MS-7786 Ver:1.0

CPU:

AMD FM1

System Chipset:

AMD - Hudson D2

On Board Chipset:

USB2.0 RearX4 FrontX6

SATAII X6
LPC Super I/O --F71868AD
LAN-Realtek 8105E Co-lay8111E
Azalia CODEC - Realtek ALC887 Co-lay VT1708S

Main Memory:

DDR III *2 (Max 16G)

Expansion Slots:

PCI Express X16 Slot * 1
PCI Express X1 Slot * 1

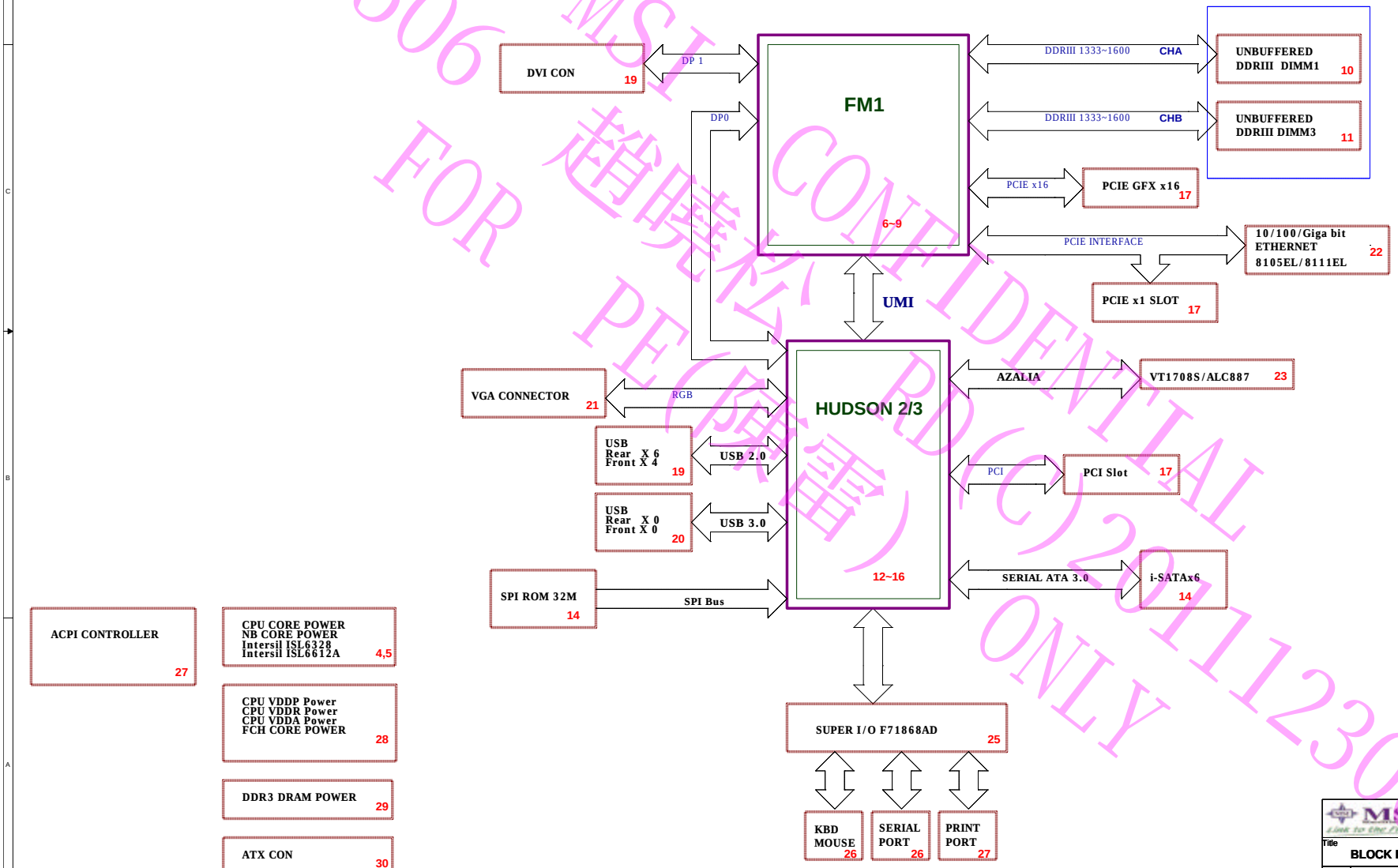
VRM

Controller - Intersil ISL6328 3+1 Phase

MICRO-START INT'L CO.,LTD.

Title: COVER SHEET		
Size: Custom	Document Number: MS-7786	Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 1 of 35	

FUSION BLOCK DIAGRAM



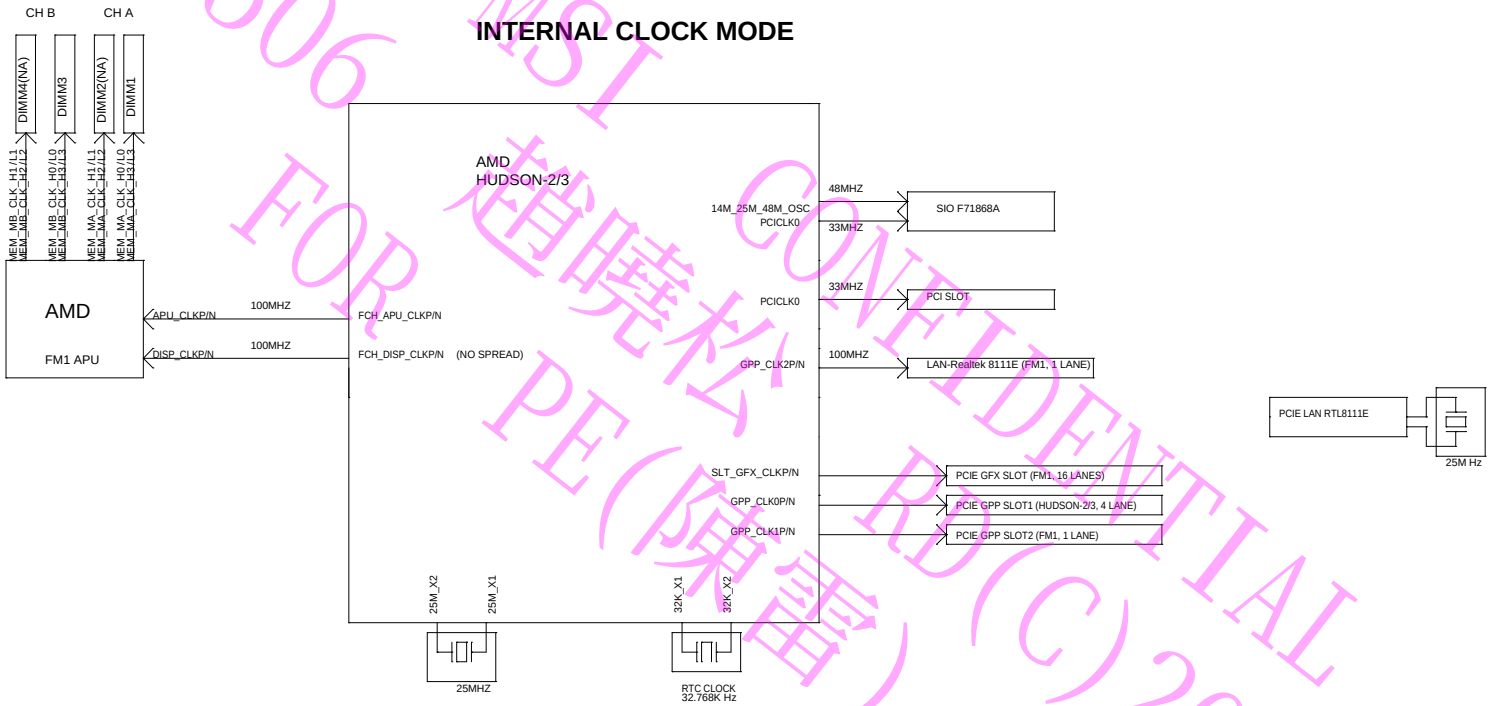
MICRO-START INT'L CO.,LTD.

Title: BLOCK Diagram

Size: Custom | Document Number: MS-7786 | Rev: 1.0

Date: Tuesday, December 27, 2011 | Sheet 2 of 35

INTERNAL CLOCK MODE

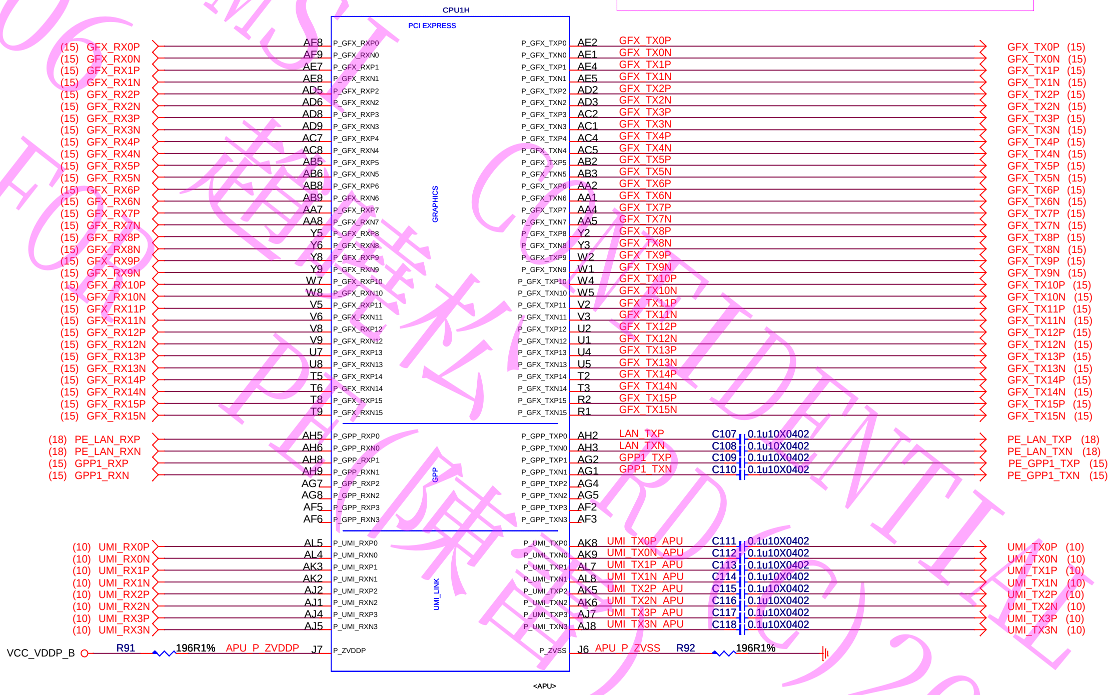


MICRO-START INTL CO.,LTD.

Title: Clock Distribution		
Size: C	Document Number: MS-7786	Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 3 of 35	

FM1 PCIE I/F

mach@CRB PCIE AC Capacitors:75nF to 200nF
Layout: PLACE CAPS WITH APU < 1 INCH
ROUTE ALL PCIE AS 85OHM +/-10%



MSI MICRO-START INT'L CO.,LTD.		
Title: FM1 PCIE I/F		
Size: Custom	Document Number: MS-7786	Rev: 1.0
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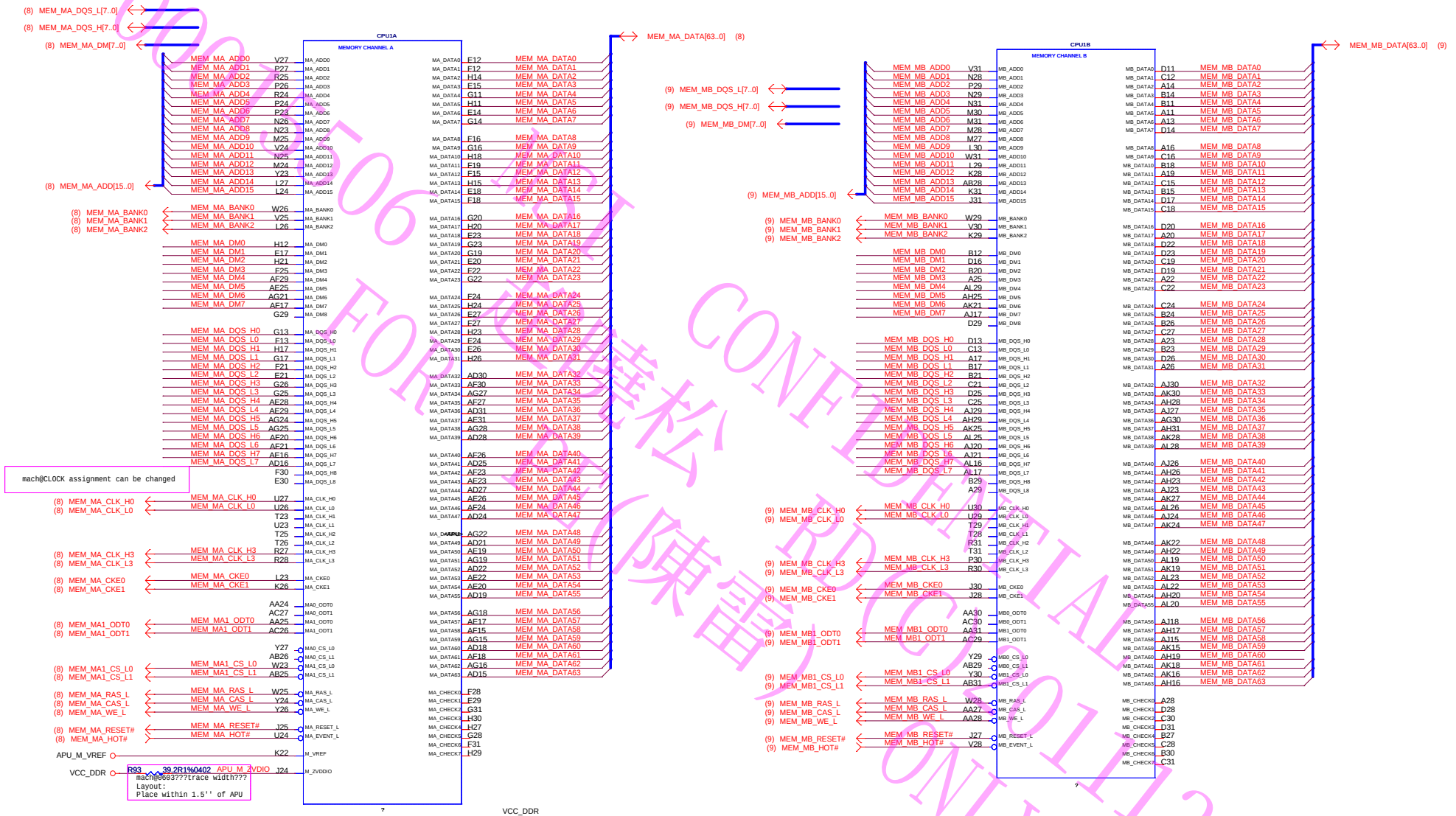
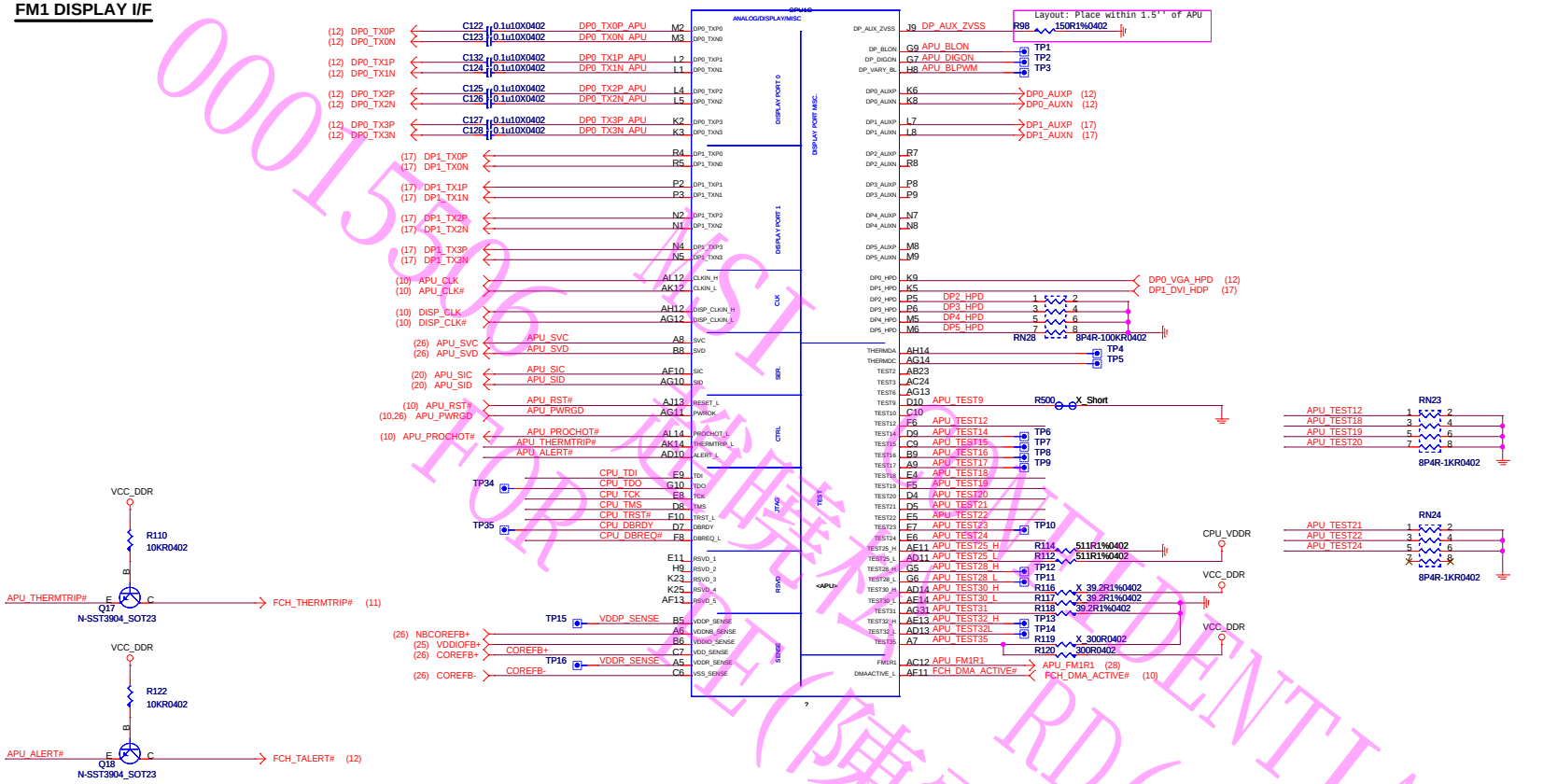
FM1DDR3 I/F



MICRO-STAR INT'L CO.,LTD.

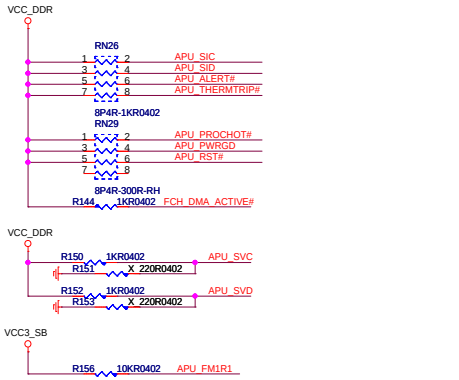
Title: FM1 DDR3 I/F		
Size: Custom	Document Number: MS-7786	Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 5 of 35	

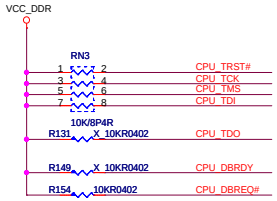
FM1 DISPLAY I/F



SCAN Connector

PULL UP





MICRO-START INT'L CO.,LTD.

Title: FM1 DISPLAY/MSIC		
Size: Custom	Document Number: MS-7786	Rev: 1.0
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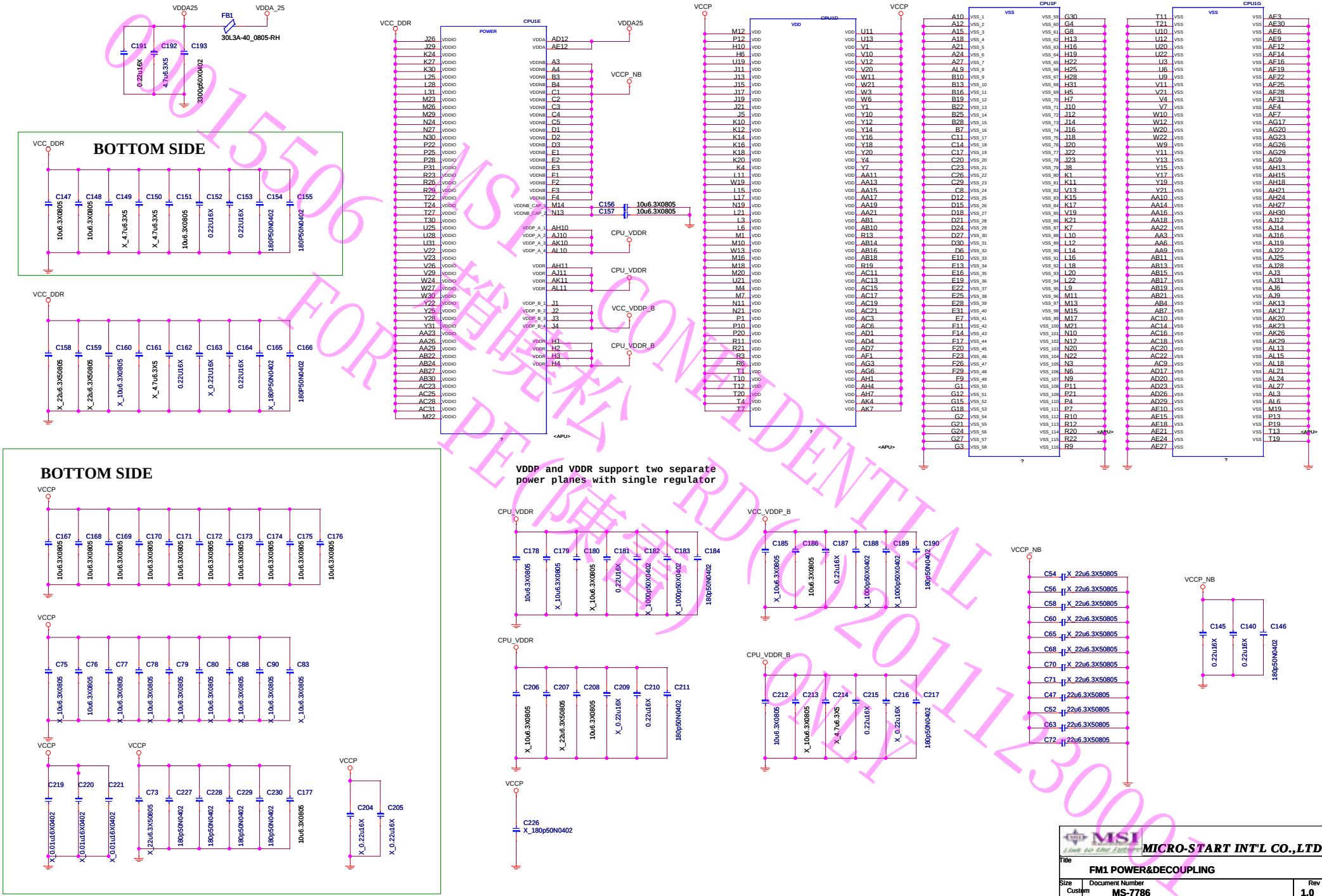
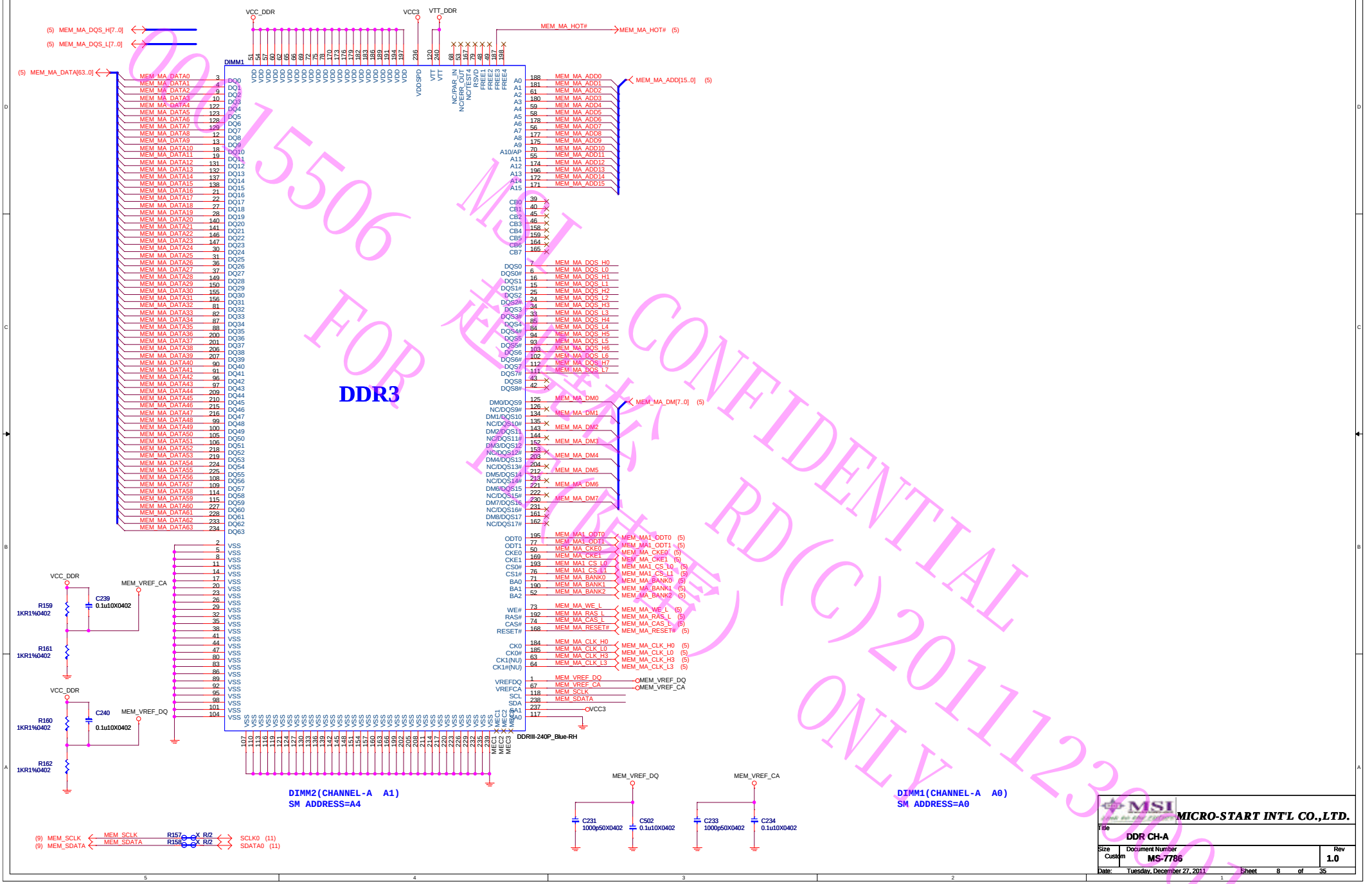
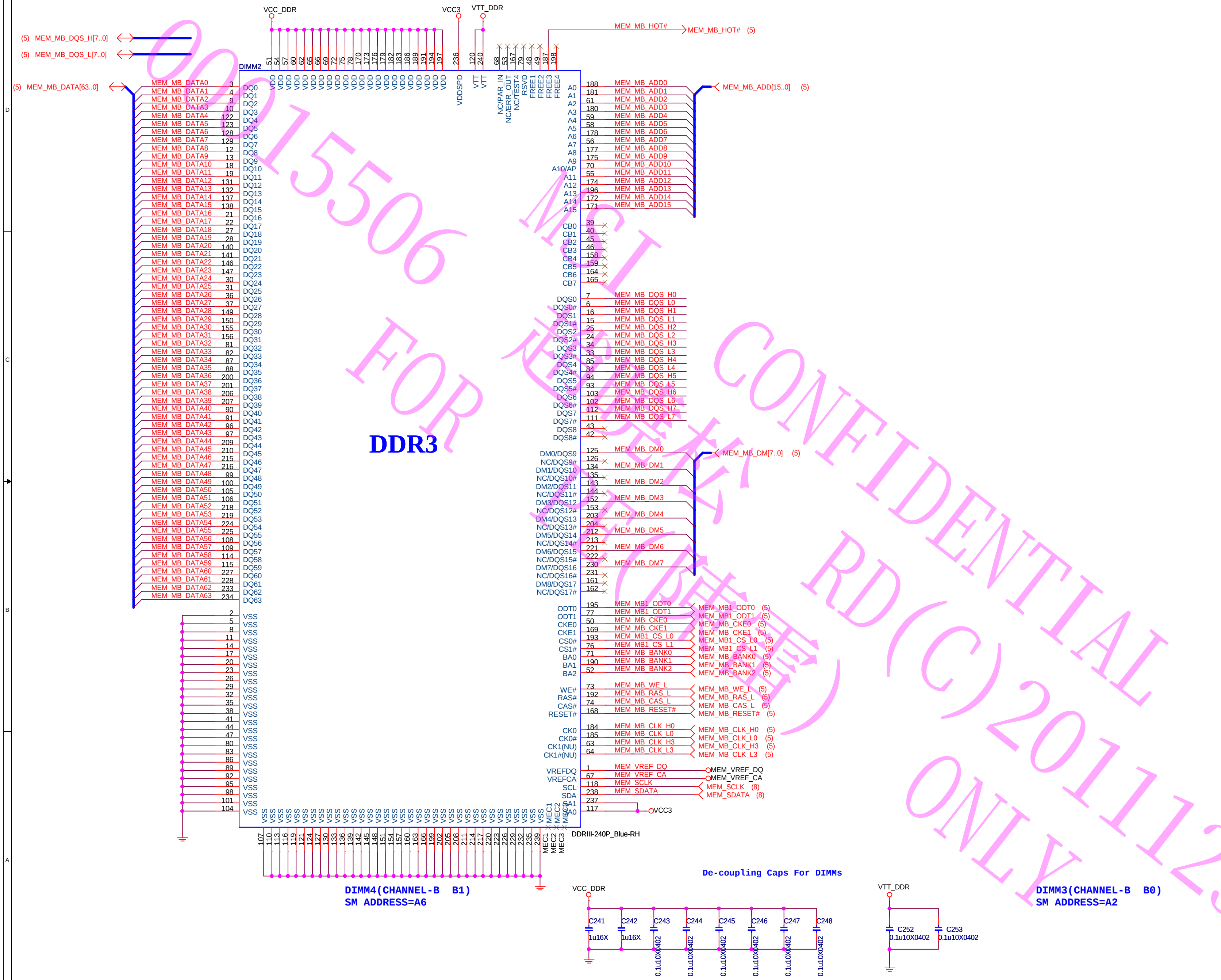




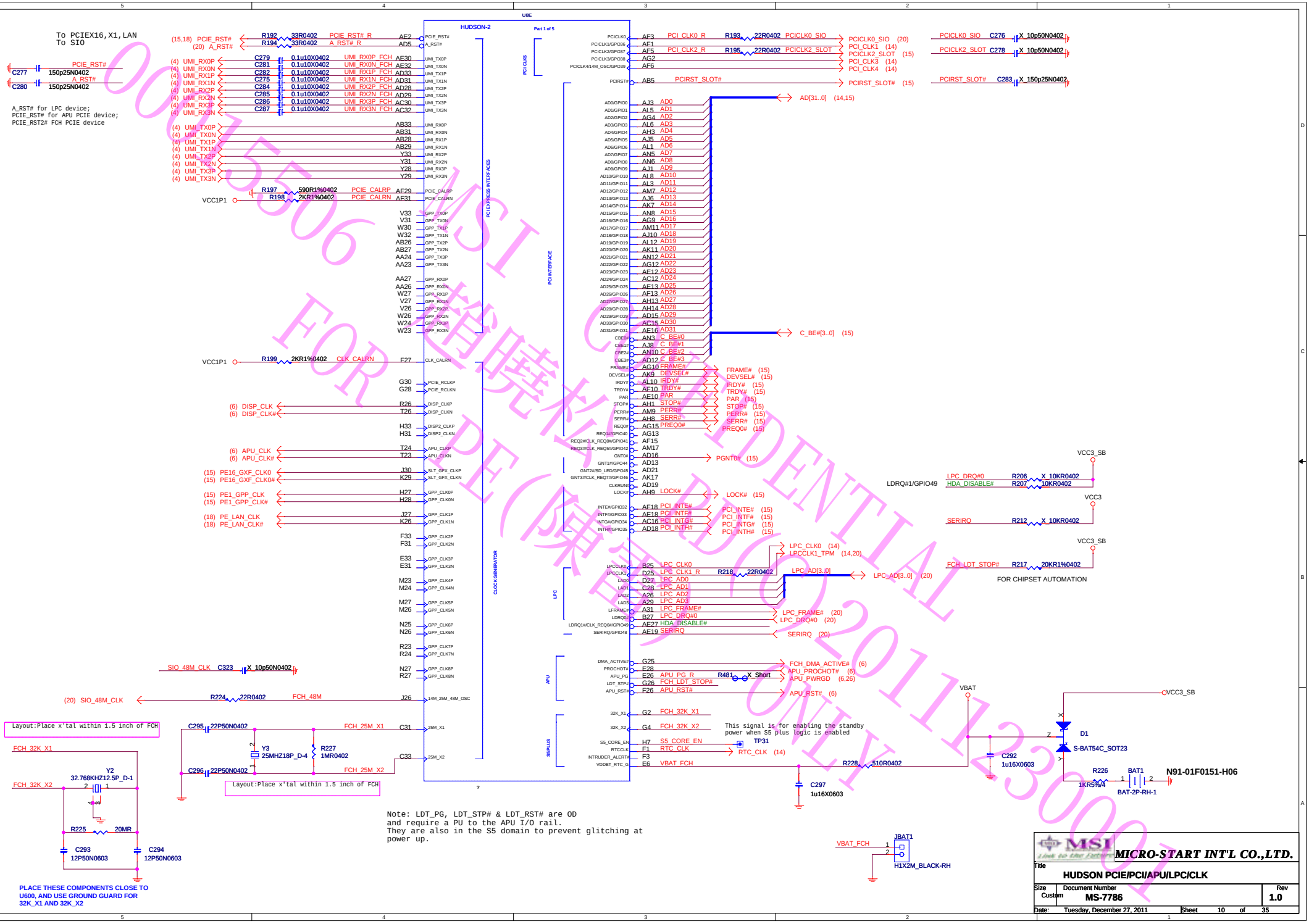
MICRO-START INT'L CO.,LTD.

Title: DDR CH-A		
Size: Custom	Document Number: MS-7786	Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 8 of 35	

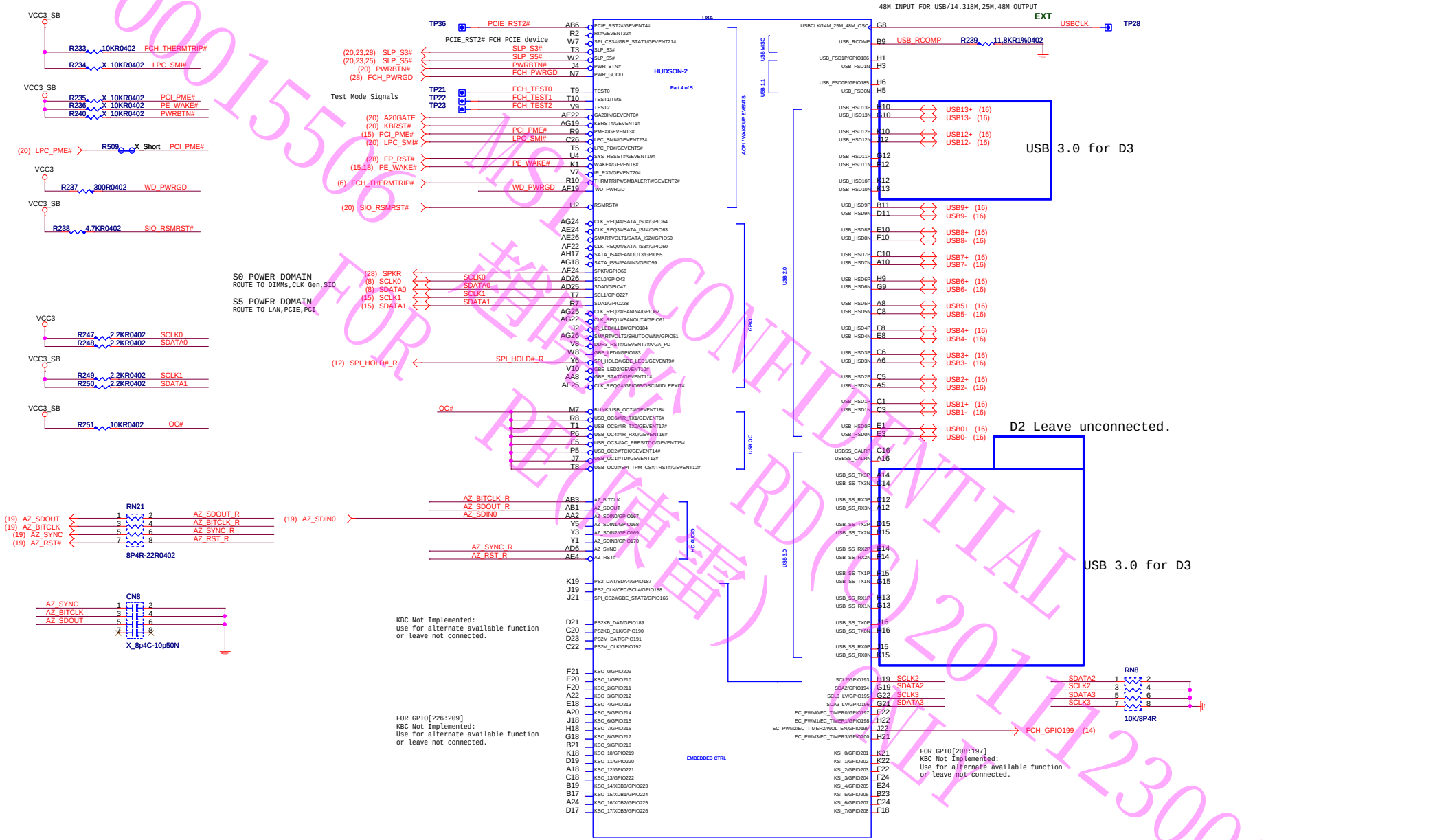


MICRO-STAR INT'L CO.,LTD.

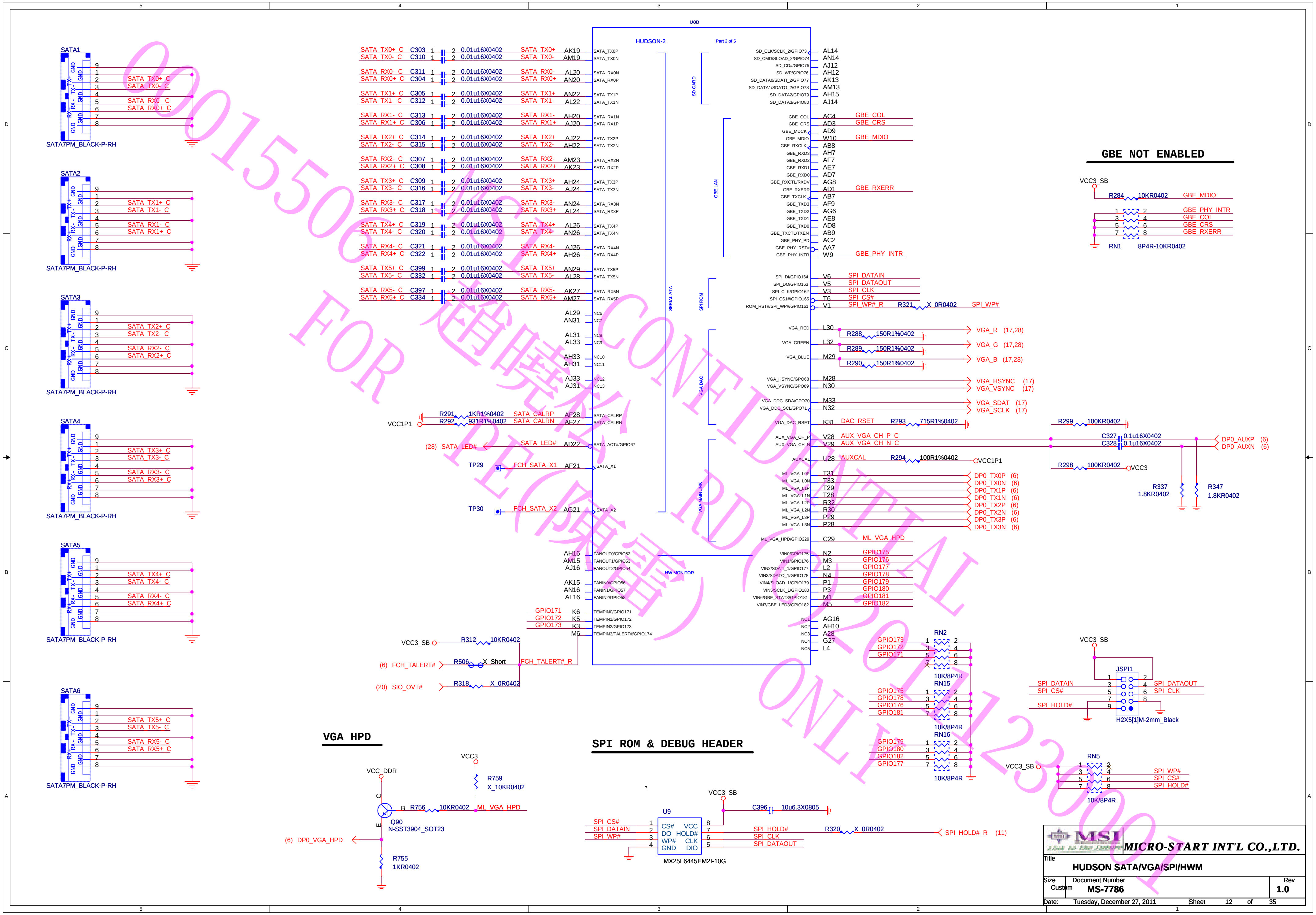
Title	DDR CH-B	
Size Custom	Document Number MS-7786	Rev 1.0
Date: Tuesday, December 27, 2011	Sheet 9 of 35	

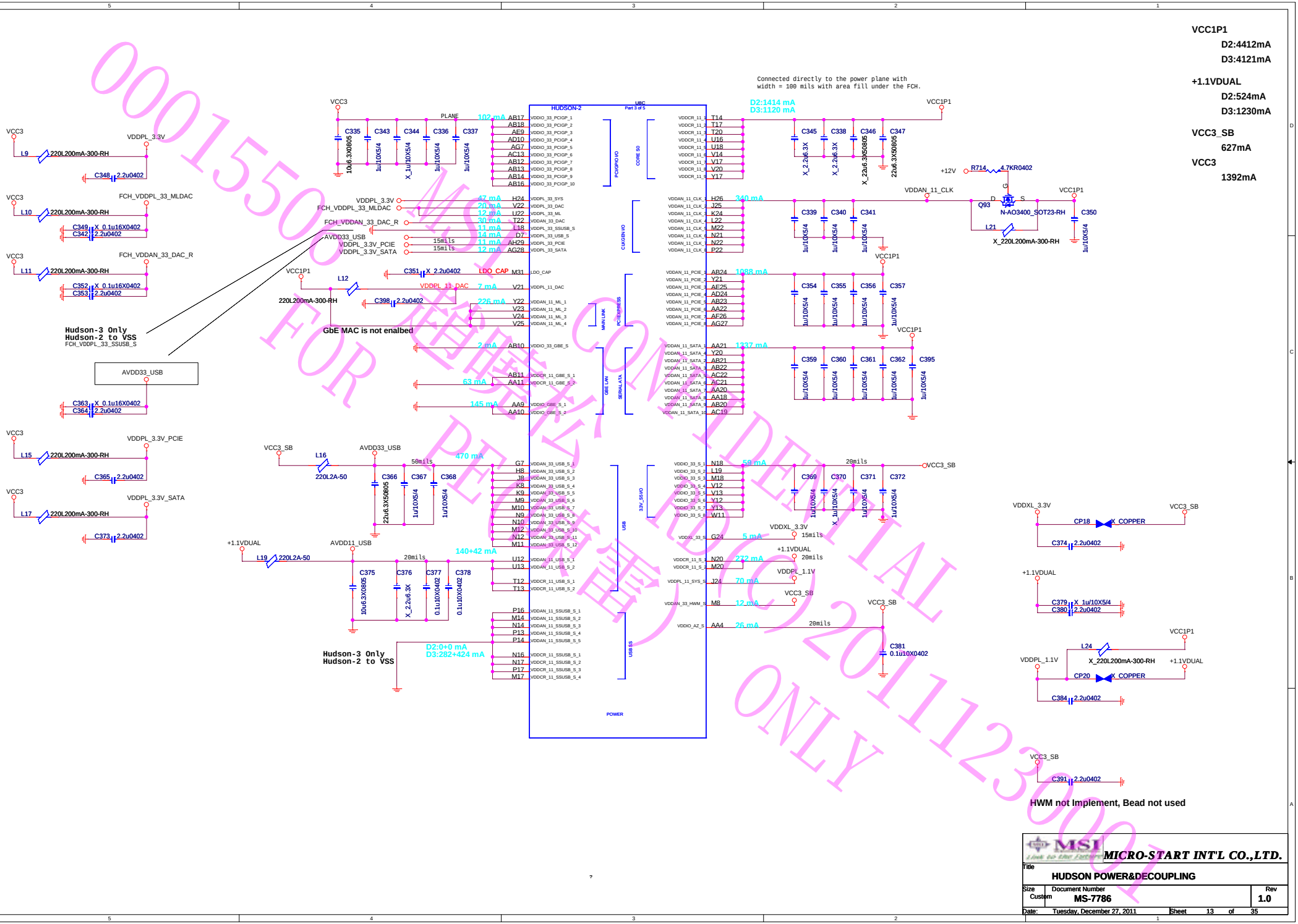


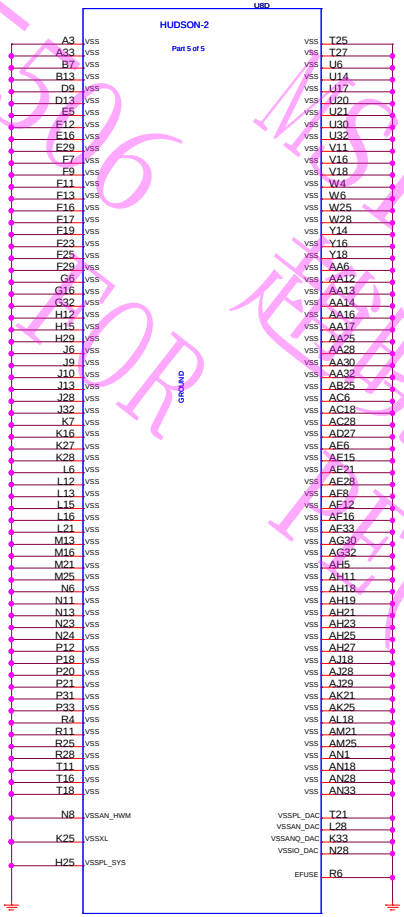
HUDSON ACPI/USB/AZ/GPIO



MICRO-START INT'L CO.,LTD.			
Title: HUDSON ACPI/USB/AZ/GPIO			
Size: Custom	Document Number: MS-7786		Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 11 of 35		

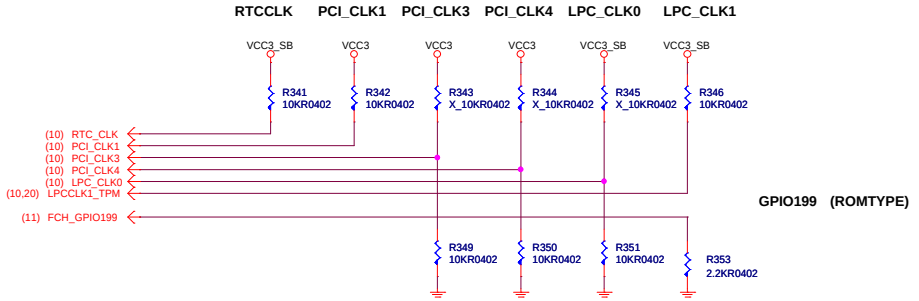






Layout:
VSSPL_SYS;VSSAN_HWM CONNECT TO GND
WITH A SEPREATED VIA

FCH REQUIRED STRAPS



	RTCCLK	PCI_CLK1	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	GPIO199 (ROMTYPE)
PULL HIGH	S5 Plus MODE DISABLED DEFAULT	PCIe interface at Gen2 DEFAULT	Enable Debug Straps	Reserved	EC ENABLED	Internal clock mode DEFAULT	LPC ROM
PULL LOW	S5 Plus MODE ENABLED	FORCE PCIe at Gen1	Disable Debug Straps DEFAULT	APU_CLK/DISP_CLK Required setting DEFAULT	EC DISABLED DEFAULT	External clock mode	SPI ROM DEFAULT

*This strap i s not used in External clock mode

FCH DEBUG STRAPS

	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	Use internal PLL clock DEFAULT			Disable I2C ROM DEFAULT	Use ROMTYPE straps DEFAULT
PULL DOWN	Bypass Internal PLL clock			Enable loading settings for UMI/PLL/misc from I2C ROM	Boot from PCI bus

MICRO-START INT'L CO.,LTD.

Title: HUDSON STRAPS

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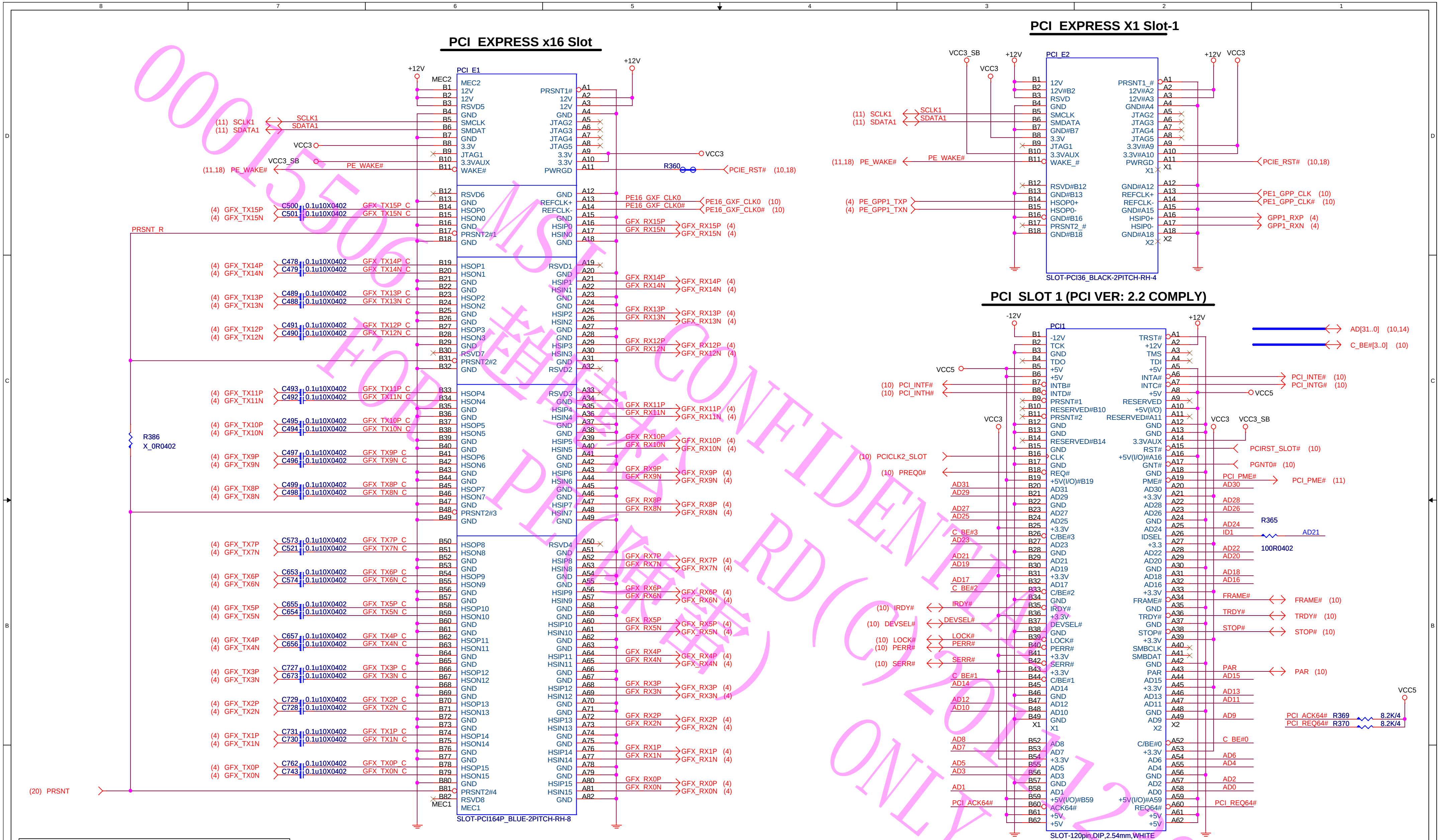
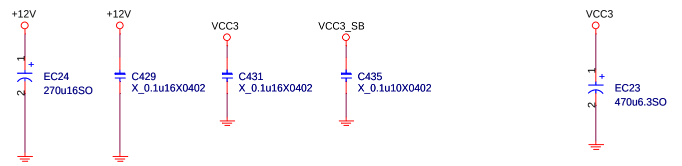


PCI Express X16 slot(X1)	
+12V	- 5.5 A
+3.3Vaux (wake) +3.3Vaux (no wake)	- 375mA - 20mA
+3.3V	- 3.0A



PCI Express X1 slot (X2)	
+12V	- 1 A
+3.3Vaux (wake) +3.3Vaux (no wake)	- 750mA - 40mA
+3.3V	- 6.0A

IDSEL = AD21
MASTER = PCI_REQ#0
PCI_GNT#0

MICRO-START INT'L CO.,LTD.

Title: PCI EXPRESS X16
Size: Custom
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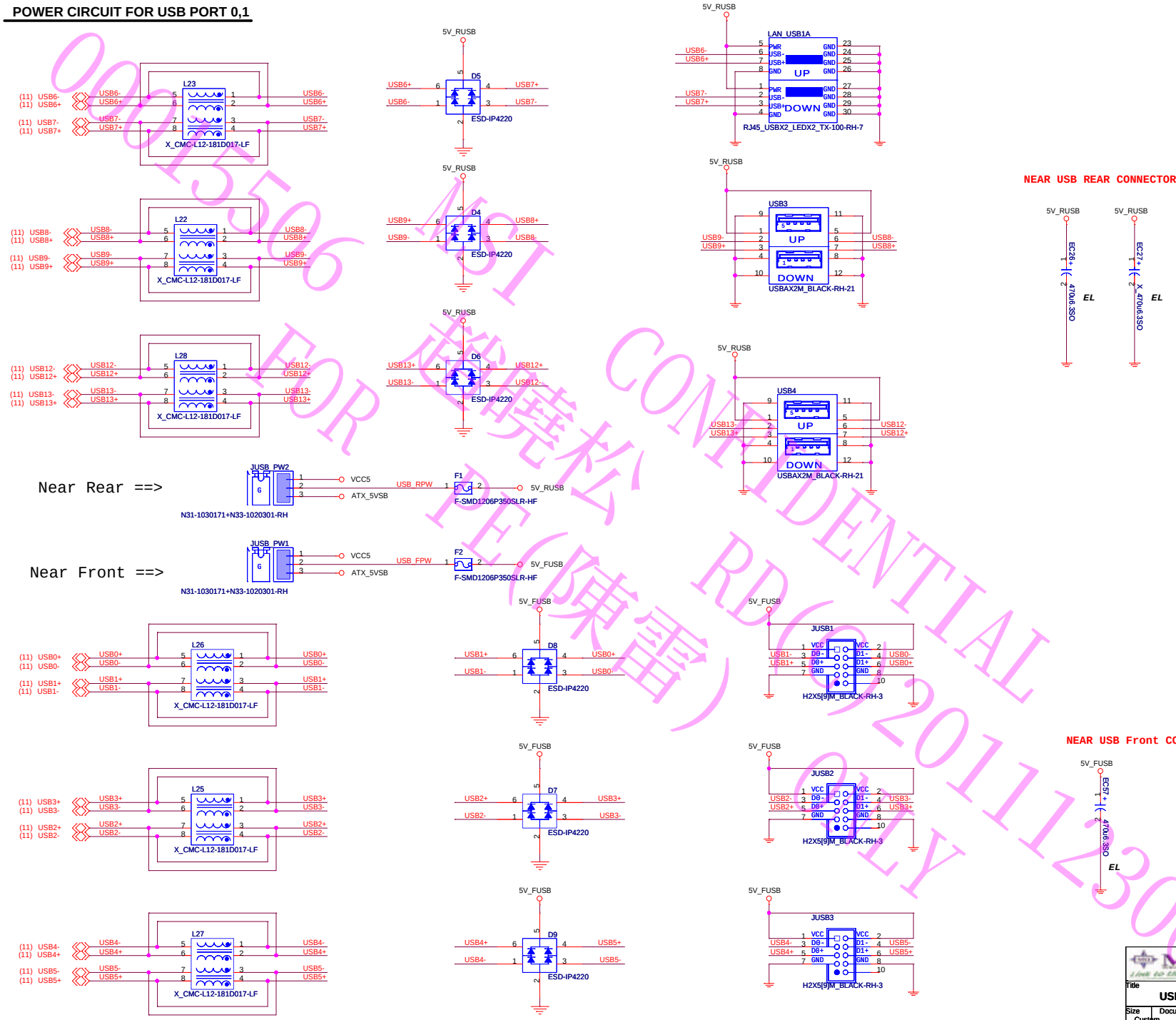
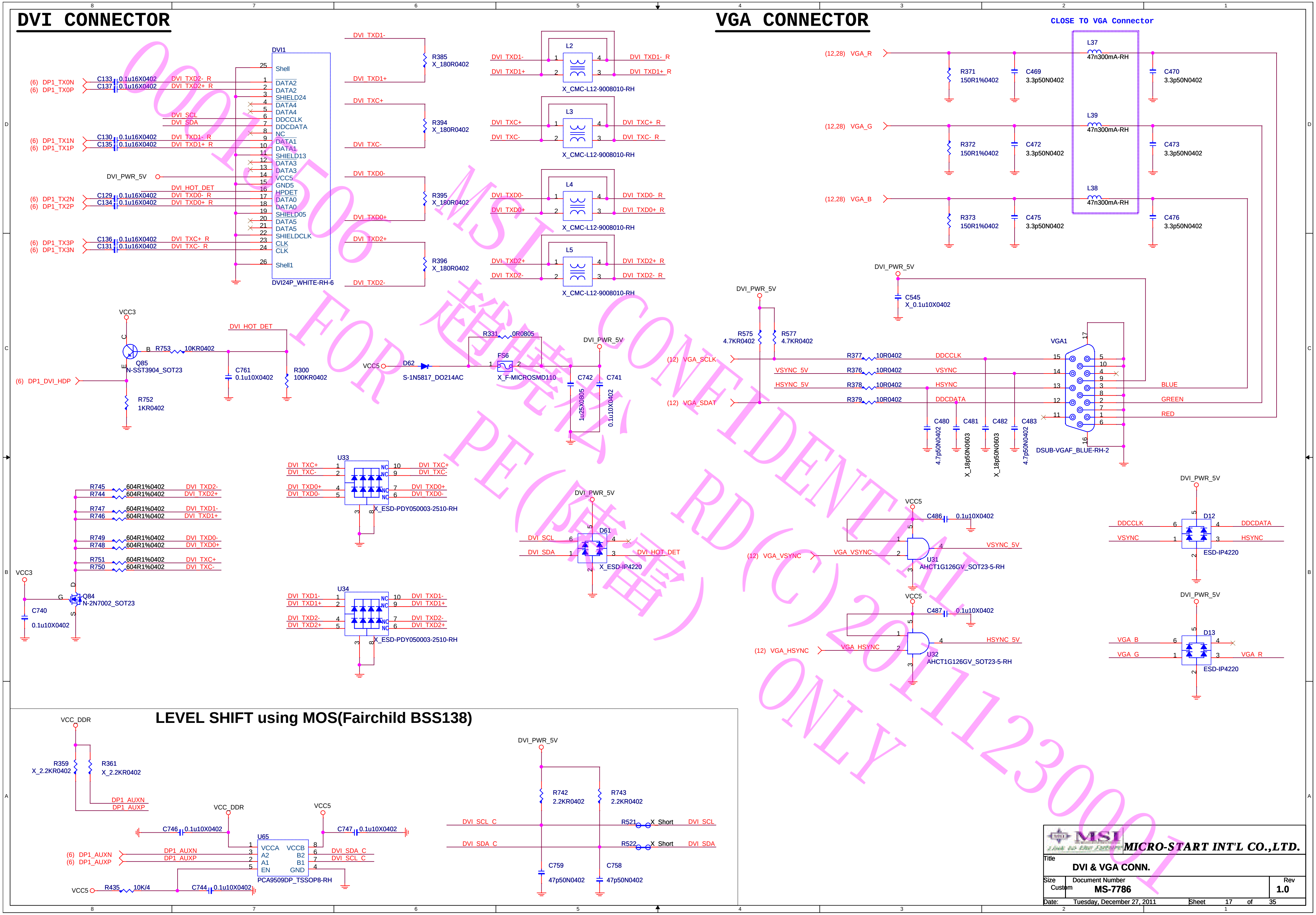
POWER CIRCUIT FOR USB PORT 0,1

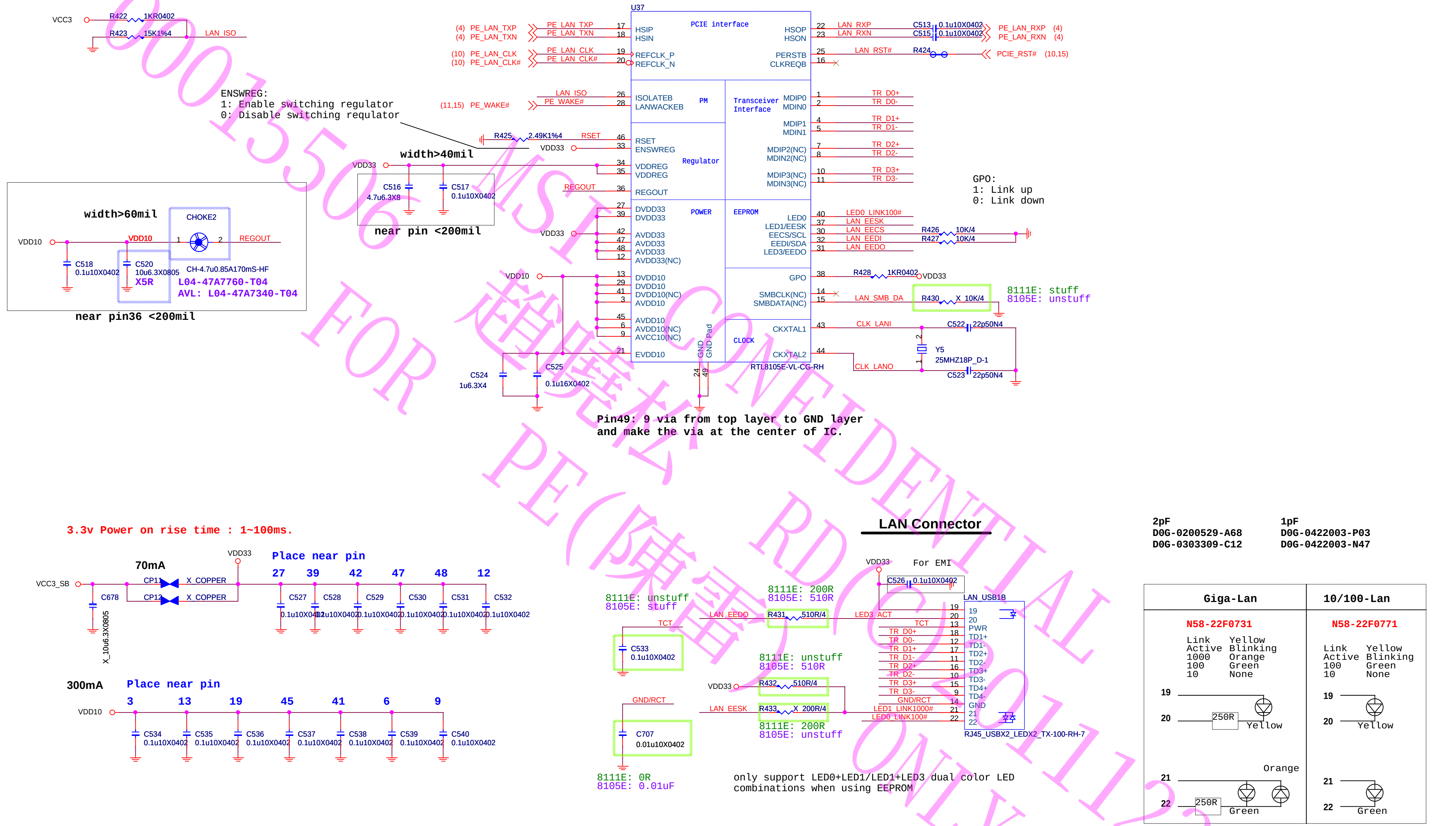


MICRO-START INT'L CO.,LTD.

Title: USB2.0 POWER/CONNECTORS		
Size: Custom	Document Number: MS-7786	Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 16 of 35	



RTL8105E/Co-Lay 8111E



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

MICRO-START INT'L CO.,LTD.

Title		
LAN-RTL8111E/8105E.		
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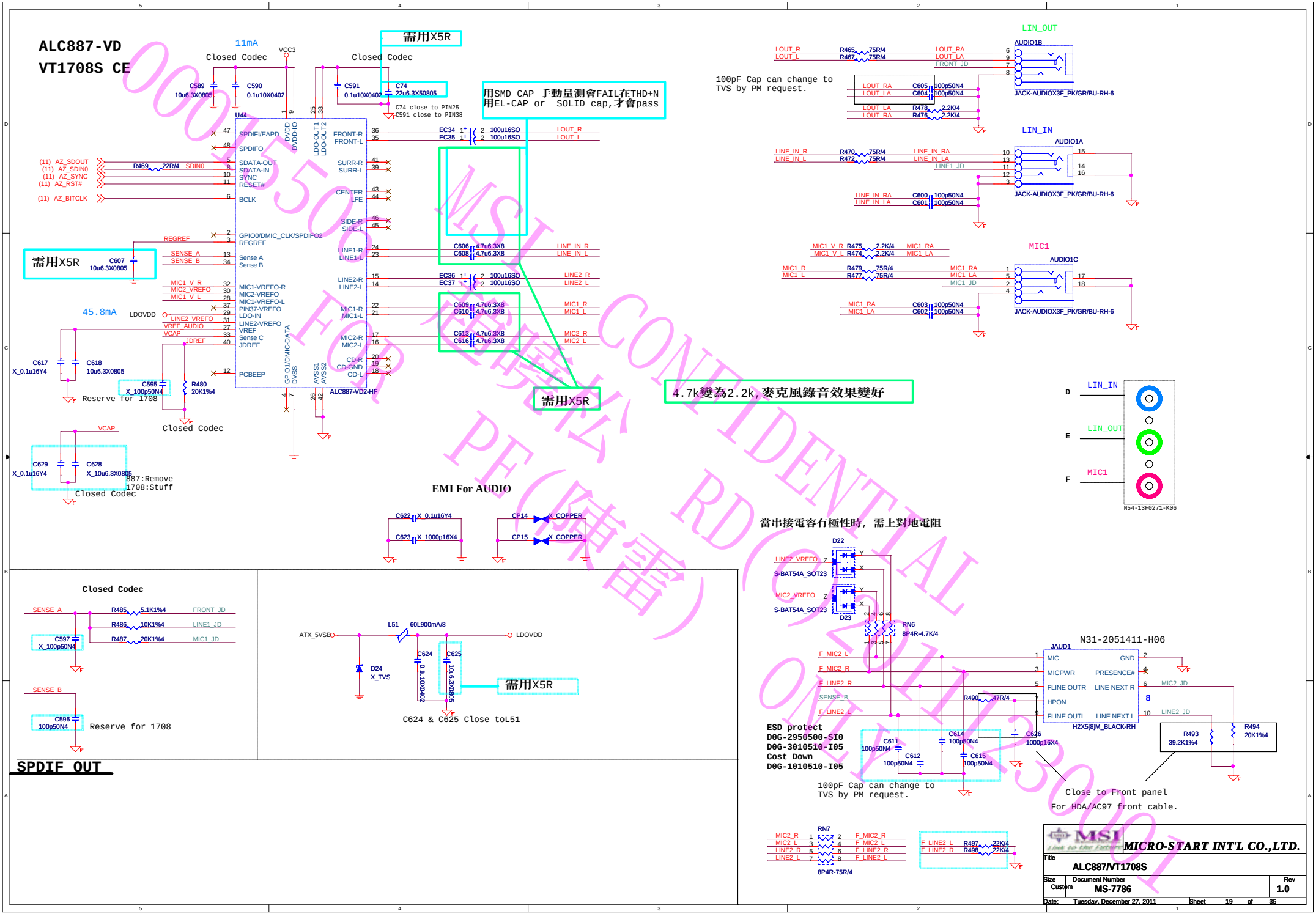
ALC887-VD
VT1708S CE
11mA
Closed Codec
VCC3
需用X5R
用SMD CAP 手動量測會FAIL在THD+N
用EL-CAP or SOLID cap,才會pass
C74 close to PIN25
C591 close to PIN38
U44
ALC887-VD2-HF
45.8mA
LDOVDD
Reserve for 1708
887:Remove
1708:Stuff
4.7k變為2.2k,麥克風錄音效果變好
LIN_OUT
LIN_IN
MIC1
AUDIO1B
AUDIO1A
AUDIO1C
JACK-AUDIOX3F_PK/GR/BU-RH-6
100pF Cap can change to
TVS by PM request.
EMI For AUDIO
當串接電容有極性時，需上對地電阻
SPDIF_OUT
ESD protect
D0G-2950500-SI0
D0G-3010510-I05
Cost Down
D0G-1010510-I05
N31-2051411-H06
H2X5[8]M_BLACK-RH
Close to Front panel
For HDA/AC97 front cable.
MICRO-START INT'L CO.,LTD.
ALC887/VT1708S
MS-7786
1.0
Tuesday, December 27, 2011
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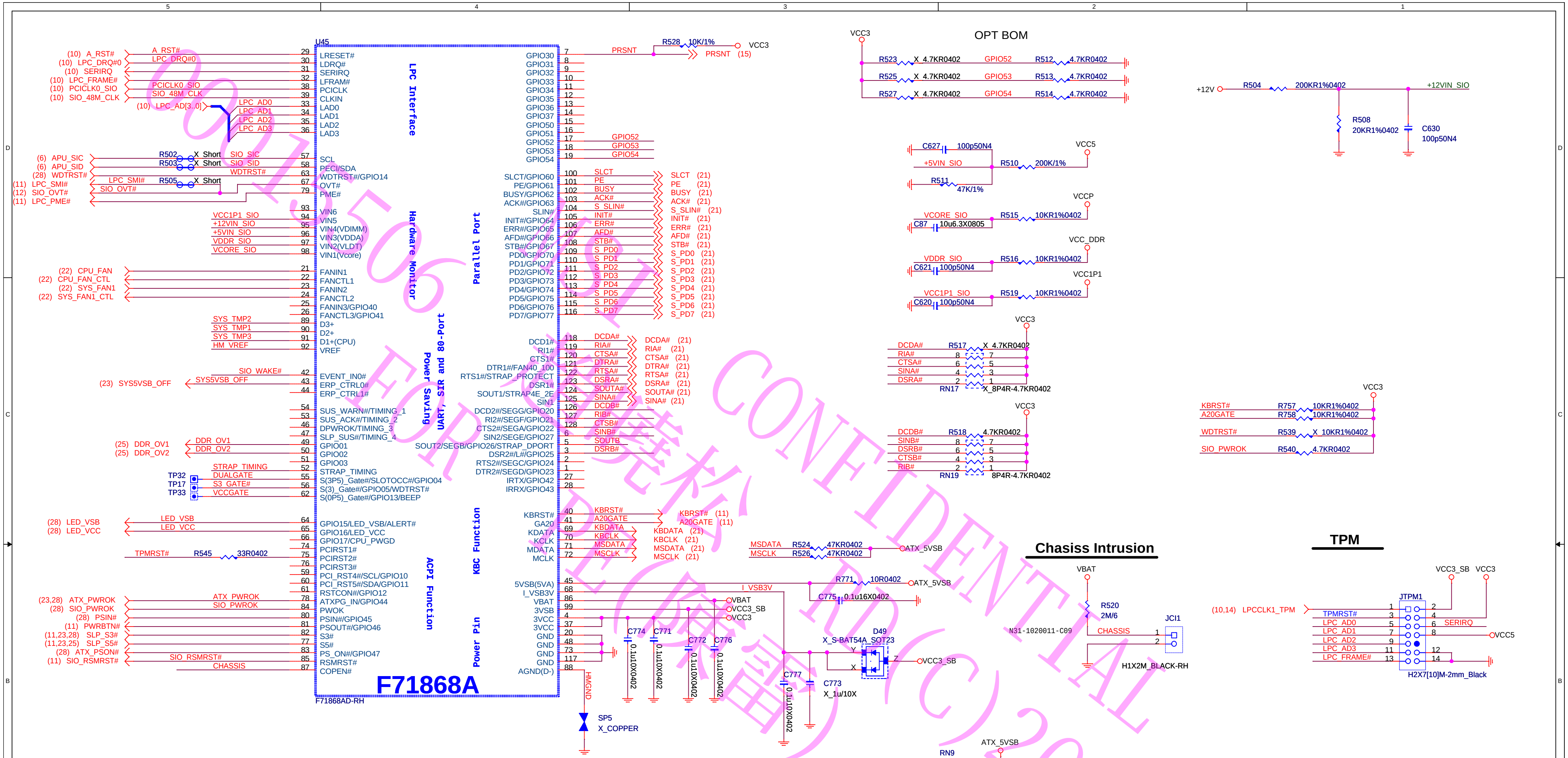
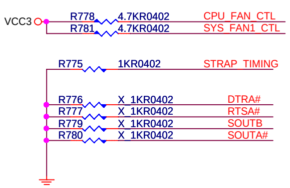
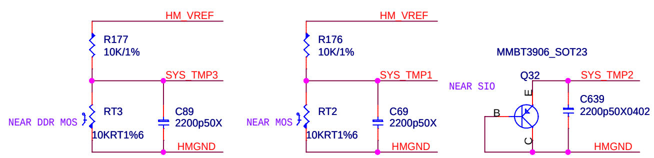


F71869 STRAPPING RESISTOR

	1	0
STRAP_TIMING	AMD	Intel
DTRA#	FAN start duty is 40%	FAN start duty is 100%
SOUTA	4E	2E
FANCTL1	PWM mode	DAC mode
FANCTL2	DAC mode	DAC mode
FANCTL3	DAC mode	DAC mode
SOUTB	80Port decode output from COM2	80Port disable
RTSA#	Disable UVP protection	Enable UVP protection



TEMP SENSOR



MICRO-START INT'L CO.,LTD.

Title: SUPER I/O F71868AD

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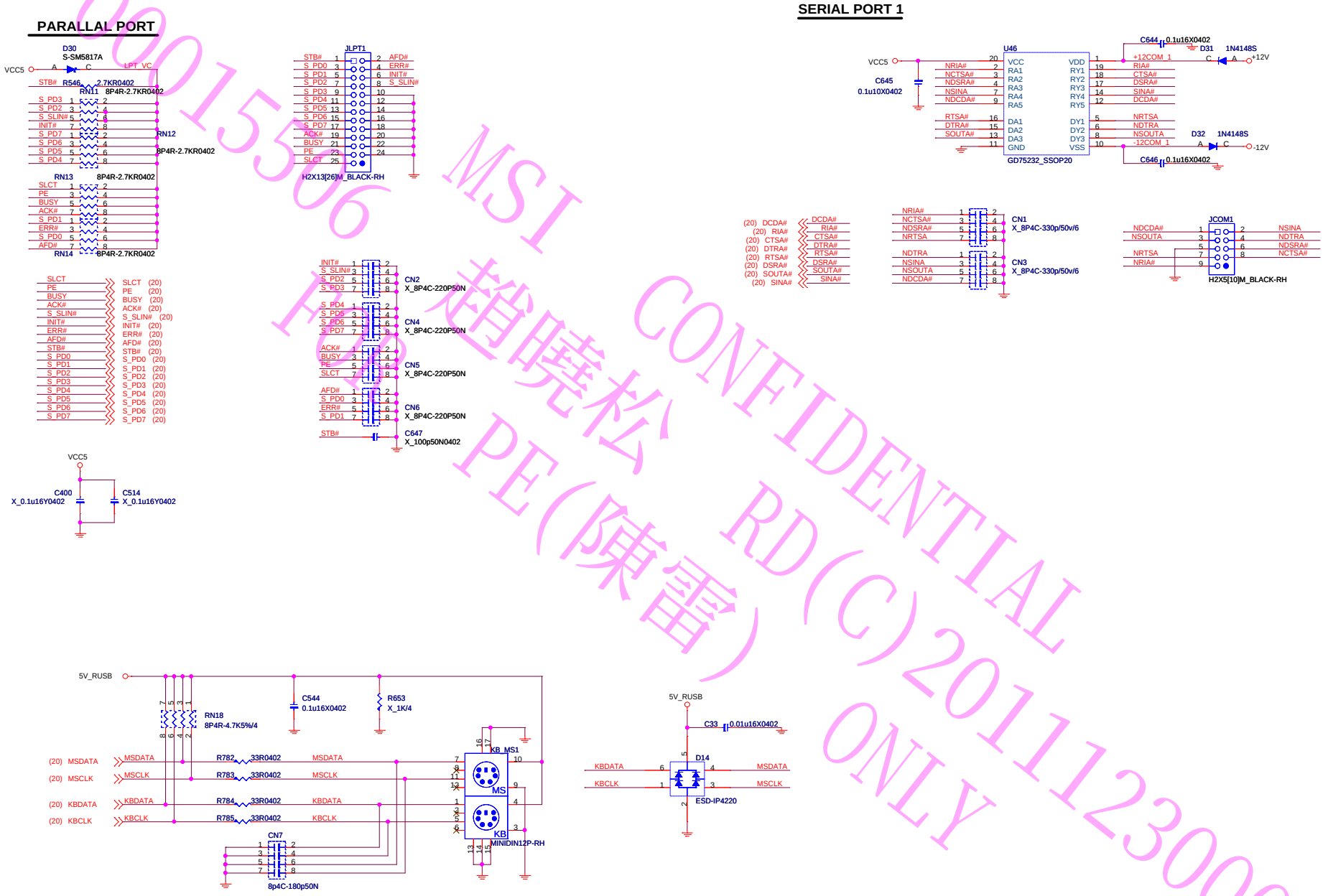

MICRO-START INT'L CO.,LTD.		
Title: COM/LPT		
Size: Custom	Document Number: MS-7786	Rev: 1.0
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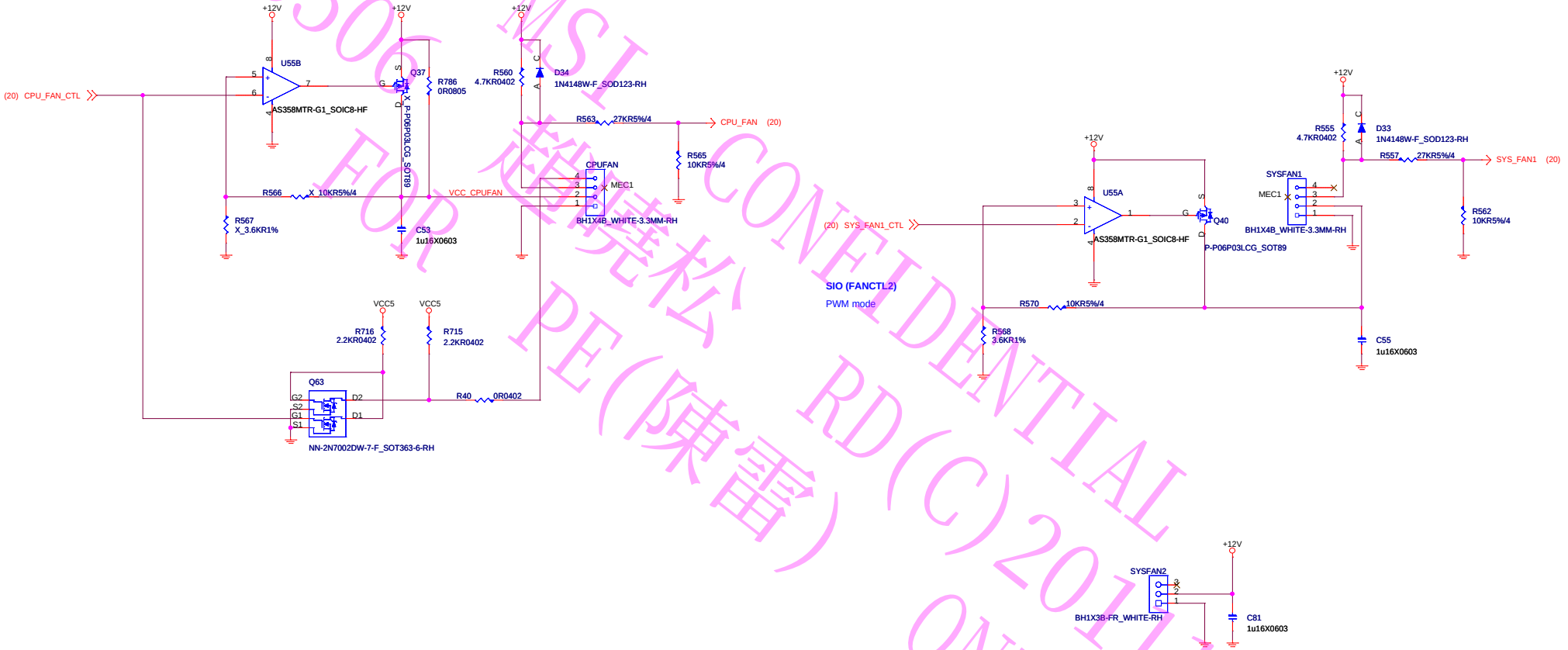
CPU FAN	CPU_FAN_TYPE	SIO (FANCTL1)	
3 pin	0	DC mode	
4 pin	1	PWM mode (push-pull)	(Default)



MICRO-START INT'L CO.,LTD.

Title: FAN		
Size: Custom	Document Number: MS-7786	Rev: 1.0
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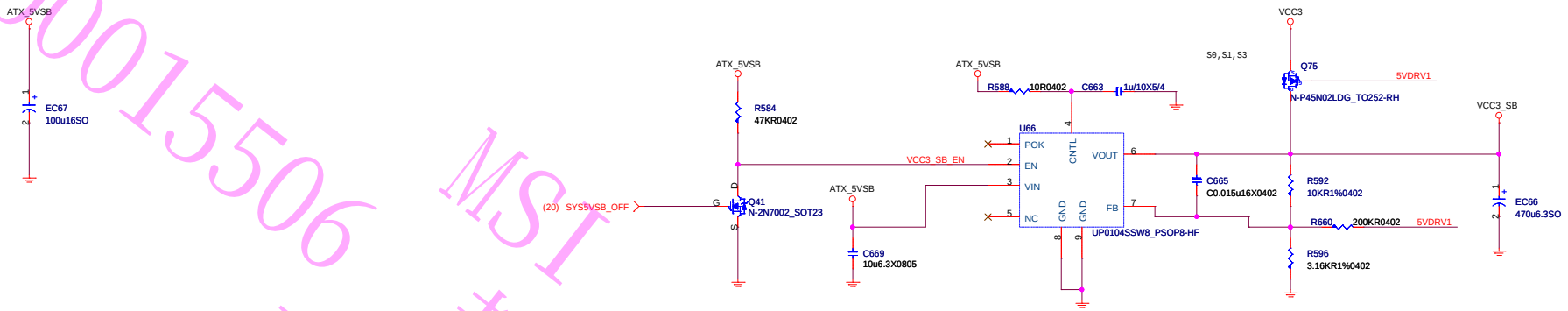
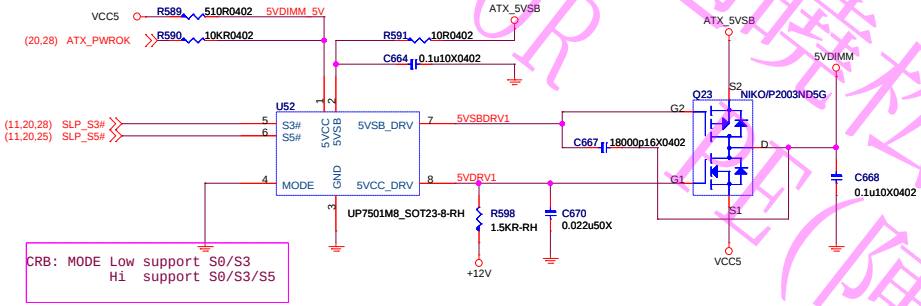
VCC5_SB Power Switch

Trace Width 80mils.



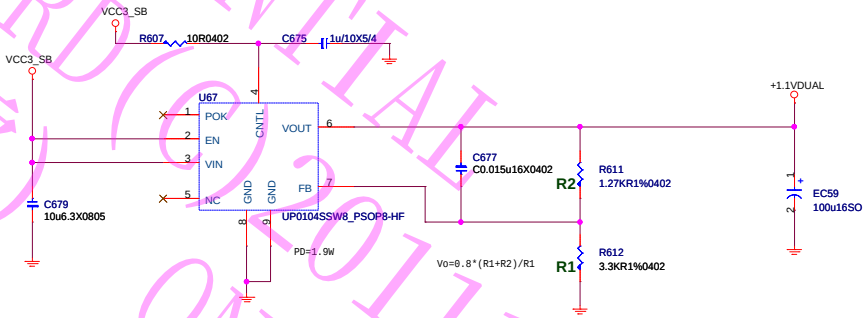
5VDIMM FOR DDR



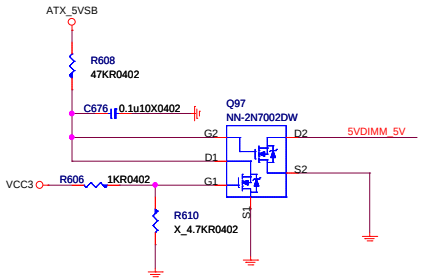
1.1VDUAL POWER

(3.3-1.1) X 1.3 = 2.86W > Po

1.1V@1.3A



For special PSU sequence



MICRO-START INT'L CO.,LTD.

Title: ACPI UPI & SYS POWER

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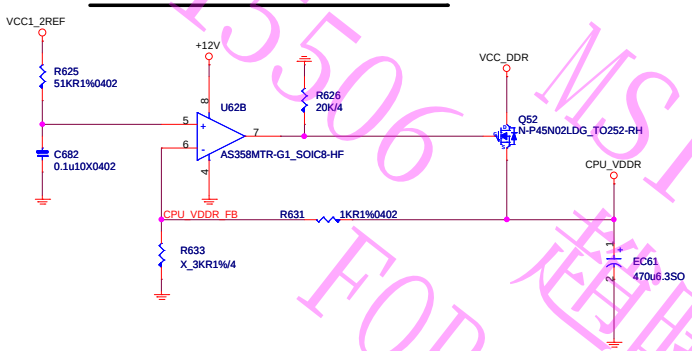
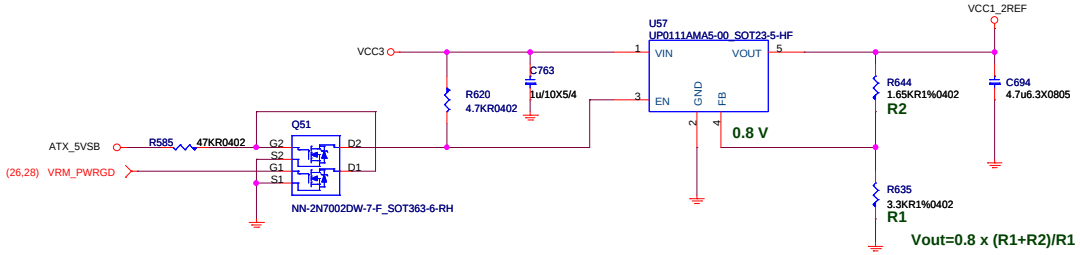
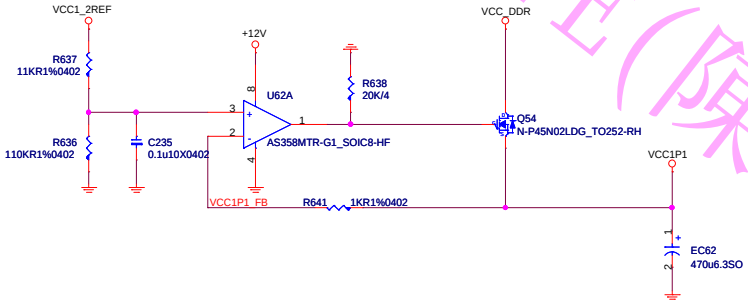
CPU_VDDP + CPU_VDDR POWER 1.2 V@3.2A



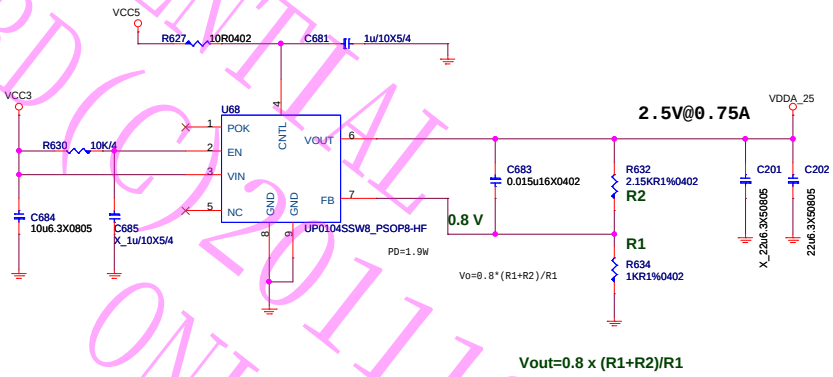
VCC1_2REF



VCC1P1 POWER 1.1V@2A



CPU VDDA_25 POWER



MICRO-START INT'L CO.,LTD.

Title: FCH CORE Power		
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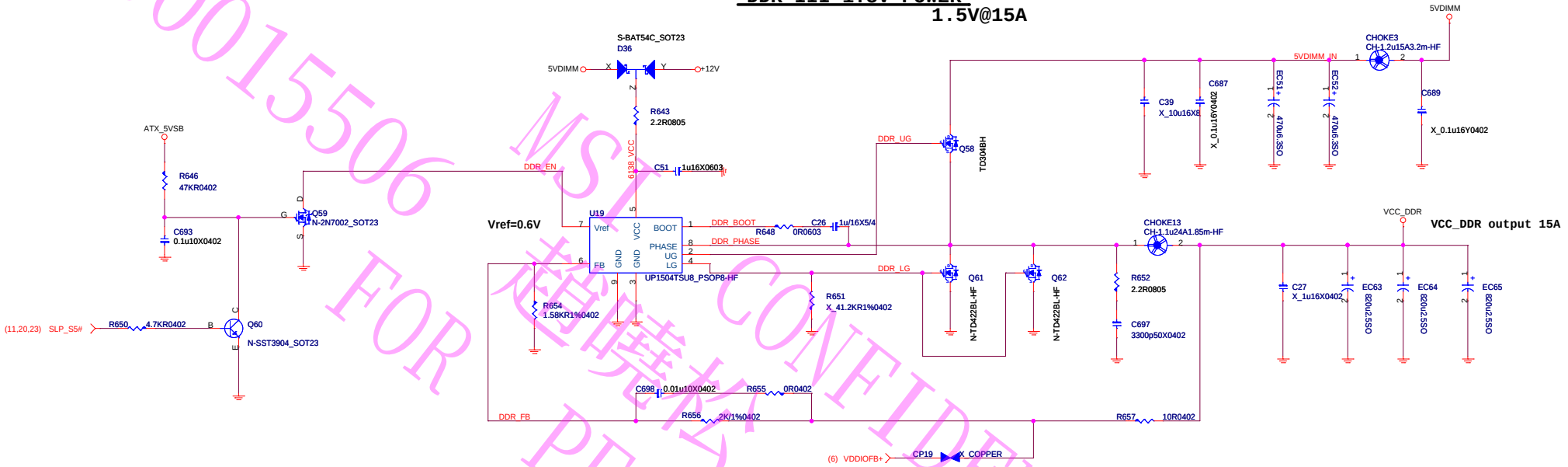
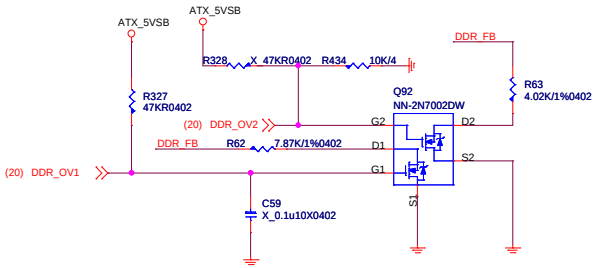
DDR III 1.5V POWER

1.5V@15A

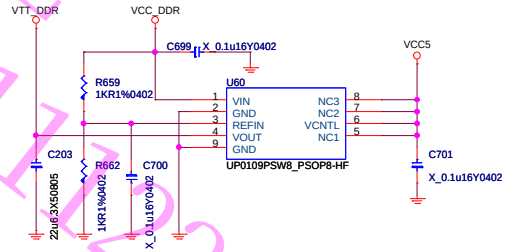


OV



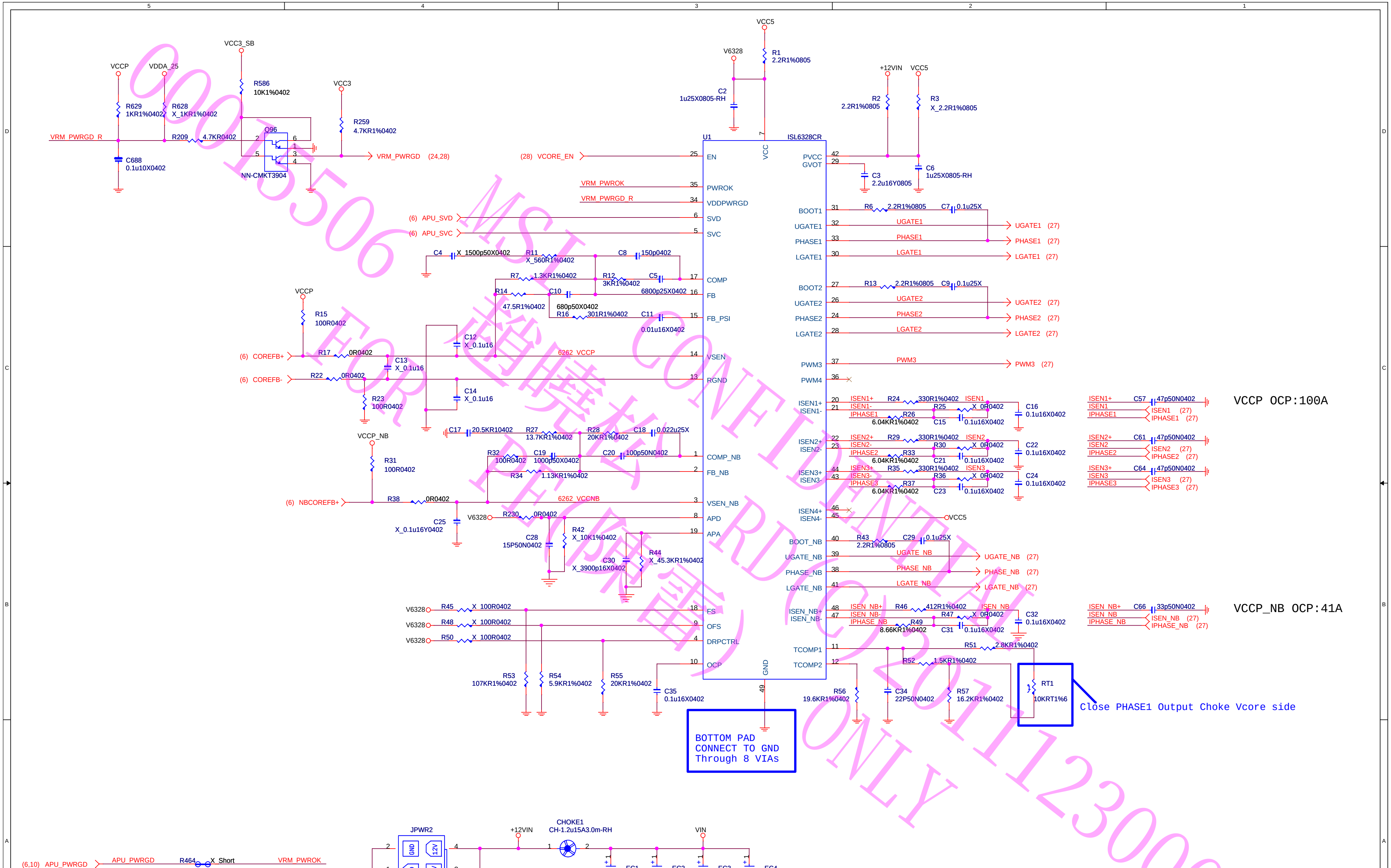
MODE	第一階	Default	第二階	第三階
DDR_OV1	LOW	HIGH	LOW	HIGH
DDR_OV2	LOW	LOW	HIGH	HIGH
VALUE	1.35V	1.5V	1.65V	1.8V

0.75V@2A VTT_DDR POWER



MICRO-START INT'L CO.,LTD.

Title: DDR Power		
Size: Custom	Document Number: MS-7786	Rev: 1.0
Date: Tuesday, December 27, 2011	Sheet 25 of 35	



MICRO-START INT'L CO.,LTD.

Title: Intersil ISL6328 3+1 Phase

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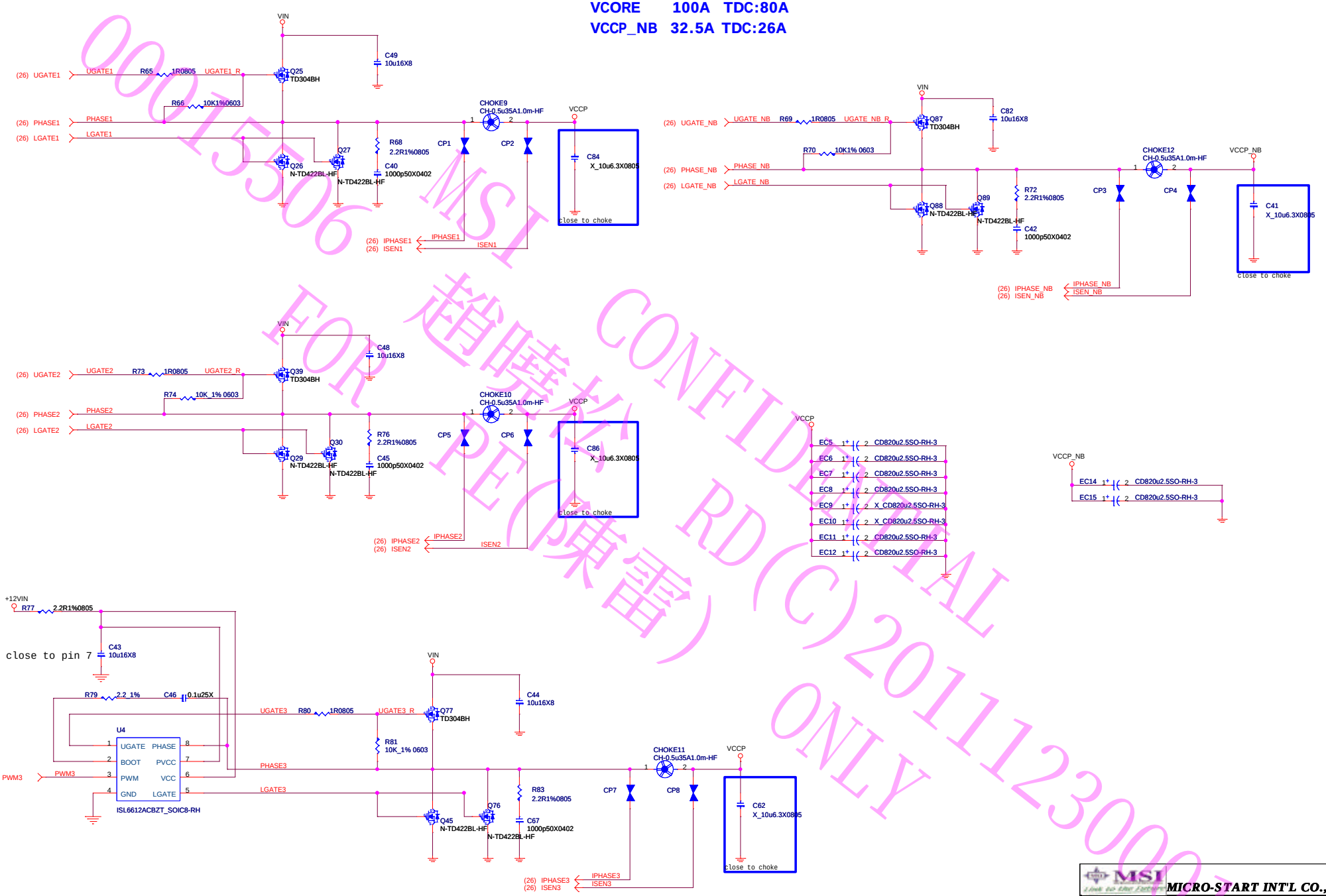
VCORE 100A TDC:80A
VCCP_NB 32.5A TDC:26A



MICRO-START INT'L CO.,LTD.

Title: APU Power		
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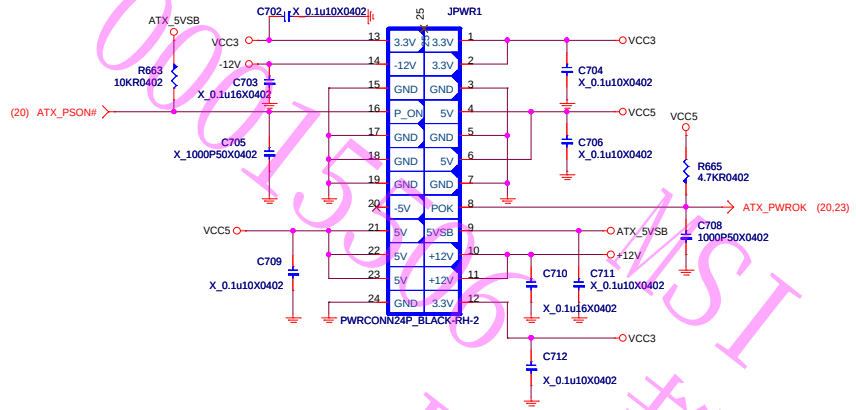
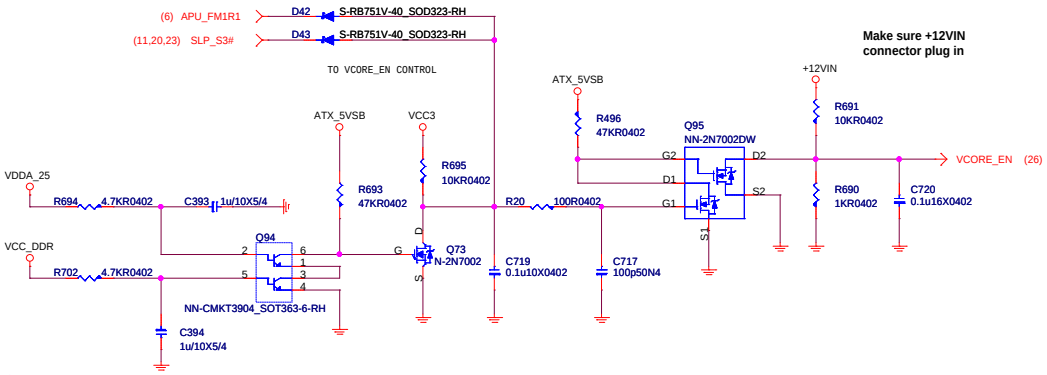
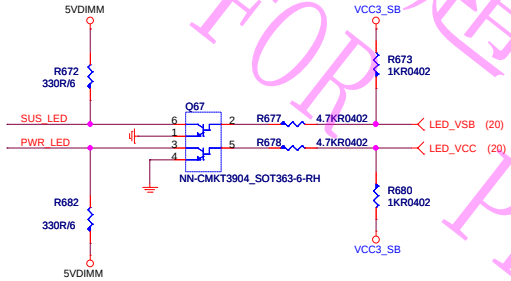
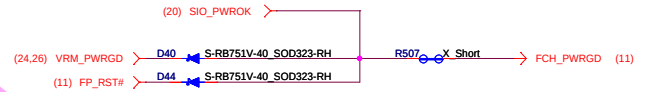
ATX CONNECTOR

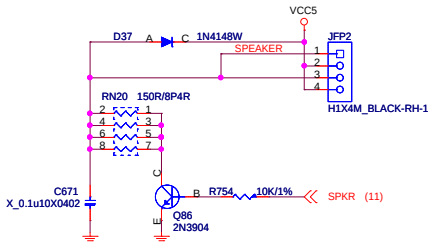


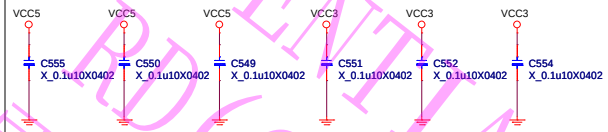




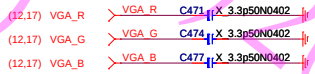


BUZZER

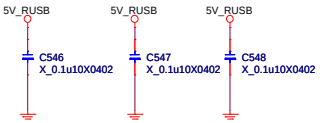




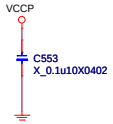
EMI For VGA

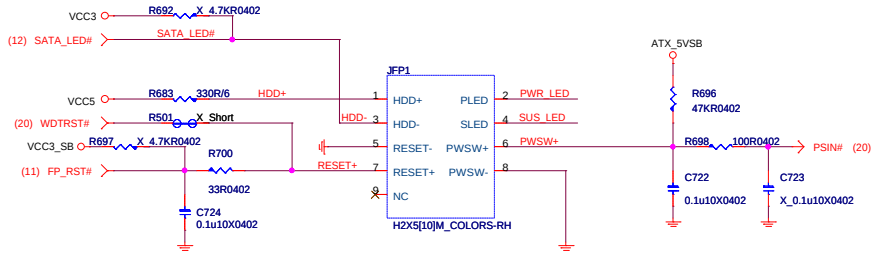


EMI For REAR USB



EMI For VCCP





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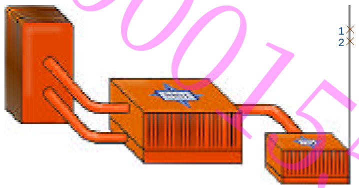
HEAT SINK

HS_FCH1 Heat-Sink PCH



1
2

LA1

AMI_BIOS LABLE

BIOS_LABLE

Hudson-2
D2
AMD-218-0755064-A13-RH

LAN
GIGA
RTL8111E-VL-CG-RH

EL1
EL 470uF
CD470u16EL11.5

R
0 Ohm
0R0402

SATAII
SATA2
SATA7PM_BLACK-P-RH

LAN1
GIGA
RTL8111E-Connector

EL2
EL 1000uF
CD1000u63EL11.5-RH

USBII
USB2.0
USBAX2M_BLACK-RH-20

EL3
EL 100uF
CD100u25EL11-RH

VCCP — CPU_VCCP
VCCP_NB — CPU_VCCP_NB
CPU_VDDR — CPU_VDDR
VDDA_25 — CPU_VDDA
VCC_DDR — DDR_1V5
VTT_DDR — DDR_VTT
VCC1P1 — FCH_1V1
+1.1VDUAL — FCH_1V1_S
VCC3_SB — FCH_3V3_S
VDD10 — LAN_1V05

MANUAL PART

AVL:
D06-0100161-F52
D06-0100101-K26

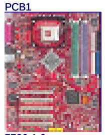
BAT1_X1
BAT-CR2032-RH

RM1
E95-0000003-H06

RM2
E93-0000094-C22

LA10
Label
601-7786-A10
LABEL

PCB1



7786-1.0
PK0-0778610-G37,精成,23,寶安恩斯適廠(MSIS)
PK0-0778610-G37,精成,7,寶安恩斯適廠(MSIS)
PK0-0778610-E48,競華,23,寶安恩斯適廠(MSIS)
PK0-0778610-E48,競華,7,寶安恩斯適廠(MSIS)

Optics Orientation Holes

FM1 X_FM120
FM2 X_FM120
FM3 X_FM120
FM4 X_FM120
FM5 X_FM120
FM6 X_FM120
FM7 X_FM120
FM8 X_FM120

Simulation

X_JS3
VCC5 SIM1
X_PIN1*2

X_JS4
SIM2
X_PIN1*2

MH7 X_MH001
MH8 X_MH001
MH1 X_MH001
MH2 X_MH001
MH4 X_MH001
MH5 X_MH001

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0A

Circuits

2011.11.01 Modify from 7697-1.0
Remove PCI-Ex1 & USB3.0 & One DDR High side MOS
Combine with CPU_VDDP & CPU_VDDR Power

2011.11.21 Guber out

1.0

Circuits

2011.12.22 Guber out

BOM

2011.12.23 Modify DVI & PWM MON

2011.06.28

2011.07.26

2011.07.27

2011.08.03

2011.08.04

2011.08.05

2011.08.12

2011.08.16

2011.08.22

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