

MS-7680 Ver:3.2 m-ATX : 245 X 210mm

CPU:

INTEL - Sandy Bridge LGA 1155

System Chipset:

INTEL - Cougar Point PCH(H61,Co-lay H67)

OnBoard Chipset:

HD Audio Codec:RTL887 Co-lay 892

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

SIO:FIN71889AD

Flash ROM: 32Mb SPI (PCH)

Main Memory:

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

Expansion Slots:

PCI Express (X16) Slot * 1

PCI Express (X1) Slot * 3

PWM:

Controller:VRD12 UP1625 4+1 Phase

CPU+GPU: UP6282 MOSFET Driver

CPU VTT CPU SA

Controller:uP6103

DDR PCH

ACPI:

UPI

Other:

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

USB2.0 RearX6 Front x8

D-SUB *1

DVI-D PORT*1

HDMI *1

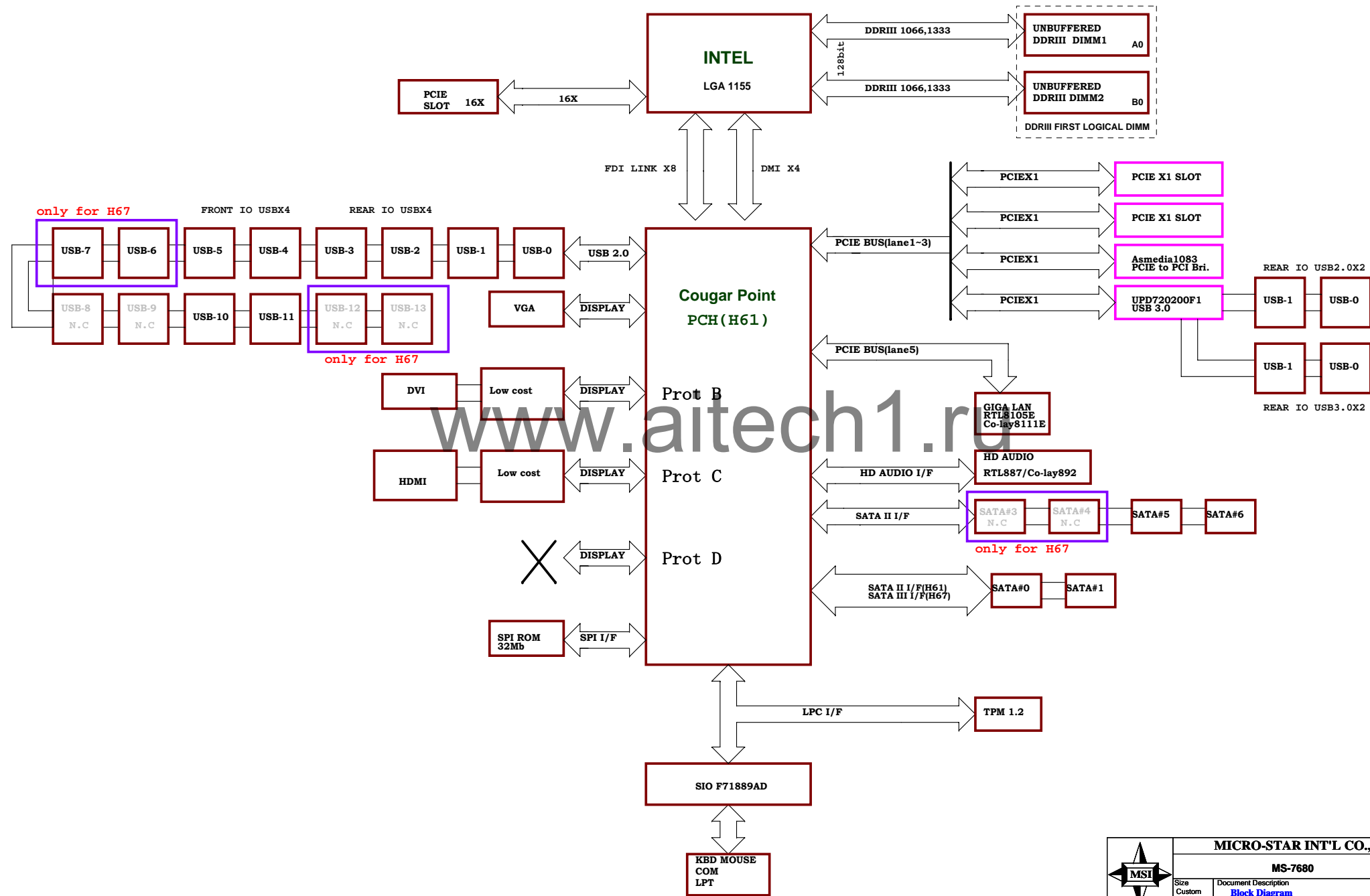
TPM Header *1

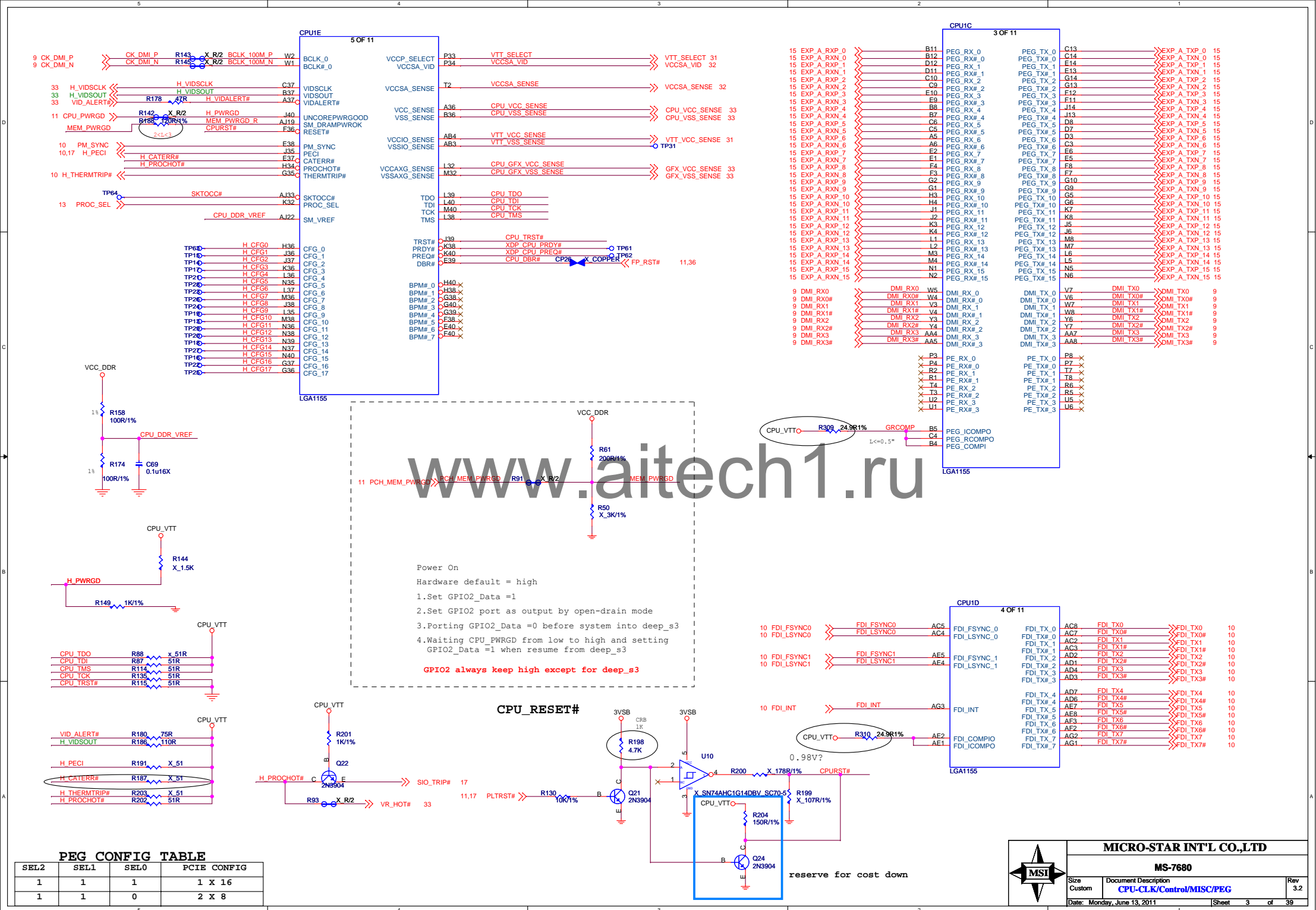
COM Header *1

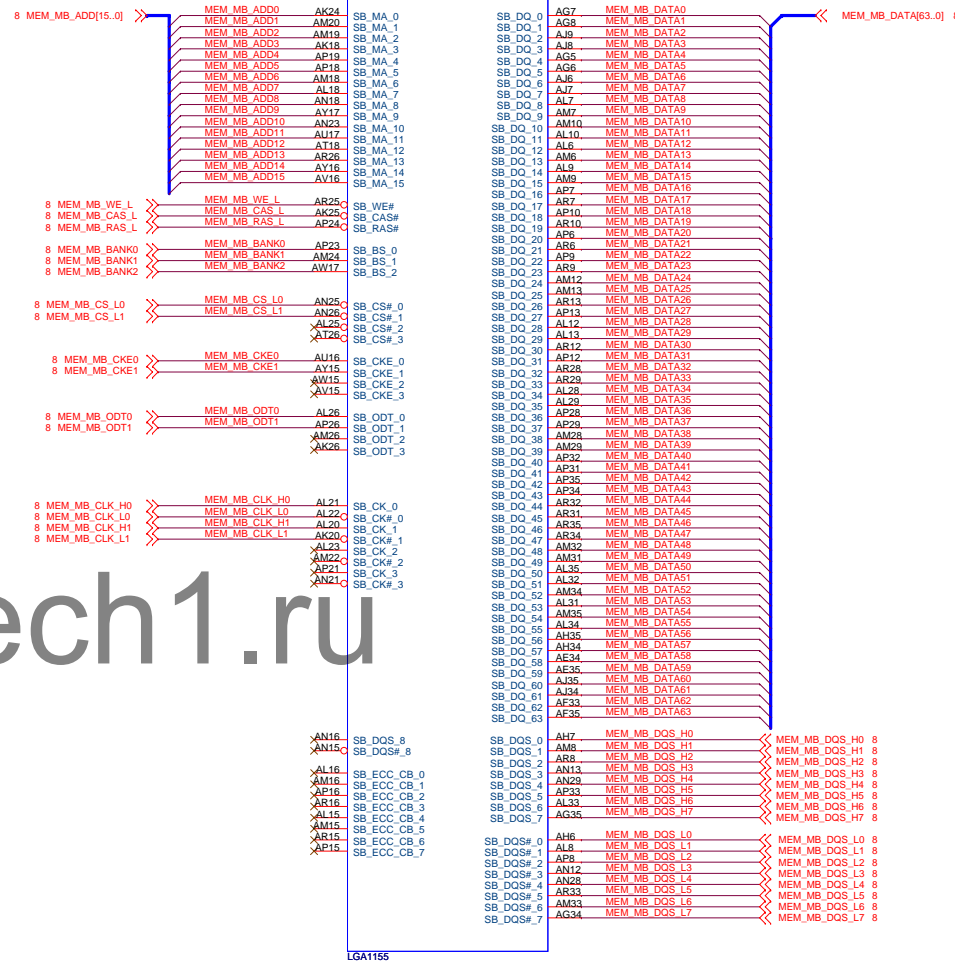
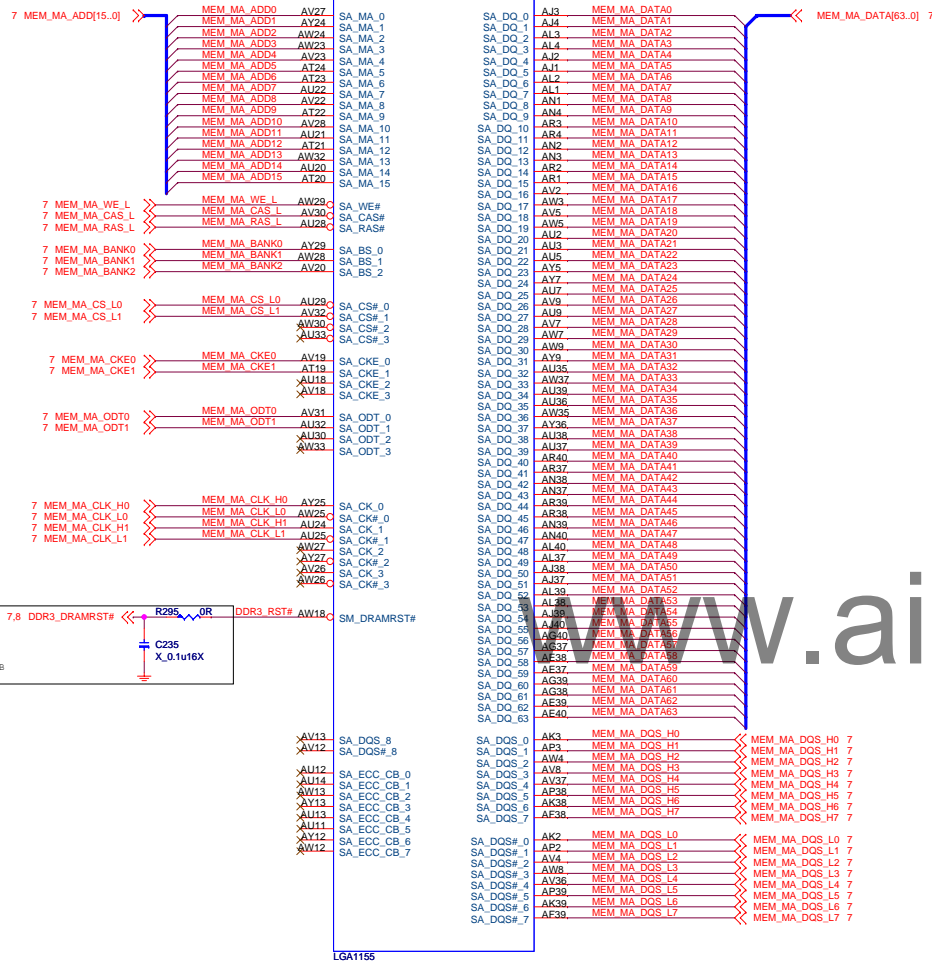
LPT Header *1

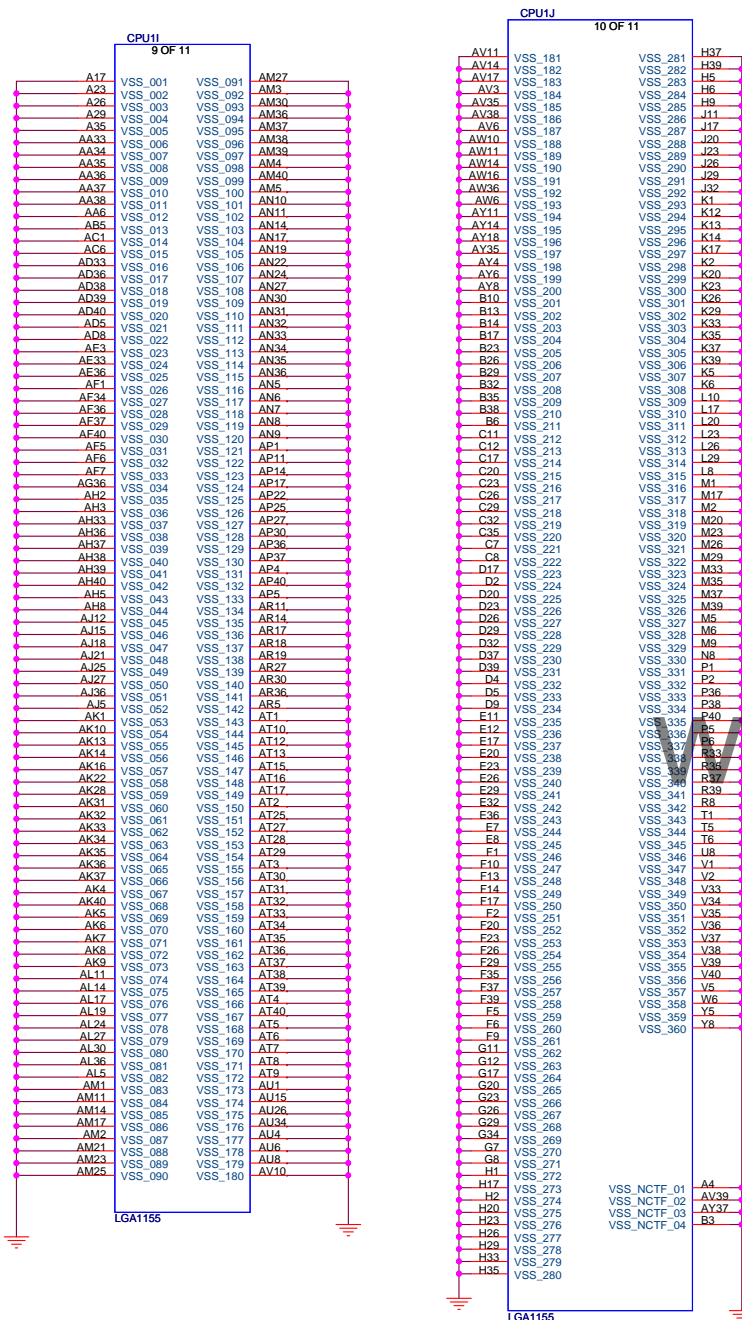
on BOARD BUZZER

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-POWER	12
CP-GND/NVRAM	13
CP Strap	14
PCIe x16 /x1 /x1HDA CO-LAY	15
PCIEx1 Slots	16
SIO-Fintek F71889AD(EUP)	17
LAN - RTL8111E	18
ALC887VD_COLAY_ALC892	19
DVI transfer	20
HDMI	21
VGA	22
SATA / FAN Control	23
USB Connector	24
ACPI Controller UPI	25
Power Saving circuit&APS	26
DDR Power - uP6103 1-Phase	27
PCH Power - uP6103 1-Phase	28
CPU_VTT - uP6103- 1-Phase	29
CPU_SA - uP6103 1-Phase	30
VRD12 - uPI6234	31
uPI6234 3-Phase CPU	32
uPI6234 1-Phase GPU	33
ATX F_Panel/EMI/TPM/LPT	34
XDP / Manual Parts	35

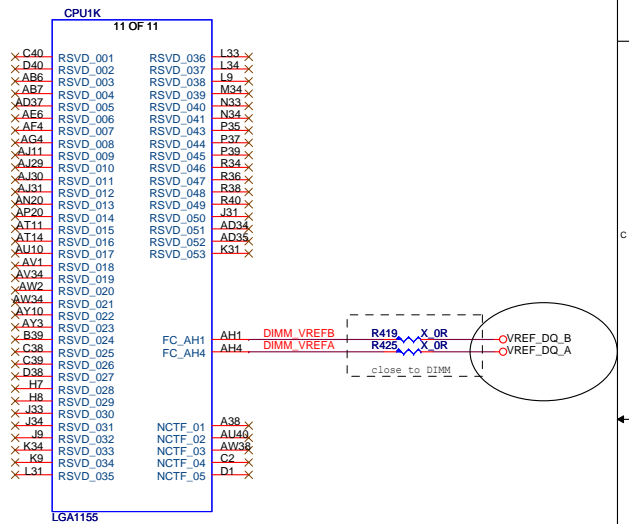






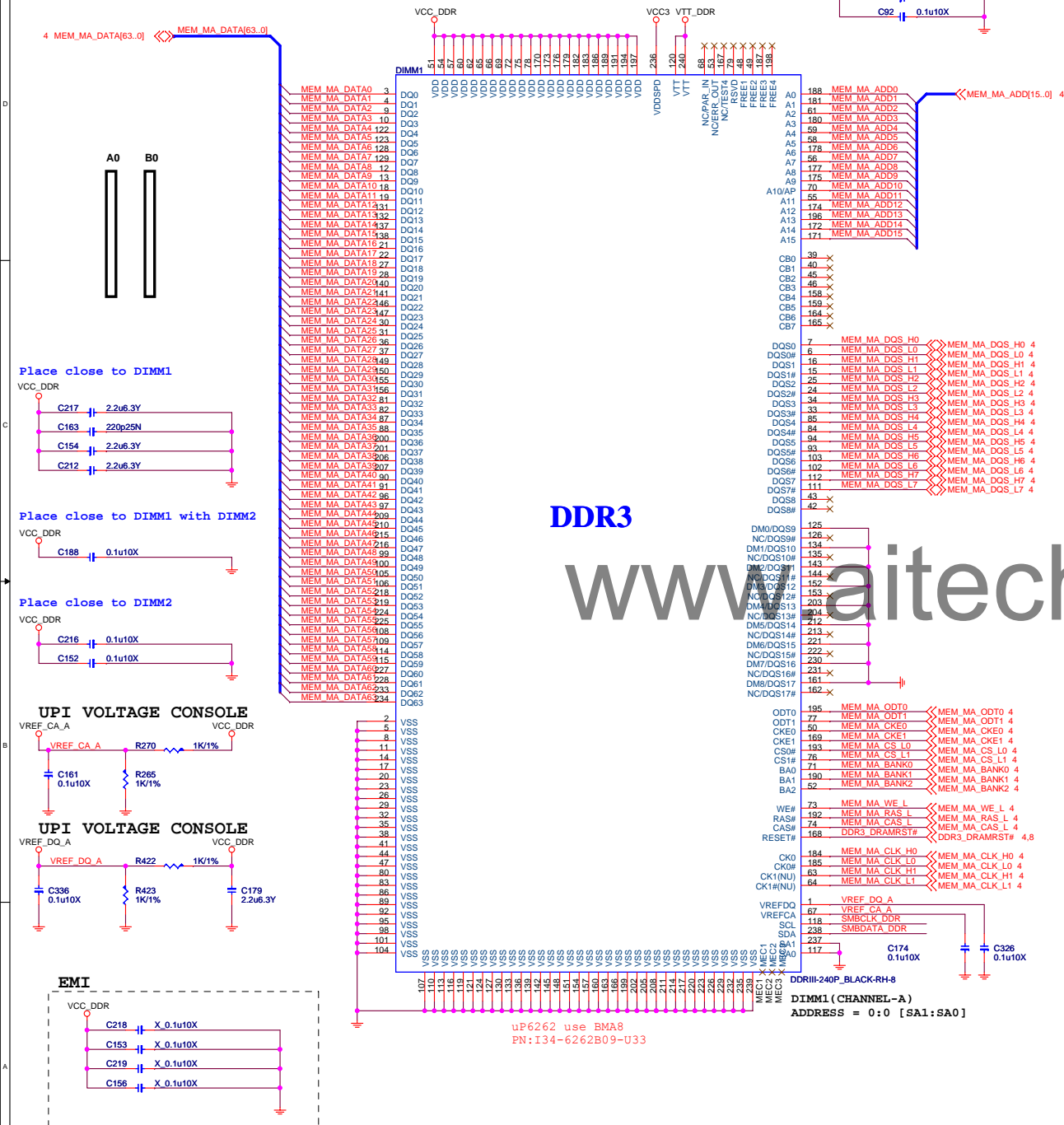


CRB 0.7 107 page

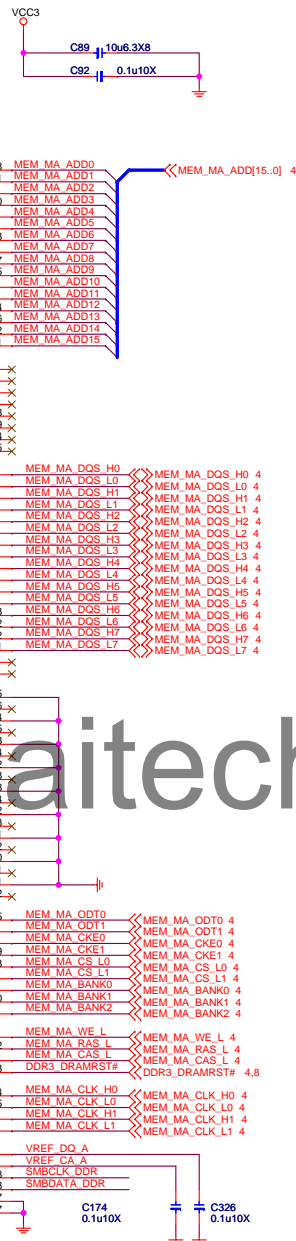


www.aitech1.ru

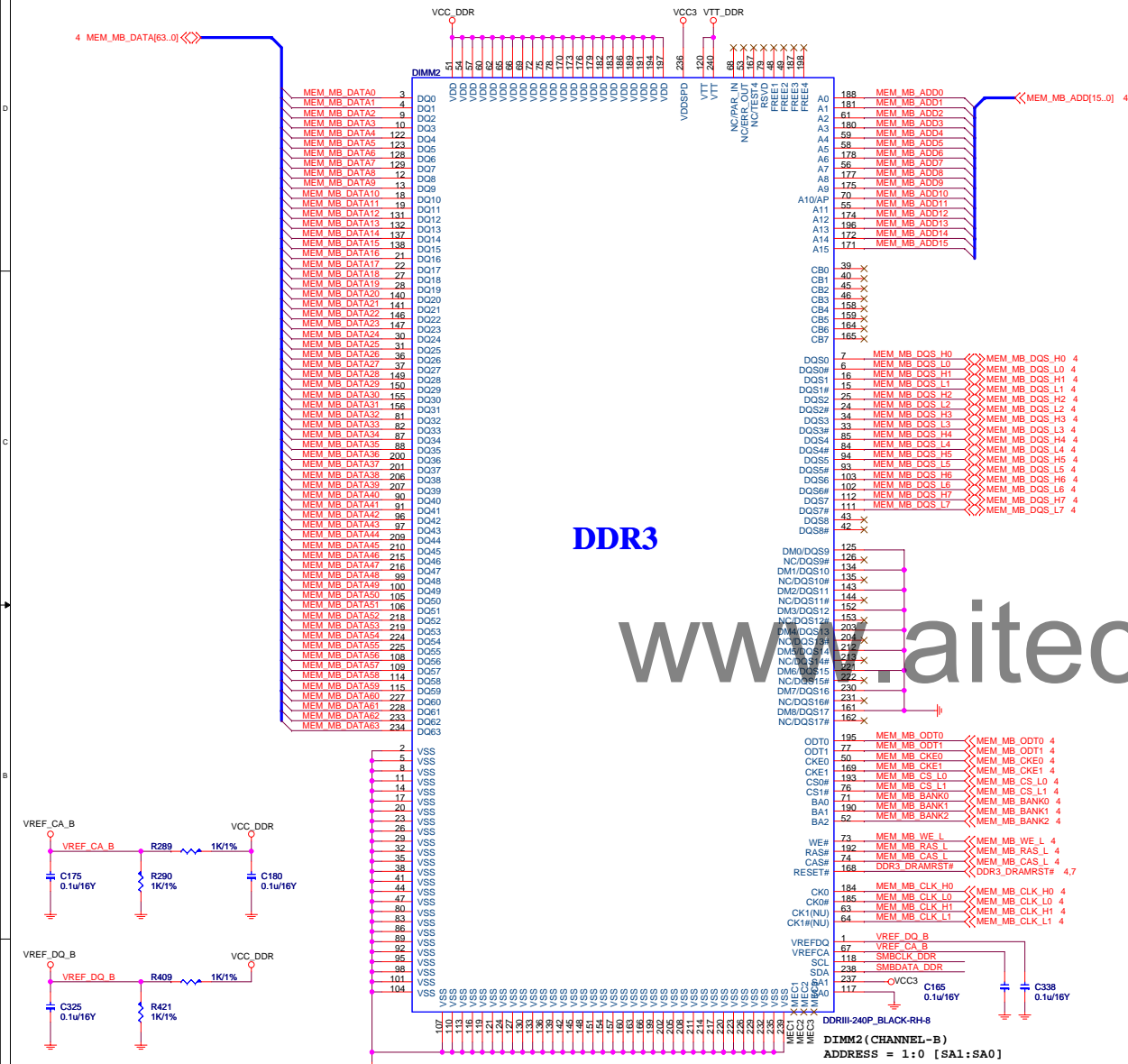
DDRIII DIMM_A0



DDRIII DIMM_A1



DDRIII DIMM_B0

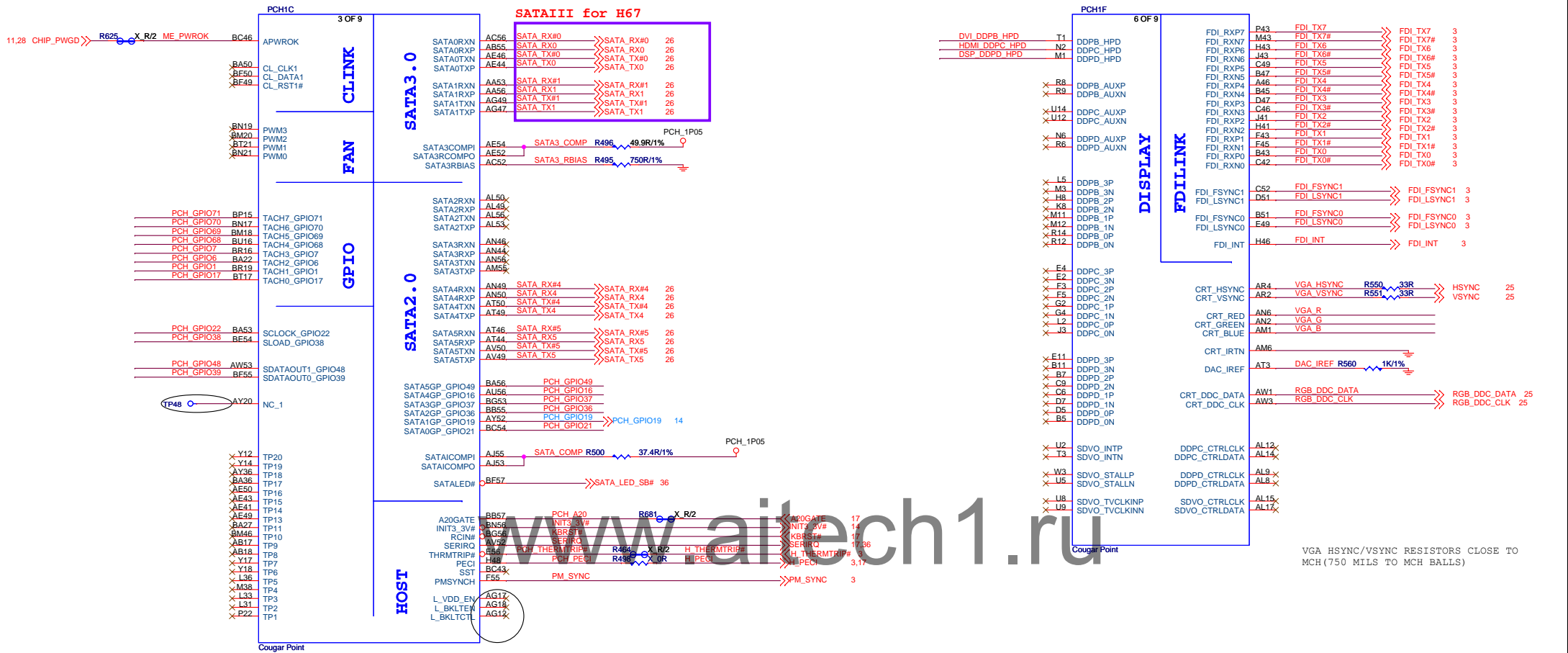


DDR3

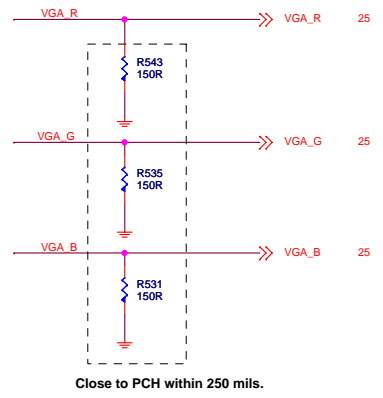
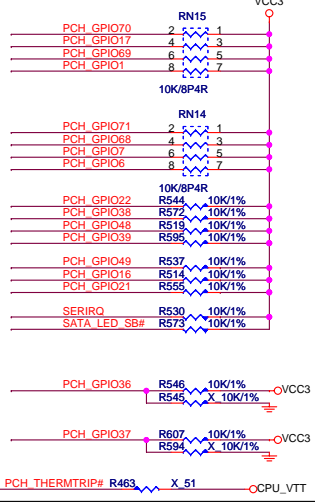
www.aitech1.ru

SMBCLK_DDR SMBCLK_DDR 7
SMBDATA_DDR SMBDATA_DDR 7

MICRO-STAR INT'L CO.,LTD		
MS-7680		
Size	Document Description	Rev
Custom	DDR III DIMM 3 / DIMM 4	3.2
Date: Monday, June 13, 2011		Sheet 8 of 39




Pull HIGH for PCH



No VGA(pull down)



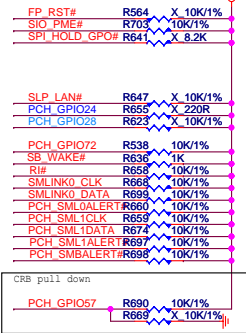
Enable VGA(CTRLCLK/DATA Pull High)



MICRO-STAR INT'L CO.,LTD		
MS-7680		
Size	Document Description	Rev
Custom	CP-SATA/HOST/FAN/GPIO/VGA	3.2
Date: Monday, June 13, 2011	Sheet	10 of 39

REQUIRED STRAPS

Internal pull-up
Internal pull-up



SUSWARN# CP R682 X 0R SUSACK# CP RSMRST# R608 X 0R

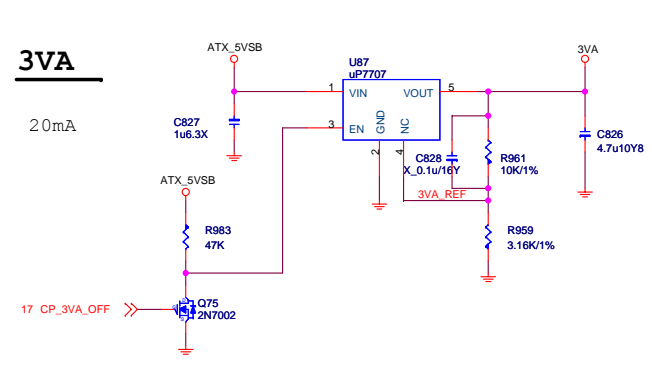
PCH GPIO31 R675 10K/1% 3VA
PCH GPIO27 R762 10K/1%
SUSACK# CP R16 10K
DPWROK CP R25 10K

PCIECLKREQ2# R574 10K/1%
PCIECLKREQ5# R634 10K/1%
PCIECLKREQ6# R539 10K/1%
PCIECLKREQ7# R640 10K/1%
PCH GPIO33 R717 X 1K

PCIECLKREQ can't find 0/1/3/4
SUSWARN# CP R700 X 10K/1% 0402 3VA
R665 X 10K/1%

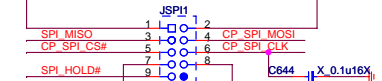
3VA

20mA



SPI DEBUG PROT

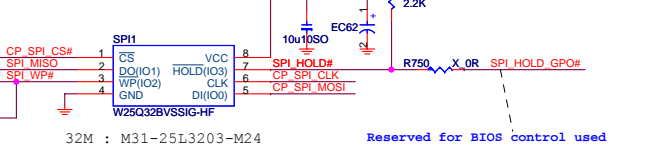
Close to SPI ROM



H2X510M-2PITCH_BLACK-RH-2
Part Number: N31-2051451-H06

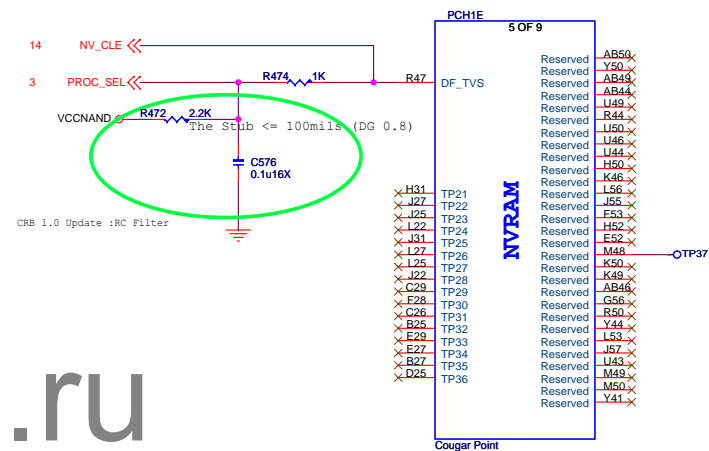
SPI FLASH ROM

Place close to SB.



MICRO-STAR INT'L CO.,LTD			
MS-7680			
Size	Document Description	Rev	
Custom	CP-SMB/LPC/AUDIO/RTC	3.2	
Date: Monday, June 13, 2011	Sheet	11	of 39

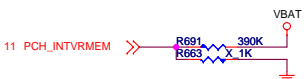
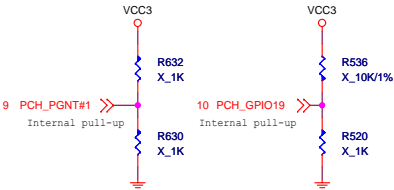
Reserved for BIOS control used

**MS-7680**

Size Custom	Document Description CP-GND/NVRAM	Rev 3.2
Date: Monday, June 13, 2011		Sheet 13 of 39

PCH Straps

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



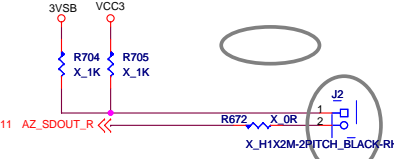
INTVRMEN
0: DISABLE INTERNAL VRM
1: ENABLE INTERNAL VRM *

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



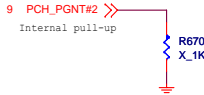
DSWVRMEN
0 : Disable Internal Deep Sleep 1.05 V regulators.
1 : Enable Internal Deep Sleep 1.05 V regulators.

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

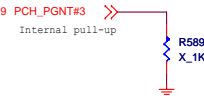


HDA_SDO
Disable ME in Manufacturing Mode when pull LOW ????

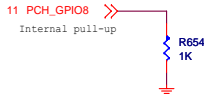
HDA_SDO has internal pull down.
Default should be connected to SDIN of codec, no pull up/down.
To Disable ME need to have a jumper to pull high



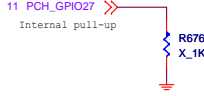
DMI AC/DC MODE
0 : AC
1 : DC *



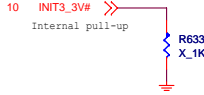
Topblock swap override when pull-low
Signal has a weak internal pull-up



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 : ?????????????? *

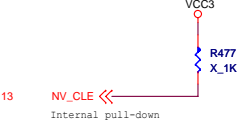
1: INIT3_3V to asserted for 16 PCI clock to reset the processor by some evens occur.
0: Can not to reset the processor.



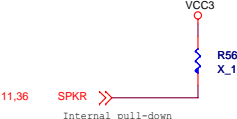
HDA_SYNC
OD PLL VR SUPPLY SEL
0: 1.8V SUPPLY*
1: 1.5V SUPPLY



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



DMI/FDI TERMINATION VOLTAGE
DC COUPLED: TX/RX TO VCC ISF 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

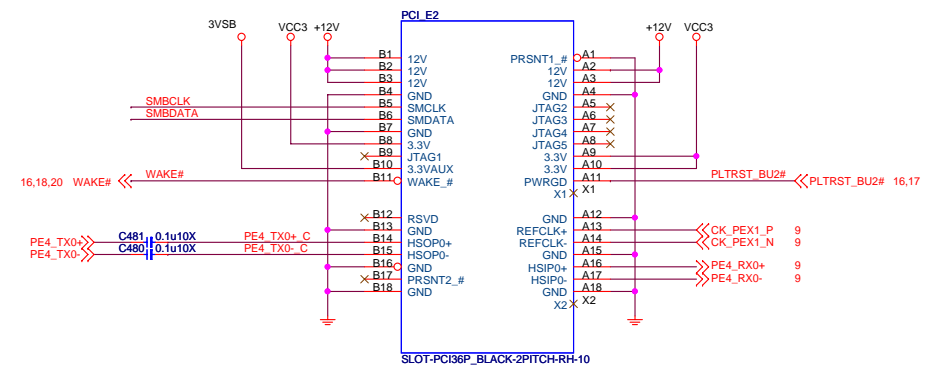
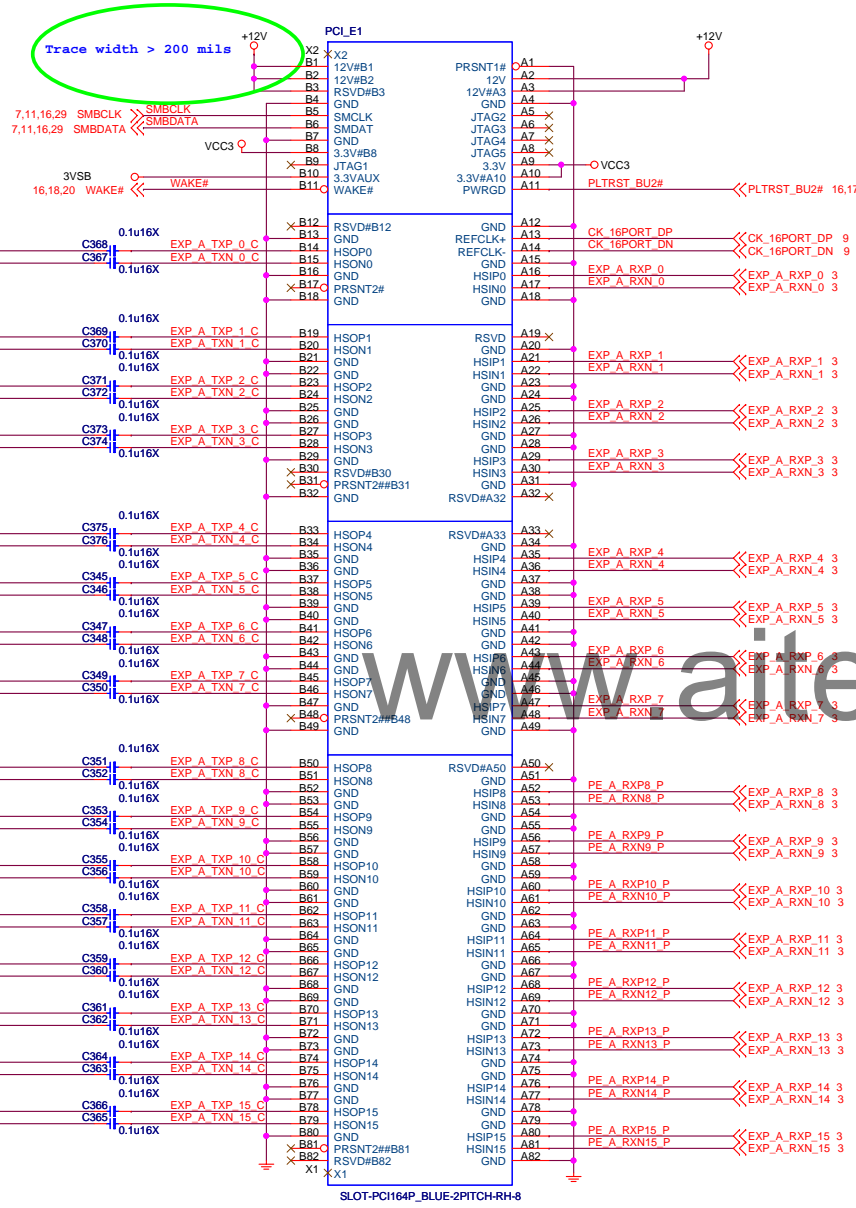
MICRO-STAR INT'L CO.,LTD

MS-7680

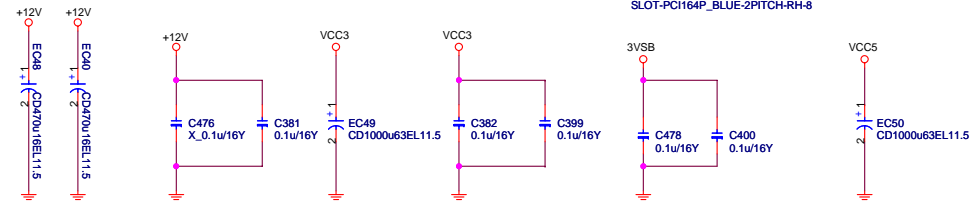
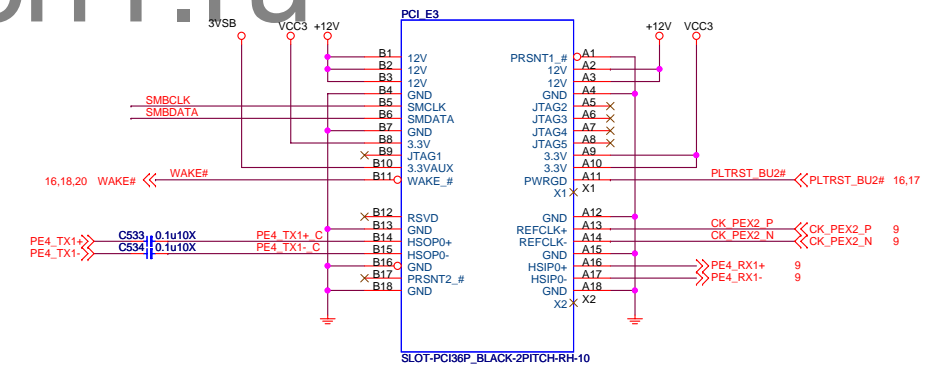
Size Custom	Document Description CP-Strap	Rev 3.2
Date: Monday, June 13, 2011		Sheet 14 of 39

PCI_Express X16 slot

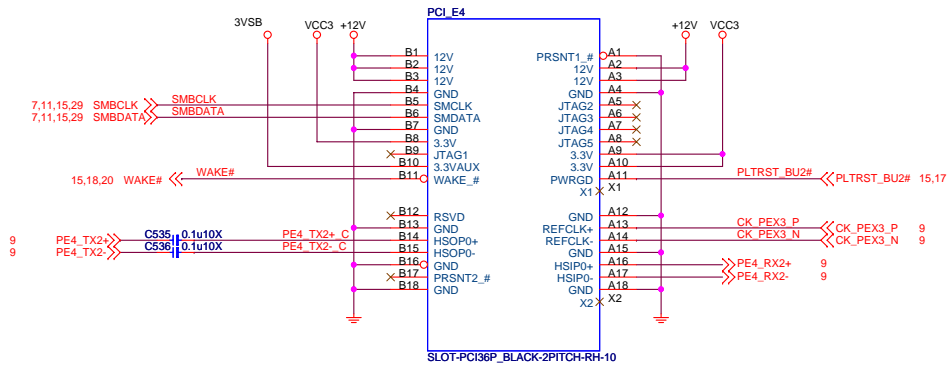
PCI EXPRESS x1-PORT



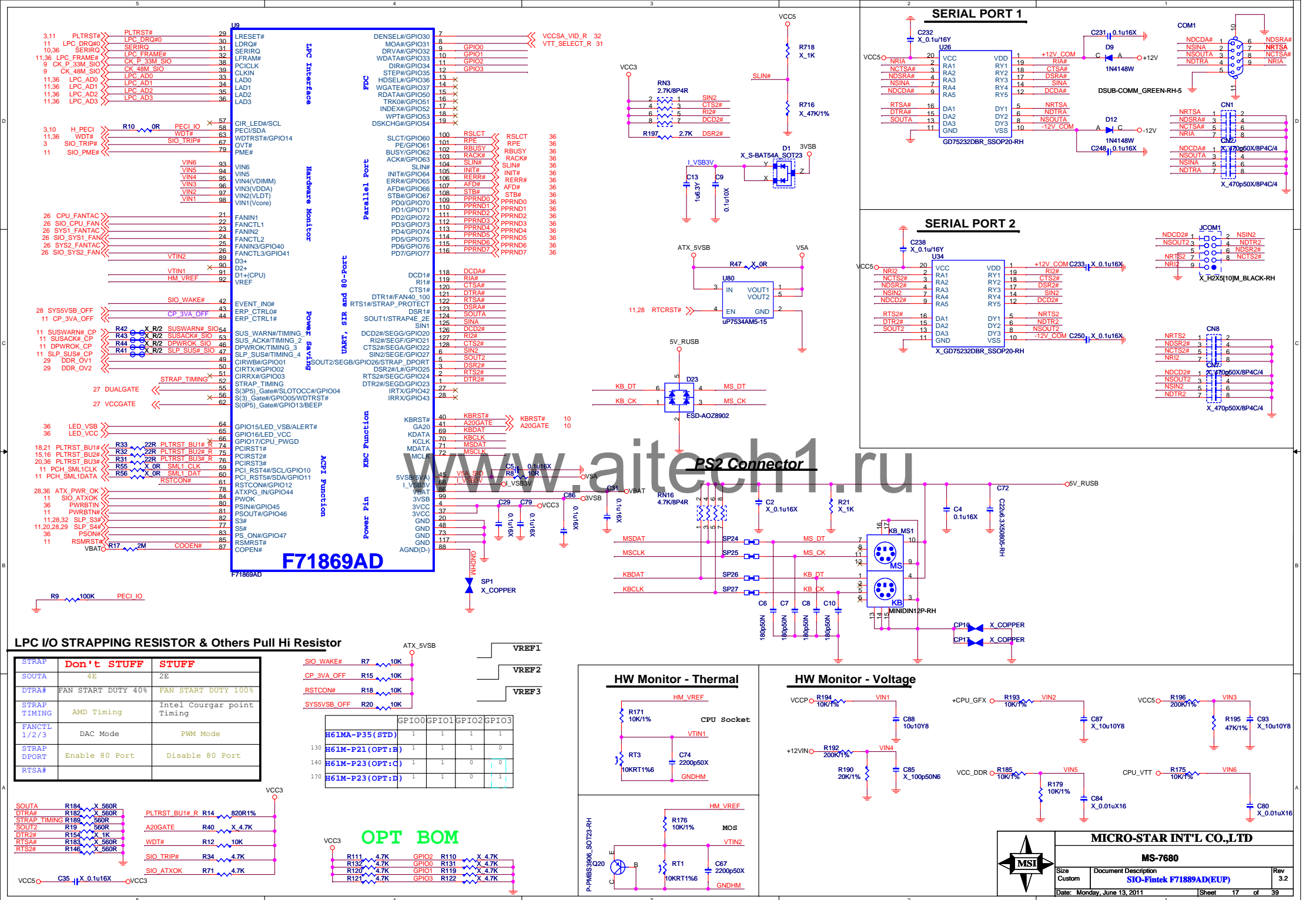
PCI EXPRESS x1-PORT



PCI EXPRESS x1-PORT

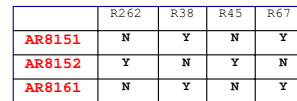


www.aitech1.ru

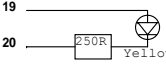



Remove pull-up R if R existence on motherboard

	R471
AR8151	N
AR8152	N
AR8161	Y



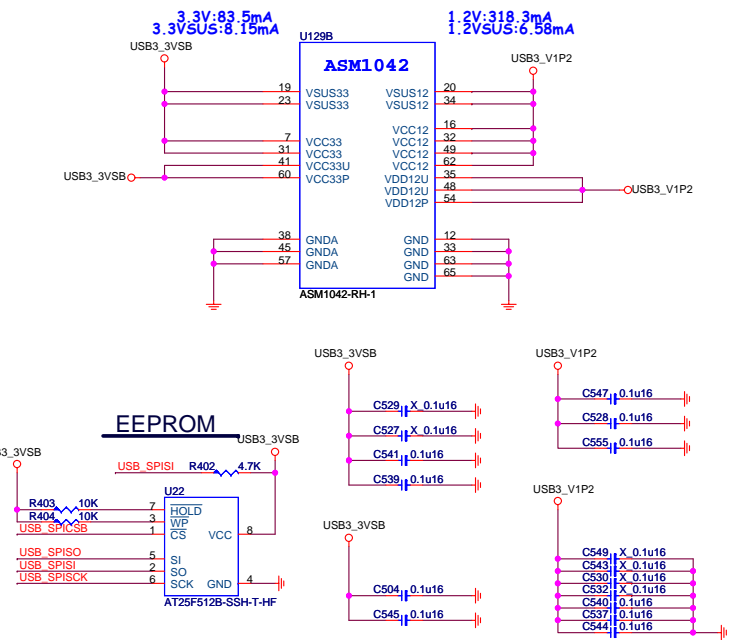
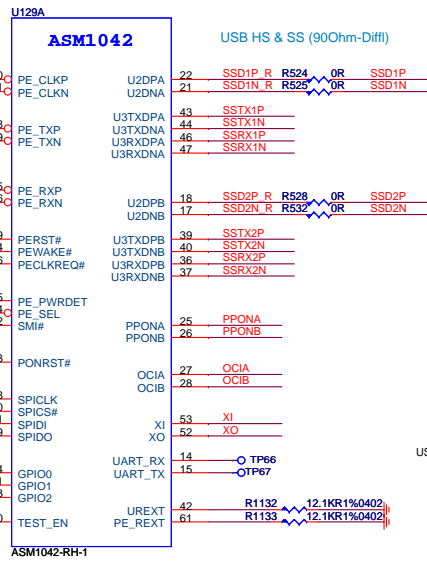
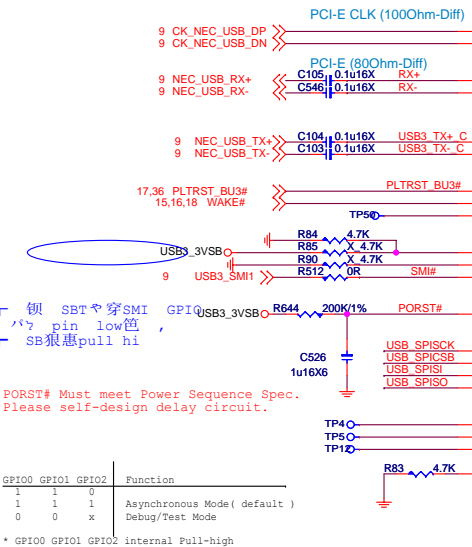
	R81	R82
AR8151	Y	N
AR8152	N	Y
AR8161	Y	N

Giga-Lan		10/100-Lan	
N58-22F0731		N58-22F0771	
Link	Yellow	Link	Yellow
Active	Blinking	Active	Blinking
1000	Orange	100	Green
100	Green	10	None
10	None		
			

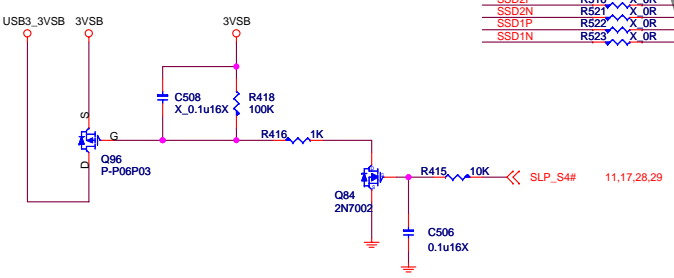


Size Custom	Document Description LAN - RTL8111E / 8105E	Rev 3.2
Date: Monday, June 13, 2011		Sheet 18 of 39

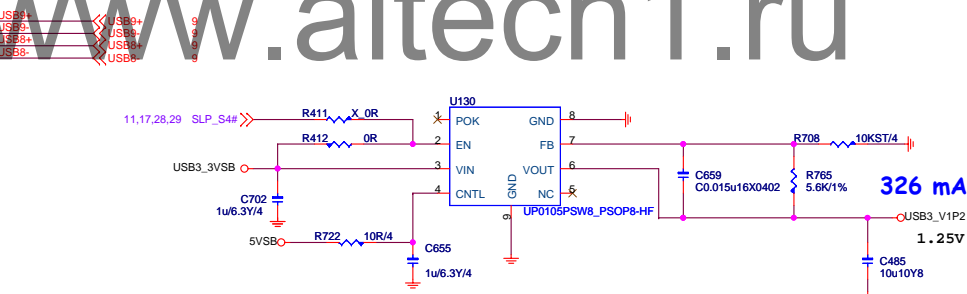
ASM1042 USB3.0



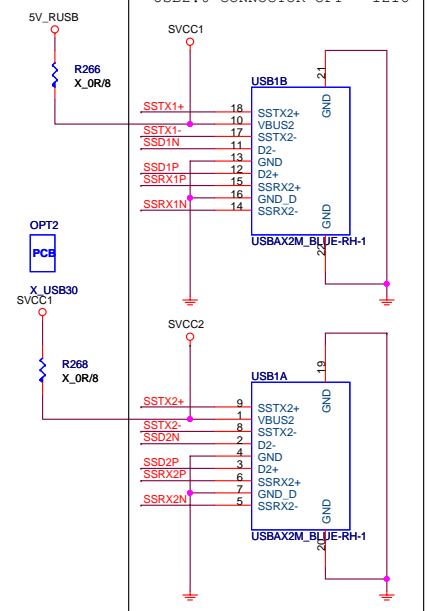
3V_Dual Circuit



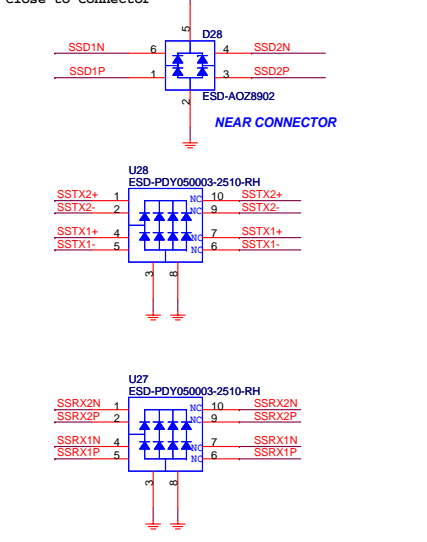
www.aitech1.ru



Rear USB3 CONN



ESD Protection



MICRO-STAR INT'L CO.,LTD

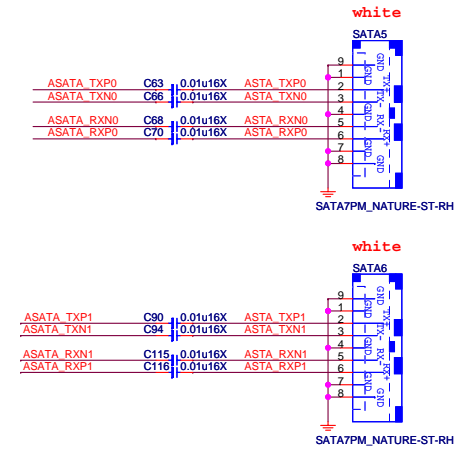
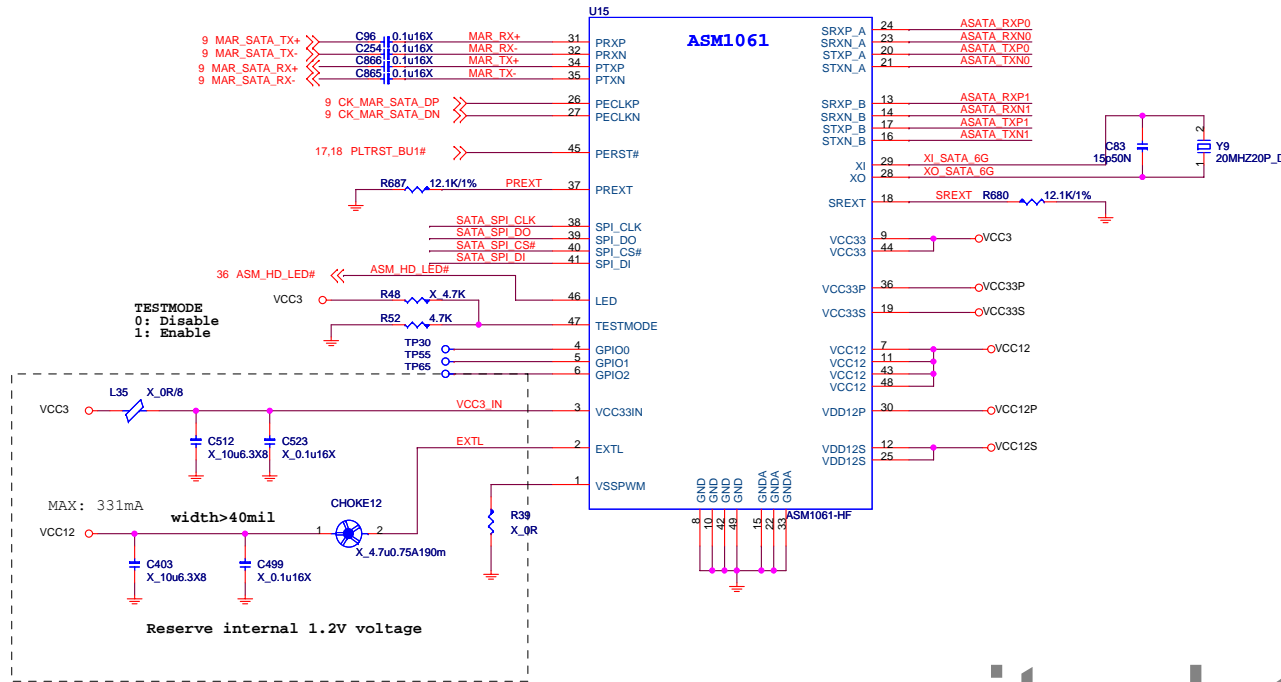
MS-7680

Size	Document Description	Rev
Custom	ASM1042-USB 3.0	3.2

Date: Monday, June 13, 2011 Sheet 20 of 36

remove usb30 stuff

ASM1061 SATA6G



1.2V delay from 3.3V 90% > 0ms

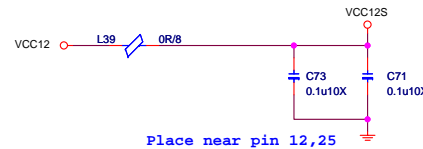
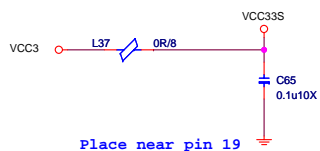
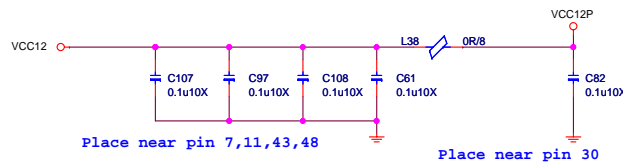
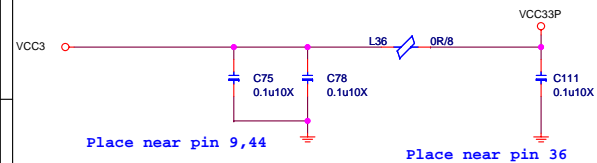
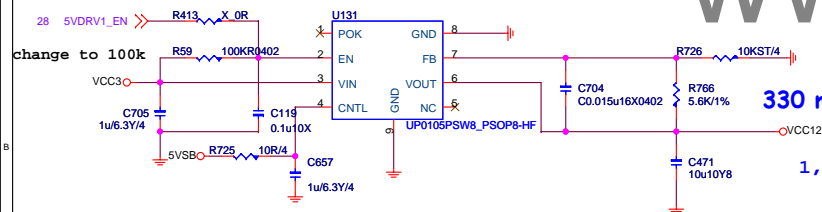
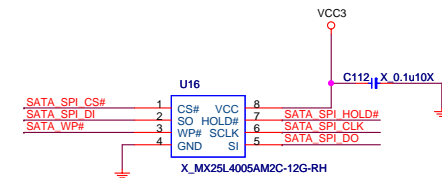
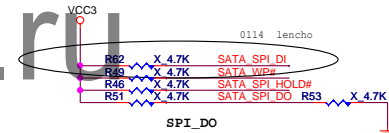
www.aitech1.ru

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

330 mA

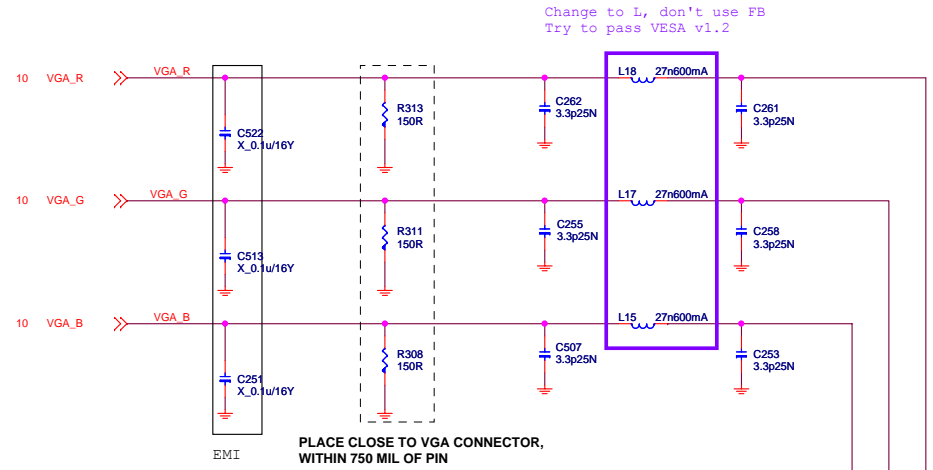
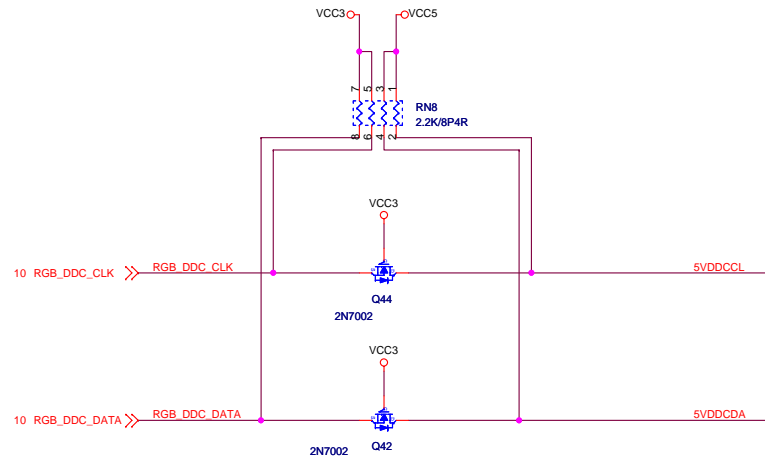
1,25V



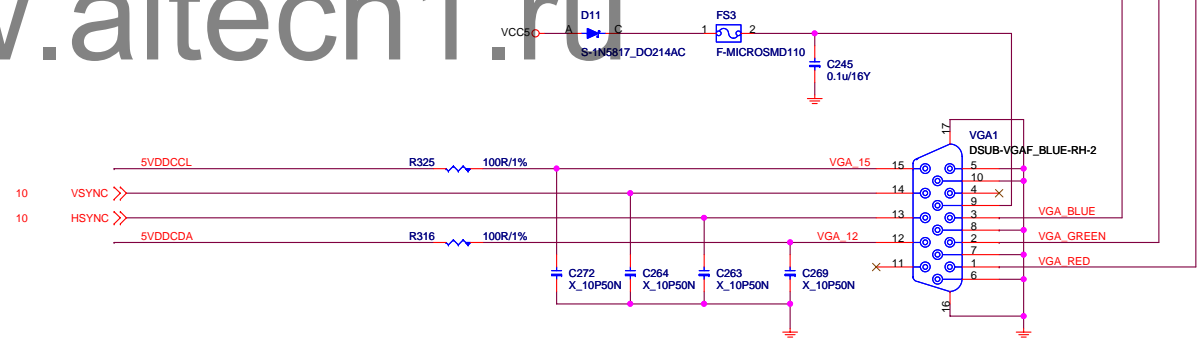
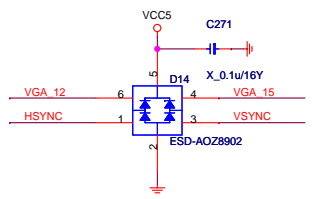
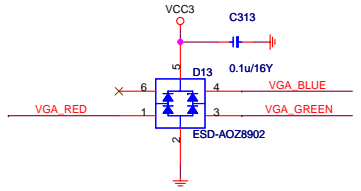
D-Sub

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

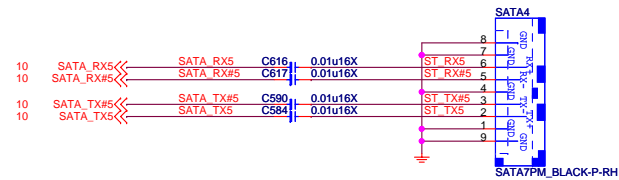
LevelShift



www.aitech1.ru



H61 PORT 0/1 3G
H67 PORT 0/1 6G



SYSTEM FAN2

The schematic diagram shows the following components and connections:

- Power Supply:** +12V supply connected to the circuit.
- Input:** 17 SIO_SYS2_FAN<> connected to pin 5 of U31B.
- Op-Amp (U31B):** LM358D_SOIC6. Pin 1 is connected to ground. Pin 4 is connected to ground. Pin 7 is connected to ground. Pin 8 is connected to +12V. Pin 9 is connected to ground. Pin 10 is connected to ground. Pin 11 is connected to ground. Pin 12 is connected to ground. Pin 13 is connected to ground. Pin 14 is connected to ground. Pin 15 is connected to ground. Pin 16 is connected to ground. Pin 17 is connected to ground. Pin 18 is connected to ground. Pin 19 is connected to ground. Pin 20 is connected to ground. Pin 21 is connected to ground. Pin 22 is connected to ground. Pin 23 is connected to ground. Pin 24 is connected to ground. Pin 25 is connected to ground. Pin 26 is connected to ground. Pin 27 is connected to ground. Pin 28 is connected to ground. Pin 29 is connected to ground. Pin 30 is connected to ground. Pin 31 is connected to ground. Pin 32 is connected to ground. Pin 33 is connected to ground. Pin 34 is connected to ground. Pin 35 is connected to ground. Pin 36 is connected to ground. Pin 37 is connected to ground. Pin 38 is connected to ground. Pin 39 is connected to ground. Pin 40 is connected to ground. Pin 41 is connected to ground. Pin 42 is connected to ground. Pin 43 is connected to ground. Pin 44 is connected to ground. Pin 45 is connected to ground. Pin 46 is connected to ground. Pin 47 is connected to ground. Pin 48 is connected to ground. Pin 49 is connected to ground. Pin 50 is connected to ground. Pin 51 is connected to ground. Pin 52 is connected to ground. Pin 53 is connected to ground. Pin 54 is connected to ground. Pin 55 is connected to ground. Pin 56 is connected to ground. Pin 57 is connected to ground. Pin 58 is connected to ground. Pin 59 is connected to ground. Pin 60 is connected to ground. Pin 61 is connected to ground. Pin 62 is connected to ground. Pin 63 is connected to ground. Pin 64 is connected to ground. Pin 65 is connected to ground. Pin 66 is connected to ground. Pin 67 is connected to ground. Pin 68 is connected to ground. Pin 69 is connected to ground. Pin 70 is connected to ground. Pin 71 is connected to ground. Pin 72 is connected to ground. Pin 73 is connected to ground. Pin 74 is connected to ground. Pin 75 is connected to ground. Pin 76 is connected to ground. Pin 77 is connected to ground. Pin 78 is connected to ground. Pin 79 is connected to ground. Pin 80 is connected to ground. Pin 81 is connected to ground. Pin 82 is connected to ground. Pin 83 is connected to ground. Pin 84 is connected to ground. Pin 85 is connected to ground. Pin 86 is connected to ground. Pin 87 is connected to ground. Pin 88 is connected to ground. Pin 89 is connected to ground. Pin 90 is connected to ground. Pin 91 is connected to ground. Pin 92 is connected to ground. Pin 93 is connected to ground. Pin 94 is connected to ground. Pin 95 is connected to ground. Pin 96 is connected to ground. Pin 97 is connected to ground. Pin 98 is connected to ground. Pin 99 is connected to ground. Pin 100 is connected to ground.
- Resistors:**
 - R566: 10K/1%
 - R559: 10K/1%
 - R561: 3.9K/1%
 - R552: 4.7K
 - R554: 27K
 - R565: 10K/1%
- Capacitors:**
 - C571: 0.1u16X
 - EC57: CD100u25EL11-RH
- Diode:** D25: 1N4148W
- Fan Motor:** FAN1X3, 0R/8, 03LCG_SOT89
- Output:** SYS2_FANTAC 17

SATA7PM_BLACK-P-RH

www.aitech1.ru

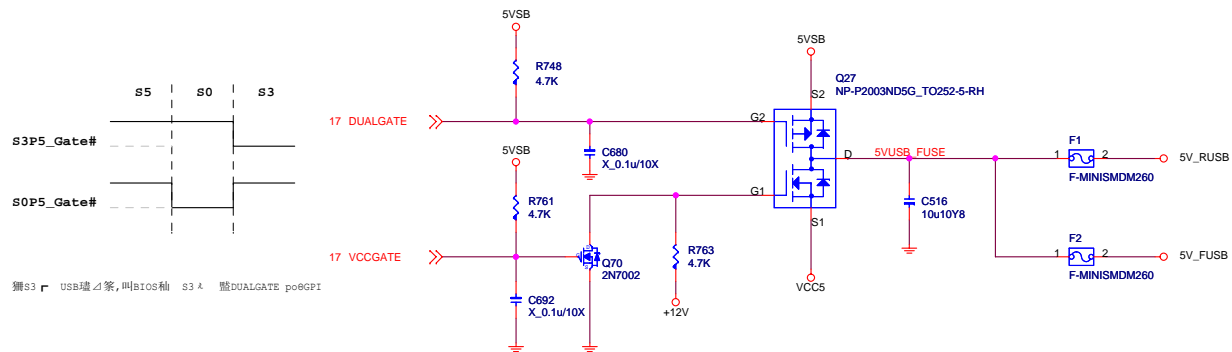
R317

R318
X_3.9K1%

**MS-7680**

Size Custom	Document Description SATA / FAN Control	Rev 3.2
Date: Tuesday, June 28, 2011		Sheet 26 of 39

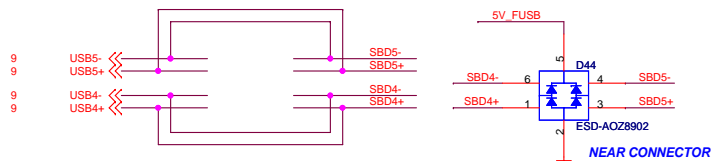
5V_RUSB Switch



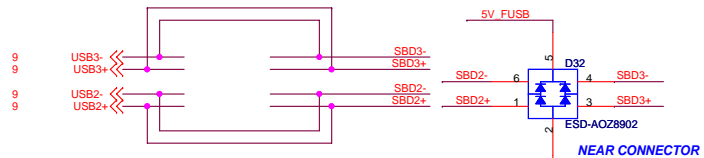
Front USB Connector

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

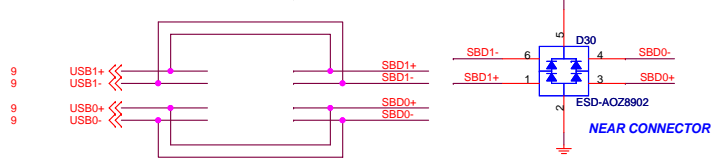
FRONT USB PORT 4,5



FRONT USB PORT 2,3

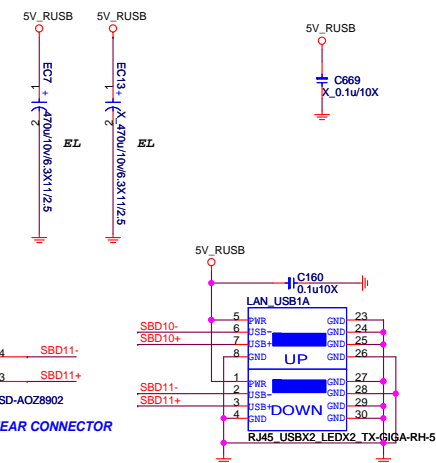


FRONT USB PORT 0,1

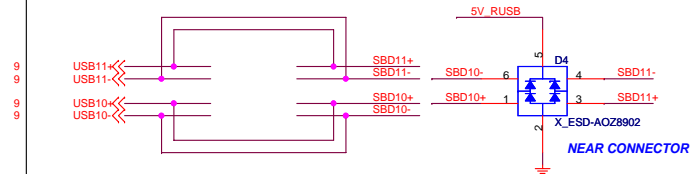


Rear USB Connector

NEAR USB REAR CONNECTOR



REAR USB PORT 10,11 (With LAN)

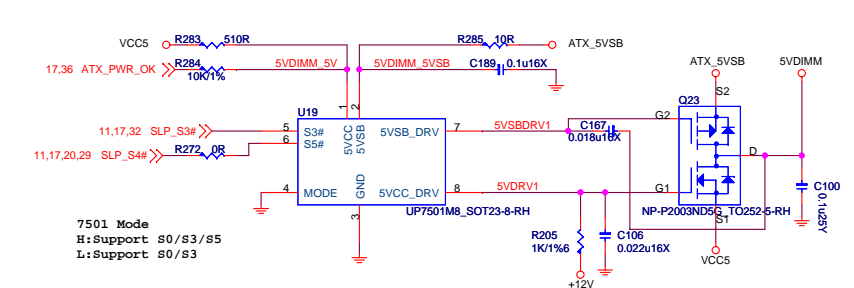


MICRO-STAR INT'L CO.,LTD

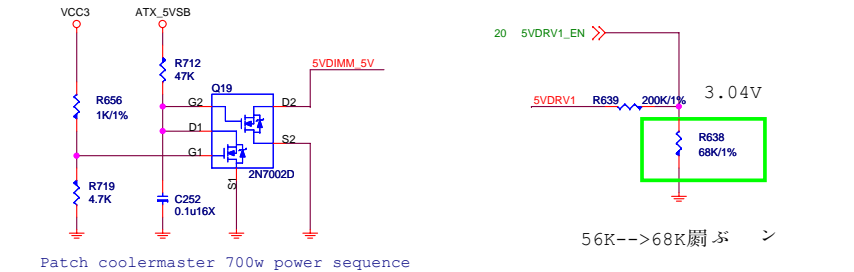
MS-7680

Size Custom	Document Description USB Connector	Rev 3.2
Date: Monday, June 13, 2011		Sheet 27 of 39

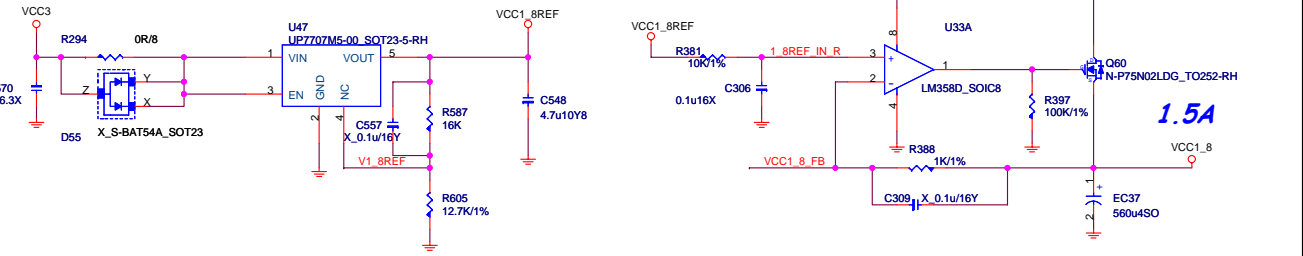
5VDIMM FOR DDR



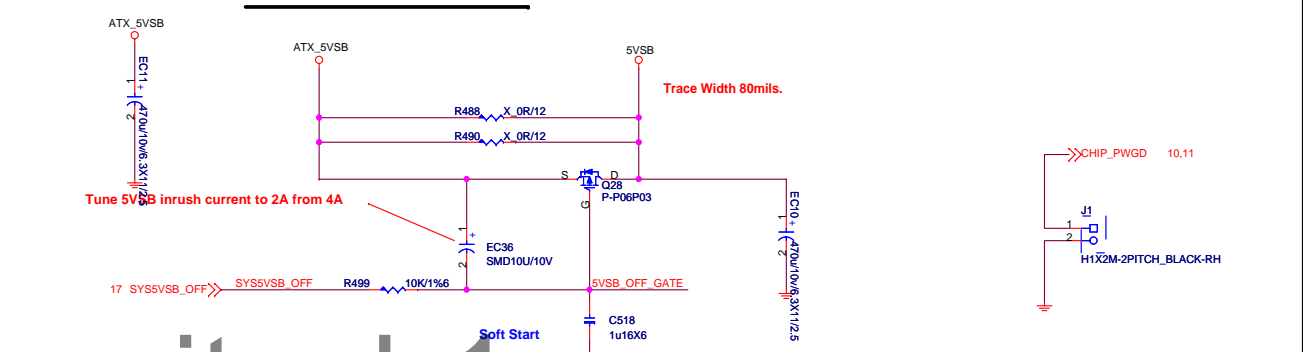
USB MODE



VCC1_8REF

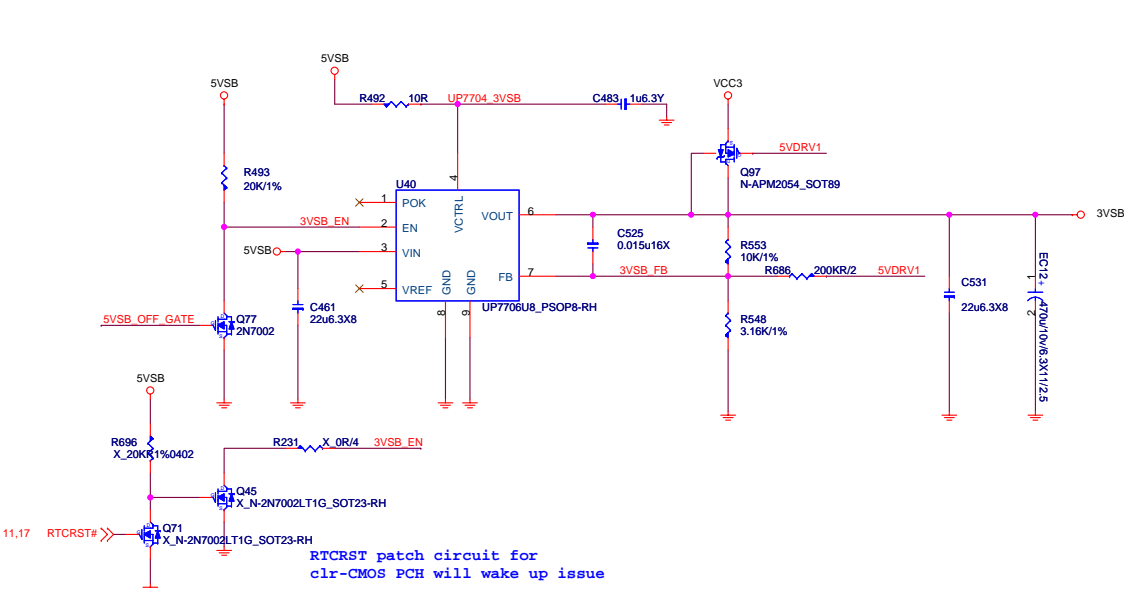


5VSB Power Switch



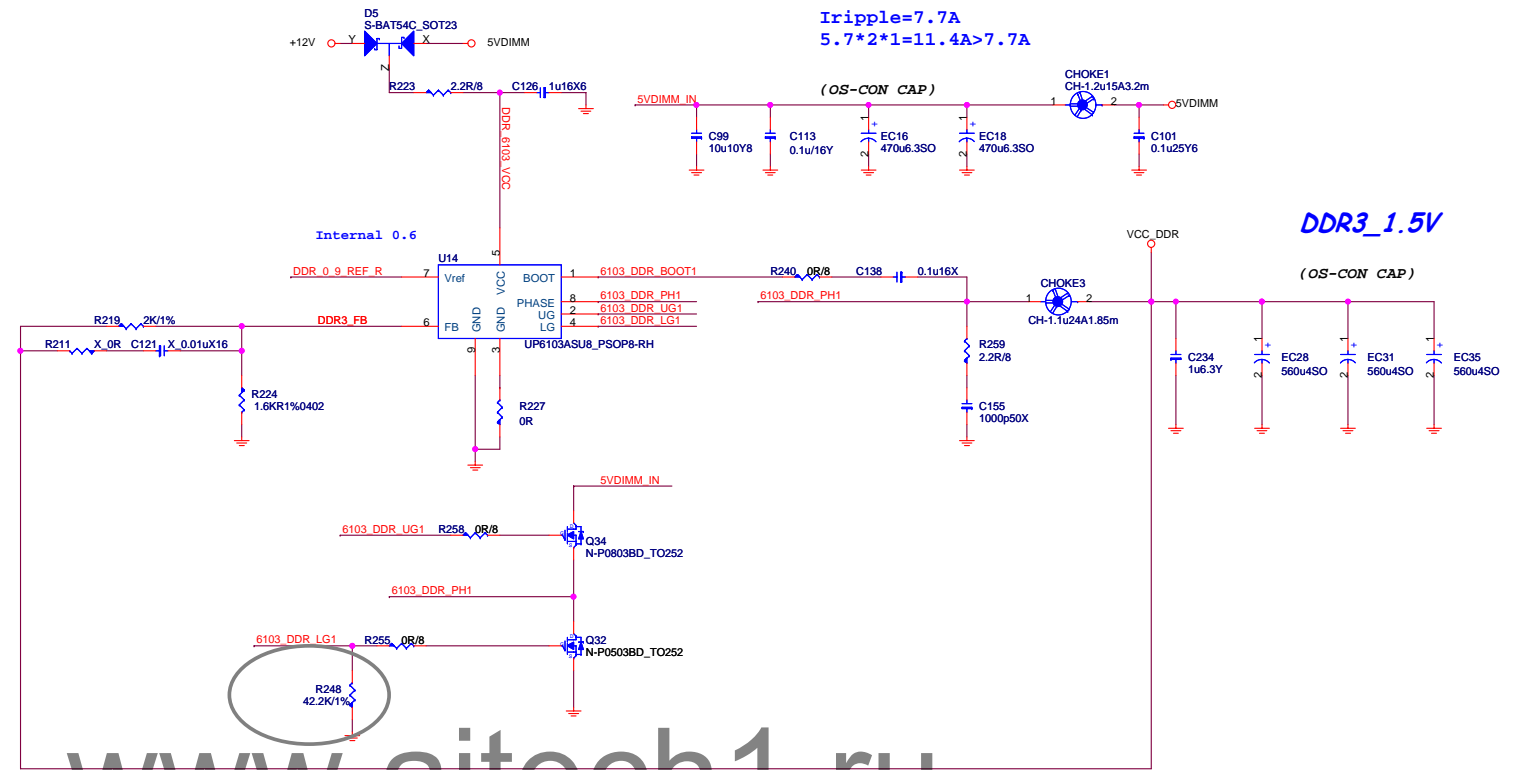
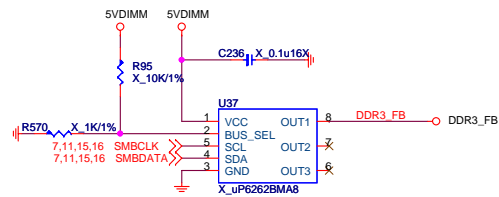
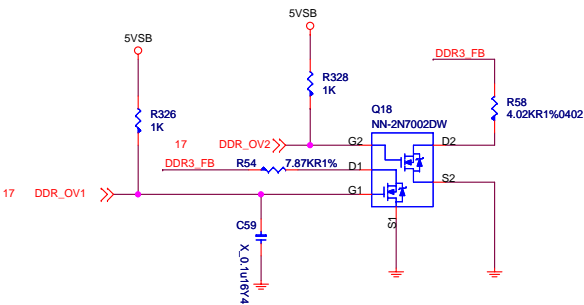
3VSB

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



www.aitech1.ru

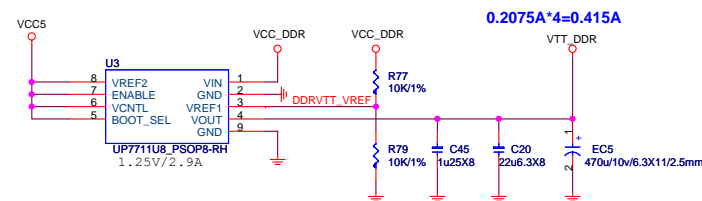
4.5A FOR CPU
7.5A FOR 2DIMM
1A FOR DDR VTT



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	OPE
BUS_SEL	0%	25%	40%	60%	75%	100%

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



MS-7680

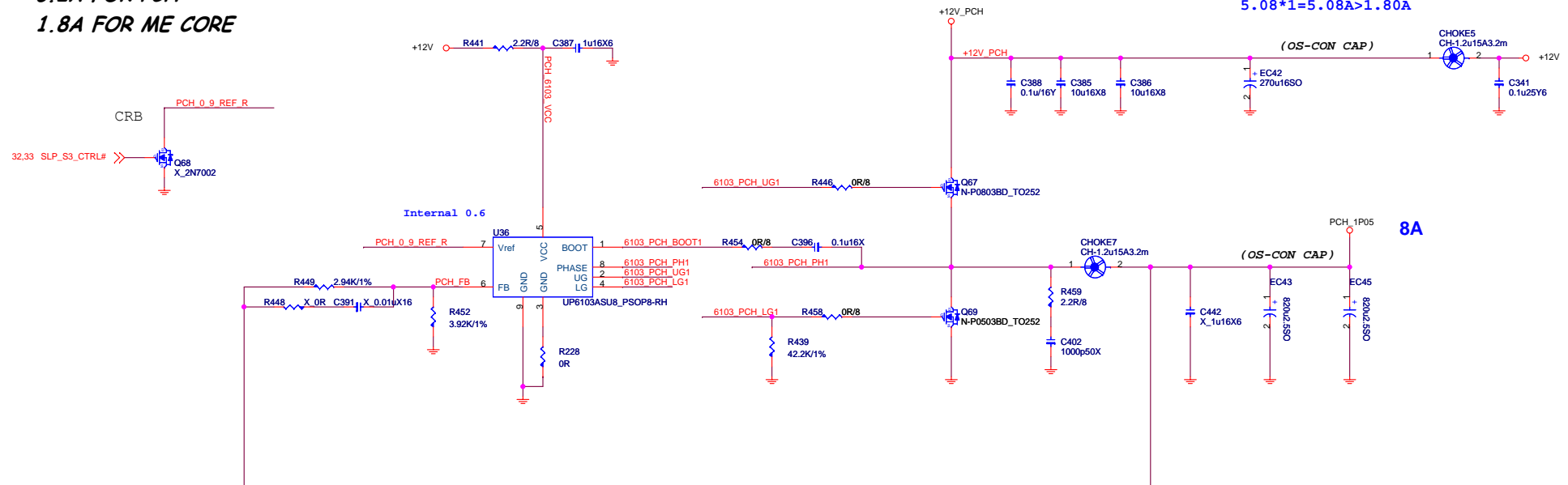
Size Custom	Document Description DDR Power - uP6103 1-Phase	Rev 3.2
Date: Monday, June 13, 2011		Sheet 29 of 39

PCH Power:1.05V

PCH Core 6.2A+1.8A=8A

6.2A FOR PCH

1.8A FOR ME CORE



www.aitech1.ru



MICRO-STAR INT'L CO.,LTD

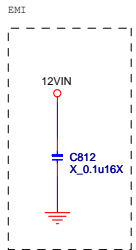
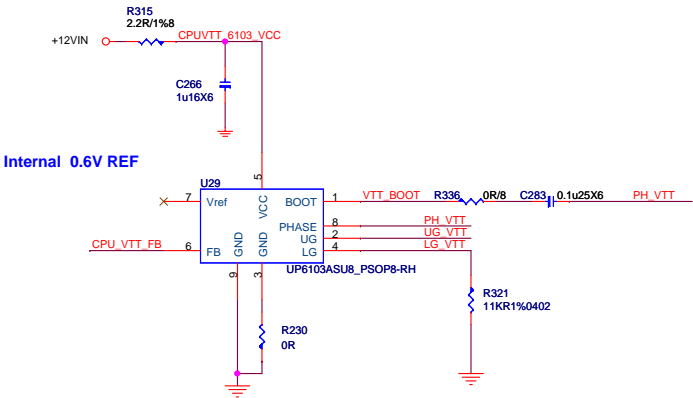
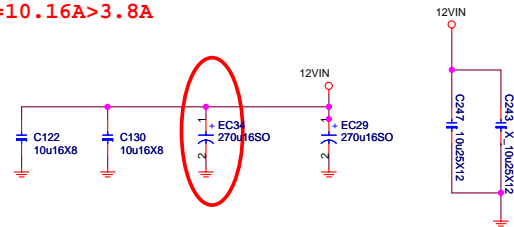
MS-7680

Size	Document Description	Rev
Custom	PCH Power - uP6103 1-Phase	3.2
Date: Monday, June 13, 2011	Sheet 30 of 39	

CPU_VTT:1.05/1.00

$CPU\ VTT\ 8.5A + SA\ Core = 8.8A = 17.3A$

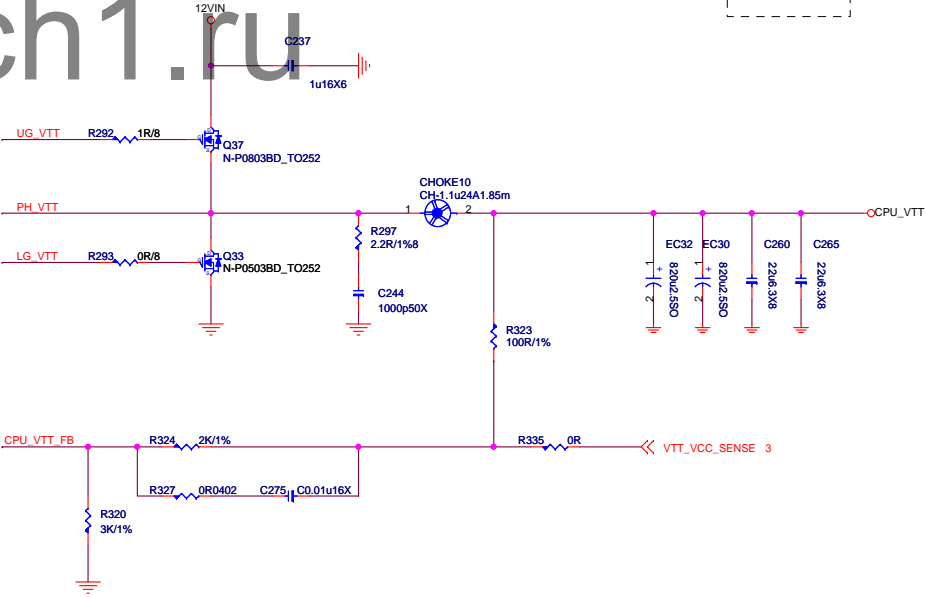
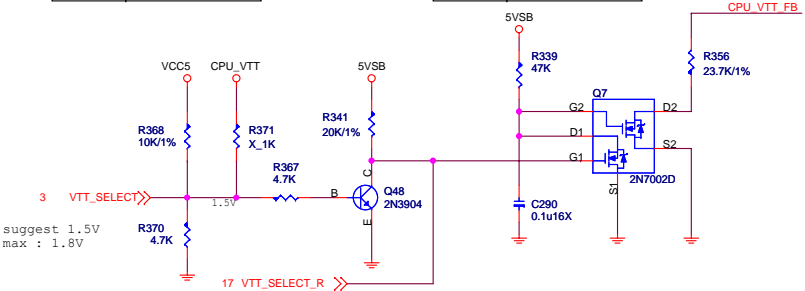
$I_{ripple} = 1.92(vtt) + 1.88(sa)$
 $5.08 * 2 = 10.16A > 3.8A$



www.aitech1.ru

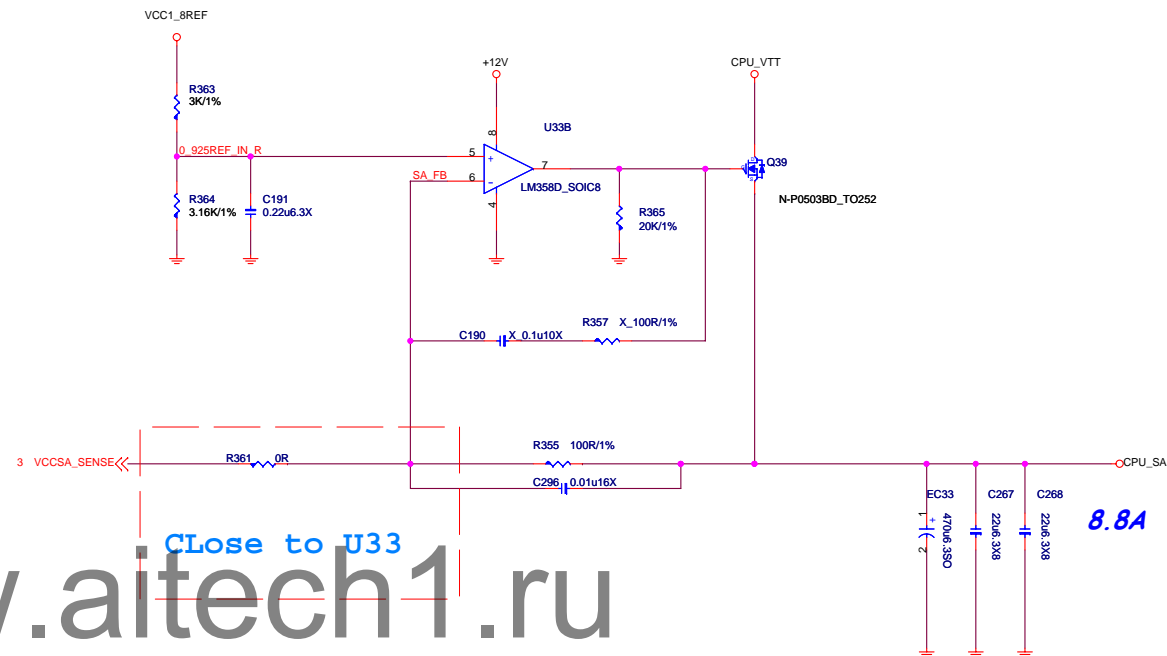
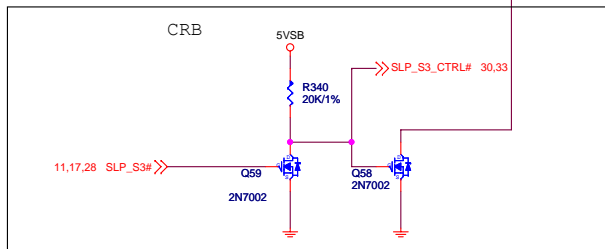
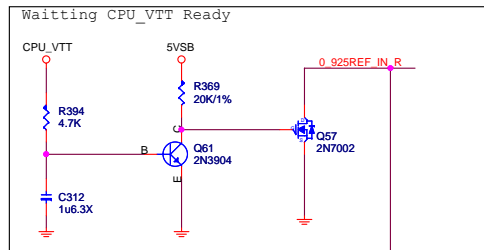
VTT_SELECT	
Low	1.0V
High	1.05V

VTT_SELECT Table	
Low	1.05V
High	1.0V



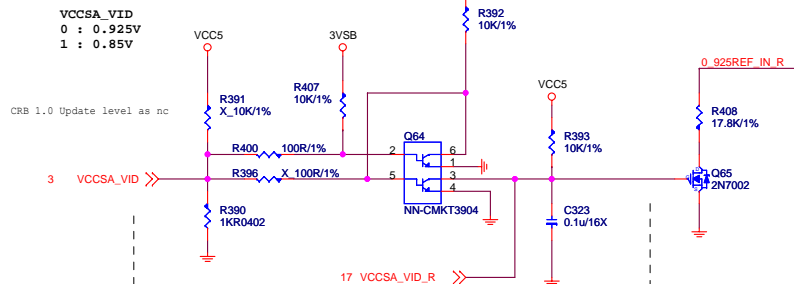
CPU_SA:0.925/0.85

SA Core =8.8A



Close to U33

www.aitech1.ru



VCCSA_VID	
Low	0.925V
High	0.85V

VCCSA_VID_SIO Table	
Low	0.925V
High	0.85V

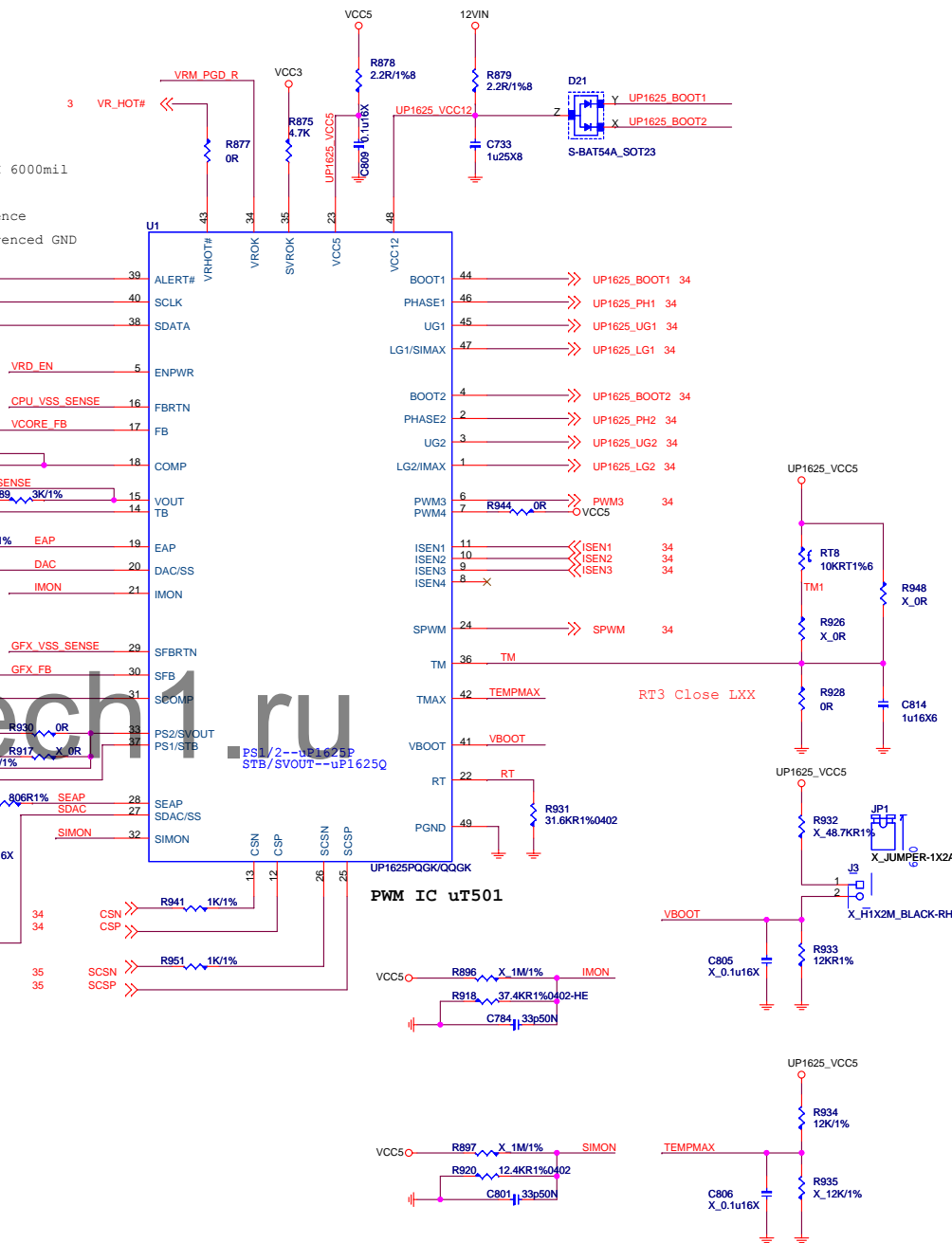
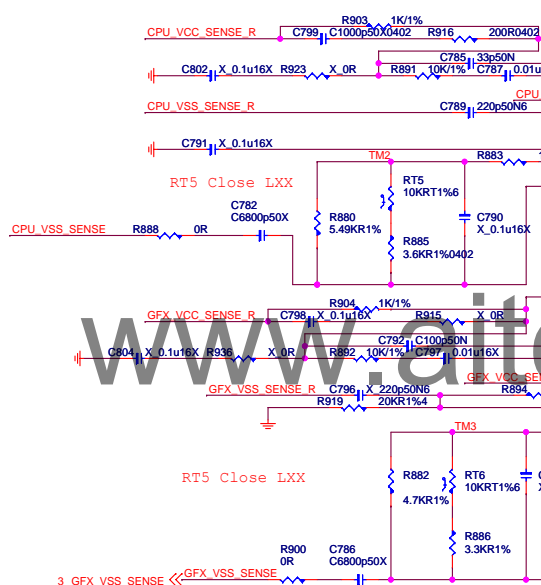
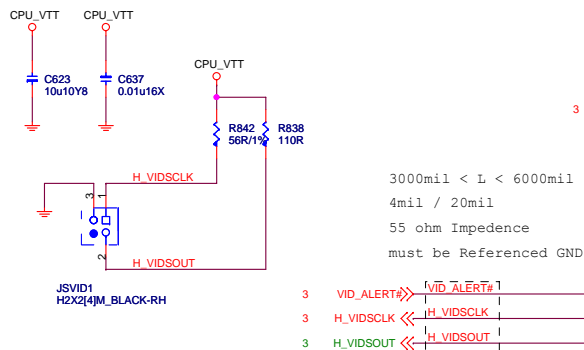
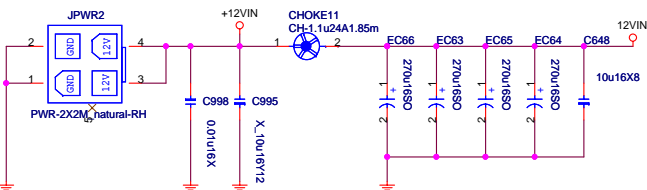
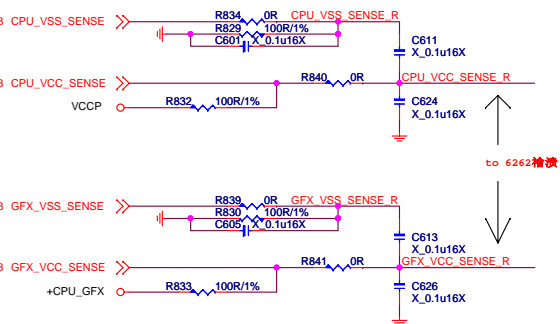
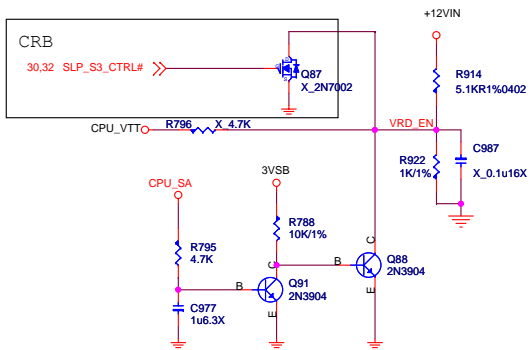


MICRO-STAR INT'L CO.,LTD

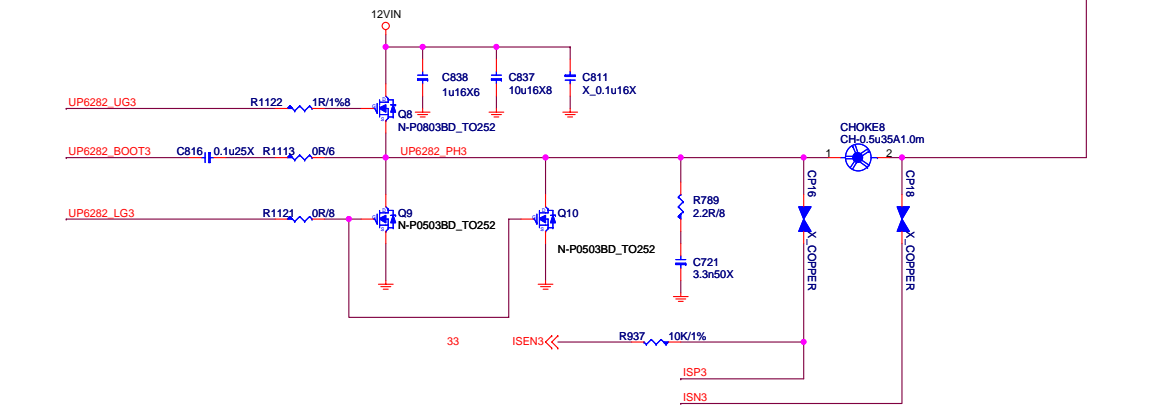
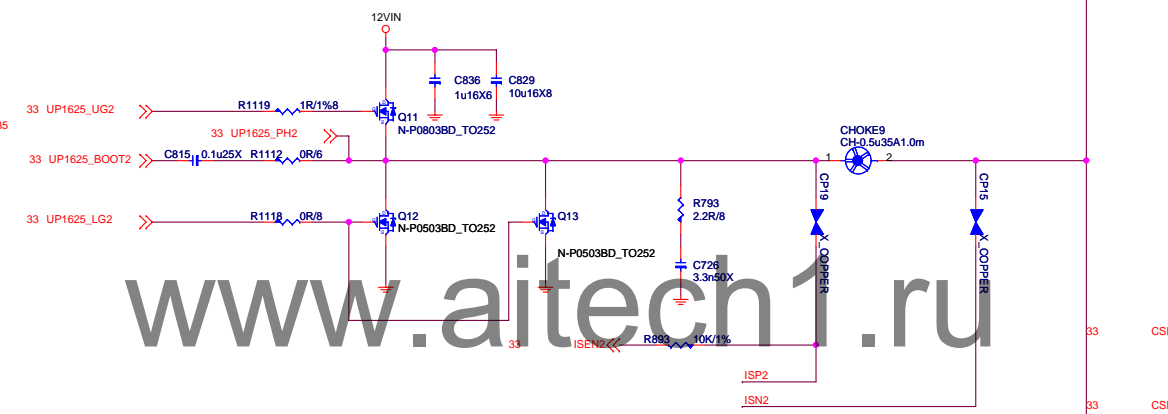
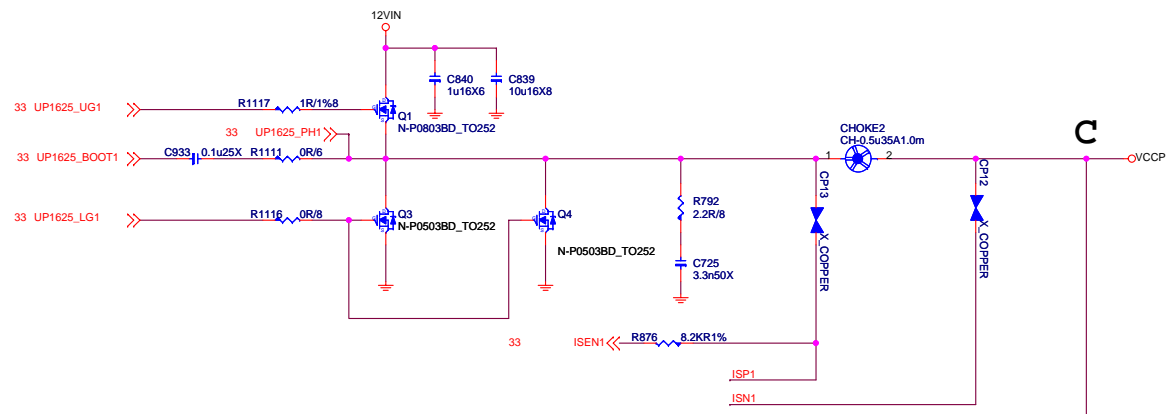
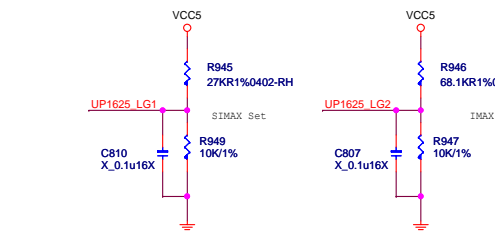
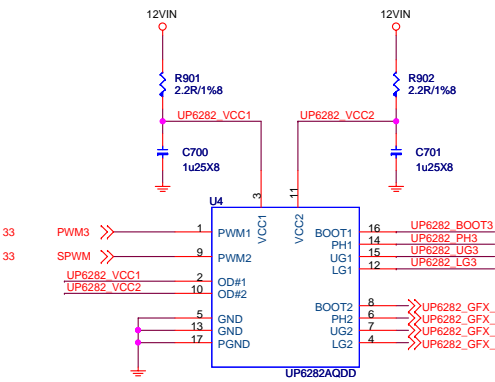
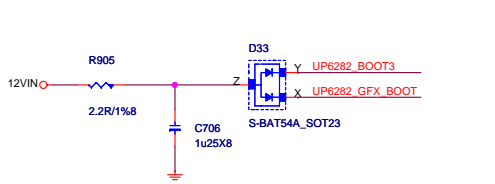
MS-7680

Size	Document Description	Rev
Custom	CPU_SA - uP6103 1-Phase	3.2
Date: Monday, June 13, 2011		Sheet 32 of 39

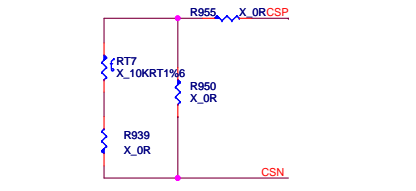
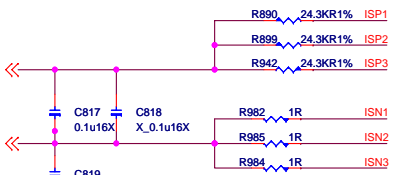
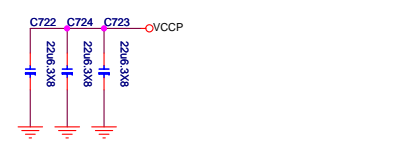
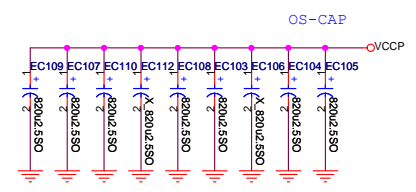
11

**MS-7680**

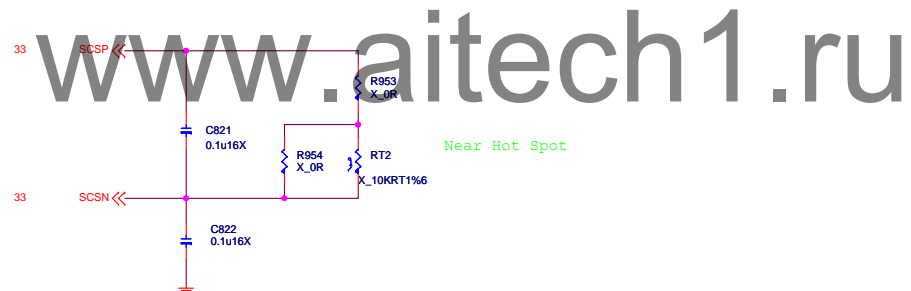
Size Custom	Document Description VRD12 - UPI6234 6+1-Phase	Rev 3.0
Date: Monday, June 13, 2011		Sheet 33 of 39



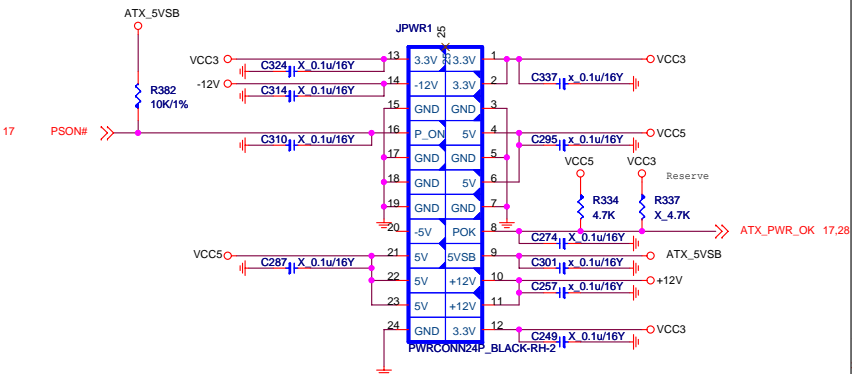
0.5V~1.6V/110A
VCORE 112A TDC:85A
LL:1.7m ohm



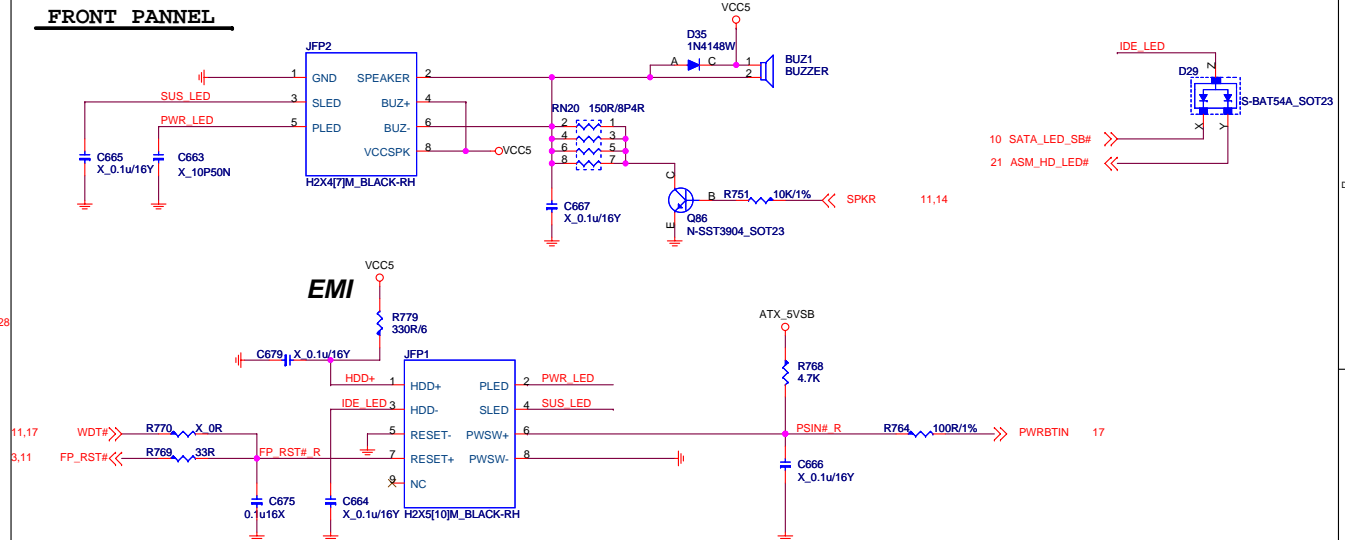
www.aitech1.ru



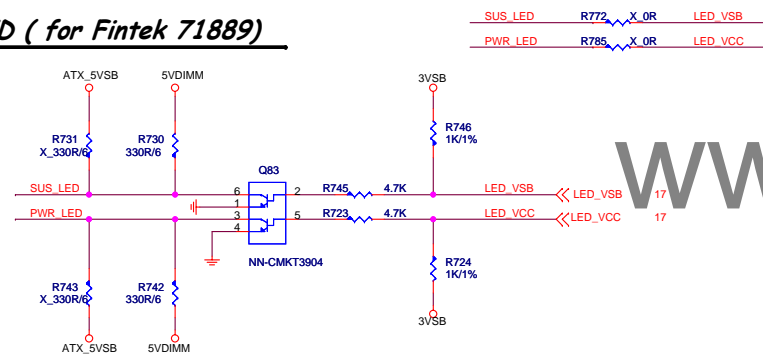
ATX POWER CONNECTOR



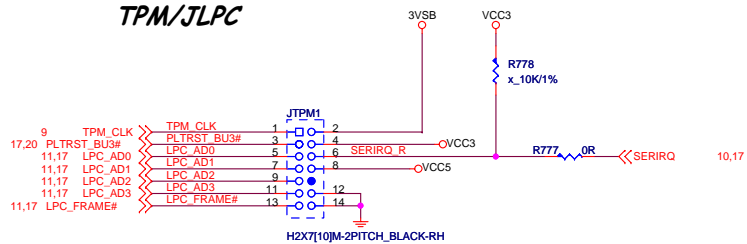
FRONT PANNEL



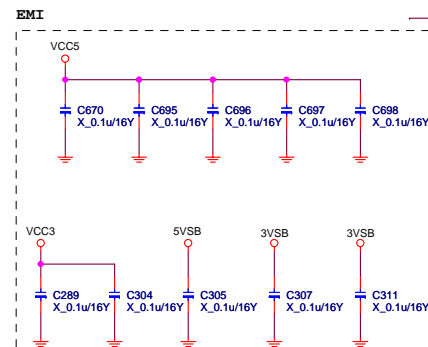
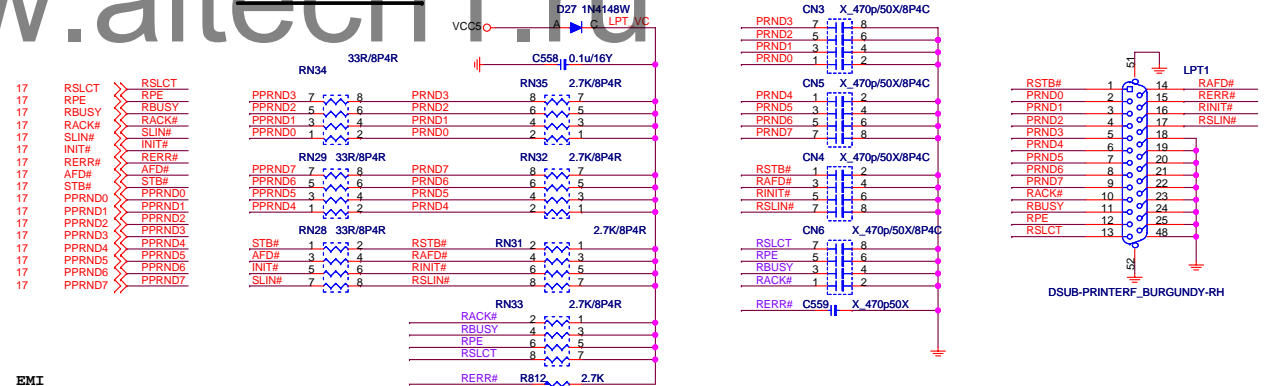
LED (for Fintek 71889)



TPM/JLPC



PARALLAL PORT



MICRO-STAR INT'L CO.,LTD

MS-7680

Size Custom	Document Description ATX PWR-Connector & Front Panel & EMI	Rev 3.2
Date: Monday, June 13, 2011	Sheet 36 of 39	

www.aitech1.ru

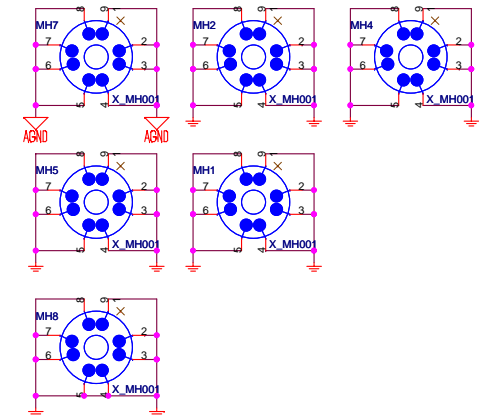
PCH XDP PWRGD/RESET

3IN1
OPT

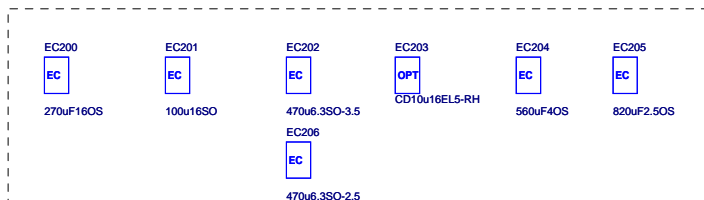
Simulation



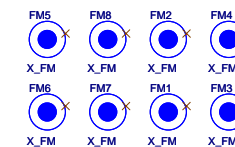
Mounting Holes



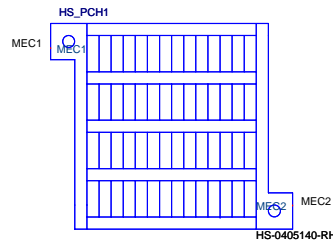
EL/OS OPT.



Optical Fiducial Marks-120



Label
OPT



H61M-P21
OPT

H61M-P23
OPT

H61M-P32
OPT



MICRO-STAR INT'L CO.,LTD			
MS-7680			
Size	Document Description	Rev	
Custom	XDP / Manual Parts	3.2	
Date: Monday, June 13, 2011		Sheet	37 of 39