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RS690M02 uATX (Version: Fab A)

CPU: AMD Athlon64 / Athlon64 FX / Athlon64 X2 / Sempron seriers(AM2)

System Chipset:

ATI RS690 ... North Bridge
ATI SB600 ... South Bridge

Main Memory:

Dual Channel / DDR-II * 2 (Max 4GB)

On Board Device:

Clock Generator ... ICS 951464(TSSOP56)
Super I/O ... Fintek F71882
PCI I/F LAN ... RTL8101E(10/100) / 81111C(Giga)
Azalia Codec ... ALC662
BIOS ... SPI ROM / 4M

Expansion Slots:

PCI EXPRESS 16X SLOT *1
PCI EXPRESS 1X SLOT * 1
PCI SLOT * 2

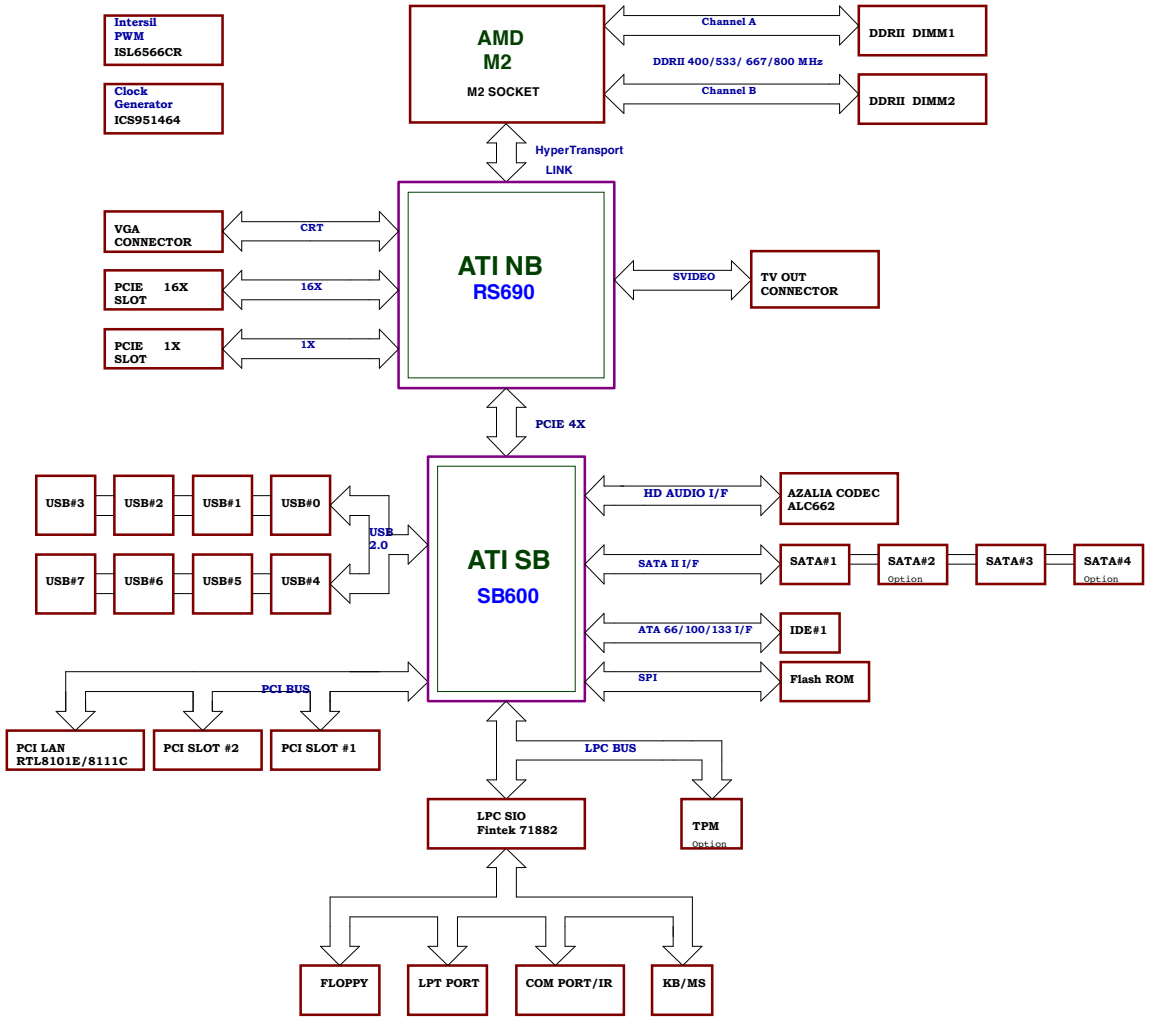
Intersil PWM:

Controller ... ISL6566CR(3Phase)

Version	Function	SKU	BOM
FAB A	AM2/RS690/SB600/F71882/ALC662/RTL8101E	6LRS2H(CLONE)	

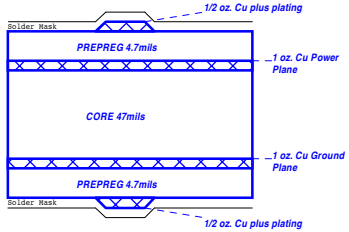
FOXCONN
FOXCONN PCEG

Title: Cover Sheet
Size: C | Document Number: RS690M02 | Rev: A
Date: Tuesday, September 11, 2007 | Sheet 1 of 36



Board Stack-up

(2116 Prepreg Considerations)



Single End 60ohm Top/Bottom : 5mils
IEEE1394 - 110ohm Top : 5/12/5
PCIE, LAN, SATA - 100ohm Top : 7/7/5
USB2.0 - 90ohm Top : 7/8/7

FOXCONN

FOXCONN PCEG

Title	Block Diagram	
Size C	Document Number RS690M02	Rev A
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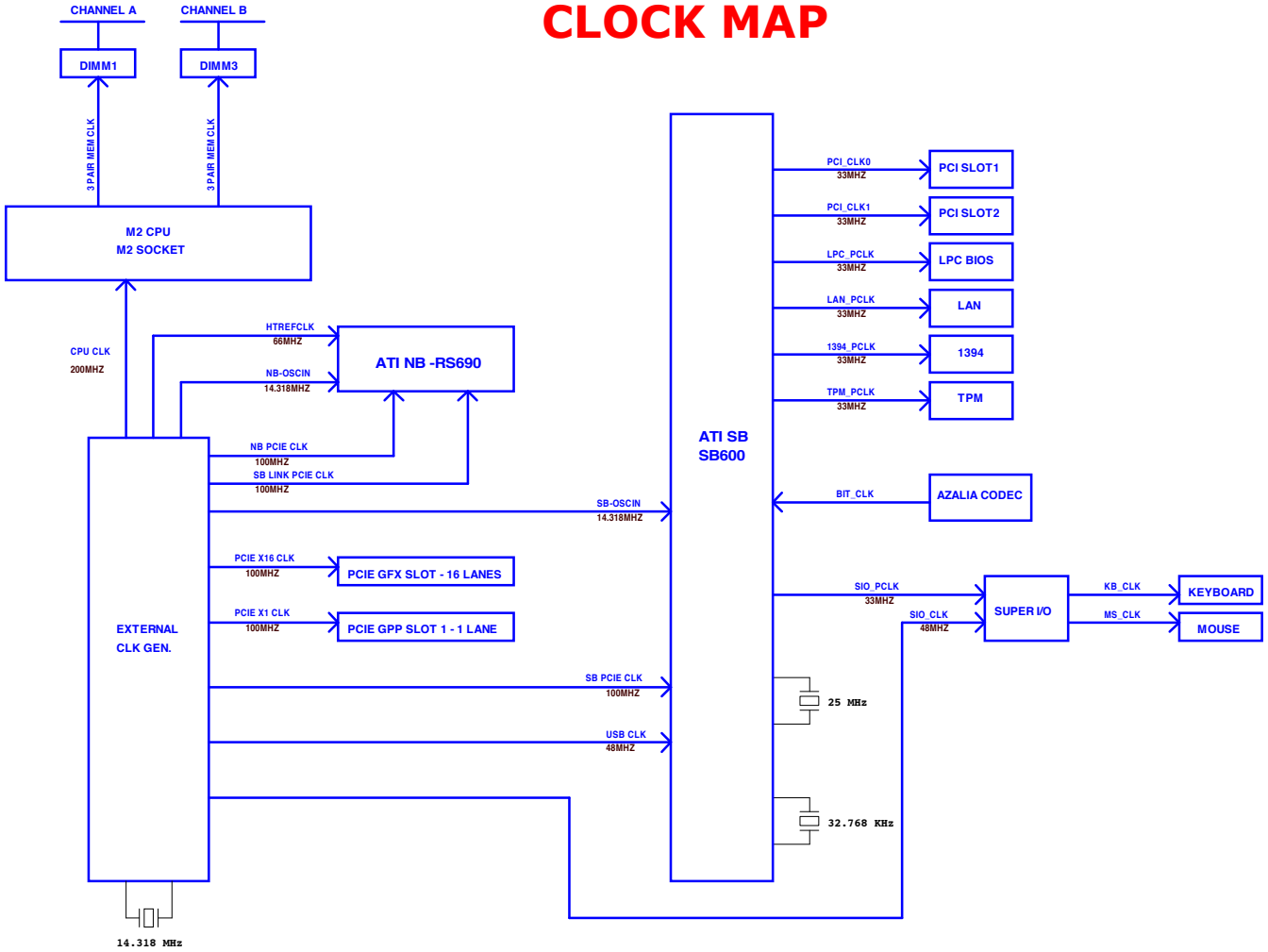
CLOCK MAP

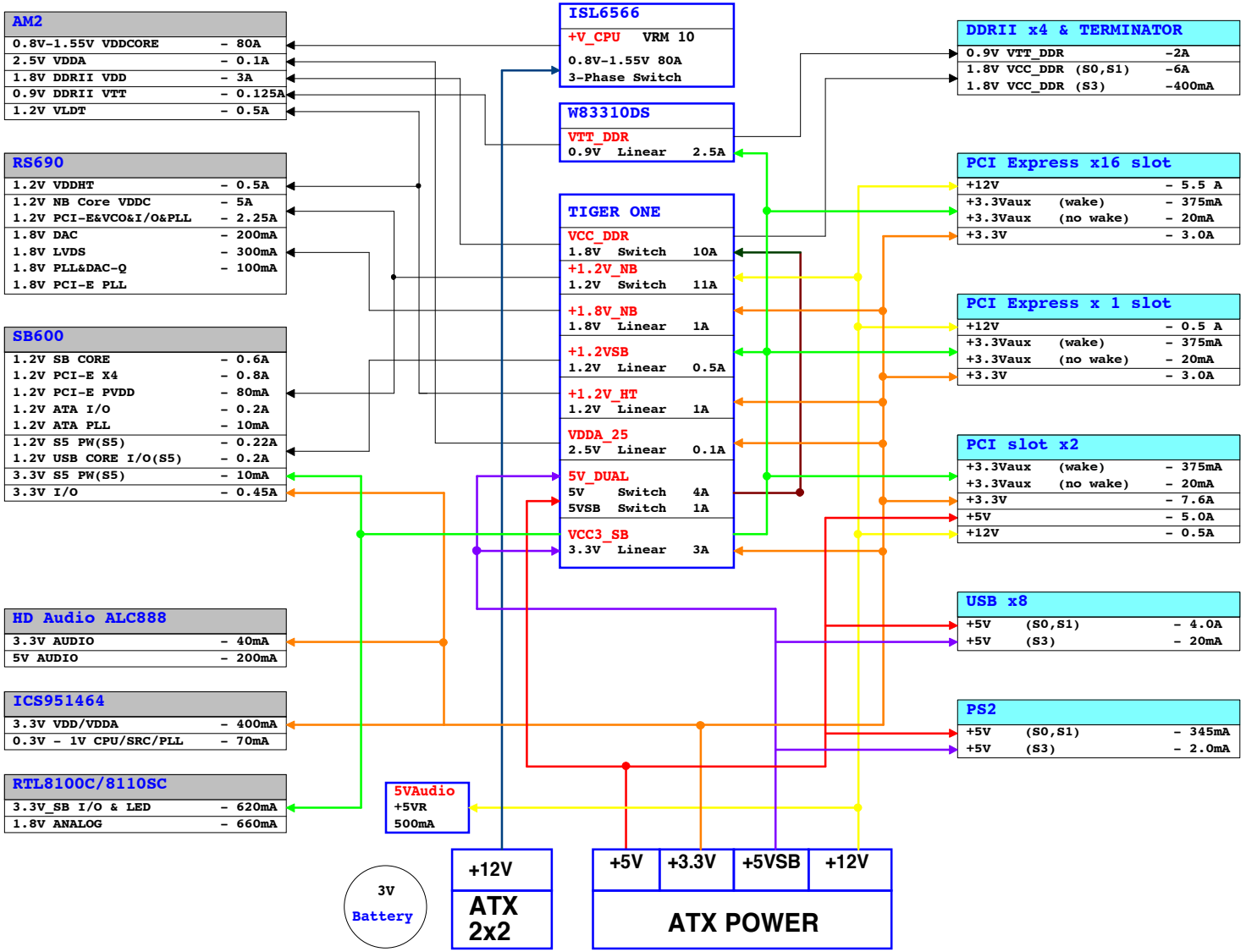


FOXCONN PCEG

Title: Clock Distribution

Size: C | Document Number: RS690M02 | Rev: 1.0

Date: Tuesday, September 11, 2007 | Sheet 3 of 36



FOXCONN PCEG

Title: Power Delivery

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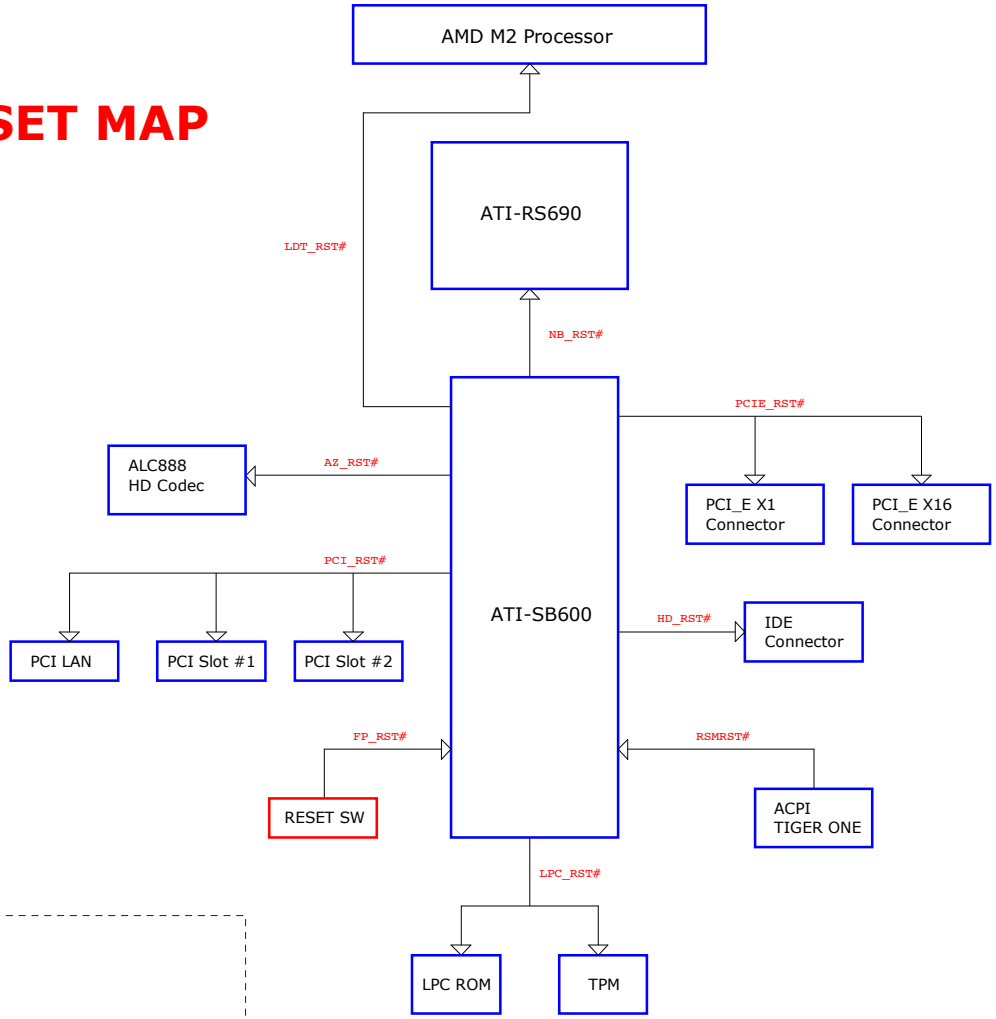
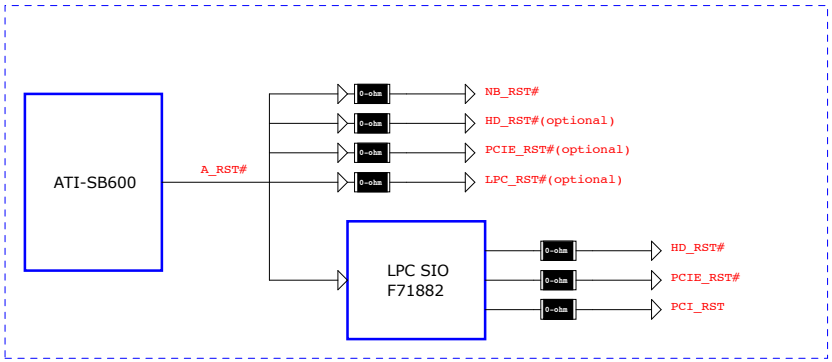
RESET MAP



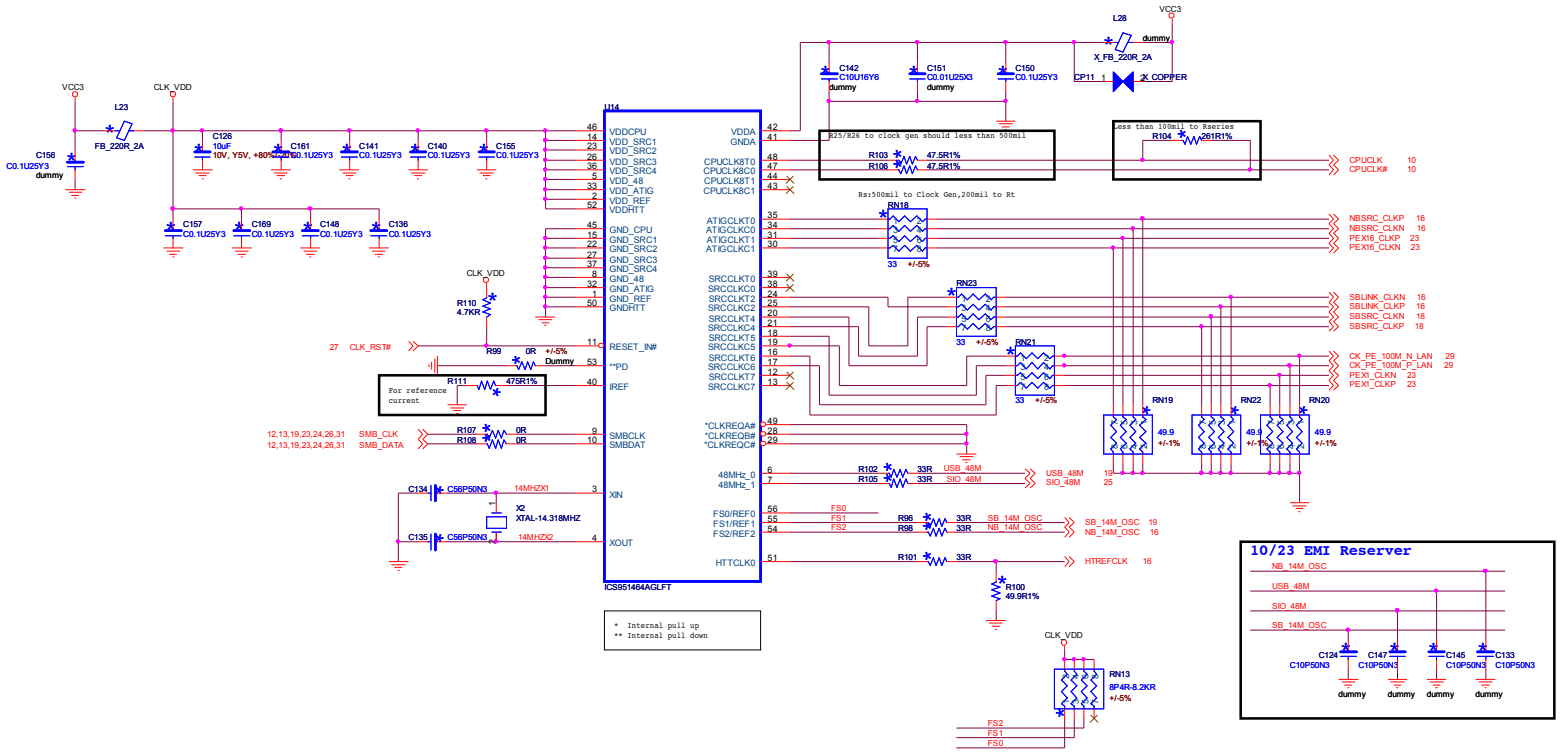


FOXCONN PCEG

Title: Reset Map

Size: C | Document Number: RS690M02 | Rev: 1.0

Date: Tuesday, September 11, 2007 | Sheet 5 of 36



EXT CLK FREQUENCY SELECT TABLE(MHZ)

FS2	FS1	FS0	CPU	HTT	SRC	ATIG	USB
0	0	0	Hi-Z	Hi-Z	100.00	100.00	48.00
0	0	1	X/2	X/3	100.00	100.00	48.00
0	1	0	230.00	76.67	100.00	100.00	48.00
0	1	1	240.00	80.00	100.00	100.00	48.00
1	0	0	100.00	66.66	100.00	100.00	48.00
1	0	1	133.33	66.66	100.00	100.00	48.00
1	1	0	166.67	66.66	100.00	100.00	48.00
1	1	1	200.00	66.66	100.00	100.00	48.00

FOXCONN

FOXCONN PCEG

Title: Clock Generator

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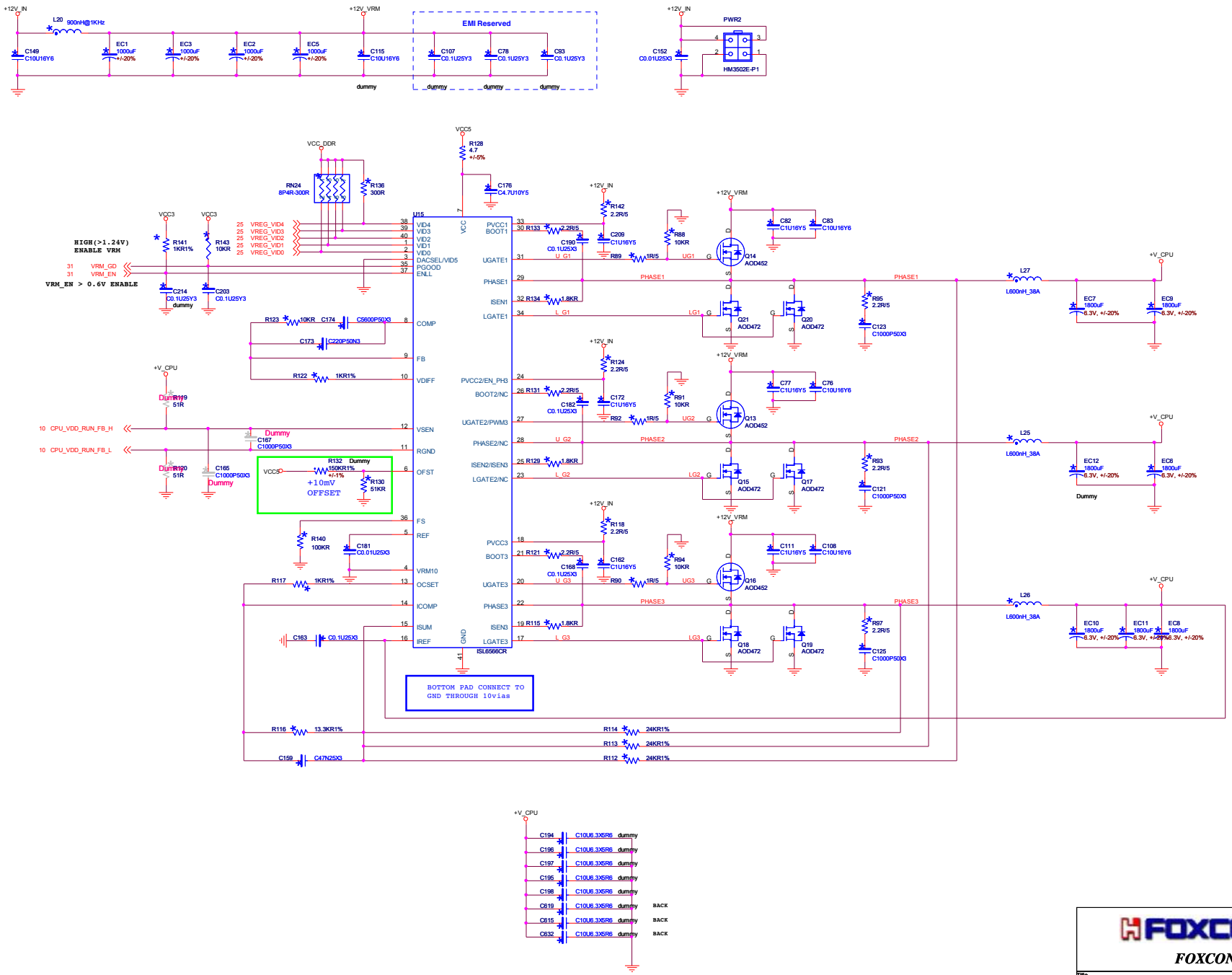

FOXCONN PCEG

Title	VRM-ISL6566CR	
Size C	Document Number RS690M02	Rev A
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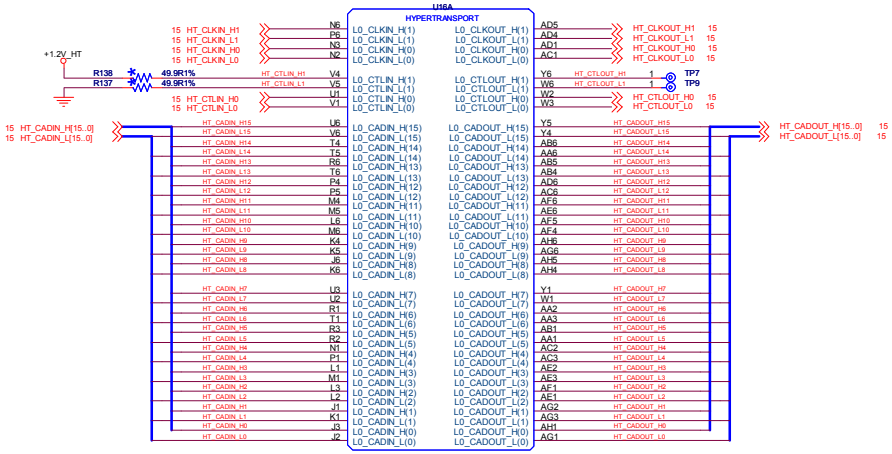
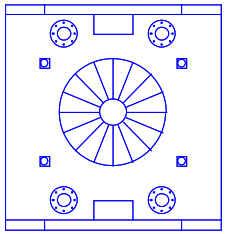
Processor Hyper Transport Interface

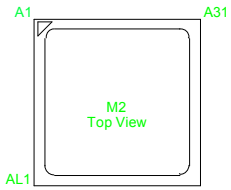


CPUHS
HEATSINK_SOCKET_940_M2

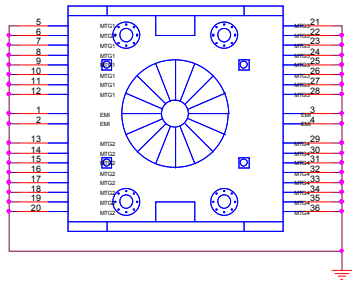


1.Layout Notice:
Add stitching caps if crossing plane split

2.HyperTransport Net Naming Convention:
HT_"link driver"_"link receiver"_"function"_"polarity"_"number"



U16J



FOXCONN PCEG

Title	M2-HT	
Size C	Document Number RS690M02	Rev A
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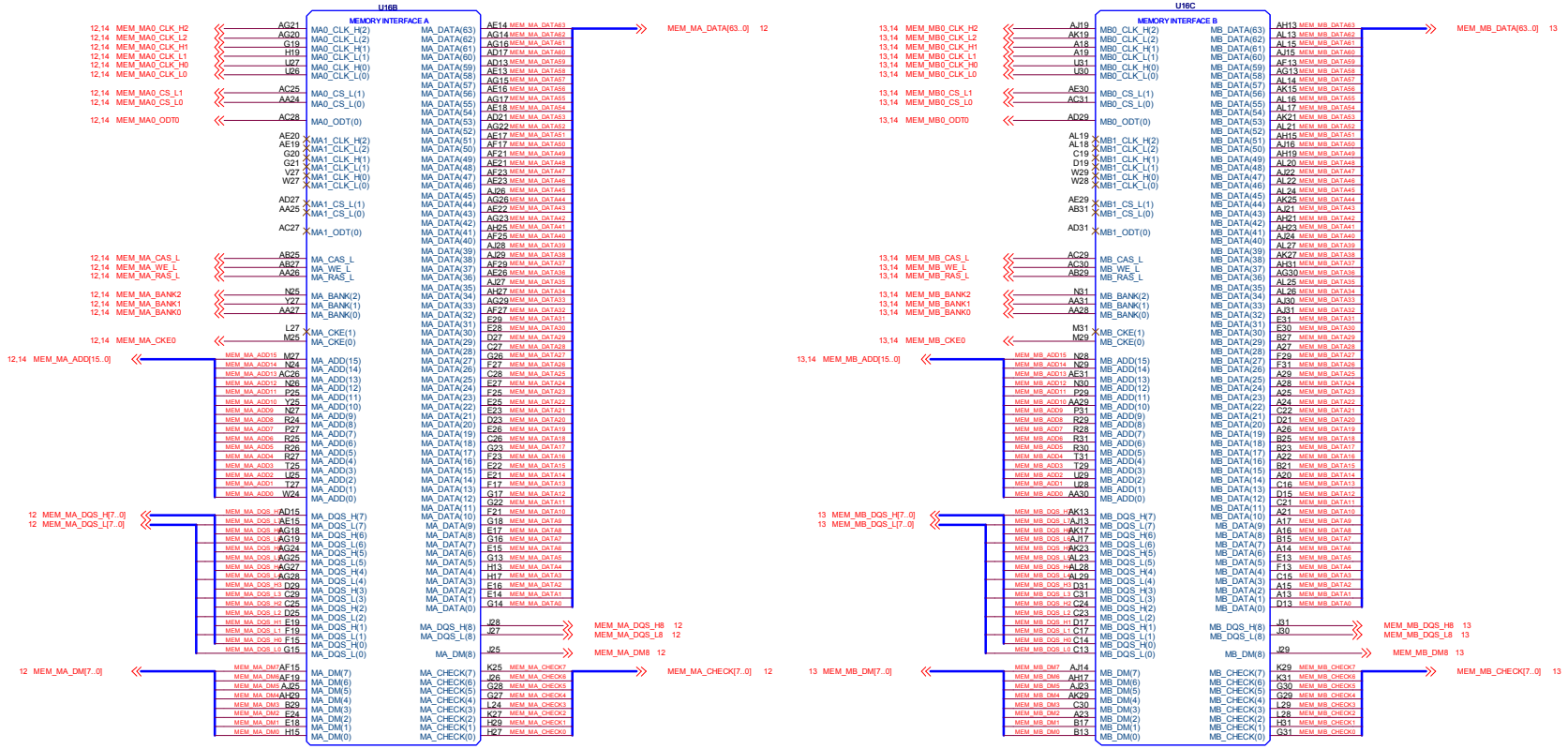
Processor DDRII Memory Interface



FOXCONN PCEG

Title	M2-DDRII	
Size C	Document Number RS690M02	Rev A
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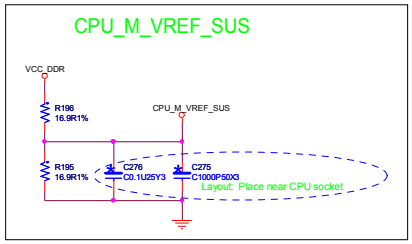
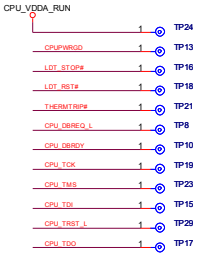
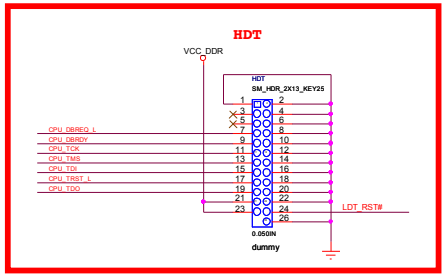
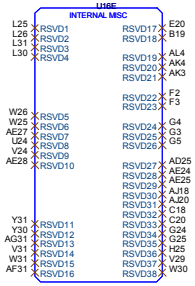
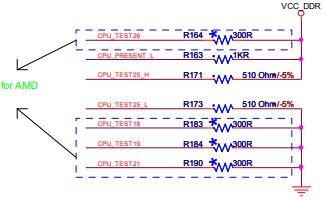
Processor Control & Debug

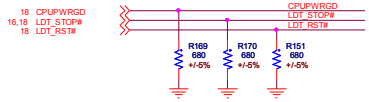


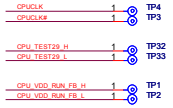


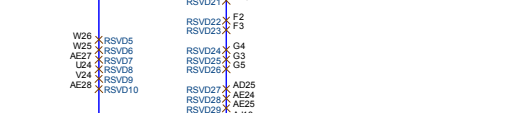


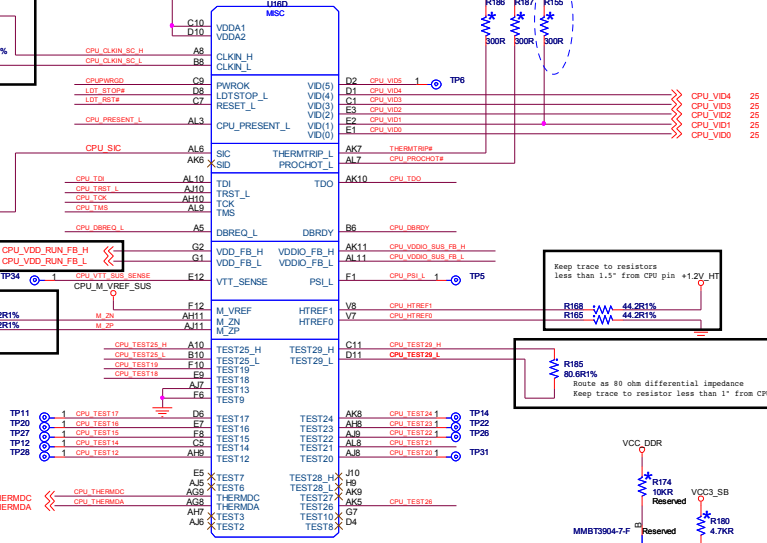








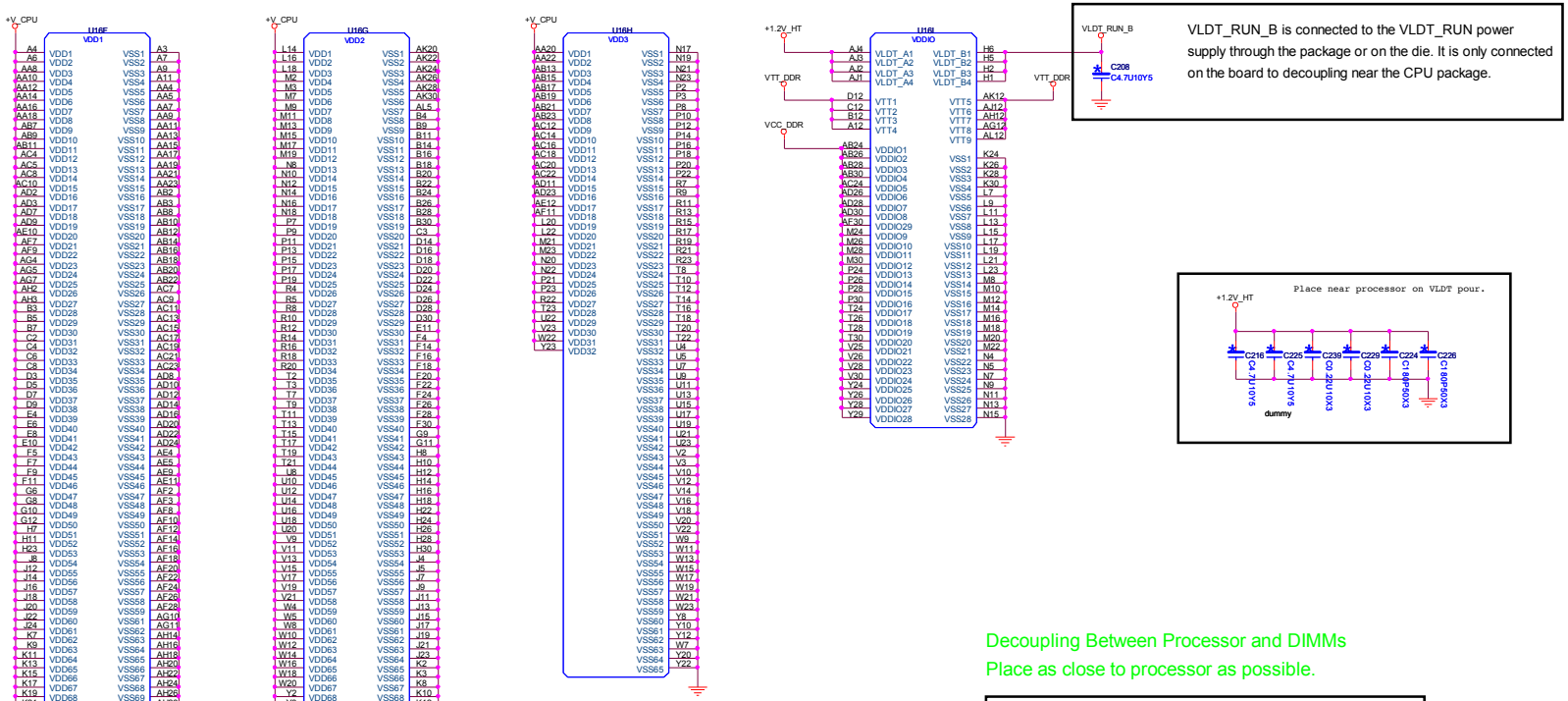




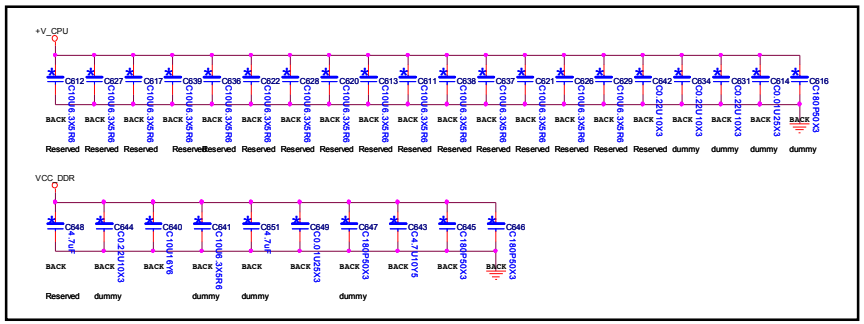
FOXCONN PCEG

Title	M2-CTRL/MISC	
Size C	Document Number RS690M02	Rev 1.0
Date: Tuesday, September 11, 2007	Sheet 10 of 36	

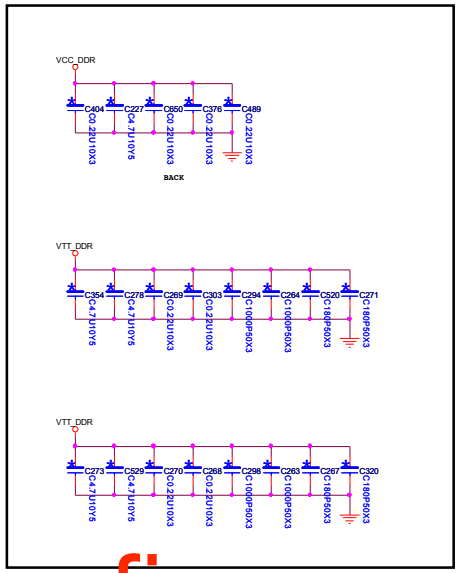
Processor Power & Ground



Bottomside Decoupling



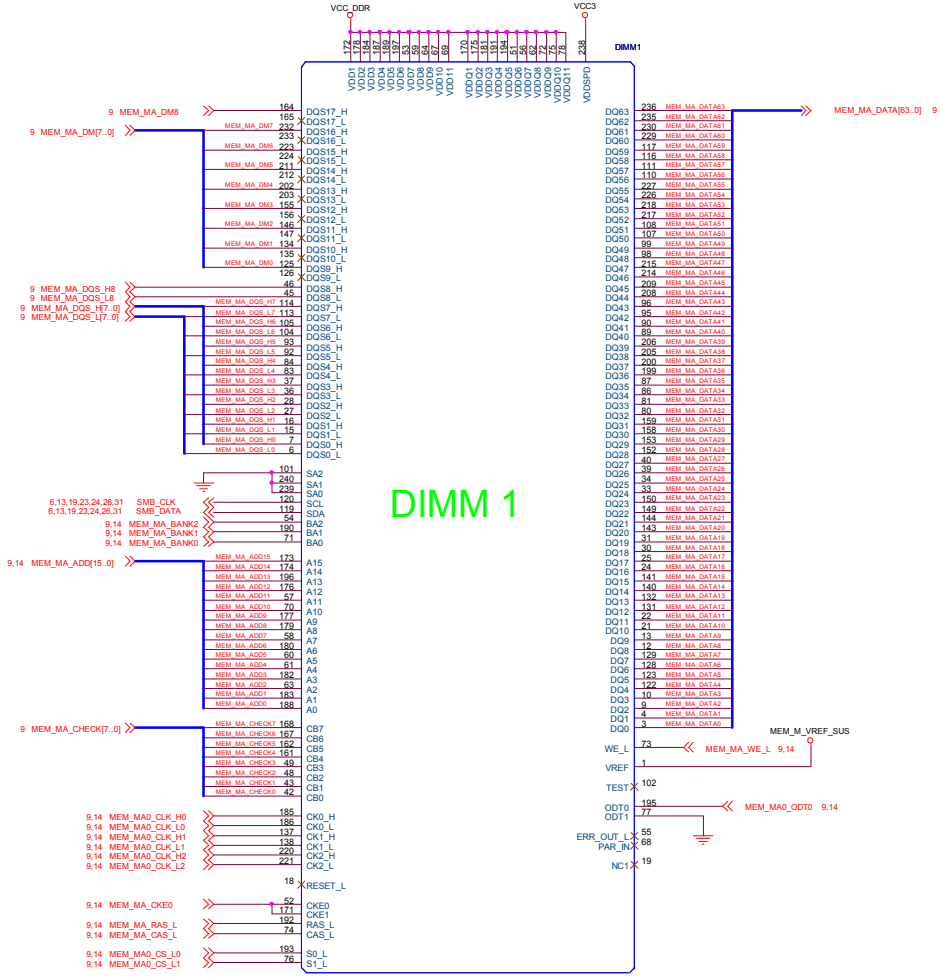
Decoupling Between Processor and DIMMs
Place as close to processor as possible.



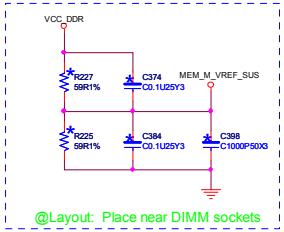
FOXCONN PCEG

Title	M2-Power/Gnd	
Size C	Document Number RS690M02	Rev 1.0
Date: Tuesday, September 11, 2007	Sheet 11 of 36	

DDRII CHANNEL A



MEM_M_VREF_SUS



FOXCONN PCEG

Title: DDRII-CHA/DIMM 1

Size: C | Document Number: RS690M02 | Rev: 1.0

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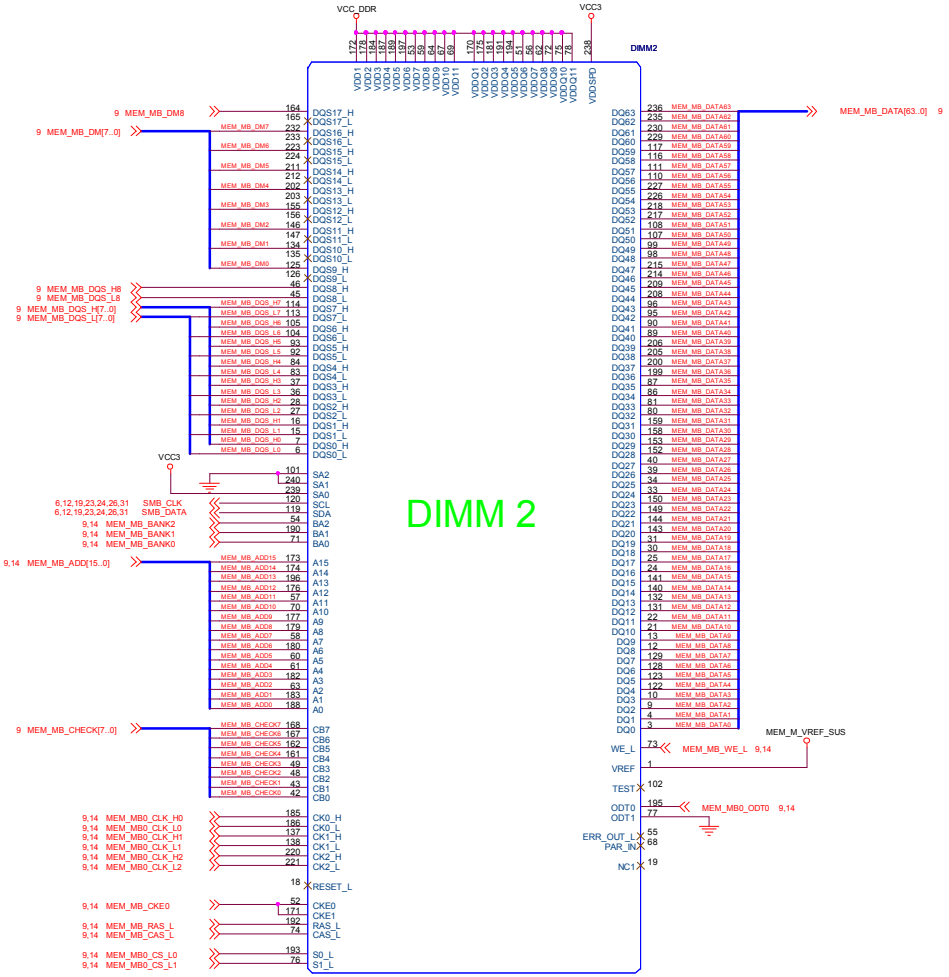
DDRII CHANNEL B



FOXCONN PCEG

Title	DDRII-CHB/DIMM 2	
Size C	Document Number RS690M02	Rev 1.0
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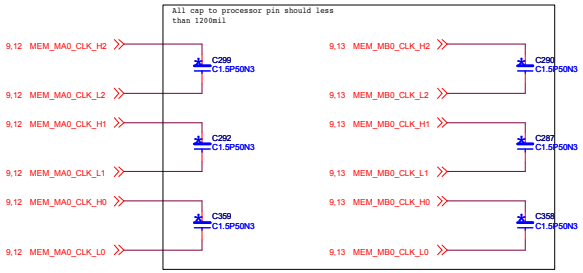
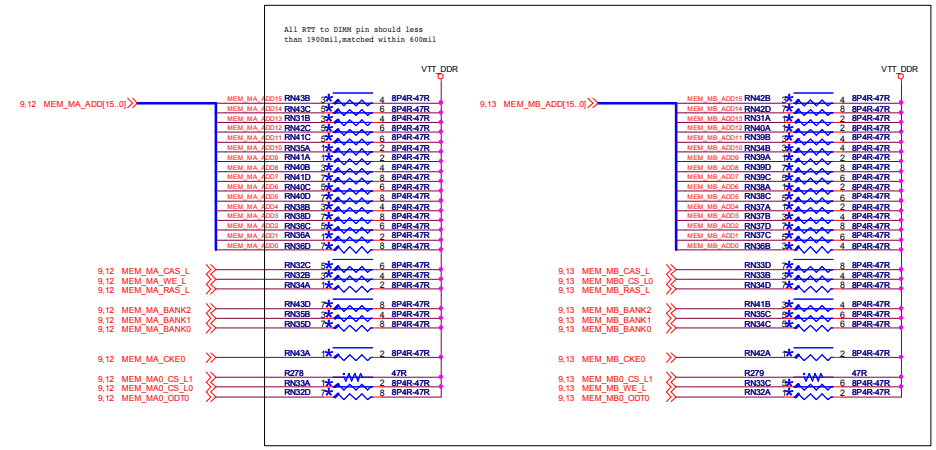
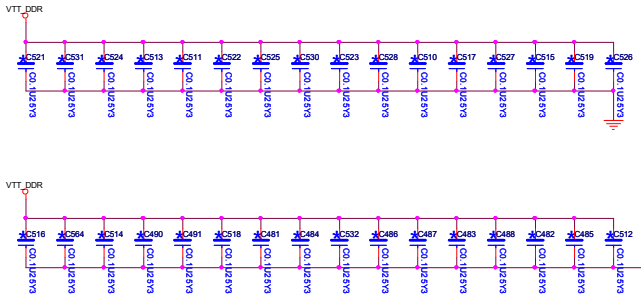
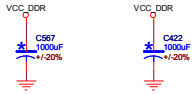
DDRII Termination









FOXCONN PCEG

Title	DDRII-Termination	
Size C	Document Number RS690M02	Rev 1.0
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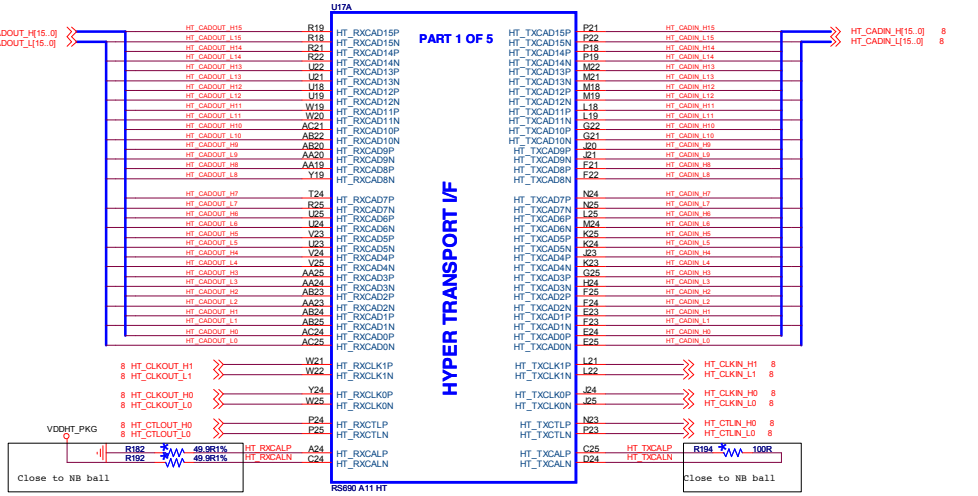

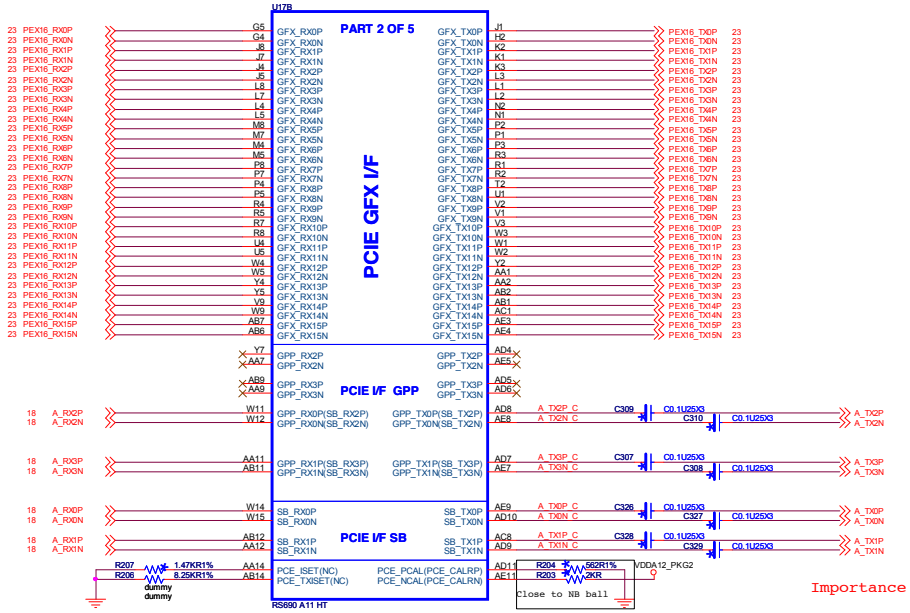

FOXCONN

FOXCONN PCEG

Title: RS690-HT/PCIE

Size: C | Document Number: RS690M02 | Rev: 1.0

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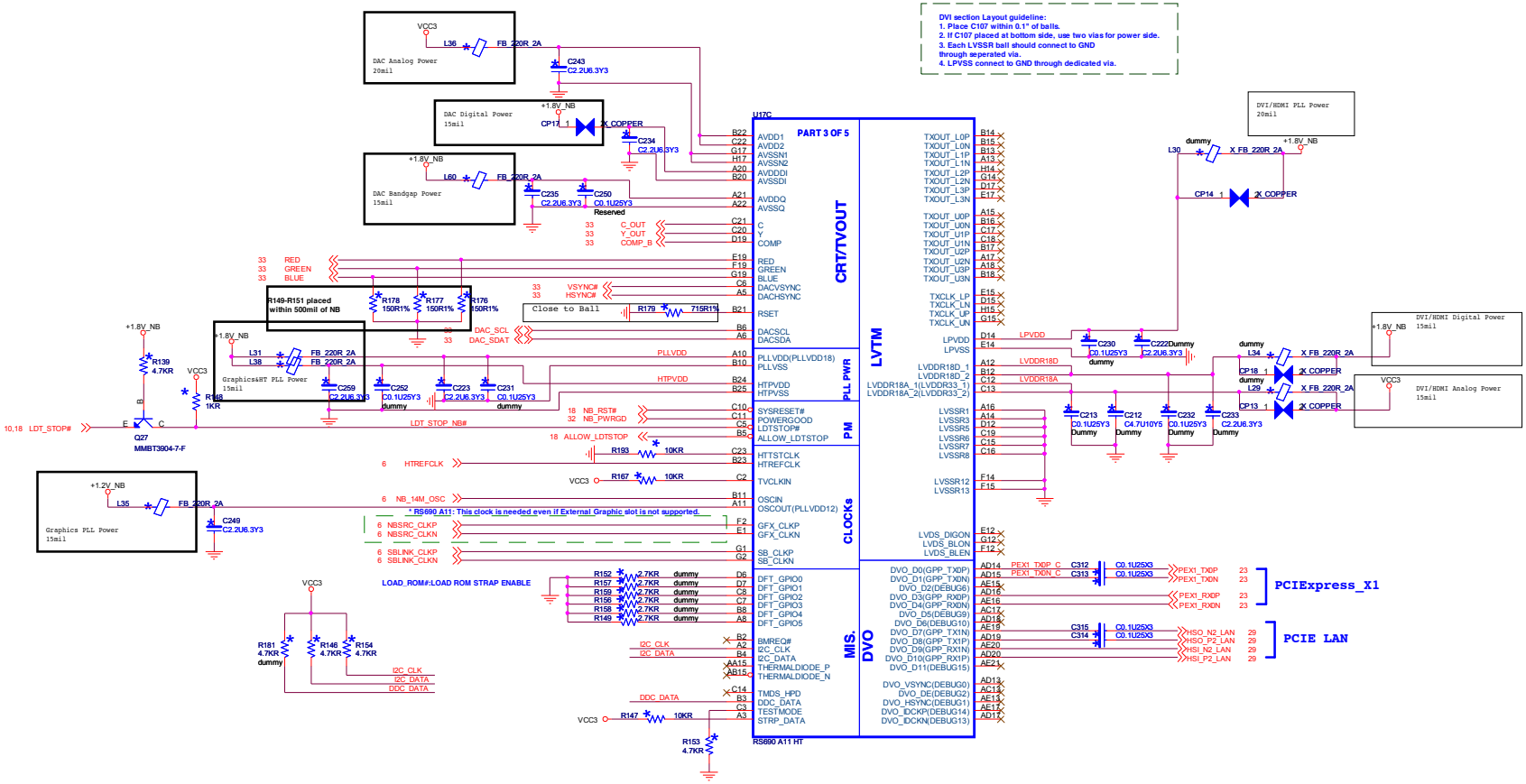
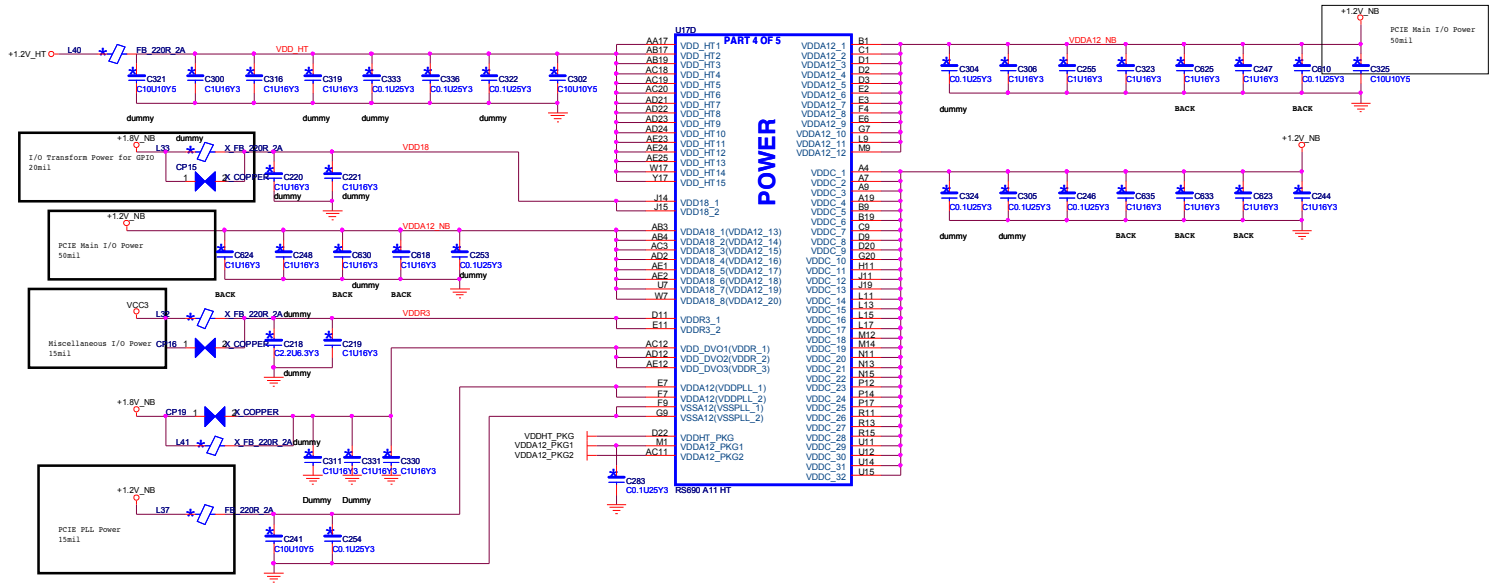
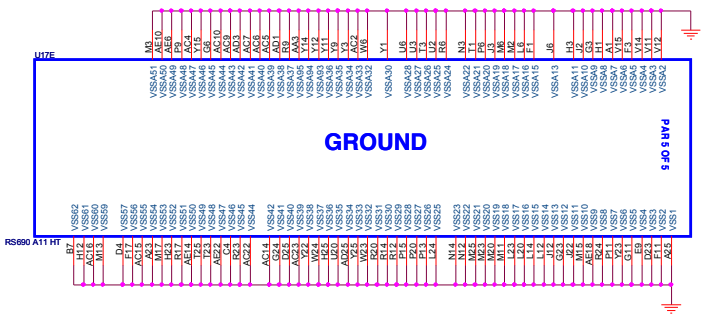


	RS690	RS690 only (NC for RS485)		
	DFT_GPIO1	DFT_GPIO0	DFT_GPIO[4:2]	DFT_GPIO5
PULL HIGH (internally pulled high)	Bypass the loading of EEPROM straps and use Hardware default values DEFAULT	Memory side port not available DEFAULT	These pin straps are used to configure PCI-E GPP mode: 111: register defined (register default to Config E) DEFAULT 110: 4-0-0-0-0 Config A 101: 4-4 Config B 100: 4-2-2 Config C 011: 4-2-1-1 Config D 010: 4-1-1-1-1 Config E others: register defined (register default to Config E)	Enable debug bus via the memory IO pads, if available in the package use default values DEFAULT
PULL LOW	I2C Master can load strap values from EEPROM if connected, or use default values if not connected	Memory side port available		use the memory data bus to output the debug bus

FOXCONN
FOXCONN PCEG

Title	RS690-System	
Size C	Document Number RS690M02	Rev 1.0
Date: Tuesday, September 11, 2007	Sheet 16 of 36	

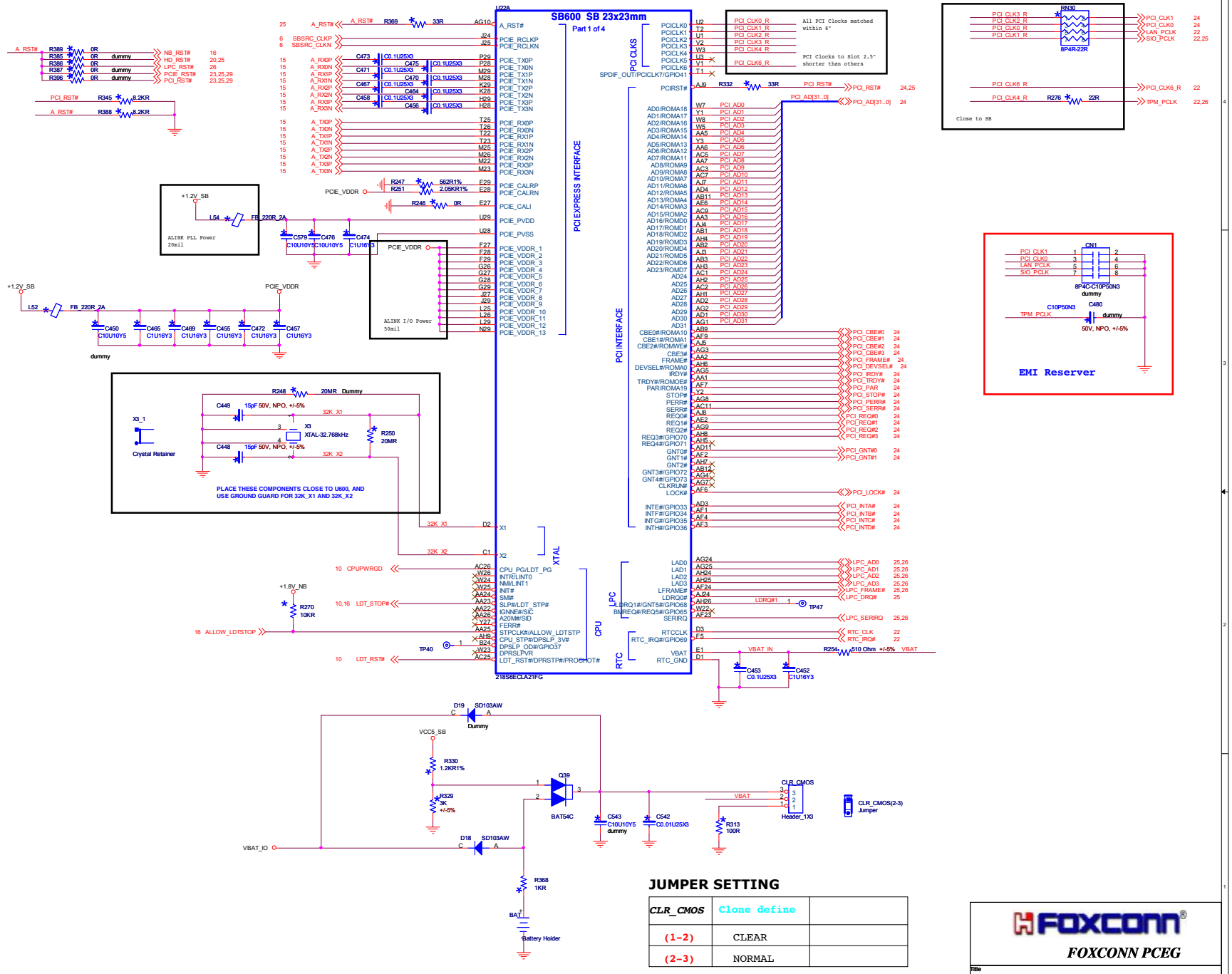




FOXCONN

FOXCONN PCEG

Title	RS690-Power/Gnd	
Size C	Document Number *RS690M02*	Rev 1.0
Date: Tuesday, September 11, 2007	Sheet 17 of 36	



JUMPER SETTING

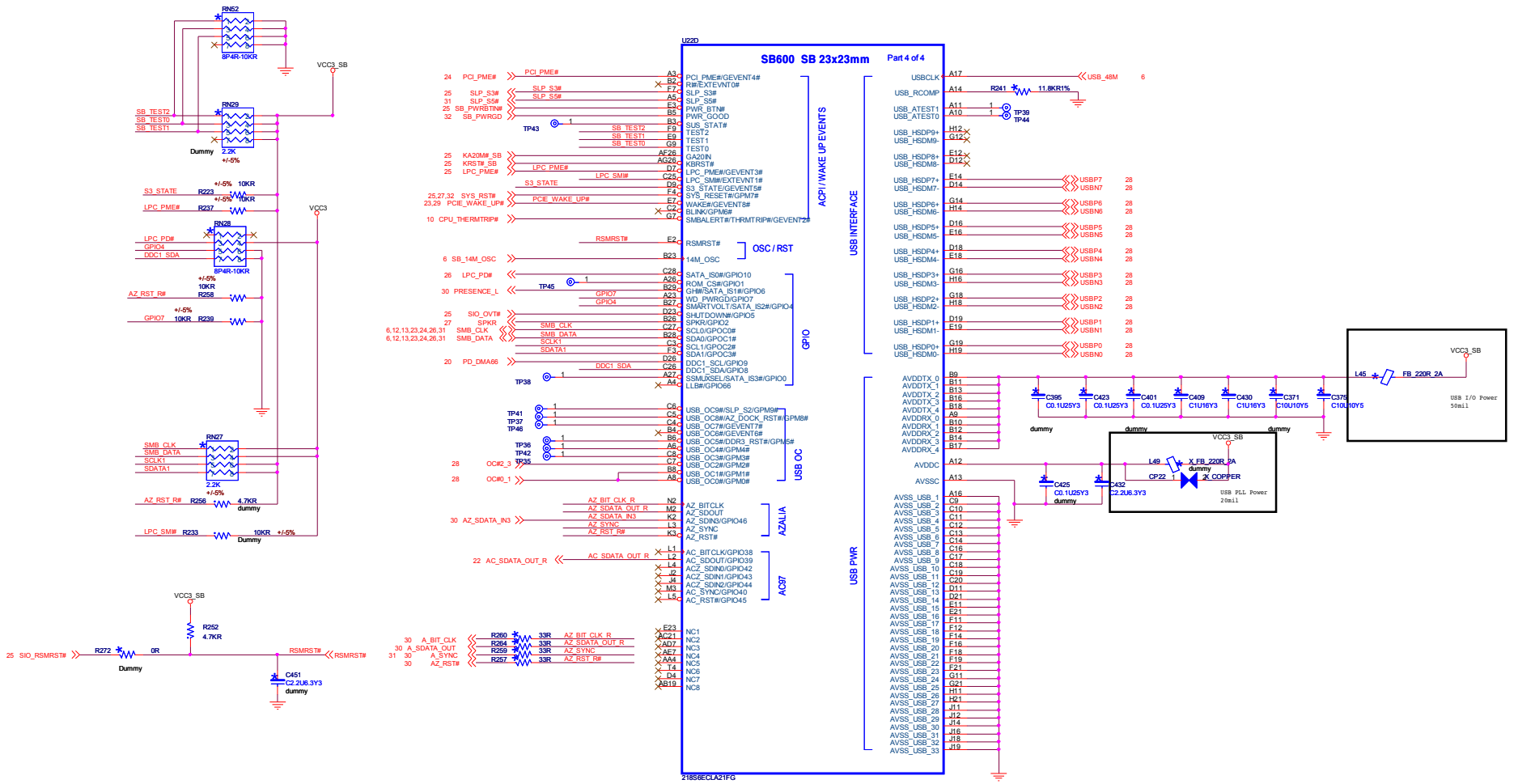
CLR_CMOS	Clone define	
(1-2)	CLEAR	
(2-3)	NORMAL	

FOXCONN PCEG

Title: SB600-CPU/PCIE/LPC/PCI

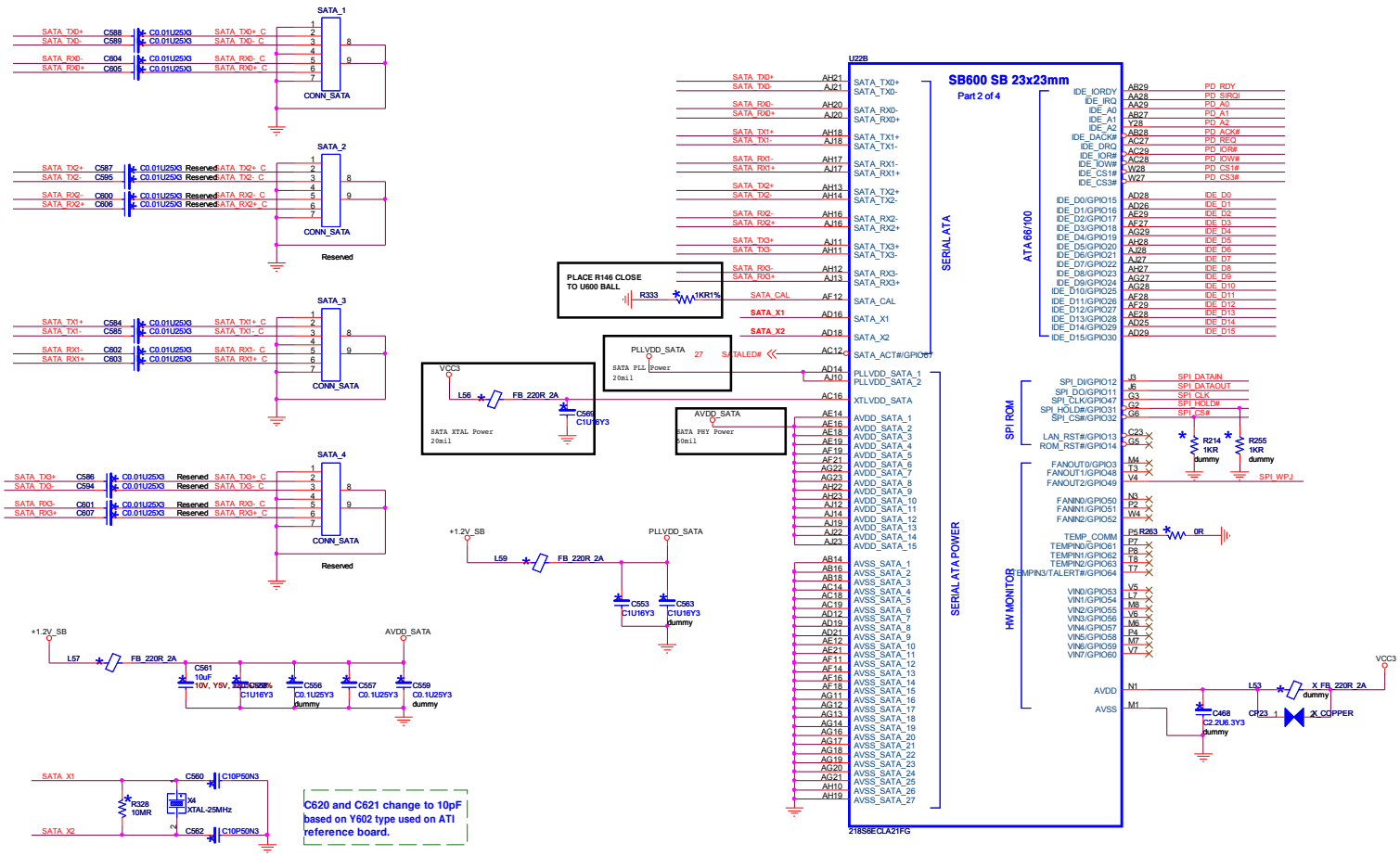
Size: C | Document Number: RS690M02 | Rev: 1.0

Date: Tuesday, September 11, 2007 | Sheet 18 of 36

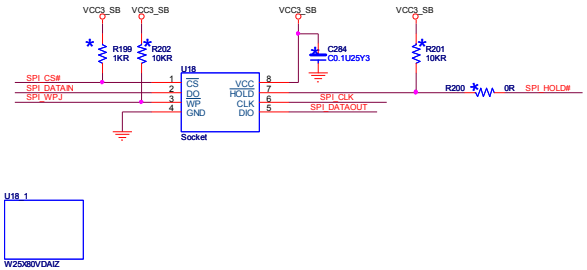


FOXCONN PCEG

Title	SB600-USB/Azalia/GPIO	
Size C	Document Number RS690M02	Rev 1.0
Date: Tuesday, September 11, 2007	Sheet 19 of 36	

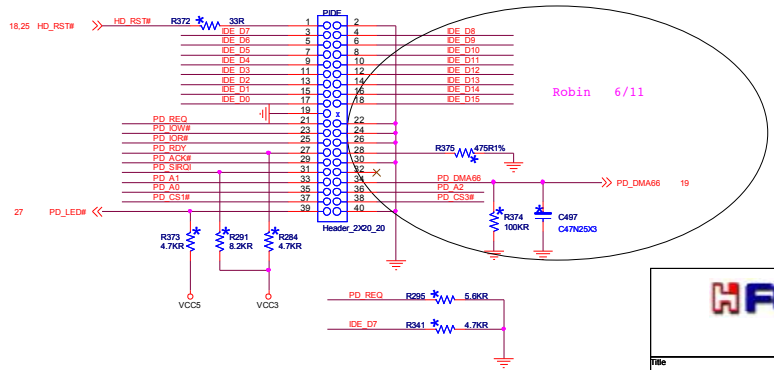


SPI Interface



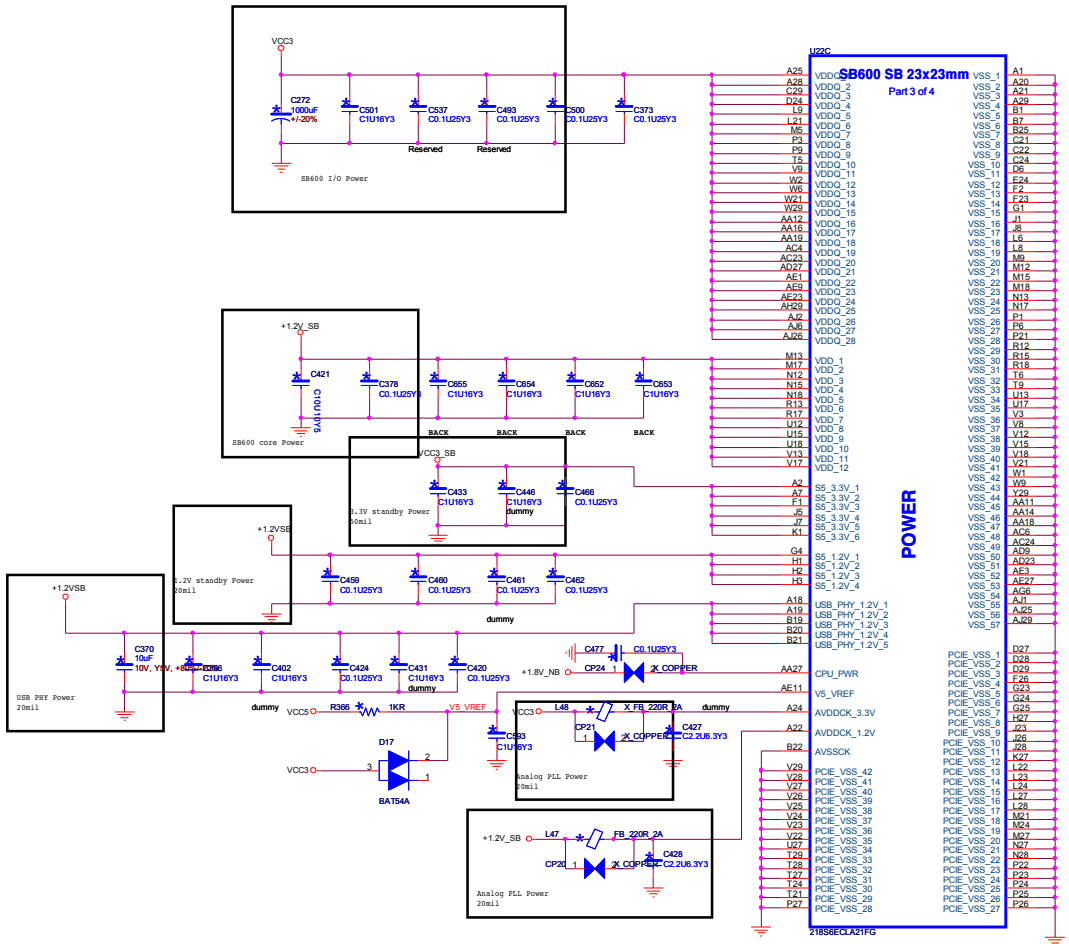
JP12	SPI WP#
Unlock	(1-2) **Default**
Lock	(2-3)

ATA 33/66/100 IDE Connector



FOXCONN PCEG

Title	SB600-SATA/IDE	
Size C	Document Number RS690M02	Rev 1.0
Date: Tuesday, September 11, 2007	Sheet 20 of 36	



FOXCONN PCEG

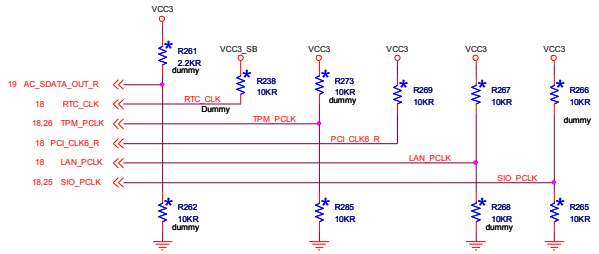
Title: SB600-Power/Decoupling

Size: C | Document Number: RS690M02 | Rev: 1.0

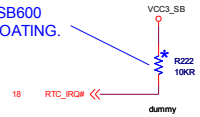
Date: Tuesday, September 11, 2007 | Sheet 21 of 36

REQUIRED STRAPS

SB600 HAS 15K INTERNAL PD FOR AC_SDATA_OUT, 15K PU FOR RTC_CLK, EXTERNAL PU/PD IS NOT REQUIRED;



NOTE: R98 PU RESISTOR FOR RTC_IRQ# IS REQUIRED FOR SB600 TO KEEP THE INPUT FROM FLOATING.



	AC_SDOUT	RTC_CLK	TPM_PCLK	LPC_PCLK	LAN_PCLK	SIO_PCLK
PULL HIGH	USE DEBUG STRAPS	INTERNAL RTC DEFAULT	USE INT. PLL48	CPU IF=K8 DEFAULT	ROM TYPE: H, H = PCI ROM H, L = SPI ROM DEFAULT L, H = LPC ROM L, L = FWH ROM	
PULL LOW	IGNORE DEBUG STRAPS DEFAULT	EXTERNAL RTC	USE EXT. 48MHZ DEFAULT	CPU IF=P4		

DEBUG STRAPS

SB600 HAS 15K INTERNAL PU FOR PCI_AD[28:23]

	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE LONG RESET DEFAULT	USE PCI PLL DEFAULT	USE ACPI BCLK DEFAULT	USE IDE PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	BOOTFAILTIMER DISABLED DEFAULT
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	BOOTFAILTIMER ENABLED

FOXCONN PCEG

Title: SB600-Strapping

Size: C | Document Number: RS690M02 | Rev: 1.0

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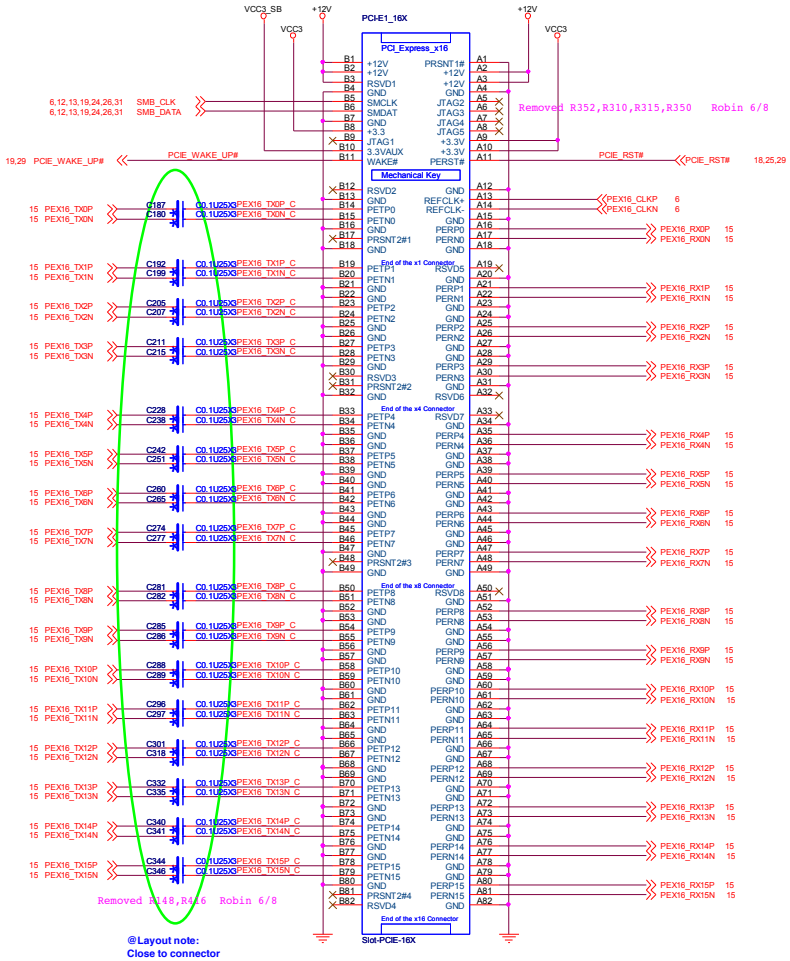
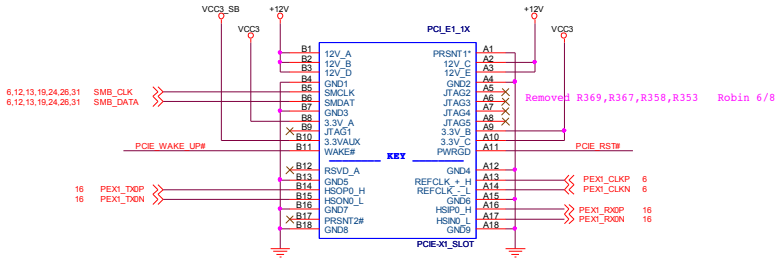
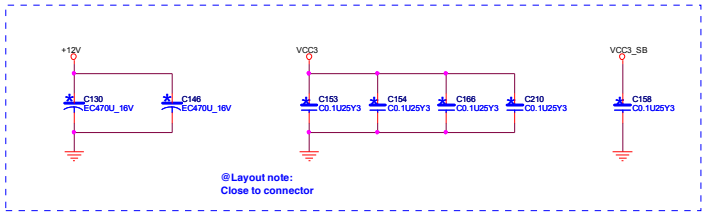




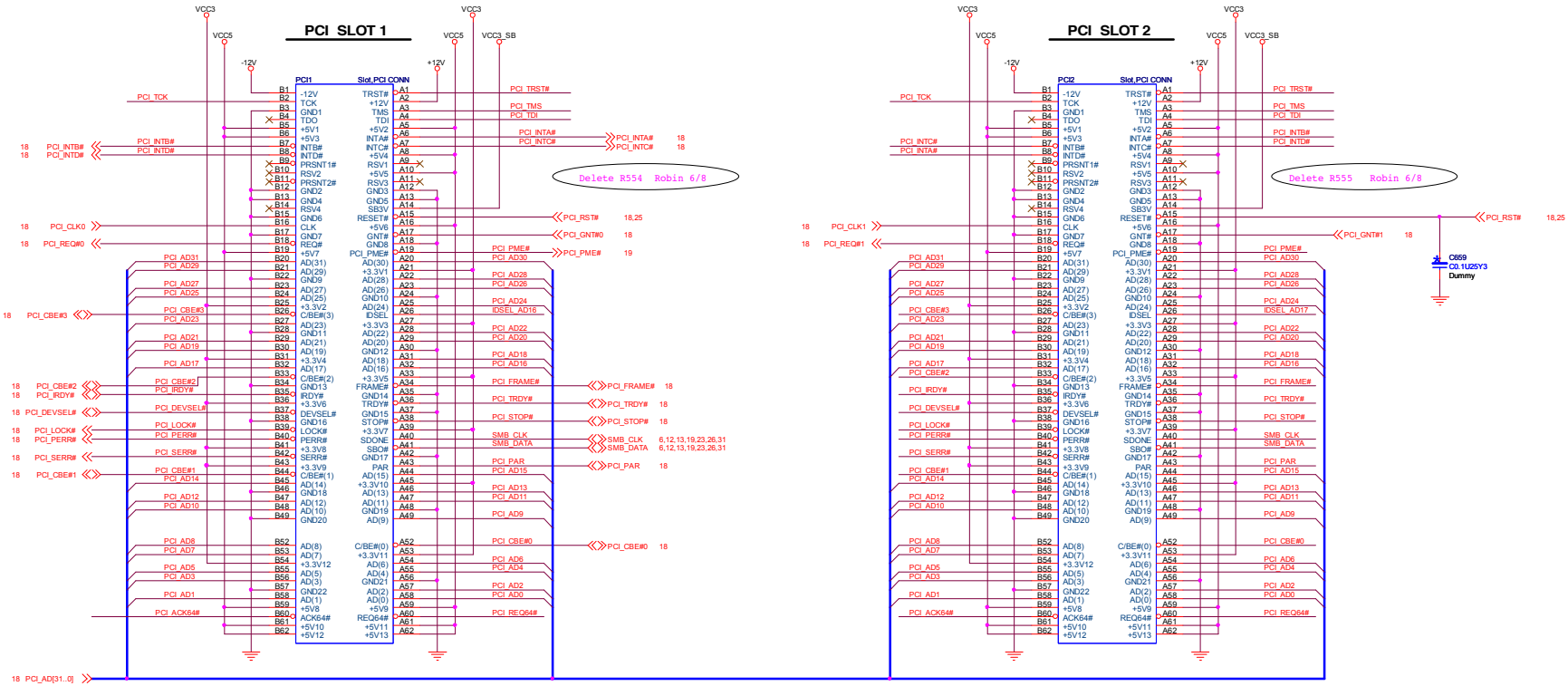


FOXCONN PCEG

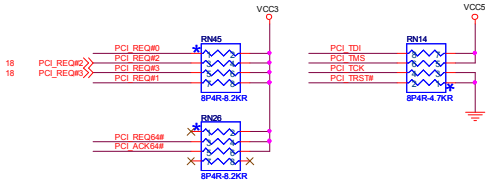
Title: PCIE 16X & 1X

Size: C | Document Number: RS690M02 | Rev: 1.0

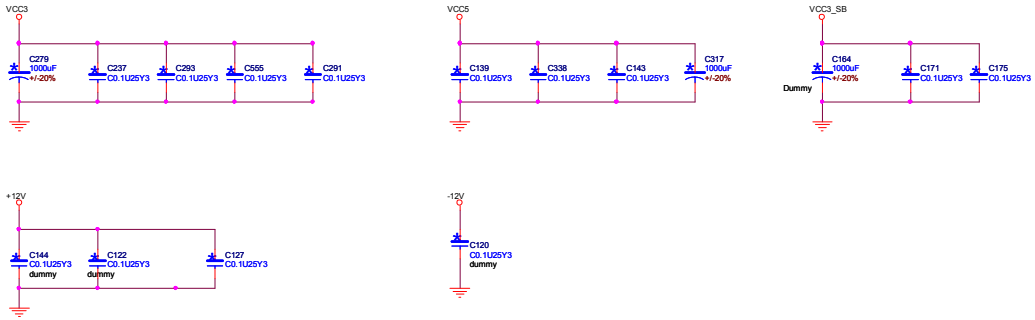
Date: Tuesday, September 11, 2007 | Sheet 23 of 36



PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS



FOXCONN PCEG

Title: PCI Slot 1& 2

Size	Document Number	Rev
C	RS690M02	1.0

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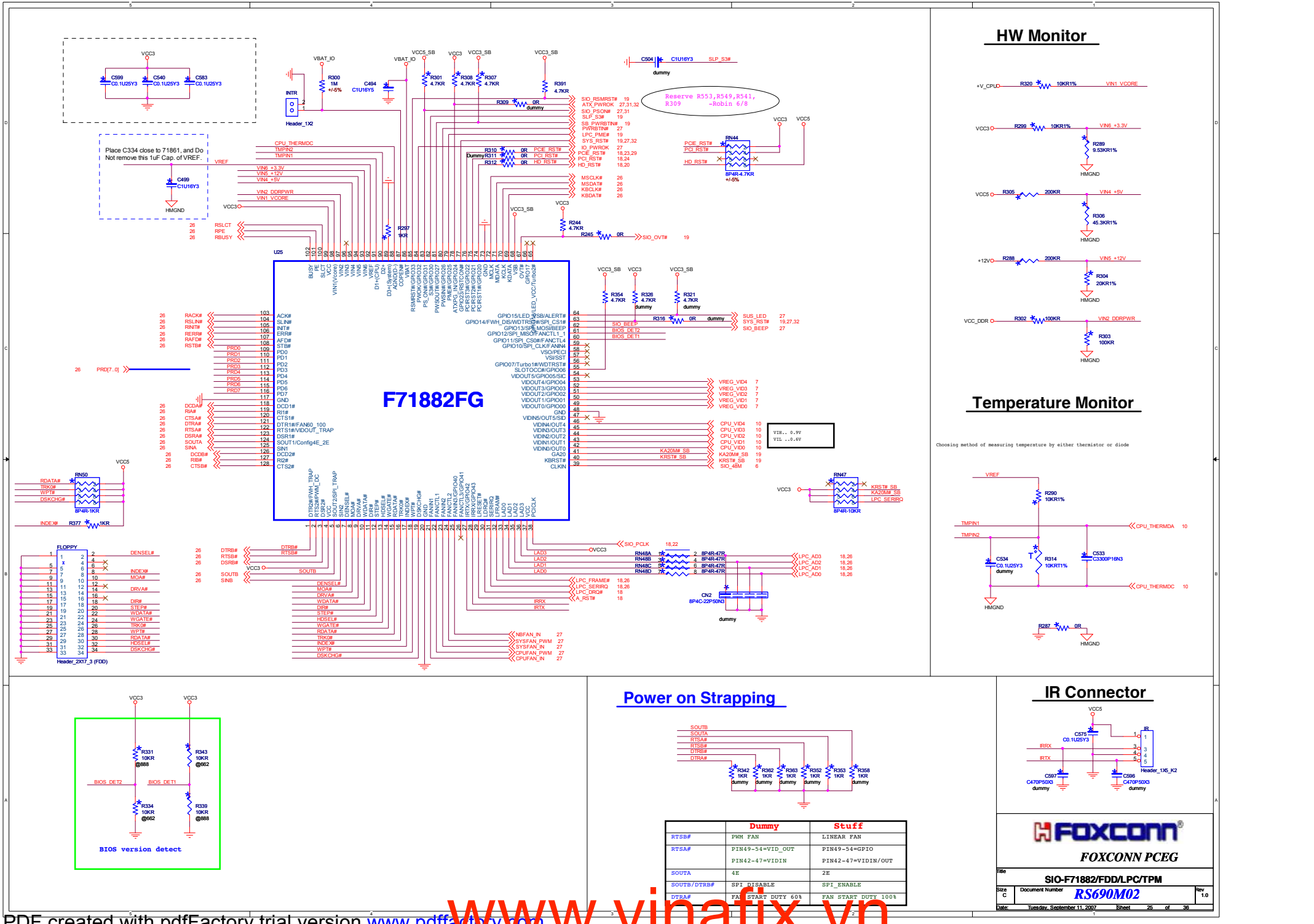
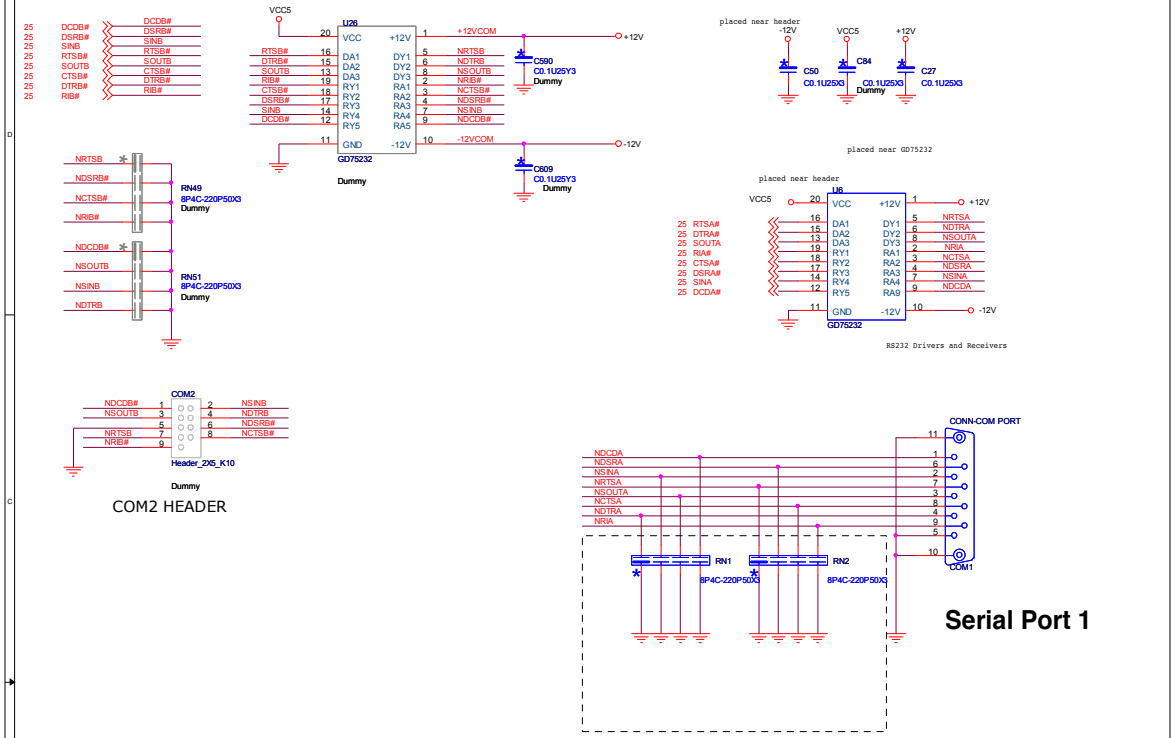
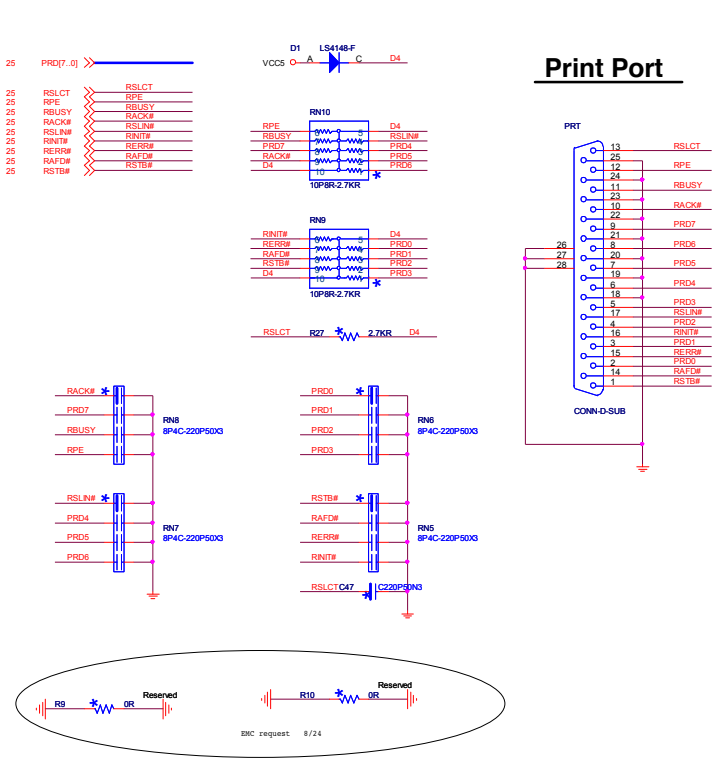
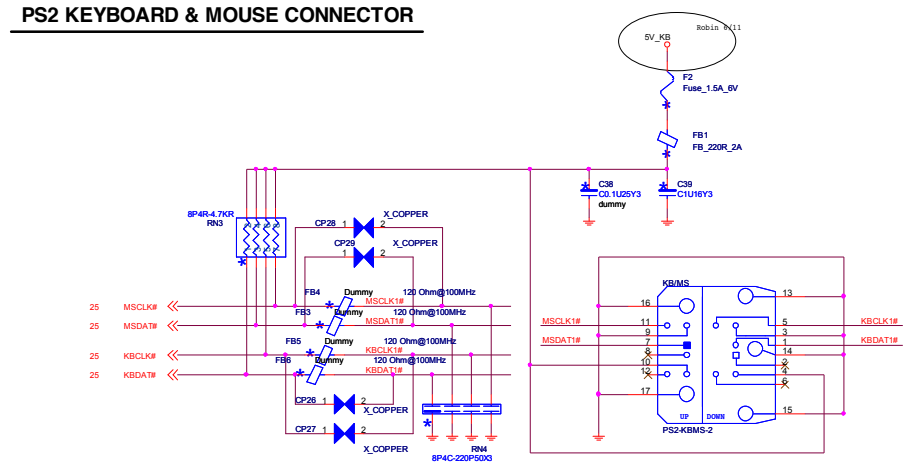
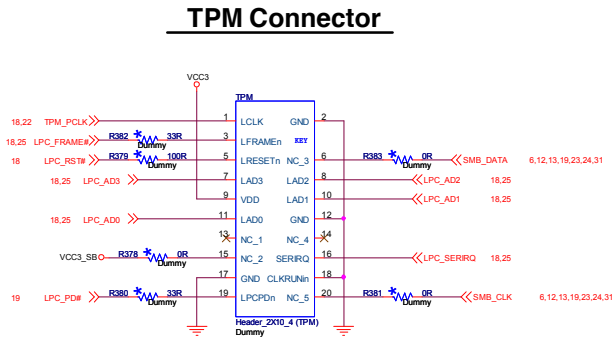


	Dummy	Stuff
RTSB#	PWM FAN	LINEAR FAN
RTSA#	PIN49-54=VID_OUT PIN42-47=VIDIN	PIN49-54=GPIO PIN42-47=VIDIN/OUT
SOUTA	4E	2E
SOUTB/DTRB#	SPI_DISABLE	SPI_ENABLE
DTRA#	FA START DUTY 60%	FAN START DUTY 100%









FOXCONN PCEG

Title: PS2/LPT/COM/TPM

Size: C | Document Number: RS690M02 | Rev: 1.0

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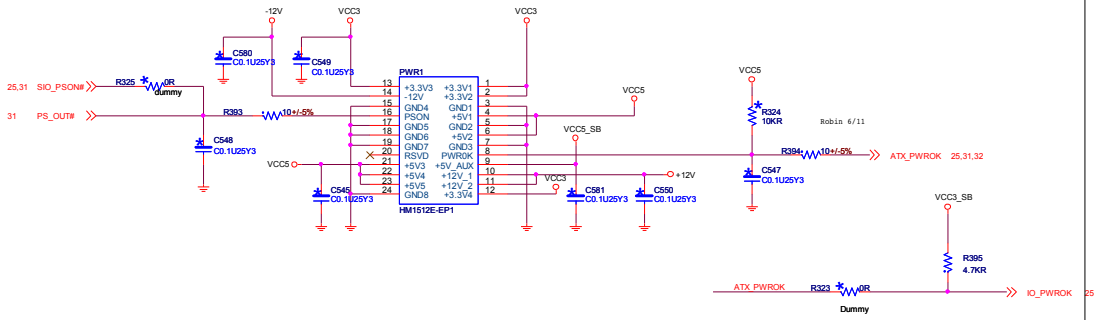
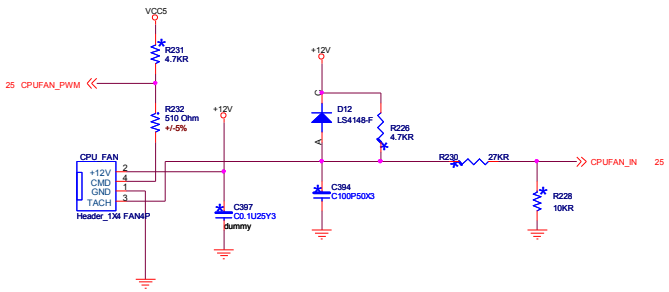
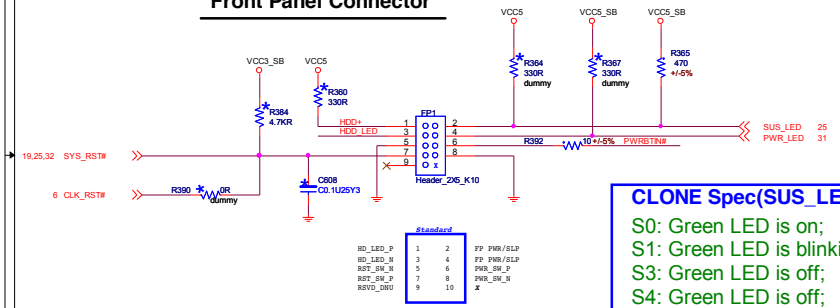
ATX Connector



CPU FAN

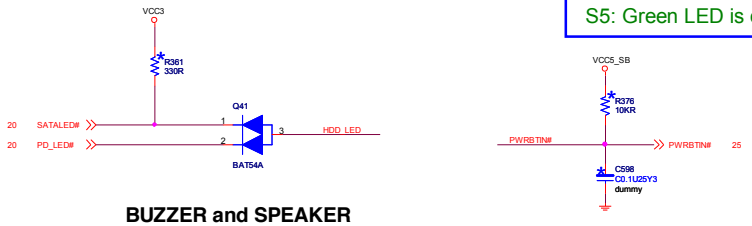


Front Panel Connector

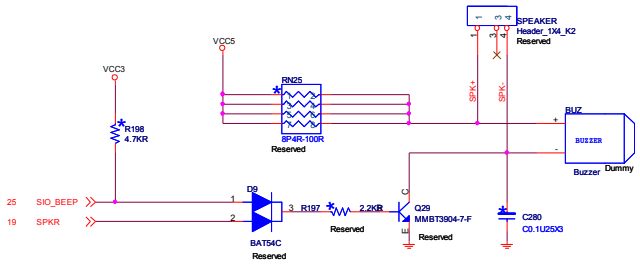


CLONE Spec(SUS_LED only)

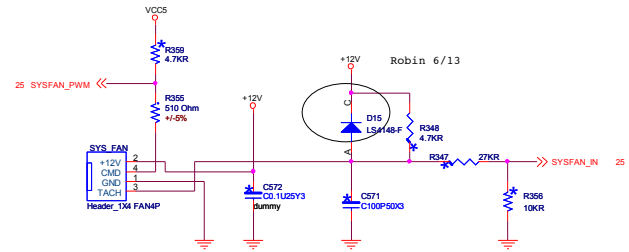
S0: Green LED is on;
S1: Green LED is blinking;
S3: Green LED is off;
S4: Green LED is off;
S5: Green LED is off.

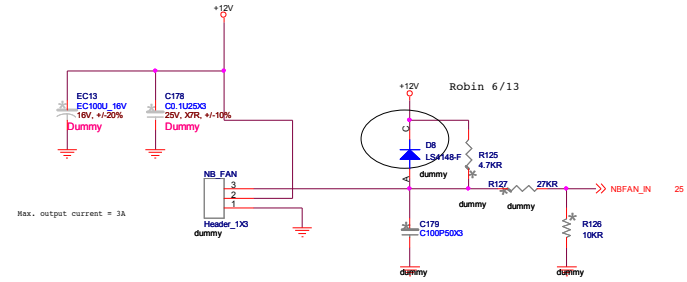


BUZZER and SPEAKER



SYSTEM FAN





FOXCONN PCEG

Title	ATX/Front Panel/Fan CTRL	
Size C	Document Number RS690M02	Rev 1.0
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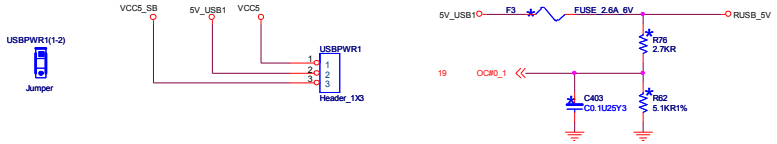
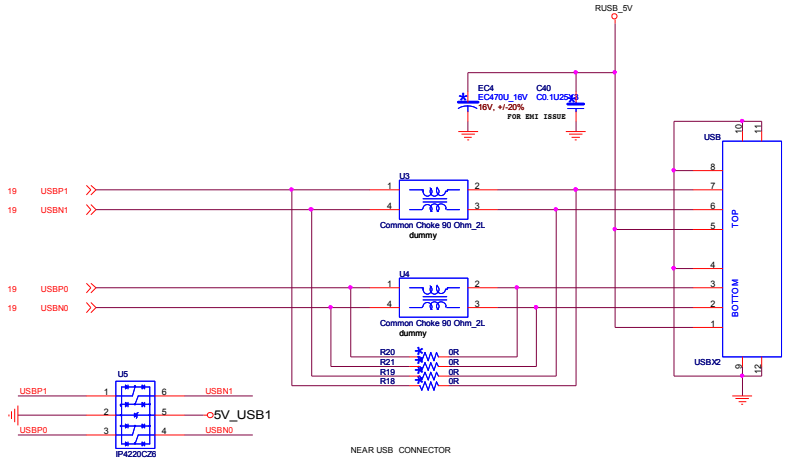
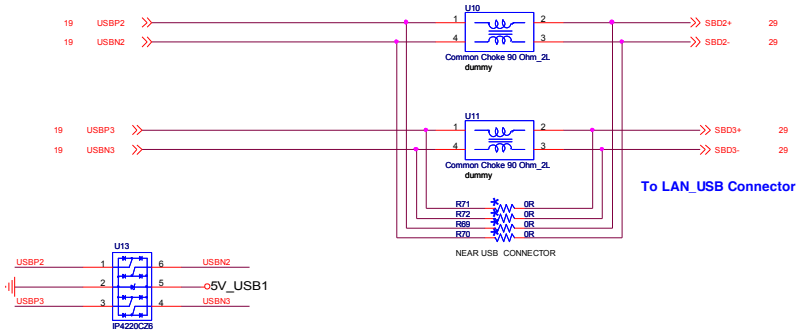
POWER CIRCUIT FOR Front USB PORT 0,1,2,3



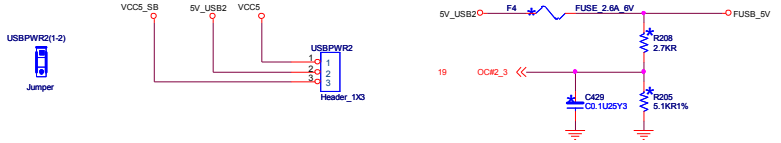
Front PANEL USB CONNECTOR FOR USB PORT 0,1



Front PANEL USB CONNECTOR FOR USB PORT 2,3

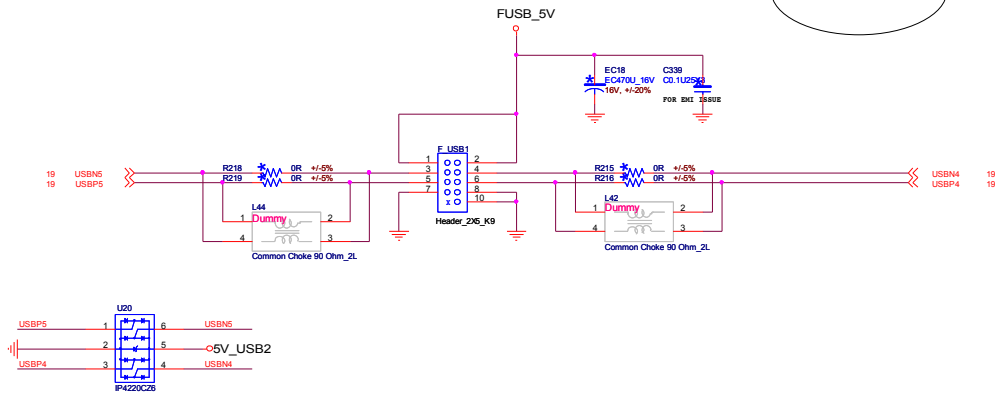


POWER CIRCUIT FOR REAR USB PORT 4,5,6,7

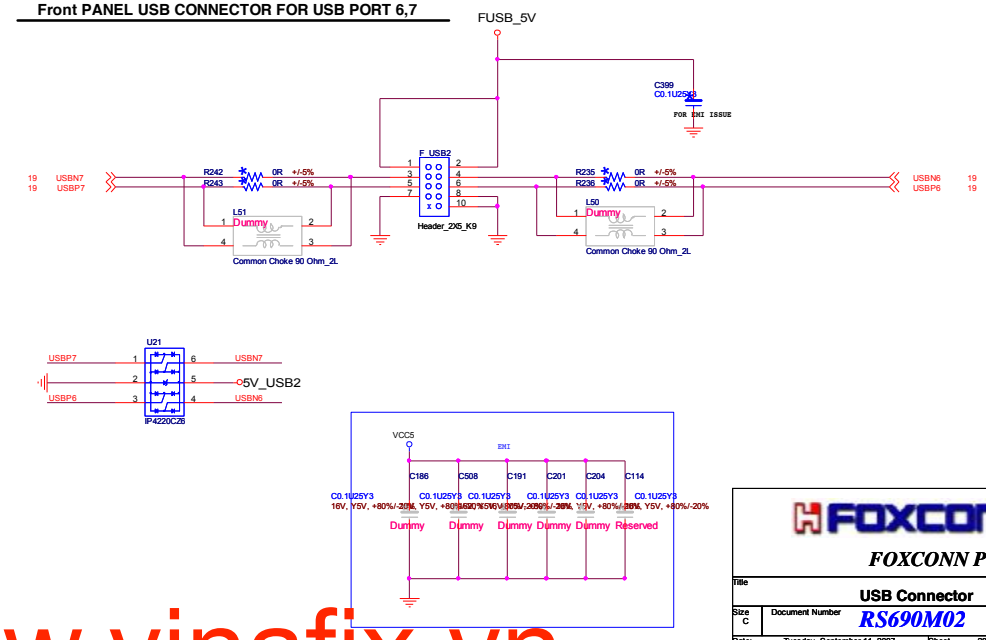


Front PANEL USB CONNECTOR FOR USB PORT 4,5

Robin 6/12



Front PANEL USB CONNECTOR FOR USB PORT 6,7



FOXCONN PCEG

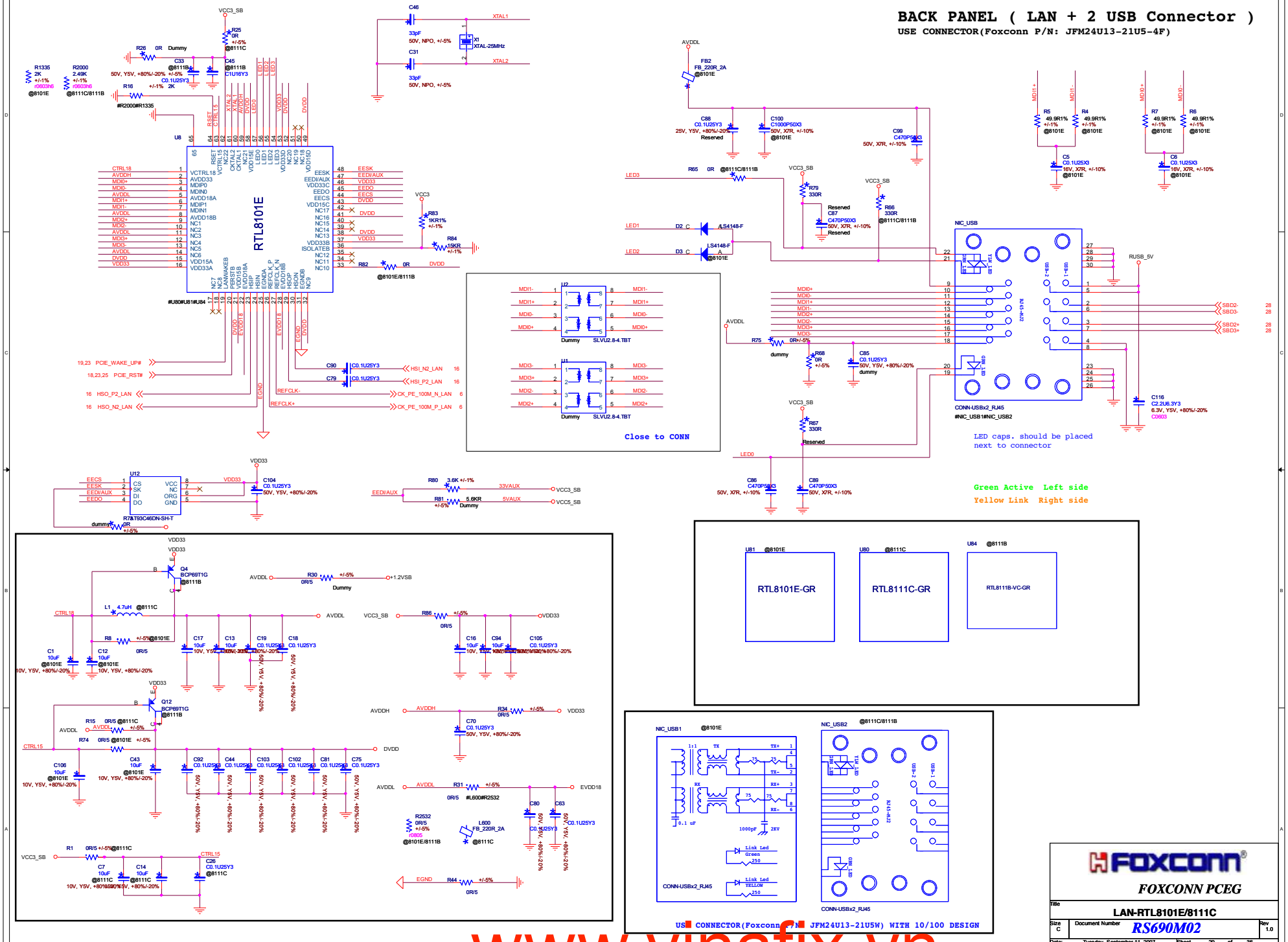
Title: USB Connector

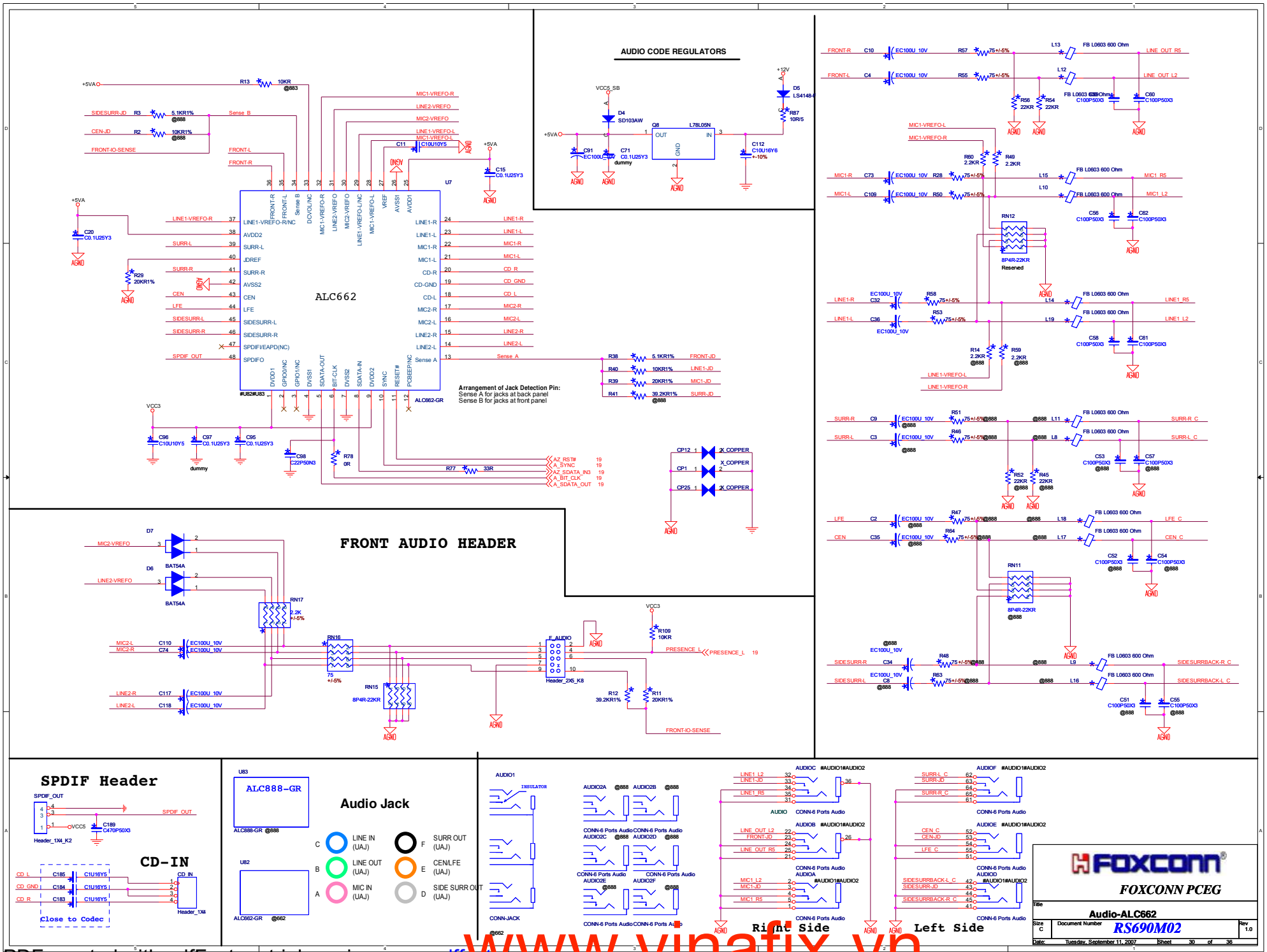
Size: C | Document Number: RS690M02 | Rev: 1.0

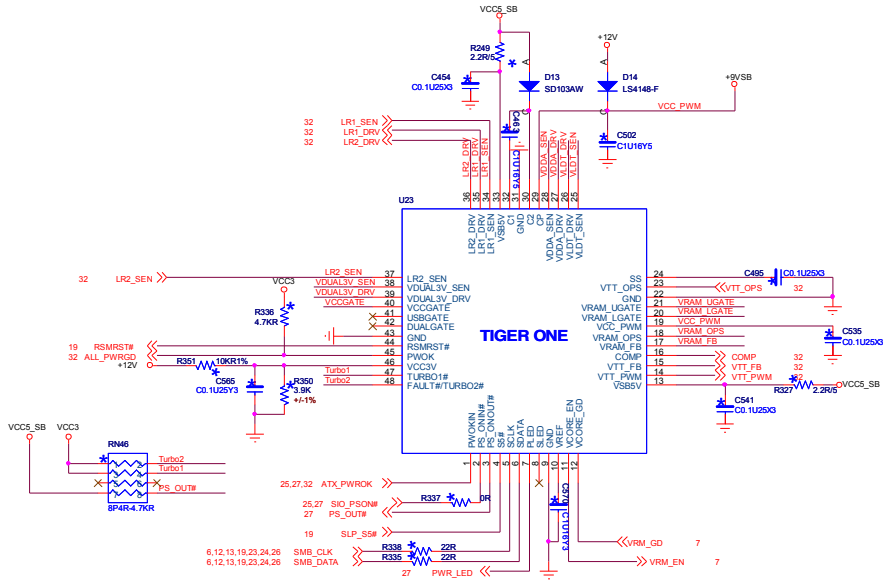
Date: Tuesday, September 11, 2007 | Sheet 28 of 36

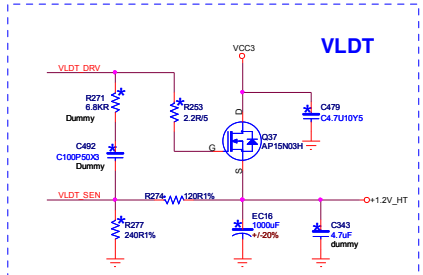
BACK PANEL (LAN + 2 USB Connector)

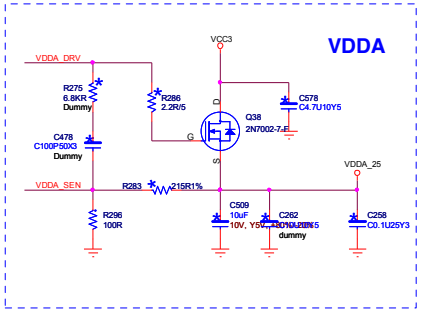
USE CONNECTOR(Foxconn P/N: JFM24U13-21U5-4F)

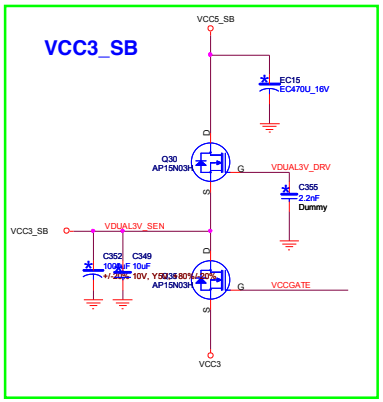


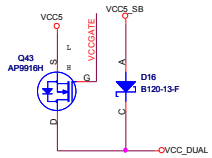


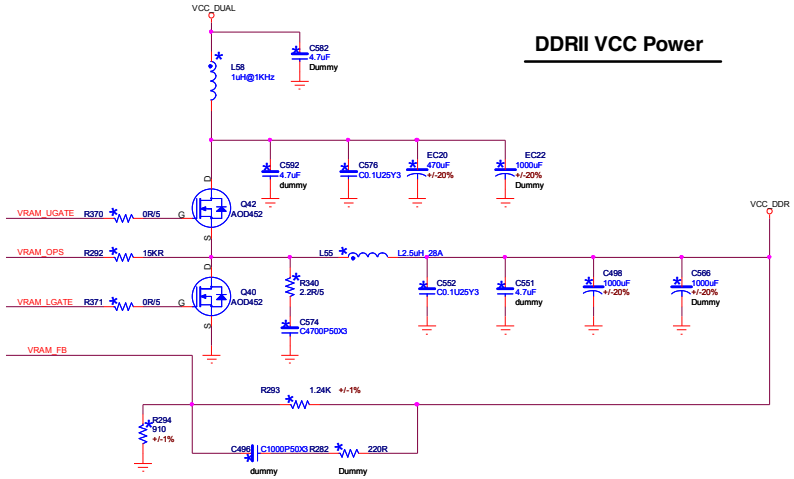


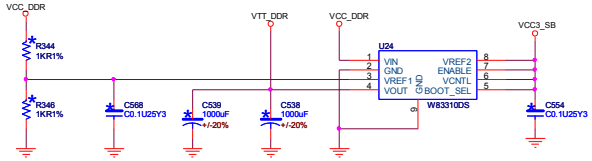












FOXCONN PCEG

Title: ACPI-TIGER ONE

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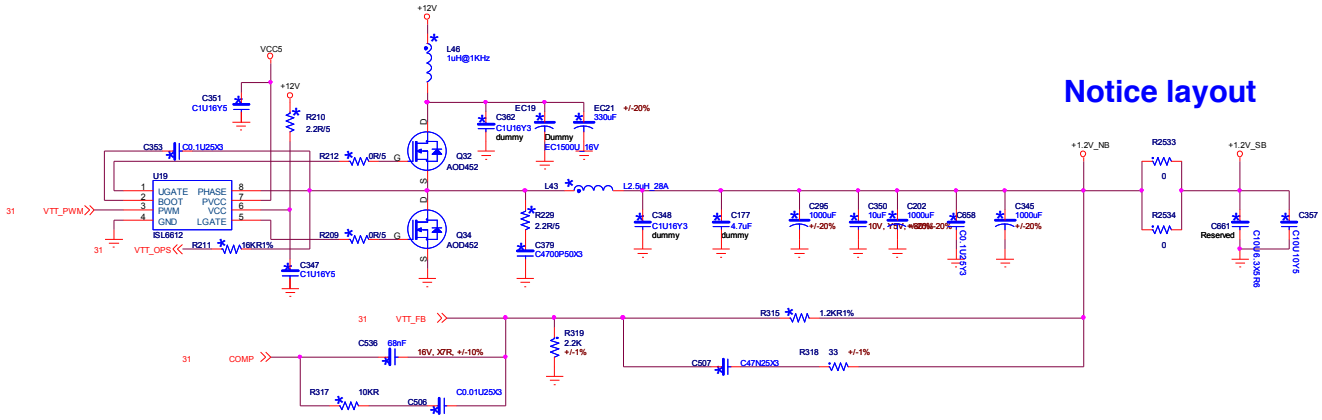
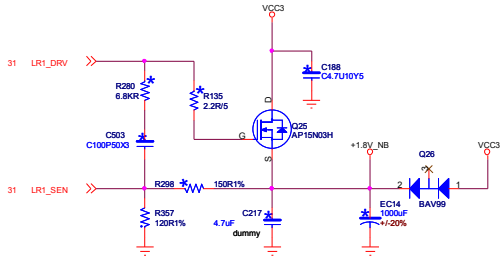
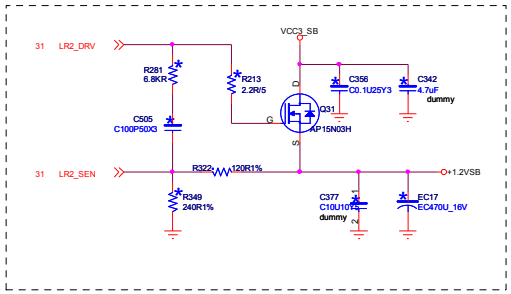
+1.2V_NB Regulator

Notice layout

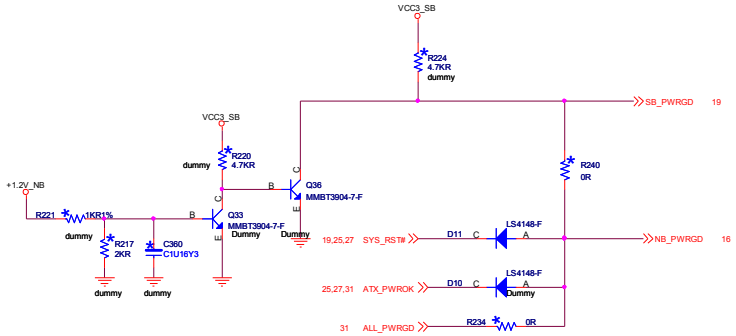


+1.8_NB Regulator





NB & SB Power Good Circuit



FOXCONN PCEG

Title: NB/SB Core Power

Size: C | Document Number: RS690M02 | Rev: 1.0

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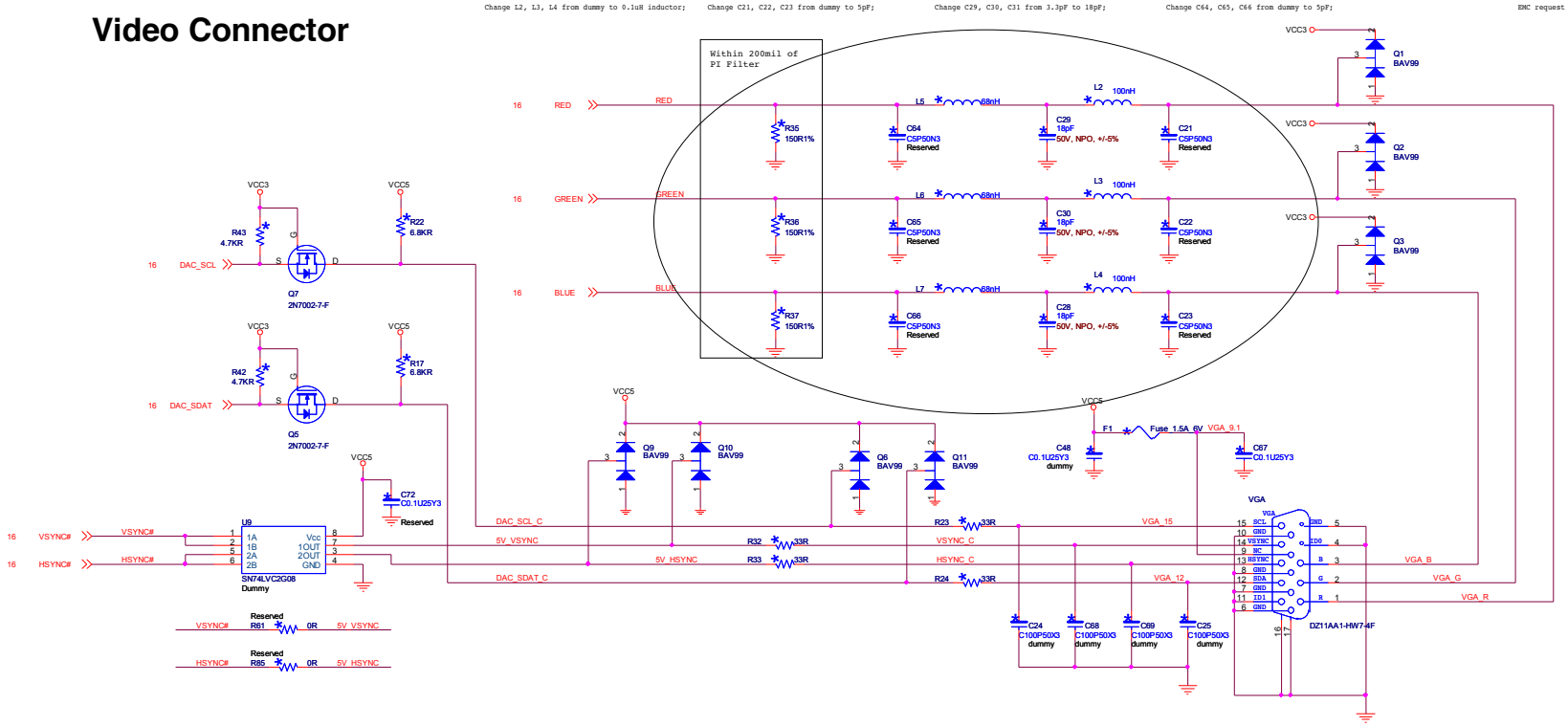
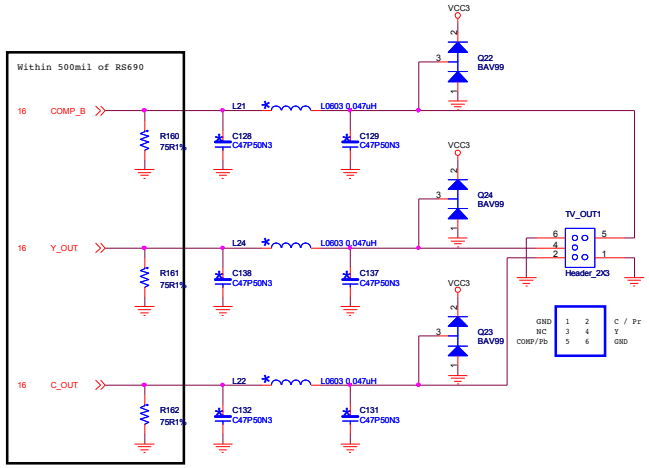
Video Connector



TV-OUT Connector

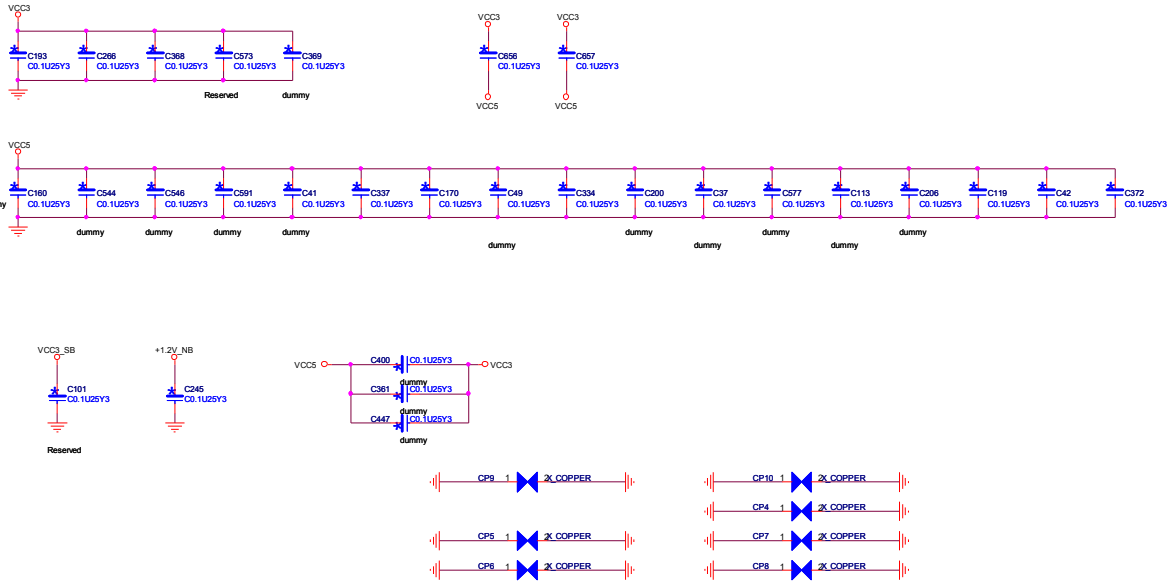


FOXCONN PCEG

Title: D-Sub/DVI/TV-OUT Connector

Size: C | Document Number: RS690M02 | Rev: 1.0

Date: Tuesday, September 11, 2007 | Sheet 33 of 36



Optics Orientation Holes

FD8 FD7 FD6 FD1 FD2 FD5 FD3 FD4
X_Optics

Mounting Holes

MH1 MH2 MH3 MH4 MH5 MH6
X_MH
AGND

VCC3
J4 X_Header_1X2
VCC3
J1 X_Header_1X2
J2 X_Header_1X2
J3 X_Header_1X2

SB_HS1
Heatsink
NB_HS1
Winfast
Heatsink
BAT_1
Battery

FOXCONN
FOXCONN PCEG

Title	EMI Reserved/F_Audio	
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SB600

GPIO	Alt Func	Pin	I/O/NC	Power	PU	SMI	Tol	Default	Signal Name
GPIO[0]	unmuxed		I/O	Core	Y	Y	3.3V	GPI	SIO_SMI#
GPIO[1]	TACH1		I/O	Core	Y	Y	3.3V	GPI	SFAN_TACH
GPIO[5:2]	PIRQ[H:E]#		I/OD	Core	Y	Y	5V	GPI	PIRQ#[H:E]
GPIO[7:6]	TACH[3:2]		I/O	Core	Y	Y	3.3V	GPI	GPIO_[7:6]
GPIO[8]	unmuxed		I/O	Resume	Y	Y	3.3V	GPI	SIO_PME#
GPIO[9]	WOL_EN		I/O	Resume	Y	Y	3.3V	Native	GPIO_9
GPIO[10]	CLGPIO1		I/O	Resume	Y	Y	3.3V	GPI	GPIO_10
GPIO[11]	SMBALERT#		I/O	Resume	Y	Y	3.3V	Native	SMB_ALERT#
GPIO[12]	unmuxed		I/O	Resume	Y	Y	3.3V	GPI	ATADET0
GPIO[13]	unmuxed		I/O	Resume	Y	Y	3.3V	GPI	CLEAR_CMOS#
GPIO[14]	CLGPIO2		I/O	Resume	Y	Y	3.3V	GPI	GPIO_14
GPIO[15]	unmuxed		I/O	Resume			3.3V	GPO	
GPIO[16]	unmuxed		I/O	Core			3.3V	GPO	
GPIO[17]	TACH0		I/O	Core	Y		3.3V	GPI	CFAN_TACH
GPIO[18]	unmuxed		I/O	Core			3.3V	GPO	
GPIO[19]	SATA1GP		I/O	Core	Y		3.3V	GPI	GPIO_19
GPIO[20]	unmuxed		I/O	Core			3.3V	GPO	
GPIO[21]	SATA0GP		I/O	Core	Y		3.3V	GPI	GPIO_21
GPIO[22]	SCLOCK		I/O	Core	Y		3.3V	GPI	GPIO_22
GPIO[23]	LDRQ1#		I/O	Core	Y		3.3V	Native	LDRQ_1#
GPIO[24]	CLGPIO0		I/O	Resume			3.3V	GPO	
GPIO[25]	unmuxed		I/O	Resume			3.3V	Native	FRONT_IO#
GPIO[26]	S4_STATE#		I/O	Resume			3.3V	GPO	
GPIO[27]	EL_STATE0		I/O	Resume			3.3V	GPO	
GPIO[28]	EL_STATE1		I/O	Resume			3.3V	GPO	
GPIO[29]	OC5#		I/O	Resume	Y		3.3V	Native	OC#2
GPIO[30]	OC6#		I/O	Resume	Y		3.3V	Native	OC#3
GPIO[31]	OC7#		I/O	Resume	Y		3.3V	Native	OC#3
GPIO[32]	unmuxed		I/O	Core			3.3V	GPO	SPI_WP#
GPIO[33]	unmuxed		I/O	Core			3.3V	GPO	SPI_HOLD_GPO#
GPIO[34]	unmuxed		I/O	Core			3.3V	GPO	
GPIO[35]	SATACLKREQ#		I/O	Core			3.3V	GPO	
GPIO[36]	SATA2GP		I/O	Core	Y		3.3V	GPI	GPIO_36
GPIO[37]	SATA3GP		I/O	Core	Y		3.3V	GPI	GPIO_37
GPIO[38]	SLOAD		I/O	Core	Y		3.3V	GPI	GPIO_38
GPIO[39]	SDATAOUT0		I/O	Core	Y		3.3V	GPI	GPIO_39
GPIO[43:40]	OC[4:1]#		I/O	Resume	Y		3.3V	Native	OC#1;OC#2
GPIO[47:44]	NA		NA	NA			NA	NA	Not implemented
GPIO[48]	SDATAOUT1		I/O	Core	Y		3.3V	GPI	GPIO_48
GPIO[49]	CPUPWRGD		I/O	V_CPU_IO			CPU	Native	H_PWRGD
GPIO[50]	REQ1#		I/O	Core	Y		5.5V	Native	PREQ#1
GPIO[51]	GNT1#		I/O	Core			3.3V	Native	PGNT#1
GPIO[52]	REQ2#		I/O	Core	Y		5.5V	Native	PREQ#2
GPIO[53]	GNT2#		I/O	Core			3.3V	Native	PGNT#2
GPIO[54]	REQ3#		I/O	Core	Y		5.5V	Native	PREQ#3
GPIO[55]	GNT3#		I/O	Core			3.3V	Native	PGNT#3

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI Slot 1	PCI_INTA# PCI_INTB# PCI_INTC# PCI_INTD#	PCI_REQ#0 PCI_GNT#0	PCI_AD16	PCI_CLK0
PCI Slot 2	PCI_INTB# PCI_INTC# PCI_INTD# PCI_INTA#	PCI_REQ#1 PCI_GNT#1	PCI_AD17	PCI_CLK1
LAN	PCI_INTC#	PCI_REQ#2 PCI_GNT#2	PCI_AD20	LAN_PCLK
1394	PCI_INTD#	PCI_REQ#3 PCI_GNT#3	PCI_AD19	1394_PCLK

PCI RESET DEVICE

Signals	Target
PCI_RST#	PCI SLOT1&2, LAN, 1394
PCIE_RST#	PCI-E-16X & PCI-E- 1X
NB_RST#	RS690
LPC_RST#	BIOS, TPM
HD_RST#	P-IDE
A_RST#	SIO

DDRII DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	A0H	MCLK_A0/MCLK_A#0 MCLK_A1/MCLK_A#1 MCLK_A2/MCLK_A#2
DIMM 2	A1H	MCLK_A3/MCLK_A#3 MCLK_A4/MCLK_A#4 MCLK_A5/MCLK_A#5
DIMM 3	A2H	MCLK_B0/MCLK_B#0 MCLK_B1/MCLK_B#1 MCLK_B2/MCLK_B#2
DIMM 4	A3H	MCLK_B3/MCLK_B#3 MCLK_B4/MCLK_B#4 MCLK_B5/MCLK_B#5

JUMPER SETTING

CLR_CMOS	Clone define	TF define
(1-2)	CLEAR	NORMAL
(2-3)	NORMAL	CLEAR

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Title: GPIO/Jumper Setting

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Title: Change History

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