

Page	TITLE
1	Cover Sheet
2	Block Diagram
3	CPU-Memory
4	CPU-Control/MISC/CFG/Audio
5	CPU-PEG/Display
6	CPU-GND
7	CPU-Power
8	DDR4 SLOT-DIMM1/DIMM2
9	DDR4 SLOT-DIMM3/DIMM4
10	DDR4-POWER/GND-1
11	DDR4-POWER/GND-2
12	PCH-LPC/SPI/SMBUS/MISC
13	PCH-Clock/Audio
14	PCH-DMI/PCIE/USB/SATA
15	PCH-GPIO/RSVD
16	PCH-POWER
17	PCH-GND
18	PCH-Strap
19	PCIE SLOT (X16)
20	PCIE SLOT (X1)
21	PCIE SLOT (X4)
22	DP to VGA - ITE6516
23	DVI Connector
24	DISPLAY PORT CON
25	M2_1 2242/2260/2280/22110
26	NA
27	SATA Connector
28	USB POWER-MP1495/UP7501
29	Front JUSB1 / JUSB2 2.0
30	Front JUSB3 3.0 / CHARGE
31	Front JUSB4 3.0
32	Rear PS2_USB1 3.0 / Redriver
33	Rear LAN_USB2 3.0 / VR
34	NA
35	Rear USB2.0 CON
36	LAN INTEL I219V
37	AUDIO ALC892
38	AUDIO De-POP
39	SIO-NTC6795D-1
40	SIO-NTC6795D-2
41	LED-BOT/AUD/LBAR
42	LED-EZ DBG/PCH/PCIE
43	CPU FAN1 / PUMP_FAN1
44	SYSTEM FAN 1/2
45	SYSTEM FAN 3/4
46	ACPI UPI POWER
47	ATX Power/F_Panel/JTPM/JTBT
48	OV-NCT3933
49	PWM-RT3606BC VCORE+VGT
50	VCORE MOS-PHASE 1~3
51	VGT MOS-PHASE 1~2
52	PWR_12V OCP - UP6273A
53	CPU_PWR_VCCIO - NB681G
54	CPU_PWR_ST/PLL
55	CPU_PWR_SA-RT8125E
56	DDR4 Power-RT8125E
57	DDR4 Power-VP25
58	PCH Core Power-RT8125E
59	SPI ROM
60	Clear CMOS SLG4B41231V
61	Manual parts
62	CLOCK MAP
63	GPIO MAP
64	POWER MAP
65	Power Sequence
66	Revision History

MS-7A75

Ver: 1.0 ATX
PCB size : 305mm * 225mm

Intel -Kabylake Plamform Z270

CPU:

Kabylake-S

System Chipset:

Z270

Onboard Chip:

HD Audio Codec : ALC892

LAN : intel I219V

SIO : Nuvoton 6795

Flash ROM : 16MB Z270

www.teknisi-indonesia.com

Main Memory:

DDRIV (800/1066/1333/1600/2133MHz) * 4 (Dual Channel)

ACPI:

NIKO/UPI

PWM:

RT3606BC

Expansion Slots:

PCI Express (X16) Slot *1

PCI Express (X4) Slot *1

PCI Express (X1) Slot *4

M2 M-Key *1

Other:

SATA3.0 *6

FRONT USB2.0 *4

FRONT USB3.0 *4

REAR USB3.0 GEN1 Z270 *4

REAR USB2.0 *2

Display :

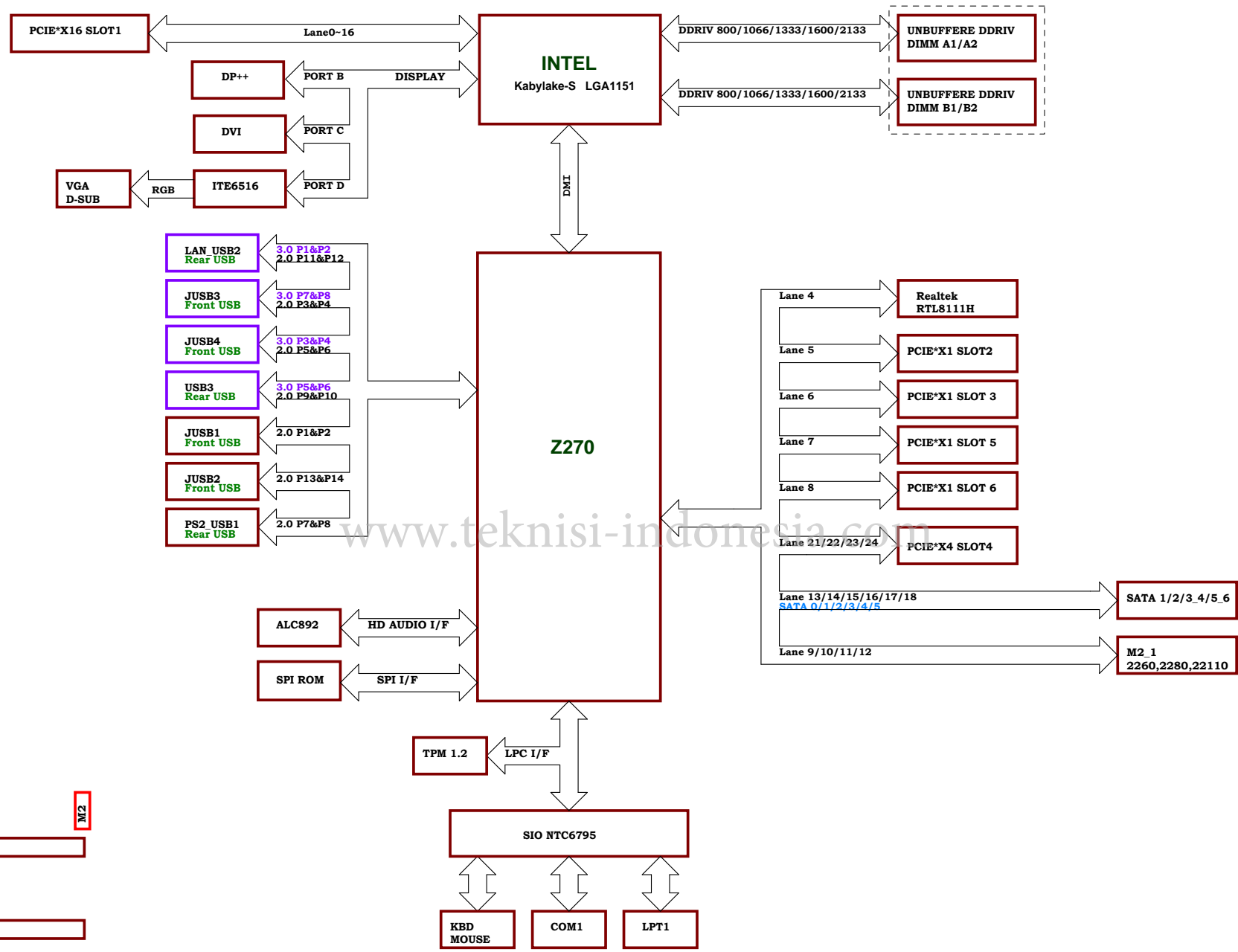
DISPLAY PORT

DVI

VGA-ITE6516 DDI to D-SUB

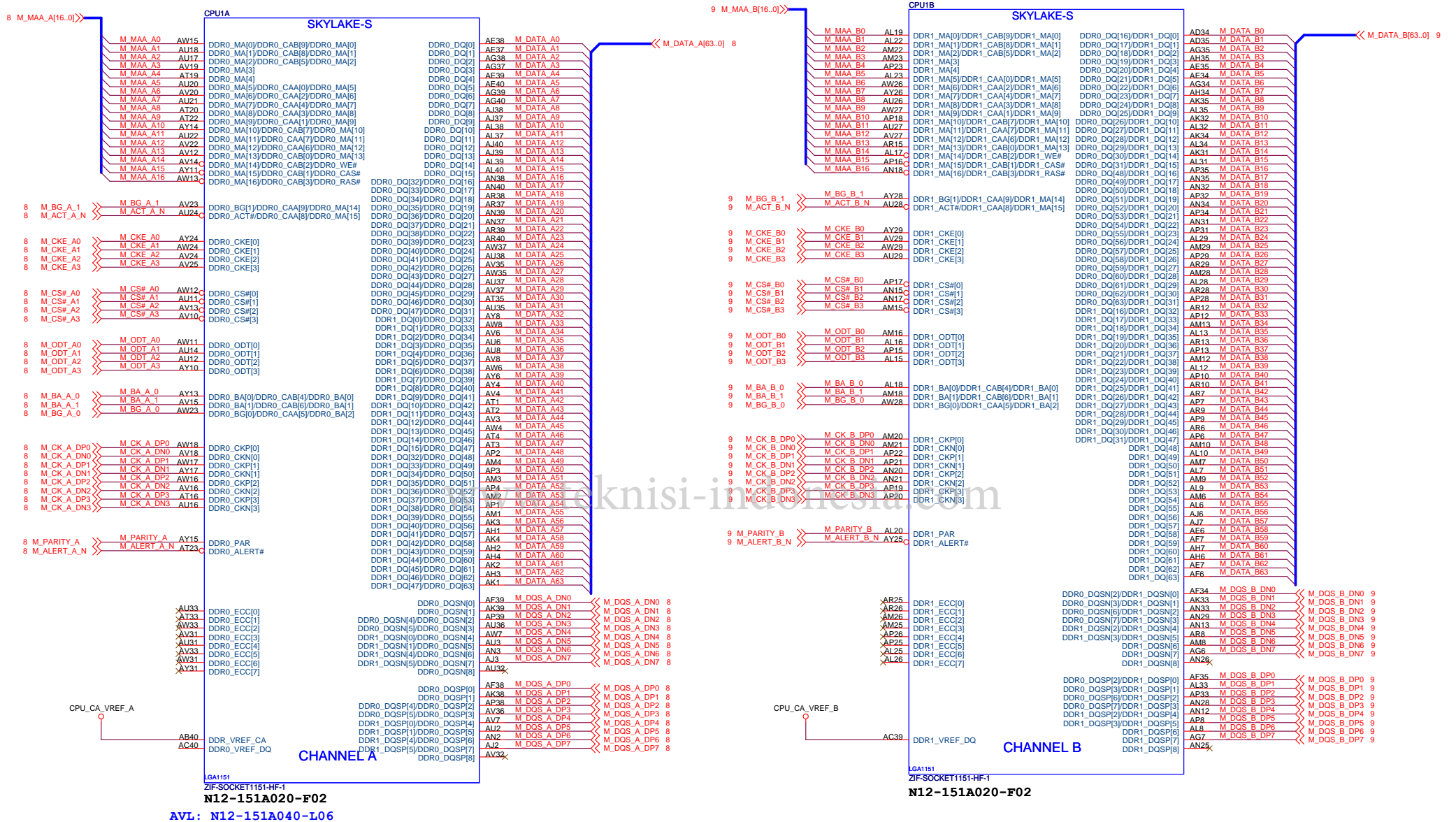
MICRO-STAR INT'L CO.,LTD		
MS-7A75		
Size Custom	Document Description Cover Sheet	Rev 1.0
Date: Tuesday, November 15, 2016	Sheet 1 of 65	

MS-7A71 Block Diagram



Slot Sequence:

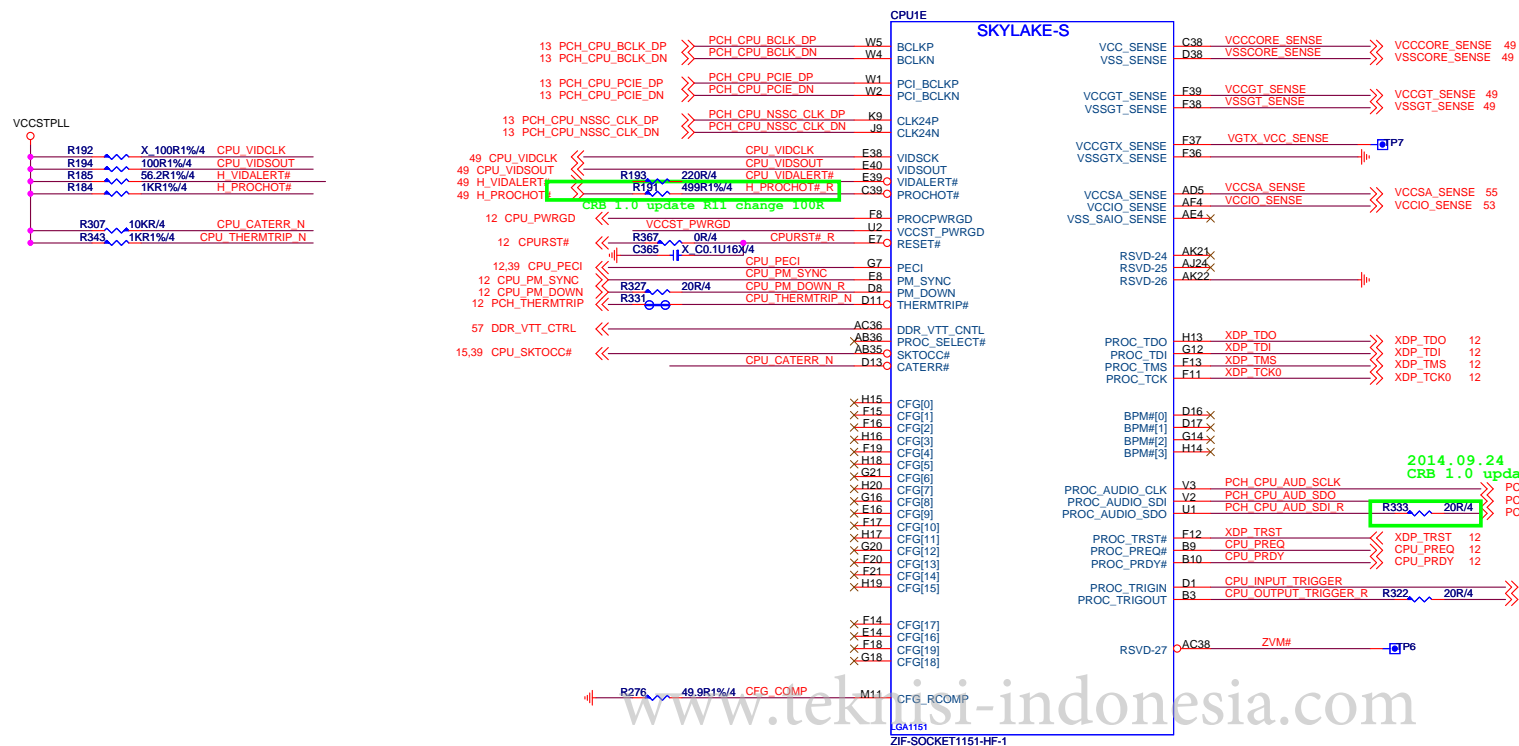
M2_1	22110	M2
PCie_E1	CPU PCie X16	
PCie_E2	PCie X1	
PCie_E3	PCie X1	
PCie_E4	PCie X4	
PCie_E5	PCie X1	
PCie_E6	PCie X1	



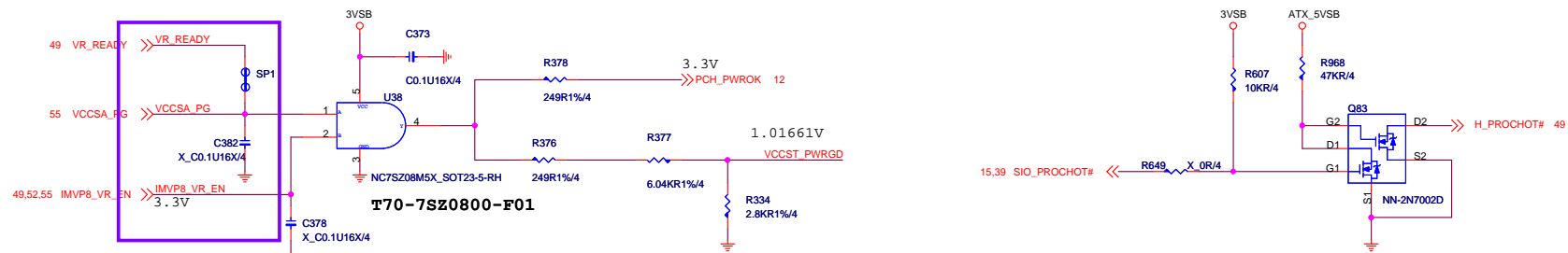
MICRO-STAR INT'L CO.,LTD

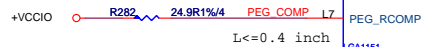
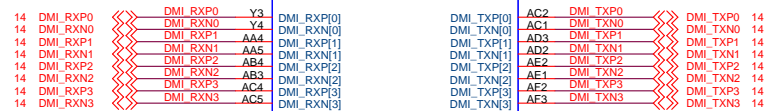
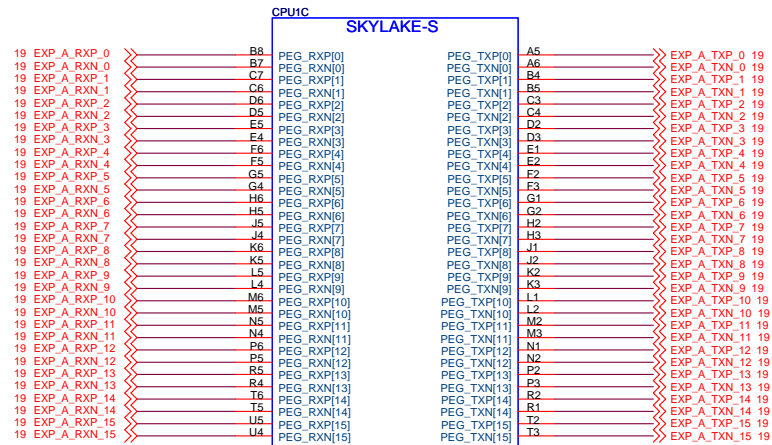
MS-7A75

Size	Document Description	Rev
Custom	CPU-Memory	1.0
Date: Friday, November 18, 2016		Sheet 3 of 65



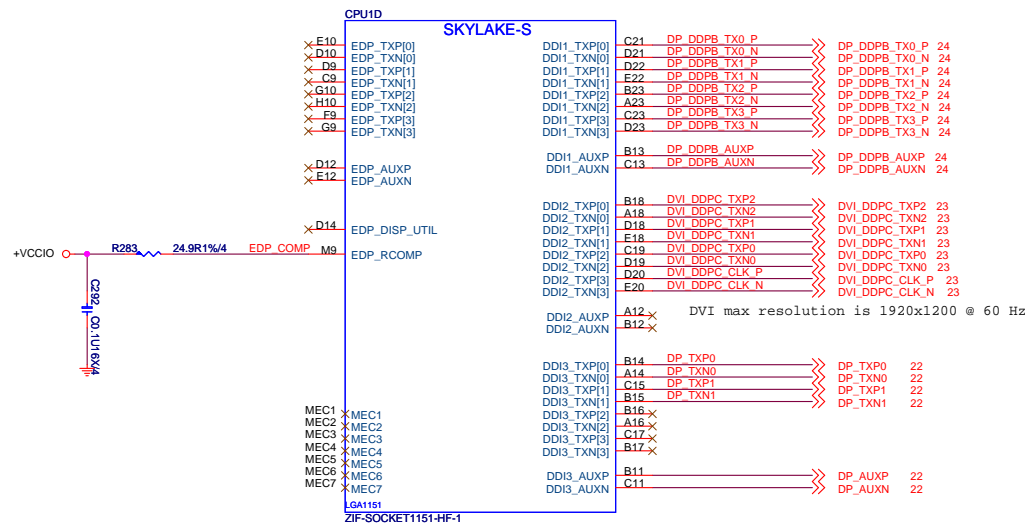
N12-151A020-F02



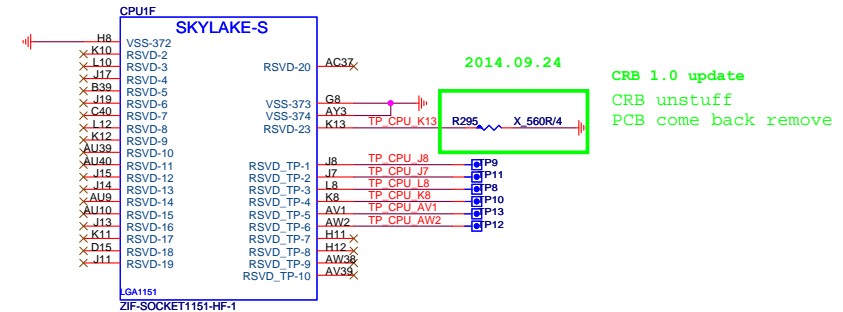


N12-151A020-F02

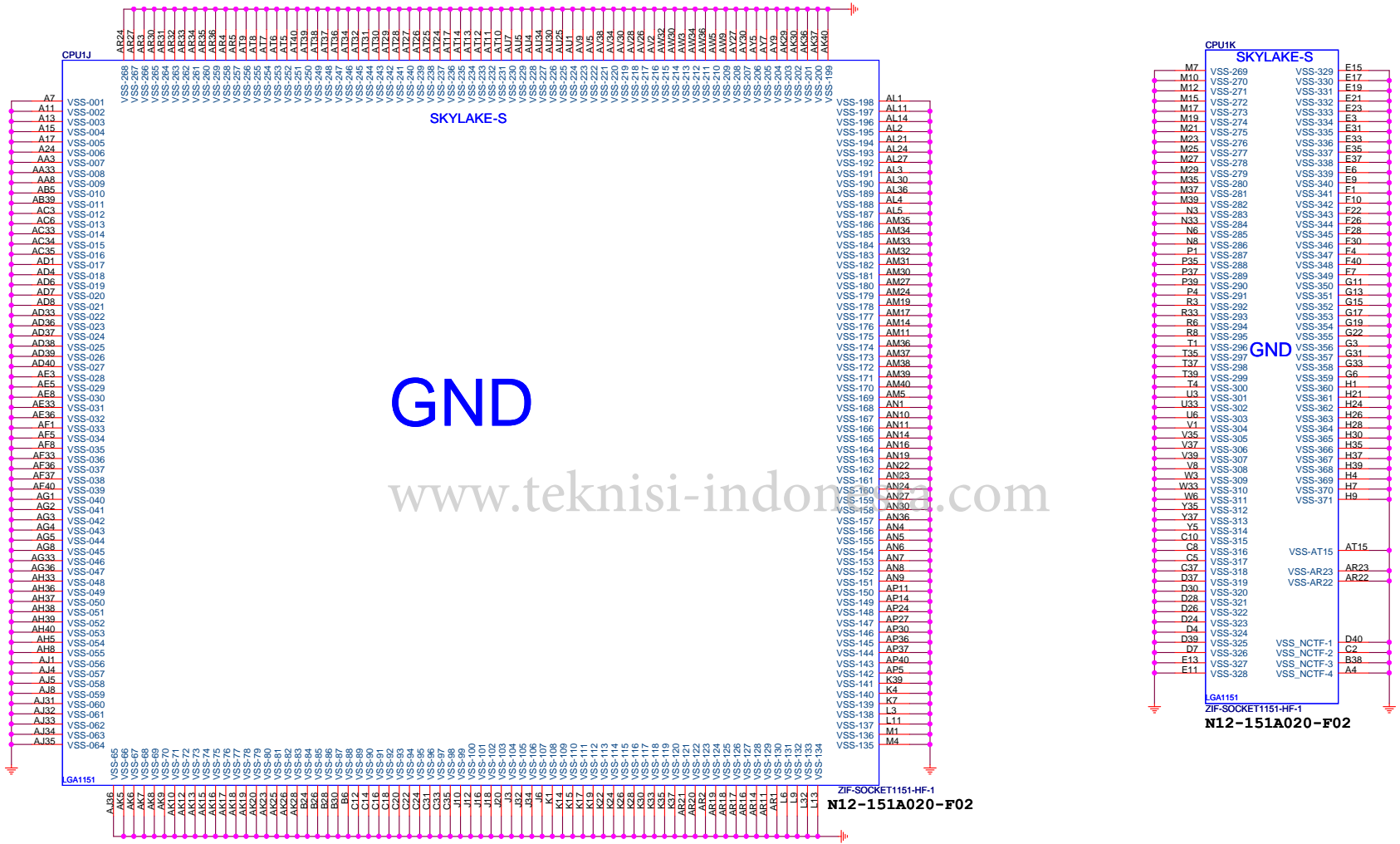
www.teknisi-indonesia.com

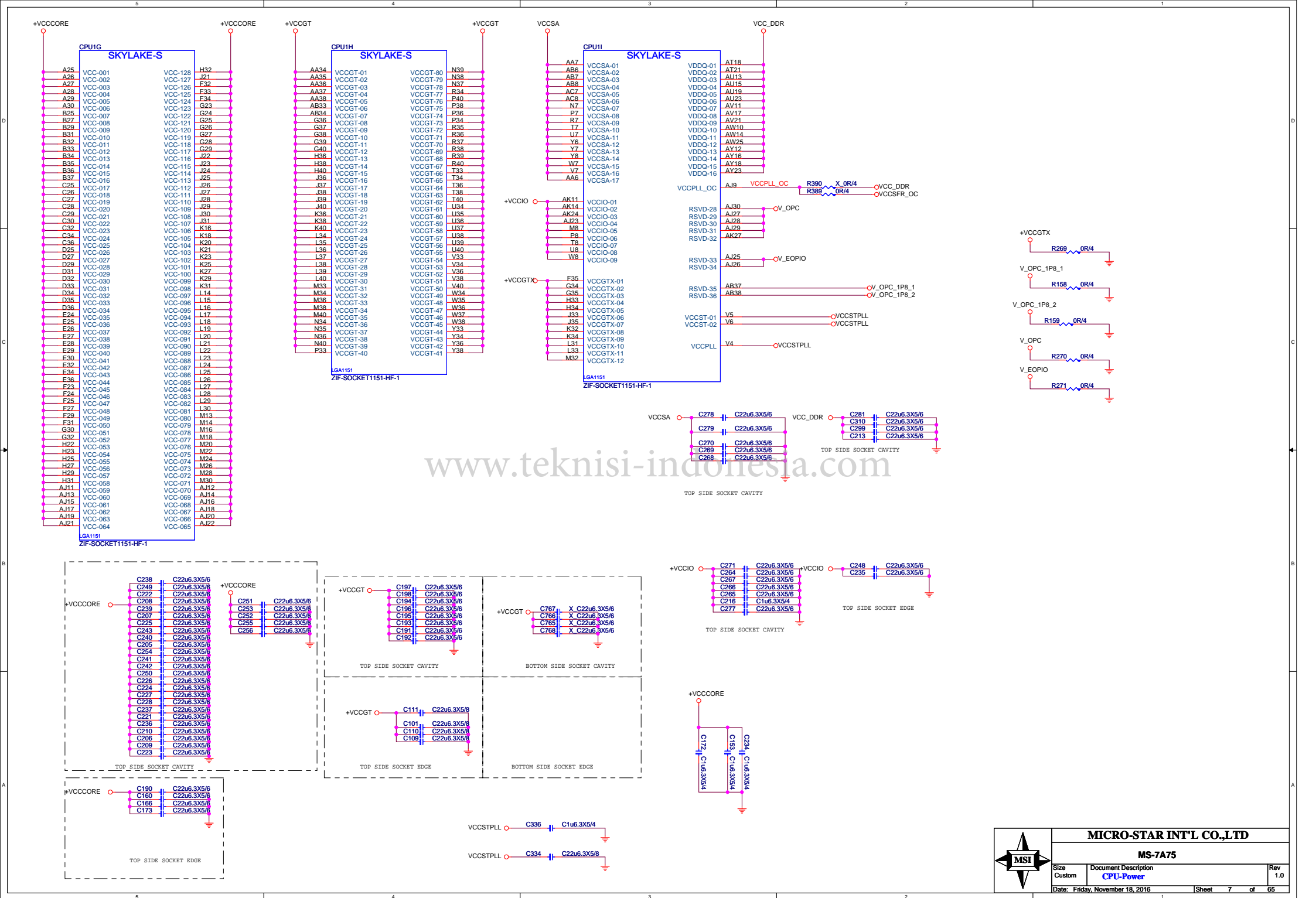


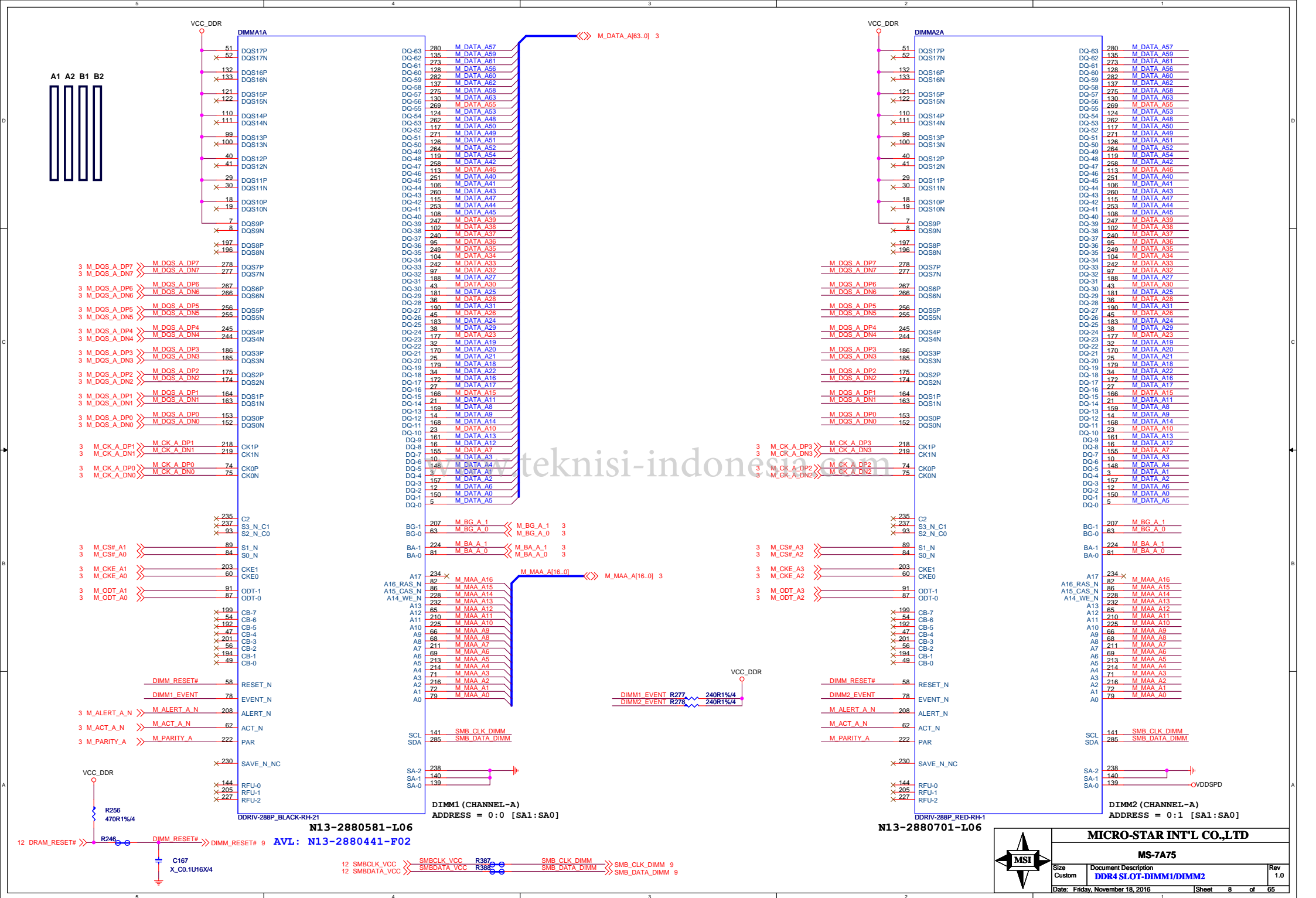
N12-151A020-F02

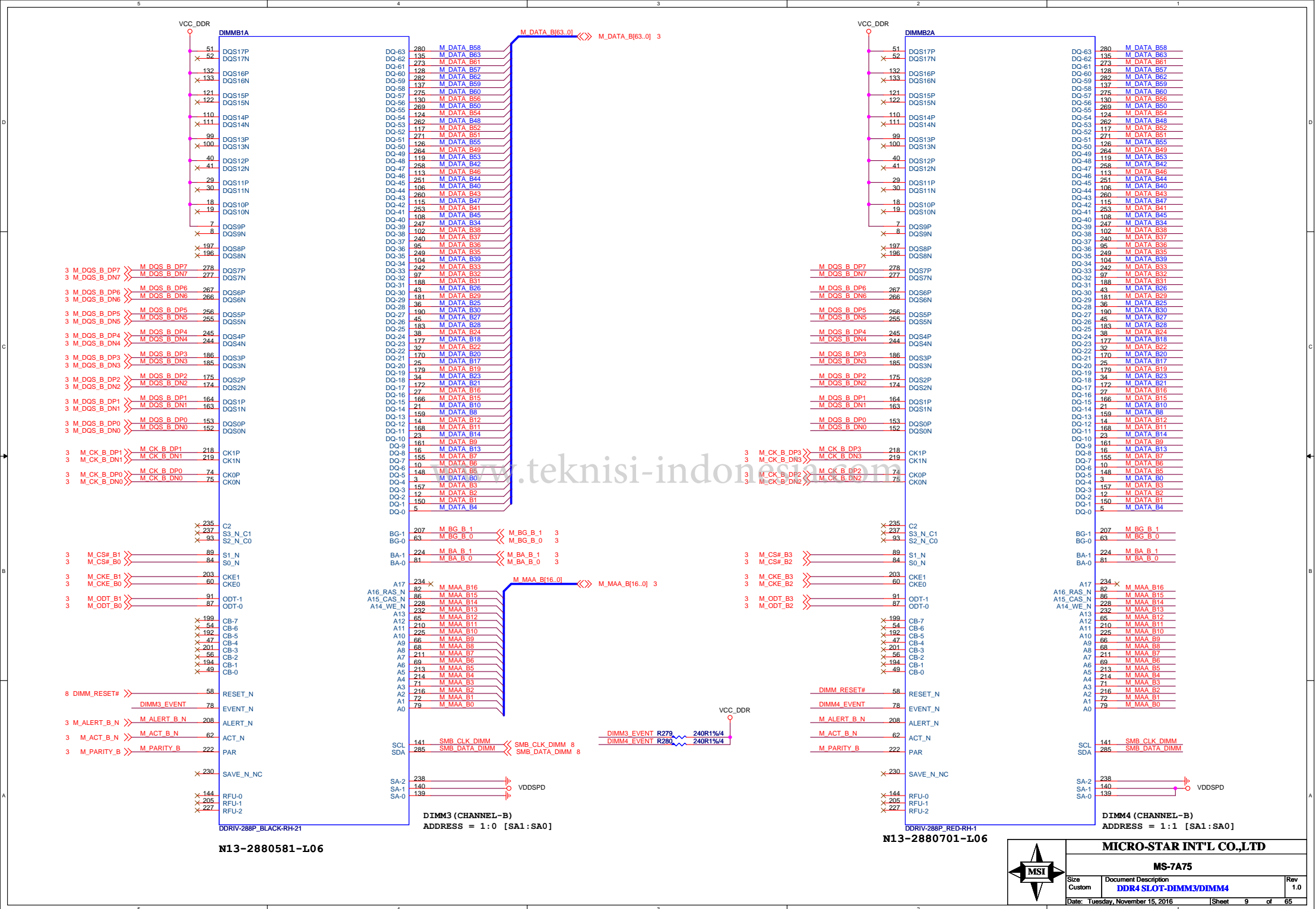


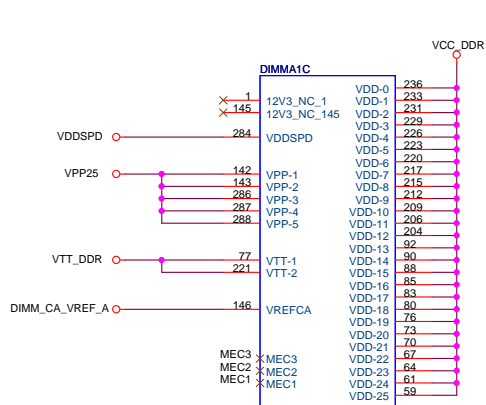
N12-151A020-F02





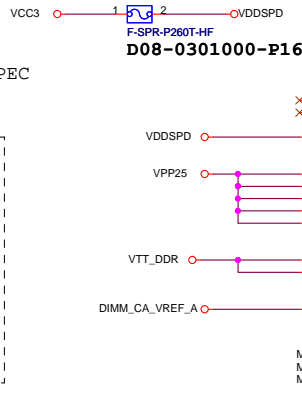
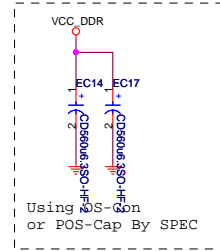




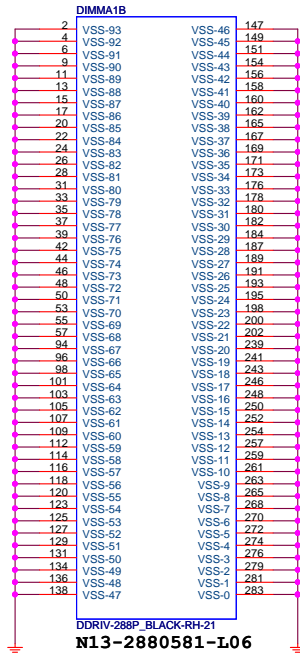
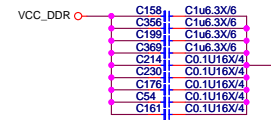
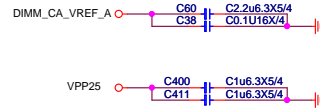
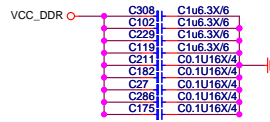
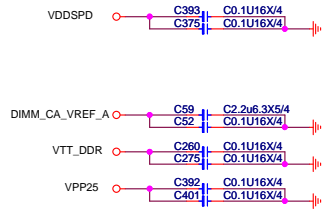


DDRIV-288P_BLACK-RH-21
N13-2880581-L06

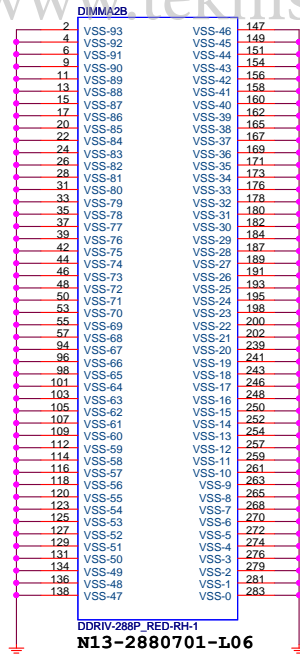
DIMM SLOT PN BY SPEC



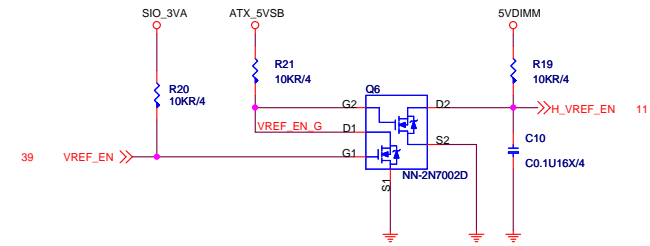
DDRIV-288P_RED-RH-1
N13-2880701-L06

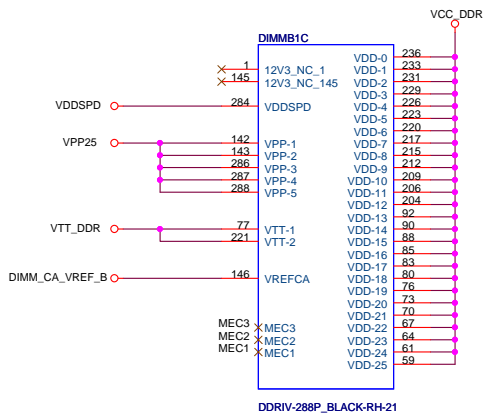


DDRIV-288P_BLACK-RH-21
N13-2880581-L06

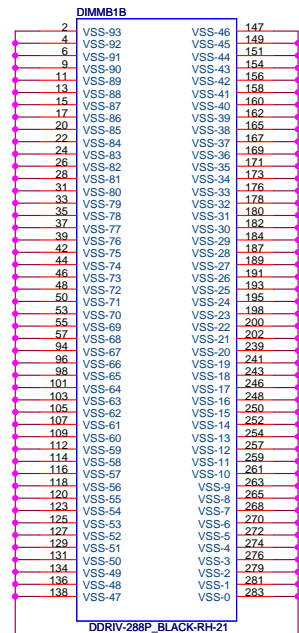
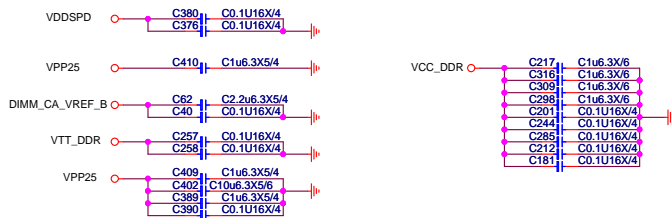


DDRIV-288P_RED-RH-1
N13-2880701-L06

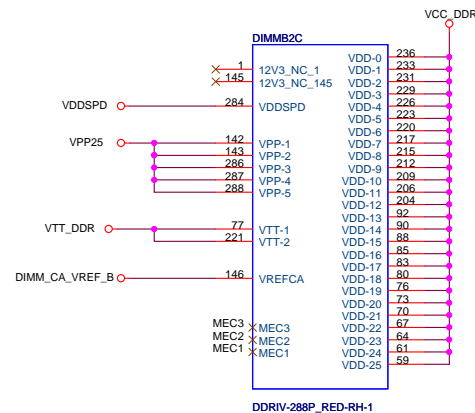




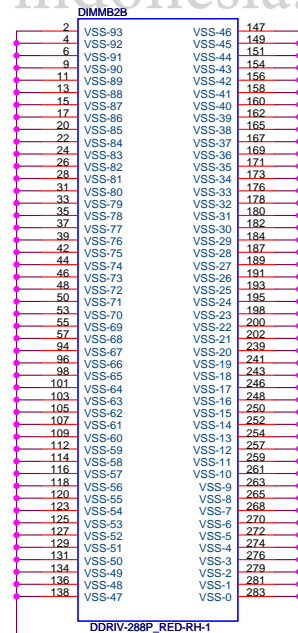
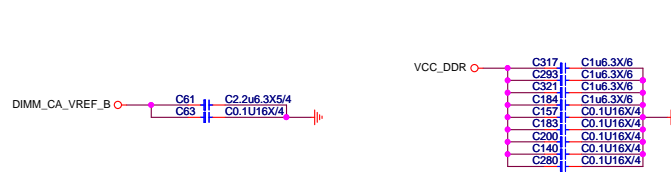
N13-2880581-L06



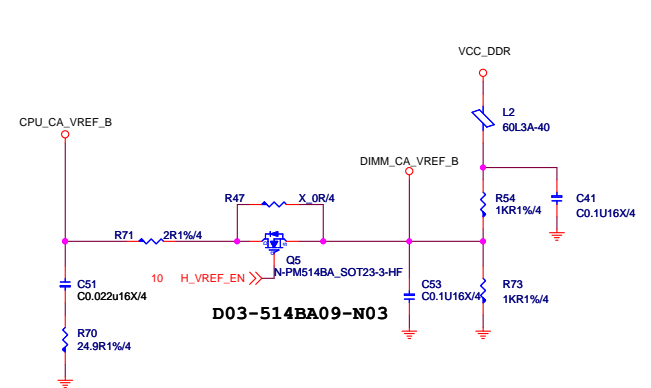
N13-2880581-L06



N13-2880701-L06

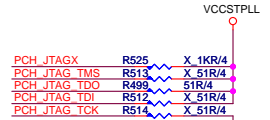
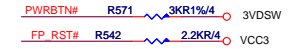
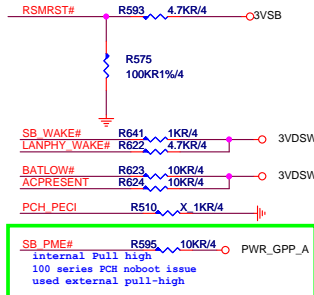
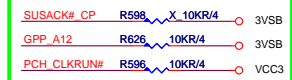
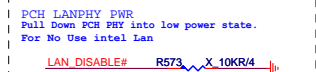
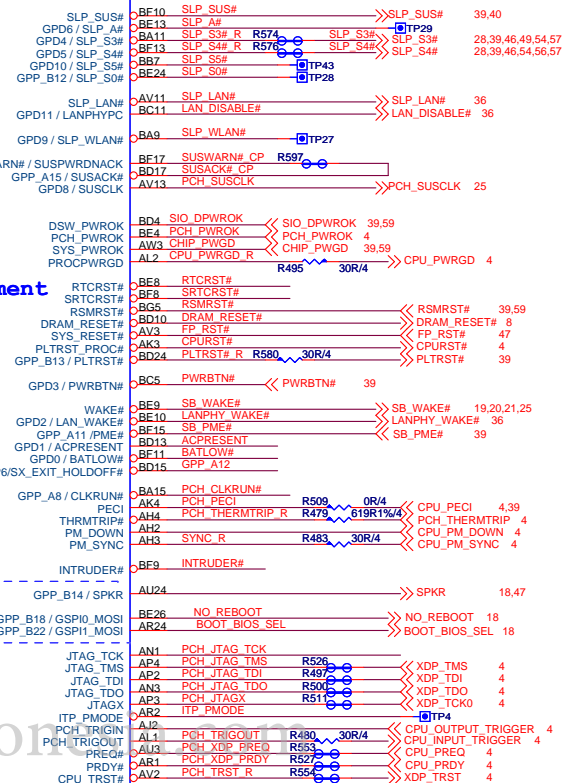
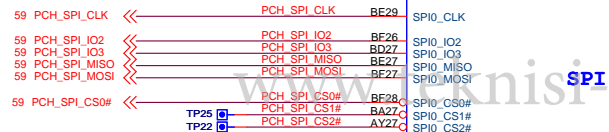
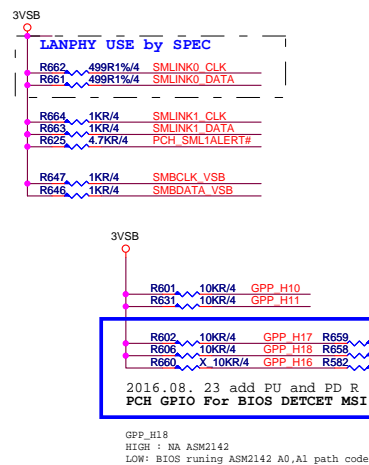


N13-2880701-L06

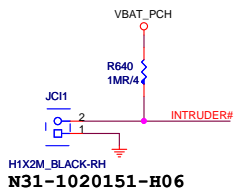


D03-514BA09-N03

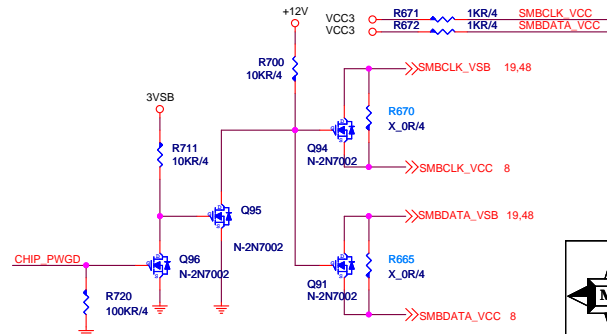
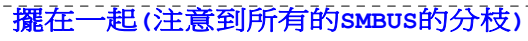
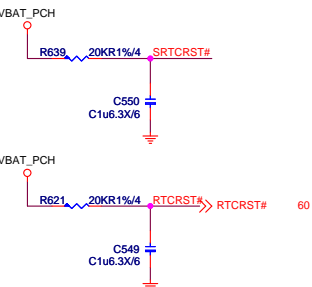
www.teknisi-indonesia.com



Chassis Intrusion



RTC

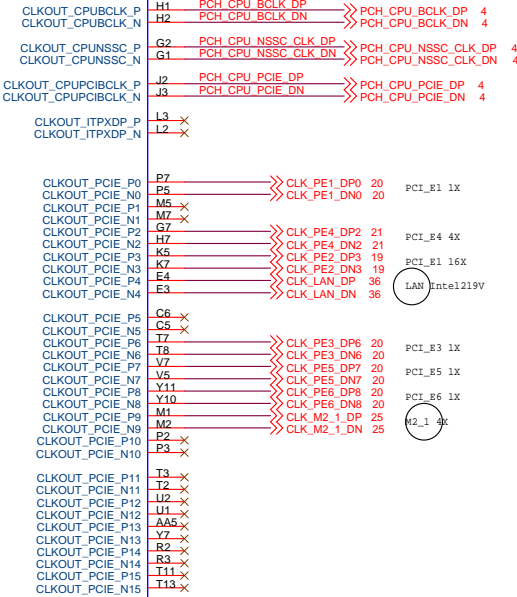
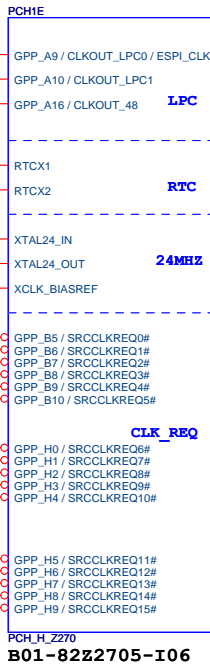
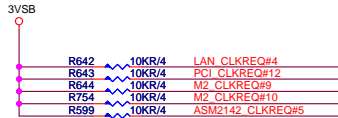
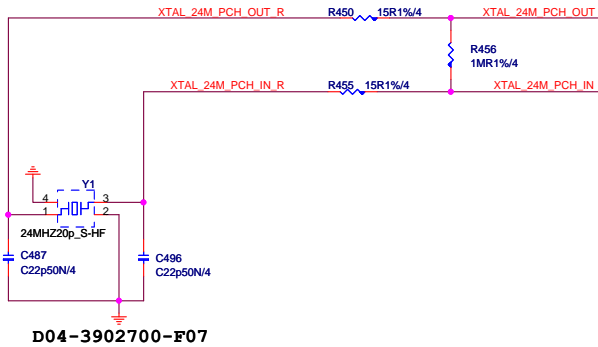
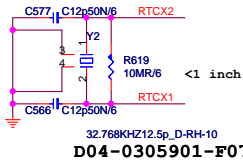


MICRO-STAR INT'L CO.,LTD			
MS-7A75			
Size Custom	Document Description PCH-LPC/SP/SMBUS/MISC		Rev 1.0
Date: Friday, November 18, 2016		Sheet 12 of 65	

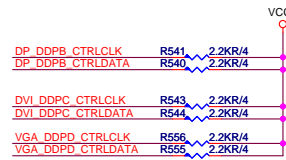
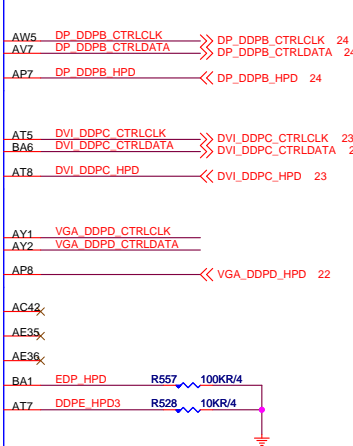
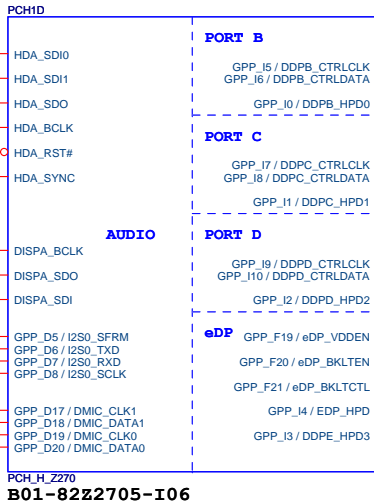
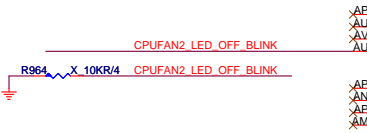
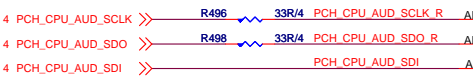
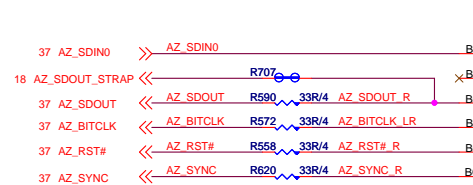
PCH_CLK

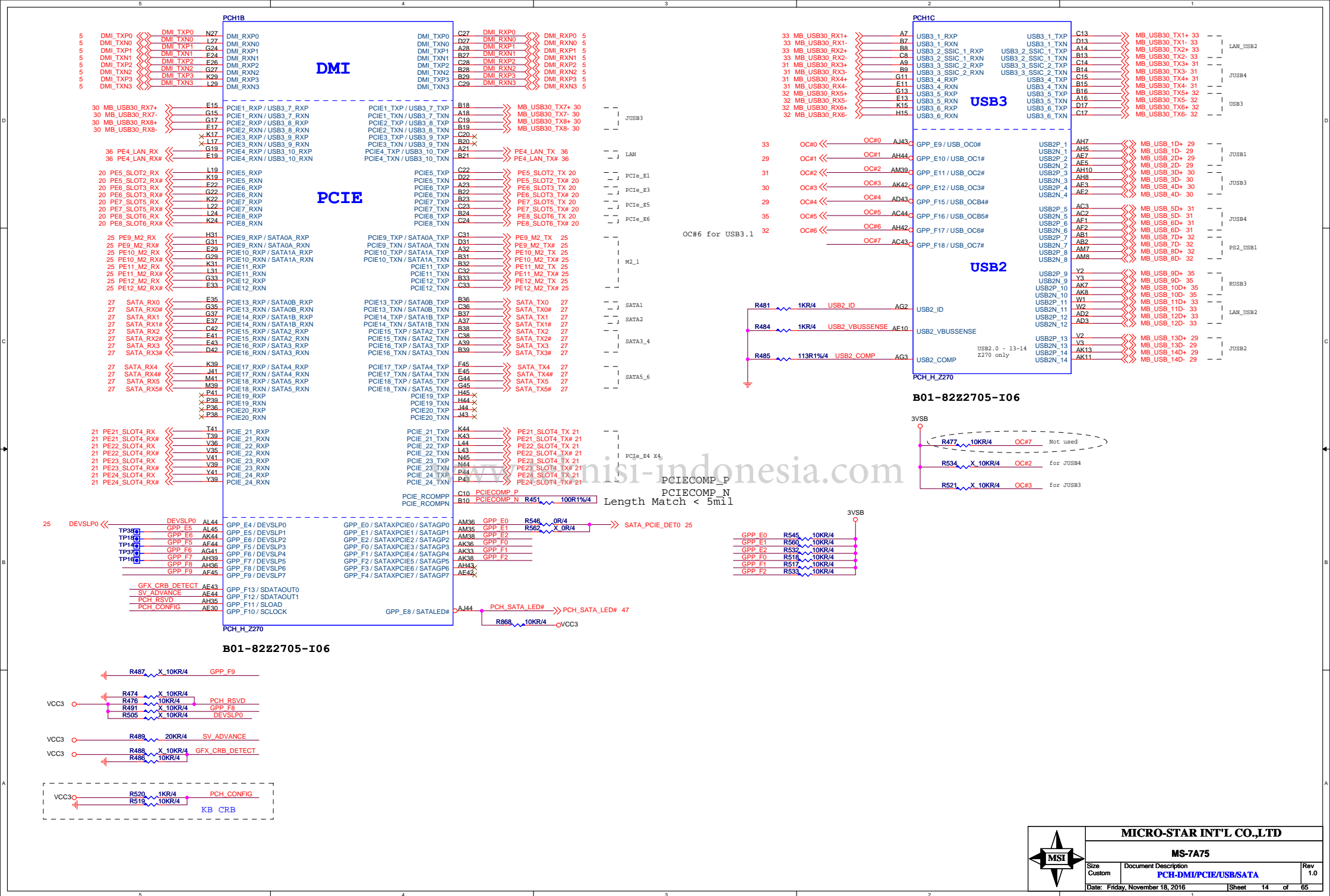
RTC Block

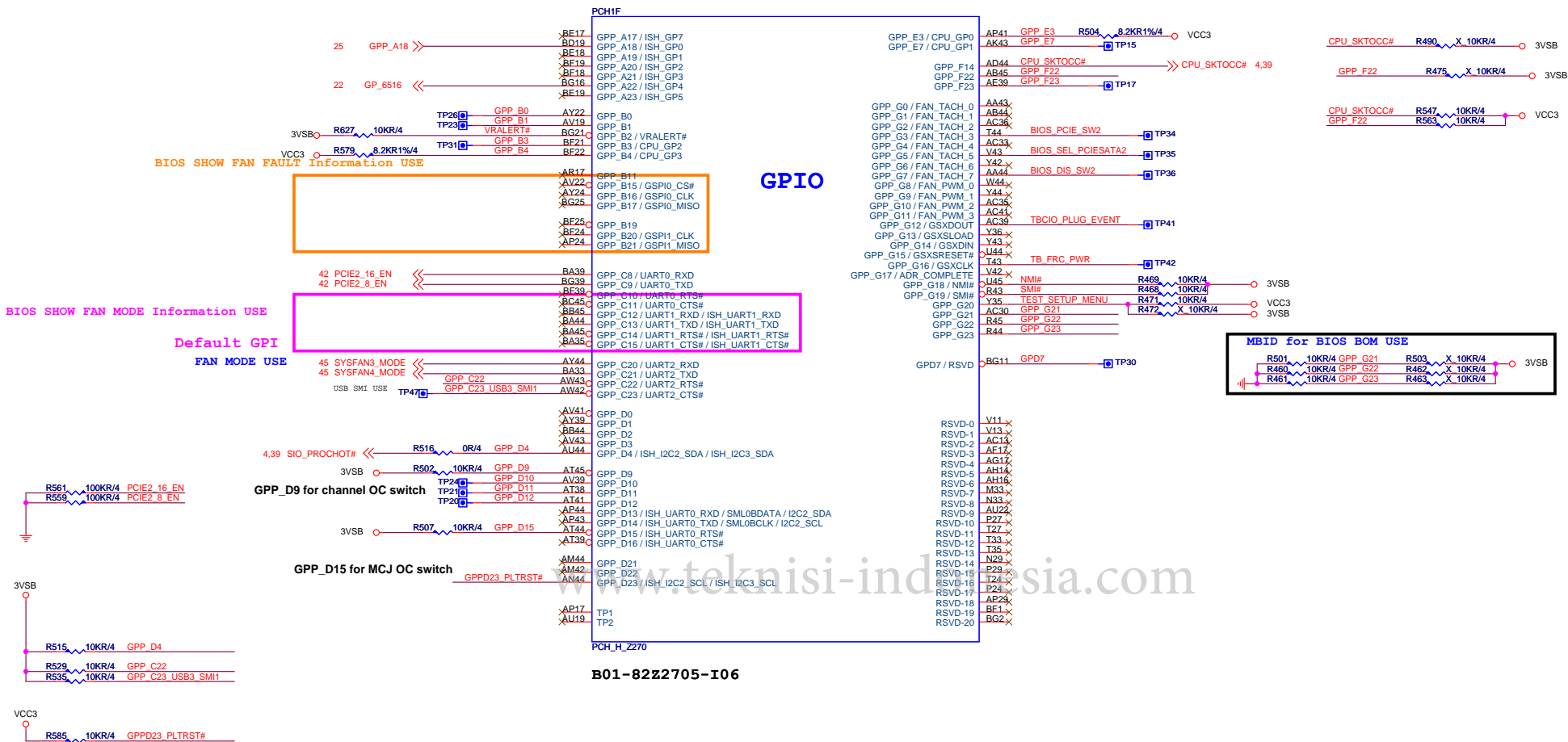
Close to PCH

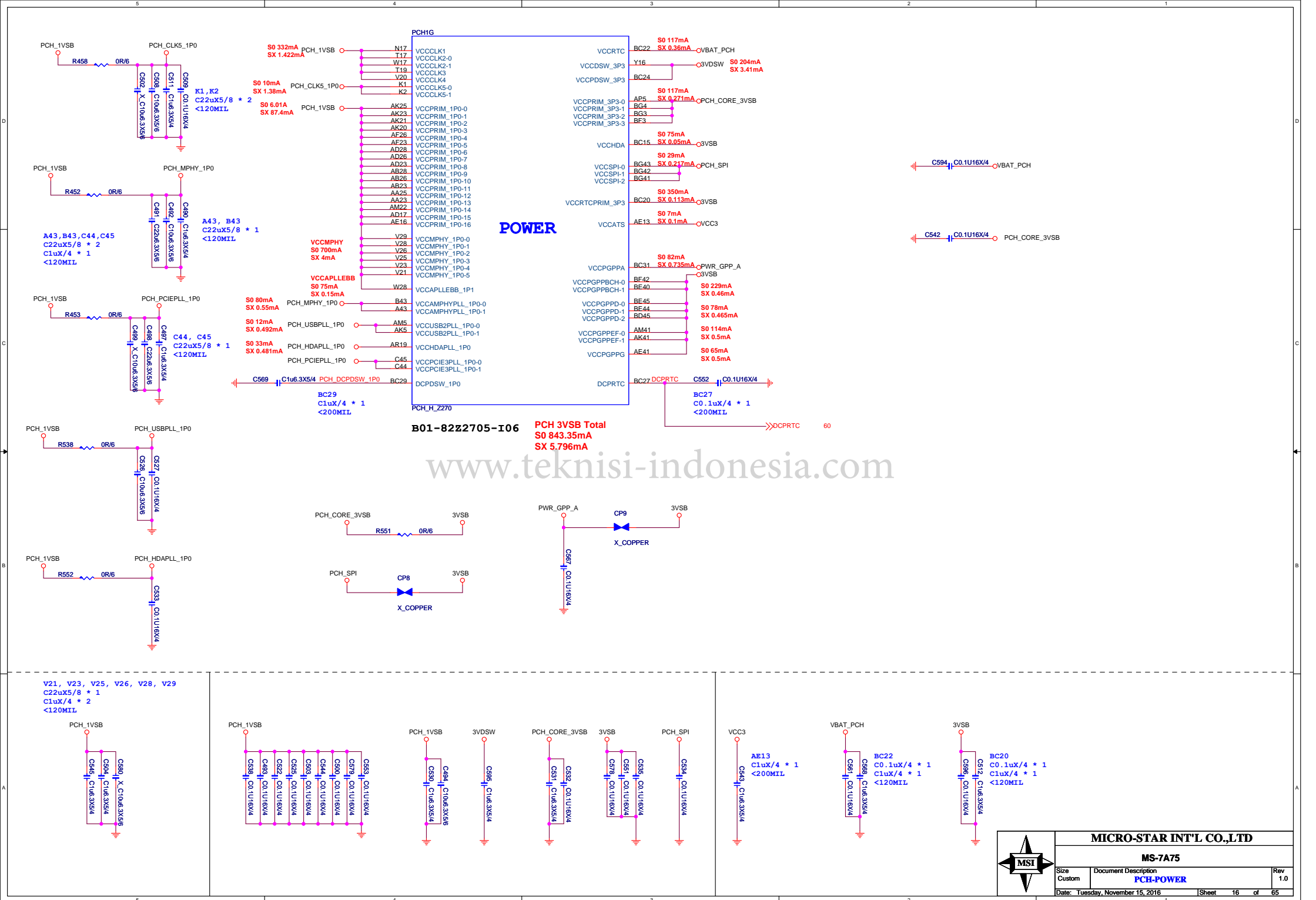


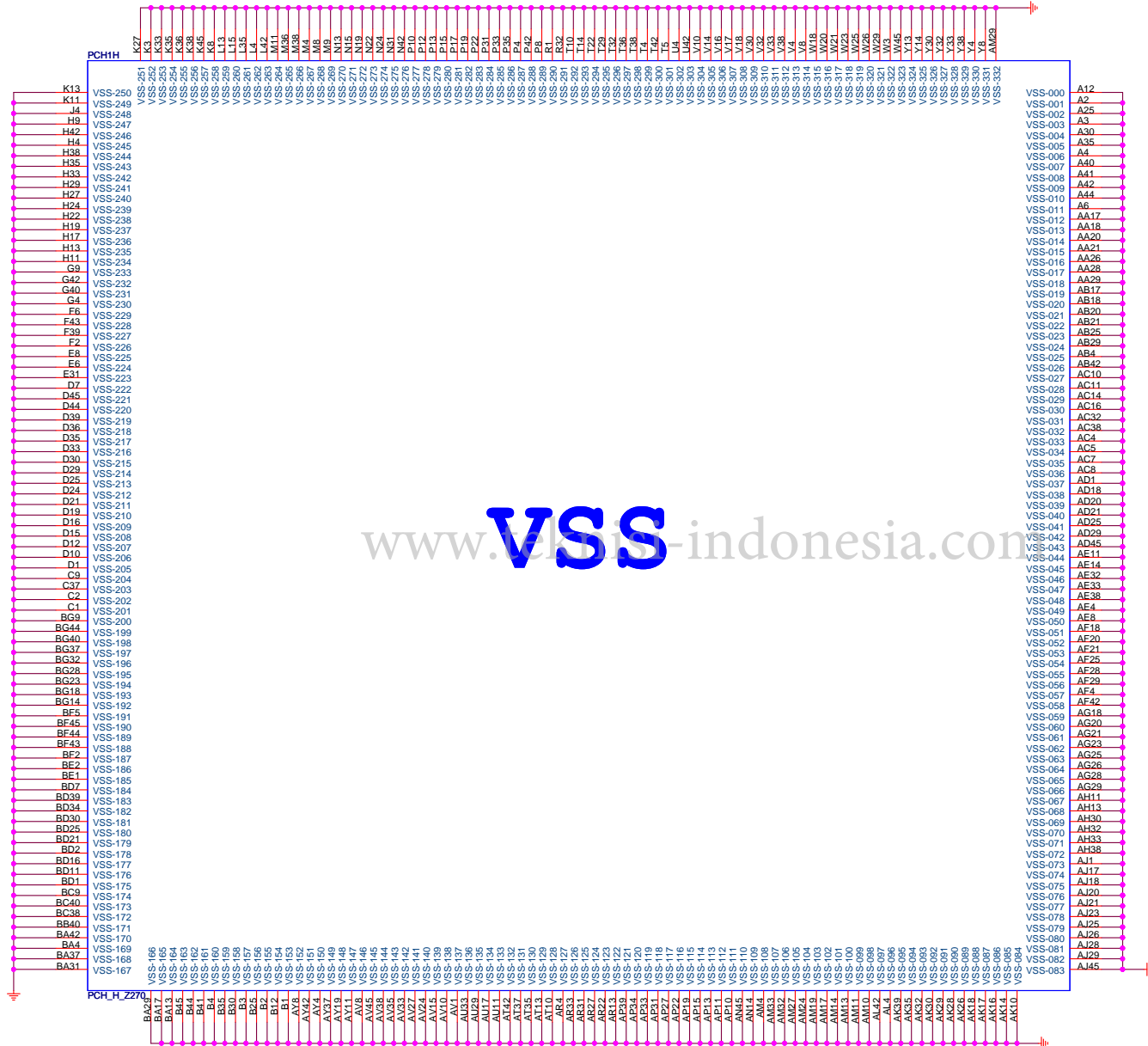
www.teknisi-indonesia.com








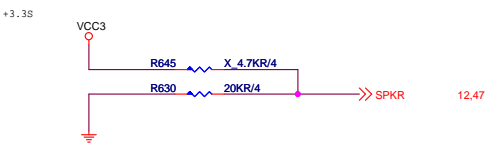




B01-82Z2705-I06

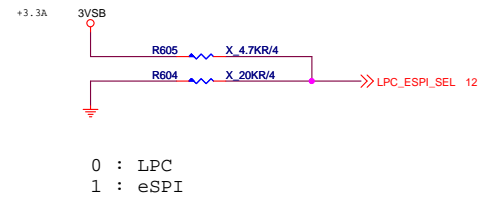
			MICRO-STAR INT'L CO.,LTD	
			MS-7A75	
Size	Document Description			Rev
Custom	PCH-GND			1.0
Date: Tuesday, November 15, 2016		Sheet 17 of 65		

TOP Swap



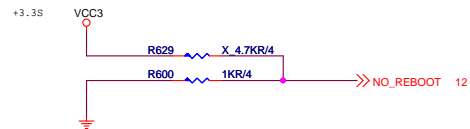
Internal pull-down is disabled after PLTRST#

LPC eSPI Mode



Internal pull-down is disabled after RSMRST

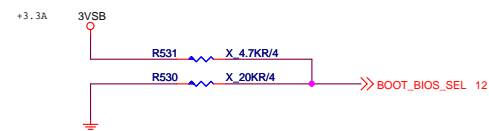
No Reboot



0 : DISABLE (Default)
1 : ENABLE

Internal pull-down is disabled after PLTRST#

Boot BIOS

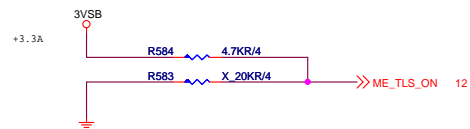


0 : SPI
1 : LPC

Internal pull-down is disabled after PLTRST

www.teknisi-indonesia.com

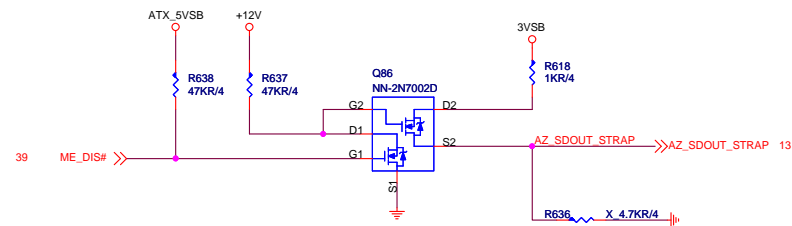
AMT and SBA with confidentiality



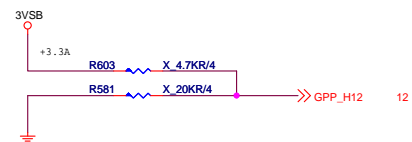
0 : DISABLE
1 : ENABLE (Default)

Internal pull-down is disabled after RSMRST

HDA_SDO



ESPI FLASH SHARING MODE



0 : MASTER ATTACHED FLASH SHARING
1 : SLAVE ATTACHED FLASH SHARING

Internal pull-down is disabled after RSMRST

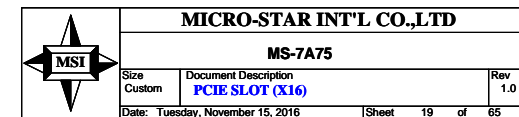


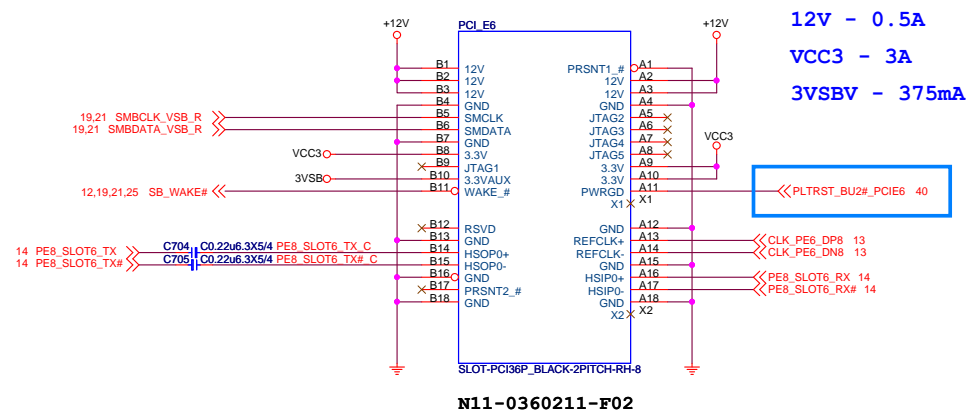
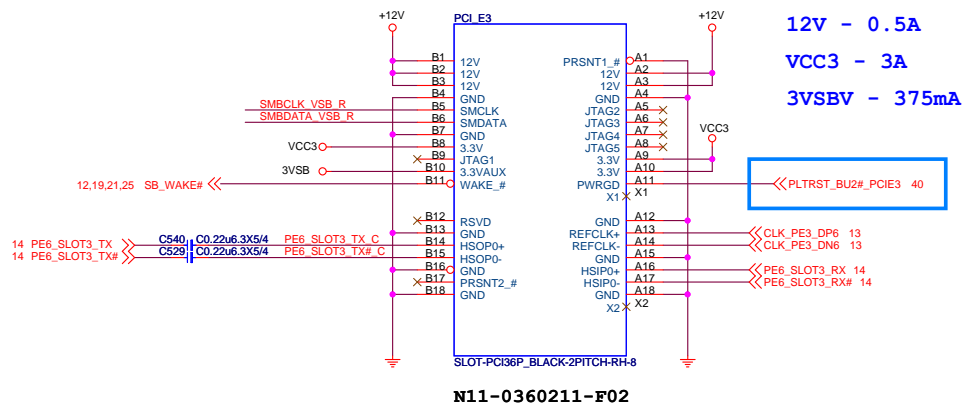
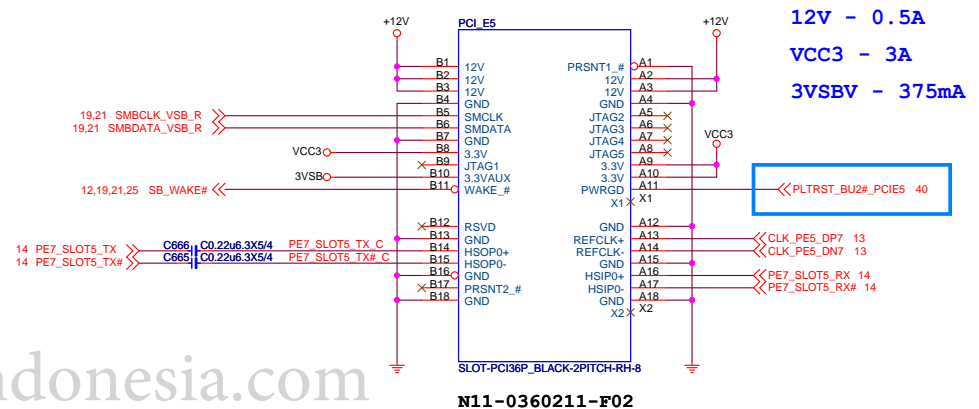
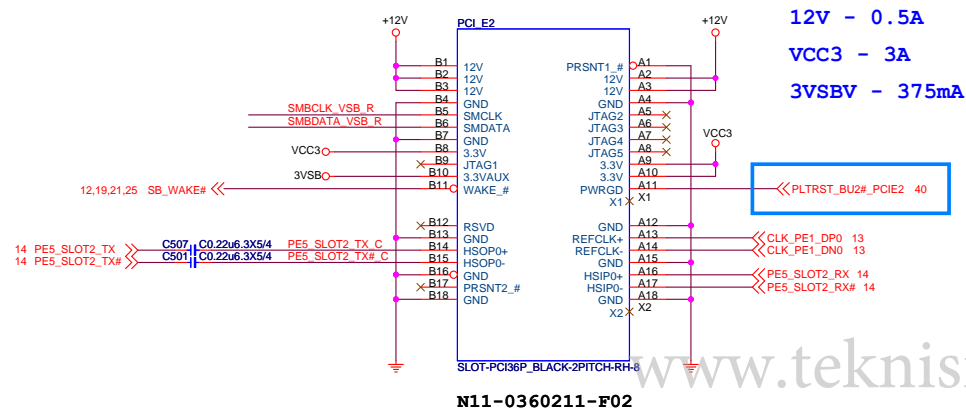
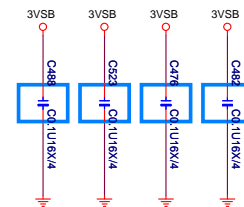
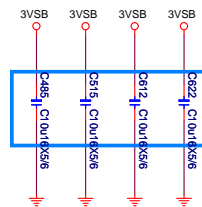
MICRO-STAR INT'L CO.,LTD

MS-7A75

Size Custom	Document Description PCH-Strap	Rev 1.0
Date: Tuesday, November 15, 2016	Sheet 18 of 65	

3VSBV - 375mA





MICRO-STAR INT'L CO.,LTD

MS-7A75

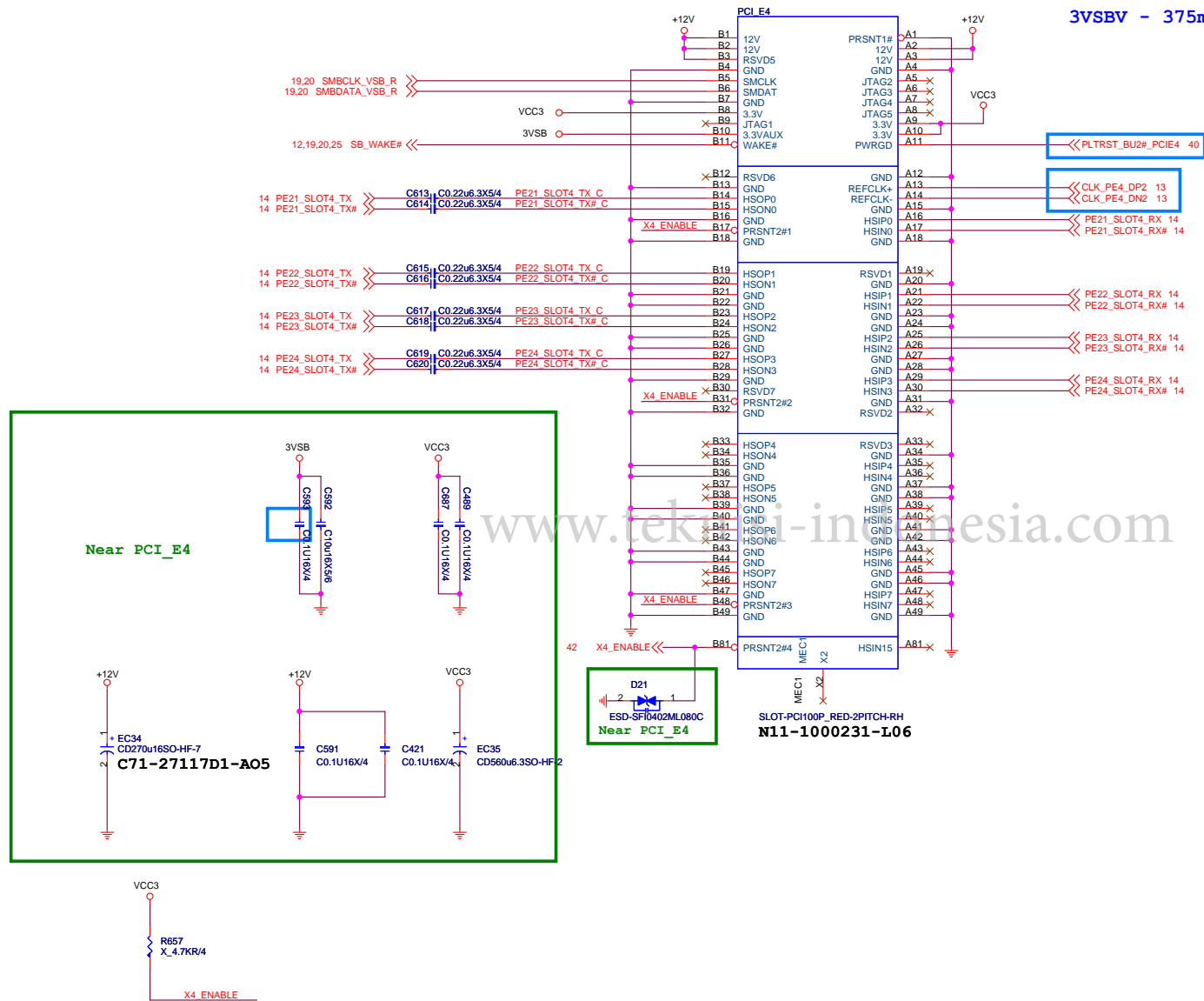
Size	Document Description	Rev
Custom	PCIE SLOT (X1)	1.0
Date:	Tuesday, November 15, 2016	Sheet 20 of 65

PCI Express X4 Slot

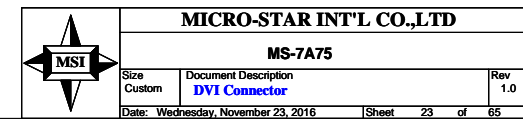
12V - 2.1A

VCC3 - 3A

3VSBV - 375mA



Check MSI PN
N58-39F0231-K06



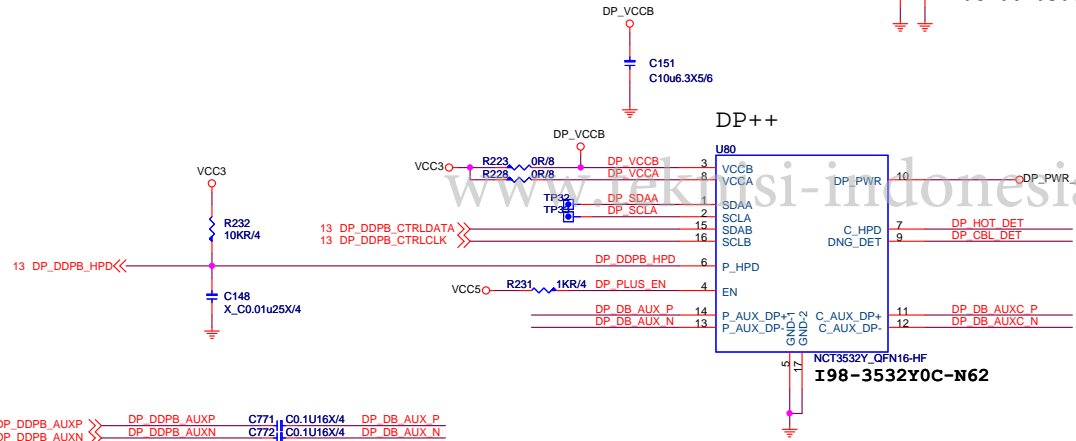
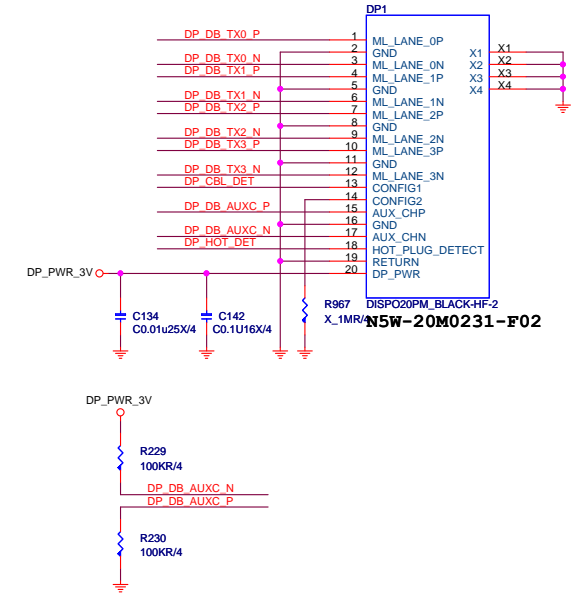
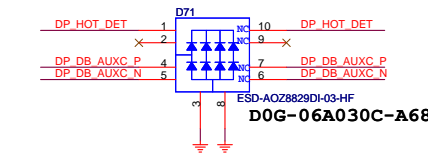
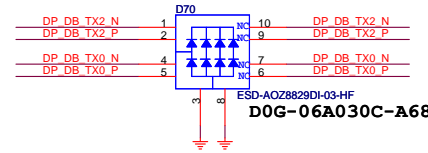
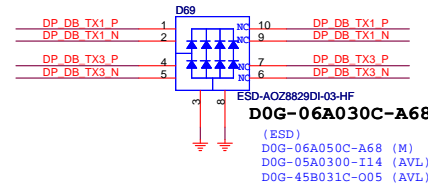
DISPLAY PORT : 1920x1200 at 60 Hz (16:10 WUXGA)

5 DP_DDPB_TX2_P >> DP_DDPB_TX2_P C169 C0.1U16X/4 DP_DB_TX2_P
5 DP_DDPB_TX2_N >> DP_DDPB_TX2_N C163 C0.1U16X/4 DP_DB_TX2_N

5 DP_DDPB_TX1_P >> DP_DDPB_TX1_P C170 C0.1U16X/4 DP_DB_TX1_P
5 DP_DDPB_TX1_N >> DP_DDPB_TX1_N C171 C0.1U16X/4 DP_DB_TX1_N

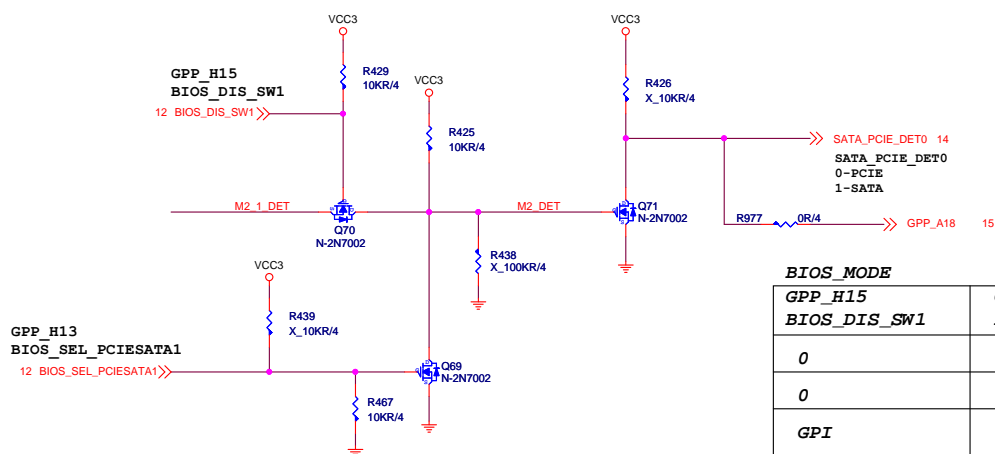
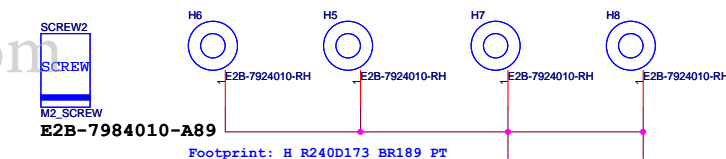
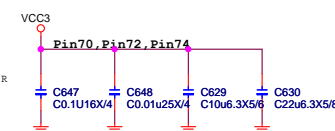
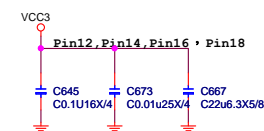
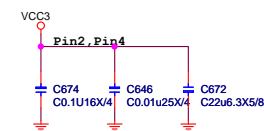
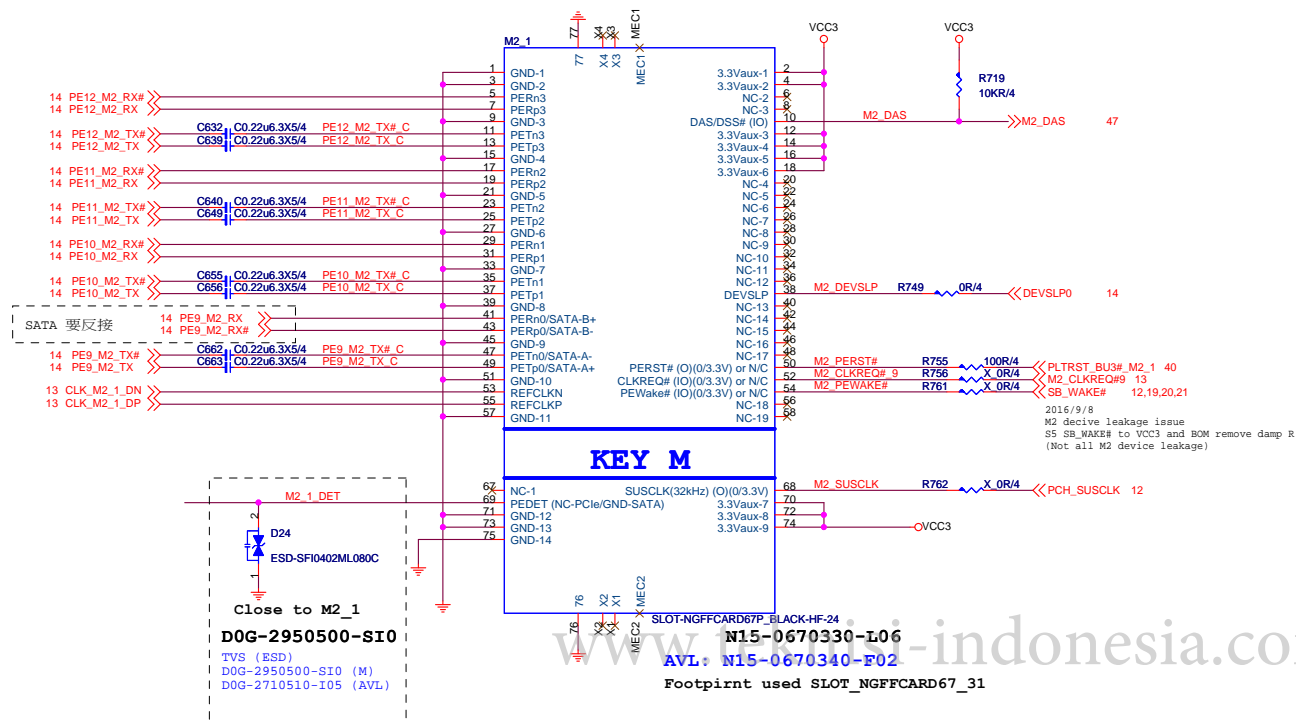
5 DP_DDPB_TX0_P >> DP_DDPB_TX0_P C162 C0.1U16X/4 DP_DB_TX0_P
5 DP_DDPB_TX0_N >> DP_DDPB_TX0_N C159 C0.1U16X/4 DP_DB_TX0_N

5 DP_DDPB_TX3_P >> DP_DDPB_TX3_P C178 C0.1U16X/4 DP_DB_TX3_P
5 DP_DDPB_TX3_N >> DP_DDPB_TX3_N C179 C0.1U16X/4 DP_DB_TX3_N

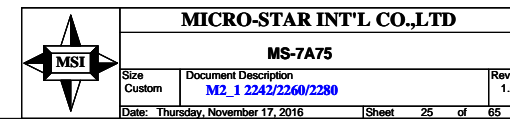
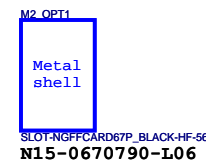


5 DP_DDPB_AUXP >> DP_DDPB_AUXP C771 C0.1U16X/4 DP_DB_AUX_P
5 DP_DDPB_AUXN >> DP_DDPB_AUXN C772 C0.1U16X/4 DP_DB_AUX_N


M2_1 2242/2260/2280/22110
(PCIeX4 mode and SATA mode)

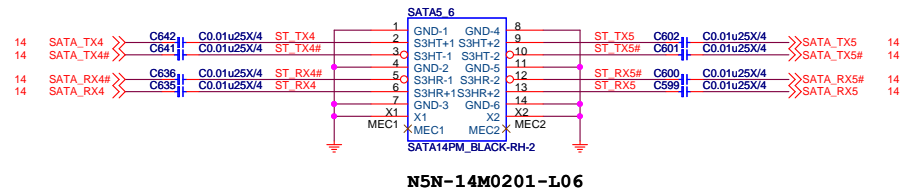
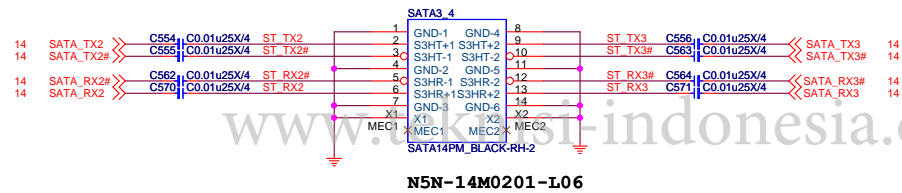
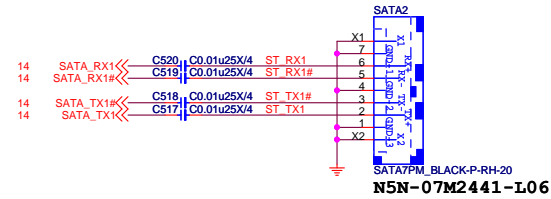
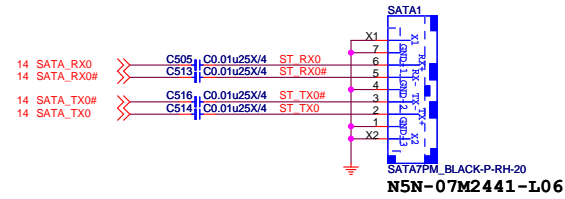


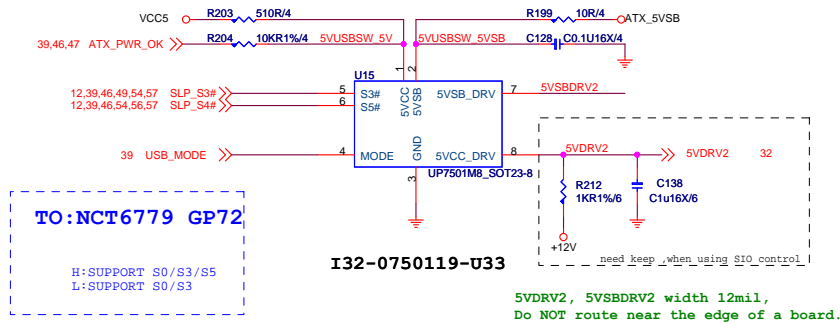
BIOS_MODE		
GPP_H15 BIOS_DIS_SW1	GPP_H13 BIOS_SEL_PCIESATA1	
0	1	M2-SATA
0	0	M2-PCIE X4
GPI	GPI	AUTO



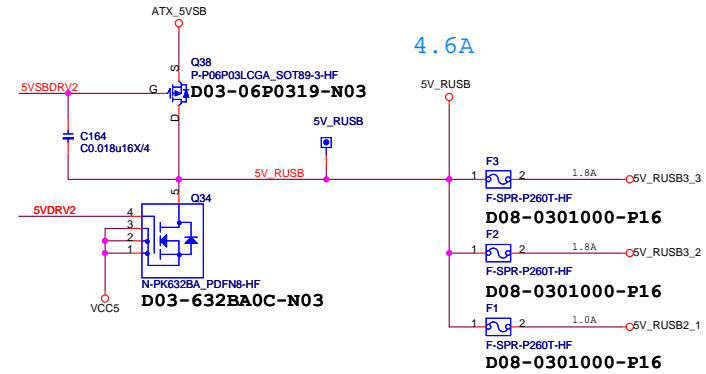
www.teknisi-indonesia.com

	MICRO-STAR INT'L CO.,LTD	
	MS-7A75	
Size Custom	Document Description NA	Rev 1.0
Date: Tuesday, November 15, 2016		Sheet 26 of 65

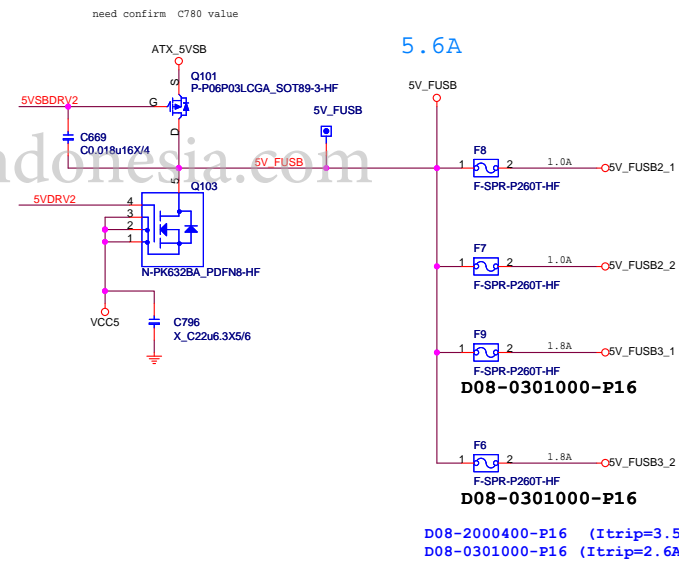




REAR USB PORT POWER



FRONT USB PORT POWER



P-MOS
D03-06P0319-N03

N-MOS
D03-510BA0C-N03
D03-3056M00-U47
D03-4C05N03-O05
D03-3830D09-N47
D03-632BA0C-N03



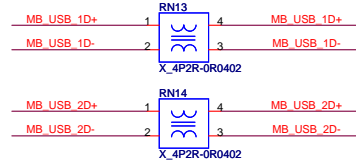
MICRO-STAR INT'L CO.,LTD

MS-7A75

Size	Document Description	Rev
Custom	USB POWER-MP1495/UP7501	1.0
Date:	Tuesday, November 15, 2016	Sheet 28 of 65

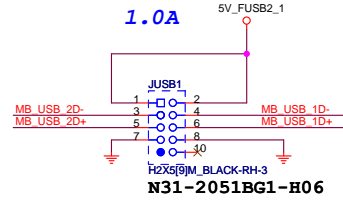
FRONT USB2.0 PORT 1,2

ComChoke co-lay 4P2R-0R0402
Footprint: FILTER_S4_RN4P2R_COLAY
Default ComChoke: L12-9008080-P01
4P2R-0R0402: R3C-0000012-W08

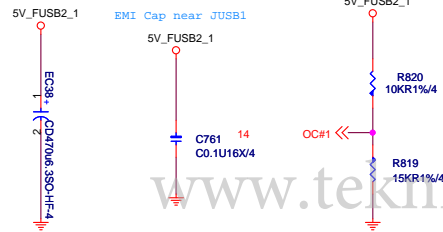


ESD-AOZ8906CI-HF
D0G-05A0529-A68
AVL: D0G-45B0510-I14

C71-47106K1-AO5

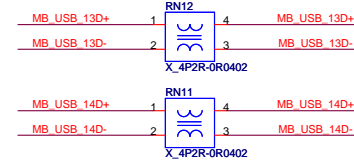


H2X5[9]M_BLACK-RH-3
N31-2051BG1-H06



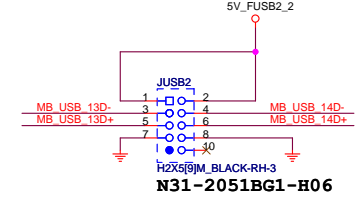
FRONT USB2.0 PORT 13,14 (Z270 only)

ComChoke co-lay 4P2R-0R0402
Footprint: FILTER_S4_RN4P2R_COLAY
Default ComChoke: L12-9008080-P01
4P2R-0R0402: R3C-0000012-W08

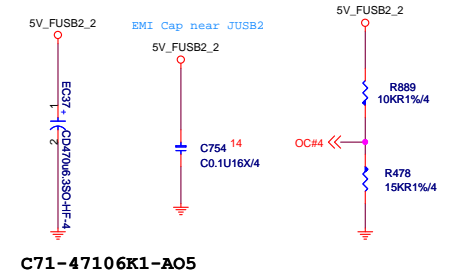


ESD-AOZ8906CI-HF
D0G-05A0529-A68
AVL: D0G-45B0510-I14

1.0A



H2X5[9]M_BLACK-RH-3
N31-2051BG1-H06



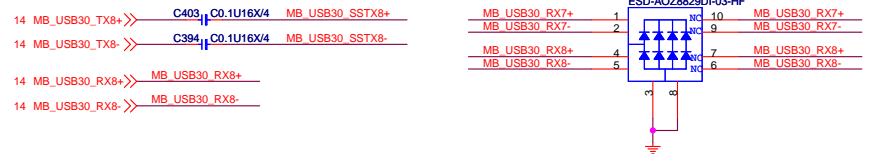
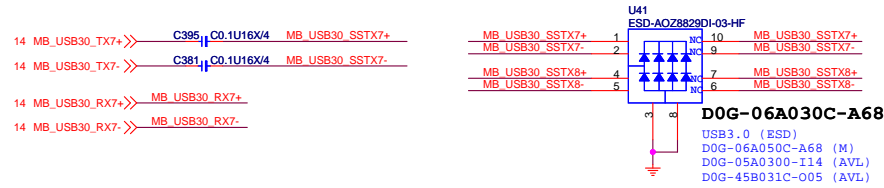
C71-47106K1-AO5



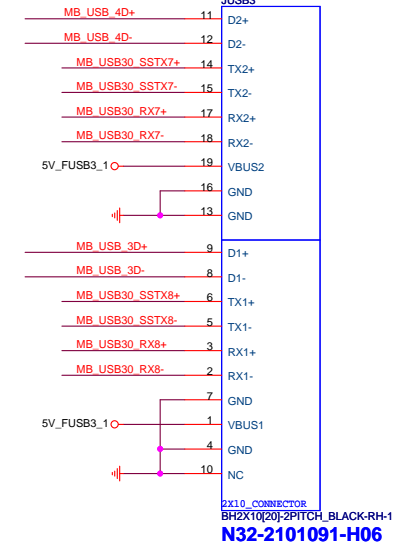
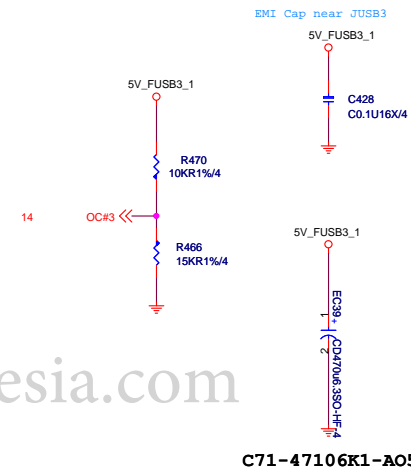
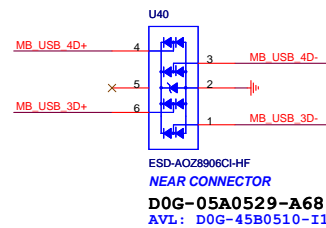
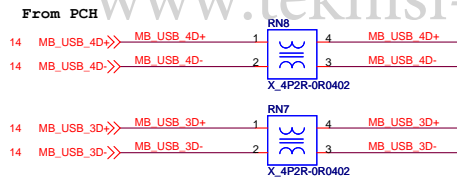
MICRO-STAR INT'L CO.,LTD

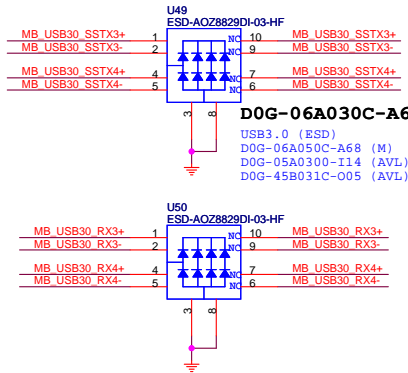
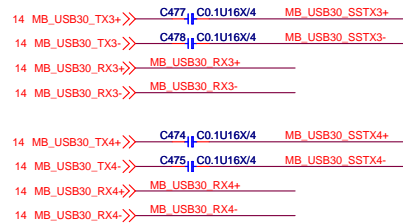
MS-7A75

Size	Document Description	Rev
Custom	Front USB2	1.0
Date: Tuesday, November 15, 2016	Sheet 29 of 65	

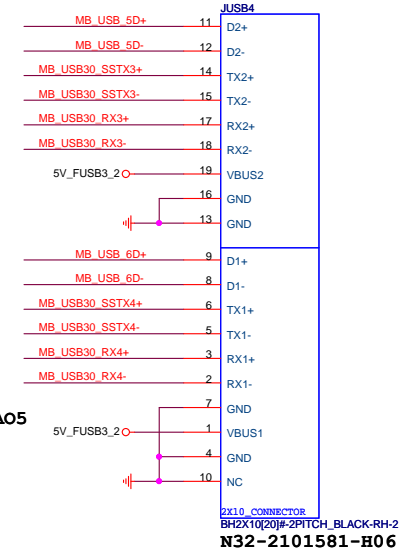
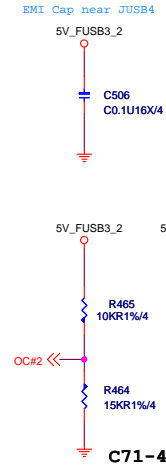
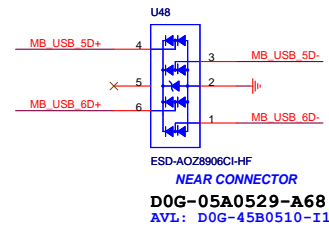
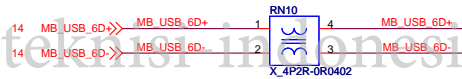
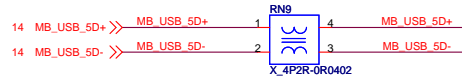


ComChoke co-lay 4P2R-0R0402
 Footprint: FILTER_S4_RN4P2R_COLAY
 Defaule ComChoke: L12-9008080-P01
 4P2R-0R0402: R3C-0000012-W08



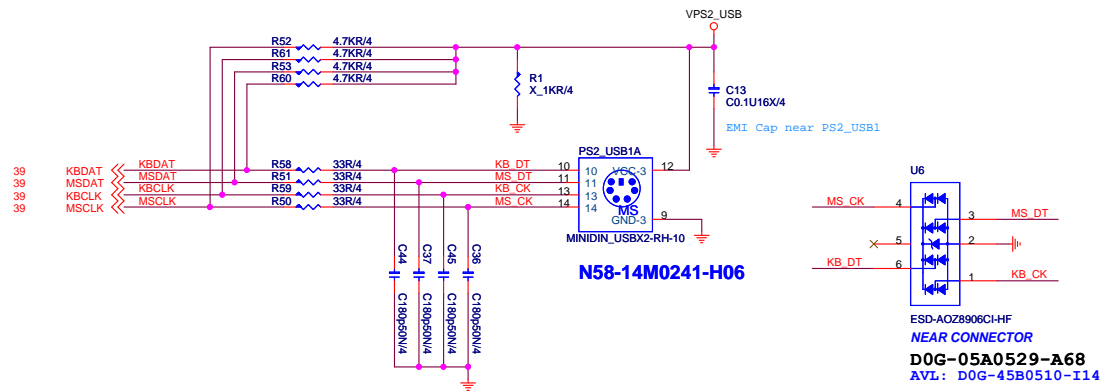


ComChoke co-lay 4P2R-0R0402
 Footprint: FILTER_S4_RN4P2R_COLAY
 Defaule ComChoke: L12-9008080-P01
 4P2R-0R0402: R3C-0000012-W08

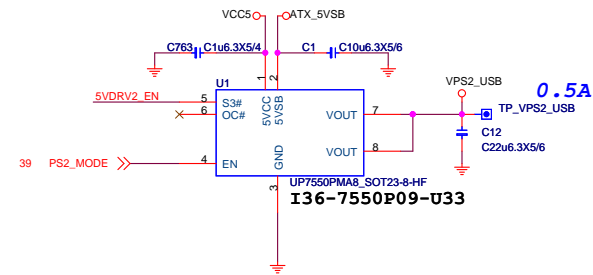


www.teknisi-indonesia.com

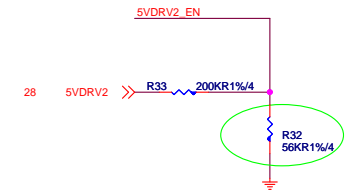
PS2 KEYBOARD & MOUSE CONNECTOR



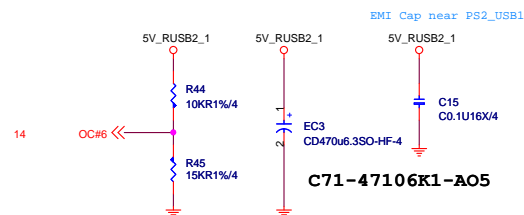
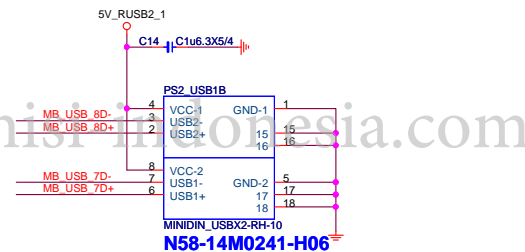
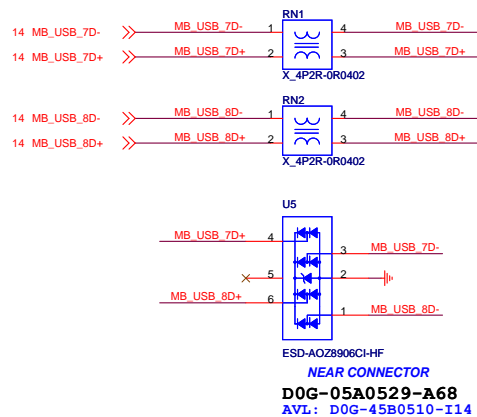
PS2 Power



USB MODE



ComChoke co-lay 4P2R-0R0402
Footprint: FILTER_S4_RN4P2R_COLAY
Defaule ComChoke: L12-9008080-P01
4P2R-0R0402: R3C-0000012-W08



MICRO-STAR INT'L CO.,LTD

MS-7A75

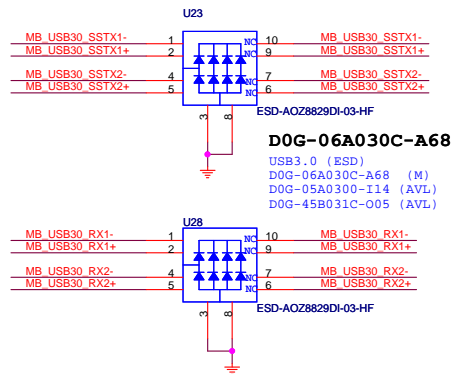
Size	Document Description	Rev
Custom	Rear PS2_USB1	1.0
Date: Tuesday, November 22, 2016	Sheet 32 of 65	

14 MB_USB30_TX1+ >>> C187 C0.1U16X/4 MB_USB30_SSTX1+
14 MB_USB30_TX1- >>> C188 C0.1U16X/4 MB_USB30_SSTX1-

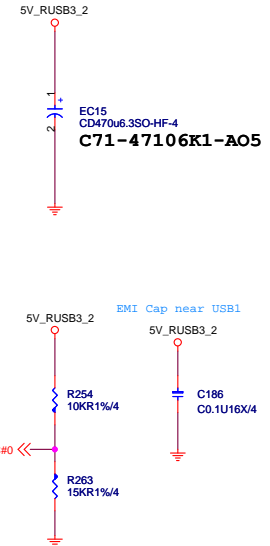
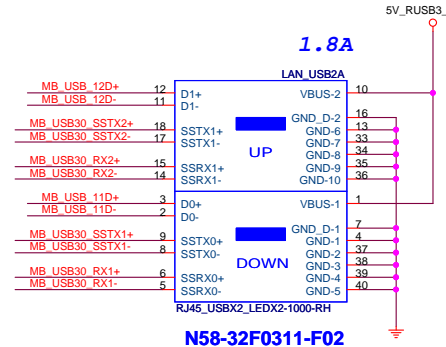
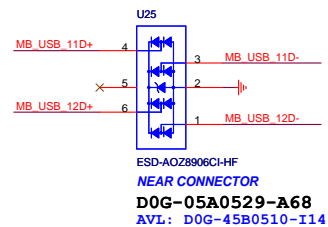
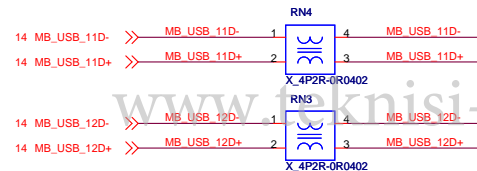
14 MB_USB30_RX1+ >>> MB_USB30_RX1+
14 MB_USB30_RX1- >>> MB_USB30_RX1-

14 MB_USB30_TX2+ >>> C203 C0.1U16X/4 MB_USB30_SSTX2+
14 MB_USB30_TX2- >>> C204 C0.1U16X/4 MB_USB30_SSTX2-

14 MB_USB30_RX2+ >>> MB_USB30_RX2+
14 MB_USB30_RX2- >>> MB_USB30_RX2-




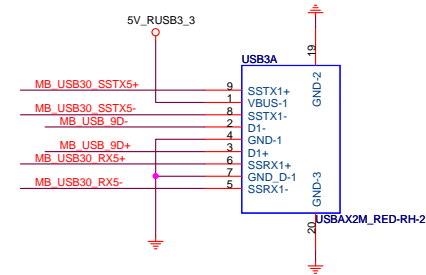
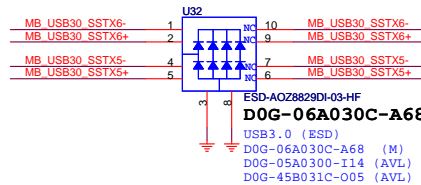
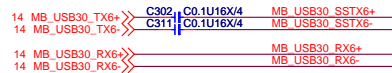
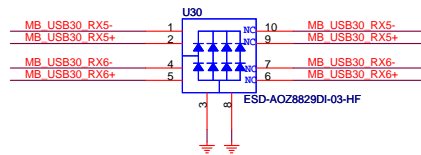
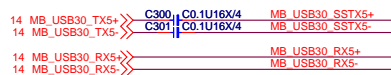
ComChoke co-lay 4P2R-0R0402
Footprint: FILTER_S4_RN4P2R_COLAY
Defaule ComChoke: L12-9008080-P01
4P2R-0R0402: R3C-0000012-W08



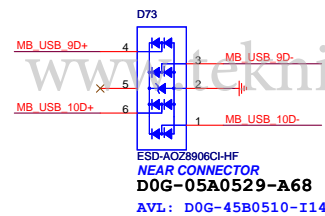
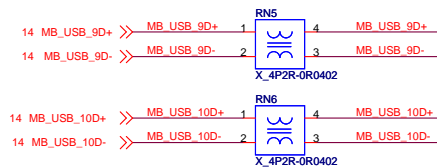
www.teknisi-indonesia.com

www.teknisi-indonesia.com

	MICRO-STAR INT'L CO.,LTD		
	MS-7A75		
Size Custom	Document Description NA		Rev 1.0
Date: Tuesday, November 15, 2016		Sheet 34 of	65

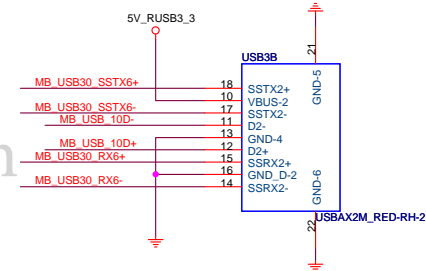
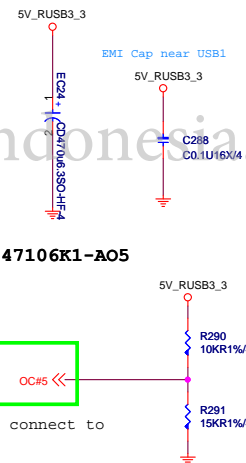


N53-18M0201-L06



C71-47106K1-A05

OC# signal connect to SB OC pin.



N53-18M0201-L06

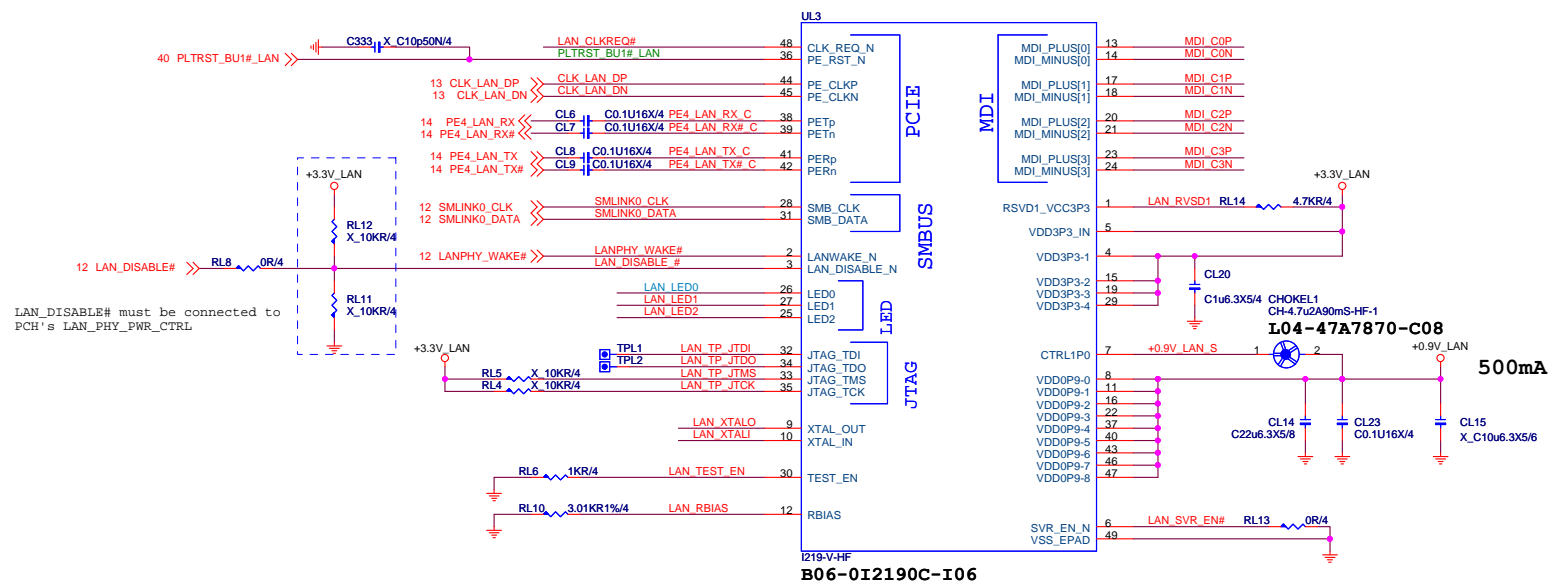


MICRO-STAR INT'L CO.,LTD

MS-7A75

Size	Document Description	Rev
Custom	USB3.1 TYPE A CON	1.0
Date:	Tuesday, November 22, 2016	Sheet 35 of 65

Intel Lan- I219V



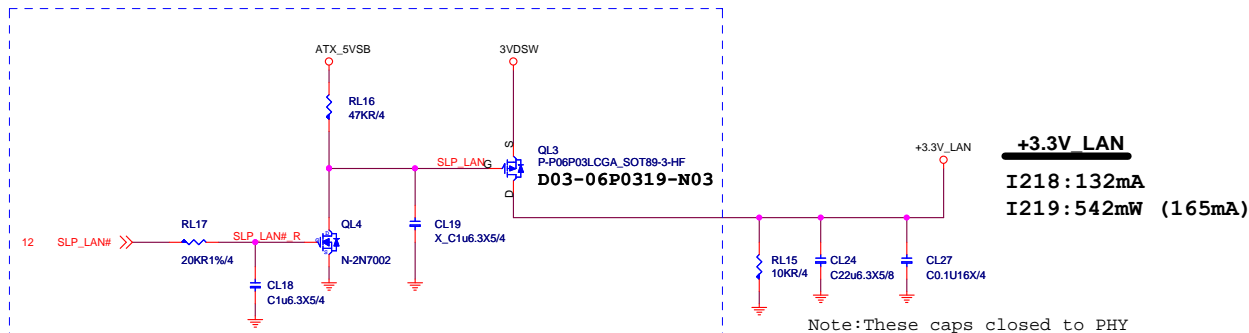
Pull-up resistor RL9 required to either 3.3V suspend or core rail depending on the power well of the PCH input CLKREQ# buffer.



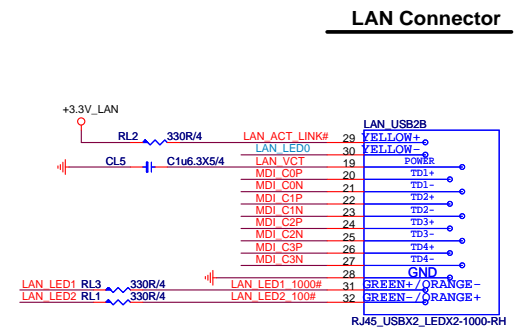
The 10Kohm pull-up resistor (RL18) of CLK_REQ_N is connected to 3.3V Suspend/Core/etc. power well, depending on the power well of PCH's input PCIECLKRQ<n> buffer.

support WOL from Deep Sx:

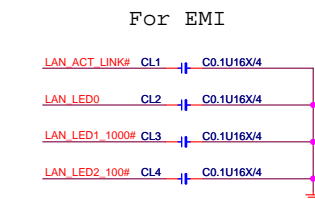
Power source from 3VA (DSW power) & make sure MAX current is enough to support i218/i219.



Note: These caps closed to PHY

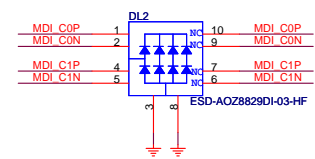


N58-32F0311-F02

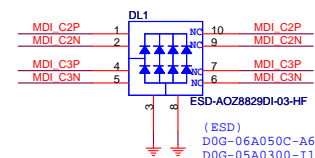


For EMI

close to connector



D0G-06A030C-A68



(ESD)
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
D0G-45B031C-005 AVL

```
| Do not pair MDI0 and MDI1 on the same TVSdevice |
| (avoid LAN POE connecting issue).             |
| Otherpairing combination is ok.                |
```

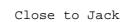
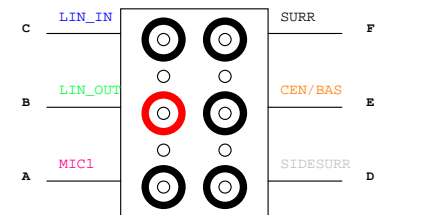
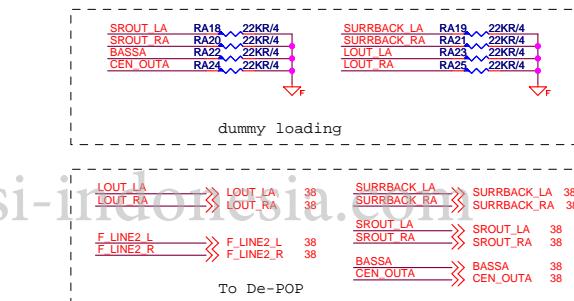
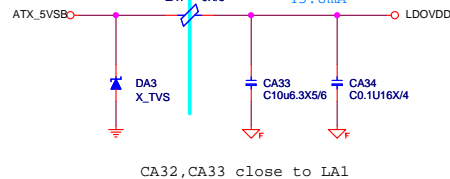
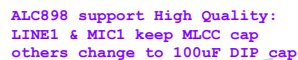


MICRO-STAR INT'L CO.,LTD

MS-7A75

Size Custom	Document Description LAN INTEL I219V	Rev 1.0
Date: Wednesday, November 23, 2016		Sheet 36 of 65

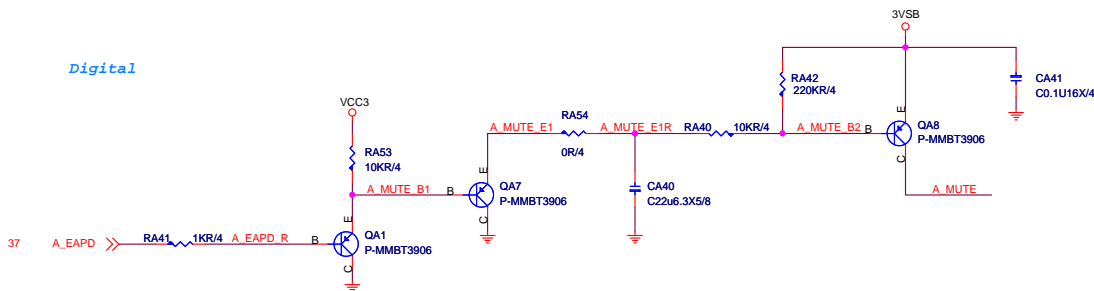
CA2 close to Pin25
CA4 close to Pin38
CA39 close to Pin38

10

Rear Line OUT De-POP circuit

(De-pop circuit for Rear Line out & Front Headphone out)

Digital



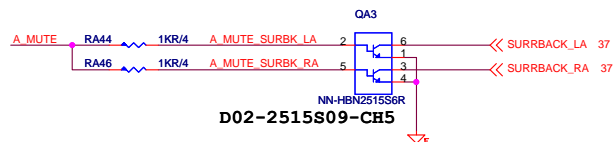
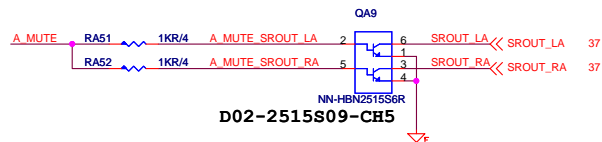
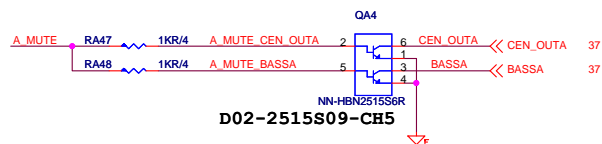
Analog



www.teknisi-indonesia.com

(add de-pop circuit by PM spec or customer request,

NOTE: add de-pop circuit need to change CA5,CA11, CA12, CA13, CA21, CA22 to TVS)



History:

2014/02/13: stuff de-pop circuit of Line out & HP out.

2014/09/11:

RNA1 change to

RA55/RA56/RA58/RA57

RNA2 change to

RA59/RA60/RA61/RA62

2015/11/09:

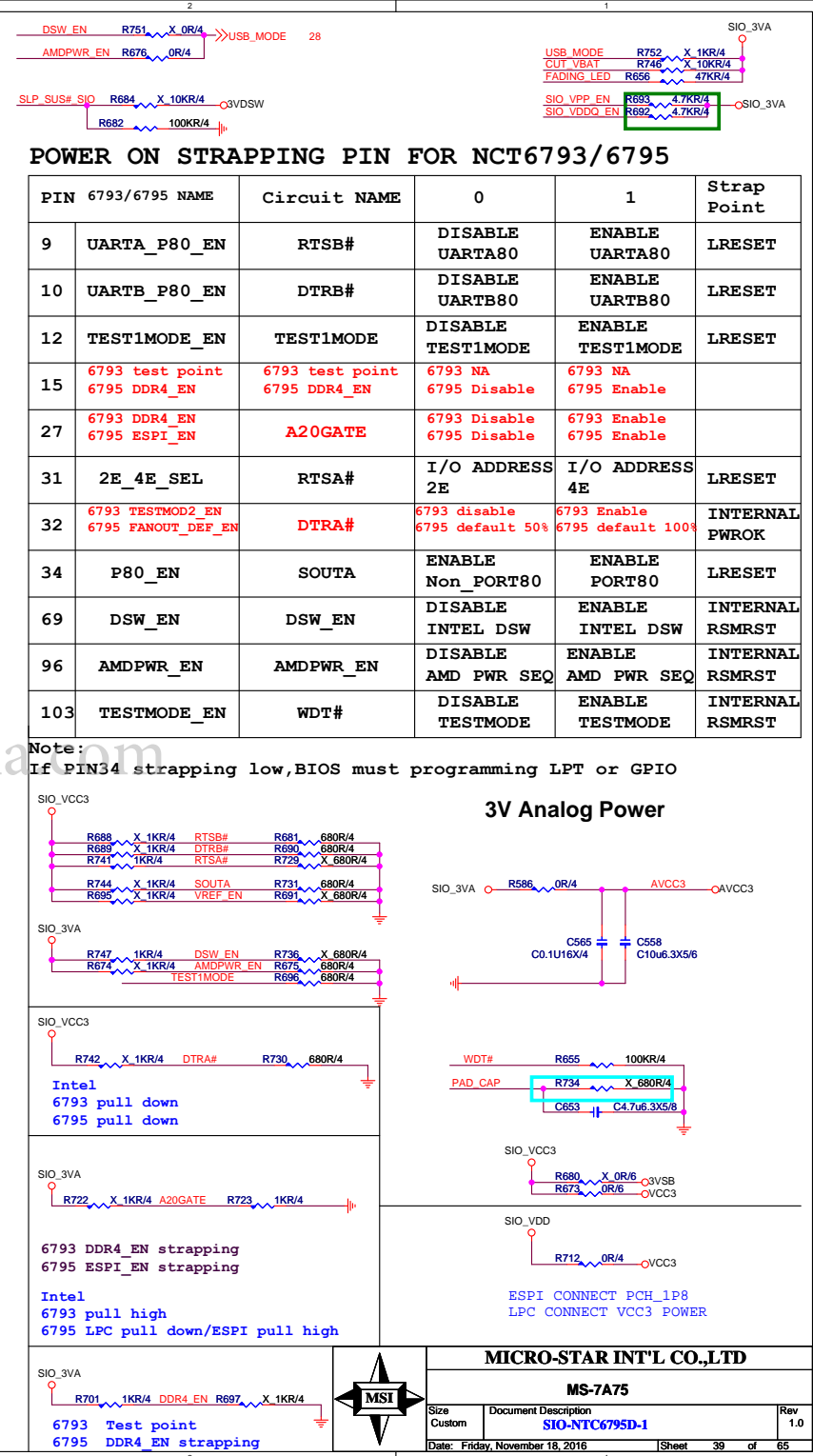
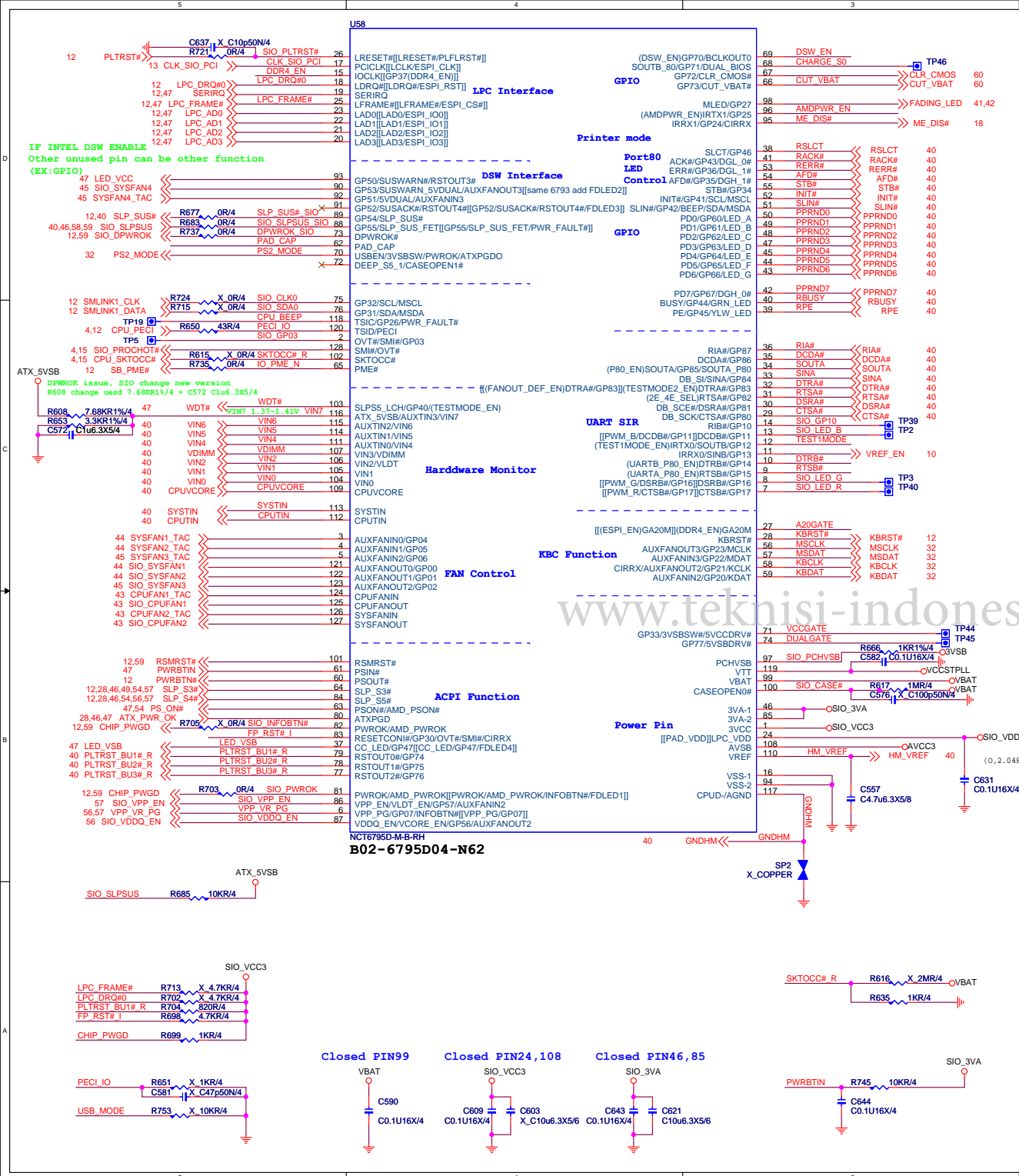
esd p/n m:D0G-2710510-I05;avl:D0G-2950500-SI0



MICRO-STAR INT'L CO.,LTD

MS-7A75

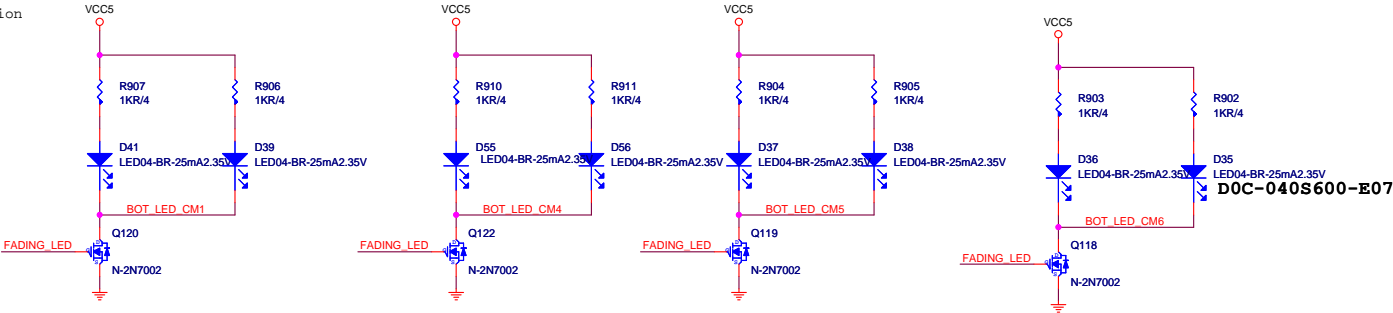
Size	Document Description	Rev
Custom	AUDIO ALC892 De-POP	1.0
Date: Friday, November 18, 2016	Sheet 38 of 65	



BOTTOM LED

PCB bottom side Screw holes
LED White : D0C-040T300-H91 * 8pcs

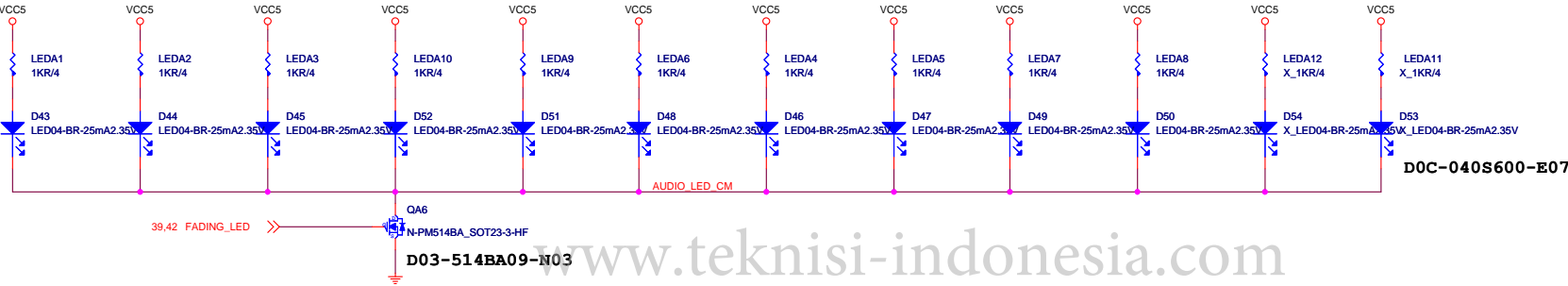
2016.08. 22 Remove Bottom LED function



AUDIO LED

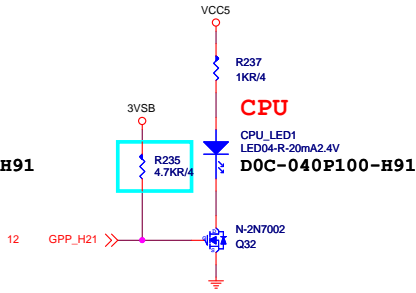
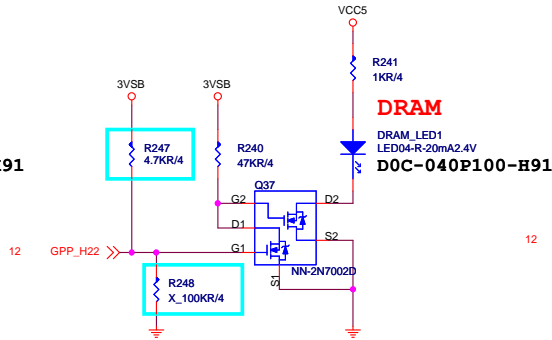
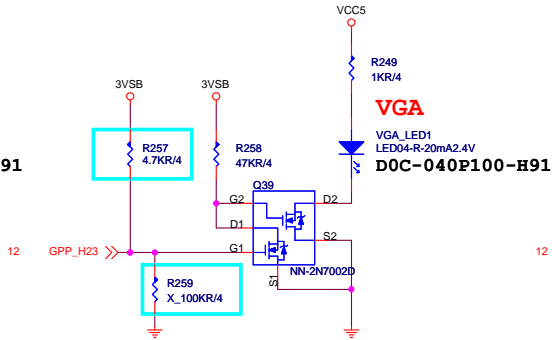
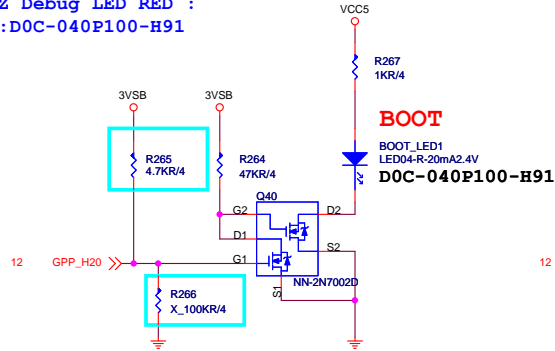
Audio Moat Line LED Red :
LED RED : D0C-040S600-E07 * 12pcs

Audio moat is transparent and width 40mil

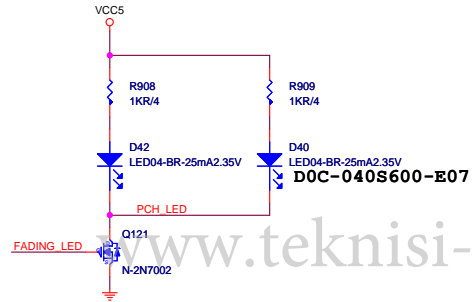


EZ Debug

EZ Debug LED RED :
M:D0C-040P100-H91



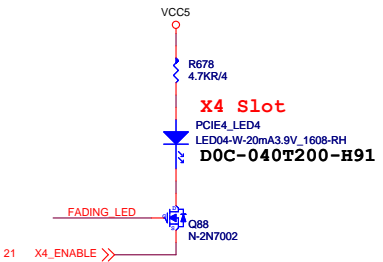
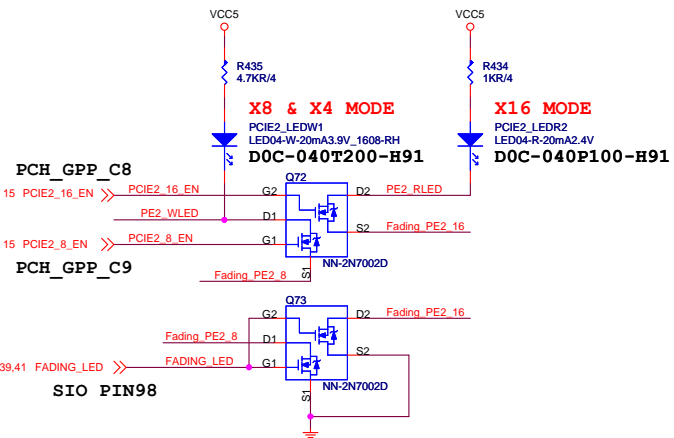
PCH_LED



PCIE PCIE SLOT LED

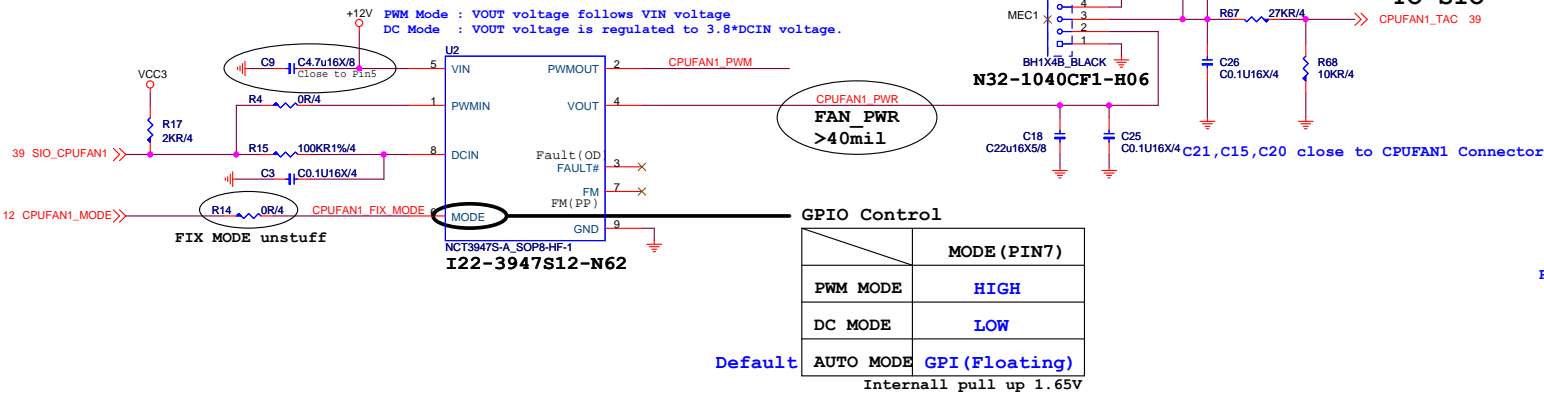
PCIE SLOT LED 命名請以PCIE_LEDn n為數字
PCIE x16 紅 : M:D0C-040P100-H91 / S:D0C-040S500-E07
PCIE x4 白 : D0C-040T200-H91 / S:D0C-040S200-E07
PCIE x1 白 : D0C-040T200-H91 / S:D0C-040S200-E07

GPIO LED	GPP_C8	GPP_C9
亮	GPO PO HIGH	GPO PO HIGH
滅	GPI (default LOW)	GPI (default LOW)

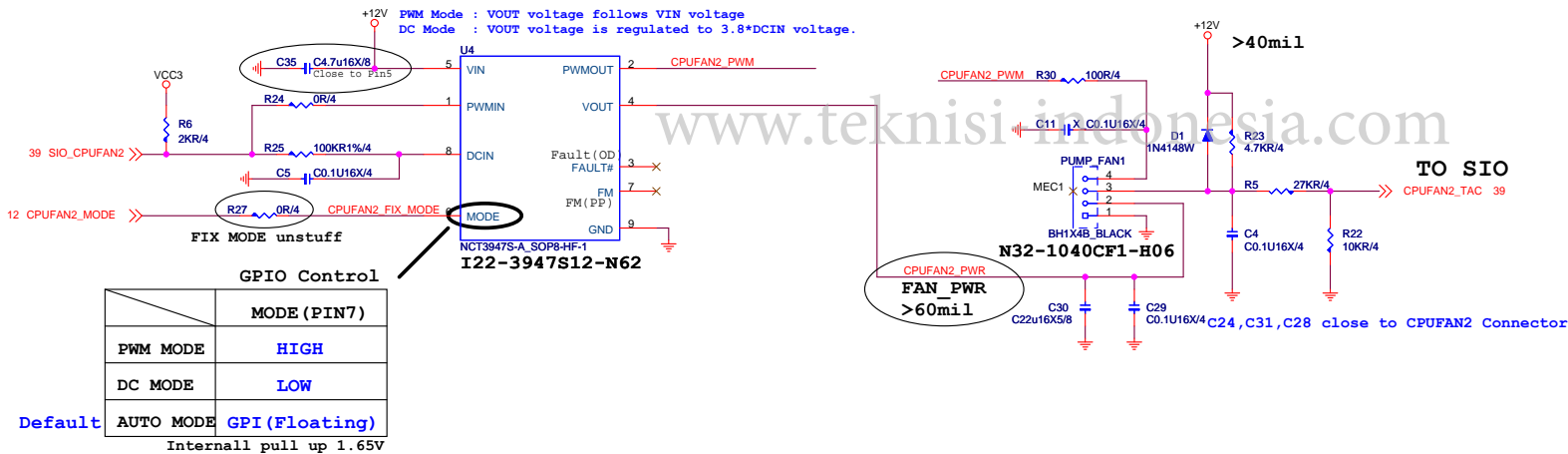


TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

- 1. PWM/DC/OCF LED (現在是改成R/G/B3色LED)
- 2. GPIO可以由BIOS切換 PWM/DC MODE
- 3. OCP拉回GPIO給BIOS認
- 4. PWM OR DC FAN拉回GPIO給BIOS認
- 5. FAN轉速加快的時候由SOFTWARE 控制GPIO讓燈的變化

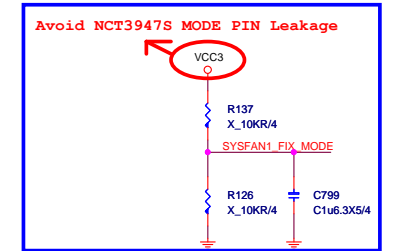
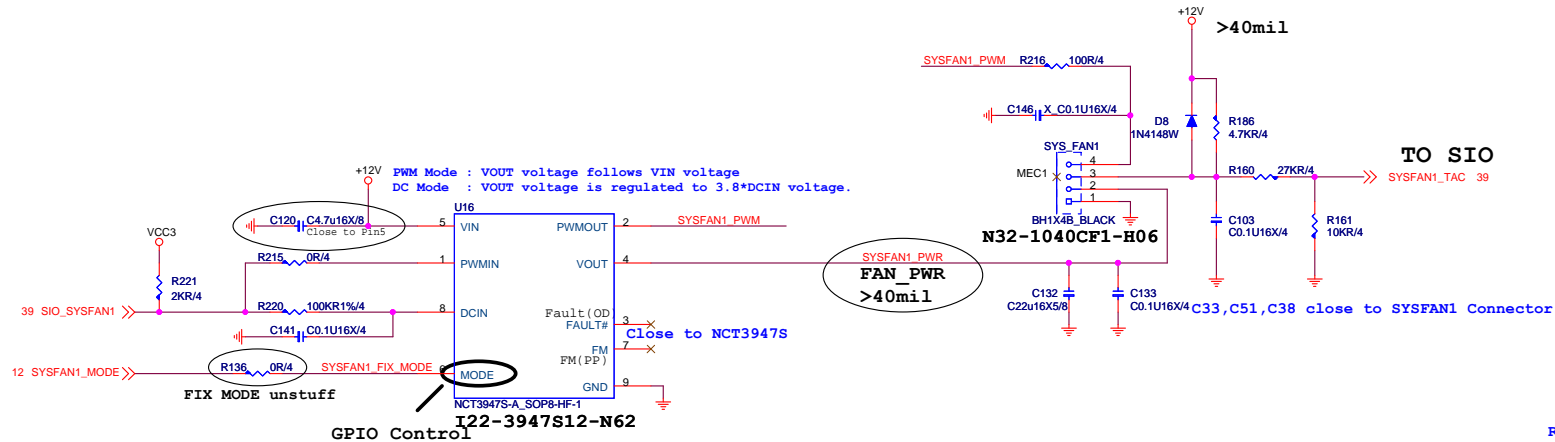


TYPEK : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE (2A pump FAN)



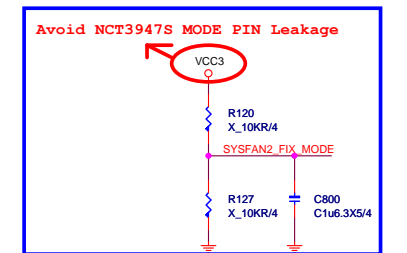
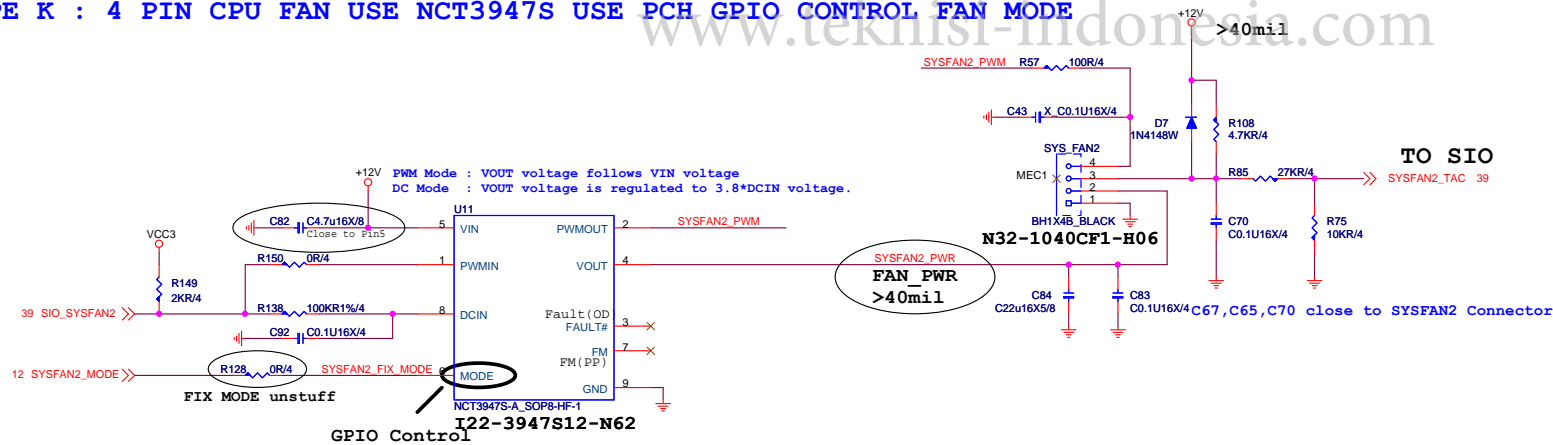
- 1. MODE : USE MODE PIN change FAN MODE (PWM or DC FAN)
- 2. FAULT : USE FAULT PIN Triger OVT/OCF Protection, LOW Atcive (Reserve NEW IC)
- 3. FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information (Reserve NEW IC)

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



Resever For FIX DC or PWM MODE USE By PM SPEC

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



Resever For FIX DC or PWM MODE USE By PM SPEC

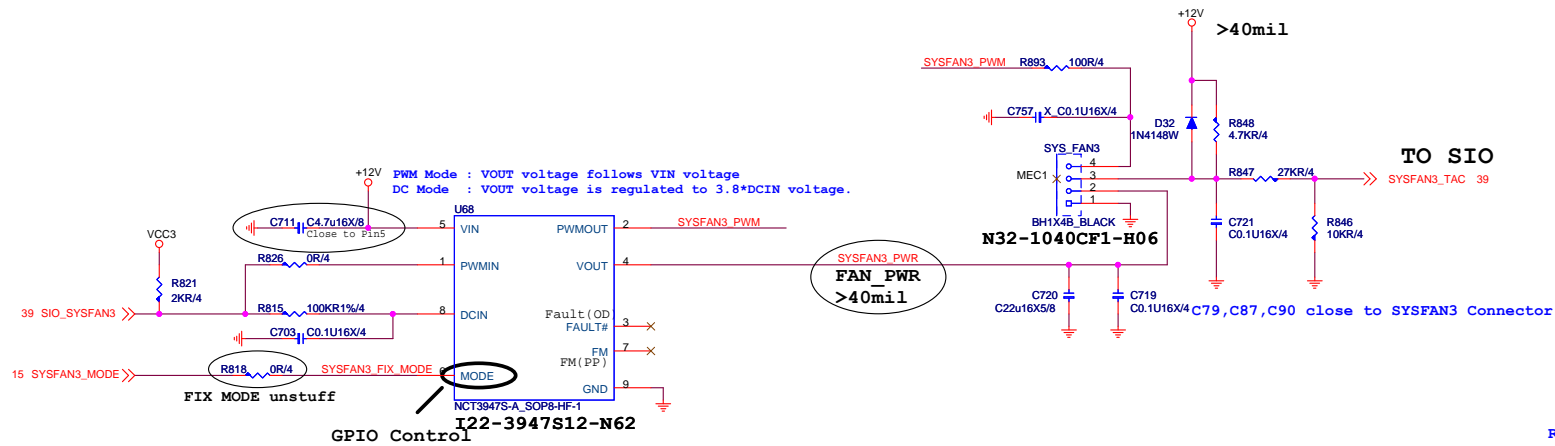


MICRO-STAR INT'L CO.,LTD

MS-7A75

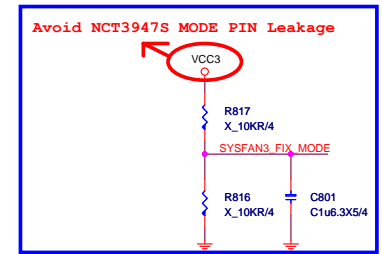
Size	Document Description	Rev
Custom	SYSTEM FAN 1/2	1.0
Date:	Tuesday, November 15, 2016	Sheet 44 of 65

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



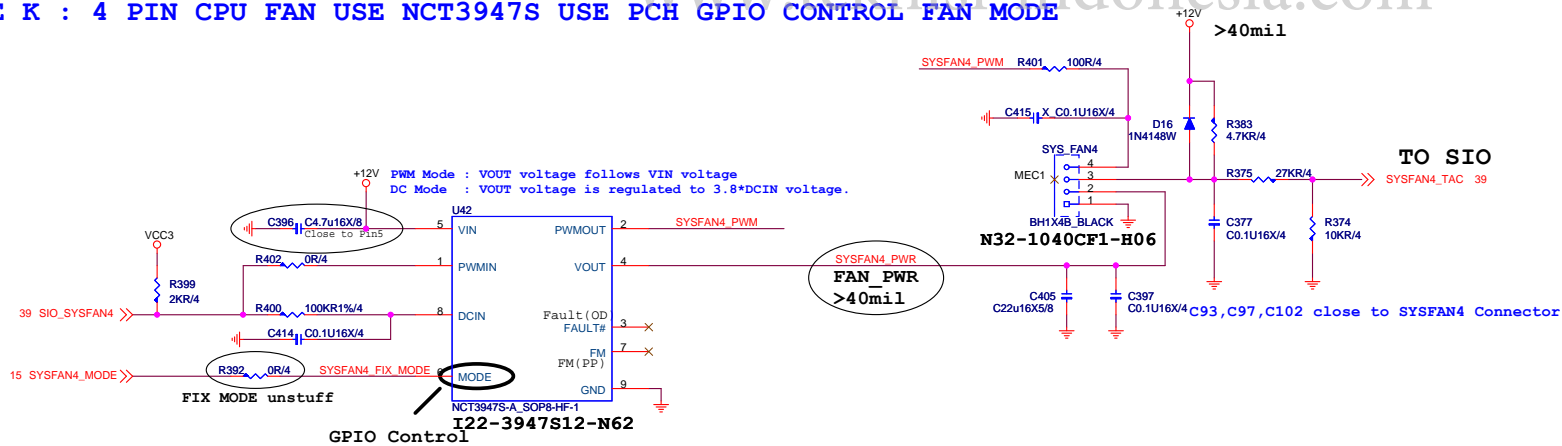
	MODE (PIN7)
PWM MODE	HIGH
DC MODE	LOW
Default AUTO MODE	GPI (Floating)

Internall pull up 1.65V



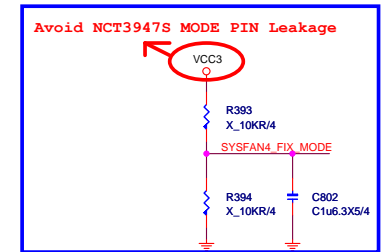
Resever For FIX DC or PWM MODE USE By PM SPEC

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



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

Internall pull up 1.65V

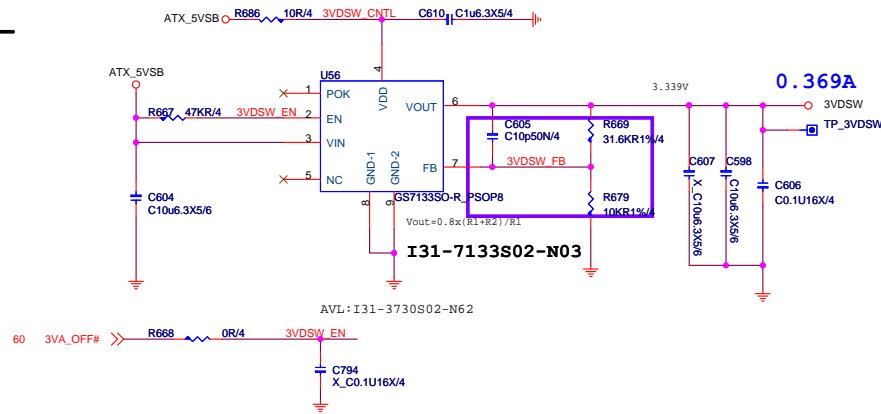


Resever For FIX DC or PWM MODE USE By PM SPEC



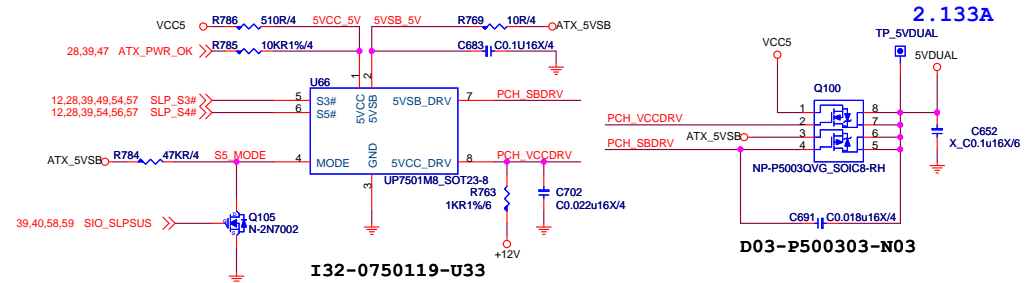
MICRO-STAR INT'L CO.,LTD			
MS-7A75			
Size	Document Description	Rev	
Custom	SYSTEM FAN 3/4	1.0	
Date:	Tuesday, November 15, 2016	Sheet	45 of 65

3VDSW

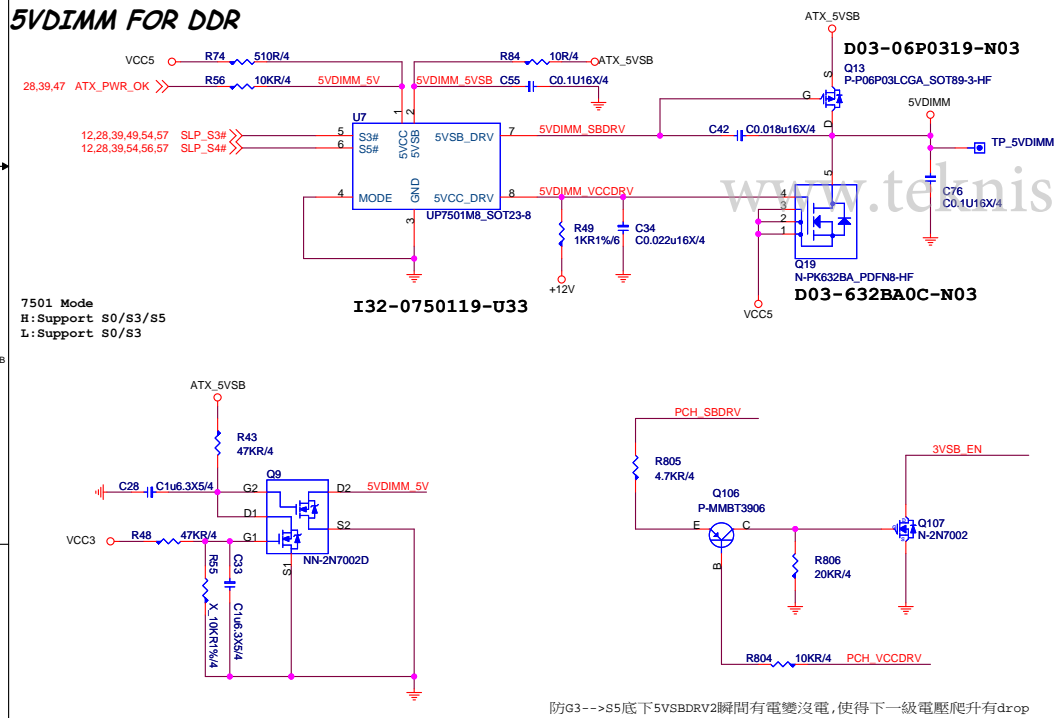


5VDUAL

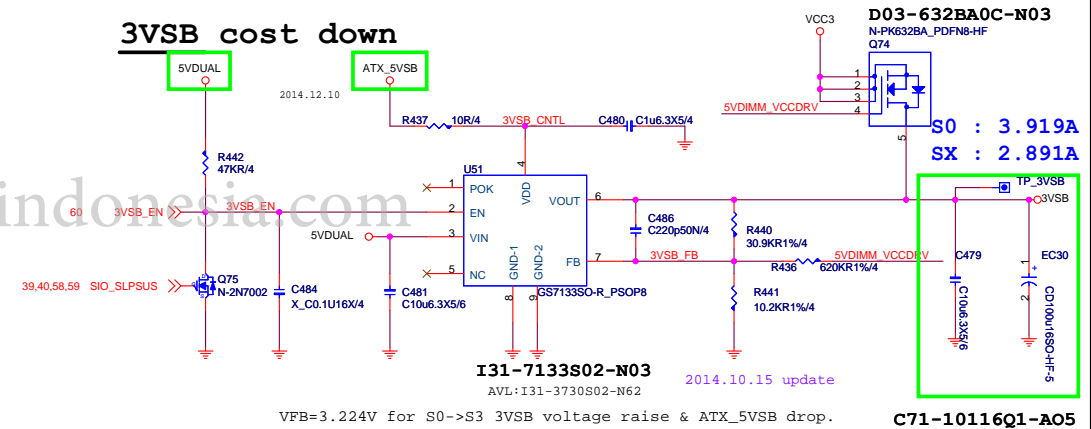
5VDUAL is power source of LP0SB



5VDIMM FOR DDR



3VSB cost down



MICRO-STAR INT'L CO.,LTD

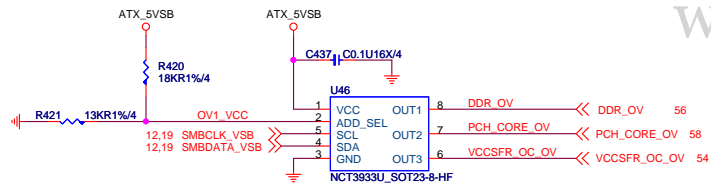
MS-7A75

Size	Document Description	Rev
Custom	ACPI UPI POWER	1.0
Date: Tuesday, November 15, 2016	Sheet 46 of 65	

Remove Cut Power.

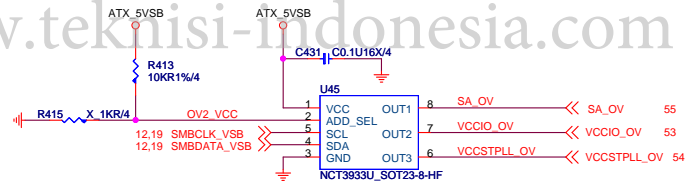
UPI VOLTAGE CONSOLE

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



I34-3933U09-N62

0x20:RH=10K,RL=OPEN



I34-3933U09-N62

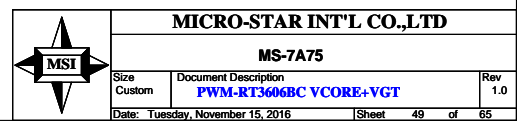
ADDRESS	0x2A	0x28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%

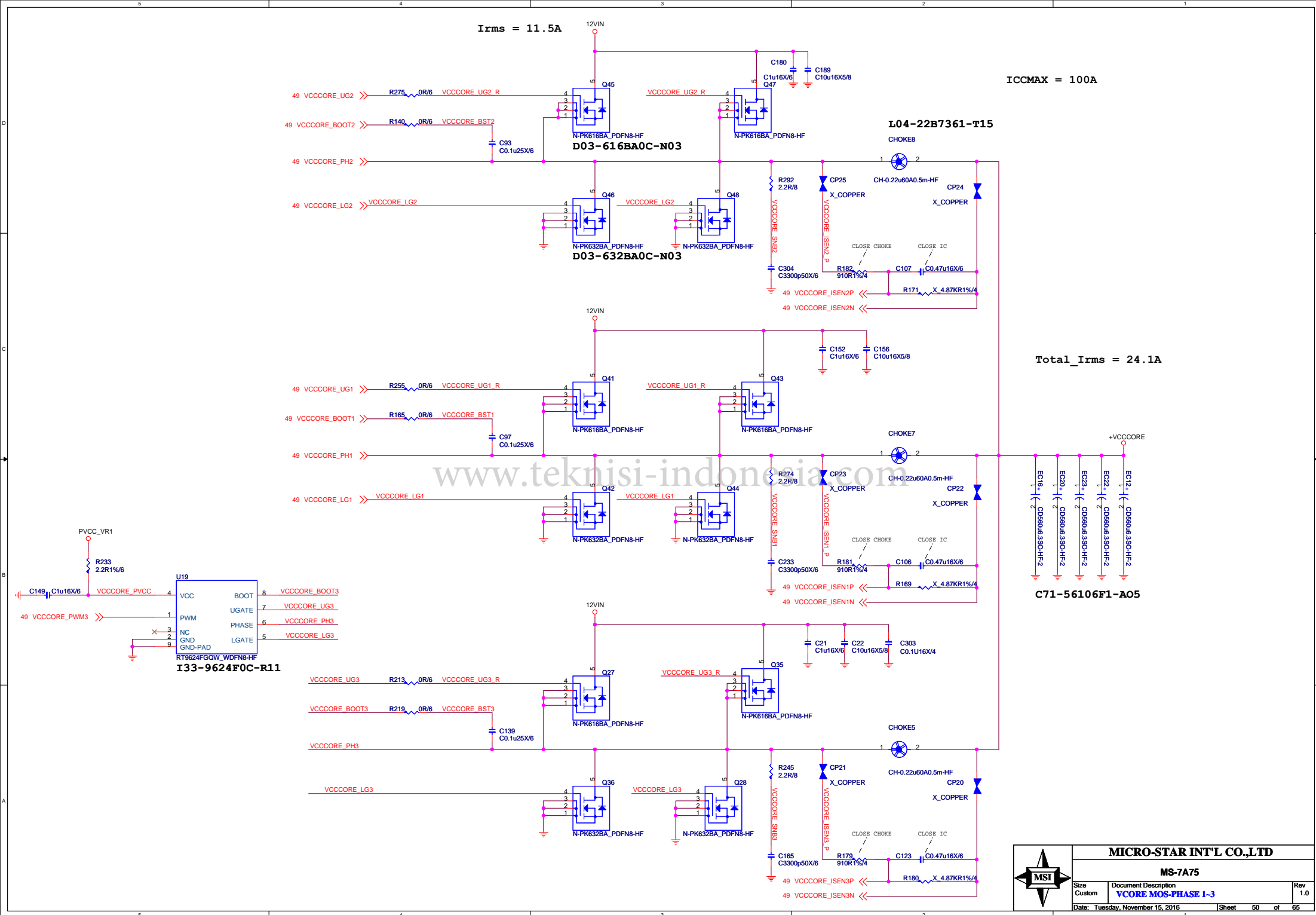


MICRO-STAR INT'L CO.,LTD

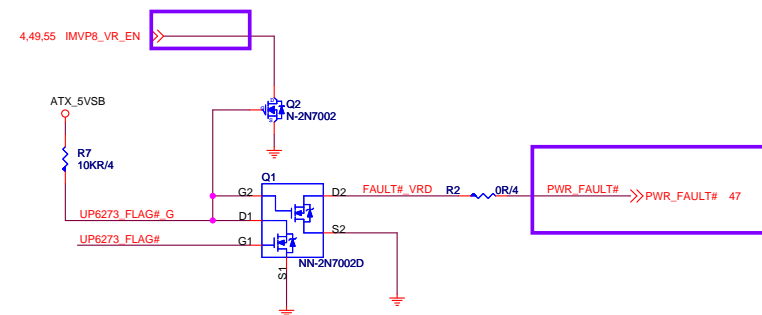
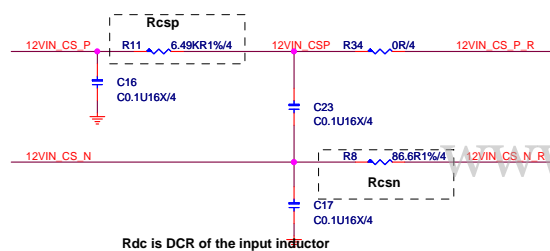
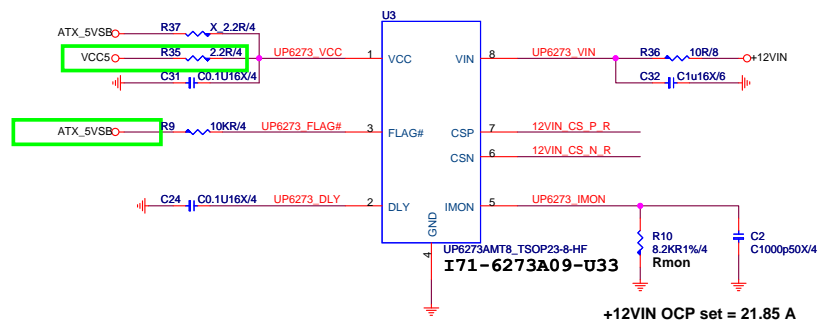
MS-7A75

Size Custom	Document Description OV-NCT3933	Rev 1.0
Date: Monday, November 21, 2016	Sheet 48 of 65	





2016.8.16
Over Current Protection change used I71-6273A09-U33
Pin3 FLAG# power change to ATX_5VSB

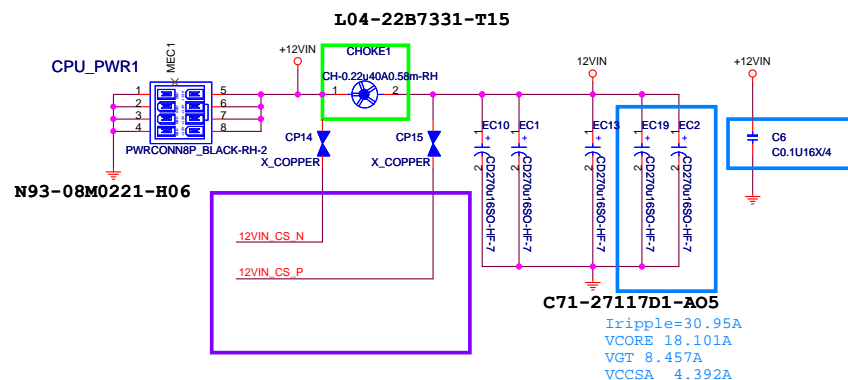


```
If OCP set Iin = 15A
When Isen = 100uA the Rcsn = ?
Isen = ( Iin x Rdc ) / Rcsn
100uA = ( 15 x 0.58m ) / Rcsn
--> Rcsn = 86.6R
```

```
Vmon = ( Iin x Rmon x Rdc ) / Rcsn
Vmon=1.2V, Iin = 15A, Rcsn = 86.6R
Rdc = 0.58m ohm ( DCR of the input inductor )
--> Rmon = 11.94KR
```

```
Vmon=1.2V, Rcsn = 86.6R, Rdc = 0.58m
1. Rmon = 11.8KR
Iin = (1.2 * 86.6) / ( 11.8K* 0.58m) = 15.18 A

2. Rmon = 8.2KR
Iin = (1.2 * 86.6) / ( 8.2K* 0.58m) = 21.85 A
```



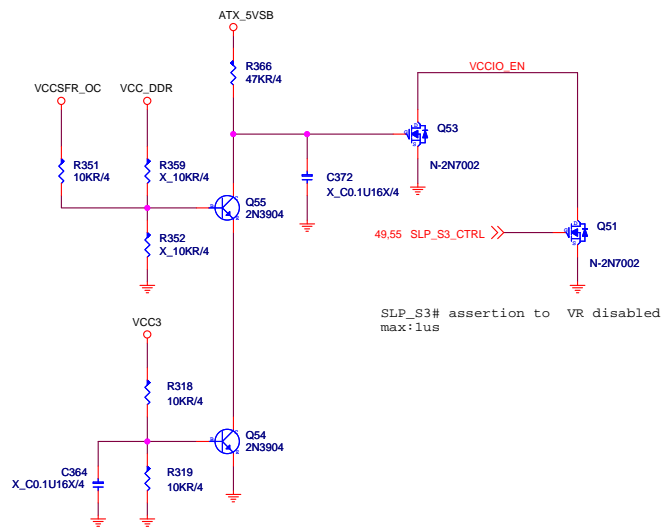
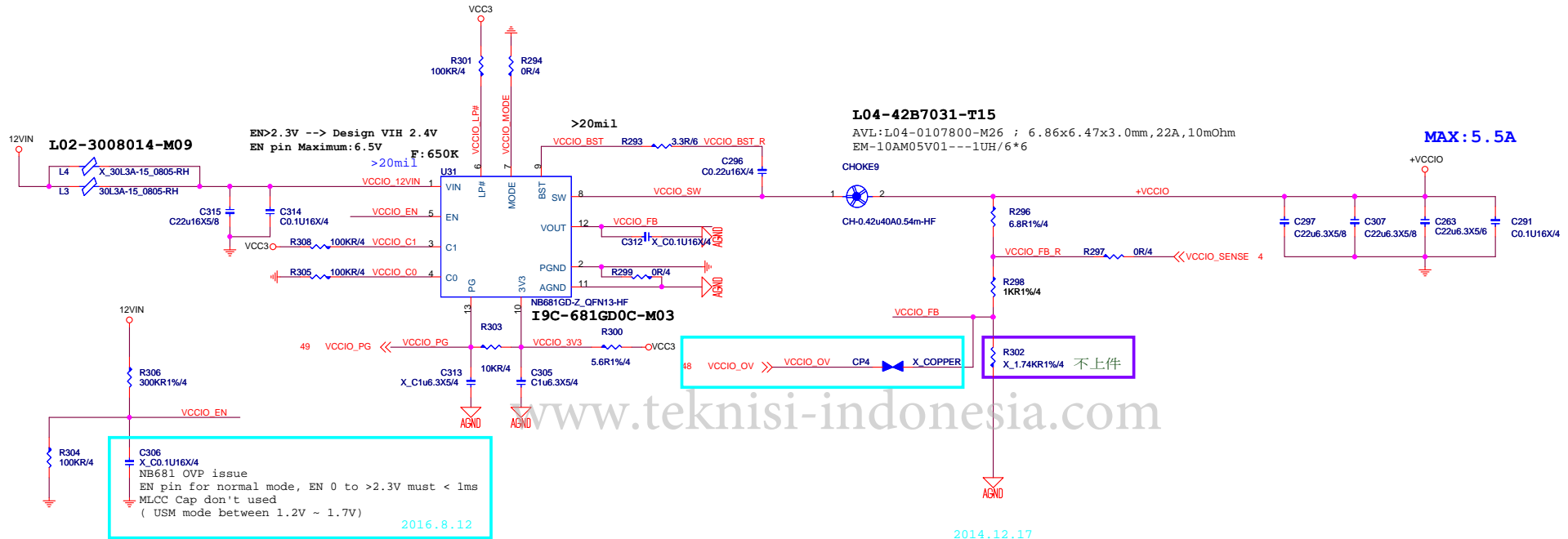
MICRO-STAR INT'L CO.,LTD

MS-7A75

Size Custom	Document Description CPU_PWR_12V OCP - UP6273A	Rev 1.0
Date: Tuesday, November 15, 2016		Sheet 52 of 65

VCCIO
 0.95V; 5.5A
 IMAX 6A
 ILIMIT=8.5~9A

	LP#	C1	C0	VOUT (V)
VCCIO	0	X	X	0
	1	0	0	0.85
	1	0	1	0.875
	1	1	0	0.95
	1	1	1	0.975

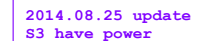


for Gaming3/5, Classic, ECO
and H110

For Cost down VCCST&VCCPLL merge



1.2V; 110mA



MS-7A75

Size Custom	Document Description CPU PWR_ST/PLL	Rev 1.0
Date: Tuesday, November 15, 2016		Sheet 54 of 65

SA Power:1.05V,12.3A

Rocpset:5.49K

OCP=Rocset*Rdson(Low side)/10uA

=7.32K*2.5mohm/10uA

=18.3A

Rocs:5.76K,OCP:

D03-4C05N03-005 : 16.94A

D03-632BA0C-N03 : 17.45A

use UBIQ MOS need Check

Rdson (low) 10V

D03-4C05N03-005 : 3.4mohm

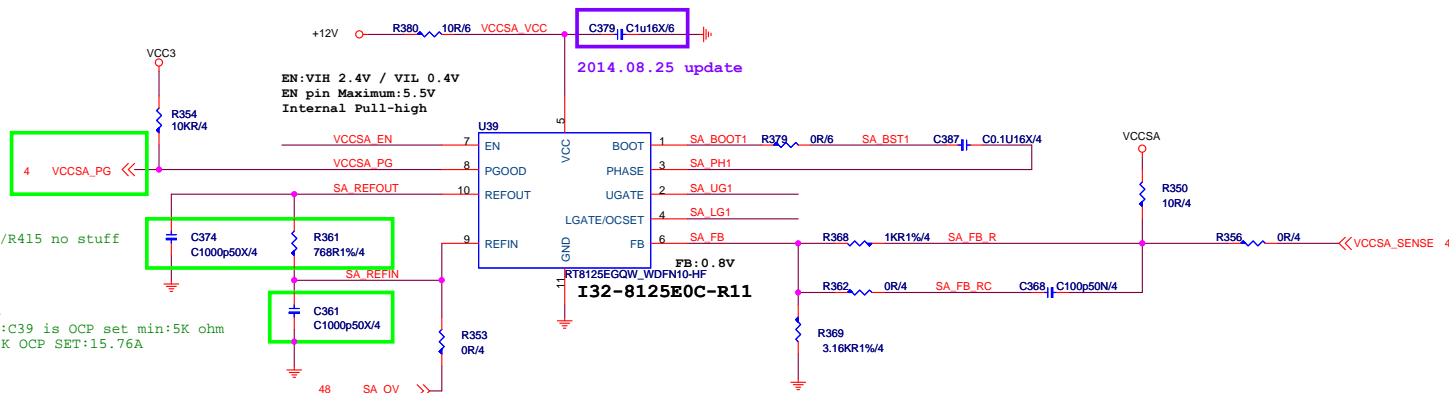
D03-632BA0C-N03 : 3.3mohm

D03-3056M00-U47 : 4.2mohm

up1540LIC5/R415 no stuff

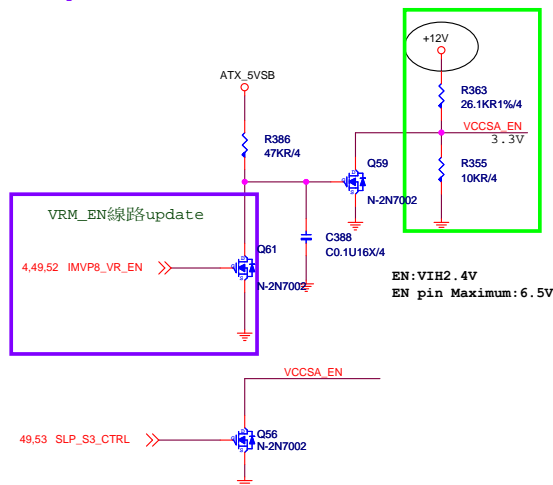
2014.12.25

for up1540:C39 is OCP set min:5K ohm
stuff 5.36K OCP SET:15.76A



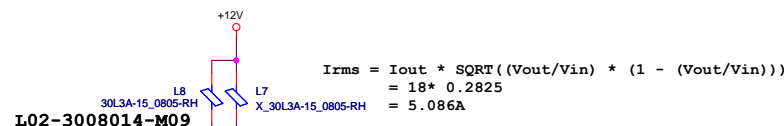
2014.08.21 update

Pull up by layout&Check level



SLP_S3# assertion to VCC, VCCGT, VCCIO and
VCCSA rails completely off.

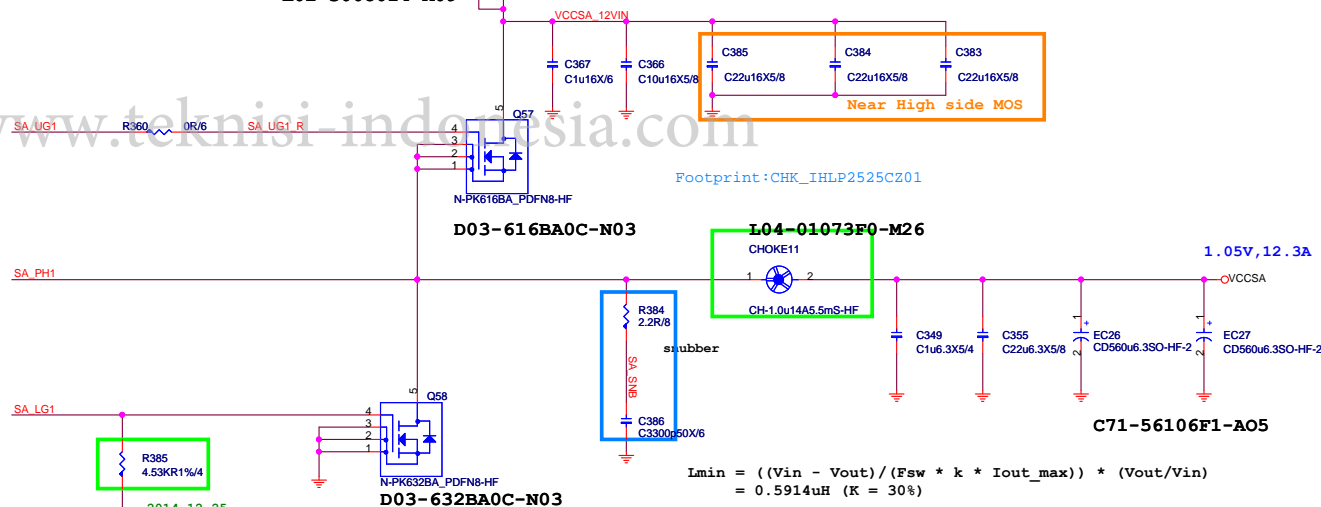
SLP_S3# assertion to VR disabled
max:1us



$$I_{rms} = I_{out} * \sqrt{((V_{out}/V_{in}) * (1 - (V_{out}/V_{in})))}$$

$$= 18 * 0.2825$$

$$= 5.086A$$



Footprint:CHK_IHLP2525CZ01

L04-01073F0-M26

CH-1.0u14A5.5mS-HF

1.05V, 12.3A

VCCSA

C349 C1u6.3X5/4

C355 C22u6.3X5/8

EC26 CD560u6.3SO-HF-2

EC27 CD560u6.3SO-HF-2

C71-56106F1-A05

Lmin = ((Vin - Vout)/(Fsw * k * Iout_max)) * (Vout/Vin)

= 0.5914uH (K = 30%)

2014.12.25
for up1540:R417 no stuff

2016.8.9

4.53K for OCP=18.3A



MICRO-STAR INT'L CO.,LTD

MS-7A75

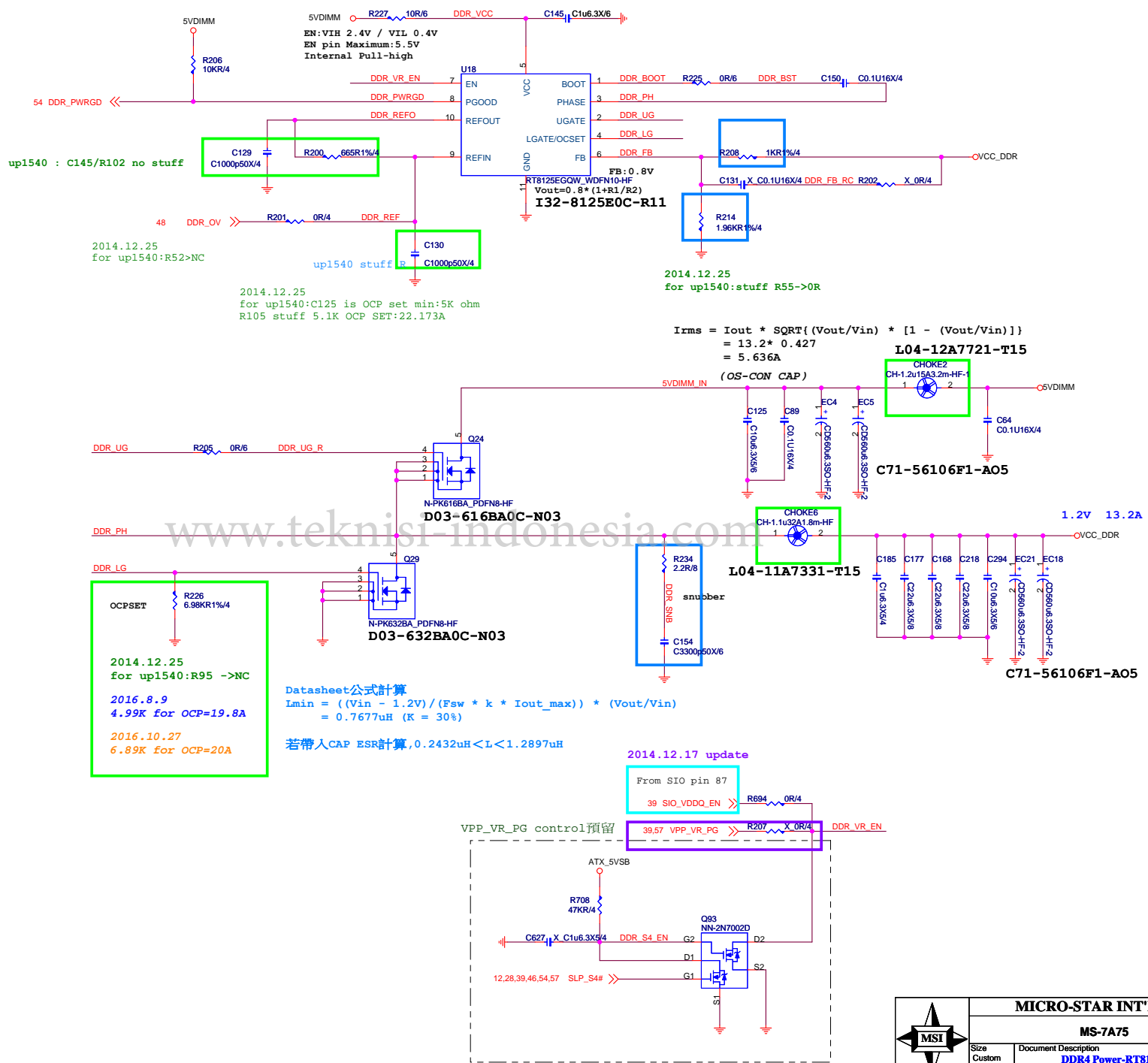
Size	Document Description	Rev
Custom	CPU PWR_SA-RT8125E	1.0
Date:	Tuesday, November 15, 2016	Sheet 55 of 65

DDR4_1.2V 2.5A+9.5A+1.2A=13.2A
 2.5A FOR CPU
 9.5A FOR 4DIMM
 1.2A FOR DDR VTT

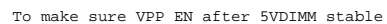
$OCP = 13.2A \times 1.5 = 19.8A$
 $Rocs(R3) = OCP \times Rdson(Low\ side) / 2 / 10\mu A$
 $= 19.8A \times (4.6 / 2) m\Omega / 10\mu A$
 $= 4.95K\Omega < 5K\Omega$

Rocpset: 4.3K
 $OCP = Rocset \times Rdson(Low\ side) / 10\mu A$
 $= 4.75K \times 4.6 m\Omega / 10\mu A$
 $= 21.85A$

Rdson (low) 4.5V
 D03-4C05N03-005 : 5 mΩ
 D03-632BA0C-N03 : 4.6 mΩ
 D03-3056M00-U47 : 6.2 mΩ



VPP25 Power
2.5V; 2.24A



2015.03.02 change to 3103S

VCC_DDR

VCC5 near pin6

C215 C0.1U16X/4

C174 C10u6.3X5/6

VTT_DDR

0.3*4=1.2A

4 DDR_VTT_CTRL

R268 10KR1%/4

12,28,39,46,49,54 SLP_S3#

EN1, EN2
Enable : HIGH > 0.8V
Disable : Low < 0.4V

U24

VOUT

VREF

VCC_DDR

R272 10KR1%/4

R273 10KR1%/4

C219 C0.1U16X/4

VTT_DDR_VREF

C273 C10u6.3X5/6

C272 C10u6.3X5/6

VTT_DDR

near DIMM slot

C274 C0.1U16X/4

C246 C0.1U16X/4

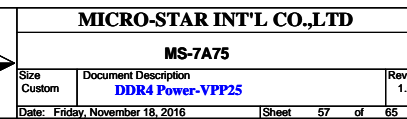
C245 C0.1U16X/4

C259 C0.1U16X/4

NCT3103S_ESOP8-HF

I31-3103S02-N62

NCT3103S co-lay NCT3102S/UP0109



PCH 1VSB

1.0V; 11A

OCP = 16.69A

OCP = $10\mu A \times 7.68K / 4.6 \text{ mohm}$
= 16.69 A

Rocs: 7.87K, OCP:

D03-4C05N03-O05 : 15.74A

D03-632BA0C-N03 : 17.1A

use UBIQ MOS need Check

Rdson (low side mosfet) 4.5V

D03-3116M00-U47 : 3.6 mohm

D03-632BA0C-N03 : 4.6mohm

D03-3056M00-U47 : 6.2mohm

EN: VIH 2.4V / VIL 0.4V
EN pin Maximum: 5.5V
Internal Pull-high

2014.08.21 update

PCH REFOUT

2014.08.25: Change 1u/0603

2014.12.25

For up1540: C236&R204 -> NC

2016.8.9

for up1540: C193 is OCP set min: 5Kohm

R185 stuff 7.87K OCP SET: 15.74A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

2016.8.9

4.22K for OCP=16.69A

2016.10.27

5.62K for OCP=17.8A

$$V_{out} = V_{ref} \times (1 + R_{821}/R_{822})$$

$$= 0.8 \times (1 + 1K/3.92K)$$

$$= 0.8 \times 1.2551$$

$$= 1.004V$$

L04-47B7730-T15 for OC, Gaming 10, 9, 7, 5
L04-12A7321-L65 for Gaming 3, SLI, ECO
L04-12A7721-T15 for cost down

L02-3008014-M09

L10 30L3A-15 0805-RH
L9 30L3A-15 0805-RH

too Big
C651 X_C0.1U16X/4

MAX: 10.664A

C71-56106F1-AO5

D03-616BA0C-N03

D03-632BA0C-N03

L04-01073F0-M26

2016.08.15

change used

L04-01073F0-M26

AVL: L04-0107800-M26

C71-56106F1-AO5

$$L_{min} = ((V_{in} - V_{out}) / (F_{sw} \times k \times I_{out_max})) \times (V_{out}/V_{in})$$

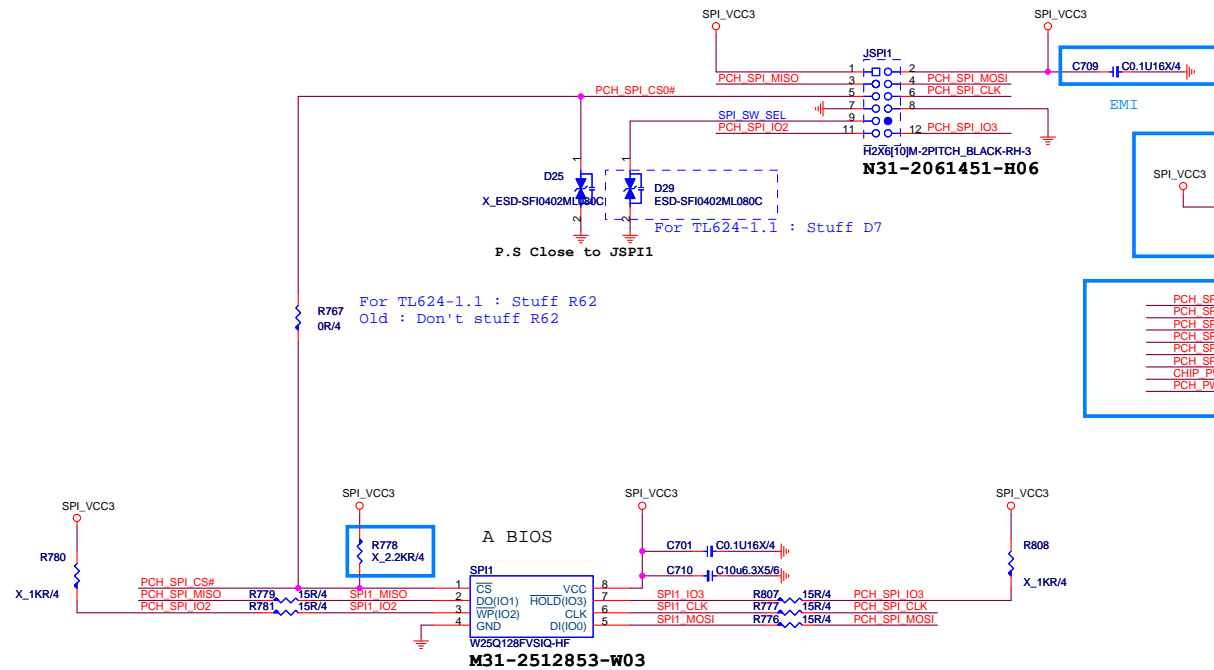
$$= 0.8335\mu H \text{ (K = 30\%)}$$



MICRO-STAR INT'L CO.,LTD

MS-7A75

Size	Document Description	Rev
Custom	PCH Core Power-RT8125E	1.0
Date: Wednesday, November 23, 2016	Sheet 58 of 65	



www.teknisi-indonesia.com



MICRO-STAR INT'L CO.,LTD

MS-7A75

Size	Document Description	Rev
Custom	SPI ROM	1.0
Date:	Tuesday, November 15, 2016	Sheet 59 of 65

PCB



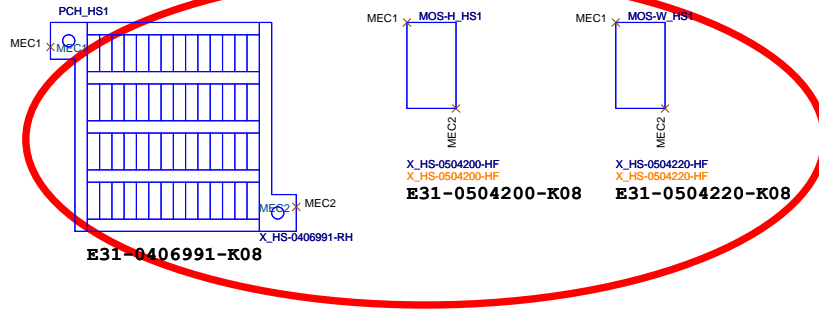
7A75_1.0
PD0-07A7510-G37

CPU Socket metal sheet

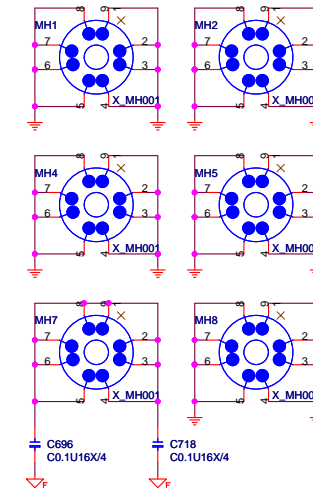
CPU_H1

CPU 鐵座

CPU_H1 (PT44A34-641C)
E21-7869020-F02



Mounting Holes



BIOS Label

AMI_LABEL



BIOS_LABEL
G51-M1SPXXA-A09

CFOS Label

LABEL1



CFOS
Y02-MU00170-CFO

XSPLIT Label

LABEL2



XSPLIT
Y02-MA00401-XSP

SSE Label

LABEL3

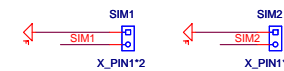


SSE
Y02-MA00101-SSE

等pm料號申請下來再上件

www.teknisi-indonesia.com

Simulation



Test point



Optical Fiducial Marks-120

