

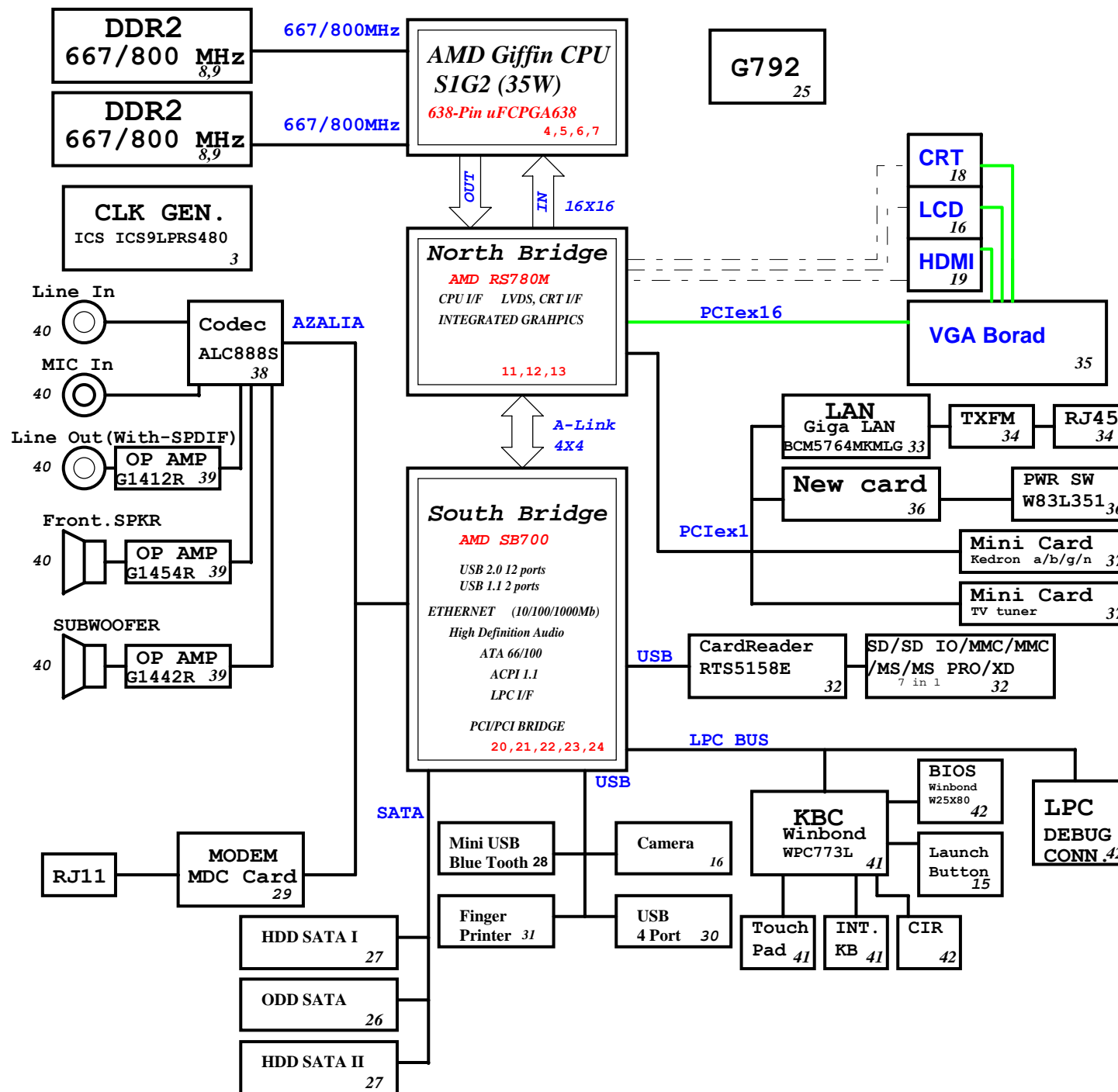
# Big Bear 2A (AS 18") Block Diagram

Project code: 91.4AJ01.001  
PCB P/N : 48.4AJ01.001  
REVISION : 08208-1

## PCB STACKUP

TOP  
VCC  
S  
S  
GND  
BOTTOM

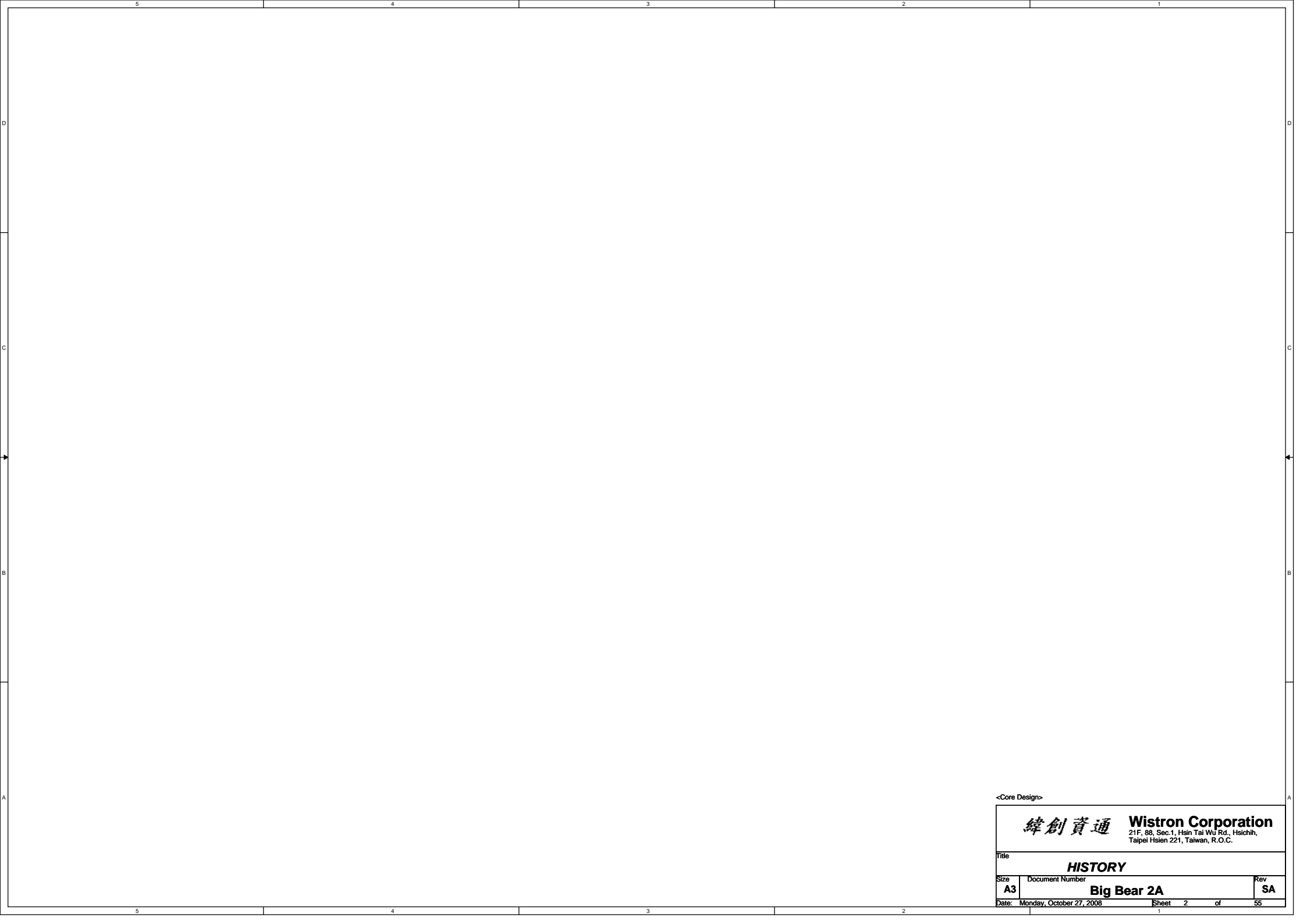
SYSTEM DC/DC TPS51125 47	
INPUTS	OUTPUTS
DCBATOUT	5V_S5 (7A)
	3D3V_S5 (7A)
SYSTEM DC/DC TPS51124 48	
INPUTS	OUTPUTS
DCBATOUT	1D1V_S0 (8A)
	1D2V_S0 (5A)
SYSTEM DC/DC TPS51117 49	
INPUTS	OUTPUTS
DCBATOUT	1D8V_S3 (10A)
RT9026PFP 50	
1D8V_S3	DDR_VREF_S3
	0D9V_S3 (1A)
RT9166 50	
3D3V_S0	2D5V_S0 (300mA)
G957 50	
3D3V_S0	1D5V_S0 (1A)
G9161 50	
3D3V_S5	1D2V_S5 (400mA)
CHARGER MAX8731A 51	
INPUTS	OUTPUTS
DCBATOUT	CHG_PWR
	18V 6.0A
	UP+5V
	5V 100mA
CPU DC/DC ISL6265HR 46	
INPUTS	OUTPUTS
DCBATOUT	VCC_CORE_S0_0
	0~1.55V 18A
	VCC_CORE_S0_1
	0~1.55V 18A
	VDDNB
	0~1.55V 18A



<Core Design>

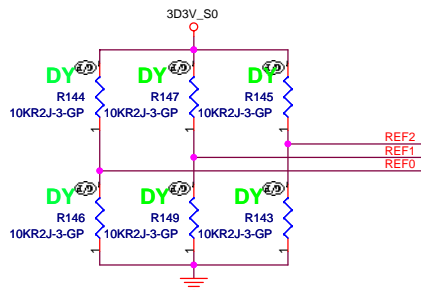
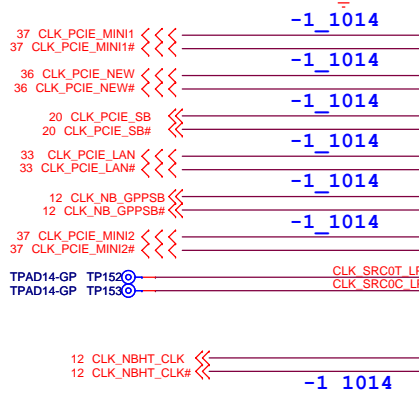
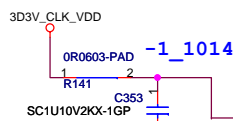
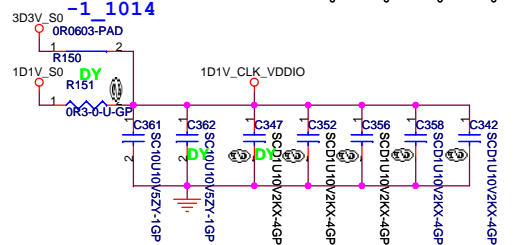
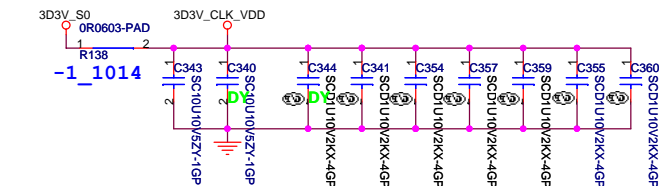
緯創資通 Wistron Corporation  
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichin,  
Taipei Hsien 221, Taiwan, R.O.C.

BLOCK DIAGRAM		
Size	Document Number	Rev
A3	Big Bear 2A	SC
Date: Monday, October 27, 2008	Sheet 1 of 55	



<Core Design>

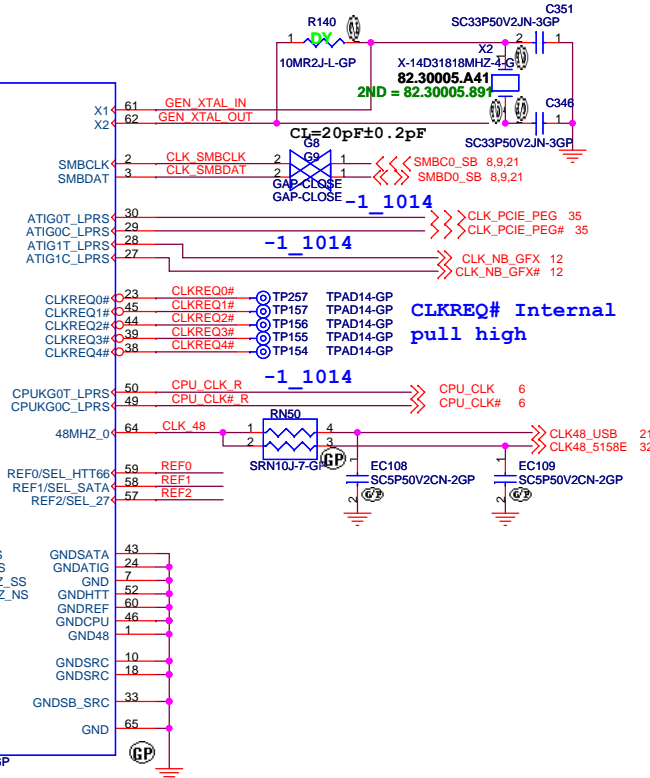
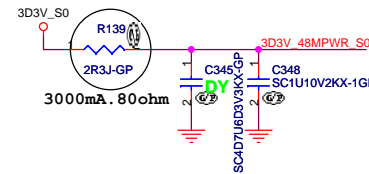
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		21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
<b>HISTORY</b>			
Size	Document Number		Rev
<b>A3</b>	<b>Big Bear 2A</b>		<b>SA</b>
Date:	Monday, October 27, 2008		Sheet 2 of 55



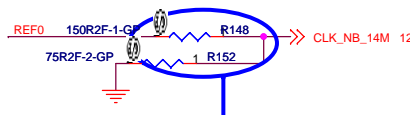
SEL_27	1	27MHz non-spreading singled clock on pin 5 and 27MHz spread clock on pin 6
REF2	0*	100MHz differential spreading SRC clock
SEL_SATA	1	100MHz non-spreading differential SATA clock
REF1	0*	100MHz differential spreading SRC clock
SEL_HTT66	1	66MHz 3.3V single ended HTT clock
REF0	0*	100MHz differential HTT clock

\* default

CPU\_CLK (200MHz)



ICS9LPRS480BKLFT-GP  
71.09480.A03  
2nd = SLG:71.08628.003



OSC 14M NB  
RS780M 1.1V 158R/90.9F

Due to PLL issue on current clock chip, the SBlink clock need to come from SRC clocks for RS740 and RS780. Future clock chip revision will fix this.

Clock chip has internal serial terminations for differential pairs, external resistors are reserved for debug purpose.

# NB CLOCK INPUT TABLE

NB CLOCKS	RS740	RX780	RS780
HT_REFCLKP	66M SE(SINGLE END)	100M DIFF	100M DIFF
HT_REFCLKN	NC	100M DIFF	100M DIFF
REFCLK_P	14M SE (3.3V)	14M SE (1.8V)	14M SE (1.1V)
REFCLK_N	NC	NC	vref
GFX_REFCLK	100M DIFF	100M DIFF	100M DIFF(IN/OUT)*
GPP_REFCLK	NC	100M DIFF	NC or 100M DIFF OUTPUT
GPPSB_REFCLK	100M DIFF	100M DIFF	100M DIFF

\* RS780 can be used as clock buffer to output two PCIe reference clocks. By default, chip will configured as input mode, BIOS can program it to output mode.

<Core Design>

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Title

CLKGEN\_ICS9LPRS480

Size

Document Number

Rev

A3

Big Bear 2A

SA

Date

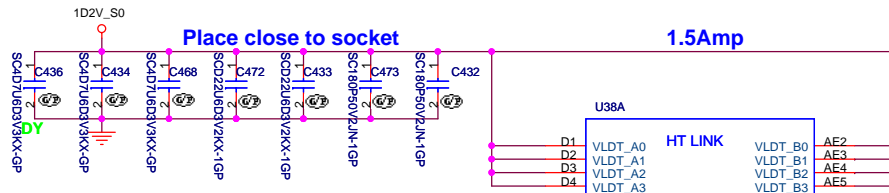
Monday, October 27, 2008

Sheet

3

of

55



11 HT_NB_CPU_CAD_H0	E3	L0_CADIN_H0	L0_CADOUT_H0	AD1	HT_CPU_NB_CAD_H0	11
11 HT_NB_CPU_CAD_L0	E2	L0_CADIN_L0	L0_CADOUT_L0	AC1	HT_CPU_NB_CAD_L0	11
11 HT_NB_CPU_CAD_H1	E1	L0_CADIN_H1	L0_CADOUT_H1	AC2	HT_CPU_NB_CAD_H1	11
11 HT_NB_CPU_CAD_L1	F1	L0_CADIN_L1	L0_CADOUT_L1	AC3	HT_CPU_NB_CAD_L1	11
11 HT_NB_CPU_CAD_H2	G3	L0_CADIN_H2	L0_CADOUT_H2	AB1	HT_CPU_NB_CAD_H2	11
11 HT_NB_CPU_CAD_L2	G2	L0_CADIN_L2	L0_CADOUT_L2	AA1	HT_CPU_NB_CAD_L2	11
11 HT_NB_CPU_CAD_H3	H1	L0_CADIN_H3	L0_CADOUT_H3	AA2	HT_CPU_NB_CAD_H3	11
11 HT_NB_CPU_CAD_L3	H1	L0_CADIN_H3	L0_CADOUT_H3	AA3	HT_CPU_NB_CAD_L3	11
11 HT_NB_CPU_CAD_H4	J1	L0_CADIN_H4	L0_CADOUT_H4	W2	HT_CPU_NB_CAD_H4	11
11 HT_NB_CPU_CAD_L4	K1	L0_CADIN_L4	L0_CADOUT_L4	W3	HT_CPU_NB_CAD_L4	11
11 HT_NB_CPU_CAD_H5	L3	L0_CADIN_H5	L0_CADOUT_H5	V1	HT_CPU_NB_CAD_H5	11
11 HT_NB_CPU_CAD_L5	L2	L0_CADIN_L5	L0_CADOUT_L5	U1	HT_CPU_NB_CAD_L5	11
11 HT_NB_CPU_CAD_H6	L1	L0_CADIN_H6	L0_CADOUT_H6	U2	HT_CPU_NB_CAD_H6	11
11 HT_NB_CPU_CAD_L6	M1	L0_CADIN_L6	L0_CADOUT_L6	U3	HT_CPU_NB_CAD_L6	11
11 HT_NB_CPU_CAD_H7	N3	L0_CADIN_H7	L0_CADOUT_H7	T1	HT_CPU_NB_CAD_H7	11
11 HT_NB_CPU_CAD_L7	N2	L0_CADIN_L7	L0_CADOUT_L7	R1	HT_CPU_NB_CAD_L7	11
11 HT_NB_CPU_CAD_H8	E5	L0_CADIN_H8	L0_CADOUT_H8	AD4	HT_CPU_NB_CAD_H8	11
11 HT_NB_CPU_CAD_L8	F5	L0_CADIN_L8	L0_CADOUT_L8	AD3	HT_CPU_NB_CAD_L8	11
11 HT_NB_CPU_CAD_H9	F3	L0_CADIN_H9	L0_CADOUT_H9	AD5	HT_CPU_NB_CAD_H9	11
11 HT_NB_CPU_CAD_L9	G5	L0_CADIN_L9	L0_CADOUT_L9	AC5	HT_CPU_NB_CAD_L9	11
11 HT_NB_CPU_CAD_H10	H5	L0_CADIN_H10	L0_CADOUT_H10	AB4	HT_CPU_NB_CAD_H10	11
11 HT_NB_CPU_CAD_L10	H4	L0_CADIN_L10	L0_CADOUT_L10	AB3	HT_CPU_NB_CAD_L10	11
11 HT_NB_CPU_CAD_H11	H3	L0_CADIN_H11	L0_CADOUT_H11	AB5	HT_CPU_NB_CAD_H11	11
11 HT_NB_CPU_CAD_L11	H4	L0_CADIN_L11	L0_CADOUT_L11	AA5	HT_CPU_NB_CAD_L11	11
11 HT_NB_CPU_CAD_H12	K3	L0_CADIN_H12	L0_CADOUT_H12	Y5	HT_CPU_NB_CAD_H12	11
11 HT_NB_CPU_CAD_L12	K4	L0_CADIN_L12	L0_CADOUT_L12	W5	HT_CPU_NB_CAD_L12	11
11 HT_NB_CPU_CAD_H13	L5	L0_CADIN_H13	L0_CADOUT_H13	V4	HT_CPU_NB_CAD_H13	11
11 HT_NB_CPU_CAD_L13	M5	L0_CADIN_L13	L0_CADOUT_L13	V3	HT_CPU_NB_CAD_L13	11
11 HT_NB_CPU_CAD_H14	M3	L0_CADIN_H14	L0_CADOUT_H14	V5	HT_CPU_NB_CAD_H14	11
11 HT_NB_CPU_CAD_L14	M4	L0_CADIN_L14	L0_CADOUT_L14	U5	HT_CPU_NB_CAD_L14	11
11 HT_NB_CPU_CAD_H15	N5	L0_CADIN_H15	L0_CADOUT_H15	T4	HT_CPU_NB_CAD_H15	11
11 HT_NB_CPU_CAD_L15	P5	L0_CADIN_L15	L0_CADOUT_L15	T3	HT_CPU_NB_CAD_L15	11
11 HT_NB_CPU_CLK_H0	J3	L0_CLKIN_H0	L0_CLKOUT_H0	Y1	HT_CPU_NB_CLK_H0	11
11 HT_NB_CPU_CLK_L0	J2	L0_CLKIN_L0	L0_CLKOUT_L0	W1	HT_CPU_NB_CLK_L0	11
11 HT_NB_CPU_CLK_H1	J5	L0_CLKIN_H1	L0_CLKOUT_H1	Y4	HT_CPU_NB_CLK_H1	11
11 HT_NB_CPU_CLK_L1	K5	L0_CLKIN_L1	L0_CLKOUT_L1	Y3	HT_CPU_NB_CLK_L1	11
11 HT_NB_CPU_CTL_H0	N1	L0_CTLIN_H0	L0_CTLOUT_H0	R2	HT_CPU_NB_CTL_H0	11
11 HT_NB_CPU_CTL_L0	P1	L0_CTLIN_L0	L0_CTLOUT_L0	R3	HT_CPU_NB_CTL_L0	11
11 HT_NB_CPU_CTL_H1	P3	L0_CTLIN_H1	L0_CTLOUT_H1	T5	HT_CPU_NB_CTL_H1	11
11 HT_NB_CPU_CTL_L1	P4	L0_CTLIN_L1	L0_CTLOUT_L1	R5	HT_CPU_NB_CTL_L1	11

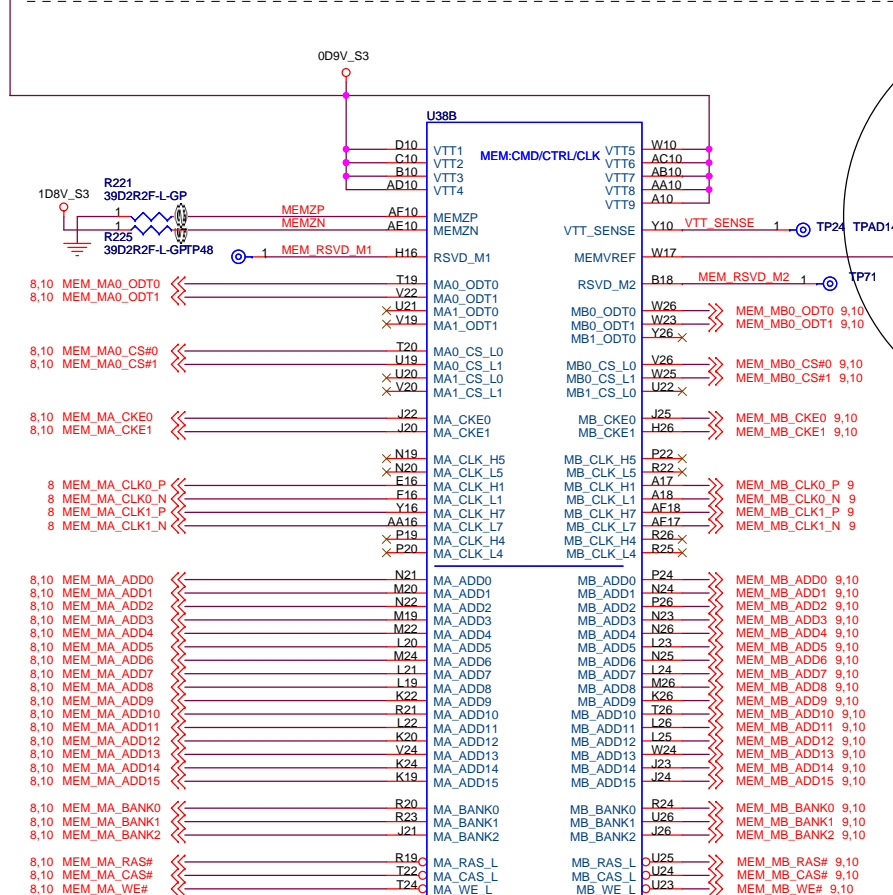
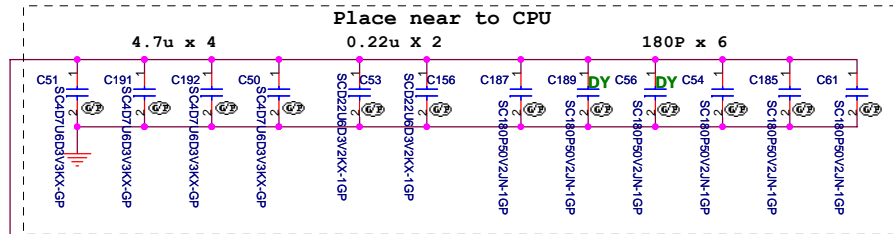
SKT-CPU638P-GP-U2  
62.10055.111  
2ND = 62.10055.251

SKT-BGA638H176

State	Specification	Notes	ZM200100M2303
S0.C0.Px	Tcase Max	3	TBD
	NB COF	1	400 MHz
	VID_VDDNB Min	2	0.950 V
	VID_VDDNB Max	2	0.950 V
	Startup P-state		S0.C0.P7
S0.C0.P0	CPU COF	1	2000 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	IDD Max	3	TBD
S0.C0.P1	CPU COF	1	1800 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V
S0.C0.P2	CPU COF	1	1500 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V
S0.C0.P3	CPU COF	1	1300 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V
S0.C0.P4	CPU COF	1	1000 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V
S0.C0.P5	CPU COF	1	800 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V
S0.C0.P6	CPU COF	1	500 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V
S0.C0.P7	CPU COF	1	300 MHz
	TDP	3	TBD
	VID_VDD Min	2	1.100 V
	VID_VDD Max	2	1.125 V
	VID_VDD Max	2	1.125 V

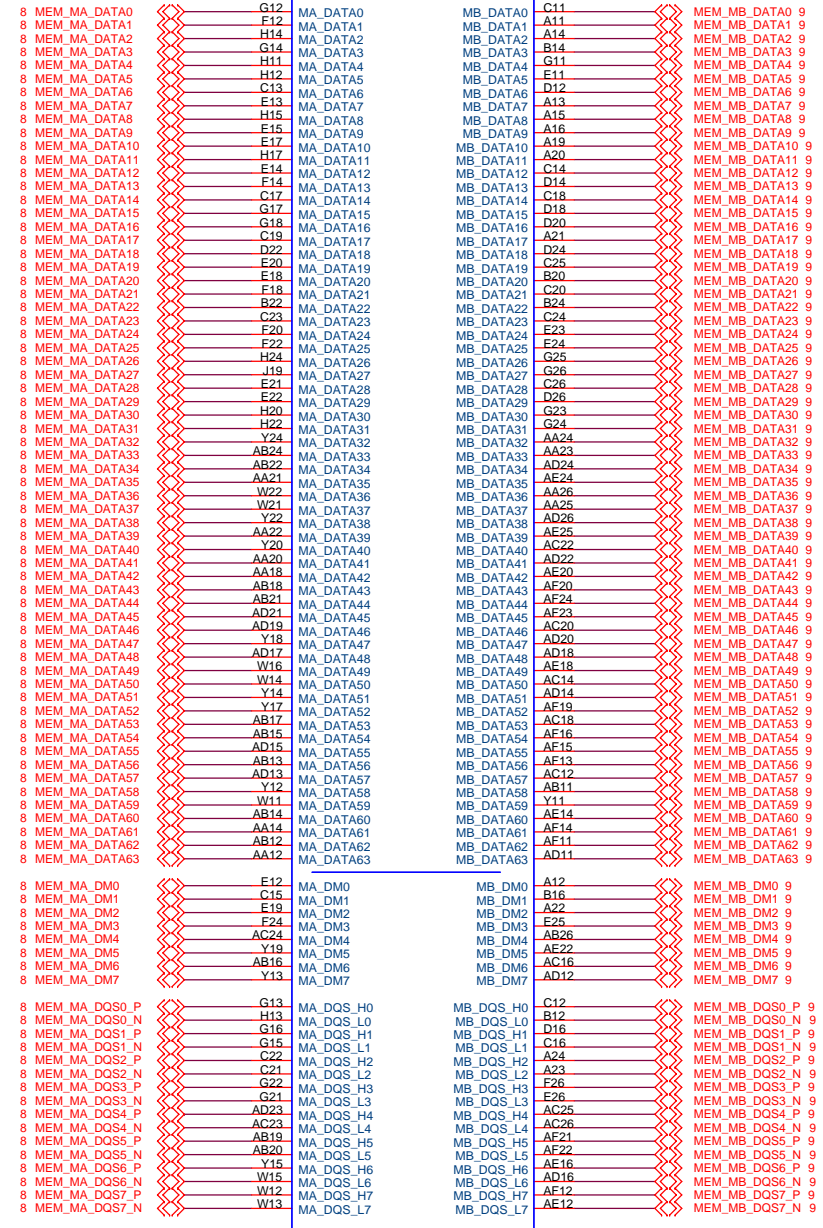
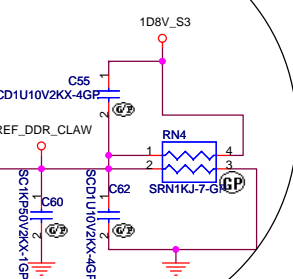
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Title CPU_HT_LINK I/F (1/4)		
Size A3	Document Number Big Bear 2A	Rev SA
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SKT-CPU638P-GP-U2  
62.10055.111  
2ND = 62.10055.251

CLOSE TO CPU

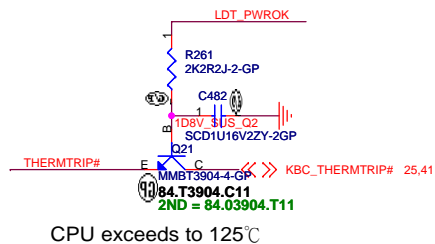
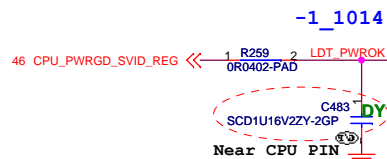
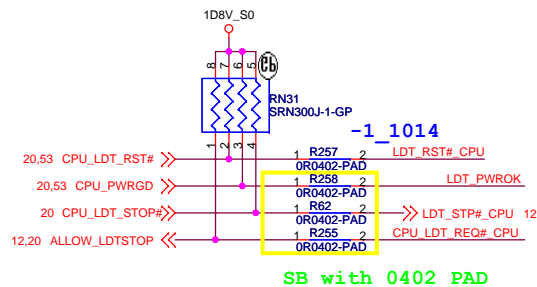


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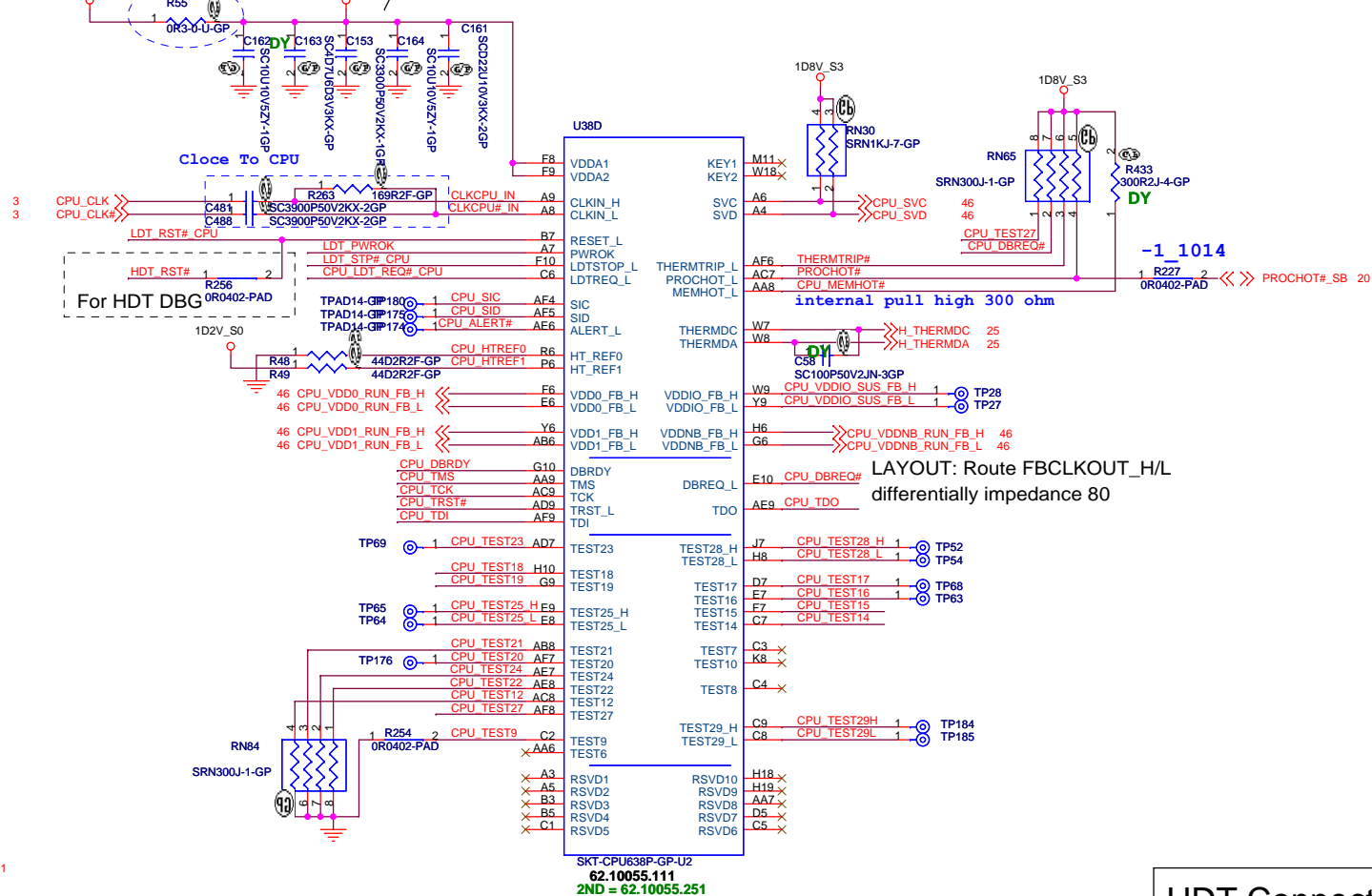
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Title		
CPU_DDR (2/4)		
Size	Document Number	Rev
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IF 0 ohm IS NOT GOOD ENOUGH, TRY 68.00082.491  
 2D5V\_S0  
 2D5V\_VDDA\_S0  
 LAYOUT: ROUTE VDDA TRACE APPROX.  
 50mils WIDE (USE 2X25 mil TRACES TO  
 EXIT BALL FIELD) AND 500 mils LONG.



The Processor has  
 reached a preset  
 maximum operating  
 temperature. 100°C  
 I=Active HTC  
 O=FAN

## HDT Connectors

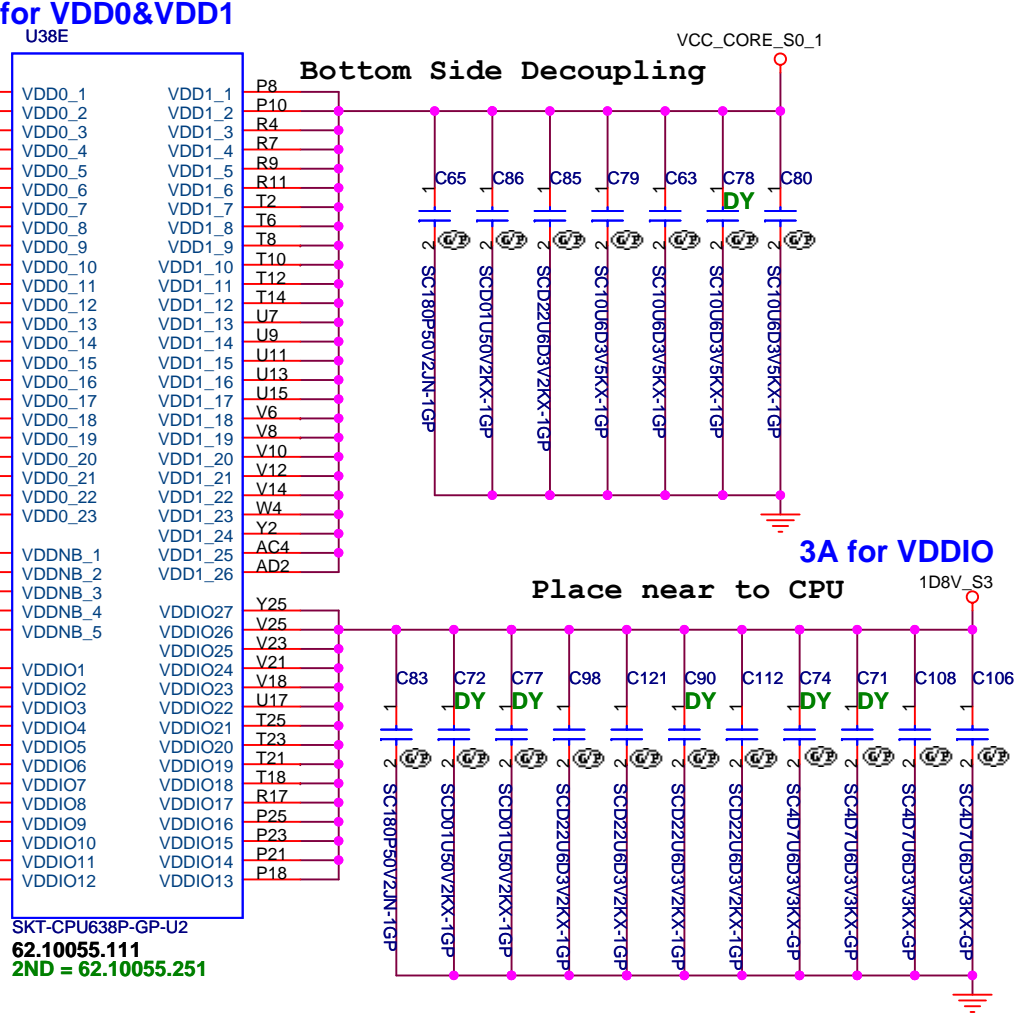
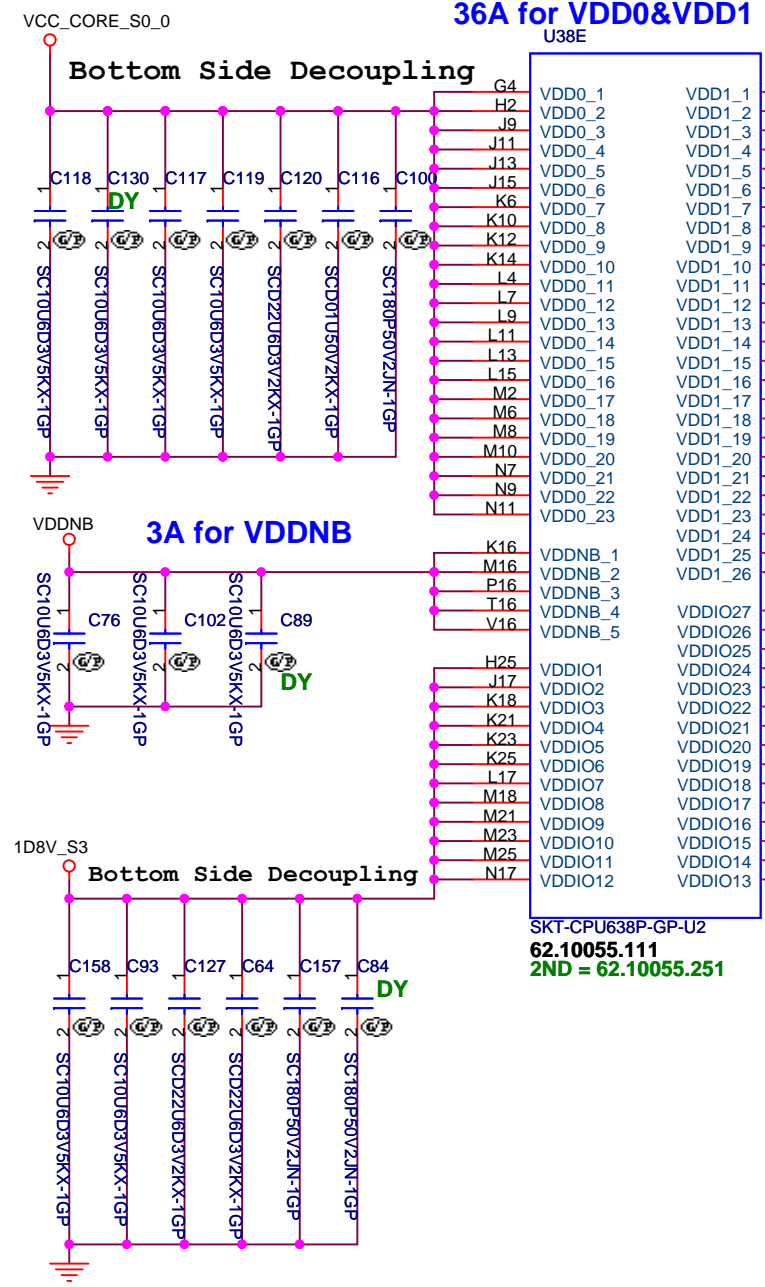
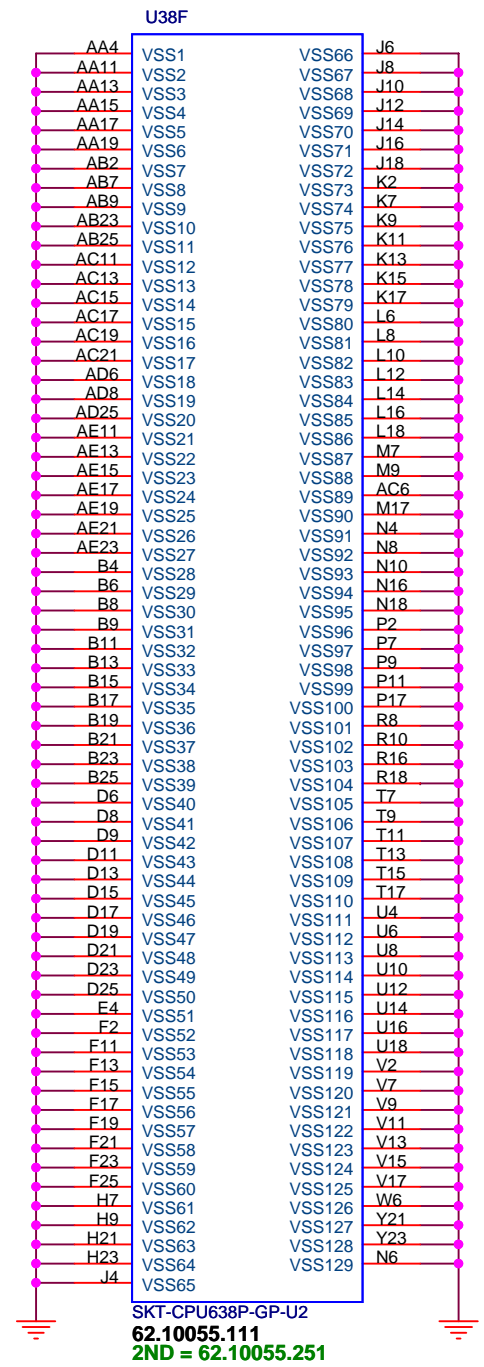
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CPU DBRDY	1	TP50	TPAD14-GP
CPU TCK	1	TP21	TPAD14-GP
CPU TMS	1	TP23	TPAD14-GP
CPU TDI	1	TP20	TPAD14-GP
CPU TRST#	1	TP19	TPAD14-GP
CPU TDO	1	TP18	TPAD14-GP
1D8V_S3	1	TP29	TPAD14-GP
HDT_RST#	1	TP183	TPAD14-GP

<Core Design>

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Title	CPU_Control&Debug_(3/4)		
Size	Document Number	Rev	
A3		SC	
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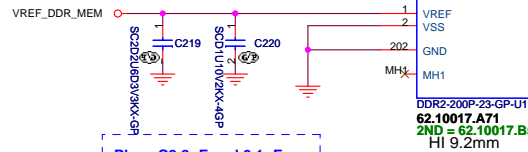
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5,10 MEM\_MB\_ADD4 >> 99 A4  
5,10 MEM\_MB\_ADD5 >> 97 A5  
5,10 MEM\_MB\_ADD6 >> 94 A6  
5,10 MEM\_MB\_ADD7 >> 92 A7  
5,10 MEM\_MB\_ADD8 >> 93 A8  
5,10 MEM\_MB\_ADD9 >> 91 A9  
5,10 MEM\_MB\_ADD10 >> 108 A10/AP  
5,10 MEM\_MB\_ADD11 >> 90 A11  
5,10 MEM\_MB\_ADD12 >> 89 A12  
5,10 MEM\_MB\_ADD13 >> 116 A13  
5,10 MEM\_MB\_ADD14 >> 86 A14  
5,10 MEM\_MB\_ADD15 >> 84 A15  
5,10 MEM\_MB\_BANK2 >> 107 A16/BA2  
5,10 MEM\_MB\_BANK0 >> 107 BA0  
5,10 MEM\_MB\_BANK1 >> 106 BA1

5 MEM\_MB\_DATA0 >> 5 DQ0  
5 MEM\_MB\_DATA1 >> 7 DQ1  
5 MEM\_MB\_DATA2 >> 17 DQ2  
5 MEM\_MB\_DATA3 >> 19 DQ3  
5 MEM\_MB\_DATA4 >> 4 DQ4  
5 MEM\_MB\_DATA5 >> 6 DQ5  
5 MEM\_MB\_DATA6 >> 14 DQ6  
5 MEM\_MB\_DATA7 >> 16 DQ7  
5 MEM\_MB\_DATA8 >> 23 DQ8  
5 MEM\_MB\_DATA9 >> 25 DQ9  
5 MEM\_MB\_DATA10 >> 35 DQ10  
5 MEM\_MB\_DATA11 >> 37 DQ11  
5 MEM\_MB\_DATA12 >> 20 DQ12  
5 MEM\_MB\_DATA13 >> 22 DQ13  
5 MEM\_MB\_DATA14 >> 36 DQ14  
5 MEM\_MB\_DATA15 >> 38 DQ15  
5 MEM\_MB\_DATA16 >> 43 DQ16  
5 MEM\_MB\_DATA17 >> 45 DQ17  
5 MEM\_MB\_DATA18 >> 57 DQ18  
5 MEM\_MB\_DATA19 >> 58 DQ19  
5 MEM\_MB\_DATA20 >> 44 DQ20  
5 MEM\_MB\_DATA21 >> 46 DQ21  
5 MEM\_MB\_DATA22 >> 56 DQ22  
5 MEM\_MB\_DATA23 >> 58 DQ23  
5 MEM\_MB\_DATA24 >> 61 DQ24  
5 MEM\_MB\_DATA25 >> 73 DQ25  
5 MEM\_MB\_DATA26 >> 75 DQ26  
5 MEM\_MB\_DATA27 >> 62 DQ27  
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5 MEM\_MB\_DATA30 >> 76 DQ30  
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5 MEM\_MB\_DATA56 >> 181 DQ56  
5 MEM\_MB\_DATA57 >> 189 DQ57  
5 MEM\_MB\_DATA58 >> 191 DQ58  
5 MEM\_MB\_DATA59 >> 180 DQ59  
5 MEM\_MB\_DATA60 >> 182 DQ60  
5 MEM\_MB\_DATA61 >> 192 DQ61  
5 MEM\_MB\_DATA62 >> 194 DQ62  
5 MEM\_MB\_DATA63 >> 194 DQ63

5 MEM\_MB\_DQS0\_N >> 11 CDS0#  
5 MEM\_MB\_DQS1\_N >> 29 CDS1#  
5 MEM\_MB\_DQS2\_N >> 49 CDS2#  
5 MEM\_MB\_DQS3\_N >> 68 CDS3#  
5 MEM\_MB\_DQS4\_N >> 129 CDS4#  
5 MEM\_MB\_DQS5\_N >> 146 CDS5#  
5 MEM\_MB\_DQS6\_N >> 167 CDS6#  
5 MEM\_MB\_DQS7\_N >> 186 CDS7#

5 MEM\_MB\_DQS0\_P >> 13 CDS0  
5 MEM\_MB\_DQS1\_P >> 31 CDS1  
5 MEM\_MB\_DQS2\_P >> 51 CDS2  
5 MEM\_MB\_DQS3\_P >> 70 CDS3  
5 MEM\_MB\_DQS4\_P >> 131 CDS4  
5 MEM\_MB\_DQS5\_P >> 148 CDS5  
5 MEM\_MB\_DQS6\_P >> 169 CDS6  
5 MEM\_MB\_DQS7\_P >> 188 CDS7

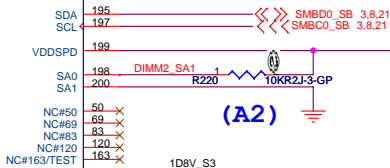
5,10 MEM\_MB\_ODT0 >> 114 OTD0  
5,10 MEM\_MB\_ODT1 >> 119 OTD1



DDR2-200P-23-GP-U1  
62.10017.A71  
2ND = 62.10017.B51  
HI 9.2mm

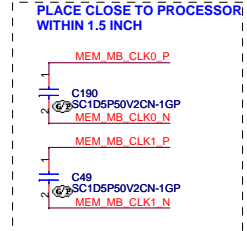
REVERSE TYPE

RAS# >> 108 MEM\_MB\_RAS# 5,10  
WE# >> 109 MEM\_MB\_WE# 5,10  
CAS# >> 113 MEM\_MB\_CAS# 5,10  
CS0# >> 110 MEM\_MB\_CS#0 5,10  
CS1# >> 115 MEM\_MB\_CS#1 5,10  
CKE0 >> 79 MEM\_MB\_CKE0 5,10  
CKE1 >> 80 MEM\_MB\_CKE1 5,10  
CK0 >> 30 MEM\_MB\_CLK0\_P 5  
CK0# >> 32 MEM\_MB\_CLK0\_N 5  
CK1 >> 164 MEM\_MB\_CLK1\_P 5  
CK1# >> 166 MEM\_MB\_CLK1\_N 5  
DM0 >> 10 MEM\_MB\_DM0 5  
DM1 >> 26 MEM\_MB\_DM1 5  
DM2 >> 52 MEM\_MB\_DM2 5  
DM3 >> 67 MEM\_MB\_DM3 5  
DM4 >> 130 MEM\_MB\_DM4 5  
DM5 >> 147 MEM\_MB\_DM5 5  
DM6 >> 170 MEM\_MB\_DM6 5  
DM7 >> 185 MEM\_MB\_DM7 5



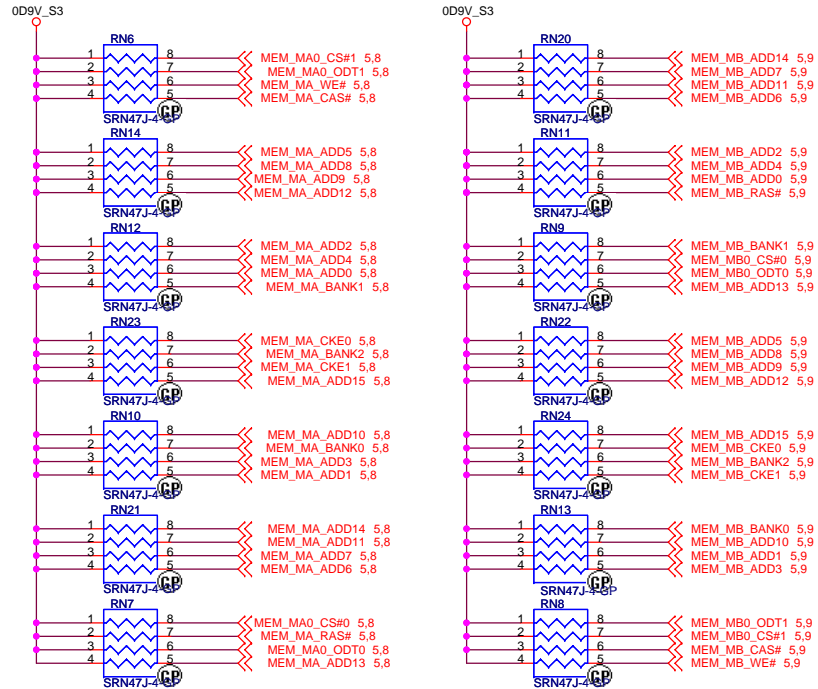
VDDSPD >> 198  
SA0 >> 199  
SA1 >> 200  
NC#50 >> 50  
NC#69 >> 69  
NC#83 >> 83  
NC#120 >> 120  
NC#163/TEST >> 163

VDD >> 81  
VDD >> 82  
VDD >> 87  
VDD >> 88  
VDD >> 95  
VDD >> 96  
VDD >> 103  
VDD >> 104  
VDD >> 111  
VDD >> 112  
VDD >> 117  
VDD >> 118  
VSS >> 3  
VSS >> 8  
VSS >> 9  
VSS >> 12  
VSS >> 15  
VSS >> 18  
VSS >> 21  
VSS >> 24  
VSS >> 27  
VSS >> 28  
VSS >> 33  
VSS >> 34  
VSS >> 38  
VSS >> 40  
VSS >> 41  
VSS >> 42  
VSS >> 47  
VSS >> 48  
VSS >> 53  
VSS >> 54  
VSS >> 59  
VSS >> 60  
VSS >> 65  
VSS >> 66  
VSS >> 71  
VSS >> 72  
VSS >> 77  
VSS >> 78  
VSS >> 121  
VSS >> 122  
VSS >> 127  
VSS >> 128  
VSS >> 132  
VSS >> 133  
VSS >> 138  
VSS >> 139  
VSS >> 144  
VSS >> 145  
VSS >> 149  
VSS >> 150  
VSS >> 155  
VSS >> 156  
VSS >> 161  
VSS >> 162  
VSS >> 165  
VSS >> 168  
VSS >> 171  
VSS >> 172  
VSS >> 177  
VSS >> 178  
VSS >> 183  
VSS >> 184  
VSS >> 187  
VSS >> 190  
VSS >> 193  
VSS >> 196  
GND >> 201  
MH2 >> GP



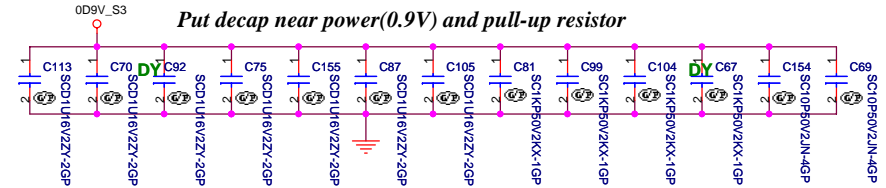
## PARALLEL TERMINATION

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

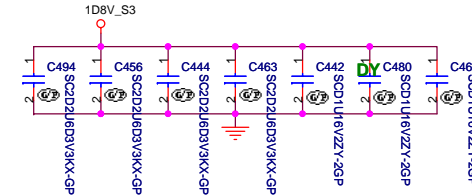


Do not share the Term resistor between the DDR address and Control Signals.

## Decoupling Capacitor

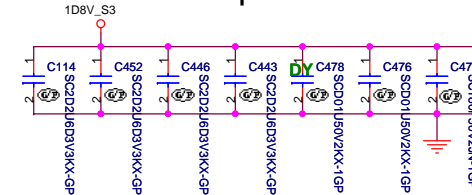


## Place these Caps near DM1

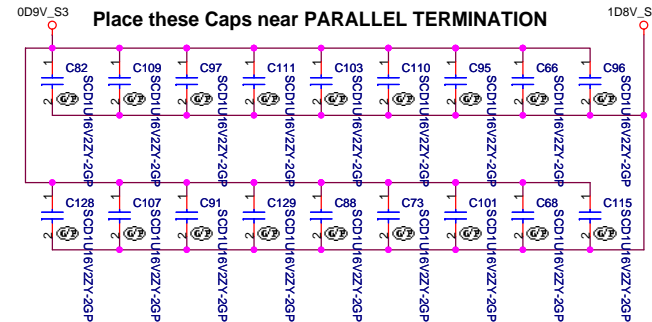


Layout Note:  
Place one cap close to every 2 pullup resistors terminated to 0D9V\_S3

## Place these Caps near DM2



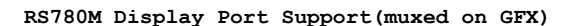
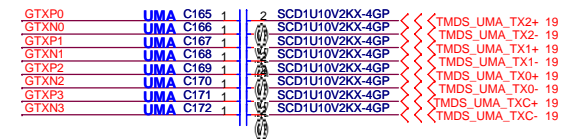
Layout Note:  
Place one cap close to every 2 pullup resistors terminated to 0D9V\_S3



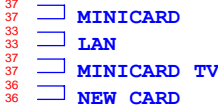
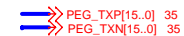
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DDR DAMPING & TERMINATION		
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DP0	GFX_TX0, TX1, TX2, TX3, AUX0, HPD0
DP1	GFX_TX4, TX5, TX6, TX7, AUX1, HPD1



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Title

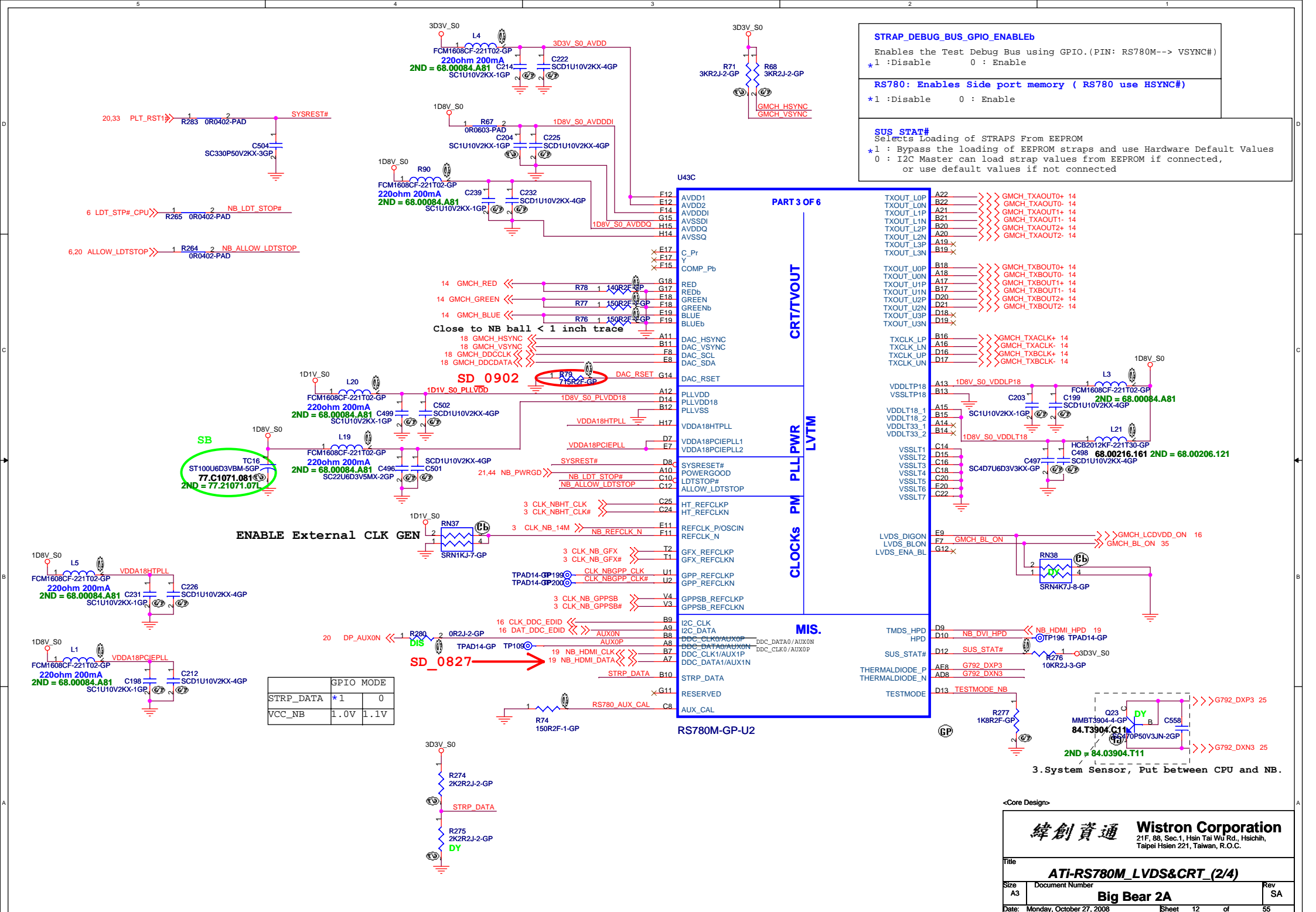
Size  
A

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Rev  
SA**ATI-RS780M\_HT LINK&PCIe(1/3)**



**STRAP\_DEBUG\_BUS\_GPIO\_ENABLEb**  
Enables the Test Debug Bus using GPIO.(PIN: RS780M--> VSYNC#)  
\* 1 :Disable      0 : Enable

**RS780: Enables Side port memory ( RS780 use HSYNC#)**  
\* 1 :Disable      0 : Enable

**SUS\_STAT#**  
Selects Loading of STRAPS From EEPROM  
\* 1 : Bypass the loading of EEPROM straps and use Hardware Default Values  
0 : I2C Master can load strap values from EEPROM if connected,  
or use default values if not connected

**CRT/TVOUT**

TXOUT\_L0P A22 >>> GMCH\_TXAOUT0+ 14  
TXOUT\_L0N B22 >>> GMCH\_TXAOUT0- 14  
TXOUT\_L1P A21 >>> GMCH\_TXAOUT1+ 14  
TXOUT\_L1N B21 >>> GMCH\_TXAOUT1- 14  
TXOUT\_L2P A20 >>> GMCH\_TXAOUT2+ 14  
TXOUT\_L2N B20 >>> GMCH\_TXAOUT2- 14  
TXOUT\_L3P A19 >>> GMCH\_TXAOUT3+ 14  
TXOUT\_L3N B19 >>> GMCH\_TXAOUT3- 14

TXOUT\_U0P B18 >>> GMCH\_TXBOUT0+ 14  
TXOUT\_U0N A18 >>> GMCH\_TXBOUT0- 14  
TXOUT\_U1P A17 >>> GMCH\_TXBOUT1+ 14  
TXOUT\_U1N B17 >>> GMCH\_TXBOUT1- 14  
TXOUT\_U2P D20 >>> GMCH\_TXBOUT2+ 14  
TXOUT\_U2N D21 >>> GMCH\_TXBOUT2- 14  
TXOUT\_U3P D18 >>> GMCH\_TXBOUT3+ 14  
TXOUT\_U3N D19 >>> GMCH\_TXBOUT3- 14

TXCLK\_LP B16 >>> GMCH\_TXACLK+ 14  
TXCLK\_LN A16 >>> GMCH\_TXACLK- 14  
TXCLK\_UP A17 >>> GMCH\_TXBCLK+ 14  
TXCLK\_UN D17 >>> GMCH\_TXBCLK- 14

**PWR**

VDDLTP18 A13 >>> 1D8V\_S0\_VDDLTP18  
VSSLTP18 B13 >>> 1D8V\_S0\_VSSLTP18  
VDDLTP18\_1 A15 >>> 1D8V\_S0\_VDDLTP18\_1  
VDDLTP18\_2 B15 >>> 1D8V\_S0\_VDDLTP18\_2  
VDDLTP18\_3 A14 >>> 1D8V\_S0\_VDDLTP18\_3  
VDDLTP18\_4 B14 >>> 1D8V\_S0\_VDDLTP18\_4

VDDLTP18\_5 A15 >>> 1D8V\_S0\_VDDLTP18\_5  
VDDLTP18\_6 B15 >>> 1D8V\_S0\_VDDLTP18\_6  
VDDLTP18\_7 A14 >>> 1D8V\_S0\_VDDLTP18\_7  
VDDLTP18\_8 B14 >>> 1D8V\_S0\_VDDLTP18\_8

VDDLTP18\_9 A15 >>> 1D8V\_S0\_VDDLTP18\_9  
VDDLTP18\_10 B15 >>> 1D8V\_S0\_VDDLTP18\_10  
VDDLTP18\_11 A14 >>> 1D8V\_S0\_VDDLTP18\_11  
VDDLTP18\_12 B14 >>> 1D8V\_S0\_VDDLTP18\_12

**CLK**

CLK\_NBHT\_CLK C25 >>> 3 CLK\_NBHT\_CLK  
CLK\_NBHT\_CLK# C24 >>> 3 CLK\_NBHT\_CLK#  
CLK\_NB\_GFX T2 >>> 3 CLK\_NB\_GFX  
CLK\_NB\_GFX# T1 >>> 3 CLK\_NB\_GFX#  
CLK\_NB\_GPPSB V4 >>> 3 CLK\_NB\_GPPSB  
CLK\_NB\_GPPSB# V3 >>> 3 CLK\_NB\_GPPSB#

CLK\_NBHT\_CLK# C25 >>> 3 CLK\_NBHT\_CLK#  
CLK\_NBHT\_CLK# C24 >>> 3 CLK\_NBHT\_CLK#  
CLK\_NB\_GFX T2 >>> 3 CLK\_NB\_GFX  
CLK\_NB\_GFX# T1 >>> 3 CLK\_NB\_GFX#  
CLK\_NB\_GPPSB V4 >>> 3 CLK\_NB\_GPPSB  
CLK\_NB\_GPPSB# V3 >>> 3 CLK\_NB\_GPPSB#

**MIS.**

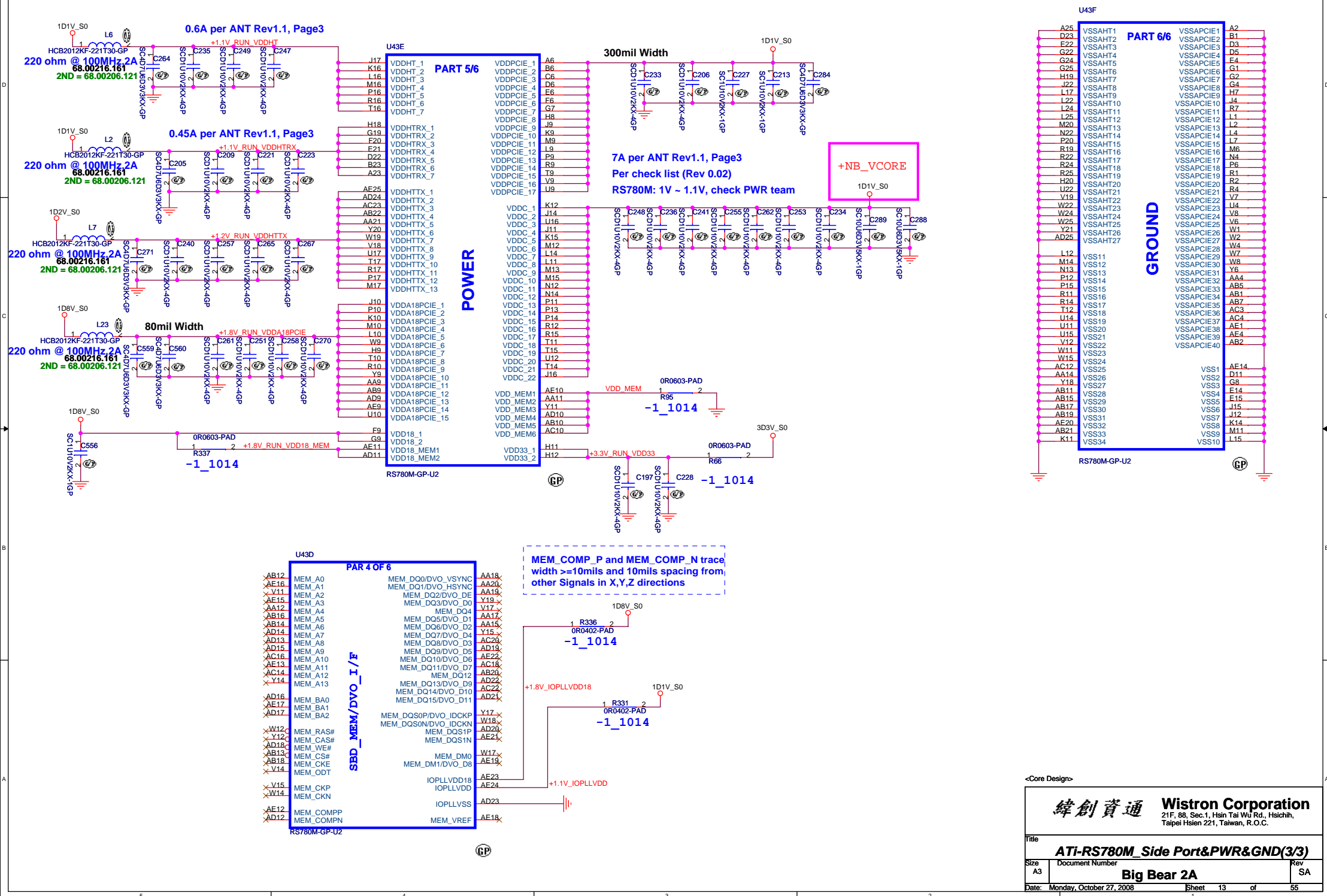
I2C\_CLK A9 >>> I2C\_CLK  
I2C\_DATA A8 >>> I2C\_DATA  
DDC\_CLK/AUX0P B8 >>> DDC\_CLK/AUX0P  
DDC\_DATA/AUX0N B7 >>> DDC\_DATA/AUX0N  
DDC\_CLK/AUX1P B7 >>> DDC\_CLK/AUX1P  
DDC\_DATA/AUX1N B7 >>> DDC\_DATA/AUX1N

STRP\_DATA B10 >>> STRP\_DATA  
RESERVED G11 >>> RESERVED  
AUX\_CAL C8 >>> AUX\_CAL

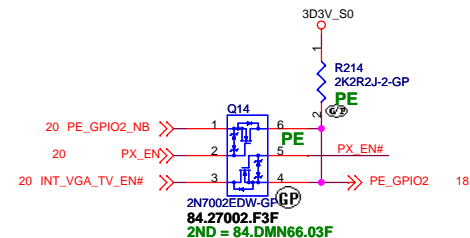
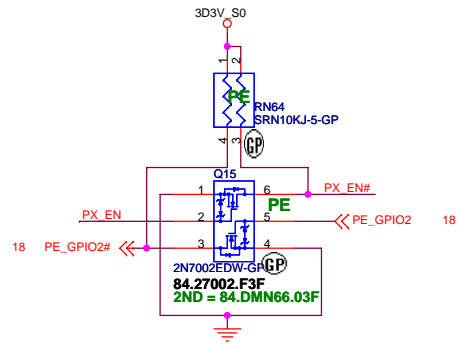
**RS780M-GP-U2**

1 150R2F-1-GP

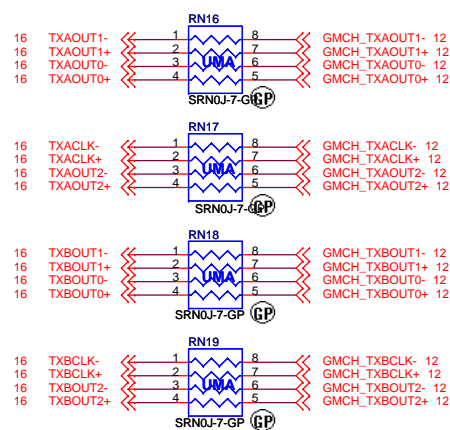
	GPIO MODE
STRP_DATA	* 1      0
VCC_NB	1.0V    1.1V



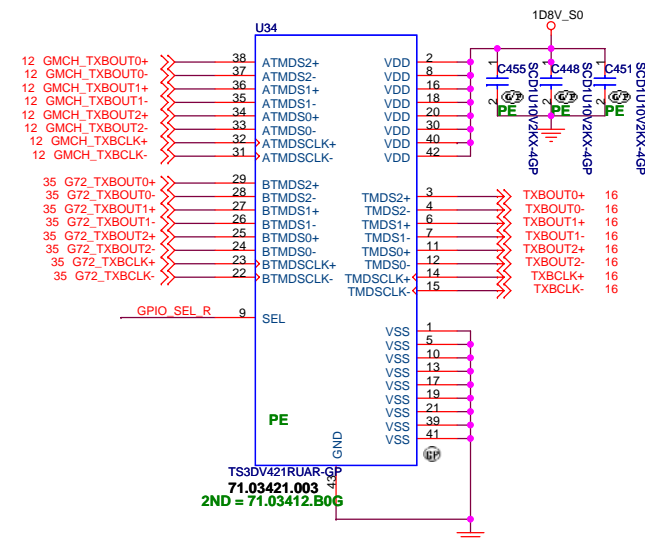
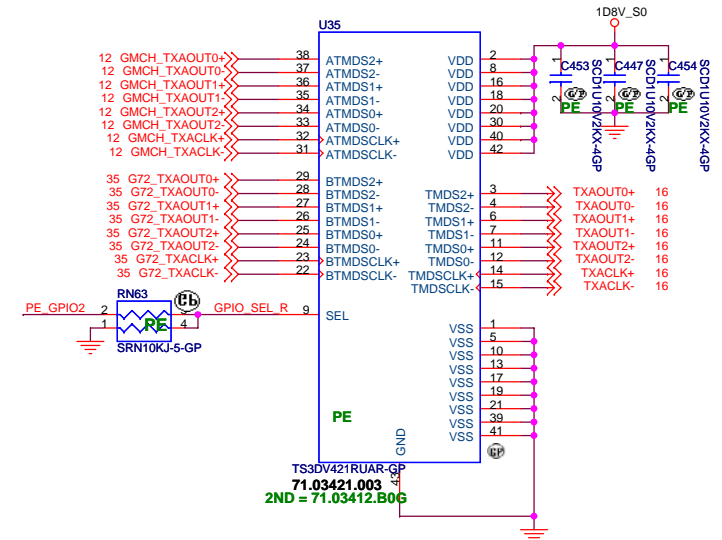
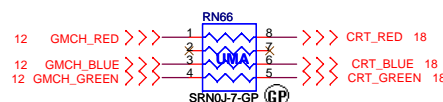
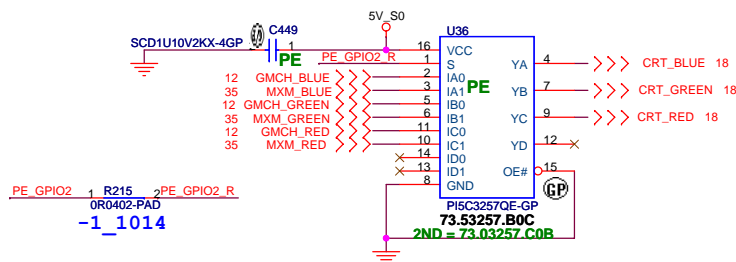




FUNCTION TABLE		
SEL	FUNCTION	OUTPUT
L	TMDSn+ = ATMDSn+ TMDSn- = ATMDSn- TMDSCLK+ = ATMDSCLK+ TMDSCLK- = ATMDSCLK- BTMDSn+ = High Impedance BTMDSn- = High Impedance BTMDSCLK+ = High Impedance BTMDSCLK- = High Impedance	TMDSn+ TMDSn- TMDSCLK+ TMDSCLK-
H	TMDSn+ = BTMDSn+ TMDSn- = BTMDSn- TMDSCLK+ = BTMDSCLK+ TMDSCLK- = BTMDSCLK- ATMDSn+ = High Impedance ATMDSn- = High Impedance ATMDSCLK+ = High Impedance ATMDSCLK- = High Impedance	TMDSn+ TMDSn- TMDSCLK+ TMDSCLK-



$\bar{E}$	S	YA	YB	YC	YD	Function
H	X	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Disable
L	L	IA0	IB0	IC0	ID0	S = 0
L	H	IA1	IB1	IC1	ID1	S = 1



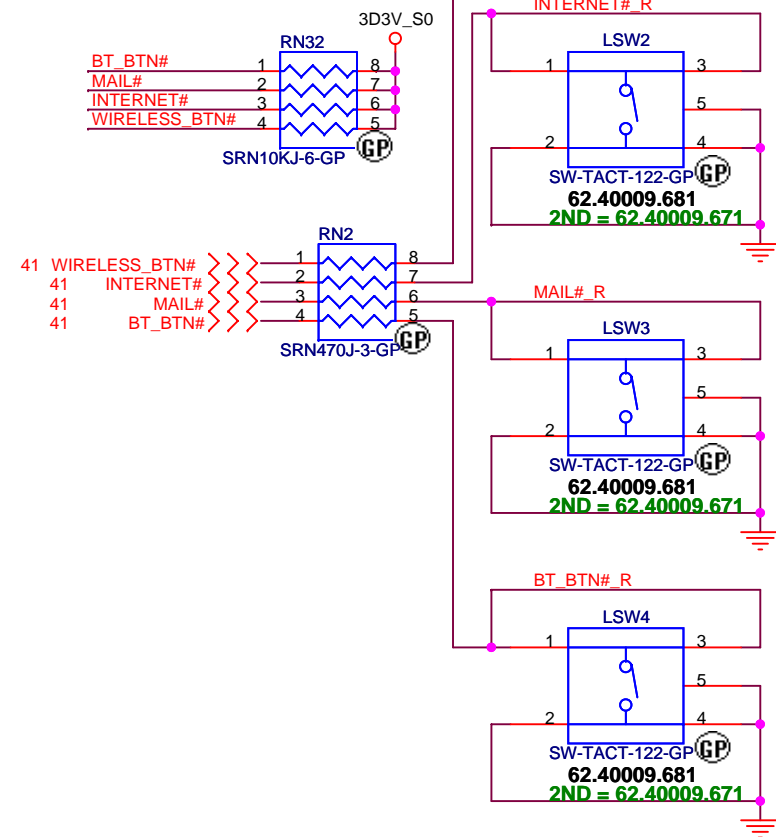
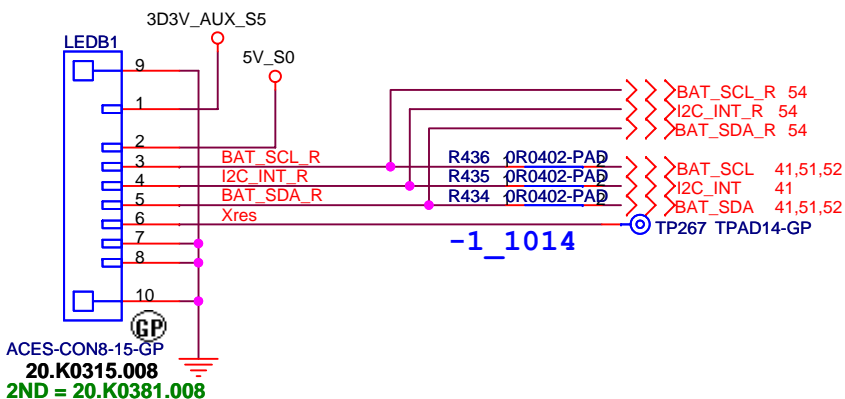
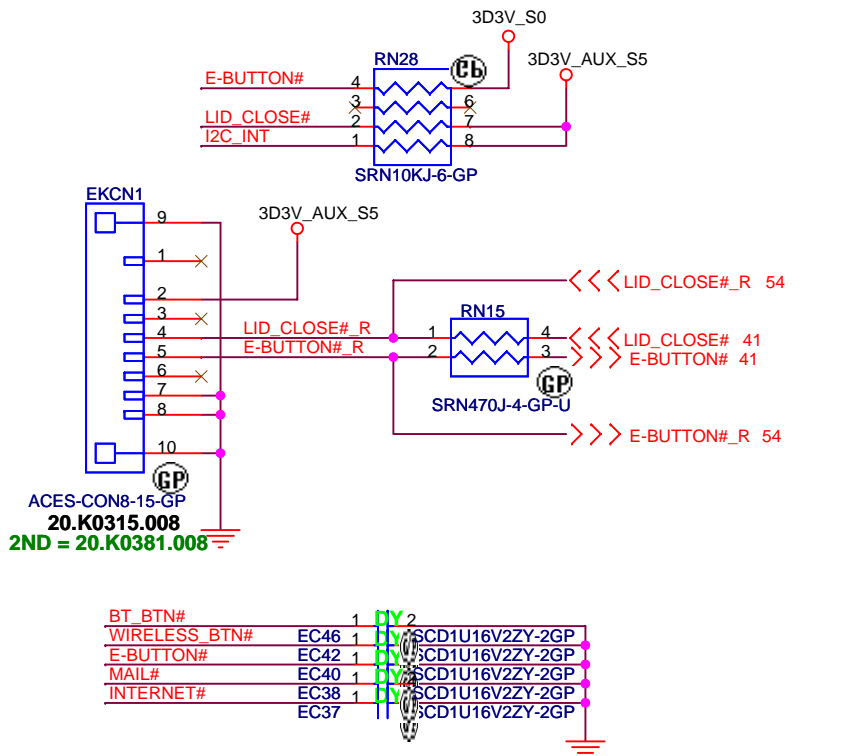
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SWITCH		
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# LAUNCH



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**LAUNCH & LID**

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A4

Document Number

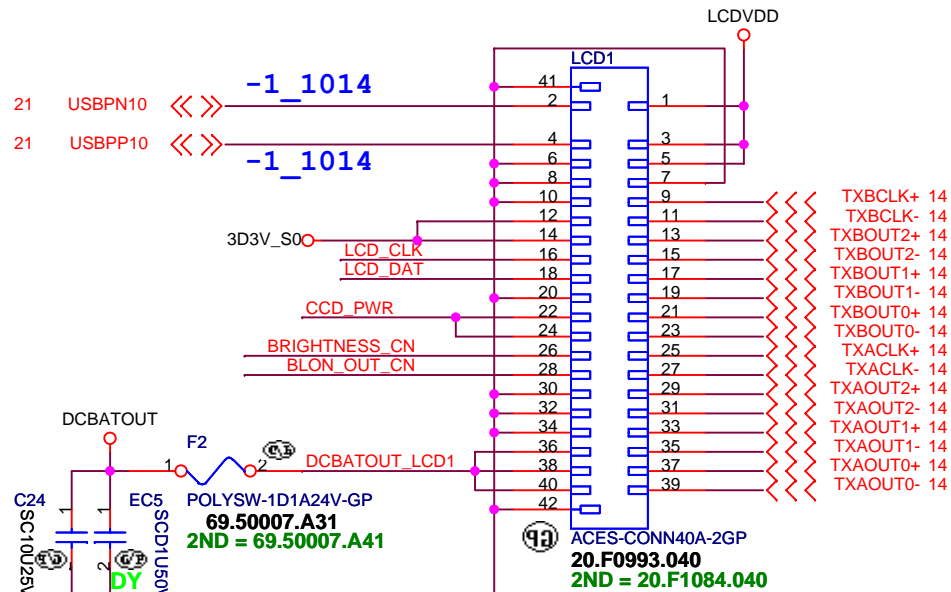
**Big Bear 2A**

Rev  
SC

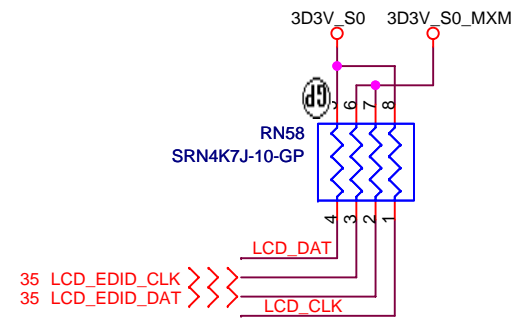
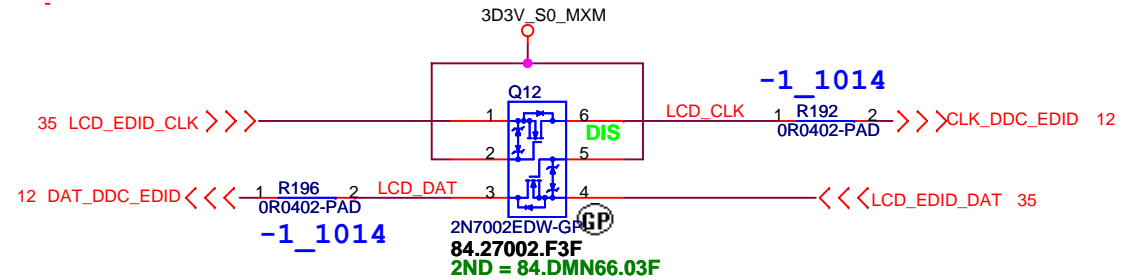
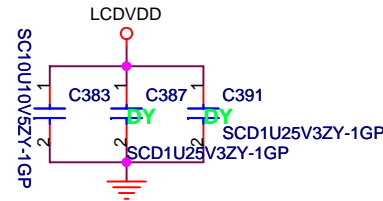
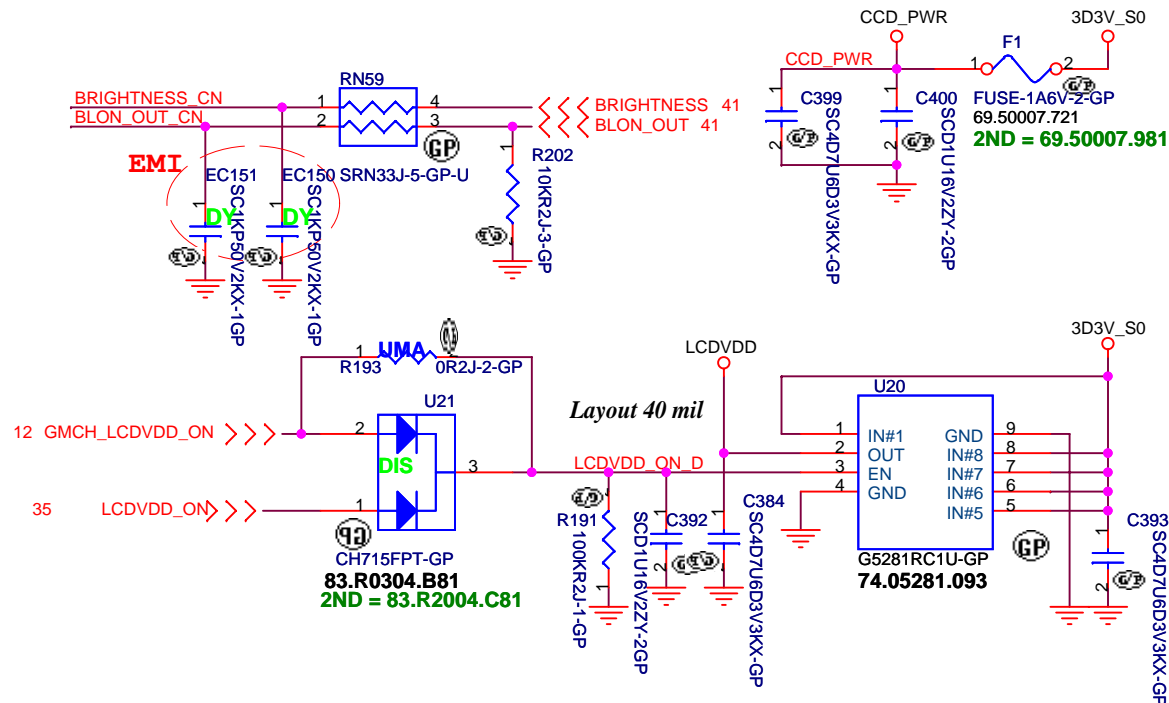
Date: Monday, October 27, 2008

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# LCD/INVERTER/CCD CONN



SD\_0901:Change "LCD1" Pin 7, 8, 10 to GND.



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LCD CONN

Size

Document Number

A4

Big Bear 2A

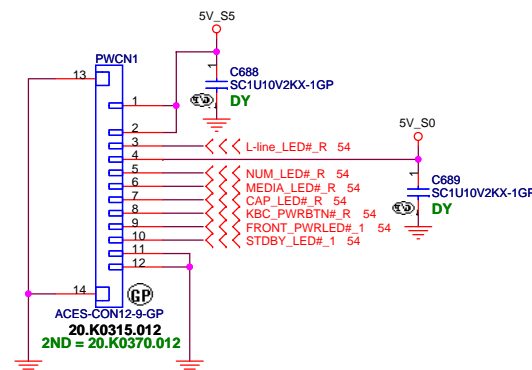
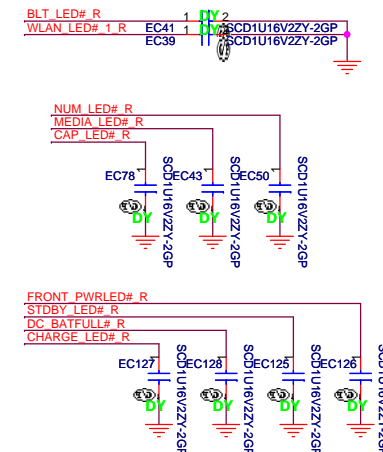
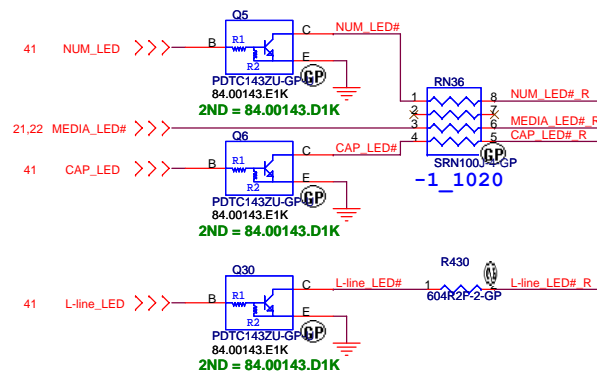
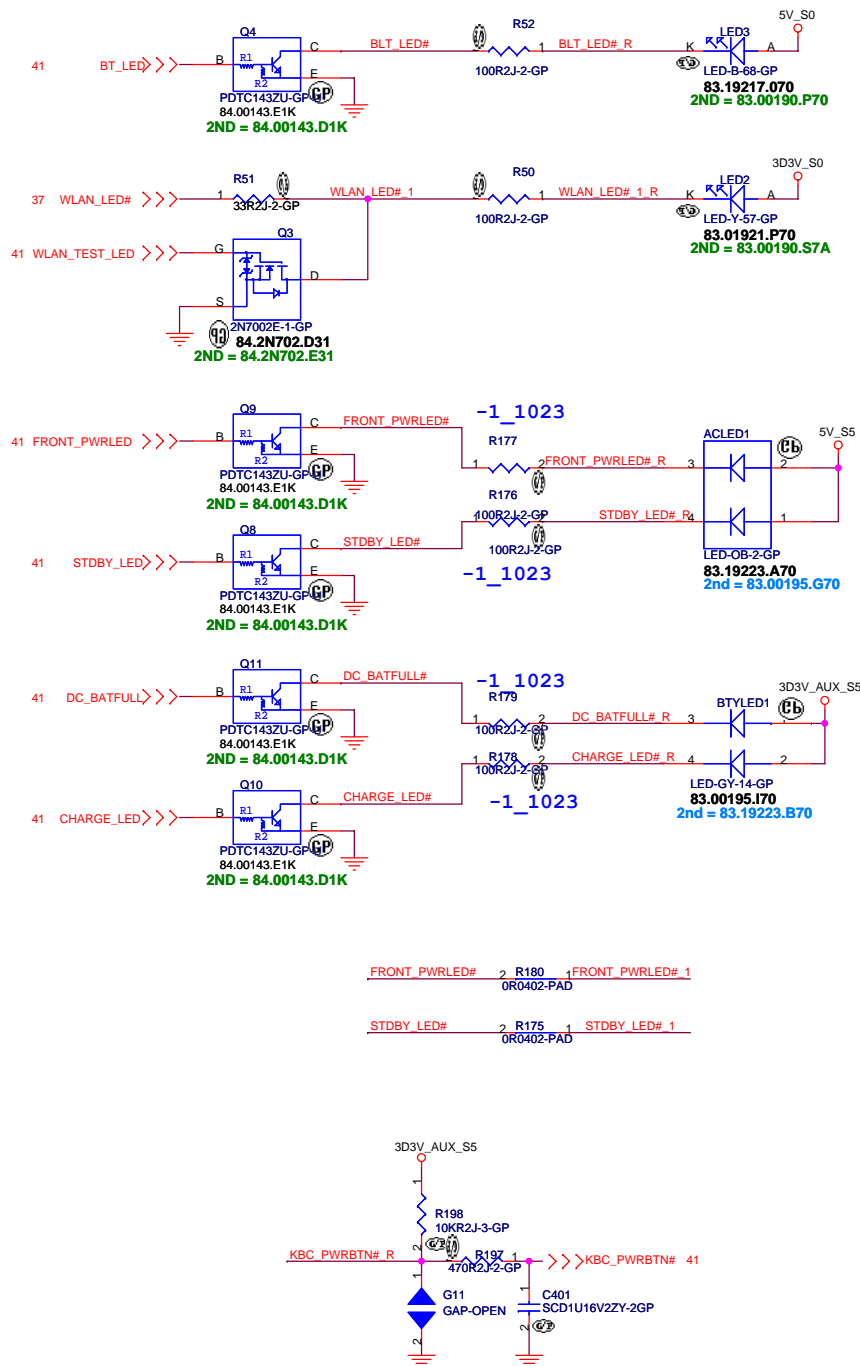
Rev

SC

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# LED

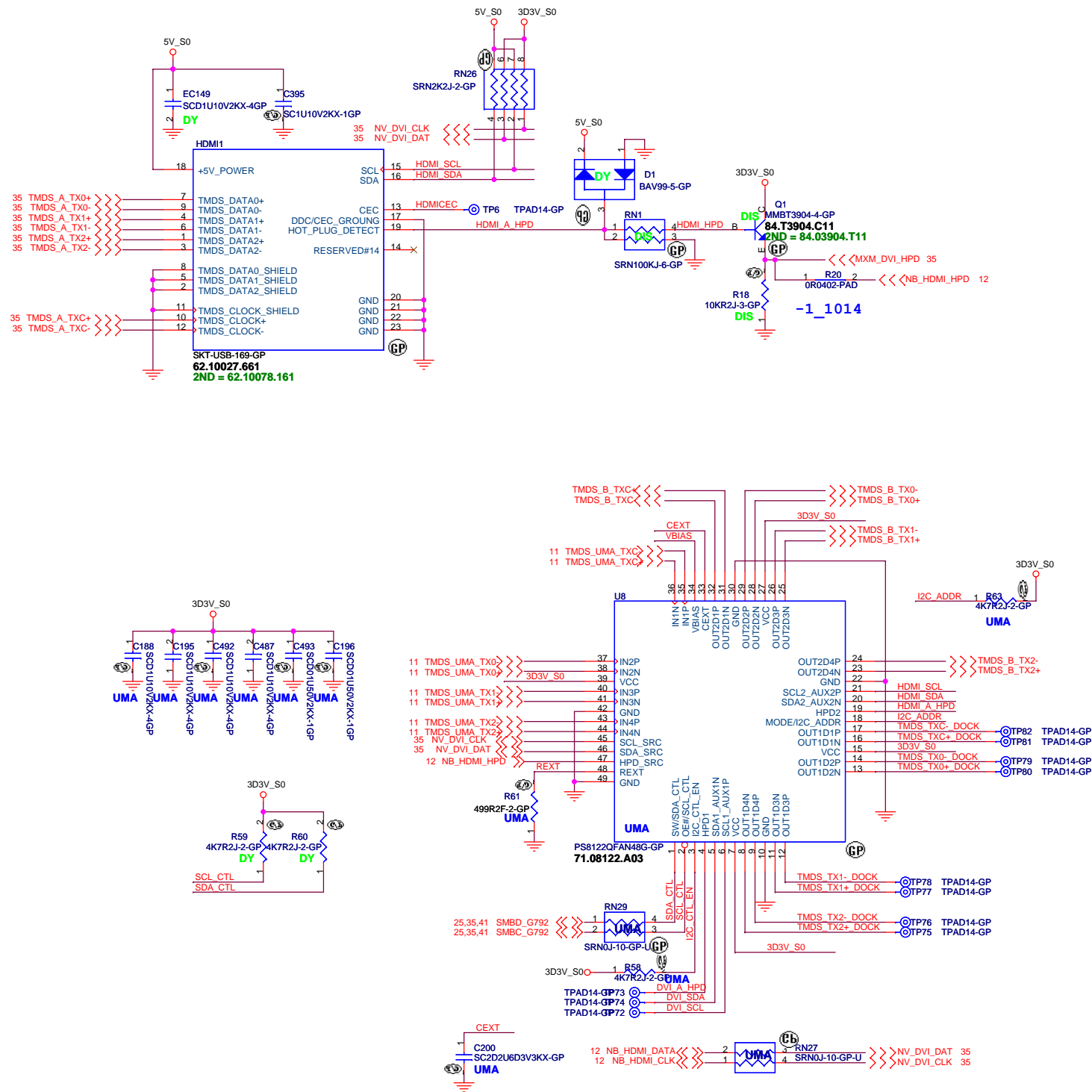


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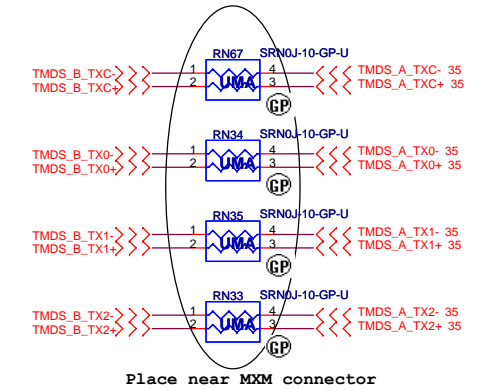
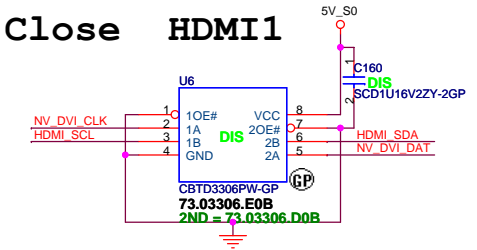
Title			LED & LAUNCH	
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# HDMI SM BUS LEVEL shifter



## Close HDMI1



Place near MXM connector

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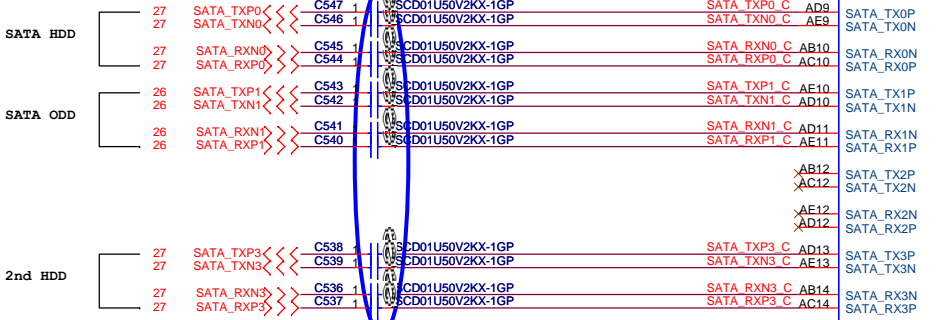
HDMI CONNECTOR			
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A3	Big Bear 2A	SD	
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PLACE SATA AC DECOUPLING  
CAPS CLOSE TO SB700

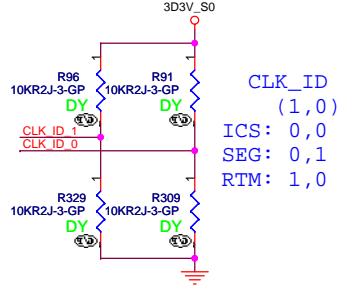
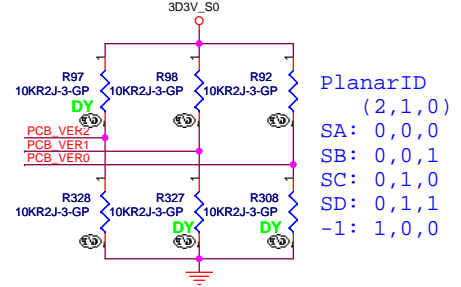
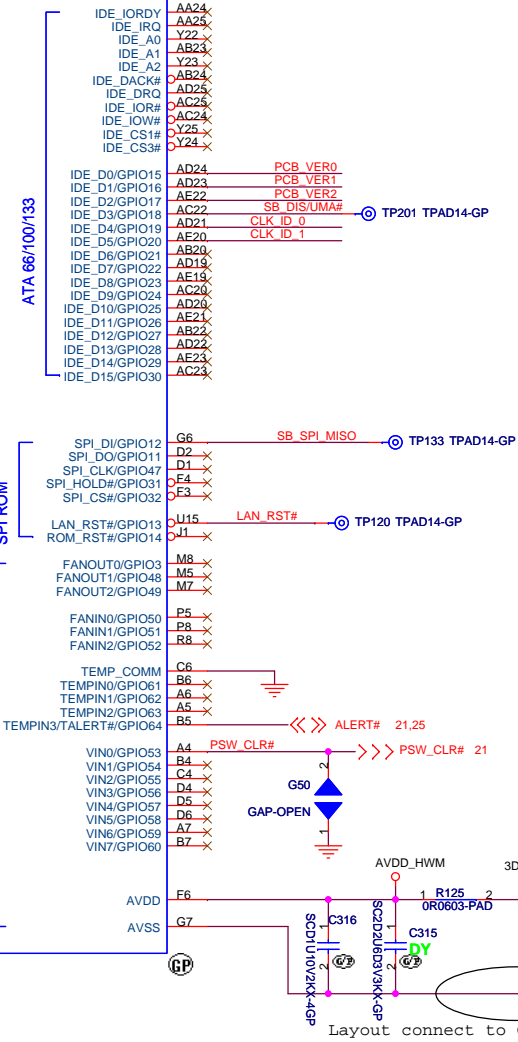


### SB700 Part 2 of 5

SERIAL ATA

SATA PWR

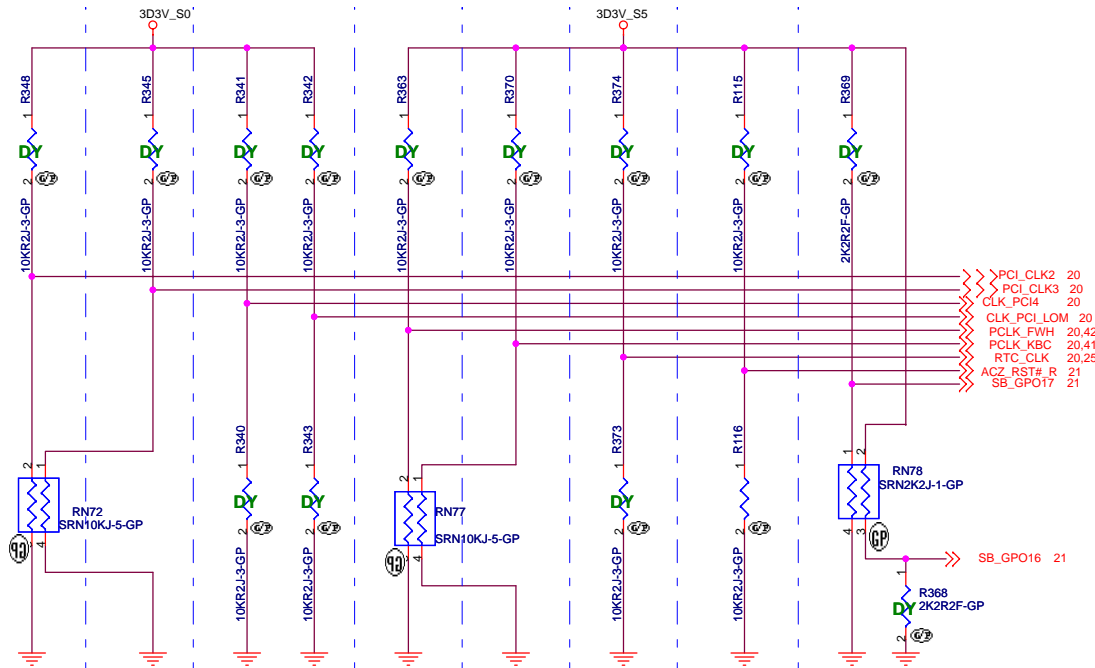
HW MONITOR





## REQUIRED STRAPS

### REQUIRED SYSTEM STRAPS



## DEBUG STRAPS

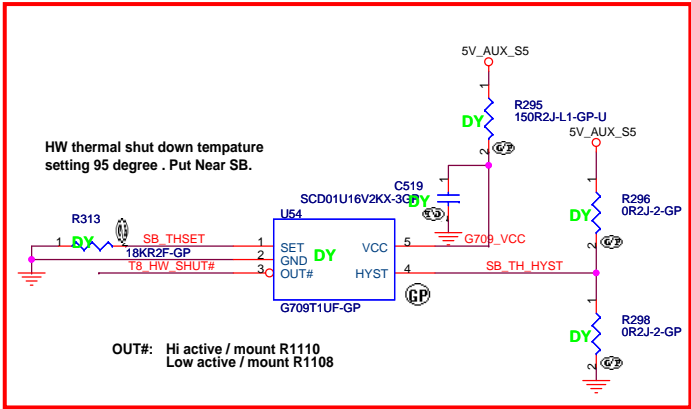
	PCI_CLK2	PCI_CLK3	CLK_PCI_LOM CLK_PCI4	PCLK_FWH	PCLK_KBC	RTCCLK	AZ_RST#	SB_GPO17, SB_GPO16
PULL HIGH	WatchDOG (NB_PWRGD) ENABLED	USE DEBUG STRAPS	RESERVED	IMC ENABLED	CLKGEN ENABLED (Use Internal)	INTERNAL RTC  DEFAULT	ENABLE PCI ROM BOOT	ROM TYPE: H, H = Reserved  H, L = SPI ROM    DEFAULT
PULL LOW	WatchDog (NB_PWRGD) DISABLED DEFAULT	IGNORE DEBUG STRAPS DEFAULT		IMC DISABLED DEFAULT	CLKGEN DISABLED (Use External) DEFAULT	EXT. RTC (PD on X1, apply 32KHz to RTC_CLK)	DISABLE PCI ROM BOOT  DEFAULT	L, H = LPC ROM  L, L = FWH ROM

NOTE: SB700 HAS INTERNAL 15K PULL UP RESISTOR FOR RTCCLK

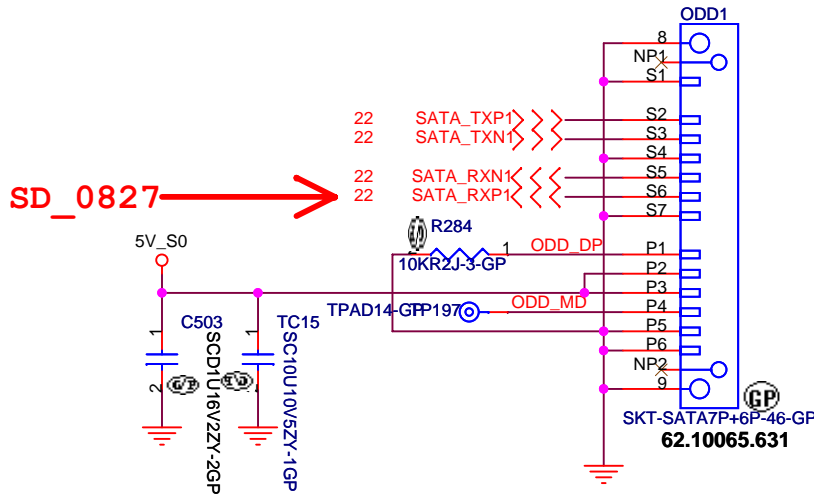
	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23	PCI_AD30 PCI_AD29
PULL HIGH	USE LONG RESET (DEFAULT)	USE PCI PLL (DEFAULT)	USE ACPI BCLK (DEFAULT)	USE IDE PLL (DEFAULT)	USE DEFAULT PCIE STRAPS (DEFAULT)	Reserved (DEFAULT)	Reserved
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	Reserved	

Note: SB700 has 15K internal PU FOR PCI\_AD[30:23]

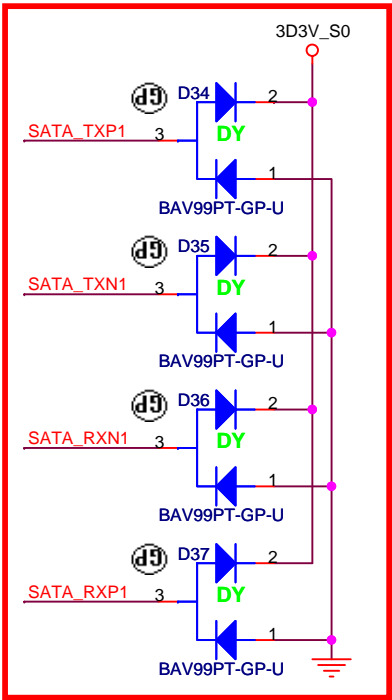
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# ODD Connector



**SD\_0828**



<Core Design>

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Title

**CDROM**

Size

Document Number

A4

**Big Bear 2A**

Rev

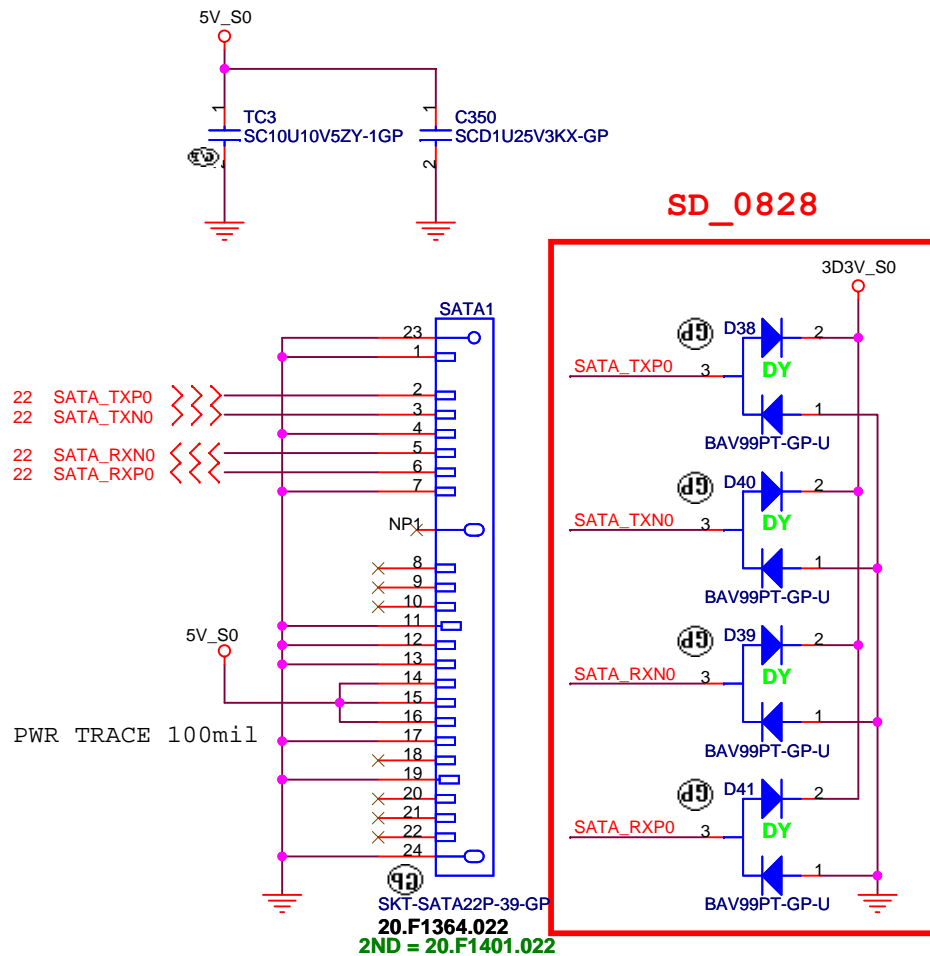
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Date: Monday, October 27, 2008

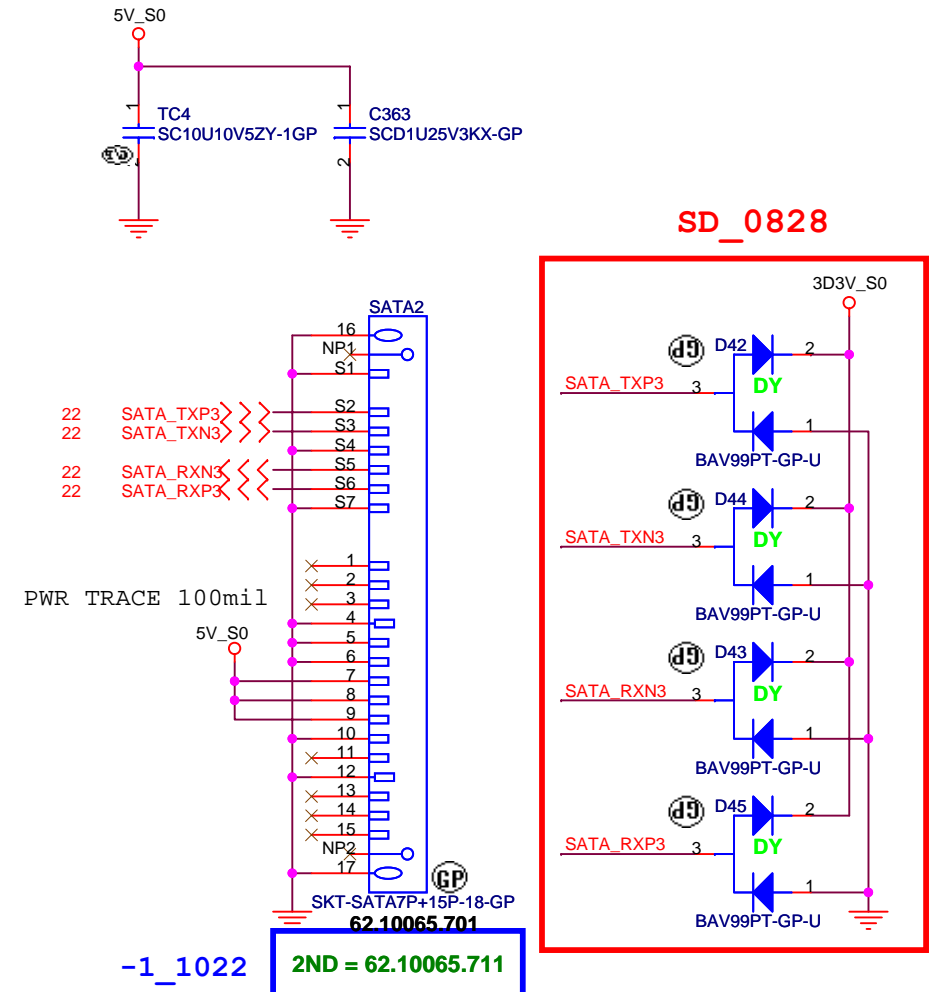
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# SATA HDD Connector



# 2ND SATA HDD Connector



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Title

**HDD**

Size

**A4**

Document Number

**Big Bear 2A**

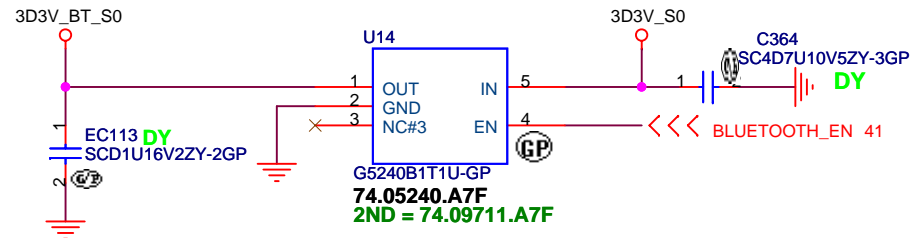
Rev

**SD**

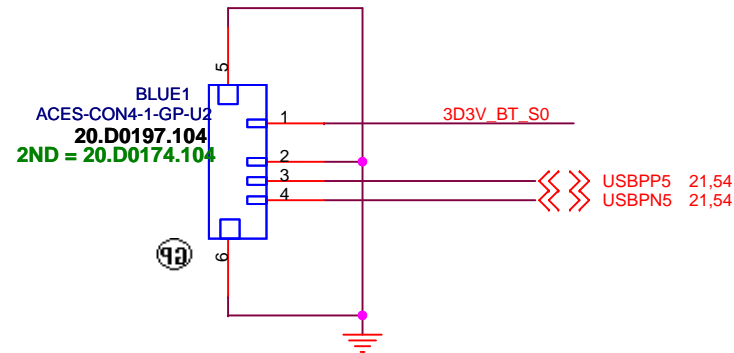
Date: Monday, October 27, 2008

Sheet 27 of 55

# BLUETOOTH MODULE

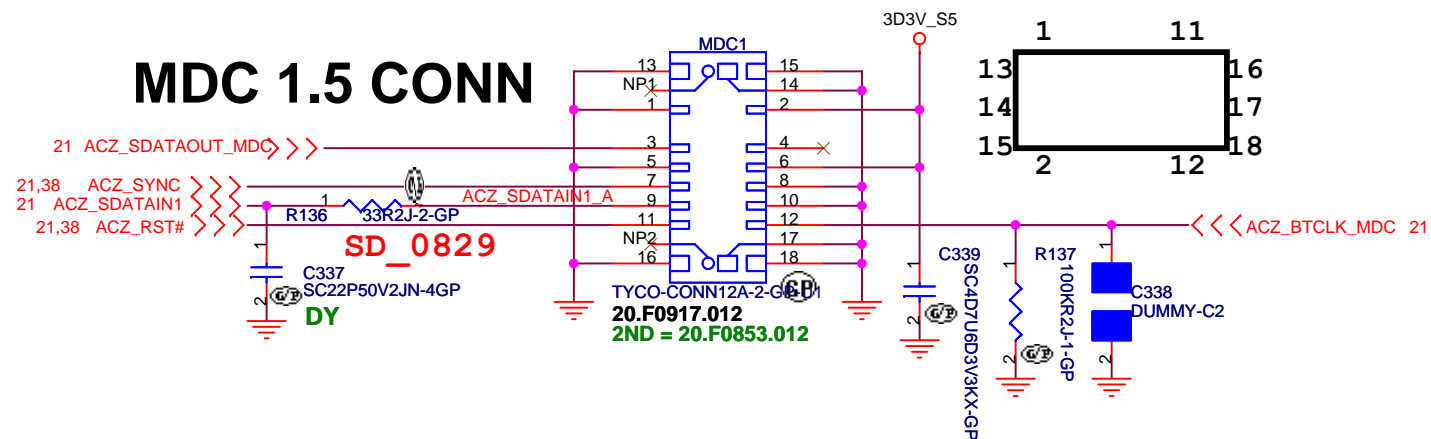


EC40 put near  
BLUE1 / all  
USB put one  
choke near  
connector by  
EMI request



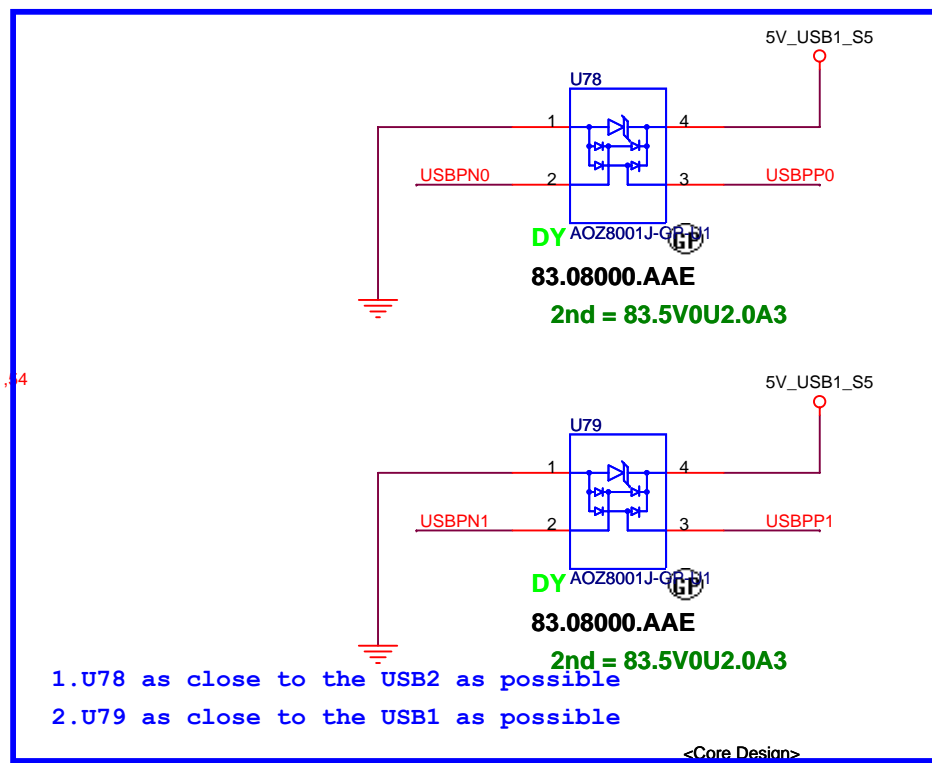
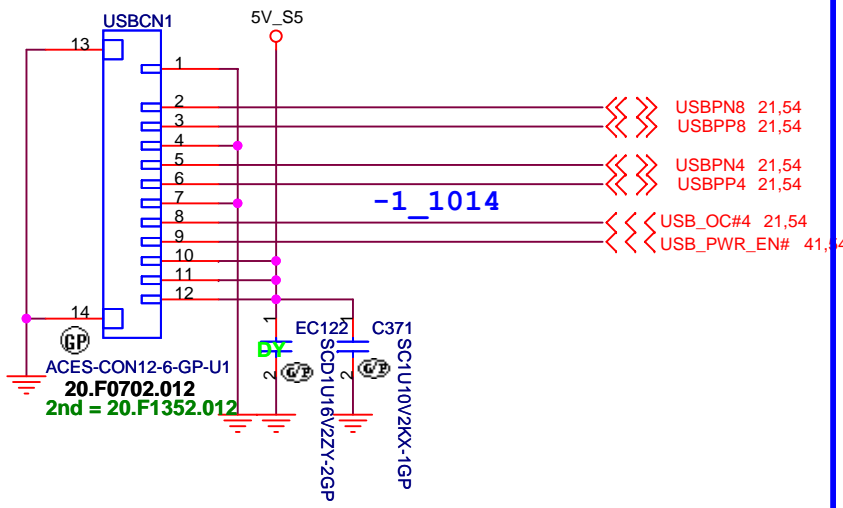
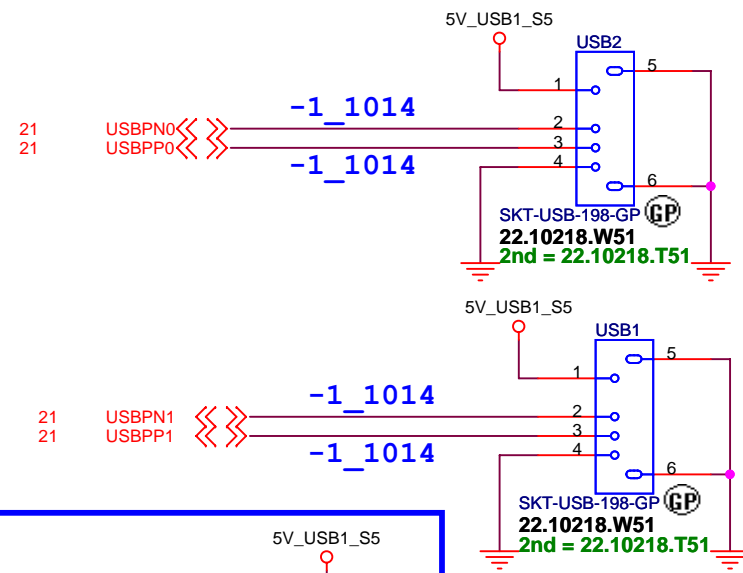
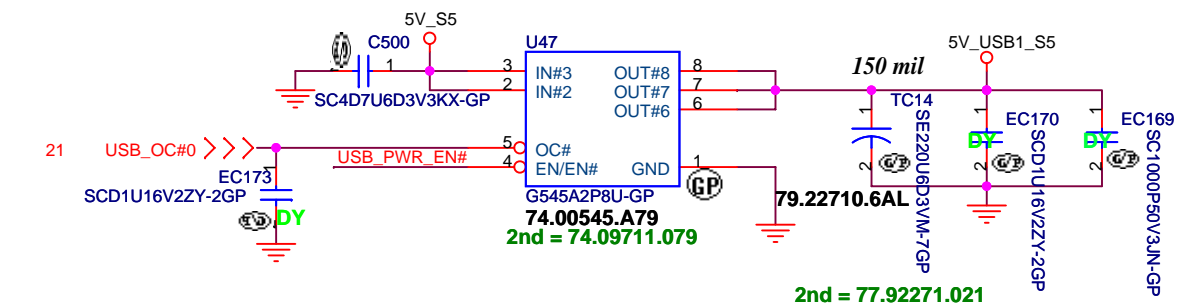
<Core Design>

<b>緯創資通</b>		<b>Wistron Corporation</b> 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
<b>BLUETOOTH</b>			
Size <b>A4</b>	Document Number <b>Big Bear 2A</b>		Rev <b>SA</b>
Date: Monday, October 27, 2008	Sheet 28	of	55



<Core Design>

<b>緯創資通</b>		<b>Wistron Corporation</b> 21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.	
Title			
<b>MDC</b>			
Size	Document Number		Rev
<b>A4</b>	<b>Big Bear 2A</b>		<b>SA</b>
Date:	Monday, October 27, 2008		Sheet 29 of 55



## ESD Protection

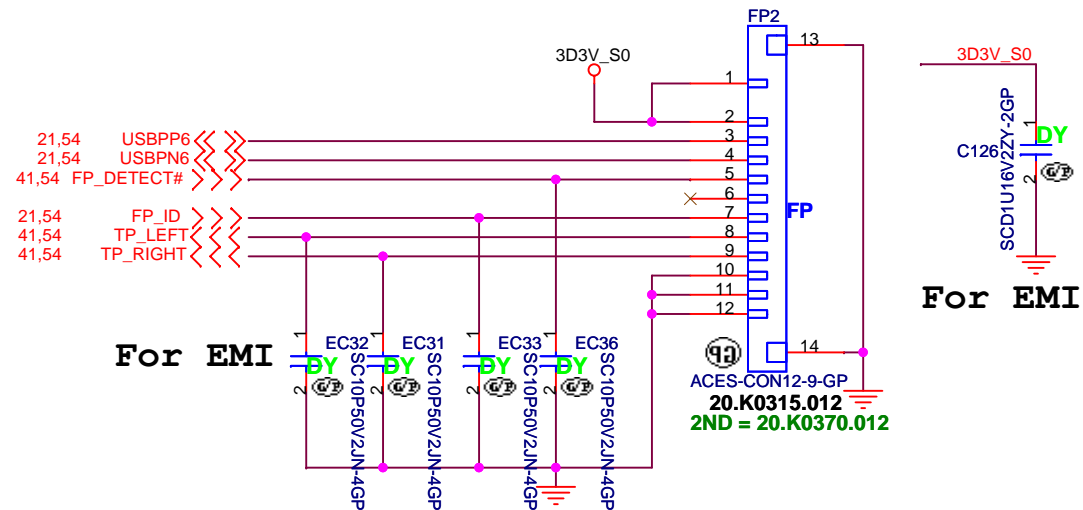
**緯創資通 Wistron Corporation**  
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan, R.O.C.

Title: **USB**

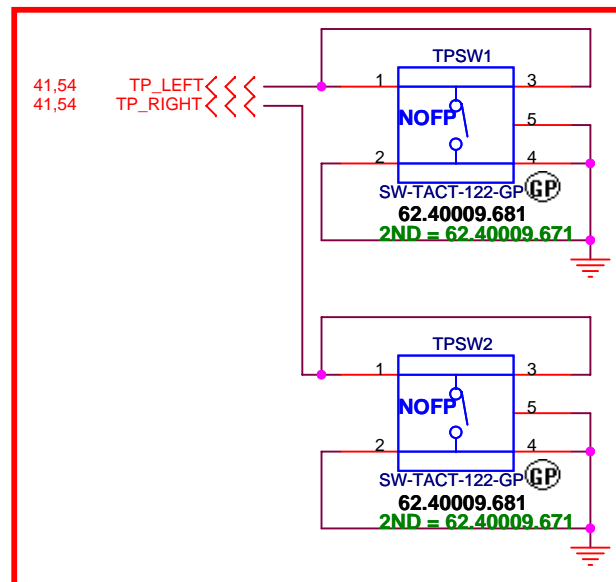
Size: **A4** Document Number: **Big Bear 2A** Rev: **SB**

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# Finger printer



SD\_0903



<Core Design>

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

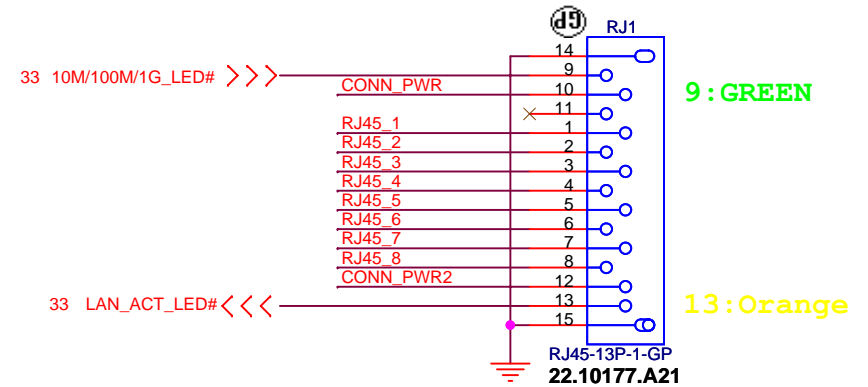
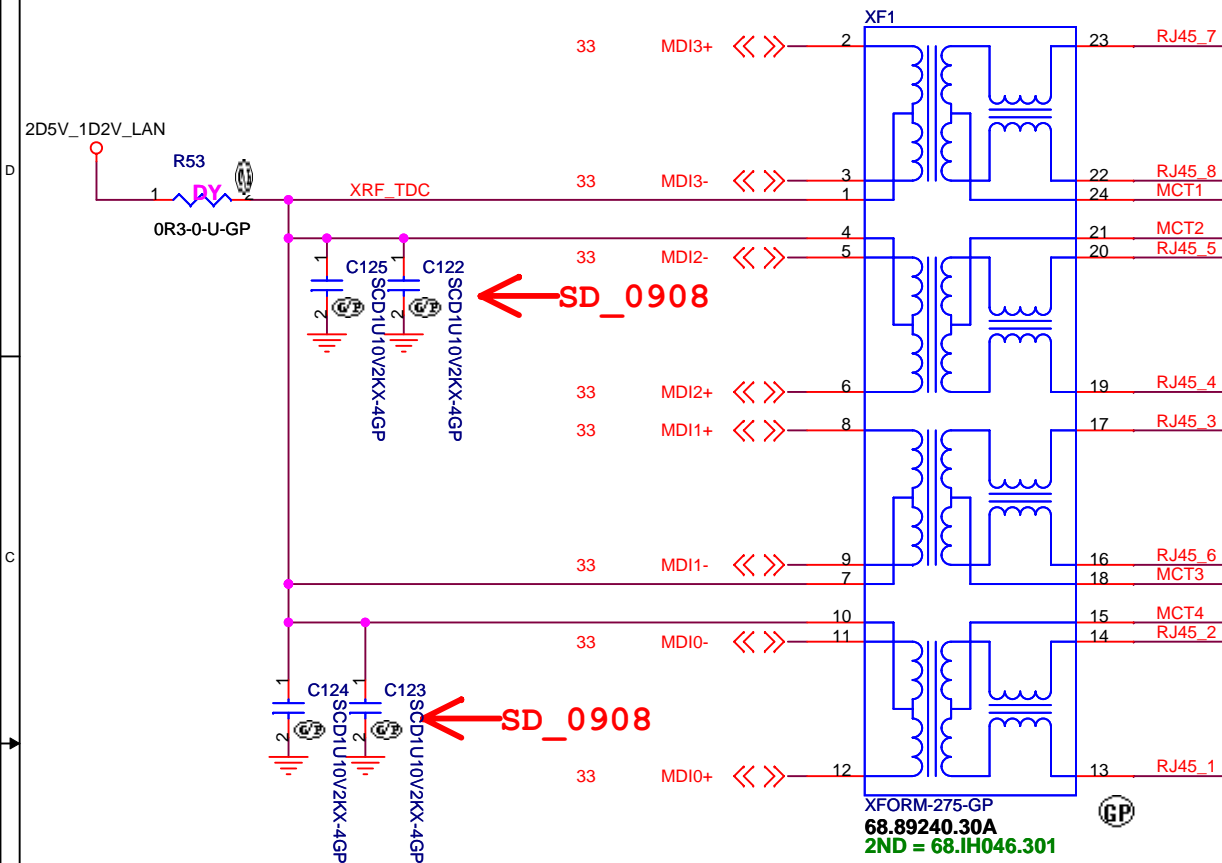
Title		
Finger Printer		
Size	Document Number	Rev
A4	Big Bear 2A	SD
Date:	Monday, October 27, 2008	Sheet 31 of 55





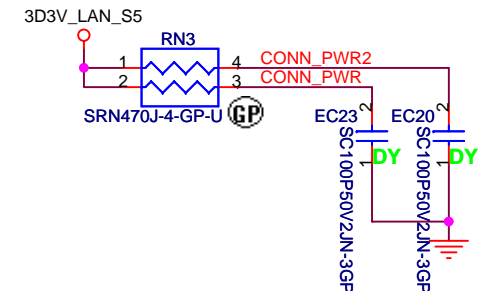


# LAN Connector

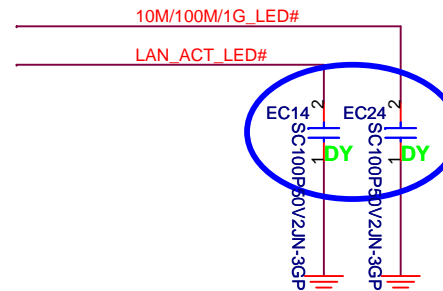


LAN Link: Green(A3), behavior is the same for 10/100/1000 bits

LAN Data: Yellow(B2), when LAN is transferring data.



## For EMI Near LAN1 CONN



- 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.

<Core Design>

緯創資通

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Title

**LAN CONN**

Size  
**A4**

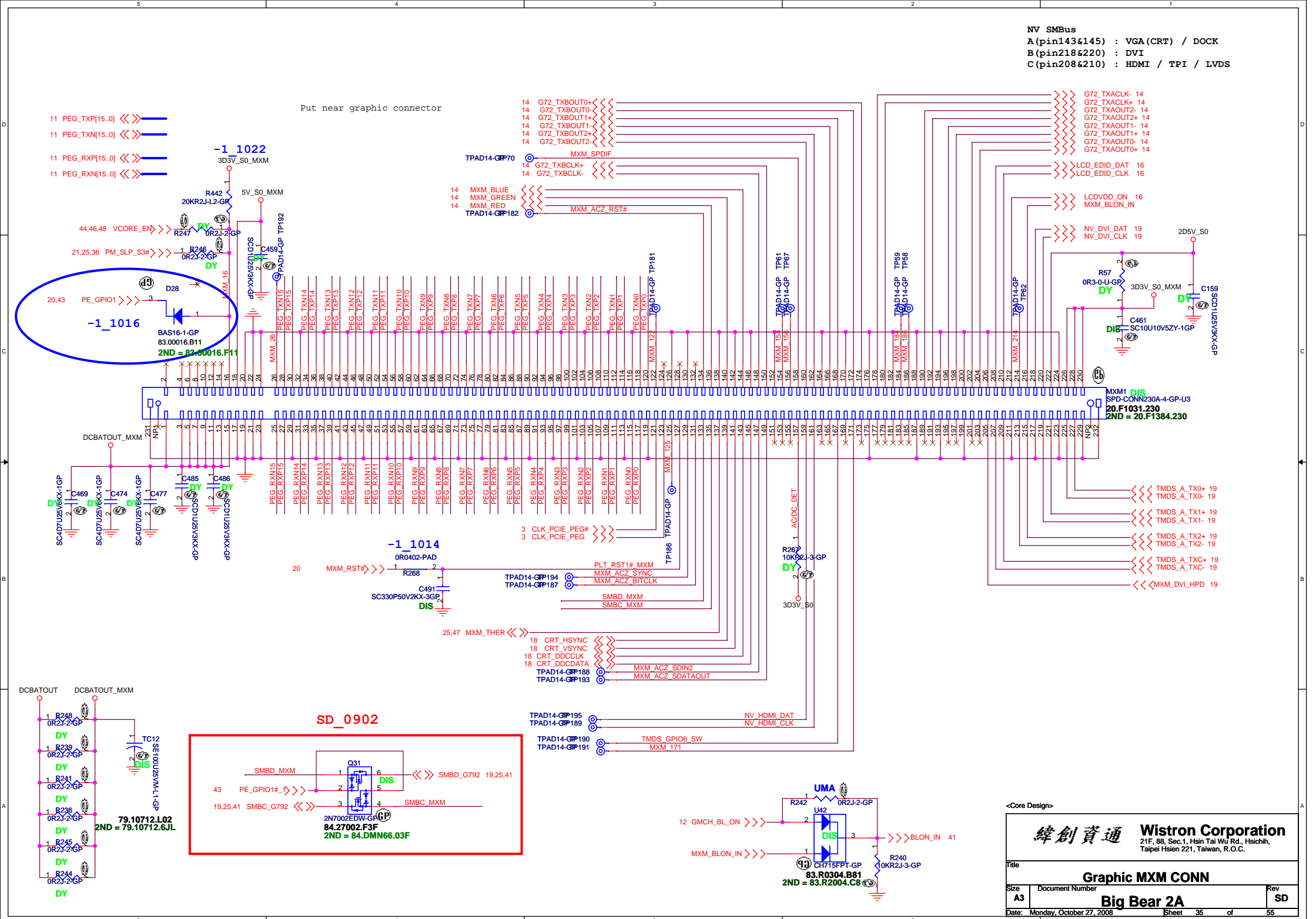
Document Number

**Big Bear 2A**

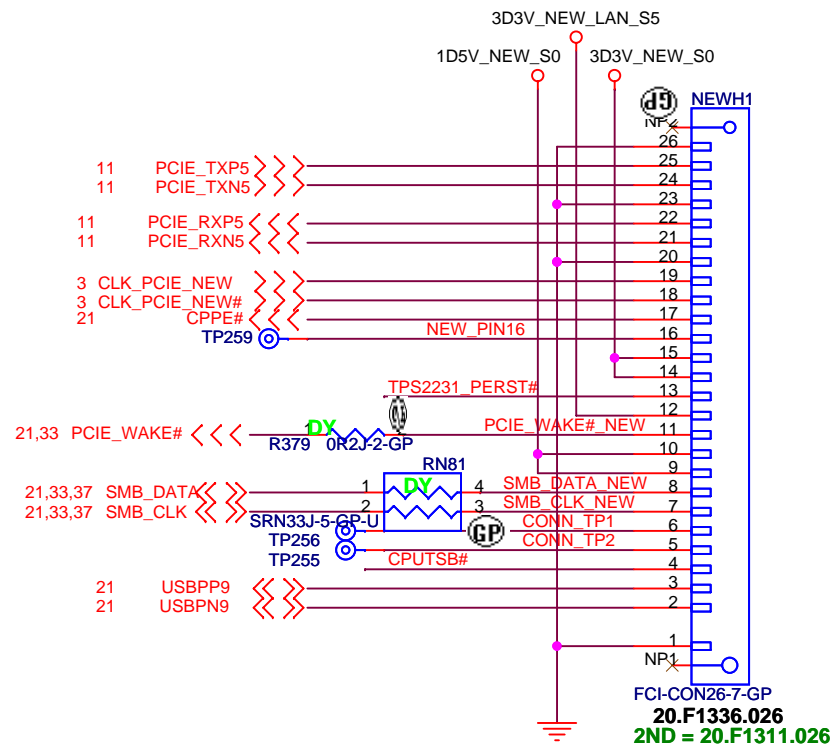
Rev  
**SB**

Date: Monday, October 27, 2008

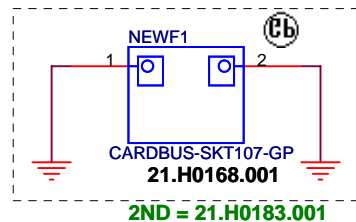
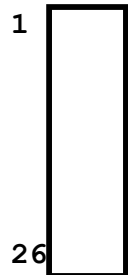
Sheet 34 of 55



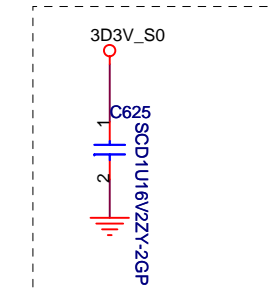
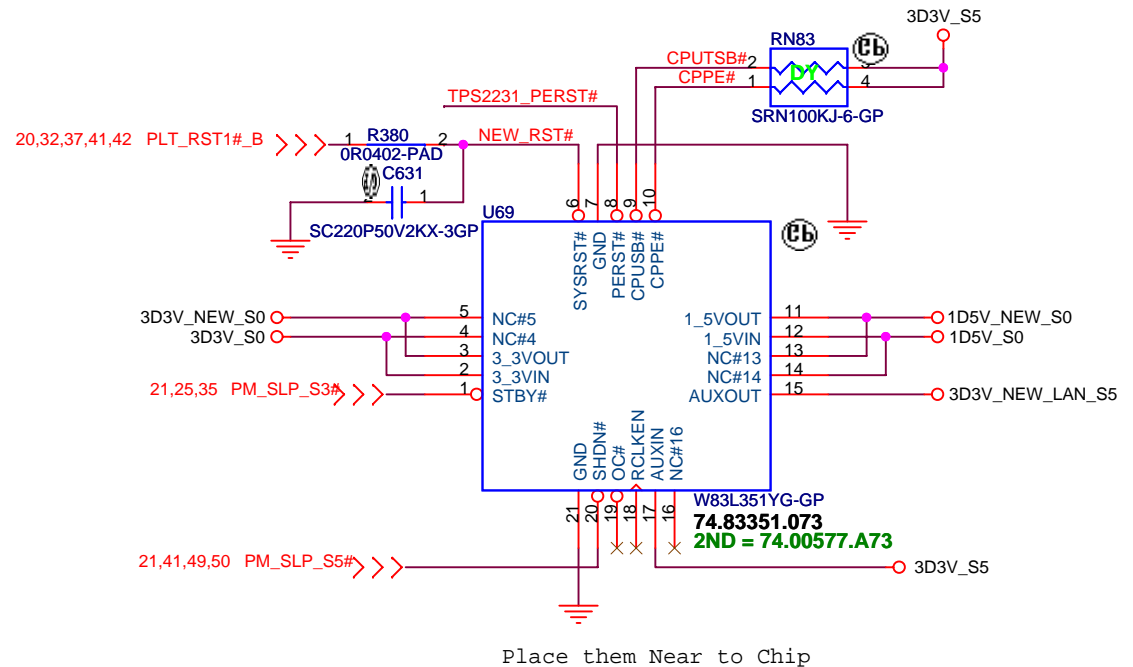
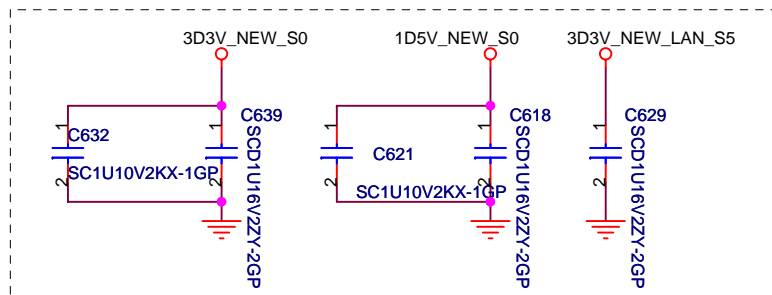
# NEWCARD Connector



## TOP VIEW



Place them Near to Connector



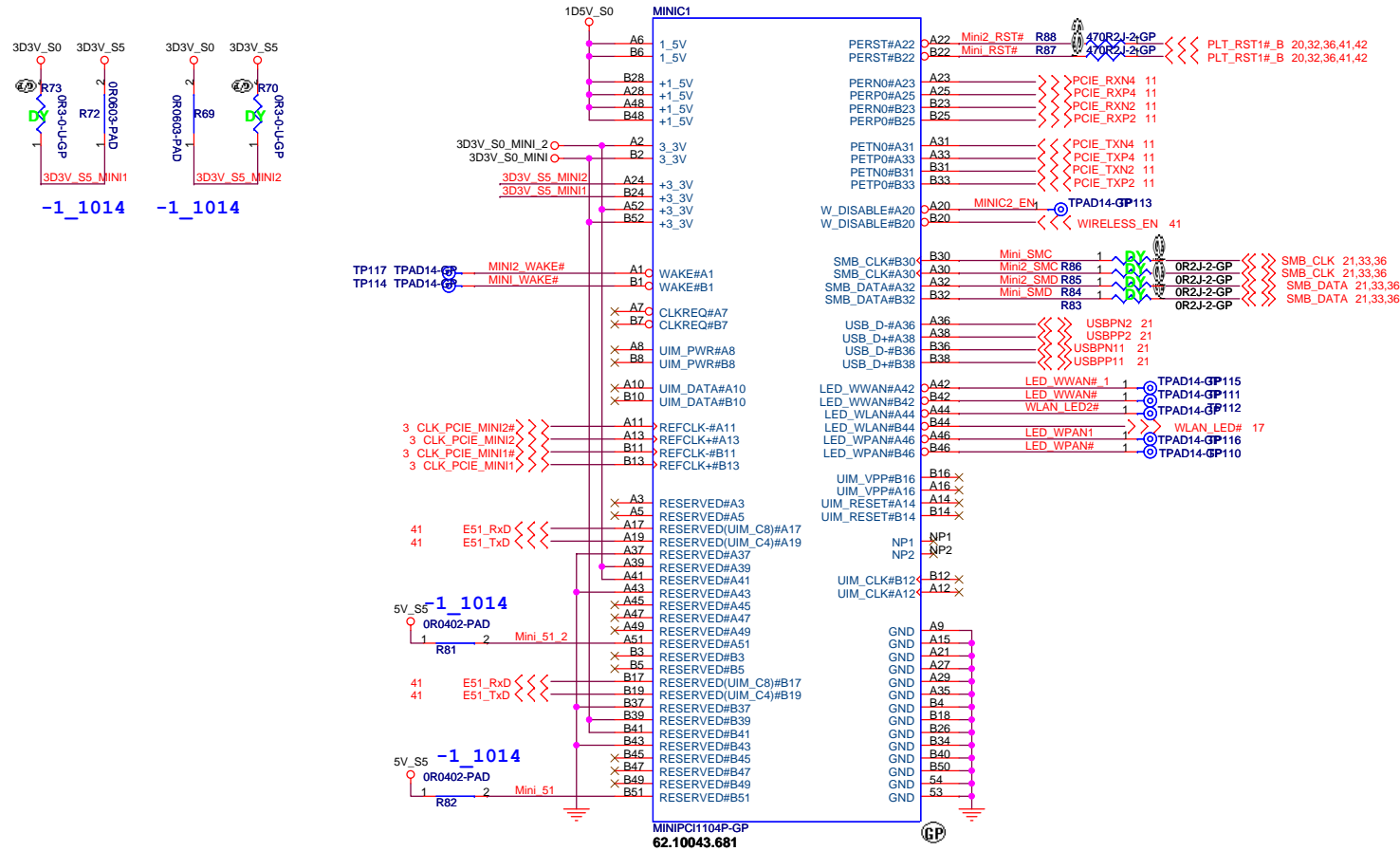
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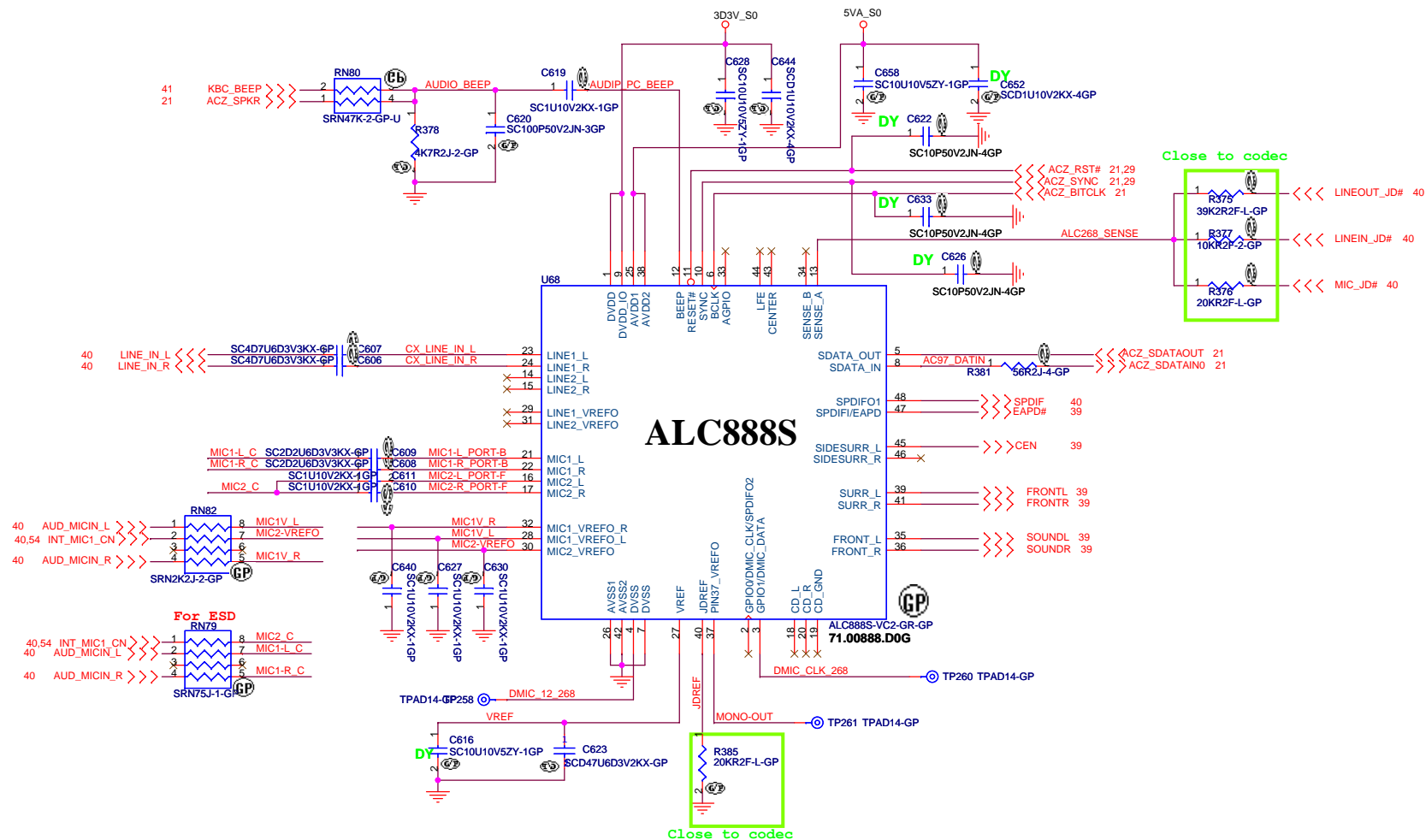
緯創資通 Wistron Corporation  
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Taipei Hsien 221, Taiwan, R.O.C.

Title				
NEW CARD				
Size	Document Number			Rev
A4	Big Bear 2A			SC
Date:	Monday, October 27, 2008	Sheet	36 of	55

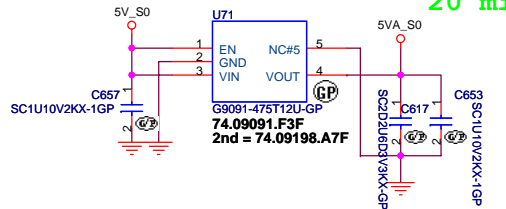
# Mini Card Connector(TV) UPPER SLOT

## Mini Card Connector(WLAN) LOWER SLOT





## POWER GENERATE \*Layout\* 20 mil



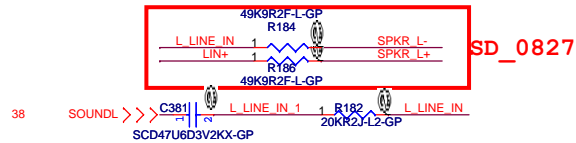
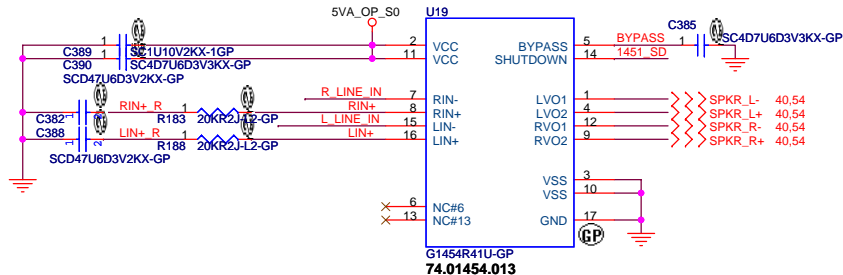
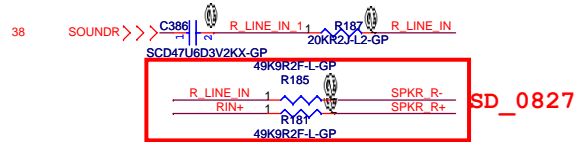
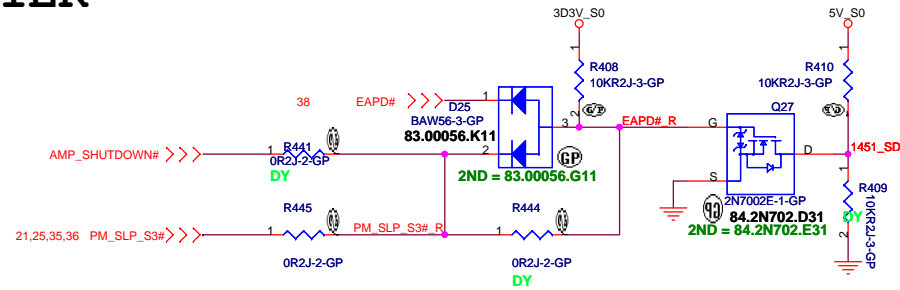
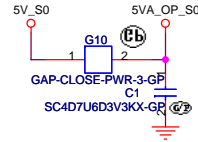
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**緯創資通 Wistron Corporation**  
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Taipei Hsien 221, Taiwan, R.O.C.

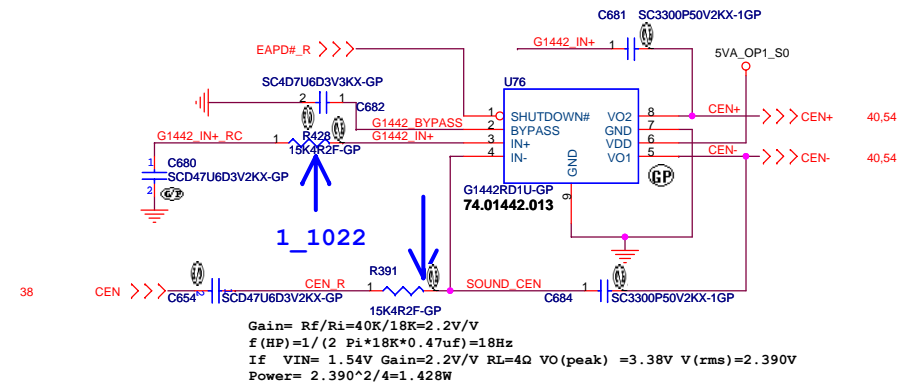
Title **Azalia codec ALC268**

Size <b>A3</b>	Document Number <b>Big Bear 2A</b>	Rev <b>SA</b>
Date: Monday, October 27, 2008	Sheet 38 of 55	

# AUDIO OP AMPLIFIER

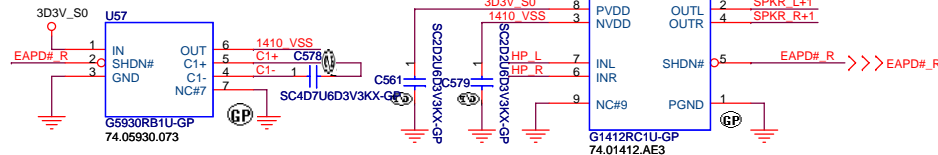
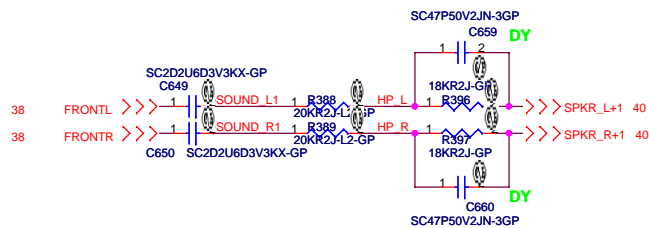


Gain=  $R_f/R_i=52K/20K=2.6V/V$   
 $f(HP)=1/(2 \pi * 20K * 0.47\mu f)=16.9Hz$   
 If  $V_{IN}=1.54V$  Gain=2.6V/V  $R_L=4\Omega$   $V_O(peak)=4V$   $V(rms)=2.828V$   
 Power=  $2.828^2/4=1.999W$



Gain=  $R_f/R_i=40K/18K=2.2V/V$   
 $f(HP)=1/(2 \pi * 18K * 0.47\mu f)=18Hz$   
 If  $V_{IN}=1.54V$  Gain=2.2V/V  $R_L=4\Omega$   $V_O(peak)=3.38V$   $V(rms)=2.390V$   
 Power=  $2.390^2/4=1.428W$

## KBC\_MUTE\_GPIO8



Gain=  $R_f/R_i=20K/18K=0.9V/V$   
 $f(HP)=1/(2 \pi * 20K * 0.47\mu f)=16.9Hz$   
 If  $V_{IN}=1.54V$  Gain=0.9V/V  $R_L=4\Omega$   $V_O(peak)=4V$   $V(rms)=2.828V$   
 Power= ?

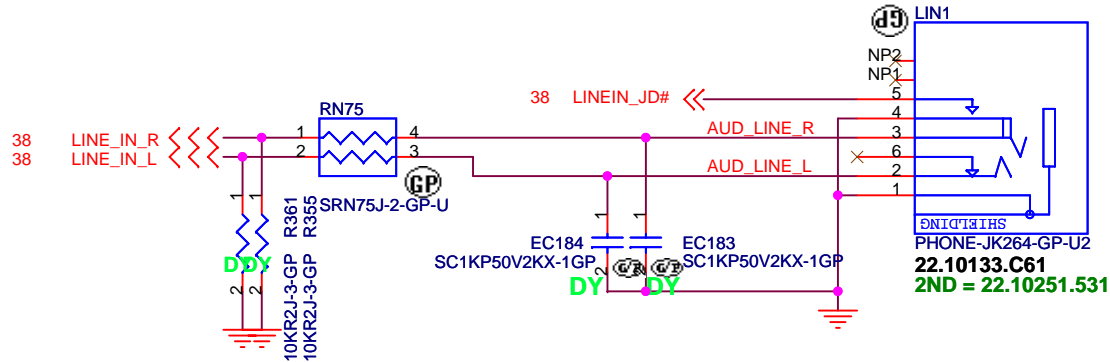
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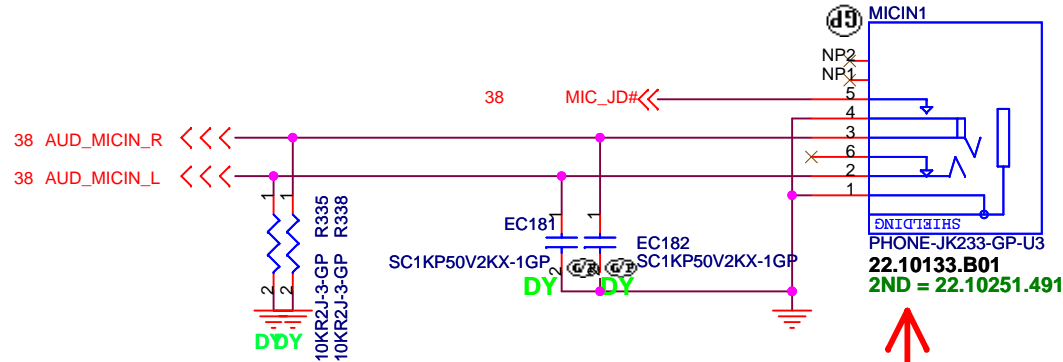
Title			AUDIO AMP	
Size	A3	Document Number	Big Bear 2A	
Date	Monday, October 27, 2008	Sheet	39	of 55
Rev	SB			



## LINE IN

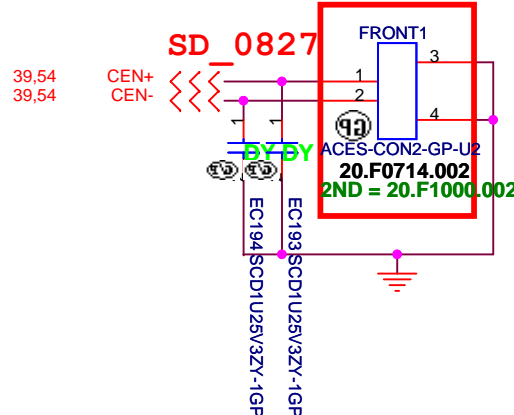


## MIC IN

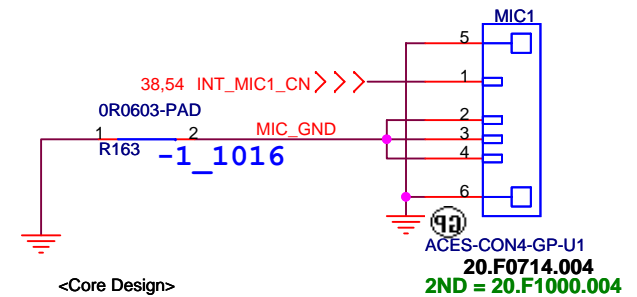
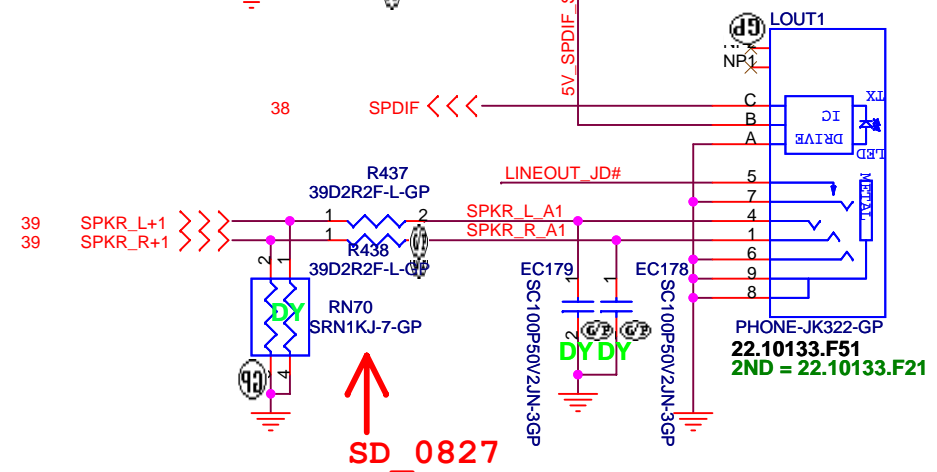
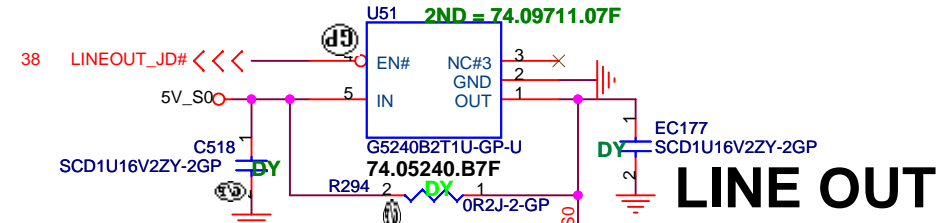
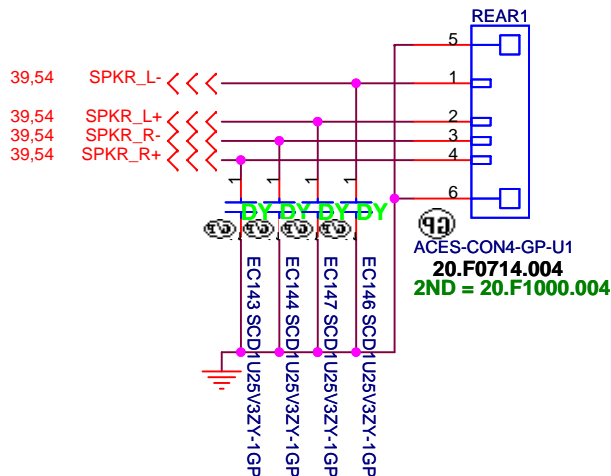


SD\_0912 change 2nd

## SUBWOOFER



## REAR Speaker

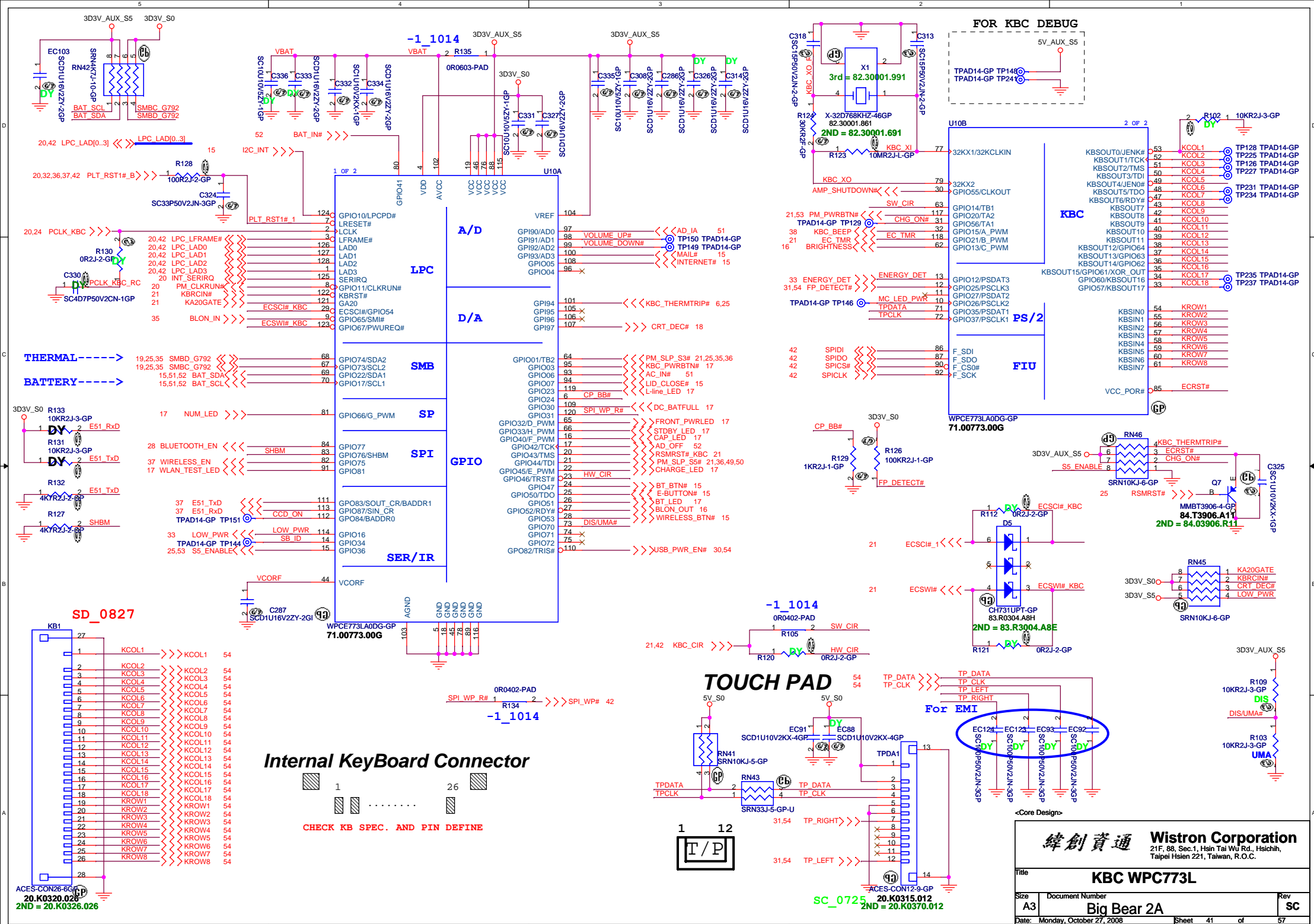


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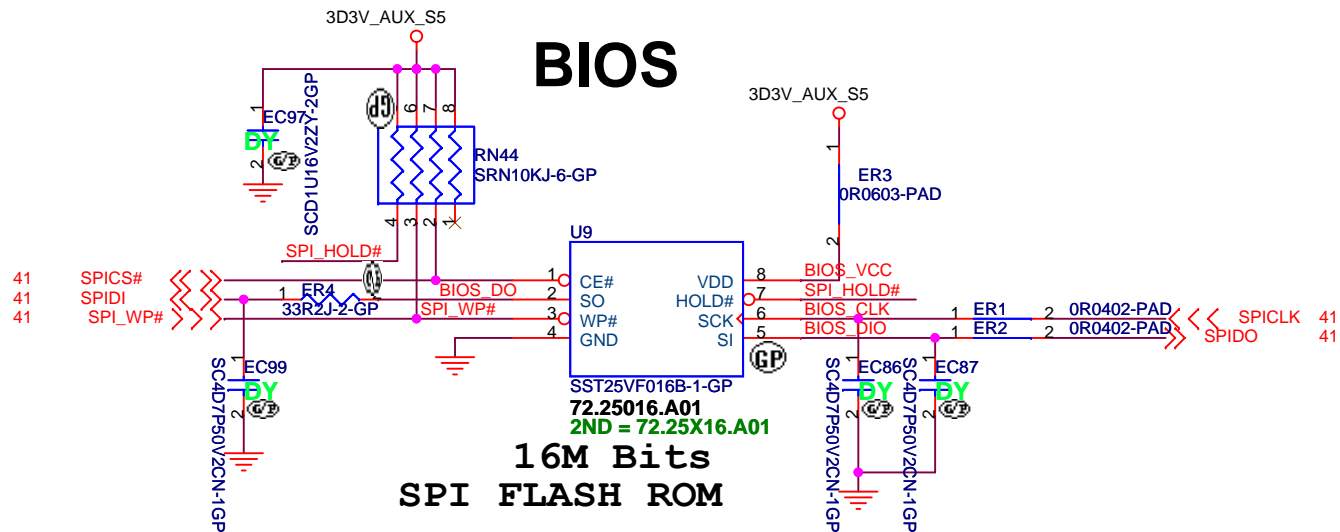
緯創資通

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

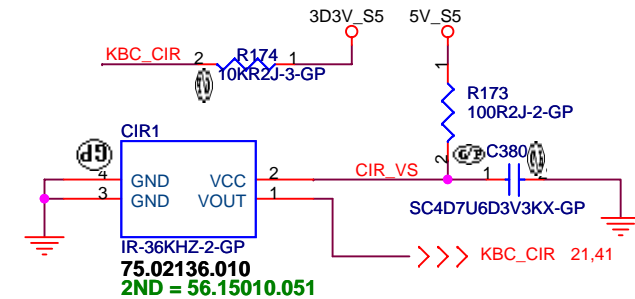
Title			AUDIO JACK	
Size	Document Number	Big Bear 2A		Rev
A4				SD
Date:	Monday, October 27, 2008	Sheet	40	of 55



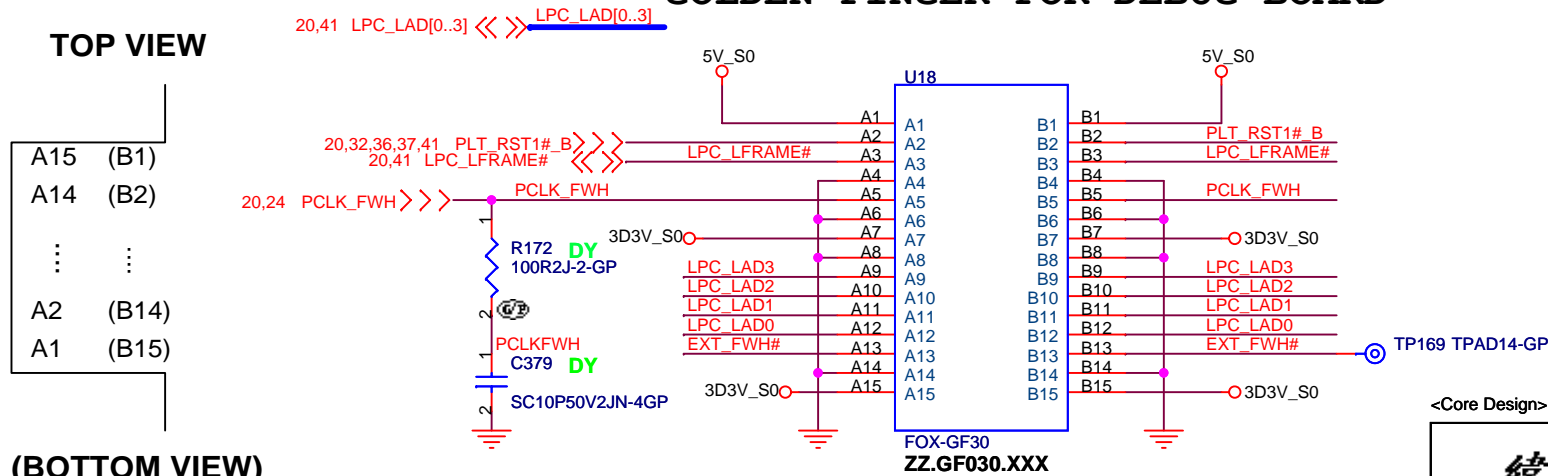
# BIOS



# CIR Module



# GOLDEN FINGER FOR DEBUG BOARD



## TOP VIEW

A15 (B1)  
A14 (B2)  
:  
:  
A2 (B14)  
A1 (B15)

## (BOTTOM VIEW)

<Core Design>

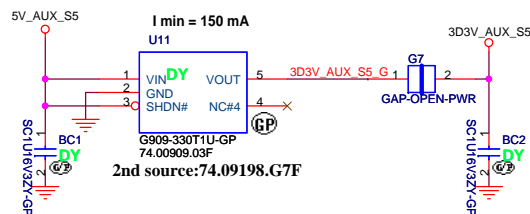
**緯創資通 Wistron Corporation**  
21F, 88, Sec.1, Hsin Tai Wu Rd., Hsichih,  
Taipei Hsien 221, Taiwan, R.O.C.

Title **BIOS & CIR**

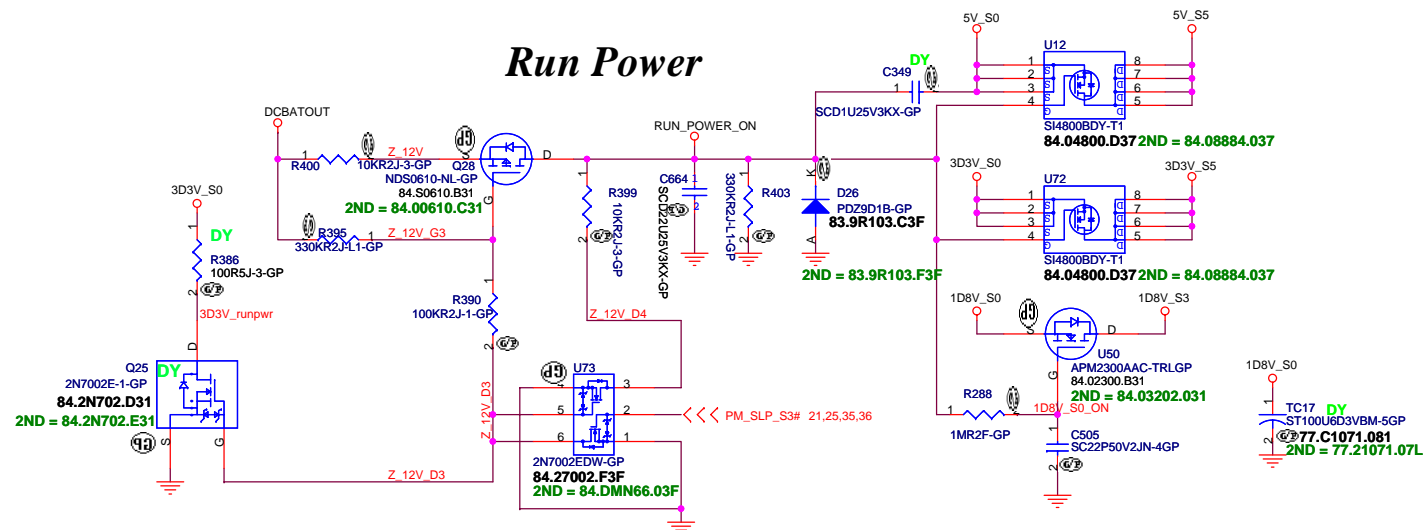
Size A4 Document Number **Big Bear 2A** Rev SB

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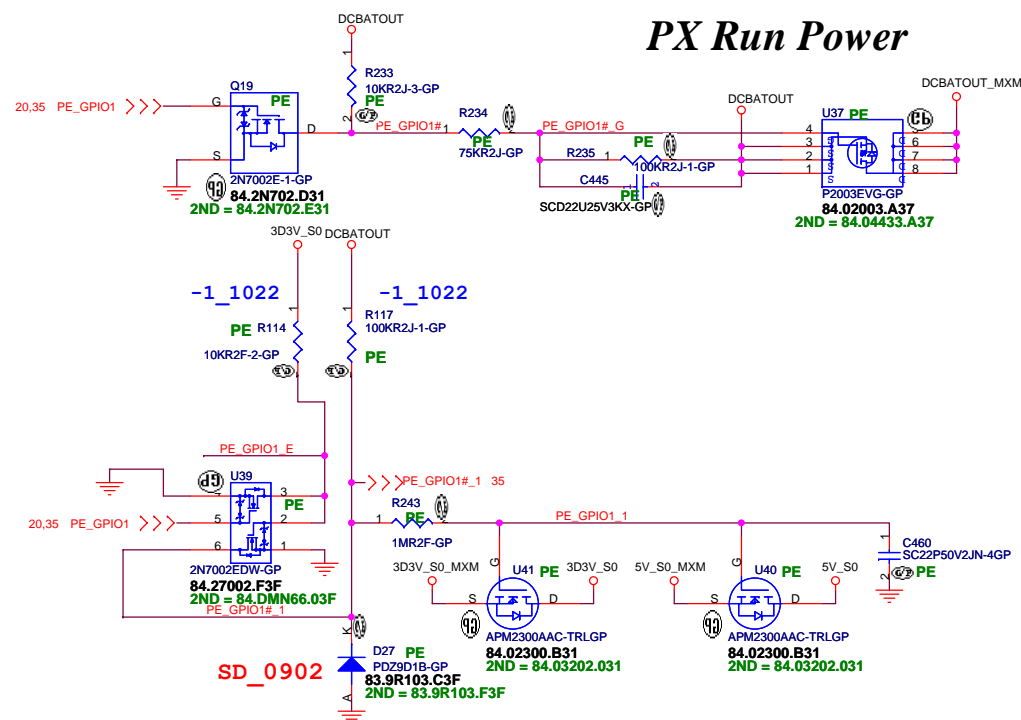
**Aux Power**      3D3V\_AUX\_S5



## Run Power

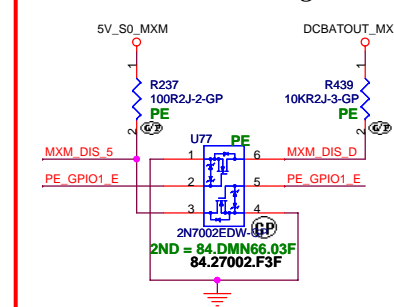


***PX Run Power***



## SD 0902

### *PX Run Power Discharge circuit*



## <Core Design>

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

Title	<b><i>RUN POWER and 3D3V AUX S5</i></b>
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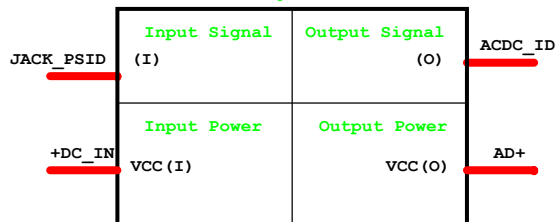
Size	Document Number	Rev
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Date: Monday, October 27, 2008 Sheet 42 of 57

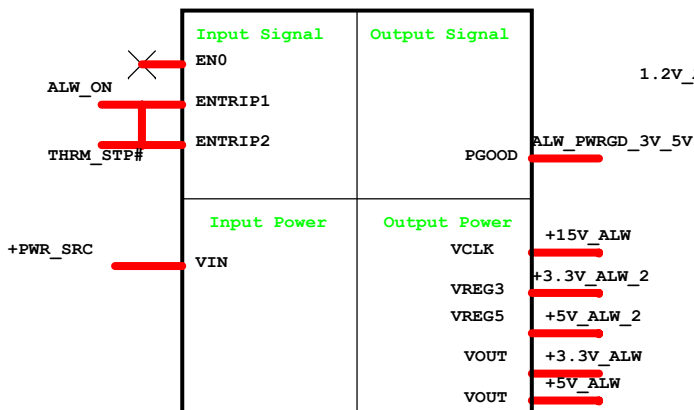
Date: Monday, October 27, 2008 Sheet 43 of 57



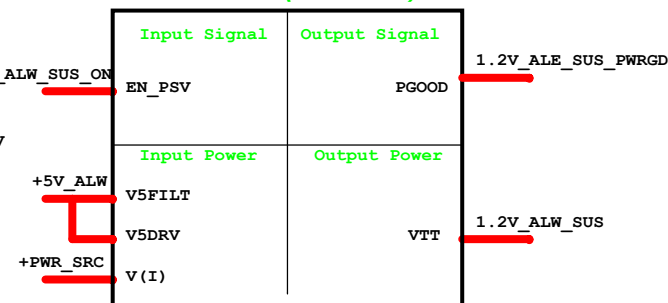
## Adapter



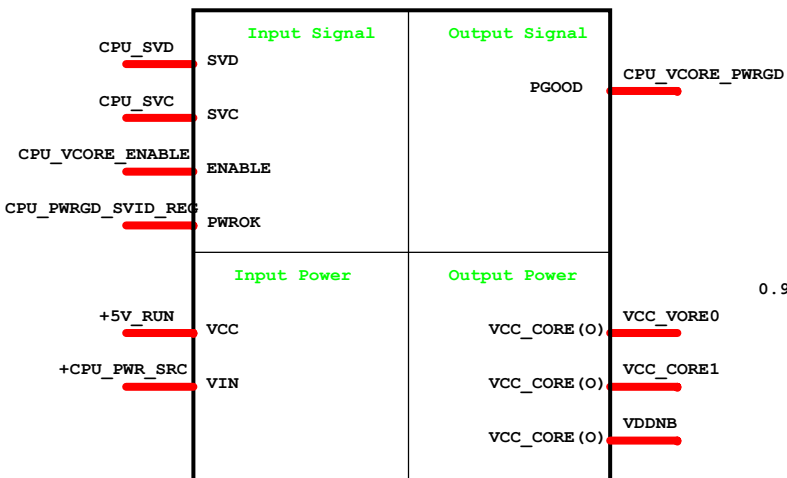
## SN0608098



## DCDC 1D2V(TPS5117)

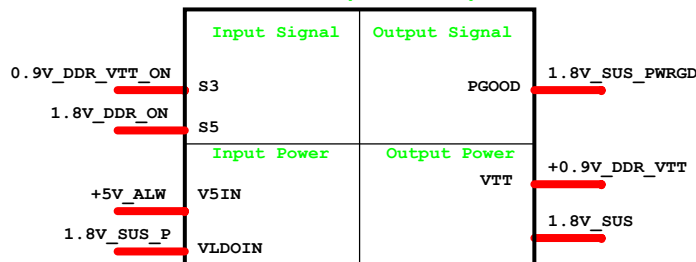


## CPU\_CORE ISL6265HRTZ

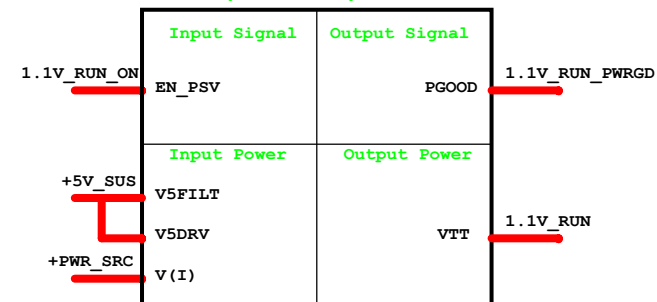


	S3	S5	VDDQ	VTTREF	VTT
S0	1	1	1	1	1
S4	0	0	0	0	0

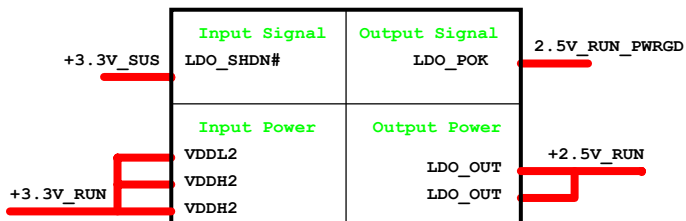
## 1D8V/0D9V(TPS5116)



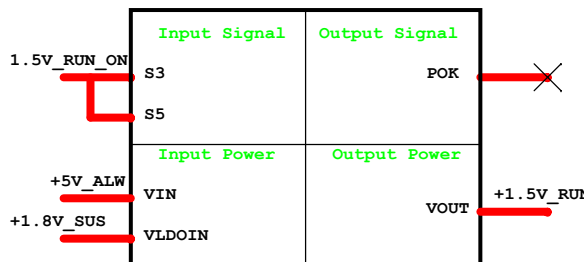
## 1D1V(TPS5117)



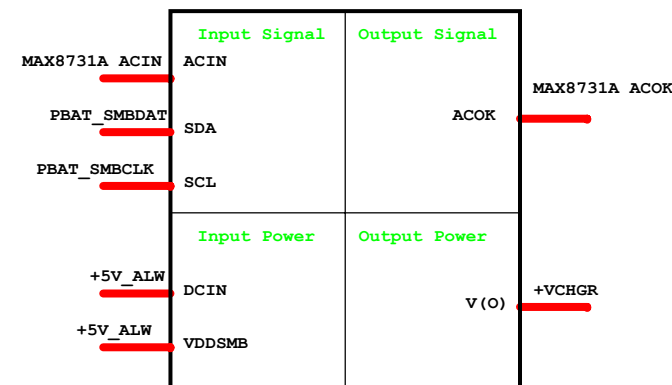
## 2.5V LDO EMC4002



## 1.5V LDO



## CHARGER BQ24745



<Core Design>

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

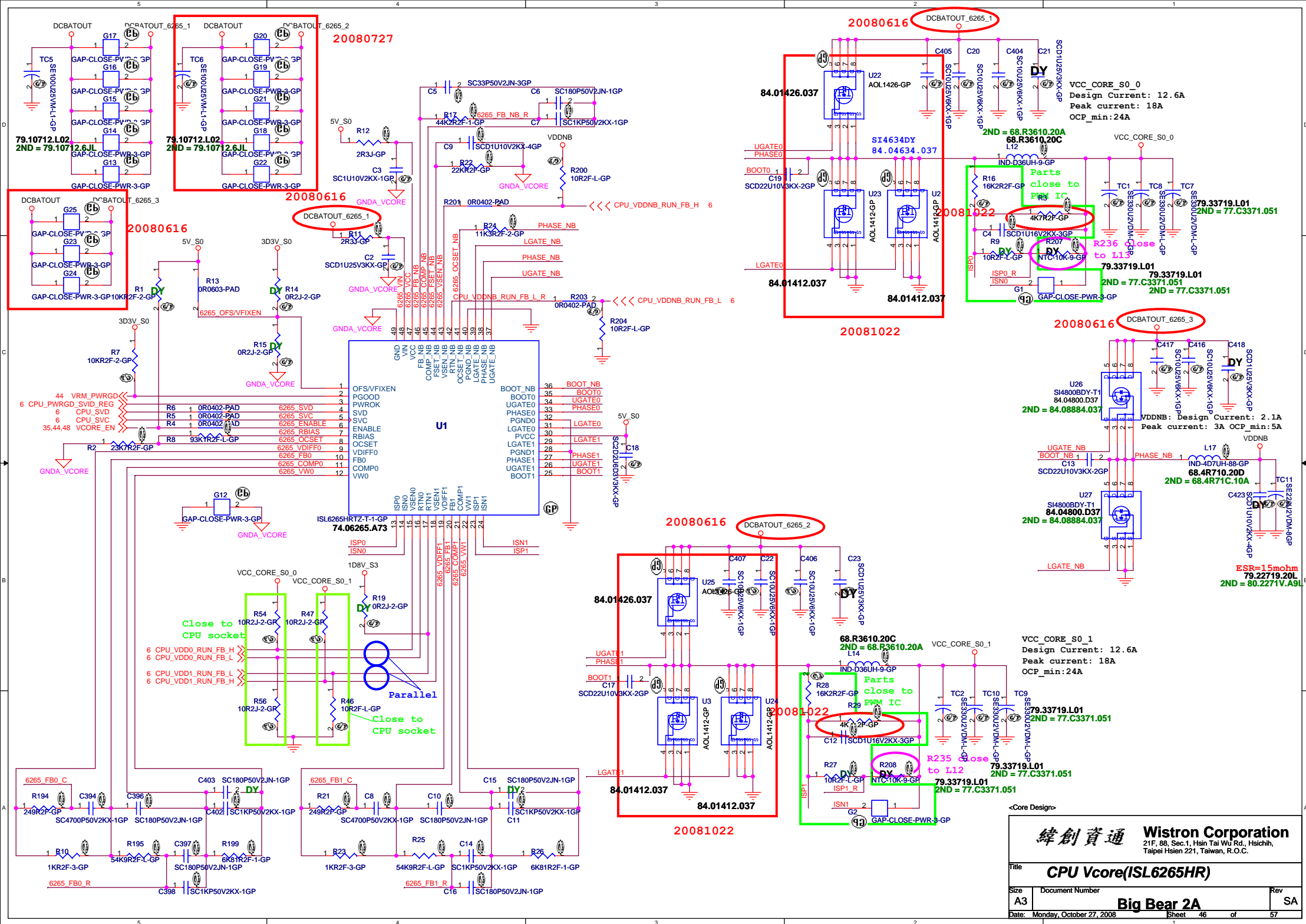
Title Power Block Diagram

Size A3 Document Number

Date: Monday, October 27, 2008 Sheet 45 of 57

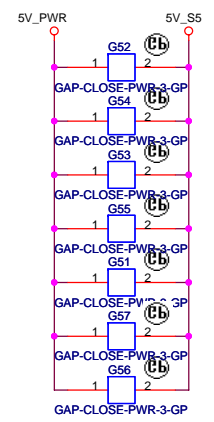
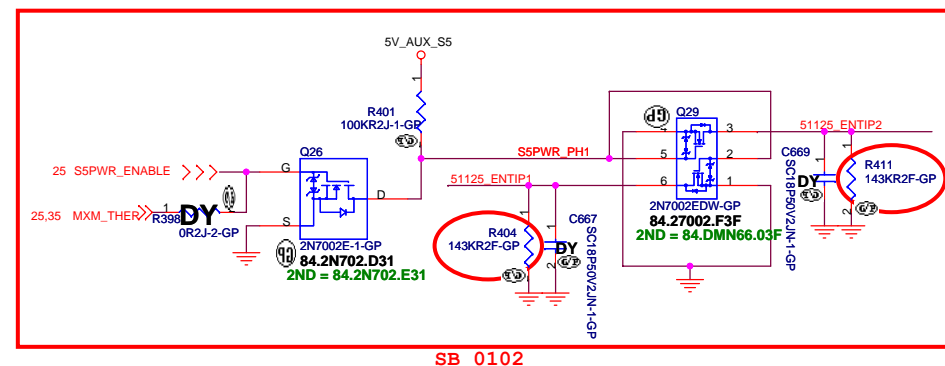
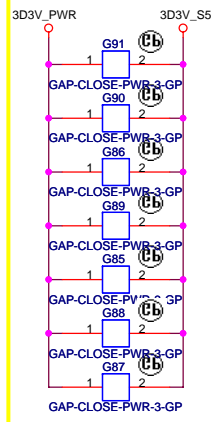
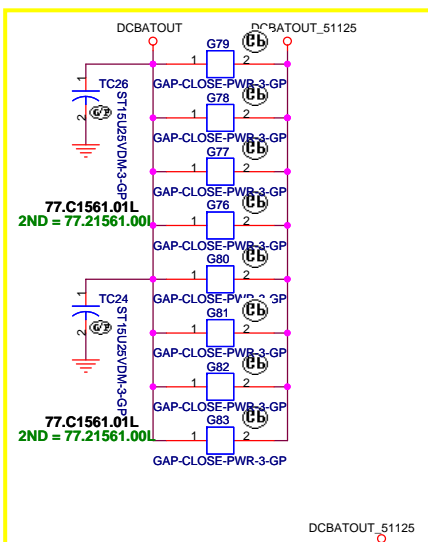
Big Bear 2A

Rev SA



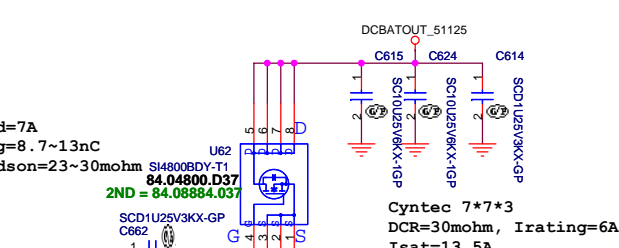
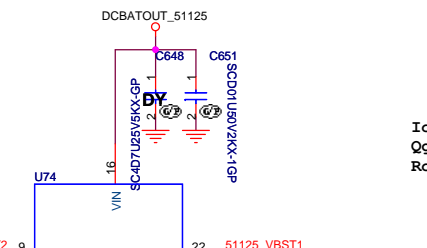
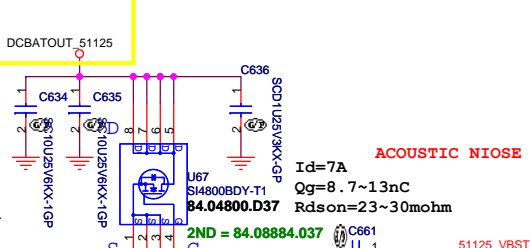


2008/04/15

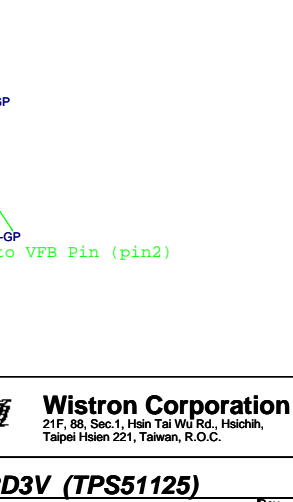
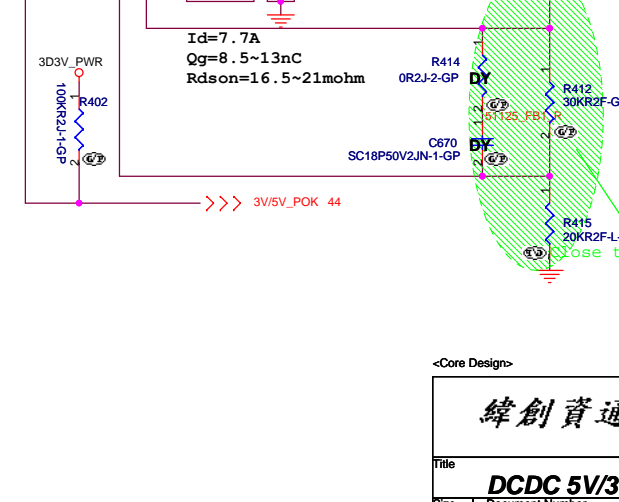
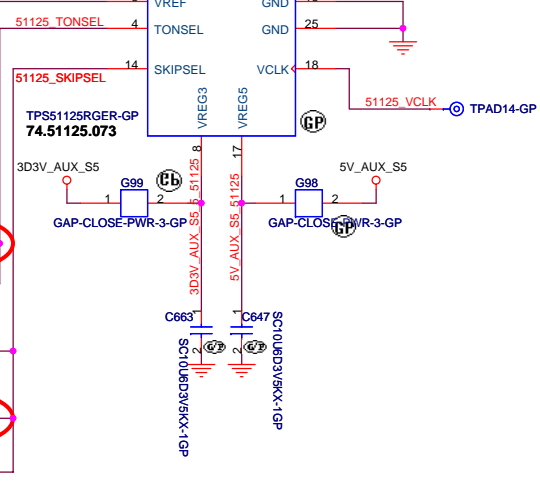
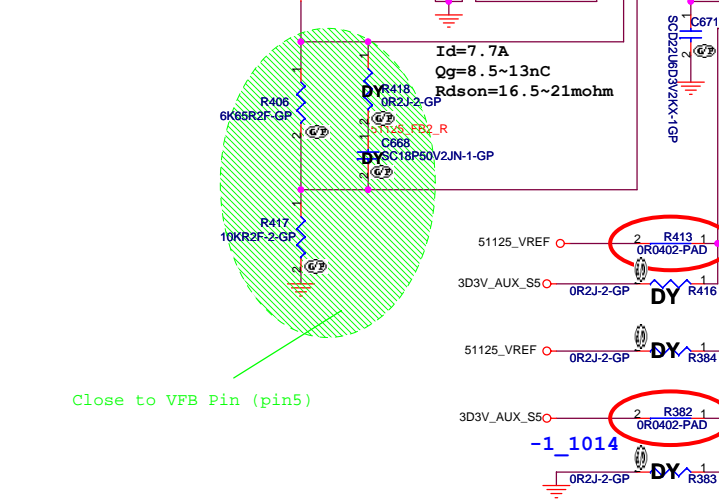
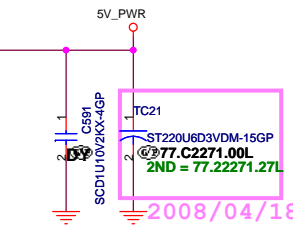
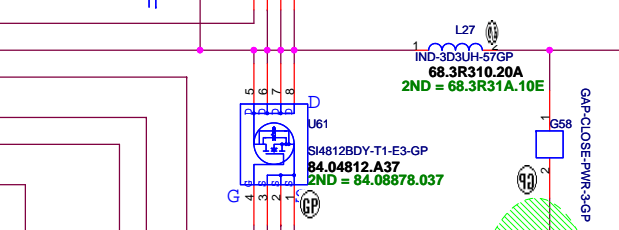
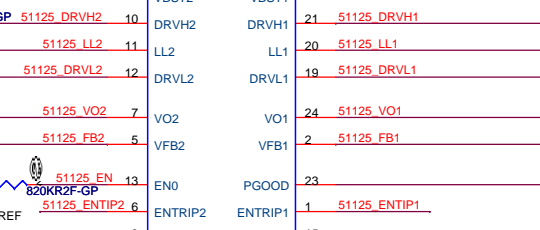
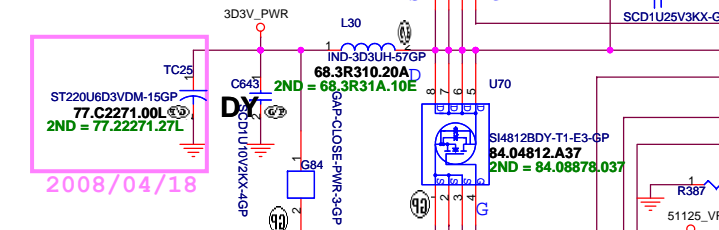


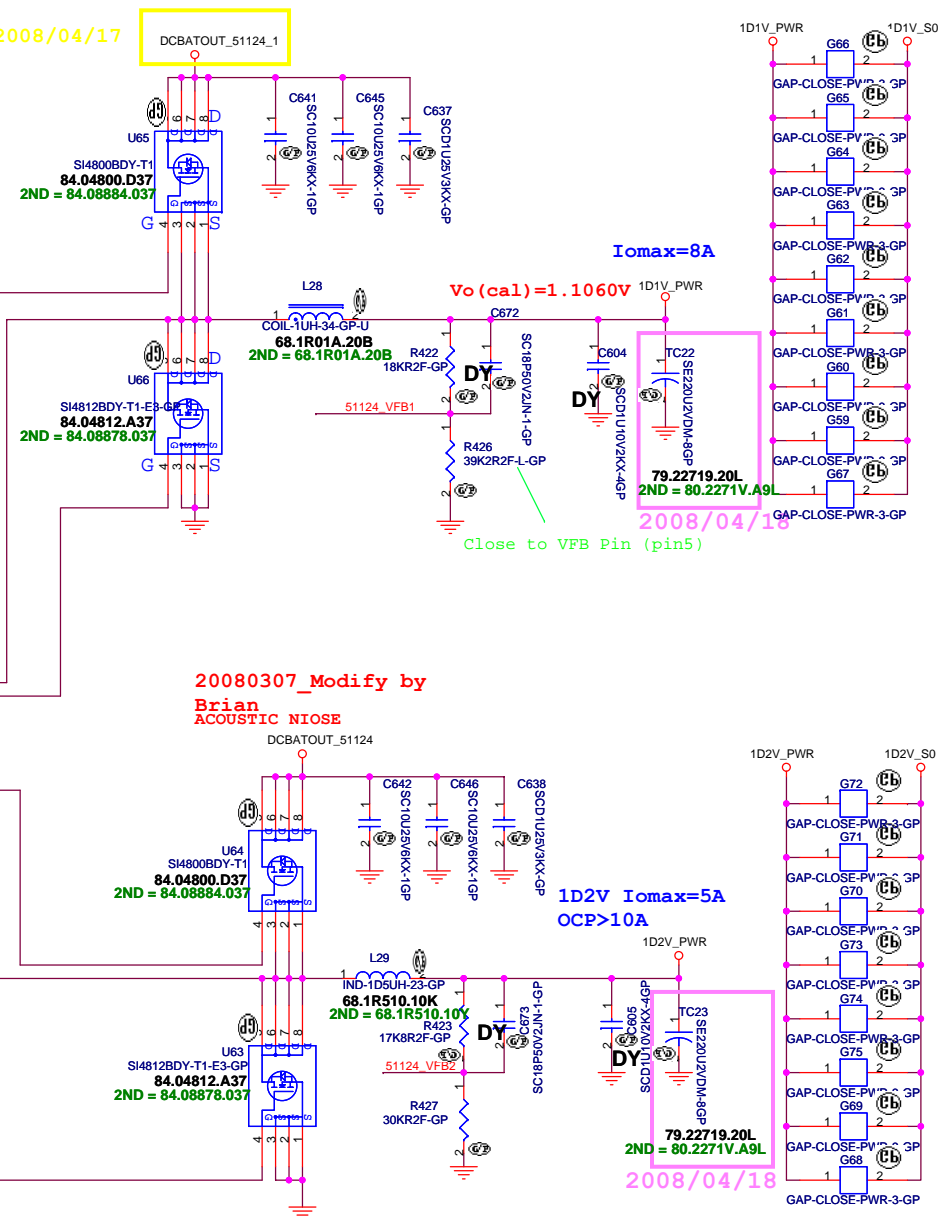
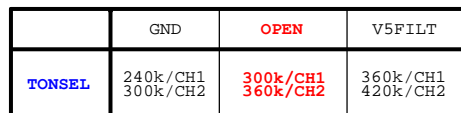
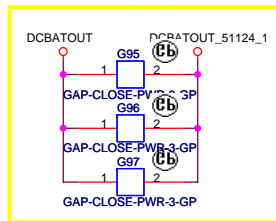
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Isat=13.5A



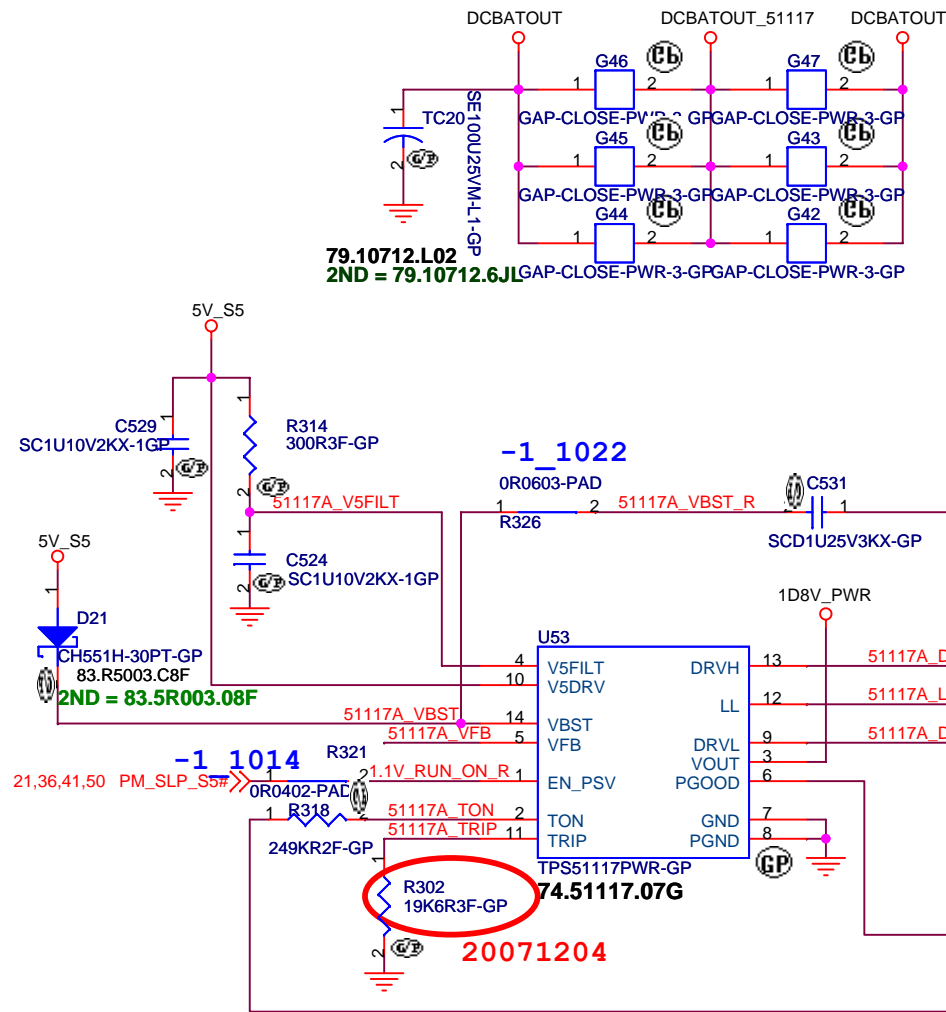
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OCP min = 10A





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Title			
TPS51124 1D1V 1D2V			
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79.10712.L02  
2ND = 79.10712.6JL

-1\_1022

74.51117.07G

SI4800BDY-T1  
84.04800.D37  
2ND = 84.08884.037

SI4812BDY-T1-E3-GP  
84.04812.A37  
2ND = 84.08878.037

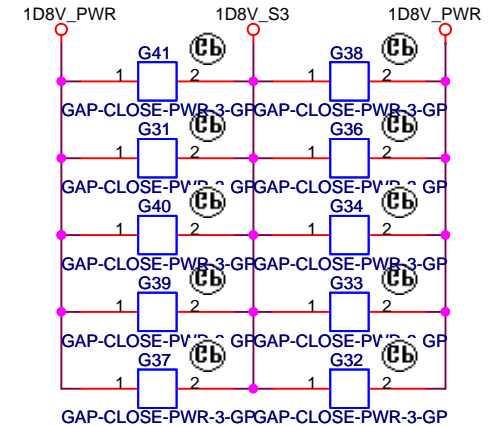
Cyntec 10\*10\*4  
DCR=4.2mohm, Irating=16A  
Isat=33A

2ND = 68.1R51A.10G  
L18  
IND-1D5UH-34-GP  
68.1R510.10J

Vo(cal)=1.8214V  
1D8V Iomax=10A  
OCP>15A

2008/04/18

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



<Core Design>

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1D8V(TPS5117)

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A4

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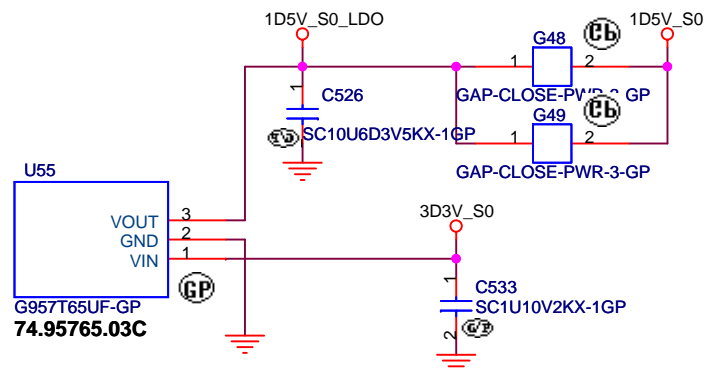
SB

Date: Monday, October 27, 2008

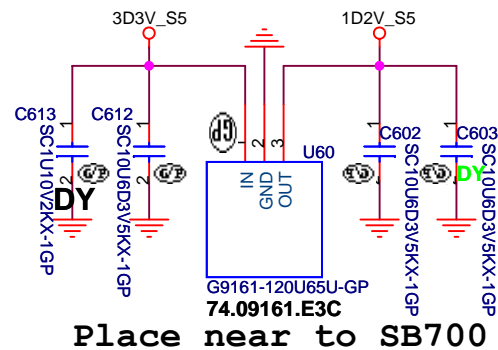
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# G957

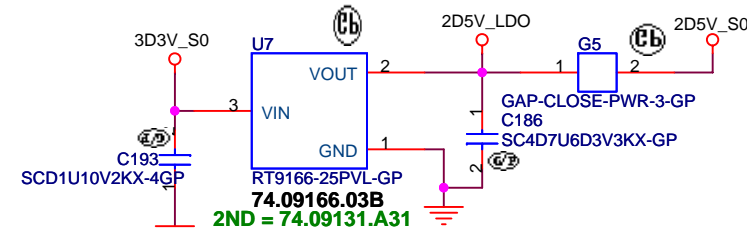
1D5V\_S0  
I<sub>omax</sub>=1A



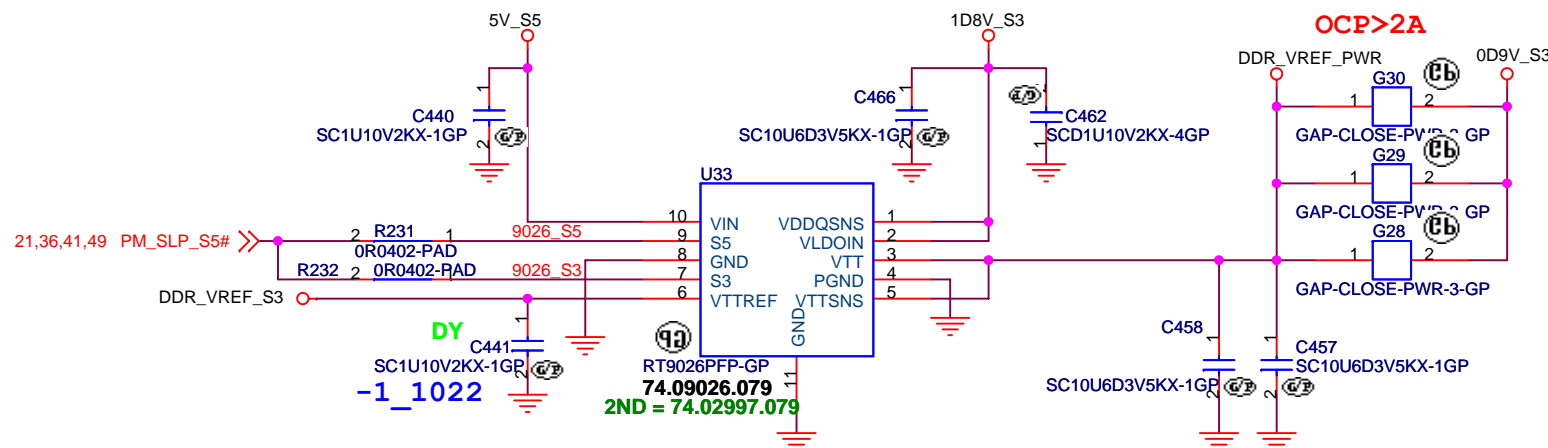
1D2V\_S5  
I<sub>omax</sub>=400mA



2D5V\_S0  
I<sub>omax</sub>=0.3A 2D5V/300mA



I<sub>omax</sub>=1A  
OCP>2A



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0D9V&2D5V&1D25V&1D5V

Size

Document Number

A4

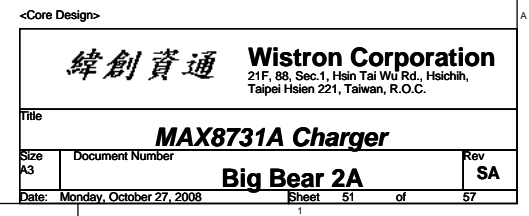
Big Bear 2A

Rev

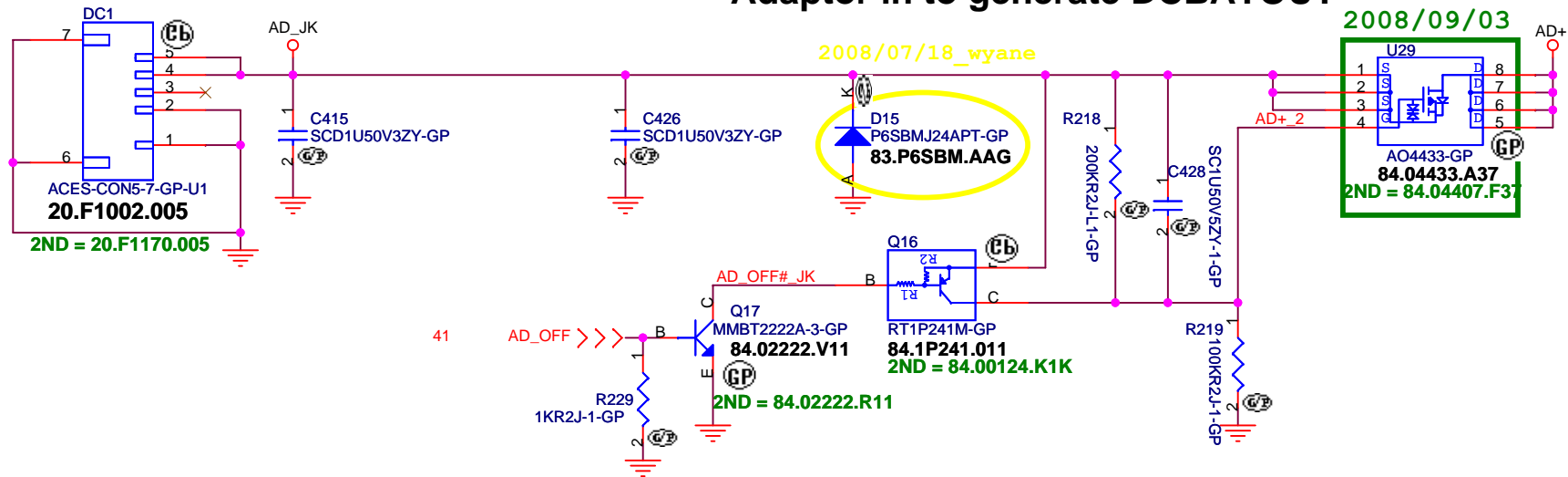
SB

Date: Monday, October 27, 2008

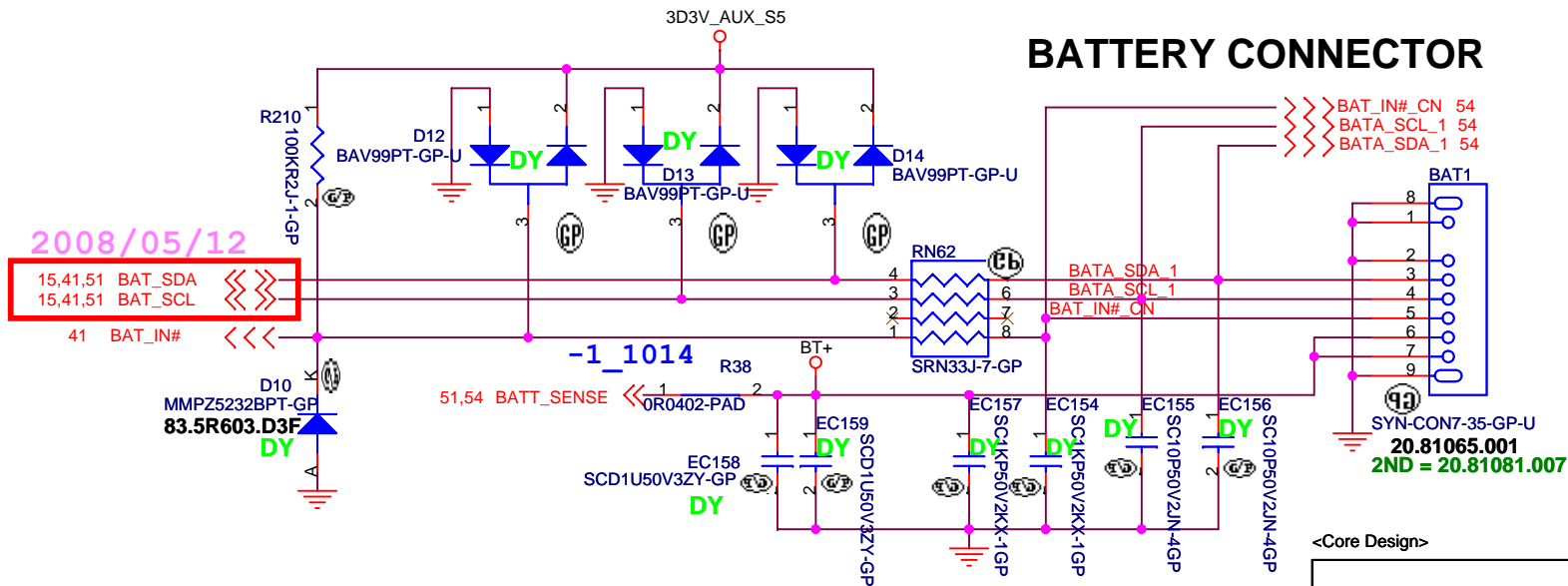
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## Adaptor in to generate DCBATOUT



## BATTERY CONNECTOR



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**AD/BATT CONN**

Size  
**A4**

Document Number
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**SA**

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