MS-7212 Ver:101

CPU:

AMD 939 Athlon 64/Athlon 64 FX

System Chipset:

NVIDIA CRUSH 51G
NVIDIA MCP51G

On Board Chipset:

LPC Super I/O -- W83627EHF REV:D
LAN -- REALTEK 8110S / 8100C
AC97 Codec --ALC655
BIOS --LPC FLASH ROM 4M

Main Memory:

DDR1 * 2 (Max 2GB)

Expansion Slots:

PCI-E 16X * 1
PCI 2.2 Slot * 3

PWM:

Controller--Intersil ISL6566CR with Driver inside

MICRO-START INT'L CO.,LTD.

Title: Cover Sheet

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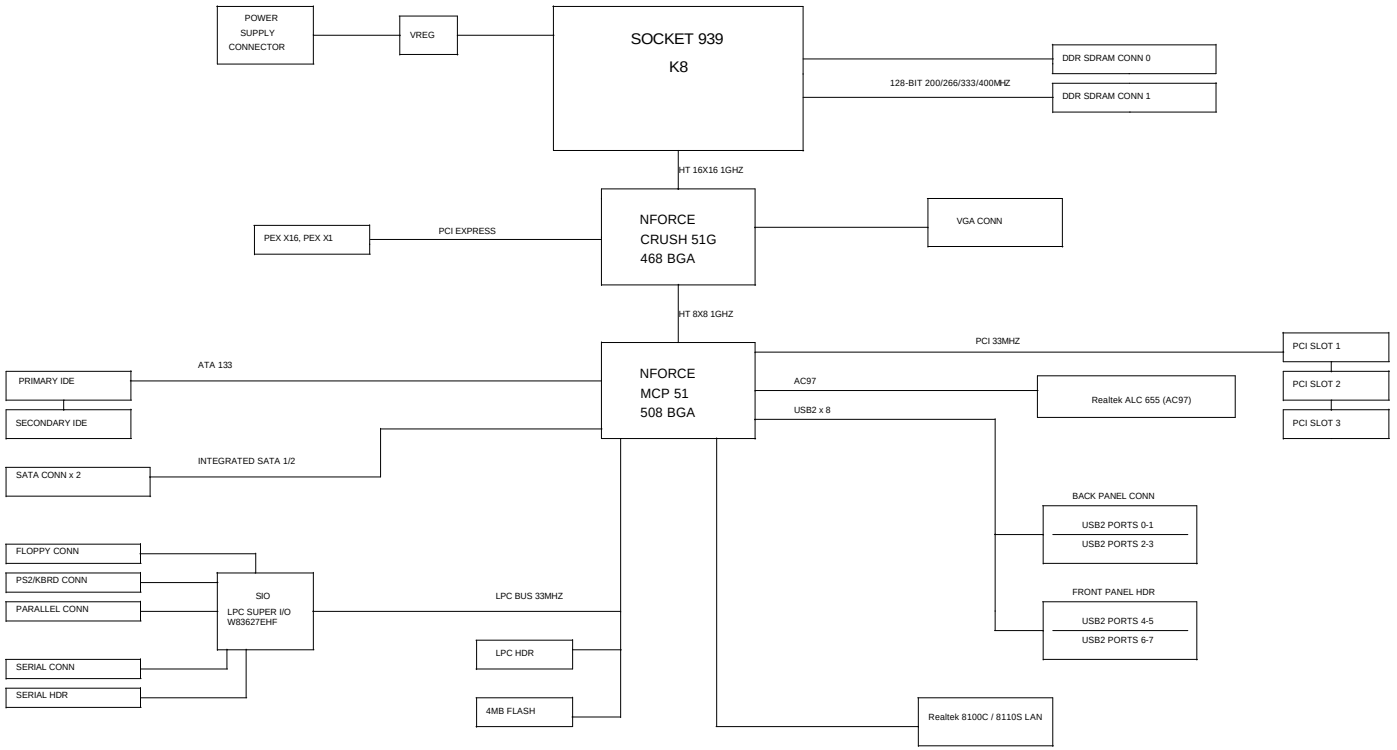
BLOCK DIAGRAM



MICRO-START INT'L CO.,LTD.

Title: Block Diagram		
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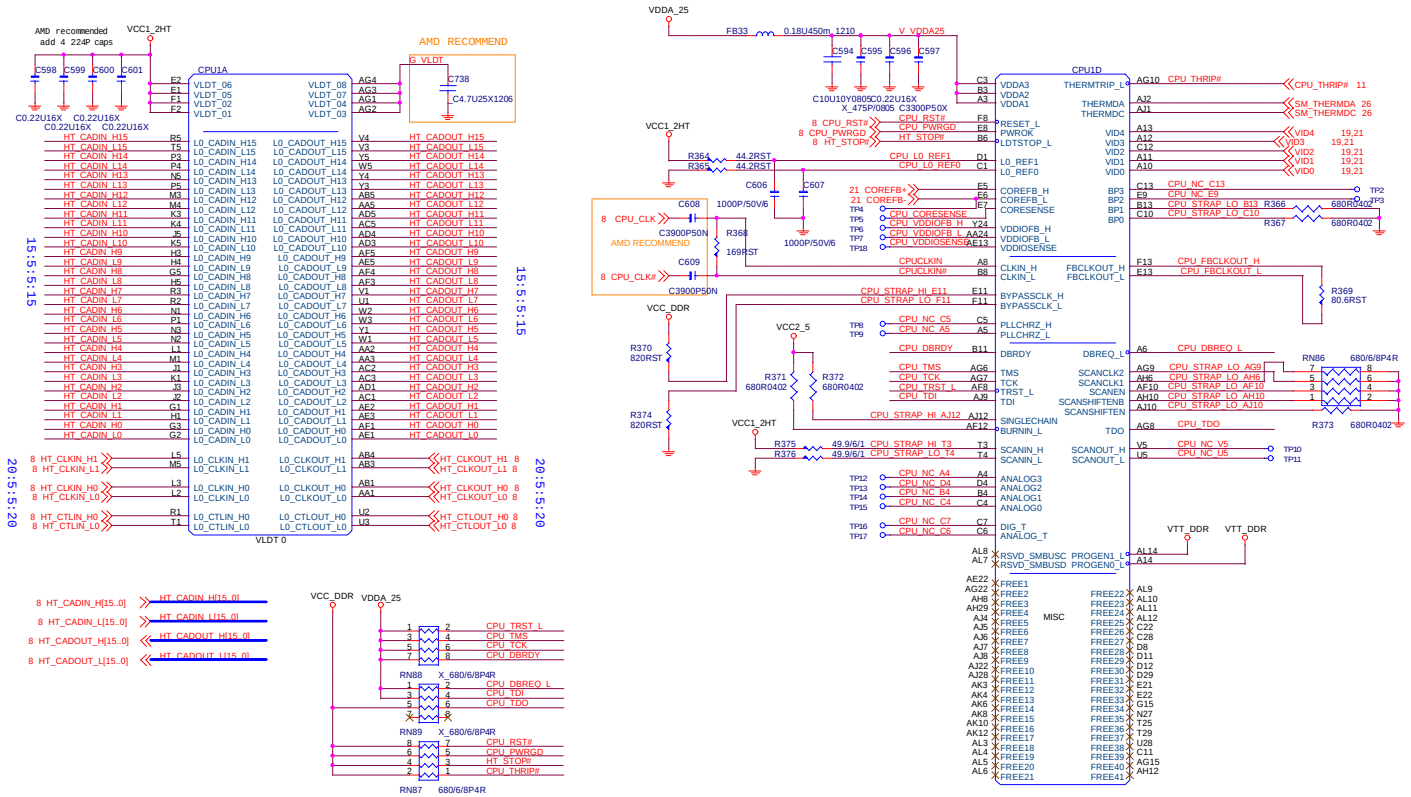
MS-7212 GPIO FUNCTION

MCP51 GPIO FUNCTION

NAME	Function Description	PAGE
GPIO_1	F_PANL RESET GPIO(FOR LENOVO SPEC)	12
GPIO_2	BIOS WRITE PROTECT(FOR LENOVO SPEC)	12
GPIO_3	BIOS_TBL#(FOR LENOVO SPEC)	12
GPIO_4	RESERVE(NC)	12
GPIO_5	RESERVE(NC)	12
GPIO_6	FOR LENOVO USB SWITCH(FOR LENOVO SPEC)	12
GPIO_7	FOR LENOVO USB SWITCH(FOR LENOVO SPEC)	12
GPIO_8	RESERVE GPIO(RSV1)(FOR LENOVO SPEC)	12
GPIO_9	RESERVE GPIO(RSV2)(FOR LENOVO SPEC)	12
GPIO_10	RESERVE(NC)	12
GPSB1/GP11	FOR LENOVO SUSPEND LED CONTROL(FOR LENOVO SPEC)	12
GP55	FOR LENOVO POWER LED CONTROL(FOR LENOVO SPEC)	12
GPIO_13	NC	12
GPIO_14	NC	12
GPIO_15	NC	12
GPIO_16	NC	12
THERMTRIP*/GPIO	CPU THERMTRIP	12
FANRPM/GPIO	THRM#	12
SATA_LED*/GPIO	SATA_LED	13

SIO GPIO FUNCTION

NAME	Function Description	PAGE
GP10	NC	19
GP11	POWER LED CONTROL(FOR LENOVO SPEC)	19
GP12	NC	19
GP13	NC	19
GP14	NC	19
GP16	NC	19
GP17	NC	19
GP32	NC	19
GP33	NC	19
GP44	NC	19
GP45	NC	19
GP53/PSON#	PS_ON# (ATX_PWR_ON#)	19
GP55	SUSPEND LED CONTROL(FOR LENOVO SPEC)	19
GP56/PSIN	PSIN (FP_RST#)	19
GP57/PSOUT#	PWRBTN#	19
GP60/RIA#	RIA#	19
GP52/SUSB#	SLP_S3#	19
GP50	GP50(EN_VRM10)	19



MSI	MICRO-START INT'L CO.,LTD.		
Title	AMD K8 939 PART 1		
Size C	Document Number MS-7212		Rev 101
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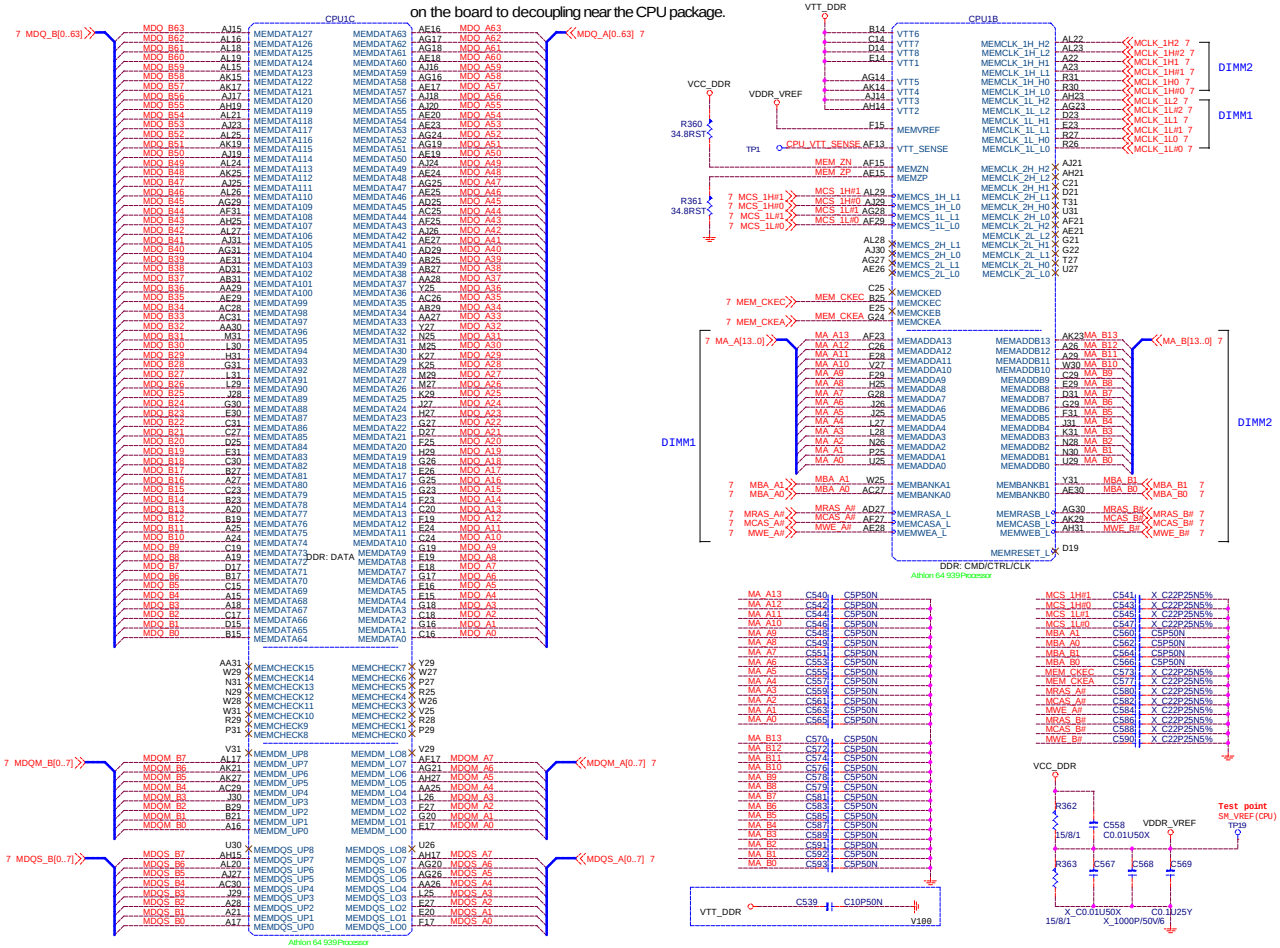
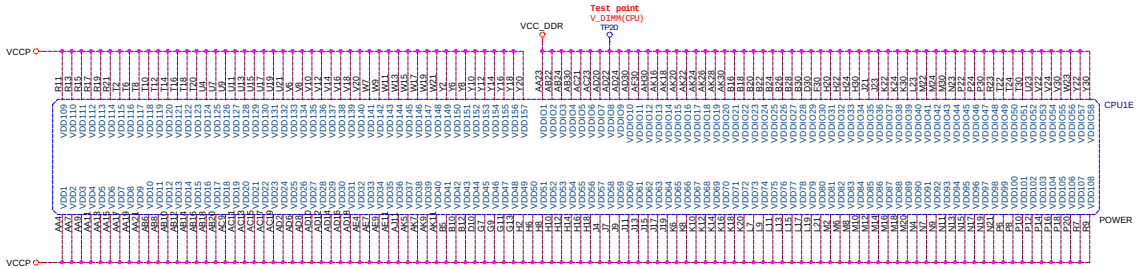
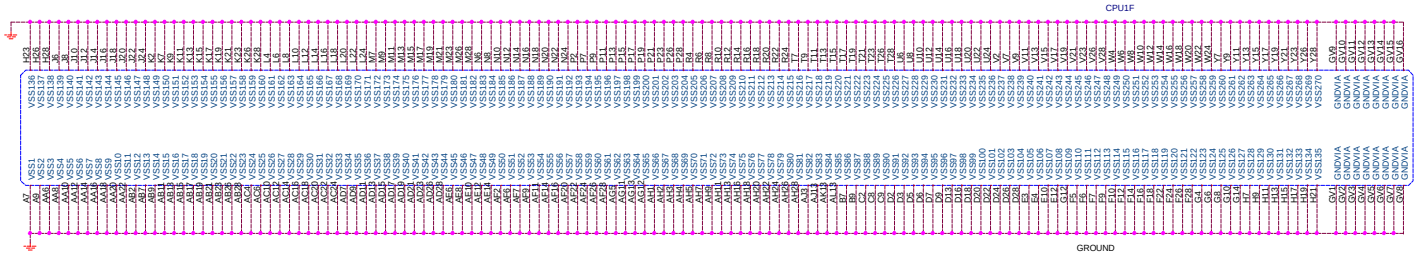
VDD_VTT_SUS_CPU is connected to the VDD_VTT_SUS power supply through the package or on the die. It is only connected on the board to decoupling near the CPU package.

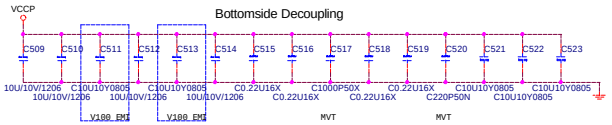


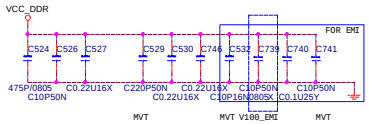
MICRO-START INT'L CO.,LTD.

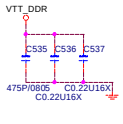
Title		
AMD K8 939 PART 2		
Size: C	Document Number: MS-7212	Rev: 101
Date: Thursday, November 24, 2005	Sheet 5 of 32	

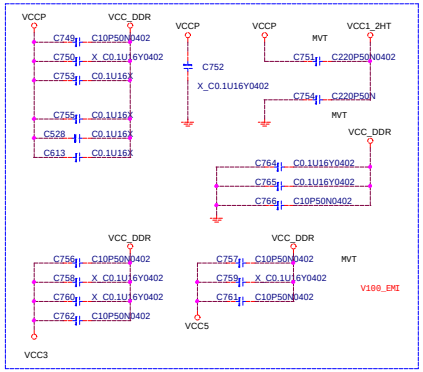












MICRO-START INT'L CO.,LTD.		
Title: AMD K8 939 PART 3		
Size: C	Document Number: MS-7212	Rev: 101
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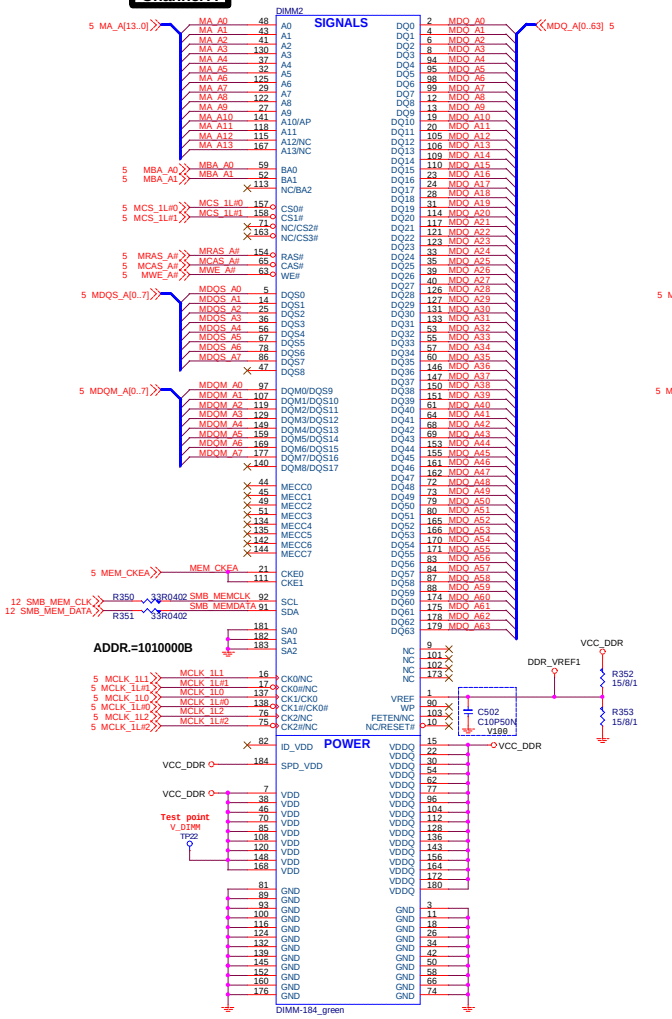
SYSTEM MEMORY

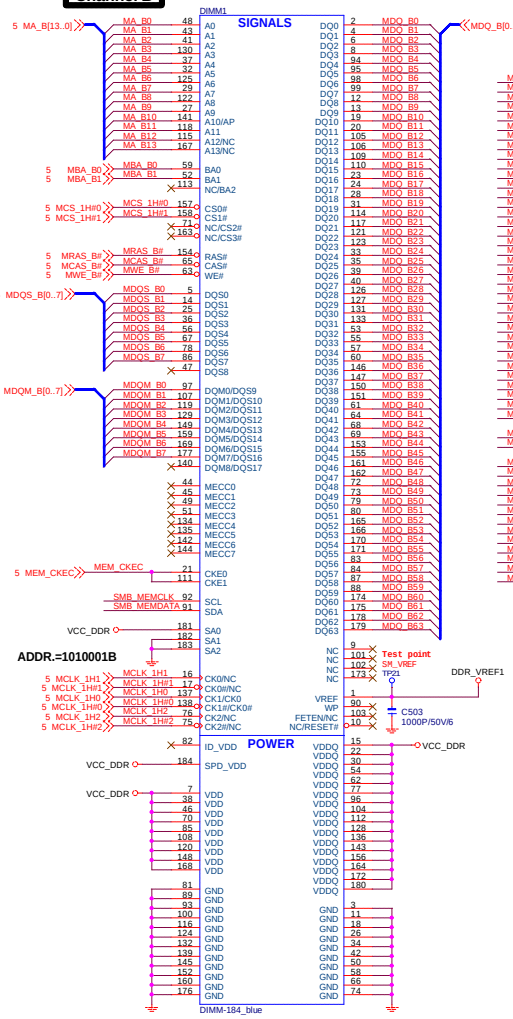
Channel A

DDR DIMM2

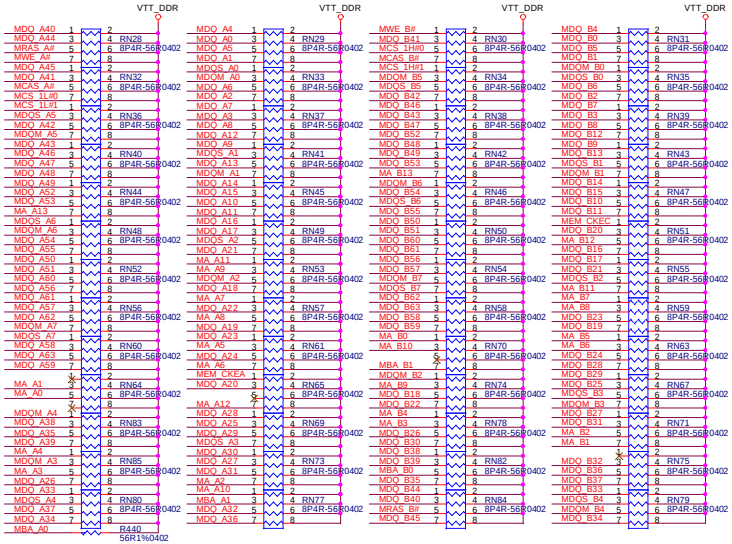


Channel B

DDR DIMM1



DDR Terminal Resisitors
CHANGE TO 56 OHM

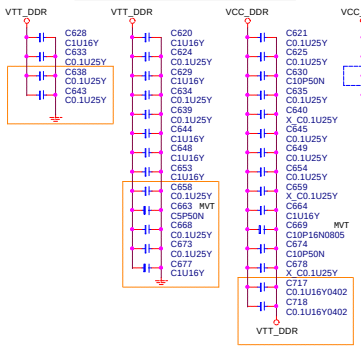


DDR Terminal Resisitors
CHANGE TO 56 OHM

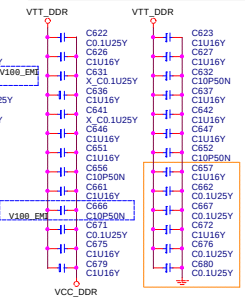
DDR Terminal Resisitors
CHANGE TO 56 OHM

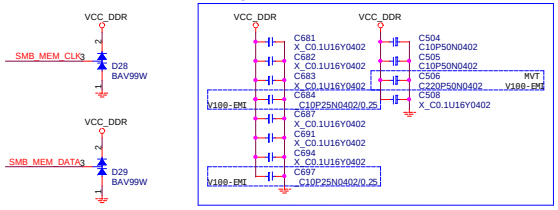
DDR Terminal Resisitors
CHANGE TO 56 OHM

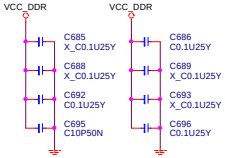
DECOUPLING CAPACITORS



DECOUPLING CAPACITORS







AMD recommended add 10 more caps between VCC_DDR and VTT_DDR.

MSI MICRO-STAR INT'L CO.,LTD.

Title: DDR DIMM 1,2		
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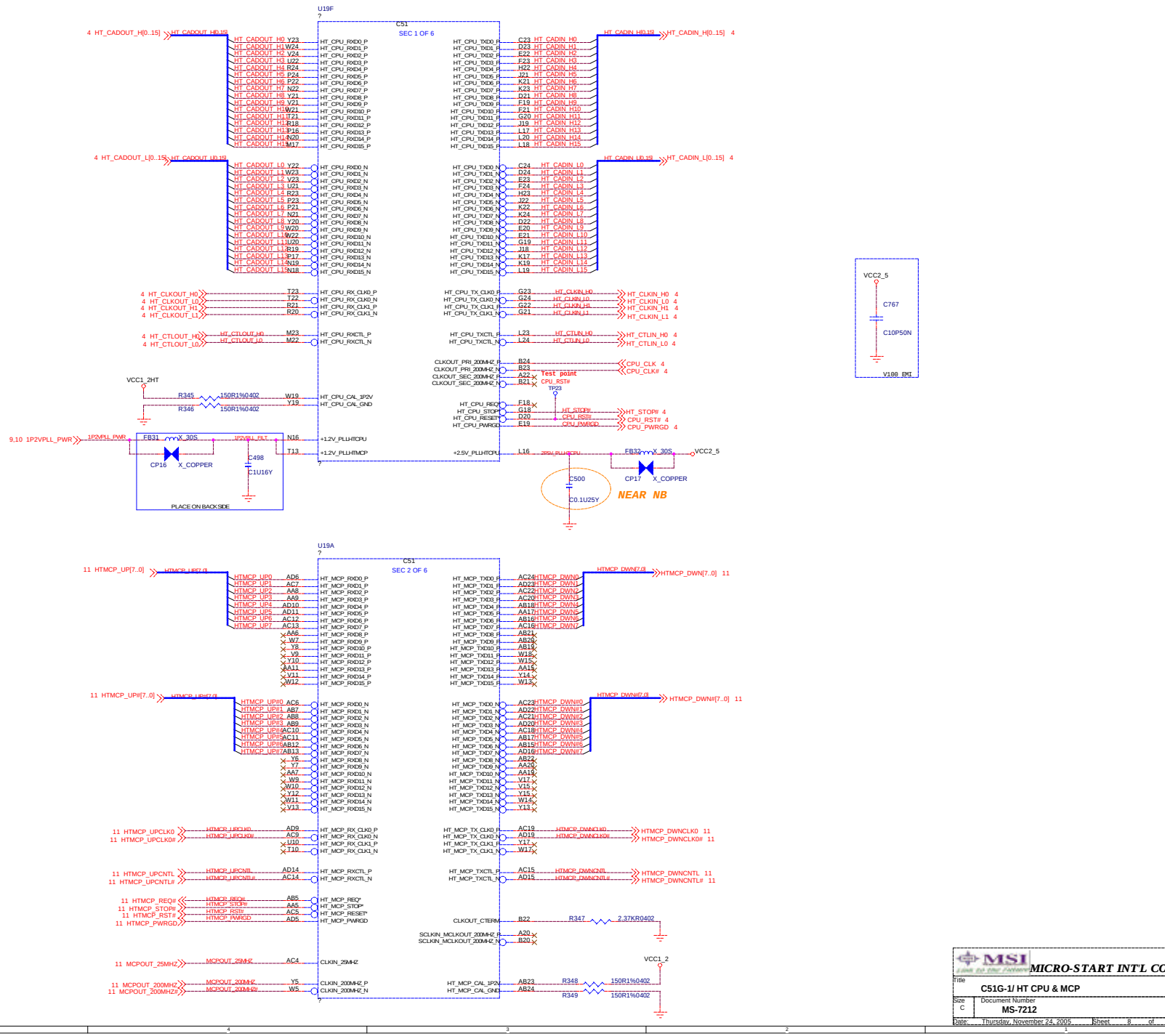

MICRO-START INT'L CO.,LTD.

Title: C51G-1/ HT CPU & MCP

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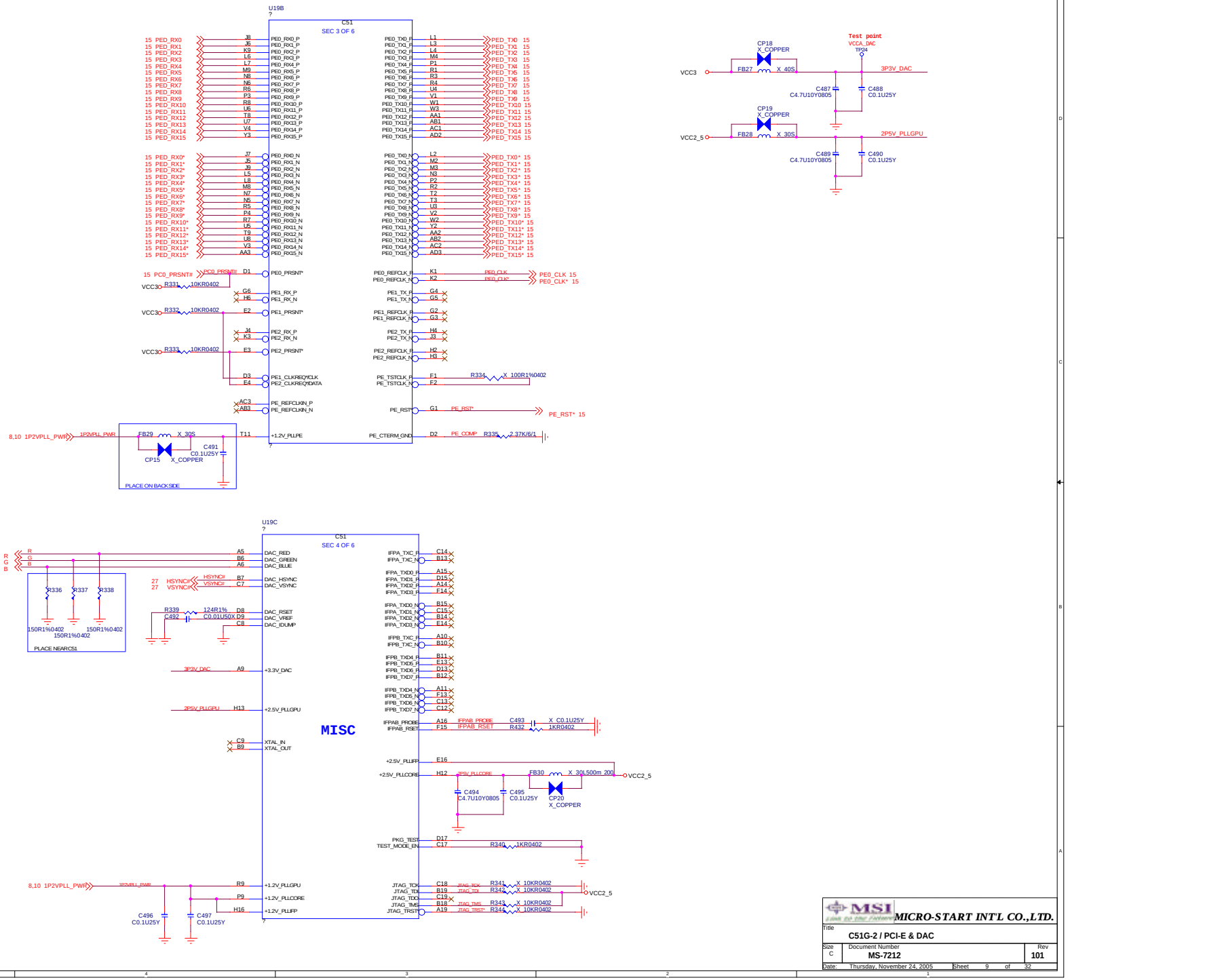

Title	C51G-2 / PCI-E & DAC
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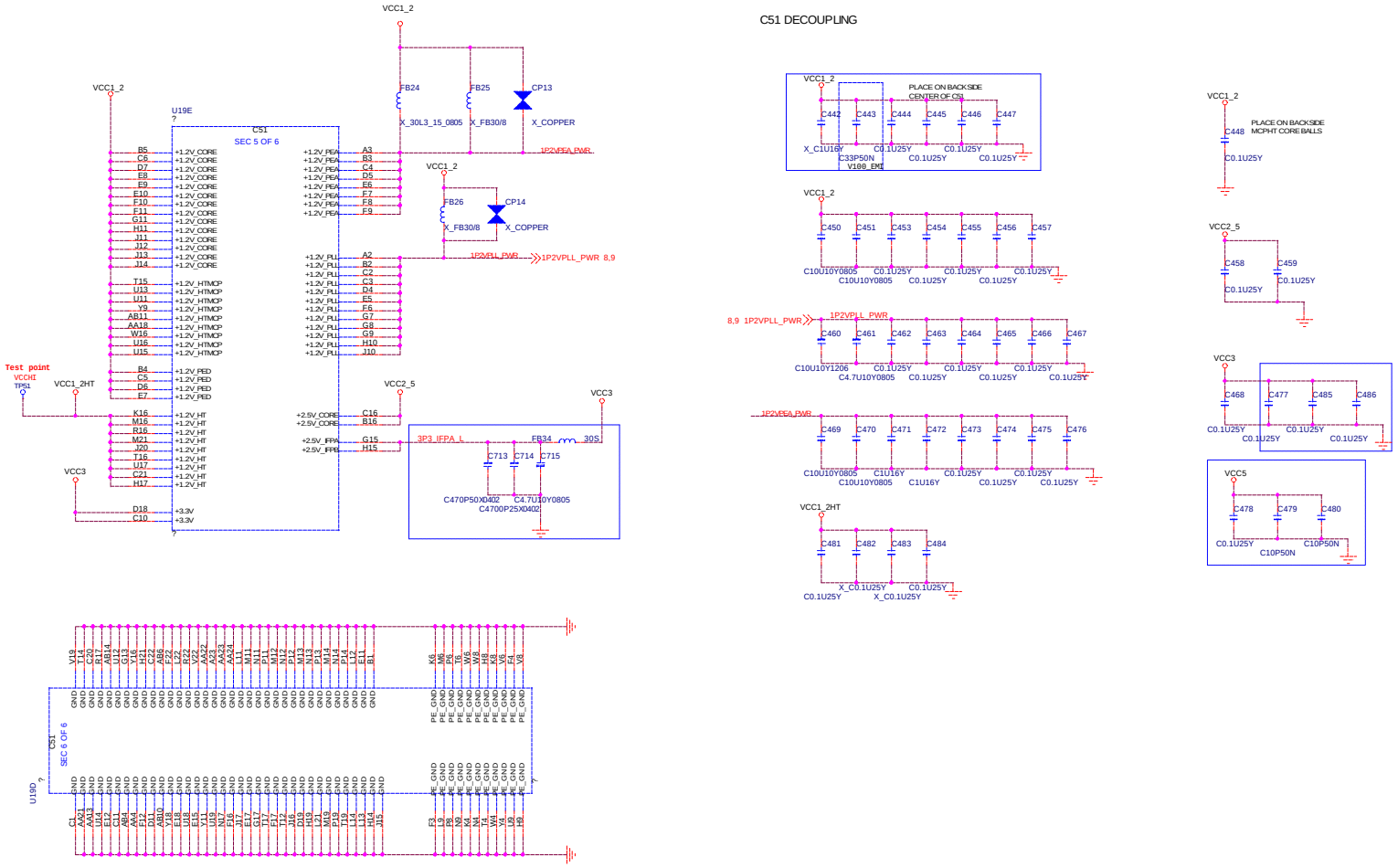
MICRO-START INT'L CO.,LTD.



MSI	MICRO-START INT'L CO.,LTD.		
Title	C51G-3/PWR/GND		
Size C	Document Number MS-7212		Rev 101
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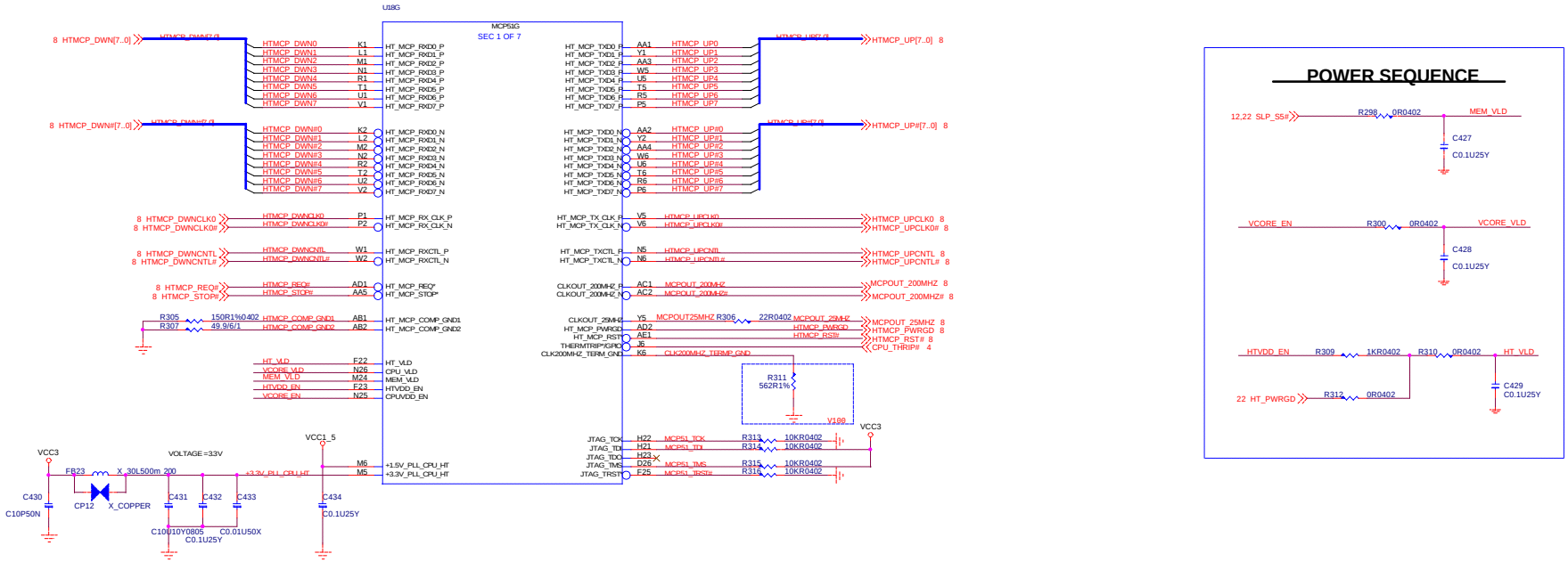
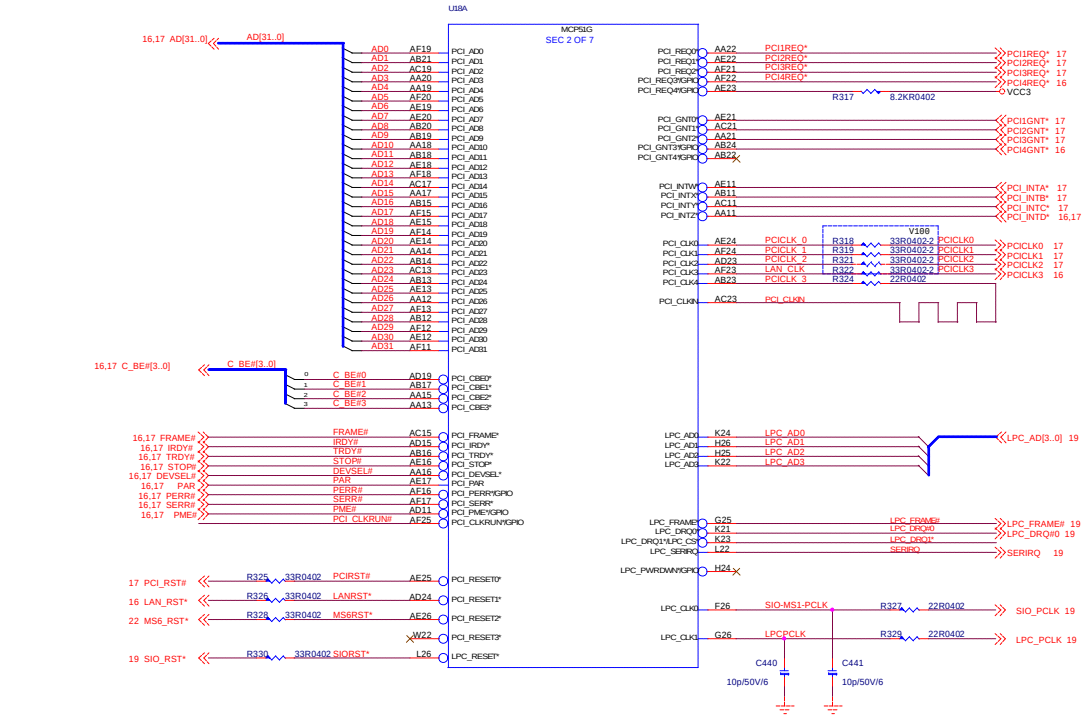
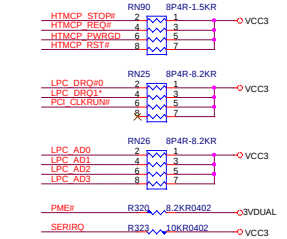
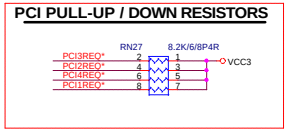


POWER SEQUENCE

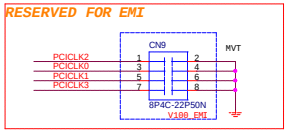




PCI PULL-UP / DOWN RESISTORS



RESERVED FOR EMI



MSI	MICRO-START INT'L CO.,LTD.	
Title: MCP51-1/ HT & PCI		
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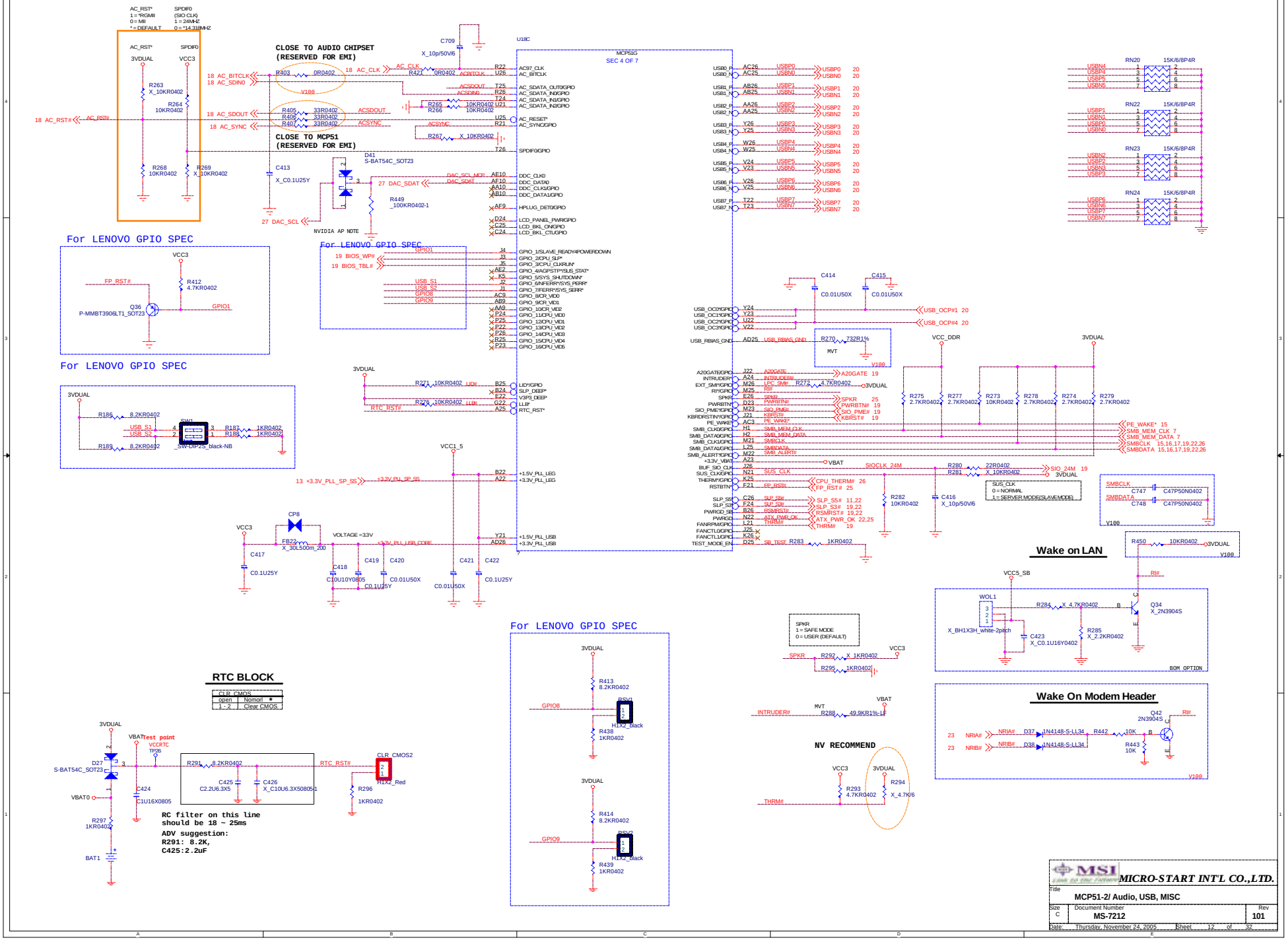
AC_RST* 1 = *RGMII 0 = MII * = DEFAULT
SPDIF0 (SIO CLK) 1 = 24MHZ 0 = *14.318MHZ
CLOSE TO AUDIO CHIPSET (RESERVED FOR EMI)
CLOSE TO MCP51 (RESERVED FOR EMI)
NVIDIA AP NOTE
MCP51G SEC 4 OF 7
For LENOVO GPIO SPEC
RTC BLOCK
CLR_CMOS
open Normal *
1 - 2 Clear CMOS
RC filter on this line should be 18 ~ 25ms
ADV suggestion:
R291: 8.2K,
C425:2.2uF
Wake on LAN
Wake On Modem Header
NV RECOMMEND
SPKR 1 = SAFE MODE 0 = USER (DEFAULT)
SUS_CLK 0 = NORMAL 1 = SERVER MODE(SLAVE MODE)
BOM OPTION
MICRO-START INT'L CO.,LTD.
MCP51-2/ Audio, USB, MISC
Document Number MS-7212
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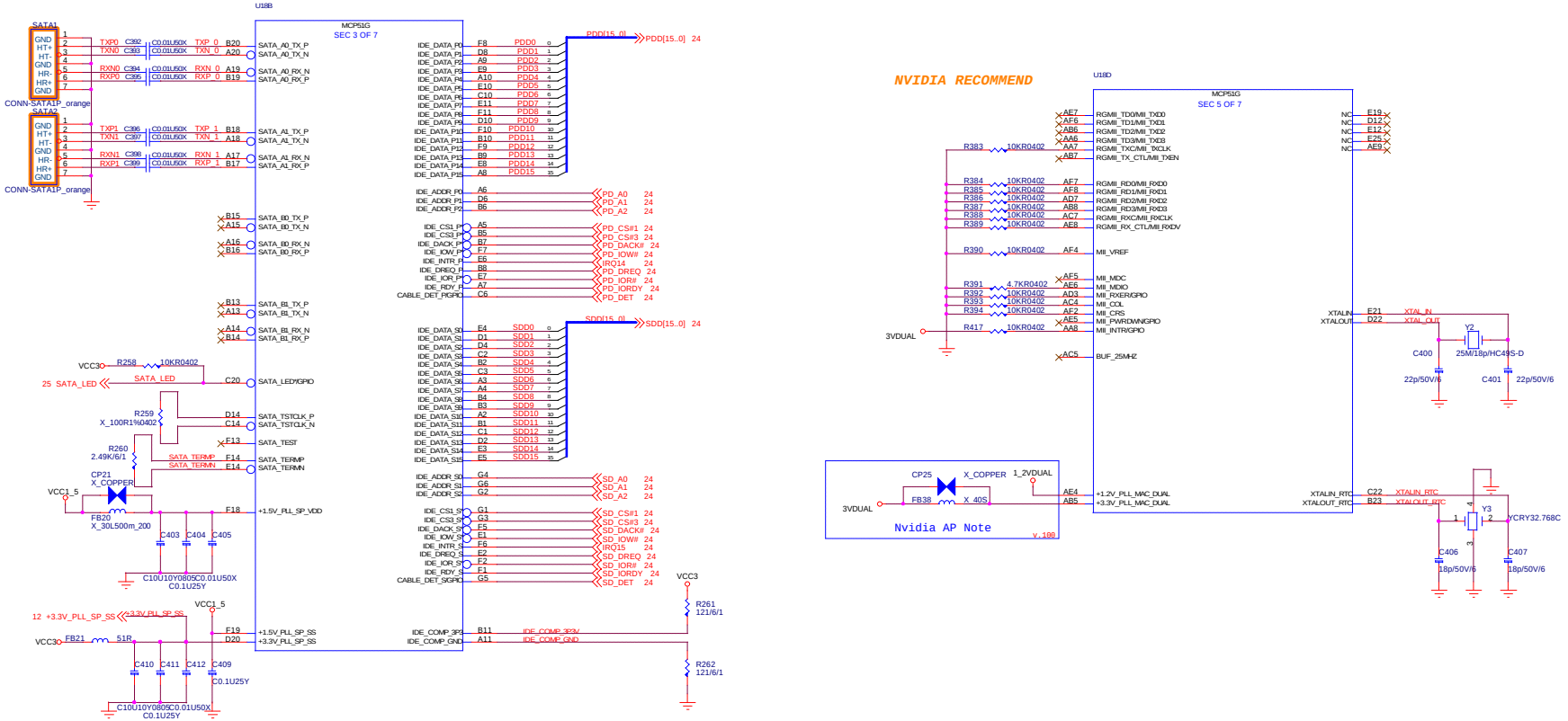
U18B
MCP51G
SEC 3 OF 7
SATA1
SATA2
CONN-SATA1P_orange
CONN-SATA1P_orange
SATA_A0_TX_P
SATA_A0_TX_N
SATA_A0_RX_N
SATA_A0_RX_P
SATA_A1_TX_P
SATA_A1_TX_N
SATA_A1_RX_N
SATA_A1_RX_P
SATA_B0_TX_P
SATA_B0_TX_N
SATA_B0_RX_N
SATA_B0_RX_P
SATA_B1_TX_P
SATA_B1_TX_N
SATA_B1_RX_N
SATA_B1_RX_P
SATA_LED
SATA_LED/GPIO
SATA_TSTCLK_P
SATA_TSTCLK_N
SATA_TEST
SATA_TERMP
SATA_TERMN
+1.5V_PLL_SP_VDD
+1.5V_PLL_SP_SS
+3.3V_PLL_SP_SS
PDD[15..0]
SDD[15..0]
IDE_COMP_3P3V
IDE_COMP_GND
U18D
MCP51G
SEC 5 OF 7
NVIDIA RECOMMEND
RGMII_TD0/MII_TXD0
RGMII_TD1/MII_TXD1
RGMII_TD2/MII_TXD2
RGMII_TD3/MII_TXD3
RGMII_TXC/MII_TXCLK
RGMII_TX_CTL/MII_TXEN
RGMII_RD0/MII_RXD0
RGMII_RD1/MII_RXD1
RGMII_RD2/MII_RXD2
RGMII_RD3/MII_RXD3
RGMII_RXC/MII_RXCLK
RGMII_RX_CTL/MII_RXDV
MII_VREF
MII_MDC
MII_MDIO
MII_RXER/GPIO
MII_COL
MII_CRS
MII_PWRDWNGPIO
MII_INTR/GPIO
BUF_25MHZ
XTALIN
XTALOUT
XTALIN_RTC
XTALOUT_RTC
+1.2V_PLL_MAC_DUAL
+3.3V_PLL_MAC_DUAL
3VDUAL
Nvidia AP Note
v_100
MICRO-START INT'L CO.,LTD.
MCP51-3/ SATA, IDE, MII
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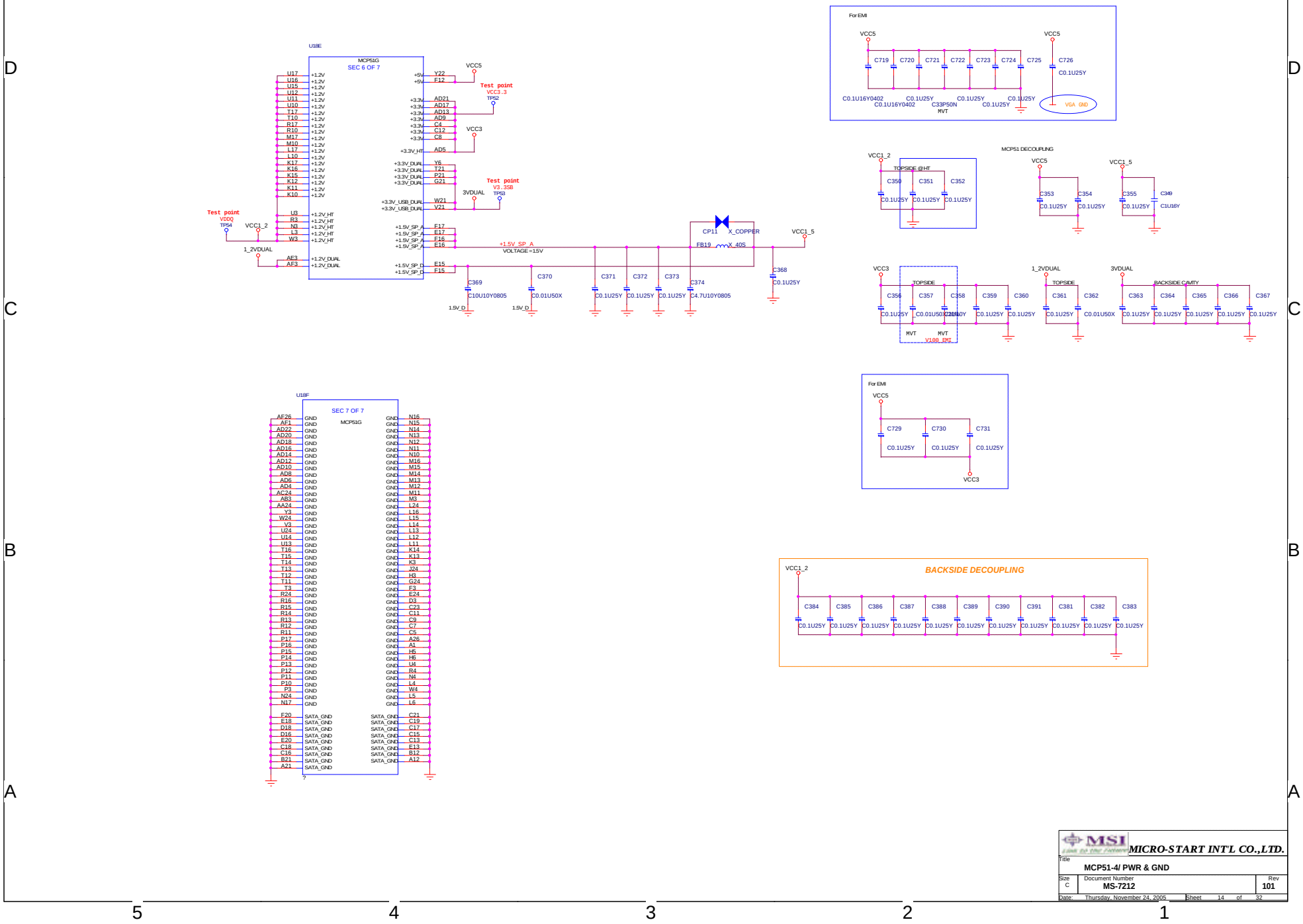
101
Sheet 13 of 32



MSI MICRO-START INT'L CO.,LTD.

Title: MCP51-4/ PWR & GND

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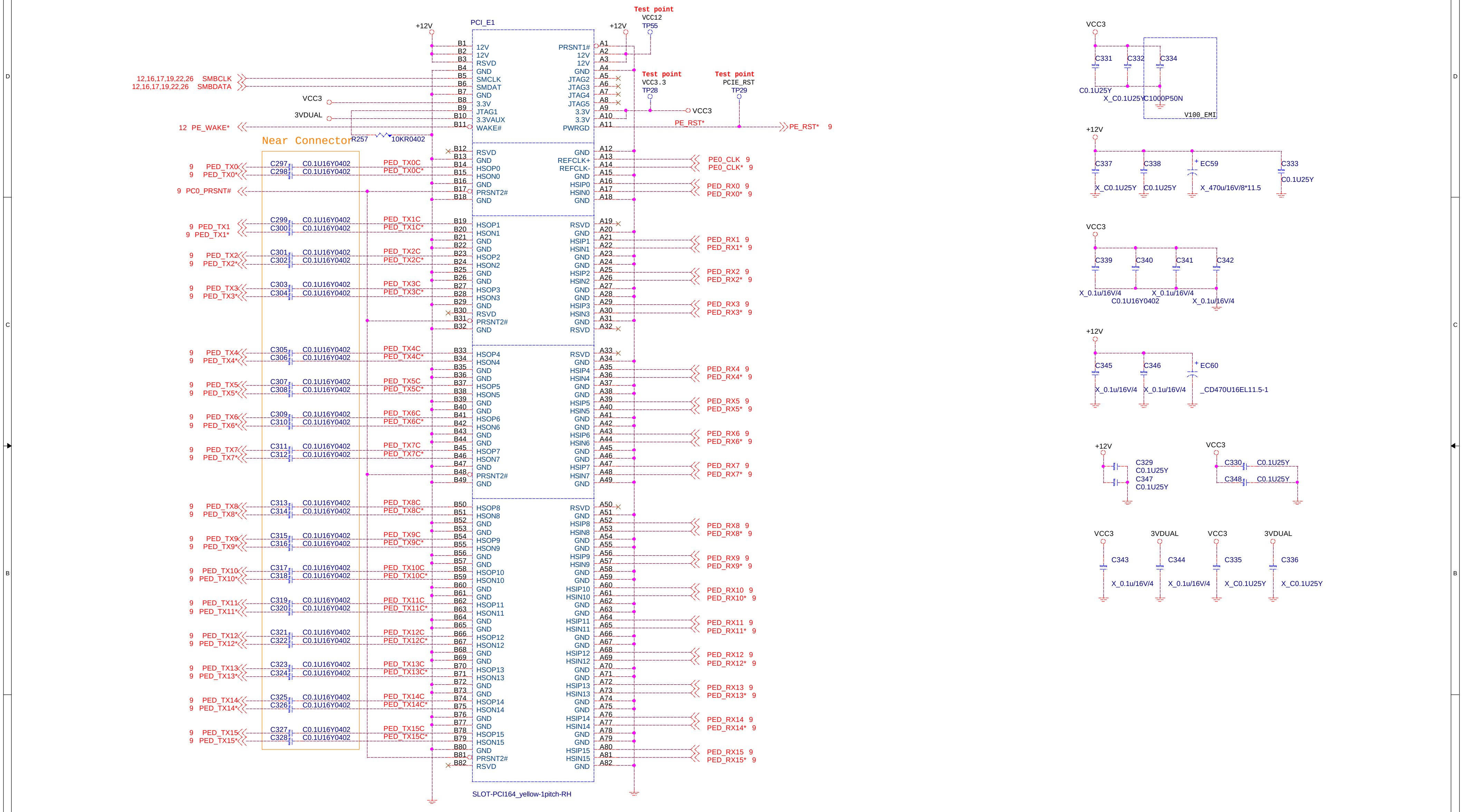

PCI_E1
SLOT-PCI164_yellow-1pitch-RH
Near Connector
Test point
VCC12
TP55
Test point
VCC3.3
TP28
Test point
PCIE_RST
TP29
+12V
VCC3
3VDUAL
12,16,17,19,22,26 SMBCLK
12,16,17,19,22,26 SMBDATA
12 PE_WAKE*
9 PC0_PRSNT#
PE_RST*
PE_RST* 9
R257
10KR0402
12V
RSVD
GND
SMCLK
SMDAT
3.3V
JTAG1
3.3VAUX
WAKE#
PRSNT1#
JTAG2
JTAG3
JTAG4
JTAG5
PWRGD
REFCLK+
REFCLK-
HSOP0
HSON0
HSIP0
HSIN0
PRSNT2#
PED_TX0C
PED_TX0C*
PED0_CLK 9
PED0_CLK* 9
PED_RX0 9
PED_RX0* 9
C0.1U16Y0402
C0.1U25Y
X_C0.1U25Y
C1000P50N
V100_EMI
X_C0.1U25Y
C0.1U25Y
X_470u/16V/8*11.5
EC59
X_0.1u/16V/4
C0.1U16Y0402
EC60
_CD470U16EL11.5-1
C329
C330
C347
C348
C343
C344
C335
C336
X_C0.1U25Y

MSI MICRO-START INT'L CO.,LTD.

Title: PCI-EXPRESS X16 SLOT

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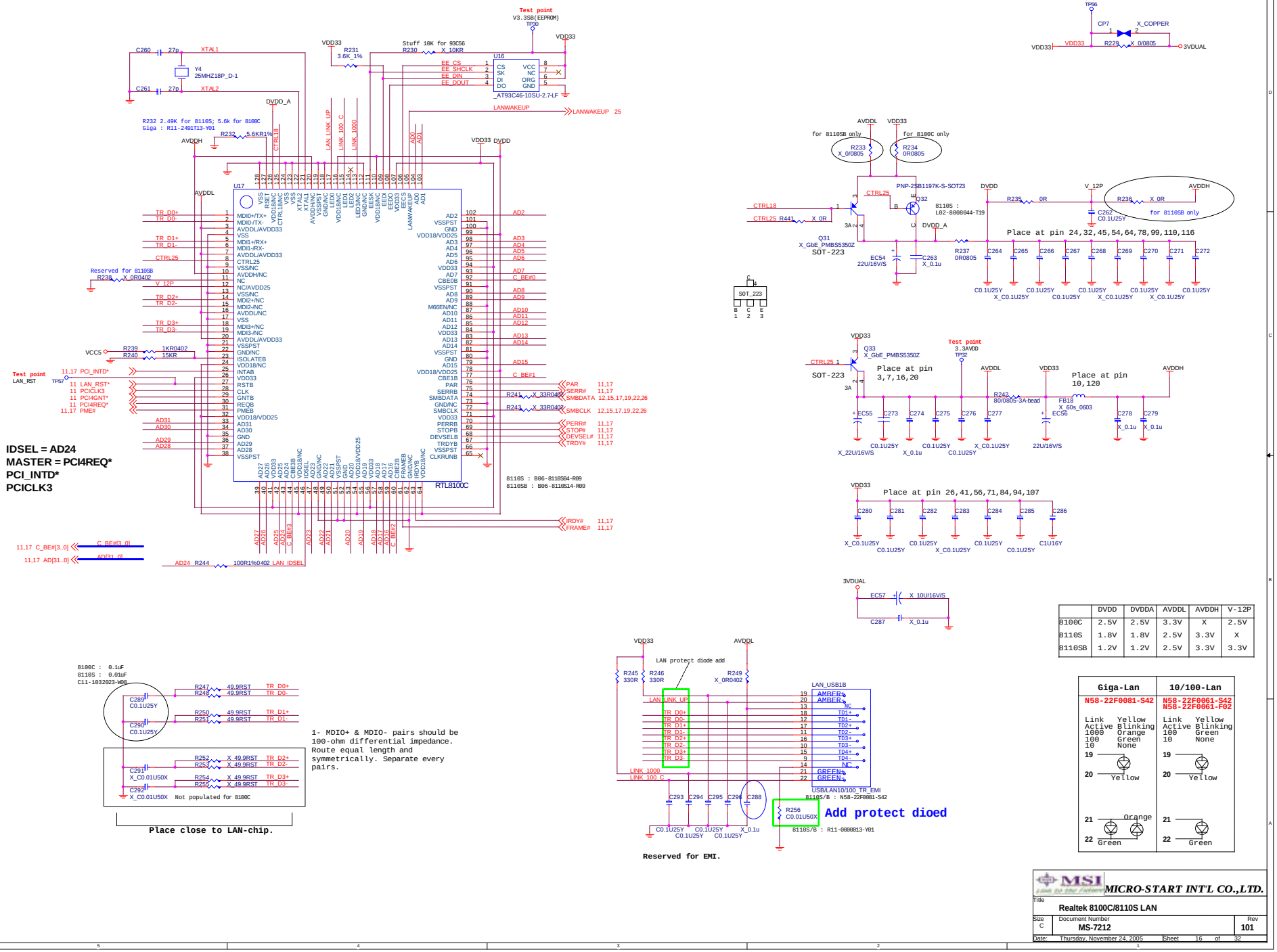

	DVDD	DVDDA	AVDDL	AVDDH	V-12P
8100C	2.5V	2.5V	3.3V	X	2.5V
8110S	1.8V	1.8V	2.5V	3.3V	X
8110SB	1.2V	1.2V	2.5V	3.3V	3.3V

Giga-Lan		10/100-Lan	
N58-22F0081-S42		N58-22F0061-S42 N58-22F0061-F02	
Link	Yellow	Link	Yellow
Active	Blinking	Active	Blinking
1000	Orange	100	Green
100	Green	10	None
10	None		

Title			
Realtek 8100C/8110S LAN			
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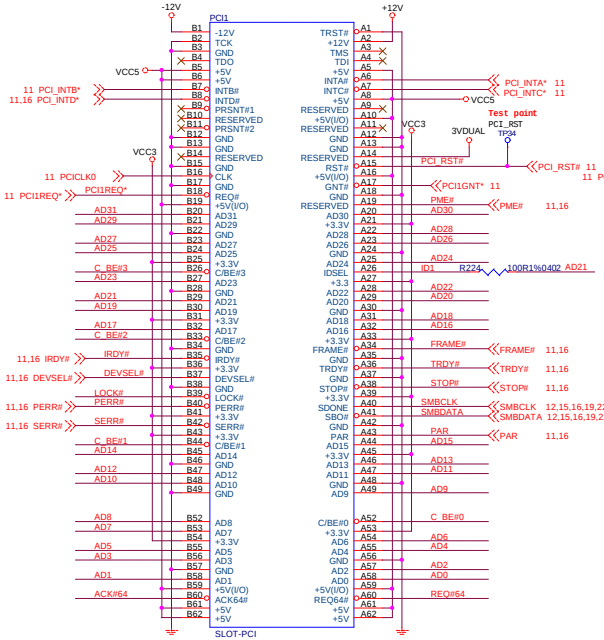
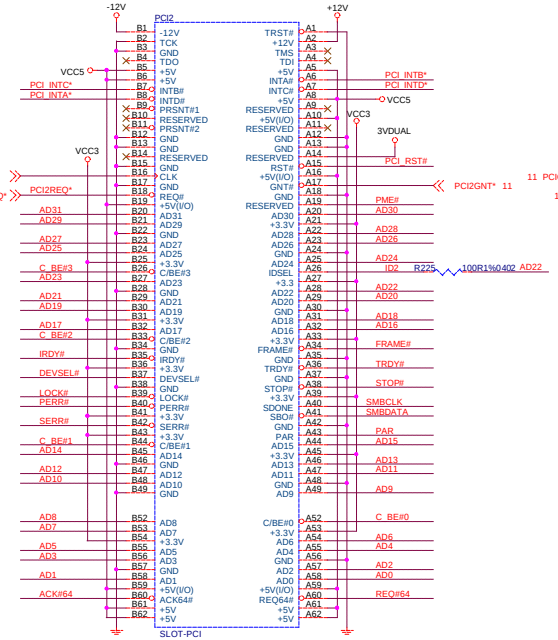
PCI SLOT 1



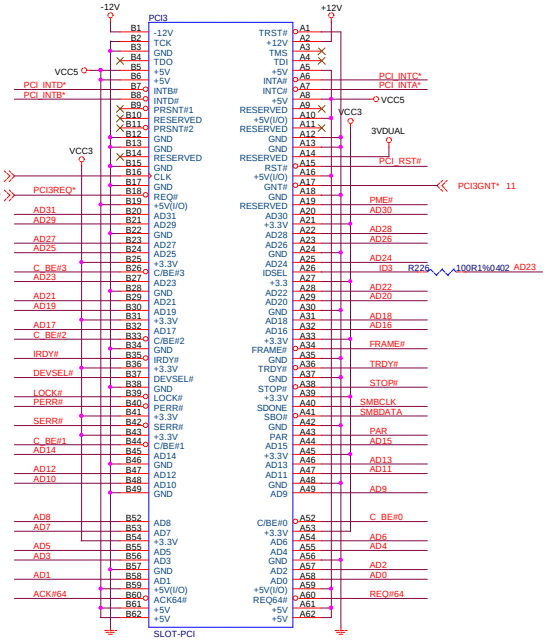
IDSEL = AD21
MASTER = PCI1REQ*
PCI_INT* A B C D
PCICLK0

PCI SLOT 2

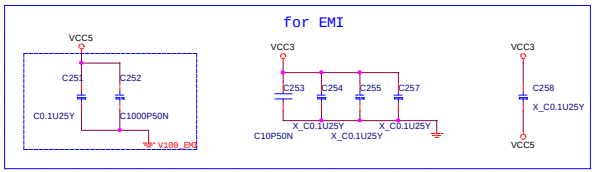


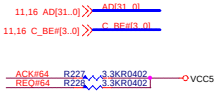
IDSEL = AD22
MASTER = PCI2REQ*
PCI_INT* B C D A
PCICLK1

PCI SLOT 3

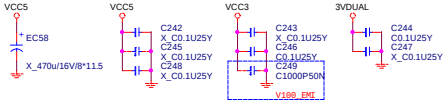


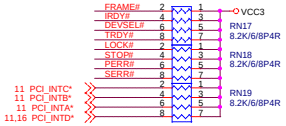
IDSEL = AD23
MASTER = PCI3REQ*
PCI_INT* C D A B
PCICLK2





PCI SLOT DECOUPLING CAPACITORS





MICRO-START INT'L CO.,LTD.

Title: PCI Slot 1 & 2		
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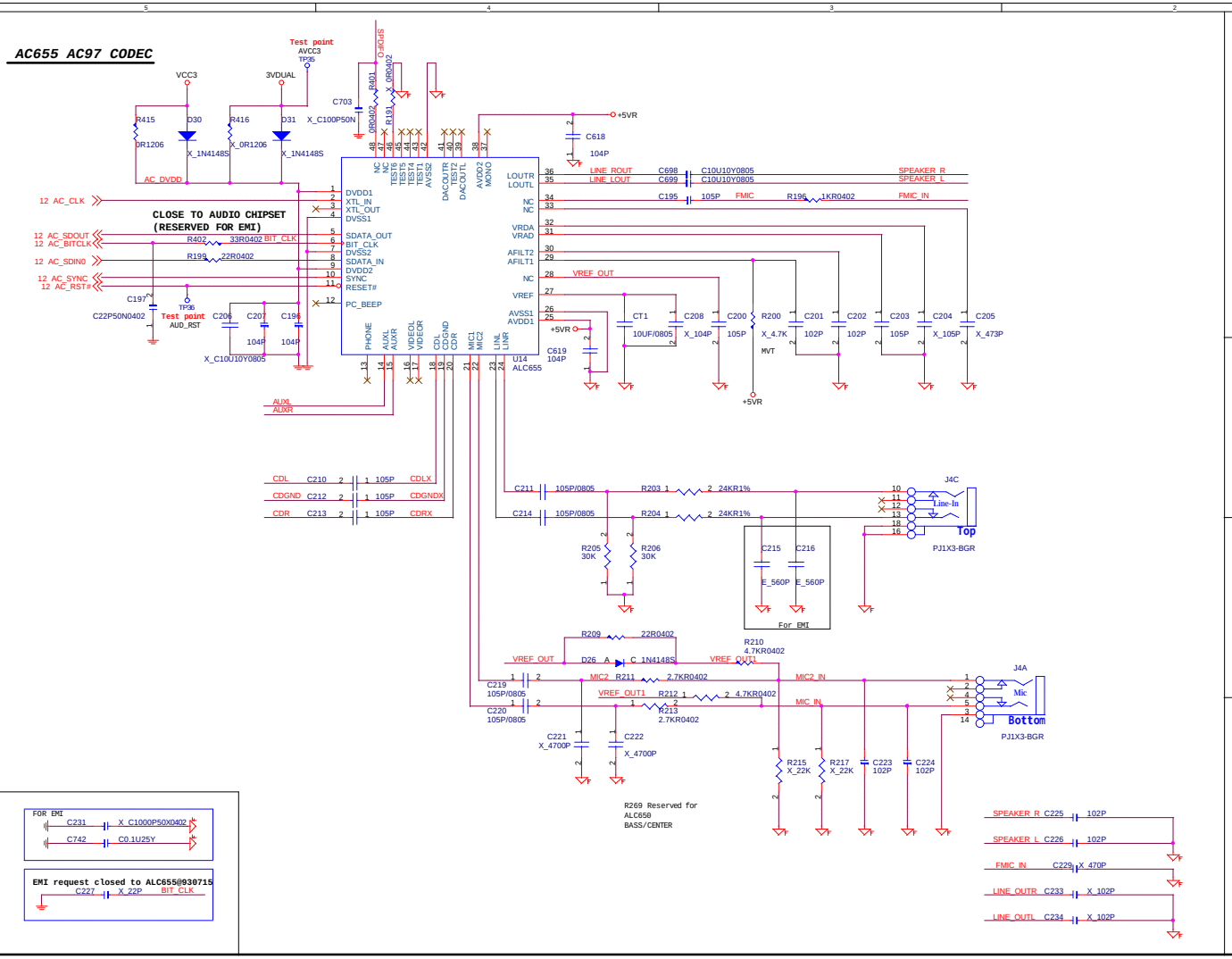
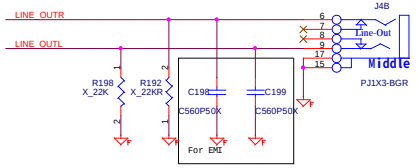
AC655 AC97 CODEC



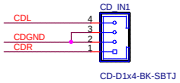
FOR EMI
C231 X_C1000P50X0402
C742 C0.1U25Y

EMI request closed to ALC655@930715
C227 X_22P BIT_CLK

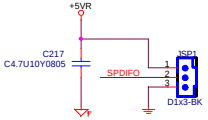
SPEAKER OUT JACK



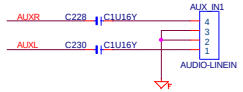
AUDIO CODE CD IN HEADERS



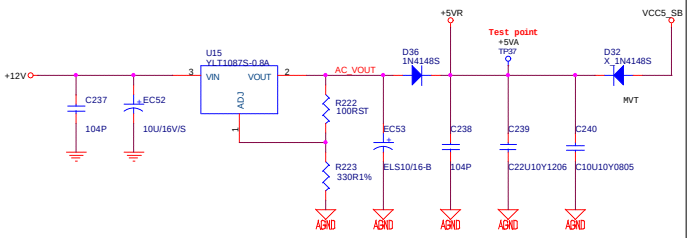
SPDIF OUT



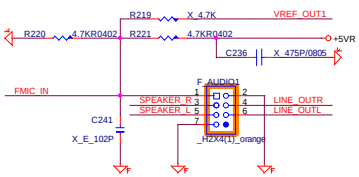
AUX IN



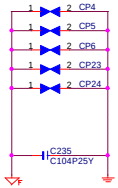
AUDIO CODE REGULATORS

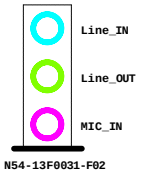


Onboard Header for Lenovo



DECOUPLING CAPACITOR





MICRO-START INT'L CO.,LTD.

Title: 1394a Link Layer Controller		
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LPC SUPER I/O W83627EHF

Winbond APnote

CPUFANOUT0 & SYSFANOUT are default PWM mode

CPUFANOUT1 & SYSFANOUT are default DC mode

When PSIN function is disable, set CRE7 bit 0 as 1

W83627EHF

Bios should switch to 24MHZ (Default : 48MHZ)

Hardware Monitor

BIOS PROTECT BLOCK

BIOS Update Config.		
HIGH	Un_protected	
LOW	Protected	Default

IR HEADER

LPC I/O STRAPPING RESISTOR

RTSA#	L: CFAD=2E	H: CFAD=4E
GP50	L: TTL LEVEL	H: VBM10.1 EVEL
SOUTA	L: KBC DISABLE	H: KBC ENABLE
DTRA#	L: DISABLE SPI	H: DIABLE SPI

Chasiss Intrusion

W83627EHF OUTPUT IS 3.3V

MSI MICRO-START INT'L CO.,LTD.

Title: W627EHF LPC I/O / FWH

Size: C | Document Number: MS-7212 | Rev: 101

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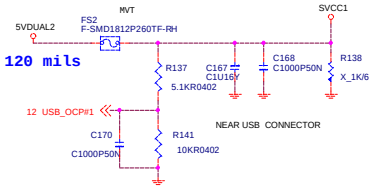
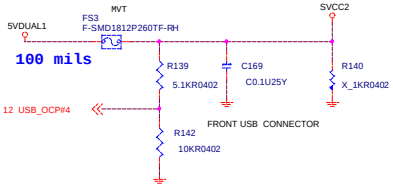
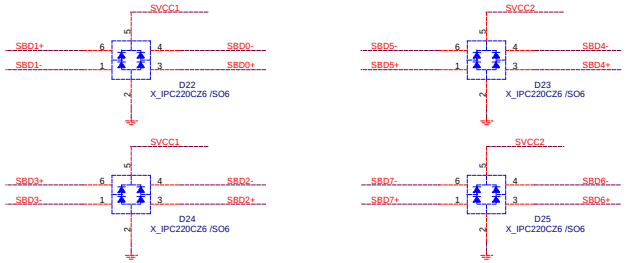
POWER CIRCUIT FOR USB PORT 0,1,2,3

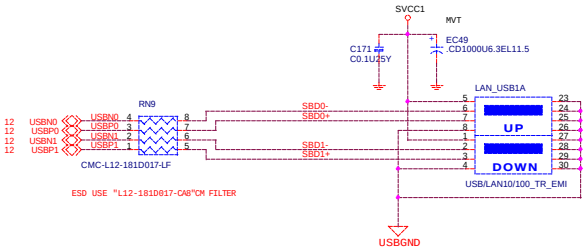


POWER CIRCUIT FOR USB PORT 4,5,6,7





REAR PANEL USB CONNECTOR FOR USB PORT 4,5

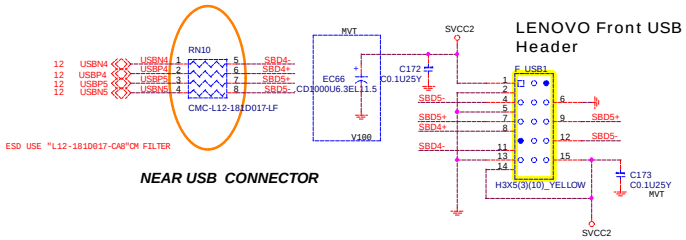


NEAR USB CONNECTOR

22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22

FRONT PANEL USB CONNECTOR FOR USB PORT 0,1

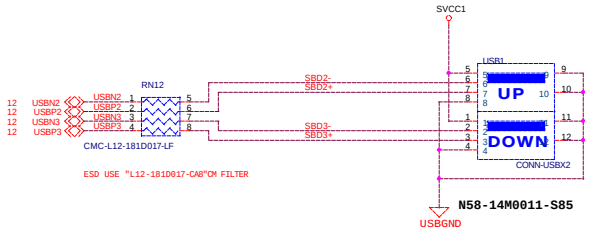
Reserved, can be taken off riser card within bead



NEAR USB CONNECTOR

22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22

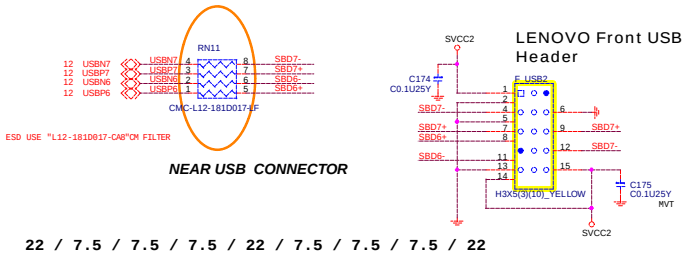
REAR PANEL USB CONNECTOR FOR USB PORT 6,7



NEAR USB CONNECTOR

22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22

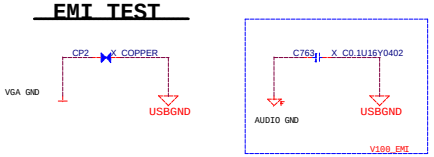
FRONT PANEL USB CONNECTOR FOR USB PORT 2,3



NEAR USB CONNECTOR

22 / 7.5 / 7.5 / 7.5 / 22 / 7.5 / 7.5 / 7.5 / 22

EMI TEST



MICRO-START INT'L CO.,LTD.

Title: USB CONNECTORS

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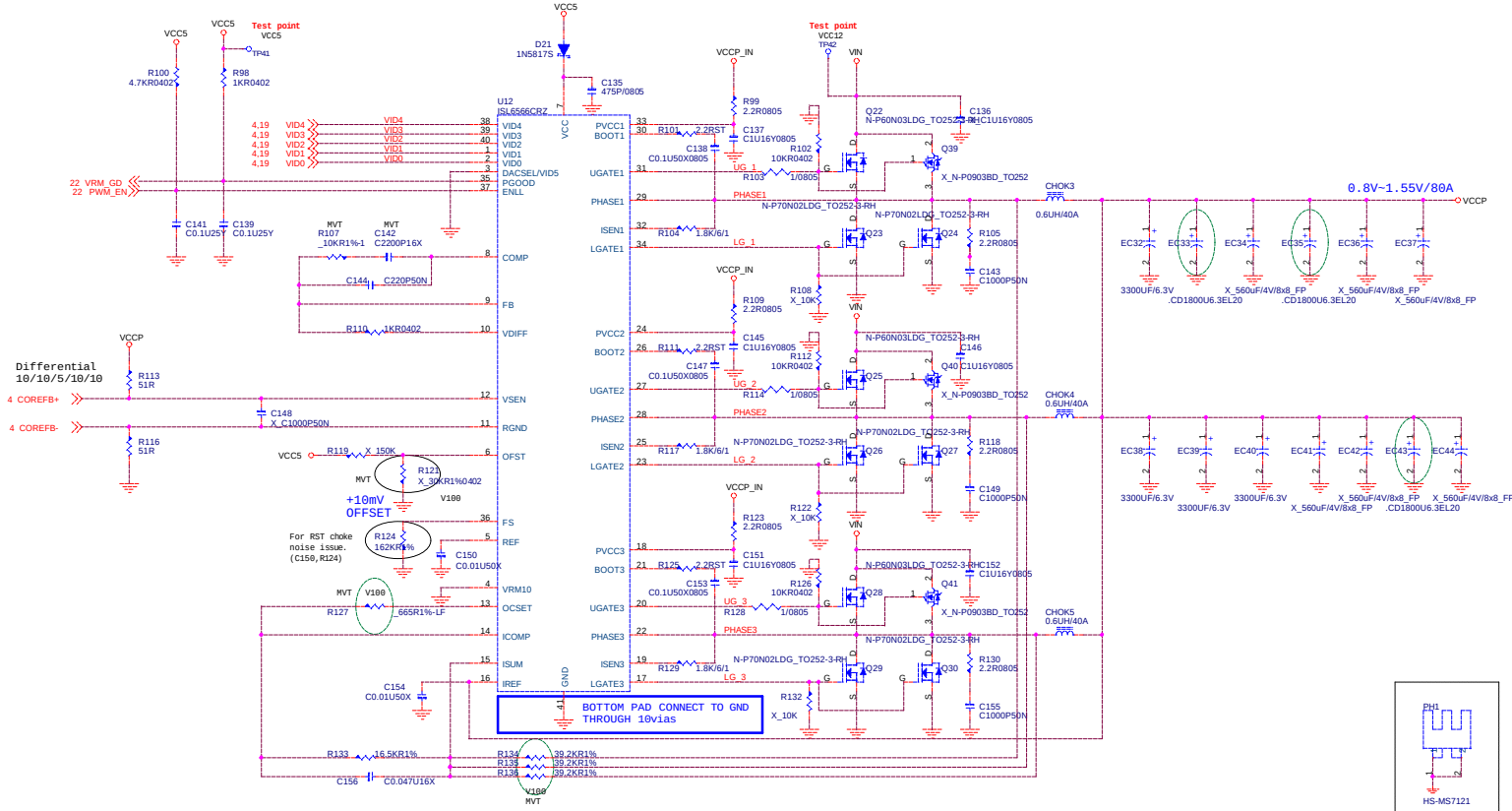
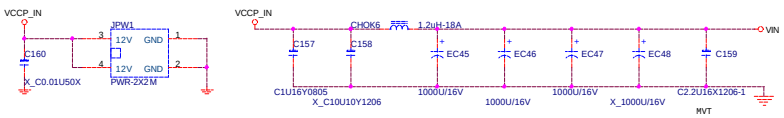


ATX12V Power Connector



MICRO-START INT'L CO.,LTD.

Title	K8 PWM ISL6566CRZ	
Size C	Document Number MS-7212	Rev 101
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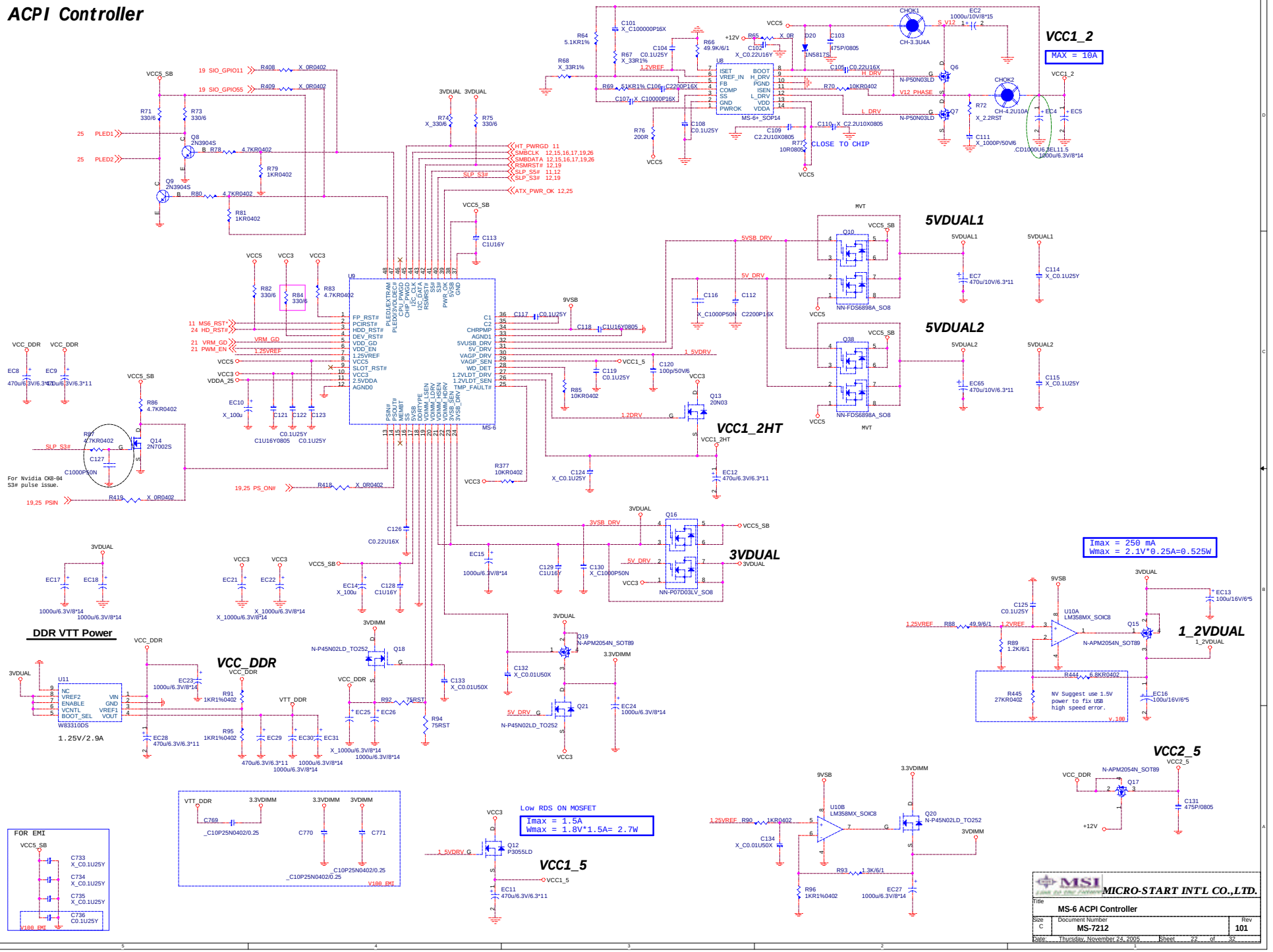
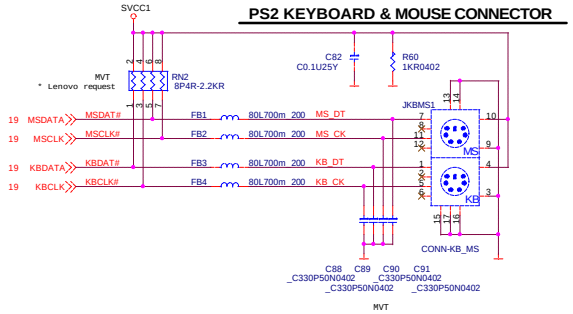
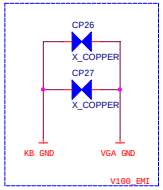
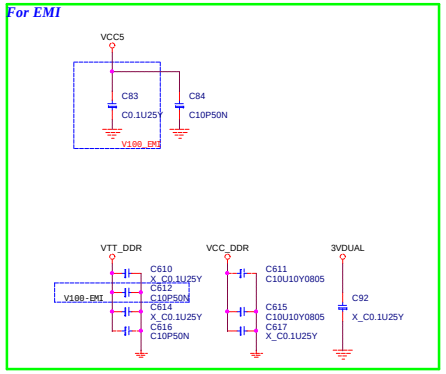
ACPI Controller



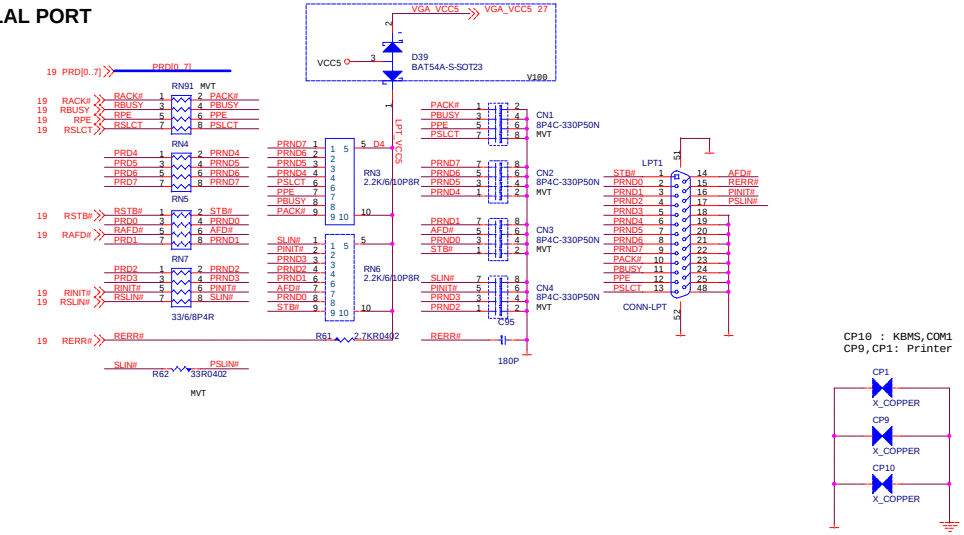
KB/MS/LPT/COM Port



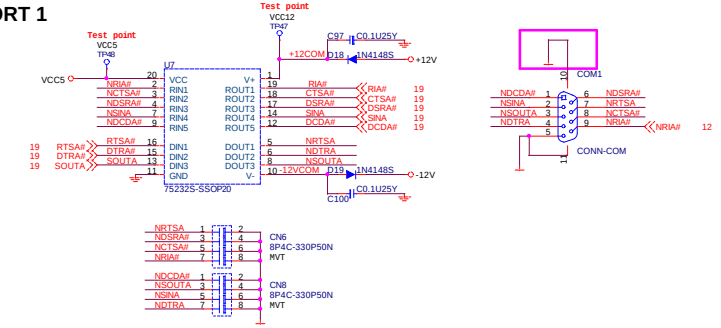




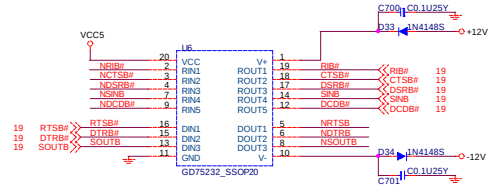
PARALLAL PORT



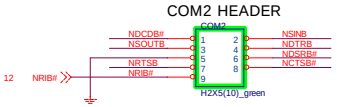
SERIAL PORT 1

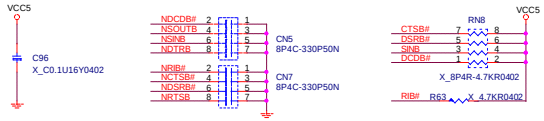


SERIAL PORT 2



COM2 HEADER





MICRO-START INT'L CO.,LTD.		
Title: KB/MS/LPT/COM Port		
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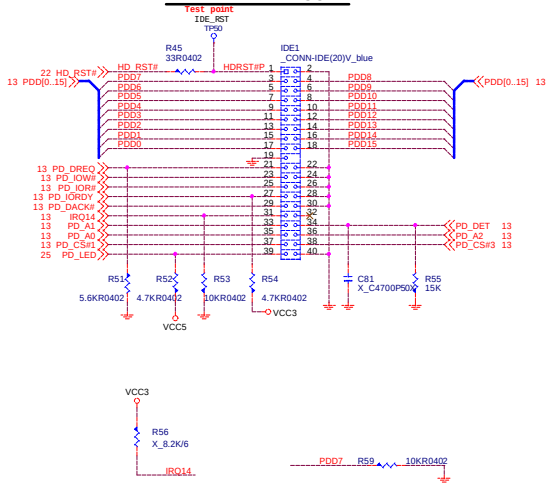
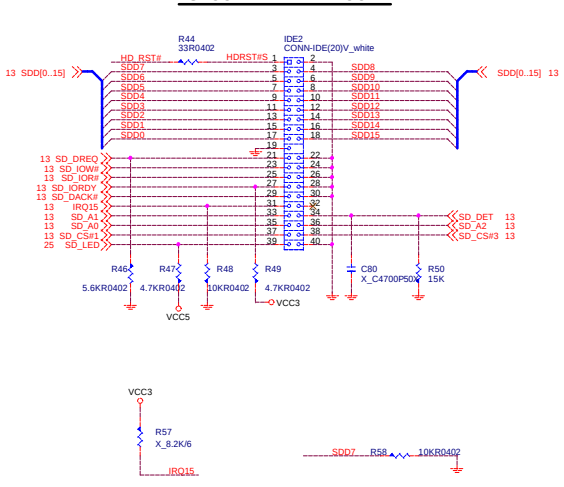
ATA 33/66/100 Connector

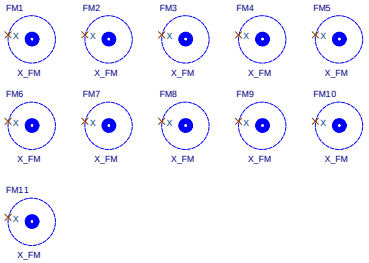
PRIMARY IDE BLOCK



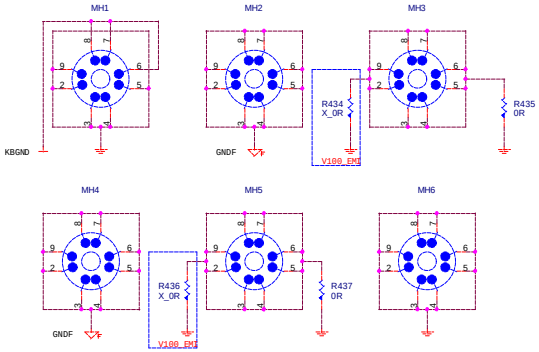
SECONDARY IDE BLOCK



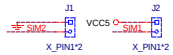
Optics Orientation Holes



Mounting Holes



Simulation



MICRO-START INT'L CO.,LTD.

Title: ATA 33/66/100 Connector		
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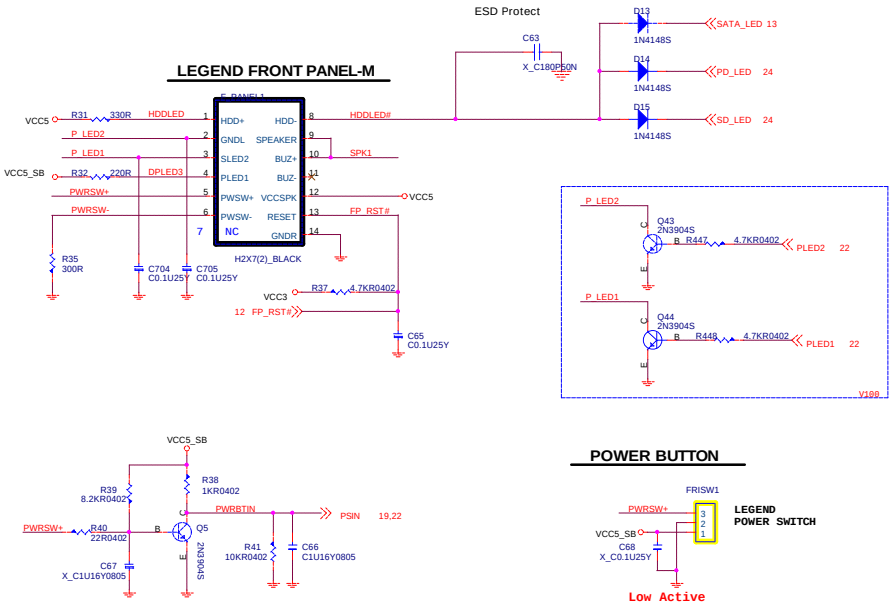
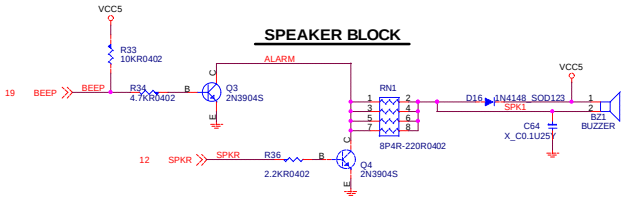
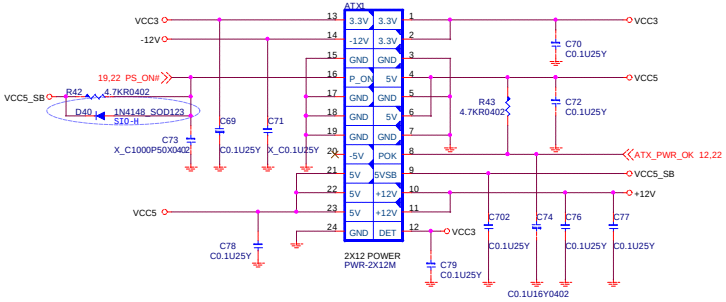
ATX connector / Front Panel



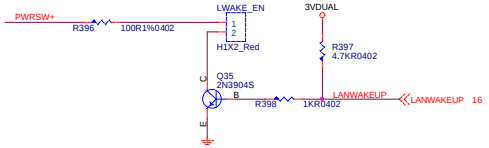
BUZZER



ATX Connector



For LENOVO LAN Wake up function



MICRO-START INT'L CO.,LTD.

Title: ATX connector / Front Panel		
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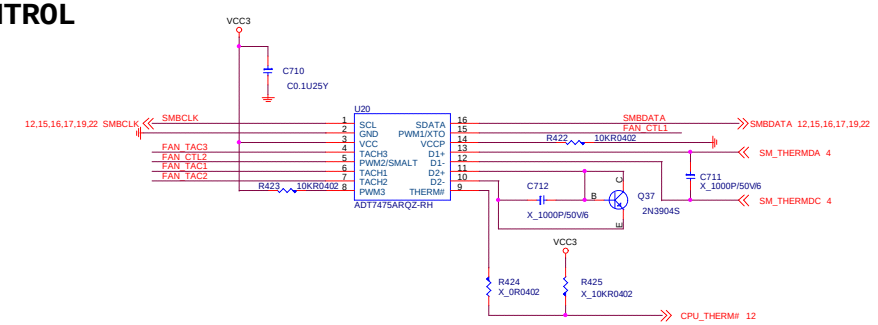
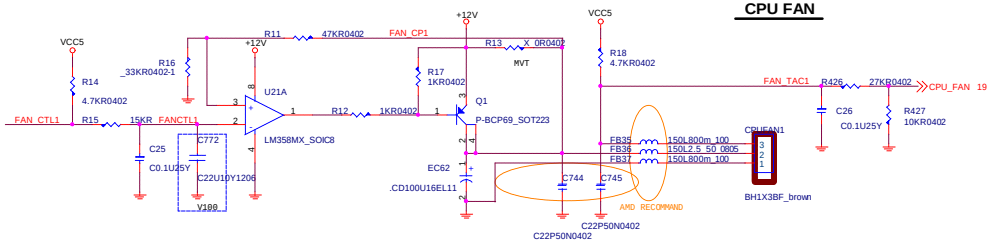
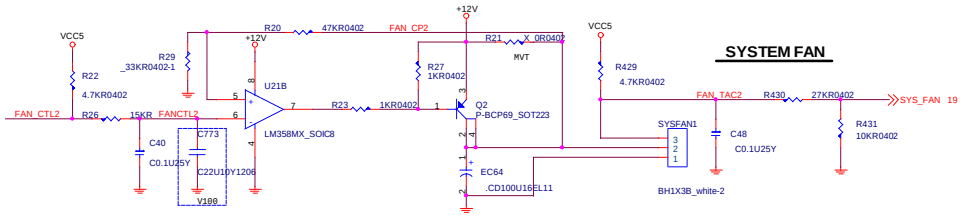
FAN CONTROL

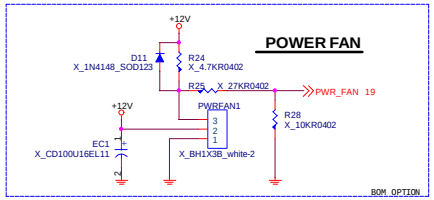


CPU FAN

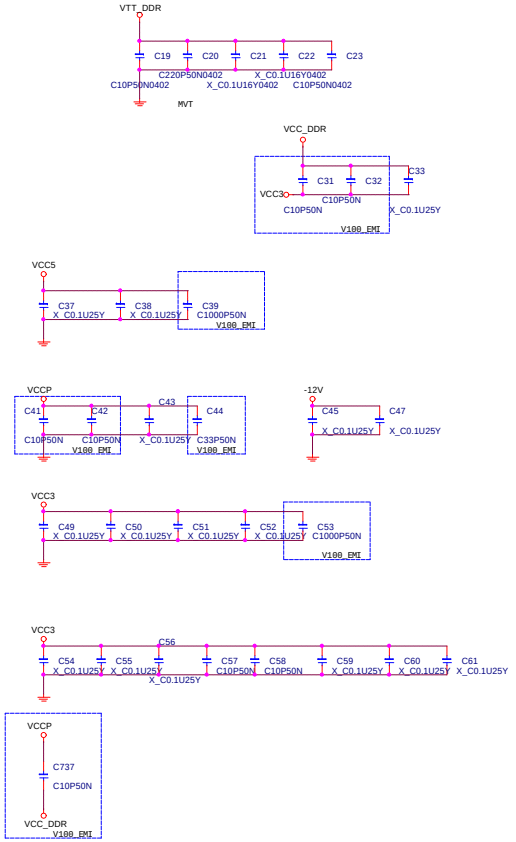


SYSTEM FAN





EMI



GND — Trace Length less then 4000mil
THERMDA_CPU — Trace Width 8mil
THERMDC_CPU — Space to self 8mil
GND — Space to other 8mil

PCB Layout Guide

MICRO-START INT'L CO.,LTD.

Title: FAN CONTROL		
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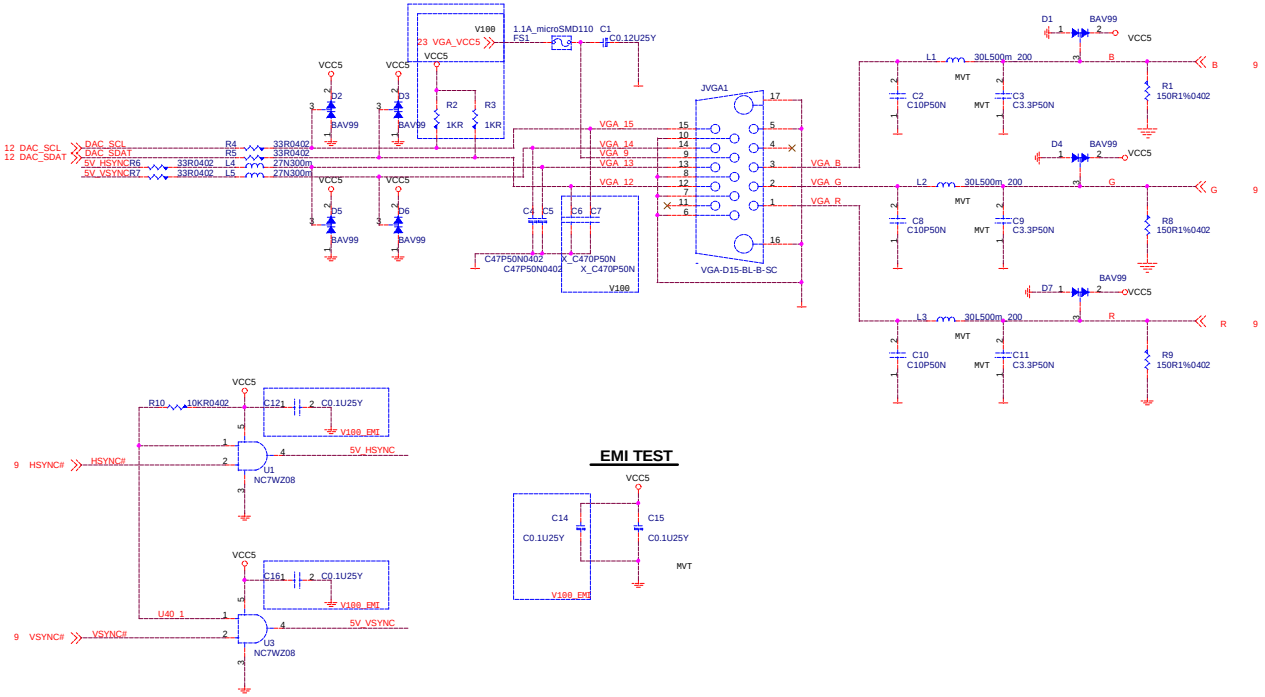
close VGA connector



EMI TEST

MICRO-START INT'L CO.,LTD.

Title: VGA CONNECTOR		
Size: C	Document Number: MS-7212	Rev: 101
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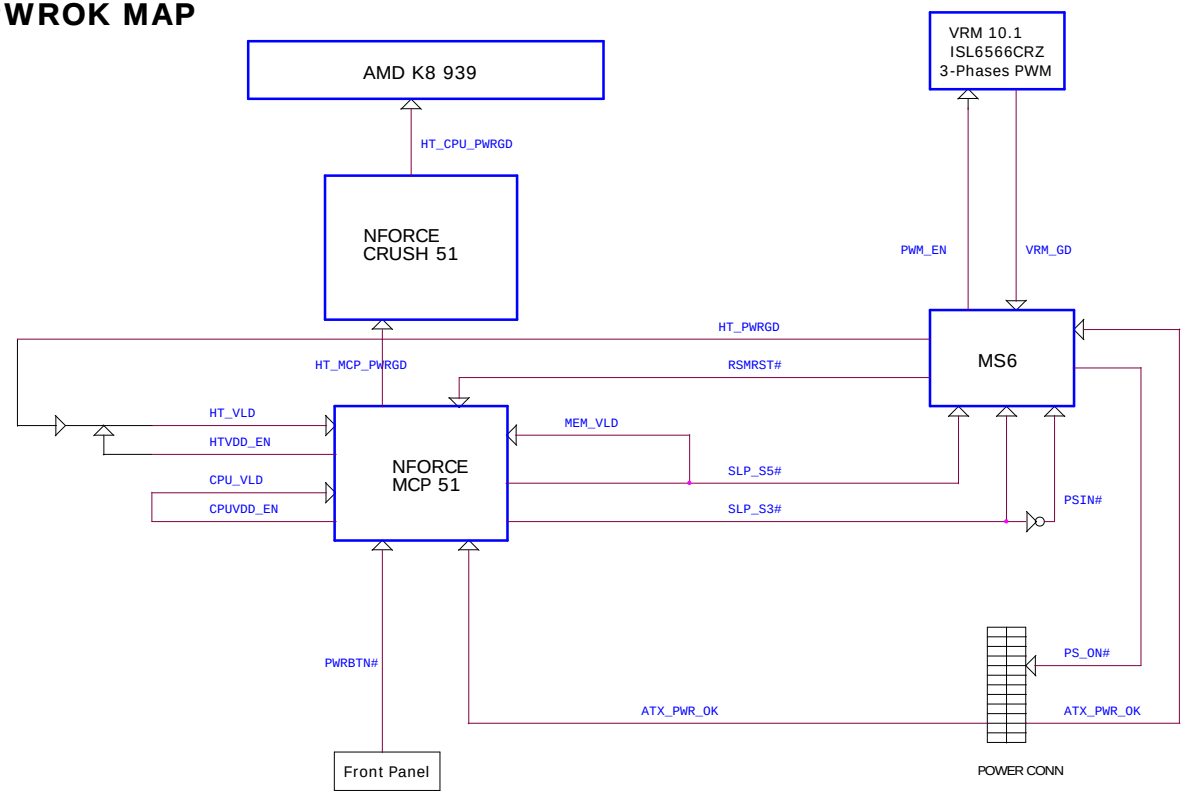
PWROK MAP



MICRO-START INT'L CO.,LTD.

Title: PWROK MAP		
Size: C	Document Number: MS-7212	Rev: 101
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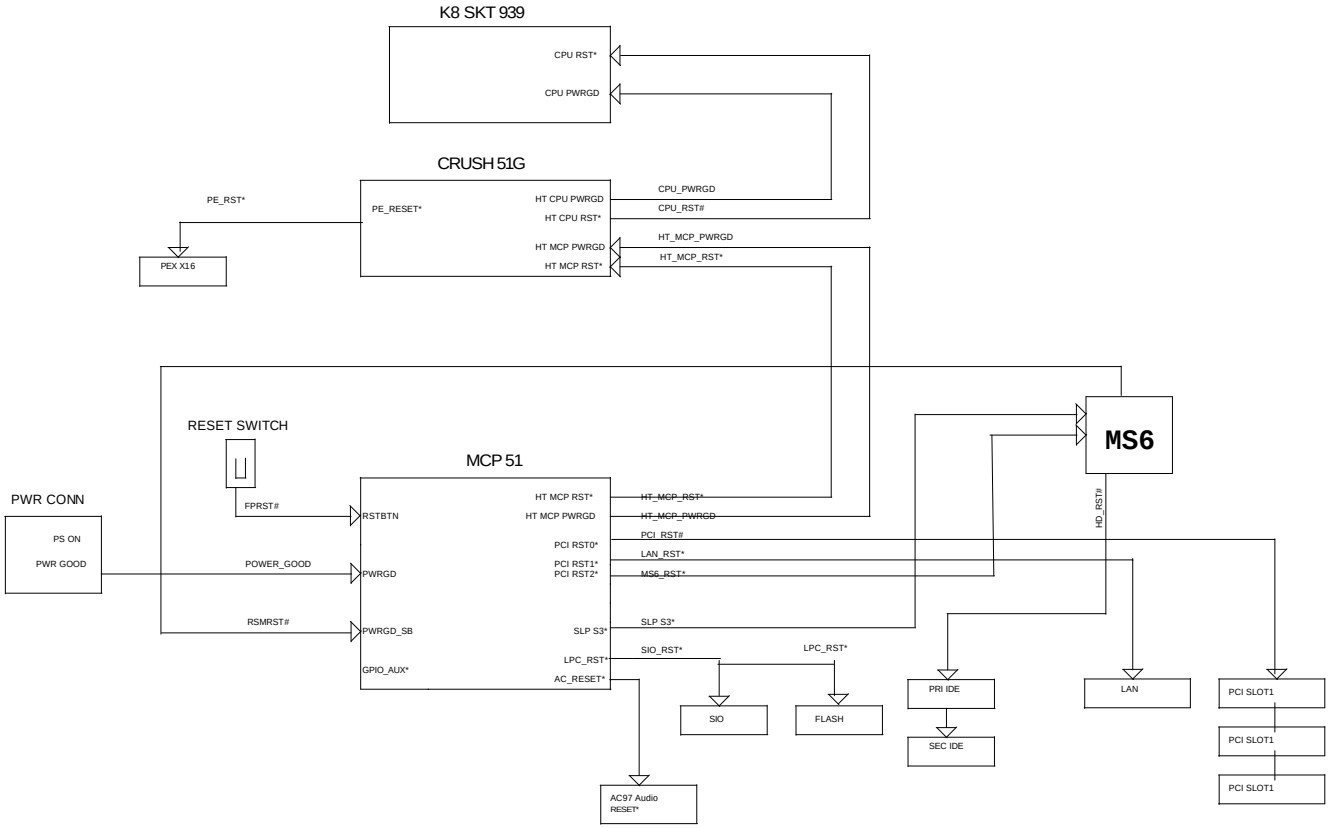
RESET MAP



MICRO-START INT'L CO.,LTD.

Title: RESET MAP		
Size: C	Document Number: MS-7212	Rev: 101
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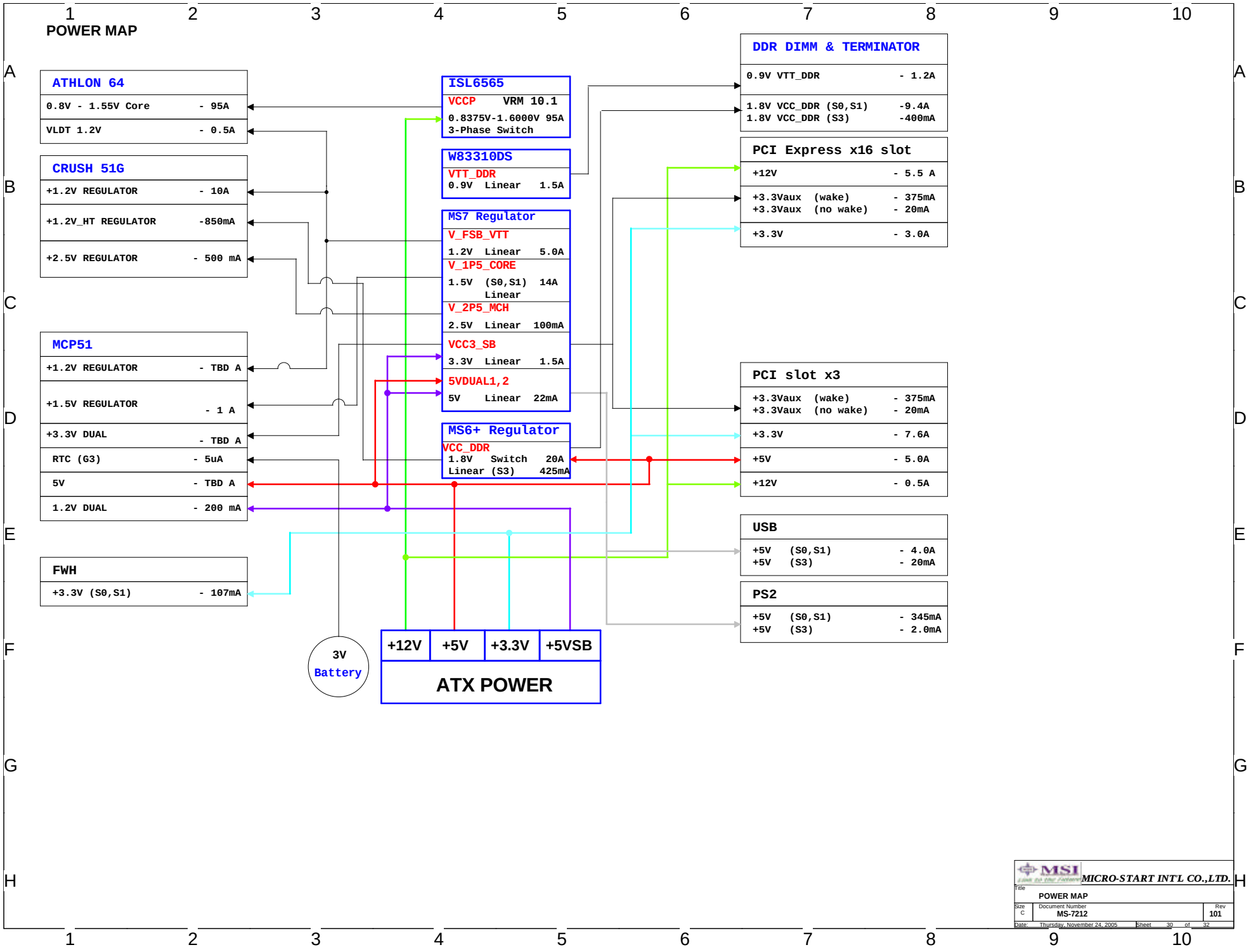
POWER MAP



MICRO-START INT'L CO.,LTD.

Title: POWER MAP

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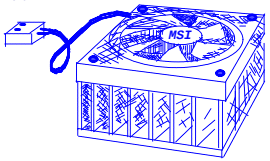
U19_X1

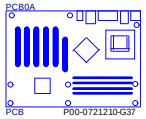
HEATSINK

U16-FAN1



X_U16-FAN

PCB0A



PCB P00-0721210-G37

PCB NEW PN
VER:0A
P00-072120A-G37
P00-072120A-T39
VER:10
P00-0721210-G37
P00-0721210-E48

U18_X1

SB_HEATSINK

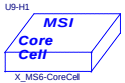
MVT

BIOS1_X1

SST49LF004B-33-4C-NH

MS-6 CORE CELL

U9-H1



X_MS6-CoreCell

BAT1-S1

YSKTBT

LEGEND SPEC:

CLR_CMOS2(2)

X_JUMPER-1X2A_green-1

JBAT1 Clear CMOS	
1 - 2	Clear CMOS
1	Normal *
2	Normal *

LEGEND SPEC:

BIOS_WP(1)

X_JUMPER-1X2A_green

BIOS WRITE PROTECT

LEGEND SPEC:

F_AUDIO(3-6)

JUMPER-2X2_green

LEGEND AUDIO

LEGEND SPEC:

RSV1(1)

X_JUMPER-1X2A_black

RSV1 PROTECT

LEGEND SPEC:

RSV2(1)

X_JUMPER-1X2A_black

RSV2 PROTECT

MICRO-START INT'L CO.,LTD.

Title: MANUAL PARTS

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MICRO-START INT'L CO.,LTD.

Title: HISTORY

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