

MS-7732 Ver: 1.1 ATX : 304.8 X 205mm

CPU:

INTEL - Sandy Bridge LGA 1155

System Chipset:

INTEL - Cougar Point PCH(H61)

OnBoard Chipset:

HD Audio Codec:RTL887 Co-lay 892

LAN:RTL 8111E 10/100/1000 , Co-lay 8105E 10/100

SIO:FIN71869AD

Flash ROM: 32Mb SPI (PCH)

Main Memory:

DDR3 (1066/1333MHz) * 2 (Dual Channel)

Expansion Slots:

PCI Express (X16) Slot * 1

PCI Express (X1) Slot * 2

PCI Slot * 3

PWM:

Controller:VRD12 UP1625 3Phase

CPU+GPU: UP6282 MOSFET Driver

CPU VTT: IP6103

CPU SA : OP+MOS

DDR: UP6103

PCH: UP6103

ACPI:

UPI

Other:

SATA3.0 x2 (ASM1061)+ SATA2.0 x4 (PCH)

USB2.0 RearX4 Front x4

USB3.0 RearX2

D-SUB *1 DVI*1

TPM Header *1

COM Header *1

LPT Header *1

on BOARD BUZZER

三個BOM:

A.H61 Full Spec(全固)

B.H61 No USB3 & SATA 6G(全固)

C.H61 網吧板(全固)

Title	Page
Cover Sheet	1
Block Diagram	2
CPU-CLK/Control/MISC/PEG	3
CPU-Memory	4
CPU-Power	5
CPU-GND	6
DDR III DIMM 1	7
DDR III DIMM 2	8
CP-PCI/E/DMI/USB/CLK	9
CP-SATA/HOST/FAN/GPIO/VGA	10
CP-SMB/LPC/AUDIO/RTC	11
CP-Strap	12
CP-POWER	13
CP-GND/NVRAM	14
PCIe x16 /x1 /x1	15
ASM PCIe to PCI Bri.	16
PCIx3 Slots	17
VGA/SATA3G	18
SIO-Fintek F71869AD	19
ATX F_Panel/FAN	20
ASM1042-USB 3.0	21
USB Connector	22
ASM1061 SATA-6G	23
LAN - RTL8111E / 8105E	24
ALC892_COLAY_ALC887VD	25
ACPI Controller UPI	26
DDR Power - uP6103 1-Phase	27
PCH Power - uP6103 1-Phase	28
CPU_VTT - uP6103 1-Phase	29
CPU_SA - OP+MOS	30
VRD12 - UPI1625 4+1-Phase	31
UP6282 1-PhaseMOS GPU	32
UP6282 2-Phase+MOS CPU	33
Manual Parts	34
Power Map	35



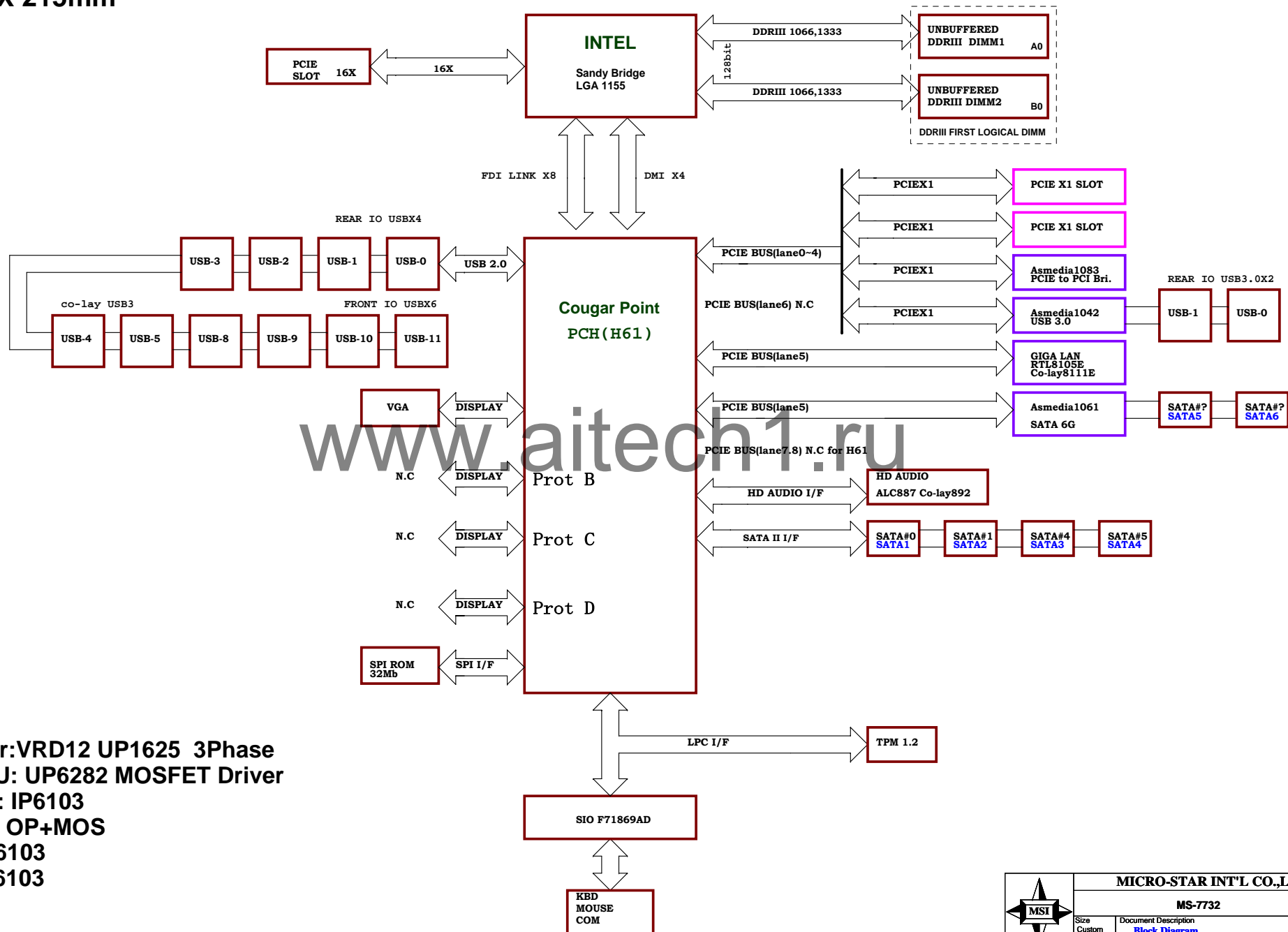
MICRO-STAR INT'L CO.,LTD

MS-7732

Size	Document Description	Rev
Custom	Cover Sheet	1.1
Date: Tuesday, May 17, 2011	Sheet 1 of 37	

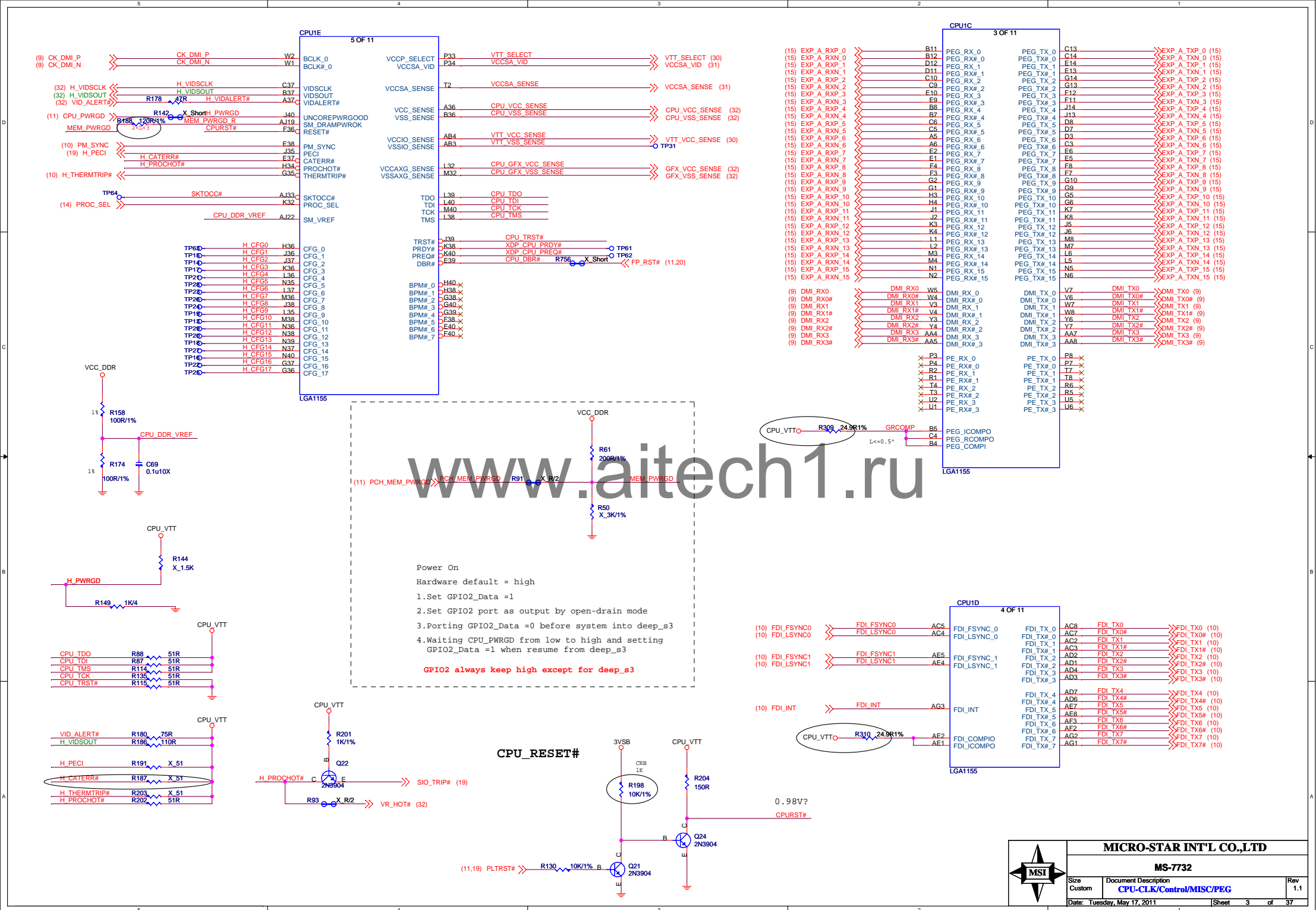
MS-7732 Ver: 1.0

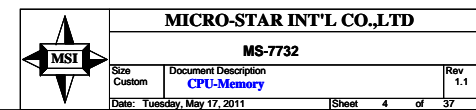
ATX : 305 X 215mm



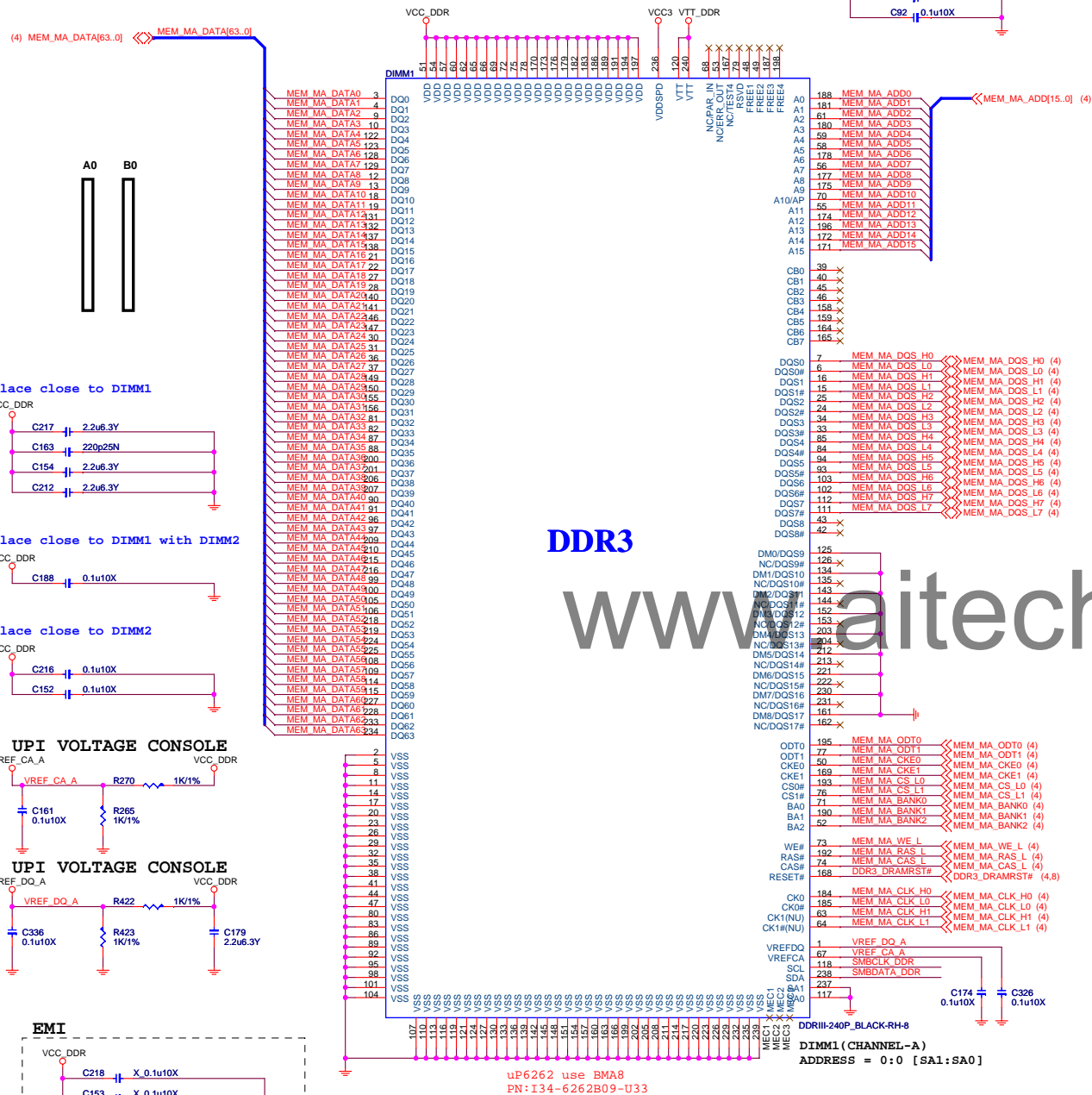
PWM:

Controller:VRD12 UP1625 3Phase
CPU+GPU: UP6282 MOSFET Driver
CPU VTT: IP6103
CPU SA : OP+MOS
DDR: UP6103
PCH: UP6103

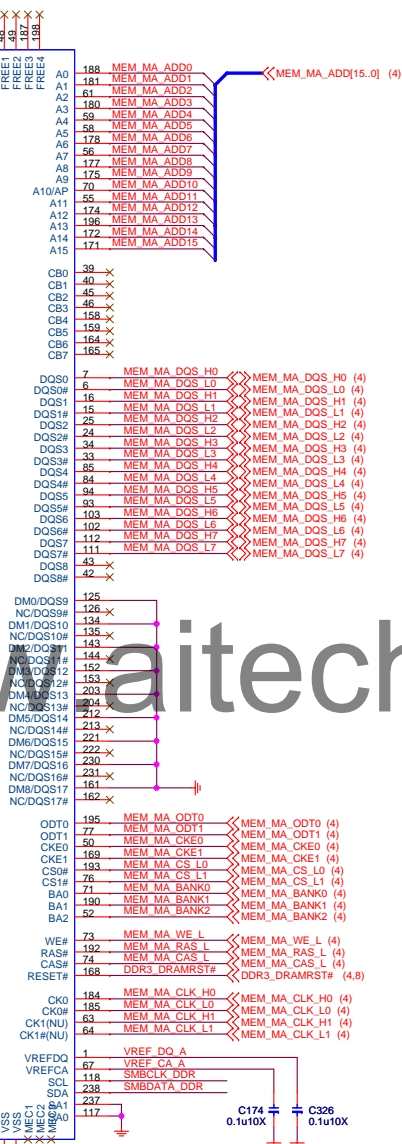
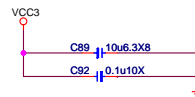




DDRIII DIMM_A0



DDRIII DIMM_A1



uP6262 use BMA8
PN:I34-6262B09-U33



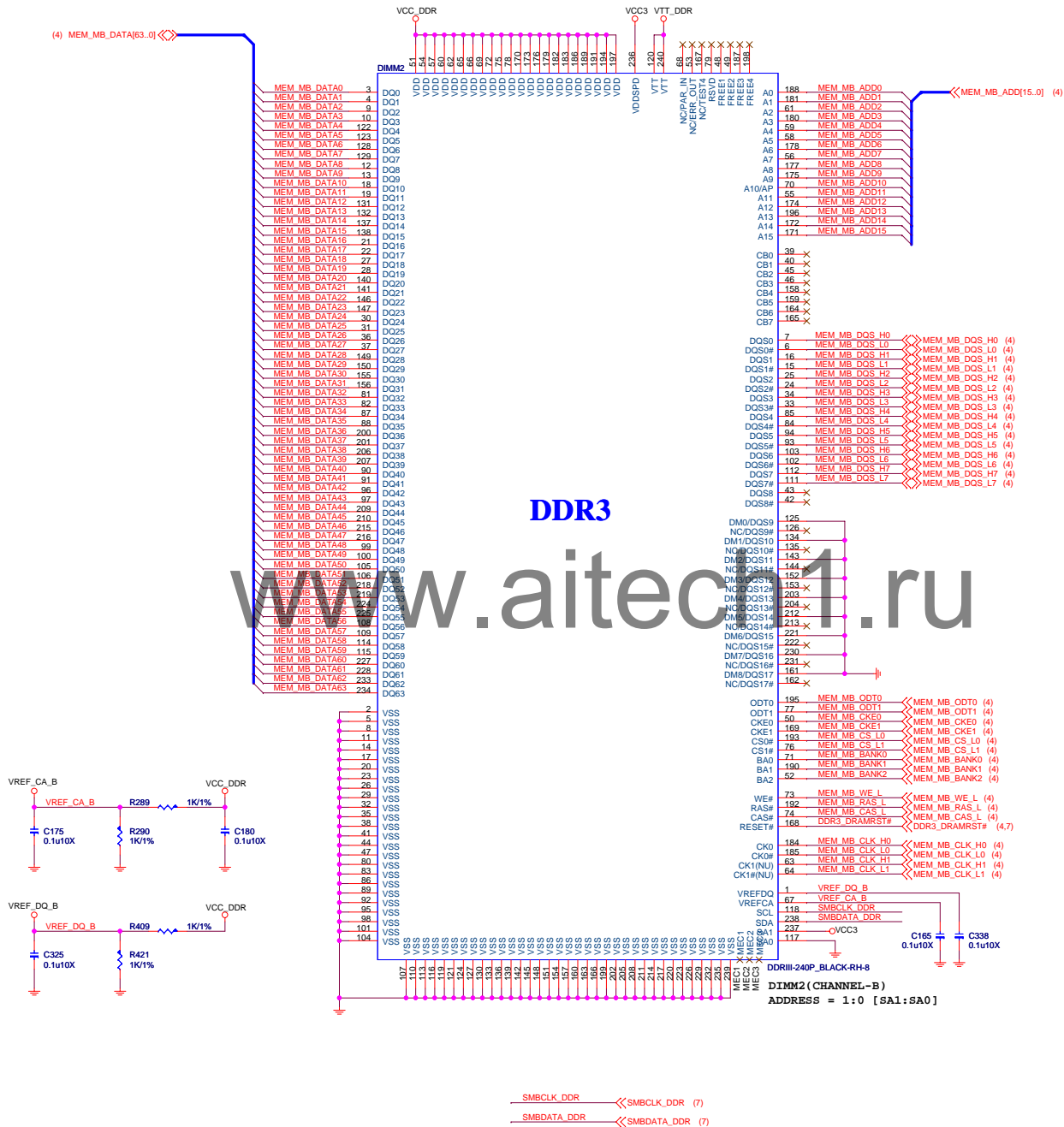
MICRO-STAR INT'L CO.,LTD

MS-7732

Size	Document Description	Rev
Custom	DDR III DIMM 1 / DIMM 2	1.1

Date: Tuesday, May 17, 2011		Sheet	7	of	37
-----------------------------	--	-------	---	----	----

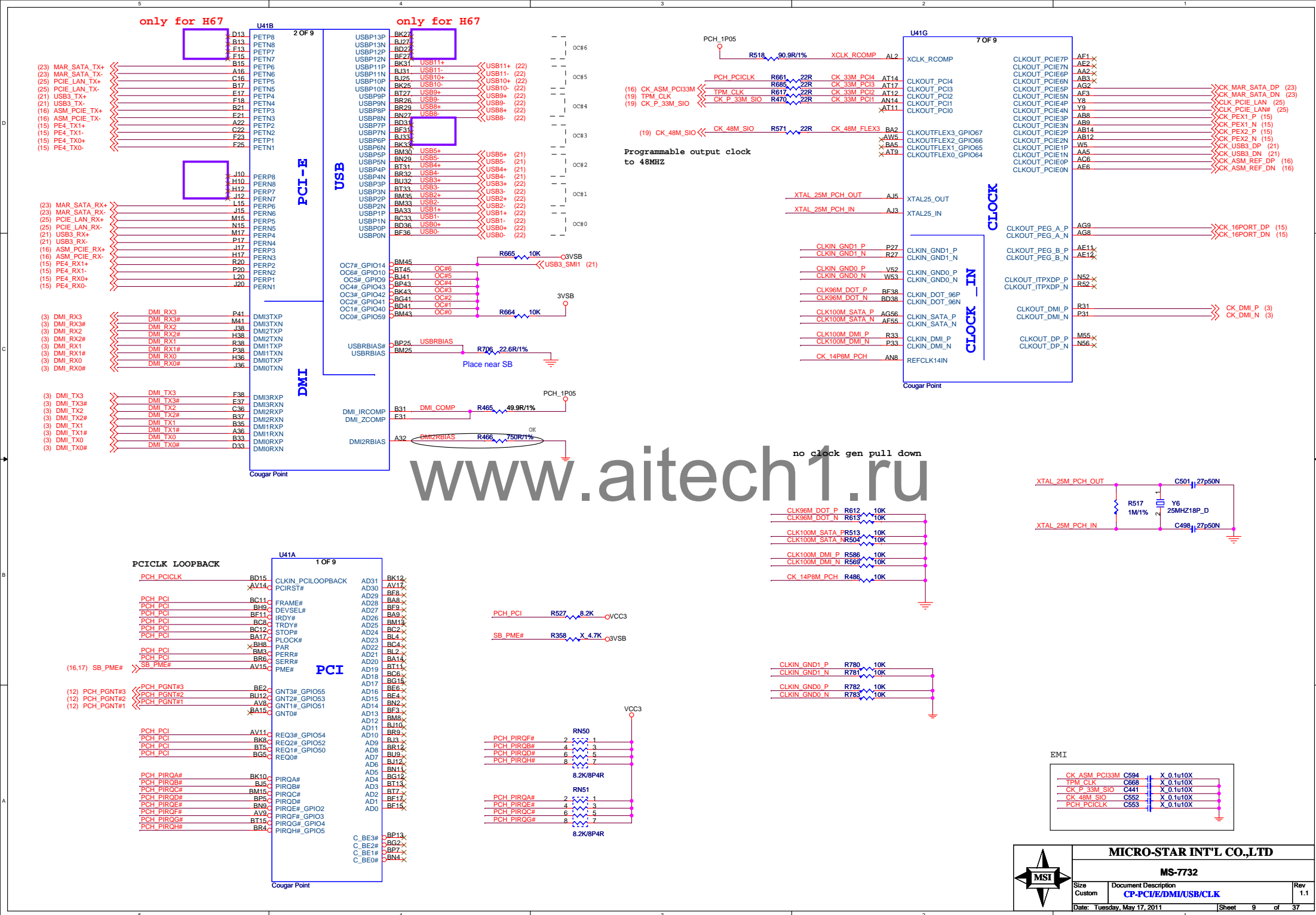
DDRIII DIMM_B0



MICRO-STAR INT'L CO.,LTD

MS-7732

Size Custom	Document Description DDR III DIMM 3 / DIMM 4	Rev 1.1
Date: Tuesday, May 17, 2011		Sheet 8 of 37

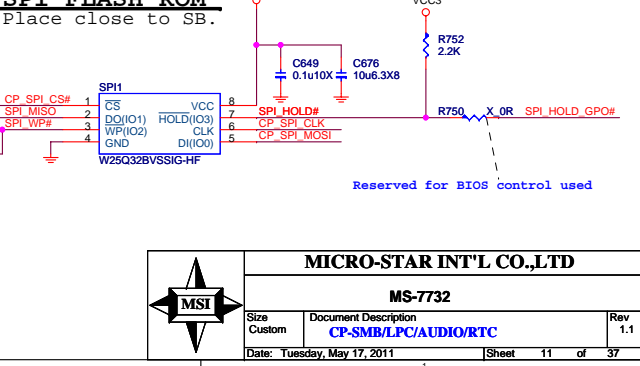
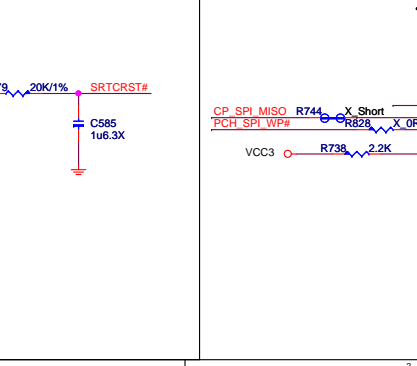
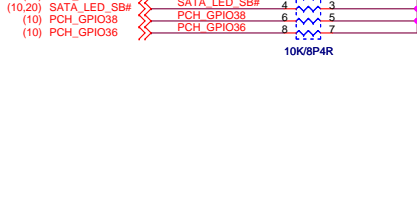
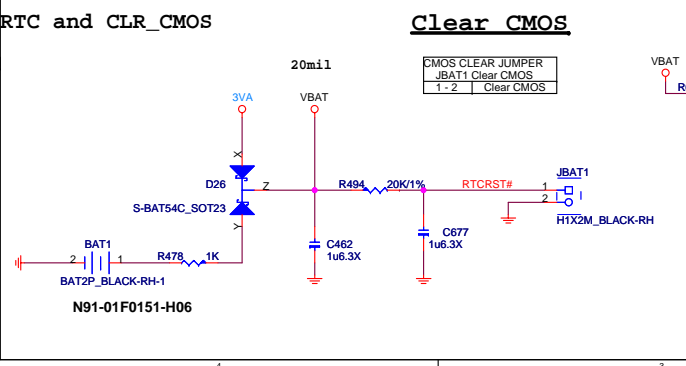
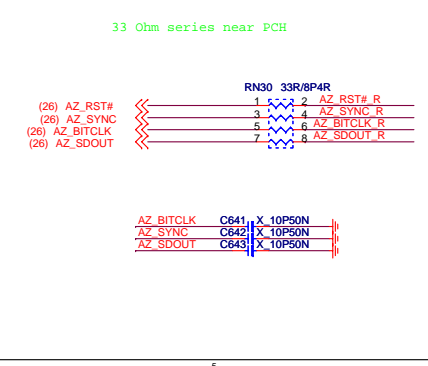
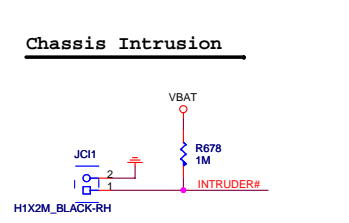
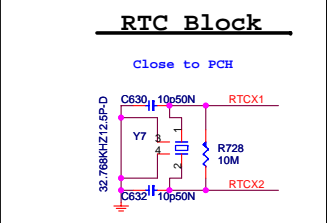
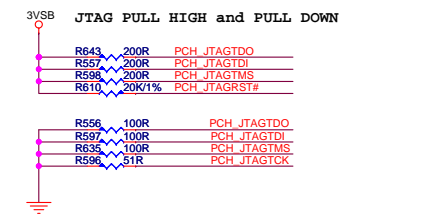
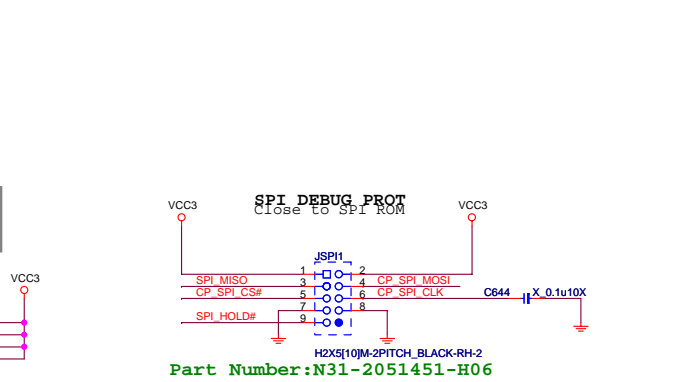
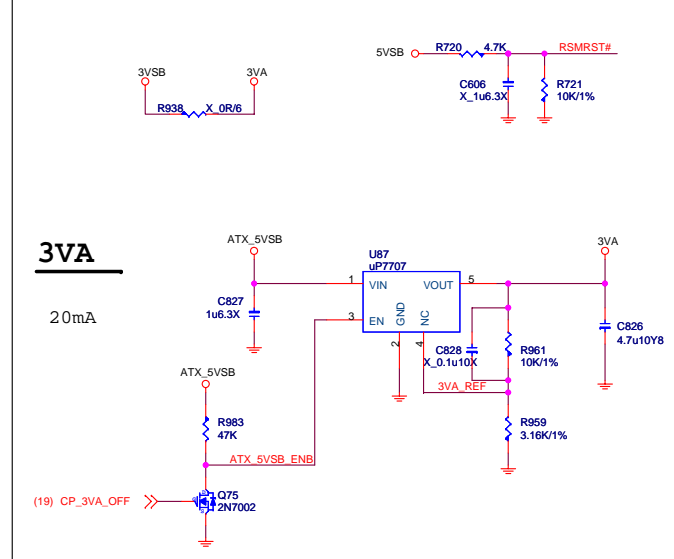
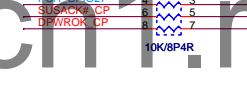
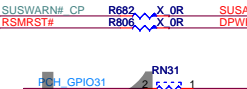
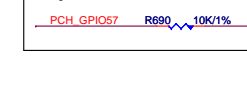
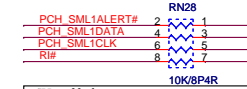
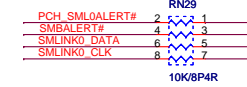
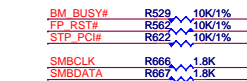
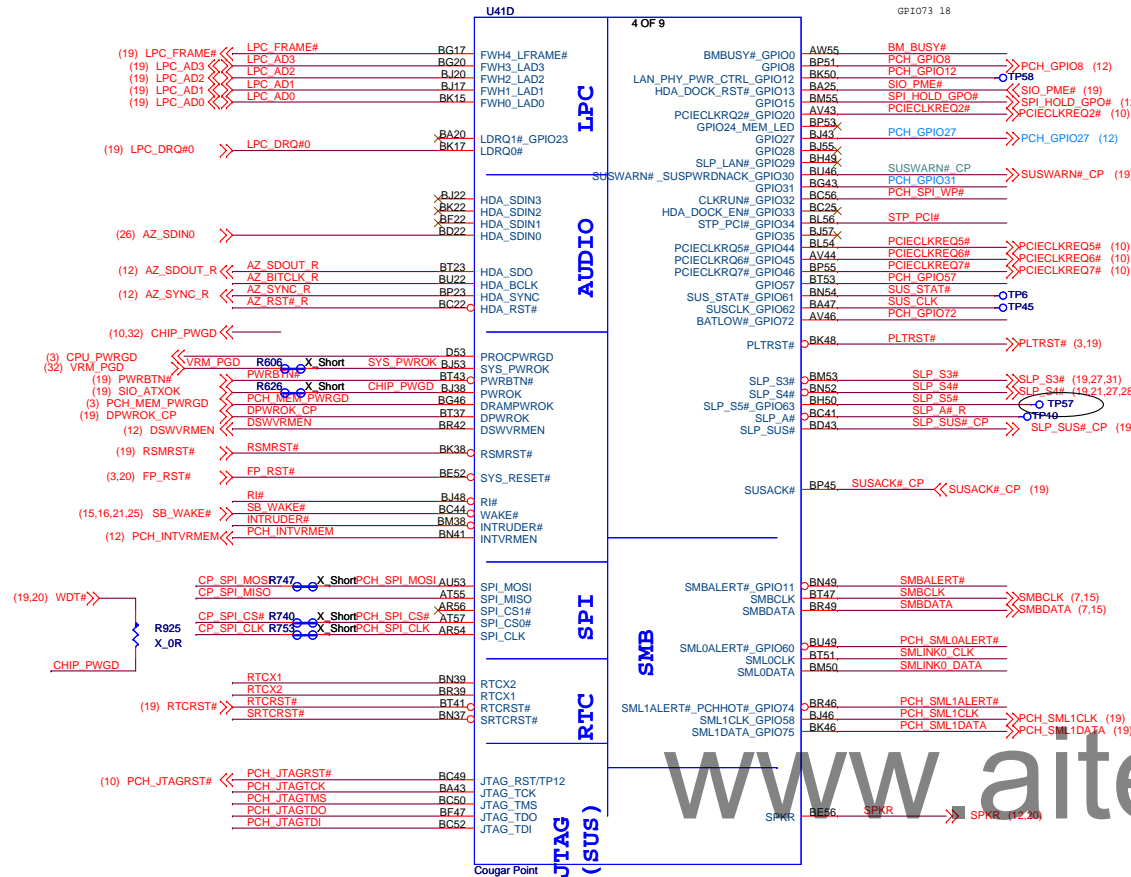


MICRO-STAR INT'L CO.,LTD

MS-7732

Size Custom	Document Description CP-PCI/E/DMI/USB/CLK	Rev 1.1
Date: Tuesday, May 17, 2011		Sheet 9 of 37

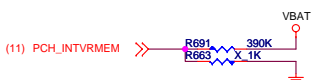
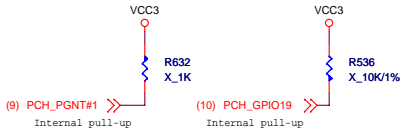
REQUIRED STRAPS



MICRO-STAR INT'L CO.,LTD			
MS-7732			
Size	Document Description	Rev	
Custom	CP-SMB/PC/AUDIO/RTC	1.1	
Date: Tuesday, May 17, 2011	Sheet	11	of 37

PCH Straps

BOOT DEVICE	GNT1	SATA1GP/GPIO19
LPC	0	0
PCI	1	0
SPI	1	1



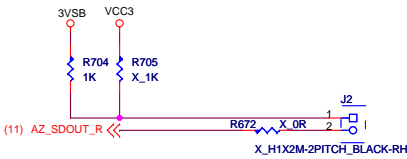
INTVRMEN
0: DISABLE INTERNAL VRM
1: ENABLE INTERNAL VRM *

When these voltage regulators are enabled, the integrated GbE only operates at 10/100 Mbps during S3-S5.



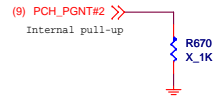
DSWVRMEN
0 : Disable Internal Deep Sleep 1.05 V regulators.
1 : Enable Internal Deep Sleep 1.05 V regulators.

This signal enables the internal Deep Sleep 1.05 V regulators. Must be reconnected even when not supporting DSW.

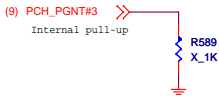


HDA_SDO
Disable ME in Manufacturing Mode when pull LOW ????

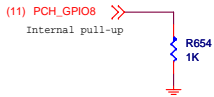
HDA_SDO has internal pull down.
Default should be connected to SDIN of codec, no pull up/down.
To Disable ME need to have a jumper to pull high



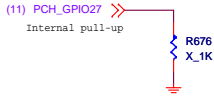
DMI AC/DC MODE
0 : AC
1 : DC *



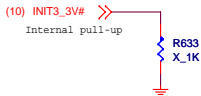
Topblock swap override when pull-low
Signal has a weak internal pull-up



GPIO8
0 : Integrated Clocking Enable (FCIM)*
1 : Buffer Through Mode Enable (BTM)



GPIO28
0 : OD PLL VR disabled
1 : OD PLL VR enabled *
Signal has a weak internal pull-up



INT3_3V#
0 : ??????????????
1 : ?????????????? *

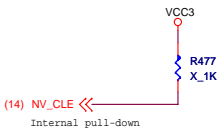
1: INIT3_3V to asserted for 16 PCI clock to reset the processor by some evens occur.
0: Can not to reset the processor.



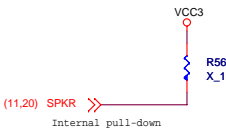
HDA_SYNC
OD PLL VR SUPPLY SEL
0: 1.8V SUPPLY*
1: 1.5V SUPPLY



GPIO15
0 : TLS CIPHER SUITE WITH NO CONFIDENTIALITY *
1 : TLS CIPHER SUITE WITH CONFIDENTIALITY



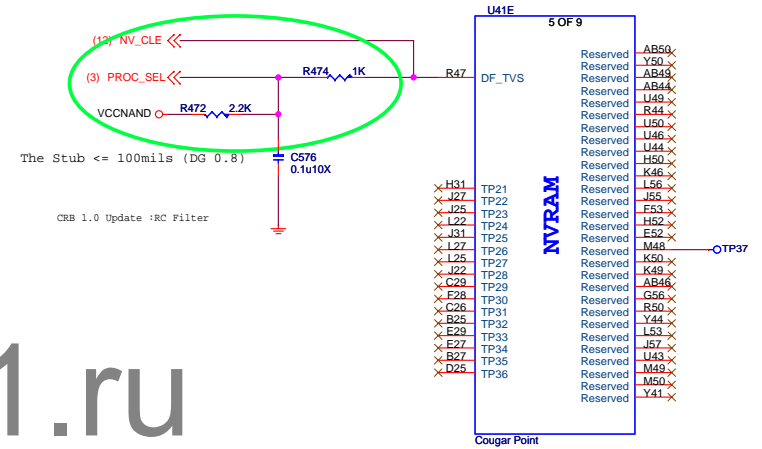
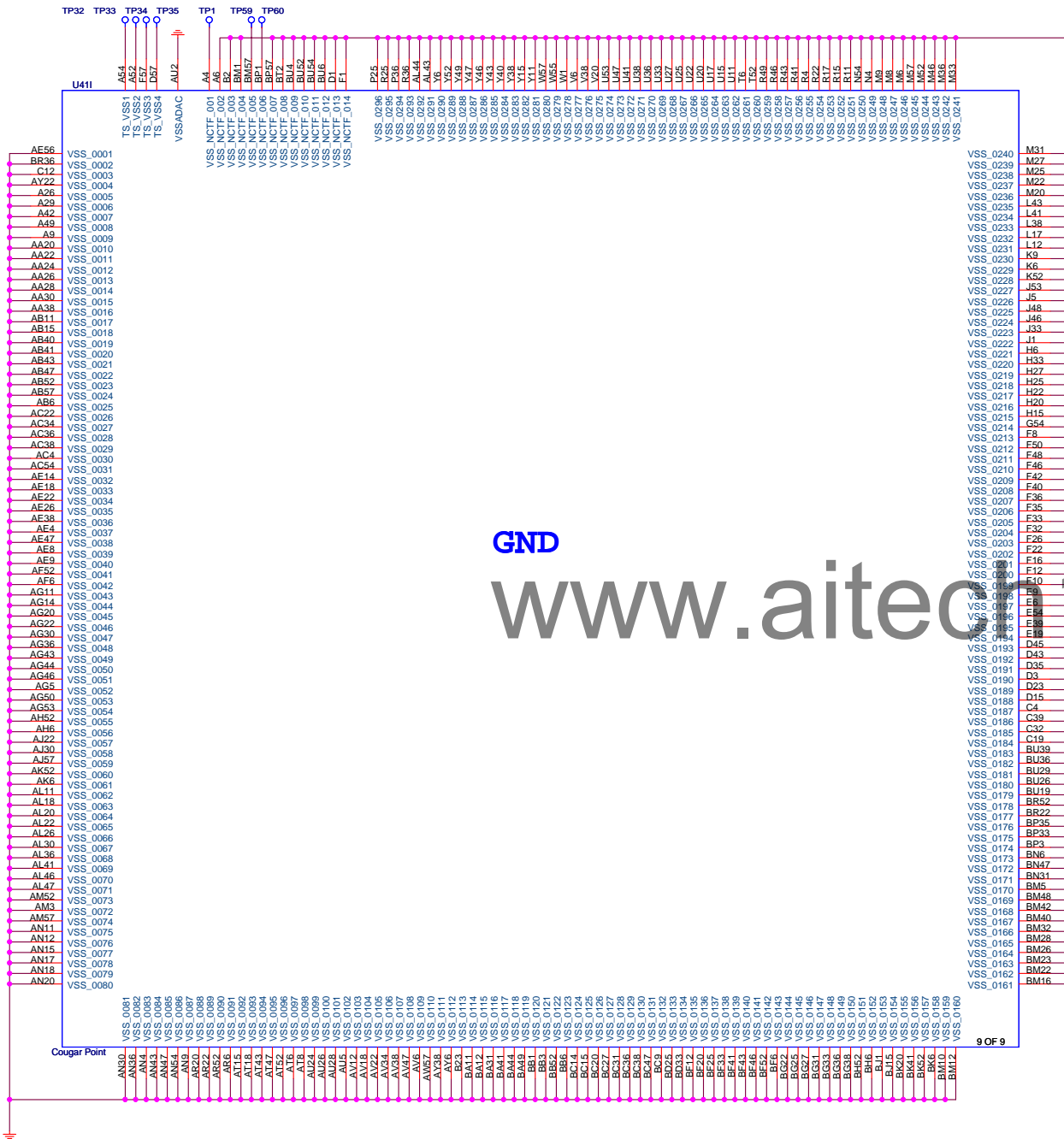
DMI/FDI TERMINATION VOLTAGE
DC COUPLED: TX/RX TO VCC IF SAMPLED HIGH
DC COUPLED: TX/RX TO VSS IF SAMPLED LOW *?
AC COUPLED: TX SET TO VCC/2, RX SET TO VSS REGARDLESS OF THIS STRAP



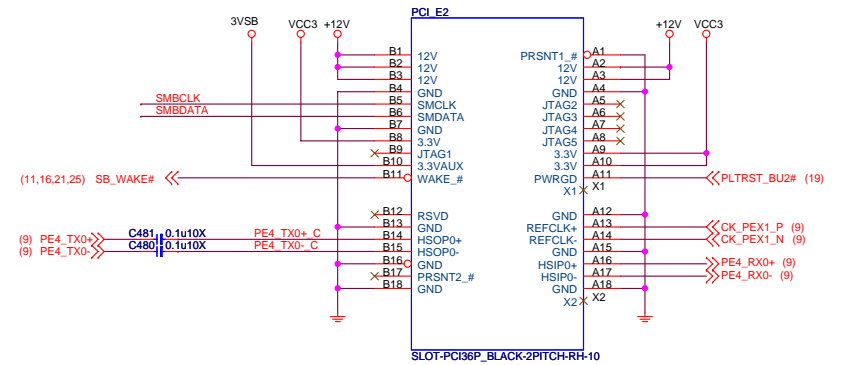
SPKR
0 : EN TCO REBOOT *
1 : DIS TCO REBOOT



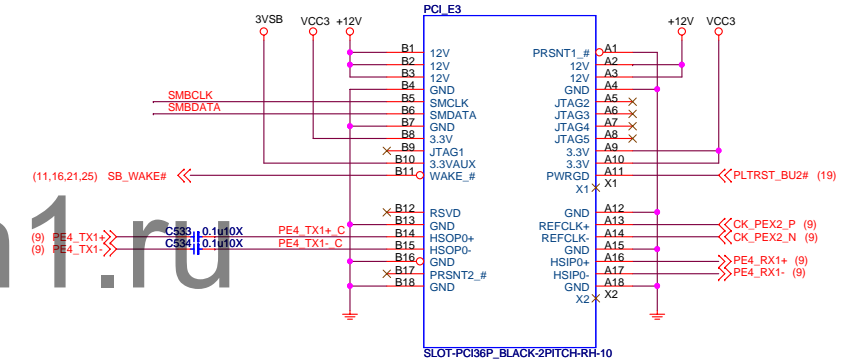
MICRO-STAR INT'L CO.,LTD		
MS-7732		
Size Custom	Document Description CP-Strap	Rev 1.1
Date: Tuesday, May 17, 2011		
Sheet 12 of 37		



PCI_Express X16 Slot



PCI EXPRESS x1-PORT



PCI Express X16 slot(X1)		
+12V		- 5.5 A
+3.3Vaux	(wake)	- 375mA
+3.3Vaux	(no wake)	- 20mA
+3.3V		- 3.0A
PCI Express X1 slot (X2)		
+12V		- 1 A
+3.3Vaux	(wake)	- 750mA
+3.3Vaux	(no wake)	- 40mA
+3.3V		- 6.0A



MICRO-STAR INT'L CO.,LTD

MS-7732

Size
Custom

m	Document Description PCIE x16 /x1/x1
---	--

Rev	
1.1	

Date: Tuesday, May 17, 2011

Sheet 15 of 37

(9) ASM_PCIE_RX+ << C731 0.1u10X ASM_PCIE_RX+ C 86
(9) ASM_PCIE_RX- << C732 0.1u10X ASM_PCIE_RX- C 87
(9) ASM_PCIE_TX+ << C97 0.1u10X ASM_PCIE_TX+ C 83
(9) ASM_PCIE_TX- << C98 0.1u10X ASM_PCIE_TX- C 84

(9) CK_ASM_REF_DP << 78
(9) CK_ASM_REF_DN << 79

R677 12.1K/1% PEREXT 91
SB_WAKE# R962 X OR 94
(11,15,21,25) SB_WAKE# PE_PWRDET 95
(19,23,25) PLTRST_BU1# << PLTRST_BU1# 96

I2CCLKSEL 71
ASM_EEDI 92
ASM_EECK 93
CLK100SEL 73
TEST_EN 74
PE_EC_SEL 75
TP147 76

(17) CK_PCIO << R683 22R PCI_CLK0 61
(17) CK_PC1 << R696 22R PCI_CLK1 62
(17) CK_PC12 << R700 22R PCI_CLK2 65

E_ASM1083_1.2V 103
VCC12 77
VCC12 47
VCC12 8

VCC33 122
VCC33 111
VCC33 98
VCC33 64
VCC33 53
VCC33 42
VCC33 32
VCC33 23
VCC33 14
VCC33 3

VCC3 << CP2 X COPPER 90
E_ASM1083_1.2V << CP3 X COPPER 89
C760 0.1u10X
C771 0.1u10X
C772 0.1u10X

PE_PWRDET << CP4 X COPPER 88
C777 X 0.1u10X

ASM_EECK R688 10K VCC3
ASM_EEDI R727 10K VCC3

ASM1083

ASM1083-RH

NC2 104
NC1 101
PCLK2EN 100
PCLK1EN 99
PCICLK2EN
PCICLK1EN
PCICLK2EN << CK_ASM_PCI33M (9)
CLKRUN# 59
CLKRUN_EN 60
AD31 36
AD30 35
AD29 34
AD28 33
AD27 30
AD26 29
AD25 28
AD24 27
AD23 25
AD22 24
AD21 21
AD20 20
AD19 19
AD18 18
AD17 17
AD16 16
AD15 15
AD14 14
AD13 13
AD12 12
AD11 11
AD10 10
AD9 9
AD8 8
AD7 7
AD6 6
AD5 5
AD4 4
AD3 3
AD2 2
AD1 1
AD0 0

C_BE#3 26
C_BE#2 25
C_BE#1 22
C_BE#0 21

LOCK# 5
IRDY# 11

PIRQ#D 55
PIRQ#C 56
PIRQ#B 57
PIRQ#A 58

PGNT#2 48
PGNT#1 49
PGNT#0 50

PCI_RST# 38
TRDY# 10
STOP# 1
SERR# 1

PREQ#2 45
PREQ#1 46
PREQ#0 47
PERR# 48

PAR 28
M66EN 117
PME# 37
FRAME# 12
DEVSEL# 9

PCIRST#_PCH (17)
TRDY# (17)
STOP# (17)
SERR# (17)
VCC3
SB_PME# (9,17)
FRAME# (17)
DEVSEL# (17)

VCC3
PCICLK1EN R689 1K
PCICLK2EN R713 1K
PCICLK1EN C825 X 0.1u10X
PCICLK2EN C842 X 0.1u10X

E_ASM1083_1.2V
C783 1u6.3X
C788 1u6.3X
C794 0.1u10X
C795 0.1u10X
C803 0.1u10X
C808 0.1u10X
C813 0.1u10X
C823 0.1u10X
C835 0.1u10X
C833 0.1u10X
C834 0.1u10X
C824 0.1u10X
C831 0.1u10X
C832 0.1u10X

H/W Strapping

VCC3
R760 1K
R759 1K
R758 1K
R735 4.7K
R794 4.7K
R787 4.7K
R758 X 4.7K
R738 4.7K

PE_EC_SEL-
"H" for Express Card mode
"L" for PCIe Riser Card mode

CLK100SEL-
"H" for PECLK input only
"L" for PECLK & PCICLK input

TEST_EN-
"H" for Test Mode Enable
"L" for Test Mode Disable

CLKRUN_EN-
"H" for CLKRUN Mode Disable
"L" for CLKRUN Mode Enable

I2CCLKSEL-
"H" is 135KHz I2CCLK
"L" is 67.5KHz I2CCLK



MICRO-STAR INT'L CO.,LTD

MS-7732

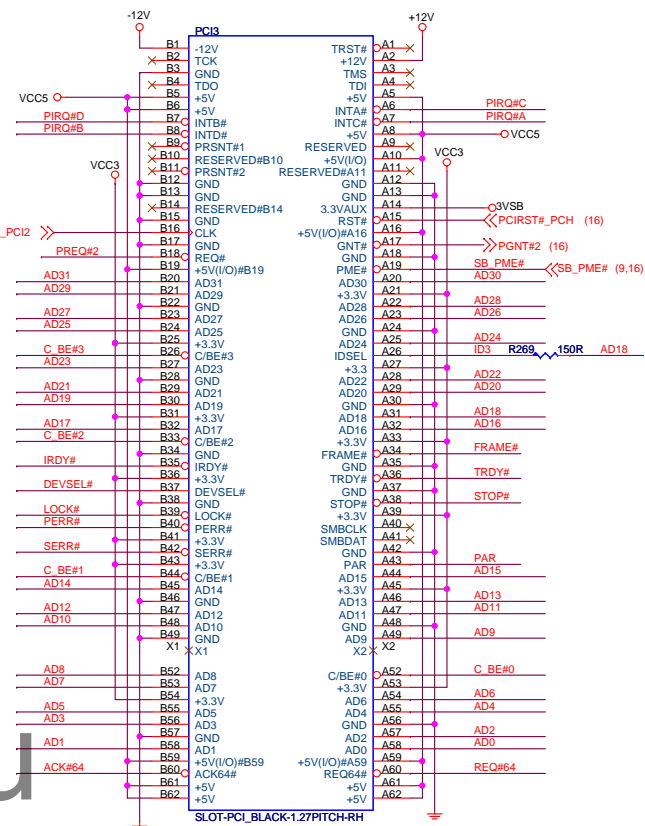
Size	Document Description	Rev
Custom	ASM1083 PCI Brl.	1.1
Date: Tuesday, May 17, 2011	Sheet 16 of 37	

remove EEPROM

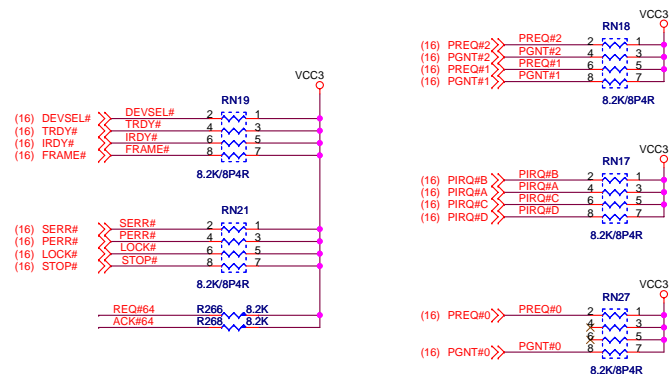
VCC3
C634 1u6.3X
U44
VIN
VOUT
EN
GND
UP7707
C622 X 0.1u10X
R80 1K/1%
R844 2K/1%
ASM1P05REF
E_ASM1083_1.2V 115mA
C825 4.7u10Y8

EMI

CK_PCIO C76 X 10P50N
CK_PC1 C77 X 10P50N
CK_PC12 C78 X 10P50N



```
IDSEL = AD18
MASTER = PREQ#2
PIRQ#C
```



PCI slot (X3)	
+3.3Vaux (wake)	- 1125mA
+3.3Vaux (no wake)	- 60mA
+3.3V	- 7.6A
+5V	- 15A
+12V	- 1.5A



MICRO-STAR INT'L CO.,LTD

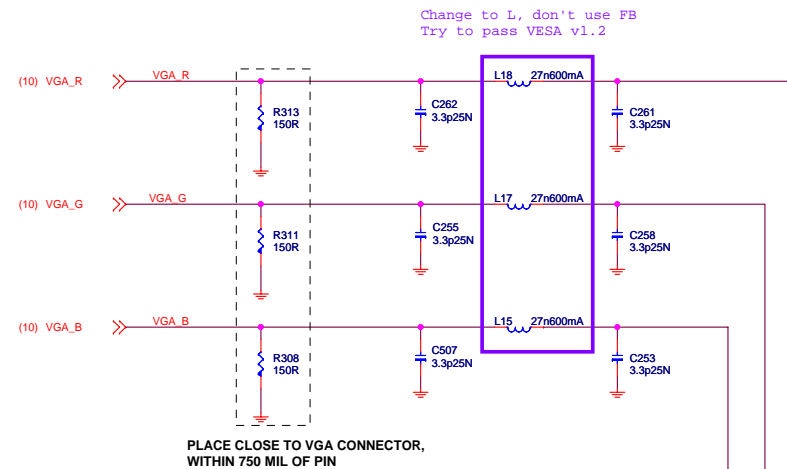
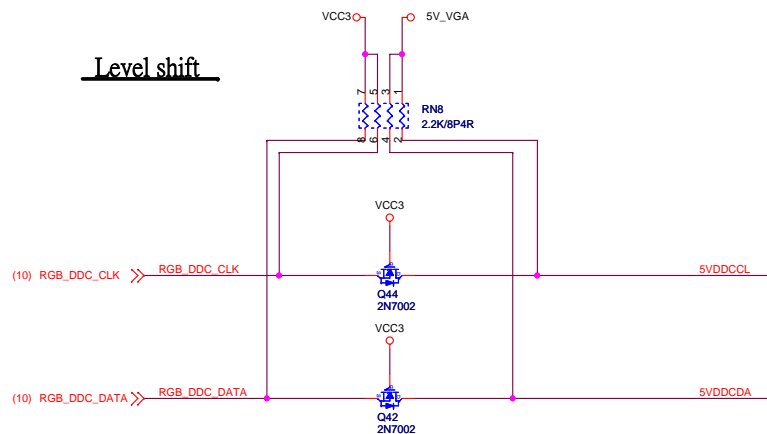
MS-7732

Size Custom	Document Description PCIx1 Slots	Rev 1.1
Date: Tuesday, May 17, 2011		Sheet 17 of 37

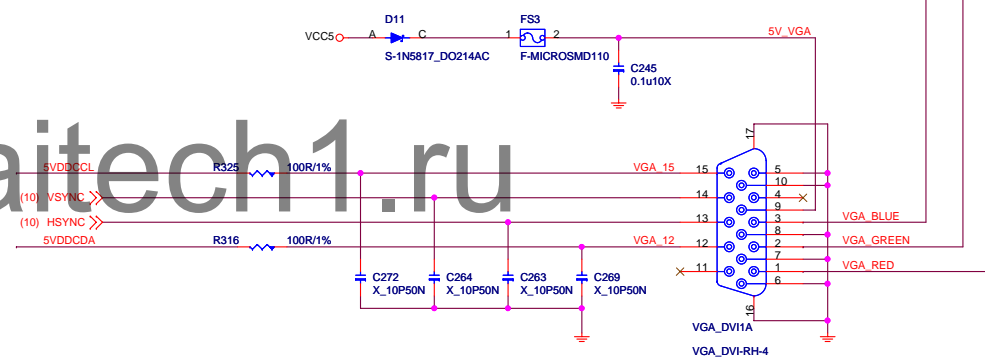
D-Sub

VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)

Level shift



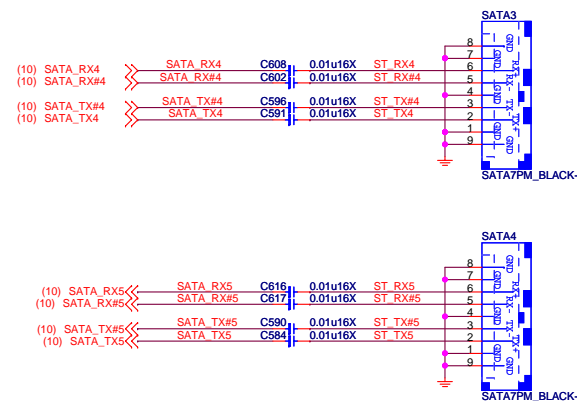
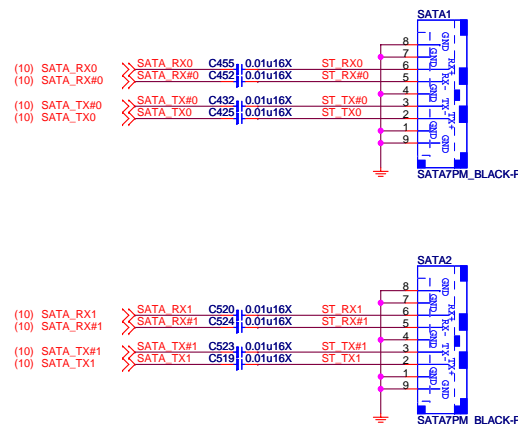
PLACE CLOSE TO VGA CONNECTOR,
WITHIN 750 MIL OF PIN



H67 SATA 6G PORT 0,1

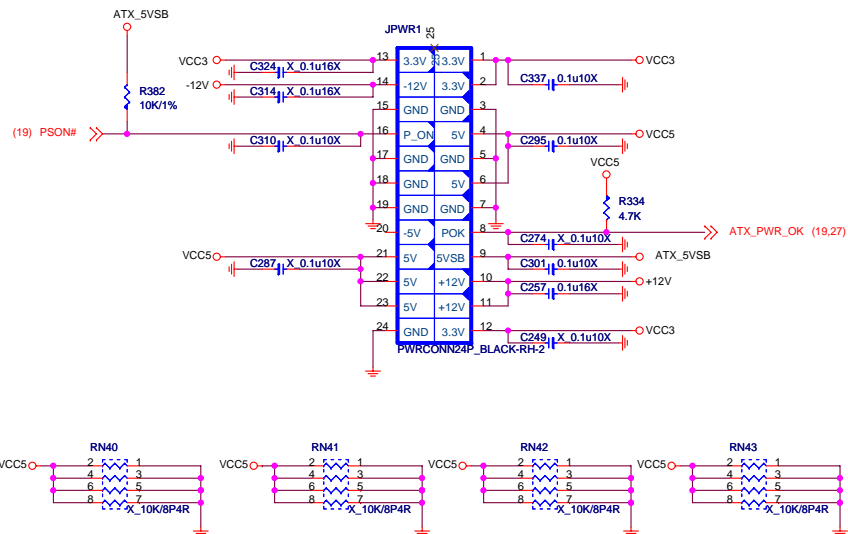
H61 PORT 0/1 Support 3G

SATA 3G PORT 4,5

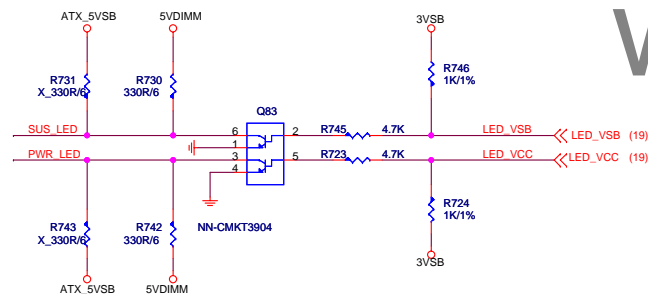


MICRO-STAR INT'L CO.,LTD			
MS-7732			
Size	Document Description	Rev	
Custom	VGA/SATA3G	1.1	
Date: Tuesday, May 17, 2011		Sheet	18 of 37

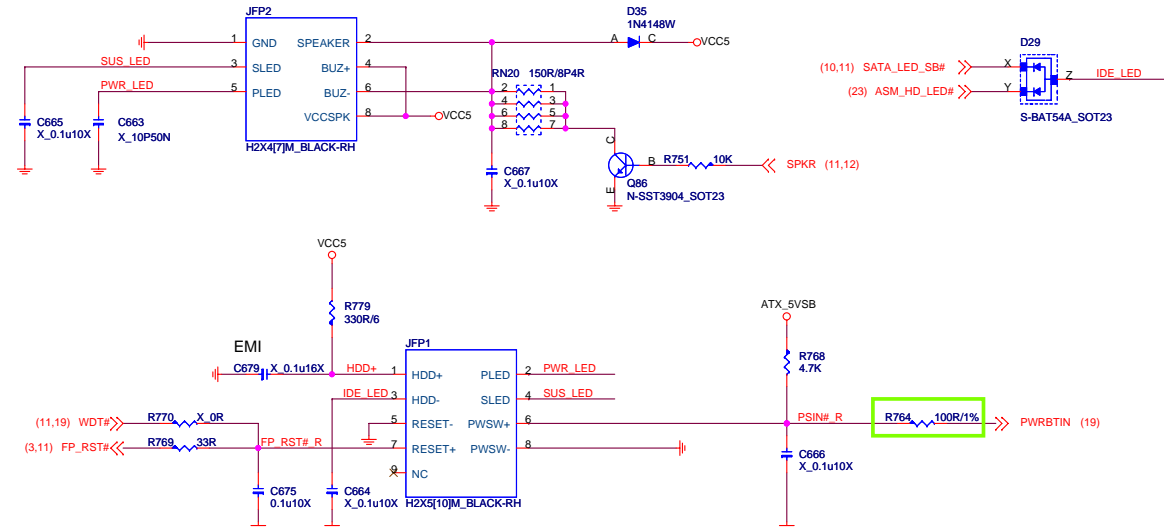
ATX POWER CONNECTOR



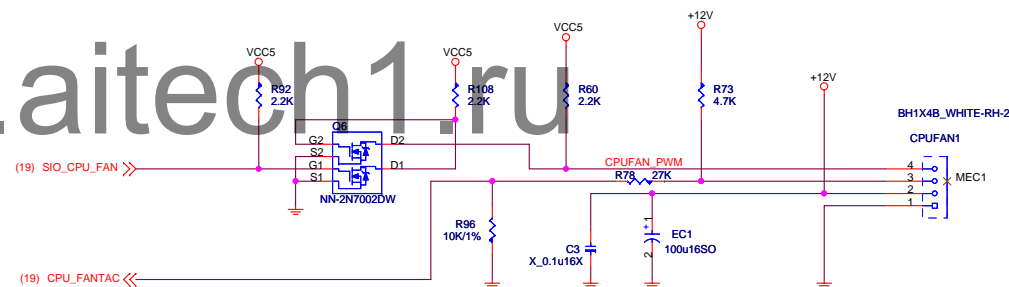
LED (for Fintek 71869)



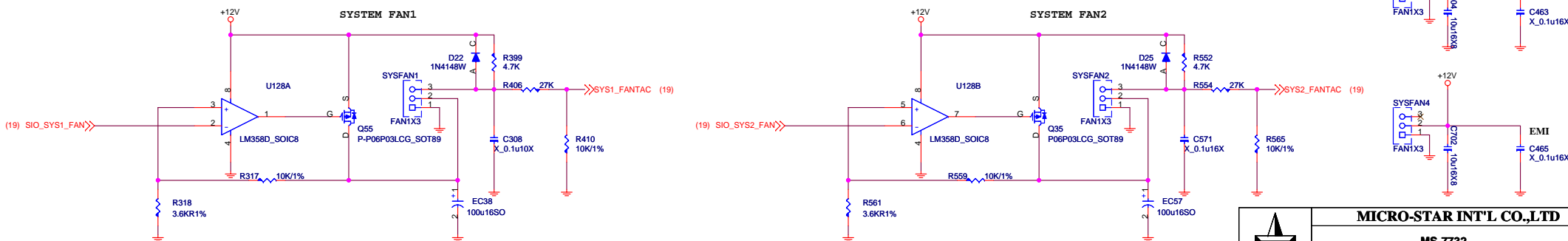
FRONT PANNEL



CPU FAN-COUNTROL CIRCUIT



SYSTEM FAN-COUNTROL CIRCUIT

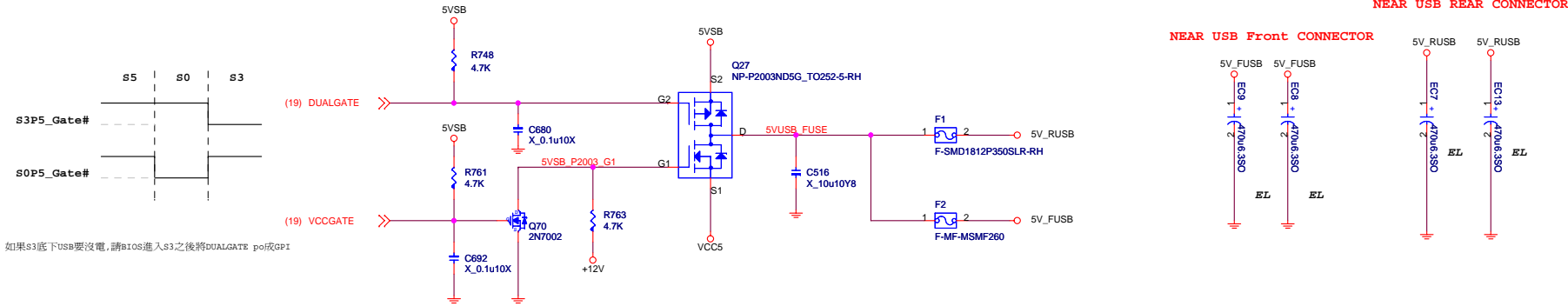


MICRO-STAR INT'L CO.,LTD

MS-7732

Size	Document Description	Rev
Custom	ATX PWR-Connector & Front Panel & EMI	1.1
Date: Tuesday, May 17, 2011	Sheet 20 of 37	

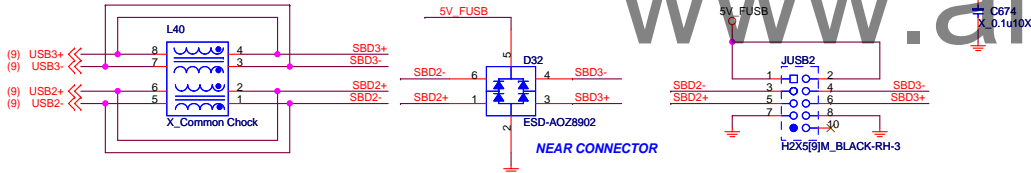
5V_RUSB Switch



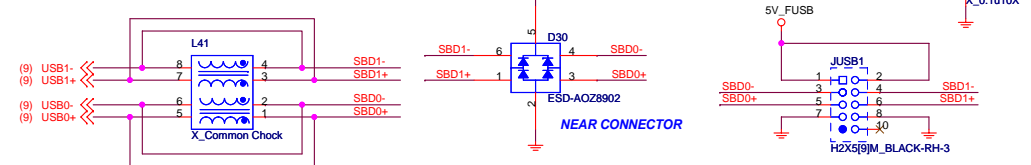
Front USB Connector

For H61 6,7,12,13 Port should be remove

FRONT USB PORT 2,3

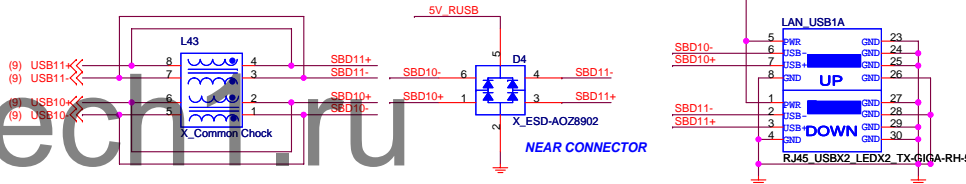


FRONT USB PORT 0,1

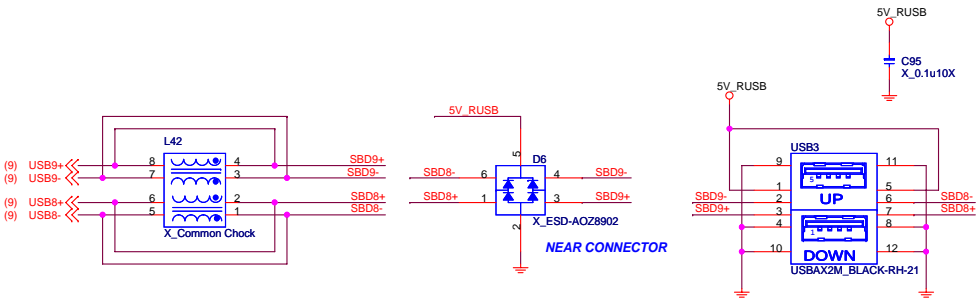


Rear USB Connector

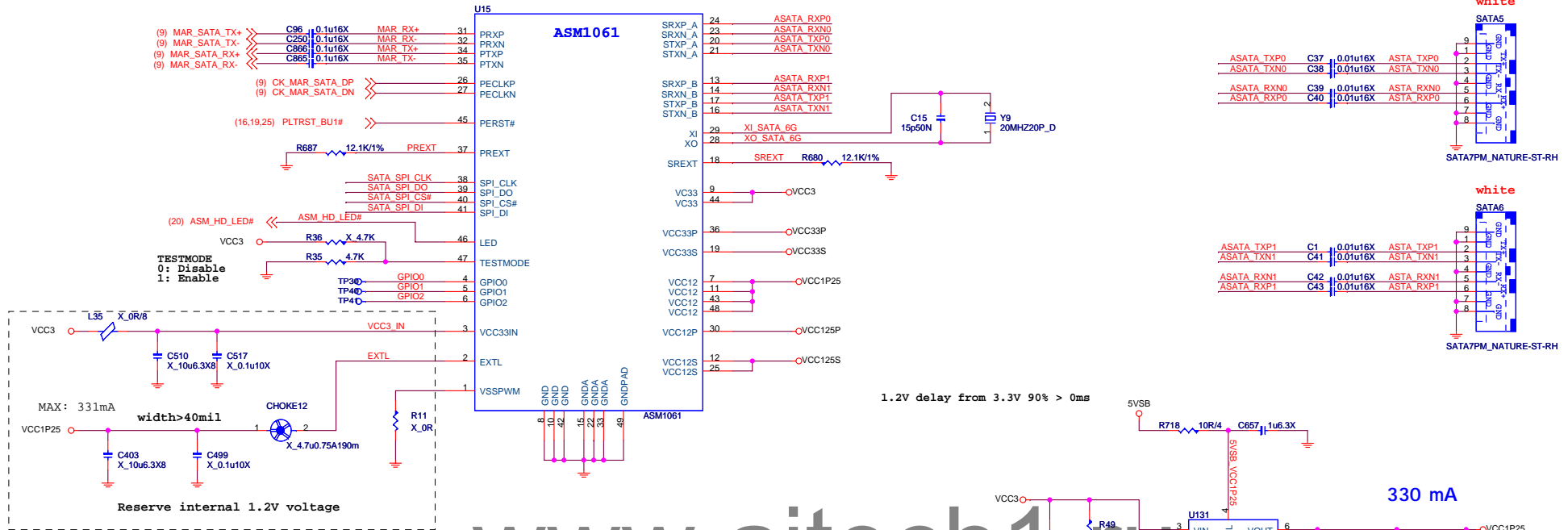
REAR USB PORT 10,11 (With LAN)



REAR USB PORT 8,9 (With PS2)

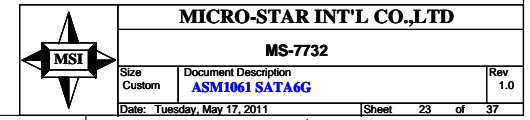
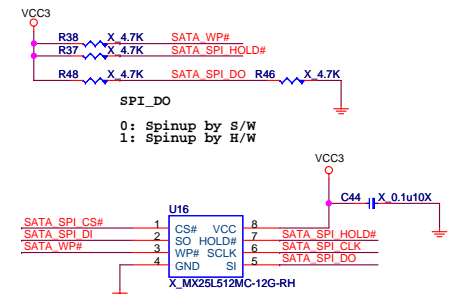
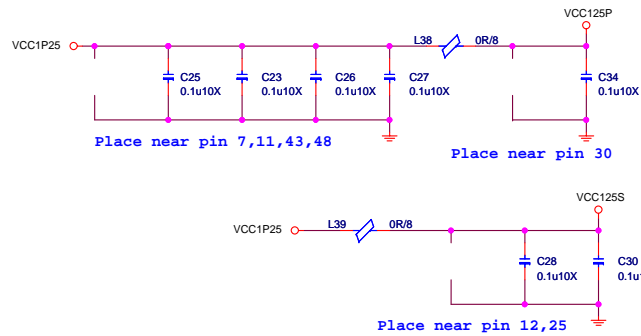
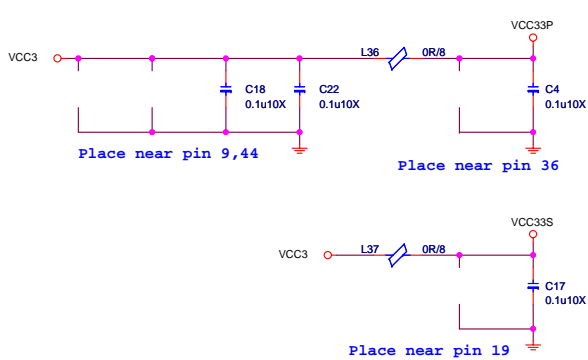


ASM1061 SATA6G



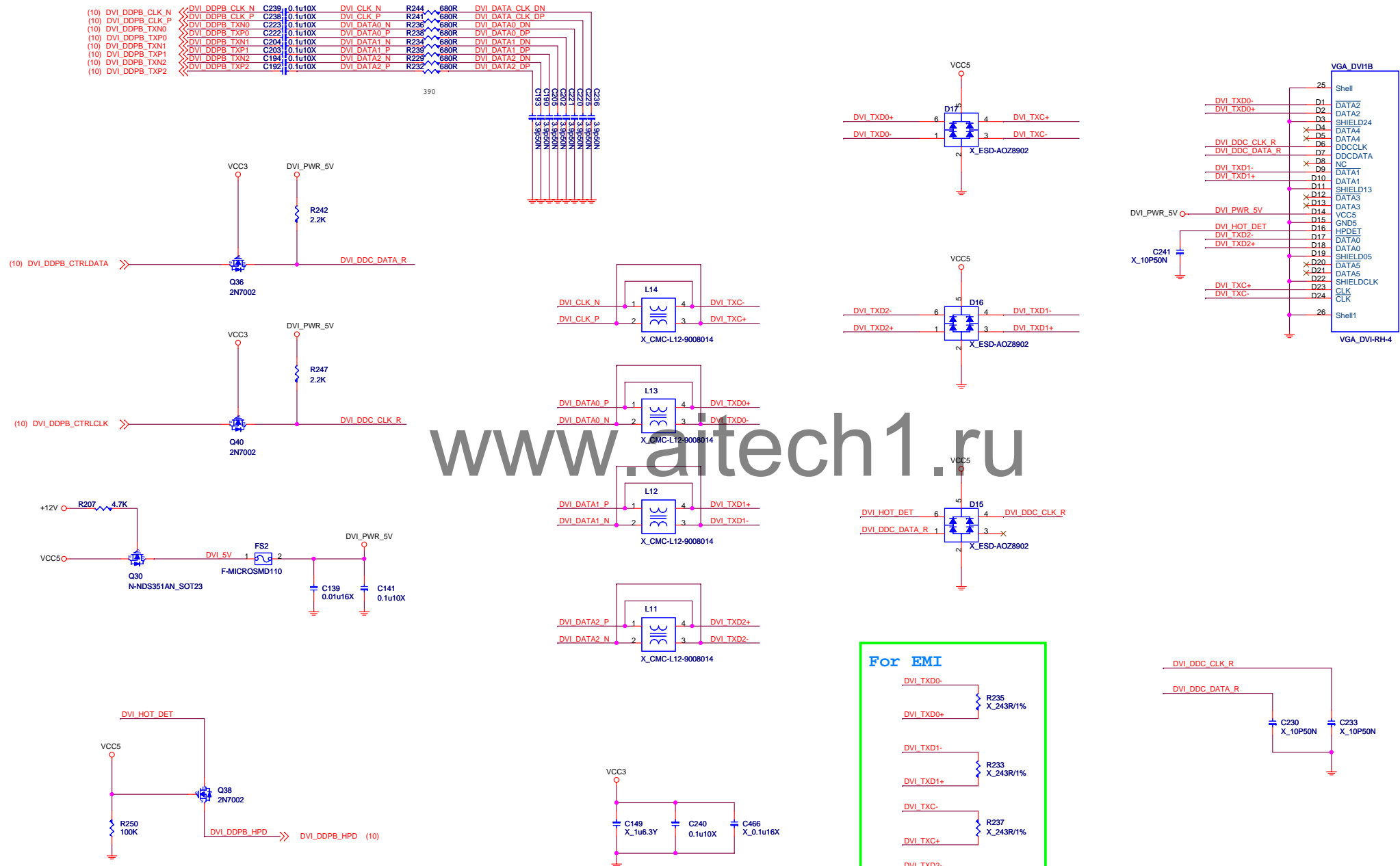
ASM1061 POWER Consumption

	3.3V	1.2V	Power (mW)
Idle (mA)	98.45	212.3	579.645
Busy (mA)	91.1	330.7	697.47

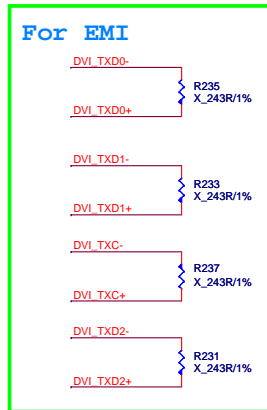


DVI level shifter

VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)



www.aitech1.ru



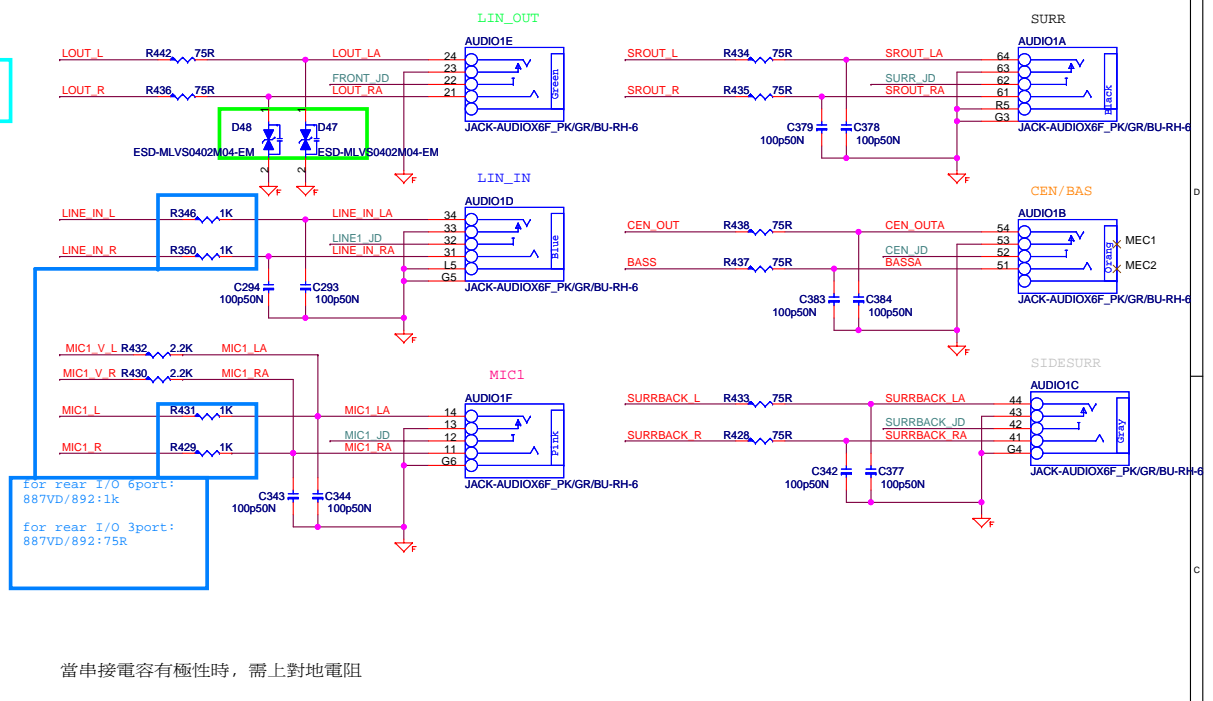
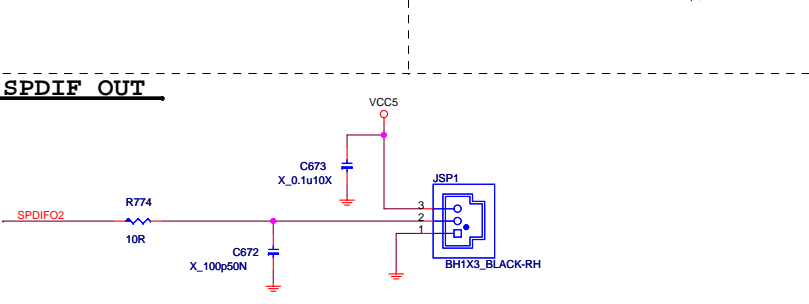
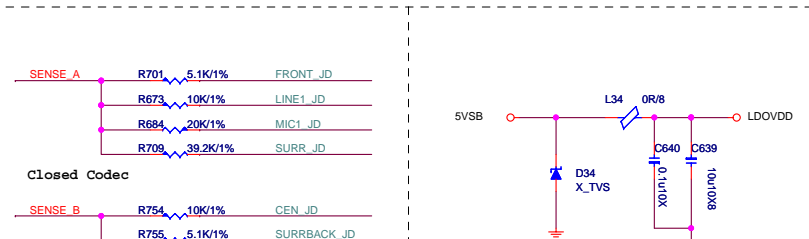
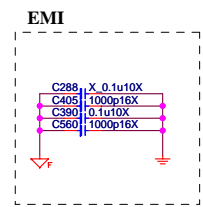
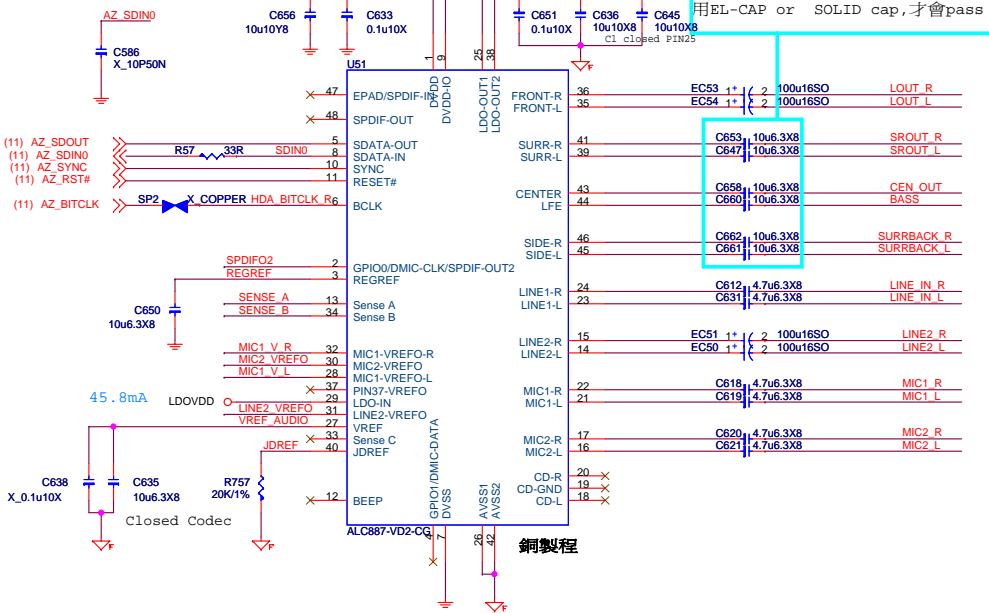
RTL8105E 10/100M LAN



	MICRO-STAR INT'L CO.,LTD		
	MS-7732		
	Size Custom	Document Description LAN - RTL811E / 8105E	Rev 1.1
	Date: Tuesday, May 17, 2011		Sheet 25 of 37

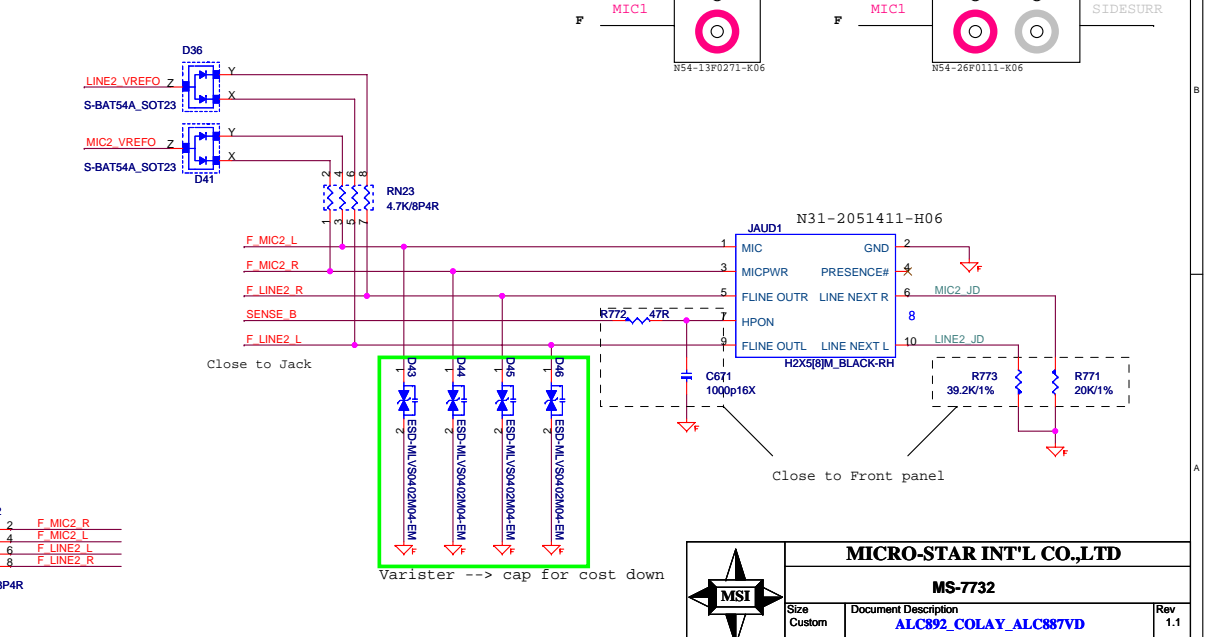
ALC887-VD

ALC892

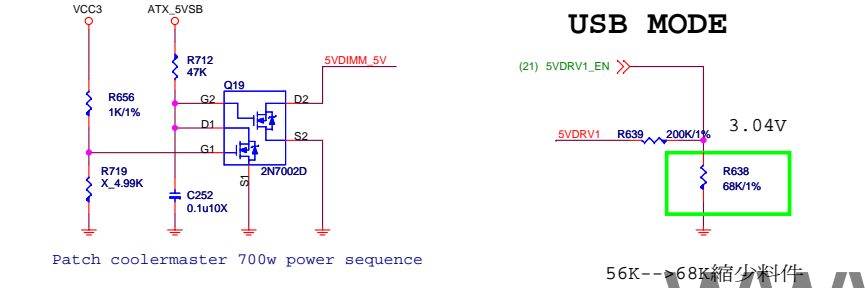
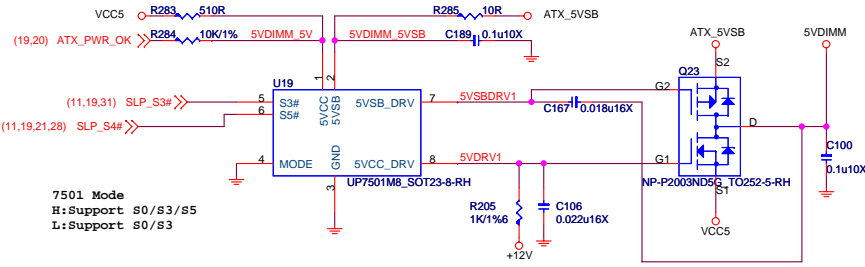


當串接電容有極性時，需上對地電阻

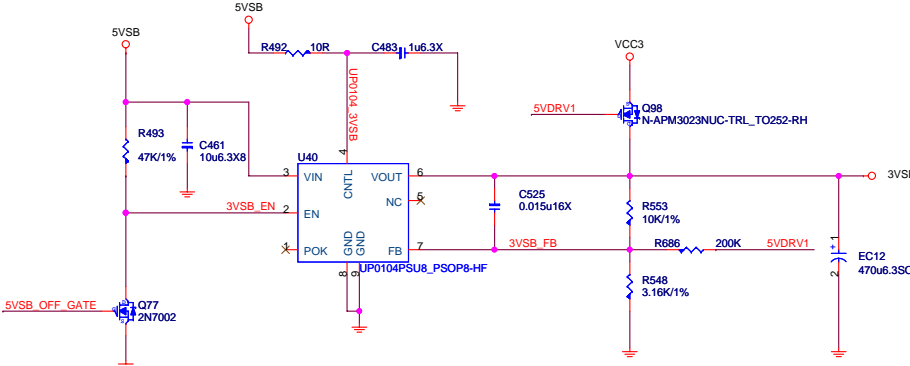
www.aitech1.ru



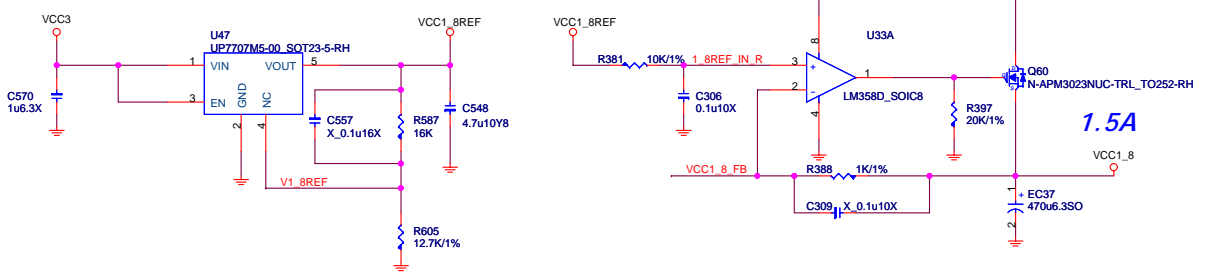
5VDIMM FOR DDR



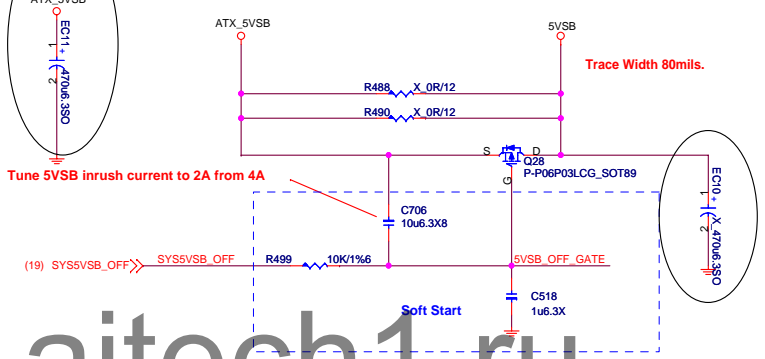
3VSB 3VSB supply to PCH and other device. Turn off when Deep S3/S5 by 5VSB off.



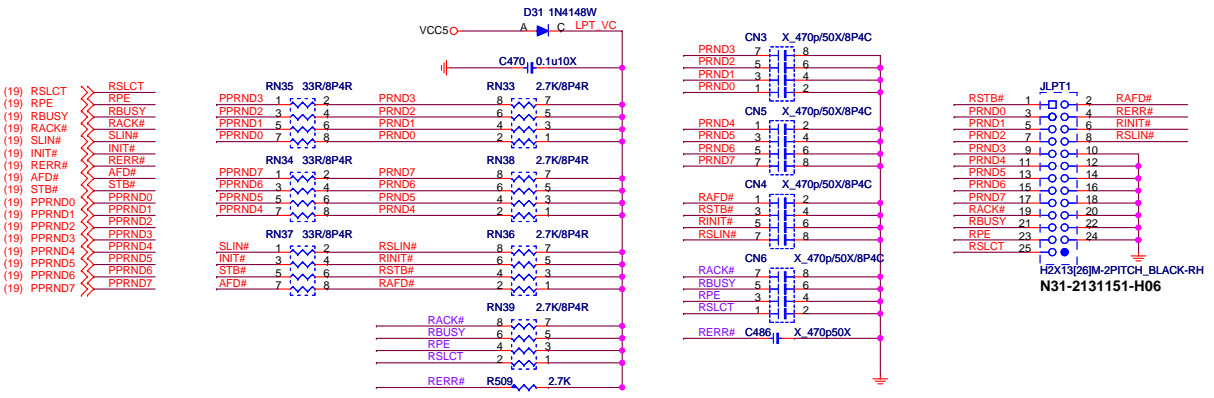
VCC1_8REF



5VSB Power Switch



PARALLAL PORT



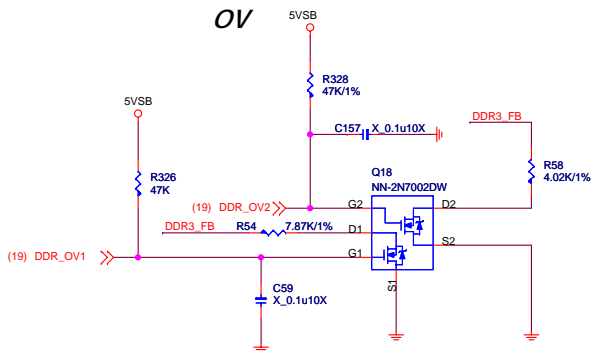
DDR3_1.5V 4.5A+7.5A+1A=13A

4.5A FOR CPU

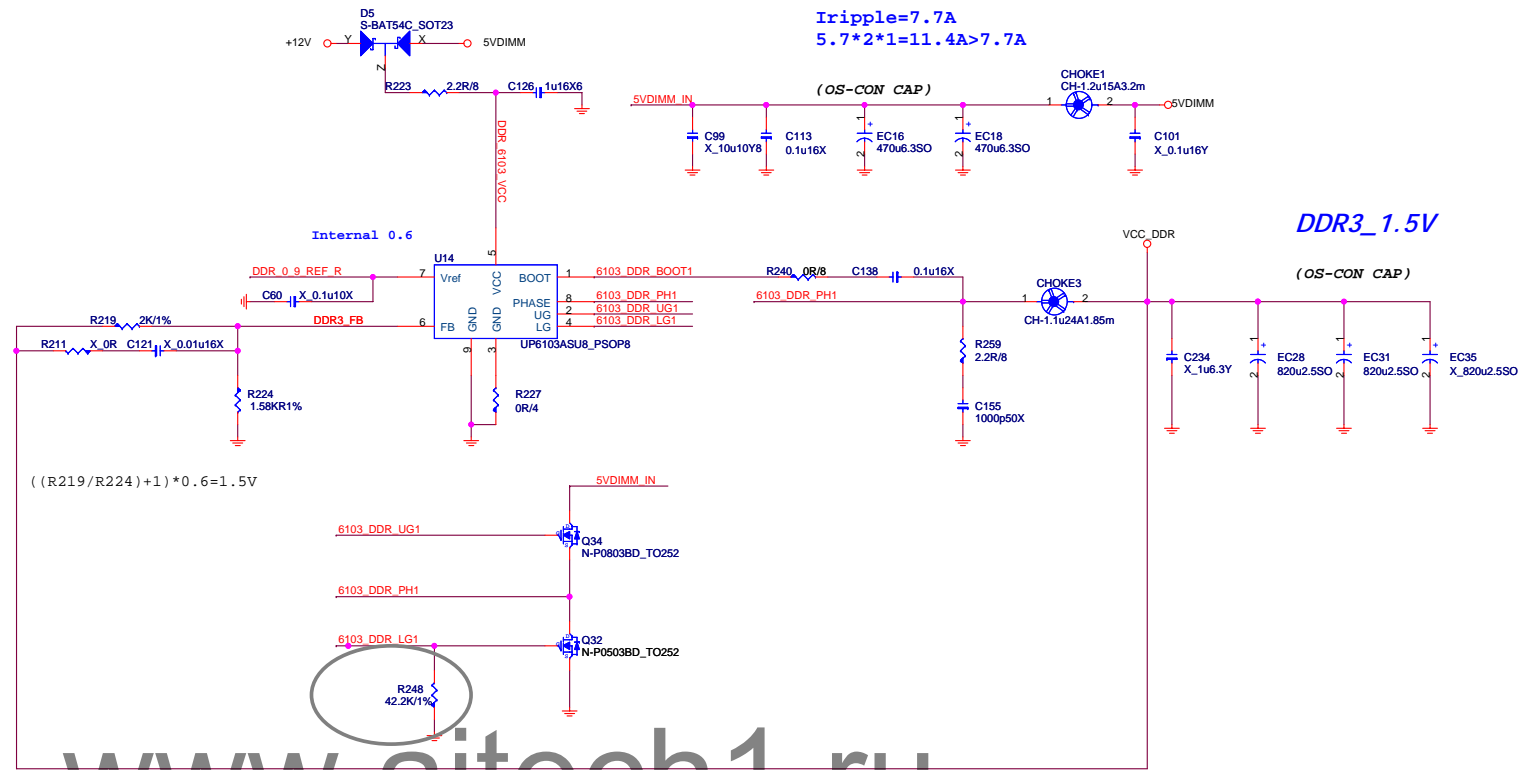
7.5A FOR 2DIMM

1A FOR DDR VTT

OV



MODE	第一階	Default	第二階	第三階
DDR_OV1	LOW	HIGH	LOW	HIGH
DDR_OV2	LOW	LOW	HIGH	HIGH
VALUE	1.35V	1.5V	1.65V	1.8V



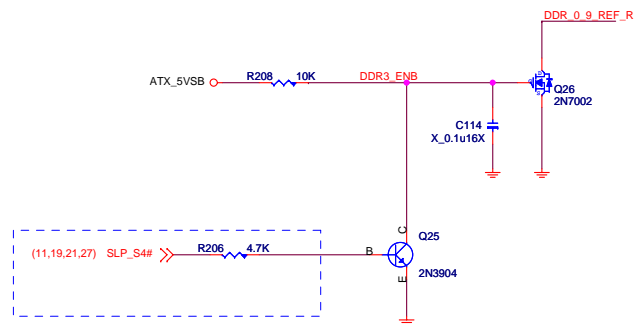
www.aitech1.ru

UPI VOLTAGE CONSOLE

0x20:RH=10K,RL=OPEN

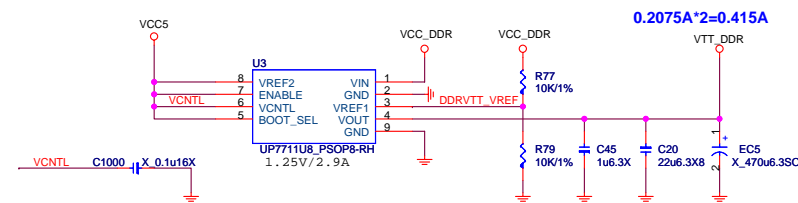
ADDRESS	0x2A	0x28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%

P.S. Only for meet Intel power down sequence.



DDR VTT Power

To CPU Copper trace width > 250mils, Fill island behind DIMM > 400mils.



MICRO-STAR INT'L CO.,LTD

MS-7732

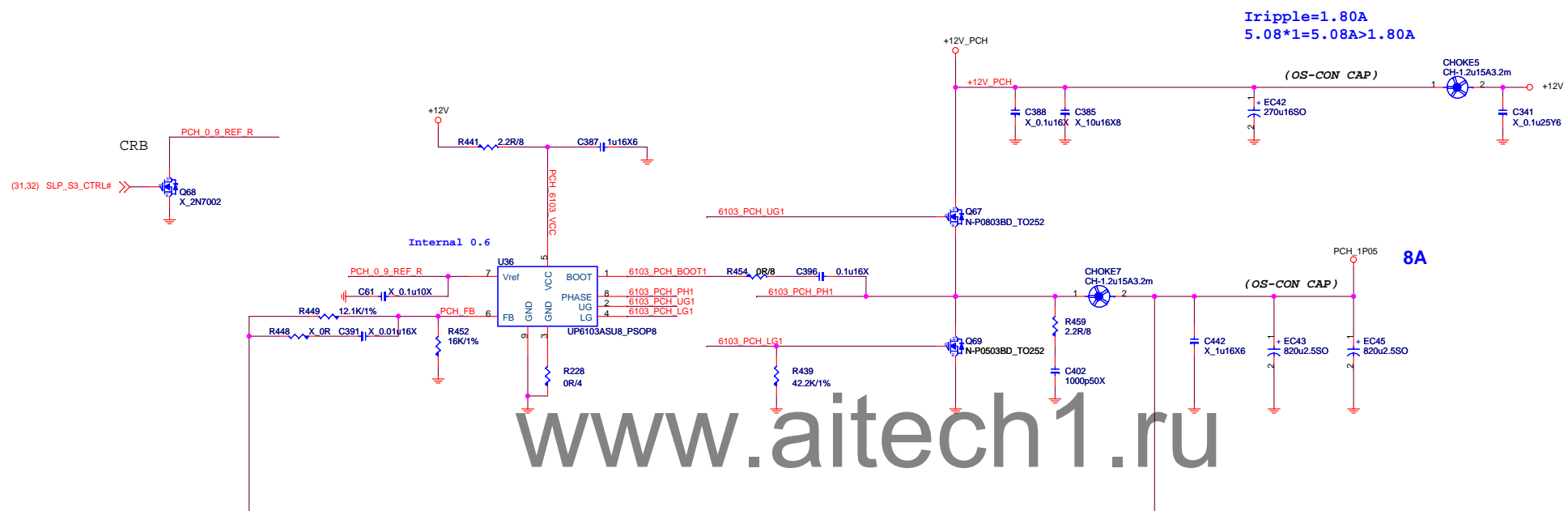
Size	Document Description	Rev
Custom	DDR Power - uP6103 1-Phase	1.1
Date:	Tuesday, May 17, 2011	Sheet 28 of 37

PCH Power:1.05V

PCH Core 6.2A+1.8A=8A

6.2A FOR PCH

1.8A FOR ME CORE



MICRO-STAR INT'L CO.,LTD

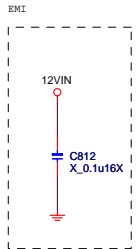
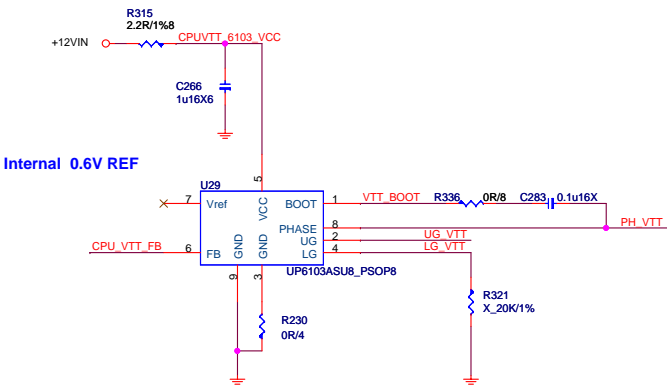
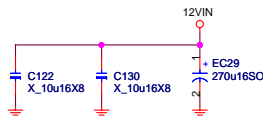
MS-7732

Size	Document Description	Rev
Custom	PCH Power - uP6103 1-Phase	1.1
Date:	Tuesday, May 17, 2011	Sheet 29 of 37

CPU_VTT:1.05/1.00

CPU VTT 8.5A + SA Core =17.3A

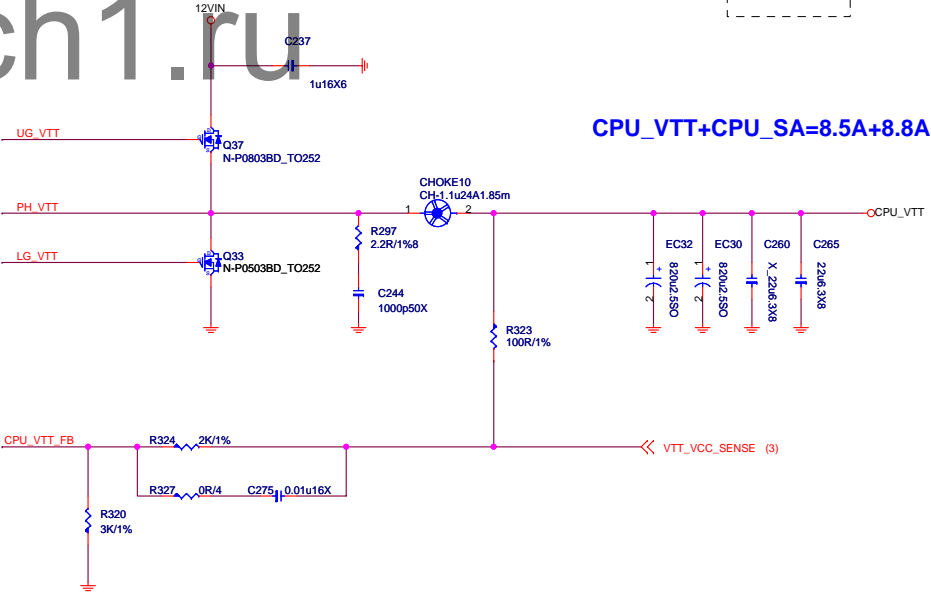
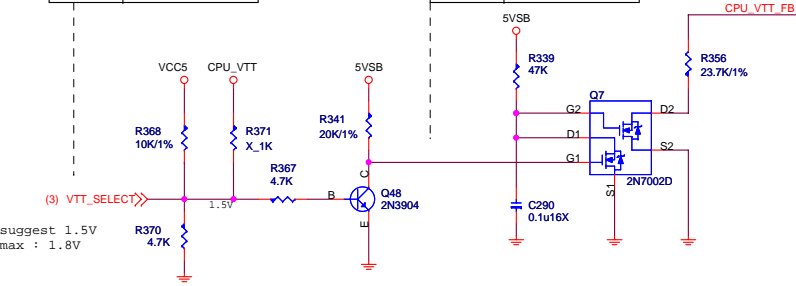
$I_{ripple}=1.92(vtt)+1.88(sa)$
 $5.08*2=10.16A>3.8A$



www.aitech1.ru

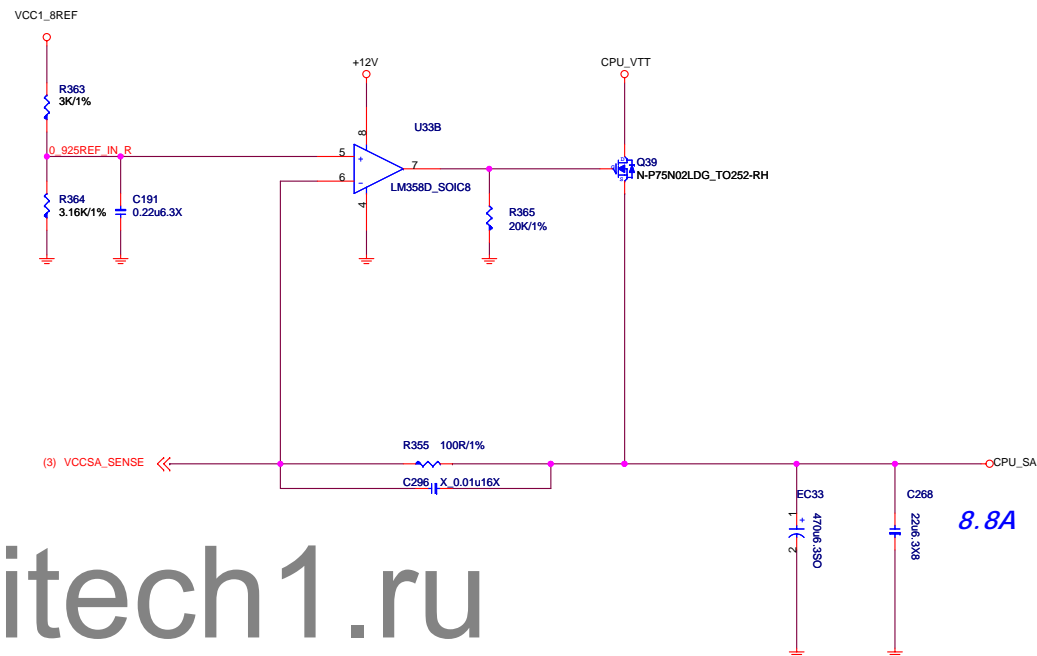
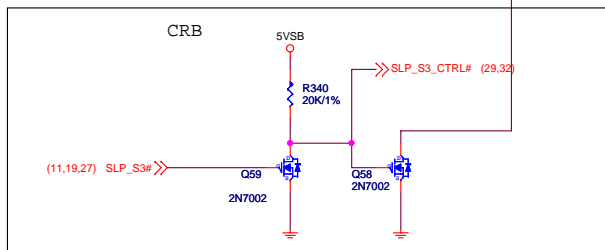
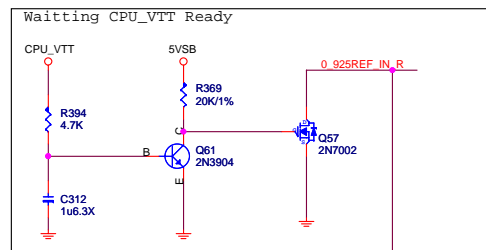
VTT_SELECT	
Low	1.0V
High	1.05V

VTT_SELECT Table	
Low	1.05V
High	1.0V

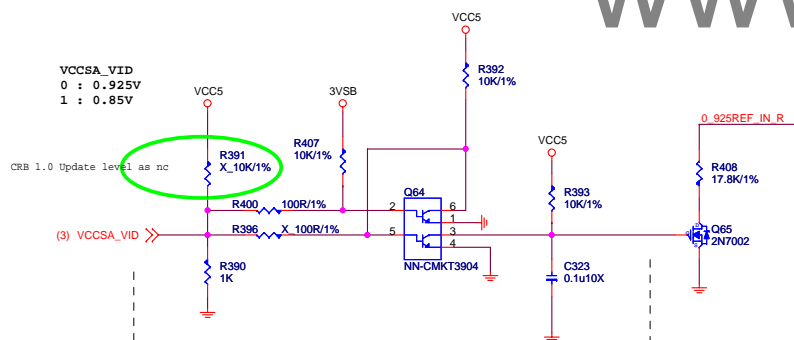


CPU_SA:0.925/0.85

SA Core =8.8A



www.aitech1.ru



VCCSA_VID	
Low	0.925V
High	0.85V

VCCSA_VID_SIO Table	
Low	0.85V
High	0.925V

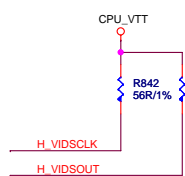
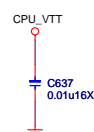
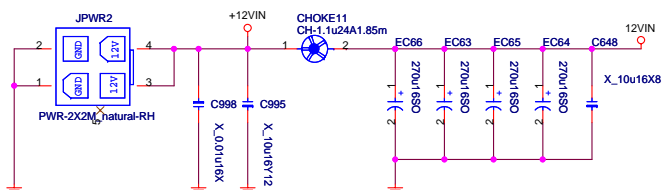
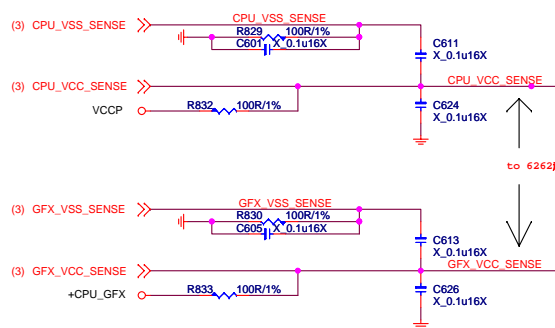
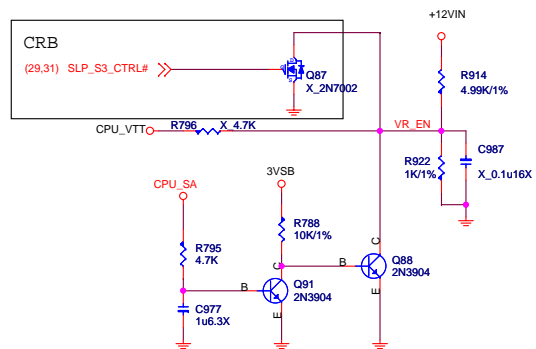
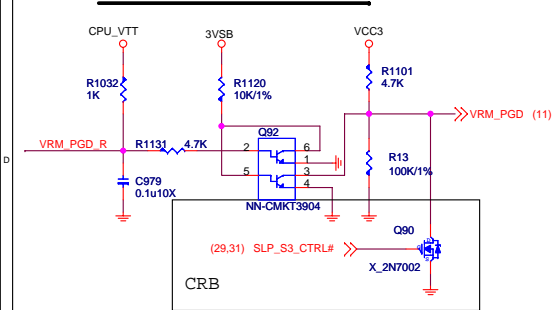


MICRO-STAR INT'L CO.,LTD

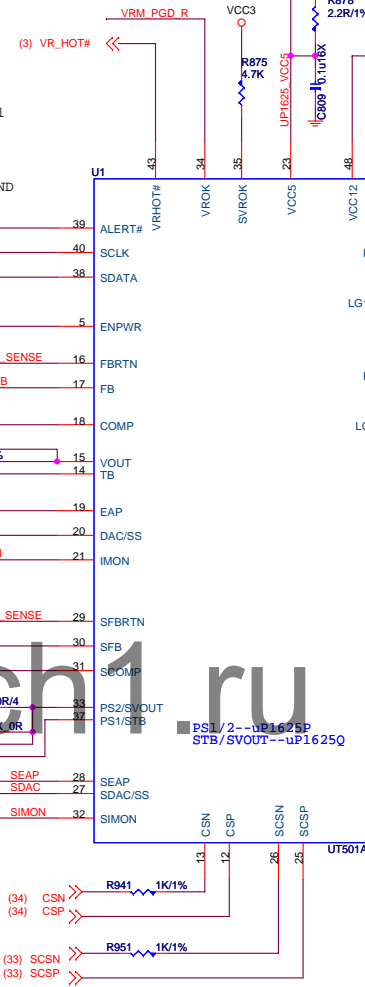
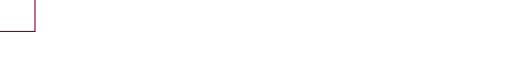
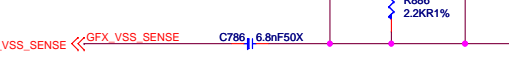
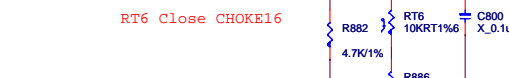
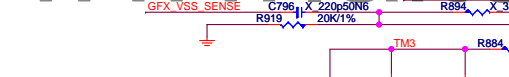
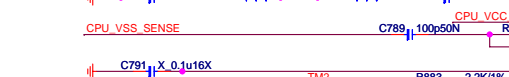
MS-7732

Size	Document Description	Rev
Custom	CPU_SA - uP6103 1-Phase	1.1
Date: Tuesday, May 17, 2011		Sheet 31 of 37

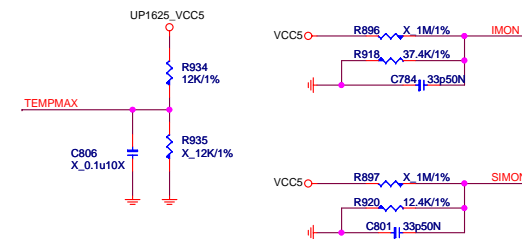
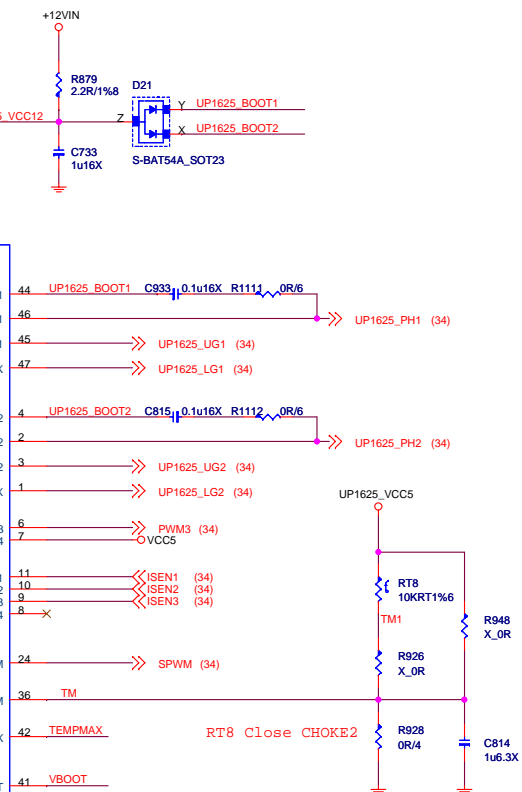
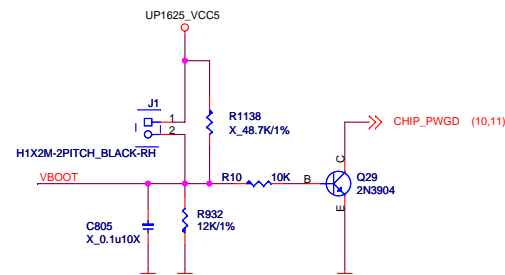
VRMPWRGD LEVEL SHIFT



3000mil < L < 6000mil
4mil / 20mil
55 ohm Impedence
must be Referenced GND



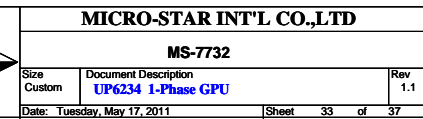
因為UP16250版本來不及趕上我們打板,所以先上P版本

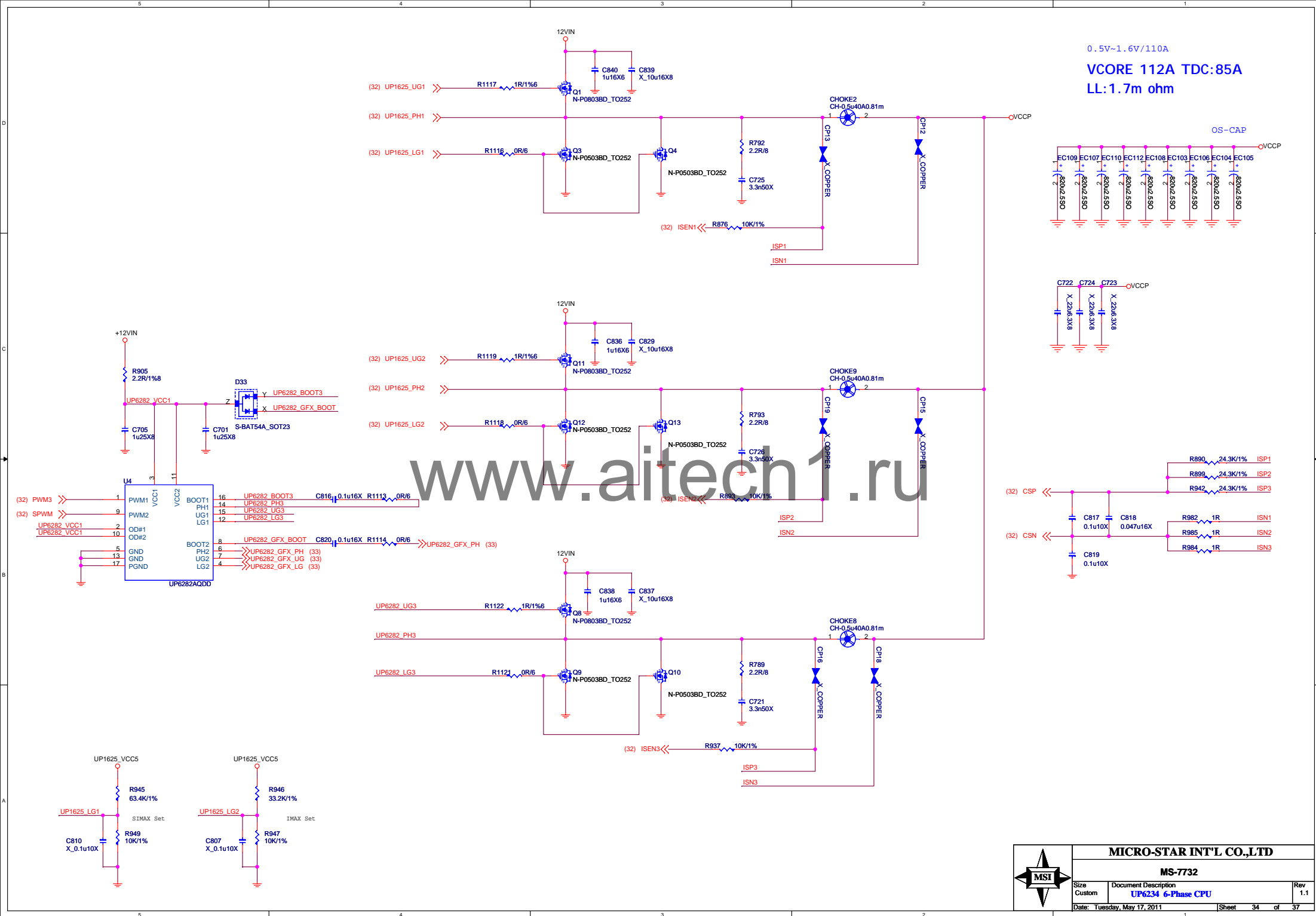


MICRO-STAR INT'L CO.,LTD

MS-7732

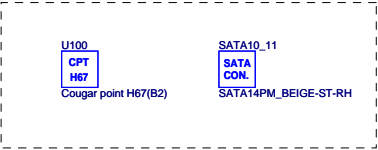
Size	Document Description	Rev
Custom	VRD12 - UP16234 4+1-Phase	1.1
Date:	Tuesday, May 17, 2011	Sheet 32 of 37



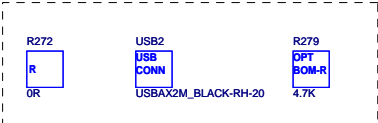


OPT	Configure	BOM	Function	Marketing Name	M.P. ERP NO.
	CFG-7732-A	601-7732-01S	MS-7732 1.0 H61MU-E45 Intel H61+2*DDRIII+1*PCIE16,2*PCIE1,1*PCI+DVI/D-sub +4*SATAII+2*SATAIII+2*USB3.0+8*USB2+6 Flexible audio ports+Gb lan,EuP,(All Solid Cap),RoHS	PH61A-P35 (B3)	
A	CFG-7732-B	601-7732-02S	MS-7732 1.0 OPT:A H61MU-E45 Intel H61+2*DDRIII+1*PCIE16,2*PCIE1,1*PCI+D-sub +4*SATAII+10*USB2+6 Flexible Audio ports+Gb lan,EuP,(All Solid Cap),RoHS	PH61-P33 (B3)	601-7732-010
B	CFG-7732-C	601-7732-03S	MS-7732 1.0 OPT:B H61MU-E45 Intel H61+2*DDRIII+1*PCIE16,2*PCIE1,1*PCI+DVI/D-sub +2*SATAII+6*USB2+3 Flexible Audio ports+Gb lan,EuP,(All Solid Cap),RoHS	PH61-SP35 (B3)	601-7732-020 OPT:C

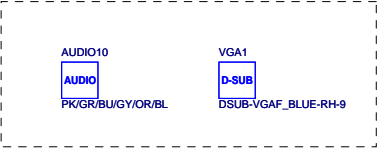
H67 OPT.



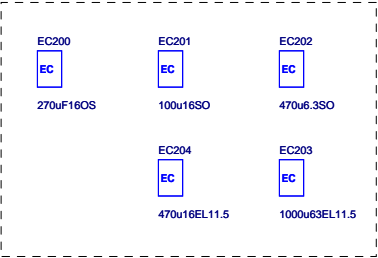
USB 3.0



AUDIO & VGA CON OPT.



EL/OS OPT.

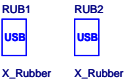


7732-1.0

PK0-0773210-G37, 精成, 23, 寶安恩斯通廠 (MSIS)
PK0-0773210-G37, 精成, 77, 寶安恩斯通廠 (MSIS)
PK0-0773210-E36, E&E, 23, 寶安恩斯通廠 (MSIS)
PK0-0773210-E36, E&E, 27, 寶安恩斯通廠 (MSIS)
PK0-0773210-E48, 麗華, 23, 寶安恩斯通廠 (MSIS)
PK0-0773210-E48, 麗華, 27, 寶安恩斯通廠 (MSIS)



BAT-BCR2032P-RH



X_Rubber X_Rubber



601-7732-01S LABEL



601-7732-02S LABEL

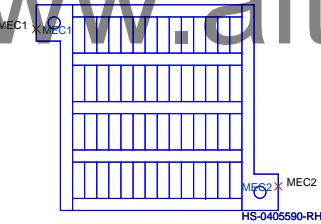


601-7732-03S LABEL



E21-7557050-L06

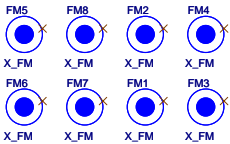
	銀	電泳黑	白色
CPU鐵座	E21-7557040-L06	E21-7670020-L06	E21-7557050-L06



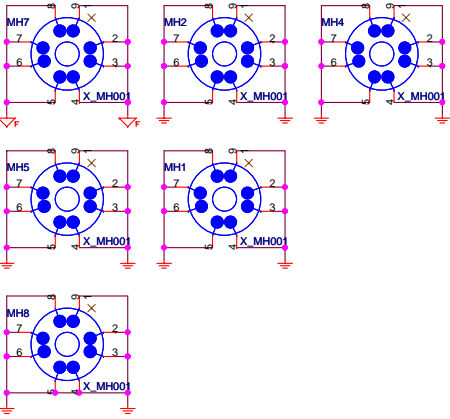
Simulation



Optical Fiducial Marks-120



Mounting Holes



MICRO-STAR INT'L CO.,LTD			
MS-7732			
Size	Document Description	Rev	
Custom	XDP / Manual Parts	1.1	
Date: Tuesday, May 17, 2011	Sheet 35 of 37		