

JM30_HR

DIS/UMA/Muxless Schematics Document

Sandy Bridge

Intel PCH

DY :None Installed
DIS:DIS installed
DIS_Muxless :BOTH DIS or Muxless installed
DIS_PX:BOTH DIS or PX installed
DIS_PX_Muxless:DIS or PX or Muxless installed.
Muxless: Muxless installed.(PX4.0)
PX:MUX installed.(PX3.0)
PX_Muxless:BOTH PX or Muxless installed.
UMA:UMA installed
UMA_Muxless:BOTH UMA or Muxless installed
UMA_PX_Muxless:UMA or PX or Muxless installed

ANNIE: ONLY FOR ANNIE solution.
PSL: KBC795 PSL circuit for 10mW solution installed.
10mW: External circuit for 10mW solution installed.
65W: for 65W adaptor installed.
90W: for 90W adaptor installed.

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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

Title

Cover Page

Size
A3

Document Number

SM30 HR

Rev
-SA

Date: Tuesday, February 21, 2012

Sheet 1 of 102

Project code : 91.4QP01.001
PCB P/N :
Revision : -1

SM30_CR CR Block Diagram

SYSTEM DC/DC
APL5916KAI 48

INPUTS	OUTPUTS
1D05V_PWR	0D85V_S0

CPU DC/DC
NCP6131S52MNR 42~43

INPUTS	OUTPUTS
DCBATOUT	VCC_CORE

SYSTEM DC/DC
UP6128PQDD 45

INPUTS	OUTPUTS
DCBATOUT	1D05V_VTT

SYSTEM DC/DC
UP6183PQAG 41

INPUTS	OUTPUTS
DCBATOUT	5V_AUX_S5 3D3V_AUX_S5 5V_S5 3D3V_S5

SYSTEM DC/DC
UP6165BQKF 46

INPUTS	OUTPUTS
DCBATOUT	1D5V_S3 0D75V_S0 DDR_VREF_S3

SYSTEM DC/DC
NCP5911MNTBG 44

INPUTS	OUTPUTS
DCBATOUT	VCC_GFXCORE_PWR

VGA
RT8208BGQW 92

INPUTS	OUTPUTS
DCBATOUT	VGA_CORE

TI CHARGER
BQ24745RHDR 40

INPUTS	OUTPUTS
DCBATOUT	BT+

SYSTEM DC/DC
RT9025 47

INPUTS	OUTPUTS
3D3V_S0	1D8V_S0

SYSTEM DC/DC
RT9025-25PSP 93

INPUTS	OUTPUTS
1D5V_S3 3D3V_S5	1V_VGA_S0 1D8V_VGA_S0

Switches

INPUTS	OUTPUTS
1D5V_S3 3D3V_S0	1D5V_VGA_S0 3D3V_VGA_S0

PCB LAYER

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

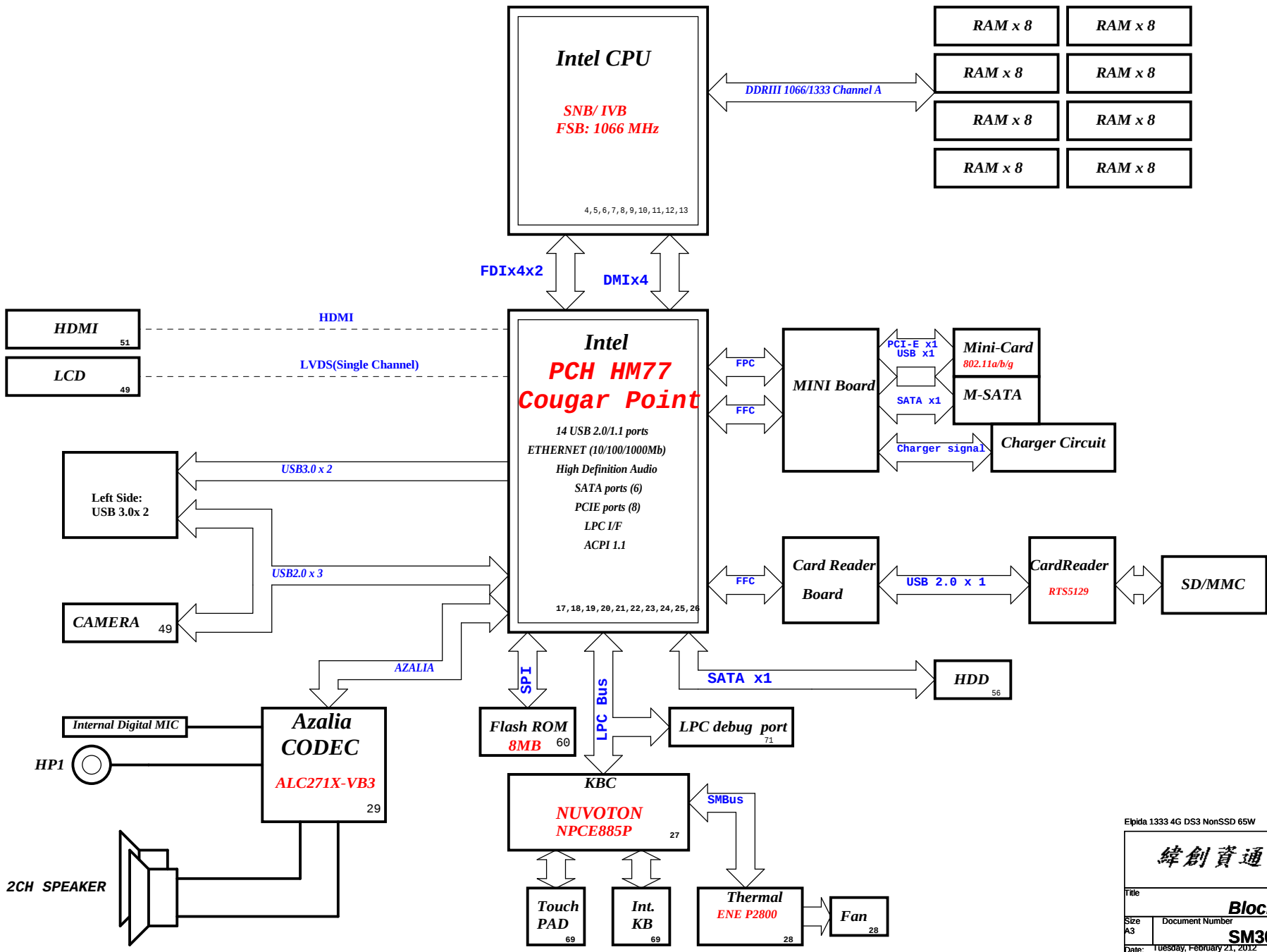
Eplida 1333 4G DS3 NonSSD 65W

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Title

Size A3 Document Number Rev

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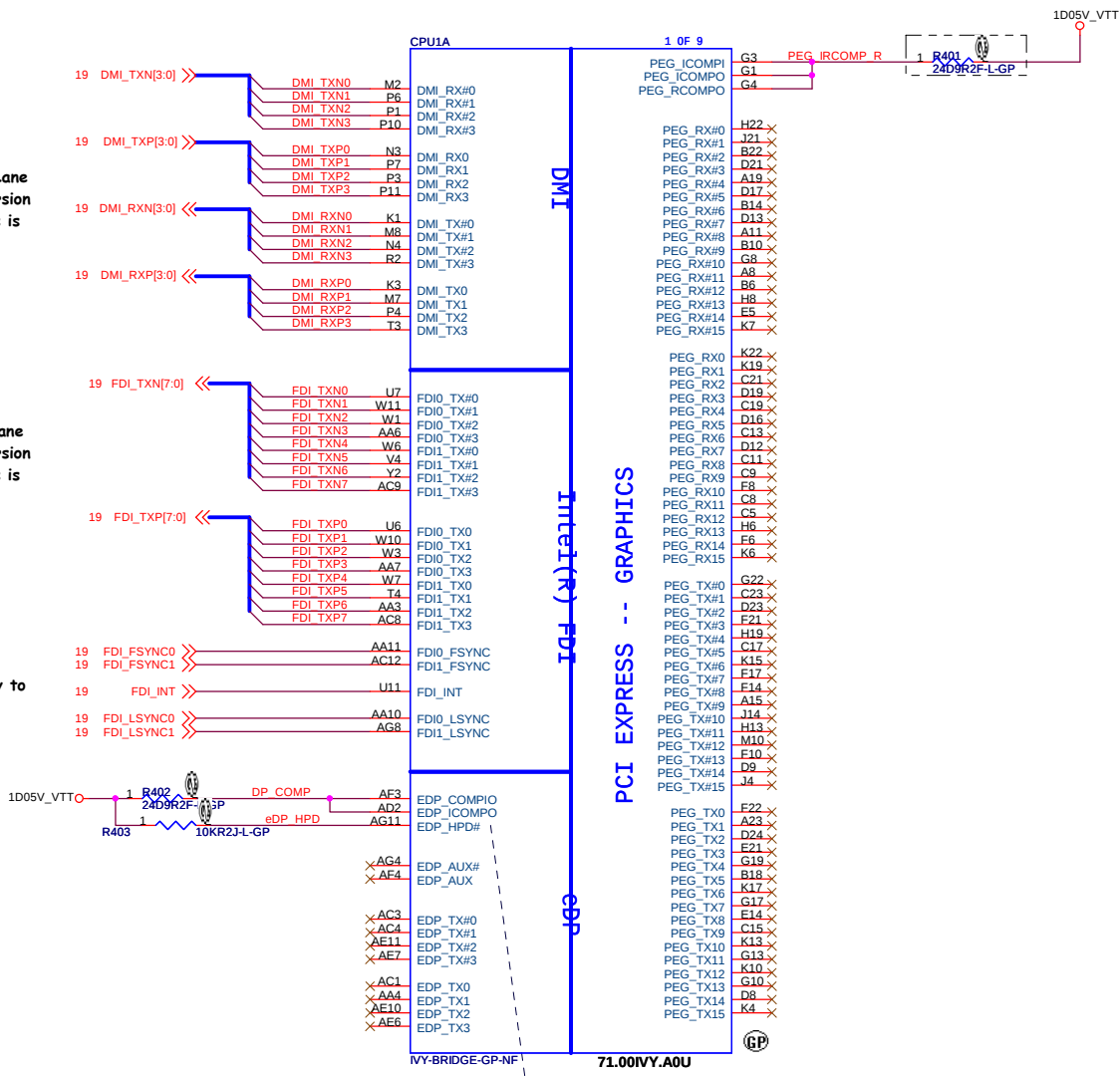


SSID = CPU

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.



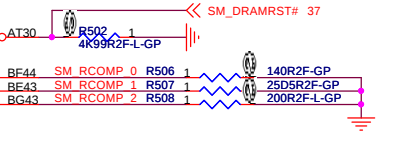
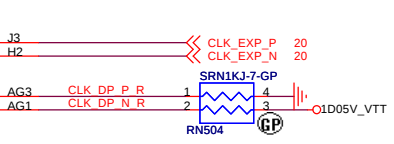
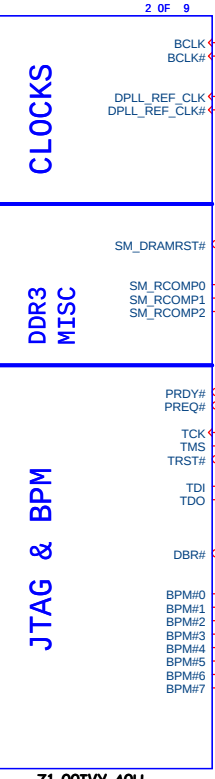
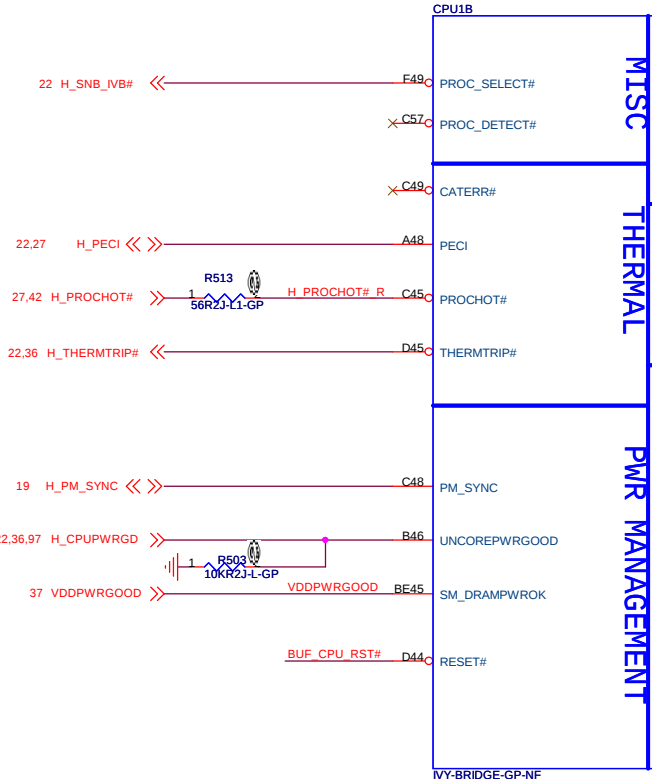
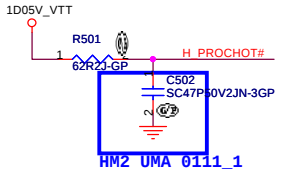
Signal Routing Guideline:
PEG_ICOMPO keep W/S=12/15 mils and routing length less than 500 mils.
PEG_ICOMPI & PEG_RCOMPO keep W/S=4/15 mils and routing length less than 500 mils.

NOTE:
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-kΩ pull-Up resistor on the motherboard.

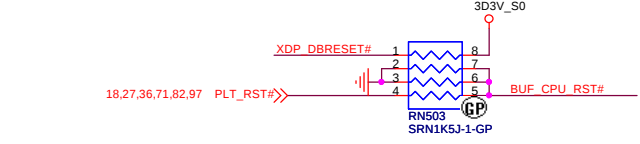
Elpida 1333 4G DS3 NonSSD 65W

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21F, 8B, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title CPU (PCIE/DMI/FDI)	
Size A3	Document Number
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SSID = CPU



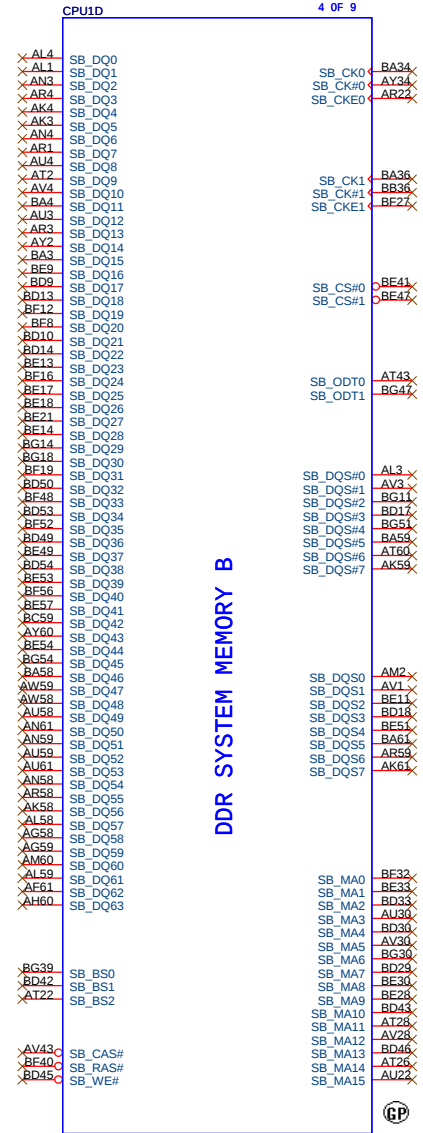
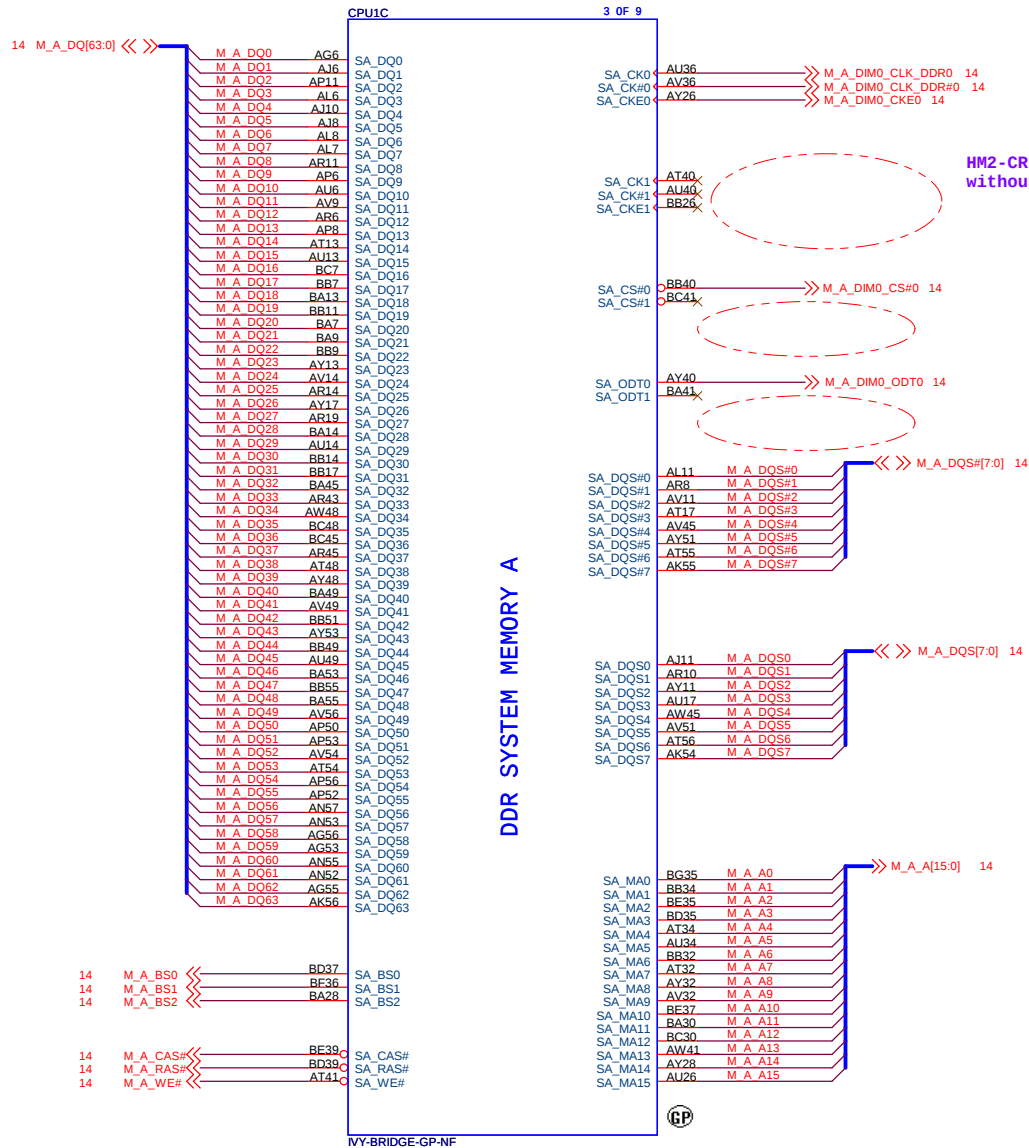
Disabling Guidelines:
If motherboard only supports external graphics or without eDP,
Connect DPLL_REF_SSCLK on Processor to GND through 1K +/- 5%
resistor.
Connect DPLL_REF_SSCLK# on Processor to VCCP through 1K +/- 5%
resistorpower (~15 mW) may be wasted.



Elpida 1333 4G DS3 NonSSD 65W

SSID = CPU

HM2 UMA 0110_1



Elpida 1333 4G DS3 NonSSD 65W

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Title

CPU (DDR)

Size

	Document Number
--	-----------------

Rev

A3

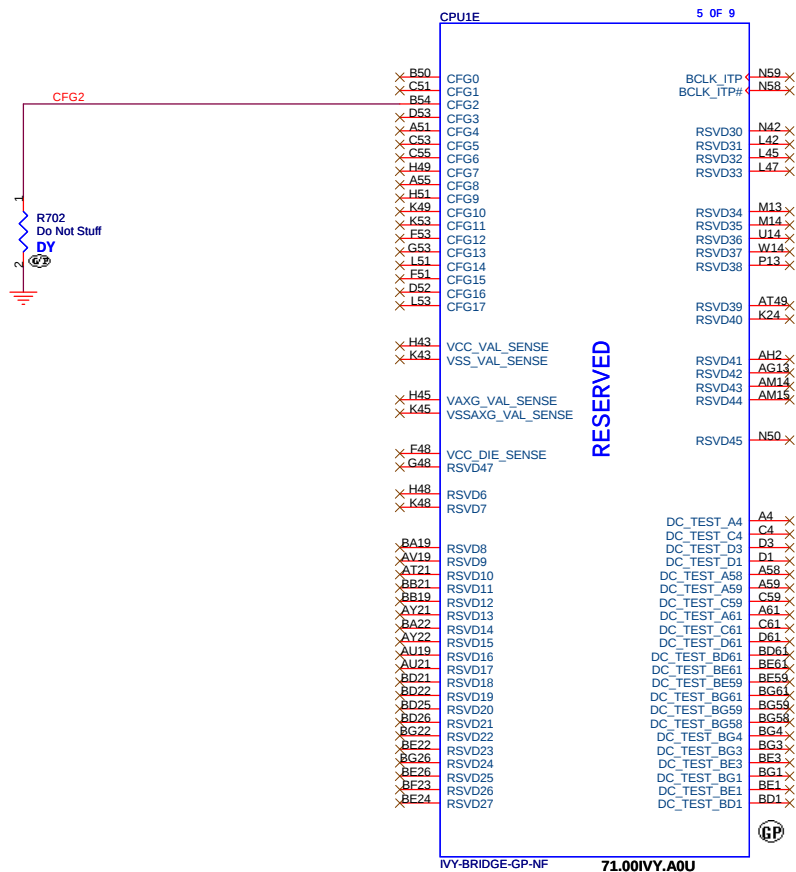
Rogue

SA

Date: Tuesday, February 21, 2012

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SSID = CPU



Pin Name	Strap Description	Configuration (Default value for each bit is 1 unless specified otherwise)	Default Value
CFG[0]		Connect a series 1 kOhms resistor on the critical CFG[0] trace in a manner which does not introduce any stubs to CFG[0] trace. Route as needed from the opposite side of this series isolation resistor to the debug port. ITP will drive the net to GND.	
CFG[2]	PCIe Static x16 Lane Numbering Reversal.	1: Normal Operation; Lane # definition matches socket pin map definition 0: Lane Reversed	0
CFG[4]	Display Port Presence strap	1: Disabled - No Physical Display Port attached to Embedded DisplayPort No connect for disable 0: Enabled - An external Display Port device is connected to the Embedded Display Port Pull-down to GND through a 1KΩ ± 5% resistor to enable port	0
CFG[6:5]	PCI-Express Port Bifurcation Straps	00 = 1 x 8, 2 x 4 PCI Express 01 = reserved 10 = 2 x 8 PCI Express 11 = 1 x 16 PCI Express	00
CFG[17:7]	Reserved configuration lands. A test point may be placed on the board for these lands.		

Elpida 1333 4G DS3 NonSSD 65W

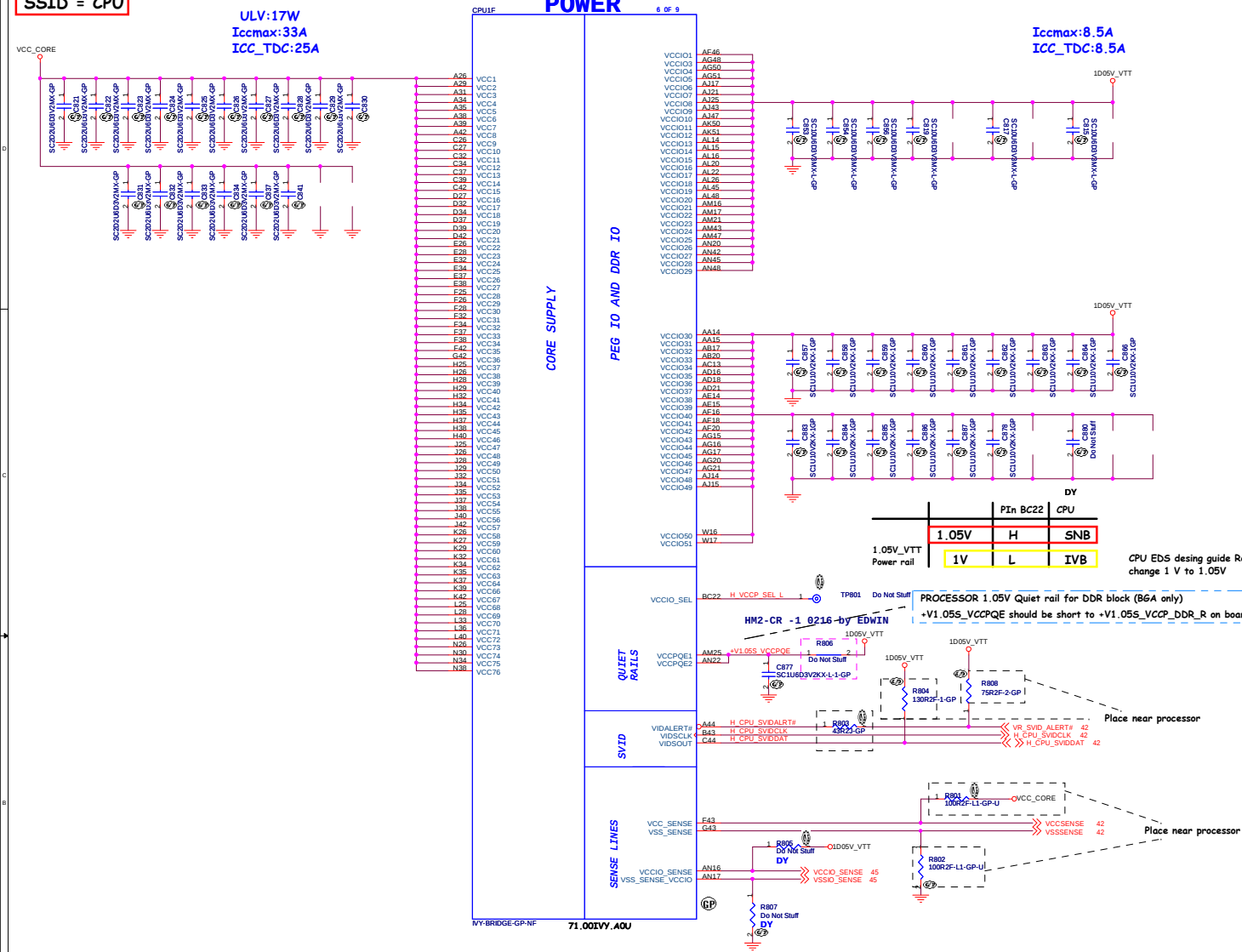
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Title CPU (RESERVED)			
Size A3	Document Number	Rev	
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SSID = CPU

ULV:17W
Iccmax:33A
ICC_TDC:25A

POWER

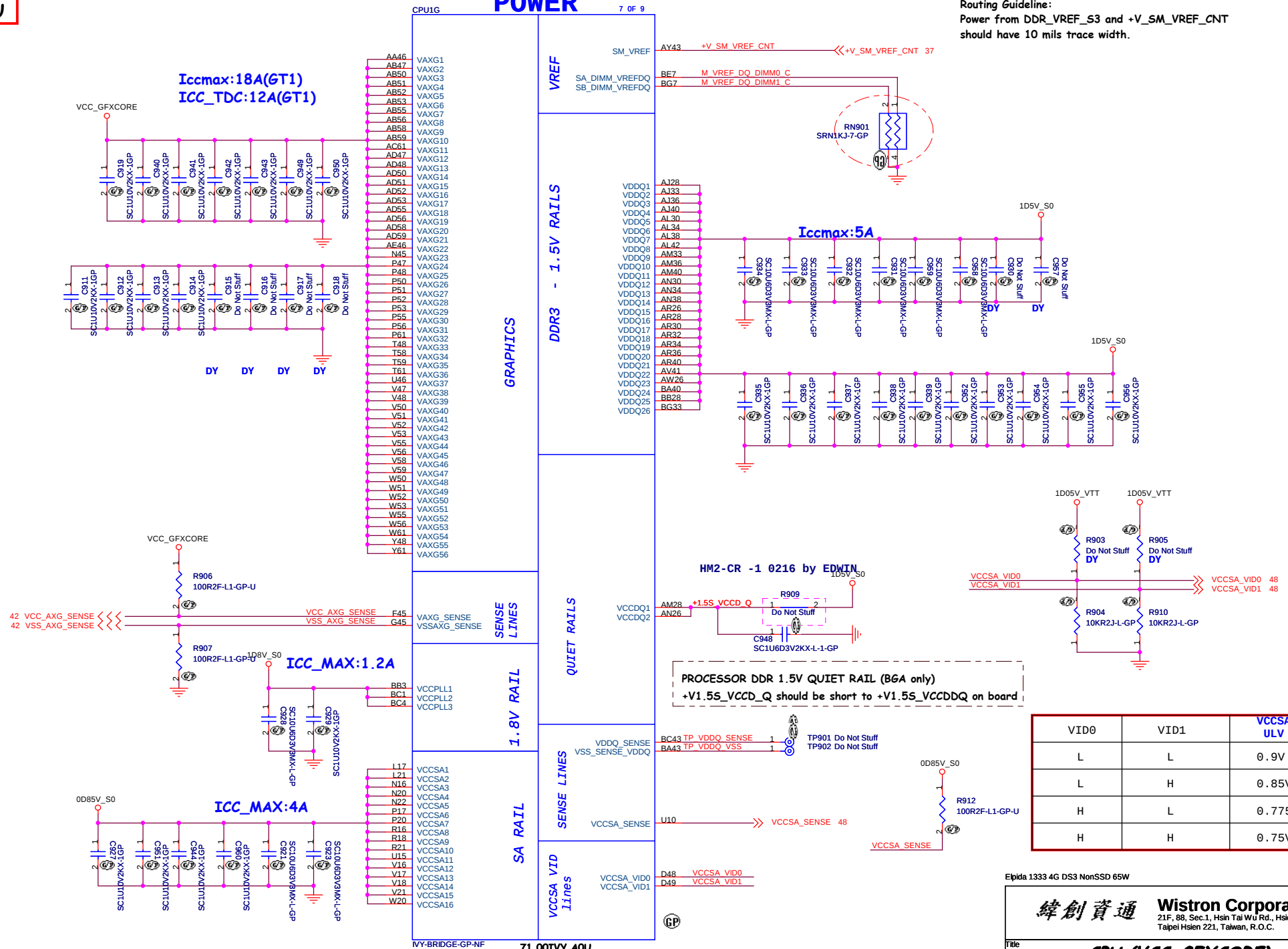
Iccmax:8.5A
ICC_TDC:8.5A



SSID = CPU

POWER

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



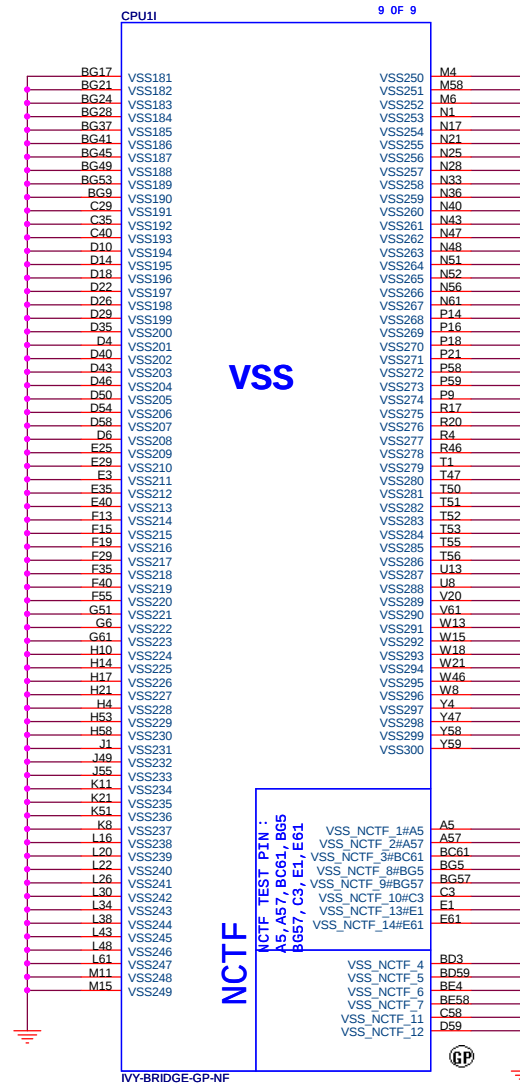
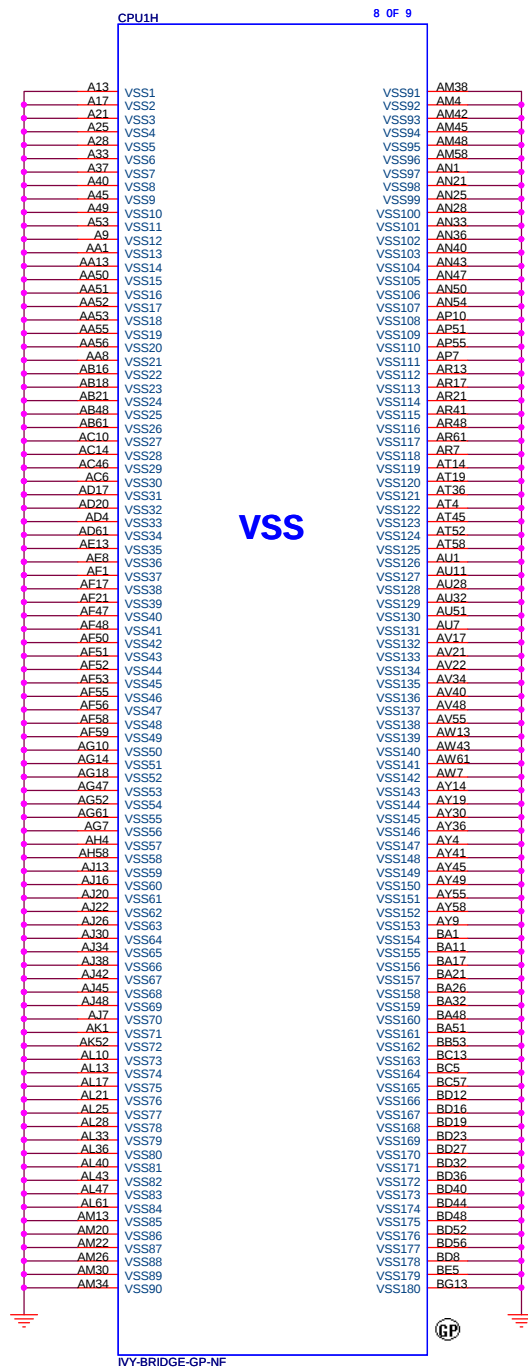
VID0	VID1	VCCSA ULV
L	L	0.9V
L	H	0.85V
H	L	0.775V
H	H	0.75V

Elpida 1333 4G DS3 NonSSD 65W

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Title		
CPU (VCC_GFXCORE)		
Size A3	Document Number	Rev
	Rogue	SA
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SSID = CPU



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Title			CPU (VSS)		
Size A3	Document Number				Rev
	Rogue				SA
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Title		
XDP		
Size	Document Number	Rev
A4	SM30 HS	-SA
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Elpida 1333 4G DS3 NonSSD 65W

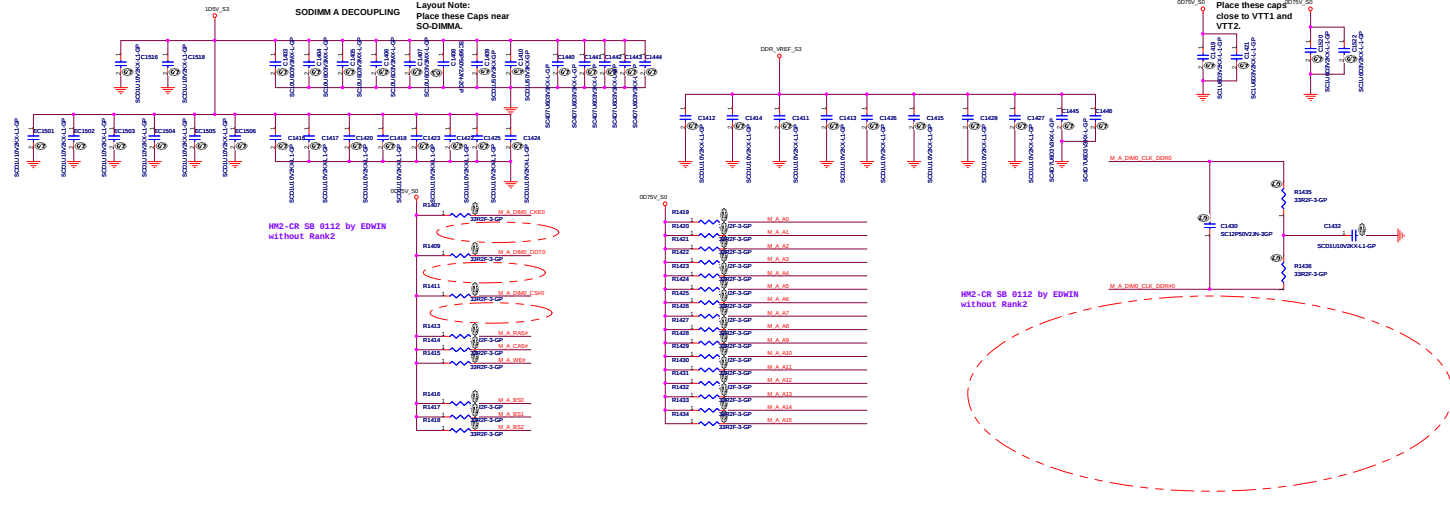
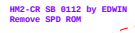
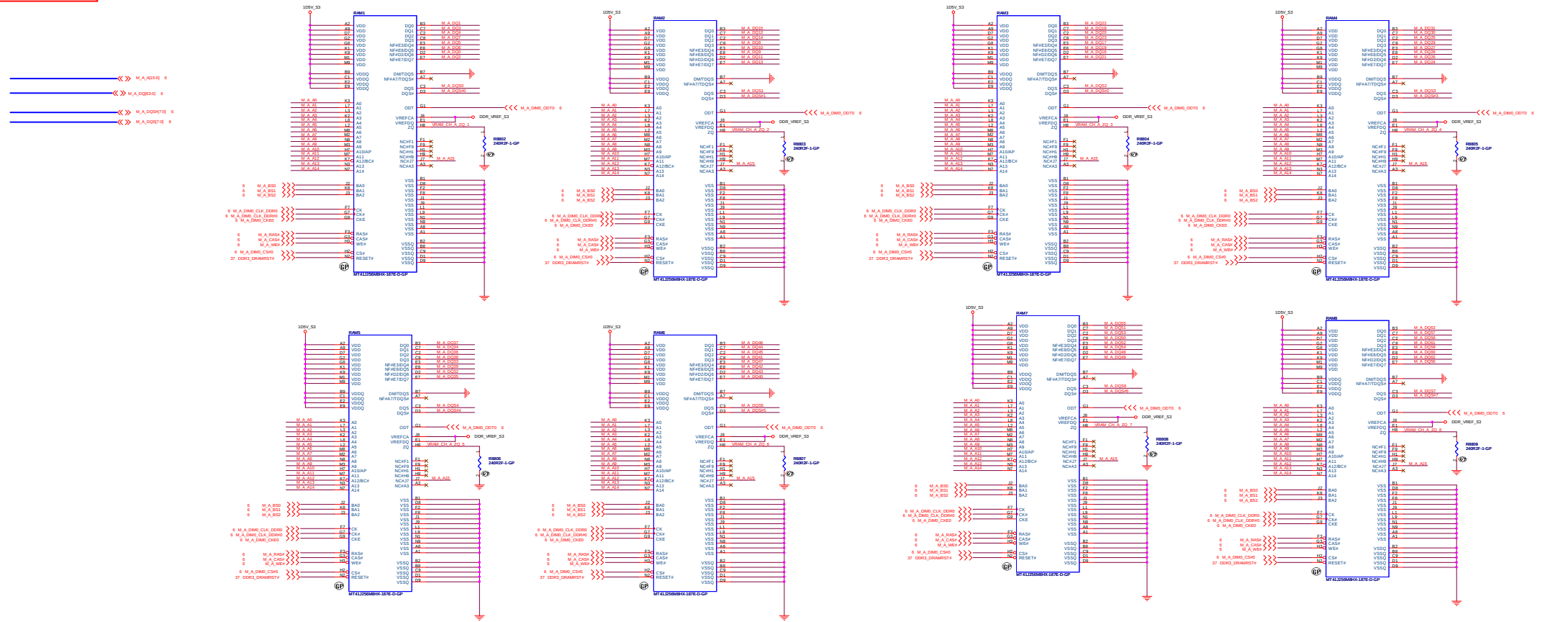
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Size A4	Document Number HMA40 HR	Rev -SA
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Title Reserved		
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SSID = MEMORY



SSID = MEMORY

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Title		
DDR3-SODIMM2		
Size	Document Number	Rev
Custom	SM30 HS	-SA
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Elpida 1333 4G DS3 NonSSD 65W

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Title

DDR3-SODIMM2

Size
A4

Document Number

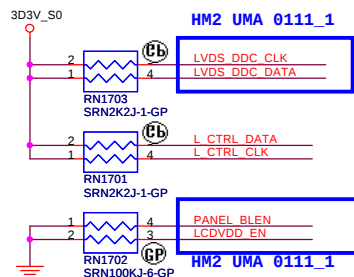
SM30 HS

Rev

-SA

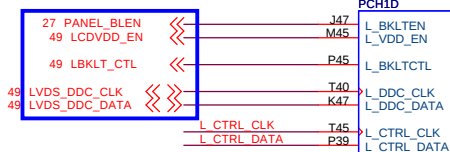
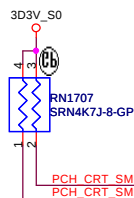
Date: Tuesday, February 21, 2012

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HM2 UMA 0111_1

Place near PCH



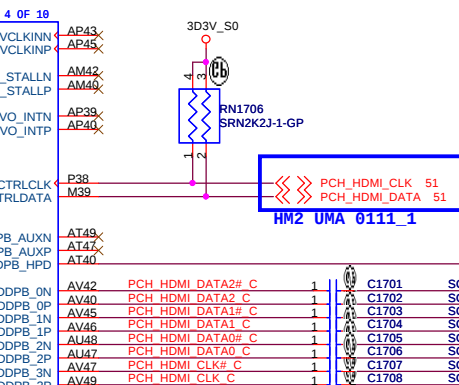
PCH1D

LVDS

CRT

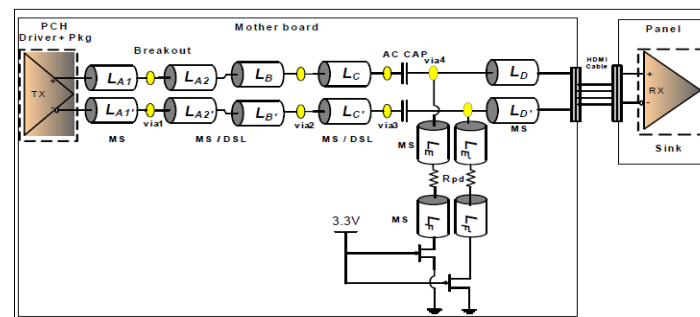
Digital Display Interface

71.PANTH.00U



Close to Connector side

Impedance:90 ohm TM request to change 85-ohm

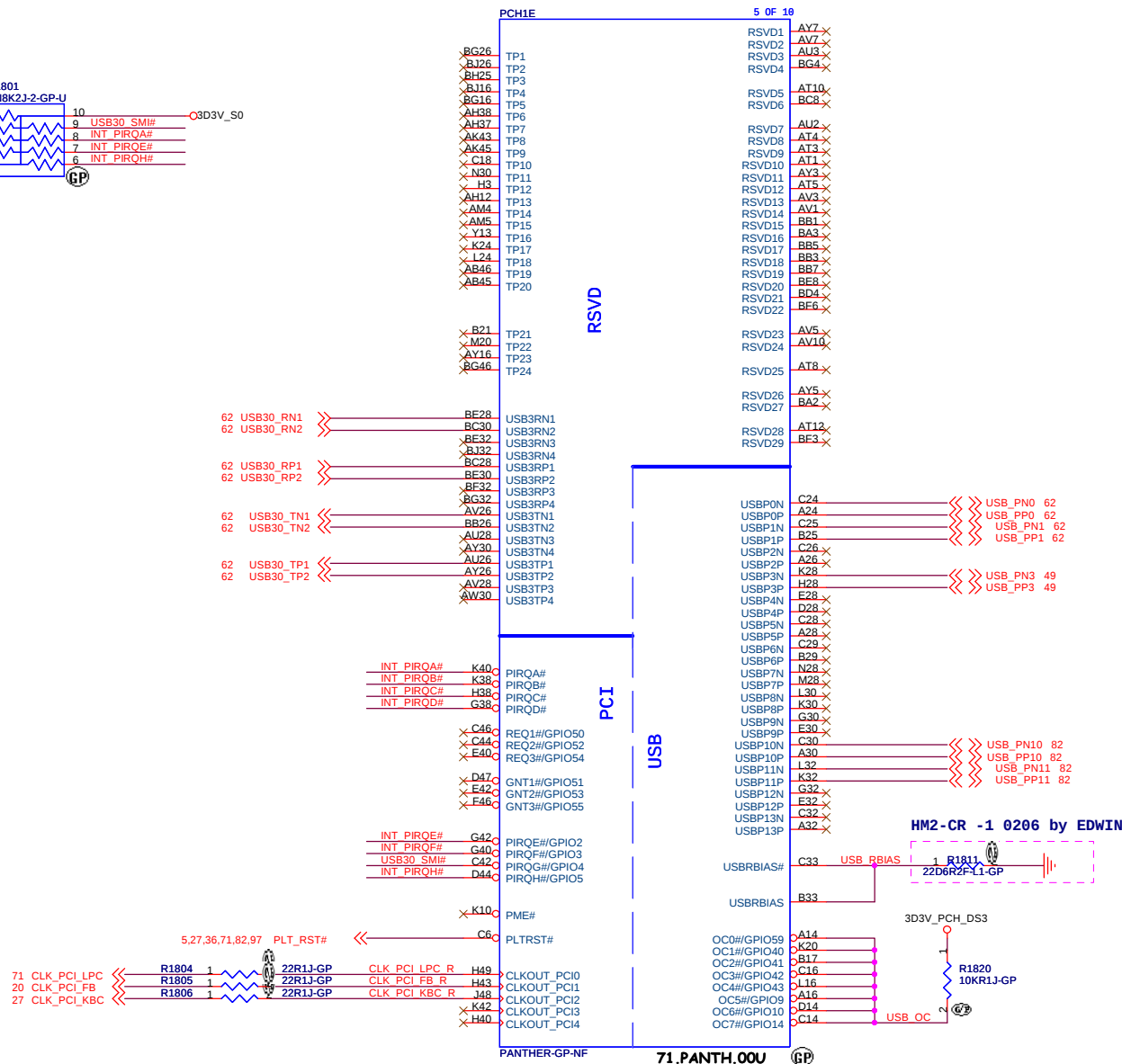
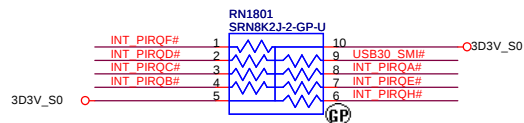


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Title			PCH (LVDS/CRT/DDI)	
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A3	SM30-2			
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SSID = PCH



USB Table

Pair	Device
0	USB3.0 Ext. port 1
1	USB3.0 Ext. port 2 (Charger)
2	NC
3	BT
4	NC
5	
6	X
7	X
8	
9	
10	Card Reader
11	Mini Card1 (WLAN)
12	CAMERA

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

Elpida 1333 4G DS3 NonSSD 65W

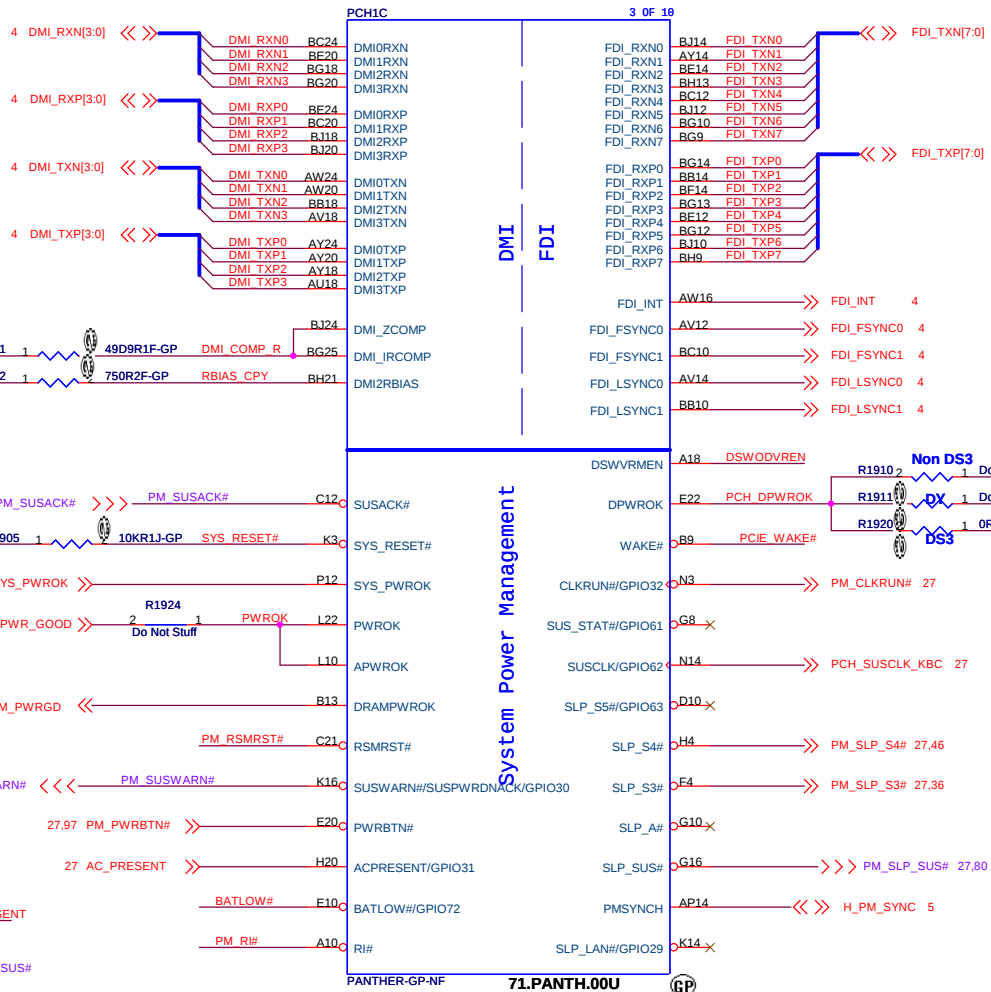
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Title	<i>PCH (PCI/USB/NVRAM)</i>
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SSID = PCH

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



Deep S4/S5 Supported

Deep S4/S5 **Not** Supported

VccDSW3_3

DPWROK

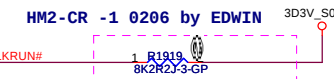
VccSUS3_3

RSMRST#

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

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



PCIE_WAKE#
CRB : 1K
CEKLT: 10K

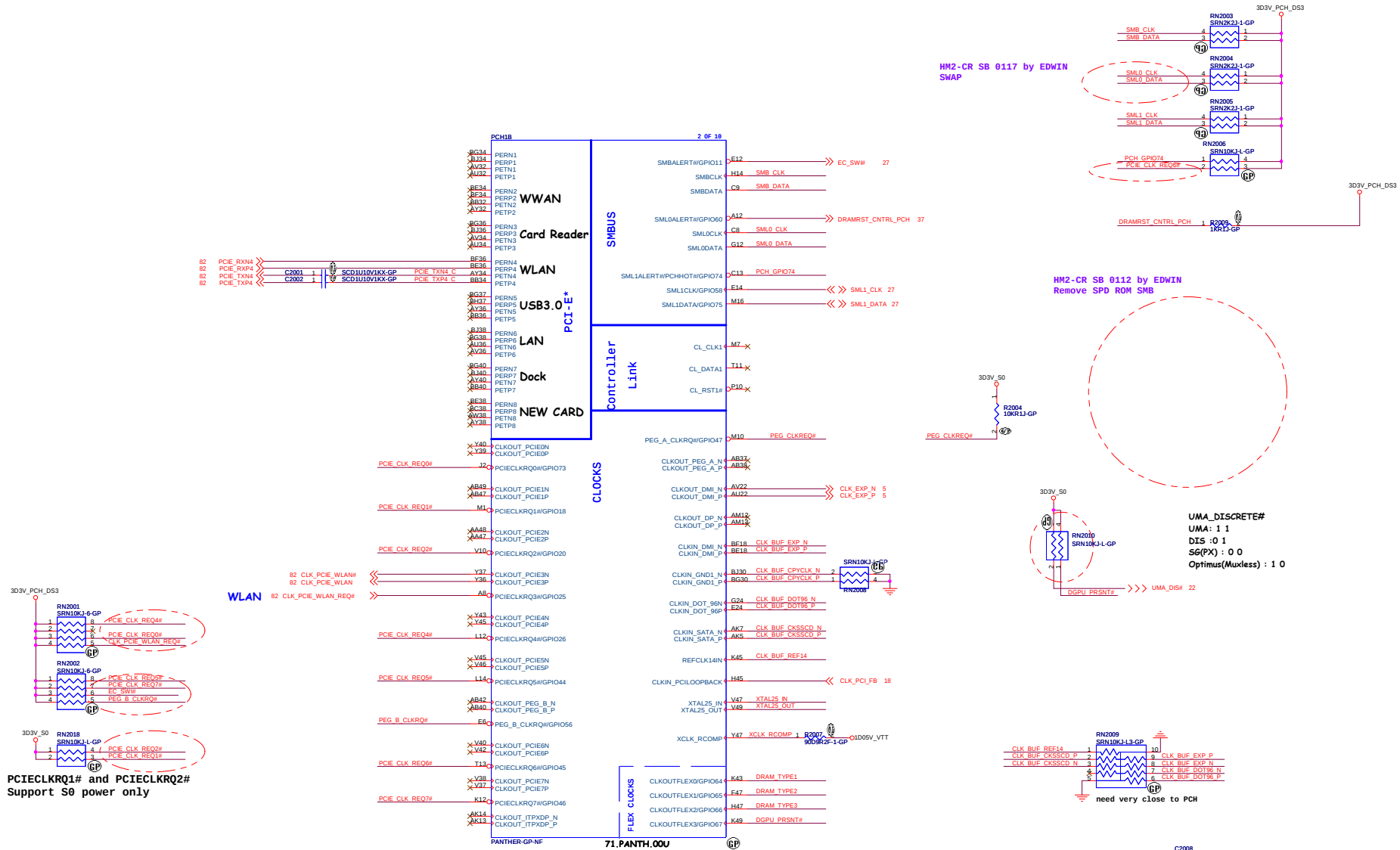
PM_RSMRST#
CRB : PL 10K
ANNIE : PL 100K

Elpida 1333 4G DS3 NonSSD 65W

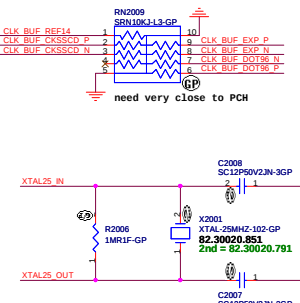
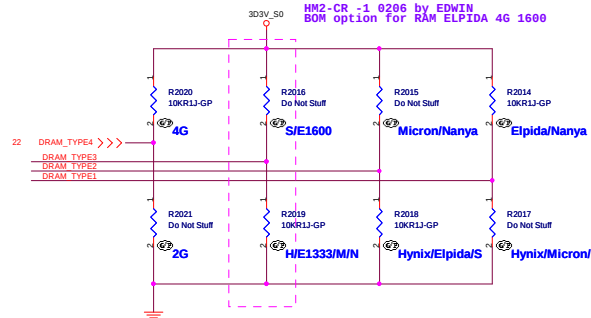
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Title			PCH (DM I/FDI/PM)	
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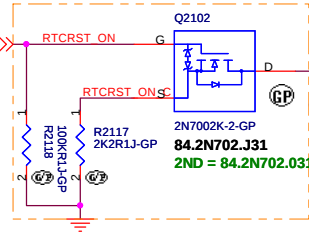
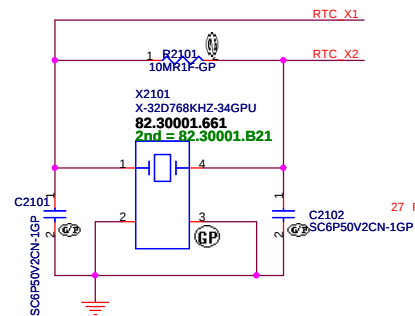
SSID = PCH



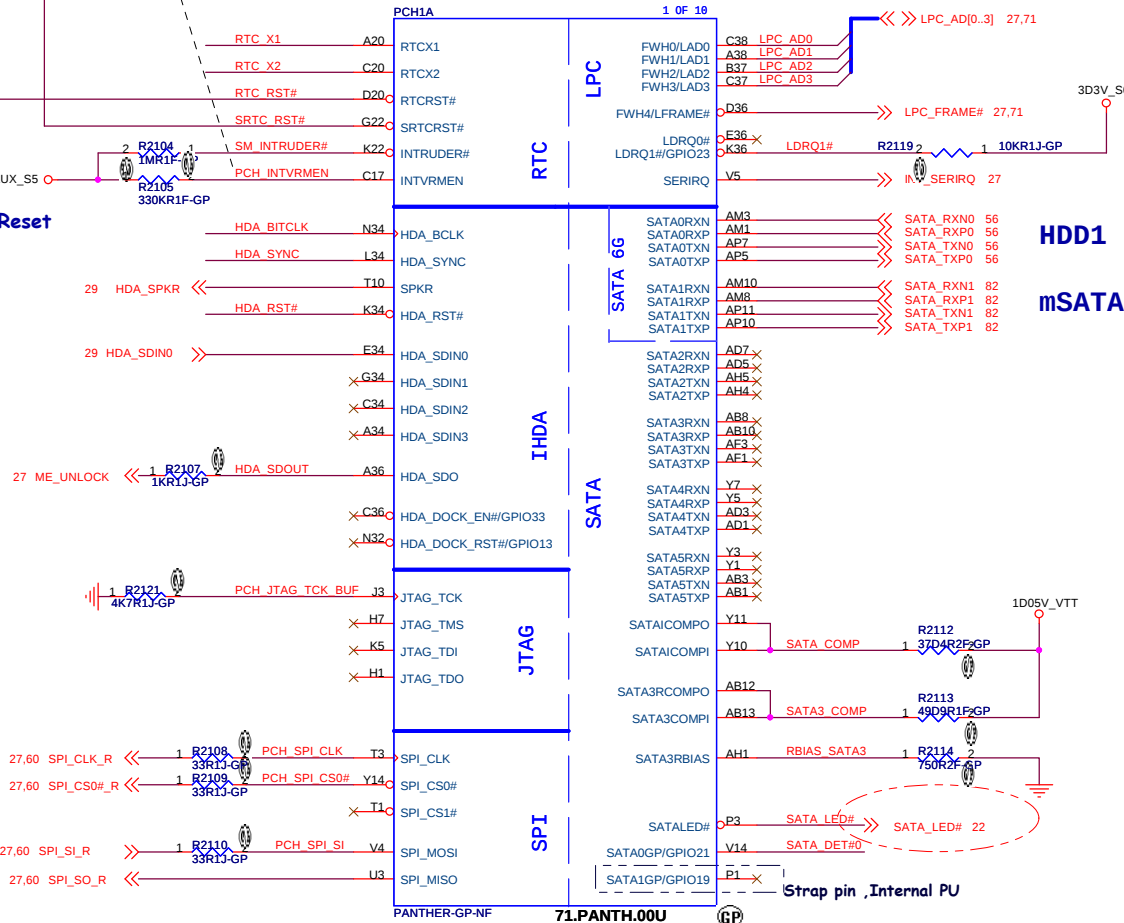
GPIO48 DRAM_Type4	GPIO65 DRAM_Type3	GPIO65 DRAM_Type2	GPIO64 DRAM_Type1	Status
0	0	0	0	HYNIX 20 (LAE SMT)
0	0	0	1	ELPIDA 20 (LAB SMT)
0	0	1	0	Microc 20
0	0	1	1	NANYA 20
0	1	0	0	Samsumg 20
0	1	0	1	
0	1	1	0	
0	1	1	1	
1	0	0	0	HYNIX 4G
1	0	0	1	ELPIDA 4G 1333 ED4208BASE-DI-F (ENG SMT)
1	0	1	0	Microc 4G (ENG SMT)
1	0	1	1	NANYA 4G
1	1	0	0	Samsumg 4G
1	1	0	1	ELPIDA 4G 1600 ED4208BBG-QN-F (ENG SMT)
1	1	1	0	
1	1	1	1	



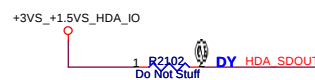
SSID = PCH



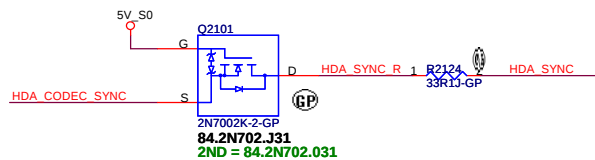
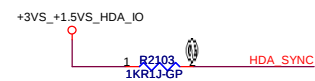
INTVRMEN- Integrated SUS
1.05V VRM Enable
High - Enable internal VRs
Low - Enable external VRs



Flash Descriptor Security Override	
HDA_SDOUT	Low = Default High = Enable

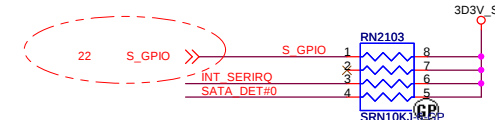


PLL ODVR VOLTAGE	
HDA_SYNC	Low = 1.8V (Default) High = 1.5V



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.

HM2-CR SB 0117 by EDWIN
Swap



Elpida 1333 4G DS3 NonSSD 65W

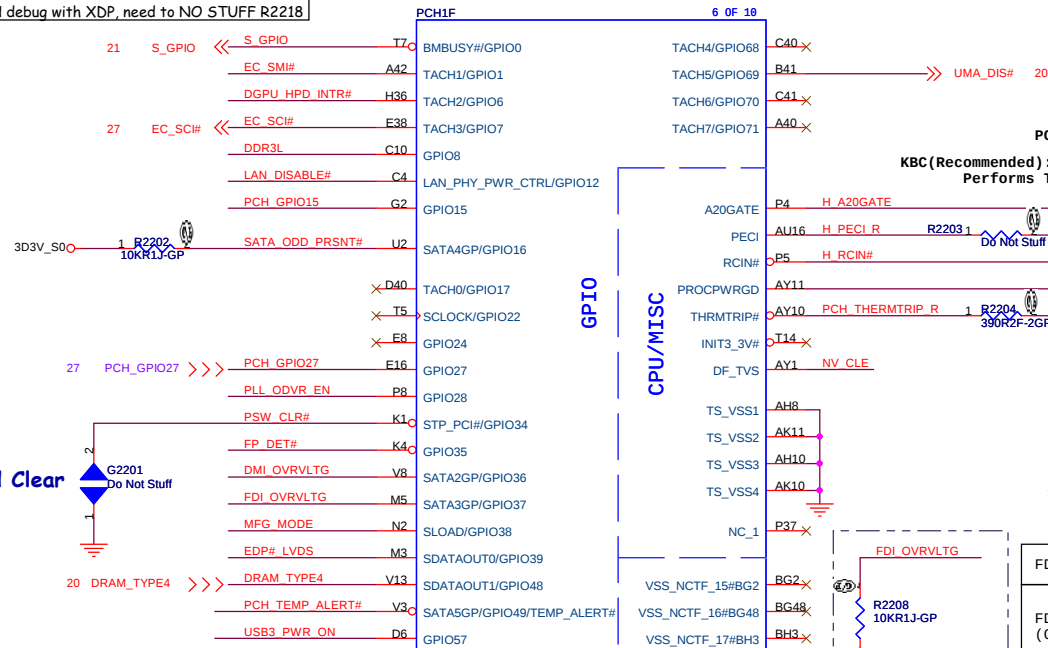
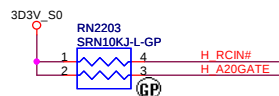
緯創資通 **Wistron Corporation**
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Title **PCH (SPI/RTC/LPC/SATA/IHDA**

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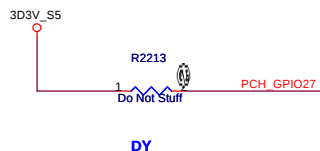
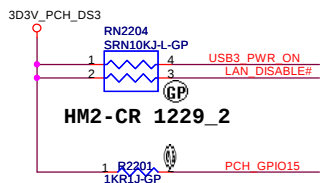
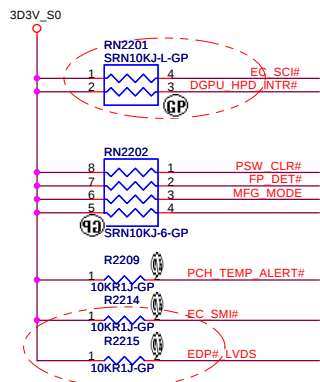
SSID = PCH

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



Pass Word Clear

HM2-CR SB 0117 by EDWIN request by layout



NCTF TEST PIN:
A4, A44, A45, A46, A5, A6, B3, B47, B48, B49, B5, B54, B55, B56, B57, B58, B59, B6, B64, B65, B66, B67, B68, B69, B7, B74, B75, B76, B77, B78, B79, B8, B84, B85, B86, B87, B88, B89, B9, B94, B95, B96, B97, B98, B99, C2, C48, D1, D49, E1, E49, F1, F49

71.PANTH.00U

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

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

Integrated Clock Chip Enable(Reserved)	
ICC_EN# (GPIO8)	HIGH- DISABLED [DEFAULT] LOW - ENABLED

PLL ON DIE VR ENABLE	
PLL_ODVR_EN (GPIO28)	HIGH- DISABLED [DEFAULT] LOW - ENABLED

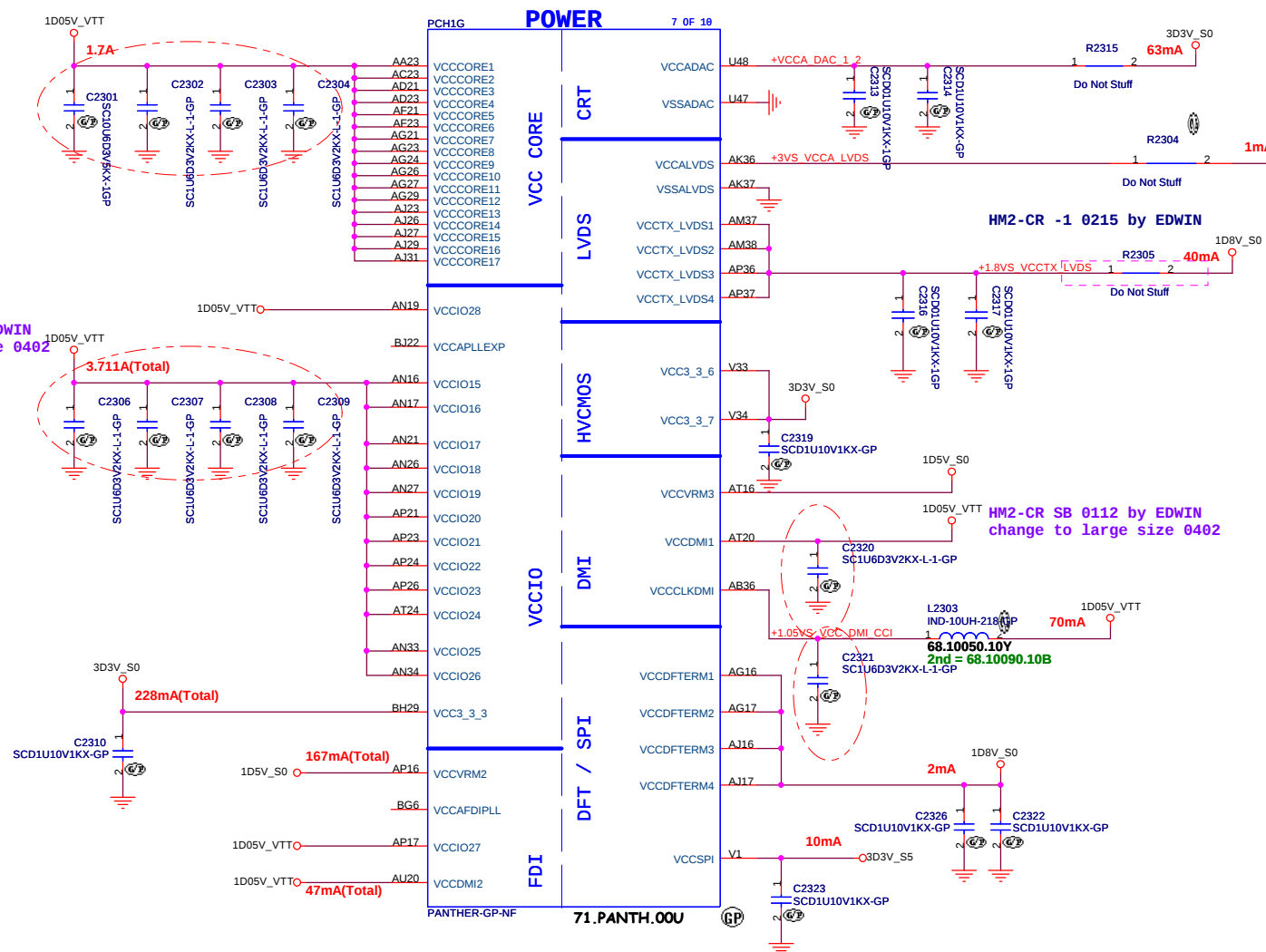
Elpida 1333 4G DS3 NonSSD 65W

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

Title			Rev
PCH (GPIO/CPU)			SA
Size A3	Document Number	M41 2SP	
Date: Tuesday, February 21, 2012	Sheet 22	of 100	

HM2-CR SB 0112 by EDWIN
change to large size 1u 0402 10u 0805

HM2-CR SB 0112 by EDWIN
change to large size 0402



Elpida 1333 4G DS3 NonSSD 65W

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

Title			PCH (POWER1)	
Size	Document Number			Rev
A3	M41 2SP			SA
Date:	Tuesday, February 21, 2012	Sheet	23	of 100

SSID = PCH

HM2-CR SB 0112 by EDWIN
change to large size 1u 0402 10u 0603

HM2-CR SB 0112 by EDWIN
change to large size 1u 0402

HM2-CR SB 0112 by EDWIN
change to large size 1u 0402

HM2-CR SB 0112 by EDWIN
change to large size 1u 0603

POWER

USB

Clock and Miscellaneous

PCI/GPIO/LPC

SATA

MISC

CPU

RTC

HDA

HM2-CR SB 0112 by EDWIN
change to large size 1u 0402

HM2-CR SB 0113 by EDWIN
Do Not Stuff
Do Not Stuff
2nd = 83.R2004.B8F
DY

Table 5-1. Voltage Ramp Up/Down Requirements for the PCH Suspend Well Voltage Rails

Va	Vb	Power-Up Requirement	Power-Down Requirement
VSREF_SUS	VCCSUS3_3	a) VCC5REF_SUS must be powered up before VCCSUS3_3 or after VCCSUS3_3 within 0.7 V. b) If VCC5REF_SUS is more than VCCSUS3_3 by 3 V, then the duration of this condition needs to be less than 20 ms.	a) VSREF_SUS must be powered down after VCCSUS3_3 or before VCCSUS3_3 within 0.7 V.
VSREF	VCC3_3	a) VSREF must be powered up before VCC3_3 or after VCC3_3 within 0.7 V. b) For power up, if VCC5REF is more than VCC3_3 by 3 V, then the duration of this condition needs to be less than 20 ms.	a) VSREF must be powered down after VCC3_3 or before VCC3_3 within 0.7 V.

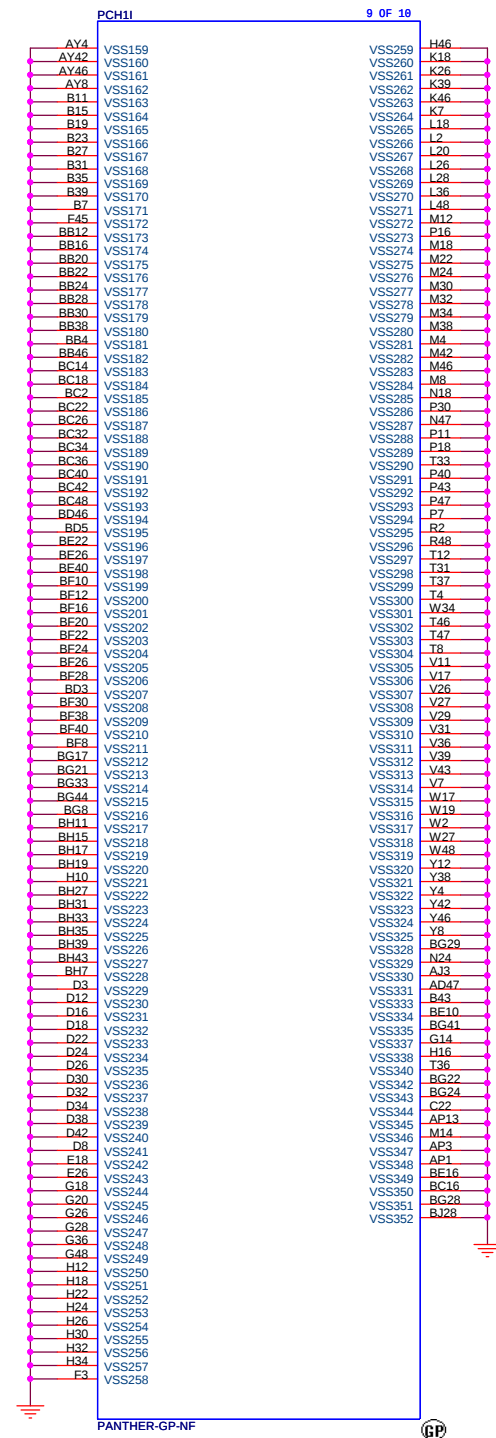
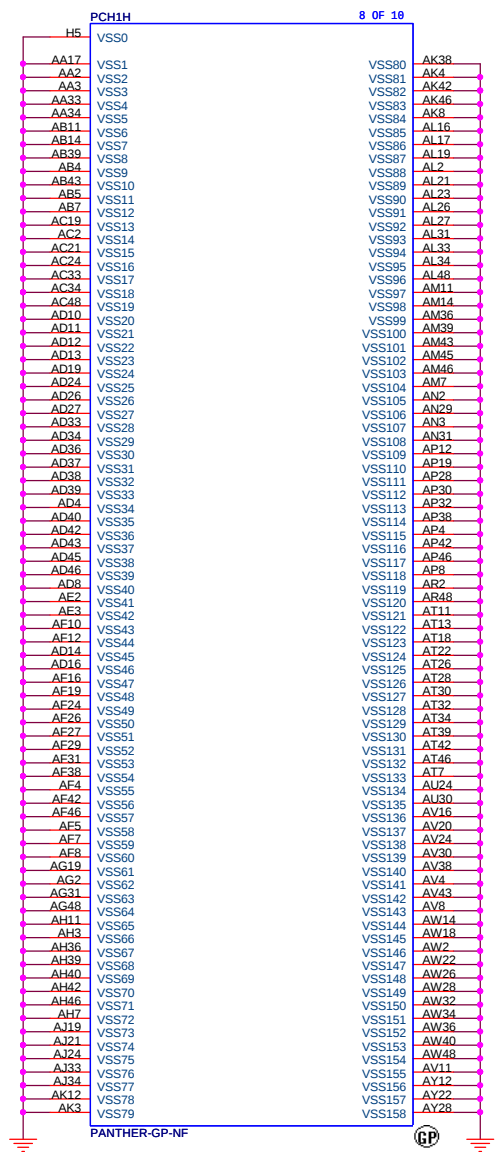
VccVRM	Internal PLL and VRMs (1.5V for Mobile)
VccVRM	1.8 V Internal PLL and VRMs (1.8 V for Desktop)

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Title PCH (POWER2)		
Size A3	Document Number M41 2SP	Rev SA
Date: Tuesday, February 21, 2012	Sheet 24	of 100

SSID = PCH



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

Title PCH (VSS)

Size A3 Document Number M41 2SP Rev SA

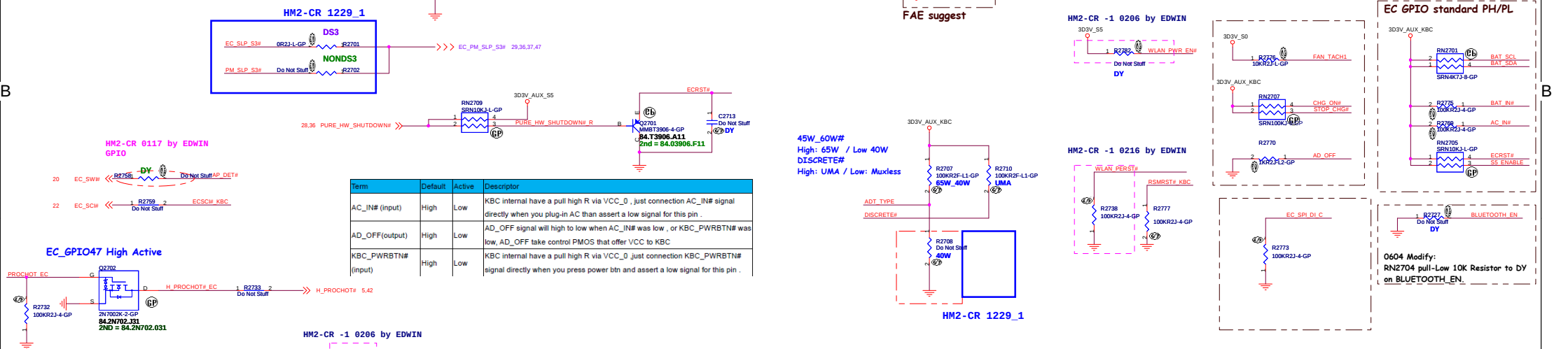
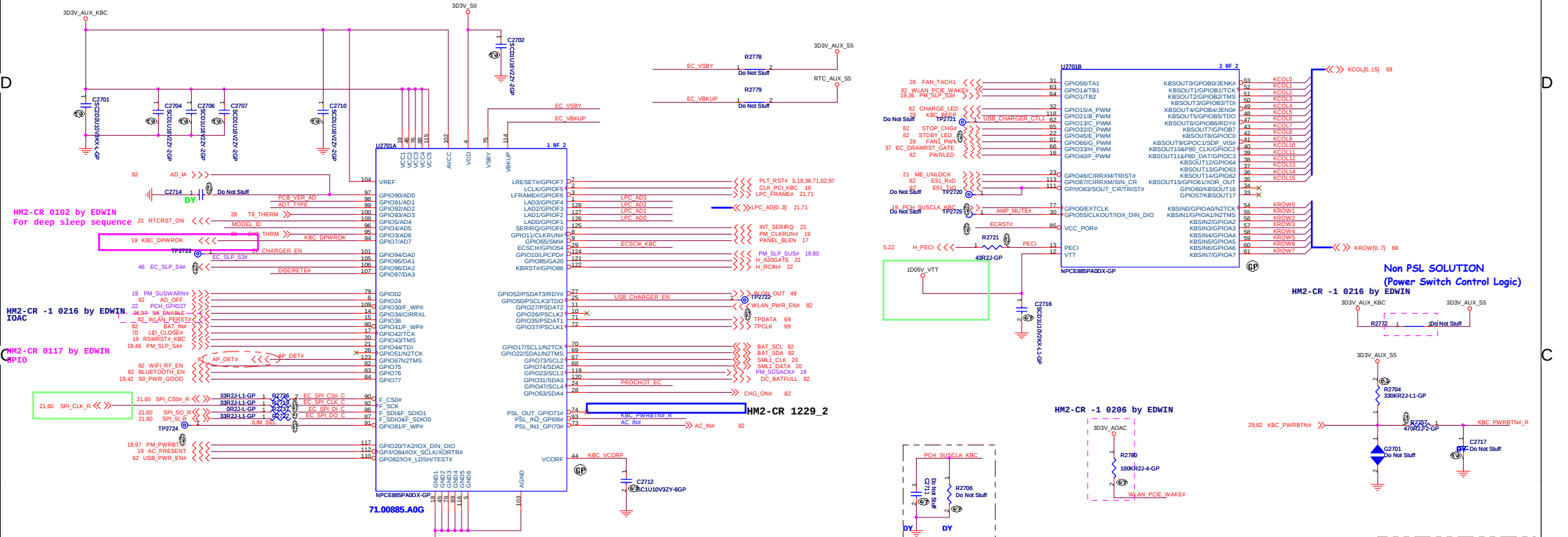
Date: Tuesday, February 21, 2012 Sheet 25 of 100

Blanking

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title Clock(colay)		
Size A4	Document Number SM30 HS	Rev -SA
Date Tuesday, February 21, 2012		Sheet 26 of 102

SSID = KBC

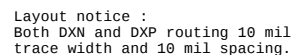


PCB VERSION	A/D(PIN64)	PULL-LOW RESISTOR	PULL-HIGH RESISTOR	VOLTAGE	ADT_TYPE A/D(PIN65)	PULL-LOW RESISTOR	PULL-HIGH RESISTOR	VOLTAGE
	SA	100.0K	10.0K	3.0V	65W	N/A	100.0K	3.3V
	SB	100.0K	20.0K	2.75V	90W	100.0K	N/A	0V
	SC	100.0K	33.0K	2.48V	30W	10.0K	100.0K	0.3V
	-1	100.0K	47.0K	2.24V	40W	20.0K	100.0K	0.55V
	-1M	100.0K	64.9K	2.0V	120W	33.0K	100.0K	0.82V
	-2	100.0K	76.8K	1.87V	Reserved	47.0K	100.0K	1.06V
	-3	100.0K	100K	1.65V	Reserved	64.9K	100.0K	1.3V
	-3M	100.0K	143.0K	1.358V				
	-1M For PCH B3	100.0K	174.0K	1.204V				

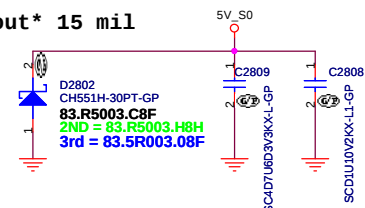
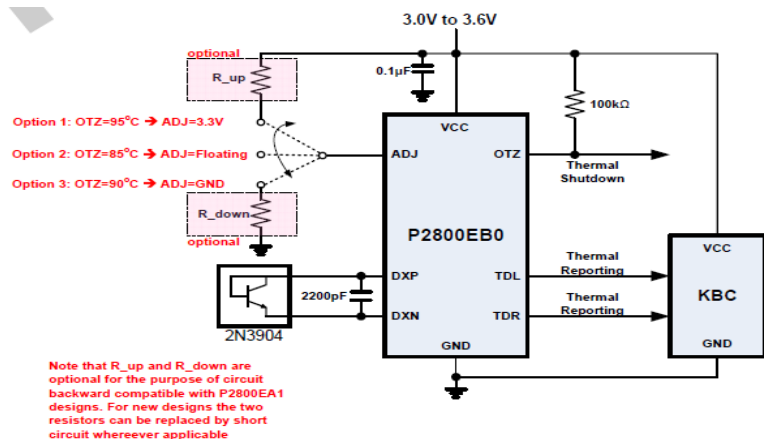
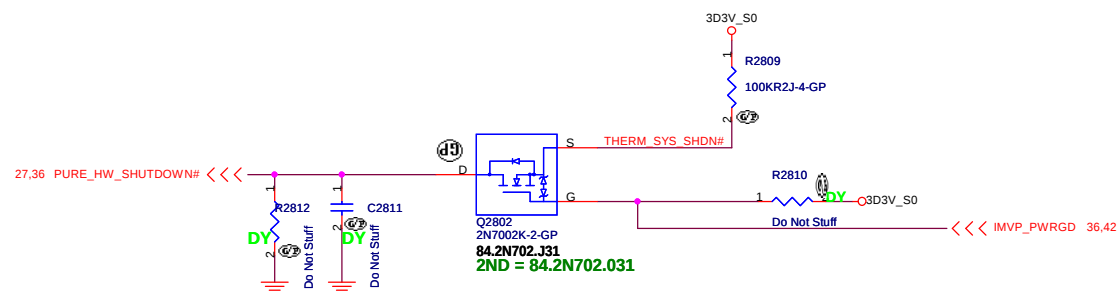
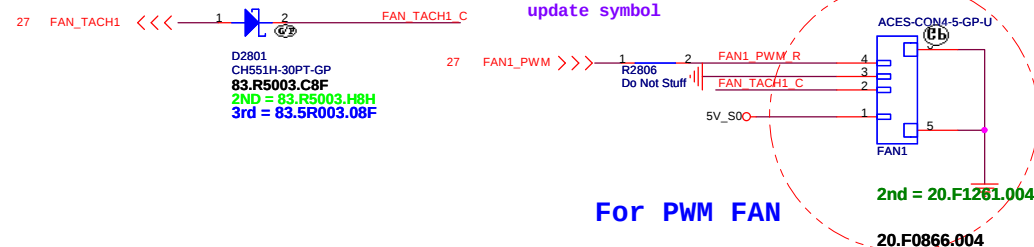
Elpida 1333 4G DS3 NonSSD 65W

緯創資通 **Wistron Corporation**
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,

Thermal sensor P2800



1.H/W T8 Shutdown

HM2-CR SB 0112 by EDWIN
update symbol

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

Title			
Thermal P2800/Fan Controller P2793			
Size A3	Document Number	Rev	
	SM30 HS	-SA	
Date:	Tuesday, February 21, 2012	Sheet 28 of	102

AUDIO OP AMPLIFIER

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緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title Audio AMP		
Size A4	Document Number SM30 HS	Rev -SA
Date Tuesday, February 21, 2012		Sheet 30 of 102

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緯創資通

Wistron Corporation

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Title

AR8158

Size
A3

Document Number
SM30 HS

Rev
-SA

Date: Tuesday, February 21, 2012

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Card reader move to small board

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title RTS5159 (CARD READER)		
Size A4	Document Number SM30 HS	Rev -SA
Date Tuesday, February 21, 2012		Sheet 32 of 102

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Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
Reserved		
Size	Document Number	Rev
A4	SM30 HS	-SA
Date:	Tuesday, February 21, 2012	Sheet 33 of 102

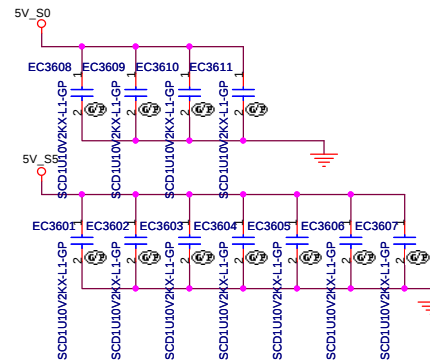
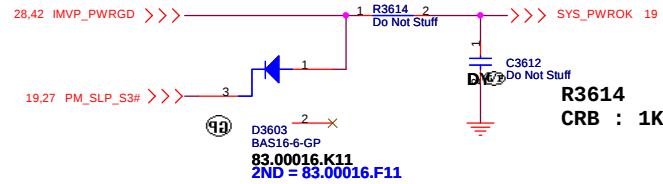
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Elpida 1333 4G DS3 NonSSD 65W

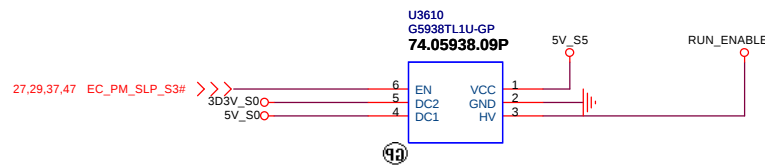
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Title Reserved		
Size A4	Document Number SM30 HS	Rev -SA
Date: Tuesday, February 21, 2012		Sheet 34 of 102

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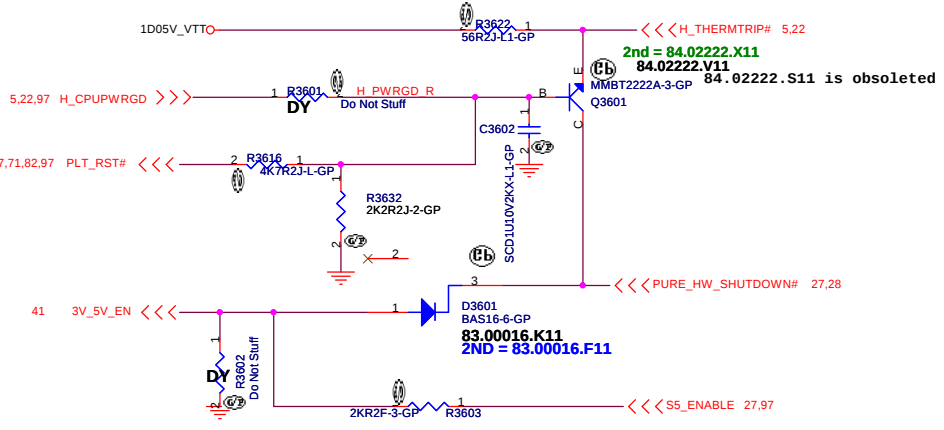
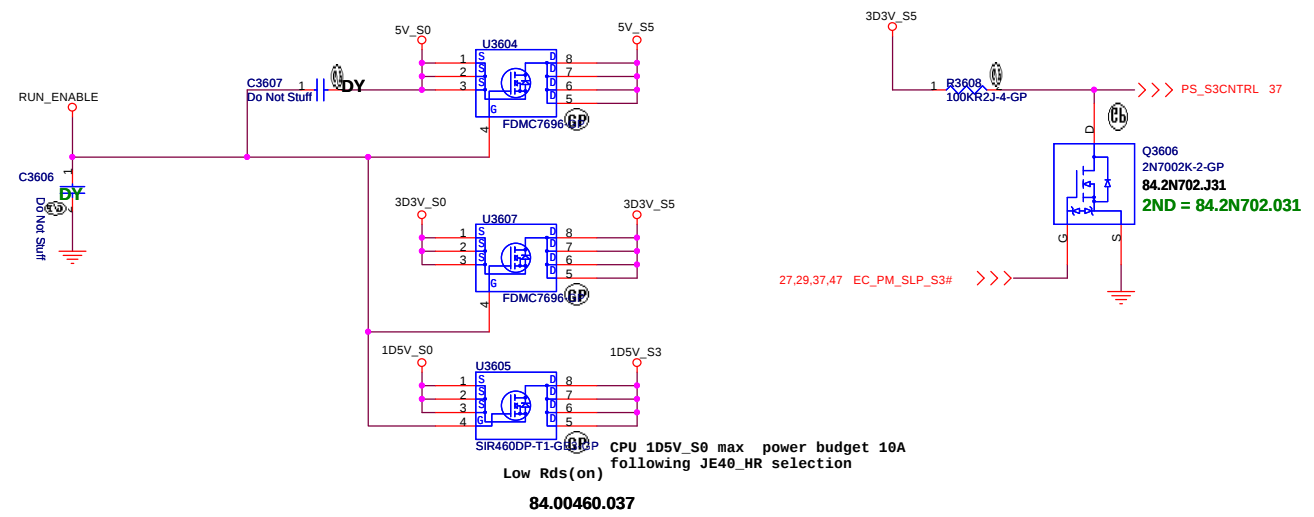
Power Sequence



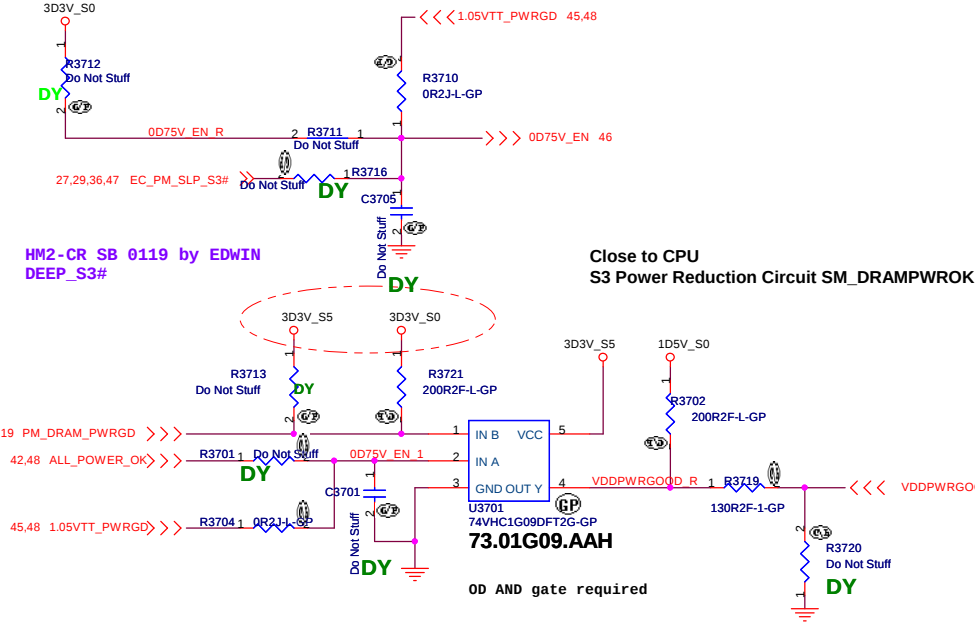
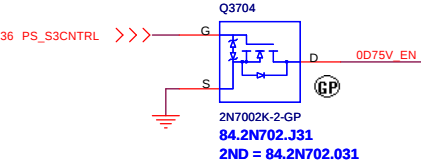
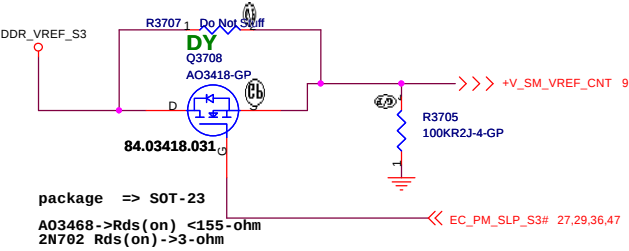
ANNIE Run Power



Modify the MOS package for placement



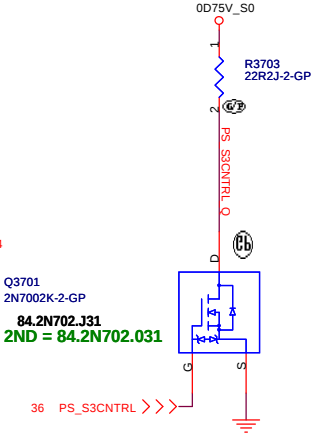
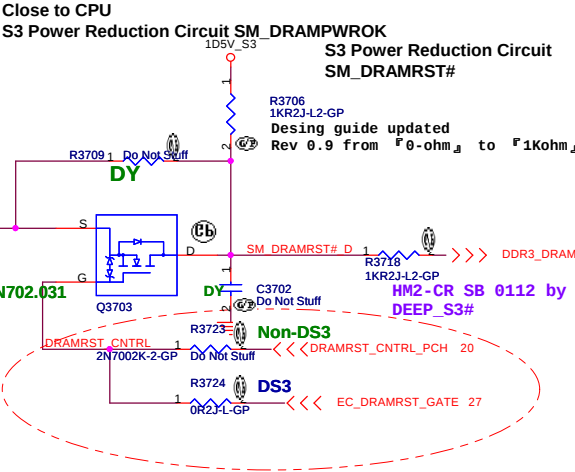
Close to CPU
S3 Power Reduction Circuit Processor VREF_DQ Implementation



For U3701 not OD AND gate
R3719 to 64.15015.6DL
R3720 to 64.75005.6DL
R3702 to DY

SM_DRAMPWROK must have a maximum of 15ns rise or fall time over VDDQ * 0.55± 200mV and the edge must be monotonic

Close to DIMM
S3 Power Reduction Circuit SM_DRAMPWROK



Elpida 1333 4G DS3 NonSSD 65W

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Title ADAPTER		
Size A3	Document Number SM30 HS	Rev -SA
Date: Tuesday, February 21, 2012	Sheet 37	of 102

Move to small board

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title DCIN JACK		
Size A4	Document Number SM30 HS	Rev -SA
Date Tuesday, February 21, 2012		Sheet 38 of 102

Move to small board

Elpida 1333 4G DS3 NonSSD 65W

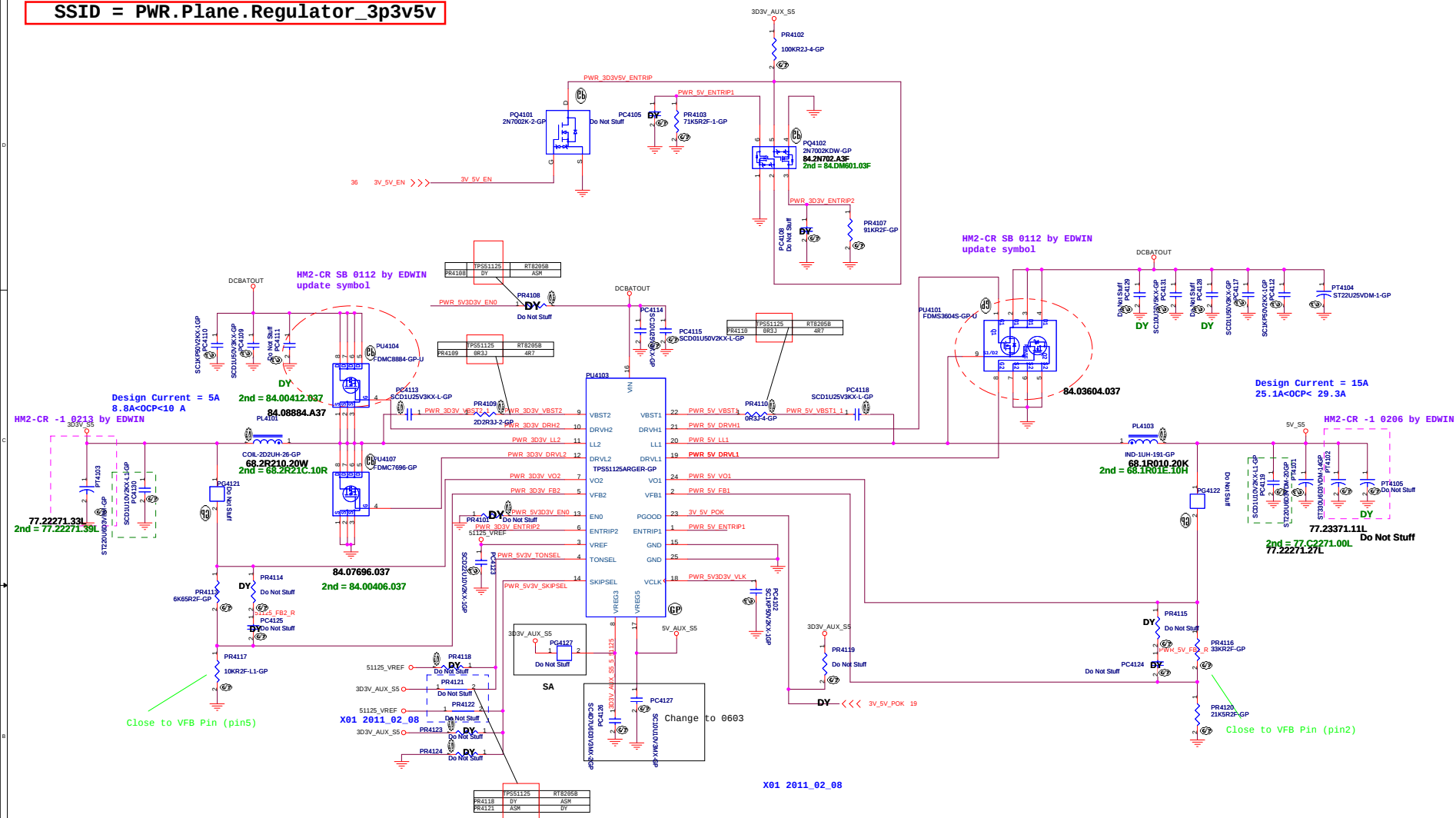
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Title		
BATT CONN		
Size	Document Number	Rev
A4	SM30 HS	-SA
Date:	Tuesday, February 21, 2012	Sheet 39 of 102

Move to small board

Elpida 1333 4G DS3 NonSSD 65W

		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
CHARGER BQ24745			
Size A3	Document Number SM30 HS		Rev SA
Date: Tuesday, February 21, 2012		Sheet 40 of	102

```
SSID = PWR.Plane.Regulator_3p3v5v
```

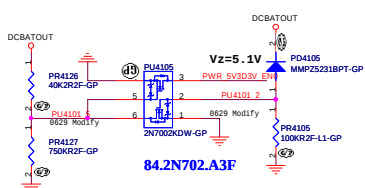


I/P cap: 10U 25V K0805 X5R/ 78.10622.51L
Inductor: 2.2U PCMC063T-2R2MN Cyntec 18mohm/20mohm Isat =10Arms 68.2R210.20B
O/P cap: ST22006D3VDM-20GP 25mohm/ 77.22271.27L
H/S: FDMC8884-GP / 22mohm/39mOhm@4.5Vgs / 84. 08884.A37
L/S: FDMC7692-GP / 9.5mohm/11.5mOhm@4.5Vgs / 84.07692.A37

```
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: ST220U6D3VDM-20GP 25mOhm / 77.22271.27L
H/S: STR1720D-T1-GE3-GP / 10.30mOhm/12.40mOhm@4.5Vgs / 84.00172.037L
L/S: STR460DP-T1-GE3-GP / 4.9mOhm/6.1mOhm@4.5Vgs / 84.00460.037L
```

SKIPSEL	VREG3 or VREG5	VREF(2V)	GND
Operating Mode	00A Auto Skip	Auto Skip	PWM only

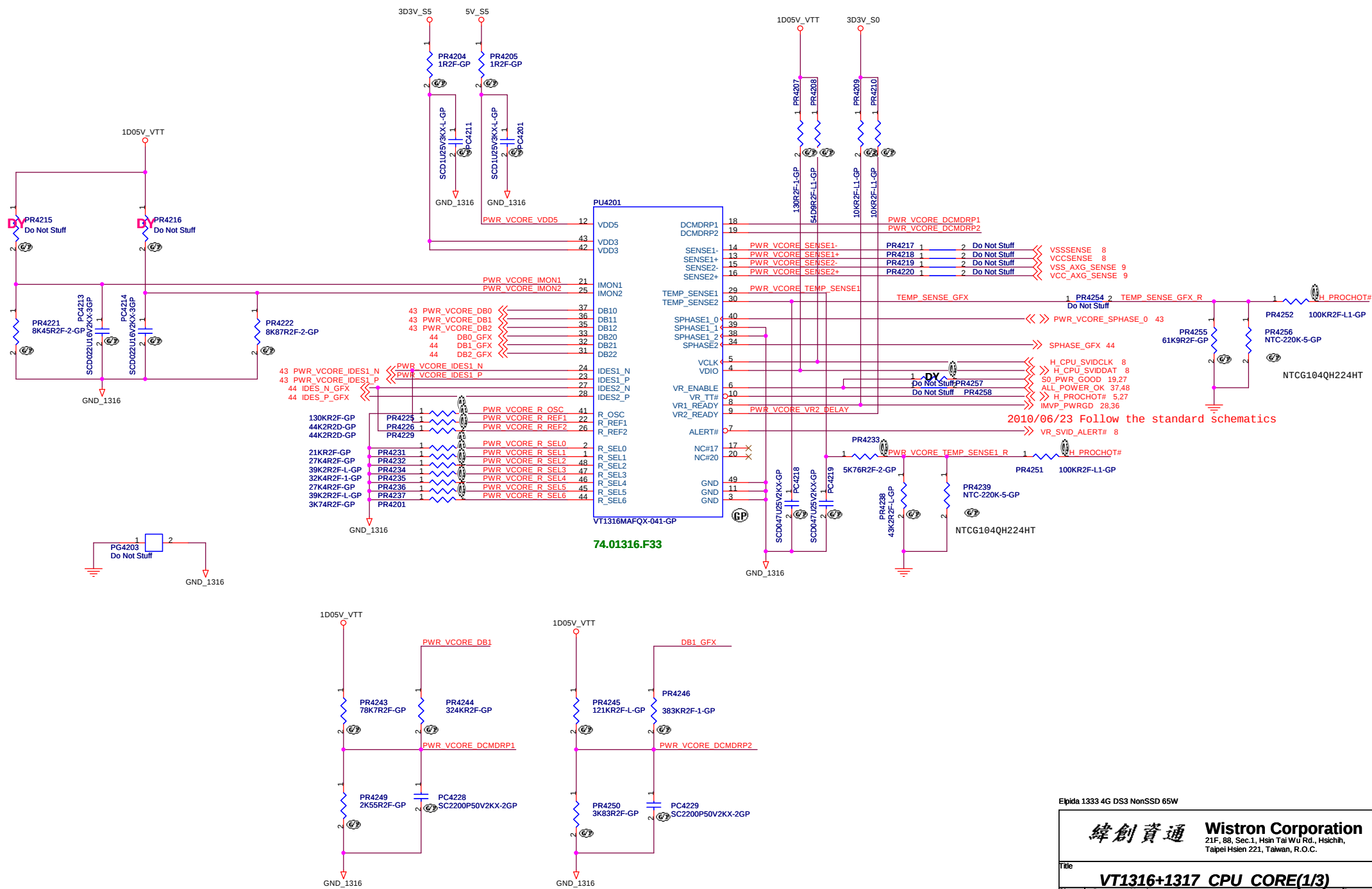
EN0	Open	820kΩ to GND	GND
Operating Mode	enable both LDOs, VCLK on and ready to turn on switcher channels	enable both LDOs, VCLK off and ready to turn on switcher channels	disable all circuit



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

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

SSID = CPU.Regulator



Elpida 1333 4G DS3 NonSSD 65W

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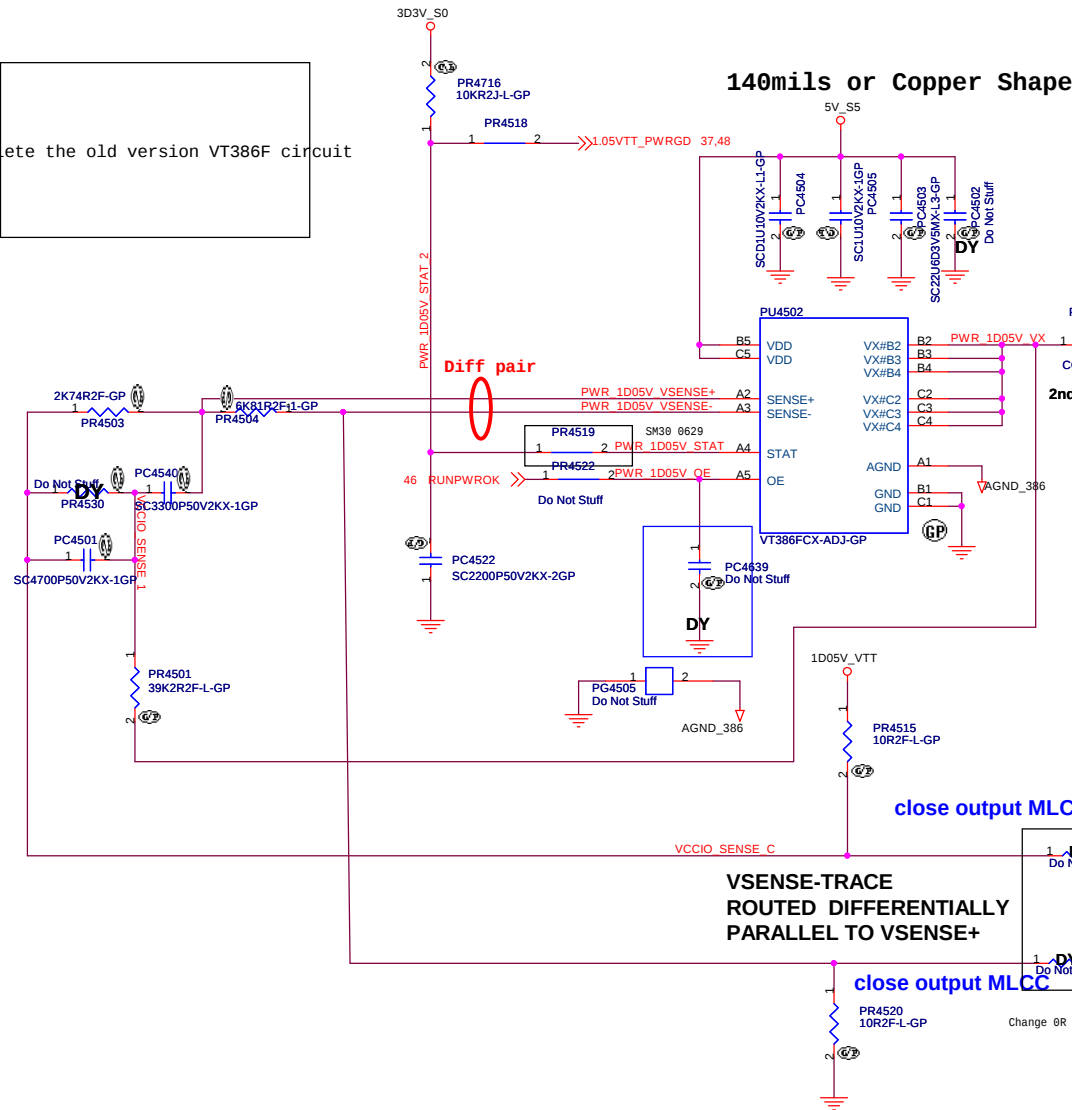
Title			
VT1316+1317 CPU CORE(1/3)			
Size	Document Number	Rev	
A3	SM30 HS	SA	
Date:	Tuesday, February 21, 2012	Sheet	42 of 102



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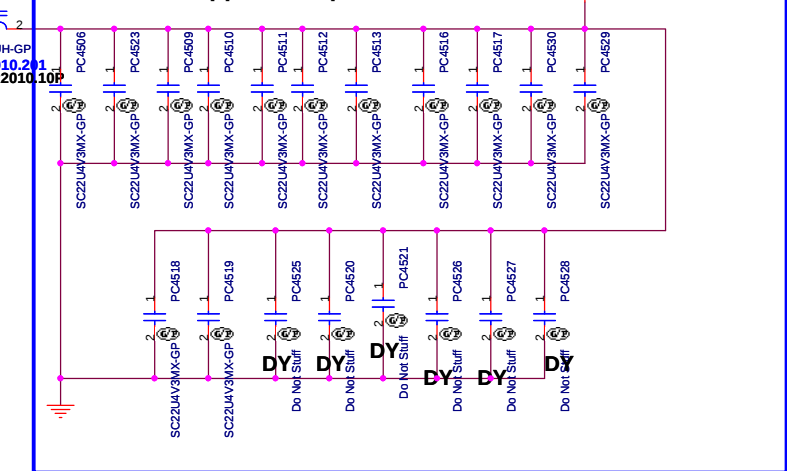
Title			
VT1316+1317 CPU CORE(3/3)			
Size A3	Document Number		Rev
	SM30 HS		SA
Date:	Tuesday, February 21, 2012	Sheet 44 of	102

Delete the old version VT386F circuit



Design Current = 12A
15.6A < OCP < 17.7A

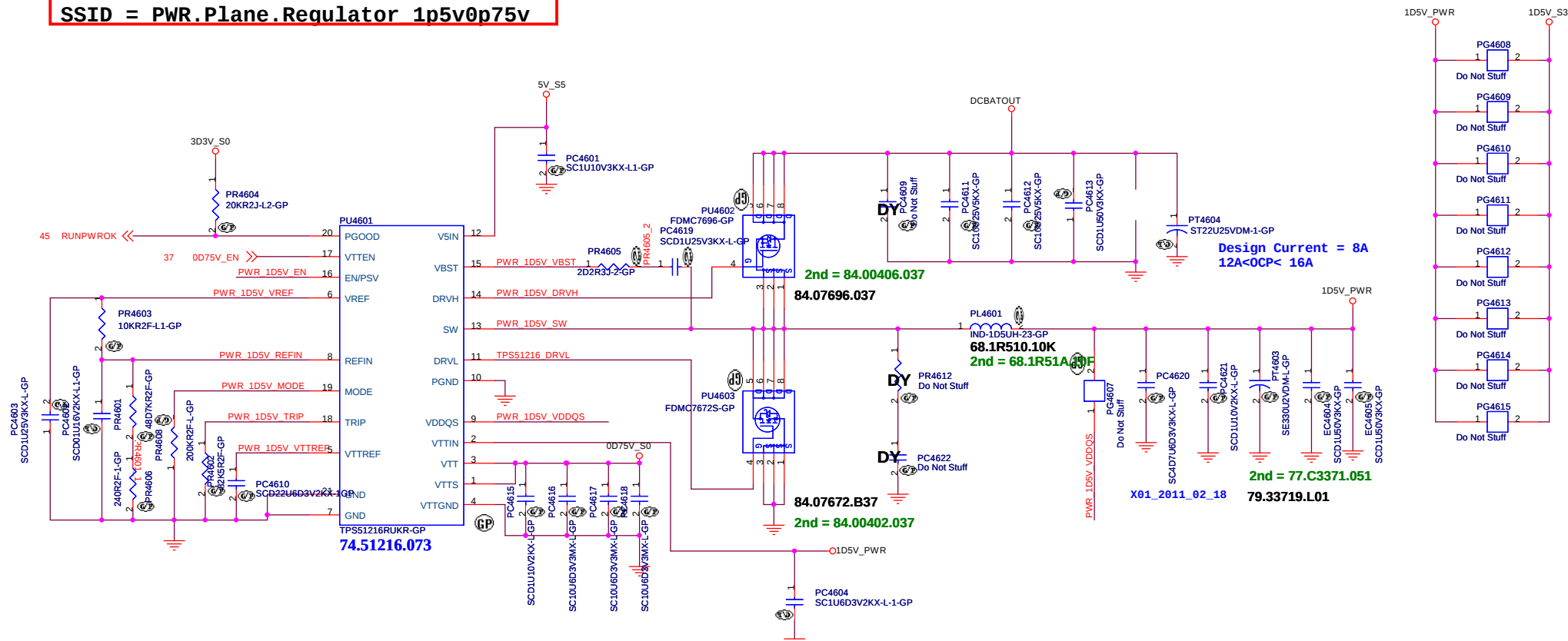
140mils or Copper Shape



Change to 0603_4V

Elpida 1333 4G DS3 NonSSD 65W

SSID = PWR.Plane.Regulator 1p5v0p75v

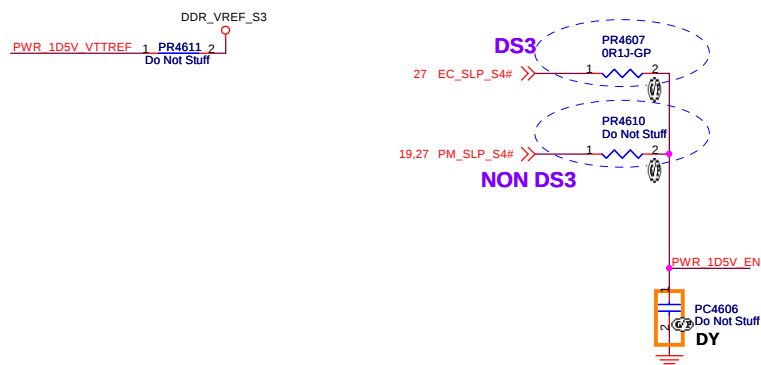


State	S3	S5	VDDR	VTTREF	VTT
S0	Hi	Hi	On	On	On
S3	Lo	Hi	On	On	Off(Hi-Z)
S4/S5	Lo	Lo	Off	Off	Off

MODE

PR5003	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: IND-1D5UH-23-GP 14mohm/15mohm Isat =18Arms 68.1R510.10K
O/P cap: SE330U2VDM-L-GP 9m0hm / 79.33719.L01
H/S: SIS412DN-T1-GE3-GP / 24m0hm/30m0hm@4.5Vgs / 84.00412.037
L/S: SI7716ADN-T1-GE3-GP / 13.5m0hm/16.5m0hm@4.5Vgs / 84.07716.037

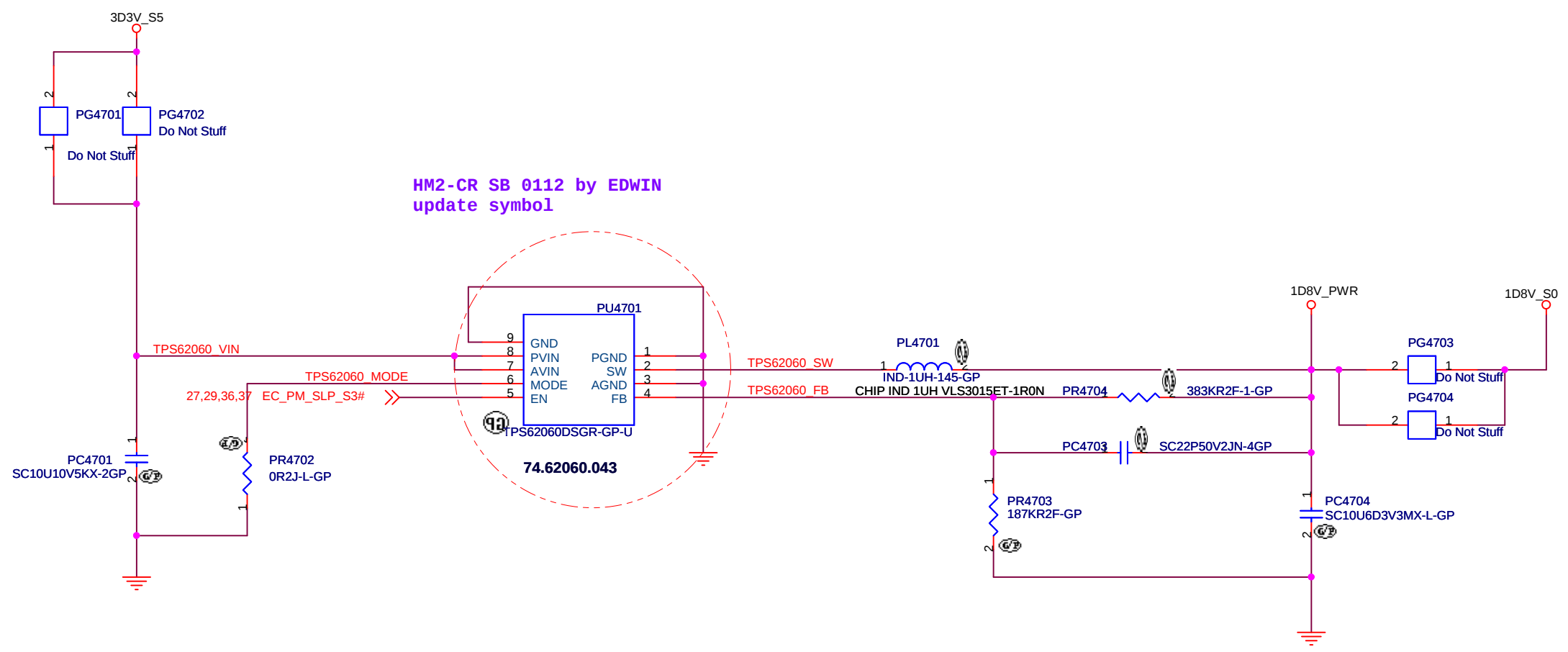


Elpida 1333 4G DS3 NonSSD 65W

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

Title			
TPS51116 +1.5V SUS			
Size A3	Document Number		Rev
	SM30 HS		S
Date:	Tuesday, February 21, 2012	Sheet 46 of	102

SSID = PWR.Plane.Regulator_1p8v



Elpida 1333 4G DS3 NonSSD 65W

緯創資通		Wistron Corporation	
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.			
Title DC CONVERTER_1D8V			
Size A4	Document Number	Rev	
	SM30 HS	SA	
Date: Tuesday, February 21, 2012	Sheet 47	of	102

VID0	VID1	VCCSA ULV
L	L	0.9V
L	H	0.85V
H	L	0.775V
H	H	0.75V



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

Title	TPS51461_VCCSA
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Size	Document Number
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SM30 HS

A3

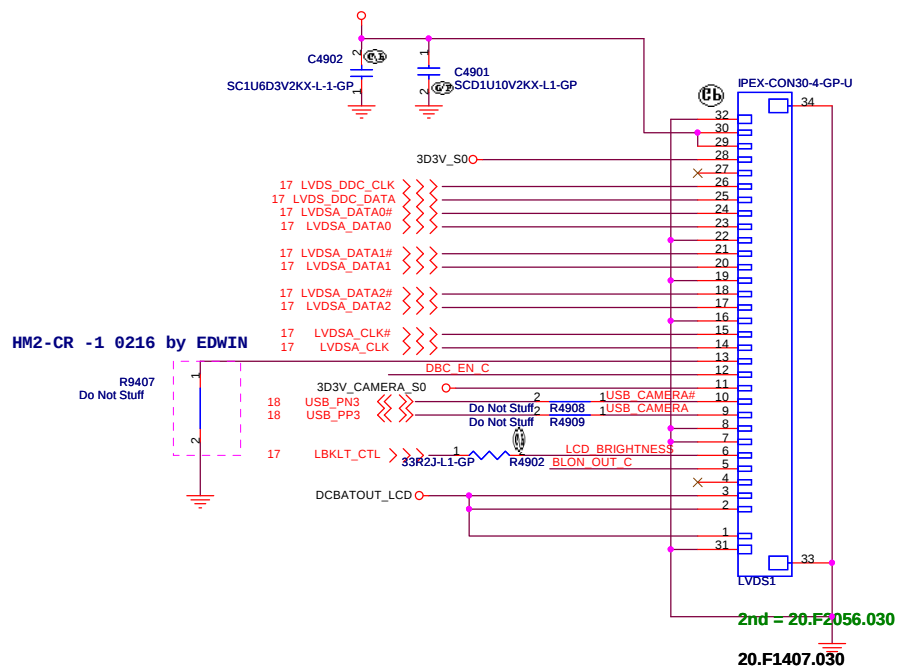
Date: Tuesday, February 21, 2012

Sheet	48	of	102
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SSID = VIDEO

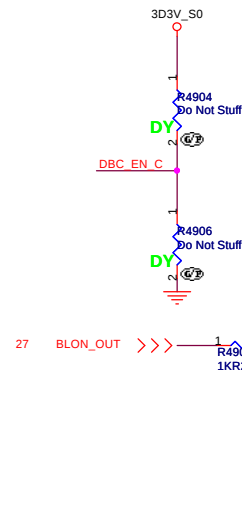
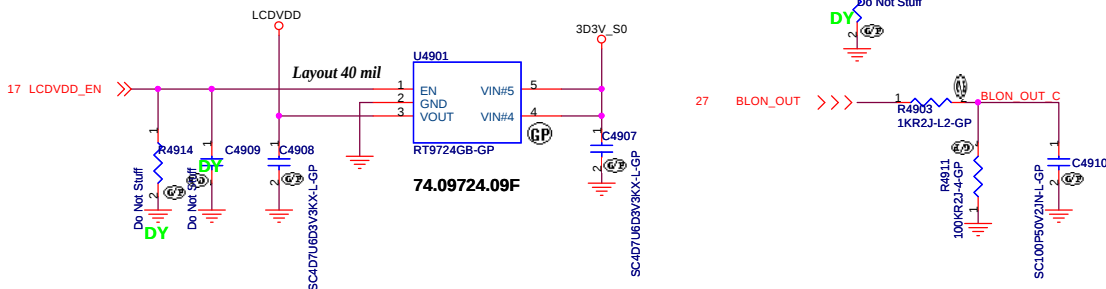
Reverse the pin define becасue of cable issue

LVDS CONNECTOR

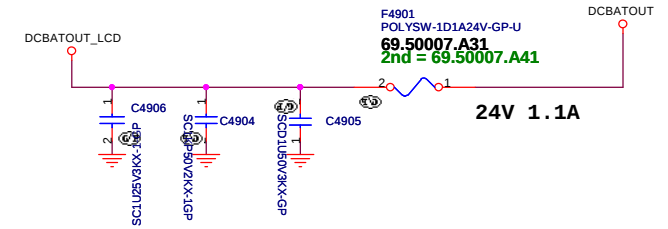


SSID = VIDEO

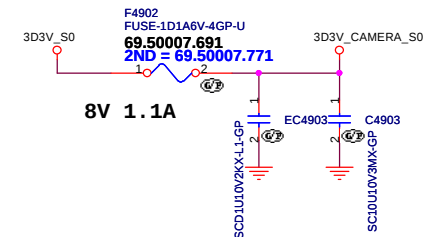
LCD POWER for ANNIE



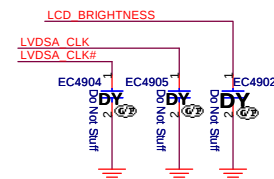
INVERTER POWER



Camera Power



For EMI request
Close to LVDS connector



Elpida 1333 4G DS3 NonSSD 65W

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Title			
LCD Connector			
Size A3	Document Number		Rev
	SM30 HS		-SA
Date:	Tuesday, February 21, 2012	Sheet 49 of	102

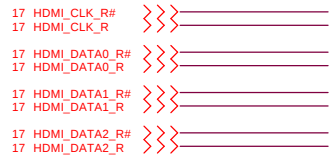
Pull High 5V Design on CRT Board
CRT DDCDATA & DDCCLK level shift

Elpida 1333 4G DS3 NonSSD 65W

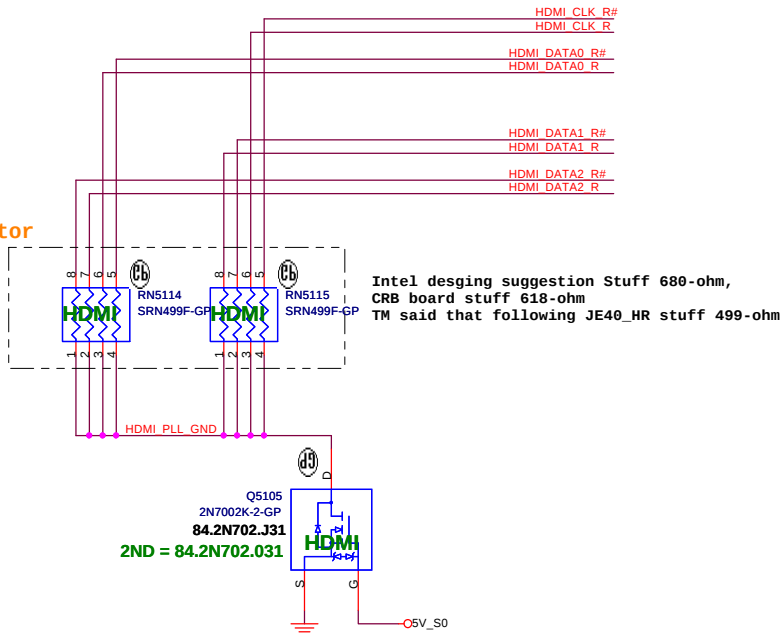
緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
CRT Connector		
Size	Document Number	Rev
A3	SM30 HS	-SA
Date:	Tuesday, February 21, 2012	Sheet 50 of 102

SSID = VIDEO

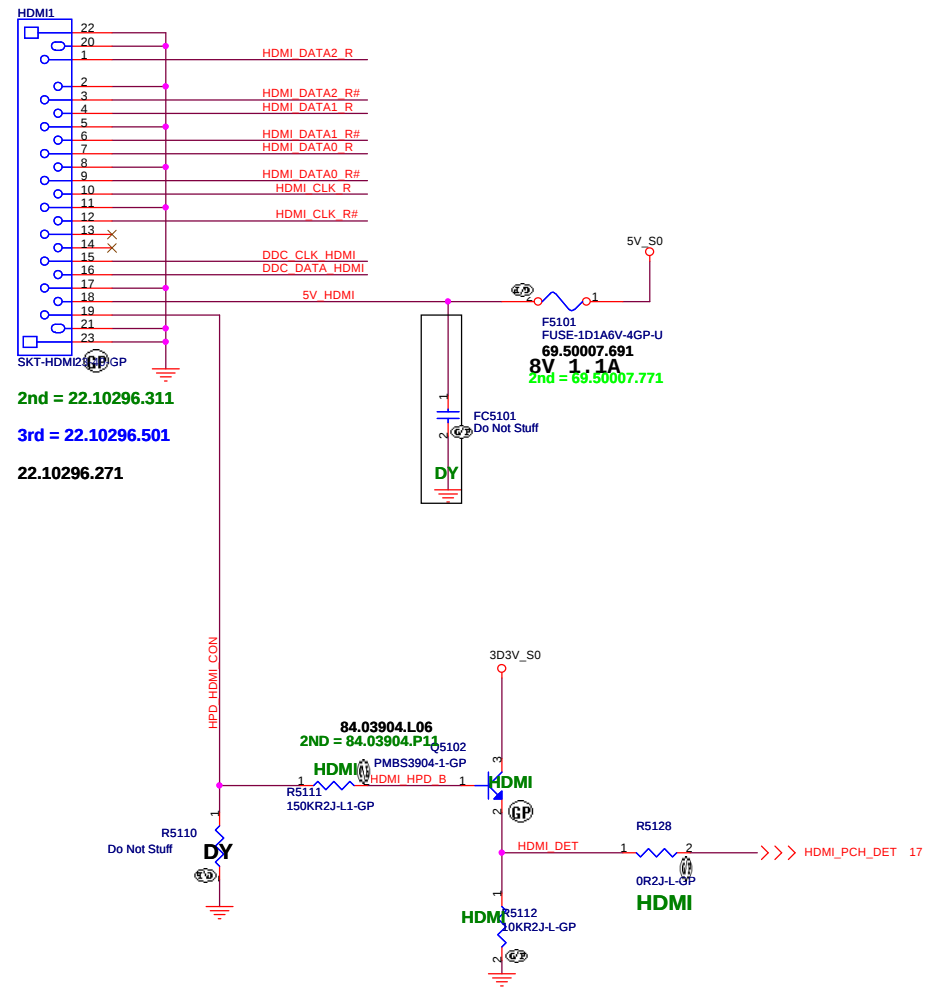
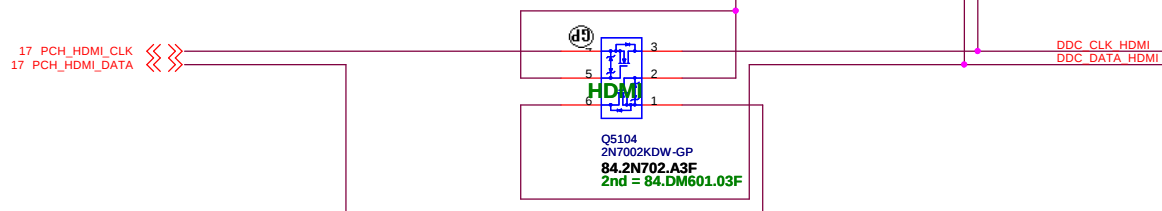
HDMI Level Shifter & CONNECTOR



Close to HDMI Connector



Close to Level Shift



Elpida 1333 4G DS3 NonSSD 65W

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

Title			
HDMI Level Shifter/Connector			
Size	Document Number		Rev
A3	SM30 HS		-SA
Date:	Tuesday, February 21, 2012	Sheet 51 of	102

LED BACKLIGHT CONVERTER POWER

Elpida 1333 4G DS3 NonSSD 65W

Title	
eDP	
Size	Document Number
A3	SM30 HS
Date:	Tuesday, February 21, 2012
Sheet	52 of 102
Rev	
-SA	

緯創資通

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

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Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
S-VIDEO		
Size	Document Number	Rev
A4	SM30 HS	-SA
Date:	Tuesday, February 21, 2012	Sheet 53 of 102

(Blanking)

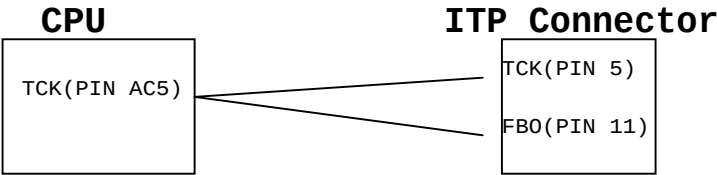
Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title Reserved		
Size A4	Document Number SM30 HS	Rev -SA
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SSID = User.Interface

ITP Connector

H_CPURST# use pull-up Resistor close
ITP connector 500 mil (max),
others place near CPU side.



Elpida 1333 4G DS3 NonSSD 65W

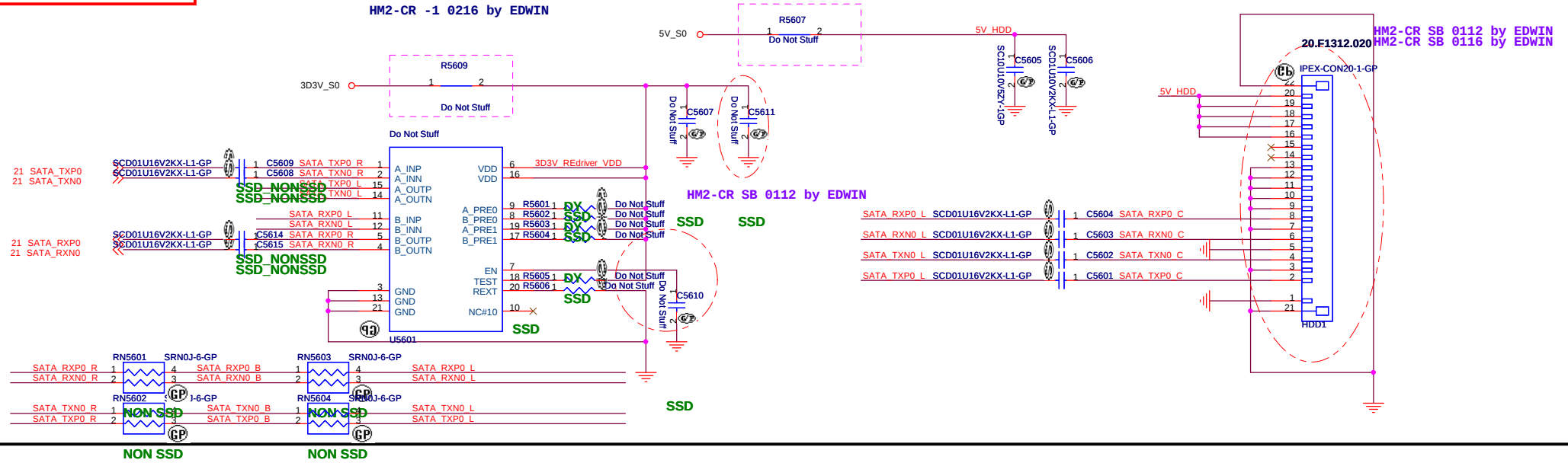
		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title ITP			
Size A4	Document Number SM30 HS		Rev -SA
Date: Tuesday, February 21, 2012		Sheet 55	of 102

SSID = SATA

SATA HDD Connector

HM2-CR -1 0216 by EDWIN

HM2-CR -1 0216 by EDWIN



ODD Connector

Without ODD

Elpida 1333 4G DS3 NonSSD 65W

Title		HDD/ODD	
Size	Document Number	Rev	
A3	SM30 HS	-SA	
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ESATA Power

USB CHARGER

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

Wistron Corporation

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Title

E-SATA/USB CHARGER

Size

A3

Document Number

SM30 HS

Rev

-SA

Date:

Tuesday, February 21, 2012

Sheet

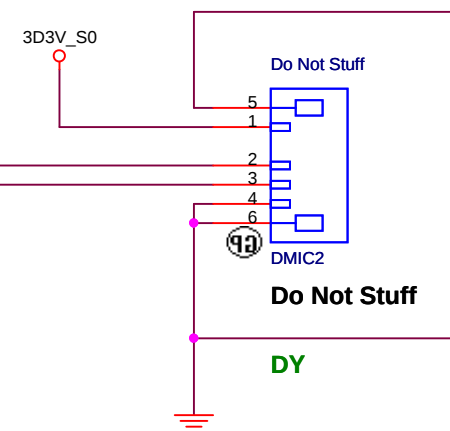
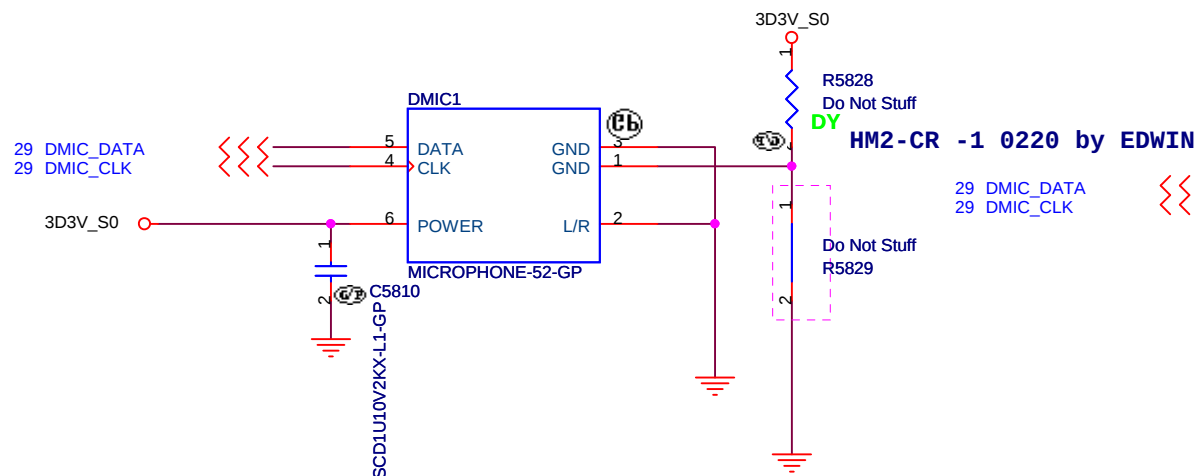
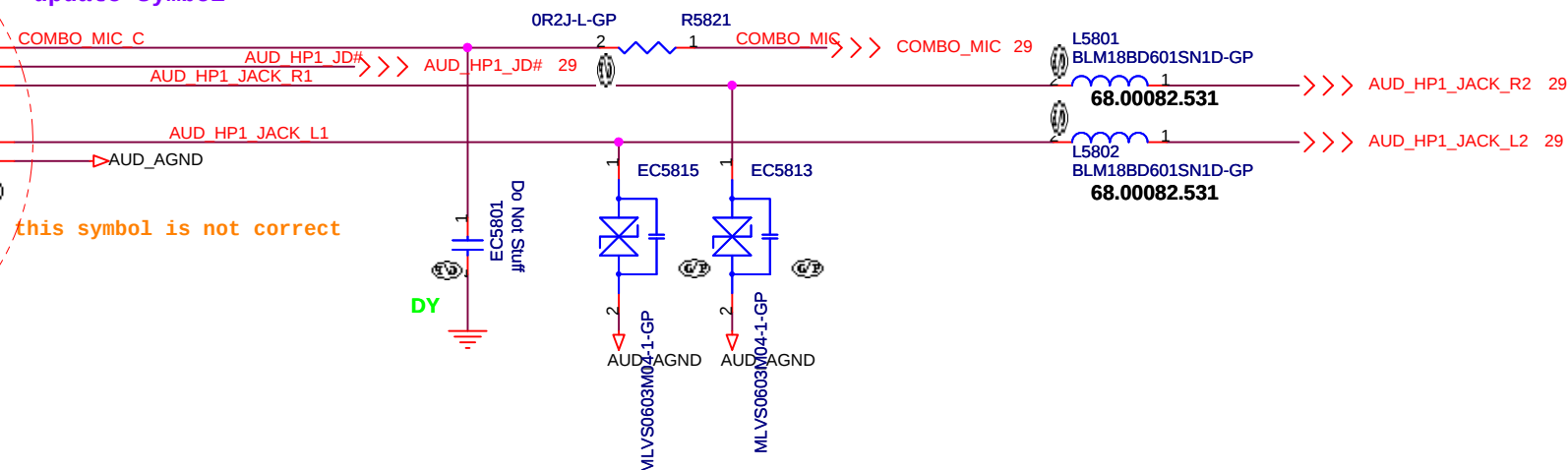
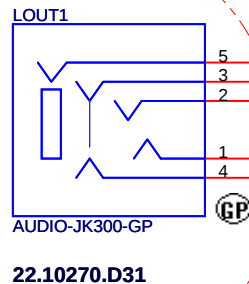
57

of

102

SSID = AUDIO

HM2-CR SB 0112 by EDWIN
update symbol



Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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Title

Audio Jack

Size
A4

Document Number

SM30 HS

Rev

-SA

Date: Tuesday, February 21, 2012

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- 54321
- D
- C
- B
- A
-
- ←
- 1.route on bottom as differential pairs.
- 2.Tx+/Tx- are pairs. Rx+/Rx- are pairs.
- 3.No vias, No 90 degree bends.
- 4.pairs must be equal lengths.
- 5.6mil trace width,12mil separation.
- 6.36mil between pairs and any other trace.
- 7.Must not cross ground moat,except RJ-45 moat.

Without LAN

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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

Title

LAN CONNECTOR

Size
A4

Document Number

SM30 HS

Rev

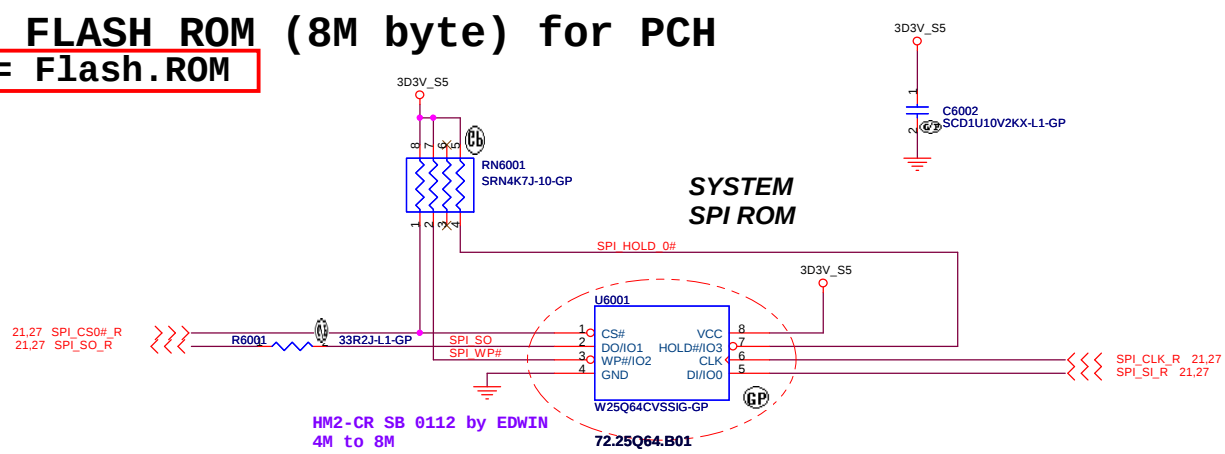
-SA

Date: Tuesday, February 21, 2012

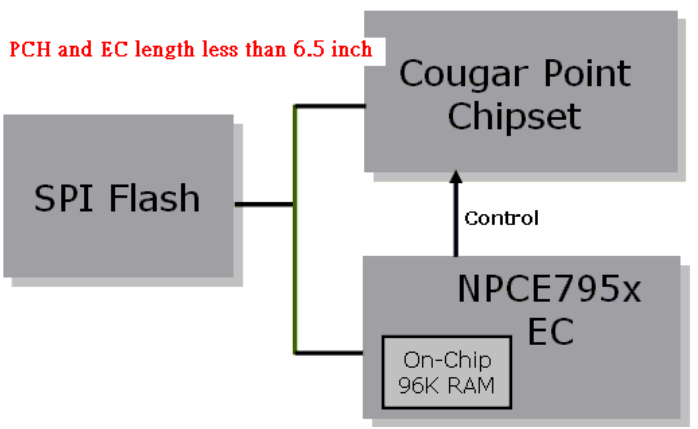
Sheet 59 of 102

SPI FLASH ROM (8M byte) for PCH

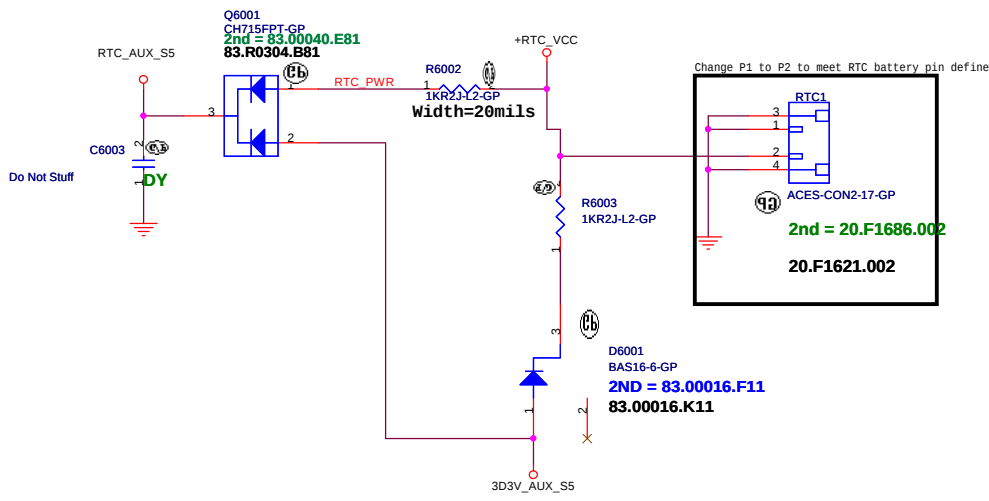
SSID = Flash.ROM



SPI ROM Equal length need to less than 500mil
SPI ROM Equal length need to less than 500mil



SSID = RBATT

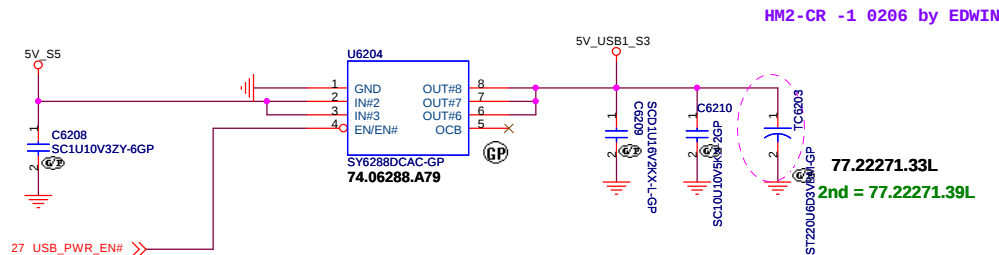


RTC battery charger circuit

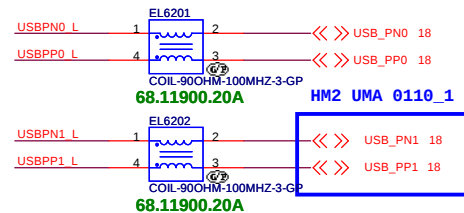
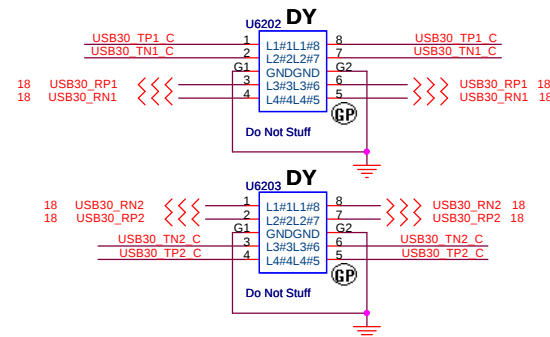
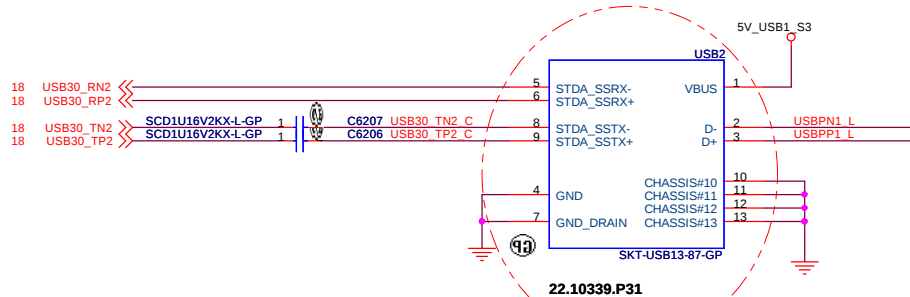
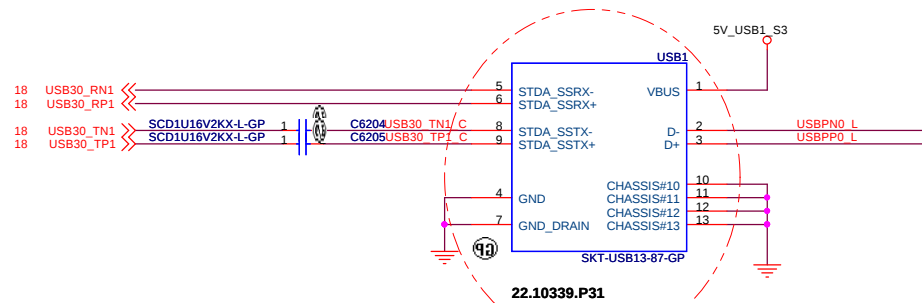
SSID = USB

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
USB Power SW		
Size	Document Number	Rev
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HM2-CR -1 0218 by EDWIN



USB 3.0 Connector Pin definition	
1	POWER
2	USB 2.0 D-
3	USB 2.0 D+
4	GND
5	StdA_SSRX- SuperSpeed RX
6	StdA_SSRX+
7	GND
8	StdA_SSTX- SuperSpeed TX
9	StdA_SSTX+

Elpida 1333 4G DS3 NonSSD 65W

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Title USB 3.0 Port	
Size A3 Date: Tuesday, February 21, 2012	Document Number Rogue Sheet 62 of 100
Rev SA	

SSID = User.Interface
Bluetooth Module conn.

Without BT

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
Bluetooth		
Size	Document Number	Rev
A4	SM30 HS	-SA
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Finger printer

JE40 delete FP function



Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
RESERVED		
Size	Document Number	Rev
A4	SM30 HS	-SA
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SSID = Wireless

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 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
A4	SM30 HS	-SA
Date: Tuesday, February 21, 2012		Sheet 65 of 102

SSID = Wireless

Blanking

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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

Title

WWAN Connector

Size
A4

Document Number

SM30 HS

Rev
-SA

Date: Tuesday, February 21, 2012

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Blanking

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
M-SATA		
Size	Document Number	Rev
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SSID = User.Interface

Move to power board

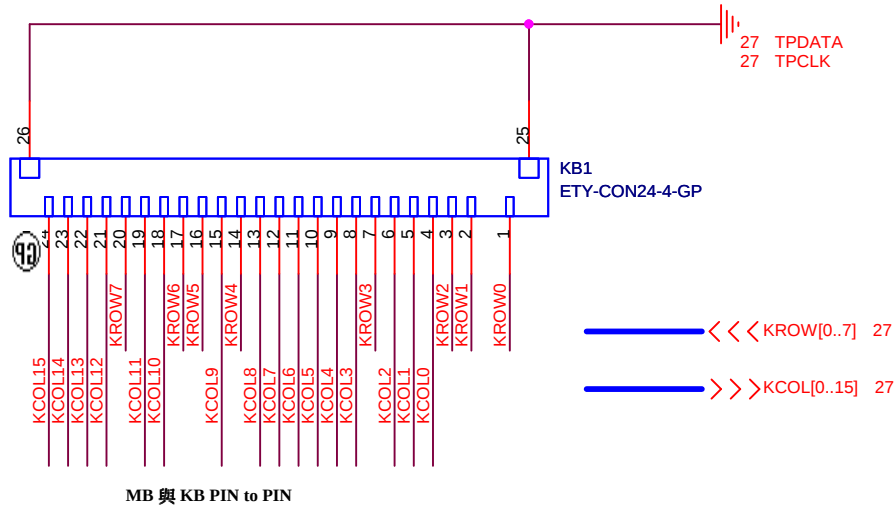
for factory test

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title LED Bard/Power Button		
Size Custom	Document Number SM30 HS	Rev -SA
Date: Tuesday, February 21, 2012		Sheet 68 of 102

SSID = KBC

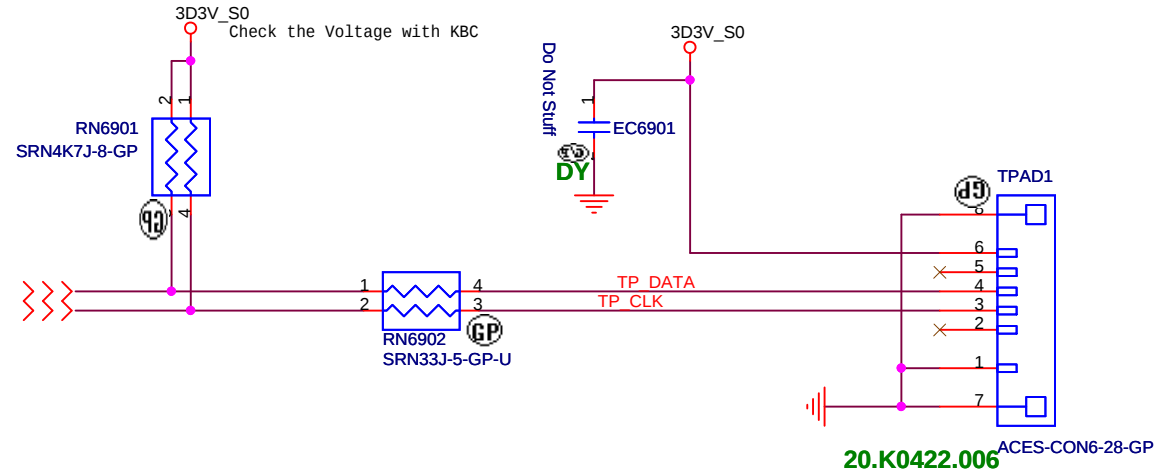
Internal KeyBoard Connector



1 **K/B** 26

Change KB from 下接觸 to 上接觸
KB Pin define need to check again

TOUCH PAD



Change back to 1mm pin pitch connector
Switch the pin order SA

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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Title

Key Board/Touch Pad

Size
A4

Document Number

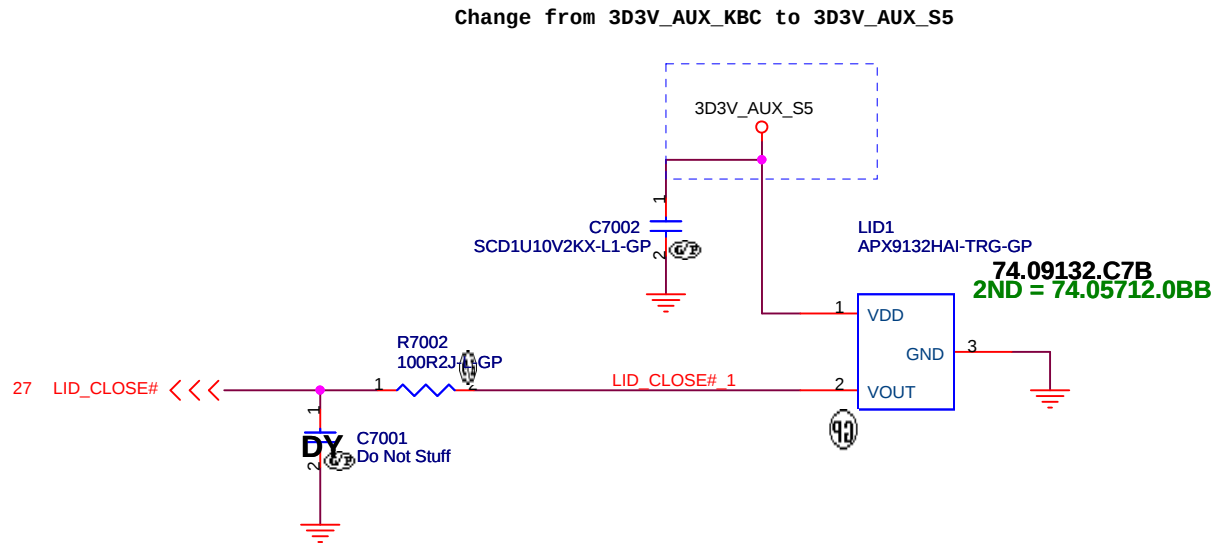
HMA40 HR

Rev

-SA

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Elpida 1333 4G DS3 NonSSD 65W

緯創資通

Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
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Title

Hall Sensor

Size
A4

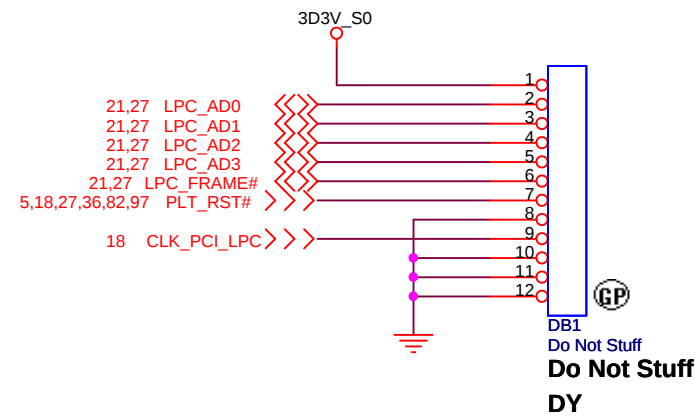
Document Number

HMA40 HR

Rev
-SA

Date: Tuesday, February 21, 2012

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Elpida 1333 4G DS3 NonSSD 65W

緯創資通

Wistron Corporation
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Title

Dubug connector

Size
A4

Document Number

HMA40 HR

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Date: Tuesday, February 21, 2012

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Elpida 1333 4G DS3 NonSSD 65W

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Title Reserved		
Size A4	Document Number HMA40 HR	Rev -SA
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Elpida 1333 4G DS3 NonSSD 65W

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Title Reserved		
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SD/XD/MS Card Reader

Card reader move to small board

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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Title

CARD Reader CONN

Size
A4

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SSID = ExpressCard

+1.5V_CARD Max. 650mA, Average 500mA.
+3.3V_CARD Max. 1300mA, Average 1000mA
+3.3V_CARDAUX Max. 275mA

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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Title

New Card

Size
A3

Document Number
HMA40_HR

Date: Tuesday, February 21, 2012

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-SA

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Elpida 1333 4G DS3 NonSSD 65W

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Title Reserved		
Size A4	Document Number HMA40 HR	Rev -SA
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(Blanking)

Elpida 1333 4G DS3 NonSSD 65W

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Title Reserved		
Size A4	Document Number HMA40 HR	Rev -SA
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(Blanking)

Elpida 1333 4G DS3 NonSSD 65W

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Title Reserved		
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SSID = User.Interface

Free Fall Sensor

Note

- no via, trace, under the sensor (keep out area around 2mm)
- stay away from the screw hole or metal shield soldering joints
- design PCB pad based on our sensor LGA pad size (add 0.1mm)
- solder stencil opening to 90% of the PCB pad size
- mount the sensor near the center of mass of the NB as possible as you can

Delete G Sensor Function

Note

- (1) Keep all signals are the same trace width. (included VDD, GND).
- (2) No VIA under IC bottom.

Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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Title

Free Fall Sensor

Size
A4

Document Number

HMA40 HR

Rev

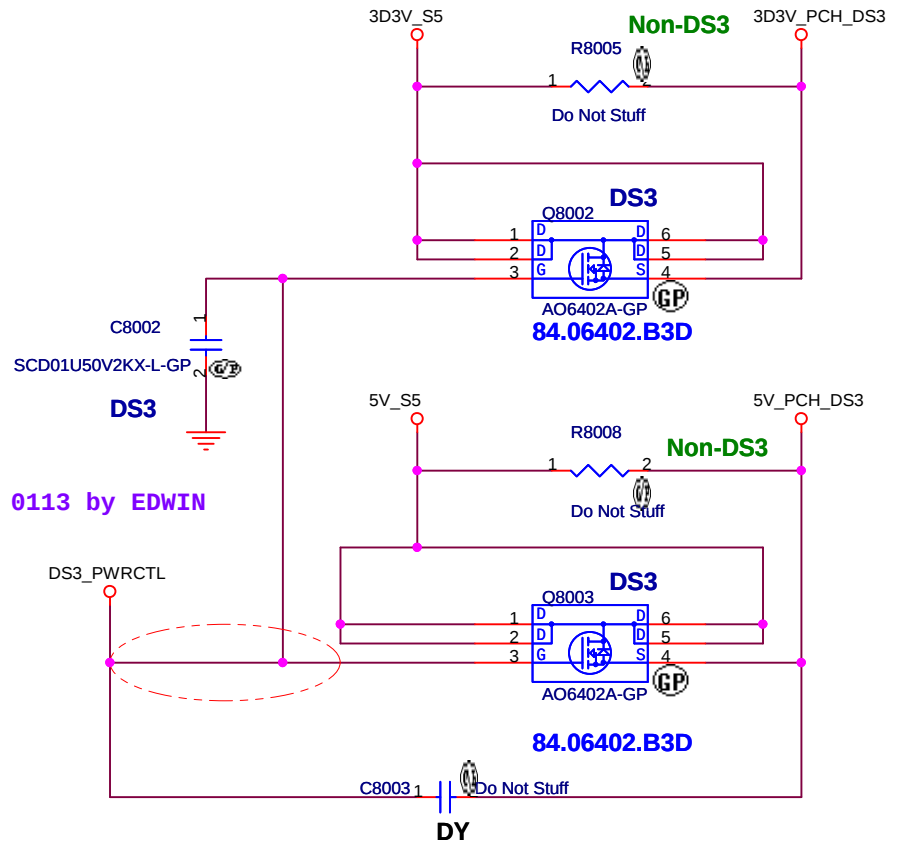
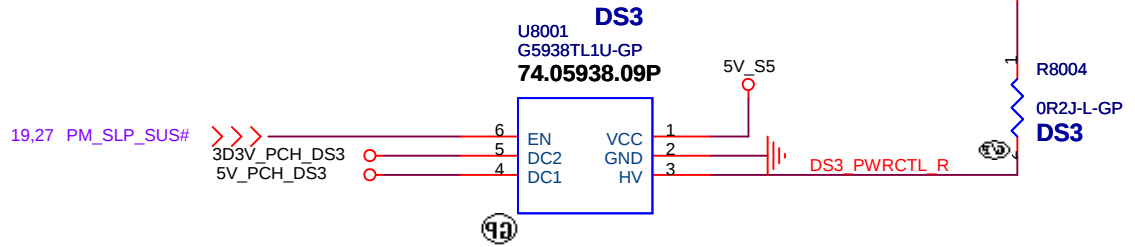
-SA

Date: Tuesday, February 21, 2012

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SA_20111013_DS3

HM2-CR SB 0113 by EDWIN



Elpida 1333 4G DS3 NonSSD 65W

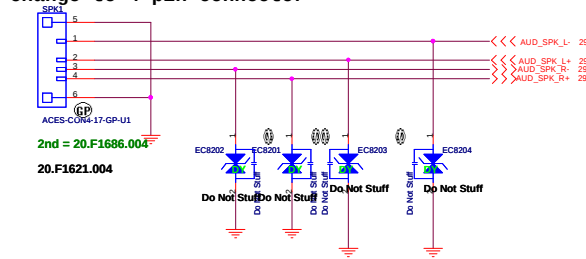
緯創資通		Wistron Corporation	
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.			
Title			
Reserved			
Size A4	Document Number HMA40 HR		Rev -SA
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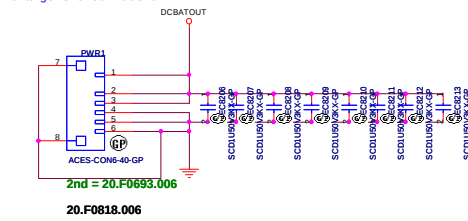
Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title Reserved		
Size A4	Document Number HMA40 HR	Rev -SA
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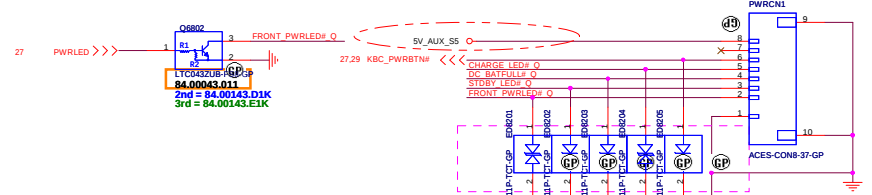
Change to 4 pin connector



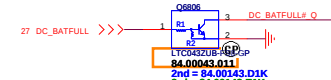
Change the connection



HM2-CR SB 0113 by EDWIN

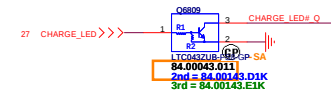


Battery LED2(DC_BATFULL)

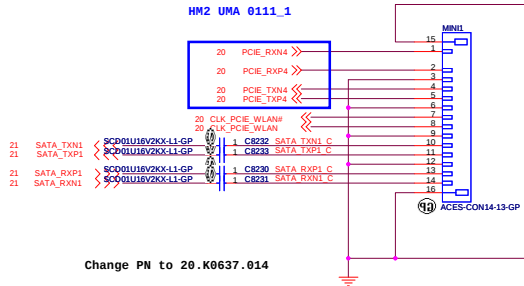
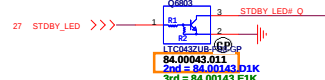


HM2-CR -1 0220 by EDWIN for EMI request

Battery LED1(CHARGE)

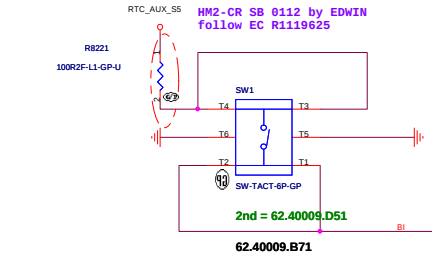
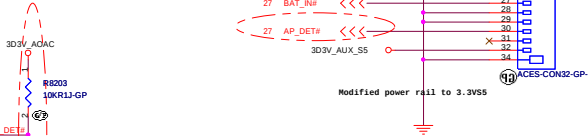


Power STDBY_LED

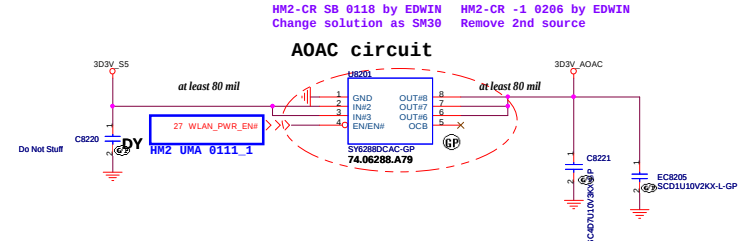
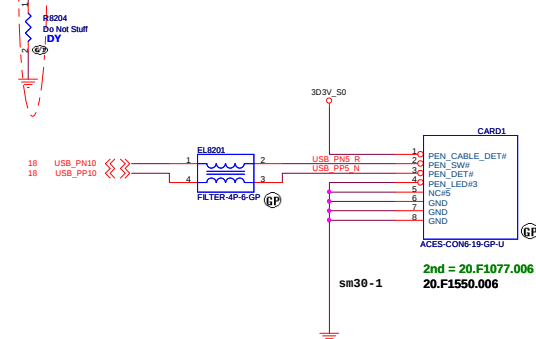


Change PN to 20.K0637.014

HM2-CR SB 0118 by EDWIN



Implement the battery reset function



HM2-CR SB 0118 by EDWIN

Change solution as SM30

HM2-CR -1 0206 by EDWIN

Remove 2nd source

AOAC circuit

Elpida 1333 4G D53 NonSSD 65W

緯創資通		Wistron Corporation	
21F, 8B, Sec.1, Hsin Tai Wu Rd., Hsuehshui, Taipei Hsien 221, Taiwan, R.O.C.			
Title			
IO Board Connector			
Size A2	Document Number HMA40 HR	Rev -SA	
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Elpida 1333 4G D53 NonSSD 65W

緯創資通

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

Title

GPU_PCIE/STRAPPING(1/5)

Size
A2

Document Number
HMA40 HR

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-SA

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Elipda 1333 4G DS3 NonSSD 65W

緯創資通

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

Rate

GPU_DP/LVDS/CRT/GPIO(3/5)Size
Custom

Customer _____
Date _____

Document Number
HMA40 HR
Tuesday, February 21, 2012

Date: _____

1

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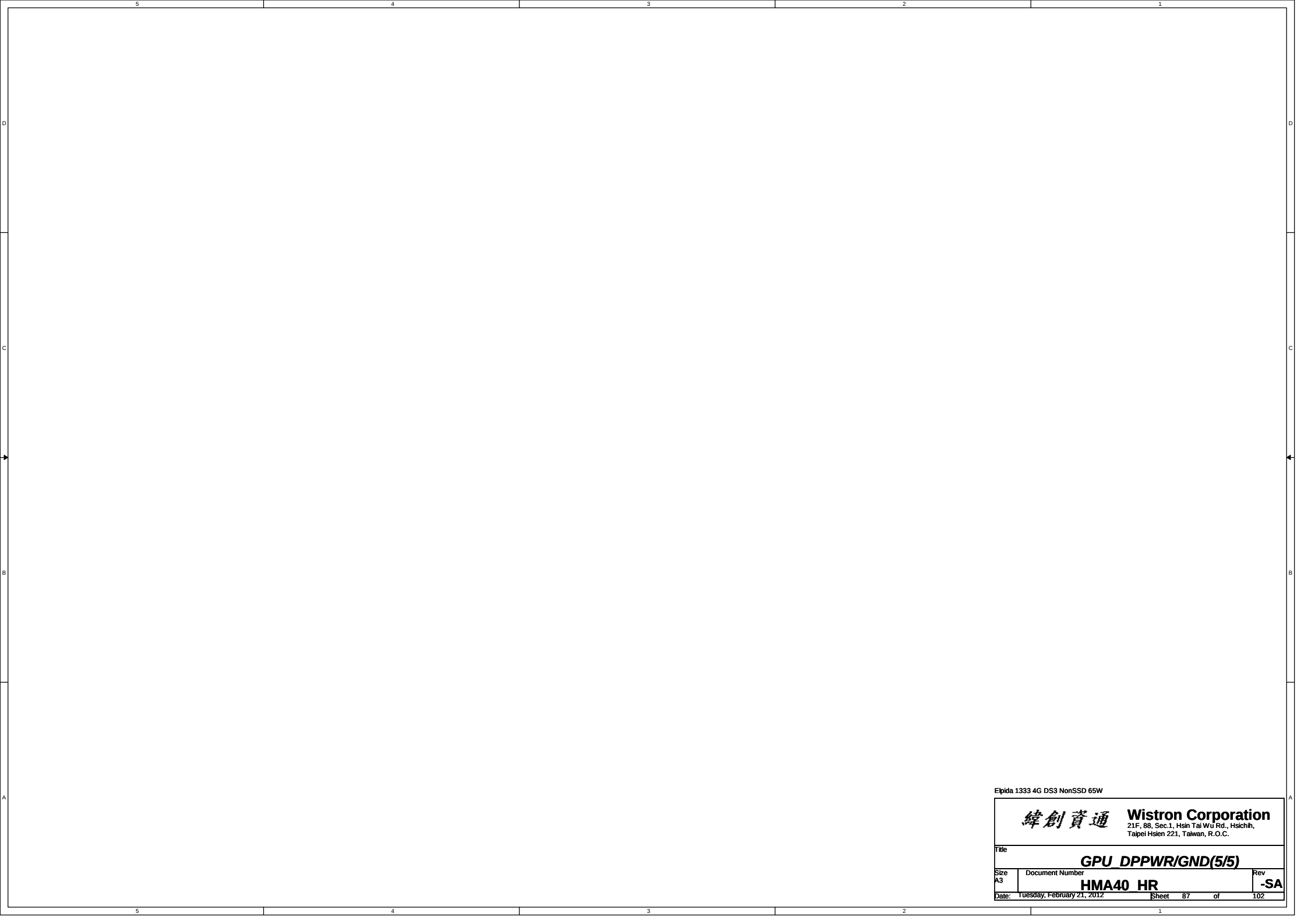
Model 1333 HG 1053 Rev0320 0509

緯創資通 **Wistron Corporation**
22F, 8F, Sec. 1, Hsin-Fa Rd, Hsinchu,
Taichung District, Taiwan, R.O.C.

File **GPU POWER(4/5)**

Rev **HMA40 HR** Rev **-SA**

Date: 2009/07/24/2009 Date: 2009/07/24/2009



Elpida 1333 4G DS3 NonSSD 65W

		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
GPU DPPWR/GND(5/5)			
Size A3	Document Number		Rev
	HMA40 HR		-SA
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Elpida 1333 4G DS3 NonSSD 65W

緯創資通

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

Title

DISCRETE VGA POWER

Size
A4

Document Number

SM30 HS

Rev
-SA

Date: Tuesday, February 21, 2012

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Blanking

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title LVDS Switch		
Size A4	Document Number SM30 HS	Rev -SA
Date Tuesday, February 21, 2012		Sheet 94 of 102

Blanking

Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title CRT Switch		
Size A4	Document Number SM30 HS	Rev -SA
Date: Tuesday, February 21, 2012		Sheet 95 of 102

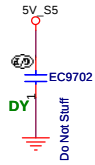
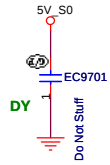
SSID = SDIO

Blanking

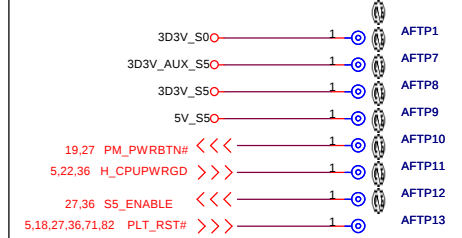
Elpida 1333 4G DS3 NonSSD 65W

緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title		
TOUCH PANEL		
Size	Document Number	Rev
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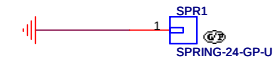
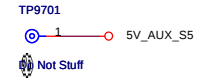
HM2-CR SB 0117 by EDWIN
request by EMI



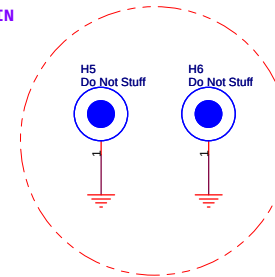
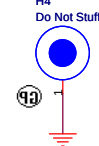
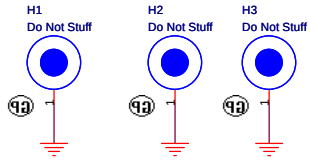
Check test point



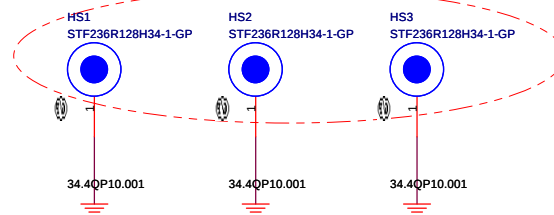
Test Point放在Dimm Door打開可量測處



HM2-CR SB 0112 by EDWIN
update symbol



HM2-CR -1 0220 by EDWIN
Part Number change



Elpida 1333 4G DS3 NonSSD 65W

Title		Wistron Corporation	
Size		21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
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- (1) change U6001 to socket 62.10089.001
- (2) change SW_L1 and SW_R1 PN to 『62.40089.221』
- (3) KI.G6501.001 / IC BD82HM65 SLH9D MM#908753 B2 FCBGA 989
KI.G6501.004 / IC BD82HM65 SLJ4P MM#914377 B3 FCBGA989P
- (4)U3101 change PN to 71.08158.M02
- (5)DM2 1st -> change PN to 62.10024.G01
- (6) IMIC1 =>82.40012.001
- (7) RJ1 =>22.10177.J71
- (8) CPU1 =>1st change PN to 62.10055.321
- (9) USB2 =>1st change PN to22.10218.G01 -> only Lab stage

[Lab] S01G ==>1st
S02G ==>2nd(NEC Cap)

Coin Battery:
1st:23.20068.001
2nd:23.22063.001

-SA

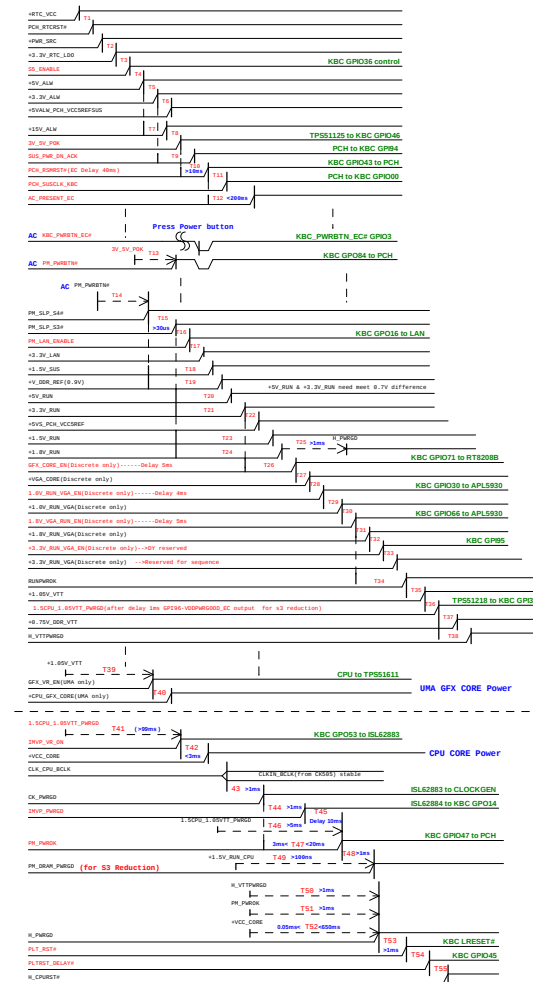
-SB

-1

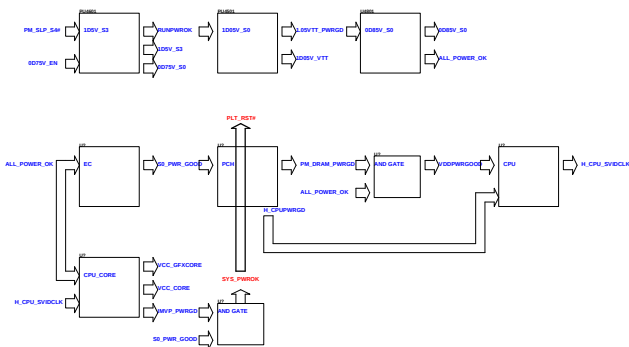
-2

(AC mode)

red word: KBC GPIO

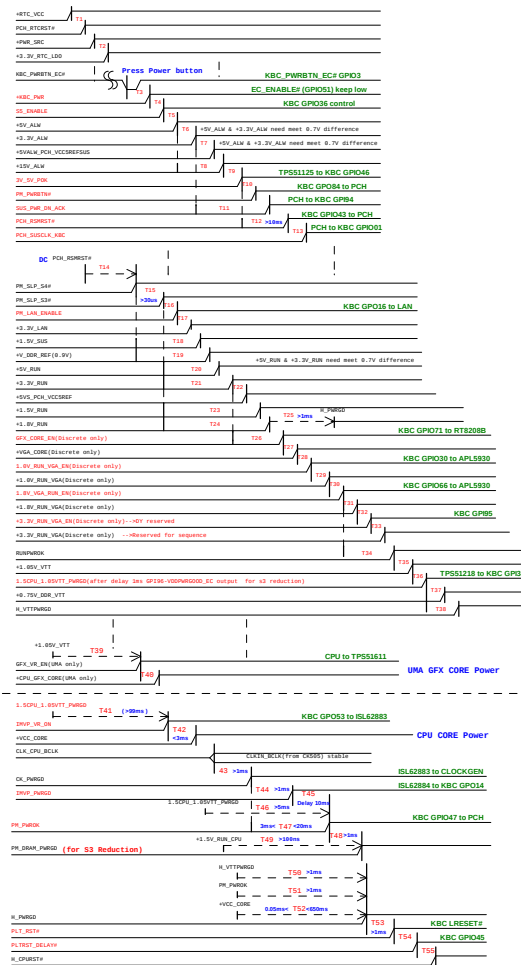


Power Sequence

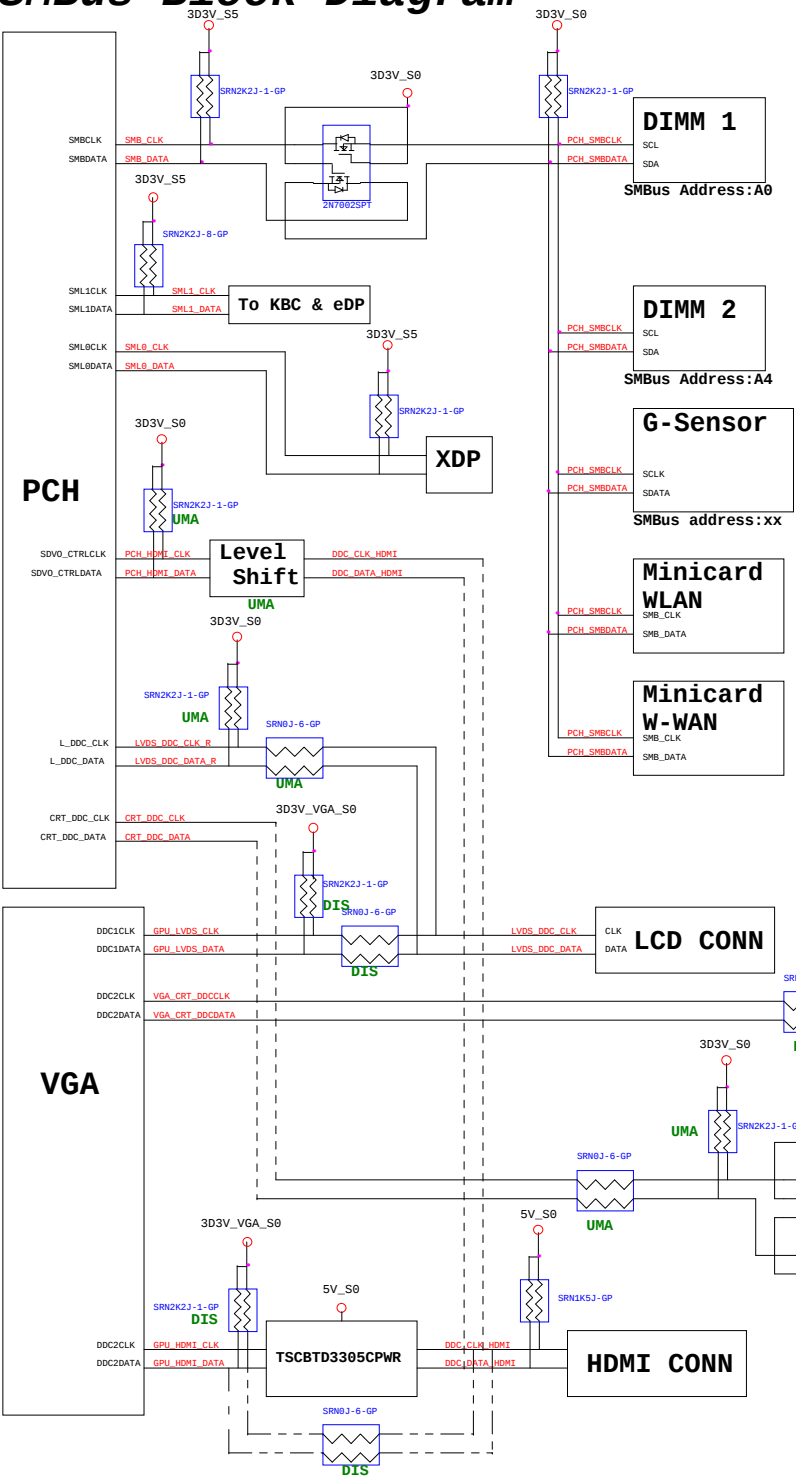


(DC mode)

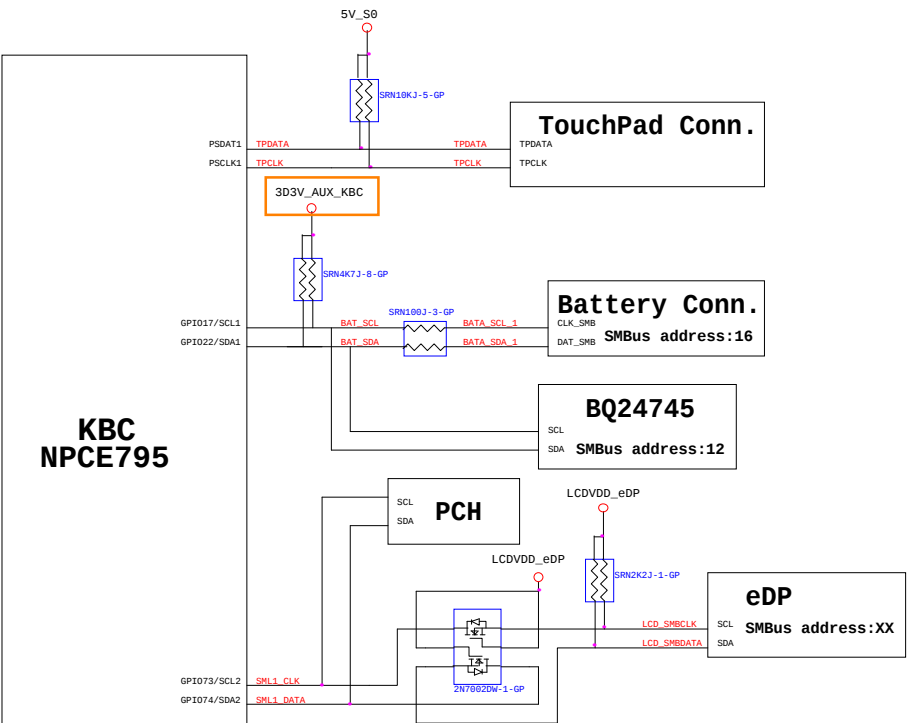
red word: KBC GPIO



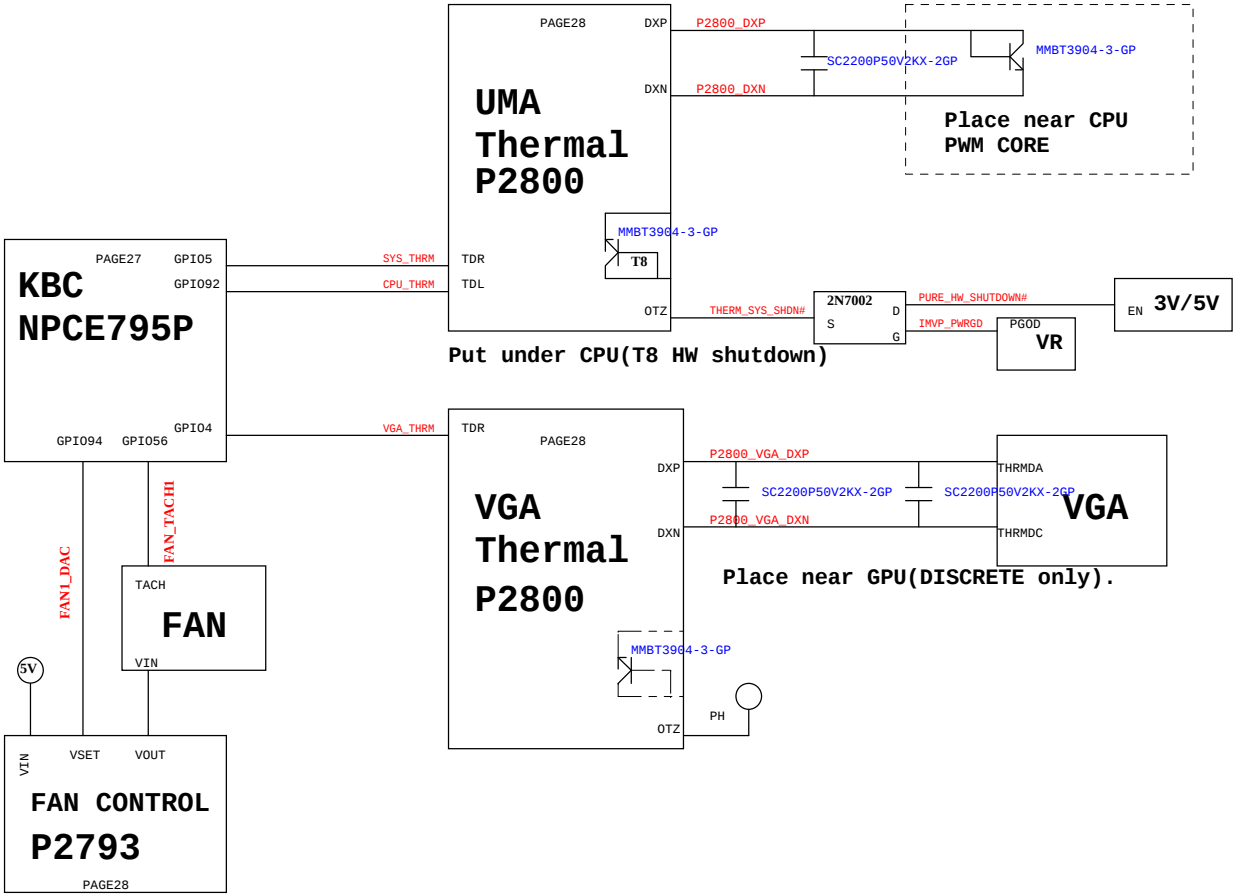
PCH SMBus Block Diagram



KBC SMBus Block Diagram



Thermal Block Diagram



Audio Block Diagram

