

MS-7636 Ver: 1.5 uATX(244mm X 240mm)

CPU:

INTEL - Lynnfield/ Clarkdale LGA 1156

System Chipset:

INTEL-IBEXPEAK PCH (H - 55)

OnBoard Chipset:

Clock Gen:ICS 4105B

HD Audio Codec:ALC892

LAN:RTL8111E 10/100/1000

SIO:F71889ED LAA

Flash ROM: 64 Mb SPI (CHIP)

Main Memory:

DDRIII (800/1066/1333MHz) * 4 (Dual Channel)

Expansion Slots:

PCI Express (X16) Slot * 1

PCI Express (X1) Slot * 2

PCI Slot *1

PWM: Controller: uP6206
(3-Phase use STD MOS -- 95W)

OV by uP6264 or SIO
uP6103 (CPU_VTT)
Linear (PCH)
uP6103(DDR)
GPU Power -ISL6314

ACPI: uPI+SIO

Other:

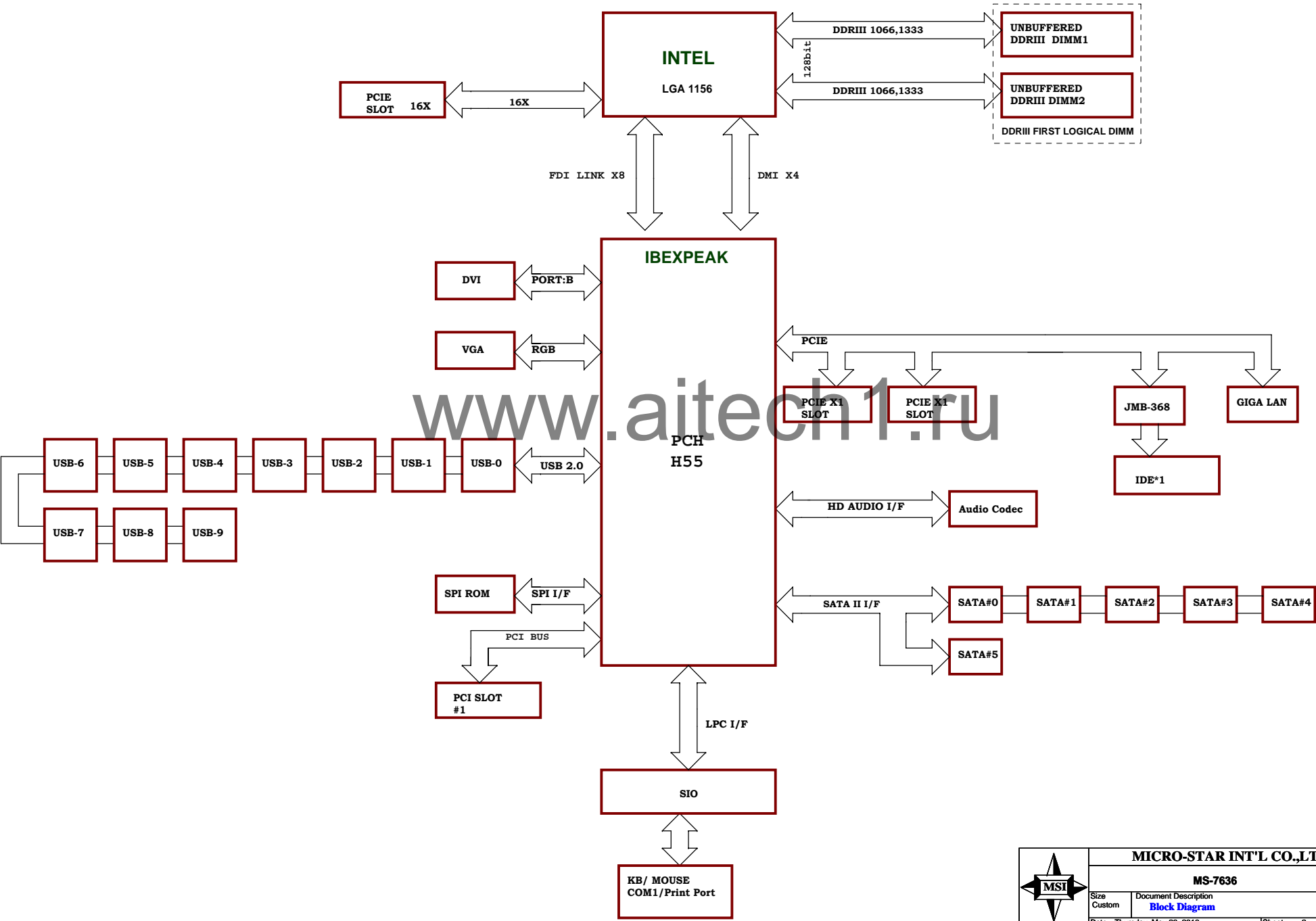
SATA(SATA2-300MB/s) *6
USB2.0 *10 (Rear*4 / Front*6)
PRINT Header *1
COM pin header *2
TPM Header *1
on BOARD BUZZER
D-SUB *1
DVI PORT*1
HDMI PORT*1

BOM SKUs

H55:chiset
S:solid cap
EL:EL cap
G:giga lan 8111DL
M:Miga lan 8103EL
6: 6 ports
DVI: DVI Stuff

MICRO-STAR INT'L CO.,LTD		
MS-7636		
Size Custom	Document Description Cover Sheet	Rev 1.5
Date: Monday, May 31 2010 Sheet 1 of 38		

Title	Page
Cover Sheet	1
Block Diagram/Device Map/GPIO Table/history	2, 3, 4, 5
CPU-CLK/Control/MISC/PEG,CPU-Memory	6,7
CPU-Power,CPU-GND	8,9
DDR III DIMM 1 / 2	10,11
CLK GEN ICS4105	12
PCH-PCI-E/PCI/DMI/USB/CLK	13
PCH-SATA/HOST/FAN/GPIO/Display	14
PCH-SMB/LPC/AUDIO/RTC/SPI/JTAG/RST	15
PCH-POWER,GND/NVRAM	16,17
SIO-Fintek F71889F/Print Port/COM1/COM2	18
PCIE x16 & x1, x1 Slots	19
PCI SLOT	20
LAN-RTL8111E	21
Audio Codec ALC892 co-lay 872	22
JMB-368 IDE*1	23
VGA - D-Sub	24
DVI-D	25
SATA conn / FAN Control	26
USB	27
ATX F_Panel/EMI/TPM/Buzzer/KB	28
ACPI Controller (uPI solution)	29
DDR Power - uP6103 1-Phase	30
PCH Power - 1P05-Linear	31
CPU_VTT Power - uP6103_1 Phase	32
GPU Power -ISL6314_1-Phase	33
CPU Power - uP6206 3-Phase	34
CPU_XDP	35
Manual & Option parts	36



DDR DIMM config.

Device	Address	Clock
CHA DIMM1	10100001B	MEM_MA_CLK_H0/L0 H1/L1
CHB DIMM2	10100000B	MEM_MB_CLK_H0/L0 H1/L1

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI Slot 1	PCI_INT#A PCI_INT#B PCI_INT#C PCI_INT#D	PCI_REQ0# PCI_GNT0#	AD16	PCH CLKOUT_PCI<0>
TPM				PCH CLKOUT_PCI<3>
SIO				PCH CLKOUT_PCI<2>

TABLE 9↓
USB PORT MAPPING (SUBJECT TO CHANGE)

Controller	Port	Destination	Fused	ESD Pads	Bulk Cap	Over-Current Detection
UHCI #1, EHCI #1	Port 0	Internal (Ready Boost - P151)	Yes	Yes	No	Yes
	Port 1	Internal (Ready Boost - P151)	Yes	Yes	No	Yes
UHCI #2, EHCI #1	Port 2	Internal (Media Reader - P150)	Yes	Yes	No	Yes
	Port 3	Internal (Media Reader - P150)	Yes	Yes	No	Yes
UHCI #3, EHCI #1	Port 4	Front I/O	Yes	Yes	No	Yes
	Port 5	Front I/O	Yes	Yes	No	Yes
UHCI #4, EHCI #2	Port 6	Front I/O	Yes	Yes	Yes	Yes
	Port 7	Front I/O	Yes	Yes	Yes	Yes
UHCI #5, EHCI #2	Port 8	Rear I/O	Yes	Yes	Yes	Yes
	Port 9	Rear I/O	Yes	Yes	Yes	Yes
UHCI #6, EHCI #2	Port 10	Rear I/O	Yes	Yes	Yes	Yes
	Port 11	Rear I/O	Yes	Yes	Yes	Yes
UHCI #7, EHCI #2	Port 12	Rear I/O	Yes	Yes	Yes	Yes
	Port 13	Rear I/O	Yes	Yes	Yes	Yes

PCI RESET DEVICE

IBEXPEAK	
Signals	Target
PCIRST#_PCH	PCISLOT1
PLTRST_BU1#	JMB368 IDE
PLTRST_BU2#	PCIE*16 / *1
PLTRST_BU3#	LAN&TPM
PLTRST#	SIO



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MS-7636

Size	Document Description	Rev
Custom	Device Map	1.5
Date: Thursday, May 20, 2010		Sheet 3 of 38

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History

- 1.2009-10-13 Change VCC_SENSE to CPU_VCC_SENSE
- 2.2009-10-13 Add HDMI circuit,change USB circuit,JSP1 circuit update
- 3.2009-10-13 update NCT3016 circuit ,add VTIN3 circuit for VRM MOS
- 4.2009-10-18 Add C589 C590
- 5.2009-10-18 Add R561 R562 For HDMI HPDET
- 6.2009-10-20 Add R602,Swap HDMI wire for layout
- 7.2009-10-21 NCT3016 circuit update:add R637 Q65 R592,Change U27 pin16 tp NCT_GPIO16,delete C121
- 8.2009-10-21A NCT3016 citcui update:add Q85,chang SATA1&SATA2 to SATA1_2
- 9.2009-10-23 change JUSB2 & JUSB1 for layout
- 10.2009-10-23A NCT3016 circuit update:add R850
- 11.2009-10-24 delete VCCGATE and DUALGATE circuit
- 12.2009-10-26 delete C534
- 13.2009-10-26 Swap RN40

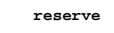
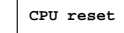
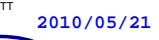
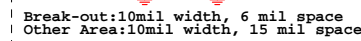
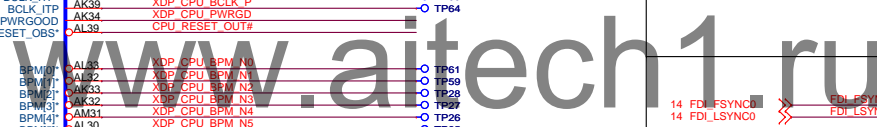
MS-7636-1.3

- 1.2010-02-23 Add MH7 MH8
- 1.2010-03-02 Empty EC30

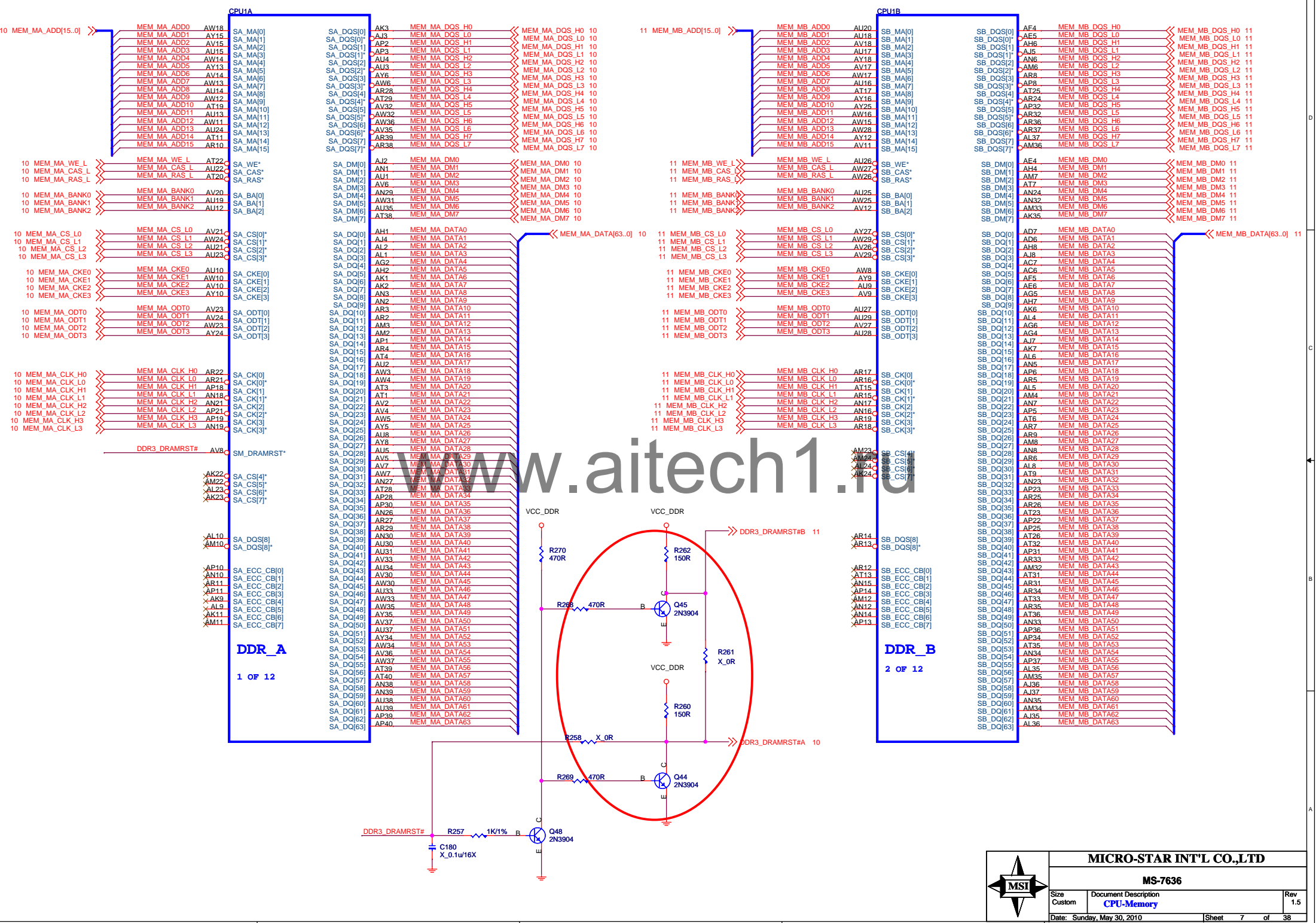
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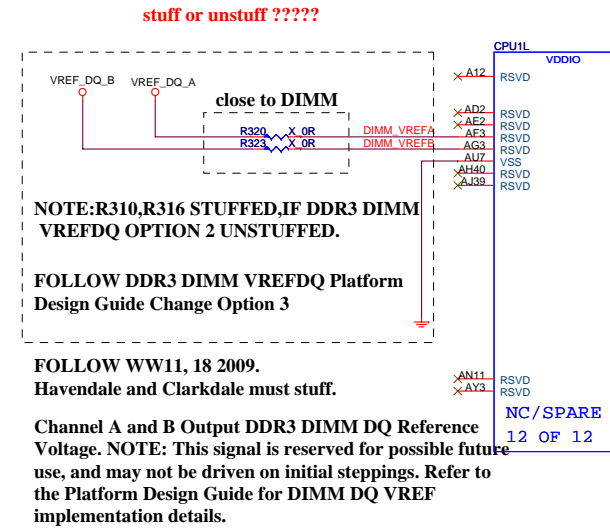
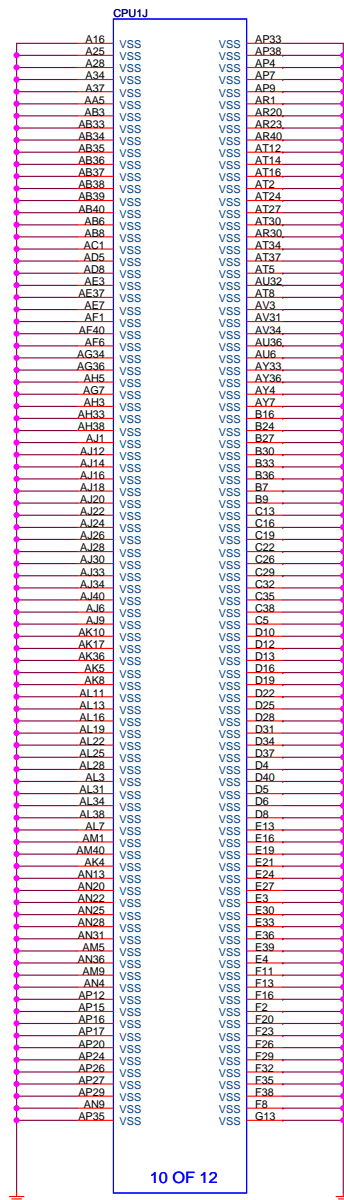
- 1.Add USB 3.0 (NEC);
- 2.Add SATA3.0 Marvell/ SE9128 ,remove JMB368;
- 3.Change ckoke to IND CHOKE;
- 4.Change 6262A to 6262B;
- 5.audio codec change to 892 co-lay 887;
- 6.lan codec change 8111E;
- 7.SIO change to 71889ED(LAA), modify 3VSB_WAKE,3VSB circuit, remove NCT3016 circuit;
- 8.R386 change to 34.8kohm 1%;
- 9.VRM output cap change to DIP-6.3x8/2.5mm
- 10.Add Q51 for CPU_VTT;
- 11.modify JFP2 circuit;
- 12.DDR and CPU_VTT power IC change to 6103A;
- 13.add Q91 and R95 for HDMI issue;
- 14.del XDP circuit;-----0520
- 15.USB power cap change to C71-4710651-N07(6.3x8/2.5mm)-----0520
- 16.add C196-----0520
- 17.modify CPU_VTT test port footprint to TEST_PIN-----0520
- 18.add R13-----0521
- 19.Del EC1,EC18-----0521
- 20.Add C920 -----0521
- 21.change RN9,RN10 footprint to RN0402_MSI-----0525

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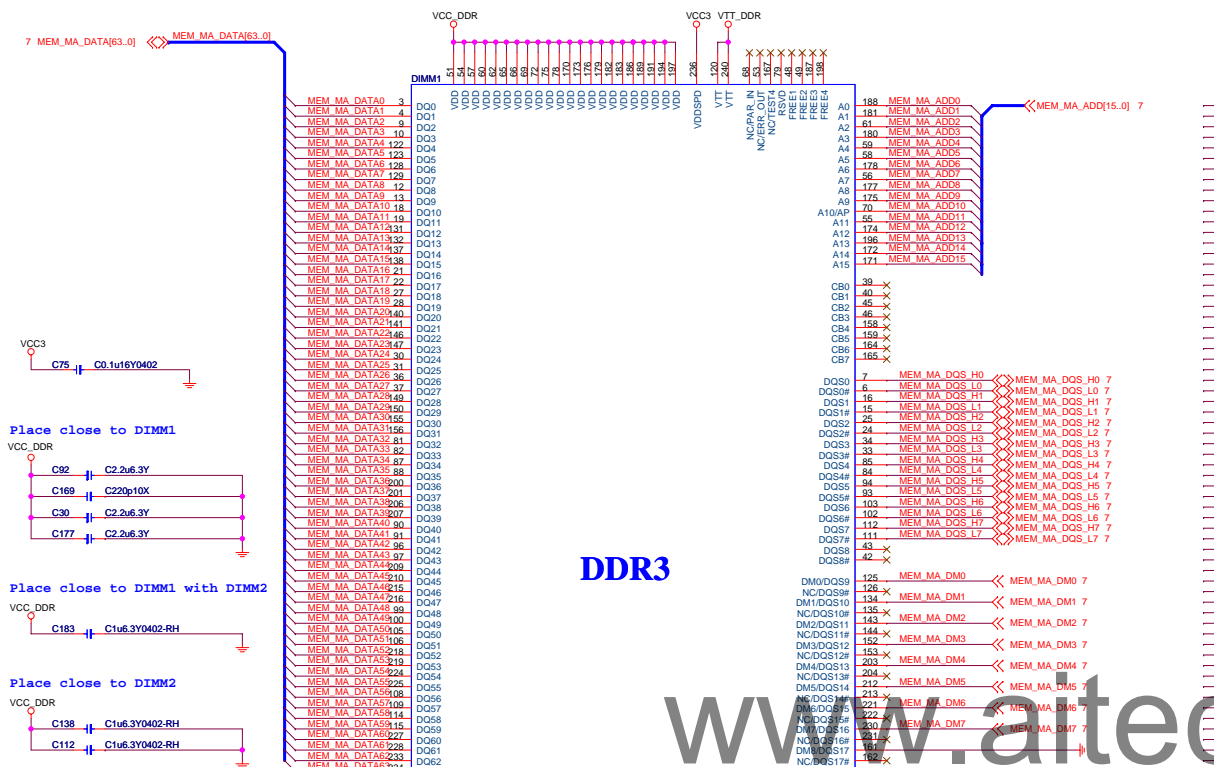
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MS-7636		
Size Custom	Document Description CPU-CNTL/CLK/MISC	Rev 1.5



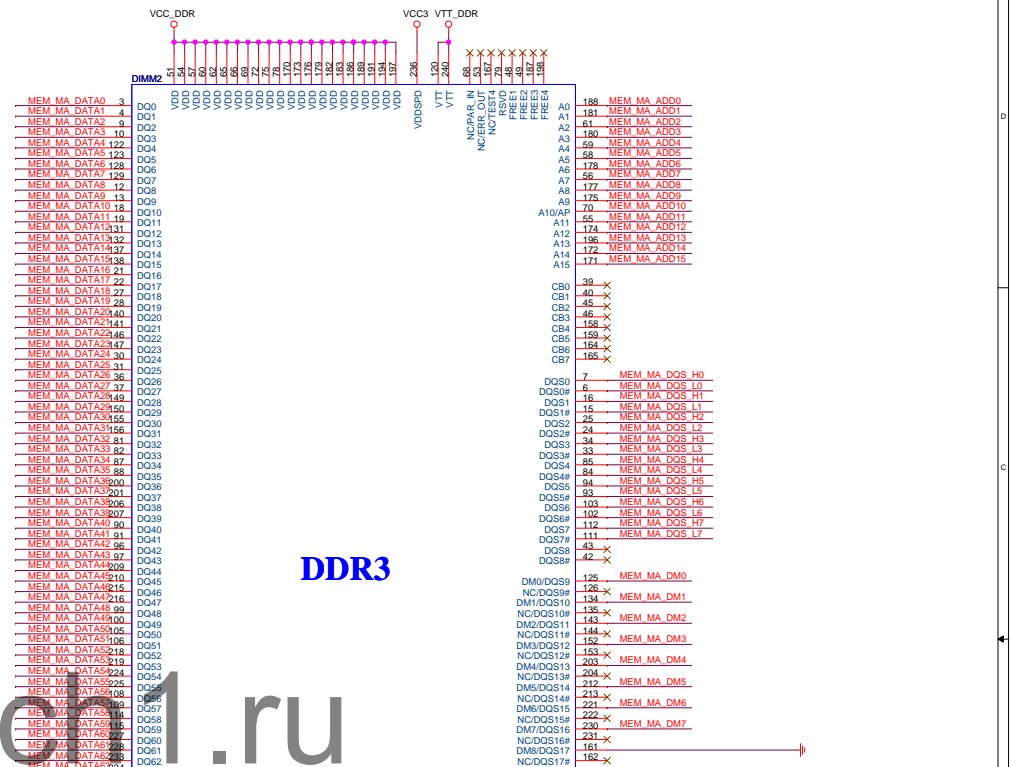


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DDRIII DIMM A1



DDRIII DIMM A2



DDR3

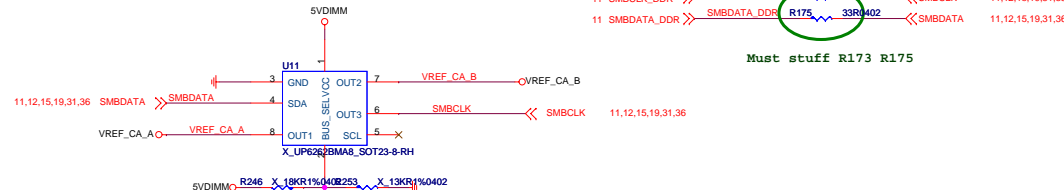
DDR3

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UPI VOLTAGE CONSOLE(2)

2.083325V

0x66:RH=18K,RL=13K



Must stuff R173 R175



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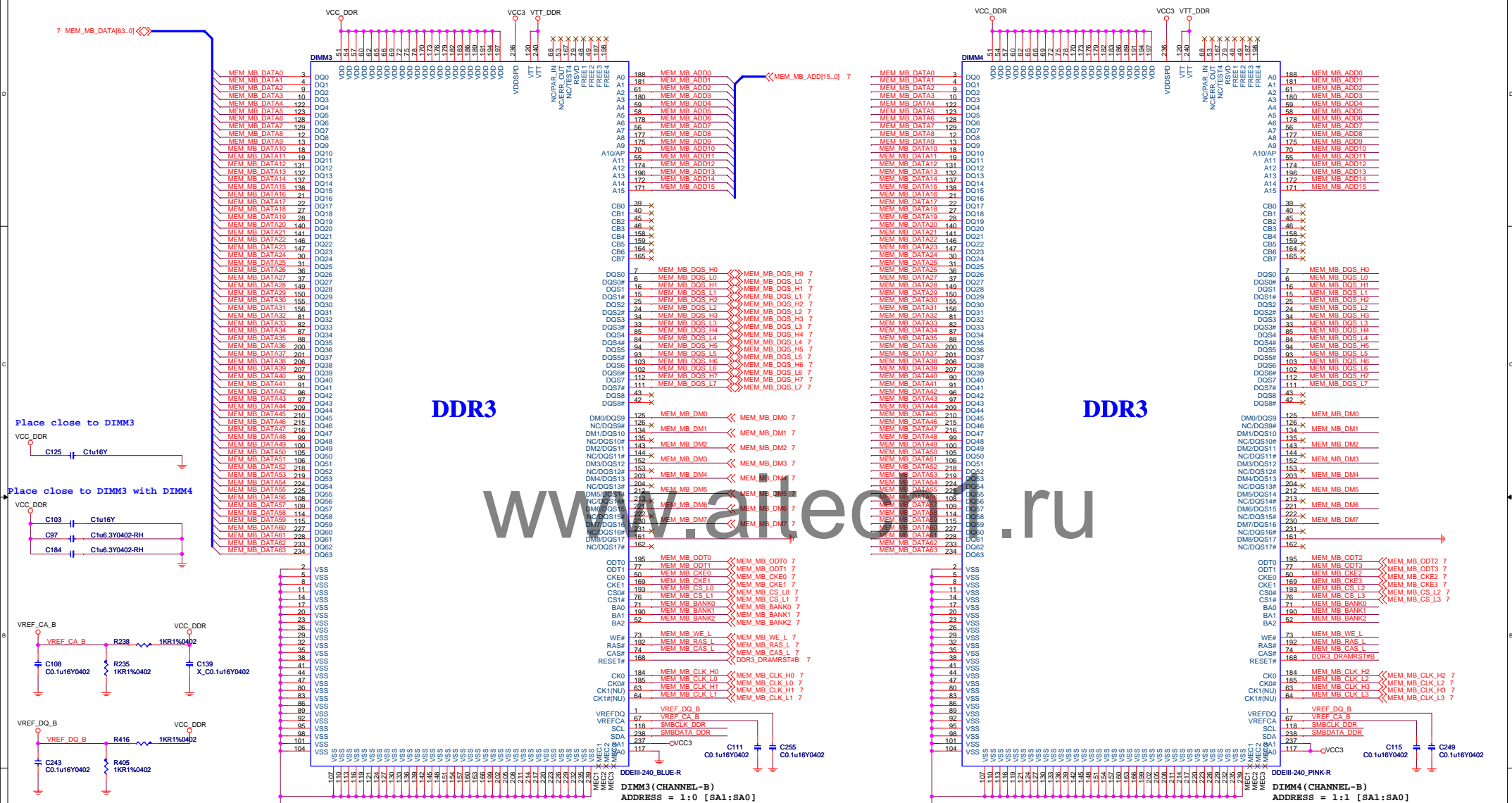
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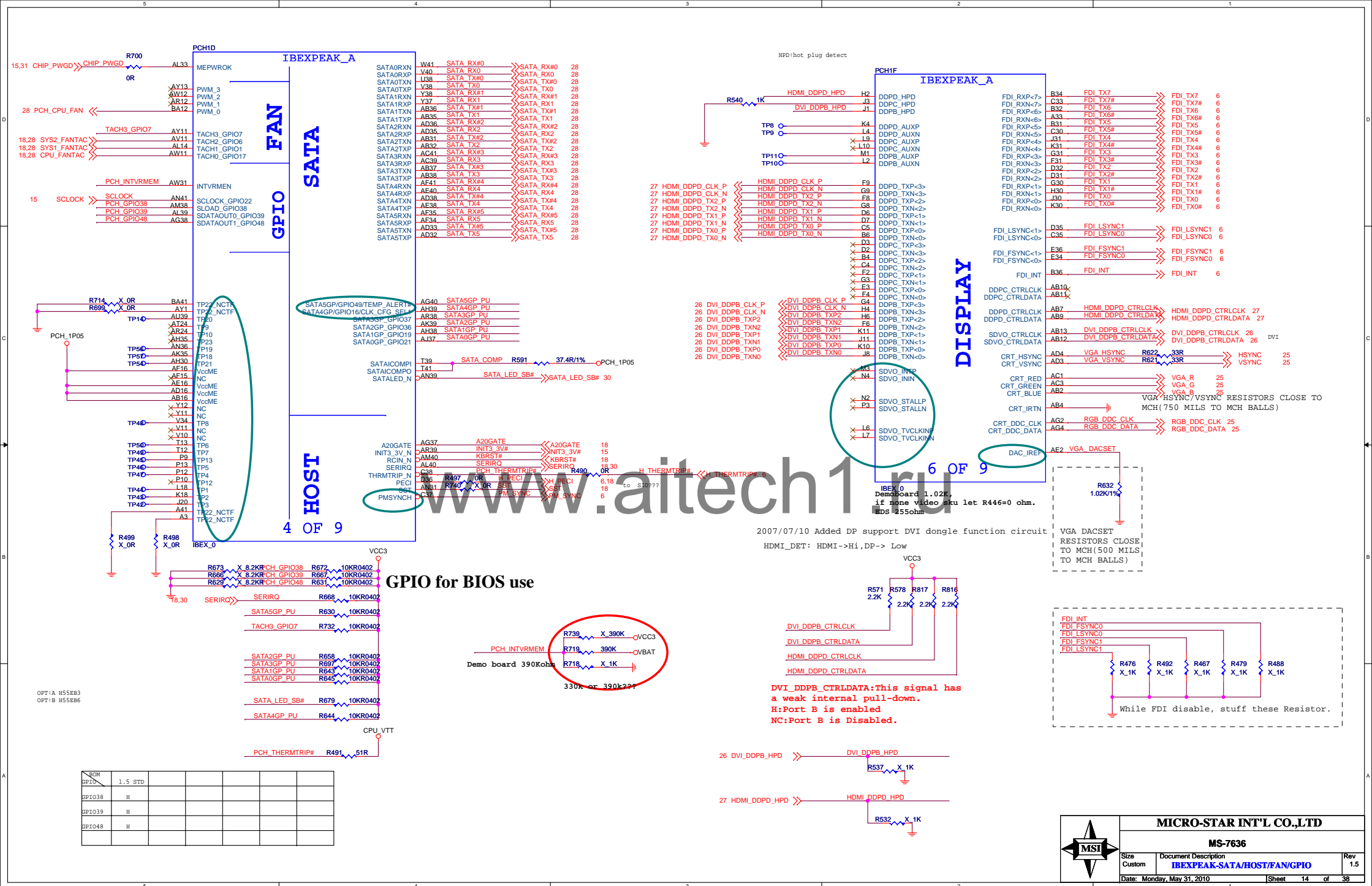
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Date: Monday, May 31, 2010		Sheet 10 of 38

Date: Monday, May 31, 2010	Sheet 10 of 38
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DDR3 DIMM B1

DDR3 DIMM B2





C599 place bottom as short as possible
C602 place TOP as short as possible

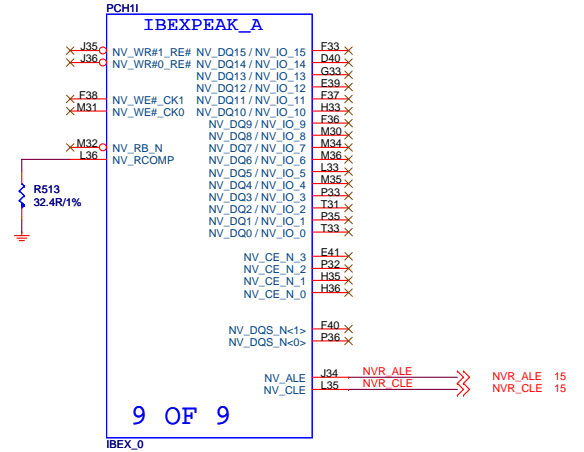
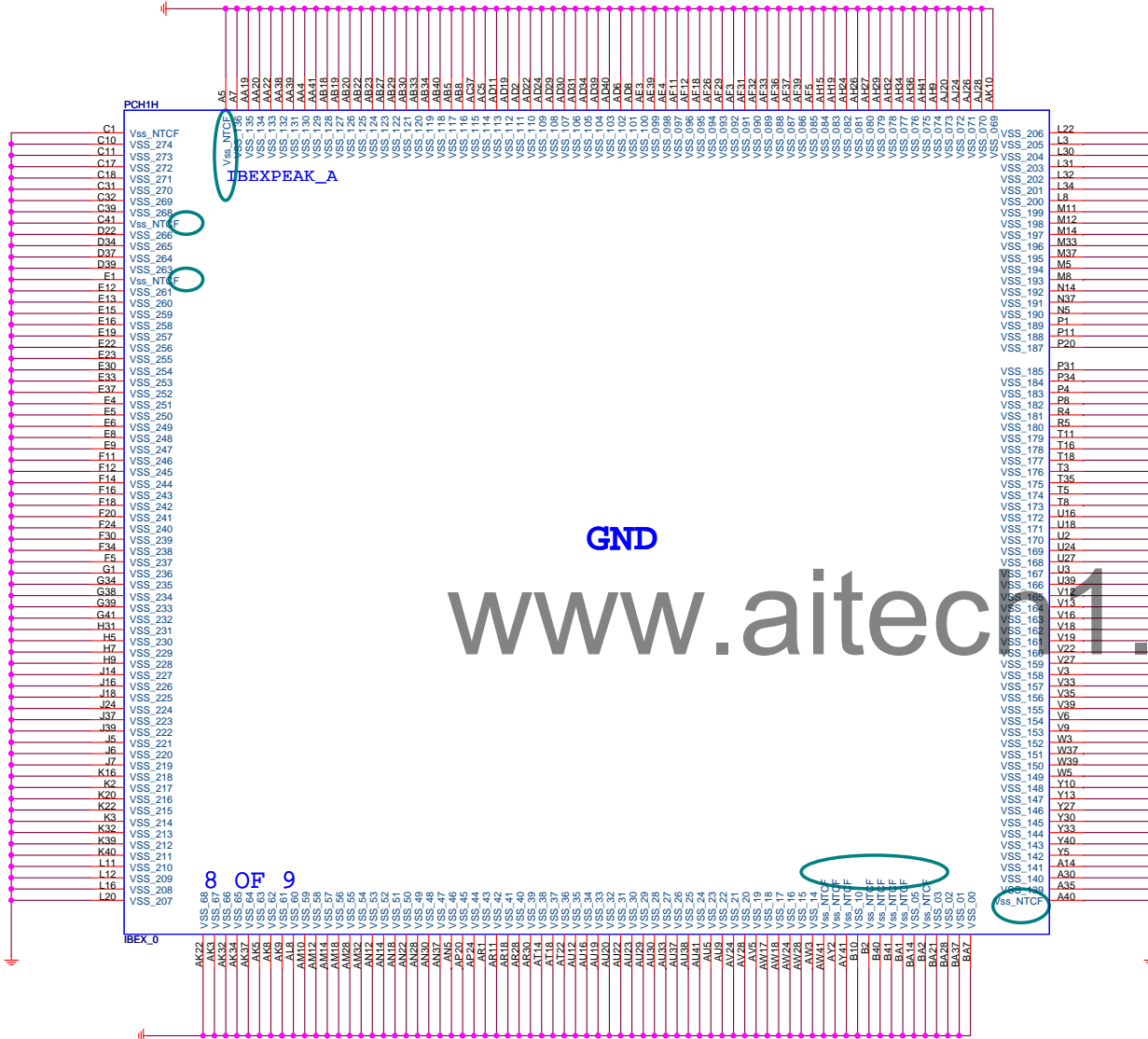


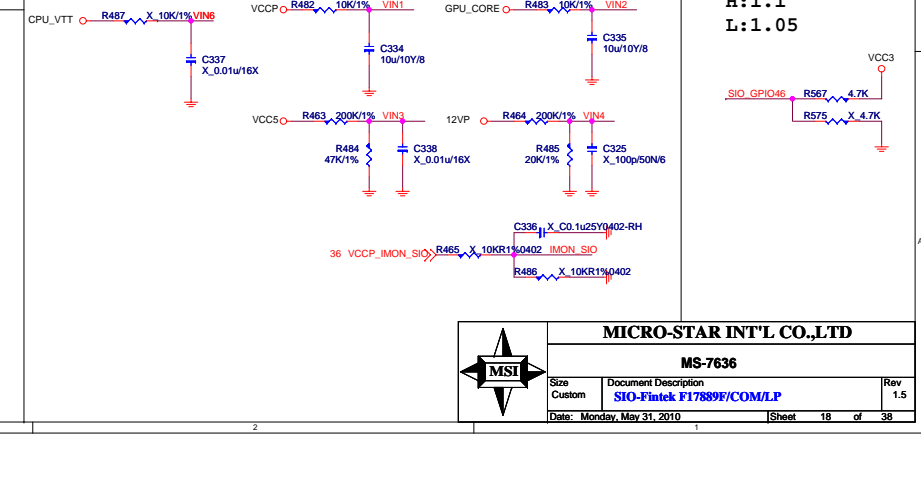
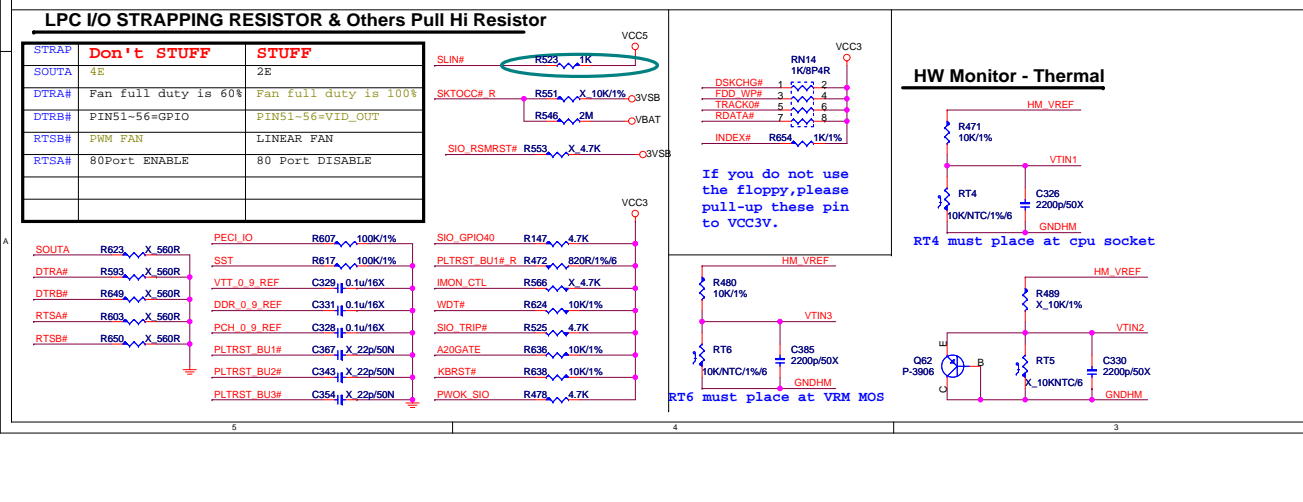
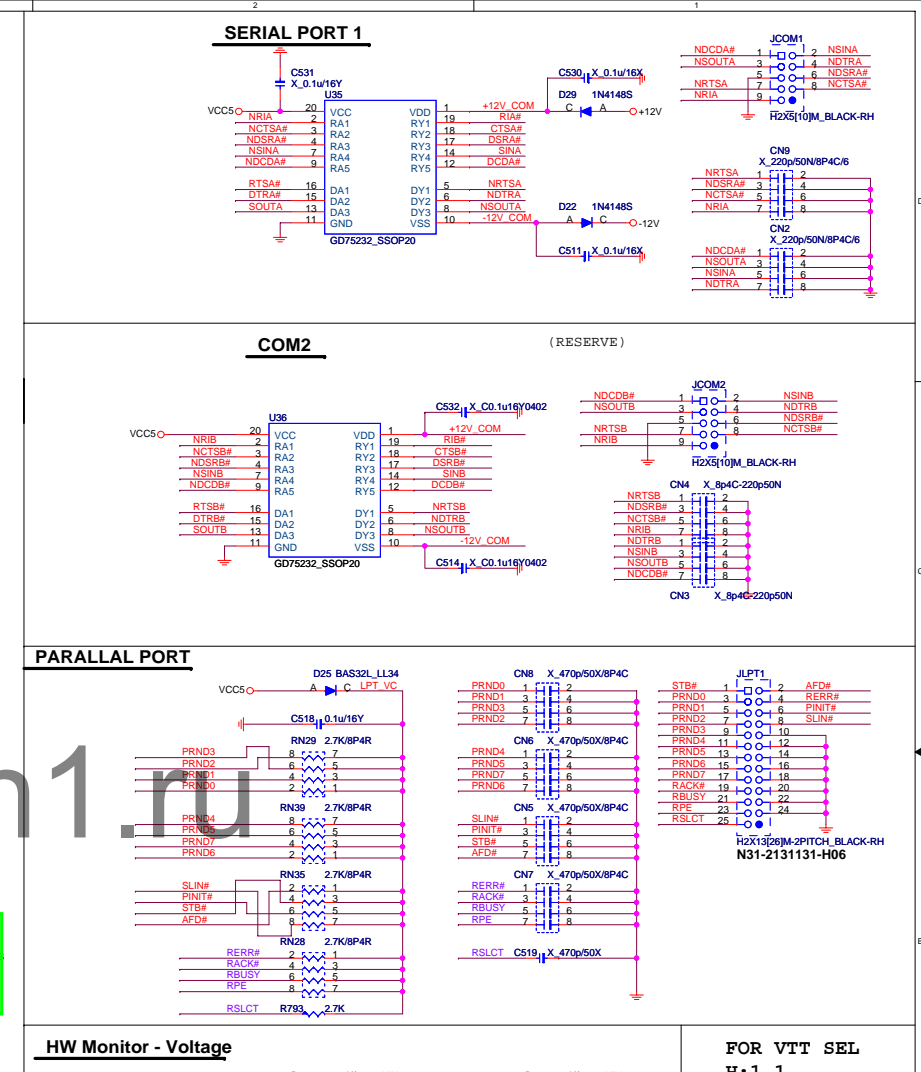
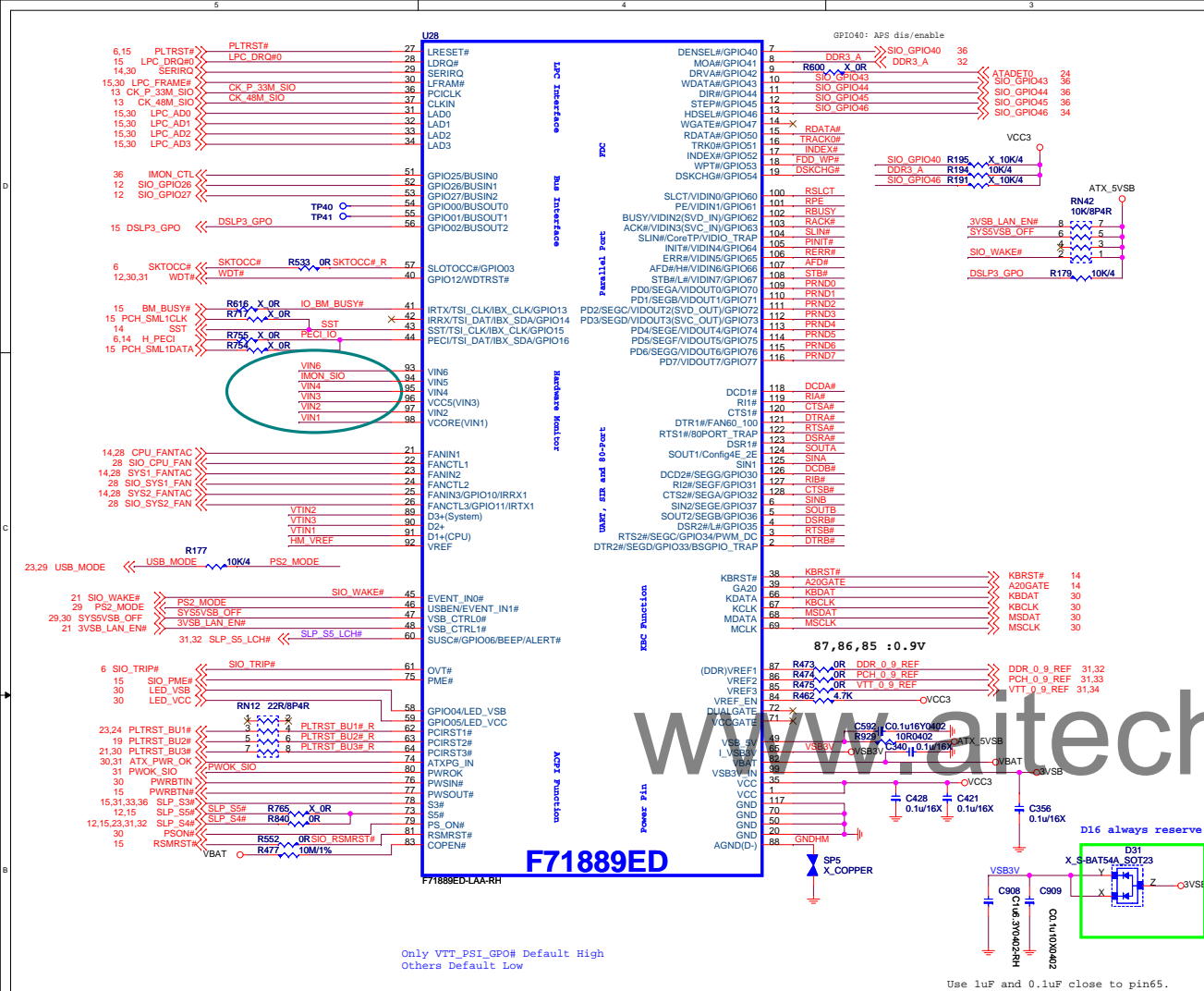
7 OF 9



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Date: Monday, May 31, 2010	Sheet 16 of 38
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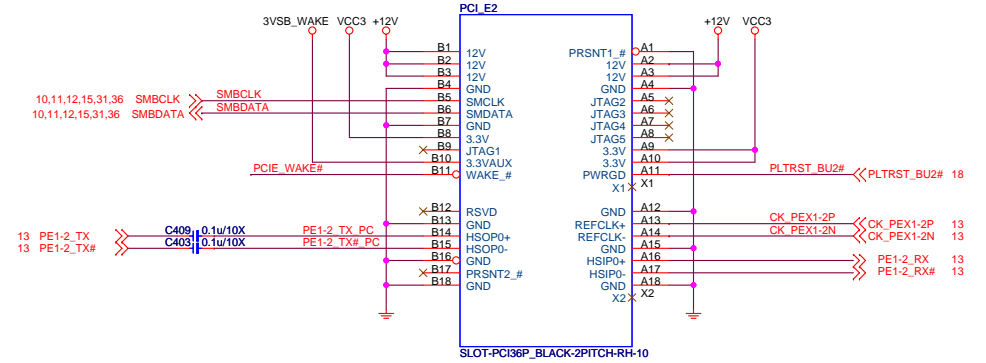




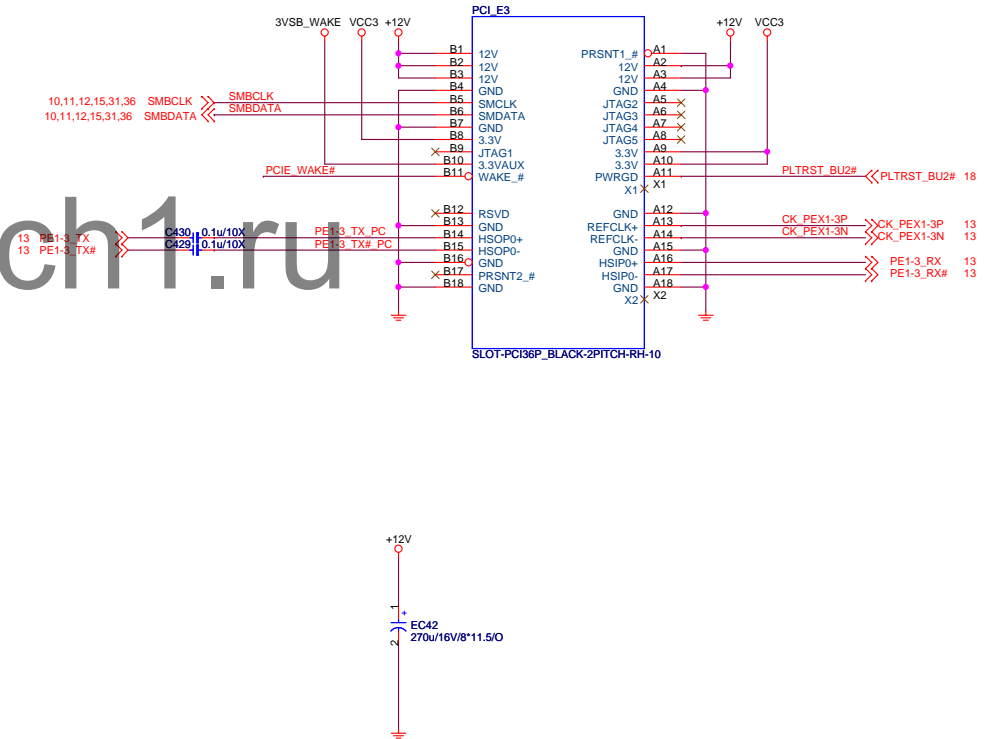
PCI_Express X16 Slot



PCI EXPRESS x1-PORT2



PCI EXPRESS x1-PORT3

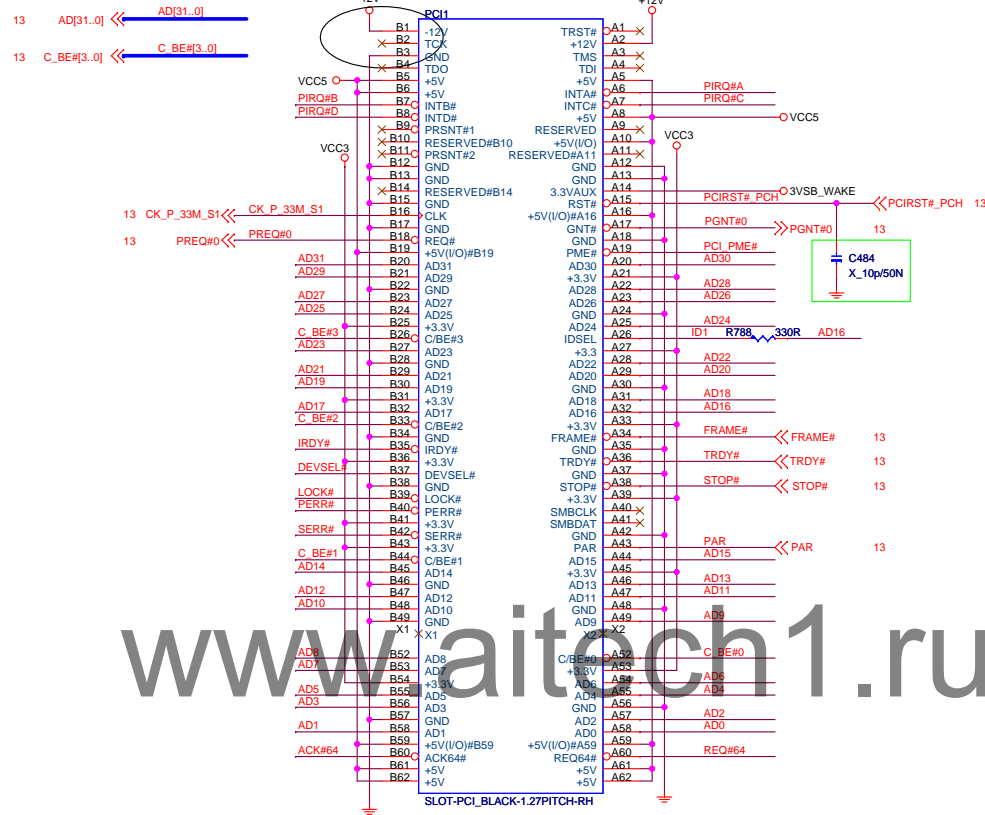


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MS-7636

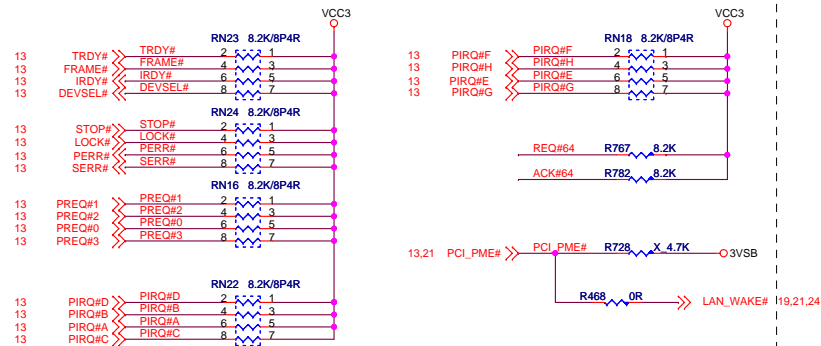
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Custom	PCIe x16/x1/x1 Slots	1.5
Date:	Sunday, May 30, 2010	Sheet 19 of 38

PCI SLOT 1 (PCI VER: 2.2 COMPLY)

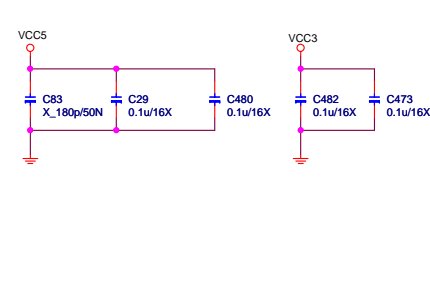


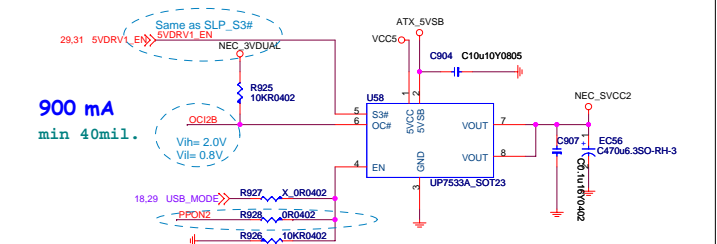
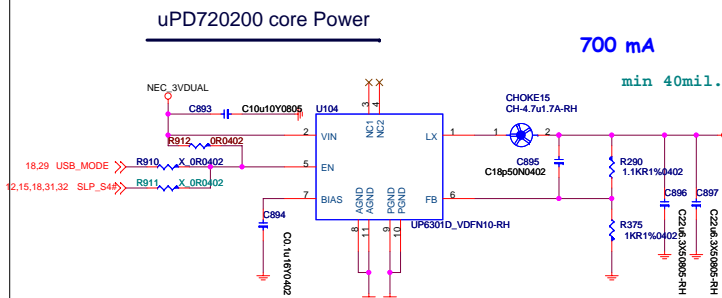
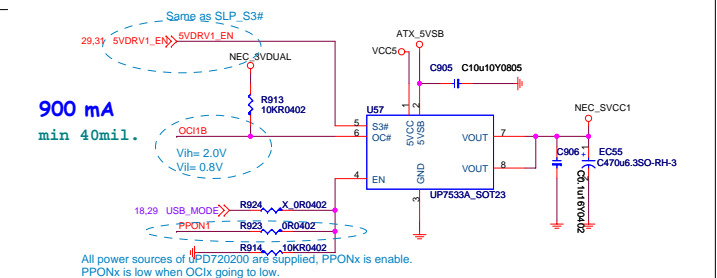
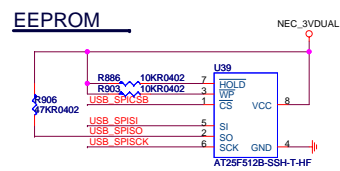
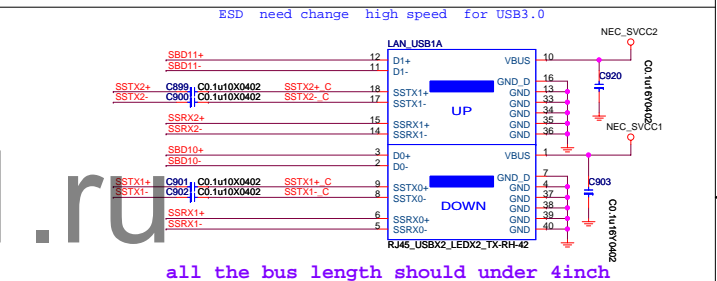
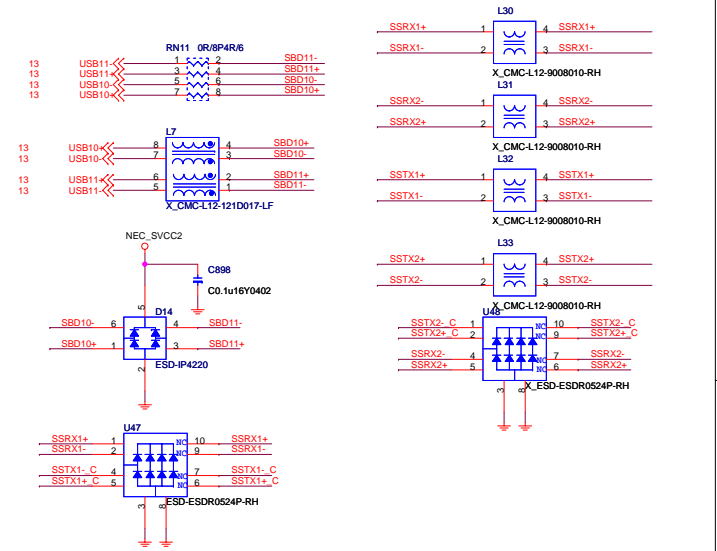
IDSEL = AD16
MASTER = PREQ#0
PIRQ#A

PCI PULL-UP / DOWN RESISTORS



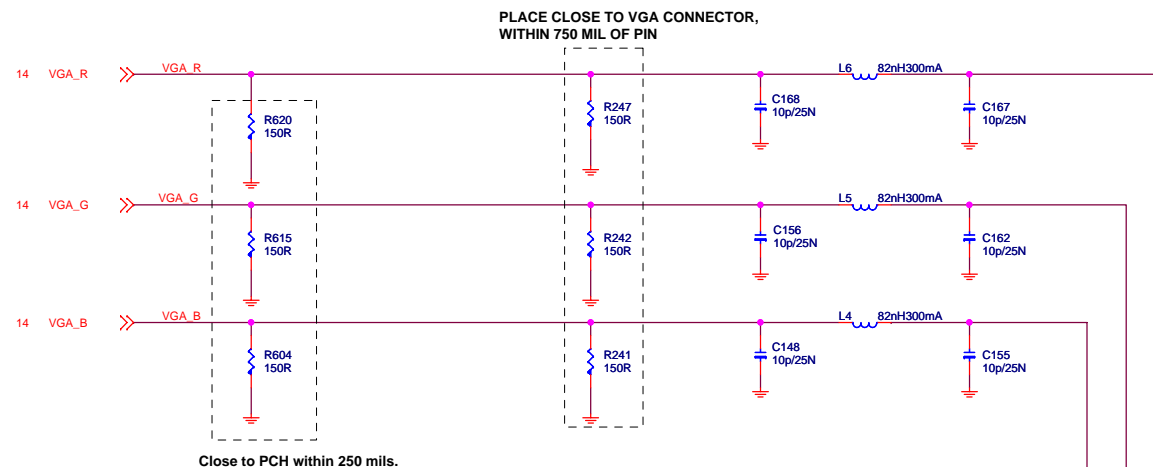
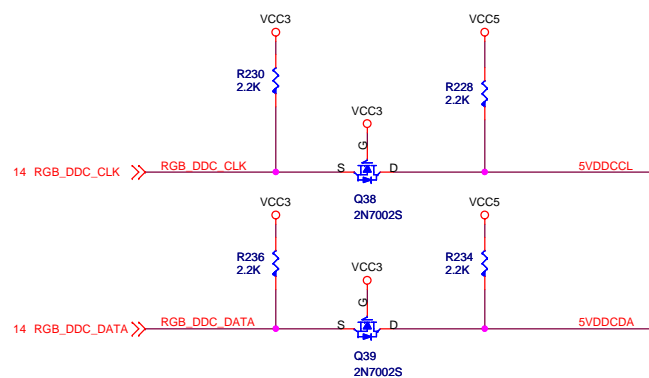
PCI SLOT DECOUPLING CAPACITORS



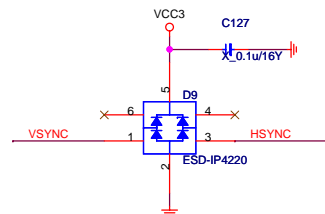
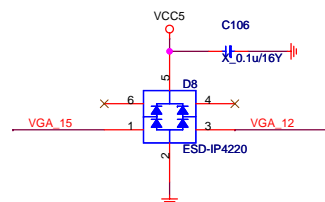
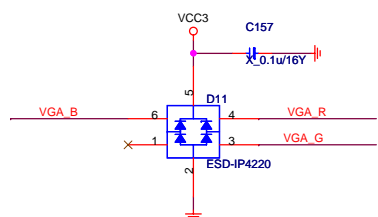


D-Sub

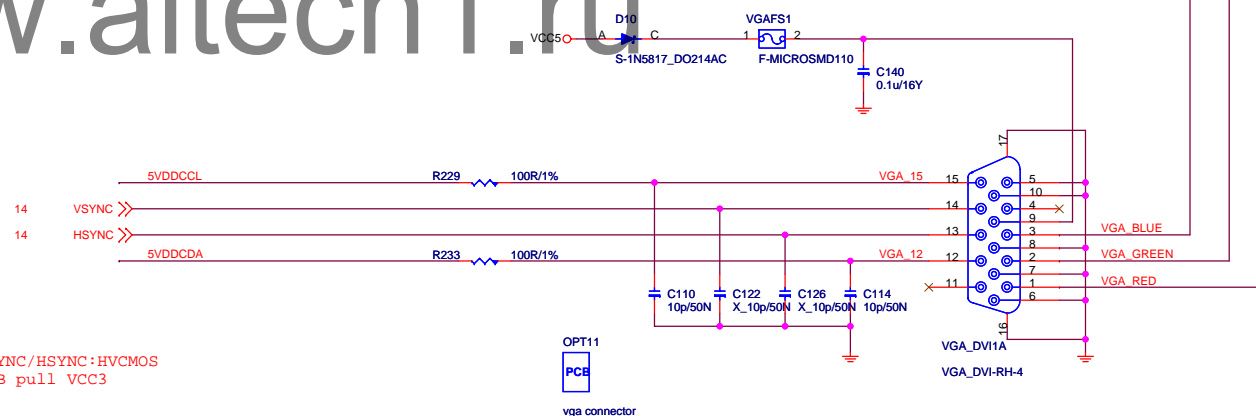
Level shift



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VSYNC/HSYNC:HVC MOS
CRB pull VCC3



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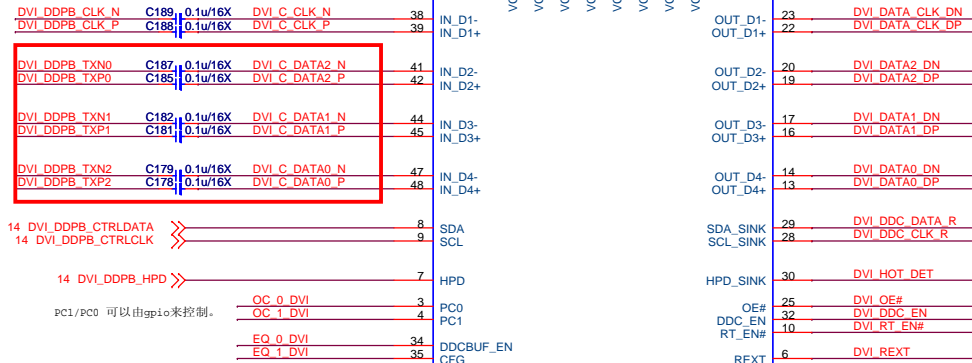
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Custom	VGA	1.5
Date: Sunday, May 30, 2010		Sheet 25 of 38

DVI level shifter

14 DVI_DDPB_TXP0
14 DVI_DDPB_TXN0
14 DVI_DDPB_TXP1
14 DVI_DDPB_TXN1
14 DVI_DDPB_TXP2
14 DVI_DDPB_TXN2
14 DVI_DDPB_CLK_P
14 DVI_DDPB_CLK_N

PCH signal Mappings DG P156

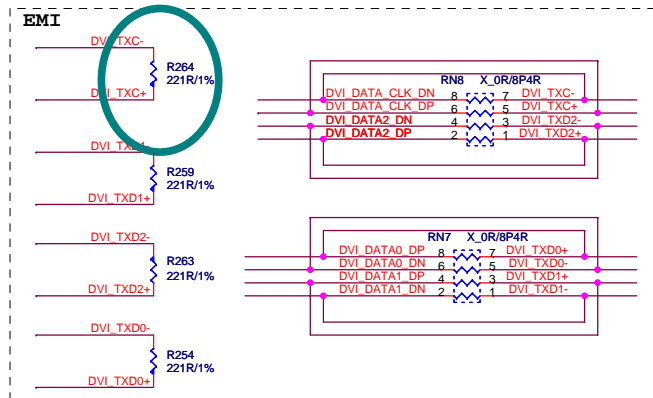
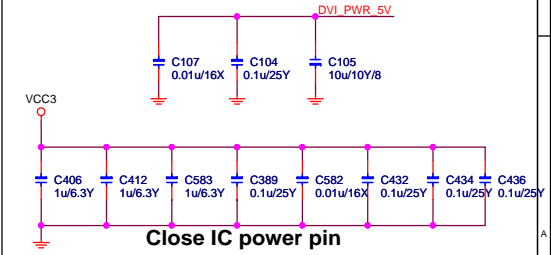
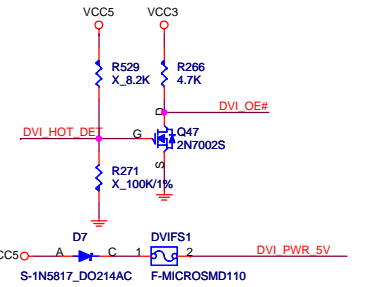
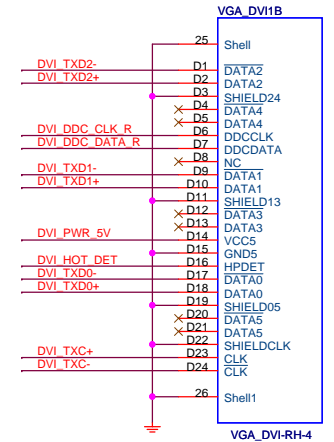
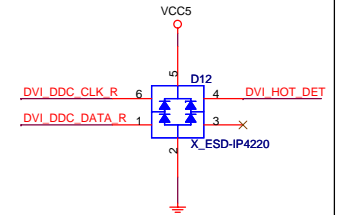
差分阻抗为100ohm



PARADE 腹:B0B-081010C-P97.

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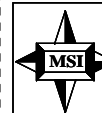
reserve



	"0"	"1"	note
DDC_EN	DDC level shifter disable	DDC level shifter enable	internal pull-up at ~500K ohm.
RT_EN#	Input 50 ohm termination resistor enable	the input termination ; resistors are set to high impedances	internal pull-down at ~500K ohm.
OE#	enable	the chip is power down and input termination resistors will be at high impedance.	internal pull-down at ~500K ohm.
HPD_SINK	disable	enable	internal pull-down at ~200K ohm; 5V tolerant.
DDCBUF_EN	For DDC level shifting configuration, please refer to Table.		internal pull-down at ~500K ohm.
REXT			analog current generation.

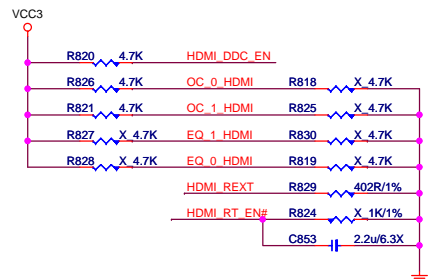
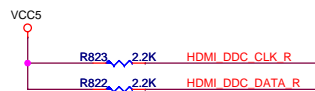
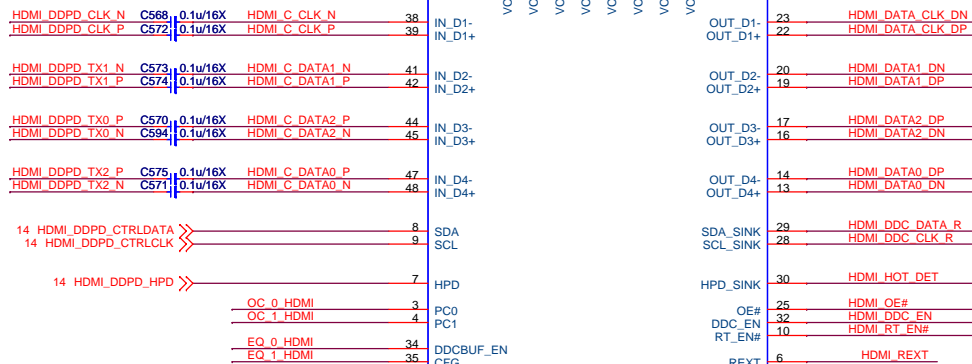
[DDC_EN, DDCBUF_EN, OE#]	DDC Passive Switch	DDC Active Buffer
1, 0, X	On	Off
1, 1, 0	Off	On
1, 1, 1	Off	Off
0, X, X	Off	Off

PC1, PC0		note
00	8 dB	internal pull-down at ~500K ohm.
01	4 dB	
10	12 dB	The 4-dB equalization setting is recommended for PC motherboard level shifting to compensate PCB trace losses.
11	0 dB	



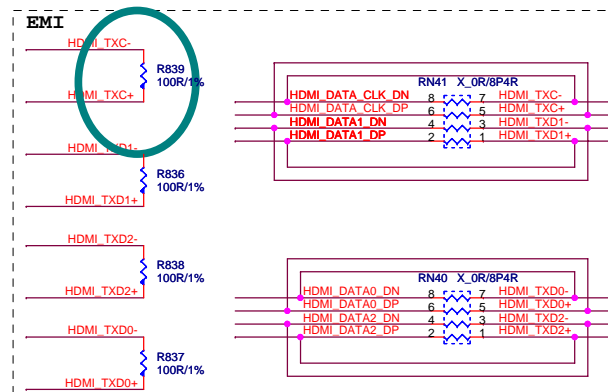
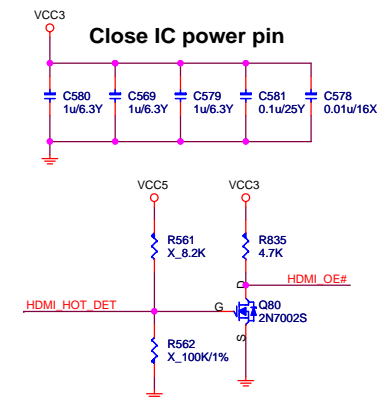
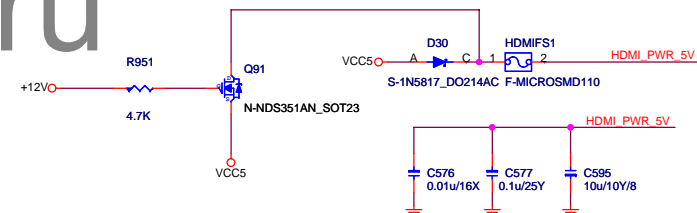
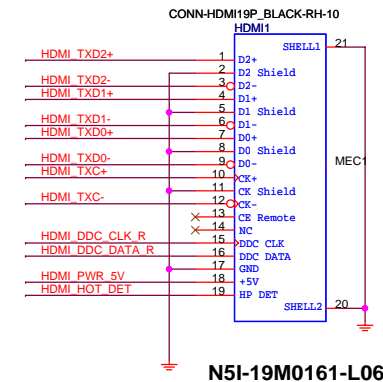
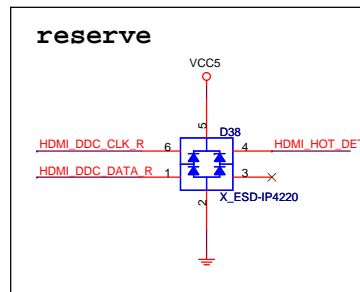
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Size Custom	Document Description	Rev 1.5	
Date: Sunday, May 30, 2010		Sheet 26	of 38

HDMI level shifter



PERICOM 腹:BOB-411LS2C-P22.
PARADE 腹:BOB-081010C-P97.

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MICRO-STAR INT'L CO.,LTD		
MS-7587		
Size	Document Description	Rev
Custom	HDMI	1.5
Date: Monday, May 31, 2010		Sheet 27 of 38

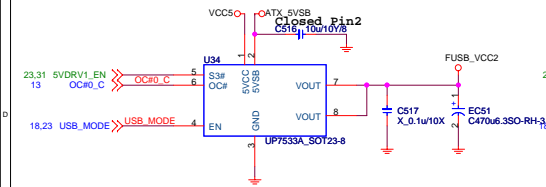
	"0"	"1"	note
DDC_EN	DDC level shifter disable	DDC level shifter enable	internal pull-up at ~500K ohm.
RT_EN#	Input 50 ohm termination resistor enable	the input termination ; resistors are set to high impedances	internal pull-down at ~500K ohm.
OE#	enable	the chip is power down and input termination resistors will be at high impedance.	internal pull-down at ~500K ohm.
HPD_SINK	disable	enable	internal pull-down at ~200K ohm; 5V tolerant.
DDCBUF_EN	For DDC level shifting configuration, please refer to Table.		internal pull-down at ~500K ohm.
REXT			analog current generation.

[DDC_EN, DDCBUF_EN, OE#]	DDC Passive Switch	DDC Active Buffer
1, 0, X	On	Off
1, 1, 0	Off	On
1, 1, 1	Off	Off
0, X, X	Off	Off

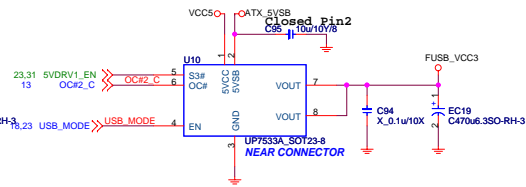
PC1, PC0		note
00	8 dB	internal pull-down at ~500K ohm.
01	4 dB	
10	12 dB	
11	0 dB	

Rear USB Connector

USB POWER FOR PORT 0,1

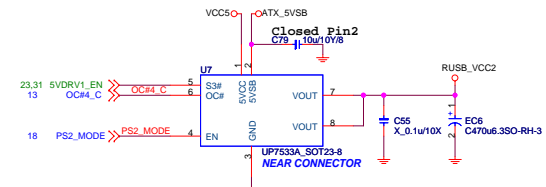


USB POWER FOR PORT 4,5

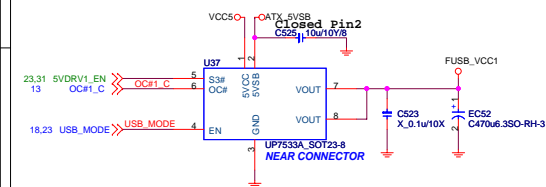


Front USB Connector

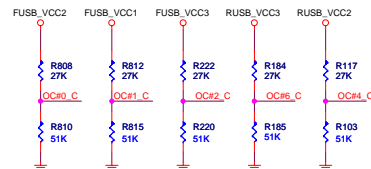
USB POWER FOR PORT 6,7



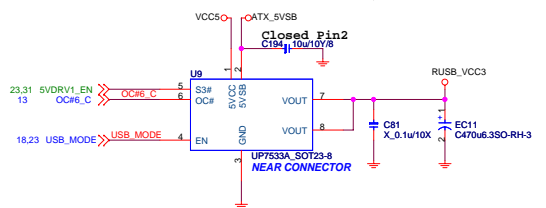
USB POWER REAL PORT 2,3



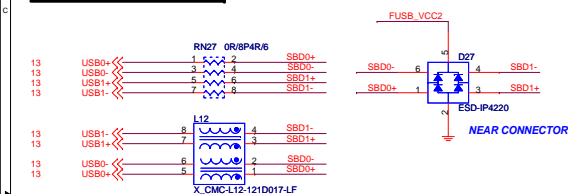
USB_MODE for USB voltage
H: Follow 5VSB
L: Always off



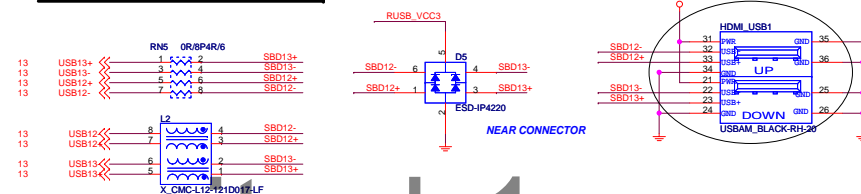
USB POWER FOR PORT 10,11



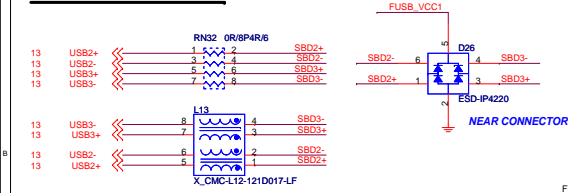
FRONT USB PORT 0,1



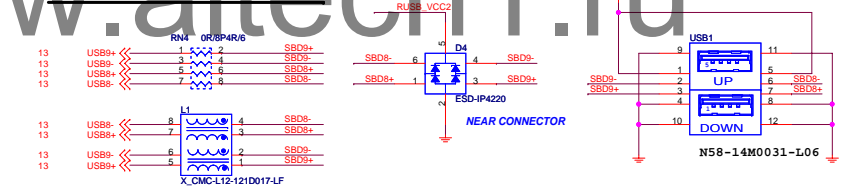
REAR USB PORT 12,13



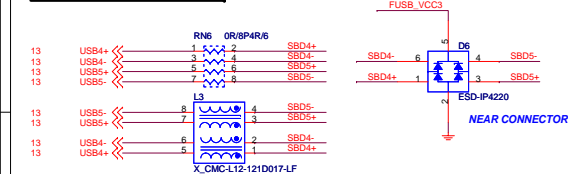
FRONT USB PORT 2,3



REAR USB PORT 8,9



Front USB PORT 4,5



REAR USB PORT 8,9

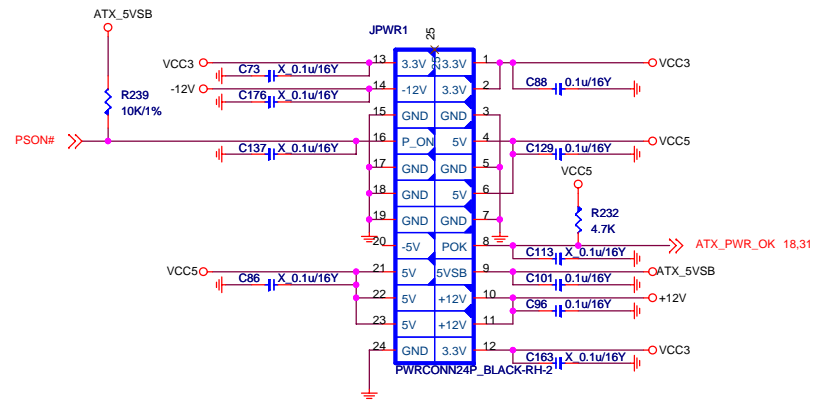


MICRO-STAR INT'L CO.,LTD

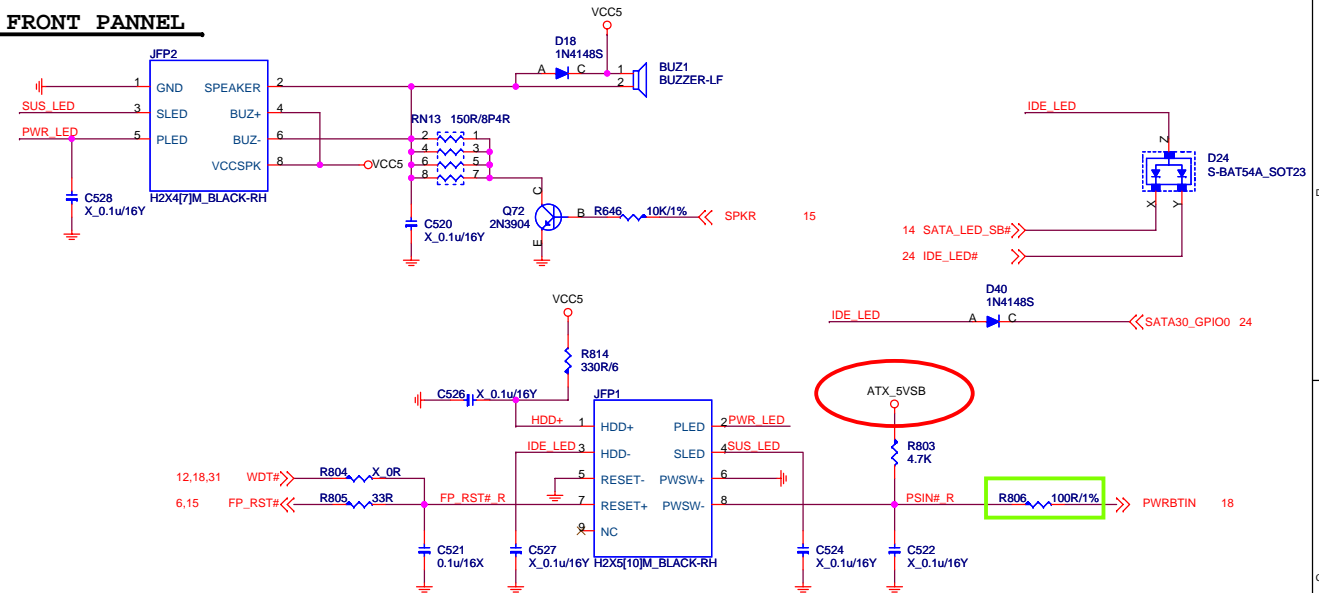
MS-7636

Size Custom	Document Description USB Connectors-10 ports	Rev 1.5
Date: Monday, May 31, 2010	Sheet 29 of 38	

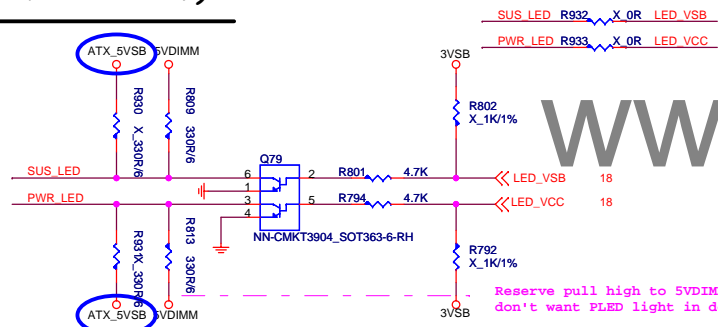
ATX POWER CONNECTOR



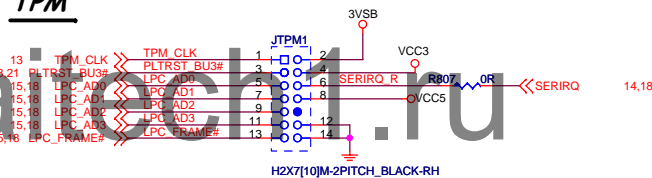
FRONT PANNEL



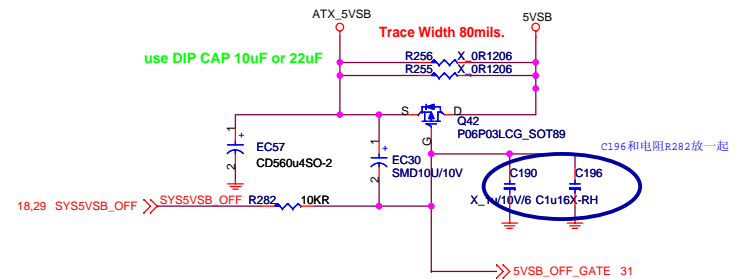
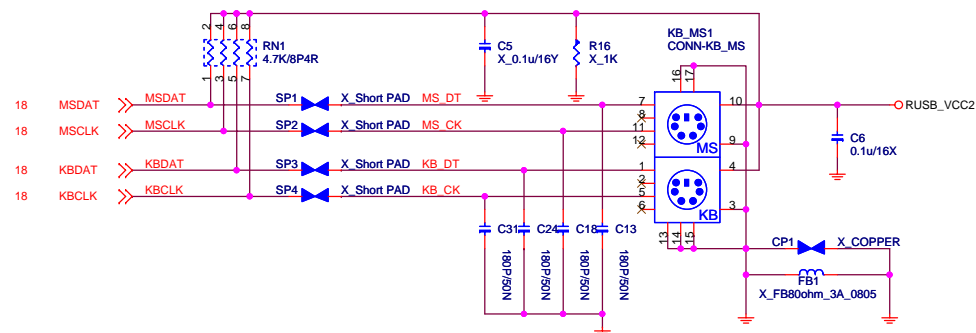
LED (for Fintek 71889)



TPM



PS2 KEYBOARD & MOUSE CONNECTOR



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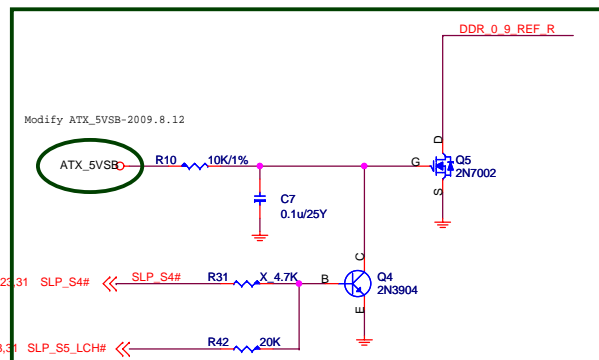
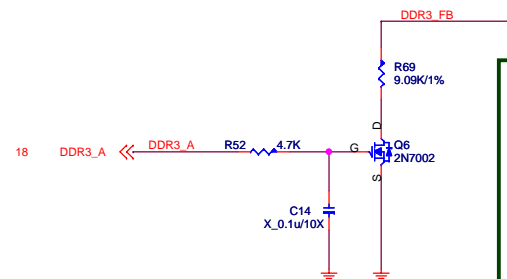
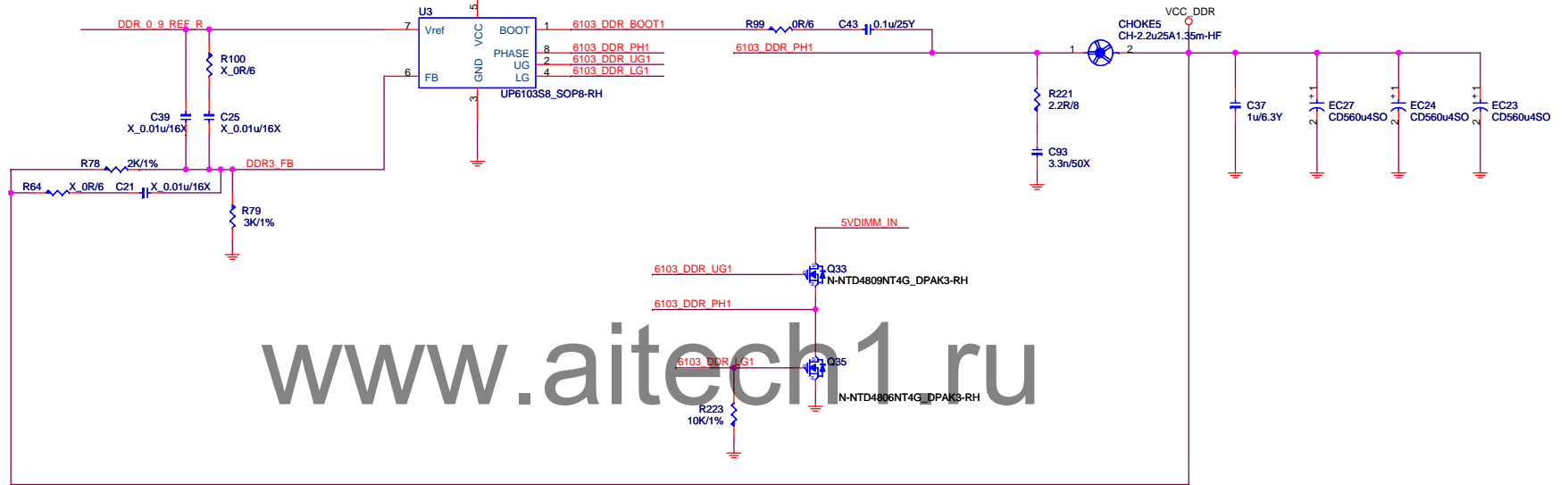
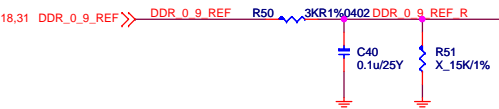
MS-7636

Size	Document Description	Rev
Custom	ATX PWR-Connector & Front Panel & EMI	1.5
Date: Sunday, May 30, 2010	Sheet 30 of 38	

DDR3_1.5V

Tripple=2.63A
1.49*2*1=2.98A>2.63A
SIO 电压 0.9VREF
6264 电压 1.5VREF

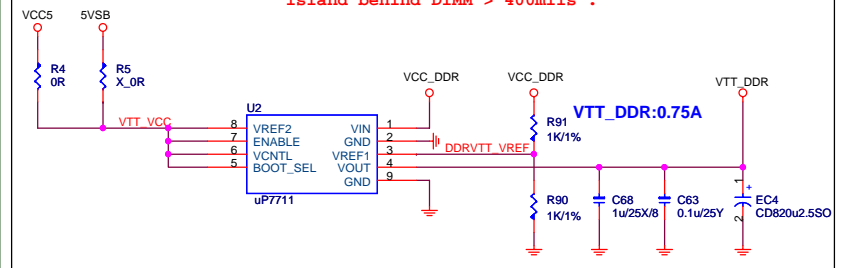
21.25A=6A+8A+0.75A+6.5A
V1.5DDQS3: DDR I/O (6A)
DDR DRAM Imax=8A



Only for meet Intel power down sequence.

DDR VTT Power

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



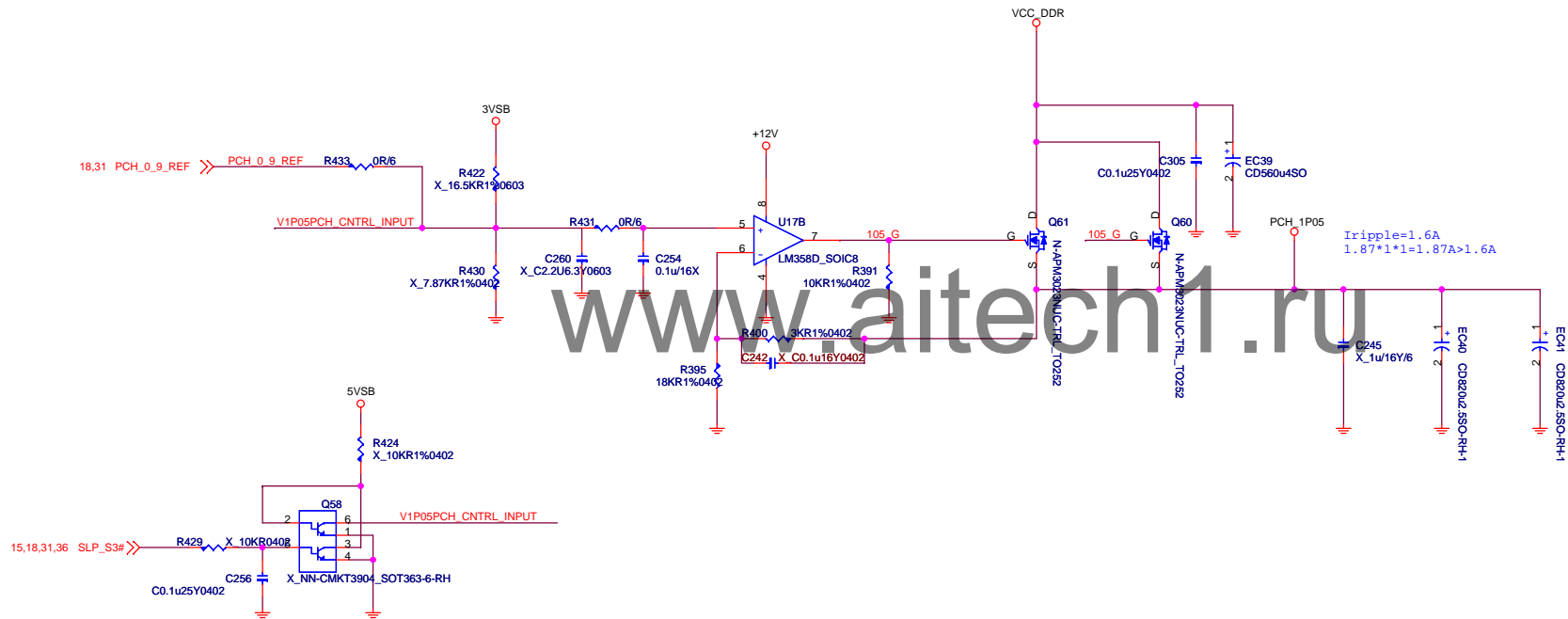
MICRO-STAR INT'L CO.,LTD

MS-7636

Size	Document Description	Rev
Custom	DDR POWER - UPI6103_1-Phase	1.5
Date: Monday, May 31, 2010	Sheet 32 of 38	

PCH Core 6.8A

V1.05PCHS0: Vcc, VccExp, VccDMI, VccSATA,
VccSATAPLL, VccAUPLL, VccSSC, VccDIFFCLK,
VccDIFFCLKN, VccUSBCORE, VccDPLL, VccDPLL_EXP, VccDPLL_FDI (4.5A)
V1.05MEM: VccMEW, VccAUX, VccME (2.3A)



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MS-7636

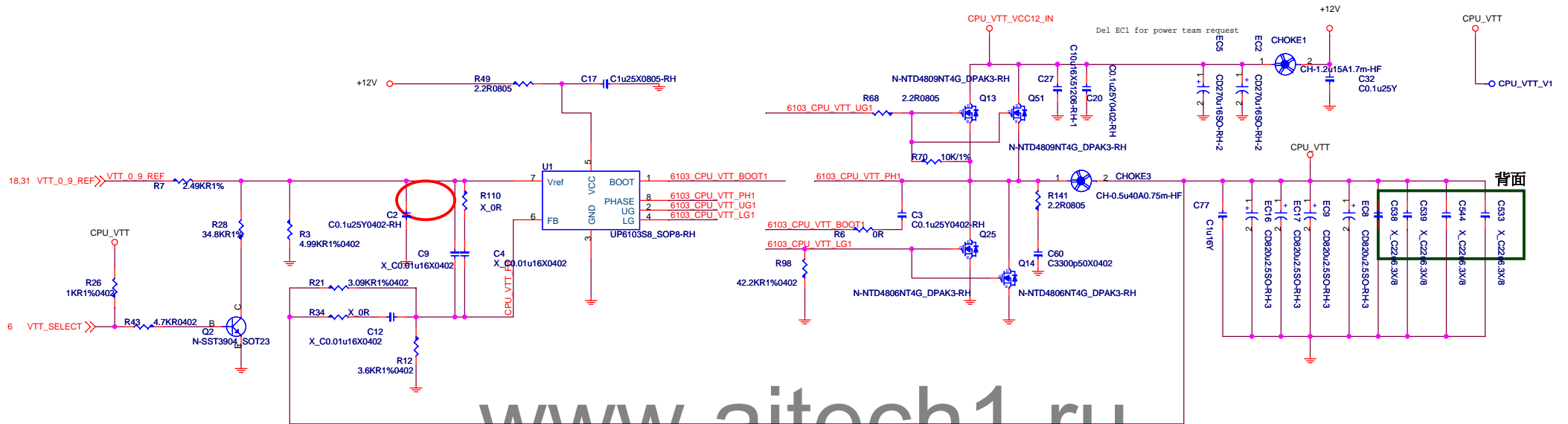
Size Custom	Document Description PCH POWER - UPI6103_1-Phase	Rev 1.5
Date: Sunday, May 30, 2010		Sheet 33 of 38

VTPWRGD LEVEL SHIFT

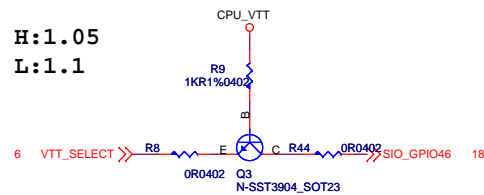
CPU_VTT

VTT0: 1.1V/1.05V CPU Uncore, MCP I/O
(30A)

Iripple=8.28A
6.1*2*1=12.2A>8.28A



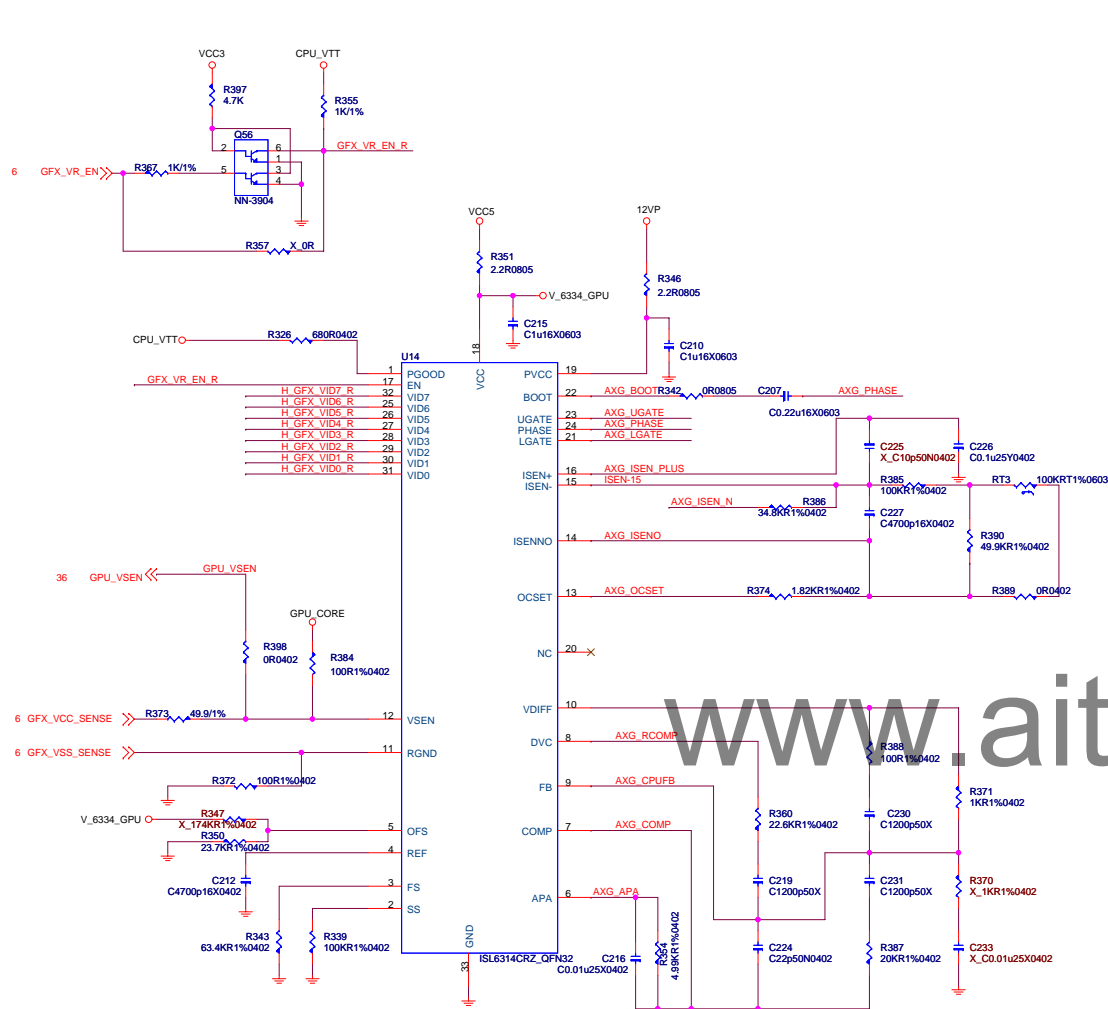
H:1.05
L:1.1



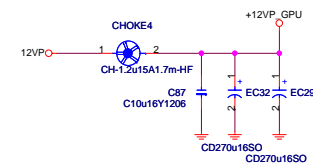
MICRO-STAR INT'L CO.,LTD

MS-7636

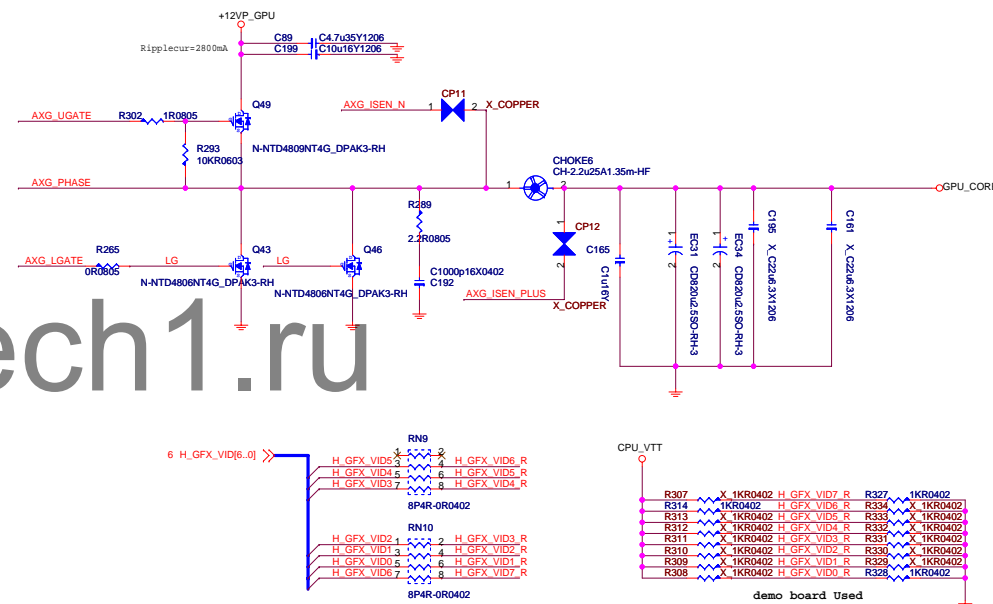
Size	Document Description	Rev
Custom	CPU_VTT - UPI6103_1-Phase	1.5
Date: Monday, May 31, 2010	Sheet 34 of 38	




GFX 12V VIN

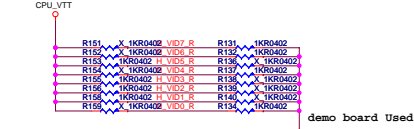


GFX 1PHASE OUTPUT

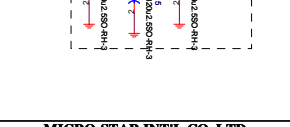
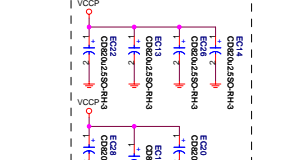
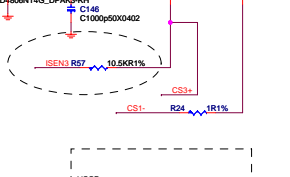
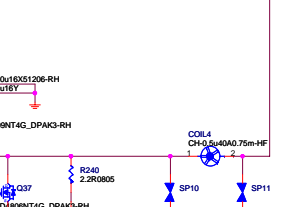
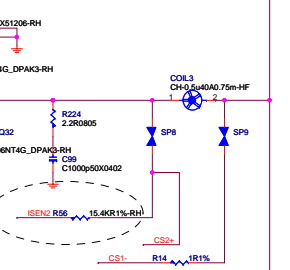
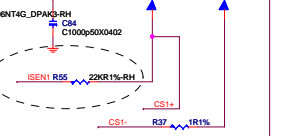
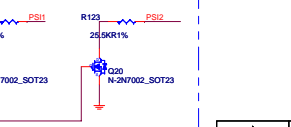
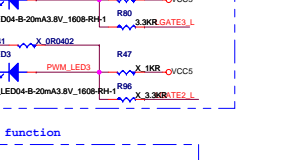
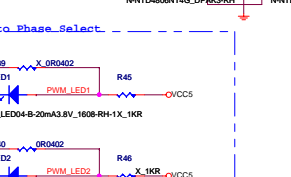
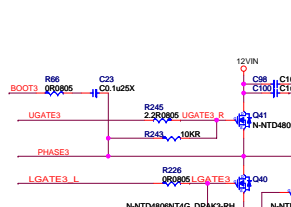
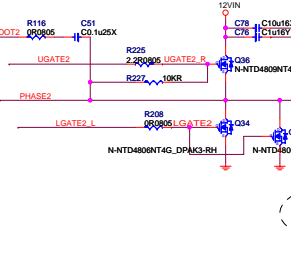
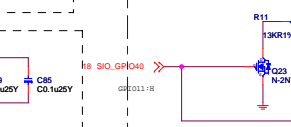
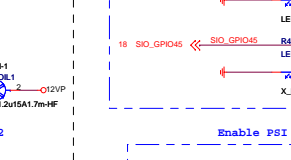
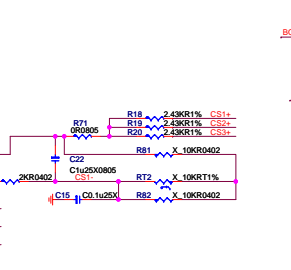
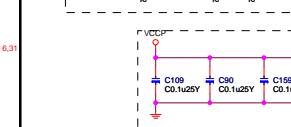
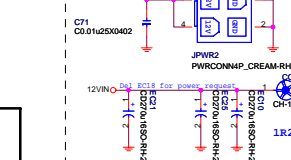
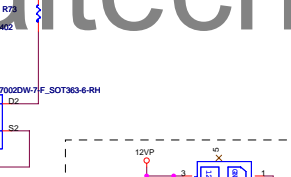
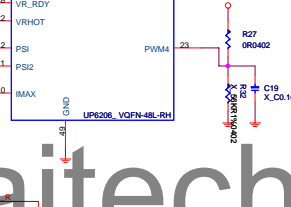
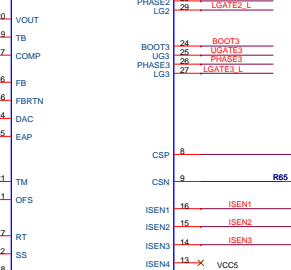
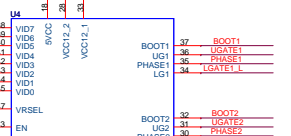
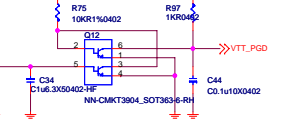
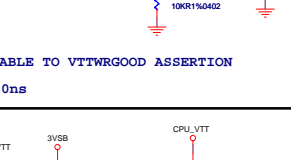
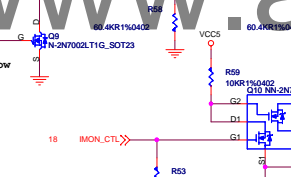
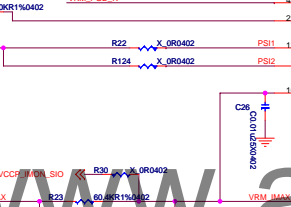
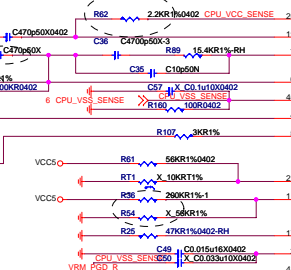
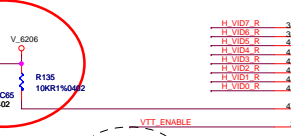
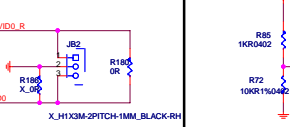
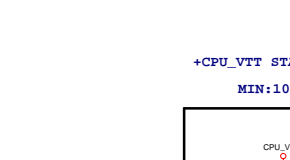
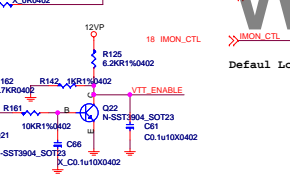
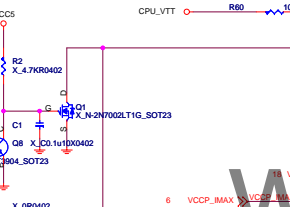
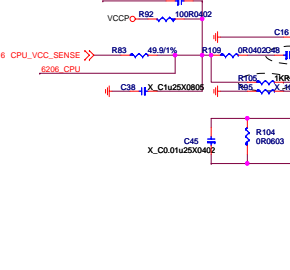
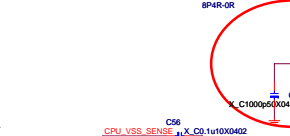
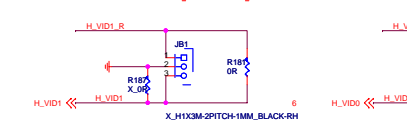
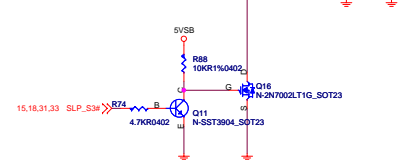


GFX VR (Clarkdale Only)
Switcher (7 VID), 16A TDC, 25A Imax

			MICRO-STAR INT'L CO.,LTD	
Size		MS-7636		Rev
Custom		Document Description		1.5
		GPU PowerISL6117_1-Phase		
Date: Sunday, May 30, 2010		Sheet 35 of 38		

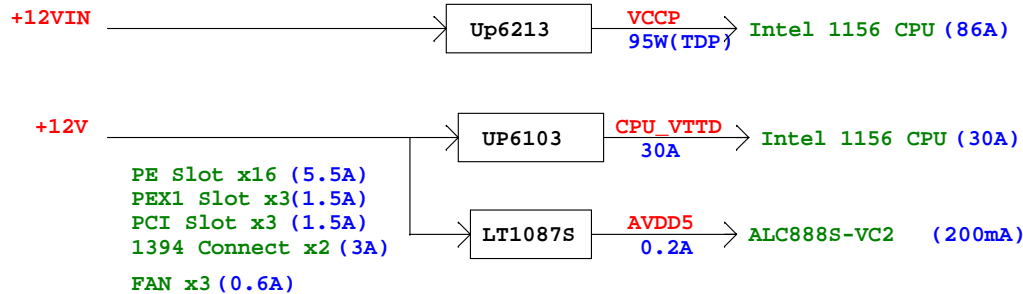


0x60:RH=10K,RL=NC



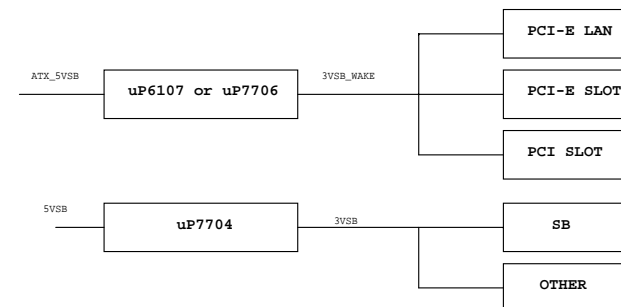
MS-7636

Size Custom	Document Description VRD11.1 - uPI 6206_3-Phase
Date: Monday, May 31, 2010	

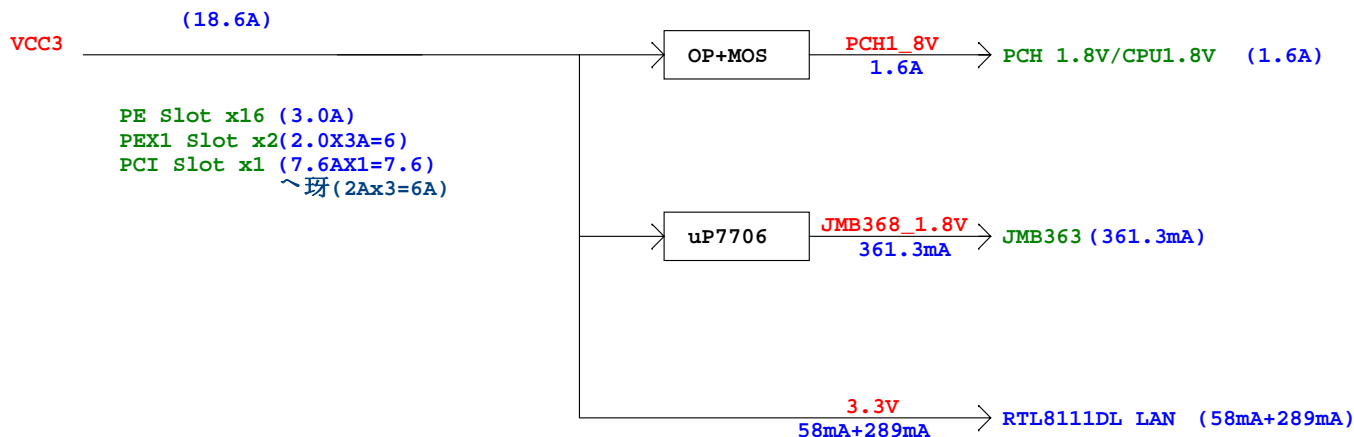
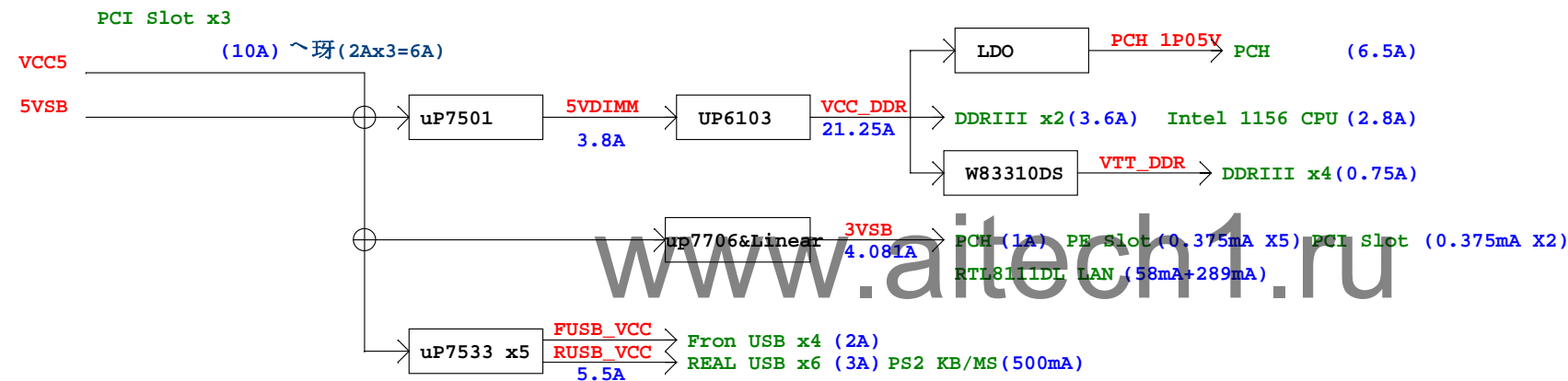


3VSB and 3VSB_WAKE POWER MAP

Add- 2009.9.28

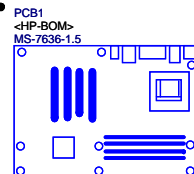


Power Delivery



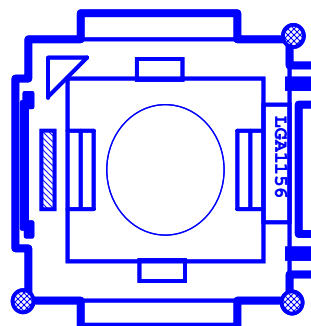
MICRO-STAR INT'L CO.,LTD			
MS-7588			
Size	Document Description		Rev
Custom	Power Map		1.5
Date: Thursday, May 20, 2010		Sheet	37 of 38

PCB



CPU SOCKET

XU1_X1
<HP-BOM>
CPU SOCKET

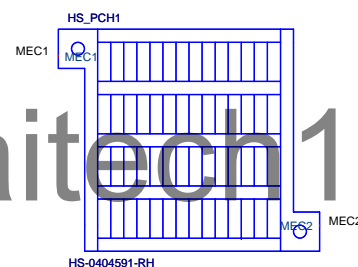


HDMI logo

HDMI_L
PCB
X_HDMI_LOGO

BATTERY

BAT1_X1
BAT-5CR2032P-RH



Rubber1
PCB
rubber

Rubber2
PCB
rubber

EL CAP

OPT1
PCB
X_CD470u6.3V4SO-2

OPT2
PCB
X_CD10uF

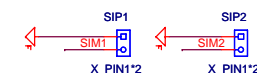
OPT3
PCB
X_CD100uF

OPT4
PCB
X_CD1000uF

LABEL1
PCB
X_G51-M1SP632X_G51-M1SP644

LABEL2
PCB
bottom_EC54
bottom_label
X_E26-7636010 X_E26-7636010

Simulation



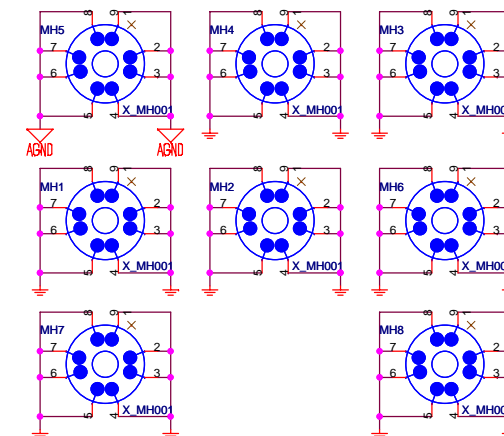
Optical Fiducial Marks-120



Optical Fiducial Marks-100



Mounting Holes



H55EB3:3孔audio (888S VC2) ,GB LAN, OC-switch 不上, DVI,HDMI 不上,
JMB368 不上(IDE 也不上), APS LED 不上 (SW APS) 半固.
H55SG6DVI:Full spec

	MICRO-STAR INT'L CO.,LTD		
	MS-7636		
	Size Custom	Document Description Manual & Option parts	Rev 1.5
	Date: Monday, May 31, 2010	Sheet 38	of 38