

AMD BRAZOS

Muxless Discrete/UMA Schematics Document

AMD Ontario CPU FT1

AMD GPU Seymour XT S3

2010-12-01

REV : SA

DY :None Installed
UMA:UMA platform installed
PARK:DIS PARK platform installed
MADISON:DIS MADISON platform installed
Colay :Manual modify BOM
MUX : PX
ROB:ROBSON

<Variant Name>		
緯創資通		Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsinchu, Taipei Hsien 321, Taiwan, R.O.C.		
File		
Cover Page		
Size A3	Document Number B575	Rev -1
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REVISION : SA

TOP	_____	L1
VCC	=====	L2
S	_____	L3
S	_____	L4
GND	=====	L5
BOTTOM	_____	L6

REQUIRED SYSTEM STRAPS ?

	AZ_SDOUT	PCI_CLK1	CLK_PCI_LPC	PCI_CLK4	LPC_CLK0	LPC_CLK1	LPC_CLK2
PULL HIGH	LOW POWER MODE	Allow PCIE GEN2 DEFAULT	USE DEBUG STRAPS	non_Fusion CLOCK mode	ENABLE EC	CLKGEN ENABLED (Use Internal) DEFAULT	Enable boot timer function
PULL LOW	PERFORMANCE MODE DEFAULT	Force PCIE GEN1	IGNORE DEBUG STRAPS DEFAULT	Fusion CLOCK mode DEFAULT	DISABLE EC DEFAULT	CLKGEN DISABLED (Use External)	Disable boot fail timer function DEFAULT

USB Table

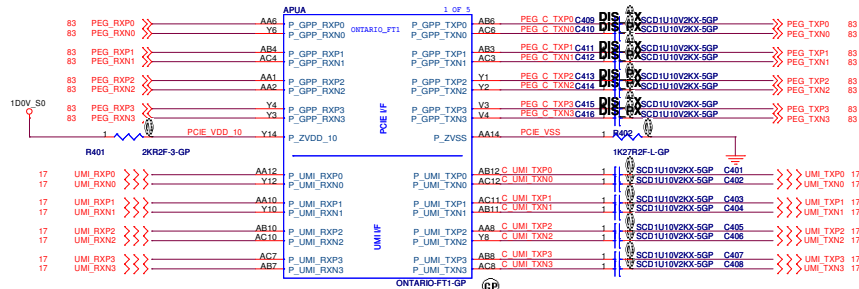
Pair	Device
0	Internal #3 (MB)
1	WLAN/WIMAX
2	WWAN
3	E-SATS/LUSB
4	BLUETOOTH
5	External #1 (IO BD)
6	External #2 (IO BD)
7	CAMERA (HS)
8	Finger Print
9	CardReader
10	NC
11	NC
12	NC
13	NC

PCIe Routing

	APU
LANE0	PEG
LANE1	
LANE2	
LANE3	
	FCH
LANE0	LAN
LANE1	WWAN
LANE2	WLAN
LANE3	CardReader

TYPE ENABLED	EC_PWM2	EC_PWM3
Reserved	2.2-kohm 5% pull-down	2.2-kohm 5% pull-down
LPC ROM	Not connected.	2.2-kohm 5% pull-down
SPI ROM	2.2-kohm 5% pull-down	Not connected.
Reserved	Not connected.	Not connected.

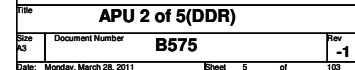
Note: EC_PWM2, EC_PWM3 default have internal 10kohm PU.



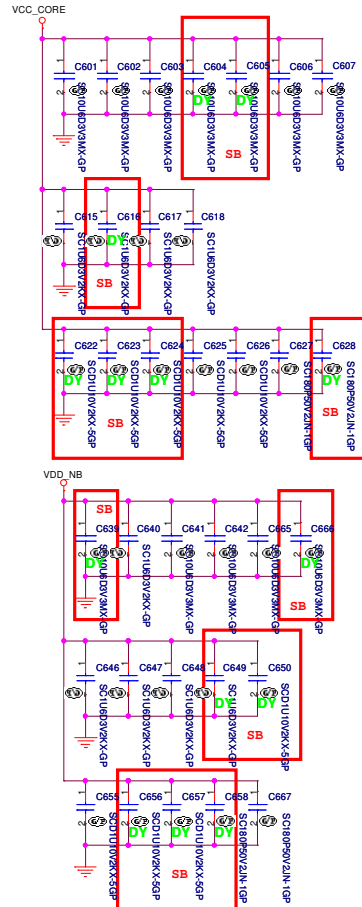
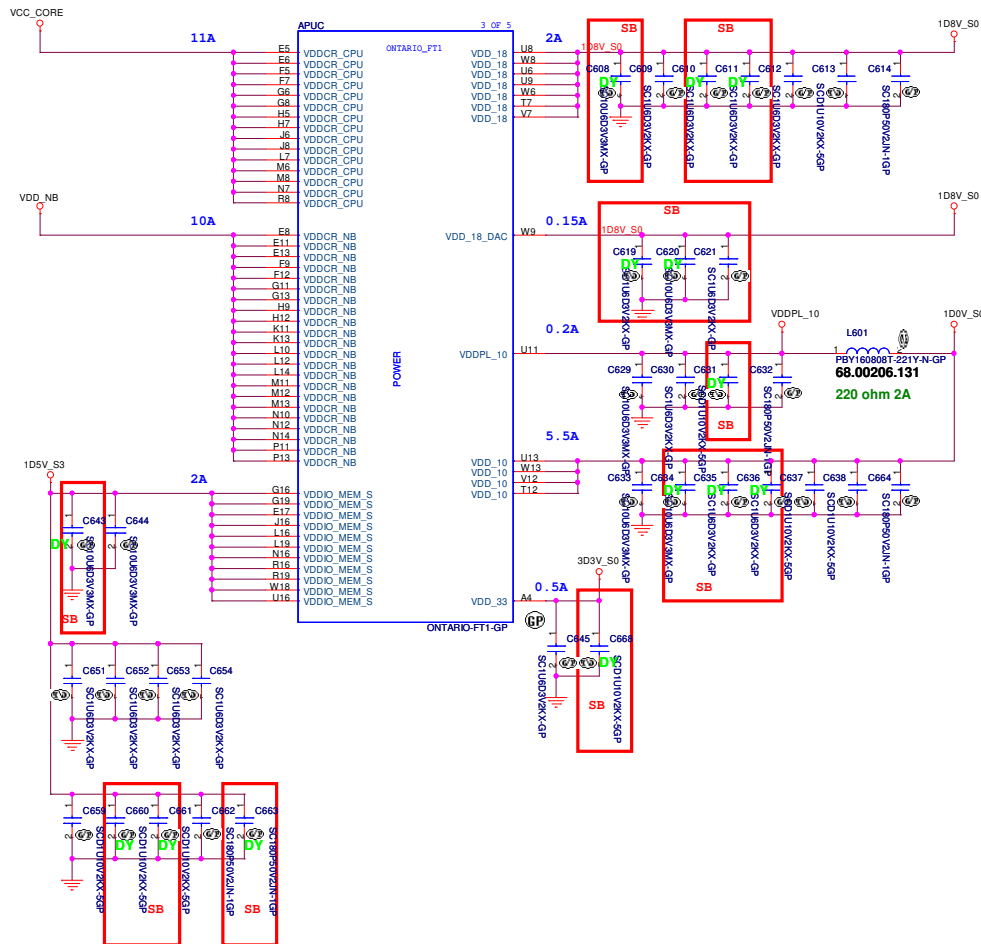
lenovo_PN_102-001093

<Core Design>

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File			
APU 1 of 5(UMI/PCIE)			
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R0502 connection to 1D5V_S3 should be directly to the plane without long trace



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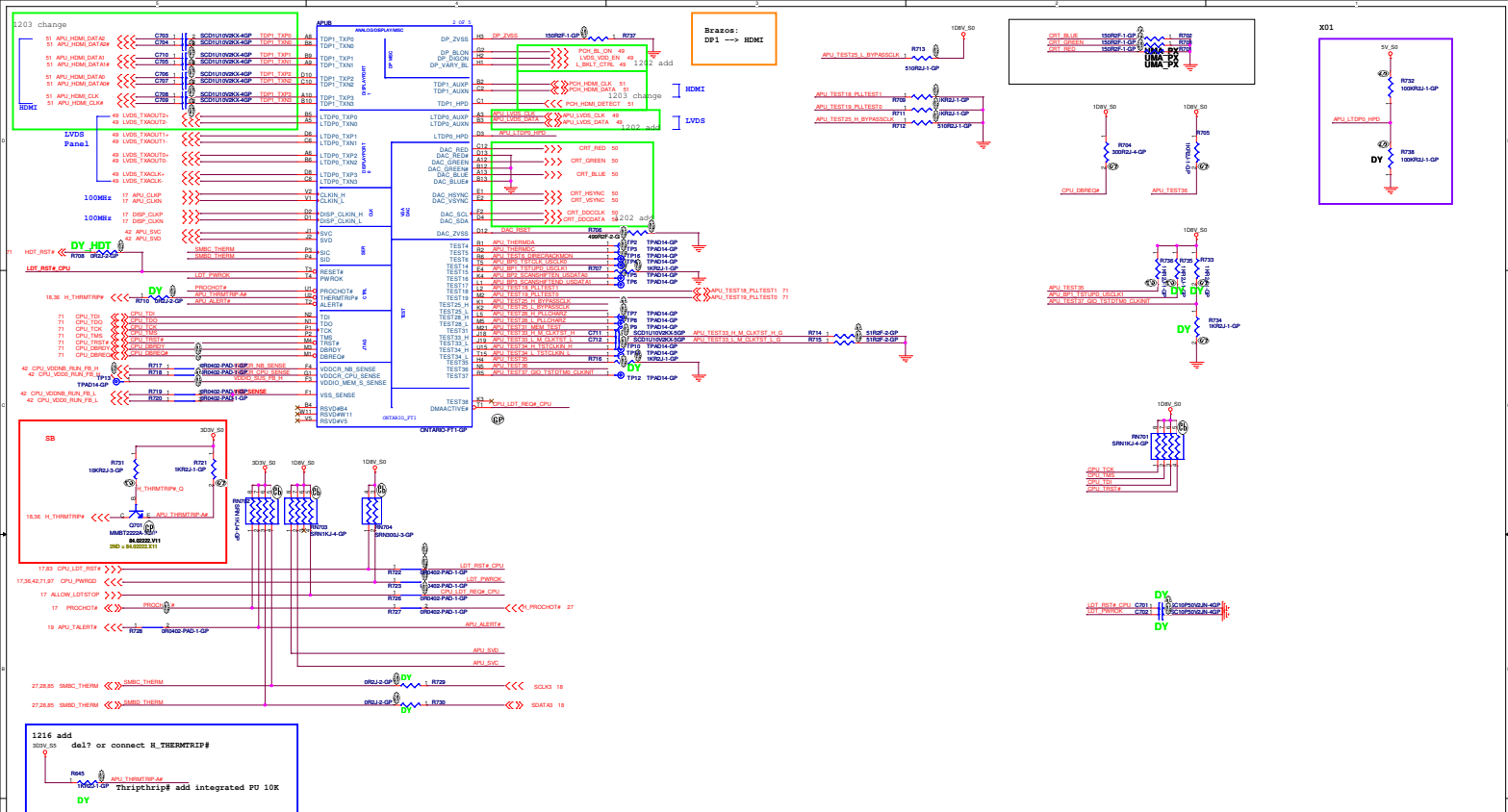
Title **APU 3 of 5(POWER)**

Size	Document Number	B575
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Date: Friday, March 25, 2011

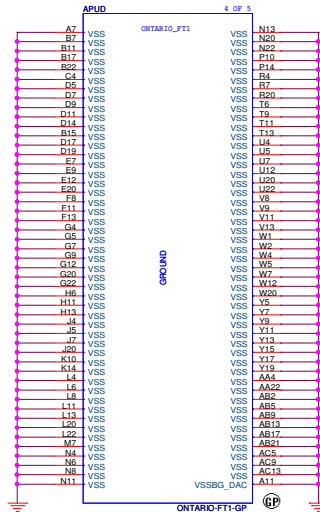
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-1



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2/F, 88, Sec. 1, Hsin-Tai Wu Rd., Hsinchu,
Taiwan 300, Taiwan, R.O.C.

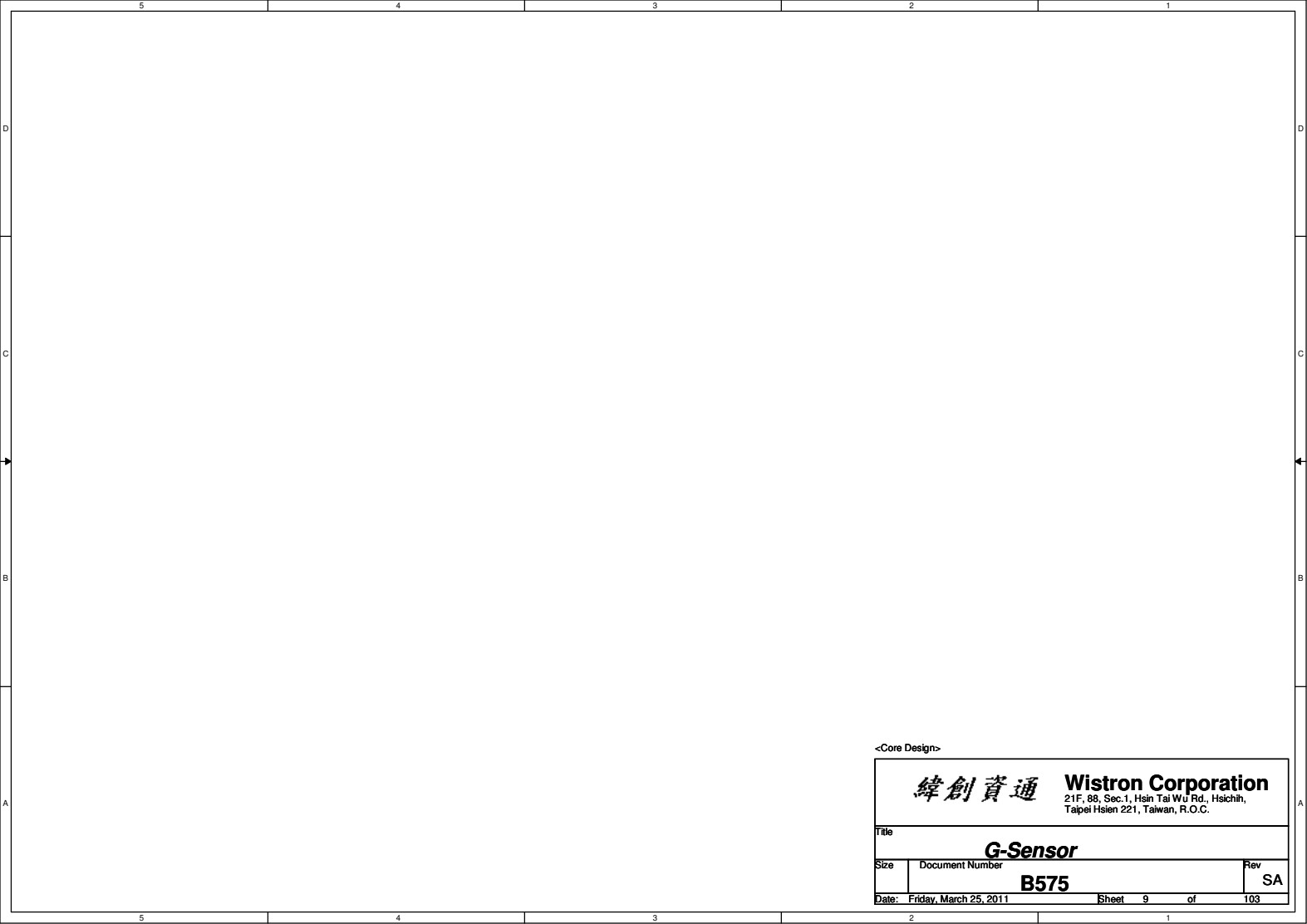


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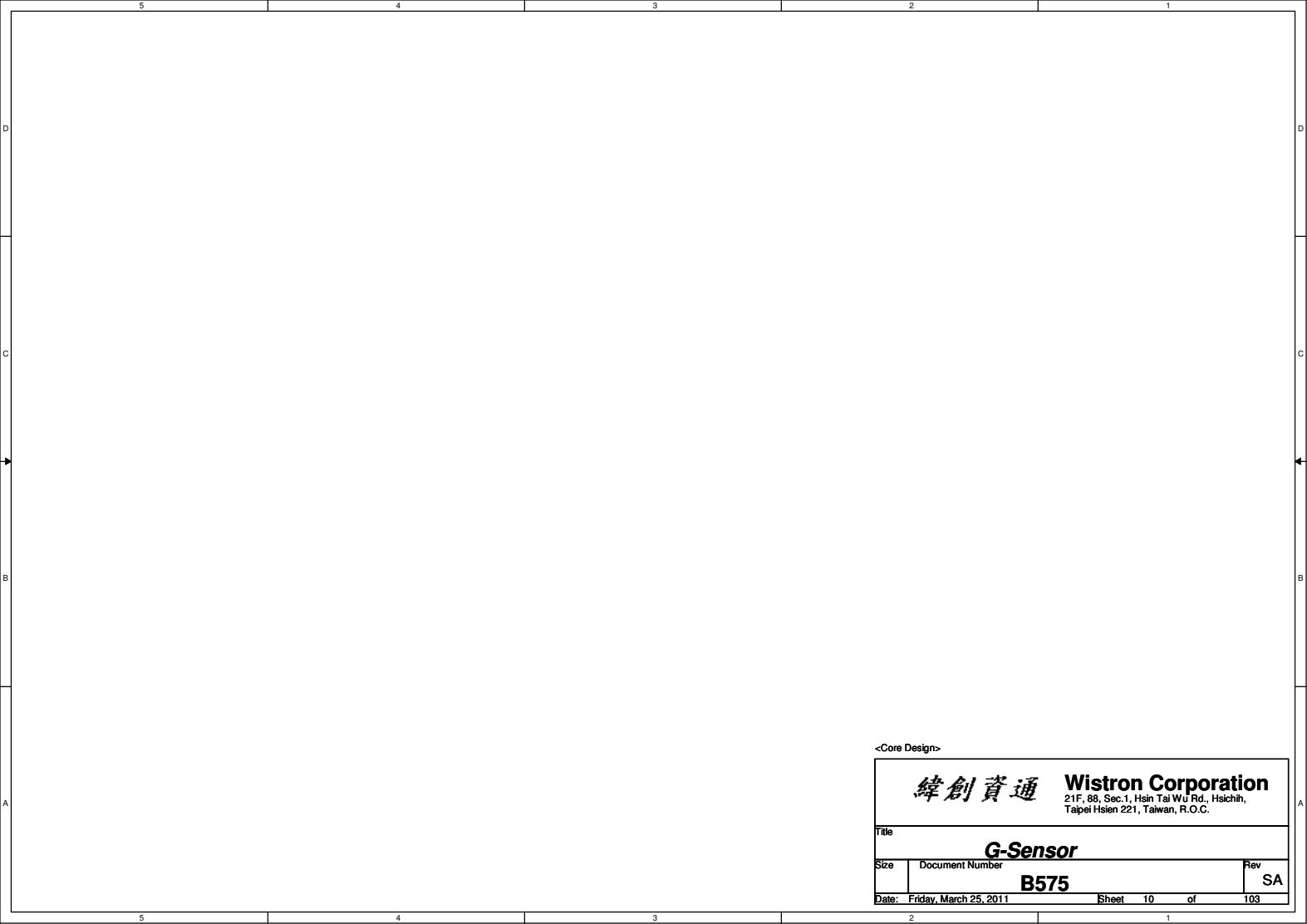
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File			APU 5 of 5(VSS)	Rev
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33				
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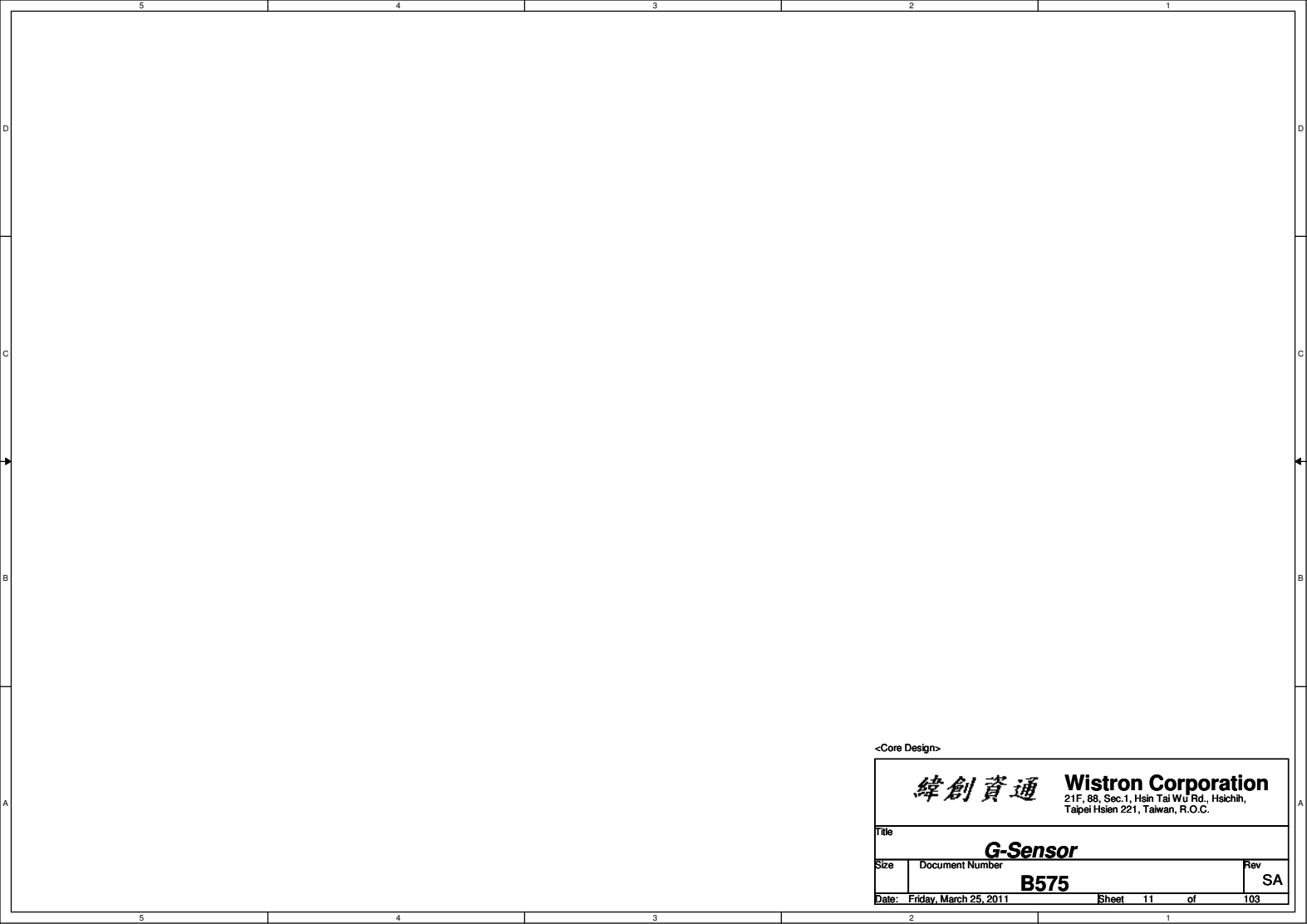
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Title			
G-Sensor			
Size	Document Number		Rev
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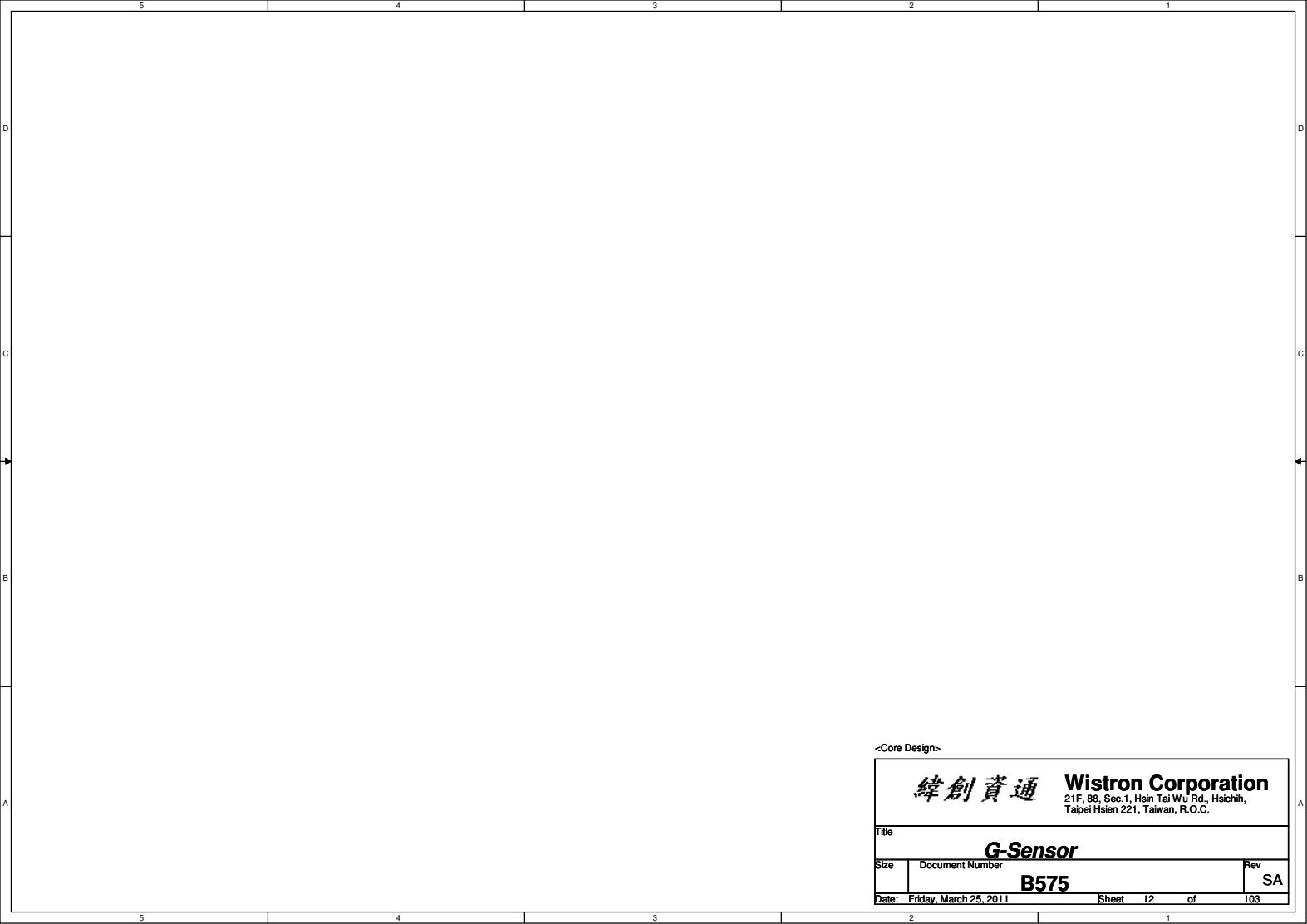
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Size	Document Number		Rev
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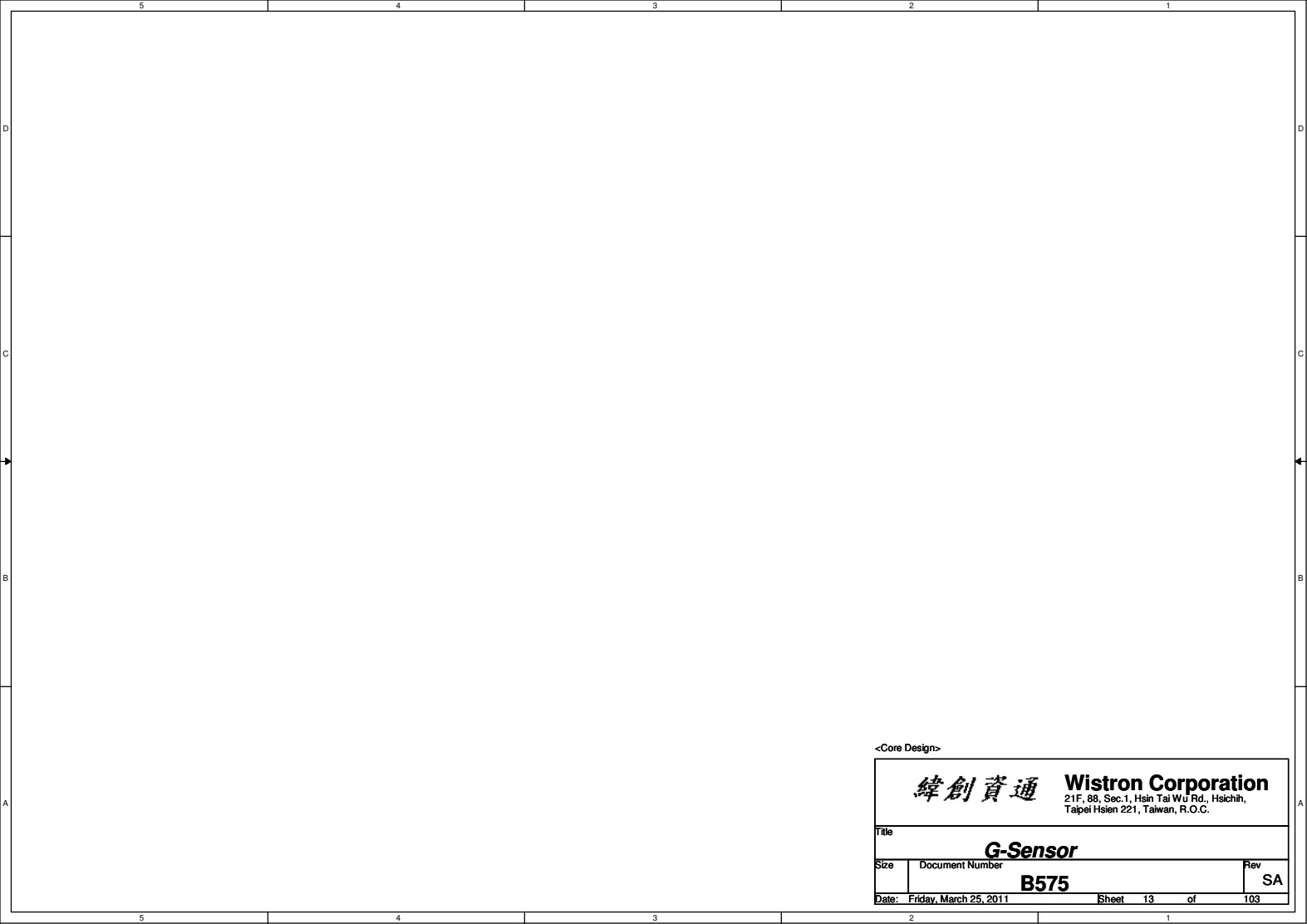
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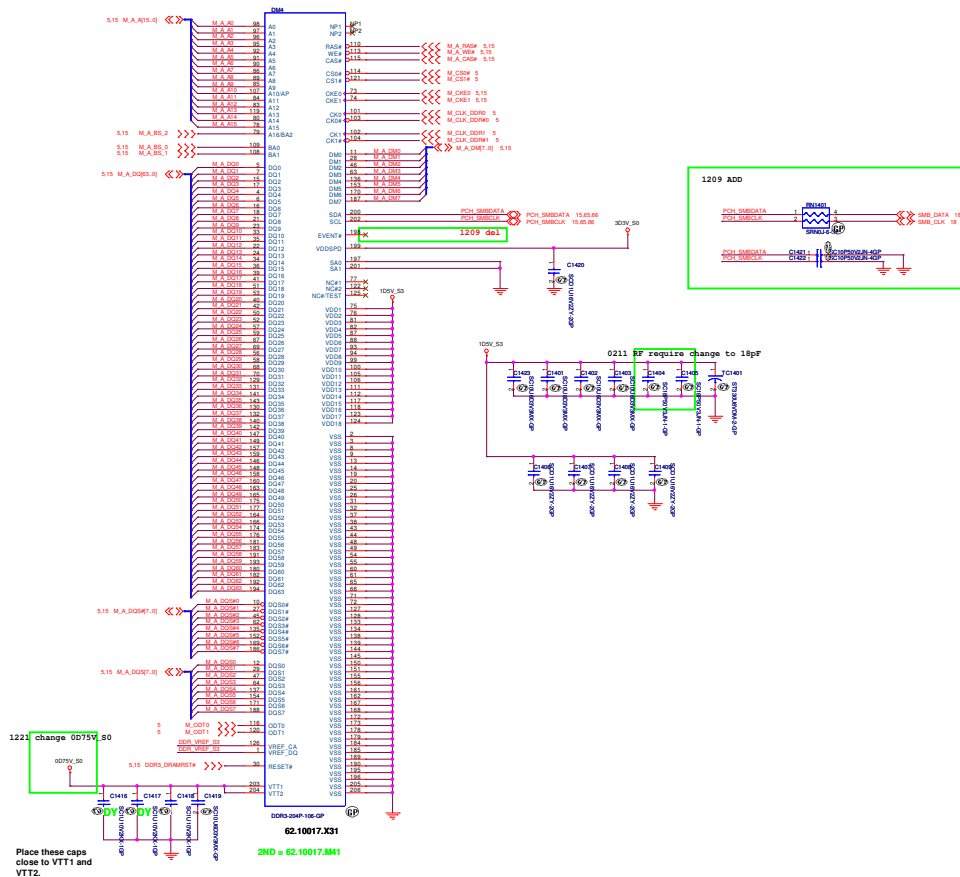
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Size	Document Number		Rev
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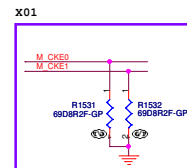


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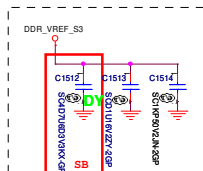
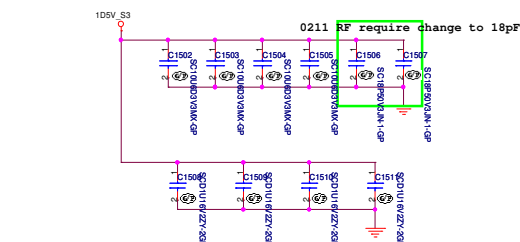
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DDR3 SOCKET_1





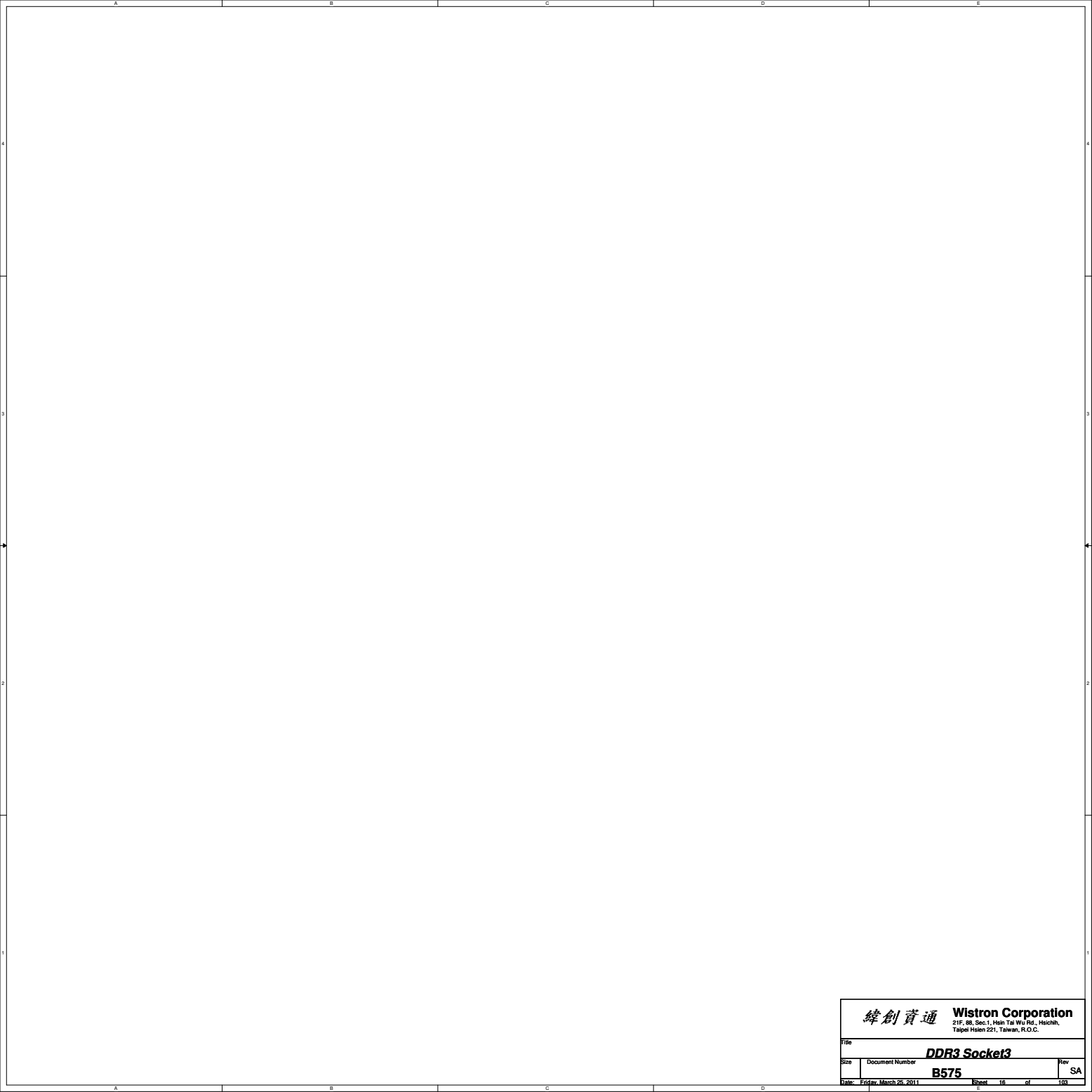
Intel HR DM tied to GND
AMD still following previous design

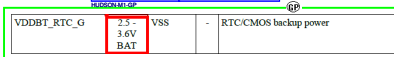
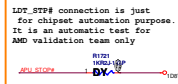
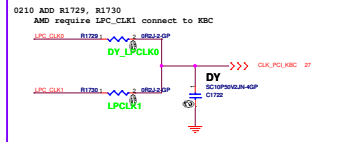


Place these caps close to VTT1 and VTT2.

62.10024.C21

2ND = 62.10017.P91

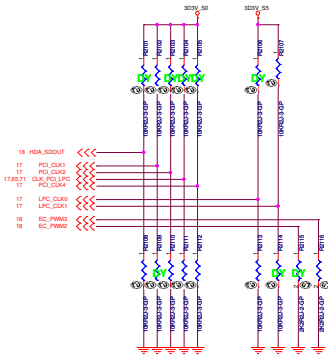






REQUIRED STRAPS

CBB-PU 3.3V AUX_85
 checklist:PU 3.3V_85
 confirm by AMD, following CBB suggestion



REQUIRED SYSTEM STRAPS

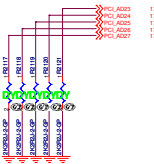
	AZ_SSDOUT (ACE_SSDATAOUT_1)	PCI_CLK1	PCI_CLK2	PCI_CLK3 (CLK_PCI_LPC)	PCI_CLK4	LPC_CLK0	LPC_CLK1
PULL HIGH	Low Power Mode	Allow PCE GEN2 DEFAULT	Watchdog Timer Enabled	USE DEBUG STRAPS	non_Fusion CLOCK mode	ENABLE EC (Use Internal)	CLKGEN ENABLED (Use Internal)
PULL LOW	Performance Mode DEFAULT	Force PCE GEN1	Watchdog Timer Disabled DEFAULT	IGNORE DEBUG STRAPS DEFAULT	Fusion CLOCK mode DEFAULT	DISABLE EC DEFAULT	CLKGEN DISABLED (Use External)

USE this pin to determine INT/EXT CLK

TYPE ENABLED	EC_PWM2	EC_PWM3
Reserved	2.2-kohm 5% pull-down	2.2-kohm 5% pull-down
LPC ROM	Not connected.	2.2-kohm 5% pull-down
SPIROM	2.2-kohm 5% pull-down	Not connected.
Reserved	Not connected.	Not connected.

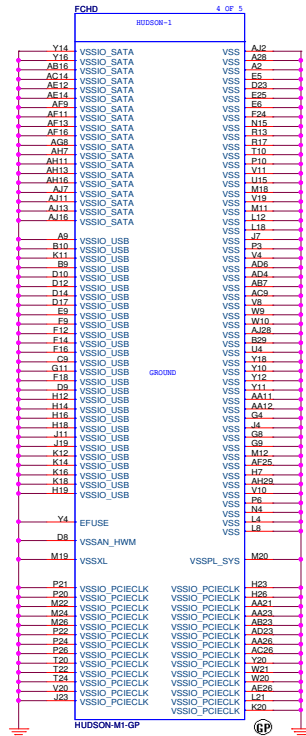
Note: EC_PWM2, EC_PWM3 default have internal 10kohm PU.

DEBUG STRAPS



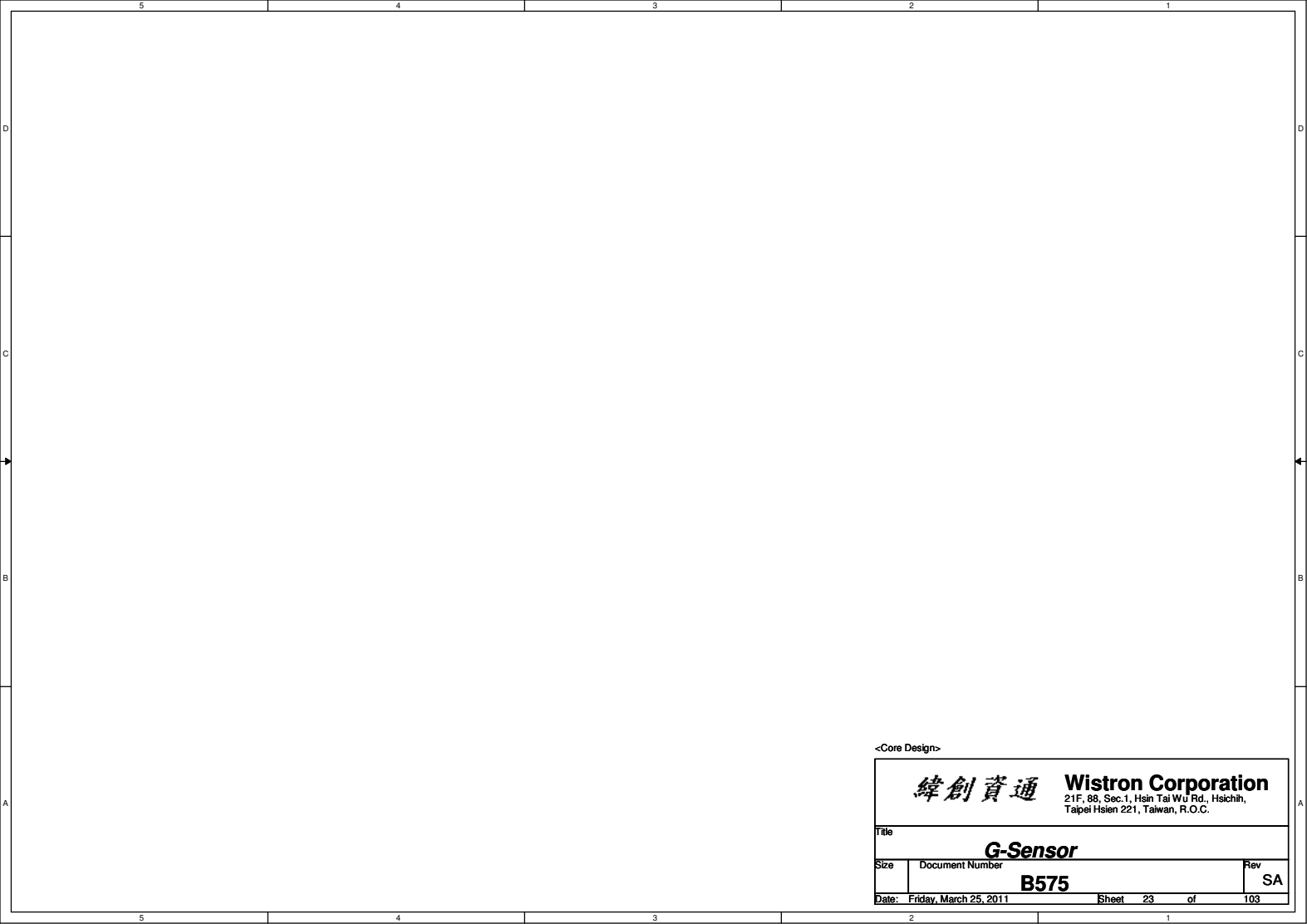
	PCI_AD27	PCI_AD28	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE PCI PLL DEFAULT	Disable ILA AUTORUN (DEFAULT)	USE FC PLL (DEFAULT)	USE DEFAULT POE STRAPS (DEFAULT)	Disable PCI MEM BOOT (DEFAULT)
PULL LOW	BYPASS PCI PLL	Enable ILA AUTORUN	BYPASS FC PLL	USE EEPROM POE STRAPS	Enable PCI MEM BOOT

Note: FCH has 15K internal PU FOR PCI_AD[27:23]



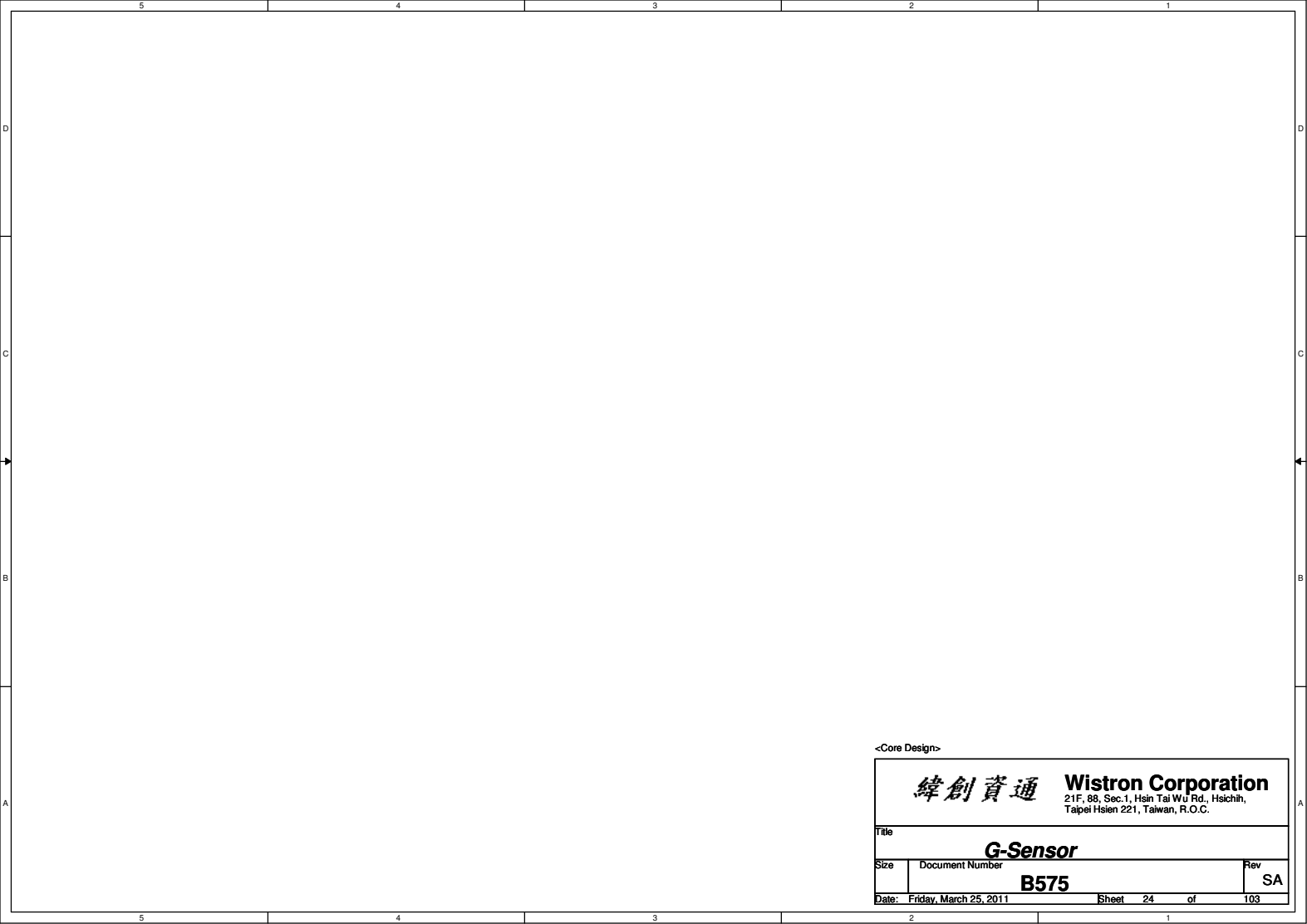
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File FCH 6 of 6(VSS)		
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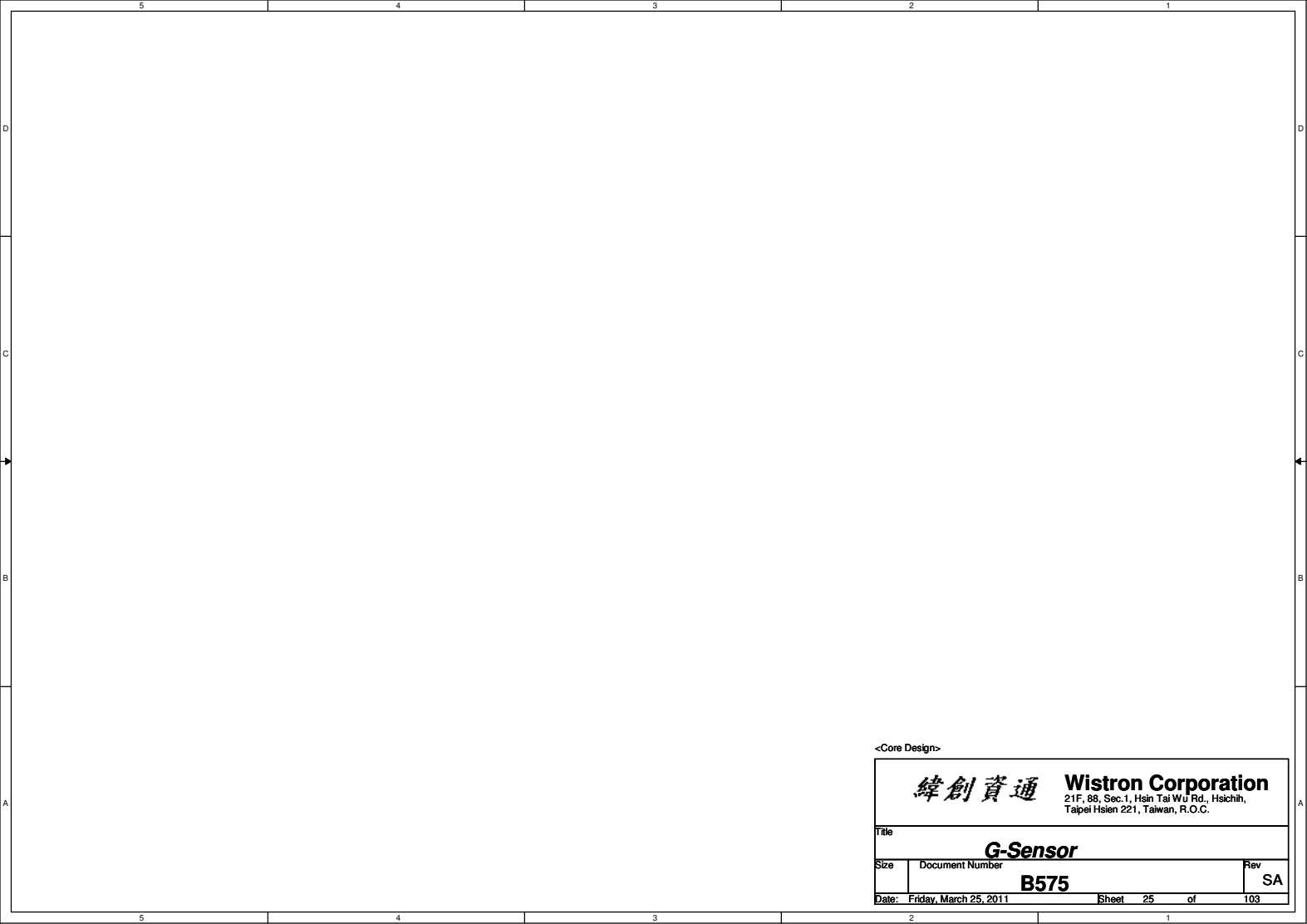
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File

Power Button

Size

A3

Document Number

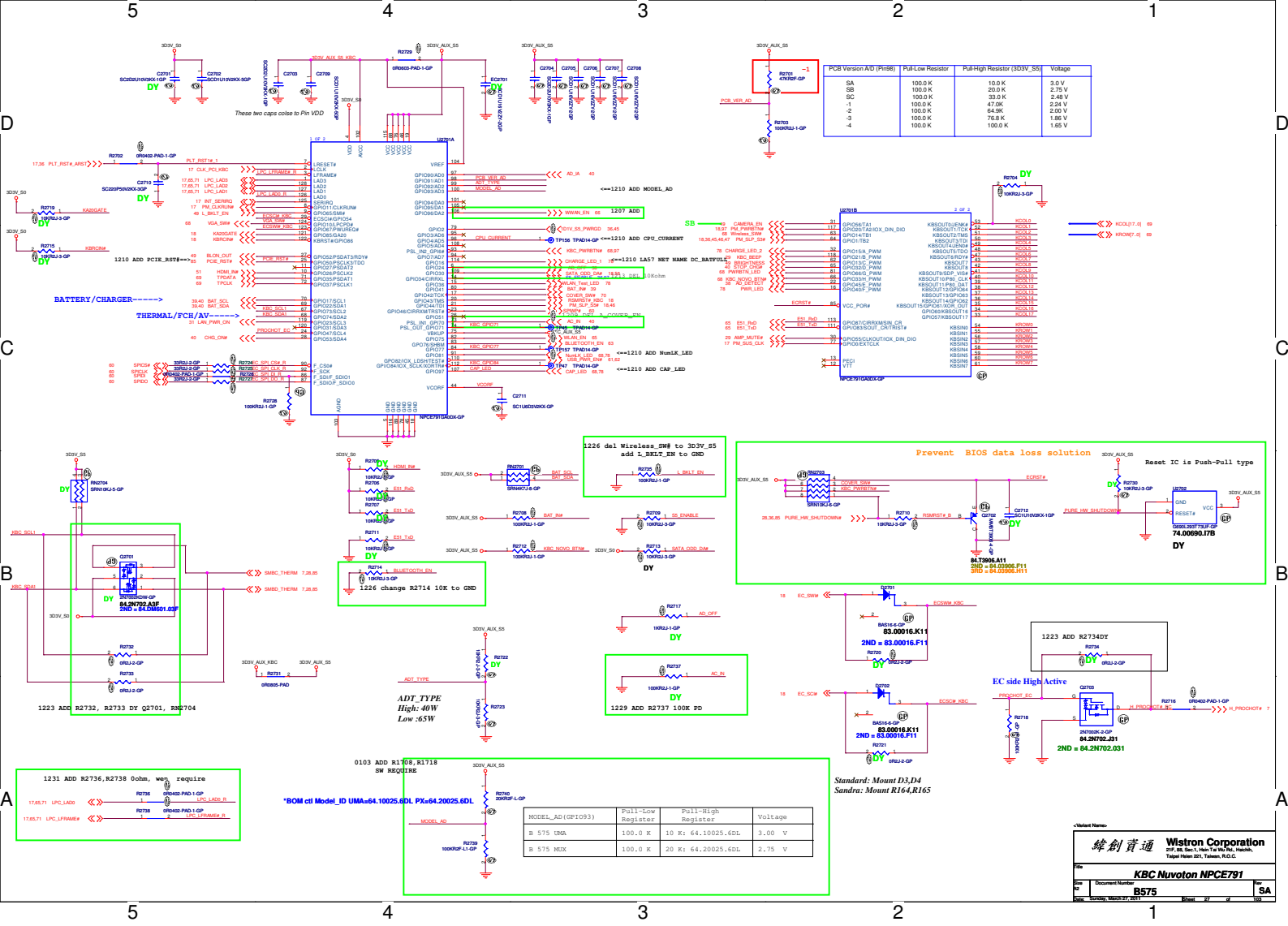
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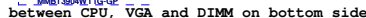
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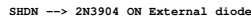


SA 0905 change to 390p



CPU TEMP:
H_THERMDA and H_THERMDC routing 10mil trace width
and spacing. Locate Capacity near Thermal diode.

Supplier	Description	Lenovo P/N	Wistron P/N
ON	MMBT3904WT1G	N/A	84.03904.R11
PANJIT	MMBT3904W	N/A	84.M3904.A1



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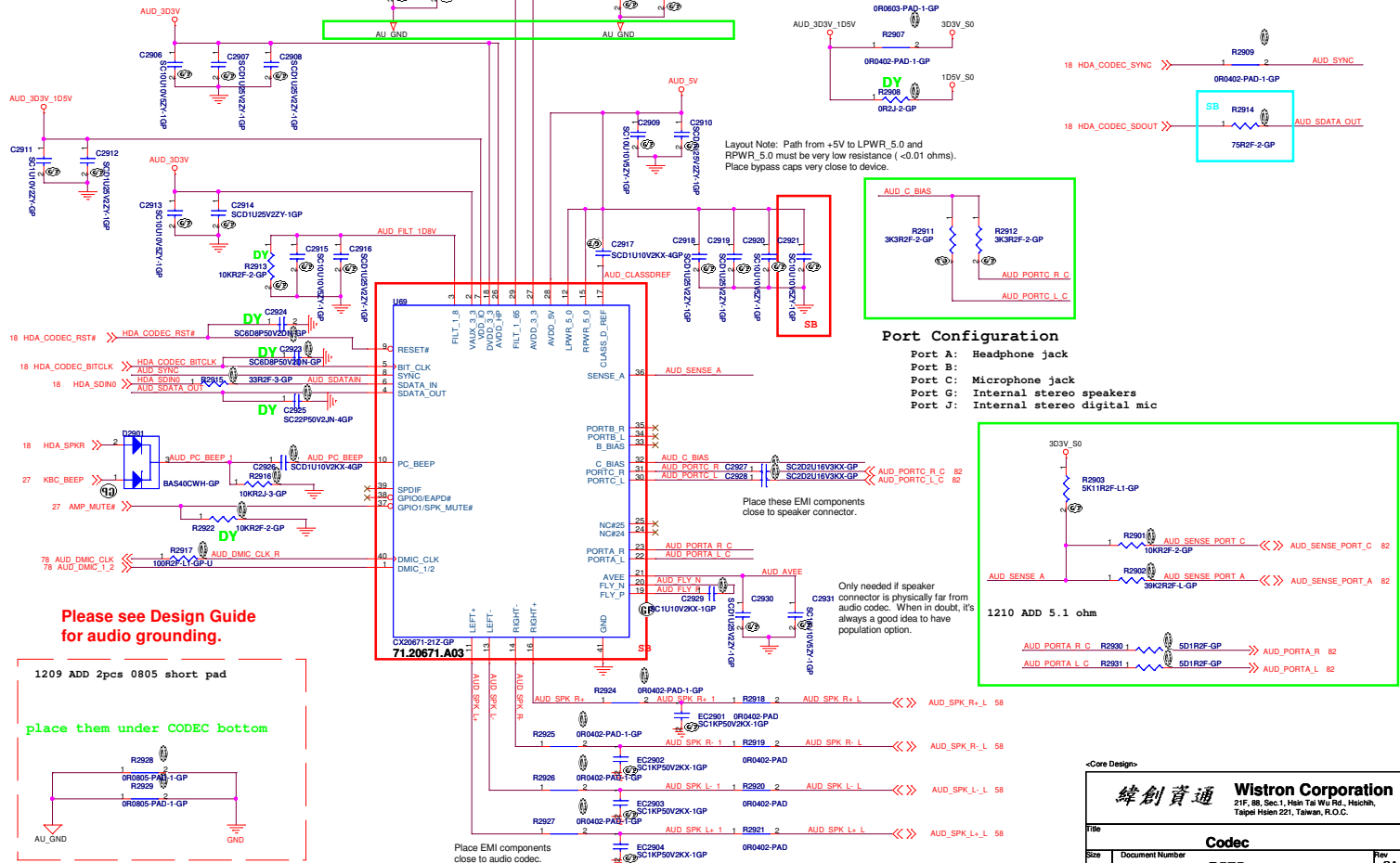
Thermal/Fan Controller

B575

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1210 10886-1 D1/D2/R15/R16/C15 DY
EC1/EC2/EC3 100pF
R17/R18 100ohm
C17/C18 100pF
R23/R24 100pF

BOM Control



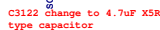
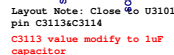
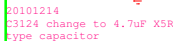
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LA57 UMA

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82
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Layout Note: Close to U3101 pin C3115 ~ C3120

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	TIME	DATE	REMARKS
1	0800	1976-05-10	Arrived at station.
2	0815	1976-05-10	Left station for field site.
3	0830	1976-05-10	Reached field site.
4	0845	1976-05-10	Started data collection.
5	0900	1976-05-10	Continued data collection.
6	0915	1976-05-10	Completed data collection.
7	0930	1976-05-10	Returned to station.
8	0945	1976-05-10	Arrived at station.
9	1000	1976-05-10	Left station for another site.
10	1015	1976-05-10	Reached new field site.
11	1030	1976-05-10	Began observations.
12	1045	1976-05-10	Observations continued.
13	1100	1976-05-10	Finished observations.
14	1115	1976-05-10	Returned to station.
15	1130	1976-05-10	Arrived at station.

Size
A3

Document

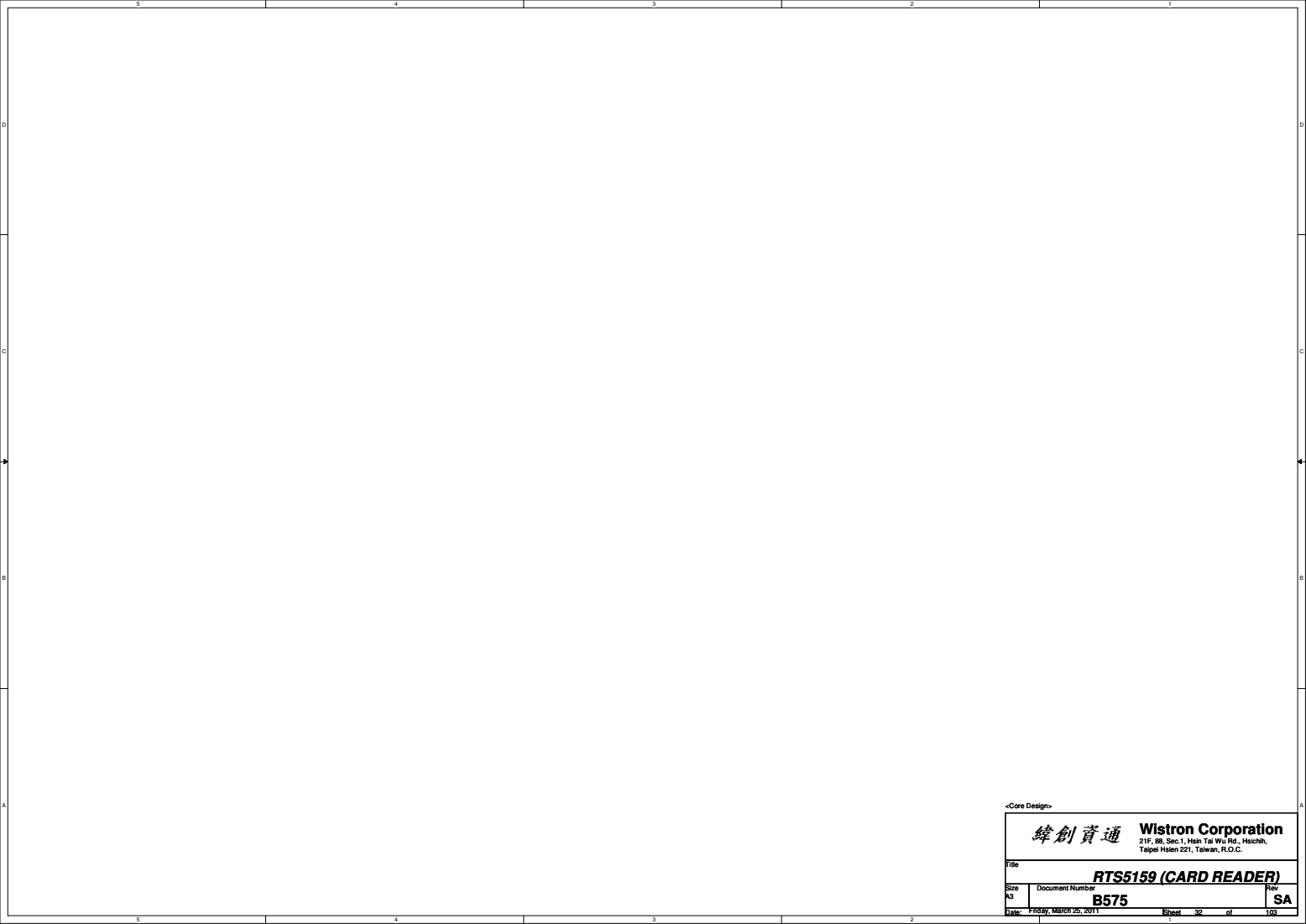
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LAN RTL8111E

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RTS5159 (CARD READER)			
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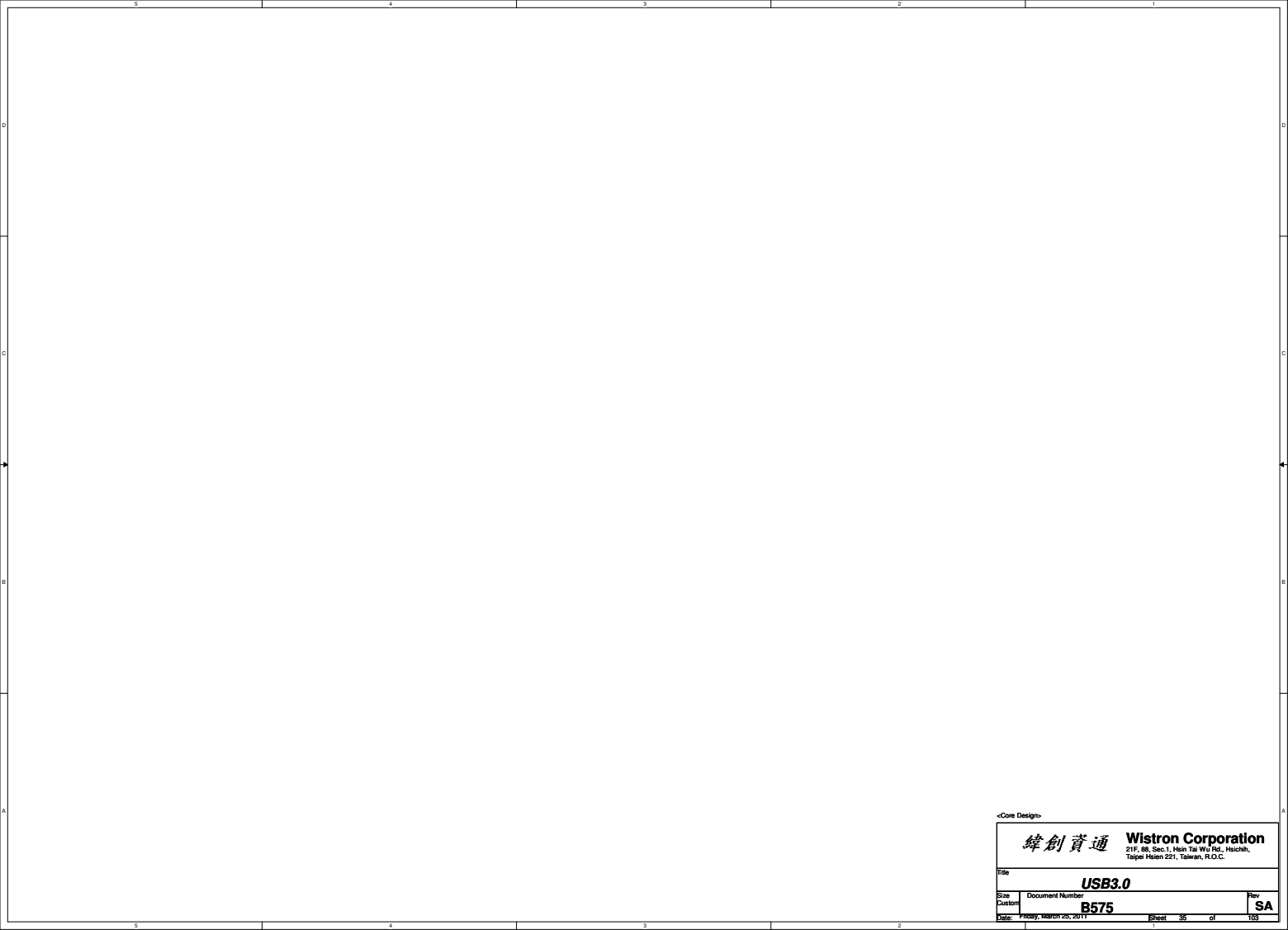
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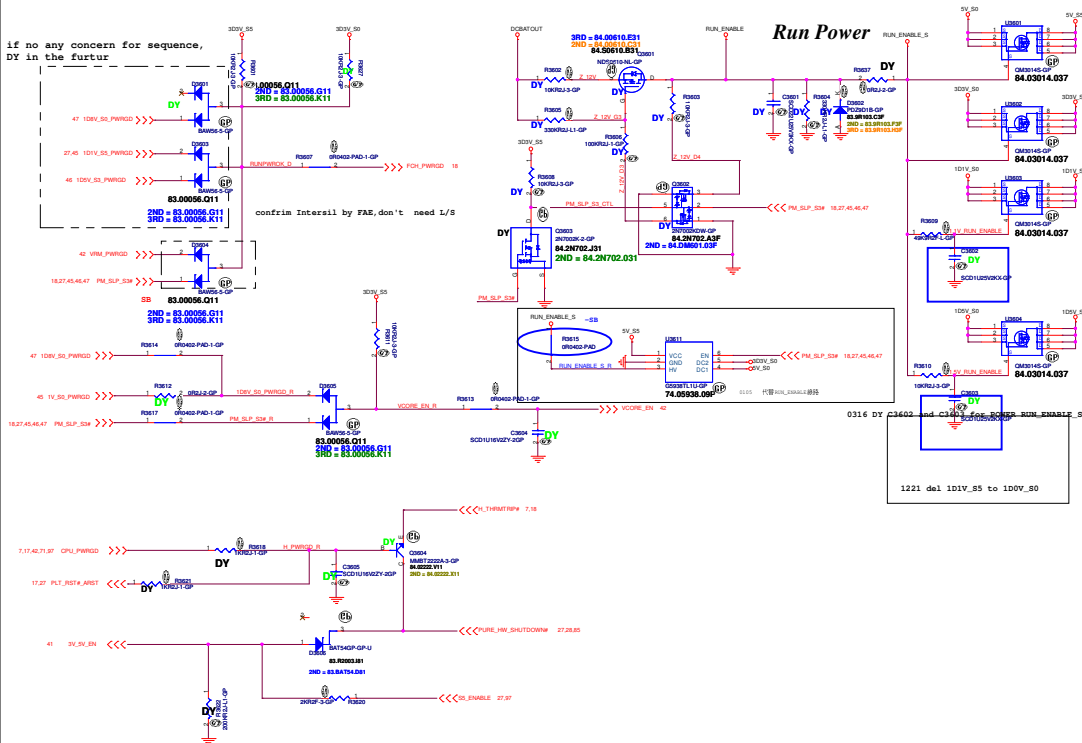
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if no any concern for sequence,
DY in the futur



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G-Sensor

Size

Document Number

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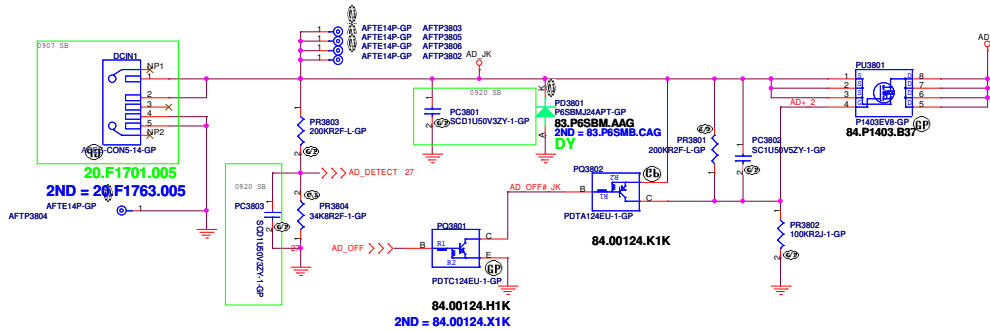
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Adaptor in to generate DCBATOUT

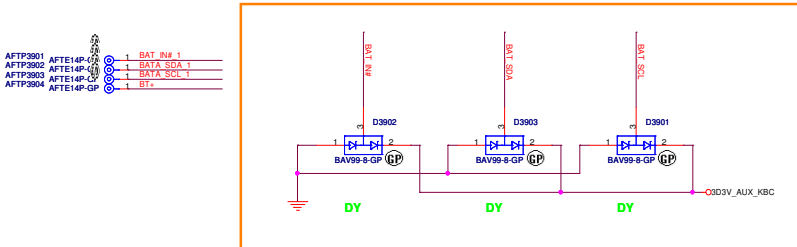
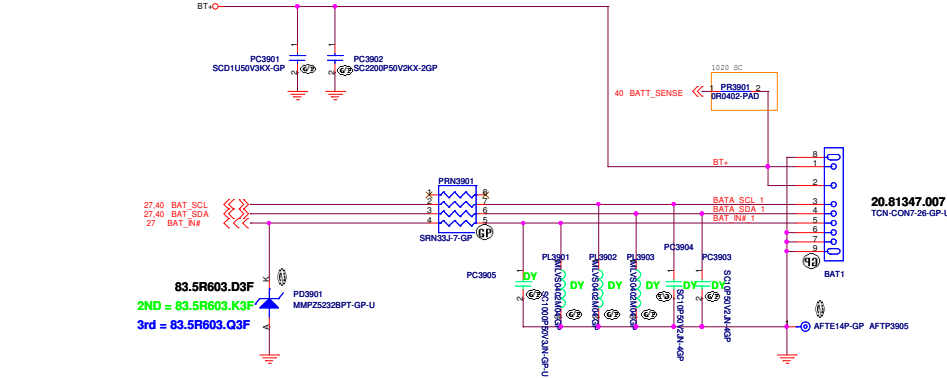


JV10-CS

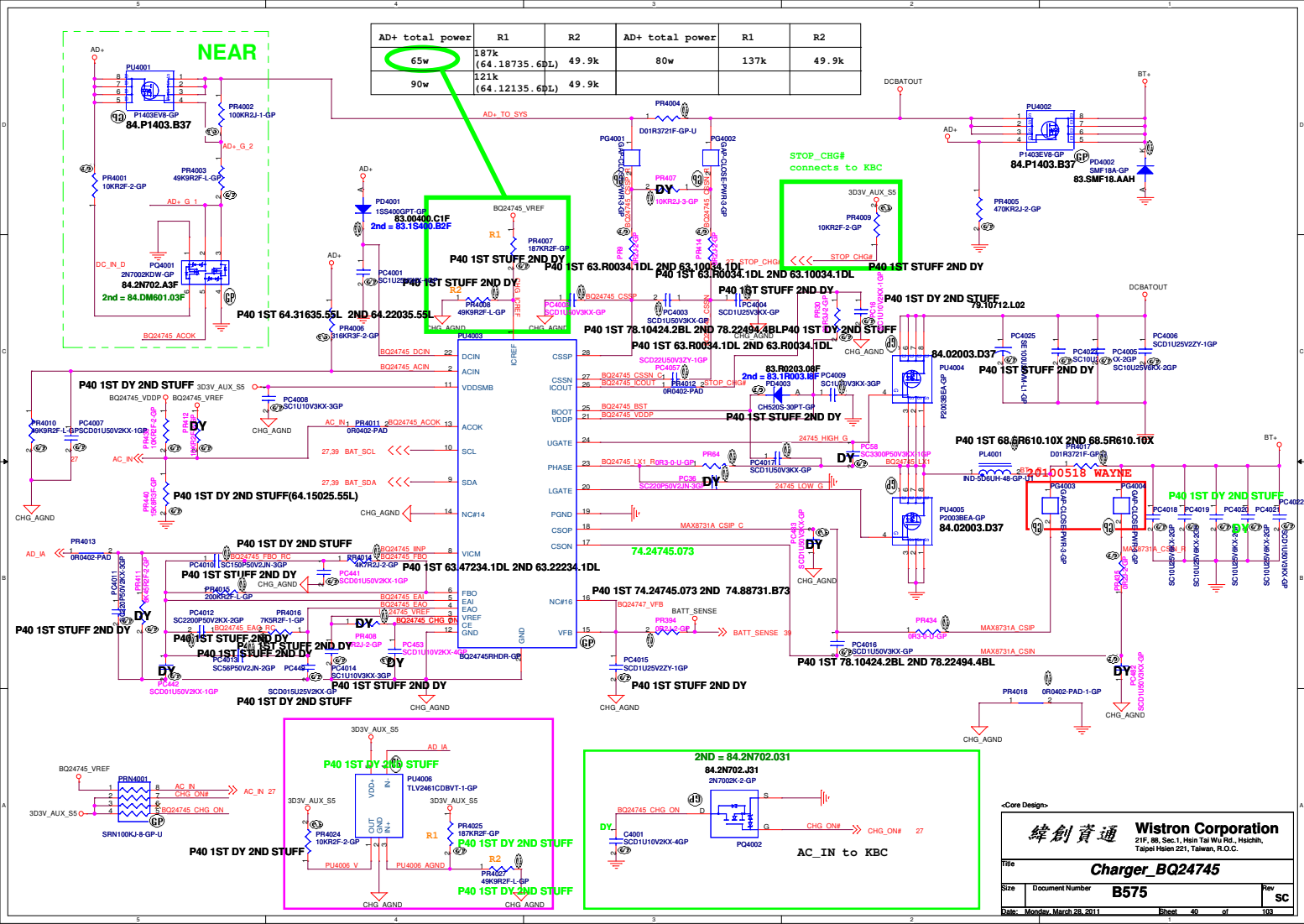
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Title			DCIN_JACK		
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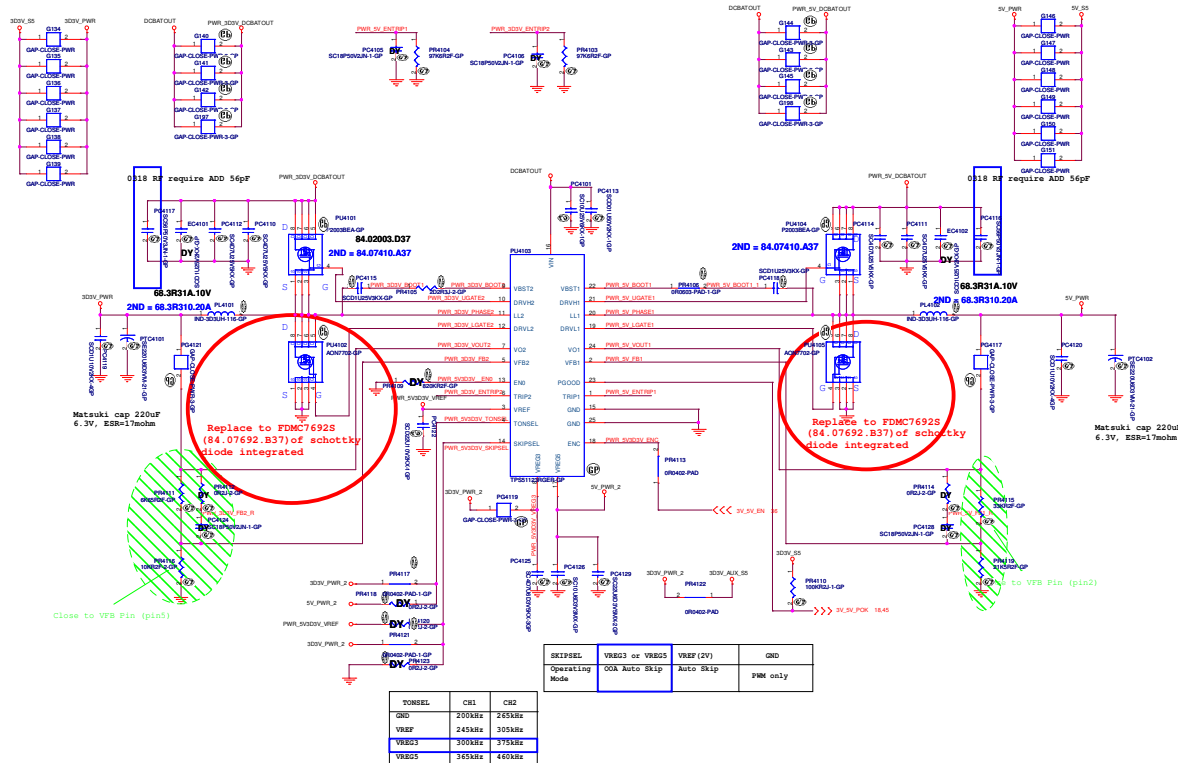
BATTERY CONNECTOR



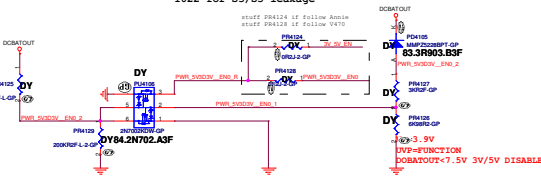
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SSID = PWR.Plane.Regulator_5v3p3v



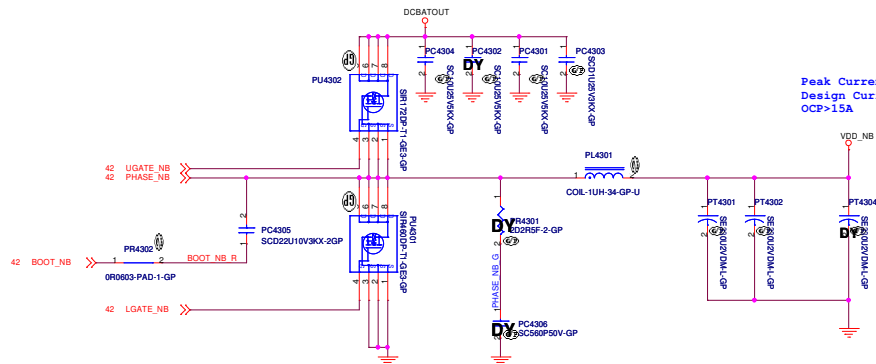
1022 for S3/S5 leakage



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Doc. DC/DC 3D3VSV
B575
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Date: 2014.03.10
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Peak Current=10
Design Current =8A
OCP>15A

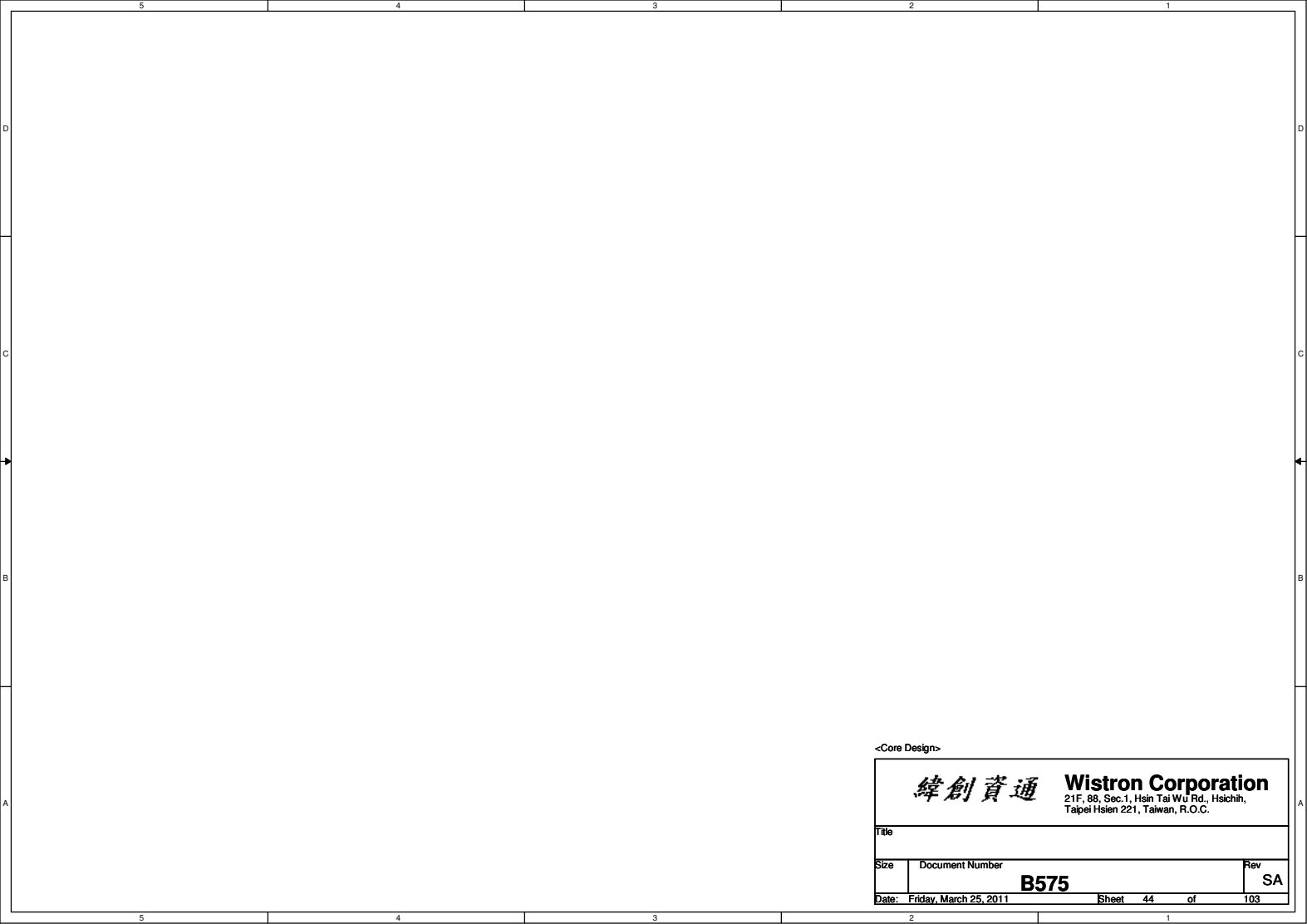
I/P cap: 10U 25V K0805 X5R/ 78.10622.51L
Inductor: 1uH PCMC063T-1R0MN Cyntec 9mohm/10mohm Isat -22Arms 68.1R01A.20B
O/P cap: 330U 2V EEFSX0D331ER 9mOhm 3Arms Panasonic/79.33719.L01
H/S: SIR712DF/ POWERPAK/ 10.3mOhm/ 12.4mOhm@4.5Vgs/ 84.00172.037
L/S: SIR460DP/ POWERPAK/ 4.9mOhm/ 6.1mohm@4.5Vgs/ 84.00460.037

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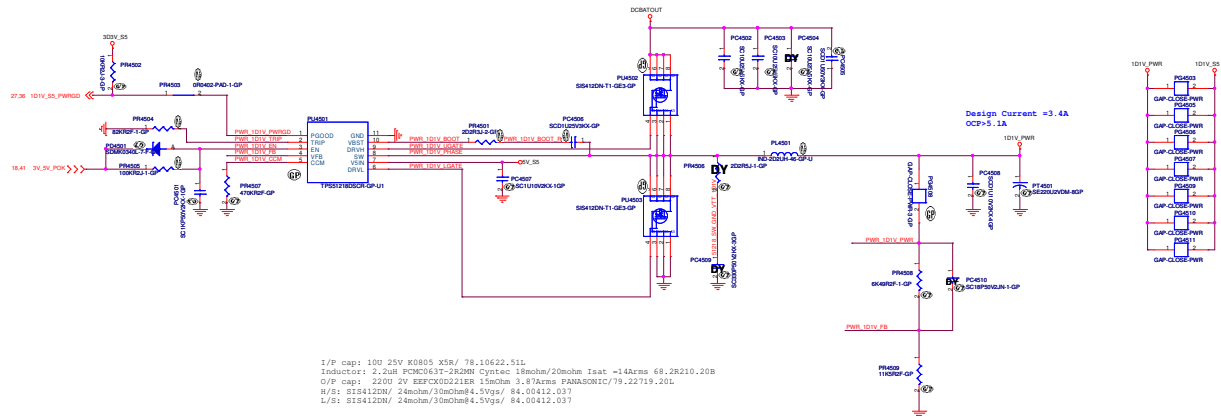
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Size	Document Number	B575	Rev
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<Core Design>

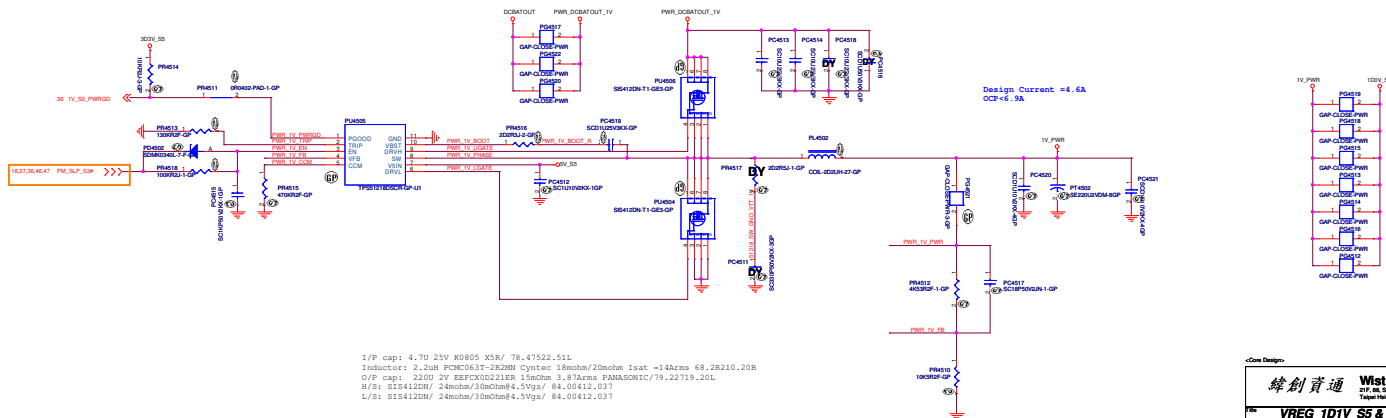
緯創資通		Wistron Corporation	
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
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SSID = PWR.Plane.Regulator_1D1V_S5



I/P cap: 100 25V K0805 X5R/ 78.10622.51L
Inductor: 2.2uH PCMC0637-2R20M Cynotec 18mohm/20mohm Isat ~14Arms 68.2R210.20B
O/P cap: 2200 2V KEEPCX02218 15mohm 3.8Arms PANASONIC/79.22719.20L
H/S: S1S412DN/ 24mohm/30mohm@4.5Vgs/ 84.00412.037
L/S: S1S412DN/ 24mohm/30mohm@4.5Vgs/ 84.00412.037

$$V_{out} = 0.704V * (R1 + R2) / R2$$

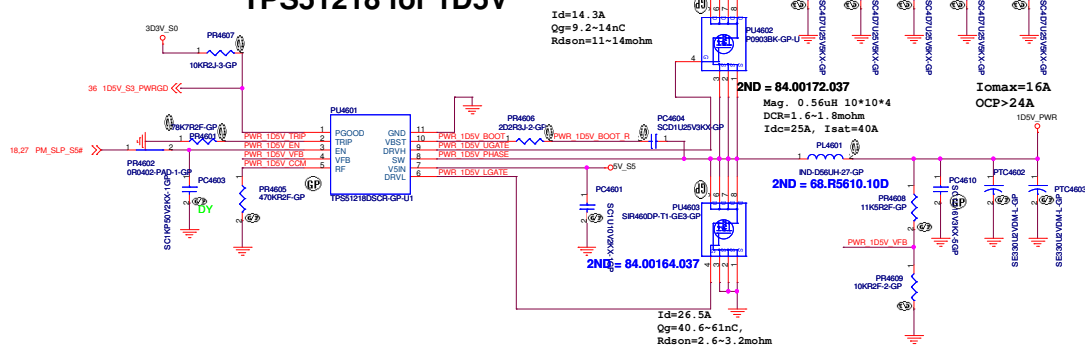


I/P cap: 4.7uF 25V K0805 X5R/ 78.47522.51L
Inductor: 2.2uH PCMC0637-2R20M Cynotec 18mohm/20mohm Isat ~14Arms 68.2R210.20B
O/P cap: 2200 2V KEEPCX02218 15mohm 3.8Arms PANASONIC/79.22719.20L
H/S: S1S412DN/ 24mohm/30mohm@4.5Vgs/ 84.00412.037
L/S: S1S412DN/ 24mohm/30mohm@4.5Vgs/ 84.00412.037

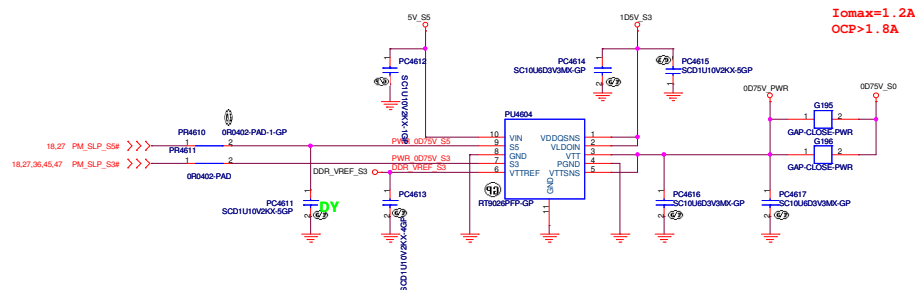
$$V_{out} = 0.704V * (R1 + R2) / R2$$

Clone Design

TPS51218 for 1D5V



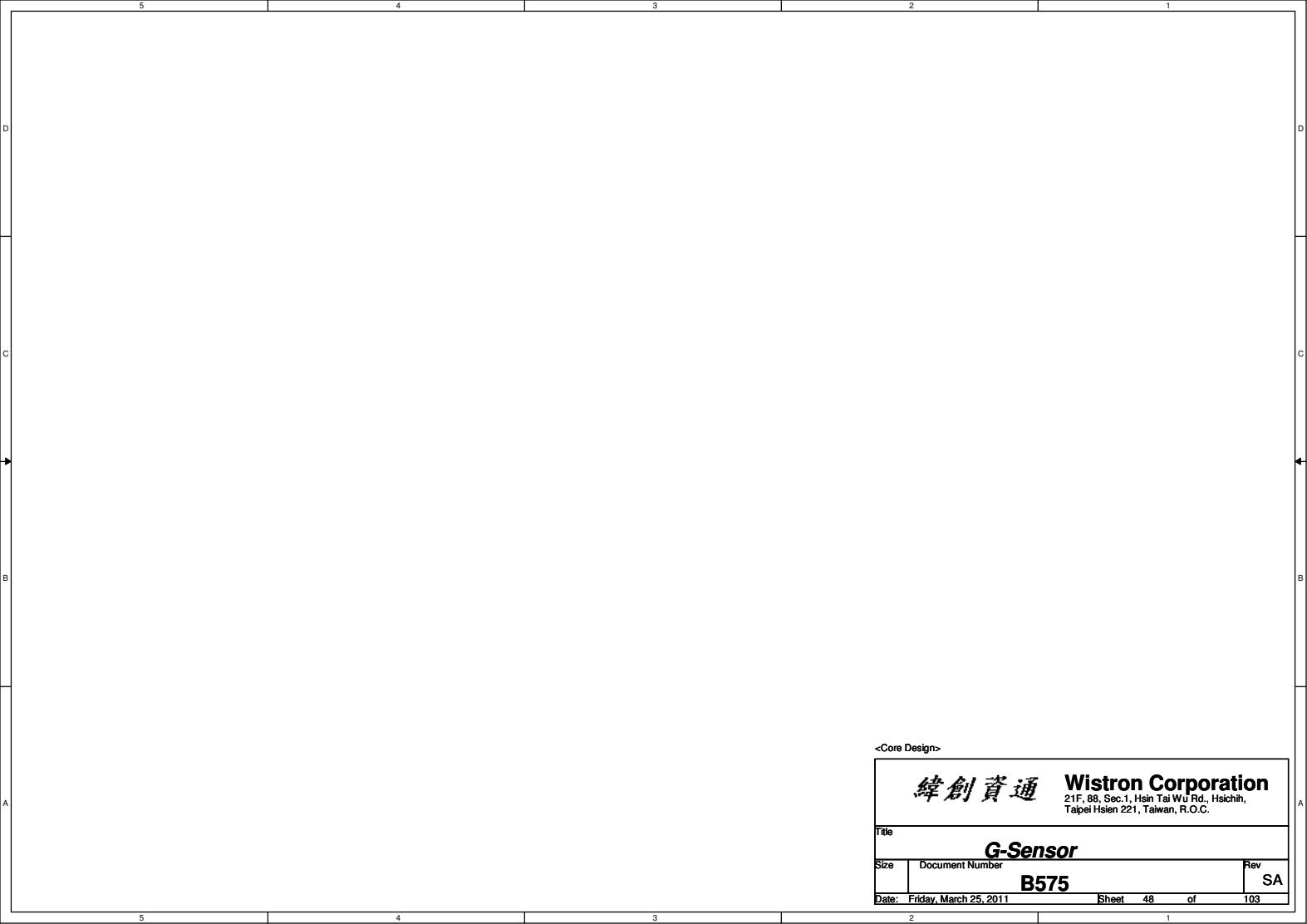
RT9026 for 0D75V_S3




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Taippei Hsien 221, Taiwan, P.O.C.

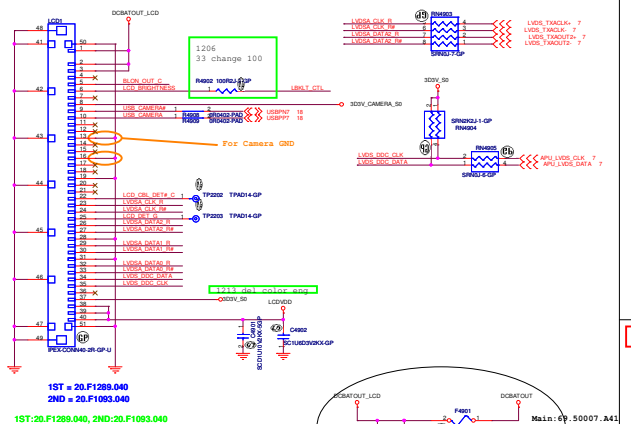


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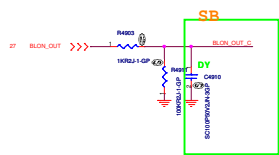
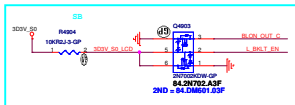
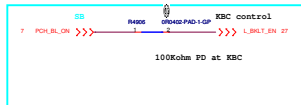
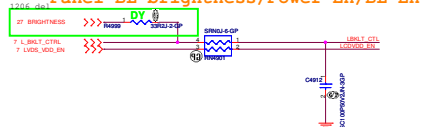
		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
G-Sensor			
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SSID = VIDEO

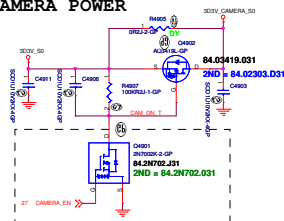
LVDS CONNECTOR



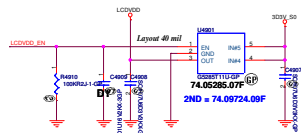
Panel BL brightness/Power En/BL En



CAMERA POWER

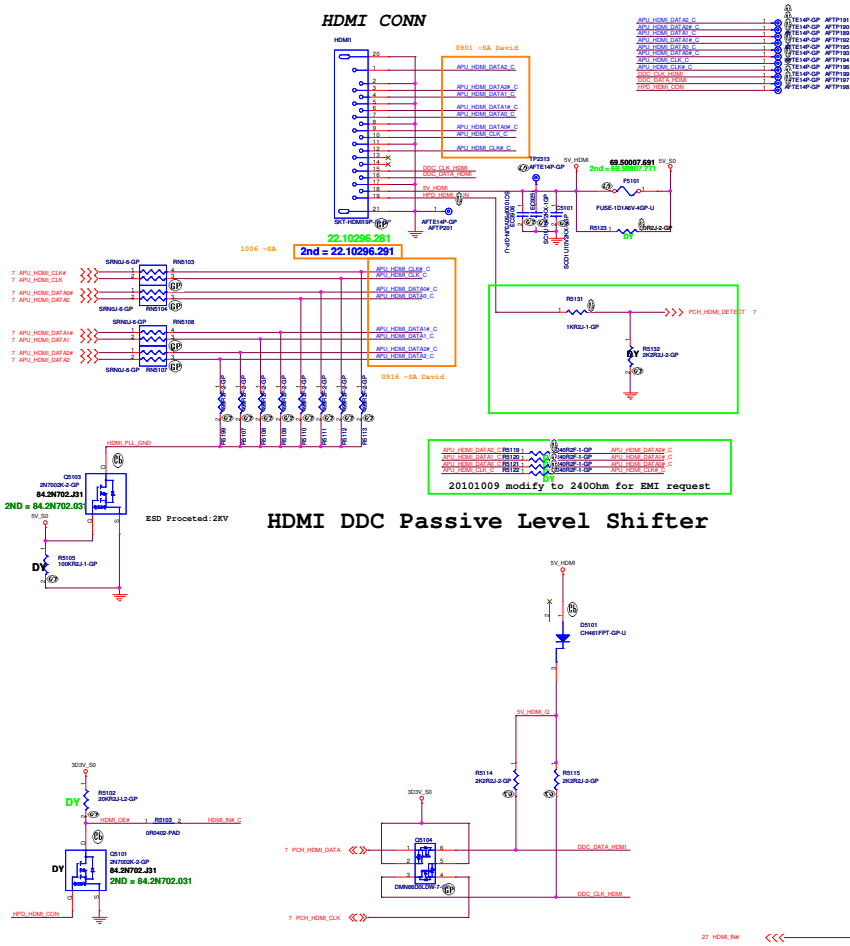


SSID = VIDEO



HDMI Level Shifter & CONNECTOR

HDMI CONN



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HDMI Level Shifter / Conn

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<Core Design>

		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichin, Taipei Hsien 221, Taiwan, R.O.C.	
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S-VIDEO			
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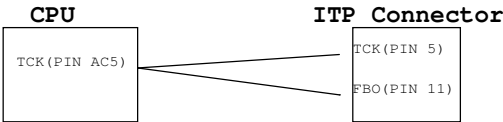
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SSID = User.Interface

ITP Connector

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

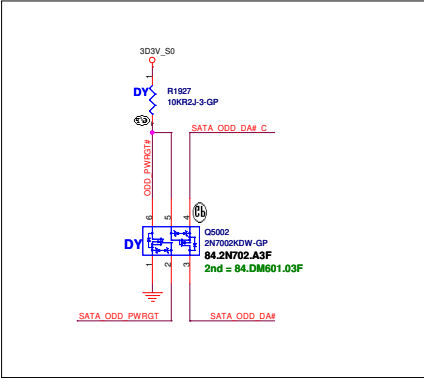
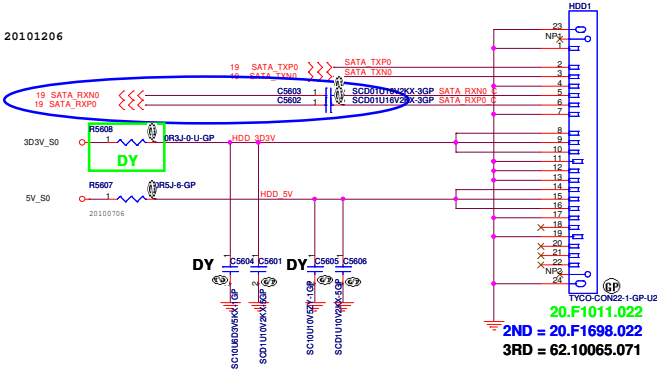


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21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichin, Taipei Hsien 221, Taiwan, R.O.C.			
Title			
ITP			
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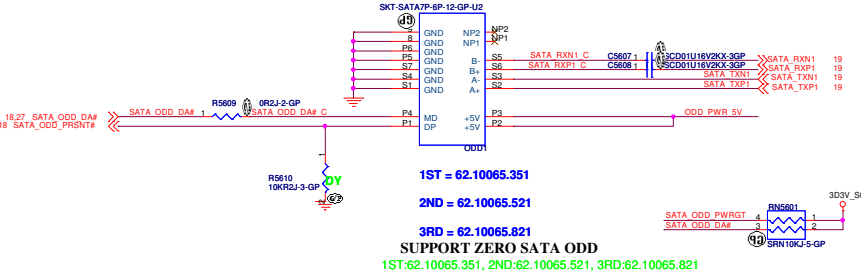
SATA HDD Connector

20101206

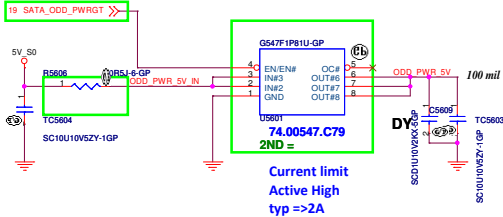


ODD Connector

SATA_RX- and SATA_RX+ Trace
Length match within 20 mil
Mars:
Exchange ODD and ESATA differential pair each other.



SATA Zero Power ODD



29 AUD_SPK_L+L
29 AUD_SPK_L+L

Place these EMI components
close to speaker connector.

Only needed if speaker
connector is physically far from
audio codec. When in doubt, it's
always a good idea to have
population option.

EC5801
SC100P50V2JN-3GP
EC5802
SC100P50V2JN-3GP

20100723 change



2ND = 20.F0693.002

1ST = 20.F1240.002

1ST:20.F1240.002, 2ND:20.F0693.002



2ND = 20.F0693.002

1ST = 20.F1240.002

1ST:20.F1240.002, 2ND:20.F0693.002

AFTP138 AFTE14P-2 1 AUD_SPK_L+L
AFTP137 AFTE14P-2 1 AUD_SPK_L+L
AFTP129 AFTE14P-2 1 AUD_SPK_R+L
AFTP140 AFTE14P-GP 1 AUD_SPK_R+L

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Taipei Hsien 321, Taiwan, R.O.C.

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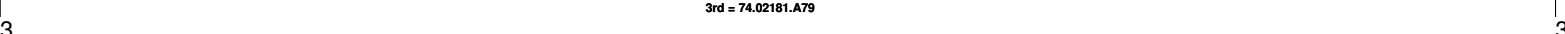
SA

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A	B	C	D	E
SSID = USB				

4	RS49_VSB Board VSB Power	4
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 緯創資通		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsuehshih, Taipei Hsien 221, Taiwan, R.O.C.	
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USB Power SW			
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Taipei Hsien 221, Taiwan, R.O.C.

USB Power SW

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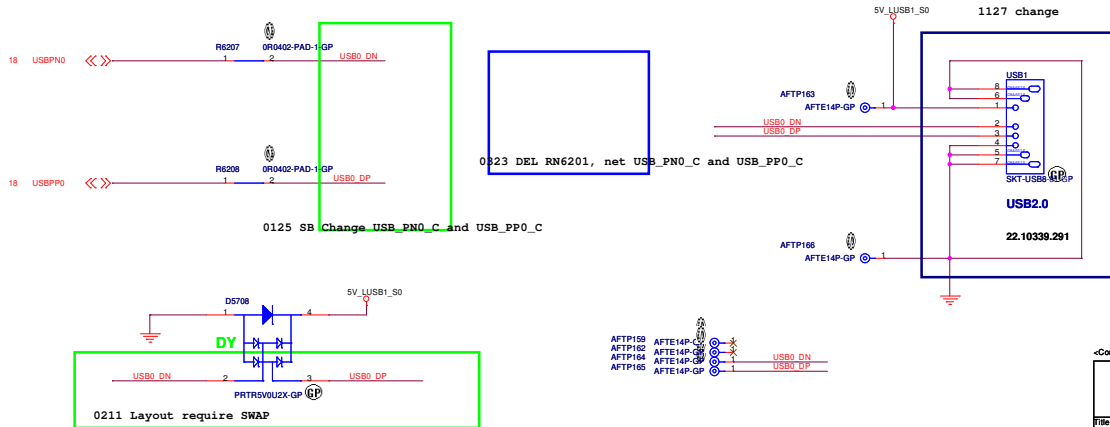
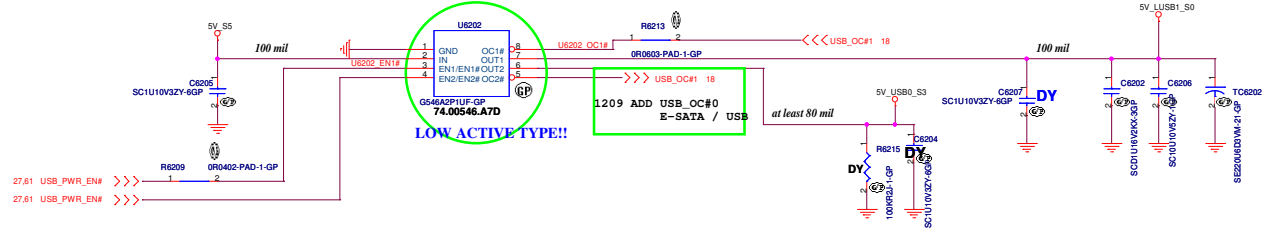
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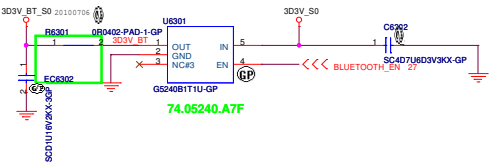
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Left Side USB Power Switch

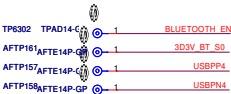
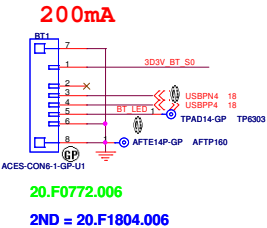


Bluetooth Power



BT CONN.

EC6302 put near
BLUE1 / all USB
put one choke
near connector
by EMI request



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LA57 UMA

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A2

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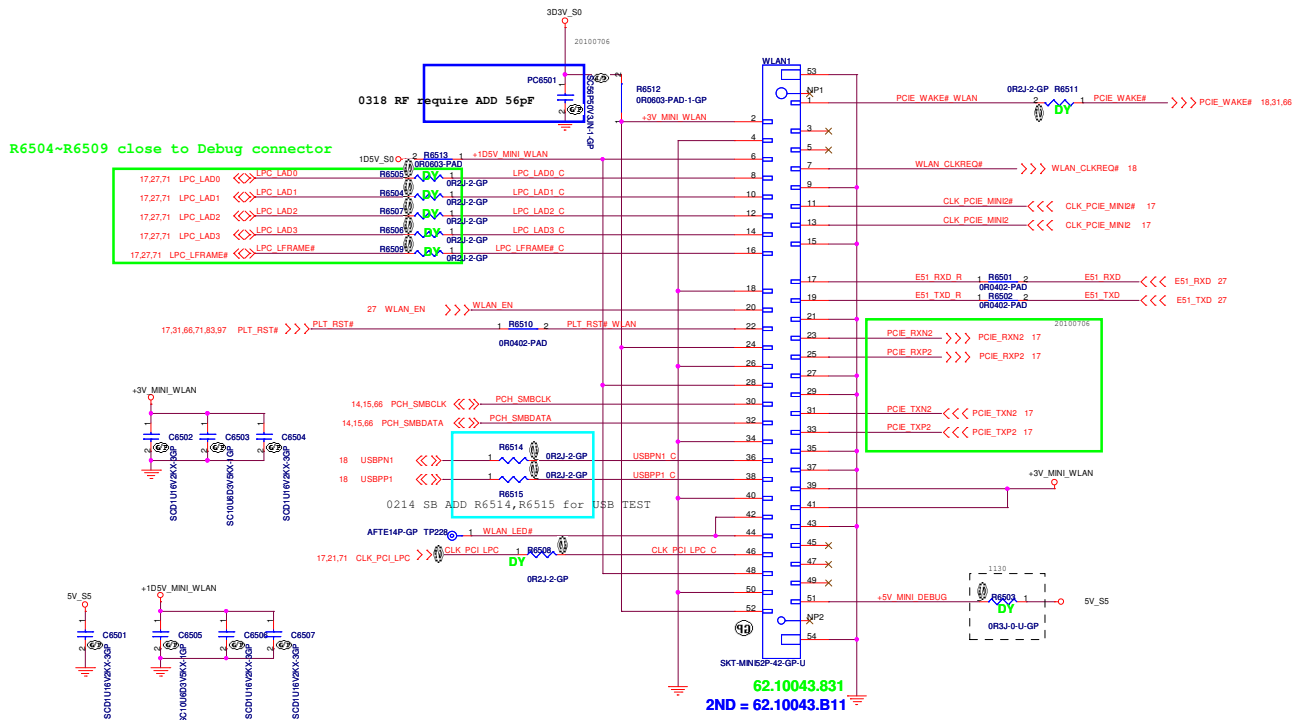
Rev

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SSID = Wireless

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



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緯創資通

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File

MINICARD WLAN

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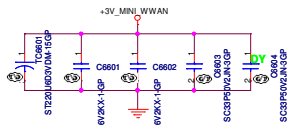
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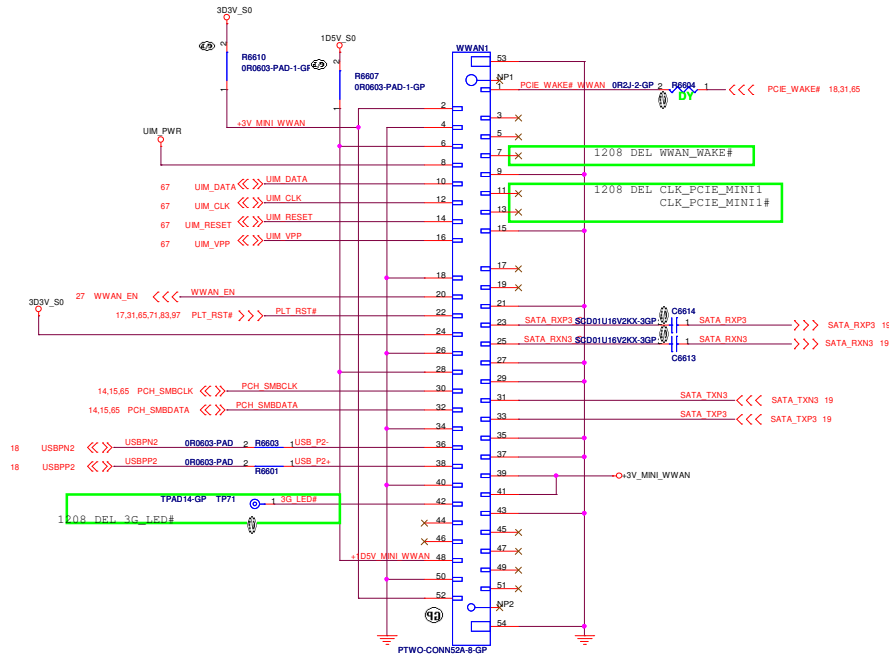
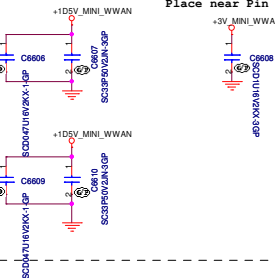
SSID = Wireless

Mini Card Connector(WWAN)

Place near MINI Card CONN



Place near Pin 24



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緯創資通

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File

MINICARD_WWAN

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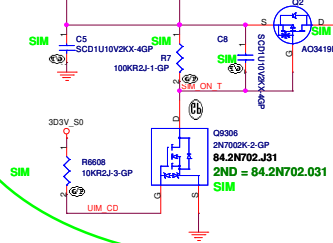
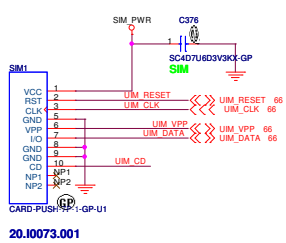
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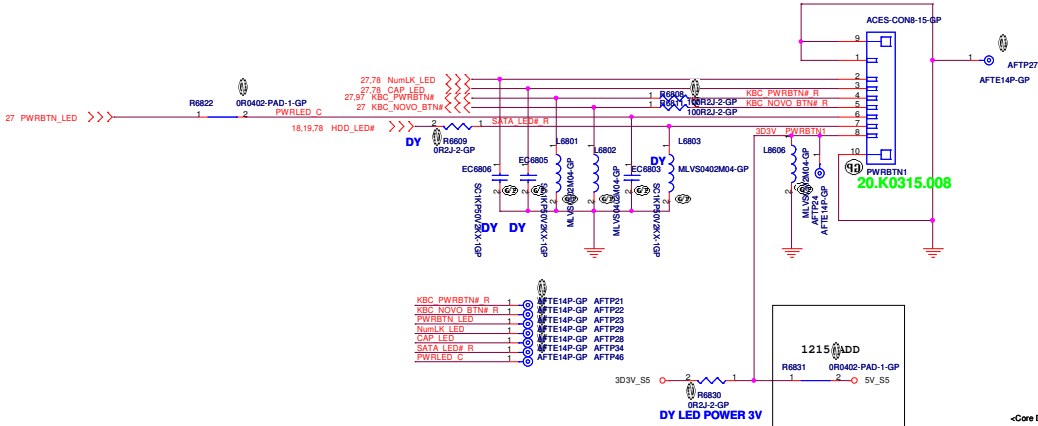
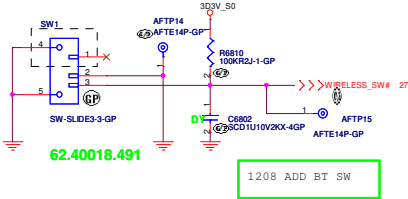
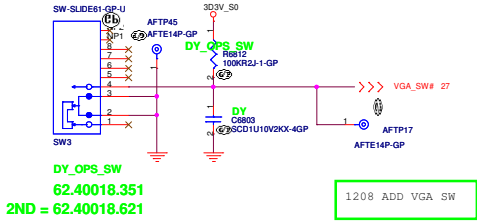
3

2

1

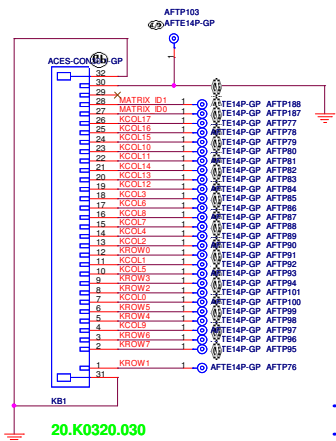


```
SSID = User.Interface
```



SSID = KBC

Internal Keyboard Connector

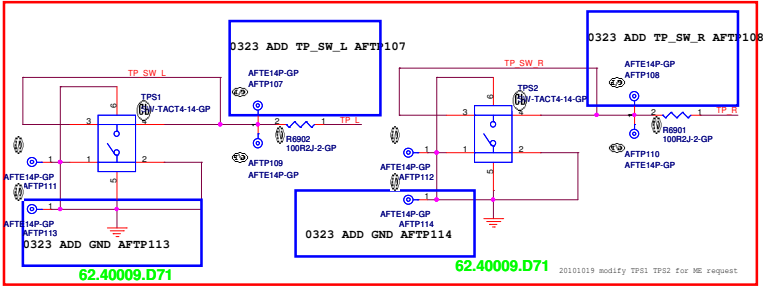
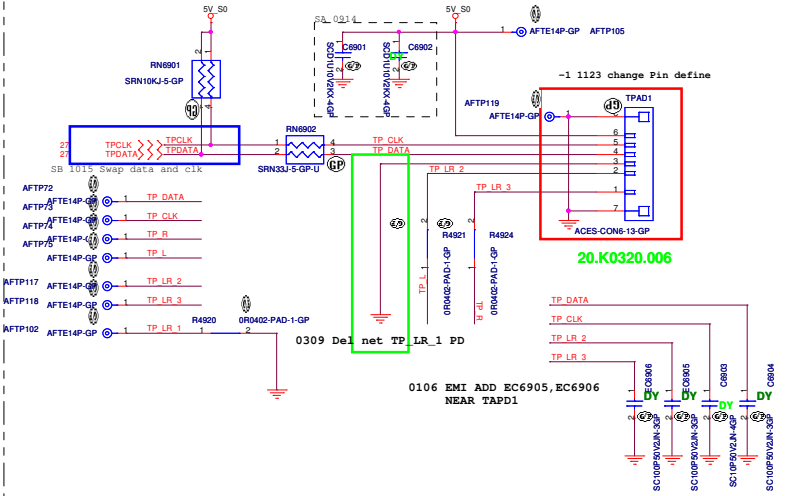


S205少兩PIN,
原廠測試已補上

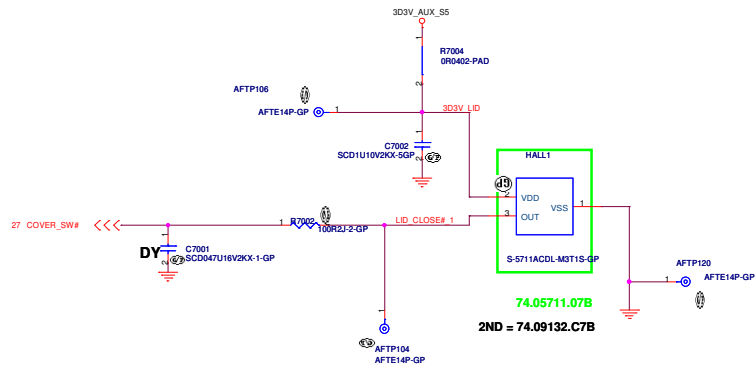
ID KEY MATRIX	SENSE			
	27	28	29	30
US	GND	GND	X	GND
GB	GND	X	X	GND
JP	X	GND	X	GND

《 KROW[7..0] 27
《 KCOL[17..0] 27

SSID = Touch.Pad



Hall Sensor



<Core Design>

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HALL Sensor

Size

Document Number

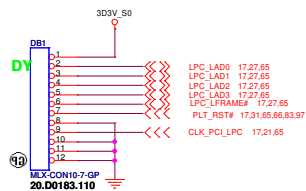
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GOLDEN FINGER FOR DEBUG BOARD



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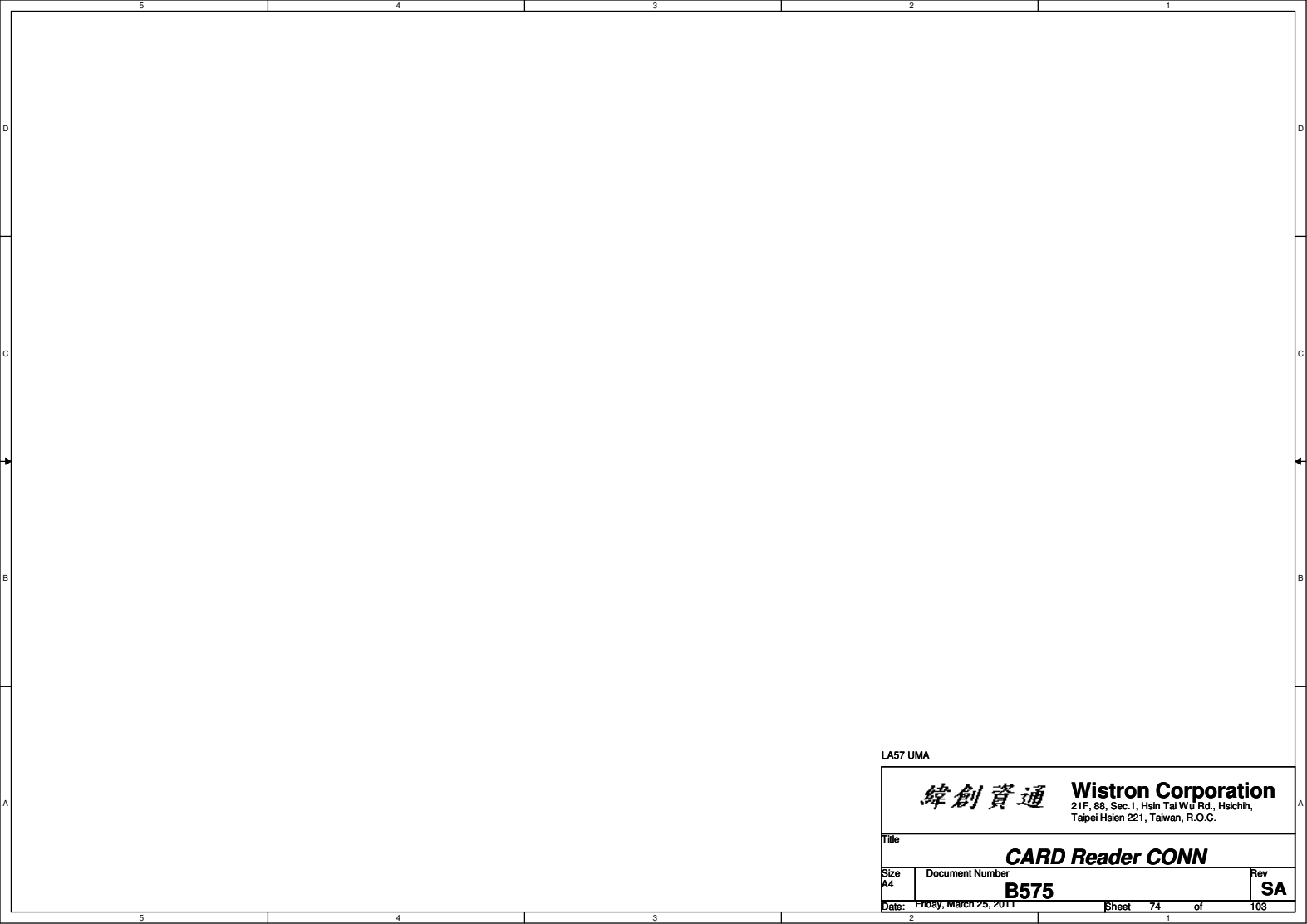
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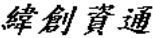
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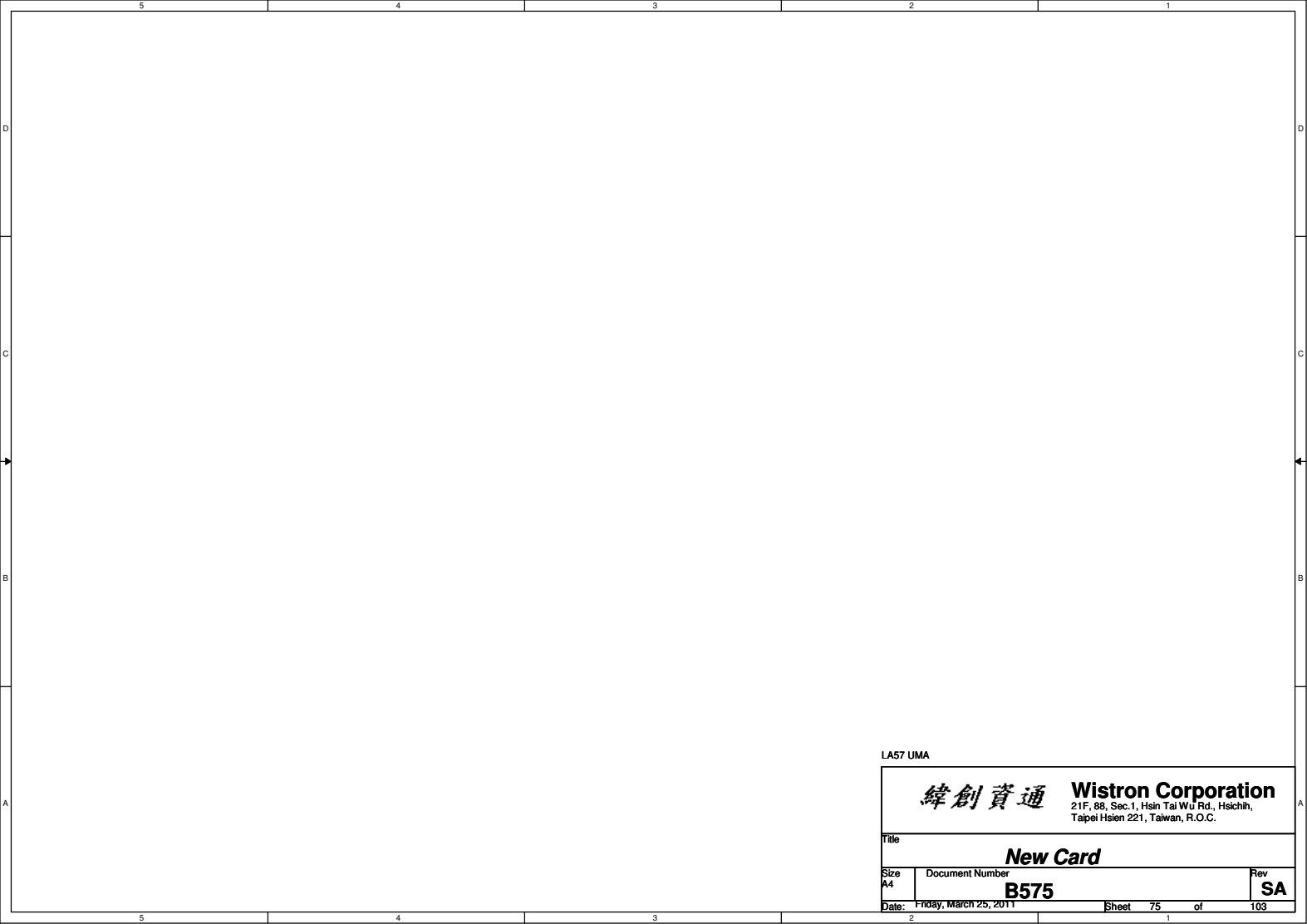
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CARD Reader CONN			
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Title			
<i>New Card</i>			
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LA57 UMA

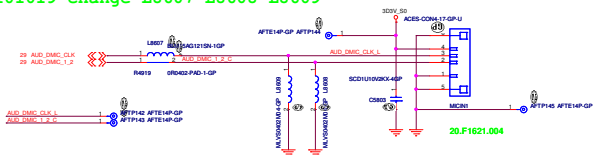
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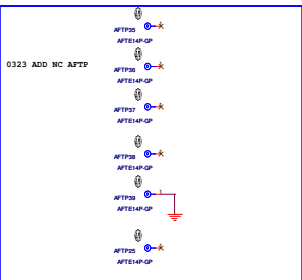
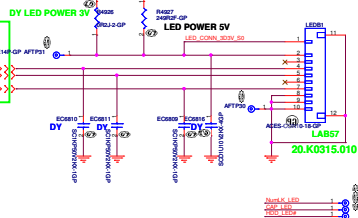
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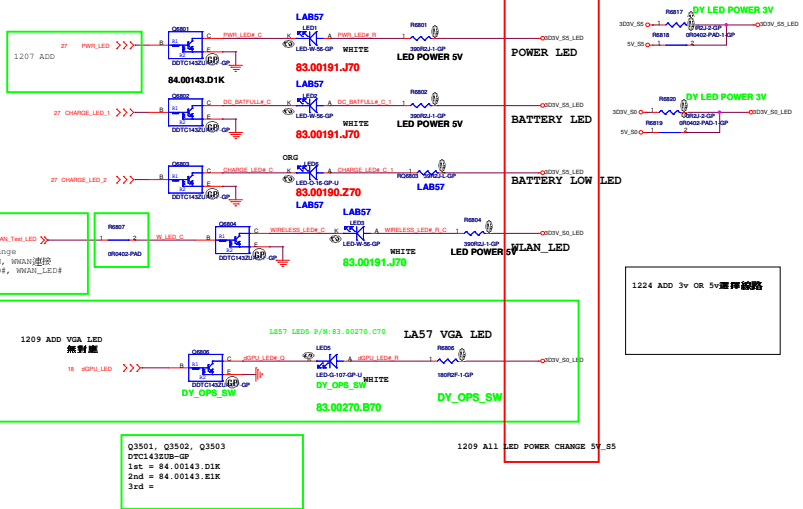
20101019 change L8607 L8608 L8609



LED BORD CONN.



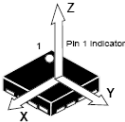
LED



	ADXL322	
	LIS244AL	No Accel
	LIS34AL	
R530	NO_ASM	ASM
R509	ASM	ASM
All other	ASM	NO_ASM

STMicro LIS34AL: 74.00034.0BZ
ADXL335 : 74.00335.0BZ

Layout Comment :
(1) Place C483, C484, Q46, R528, R530,
C479, C476, R509, R508 close to U55.
(2) Avoid routing under DCDC switching area.



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LA57 UMA

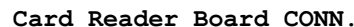
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LA57 UMA

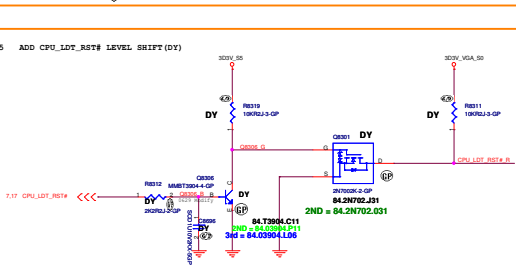
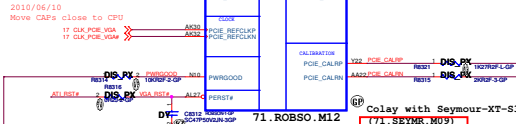
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RJ45 USB CONN.



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" 1" (PU)	NC
" 1" (PU)	NC

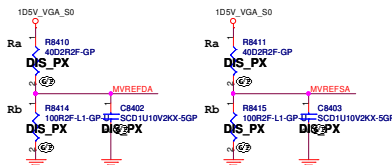
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STRAPPING(1/5)

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New
SA

PLACE MVREF DIVIDERS AND CAPS CLOSE TO ASIC

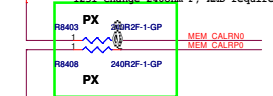


DDR3/GDDR3 Memory Stuff Option (ROBSON-S3/SEYMOUR-XT-S3)

	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 DPx_CALR to GND through a 150-Ω (1%) resistor.

1231 change 240ohm F, AMD require



★ This basic topology should be used for DRAM_RST for GDDR3/GDDR5/DDR5. 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

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

DIS_PX lenovo PN 71.SEYMR.M09

71.ROBSON.M12 Colay with Seymour-XT-S3
(71.SEYMR.M01)

2010/07/06
Schematics check list:
A pull-down resistor is required.

~Variant Name~

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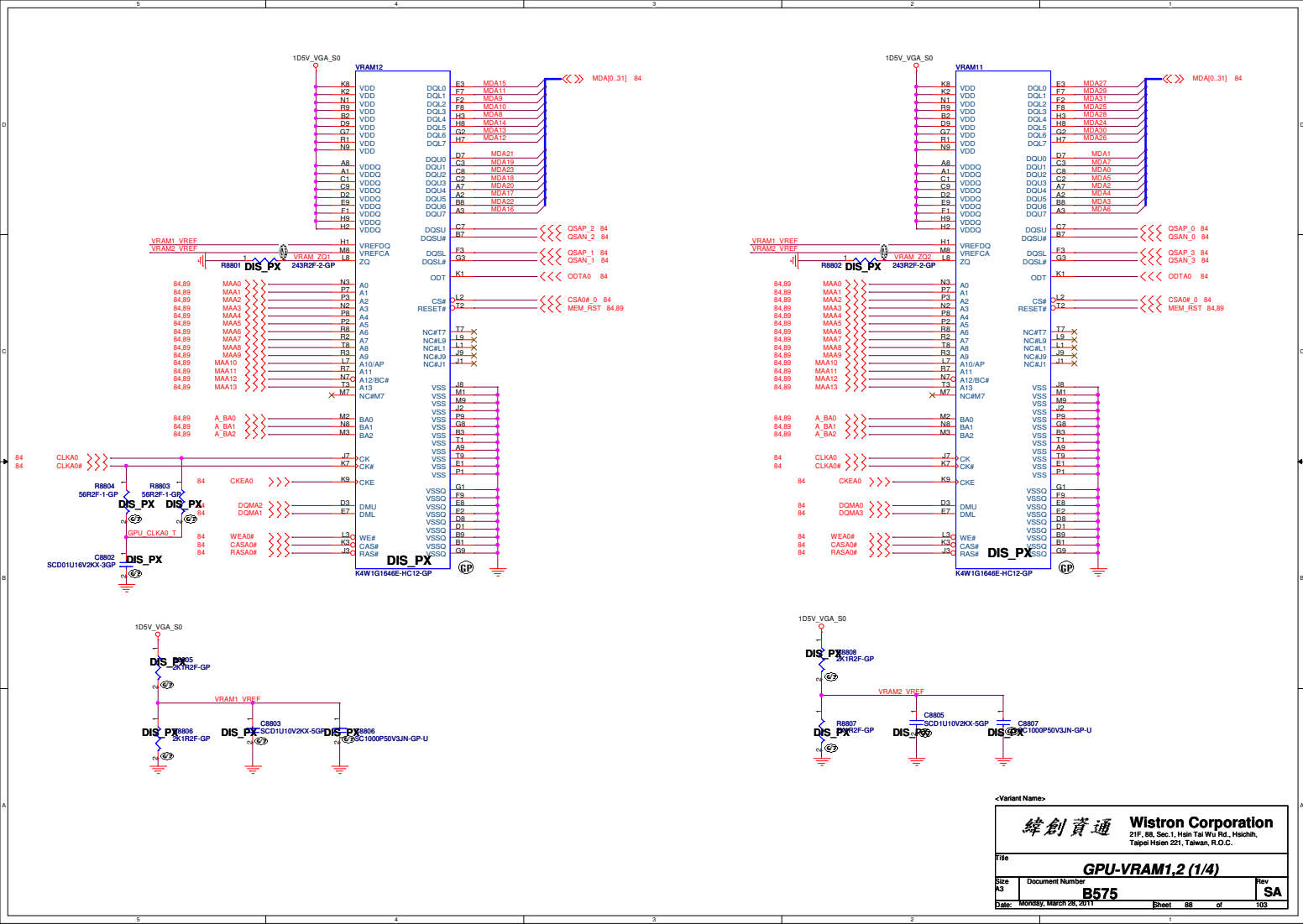
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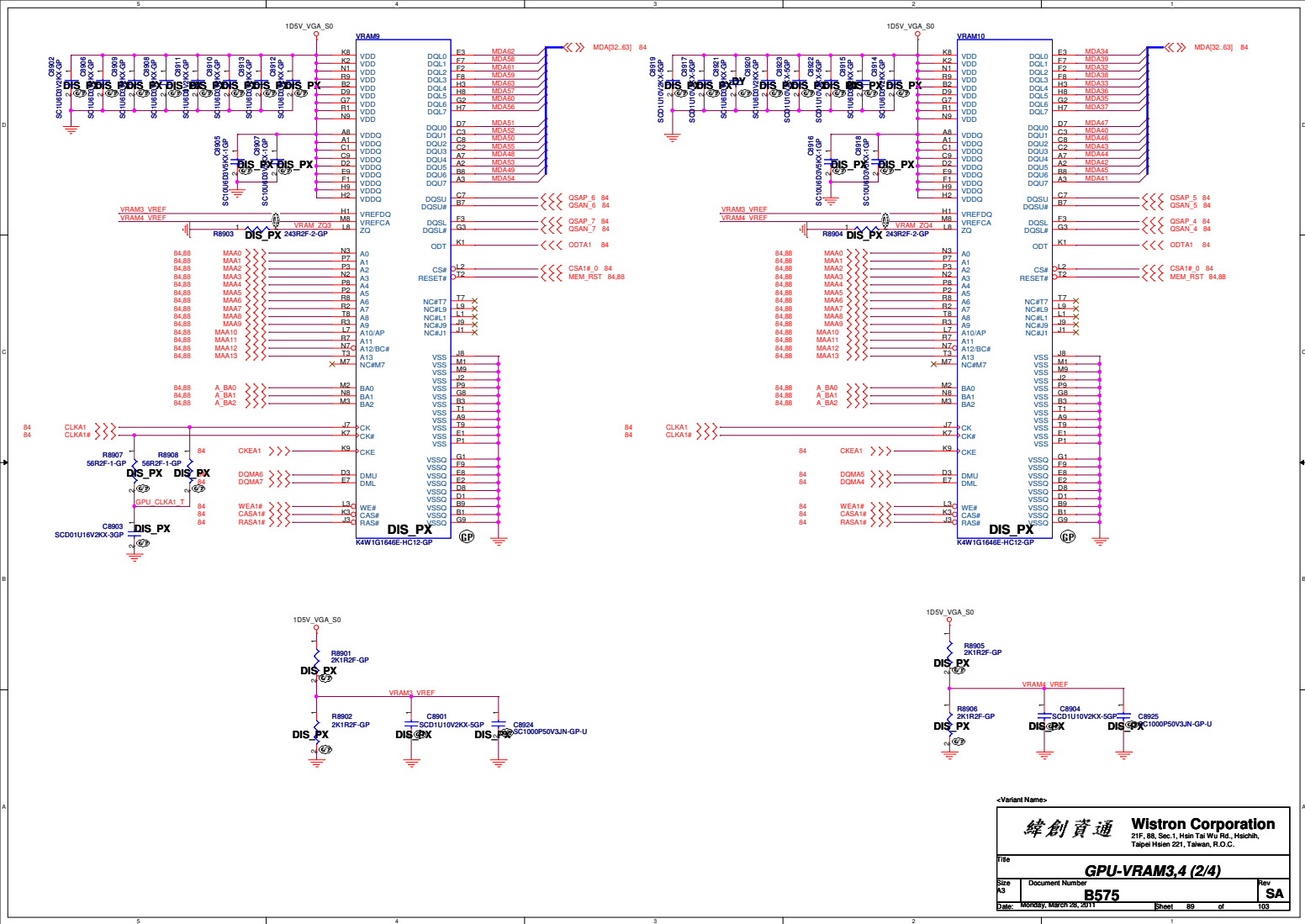
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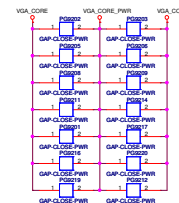
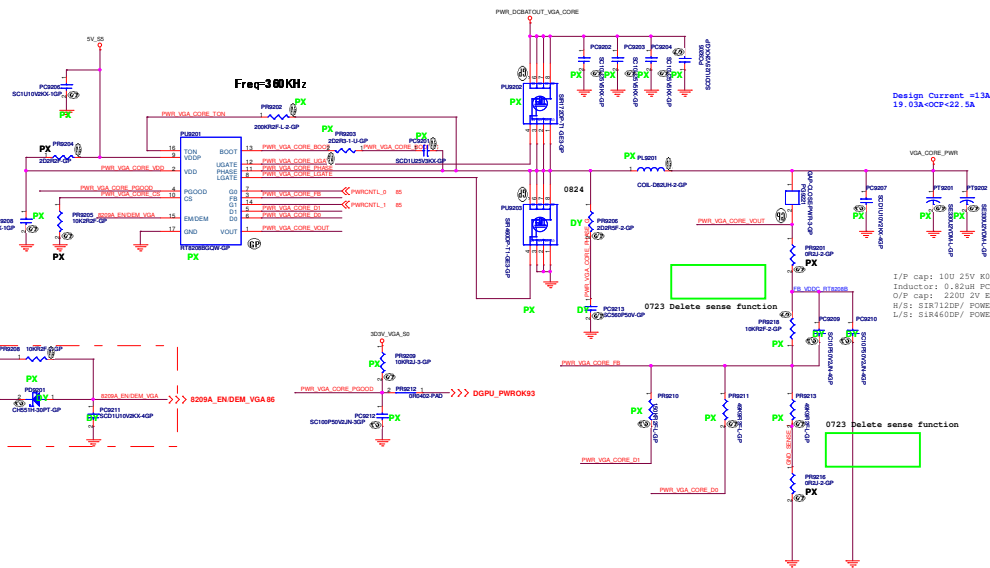
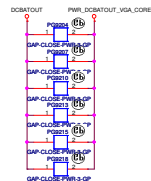
Date: **Monday, March 28, 2011**

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







Robson-XT

PWR_VGA_CORE_D1	PWR_VGA_CORE_D0	VGA_CORE_PWR
L	L	1.1V
L	L	0.9V
L	L	1.05V
L	L	0.9V

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

For ROBSON

PR9210=44K, 2K (64.44225.6DL)

PR9211=150K (64.15035.6DL)

Seymour-XT

PWR_VGA_CORE_D1	PWR_VGA_CORE_D0	VGA_CORE_PWR
L	L	1.1V
L	L	0.9V
L	L	1.05V
L	L	0.9V

©Core Design

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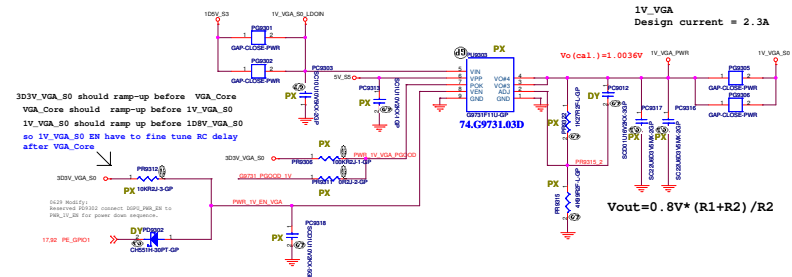
RT8208B +VCC_GFXCORE

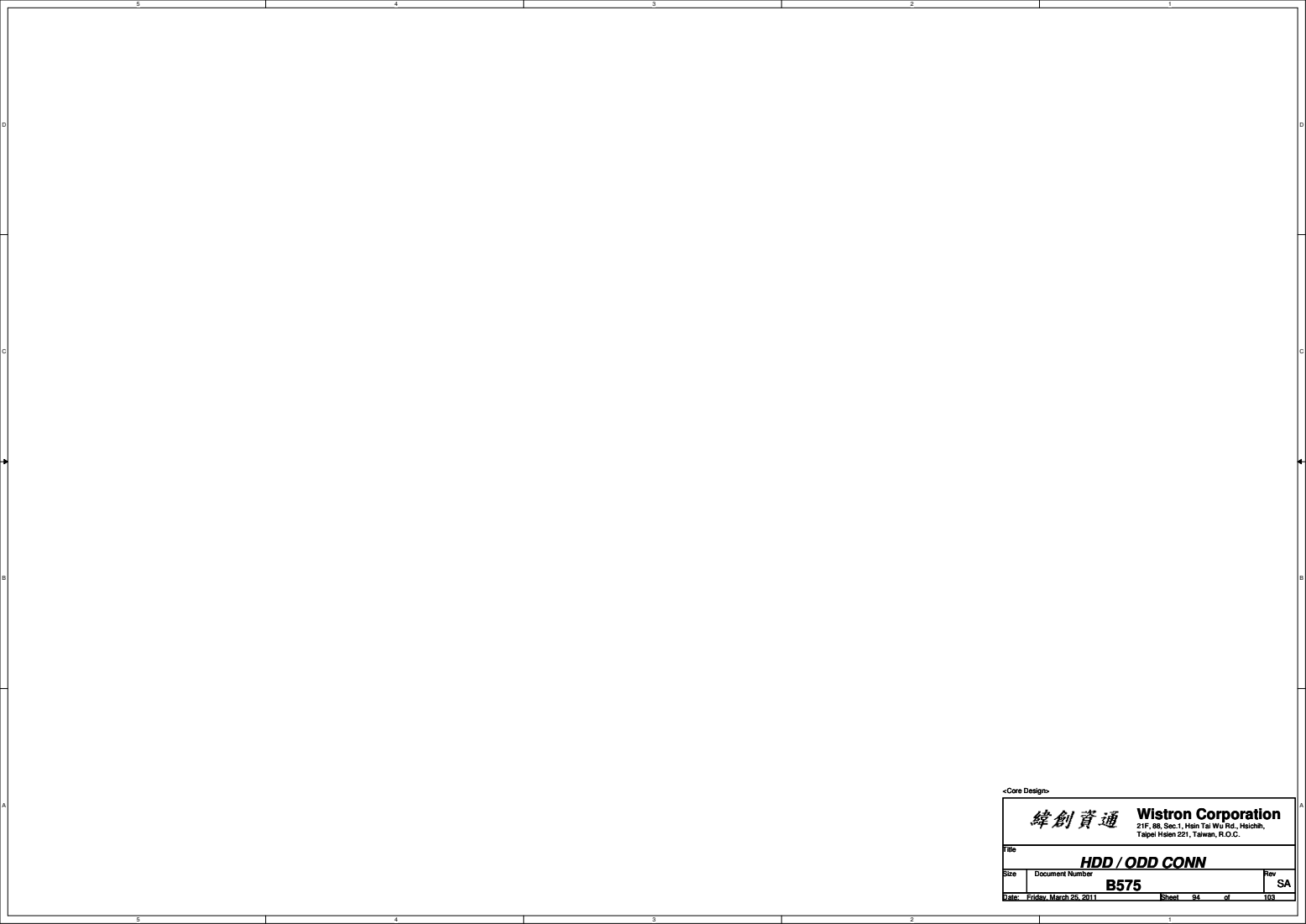
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Rev. 5A

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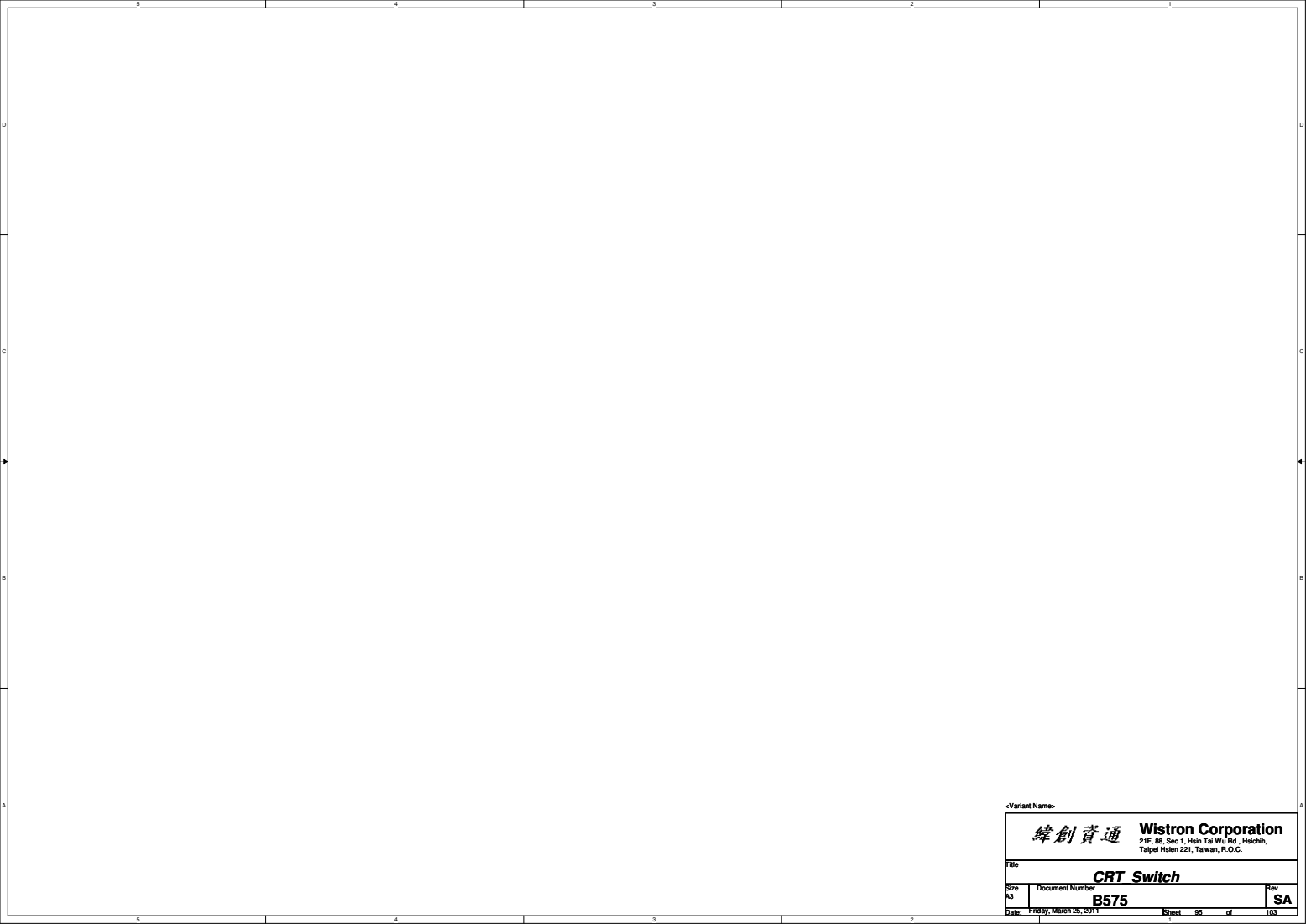
	PE_GPIO0	PE_GPIO1
dGPU mode	H	H
IGPU	L	L
IGPU with BACO	H	H

[illegible][illegible]



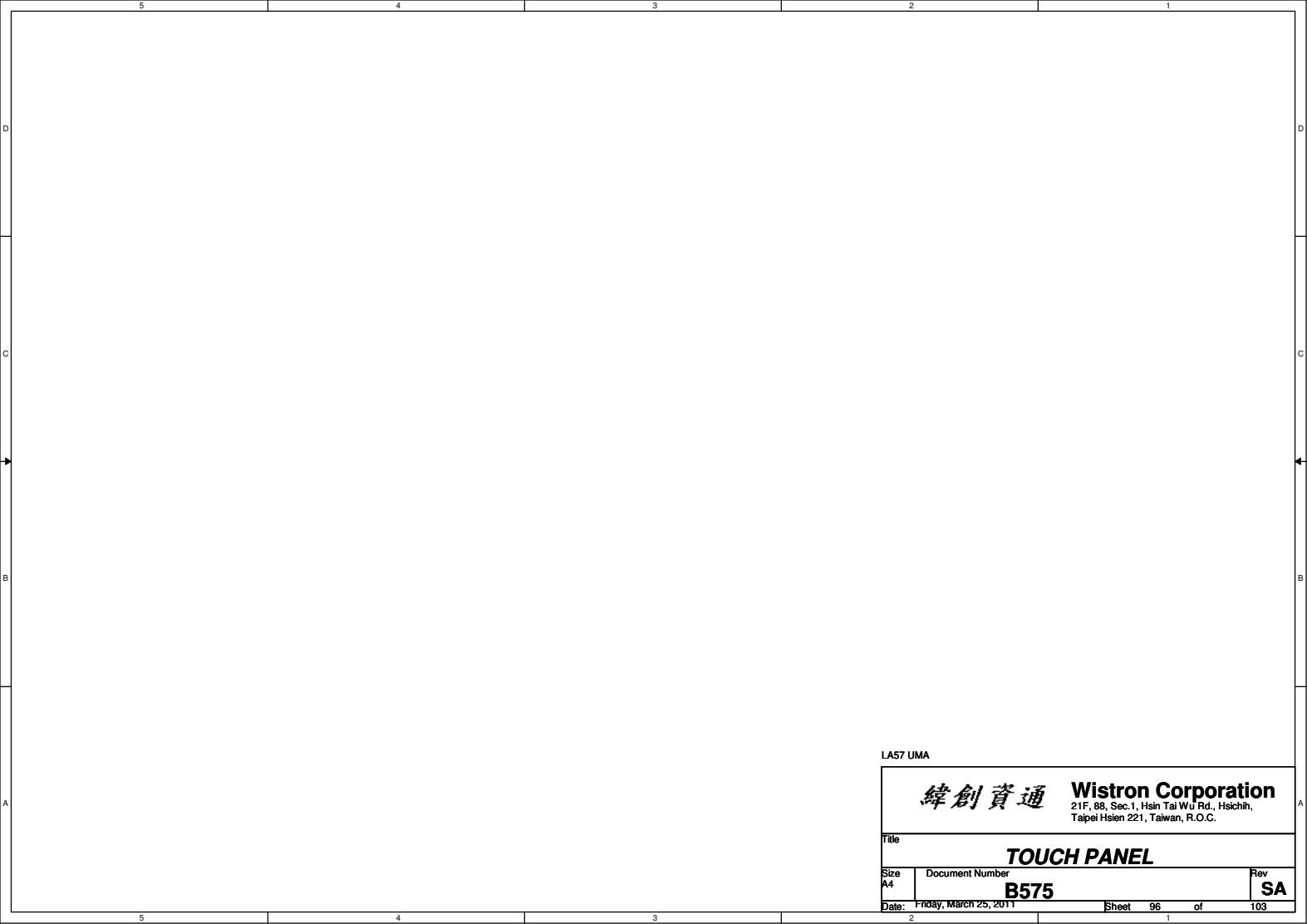
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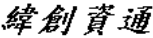


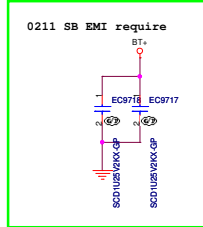
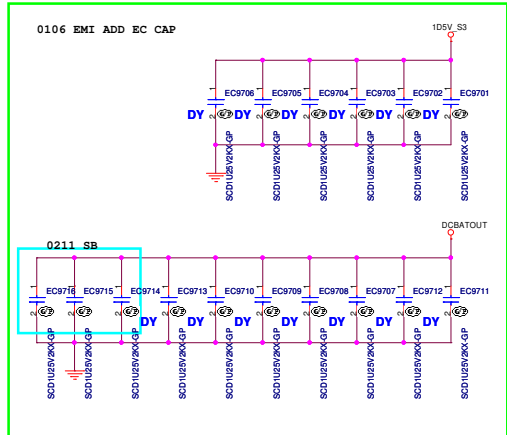
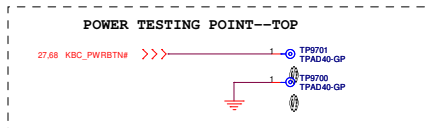
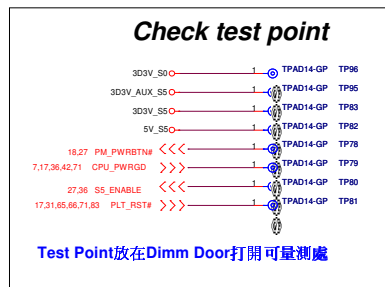
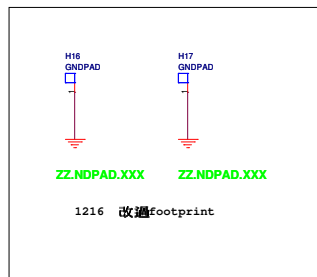
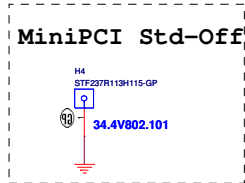
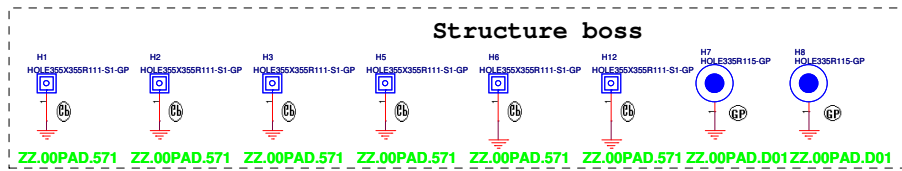
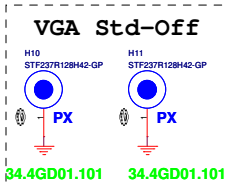
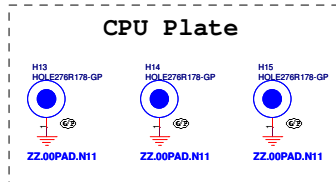
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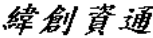
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Size	Document Number		Rev
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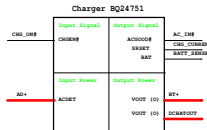
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Title			
Change History			
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特種型	
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Power Delivery Block Diagram

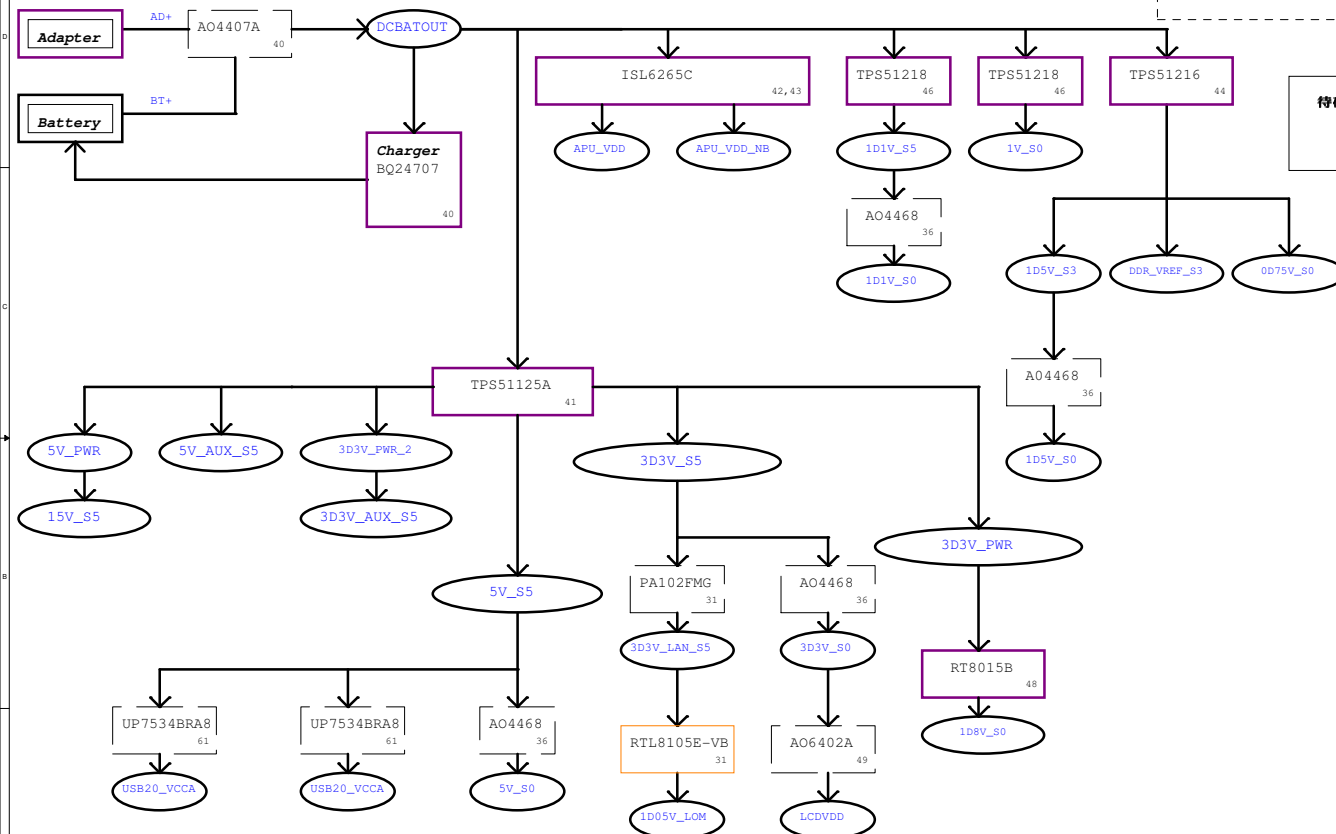
Power Shape

Regulator

LDO

Switch

待確認



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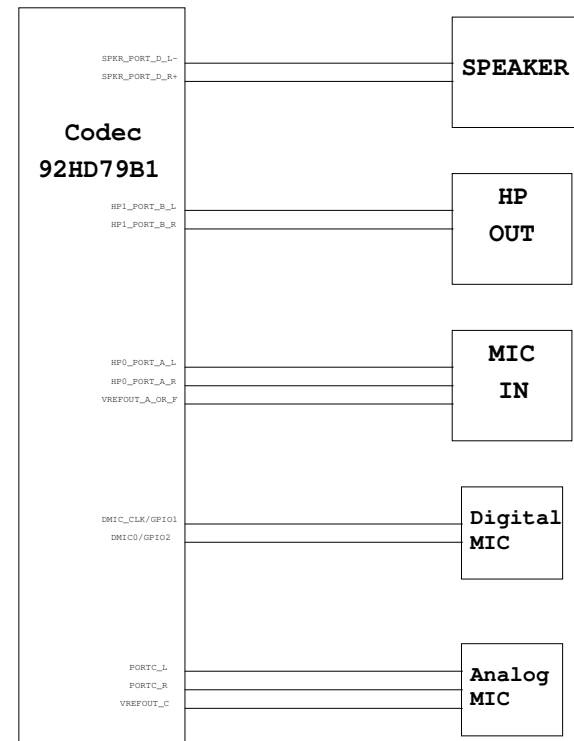
Power Block Diagram

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Thermal/Audio Block Diagram

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