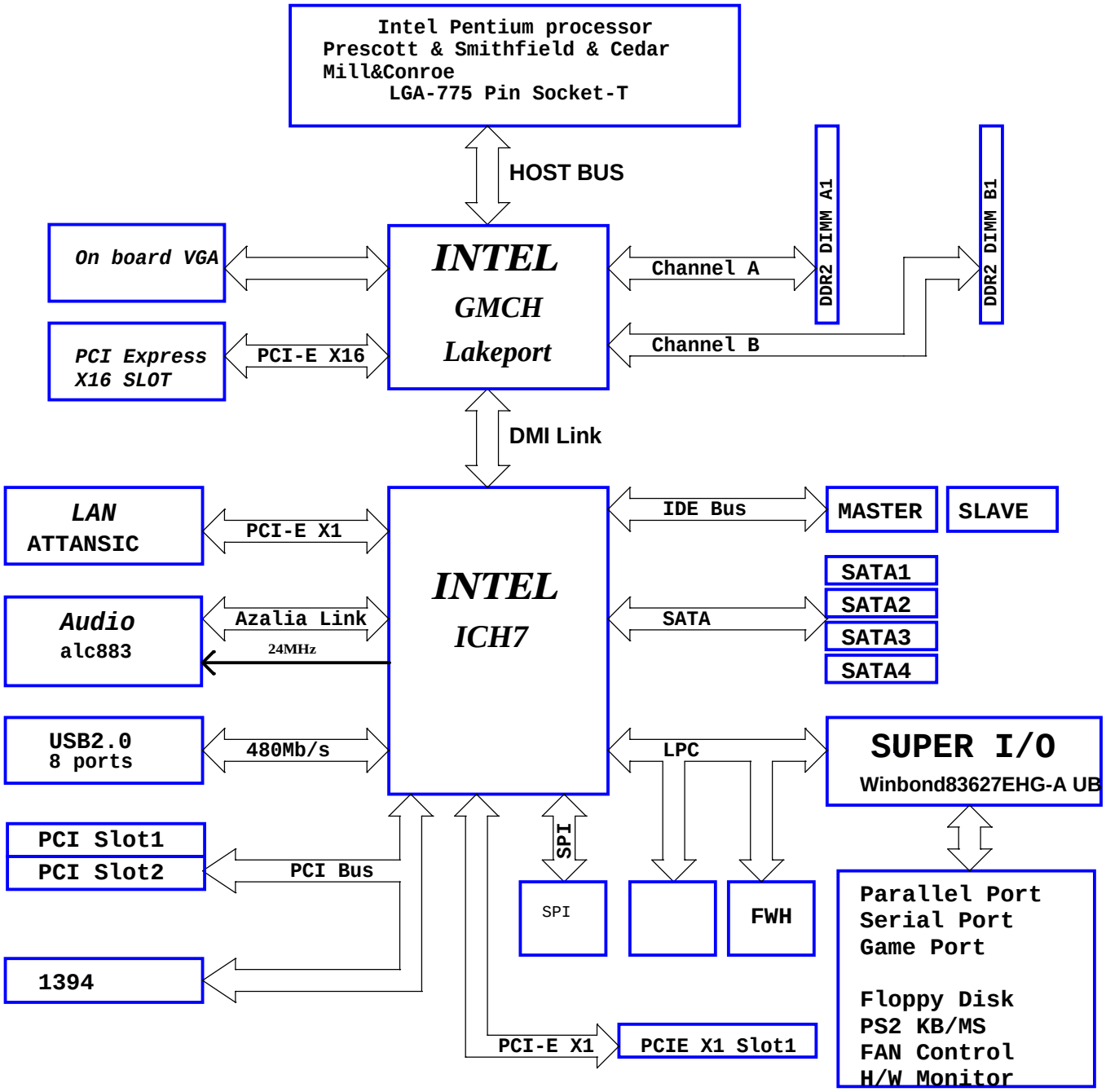
P5GC-MX

Revision:1.00G



01	Block Diagram
02	Power Sequence
03	Power Flow
04	Clock Distribution
05	Clock
06	Clock Trap
07	LGA775-1
08	LGA775-2
09	LGA775-3
10	LGA775-4
11	LGA775-5
12	Lakeport-1
13	Lakeport-2
14	Lakeport-3
15	Lakeport-4
16	Lakeport-5
17	DDR2-CHA Control
18	DDR2-CHA Power
19	DDR2-CHB Control
20	DDR2-CHB Power
21	PCI Express X16
22	Onboard VGA
23	ICH7-1
24	ICH7-2
25	ICH7-3
26	ICH7-4
27	PCI Express X1
28	PCI
29	IDE and SATA
30	SPI
31	KB/MS/GAME
32	LPT & COM & FDD
33	USB
34	FAN Control & H/W Mointor
35	Super IO
36	AUDIO 1986A
37	AUDIO-1
38	Front Panel
39	FWH
40	1394
41	LAN(ATTANSIC)
42	1.8v_dual&vtt_ddr&5v_dual&lan
43	+3v_dual&+3vsb&
44	Vcore Controller
45	Vcore Driver
46	VTT_CPU
47	+1.5v

<Variant Name>

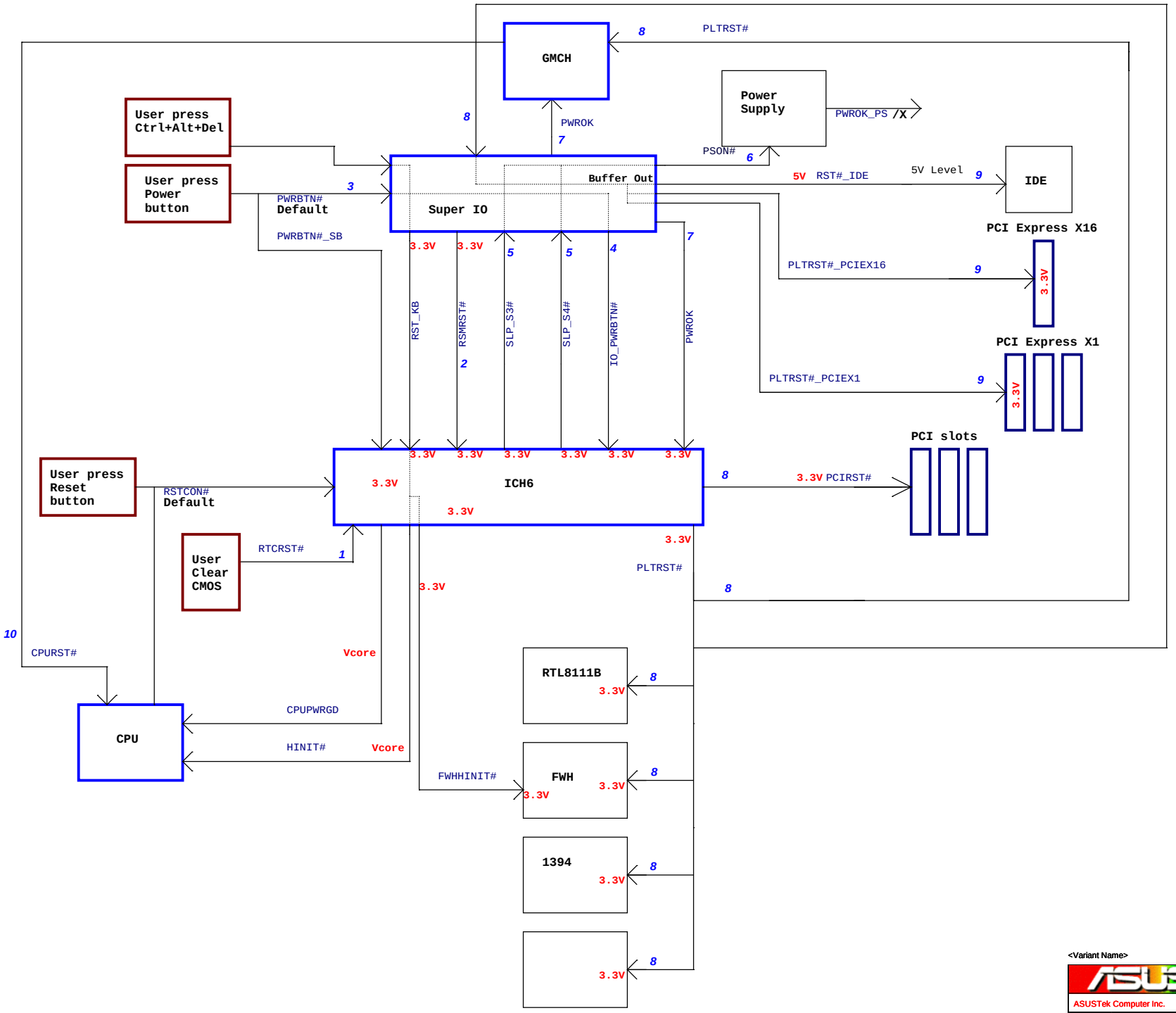
ASUSTek Computer Inc.

Title : Block Diagram

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 1 of 47



<Variant Name>

ASUSTek Computer Inc.	Title : Power Sequence	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 2 of 47	

Current:SPEC/Average/PEAK

NOTE:

Linear REG

ATX12V

ATXPWR

RT8800A+RT9605B*3 PHASE → **VCORE** S0/S1

125A/70A/91A

+5VSB

- **AME1117** S0/S3/S5 → **+3VSB** → 3.34A/S0:0.258A/0.326A S3:0.133A/0.19A S5:0.088A/0.099A
- **AME1117** S0/S3/S5 → **LAN_+2.5VSB** → 0.3A/0.23A/0.24A
- **AME1117** S0/S3/S5 → **LAN_+1.5VSB** → 0.6A/0.5A/0.52A

+5V

AP9T15+AP2301 S0/S3 → **+5V_DUAL**

- **AME1117** S0/S3 → **+3V_DUAL** → 0.5A/S0:0.31A/0.35A S3:0.069A/0.08A
- **APM7120** S0/S3 → **+1.8V_DUAL**
  - **CM8562P** S0 → **VTT_DDR** → 1.2A/0.133A/0.474A(-0.206A)

9A/S0:3.55A/4.36A
S3:0.09A/1.39A

- **OP2D+AP9T18** → **+1.5V** → 17.58A/8.66A/12.5A
- **OP2A+AP9T15** S0 → **+VTT_CPU** → 6.6A/2.2A/3.04A
- **OP2B+AP9T15** S0 → **+1.05V** → 1.31A/0.428A/0.484A
- **OP2C+2N7002*2** → **PROCHOT#**

+3V

BAW56 → **+2.5V_DAC** → 70mA/3mA/7mA

<Variant Name>

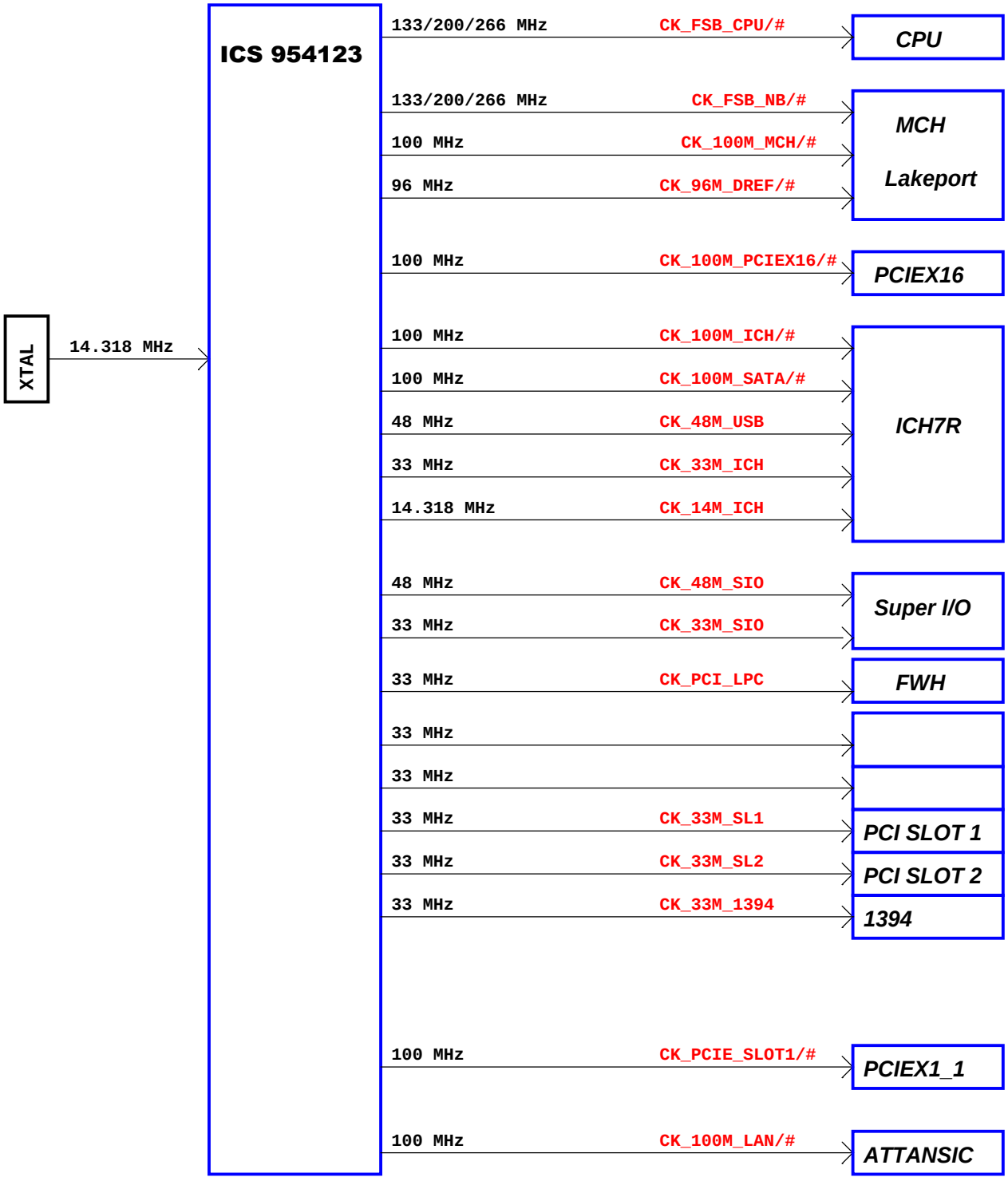
ASUSTek Computer Inc.

Title : Power flow

Engineer: SEP_HU

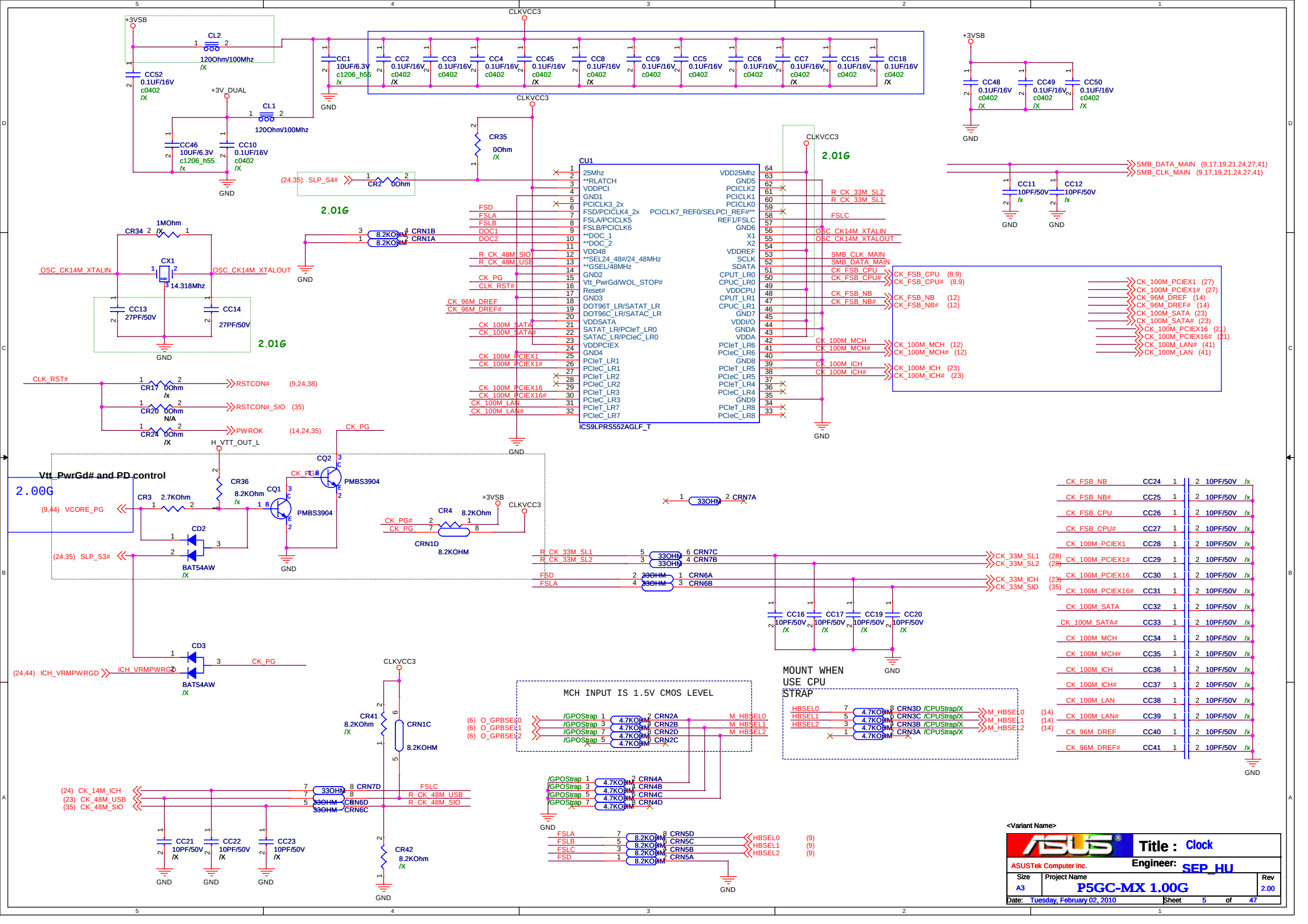
Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

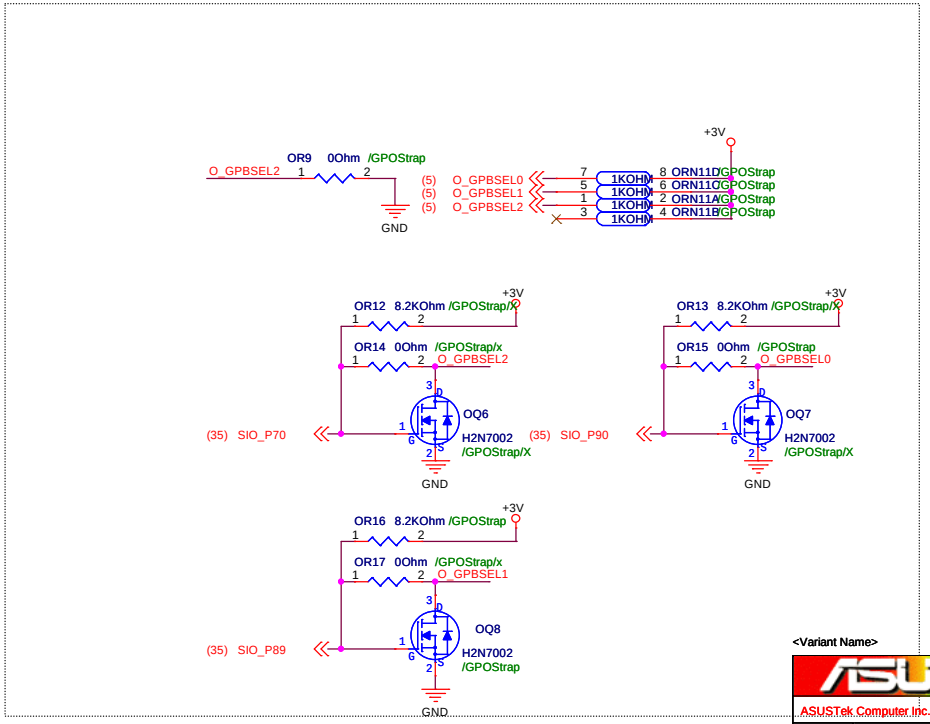
Date: Tuesday, February 02, 2010 Sheet 3 of 47



<Variant Name>

ASUSTek Computer Inc.	Title : Clock Distribution	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 4 of 47	


CLKVCC3
+3VSB
+3V_DUAL
GND
CU1
ICS9LPRS552AGLF_T
2.01G
2.00G
Vtt_PwrGd# and PD control
MCH INPUT IS 1.5V CMOS LEVEL
MOUNT WHEN USE CPU STRAP
Title : Clock
ASUSTek Computer Inc.
Engineer: SEP_HU
Project Name
P5GC-MX 1.00G
Size A3
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 5 of 47



<Variant Name>

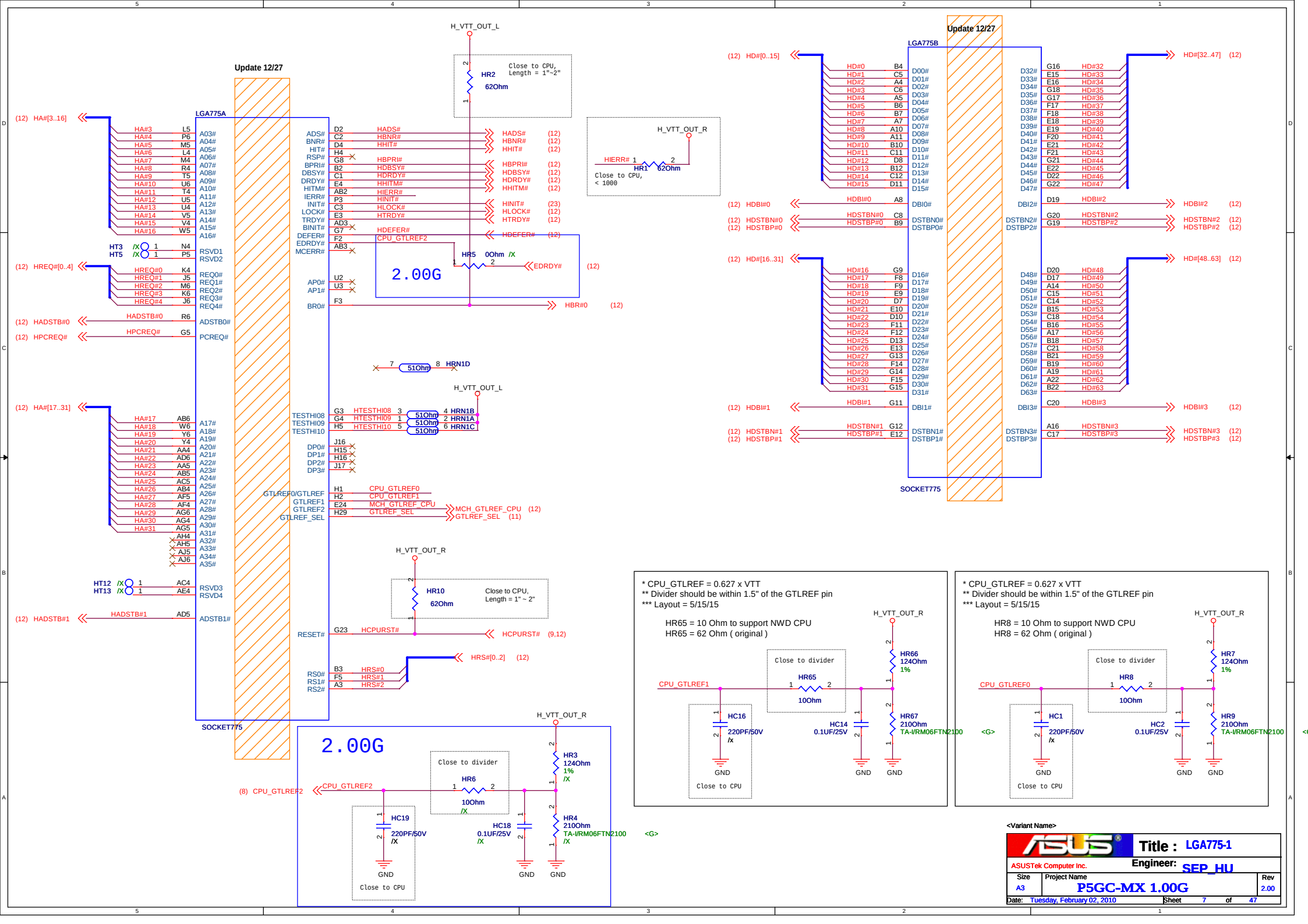
ASUSTek Computer Inc.

Title : Clock

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 6 of 47


Update 12/27
LGA775A
H_VTT_OUT_L
HR2
62Ohm
Close to CPU, Length = 1"~2"
H_VTT_OUT_R
HIERR#
HR1
62Ohm
Close to CPU, < 1000
(12) HA#[3..16]
HA#3 L5
HA#4 P6
HA#5 M5
HA#6 L4
HA#7 M4
HA#8 R4
HA#9 T5
HA#10 U6
HA#11 T4
HA#12 U5
HA#13 U4
HA#14 V5
HA#15 V4
HA#16 W5
A03# A04# A05# A06# A07# A08# A09# A10# A11# A12# A13# A14# A15# A16#
HT3 /X 1 N4
HT5 /X 1 P5
RSVD1 RSVD2
(12) HREQ#[0..4]
HREQ#0 K4
HREQ#1 J5
HREQ#2 M6
HREQ#3 K6
HREQ#4 J6
REQ0# REQ1# REQ2# REQ3# REQ4#
(12) HADSTB#0
HADSTB#0 R6
ADSTB0#
(12) HPCREQ#
HPCREQ# G5
PCREQ#
(12) HA#[17..31]
HA#17 AB6
HA#18 W6
HA#19 Y6
HA#20 Y4
HA#21 AA4
HA#22 AD6
HA#23 AA5
HA#24 AB5
HA#25 AC5
HA#26 AB4
HA#27 AF5
HA#28 AF4
HA#29 AG6
HA#30 AG4
HA#31 AG5
A17# A18# A19# A20# A21# A22# A23# A24# A25# A26# A27# A28# A29# A30# A31#
AH4 AH5 AJ5 AJ6
A32# A33# A34# A35#
HT12 /X 1 AC4
HT13 /X 1 AE4
RSVD3 RSVD4
(12) HADSTB#1
HADSTB#1 AD5
ADSTB1#
SOCKET775
ADS# D2 HADS# HADS# (12)
BNR# C2 HBNR# HBNR# (12)
HIT# D4 HHIT# HHIT# (12)
RSP# H4
BPRI# G8 HBPRI# HBPRI# (12)
DBSY# B2 HDBSY# HDBSY# (12)
DRDY# C1 HDRDY# HDRDY# (12)
HITM# E4 HHITM# HHITM# (12)
IERR# AB2 HIERR#
INIT# P3 HINIT# HINIT# (23)
LOCK# C3 HLOCK# HLOCK# (12)
TRDY# E3 HTRDY# HTRDY# (12)
BINIT# AD3
DEFER# G7 HDEFER# HDEFER# (12)
EDRDY# F2 CPU_GTLREF2
MCERR# AB3
HR5 0Ohm /X
EDRDY# (12)
2.00G
AP0# U2
AP1# U3
BR0# F3 HBR#0 (12)
7 51Ohm 8 HRN1D
H_VTT_OUT_L
TESTHI08 G3 HTESTHI08 3 51Ohm 4 HRN1B
TESTHI09 G4 HTESTHI09 1 51Ohm 2 HRN1A
TESTHI10 H5 HTESTHI10 5 51Ohm 6 HRN1C
DP0# J16
DP1# H15
DP2# H16
DP3# J17
GTLREF0/GTLREF H1 CPU_GTLREF0
GTLREF1 H2 CPU_GTLREF1
GTLREF2 E24 MCH_GTLREF_CPU MCH_GTLREF_CPU (12)
GTLREF_SEL H29 GTLREF_SEL GTLREF_SEL (11)
H_VTT_OUT_R
HR10
62Ohm
Close to CPU, Length = 1" ~ 2"
RESET# G23 HCPURST# HCPURST# (9,12)
HRS#[0..2] (12)
RS0# B3 HRS#0
RS1# F5 HRS#1
RS2# A3 HRS#2
H_VTT_OUT_R
2.00G
(8) CPU_GTLREF2
CPU_GTLREF2
Close to divider
HR6
10Ohm /X
HR3 124Ohm 1% /X
HR4 210Ohm TA-I/RM06FTN2100 /X
<G>
HC19 220PF/50V /X
HC18 0.1UF/25V /X
GND
Close to CPU
Update 12/27
LGA775B
(12) HD#[0..15]
HD#0 B4 D00#
HD#1 C5 D01#
HD#2 A4 D02#
HD#3 C6 D03#
HD#4 A5 D04#
HD#5 B6 D05#
HD#6 B7 D06#
HD#7 A7 D07#
HD#8 A10 D08#
HD#9 A11 D09#
HD#10 B10 D10#
HD#11 C11 D11#
HD#12 D8 D12#
HD#13 B12 D13#
HD#14 C12 D14#
HD#15 D11 D15#
(12) HDBI#0
HDBI#0 A8 DBI0#
(12) HDSTBN#0
(12) HDSTBP#0
HDSTBN#0 C8 DSTBN0#
HDSTBP#0 B9 DSTBP0#
(12) HD#[16..31]
HD#16 G9 D16#
HD#17 F8 D17#
HD#18 F9 D18#
HD#19 E9 D19#
HD#20 D7 D20#
HD#21 E10 D21#
HD#22 D10 D22#
HD#23 F11 D23#
HD#24 F12 D24#
HD#25 D13 D25#
HD#26 E13 D26#
HD#27 G13 D27#
HD#28 F14 D28#
HD#29 G14 D29#
HD#30 F15 D30#
HD#31 G15 D31#
(12) HDBI#1
HDBI#1 G11 DBI1#
(12) HDSTBN#1
(12) HDSTBP#1
HDSTBN#1 G12 DSTBN1#
HDSTBP#1 E12 DSTBP1#
SOCKET775
D32# G16 HD#32
D33# E15 HD#33
D34# E16 HD#34
D35# G18 HD#35
D36# G17 HD#36
D37# F17 HD#37
D38# F18 HD#38
D39# E18 HD#39
D40# E19 HD#40
D41# F20 HD#41
D42# E21 HD#42
D43# F21 HD#43
D44# G21 HD#44
D45# E22 HD#45
D46# D22 HD#46
D47# G22 HD#47
HD#[32..47] (12)
DBI2# D19 HDBI#2
HDBI#2 (12)
DSTBN2# G20 HDSTBN#2
DSTBP2# G19 HDSTBP#2
HDSTBN#2 (12)
HDSTBP#2 (12)
D48# D20 HD#48
D49# D17 HD#49
D50# A14 HD#50
D51# C15 HD#51
D52# C14 HD#52
D53# B15 HD#53
D54# C18 HD#54
D55# B16 HD#55
D56# A17 HD#56
D57# B18 HD#57
D58# C21 HD#58
D59# B21 HD#59
D60# B19 HD#60
D61# A19 HD#61
D62# A22 HD#62
D63# B22 HD#63
HD#[48..63] (12)
DBI3# C20 HDBI#3
HDBI#3 (12)
DSTBN3# A16 HDSTBN#3
DSTBP3# C17 HDSTBP#3
HDSTBN#3 (12)
HDSTBP#3 (12)
* CPU_GTLREF = 0.627 x VTT
** Divider should be within 1.5" of the GTLREF pin
*** Layout = 5/15/15
HR65 = 10 Ohm to support NWD CPU
HR65 = 62 Ohm (original)
H_VTT_OUT_R
Close to divider
CPU_GTLREF1
HR65
10Ohm
HR66 124Ohm 1%
HR67 210Ohm TA-I/RM06FTN2100
HC16 220PF/50V /x
HC14 0.1UF/25V
GND
Close to CPU
* CPU_GTLREF = 0.627 x VTT
** Divider should be within 1.5" of the GTLREF pin
*** Layout = 5/15/15
HR8 = 10 Ohm to support NWD CPU
HR8 = 62 Ohm (original)
H_VTT_OUT_R
Close to divider
CPU_GTLREF0
HR8
10Ohm
HR7 124Ohm 1%
HR9 210Ohm TA-I/RM06FTN2100
<G>
HC1 220PF/50V /x
HC2 0.1UF/25V
GND
Close to CPU
<Variant Name>
Title : LGA775-1
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 7 of 47

R_ HR11 change RN to R for layout

In 915/925 series use:
09-022104300
INDUCTOR 10UH/100mA
(0805)

Update 12/27

LGA775C

Inductor 10UH (0805)
TOL: +/-20%
SRF: >30 MHz
I rated : > 120 mA
DCR : < 0.36 Ohm

EL CAP 33UF/25V
6.3x?
TOL: +/-20%
ESL: < 9nH
ESR: < 0.3 Ohm

2.00G

Reserved !!
Intel CRB is NC
and add TP only

2.00G
reserved 1Kohm

FORCEPRH# :
Use for Dual-Core CPU VR
Thermal Monitor ckt

Reserved for change to 2005 Mainstream FMB

Reserved
!!
Intel CRB
is NC and
add TP
only

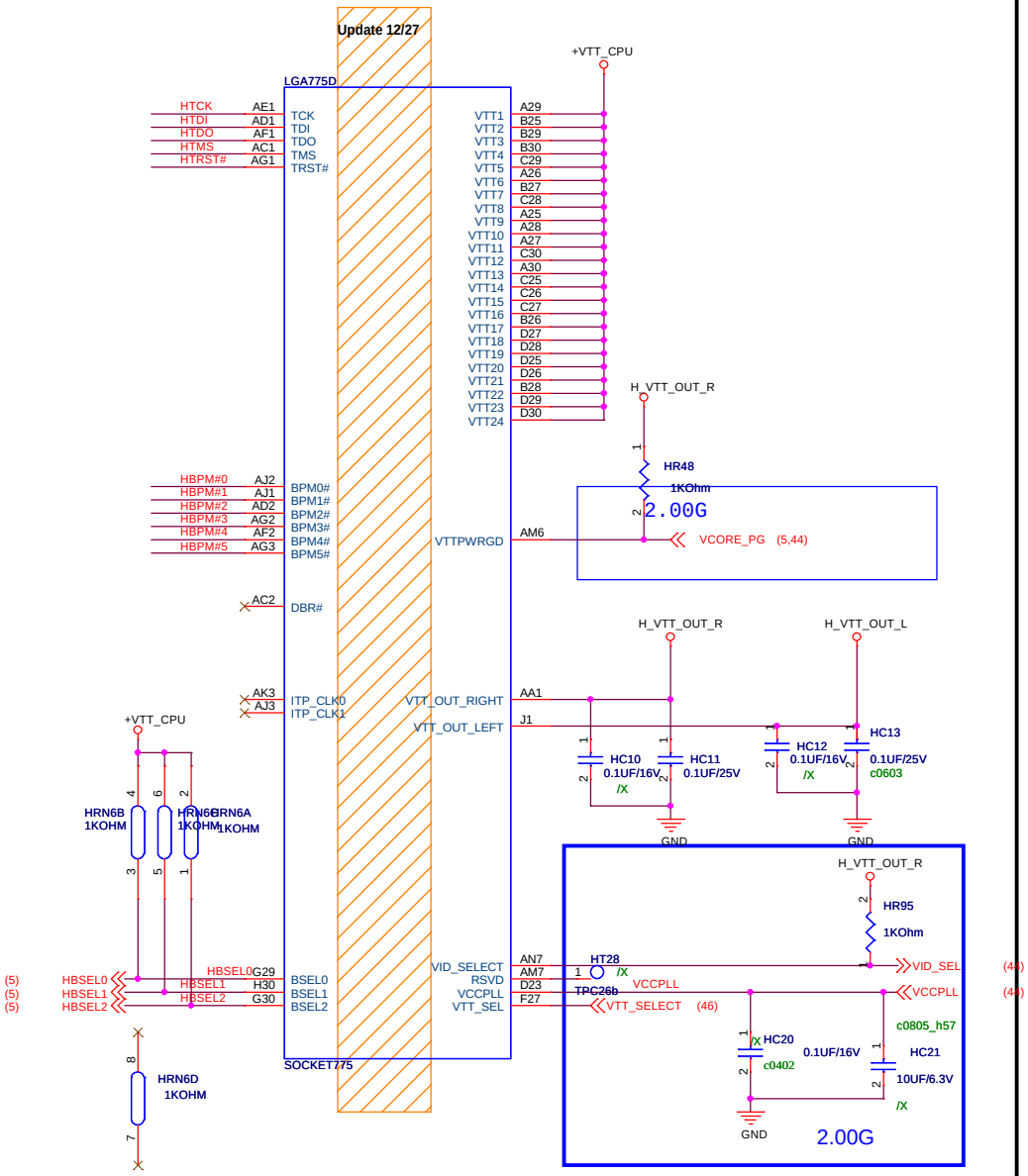
BOOTSELECT Input:
determine whether the processor is installed in a platform that supports the Pentium 4 processor in the 775-land package.

CPU VID Termination
(CPU Side)

	2005 Performance FMB	2005 Mainstream FMB
MSID1	62 ohm PD	62 ohm PD
MSID0	62 ohm PD	62 ohm PU to VTT

<Variant Name>

ASUSTek Computer Inc.
Title : LGA775-2
Engineer: SEP_HU
Size: A3
Project Name: P5GC-MX 1.00G
Rev: 2.00
Date: Tuesday, February 02, 2010
Sheet 8 of 47



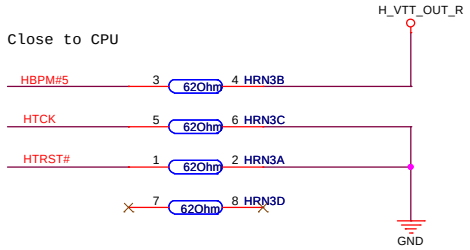
ITP

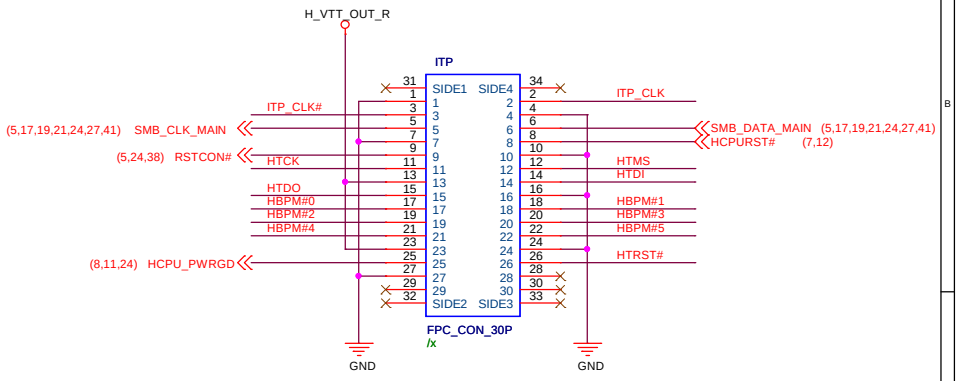
*** All ITP related resistor can be placed in back side except RN16(TCK and TRST) and BPM5#**

**** The resistors of HTCK(HR48), HTRST#(HR47), and HBPM5#(HR71) must be mounted.**

TCK/TDI/TMS : near CPU, < 1.5"

TDO: Close to ITP connector

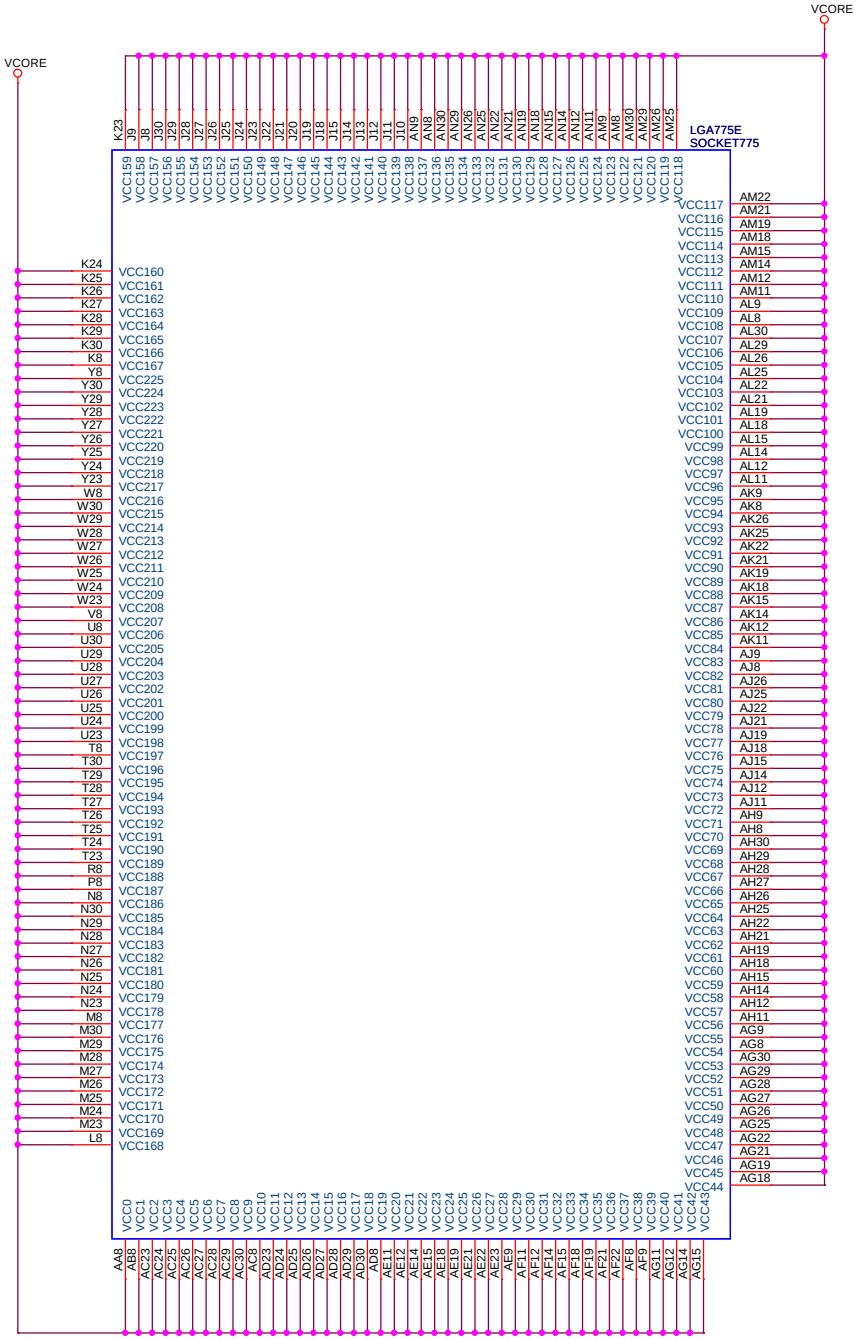




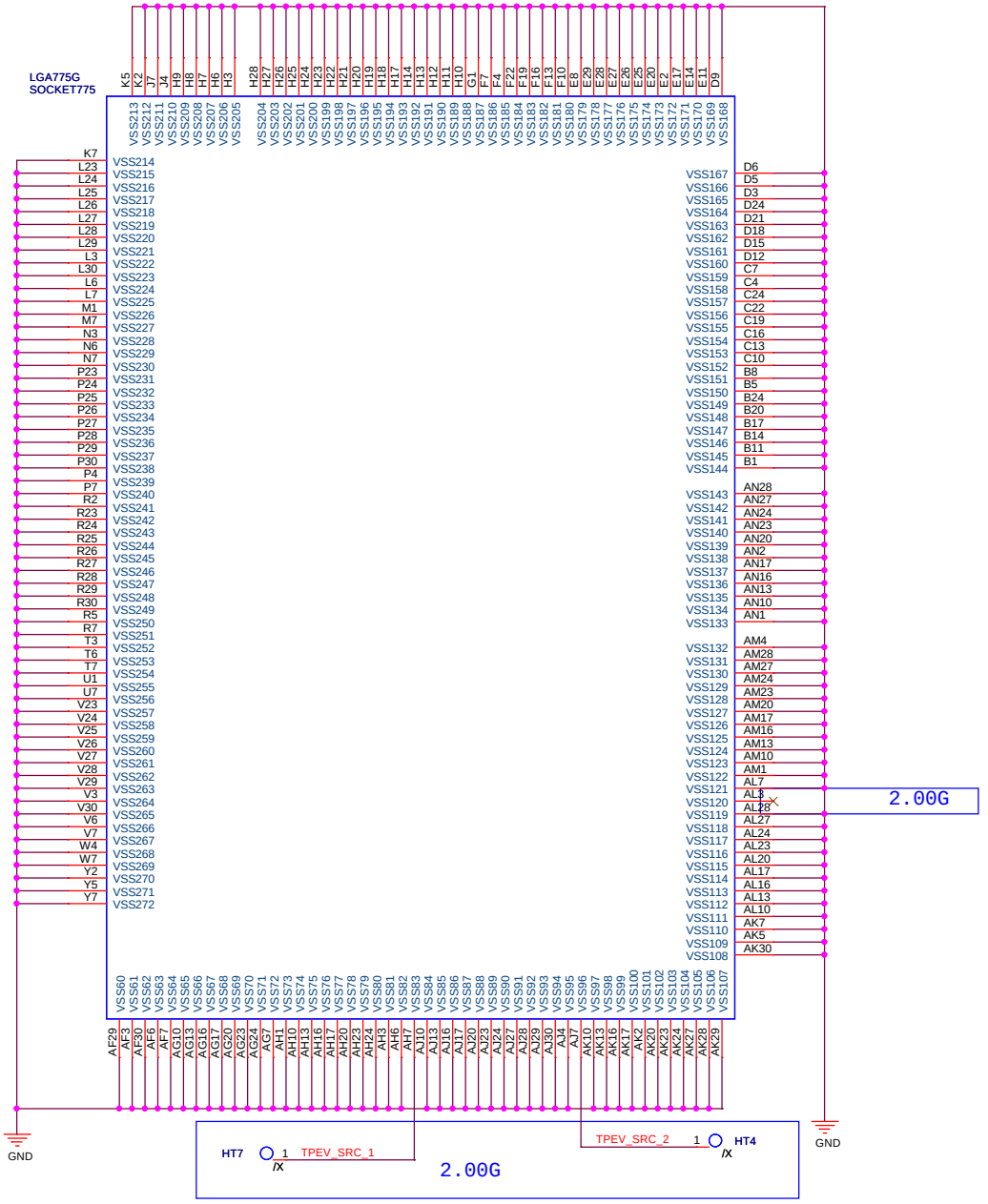
<Variant Name>

ASUSTek Computer Inc.	Title : LGA775-3	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 9 of 47	

Update 12/27



Update 12/27

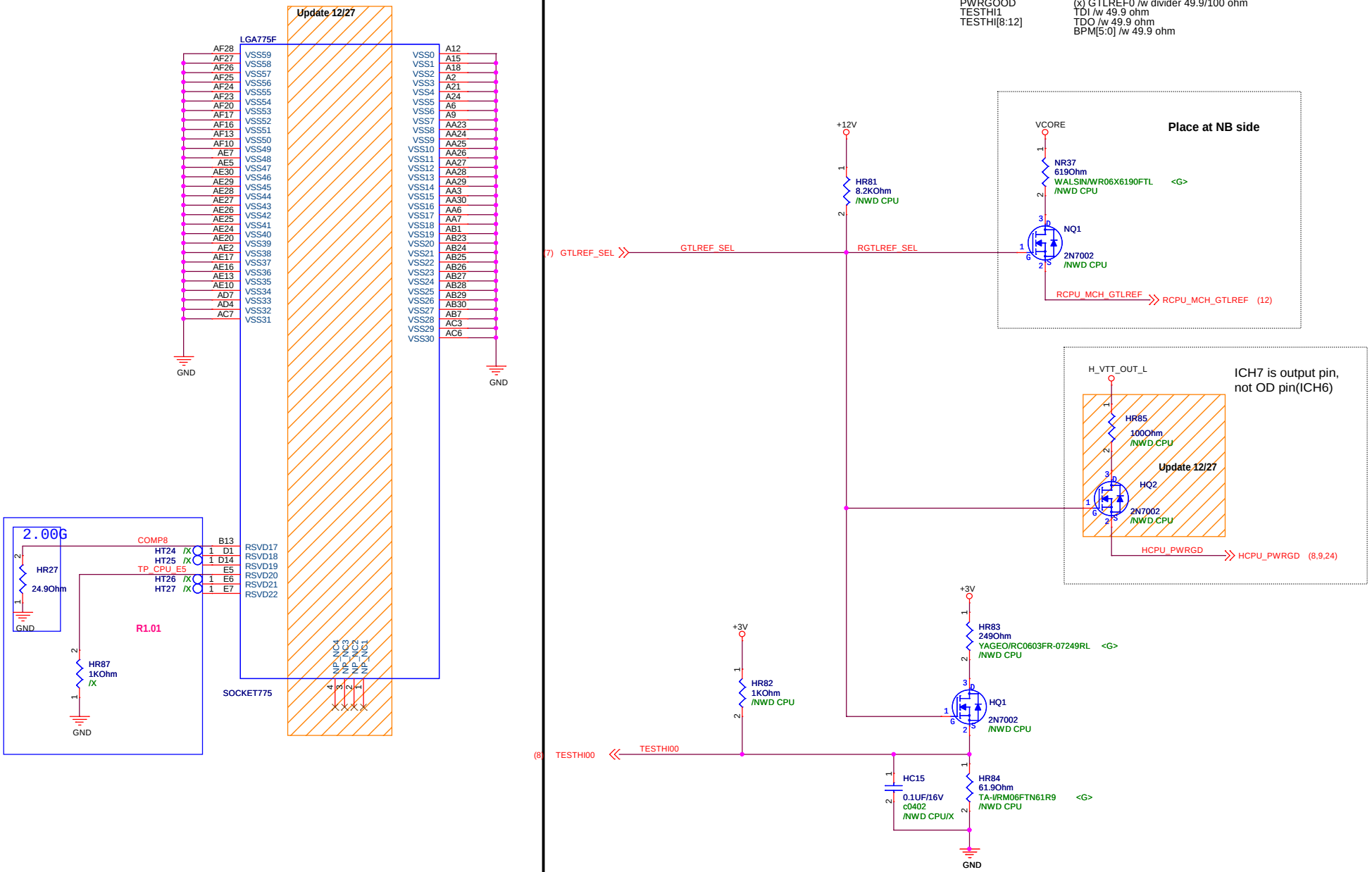


<Variant Name>

ASUSTek Computer Inc.	Title : LGA775-4	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 10 of 47	

For Support NWD-T CPU

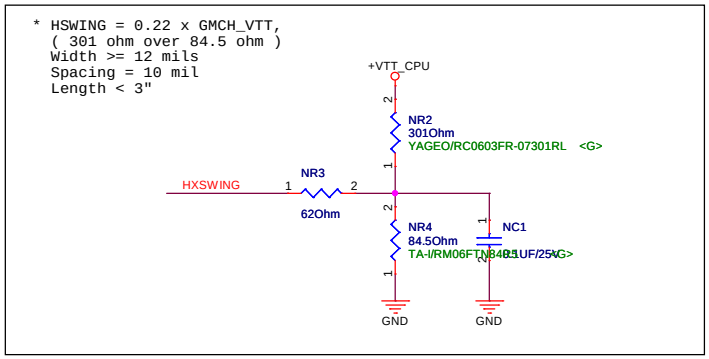
VTT_OUT_L	VTT_OUT_R	ANY
RESET#	VTTPWRGD	(x) COMP[2:3] /w 100 ohm
BR0#	VID[5:0] /w 680 ohm	
PWRGOOD	(x) GTLREF0 /w divider 49.9/100 ohm	
TESTHI1	TDI /w 49.9 ohm	
TESTHI[8:12]	TDO /w 49.9 ohm	
	BPM[5:0] /w 49.9 ohm	

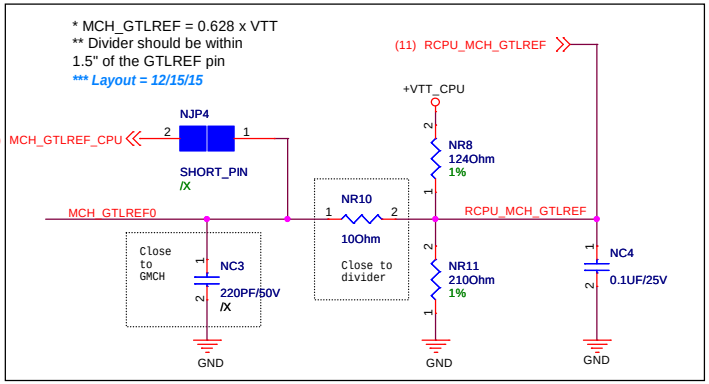


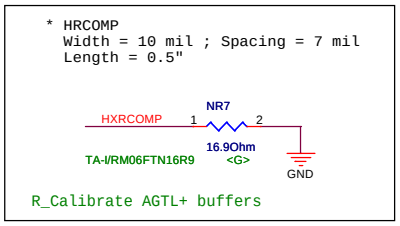
<Variant Name>

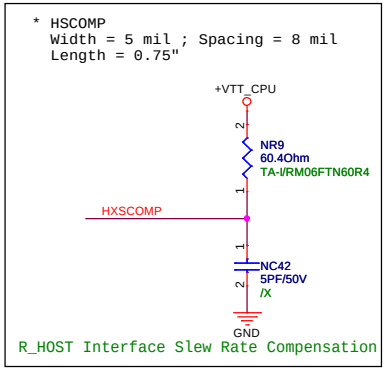
ASUSTek Computer Inc.	Title : LGA775-5	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 11 of 47	


NU1A
PCIE
DMI
GMCH_QG82LKG
GMCH_PCIE_CORE
NR1
24.9Ohm
RALEC/RTT0324R9FTP
<G>
EXP_COMPO : PCI Express Output Compensation
EXP_COMPI : PCI Express Input Compensation


* HSWING = 0.22 x GMCH_VTT,
(301 ohm over 84.5 ohm)
Width >= 12 mils
Spacing = 10 mil
Length < 3"
+VTT_CPU
NR2
301Ohm
YAGEO/RC0603FR-07301RL
<G>
NR3
62Ohm
HXSWING
NR4
84.5Ohm
TA-I/RM06FTN845R
NC1
0.1UF/25V
<G>
GND

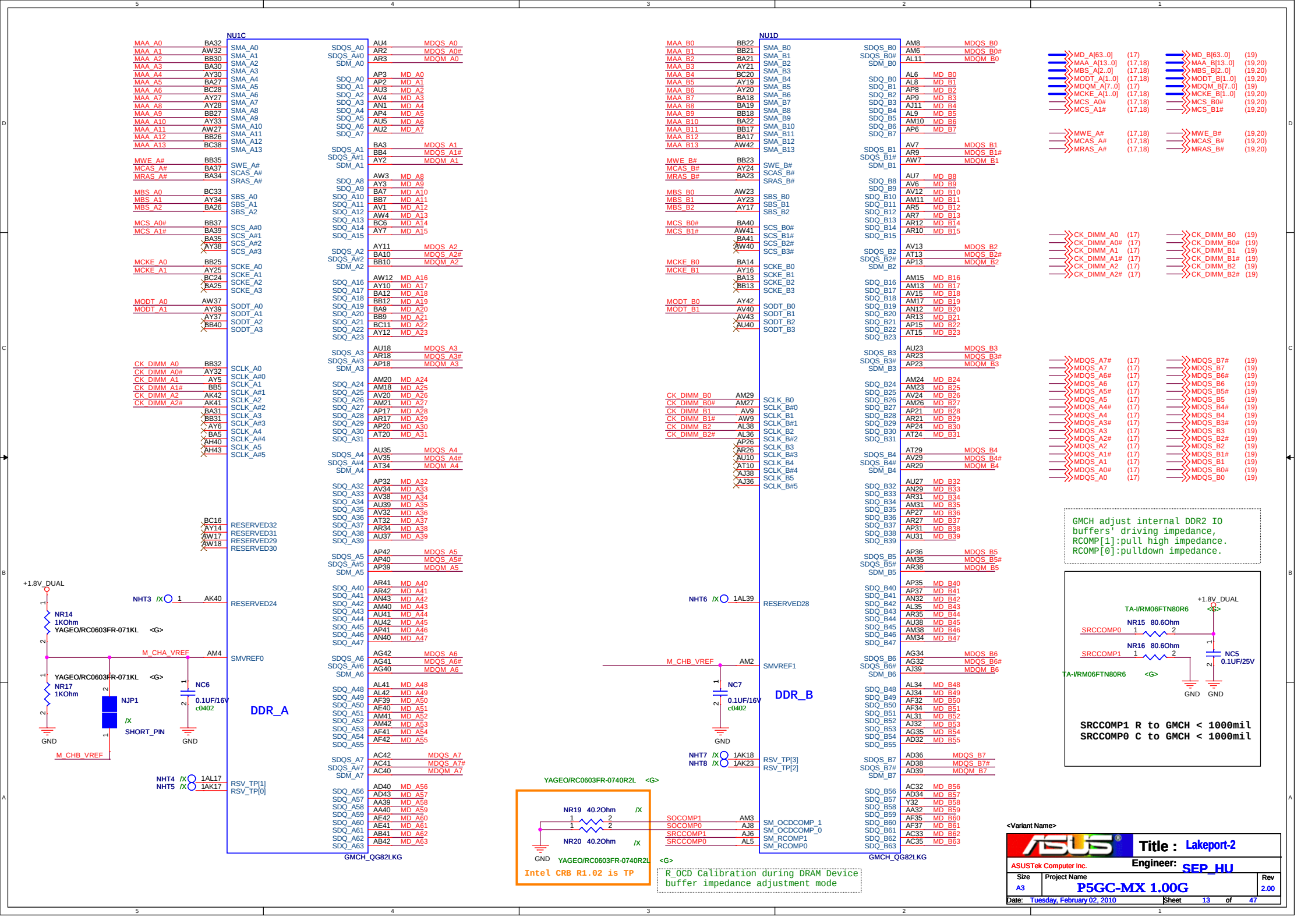

* MCH_GTLREF = 0.628 x VTT
** Divider should be within
1.5" of the GTLREF pin
*** Layout = 12/15/15
(11) RCPU_MCH_GTLREF
+VTT_CPU
NJP4
SHORT_PIN
/X
(7) MCH_GTLREF_CPU
MCH_GTLREF0
NR10
10Ohm
RCPU_MCH_GTLREF
NR8
124Ohm
1%
NR11
210Ohm
1%
NC3
220PF/50V
/X
NC4
0.1UF/25V
Close to GMCH
Close to divider
GND


* HRCOMP
Width = 10 mil ; Spacing = 7 mil
Length = 0.5"
HXRCOMP
NR7
16.9Ohm
TA-I/RM06FTN16R9
<G>
GND
R_Calibrate AGTL+ buffers

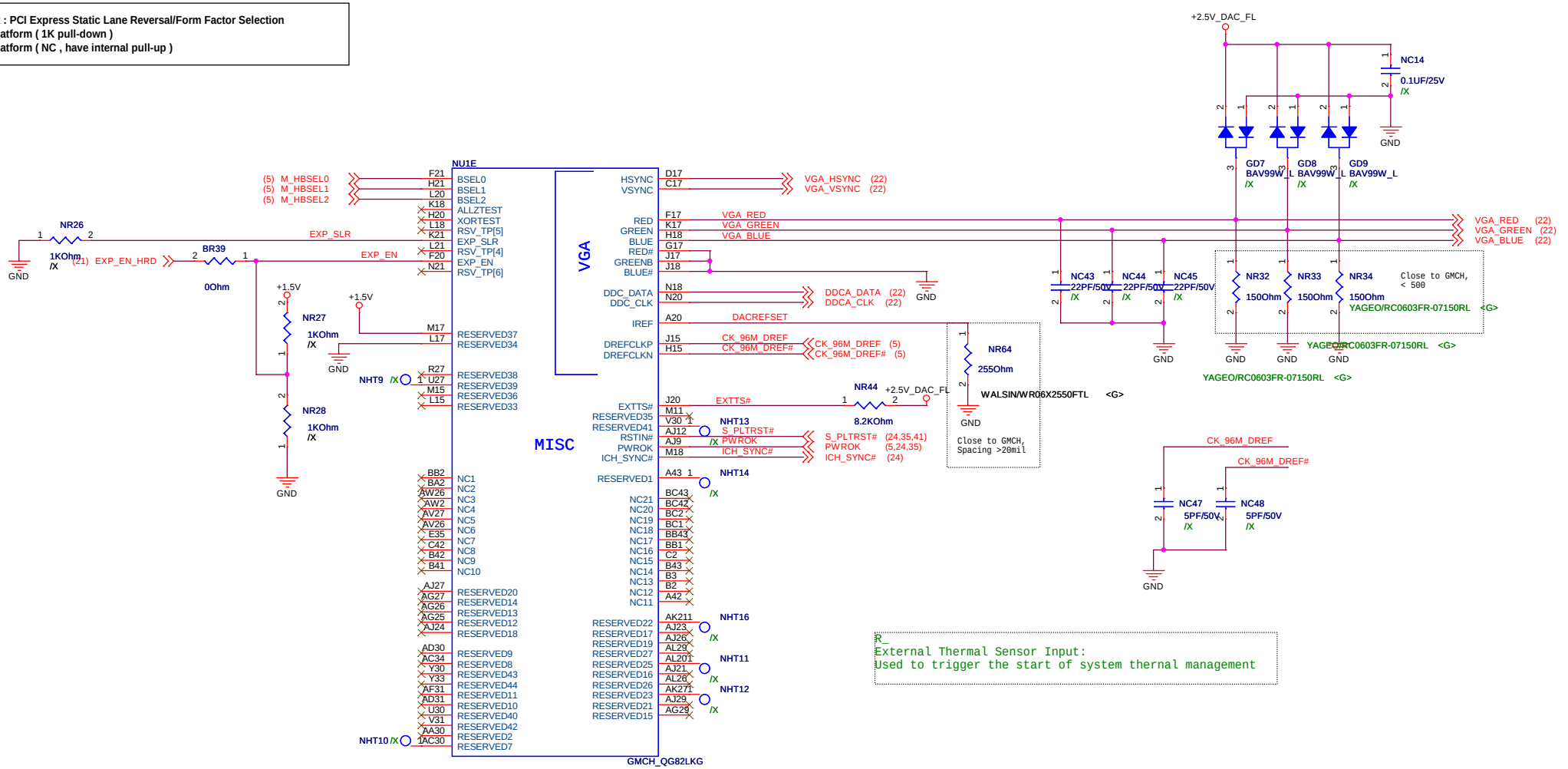

* HSCOMP
Width = 5 mil ; Spacing = 8 mil
Length = 0.75"
+VTT_CPU
NR9
60.4Ohm
TA-I/RM06FTN60R4
<G>
HXSCOMP
NC42
5PF/50V
/X
GND
R_HOST Interface Slew Rate Compensation

NU1B
FSB
(7) HA#[3..16]
(7) HA#[17..31]
NHT1 /X
NHT2 /X
(7) HREQ#[0..4]
(7) HADSTB#0
(7) HADSTB#1
(7) HDSTBP#0
(7) HDSTBN#0
(7) HDBI#0
(7) HDSTBP#1
(7) HDSTBN#1
(7) HDBI#1
(7) HDSTBP#2
(7) HDSTBN#2
(7) HDBI#2
(7) HDSTBP#3
(7) HDSTBN#3
(7) HDBI#3
(7) HADS#
(7) HTRDY#
(7) HDRDY#
(7) HDEFER#
(7) HHITM#
(7) HHIT#
(7) HLOCK#
(7) HBR#0
(7) HBNR#
(7) HBPRI#
(7) HDBSY#
(7) HRS#[0..2]
(7) HPCREQ#
Reserved
NR36 0Ohm
/X
(7,9) HCPURST#
PCREQ#
(7) EDRDY#
HD#[0..15] (7)
HD#[16..31] (7)
HD#[32..47] (7)
HD#[48..63] (7)
HSWING
HSCOMP
HRCOMP
HDVREF
HACCVREF
HCLKP
HCLKN
MCH_GTLREF0
CK_FSB_NB
CK_FSB_NB#
NCK1
5PF/50V
/X
NCK2
5PF/50V
/X
GND
R_Measure

<Variant Name>
Title : Lakeport-1
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 12 of 47

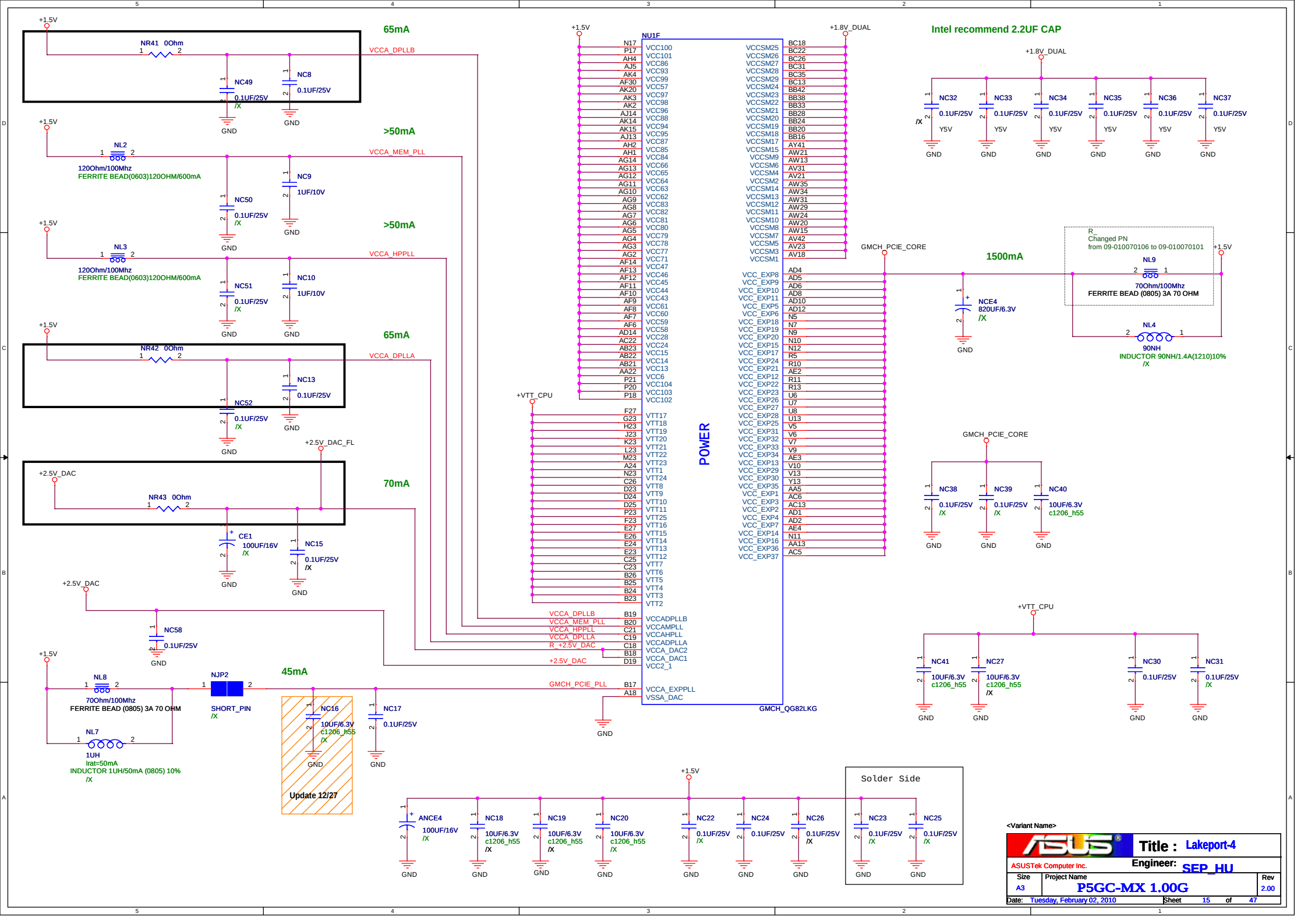

NU1C
NU1D
DDR_A
DDR_B
GMCH_QG82LKG
+1.8V_DUAL
NR14 1KOhm YAGEO/RC0603FR-071KL <G>
NR17 1KOhm YAGEO/RC0603FR-071KL <G>
NJP1 /X SHORT_PIN
NC6 0.1UF/16V c0402
NC7 0.1UF/16V c0402
NR19 40.2Ohm /X
NR20 40.2Ohm /X
YAGEO/RC0603FR-0740R2L <G>
Intel CRB R1.02 is TP
R_OCD Calibration during DRAM Device buffer impedance adjustment mode
GMCH adjust internal DDR2 IO buffers' driving impedance,
RCOMP[1]:pull high impedance.
RCOMP[0]:pulldown impedance.
TA-I/RM06FTN80R6 <G>
NR15 80.6Ohm
NR16 80.6Ohm
NC5 0.1UF/25V
SRCCOMP1 R to GMCH < 1000mil
SRCCOMP0 C to GMCH < 1000mil
<Variant Name>
ASUSTek Computer Inc.
Title : Lakeport-2
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 13 of 47

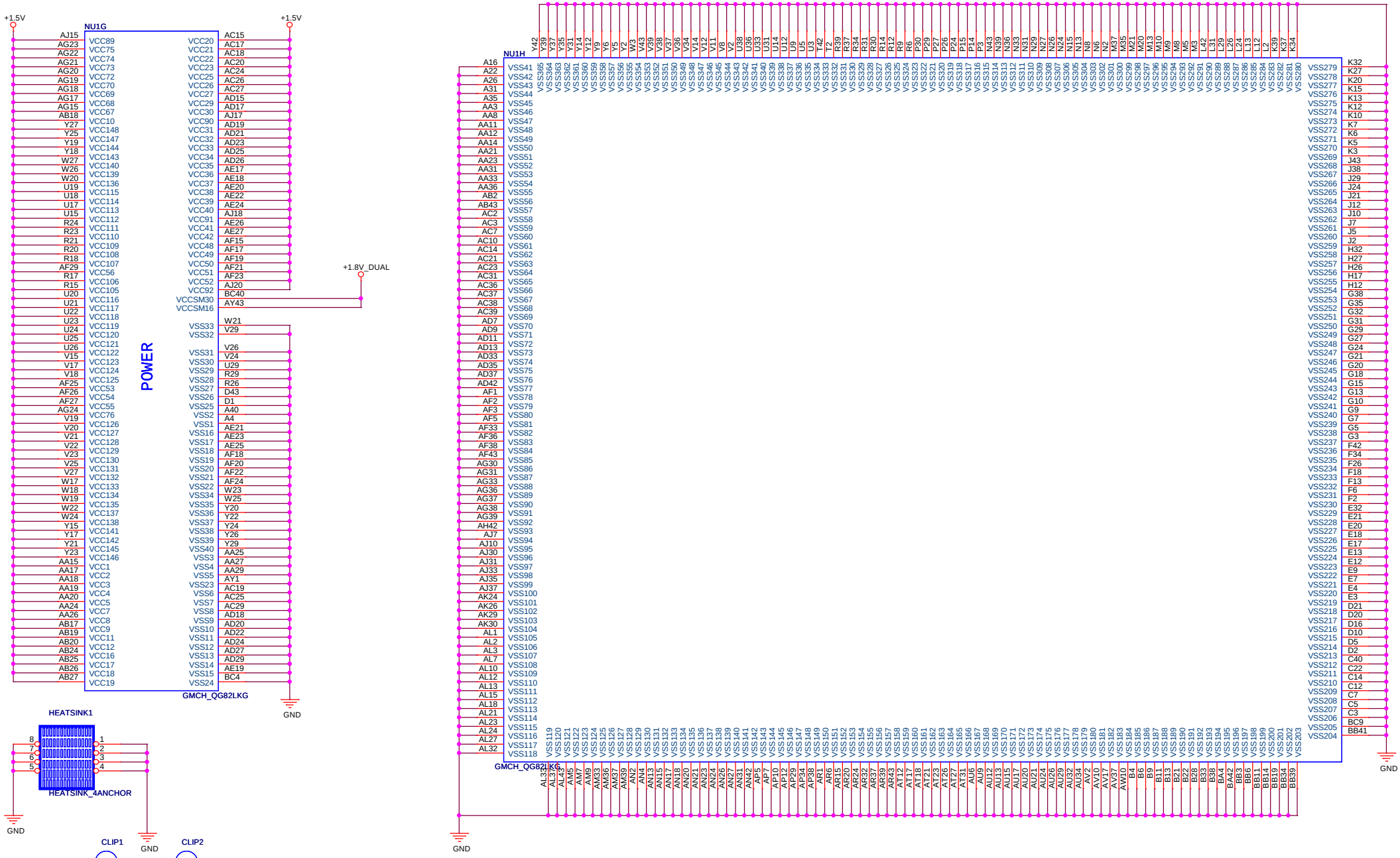
* EXP_SLR : PCI Express Static Lane Reversal/Form Factor Selection
0 : BTX platform (1K pull-down)
1 : ATX platform (NC , have internal pull-up)



<Variant Name>

ASUSTek Computer Inc.	Title : Lakeport-3	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 14 of 47	


65mA
VCCA_DPLLB
NR41 0Ohm
NC49 0.1UF/25V /X
NC8 0.1UF/25V
>50mA
VCCA_MEM_PLL
NL2
120Ohm/100Mhz
FERRITE BEAD(0603)120OHM/600mA
NC9 1UF/10V
NC50 0.1UF/25V /X
>50mA
VCCA_HPPLL
NL3
120Ohm/100Mhz
FERRITE BEAD(0603)120OHM/600mA
NC51 0.1UF/25V /X
NC10 1UF/10V
65mA
VCCA_DPLLA
NR42 0Ohm
NC13 0.1UF/25V
NC52 0.1UF/25V /X
+2.5V_DAC_FL
70mA
+2.5V_DAC
NR43 0Ohm
CE1 100UF/16V /X
NC15 0.1UF/25V /X
NC58 0.1UF/25V
45mA
NL8
70Ohm/100Mhz
FERRITE BEAD (0805) 3A 70 OHM
NJP2
SHORT_PIN /X
NL7
1UH
Irat=50mA
INDUCTOR 1UH/50mA (0805) 10% /X
NC16 10UF/6.3V c1206_h55 /X
NC17 0.1UF/25V
Update 12/27
NU1F
POWER
VCCADPLLB
VCCAMPLL
VCCAHPLL
VCCADPLLA
VCCA_DAC2
VCCA_DAC1
VCC2_1
VCCA_EXPPLL
VSSA_DAC
GMCH_QG82LKG
Intel recommend 2.2UF CAP
NC32 NC33 NC34 NC35 NC36 NC37 0.1UF/25V /X Y5V
1500mA
GMCH_PCIE_CORE
NCE4 820UF/6.3V /X
R_
Changed PN
from 09-010070106 to 09-010070101
NL9
70Ohm/100Mhz
FERRITE BEAD (0805) 3A 70 OHM
NL4
90NH
INDUCTOR 90NH/1.4A(1210)10% /X
NC38 NC39 0.1UF/25V /X
NC40 10UF/6.3V c1206_h55
NC41 NC27 10UF/6.3V c1206_h55 /X
NC30 0.1UF/25V
NC31 0.1UF/25V /X
ANCE4 100UF/16V /X
NC18 NC19 NC20 10UF/6.3V c1206_h55 /X
NC22 NC24 NC26 0.1UF/25V /X
Solder Side
NC23 NC25 0.1UF/25V /X
GND
<Variant Name>
Title : Lakeport-4
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 15 of 47



<variant_name>

ASUSTek Computer Inc.

Title : Lakeport -5

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 16 of 47

LF FootPrint

DIMM_A1A

MAA_A0	188	A0	DQ63	236	MD_A63
MAA_A1	183	A1	DQ62	235	MD_A62
MAA_A2	63	A2	DQ61	230	MD_A61
MAA_A3	182	A3	DQ60	229	MD_A60
MAA_A4	61	A4	DQ59	117	MD_A59
MAA_A5	60	A5	DQ58	116	MD_A58
MAA_A6	180	A6	DQ57	111	MD_A57
MAA_A7	58	A7	DQ56	110	MD_A56
MAA_A8	179	A8	DQ55	227	MD_A55
MAA_A9	177	A9	DQ54	226	MD_A54
MAA_A10	70	A10/AP	DQ53	218	MD_A53
MAA_A11	57	A11	DQ52	217	MD_A52
MAA_A12	176	A12	DQ51	108	MD_A51
MAA_A13	196	A13	DQ50	107	MD_A50
	174	A14	DQ49	99	MD_A49
	173	A15	DQ48	98	MD_A48
			DQ47	215	MD_A47
CK_DIMM_A2	220	CK2P	DQ46	214	MD_A46
CK_DIMM_A2#	221	CK2N	DQ45	209	MD_A45
CK_DIMM_A1	137	CK1P	DQ44	208	MD_A44
CK_DIMM_A1#	138	CK1N	DQ43	96	MD_A43
CK_DIMM_A0	185	CK0P	DQ42	95	MD_A42
CK_DIMM_A0#	186	CK0N	DQ41	90	MD_A41
			DQ40	89	MD_A40
MCS_A1#	76	CS1#	DQ39	206	MD_A39
MCS_A0#	193	CS0#	DQ38	205	MD_A38
			DQ37	200	MD_A37
MCKE_A1	171	CKE1	DQ36	199	MD_A36
MCKE_A0	52	CKE0	DQ35	87	MD_A35
			DQ34	86	MD_A34
MBS_A2	54	A16/BA2	DQ33	81	MD_A33
MBS_A1	190	BA1	DQ32	80	MD_A32
MBS_A0	71	BA0	DQ31	159	MD_A31
			DQ30	158	MD_A30
SMB_DATA_MAIN	119	SDA	DQ29	153	MD_A29
SMB_CLK_MAIN	120	SCL	DQ28	152	MD_A28
			DQ27	40	MD_A27
	168	NC/CB7	DQ26	39	MD_A26
	167	NC/CB6	DQ25	34	MD_A25
	162	NC/CB5	DQ24	33	MD_A24
	161	NC/CB4	DQ23	150	MD_A23
	49	NC/CB3	DQ22	149	MD_A22
	48	NC/CB2	DQ21	144	MD_A21
	43	NC/CB1	DQ20	143	MD_A20
	42	NC/CB0	DQ19	31	MD_A19
			DQ18	30	MD_A18
	101	SA2	DQ17	25	MD_A17
	240	SA1	DQ16	24	MD_A16
	239	SA0	DQ15	141	MD_A15
			DQ14	140	MD_A14
			DQ13	132	MD_A13
			DQ12	131	MD_A12
			DQ11	22	MD_A11
			DQ10	21	MD_A10
MWE_A#	73	WE#	DQ9	13	MD_A9
MRAS_A#	192	RAS#	DQ8	12	MD_A8
MCAS_A#	74	CAS#	DQ7	129	MD_A7
			DQ6	128	MD_A6
MODT_A1	77	ODT1	DQ5	123	MD_A5
MODT_A0	195	ODT0	DQ4	122	MD_A4
			DQ3	10	MD_A3
	55	RC02	DQ2	9	MD_A2
	18	RESET#	DQ1	4	MD_A1
			DQ0	3	MD_A0

	164	DM8/DQS17P	DQS7P	114	MDQS_A7
	165	NC/DQS17N	DQS7N	113	MDQS_A7#
MDQM_A7	232	DM7/DQS16P	DQS6P	105	MDQS_A6
	233	NC/DQS16N	DQS6N	104	MDQS_A6#
MDQM_A6	223	DM6/DQS15P	DQS5P	93	MDQS_A5
	224	NC/DQS15N	DQS5N	92	MDQS_A5#
MDQM_A5	211	DM5/DQS14P	DQS4P	84	MDQS_A4
	212	NC/DQS14N	DQS4N	83	MDQS_A4#
MDQM_A4	202	DM4/DQS13P	DQS3P	37	MDQS_A3
	203	NC/DQS13N	DQS3N	36	MDQS_A3#
MDQM_A3	155	DM3/DQS12P	DQS2P	28	MDQS_A2
	156	NC/DQS12N	DQS2N	27	MDQS_A2#
MDQM_A2	146	DM2/DQS11P	DQS1P	16	MDQS_A1
	147	NC/DQS11N	DQS1N	15	MDQS_A1#
MDQM_A1	134	DM1/DQS10P	DQS0P	7	MDQS_A0
	135	NC/DQS10N	DQS0N	6	MDQS_A0#
MDQM_A0	125	DM0/DQS9P			
	126	NC/DQS9N			
	46	NC/DQS8P			
	45	NC/DQS8N			

	102	NC2	NP_NC1	241	
	68	NC1	NP_NC2	242	
	19	NC0	NP_NC3	243	

DDR_DIMM_240P

GND

MD_A[63..0] (13)
MAA_A[13..0] (13,18)
MBS_A[2..0] (13,18)
MODT_A[1..0] (13,18)
MDQM_A[7..0] (13)
MCKE_A[1..0] (13,18)
MCS_A0# (13,18)
MCS_A1# (13,18)

MWE_A# (13,18)
MCAS_A# (13,18)
MRAS_A# (13,18)

CK_DIMM_A0 (13)
CK_DIMM_A0# (13)
CK_DIMM_A1 (13)
CK_DIMM_A1# (13)
CK_DIMM_A2 (13)
CK_DIMM_A2# (13)

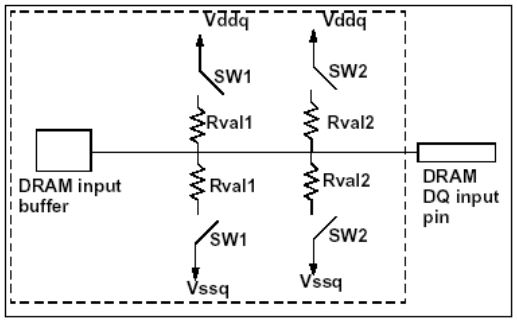
MDQS_A7# (13)
MDQS_A7 (13)
MDQS_A6# (13)
MDQS_A6 (13)
MDQS_A5# (13)
MDQS_A5 (13)
MDQS_A4# (13)
MDQS_A4 (13)
MDQS_A3# (13)
MDQS_A3 (13)
MDQS_A2# (13)
MDQS_A2 (13)
MDQS_A1# (13)
MDQS_A1 (13)
MDQS_A0# (13)
MDQS_A0 (13)

SMB_CLK_MAIN (5,9,19,21,24,27,41)
SMB_DATA_MAIN (5,9,19,21,24,27,41)

1.00 ODT On die Termination
1.Reduced DQ and DQS skew
2.Increased voltage margin
3.Reduced board area and BOM cost

There status Off,75,150 Ohm

ODT: On Die Termination



- Controlled by memory controller via ODT pin.
- Can be turned on/off in 2 cycles
- Provides active termination at the receiver interface.

SMB_DATA_MAIN
SMB_CLK_MAIN

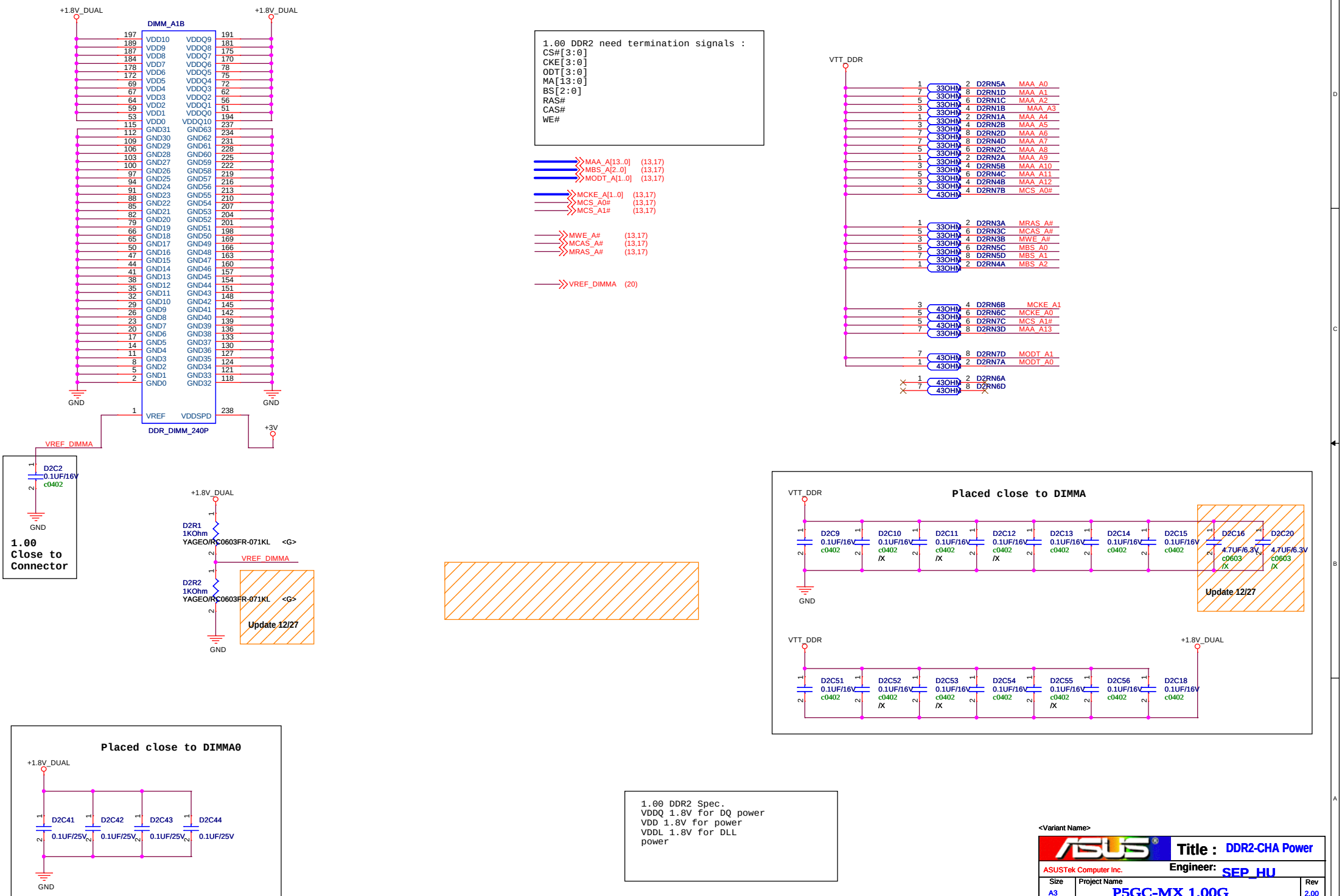
SC1 150PF/50V /X
SC2 150PF/50V /X

GND GND

Placed close to DIMM

<Variant Name>

ASUSTek Computer Inc.	Title : DDR2-CHA control		
	Engineer: SEP_HU		
Size: A3	Project Name: P5GC-MX 1.00G		Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 17 of 47		


+1.8V_DUAL
+1.8V_DUAL
DIMM_A1B
VDD10 VDDQ9 VDD9 VDDQ8 VDD8 VDDQ7 VDD7 VDDQ6 VDD6 VDDQ5 VDD5 VDDQ4 VDD4 VDDQ3 VDD3 VDDQ2 VDD2 VDDQ1 VDD1 VDDQ0 VDD0 VDDQ10
GND31 GND30 GND29 GND28 GND27 GND26 GND25 GND24 GND23 GND22 GND21 GND20 GND19 GND18 GND17 GND16 GND15 GND14 GND13 GND12 GND11 GND10 GND9 GND8 GND7 GND6 GND5 GND4 GND3 GND2 GND1 GND0
GND63 GND62 GND61 GND60 GND59 GND58 GND57 GND56 GND55 GND54 GND53 GND52 GND51 GND50 GND49 GND48 GND47 GND46 GND45 GND44 GND43 GND42 GND41 GND40 GND39 GND38 GND37 GND36 GND35 GND34 GND33 GND32
GND
GND
VREF VDDSPD
DDR_DIMM_240P
+3V
VREF_DIMMA
D2C2
0.1UF/16V
c0402
GND
1.00
Close to
Connector
+1.8V_DUAL
D2R1
1KOhm
YAGEO/RC0603FR-071KL <G>
VREF_DIMMA
D2R2
1KOhm
YAGEO/RC0603FR-071KL <G>
Update 12/27
GND
1.00 DDR2 need termination signals :
CS#[3:0]
CKE[3:0]
ODT[3:0]
MA[13:0]
BS[2:0]
RAS#
CAS#
WE#
MAA_A[13..0] (13,17)
MBS_A[2..0] (13,17)
MODT_A[1..0] (13,17)
MCKE_A[1..0] (13,17)
MCS_A0# (13,17)
MCS_A1# (13,17)
MWE_A# (13,17)
MCAS_A# (13,17)
MRAS_A# (13,17)
VREF_DIMMA (20)
VTT_DDR
33OHM D2RN5A MAA_A0
33OHM D2RN1D MAA_A1
33OHM D2RN1C MAA_A2
33OHM D2RN1B MAA_A3
33OHM D2RN1A MAA_A4
33OHM D2RN2B MAA_A5
33OHM D2RN2D MAA_A6
33OHM D2RN4D MAA_A7
33OHM D2RN2C MAA_A8
33OHM D2RN2A MAA_A9
33OHM D2RN5B MAA_A10
33OHM D2RN4C MAA_A11
33OHM D2RN4B MAA_A12
33OHM D2RN7B MCS_A0#
33OHM D2RN3A MRAS_A#
33OHM D2RN3C MCAS_A#
33OHM D2RN3B MWE_A#
33OHM D2RN5C MBS_A0
33OHM D2RN5D MBS_A1
33OHM D2RN4A MBS_A2
43OHM D2RN6B MCKE_A1
43OHM D2RN6C MCKE_A0
43OHM D2RN7C MCS_A1#
43OHM D2RN3D MAA_A13
43OHM D2RN7D MODT_A1
43OHM D2RN7A MODT_A0
43OHM D2RN6A
43OHM D2RN6D
Placed close to DIMMA
VTT_DDR
D2C9 D2C10 D2C11 D2C12 D2C13 D2C14 D2C15 D2C16 D2C20
0.1UF/16V
c0402
/X
4.7UF/6.3V
c0603
/X
Update 12/27
GND
VTT_DDR
+1.8V_DUAL
D2C51 D2C52 D2C53 D2C54 D2C55 D2C56 D2C18
0.1UF/16V
c0402
/X
Placed close to DIMMA0
+1.8V_DUAL
D2C41 D2C42 D2C43 D2C44
0.1UF/25V
GND
1.00 DDR2 Spec.
VDDQ 1.8V for DQ power
VDD 1.8V for power
VDDL 1.8V for DLL
power
<Variant Name>
Title : DDR2-CHA Power
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
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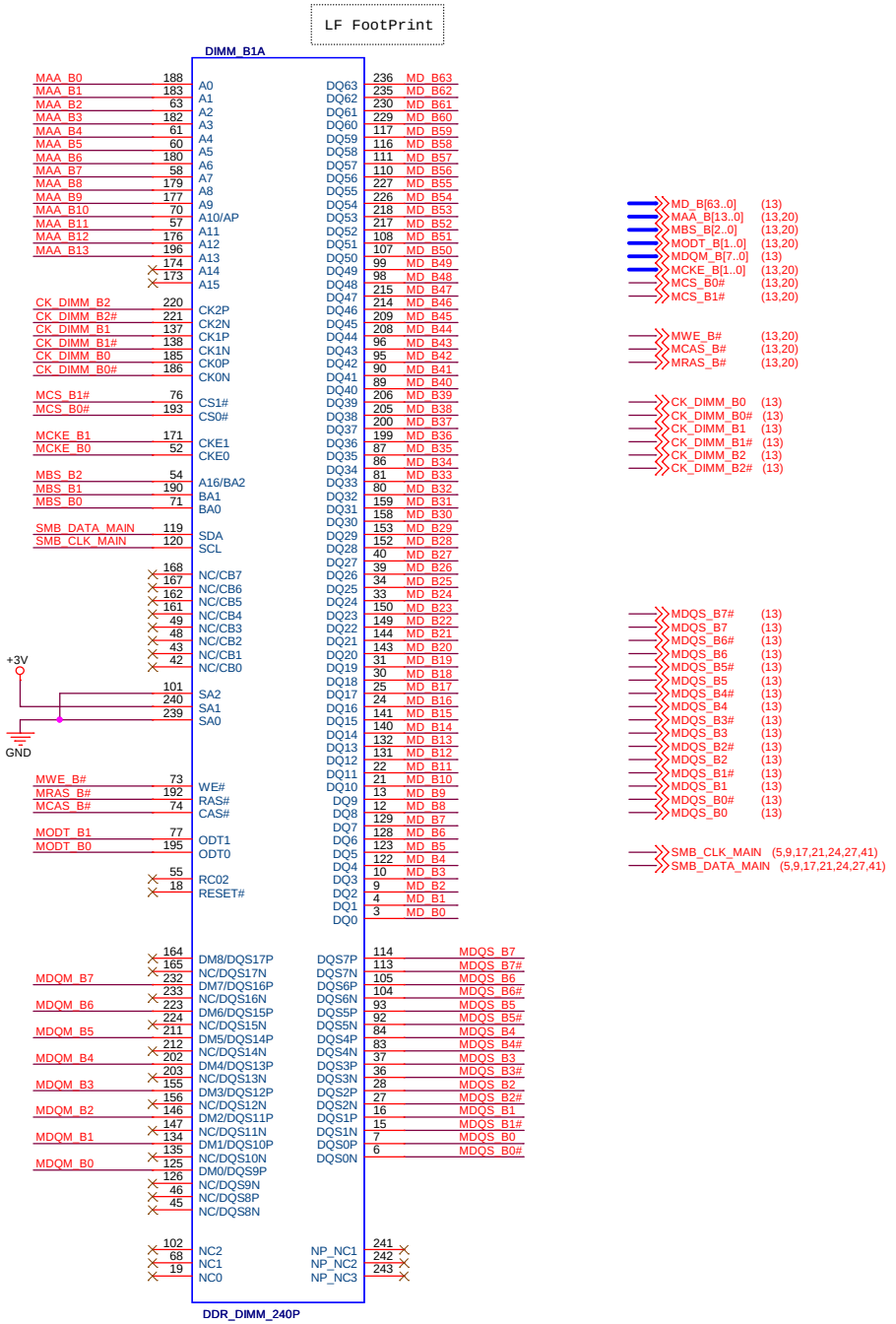


<Variant Name>

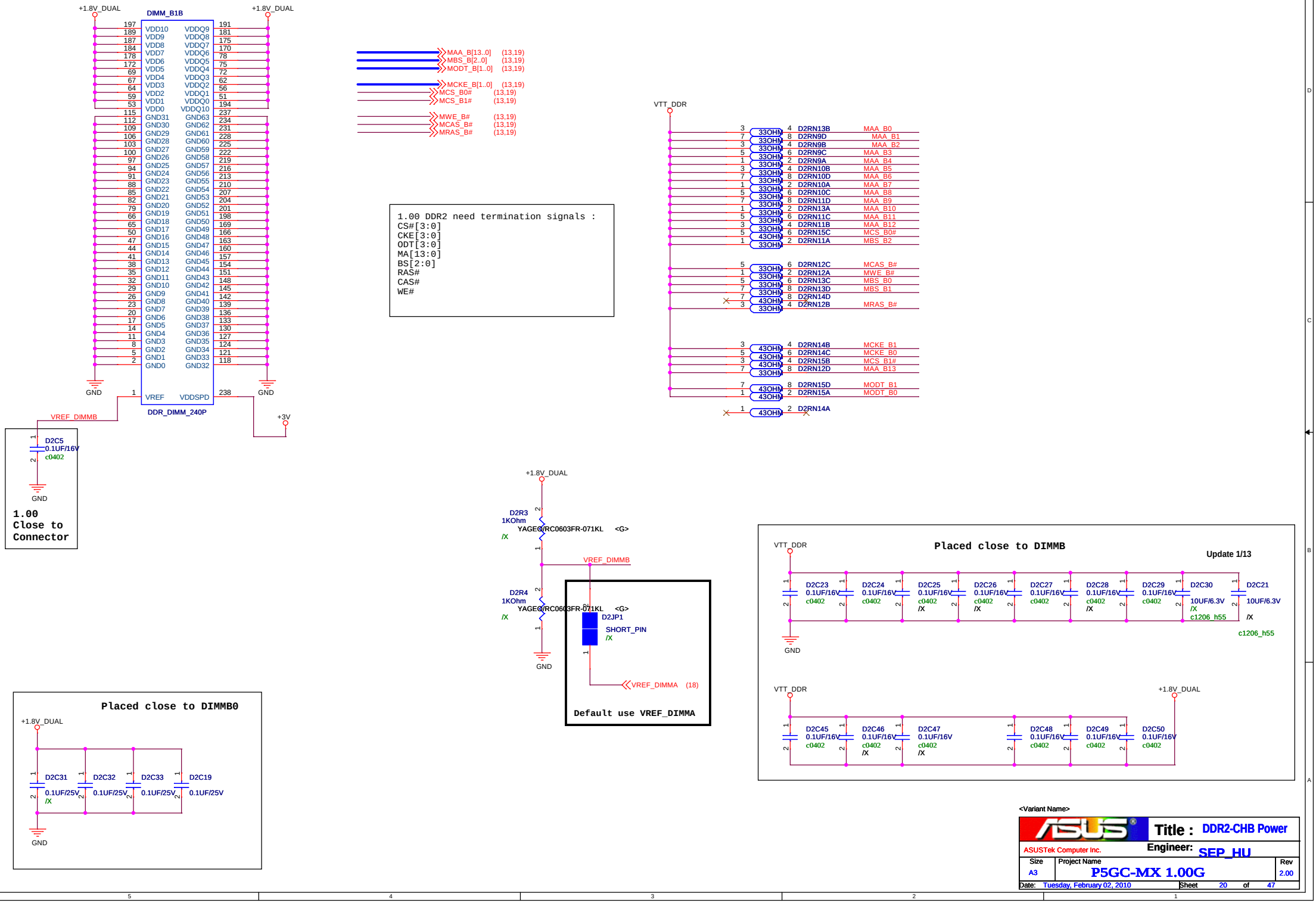
ASUSTek Computer Inc.

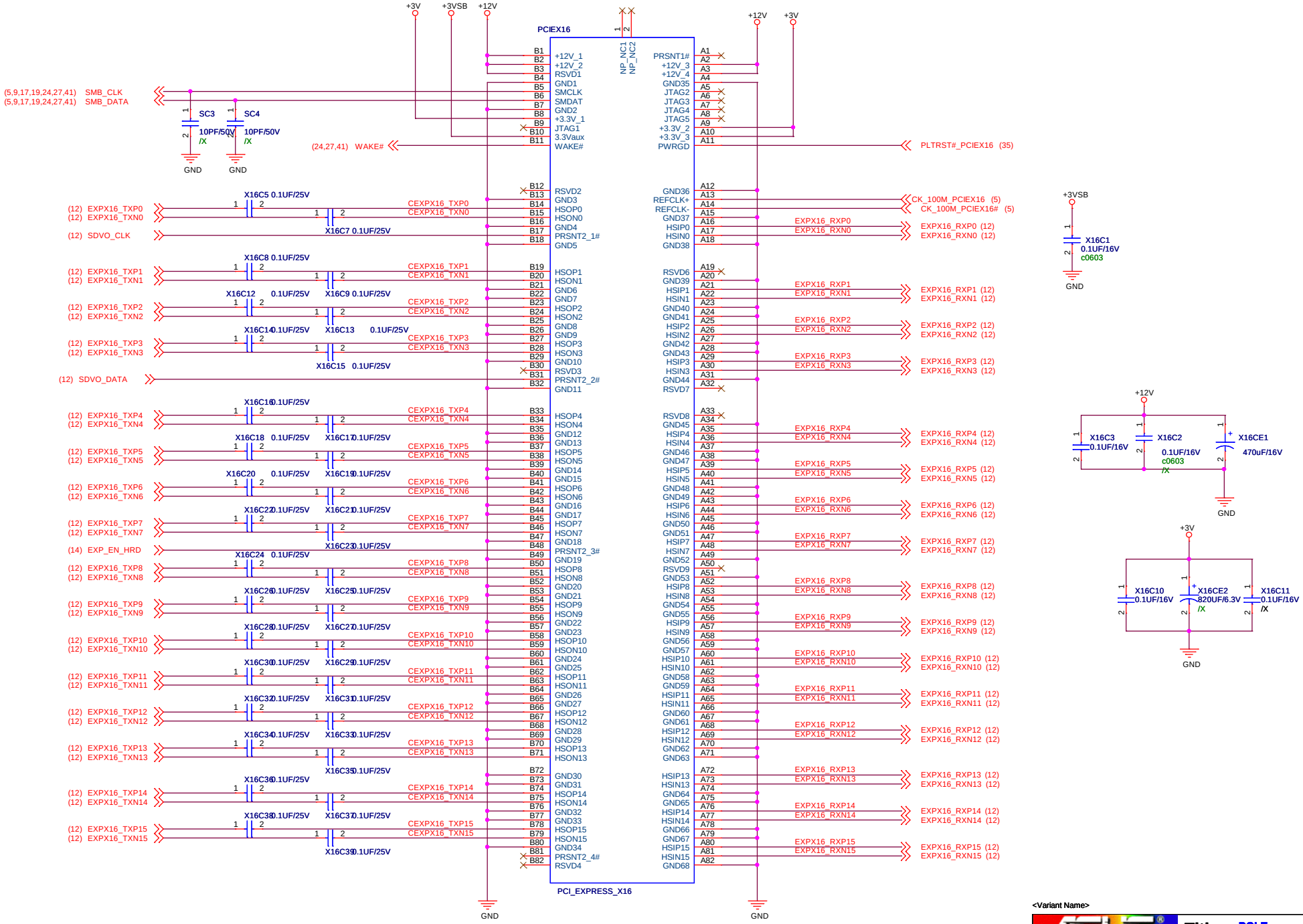
Title : DDR2-CHB Control

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 19 of 47


DIMM_B1B
+1.8V_DUAL
+1.8V_DUAL
VDD10 VDDQ9 197 191
VDD9 VDDQ8 189 181
VDD8 VDDQ7 187 175
VDD7 VDDQ6 184 170
VDD6 VDDQ5 178 78
VDD5 VDDQ4 172 75
VDD4 VDDQ3 69 72
VDD3 VDDQ2 67 62
VDD2 VDDQ1 64 56
VDD1 VDDQ0 59 51
VDD0 VDDQ10 53 194
GND31 GND63 115 237
GND30 GND62 112 234
GND29 GND61 109 231
GND28 GND60 106 228
GND27 GND59 103 225
GND26 GND58 100 222
GND25 GND57 97 219
GND24 GND56 94 216
GND23 GND55 91 213
GND22 GND54 88 210
GND21 GND53 85 207
GND20 GND52 82 204
GND19 GND51 79 201
GND18 GND50 66 198
GND17 GND49 65 169
GND16 GND48 50 166
GND15 GND47 47 163
GND14 GND46 44 160
GND13 GND45 41 157
GND12 GND44 38 154
GND11 GND43 35 151
GND10 GND42 32 148
GND9 GND41 29 145
GND8 GND40 26 142
GND7 GND39 23 139
GND6 GND38 20 136
GND5 GND37 17 133
GND4 GND36 14 130
GND3 GND35 11 127
GND2 GND34 8 124
GND1 GND33 5 121
GND0 GND32 2 118
GND
GND
VREF VDDSPD 1 238
DDR_DIMM_240P
VREF_DIMMB
+3V
D2C5
0.1UF/16V
c0402
GND
1.00
Close to
Connector
MAA_B[13..0] (13,19)
MBS_B[2..0] (13,19)
MODT_B[1..0] (13,19)
MCKE_B[1..0] (13,19)
MCS_B0# (13,19)
MCS_B1# (13,19)
MWE_B# (13,19)
MCAS_B# (13,19)
MRAS_B# (13,19)
1.00 DDR2 need termination signals :
CS#[3:0]
CKE[3:0]
ODT[3:0]
MA[13:0]
BS[2:0]
RAS#
CAS#
WE#
VTT_DDR
3 33OHM 4 D2RN13B MAA_B0
7 33OHM 8 D2RN9D MAA_B1
3 33OHM 4 D2RN9B MAA_B2
5 33OHM 6 D2RN9C MAA_B3
1 33OHM 2 D2RN9A MAA_B4
3 33OHM 4 D2RN10B MAA_B5
7 33OHM 8 D2RN10D MAA_B6
1 33OHM 2 D2RN10A MAA_B7
5 33OHM 6 D2RN10C MAA_B8
7 33OHM 8 D2RN11D MAA_B9
1 33OHM 2 D2RN13A MAA_B10
5 33OHM 6 D2RN11C MAA_B11
3 33OHM 4 D2RN11B MAA_B12
5 43OHM 6 D2RN15C MCS_B0#
1 33OHM 2 D2RN11A MBS_B2
5 33OHM 6 D2RN12C MCAS_B#
1 33OHM 2 D2RN12A MWE_B#
5 33OHM 6 D2RN13C MBS_B0
7 33OHM 8 D2RN13D MBS_B1
7 33OHM 8 D2RN14D
3 43OHM 4 D2RN12B MRAS_B#
3 43OHM 4 D2RN14B MCKE_B1
5 43OHM 6 D2RN14C MCKE_B0
3 43OHM 4 D2RN15B MCS_B1#
7 33OHM 8 D2RN12D MAA_B13
7 43OHM 8 D2RN15D MODT_B1
1 43OHM 2 D2RN15A MODT_B0
1 43OHM 2 D2RN14A
+1.8V_DUAL
D2R3
1KOhm
YAGEO/RC0603FR-071KL <G>
/X
VREF_DIMMB
D2R4
1KOhm
YAGEO/RC0603FR-071KL <G>
/X
GND
D2JP1
SHORT_PIN
/X
VREF_DIMMA (18)
Default use VREF_DIMMA
Placed close to DIMMB
Update 1/13
VTT_DDR
D2C23 0.1UF/16V c0402
D2C24 0.1UF/16V c0402
D2C25 0.1UF/16V c0402 /X
D2C26 0.1UF/16V c0402 /X
D2C27 0.1UF/16V c0402
D2C28 0.1UF/16V c0402 /X
D2C29 0.1UF/16V c0402
D2C30 10UF/6.3V /X c1206_h55
D2C21 10UF/6.3V /X c1206_h55
GND
VTT_DDR
+1.8V_DUAL
D2C45 0.1UF/16V c0402
D2C46 0.1UF/16V c0402 /X
D2C47 0.1UF/16V c0402 /X
D2C48 0.1UF/16V c0402
D2C49 0.1UF/16V c0402
D2C50 0.1UF/16V c0402
Placed close to DIMMB0
+1.8V_DUAL
D2C31 0.1UF/25V /X
D2C32 0.1UF/25V
D2C33 0.1UF/25V
D2C19 0.1UF/25V
GND
<Variant Name>
Title : DDR2-CHB Power
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 20 of 47



<Variant Name>

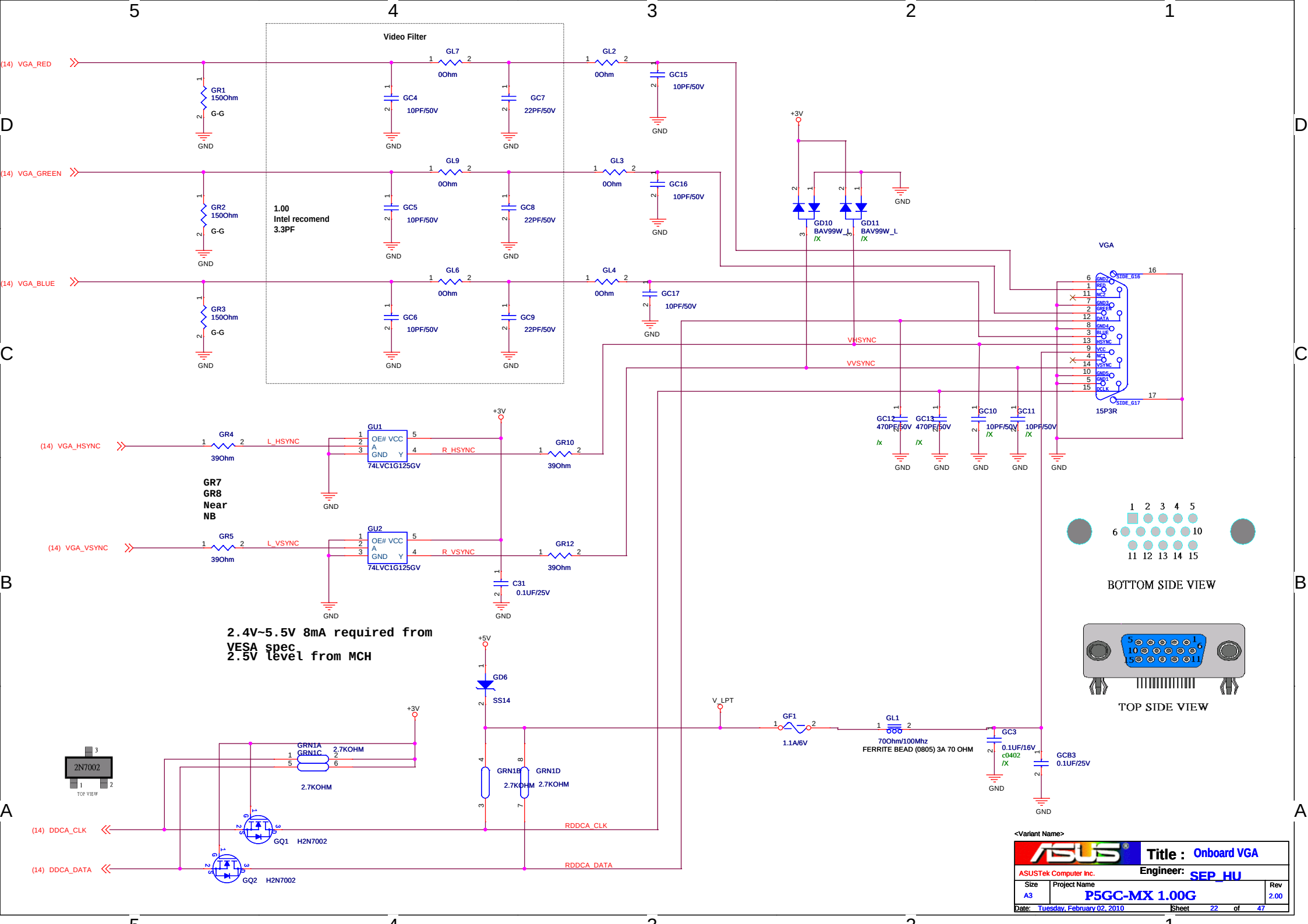
ASUSTek Computer Inc.

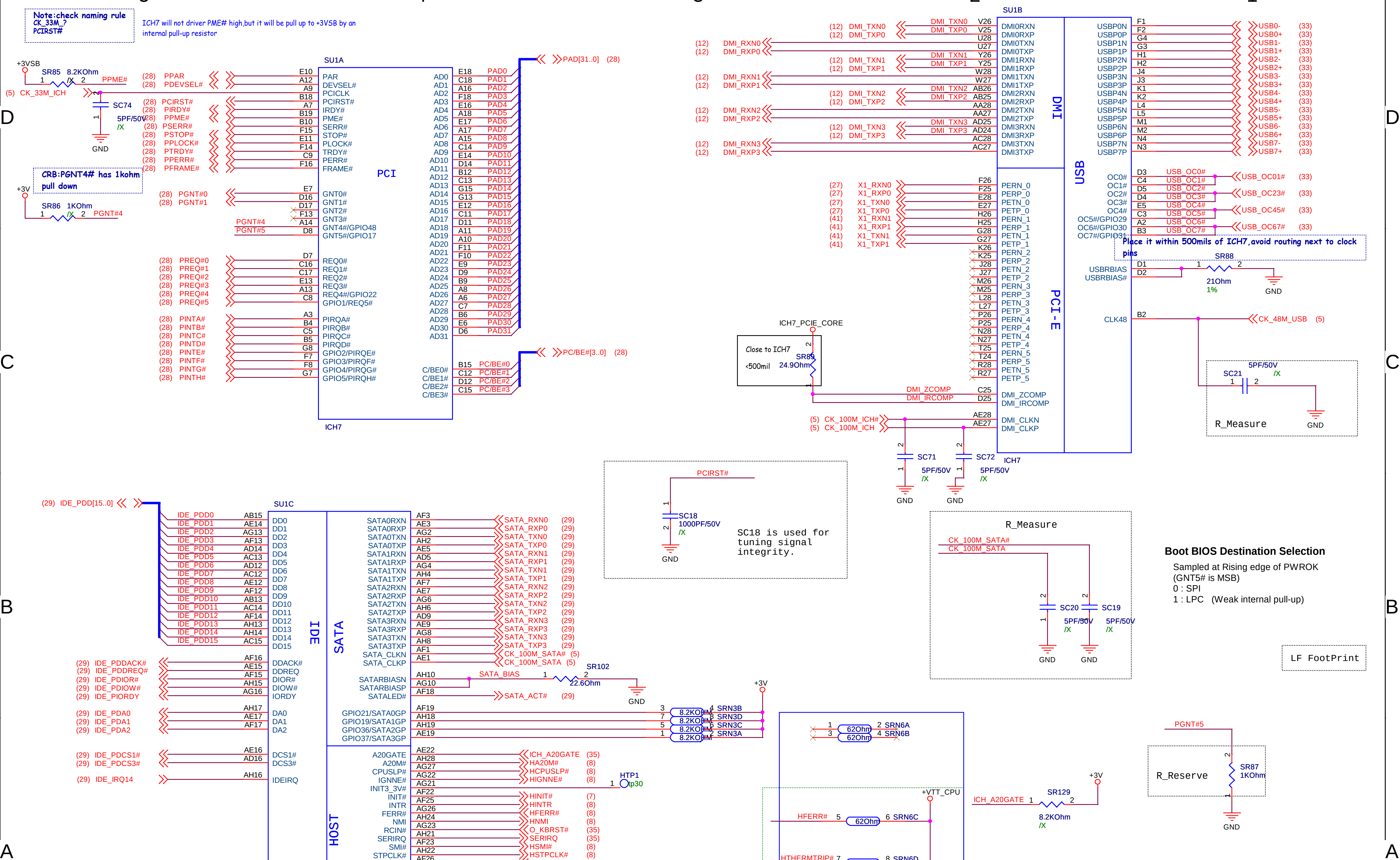
Title : PCI Express X16

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 21 of 47


Video Filter
(14) VGA_RED
(14) VGA_GREEN
(14) VGA_BLUE
GR1 150Ohm G-G
GR2 150Ohm G-G
GR3 150Ohm G-G
GL7 0Ohm
GL9 0Ohm
GL6 0Ohm
GL2 0Ohm
GL3 0Ohm
GL4 0Ohm
GC4 10PF/50V
GC5 10PF/50V
GC6 10PF/50V
GC7 22PF/50V
GC8 22PF/50V
GC9 22PF/50V
GC15 10PF/50V
GC16 10PF/50V
GC17 10PF/50V
GND
1.00
Intel recomend
3.3PF
+3V
GD10 BAV99W_L /X
GD11 BAV99W_L /X
VGA
15P3R
VHSYNC
VVSYNC
GC12 470PF/50V /X
GC13 470PF/50V /X
GC10 10PF/50V /X
GC11 10PF/50V /X
(14) VGA_HSYNC
(14) VGA_VSYNC
GR4 39Ohm
GR5 39Ohm
L_HSYNC
L_VSYNC
GU1
GU2
OE# VCC A GND Y
74LVC1G125GV
R_HSYNC
R_VSYNC
GR10 39Ohm
GR12 39Ohm
C31 0.1UF/25V
GR7
GR8
Near
NB
2.4V~5.5V 8mA required from VESA spec
2.5V level from MCH
BOTTOM SIDE VIEW
TOP SIDE VIEW
+5V
GD6 SS14
V_LPT
GF1 1.1A/6V
GL1 70Ohm/100Mhz FERRITE BEAD (0805) 3A 70 OHM
GC3 0.1UF/16V c0402 /X
GCB3 0.1UF/25V
GRN1A GRN1C 2.7KOHM
GRN1B GRN1D 2.7KOHM
2N7002
TOP VIEW
(14) DDCA_CLK
(14) DDCA_DATA
GQ1 H2N7002
GQ2 H2N7002
RDDCA_CLK
RDDCA_DATA
<Variant Name>
Title : Onboard VGA
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 22 of 47



Note:check naming rule
CK_33M_?
PCIRST#
ICH7 will not driver PME# high,but it will be pull up to +3VSB by an internal pull-up resistor
SU1A
PCI
ICH7
CRB:PGNT4# has 1kohm pull down
SU1B
DMI
USB
PCI-E
ICH7_PCIE_CORE
Close to ICH7
<500mil
SR89 24.9Ohm
Place it within 500mils of ICH7,avoid routing next to clock pins
SR88 21Ohm 1%
SC21 5PF/50V /X
R_Measure
SC18 1000PF/50V /X
SC18 is used for tuning signal integrity.
SC19 5PF/50V /X
SC20 5PF/50V /X
Boot BIOS Destination Selection
Sampled at Rising edge of PWROK
(GNT5# is MSB)
0 : SPI
1 : LPC (Weak internal pull-up)
LF FootPrint
SU1C
IDE
SATA
HOST
SR102 22.6Ohm
SC24 150PF/50V /X
HTP1 tp30
Close to ICH7
L<3"
SR129 8.2KOhm /X
R_Reserve
SR87 1KOhm

<Variant Name>

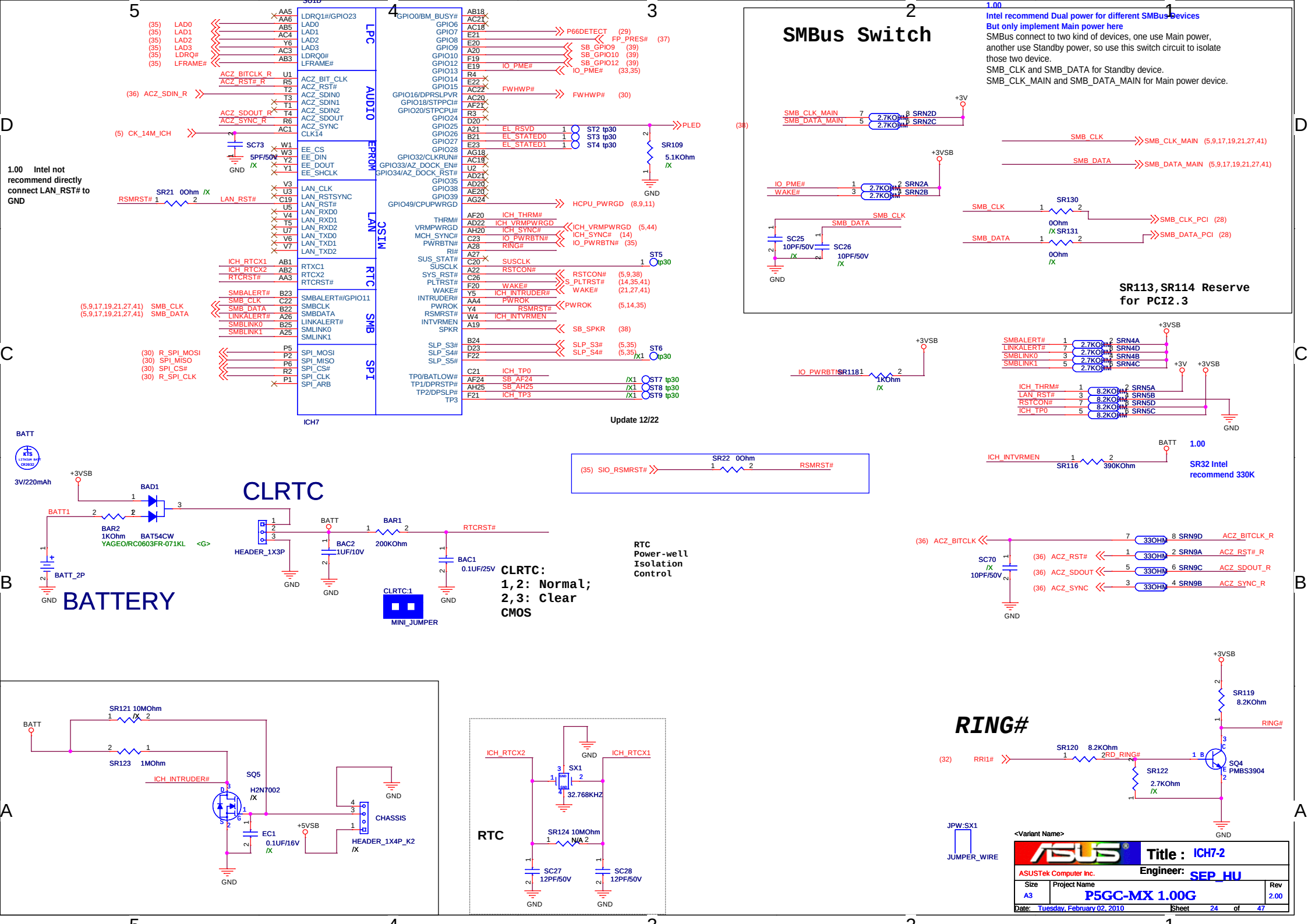
Title : ICH7-1

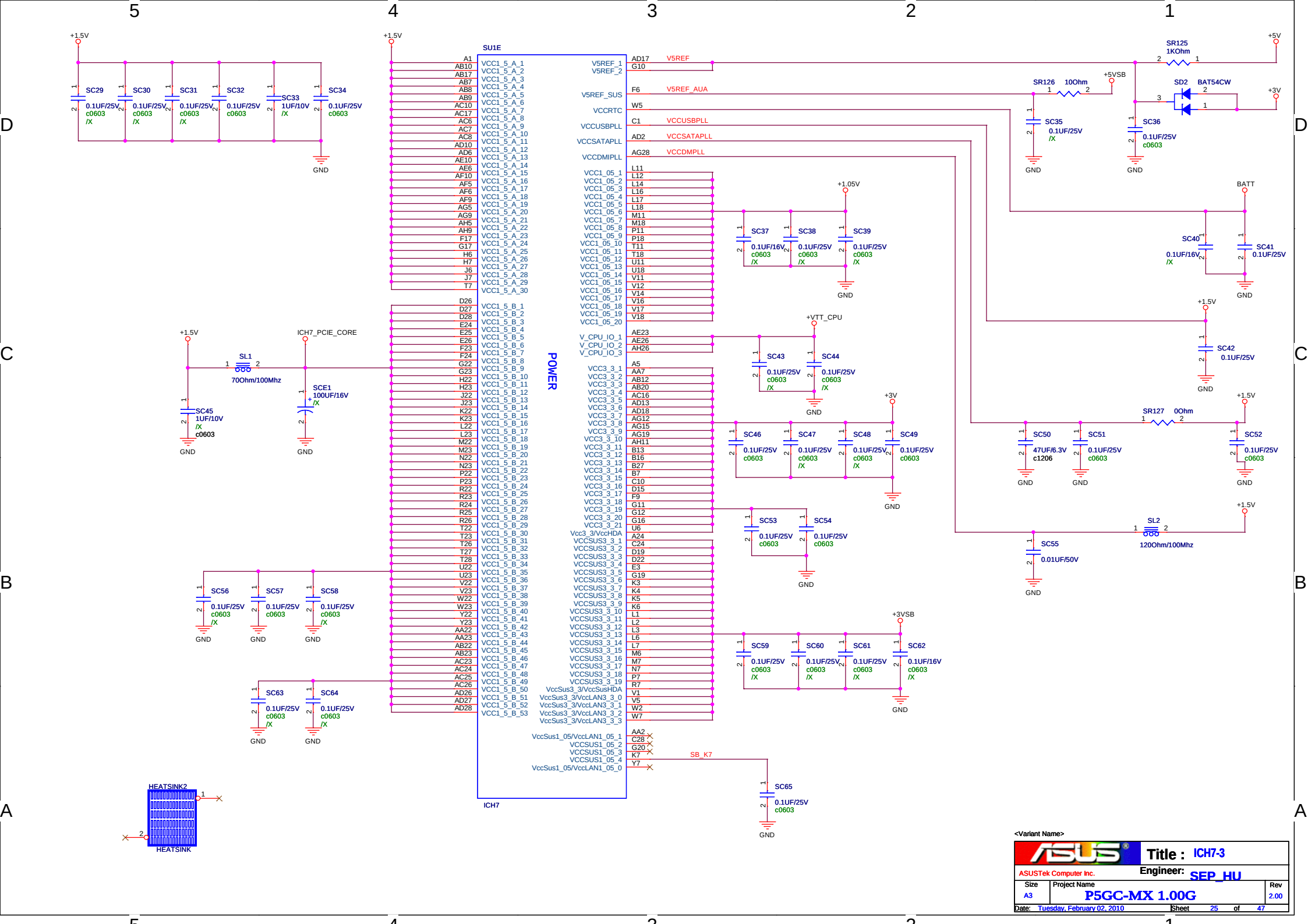
ASUSTek Computer Inc.

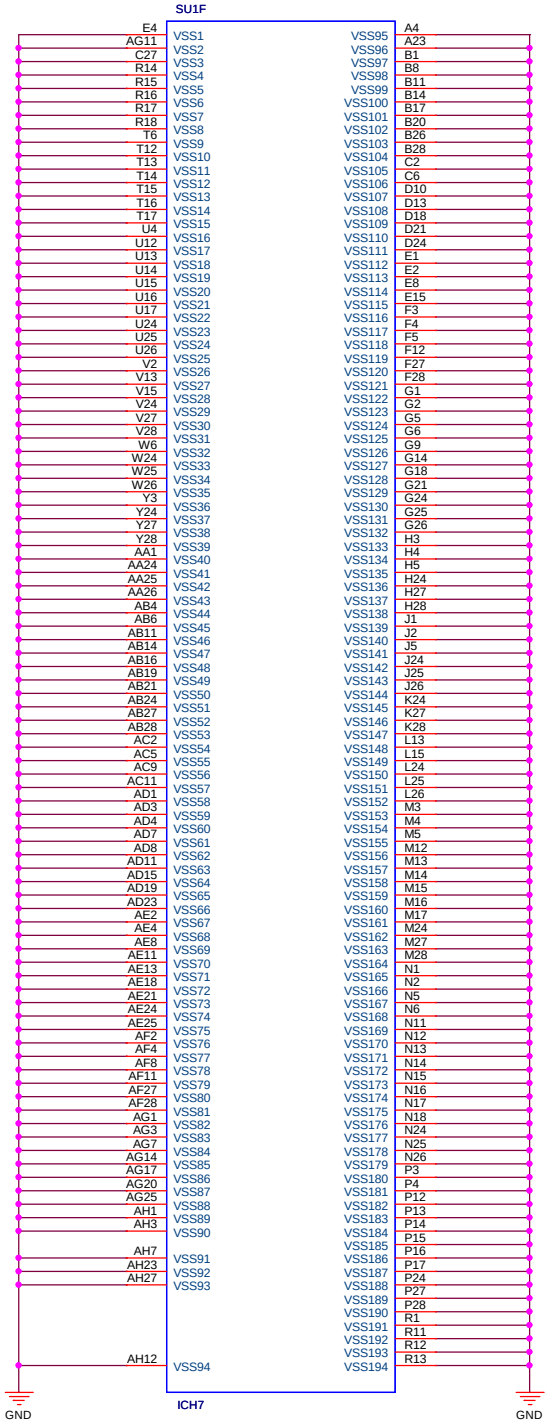
Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 23 of 47


SMBus Switch
1.00
Intel recommend Dual power for different SMBus Devices
But only implement Main power here
SMBus connect to two kind of devices, one use Main power, another use Standby power, so use this switch circuit to isolate those two device.
SMB_CLK and SMB_DATA for Standby device.
SMB_CLK_MAIN and SMB_DATA_MAIN for Main power device.
SR113,SR114 Reserve for PCI2.3
1.00 Intel not recommend directly connect LAN_RST# to GND
ICH7
Update 12/22
CLRTC
BATTERY
3V/220mAh
CLRTC: 1,2: Normal; 2,3: Clear CMOS
RTC Power-well Isolation Control
SR32 Intel recommend 330K
RING#
RTC
Title : ICH7-2
ASUSTek Computer Inc.
Engineer: SEP_HU
Project Name P5GC-MX 1.00G
Size A3
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 24 of 47


SU1E
ICH7
POWER
V5REF
V5REF_AUA
VCCUSBPLL
VCCSATAPLL
VCCDMPLL
SB_K7
ICH7_PCIE_CORE
HEATSINK2
HEATSINK
SR125 1KOhm
SR126 10Ohm
SR127 0Ohm
SD2 BAT54CW
SL1 70Ohm/100Mhz
SL2 120Ohm/100Mhz
SC29 SC30 SC31 SC32 SC33 1UF/10V SC34
SC35 SC36
SC37 SC38 SC39
SC40 SC41
SC42
SC43 SC44
SC45 1UF/10V c0603
SCE1 100UF/16V
SC46 SC47 SC48 SC49
SC50 47UF/6.3V c1206
SC51 SC52
SC53 SC54
SC55 0.01UF/50V
SC56 SC57 SC58
SC59 SC60 SC61 SC62
SC63 SC64
SC65
+1.5V
+1.05V
+VTT_CPU
+3V
+3VSB
+5V
+5VSB
BATT
GND
0.1UF/25V c0603 /X
Title : ICH7-3
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 25 of 47



<Variant Name>

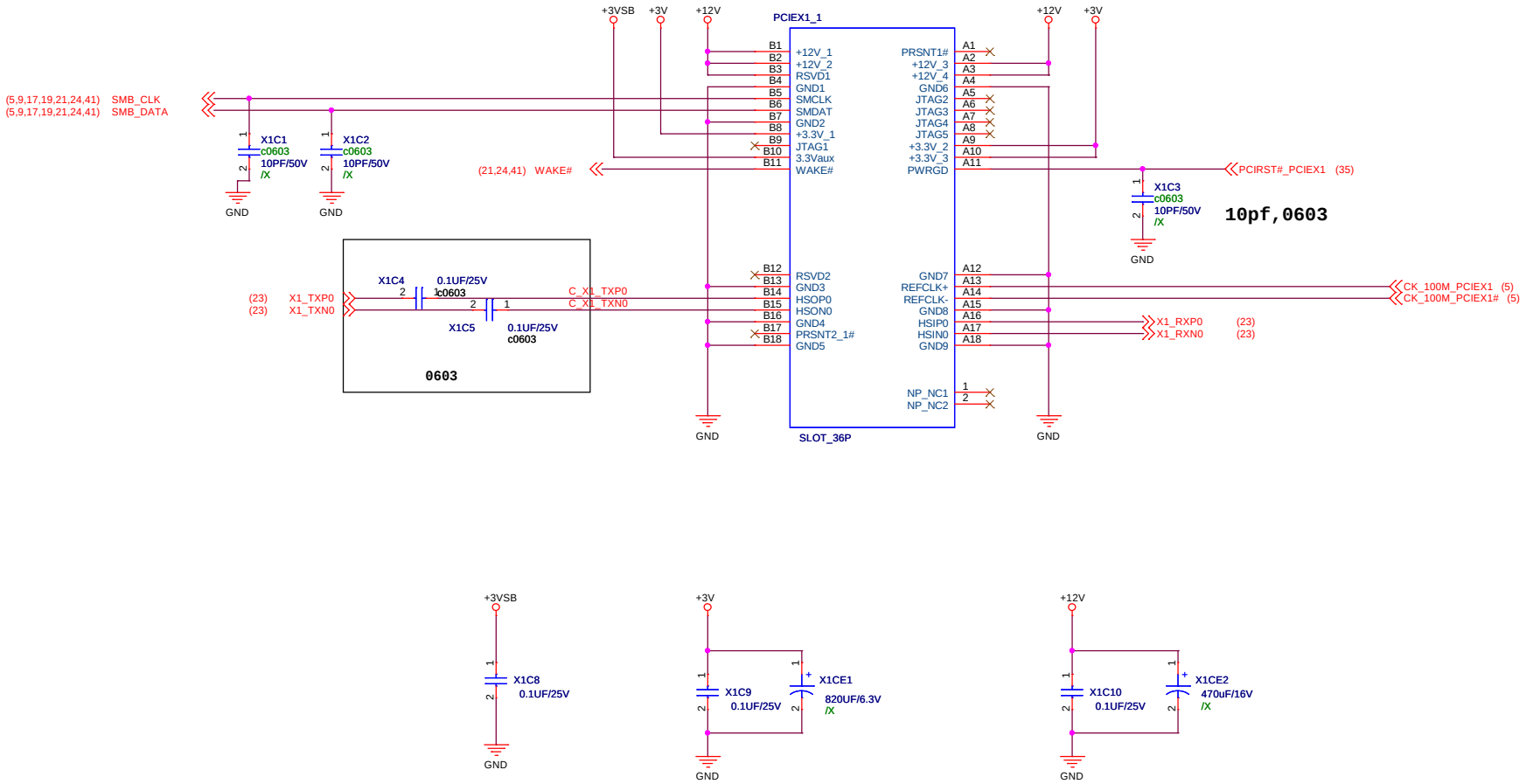
Title : ICH7-4

ASUSTek Computer Inc.

Engineer: SEP_HU

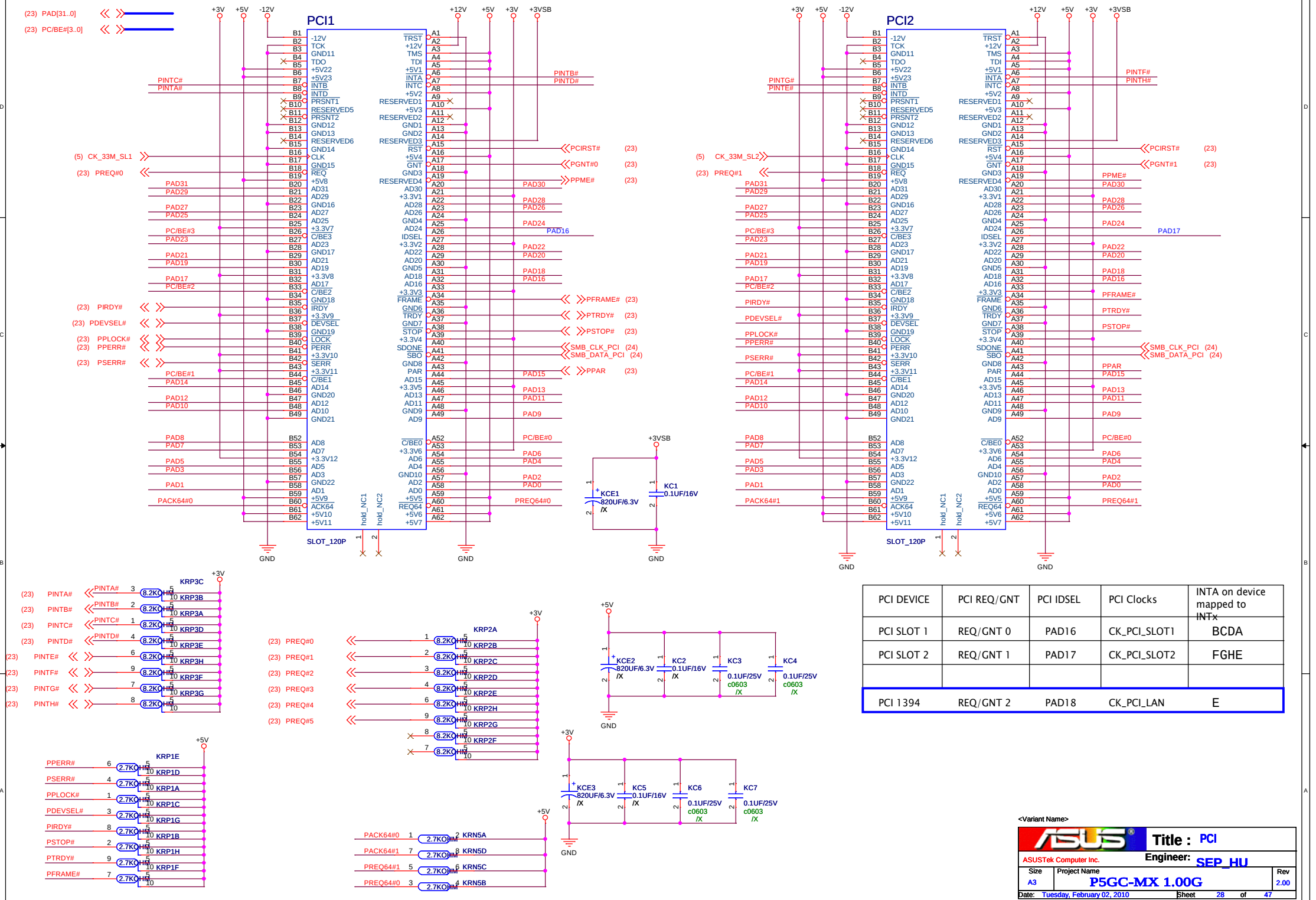
Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

Date: Tuesday, February 02, 2010 Sheet 26 of 47



<Variant Name>

ASUSTek Computer Inc.	Title : PCI Express X1	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 27 of 47	



PCI DEVICE	PCI REQ/GNT	PCI IDSEL	PCI Clocks	INTA on device mapped to INTx
PCI SLOT 1	REQ/GNT 0	PAD16	CK_PCI_SLOT1	BCDA
PCI SLOT 2	REQ/GNT 1	PAD17	CK_PCI_SLOT2	FGHE
PCI 1394	REQ/GNT 2	PAD18	CK_PCI_LAN	E

<Variant Name>

ASUSTek Computer Inc.

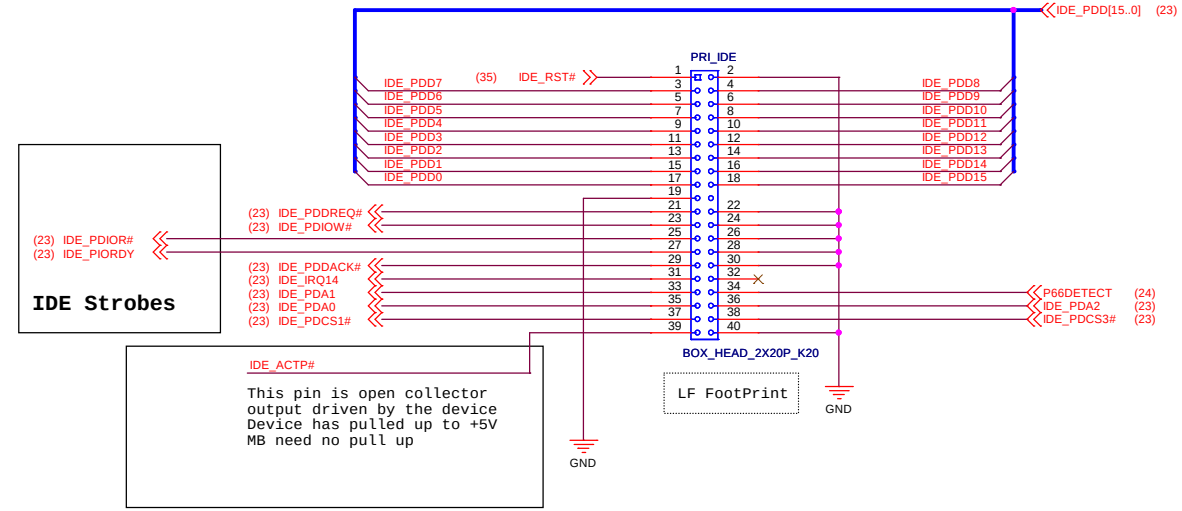
Title : PCI

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

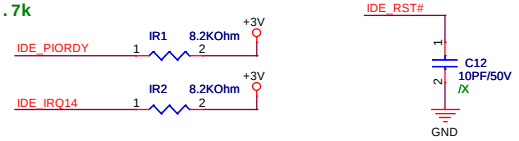
Date: Tuesday, February 02, 2010 Sheet 28 of 47

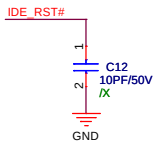
IDE

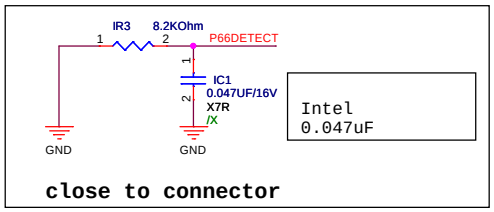


[IR1]Demo Circuit use 4.7k

P5LD2 4.7K
P5B-TMX 8.2K

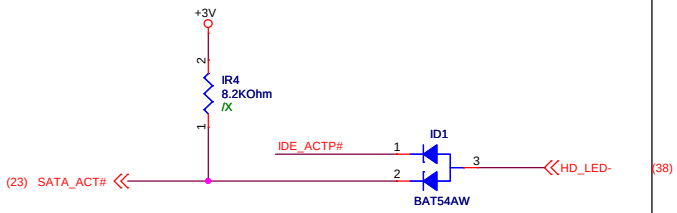






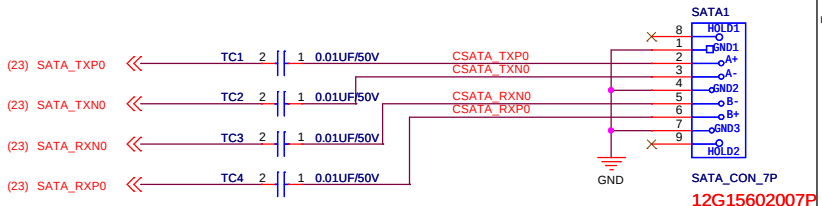
IR2 P5B-TMX 8.2K
CRB 10K
P5PL2 15K

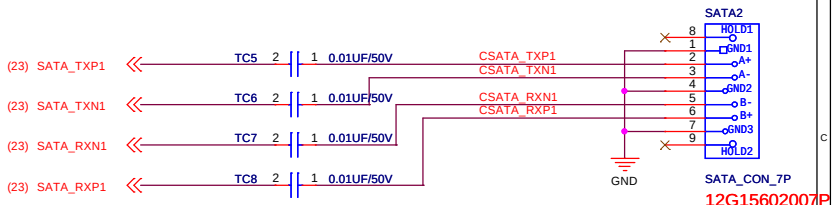
IDE & SATA LED



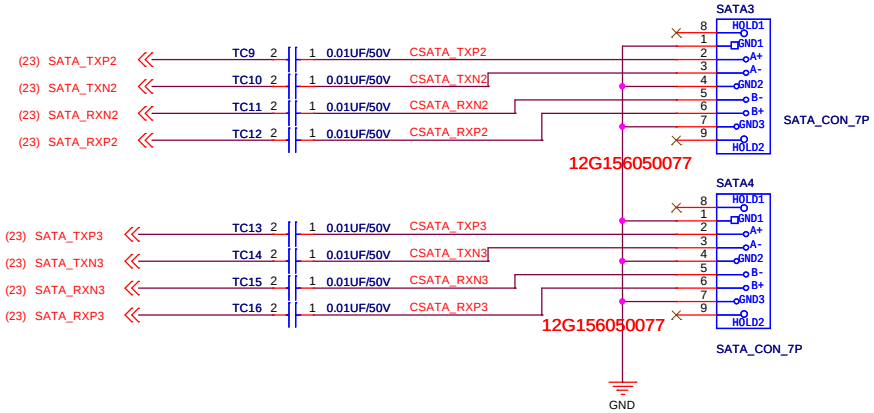
Serial ATA

Color: RED





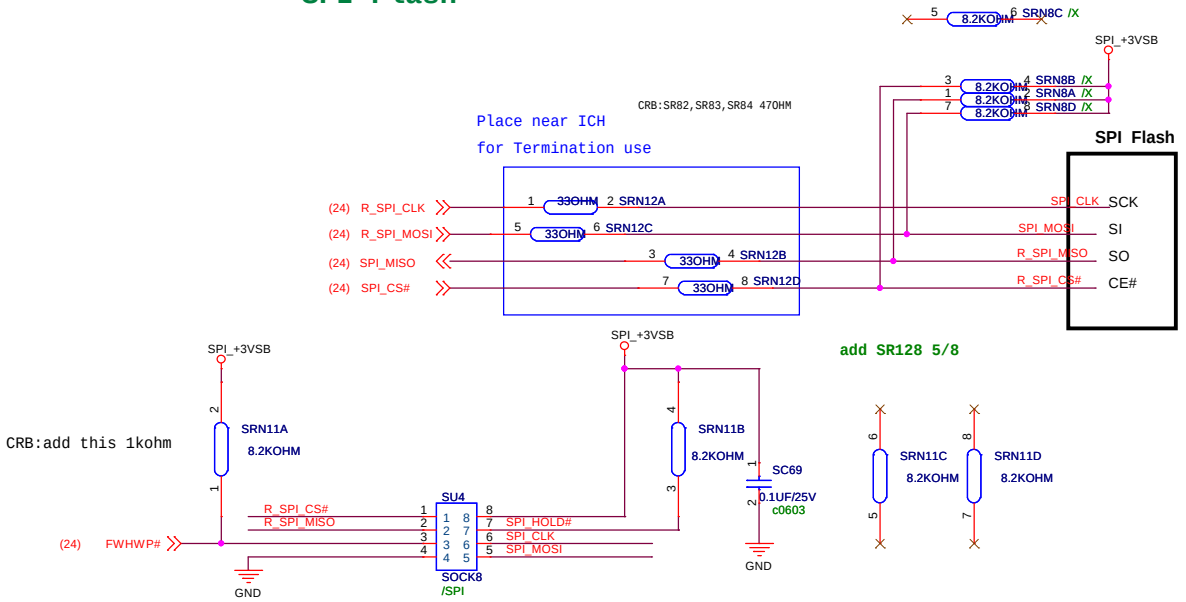
Color: BLACK



<Variant Name>

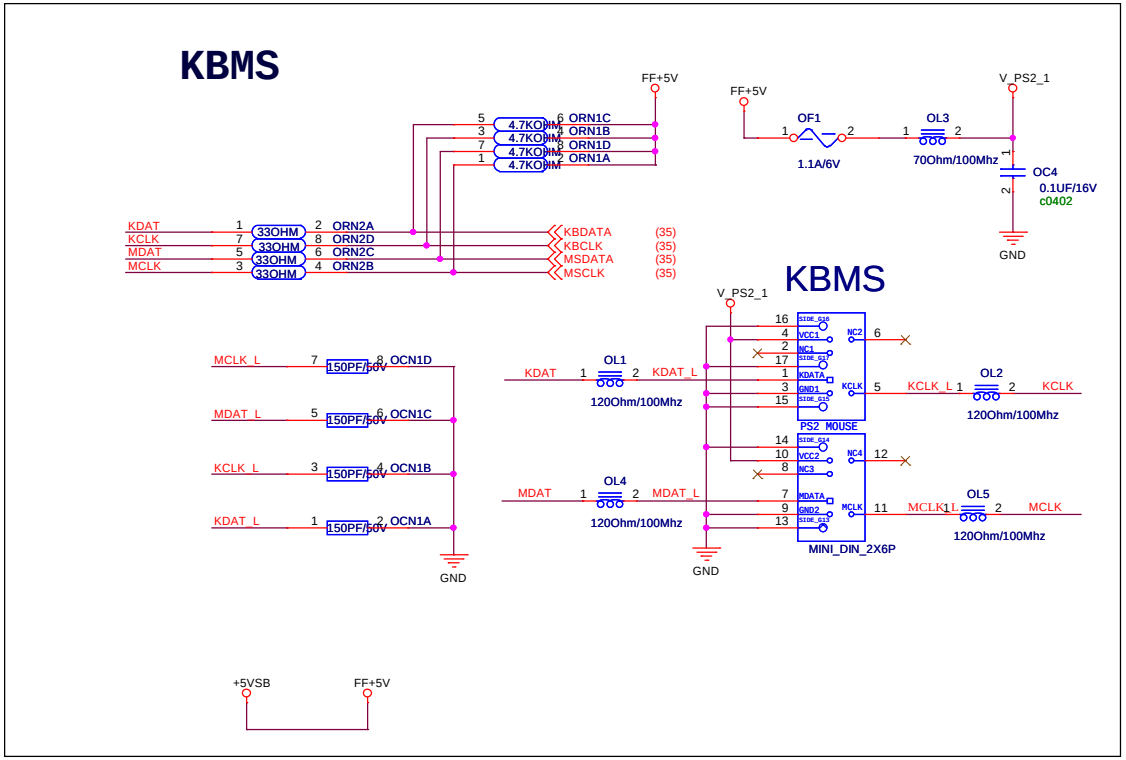
ASUSTek Computer Inc.	Title : IDE & SATA	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 29 of 47	

SPI Flash



<Variant Name>

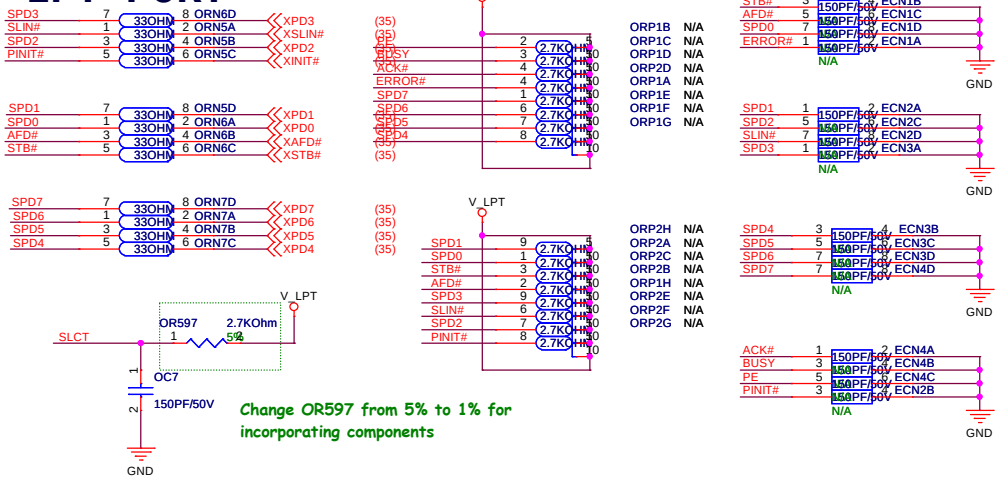
ASUSTek Computer Inc.	Title : SPI	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 30 of 47	



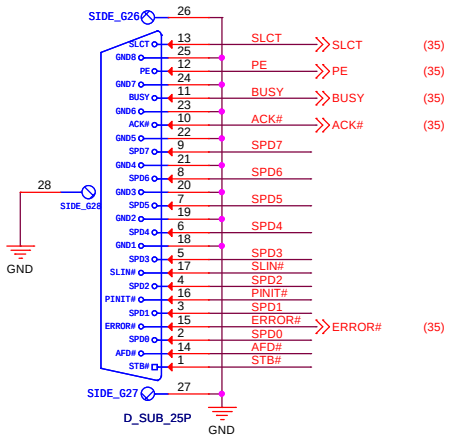
<Variant Name>

ASUSTek Computer Inc.	Title : KB/MS/GAME	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 31 of 47	

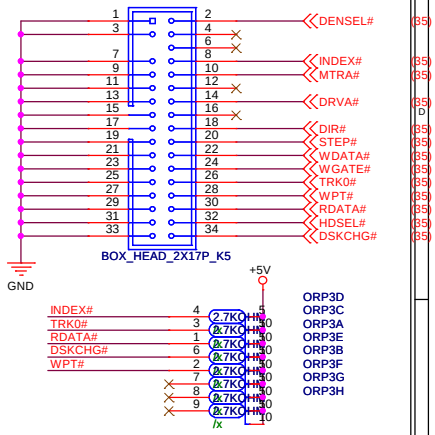
LPT PORT



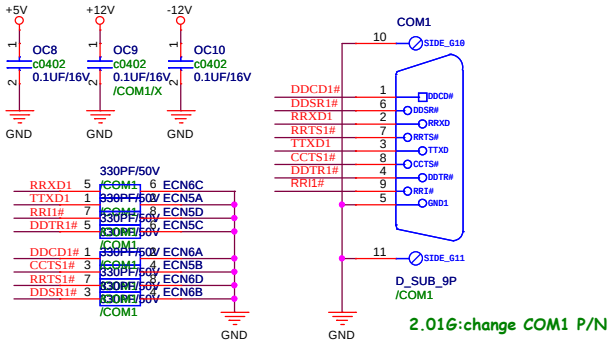
LPT



FLOPPY

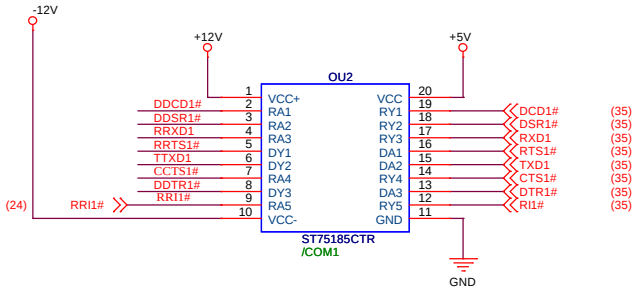


COM1



2.01G:change COM1 P/N

1.00 For EMI

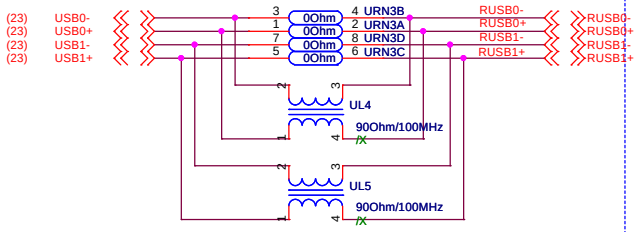


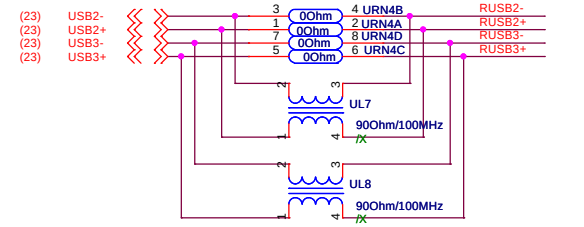
<Variant Name>

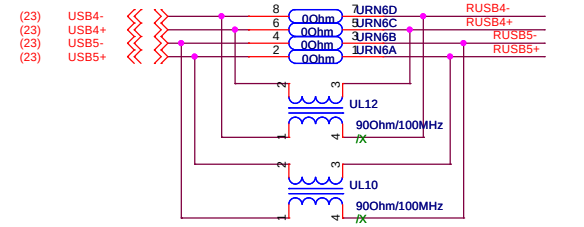
ASUSTek Computer Inc.	Title : LPT&COM&FDD	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 32 of 47	

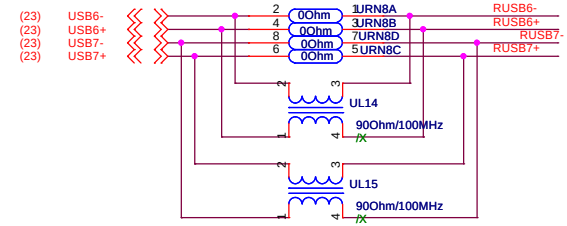
Part number:04G521011011

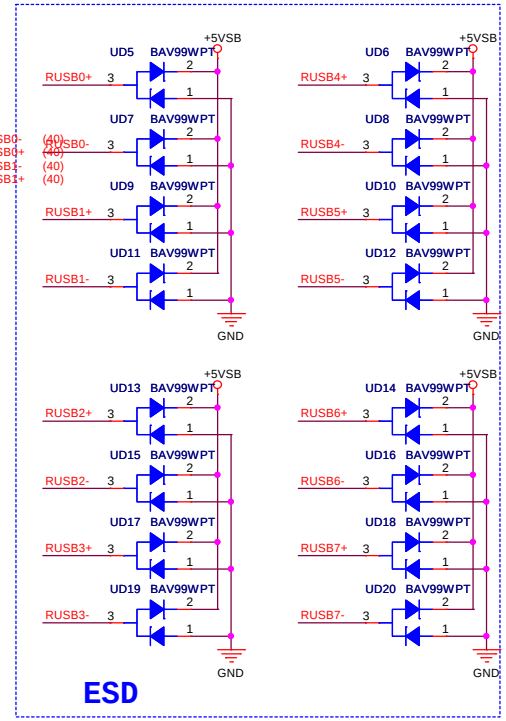
Need 3.9ohm resistors?

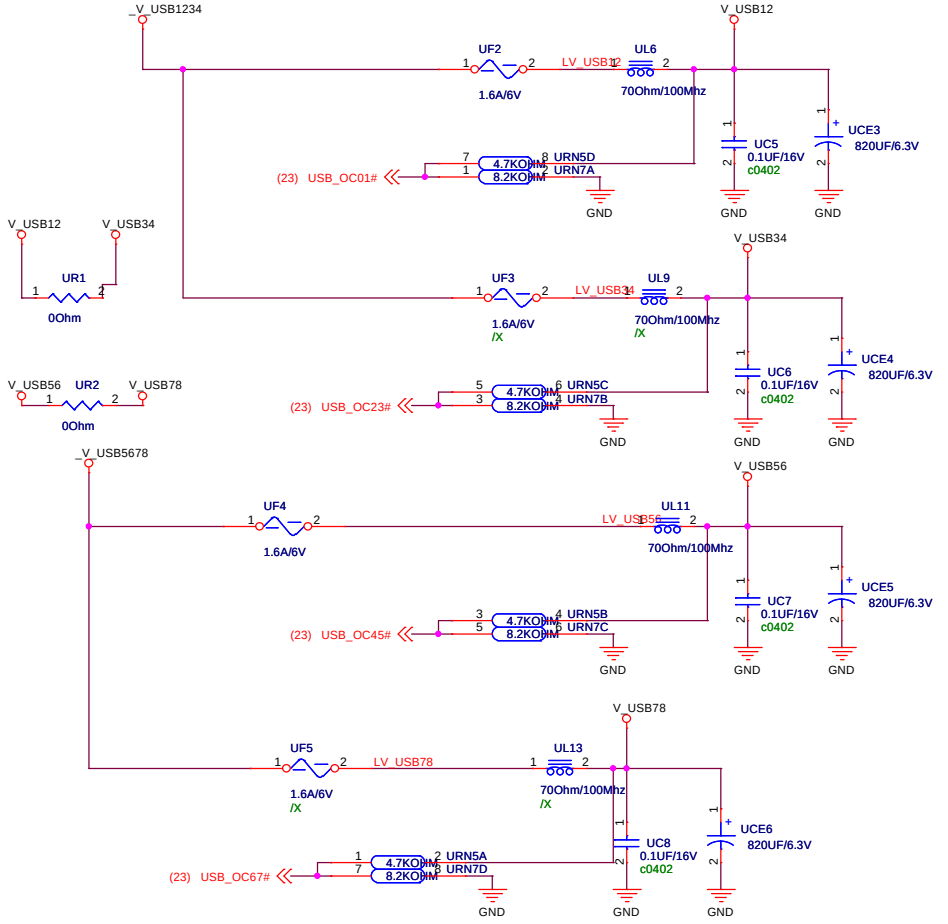


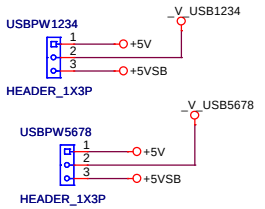




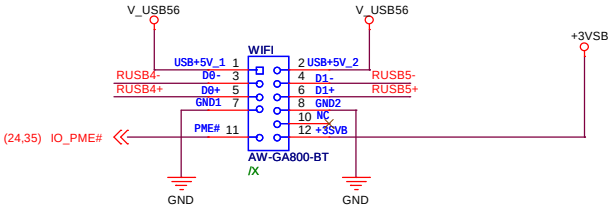


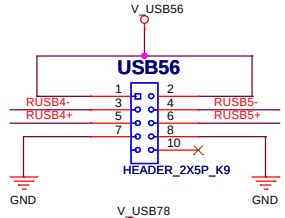


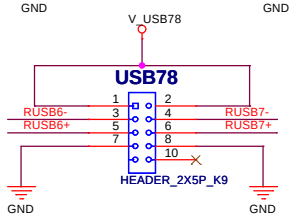




WIFI-G



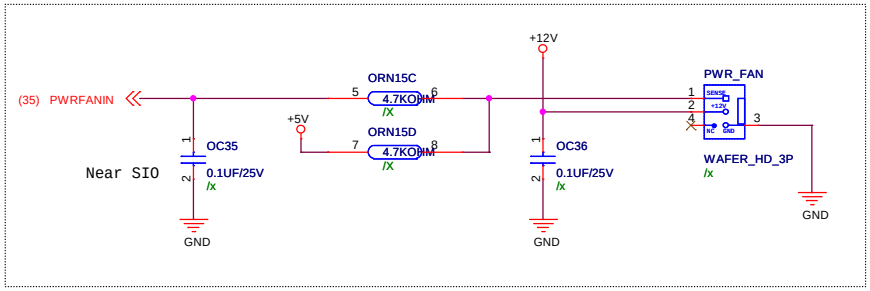


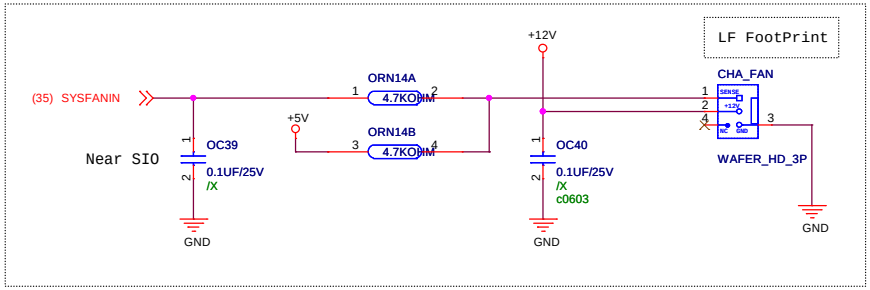


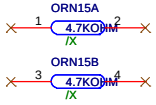
<Variant Name>

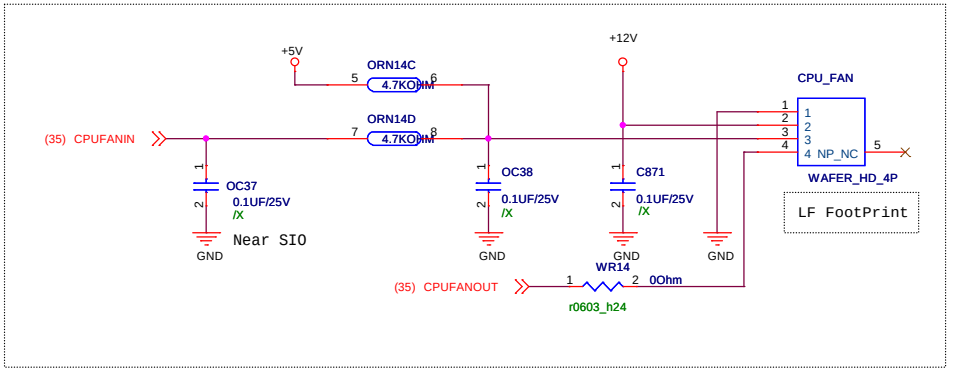
ASUSTek Computer Inc.	Title : USB	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 33 of 47	

04G521011011



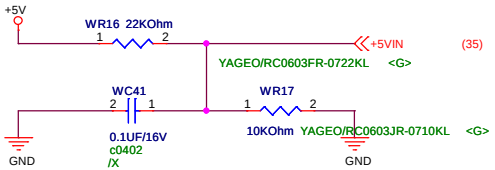


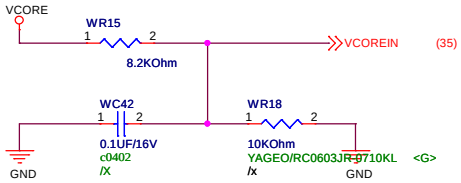




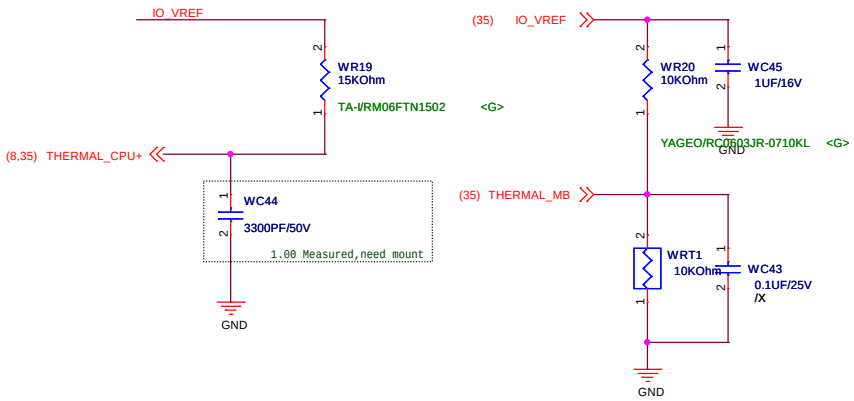
Pin Number	Signal
1	Ground
2	+12V
3	Sense
4	Control

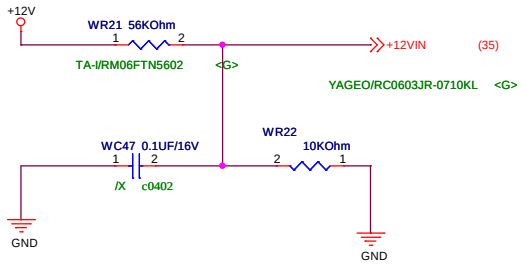
Requirement	Value
Peak fan current draw	1.5A
Average fan current draw	1.1A
Fan start-up current draw	2.2A
Fan start-up current draw maximum duration	1.0 second
Fan header voltage	12V ± 10%





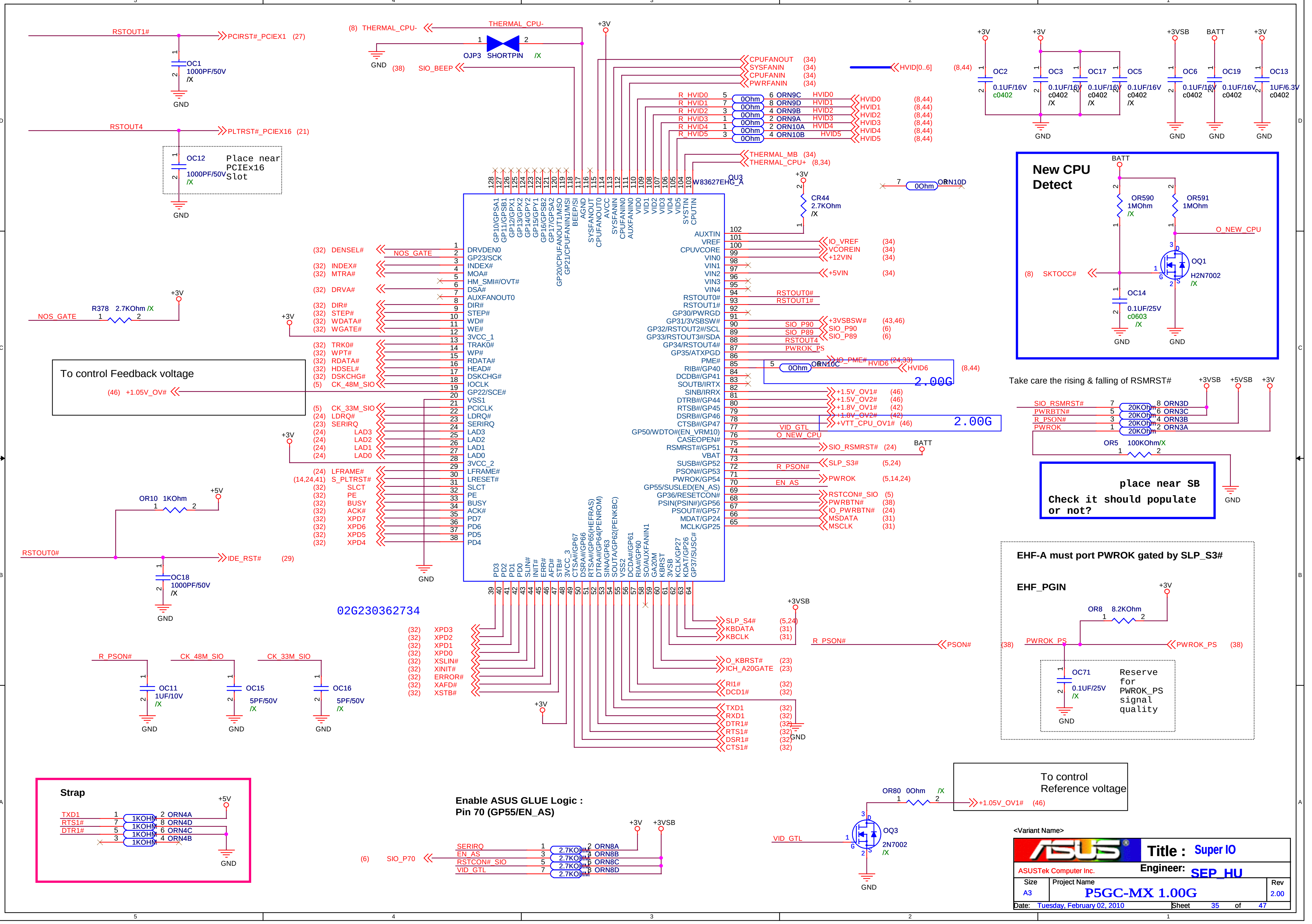
Hardward Mointor



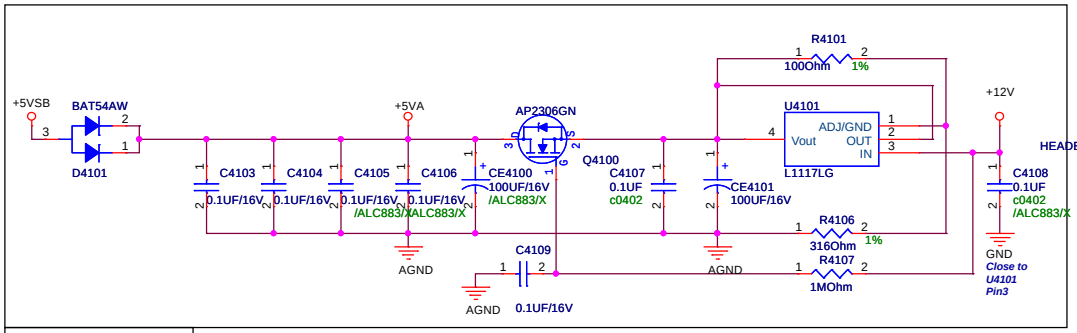


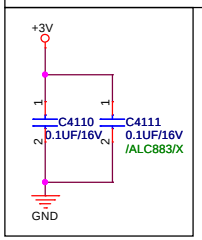
<Variant Name>

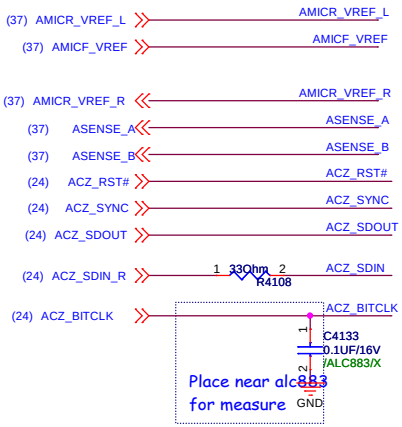
ASUSTek Computer Inc.	Title : FAN Control&H/W mointor	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 34 of 47	

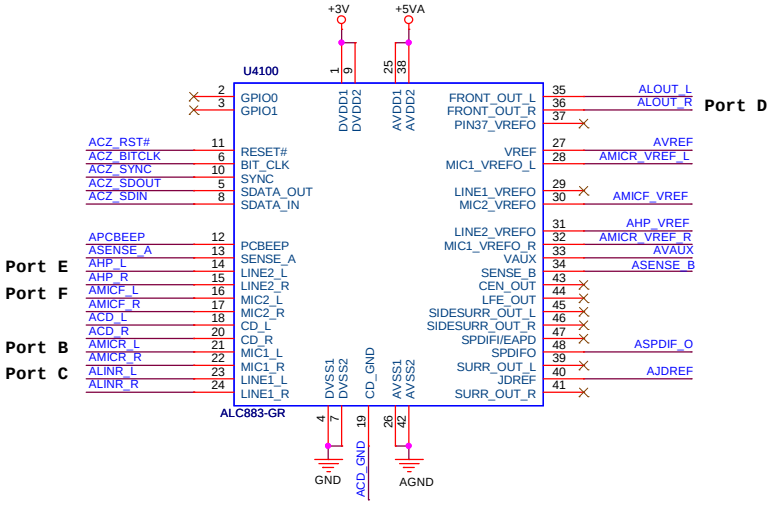

RSTOUT1#
PCIRST#_PCIEX1 (27)
OC1 1000PF/50V /X
RSTOUT4
PLTRST#_PCIEX16 (21)
OC12 1000PF/50V /X
Place near PCIEx16 Slot
(8) THERMAL_CPU-
THERMAL_CPU-
OJP3 SHORTPIN /X
(38) SIO_BEEP
CPUFANOUT (34)
SYSFANIN (34)
CPUFANIN (34)
PWRFANIN (34)
HVID[0..6] (8,44)
THERMAL_MB (34)
THERMAL_CPU+ (8,34)
W83627EHG_A
QU3
R378 2.7KOhm /X
NOS_GATE
To control Feedback voltage
(46) +1.05V_OV#
New CPU Detect
OR590 1MOhm /X
OR591 1MOhm
OQ1 H2N7002 /X
(8) SKTOCC#
O_NEW_CPU
OC14 0.1UF/25V c0603 /X
Take care the rising & falling of RSMRST#
SIO_RSMRST#
PWRBTN#
R_PSON#
PWROK
OR5 100KOhm/X
place near SB
Check it should populate or not?
EHF-A must port PWROK gated by SLP_S3#
EHF_PGIN
OR8 8.2KOhm
PWROK_PS
OC71 0.1UF/25V /X
Reserve for PWROK_PS signal quality
OR10 1KOhm
RSTOUT0#
IDE_RST# (29)
OC18 1000PF/50V /X
02G230362734
OC11 1UF/10V /X
OC15 5PF/50V /X
OC16 5PF/50V /X
Strap
TXD1 RTS1# DTR1#
ORN4A ORN4D ORN4C ORN4B 1KOHM
Enable ASUS GLUE Logic :
Pin 70 (GP55/EN_AS)
(6) SIO_P70
SERIRQ EN_AS RSTCON#_SIO VID_GTL
ORN8A ORN8B ORN8C ORN8D 2.7KOhm
OR80 0Ohm /X
To control Reference voltage
+1.05V_OV1# (46)
OQ3 2N7002 /X
VID_GTL
<Variant Name>
ASUSTek Computer Inc.
Title : Super IO
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
Sheet 35 of 47

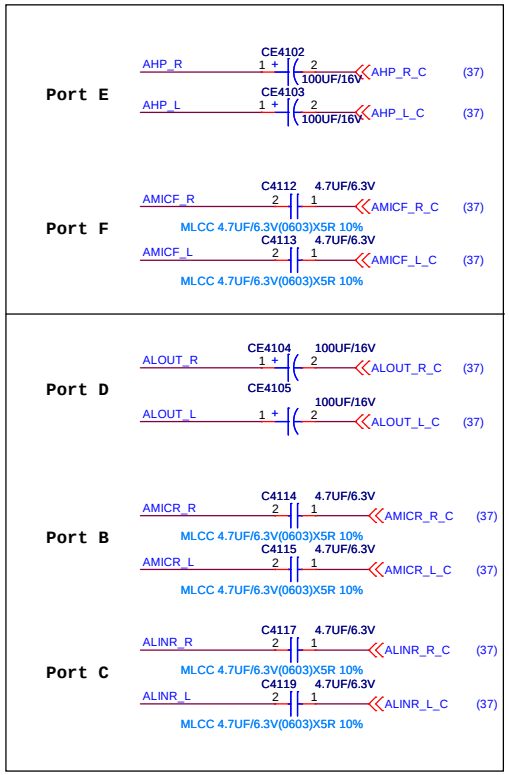
SPDIF_OUT

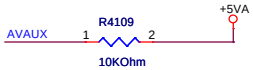


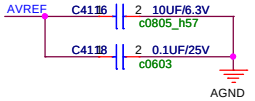


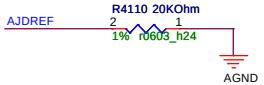


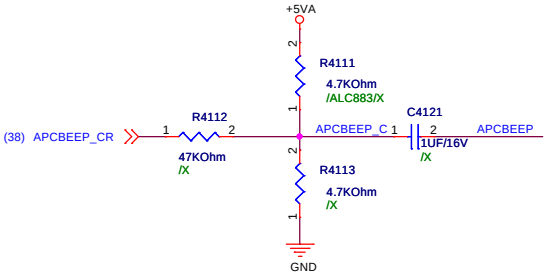


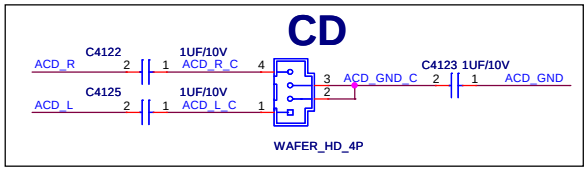






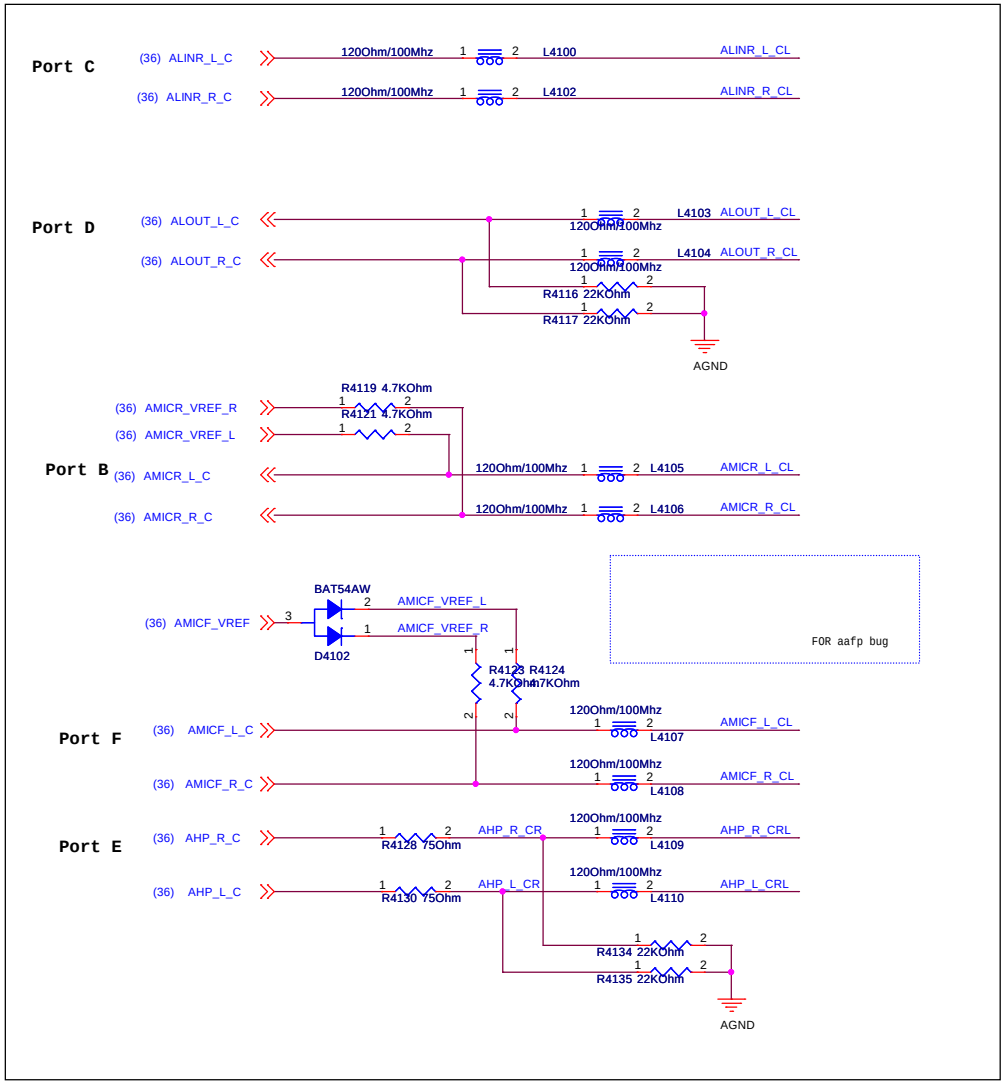


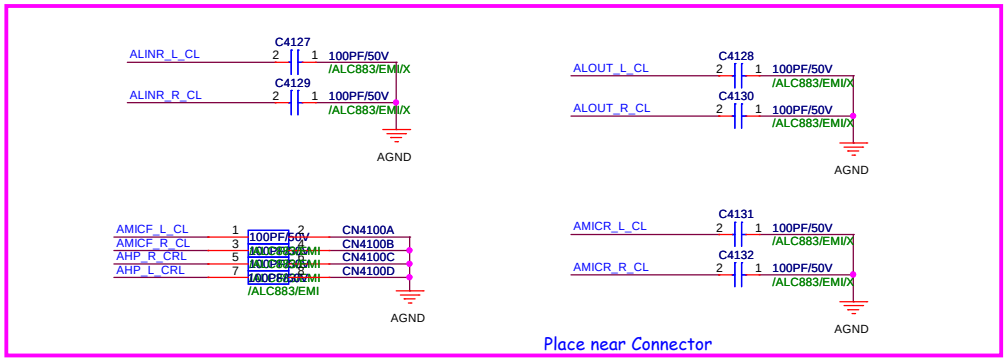


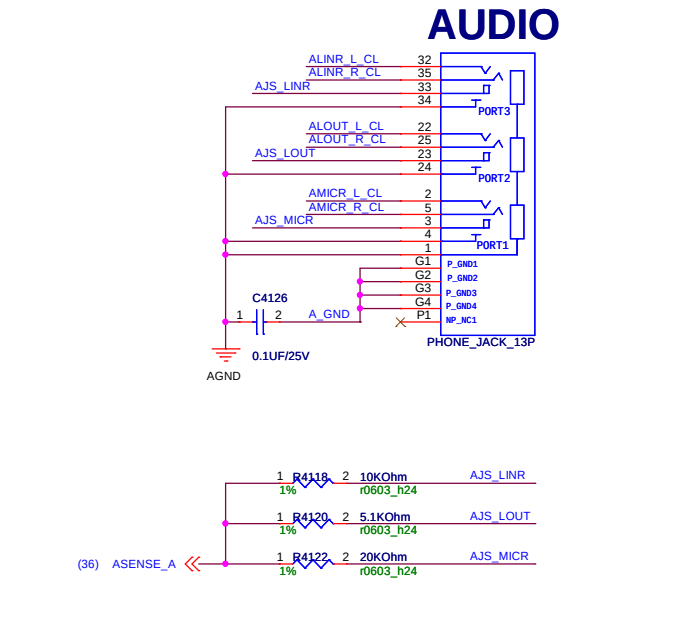


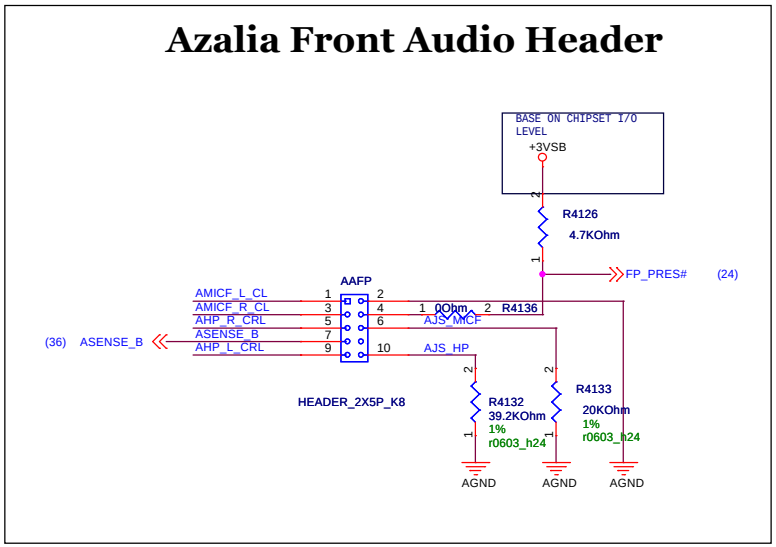
<variant_name>

ASUSTek Computer Inc.	Title : AUDIO	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 36 of 47	









<variant_name>

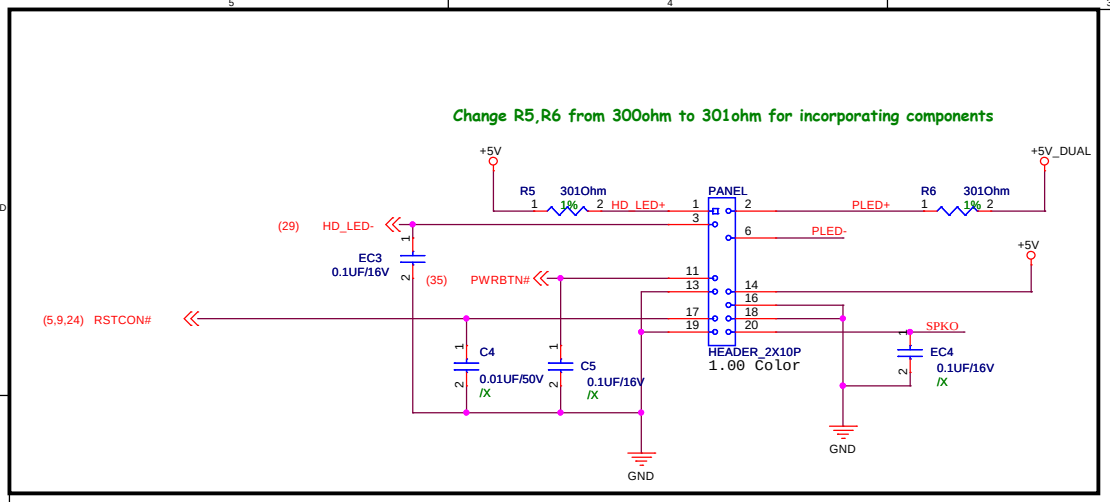
ASUSTek Computer Inc.

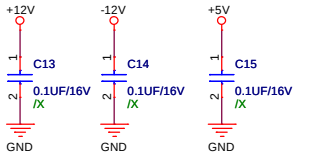
Title : AUDIO-1*

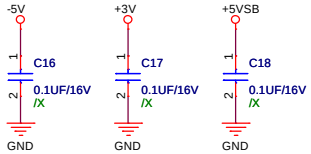
Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

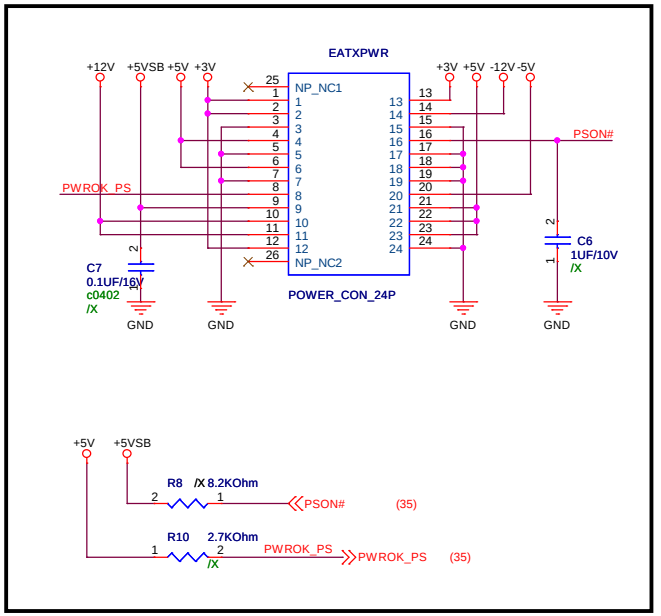
Date: Tuesday, February 02, 2010 Sheet 37 of 47

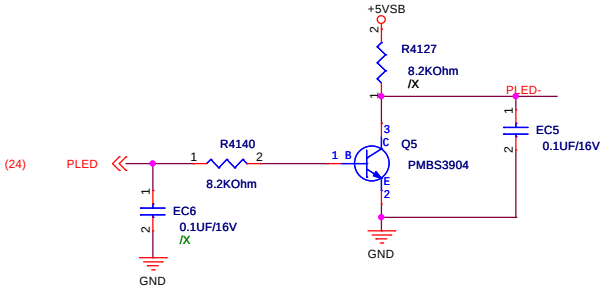




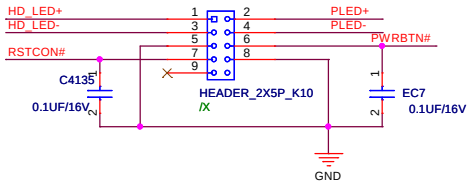


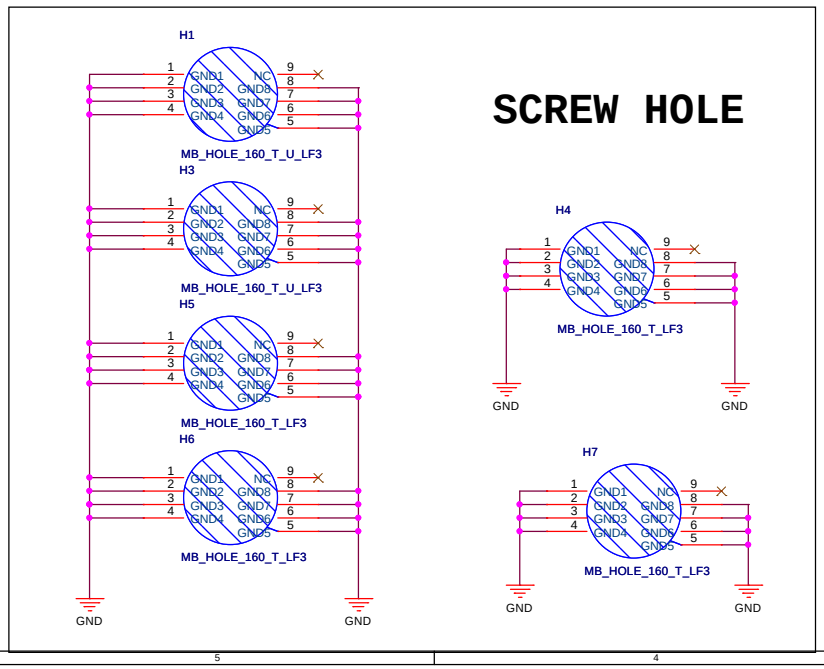
ATX Connector (24 pin)





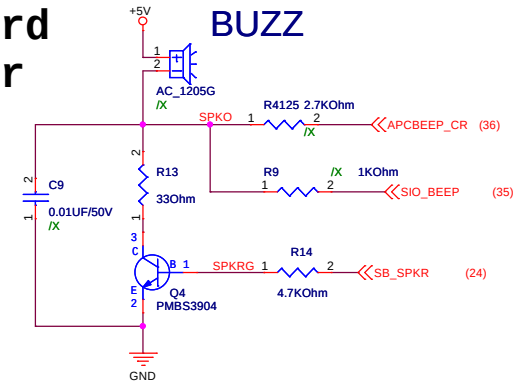
F_PANEL



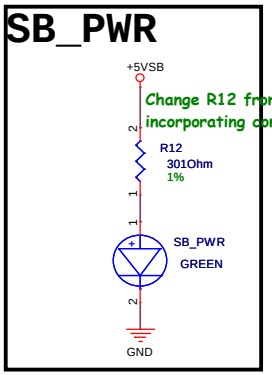


SCREW HOLE

OnBoard Buzzer



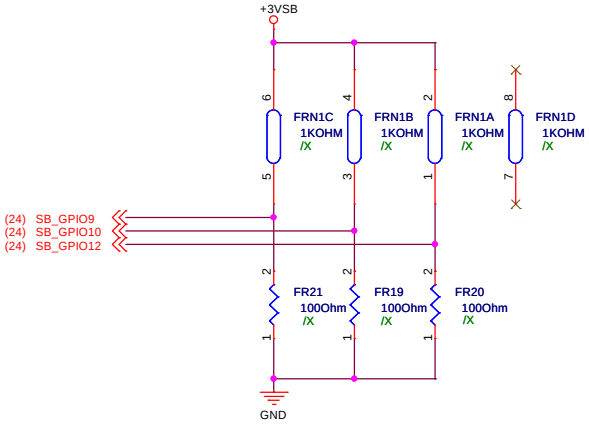
SB_PWR



<Variant Name>

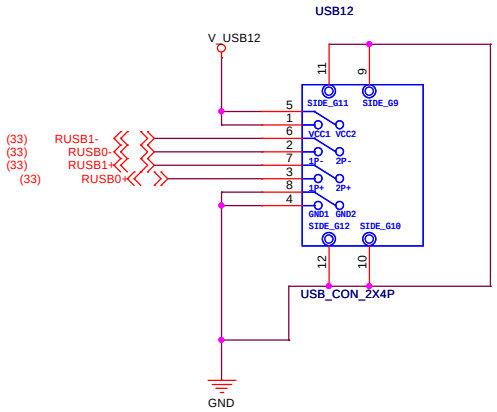
ASUSTek Computer Inc.	Title : Front Panel	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 38 of 47	

1.00 WE# Write Enable



<Variant Name>

ASUSTek Computer Inc.	Title : FWH	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 39 of 47	



<Variant Name>

Title : 1394

ASUSTek Computer Inc.

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

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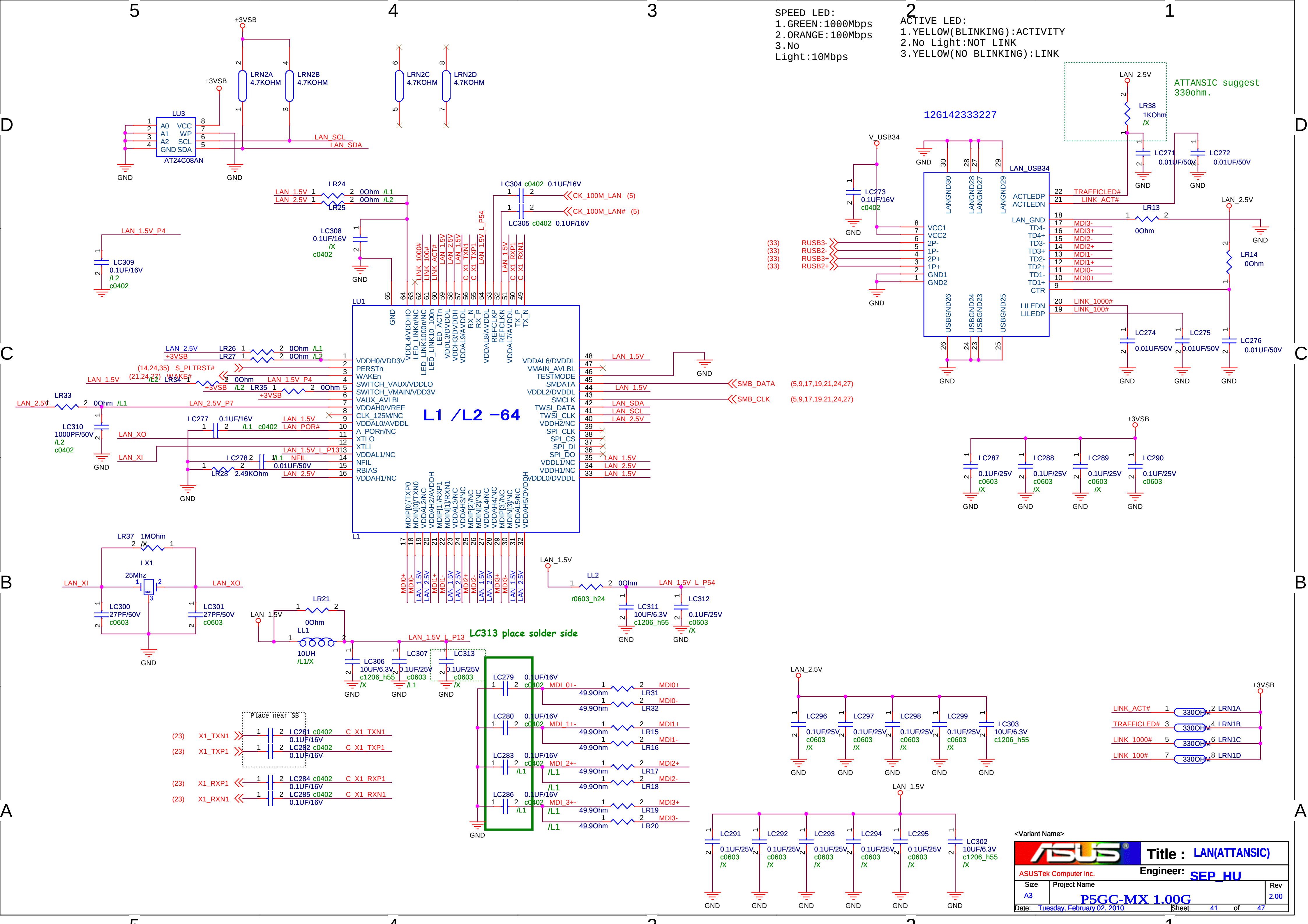

SPEED LED:
1.GREEN:1000Mbps
2.ORANGE:100Mbps
3.No Light:10Mbps
ACTIVE LED:
1.YELLOW(BLINKING):ACTIVITY
2.No Light:NOT LINK
3.YELLOW(NO BLINKING):LINK
ATTANSIC suggest 330ohm.
12G142333227
LU3 AT24C08AN
LRN2A 4.7KOHM
LRN2B 4.7KOHM
LRN2C 4.7KOHM
LRN2D 4.7KOHM
LAN_SCL
LAN_SDA
+3VSB
GND
LU1
L1 /L2 -64
LAN_USB34
V_USB34
LAN_2.5V
LAN_1.5V
LAN_1.5V_P4
LAN_1.5V_L_P54
LAN_1.5V_L_P13
SMB_DATA (5,9,17,19,21,24,27)
SMB_CLK (5,9,17,19,21,24,27)
CK_100M_LAN (5)
CK_100M_LAN# (5)
LX1 25Mhz
LAN_XI
LAN_XO
LC313 place solder side
Place near SB
X1_TXN1
X1_TXP1
X1_RXP1
X1_RXN1
TRAFFICLED#
LINK_ACT#
LINK_1000#
LINK_100#
RUSB3-
RUSB2-
RUSB3+
RUSB2+
<Variant Name>
ASUSTek Computer Inc.
Title : LAN(ATTANSIC)
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
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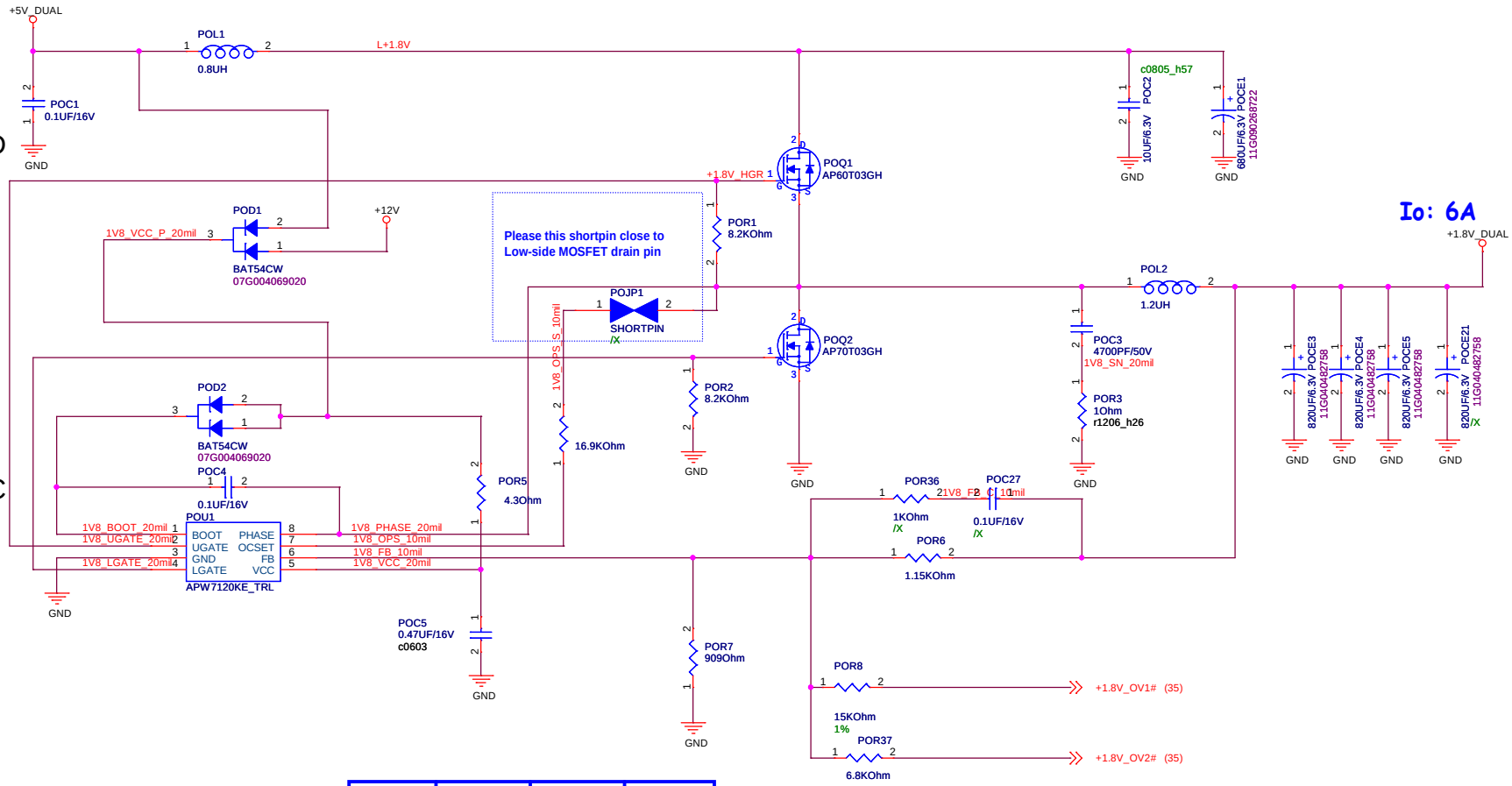
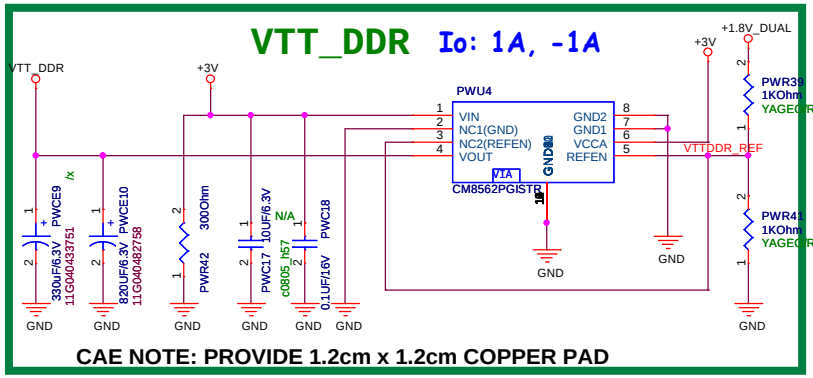


+1.8V_OV3#	+1.8V_OV2#	+1.8V_OV1#	+1.8V_DUAL
1	1	1	+1.812V
1	1	0	+1.85V
1	0	1	+1.904V
1	0	0	+1.942V
0	1	1	+1.992V
0	1	0	+2.030V
0	0	1	+2.084V
0	0	0	+2.122V



CAE NOTE: PROVIDE 1.2cm x 1.2cm COPPER PAD

FOR DPAK(TO252) LET Tja OF 20C/W FOR 1.2A ON DDR VTT

<Variant Name>

ASUSTek Computer Inc.

Title : +1.8V_DUAL&VTT_DDR

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

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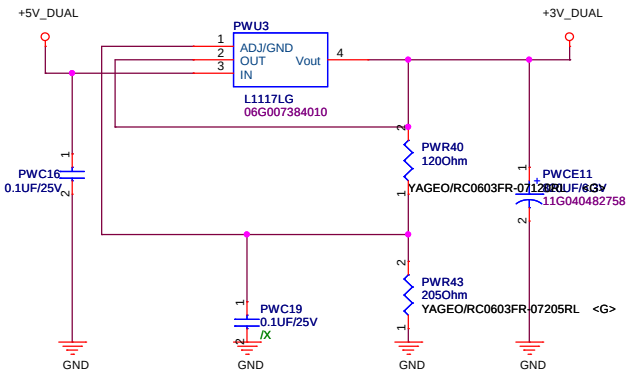
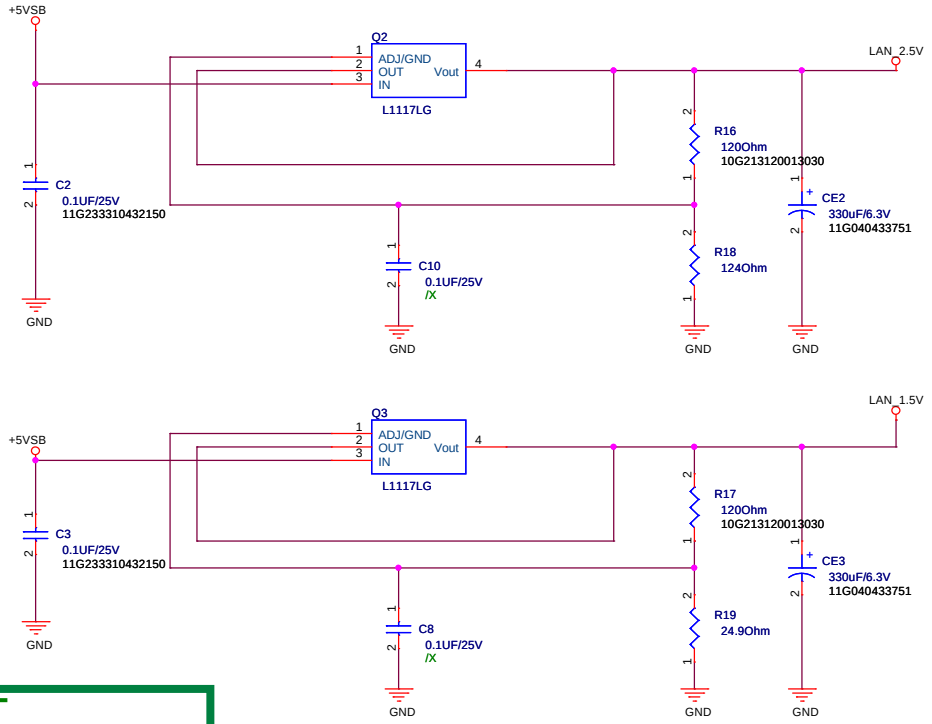
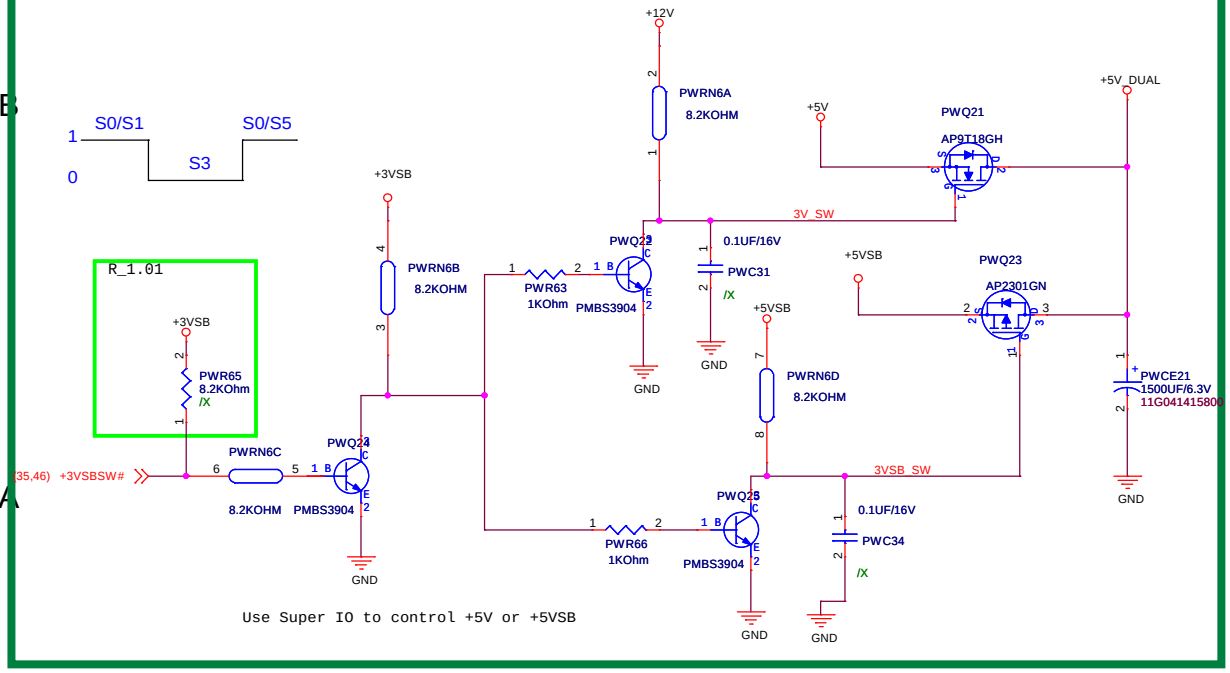
+5V_Dual ===>+3V_Dual for Clock gen



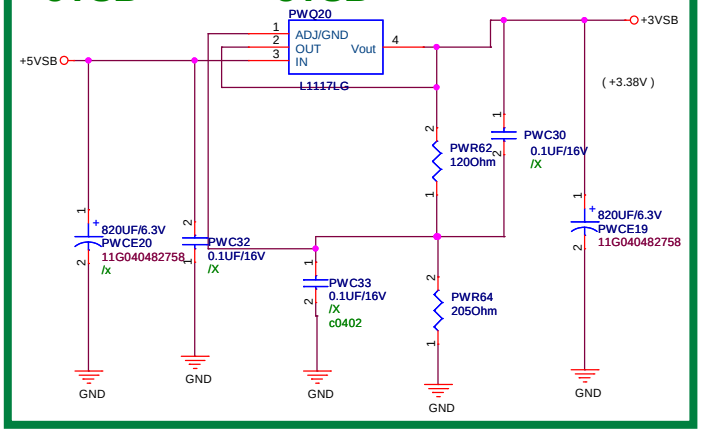
+5VSB ===>LAN_2.5V /0.3A



+5V_DUAL VOLTAGE SWITCH & POWER CIRCUIT



+5VSB ====>+3VSB Io: 2A



<Variant Name>

ASUSTek Computer Inc.

Title : 3V_DYAL&+3VSB&+5VDUAL&LAN

Engineer: SEP_HU

Size	Project Name	Rev
A3	P5GC-MX 1.00G	2.00

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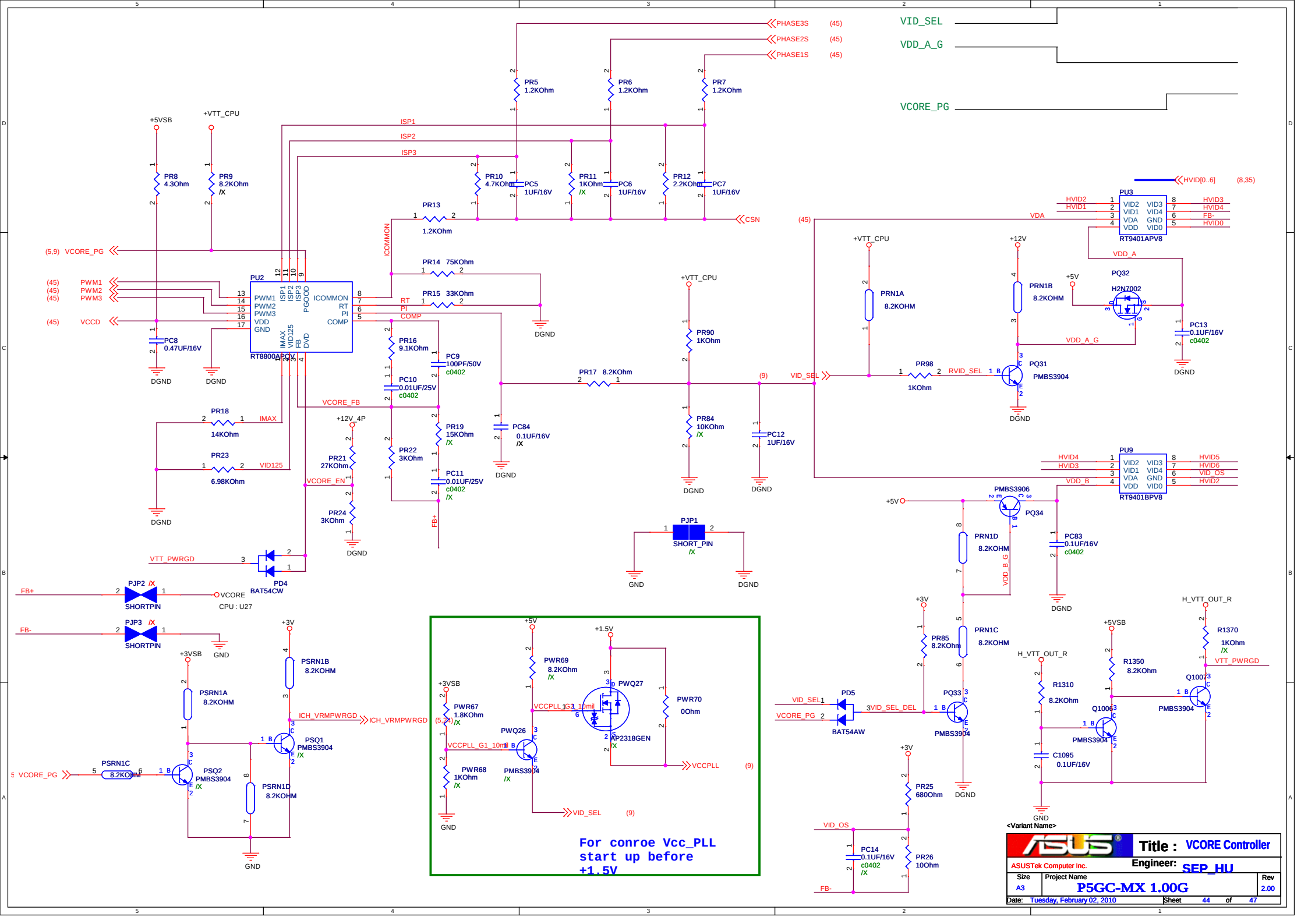
VID_SEL
VDD_A_G
VCORE_PG
PHASE3S (45)
PHASE2S (45)
PHASE1S (45)
PR5 1.2KOhm
PR6 1.2KOhm
PR7 1.2KOhm
ISP1
ISP2
ISP3
PR10 4.7KOhm
PC5 1UF/16V
PR11 1KOhm /X
PC6 1UF/16V
PR12 2.2KOhm
PC7 1UF/16V
CSN
PR13 1.2KOhm
ICOMMON
PR14 75KOhm
PR15 33KOhm
RT
PI
COMP
+5VSB
+VTT_CPU
PR8 4.3Ohm
PR9 8.2KOhm /X
(5,9) VCORE_PG
(45) PWM1
(45) PWM2
(45) PWM3
(45) VCCD
PU2
PWM1
PWM2
PWM3
VDD
GND
ISP1
ISP2
ISP3
PGOOD
ICOMMON
RT
PI
COMP
IMAX
VID125
FB
DVD
RT8800APQV
PC8 0.47UF/16V
DGND
PR16 9.1KOhm
PC9 100PF/50V c0402
PC10 0.01UF/25V c0402
VCORE_FB
PR18 14KOhm
IMAX
PR23 6.98KOhm
VID125
+12V_4P
PR21 27KOhm
VCORE_EN
PR24 3KOhm
PR19 15KOhm /X
PR22 3KOhm
PC11 0.01UF/25V c0402 /X
PC84 0.1UF/16V /X
FB+
PR17 8.2KOhm
PR90 1KOhm
PR84 10KOhm /X
PC12 1UF/16V
(9) VID_SEL
PJP1
SHORT_PIN /X
GND
VTT_PWRGD
PD4 BAT54CW
PJP2 /X SHORTPIN
VCORE
CPU : U27
FB-
PJP3 /X SHORTPIN
+3VSB
PSRN1A 8.2KOHM
PSRN1B 8.2KOHM
PSRN1C 8.2KOHM
PSRN1D 8.2KOHM
ICH_VRMPWRGD
PSQ1 PMBS3904 /X
PSQ2 PMBS3904 /X
PWR67 1.8KOhm /X
PWR68 1KOhm /X
PWR69 8.2KOhm /X
PWQ26
PWQ27
AP2318GEN /X
PWR70 0Ohm
VCCPLL_G1_10mil
VCCPLL (9)
VID_SEL (9)
+1.5V
For conroe Vcc_PLL start up before +1.5V
(45) VDA
HVID[0..6] (8,35)
PU3
RT9401APV8
HVID2
HVID1
VID2
VID1
VDA
VDD
VID3
VID4
GND
VID0
HVID3
HVID4
FB-
HVID0
VDD_A
PQ32 H2N7002
PRN1A 8.2KOHM
PRN1B 8.2KOHM
+12V
PC13 0.1UF/16V c0402
PR98 1KOhm
RVID_SEL
PQ31 PMBS3904
PU9
RT9401BPV8
HVID4
HVID3
VID2
VID1
VDA
VDD
VID3
VID4
GND
VID0
HVID5
HVID6
VID_OS
HVID2
VDD_B
PMBS3906
PQ34
PRN1D 8.2KOHM
VDD_B_G
PC83 0.1UF/16V c0402
PRN1C 8.2KOHM
PR85 8.2KOhm
VID_SEL1
VCORE_PG 2
PD5 BAT54AW
3VID_SEL_DEL
PQ33 PMBS3904
PR25 680Ohm
PC14 0.1UF/16V c0402 /X
PR26 10Ohm
VID_OS
FB-
H_VTT_OUT_R
R1370 1KOhm /X
VTT_PWRGD
R1350 8.2KOhm
R1310 8.2KOhm
Q10073 PMBS3904
Q10063 PMBS3904
C1095 0.1UF/16V
<Variant Name>
Title : VCORE Controller
ASUSTek Computer Inc.
Engineer: SEP_HU
Size A3
Project Name P5GC-MX 1.00G
Rev 2.00
Date: Tuesday, February 02, 2010
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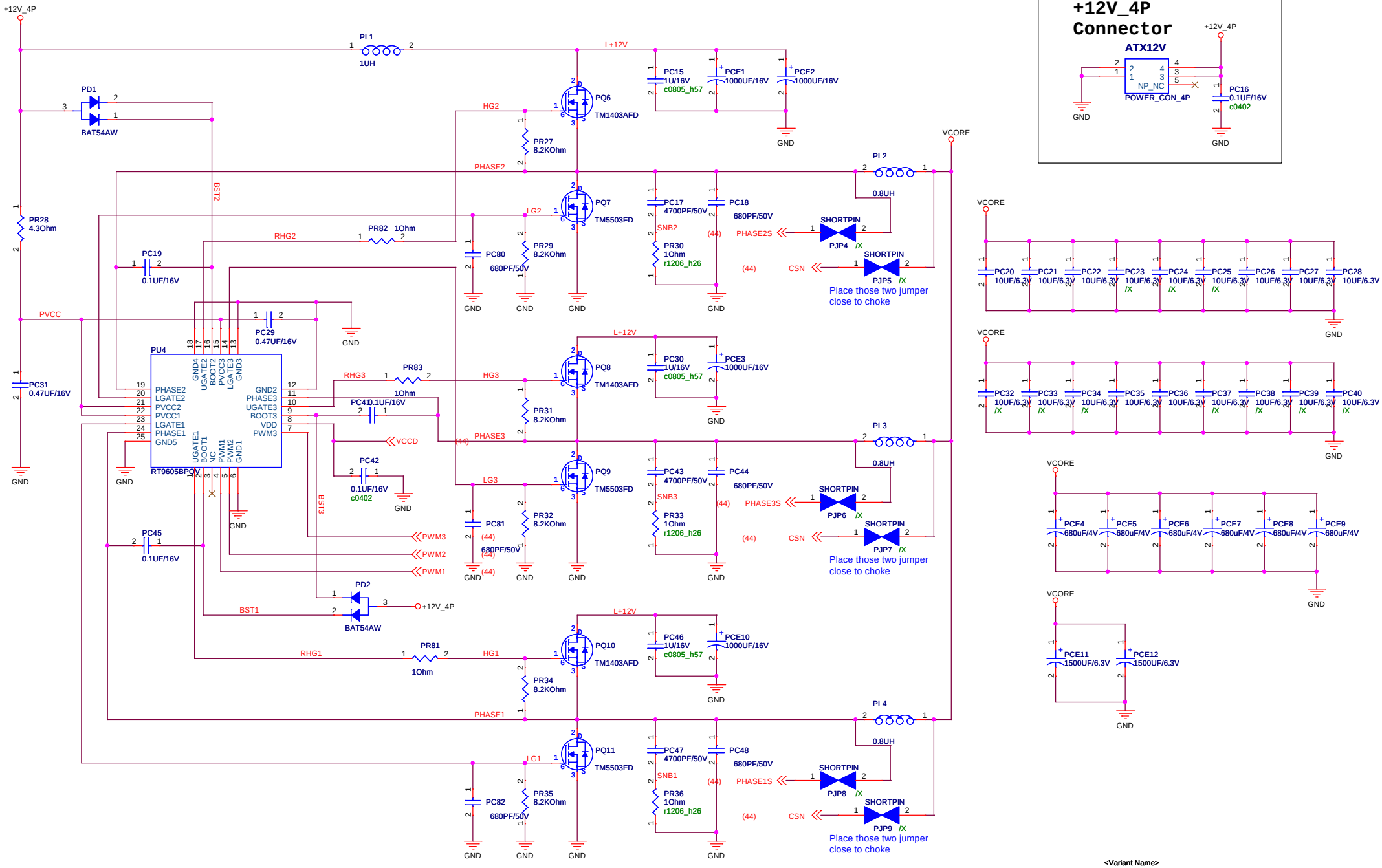
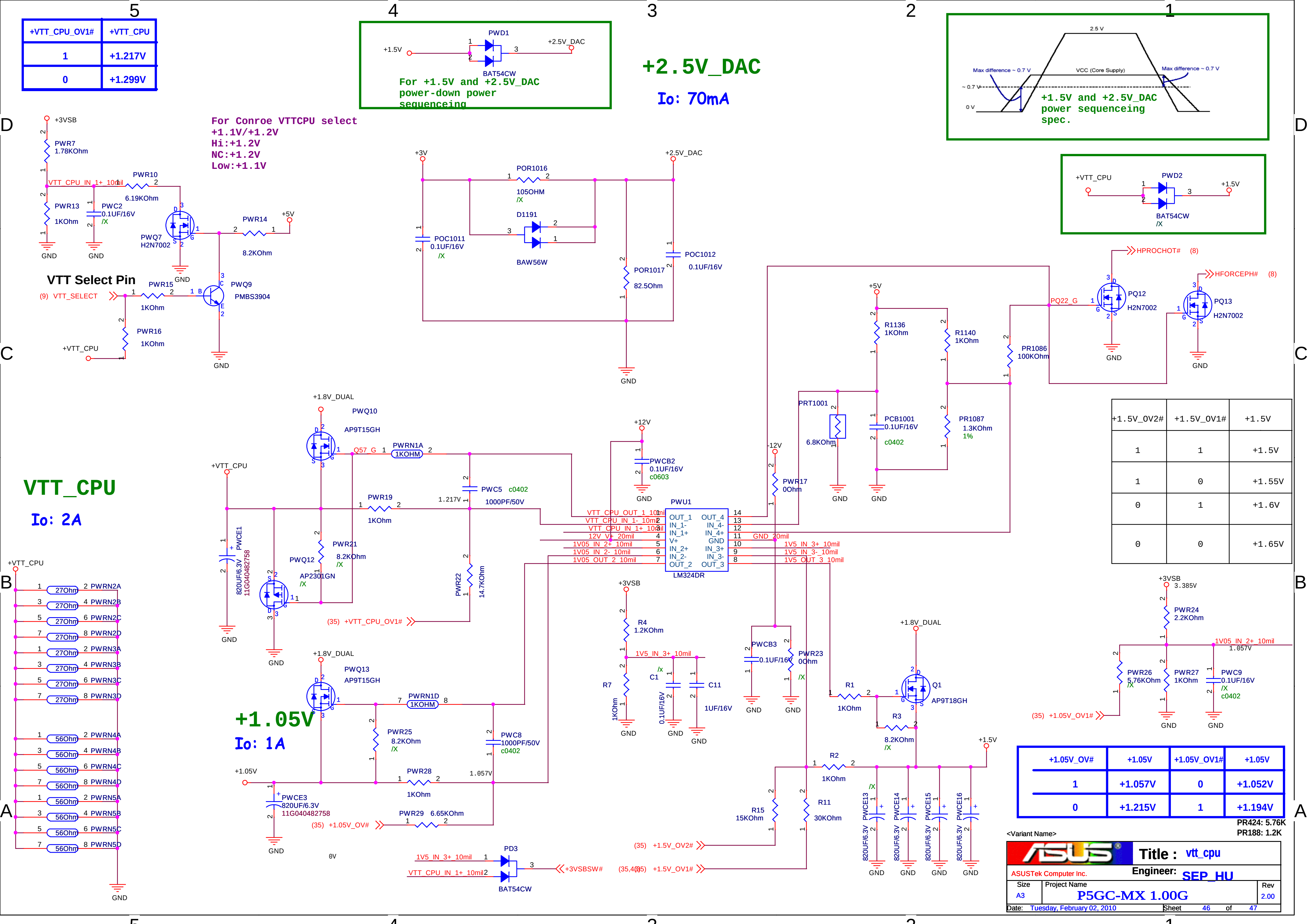


<Variant Name>

ASUSTek Computer Inc.	Title : Vcor Driver	
	Engineer: SEP_HU	
Size: A3	Project Name: P5GC-MX 1.00G	Rev: 2.00
Date: Tuesday, February 02, 2010	Sheet 45 of 47	



For +1.5V and +2.5V_DAC power-down power sequenceing
PWD1
BAT54CW
+1.5V
+2.5V_DAC
+2.5V_DAC
Io: 70mA
+1.5V and +2.5V_DAC power sequenceing spec.
2.5 V
VCC (Core Supply)
Max difference ~ 0.7 V
~ 0.7 V
0 V
For Conroe VTTCPU select
+1.1V/+1.2V
Hi:+1.2V
NC:+1.2V
Low:+1.1V
VTT Select Pin
(9) VTT_SELECT
+3VSB
PWR7 1.78KOhm
PWR13 1KOhm
PWC2 0.1UF/16V
PWR10 6.19KOhm
PWQ7 H2N7002
PWR14 8.2KOhm
+5V
PWR15 1KOhm
PWQ9 PMBS3904
PWR16 1KOhm
+VTT_CPU
GND
+3V
POR1016 105OHM
D1191 BAW56W
POC1011 0.1UF/16V
POR1017 82.5Ohm
POC1012 0.1UF/16V
+VTT_CPU
PWD2
BAT54CW
HPROCHOT# (8)
HFORCEPH# (8)
PQ12 H2N7002
PQ13 H2N7002
PR1086 100KOhm
R1136 1KOhm
R1140 1KOhm
PRT1001 6.8KOhm
PCB1001 0.1UF/16V c0402
PR1087 1.3KOhm 1%
VTT_CPU
Io: 2A
+1.8V_DUAL
PWQ10 AP9T15GH
PWRN1A 1KOHM
PWC5 c0402 1000PF/50V
PWR19 1KOhm
PWR21 8.2KOhm
PWQ12 AP2301GN
PWCE1 820UF/6.3V 11G040482758
PWR22 14.7KOhm
(35) +VTT_CPU_OV1#
+12V
PWCB2 0.1UF/16V c0603
PWU1 LM324DR
OUT_1 IN_1- IN_1+ V+ IN_2+ IN_2- OUT_2
OUT_4 IN_4- IN_4+ GND IN_3+ IN_3- OUT_3
-12V
PWR17 0Ohm
PWR2A–PWR2D 270hm
PWR3A–PWR3D 270hm
PWR4A–PWR4D 560hm
PWR5A–PWR5D 560hm
+1.05V
Io: 1A
PWQ13 AP9T15GH
PWRN1D 1KOHM
PWR25 8.2KOhm
PWC8 1000PF/50V c0402
PWR28 1KOhm
PWCE3 820UF/6.3V 11G040482758
PWR29 6.65KOhm
(35) +1.05V_OV#
+3VSB
R4 1.2KOhm
R7 1KOhm
C1 0.1UF/16V
C11 1UF/16V
PWCB3 0.1UF/16V
PWR23 0Ohm
R1 1KOhm
Q1 AP9T18GH
R3 8.2KOhm
R2 1KOhm
R15 15KOhm
R11 30KOhm
+1.5V
PWCE13 PWCE14 PWCE15 PWCE16 820UF/6.3V
(35) +1.5V_OV2#
(35) +1.5V_OV1#
PD3 BAT54CW
+3VSBSW#
PWR24 2.2KOhm
PWR26 5.76KOhm
PWR27 1KOhm
PWC9 0.1UF/16V c0402
(35) +1.05V_OV1#
PR424: 5.76K
PR188: 1.2K

+VTT_CPU_OV1#	+VTT_CPU
1	+1.217V
0	+1.299V

+1.5V_OV2#	+1.5V_OV1#	+1.5V
1	1	+1.5V
1	0	+1.55V
0	1	+1.6V
0	0	+1.65V

+1.05V_OV#	+1.05V	+1.05V_OV1#	+1.05V
1	+1.057V	0	+1.052V
0	+1.215V	1	+1.194V

<Variant Name>

ASUSTek Computer Inc.

Title : vtt_cpu

Engineer: SEP_HU

Size: A3 | Project Name: P5GC-MX 1.00G | Rev: 2.00

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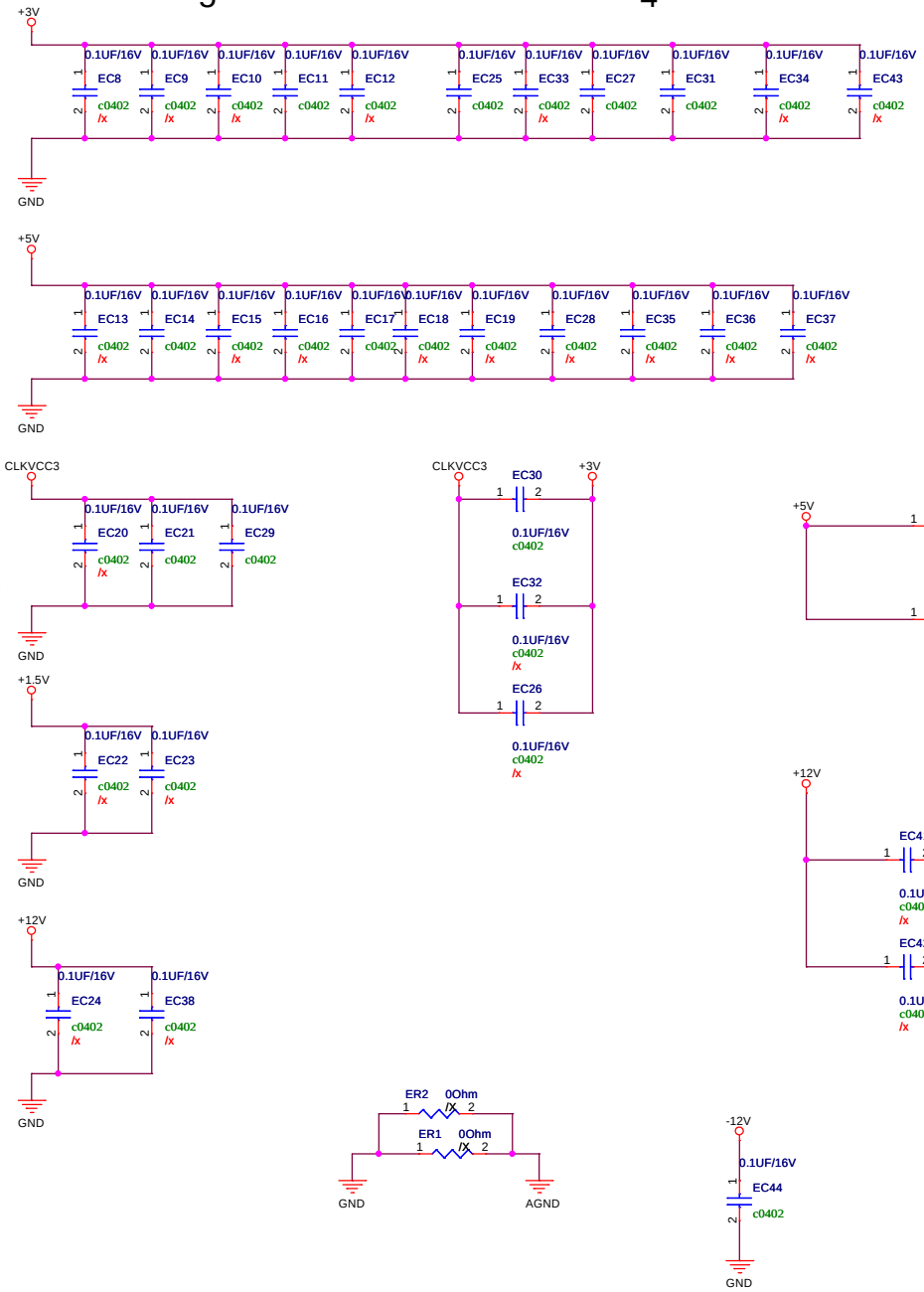
+3V
0.1UF/16V
EC8
EC9
EC10
EC11
EC12
EC25
EC33
EC27
EC31
EC34
EC43
c0402
/x
GND
+5V
EC13
EC14
EC15
EC16
EC17
EC18
EC19
EC28
EC35
EC36
EC37
CLKVCC3
EC20
EC21
EC29
EC30
EC32
EC26
+1.5V
EC22
EC23
+12V
EC24
EC38
EC39
EC40
EC41
EC42
ER2
0Ohm
ER1
AGND
-12V
EC44