

Yukon Block Diagram

Project code: 91.4BC01.001
 PCB P/N : 48.4BC01.0SA
 REVISION : 08226-SA

PCB Layer Stackup

L1: Signal 1
 L2: VCC
 L3: Inner Signal 2
 L4: Inner Signal 3
 L5: GND
 L6: Signal 4

CPU V_CORE

INPUT	OUTPUT
DCBATOUT	VCC_CORE_S0

SYSTEM DC/DC

INPUT	OUTPUT
DCBATOUT	ID2V_S0 ID8V_S3

SYSTEM DC/DC

INPUT	OUTPUT
DCBATOUT	5V_S5 3D3V_S5

SYSTEM LDO

INPUT	OUTPUT
1D8V_S3	0D9V_S3

SYSTEM LDO

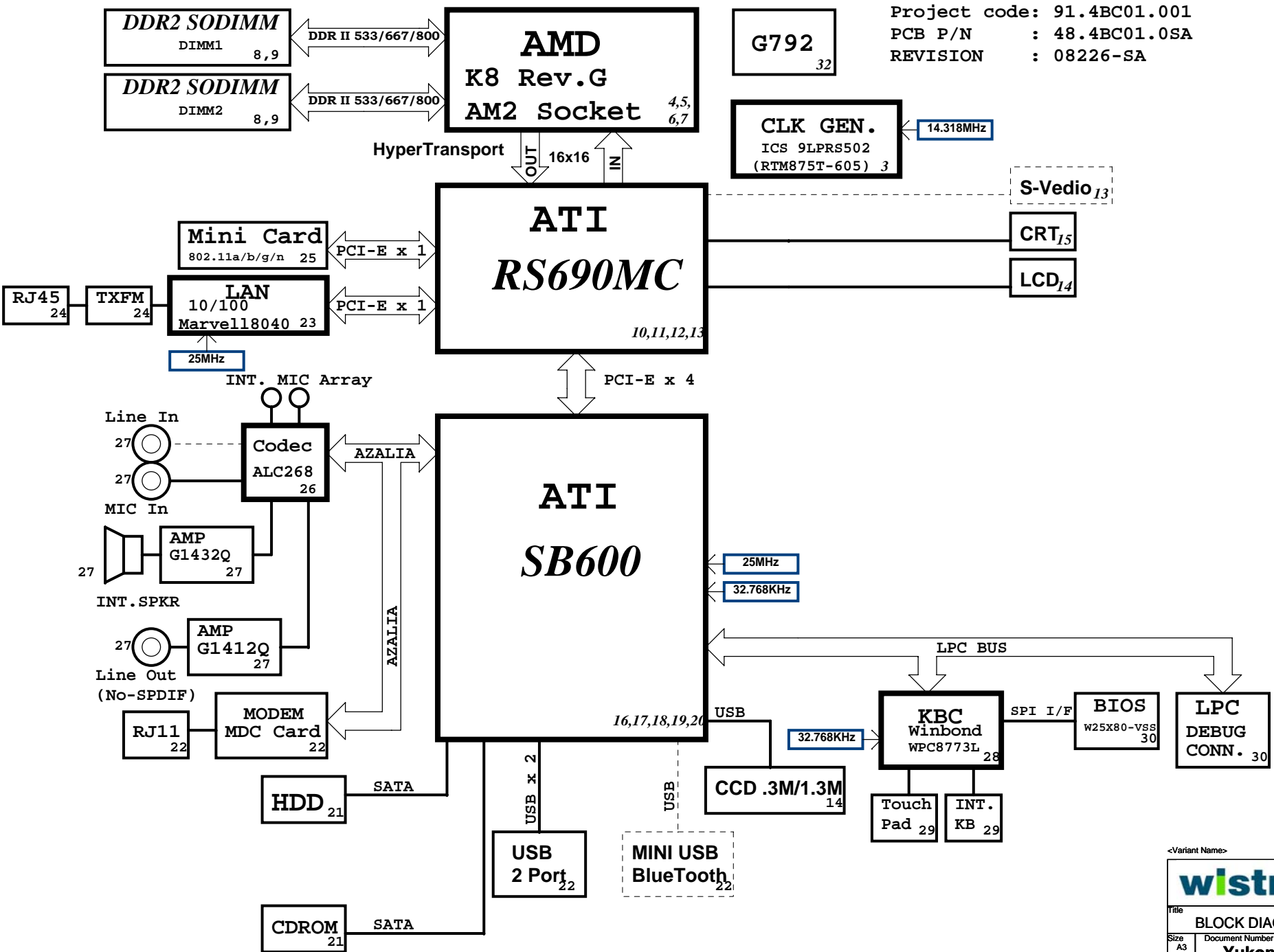
INPUT	OUTPUT
3D3V_S5 3D3V_S0 3D3V_S0	1D2V_S5 2D5V_S0 1D5V_S0

SYSTEM LDO

INPUT	OUTPUT
DCBATOUT	5V_AUX_S5 3D3V_AUX_S5

Battery Charger

INPUTS	OUTPUTS
AD+ BAT+	DCBATOUT



<Variant Name>

wistron Wistron Incorporated
 21F, 88, Hsin Tai Wu Rd
 Hsichih, Taipei

Title: **BLOCK DIAGRAM**

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5

4

3

2

1

D

D

C

C

B

B

A

A

<Core Design>

緯創資通

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Title

CHANGE HISTORY

Size
A3

Document Number

Yukon

Rev
SA

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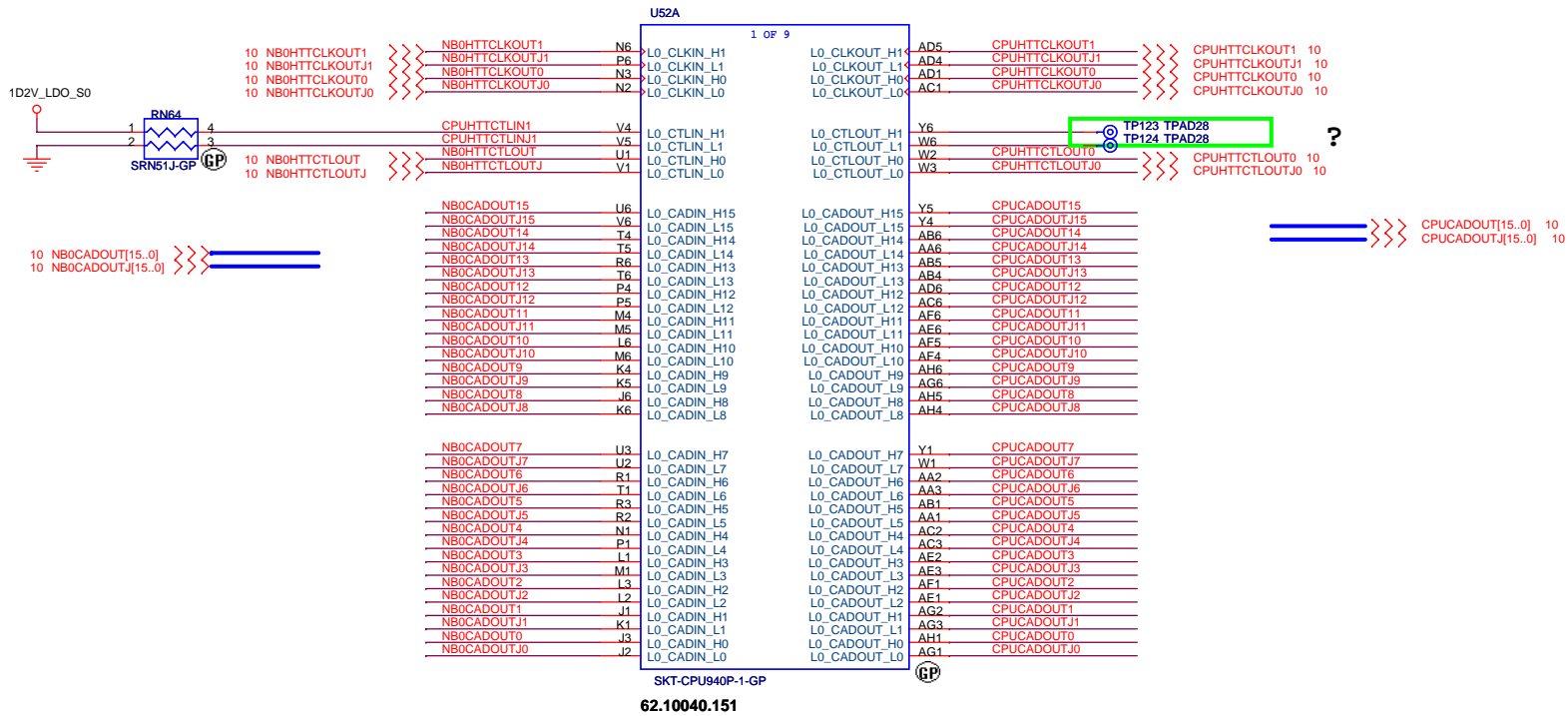
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4

3

2

1



<Core Design>

		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.
CPU(1/4)_HyperTransport I/F		
Size A3	Document Number Yukon	Rev SA
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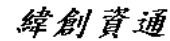
62.10040.151

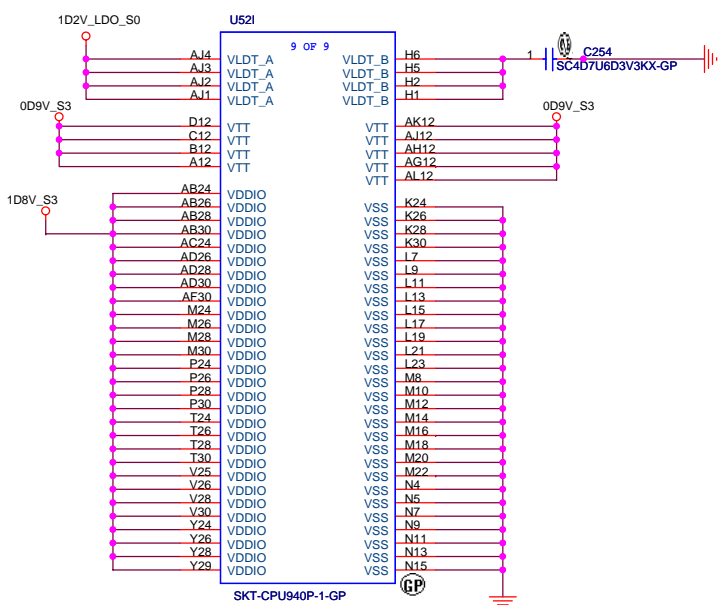
SKT-CPU940P-1-GP

62.10040.151

SKT-CPU940P-1-GP

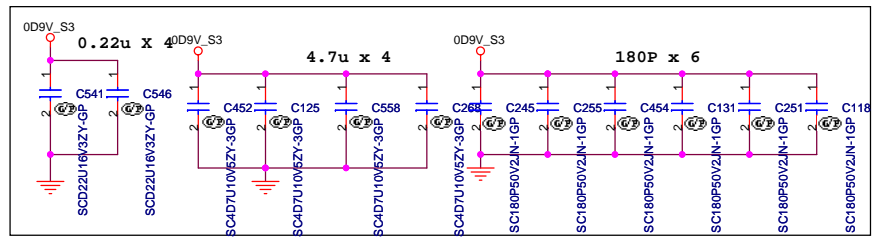
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 Wistron Corporation 21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.		
Title CPU(2/4) DDR		
Size A3	Document Number Yukon	Rev SA
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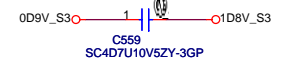
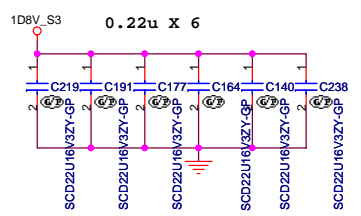
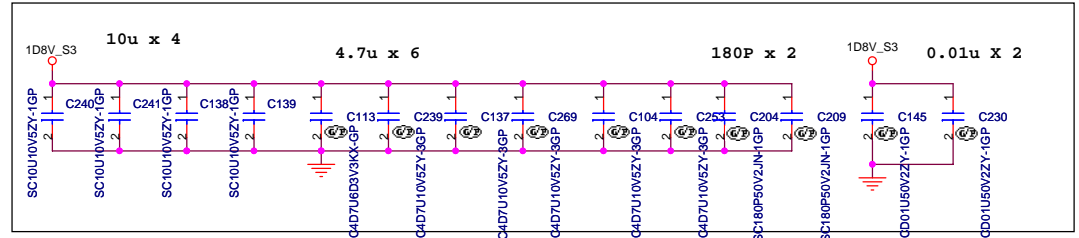
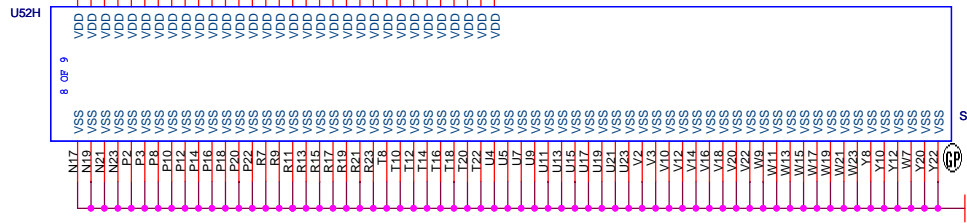
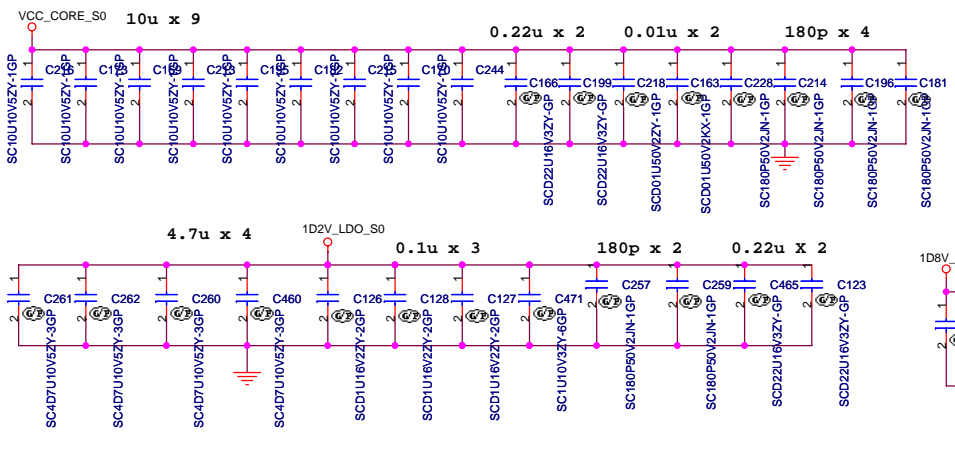


62.10040.151

Place near to CPU



LAYOUT: Place on backside of processor.



<Core Design>

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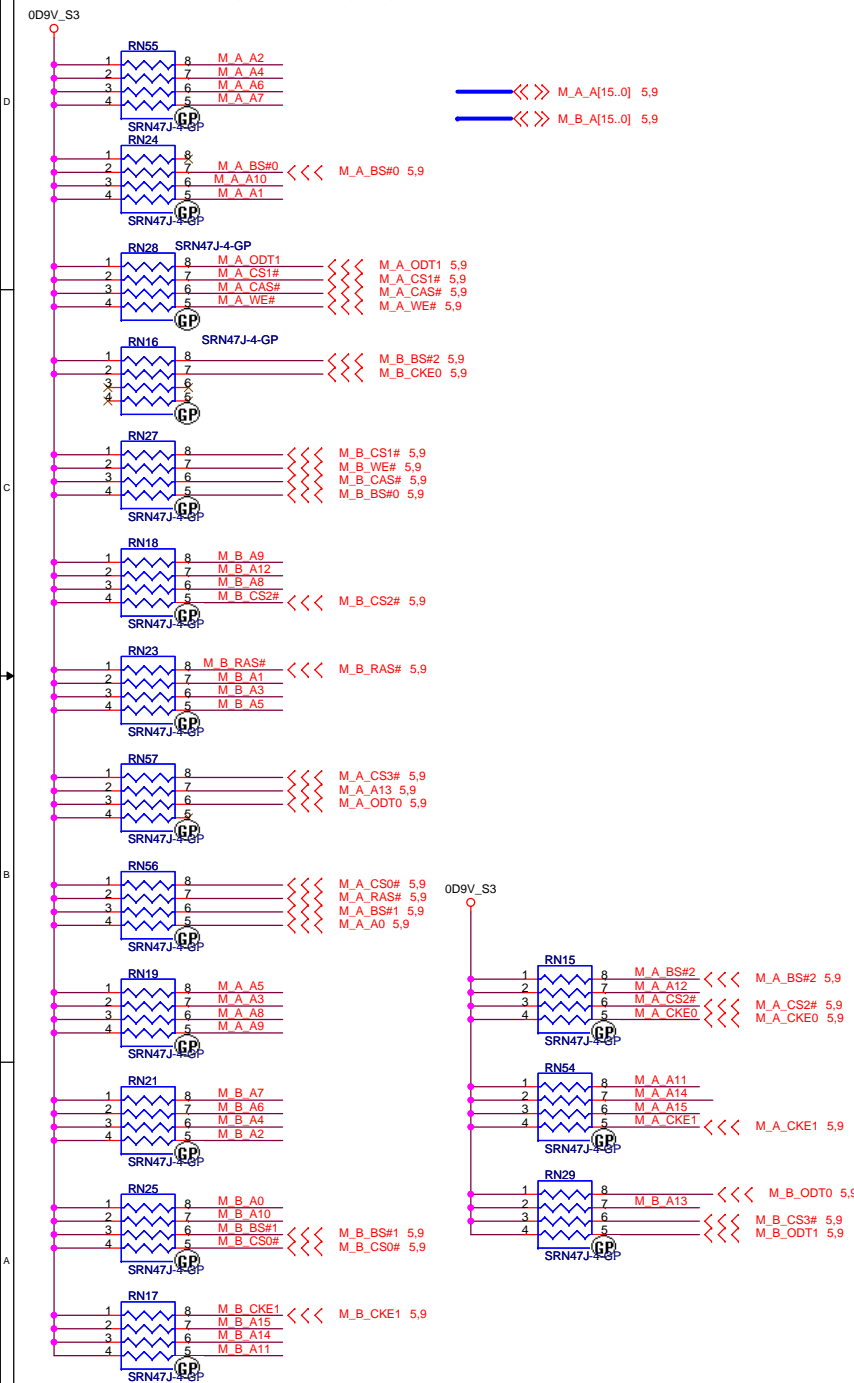
Title: **CPU(4/4)_Power**

Size: A3 Document Number: Yukon Rev: SA

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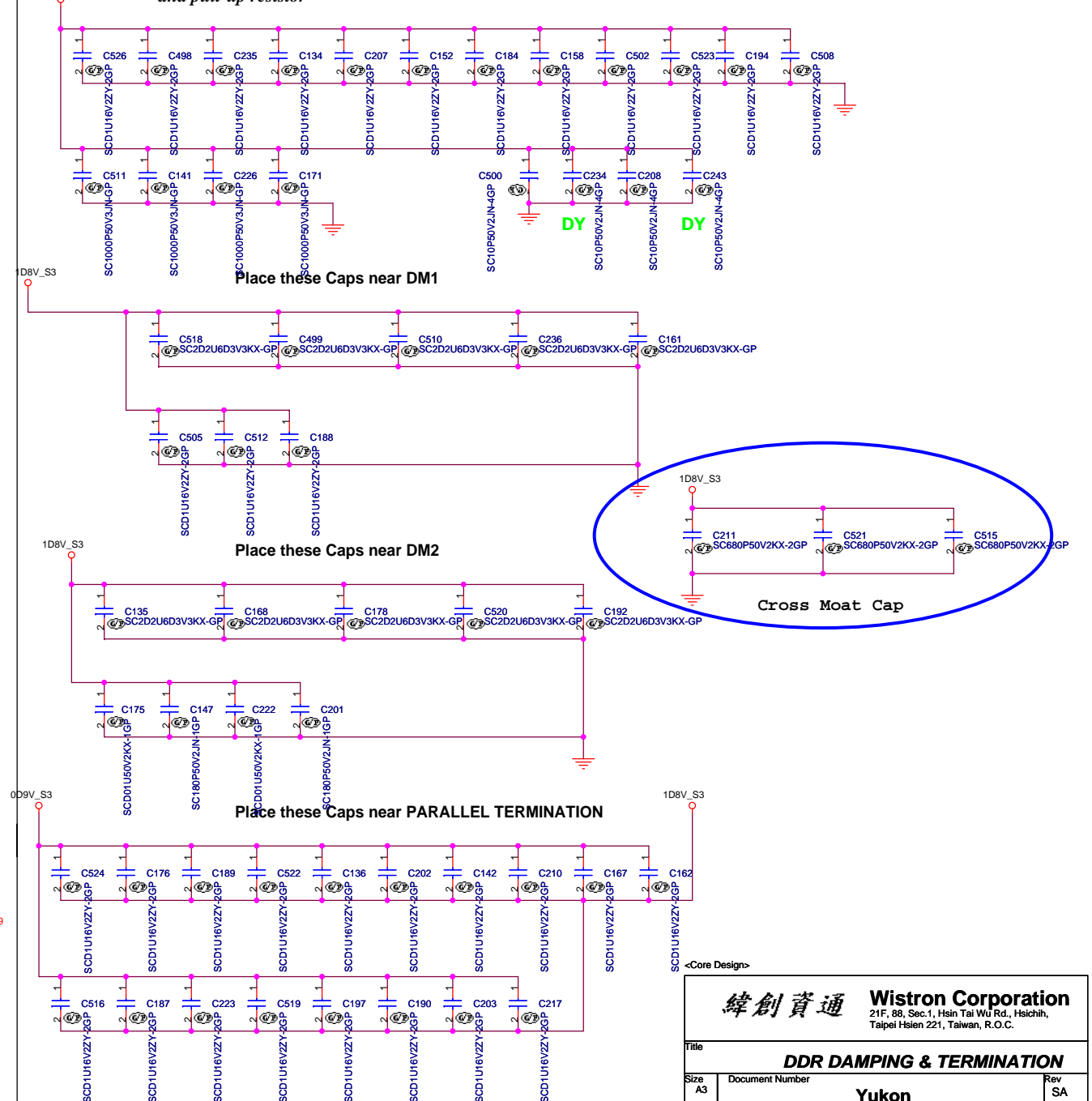
PARALLEL TERMINATION


Put decap near power(0.9V) and pull-up resistor



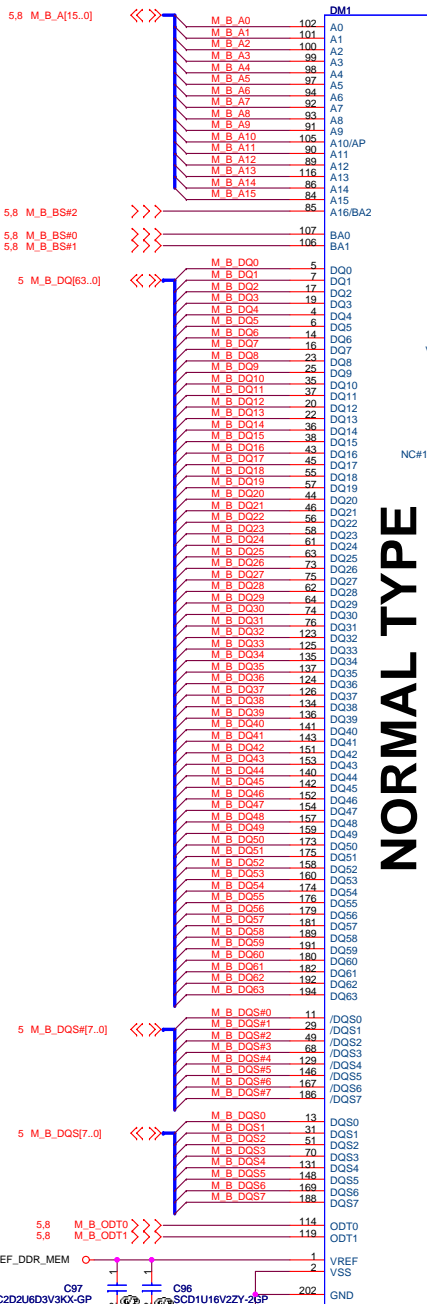
Decoupling Capacitor

Put decap near power(0.9V) and pull-up resistor



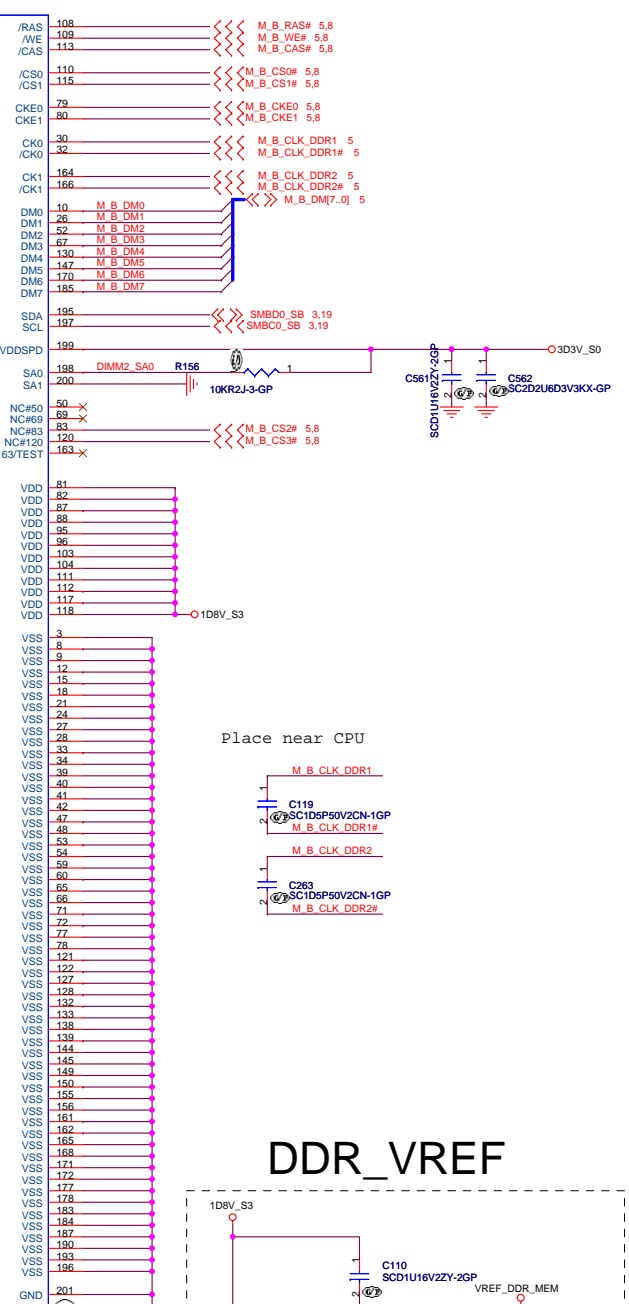

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DDR DAMPING & TERMINATION
 Title
 Size A3 Document Number
Yukon
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NORMAL TYPE

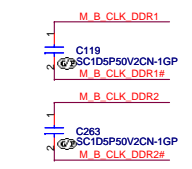
62.10017.A61
High 9.2mm
2nd: 62.10017.A51



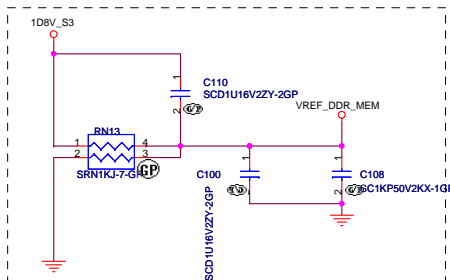
NORMAL TYPE

62.10017.661
High 5.2mm
2nd: 62.10017.A41

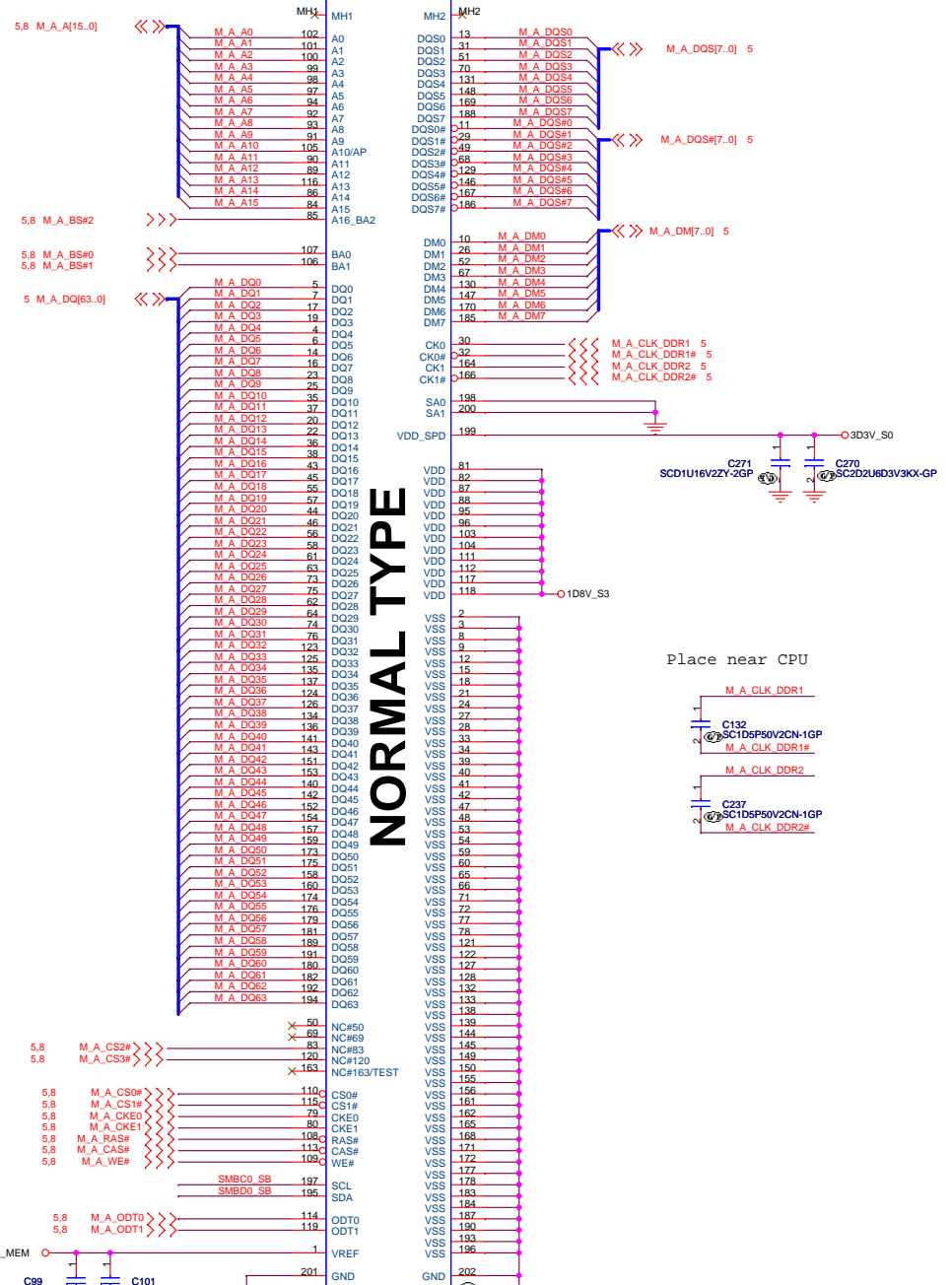
Place near CPU



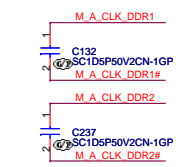
DDR_VREF



LAYOUT: Locate close to DIMM



Place near CPU



<Core Design>

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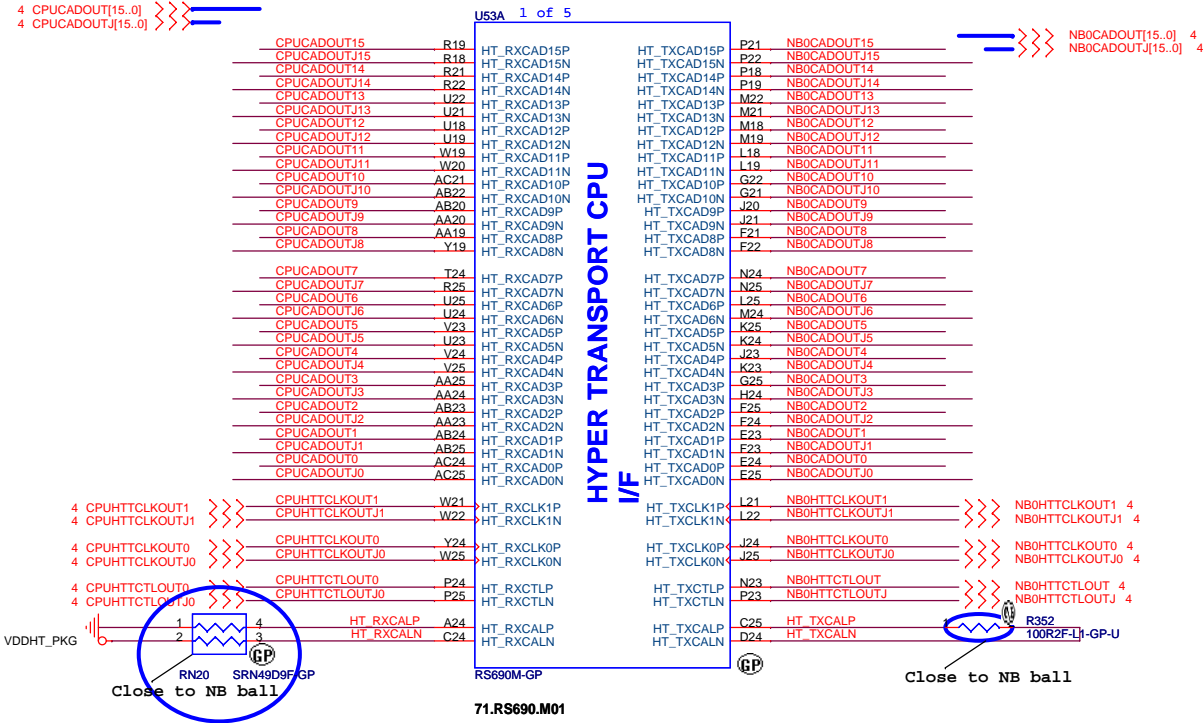
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Size: Custom Document Number: **Yukon** Rev: SA

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CLAW HAMMER TO NB

NB TO CLAW HAMMER

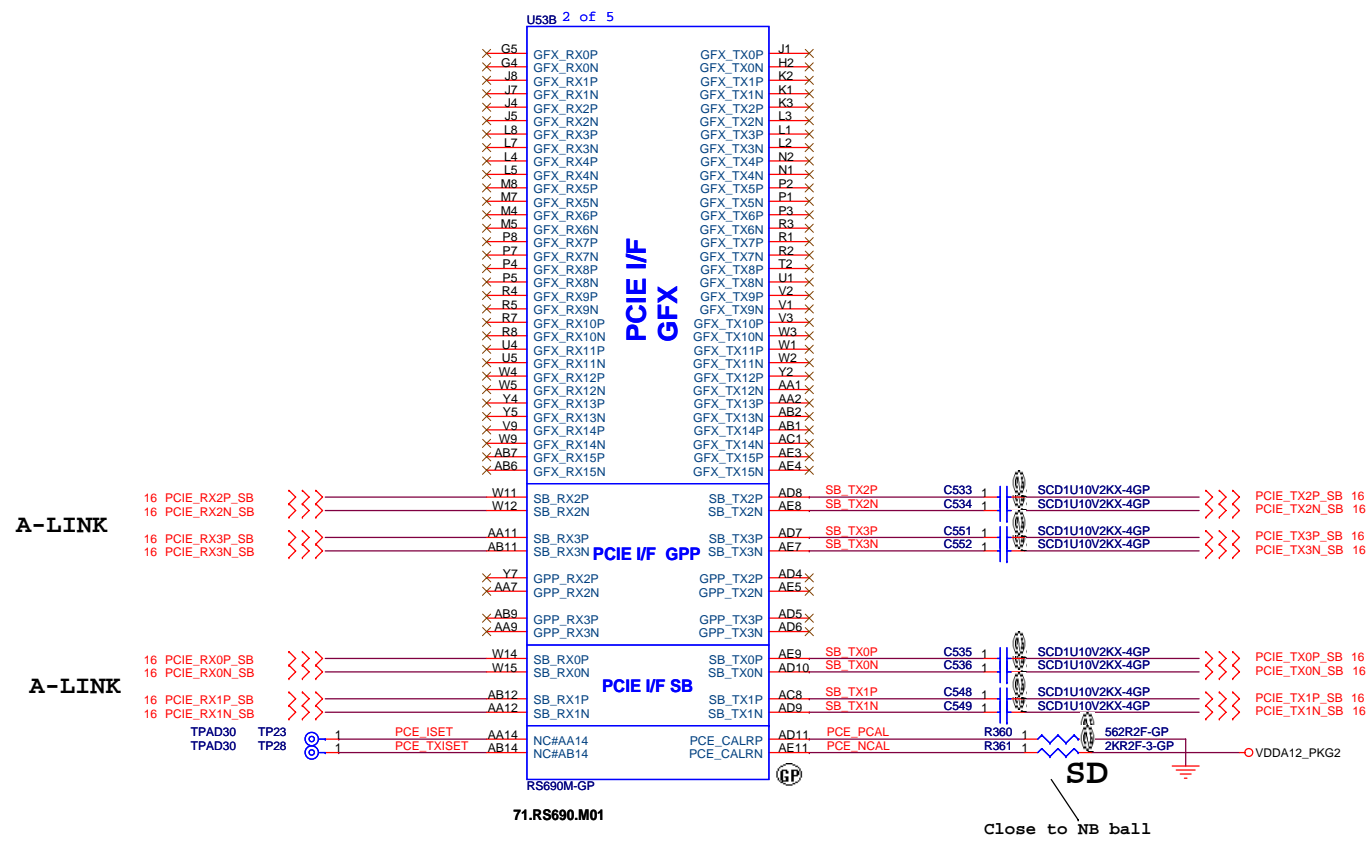


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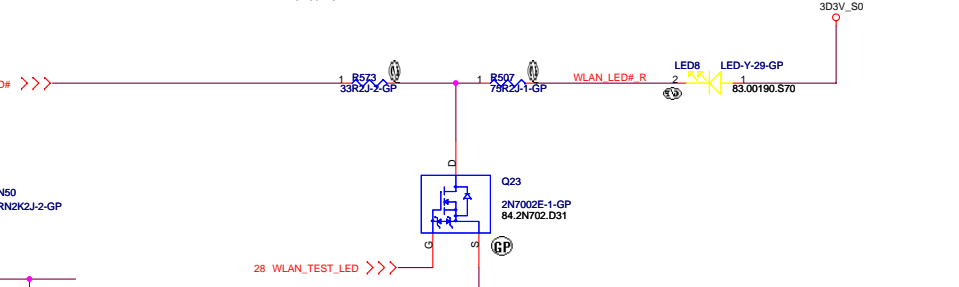
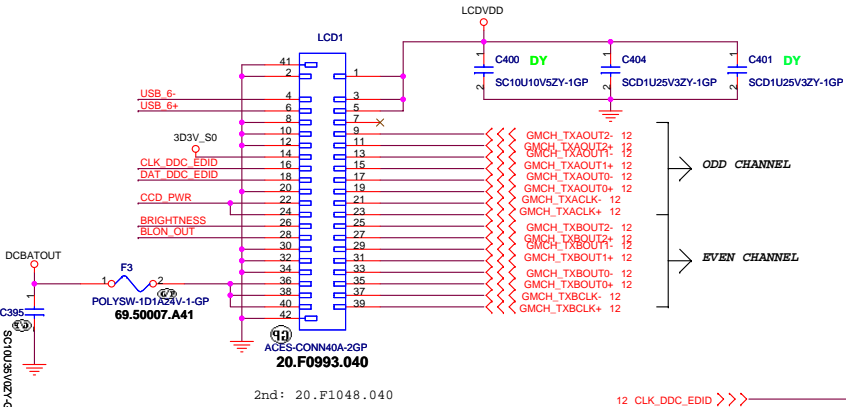
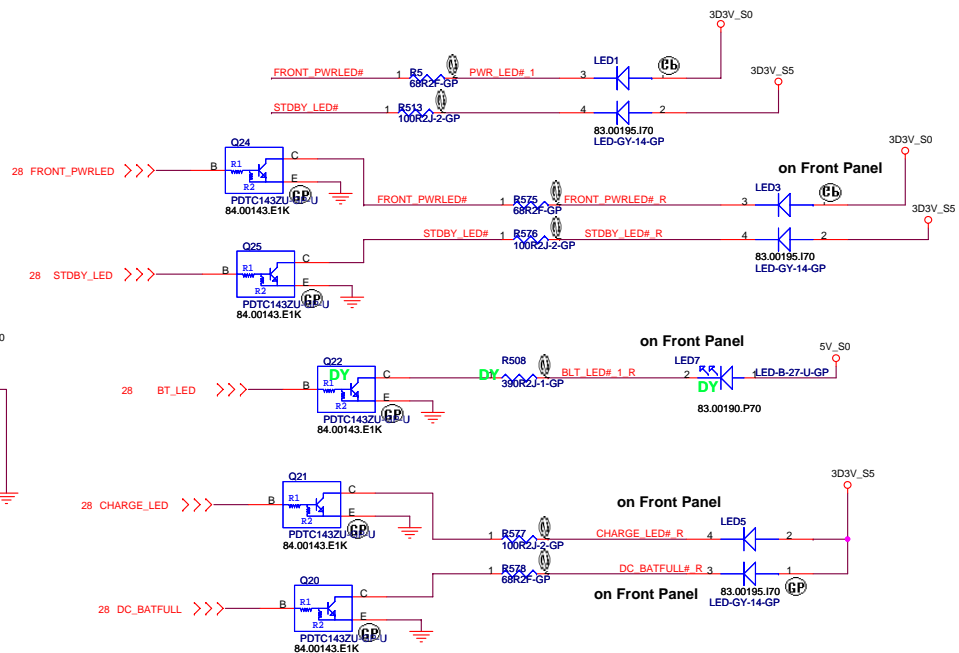
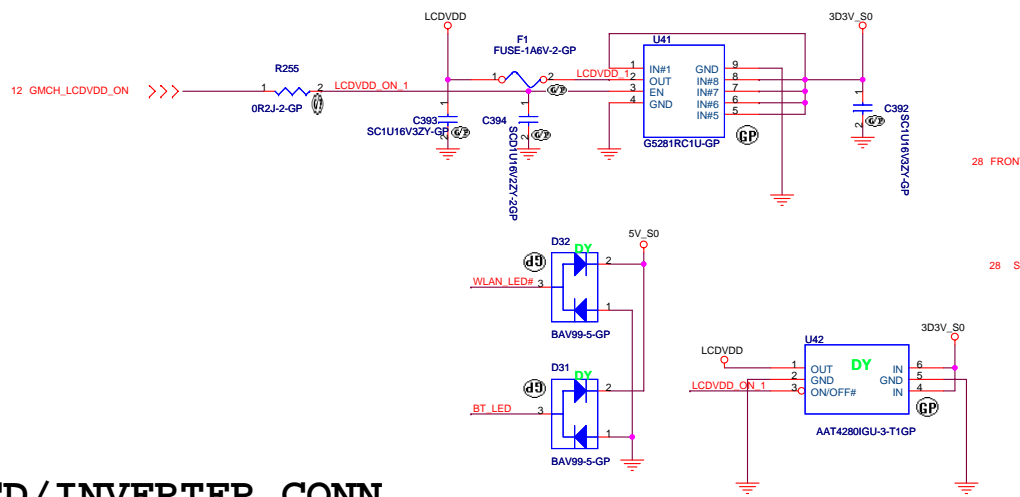
緯創資通 Wistron Corporation
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

Title: **NB-RS690M HT**

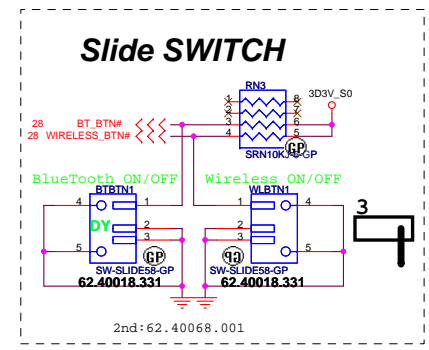
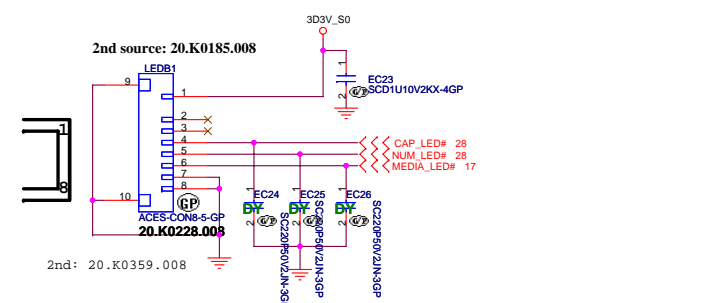
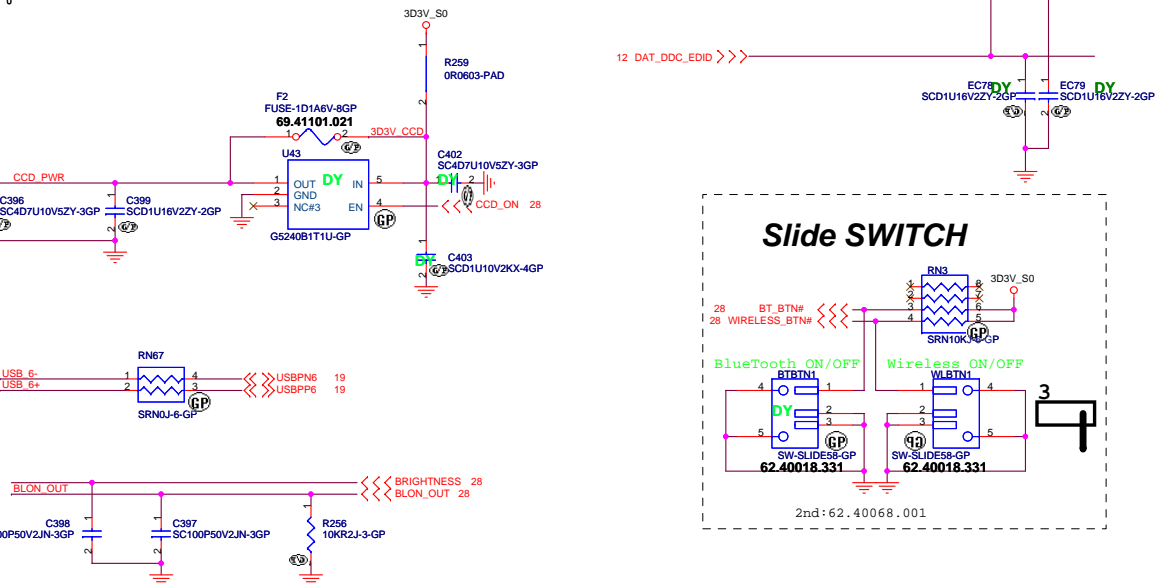
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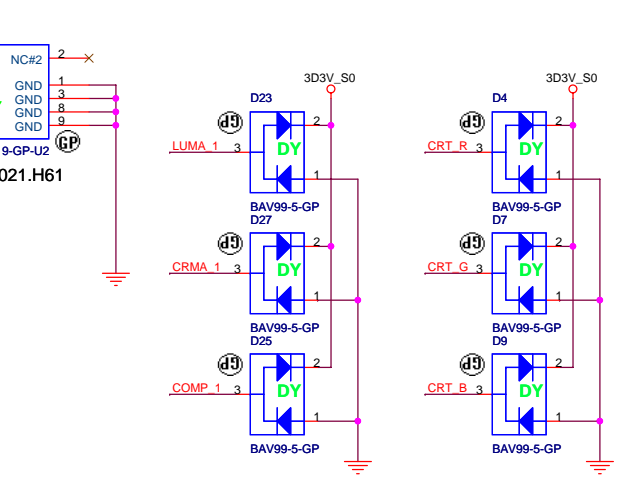
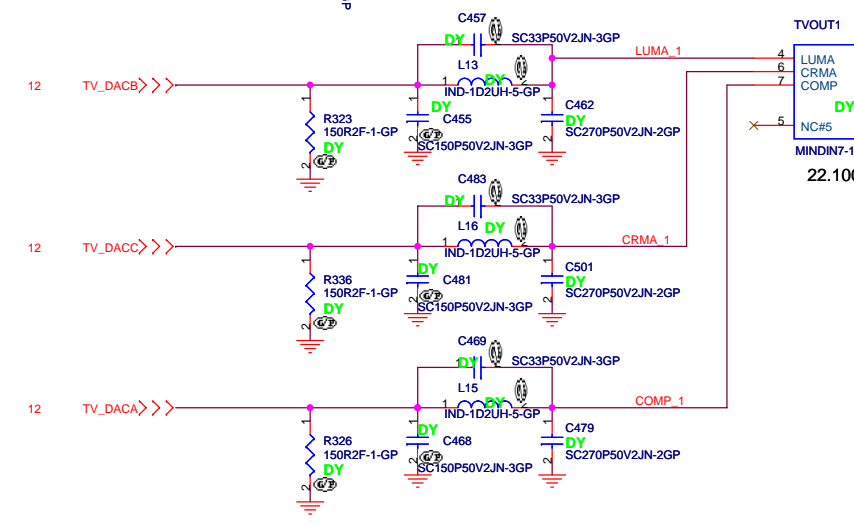
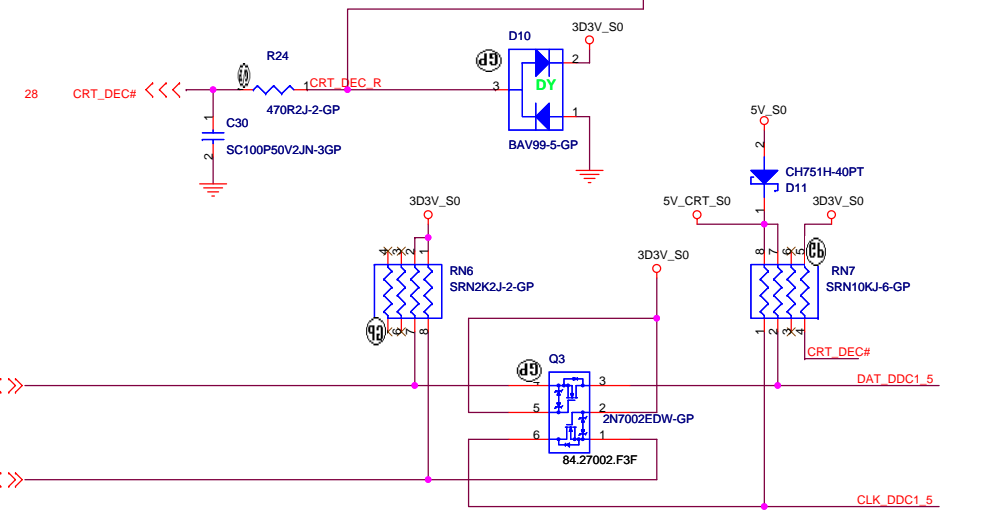
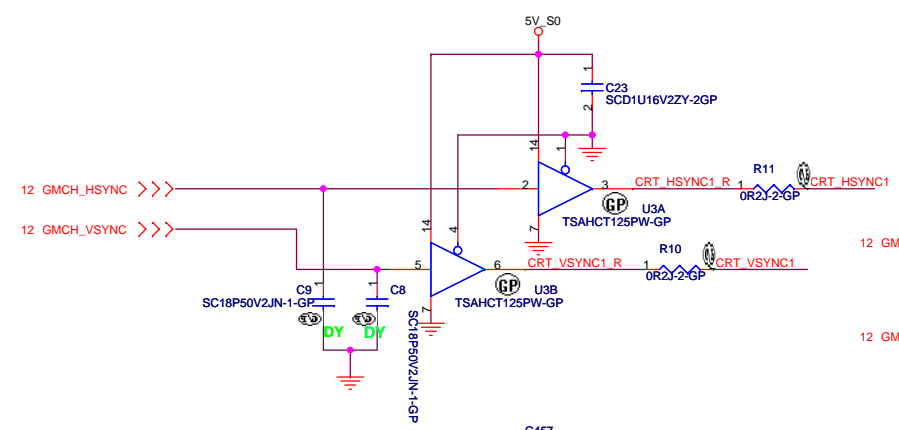
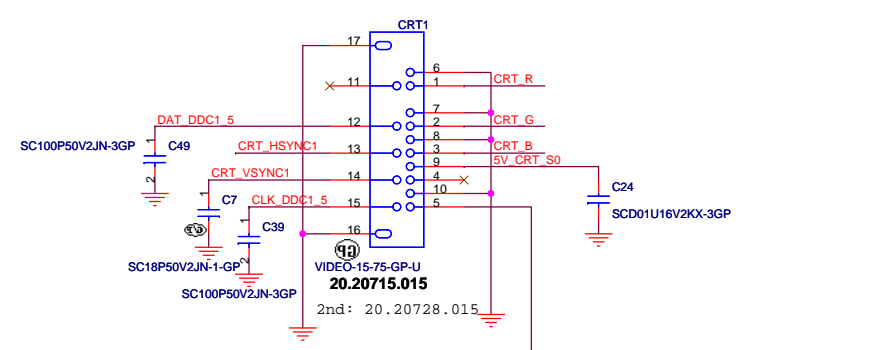
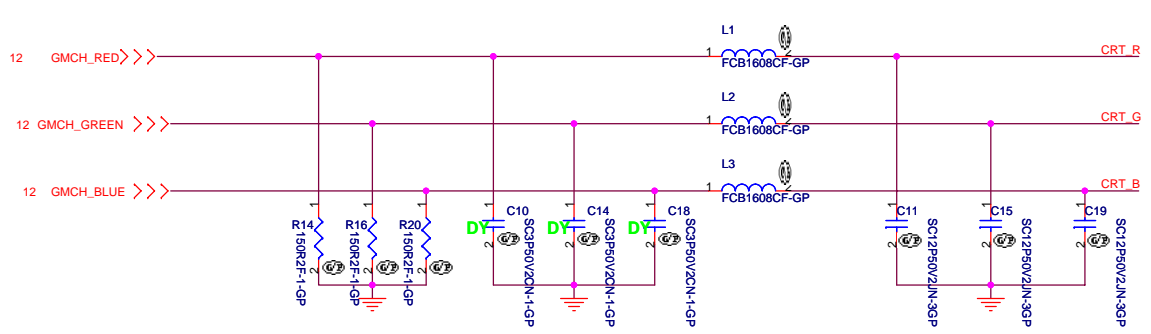


LCD/INVERTER CONN



LED BD

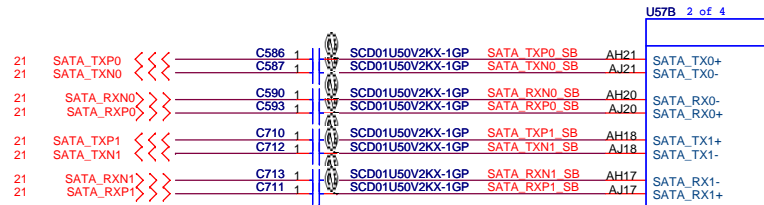




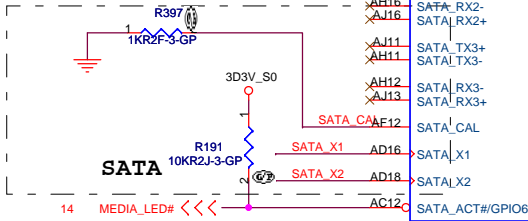
緯創資通 Wistron Corporation
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Title CRT/TV Connector		Rev SA
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PLACE SATA AC DECOUPLING CAPS CLOSE TO SB460
CAPS CLOSE TO SB460

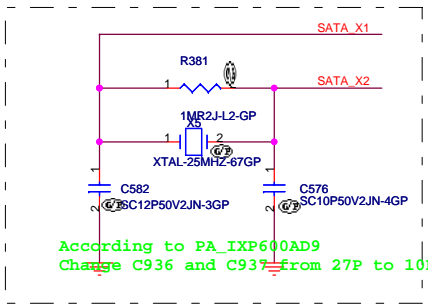


SATA



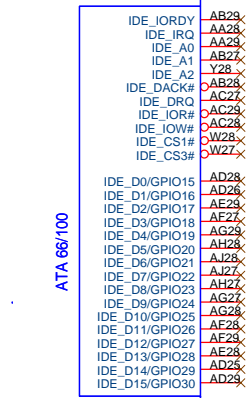
SATA

SATA

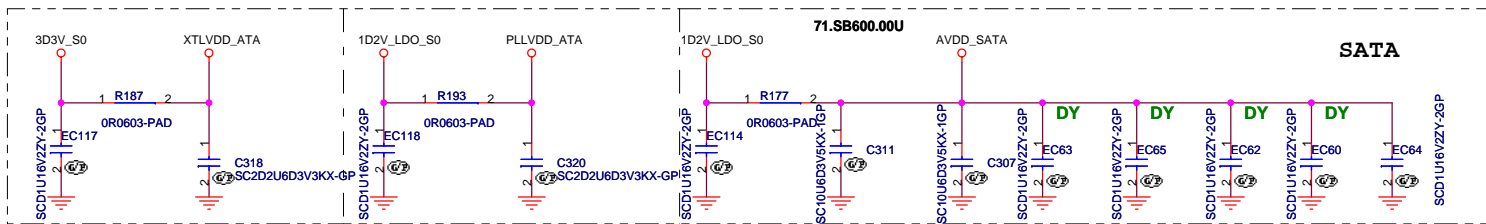
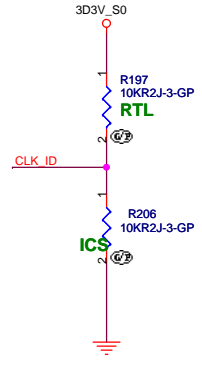
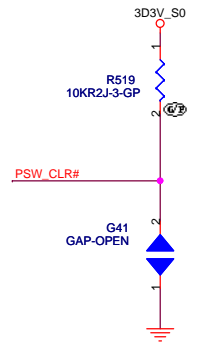
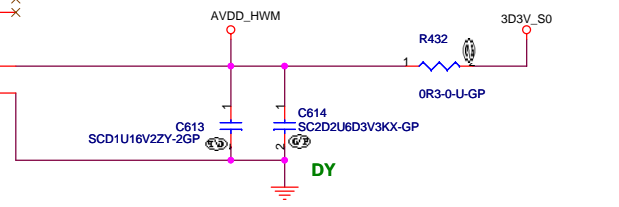


SERIAL ATA

SERIAL ATA POWER



REMOVE FP_DETECT TO KBC



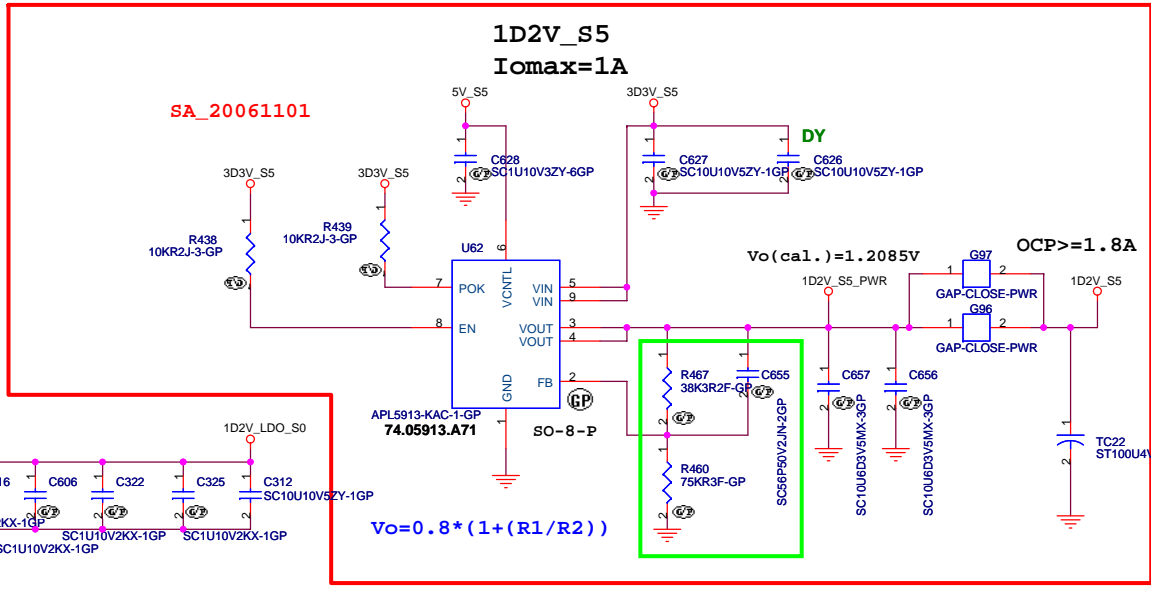
<Core Design>

緯創資通 Wistron Corporation
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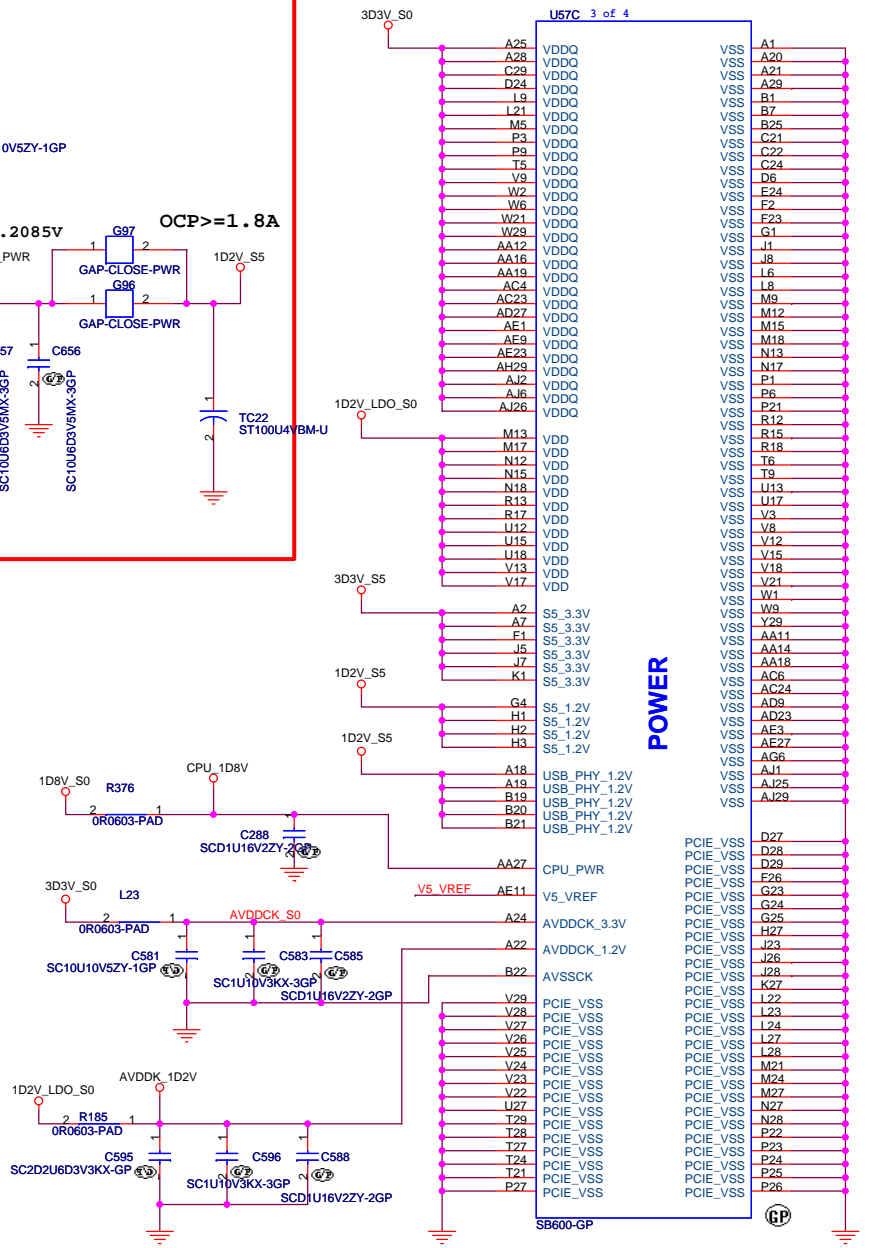
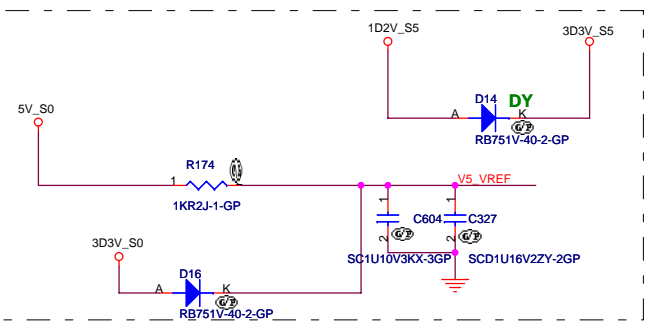
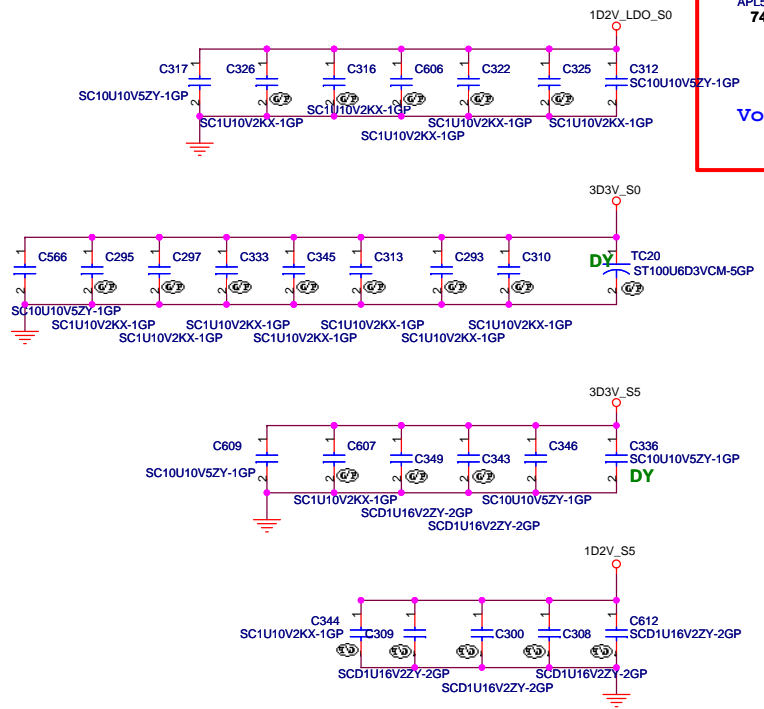
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Size: A3 Document Number: Yukon Rev: SA

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Place near to SB600

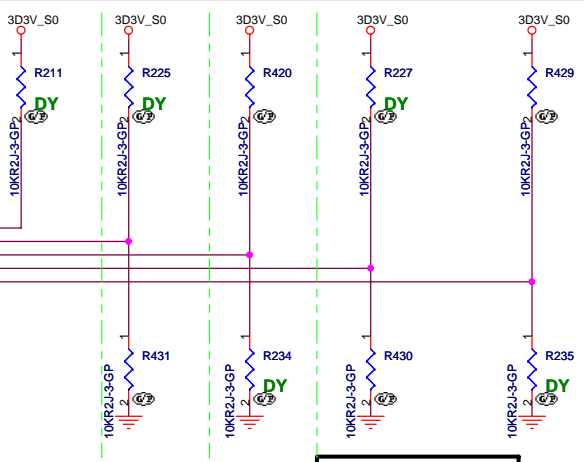


<Core Design>

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SB600 POWER/DECOUPLING		
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19 AC_SDATAOUT
 16,28 PCLK_KBC
 15 CLK33_LPCROM
 16,28 PCI_CLK0
 16 PCLK_PCM

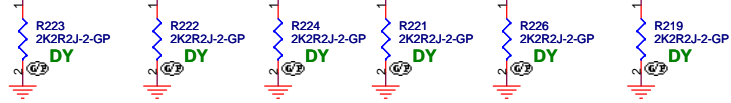


REQUIRED SYSTEM STRAPS

		SB600				
		AC_SDATAOUT	PCI_CLK4	PCI_CLK6	PCI_CLK0	PCI_CLK1
PULL HIGH	USE DEBUG STRAPS	USE INT. PLL48	CPU IF=K8 DEFAULT	ROM TYPE: H, H = PCI ROM H, L = SPI ROM		
	IGNORE DEBUG STRAPS DEFAULT	USE EXT. 48MHZ DEFAULT	CPU IF=P4	L, H = LPC ROM L, L = FWH ROM DEFAULT		

SB600 HAS 15K INTERNAL PU FOR PCI_AD[23..28]

16 PCI_AD28
 16 PCI_AD27
 16 PCI_AD26
 16 PCI_AD25
 16 PCI_AD24
 16 PCI_AD23



DEBUG STRAPS

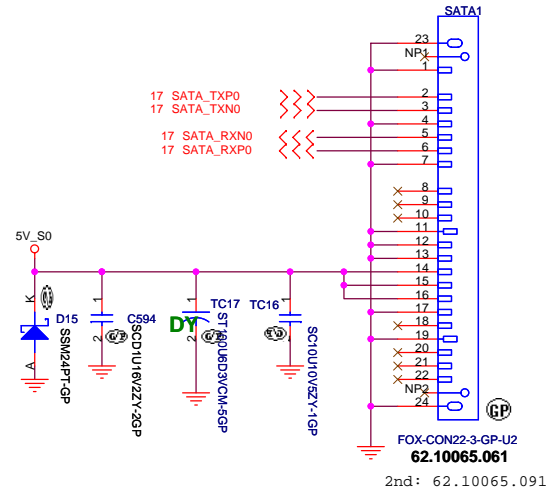
	PCI_AD31	PCI_AD30	PCI_AD29	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
STRAP HIGH	RESERVED	RESERVED	RESERVED	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	BOOT FAIL TIMER DISABLE DEFAULT
STRAP LOW				USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	BOOT FAIL TIMER ENABLE

<Core Design>

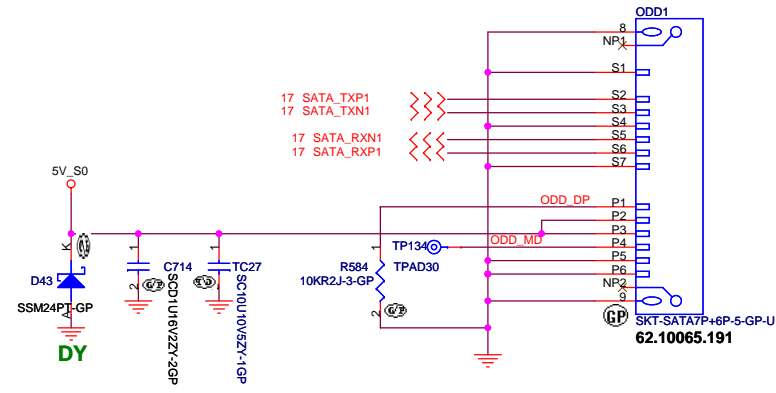
緯創資通 Wistron Corporation
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Title: **SB600 STRAPPING PIN**
 Size: A3 Document Number: Yukon Rev: SA
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SATA HD Connector

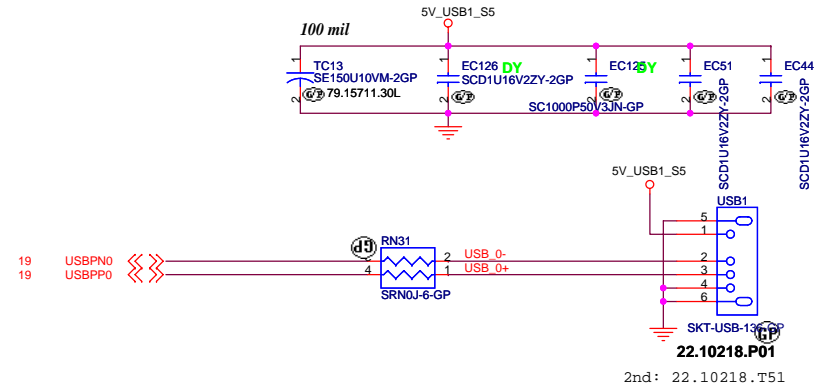
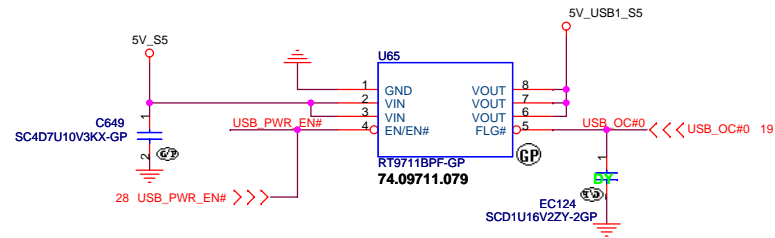


SATA ODD Connector

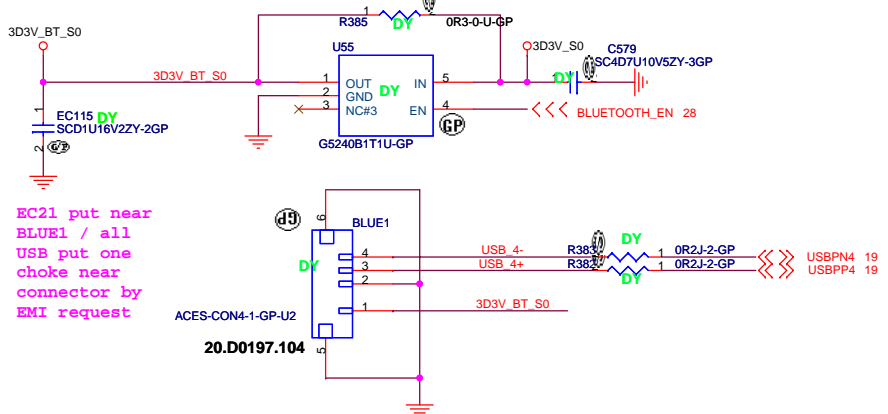


bom1

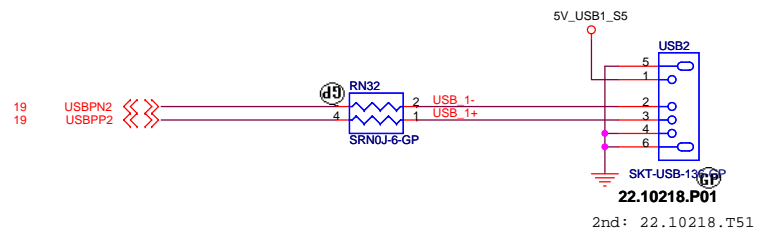
緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
HDD and CDROM	
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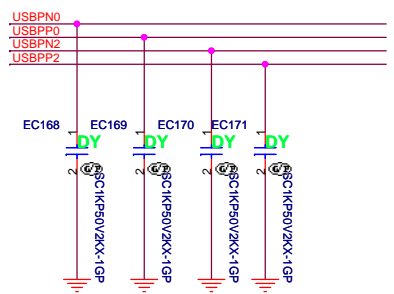
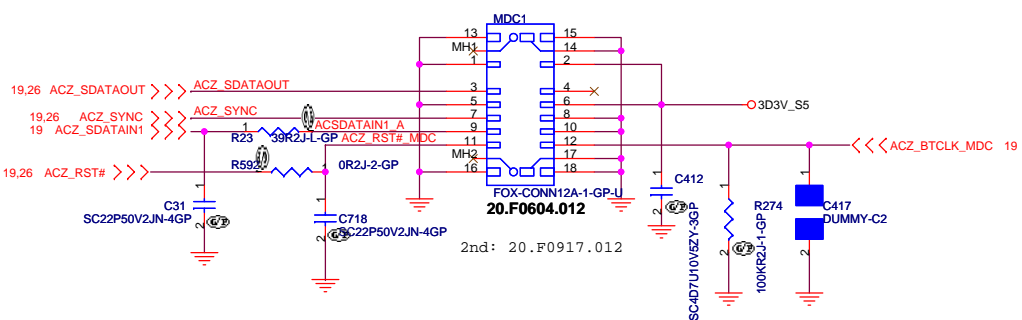
BLUETOOTH MODULE



EC21 put near BLUE1 / all USB put one choke near connector by EMI request



MDC 1.5 CONN



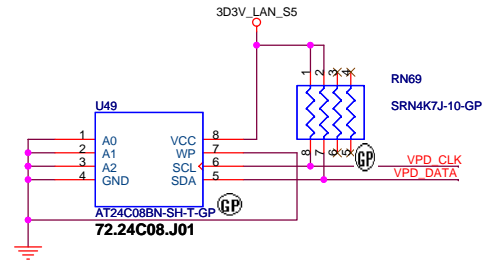
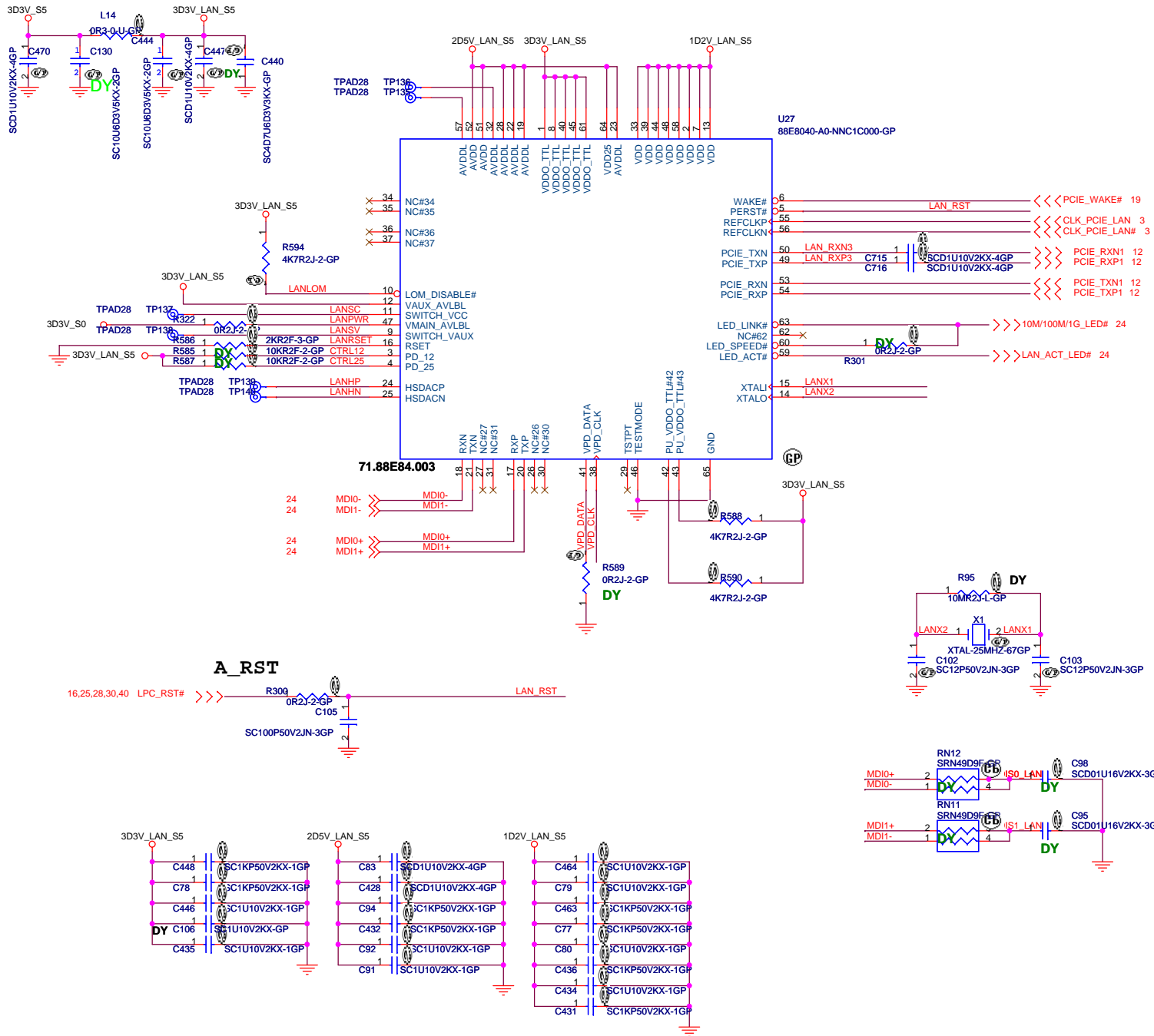
bom1

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Title: **USB / MDC / BLUETOOTH**

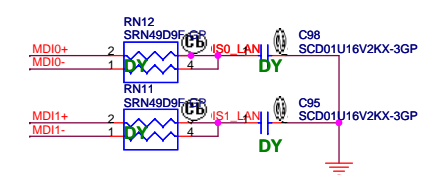
Size: Document Number: **Yukon** Rev: SA

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Pull up for AT24C08 another pull low

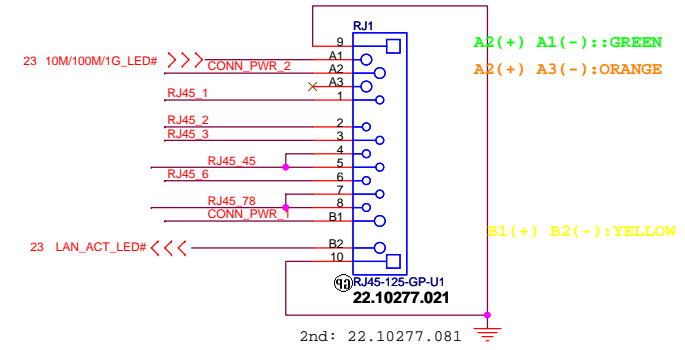
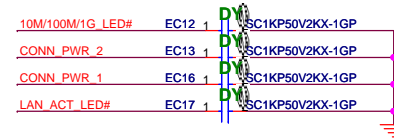
A_RST



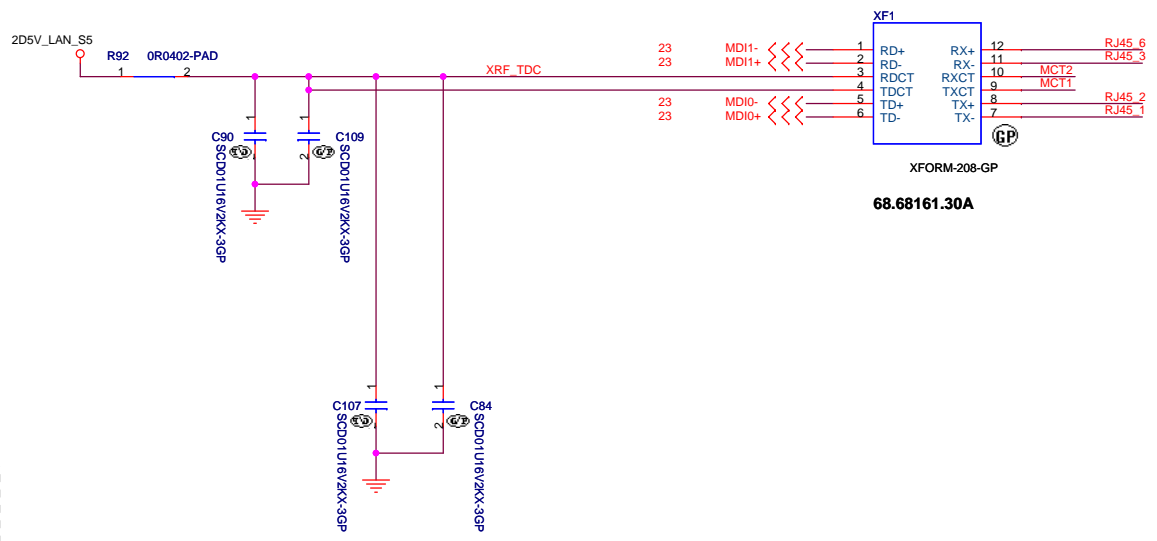
<Variant Name>

		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
MARVELL 88E8040			
Size	Document Number	Rev	
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LAN Connector



10/100 Lan Transformer

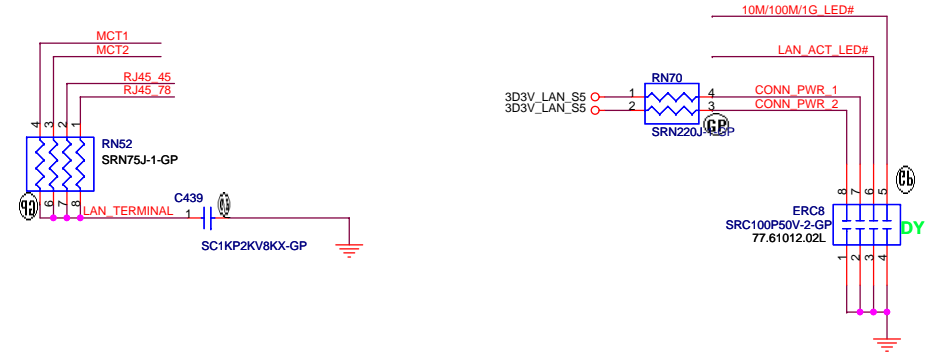


- 1. route on bottom as differential pairs.
- 2. Tx+/Tx- are pairs. Rx+/Rx- are pairs.
- 3. No vias, No 90 degree bends.
- 4. pairs must be equal lengths.
- 5. 6mil trace width, 12mil separation.
- 6. 36mil between pairs and any other trace.
- 7. Must not cross ground moat, except RJ-45 moat.

RJ11 signal must leave the other signal or power plane 100mil.

DOC_TIP,DOC_RING,TIP,RING:
W/S : 10/100 @ Surface layers
10/20 @ Inner layers

10/100 LAN Transformer	RJ45 PIN
TD+ --> TX+	RJ45-1
TD- --> TX-	RJ45-2
RD+ --> RX+	RJ45-3
RD- --> RX-	RJ45-6



<Variant Name>

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

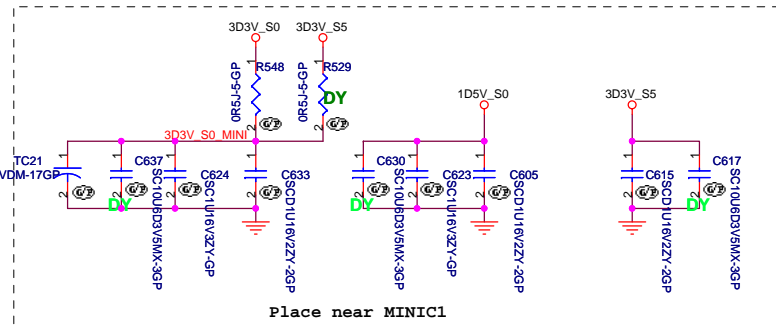
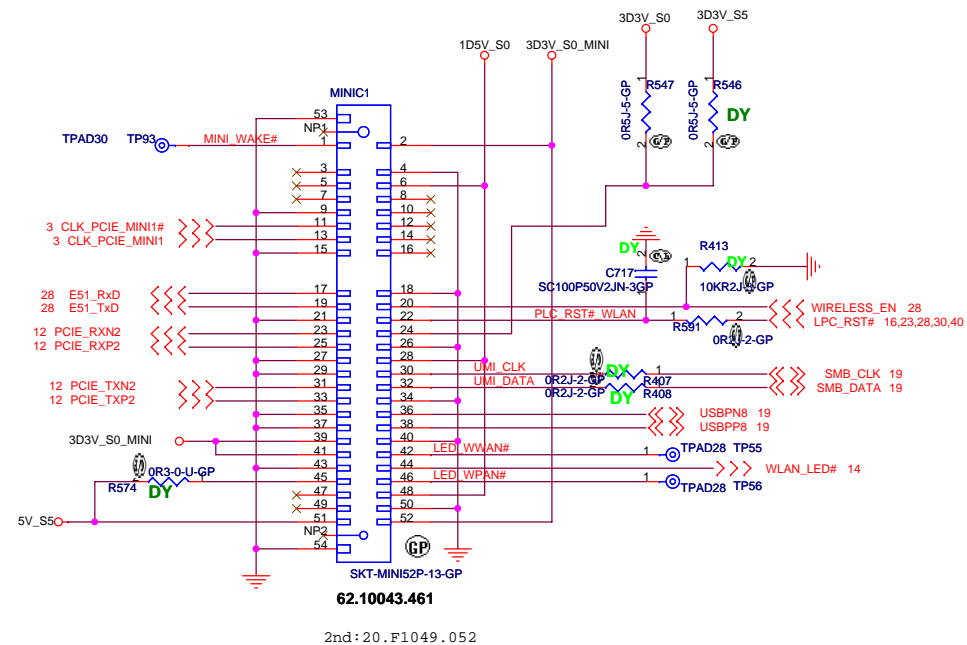
Title: **LAN Connector**

Size A3 Document Number: **Yukon** Rev: **SA**

Date: Thursday, July 03, 2008 Sheet 24 of 43

Mini Card Connector

NEWCARD Connector

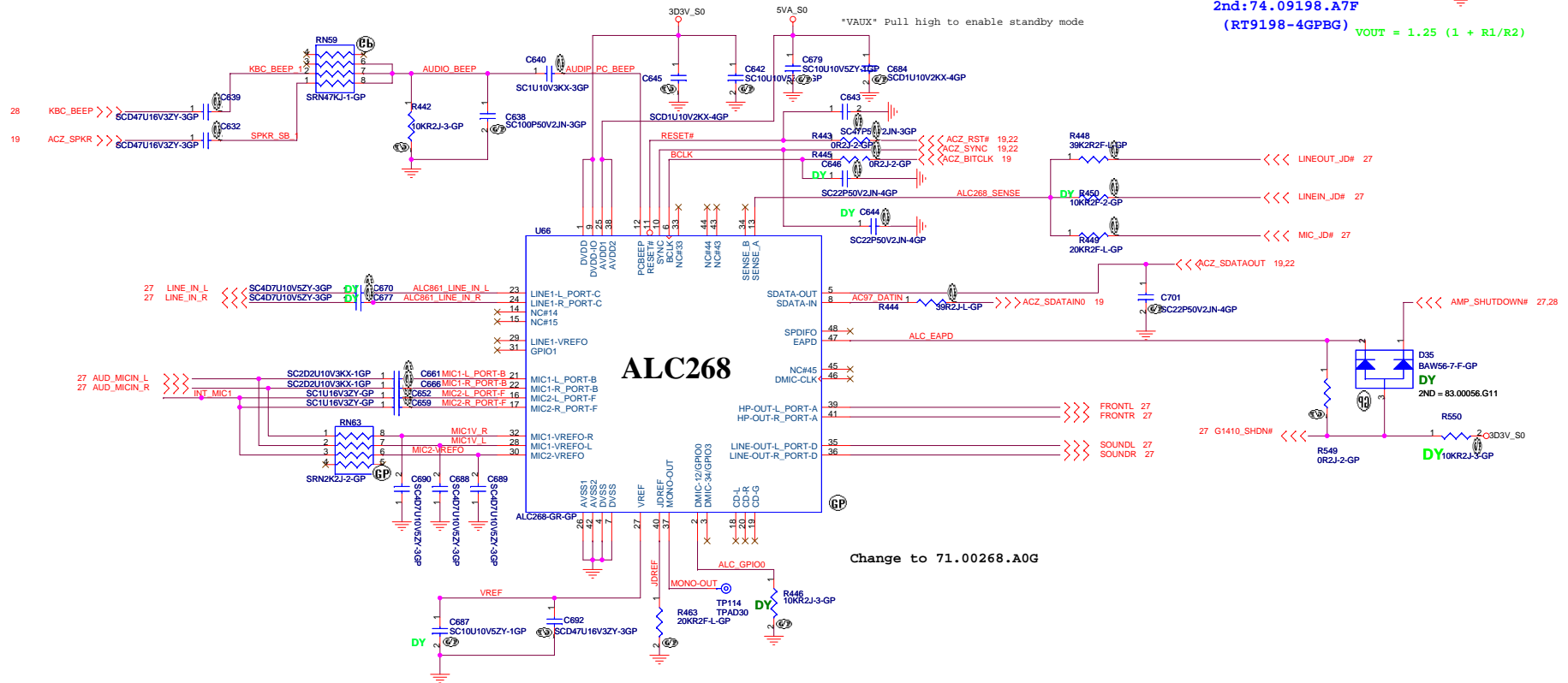
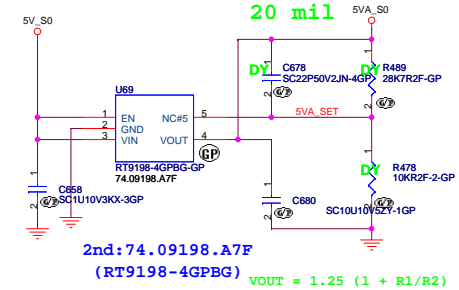


bom1

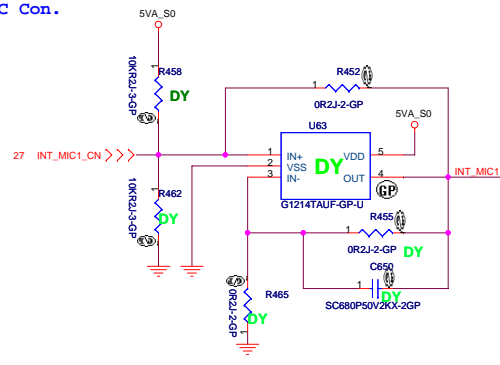
		Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
MINI CARD / NEW CARD			
Size	Document Number		Rev
Yukon		SA	
Date: Thursday, July 03, 2008		Sheet	25 of 43

POWER GENERATE

Layout
20 mil



Near INTMIC Con.

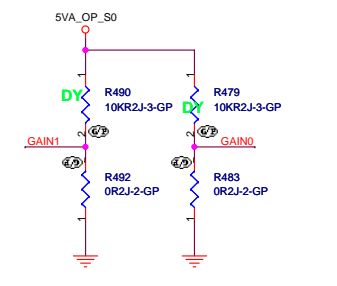
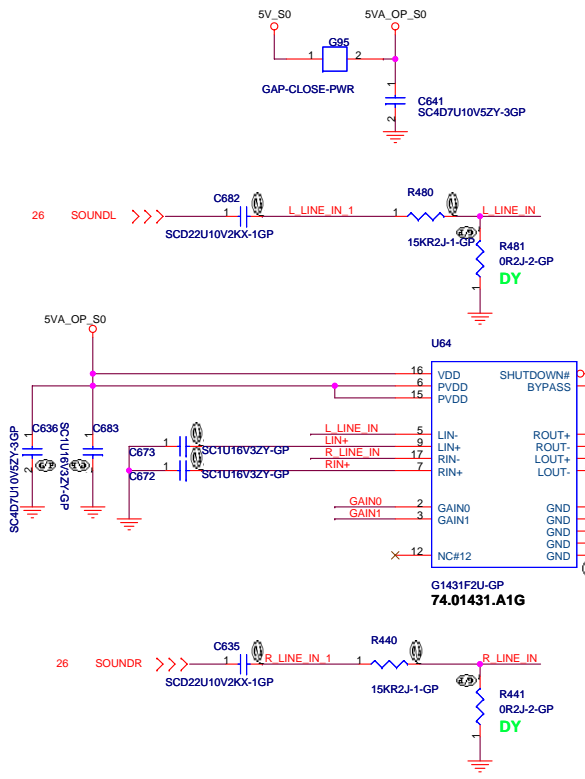
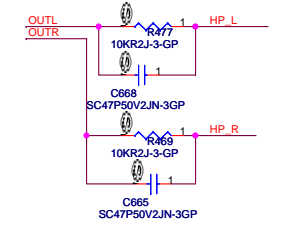
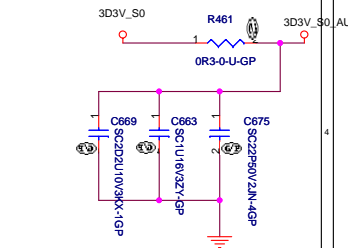
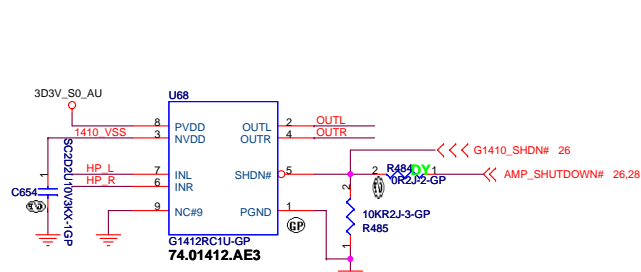
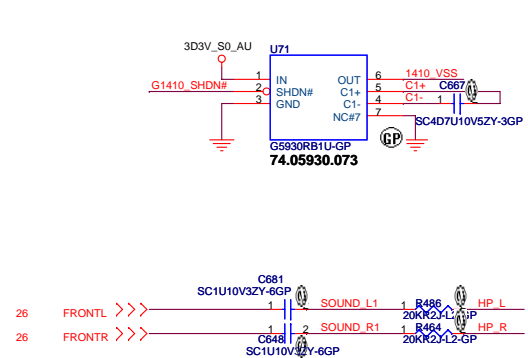
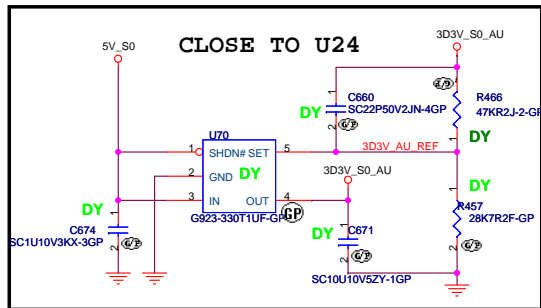


<Variant Name>

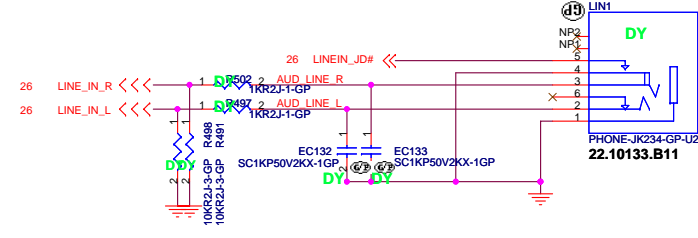
<p>緯創資通 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsinchu, Taipei Hsien 221, Taiwan, R.O.C.</p>	
Title	AZALIA CODEC - ALC268
Size	Document Number Yukon
Date: Thursday, July 03, 2008	Sheet 26 of 43

AUDIO OP AMPLIFIER

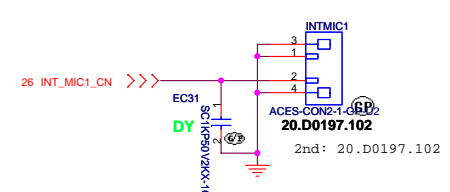
KBC_MUTE_GPIO8



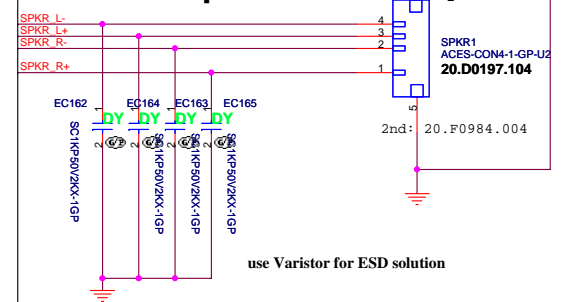
LINE IN



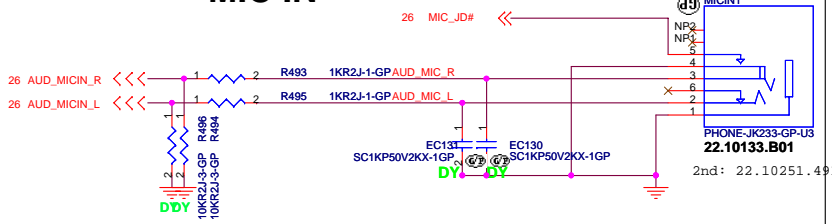
Internal Microphone



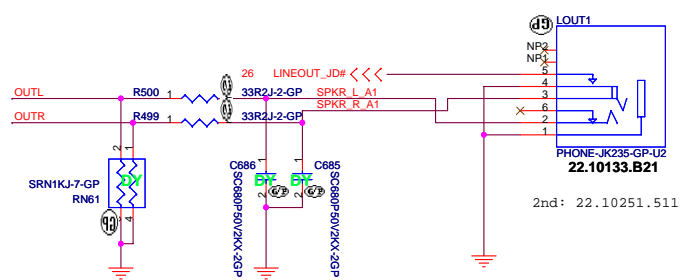
Internal Speaker



MIC IN



LINE OUT



<Variant Name>

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

Title: **AUDIO AMP AND JACK**

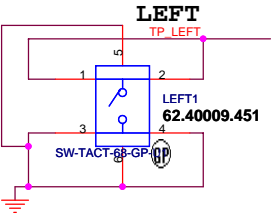
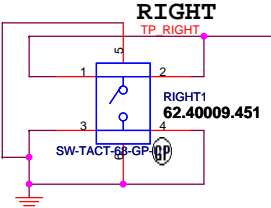
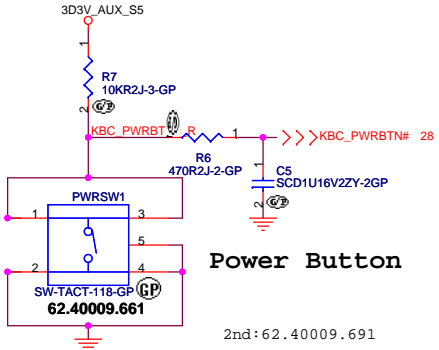
Size: Document Number

Date: Thursday, July 03, 2008

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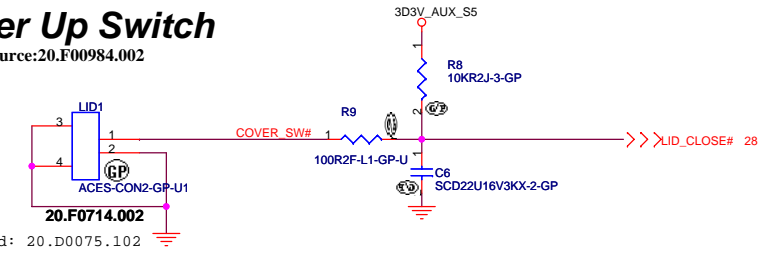
Rev SA

Yukon



Cover Up Switch

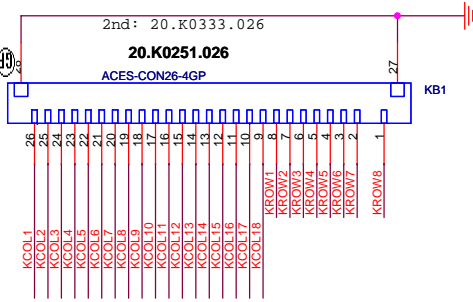
2nd source: 20.F00984.002



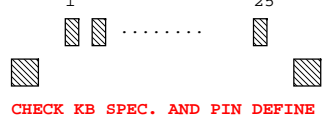
Check test point

- 3D3V_AUX_SS ○ TP69 TPAD30
- 3D3V_S5 ○ TP62 TPAD30
- 5V_S5 ○ TP71 TPAD30
- 19,28 PM_PWRBTN# <<< TP68 TPAD30
- 28,32 S5_ENABLE <<< TP63 TPAD30

Test Point 放在 Dimm Door 打開可量測處

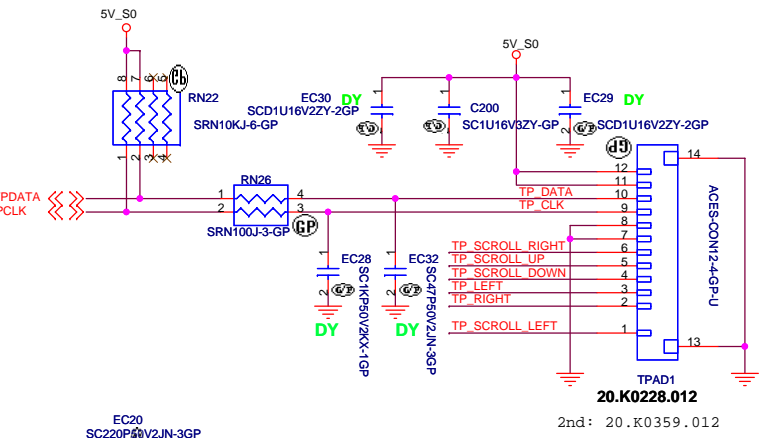


Internal Keyboard CONN



EMI Bypass cap.

- | | | |
|--------|-------|------------------|
| KCOL14 | EC134 | SC220P50V2JN-3GP |
| KCOL15 | EC137 | SC220P50V2JN-3GP |
| KCOL16 | EC136 | SC220P50V2JN-3GP |
| KCOL8 | EC135 | SC220P50V2JN-3GP |
| KCOL10 | EC138 | SC220P50V2JN-3GP |
| KCOL6 | EC142 | SC220P50V2JN-3GP |
| KCOL7 | EC139 | SC220P50V2JN-3GP |
| KCOL5 | EC143 | SC220P50V2JN-3GP |
| KCOL4 | EC140 | SC220P50V2JN-3GP |
| KCOL3 | EC144 | SC220P50V2JN-3GP |
| KCOL2 | EC141 | SC220P50V2JN-3GP |
| KCOL1 | EC145 | SC220P50V2JN-3GP |
| KROW2 | EC147 | SC220P50V2JN-3GP |
| KROW6 | EC146 | SC220P50V2JN-3GP |
| KROW7 | EC149 | SC220P50V2JN-3GP |
| KROW8 | EC148 | SC220P50V2JN-3GP |
| KROW1 | EC151 | SC220P50V2JN-3GP |
| KROW3 | EC150 | SC220P50V2JN-3GP |
| KROW4 | EC152 | SC220P50V2JN-3GP |
| KROW5 | EC153 | SC220P50V2JN-3GP |
| KCOL11 | EC154 | SC220P50V2JN-3GP |
| KCOL12 | EC156 | SC220P50V2JN-3GP |
| KCOL13 | EC155 | SC220P50V2JN-3GP |
| KCOL9 | EC157 | SC220P50V2JN-3GP |



- KROW1..8 >>> KROW[1..8] 28
- KCOL1..18 >>> KCOL[1..18] 28

- TP_RIGHT EC39 SC1KP50V2KX-1GP
- TP_SCROLL_RIGHT EC38 SC1KP50V2KX-1GP
- TP_SCROLL_UP EC37 SC1KP50V2KX-1GP
- TP_SCROLL_LEFT EC36 SC1KP50V2KX-1GP
- TP_SCROLL_DOWN EC35 SC1KP50V2KX-1GP
- TP_LEFT EC34 SC1KP50V2KX-1GP

bom1

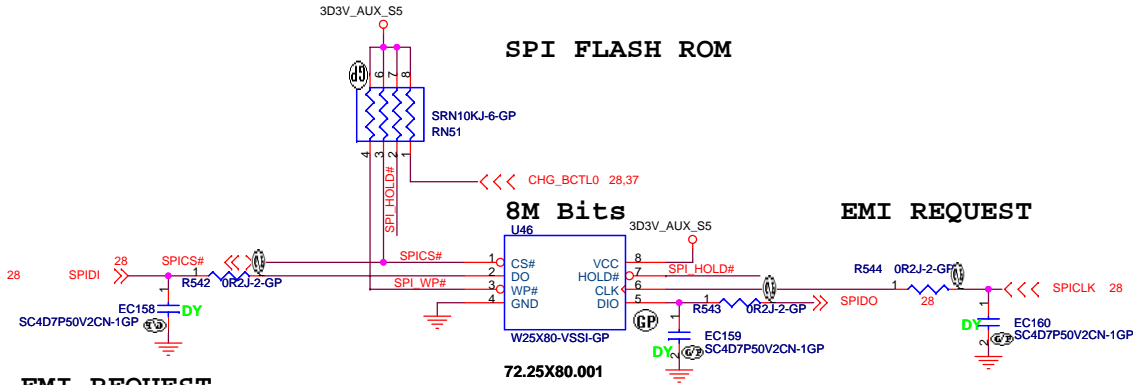
緯創資通 Wistron Corporation
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Title: **BUTTONS / KB / TOUCHPAD**

Size: Document Number **Yukon** Rev: SA

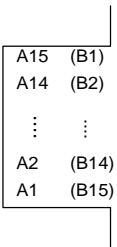
Date: Thursday, July 03, 2008 Sheet 29 of 43

SPI FLASH ROM



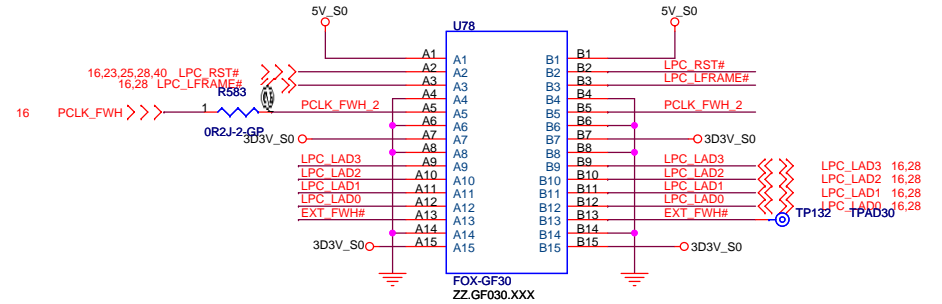
EMI REQUEST

TOP VIEW

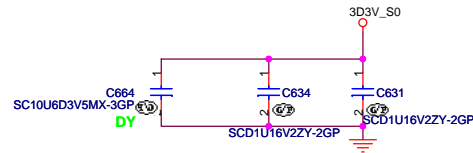


(BOTTOM VIEW)

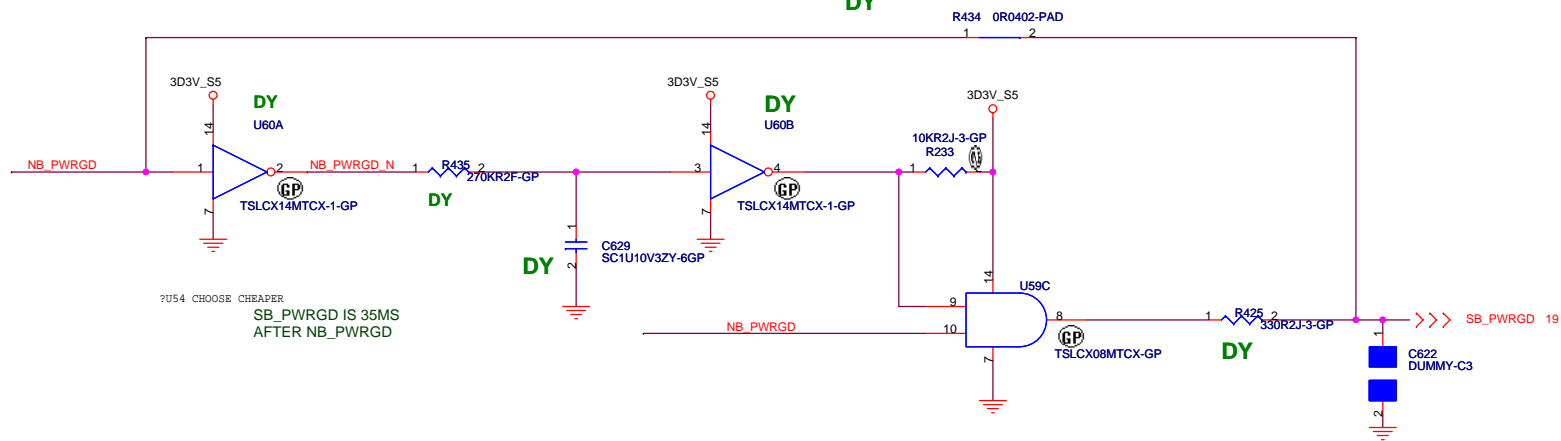
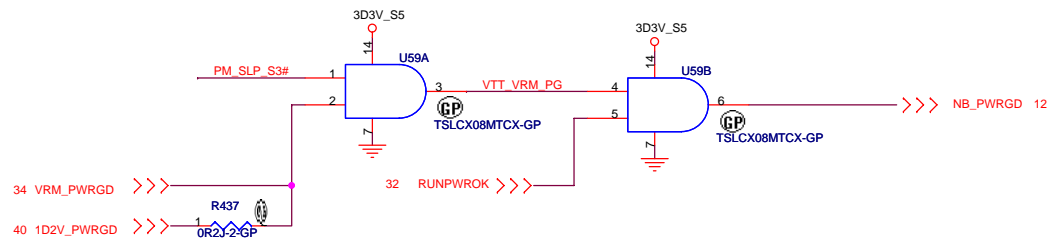
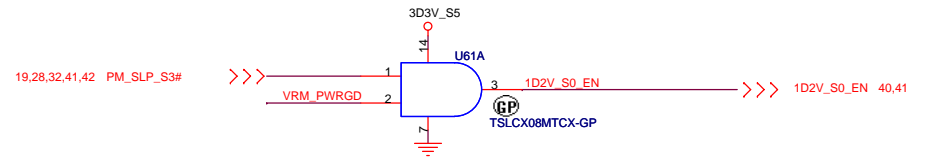
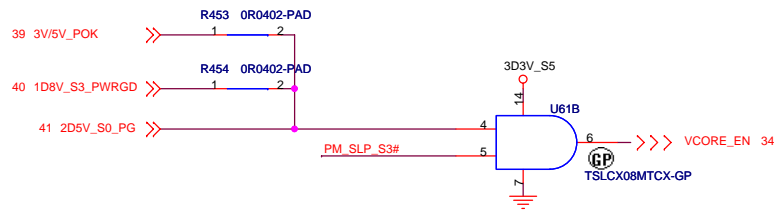
GOLDEN FINGER FOR DEBUG BOARD



Boot Device must have ID[3:0] = 0000
 Has internal pull-down resistors
 All may be left floated
 FPET7 Elec. P3-46

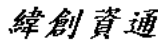


<Core Design>



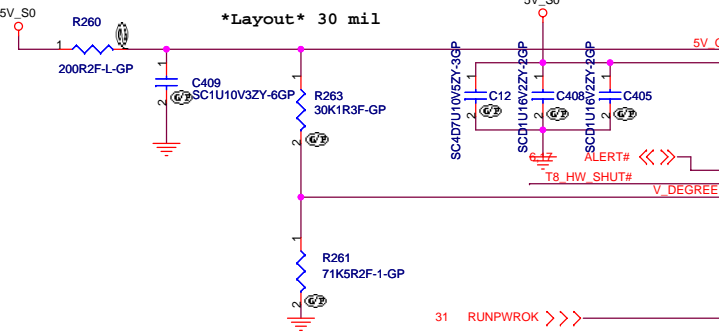
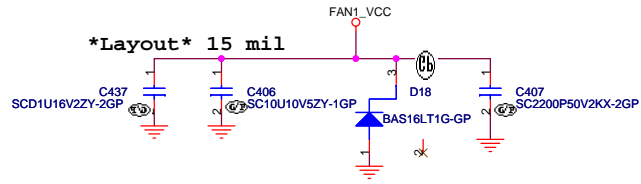
?U54 CHOOSE CHEAPER
SB_PWRGD IS 35MS
AFTER NB_PWRGD

<Core Design>

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POWERGOOD&ENABLES(1/2)		
Size	Document Number	Rev
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Date: Thursday, July 03, 2008	Sheet 31 of 43	

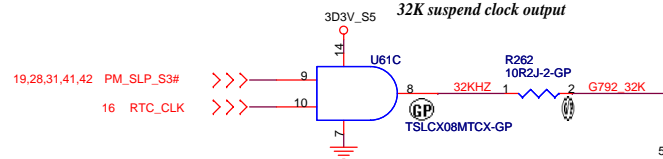
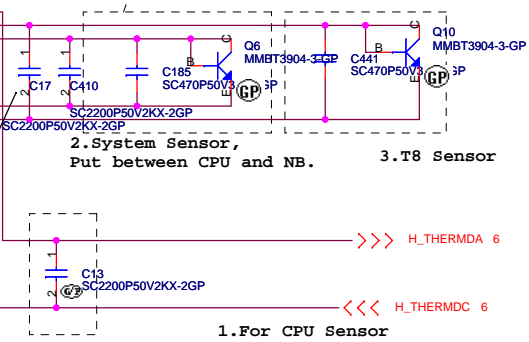
Setting T8 as 90 Degree

$$V_DEGREE = (((Degree - 72) * 0.02) + 0.34) * VCC$$

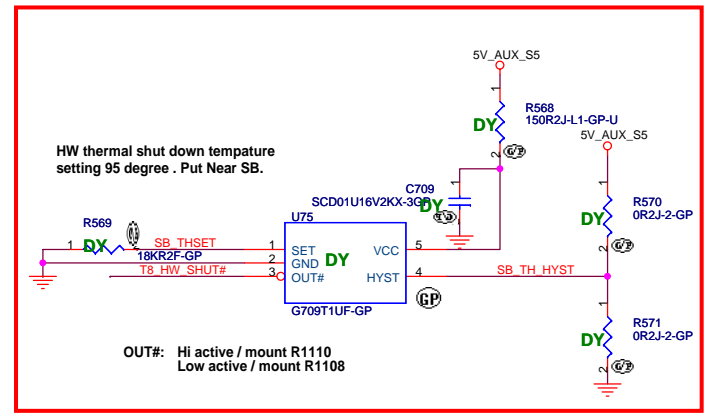
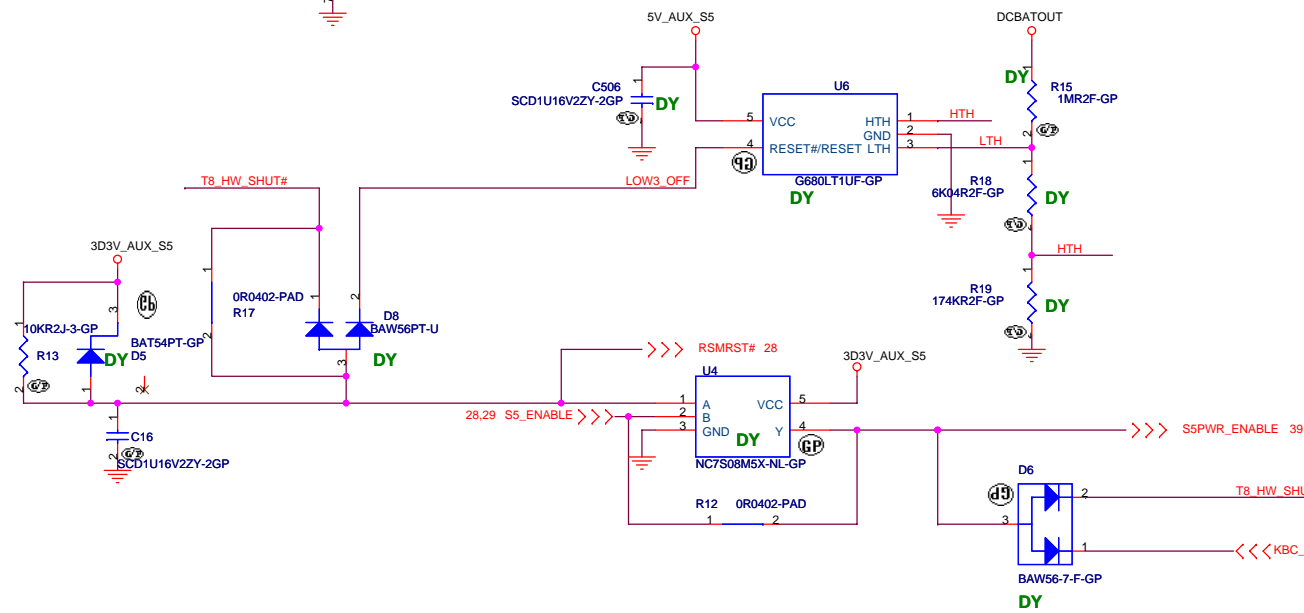


DXP1:108 Degree
DXP2:H/W Setting
DXP3:88 Degree

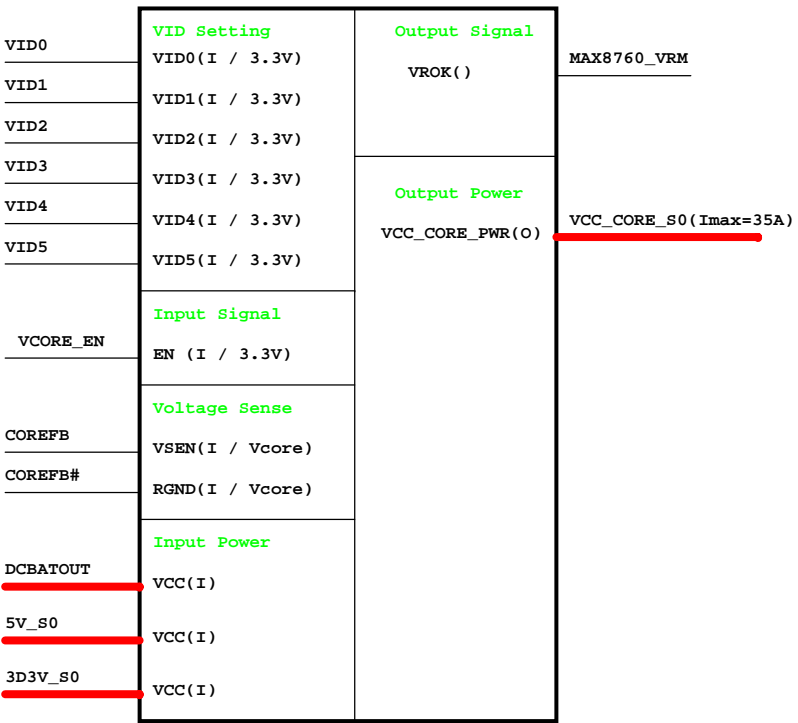
Place near chip as close as possible



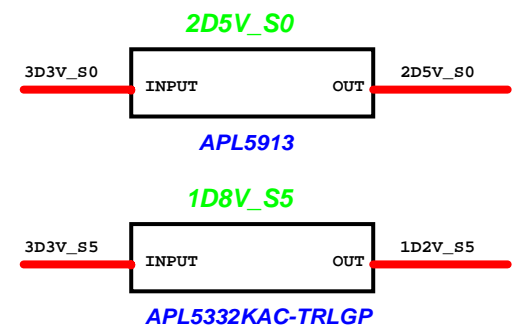
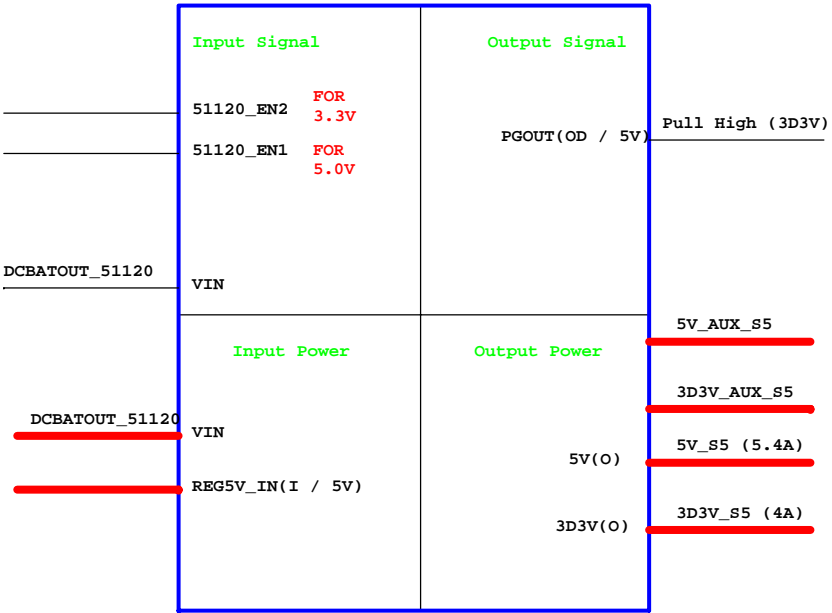
HW Thermal Throttling BL3#



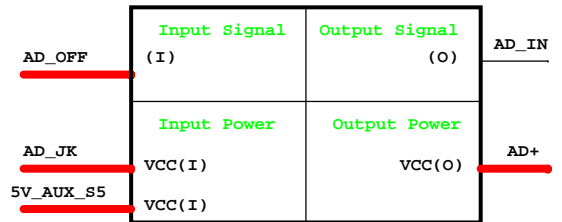
CPU_CORE
ISL6264CRZ



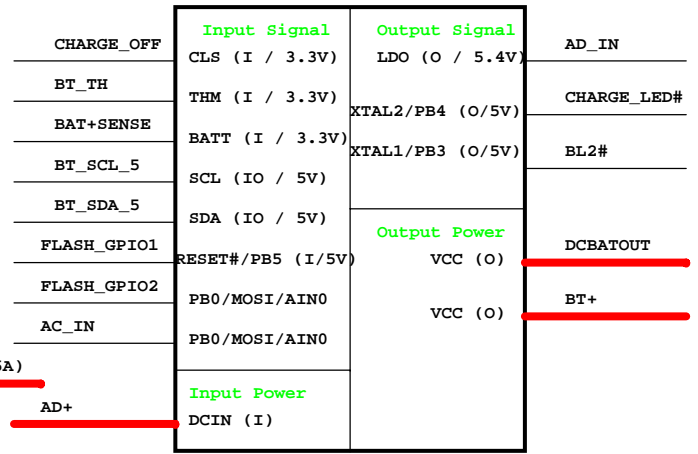
TI TPS51120
3D3V/5V



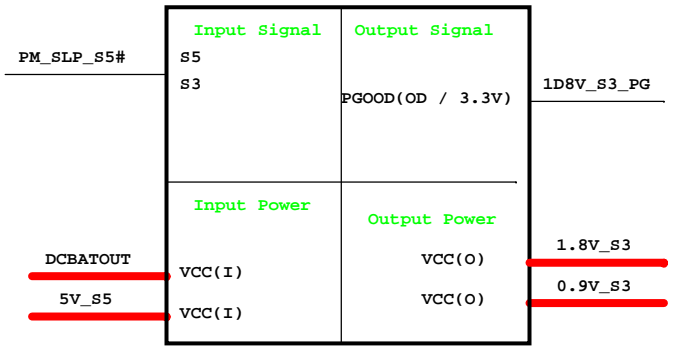
Adapter



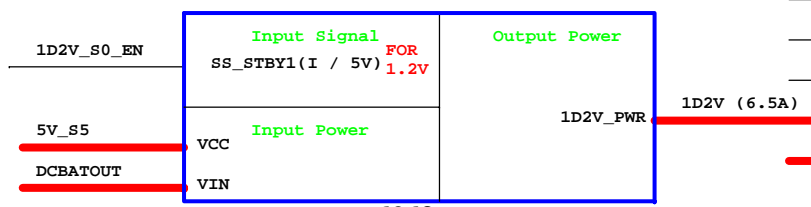
Charger_ISL6255



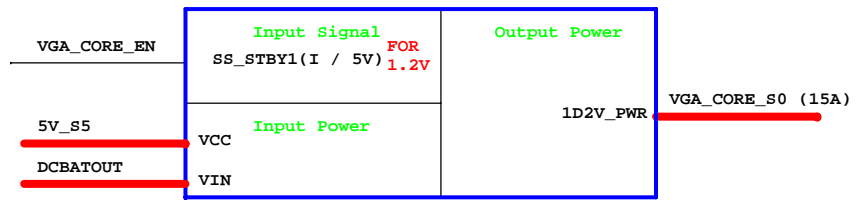
TI TPS51116
1.8V / 0.9V



ISL6268_1D2V



ISL6268_VGA_CORE



<Core Design>

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Title: **Power Block Diagram**

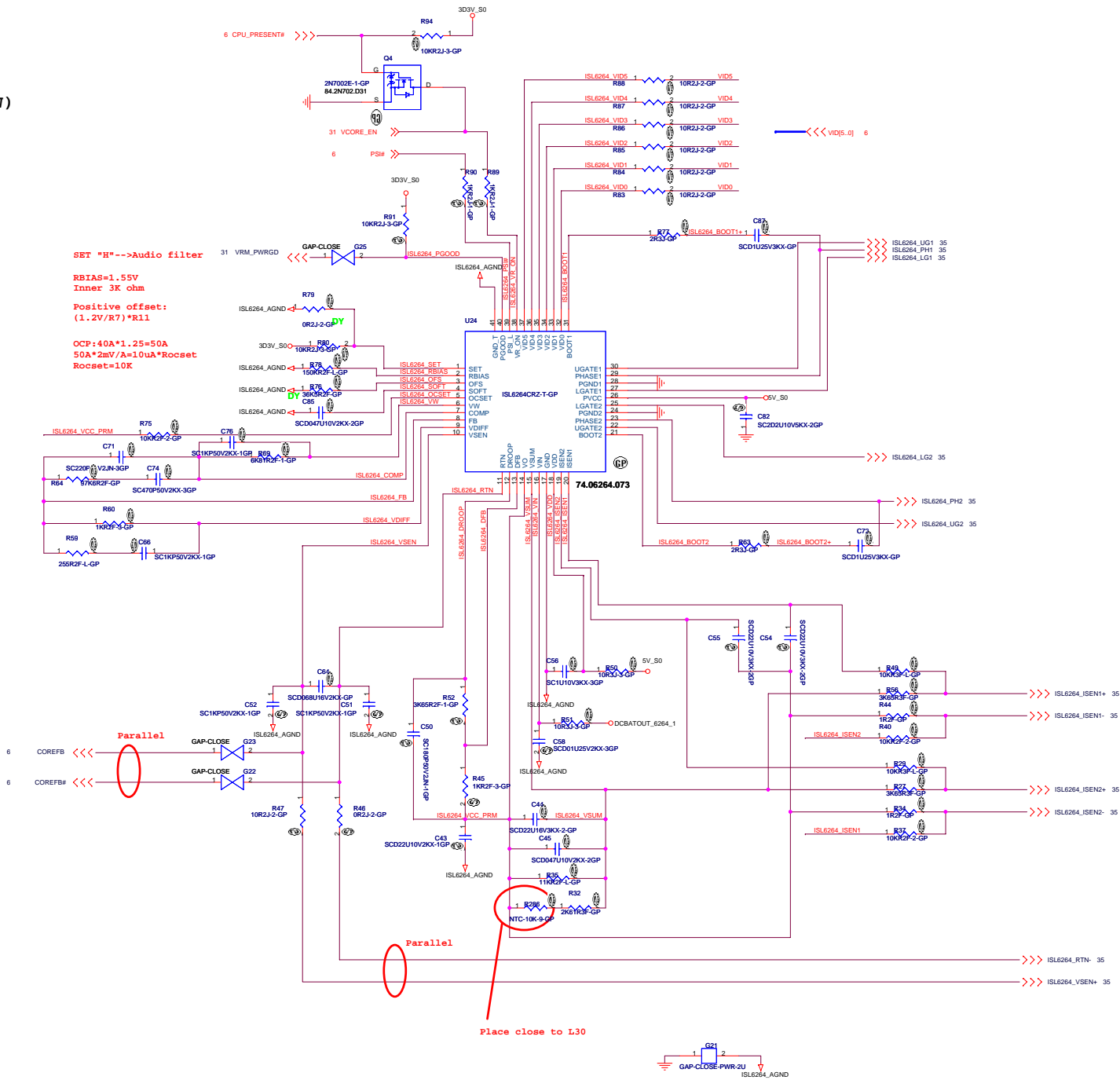
Size: A3 Document Number: **Yukon** Rev: **SA**

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CPU_VCORE
VID=1.20V(25W)/1.15V(35W)
I_{omax}=21A(25W)/35A(35W)
OCP=40A~45A

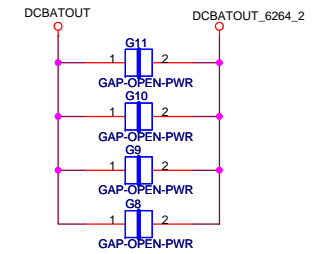
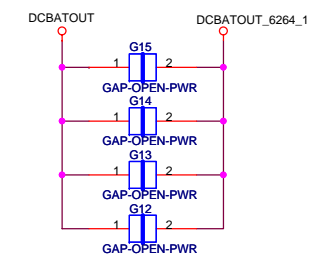
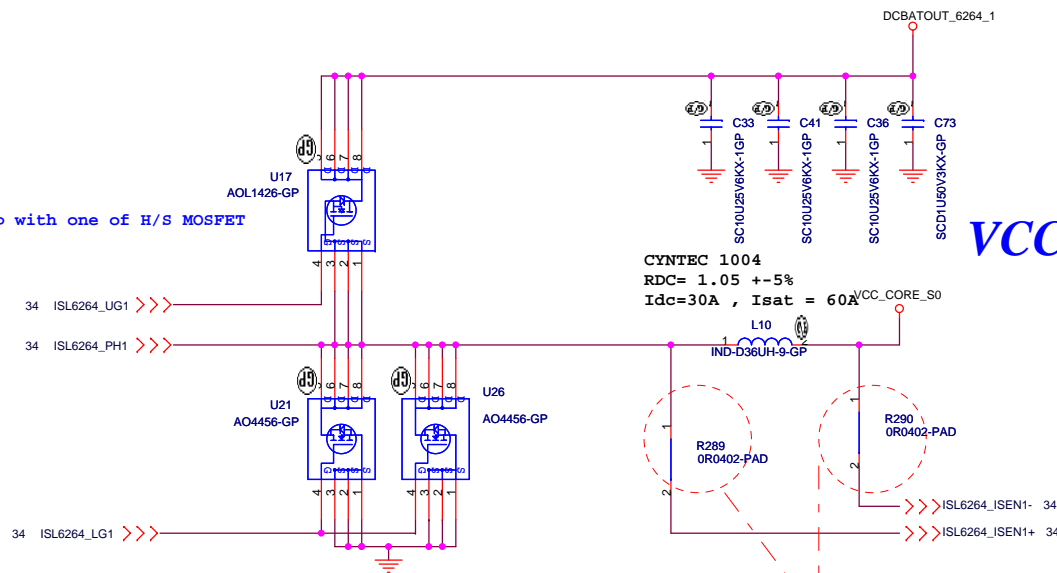
TABLE 1. VOLTAGE IDENTIFICATION CODES

VID5	VID4	VID3	VID2	VID1	VID0	DAC
0	0	0	0	0	0	1.550
0	0	0	0	0	1	1.525
0	0	0	0	0	1	1.500
0	0	0	0	1	1	1.475
0	0	0	1	0	0	1.450
0	0	0	1	0	1	1.425
0	0	0	1	1	0	1.400
0	0	0	1	1	1	1.375
0	0	1	0	0	0	1.350
0	0	1	0	0	1	1.325
0	0	1	1	0	0	1.300
0	0	1	1	0	1	1.275
0	0	1	1	1	0	1.250
0	0	1	1	1	1	1.225
0	1	0	0	0	0	1.200
0	1	0	0	0	1	1.175
0	1	0	0	1	0	1.150
0	1	0	0	1	1	1.125
0	1	0	1	0	0	1.100
0	1	0	1	0	1	1.075
0	1	0	1	1	0	1.050
0	1	0	1	1	1	1.025
0	1	1	0	0	0	1.000
0	1	1	0	0	1	0.975
0	1	1	0	1	0	0.950
0	1	1	0	1	1	0.925
0	1	1	1	0	0	0.900
0	1	1	1	0	1	0.875
0	1	1	1	1	0	0.850
0	1	1	1	1	1	0.825
0	1	1	1	1	1	0.800
1	0	0	0	0	0	0.775
1	0	0	0	0	1	0.750
1	0	0	0	1	0	0.725
1	0	0	1	0	0	0.700
1	0	0	1	0	1	0.675
1	0	0	1	1	0	0.650
1	0	0	1	1	1	0.625
1	1	0	0	0	0	0.600
1	1	0	0	0	1	0.575
1	1	0	0	1	0	0.550
1	1	0	0	1	1	0.525
1	1	0	1	0	0	0.500
1	1	0	1	0	1	0.475
1	1	0	1	1	0	0.450
1	1	0	1	1	1	0.425
1	1	1	0	0	0	0.400
1	1	1	0	0	1	0.375

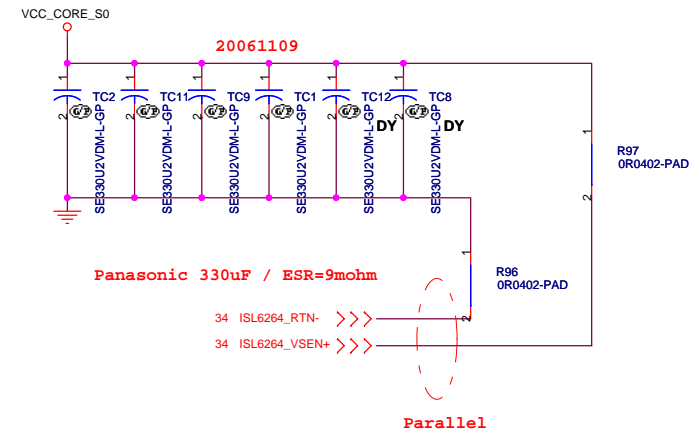
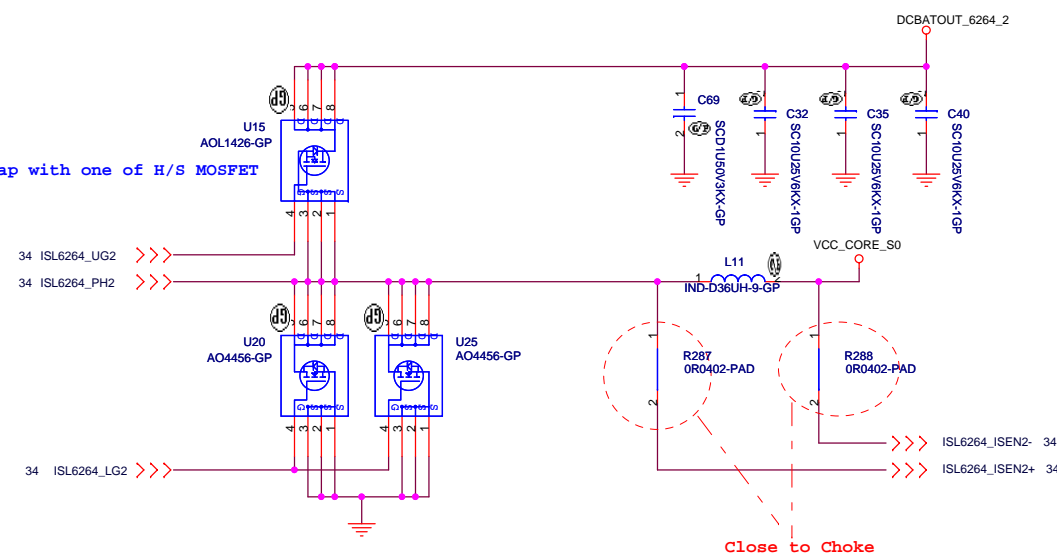


SET "H"--->Audio filter
 RBIAS=1.55V
 Inner 3K ohm
 Positive offset:
 (1.2V/R7)*R11
 OCP:40A*1.25=50A
 50A*2mV/A=100uA*Rocset
 Rocset=10K

Overlap with one of H/S MOSFET



Overlap with one of H/S MOSFET

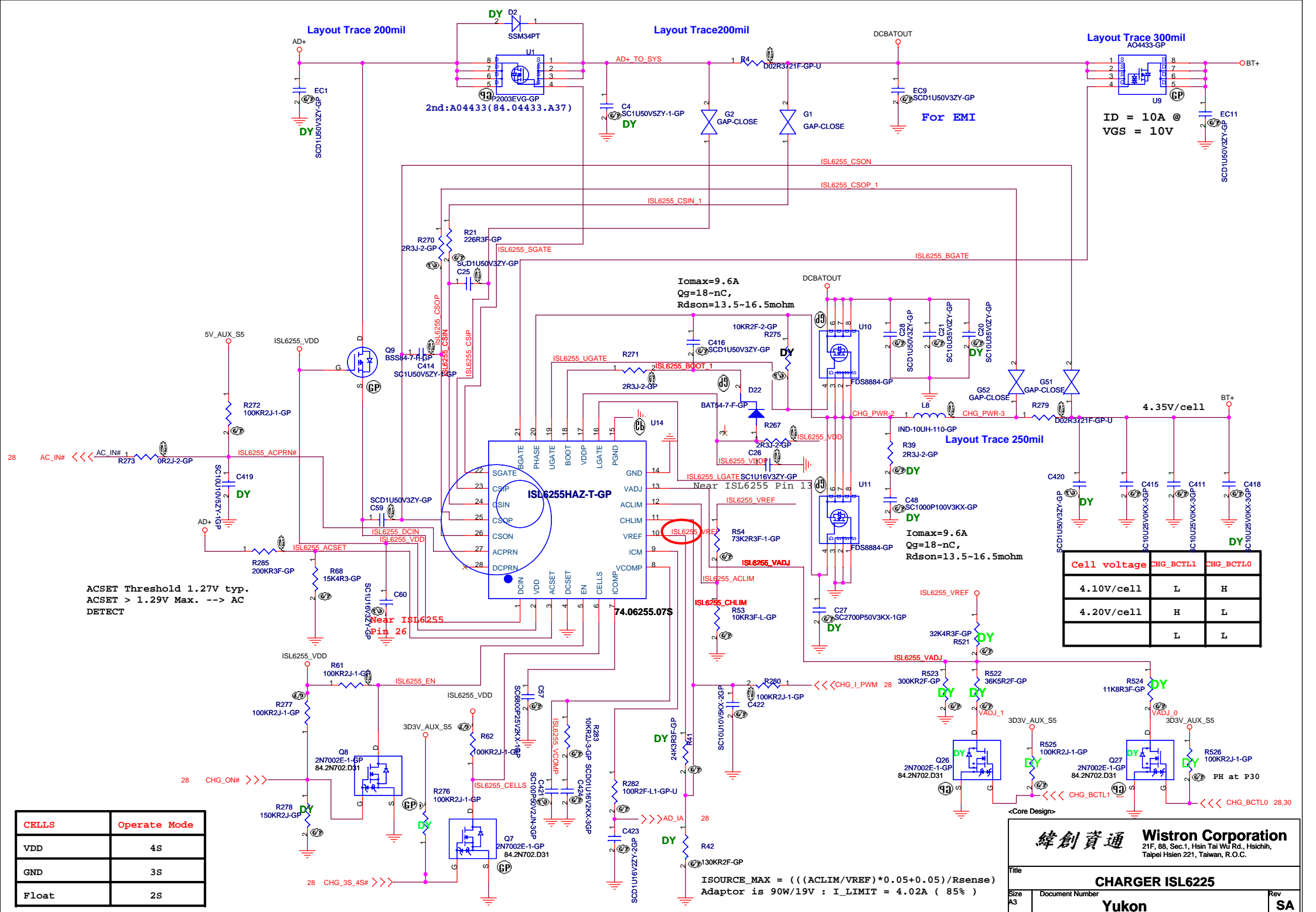


<Core Design>

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Title CPU Vcore Power_2

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Layout Trace 200mil

Layout Trace 200mil

Layout Trace 300mil

For EMI

ID = 10A @
VGS = 10V

I_{omax}=9.6A
Q_g=18-nC,
R_{dson}=13.5~16.5mohm

I_{omax}=9.6A
Q_g=18-nC,
R_{dson}=13.5~16.5mohm

ACSET Threshold 1.27V typ.
ACSET > 1.29V Max. --- AC
DETECT

Near ISL6255
Pin 26

74.06255.07S

Cell voltage	CHG_BCTL1	CHG_BCTL0
4.10V/cell	L	H
4.20V/cell	H	L
	L	L

CELLS	Operate Mode
VDD	4S
GND	3S
Float	2S

ISOURCE_MAX = ((ACLIM/VREF)*0.05+0.05)/Rsense)
Adaptor is 90W/19V : I_LIMIT = 4.02A (85%)

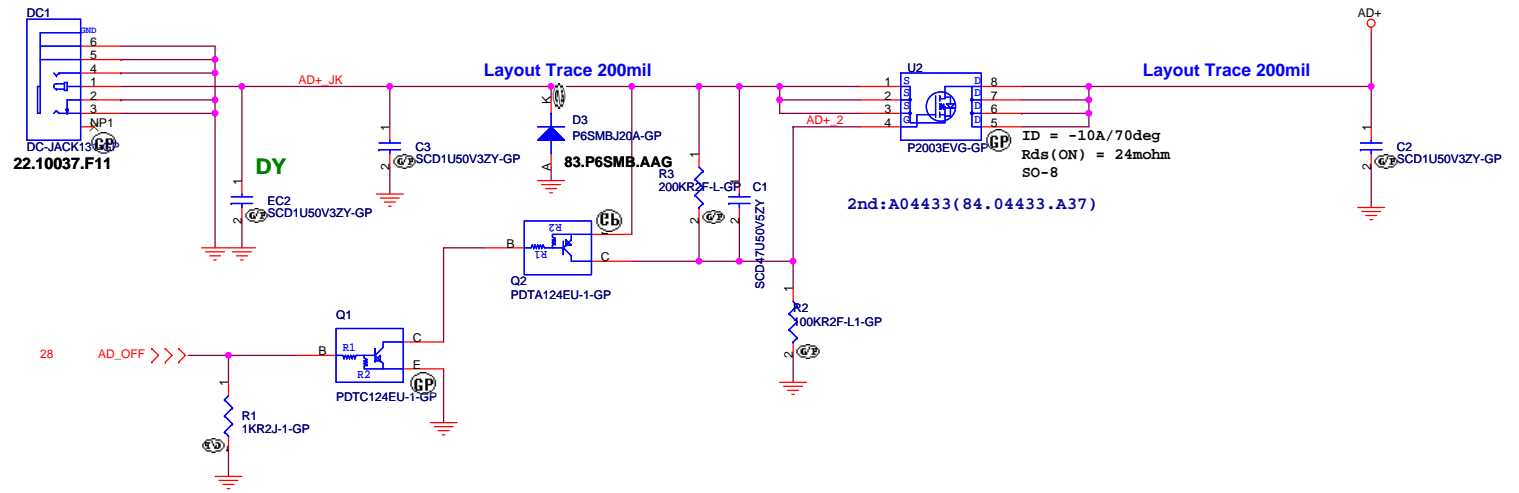
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21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.

CHARGER ISL6255

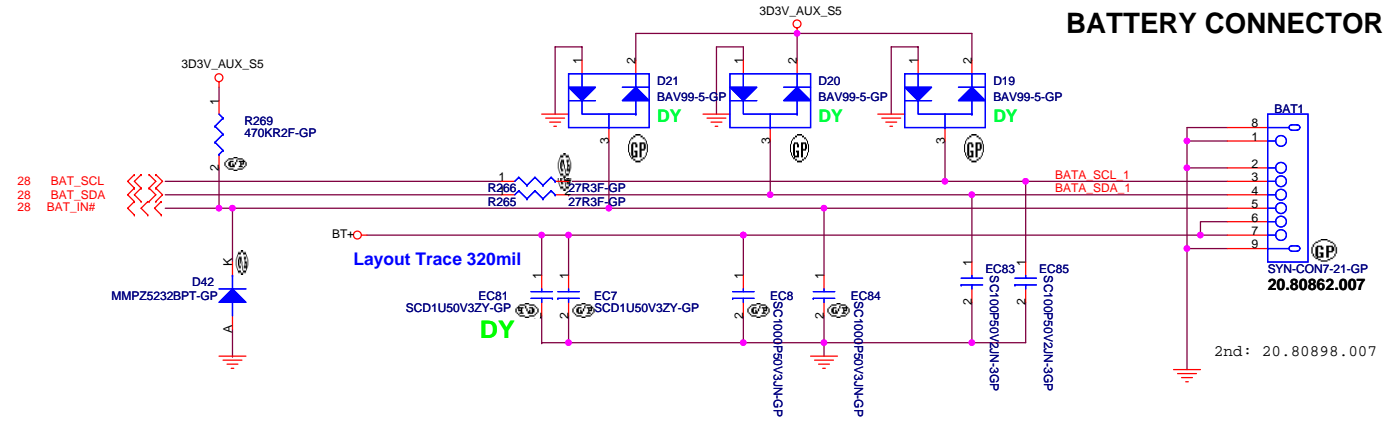
Yukon

Title: _____
Size A3 Document Number _____ Rev SA
Date: Thursday, July 03, 2008 Sheet 37 of 43


Adaptor in to generate DCBATOUT

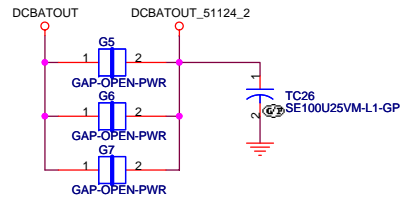
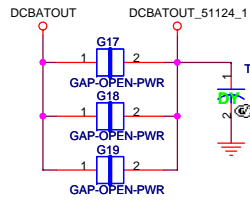


BATTERY CONNECTOR



<Variant Name>

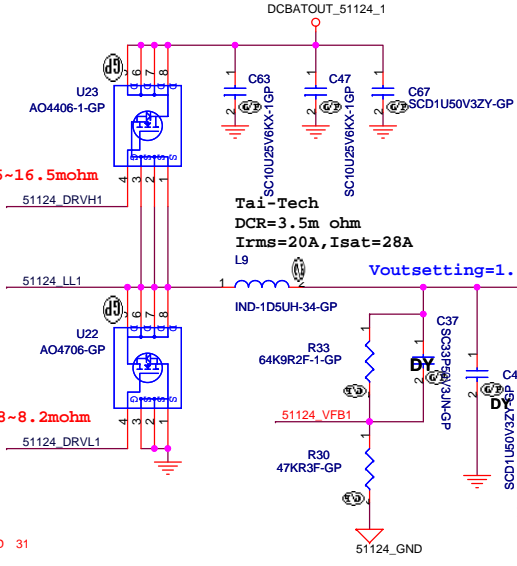
 Wistron Corporation 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
AD/BATT CONN	
Size A3	Document Number Yukon
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$I_d=9.6A$
 $Q_g=18\sim nC$,
 $R_{dson}=13.5\sim 16.5m\Omega$

$I_d=13.2A$
 $Q_g=27nC$,
 $R_{dson}=6.8\sim 8.2m\Omega$

1D8V_S3_PWRGD 31
 1D2V_PWRGD 31

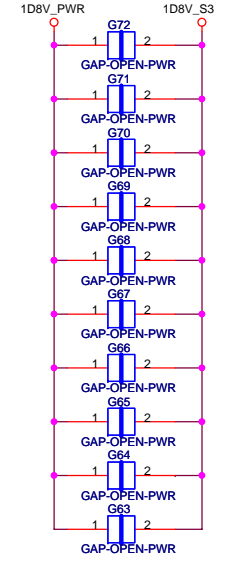


1D8V $I_{omax}=8A$
 $OCP>16A$

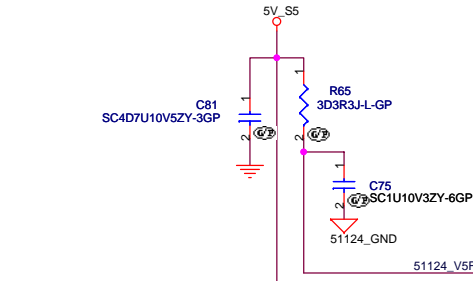
$V_{outsetting}=1.8046V$

Kemet
 220uF/ 4V
 $ESR=15m\Omega$

Nippon
 Chemi-Con
 Al Cap.
 390uF/2D5V
 $ESR=15m\Omega$



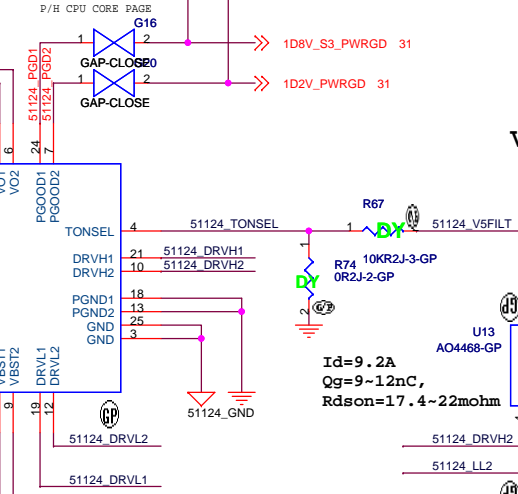
$$V_{out}=0.758V \cdot (R1+R2) / R2$$



19,28,41 PM_SLP_S5#
 31,41 1D2V_S0_EN

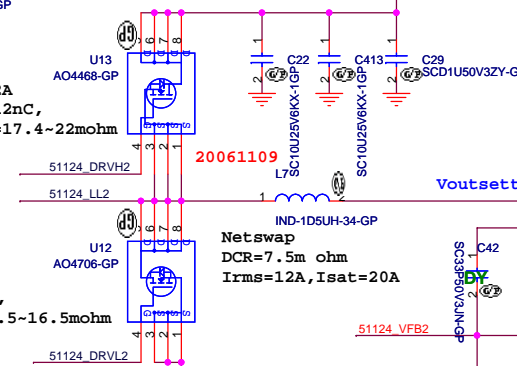
1D2V_PWR
 1D8V_PWR
 51124_VFB2
 51124_VFB1

TPS51124RGER-GPU1
 10KR3F-L-GP
 10KR3F-L-GP



$I_d=9.2A$
 $Q_g=9\sim 12nC$,
 $R_{dson}=17.4\sim 22m\Omega$

$I_d=9.6A$
 $Q_g=18\sim nC$,
 $R_{dson}=13.5\sim 16.5m\Omega$

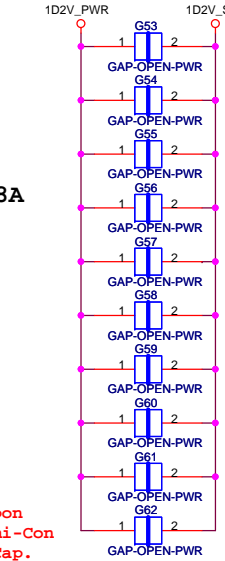


1D2V $I_{omax}=8A$
 $OCP>16A$

$V_{outsetting}=1.2047V$

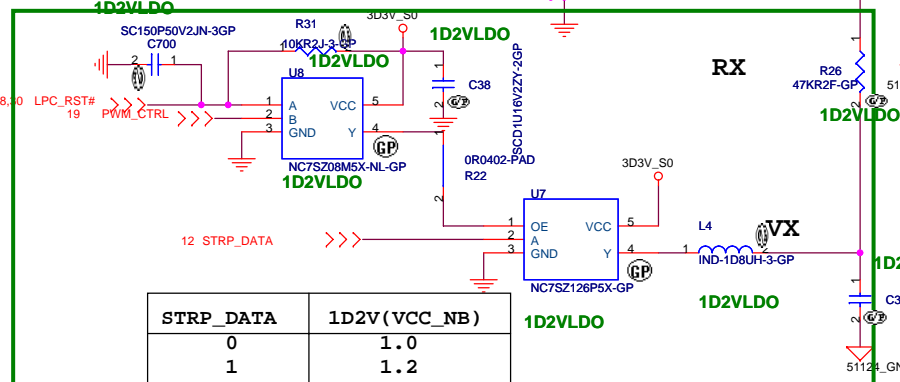
Kemet
 220uF/ 4V
 $ESR=15m\Omega$

Nippon
 Chemi-Con
 Al Cap.
 390uF/2D5V
 $ESR=15m\Omega$



$V_{trip}(mV)=R_{trip}(K\Omega) \cdot 10(\mu A)$
 $I_{ocp}=(V_{trip}/R_{dson}) + ((1/(2 \cdot L \cdot f)) \cdot ((V_{in}-V_{out}) \cdot V_{out}) / V_{in}))$

	GND	OPEN	V5FILT
TONSEL	230k/CH1 283k/CH2	283k/CH1 346k/CH2	346k/CH1 423k/CH2



STRP_DATA	1D2V(VCC_NB)	1D2VLO	1D2VLO
0	1.0		
1	1.2		

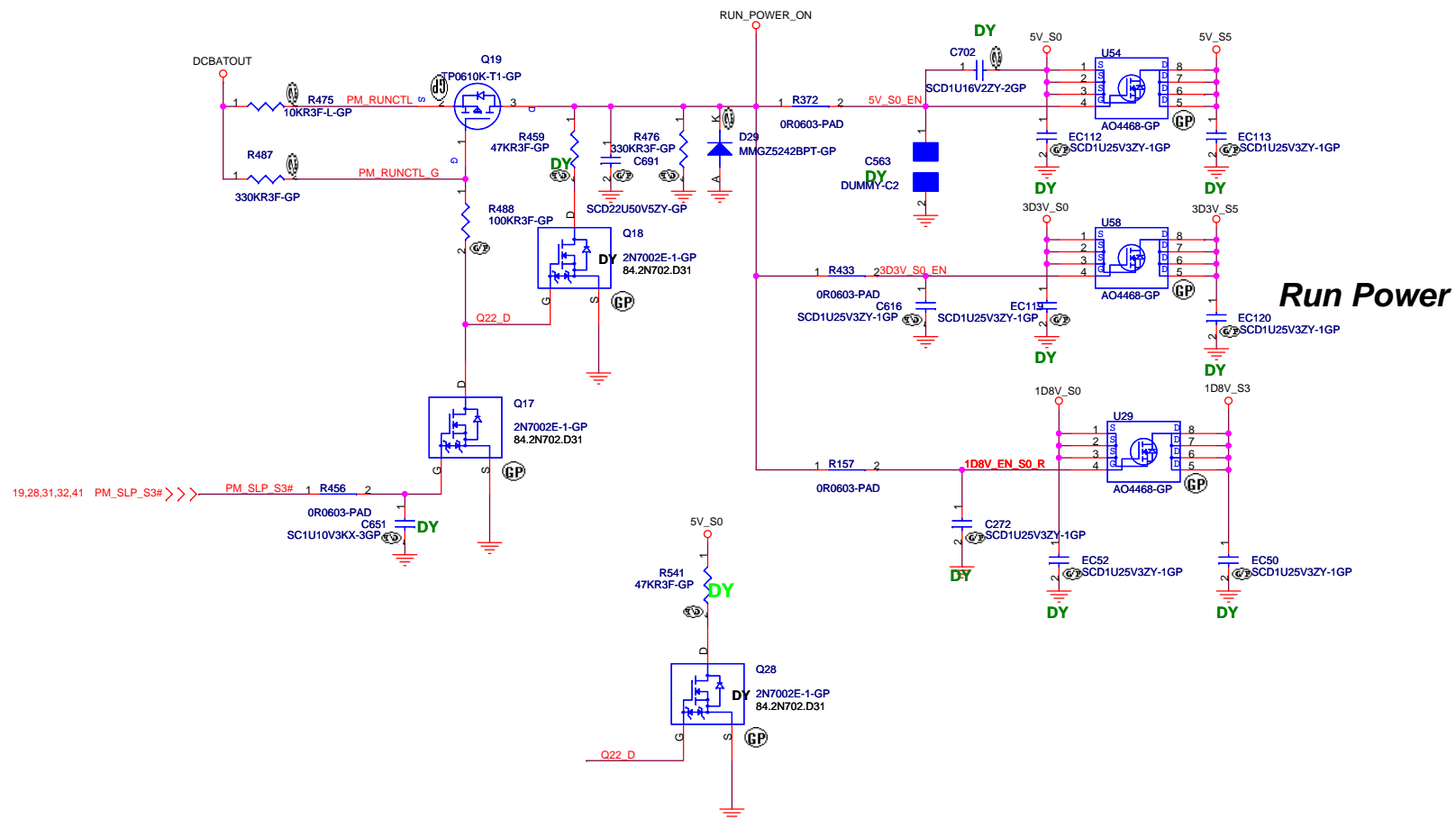
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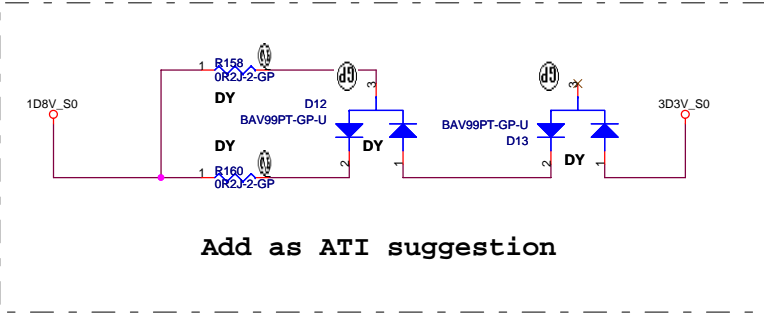
TPS51124 1D8V 1D2V

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 Size: A3
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Run Power

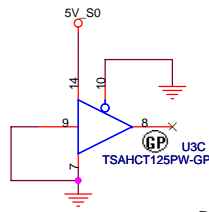


Add as ATI suggestion

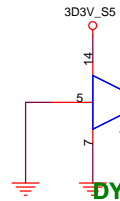
Power On Logic

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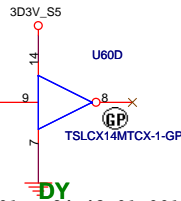
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Title: RUB POWER		
Size: A3	Document Number: Yukon	Rev: SA
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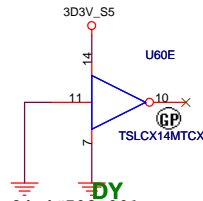
DUMMY in SA



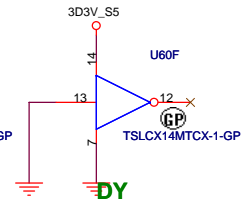
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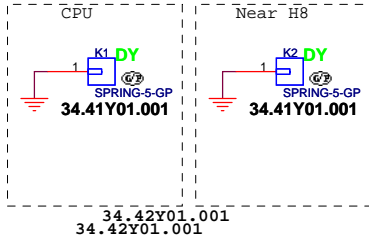
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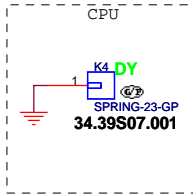
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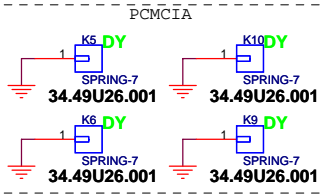
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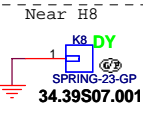
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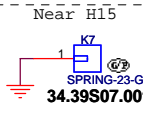
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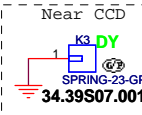
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34.49U26.001
34.39S07.001
34.49U26.001
34.49U26.001



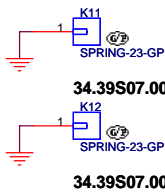
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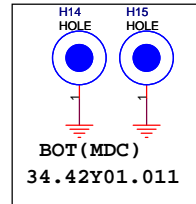
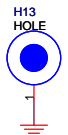
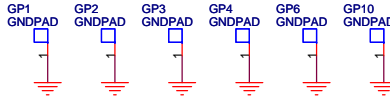
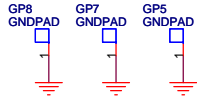
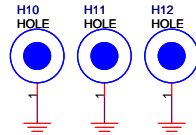
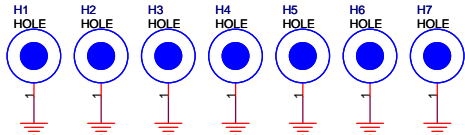
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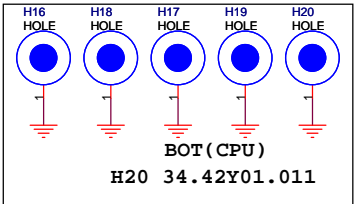
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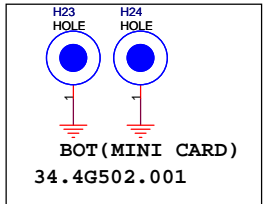
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34.39S07.001



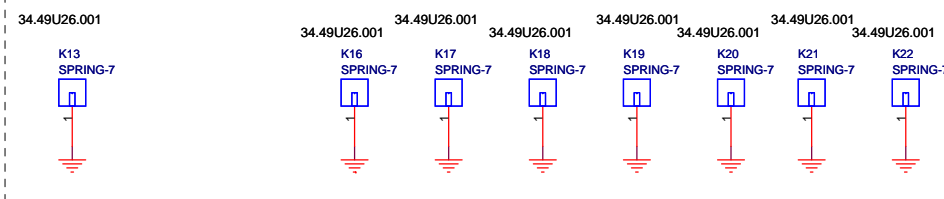
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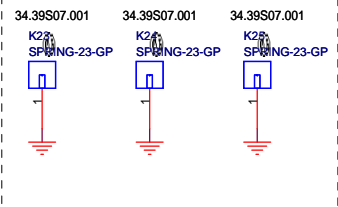
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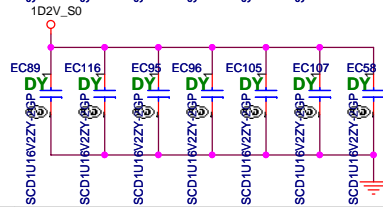
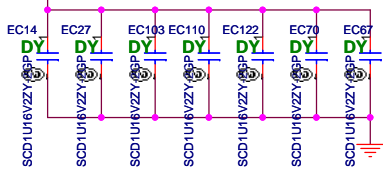
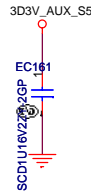
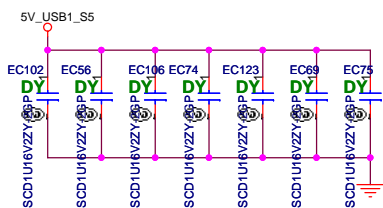
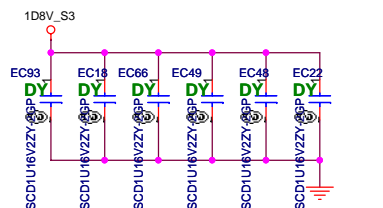
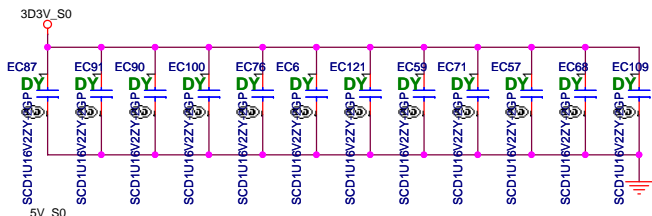
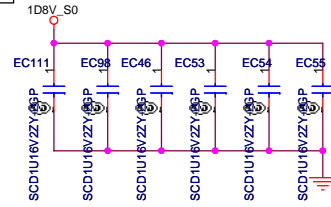
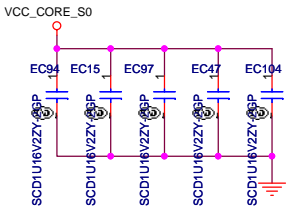
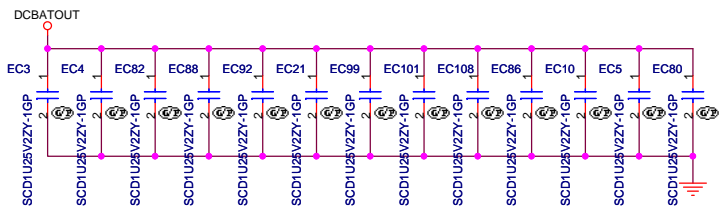
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34.49U26.001



34.39S07.001
34.39S07.001
34.39S07.001



<Core Design>

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