MS-7615-2.0

CPU:

AMD AM3 Socket941 SUPPORT TO 95W

System Chipset:

North Bridge --- NF520

OnBoard Chipset:

Clock Gen:NA
AC'97 Codec:ALC887, Azalia 7.1 channel codec
Realtek RTL8111E for Gb LAN
SIO:Fintek F71889ED
Flash ROM:8MB SPI

Main Memory:

DDRIII 800/1066* 2 (Dual Channel)

Expansion Slots:

PCI Express (X16) Slot * 1
PCI Express (X1) Slot * 1
PCI Slot * 4

PWM:

Controller:ISL6362A(3+1-Phase)

ACPI:

UPI

Other:

IDE(DMA133) *1
FDD *1
SATA(SATA2-300MB/S) *4
USB2.0 *10(Rear*4 Front*4)
COM PORT *1
LPT PORT *1

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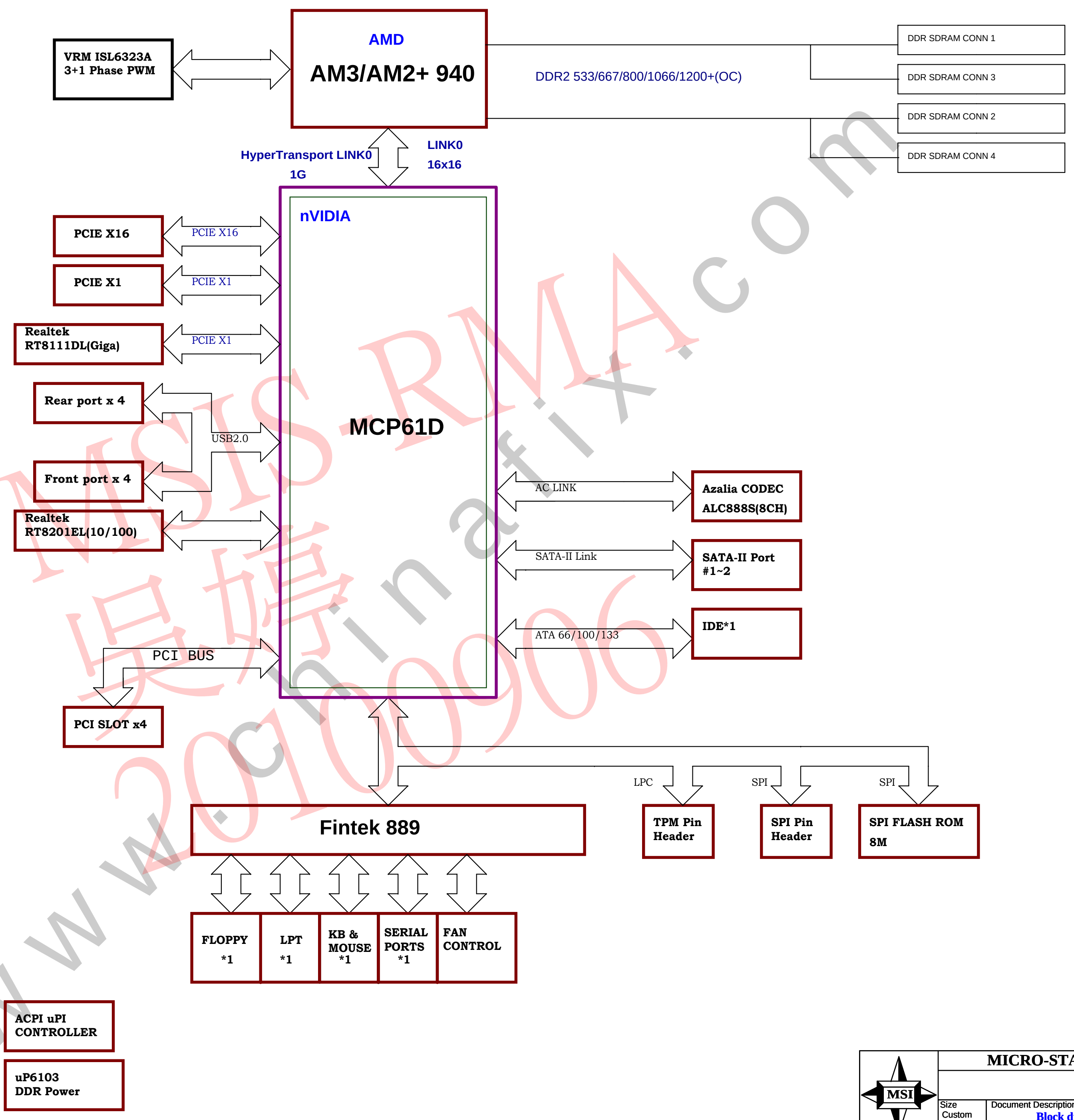

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MS-7615			
Size: Custom	Document Description: Block diagram		Rev: 20
Date: Tuesday, July 27, 2010	Sheet 2 of 33		

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PCI RESET DEVICE

MCP61D

Signals	Target
PCI_RESET0*	PCISLOT1
PCI_RESET1*	PCISLOT2
PCI_RESET2*	PCISLOT3
PCI_RESET3*	PCISLOT4
LPC_RESET*	LPC/SIO

SIO F71889ED

Signals	Target
HDD_RST#	IDE
LAN_RST#	LAN

MEMORY CLOCK TRANSLATION

DIMM	DDR2 Memory Signal	CPU Signal
DIMM A0	MEM_MA0_CLK(2) MEM_MA0_CLK(1) MEM_MA0_CLK(0)	MA_CLK(7) MA_CLK(1) MA_CLK(5)
DIMM A1	MEM_MA1_CLK(2) MEM_MA1_CLK(1) MEM_MA1_CLK(0)	MA_CLK(6) MA_CLK(0) MA_CLK(4)
DIMM B0	MEM_MB0_CLK(2) MEM_MB0_CLK(1) MEM_MB0_CLK(0)	MB_CLK(7) MB_CLK(1) MB_CLK(5)
DIMM B1	MEM_MB1_CLK(2) MEM_MB1_CLK(1) MEM_MB1_CLK(0)	MB_CLK(6) MB_CLK(0) MB_CLK(4)

PCI Config.

DEVICE	MCP1 INT Pin	REQ# / GNT#	IDSEL	CLOCK
PCI Slot 1	PCI_INT#Y PCI_INT#Z PCI_INT#W PCI_INT#X	PCI_REQ0# PCI_GNT0#	AD26	PCI_CLKSLOT1 (PCICLK0)
PCI Slot 2	PCI_INT#X PCI_INT#Y PCI_INT#Z PCI_INT#W	PCI_REQ1# PCI_GNT1#	AD25	PCI_CLKSLOT2 (PCICLK1)
PCI Slot 3	PCI_INT#W PCI_INT#X PCI_INT#Y PCI_INT#Z	PCI_REQ2# PCI_GNT2#	AD24	PCI_CLKSLOT3 (PCICLK2)
PCI Slot 4	PCI_INT#Z PCI_INT#W PCI_INT#X PCI_INT#Y	PCI_REQ3# PCI_GNT3#	AD23	PCI_CLKSLOT4 (PCICLK3)
LPC				LPC_PCLK
SIO				SIO_PCLK

USB

	Port	DATA +/-	OC#
Rear	USB1	USB0- USB0+ USB1- USB1+	USB_OC#0 (OC#0~1)
	LAN_USB1	USB2- USB2+ USB3- USB3+	USB_OC#1 (OC#2~3)
Front	JUSB1	USB4- USB4+ USB5- USB5+	USB_OC#2 (OC#4~5)
	JUSB2	USB6- USB6+ USB7- USB7+	USB_OC#3 (OC#6~7)
	JUSB2	USB8- USB8+ USB9- USB9+	USB_OC#4 (OC#6~7)

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MCP61 GPIO TABLE

PIN NAME	FUNCTION
THERMTRIP*/GPIO58	CPU_THERMTRIP*
PROCHOT*/GPIO20	PROCHOT*
MII_RXER/GPIO36	MII_RXER
MII_COL/GPIO13/MI2C_DATA	MII_COL
MII_CRS/GPIO14/MI2C_CLK	MII_CRS
RGMII/MII_INTR*/GPIO35	Pull High 10K to 3VDUAL
RGMII/MII_PWRDWN*/GPIO37	--
MII_RESET*/GPIO12	MII_RESET*
PCI_REQ2*/GPIO40.RS232_DSR*	PCI_REQ2*
PCI_REQ3*/GPIO38/RS232_CTS*	Pull High 10K to 3VDUAL
PCI_GNT2*/GPIO41/RS232_DTR*	PCI_GNT2*
PCI_GNT3*/GPIO39/RS232_RTS*	PCI_GNT3*
PCI_PERR*/GPIO43/RS232_DCD*	PCI_PERR*
PCI_PME*/GPIO30	PCI_PME*
LPC_PWRDWN*/GPIO54/EXT_NMI*	--
LPC_DRQ0*/GPIO50	LPC_DRQ0*
LPC_DRQ1*/GPIO15/FANRPM1	--
CABLE_DET_P/GPIO63	CABLE_DET_P
SATE_LED*/GPIO57	SATE_LED*
HDA_SDATA_OUT0/GPIO45	HDA_SDATA_OUT
HDA_SDATA_IN0/GPIO22	HDA_SDATA_IN0
HDA_SDATA_IN1/GPIO23/MGPIO0	--
HDA_SYNC/GPIO44	HDA_SYNC
GPIO_1	--
GPIO_2/NMI*/PS2_CLK0	--
GPIO_3/SMI*/PS2_DATA0	--
GPIO_4/SCI_INTR/PS2_CLK1	USB EN(CONTROL USB POWER)
GPIO_5/INIT*/PS2_DATA2	--
GPIO_6/FERR*/SYS_FERR*	--
GPIO_7/NFERR*/SYS_PERR*	--
GPIO_8/SPI_DI	SPI_DI
GPIO_9/SPI_DO	SPI_DO
GPIO_10/SPI_CS	SPI_CS
GPIO_11/SPI_CLK	SPI_CLK
USB_OC0*/GPIO25	USB_Rear_1_0OC*
USB_OC1*/GPIO26	USB_Rear_3_2OC*
USB_OC2*/GPIO27	USB_FNTPNL_5_4OC*
USB_OC3*/GPIO28/MGPIO_1	USB_FNTPNL_7_6OC*
USB_OC4*/GPIO29	Pull High 10K to 3VDUAL(USB not USE)
A20GATE/GPIO55	AGATE20
EXT_SMI*/GPIO32	EXT_SMI*
RI*/GPIO33	
SIO_PME*/GPIO31	SIO_PME*
KBRDRSTIN*/GPIO56	SIO_KBRST*
SUS_CLK/GPIO34	--
THERM*/GPIO59	THERM*
FANRPM0/GPIO60	--
FANCTL0/GPIO61	--
FANCTL1/GPIO62	--
THERM_SIC/GPIO48	
THERM_SID0/GPIO49	--
PE_WAKE*/GPIO21	PE_WAKE*

SIO GPIO TABLE

GROUP	PIN NAME	FUNCTION
UART & SIR	IRTX/GPIO42	--
	IRRX/GPIO43	--
	GPIO17	--
Hardware Monitor	FANIN3/GPIO40	--
	FAN_CTL3/GPIO41	--
	PME#/GPIO25	PME#
	GPIO10/SPISLK/FININ4	SPI_SLK
	GPIO11/SPI_CS0#/FAN_CTL4	SPI_CS0#
	FPIO12/SPI_MISO/FANCTL1_1	SPI_MISO
	GPIO13/SPI_MOSI/BEEP	SPI_MOSI
	GPIO14/FWH_DIS/WDTRST#/SPI_CS1#	SPI_CS1#
ACPI Function Pins	GPIO15/LED_VSB/ALERT#	--
	GPIO16/LED_VCC/Turbo2#	CPU_FAN_GPO
	PCIRST1#/GPIO20	--
	PCIRST2#/GPIO21	--
	PCIRST3#/GPIO22	--
	GPIO23/RSTCON#	--
	ATXPG_IN/GPIO24	ATXPG_IN
	PWROK/GPIO32	--
	PWSIN#/GPIO26	PWSIN#
	PWSOUT#/GPIO27	PWSOUT#
	S3#/GPIO30	S3#
	PSON#/GPIO31	PSON#
	RSMRST#/GPIO33	RSMRST#
VID Controller	SST/TSI_CLK/GPIO15	SIC
	PECI/TSI_DAT/GPIO16	SID
	SLOTOCC#/GPIO3	SLOTOCC#
	GPIO7/Turbo1#/WDTRST#	--

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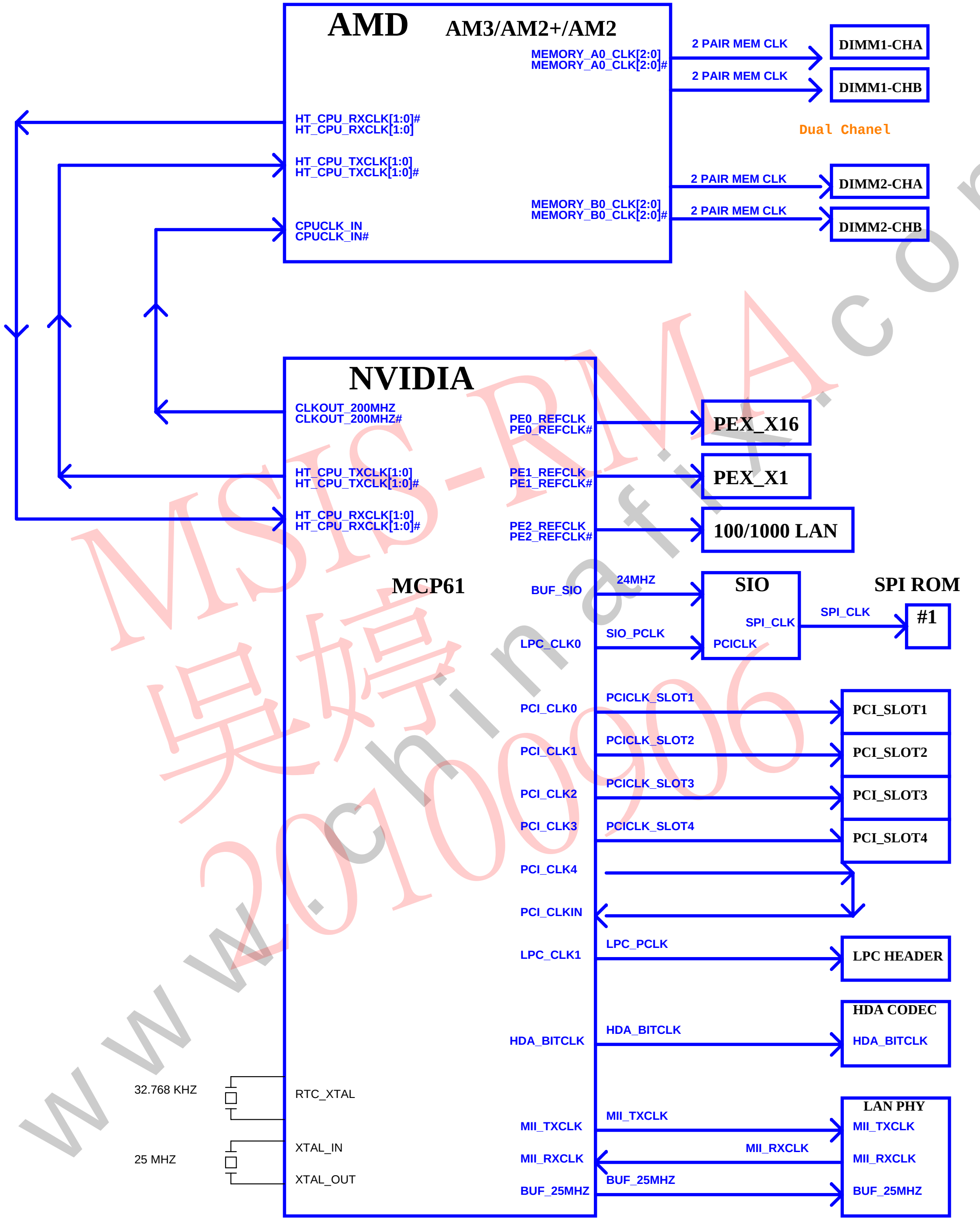

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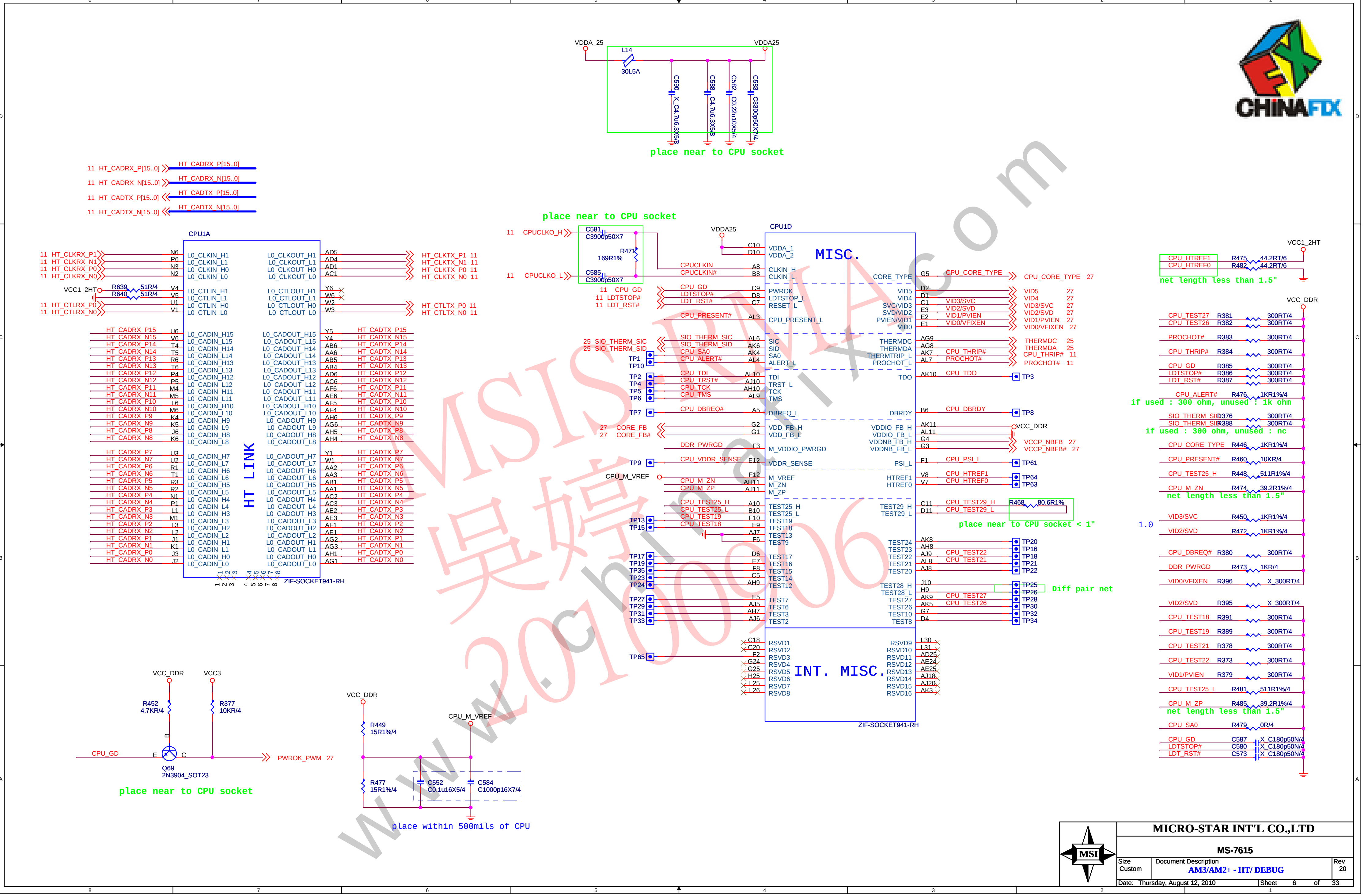
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VDDA_25
VDDA25
L14
30L5A
C590 X_C4.7u6.3X5/8
C588 C4.7u6.3X5/8
C582 C0.22u10X5/4
C583 C3300p50X7/4
place near to CPU socket
11 HT_CADRX_P[15..0]
11 HT_CADRX_N[15..0]
11 HT_CADTX_P[15..0]
11 HT_CADTX_N[15..0]
CPU1A
HT LINK
ZIF-SOCKET941-RH
11 HT_CLKRX_P1
11 HT_CLKRX_N1
11 HT_CLKRX_P0
11 HT_CLKRX_N0
VCC1_2HT
R639 51R/4
R640 51R/4
11 HT_CTLRX_P0
11 HT_CTLRX_N0
HT_CLKTX_P1 11
HT_CLKTX_N1 11
HT_CLKTX_P0 11
HT_CLKTX_N0 11
HT_CTLTX_P0 11
HT_CTLTX_N0 11
place near to CPU socket
11 CPUCLKO_H
11 CPUCLKO_L
C581 C3900p50X7
C585 C3900p50X7
R471 169R1%
CPUCLKIN
CPUCLKIN#
11 CPU_GD
11 LDTSTOP#
11 LDT_RST#
25 SIO_THERM_SIC
25 SIO_THERM_SID
27 CORE_FB
27 CORE_FB#
CPU_M_VREF
CPU1D
MISC.
INT. MISC.
ZIF-SOCKET941-RH
CPU_CORE_TYPE 27
VID5 27
VID4 27
VID3/SVC 27
VID2/SVD 27
VID1/PVIEN 27
VID0/VFIXEN 27
THERMDC 25
THERMDA 25
CPU_THRIP# 11
PROCHOT# 11
VCC_DDR
VCCP_NBFB 27
VCCP_NBFB# 27
place near to CPU socket < 1"
Diff pair net
VCC1_2HT
CPU_HTREF1 R475 44.2RT/6
CPU_HTREF0 R482 44.2RT/6
net length less than 1.5"
VCC_DDR
if used : 300 ohm, unused : 1k ohm
if used : 300 ohm, unused : nc
net length less than 1.5"
1.0
net length less than 1.5"
VCC_DDR
VCC3
R452 4.7KR/4
R377 10KR/4
CPU_GD
Q69 2N3904_SOT23
PWROK_PWM 27
place near to CPU socket
VCC_DDR
R449 15R1%/4
R477 15R1%/4
CPU_M_VREF
C552 C0.1u16X5/4
C584 C1000p16X7/4
place within 500mils of CPU
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Document Description
AM3/AM2+ - HT/ DEBUG
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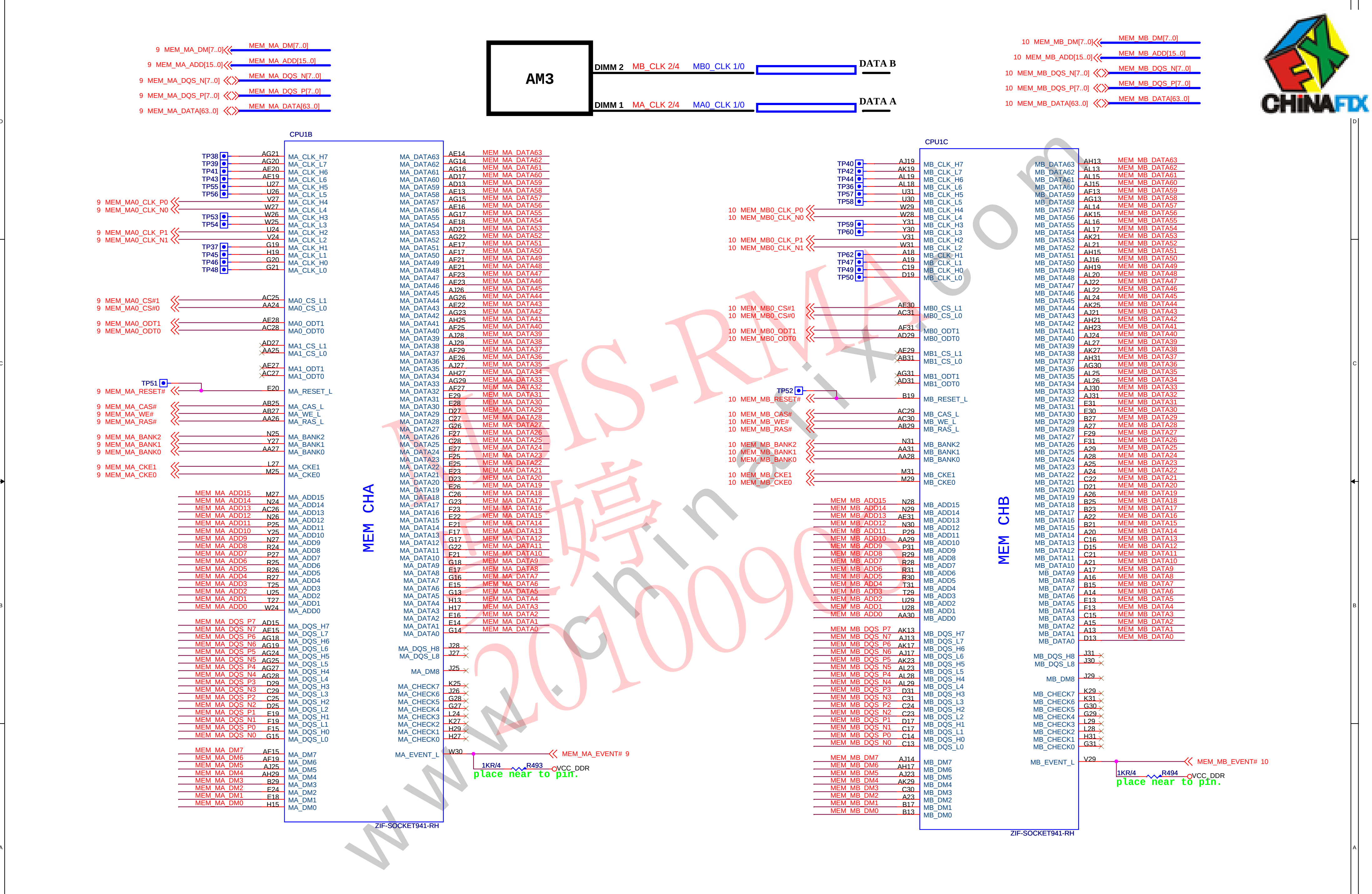

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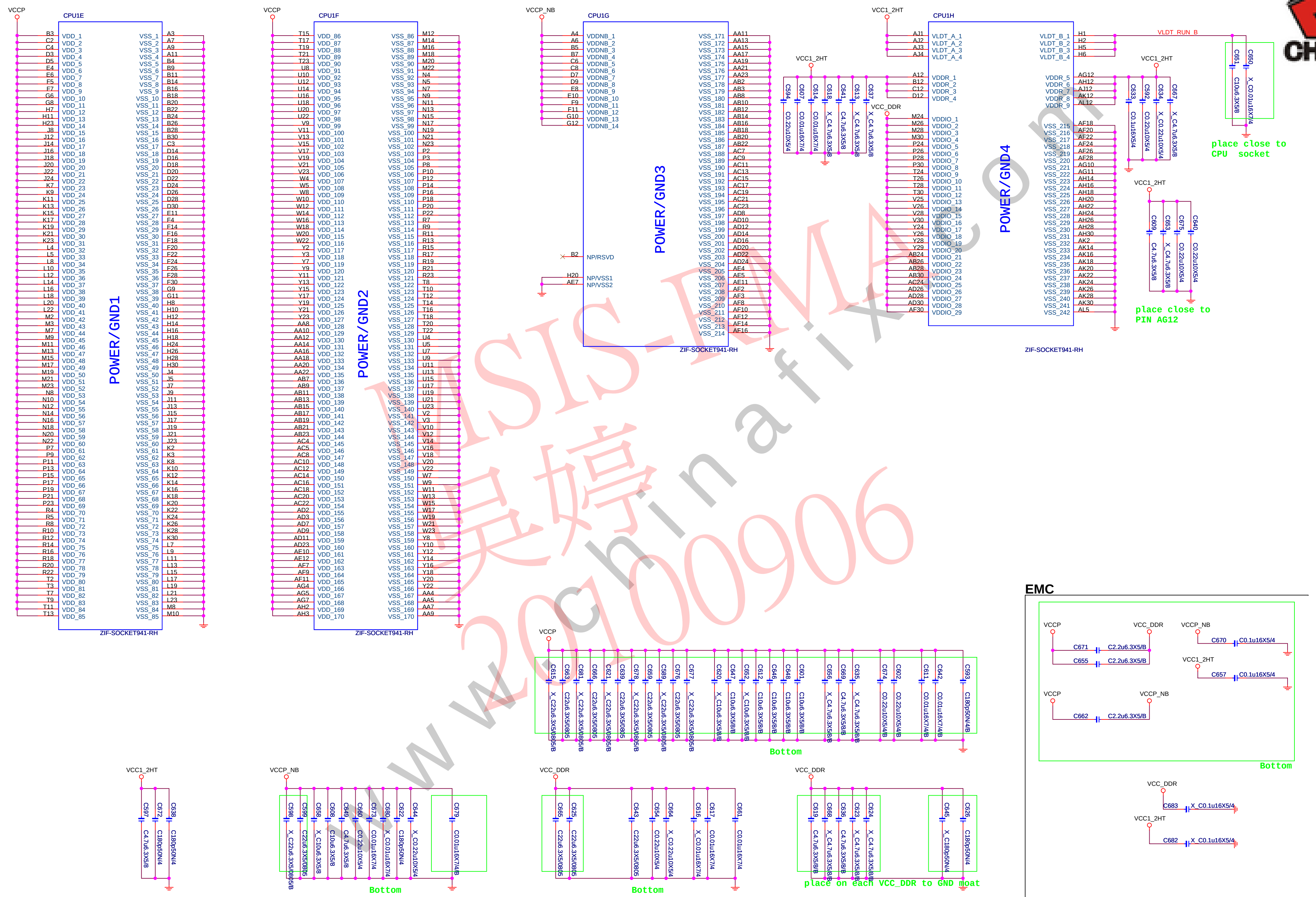

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Custom	AM3/AM2+ - POWER/ GND	20

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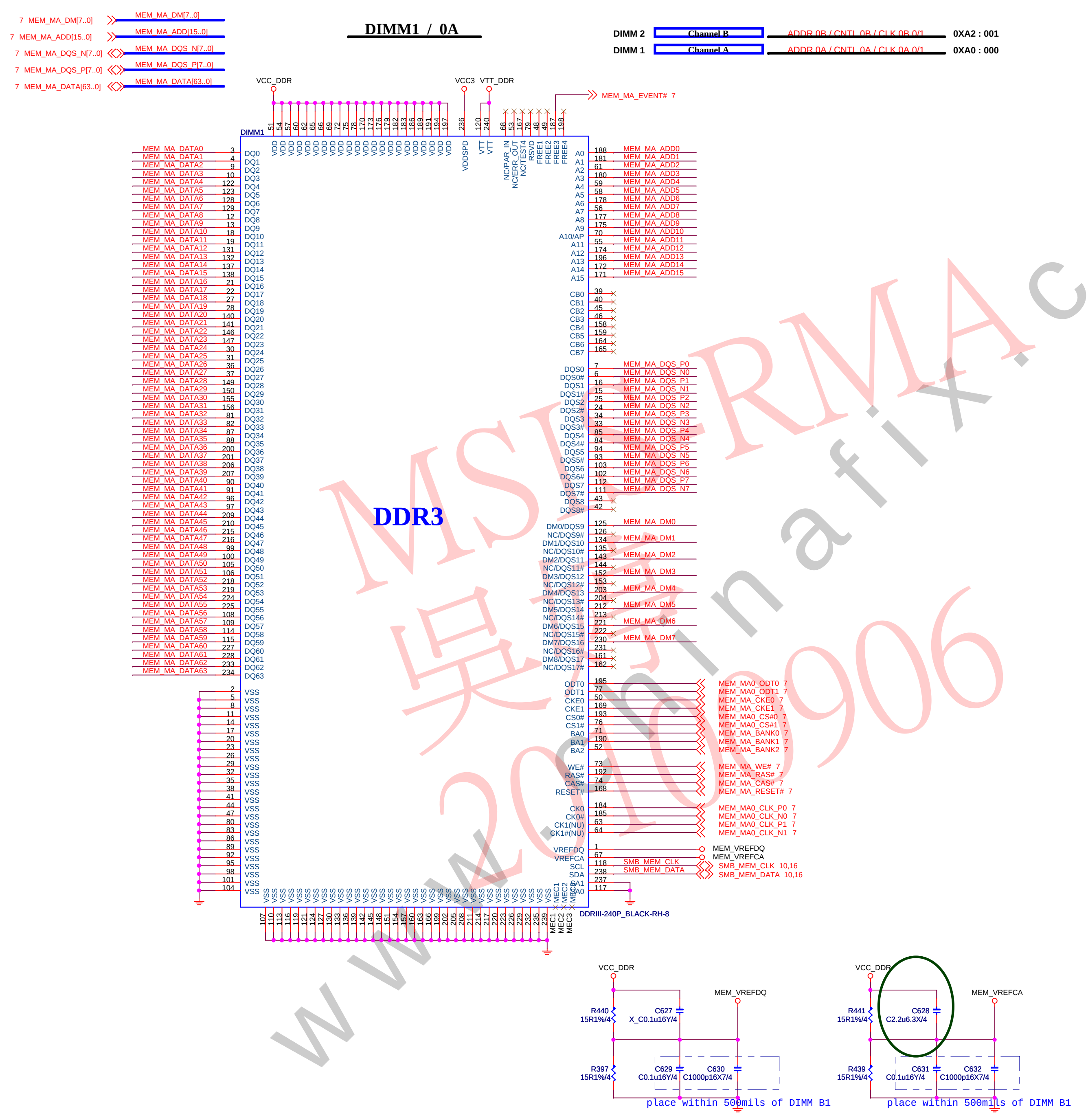

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Size: Custom	Document Description: DDR3 DIMM1	Rev: 20
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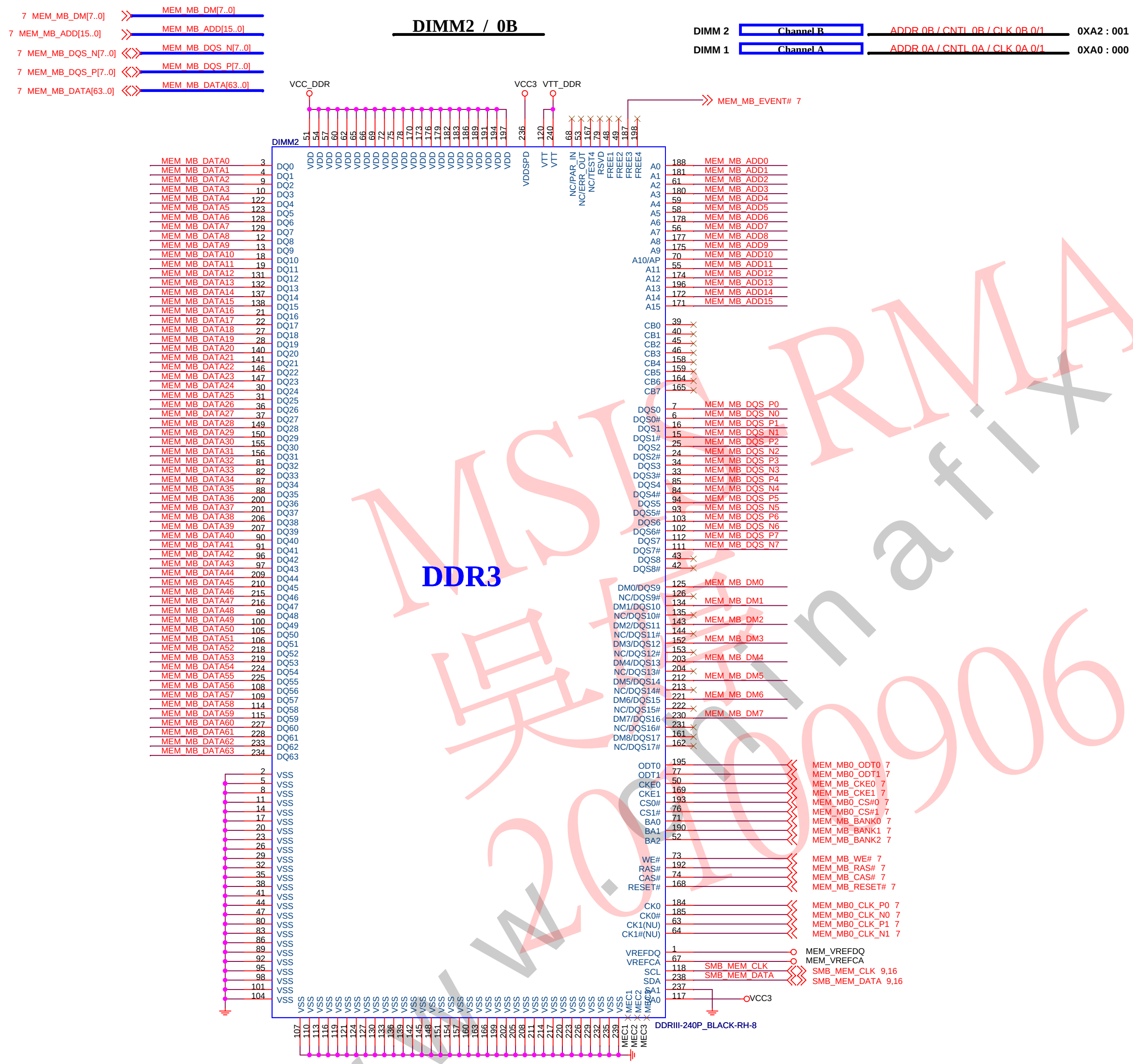

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Size: Custom	Document Description: DDR3 DIMM2	Rev: 20
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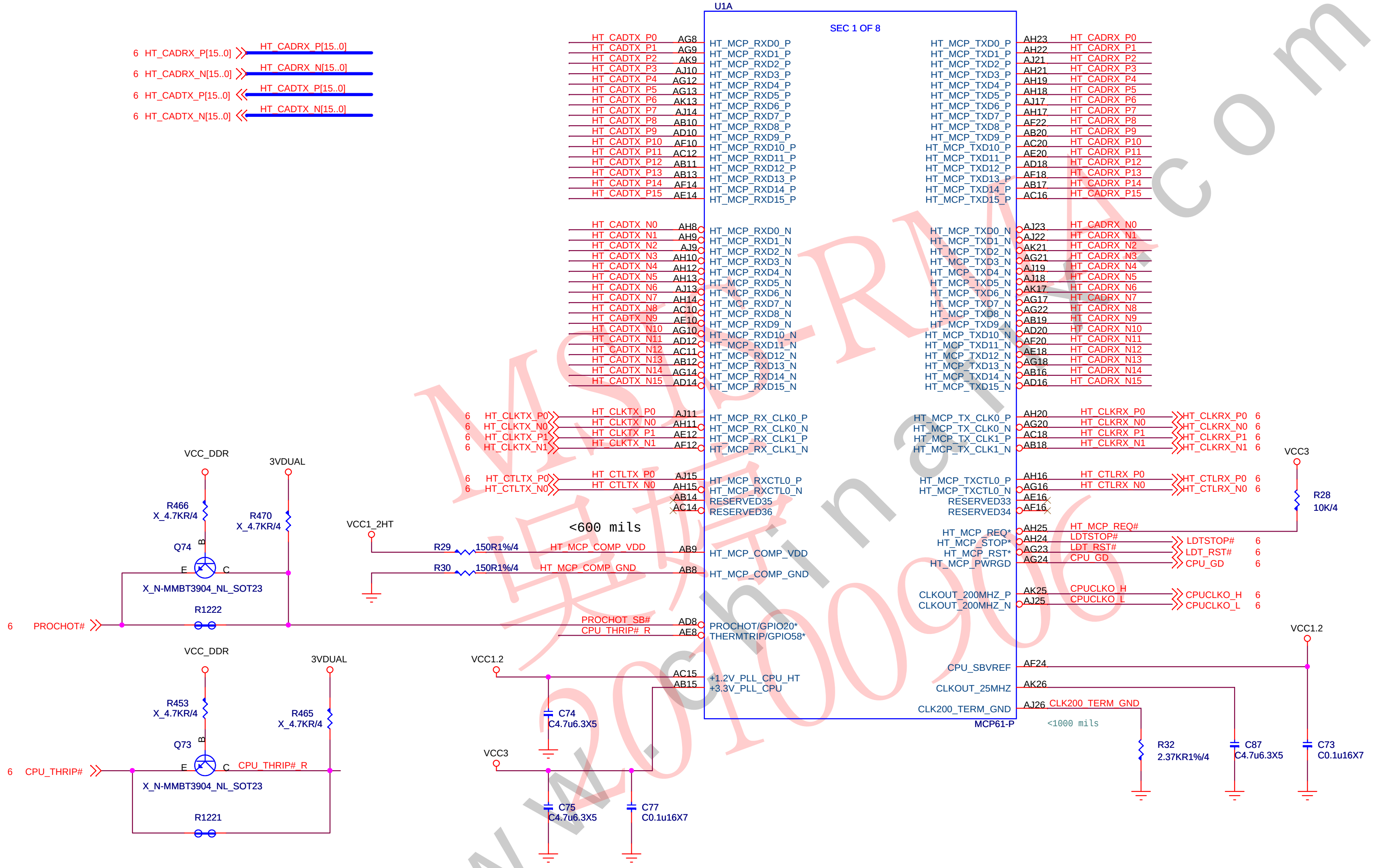

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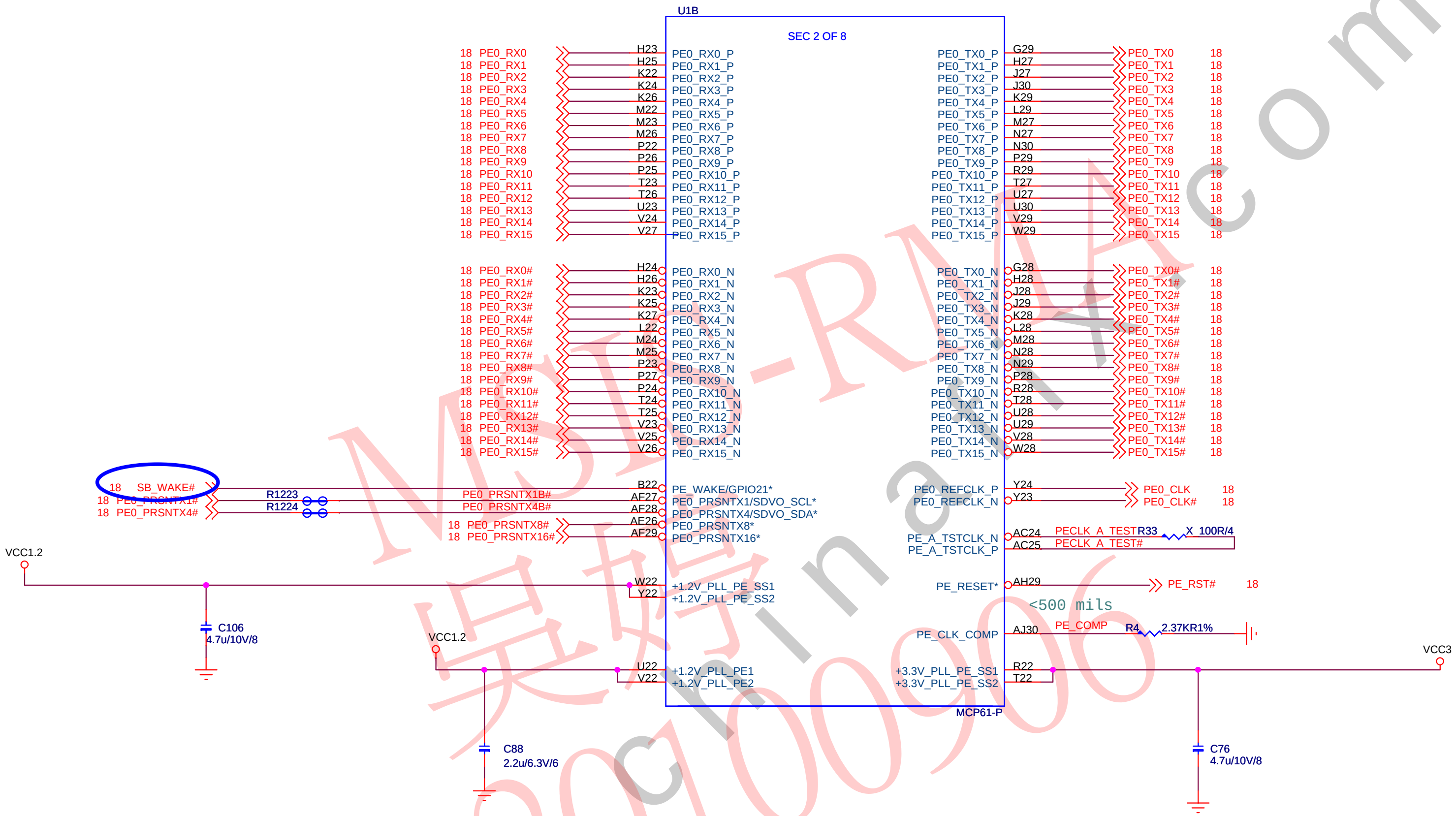
Size: Custom	Document Description: MCP61-HT		Rev: 20
Date: Thursday, August 12, 2010		Sheet 11 of 33	



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Size: Custom	Document Description: **MCP61-PEX X16**	Rev: 20
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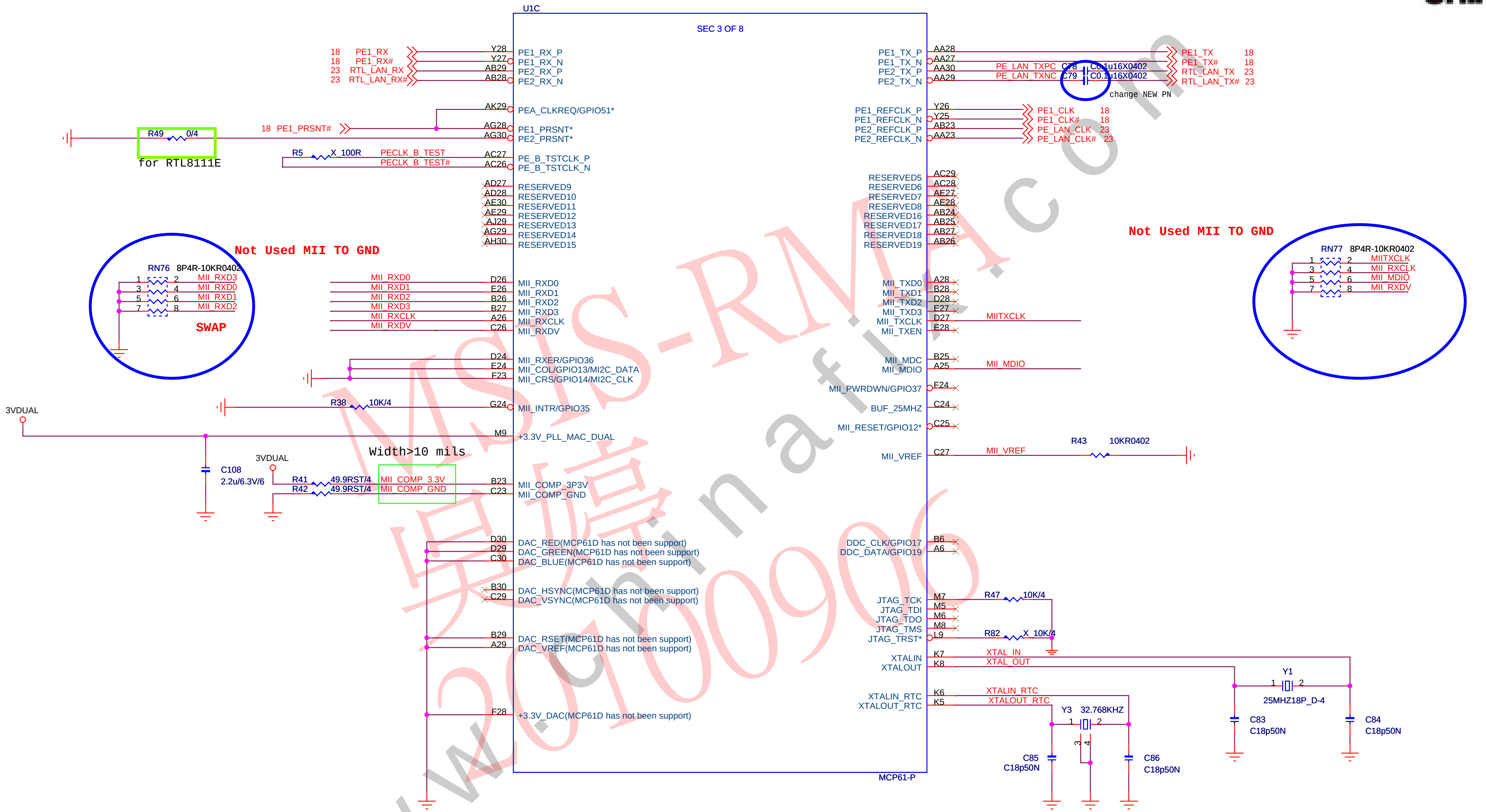

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Size: Custom	Document Description: MCP61-PEX X1 & MII & DAC	Rev: 20
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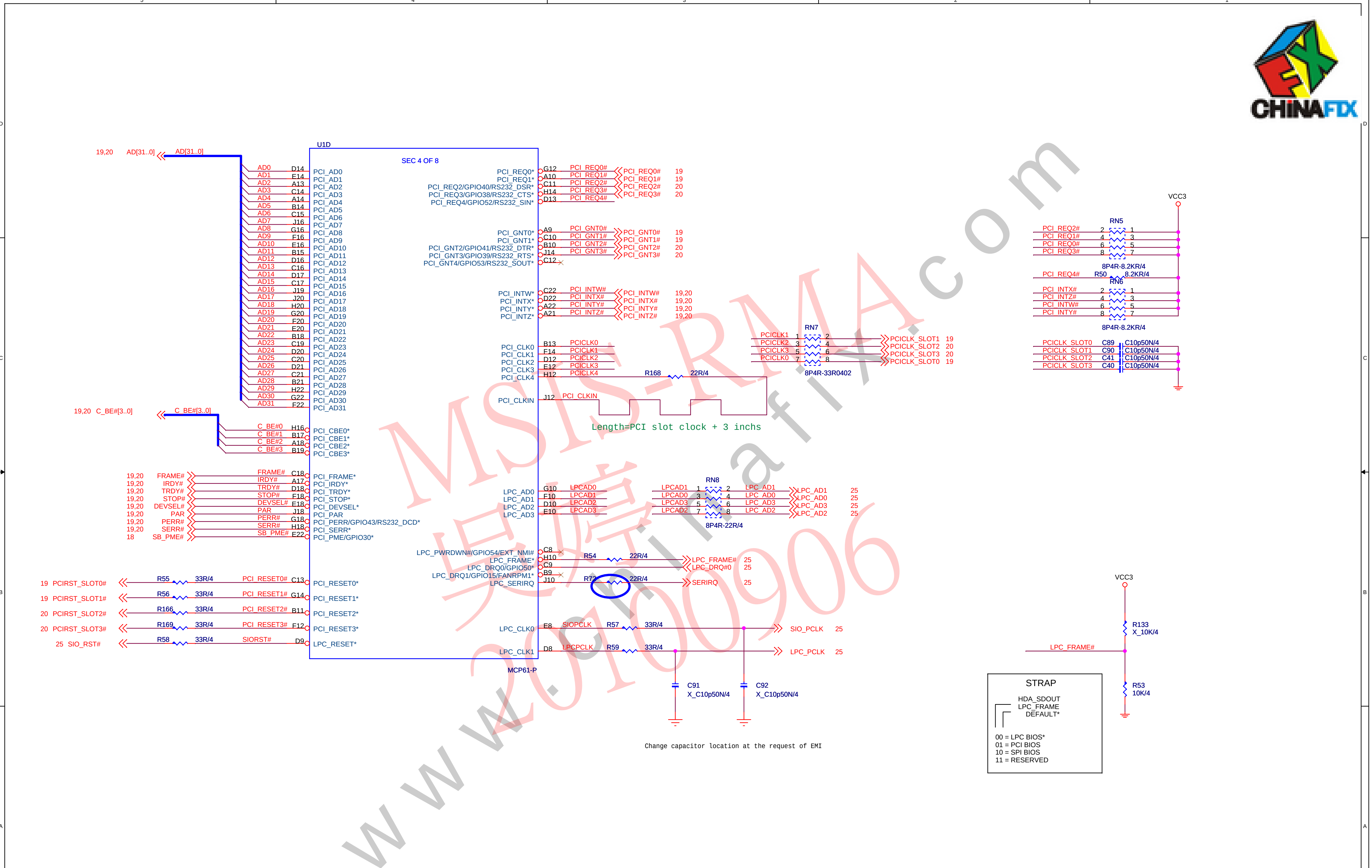

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Size	Document Description	Rev
Custom	MCP61-PCI & LPC	20

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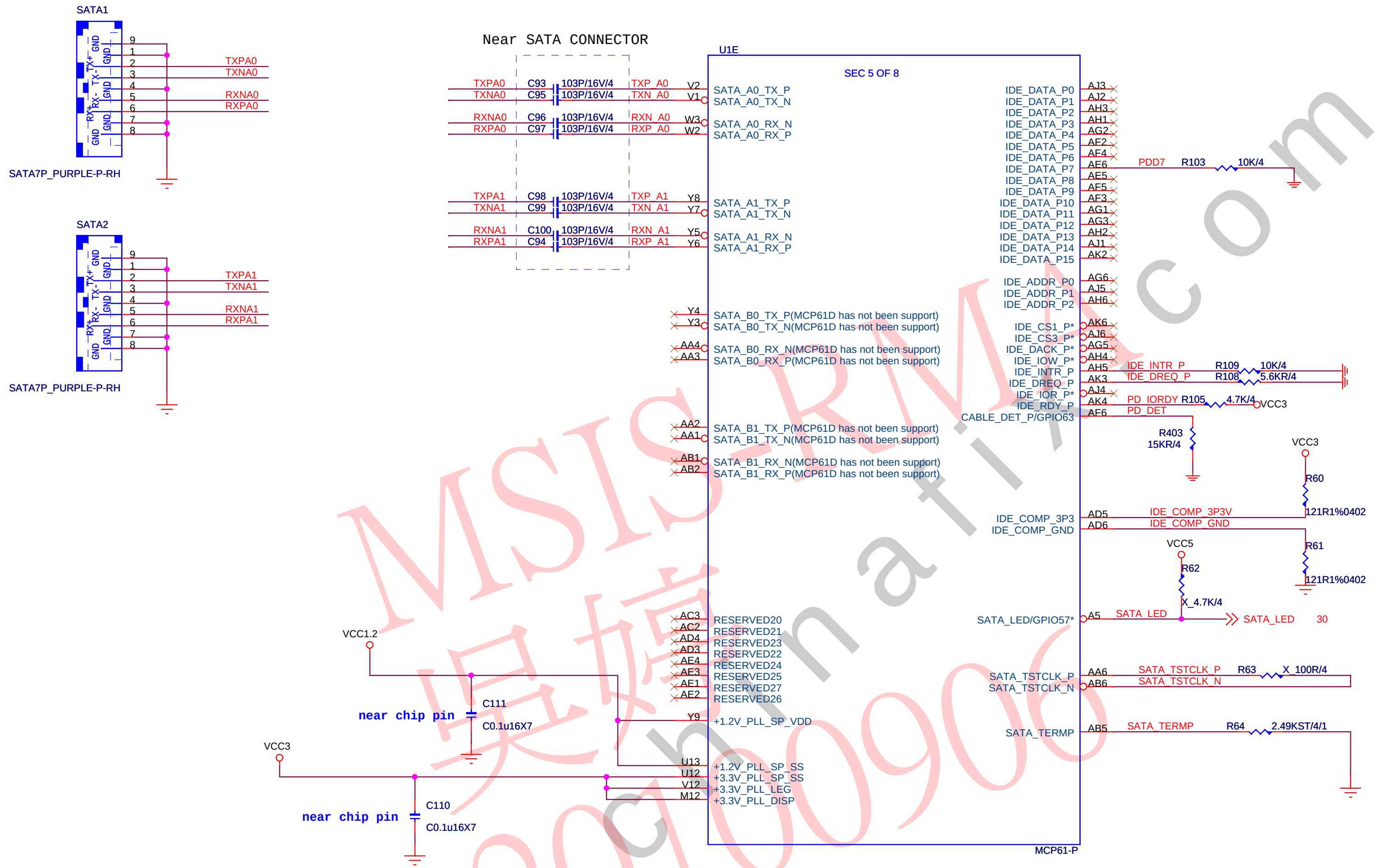

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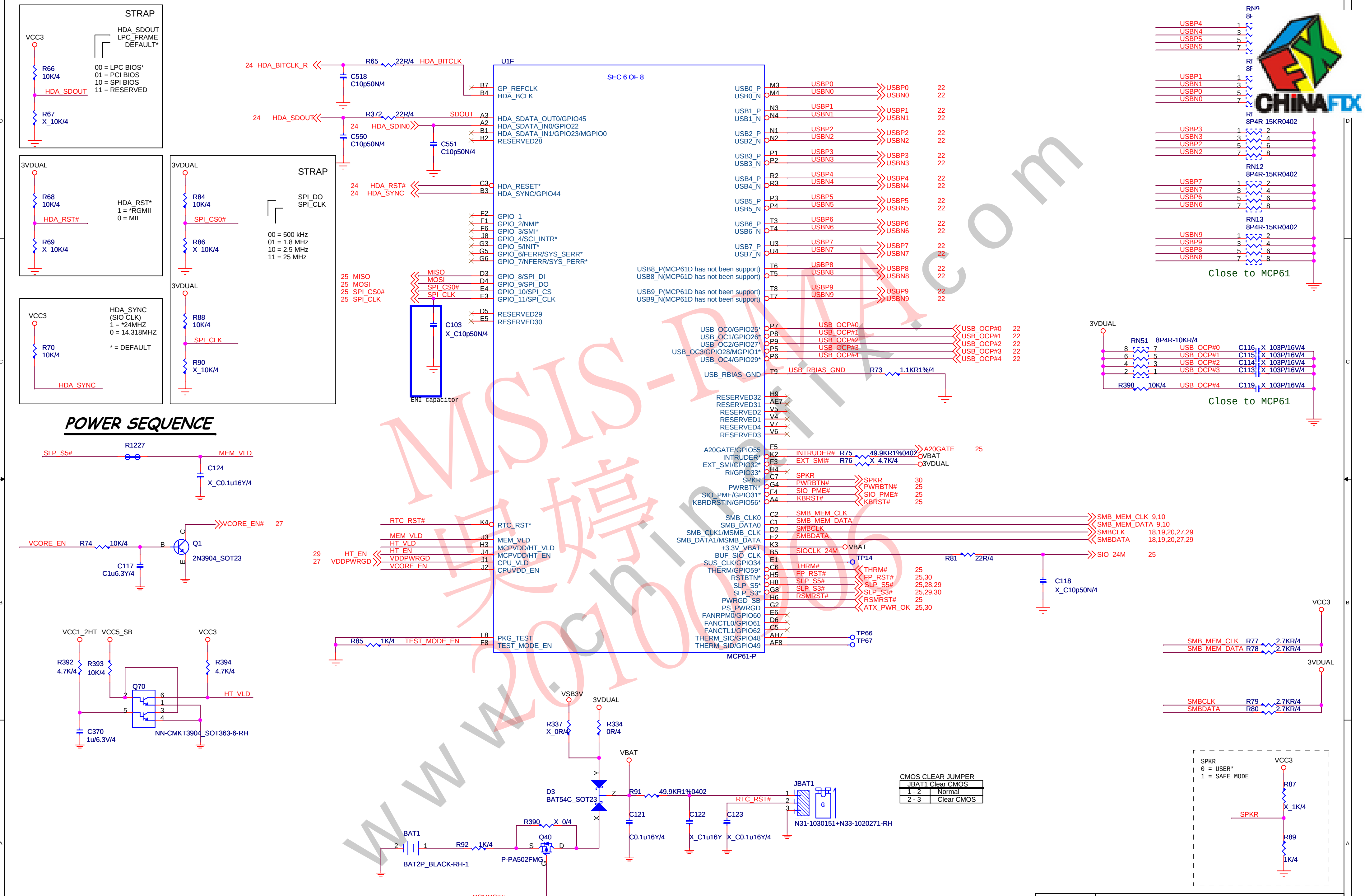

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Size	Document Description	Rev
Custom	MCP61-AUDIO & USB & MISC	20

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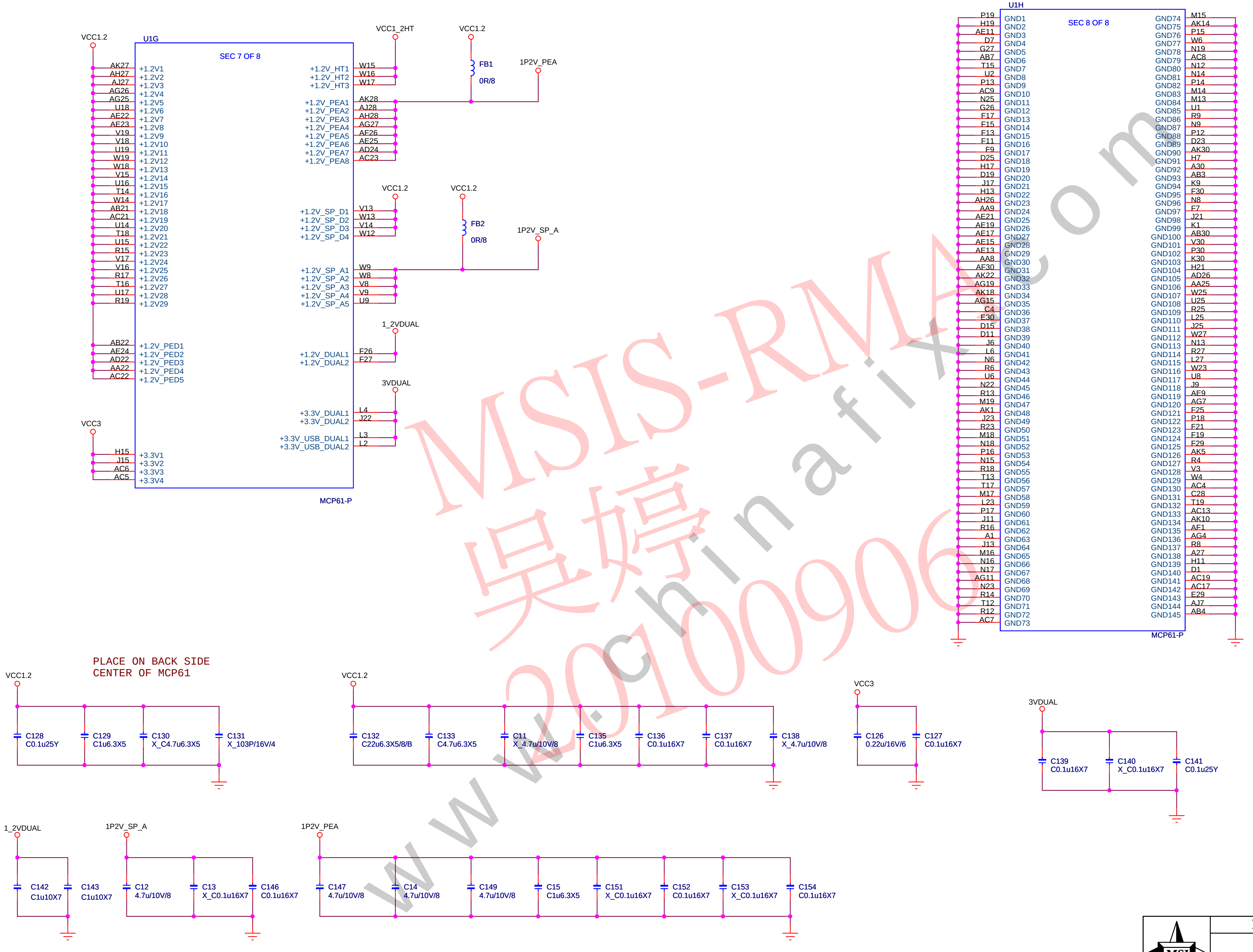

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Size	Document Description	Rev
Custom	MCP61-Power & GND	20

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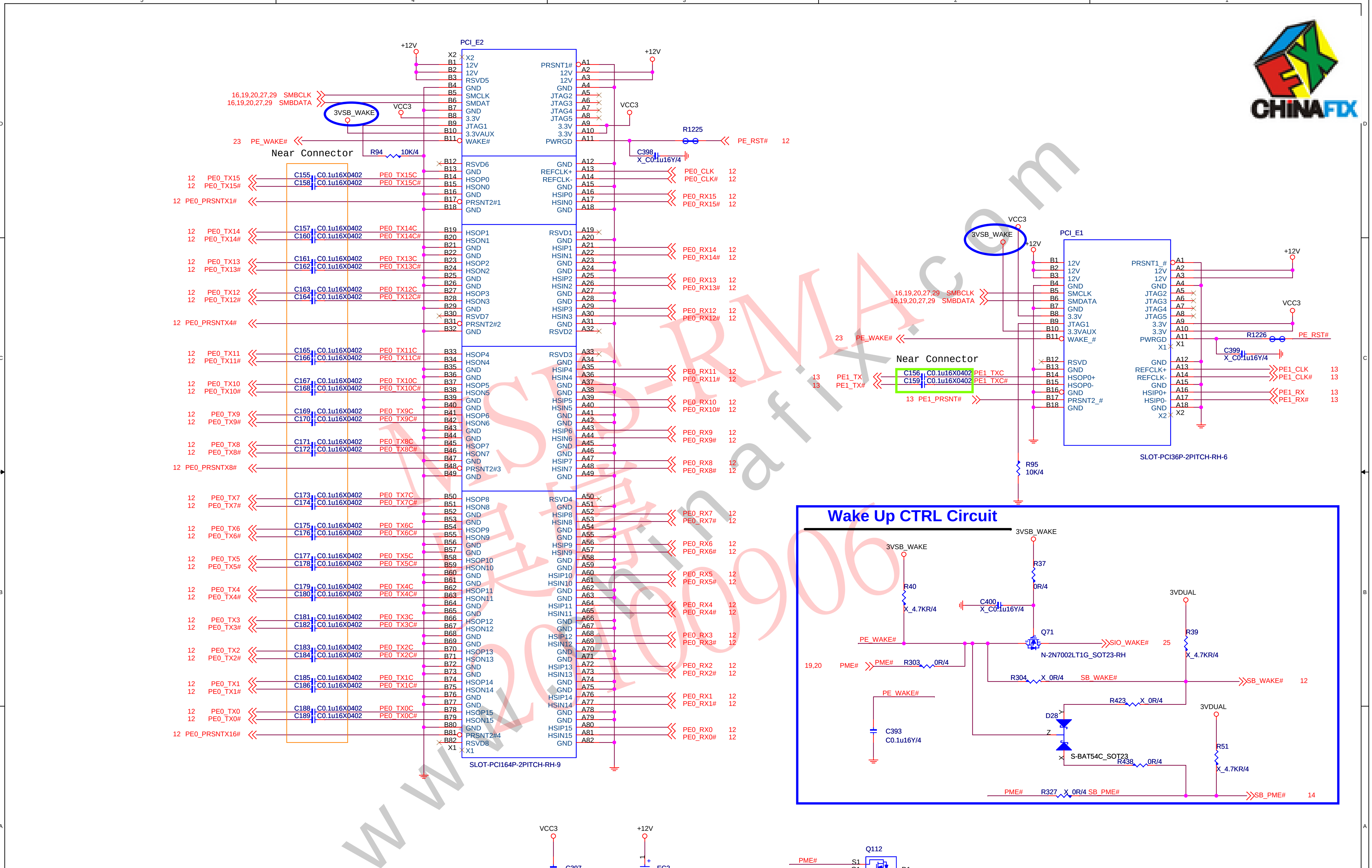

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Custom	PCI-E X16 SLOT&PCI-E X1 SLOT	20

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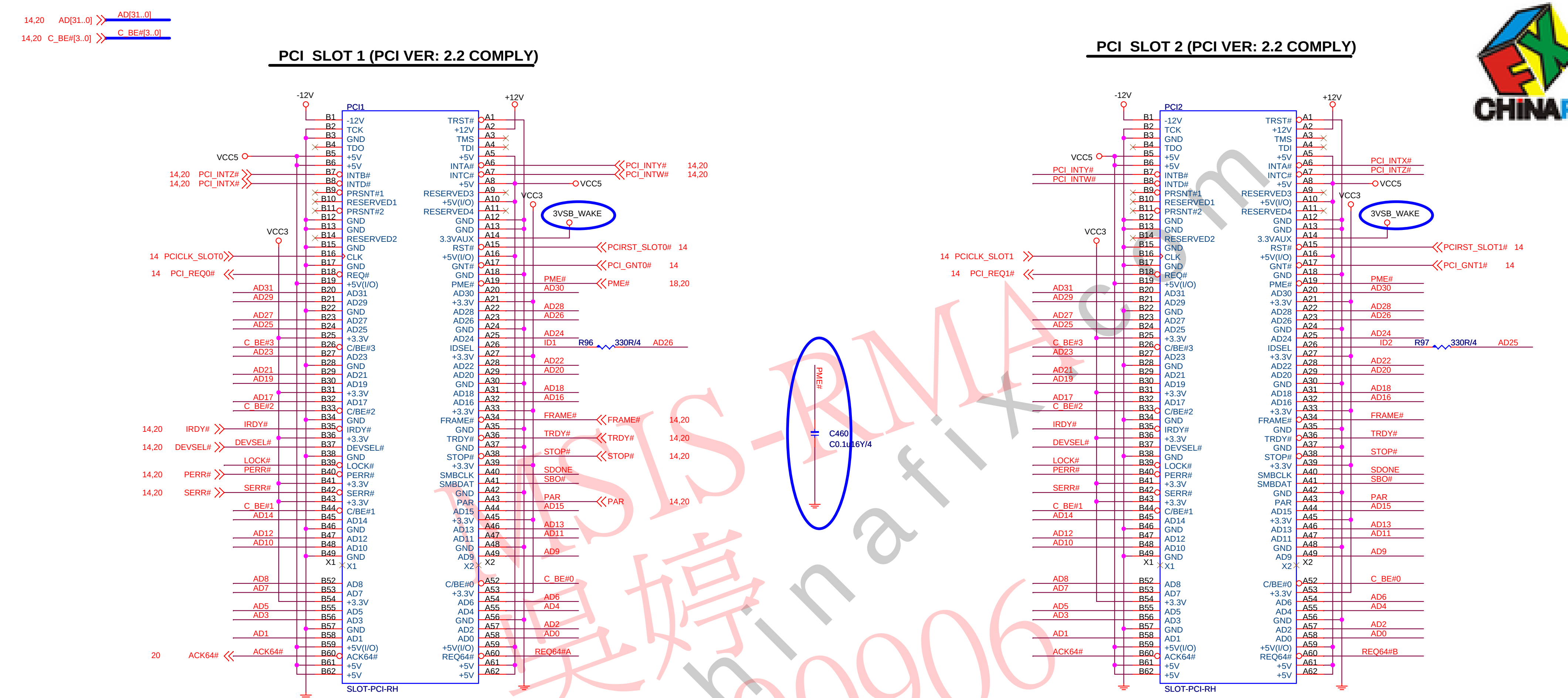
PCI SLOT 1 (PCI VER: 2.2 COMPLY)

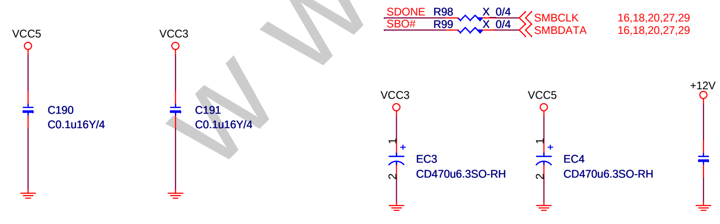
PCI SLOT 2 (PCI VER: 2.2 COMPLY)



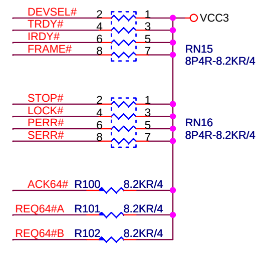
IDSEL = AD26
PCI_REQ0# PCI_GNT0#
INT Y# Z# W# X#
PCICLK_SLOT1

IDSEL = AD25
PCI_REQ1# PCI_GNT1#
INT X# Y# Z# W#
PCICLK_SLOT2

PCI SLOT DECOUPLING CAPACITORS



PCI PULL-UP / DOWN RESISTORS



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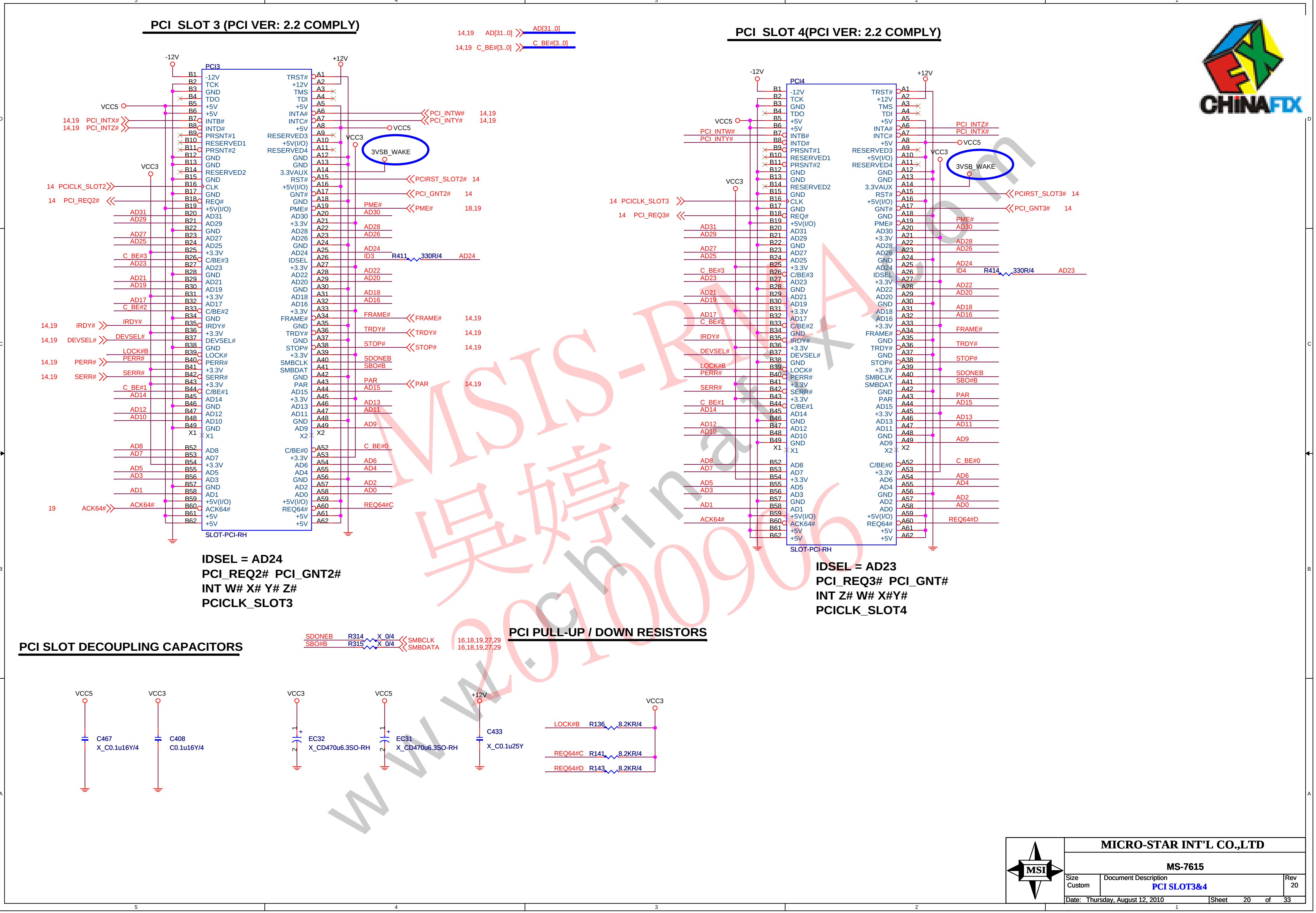

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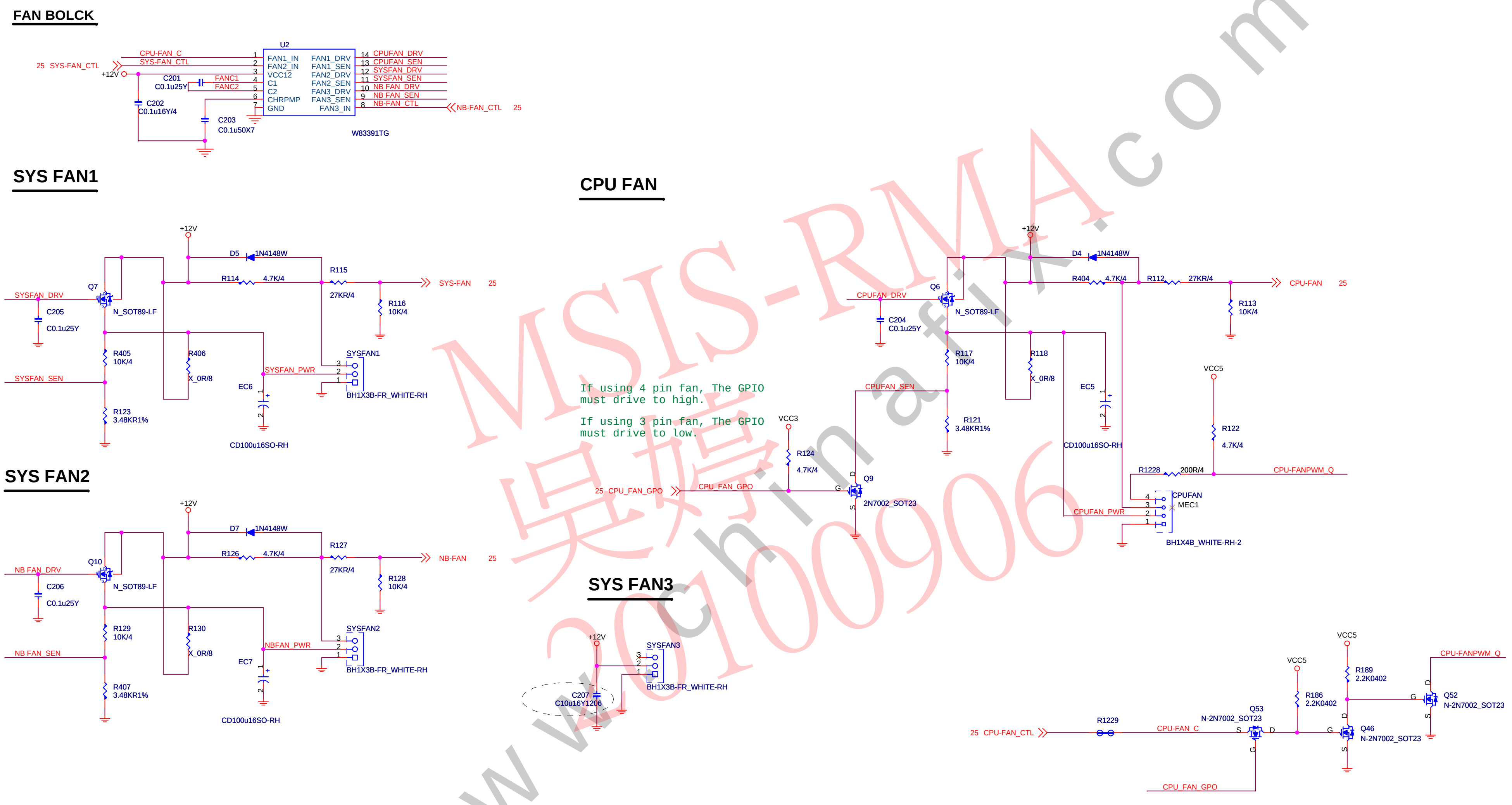

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Custom	IDE,FAN,LED	20

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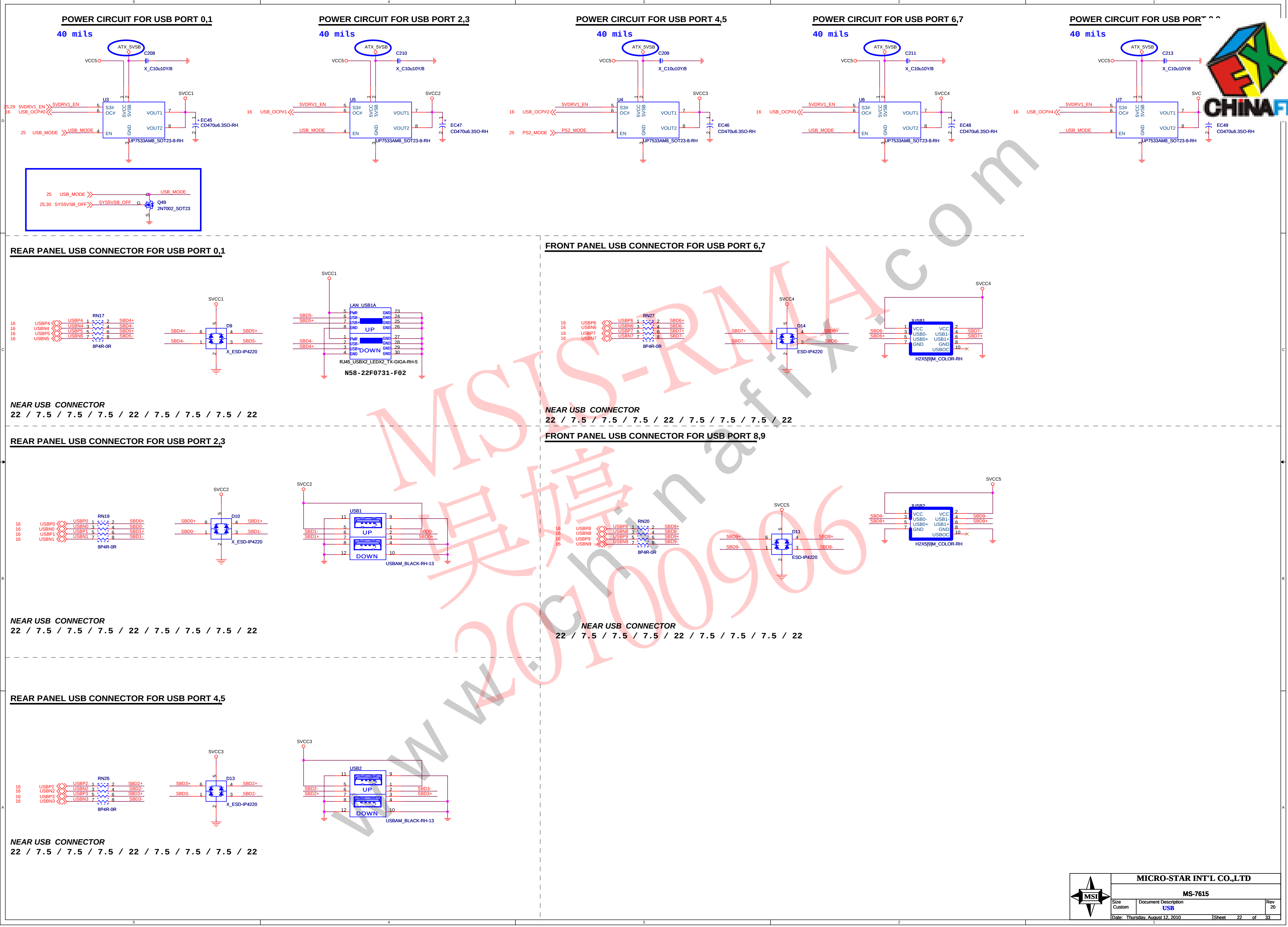
POWER CIRCUIT FOR USB PORT 0,1
40 mils
POWER CIRCUIT FOR USB PORT 2,3
40 mils
POWER CIRCUIT FOR USB PORT 4,5
40 mils
POWER CIRCUIT FOR USB PORT 6,7
40 mils
POWER CIRCUIT FOR USB PORT 8,9
40 mils
ATX_5VSB
VCC5
X_C10u10Y/8
5VDRV1_EN
USB_OCP#0
USB_OCP#1
USB_OCP#2
USB_OCP#3
USB_OCP#4
USB_MODE
PS2_MODE
UP7533AM8_SOT23-8-RH
CD470u6.3SO-RH
SVCC1
SVCC2
SVCC3
SVCC4
USB_MODE
SYS5VSB_OFF
Q49
2N7002_SOT23
REAR PANEL USB CONNECTOR FOR USB PORT 0,1
RN17
8P4R-0R
D9
X_ESD-IP4220
LAN_USB1A
RJ45_USBX2_LEDX2_TX-GIGA-RH-5
N58-22F0731-F02
NEAR USB CONNECTOR
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22
FRONT PANEL USB CONNECTOR FOR USB PORT 6,7
RN27
8P4R-0R
D14
ESD-IP4220
JUSB1
H2X5[9]M_COLOR-RH
NEAR USB CONNECTOR
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22
REAR PANEL USB CONNECTOR FOR USB PORT 2,3
RN19
8P4R-0R
D10
X_ESD-IP4220
USB1
USBAM_BLACK-RH-13
NEAR USB CONNECTOR
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22
FRONT PANEL USB CONNECTOR FOR USB PORT 8,9
SVCC5
RN20
8P4R-0R
D11
ESD-IP4220
JUSB2
H2X5[9]M_COLOR-RH
NEAR USB CONNECTOR
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22
REAR PANEL USB CONNECTOR FOR USB PORT 4,5
RN26
8P4R-0R
D13
X_ESD-IP4220
USB2
USBAM_BLACK-RH-13
NEAR USB CONNECTOR
22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22
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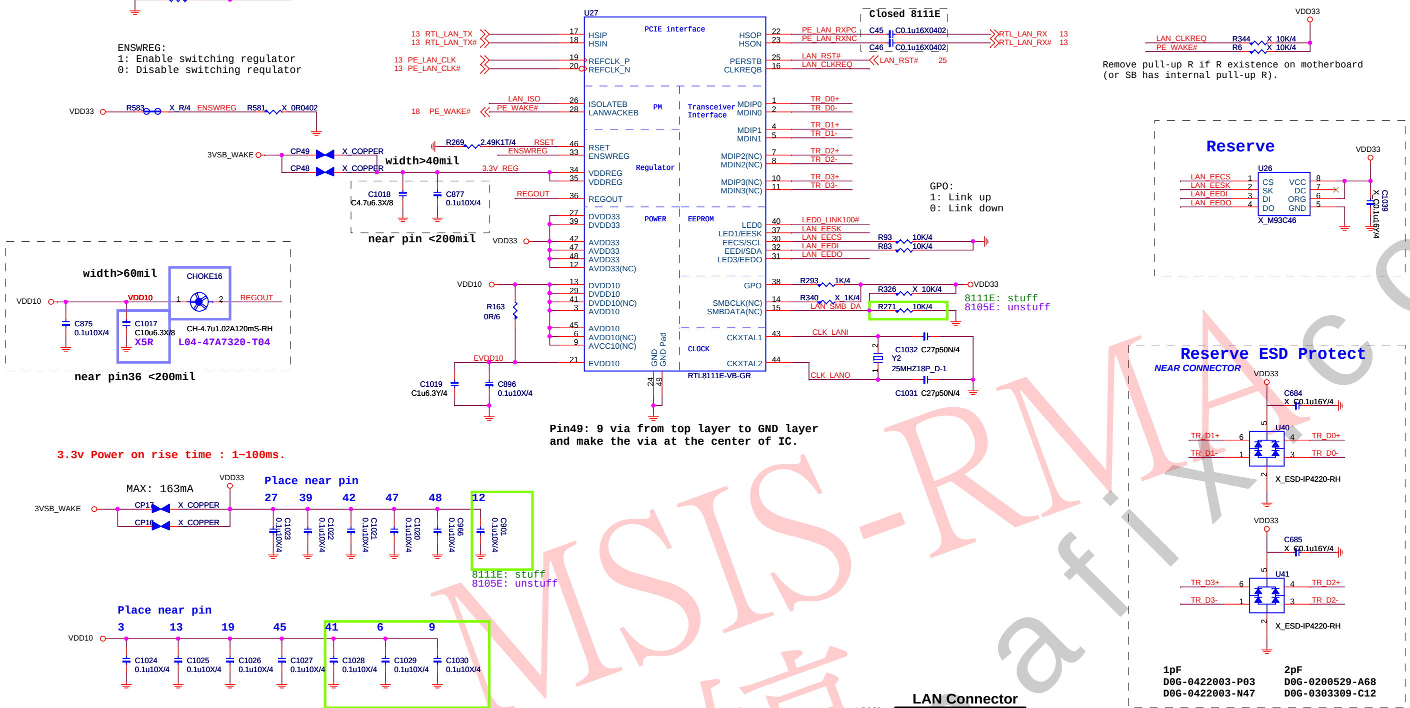
RTL8111E Giga LAN

RTL8105E 10/100M LAN

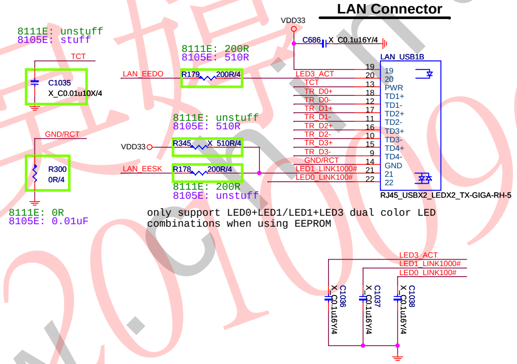


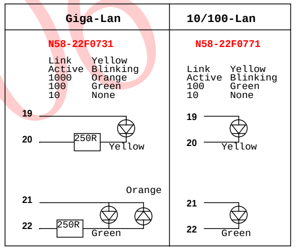
8105E POWER Consumption

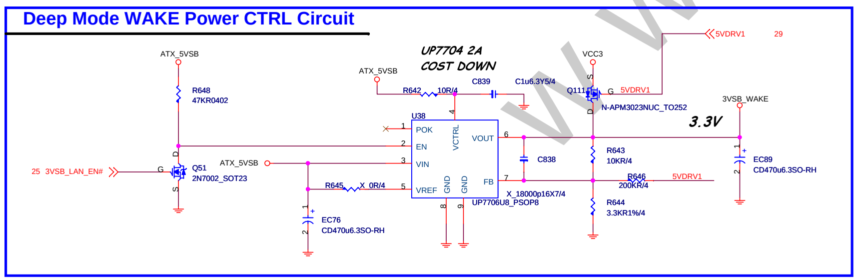
	3.3V	mW
10 M Idle/TxRx	14/75	46/248
100 M Idle/TxRx	43/66	142/218
S0 ALDPS	3.2	11

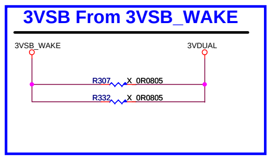
8111E POWER Consumption

	3.3V	mW
10 M Idle/TxRx	12/66	40/218
100 M Idle/TxRx	31/44	102/145
Giga Idle/TxRx	135/163	452/538
ALDPS	4	13









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Size	Document Description	Rev
Custom	LAN RT8111E	20

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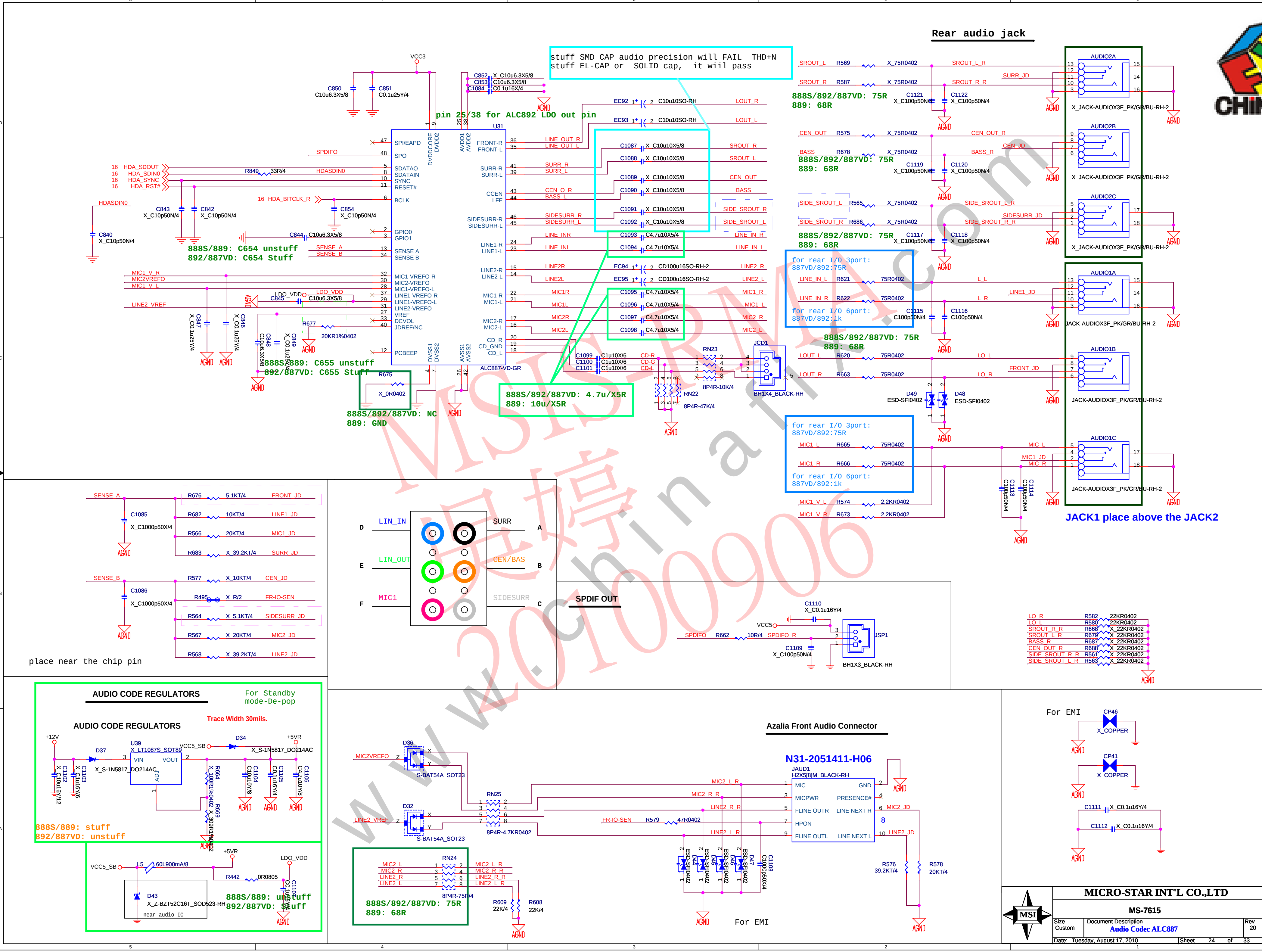

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Custom	Audio Codec ALC887	20

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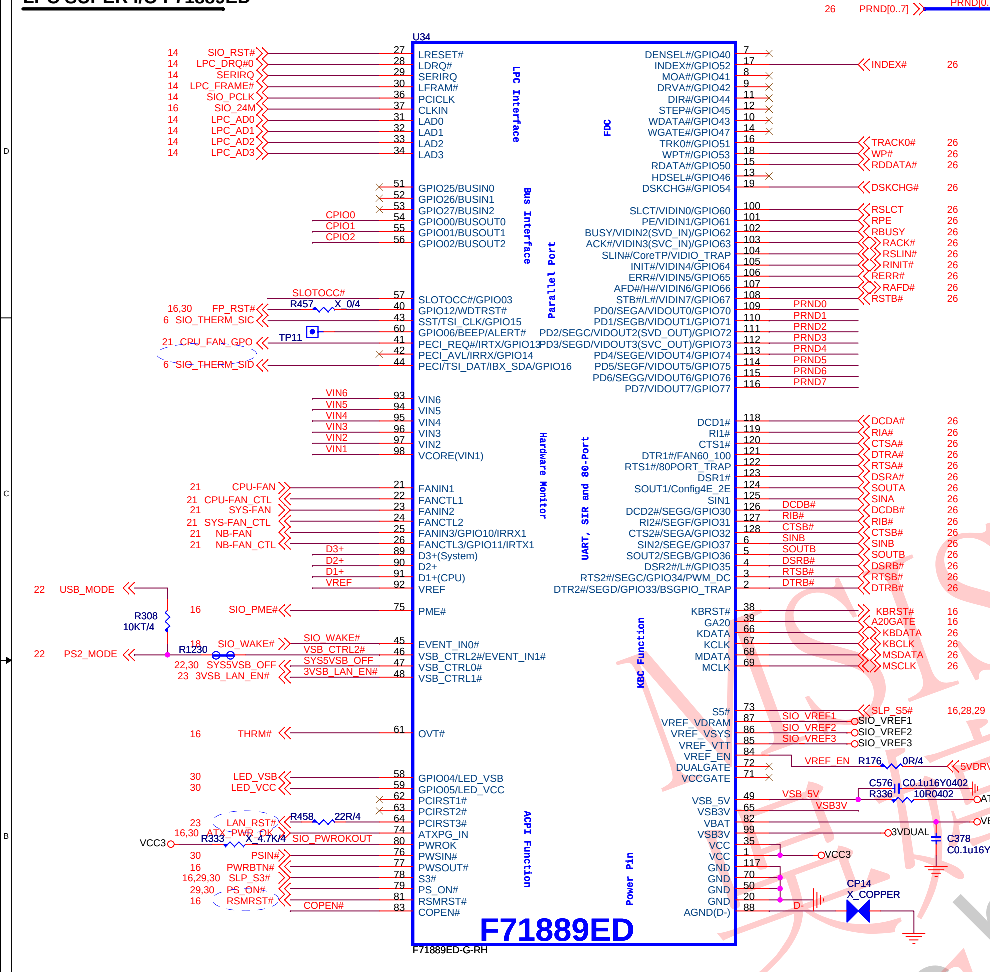
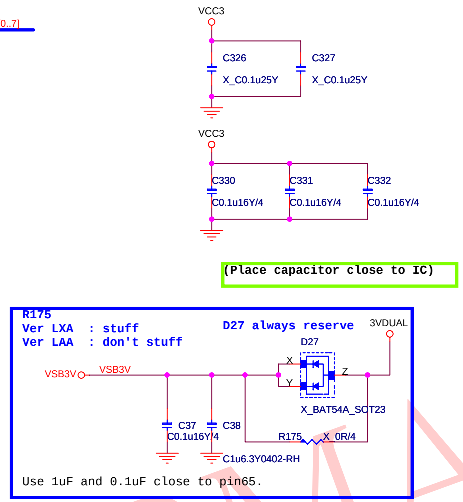
LPC SUPER I/O F71889ED



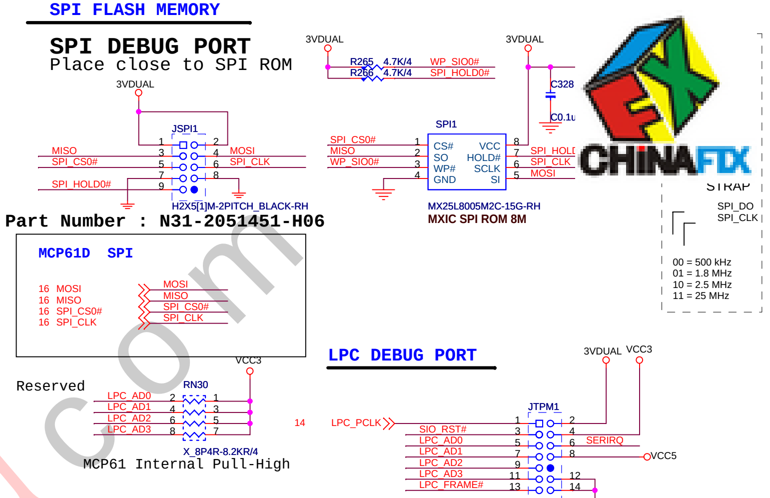


SPI FLASH MEMORY

SPI DEBUG PORT

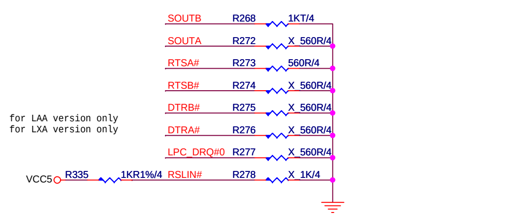
Place close to SPI ROM

Part Number : N31-2051451-H06

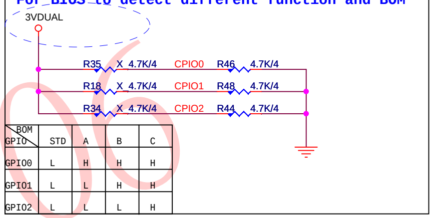


	Don't STUFF	STUFF
RTS2#	PWM FAN	LINEAR FAN
RTSA#	80Port enable	80Port disable
SOUTA	4E	2E
DTRA#	FAN START DUTY 60%	FAN START DUTY 100%
DTR2 SOUT2	PIN51~56 as GPIO PIN51~56 as GPIO	PIN51~56 as BUS I/F PIN51~56 as BUS I/F

for LAA version only
for LXA version only



For BIOS to detect different function and BOM



BOM / GPIO	STD	A	B	C
GPIO0	L	H	H	H
GPIO1	L	L	H	H
GPIO2	L	L	L	H

	Don't STUFF	STUFF
RTSB#	PWM FAN	LINEAR FAN
SOUTA	4E	2E
DTRB#	Pin 51-56 are GPIO pins	Pin 51-56 are Bus Interface functions
DTRA#	FAN START DUTY 60%	FAN START DUTY 100%
RTSA#	ENABLE 80 PORT	DISABLE 80 PORT
RSLIN#	PULL 1K FOR PIN100~116 AS LTP INTERFACES	

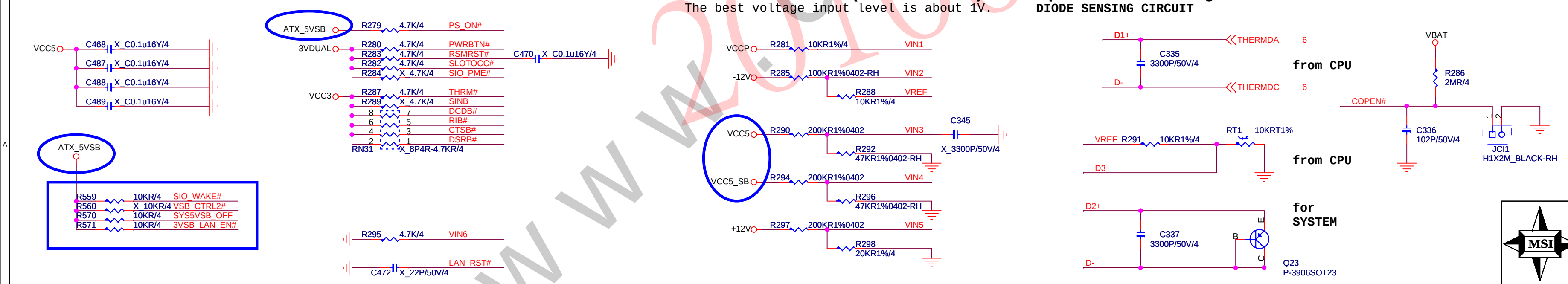
VOLTAGE SENSING(H/W Monitor).

The best voltage input level is about 1V.

Temperature Sensing

DIODE SENSING CIRCUIT

CASE OPEN CIRCUIT



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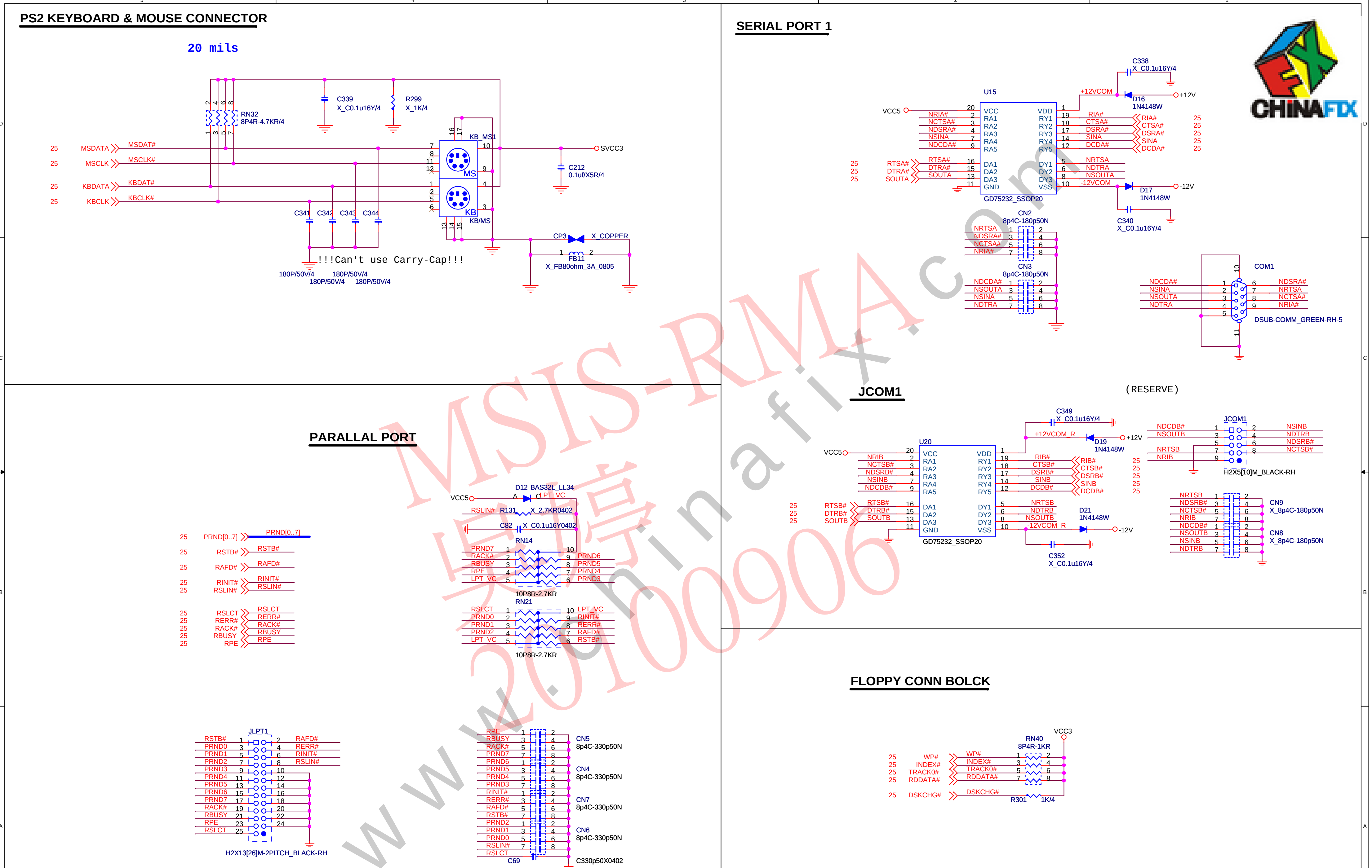

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Custom	KB/MS,LPT,COM,Floppy CONN	20

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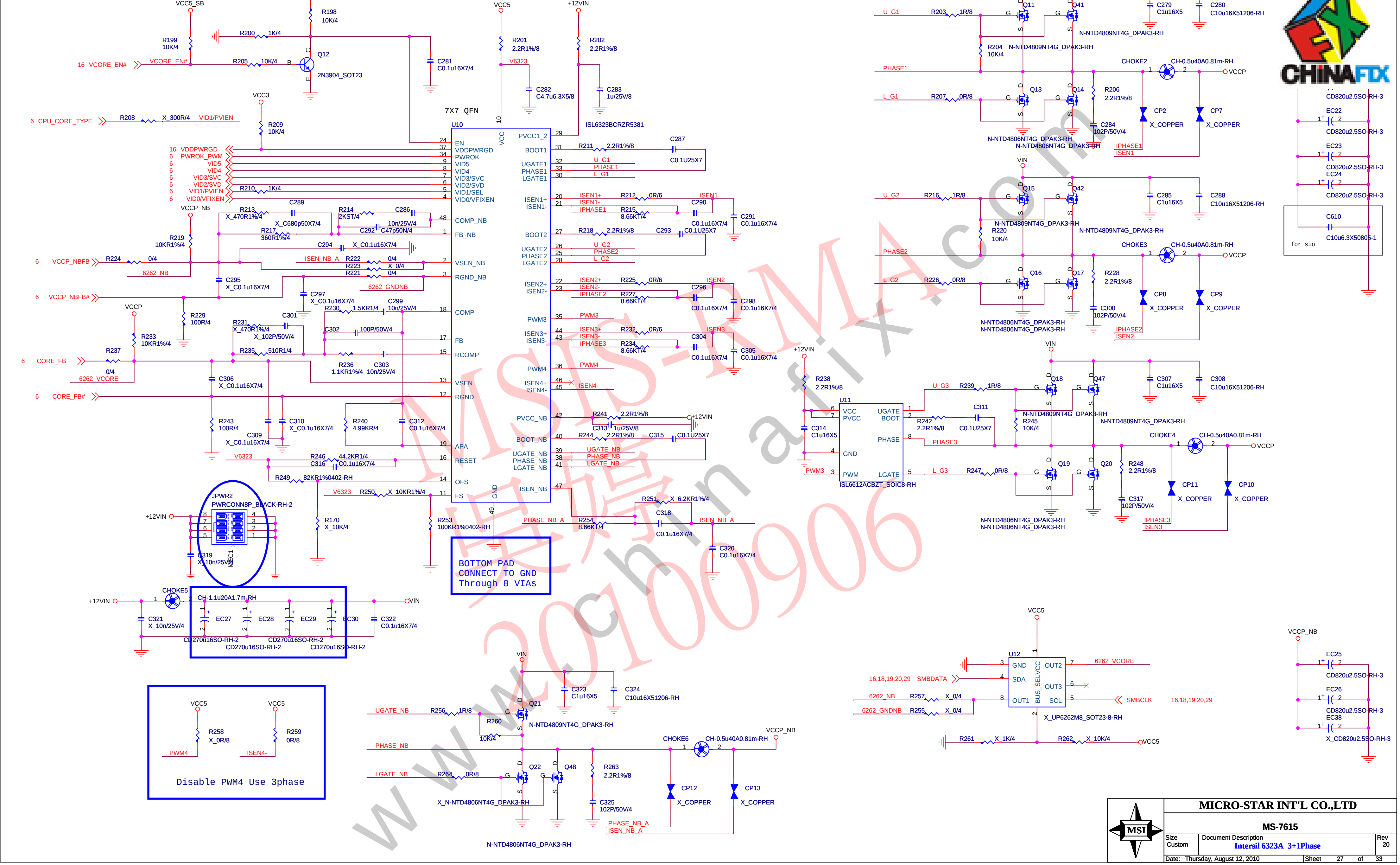
ISL6323CR CKT for Hybride



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Size	Document Description	Rev
Custom	Intersil 6323A 3+1Phase	20

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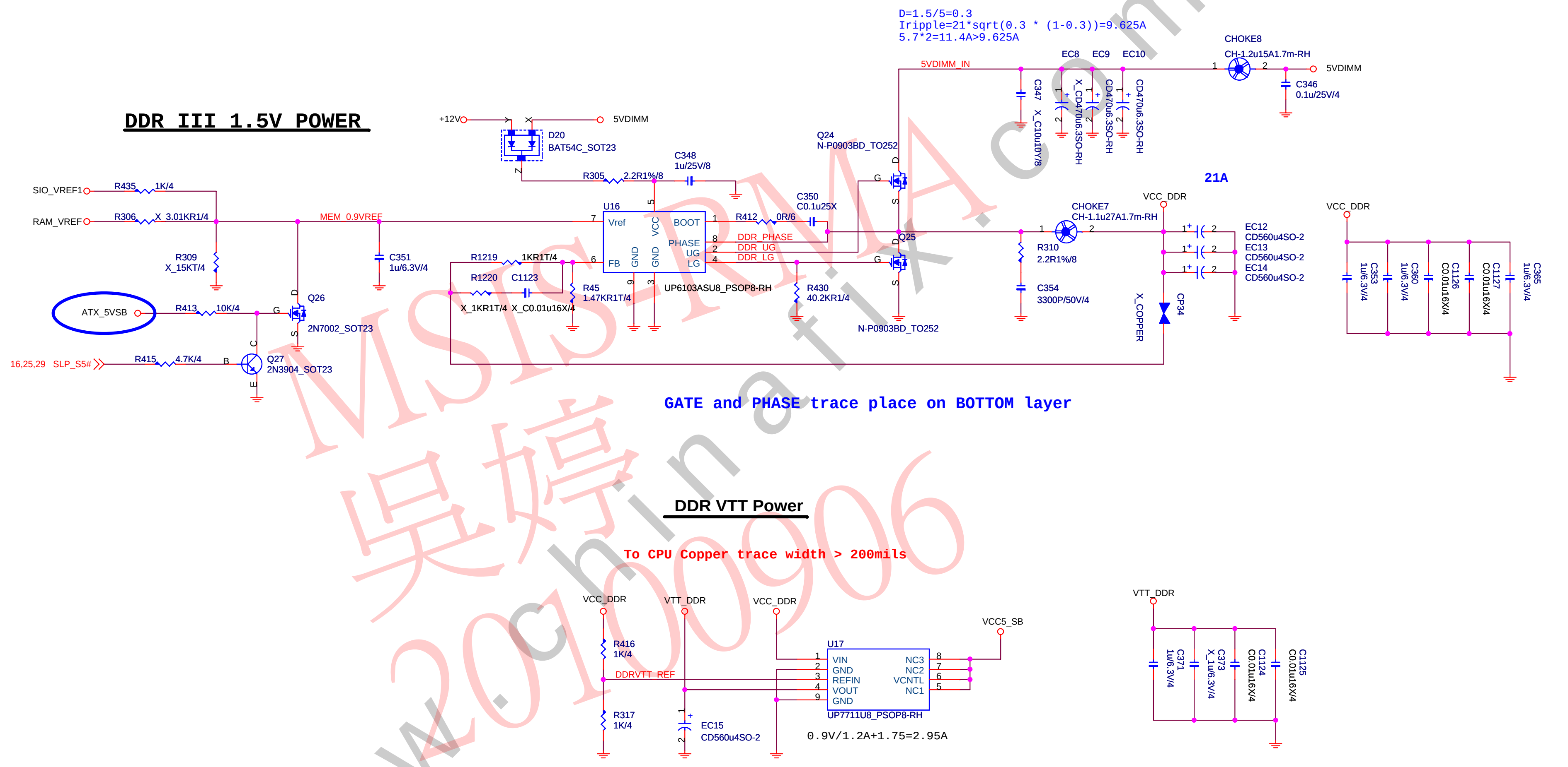

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Custom	MEMORY POWER	20

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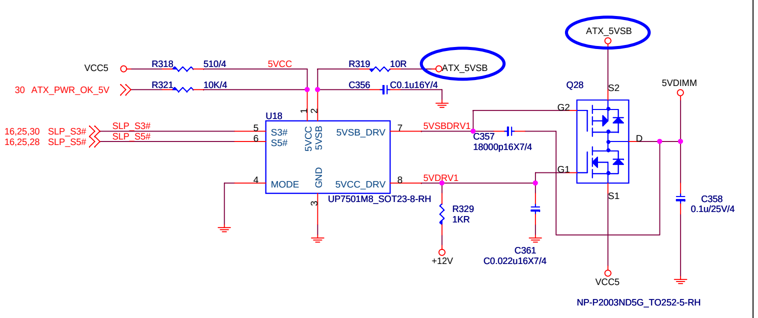
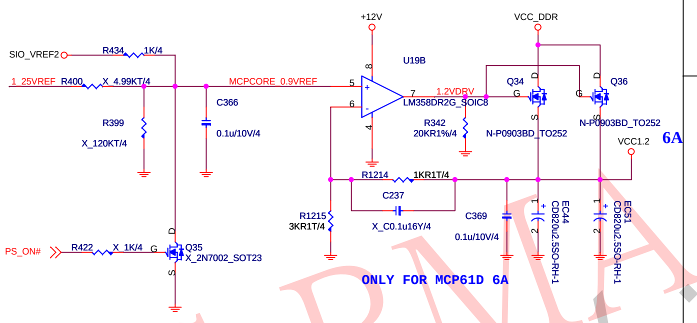
5VDIMM FOR DDR

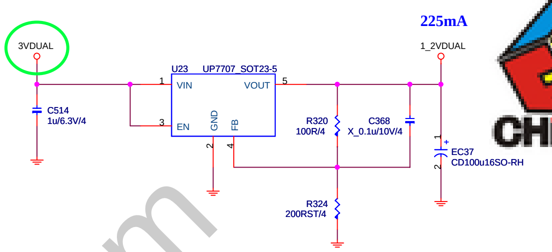


FOR GPIO CONTROL S5 POWER OR SHUTDOWN

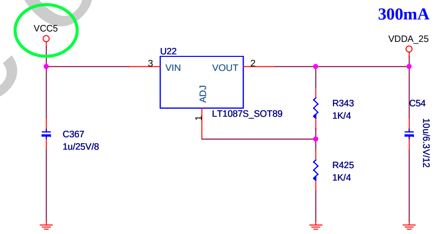
S5	S3	MODE	5VDUAL	REMARK
1	1	X	VCC5	S0/S1/S2
1	0	X	VCC5_SB	S3
0	X	1	VCC5_SB	S4/S5
0	X	0	SHUTDOWM	S4/S5

MCP 61 CORE 1.2V



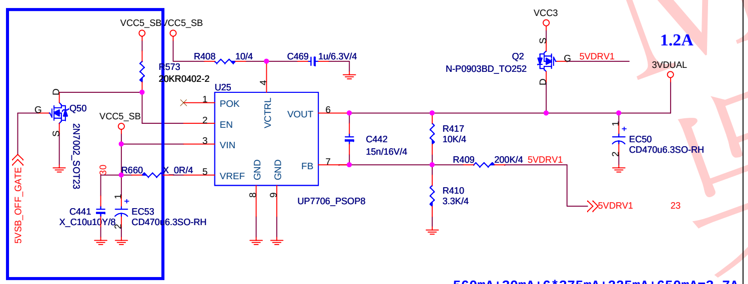


VDDA_25



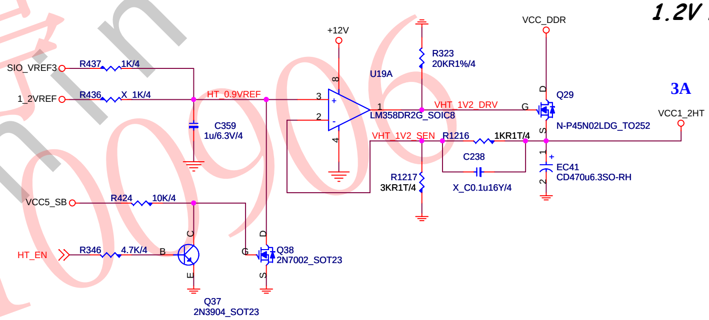
ONLY FOR CPU

3VDUAL CONTROLLER

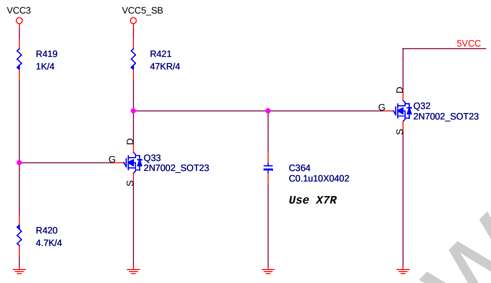


560mA+30mA+6*375mA+225mA+650mA=3.7A

1.2V HT

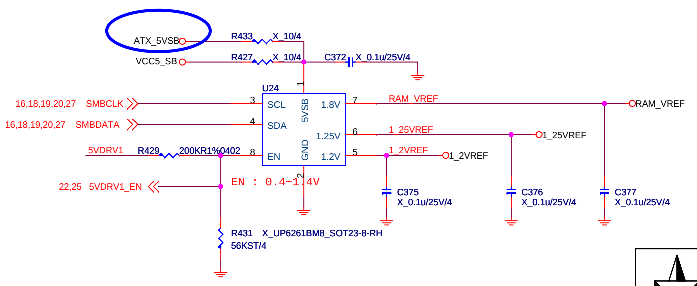


Patch COOLERMASTER 700W POWER Sequence-default stuff



For power 700W solution (only for uP7501+uP7506)
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 power sequence fail.

reference Voltage



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MS-7615		
Size C	Document Description ACPI BY UPI	Rev 20
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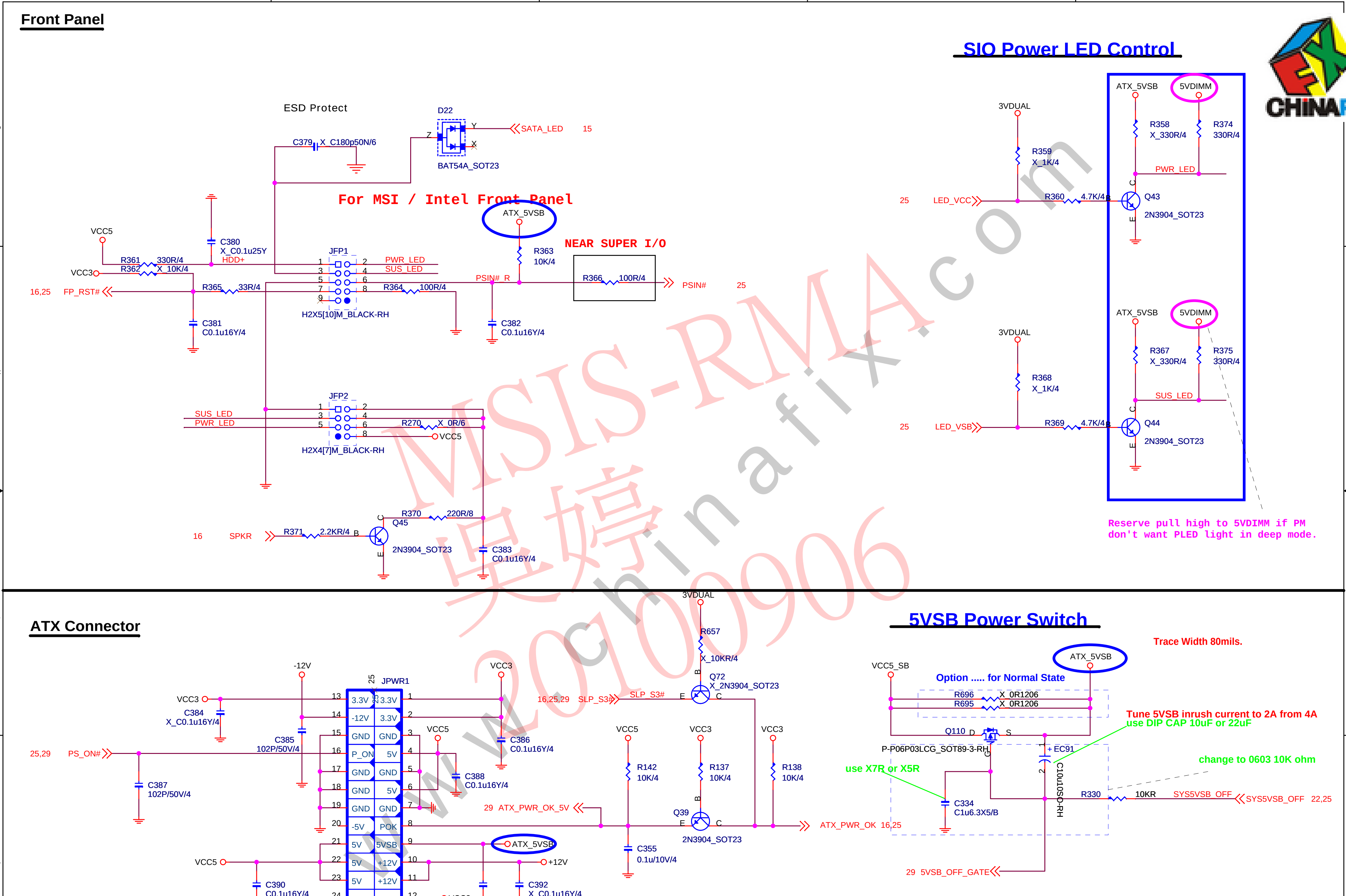

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Size	Document Description	Rev
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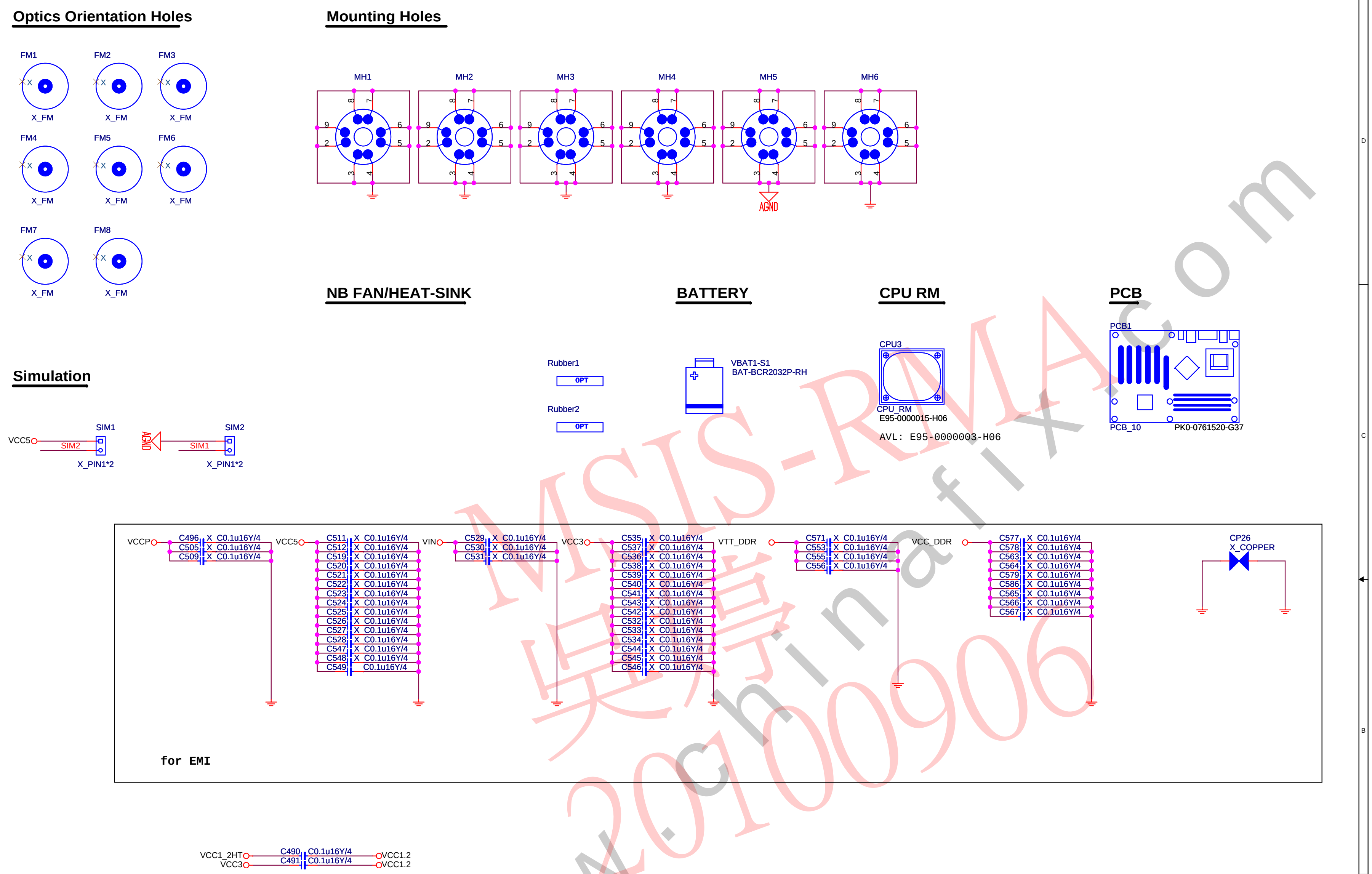

Model option table

Model type	Function	BOM Config	ERP BOM No.	OPTION
MS-7615	MCP61P+10/100LAN	CFG-761511STD	**601-7615-**	**STD**
	MCP61P+10/100/1000LAN	CFG-761511A	**601-7615-**	**A**

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Custom	Option Parts	20

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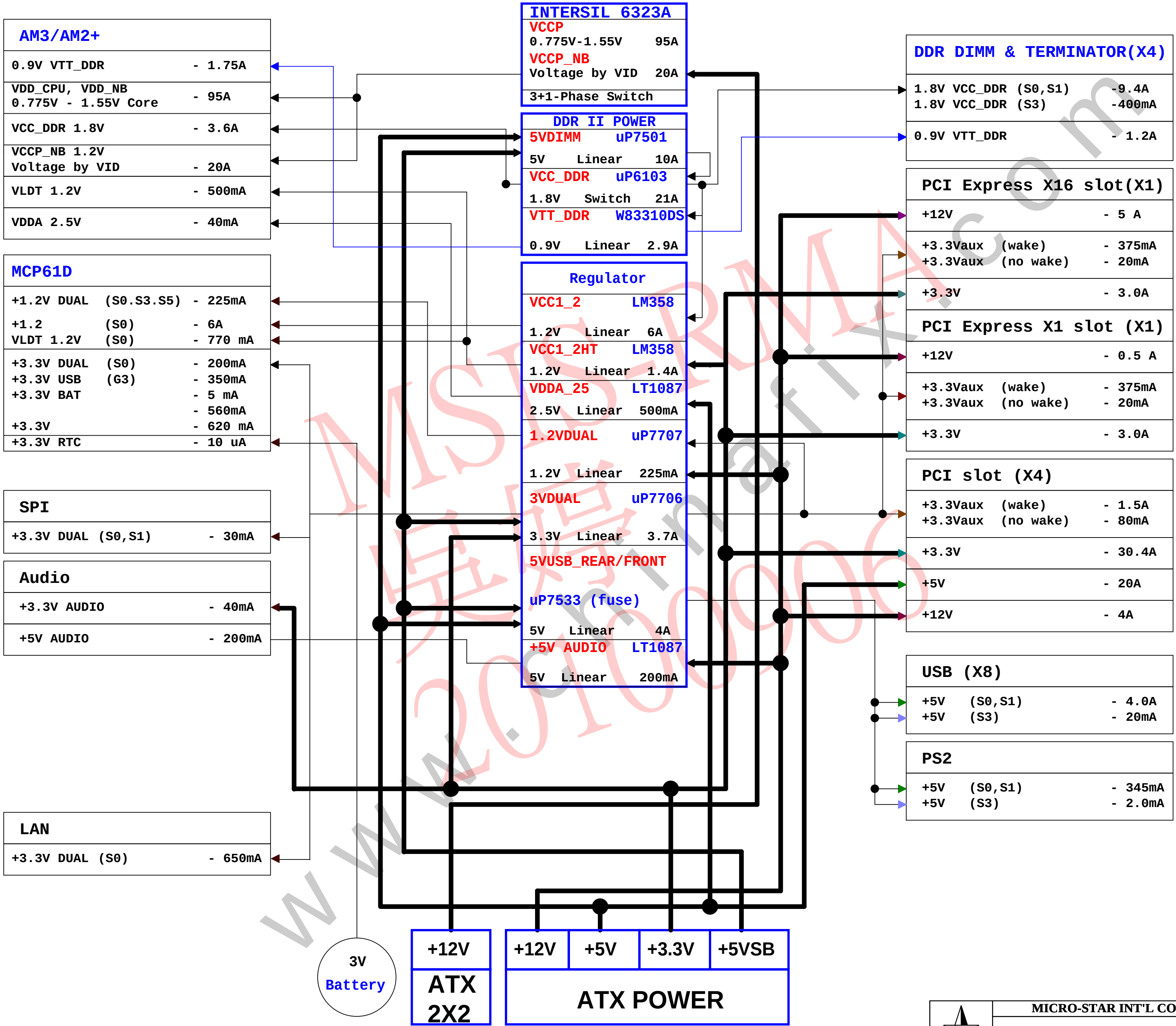

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Size: Custom	Document Description: Power Delivery	Rev: 20
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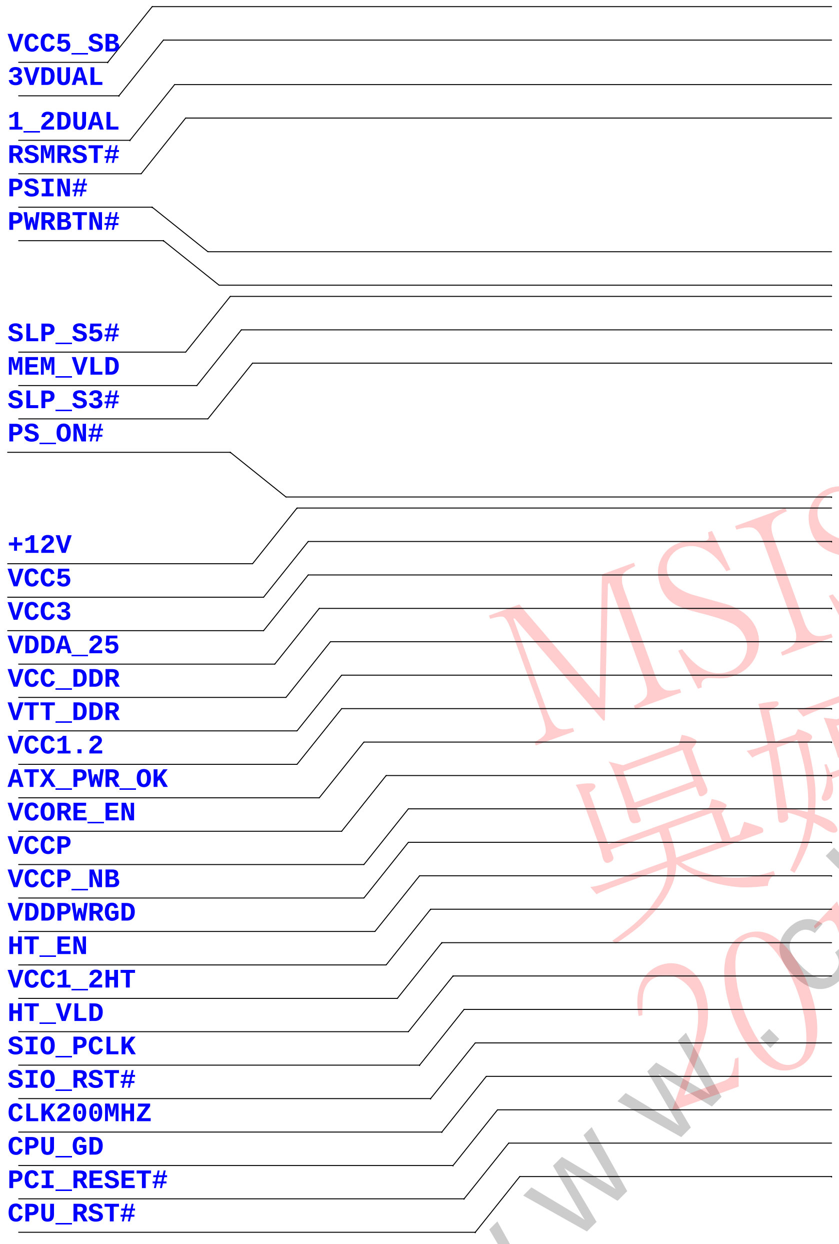
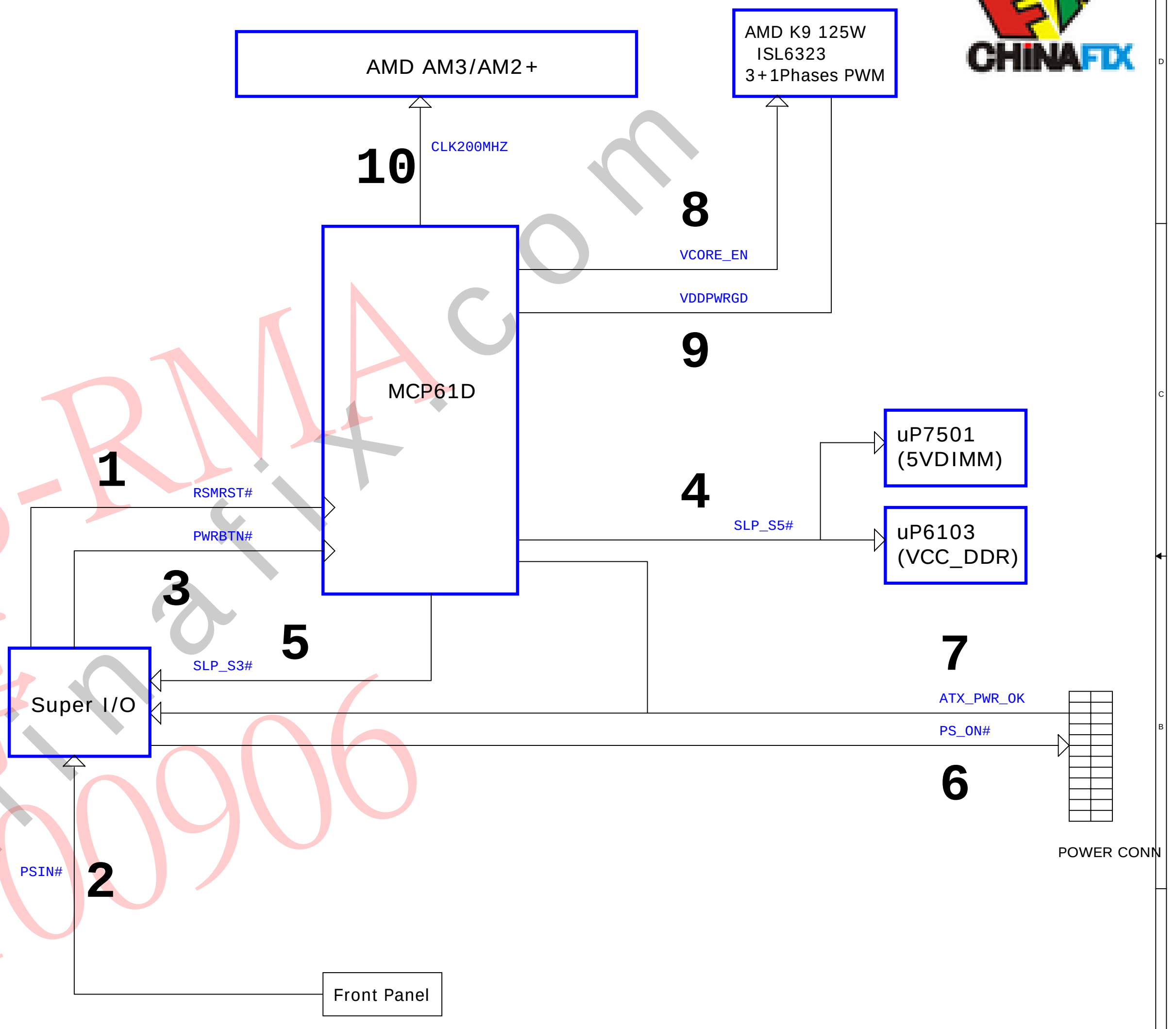
power sequence



PWROK MAP



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Size	Document Description	Rev
Custom	POWER OK MAP	20

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