT	Low = Default High = Enable

+3VS_+1.5VS_HDA_IO
R2102 1KR2J-1-GP HDA_SDOUT

NO REBOOT STRAP

3D3V_S0
R2106 1KR2J-1-GP HDA_SPKR

HDA_SPKR	Low = Default High = No Reboot

+3VS_+1.5VS_HDA_IO
R2103 1KR2J-1-GP HDA_SYNC

This signal has a weak internal pull down.
On Die PLL VR is supplied by 1.5V when
sampled high, 1.8 V when sampled low.
Needs to be pulled High for Huron River platform.
co-operate with R2310

HDA_SYNC	Low = 1.8V (Default) High = 1.5V

PLL ODVR VOLTAGE

HDA_SYNC: This strap is sampled on rising edge of RSMRST# and is used to sample 1.5V VccVRM supply mode. 1K external pull-up resistor is required on this signal on the board. Signal may have leakage paths via powered off devices (Audio Codec) and hence contend with the external pull-up. A blocking FET is recommended in such a case to isolate HDA_SYNC from the Audio Codec device until after the Strap sampling is complete.

11/2 Merge R2122 into Q2101

RUN_ENABLE
Q2101 2N7002K-2-GP
84.2N702.J31
2ND = 84.2N702.031
29 HDA_CODEC_SYNC → HDA_CODEC_SYNC
R2117 100KR2J-1-GP
HDA_SYNC_R R2124 33R2J-2-GP HDA_SYNC
33R2J-2-GP R2122

HDA_CODEC_BITCLK → EC2102 SC4D7P50V2CN-1GP
HDA_CODEC_SDOUT → EC2103 SC4D7P50V2CN-1GP
SPI_CS0#_R → EC2101 SC4D7P50V2CN-1GP

3D3V_S0
RN2103 SRN10KJ-GP
INT_SERIRQ
SATA_DET#0
22 S_GPIO → R2125 10KR2J-3-GP
22 PSW_CLR# → R2126 10KR2J-3-GP

12/6 Separate RN2103 to R2125 and R2126

11/11Remove RN2104 and FP_DET#

<Core Design>

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

Title: PCH (SPI/RTC/LPC/SATA/IHDA)
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 21 of 105

SSID = PCH

Note:
For PCH debug with XDP, need to DUMMY R2218

PCH1F — 6 OF 10 — Cougar Point

GPIO / CPU/MISC / NCTF

BMBUSY#/GPIO0 — T7 — S_GPIO — R2218 100R2J-2-GP — PCH_GPIO0
TACH1/GPIO1 — A42 — EC_SMI#
TACH2/GPIO6 — H36 — DGPU_HPD_INTR#
TACH3/GPIO7 — E38 — EC_SCI#
GPIO8 — C10 — ICC_EN#
LAN_PHY_PWR_CTRL/GPIO12 — C4 — RTC_SENSE#
GPIO15 — G2 — PCH_GPIO15
SATA4GP/GPIO16 — U2 — R2213 0R0402-PAD — PCH_GPIO16
TACH0/GPIO17 — D40 — DGPU_PWROK
SCLOCK/GPIO22 — T5 — PCH_GPIO22
GPIO24/MEM_LED — E8 — PCH_GPIO24
GPIO27 — E16 — PCH_GPIO27
GPIO28 — P8 — PLL_ODVR_EN
STP_PCI#/GPIO34 — K1 — PSW_CLR#
GPIO35 — K4 — PCH_GPIO35
SATA2GP/GPIO36 — V8 — DMI_OVRVLTG
SATA3GP/GPIO37 — M5 — FDI_OVRVLTG
SLOAD/GPIO38 — N2 — MFG_MODE
SDATAOUT0/GPIO39 — M3 — GFX_CRB_DET
SDATAOUT1/GPIO48 — V13 — PCH_GPIO48
SATA5GP/GPIO49 — V3 — PCH_TEMP_ALERT#
GPIO57 — D6
NCTF_VSS#A4 — A4 — PCH_NCTF_1
NCTF_VSS#A44 — A44
NCTF_VSS#A45 — A45
NCTF_VSS#A46 — A46
NCTF_VSS#A5 — A5
NCTF_VSS#A6 — A6
NCTF_VSS#B3 — B3
NCTF_VSS#B47 — B47
NCTF_VSS#BD1 — BD1
NCTF_VSS#BD49 — BD49
NCTF_VSS#BE1 — BE1 — PCH_NCTF_2
NCTF_VSS#BE49 — BE49 — PCH_NCTF_3
NCTF_VSS#BF1 — BF1
NCTF_VSS#BF49 — BF49 — PCH_NCTF_4
NCTF TEST PIN: A4,A44,A45,A46,A5,A6,B3,B47,BD1,BD49,BE1,BE49,BF1,BF49
NCTF_VSS#BG2 — BG2
NCTF_VSS#BG48 — BG48
NCTF_VSS#BH3 — BH3
NCTF_VSS#BH47 — BH47
NCTF_VSS#BJ4 — BJ4
NCTF_VSS#BJ44 — BJ44
NCTF_VSS#BJ45 — BJ45
NCTF_VSS#BJ46 — BJ46
NCTF_VSS#BJ5 — BJ5
NCTF_VSS#BJ6 — BJ6
NCTF_VSS#C2 — C2
NCTF_VSS#C48 — C48
NCTF_VSS#D1 — D1
NCTF_VSS#D49 — D49
NCTF_VSS#E1 — E1
NCTF_VSS#E49 — E49
NCTF_VSS#F1 — F1
NCTF_VSS#F49 — F49
NCTF TEST PIN: BG2,BG48,BH3,BH47,BJ4,BJ44,BJ45,BJ46,BJ5,BJ6,C2,C48,D1,D49,E1,E49,F1,F49
PCH1
COUGAR-GP-U2-NF

TACH4/GPIO68 — C40 — SATA_ODD_PWRGT — 56
TACH5/GPIO69 — B41 — UMA_DIS# — UMA_DIS# 20
TACH6/GPIO70 — C41 — PCH_GPIO70 — TP2204 TPAD14-GP
TACH7/GPIO71 — A40 — PCH_GPIO71 — TP2205 TPAD14-GP
A20GATE — P4 — H_A20GATE 27
PECI — AU16 — H_PECI_R — R2203 0R2J-2-GP — H_PECI 5,27
RCIN# — P5 — H_RCIN# 27
PROCPWRGD — AY11 — H_CPUPWRGD 5,36
THRMTRIP# — AY10 — PCH_THERMTRIP_R — R2204 390R2J-1-GP — H_THERMTRIP# 5,36,85
INIT3_3V# — T14 — INIT3_3V# — TP2201 TPAD14-GP
TS_VSS1 — AH8
TS_VSS2 — AK11
TS_VSS3 — AH10
TS_VSS4 — AK10 — TS_VSS — R2219 0R0402-PAD
NC_1 — P37

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.

3D3V_S0 — R2202 100KR2J-1-GP — SATA_ODD_PRSNT#

3D3V_S0 — RN2203 SRN10KJ-5-GP — H_A20GATE, H_RCIN#

GPIO27 has a weak[20K] internal pull up.
To enable on-die PLL Voltage regurator, should not place external pull down.

11/11 Remove R2220 for GPIO48 set to GPO

X02-0303 change 0R to short pad

21 S_GPIO
27 EC_SMI#
EC_SCI#
TPAD14-GP TP2219
60 RTC_SENSE#
56 SATA_ODD_PRSNT#
86,92,93 DGPU_PWROK
TPAD14-GP TP2210
TPAD14-GP TP2212
TPAD14-GP TP2203
21 PSW_CLR#
TPAD14-GP TP2213
G2201 GAP-OPEN
TPAD14-GP TP22
TPAD14-GP TP2214
TPAD14-GP TP2206
TPAD14-GP TP2207
TPAD14-GP TP2208
TPAD14-GP TP2209

3D3V_S0 — PCH_TEMP_ALERT# — R2222 10KR2J-3-GP
MFG_MODE — R2223 10KR2J-3-GP
RN2201 SRN10KJ-6-GP — DGPU_HPD_INTR#, EC_SCI#, EC_SMI#

11/11Remove DBC_EN
X01-0211 swap DGPU_HPD_INTR#, EC_SMI# for layout.

12/1 Add R2224 pull high
3D3V_S5 — RTC_SENSE# — R2224 10KR2J-3-GP
PCH_GPIO15 — R2201 1KR2J-1-GP DY

11/ 17 Dummy R2201 because GPIO15 internal PH

11/15 Remove Rn2204

3D3V_S0 — R2207 10KR2J-3-GP DY — FDI_OVRVLTG — R2208 10KR2J-3-GP

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

3D3V_S0 — R2209 10KR2J-3-GP DY — DMI_OVRVLTG — R2210 10KR2J-3-GP

DMI TERMINATION VOLTAGE OVERRIDE	
GPIO36 (DMI_OVRVLTG)	LOW - Tx, Rx terminated to same voltage (DC Coupling Model DEFAULT)

Integrated Clock Enable functionality is achieved via soft-strap. The default is integrated clock enable.

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

ICC_EN#1 — R2211 1KR2J-1-GP

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

PLL ON DIE VR ENABLE
NOTE:This signal has a weak internal pull-up 20K ENABLED -- HIGH (R2212 UNSTUFFED) DEFAULT DISABLED -- LOW (R2212 STUFFED)

PLL_ODVR_EN — DY — R2212 1KR2J-1-GP

P/N: ND27V

<Core Design>

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

Title: PCH (GPIO/CPU)
Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00
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SSID = PCH 6A

11/ 17 Add R2301 but dummy it
and change L2301 source to 3D3V_DAC_S0

Voltage Rail	Voltage	Iccmax
V_PROC_IO	1.05	0.001
V5REF	5	0.001
V5REF_Sus	5	0.001
Vcc3_3	3.3	0.266
VccADAC3	3.3	0.001
VccADPLLA	1.05	0.08
VccADPLLB	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.1	0.042
VccIO3	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.02
VccDSW3_3	3.3	0.002
VccDFTERM	1.8	0.19
VccRTC	3.3	6u
VccSus3_3	3.3	0.097
VccSusHDA	3.3	0.01
VccVRM	1.5	0.16
VccClkDMI	1.05	0.02
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	0.001
VccTX_LVDS3	1.8	0.06

Refer to NPCE795 shared SPI flash architecture

1.3A(Total current of VCCCORE)

11/18 change capacity to 0603 package

2.925A(Total current of VCCIO)

12/28 Yellow mark for OPI change

0.266A (Totally VCC3_3 current)

0.159A(Totally current of VCCVRM)

0.042A (Totally current of VCCDMI)

VCCVRM(Internal PLL and VRMs):
A.1.5V for Mobile
B.1.8 V for Desktop

11/2 change
R2304, R2305 to 0ohm

X02-0303
change 0R to short pad

11/18 change capacity to 0603 package

X02-0303
change 0R to short pad

68.00214.051
2nd = 68.00206.041
3rd = 68.00335.081

11/3 Add LDO for CRT DAC power

11/ 17change U2301 Vout power rail and stuff the circuit

G9091-330T11U-GP
74.09091.J3F
2nd = 74.09198.G7F

P/N: ND27V

(**) - When the control signal is low, the switch is "on".

<Core Design>

Wistron Corporation
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Title: PCH (POWER1)
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 23 of 105

SSID = PCH

POWER

PCH1J

Cougar Point

10 OF 10

COUGAR-GP-U2-NF

P/N: ND27V

PCH1

Clock and Miscellaneous

USB

PCI/GPIO/LPC

SATA

MISC

CPU

HDA

RTC

0.002A

0.097A (Totally current of VCCSUS3_3)

0.001A

1.01A (Total current of VCCASW)

0.08A

0.16A (Totally current of VCCVRM)

0.055A

0.095A

0.01A

6uA

11/18 change capacity to 0603 package

12/28 Yellow mark for OPI change

11/ 17 Change R2406 from close gap to 0ohm

11/ 17 Change R2409 from close gap to 0ohm

X02-0303 change 0R to short pad

2nd = 83.R2004.B8F 83.R0304.A8F

Voltage Rail	Voltage	Iccmax
V_PROC_IO	1.05	0.001
V5REF	5	0.001
V5REF_Sus	5	0.001
Vcc3_3	3.3	0.266
VccADAC3	3.3	0.001
VccADPLLA	1.05	0.08
VccADPLLB	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.1	0.042
VccIO3	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.02
VccDSW3_3	3.3	0.002
VccDFTERM	1.8	0.19
VccRTC	3.3	6u
VccSus3_3	3.3	0.097
VccSusHDA	3.3	0.01
VccVRM	1.5	0.16
VccClkDMI	1.05	0.02
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	0.001
VccTX_LVDS3	1.8	0.06

<Core Design>

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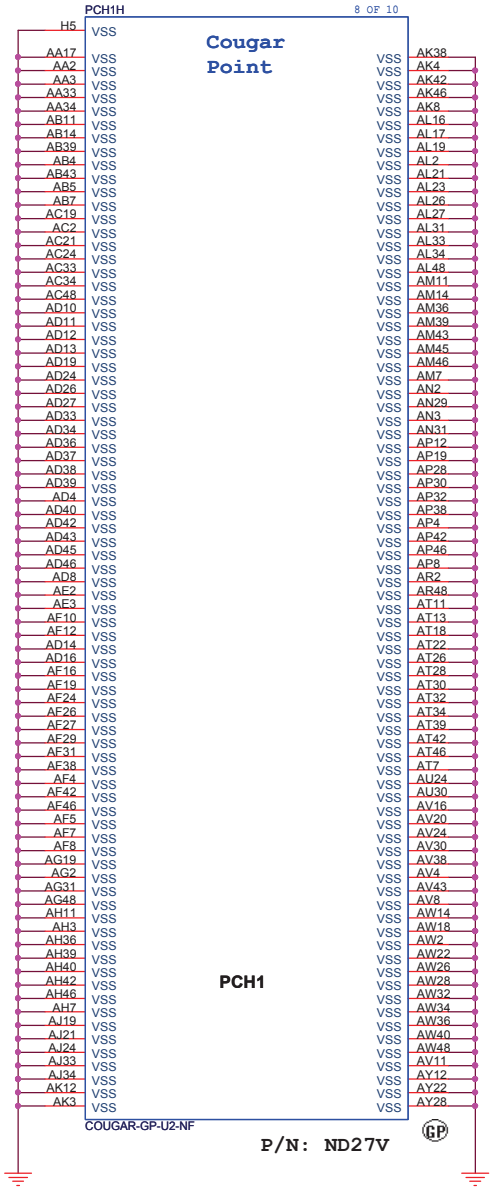
Taipei Hsien 221, Taiwan, R.O.C.

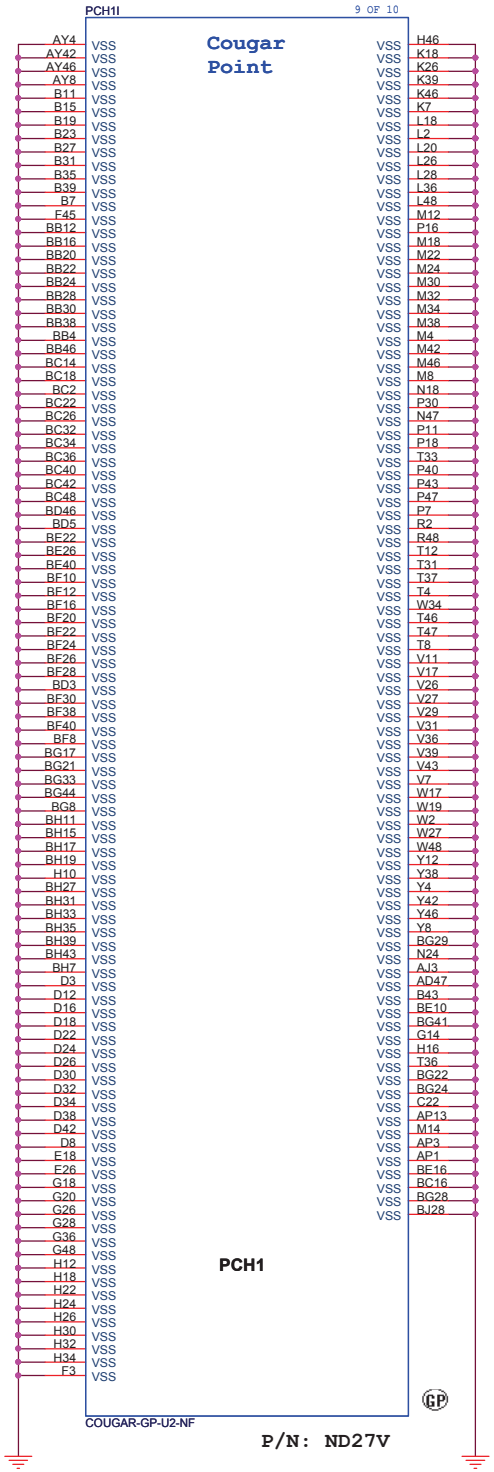
Title: PCH (POWER2)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 24 of 105

SSID = PCH





DN15ATI Whistler

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

Title: PCH (VSS)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 25 of 105

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DN15ATI Whistler

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

Title: *Reserved*

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 26 of 105

SSID = KBC

11/ 17 change R2702 from close gap to 0ohm
X02-0303 change 0R to short pad

11/17 change R2724 to meet X00 PCB ver
X01-0210 change R2724 to meet X01 PCB ver
X02-0314 change R2724 to meet X02 PCB ver

Reserved 0.1uF on all of ADC input pins
base on NUVOTON feedback list.(C2717~C2721)

A00-0413 change R2724 to 47K for PCB ver

A00-0328
change R2735 to 10R
and C2711 to 220p

PCB VERSION A/D(PIN98)	PULL-LOW RESISTOR	PULL-HIGH RESISTOR	VOLTAGE
X00	100.0K	10.0K	3.0V
X01	100.0K	20.0K	2.75V
X02	100.0K	33.0K	2.48V
A00	100.0K	47.0K	2.24V
Reserved	100.0K	64.9K	2.0V
Reserved	100.0K	76.8	1.87V
Reserved	100.0K	100.0K	1.65V
Reserved	100.0K	143.0K	1.358V
Reserved	100.0K	174.0K	1.204V
Reserved	100.0K	215.0K	1.048V

MODELID

11/2 Add MODEL_ID_DET pin
for Vostro & Inspron select

MODEL_ID_DET(GPIO07)	PULL-LOW RESISTOR	PULL-HIGH RESISTOR	VOLTAGE
Reserved	100.0K	10.0K(64.10025.6DL)	3.0V
Reserved	100.0K	20.0K(64.20025.6DL)	2.75V
DVI5_UMA with HDMI	100.0K	33.0K	2.48V
DVI5_UMA without HDMI	100.0K	47.0K(64.47025.6DL)	2.24V
DVI4_UMA with HDMI	100.0K	64.9K(64.64925.6DL)	2.0V
DVI4_UMA without HDMI	100.0K	76.8K(64.76825.6DL)	1.87V
DVI4_DIS(512M) with HDMI	100.0K	100.0K(64.10035.6DL)	1.65V
DVI4_DIS(512M) without HDMI	100.0K	143.0K(64.14335.L0L)	1.358V
DVI4_DIS(1G) with HDMI	100.0K	174.0K(74.17435.6DL)	1.204V
DVI4_DIS(1G) without HDMI	100.0K	215.0K(64.21535.6DL)	1.048V

NOTES:
The NPCE795P GPIO/PWM outputs that are connected to LEDs have high drive buffers (20mA) and can be connected directly to the LEDs.

Notes:
The total SPI interface signal between EC and PCH can't not exceed 6500mil. The mismatch between SPI signal must be within 500mil

11/16 Add R2728 R2729
for SERIES_ID

11/19 add TP2701 for KBC_GPIO10

Follow DQ15 change PCIE_RST#
to AD_IA_HW2

<------ TP

<------ BATTERY / CHARGER

<------PCH / eDP

11/22 change WLAN LED control to KBC

11/16 Add R2776 for aviod kbc code error

11/22 add RTC_AUX_S5 to KBC_GPIO72

X01-0127 Del R2757 to follow
standard 10mw circuit

X02-0309 change 0R to short pad

11/ 17 DY D2705 to meet DN13 result

11/1 Add R2777, C2777 for EMI

11/ 17 add R2774 pull high for LID_CLOSE#

Very close to EC

NOTE:
Locate resistors R2736,R2719 and R2722 close to the NPCE795P.

NOTE:
Connect GND and AGND planes via either 0R resistor or one point layout connection.

12/10 Add R2762 and dummy R2732, Q2702

EC_GPIO47 High Active

PSL SOLUTION

10mW SOLUTION

11/ 17 DY R2734 and stuff R2756 to keep KBC data

VBACKUP

12/22 swap net for layout

12/6 swap net for layout

PSL_IN1

PSL_OUT

X01-0208 dummy R2769

EC GPIO standard PH/PL

NOTES:
Please make sure there's no pull-down resistor on USB_PWR_EN#,AC_PRESENT,E51_TXD.

ROSA Multi GPIO setting

<Core Design>

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

Title: KBC Nuvoton NPCE795

Size: A2 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 27 of 105

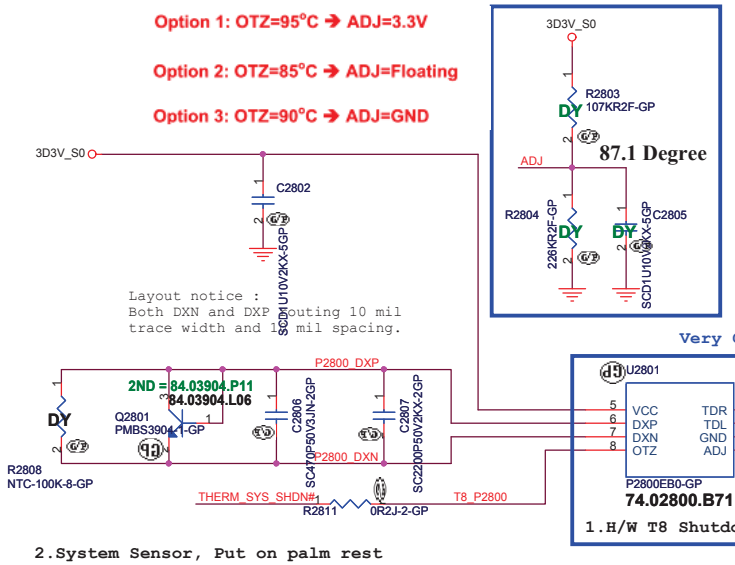
SSID = Thermal

Thermal sensor P2800

Option 1: OTZ=95°C → ADJ=3.3V

Option 2: OTZ=85°C → ADJ=Floating

Option 3: OTZ=90°C → ADJ=GND

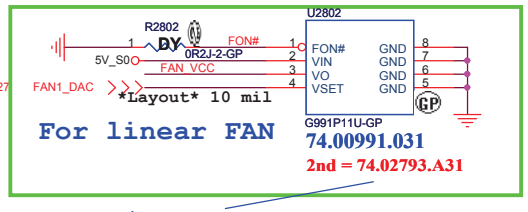


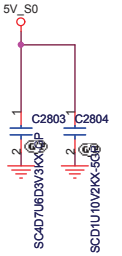
2.System Sensor, Put on palm rest

	Pin-1	Definition
P2793A	/FON	Low(<0.4V): VOUT =Vin and the fan is fully-on High(>1.6V): VOUT=1.6*VSET This pin is internal Pull-High with ~500K ohm
P2793B	EN	Low (<0.4): IC is shutdown. High(>1.6V): VOUT=1.6*VSET This pin is internal Pull-High with ~500K ohm

12/14 dummy R2803, R2804 and C2805

Fan controller P2793



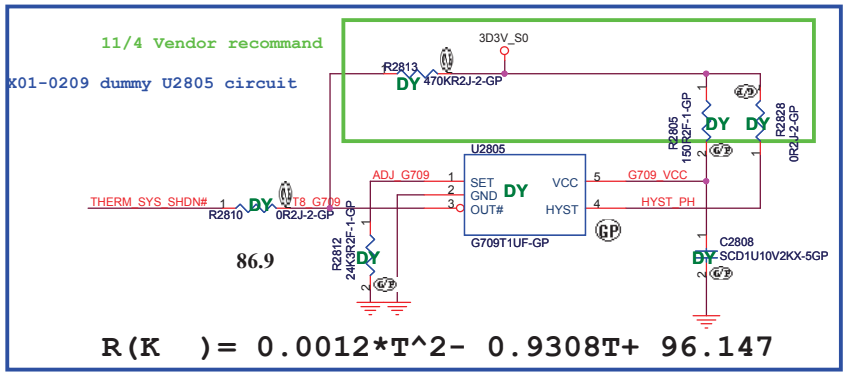


Very close to CPU1

12/15 Remove 3rd source

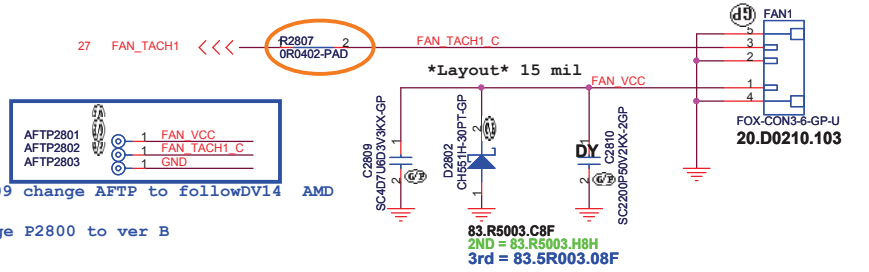
11/4 Vendor recommand

X01-0209 dummy U2805 circuit



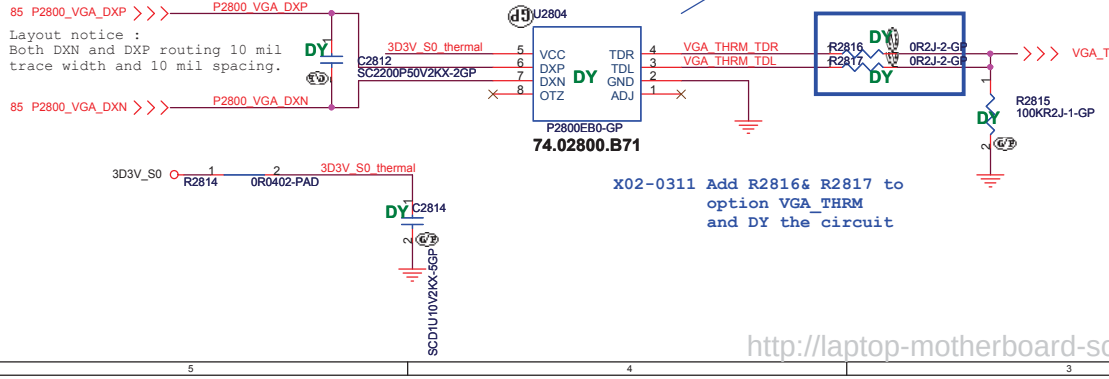
X02-0309 change AFTP to followDV14 AMD

12/13 change P2800 to ver B

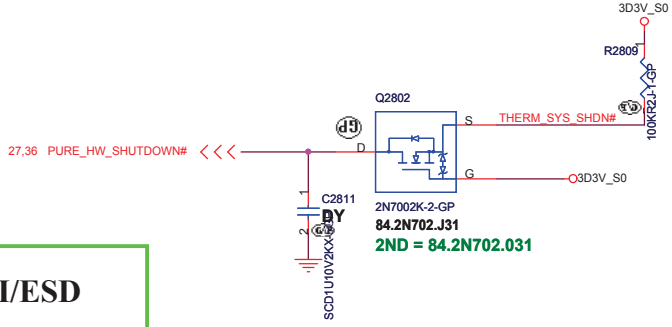


VGA Thermal sensor P2800

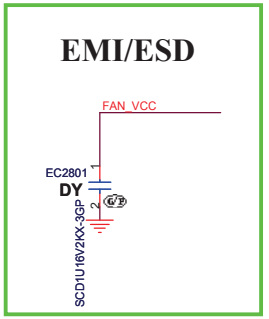
11/18 remove R2817, R2818, C2816
and NC U2804 OTZ pin



X02-0311 Add R2816& R2817 to
option VGA_THRM
and DY the circuit



EMI/ESD



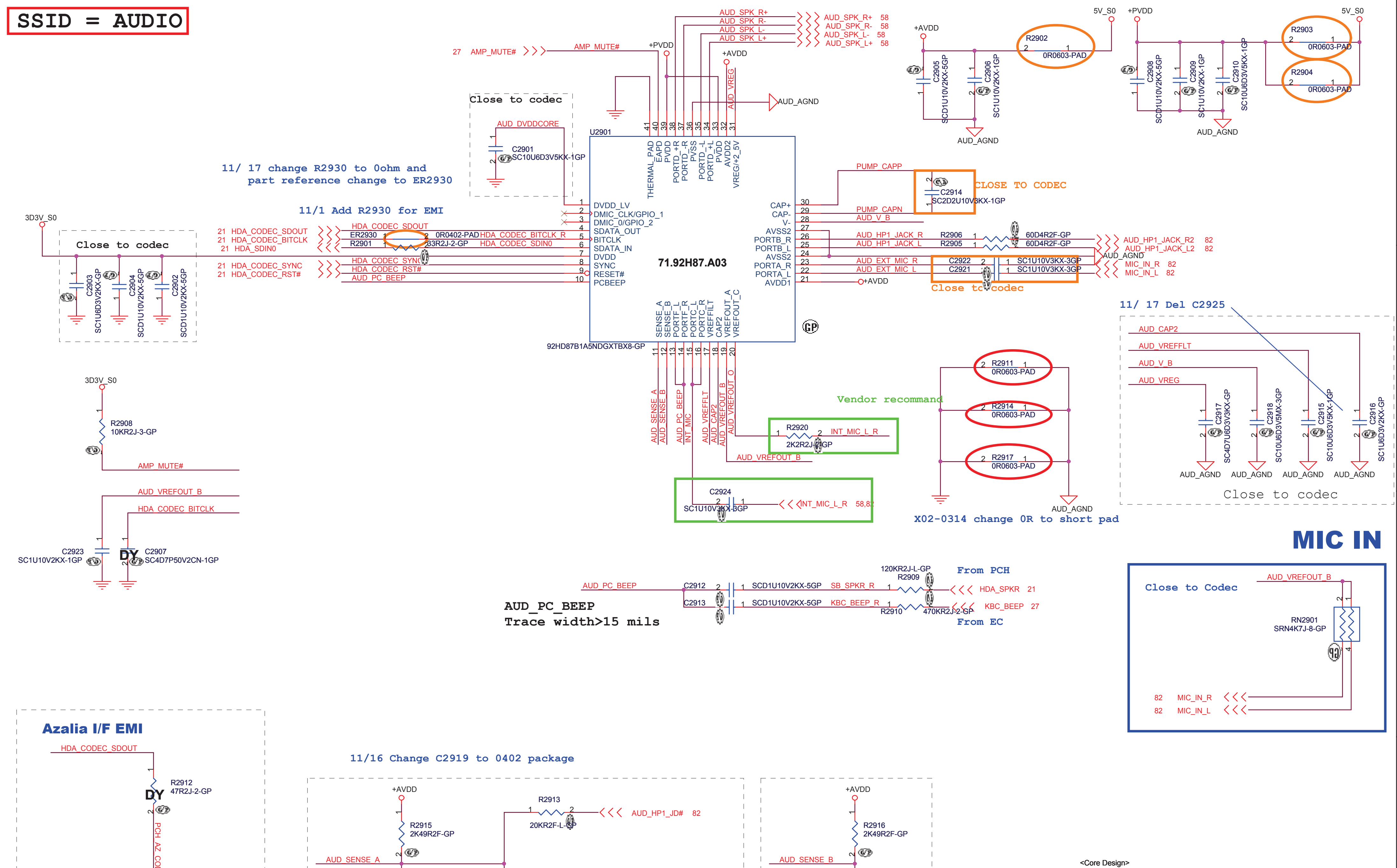
<Core Design>

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

Title: Thermal P2800/Fan Controllor P2793

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 28 of 105



<Core Design>

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

Title	Audio Codec 92HD87B1	
Size A3	Document Number: Enrico Caruso 14	Rev A00
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Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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LAN CHIP

11/18 change L3101 to slime type

60 mils

40 mils

X02-0303 change 0R to short pad

X02-0311 add circuit to provent leakage.
X02-0314 SWAP net

11/19 add R3131 for KBC code test

A00-0320
Change R3118 for LOM power sequence

X01-0211 add C3122 for soft-sart

X01-0127 change Q3101 base power rail for leakage issue.

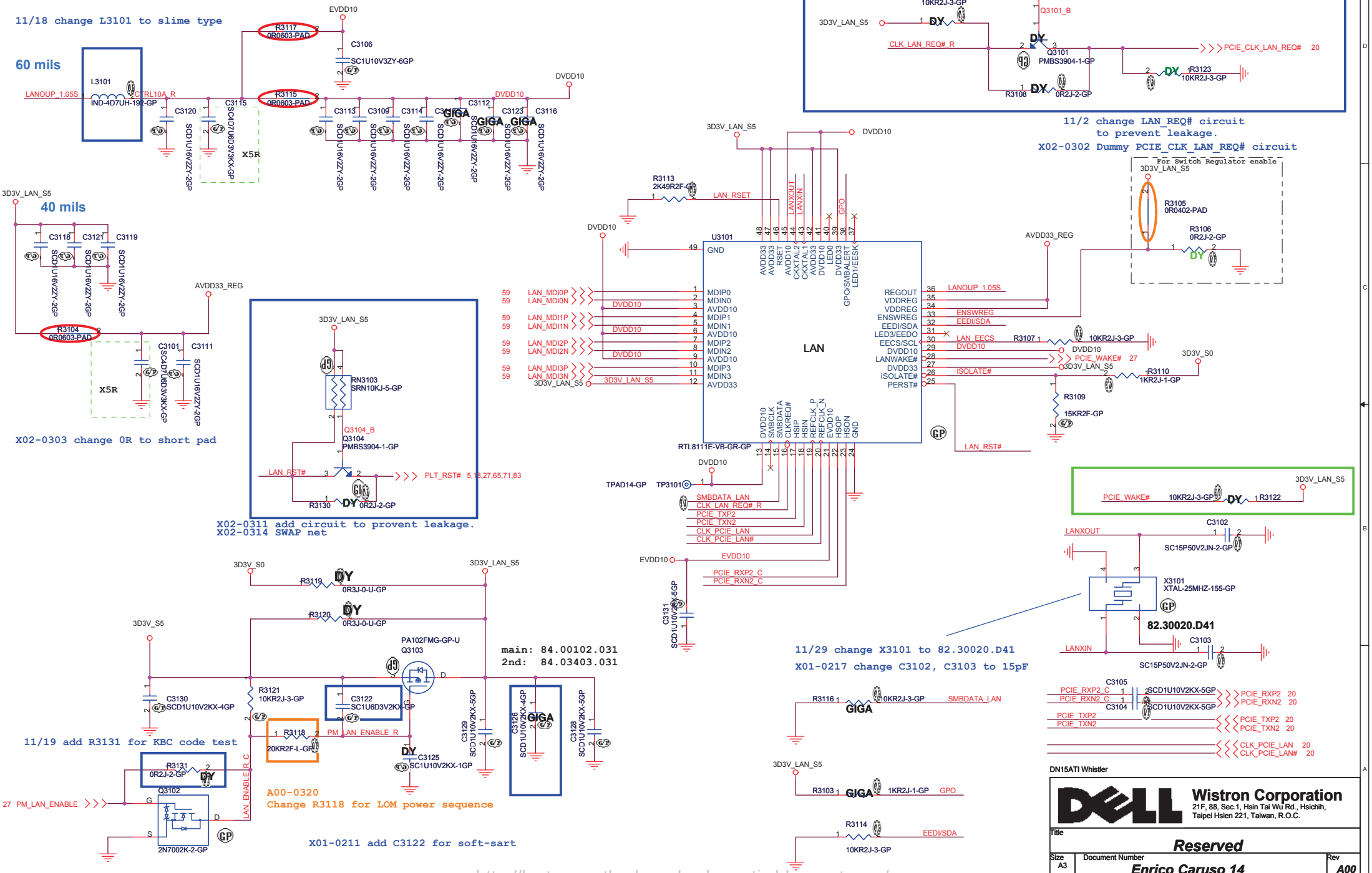
11/2 change LAN_REQ# circuit to prevent leakage.

X02-0302 Dummy PCIE_CLK_LAN_REQ# circuit

11/29 change X3101 to 82.30020.D41

X01-0217 change C3102, C3103 to 15pF

main: 84.00102.031
2nd: 84.03403.031



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Title: **Reserved**

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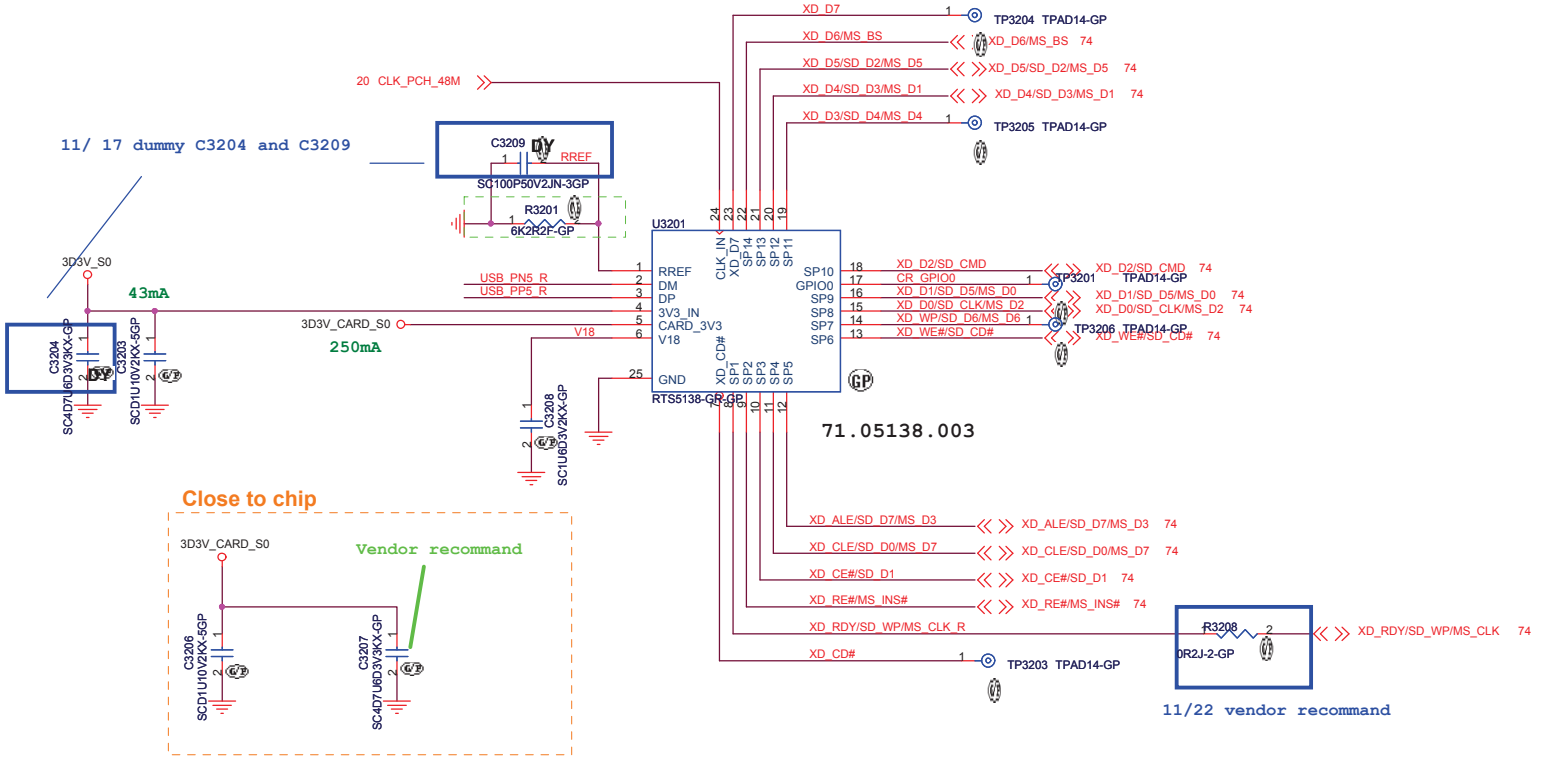
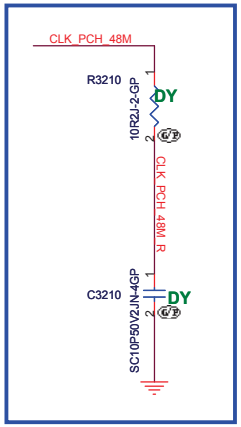
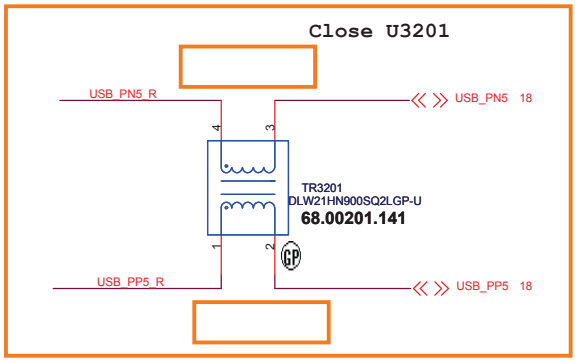
Date: Wednesday, April 13, 2011 Sheet 31 of 105

SSID = SDIO



11/1 Add R3210, C3210 for EMI





X02-0311 stuff TR3201 and change symbol to 68.00201.141

A00-0324 change TR6102 to TR3201

A00-0406 remove R3206, R3207 PAD

<Core Design>

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

Title: Card Reader-RTS5138

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 32 of 105

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Title: ***Reserved***

Size	Document Number	Rev
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Date: Wednesday, April 13, 2011 Sheet 33 of 105

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DN15ATI Whistler

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Title: ***Reserved***

Size	Document Number	Rev
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DN15ATI Whistler

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Title: ***Reserved***

Size	Document Number	Rev
A3	***Enrico Caruso 14***	***A00***

Date: Wednesday, April 13, 2011 Sheet 35 of 105

SSID = Reset.Suspend

20101206 X02:
Add Q3603 for RTC power sequence.

27,42 IMVP_PWRGD >>> R3614 0R0402-PAD SYS_PWROK

C3612 SCD01U50V2KX-1GP DY

PS_S3CNTRL Q3603 2N7002K-2-GP

X02-0303 change 0R to short pad

12/16 Add Q3603 to meet RTC sequence as DN13

Power Sequence

19,27 S0_PWR_GOOD >>> D3602 BAS16-6-GP 83.00016.K11 2ND = 83.00016.F11 >>> SYS_PWROK 19

1D05V_VTT R3622 56R2J-4-GP H_THERMTRIP# 5,22,85

5,22 H_CPUPWRGD >>> R3601 1KR2J-1-GP DY H_PWRGD_R Q3601 CHT2222APT-GP

C3602 SCD01U10V2KX-1GP DY

2ND = 83.00016.F11
83.00016.K11
BAS16-6-GP

PURE_HW_SHUTDOWN# 27,28

41 3V_5V_EN D3601 R3603 1KR2J-1-GP S5_ENABLE 27

R3602 200KR2J-L1-GP DY

ROSA Run Power

15V_S5 R3604 100KR2J-1-GP

AO4468 MAX 9A
Rds(on) = 18.5mOhm
2nd = 84.08882.037

5V_S5 84.04468.037 AO4468-GP U3601 5V_S0

C3603 SC10U10V5ZY-1GP

5V_S0

+5V_RUN Comsumption
Peak current 7.73A

R3605 10KR2J-3-GP 5V_RUN_ENABLE

C3608 SCD01U50V2KX-1GP

3D3V_AUX_S5 R3606 100KR2J-1-GP PS_S3CNTRL >>> PS_S3CNTRL 37

Q3602 2N7002KDW-GP
84.2N702.A3F
2nd = 84.DM601.03F

19,27,37,47 PM_SLP_S3# >>>

RUN_ENABLE

Rds(on) = 18.5mOhm
AO4468 MAX 11.6A
2nd = 84.08882.037

3D3V_S5 84.04468.037 AO4468-GP U3602 3D3V_S0

C3604 SC10U6D3V5KX-1GP

3D3V_S0

+3.3V_RUN Comsumption
Peak current 8.14A

R3607 10KR2J-3-GP 3.3V_RUN_ENABLE

C3605 SCD01U50V2KX-1GP

1.5V_RUN for VGA Comsumption
Peak current 7.39A

+1.5V_RUN_CPU Comsumption
Peak current 3A

+1.5V_RUN for Mini-Card Comsumption
Peak current 1A

1D5V_S3 1D5V_S0

TPCA8062-H-GP MAX 28A
Rds(on) = 4.1~5.4m OHM

U3606 POWERPAK-8P-GP

C3609 SC10U6D3V5KX-1GP

1D5V_S0

MAX Current ? mA
Design Current ? mA
Total= 11.39A

R3630 10KR2J-3-GP 1.5V_RUN_ENABLE

C3610 SCD01U50V2KX-1GP

X02-0314 Change U3606 footprint.

<Core Design>

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

Title: Power Plane Enable

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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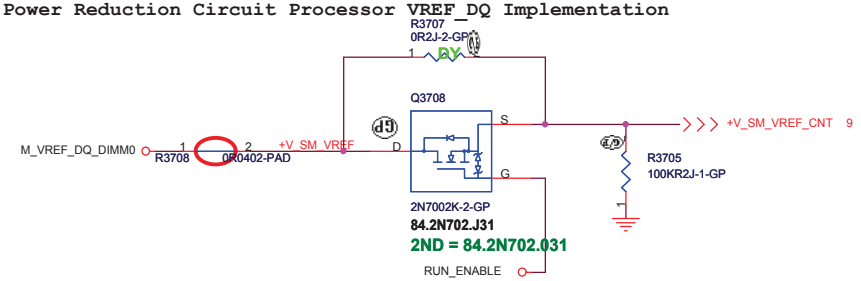
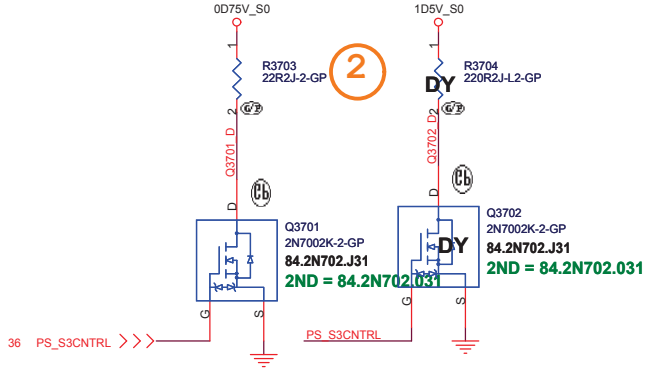
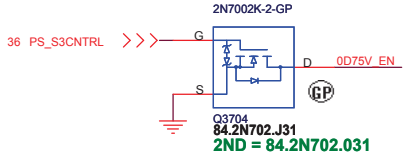
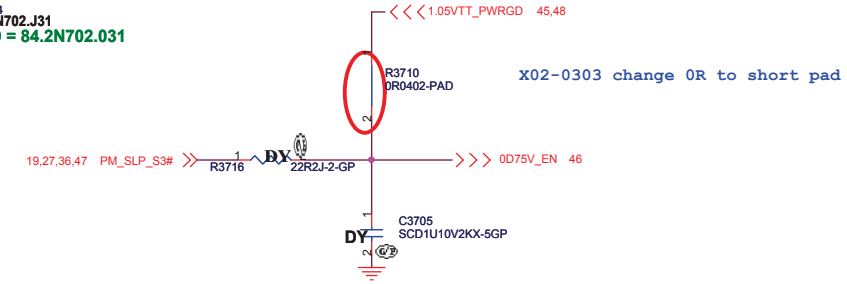
Close to CPU
S3 Power Reduction Circuit Processor VREF_DQ Implementation



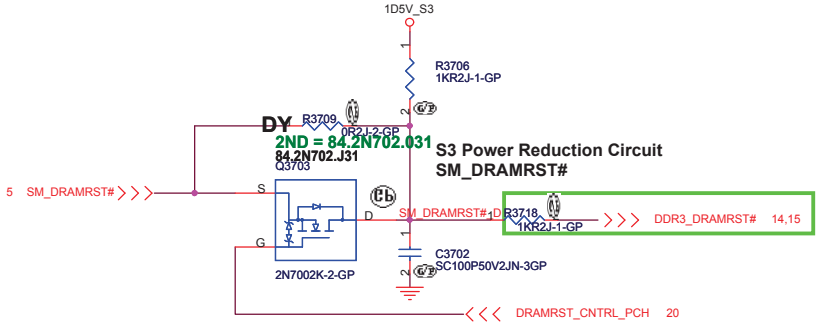
Close to DIMM
S3 Power Reduction Circuit SM_DRAMPWROK

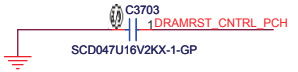




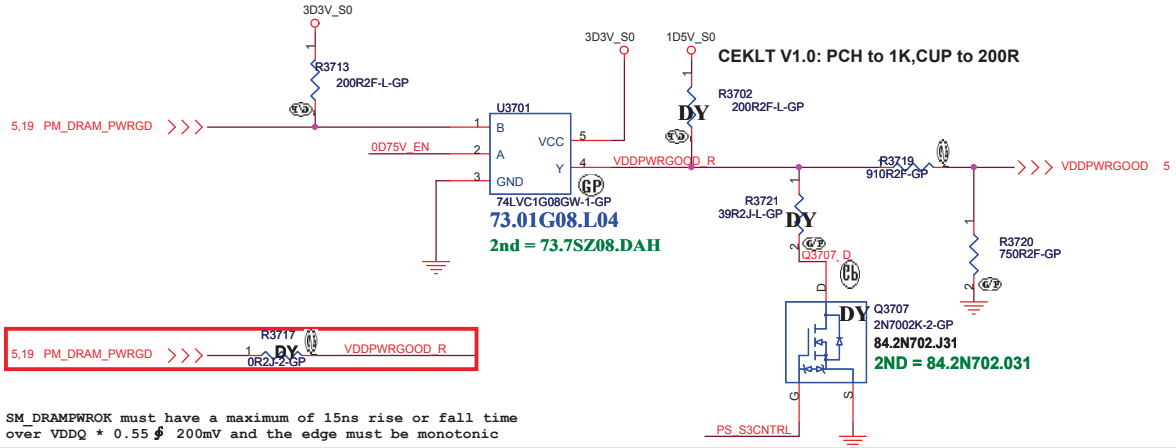


Close to CPU
S3 Power Reduction Circuit SM_DRAMPWROK





Close to CPU
S3 Power Reduction Circuit SM_DRAMPWROK



<Core Design>

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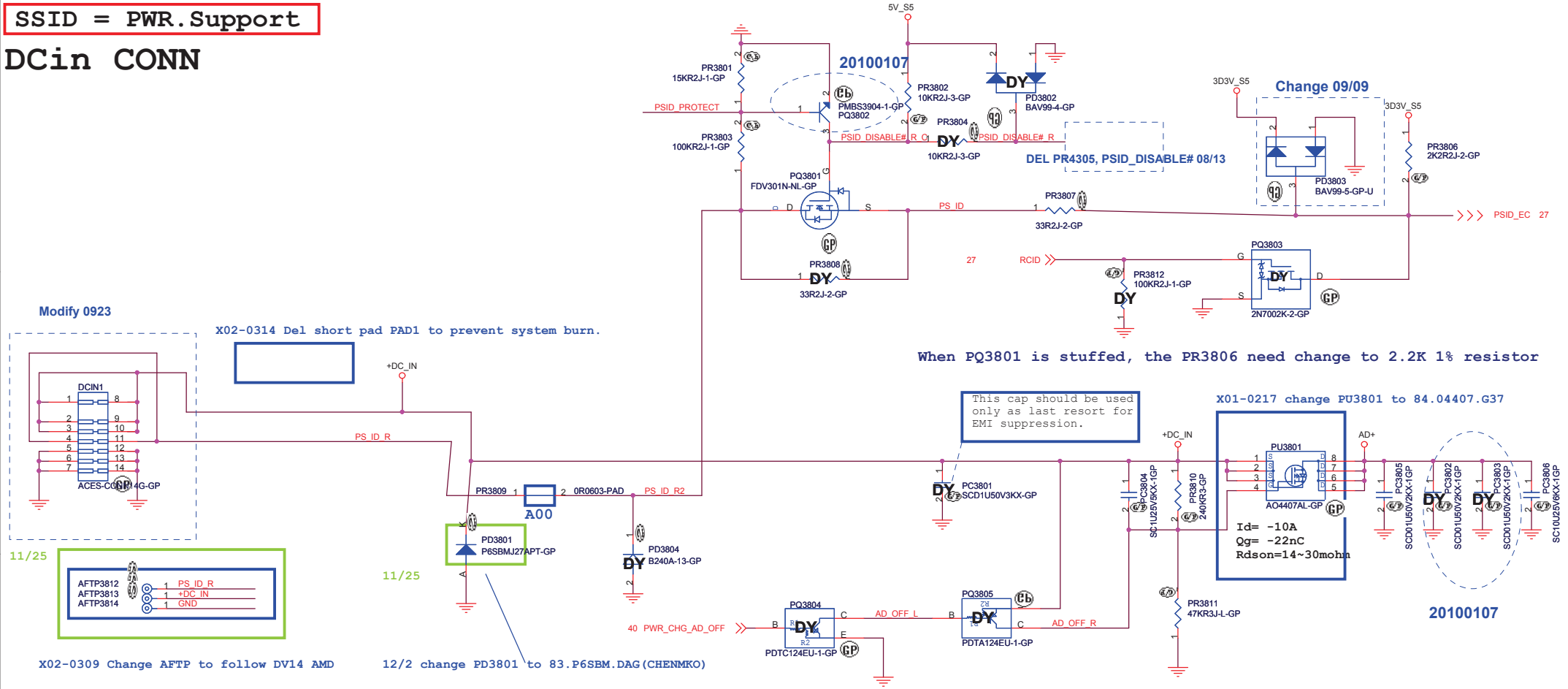
Title: S3 Reduction Circuit

Size	Document Number	Rev
A3	Enrico Caruso 14	A00

Date: Wednesday, April 13, 2011 Sheet 37 of 105

SSID = PWR.Support

DCin CONN



<Core Design>

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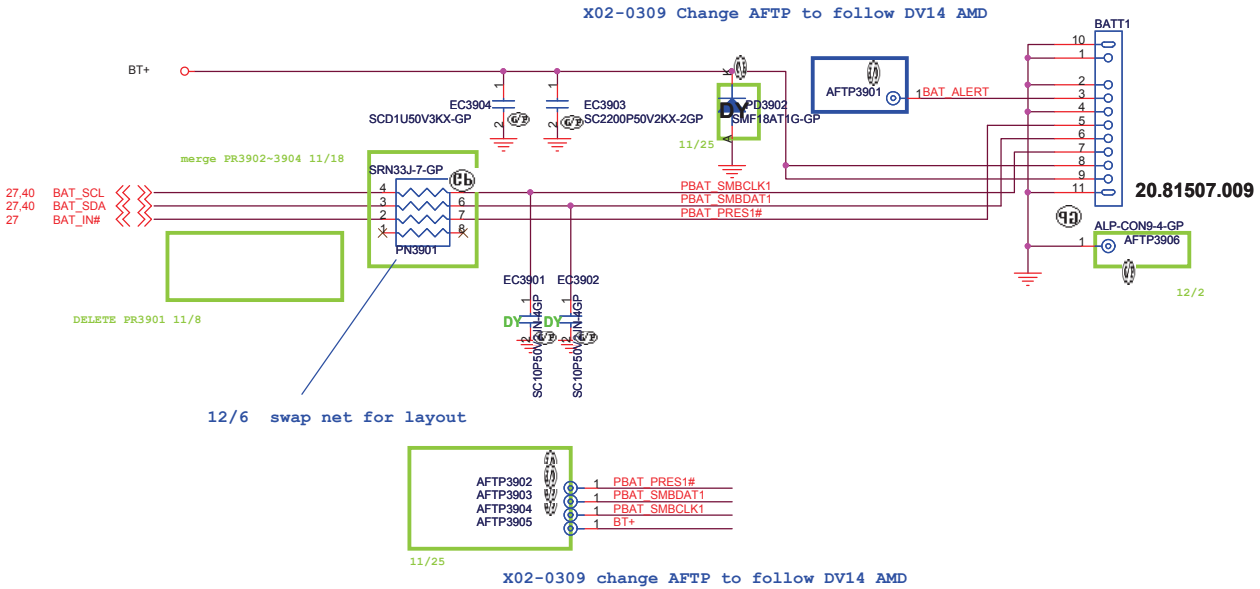
Taipei Hsien 221, Taiwan, R.O.C.

Title	DCIN Jack	
Size: A3	Document Number: Enrico Caruso 14	Rev: A00
Date: Wednesday, April 13, 2011	Sheet 38 of 105	

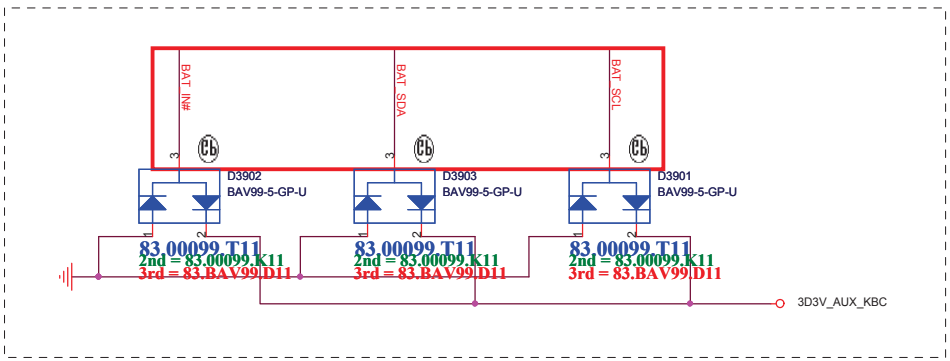
SSID = PWR.Support

Batt Connecter



For actual location, need to be swap all pin

Placement: Close to Batt Connector



<Core Design>

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

Title: BATT CONN

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 39 of 105

SSID = Charger

X01-0217 change PU4002, PU4003 to 84.04407.G37

EE need pull high and net name

0802 Rename H_PROCHOT#

PU4002 AO4407AL-GP
Id= -10A
Qg= -22nC
Rdson=14~13mohm

PU4003 AO4407AL-GP
Id= -10A
Qg= -22nC
Rdson=14~13mohm

A00-0412 dummy PR4037

A00-0412 stuff PQ4005

A00-0412 Change PR4029 to 54.9K

A00-0412 Change PR4013 to 49.9K

A00-0412 stuff PR4030& PR4032

A00-0412 Change PR4027 to 19.6K

2N7002KDW-GP
84.2N702.A3F
2nd = 84.DM601.03F

PU4005 BQ24707ARGRR-GP

PU4004 AO4496-GP

PU4001 AO4496-GP

Charger Current=1.4~3.6A

delete net name 11/10

delete net name 11/15

X01-0217 change PU4001, PU4004 to 84.04496.037

Add net name 11/10

EE need check pull high

ROSA

11/15

Adapter Type	PR4023
65W	24K
90W	33.2K
130W	59K

11/29

BOM merge 12/15

EC code only BQ24707

H_PROCHOT#	AD_IA_HW	AD_IA_HW2
65W	0	0
90W	1	0
130W	0	1

PR4034 can dummy if you use external 10mW

X01-0127 DY PQ4007, PR4038, PR4039 for new version BQ24707

<Core Design>

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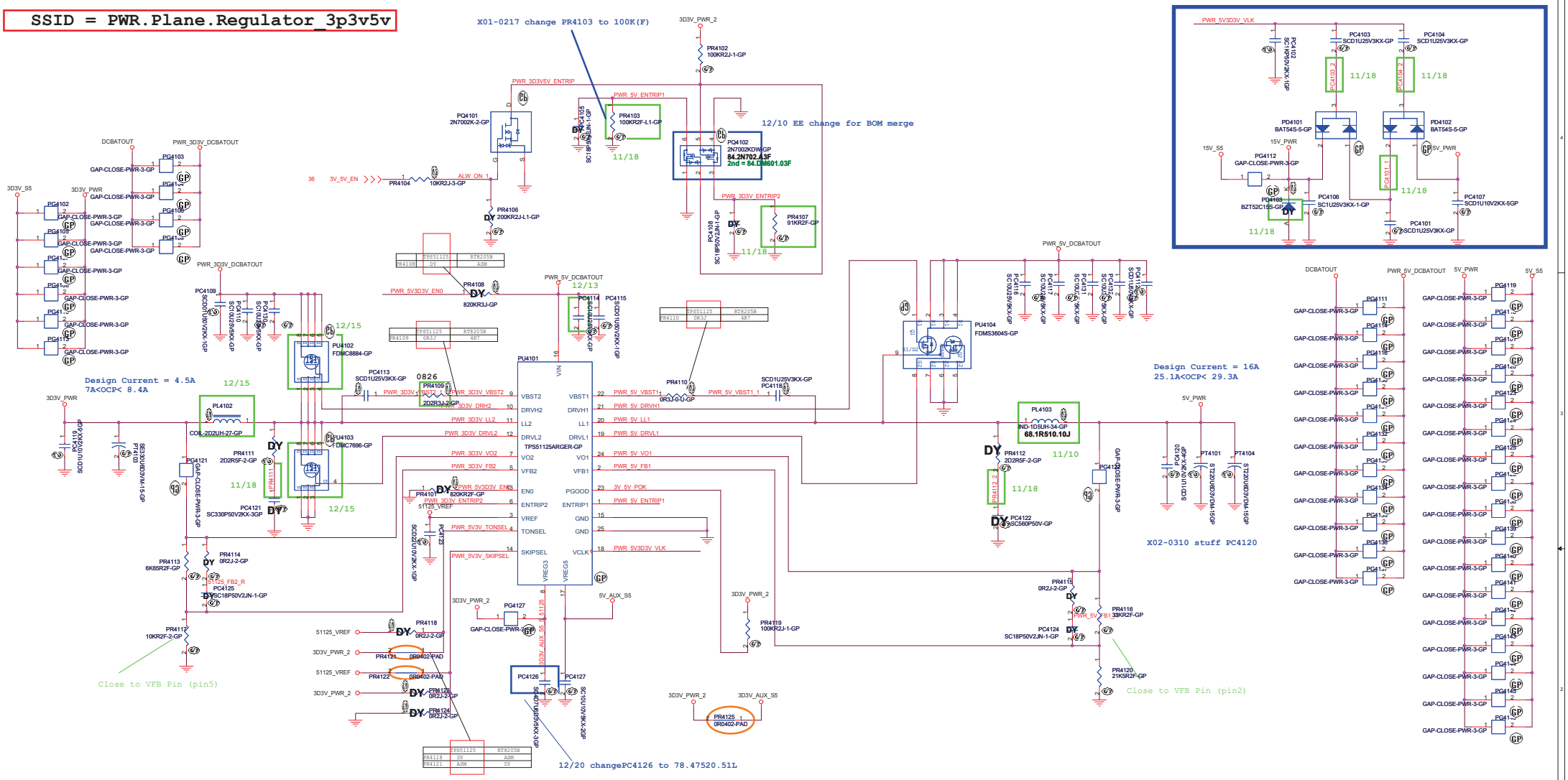
Title: CHARGER BQ24707

Size: Custom | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 40 of 105

SSID = PWR.Plane.Regulator_3p3v5v



I/P cap: 10U 25V K0805 X5R/ 78.10622.51L
Inductor: 2.2U PCMC063T-2R2MN Cyntec 18mohm/20mohm Isat =10Arms 68.2R210.20B
O/P cap: 330U6.3V M6.3*5.7 15mOhm 3.16Arms Matsuki/77.53371.04L
H/S: SI8412DN / 24mohm/30mOhm@4.5Vgs/ 84.00412.037
L/S: SI7716ADN / 13.5mohm/16.5mOhm@4.5Vgs/ 84.07716.037

I/P cap:10U 25V K0805 X5R/ 78.10622.51L
Inductor: 1.50UH PCMC104T-1R5 Cyntec 3.8mohm/4.2mohm Isat =33Arms 68.1R510.10J
O/P cap: 220U 6.3V PSLV0J227M 25mOhm 2.236Arms NEC_TOKIN/77.C2271.00L
H/S,L/S: FDMS3604S / 7.5mohm/9.8mOhm@4.5Vgs, 2.6mohm/3.2mOhm@4.5Vgs/ 84.03604.037

SKIPSEL	VREG3 or VREG5	VREF(2V)	GND
Operating Mode	OOA Auto Skip	Auto Skip	PWM only

EN0	Open	820k to GND	GND
Operating Mode	enable both LDOs, VCLK on and ready to turn on switcher channels	enable both LDOs, VCLK off and ready to turn on switcher channels	disable all circuit

TPS51125:

TONSEL	CH1	CH2
GND	200kHz	265kHz
VREF	245kHz	305kHz
VREG3	300kHz	375kHz
VREG5	365kHz	460kHz

RT8205B:

TONSEL	CH1	CH2
GND	200kHz	250kHz
VREF	300kHz	375kHz
VREG3	365kHz	460kHz
VREG5	365kHz	460kHz

<Core Design>

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Title: TPS51125_5V/3D3V
Size: A2 | Document Number: Enrico Caruso 14 | Rev: A00
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SSID = CPU.Regulator

Delete PR4212 Pull-up 200 R of ALL_SYS_PWRGD

12/17 change PR4246 to 475K(1%) as DN13

11/18

DELETE 11/8

<Core Design>

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Title: VT1316+1314_CPU_CORE(1/3)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 42 of 105

X01-0217 change PR4202, PR4213, PR4230
PR4247 to 7.5K(F)

400mils or Copper Shape

2120mils or Copper Shape

400mils or Copper Shape

53A=2120mils or Copper Shape

12/29 change PL4201 to HF part

<Core Design>

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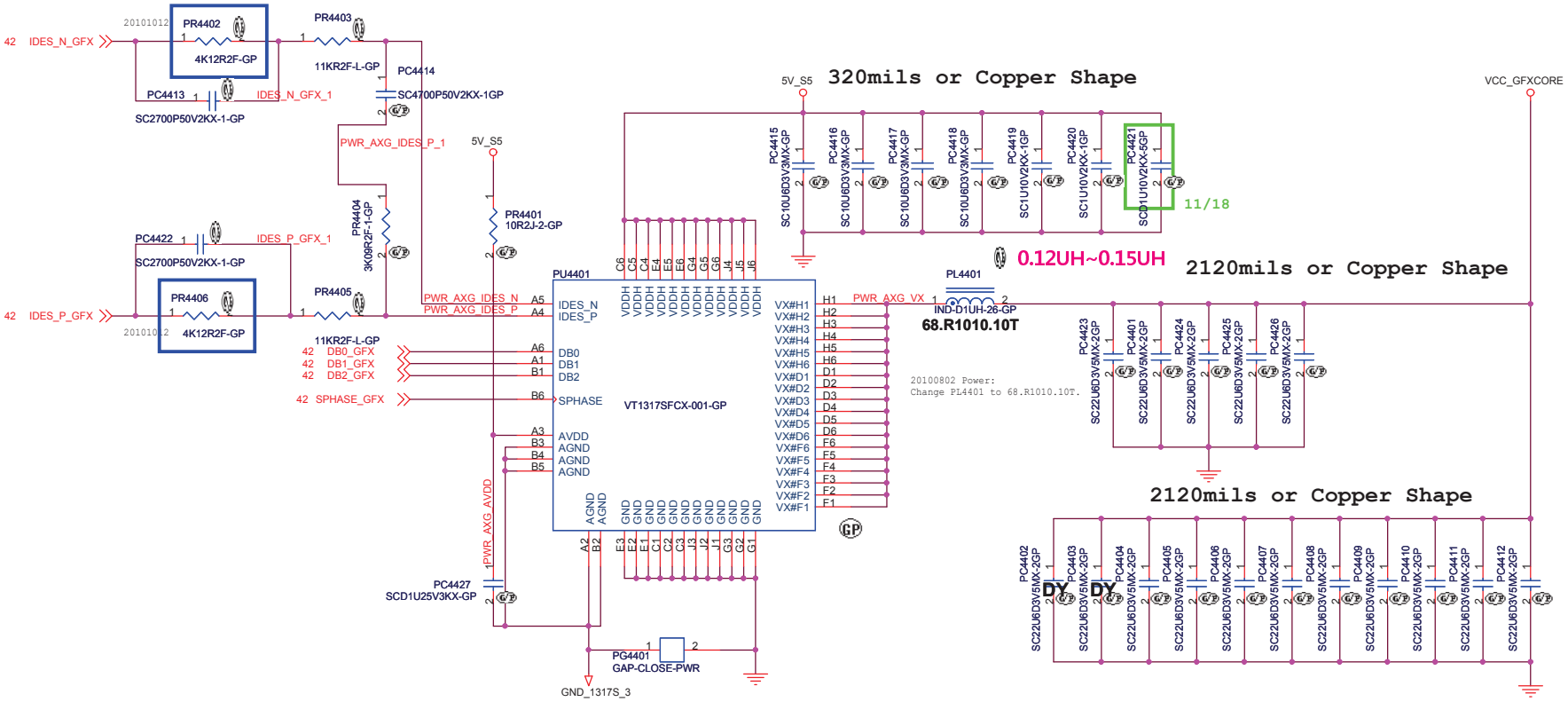
Taipei Hsien 221, Taiwan, R.O.C.

Title: VT1316+1314_CPU_CORE(2/3)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 43 of 105

X01-0217 change PR4402& PR4406 to 4.12K(F)



<Core Design>

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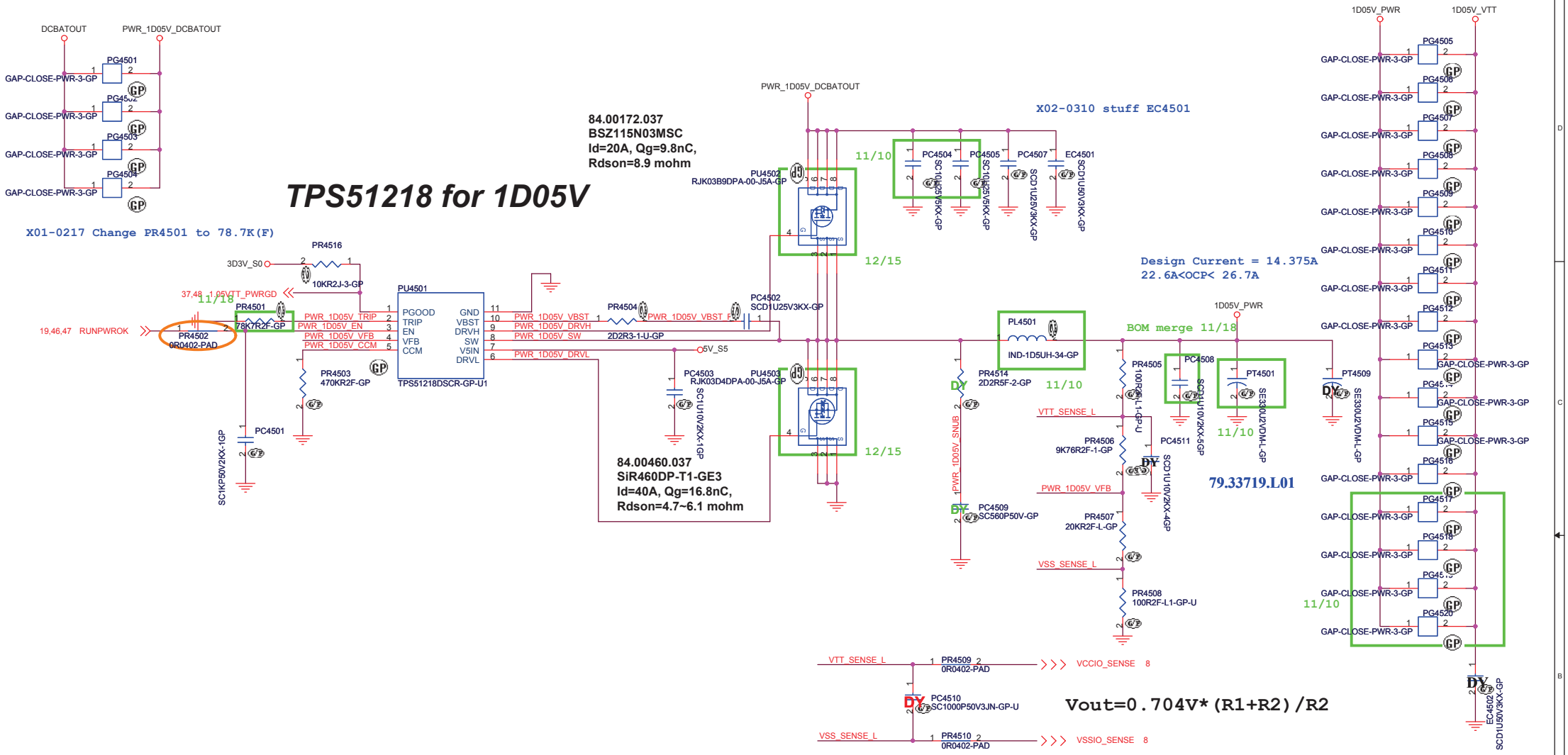
Taipei Hsien 221, Taiwan, R.O.C.

Title: VT1316+1317_AXG_CORE(3/3)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 44 of 105



I/P cap: 10U 25V K0805 X5R/ 78.10622.51L
Inductor: 1.50UH PCMC104T Cyntec 3.8mohm/4.2mohm Isat =33Arms 68.1R510.10J
O/P cap: 330U2V EEFSX0D331ER 9mOhm 3Arms Panasonic/79.33719.L01
H/S: SIR172DP / 10.3mohm/12.4mOhm@4.5Vgs/ 84.00172.037
L/S: SiR460DP / 0.49mohm/0.61mOhm@4.5Vgs/ 84.00460.037

<Core Design>

Wistron Corporation
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Title: TPS51218_+1.05V_VTT
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
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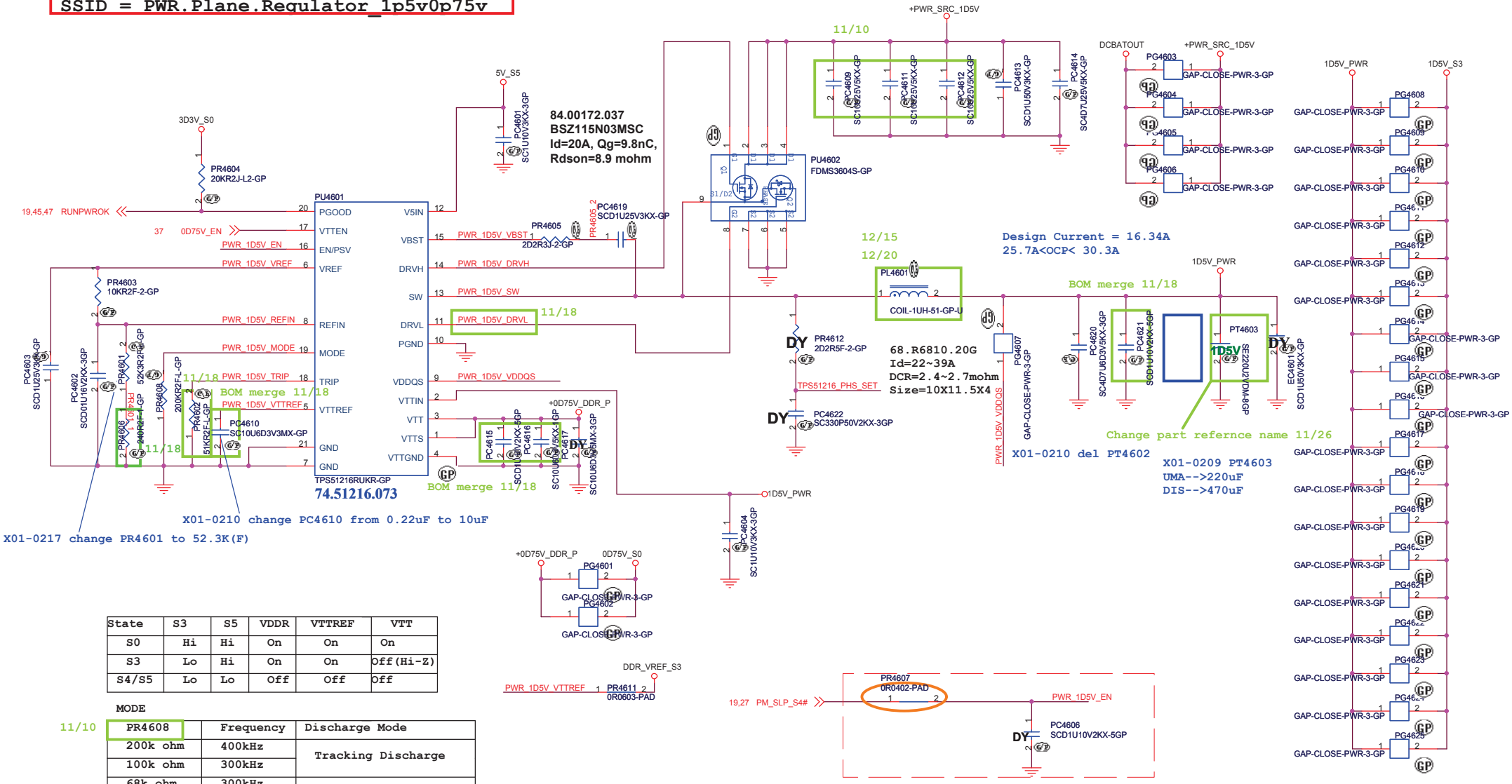
SSID = PWR.Plane.Regulator_1p5v0p75v



State	S3	S5	VDDR	VTTREF	VTT
S0	Hi	Hi	On	On	On
S3	Lo	Hi	On	On	Off(Hi-Z)
S4/S5	Lo	Lo	Off	Off	Off

MODE

11/10

PR4608	Frequency	Discharge Mode
200k ohm	400kHz	Tracking Discharge
100k ohm	300kHz	
68k ohm	300kHz	Non-tracking Discharge
47k ohm	400kHz	

I/P cap:10U 25V K0805 X5R/ 78.10622.51L
Inductor: 0.68UH PCMC104T-R68MN Cyntec 2.4mohm/2.7mohm Isat =39Arms 68.R6810.20G
O/P cap: 220U2V EEFCX0D221R 15mOhm 2.7Arm/Panasonic/79.22719.20L
H/S,L/S: FDMS3604S / 7.5mohm/9.8mOhm@4.5Vgs, 2.6mohm/3.2mOhm@4.5Vgs/ 84.03604.037

<Core Design>

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Title: TPS51216_+1.5V_SUS

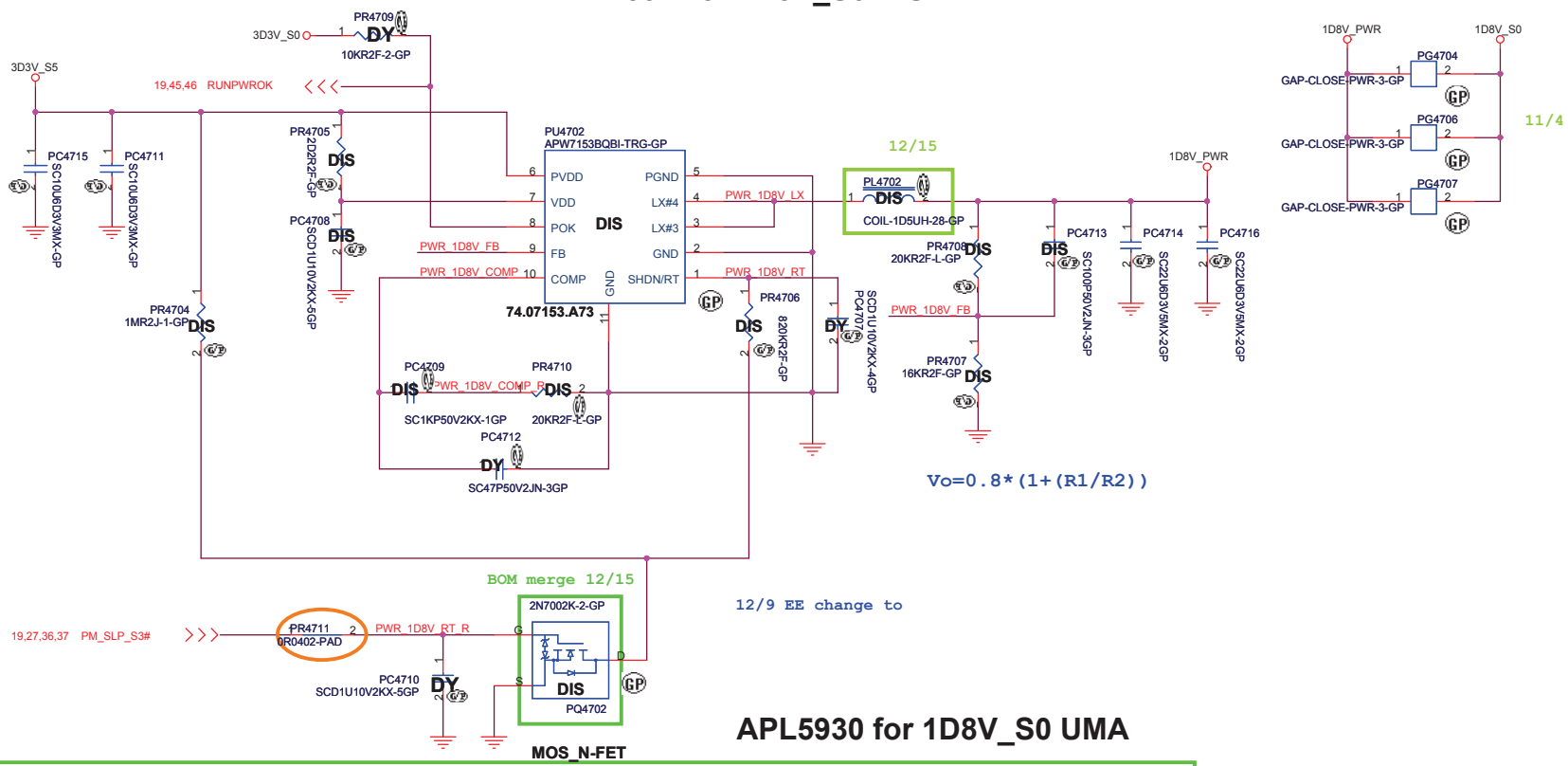
Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 46 of 105

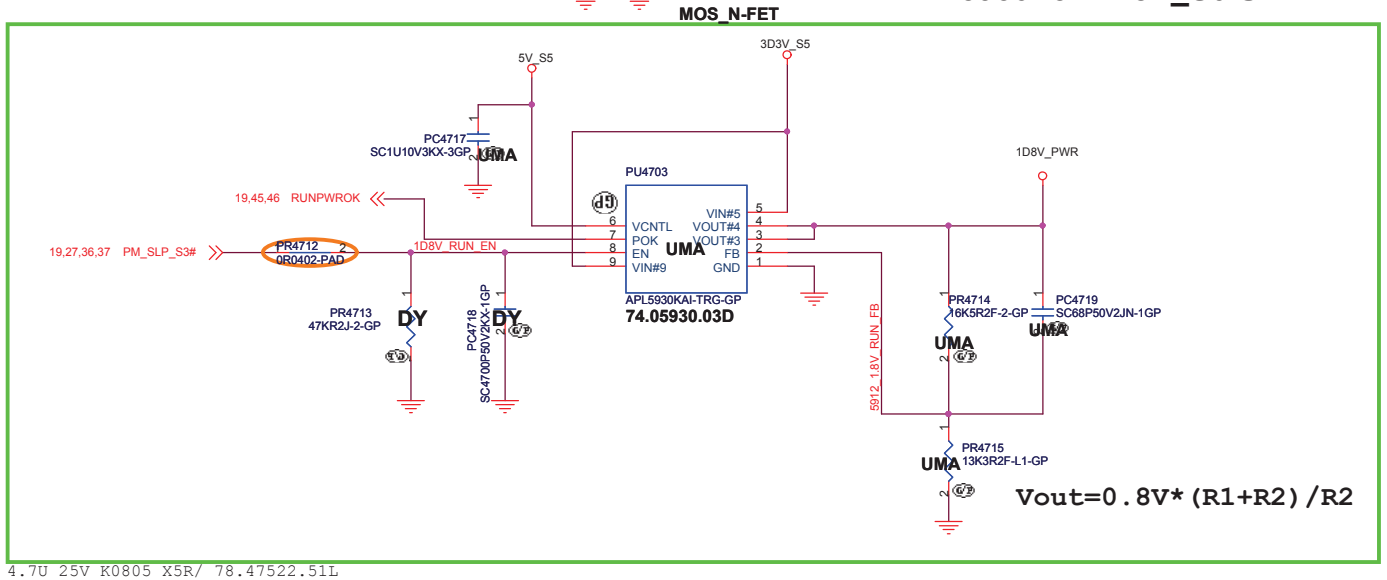
SSID = PWR.Plane.Regulator_1p8v

+1.8V_RUN
Design current = 1.015A

APW7153B for 1D8V_S0 DIS



APL5930 for 1D8V_S0 UMA



I/P cap: 4.7U 25V K0805 X5R/ 78.47522.51L
O/P cap: 22U 25V M0805 X5R/ 78.22610.51L
Inductor: 1.5U PCMC063T Cyntec 14mohm/15mohm Isat =18Arms 68.1R510.10K

<Core Design>

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Title: APW7153B_+1.8V_RUN
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
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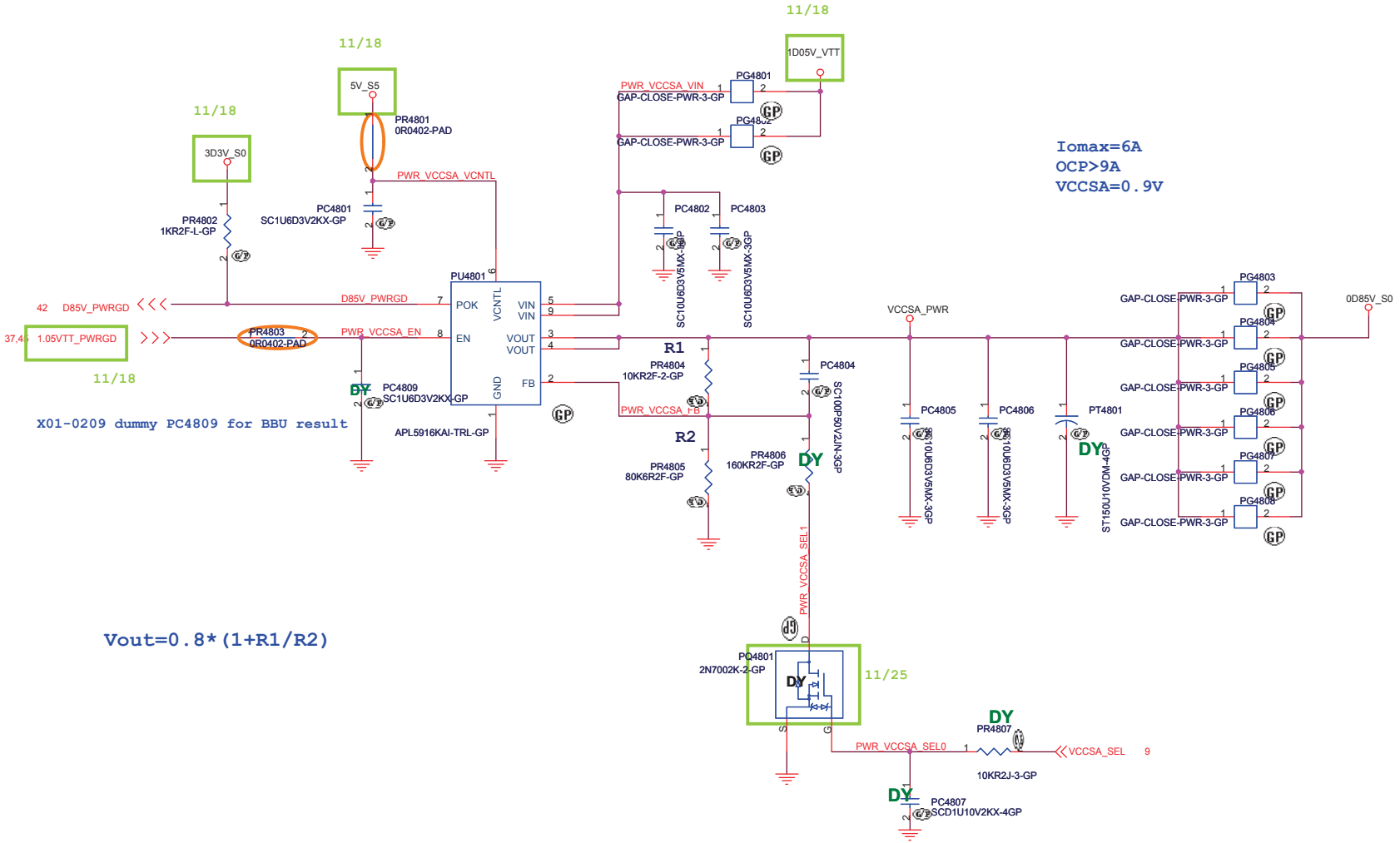
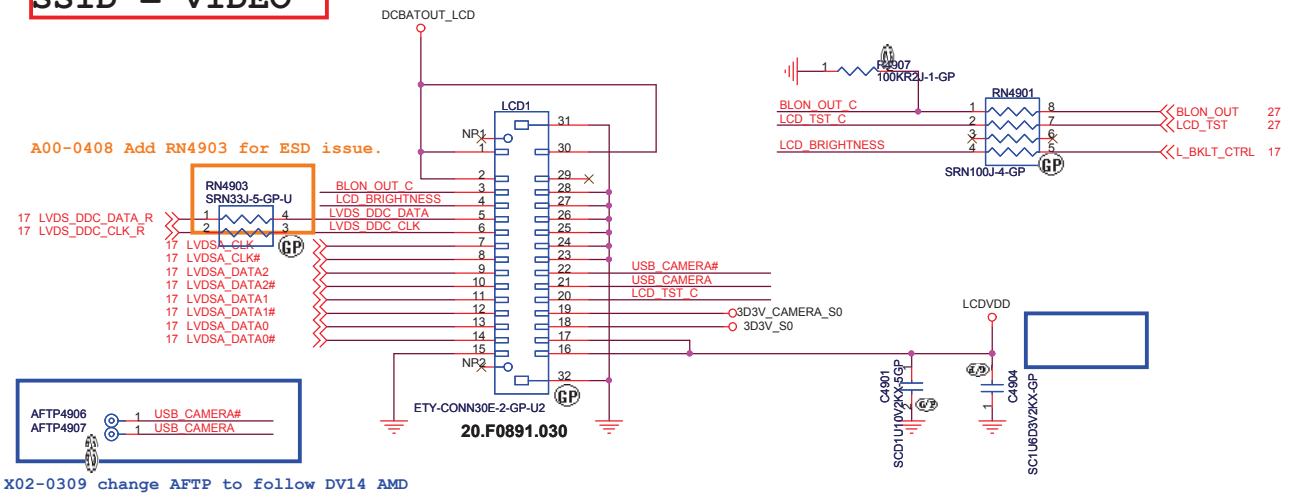
APL5916 for VCCSA



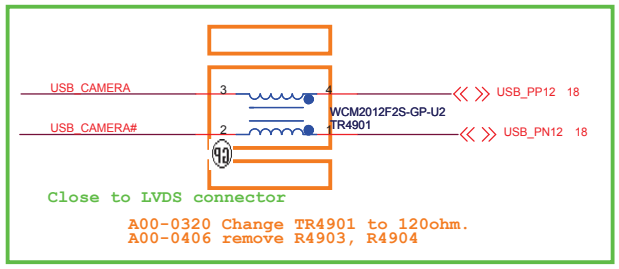
JV10-CS

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title: APL5916_VCCSA		
Size	Document Number: Enrico Caruso 14	Rev: A00
Date: Wednesday, April 13, 2011	Sheet 48 of 105	

SSID = VIDEO

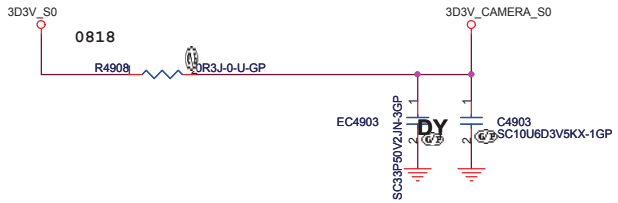


X02-0309 change AFTP to follow DV14 AMD

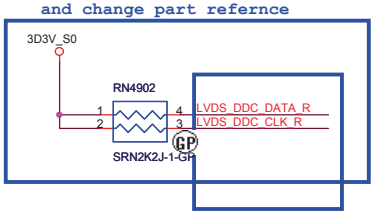


A00-0320 Change TR4901 to 120ohm.
A00-0406 remove R4903, R4904

A00-0408 SWAP TR4901 net

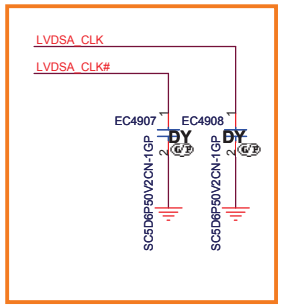


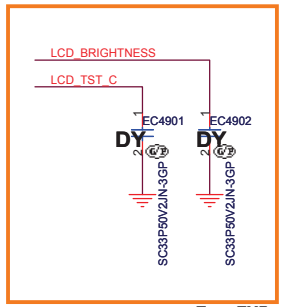
11/17 move RN1703 from P17 to P49
and change part refernce



12/22 swap net for layout

Close to LVDS connector

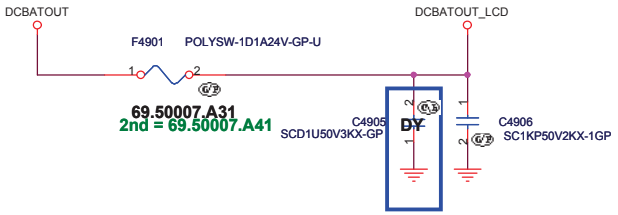




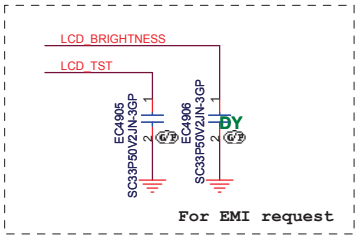
For EMI request

SSID = Inverter

INVERTER POWER



11/ 17 dummy C4905

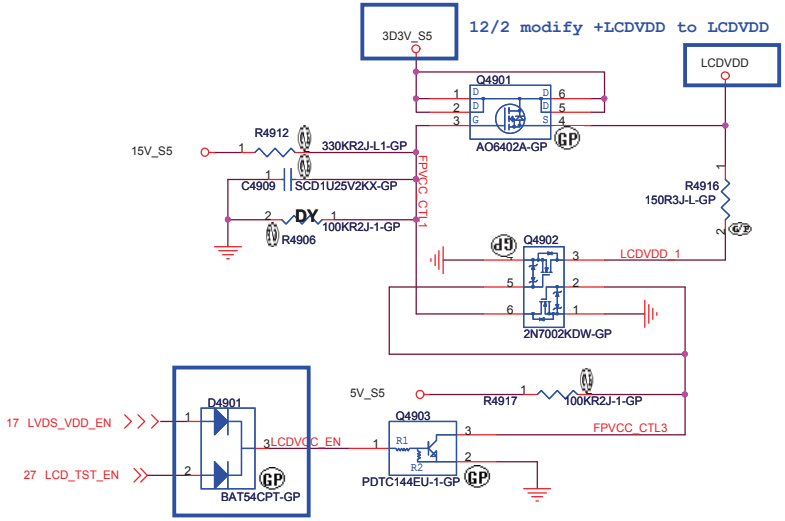


SSID = VIDEO

LCD POWER

11/15 change LCDVDD source from S0 to S5

12/2 modify +LCDVDD to LCDVDD



12/9 BOM merge

<Core Design>

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Title: LCD Connector

Size	Document Number	Rev
A3	Enrico Caruso 14	A00

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SSID = VIDEO

11/ 17 Add RN5012 for SMbus pull high

X01: change RN5012 from 0R to 2.2KR

11/3 Add RN5010 for CRT SMBus

X02-0303 change 0R to short pad

11/29 change CRT1 to 20.20927.015

X02-0309 change AFTP to follow DV14 AMD

5V Tolerance

Layout Note:

*Pi-filter & 150 Ohm pull-down resistors should be as close as to CRT CONN.
* RGB signal will hit 75 Ohm first, then pi-filter, finally CRT CONN.

11/18 change Fuse for CRT and HDMI share

11/15 remove F5501 base on brazos result.

11/ 17 Remove R5001

Hsync & Vsync level shift

X00 9/23

X01-0208 change R5002, R5003 to 33R

CLOSE TO TRANSFORMER

DN15ATI Whistler

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

Title: CRT Connector

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 50 of 105

SSID = VIDEO

HDMI Level Shifter & CONNECTOR

HDMI CONN

HDMI_CLK_R_C — R5101 0R0402-PAD — HDMI_CLK_R_C_CON
HDMI_CLK_R_C# — R5102 0R0402-PAD — HDMI_CLK_R_C#_CON
HDMI_DATA1_R_C — RR5106 0R0402-PAD — HDMI_DATA1_R_C_CON
HDMI_DATA1_R_C# — RR5105 0R0402-PAD — HDMI_DATA1_R_C#_CON

A00-0407 remove TR5101, TR5102, TR5103, TR5104 PAD and remove 0R PAD.

HDMI_DATA0_R_C — RR5104 0R0402-PAD — HDMI_DATA0_R_C_CON
HDMI_DATA0_R_C# — RR5103 0R0402-PAD — HDMI_DATA0_R_C#_CON
HDMI_DATA2_R_C — RR5108 0R0402-PAD — HDMI_DATA2_R_C_CON
HDMI_DATA2_R_C# — RR5107 0R0402-PAD — HDMI_DATA2_R_C#_CON

HDMI_PLL_GND
Q5103 2N7002K-2-GP
84.2N702.J31
2ND = 84.2N702.031
5V_S0
R5113 100KR2J-1-GP
R5123 0R2J-2-GP
11/19 change net Q5103_G to 5V_S0

HDMI1
SKT-HDMI19P-63-GP-U
22.10296.171
HDMI_DATA2_R_C_CON
HDMI_DATA2_R_C#_CON
HDMI_DATA1_R_C_CON
HDMI_DATA1_R_C#_CON
HDMI_DATA0_R_C_CON
HDMI_DATA0_R_C#_CON
HDMI_CLK_R_C_CON
HDMI_CLK_R_C#_CON
DDC_CLK_HDMI
DDC_DATA_HDMI
HPD_HDMI_CON
11/18 change Fuse for CRT and HDMI share
5V_CRT_S0_R
C5102 SCD1U10V2KX-5GP
X02-0309
Del AFTP test point to follow DV14 AMD
3D3V_S0
12/9 BOM merge
12/23 BOM merge
Q5102 PMBS3904-1-GP
84.03904.L06
2ND = 84.03904.R11
HDMI_HPD_B
HDMI_HPD_E
R5111 150KR2J-L1-GP
R5110 200KR2J-L1-GP
R5125 0R0402-PAD
R5112 10KR2J-3-GP
HDMI_PCH_DET 17

HDMI DISCRETE/ UMA Co-lay

17 HDMI_CLK_R# — C5103 SCD1U10V2KX-5GP — HDMI_CLK_R_C#
17 HDMI_CLK_R — C5104 SCD1U10V2KX-5GP — HDMI_CLK_R_C
17 HDMI_DATA0_R# — C5105 SCD1U10V2KX-5GP — HDMI_DATA0_R_C#
17 HDMI_DATA0_R — C5106 SCD1U10V2KX-5GP — HDMI_DATA0_R_C
66.68136.08L=>680ohm for UMA
66.47136.A8L=>470ohm for GPU
17 HDMI_DATA1_R# — C5110 SCD1U10V2KX-5GP — HDMI_DATA1_R_C#
17 HDMI_DATA1_R — C5107 SCD1U10V2KX-5GP — HDMI_DATA1_R_C
17 HDMI_DATA2_R# — C5108 SCD1U10V2KX-5GP — HDMI_DATA2_R_C#
17 HDMI_DATA2_R — C5109 SCD1U10V2KX-5GP — HDMI_DATA2_R_C
RN5106 SRN680J-GP
RN5107 SRN680J-GP
HDMI_PLL_GND

5V_CRT_S0_R
12/1 Modify 5V_HDMI to 5V_CRT_S0_R
3D3V_S0
RN5101 SRN2K2J-1-GP
11/18 change RN5117 BOM control property to HDMI
17 PCH_HDMI_CLK
17 PCH_HDMI_DATA
RN5117 0R4P2R-PAD
X02-0303 change 0R to short pad
DDC_CLK_Q
DDC_DATA_Q
Q5104 2N7002KDW-GP
84.2N702.A3F
2nd = 84.DM601.03F
DDC_CLK_HDMI
DDC_DATA_HDMI

11/16 Del RN5112~5115 for no need to reserve for VGA

Routing Guidelines:
CTRLDATA must be routed longer than CTRLCLK within 1000 mils (25.4 mm).
The total delay on CTRLDATA should be longer than CTRLCLK.

<Core Design>

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

Title: HDMI Level Shifter/Connector
Size: A3
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DN15ATI Whistler

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Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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DN15ATI Whistler

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Title	*LVDS_Switch*	
Size: A3	Document Number: *Enrico Caruso 14*	Rev: *A00*
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Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 54 of 105

SSID = User.Interface

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Title: ITP/Fan Connector

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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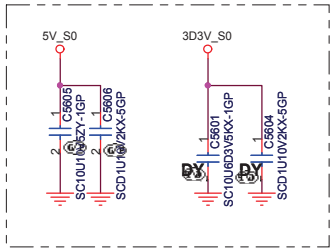
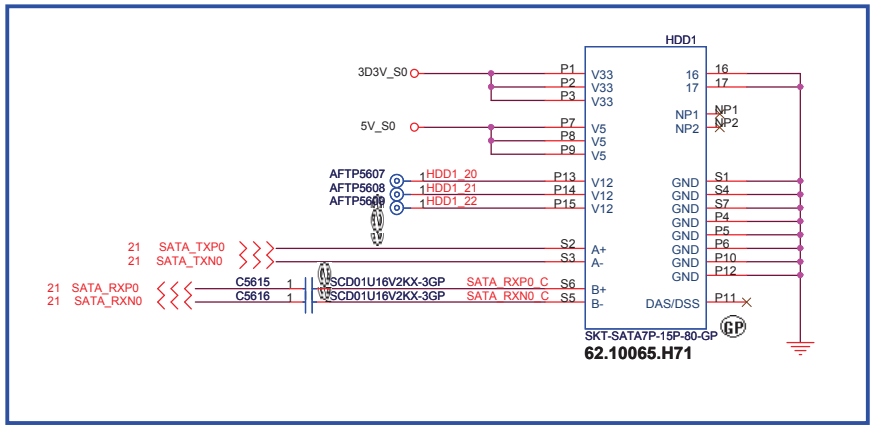
SSID = SATA

SATA HDD Connector

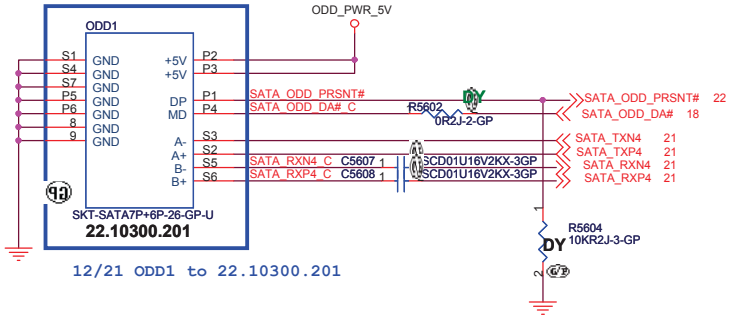
11/10 Change HDD1 CONN to 62.10065.031
12/22 Change HDD1 CONN to62.10065.H71



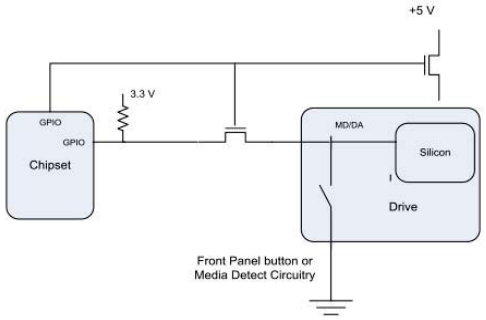
Close to HDD1



ODD Connector

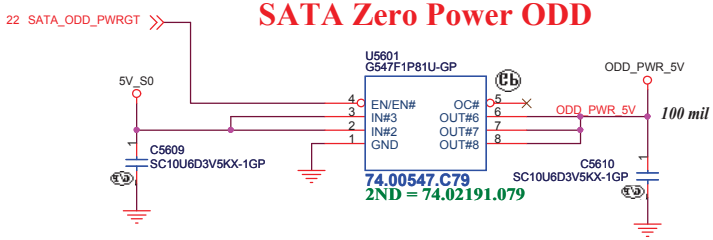


12/21 ODD1 to 22.10300.201

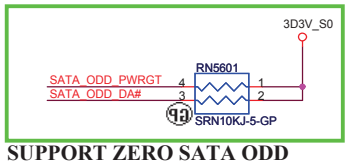


When the drive is powered on, the FET to the MD/DA pin drive is OFF.
When the drive is powered off, the FET to the MD/DA pin is ON

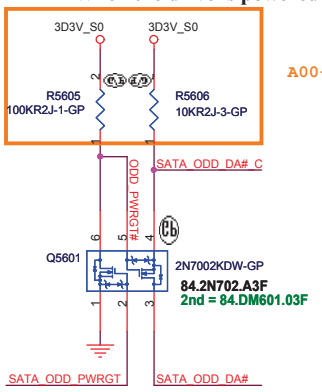
SATA Zero Power ODD



Current limit
Active High
typ =>2A



SUPPORT ZERO SATA ODD



A00-0408 Add R5606 to pull high 3.3V_S0
Change pull high to 3.3V_S0

<Core Design>

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Title: HDD/ODD

Size	Document Number	Rev
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Date: Wednesday, April 13, 2011 Sheet 56 of 105

SSID = ESATA

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<Core Design>

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

Title: ESATA

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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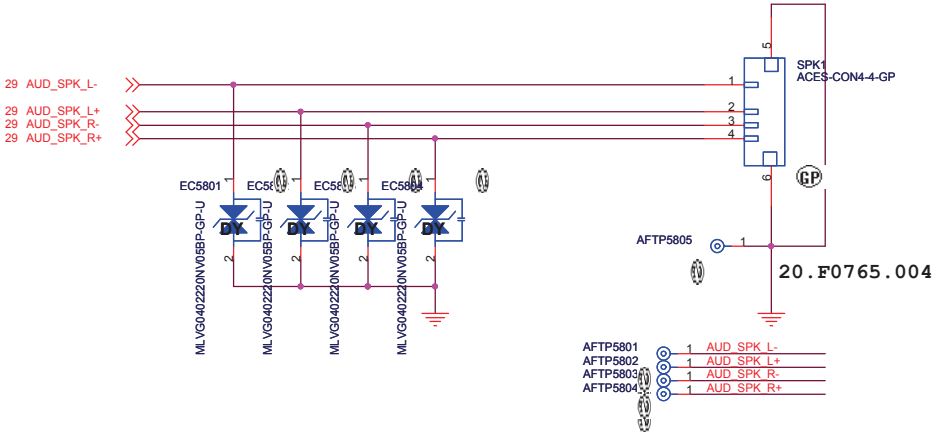
SSID = AUDIO

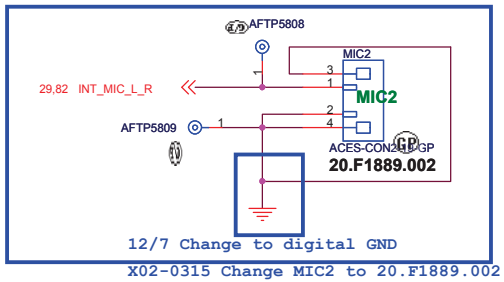
Speaker Connector



11/10 remove MIC1

11/26 reserve MIC2

12/7 change MIC2 to 20.F1050.002



12/7 Change to digital GND

X02-0315 Change MIC2 to 20.F1889.002

DN15ATI Whistler

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

Title: SPEAKER CONN

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 58 of 105

SSID = LOM

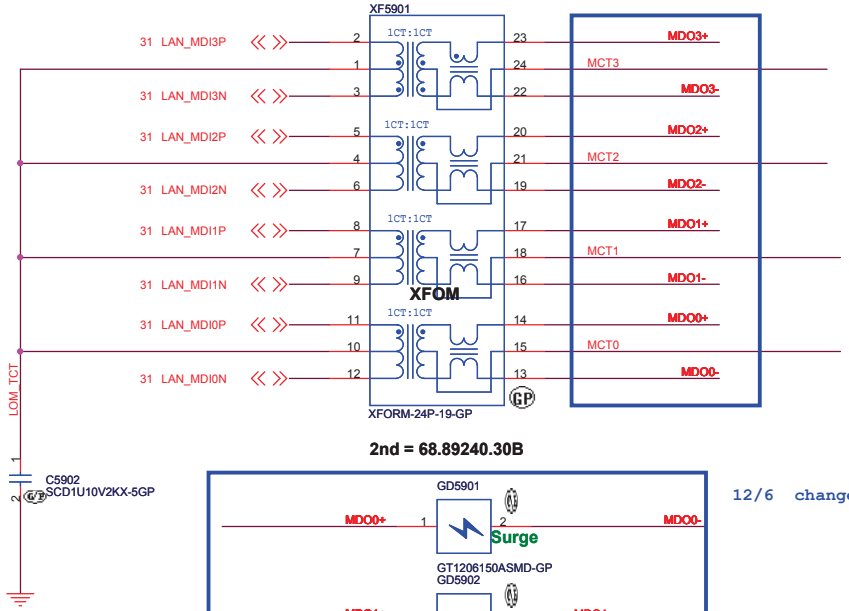
LAN TransFormer

X01-0211 Add EMI solution for Surge

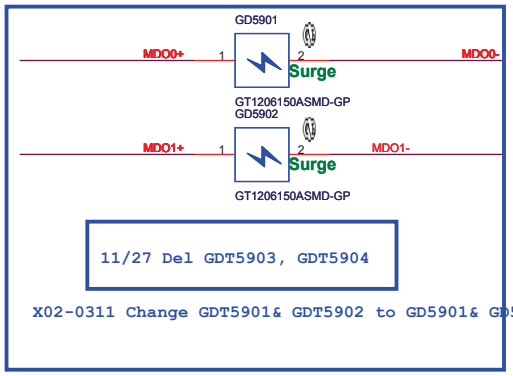
Giga Main: 68.IH601.301
Giga 2nd: 68.05009.30A

10/100 Main: 68.HH035.301
10/100 Main: 68.01284.30A

11/30 swap net



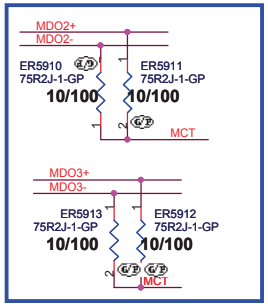
2nd = 68.89240.30B

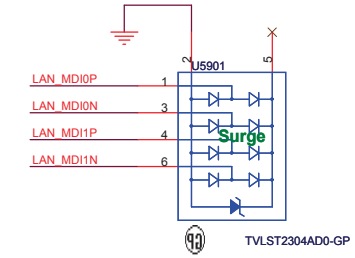


11/27 Del GDT5903, GDT5904

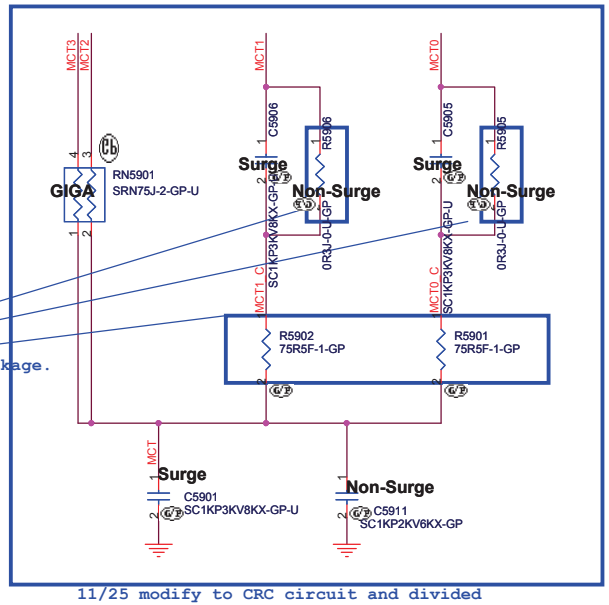
X02-0311 Change GDT5901& GDT5902 to GD5901& GD5902

0722 : change to gas tube





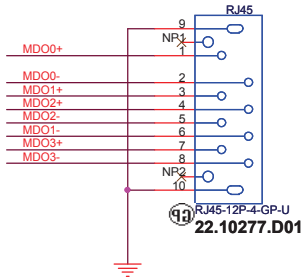
11/27 Del U5902



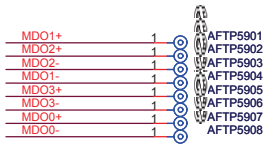
12/6 change resistor package.

11/25 modify to CRC circuit and divided resistor as EMI suggest
11/29 Change C5911 to 78.1022S.22L

RJ45



11/29 change RJ45 to 22.10277.D01



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Title: XFOM&RJ45

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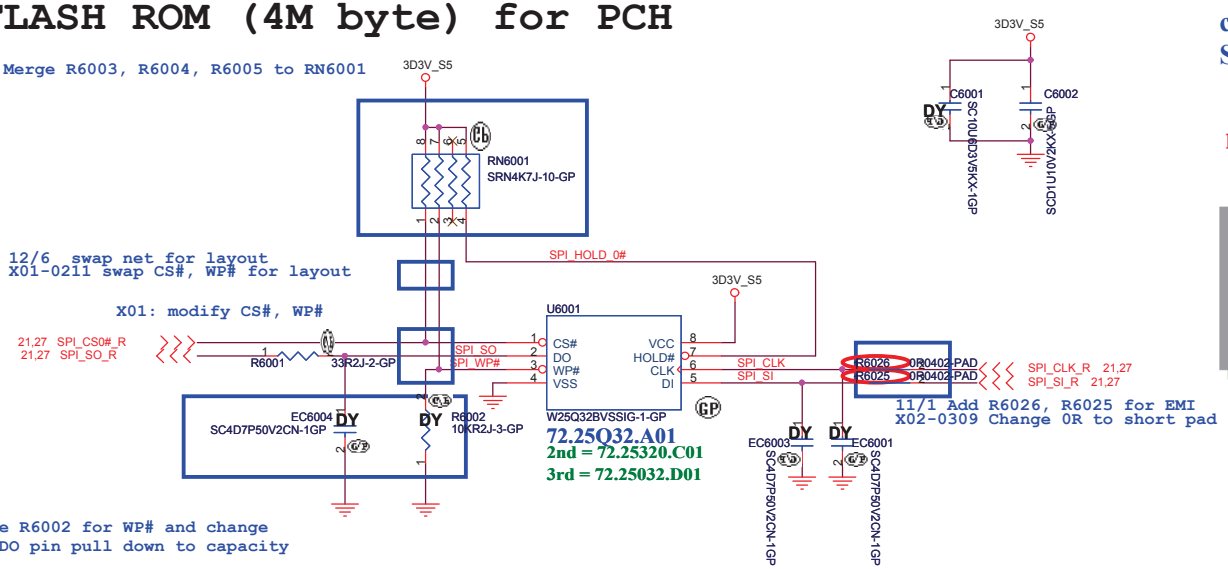
SSID = Flash.ROM

SPI FLASH ROM (4M byte) for PCH

11/18 Merge R6003, R6004, R6005 to RN6001

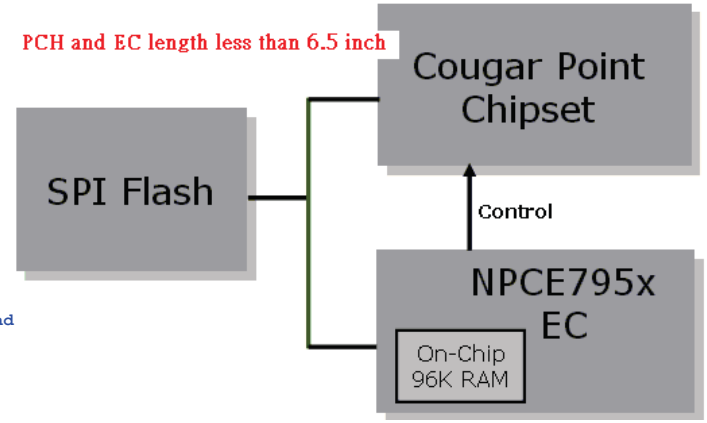


11/18 reserve R6002 for WP# and change
change DO pin pull down to capacity

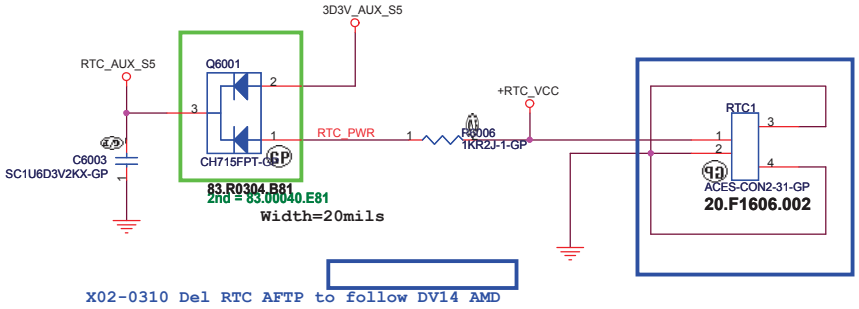
Pirority	Wistron P/N	Manufacturer	Vendor P/N
1	72.25Q32.A01	WINBOND	W25Q32BVSSIG
2	72.25320.C01	MXIC	MX25L3206EM2I-12G
3	72.25032.D01	SST	SST25VF032B-80-4I-S2AF
4	72.25P32.C01	Numonyx	M25PX32-VMW6F

Notes:
The total SPI interface signal between EC and PCH can˙t not exceed 6500mil. The mismatch between SPI signal must be within 500mil

PCH and EC length less than 6.5 inch

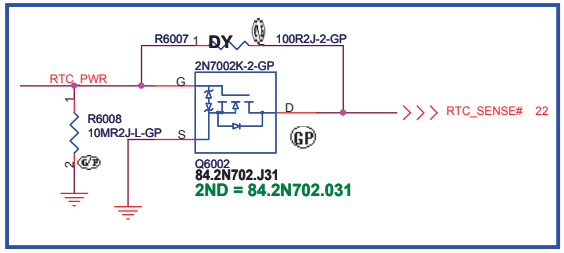


SSID = RBATT

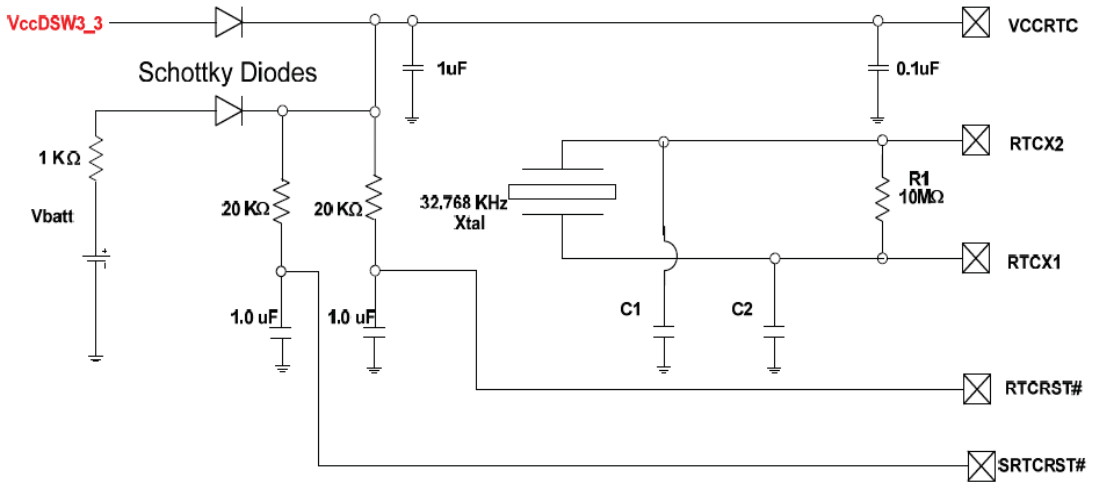


X02-0310 Del RTC AFTP to follow DV14 AMD

11/29 change RTC1 to 20.F1606.002



11/23 add RTC DET circuit



VccRTC is now connected to VccDSW3_3 through the Schottky diode instead of the 3.3V Sus well.

<Core Design>

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

Title: Flash/RTC
Size: A3
Document Number: Enrico Caruso 14
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Date: Wednesday, April 13, 2011
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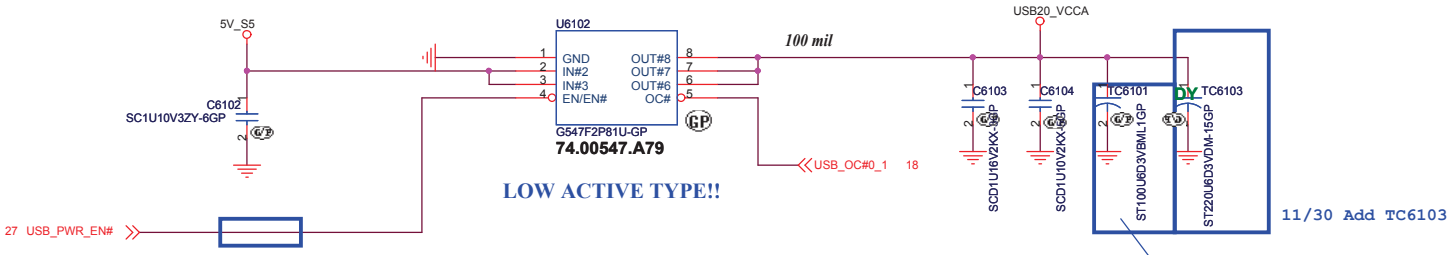
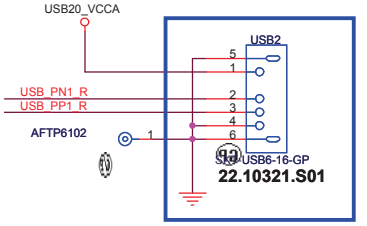
SSID = USB



LOW ACTIVE TYPE!!

11/30 Add TC6103

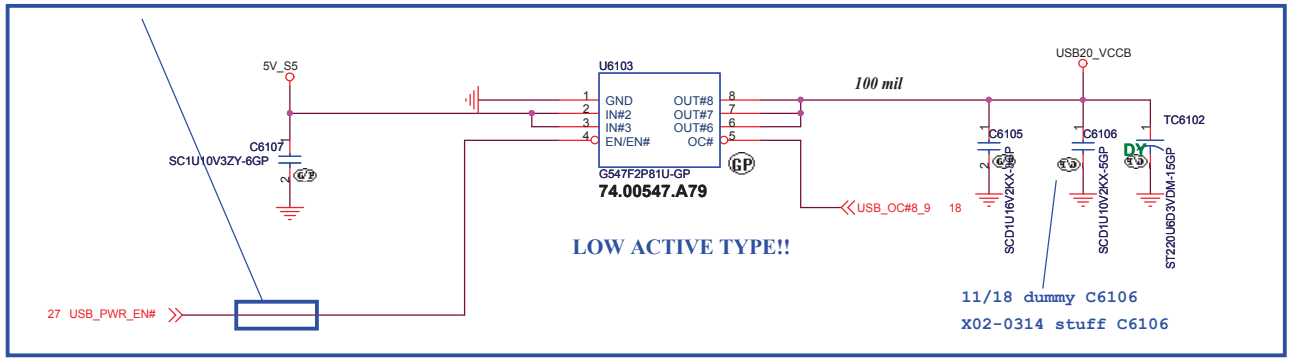
12/22 change TC6101 to 100uF



11/29 change USB2 to 22.10321.S01

11/18 remove R6101, R6104

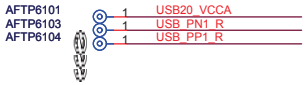
11/10 Move USB power SW to Mainboard



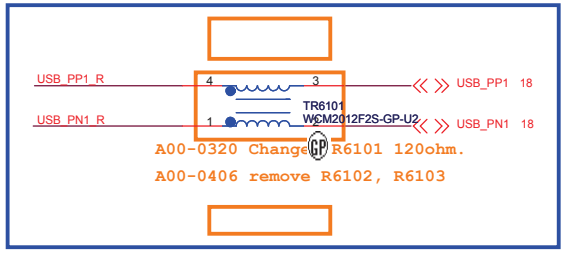
LOW ACTIVE TYPE!!

11/18 dummy C6106

X02-0314 stuff C6106



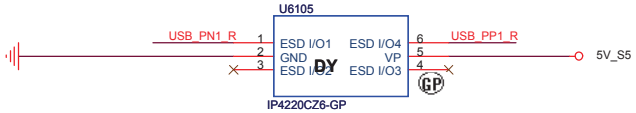
11/1 Stuff TR6101 for EMI



A00-0320 Change R6101 120ohm.

A00-0406 remove R6102, R6103

A00-0408 Swap TR6101 net for layout



DN15ATI Whistler

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Title: USB Power SW

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Title: Reserved

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SSID = User.Interface

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DN15ATI Whistler

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

Title: Bluetooth

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<Core Design>

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Title: RESERVED

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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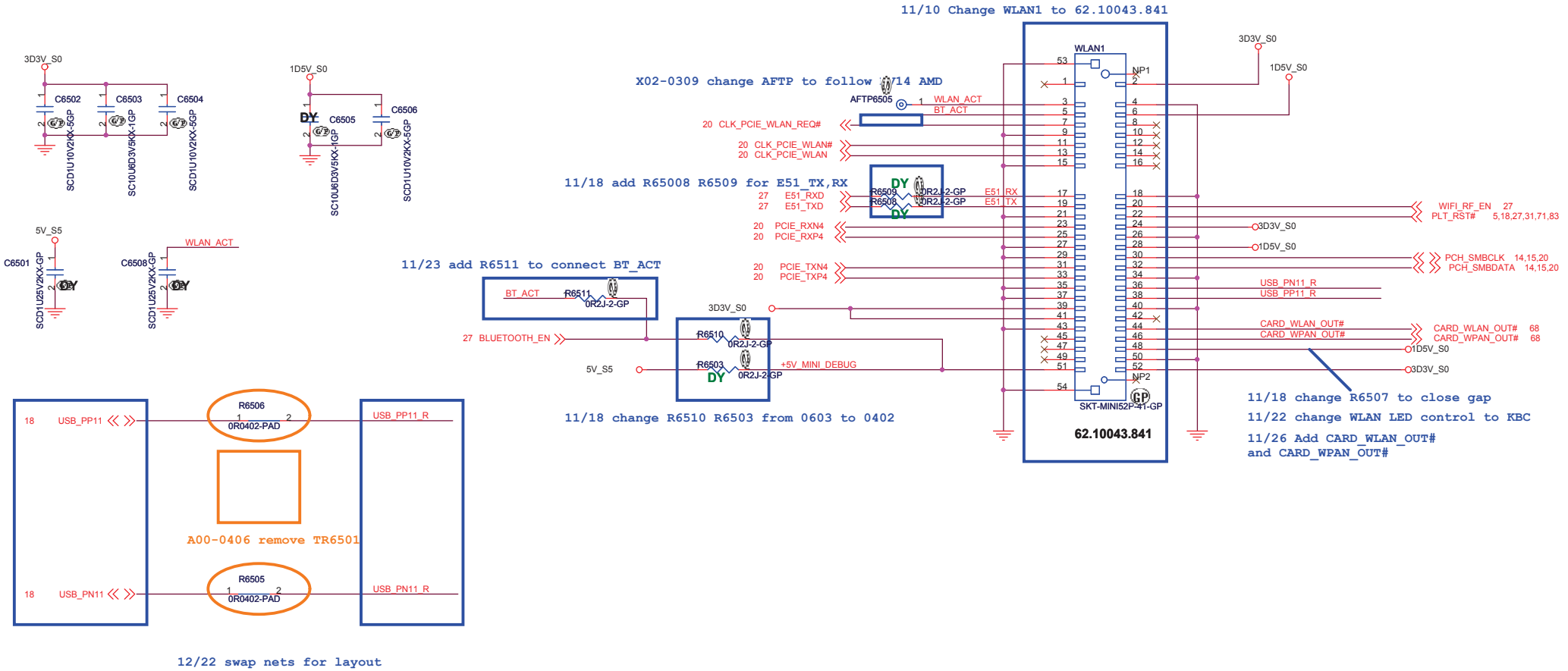
SSID = Wireless

Mini Card Connector(802.11a/b/g)



DN15ATI Whistler

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

Title: MINICARD(WLAN)/ITP CONN

Size	Document Number	Rev
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Taipei Hsien 221, Taiwan, R.O.C.

Title: *Reserved*

Size: A3 | Document Number: *Enrico Caruso 14* | Rev: *A00*

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DN15ATI Whistler

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Title: *Reserved*

Size: A3 | Document Number: *Enrico Caruso 14* | Rev: *A00*

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SSID = User.Interface

FRONT POWER LED

27 PWRLED# → R6813 0R0402-PAD → PWRLED# C → Q6801 PDTA143ET-GP (84.00143.M11) → LED_PWR → R6806 330R2J-3-GP → FPOWER_LED_A → PLED1 LED-W-27-GP (83.01221.R70) ← 5V_S5

R6811 0R0402-PAD

11/26 reserve R6813 to aviod LED turn on when Q6801 install

A00-0320 Change resistor for LED brightness

SATA HDD LED(White)

11/26 Add R6810 to avoid LED turn on

21 SATA_LED# → R6810 5KR2J-1-GP → SATALED# C → Q6805 PDTA143ET-GP (84.00143.M11) ← 5V_S0

SATA_LED_R → R6812 330R2J-3-GP → HDD_LED_A → HDLED1 LED-W-27-GP (83.01221.R70)

Need change to LOW actived from KBC GPIO

EC6801 SC220P50V2KX-3GP DY — LED_PWR
EC6810 SC220P50V2KX-3GP DY — SATA_LED_R
EC6807 SC220P50V2KX-3GP DY — WHITE_LED_BAT#
EC6809 SC220P50V2KX-3GP DY — AMBER_LED_BAT#

11/18 add R6804 R6805 0ohm and dummy Q6807, Q6808

12/3 Change LED part reference to follow standard

Battery LED2(WHITE_LED)

X02-0303 change 0R to short pad

R6804 0R0402-PAD

27 BATT_WHITE_LED# → Q6807 PDTC124EU-GP (84.00124.H1K) → WHITE_LED_BAT# → R6801 330R2J-3-GP → BAT_WHITE#

WHITE

11/16 Del RN6801 to follow DV15 AMD

Battery LED1(AMBER_LED)

R6805 0R0402-PAD

27 CHG_AMBER_LED# → Q6808 PDTC124EU-GP (84.00124.H1K) → AMBER_LED_BAT# → R6803 499R2F-2-GP → BAT_AMBER#

CHLED1 LED-OW-3-GP (83.00326.G70) ← 5V_S5

AMBER

A00-0413 change R6806, R6812, R6801, R6808 to 330ohm

Wireless LED

A00-0328 change R6814 to 10KR

11/26 change WLANLED control circuit

65 CARD_WLAN_OUT# → D6801 BAT54A-7-F-1-GP → WLAN_LED# → R6814 10KR2J-3-GP → WLANLED# C

65 CARD_WPAN_OUT# → D6801

27 KBC_WLAN_OUT# → R6807 0R2J-2-GP DY

11/26 if WLAN LED control by KBC. remove D6801 and short R6814, R6807

11/26 remove R6835

Q6806 PDTA143ET-GP (84.00143.M11) ← 5V_S0

WLAN_LED_R → R6808 330R2J-3-GP → WLAN_LED → WLED1 LED-W-27-GP (83.01221.R70)

WHITE

X02-0315 Change R6808 to 499R

X01-0217 Change R6814 to 0R

EC6806 SCD1U25V2KX-GP DY

Place EC6806 near LED2

A00-0316 modify WLED1 circuit for brightness

Power button

27 KBC_PWRBTN# → R6802 100R2J-2-GP → AFTP6801 → KBC_PWRBTN# C → PWRBT1 ACES-CONN8G-GP → AFTP6802

20.K0464.004

12/10 change PWRBT1 pin define

12/21 change PWRBT1 to 20.K0464.004

<Core Design>

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

Title: LED Bard/Power Button
Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00
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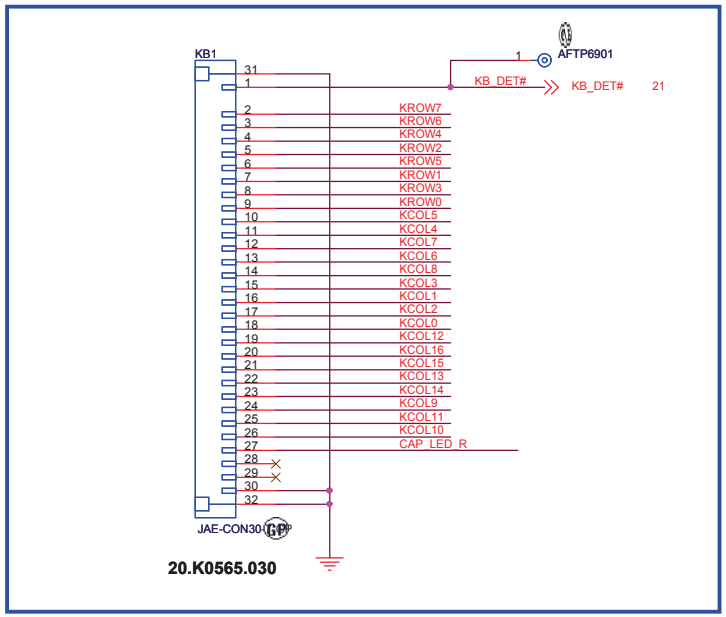
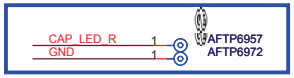
SSID = KBC



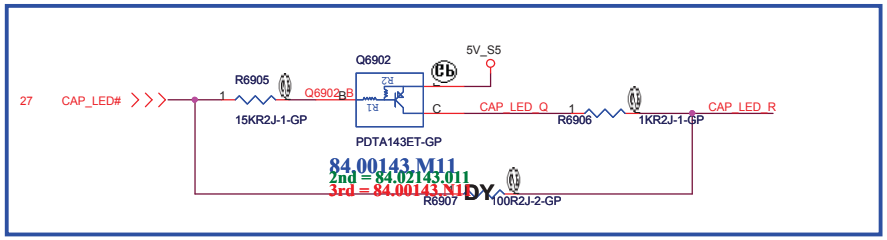
11/26 change KB1 to 20.K0597.030
12/8 Change KB1 to 20.K0565.030

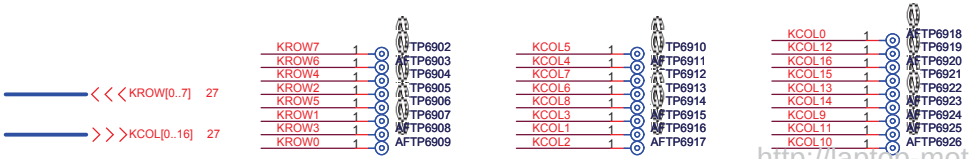
X02-0309 change AFTP to follow DV14 AMD



12/8 Add Cap LED control circuit

CAP LED CONTROL



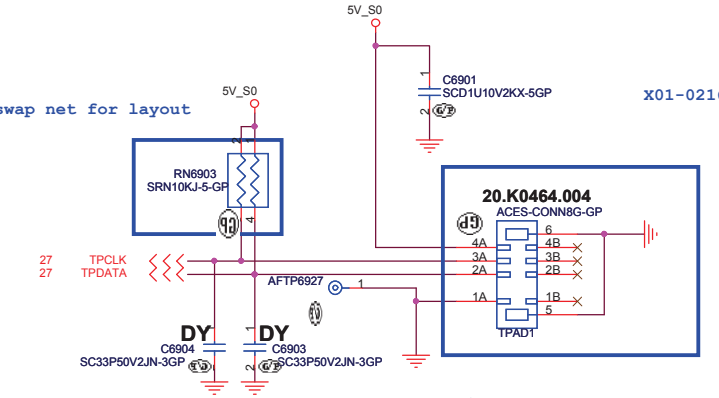


SSID = Touch.Pad

X01-0216 Modify pin define error

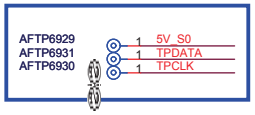
TouchPad Connector

12/6 swap net for layout



X01-0216 exchange C6903& C6904

X01-0216 Modify pin define error



11/23 change TPAD1 to 20.K0320.004
X01-0208 change TPAD1 to 20.K0464.004
X01-0216 Modify pin define error

<Core Design>

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Title: Key Board/Touch Pad
Size: A3
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
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DN15ATI Whistler

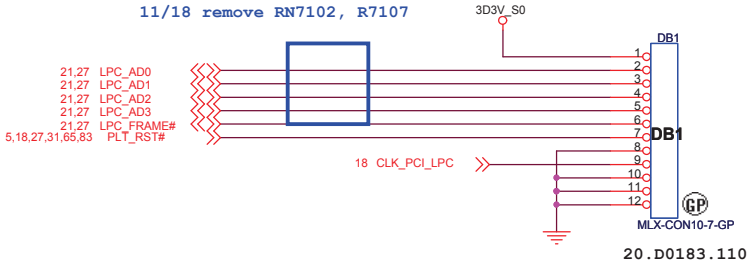
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: *Hall Sensor*

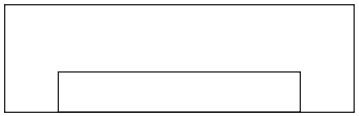
Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 70 of 105

11/18 remove RN7102, R7107



20.D0183.110



DN15ATI Whistler

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Title	Debug connector	
Size A3	Document Number: Enrico Caruso 14	Rev A00
Date: Wednesday, April 13, 2011	Sheet 71 of 105	

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DN15ATI Whistler

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

Title: ***Reserved***

Size	Document Number	Rev
A3	***Enrico Caruso 14***	***A00***

Date: Wednesday, April 13, 2011 Sheet 72 of 105

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DN15ATI Whistler

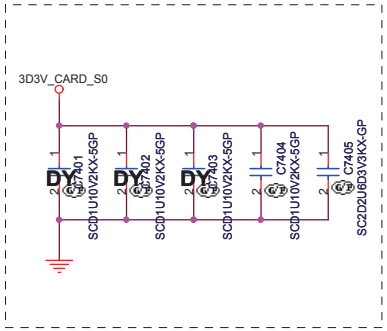
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

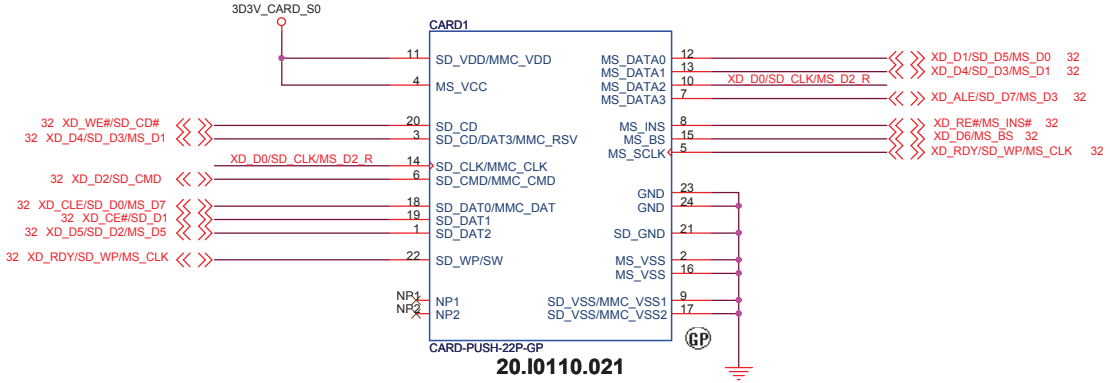
Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

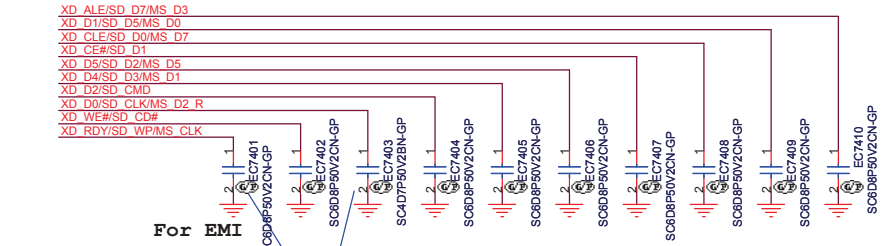
Date: Wednesday, April 13, 2011 | Sheet 73 of 105

SSID = SDIO





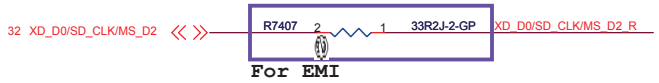
0810 Vendor Recommand



11/18 Dummy EC7401, EC7403

11/20 vendor recommand to reserve 5P

X01-0216 stuff EC7401~EC7410 for EMI



<Core Design>

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

Title: SD/XD/MS/MMC Card CONN

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 74 of 105

SSID = ExpressCard

<Core Design>

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

Title: Express Card

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 75 of 105

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DN15ATI Whistler

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

Title: ***Reserved***

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DN15ATI Whistler

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

Title: *Reserved*

Size: A3 | Document Number: *Enrico Caruso 14* | Rev: *A00*

Date: Wednesday, April 13, 2011 | Sheet 77 of 105

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DN15ATI Whistler

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

Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 78 of 105

SSID = User.Interface

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DN15ATI Whistler

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

Title: Free Fall Sensor

Size	Document Number	Rev
A3	Enrico Caruso 14	A00

Date: Wednesday, April 13, 2011 Sheet 79 of 105

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DN15ATI Whistler

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

Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 80 of 105

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DN15ATI Whistler

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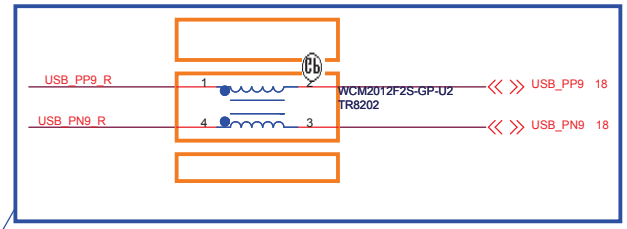
Taipei Hsien 221, Taiwan, R.O.C.

Title: Reserved

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 81 of 105

11/1 Stuff TR8201, TR8202 for EMI

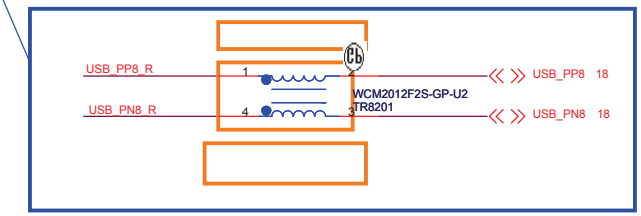


A00-0406 remove R8201, R8202, R8203, R8204 pad

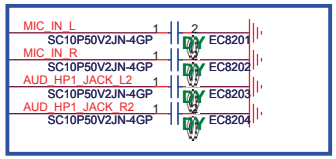
A00-0320 Change TR8201, TR8202 to 120ohm.

A00-0408 Swap net for layout

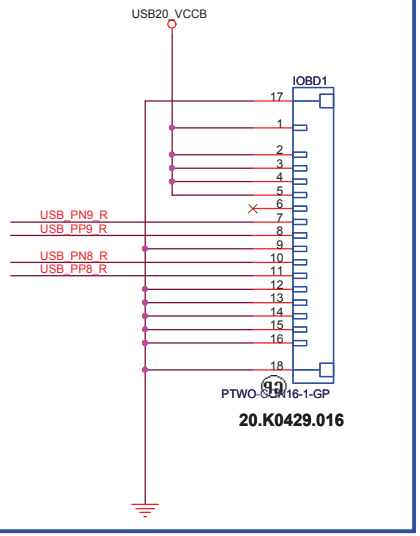
12/6 swap net for layout



11/1 Add EC2901~EC2904 for EMI request



IOBD1 is for USB board

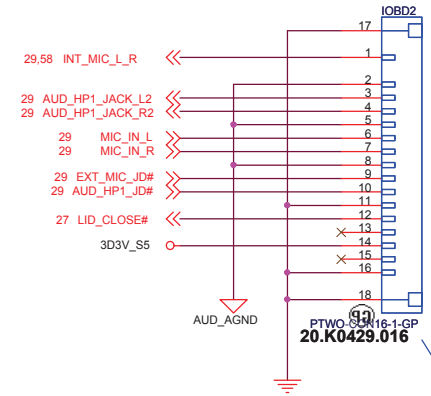


11/10 modify B2B CONN and pin define

X01-0214 add AFTP8201~8210

X02-0309 Del AFTP8201~8210

IOBD2 is for Audio board



X02-0309 Del AFTP8201~8210

12/10 Change pin defien for audio board routing smooth.

12/14 Change IOBD2 to 20.K0429.016 and change pin define.

<Core Design>

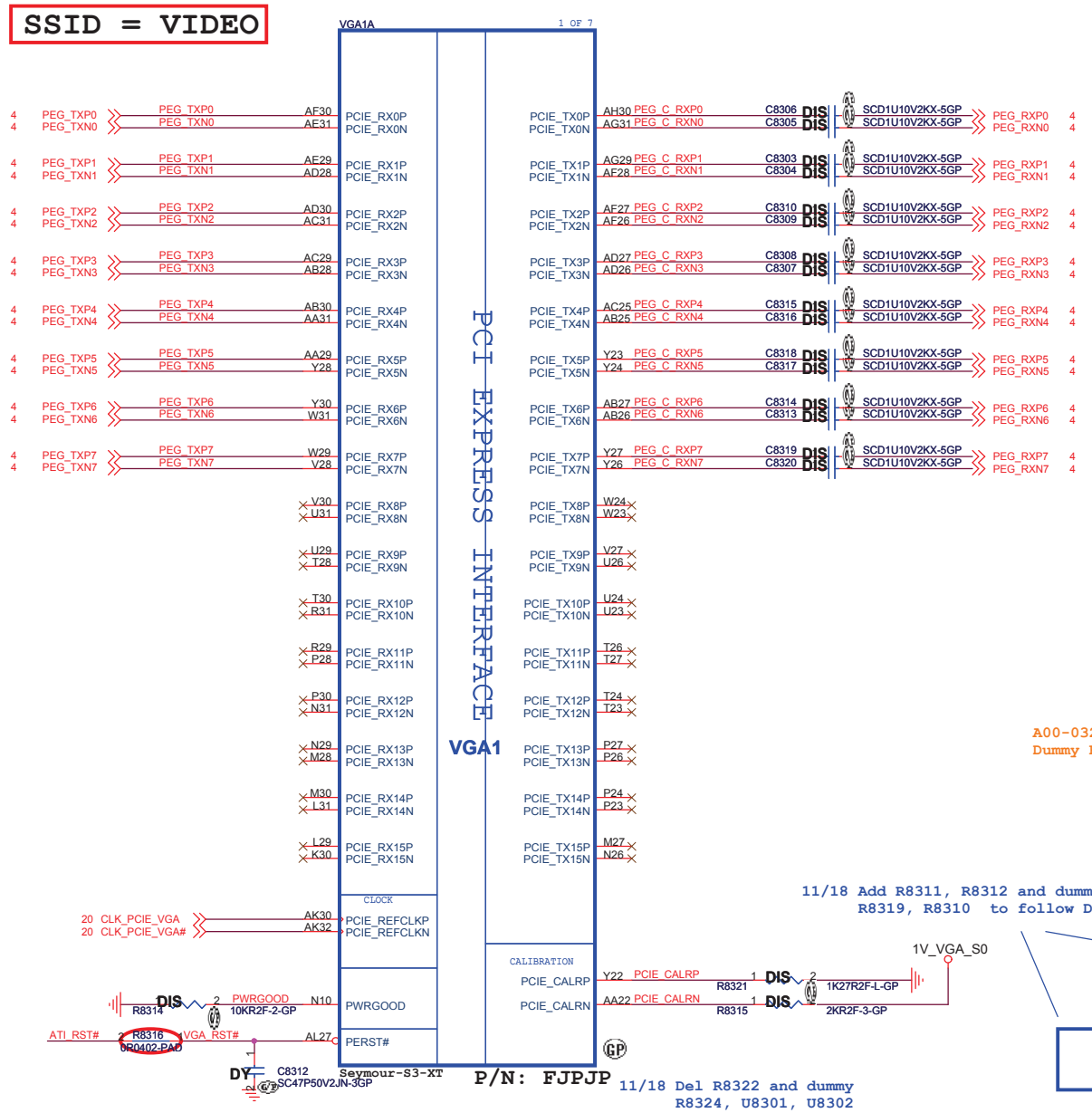
Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

Title: IO Board Connector

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 82 of 105

SSID = VIDEO



CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

RECOMMENDED SETTINGS
0= DO NOT INSTALL RESISTOR
1 = INSTALL 3K RESISTOR
X = DESIGN DEPENDANT
NA = NOT APPLICABLE

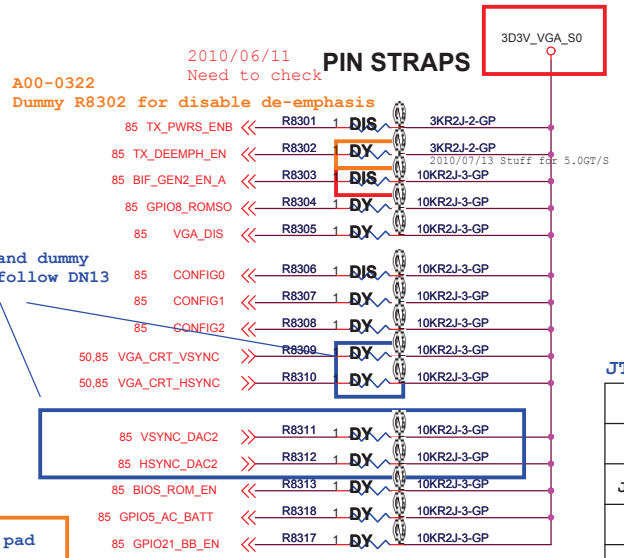
STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	RECOMMEND	PLATFORM SETTING
TX_PWRS_ENB	GPIO0	Transmitter Power Savings Enable 0: 50% Tx output swing 1: Full Tx output swing	X	1
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED 0:Tx de-emphasis disabled 1:Tx de-emphasis enabled	X	1
BIF_GEN2_EN_A	GPIO2	0:Advertises the PCIe device as 2.5GT/s capable at power on. 1:Advertises the PCIe device as 5.0GT/s capable at power on.	0	0
GPIO5_AC_BATT	GPIO5	optional input allow the system to request a fast power reduction by setting GPIO5 to low.	?	0
GPIO8_ROMSO	GPIO8	RESERVED	0	0
VGA_DIS	GPIO9	0:VGA Controller capacity enabled 1:The device won't be recognized as the system's VGA controller	0	0
ROMIDCFG[2:0]	GPIO[13:11]	BIOS_ROM_EN=1, Config[2:0] defines the ROM type BIOS_ROM_EN=0, Config[2:0] defines the primary memory aperture size	X X X	0 0 1 (256MB)
GPIO21_BB_EN	GPIO21	RESERVED	0	0
BIOS_ROM_EN	GPIO_22_ROMCSB	0:Disable external BIOS ROM device 1:Enable external BIOS ROM device	X	0
VIP_DEVICE_STRAP_EN	V2SYNC	VIP Device Strap Enable indicates to the software driver that it sense whether or not a VIP device is connected on the VIP Host interface.	X	0
RSVD	H2SYNC	RESERVED	0	0
RSVD	GENERICC	RESERVED	0	0
AUD[1]	HSYNC	AUD[1:0]:11-Audio for both DisplayPort and HDMI	X	1
AUD[0]	VSYNC		X	1

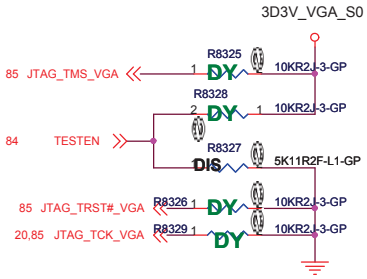
2010/06/11

2010/06/11
Need to check

PIN STRAPS

A00-0322
Dummy R8302 for disable de-emphasis





11/18 Add R8311, R8312 and dummy
R8319, R8310 to follow DN13

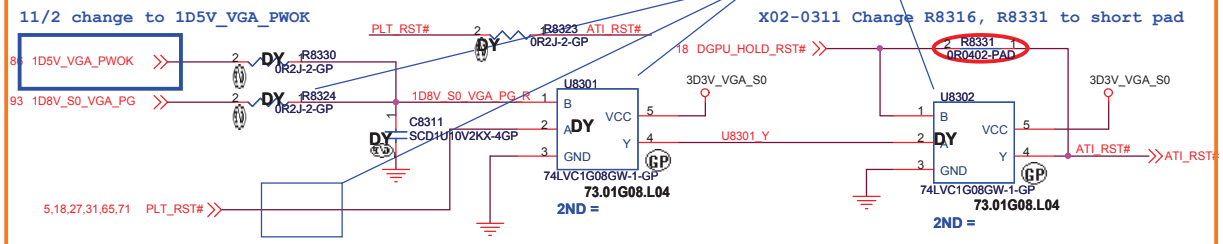
11/18 Del R8322 and dummy
R8324, U8301, U8302

JTAG SIGNAL OPTION

Signal	Normal mode	Debug mode	pilot run mode
TESTEN	"1"(PU)	"1"(PU)	"0"(PD)
JTAG_TRST#	"0"(PD)	"1"(PU)	NC
JTAG_TCK	CLK	"1"(PU)	NC
JTAG_TMS	"1"(PU)	"1"(PU)	NC

11/2 change to 1D5V_VGA_PWOK

X02-0311 Change R8316, R8331 to short pad



PE_GPIO0	
dGPU mode	H
IGPU	L
IGPU with BACO	H

<Core Design>

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

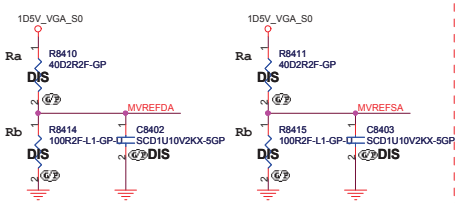
Title: GPU_PCIE/STRAPPING(1/5)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 83 of 105

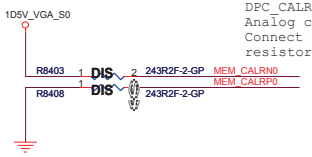
SSID = VIDEO

PLACE MVREF DIVIDERS AND CAPS CLOSE TO ASIC

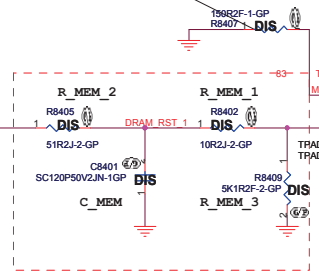


DDR3/GDDR3 Memory Stuff Option (ROBSON-S3/SEYMOUR-XT-S3)

	DDR5	DDR3
MVDDQ	1.5V	1.5V/1.8V
Ra	40.2R	40.2R
Rb	100R	100R



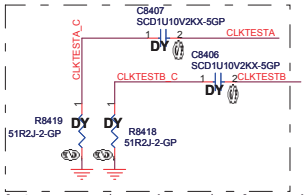
DPC_CALR (Park/Robson-S3):
Analog calibration.
Connect DPxx_CALR to GND through a 150- (1%) resistor.



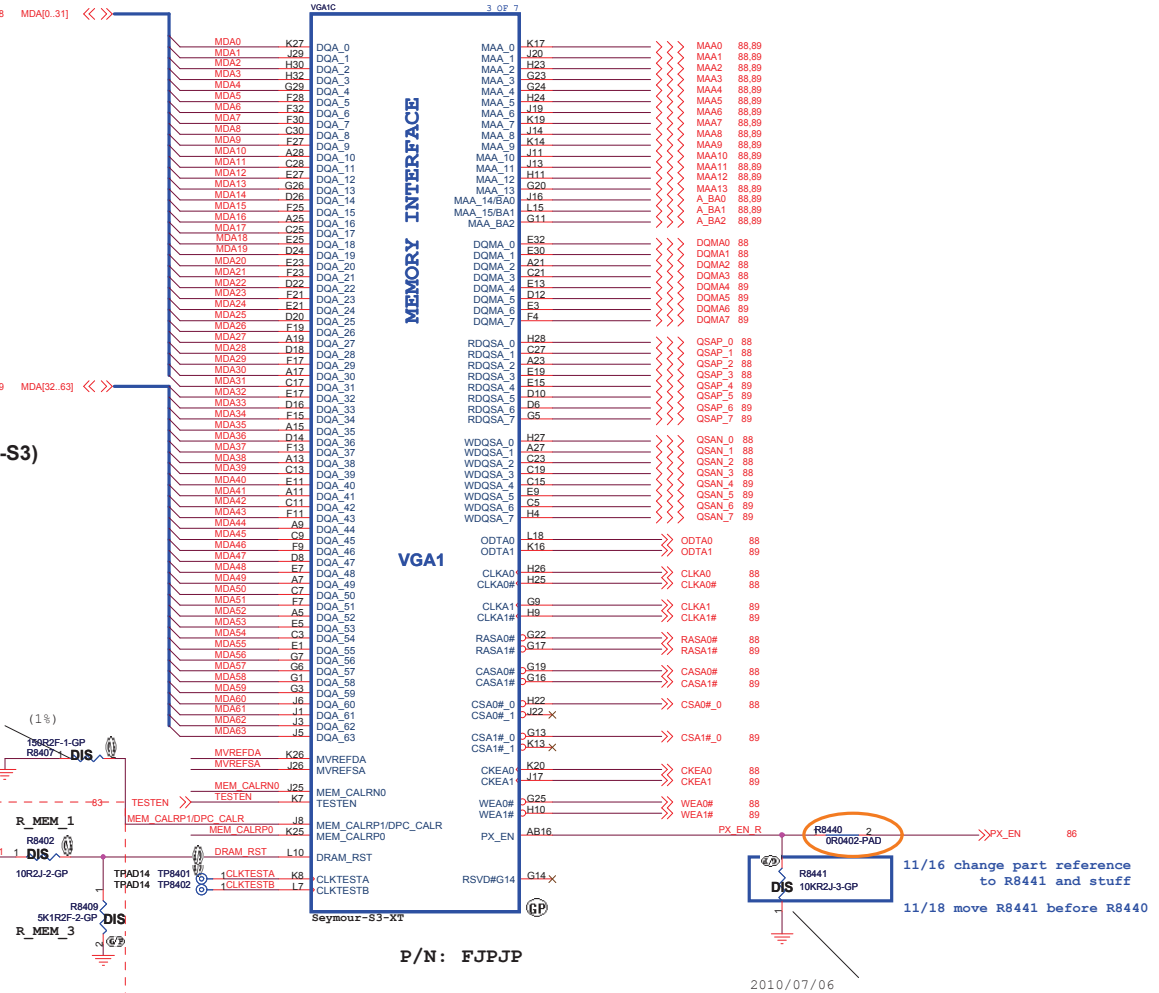
Place all these components very close to GPU (Within 25mm) and keep all component close to each Other (within 5mm) except R_MEM_2

**This basic topology should be used for DRAM_RST for DDR3/GDDR3/GDDR5.These Capacitors and Resistor values are an example only. The Series R and || Cap values will depend on the DRAM load and will have to be calculated for different Memory ,DRAM Load and board to pass Reset Signal Spec.

Designator	For SEYMOUR	For Robson
R_MEM_1	10R	10R
R_MEM_2	50R	50R
R_MEM_3	5K	5K
C_MEM	120pF	120pF



For normal GPU operation, these signals can be left floating (do not populate the capacitors and resistors).



DN15ATI Whistler

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

Title: GPU Memory(2/5)
Size: Custom | Document Number: Enrico Caruso 14 | Rev: A00
Date: Wednesday, April 13, 2011 | Sheet 84 of 105

MEMORY ID Table

DVPDATA[3:0]	Description
0000	DDR3 SAMSUNG-K4W1G1646G-BC11(900MHz)64M*16
0001	DDR3 Hynix-H5TQ1G63DFR-11C (900MHz) 64M*16
0010	DDR3 SAMSUNG K4W2G1646C-HC11 (900MHz) 128M*16
0011	DDR3 Hynix-H5TQ2G63BFR-11C (900MHz) 128M*16

DVPDATA[0:3] Default:Pull down

SSID = VIDEO

For Seymour,
DPC_PVDD is DPC_VDD18 2010/06/11
DPC_PVSS and all DPC_VSSR are DP_VSSR

2010/07/15 Modify:
Q8501 change to dual 2n7002.
Add R8512,R8521,C8529 for Q8501 pin2 turn on timming control.

X01: dummy VGA thermal circuit based on DN15

11/18 Del C8529 to follow DN13

GPIO_6,GPIO_15_PWRCNTL_0,GPIO_16_SSIN,GPIO_20_PWRCNTL_1:
Voltage control signals for the core (VDDC and VDDCI).
At Reset, these signals will be inputs with weak internal pull-down resistors.
VBIOS can define all voltage control signals to be either 3.3-V or open drain outputs (all signals must be the same type). The output state (high/low) of these signals is programmable for each PowerPlay state.

12/17 dummy R8523 for panel interface unused.

2010/07/07
Change to RSVD based on DS v3.05

PLACE VREFG DIVIDER AND CAP CLOSE TO ASIC

11/18 Del 27M CLK circuit from PCH

2010/07/06
Schematics check list:
A 1~M ohm resistor must be connected between XTALIN and XTALOUT when a crystal is used.

Clock Input Configuraiton -GDDR3/DDR3
a) 27MHz crystal connected to XTALIN or XTALOUT or
b) 27MHz (1.8V) oscillator connected to XTALIN or
c) 27MHz (3.3V) oscillator connected to XO_IN (Park, Madison, and Broadway only)

11/2 Stuff X8501, R8502
C8524, C8525

11/29 change X8501 to 82.30034.641

0923 Modify for DV14 Config

MEM_ID Control

2010/06/11

2010/07/07 Remove TP8517,TP8518,TP8506,TP8519,TP8512

Vendor suggest to reserve test point 09/06

12/20 NC R-,G-,B- on SSI and try to co-layout with Rosbson in PT stage

12/20 Add R8504 for Robson.

12/9 chnage R8501 to ROB

0723 Add SMBUS

AUXP PD 100K
AUXN PD 100K
Draw on EDP circuit page

12/16 change R8507, R8505 and R8513 to ROB

Change to DY 9/20

Modified 9/1

P/N: FJPJP

P/N: FJPJP

LVDS Interface

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

Title: GPU_DP/LVDS/CRT/GPIO(3/5)
Size: A2 | Document Number: Enrico Caruso 14 | Rev: A00
Date: Wednesday, April 13, 2011 | Sheet 85 of 105

SSID = VIDEO

12/28 Yellow mark for OPI change

12/6 remove tp8604, 8605

12/2 change property to EMI for BOM control

12/28 Yellow mark for OPI change

Close to VGA pin R21, U21

X01: add capacity for BIF_VDDC

2010/06/17_1

Rds(on) = 1ow
VGS=0.7~1.5V

AO4468 MAX 3.1A
Rds(on) = 101~155mOhm
VGS=+/-12V

Change polarity , switch pin D and pin S. 9/6

X02-0302 Add R8605, R8609 PU 5V for lower Rdson

X01: modify to DGPU_PWROK

12/16 dummy U8605 and stuff R8601 to follow standard schematic.

2010/07/08

1D5V_VGA_PWOK

11/18 dummy 1D5V_VGA_PWOK circuit

11/2 change net name to 1D5V_VGA_PWOK

Non-BACO= HIGH
BACO = LOW

	PX_EN	8209A_EN/DEM_VGA	1D5V_VGA_PWOK_R	PX_EN#	PX_EN##
Non-BACO	0	1	1	0	1
BACO	1	0	0	1	0

PX_EN# = High, BIF_VDDC = 1V_VGA_S0
PX_EN## = High, BIF_VDDC = VGA_CORE

P/N: FJPJP

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

Title: GPU_POWER(4/5)
Size: A2
Document Number: Enrico Caruso 14
Rev: A00
Date: Wednesday, April 13, 2011
Sheet 86 of 105

SSID = VIDEO

Vendor suggest
09/23

LVDS mode(1.8V@440mA DPEF_VDD18)
DP mode(1.8V@300mA DPEF_VDD18)

LVDS mode(1V@240mA DPEF_VDD10)
DP mode(1V@220mA DPEF_VDD10)

2010/07/09 N11 and N12: in Seymour is NC

Vendor suggest
09/23

(1.8V@300mA DPAB_VDD18)

(1.0V@220mA DPAB_VDD10)

Vendor suggest
9/23

(1.8V@150mA DPB_VDD18)

11/18 Del R8709, C8710,C8711

P/N: FJPJP

P/N: FJPJP

<Core Design>

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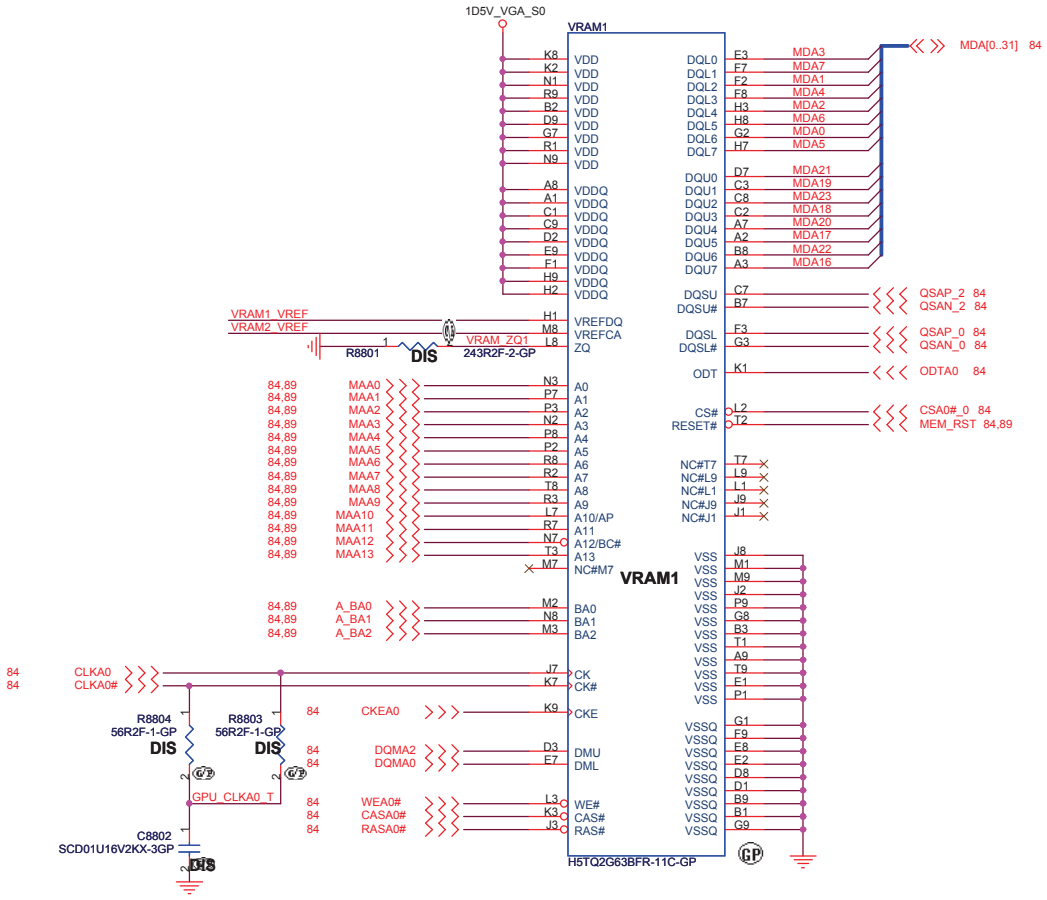
Taipei Hsien 221, Taiwan, R.O.C.

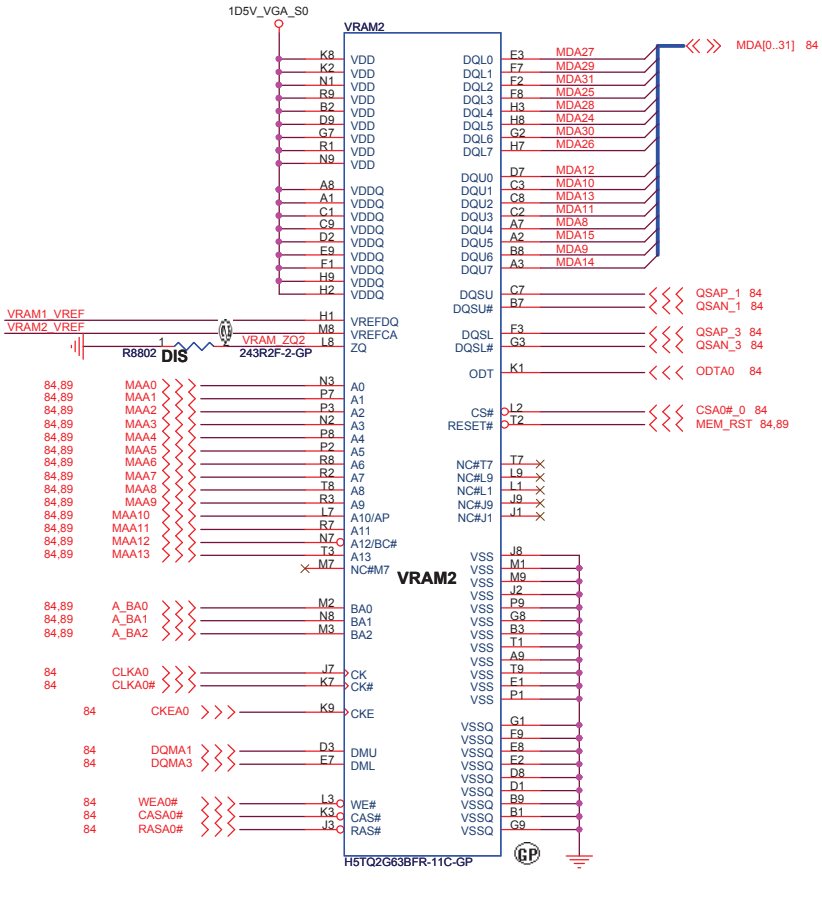
Title: GPU_DPPWR/GND(5/5)

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

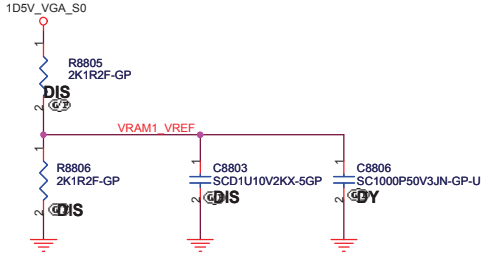
Date: Wednesday, April 13, 2011 | Sheet 87 of 105

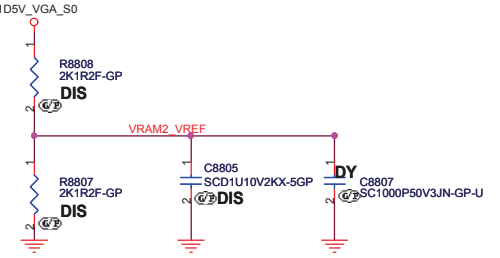
SSID = VIDEO





X01-0211 change VRAM symbol for layout (larger package)





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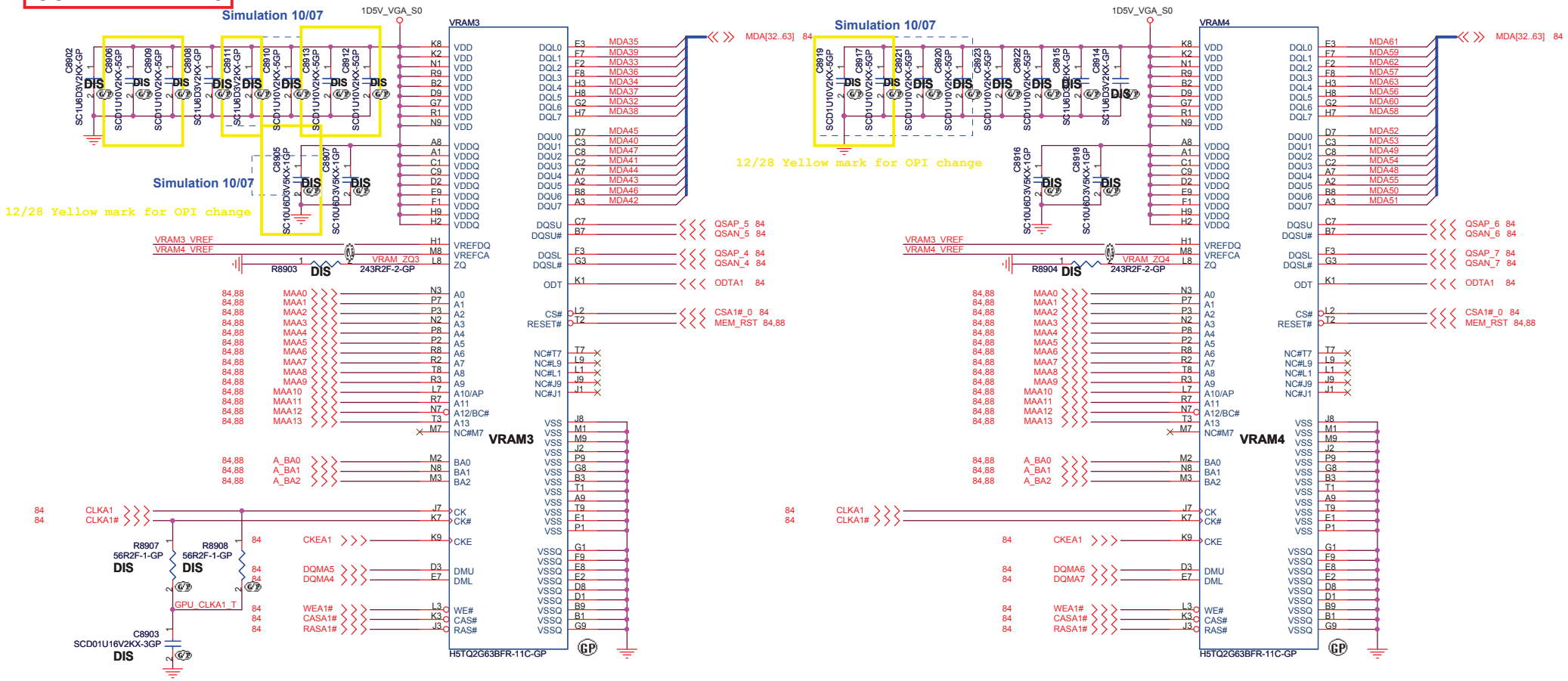
Taipei Hsien 221, Taiwan, R.O.C.

Title: GPU-VRAM1,2 (1/4)

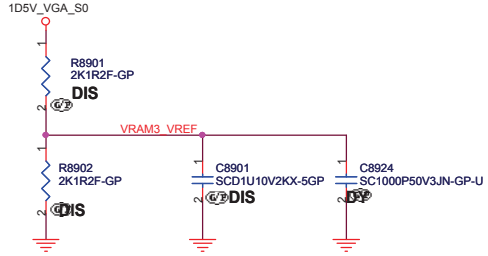
Size: Custom | Document Number: Enrico Caruso 14 | Rev: A00

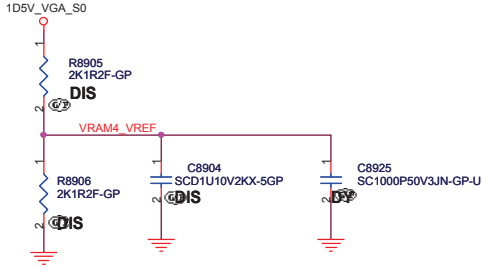
Date: Wednesday, April 13, 2011 | Sheet 88 of 105

SSID = VIDEO



X01-0211 change VRAM symbol for layout (larger package)





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Title: GPU-VRAM3,4 (2/4)

Size: Custom | Document Number: Enrico Caruso 14 | Rev: A00

Date: Wednesday, April 13, 2011 | Sheet 89 of 105

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Title: *GPU-VRAM5,6 (3/4)*

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Title: *GPU-VRAM7,8 (4/4)*

Size	Document Number	Rev
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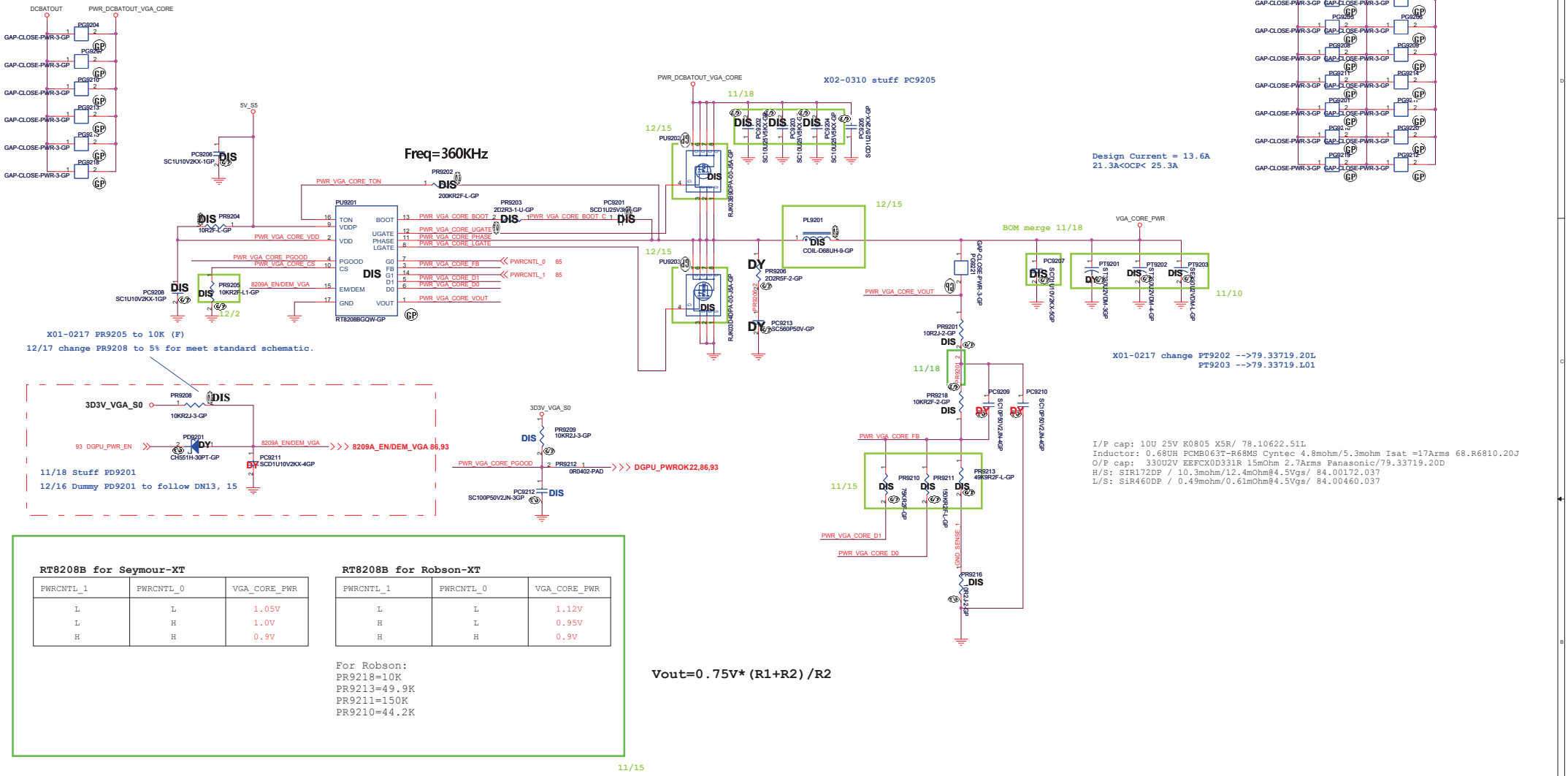
SSID = PWR.Plane.Regulator_VGACORE



RT8208B for Seymour-XT

PWRCNTL_1	PWRCNTL_0	VGA_CORE_PWR
L	L	1.05V
L	H	1.0V
H	H	0.9V

RT8208B for Robson-XT

PWRCNTL_1	PWRCNTL_0	VGA_CORE_PWR
L	L	1.12V
H	L	0.95V
H	H	0.9V

<Core Design>

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Title: RT8208B +VGA_CORE

Size: A2 | Document Number: Enrico Caruso 14 | Rev: A00

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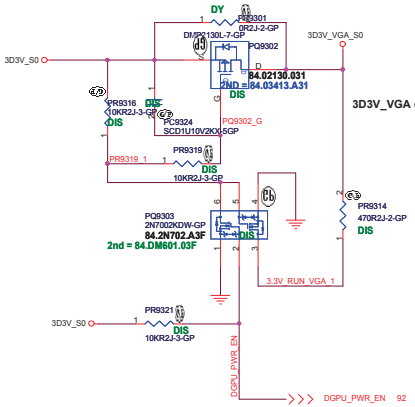
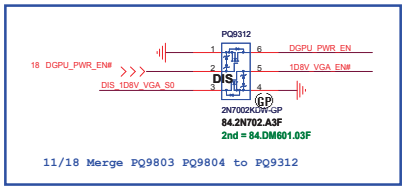
3D3V_S0 to 3D3V_VGA_S0 Transfer

Change DUMMY Reference Name to PX_BACO

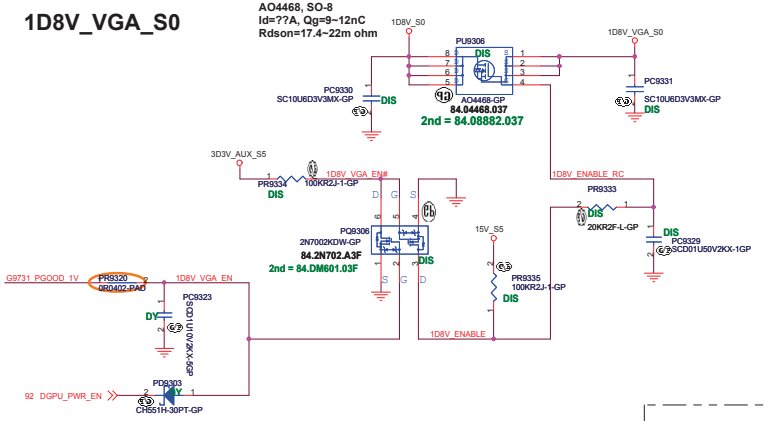


DGPU_PWR_EN#	
dGPU mode	L
IGPU	H
IGPU with BACO	L

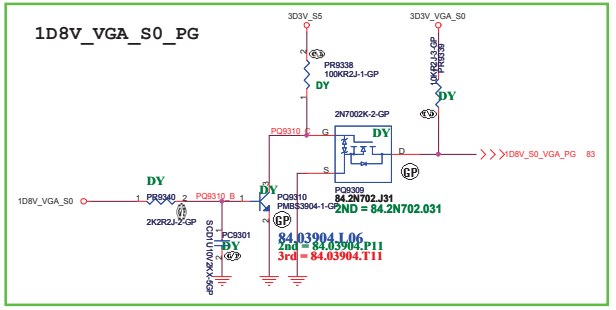


1D8V_VGA_S0

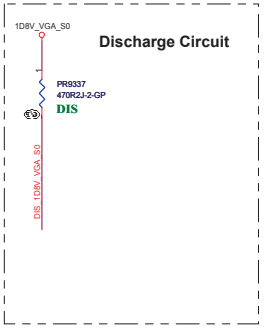
AO4468, SO-8
Id=??A, Qg=9~12nC
Rdson=17.4~22m ohm



1D8V_VGA_S0_PG



Discharge Circuit



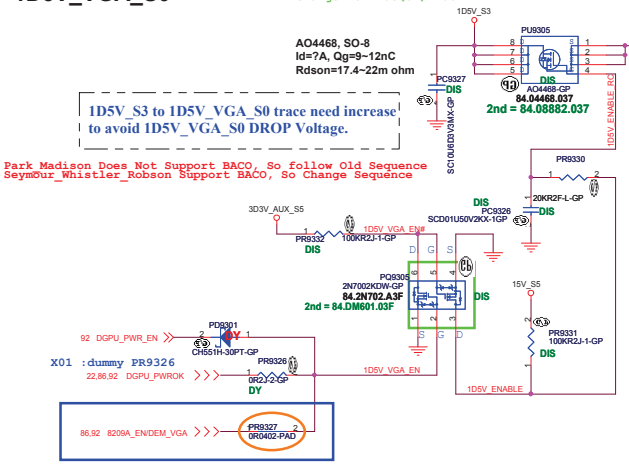
1D5V_VGA_S0

change low Rds(on) MOSFET

AO4468, SO-8
Id=?A, Qg=9~12nC
Rdson=17.4~22m ohm

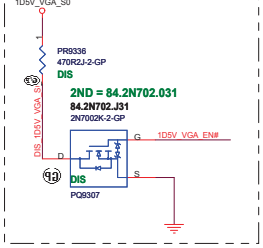
1D5V_S3 to 1D5V_VGA_S0 trace need increase to avoid 1D5V_VGA_S0 DROP Voltage.

Park Madison Does Not Support BACO, So follow Old Sequence
Seymour_Whistler_Robson Support BACO, So Change Sequence



11/18 Add PR9327 for 8209A_EN/DEM_VGA turn on 1D5V_VGA_S0 power.

Discharge Circuit



G9731 for 1V_VGA_S0

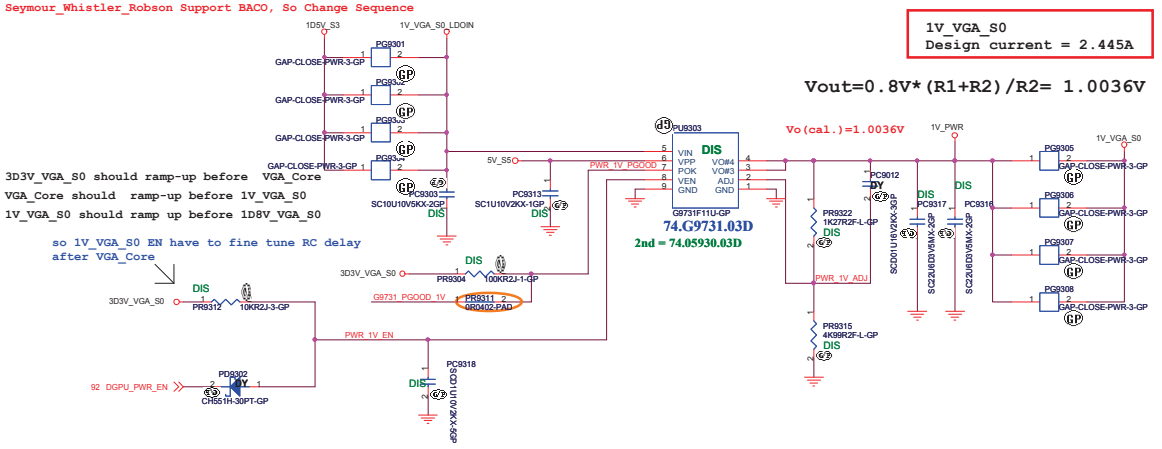
Park_Madison Does Not Support BACO, So follow Old Sequence
Seymour_Whistler_Robson Support BACO, So Change Sequence

3D3V_VGA_S0 should ramp-up before VGA_Core
VGA_Core should ramp-up before 1V_VGA_S0
1V_VGA_S0 should ramp up before 1D8V_VGA_S0

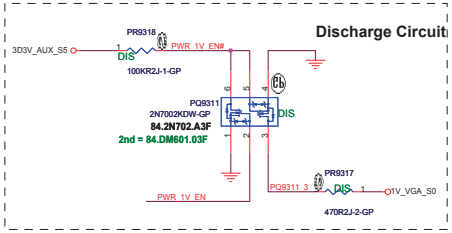
so 1V_VGA_S0 EN have to fine tune RC delay after VGA_Core

1V_VGA_S0
Design current = 2.445A

Vout=0.8V*(R1+R2)/R2= 1.0036V



Discharge Circuit



<Core Design>

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Title: DISCRETE VGA POWER

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DN15ATI Whistler

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Title: *LVDS_Switch*

Size	Document Number	Rev
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DN15ATI Whistler

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Title: CRT_Switch		
Size: A3	Document Number: Enrico Caruso 14	Rev: A00
Date: Wednesday, April 13, 2011	Sheet 95 of 105	

SSID = SDIO

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DN15ATI Whistler

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Title: TOUCH PANEL

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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SSID = Mechanical

H1 HT85BE85R29-U-5-GP
H2 HOLE256R115-GP
H3 HT85BE85R29-U-5-GP
H4 HT85BE85R29-U-5-GP
H5 HT85BE85R29-U-5-GP
H6 HT85BE85R29-U-5-GP
H7 HT85B95X975R29-S-GP

X01-0208 stuff SPR1 and add SPR2

SPR1 SPRING-62-GP
34.39S07.003

A00-0406 dummy SPR2
SPR2 SPRING-58-GP
34.4B312.002
X02-0314 stuff SPR2

12/17 add SPR1 for EMI
12/21 change SPR1 to 34.4B312.002
12/22 change SPR1 to 34.39S07.003

X01-0211 change SPR2, SPR3 to 34.4B312.002
X01-0210 add SPR3

SPR3 SPRING-58-GP
34.4B312.002

SPR4 SPRING-13-GP-U
34.43E24.001
SPR5 SPRING-13-GP-U
34.43E24.001

X01-0211 add SPR4, SPR5

For CPU BRACKET

H8 HOLE197R166-1-GP
H9 HOLE197R166-1-GP
H10 HOLE197R166-1-GP

VGA Stand-Off

H11 STF237R117H83-1-GP
DIS

PCH Stand-Off

H12 STF217R113H162-GP
H13 STF237R117H83-1-GP
DY

A00-0412 dummy H12, H13 for remove PCH Heatsink
A00-0413 change H12 to 34.4HL17.001

12/2 Delete SPR1, SPR2

DCBATOUT
EC9701 EC9702 EC9703 EC9704 EC9705 EC9706 EC9707 EC9708 EC9709 EC9710 EC9711 EC9712 EC9713 EC9714 EC9715 EC9716 EC9717 EC9718 EC9719
SCD1U25V2KX-GP

5V_S5
X02-0314 stuff EC9722
EC9720 EC9721 EC9722 EC9723 EC9724 EC9725 EC9726
SCD1U25V2KX-GP

PWR_3D3V_DCBATOUT
EC9727
SCD1U25V2KX-GP
12/15 Stuff EC9727

3D3V_S5
EC9728
SCD1U25V2KX-GP

1D5V_S3
EC9729 EC9730 EC9731
SCD1U25V2KX-GP

VCC_GFXCORE
EC9732
SCD1U25V2KX-GP

VCC_CORE
EC9733 EC9734 EC9735 EC9736 EC9737
SCD1U25V2KX-GP

1D05V_VTT
EC9738 EC9739
SCD1U25V2KX-GP

5V_S5
EC9740
SCD1U25V2KX-GP
3D3V_S5

BT+
EC9741
SCD1U25V2KX-GP
12/17 Add EC9741

12/6 Add EMI capacities
12/20 change EMI caps to 0402 package

AUD_AGND
EC9742 EC9743 EC9744 EC9745 EC9746
SCD1U10V2KX-5GP

X01-0208 add EC9742~EC9746

<Core Design>

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Title: UNUSED PARTS/EMI Capacitors
Size: A3
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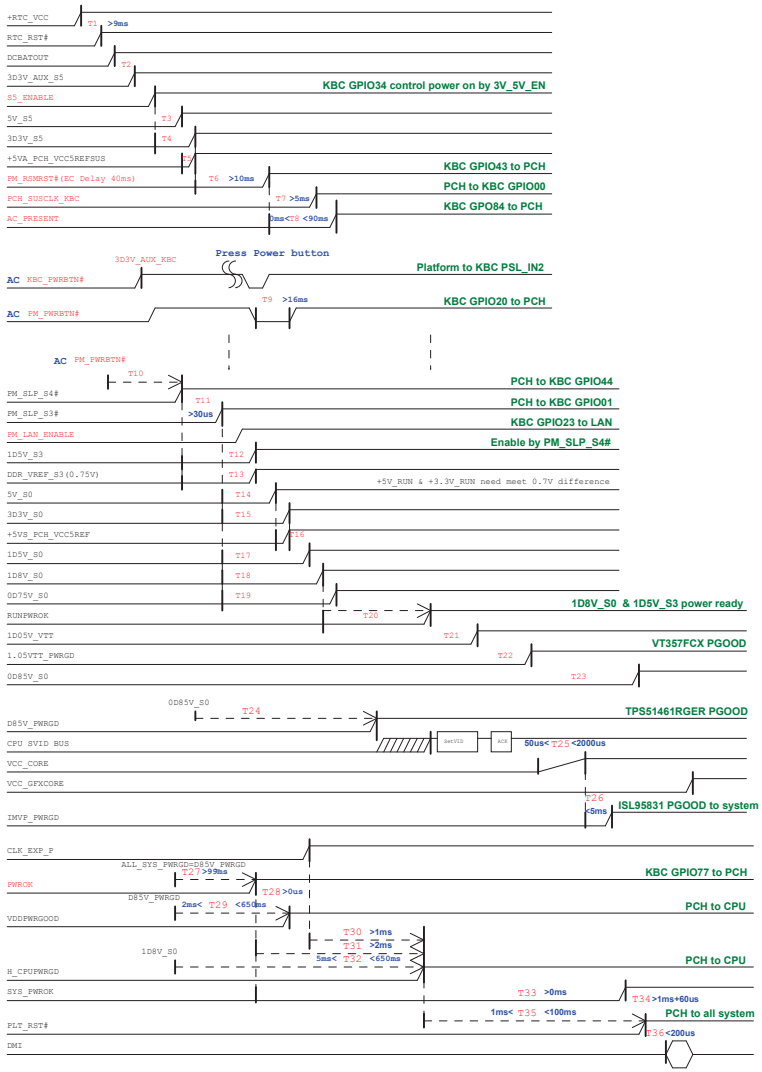
Huron River Platform Power Sequence

(AC mode)

red word: KBC GPIO



Within logic high level and disable if it is less than the logic low level.

VSREF_fus must be powered up before Vccdmi3_1, or after Vccdmi3_3 within 0.7 V. Also, VSREF_fus must power down after Vccdmi3_1, or before Vccdmi3_3 within 0.7 V.

Not floating.

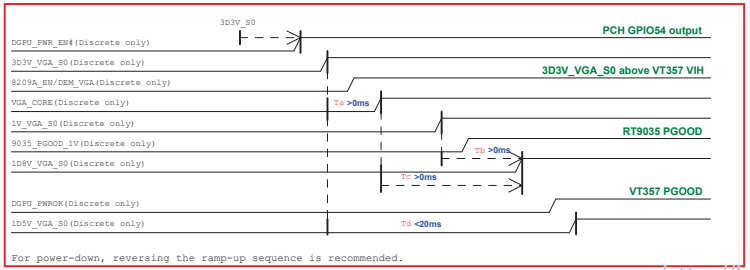
Sense the power button status

This signal has an internal pull-up resistor and has an internal 16 ns de-bounce on the input.

VSREF must be powered up before Vccd_h, or after Vccd_3 within 0.7 V. Also, VSREF must power down after Vccd_h, or before Vccd_3 within 0.7 V.

This signal represents the Power Good for all the non-CORE and non-graphics power rails.

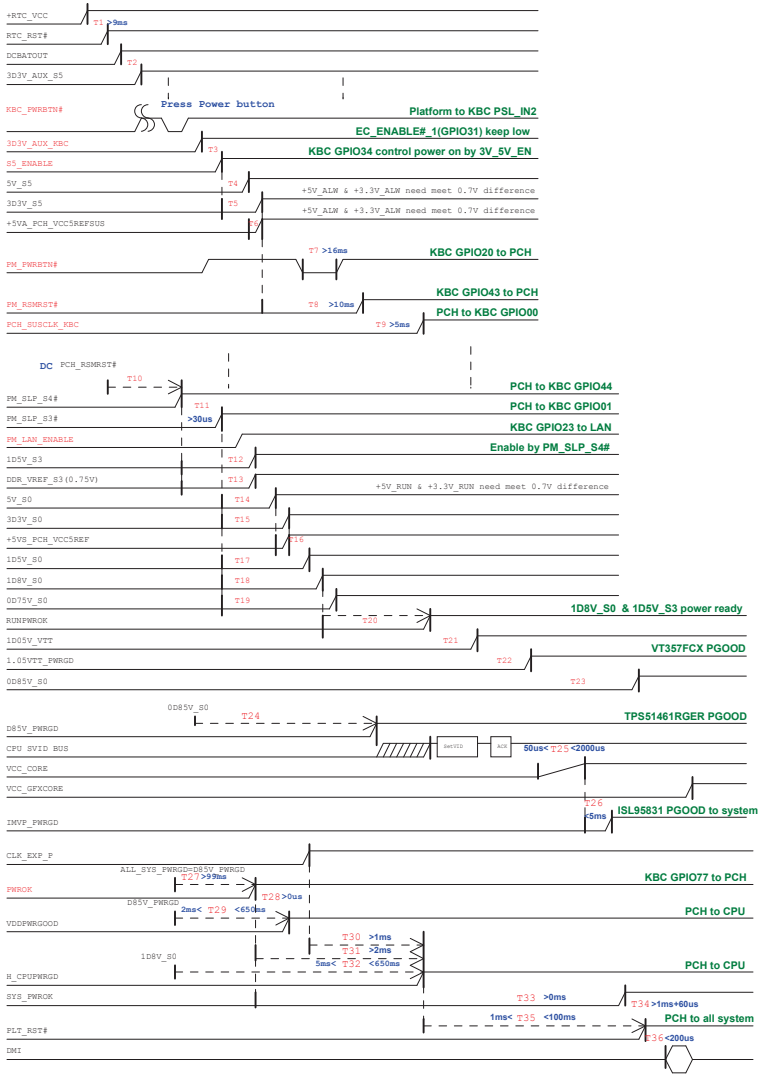
Robson XT Power-Up/Down Sequence



For power-down, reversing the ramp-up sequence is recommended.

(DC mode)

red word: KBC GPIO



Sense the power button status

VSREF_fus must be powered up before Vccd_h, or after Vccd_3 within 0.7 V. Also, VSREF must power down after Vccd_h, or before Vccd_3 within 0.7 V.

This signal represents the Power Good for all the non-CORE and non-graphics power rails.

<Core Design>

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Title: Power Sequence

Size: A1 | Document Number: Enrico Caruso 14 | Rev: A00

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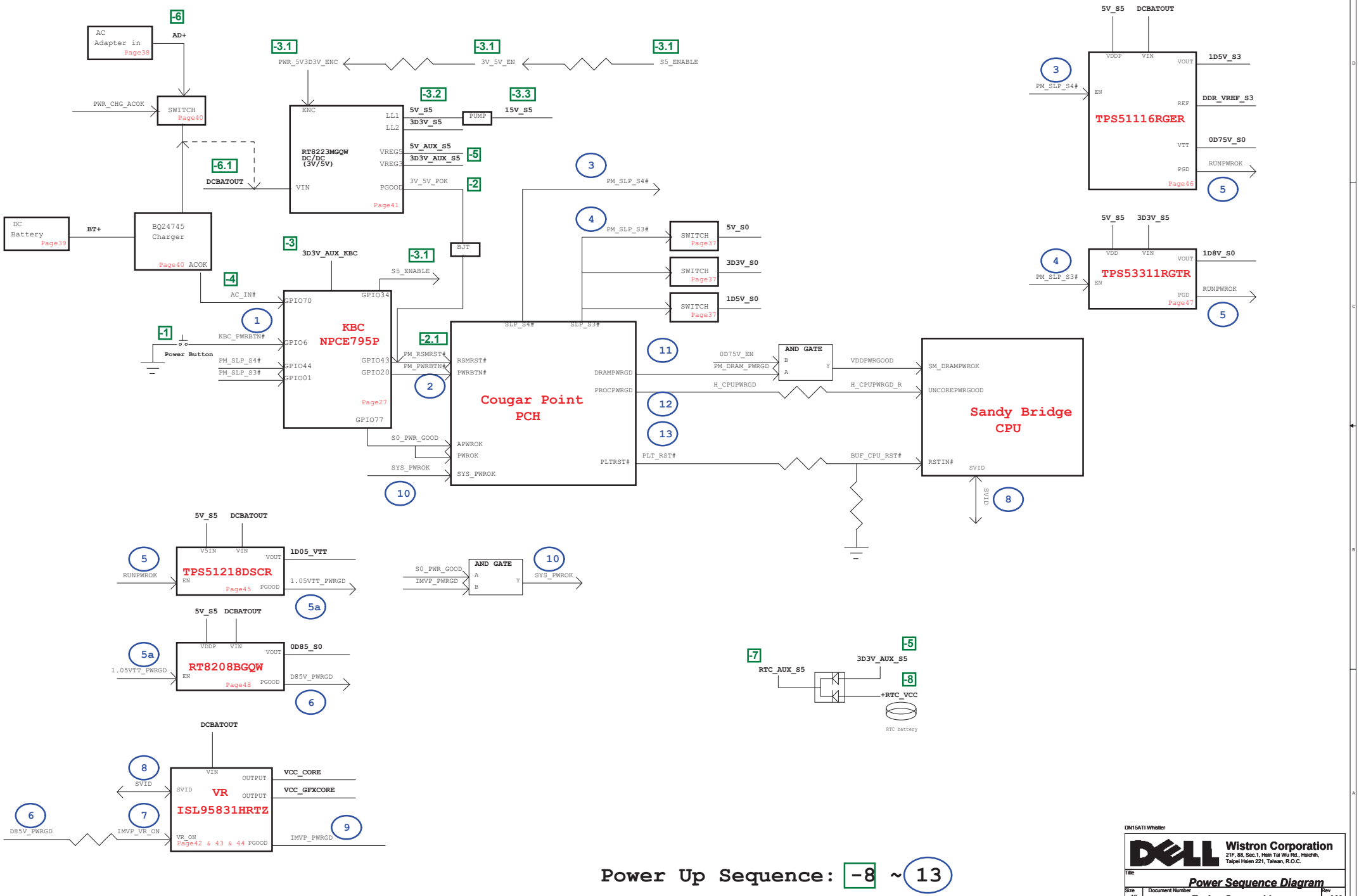
Wistron HURON RIVER POWER UP SEQUENCE DIAGRAM



Power Up Sequence: -8 ~ 13

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Title: Power Sequence Diagram

Size: A2 | Document Number: Enrico Caruso 14 | Rev: A00

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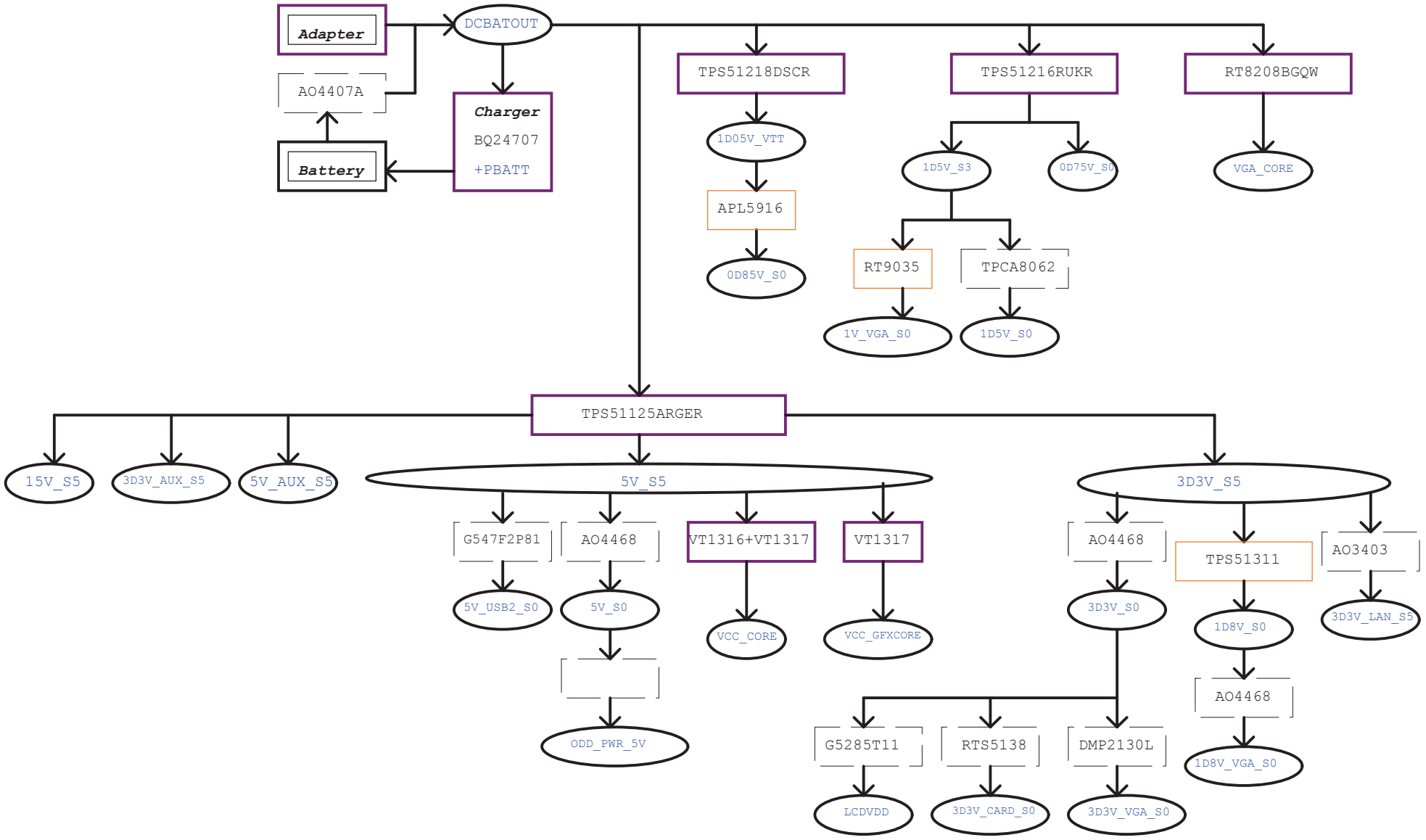

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Title: Power Block Diagram

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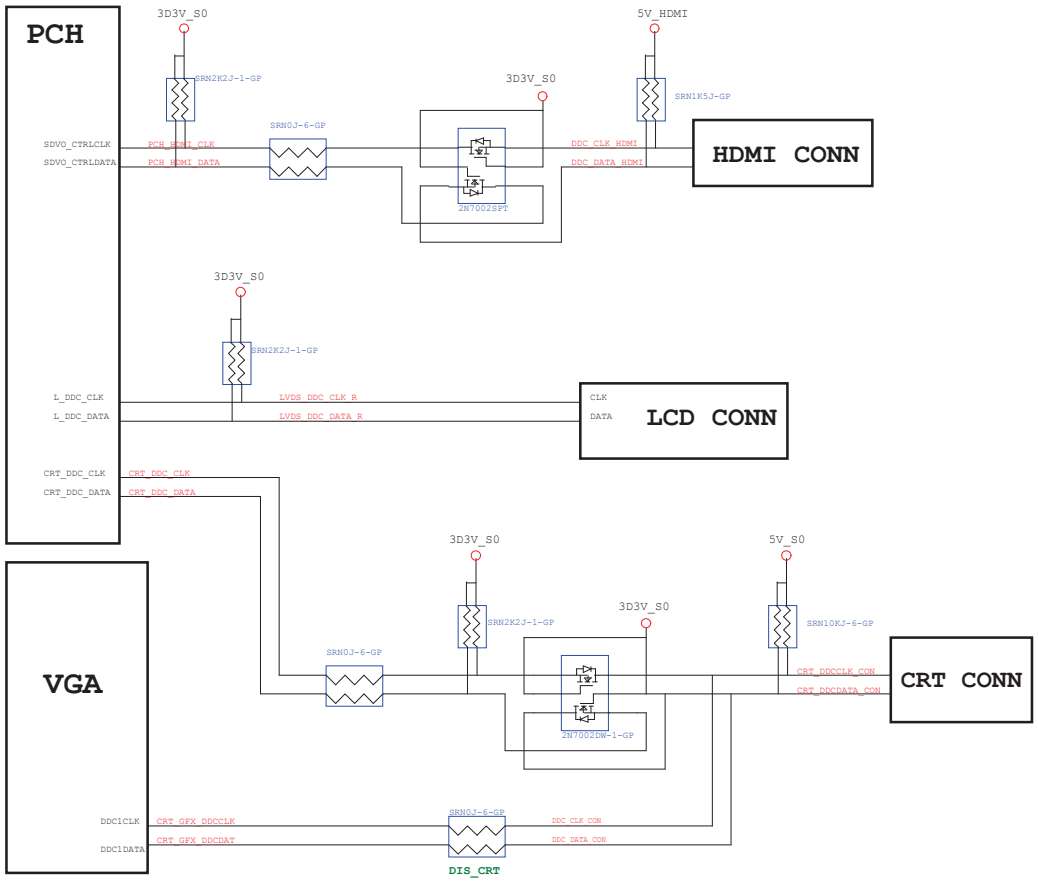
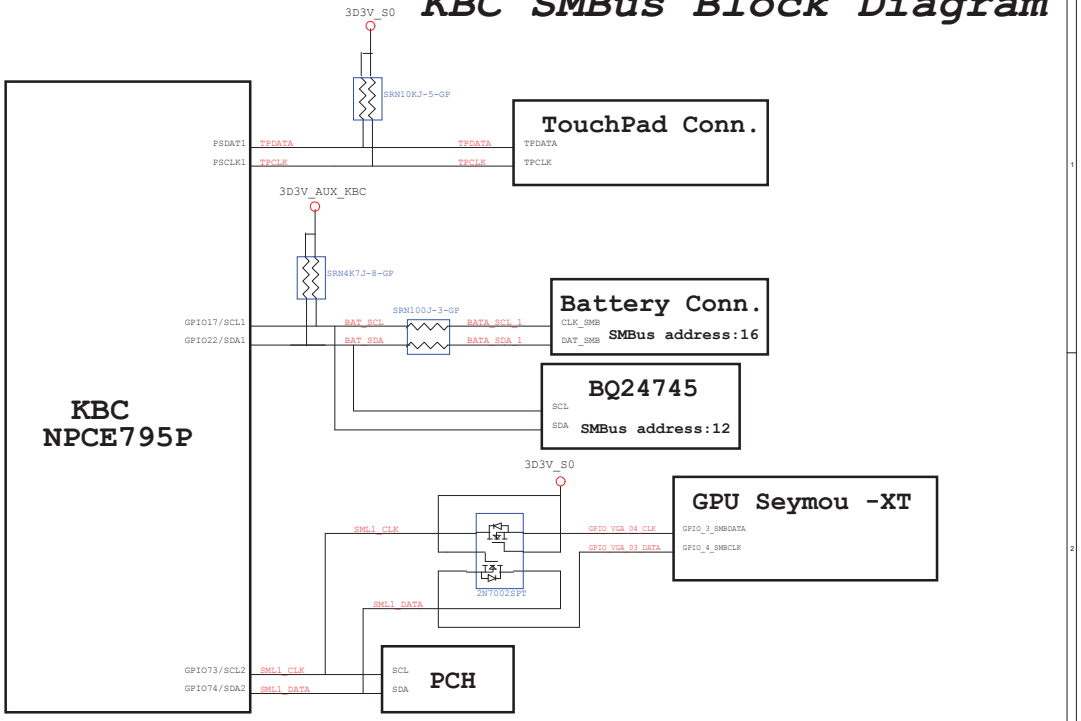
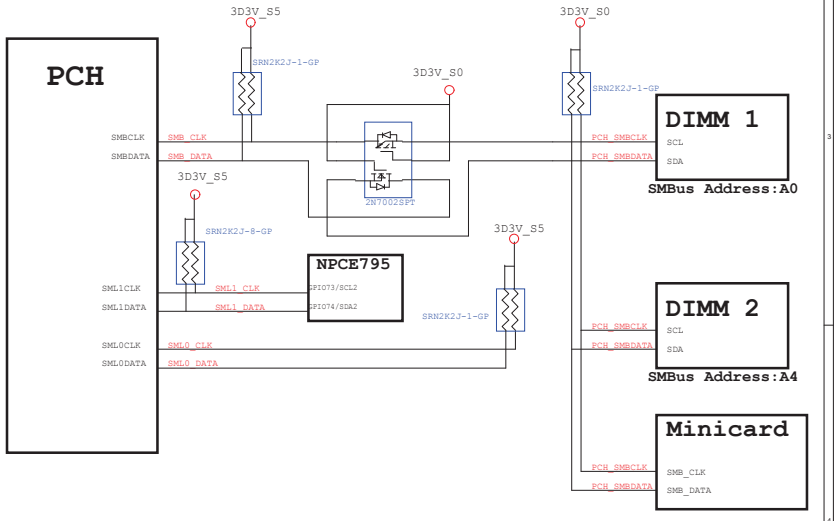
PCH SMBus Block Diagram



KBC SMBus Block Diagram





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Title: SMBUS Block Diagram

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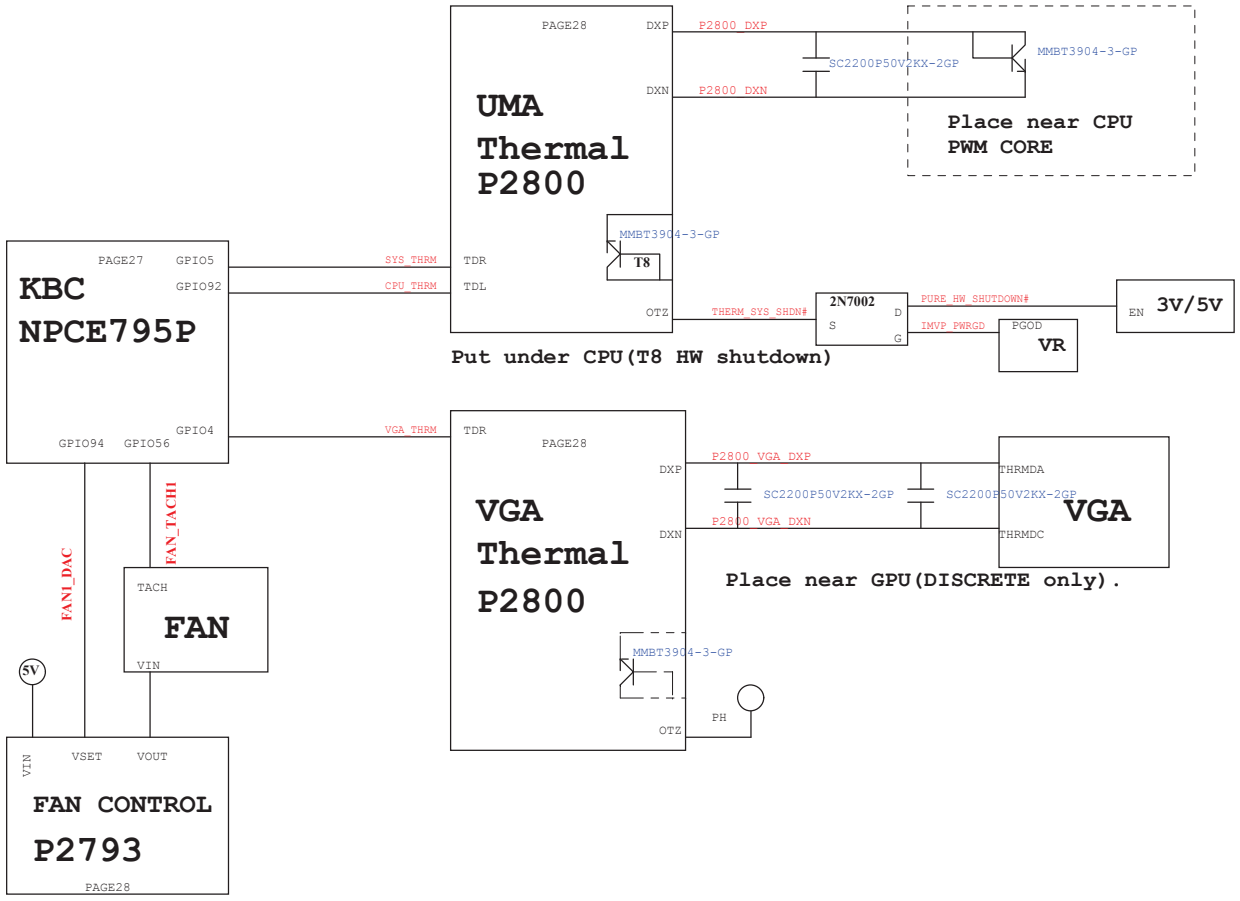
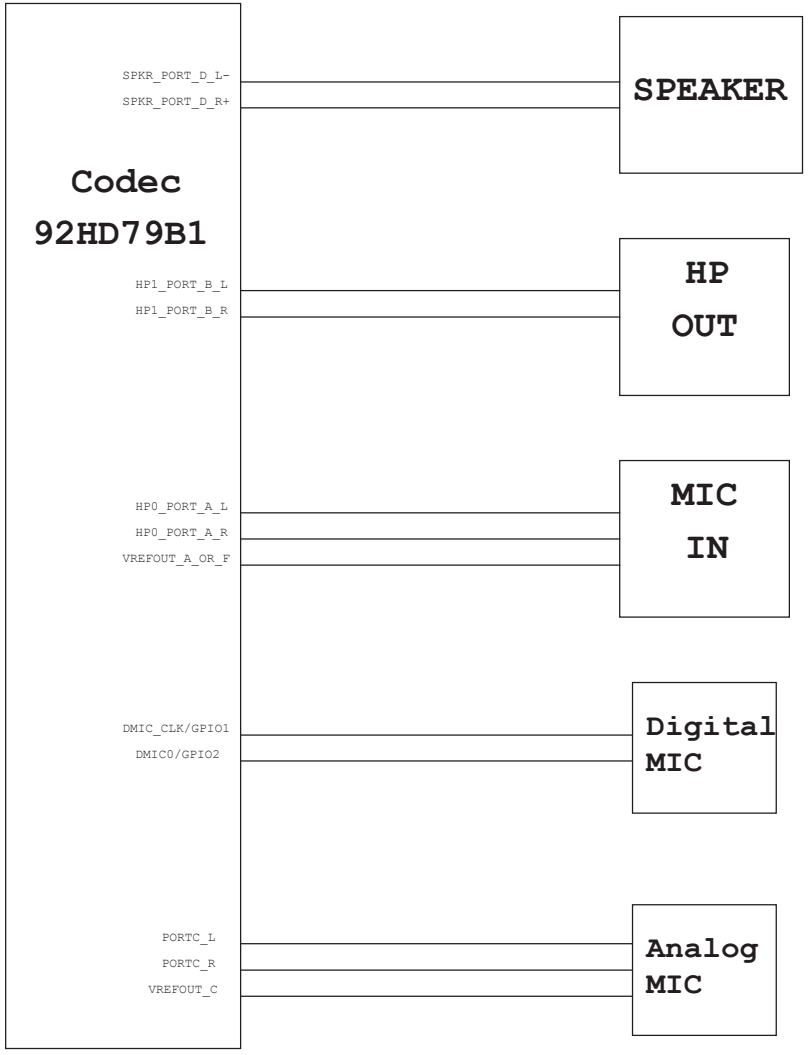
Thermal Block Diagram



Audio Block Diagram



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

Title: Thermal/Audio Block Diagram

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DATA	PAGE	Change Description	Version
12/28	85	dummy VGA thermal circuit	X01
12/28	86	modify to DGPU_PWROK	X01
12/28	86	add capacity for BIF_VDDC	X01
12/28	93	dummy PR9326	X01
1/14	93	modify CS#, WP#	X01
1/27	5	Add C504 for noise couple.	X01
1/27	8	Stuff C812, C822, C831, C834 for VCC core noise issue.	X01
1/27	27	Del R2757 to follow standard 10mW circuit	X01
1/27	31	change Q3101 base power rail for leakage issue.	X01
1/27	40	X01-0127 DY PQ4007, PR4038, PR4039 for new version BQ24707	X01
2/8	21	Add RN2101, R2127 for LPC EA result	X01
2/8	27	Dummy R2769	X01
2/8	50	change R5002, R5003 to 33R	X01
2/8	69	TPAD1 to 20.K0464.004	X01
2/8	27	change R5002, R5003 to 33R	X01
2/8	97	add EC9742~EC9746	X01
2/8	97	stuff SPR1 and add SPR2	X01
2/9	28	dummy U2805 circuit	X01
2/9	46	PT4603 UMA-->220uF DIS-->470uF	X01
2/9	48	dummy PC4809 for BBU result.	X01
2/10	5	Merge R512 R514	X01
2/10	21	change RN2101 to RN2104 RN2105	X01
2/10	27	change R2724 to meet X01 PCB ver	X01
2/10	46	del PT4602	X01
2/10	46	change PC4610 from 0.22uF to 10uF	X01
2/10	97	add SPR3	X01
2/10	21	Merge R5115 R2116	X01
2/11	31	add C3122 for soft-sart	X01
2/11	59	Add EMI solution for Surge	X01
2/11	19,27	Change R1925, R1924, R1906, R1913, R2720, R2758, R2759, R2760 to short-pad	X01
2/14	82	add AFTP8201~8210	X01

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Title: Change History

Size: A3 | Document Number: Enrico Caruso 14 | Rev: A00

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DATA	PAGE	Change Description	Version
0212	40	Change charger IC to new version	X01
0302	31	Dummy PCIE_CLK_LAN_REQ# circuit	X02
0302	86	Add R8605, R8609 PU 5V for lower Rdson	X02
0303	14,15,17,18 19,22,23,24 27,29,31,36 37,50,51,68	Change R1404, R1405,R1504, R1503,RN1704, R1807, R1903, R1910, R1912, R2214, R2304, R2305, R2306, R2307, R2404, R2405, R2406, R2409, R2702, R2735,R2762, R2756, R2911,R2914, R2917, R3104, R3115, R3117, R3614, R3710, RN5010, RN5117, R6811, R6813, R6804, R6805 0R to short pad	X02
0309	86	Change AFTP test point to follow DV14 AMD	X02
0310	41,45,92,97	Stuff PC4120, EC4501, PC9205, EC9708, EC9709, EC9714, EC9715, EC9716, EC9717, EC9718, EC9720, EC9724, EC9725, EC9740	X02
0311	28	Add R2816& R2817 to option VGA_THRM and DY the circuit	X02
0311	83	Change R8316, R8331 to short pad	X02
0311	59	Change GDT5901& GDT5902 to GD5901& GD5902	X02
0311	18	dummy R1804	X02
0311	31	add rest circuit to provent leakage.	X02
0311	32	Stuff TR3201 and change symbol to 68.00201.141	X02
0314	38	Del short pad PAD1 to prevent system burn.	X02
0314	97	Stuff SPR2	X02
0314	61,97	Stuff EC9722,C6106	X02
0314	36	Change U3606 footprint.	X02
0315	58	Change MIC2 to 20.F1889.002	X02
0315	88,89	Modify VRAM property PN and footprint	X02
0315	32,59	Modify part reference problem of ER5912& TR3201.	X02
0316	68	Modify WLED1 cirucit for brightness.	A00
0320	31	Change R3118 for LOM power sequence	A00
0320	49	Change TR4901 to 120ohm.	A00
0320	61	Change TR601 120ohm.	A00
0320	68	Change resistor for LED brightness	A00
0320	82	Change TR8201, TR8202 to 120ohm.	A00
0320	83	Dummy R8302 for disable de-emphasis	A00
0329	27	change R2735 to 10R and C2711 to 220p	A00
0329	68	Change R6814 to 10KR	A00
0406	97	Dummy SPR2	A00
0406	32, 49, 61, 65,82	Remove R3206, R3207, R4903, R4904, R6102, R6103, TR6501, R8201, R8202, R8203, R8204 PAD	A00

DN15ATI Whistler

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DATA	PAGE	Change Description	Version
0407	51	remove HDMI common mode choke PAD	A00
0408	49,61,82	Swap TR4901, TR6101, TR8201, TR8202 net for layout	A00
0408	49	Add RN4903 for ESD issue.	A00
0408	56	Add R5606 to pull high 3.3V_S0 and change R5605 pull high to 3.3V_S0	A00
0412	40	Change PR4027 to 19.6K Change PR4029 to 54.9K Change PR4013 to 49.9K	A00
0412	40	Dummy PR4037 and stuff PR4030, PR4032, PQ4005	A00
0412	97	dummy H12, H13 for remove PCH Heatsink	A00
0412	5,28,29,31 50,65,85 84,86,87	Change R504,R2807,R3105, R6505, R6506, R8601,R2902,R2903,R2904,R8440,R8517,R8711,R8713,R8714,R8715,R8716,RN2010,RN2012,RN2014,RN2016,,RN5007,RN5008 to short-PAD	A00
0412	21,29	Change ER2111,ER2930 to short-PAD	A00
0412	41,42,45 46,47,48 93	Change PR4121,PR4122,PR4125,PR4217,PR4218,PR4219,PR4220,PR4254,PR4502,PR4607,PR4801,PR4803,PR4711,PR9311,PR9320,PR9327,PR4712 to short-PAD	A00
0413	97	change H12 to 34.4HL17.001	A00
0413	27	change R2724 to 47K for PCB ver	
0413	68	change R6806, R6812, R6801, R6808 to 330ohm	
0413	41,,45,47 89,93	Change close-GAP to green cover-GAP	
0413	28	update P2800 thermal option.	
0413	20	SWAP RN2014 net for layout	

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