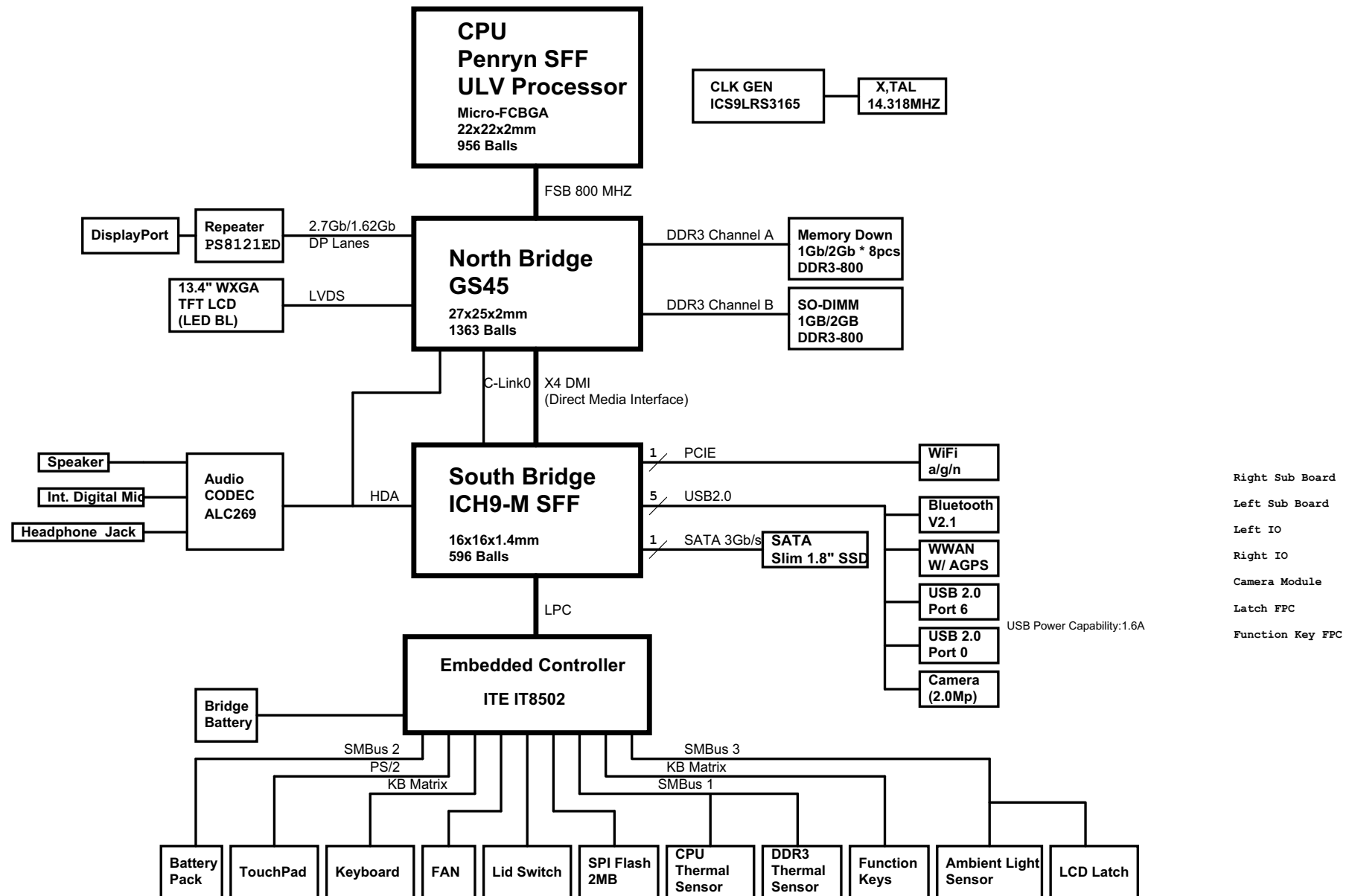


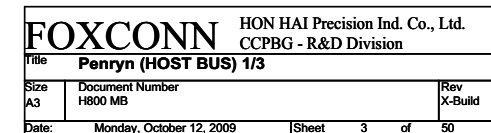
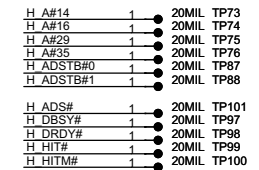
Schematics Page Index (Title / Revision / Change Date)			
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02	Block Diagram		39 DDR3 Power
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04	Penryn(HOST BUS) 2/4		41 CPU Core Power
05	Penryn (POWER/GROUND) 3/4		42 Suspend/Run Power
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20	ICH9-M( LPC,HDA,SATA )2/5		
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22	ICH9-M( POWER) 4/5		
23	ICH9-M( VSS) 5/5		
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25	Audio (MUTE) 2/2		
26	EC+KBC(ITE8502)		
27	BIOS ROM/Debug Port		
28	KB MATRIX(DELETED)		
29	PWR BTN/FK/ALS/LID SW		
30	FAN/Thermal Sensor		
31	LVDS		
32	IO CONN		
33	WWAN/UWB/SPK/TP CONN		
34	WIFI/BT/SSD		
35	Power Design Diagram		
36	DCIN & BATTERY CONN		
37	CHARGER (O2MICRO)		

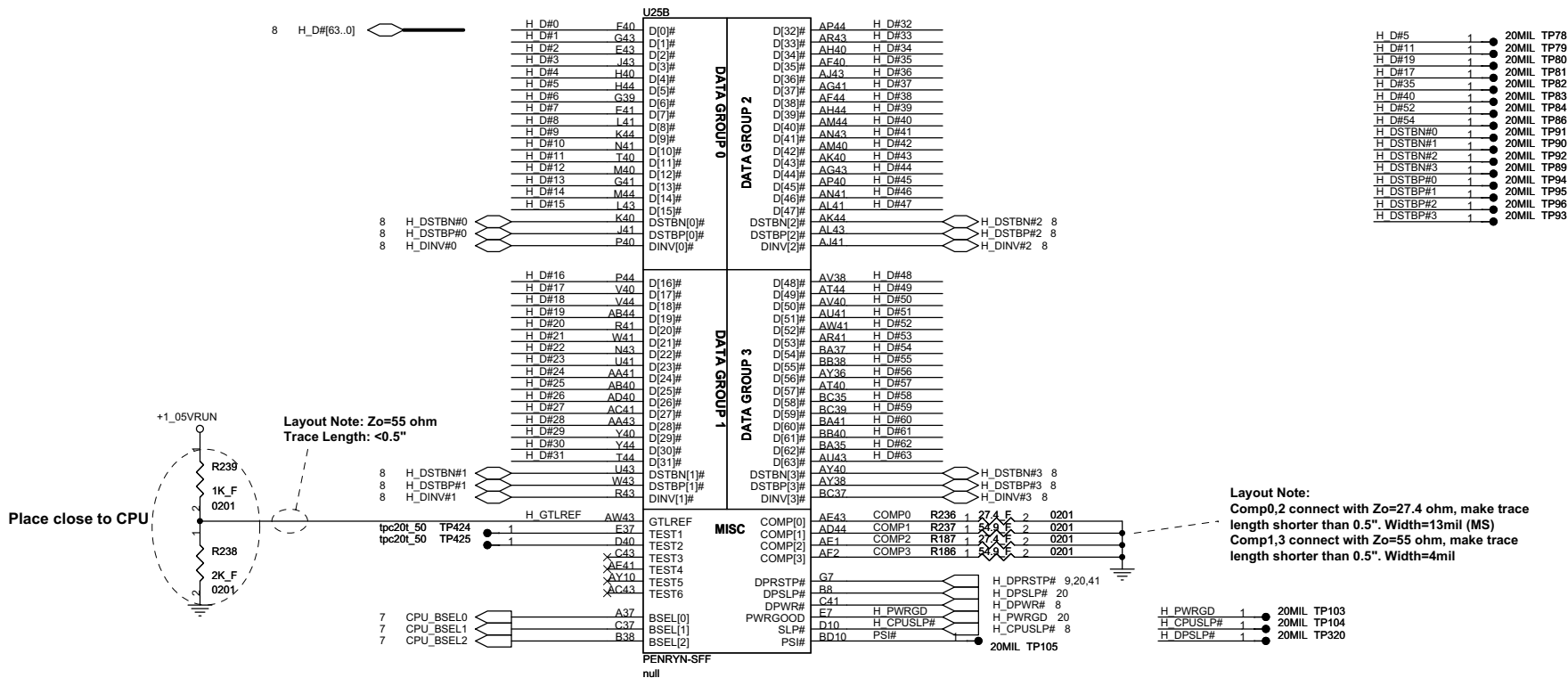
Project Code & Schematics Subject:

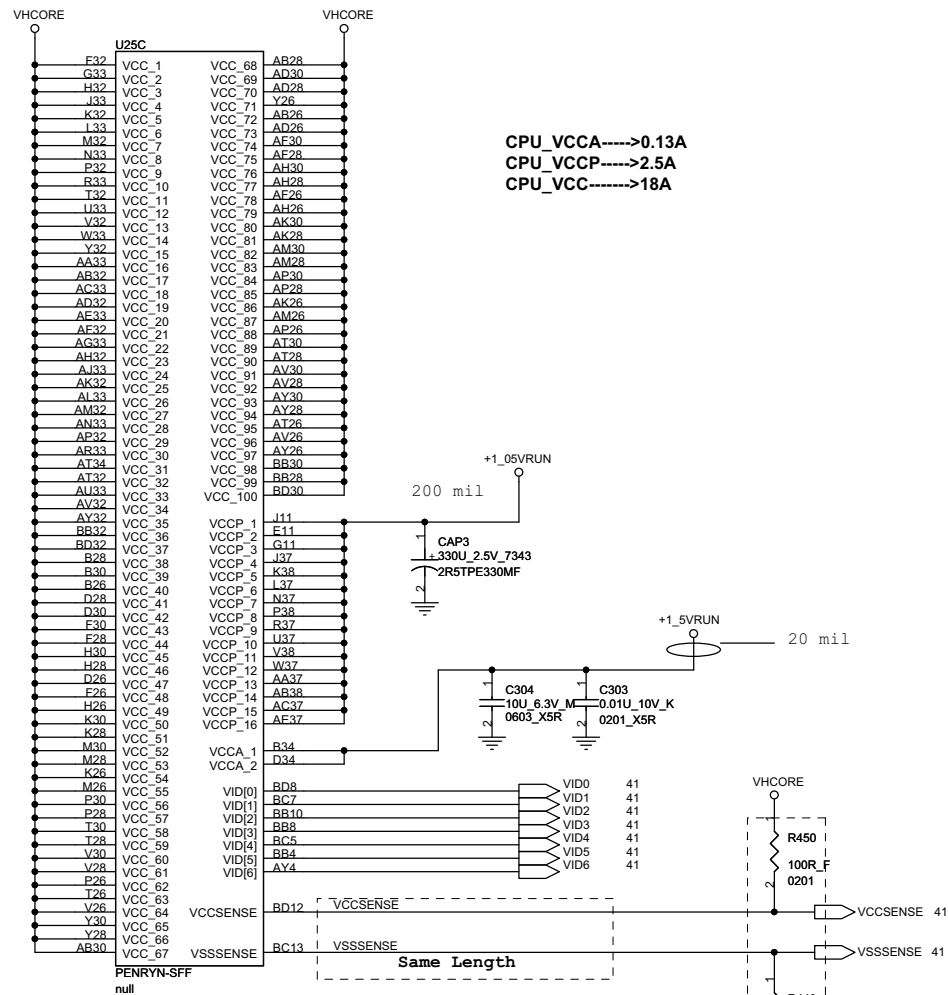
H800 Main Board1P-0099L00-A000 (COMPEQ)  
1P-0099J00-A000 (IRIS)

# H800 BLOCK DIAGRAM



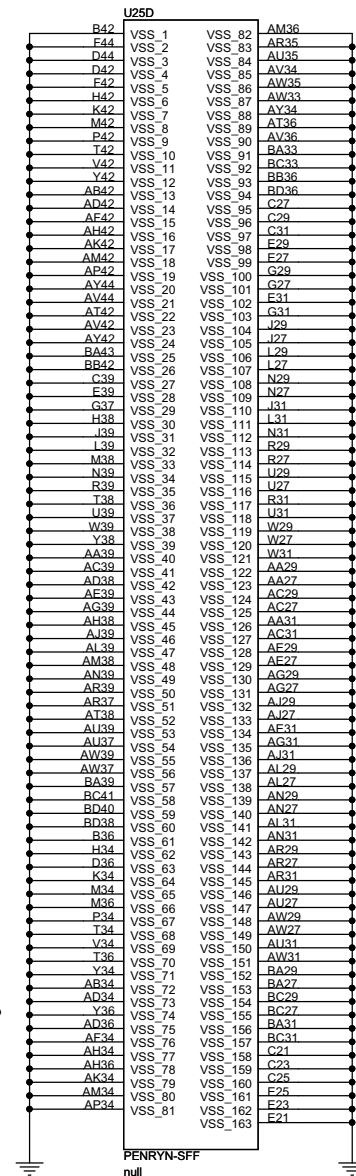


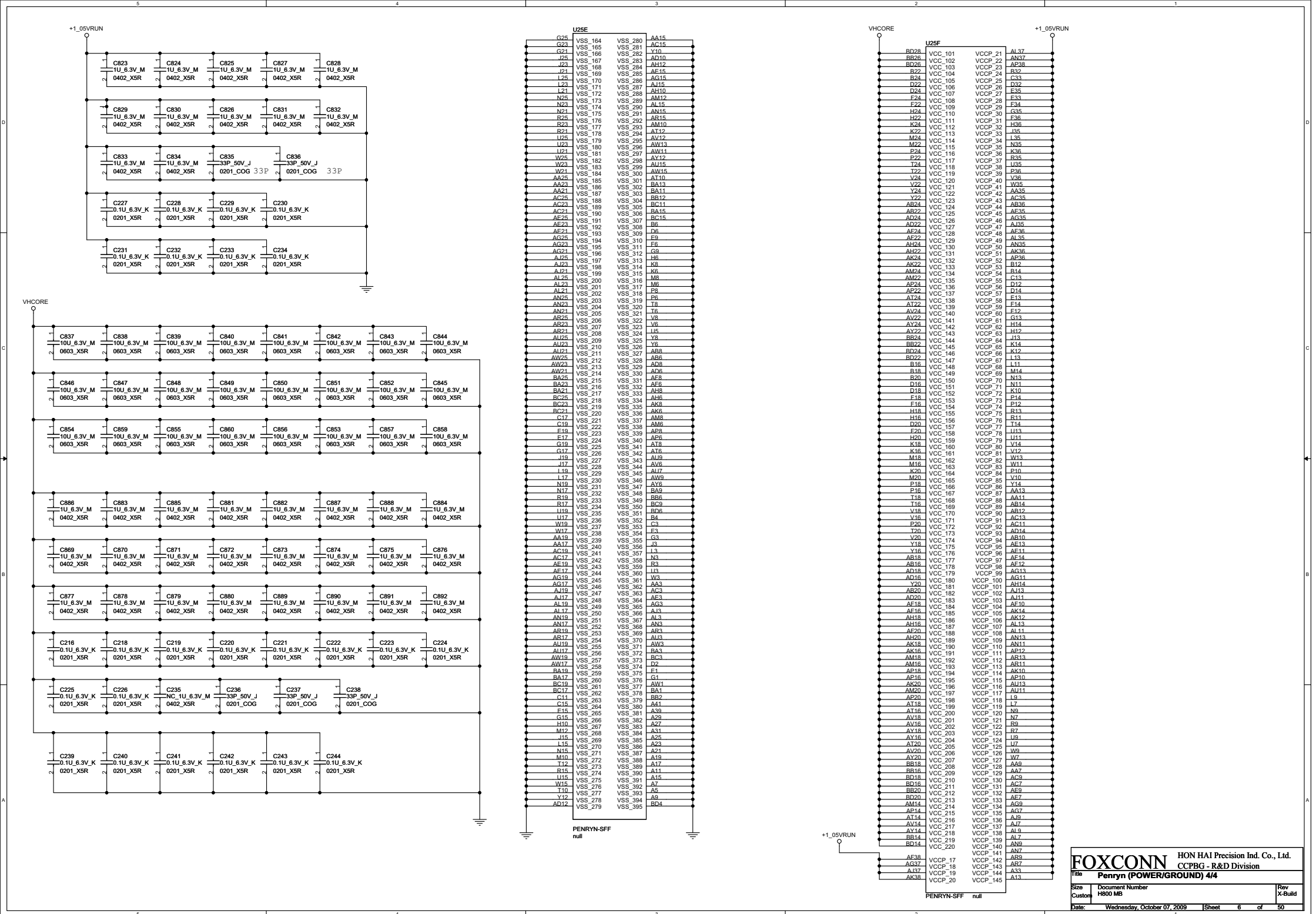


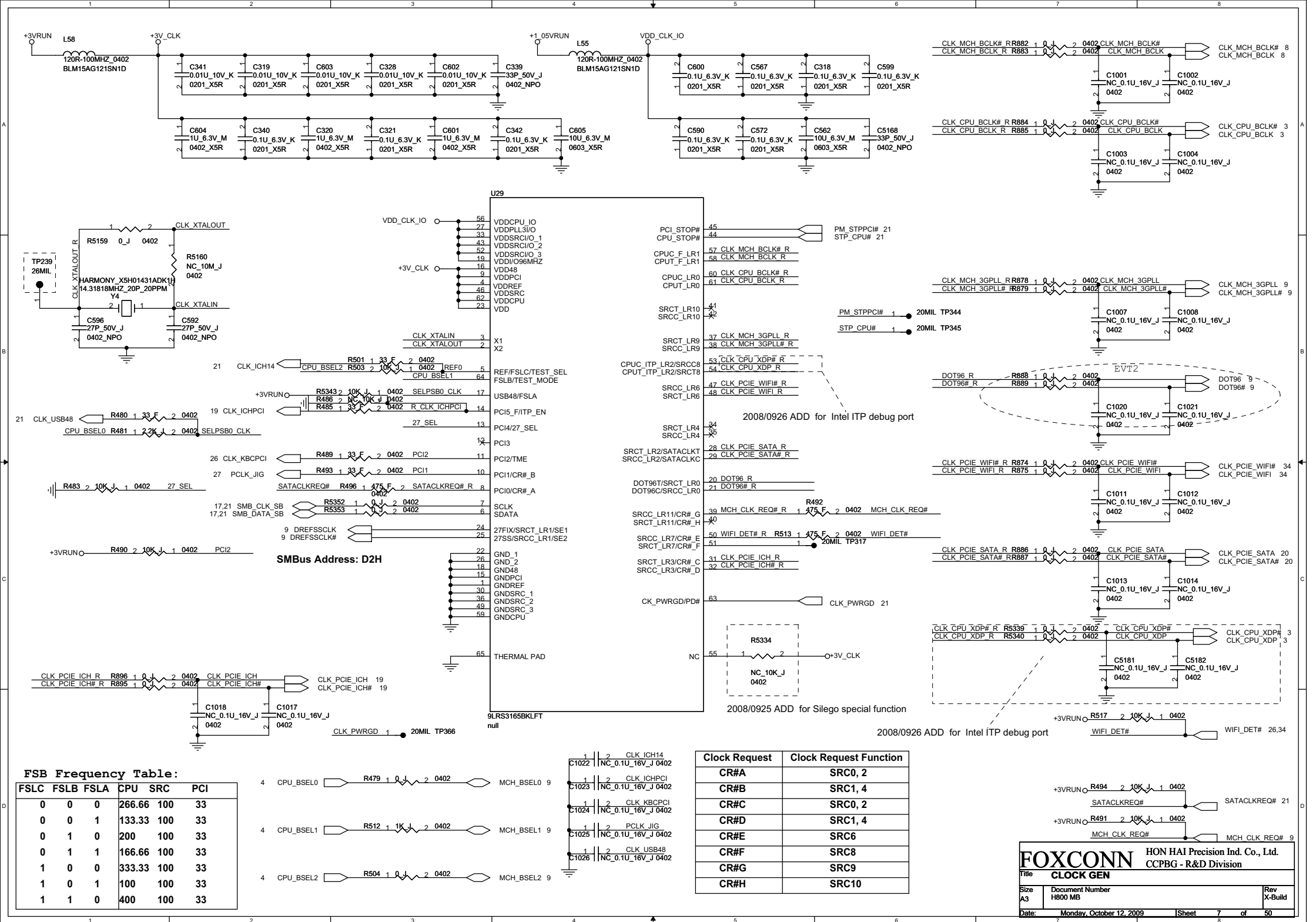


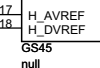
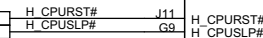
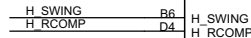
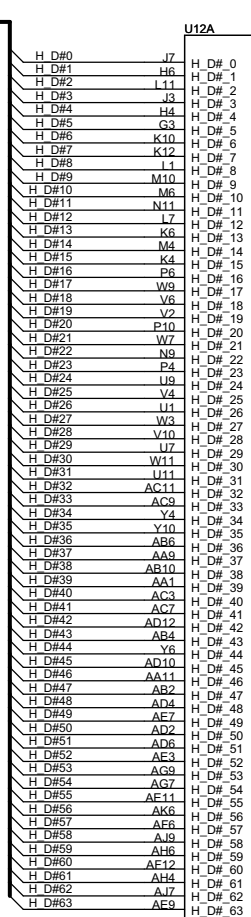
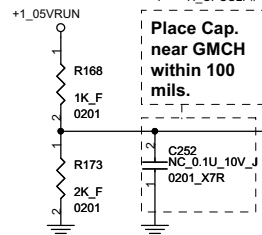
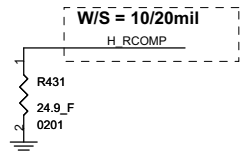
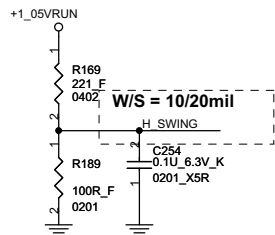
Layout Note: Route VCCSENSE & VSSSENSE traces at 27.4 Ohms with 25 mil spacing to other signals. Place PU and PD within 2 inch of CPU.

Outer width=13 mil spacing=7 mil  
Inner width=9.5 mil (L3,L8), spacing=7 mil  
Inner width=12.5 mil (L4,L7), spacing=7 mil  
Length match < 25 mil



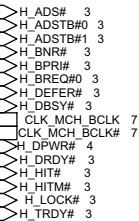
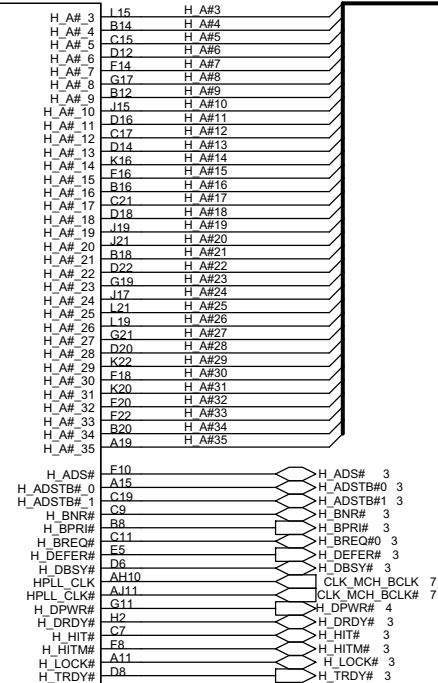




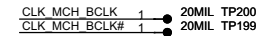
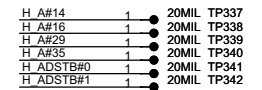
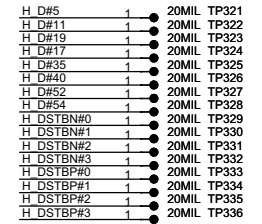


Traces width 10 mils.  
Length < 500 mils.

HOST

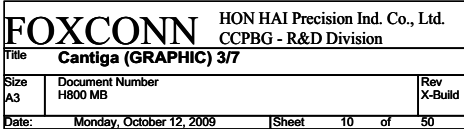


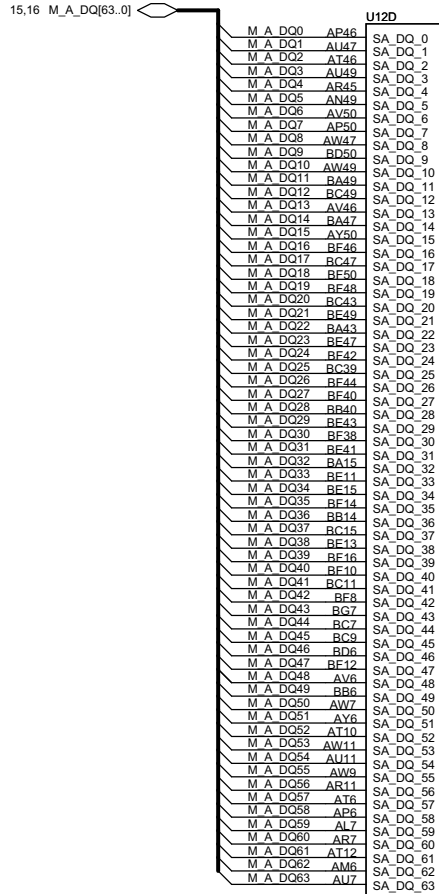
H\_A#[3..35] 3



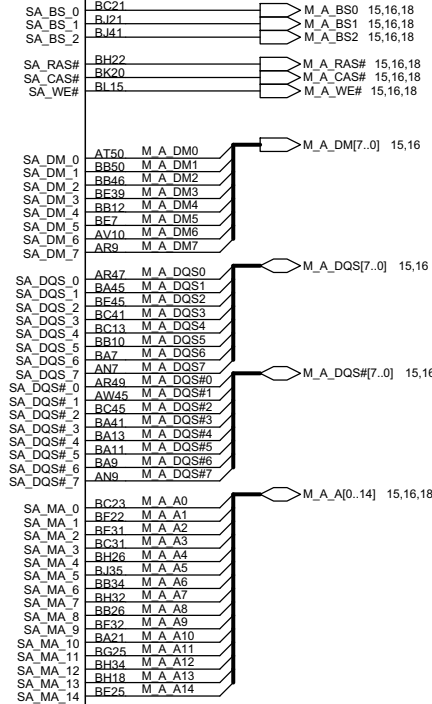




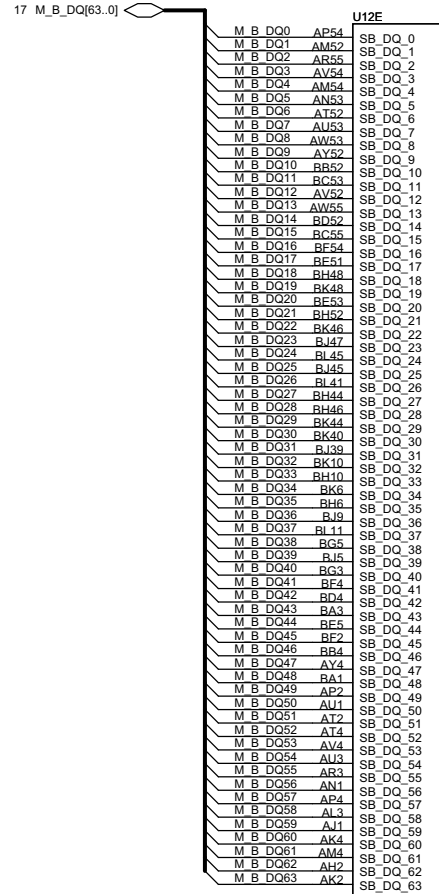




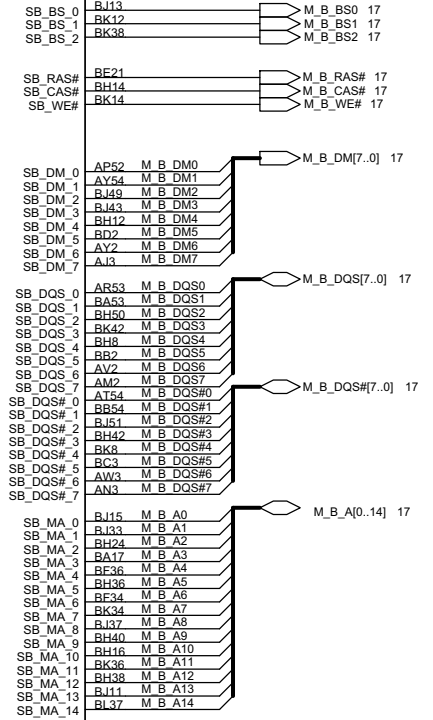
DDR SYSTEM MEMORY A



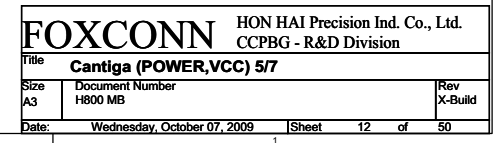
GS45  
null



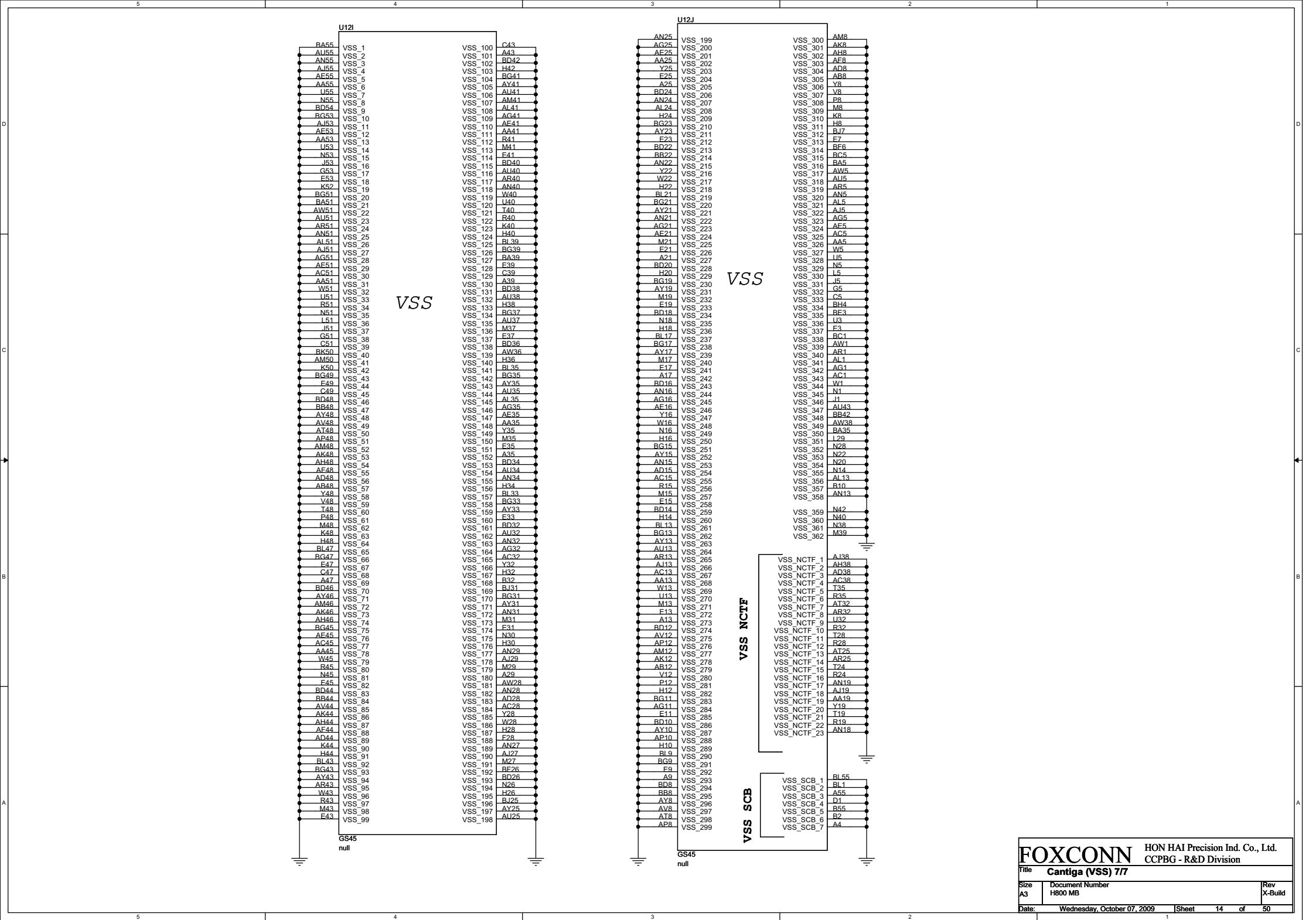
DDR SYSTEM MEMORY B

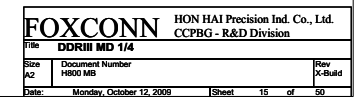


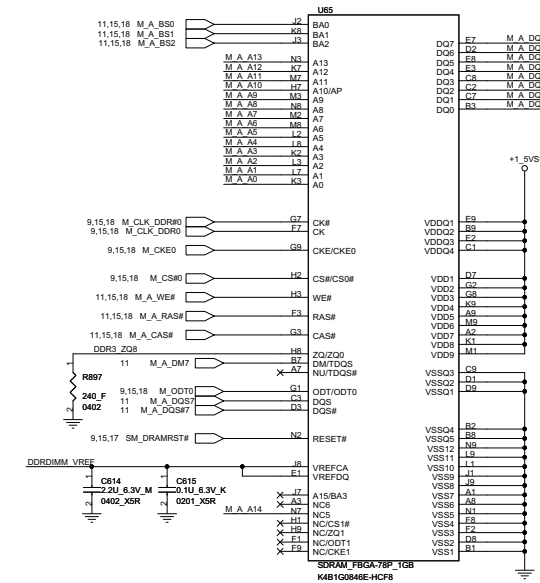
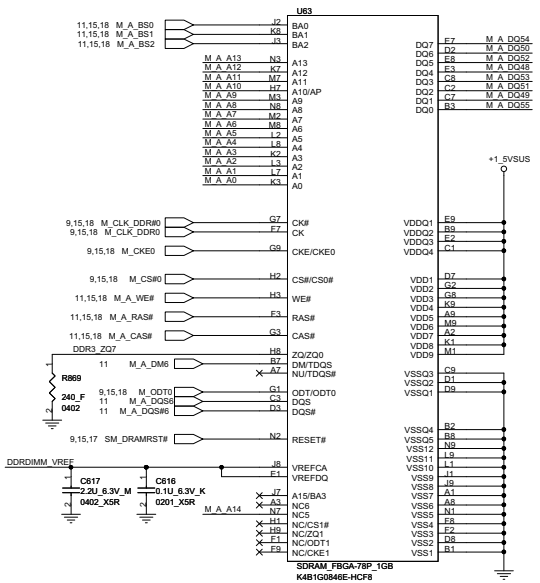
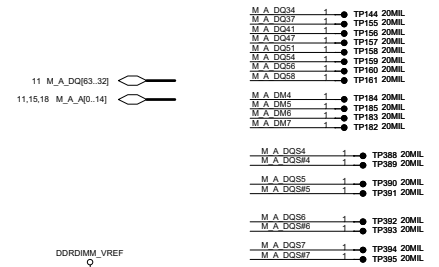
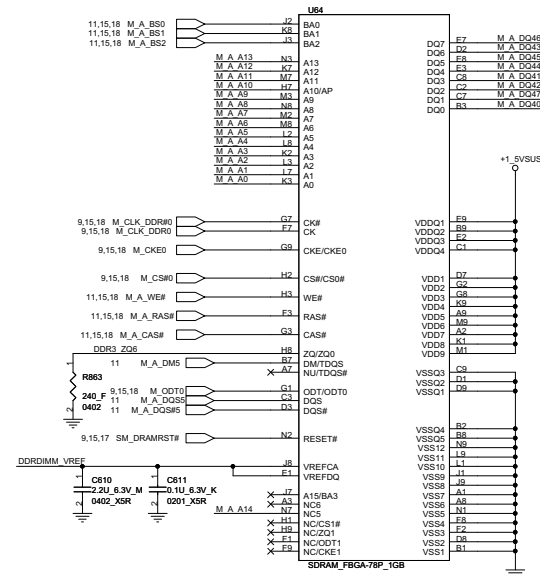
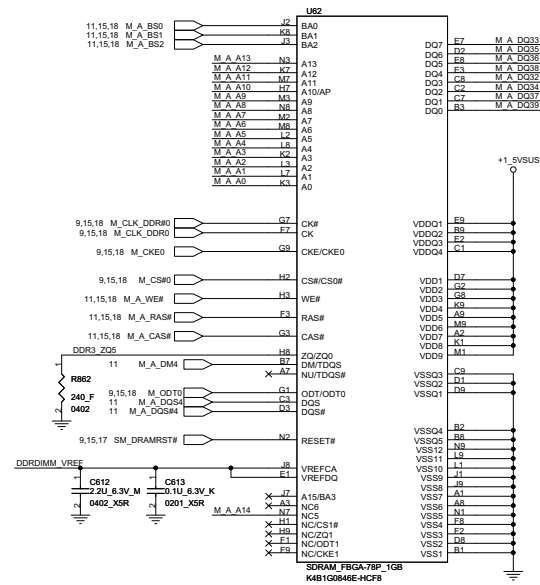
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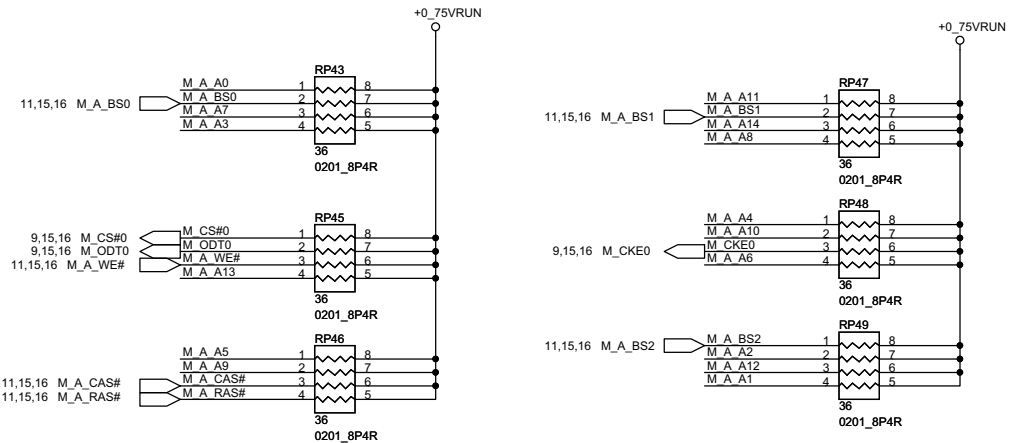
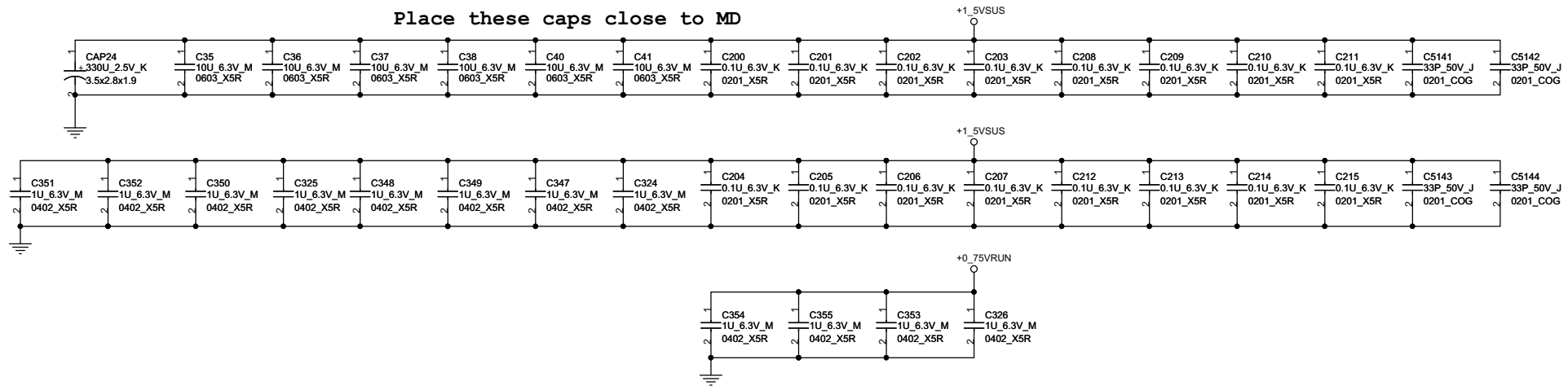


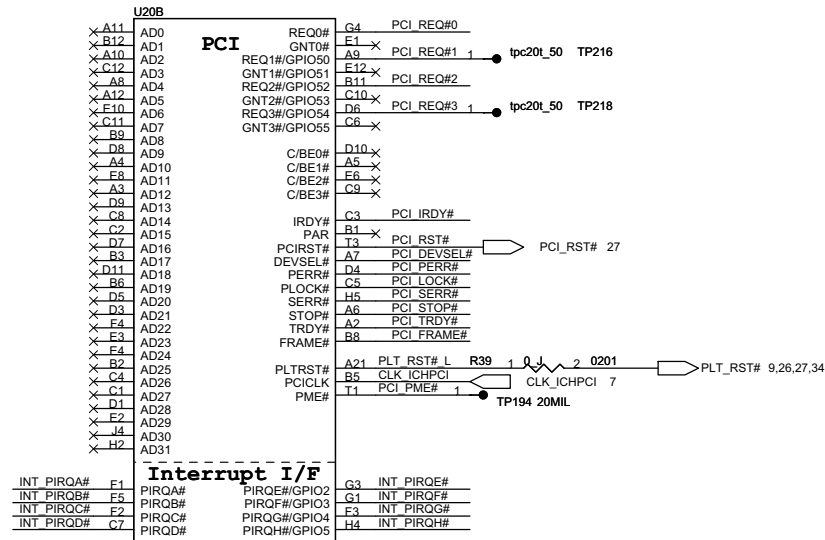
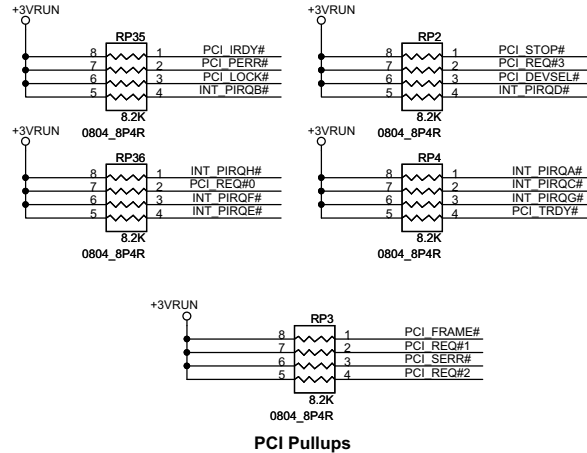






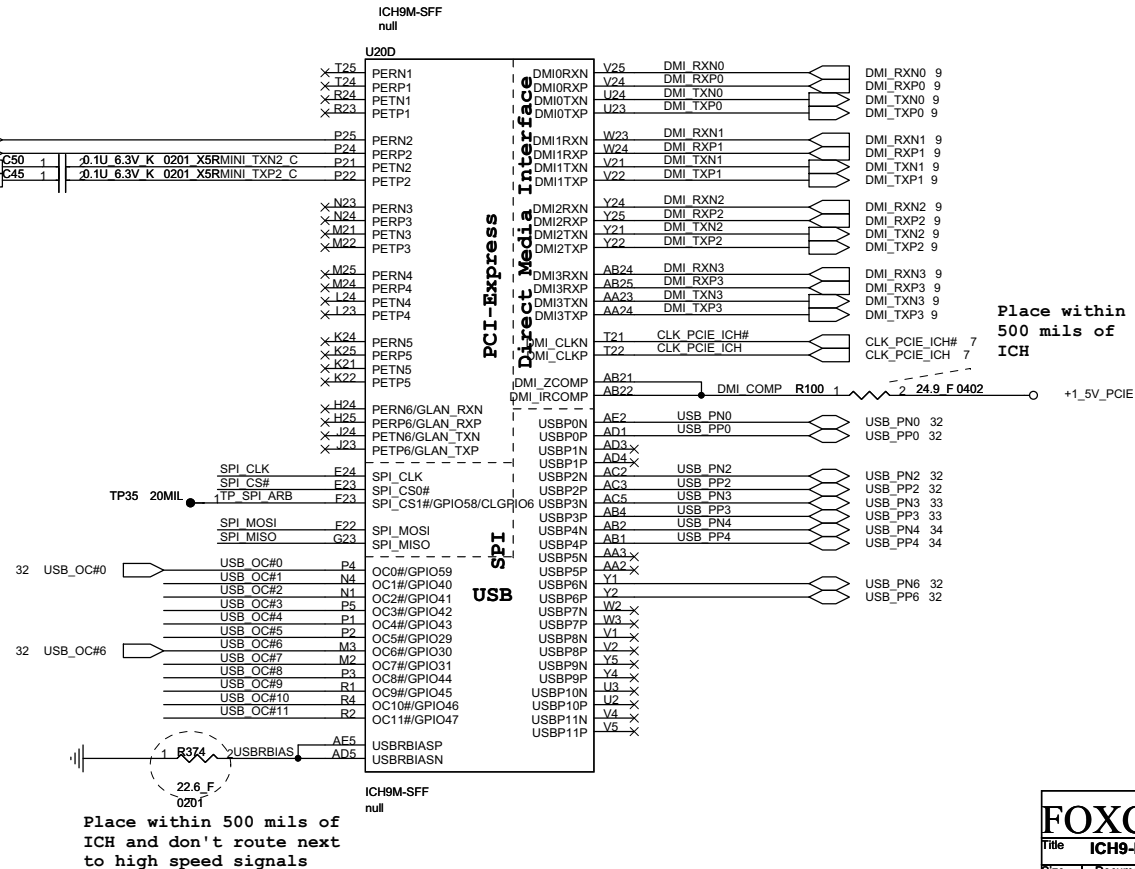
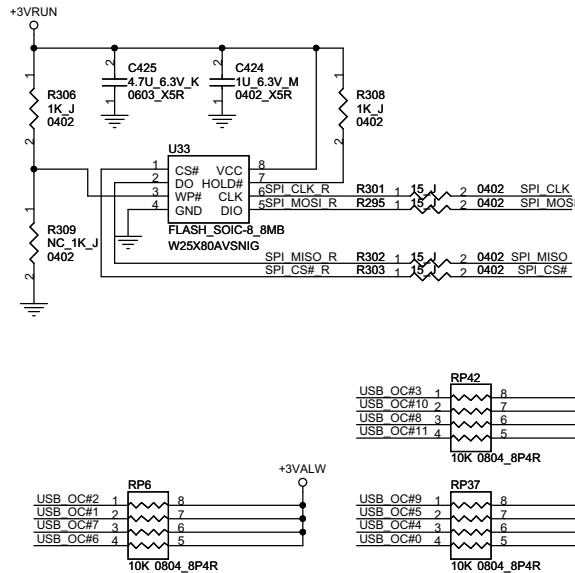






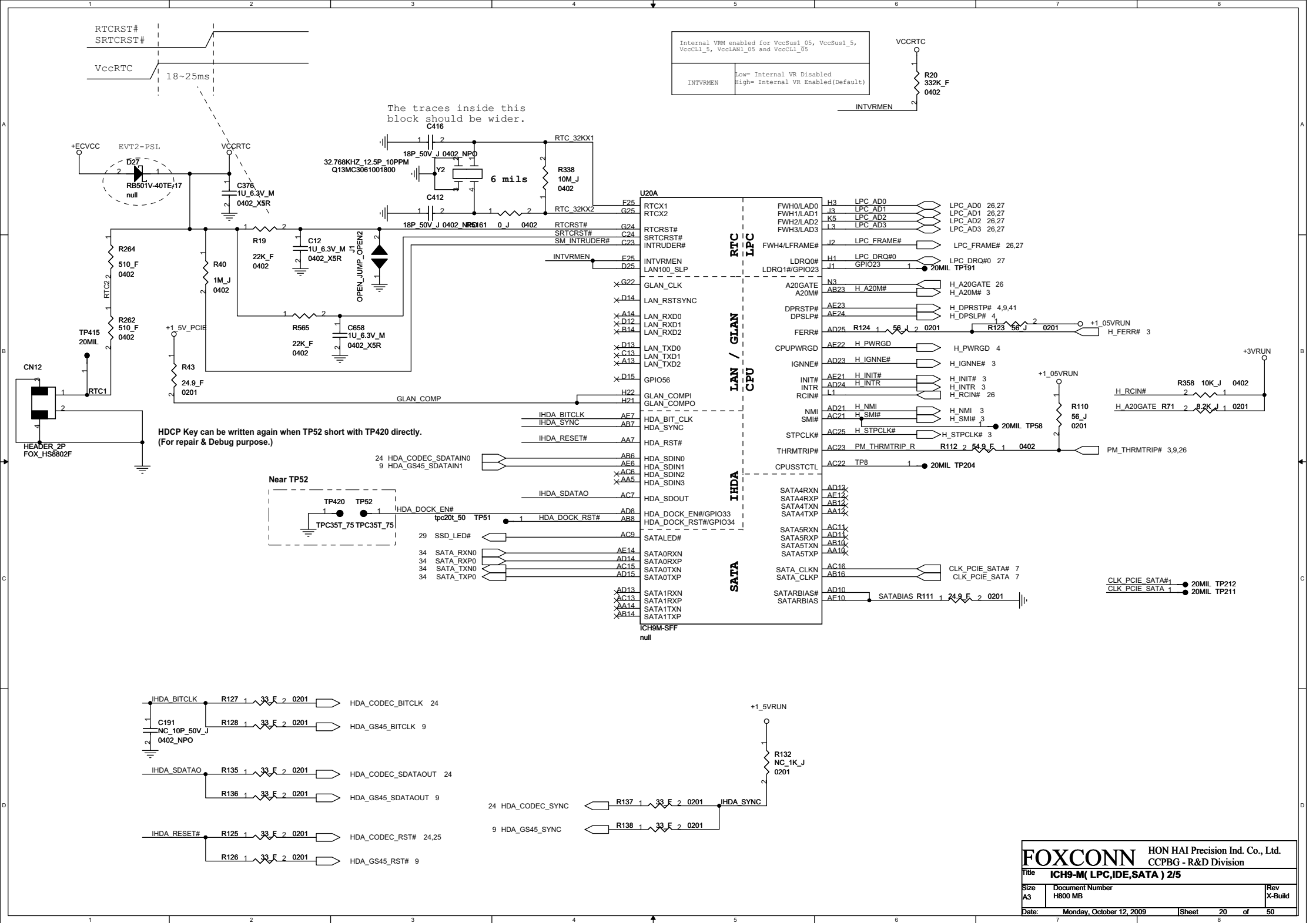
**Strap for Boot-BIOS**

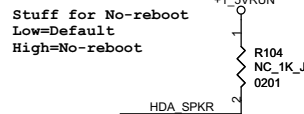
	GNT0#	SPI_CS1#
LPC(Default)	H1	H1
PCI	H1	LOW
SPI	LOW	H1



CLK ICHPCI	1	TP343 20MIL
DMI RXN0	1	TP118 20MIL
DMI RXN2	1	TP119 20MIL
DMI RXN3	1	TP120 20MIL
DMI RXP0	1	TP114 20MIL
DMI RXP2	1	TP117 20MIL
DMI RXP3	1	TP116 20MIL
CLK PCIE ICH#	1	TP209 20MIL
CLK PCIE ICH	1	TP210 20MIL

USB PORT	FUNCTION
PORT-0	Right USB
PORT-2	CAMERA
PORT-3	WWAN
PORT-4	BlueTooth
PORT-6	Left USB (USB to RJ45)

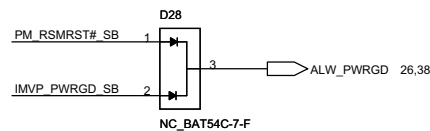
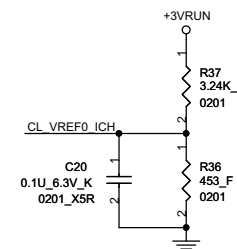
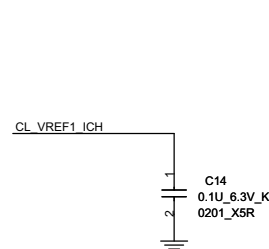
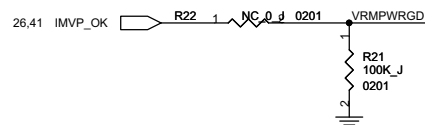
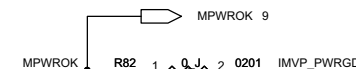
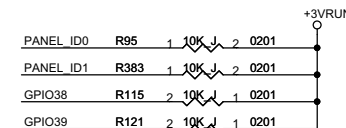
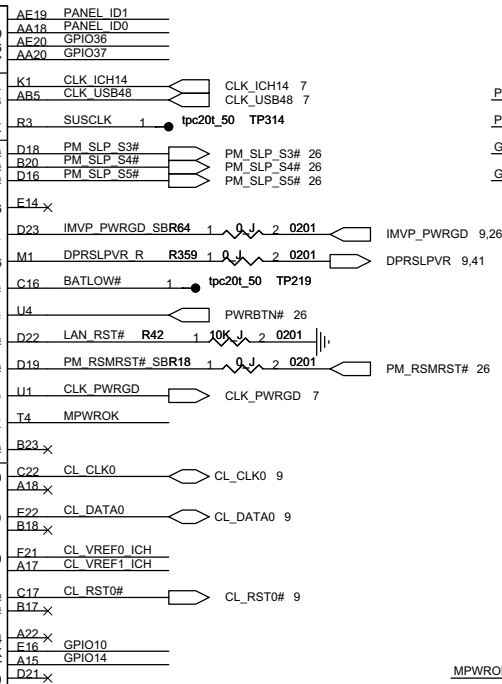
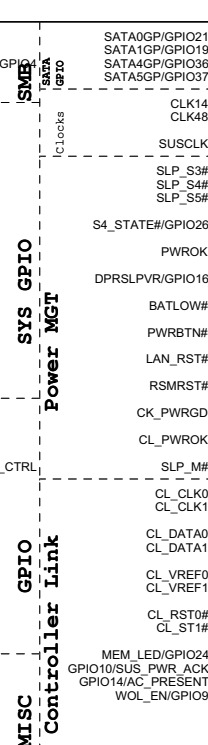
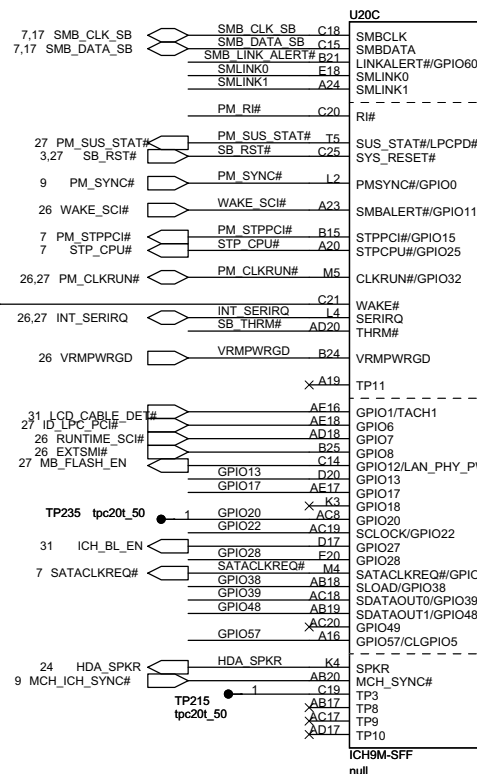
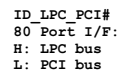
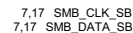


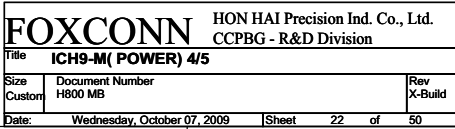


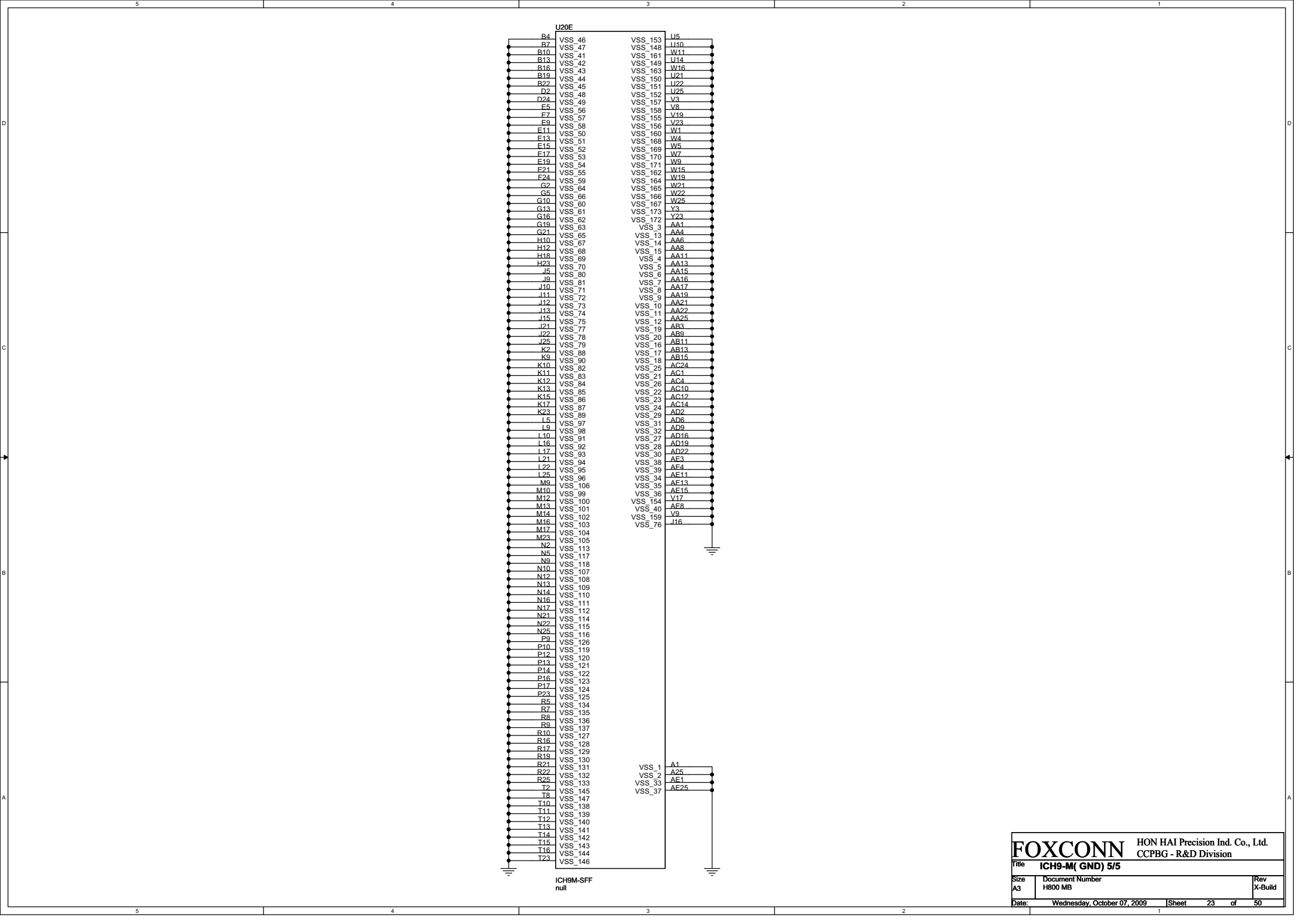
GPIO36 R26 1 10K J 2 0201 +3V<sub>RUN</sub>

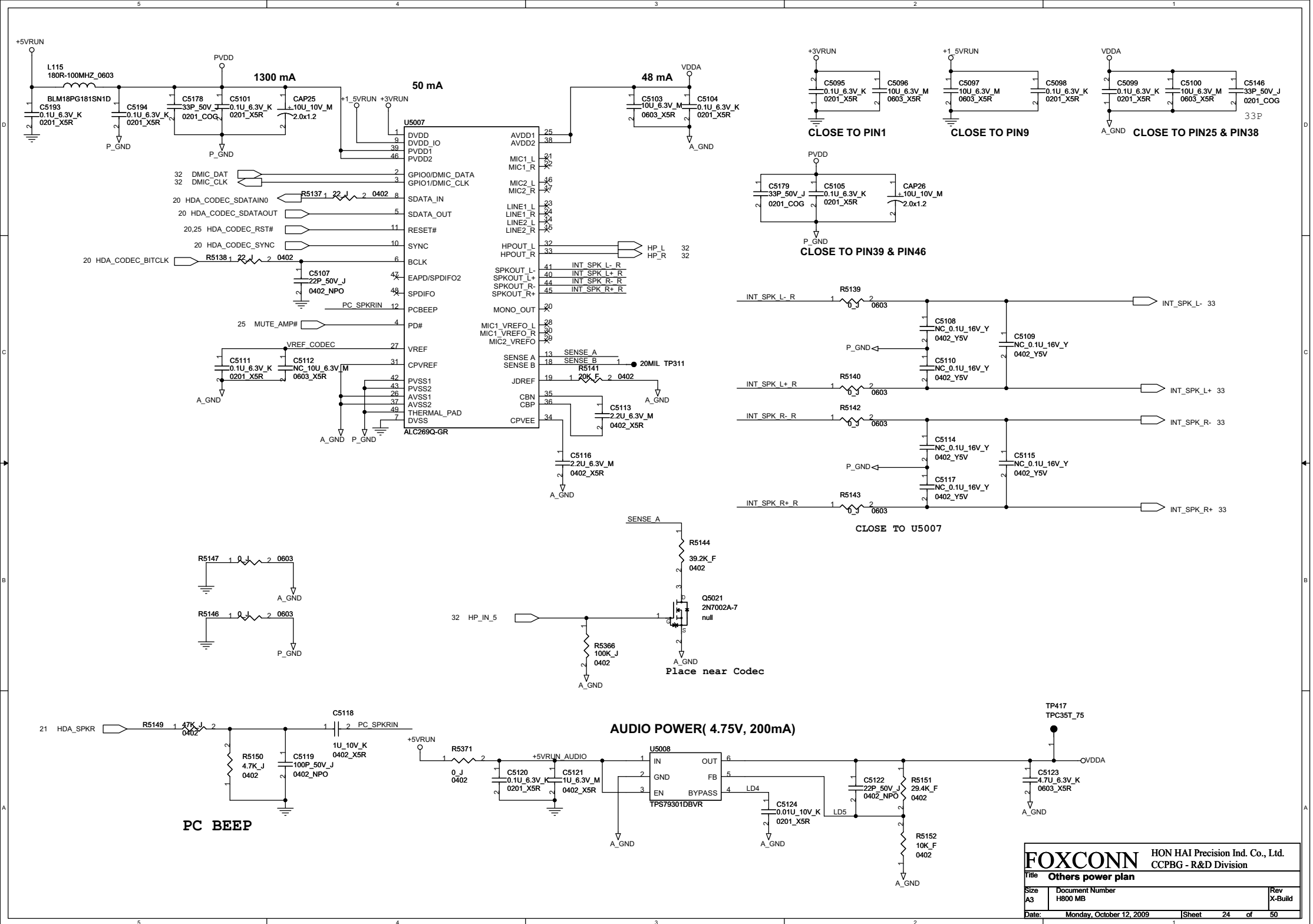
GPIO37 R27 1 10K J 2 0201

CLK ICH14	1	26MIL	TP214
CLK USB48	1	tpc20t 50	TP213

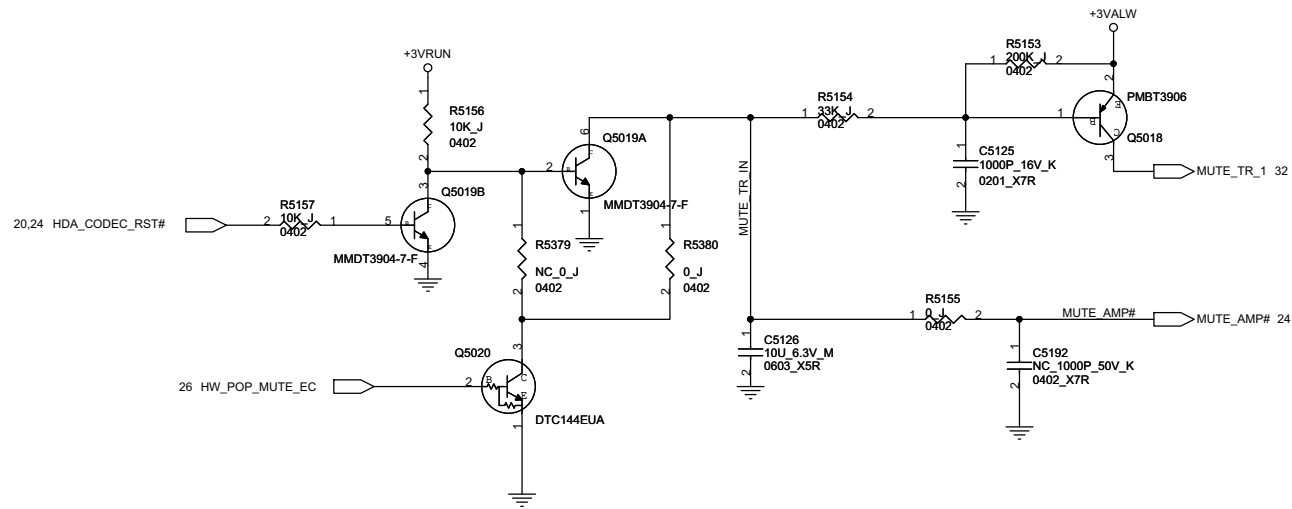


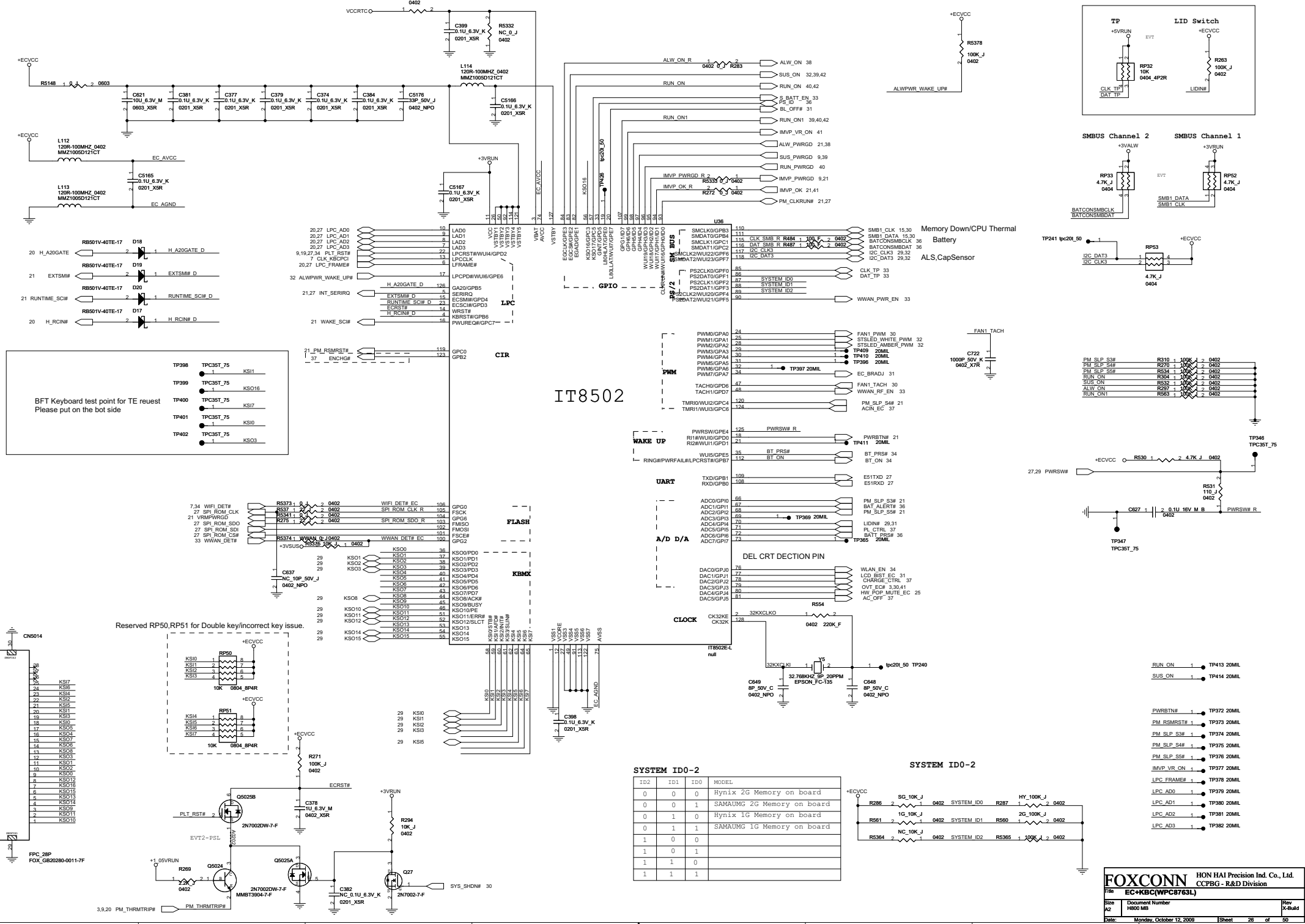










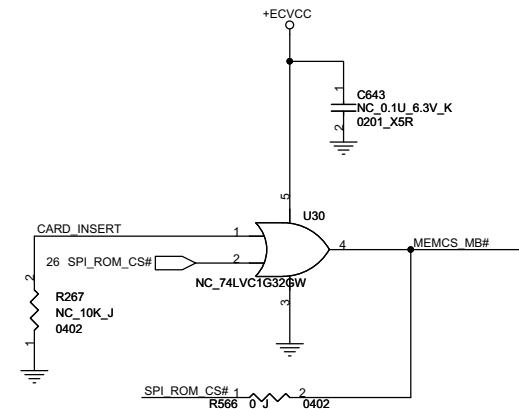
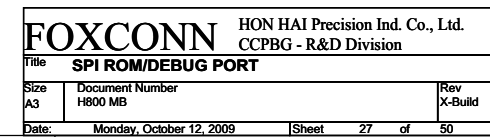


BFT Keyboard test point for TE reuest  
Please put on the bot side

TP398    TPC35T\_75    KS11  
TP399    TPC35T\_75    KS016  
TP400    TPC35T\_75    KS17  
TP401    TPC35T\_75    KS10  
TP402    TPC35T\_75    KS03

IT8502

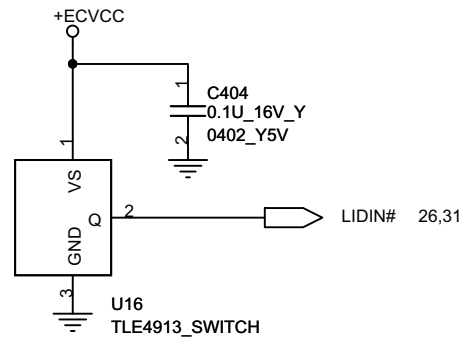
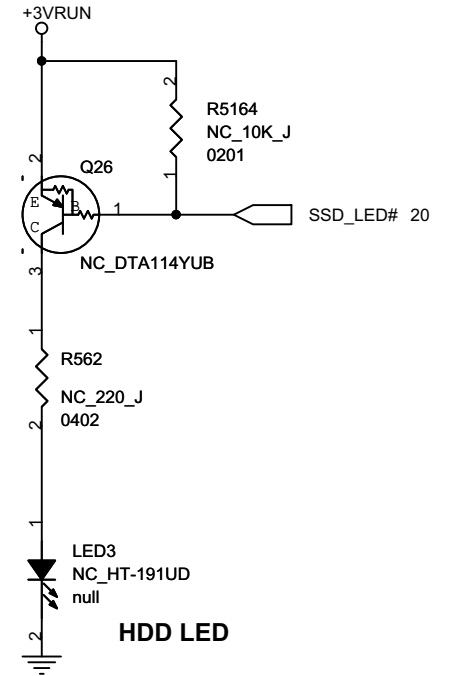
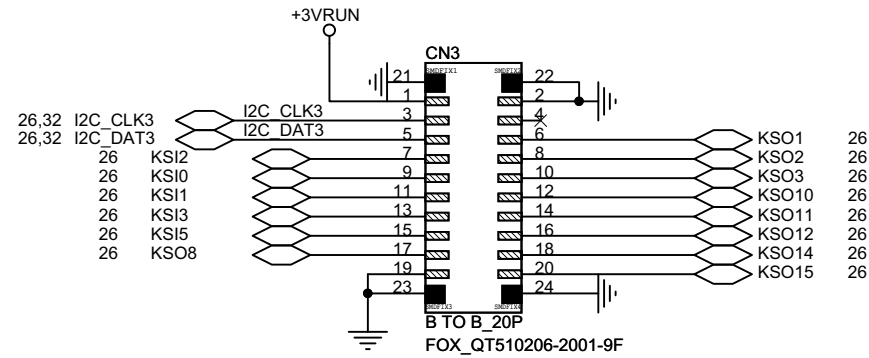
ID2	ID1	ID0	MODEL
0	0	0	Hynix 2G Memory on board
0	0	1	SAMAUHG 2G Memory on board
0	1	0	Hynix 1G Memory on board
0	1	1	SAMAUHG 1G Memory on board
1	0	0	
1	0	1	
1	1	0	
1	1	1	

[illegible]

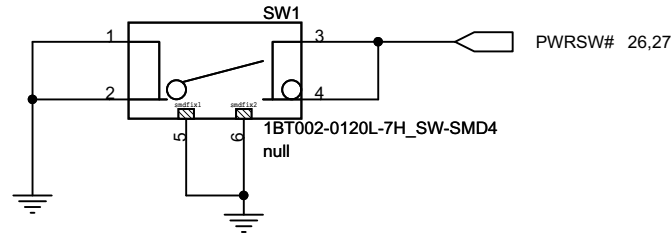
**PT**

**Removed on board key pad design**

# FUNCTION KEY CONN



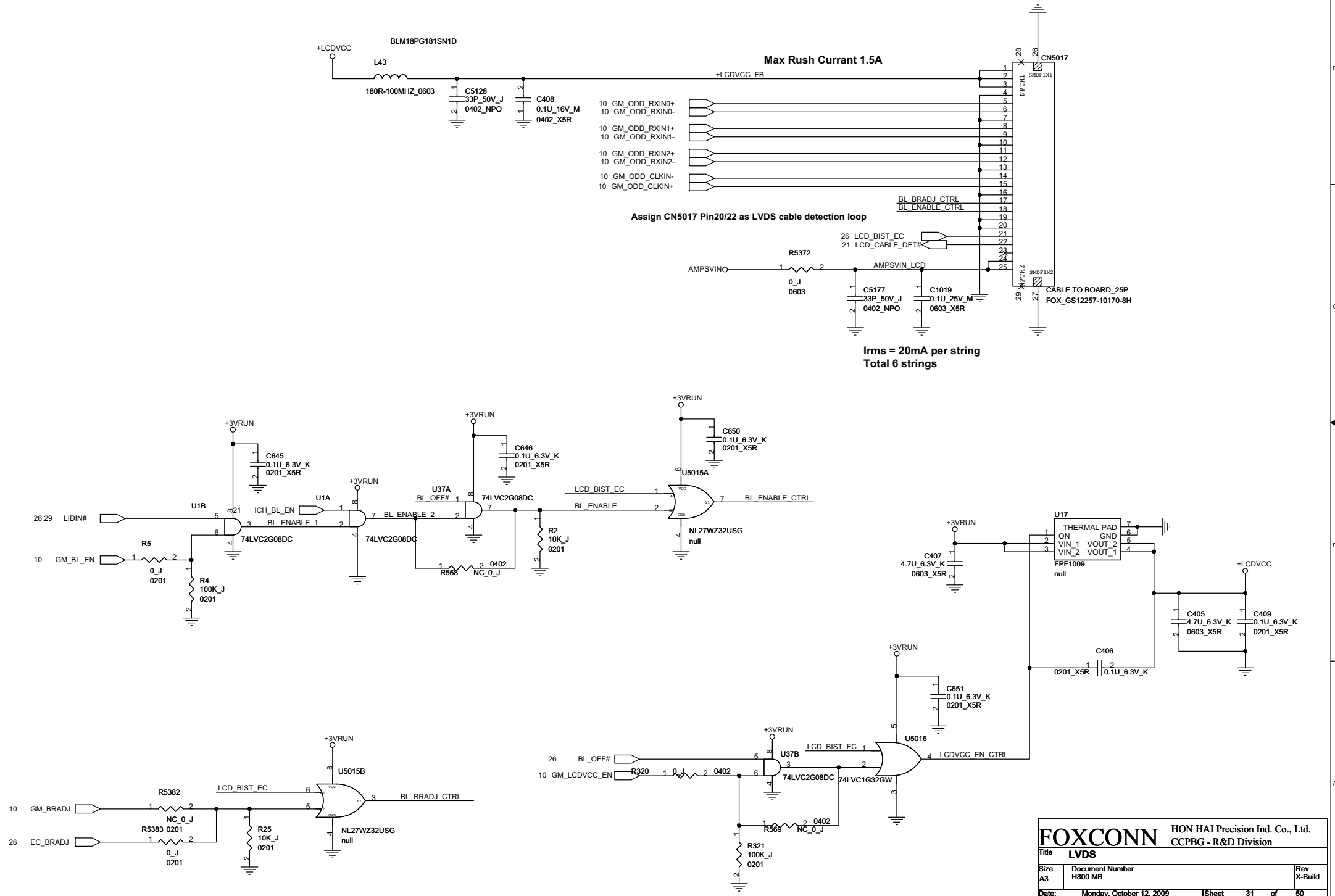
## LID SWITCH



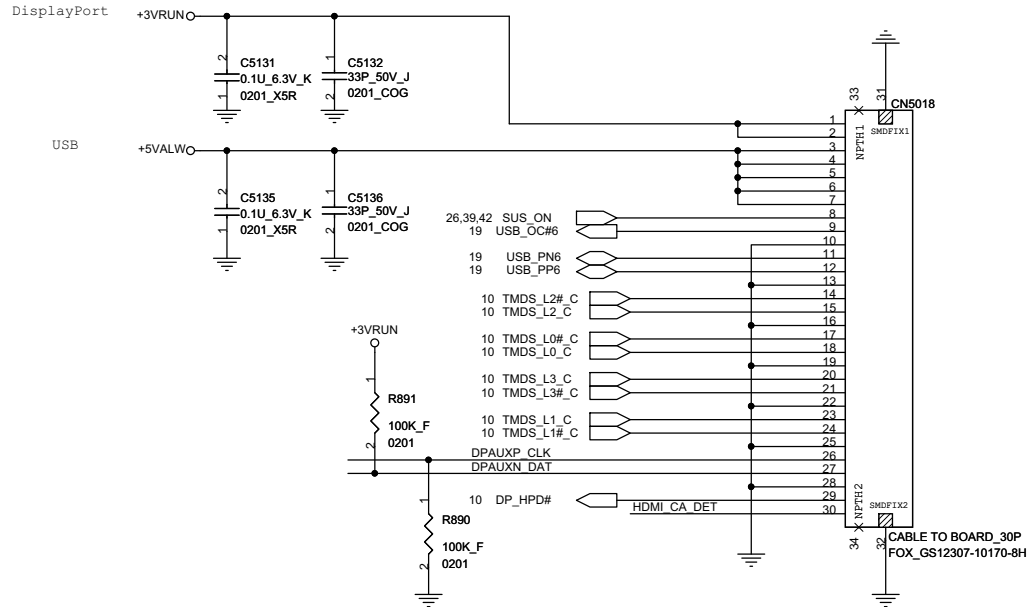
## POWER BOTTON



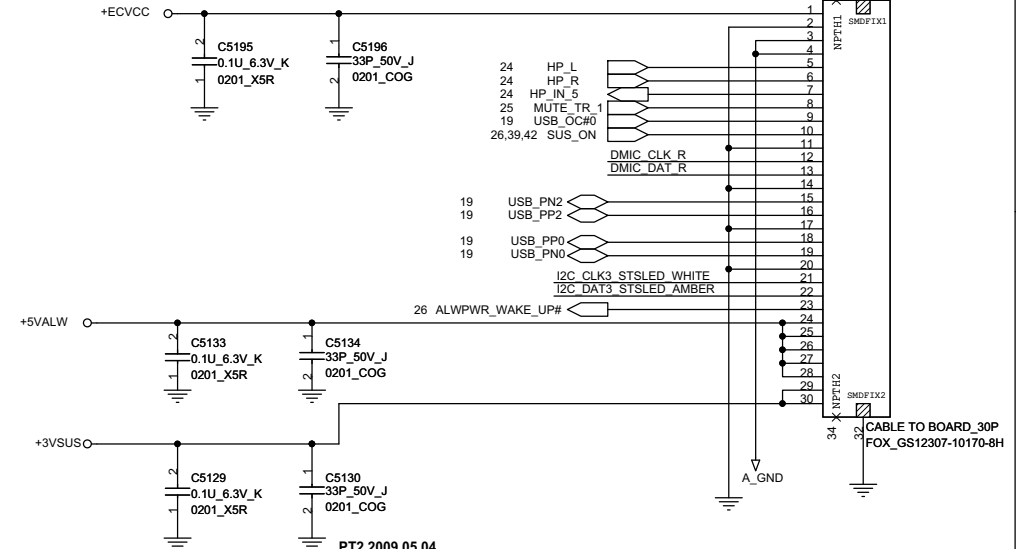
# LVDS CONNECTOR



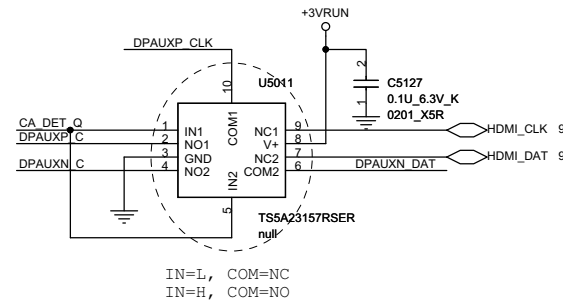
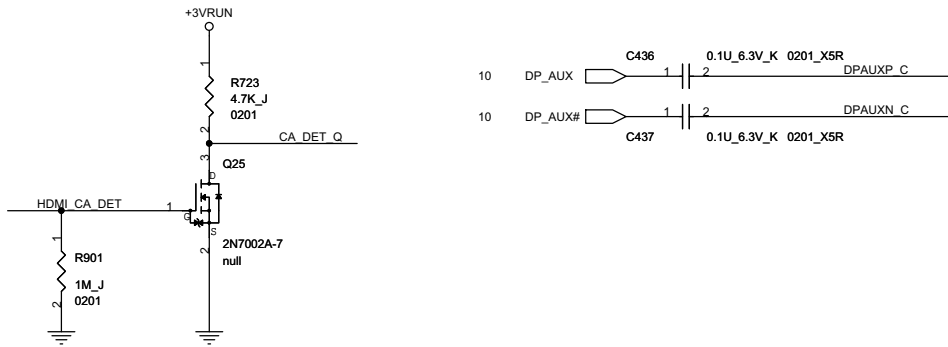
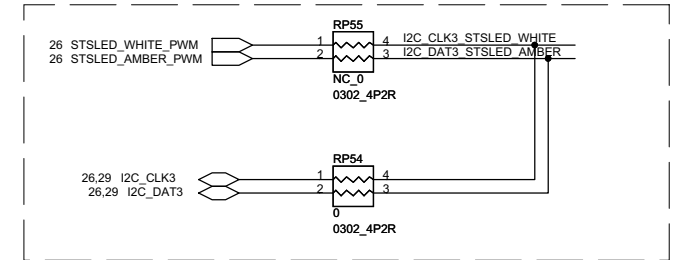
# LEFT SIDE I/O CONNECTOR



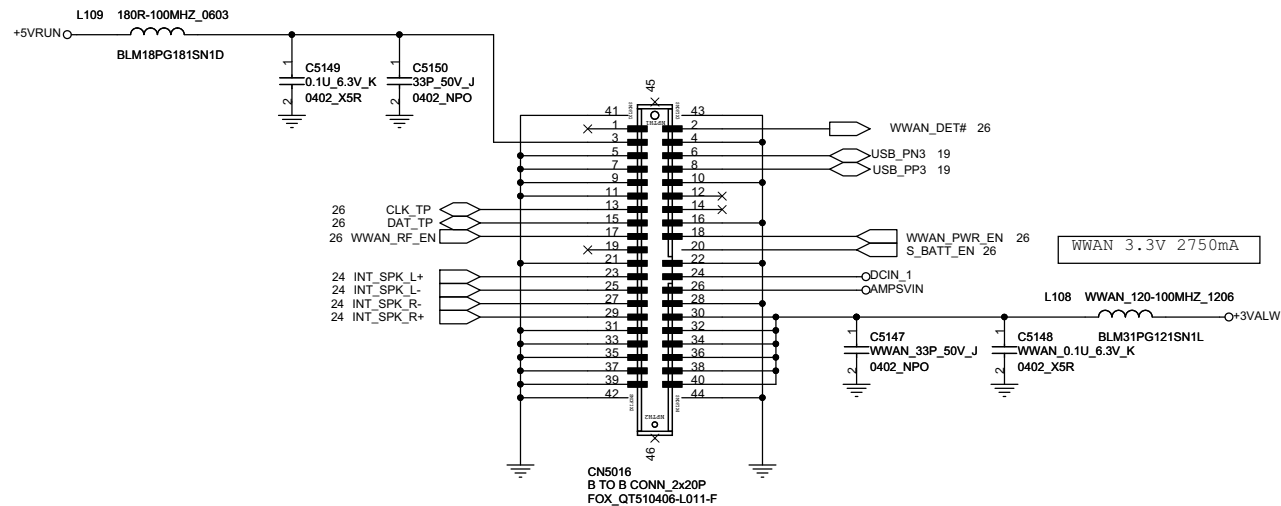
# RIGHT SIDE I/O CONNECTOR

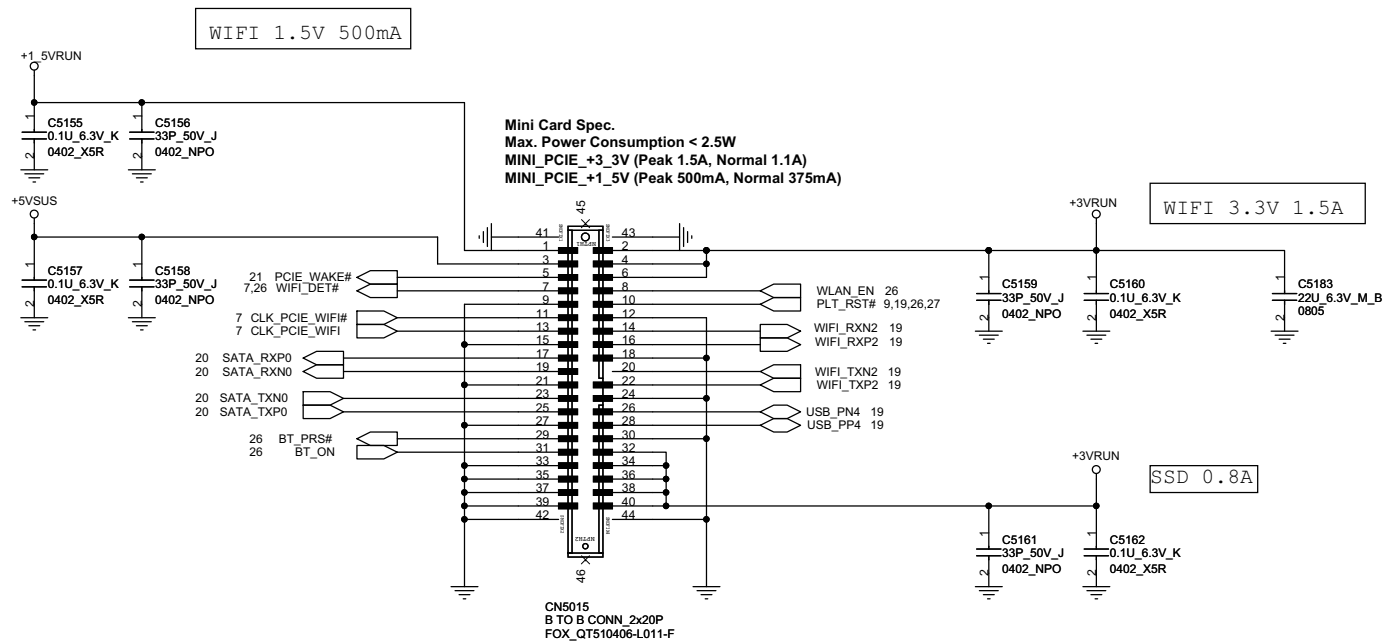


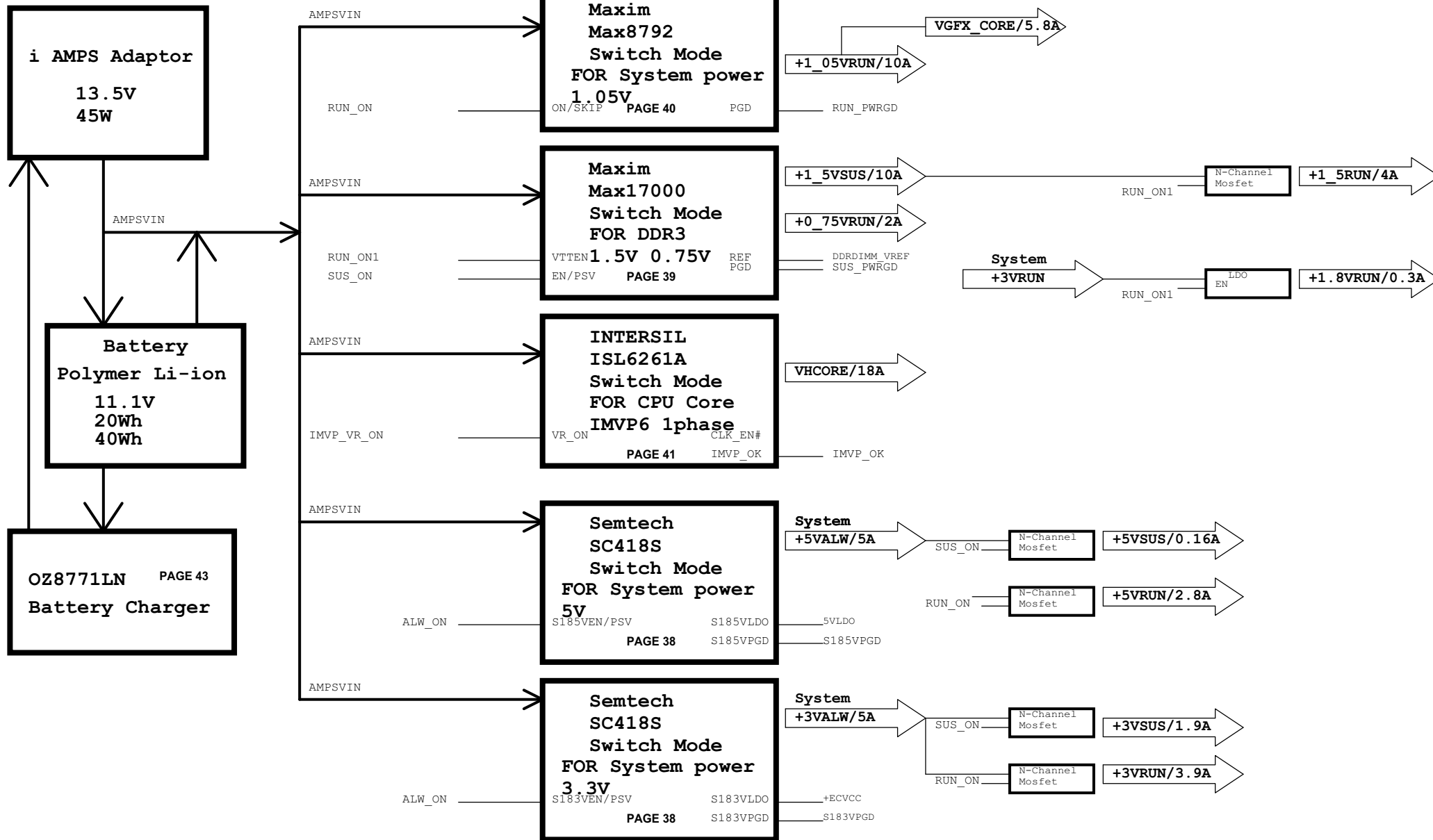
**PT2 2009.05.04**  
 Added RP55 & RP54 for the path select function.  
 If RP55 Mount / RP54 NC : PWM control function by EC.  
 If RP55 NC / RP54 Mount : I2C Bus connection between Cypress uC(Latch FPC) & EC.

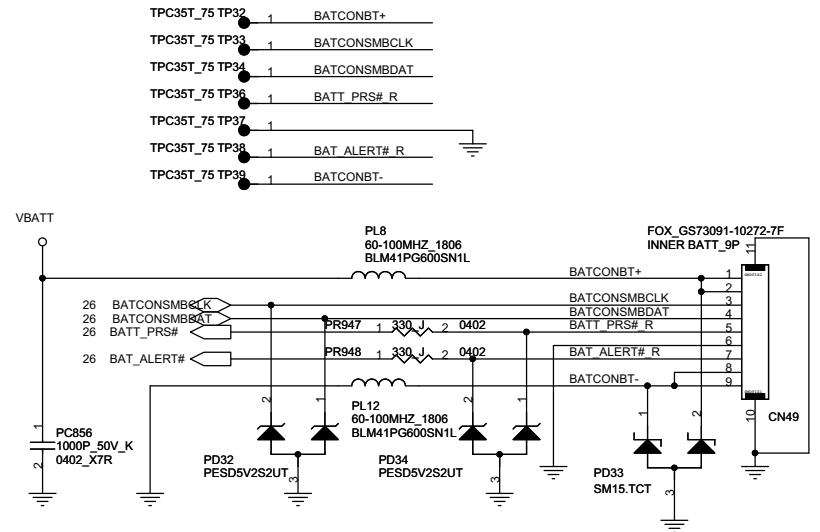
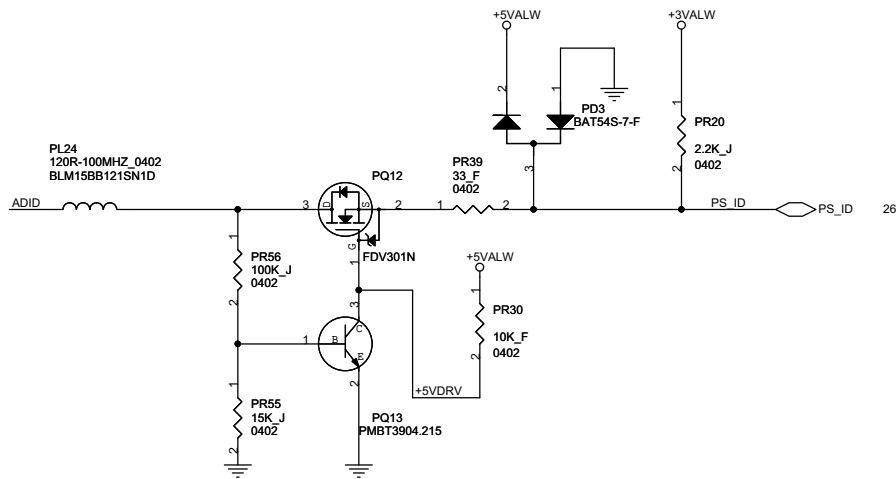
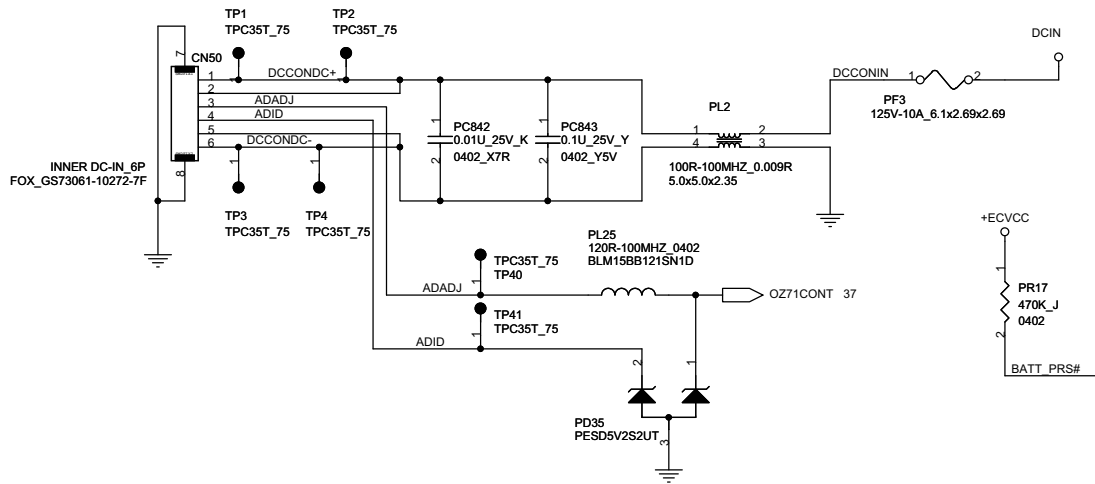




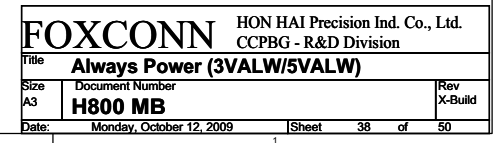


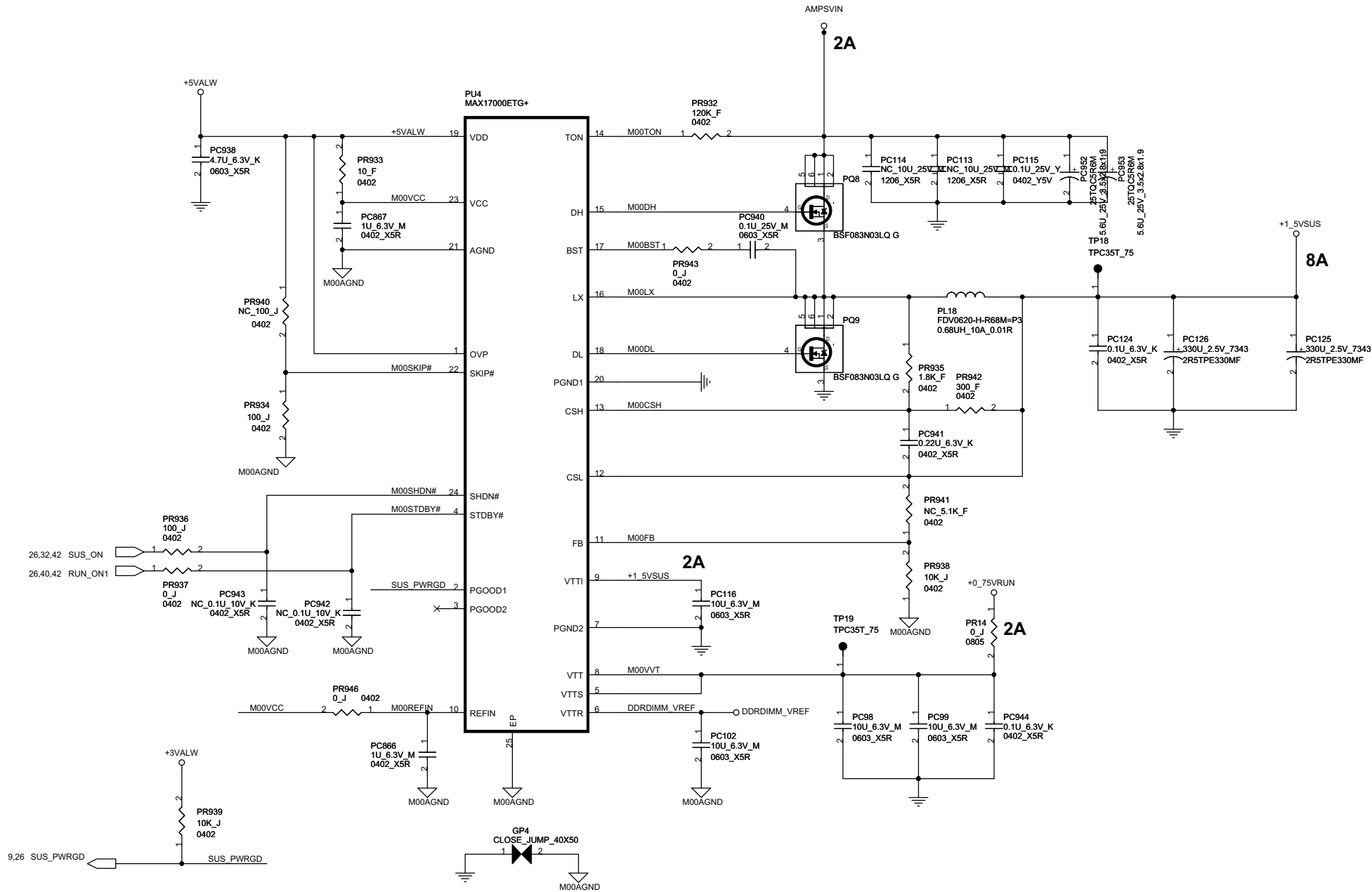




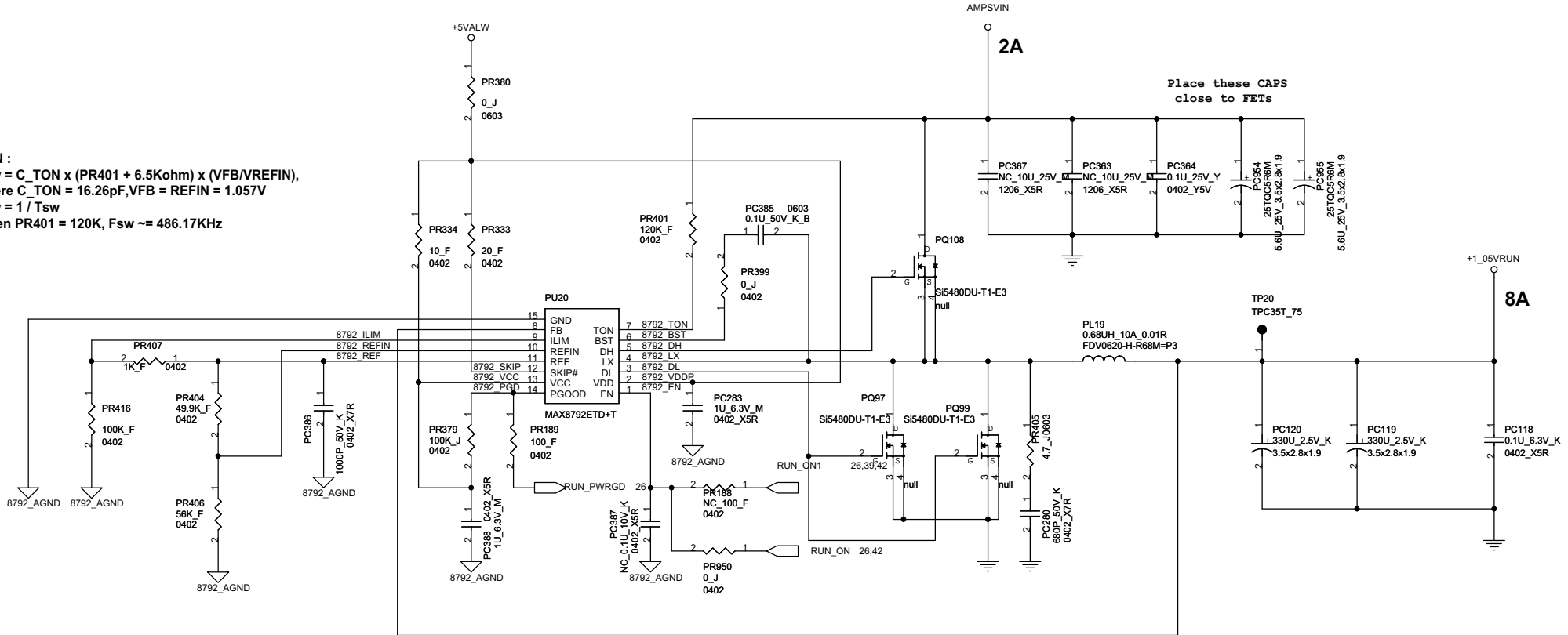








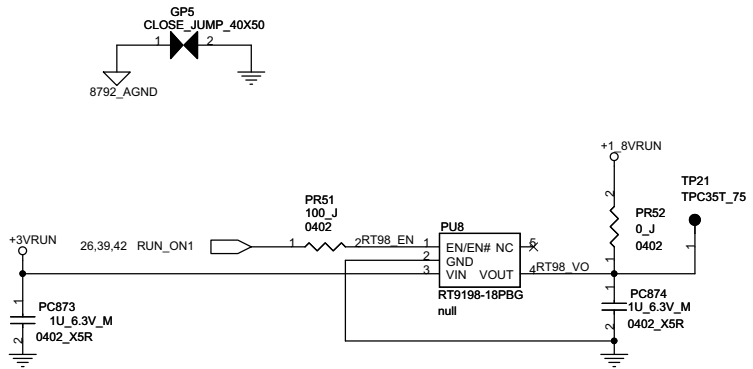
TON :  
 $T_{sw} = C_{TON} \times (PR401 + 6.5K\Omega) \times (V_{FB}/V_{REFIN})$ ,  
 where  $C_{TON} = 16.26pF$ ,  $V_{FB} = REF_{IN} = 1.057V$   
 $F_{sw} = 1 / T_{sw}$   
 When  $PR401 = 120K$ ,  $F_{sw} \approx 486.17KHz$



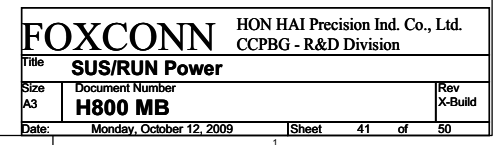
Choose  $I_{LOAD} = 10A$ . So  $I_{peak} = 11.47A$ ,  $I_{valley} = 8.53A$   
 $V_{LIM} = 8.53A \times R_{ds} = 85.3mV$ , where  $R_{ds} = 20m\Omega/2 = 10m\Omega$   
 Choose  $PR416 = 100K$ . So  $PR407 = PR416 \times ((0.1 / V_{LIM}) - 1) \approx 1K$   
 Set Valley Current Limit Threshold =  $85.3mV / 10m\Omega = 8.53A$

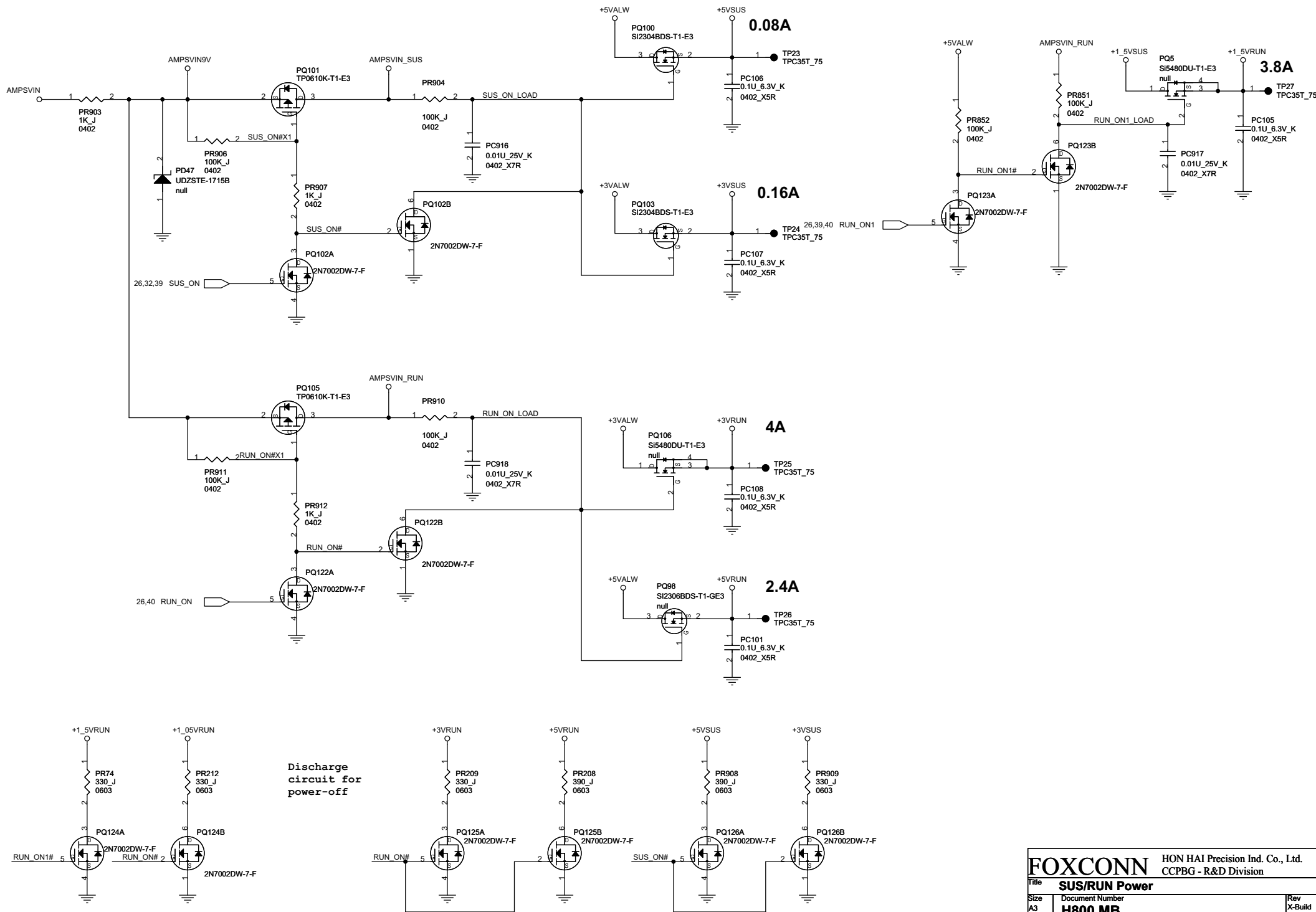
REFIN and FB :  
 1. FB TO Output => output voltage less than 2V.  
 2. REFIN voltage determines SMPS output.  
 $V_{REFIN} = 2V \times PR406 / (PR406 + PR404) = 1.057V$

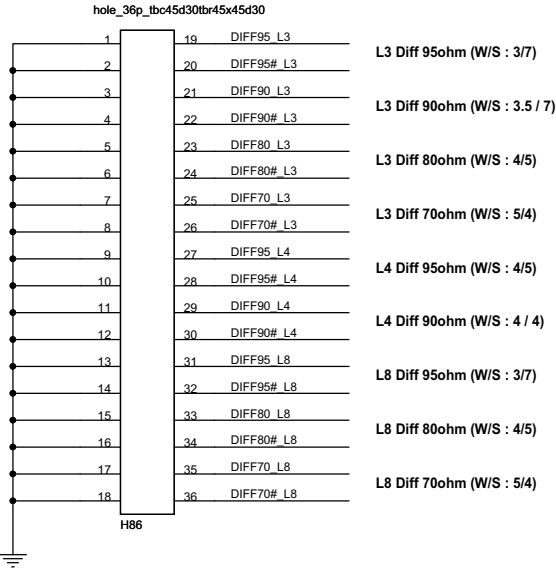
SKIP#:  
 SKIP# TO VDD => forced PWM mode  
 SKIP# TO REF => pulse-skipping mode with forced-PWM during transitions.  
 SKIP# TO OPEN => ultrasonic mode  
 SKIP# TO GND => pulse-skipping mode



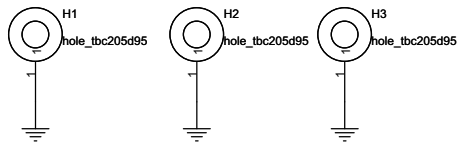




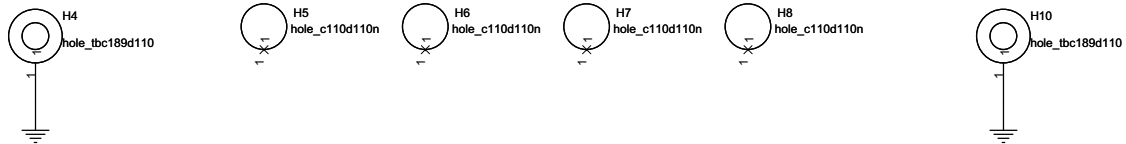




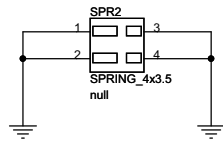
Type A\*3PCS



Type B\*6PCS



Type C\*2PCS







PT2 2009.04.20  
To fix GPIO function limitation(GPE0 is no function when system in S5) ,  
changed ALWPWR\_WAKE\_UP# from GPE0 to GPE6.  
(Deleted TP353 for GPE6 & Added TP426 for GPE0)

PT2 2009.04.27  
To improve SMT reliability issue , implemented new part footprint for  
PQ5,PQ6,PQ7,PQ10,PQ11,PQ37,PQ99,PQ106,PQ108

PT2 2009.04.30  
To support Bridge Battery function , implement S\_BATT\_EN for EC GPIO GPC5(Pin57)  
(Deleted TP348)  
(2)To support Bridge Battery function , implement necessary Power/control signal for CN5016  
S\_BATT\_EN  
DCHN\_1  
AMPSVIN

PT2 2009.05.04  
(1)Follow ME DXF to deleted H11  
(2)Implement PWLED & STSLED PWM control for EC to support Power LED & Status LED control in Mech. Latch case.  
(3)Added RP55 & RP54 for the path select function.  
If RP55 Mount / RP54 NC : PWM control function by EC.  
If RP55 NC / RP54 Mount : I2C Bus connection between Cypress uC(Latch FPC) & EC.

PT2 2009.05.05  
(1)To improve the HP Crosstalk issue , changed CN5019-Pin3 from GND to A\_GND  
(2)To fix the timing issue for VCCRTC to RTCRST# , changed part value for R19 from 13Kohm to 17.8Kohm.  
(3)To reduce leakage , changed part value for PR857, PR869, PR883, PR886 from 10Kohm to 100Kohm.  
(4)Change part for PL3&PL5 from Lead free to Halogen free.  
(FDVE0630-2R2M=P3 to FDVE0630-H-2R2M=P3.)  
(5)Change part for PL7 from Lead free to Halogen free.  
(FDU1235-R47M=P3 to FDU1235-H-R47M=P3.)

PT2 2009.05.06  
(1)Added TP241 for I2C\_DAT3  
(2)For USB 5V power drop concern ;  
changed part value for PR864&PR867 to rise +5VALW power level.  
PR864 : 91Kohm to 84.5Kohm  
PR867 : 10Kohm to 9.1Kohm

PT2 2009.05.07  
To fix ghost key issue , mount RP50/RP51 as external pull high.

ST 2009.05.22  
To fix sense issue for system shutdown of SMCSC1422 , added Q27 to change the connection of SYS\_SHDN# from Source to Gate of MOS.

ST 2009.05.22  
To meet Dell requirement , added WWAN\_PWR\_EN control to separate the WWAN device/power control.

ST 2009.05.25  
(1)To fix power noise issue , added C5199(1uF Cap) for +5VALW .  
(2)Changed part for PD35 from 15V rating to 5V rating and follow EMI suggestion to connect PD35-1 from ADADJ to QZ71CONT.  
(3)Follow Dell requirement to implement PS\_ID circuit.  
(4)To guarantee the suitable power level output when air adapter condition(14V~19V) , added PC11,PD45.

ST 2009.5.27  
(1)Deleted close Gap PJ4,PR10,PR18,PR19 and changed net name form AMPSVINS185V to AMPSVIN  
(2)Deleted Close Gap PJ15 and change net name form S185VOUT to +5VALW.  
(3)Deleted Close Gap PJ16,PR11,PR21 and changed net name form AMPSVINS183V to AMPSVIN  
(4)Deleted Close Gap PJ7 and changed net name form S183VOUT to +3VALW.  
(5)Deleted close Gap PJ10,PR12,PR23 and change net name form AMPSVINM00 to AMPSVIN  
(6)Deleted Close Gap PJ11,PJ12 and changed net name form +1\_5VSUS\_1 to +1\_5VSUS  
(7)Deleted Close Gap PJ18,PR13,PR24 and changed net name form AMPSVINM8792 to AMPSVIN.  
(8)Deleted Close Gap PJ19,PR20 and changed net name form S792\_FB to +1\_05VRUN.  
(9)Deleted Close Gap PJ14,PR15,PR16 and changed net name form AMPSVIN\_ISLVIN to AMPSVIN.  
(10)To fix hang up issue(Post code:0x86) ,added R5379 as termination Res.

ST 2009.06.01  
Follow the suggestion from SMCSC FAE to reserve C382(0.1uF) for RC delay reusept.

ST 2009.06.02  
Removed 75ohm termination Res.--R5379

ST 2009.06.02B  
To fix the RTCRST# timing issue ,  
changed part value for R19 from 17.8Kohm to 22Kohm and R565 from 13Kohm to 22Kohm.

ST 2009.06.02B  
To fix the Ripple /Noise issue for +5V power ,  
changed part for PC949 from TEPSLD1A227M(25)12R to TLP5LV0J227M(15)12RE.  
(Lower ESR)

ST 2009.06.02B  
To fix the Ripple /Noise issue for +5V power ,  
changed part value for PR860 from 100K to 75K

ST 2009.06.02B  
Corrected signal name as below.  
I2C\_DAT3\_STSLD ==> I2C\_DAT3\_STSLD\_AMBER  
I2C\_CLK3\_PWRLED ==> I2C\_CLK3\_STSLD\_WHITE  
PWRLED\_PWM ==> STSLED\_WHITE\_PWM  
STSLED\_PWM ==> STSLED\_AMBER\_PWM

ST 2009.06.03  
To fix timing accuracy issue , changed part value for C648&C649 from 10pF to 8pF.

ST 2009.06.09  
Follow adapter ground linear resistance to adjust part value for PR832,PR835  
PR832 : 4.87Kohm to 118Kohm  
PR835 : 31.6Kohm to 768Kohm

ST 2009.06.09B  
(1)To fix noise issue when Codec initial , changed C5112 from mounted to NC\_.  
(2)Corrected signal name from WWAN\_EN to WWAN\_RF\_EN  
(3)To drop HDD\_LED function from ST , reserved below parts from mount to NC\_  
R5164,Q26,R562,LED3  
(4)Corrected signal name from HW\_POP\_MUTE\_ECG to HW\_POP\_MUTE\_EC

ST 2009.06.24  
(1)To fix derating concern for air adapter condition(14V~19V) , changed part value for PR905,PR914 from 2.2Kohm to 4.7Kohm.  
(2)To fix derating concern for air adapter condition(14V~19V) , changed part value for PC932 from 0.1uF\_16V to 0.1uF\_25V.  
(3)To improve ripple noise for +3VALW/+5VALW , NC PC852&PC996  
(4)To fix derating concern , changed part value for PC885 from 0.1uF\_6.3V to 0.1uF\_25V  
(5)To control Impedance accurately , implement Impedance coupon on MB.  
(6)To fix USB 5V power drop issue , changed part value for PR864,PR867  
PR864 : from 84.5Kohm to 110Kohm  
PR867 : from 9.1Kohm to 12Kohm

ST 2009.06.29  
(1)Update Block Diagram  
(2)To fix Slew issue for DREFSSCLK/DREFSSCLK# , changed Clock Gen.(U29) from SL28541BQCJ to 9LRS3165BKLFT.  
(3)Reserved R5379/R5380 as path select for HW\_POP\_MUTE\_EC control function.

ST 2009.06.29B  
Due to Die-transfer from D to E , changed Part for U62~U69 from K4B1G0846D-HCF8 to K4B1G0846E-HCF8

ST 2009.06.30  
(1)Follow JEDEC Standard to implement 75ohm terminator(R5381) for unused M\_CLK\_DDR1/M\_CLK\_DDR#1  
(2)To fix the DP source detection issue when system in S5 , changed power source for DPAUXN\_C pull up & U5011 switch power from +3VRUN to +ECVCC

ST 2009.07.01  
(1)Implement special footprint(qfn\_65p\_20\_354x354\_th118\_H800) that set thermal pad as 3mmx3mm for U29  
(2)Implement suitable Symbol(Footprint(H86) for Impedance coupon on MB.

ST 2009.07.02  
(1)For BFT test request , changed TP size from tpc20t\_50 to TPC35T\_75 for TP52/TP420  
(2)For height limitation concern , changed part size from 0402 to 0201 for R5381

ST 2009.07.02B  
To fix the DP source detection issue when system in S5 , changed power source for CA\_DET\_Q pull up power from +3VRUN to +ECVCC

ST 2009.07.03  
For DFM concern , implemented special footprint to improve SMT quality.  
PQ5,PQ6,PQ7,PQ10,PQ11,PQ97,PQ99,PQ106,PQ108

ST 2009.07.07  
For ESD concern , changed part for Q25 from 2N7002-7-F to 2N7002A-7(with ESD diode)

ST 2009.07.07B  
(1)Deleted unnecessary PJ2(Open GAP for GND)  
(2)For fix EMI issue , added SPR1 & SPR2

ST 2009.07.09  
For height limitation concern , deleted SPR1

ST 2009.07.13  
To prevent the abnormal short between LCD\_CABLE\_DET#(Pin22) & AMPSVIN\_LCD(Pin23) when cable assy ,  
changed pin define for CANS017-pin23 from AMPSVIN\_LCD to NC.

ST 2009.07.21  
To fix the DP source detection issue completely when system in S5 , backward pull high power source for CA\_DET\_Q/DPAUXN\_C/U5011 VDD to +3VRUN.  
And move Pull high/Pull down Res(R891/R890) connection from switch input to switch output.

ST 2009.07.22  
To fix ESD issue , changed H5~H8 from PTH Hole to NPTH Hole.  
(Cut off the path from Keyboard to system GND.)

ST 2009.07.23  
To fix the derating issue(Vgs) , changed part for PQ98 from Si2312BDS(8V) to Si2306(20V)

ST 2009.07.27  
To fix the derating issue(Vgs) , changed part for PD47 from UDZSTE-179.1B to UDZSTE-1715B.  
(Fix AMPSVIN9V level is 15V when air adapter input)

ST 2009.07.30  
To control BOM for option WWAN function , changed the head value for related parts from Mount to WWAN\_  
Page33 : C5147,C5146,L108  
Page26 : R5375

ST 2009.08.03  
Follow adapter ground linear resistance to adjust part value for PR832,PR835  
PR832 : 118Kohm to 143Kohm  
PR835 : 768Kohm to 931Kohm

ST 2009.08.06  
Follow adapter ground linear resistance to adjust part value for fixed adapter watt.  
NC PR952,PR831,PR843,PR844,PR838,PR839,PJ6,PU7  
PR834,PR836,PR837 Change part value to 0 ohm.

ST 2009.08.28  
(1)  
To fix USB 5V power drop issue ,  
backward part value for PR864,PR867 to enhance +5VALW level  
PR864 : from 110Kohm to 84.5Kohm

(2)(ECN:CDNRDS0908009)  
To fix maximum power limitation function , changed part value for PR832,PR835  
PR832 : from 143Kohm to 60.4Kohm  
PR835 : from 931Kohm to 30.1Kohm  
PR867 : from 12Kohm to 9.1Kohm

(3)  
To fix the rise time SI issue for Batt SMBus , changed part value for RP33.  
From 10Kohm(1R-1010103-JP00) to 4.7Kohm(1R-1010472-JP00)

ST 2009.09.10  
To support complete vendor P/N & part description , changed part for PD45 from 16-UD2551B-0001 to 16-UD2551B-0000

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ST2 2009.09.16  
To fix hang up issue , implement below solution for VR design.  
(1)Reserved PR953 for H side MOS(PQ3) rise timing adjustment.  
(2)To reduce Spike for AMPSVIN\_ISLVIN , added PL28,PL27 for PQ3(VR H side MOS) VIN.  
(3)To reduce Spike for AMPSVIN\_ISLVIN , follow Intel CRB(Rev1.01) to add 4pcs 0.01uF cap(PC958-PC961)

ST2 2009.09.17  
Co-layout PL28,PL29 for Inductor solution.

ST2 2009.09.17B  
To get better brightness linearity , added EC control signal(EC\_BRADJ) and reserved R5382,R5383 for path selection.

ST2 2009.09.18B  
Follow the suggestion from PWR team , corrected part for PL28,PL29 from BLM21PG331SN1 to LQM21PNR47MCD

ST2 2009.09.28  
To support backlight control function by EC side , changed control circuit path from GMCH to EC.  
R5382 : From Mount to NC.  
R5383 : From NC to Mount.

X-Build 2009.10.12  
Disabled external SPI ROM boot function and changed part value as below.  
From Mount to NC : U30,C643,R267,CN13  
From NC to Mount : R566

X-Build 2009.10.12  
Disabled test fan function and changed part value for CN51 from Mount to NC.

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