MS-7B38 Ver:1.1

CPU:
AMD AM4

System Chipset:
Promontory A320
(Value DIY or System Builder)

Main Memory:
DDR IV * 2 MAX:64 GB

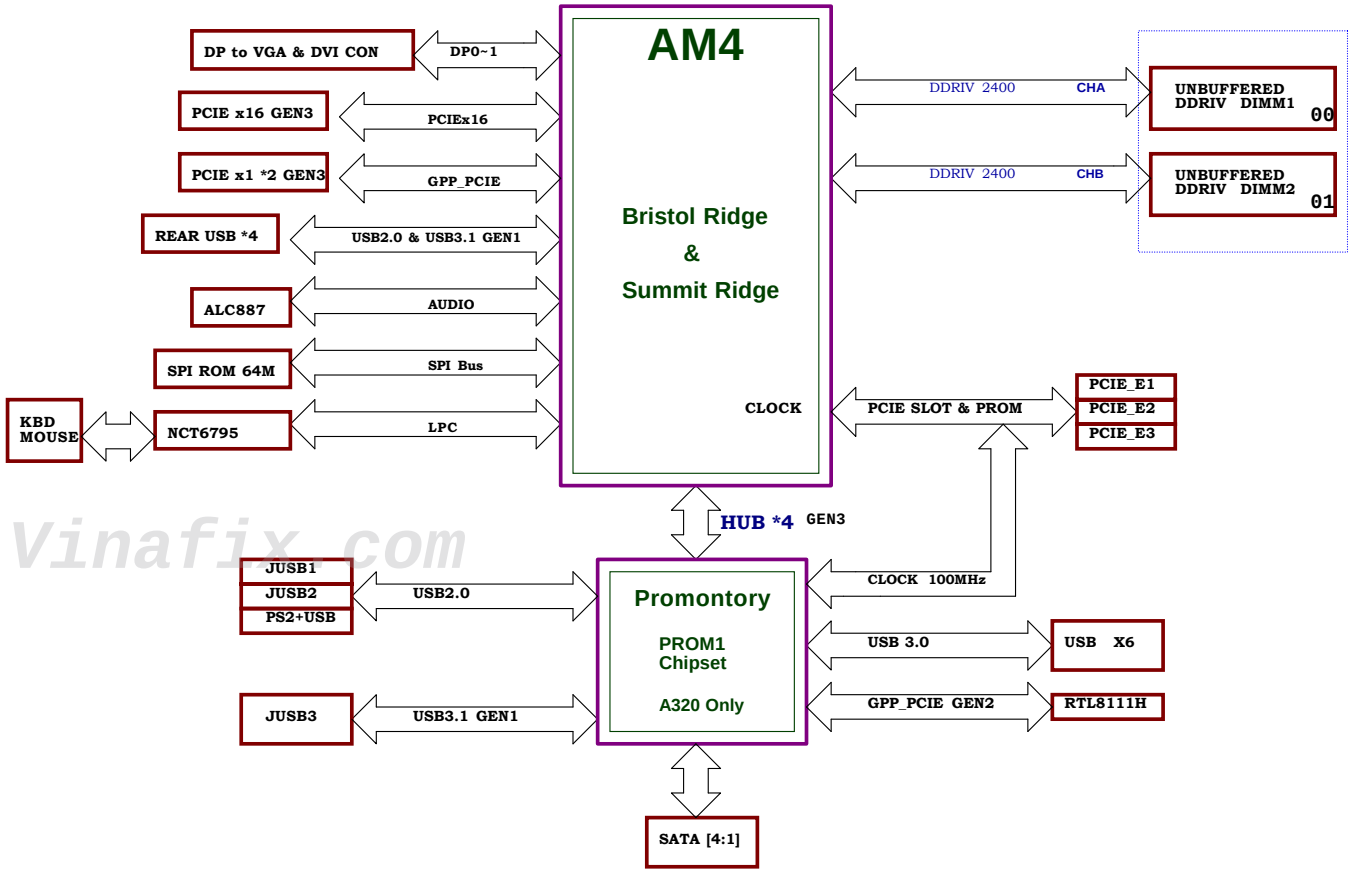
VRM
RT8894 3+2

On Board Chipset:
LPC Super I/O --NCT6795
LAN RTL8111H
Azalia CODEC - Realtek ALC887

Expansion Slots:
From CPU
PCI Express X16 Slot * 1
PCI Express X1 Slot * 1
PCI Express X1 Slot * 1

OCP IC:
UP6273

FUSION BLOCK DIAGRAM



MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: Block Diagram		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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AMD AM4

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27 USB Front Side	
28 SATA Connector	
29 DVI Connector	
30 DP to VGA ITE6516	
31 ACPI uPI-5VDIMM&3VSB	
32 PM-NB681-1.05V/GS7133-2.5V	
33 DDR PWR VPP25/VTT-MP2143	
34 DDR Power-RT8231AGQW	
35 CPU Power 1P8V-MP2147	

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: COVER SHEET

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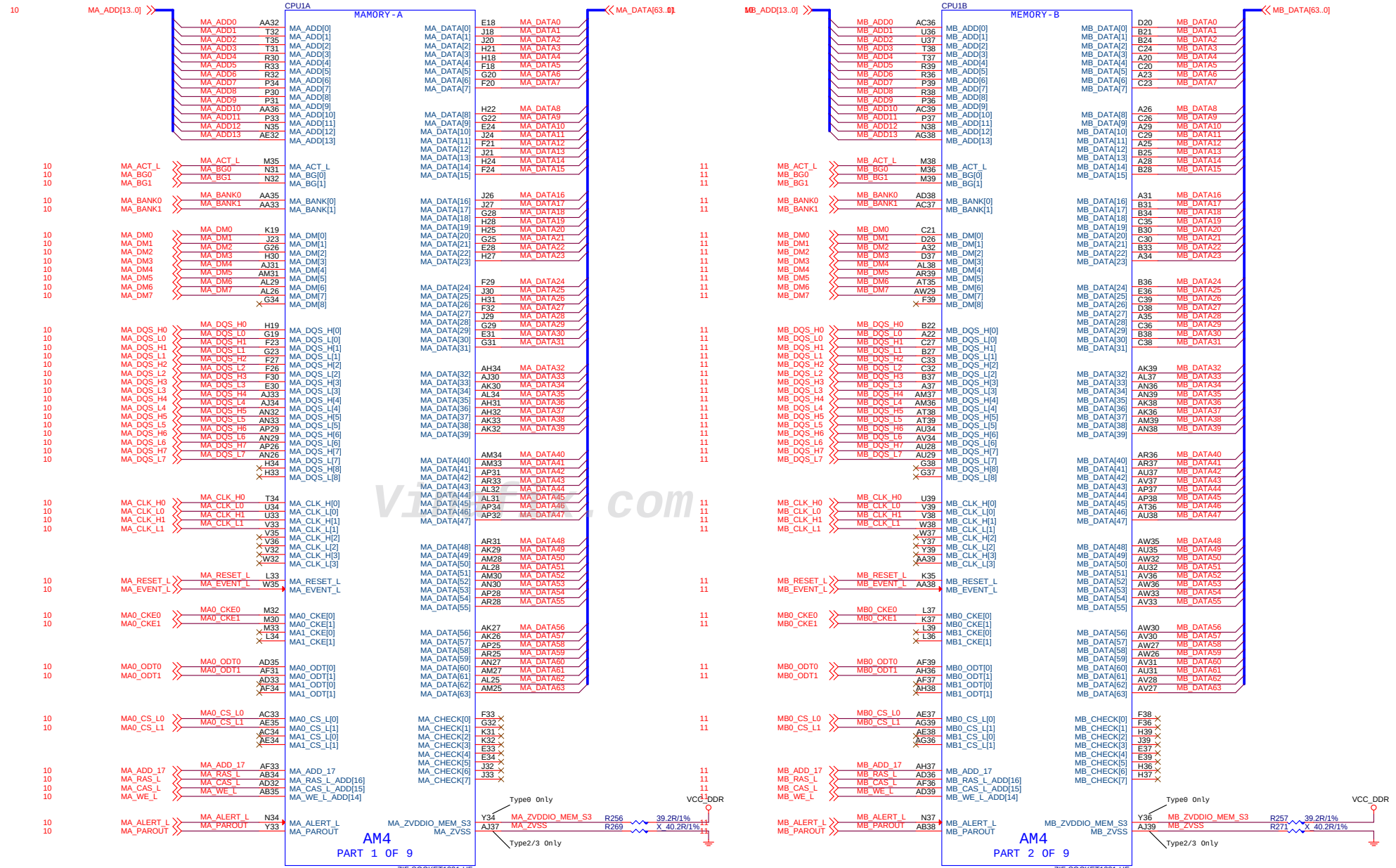

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title	AM4 DDR4 I/F	
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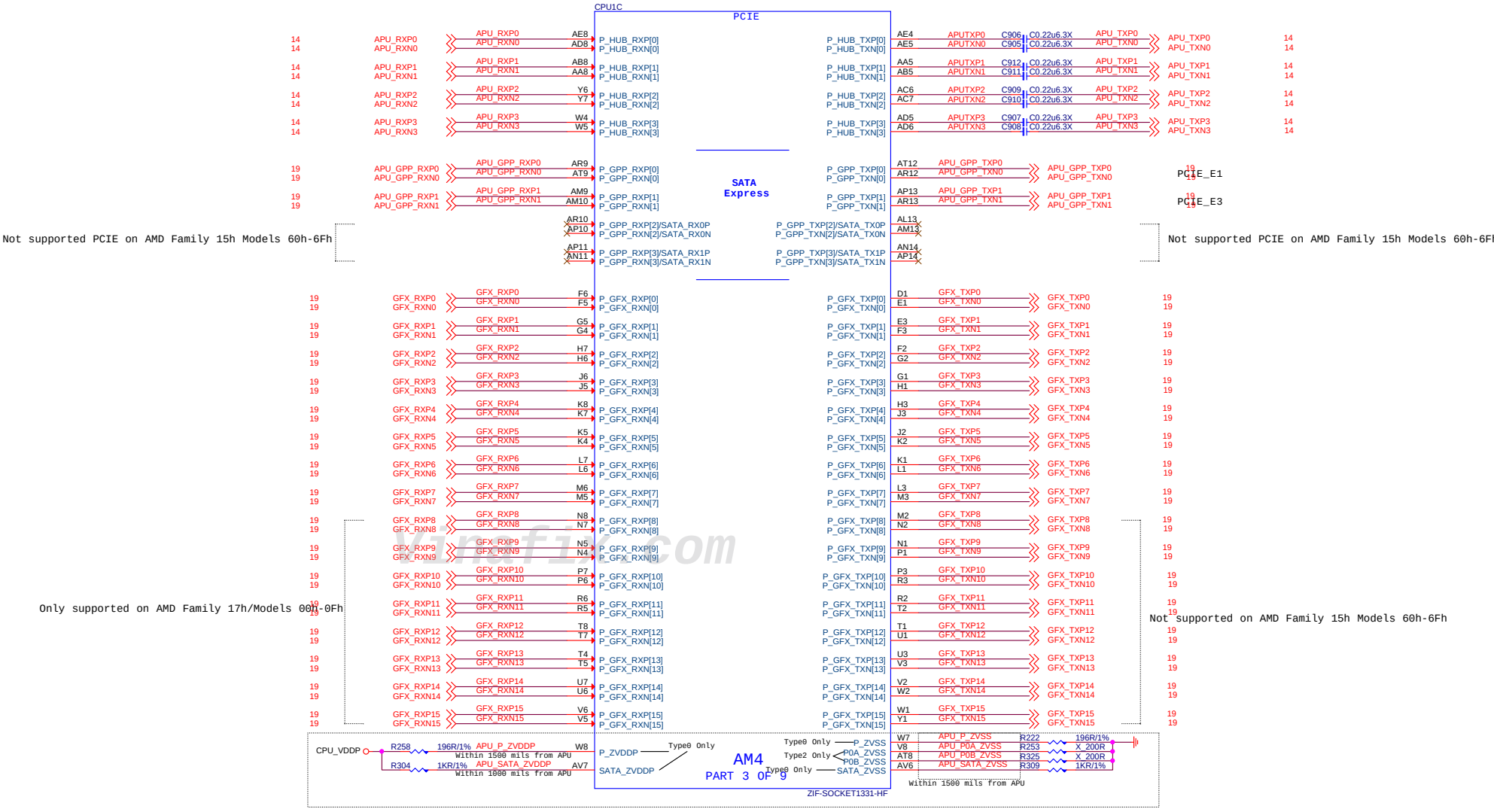

MSI MICRO-START INT'L CO.,LTD.

Title: AM4 PCIE/SATAE		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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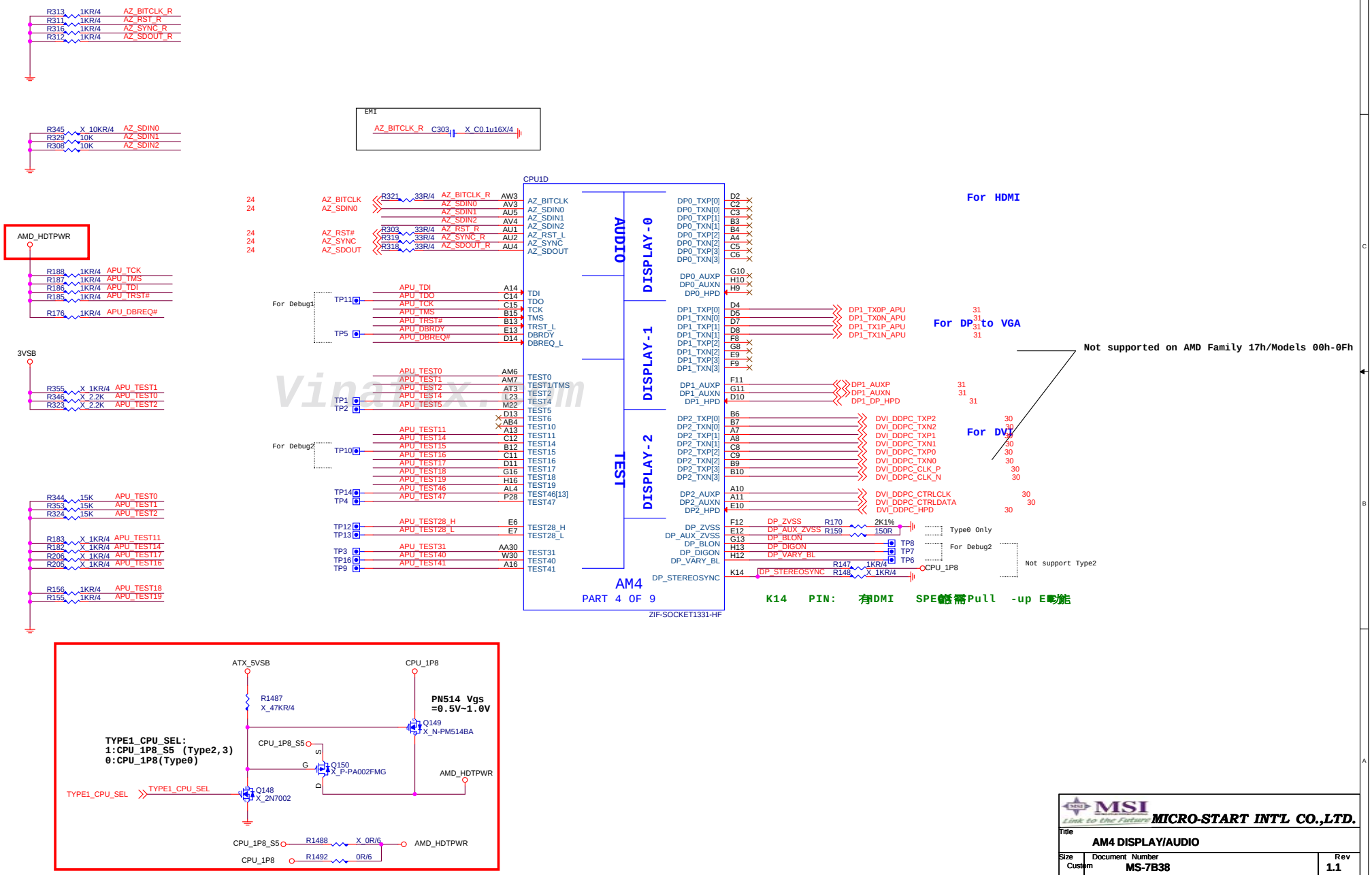

MSI MICRO-START INTL CO.,LTD.

Title: AM4 DISPLAY/AUDIO

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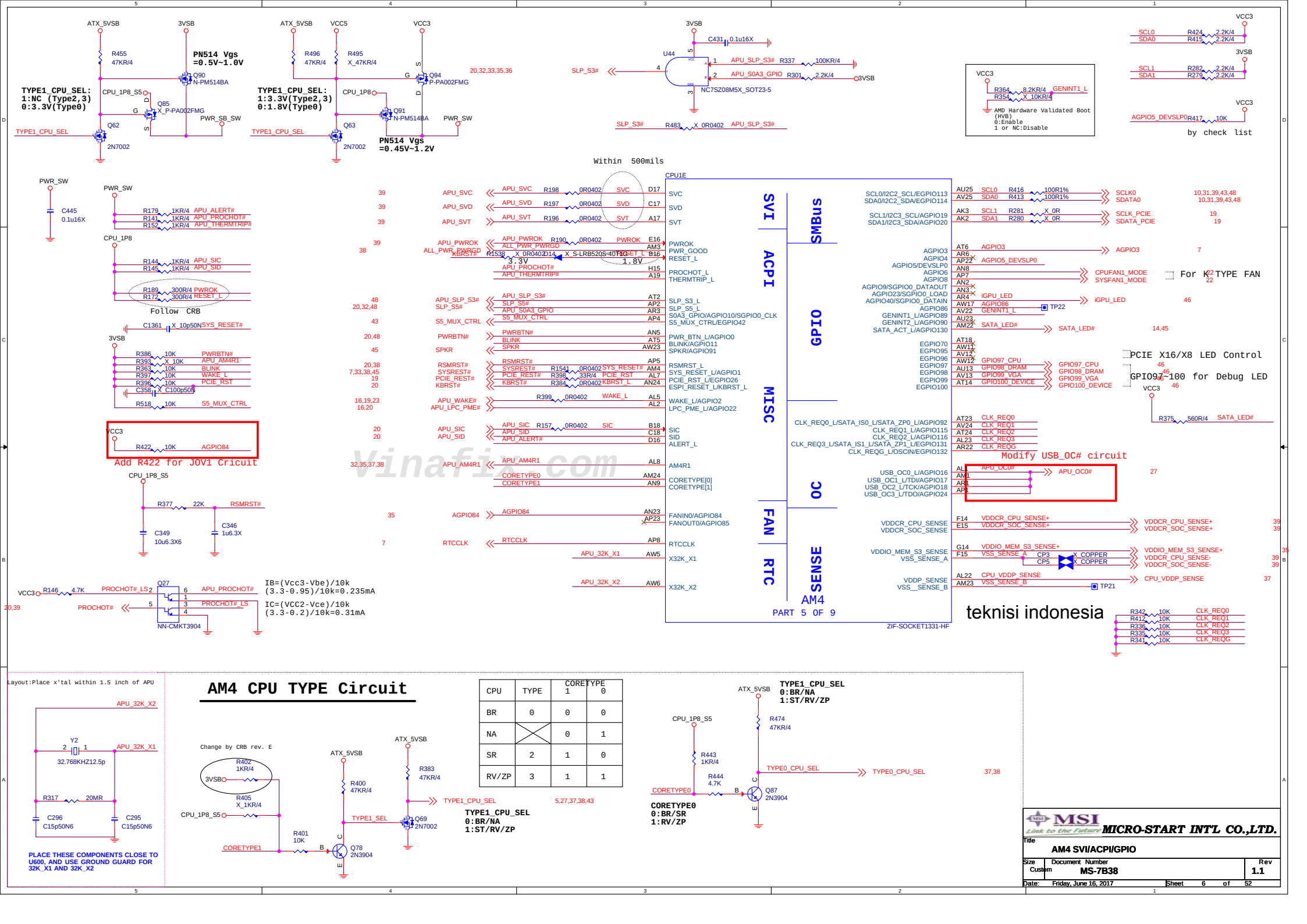
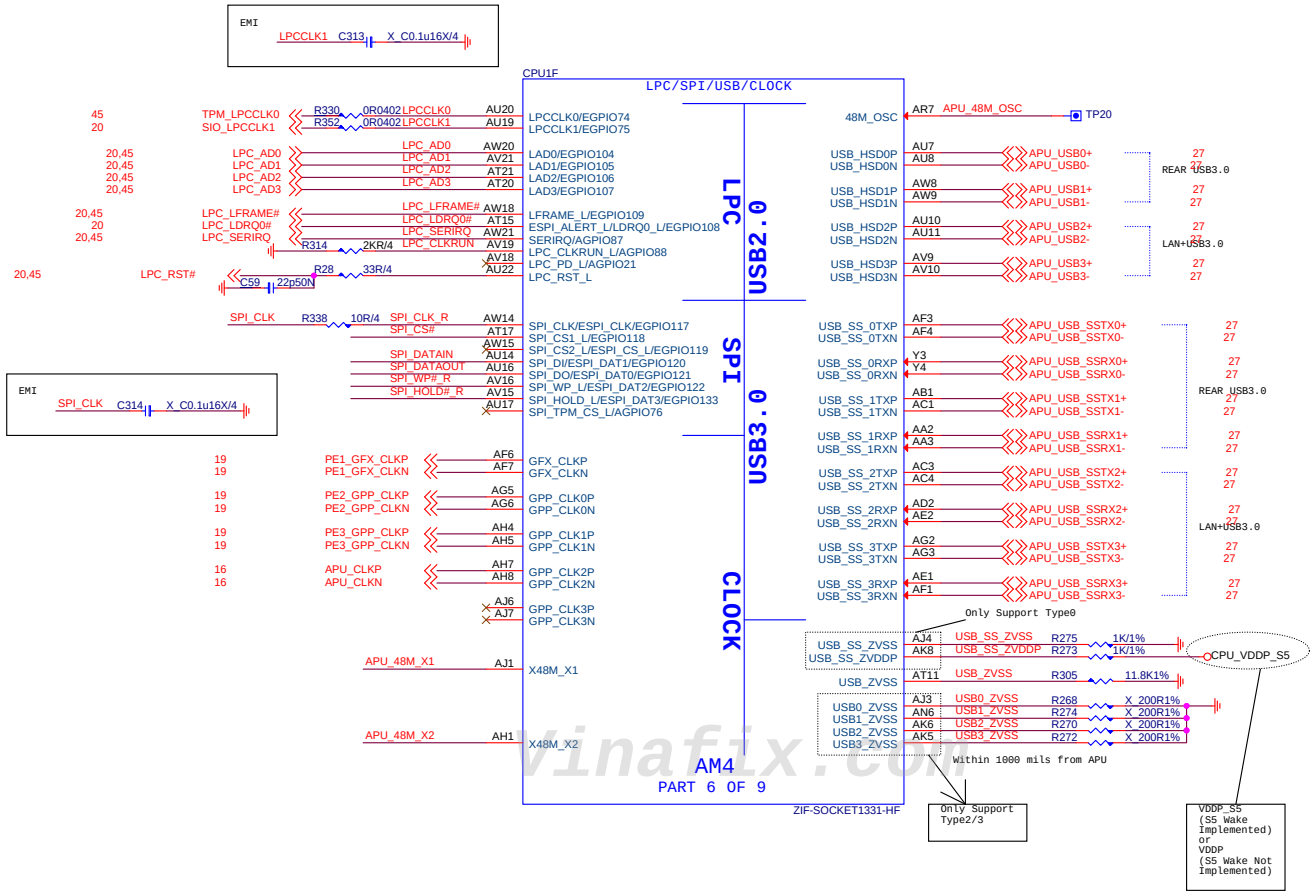
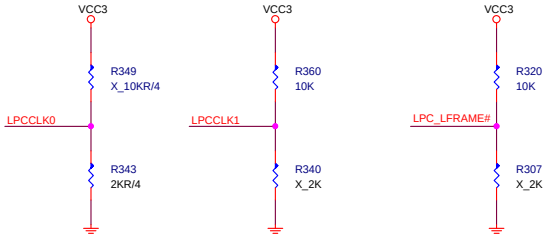


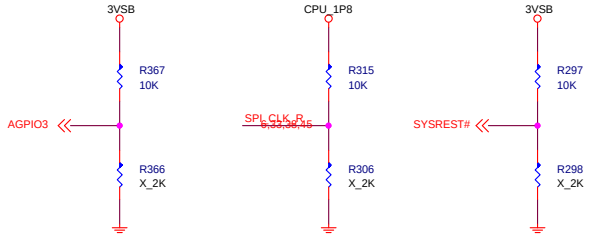
CPU	TYPE	CORETYPE 1	CORETYPE 0
BR	0	0	0
NA	X	0	1
SR	2	1	0
RV/ZP	3	1	1



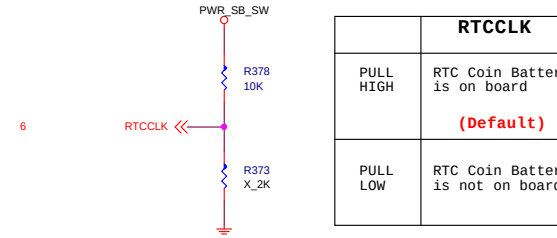
Strapping Options



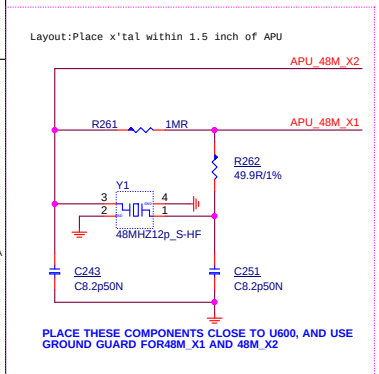
	LPCCLK0	LPCCLK1	SIO_LFRAME
PULL HIGH	LPC device Boot Fail Timer Enabled	Configured for Internal clock generator **(Default)**	SPI ROM **(Default)**
PULL LOW	LPC device Boot Fail Timer Disabled **(Default)**	Configured for External clock generator ?????	LPC ROM



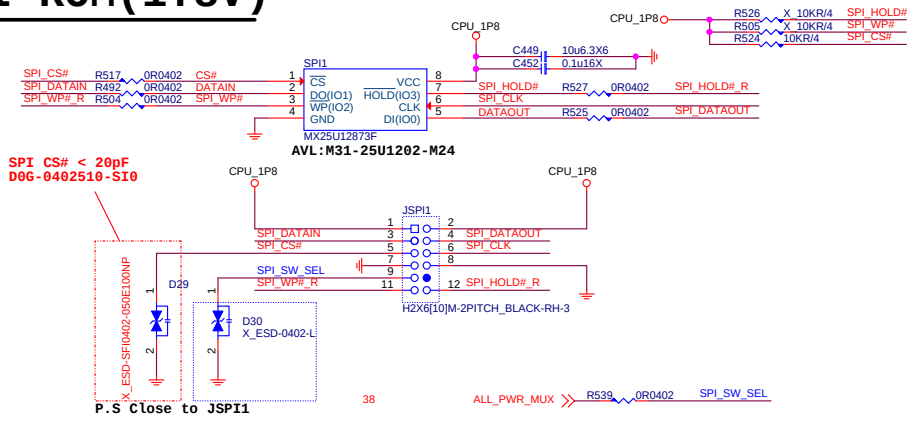
	AGPIO3	SPI_CLK	SYSREST#
PULL HIGH	Enhanced Reset logic **(Default)**	Use 48Mhz crystal clock and generate both internal and external clocks **(Default)**	Normal reset mode **(Default)**
PULL LOW	Traditional Reset logic	Use 100Mhz PCIE clock as reference clock and generate internal clocks only	short reset mode



	RTCCLK
PULL HIGH	RTC Coin Battery is on board **(Default)**
PULL LOW	RTC Coin Battery is not on board



SPI ROM(1.8V)



MSI MICRO-START INTL CO.,LTD.

Title: AM4 LPC/SPI/USB/CLK/STRAP

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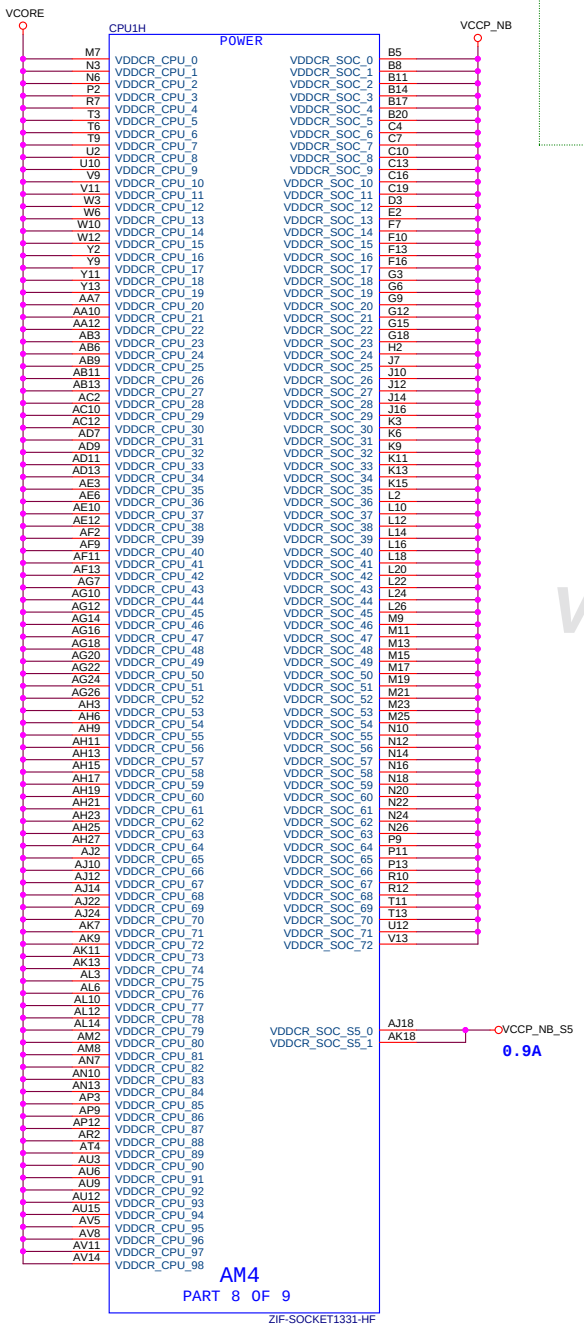

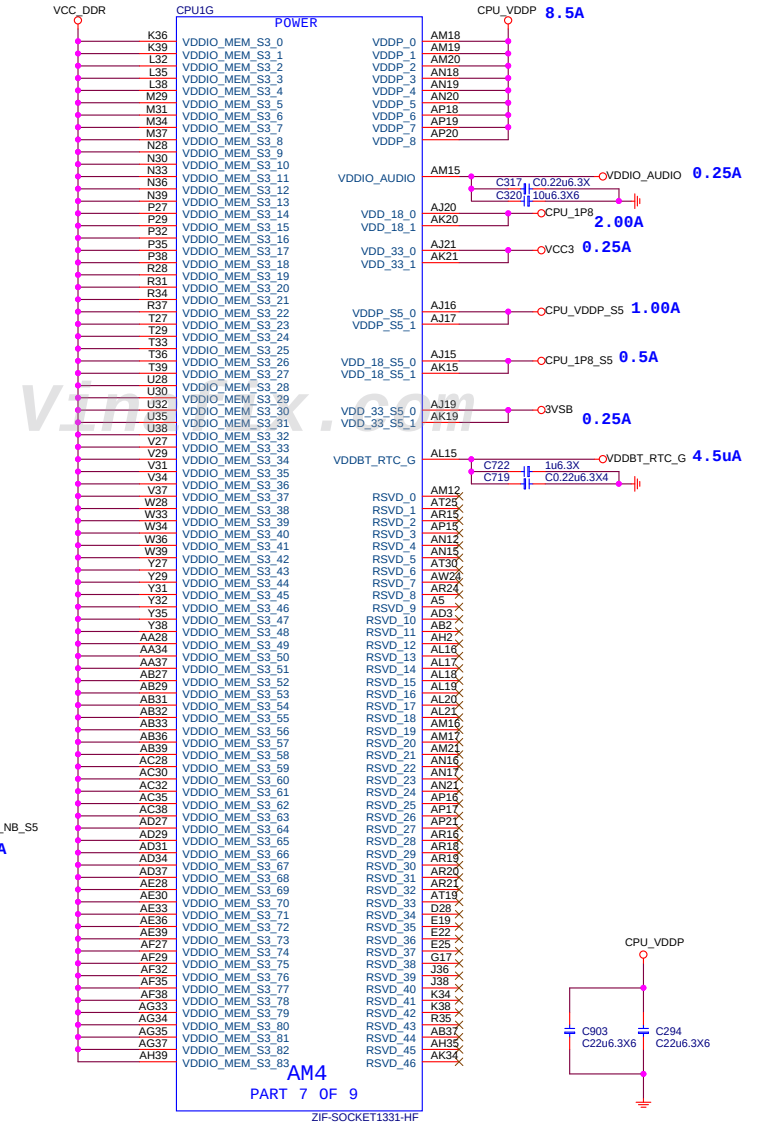

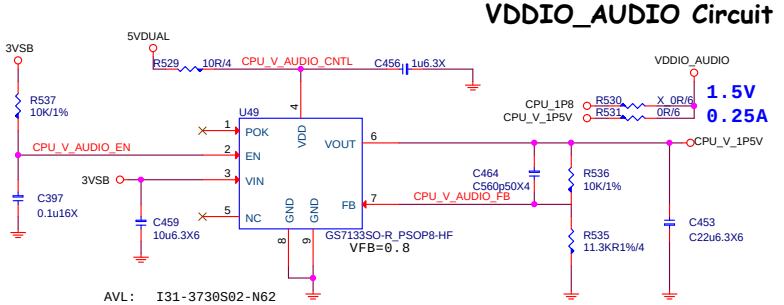

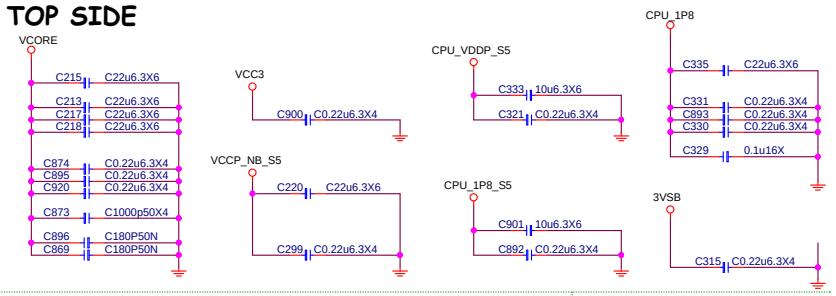

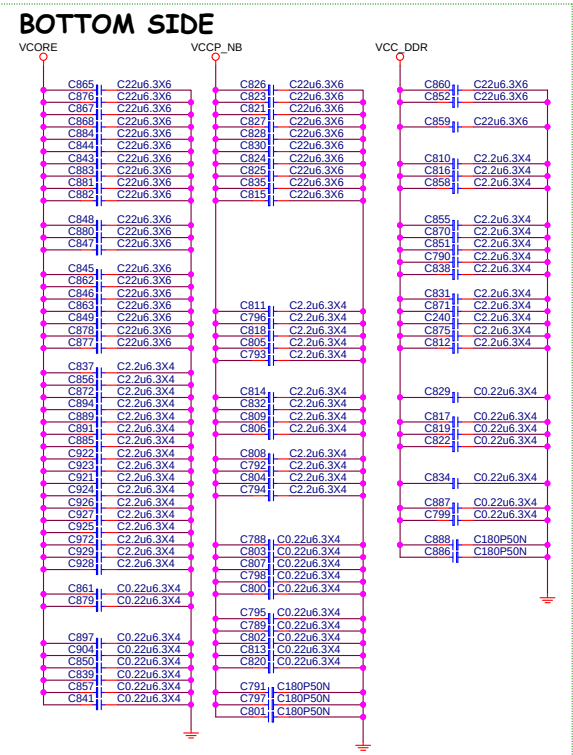

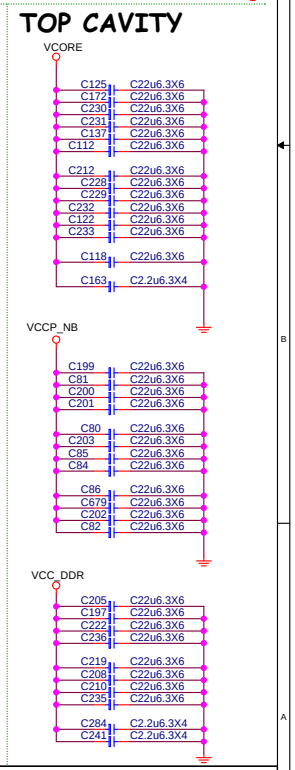

MSI MICRO-START INTL CO.,LTD.

Title	AM4 Power/RTC Power	
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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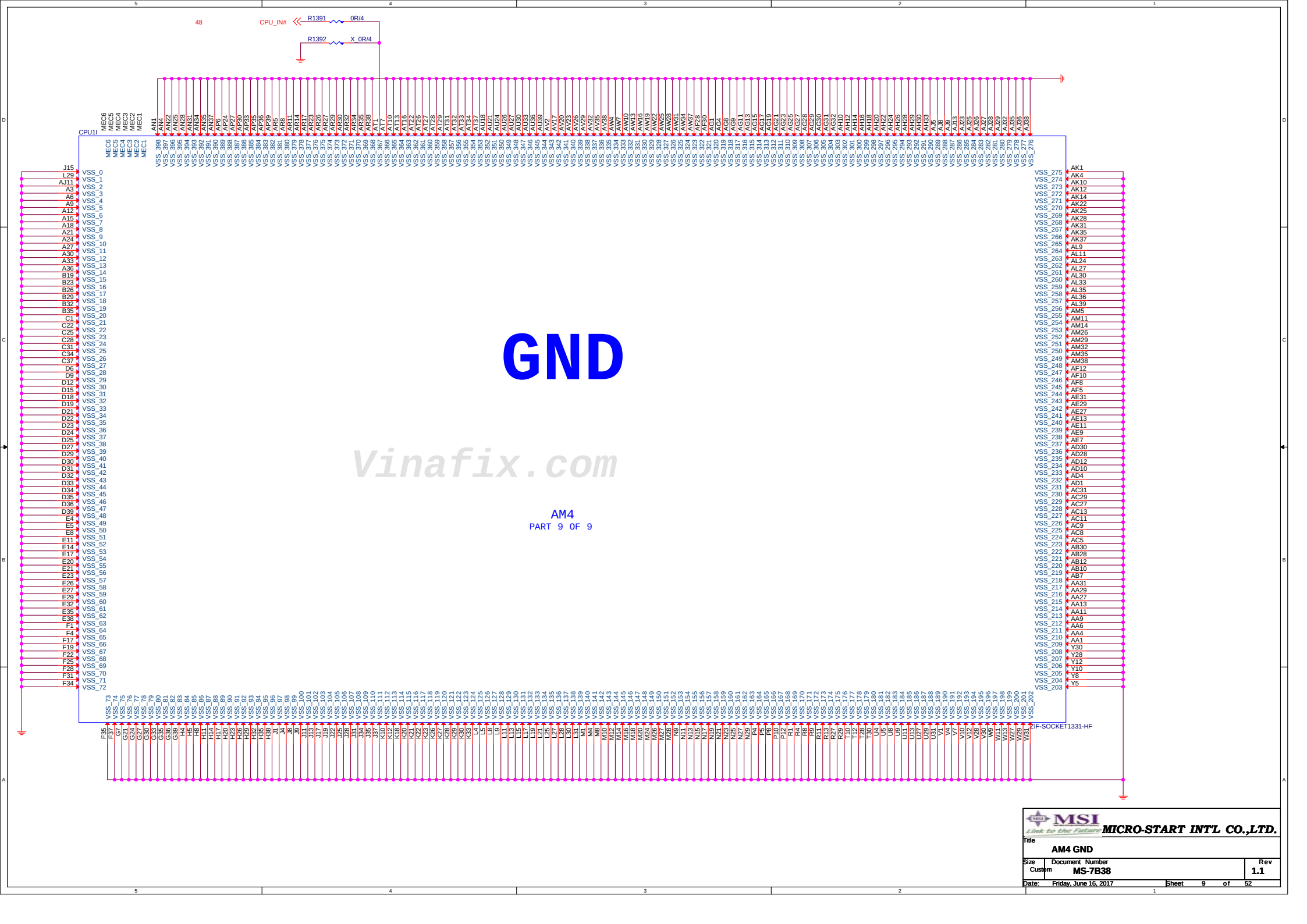

MSI
Link to the Future
MICRO-START INT'L CO.,LTD.

Title	AM4 GND	
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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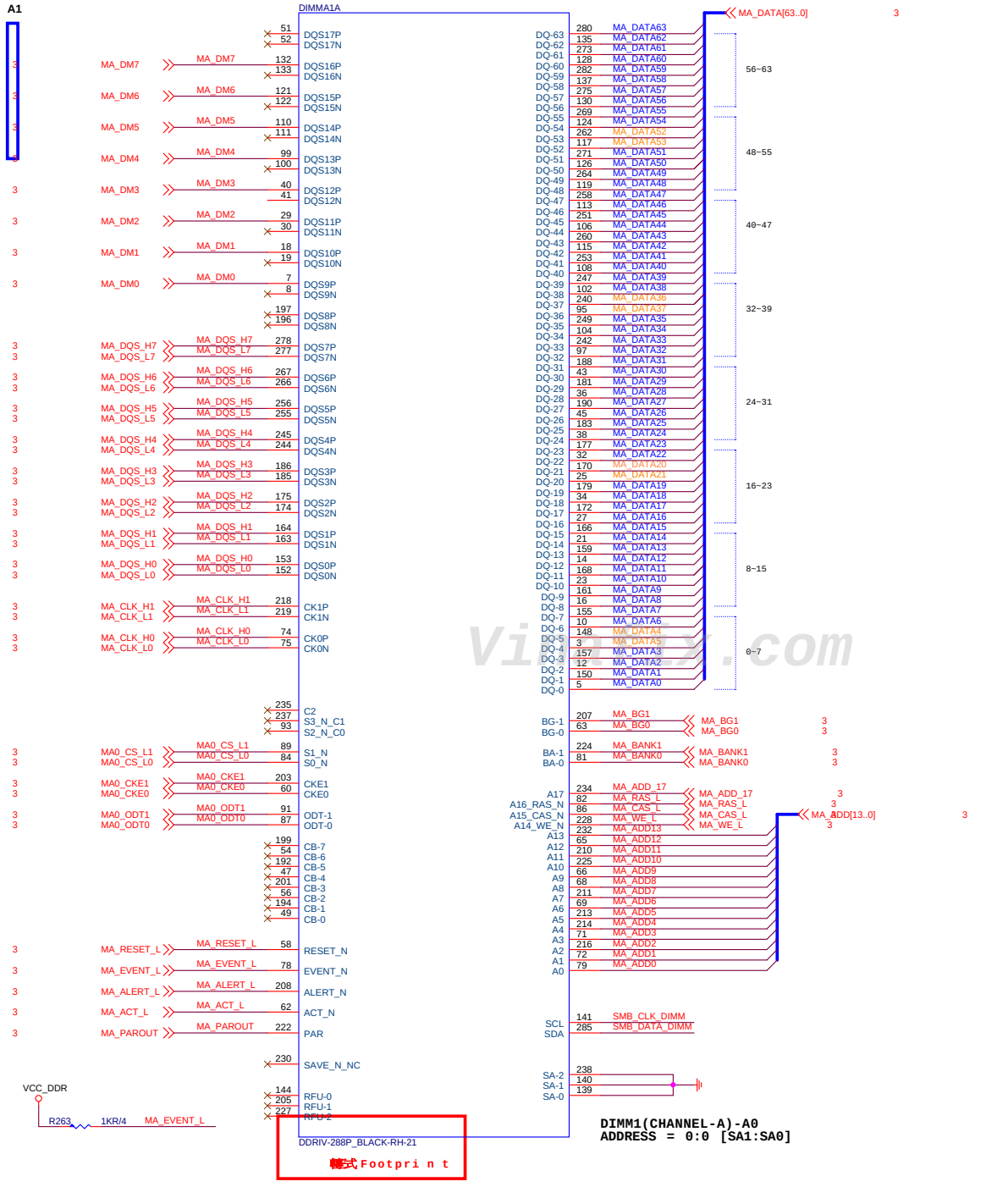

MICRO-START INTL CO.,LTD.

Title	DDR4 DIMM CH-A	
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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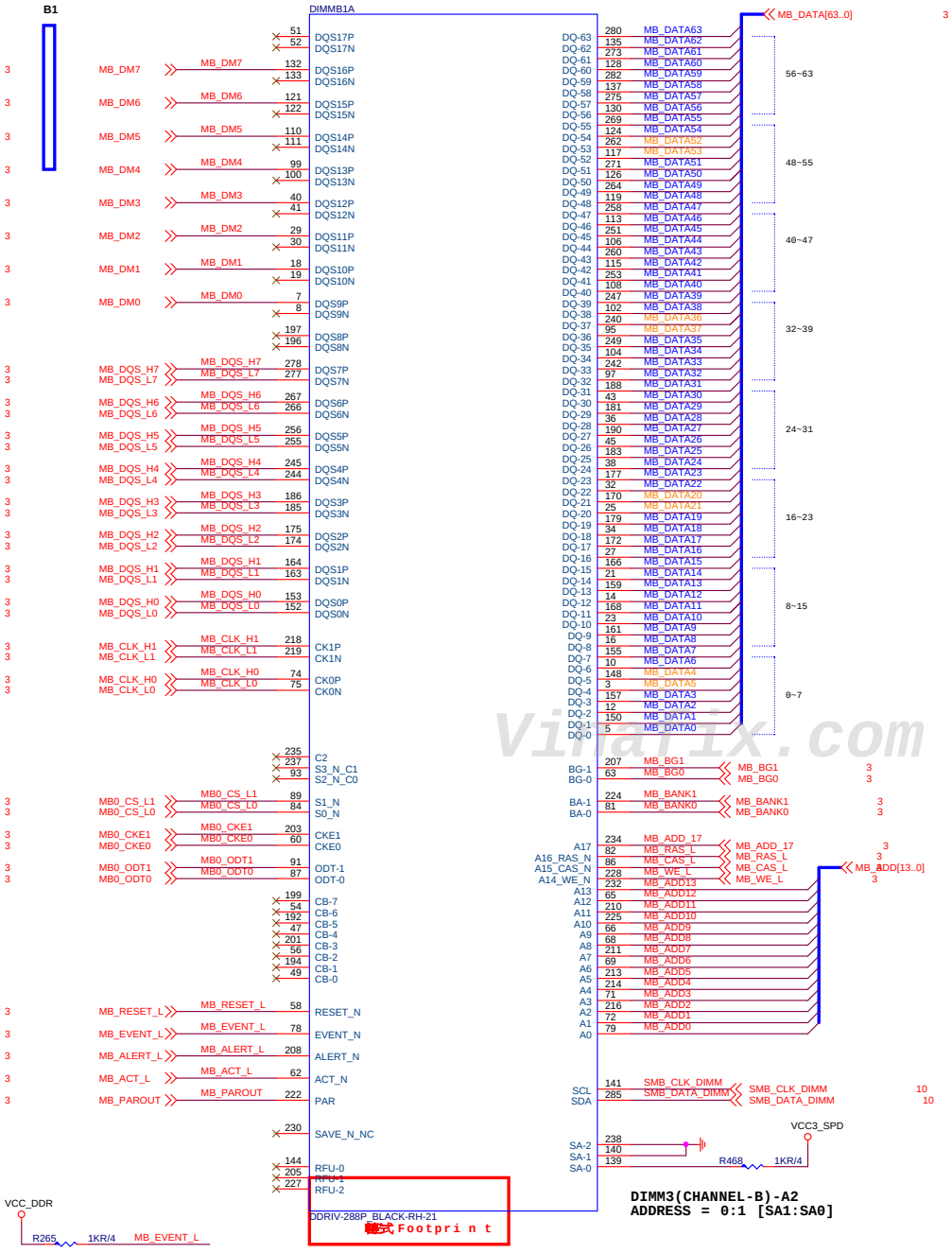

Title	DDR4 DIMM CH-B
Size	Custom
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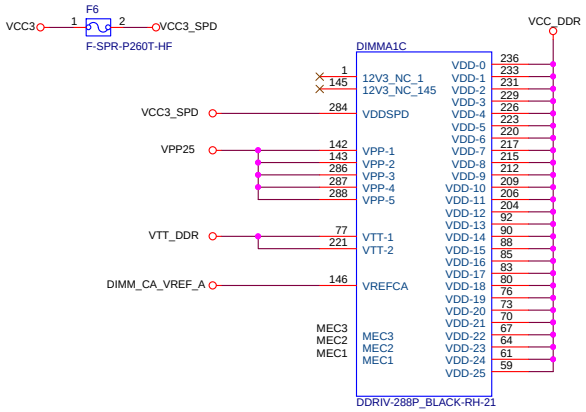
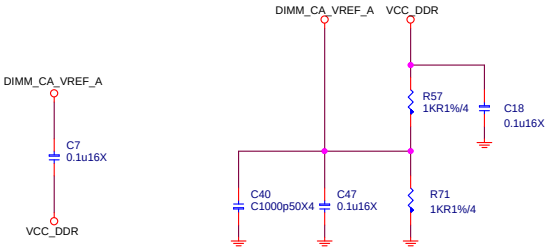
MICRO-STAR INT'L CO.,LTD.

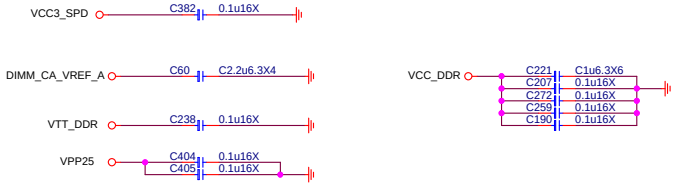


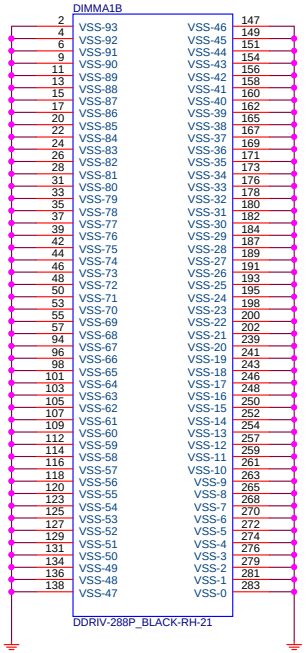
DIMM SLOT PN BY SPEC

DDR VREF

(place resistors close to DIMMs)





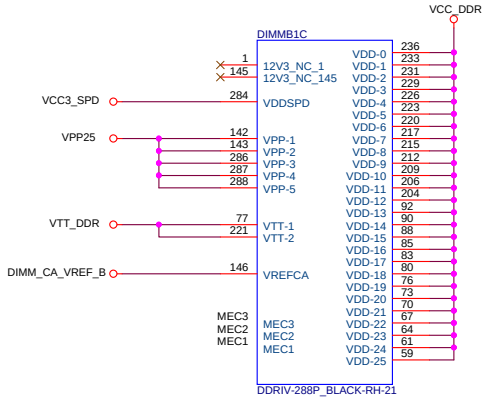


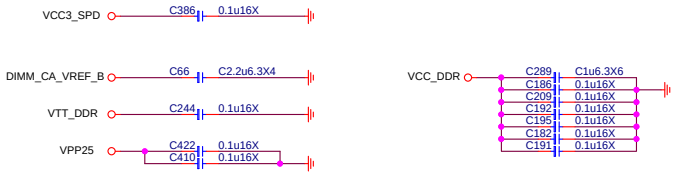
MSI MICRO-START INT'L CO.,LTD.

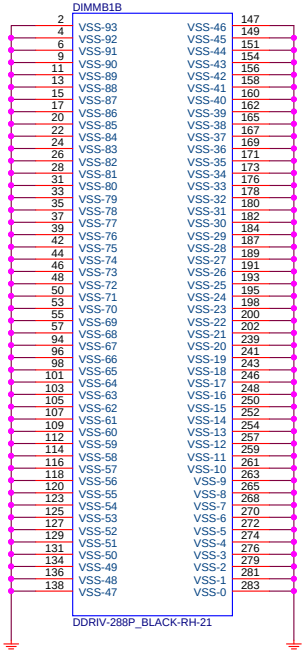
Title: DDR4-POWER/GND-1

Size: Custom | Document Number: MS-7B38 | Rev: 1.1

Date: Friday, June 16, 2017 | Sheet 12 of 52

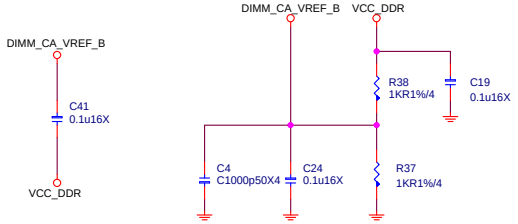






DDR VREF

(place resistors close to DIMMs)



MICRO-START INT'L CO.,LTD.

Title	DDR4-POWER/GND-2	
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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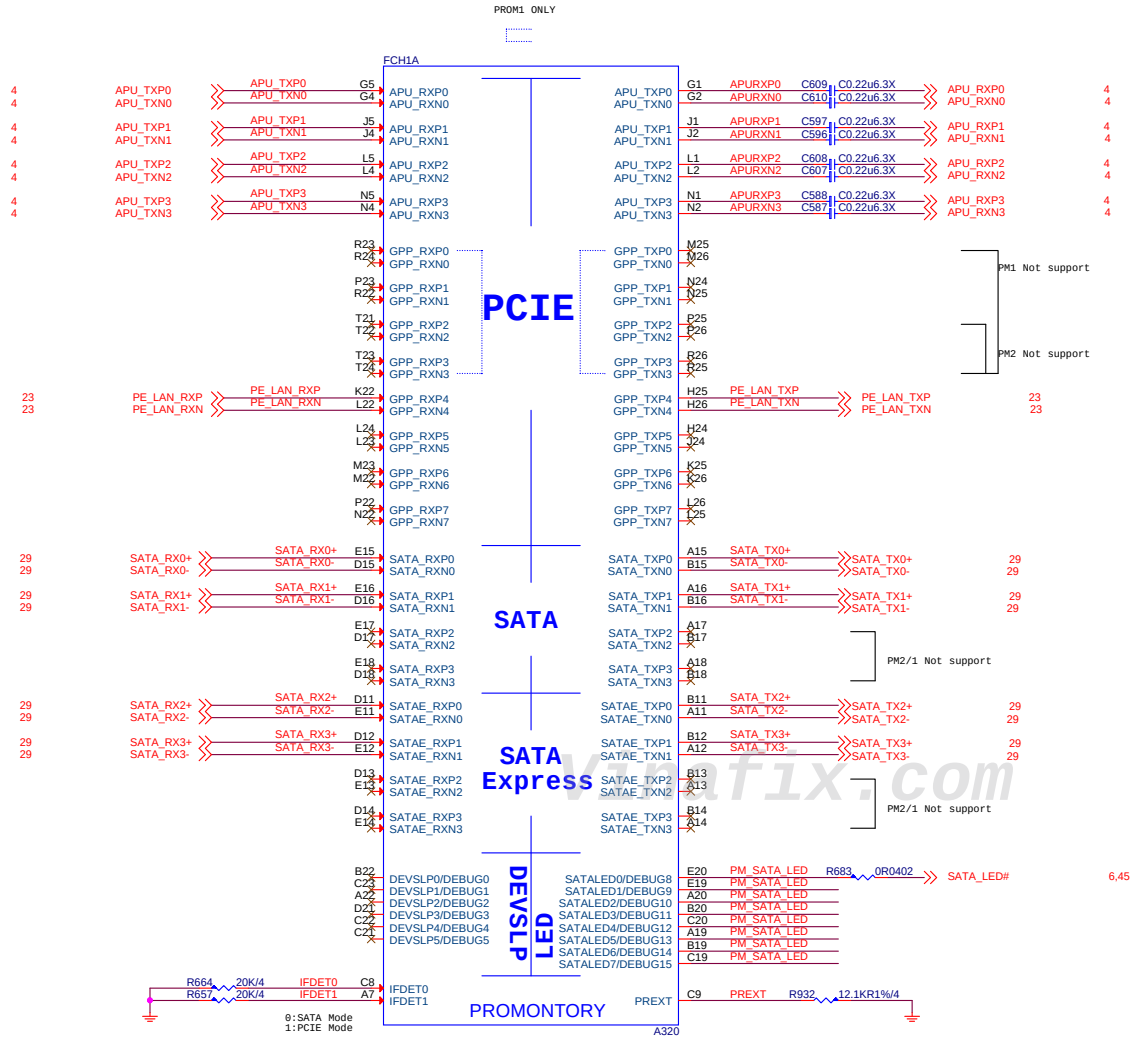

MSI MICRO-START INT'L CO.,LTD.

Title: Promontory-PCIE/SATA/SATAE

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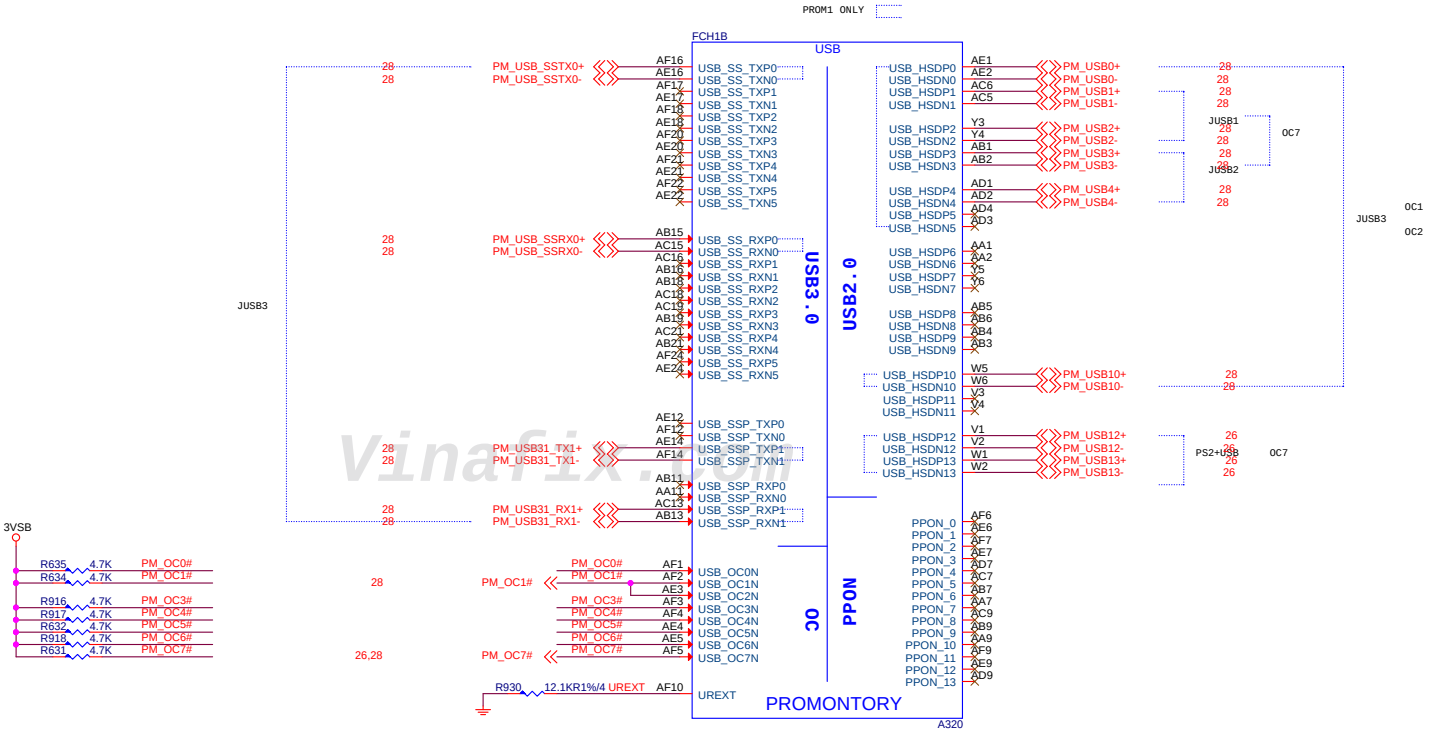

MSI Link to the Future	MICRO-START INT'L CO.,LTD.		
Title	Promontory-USB/OC		
Size: Custom	Document Number: MS-7B38		Rev: 1.1
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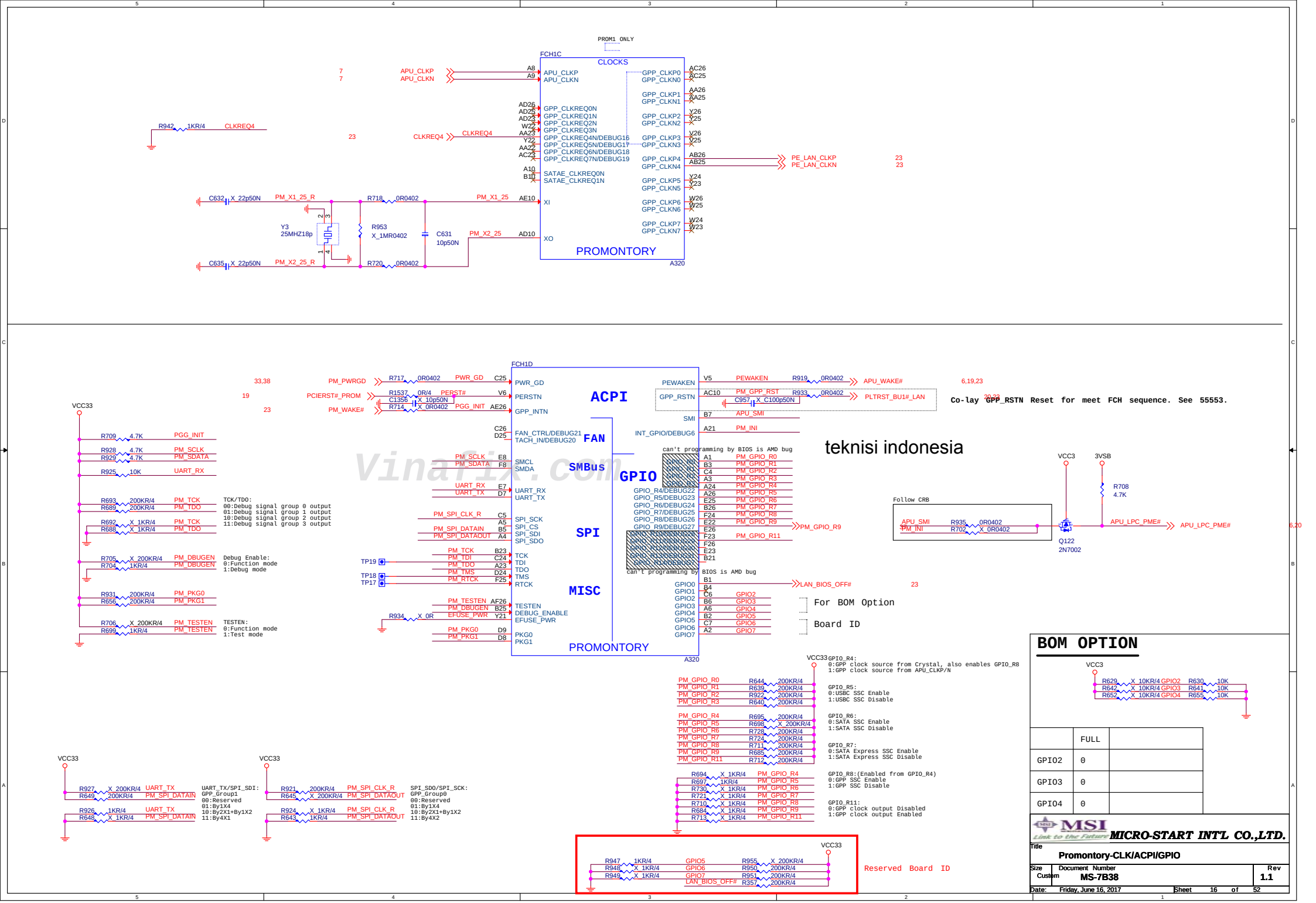
PROM1 ONLY
FCH1C
CLOCKS
APU_CLKP
APU_CLKN
CLKREQ4
GPP_CLKREQ0N
GPP_CLKREQ1N
GPP_CLKREQ2N
GPP_CLKREQ3N
GPP_CLKREQ4N/DEBUG16
GPP_CLKREQ5N/DEBUG17
GPP_CLKREQ6N/DEBUG18
GPP_CLKREQ7N/DEBUG19
SATAE_CLKREQ0N
SATAE_CLKREQ1N
GPP_CLKP0
GPP_CLKN0
GPP_CLKP1
GPP_CLKN1
GPP_CLKP2
GPP_CLKN2
GPP_CLKP3
GPP_CLKN3
GPP_CLKP4
GPP_CLKN4
GPP_CLKP5
GPP_CLKN5
GPP_CLKP6
GPP_CLKN6
GPP_CLKP7
GPP_CLKN7
PE_LAN_CLKP
PE_LAN_CLKN
R942 1KR/4
C632 X_22p50N
C635 X_22p50N
PM_X1_25_R
PM_X2_25_R
R718 0R0402
R720 0R0402
PM_X1_25
PM_X2_25
Y3 25MHZ18p
R953 X_1MR0402
C631 10p50N
XI
XO
PROMONTORY
A320
FCH1D
ACPI
FAN
SMBus
GPIO
SPI
MISC
PM_PWRGD
PCIERST#_PROM
PM_WAKE#
PWR_GD
PERSTN
GPP_INTN
PERST#
PGG_INIT
PEWAKEN
GPP_RSTN
PM_GPP_RST
PLTRST_BU1#_LAN
APU_WAKE#
APU_SMI
PM_INI
SMI
INT_GPIO/DEBUG6
FAN_CTRL/DEBUG21
TACH_IN/DEBUG20
SMCL
SMDA
PM_SCLK
PM_SDATA
UART_RX
UART_TX
SPI_SCK
SPI_CS
SPI_SDI
SPI_SDO
PM_SPI_CLK_R
PM_SPI_DATAIN
PM_SPI_DATAOUT
TCK
TDI
TDO
TMS
RTCK
TESTEN
DEBUG_ENABLE
EFUSE_PWR
PKG0
PKG1
PM_TCK
PM_TDI
PM_TDO
PM_TMS
PM_RTCK
PM_TESTEN
PM_DBUGEN
PM_PKG0
PM_PKG1
can't programming by BIOS is AMD bug
PM_GPIO_R0
PM_GPIO_R1
PM_GPIO_R2
PM_GPIO_R3
PM_GPIO_R4
PM_GPIO_R5
PM_GPIO_R6
PM_GPIO_R7
PM_GPIO_R8
PM_GPIO_R9
PM_GPIO_R11
LAN_BIOS_OFF#
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
For BOM Option
Board ID
Co-lay GPP_RSTN Reset for meet FCH sequence. See 55553.
teknisi indonesia
Follow CRB
Q122
2N7002
APU_LPC_PME#
R708 4.7K
VCC33
3VSB
TCK/TDO:
00:Debug signal group 0 output
01:Debug signal group 1 output
10:Debug signal group 2 output
11:Debug signal group 3 output
Debug Enable:
0:Function mode
1:Debug mode
TESTEN:
0:Function mode
1:Test mode
UART_TX/SPI_SDI:
GPP_Group1
00:Reserved
01:By1X4
10:By2X1+By1X2
11:By4X1
SPI_SDO/SPI_SCK:
GPP_Group0
00:Reserved
01:By1X4
10:By2X1+By1X2
11:By4X2
GPIO_R4:
0:GPP clock source from Crystal, also enables GPIO_R8
1:GPP clock source from APU_CLKP/N
GPIO_R5:
0:USBC SSC Enable
1:USBC SSC Disable
GPIO_R6:
0:SATA SSC Enable
1:SATA SSC Disable
GPIO_R7:
0:SATA Express SSC Enable
1:SATA Express SSC Disable
GPIO_R8:(Enabled from GPIO_R4)
0:GPP SSC Enable
1:GPP SSC Disable
GPIO_R11:
0:GPP clock output Disabled
1:GPP clock output Enabled
Reserved Board ID
BOM OPTION
FULL
GPIO2 0
GPIO3 0
GPIO4 0
MICRO-START INT'L CO.,LTD.
Promontory-CLK/ACPI/GPIO
Document Number MS-7B38
Rev 1.1
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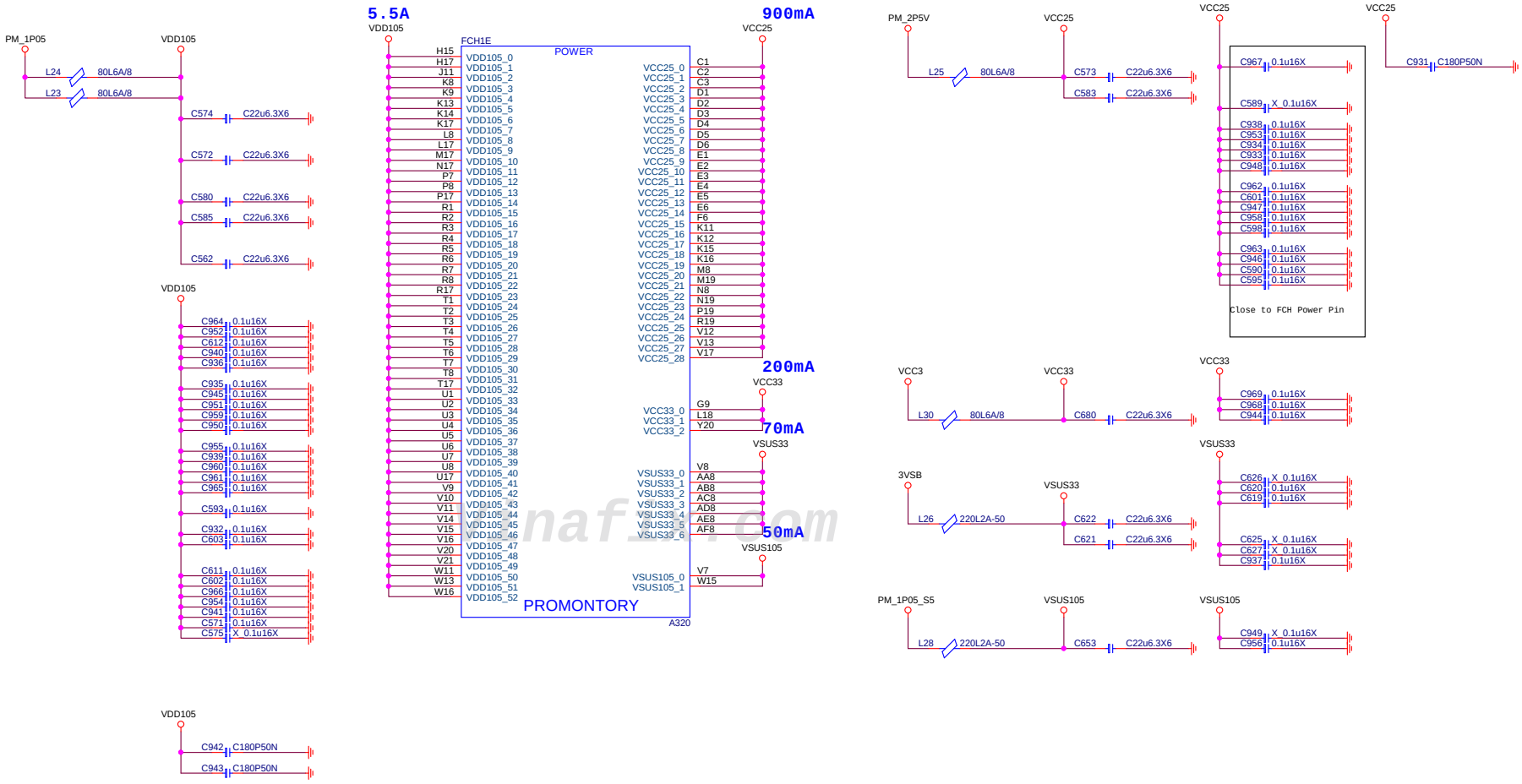

MICRO-START INTL CO.,LTD.

Title: Promontory-Power		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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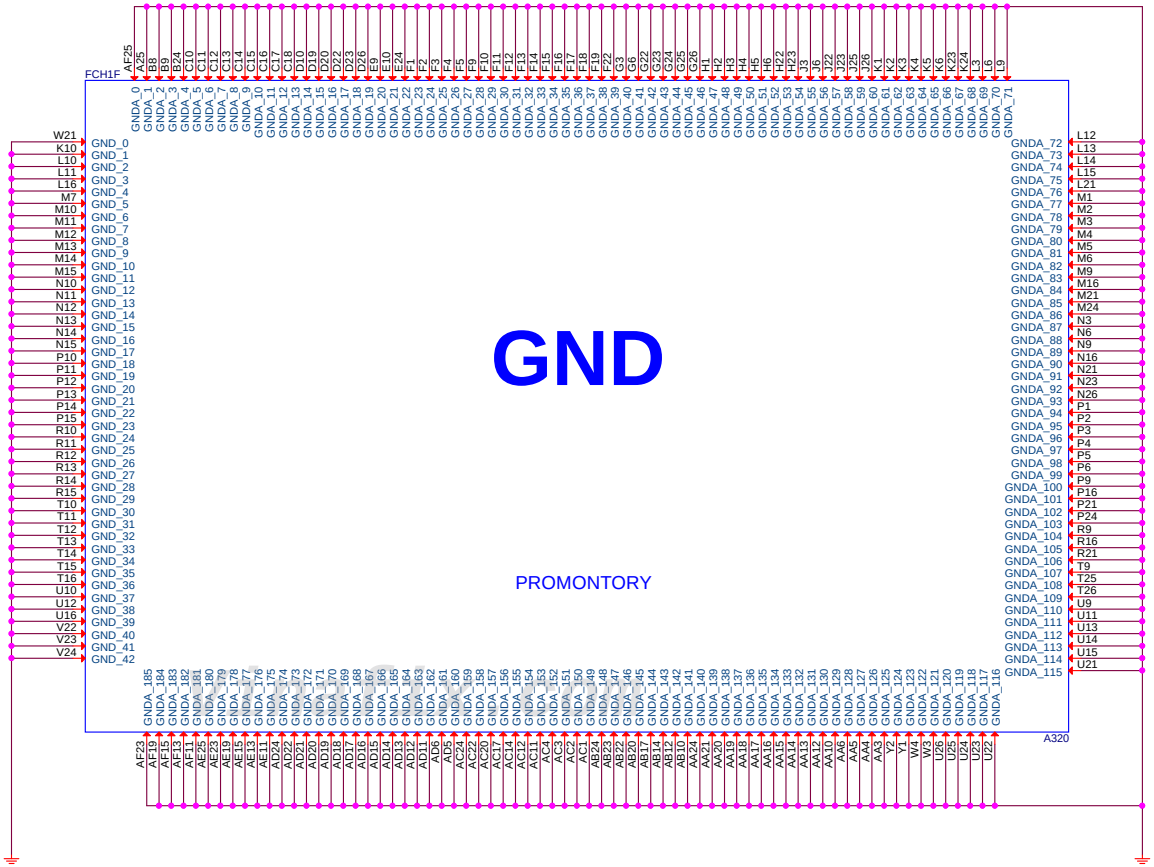

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MSI MICRO-START INT'L CO.,LTD.

Title: Promontory-GND		
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PCI EXPRESS x16 Slot

3.3V 3.0A
12V 5.5A

PCIEX1 12V 0.5A
3.3V weak 375mA

3.3V 3.0A
12V 0.5A

PCI_E2

PCI_E1

PCI_E3

SLOT-PCI36P_BLACK-2PITCH-RH-8

within 500mil

X_NC7SZ08M5X_SOT23-5

Fllow CRB

SMBus separate circuit

X_ESD-AOZ8906

SMB_SEL
GPIO Default High

Company	MICRO-START INTL CO.,LTD.
Title	PCIE X16(X1*2) SLOT
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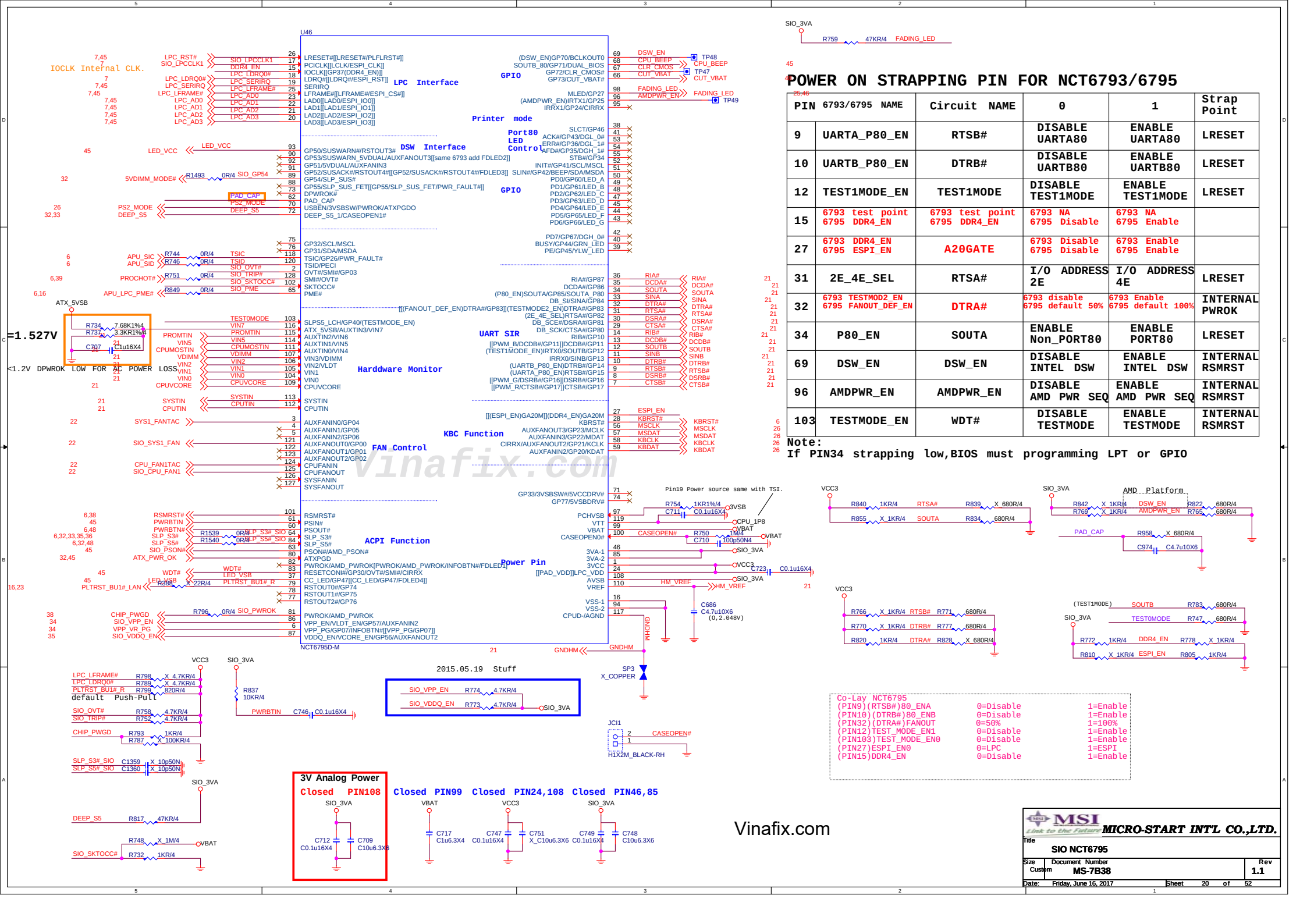

POWER ON STRAPPING PIN FOR NCT6793/6795

PIN	6793/6795 NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
15	6793 test point 6795 DDR4_EN	6793 test point 6795 DDR4_EN	6793 NA 6795 Disable	6793 NA 6795 Enable	
27	6793 DDR4_EN 6795 ESPI_EN	A20GATE	6793 Disable 6795 Disable	6793 Enable 6795 Enable	
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	LRESET
32	6793 TESTMOD2_EN 6795 FANOUT_DEF_EN	DTRA#	6793 disable 6795 default 50%	6793 Enable 6795 default 100%	INTERNAL PWROK
34	P80_EN	SOUTA	ENABLE Non_PORT80	ENABLE PORT80	LRESET
69	DSW_EN	DSW_EN	DISABLE INTEL DSW	ENABLE INTEL DSW	INTERNAL RSMRST
96	AMDPWR_EN	AMDPWR_EN	DISABLE AMD PWR SEQ	ENABLE AMD PWR SEQ	INTERNAL RSMRST
103	TESTMODE_EN	WDT#	DISABLE TESTMODE	ENABLE TESTMODE	INTERNAL RSMRST

Note:
If PIN34 strapping low,BIOS must programming LPT or GPIO

Co-Lay NCT6795
(PIN9)(RTSB#)80_ENA 0=Disable 1=Enable
(PIN10)(DTRB#)80_ENB 0=Disable 1=Enable
(PIN32)(DTRA#)FANOUT 0=50% 1=100%
(PIN12)TEST_MODE_EN1 0=Disable 1=Enable
(PIN103)TEST_MODE_EN0 0=Disable 1=Enable
(PIN27)ESPI_EN0 0=LPC 1=ESPI
(PIN15)DDR4_EN 0=Disable 1=Enable

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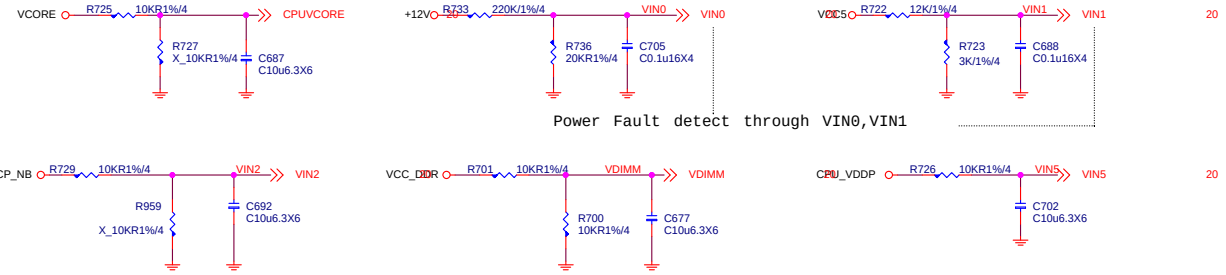
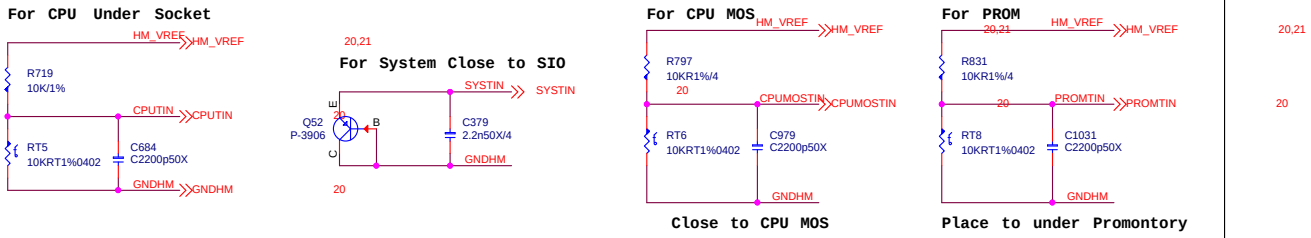
MICRO-START INTL CO.,LTD.

HW Monitor - Voltage

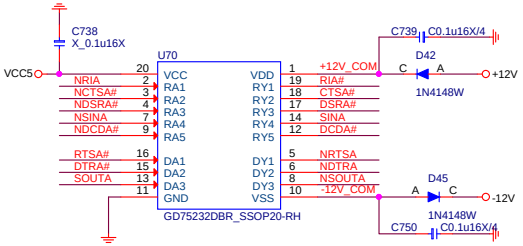
SIO HM Voltage over 2.048V will not detect

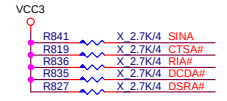


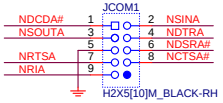
Thermal Monitor

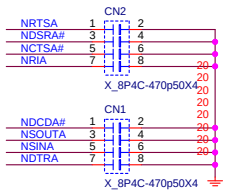


SERIAL PORT 1

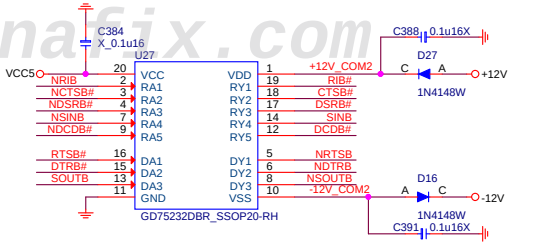


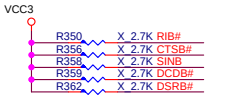


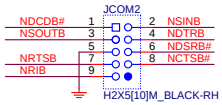


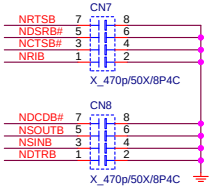


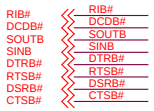
SERIAL PORT 2











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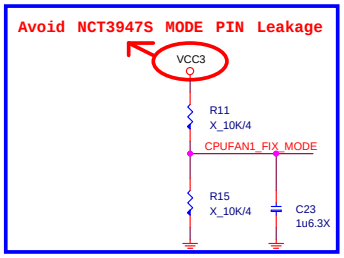
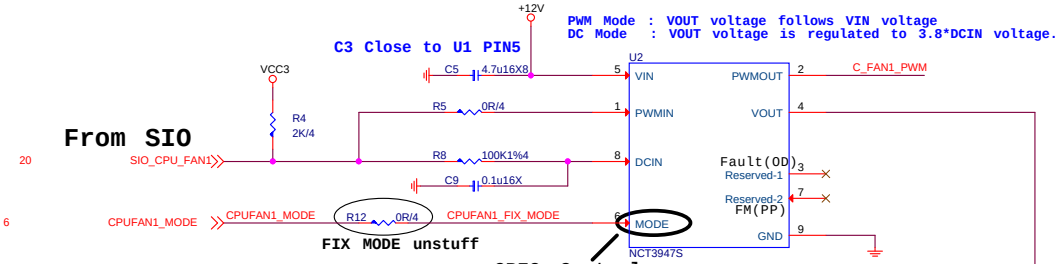
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

2.GPIO由BIOS 切換 PWM/DC MODE



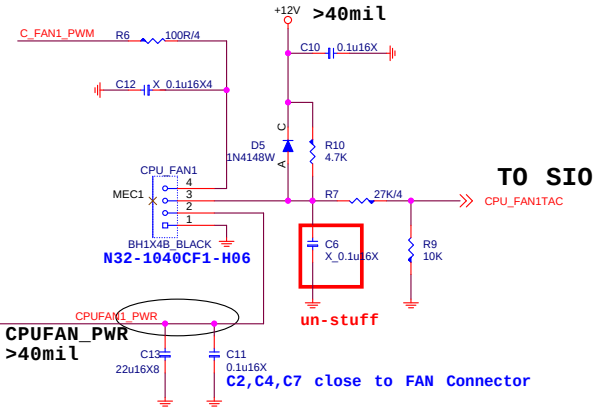
Resever For FIX DC or PWM MODE USE By PM SPEC

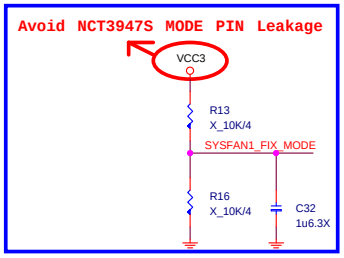


GPIO Control

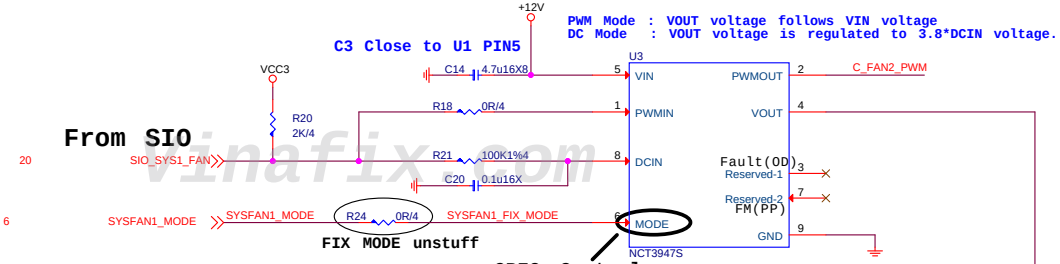
	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V





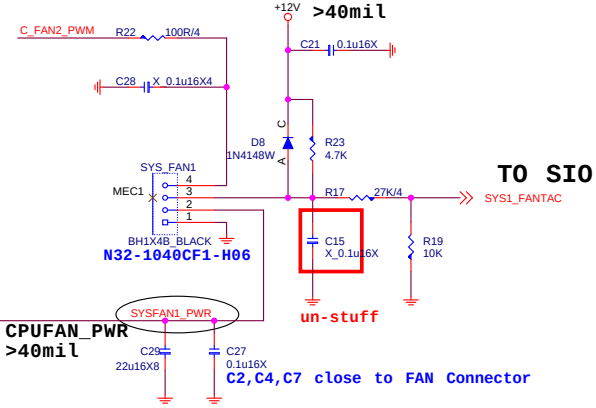
Resever For FIX DC or PWM MODE USE By PM SPEC



GPIO Control

	MODE(PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI(Floating)

Internall pull up 1.65V



MSI Link to the Future	MICRO-START INT'L CO.,LTD.		
Title: CPU FAN Control			
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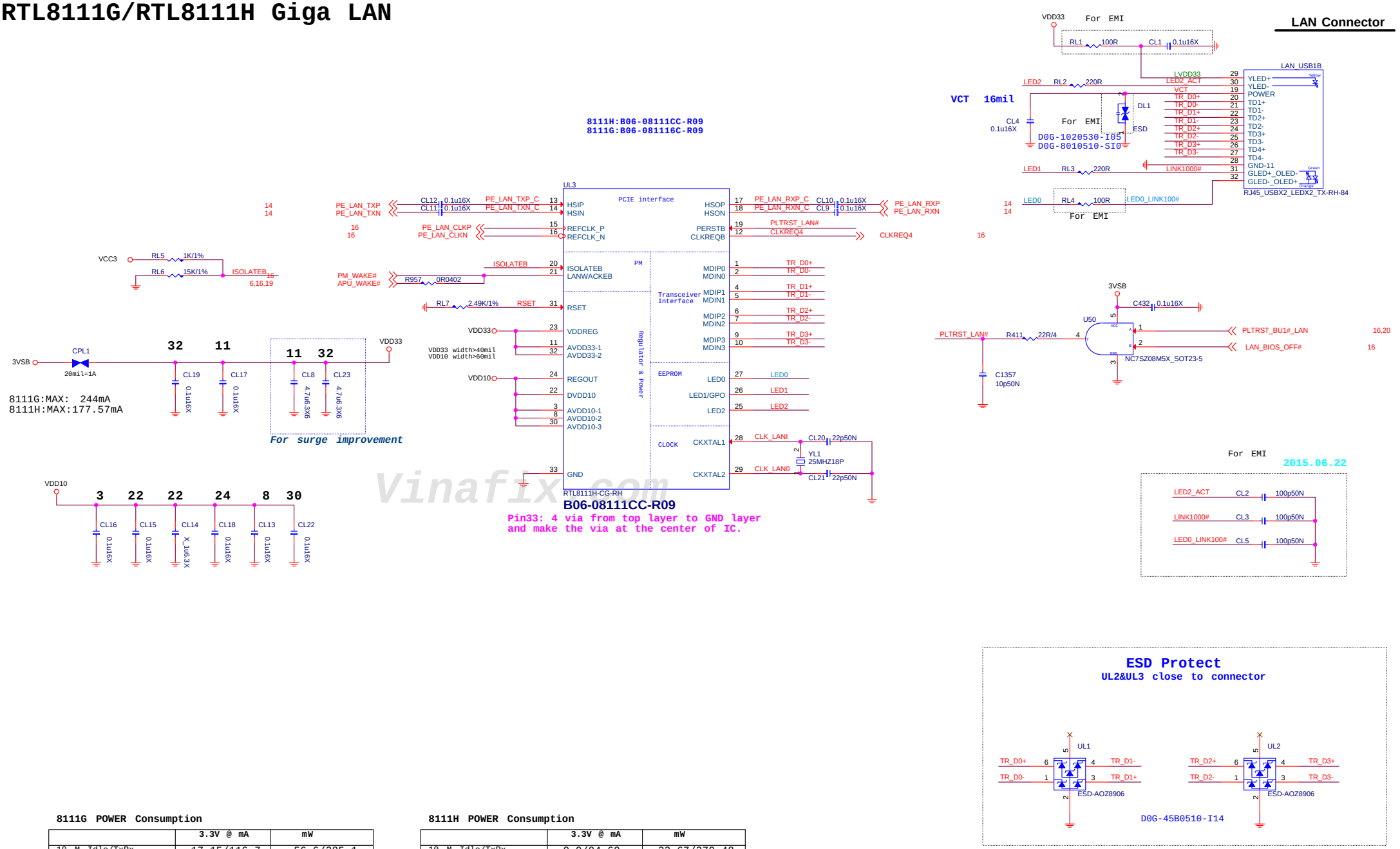
RTL8111G/RTL8111H Giga LAN



8111G POWER Consumption

	3.3V @ mA	mW
10 M Idle/TxRx	17.15/116.7	56.6/385.1
100 M Idle/TxRx	71.45/129.5	235.8/427.4
Giga Idle/TxRx	179.1/243.9	591/804.9
ALDPS	6.41	21.15

8111H POWER Consumption

	3.3V @ mA	mW
10 M Idle/TxRx	9.9/84.69	32.67/279.48
100 M Idle/TxRx	48.11/92.44	158.76/305.05
Giga Idle/TxRx	124.5/177.57	410.85/585.98
ALDPS	5.50	18.15

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Title: LAN-RTL8111H

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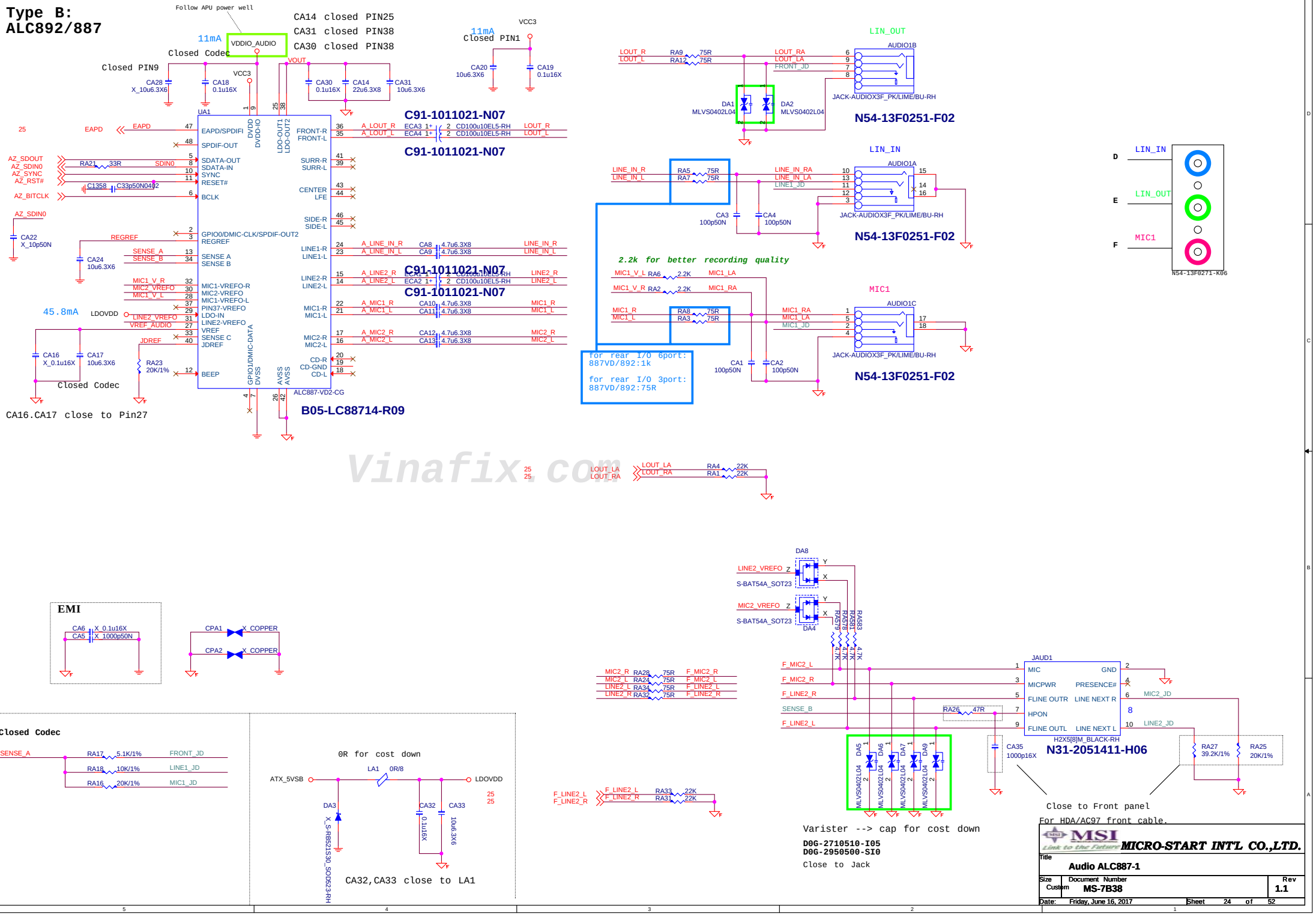
Type B: ALC892/887



Title	Audio ALC887-1
Size	Custom
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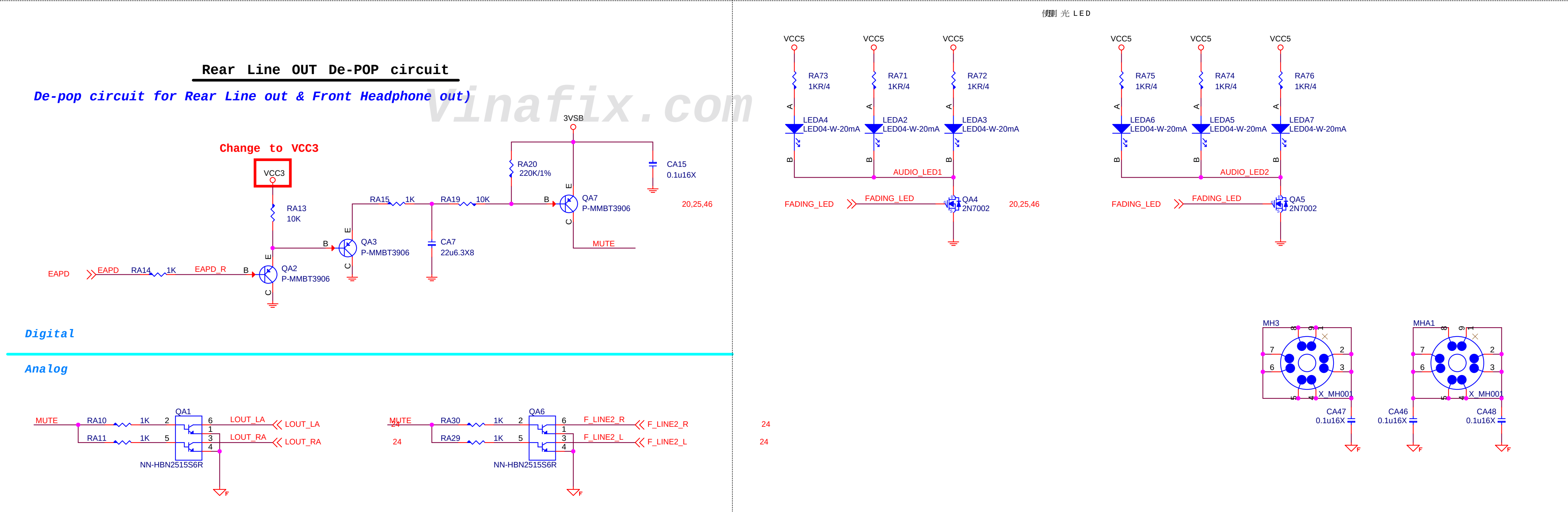
MICRO-START INT'L CO.,LTD.



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

Title	Audio ALC887-2	
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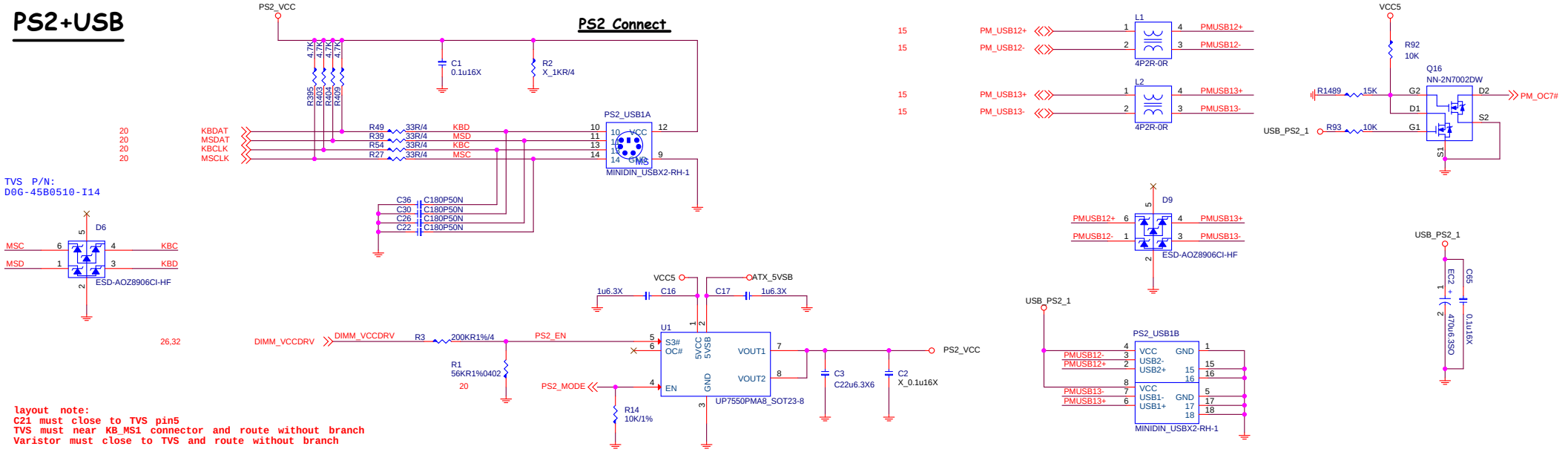
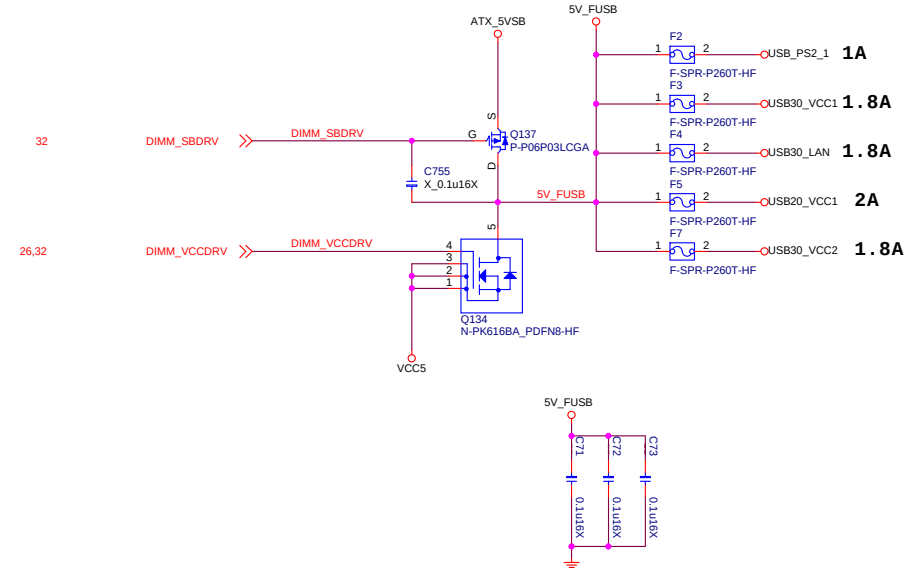
PS2+USB



USB Power



MICRO-START INTL CO.,LTD.

Title	USB Rear PS2+USB2.0	
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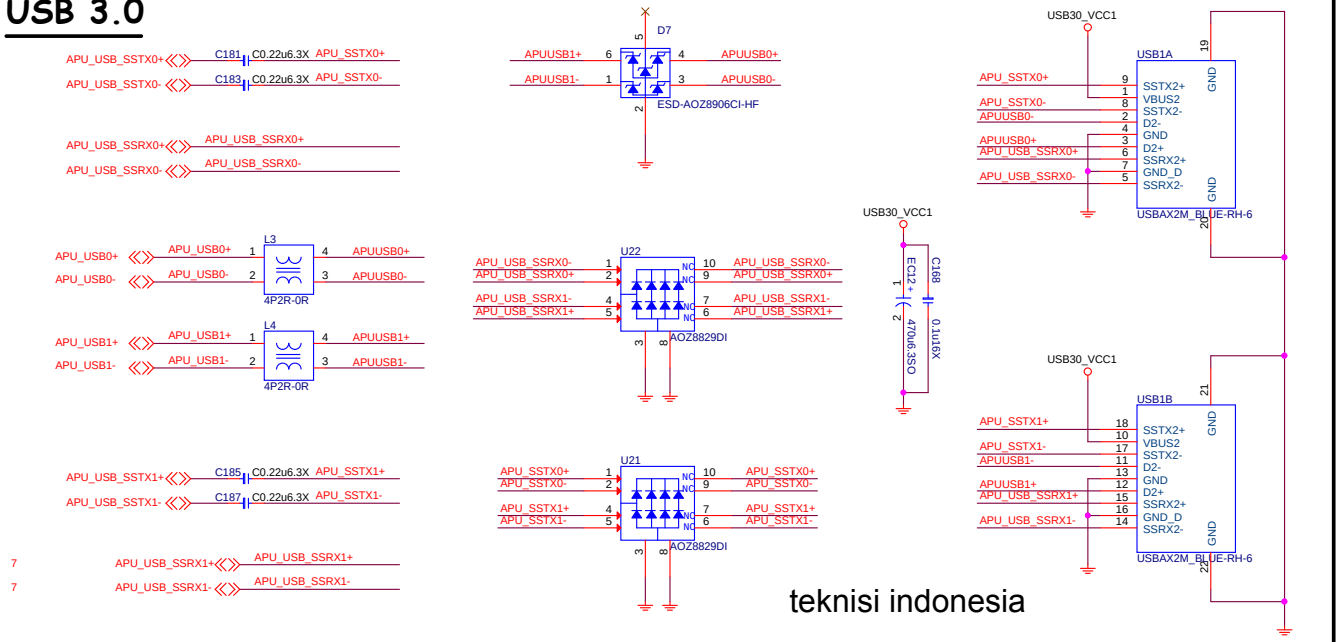
USB 3.0



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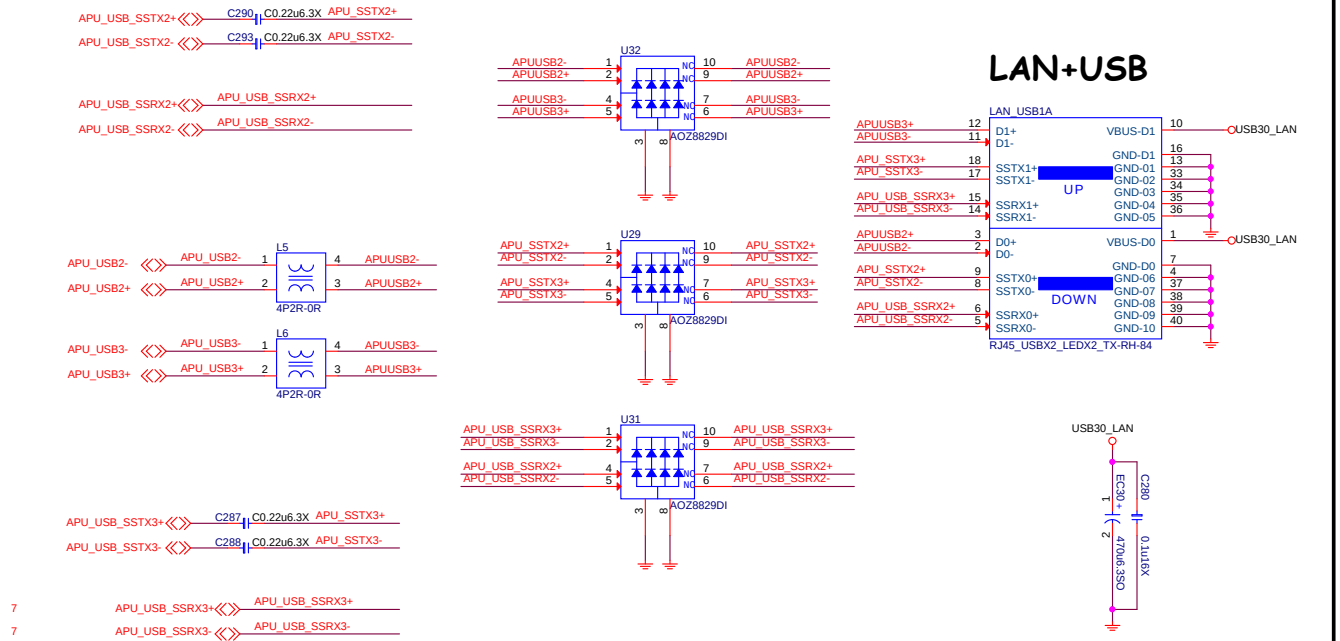
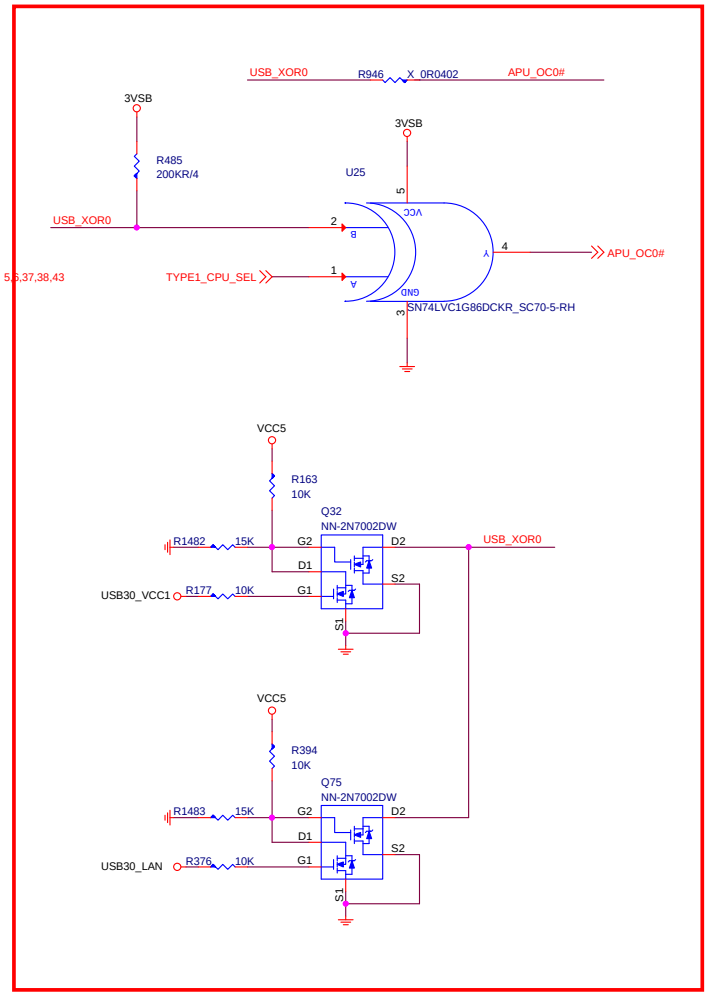
USB3.1 GEN1



Modify USB_OC# circuit



	CORETYPE1(A)	USB_PWR(B)	APU_USB_OC(Y)
BR	0	0	0
Act. Low	0	1	1
SR	1	0	1
Act. High	1	1	0

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

Title: USB Rear LAN+USB3.1 GEN1

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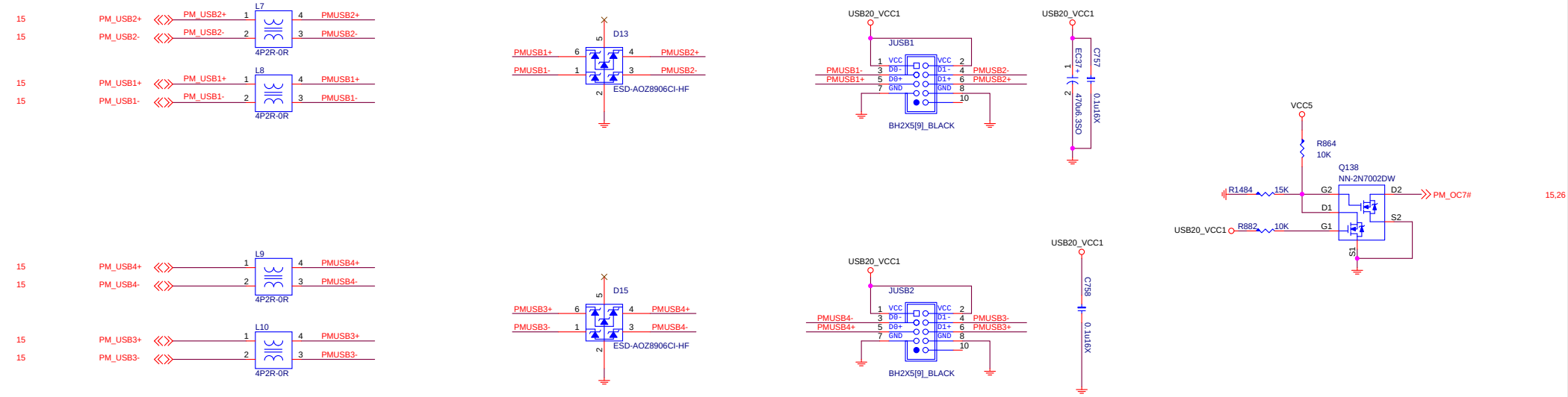
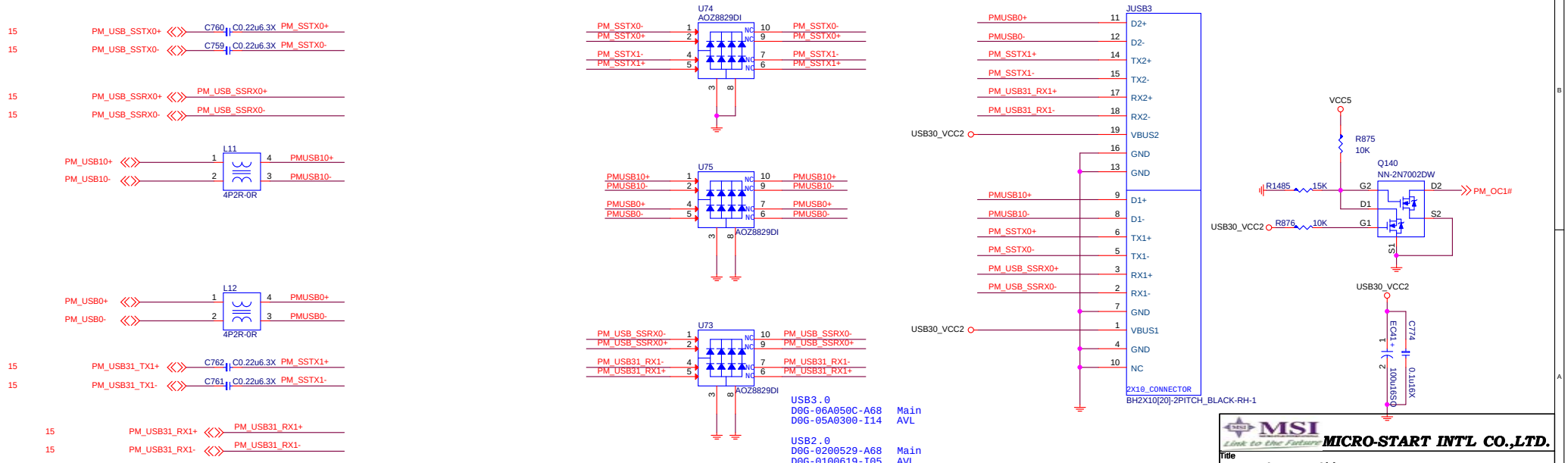
Front USB2.0



Front USB3.1 GEN1



USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL

USB2.0
D0G-0200529-A68 Main
D0G-0100619-I05 AVL

MSI Link to the Future	MICRO-START INTL CO.,LTD.		
Title: USB Front Side			
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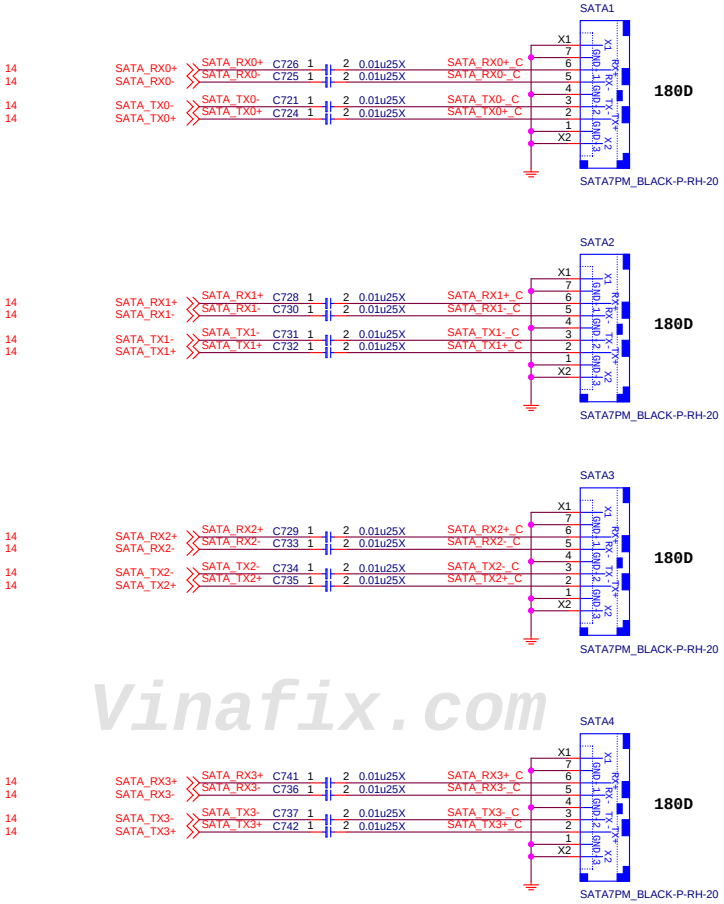
SATA Connector



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

Title: SATA Connector		
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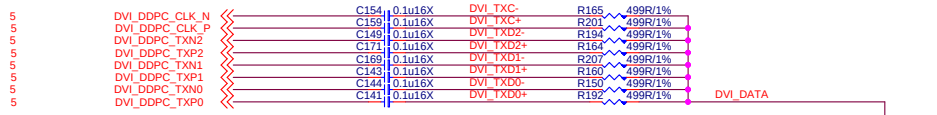
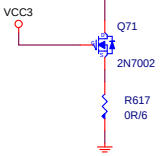
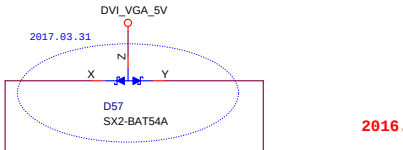
DVI level shifter

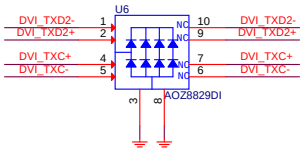
VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)

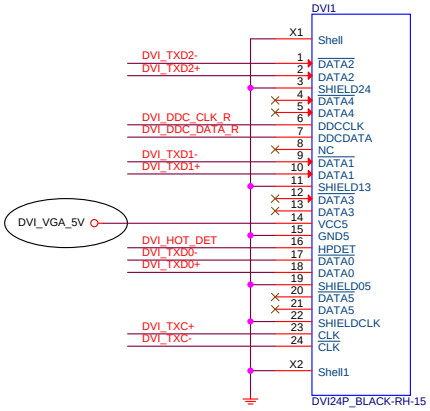


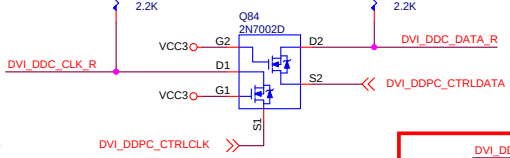


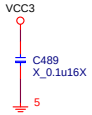


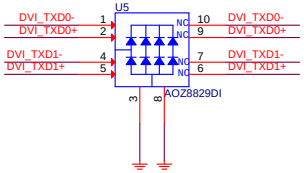
2016.01.11 Dual MOS change to single MOS,reduce CM noise by EMI Suggestion

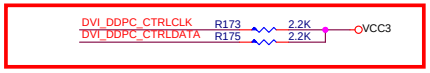












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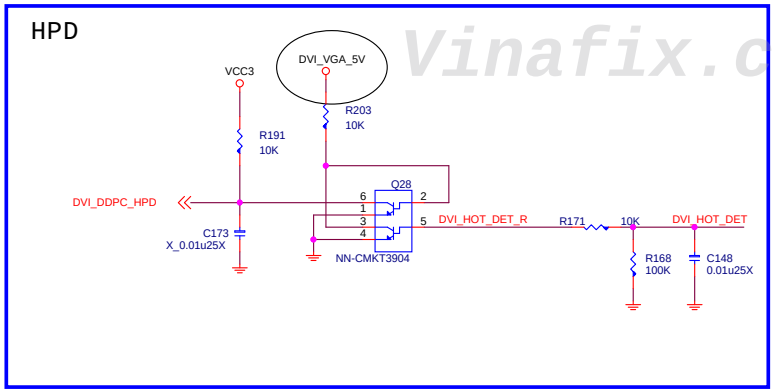

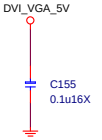

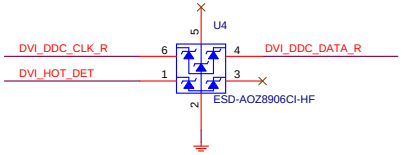

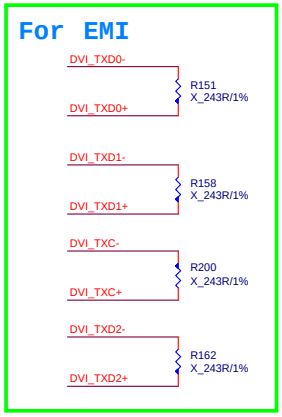

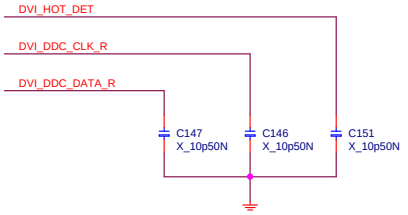

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Title: HDMI Connector		
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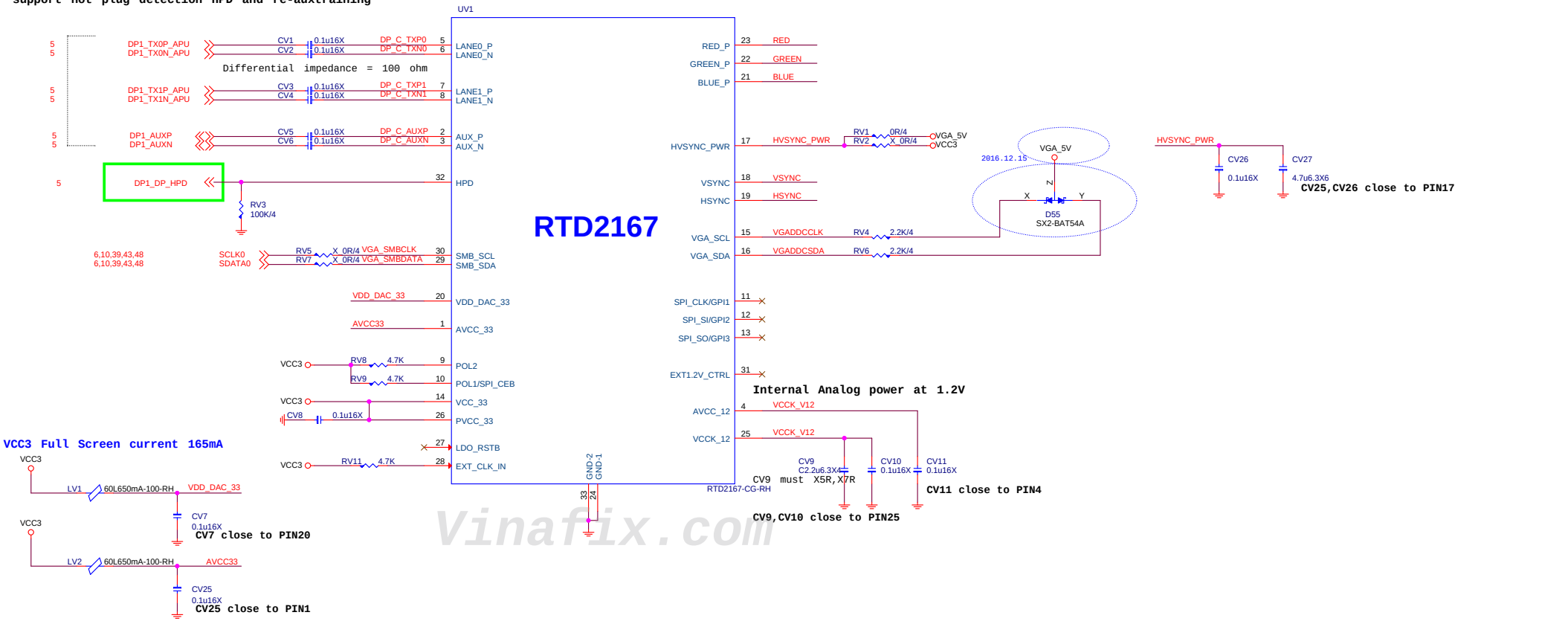
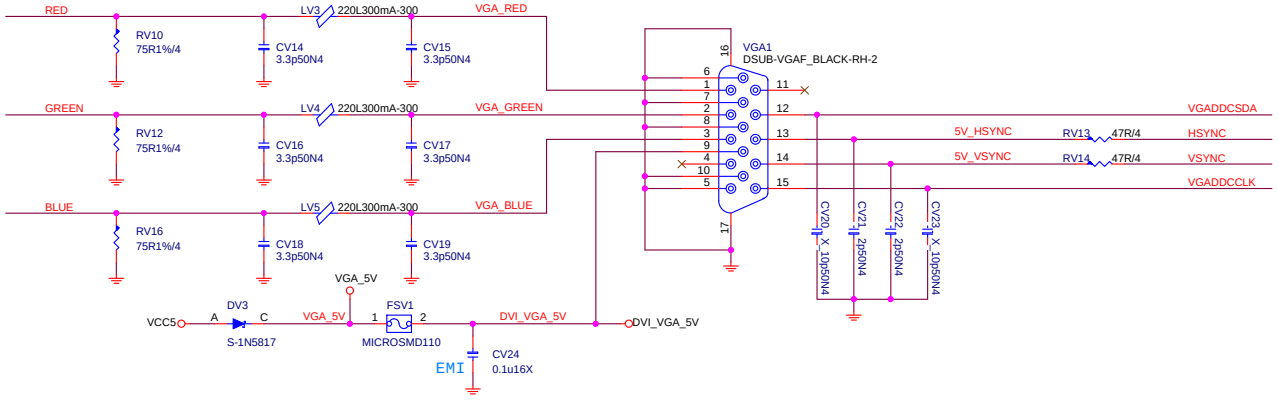
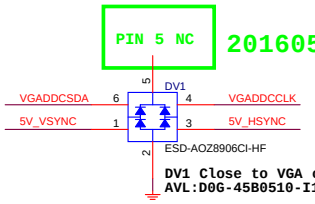
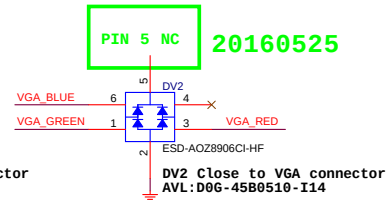
Note:

If connect to eDP port,must confirm whether it support hot plug detection HPD and re-auxtraining









MICRO-START INTL CO.,LTD.

Title: DP to VGA TRD2167		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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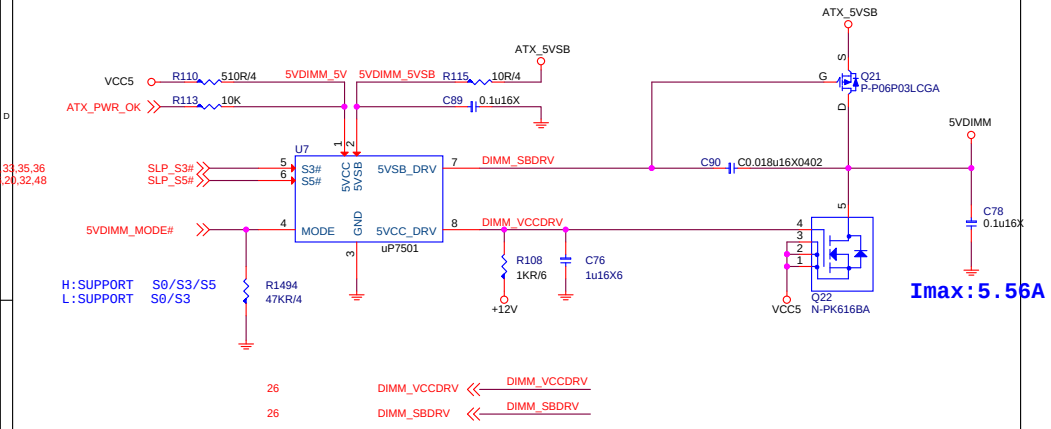
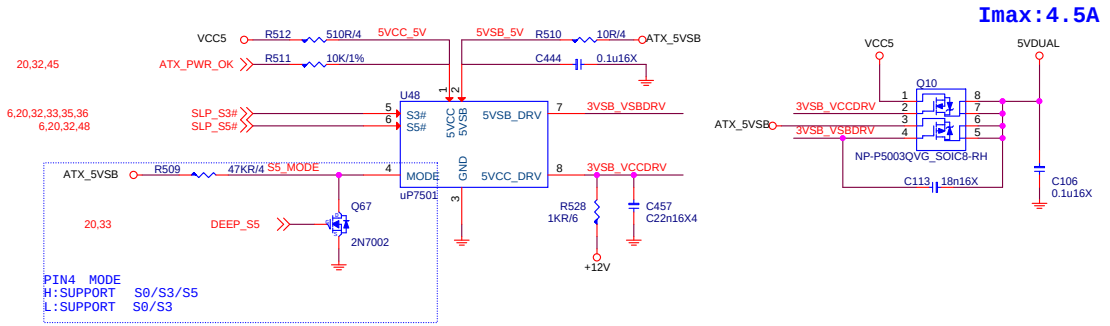
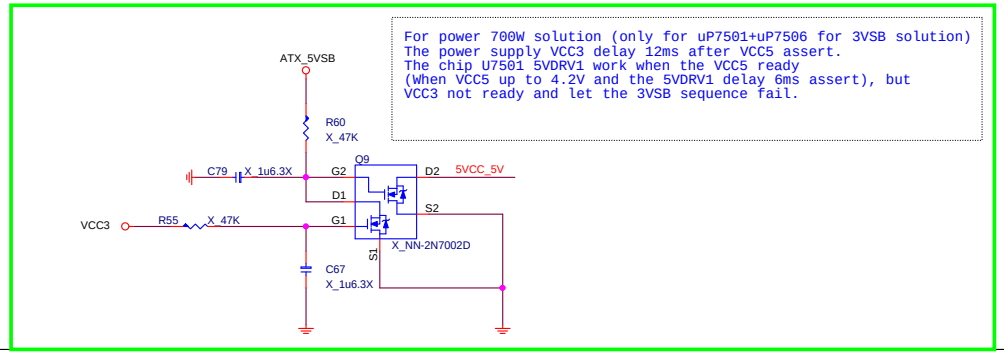
5VDIMM FOR DDR

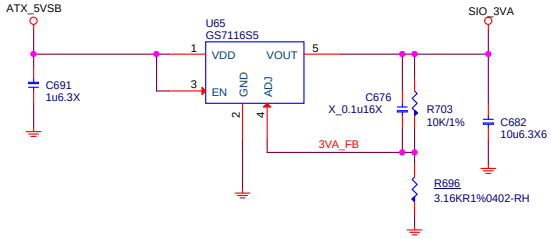


5VDUAL For 3VSB、CPU 1.8V、 VDDP

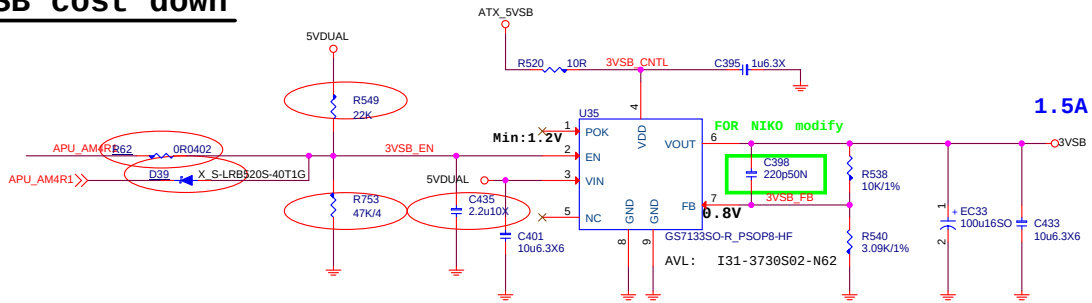




SIO_3VA



3VSB cost down



MICRO-START INTL CO.,LTD.

Title	ACPI uPI-5VDIMM&3VSB	
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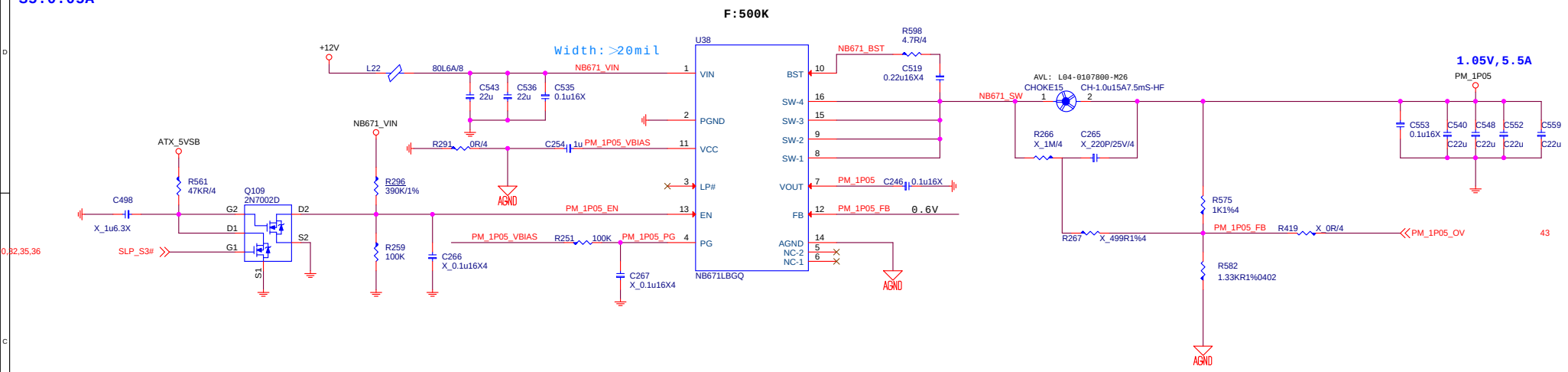
FOR Promontory 1.05V_S0

1.05V
S0:5.5A
S5:0.05A

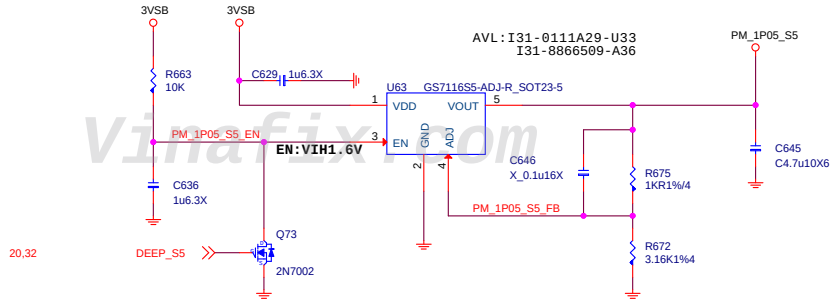
IMAX 10A
ILIMIT=10A~12A
IOC=ILIMIT+40%*IMAX/2=12A~14A.

0.7776uH < 1.1664u H



FOR Promontory 1.05V_S5

0.05A



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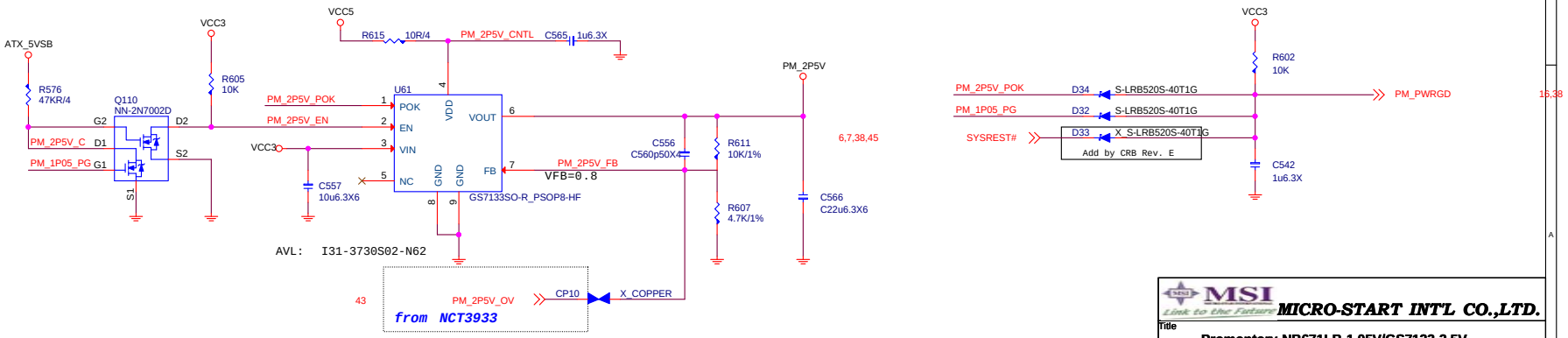
Promontory-2.5V

2.5V; 900mA



MSI MICRO-START INTL CO.,LTD.

Title: Promontory-NB671LB-1.05V/GS7133-2.5V		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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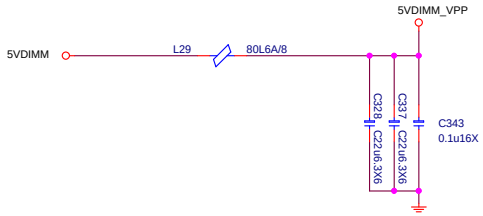
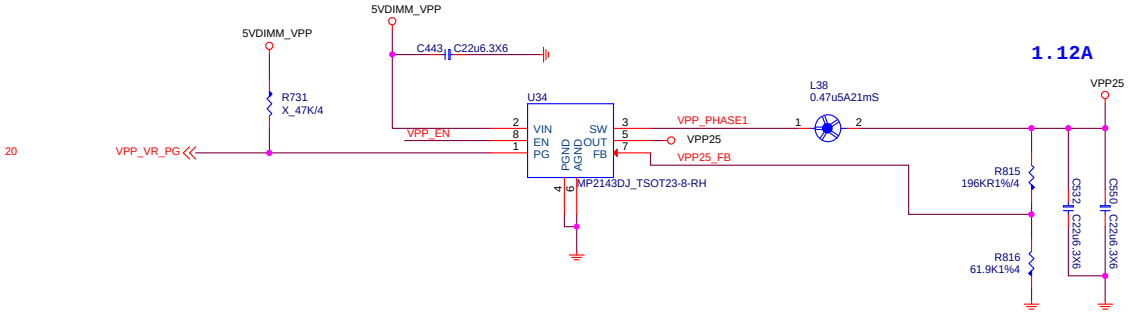
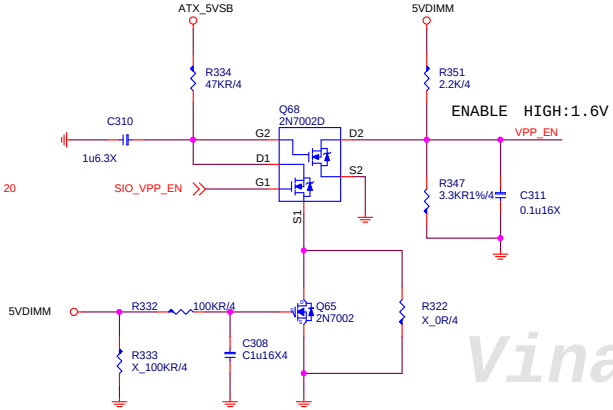
2DIMM :1.12A FOR DDR VPP2.5V







MICRO-START INT'L CO.,LTD.

Title	DDR PWR VPP25/VTT-MP2143	
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DDR4_1.2V 15.5A+4.75A+0.6A=20.85A

15.5A FOR CPU

4.75A FOR 2DIMM

0.6A FOR DDR VTT

Irms = Iout * SQRT{D/N- (D)^2]}

VCCDDR:
D=Vout/Vin=1.2/5=0.24
N=Phase number=1
=20.85A*SQRT(0.24-0.0576)
=5.21A

VID	Reference Voltage (V)
H	0.675
L	0.75

2V

f:400KHz

By layout modify

OCP:27.5A

Imax: 20.85A

Close to PIN19

FB:0.75V

default=1.36V

I32-8231A0C-R11

Add JOV1

AGPIO84
Low , VCC_DDR Base 1.4V
High , VCC_DDR Base 1.36V

MAX:20.85A

1.2V

1.1uH change to 0.47uH

0.1uFx1 per dimm

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Title	DDR Power-RT8231AGQW
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FOR CPU 1.8V S5

0.5A

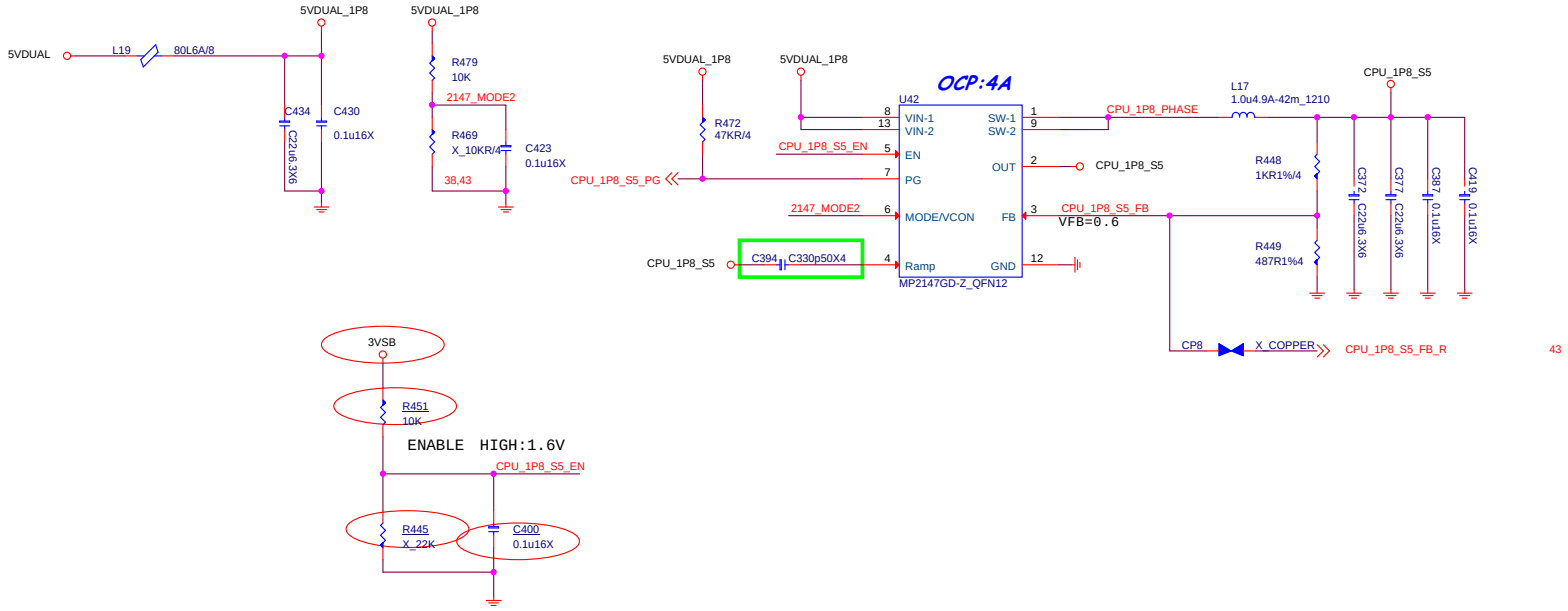
FOR VCCP_SOC_S5

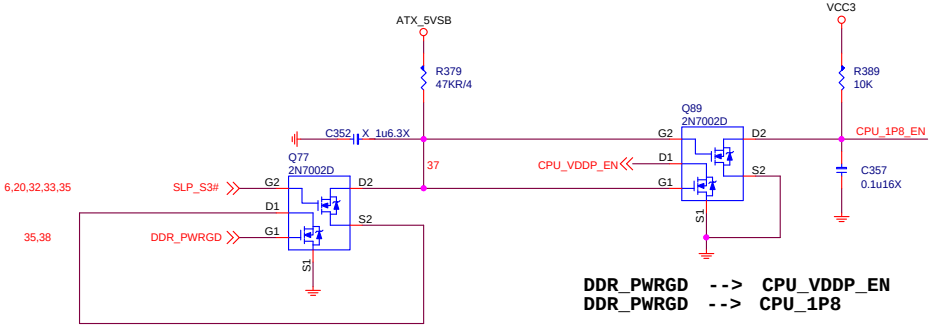
0.9A

FOR CPU 1.8V S0

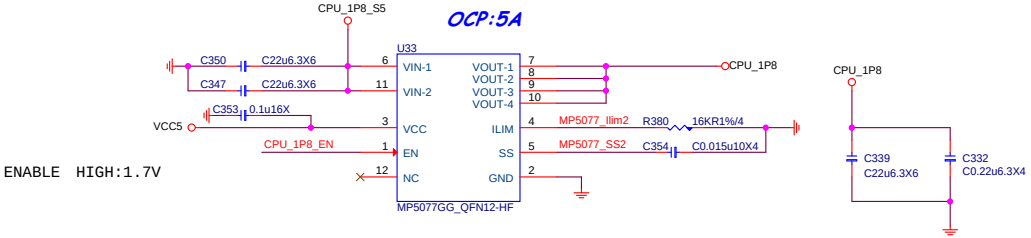
2.0A

0.5A + 2.0A + 0.9A =3.4A





DDR_PWRGD --> CPU_VDDP_EN
DDR_PWRGD --> CPU_1P8



ENABLE HIGH:1.7V

```
Ilimit=(1/Rlimit)*S,S=80000,when    VIN=1.8V
=(1/16)*80000=5.0375A

Tss=(1/3)*((Vout*Css)/Iss),Iss=9uA
Tss=(1/3)*((1.8*15n)/9uA)=1mS
```

MICRO-START INTL CO.,LTD.

Title: CPU Power 1P8V-MP2147		
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by layout

CPU_VDDP_S0

1.05V/0.9
S0:8.5A
OCP=12A

+12V
R406 100K1%4
EN:VIH1.6V
CPU_VDDP_EN
R418 33K/1%
C389 0.1u16X

VCC5
R437 10K
6,32,35,38
38
CPU_VDDP_PG

by layout
+12V
R494 10R/8
U6_VCC
C429 4.7u16X8

EN:VIH1.6V
EN pin Maximum:6.5V

APU_AM4R1
D20 S-LRB520S-40T1G-HF
CPU_VDDP_EN

U41
EN
PGOOD
REFOUT
REFIN
VCC
GND
BOOT
PHASE
UGATE
LGATE/OCSET
FB
RT8125EGQW_WDFN10-HF

CPU_VDDP_BOOT1
CPU_VDDP_PH1
CPU_VDDP_UG1
CPU_VDDP_LG1
CPU_VDDP_FB
R484 0R/6
C440 0.1u16X25
CPU_VDDP_REFOUT
C426 C1000p50X4
R453 768R1%4
CPU_VDDP_REFIN
C374 C1000p50X4
R463 4.53KR1%4
0.8V
0.684V
FB:0.8V

CPU_VDDP
R420 10R1%4
R438 1KR1%/4
CPU_VDDP_SENSE_R
R421 0R/4
CPU_VDDP_SENSE
C399 X_0.1u16X
R450 3.16K/1%

Vout = Vref * (1 +(R1/R2))
= 0.8 * (1 +(1K/3.16K))
= 1.05V

Vout = Vref * (1 +(R1/R2))
= 0.684 * (1 +(1K/3.16K))
= 0.9V

AM4_CPU_SEL
0:Type 0/1 1.05V
1:Type 2/3 0.9V

Q86
NN-2N7002DW
TYPE1_CPU_SEL
16
PM_GPIO_R9
CPU_VDDP_OV
CP25
X_COPPER

PM_GPIO_R9
1:Type 0/1 1.05V
0:Type 2/3 0.9V

Irms = Iout * SQRT((Vout/Vin) * (1 - (Vout/Vin)))
= 11.1* 0.8 * 0.282566
= 3.46A

TYPE0_CPU_SEL:
1:TYPE 0
0:TYPE 2
TYPE1_CPU_SEL:
0:TYPE 0
1:TYPE 2
CPU_VDDP_EN:
0:TYPE 2
1:TYPE 0

Q92
NN-2N7002DW
TYPE0_CPU_SEL
TYPE1_CPU_SEL
VDDP_SEL
CPU_VDDP_EN

CPU	TYPE	TYPE1_CPU_SEL	TYPE0_CPU_SEL
BR	0	0	1
NA	X	0	0
SR	2	1	1
RV/ZP	3	1	0

CPU VDDP NOT SUPPORT TYPE2

12VCC_IN
CHOKE14
CH-0.47u5A21mS-HF
+12V
C461 C1u16X6
C460 22u16X8
EC11 270u16SO
C446 0.1u16X

CPU_VDDP_UG1
R508 0R/6
CPU_VDDP_UG1_R
R500 X_10KR/4
N-PK616BA_PDFN8-HF
Q97
CPU_VDDP_PH1
CPU_VDDP_LG1
R475 5.1K/1%/4
N-PK632BA_PDFN8-HF
Q96

OCPSET:min 5Kohm
OCP
=(R475*10uA)/DCR
=(5.1k*10uA)/3.3m
=15.45A

CHOKE13
1.0u15A7.5mS-HF
CPU_VDDP
R482 2.2R/8
snubber
C437 C3300p50X4
C334 1u6.3X
C425 C22u6.3X6
EC31 560u6.3SO
EC32 560u6.3SO

teknisi indonesia

OCP=12A
1.05V,8.5A

CPU_VDDP_S5

VDDP_S5 1.05V/0.9
S5:1A

3VSB
R501 X_10KR/4
5VDUAL
L20 80L6A/8
C439 C22u6.3X6
U45
VDDP_VSB_VIN
VDDP_VSB_EN
VDDP_VSB_PG
VIN
EN
PG
SW
OUT
FB
PGND
AGND
MP2143DJ
VDDP_VSB_PHASE
L18 1.0u6.3A_1210-HF
CPU_VDDP_S5
R489 1KR1%/4
R488 2KR1%/4
C412 C22u6.3X6
C421 C22u6.3X6
C427 C0.22u6.3X4
5,6,27,37,38,43
38
VDDP_VSB_PG
3VSB
Internal Pull-Up 500K
R502 10K
VDDP_VSB_EN
C390 1u6.3X

VDDP_VSB_FB
ATX_5VSB
R490 47KR/4
Q95
NN-2N7002DW
R464 3.83KR1%4
C436 0.1u16X
TYPE1_CPU_SEL
AM4_CPU_SEL
0:Type 0/1
1:Type 2/3

R488///R464=1.3139K, Vout=1.056V
R488=8.06K, Vout=0.9V

MSI MICRO-START INTL CO.,LTD.

Title: CPU Power VDDP-RT8125E
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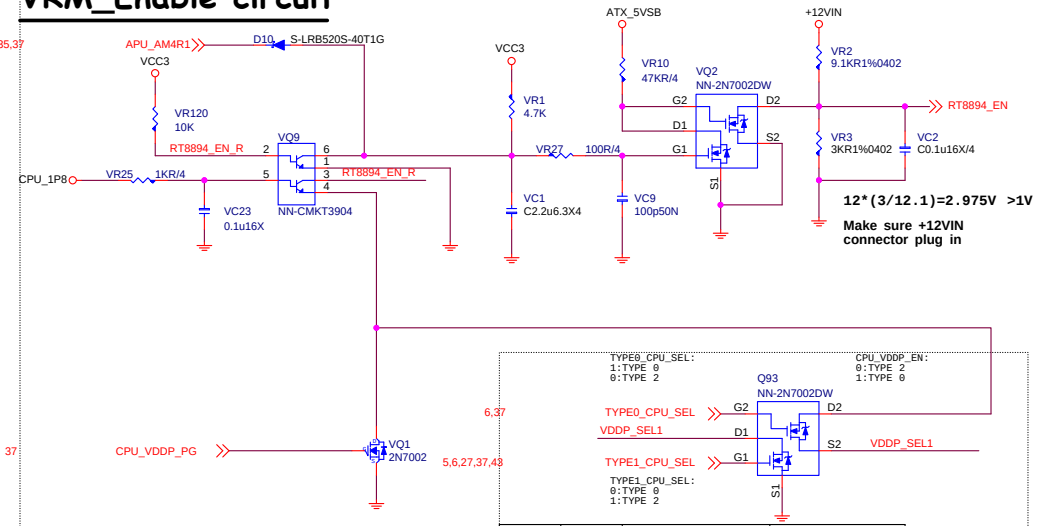
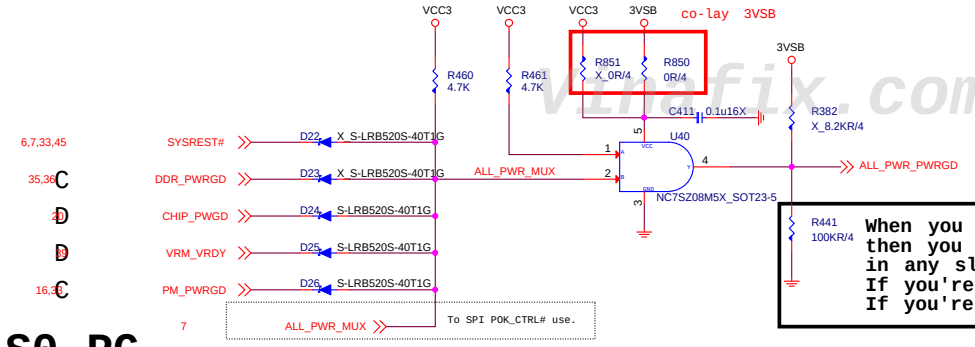
VRM_Enable circuit



CPU	TYPE	TYPE1_CPU_SEL	TYPE0_CPU_SEL
BR	0	0	1
NA	X	0	0
SR	2	1	1
RV/ZP	3	1	0

CPU VDDP NOT SUPPORT TYPE2

ALL POWER GOOD MUX

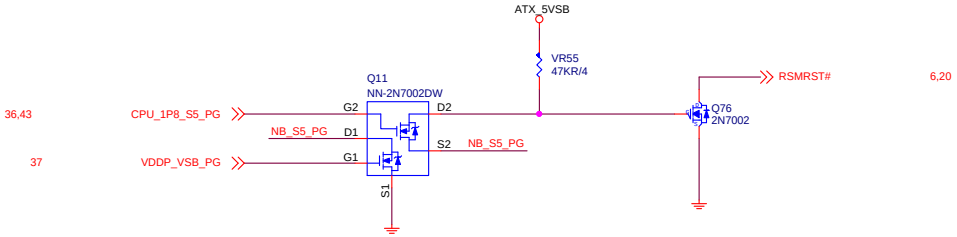


R441 100KR/4

When you use external buffer
then you cannot let APU PWR_GOOD pin float
in any sleep state.
If you're buffer use 3.3V_S0 and you need Pull-down 100K
If you're buffer use 3.3V_S5 and you don't need PD.

S0 PG

S5 PG



MSI MICRO-START INTL CO.,LTD.

Title: CPU PWR-IR3599

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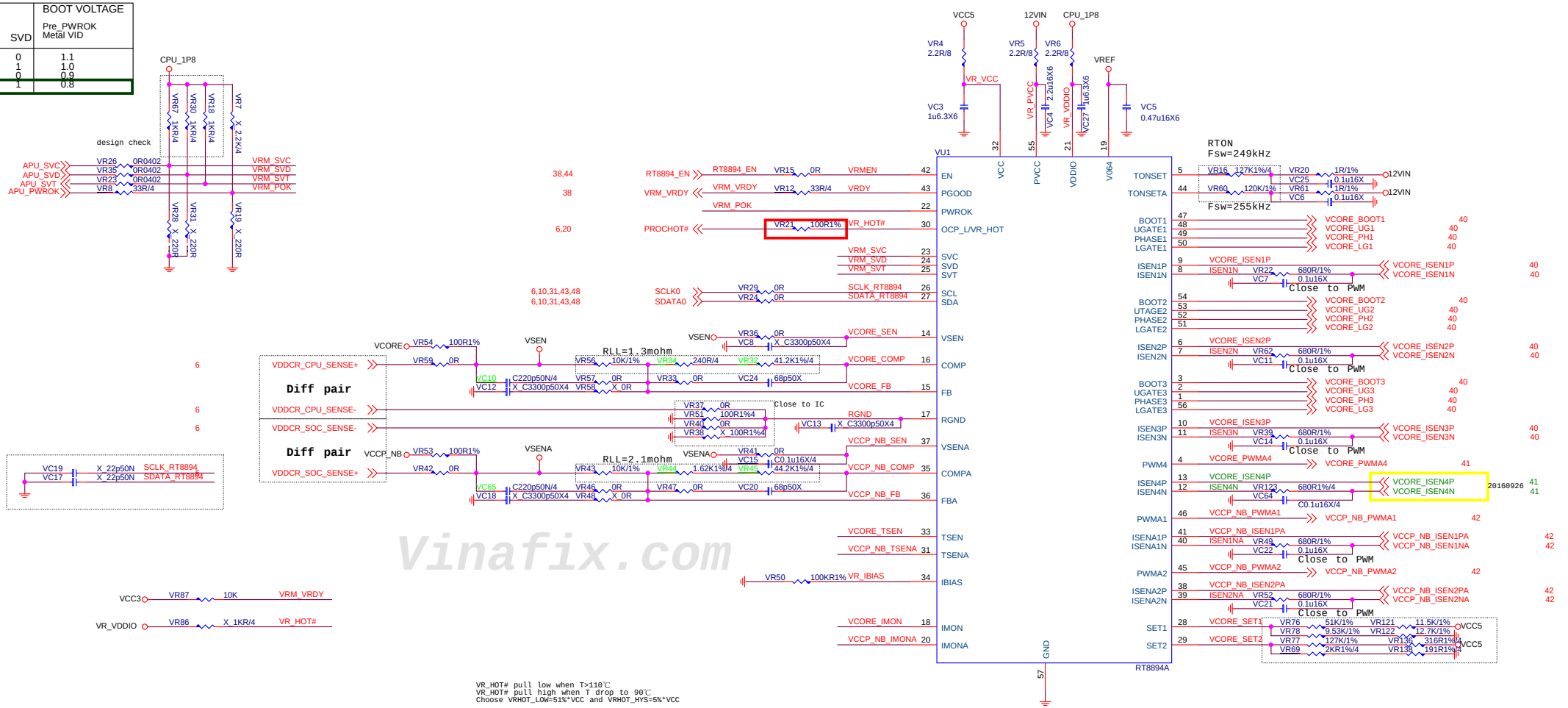
Note:VID Override Circuit

SVC	SVD	BOOT VOLTAGE Pre_PWROK Metal VID
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8



MICRO-START INTL CO.,LTD.

Title: CPU Power RT8894 3+2 Phase

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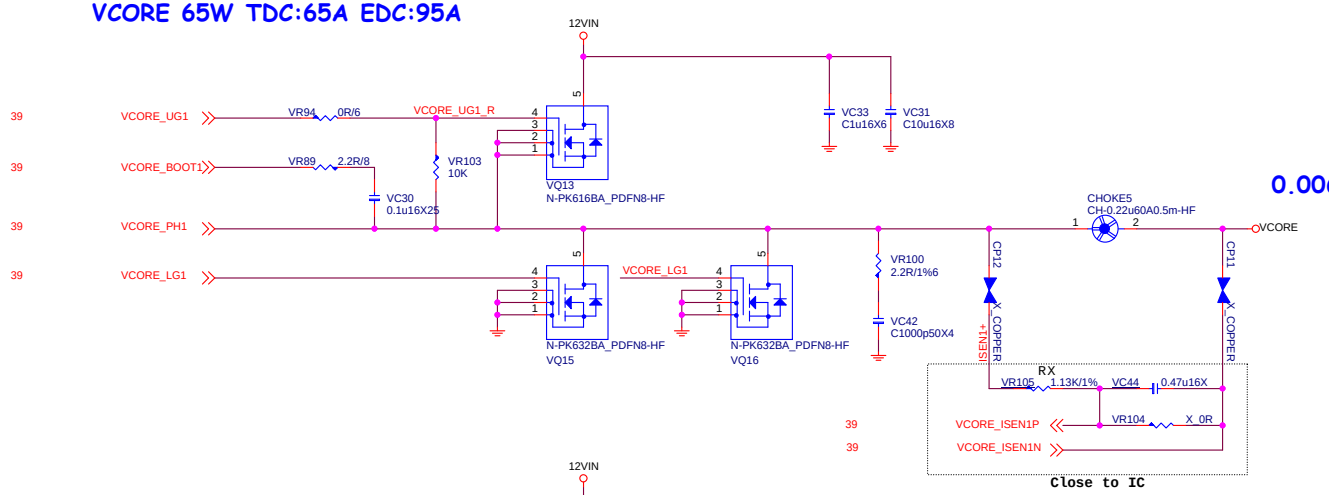
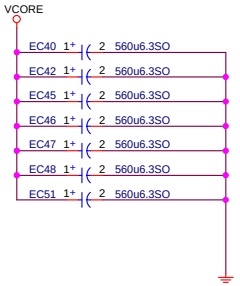
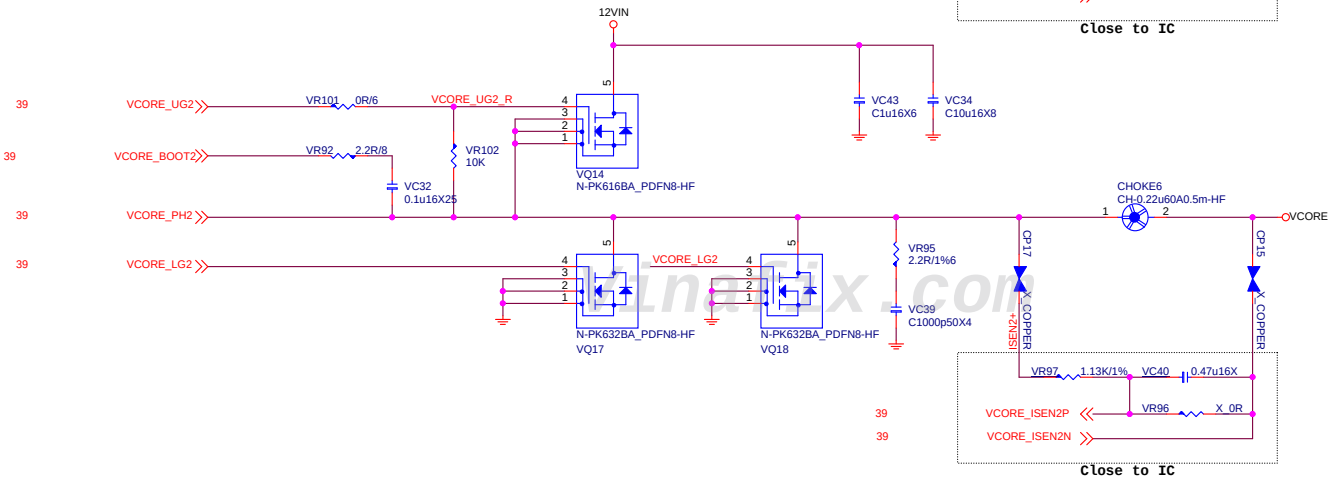
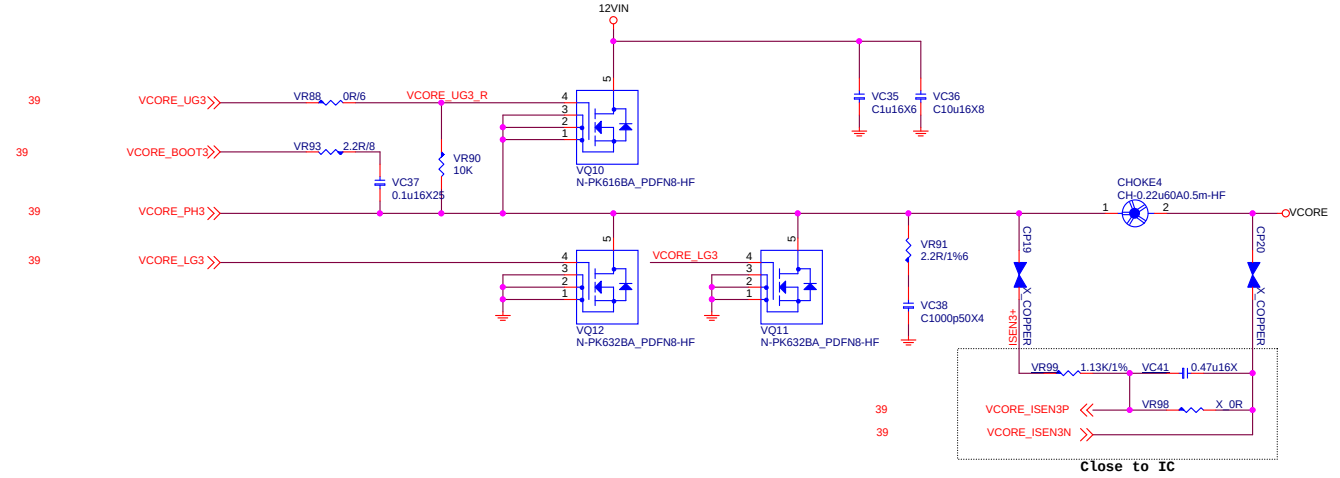
VCORE 95W TDC:80A EDC:125A
VCORE 65W TDC:65A EDC:95A



0.00625V~1.55V







MICRO-START INT'L CO.,LTD.

Title: CPU Power Phase 1-3		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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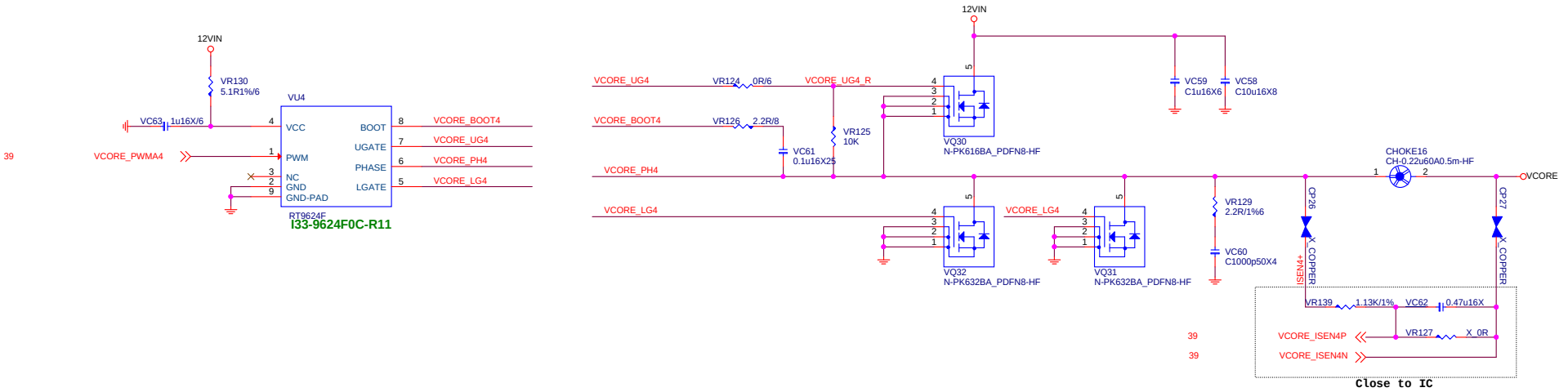

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MICRO-START INT'L CO.,LTD.

Title: CPU Power Phase 1-3		
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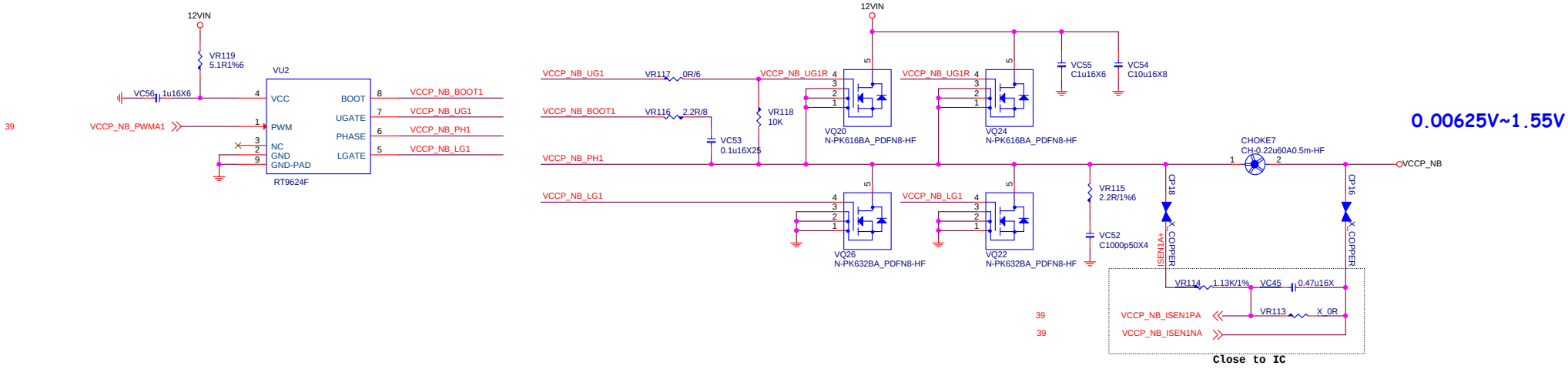
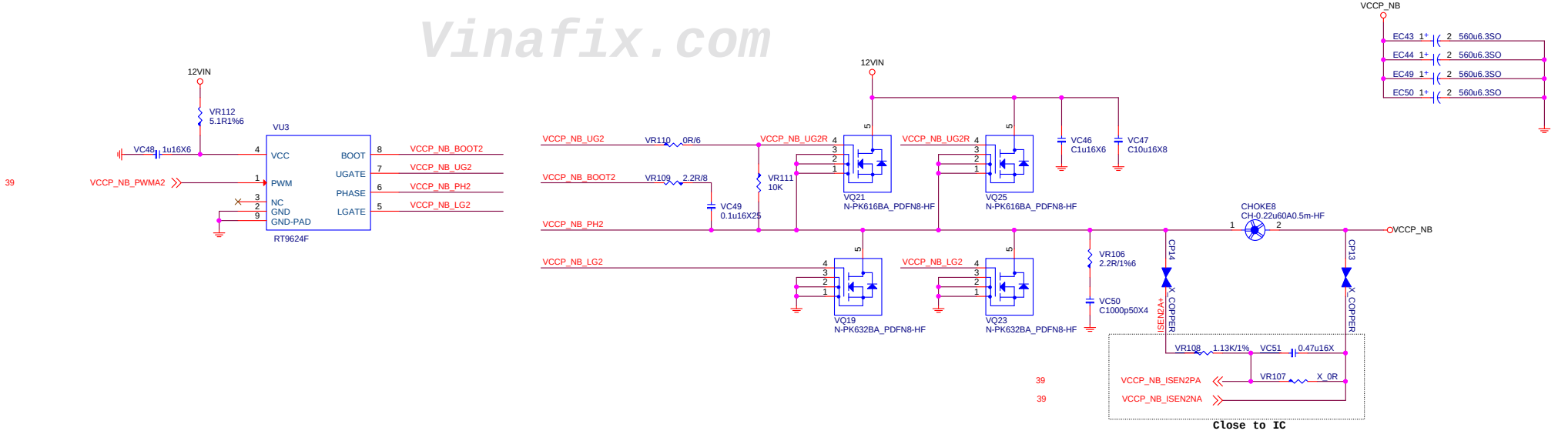
VCCP_NB 95W TDC:50A EDC:75A
VCCP_NB 65W TDC:50A EDC:75A



0.00625V~1.55V



MICRO-START INTL CO.,LTD.

Title	CPU Power NB Phase 1-2	
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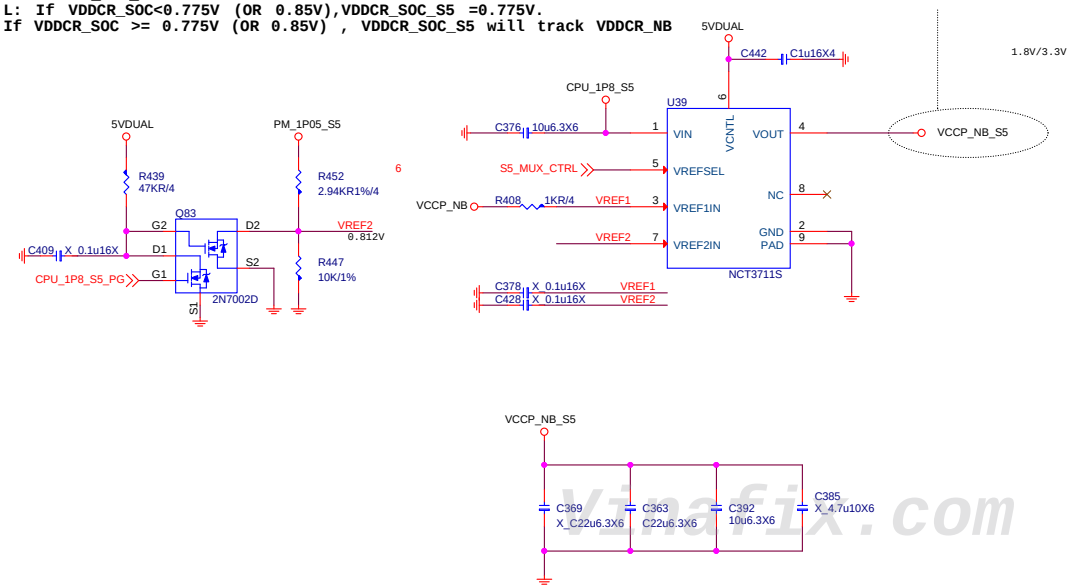
FOR VCCP_SOC_s5
0.9A

TYPE0 Only

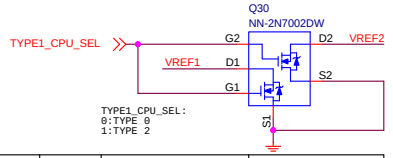
S5_MUX_CTRL
HIGH:S0
LOW: S3/S5

H: +VDDCR_FCH_ALW will track VDDNB
L: If VDDCR_SOC<0.775V (OR 0.85V),VDDCR_SOC_S5 =0.775V.
If VDDCR_SOC >= 0.775V (OR 0.85V) , VDDCR_SOC_S5 will track VDDCR_NB

(VDDCR_SOC_S5 is only used for AMD Family 15h Models 60h-6Fh processors)Bristol Ridge TYPE0



5,6,27,37,38



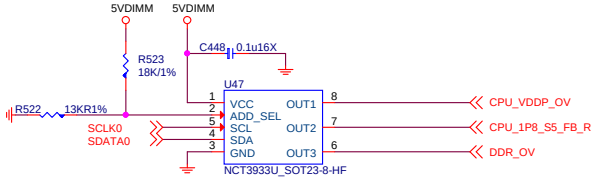
CPU	TYPE	TYPE1_CPU_SEL	TYPE0_CPU_SEL
BR	0	0	1
NA	X	0	0
SR	2	1	1
RV/ZP	3	1	0

CPU VCCP_NB_S5 ONLY SUPPORT TYPE0

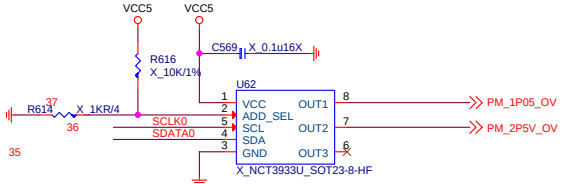
Over Voltage Control IC

除非確實功能有任何幫助，否則不上NCT3933與開超頻選項

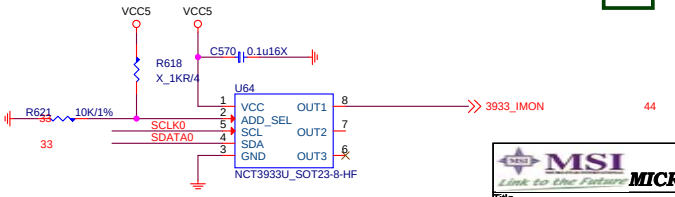
0x26:RH=18K,RL=13K



0x20:RH=10K,RL=OPEN



0x2A:RH=OPEN,RL=10K



UPI VOLTAGE CONSOLE

ADDRESS	0x2A	0X28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%

MICRO-START INTL CO.,LTD.

Title: CPU Power NB Switch / NCT3933 OV

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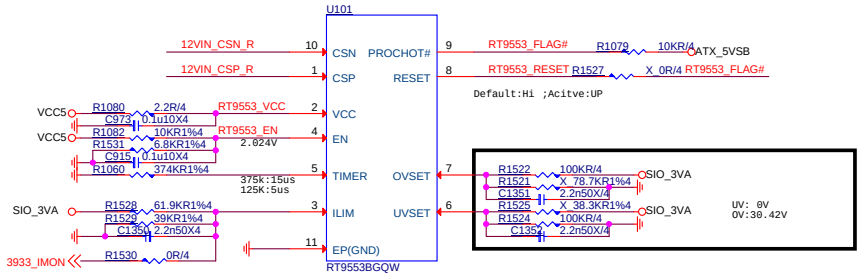
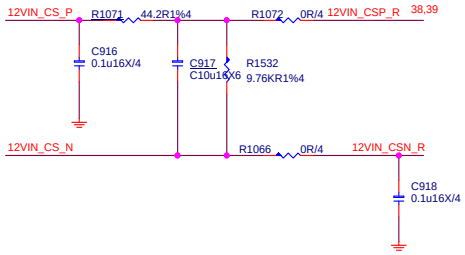
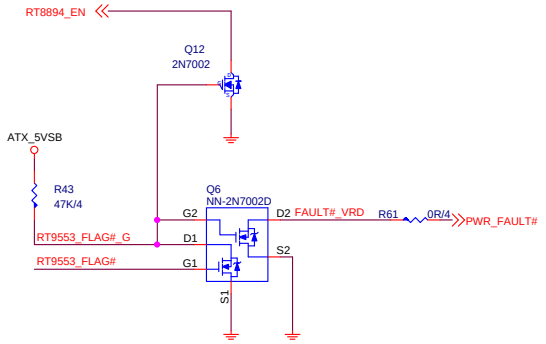
RT9553B CURRENT SENSE

VCORE EDC MAC 125A

NB EDC MAX75A





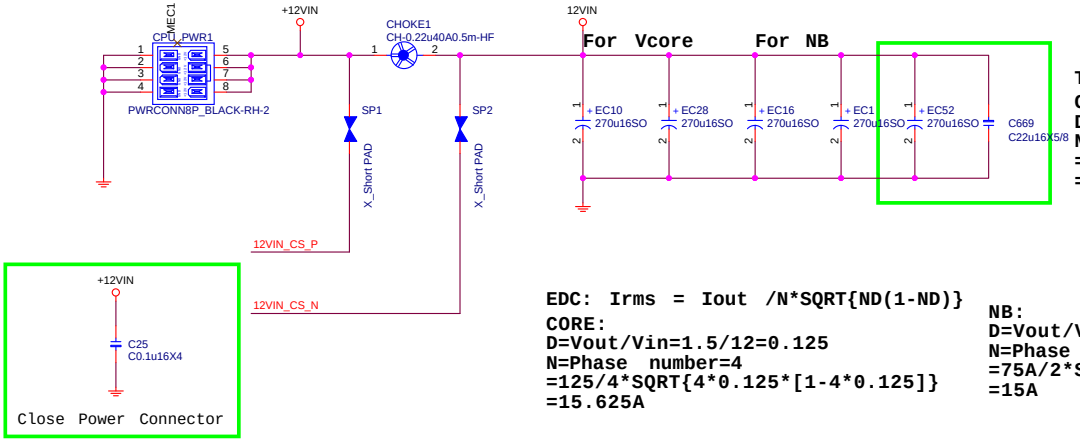


OCP:30A
Real OCP:30.05A
R17+R18>100k Vsio_3va= 3.38V Rdcr= 0.5 mohm

I3933_imon*[R17*R18/(R17+R18)]= Istep* Rdcr*100
I3933_imon= 10uA/step
Istep=4.968A

Vinafix.com

CPU POWER CONNECTOR



TDC: Irms = Iout /N*SQRT{ND(1-ND)}
CORE:
D=Vout/Vin=1.5/12=0.125
N=Phase number=4
=80/4*SQRT{4*0.125*[1-4*0.125]}
=10A

NB:
D=Vout/Vin=1.2/12=0.1
N=Phase number=2
=65A/2*SQRT(2*0.1*(1-2*0.1))
=13A

EDC: Irms = Iout /N*SQRT{ND(1-ND)}
CORE:
D=Vout/Vin=1.5/12=0.125
N=Phase number=4
=125/4*SQRT{4*0.125*[1-4*0.125]}
=15.625A

NB:
D=Vout/Vin=1.2/12=0.1
N=Phase number=2
=75A/2*SQRT(2*0.1*(1-2*0.1))
=15A

uP6273 CURRENT SENSE

VCORE EDC MAC 125A

NB EDC MAX75A

MSI Link to the Future MICRO-START INT'L CO.,LTD.

Title: uP6273 CURRENT SENSE		
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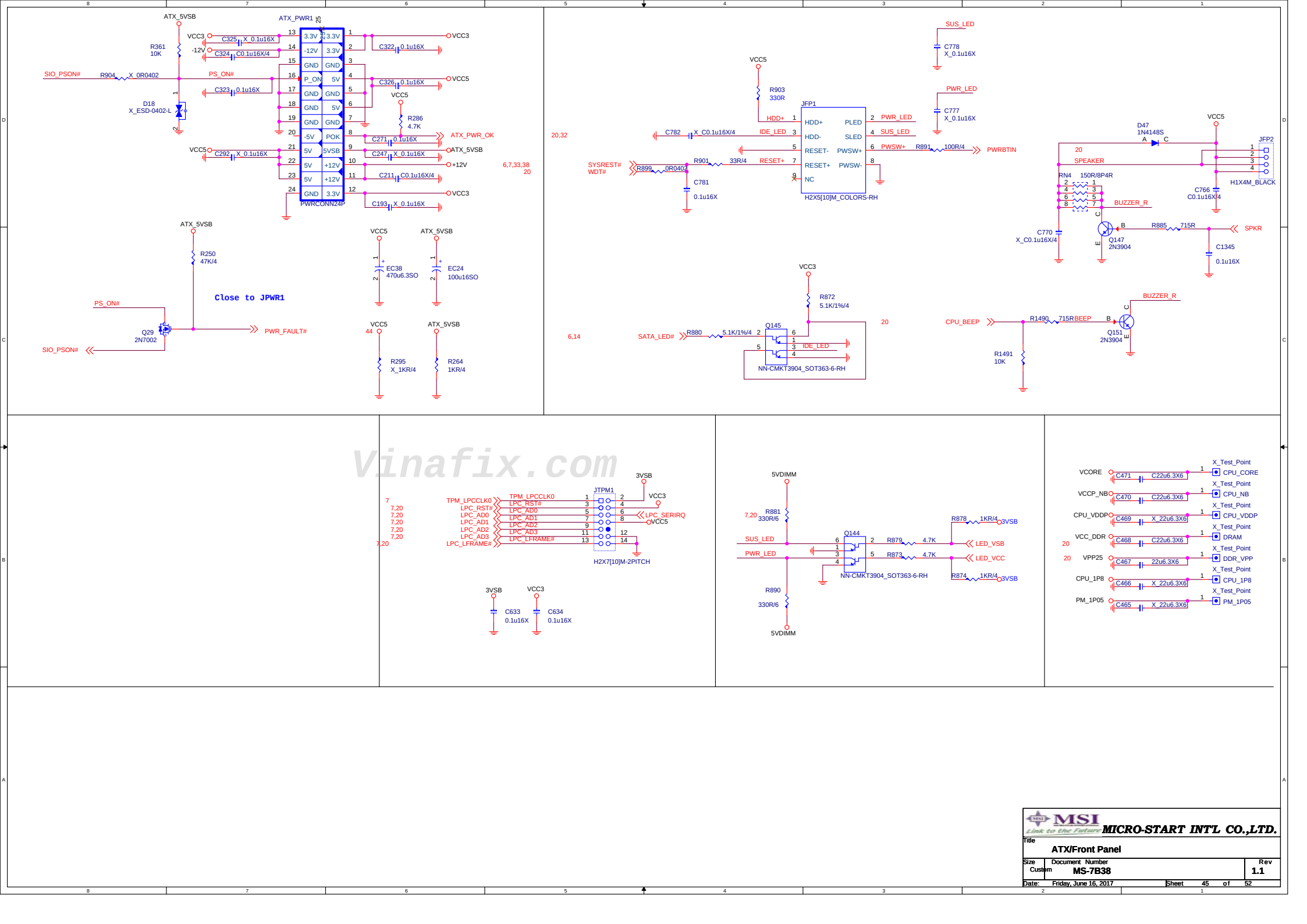

MSI Link to the Future MICRO-START INTL CO.,LTD.

Title: ATX/Front Panel		
Size: Custom	Document Number: MS-7B38	Rev: 1.1
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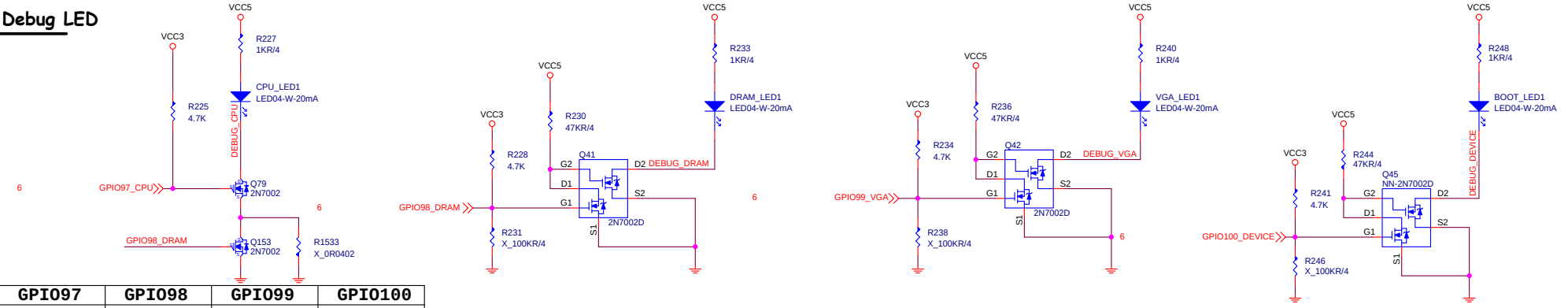
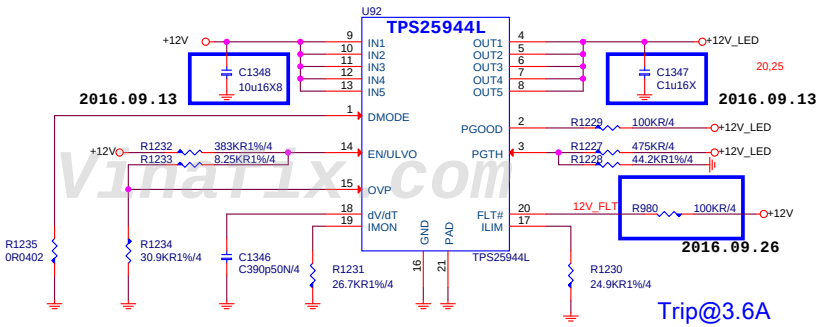
EZ Debug LED

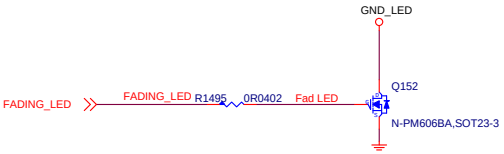


LED \ GPIO	GPIO97	GPIO98	GPIO99	GPIO100
亮	GPI PULL HIGH	GPO PO LOW	GPO PO LOW	GPO PO LOW
滅	GPO LOW	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)	GPO HIGH (default HIGH)

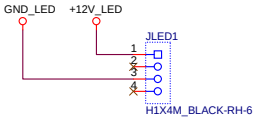
JLED



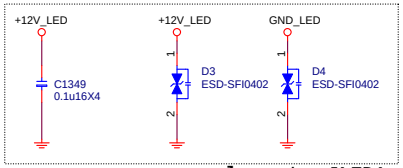
3A



3A



2016.08.31 StuFF

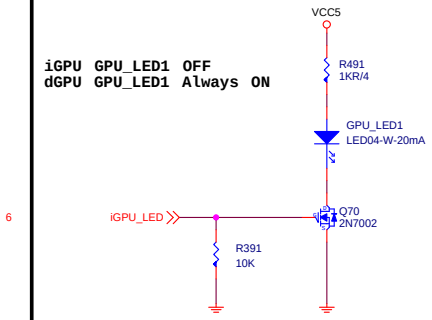


close to JLED1

LED	x16	x8	x4
PCIE2	Red	White	White

AM4 APU Detect LED Circuit

iGPU GPU_LED1 OFF
dGPU GPU_LED1 Always ON



Bottom LED

LED \ GPIO	EGPIO95	EGPIO96
亮	GPO PO HIGH	GPO PO HIGH
滅	GPI (default LOW)	GPI (default LOW)

MSI Link to the Future MICRO-START INTL CO.,LTD.

Title: ALL LED Control

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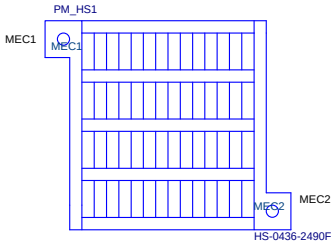
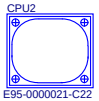
HEAT SINK

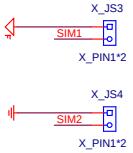


CPU Socket

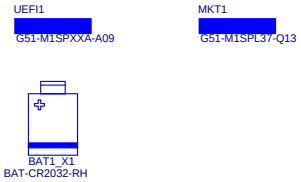


RETENTION MODULE

Simulation

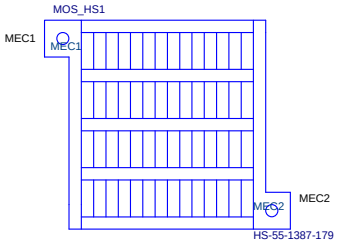


MANUAL PART

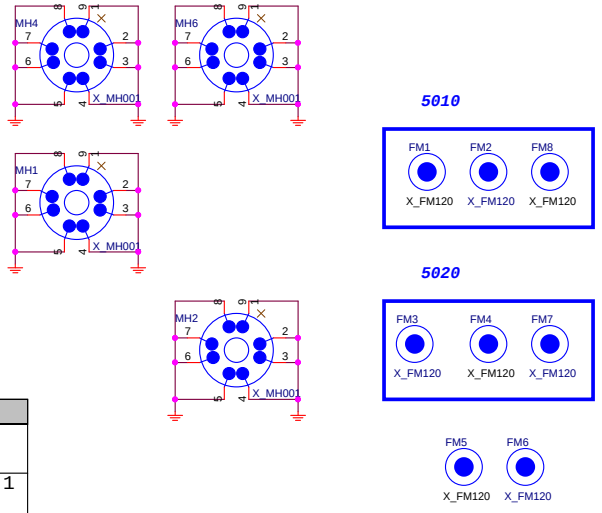


PK0-07B3810-G37, [illegible]
PK0-07B3810-E48, [illegible]

MOS HS(VCORE)



Optics Orientation Holes



OPT	Configure	BOM	Function
		601-7A36-A01	XXXX
		601-7A36-01S	MS-7A36 1.0 A320 A320M PRO-VD,A320,AM4,2DDR4,1PCI-Ex16,2PCI-Ex1,4SATA3,6USB3.1 Gen1,HD Audio,GB LAN,DVI-D,VGA
		601-7A36-010	MS-7A36 1.0 A320 A320M PRO-VD,A320,AM4,2DDR4,1PCI-Ex16,2PCI-Ex1,4SATA3,6USB3.1 Gen1,HD Audio,GB LAN,DVI-D,VGA

MICRO-START INTL CO.,LTD.

Title: BOM OPTION

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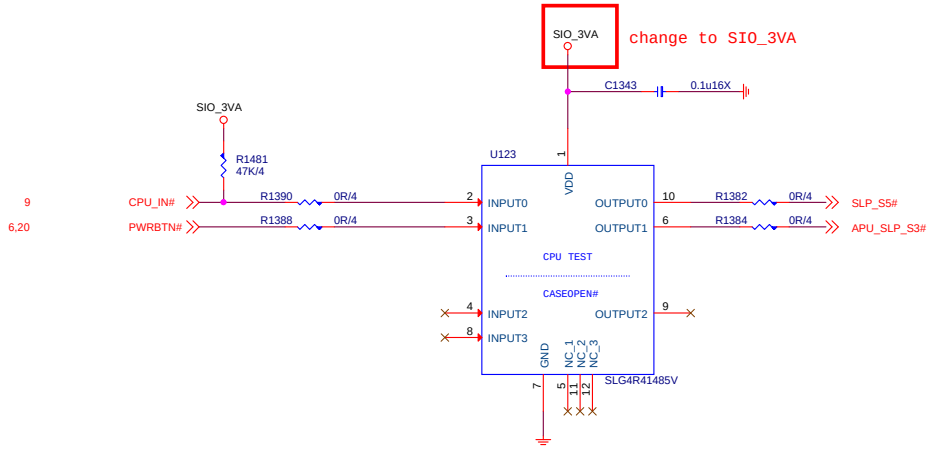
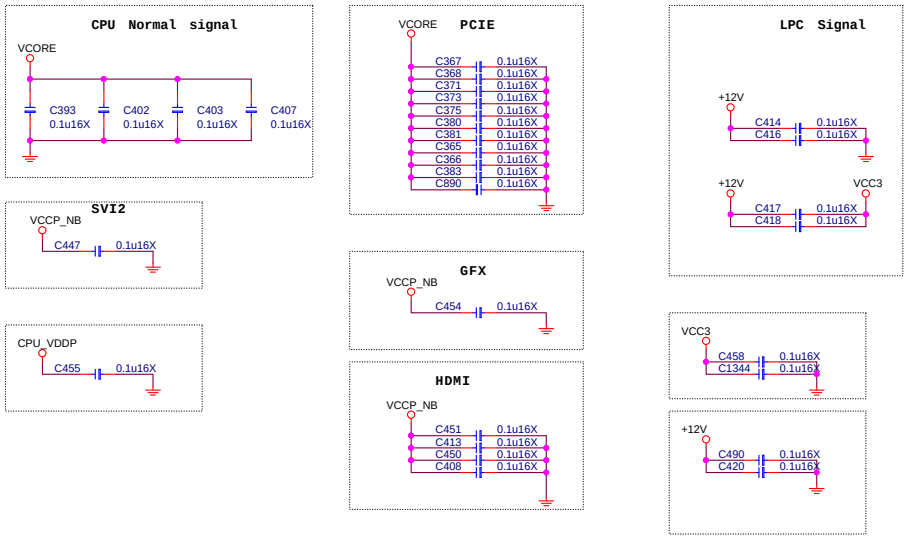
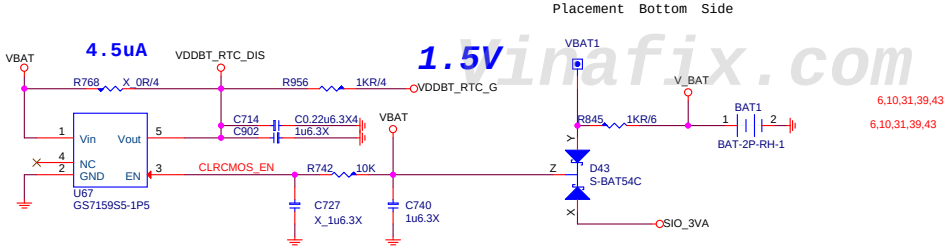


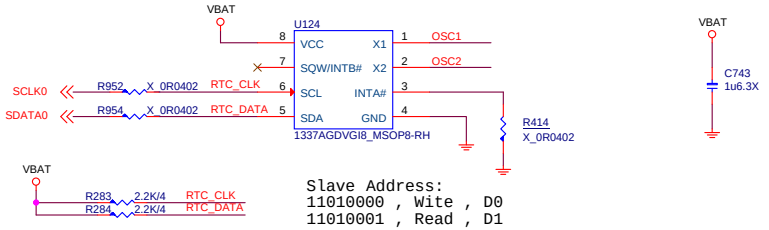
Moat Cap



RTC & Clear CMOS Circuit

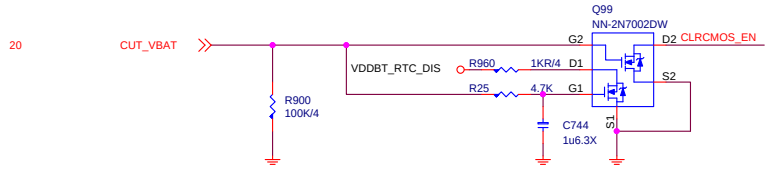
Placement Bottom Side

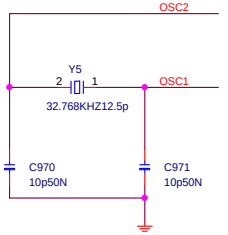


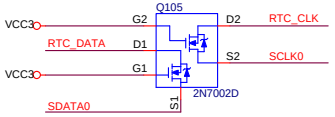


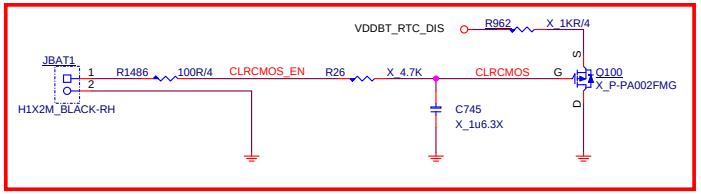
Slave Address:
11010000 , Wite , D0
11010001 , Read , D1

開機 時 , BI O S必須 將0E h bi t 2 = 1 以 達到G 3 底下省電效果









MICRO-START INT'L CO.,LTD.

Title	RTC Circuit		
Size: Custom	Document Number: MS-7B38		Rev: 1.1
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