

Platform : Braswell

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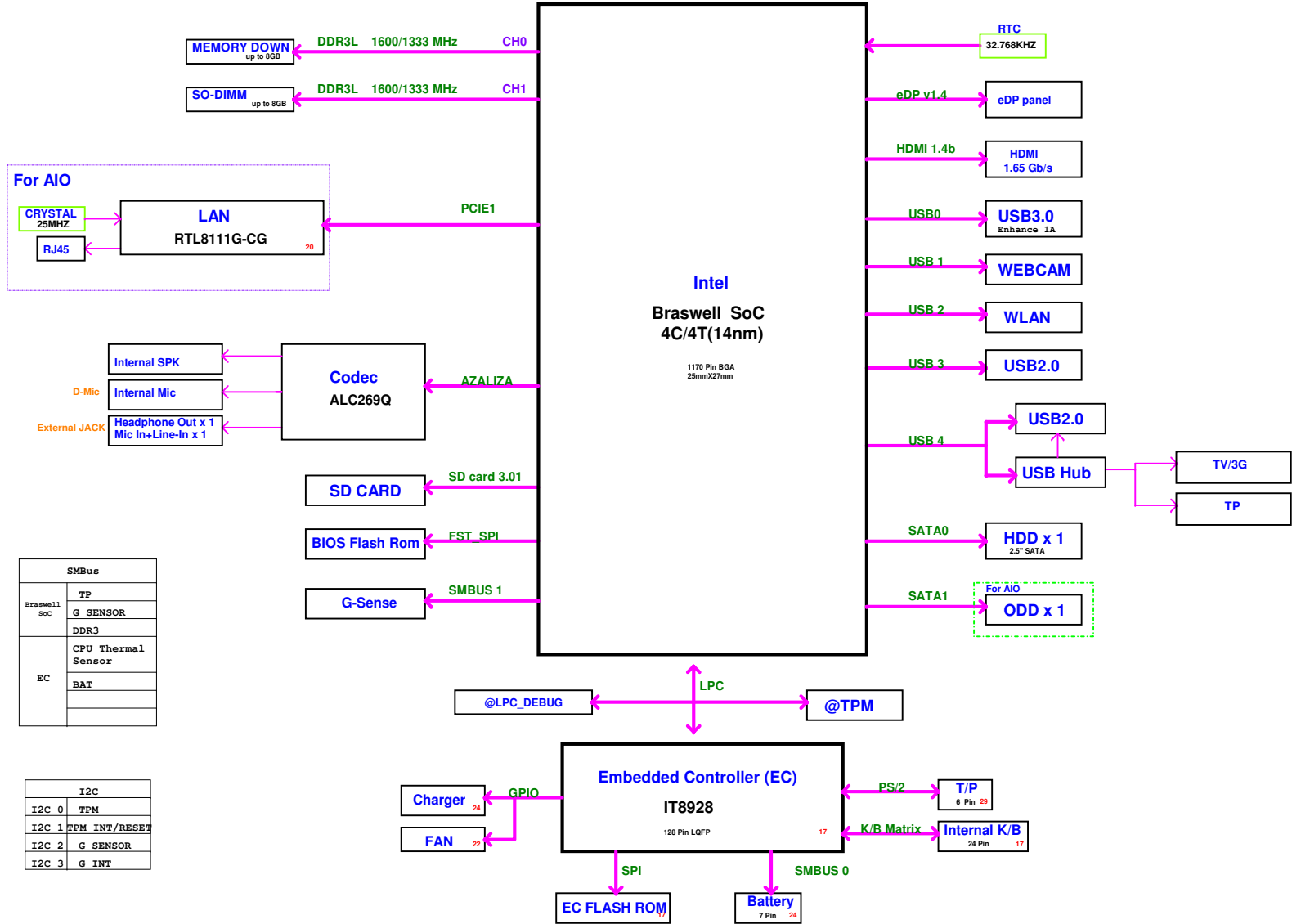
M/B Schematic Version Change List

[illegible]

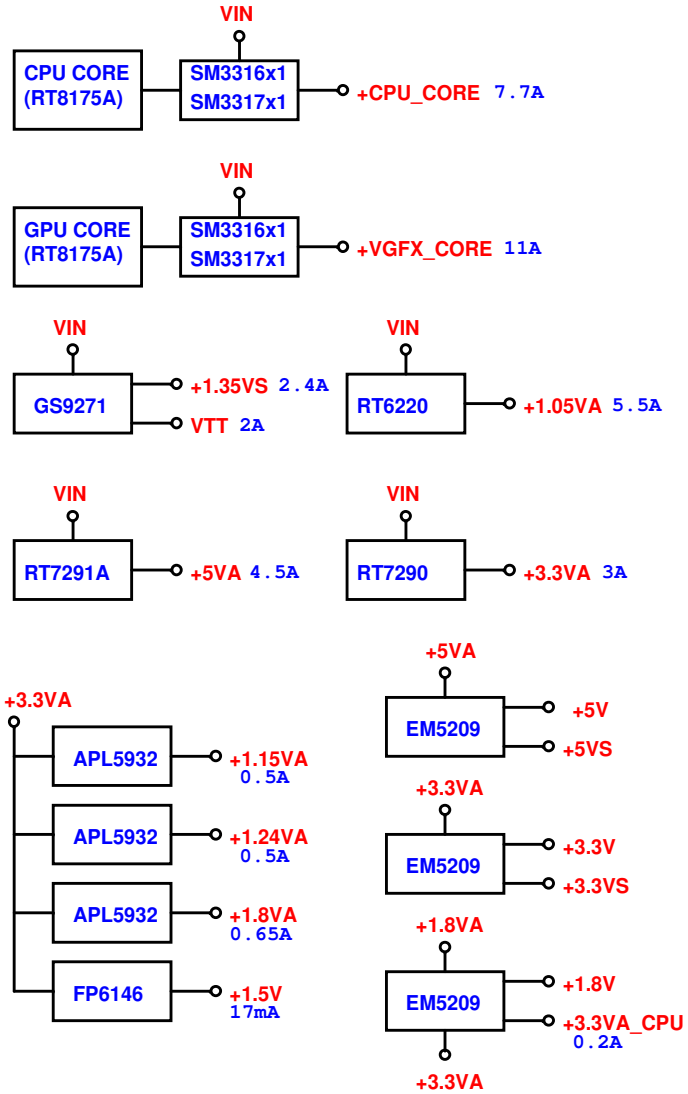
Daughter Board Schematic Version Change List

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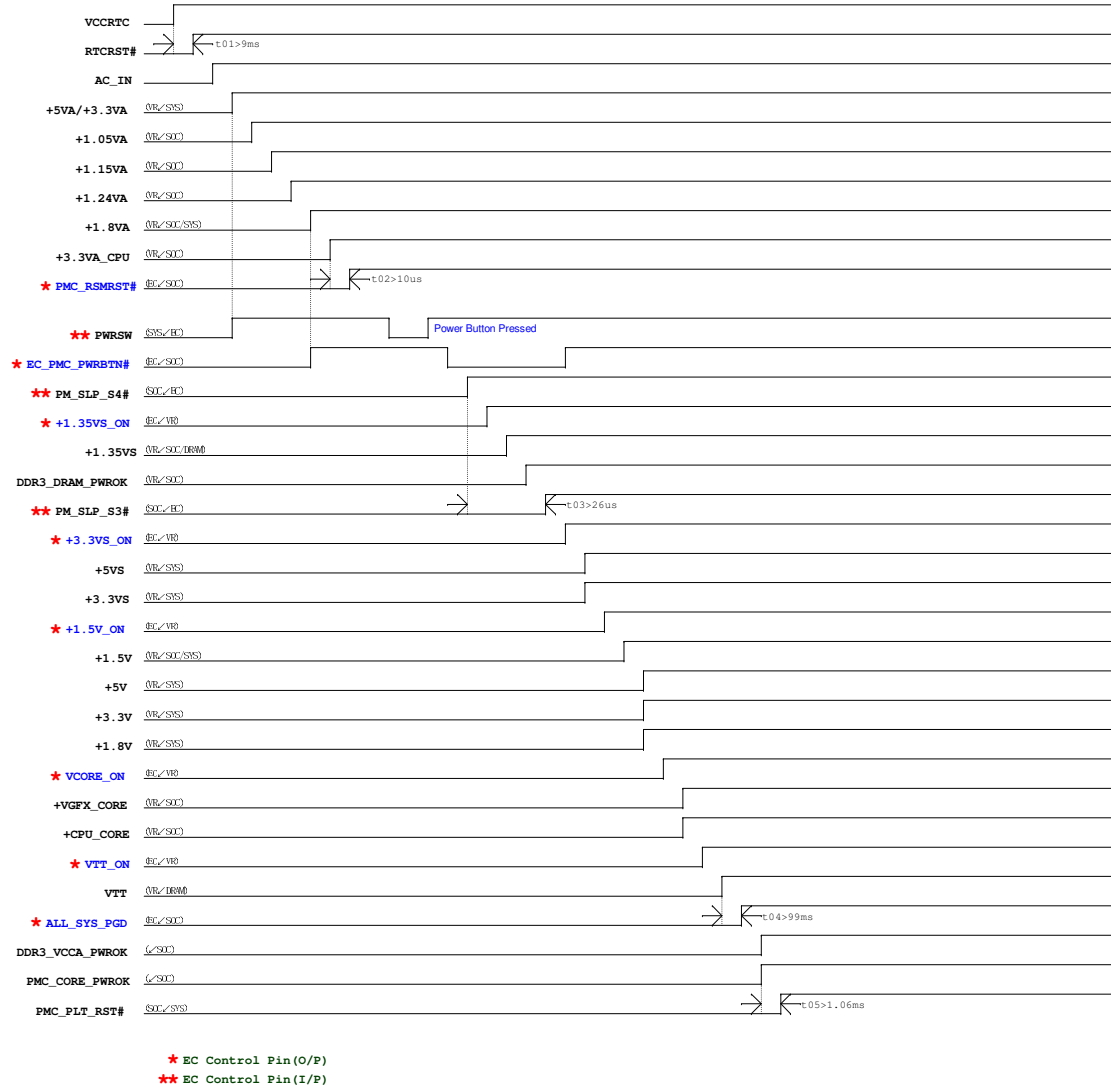
NSBW140X BLOCK DIAGRAM



POWER BLOCK DIAGRAM



Power On Sequence



Input Power	Voltage	Current	Power Rail	Voltage	Current
VIN	12-19V	4.1A	+CPU_CORE	VID	7.7A
			+VGFX_CORE	VID	11.0A
			+1.35VS	1.35V	8.0A
			VTT	0.675V	2.0A
			+1.05VA	1.05V	5.5A
			+5VA	5.0V	5.5A
			+3.3VA	3.3V	3.0A

Input Power	Voltage	Current	Power Rail	Voltage	Current
+3.3VA	3.3V	3.0A	+3.3VA_CPU	3.3V	0.2A
			+1.15VA	1.15V	0.5A
			+1.24VA	1.24V	0.5A
			+1.08VA	1.8V	0.65A
			+1.5V	1.5V	0.02A
			+3.3V/+3.3VS	3.3V	1.5A

Input Power	Voltage	Current	Power Rail	Voltage	Current
+5VA	5.0V	5.5A	+5V/+5VS	5V	5.5A

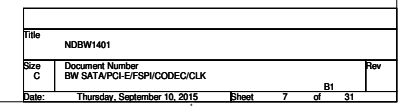
ITE8928

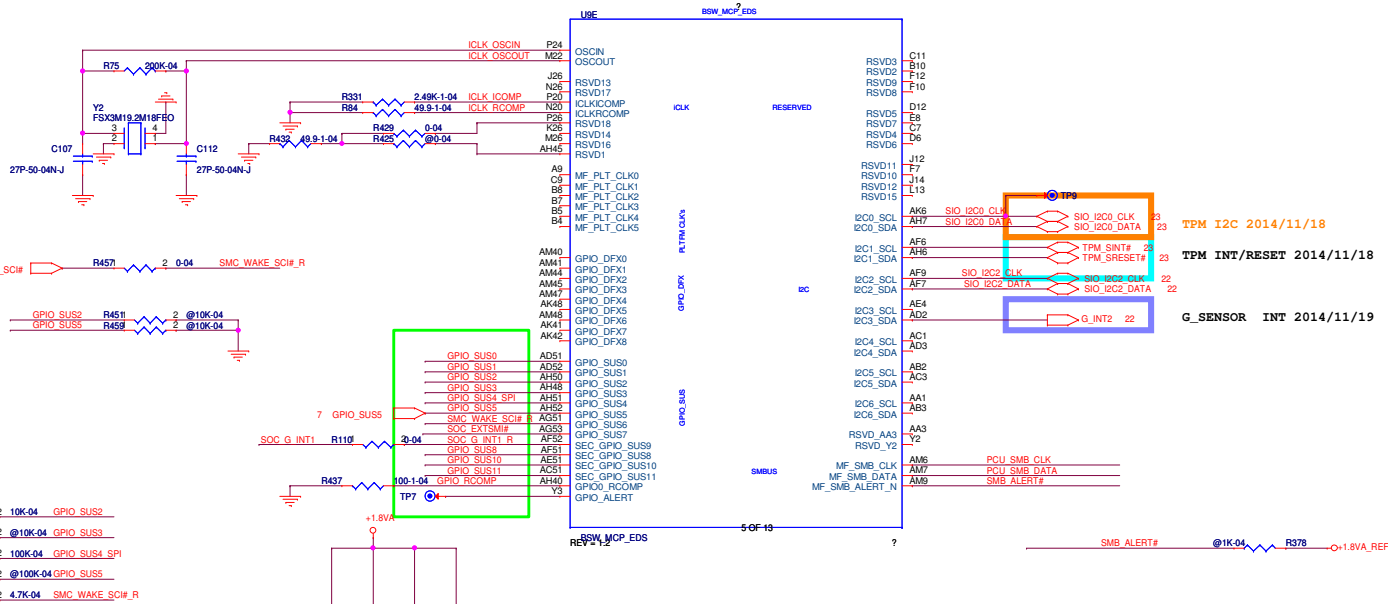
Default

	GPIO	Pull/Mode	DSN LEVEL	EC LEVEL	IC LEVEL	Comment
GPA0	PID_1_CHG_R_LED	UP/GPO	3.3VA	3.3V		Reserved
GPA1	PID_2_PWR_LED	UP/GPO	3.3VA	3.3V		Reserved
GPA2	BTL_BEEP	/GPO	3.3V	3.3V	3.3V	Reserved
GPA3	Fast_Charge	/GPO	3.3V	3.3V	3.3V	
GPA4	+1.05VA_ON	UP / GPO	3.3VA	3.3V	>1.25V	Reserved
GPA5	SENBAT_V	/ GPO	3.3V	3.3V	For NMOS	
GPA6	PMC_RSMRST#	Dn / GPI	3.3V	3.3V	3.3V	
GPA7	+1.35VS_ON	/ GPO	3.3V	3.3V	>1.25V	
GPB0	WLAN_HOST_WAKE	/ GPI	3.3V	3.3V	3.3V	Reserved
GPB1	WLAN_SUSPEND	/ GPO	3.3V	3.3V	3.3V	Reserved
GPB2	WEBCAM_ON	/ GPO	3.3V	3.3V	3.3V	
GPB3	BAT_SMBCLK1	UP/GPIO	3.3VA	1.8VA		
GPB4	BAT_SMBDAT1	UP/GPIO	3.3VA	1.8VA		
GPB5	SOC_BL_EN	/ GPI	1.8VA	1.8/3.3VA	MAX 5.0V	Reserved
GPB6	+3.3V_EC	UP / GPI	3.3VA	1.8/3.3VA	3.3V	
GPB7	SAFTY_PROTECT	Dn / GPO	3.3V	3.3V	For NMOS	
GPC0	3G_Power_ON_EC	/ GPO	3.3VA	1.8/3.3VA	3.3V	Reserved
GPC1	SMB_CLK_EC	UP / GPIO	3.3VA	1.8/3.3VA	3.3V	
GPC2	SMB_DATA_EC	UP / GPIO	3.3VA	1.8/3.3VA	3.3V	
GPC3	PWRBTN1#	UP / GPI	3.3VS	3.3V	3.3V	Reserved
GPC4	PANEL_DETECT 2	UP / GPI	3.3VA	3.3V	3.3V	
GPC5	CHG_HI_VOLT#	/ GPO	3.3V	3.3V	For NMOS	
GPC6	PANEL_3.3V_ON	UP /GPO	3.3V	3.3V	For NMOS	
GPC7	VTT_ON	/ GPO	3.3V	1.8/3.3VA	>1.25V	
GPD0	ADAP_IN	Dn / GPI	3.3V	1.8/3.3VA	For NMOS	
GPD1	EC_PMC_PWRBTN#	UP / GPO	1.8VA	1.8/3.3VA	1.8V	
GPD2	PLT_RST#	UP / GPI	3.3V	1.8/3.3VA	3.3V	
GPD3	SMC_WAKE_SCI#	Up / GPO	1.8VA	1.8/3.3VA	1.8V	Reserved
GPD4	EC_EXTSMI#	UP / GPO	1.8VA	1.8/3.3VA	1.8V	
GPD5	NC					
GPD6	+1.5V_ON	/ GPO	3.3V	3.3V	3.3V	
GPD7	PWR_USB#	UP/ GPO	3.3VA	3.3V	3.3V	
GPE0	LID#	UP / GPI	3.3VA	1.8/3.3VA	3.3V	
GPE1	AMP_MUTE#	/ GPO	3.3V	3.3V	3.3V	
GPE2	ALL_SYS_PGD	/ GPO	3.3V	3.3V	For NMOS	
GPE3	VCORE_ON	/ GPO	3.3V	3.3V	3.3V	
GPE4	PWRSW	UP / GPI	3.3VA	3.3V	3.3V	
GPE5	LVDS_VIN	/ GPO	3.3V	3.3V	For NMOS	
GPE6	3G_SIM_DET_EC	/ GPI	3.3V	1.8/3.3VA	3.3V	Reserved
GPE7	PMC_SLP_S0IX#_R	/ GPI	3.3V	1.8/3.3VA	3.3V	Reserved
GPF0	PANEL_VCC	Dn / GPO	3.3V	3.3V	3.3V	Reserved
GPF1	TXE_DISABLE	/ GPO	3.3V	3.3V	For NMOS	
GPF2	3G_Reset_EC	/ GPO	3.3V	1.8/3.3VA	3.3V	Reserved
GPF3	WLAN_ON	/ GPO	3.3V	1.8/3.3VA	For NMOS	
GPF4	TP_CLK	UP / GPIO	3.3V	1.8/3.3VA	3.3V	
GPF5	TP_DATA	UP / GPIO	3.3V	1.8/3.3VA	3.3V	
GPF6	PM_SLP_S3#	UP / GPIO	3.3VA	1.8/3.3VA	connect to level shifter	
GPF7	PM_SLP_S4#	UP / GPI	3.3VA	1.8/3.3VA	connect to level shifter	
GPG0	NC					
GPG1	+3.3VS_ON	/GPO	3.3V	3.3V	3.3V	
GPG2	NC					
GPG3	SPI_CE#	/GPO		3.3V	3.3V	
GPG4	SPI_SI	/GPI		3.3V	3.3V	
GPG5	SPI_SO	/GPO		3.3V	3.3V	
GPG6	LAN_PW_EN	UP/GPO	3.3V	3.3V	For NMOS	
GPG7	SPI_CLK	/GPO		3.3V	3.3V	
GPH0	AUX_OFF	Dn/GPO	3.3VA	1.8/3.3VA	For NMOS	
GPH1	PID_3_RF_LED_ON#	/GPO	3.3VA	1.8/3.3VA	3.3V	
GPH2	EC_LCDVDD_EN	UP/GPO	1.8VA	1.8/3.3VA	1.8V	
GPH3	RST	/GPO	3.3V	3.3V	For NMOS	Reserved
GPH4	PLATFORM_ID1	UP/GPI/ID1	3.3VA	3.3V	3.3V	
GPH5	PLATFORM_ID2	UP/GPI/ID2	3.3VA	3.3V	3.3V	Reserved
GPH6	PLATFORM_ID3	Dn/GPI/ID3	3.3VA	3.3V	3.3V	
GPH7	NC					

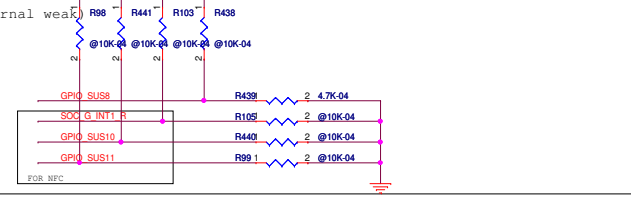
	GPIO	Pull/Mode	LEVEL	EC LEVEL	IC LEVEL	Comment
GPI0	CPU_THERMAL_SENSE	UP/GPI/ADC	3.3V	3.3V	3.3V	
GPI1	PANEL_DETECT	UP/GPI	3.3VA	3.3V	3.3V	
GPI2	LAN_WAKE#	UP/GPI	3.3VS	3.3V	3.3V	EC Reserved
GPI3	PWRBTN2#	UP/GPI	3.3VS	3.3V	3.3V	Reserved
GPI4	BAT_I	/GPI/ADC	3.3V	3.3V	3.3V	Reserved
GPI5	BATT_TEMP	UP/GPI/ADC	3.3VA	3.3V	3.3V	
GPI6	ADAPTOR	Dn/GPI/ADC	3.3V	3.3V	3.3V	
GPI7	BAT_V	/GPI/ADC	3.3V	3.3V	3.3V	
GPJ0	EC_BL_ON	/GPO	3.3V	3.3V	<5V	
GPJ1	EC_PROCHOT	/GPO	3.3V	3.3V	For NMOS	
GPJ2	FAN_CTRL0	/GPO/DAC	3.3V	3.3V	3.3V	
GPJ3	WK_TH	/GPO/DAC	3.3V	3.3V	3.3V	
GPJ4	CHG_I	/GPO/DAC	3.3V	3.3V	3V	
GPJ5	SET_V	Dn/GPO/DAC	3.3V	3.3V	3.3V	
GPJ6	BATT_VA_OFF#	Dn/GPO	3.3V	3.3V	For NMOS	
GPJ7	3G_Module_ON_EC	/GPO	3.3V	3.3V	3.3V	Reserved
GPM0	LPC_AD0_EC	/GPIO	1.8V	1.8V	1.8V	
GPM1	LPC_AD1_EC	/GPIO	1.8V	1.8V	1.8V	
GPM2	LPC_AD2_EC	/GPIO	1.8V	1.8V	1.8V	
GPM3	LPC_AD3_EC	/GPIO	1.8V	1.8V	1.8V	
GPM4	CLK_EC_LPC	/GPI	1.8V	1.8V	1.8V	
GPM5	LPC_FRAME#	/GPI	1.8V	1.8V	1.8V	
GPM6	INT_SERIRQ	UP/GPIO	1.8VA	1.8V	1.8V	
GPM7						

TongFang Inc
NSBW1401

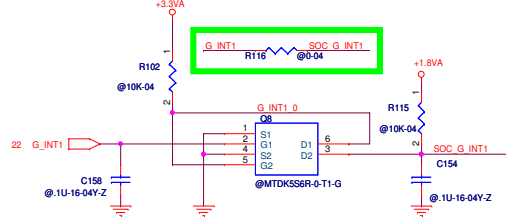




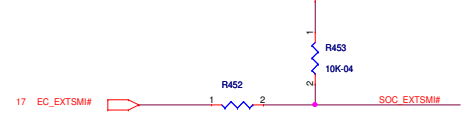
PIN NAME	PURPOSE	OPTIONS	STATE	PU/PD (internal weak)
SUS0	DDI0	PU ENABLE, N/A DISABLE	LOW	PD
SUS1	DDI1	PU ENABLE, N/A DISABLE	HIGH	PD
SUS3	DSI DISPLAY	PU ENABLE, N/A DISABLE	LOW	PD
SUS4	BIOS BOOT	PU SPI, PD LPC	HIGH	PU
SUS5	GPIO	NC	NC	PU
SUS6	WAKE_SCI#	PU DISABLEI, PD ENABLE	HIGH	PU
SUS7	EXTSMI#	PU DISABLEI, PD ENABLE	HIGH	PU
SUS8	PLL, USB2.0, SFR, ICLK...	PU 1.35V, PD 1.24V	LOW	PU



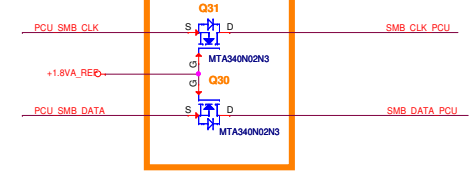
G_SENSOR_INT



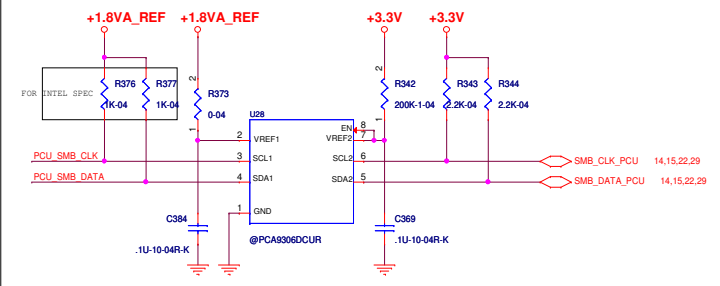
EXTSMI# NO USE



COLAY U28



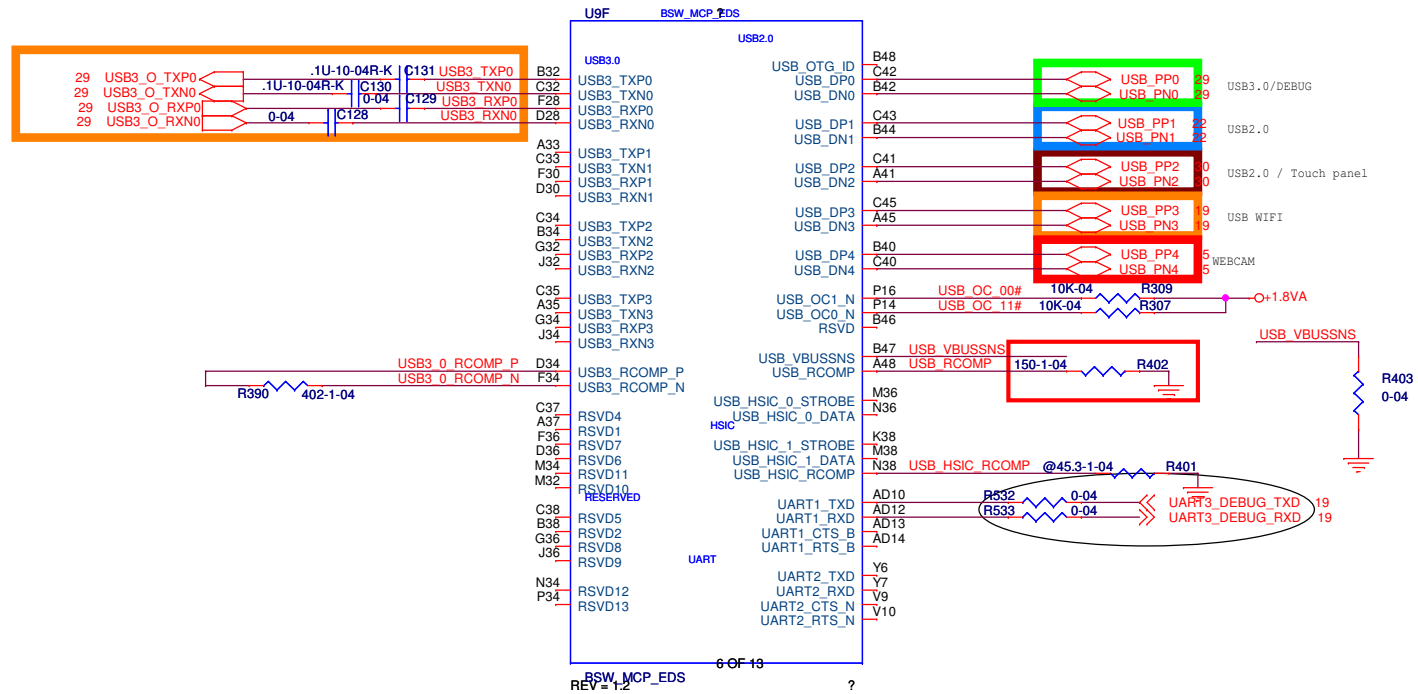
SMBUS/I2C FOR G-SENSOR/CPD/DRAM



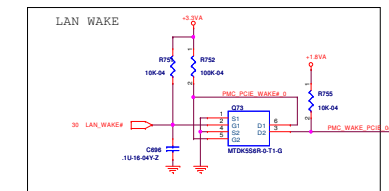
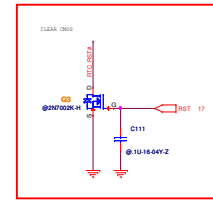
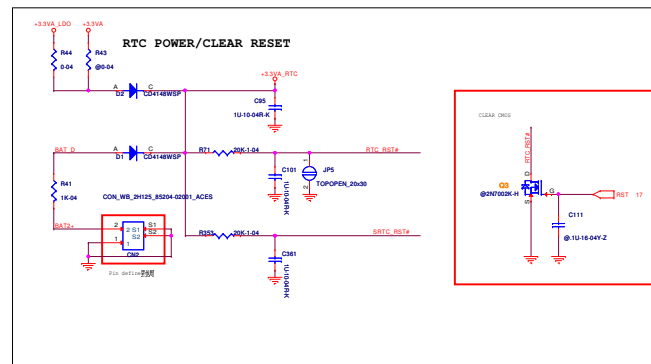
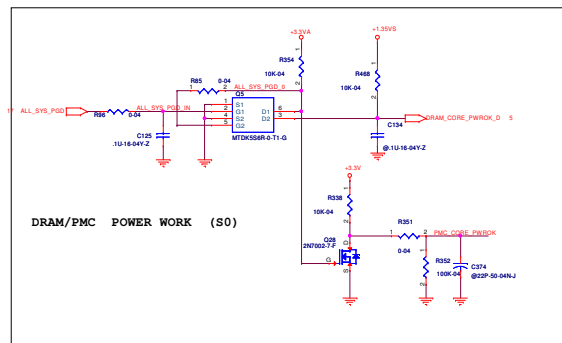
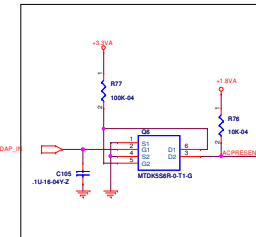
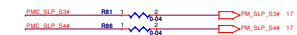
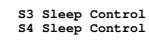
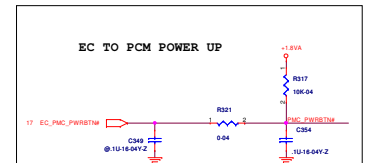
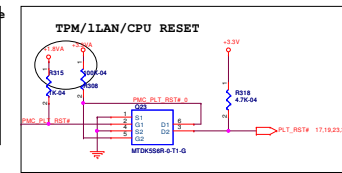
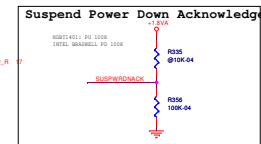
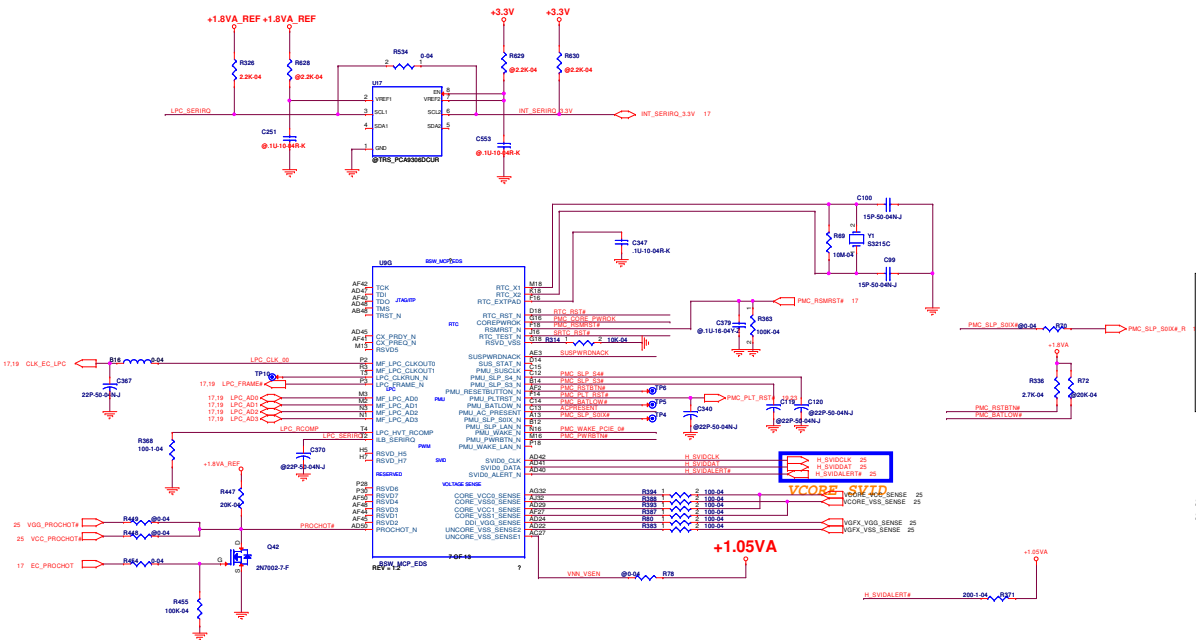
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NDBW1401			
Size	Document Number	B1	Rev
C	BW I2C/GPIO		
Date:	Thursday, September 10, 2015	Sheet	8 of 31

USB 2.0 BUS

USB0	USB3.0/DEBUG
USB1	USB2.0
USB2	USB2.0
USB3	USB WLAN
USB4	USB HUB/ WEBCAM



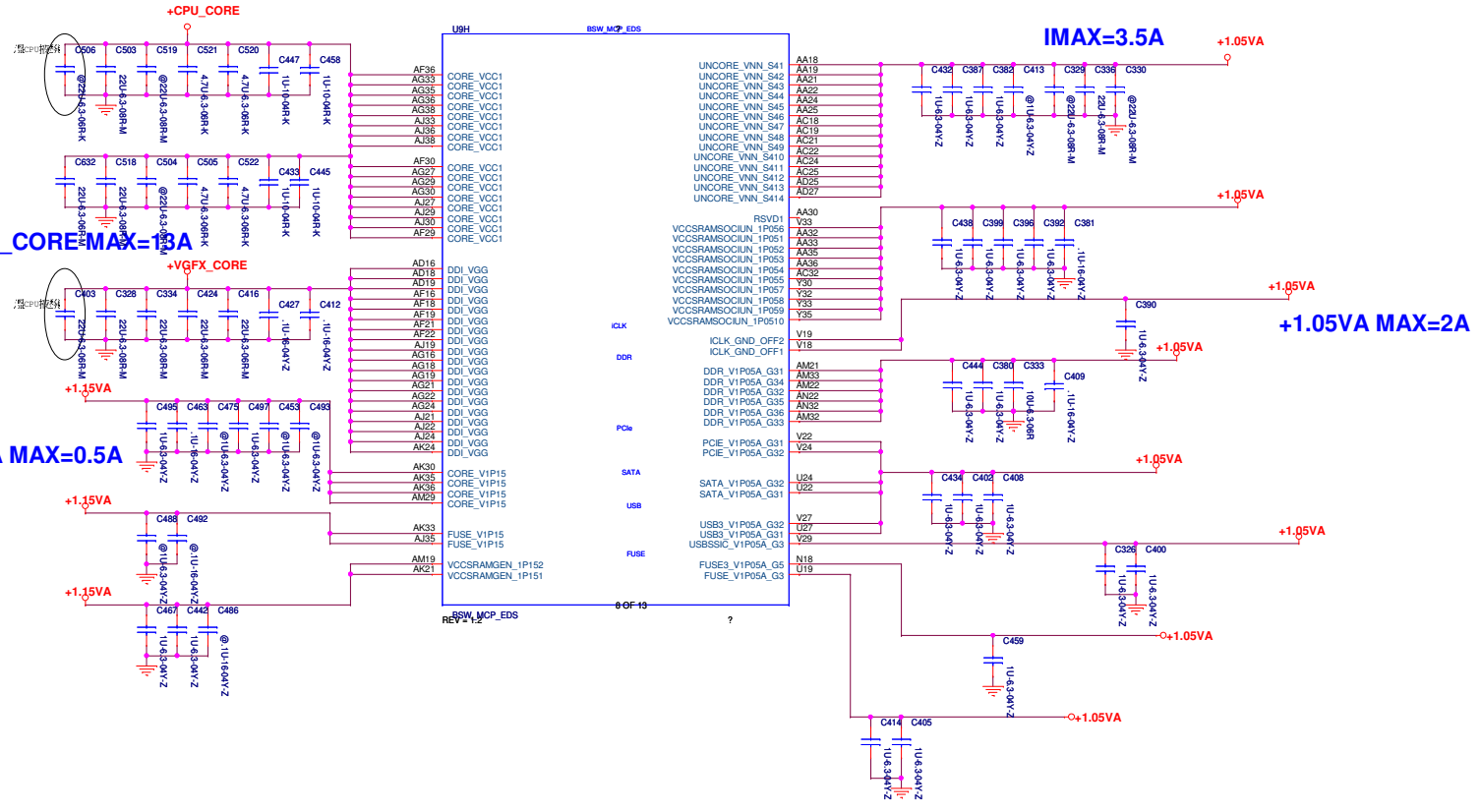
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Size	Document Number	Rev
B	BW USB2.0/3.0	B1
Date:	Thursday, September 10, 2015	Sheet 9 of 31

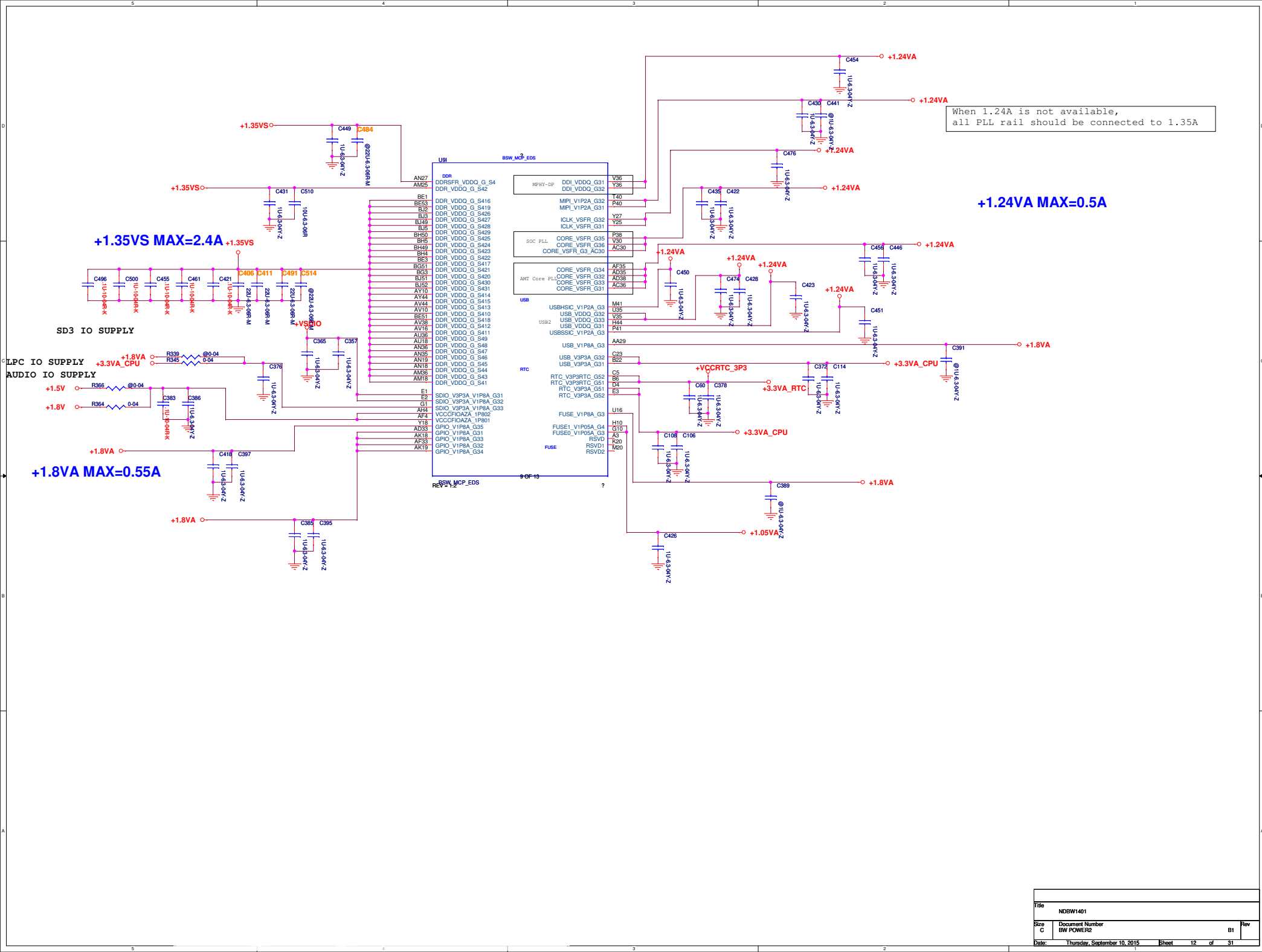


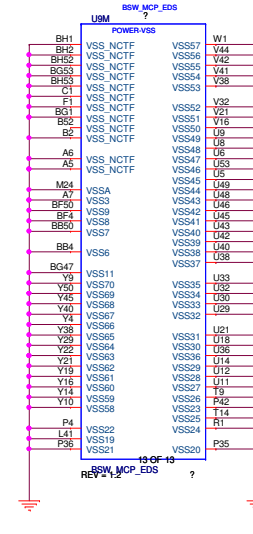
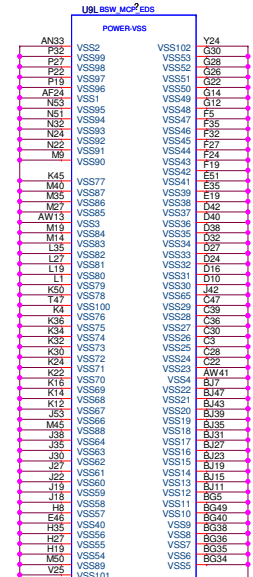
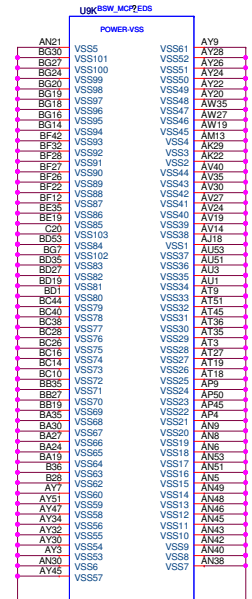
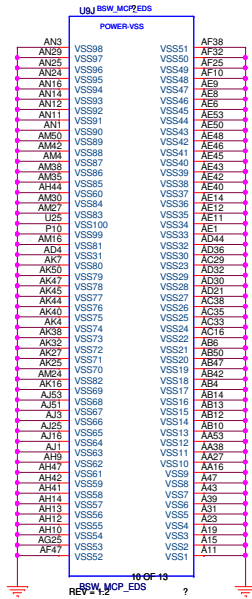
+CPU_CORE MAX=6.4A

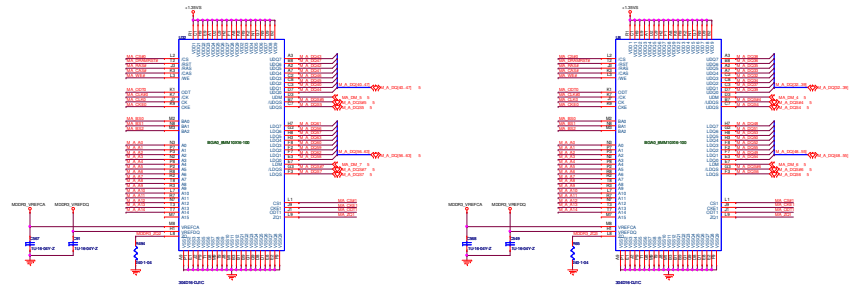
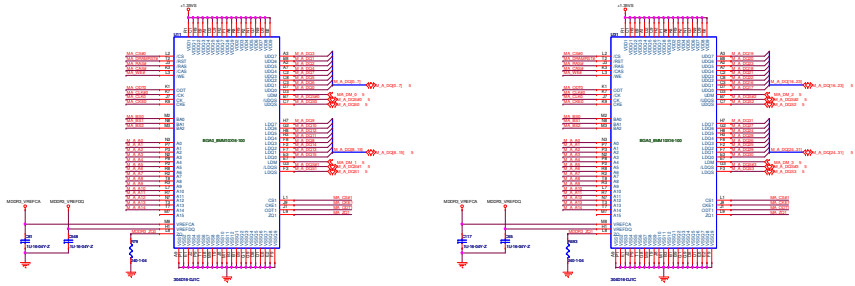
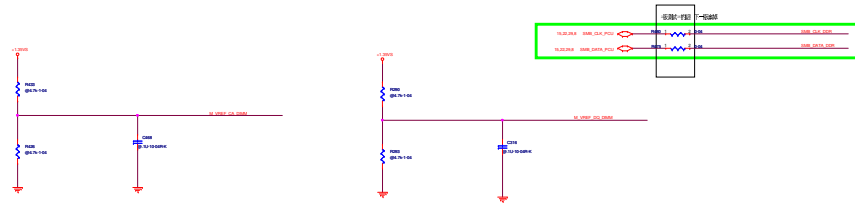
+VGFX_CORE MAX=1.3A

+1.15VA MAX=0.5A

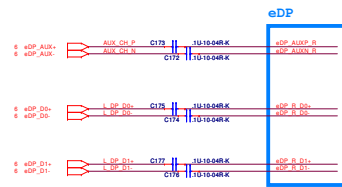






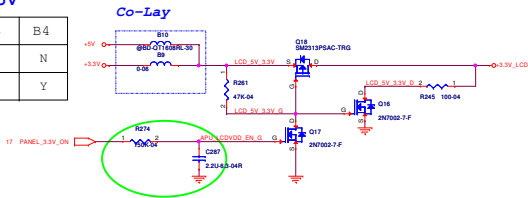


eDP

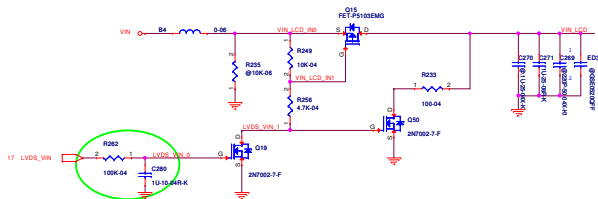


LCD 3.3V/5V

LCD_VDDIO	B3	B4
+5V	Y	N
+3.3V	N	Y

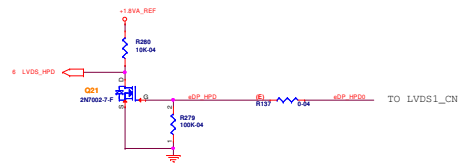


LCD 19V/BAT1+



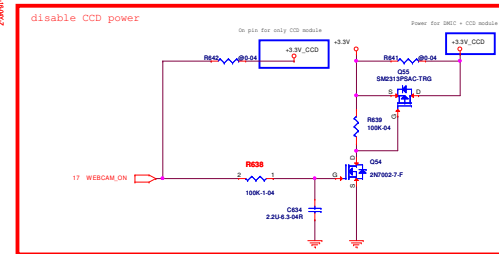
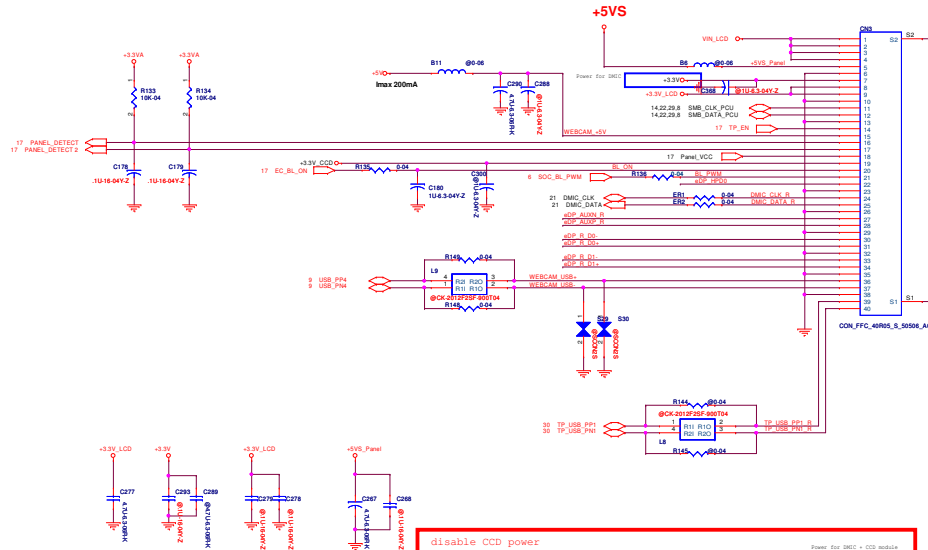
LCD HPD

LCD HPD	R183	R177
LVDS	Y	N
eDP	N	Y

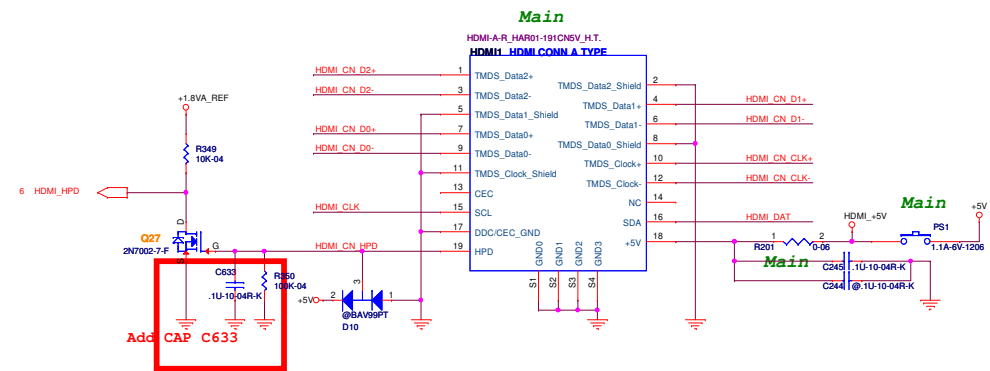
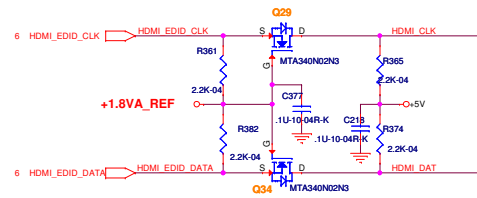


Panel Connector

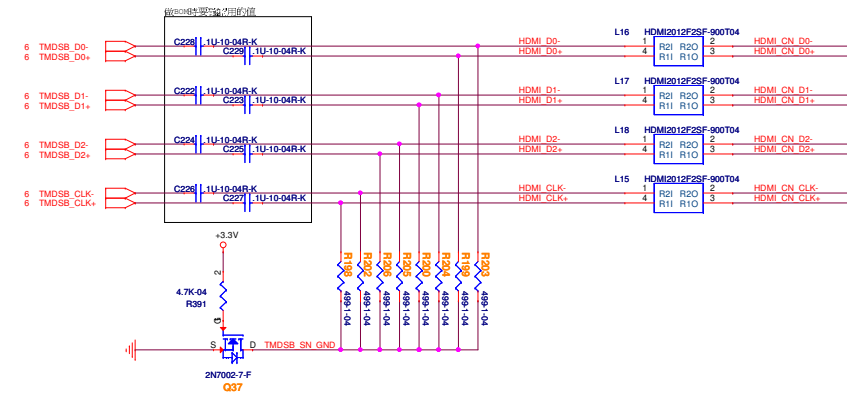
	High	Low
FAHML_DETECT	14*	15*
FAHML_DETECT2	320	



HDMI EDID



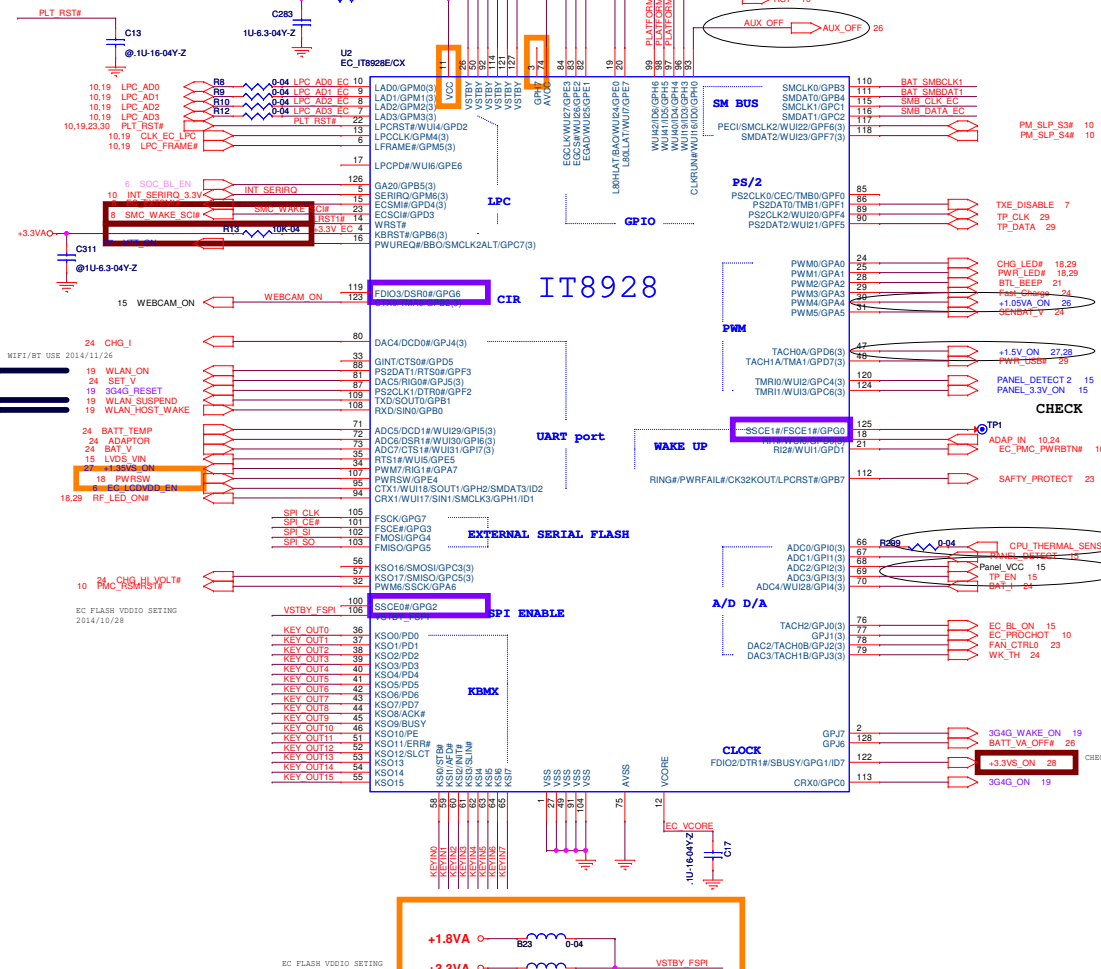
HDMI CONN



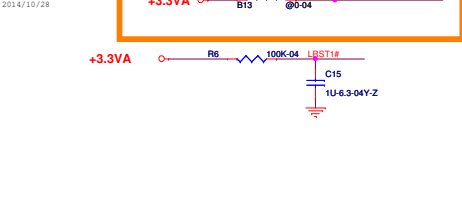
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Size	Document Number		Rev
Custom	HDMI		B1
Date:	Thursday, September 10, 2015	Sheet	16 of 31

EC

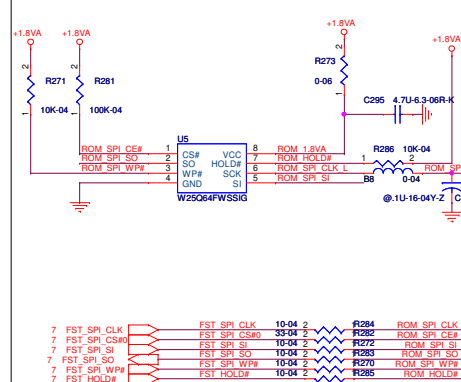
IT8928 1.8V /3.3V optional Pin
PIN 4
PIN 15-23
PIN 87-90
PIN 93-95
PIN 115-119
PIN 122
PIN 126



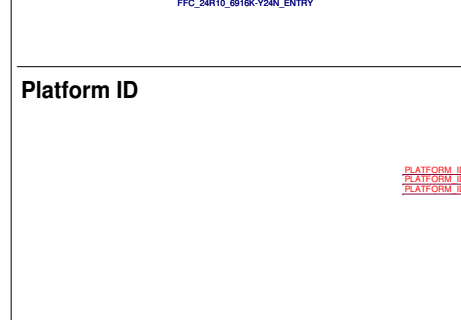
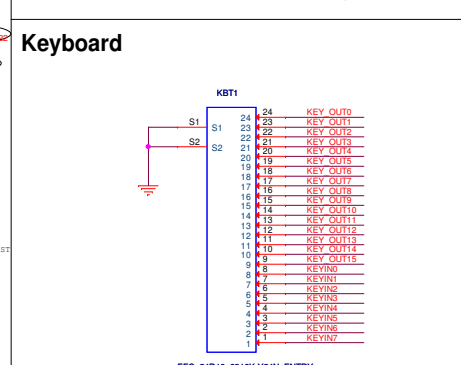
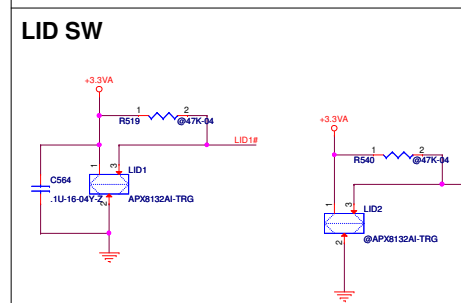
EC IO Port	
SMB0	Only for Batt.
SMB1	TH-sensor RTD2136R (LVDS/eDP) OZ8296(Core Power)
PS2_2	TP/Click PAD



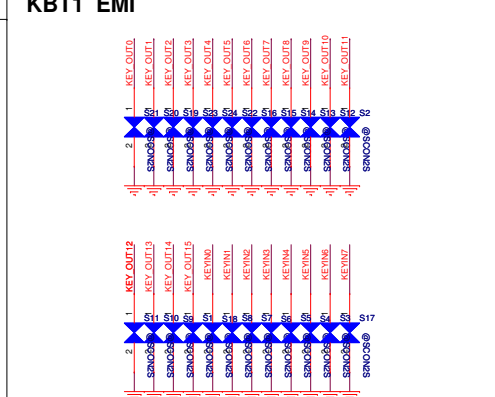
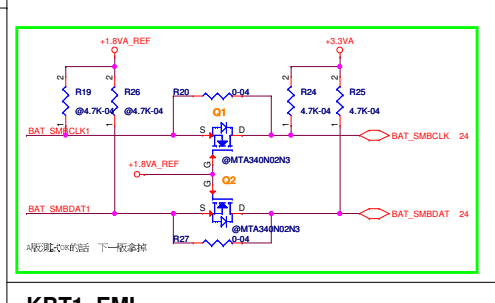
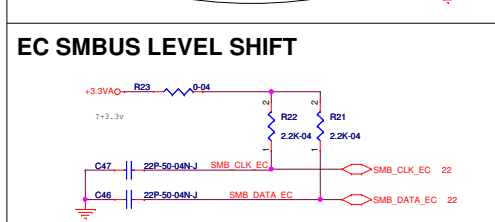
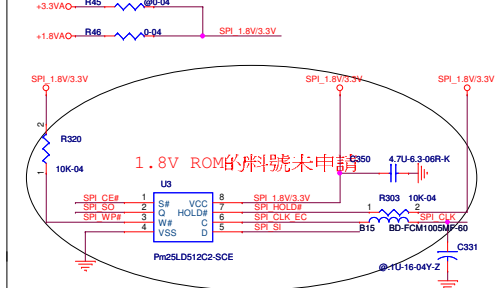
BIOS FLASH ROM(SPI)



7	FST SPI CLK	FST SPI CLK	10-04	2	R284	ROM SPI CLK
7	FST SPI CS#	FST SPI CS#	10-04	2	R282	ROM SPI CE#
7	FST SPI SI	FST SPI SI	10-04	2	R272	ROM SPI SI
7	FST SPI SO	FST SPI SO	10-04	2	R283	ROM SPI SO
7	FST SPI WP#	FST SPI WP#	10-04	2	R270	ROM SPI WP#
7	FST SPI HOLD#	FST HOLD#	10-04	2	R285	ROM HOLD#

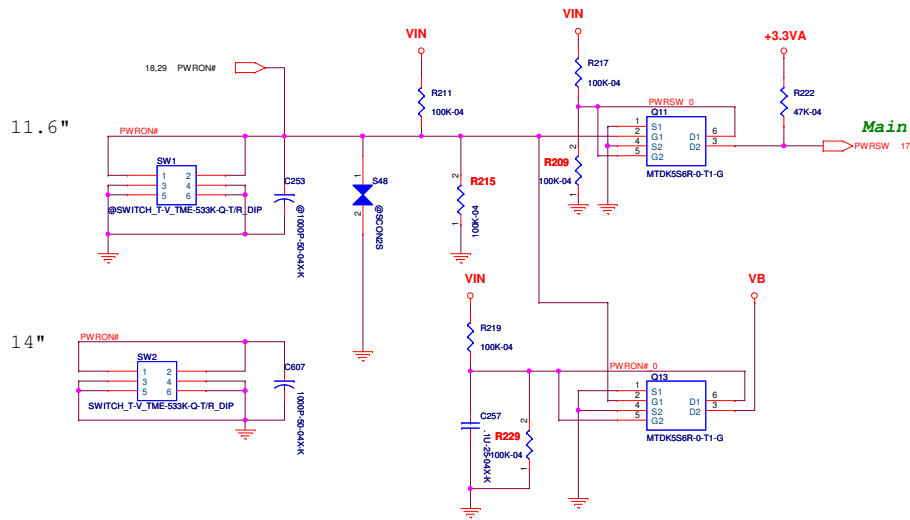


EC FLASH ROM(SPI)

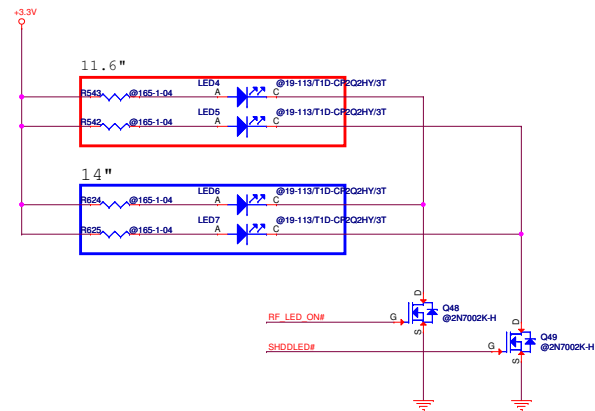


Platform ID1	NA
Platform ID2	NA
Platform ID3	H-->Memory 2G, L-->Memory 4G
TongFang Inc NDBW1401	
Size	Document Number
Custom	EC ITT8518/BIOS/KB CONN
Date	Thursday, September 10, 2015
Sheet	17 of 31

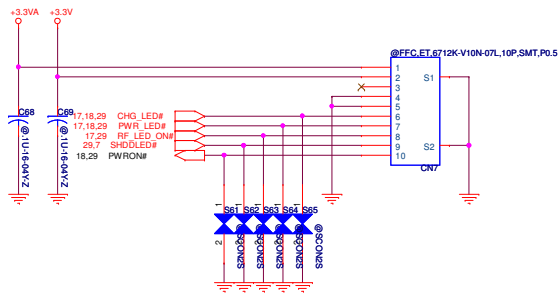
PWR SW



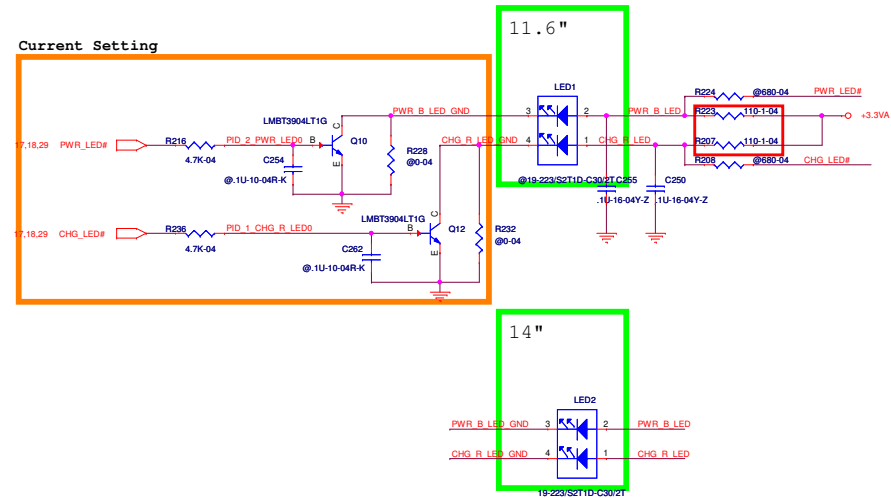
LED for WIFI & HDD



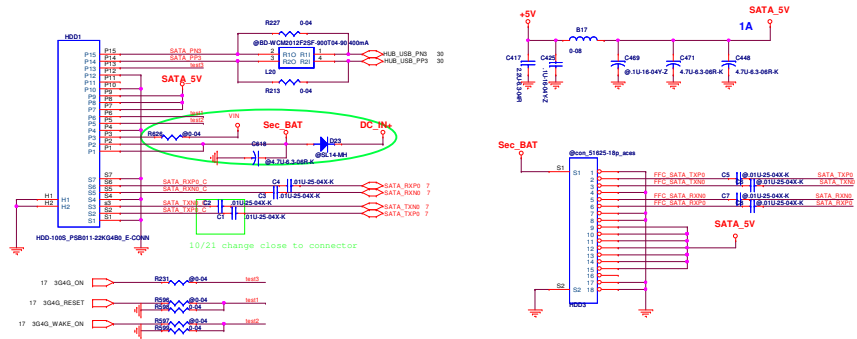
Power Board(Optional)



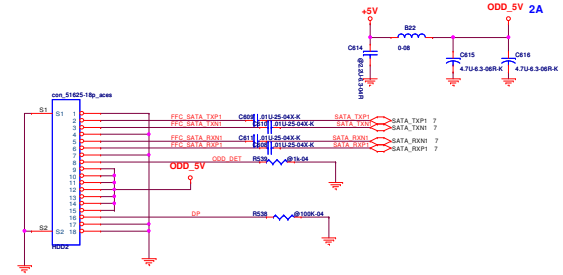
Charge LED



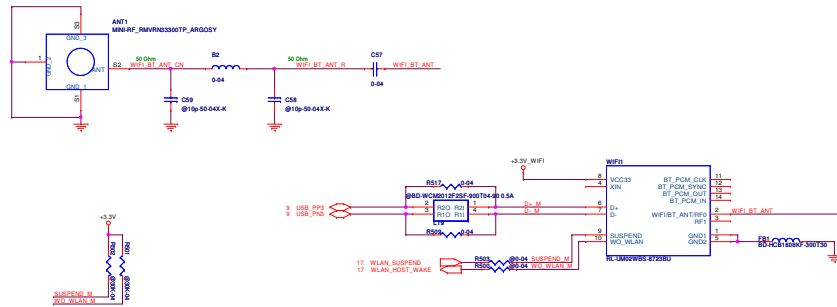
SATA-HDD



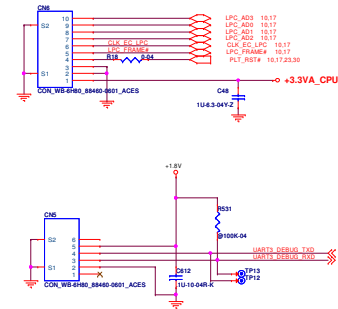
SATA-ODD



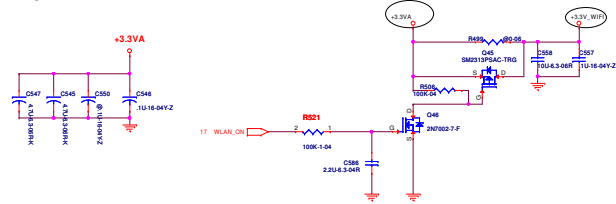
WIFI/BT 2014/11/26



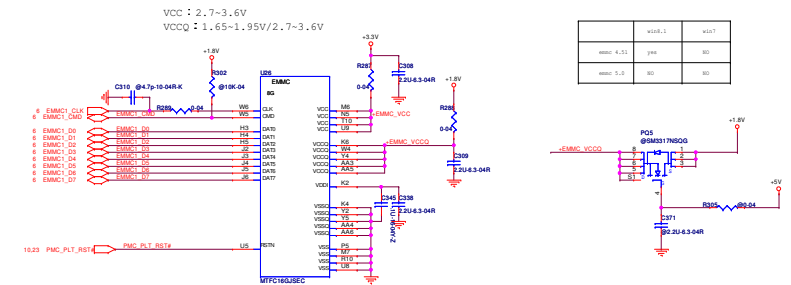
DEBUG CN



WIFI/BT POWER

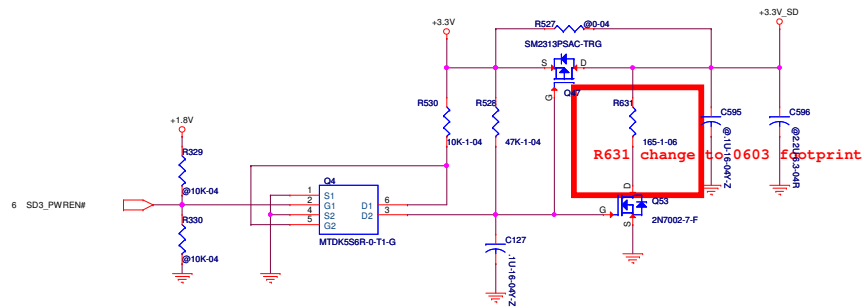


EMMC

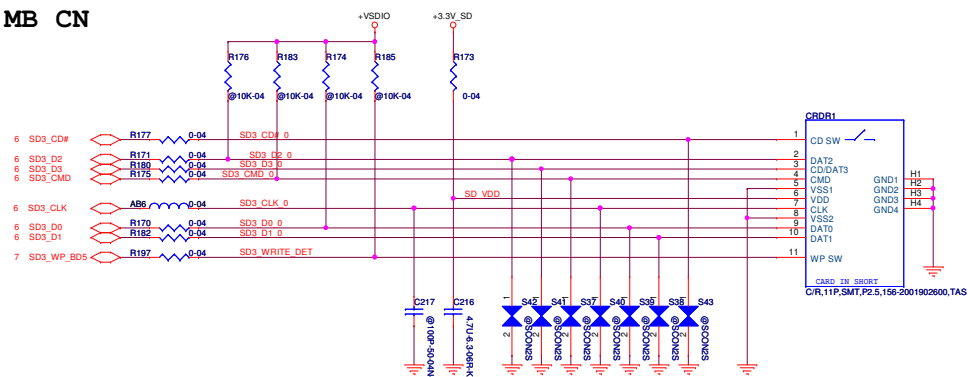


	win8.1	win7
emmc 4.51	yes	NO
emmc 5.0	NO	NO

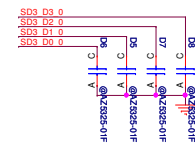
SD POWER



SD MB CN

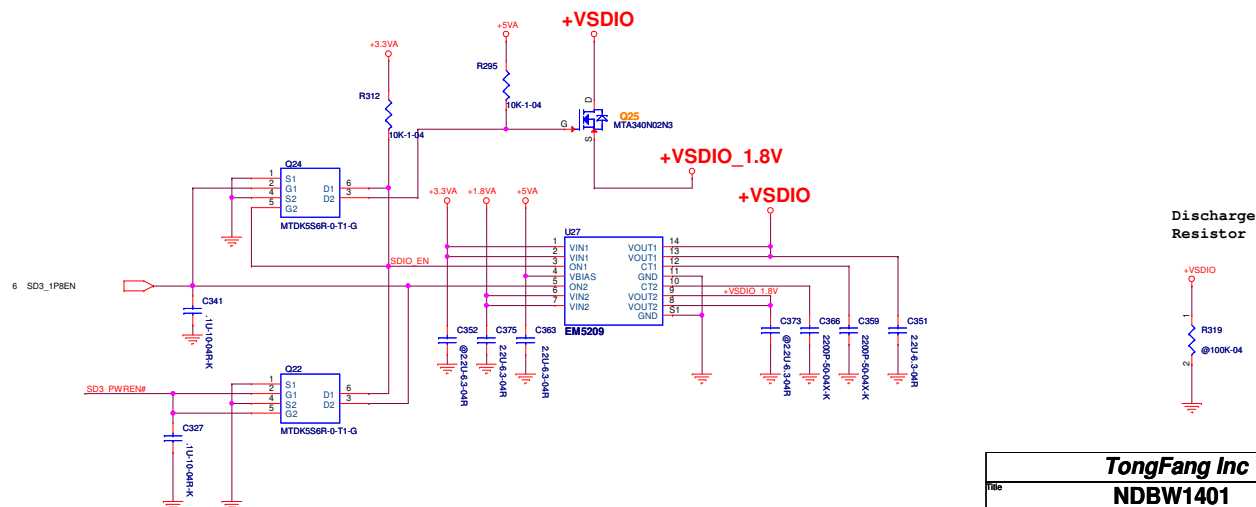


ESD



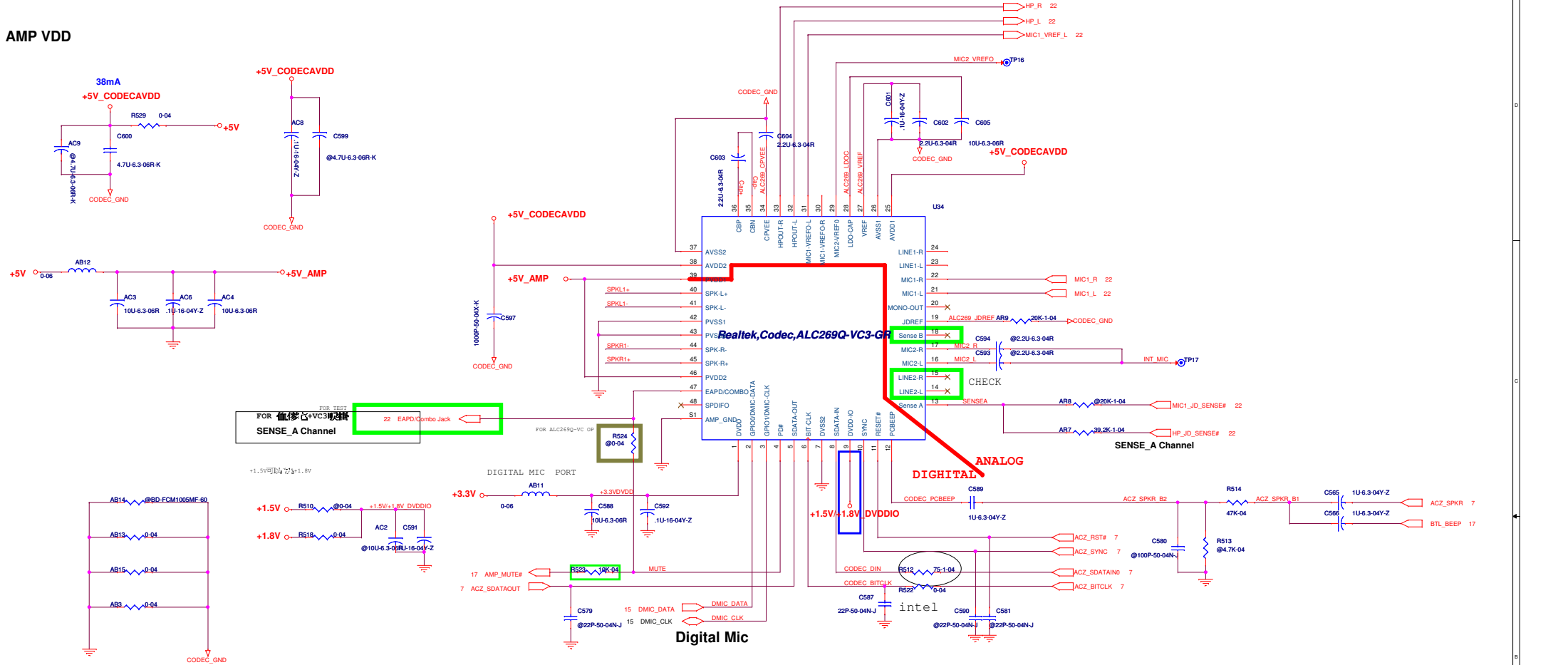
Support Ultra High Speed SD

SD3_1P8EN	High	Low	
CN1	Low	Low	
	1.8V	3.3V	

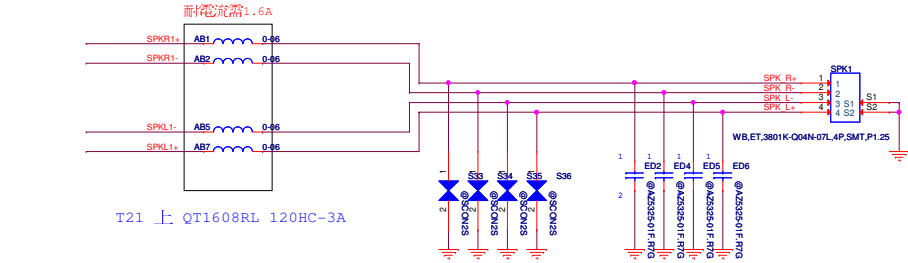
Discharge
Resistor

CODEC ALC269Q-VC/VB

AMP VDD

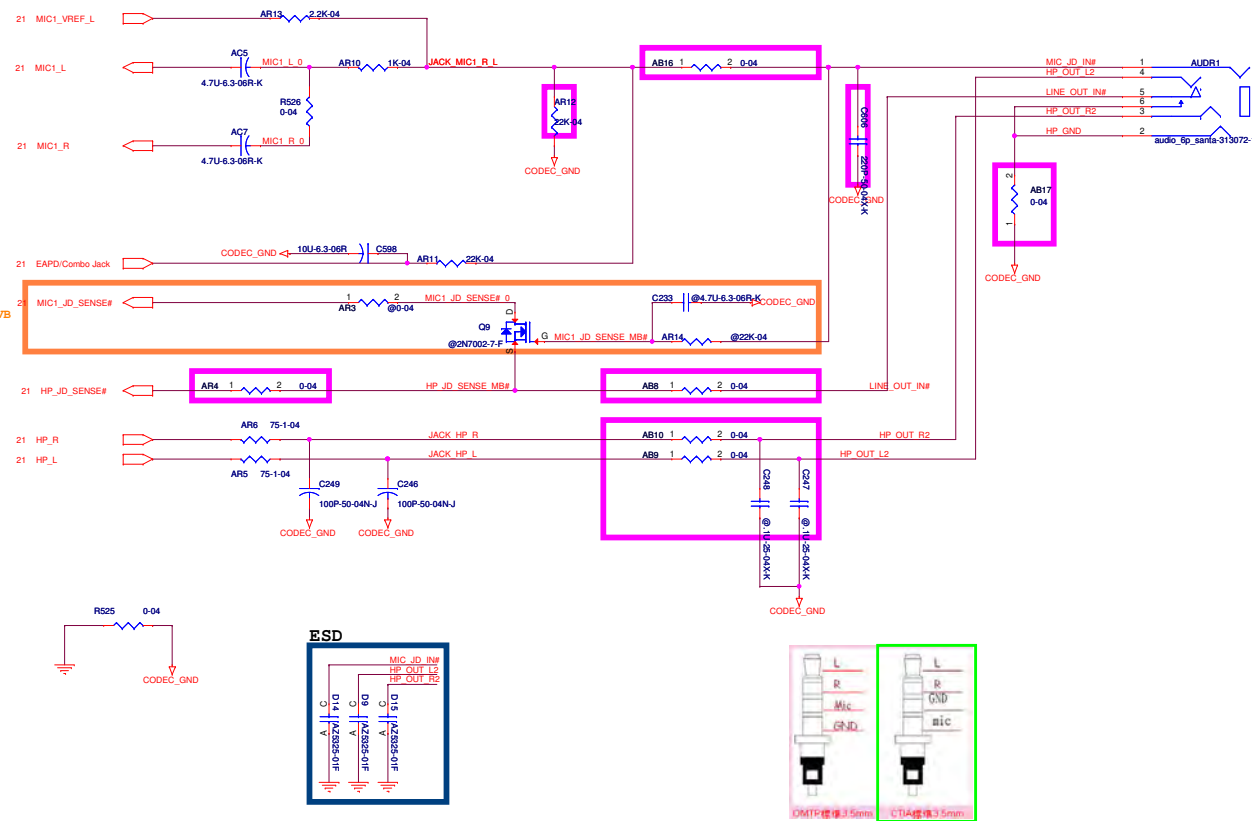


INT_SPEAKER

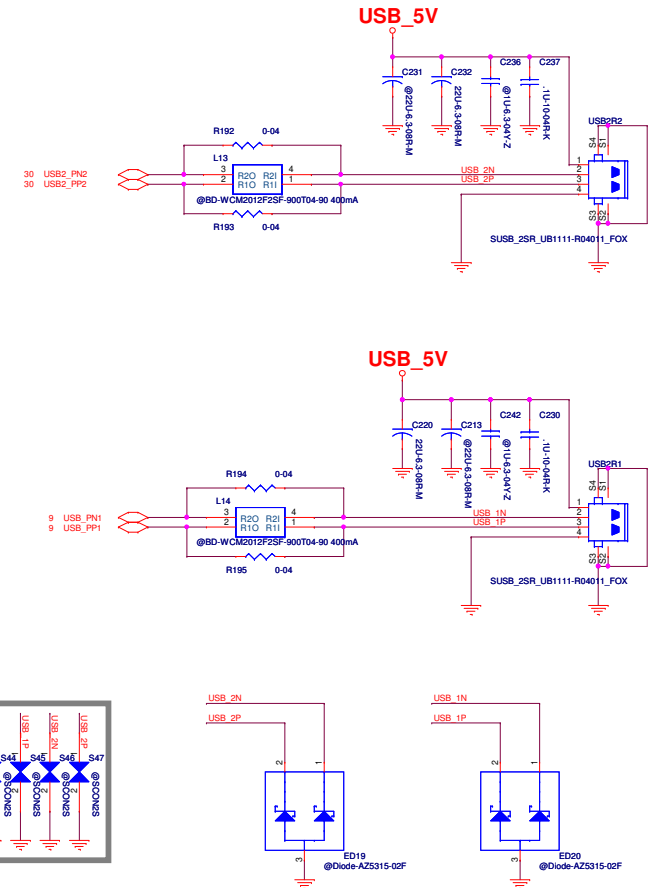


2 IN 1 Audio Jack / USB

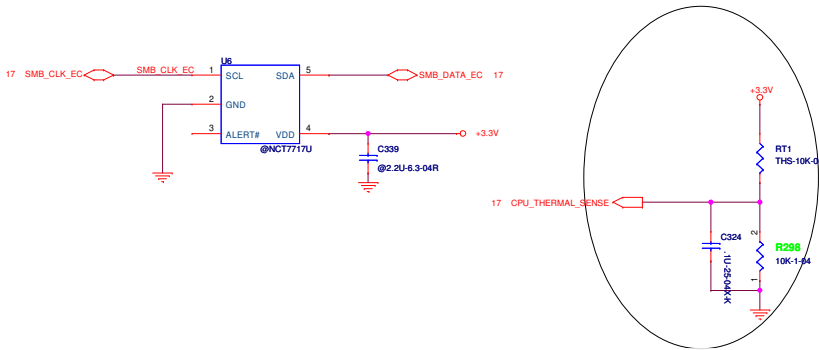
FOR
ALC2690-VB
MIC JD



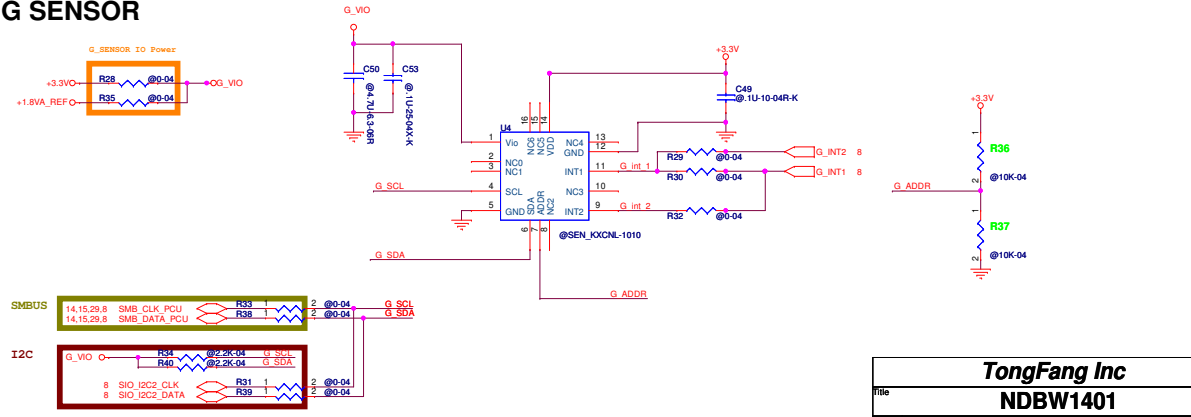
USB2.0



CPU Thermal Sensor

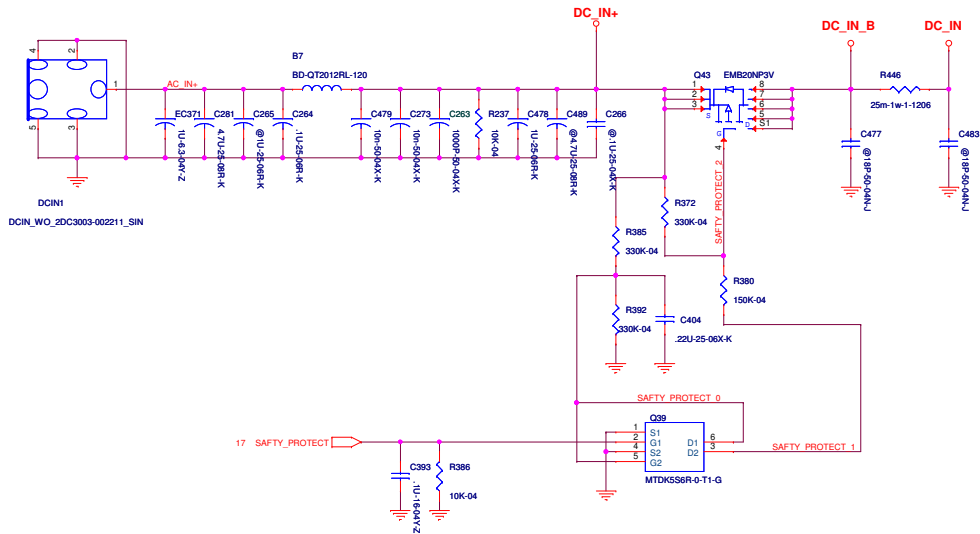


G SENSOR

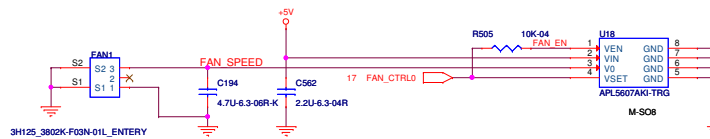


DC IN

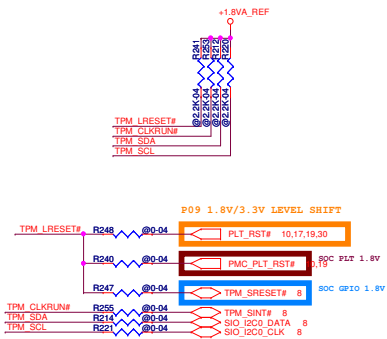
PROJECT	NDBT1401		
Adaptor	40W		
Rsense	25m Ohm		
Stop Charger			



FAN CONTROLLER



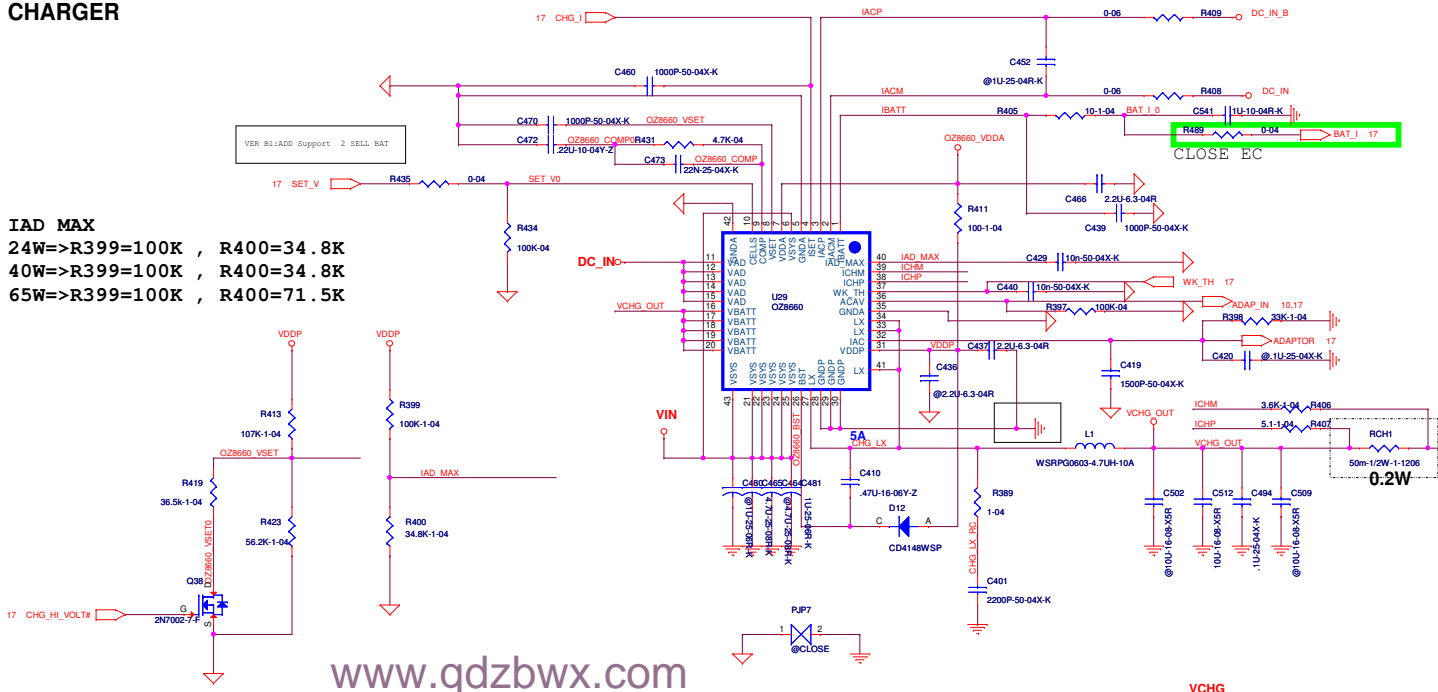
TPM I2C Interface for NPCT65X 2014/11/18



Second DC IN

CHARGER

IAD MAX
24W=>R399=100K , R400=34.8K
40W=>R399=100K , R400=34.8K
65W=>R399=100K , R400=71.5K



SET_V	
H	16.84V (4CELL)
L	12.71V (3CELL)
Hi-Z	8.4V (2CELL)

HI_CHARGE	Each CELL
*H	4.21V
L	4.35V

Vch =Nx(4.1 +Vset/10)
N=Cell (pin2 =hing -->4, low -->3)

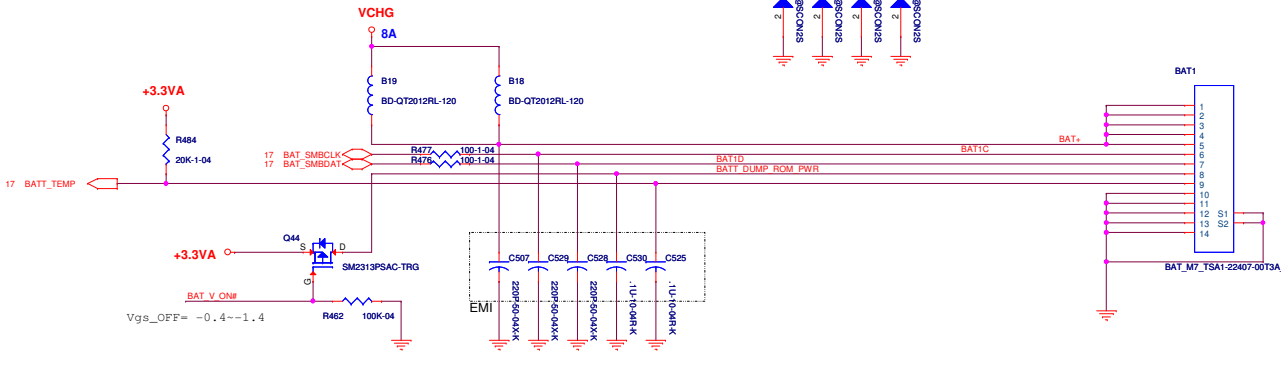
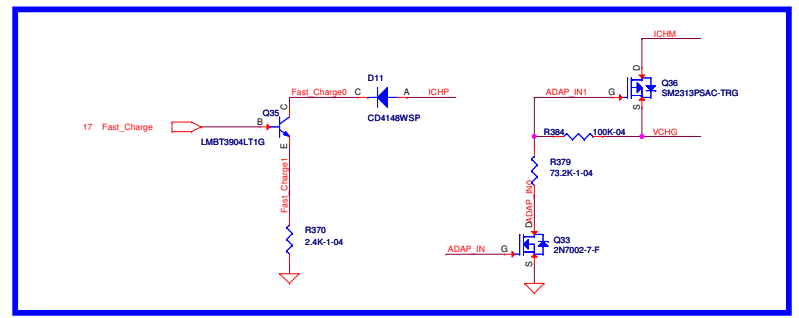
CHG_I	Fastchg_EN	CHG Current
300mv	Low	100mA
750mv	Low	250mA
3V	Low	1A
3V	Hi	2A

ADAPTOR_I	
Voltage	W
330mV	20W
660mV	40W
990mV	60W
1320mV	80W
1650mV	100W

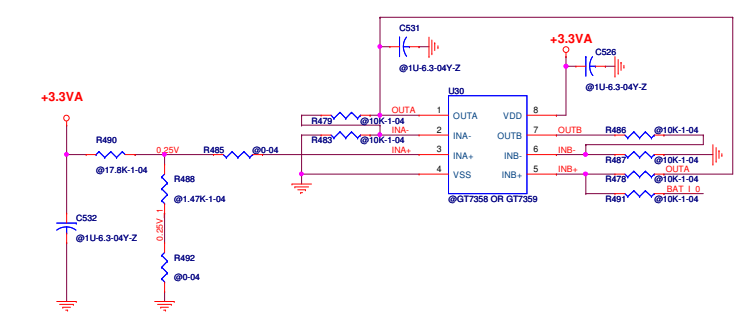
CHARGER CURRENT =V(CGHI)/(Rch*30)

Vichg =RAD1*Irsense*10

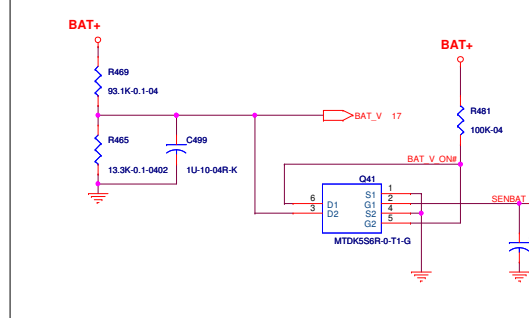
www.qdzbwx.com



EC 0.25V AD/DA

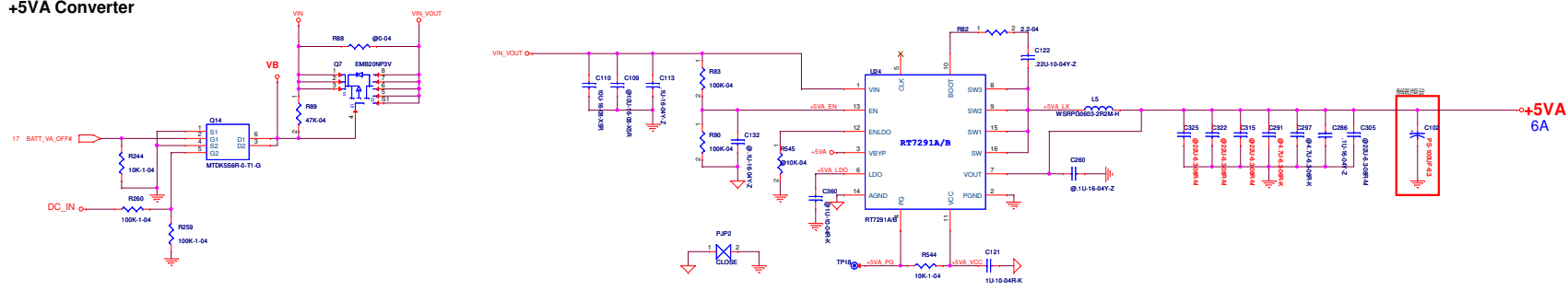


Battery Voltage Detect

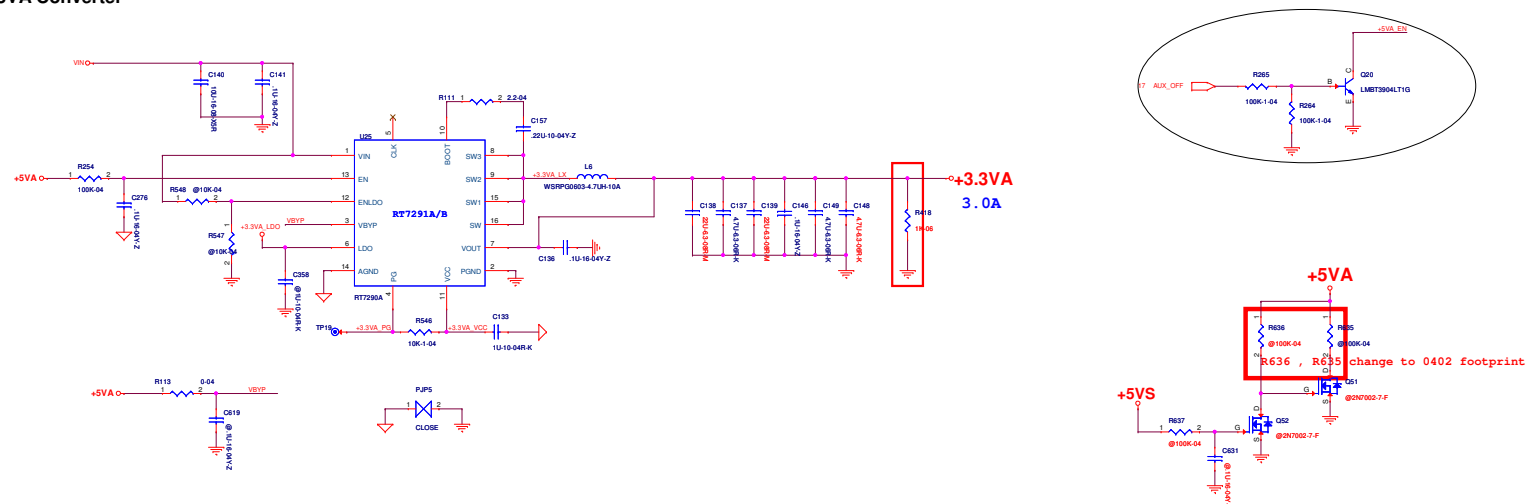


17.6V->BAT_V=2.2V
16.8V->BAT_V=2.1V
13.2V->BAT_V=1.65V
12.6V->BAT_V=1.575V
9.0V->BAT_V=1.125V

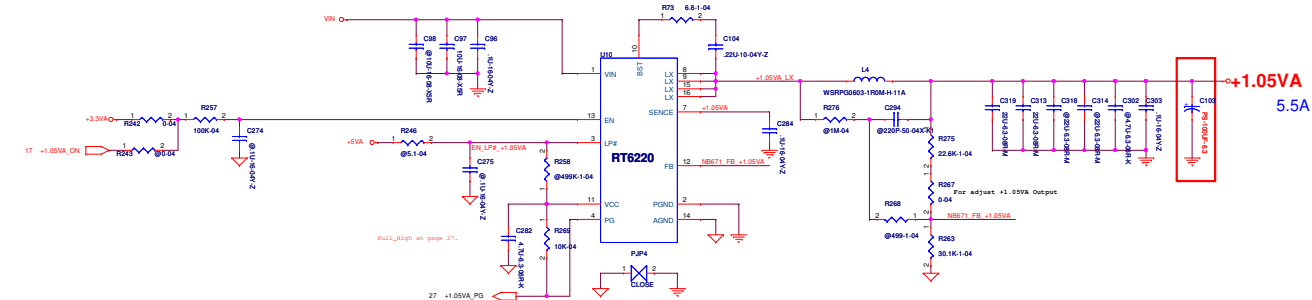
+5VA Converter



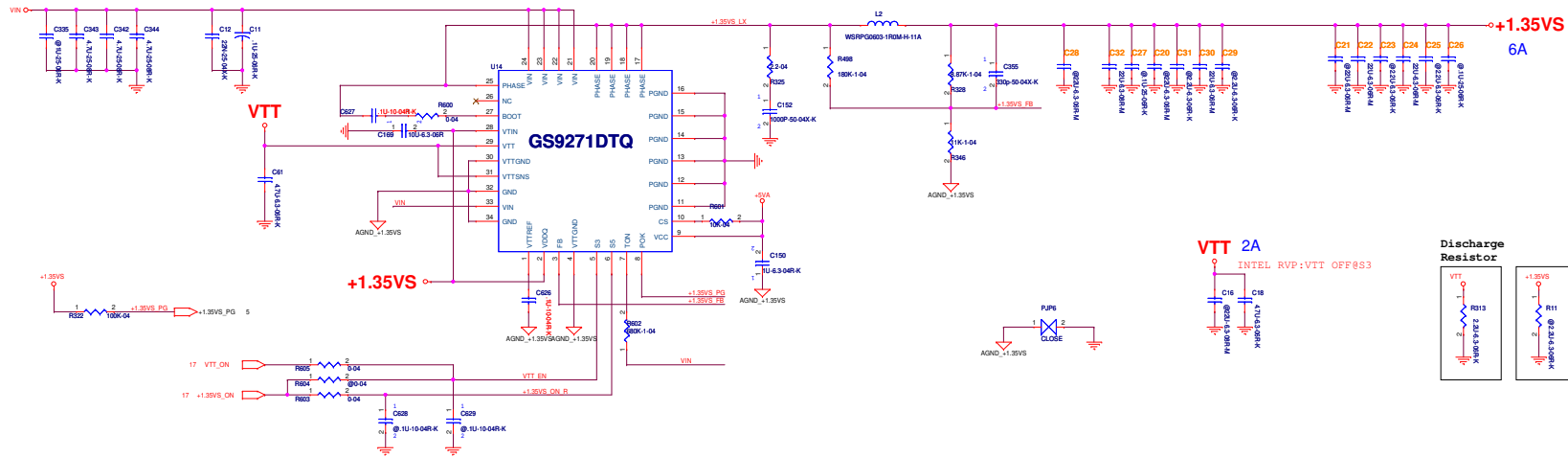
+3.3VA Converter



+1.05V Converter

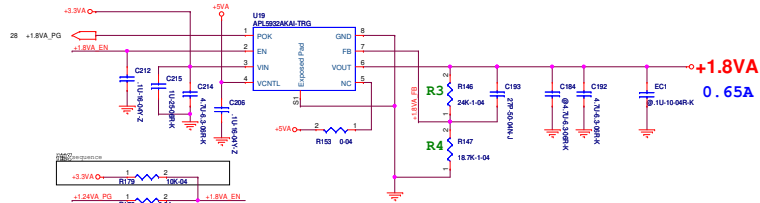


+1.35VS



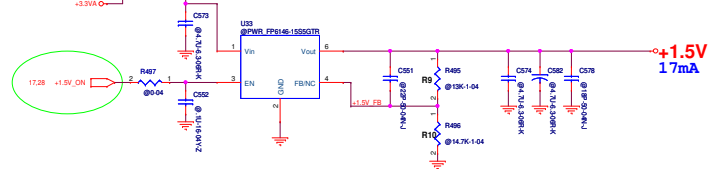
+1.8VA

$V_{OUT} = V_{REF} * (1 + R3/R4)$
 $0.8 * (1 + 24/18.7) = 1.8267$



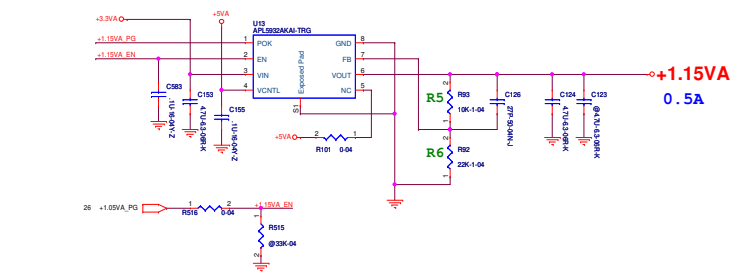
+1.5V

$V_{out} = 0.8V * (1 + R9/R10)$
 $0.8V * (1 + 13K/14.7K) = 1.5075V$



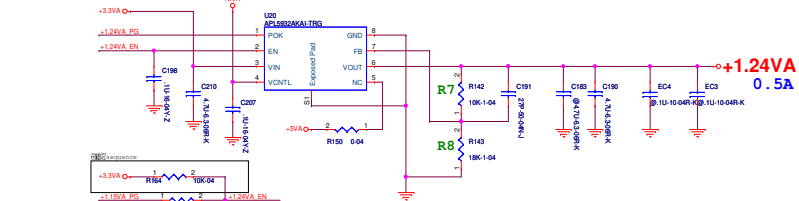
+1.15VA

$V_{OUT} = V_{REF} * (1 + R5/R6)$
 $0.8 * (1 + 10/22) = 1.164$

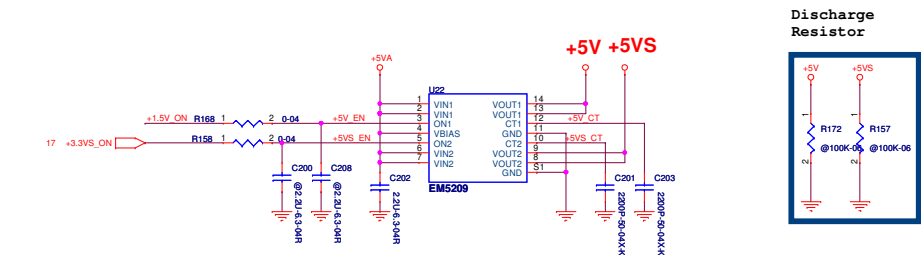


+1.24VA

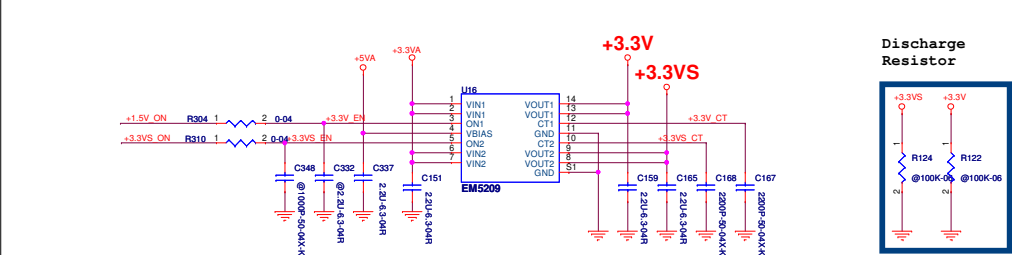
$V_{OUT} = V_{REF} * (1 + R7/R8)$
 $0.8 * (1 + 10/18) = 1.244$



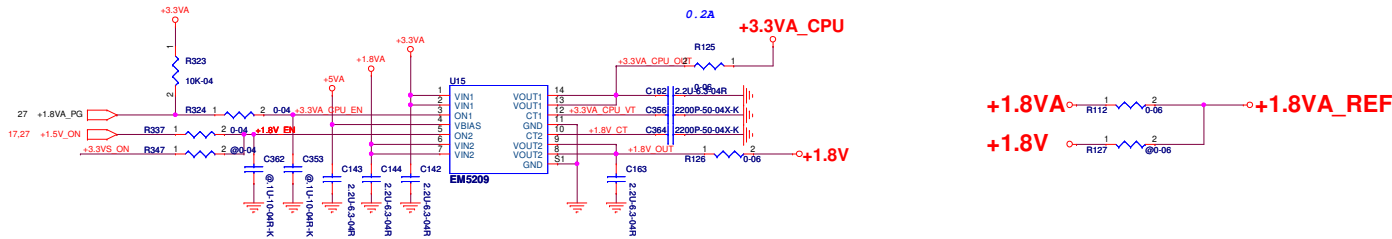
VCCSW +5V/+5VS

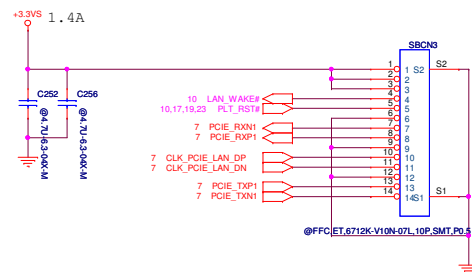
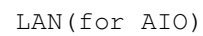


VCCSW +3.3V/+3.3VS



VCCSW +1.8V
VCCSW +3.3VA_CPU





B phase

- 1. ER182, ER183 EMI solution
- 2. R245修改為100 ohm
- 3. 新增VIN_LCD放電路徑，R233改為100 ohm，新增Q50
- 4. 修改+1.5V_PG改為+1.5V_ON
- 5. R402改為200 ohm，USB2.0 信號才會PASS
- 6. R305刪除
- 7. 新增R498 180K, R328改為8.06K, R346改為10K, C355上件容值改為330p
- 8. +1.05V solution：R276, R268, R258, C294 皆OP
- 9. Vcore, Vgfx新增snuuber R130, R67：1 ohm, C88, C170：1000p
- 10. ACZ_BITCLK新增電容EC160
- 11. VIN_LCD ESD 元件ED3
- 12. AC_IN+新增1uF電容EC371
- 13. eMMC VDDQ1預留一組switch(PQ5)，原因是SOC漏電會串到1.8V
- 14. C107, C112修改為27P
- 15. SERIRQ新增level shift (U17, R326, R628, R629, R630, C251, C553)
- 16. TXE_disable(GPIO_SUS5)修改
- 17. 新增TXE_disable(Q32)
- 18. C424, C403, C416改為22uF
- 19. 新增C447, C458, C433, C445 1uF, C632 22uF
- 20. R138改為200 ohm
- 21. EMI要求 (Medion)
- 1uF：C453,C493,C413,C244,C242,C236,C265,C517,C325,C138,C319,C335,C27,C221 共14顆
- 0.1uF：C397,C441,C293,C278,C268,C311,C68,C469,C266,C526,C260,C358,C619,C274,C26,C51,C52,C560,C570,C613,C306 共21顆
- Diode,SMD,GSE0520QFF,GT：ED3,D9,D14,D15
- 22. 調整transient C621,C624 改為1000p, R140,R589改為10K, R551,R590改為1K

B1

- 1. RT4,RT5,R635,R636 0603 footprint change to 0402 footprint
- 2. Del JP
- 3. Change HDD,ODD 18 pin conn pin define
- 4. Change H2 footprint
- 5. Add Q55,Q54,R639,R638,C634,R641 for disable CCD power
- 6. Add Q53,R631 for cardreader

V1.0

- 1. 新增5VA poscap(C102)，R418加一顆下地電阻(1K ohm) 刪除MLCC (C325,C322,C315,C291,C286)解高頻音
- 2. 修改CN2 pin define
- 3. OP R641
- 4. Co-lay BX/CX EC, 修改SPEI ROM的power 1.8V
- 5. R534上件, SIRIRO周邊零件(OP (U17, R628, R629, R630, C553, R628, C251)
- 6. 新增C103 100uF POSCAP (BurnIn test)
- 7. R402改為150 ohm(USB driving)
- 8. LED R223, R207 改為110 ohm
- 9. CN5,CN6刪除
- 10. VCC, VGG家diode(SK34, 位置：D3,D4)
- 11. +1.05V新增RC(R246,C275)
- 12. C138, C139 改為22uF(0805)，C148上件4.7uF 0603
- 13. R78 OP
- 14. B13刪除, B23上件