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# MS-7708 Ver: 1.1

uATX(243.84mm X 203.2mm)

## CPU:

INTEL -Clarkdale/Lynnfied LGA 1156

## System Chipset:

INTEL-IBEXPEAK PCH

## OnBoard Chipset:

Clock Gen:Realtek RTM875N-632

HD Audio Codec:ALC887-VD-GR

LAN:RTL8111E 10/100/1000

IO: Fintek F71858AD

Flash ROM: 32 Mb SPI (CHIP)

## Main Memory:

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

## Expansion Slots:

PCI Express (X16) Slot \* 1

PCI Express (X1) Slot \* 2

## PWM:

Controller:NCP5395 3-Phase -- 95W

## Other:

SATA(SATA2-300MB/s) \*4

USB2.0 \*10 (Rear\*4 / Front\*4)

USB3.0\*2

On BOARD BUZZER



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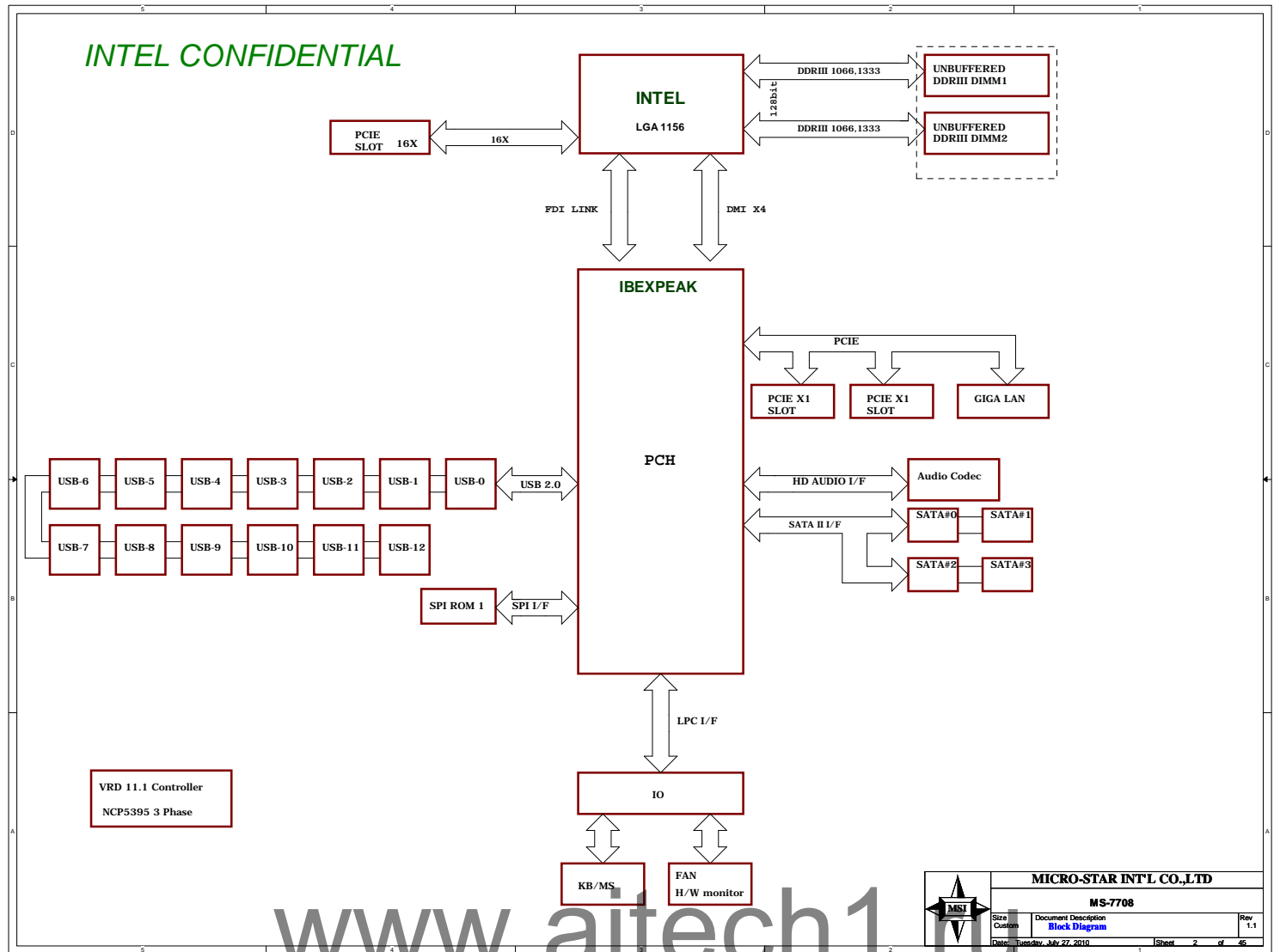
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Size Custom	Document Description <a href="#">Block Diagram</a>	Rev 1.1
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# DDR DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 2 CH-A	10100001B	MEM_MA_CLK_H2/L2 MEM_MA_CLK_H3/L3
DIMM 1 CH-A	10100000B	MEM_MA_CLK_H0/L0 MEM_MA_CLK_H1/L1
DIMM 4 CH-B	10100011B	MEM_MB_CLK_H2/L2 MEM_MB_CLK_H3/L3
DIMM 3 CH-B	10100010B	MEM_MB_CLK_H0/L0 MEM_MB_CLK_H1/L1

TABLE 9-  
USB PORT MAPPING SUBJECT TO CHANGES

Controller	Port	Destination	max. USB Ports	Full Cap.	Over Current Protection
UHCI1, EHCI1	Port 1	Internal USB, Device F15.0	255	Y	Y
	Port 2	Internal USB, Device F15.0	255	Y	Y
UHCI2, EHCI2	Port 3	Internal USB, Device F15.0	255	Y	Y
	Port 4	Internal USB, Device F15.0	255	Y	Y
UHCI3, EHCI3	Port 5	Internal USB	255	Y	Y
	Port 6	Internal USB	255	Y	Y
UHCI4, EHCI4	Port 7	Internal USB	255	Y	Y
	Port 8	Internal USB	255	Y	Y
UHCI5, EHCI5	Port 9	Internal USB	255	Y	Y
	Port 10	Internal USB	255	Y	Y
UHCI6, EHCI6	Port 11	Internal USB	255	Y	Y
	Port 12	Internal USB	255	Y	Y
UHCI7, EHCI7	Port 13	Internal USB	255	Y	Y
	Port 14	Internal USB	255	Y	Y
UHCI8, EHCI8	Port 15	Internal USB	255	Y	Y
	Port 16	Internal USB	255	Y	Y
UHCI9, EHCI9	Port 17	Internal USB	255	Y	Y
	Port 18	Internal USB	255	Y	Y
UHCI10, EHCI10	Port 19	Internal USB	255	Y	Y
	Port 20	Internal USB	255	Y	Y
UHCI11, EHCI11	Port 21	Internal USB	255	Y	Y
	Port 22	Internal USB	255	Y	Y

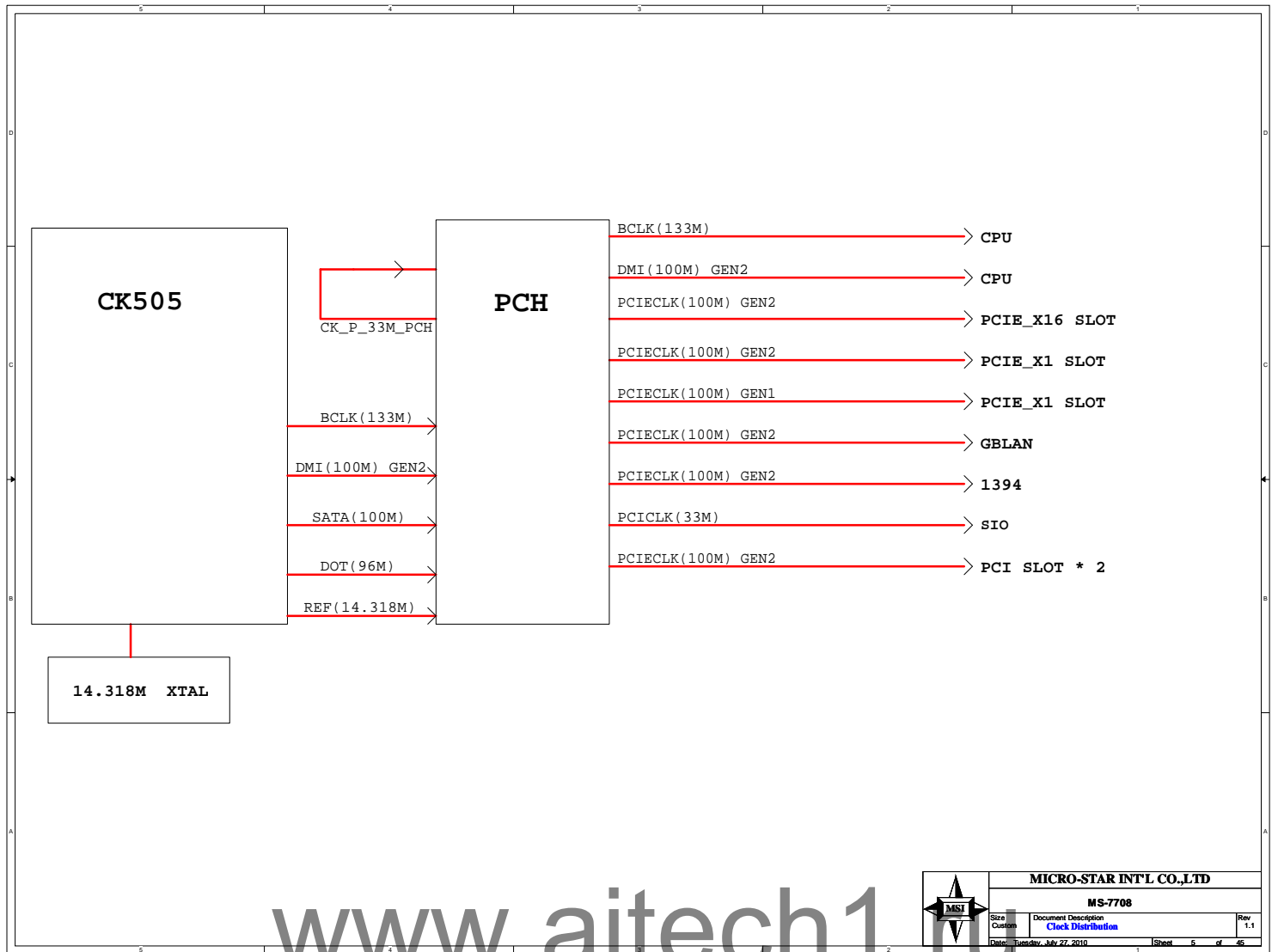
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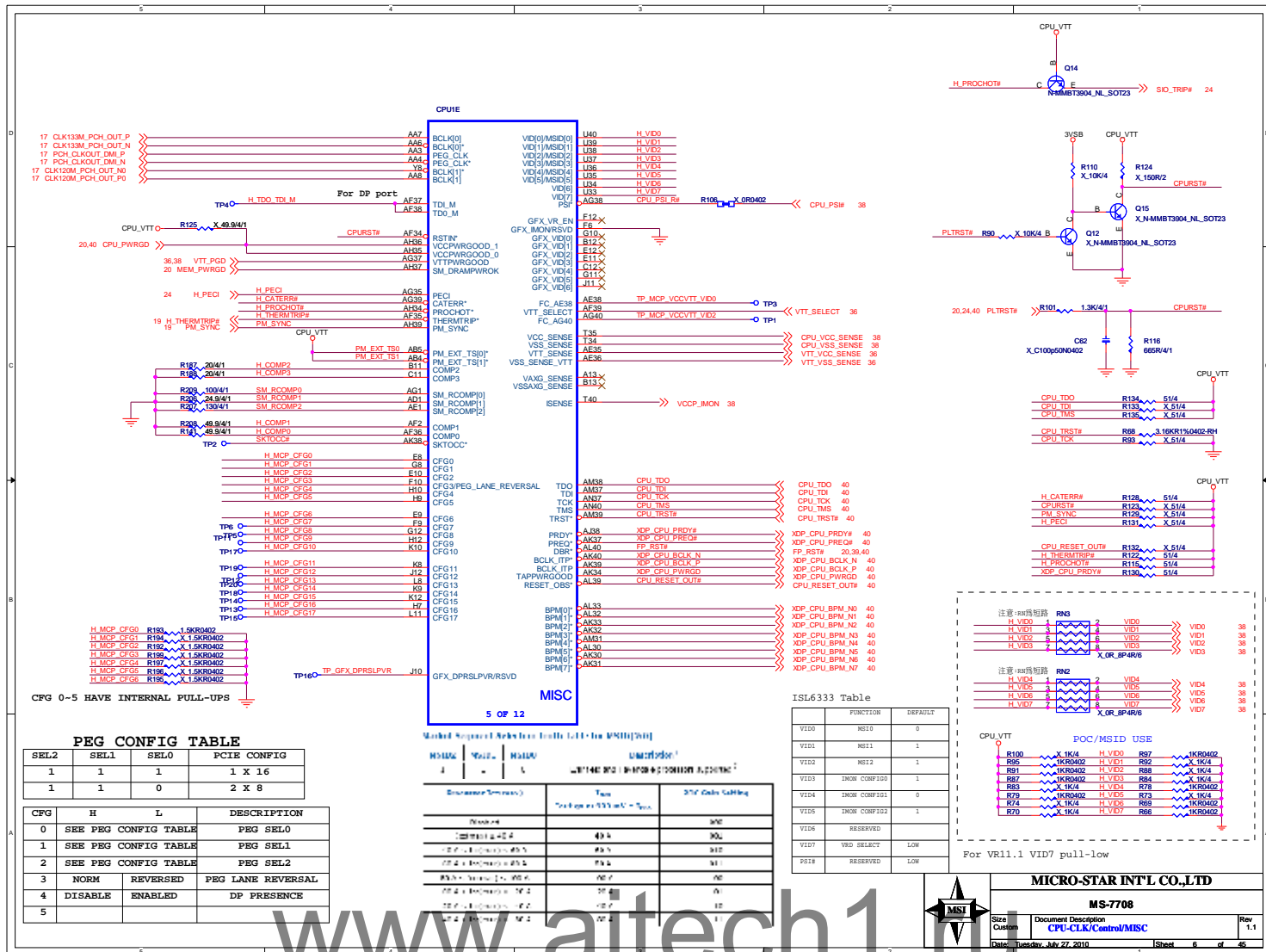
PDF created with pdfFactory trial version [www.pdffactory.com](http://www.pdffactory.com)





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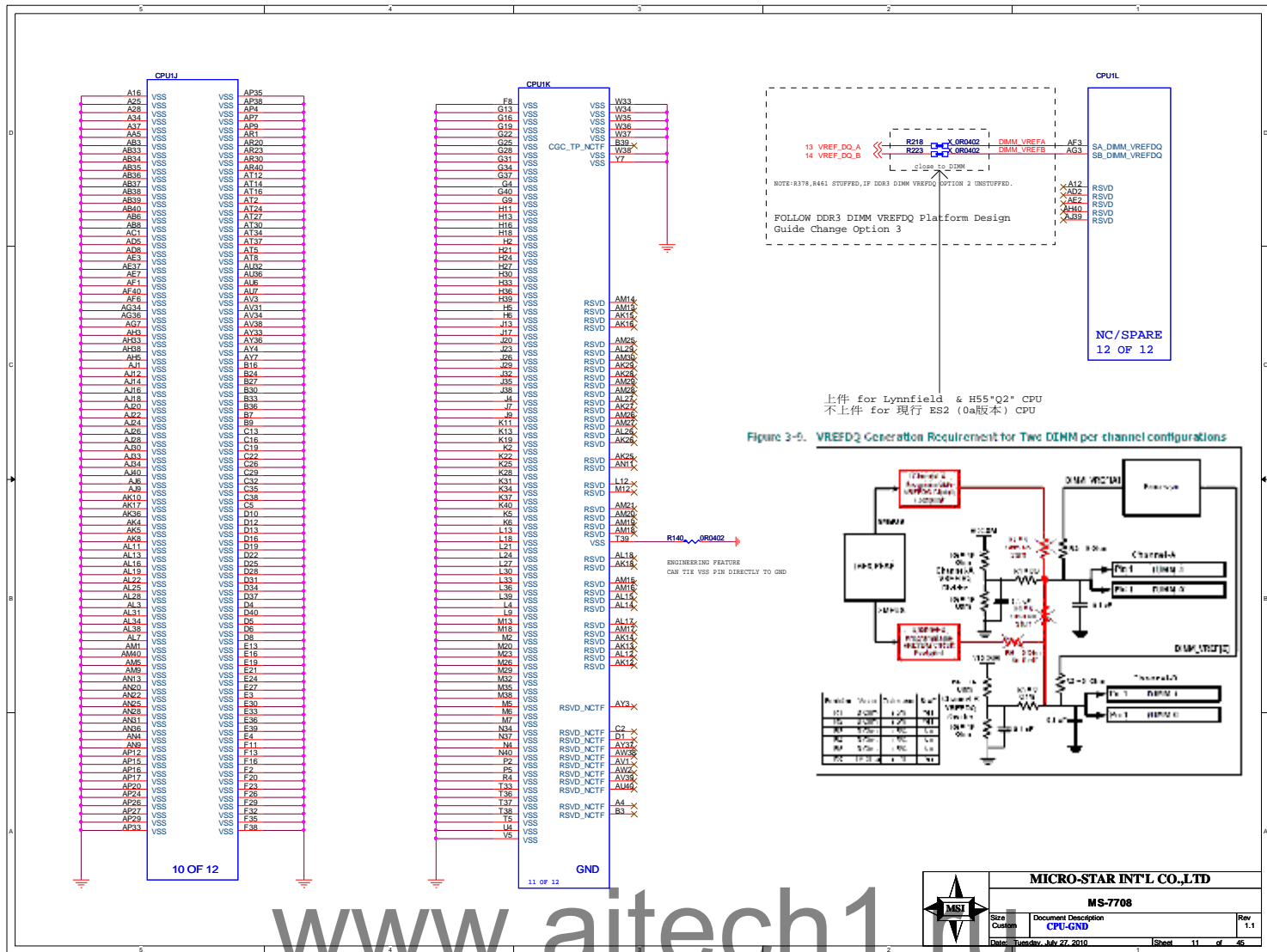




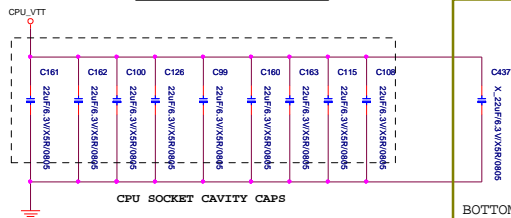
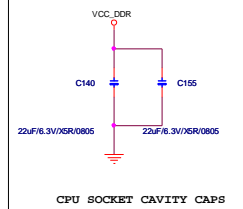
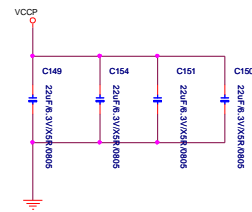
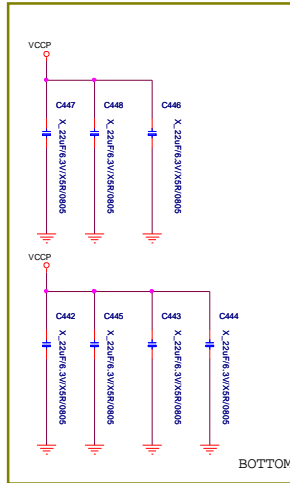
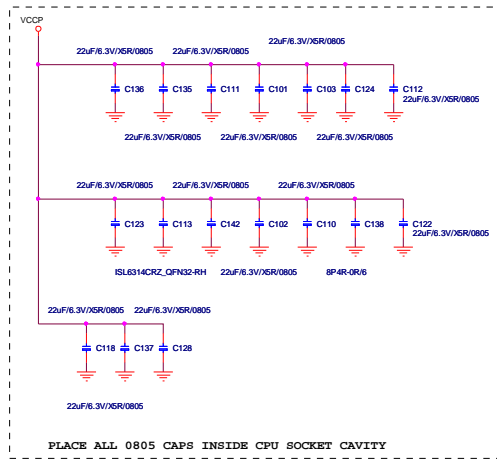










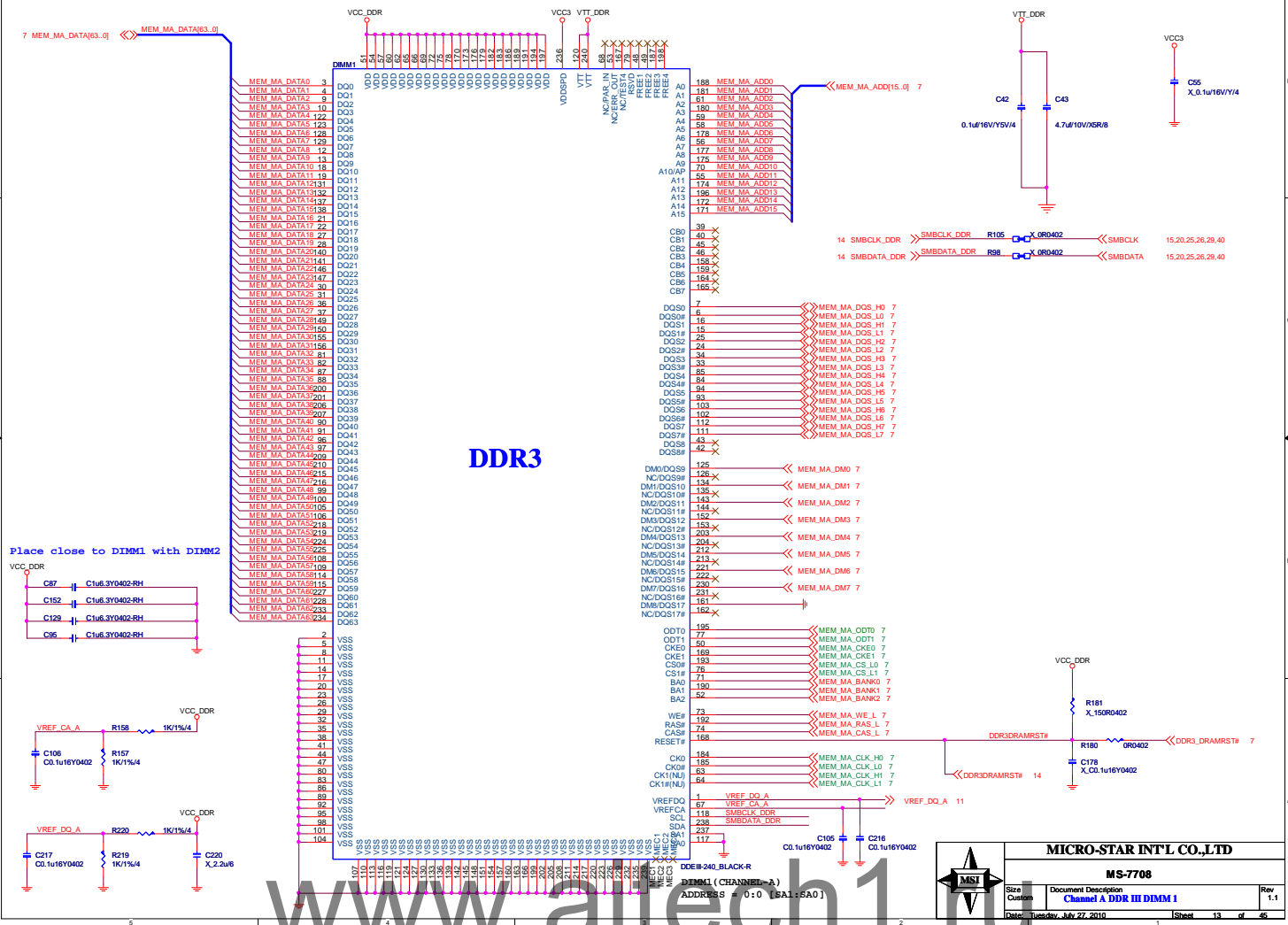


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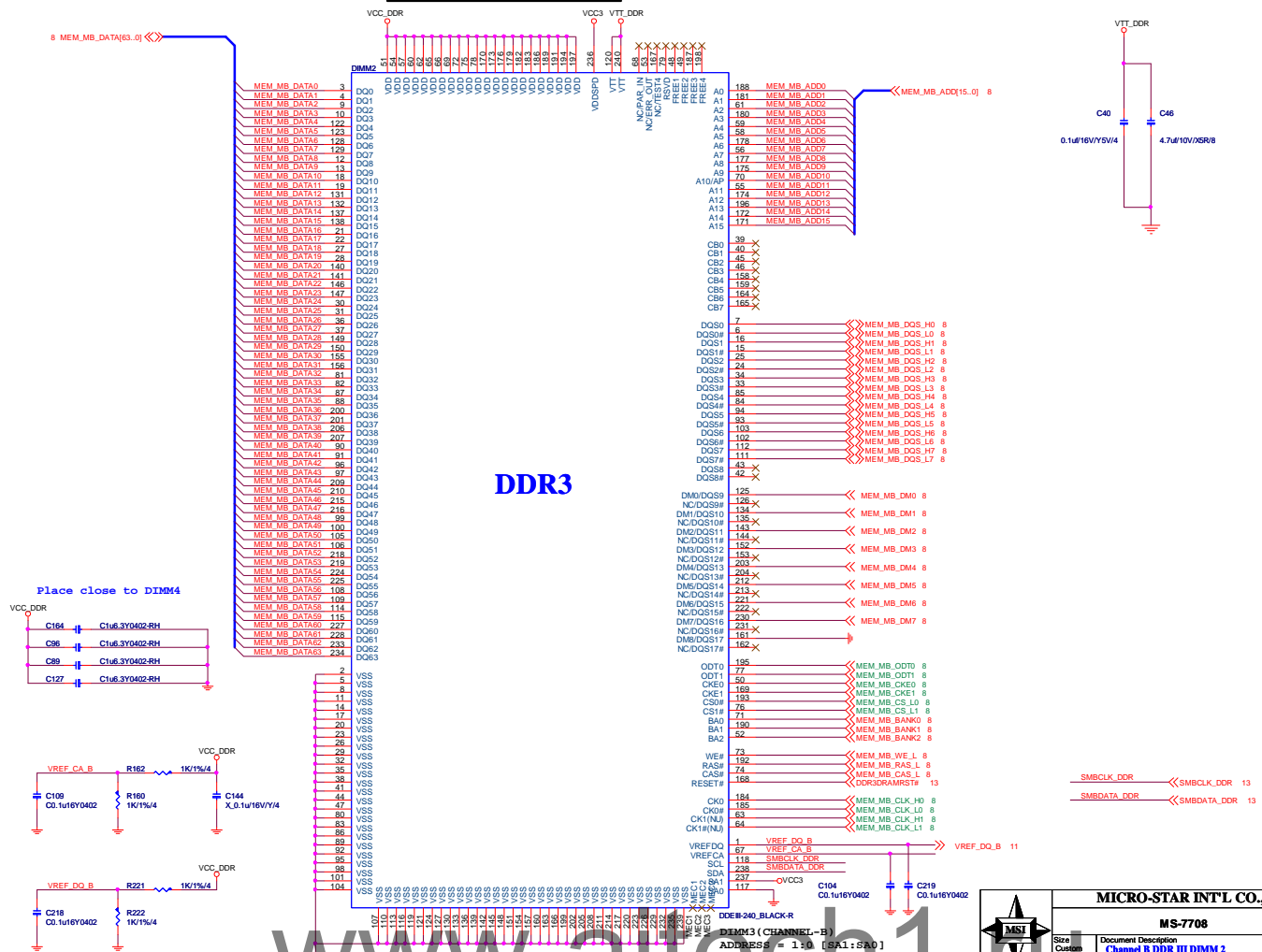
# DDR3 DIMM\_A1





# DDRIII DIMM\_B1

DDR3



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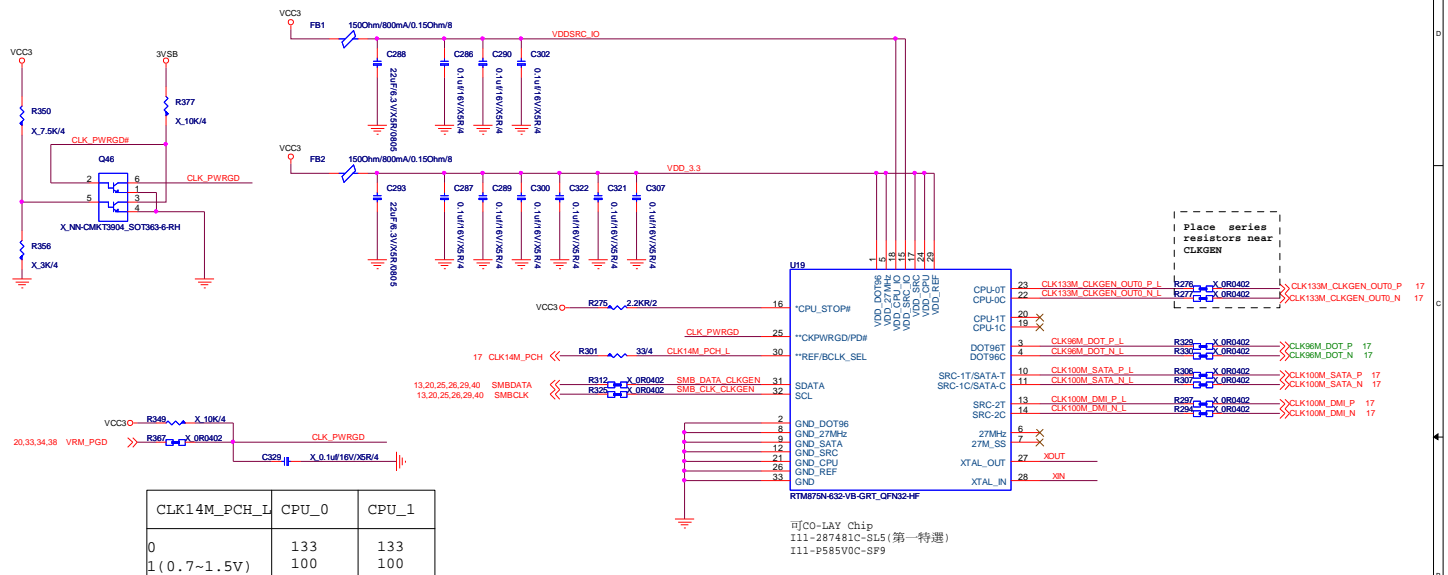
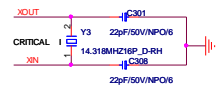
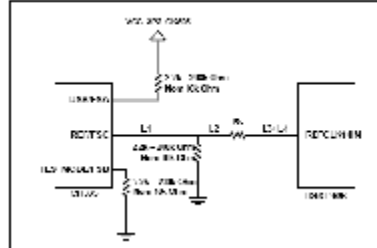
**CLOCK Gen / RTM875N-632**

Figure 9: L8 REFCLK Topology from C4305 to Dmac Peak with DCCLK Frequency Strapping



CLOCK EMI CAPS: DEFAULT EMPTY

CLK14M_PCH_L	CPU_0	CPU_1
0	133	133
1 (0.7~1.5V)	100	100

CLK14M\_PCH\_L C319 X\_10pF/25V/N



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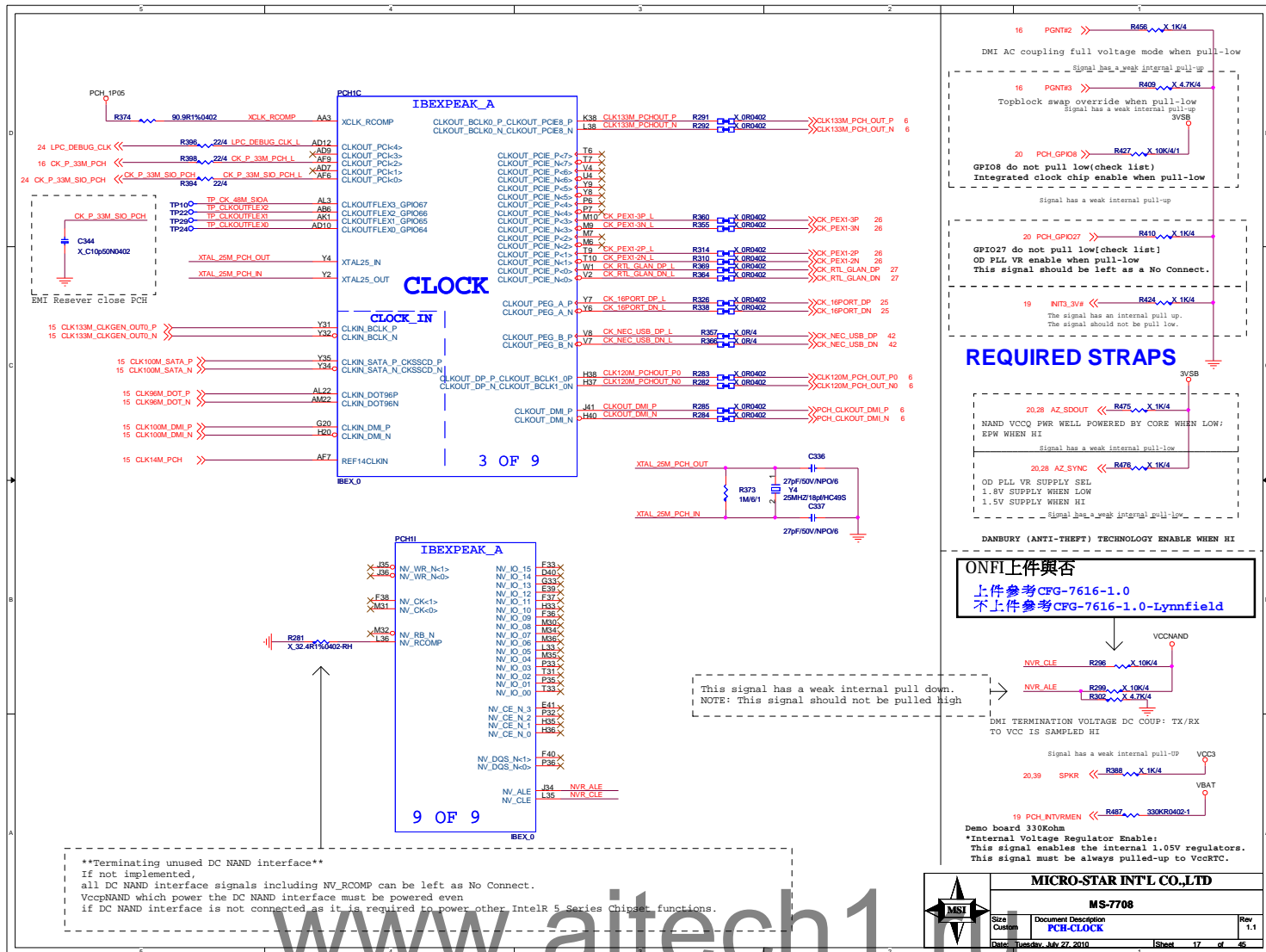
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Size Custom	Document Description <b>Clock-Gen Realtek RTM875N-632</b>	Rev 1.1
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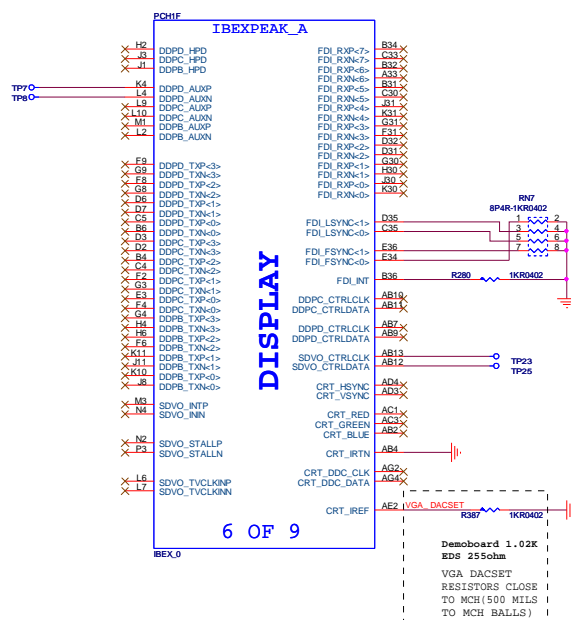












Following table describes recommendations for disbanding ID on the ICD

[illegible]

372569 372569 Platform Key Case: Fishlow Platform Design: Case Real Spd

[illegible]

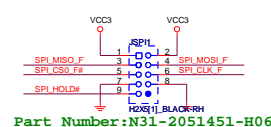
For external graphics designs, the pins VccIOPLL, VccIOPLL<sub>2</sub>, VccIOPLL and VccIOPLL<sub>2</sub> should be directly connected to the respective power rails and no LC filters are required to be populated on the power rails that source these pins.

376563 376563 Piketon Kings Creek Foxhollow Platform Design Guide Rev1 5.pdf

R492 from 1.02k to 0ohm if D-SUB Unuse.

Schematic diagram of the M31-25L6412-M24 memory module. The module is represented by a blue rectangle labeled 'M31-25L6412-M24' with pins 1 through 20 on the left and right. Pin 1 is labeled 'CS' and pin 2 is 'S0/SIO1'. Pin 3 is 'NC/SIO3' and pin 4 is 'S1/SIO0'. Pin 5 is 'WP/SIO2' and pin 6 is 'S2/SIO4'. Pin 7 is 'GND' and pin 8 is 'VCC'. Pin 9 is 'S3/HOLD' and pin 10 is 'S4/CLK\_F'. Pin 11 is 'S5/CLK\_F' and pin 12 is 'S6/MOSI\_F'. Pin 13 is 'S7/G4' and pin 14 is 'S8/GPO#'. Pin 15 is 'S9/HOLD\_GPO#' and pin 16 is 'S10/GPO#'. Pin 17 is 'S11/HOLD\_GPO#' and pin 18 is 'S12/GPO#'. Pin 19 is 'S13/HOLD\_GPO#' and pin 20 is 'S14/GPO#'. The module is connected to an 'AU1' microcontroller (M31-2503203-W03) at pins 1-4. It is also connected to a 'VCC3' supply (C430, 0.1uF/16V/50R/4) at pins 8 and 9. A 'C434' capacitor (2.2K/2V) is connected to pin 10. A 'C10u0Y0805' capacitor is connected to pin 11. A 'R555' resistor (2.2K/2V) is connected to pin 12. A 'R554' resistor (2.2K/2V) is connected to pin 13. A 'R500' resistor (2.2K/2V) is connected to pin 14. A 'R501' resistor (2.2K/2V) is connected to pin 15. A 'R502' resistor (2.2K/2V) is connected to pin 16. A 'R503' resistor (2.2K/2V) is connected to pin 17. A 'R504' resistor (2.2K/2V) is connected to pin 18. A 'R505' resistor (2.2K/2V) is connected to pin 19. A 'R506' resistor (2.2K/2V) is connected to pin 20. The module is also connected to a 'From South-Bridge GP1032' at pins 1-4 and a 'From South-Bridge GP1031' at pins 15-18.

Close to SPI ROM



Part Number:N31-2051451-H06

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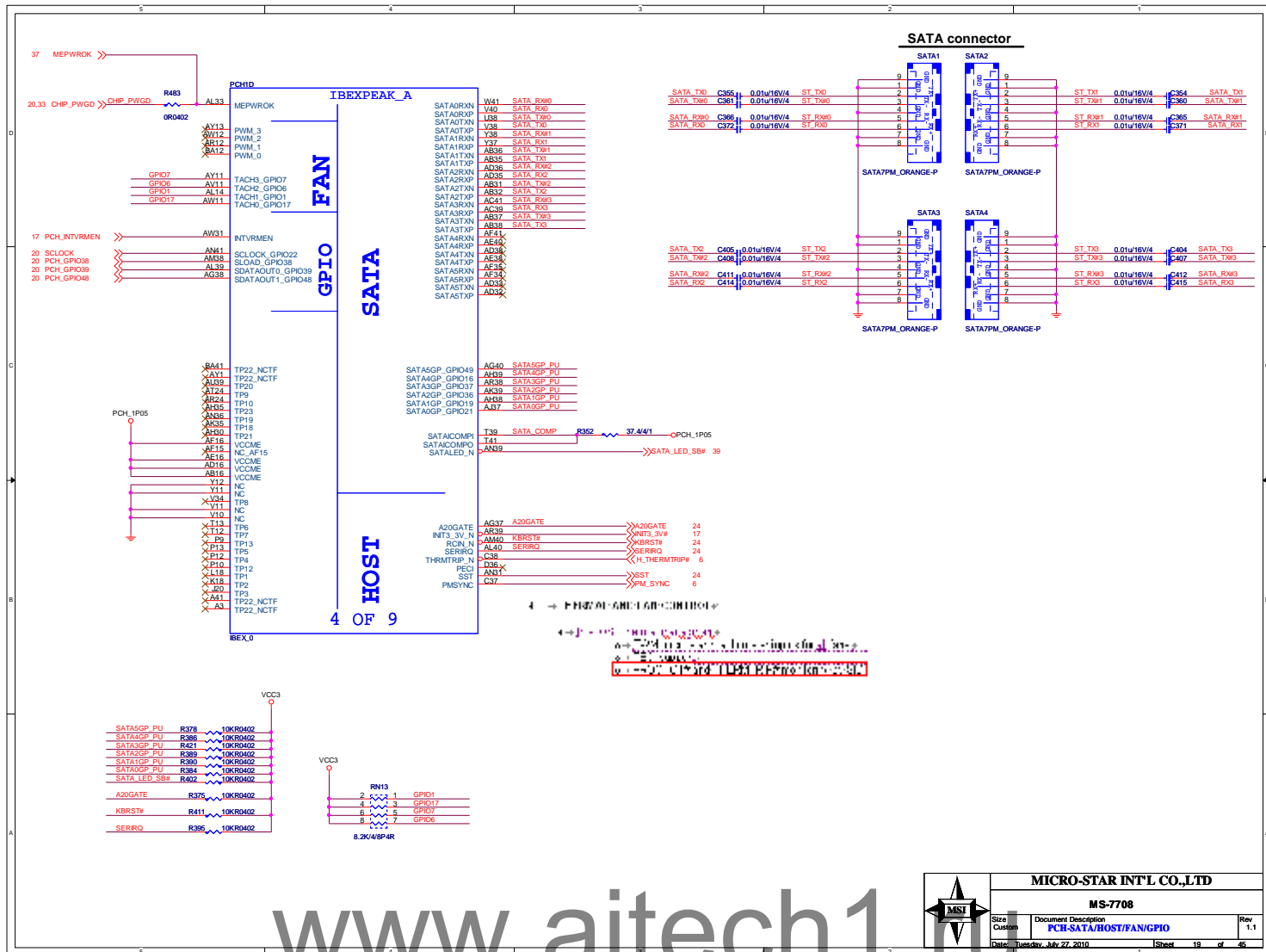


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Size Custom	Document Description <b>PCH-DISPLAY/ SPI ROM</b>	Rev 1.1
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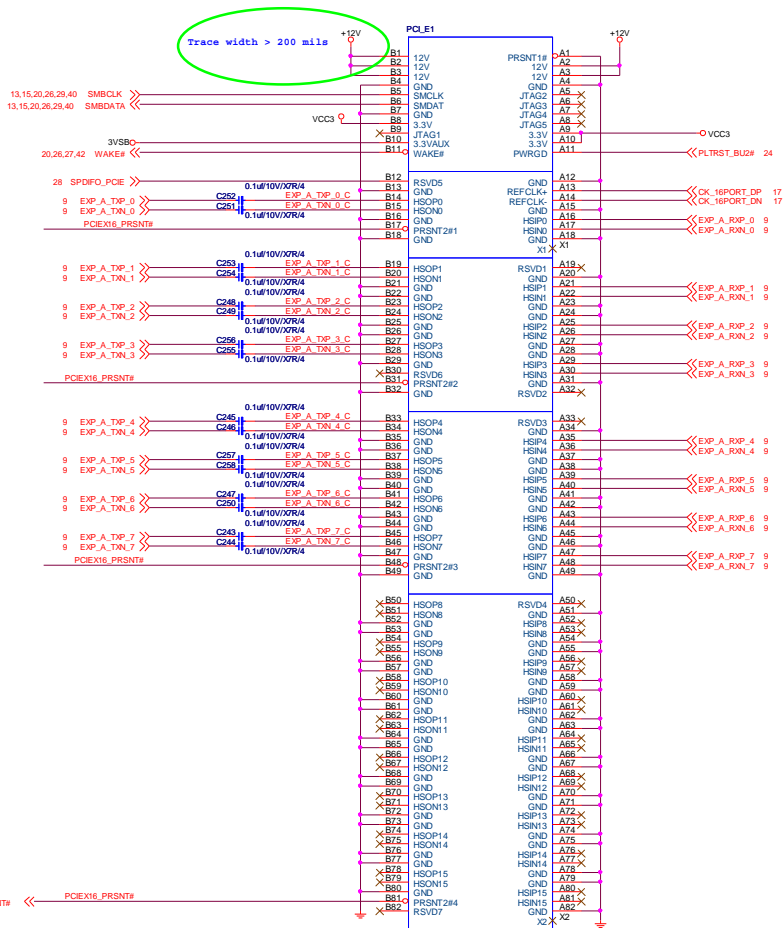








# PCI\_Express X16 Slot



SLOT:PC164P\_BLACK-2PITCH-RH-16  
N11-1640221-L06

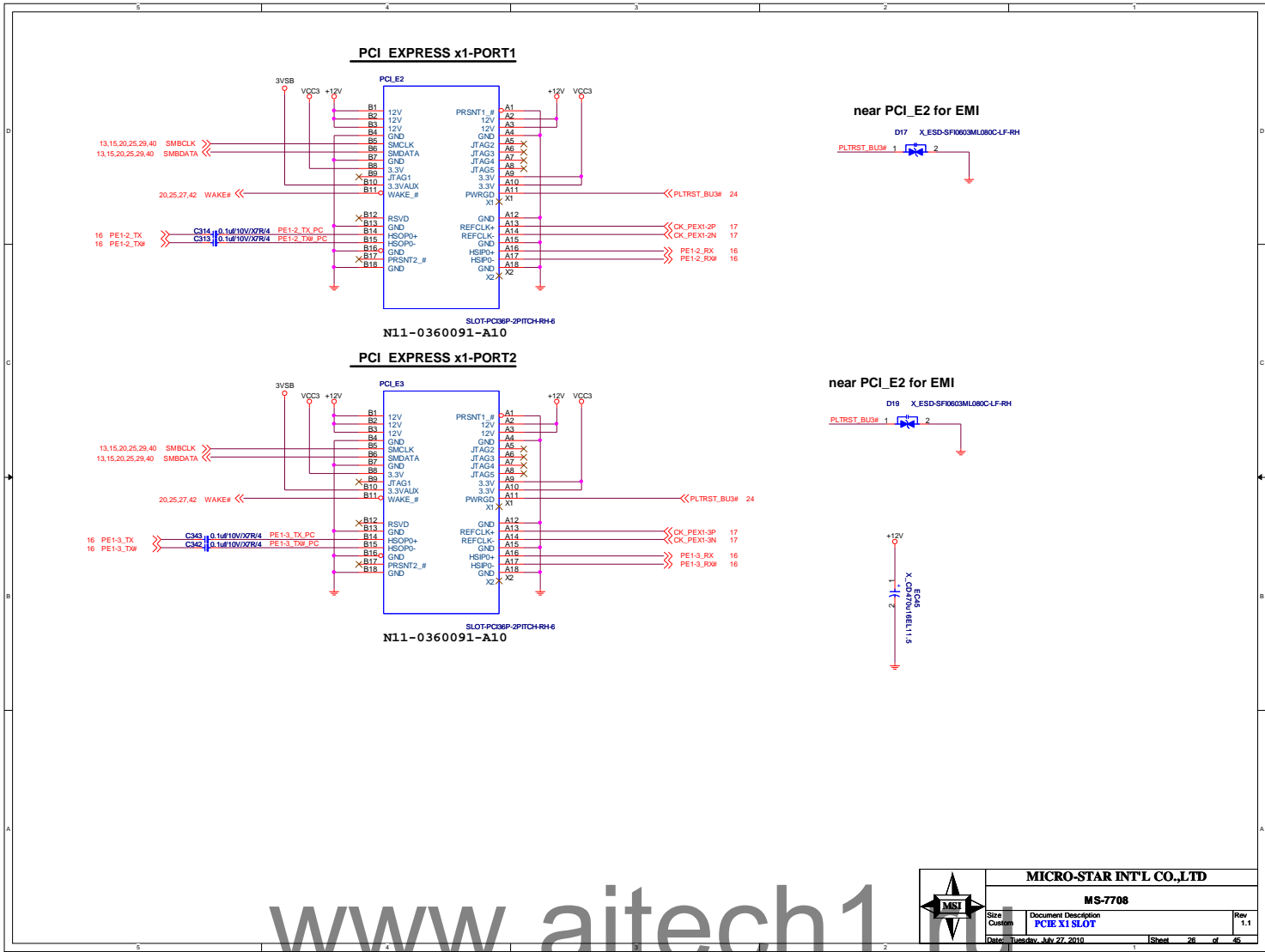


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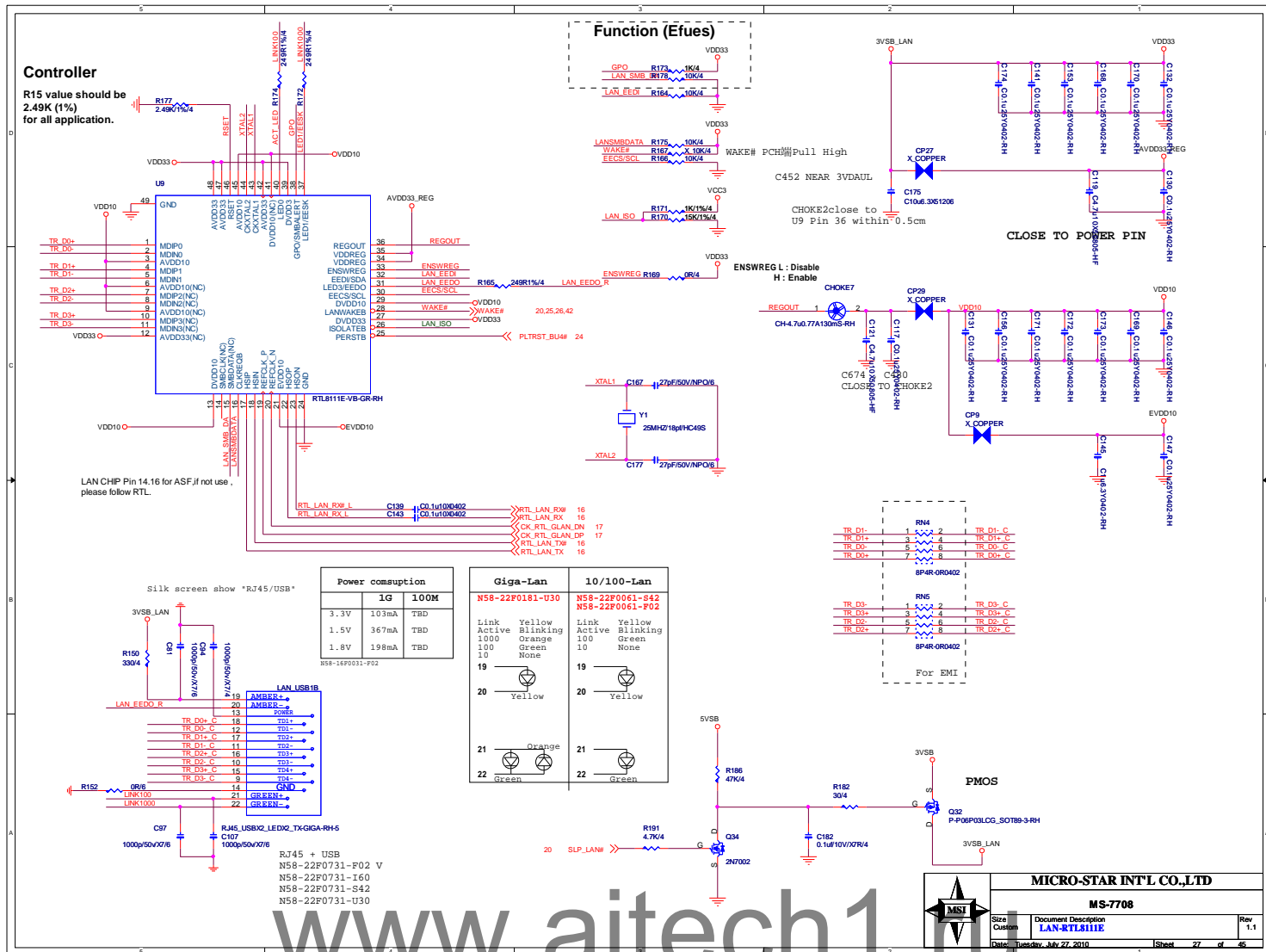
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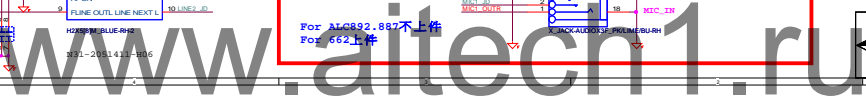








For 892&887-VD  
Fax 660-

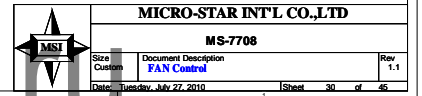








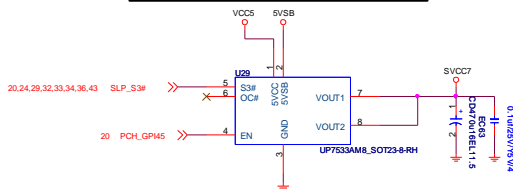
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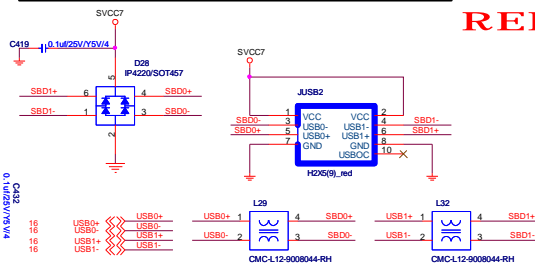
## FRONT POWER CONTROL

### POWER CIRCUIT FOR USB PORT 0, 1



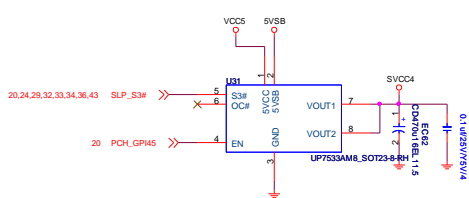
### FRONT PANEL USB CONNECTOR FOR USB PORT 0,1

RED



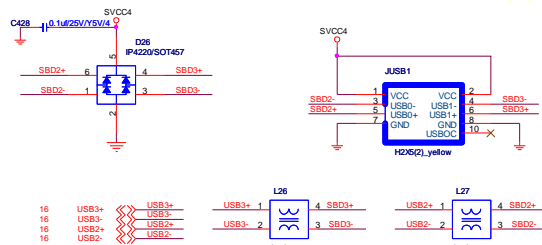
### NEAR USB CONNECTOR

### POWER CIRCUIT FOR USB PORT 2, 3



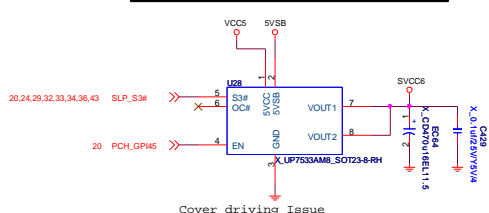
### FRONT PANEL USB CONNECTOR FOR USB PORT 2,3

YELLOW



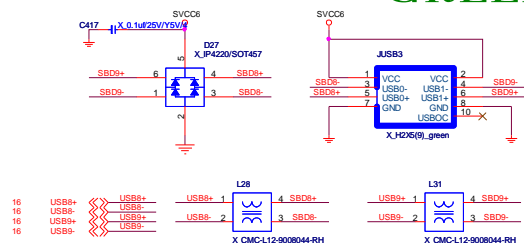
### NEAR USB CONNECTOR

### POWER CIRCUIT FOR USB PORT 8, 9



### FRONT PANEL USB CONNECTOR FOR USB PORT 8, 9

GREEN



### NEAR USB CONNECTOR

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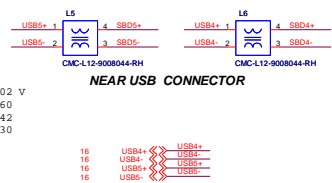
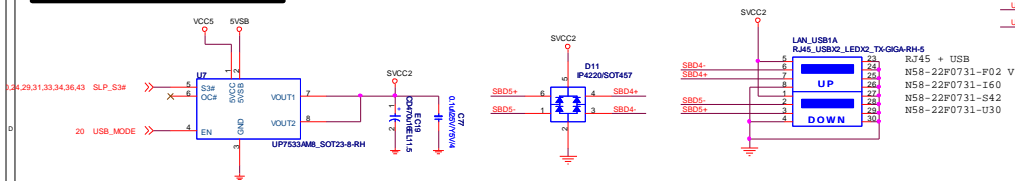
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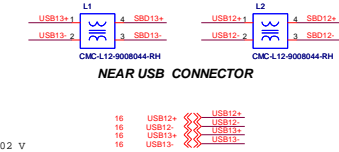
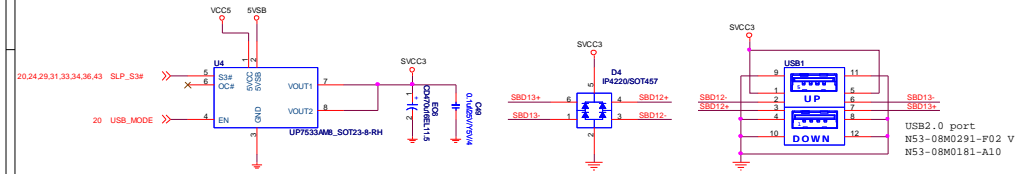


## REAR POWER CONTROL

## REAR PANEL USB/LAN CONNECTOR FOR USB PORT 4,5

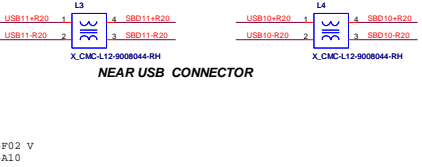
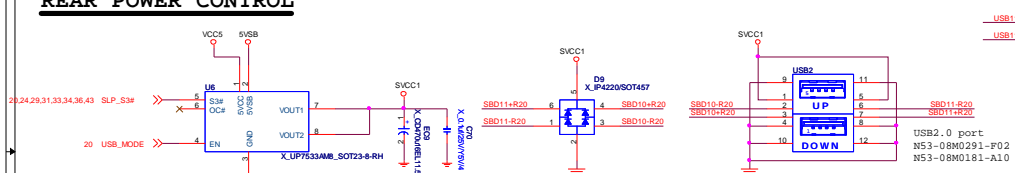


## REAR PANEL USB/KB CONNECTOR FOR USB PORT 12,13



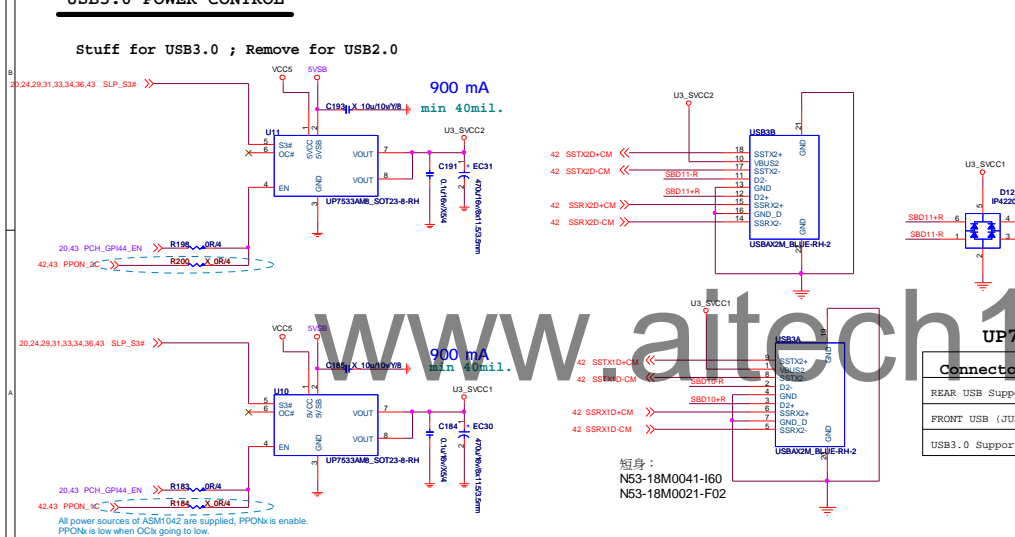
## REAR POWER CONTROL

## REAR PANEL USB/LAN CONNECTOR FOR USB PORT 10,11(Colay USB3.0) \*option



## USB3.0 POWER CONTROL

## REAR PANEL USB CONNECTOR FOR USB PORT 10,11(Colay USB3.0)

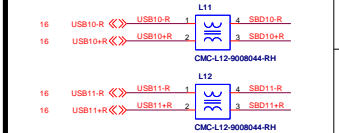


Stuff for USB2.0

USB11-R R212 X OR4 USB11-R20  
USB11-R R211 X OR4 USB11-R20  
USB10-R R210 X OR4 USB10-R20  
USB10-R R205 X OR4 USB10-R20

## NEAR REAR USB CONNECTOR

Stuff for USB3.0



## UP7533 ENABLE CONTROL

Connector	Power	GPIO Control
REAR USB Support S5 Power (KB/PS2/LAN)	SVCC1, SVCC2, SVCC3	USB_MODE
FRONT USB (JUSB1, JUSB2, JUSB3, JUSB4)	SVCC4, SVCC6, SVCC7	PCH_GP145
USB3.0 Support S5 Power	U3_SVCC1, U3_SVCC2	PCH_GP144



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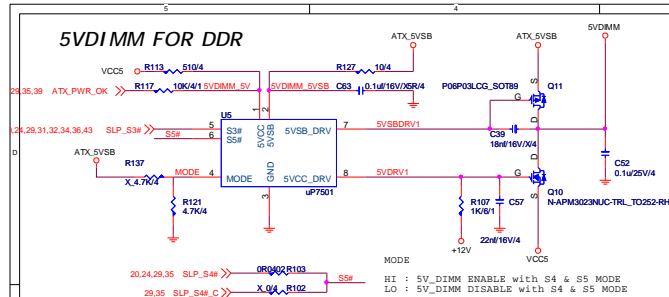
REAR USB3.0

Date: Tuesday, July 27, 2010

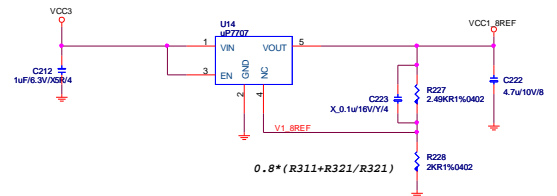
Sheet 32 of 45



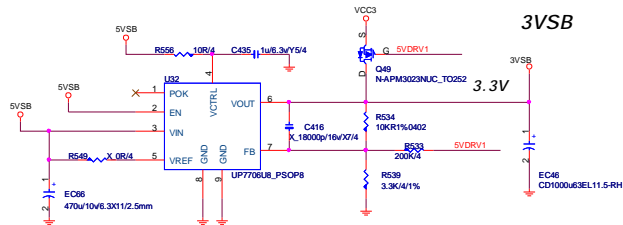
## 5V DIMM FOR DDR



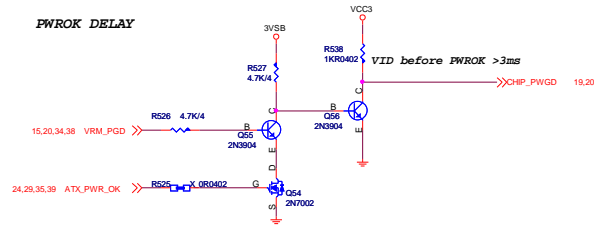
## VCC1\_8REF



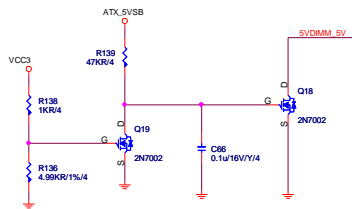
## 3VSB



## PWROK\_DELAY



Update from SLP\_S3# to VRM\_PGD



For power 700W solution  
The power supply VCC3 delay 12ms after VCC5 assert.  
The chip U7501 5VDRV1 work when the VCC5 ready  
(When VCC5 up to 4.2V and the 5VDRV1 delay 6ms assert), but  
VCC3 not ready and let the 3VSB sequence fail.



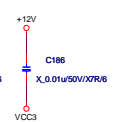
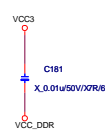
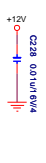
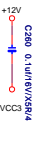
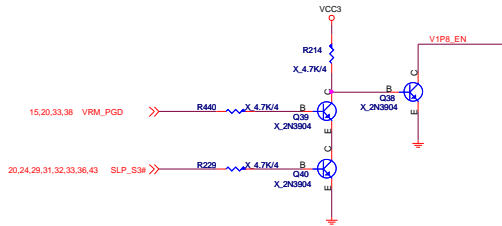
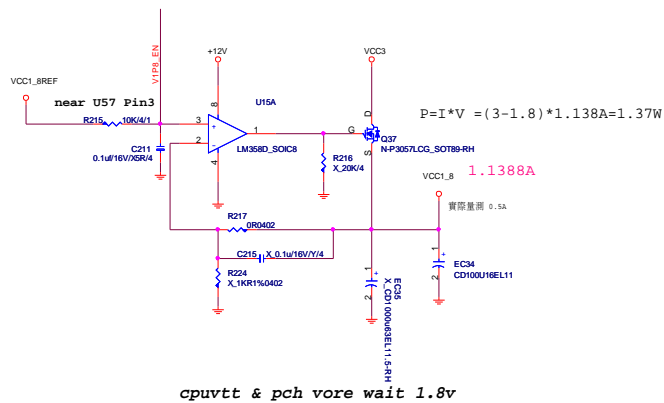
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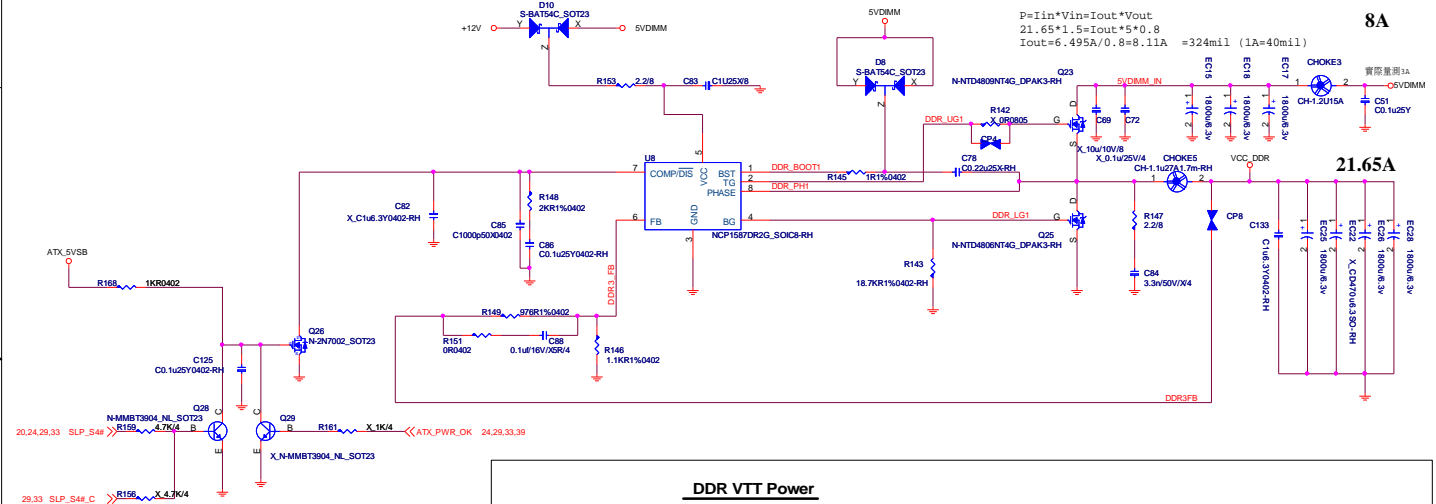
$$\begin{aligned} \text{DDR\_VTT POWER} &+ \text{CPU(VDDQ)} + \text{VCC} + \text{PCH} \\ &= 3.65 + 2.8 + 7.2 + 8 \\ &= 21.65\text{A} \end{aligned}$$

$$\begin{aligned} I_{\text{ripple}} &= \{ I_o \cdot \sqrt{D} \cdot \sqrt{(1-D)} \} / \text{Phase} \\ &= 21.65 \times 0.547 \times 0.673 \\ &= 7.97\text{A} \\ \text{**Cap: } 2350\text{m} \times 4 &= 9.4\text{A} \end{aligned}$$

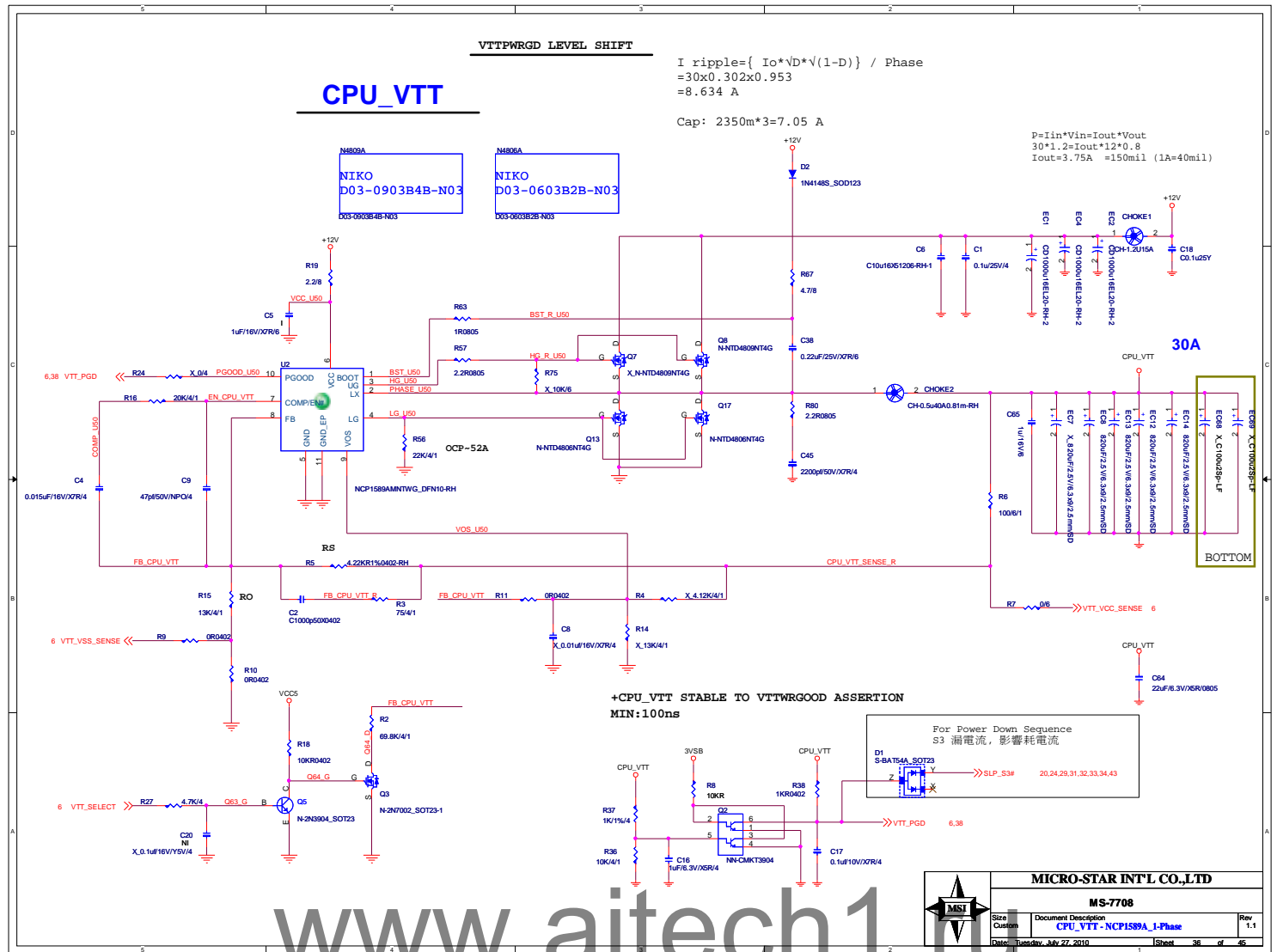
DDR3\_1.5V

8A

21.65A



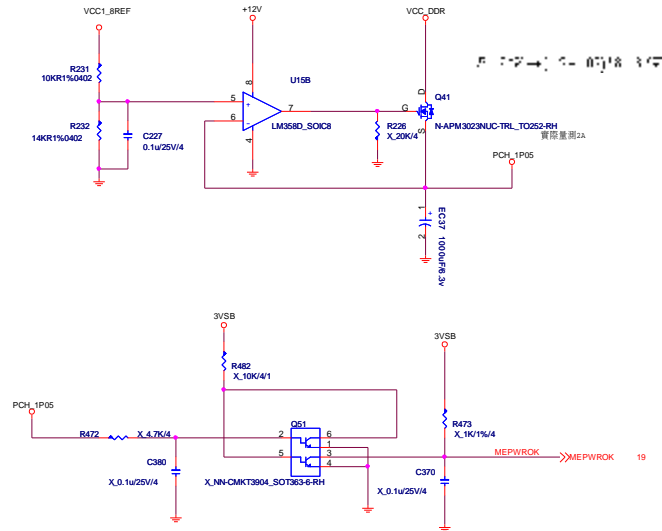






## PCH Core

$$5.5\text{A(PCH)} + 2.5\text{A(VCCME)} = 8\text{A}$$



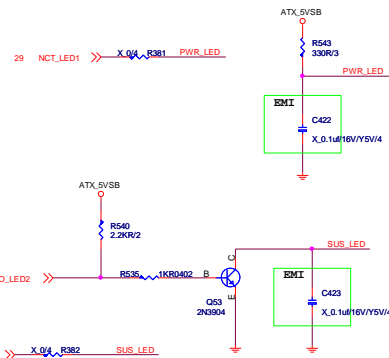
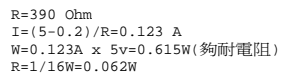
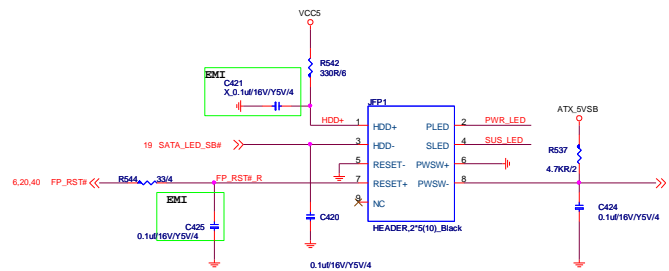
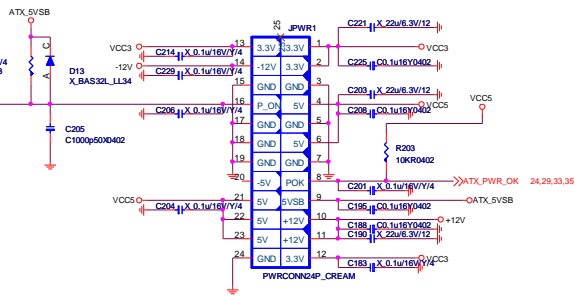
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Size: Custom	Document Description: PCH POWER - LM358
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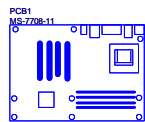
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## PCB



P30-0770811-E55, 依頓 V  
P30-0770811-G37, 精成

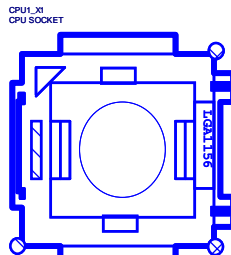


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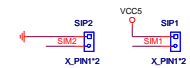
BAT-BCR2032P-RH

## CPU SOCKET

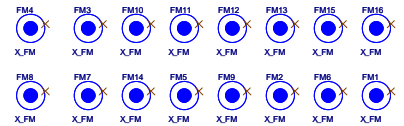


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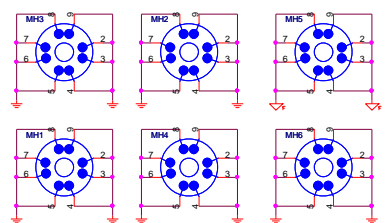
## Simulation



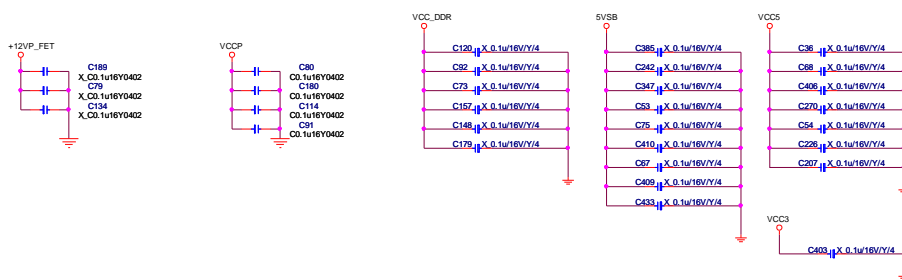
## Optical Fiducial Marks-120



## Mounting Holes



## For EMI



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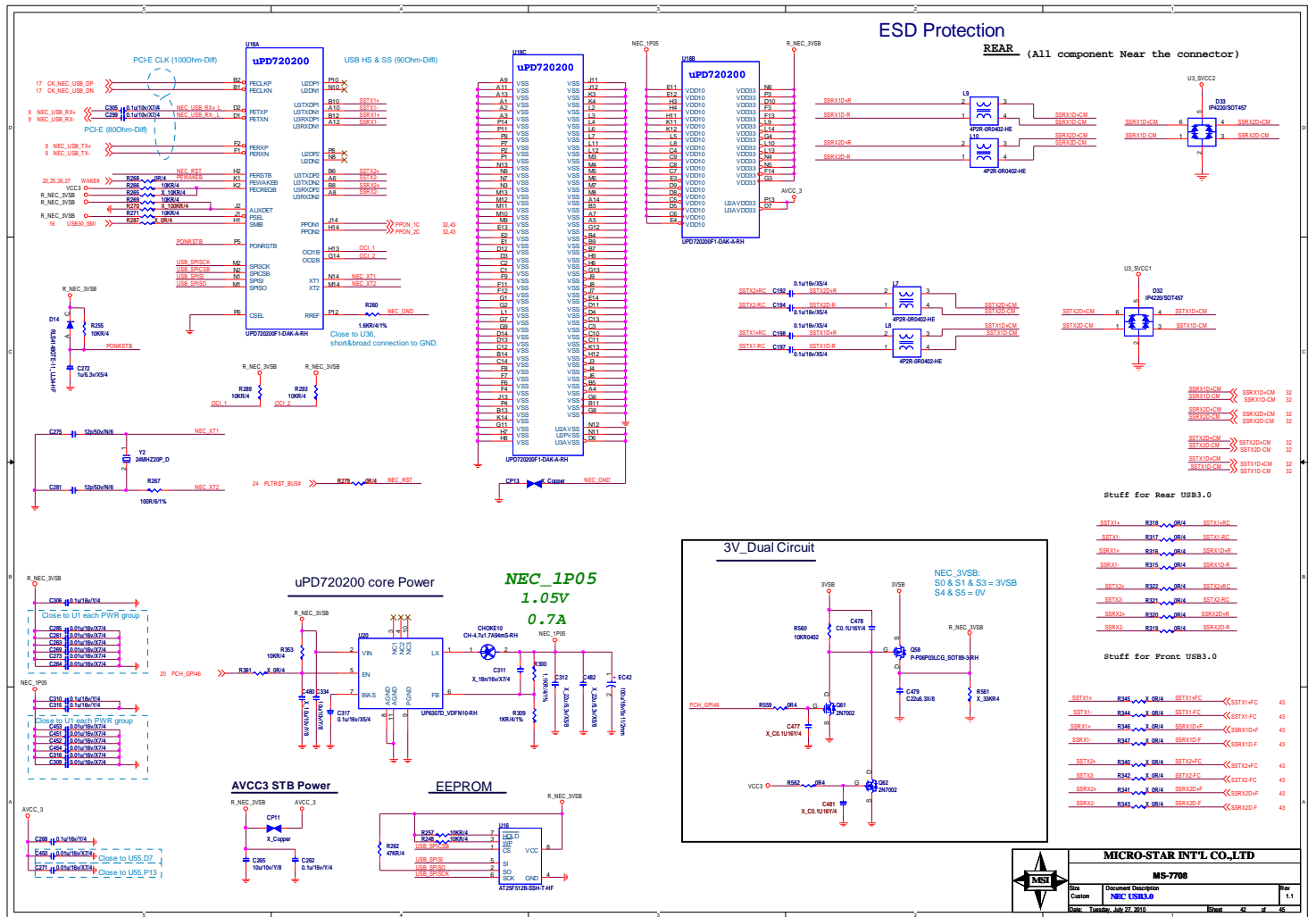


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Custom	Manual & Option parts	1.1
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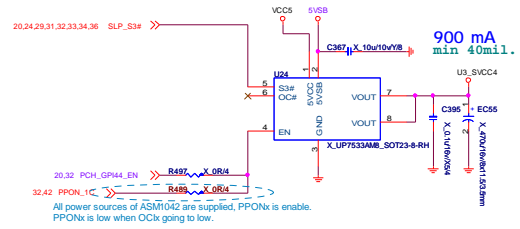
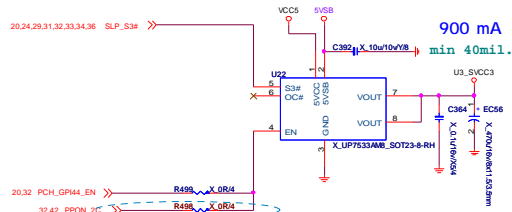




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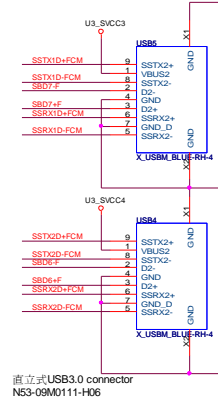
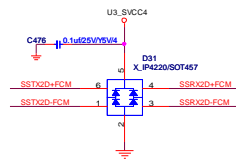
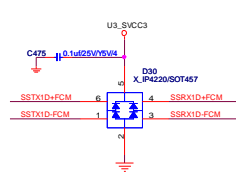
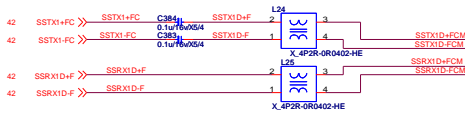


Stuff for USB3.0 ; Remove for USB2.0



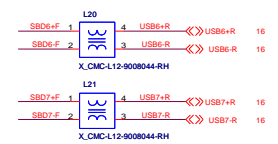
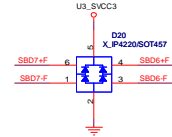
FRONT PANEL USB CONNECTOR  
FOR USB PORT 12,13

FRONT (All component Near the connector)



直立式USB3.0 connector  
N53-09M0111-H06

NEAR FRONT USB CONNECTOR



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