

# Rocket BSW 11.6" Schematic

## Braswell

**2015-11-09**  
**REV : A00**

*DY : None Installed*  
*OSP/ISP : different config for storage and DRAM*  
*Drax : stuff on Drax*

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Title

**Cover Page**

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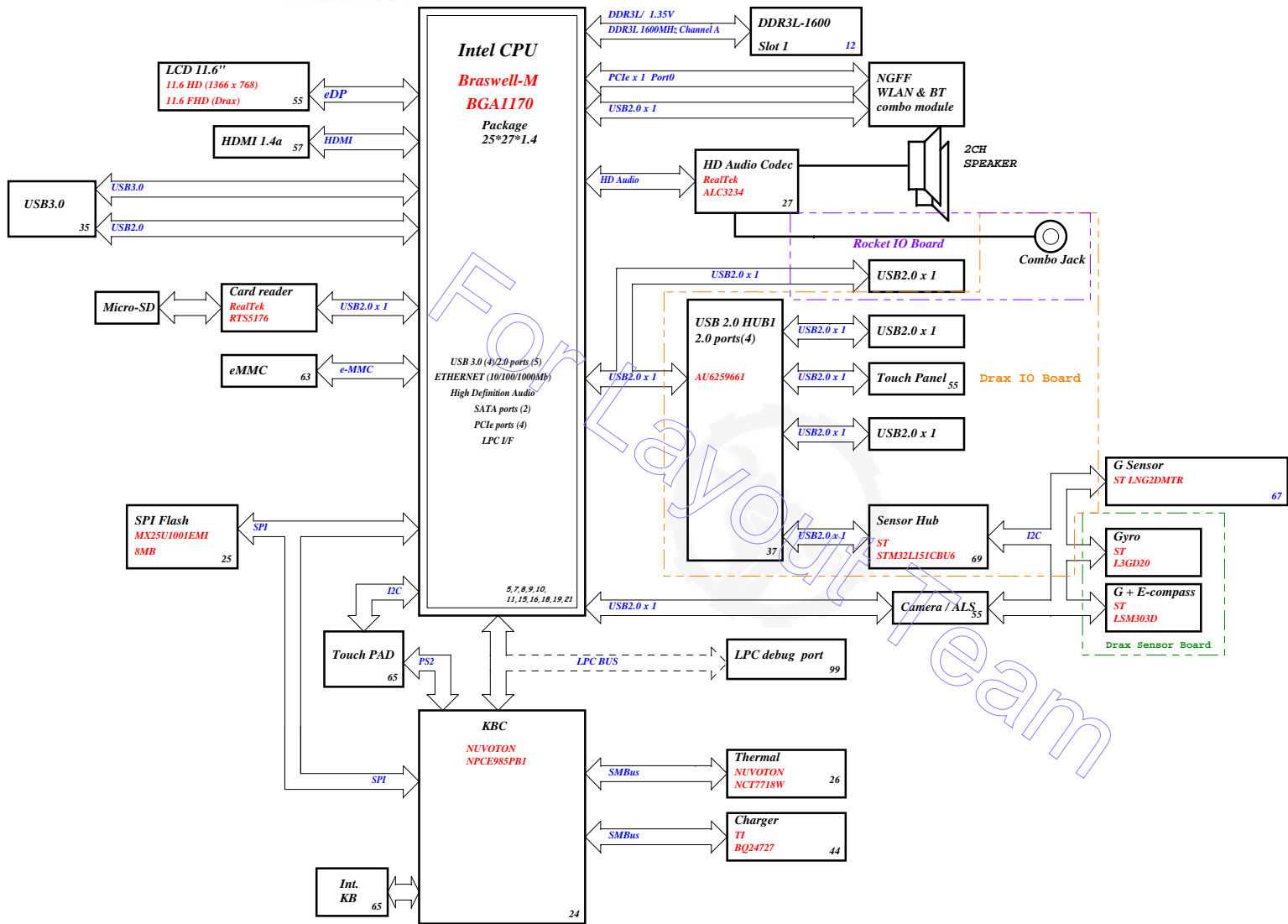
Date: Tuesday, November 10, 2015

Sheet 1 of 109

Project code : 4PD076010001  
PCB P/N : 15239  
Revision : -1

# Rocket 11.6" Block Diagram - 1SP

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CHARGER	
BQ24727R6RR	44
INPUTS	OUTPUTS
19V_AD+	12V_BT+
SYSTEM DC/DC	
SY8288CRAC	45
SY8286BRAC	
INPUTS	OUTPUTS
19V_DCBATOUT	3D3V_AUX_S5 3D3V_S5 5V_S5
CPU DC/DC	
NCP81201MNTXG	46-47
INPUTS	OUTPUTS
19V_DCBATOUT	1V_CPU_CORE
CPU DC/DC	
NCP81201MNTXG	48
INPUTS	OUTPUTS
19V_DCBATOUT	6FX_CORE
SYSTEM DC/DC	
SY8286RAC	50
INPUTS	OUTPUTS
19V_DCBATOUT	1D05V_S5
Step Down Regulator	
SYW232DFC	50
INPUTS	OUTPUTS
3D3V_S5	1D15V_S5
SYSTEM DC/DC	
SY8286RAC	51
INPUTS	OUTPUTS
19V_DCBATOUT	1D35V_CPU_VDDQ_S3
SYSTEM DC/DC	
APL5338XAI	51
INPUTS	OUTPUTS
1D35V_CPU_VDDQ_S3	0D675V_VREF_S0
Step Down Regulator	
SYW232DFC	52
INPUTS	OUTPUTS
3D3V_S5	1D8V_S5
SYSTEM LDO	
S-1339D15-M5001	53
INPUTS	OUTPUTS
3D3V_S5	1D5V_S0
SYSTEM LDO	
APL5930KAI	54
INPUTS	OUTPUTS
3D3V_S5	1D24V_S5

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


SSID = CPU

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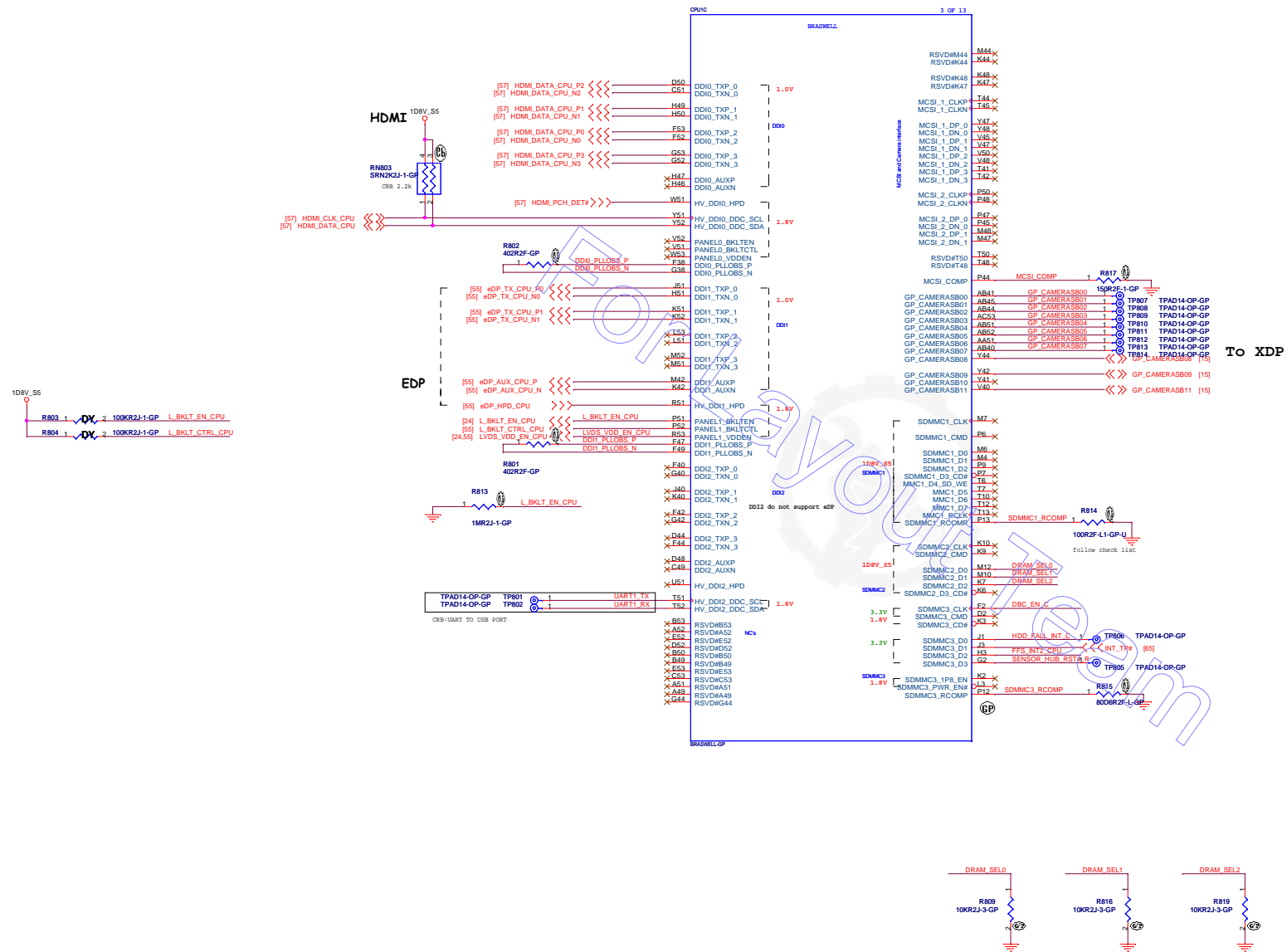
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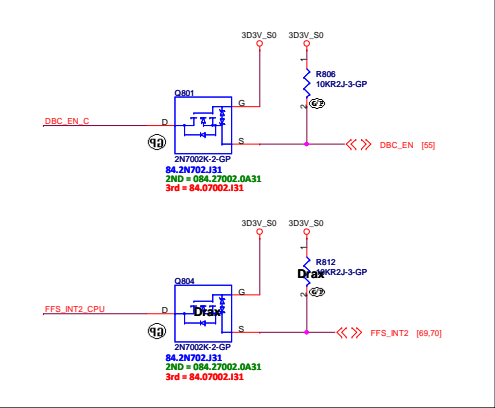
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Level Shift

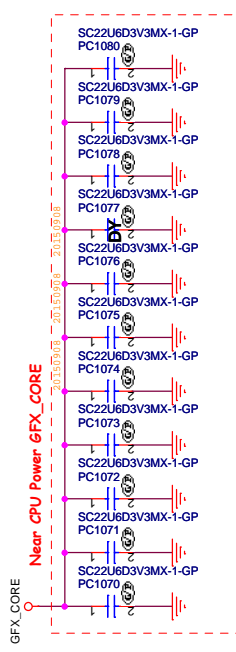
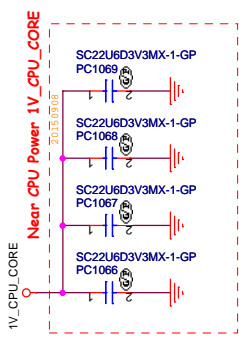
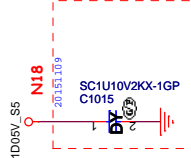
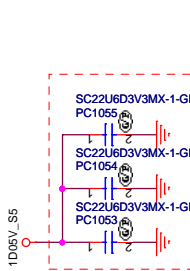
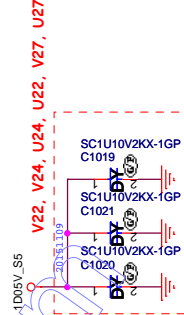
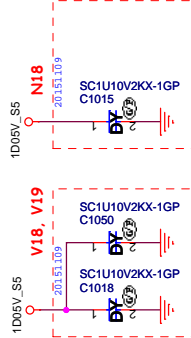
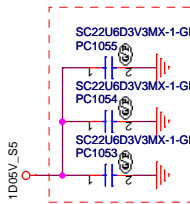
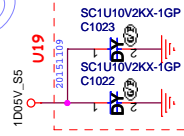
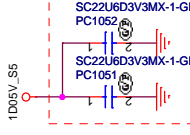
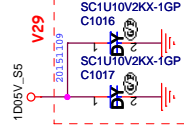
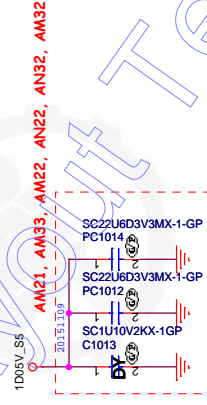
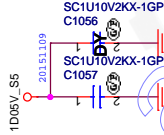
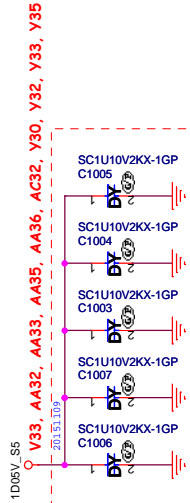
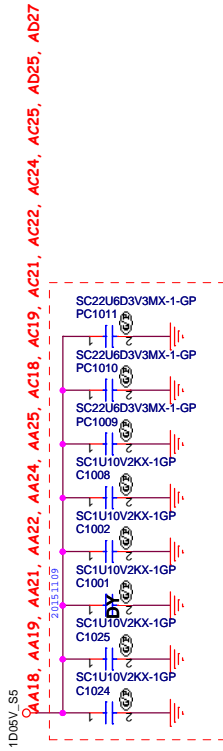
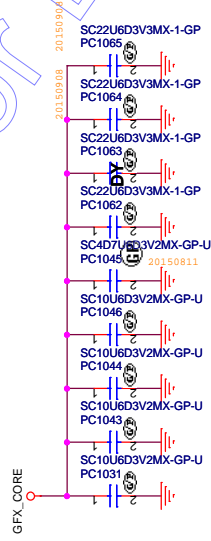
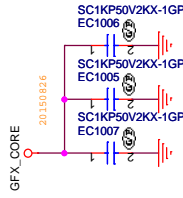
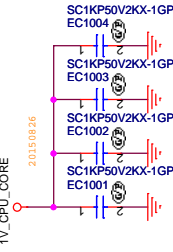
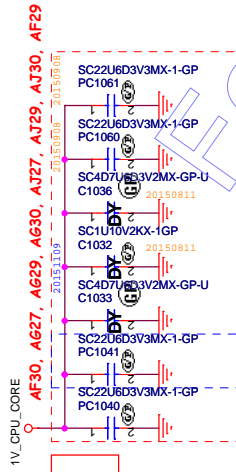
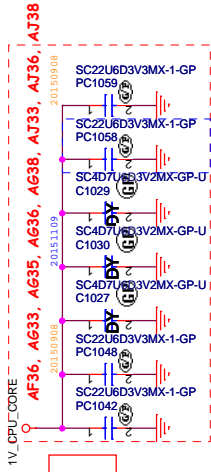




SSID = CPU

PLACE ALL THE CAPS  
UNDER THE PKG SHADOW

PLACE ALL THE CAPS  
UNDER THE PKG SHADOW



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SSID = MEMORY

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SSID = PCH


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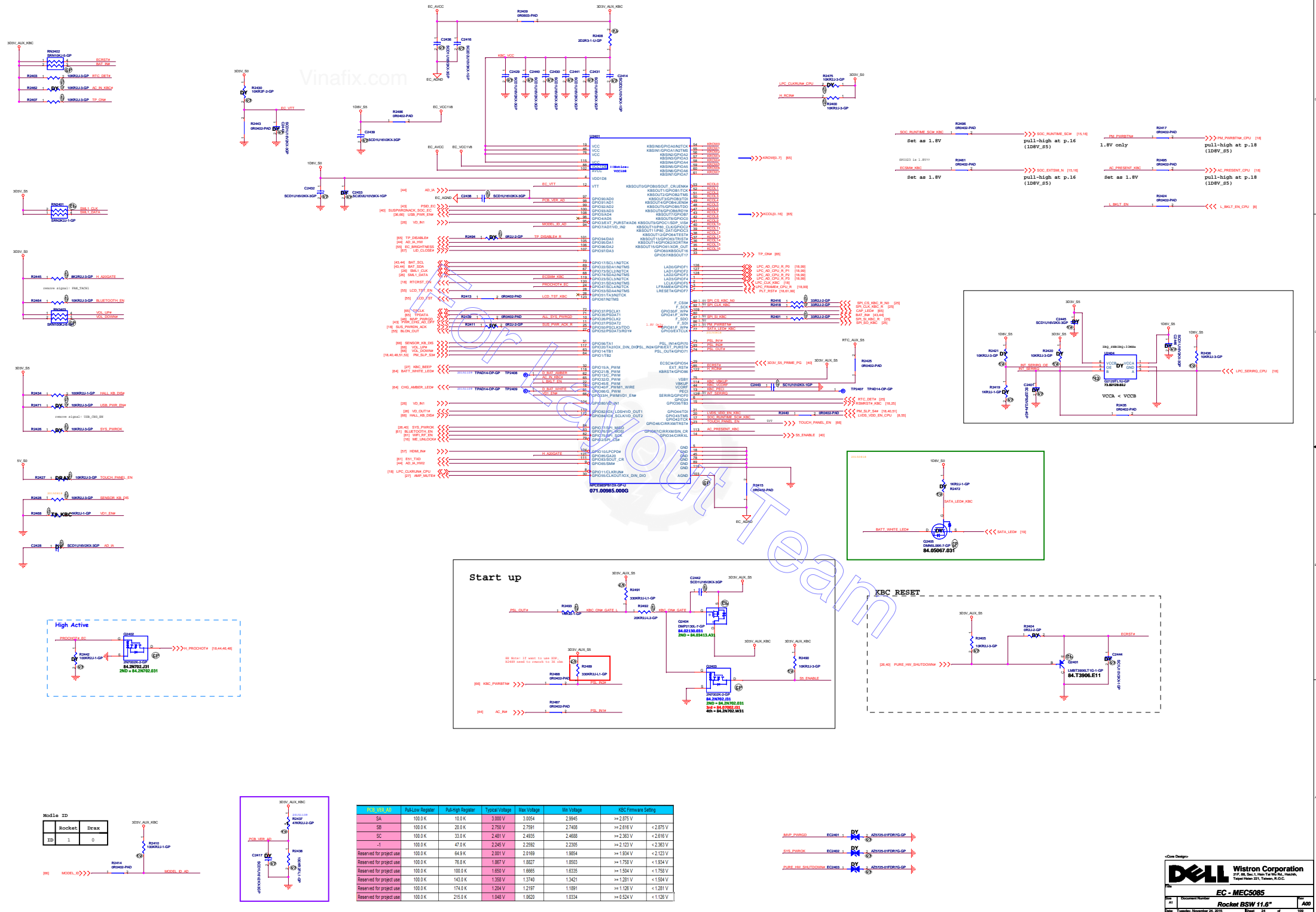
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SSID = KBC



Module ID	Rocket	Drax
ID	1	0

Pin	Pin Name	Pin Type	Pin Value	Pin Voltage	Pin Voltage	Pin Voltage	Pin Voltage	Pin Voltage	Pin Voltage
SA	100.0 K	10.0 K	3.000 V	3.005 V	2.995 V	2.975 V	2.975 V	2.975 V	2.975 V
SB	100.0 K	20.0 K	2.750 V	2.759 V	2.740 V	2.740 V	2.740 V	2.740 V	2.740 V
SC	100.0 K	33.0 K	2.481 V	2.495 V	2.468 V	2.468 V	2.468 V	2.468 V	2.468 V
-1	100.0 K	47.0 K	2.245 V	2.259 V	2.226 V	2.226 V	2.226 V	2.226 V	2.226 V
Reserved for project use	100.0 K	64.9 K	2.001 V	2.016 V	1.985 V	1.985 V	1.985 V	1.985 V	1.985 V
Reserved for project use	100.0 K	76.8 K	1.887 V	1.897 V	1.860 V	1.860 V	1.860 V	1.860 V	1.860 V
Reserved for project use	100.0 K	100.0 K	1.650 V	1.665 V	1.635 V	1.635 V	1.635 V	1.635 V	1.635 V
Reserved for project use	100.0 K	143.0 K	1.350 V	1.370 V	1.342 V	1.342 V	1.342 V	1.342 V	1.342 V
Reserved for project use	100.0 K	174.0 K	1.100 V	1.110 V	1.080 V	1.080 V	1.080 V	1.080 V	1.080 V
Reserved for project use	100.0 K	215.0 K	1.040 V	1.050 V	1.025 V	1.025 V	1.025 V	1.025 V	1.025 V



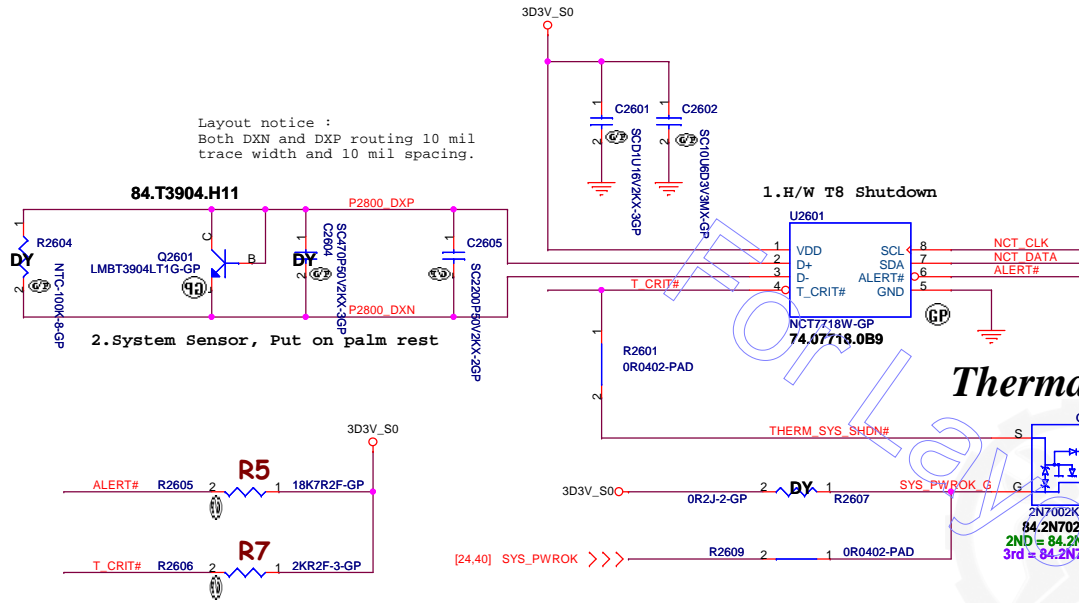
SSID = Thermal

EE Note:

1. T8: PURE\_HW\_SHUTDOWN# through Q2603.
2. THM\_SENSOR: Thermal sensor NCT7718W solution.

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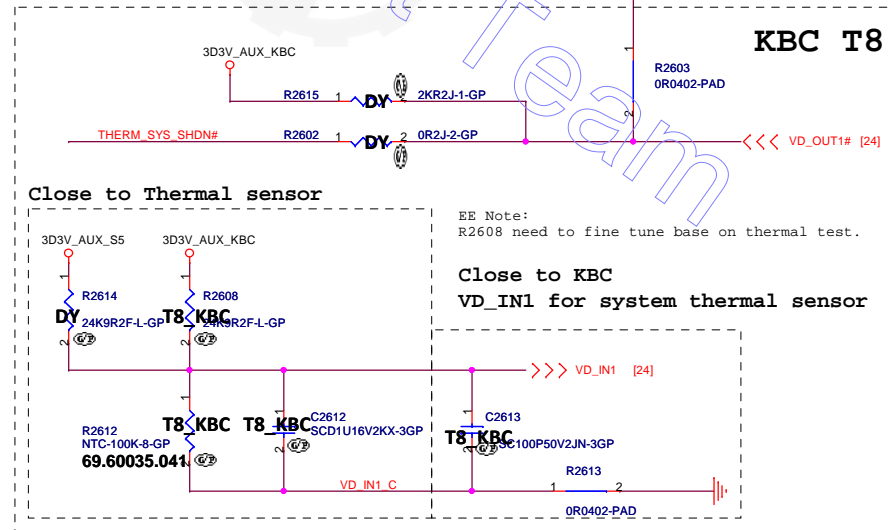
Layout notice :  
Both DXN and DXP routing 10 mil  
trace width and 10 mil spacing.



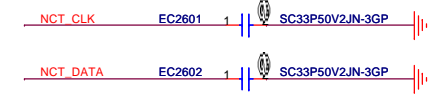
## Thermal sensor NCT 7718W

The default value is trapping after power up 100ms by different pull-up resistors of T\_CRIT# and ALERT# pin:

TEMPERATURE (°C)	T_CRIT#				
	2KΩ	7.5KΩ	10.5KΩ	14KΩ	18.7KΩ
ALERT#	2KΩ	77	87	97	107
	7.5KΩ	79	89	99	109
	10.5KΩ	81	91	101	111
	14KΩ	83	93	103	113
	18.7KΩ	85	95	105	115



Layout Note: Close U2601



pull-high at p.24  
(3D3V\_S5)

KBC T8

EE Note:  
R2608 need to fine tune base on thermal test.

Close to KBC  
VD\_IN1 for system thermal sensor

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SSID = LOM

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SSID = LAN

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SSID = LAN CONN

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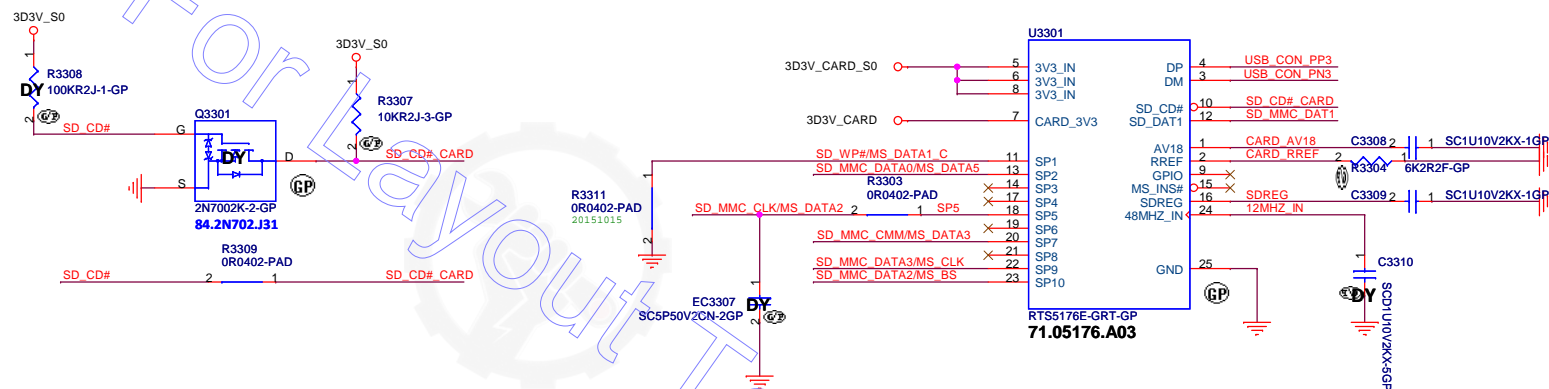
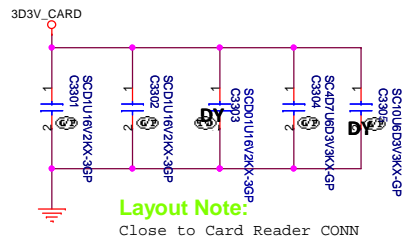
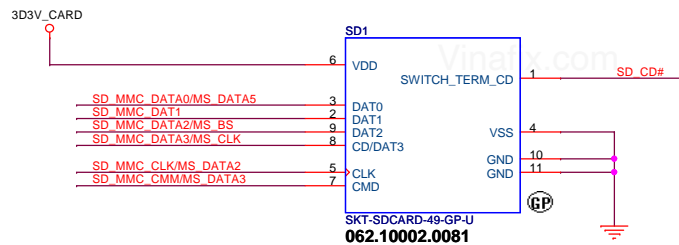
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Title **(Reserved)RJ45+Transformer**

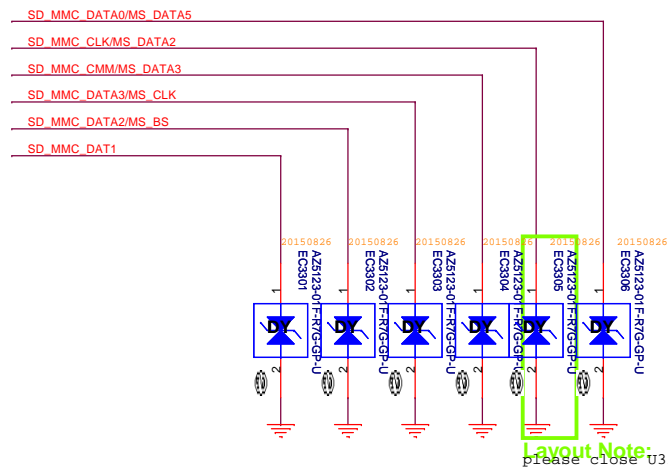
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# SSID = Card Reader



## For EMI Reserved



Pin name	Net name
SD_DAT1	SD_MMC_DAT1
SP1	SD_WP/MS_DATA1
SP2	SD_MMC_DATA0/MS_DATA5
SP3	MMC_DATA7/MS_DATA4
SP4	MMC_DATA6/MS_DATA0
SP5	SD_MMC_CLK/MS_DATA2
SP6	MMC_DATA5/MS_DATA6
SP7	SD_MMC Command/MS_DATA3
SP8	MMC_DATA4/MS_DATA7
SP9	SD_MMC_DATA3/MS_CLK
SP10	SD_MMC_DATA2/MS_BS

SSID = USB

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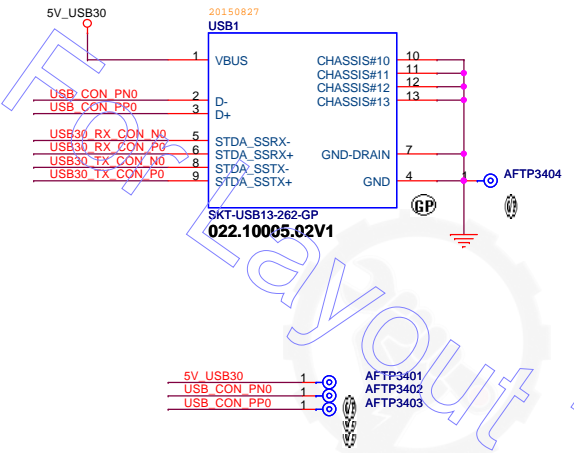
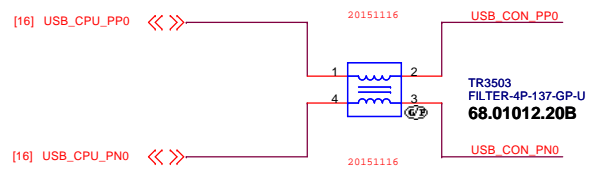
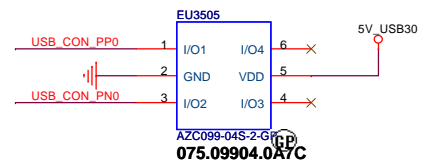
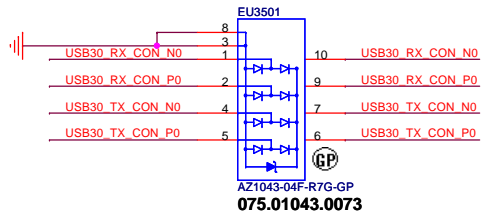
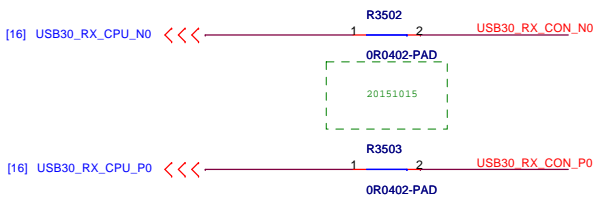
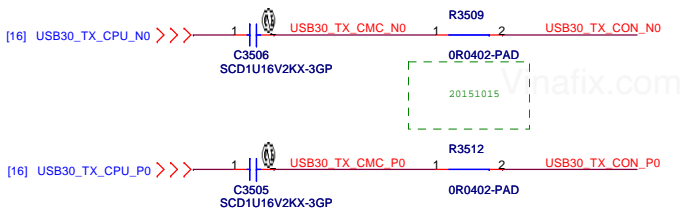
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Title **(Reserved)USB 2.0 Port**

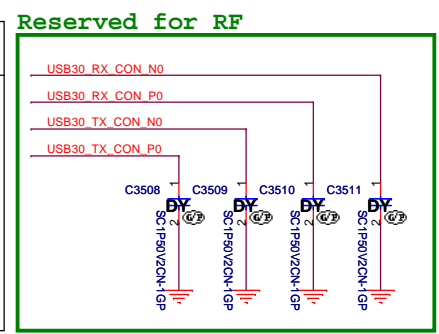
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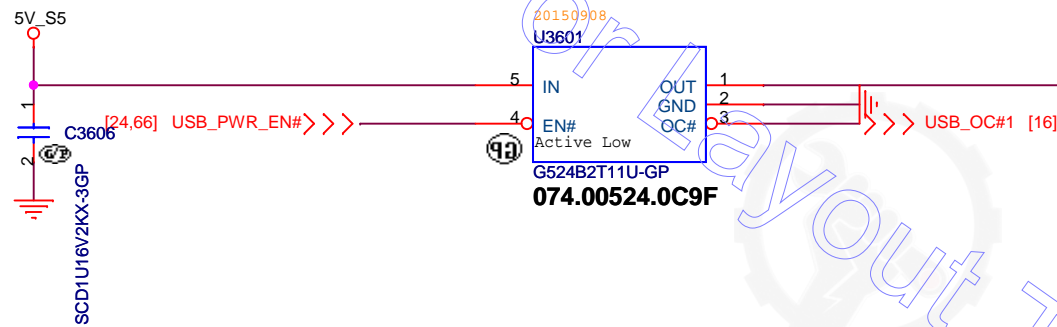
SSID = USB



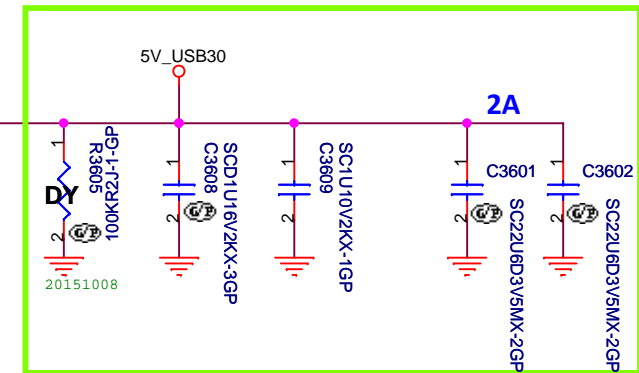
USB 3.0 Connector Pin definition	
1	POWER
2	USB 2.0 D-
3	USB 2.0 D+
4	GND
5	StdA_SSRX- SuperSpeed RX
6	StdA_SSRX+
7	GND
8	StdA_SSTX- SuperSpeed TX
9	StdA_SSTX+



## USB3.0 Port1



Layout Note: Close CON1



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**USB Power SW**

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SSID = USB

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**USB2.0 HUB**

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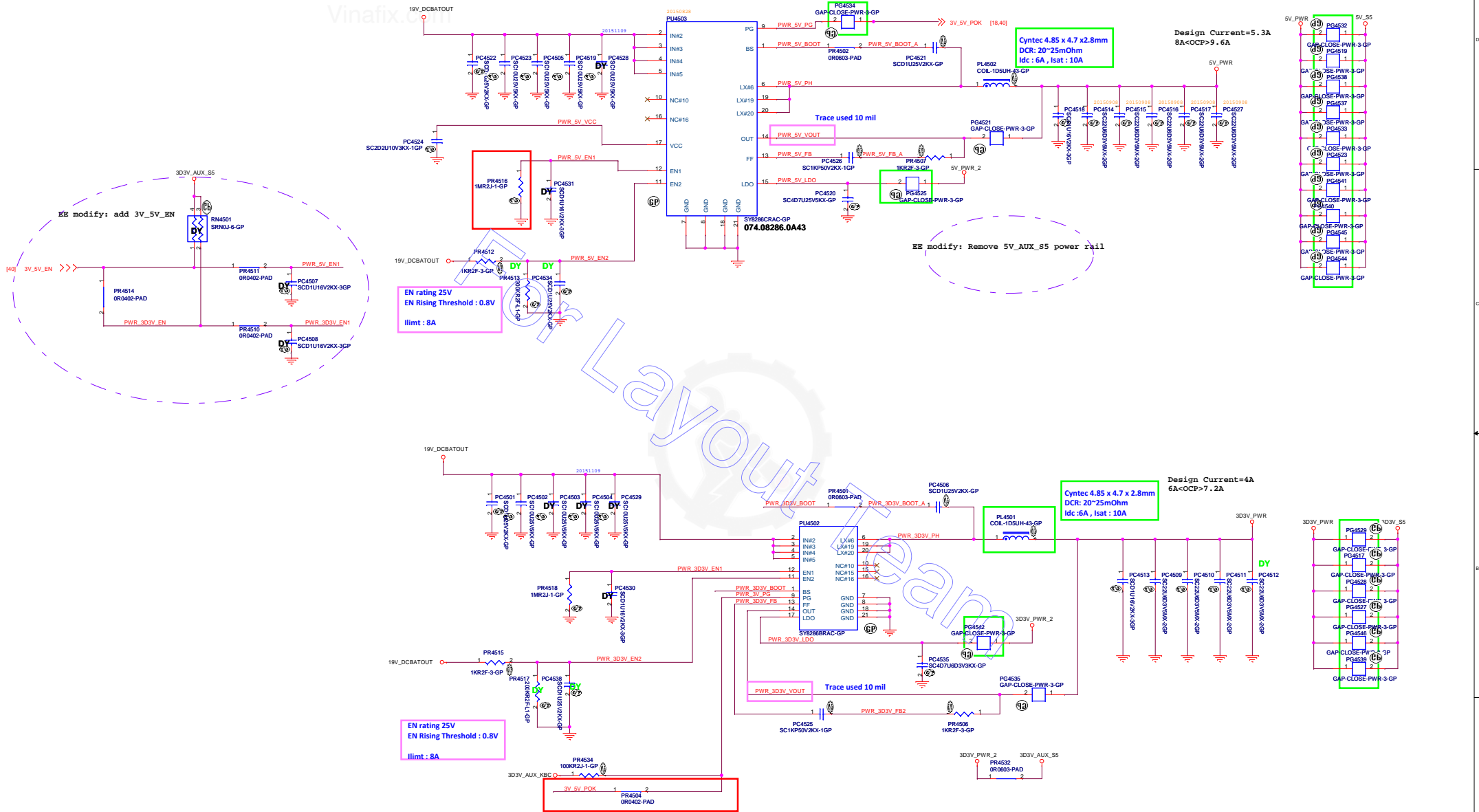
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Size A4	Document Number <b>Rocket BSW 11.6"</b>	Rev <b>X00</b>
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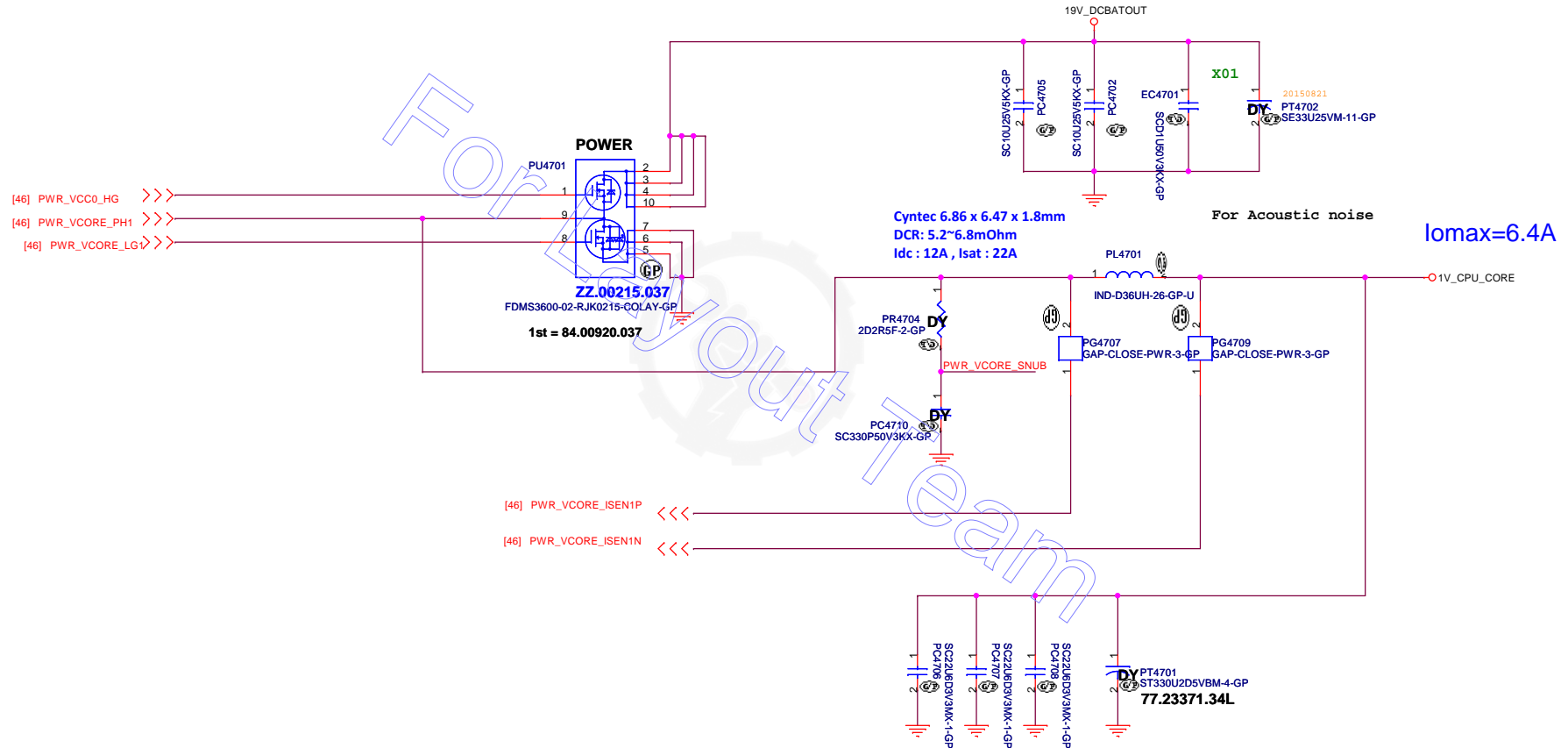


<Core Design>



# SSID = CPU Regulator

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**(Reserved)**

Size  
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Document Number

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Rev  
**X00**

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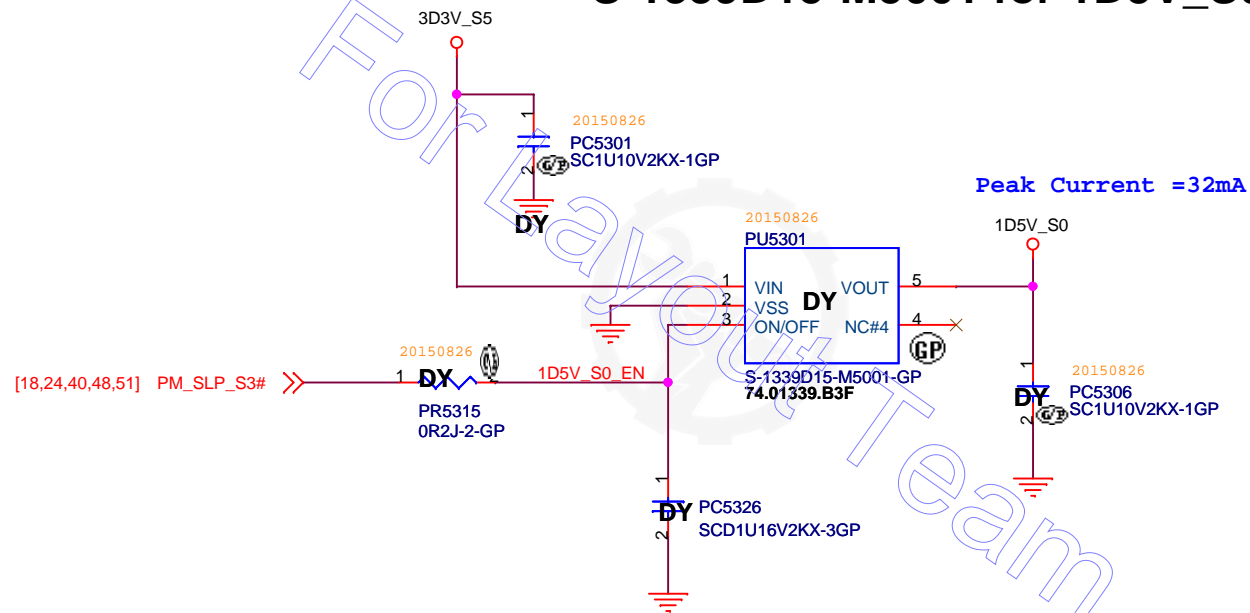
Sheet 49 of 109







## S-1339D15-M5001 for 1D5V\_S0



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Title

**S1339D15 1D5V**Size  
A4

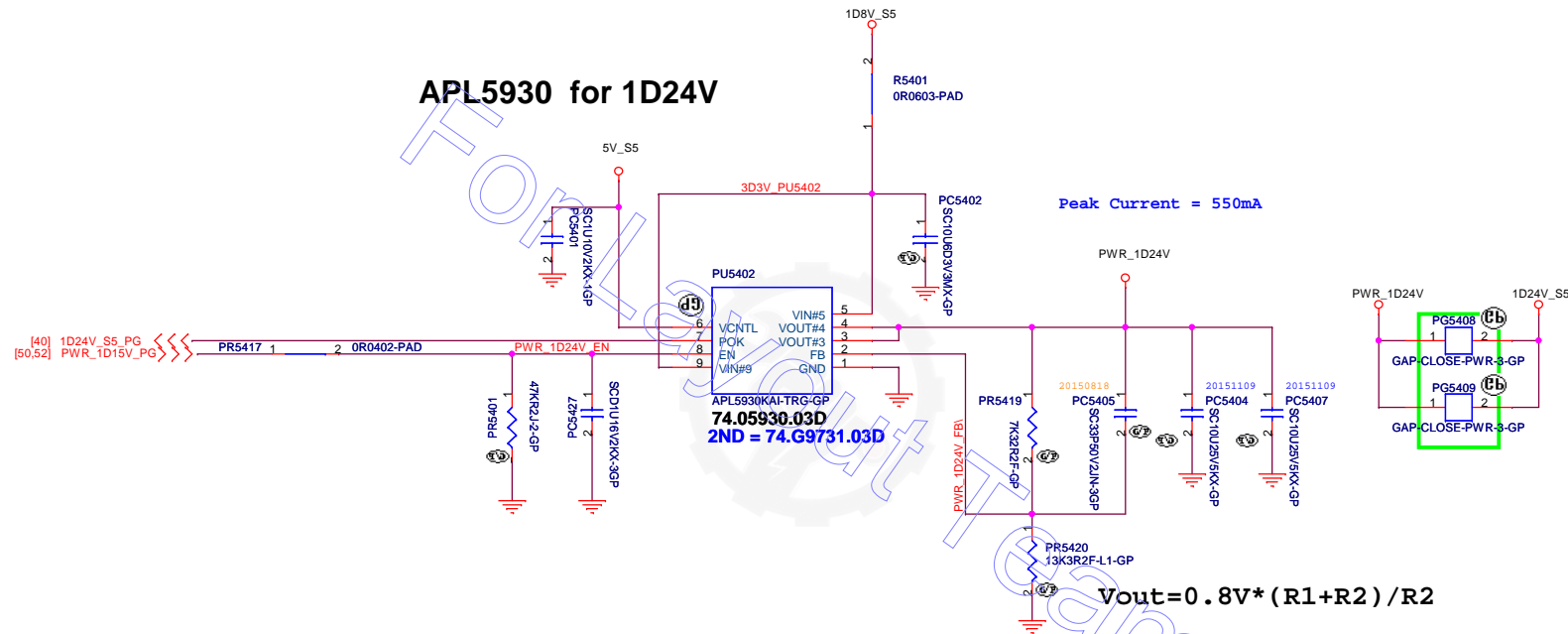
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## APL5930 for 1D24V



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APL5930\_1D24V

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Document Number

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Rev

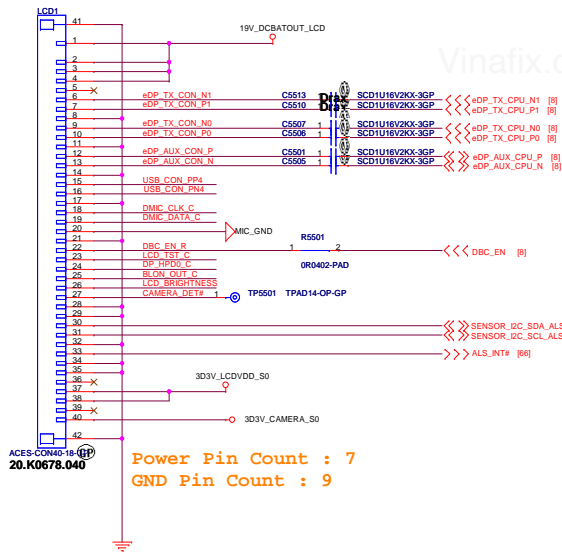
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Date: Tuesday, November 10, 2015

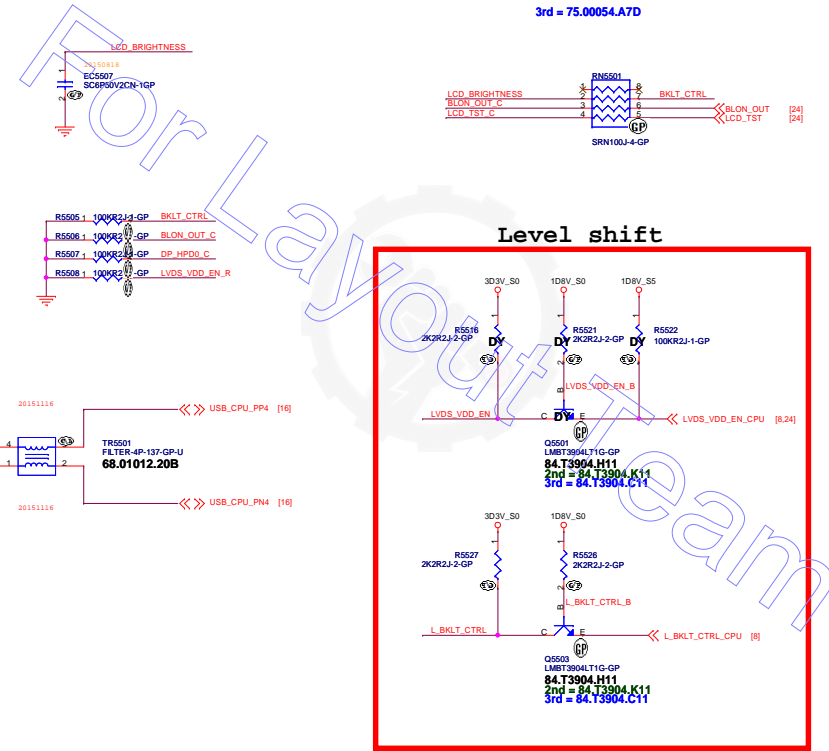
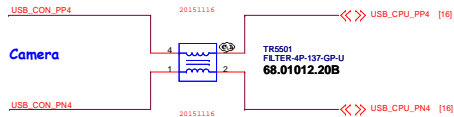
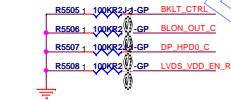
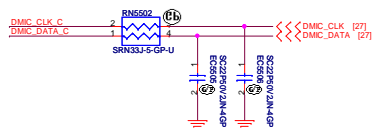
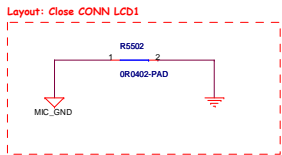
Sheet 54 of 109

SSID = VIDEO

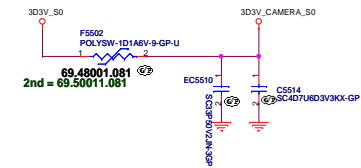
### Panel Conn.



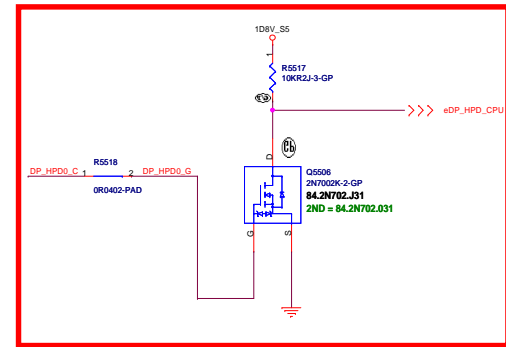
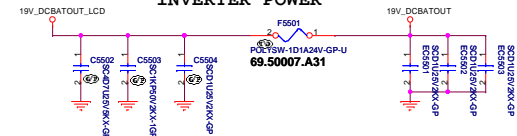
Power Pin Count : 7  
GND Pin Count : 9



### CAMERA POWER



### INVERTER POWER



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**(Reserved)**

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Document Number

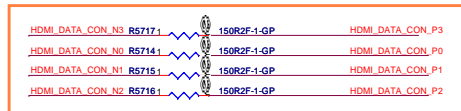
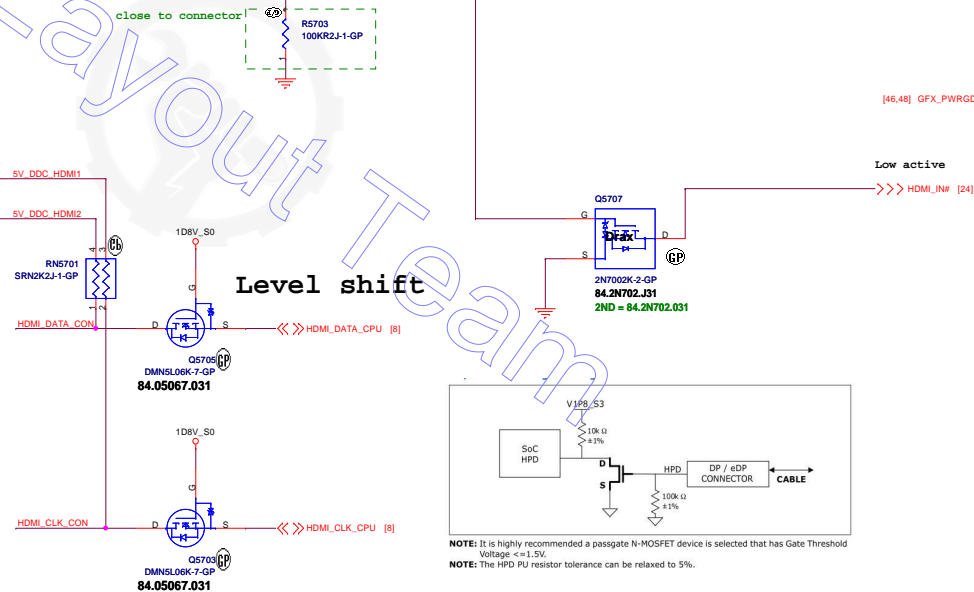
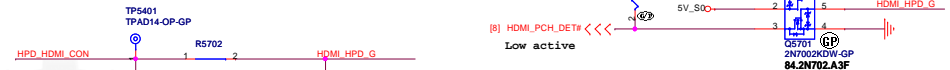
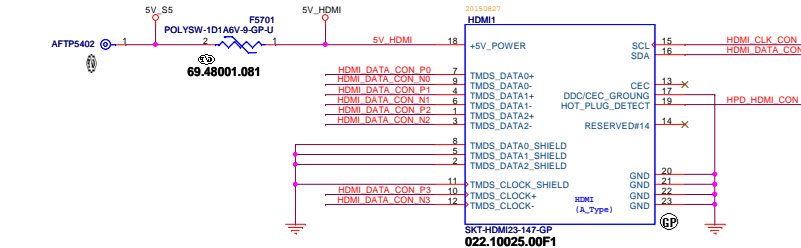
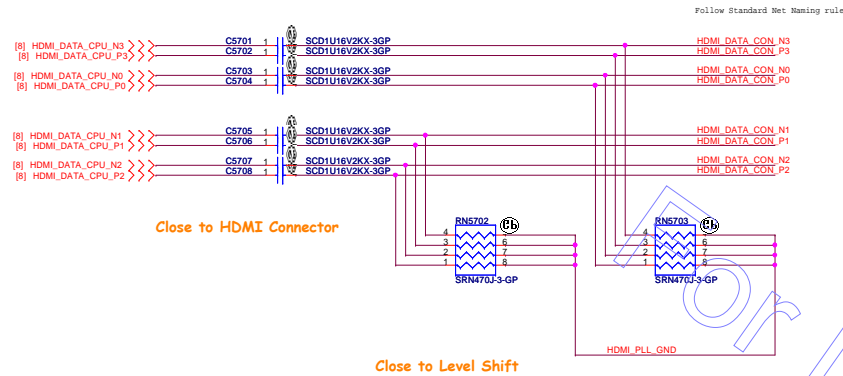
**Rocket BSW 11.6"**

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# HDMI Level Shifter & CONNECTOR



Reserve 150 ohm bridge resistance on the HDMI trace as circle for EMI



Reserve 0.1uF for ESD

### 4.2.9 Hot Plug Detect Signal (HPD)

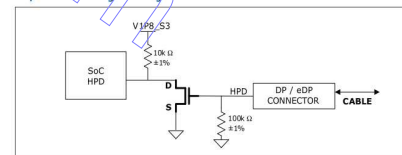
The ground reference for the Hot Plug Detect signal is the DDC/CEC Ground pin.

Table 4-38 Required Output Characteristics of Hot Plug Detect Signal

Item	Value
High voltage level (Sink)	Minimum 2.4 Volts, Maximum 5.3 Volts
Low voltage level (Sink)	Minimum 0 Volts, Maximum 0.4 Volts
Output resistance	1000 ohms ±20%

Table 4-39 Required Detection Levels for Hot Plug Detect Signal

Item	Value
High voltage level (Source)	Minimum 2.0 Volts, Maximum 5.3 Volts
Low voltage level (Source)	Minimum 0 Volts, Maximum 0.8 Volts



NOTE: It is highly recommended a passgate N-MOSFET device is selected that has Gate Threshold Voltage <= 1.5V.  
NOTE: The HPD PU resistor tolerance can be relaxed to 5%.

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SSID = Display Port

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***(Reserved) Display Port***

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SSID = DVI

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**(Reserved) DVI**

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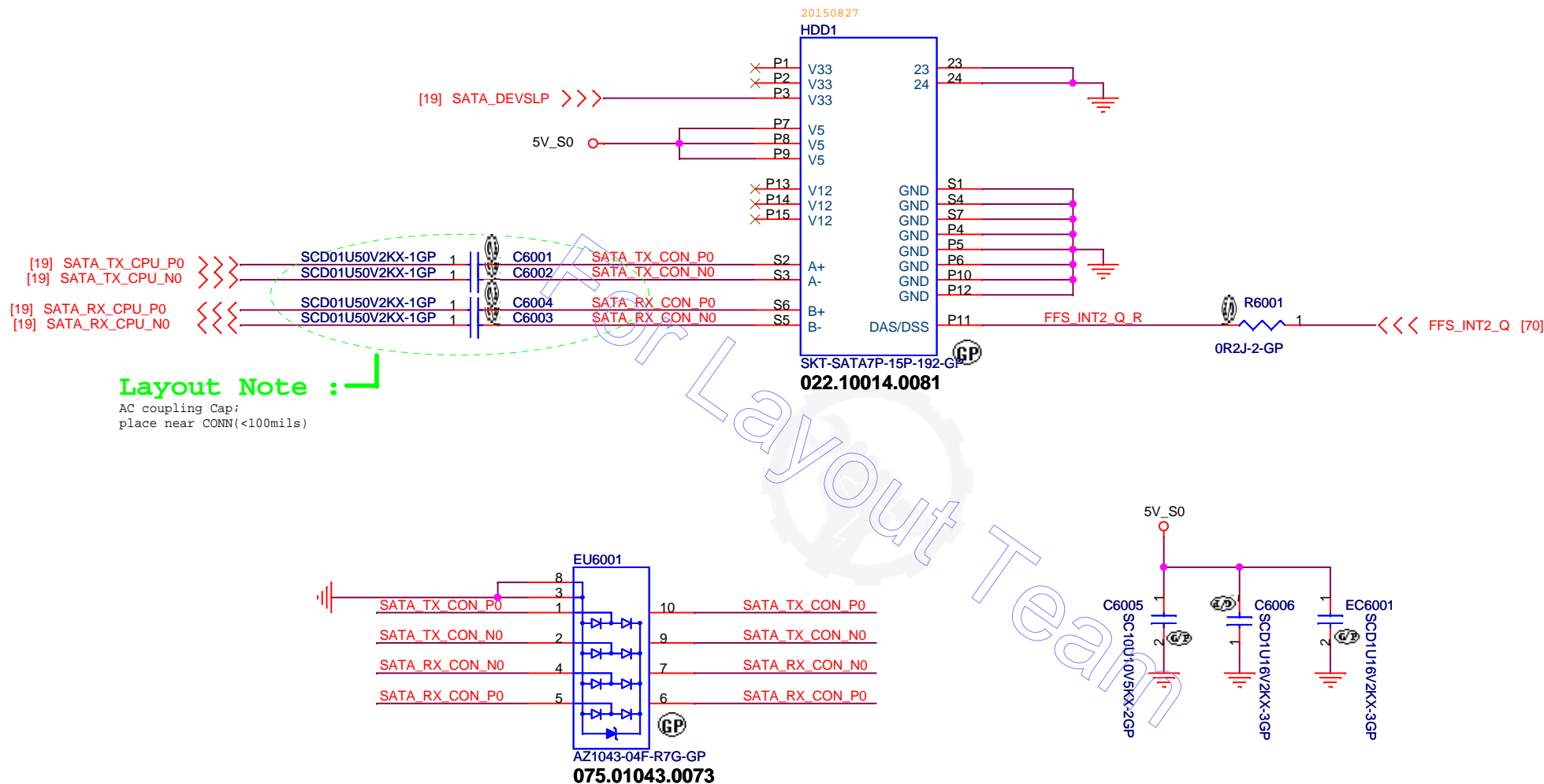
**X00**

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SSID = SATA

# SATA HDD Connector



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SSID = WWAN

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SSID = SSD-NGFF

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Title

eMMC

Size

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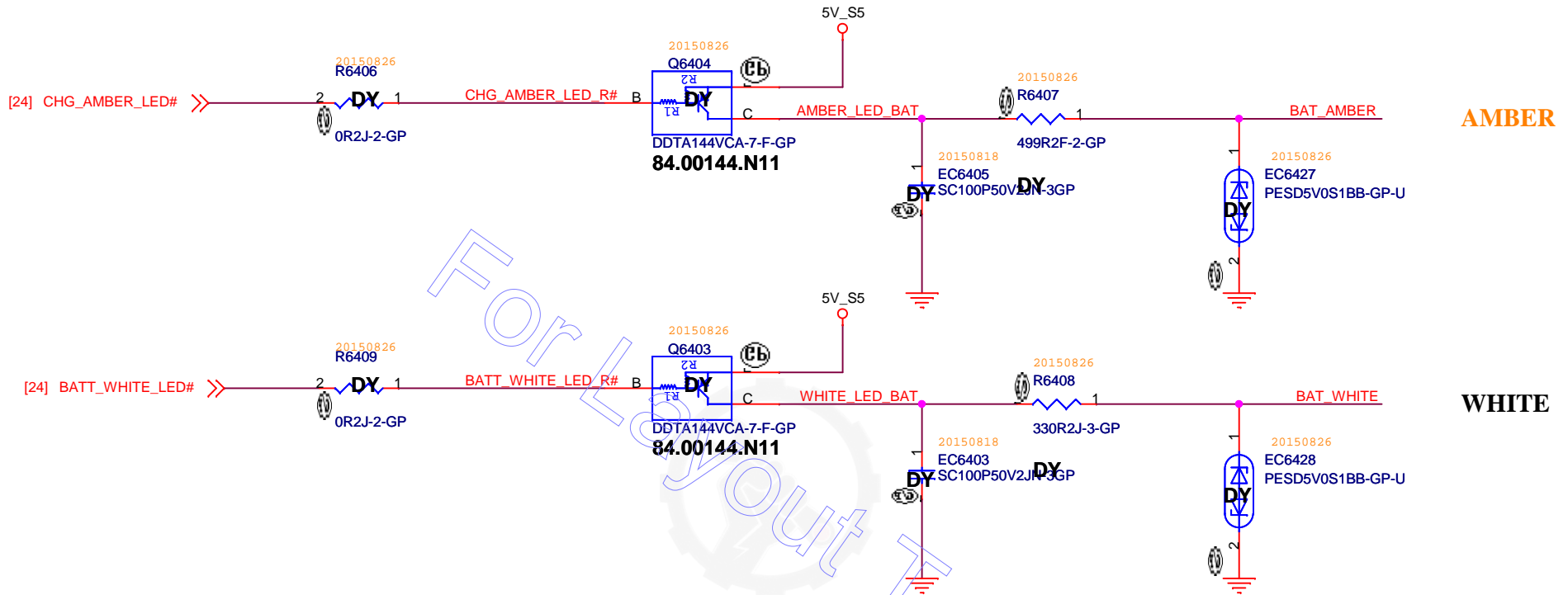
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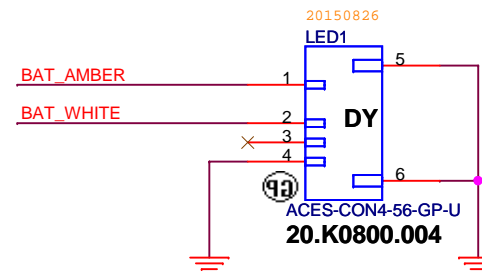
109

SSID = LED / PWRBTN

Battery LED1 (AMBER\_LED)  
Low activated from KBC GPIO



Battery LED2 (WHITE\_LED)  
Low activated from KBC GPIO



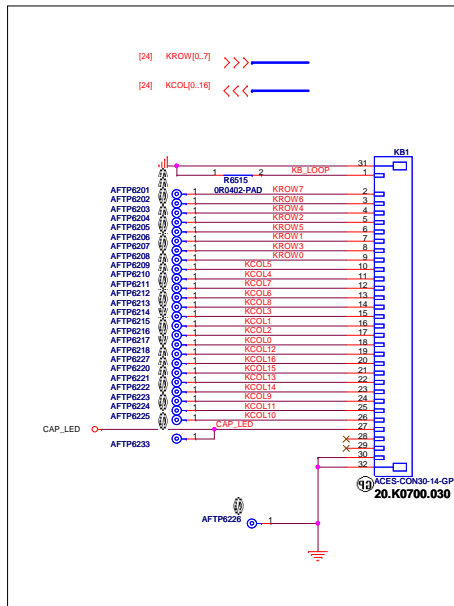
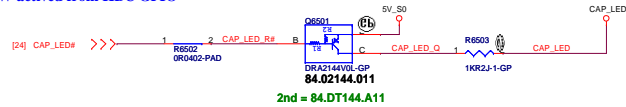
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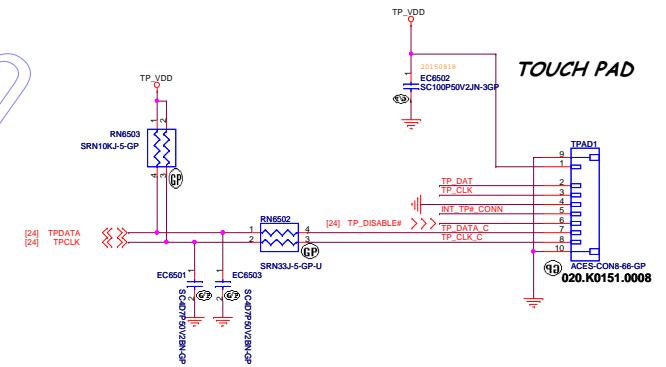
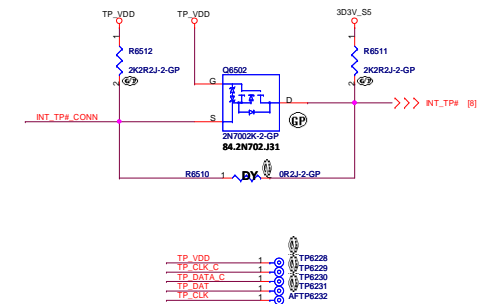
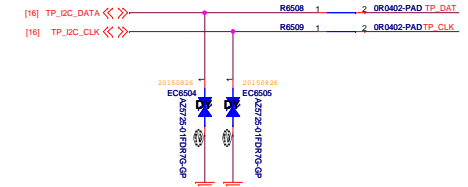
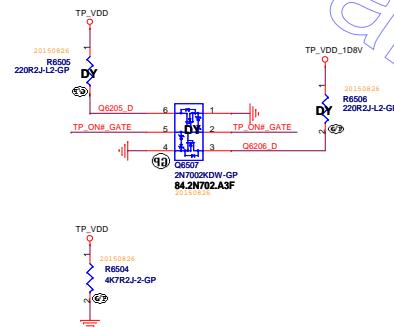
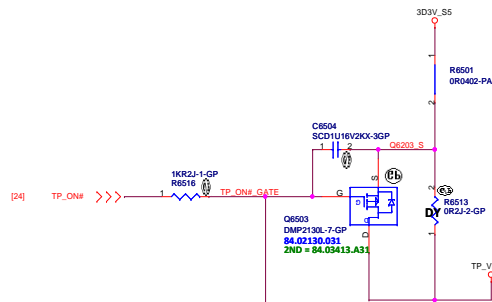
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Title <b>LED / PWRBTN</b>		
Size A4	Document Number <b>Rocket BSW 11.6"</b>	Rev <b>X00</b>
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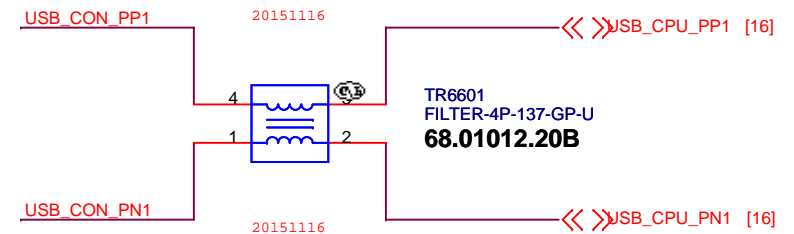
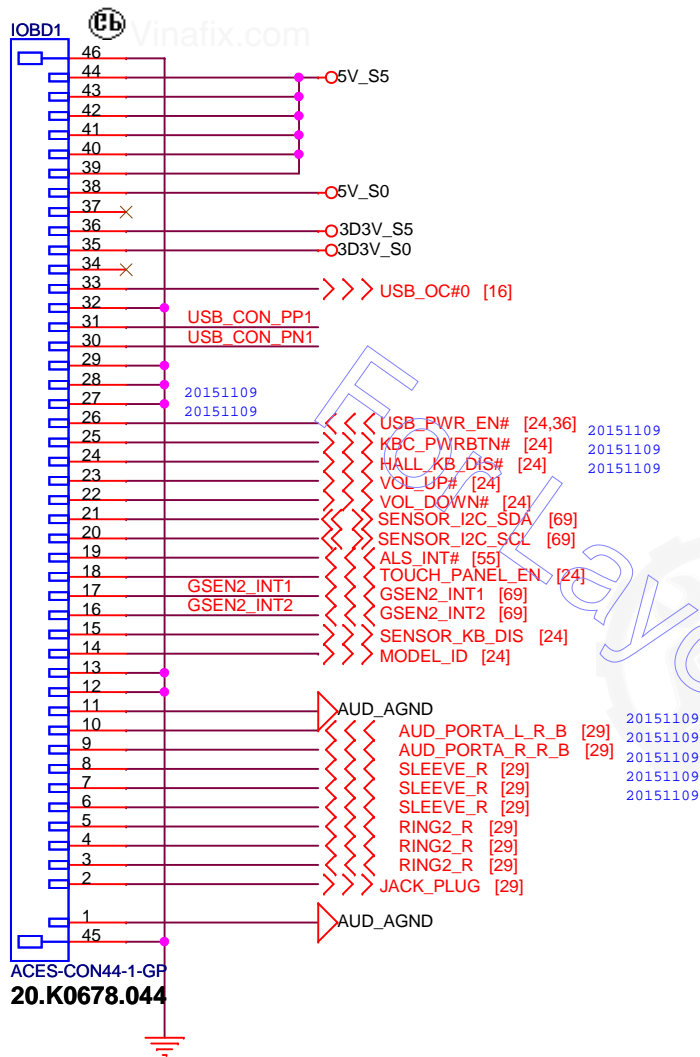
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CAP LED Control  
LOW active from KBC GPIO

PIN#	SIGNAL
1	Diag_Loop=GPIO_1 (TPC)
2	KSI [7] = KBD S8
3	KSI [6] = KBD S7
4	KSI [4] = KBD S5
5	KSI [2] = KBD S3
6	KSI [5] = KBD S6
7	KSI [1] = KBD S2
8	KSI [3] = KBD S4
9	KSI [0] = KBD S1
10	KSO [5] = KBD D6
11	KSO [4] = KBD D5
12	KSO [7] = KBD D8
13	KSO [6] = KBD D7
14	KSO [8] = KBD D9
15	KSO [3] = KBD D4
16	KSO [1] = KBD D2
17	KSO [2] = KBD D3
18	KSO [0] = KBD D1
19	KSO [12] = KBD D13
20	KSO [16] = KBD D17
21	KSO [15] = KBD D16
22	KSO [13] = KBD D14
23	KSO [14] = KBD D15
24	KSO [9] = KBD D10
25	KSO [11] = KBD D12
26	KSO [10] = KBD D11
27	CopsLock LED
28	N/C
29	N/C
30	GND



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Power Pin Count : 9  
GND Pin Count : 8

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Title

**IO Board CONN**

Size

Document Number

A4

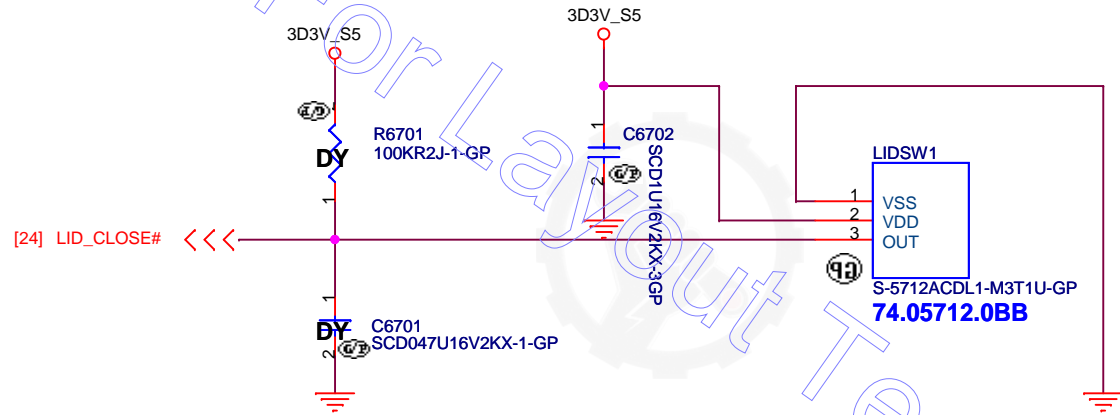
**Rocket BSW 11.6"**

Rev

**A00**

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Title

**Hall Sensor**

Size  
A4

Document Number

**Rocket BSW 11.6"**

Rev  
**X00**

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SSID = Debug CONN

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Title

***(Reserved) Debug CONN***

Size  
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***Rocket BSW 11.6"***

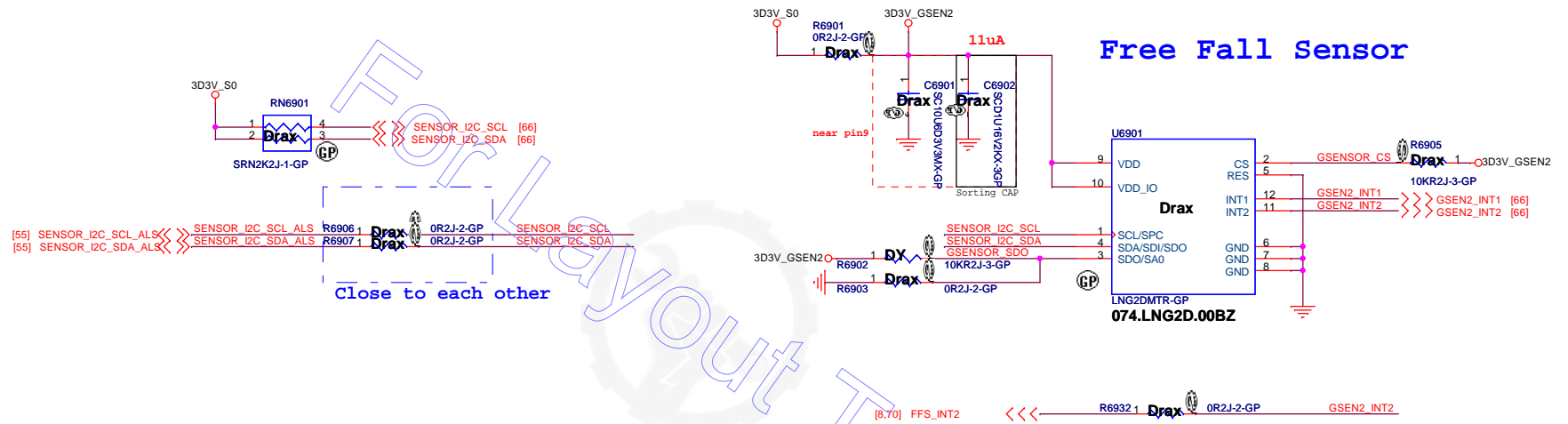
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SSID = Sensor

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Title **(Reserved)Thunderbolt (1/5)**

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**(Reserved)Thunderbolt (3/5)**

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Title **(Reserved)GPU (1/5) PEG**

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Title **(Reserved)GPU (2/5) DIGITAL**

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Title **(Reserved)GPU (3/5) VRAM**

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Title **(Reserved)GPU (4/5) GPIO**

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Title **(Reserved)VRAM1,2 (1/4)**

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Title **(Reserved)VRAM3,4 (2/4)**

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Title **(Reserved)VRAM5,6 (3/4)**

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Title **(Reserved)VRAM7,8 (4/4)**

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Title			<b>(Reserved)VGA_CORE</b>		
Size	Document Number				Rev
A4	<b>Rocket BSW 11.6"</b>				<b>X00</b>
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Title **(Reserved)DISCRETE VGAPOWER**

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34.43E24.001

SPRING-13-GP-U  
SPR1



20151124

34.4YW18.001

SPRING-171-GP  
SPR2



20150901

20151008

34.34S02.002

SPRING-98-GP  
SPR4



20151008

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20151008

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SPR6



20151008

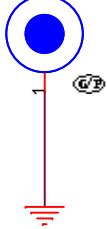
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SPRING-98-GP  
SPR7



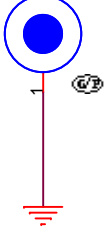
ZZ.PAD01.041

H1  
HOLE354R237-GP



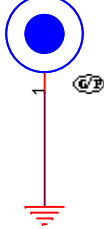
ZZ.00PAD.6U1

H2  
HOLE256R142-OG-1-GP



ZZ.00PAD.7L1

H4  
HOLE335R197-GP



ZZ.00PAD.7L1

H9  
HOLE335R197-GP



20151012 Remove H12 H14

34.4OX45.101

HS1  
STF237R117H67-3-GP



34.4OX45.101

HS2  
STF237R117H67-3-GP



34.4OX45.101

HS3  
STF237R117H67-3-GP



34.4OX45.101

HS4  
STF237R117H67-3-GP



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Title

**UNUSED PARTS/EMI Capacitors**

Size  
A4

Document Number

**Rocket BSW 11.6"**

Rev  
**X00**

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Title **(Reserved)NFC Connector**

Size A4	Document Number <b>Rocket BSW 11.6"</b>	Rev <b>X00</b>
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Title  
**(Reserved) TPM**

Size A4	Document Number <b>Rocket BSW 11.6"</b>	Rev <b>X00</b>
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Title **(Reserved)Finger Print**

Size A4	Document Number <b>Rocket BSW 11.6"</b>	Rev <b>X00</b>
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Title

**(Reserved)Express Card**

Size  
A3

Document Number

**Rocket BSW 11.6"**

Rev  
X00

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Title				<b>(Reserved)Smart Card Socket</b>			
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Title **(Reserved)SW GFX eDP**

Size A4	Document Number <b>Rocket BSW 11.6"</b>	Rev <b>X00</b>
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Title

**(Reserved)Bottom Docking**

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A4

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Title			<b>(Reserved)LAN</b>		
Size	Document Number				Rev
A4	<b>Rocket BSW 11.6"</b>				<b>X00</b>
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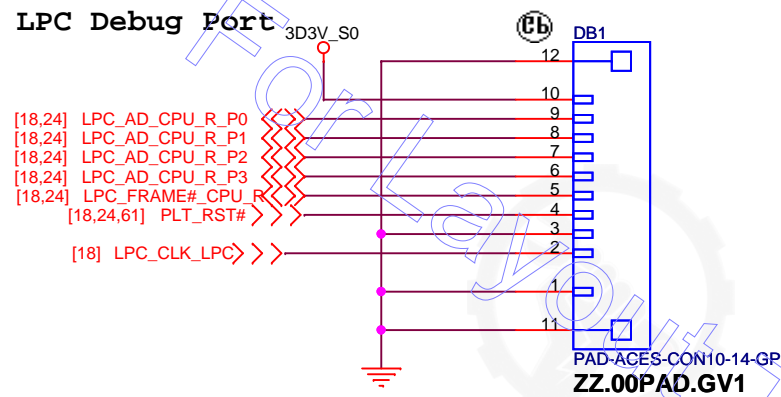
Title **(Reserved)LAN SWITCH**

Size	Document Number	Rev
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SSID = DEBUG PORT

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20.F1180.010: Dummy Pad with solder mask is ZZ.00PAD.GV1

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Title

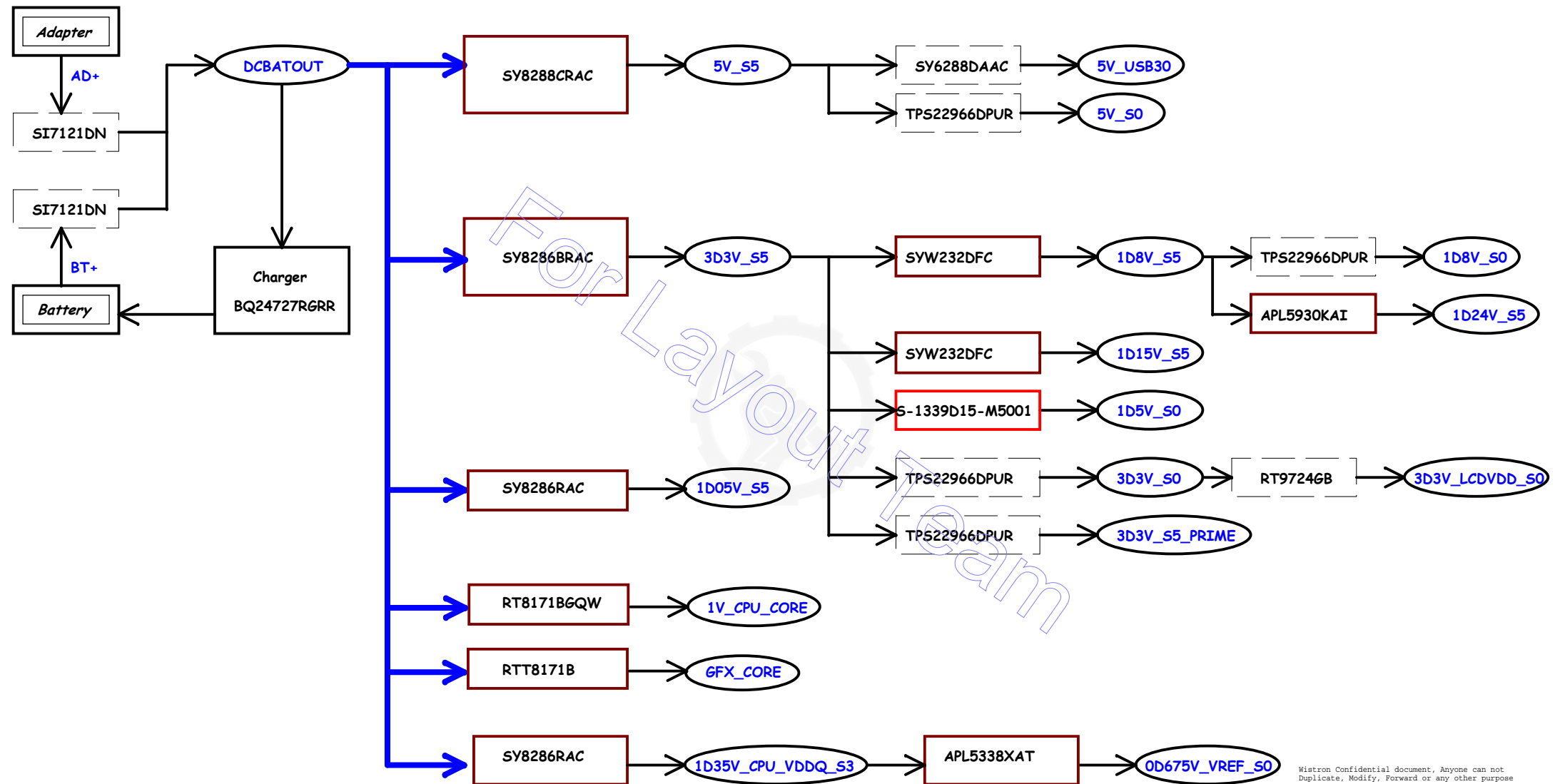
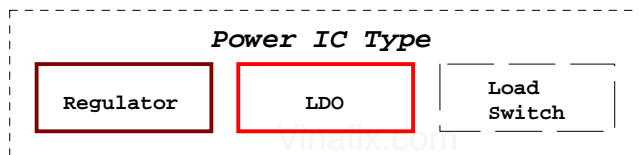
CPU XDP

SizeA4

Document Number

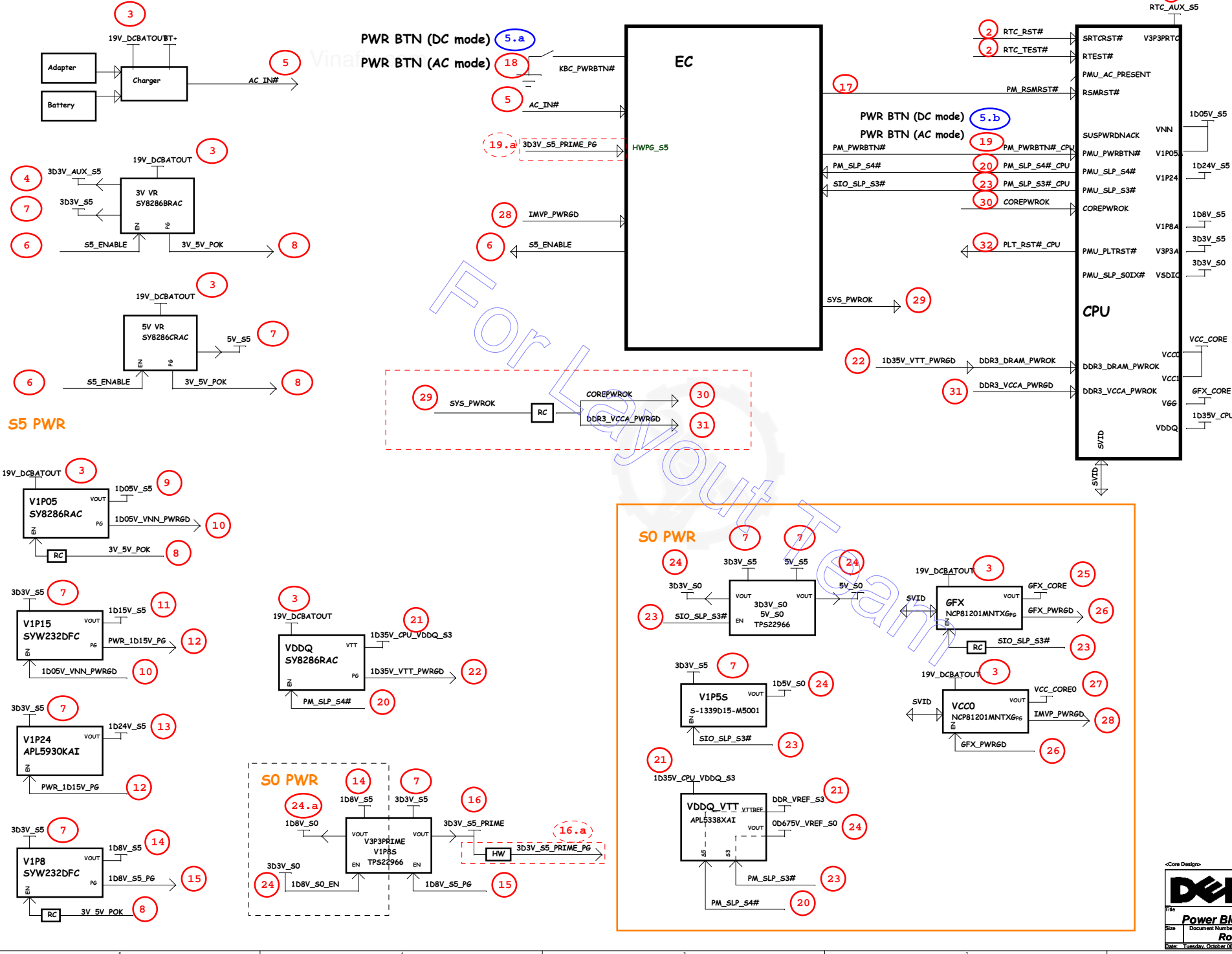
RevX00

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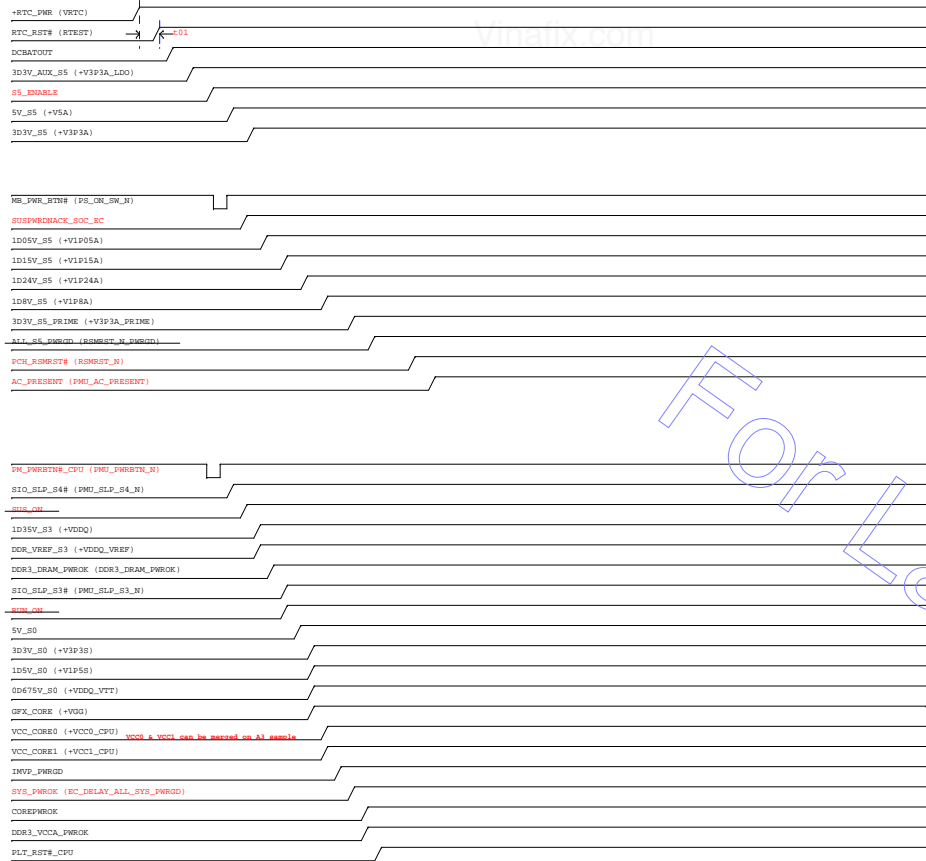
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# Braswell POWER UP SEQUENCE DIAGRAM



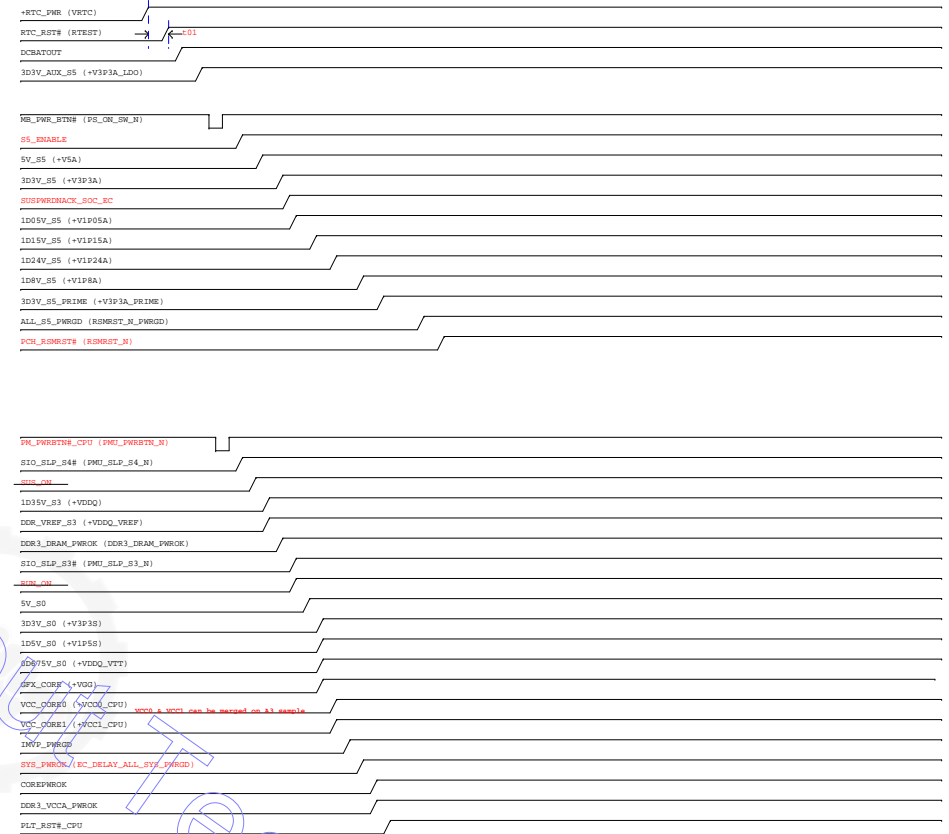
## Intel-Power Up Sequence

(AC mode) Red word : RMC GP20



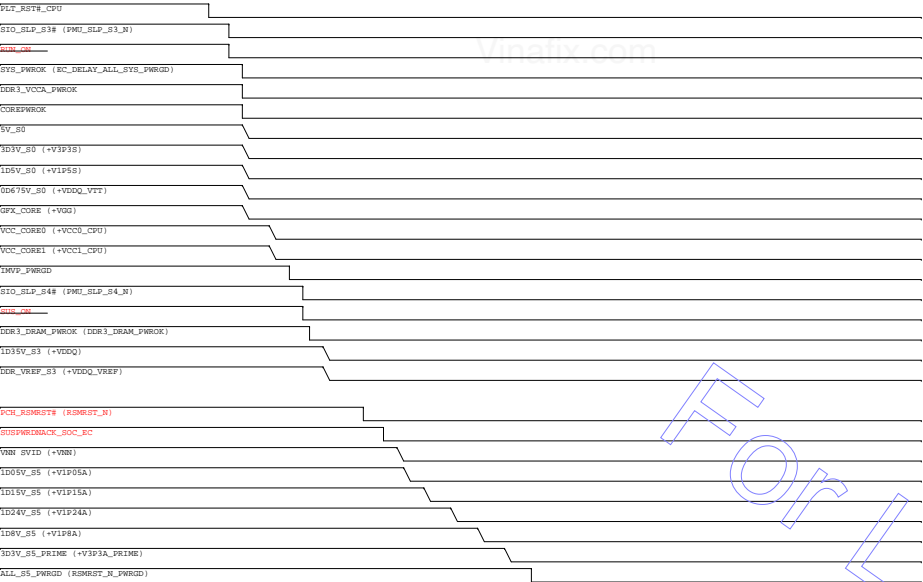
## Intel-Power Up Sequence

(DC mode) Red word : RMC GP20



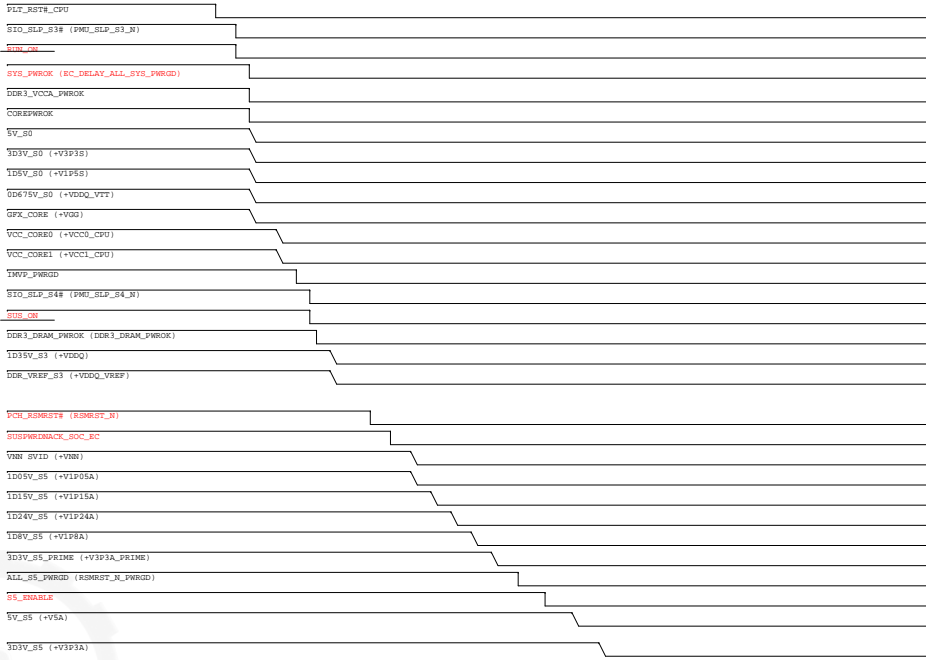
Intel-Power Down Sequence

(AC mode) Red word : X3C GPIO

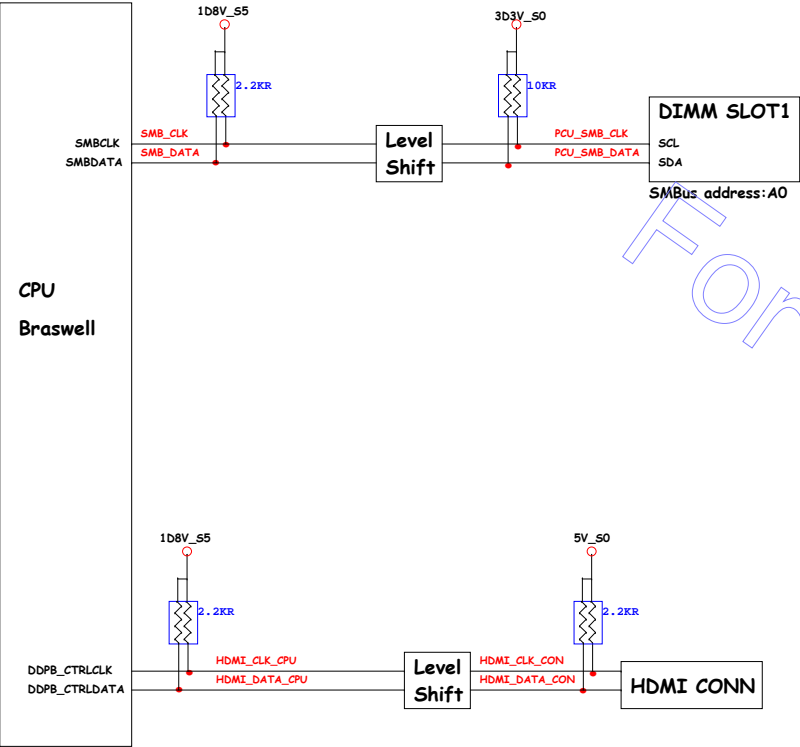


Intel-Power Down Sequence

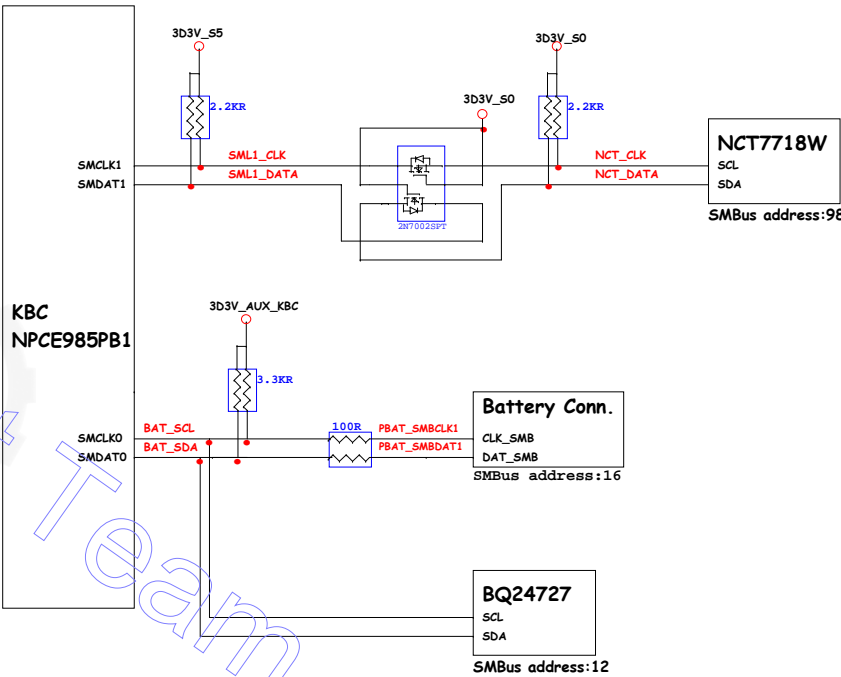
(DC mode) Red word : X3C GPIO



PCH SMBus Block Diagram

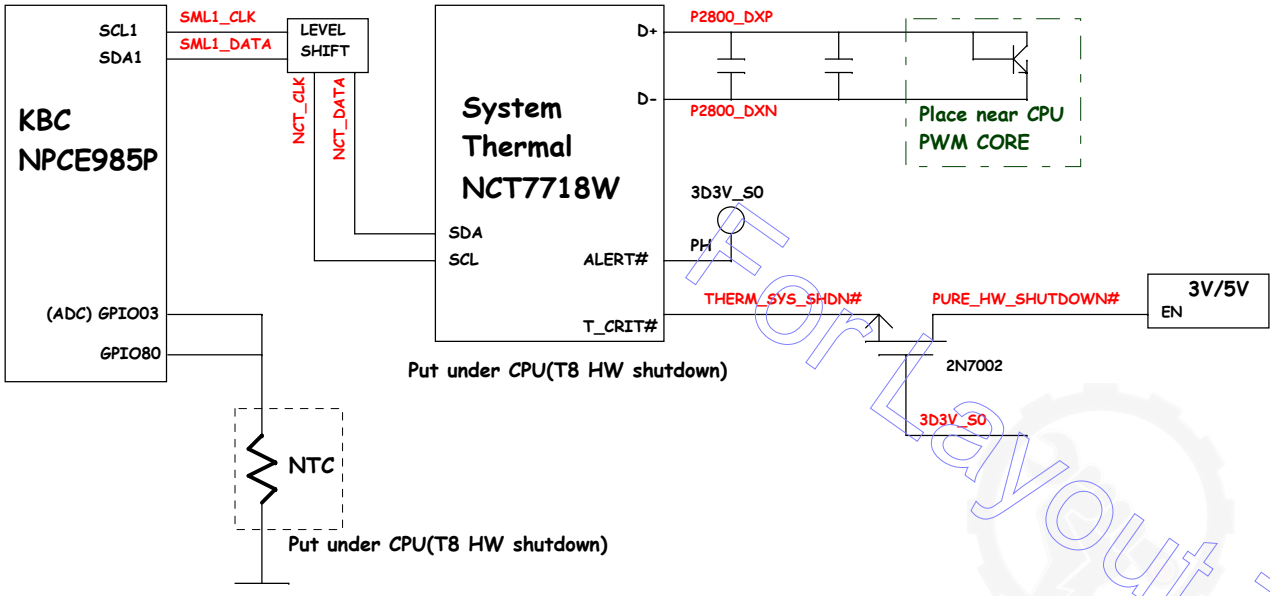


KBC SMBus Block Diagram

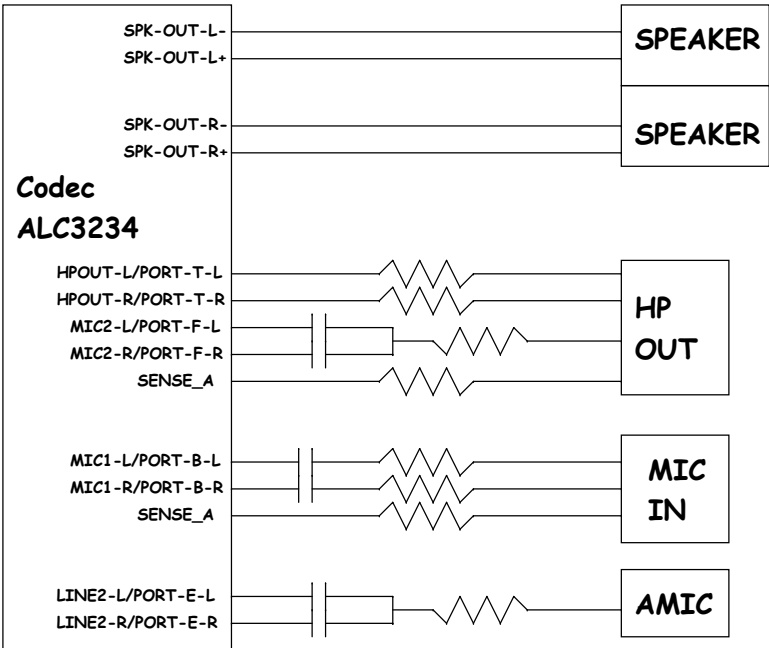


# Thermal Block Diagram

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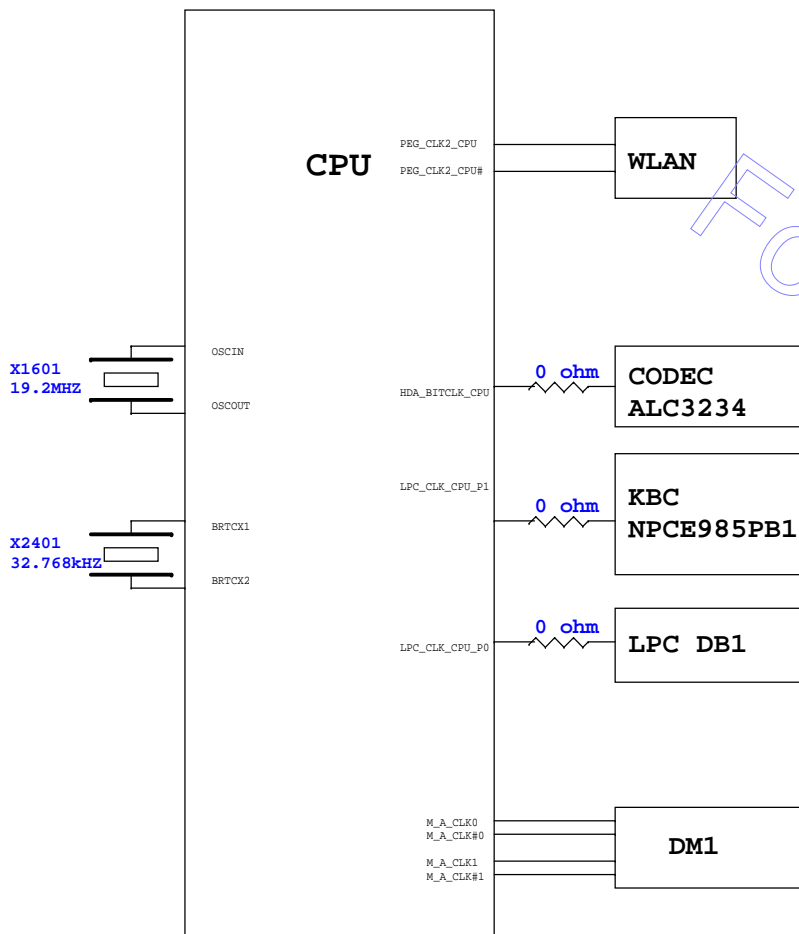


# Audio Block Diagram

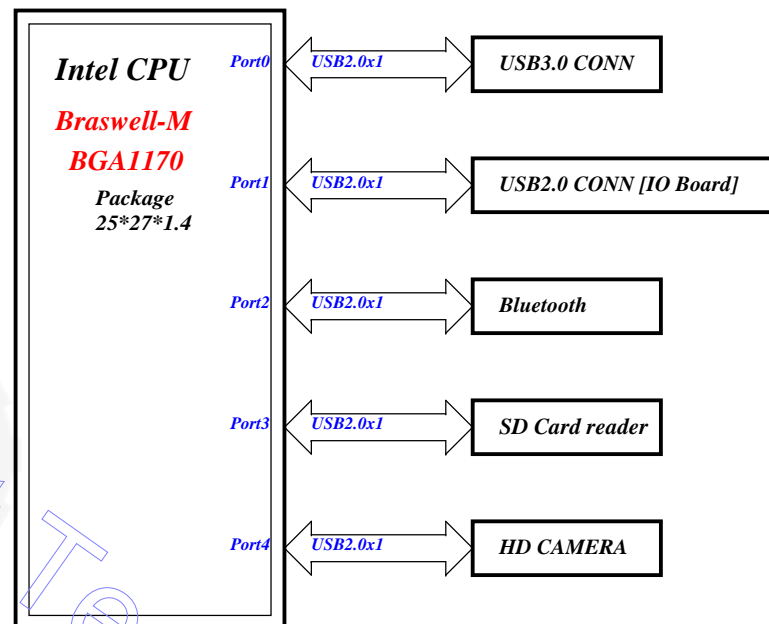


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## CLK Block Diagram



## USB2.0 Port Block Diagram



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**CLK / USB Block**

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