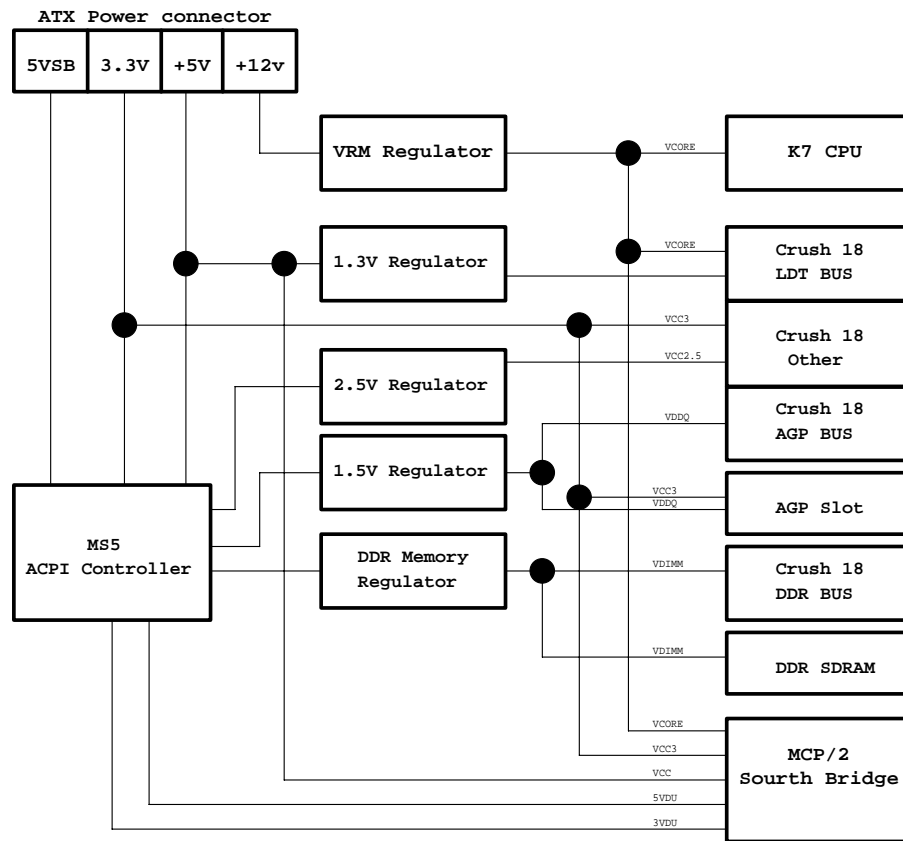


MS-6570 Version: 0D

Powered by
Venson.Chen

003-K7 CPU Part 1
004-K7 CPU Part 2
005-VRM 9.0
006-Crush17/18 Part 1
007-Crush17/18 Part 2
008-Crush17/18 Part 3
009-Crush17/18 Part 4

Power OK Circuit
010-AGP Slot & TV-out
011-DDR DIMM1 & 2
012-DDR DIMM3
013-DDR Terminator Resistor
014-MCP/2 Part 1
015-MCP/2 Part 2
016-MCP/2 Part 3
017-ACR Slot & MS3 & BIOS
018-MII LAN & USB Connector
019-IEEE1394 & VGA Connector
020-Realtek 650 AC97 codec
021-PCI Slot1 & 2
022-PCI Slot3 & 4
023-PCI Slot5 & MS1
024-On board Serial ATA
025-K/M Connector & IDE Connector
026-COM/Print Port
027-W83627HF LPC SIO & Game Port
028-MS5 ACPI Controller & Power
029-ATX Power & Front Panel
030-History



MS-6570 Specification

CPU: AMD K7 Serial Socket 462

North Bridge: Nvidia Crush 17/18

South Bridge: Nvidia MCP/2

On Board PCI Device: Serial ATA

On Board Device: RealTek AC97 Codec

On Board Device: IEEE1394 PHY

On Board Device: ICS MII LAN

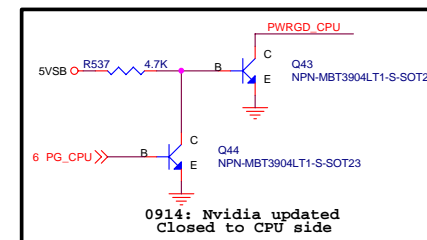
On Board DDR SDRAM: X3

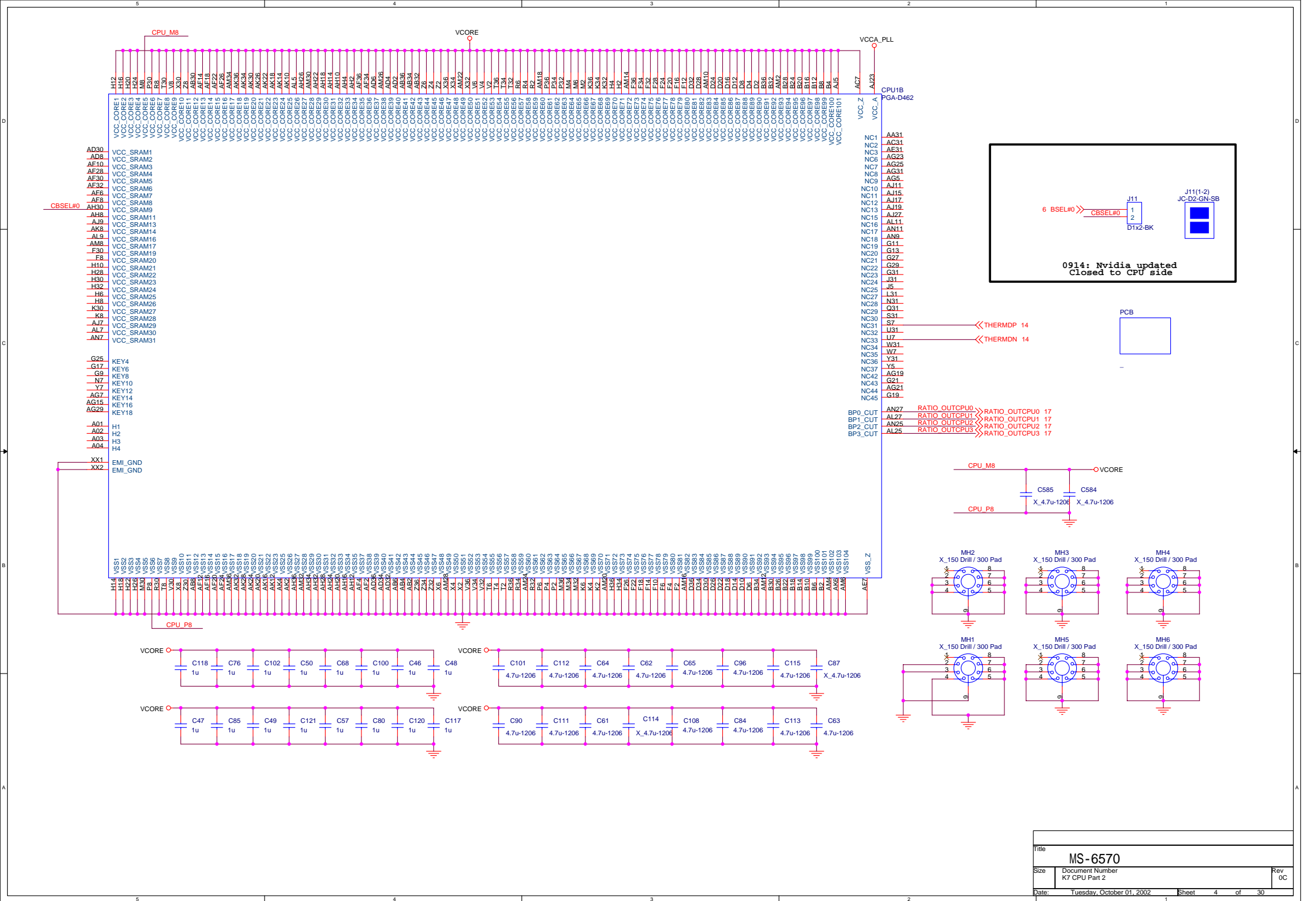
On Board AGP Slot: X1

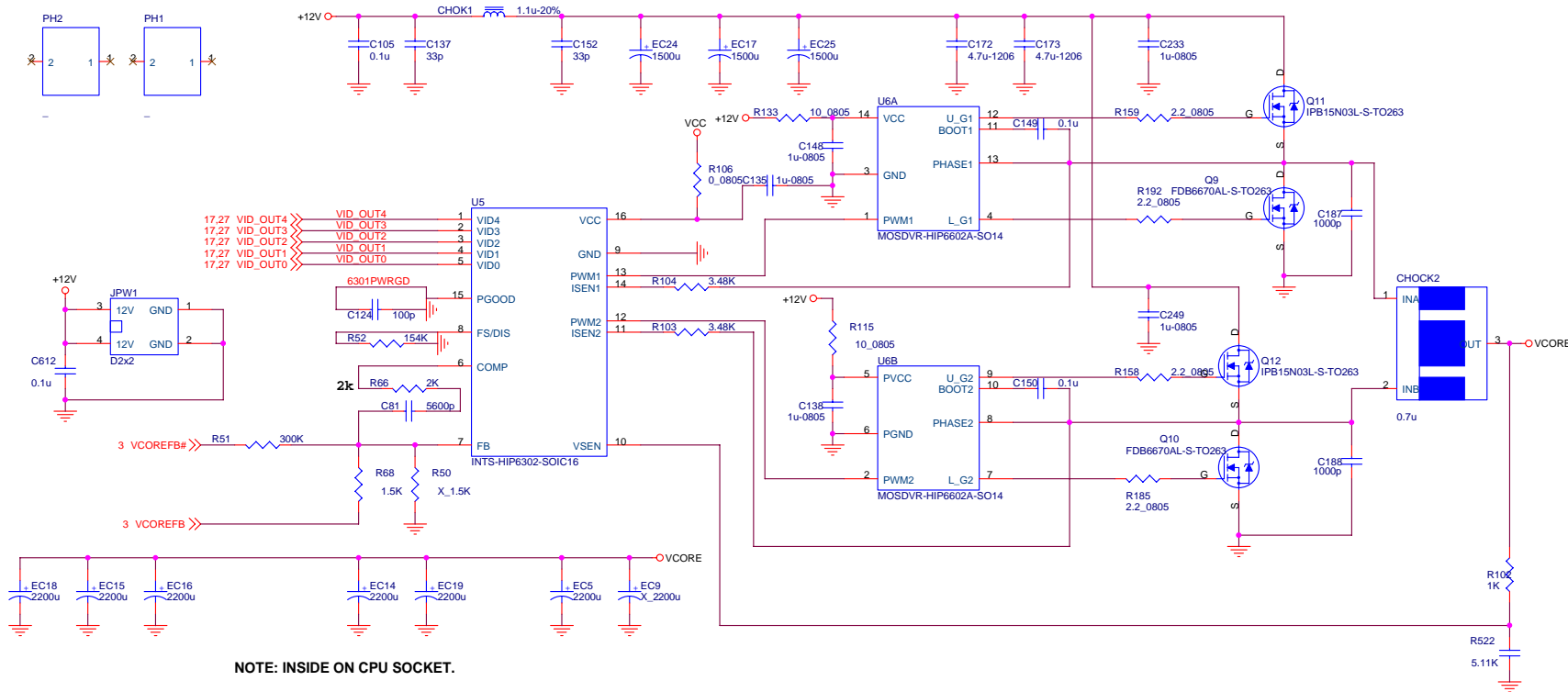
On Board PCI Slot: X5

On Board ACR Slot: X1

GPIO and PCI BUS Address







NOTE: INSIDE ON CPU SOCKET.

FDB6670 Specification:

Qg= 35nC; Trise= 15ns; Tfall= 42ns

Hi-Side MOSFET:

Switching loss=

$1/2 \cdot I_o \cdot V_{in} \cdot (T_{rise} + T_{fall}) \cdot F_s$

$1/2 \cdot 22.5 \cdot 5 \cdot (15ns + 42ns) \cdot 200K$

P_switching loss= 0.64W

Conduction loss= $I_o^2 \cdot R_{ds(on)} \cdot D$

$= (22.5 \cdot 22.5) \cdot 0.0065 \cdot 0.33 = 1.1W$

P(total)= P_switching loss + P_conduction loss

$= 0.64W + 1.1W = 1.74W$

Low-Side MOSFET:

P(total)= $(22.5 \cdot 22.5) \cdot 0.0065 \cdot 0.67$

$= 2.2W$

AMD CPU specification:

2GHz CPU: Vcore= 1.65V, P= 74.1W

Vcore_DC= -50mv ~ 50mv

Vcore_AC= -100mv ~ 150mv

$I_{ripple} = I_o \sqrt{D(1-D)}$

D= 1.65/5= 33%; $I_{ripple} = 10.58A$

The ripple current for each input

Based on temperature coefficient of Rubycon:

濾波電流 溫度係數 溫度

2.55A 1 105

4.3A 1.7 85

5.4A 2.1 under 65

Total 4 pcs input capacitance= 17.2A @85

ESR= $V_o(\Delta T) / I_o(\Delta T)$

ESR= 100mv/45= 2.22m_ohm

ESR for each capacitance is 13m_ohm

Total 10 pcs capacitance are 1.3 m_ohm

1.3 m_ohm < 2.2 m_ohm, so it OK !

Rubycon 2200uF/6.3V capacitor

Rated voltage: 6.3V

Surge voltage: 8V

Leakage current: 415uA/2min

DF= 0.24@120Hz

Ripple current= 2.55A(max)

Vender guaranteed: 3000 Hr/105 degree.C

Actual operating temperature: 55 degree.C @45A

Ambient temperature: 25 degree.C

實際壽命= $L1 \cdot 2^{\frac{(T1-Ta)}{10}} \cdot 2^{\frac{(Ta-T2)}{K}}$

K= 10, if ripple current within specification

K= 5, if ripple current over specification

實際壽命= $L1 \cdot 2^{\frac{(T1-T2)}{10}}$

實際壽命= 3000 * 2^{\frac{(105-55)}{10}}

實際壽命= 96000 Hr

VID4	VID3	VID2	VID1	VID0	VDC(V)
1	0	1	1	0	1.30
1	0	0	0	1	1.425
1	0	0	0	0	1.45
0	1	1	1	1	1.475
0	1	1	1	0	1.500
0	1	1	0	1	1.525
0	1	1	0	0	1.550
0	1	0	1	1	1.575
0	1	0	1	0	1.600
0	1	0	0	1	1.625

VID4	VID3	VID2	VID1	VID0	VDC(V)
0	1	0	0	0	1.650
0	0	1	1	1	1.675
0	0	1	1	0	1.70
0	0	1	0	1	1.725
0	0	1	0	0	1.75
0	0	0	1	1	1.775
0	0	0	1	0	1.80
0	0	0	0	1	1.825
0	0	0	0	0	1.85
1	1	1	1	1	OFF

Ripple current of Vender's design:

$$I_{ac} = \frac{\Delta(T) \cdot B \cdot A \cdot WC}{\tan G}$$

Delta(T): 溫升 ; A= 0.785 * [D(D+4L)]/10]

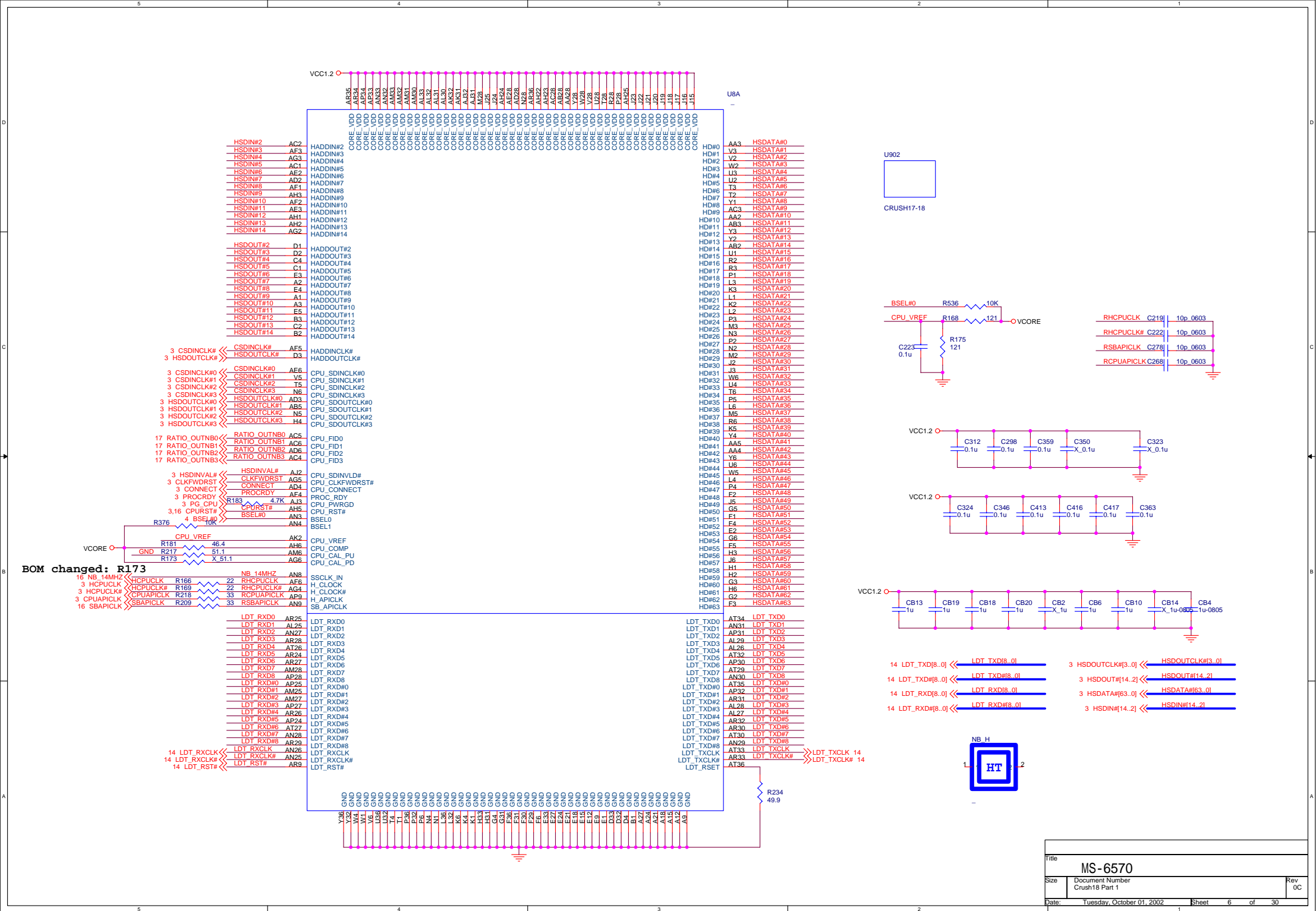
B: 散熱係數 ; WC= 6.28 * f * C

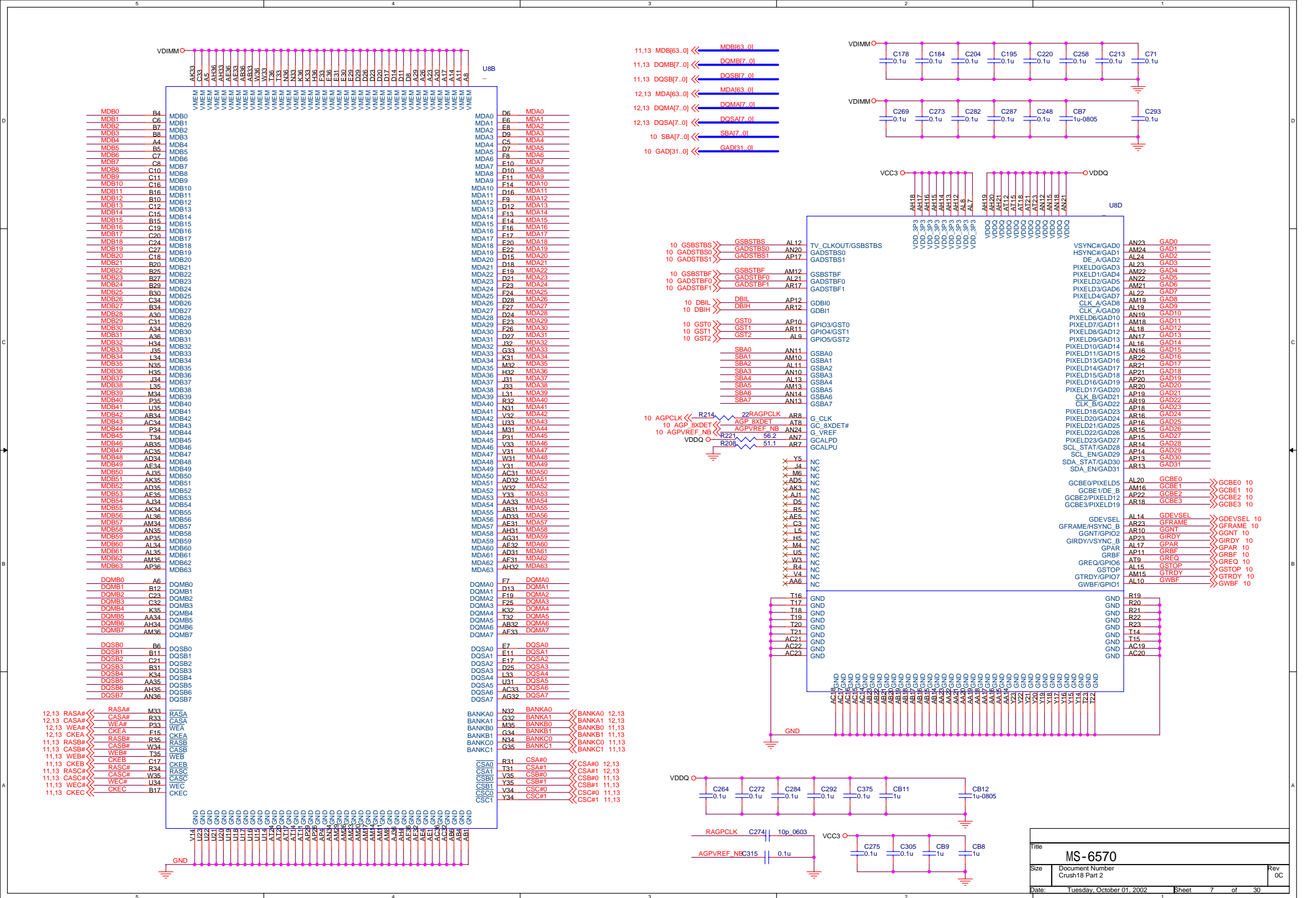
D: 電容外徑 ; L: 電容長度

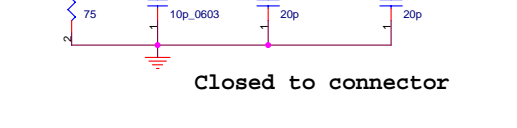
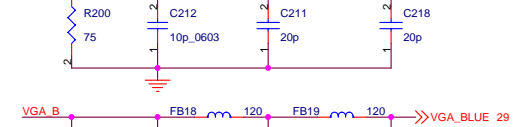
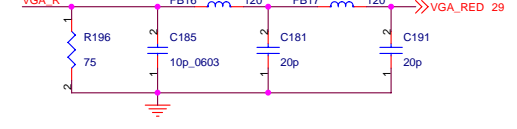
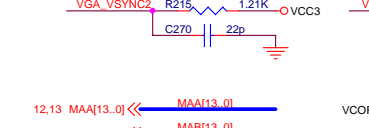
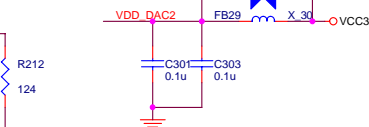
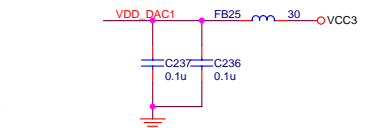
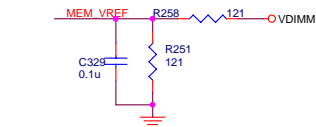
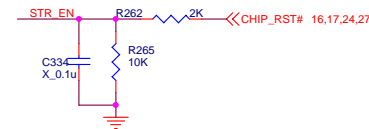
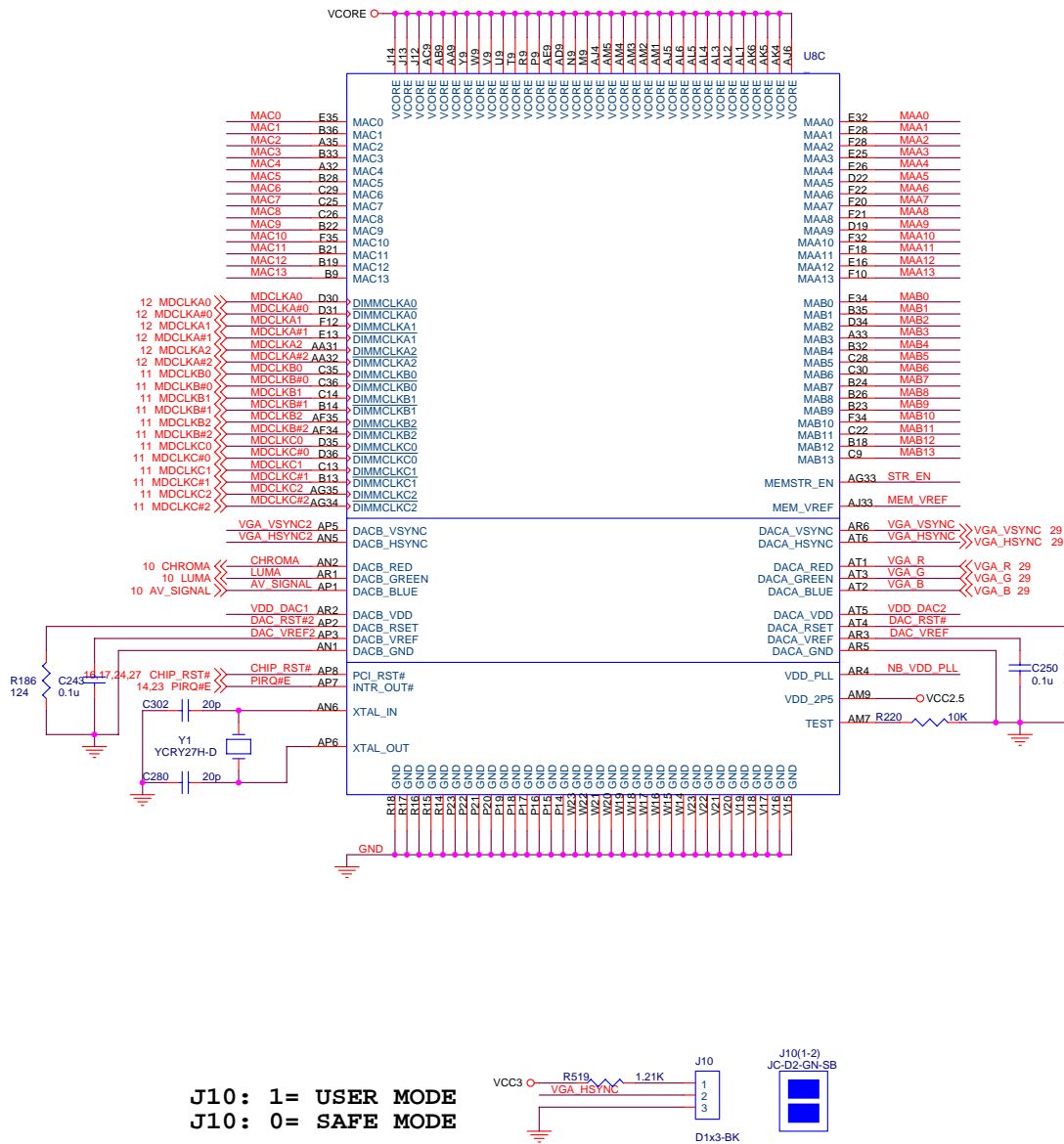
$\tan G = R/X_c$;

DF(電容損失角)= $\tan G \cdot 100\%$

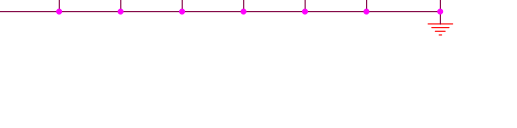
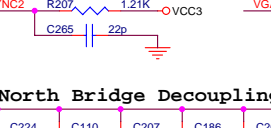
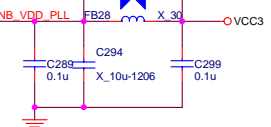
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	VRM 9.0	0C
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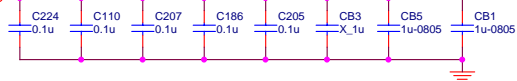




Closed to connector



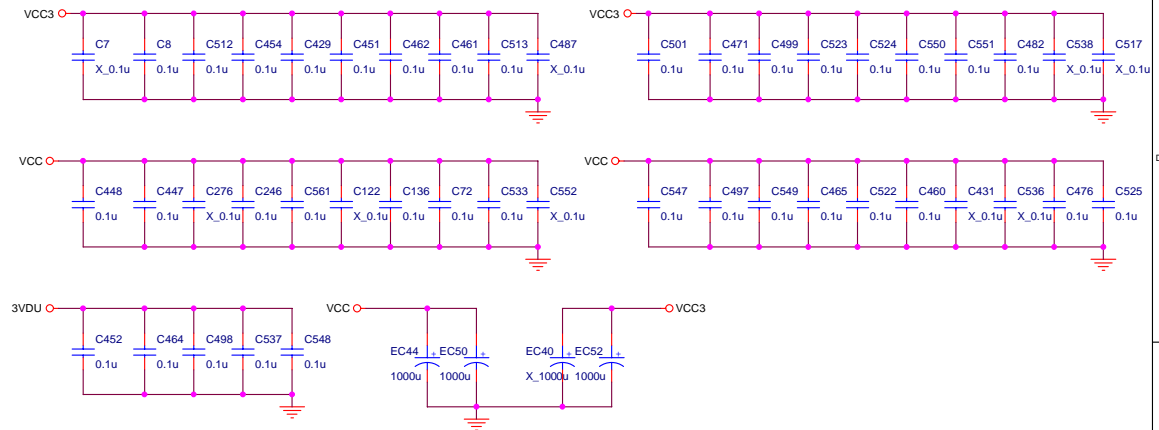
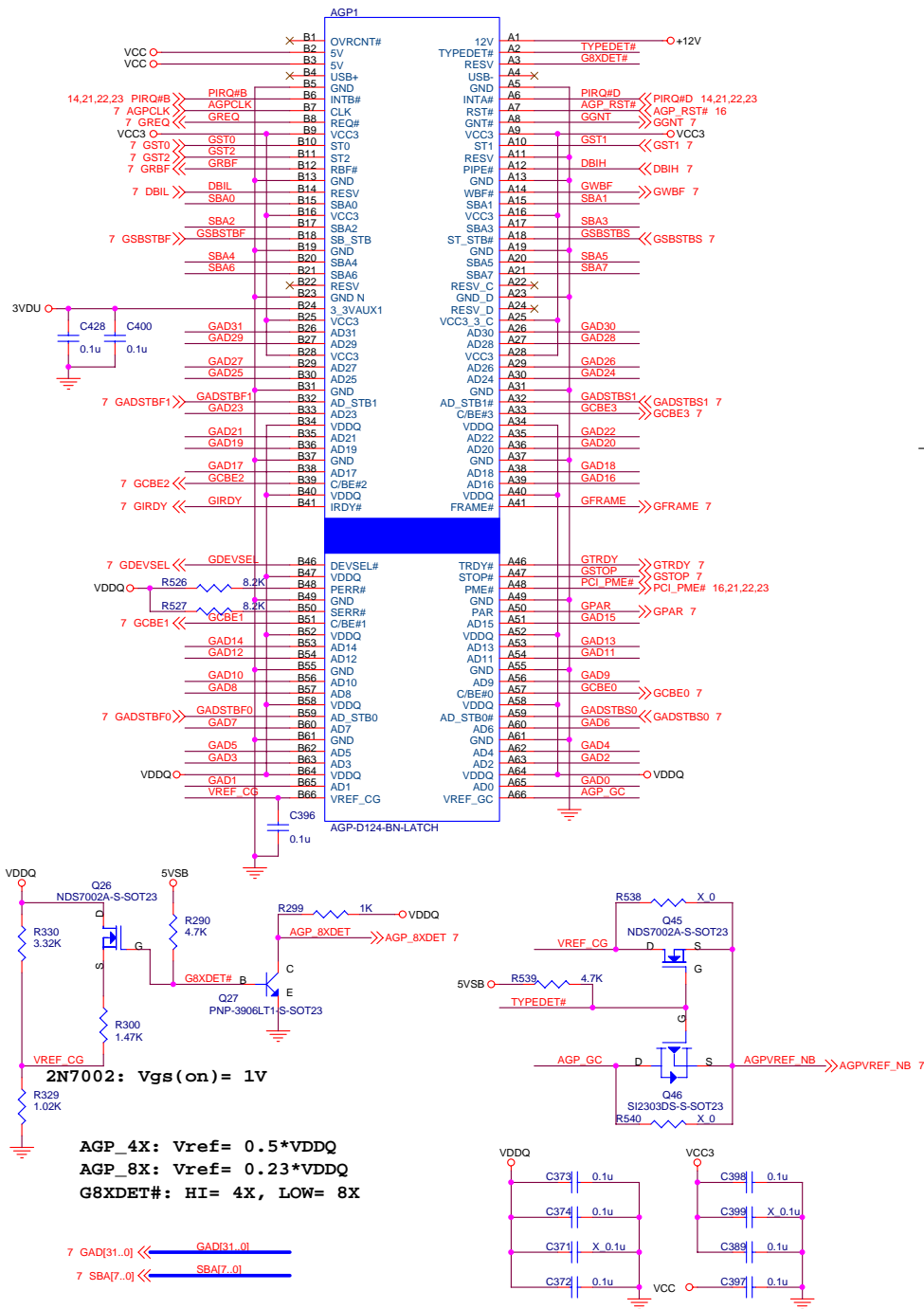
North Bridge Decoupling Capacitor



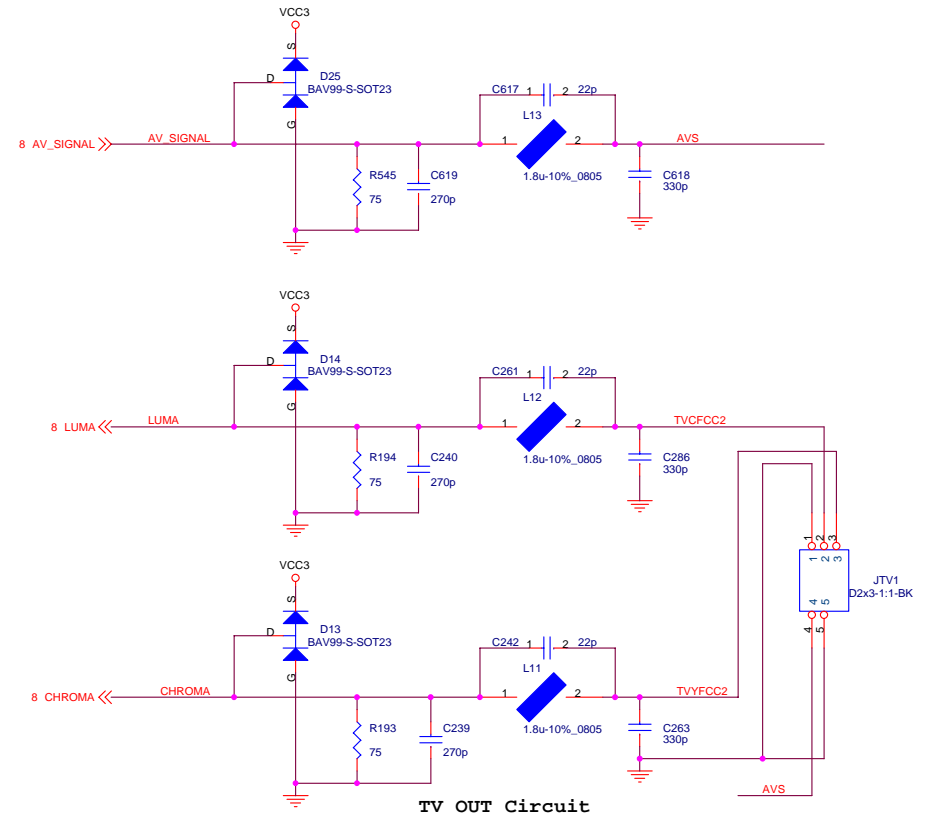
Title		
MS-6570		
Size	Document Number	Rev
	Crush18 Part 3	0C
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Title			
MS-6570			
Size	Document Number		Rev
	Crush18 Part 4		0C
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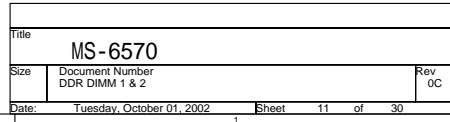


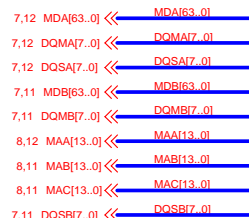
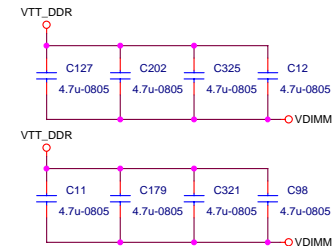
These Capacitance closed to PCI Slot



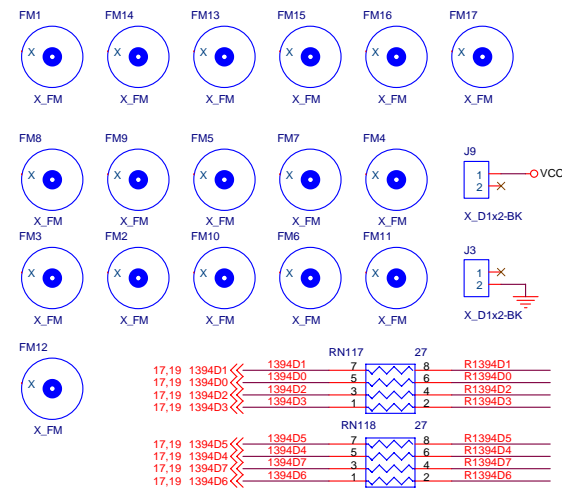
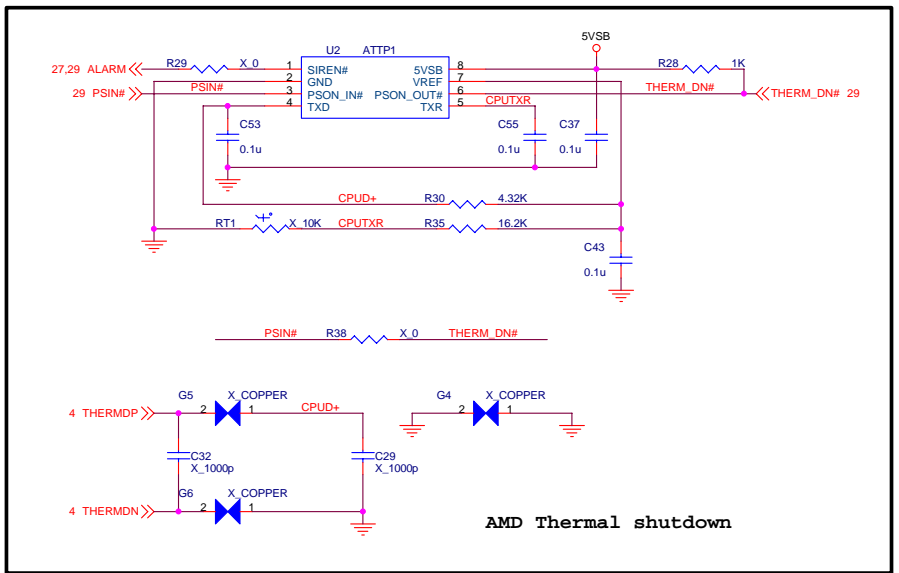
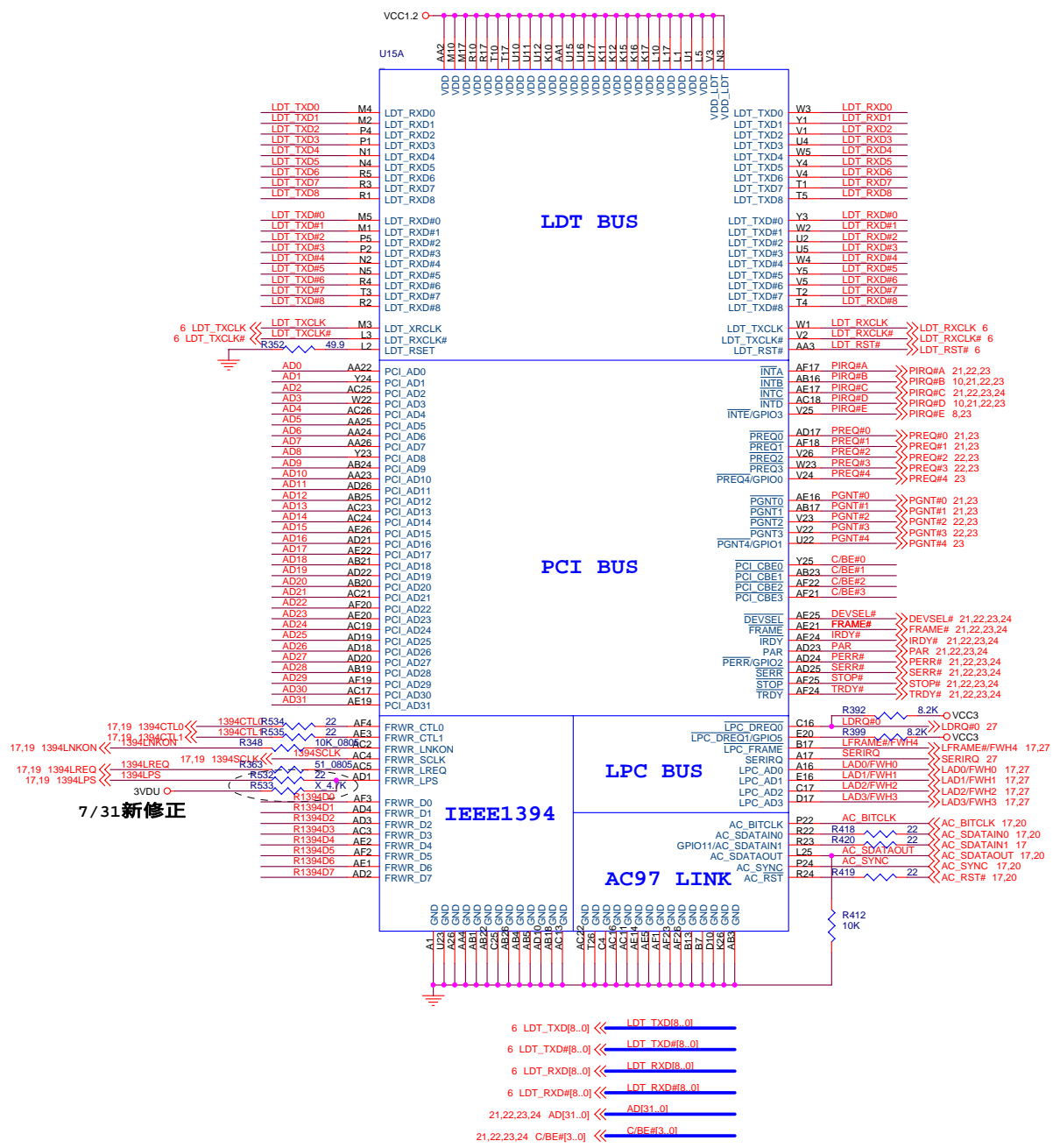
TV OUT Circuit

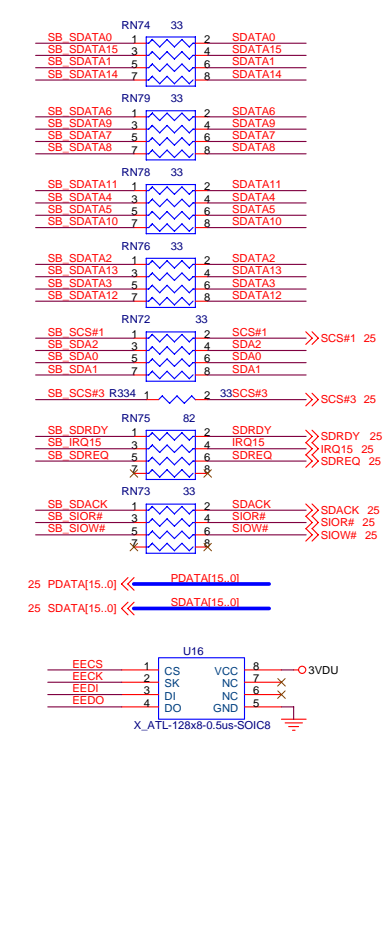
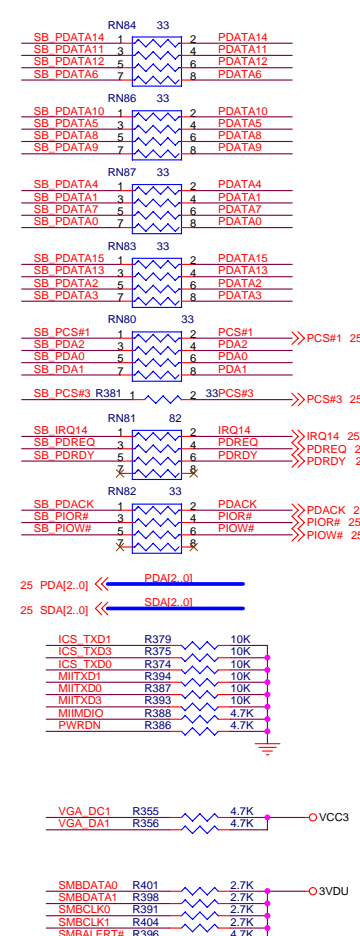
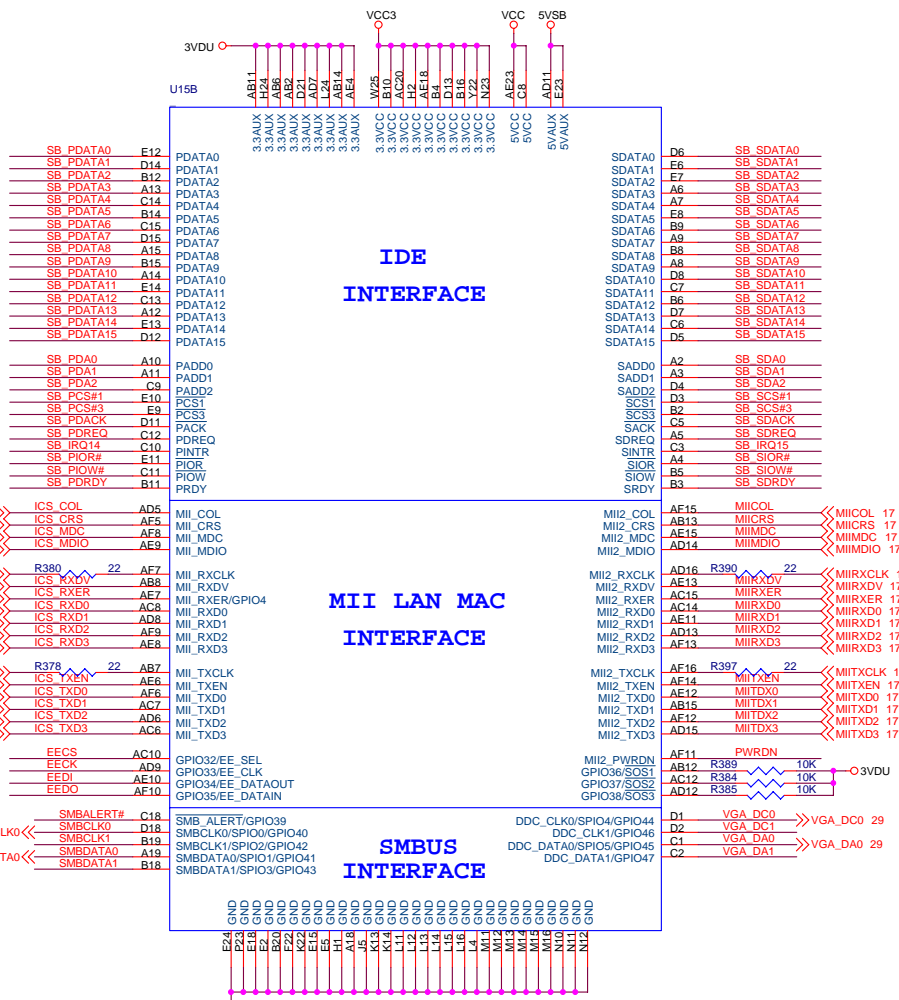
Title		
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	AGP Slot 1.5V	0C
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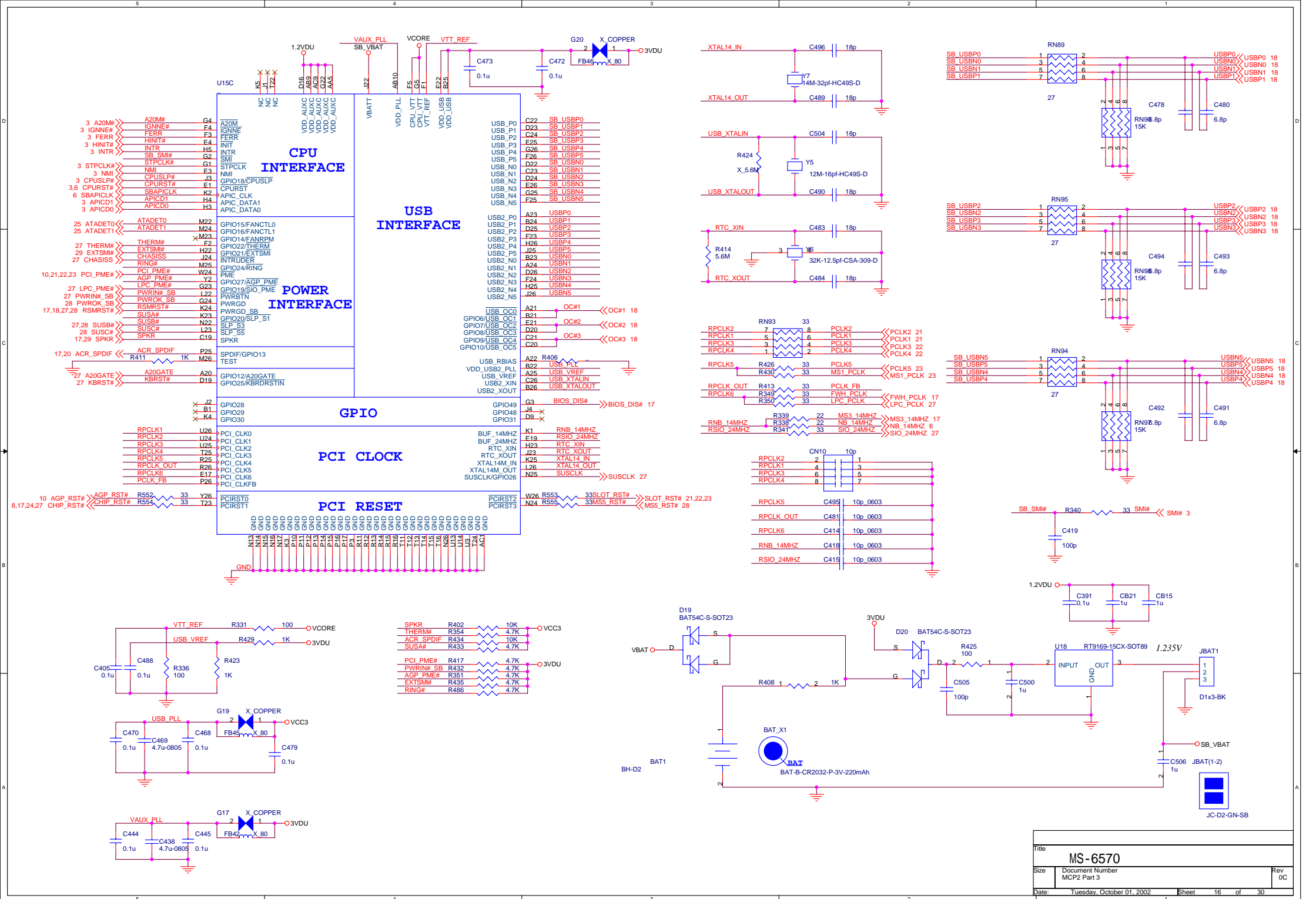


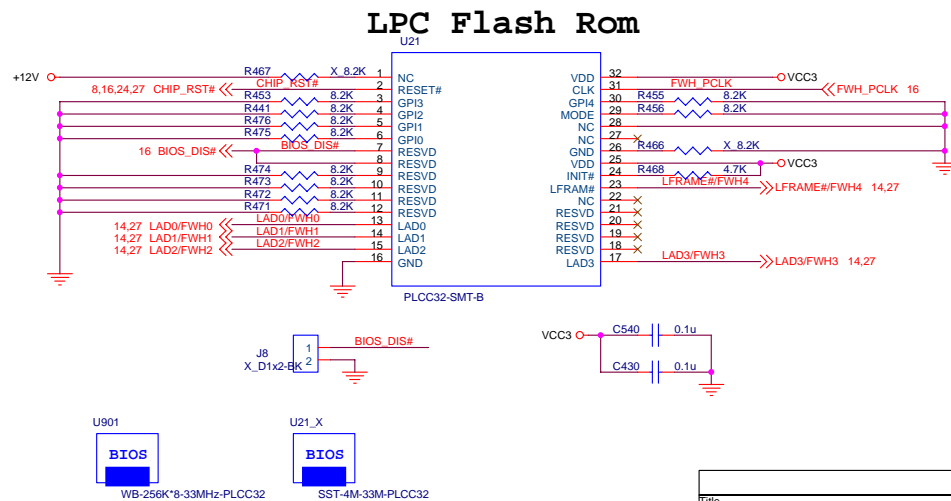
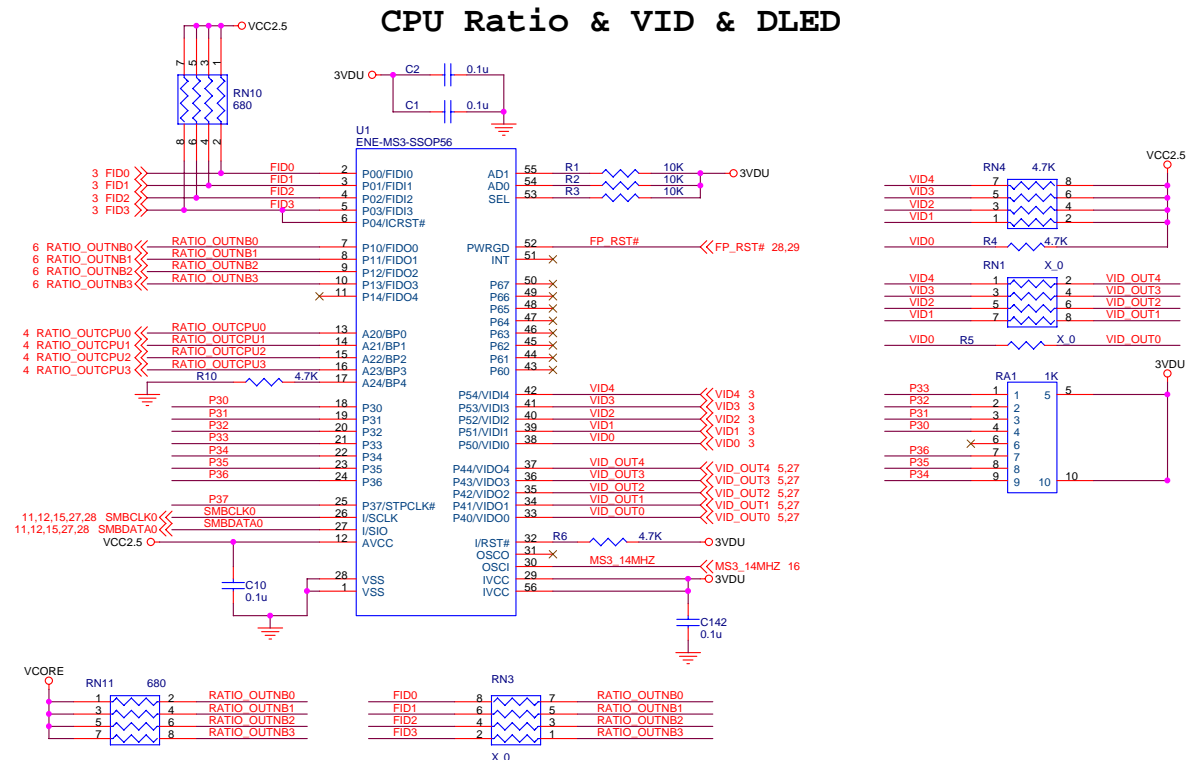
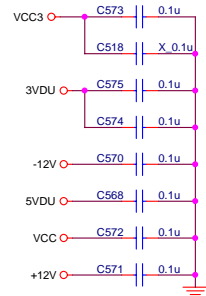
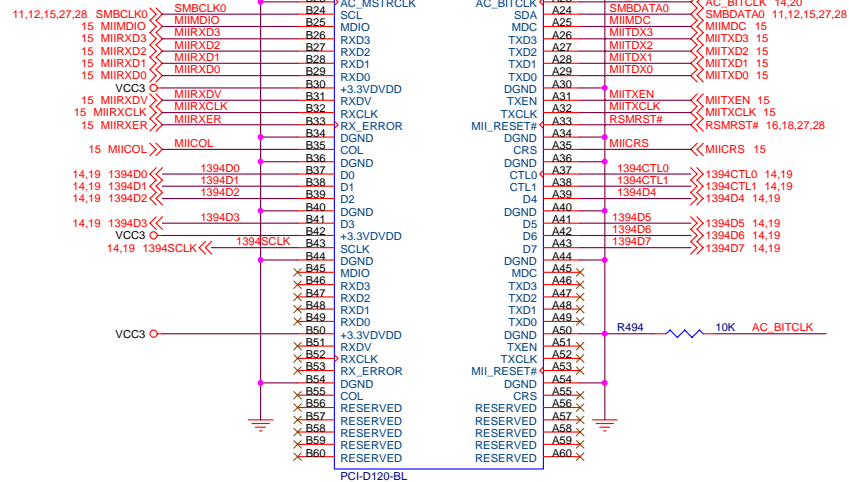


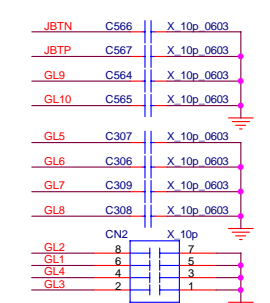
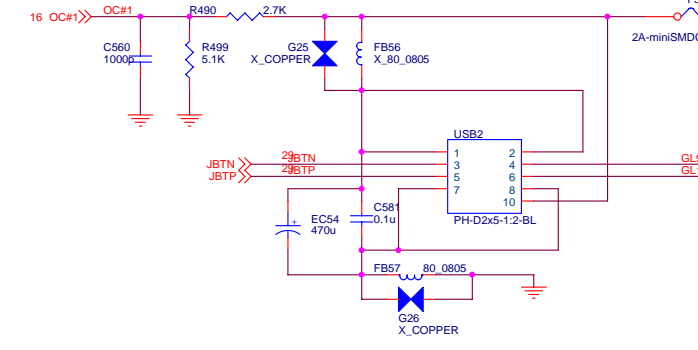
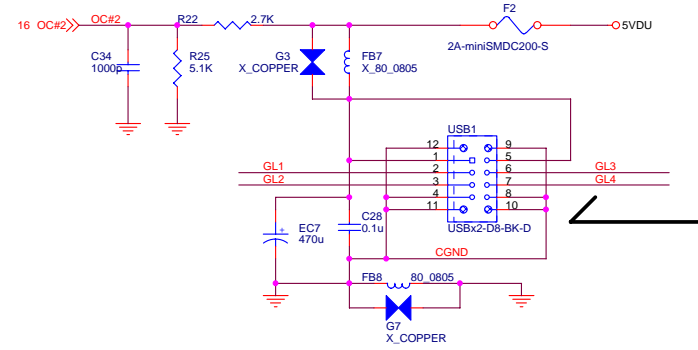
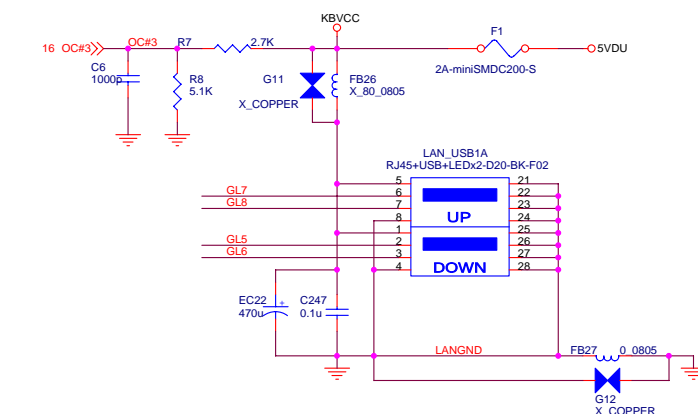
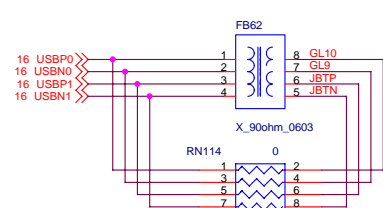
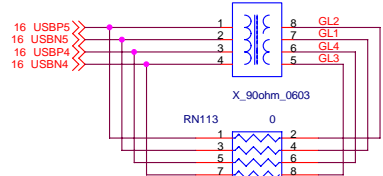
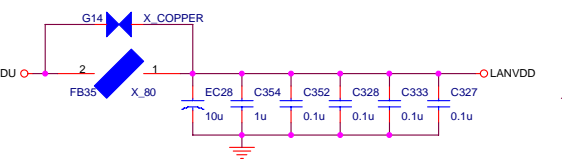
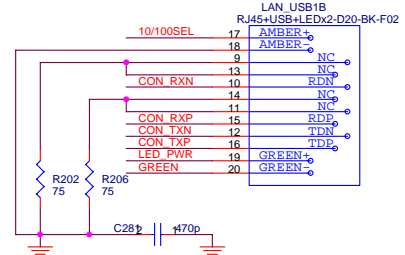
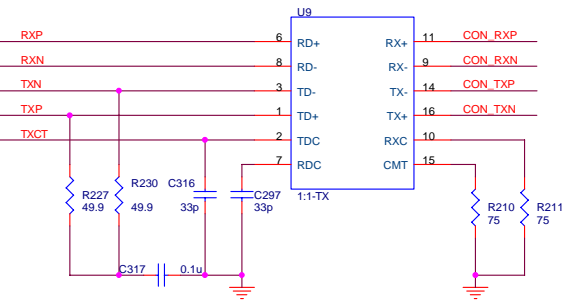
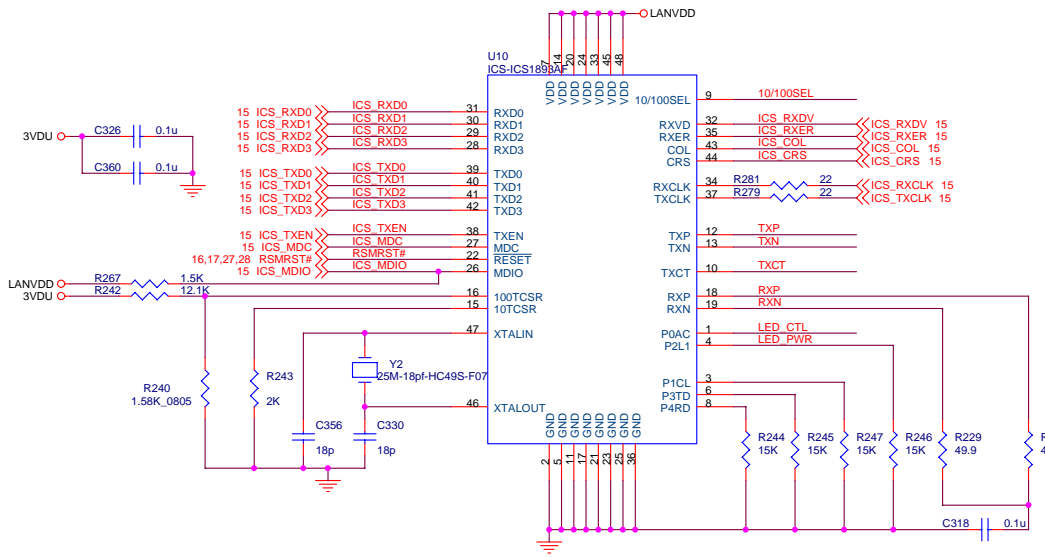
BANKA0	≡	BANKA0	7, 12
BANKA1	≡	BANKA1	7, 12
BANKB0	≡	BANKB0	7, 11
BANKB1	≡	BANKB1	7, 11
BANKC0	≡	BANKC0	7, 11
BANKC1	≡	BANKC1	7, 11
CSA#0	≡	CSA#0	7, 12
CSA#1	≡	CSA#1	7, 12
CSB#0	≡	CSB#0	7, 11
CSB#1	≡	CSB#1	7, 11
CSC#0	≡	CSC#0	7, 11
CSC#1	≡	CSC#1	7, 11





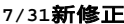


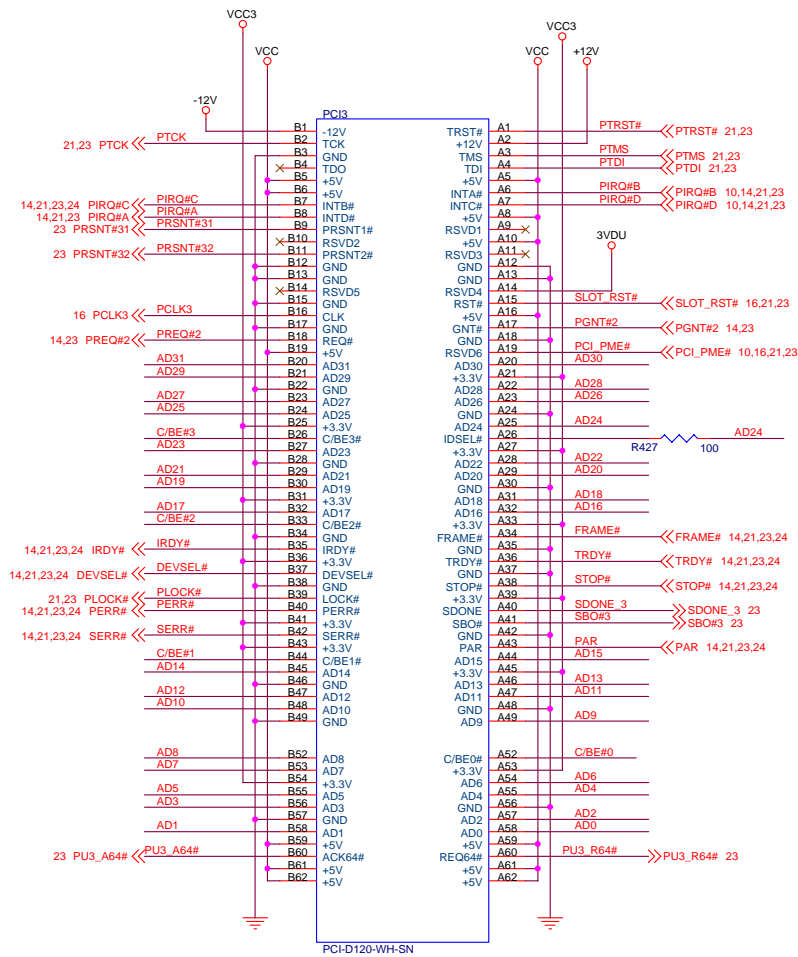




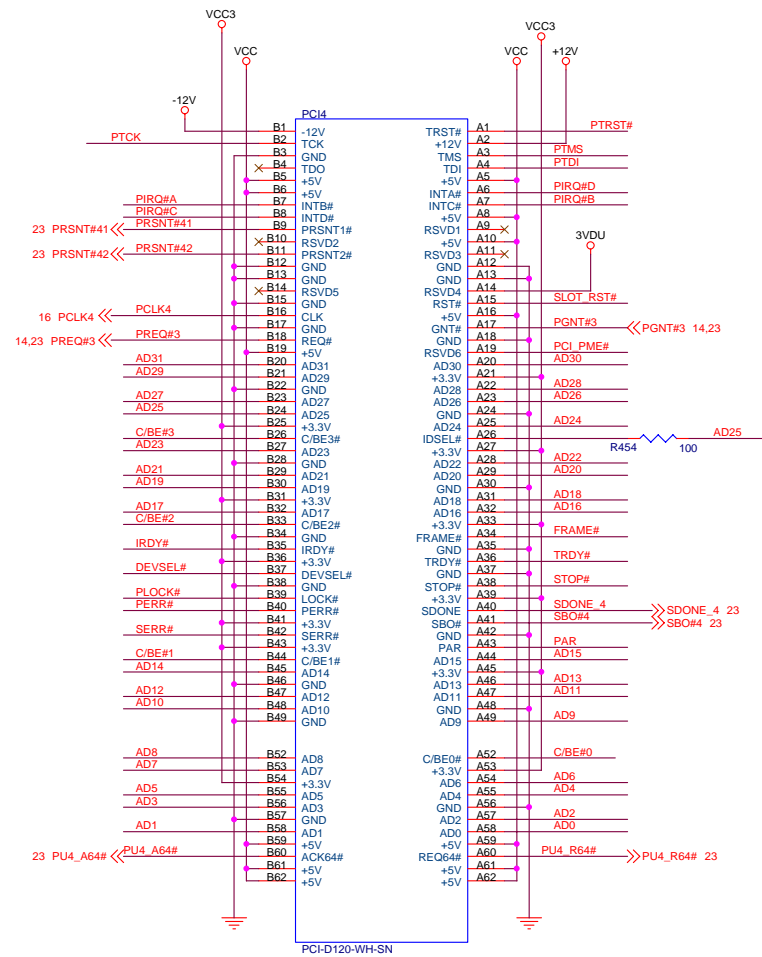
For EMI only

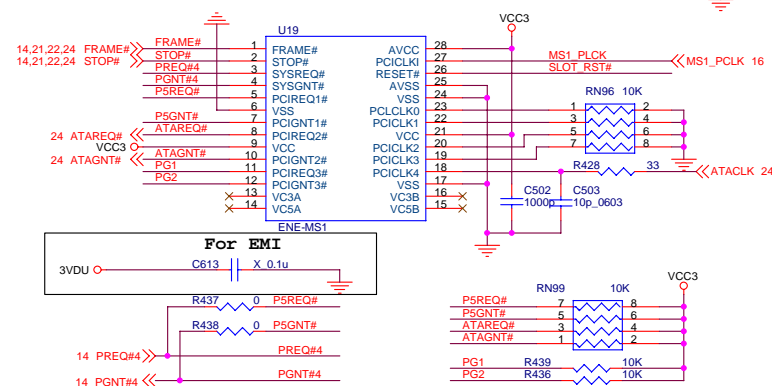
Title		
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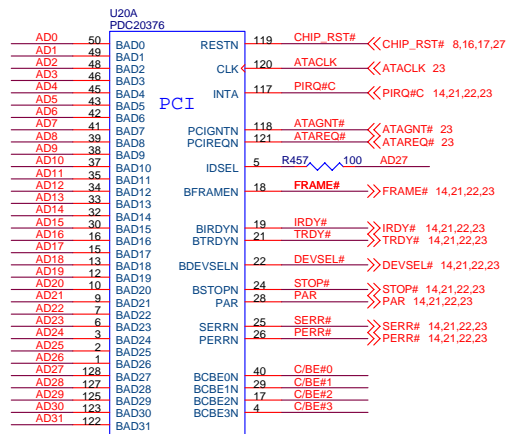




14,21,23,24 AD[31..0] << AD[31..0]
14,21,23,24 C/BE#[3..0] << C/BE#[3..0]

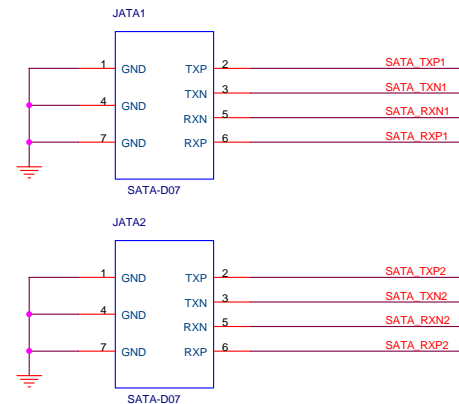
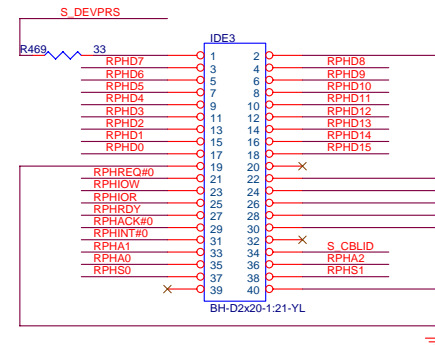
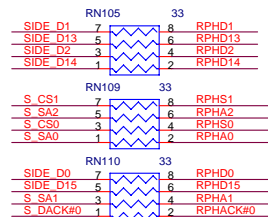
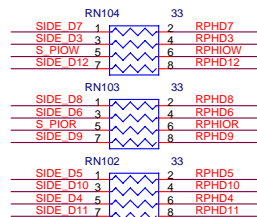
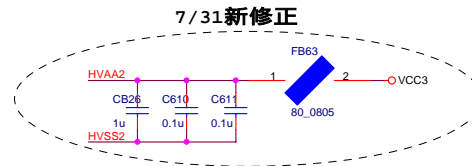
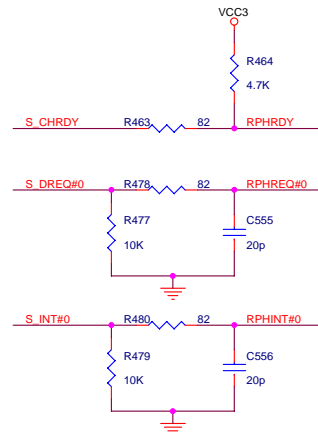
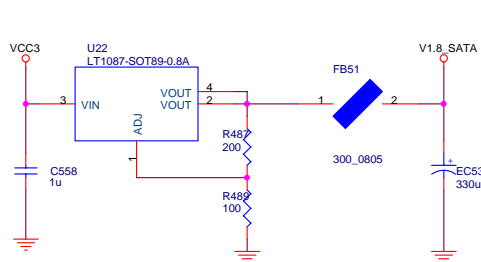
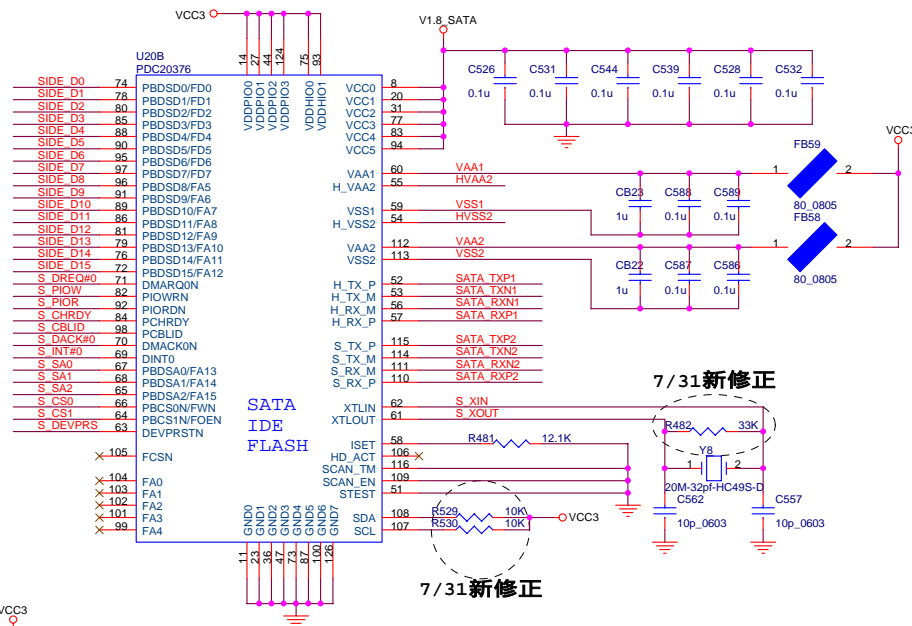


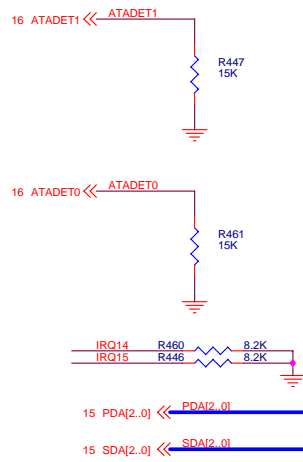
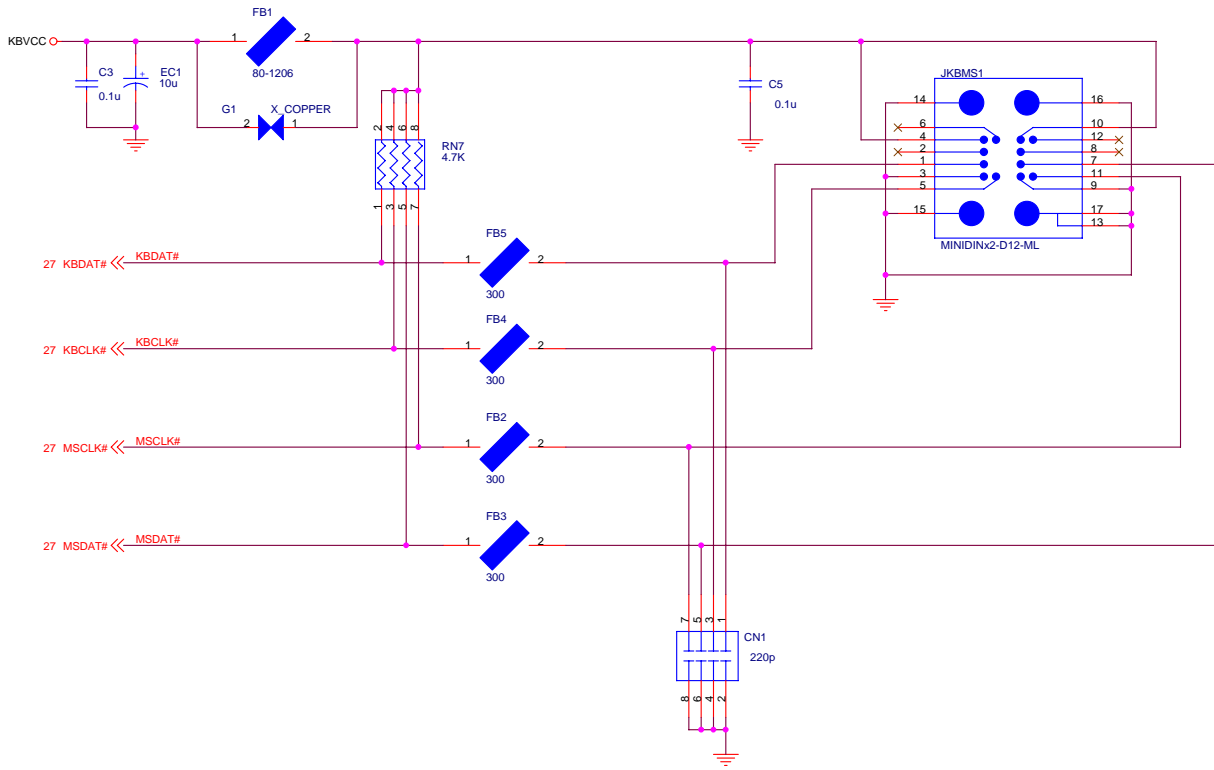
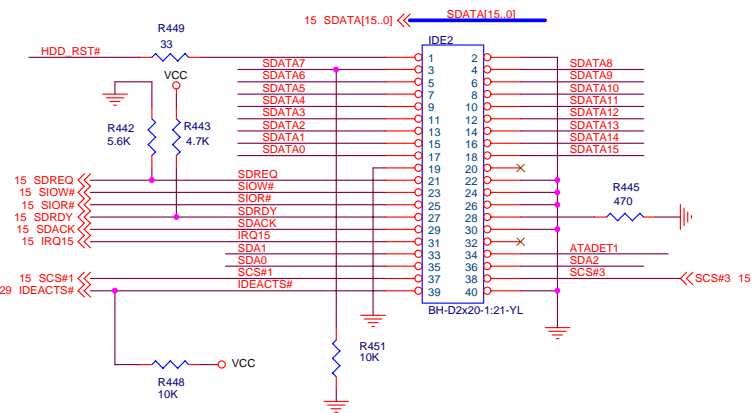
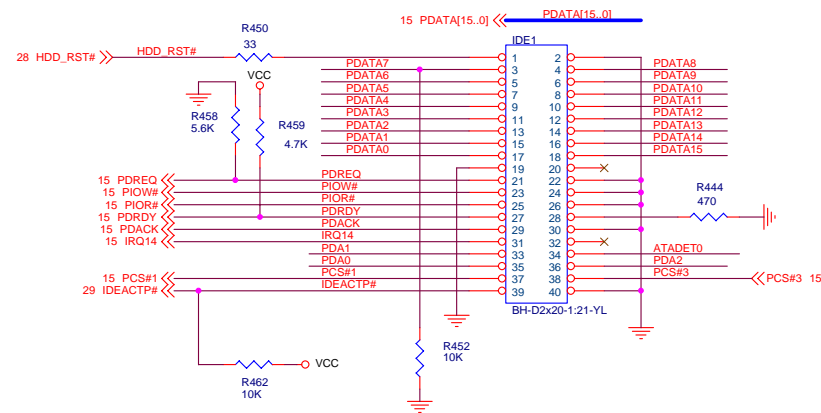


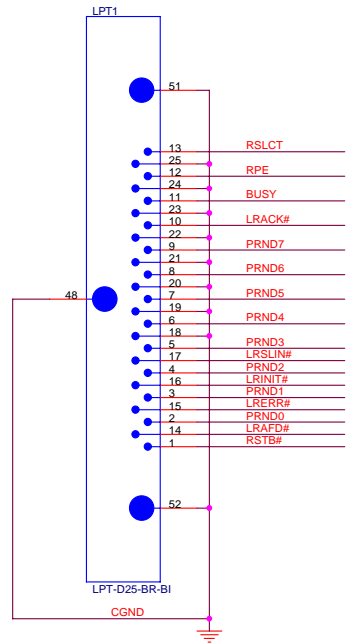
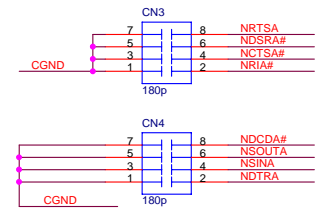
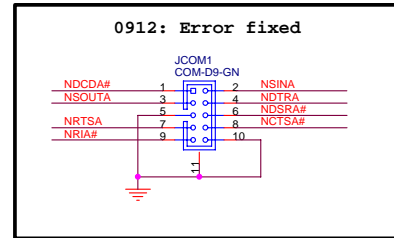
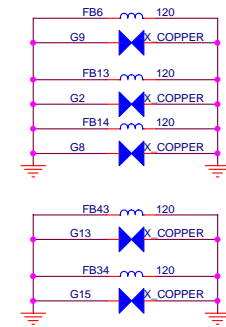
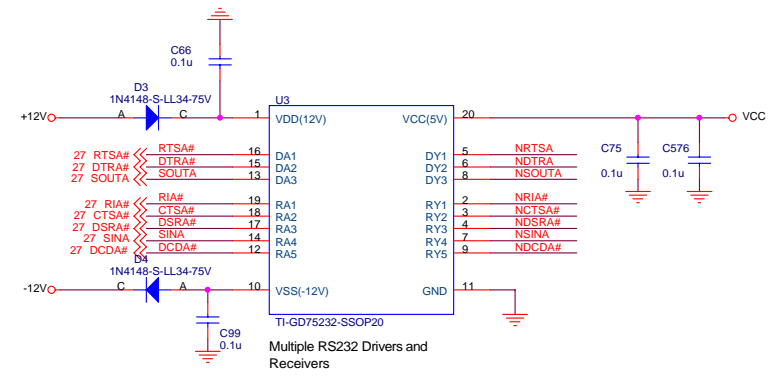
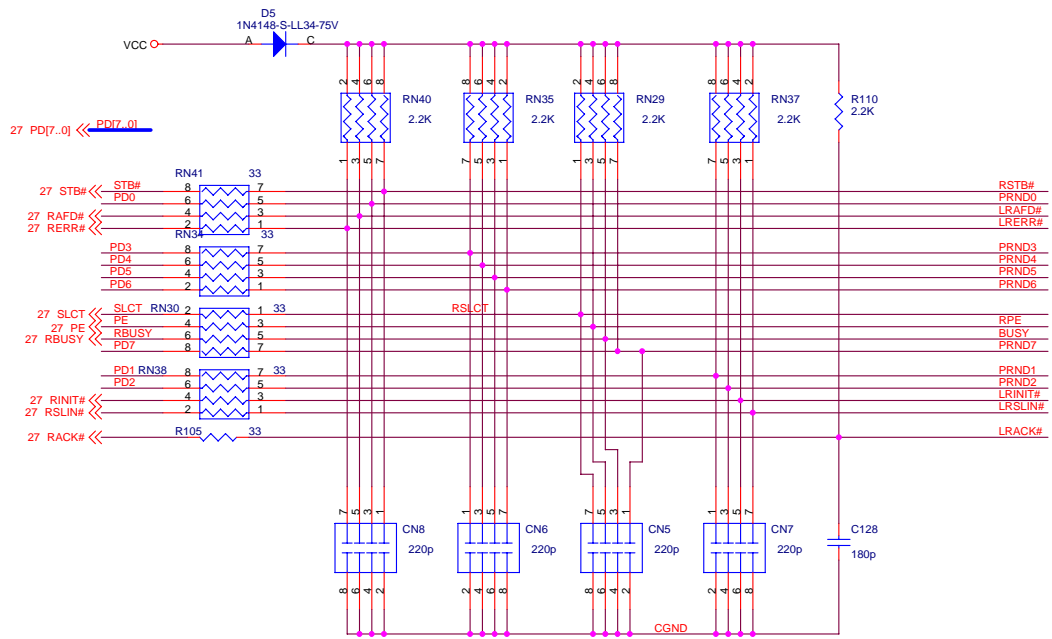


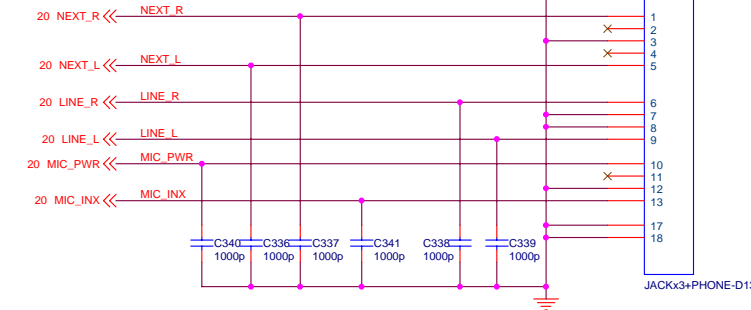
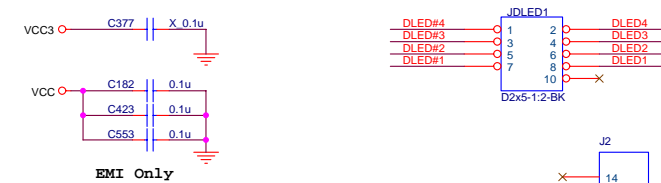
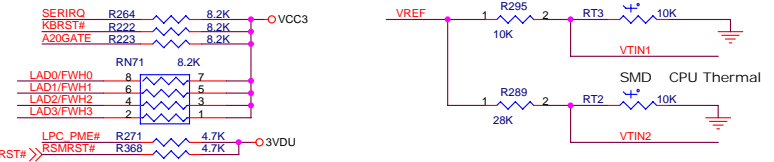
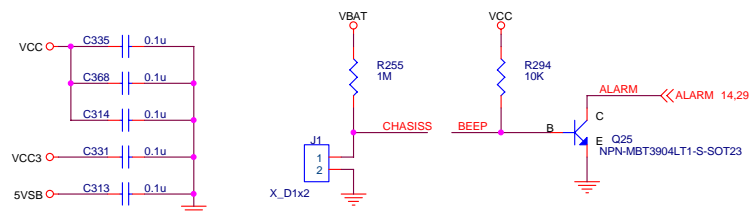
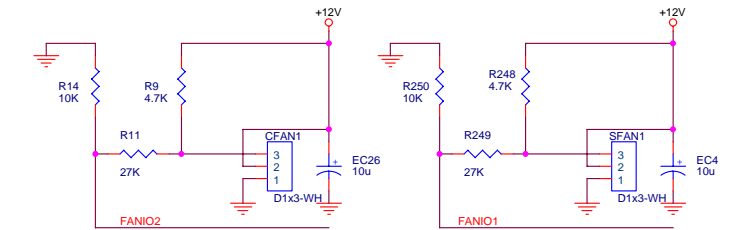
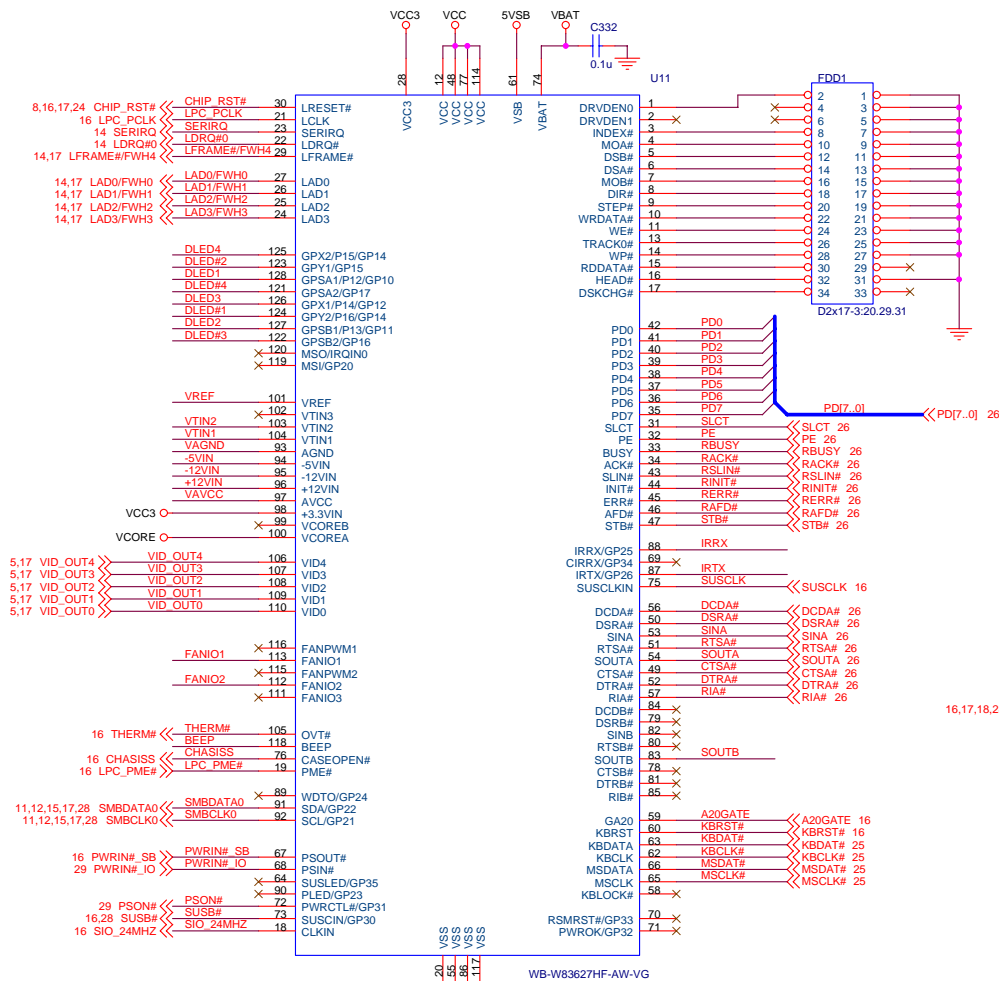
14,21,22,23 AD[31..0] << AD[31..0]

14,21,22,23 C/BE#[3..0] << C/BE#[3..0]



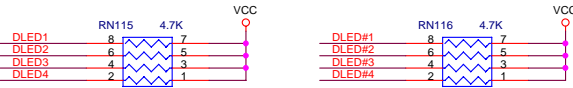




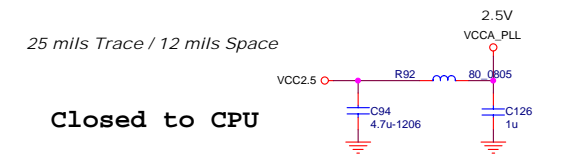
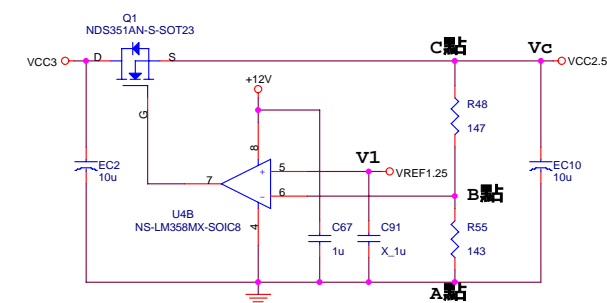
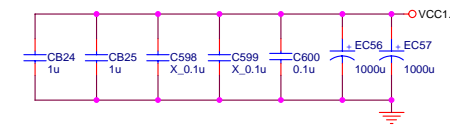
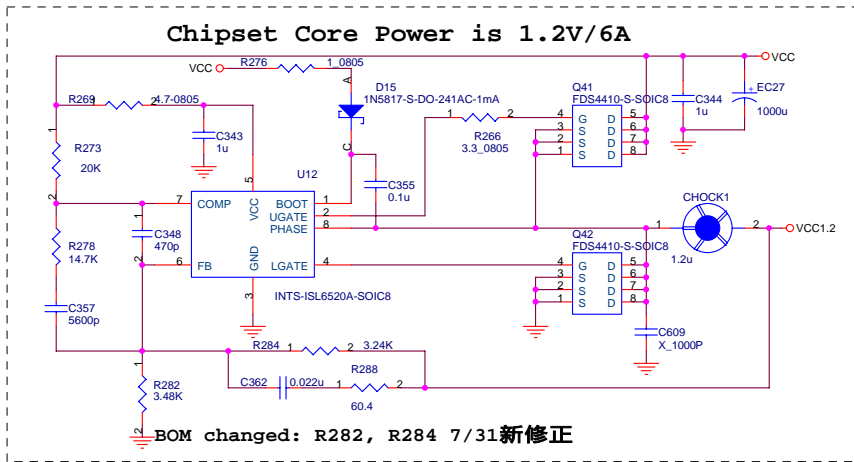


RTSA: Pull-up for 4E port
Pull-down for 2E port

SOUTB: Pull-up for 48MHz
Pull-down for 24MHz

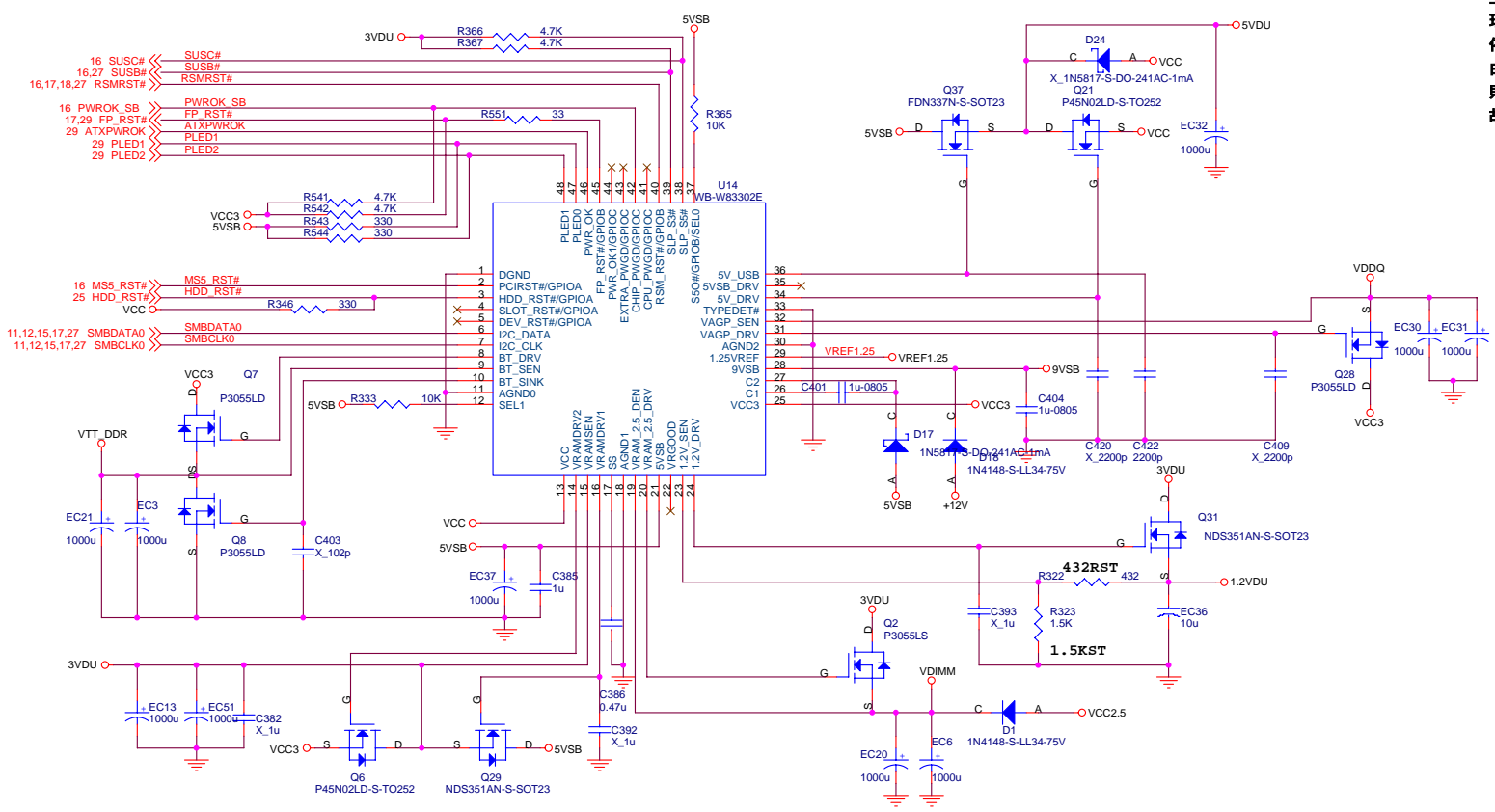


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運算放大器分析

工作原理: 藉由B點的回授, 運算放大器可決定MOSFET的導通量。
 理想運算放大器中, 跨在+, -兩端電壓為0V。
 依據KVL, $-V_{ba} + V_{bc} + V_c = 0$ 或 $V_{bc} = V_{ba} - V_c = V_1 - V_c$
 由B點的KCL可得: $(V_1/R55) + [(V_1 - V_c)/R48] = 0$
 則 $V_c = uV_1$, $u = 1 + (R48/R55)$
 故 $V_c = (1 + R48/R55) * V_1$



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DATE	DESCRIPTION
4/16	1. First version initiated.

DATE	DESCRIPTION

DATE	DESCRIPTION
7/5 Rev.0B	Changed HSDIN#[0..1] form pull_down to pull_up Vcore
	Added J10 for user/safe mode selection
	Changed R203/R207 from pull_down to pull_up
	Added R507 where connected to VCCA_PLL
	Used VCCPLL_NB to control PWROK_SB delay
	Added pull_up resistor R526/R527 for PERR#/SERR# of AGP slot
	Swap APICD[0..1] for correct connection
	Added comm chock for USB 2.0
	IEEE1394 power circuit modified