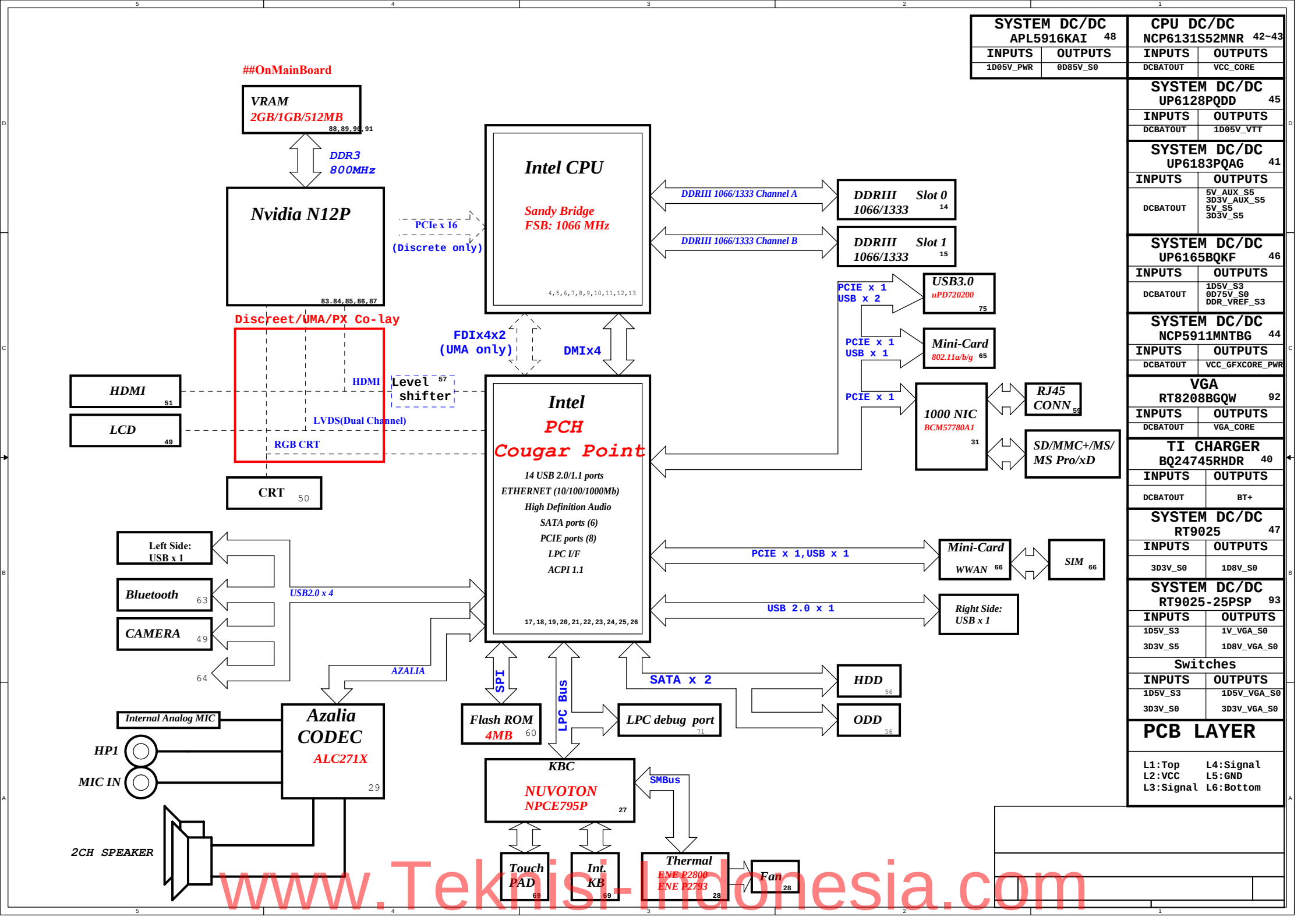


SYSTEM DC/DC APL5916KAI 48	
INPUTS	OUTPUTS
1D05V_PWR	0D85V_S0

CPU DC/DC NCP6131S52MNR 42~43	
INPUTS	OUTPUTS
DCBATOUT	VCC_CORE

SYSTEM DC/DC UP6128PQDD 45	
INPUTS	OUTPUTS
DCBATOUT	1D05V_VTT

SYSTEM DC/DC UP6183PQAG 41	
INPUTS	OUTPUTS
DCBATOUT	5V_AUX_S5 3D3V_AUX_S5 5V_S5 3D3V_S5

SYSTEM DC/DC UP6165BQKF 46	
INPUTS	OUTPUTS
DCBATOUT	1D5V_S3 0D75V_S0 DDR_VREF_S3

SYSTEM DC/DC NCP5911MNTBG 44	
INPUTS	OUTPUTS
DCBATOUT	VCC_GFXCORE_PWR

VGA RT8208BGQW 92	
INPUTS	OUTPUTS
DCBATOUT	VGA_CORE

TI CHARGER BQ24745RHDR 40	
INPUTS	OUTPUTS
DCBATOUT	BT+

SYSTEM DC/DC RT9025 47	
INPUTS	OUTPUTS
3D3V_S0	1D8V_S0

SYSTEM DC/DC RT9025-25PSP 93	
INPUTS	OUTPUTS
1D5V_S3	1V_VGA_S0
3D3V_S5	1D8V_VGA_S0
Switches	
INPUTS	OUTPUTS
1D5V_S3	1D5V_VGA_S0
3D3V_S0	3D3V_VGA_S0

PCB LAYER

L1:Top L4:Signal
L2:VCC L5:GND
L3:Signal L6:Bottom

PCH Strapping

Huron River Schematic Checklist Rev.0_7

Name	Schematics Notes
SPKR	**Reboot option at power-up** **Default Mode:** Internal weak Pull-down. **No Reboot Mode with TCO Disabled:** Connect to Vcc3_3 with 8.2-kΩ - 10-kΩ weak pull-up resistor.
INIT3_3V#	Weak internal pull-up. Leave as "No Connect".
GNT3#/GPIO55 GNT2#/GPIO53 GNT1#/GPIO51	GNT[3:0]# functionality is not available on Mobile. Mobile: Used as GPIO only Pull-up resistors are not required on these signals. If pull-ups are used, they should be tied to the Vcc3_3power rail.
SPI_MOSI	**Enable Danbury:** Connect to Vcc3_3 with 8.2-k? weak pull-up resistor. **Disable Danbury:** Left floating, no pull-down required.
NV_ALE	**Enable Danbury:** Connect to +NVRAM_VCCQ with 8.2-kohm weak pull-up resistor [CRB has it pulled up with 1-kohm no-stuff resistor] **Disable Danbury:** Leave floating (internal pull-down)
NC_CLE	DMI termination voltage. Weak internal pull-up. Do not pull low.
HAD_DOCK_EN# /GPIO[33]	Low (0) - Flash Descriptor Security will be overridden. Also, when this signals is sampled on the rising edge of PWROK then it will also disable Intel ME and its features. High (1) - Security measure defined in the Flash Descriptor will be enabled. Platform design should provide appropriate pull-up or pull-down depending on the desired settings. If a jumper option is used to tie this signal to GND as required by the functional strap, the signal should be pulled low through a weak pull-down in order to avoid asserting HDA_DOCK_EN# inadvertently. Note: CRB recommends 1-kohm pull-down for FD Override. There is an internal pull-up of 20 kohm for DA_DOCK_EN# which is only enabled at boot/reset for strapping functions.
HDA_SDO	Weak internal pull-down. Do not pull high. Sampled at rising edge of RSMRST#.
HDA_SYNC	Weak internal pull-down. Do not pull high. Sampled at rising edge of RSMRST#.
GPIO15	Low (1) - Intel ME Crypto Transport Layer Security (TLS) cipher suite with no confidentiality High (1) - Intel ME Crypto Transport Layer Security (TLS) cipher suite with confidentiality Note : This is an un-muxed signal. This signal has a weak internal pull-down of 20 kohm which is enabled when PWROK is low. Sampled at rising edge of RSMRST#. CRB has a 1-kohm pull-up on this signal to +3.3VA rail.
GPIO8	GPIO8 on PCH is the Integrated Clock Enable strap and is required to be pulled-down using a 1k +/- 5% resistor. When this signal is sampled high at the rising edge of RSMRST#, Integrated Clocking is enabled, When sampled low, Buffer Through Mode is enabled.
GPIO27	**Default = Do not connect (floating)** High(1) = Enables the internal VccVRM to have a clean supply for analog rails. No need to use on-board filter circuit. Low (0) = Disables the VccVRM. Need to use on-board filter circuits for analog rails.

Processor Strapping

Huron River Schematic Checklist Rev.0_7

Pin Name	Strap Description	Configuration (Default value for each bit is 1 unless specified otherwise)	Default Value
CFG[2]	**PCI-Express Static Lane Reversal**	**1:** Normal Operation. **0:** Lane Numbers Reversed 15 -> 0, 14 -> 1, ...	**1**
CFG[4]		**1:** Disabled - No Physical Display Port attached to Embedded DisplayPort. **0:** Enabled - An external Display Port device is connectd to the EMBEDDED display Port	**0**
CFG[6:5]	**PCI-Express Port Bifurcation Straps**	11 : x16 - Device 1 functions 1 and 2 disabled 10 : x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01 : Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00 : x8, x4, x4 - Device 1 functions 1 and 2 enabled	**11**
CFG[7]	**PEG DEFER TRAINING**	**1:** PEG Train immediately following xxRESETB de assertion **0:** PEG Wait for BIOS for training	**1**

Voltage Rails

POWER PLANE	VOLTAGE	ACTIVE IN	DESCRIPTION
5V_S0 3D3V_S0 1D8V_S0 1D5V_S0 1D05V_VTT 0D85V_S0 0D75V_S0 VCC_CORE VCC_GFXCORE 1D8V_VGA_S0 3D3V_VGA_S0 1V_VGA_S0	5V 3.3V 1.8V 1.5V 1.05V 0.95 - 0.85V 0.75V 0.35V to 1.5V 0.4 to 1.25V 1.8V 3.3V 1V	S0	CPU Core Rail Graphics Core Rail
5V_USBX_S3 1D5V_S3 DDR_VREF_S3	5V 1.5V 0.75V	S3	
BT+ DCBATOUT 5V_S5 5V_AUX_S5 3D3V_S5 3D3V_AUX_S5	6V-14.1V 6V-14.1V 5V 5V 3.3V 3.3V	All S states	AC Brick Mode only
3D3V_LAN_S5	3.3V	WOL_EN	Legacy WOL
3D3V_AUX_KBC	3.3V	DSW, Sx	ON for supporting Deep Sleep states
3D3V_AUX_S5	3.3V	G3, Sx	Powered by Li Coin Cell in G3 and +V3ALW in Sx

PCIE Routing

LANE1	Mini Card2(WWAN)
LANE2	Mini Card1(WLAN)
LANE3	Card Reader
LANE4	Onboard LAN
LANE5	USB3.0
LANE6	Intel GBE LAN
LANE7	Dock
LANE8	New Card

SATA Table

SATA	
Pair	Device
0	HDD1
1	HDD2
2	N/A
3	N/A
4	ODD
5	ESATA

USB Table

Pair	Device
0	Touch Panel / 3G SIM
1	USB Ext. port 1 (HS)
2	Fingerprint
3	BLUETOOTH
4	Mini Card2 (WWAN)
5	CARD READER
6	X
7	X
8	USB Ext. port 4 / E-SATA /USB CHARGER
9	USB Ext. port 2
10	EDP CAMERA
11	Mini Card1 (WLAN)
12	CAMERA
13	New Card

SMBus ADDRESSES

I² C / SMBus Addresses Device	Ref Des	HURON RIVER ORB Address Hex Bus
EC SMBus 1 Battery CHARGER		BAT_SCL/BAT_SDA BAT_SCL/BAT_SDA BAT_SCL/BAT_SDA
EC SMBus 2 PCH eDP		SML1_CLK/SML1_DATA SML1_CLK/SML1_DATA SML1_CLK/SML1_DATA
PCH SMBus SO-DIMMA (SPD) SO-DIMMB (SPD) Digital Pot G-Sensor MINI		PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK PCH_SMBDATA/PCH_SMBCLK

CPU1A
SANDY
62.10055.421
Change:62.10053.611
2nd = 62.10055.321
3rd = 62.10040.821

Signal Routing Guideline:
PEG_ICOMPO keep W/S=12/15 mils and routing length less than 500 mils.
PEG_ICOMPI & PEG_RCOMPO keep W/S=4/15 mils and routing length less than 500 mils.

Note:
Intel DMI supports both Lane Reversal and polarity inversion but only at PCH side. This is enabled via a soft strap.

Note:
Intel FDI supports both Lane Reversal and polarity inversion but only at PCH side. This is enabled via a soft strap.

Note:
Lane reversal does not apply to FDI sideband signals.

Signal Routing Guideline:
EDP_ICOMPO keep W/S=12/15 mils and routing length less than 500 mils.
EDP_COMPIO keep W/S=4/15 mils and routing length less than 500 mils.

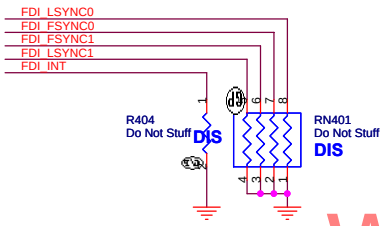
NOTE.
Processor strap CFG[4] should be pulled low to enable Embedded DisplayPort.

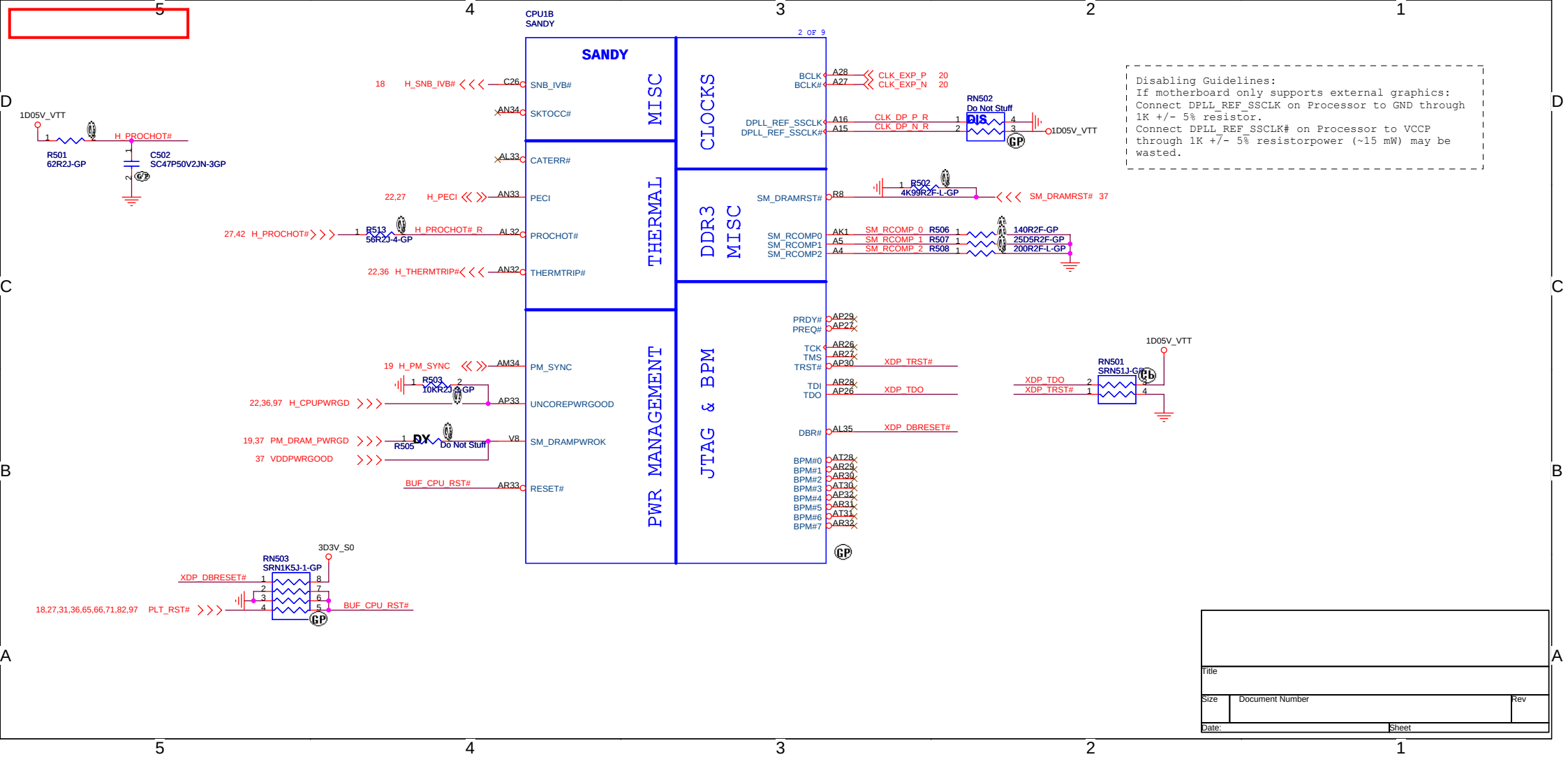
NOTE.
If PEG is not implemented, the RX&TX pairs can be left as No Connect

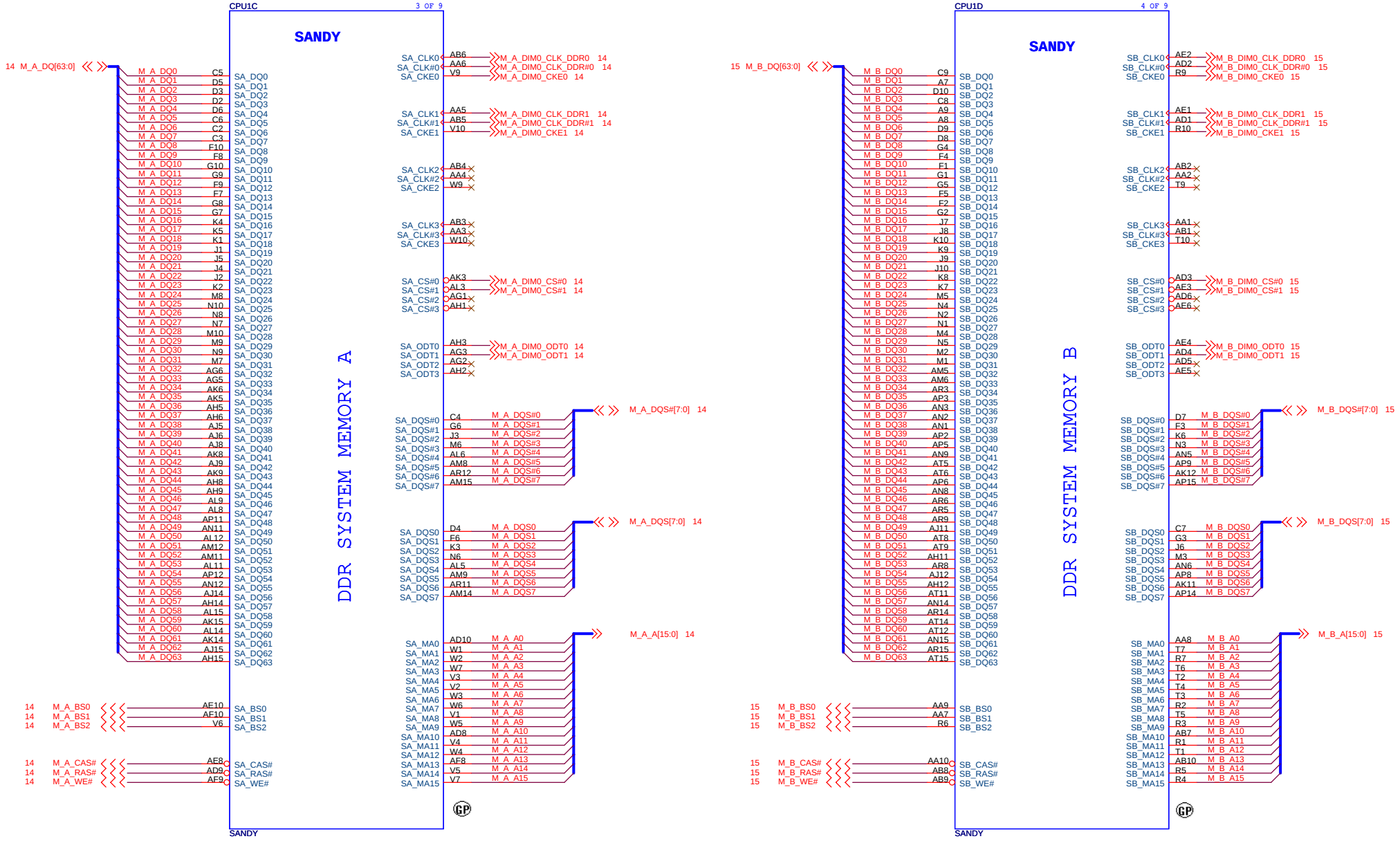
PEG Static Lane Reversal

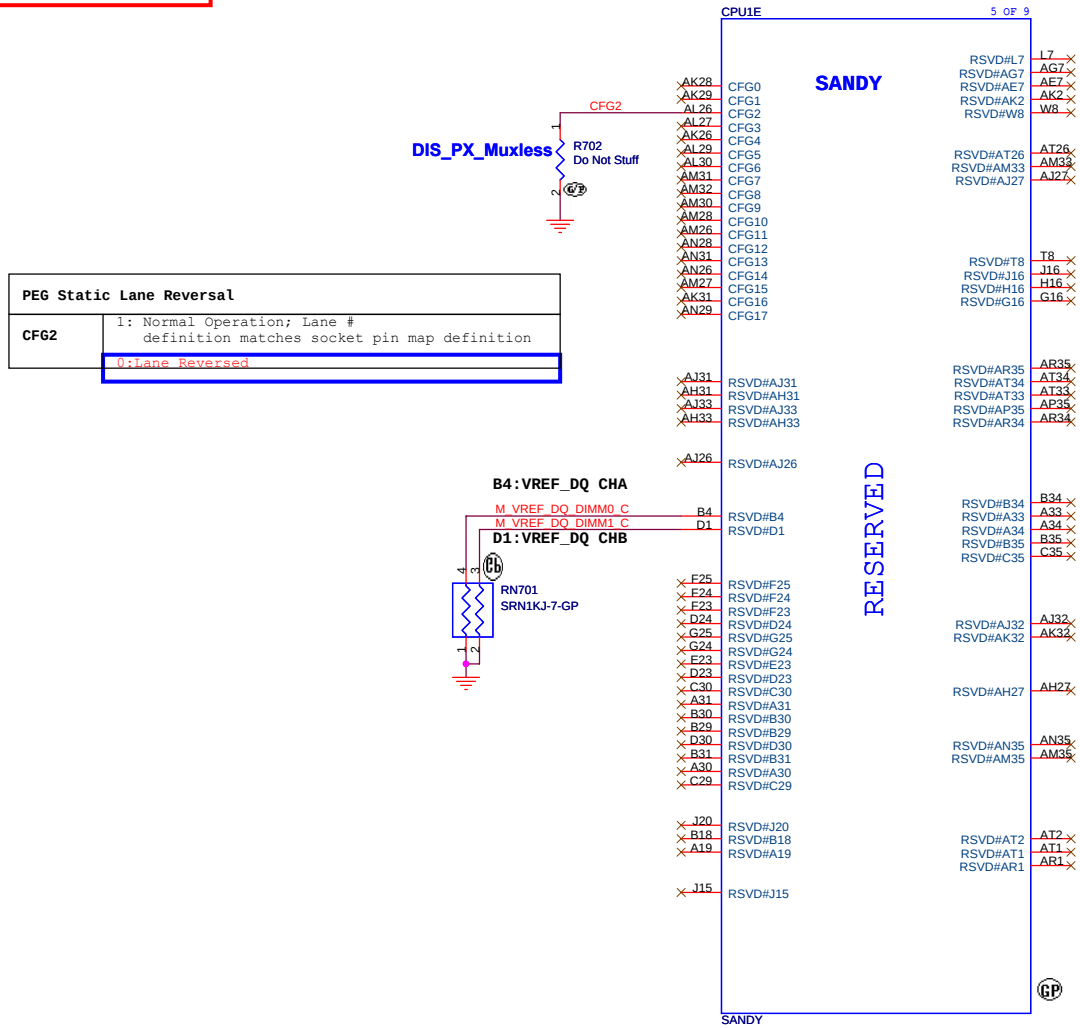
NOTE:
Select a Fast FET similar to 2N7002E whose rise/ fall time is less than 6 ns. If HPD on eDP interface is disabled, connect it to CPU VCCIO via a 10-kΩ pull-Up resistor on the motherboard.

Stuff to disable internal graphics function for power saving.









POWER

PROCESSOR CORE POWER

53A

CPU1F

SANDY

6 OF 9

VCC_CORE

PEG AND DDR

CORE SUPPLY

SVID

SENSE LINES

1D05V_VTT

VIDALERT#
VIDSCLK
VIDSOUT

H_CPU_SVIDALRT#
H_CPU_SVIDCLK 42
H_CPU_SVIDDAT 42

R803 43R2J-GP

VR_SVID_ALERT# 42

For CRB VIDSOUT need to pull high 130 ohm closr to CPU and IMVP7
For CRB VIDALERT# need to pull high 75 ohm close to CPU

H_CPU_SVIDDAT R804 130R2F-1-GP

R801 100R2F-L1-GP-U

R802 100R2F-L1-GP-U

VCC_SENSE
VSS_SENSE

VCCSENSE 42
VSSSENSE 42

VCCIO_SENSE
VSSIO_SENSE

VCCIO_SENSE 45
VSSIO_SENSE 45

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Size

Document Number

Rev

Date:

Sheet

POWER

VAXG Output Decoupling Recommendation:
2 x 470 uF at Bottom Socket Edge
2 x 22 uF at Top Socket Cavity
4 x 22 uF at Top Socket Edge
2 x 22 uF at Bottom Socket Cavity
4 x 22 uF at Bottom Socket Edge

R906,R907 close to CPU

VCC_GFXCORE

PROCESSOR VAXG: 24A

C901 Do Not Stuff DY
C902 SC10U6D3V5KX-1GP
C903 SC10U6D3V5KX-1GP
C904 SC10U6D3V5KX-1GP
C905 SC10U6D3V5KX-1GP
C906 Do Not Stuff DY
UMA_PX_Muxless

C907 Do Not Stuff DY
C908 SC10U6D3V5KX-1GP
C918 Do Not Stuff DY
C919 SC10U6D3V5KX-1GP
C920 SC10U6D3V5KX-1GP
C921 SC10U6D3V5KX-1GP DY
UMA_PX_Muxless

CPU1G — SANDY — 7 OF 9

VAXG: AT24, AT23, AT21, AT20, AT18, AT17, AR24, AR23, AR21, AR20, AR18, AR17, AP24, AP23, AP21, AP20, AP18, AP17, AN24, AN23, AN21, AN20, AN18, AN17, AM24, AM23, AM21, AM20, AM18, AM17, AL24, AL23, AL21, AL20, AL18, AL17, AK24, AK23, AK21, AK20, AK18, AK17, AJ24, AJ23, AJ21, AJ20, AJ18, AJ17, AH24, AH23, AH21, AH20, AH18, AH17

SENSE LINES
VAXG_SENSE AK35 — VCC_AXG_SENSE 42
VSSAXG_SENSE AK34 — VSS_AXG_SENSE 42

VCC_AXG_SENSE
VSS_AXG_SENSE
R906 100R2F-L1-GP-U
R907 100R2F-L1-GP-U

Refer to the latest Huron River Mainstream PDG (Doc# 436735) for more details on S3 power reduction implementation.

+V_SM_VREF_CNT should have 10 mil trace width

VREF
SM_VREF AL1 — +V_SM_VREF_CNT 37

Routing Guideline:
Power from DDR_VREF_S3 and +V_SM_VREF_CNT should have 10 mils trace width.

DDR3 -1.5V RAILS

1D5V_S0

PROCESSOR VDDQ: 10A

VDDQ: AF7, AF4, AF1, AC7, AC4, AC1, Y7, Y4, Y1, U7, U4, U1, P7, P4, P1

C909 Do Not Stuff DY
C910 SC10U6D3V5KX-1GP
C911 SC10U6D3V5KX-1GP
C912 SC10U6D3V5KX-1GP
C913 SC10U6D3V5KX-1GP
C914 Do Not Stuff DY

VDDQ Output Decoupling Recommendation:
1 x 330 uF
6 x 10 uF

0D85V_S0

PROCESSOR VCCSA: 6A

C916 Do Not Stuff DY
C915 SC10U6D3V5KX-1GP

VCCSA Output Decoupling Recommendation:
1 x 330 uF
2 x 10 uF at Bottom Socket Cavity
1 x 10 uF at Bottom Socket Edge

SA RAIL

VCCSA: M27, M26, L26, J26, J25, J24, H26, H25

0D85V_S0
R902 10R2J-2-GP
R902 need be close to pin H23.
VCCSA_SENSE H23 — VCCUSA_SENSE — TP901 Do Not Stuff

FC_C22 C22 — H_FC_C22
VCCSA_VID1 C24 — VCCSA_SEL 48
RN901 SRN1KJ-7-GP

VCC_GFXCORE

R903 Do Not Stuff DIS
R904 Do Not Stuff DIS
R905 Do Not Stuff DIS
R901 Do Not Stuff DIS

Disabling Guidelines for External Graphics Designs:
Can connect to GND if motherboard only supports external graphics and if GFX VR is not stuffed.
Can be left floating (Gfx VR keeps VAXG rail from floating) if the VR is stuffed

GRAPHICS

1.8V RAIL

1D8V_S0

PROCESSOR VCCPLL: 1.2A

VCCPLL: B6, A6, A2

C922 SC1U10V2KX-1GP

VCCPLL Output Decoupling Recommendation:
1 x 330 uF
2 x 1 uF
1 x 10 uF

MISC

SANDY

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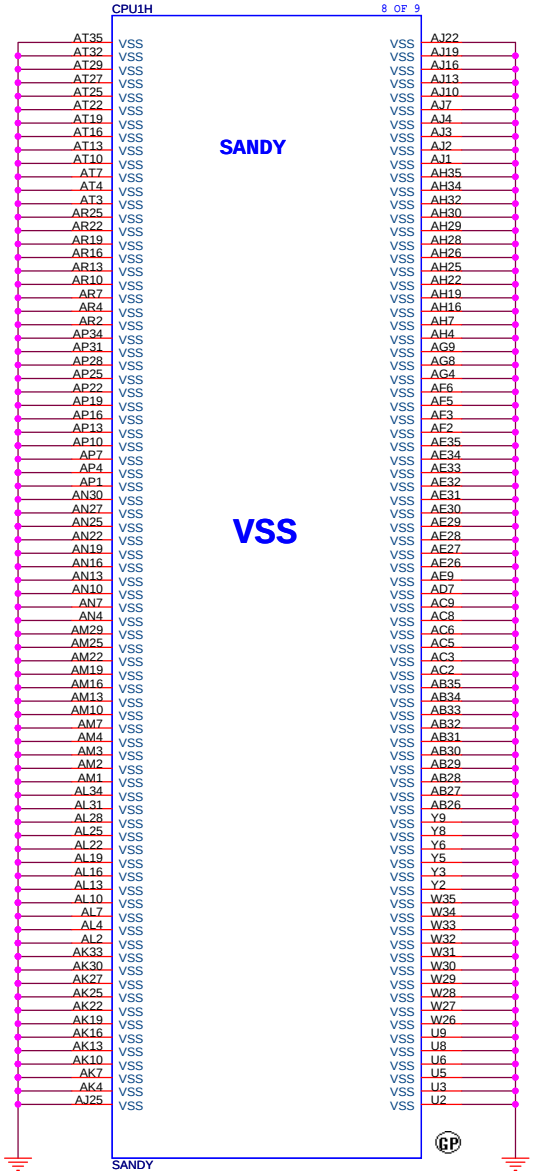
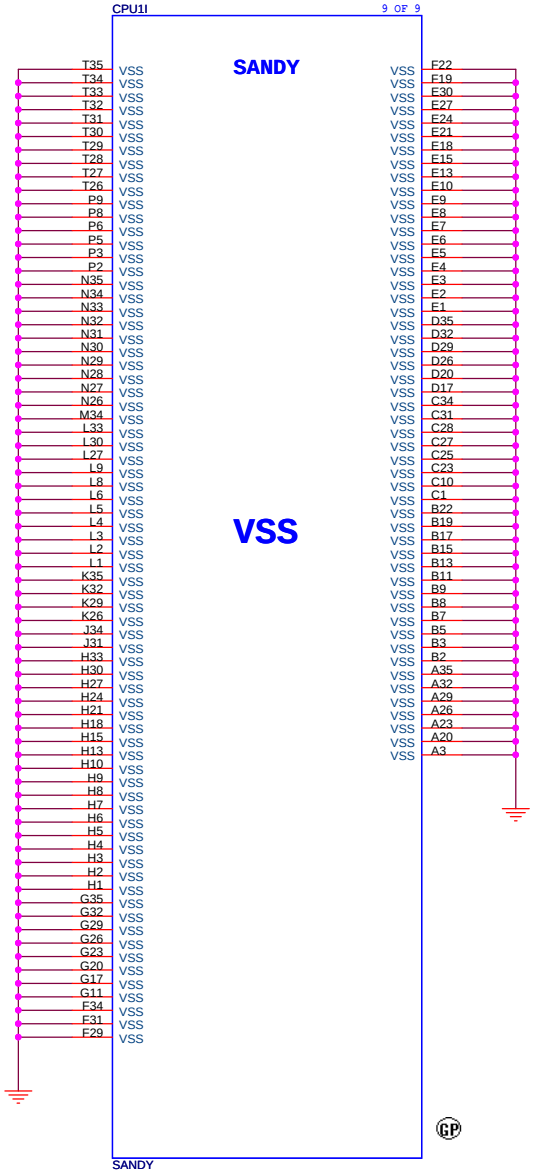
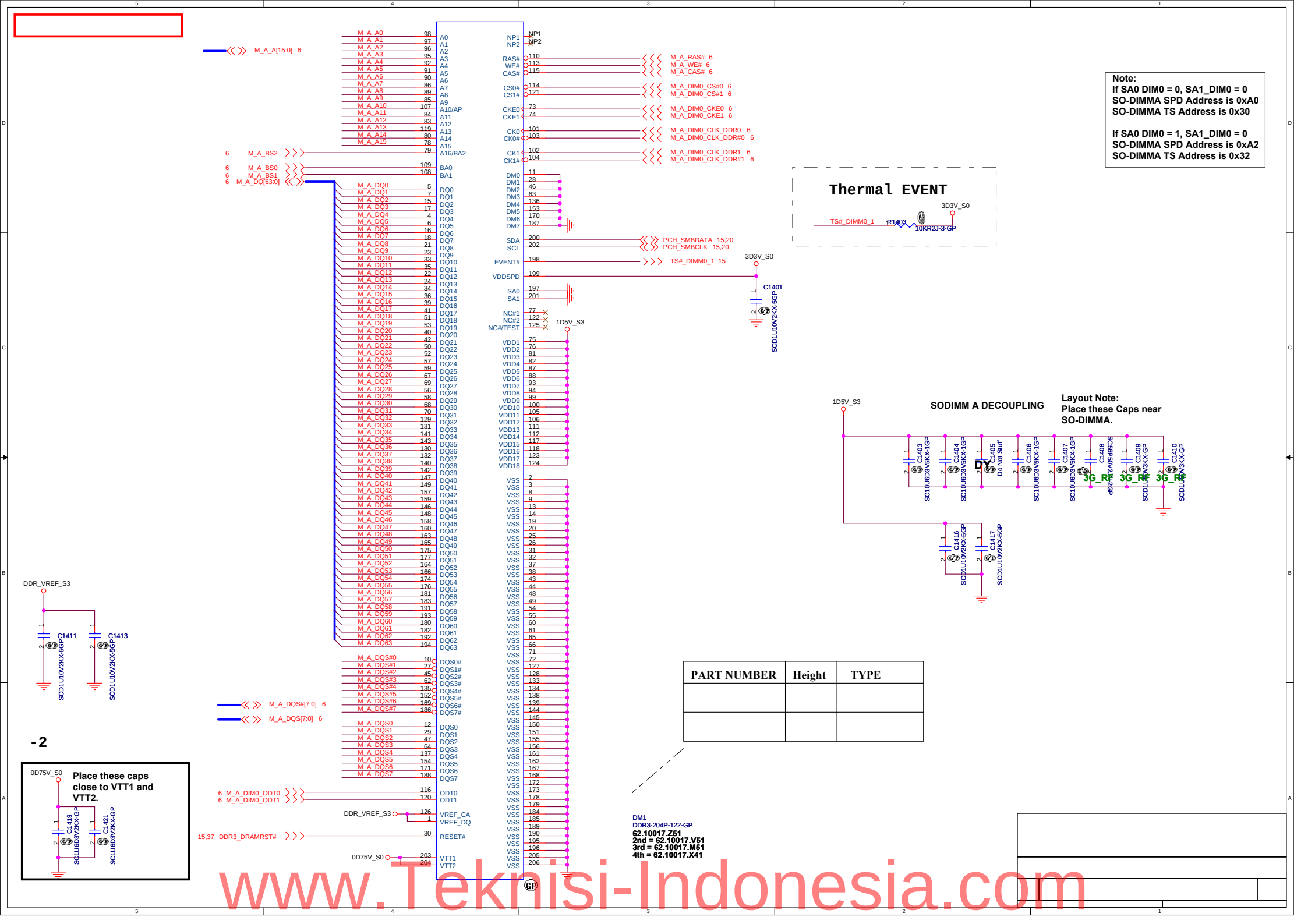
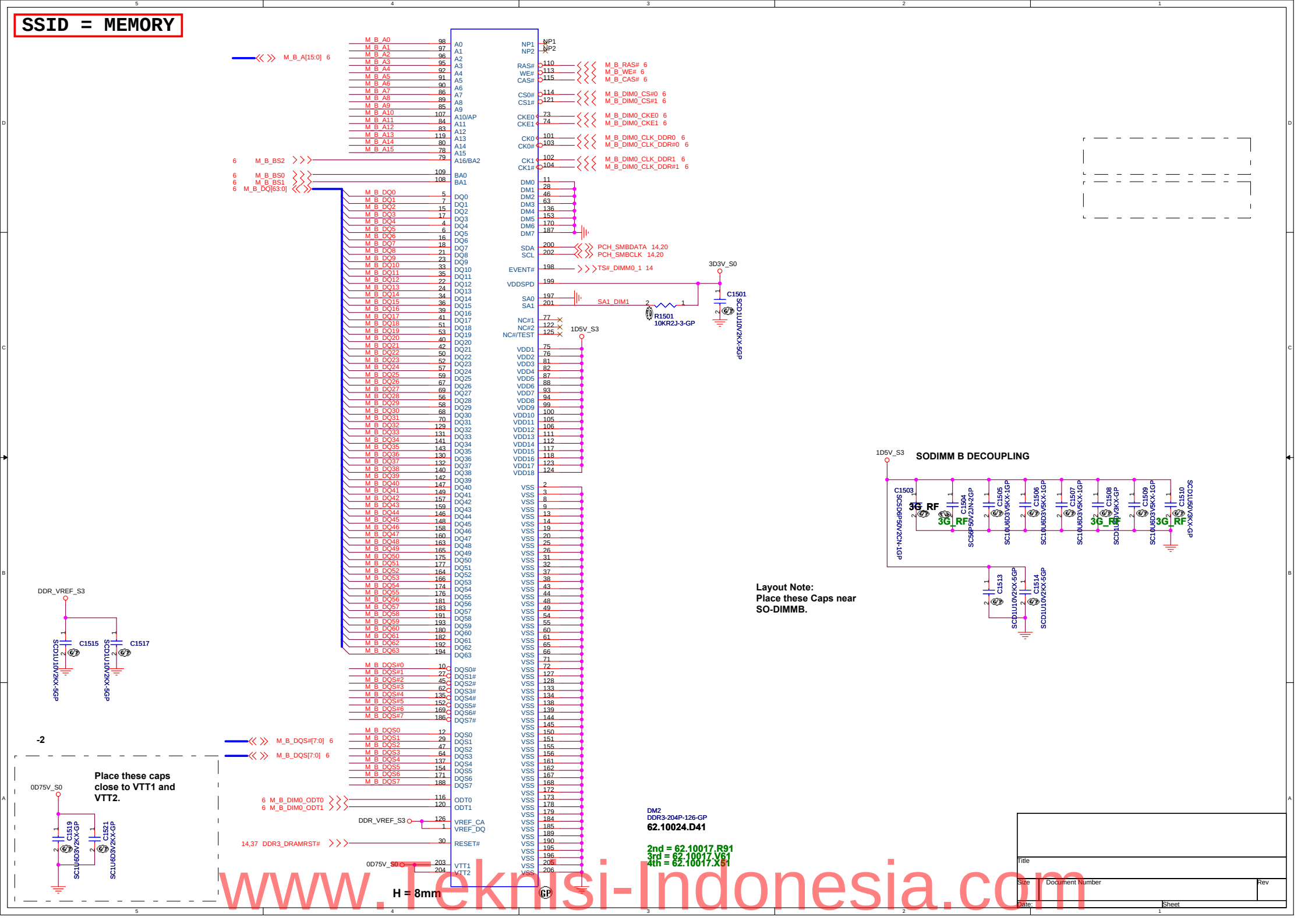
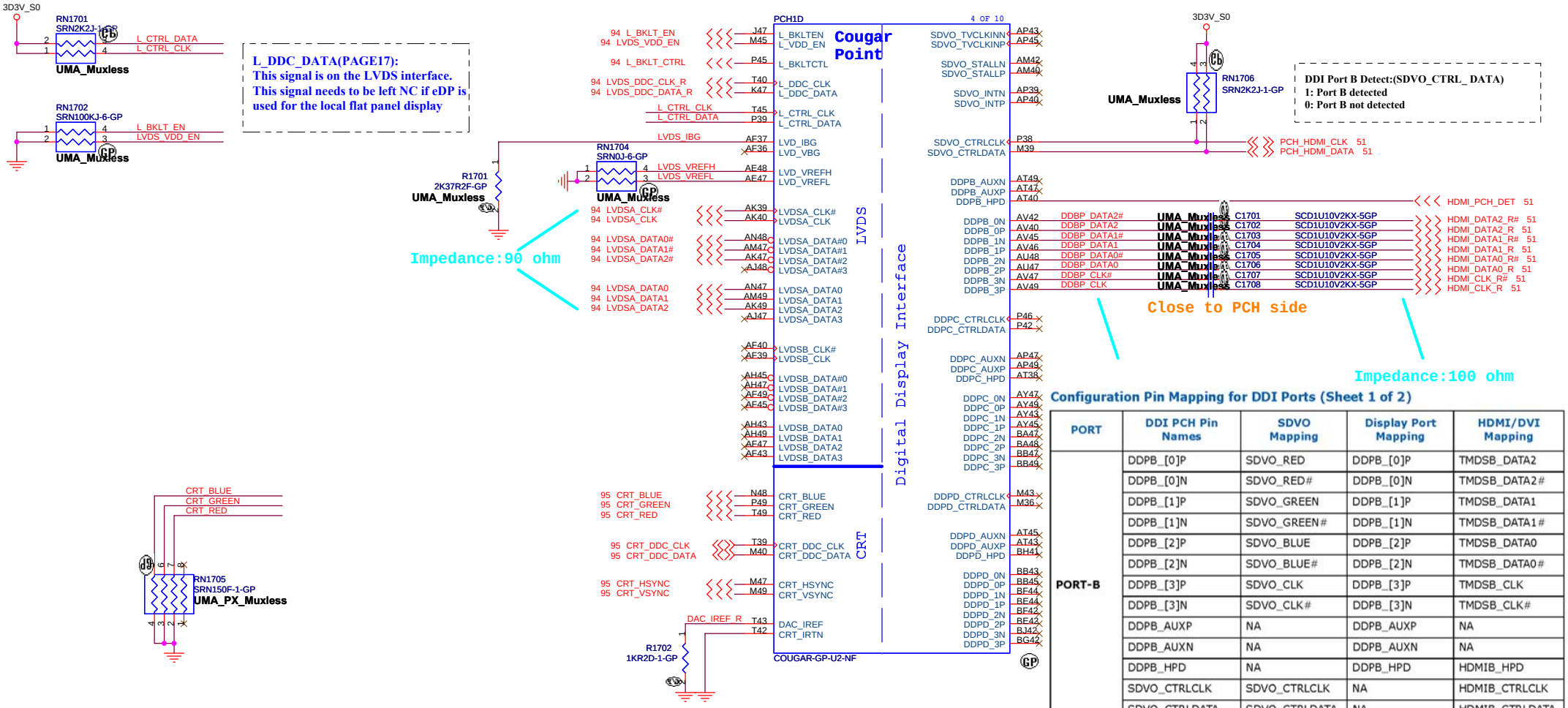






SSID = MEMORY

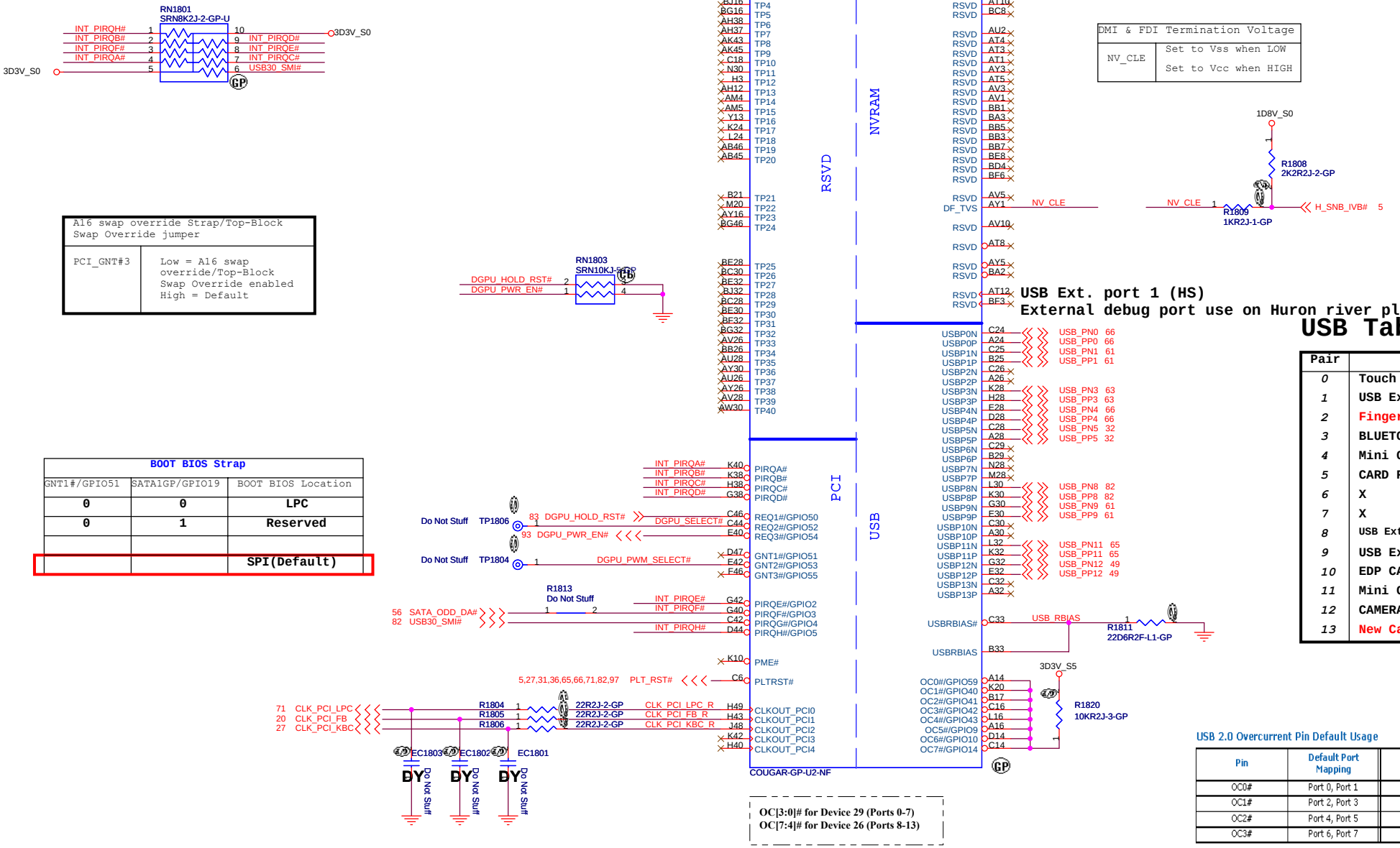




Configuration Pin Mapping for DDI Ports (Sheet 1 of 2)

PORT	DDI PCH Pin Names	SDVO Mapping	Display Port Mapping	HDMI/DVI Mapping
PORT-B	DDPB_[0]P	SDVO_RED	DDPB_[0]P	TMDSB_DATA2
	DDPB_[0]N	SDVO_RED#	DDPB_[0]N	TMDSB_DATA2#
	DDPB_[1]P	SDVO_GREEN	DDPB_[1]P	TMDSB_DATA1
	DDPB_[1]N	SDVO_GREEN#	DDPB_[1]N	TMDSB_DATA1#
	DDPB_[2]P	SDVO_BLUE	DDPB_[2]P	TMDSB_DATA0
	DDPB_[2]N	SDVO_BLUE#	DDPB_[2]N	TMDSB_DATA0#
	DDPB_[3]P	SDVO_CLK	DDPB_[3]P	TMDSB_CLK
	DDPB_[3]N	SDVO_CLK#	DDPB_[3]N	TMDSB_CLK#
	DDPB_AUXP	NA	DDPB_AUXP	NA
	DDPB_AUXN	NA	DDPB_AUXN	NA
	DDPB_HPD	NA	DDPB_HPD	HDMIB_HPD
	SDVO_CTRLCLK	SDVO_CTRLCLK	NA	HDMIB_CTRLCLK
	SDVO_CTRLDATA	SDVO_CTRLDATA	NA	HDMIB_CTRLDATA

SSID = PCH



A16 swap override Strap/Top-Block Swap Override jumper	
PCI_GNT#3	Low = A16 swap override/Top-Block Swap Override enabled High = Default

DMI & FDI Termination Voltage	
NV_CLE	Set to Vss when LOW Set to Vcc when HIGH

USB Ext. port 1 (HS)
External debug port use on Huron river platform

USB Table

Pair	Device
0	Touch Panel / 3G SIM
1	USB Ext. port 1 (HS)
2	Fingerprint
3	BLUETOOTH
4	Mini Card2 (WWAN)
5	CARD READER(DY)
6	X
7	X
8	USB Ext. port 4 / E-SATA /USB CHARGER
9	USB Ext. port 2
10	EDP CAMERA
11	Mini Card1 (WLAN)
12	CAMERA
13	New Card

BOOT BIOS Strap		
GNT1#/GPIO51	SATA1GP/GPIO19	BOOT BIOS Location
0	0	LPC
0	1	Reserved
		SPI(Default)

USB 2.0 Overcurrent Pin Default Usage

Pin	Default Port Mapping	Pin	Default Port Mapping
OC0#	Port 0, Port 1	OC4#	Port 8, Port 9
OC1#	Port 2, Port 3	OC5#	Port 10, Port 11
OC2#	Port 4, Port 5	OC6#	Port 12, Port 13
OC3#	Port 6, Port 7	OC7#	Not Used

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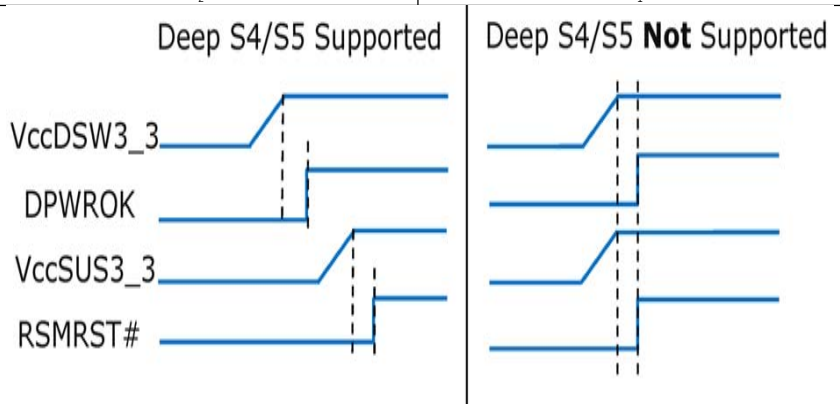
SSID = PCH



PCH1C — Cougar Point — 3 OF 10 — COUGAR-GP-U2-NF

DMI: DMI_RXN[3:0], DMI_RXP[3:0], DMI_TXN[3:0], DMI_TXP[3:0]

FDI: FDI_TXN[7:0], FDI_TXP[7:0], FDI_INT, FDI_FSYNC0, FDI_FSYNC1, FDI_LSYNC0, FDI_LSYNC1

System Power Management: DSWVRMEN, DPWROK, WAKE#, CLKRUN#/GPIO32, SUS_STAT#/GPIO61, SUSCLK/GPIO62, SLP_S5#/GPIO63, SLP_S4#, SLP_S3#, SLP_A#, SLP_SUS#, PMSYNCH, SLP_LAN#/GPIO29

1D05V_VTT

R1901 49D9R2F-GP DMI_COMP_R — DMI_ZCOMP, DMI_IRCOMP

R1902 750R2F-GP RBIAS_CPY — DMI2RBIAS

R1926 Do Not Stuff DY — SYS_PWROK

R1904 100KR2J-1-GP — PWROK

0628 Modify:
Change R1904 to 100K 0402 from 10K and default stuff.

SUS_PWR_ACK — SUSACK#

3D3V_S0 — R1905 10KR2J-3-GP — SYS_RESET#

36 SYS_PWROK — SYS_PWROK

27,42 S0_PWR_GOOD — R1924 Do Not Stuff — PWROK

APWROK

5,37 PM_DRAM_PWRGD — DRAMPWROK

PM_RSMRST# — RSMRST#

27 SUS_PWR_ACK — SUSWARN#/SUSPWRDNACK/GPIO30

27,97 PM_PWRBTN# — PWRBTN#

27 AC_PRESENT — ACPRESENT/GPIO31

BATLOW# — BATLOW#/GPIO72

PM_RI# — RI#

DSWODVREN — A18

DPWROK — F22 — PCH_DPWROK — R1910 Do Not Stuff DY — R1911 Do Not Stuff — PM_RSMRST# — RTC_AUX_S5

WAKE# — B9 — PCIE_WAKE# 31,65,66,82

CLKRUN#/GPIO32 — N3 — PM_CLKRUN# 27

SUS_STAT#/GPIO61 — G8

SUSCLK/GPIO62 — N14 — PCH_SUSCLK_KBC 27

SLP_S5#/GPIO63 — D10

SLP_S4# — H4 — PM_SLP_S4# 27,46

SLP_S3# — F4 — PM_SLP_S3# 27,36,37,47,92

SLP_A# — G10

SLP_SUS# — G16

PMSYNCH — AP14 — H_PM_SYNC 5

SLP_LAN#/GPIO29 — K14

S0_PWR_GOOD after PM_SLP_S3# delay 200 ms

DSWODVREN - On Die DSW VR Enable	
HIGH	Enabled (DEFAULT)
LOW	Disabled

SB modify

RTC_AUX_S5 — R1917 330KR2J-L1-GP — DSWODVREN — R1918 DY Do Not Stuff

R1919 8K2R2J-3-GP — 3D3V_S0 — PM_CLKRUN#

3D3V_S5 — RN1901 SRN10KJ-6-GP — BATLOW# — PM_RI# — AC_PRESENT — SUS_PWR_ACK

R1921 10KR2J-3-GP — PCIE_WAKE#

PCIE_WAKE#
CRB : 1K
CEKLT: 10K

PWRBTN#
This signal has an internal pull-up resistor

R1908 100KR2J-1-GP — PM_RSMRST#

3D3V_AUX_S5 — R1909 100KR2J-1-GP — R1916 10KR2J-3-GP — 3V_5V_POK_#

Q1901 2N7002KDW-GP
84.2N702.A3F
2nd = 84.DM601.03F

PM_RSMRST# — R1912 1KR2J-1-GP — RSMRST#_KBC 27

3V_5V_POK 41

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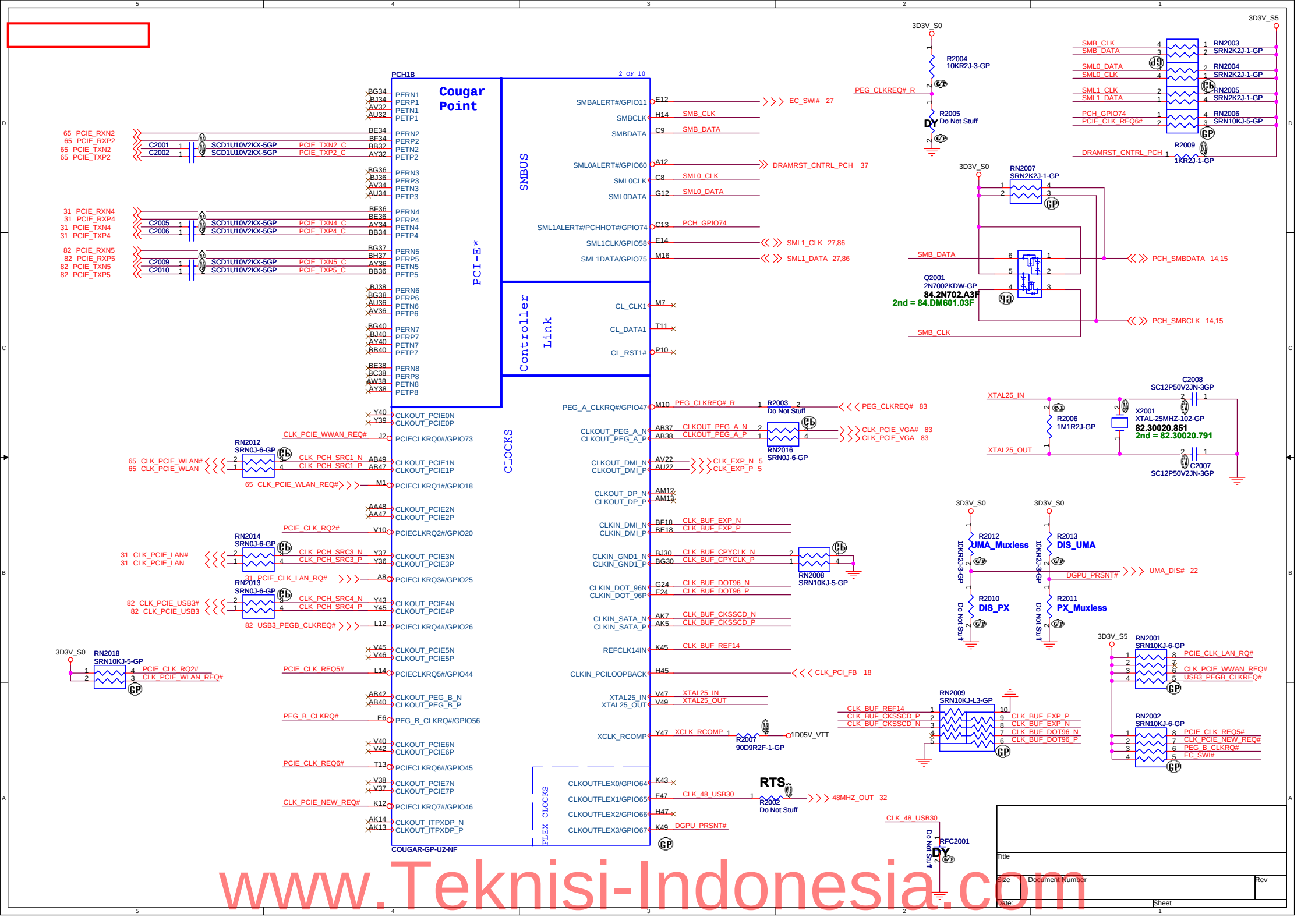
Size | Document Number | Rev

Date: | Sheet



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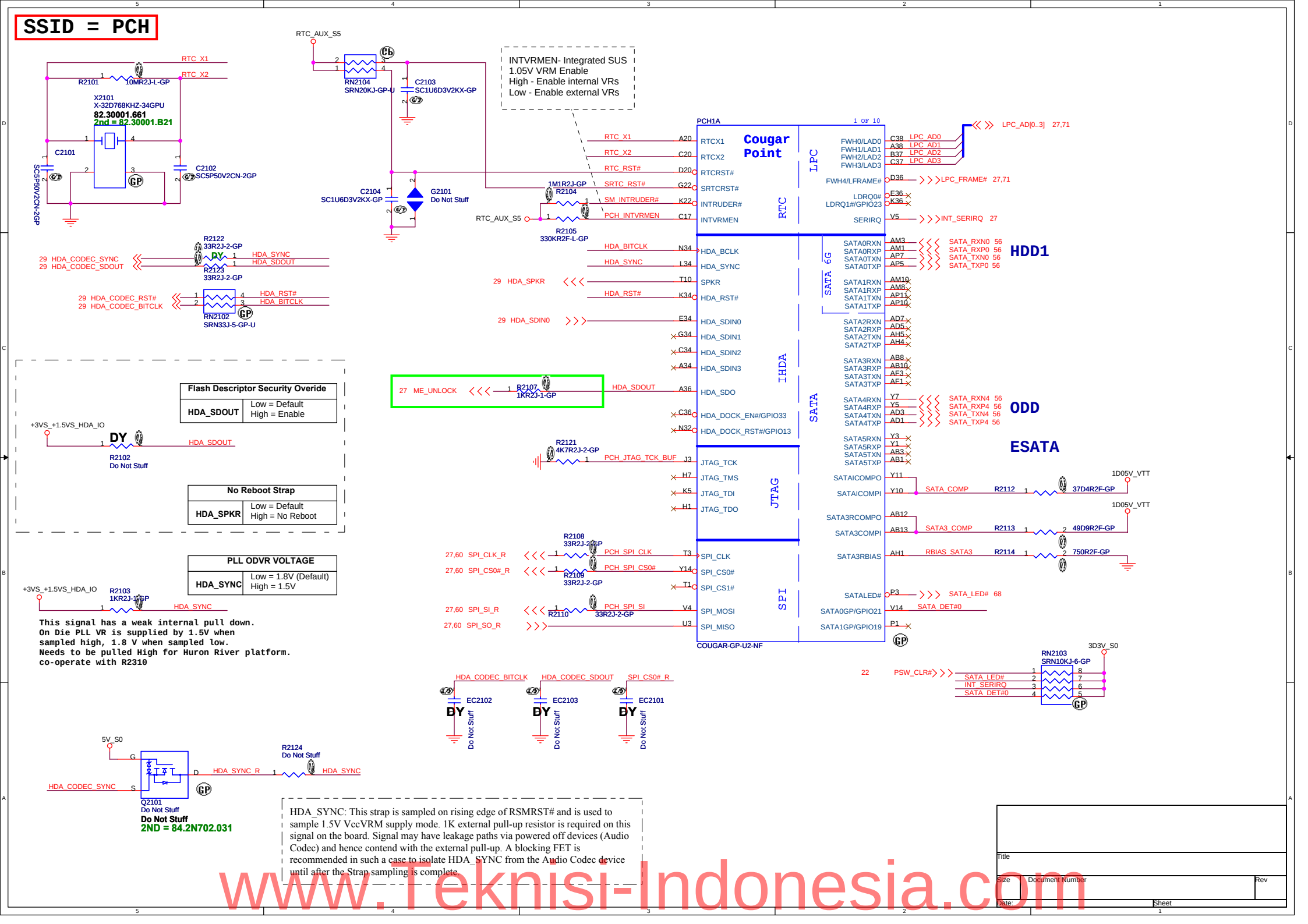
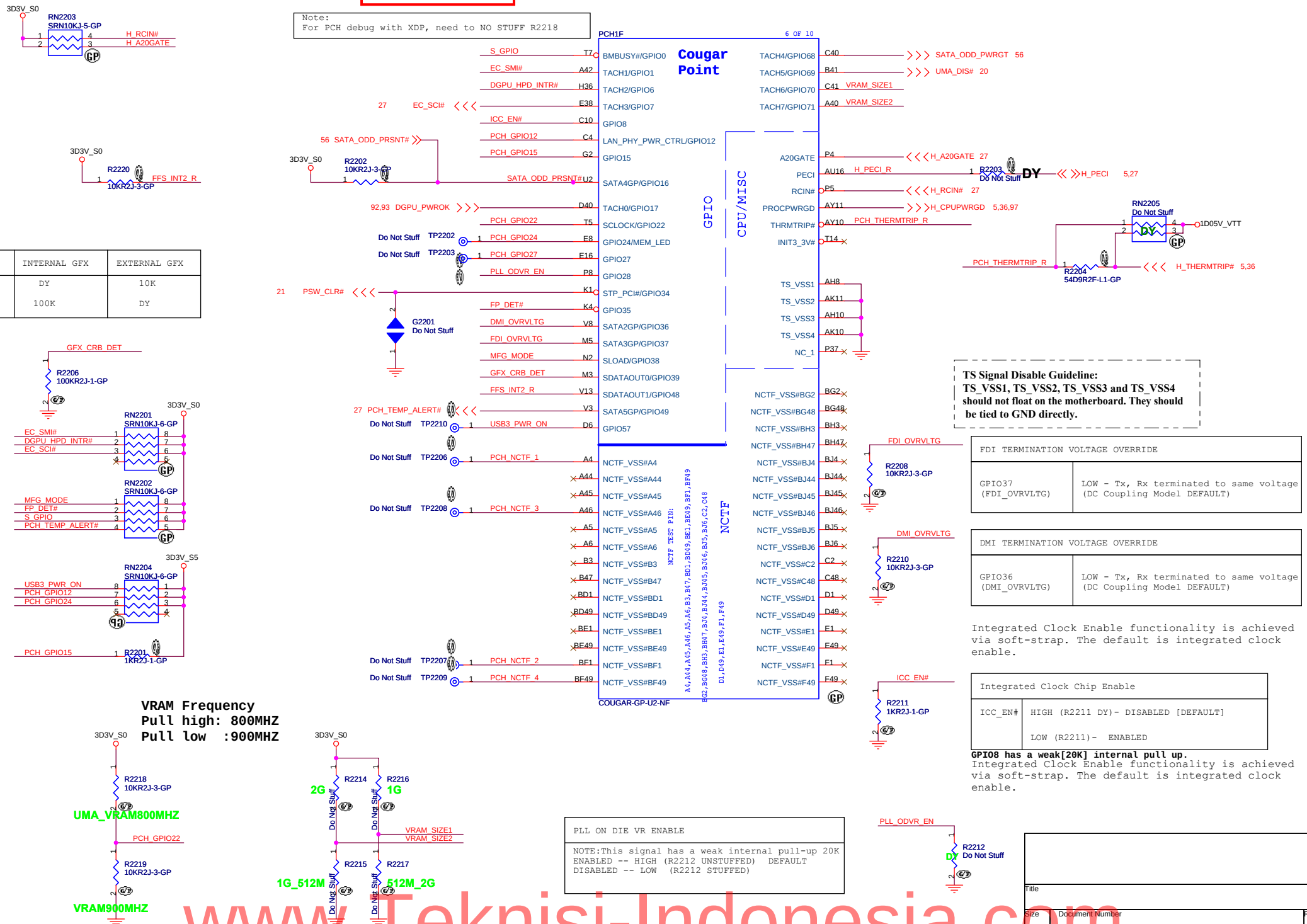
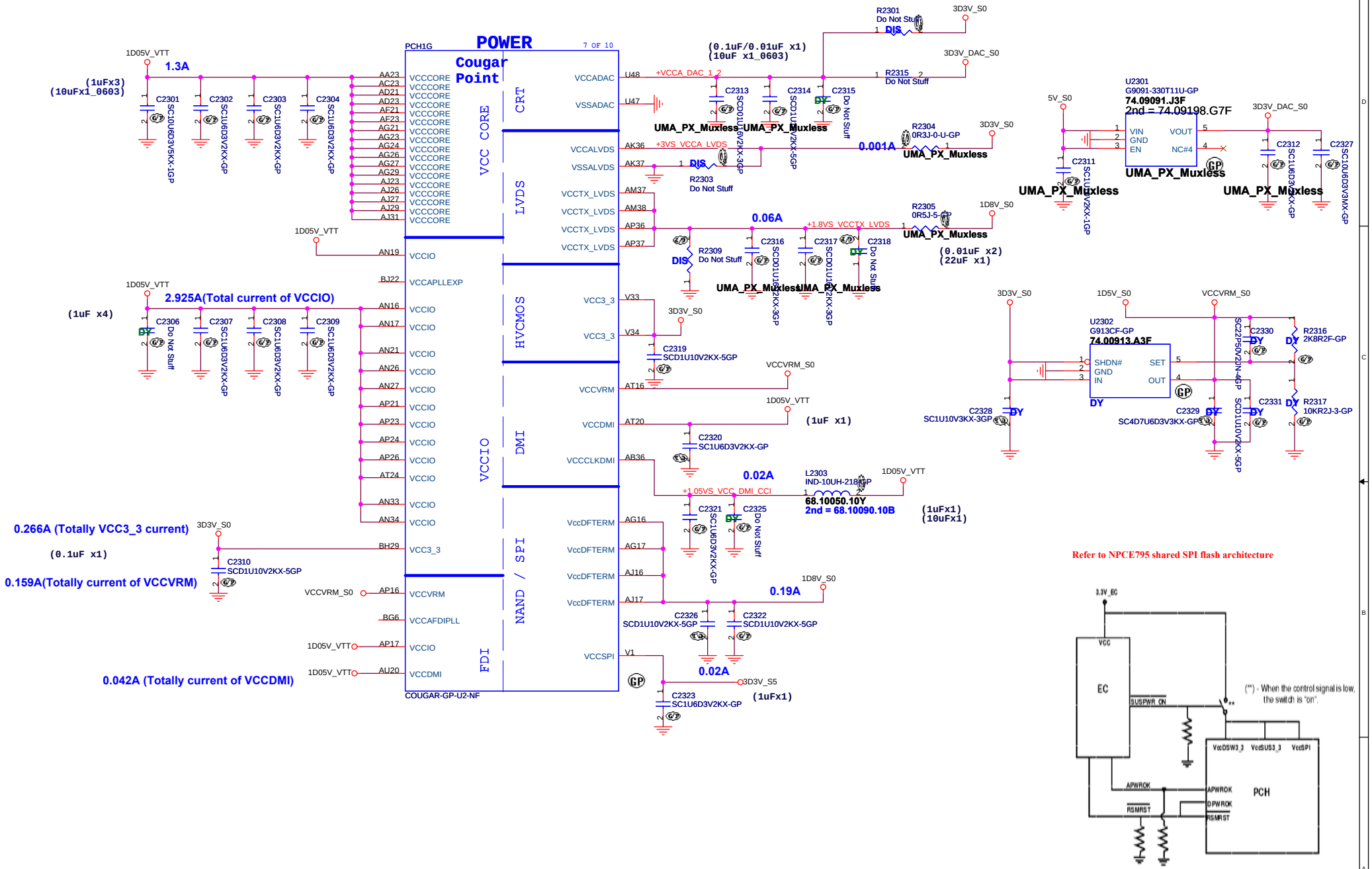
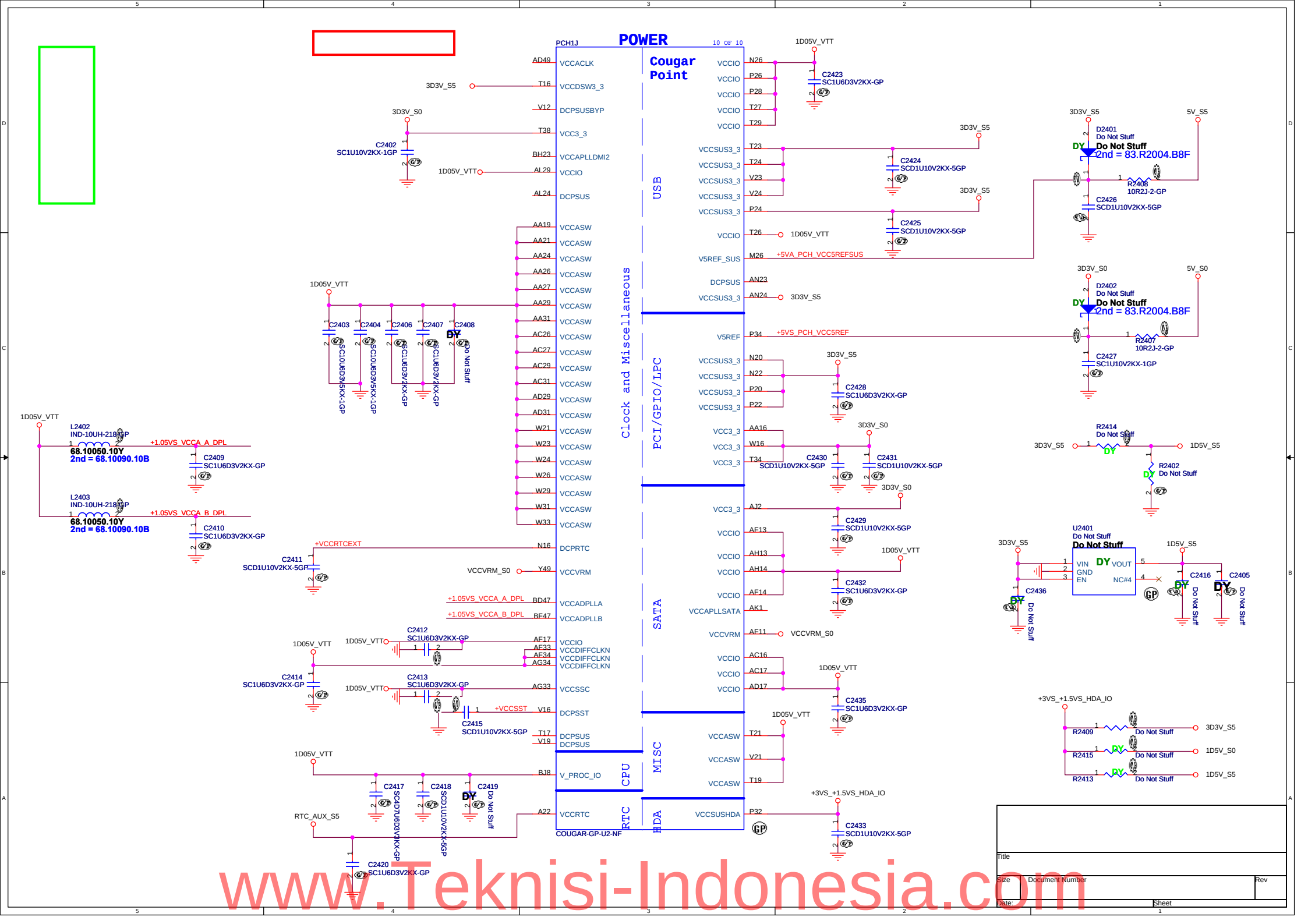


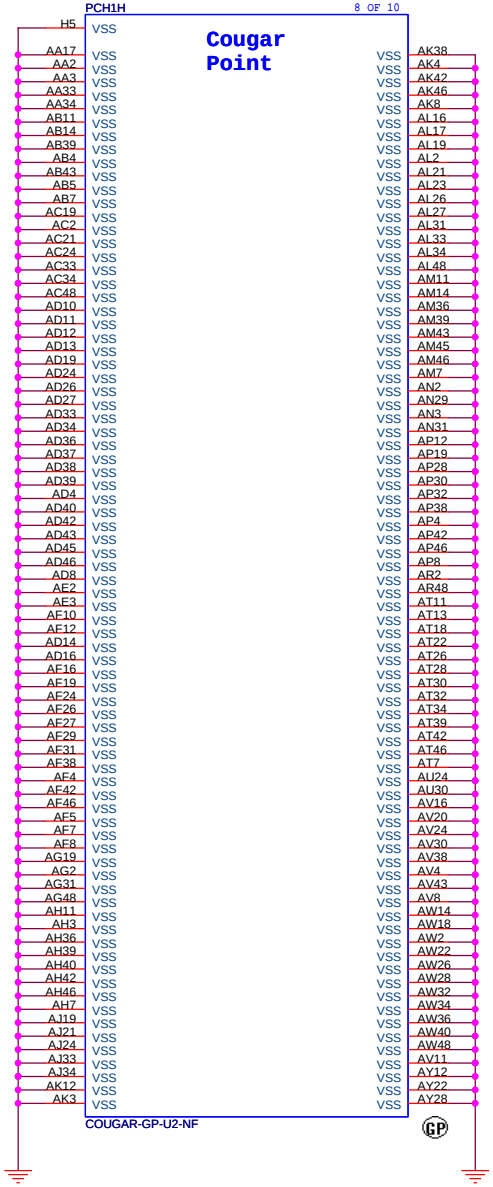


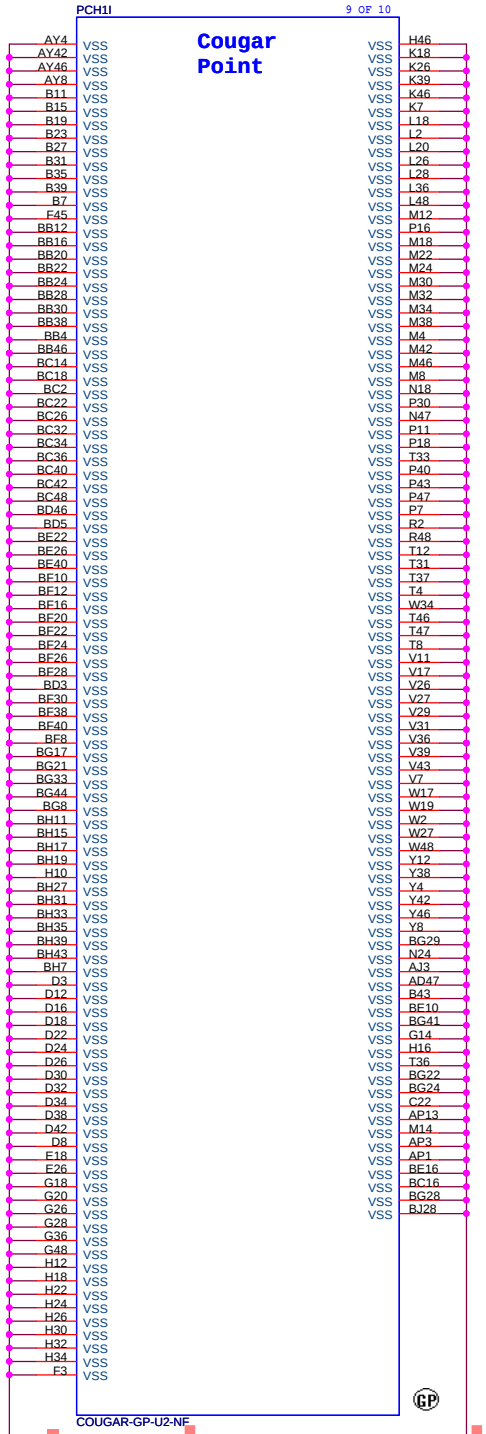
	INTERNAL GFX	EXTERNAL GFX
R2205	DY	10K
R2206	100K	DY

SSID = PCH









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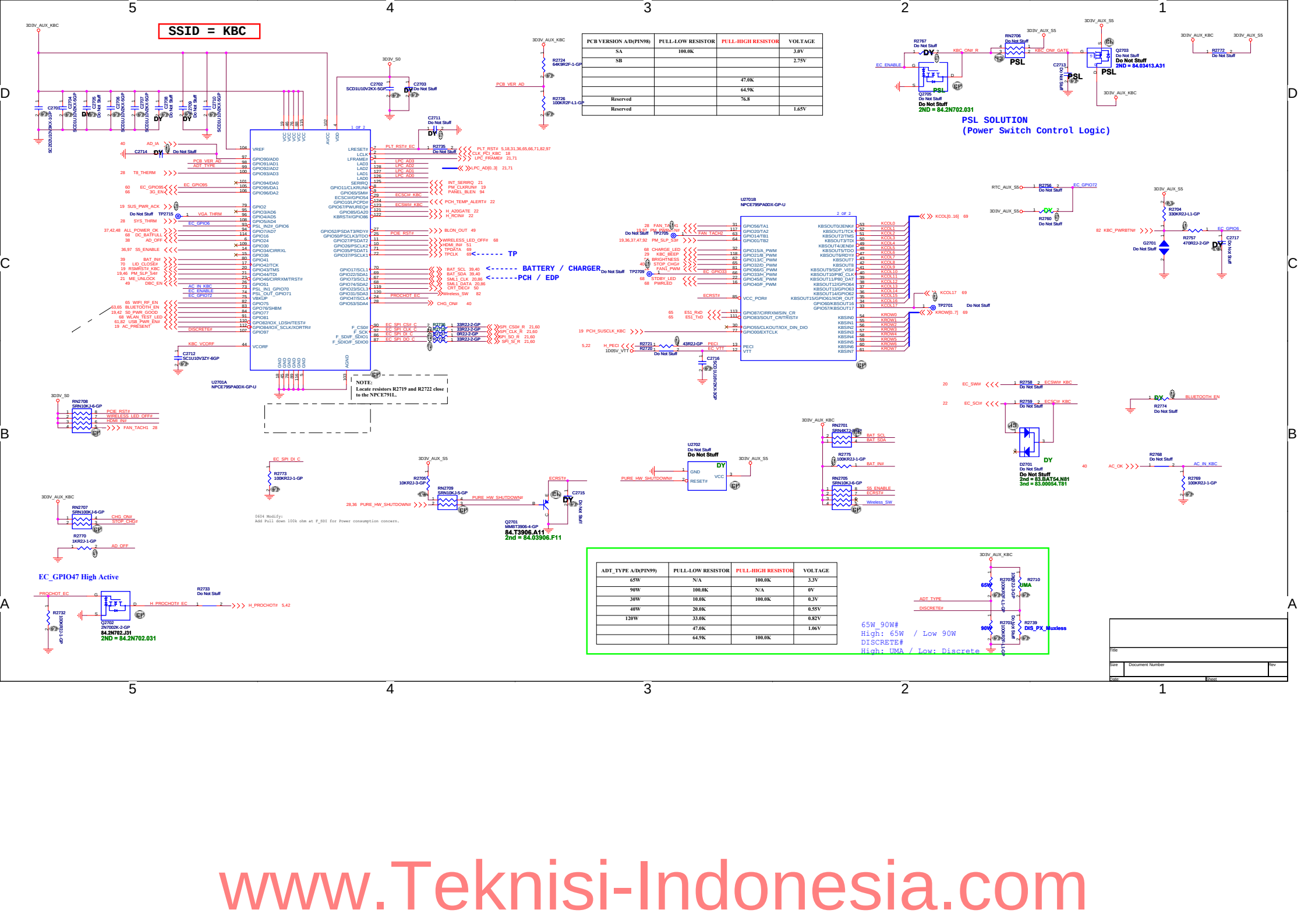
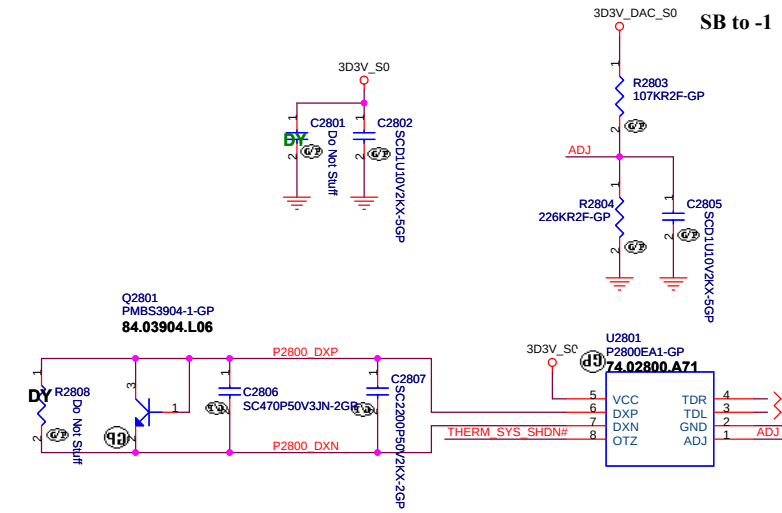
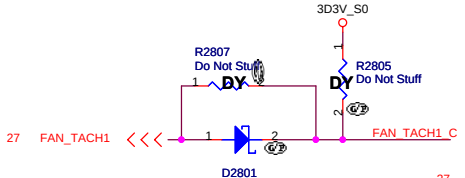
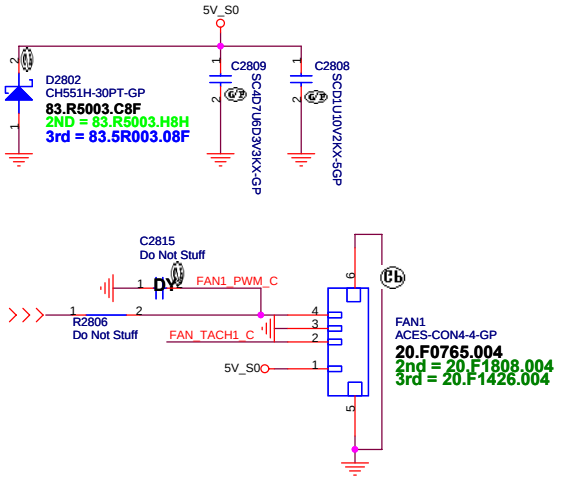
Size | Document Number | Rev

Date: | Sheet



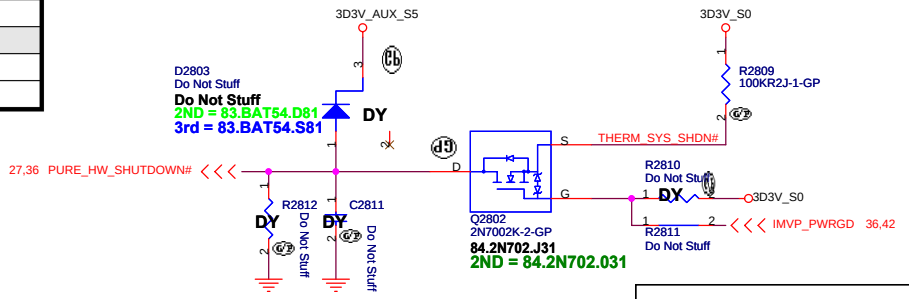






ADJ Table (Reference to SYNTON-TECH Metal Film Resistor E-96 ±1% Series)

RADJ1 (KΩ)	RADJ2 (KΩ)	VADJ (v)	OTZ Threshold Temperature (°C)
124	226	2.13	101
118	226	2.17	96.3
113	226	2.20	92.1
110	226	2.22	89.6
107	226	2.24	87
105	226	2.25	85.3
100	226	2.29	80.9



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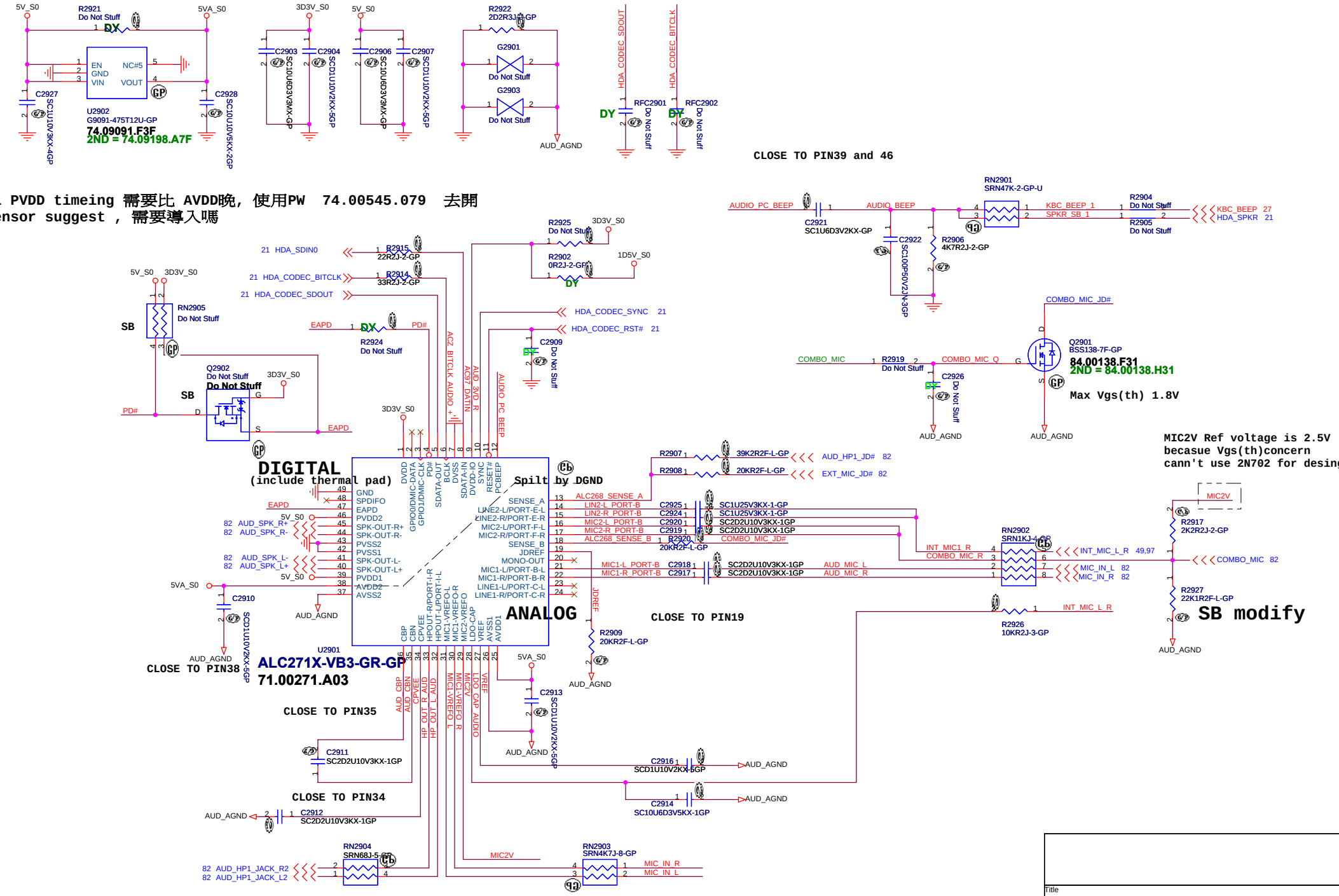
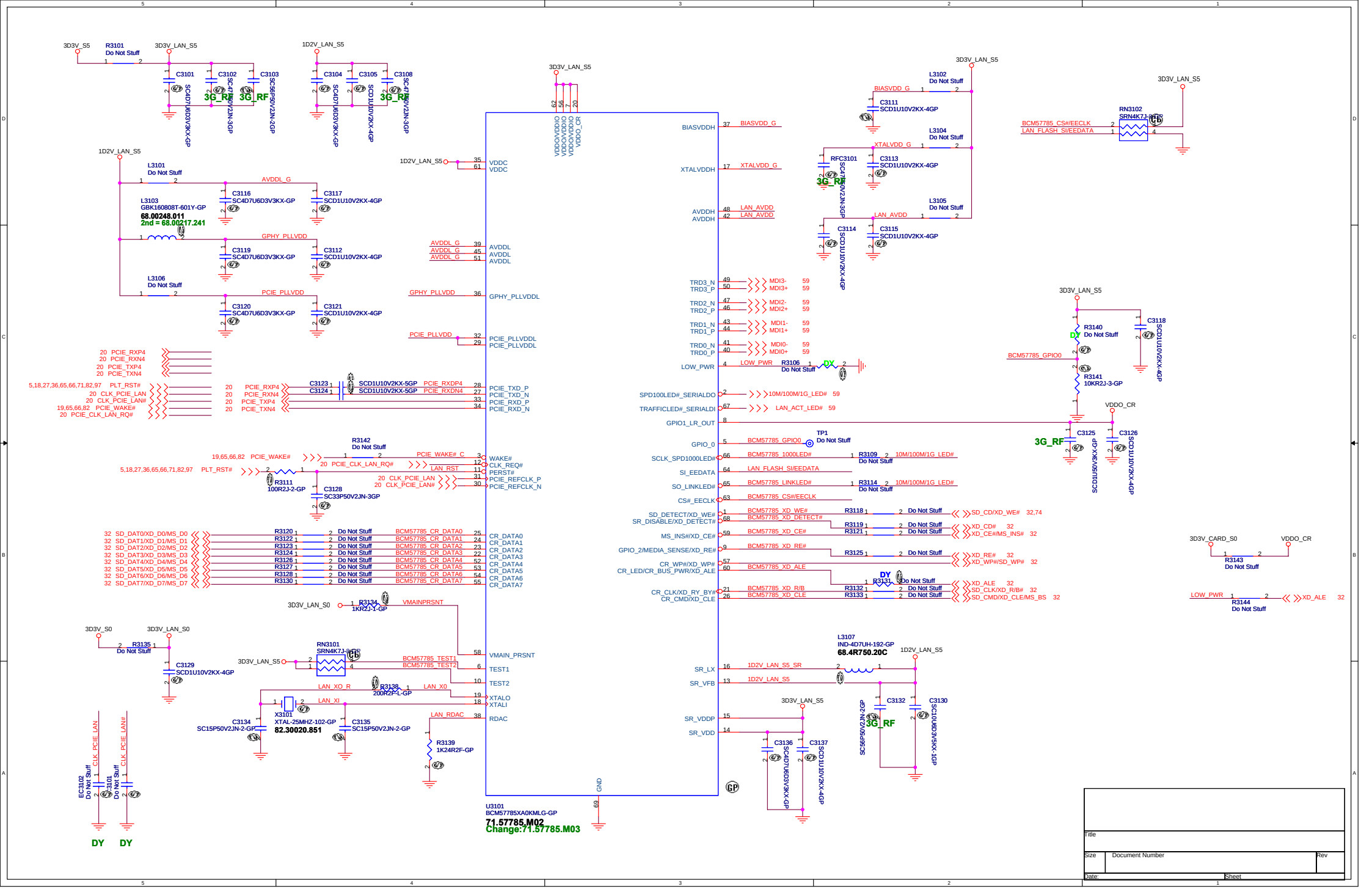
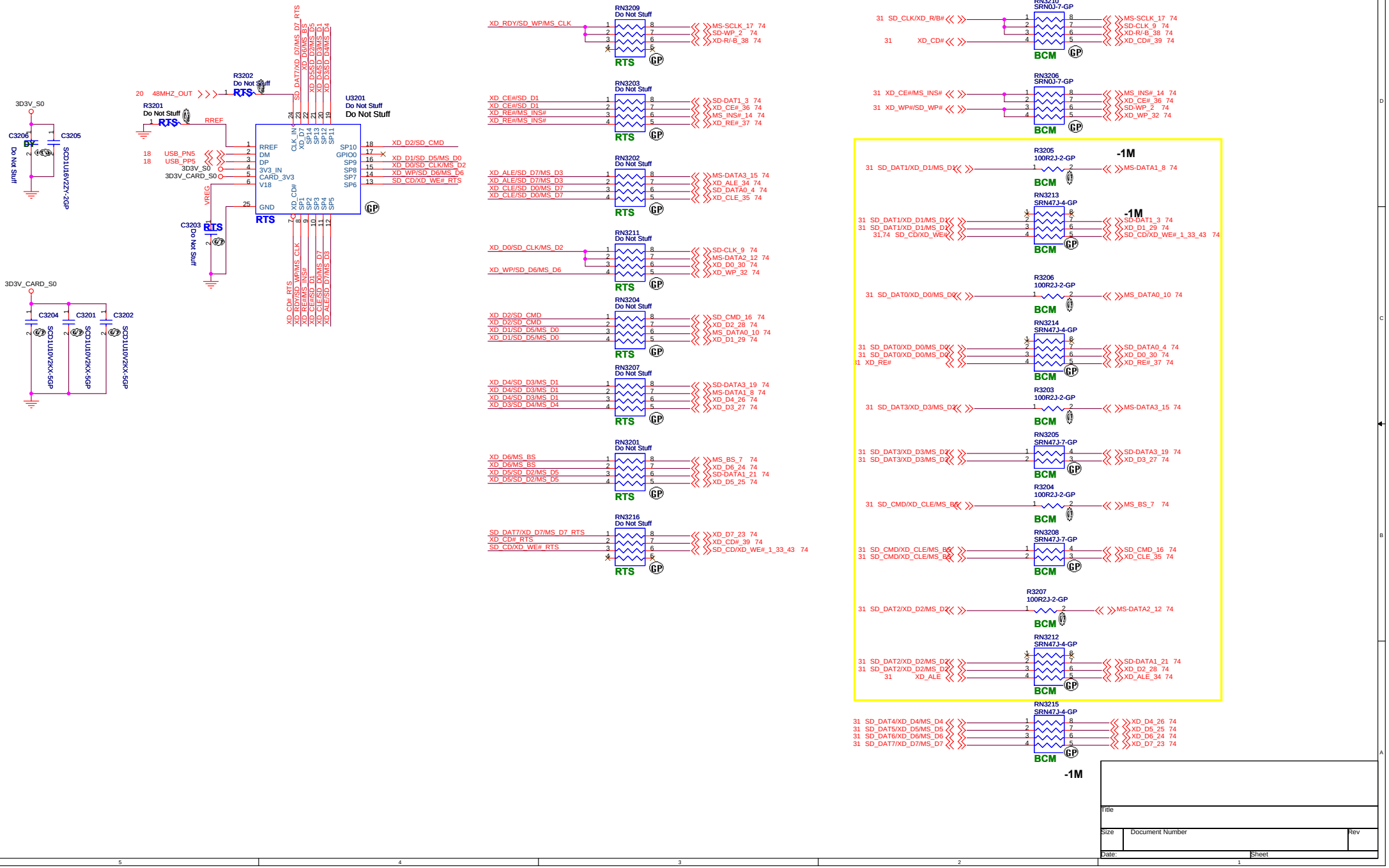
Size | Document Number | Rev

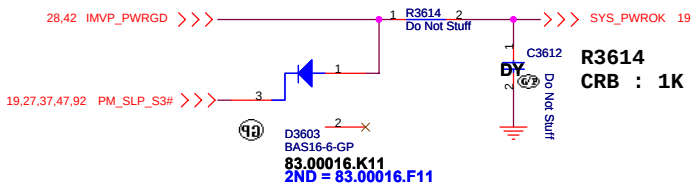
Date: | Sheet


-1 PVDD timeing 需要比 AVDD晚, 使用PW 74.00545.079 去開
vensor suggest , 需要導入嗎
CLOSE TO PIN39 and 46
MIC2V Ref voltage is 2.5V
becasue Vgs(th)concern
cann't use 2N702 for desing
DIGITAL
(include thermal pad)
Spilt by DGND
ANALOG
U2901
ALC271X-VB3-GR-GP
71.00271.A03
CLOSE TO PIN38
CLOSE TO PIN35
CLOSE TO PIN34
CLOSE TO PIN19
SB modify
Max Vgs(th) 1.8V
74.09091.F3F
2ND = 74.09198.A7F
84.00138.F31
2ND = 84.00138.H31
www.Teknisi-Indonesia.com



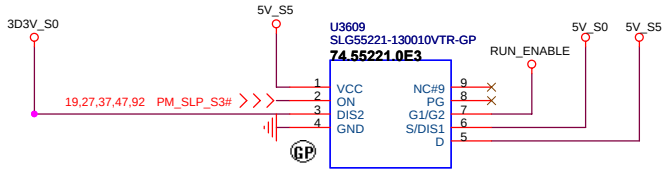


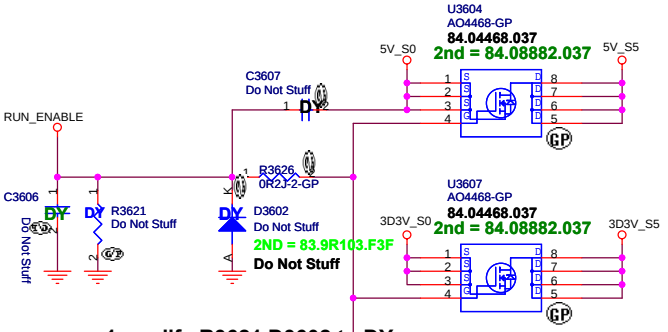
Power Sequence



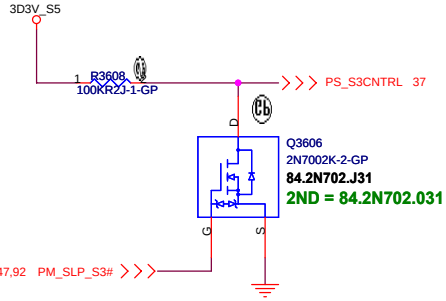
R3614
CRB : 1K

ANNIE Run Power



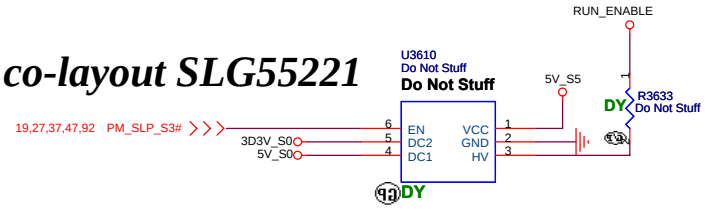


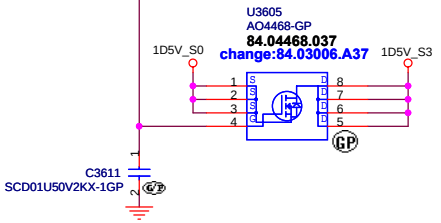
-1 modify R3621,D3602 to DY



SB modify part number

-1 co-layout SLG55221

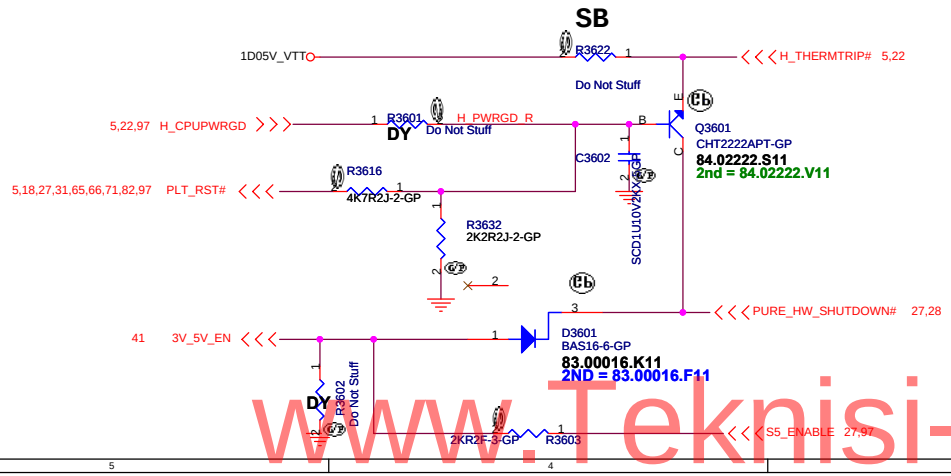




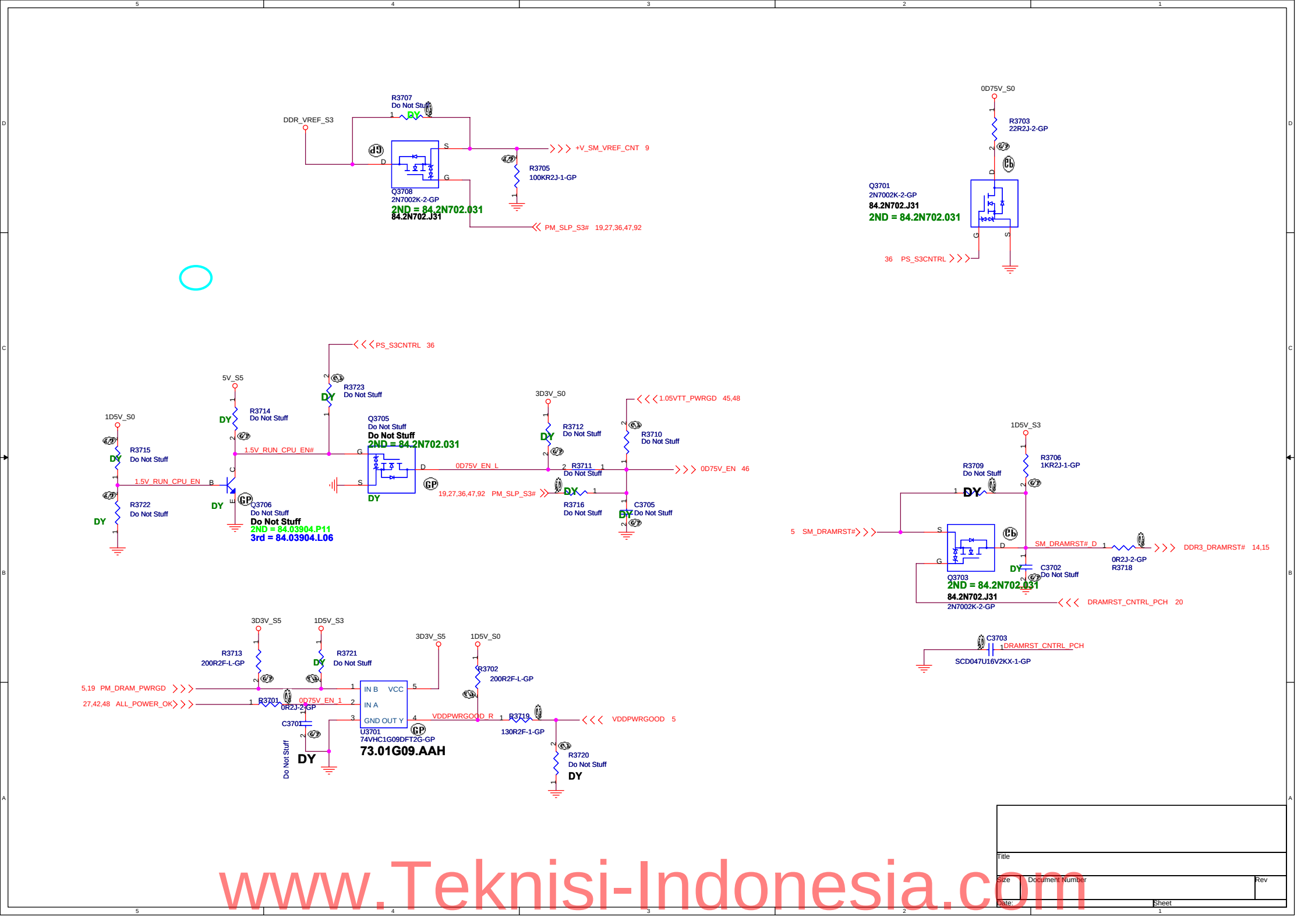
1D5V_S0

MAX Current 3000 mA
Design Current 2100 mA
Total= 11.39A

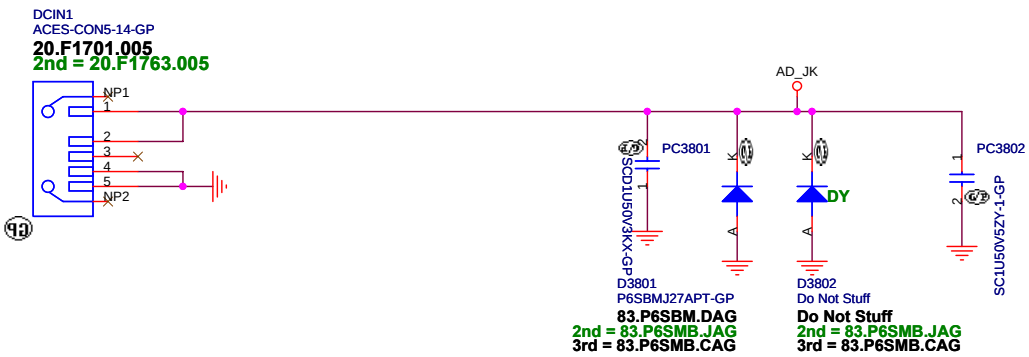
SB

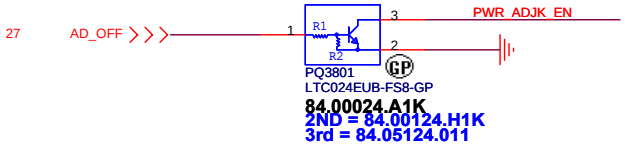


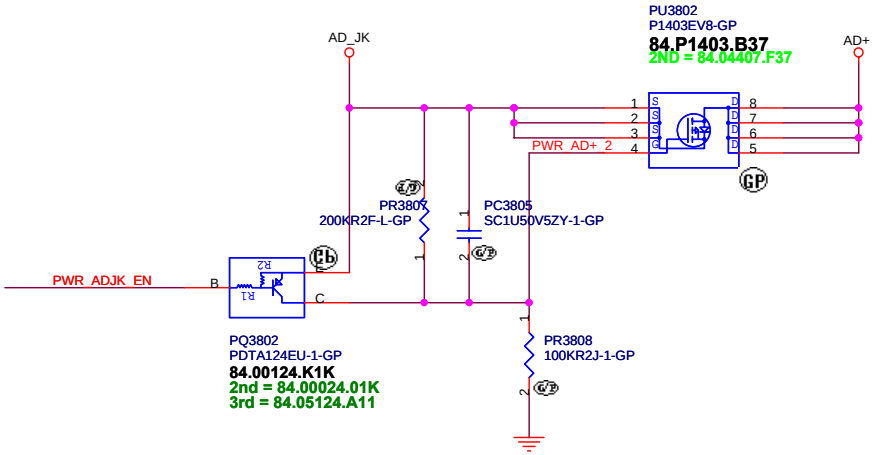
Title
Size
Document Number
Rev
Date:
Sheet



Title		
Size	Document Number	Rev
Date:		Sheet







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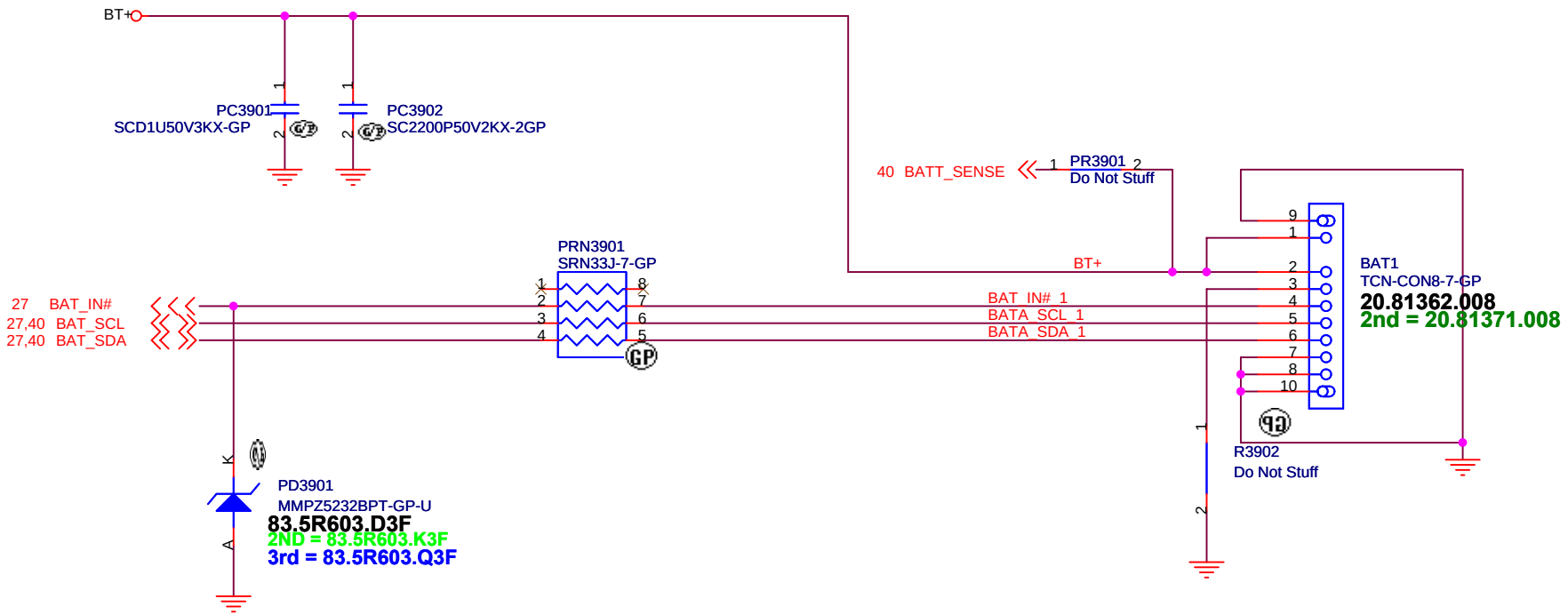
Size	Document Number	Rev
Date:		Sheet

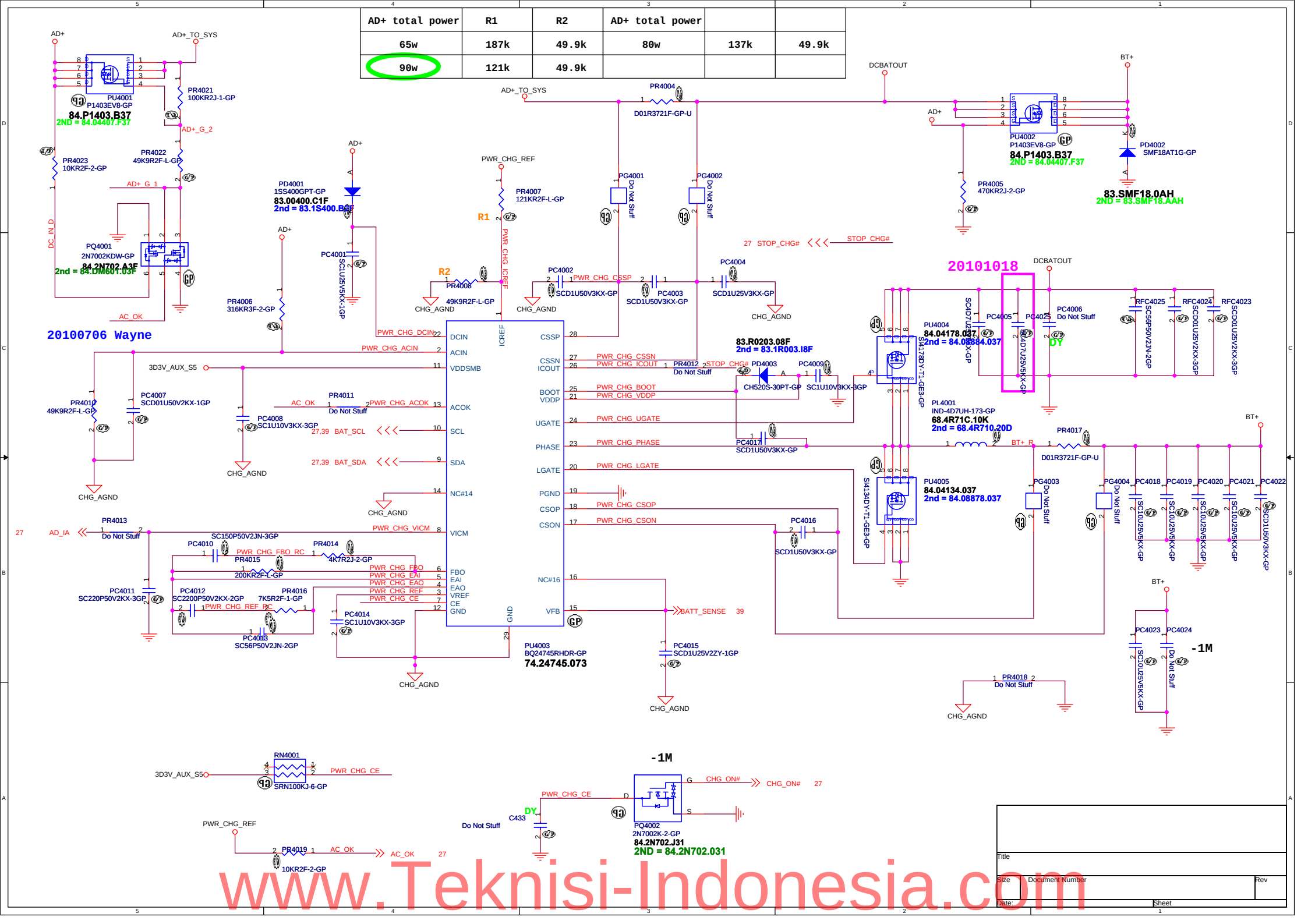


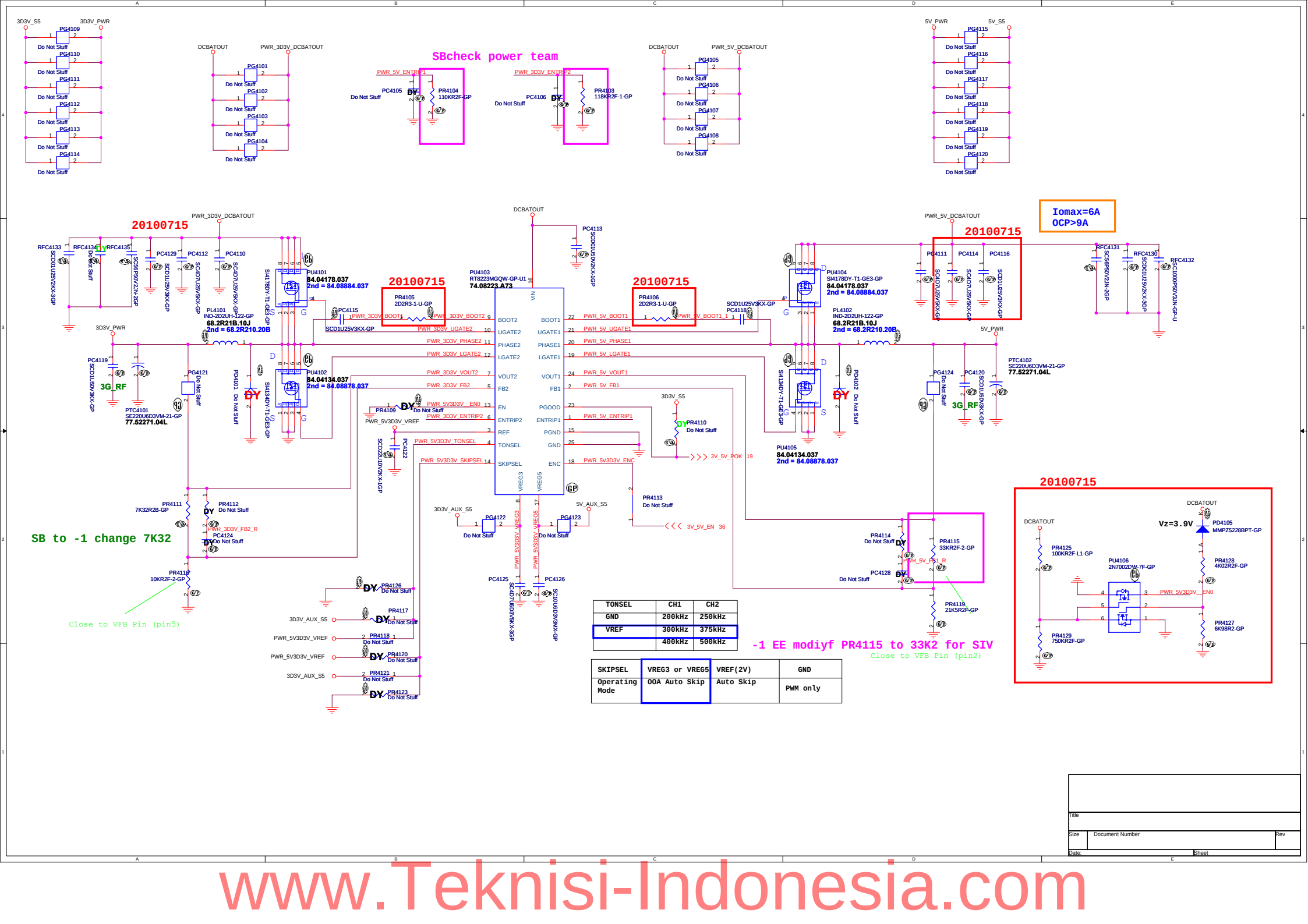
Title

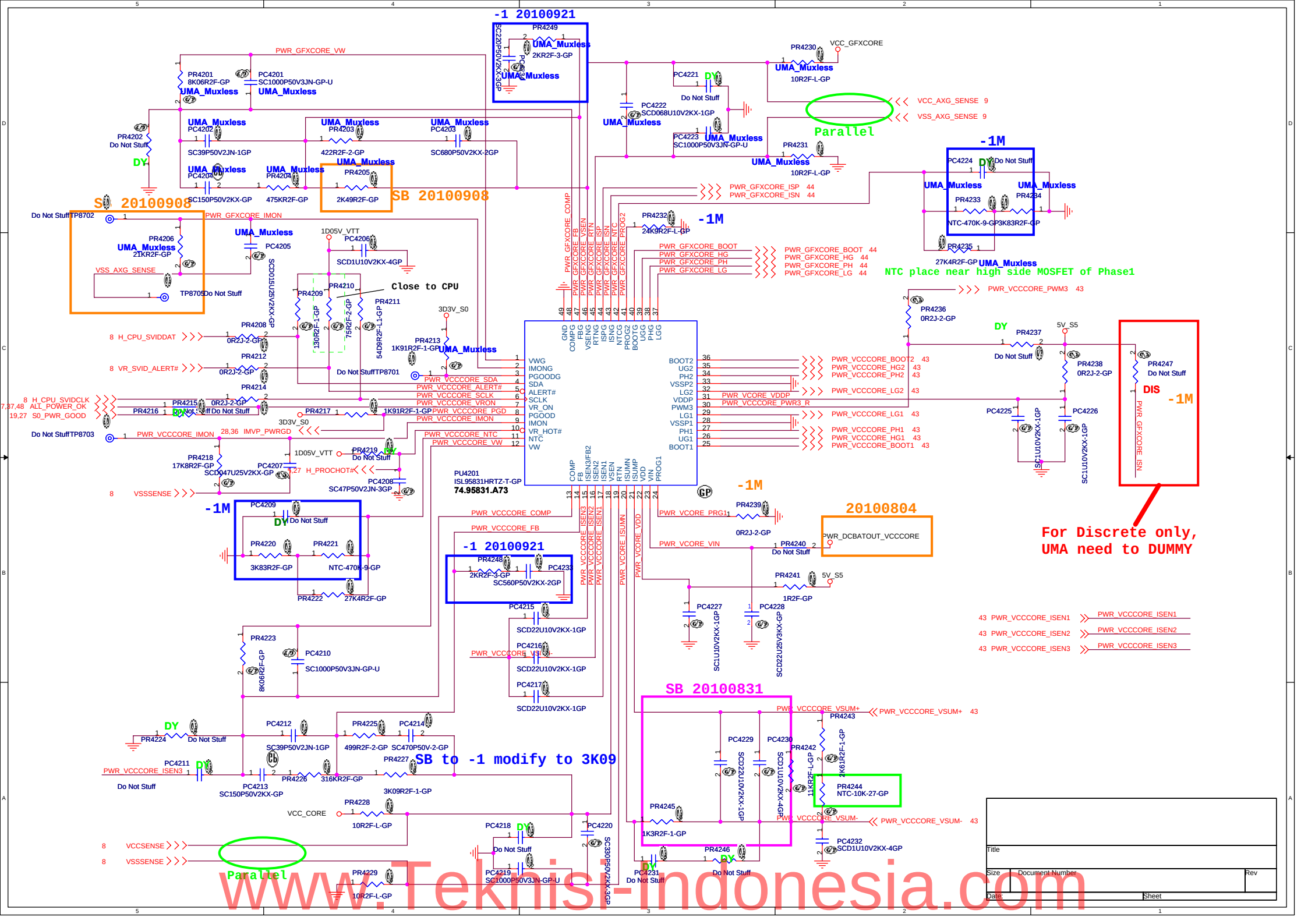
Size | Document Number | Rev

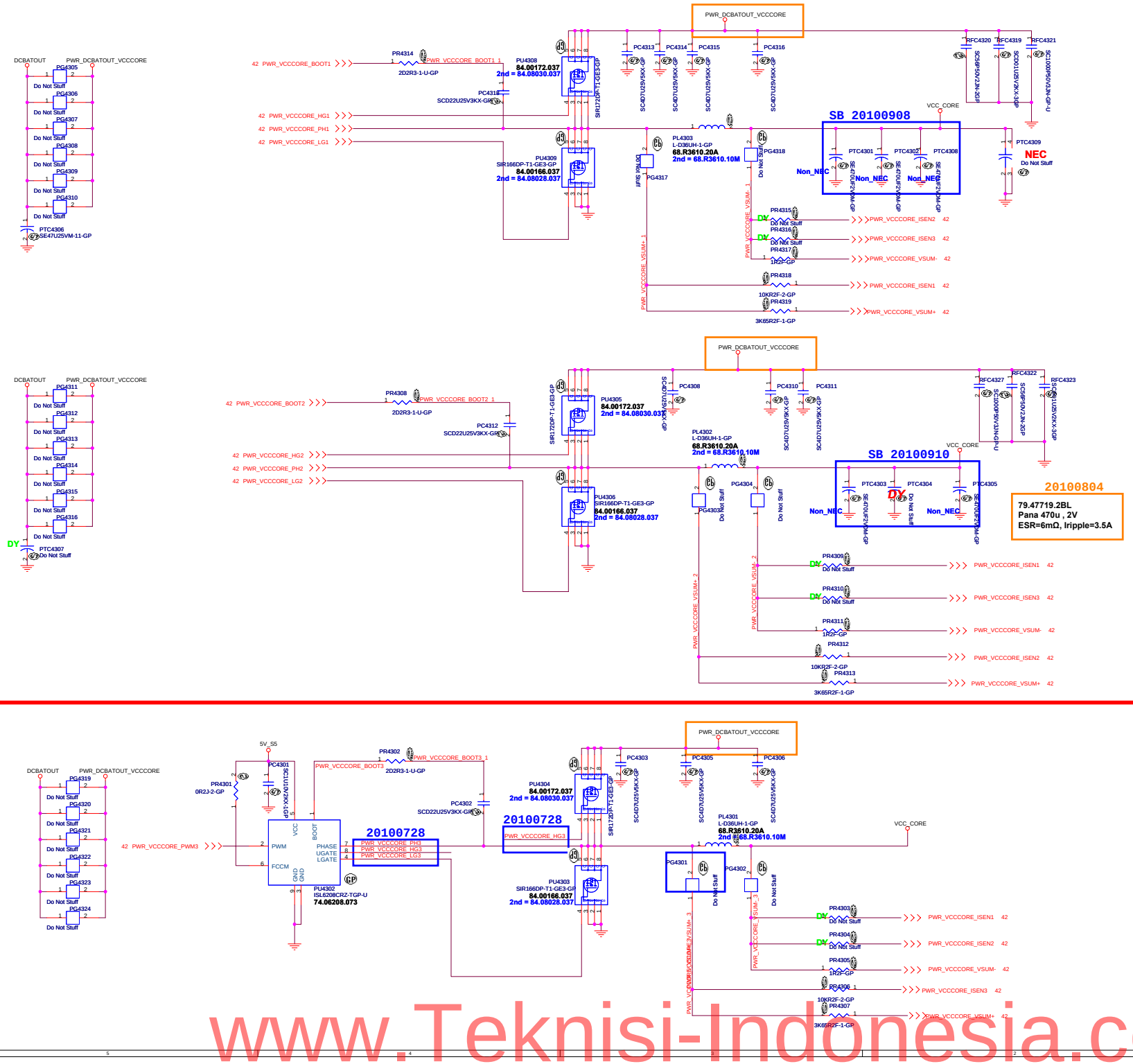
Date: | Sheet

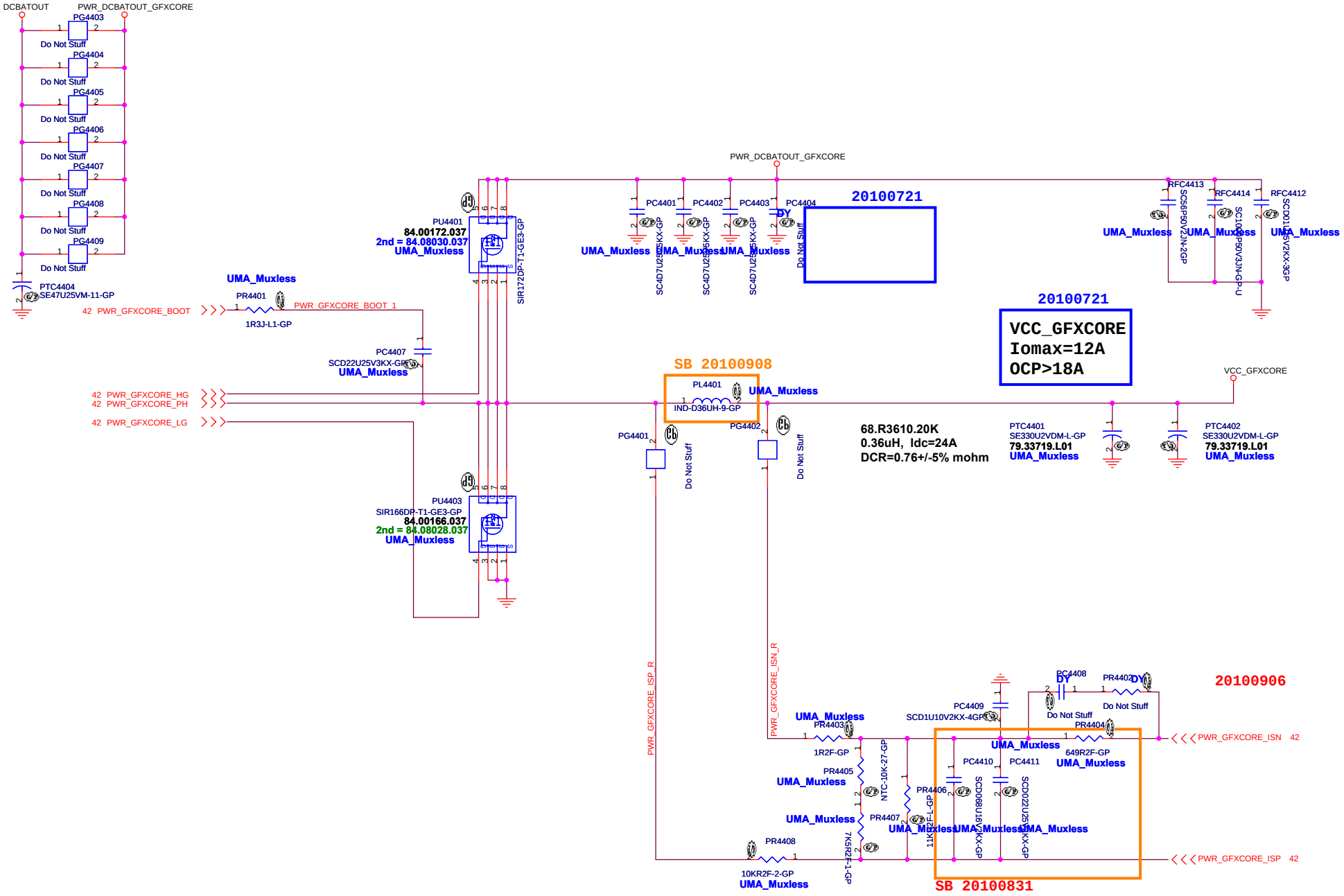
AD+ total power	R1	R2	AD+ total power		
65w	187k	49.9k	80w	137k	49.9k
90w	121k	49.9k			



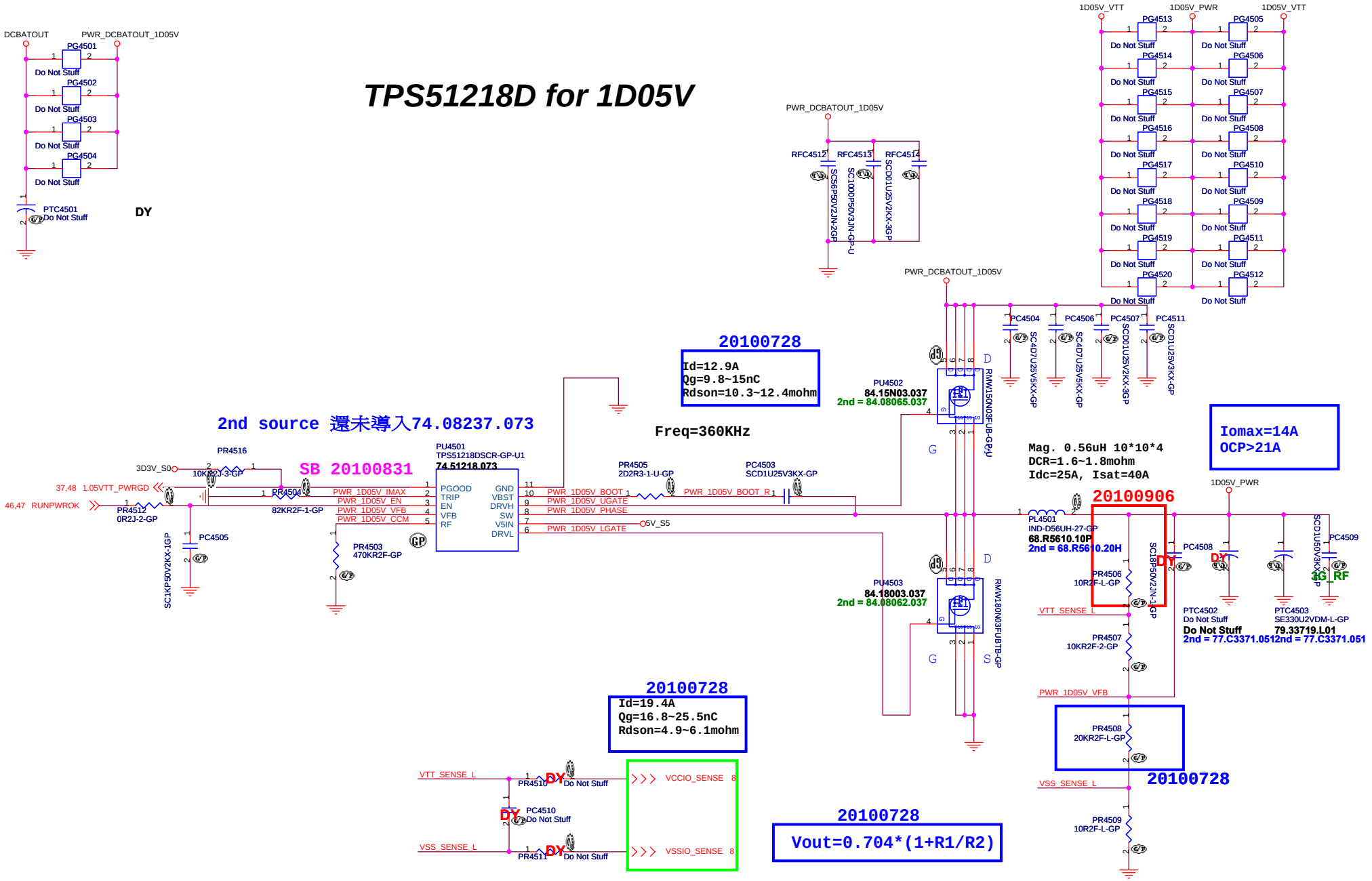

SBcheck power team
20100715
20100715
20100715
20100715
Iomax=6A
OCP>9A
SB to -1 change 7K32
Close to VFB Pin (pin5)
-1 EE modiyf PR4115 to 33K2 for SIV
Close to VFB Pin (pin2)
Vz=3.9V
TONSEL | CH1 | CH2
GND | 200kHz | 250kHz
VREF | 300kHz | 375kHz
400kHz | 500kHz
SKIPSEL | VREG3 or VREG5 | VREF(2V) | GND
Operating Mode | OOA Auto Skip | Auto Skip | PWM only
www.Teknisi-Indonesia.com


-1 20100921
SB 20100908
-1M
Parallel
NTC place near high side MOSFET of Phase1
Close to CPU
20100804
For Discrete only,
UMA need to DUMMY
SB 20100831
SB to -1 modify to 3K09
PU4201
ISL95831HRTZ-T-GP
74.95831.A73
www.Teknisi-Indonesia.com





TPS51218D for 1D05V



Title	
Size	Document Number
Rev	
Date:	Sheet

SSID = PWR.Plane.Regulator_1p5v0p75v

20100805

RT8207L for 1D5V

DCBATOUT PWR_DCBATOUT_1D5V
PG4601 PG4602 PG4603 PG4604 Do Not Stuff
PTC4601 Do Not Stuff
DY

19,27 PM_SLP_S4# PR4612 Do Not Stuff PWR_1D5V_EN
PC4612 Do Not Stuff
DY

SB 20100831

PWR_1D5V_VCC5 PR4604 5D1R2F-GP 5V_S5
PC4606 SC1U10V2KX-1GP
PC4602 SC1K50V2KX-1GP
PR4603 12K4R2F-GP
PWR_1D5V_VDDP PR4605 Do Not Stuff 5V_S5
C694 SC1U10V2KX-1GP
PWR_1D5V_CS

20100728
Id=12.9A
Qg=9.8~15nC
Rdson=10.3~12.4mohm

SB

3D3V_S5 PR4602 10KR2F-2-GP
Close to pin23
45,47 RUNPWROK
PWR_DCBATOUT_1D5V PR4610 620KR2F-GP PWR_1D5V_TON
PWR_1D5V_EN
PWR_0D75V_EN
PWR_1D5V_VTTIN
1D5V_S3 PG4605 Do Not Stuff PG4606 Do Not Stuff PC4603 SC10U6D3V5MX-3GP
1D5V_S3 PG4607 Do Not Stuff PWR_1D5V_VDDQ
DDR_VREF_PWR
Close to pin23

CS VDD VDDP PGOOD TON S5 S3 VLDOIN NC#7 VTTGND MODE VTT VTTSNS GND GND
BOOT UGATE PHASE LGATE PGND NC#17 VDDQ FB DEM VTTREF

PWR_1D5V_BOOT PR4606 2D2R3-1-U-GP PWR_1D5V_PHASE_L PC4609 SCD1U25V3KX-GP
PWR_1D5V_UGATE
PWR_1D5V_PHASE
PWR_1D5V_LGATE
PWR_1D5V_VDDQ
PWR_1D5V_FB
5V_S5

PU4601 RT8207LGQW-GP-U1 74.08207.B73

-1 PR4608 需要將來都改32K4R

R1 PR4608 33KR2F-GP DY PC4610 Do Not Stuff
R2 PR4609 30KR2F-GP

Close to output cap pin1, not inside of the output cap
2nd source 還未導入74.51116.073

PWR_1D5V_VTTREF PR4607 Do Not Stuff DDR_VREF_S3
PC4608 SCD033U16V2KX-GP
Close to PIN9

37 0D75V_EN PR4615 Do Not Stuff PWR_0D75V_EN

+0.75VS
Iomax: 1.2A

0D75V_S0 PG4608 Do Not Stuff PG4609 Do Not Stuff DDR_VREF_PWR
PC4604 SC10U6D3V5MX-3GP PC4605 Do Not Stuff DY

PWR_DCBATOUT_1D5V
RFC4617 SC1U25V2KX-3GP RFC4618 SC1000P50V3JN-GP-U RFC4616 SC56P50V2JN-2GP

20100906

PWR_DCBATOUT_1D5V
PC4611 PC4614 PC4616 PC4617 PC4615 SC4D7U25V5KX-GP SCD1U25V3KX-GP

PU4602 84.15N03.037 2nd = 84.08065.037 RMW150N03FUB-GP-U1
PU4603 84.18003.037 2nd = 84.18002.037 RMW180N03FUBTB-GP

Mag. 1.0uH 10*10*4
DCR=2.9~3.3mohm
Idc=18A, Isat=36A
Iomax=12A
OCP>20A

1D5V_S3 PL4601 IND-1UH-93-GP 68.1R01B.10J 2nd = 68.1R01C.10Q
PC4613 Do Not Stuff DY
PTC4602 SE390U2D5VM-7GP 79.3971V.30L 2nd = 79.3971V.6AL
Matsuki cap 390uF 2.5V, ESR=10mohm

Vout=0.75*(1+R1/R2)

20100728

SB R4608 chekc 修改31K6R
Vout 需再1.55V 以上

Title
Size Document Number Rev
Date Sheet

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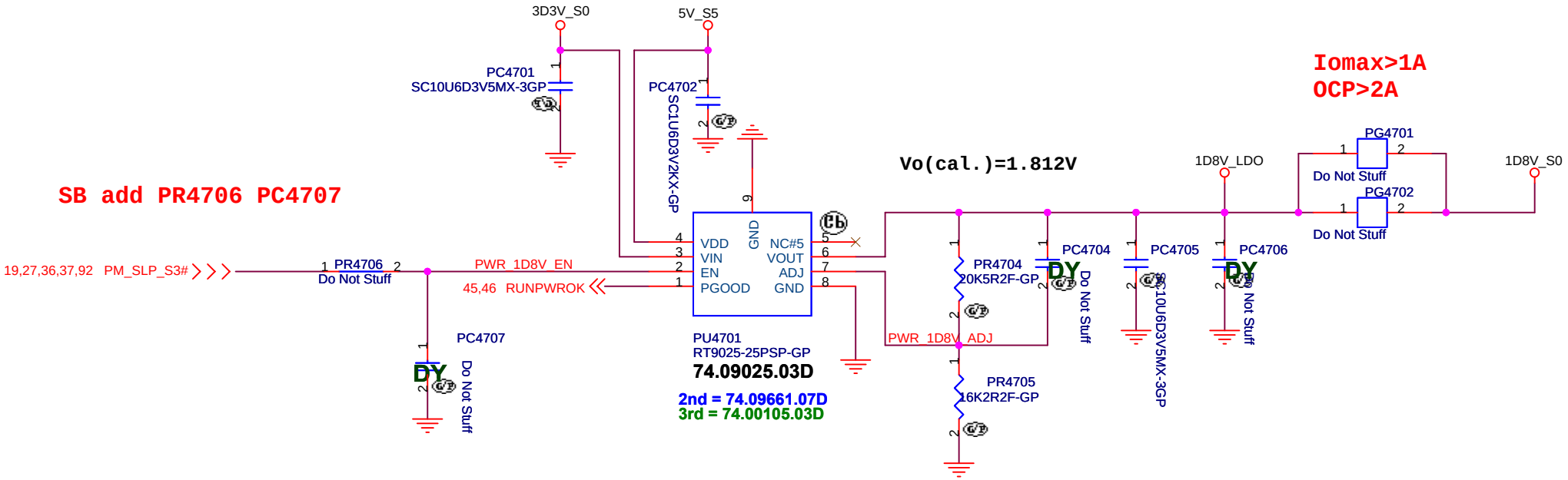
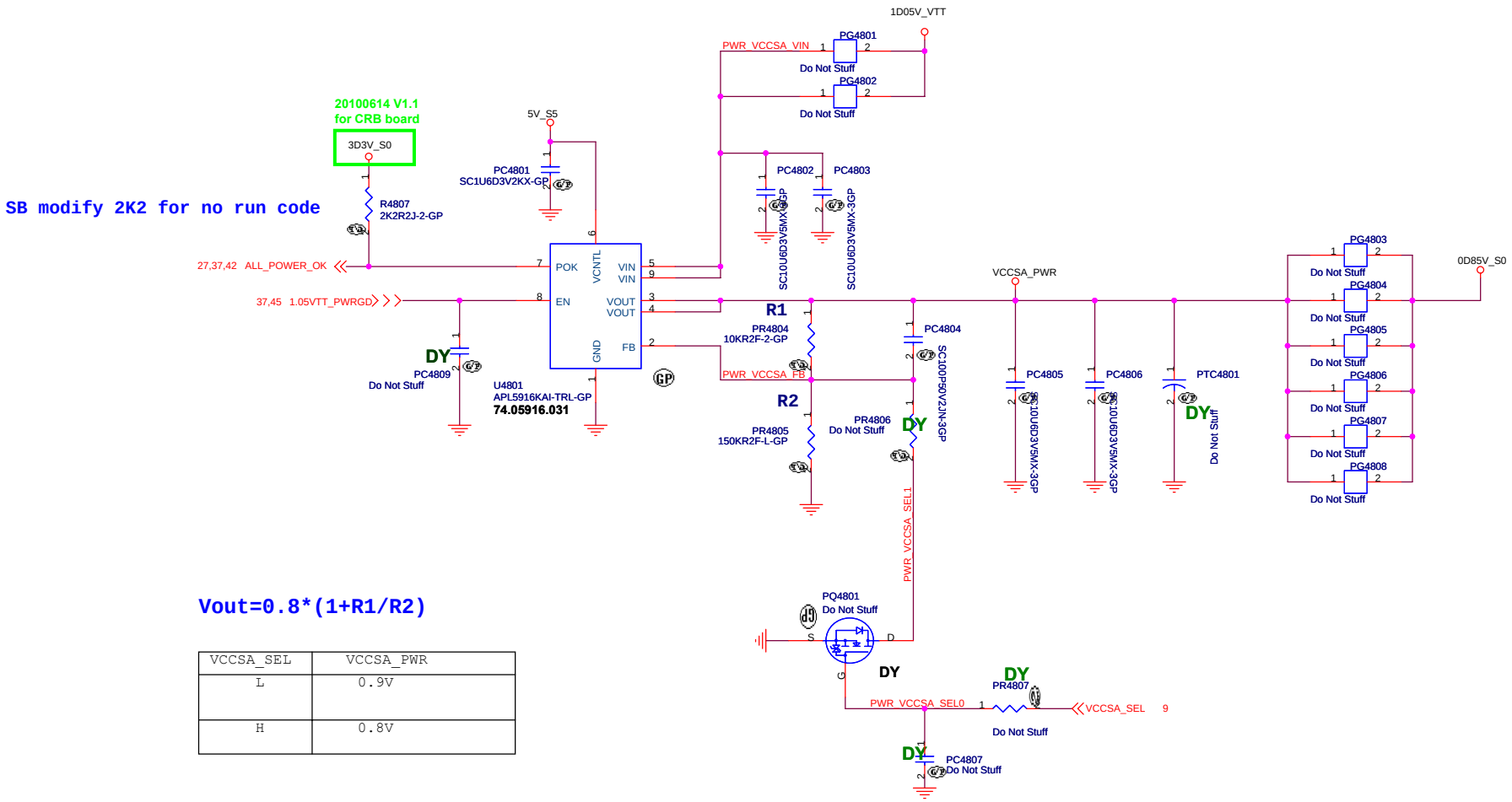
RT9025 for 1D8V_S0



Title		
Size	Document Number	Rev
Date:	Sheet	

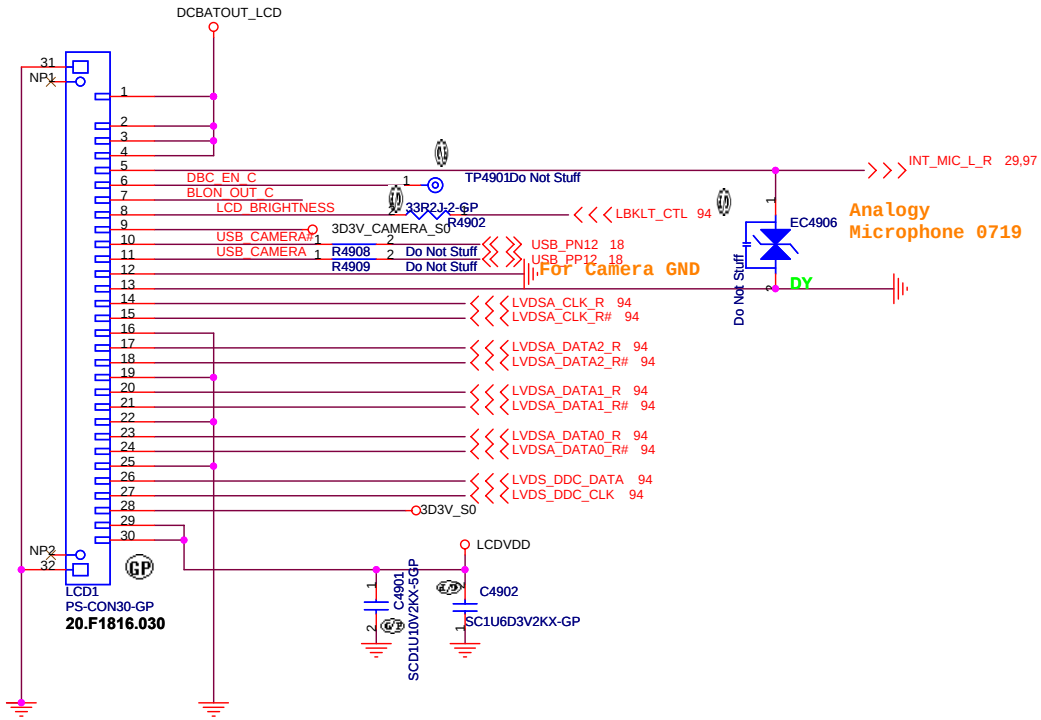
APL5916 for VCCSA



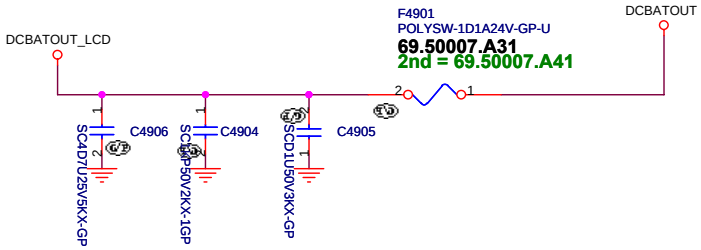
Vout=0.8*(1+R1/R2)

VCCSA_SEL	VCCSA_PWR
L	0.9V
H	0.8V

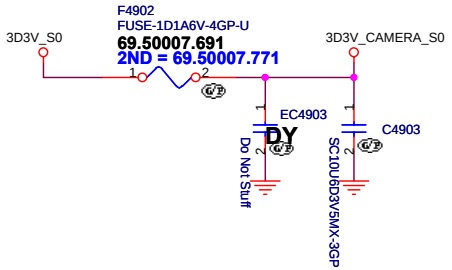
LVDS CONNECTOR



INVERTER POWER

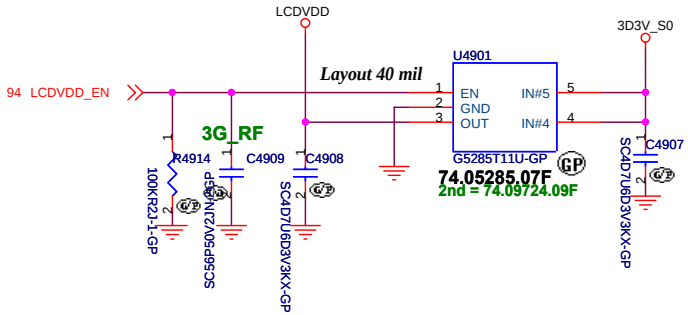


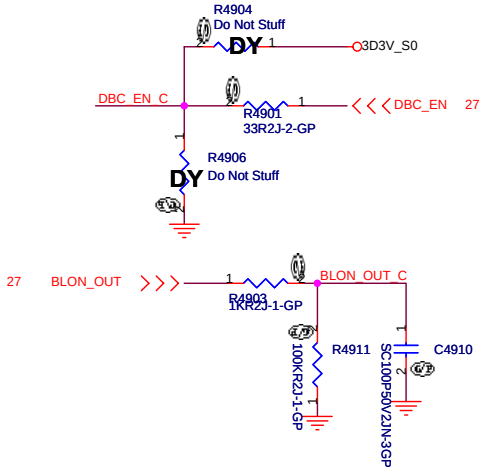
Camera Power



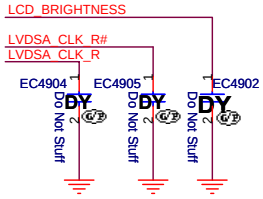
SSID = VIDEO

LCD POWER for ANNIE





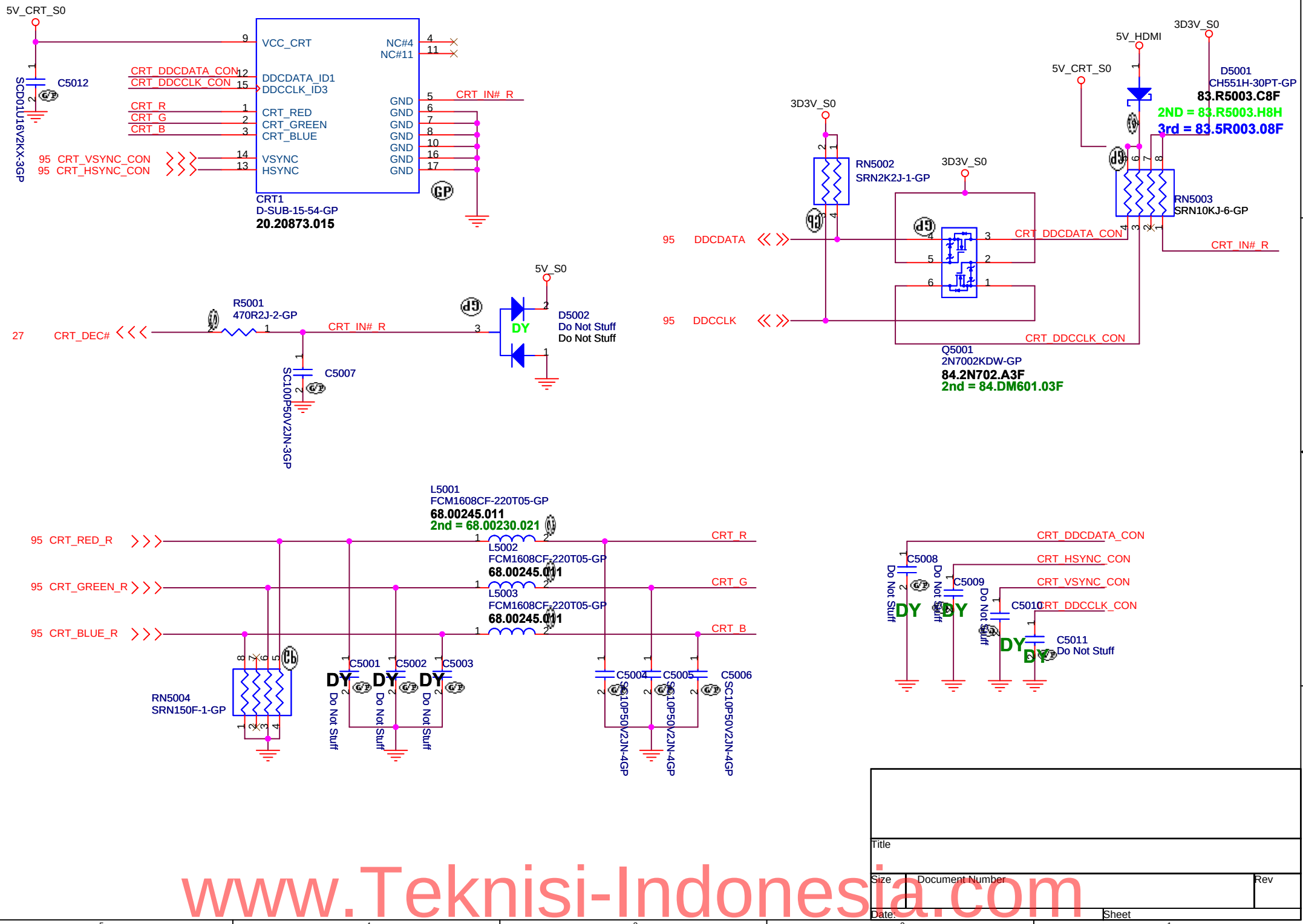
For EMI request
Close to LVDS connector



Title

Size | Document Number | Rev

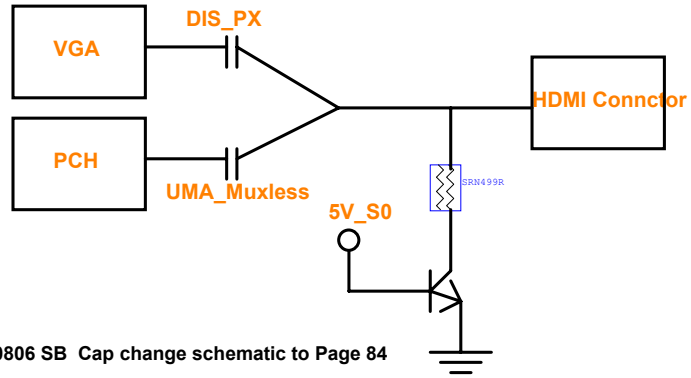
Date: | Sheet



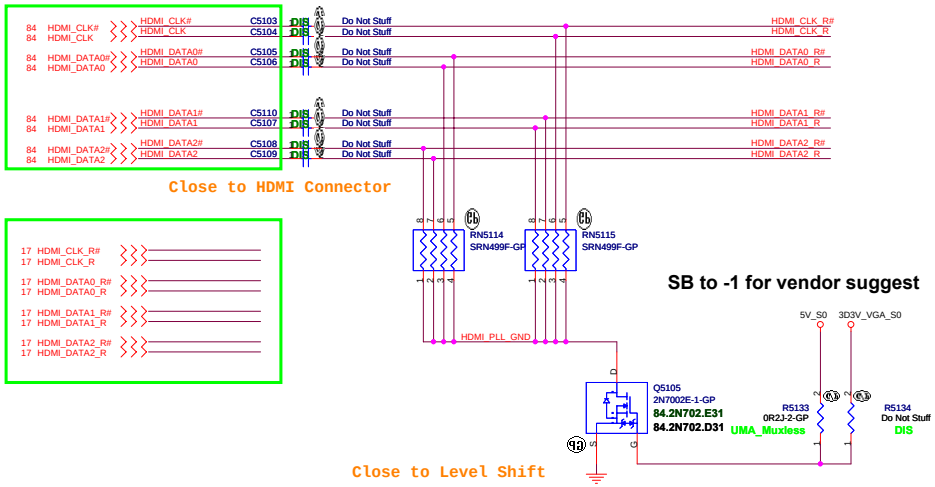
HDMI Level Shifter & CONNECTOR

UMA_Muxless : default setting used PS8101. if don't used PS8101
please change C5103~C5110 to 0 ohm resister

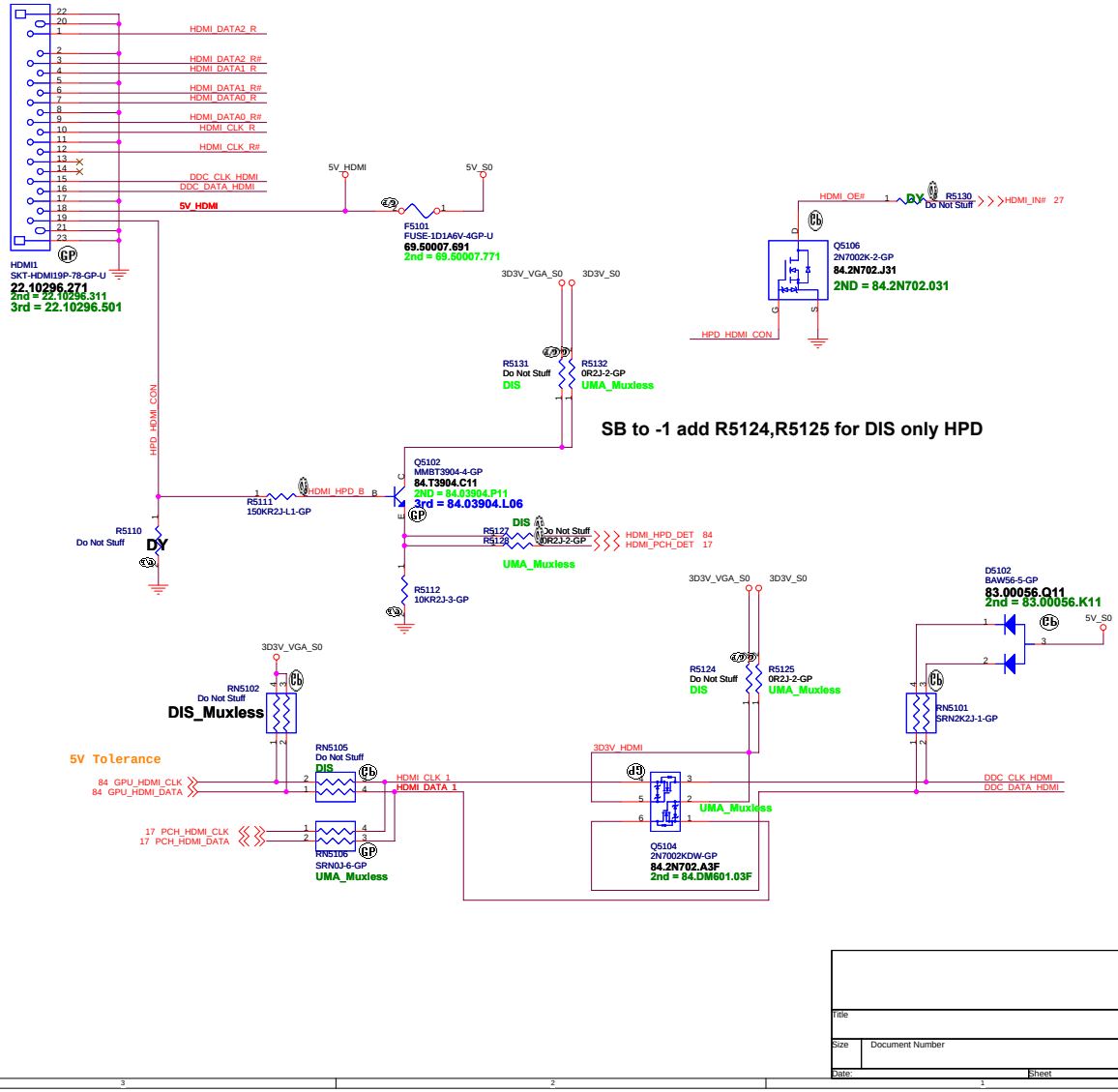
HDMI DISCRETE/ UMA Co-lay



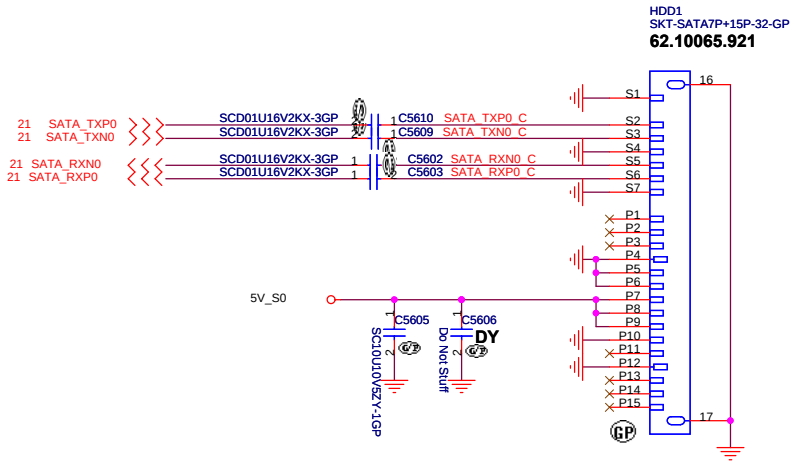
0806 SB Cap change schematic to Page 84



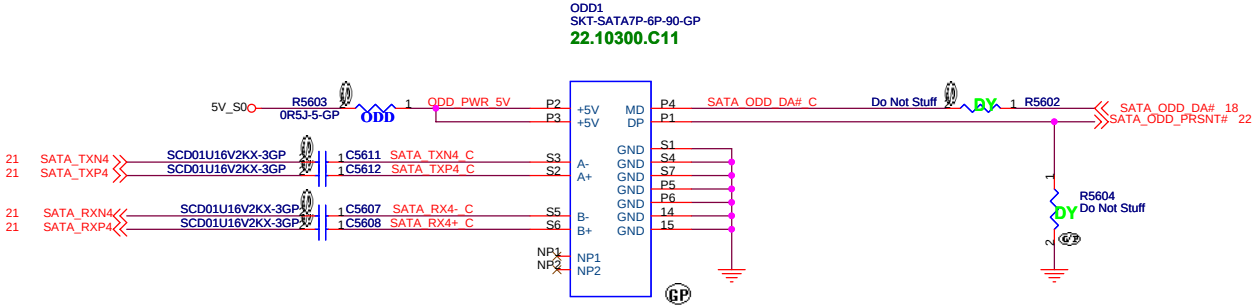
HDMI CONN

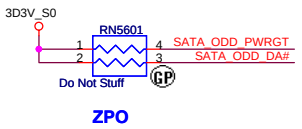


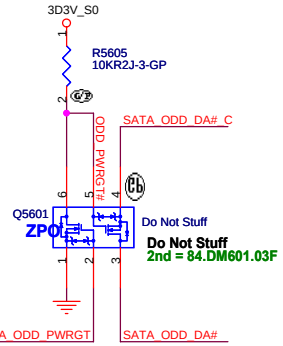
Title		
Size	Document Number	Rev
Date:	Sheet	



ODD Connector





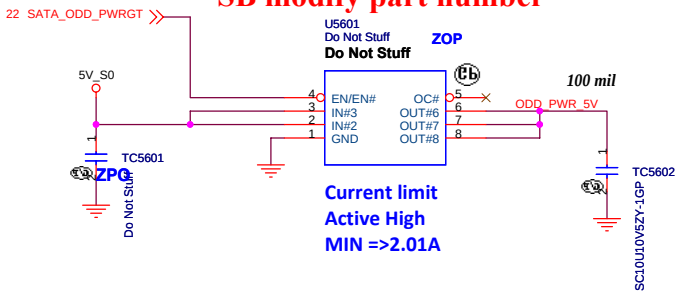


0707 Modify:
Change Q5601 to DUAL 2N7002 for isolate MD/DA signal between PCH and ODD.

SB

SATA Zero Power ODD

SB modify part number



Title
Size | Document Number | Rev
Date: | Sheet

GIGA Lan Transformer

LAN MDI Off-Page

XF5901
XFORM-12-P-36-GP
68.HD081.30B
Change:68.68160.30B
2nd = 68.HD081.30B

XF5902
XFORM-12-P-36-GP
68.HD081.30B
Change:68.68160.30B
2nd = 68.HD081.30B

SB modiyf Pin9 Pin10 SWAP

LED COLOR
10(+) 9(-)::GREEN
12(+) 13(-):ORANGE

RJ45
RJ45-12P-16-GP
22.10321.Y21
2nd = 22.10321.Y91

RN5901
SRN470J-4-GP-U

EC5901 EC5902
Do Not Stuff
DY DY

SB modify For EMI

U5901 U5902 U5903 U5904
TVLST2304AD0-GP
SURGE

GDT1 GDT2 GDT3 GDT4
SURGE

C5905
SC1KP2KV6KX-GP

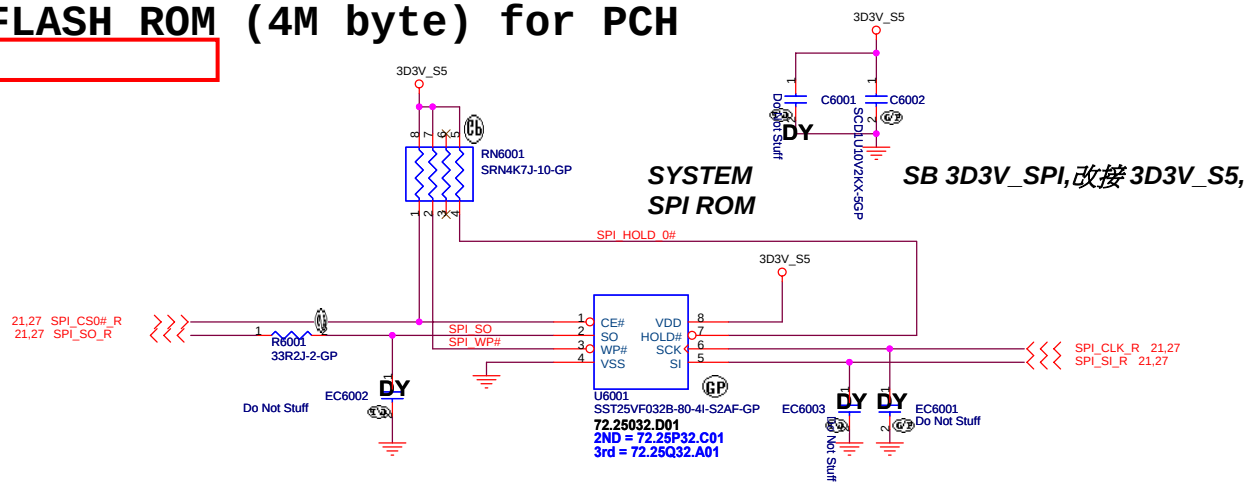
C5907 C5906
DY DY
Do Not Stuff

C5916 C5917 C5918 C5919
DY Do Not Stuff

EC5910 EC5909 EC5903 EC5904 EC5905 EC5906 EC5908 EC5907
Do Not Stuff

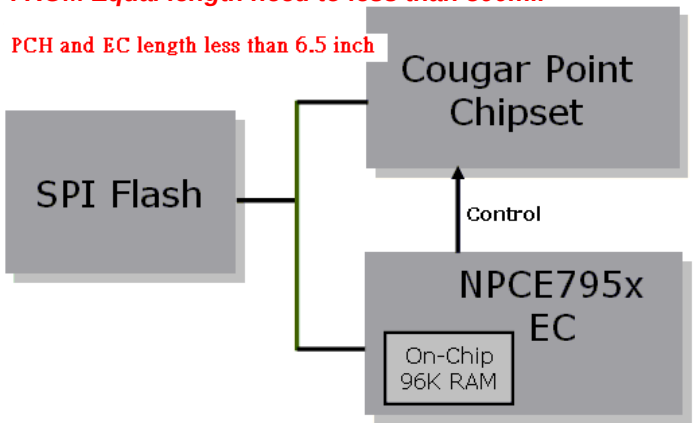
Title
Size Document Number Rev
Date: Sheet

SPI FLASH ROM (4M byte) for PCH

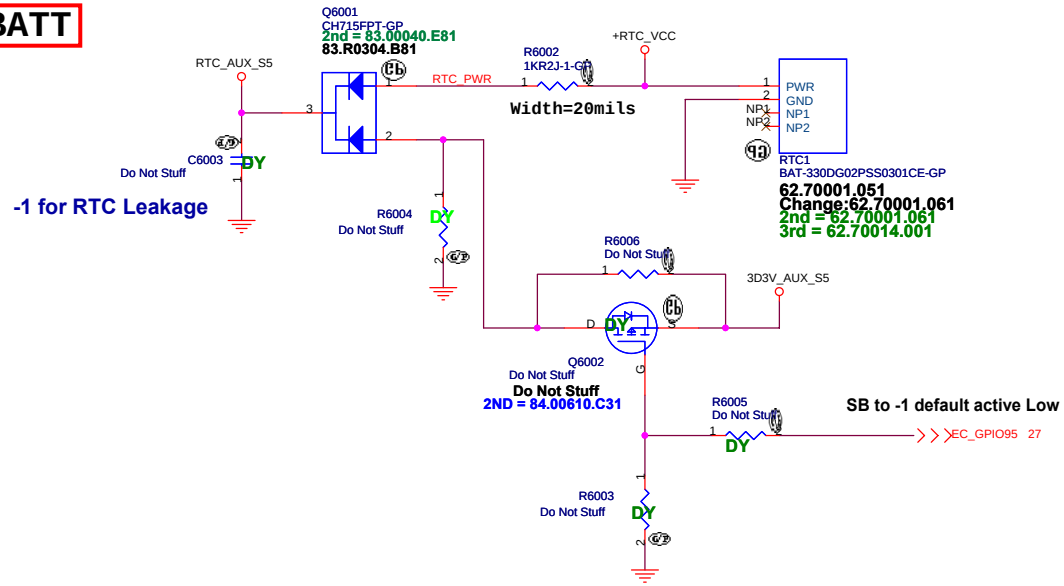


SPI ROM Equal length need to less than 500mil

PCH and EC length less than 6.5 inch



SSID = RBATT



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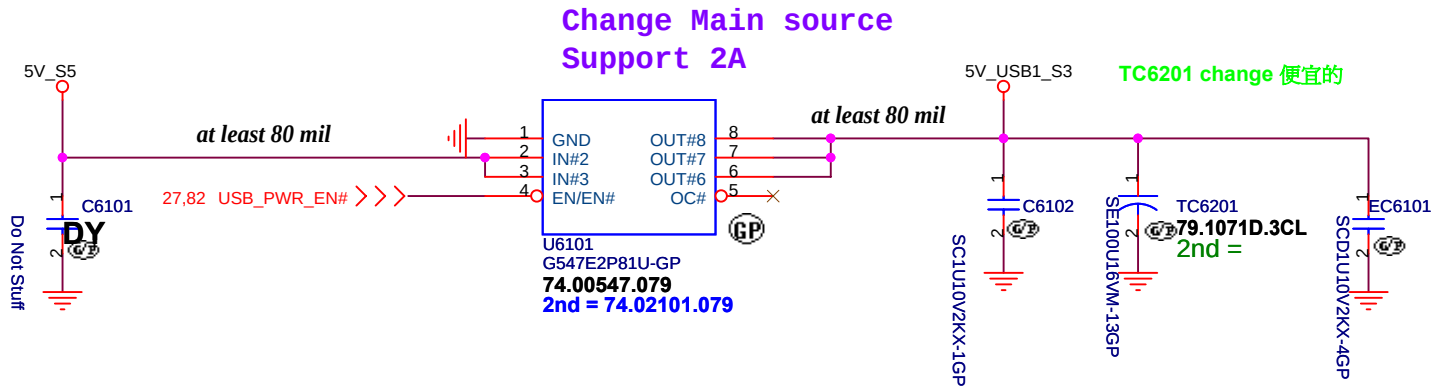
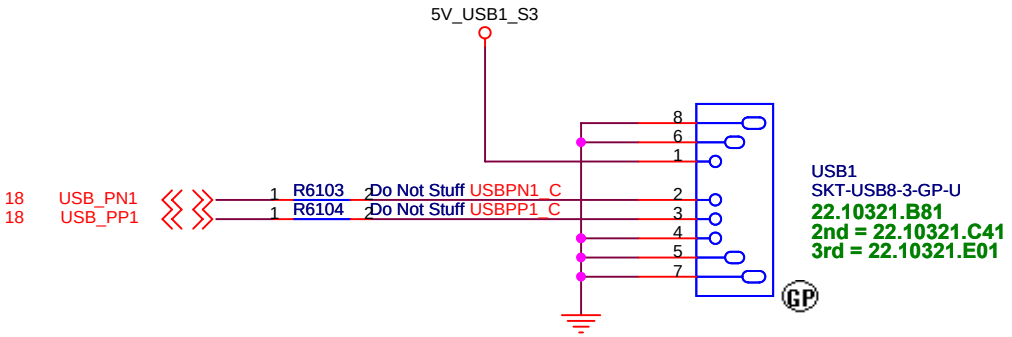
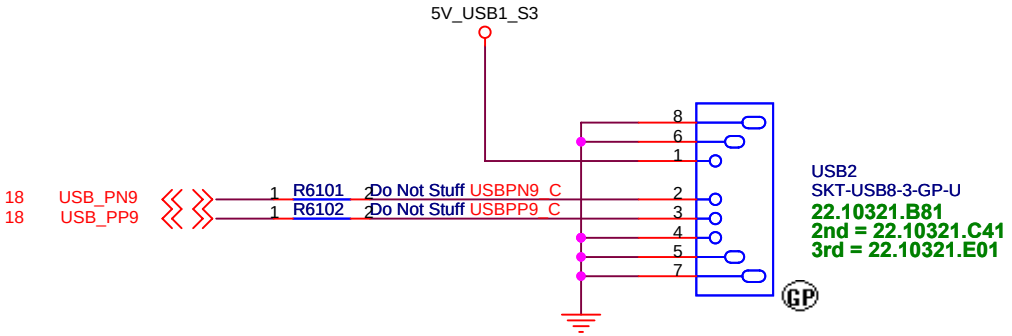
Size	Document Number	Rev
Date:	Sheet	







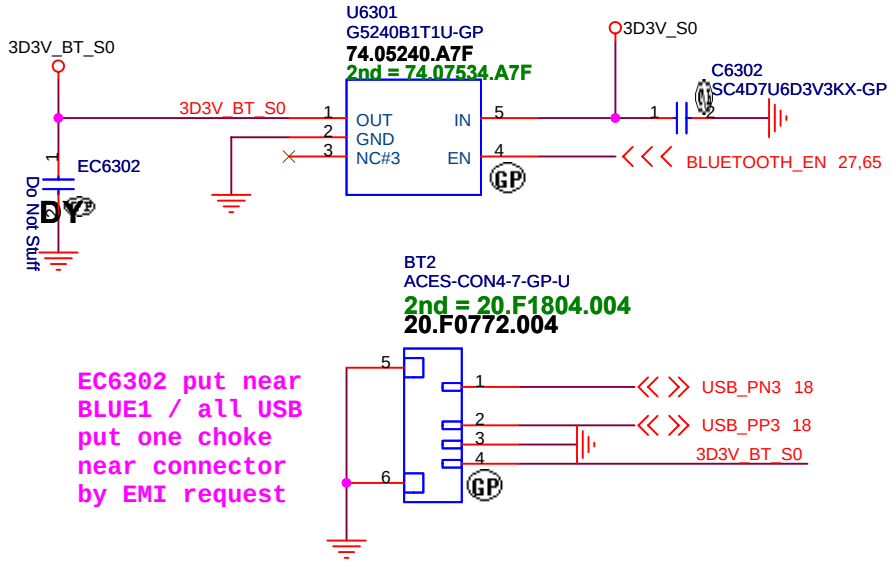
Title

Size | Document Number | Rev

Date: | Sheet

Bluetooth Module conn.

ANNIE Bluetooth Module



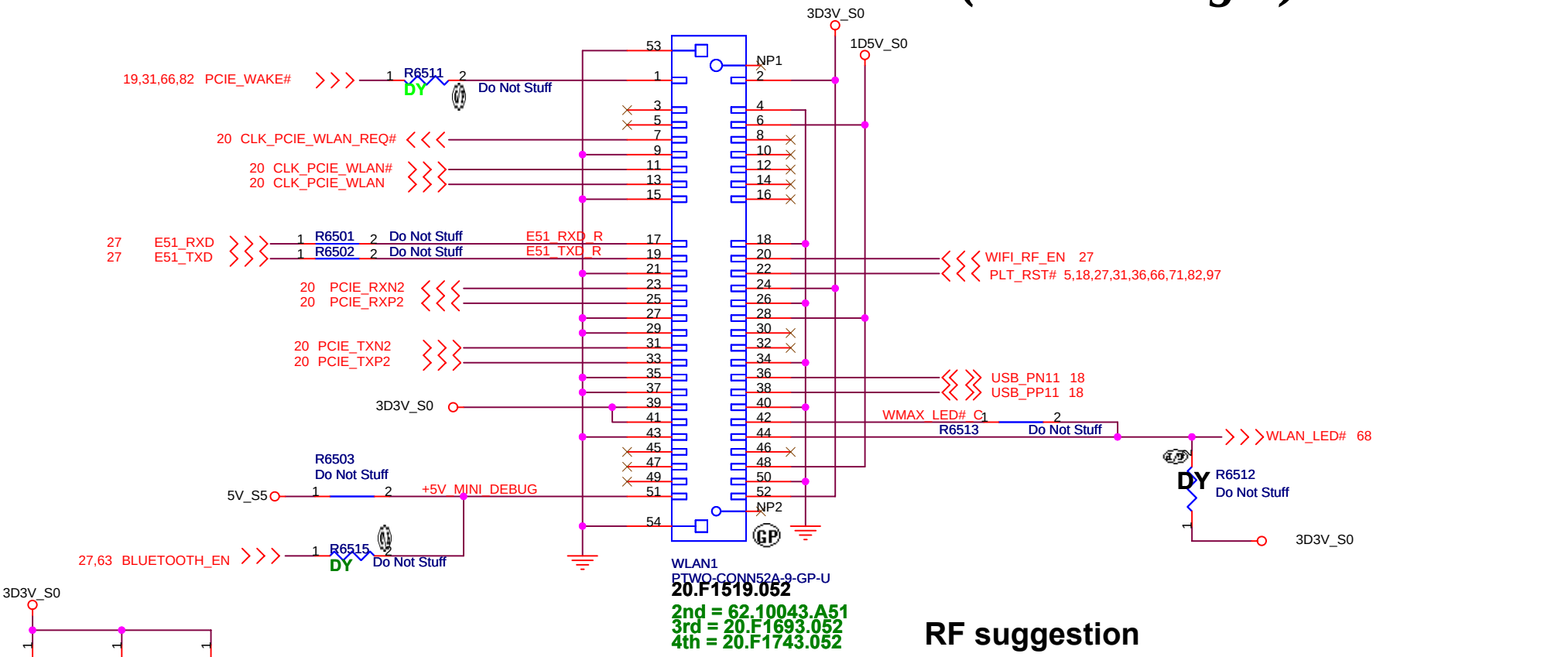
EC6302 put near BLUE1 / all USB put one choke near connector by EMI request

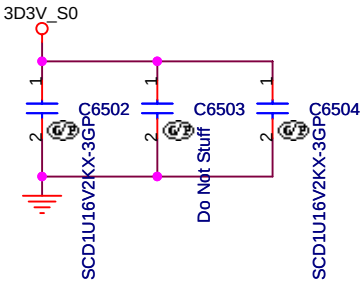
Title

Size | Document Number | Rev

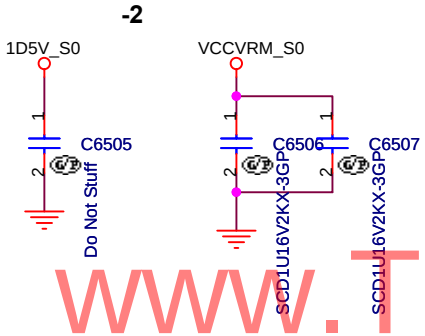
Date: | Sheet

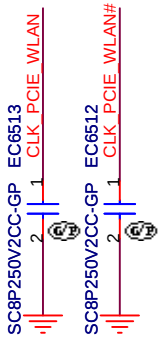
Mini Card Connector(802.11a/b/g/n)



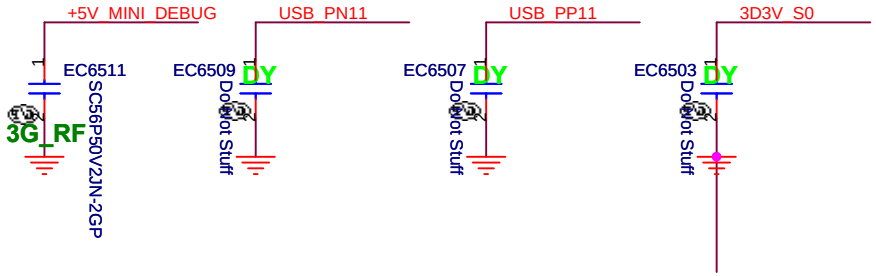


SB modify for SIV





RF suggestion



Title

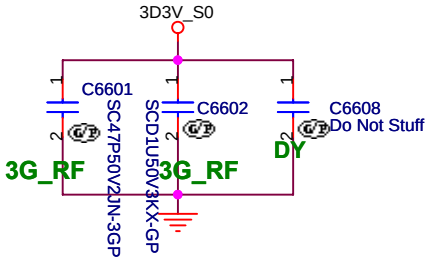
Size | Document Number | Rev

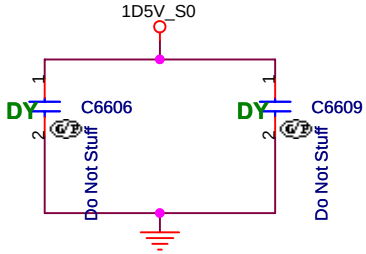
Date: | Sheet

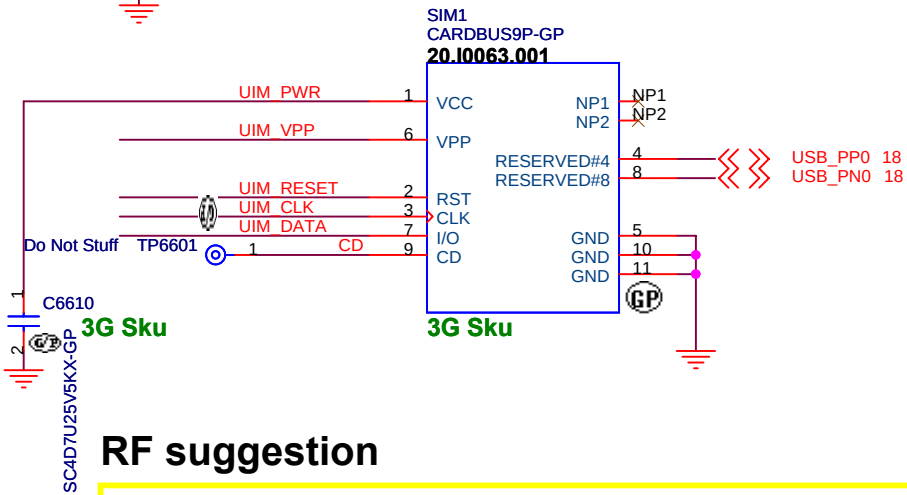
Mini Card Connector(WWAN)

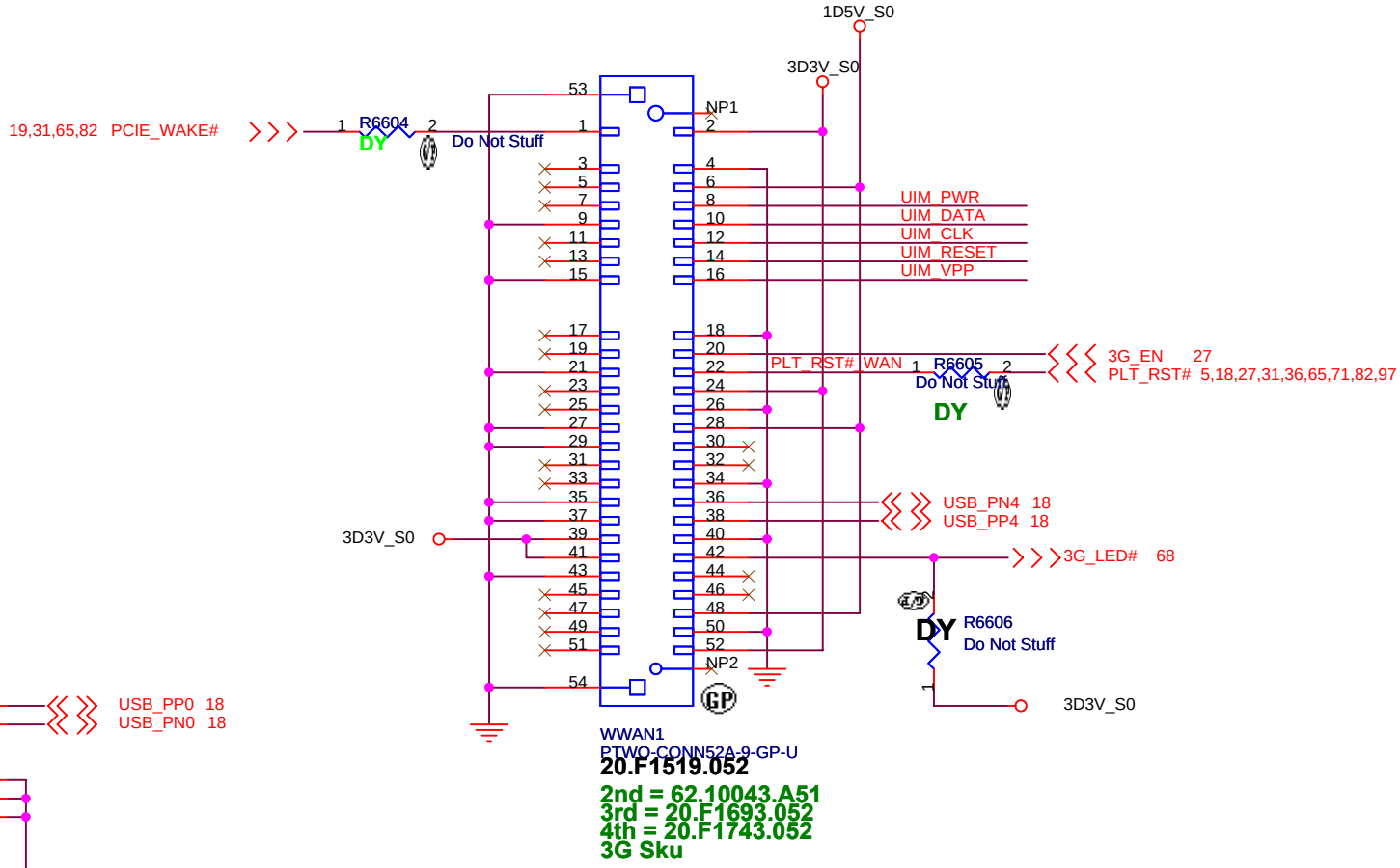
20100712 V1.5

Place near MINI Card CONN

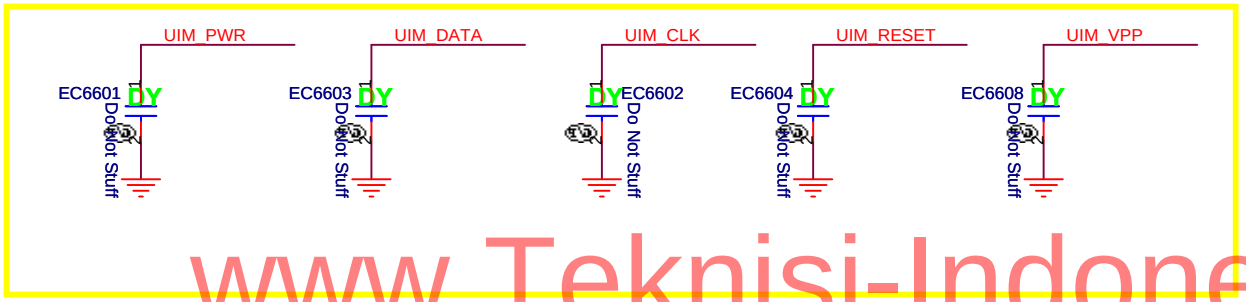








RF suggestion

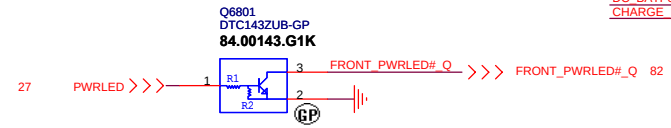


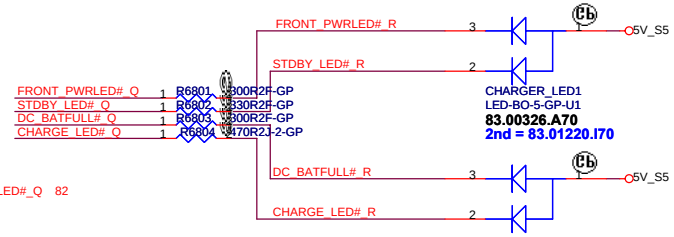
Title

Size | Document Number | Rev

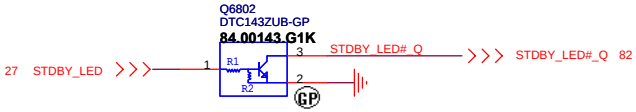
Date: | Sheet

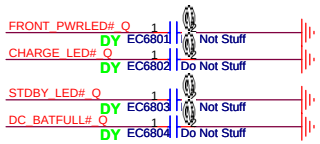
Power button LED

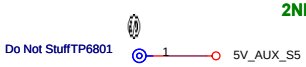




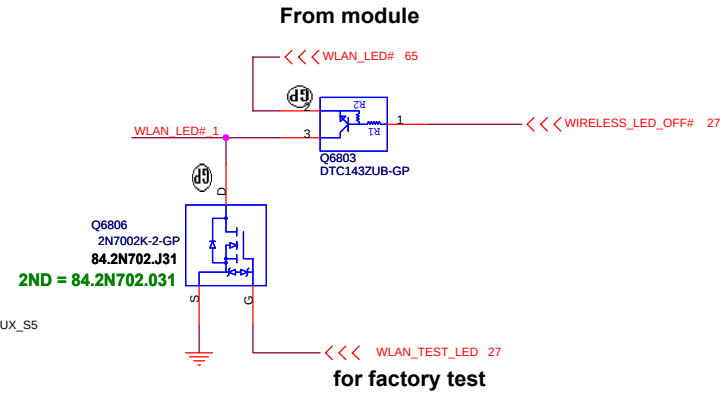
Power STDBY_LED



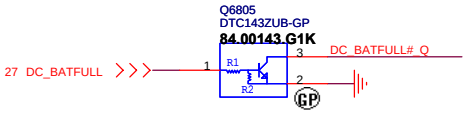




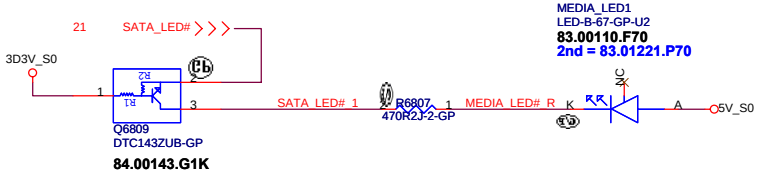
WLAN_LED



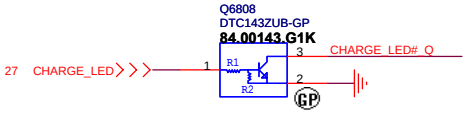
Battery LED2(DC_BATFULL)

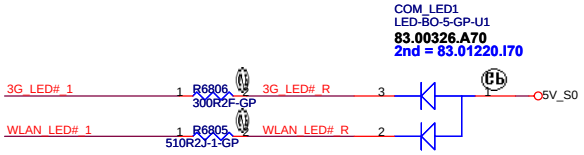


SATA HDD LED

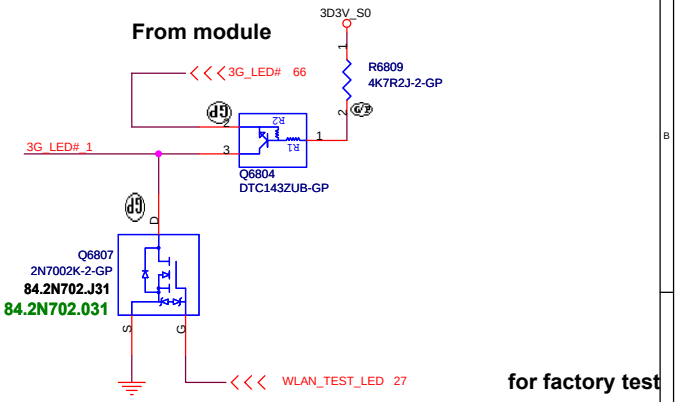


Battery LED1(CHARGE)





3G LED

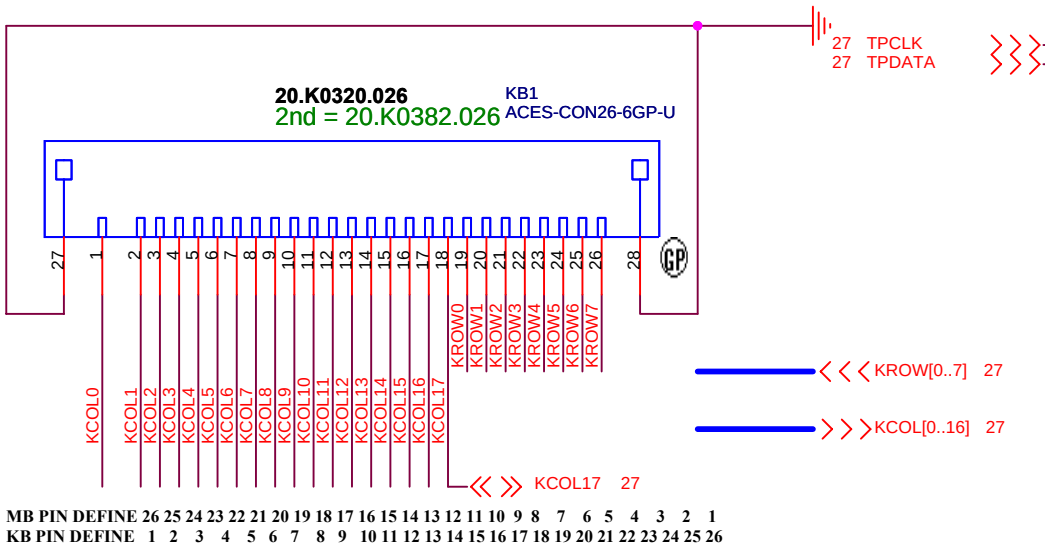


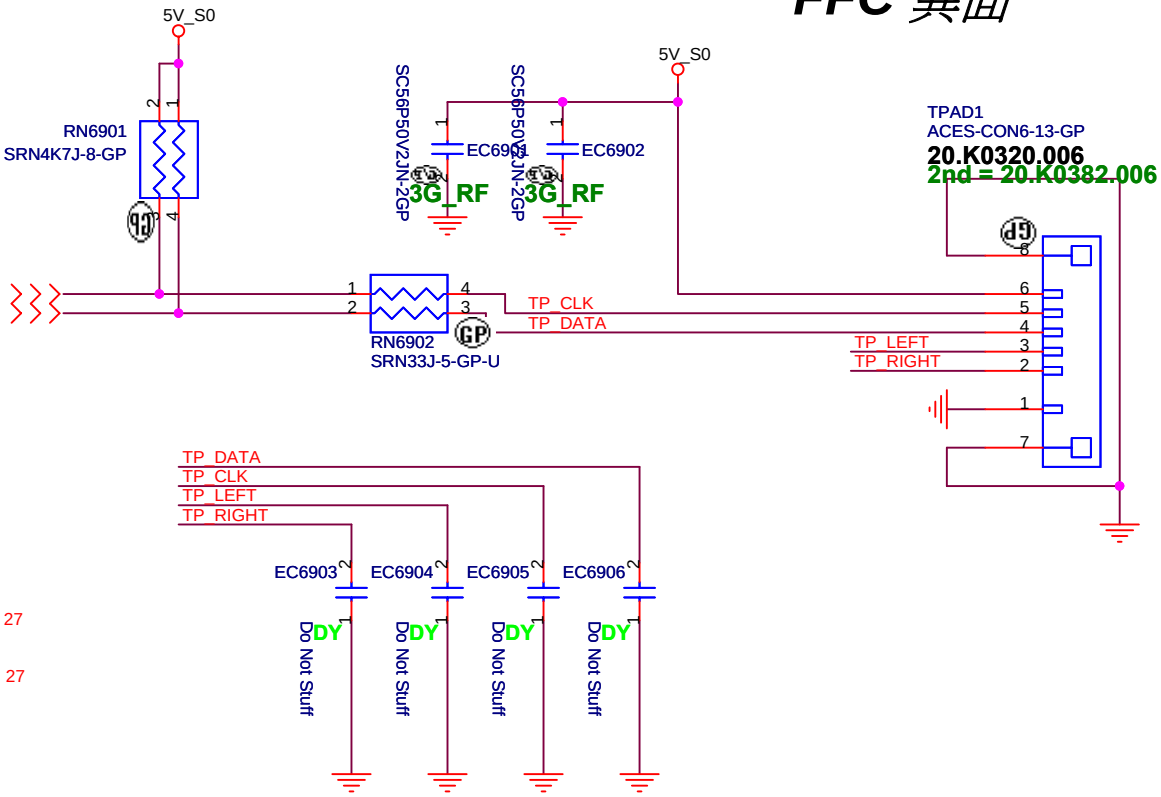
Title		
Size	Document Number	Rev
Date:	Sheet	

TOUCH PAD

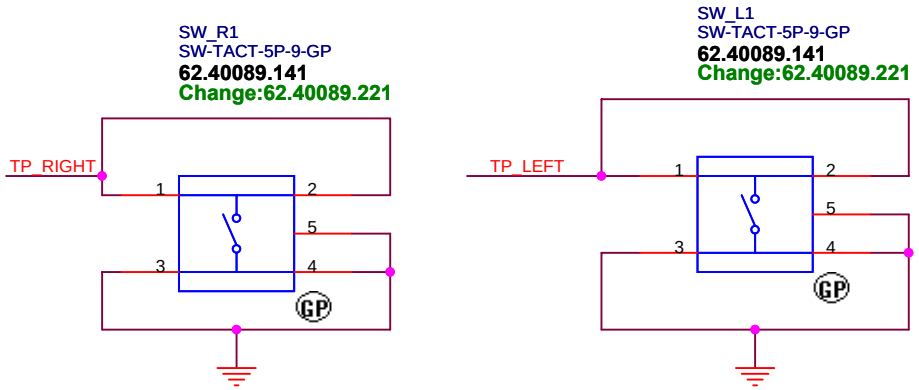
FFC 異面

Internal KeyBoard Connector





26 K/B 1 **SB to -1 modify Part number**



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Size | Document Number | Rev

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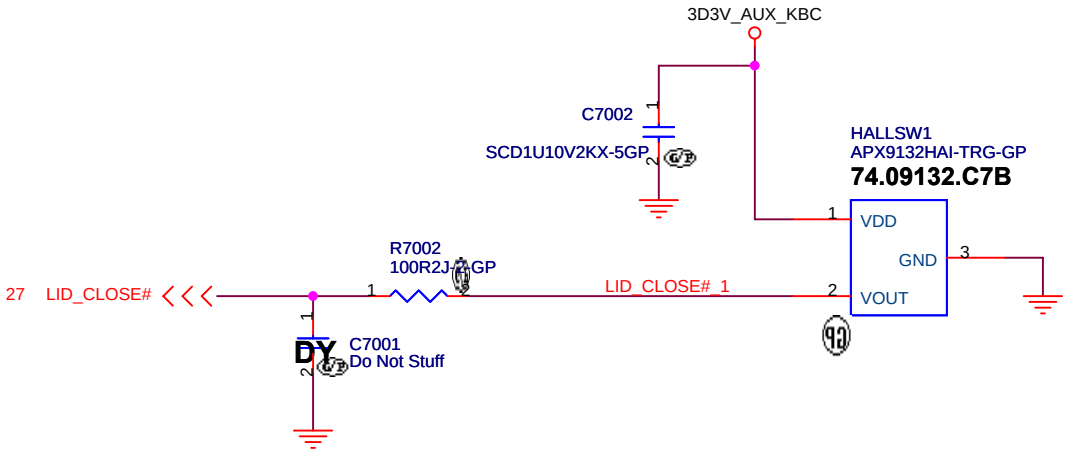

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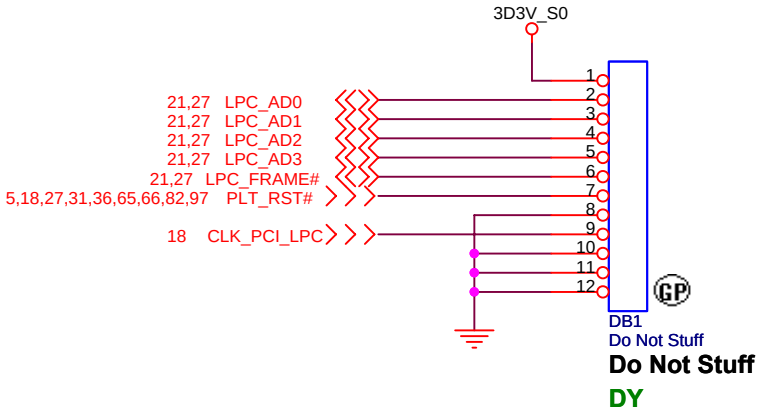
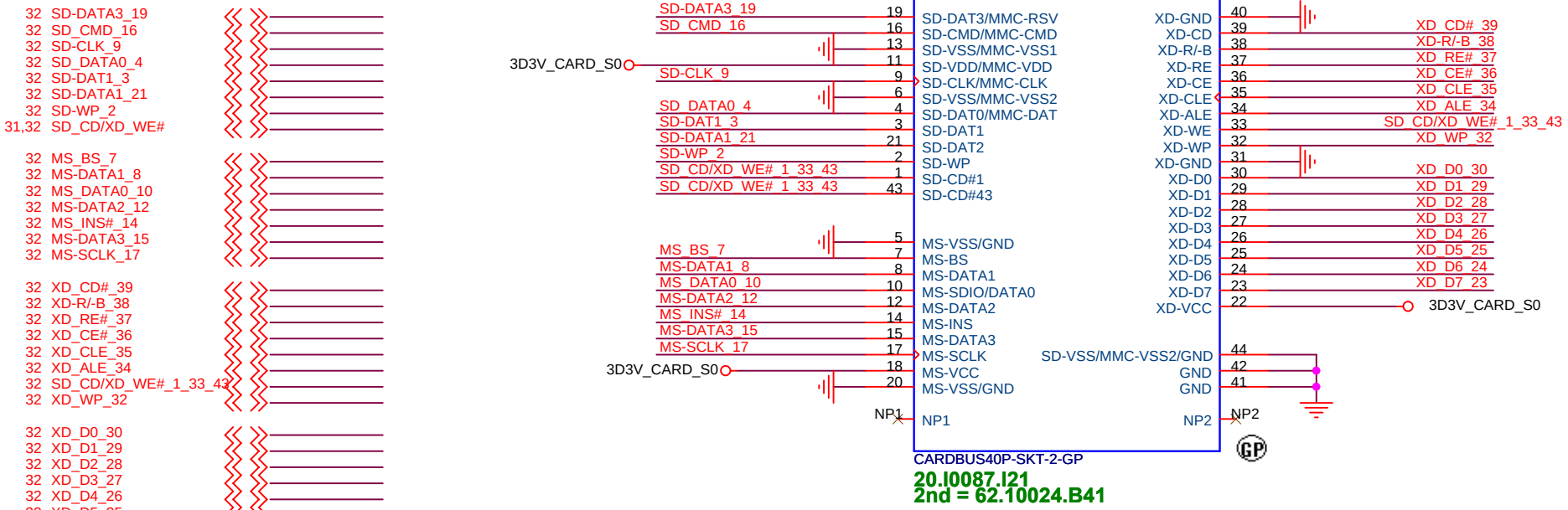


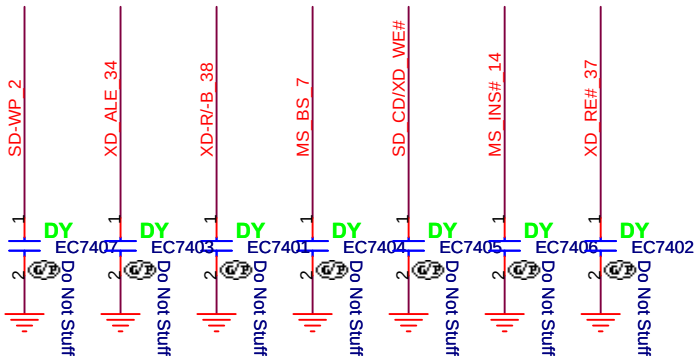
Title

Size | Document Number | Rev

Date: | Sheet

SD/XD/MS Card Reader





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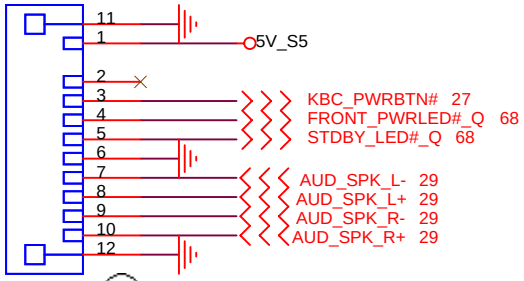
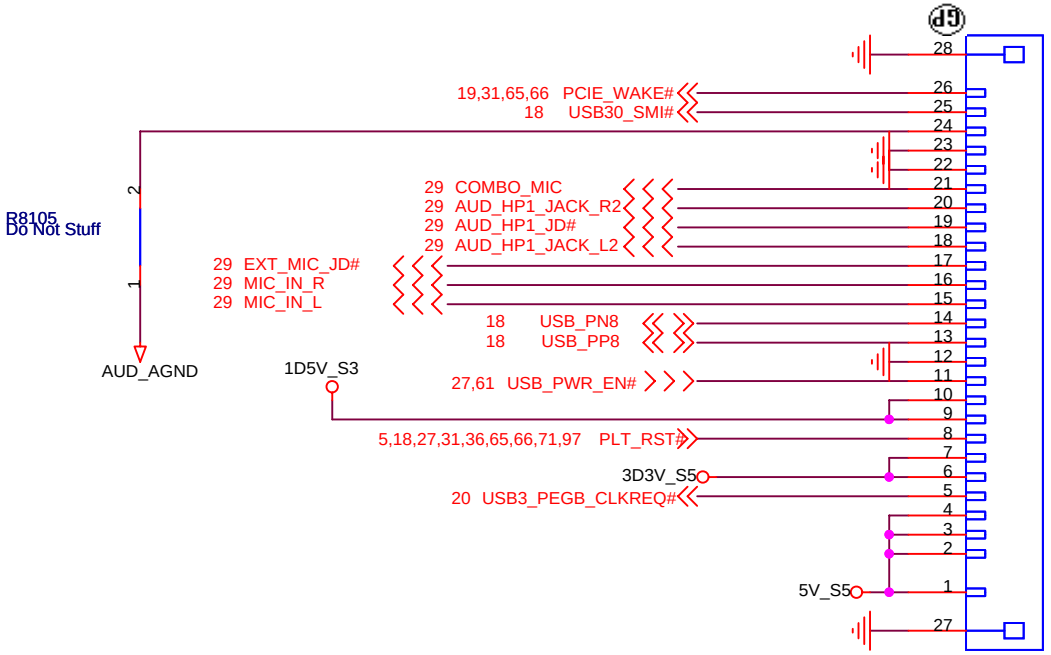
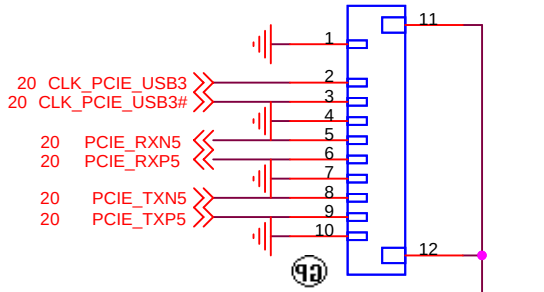


PWRCN1
ACES-CON10-20-GP
20.K0422.010
2nd = 20.K0382.010

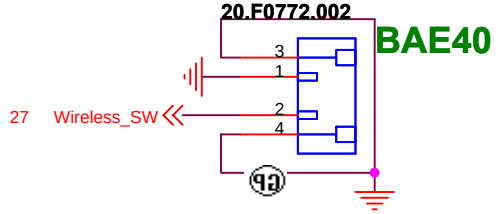


USBCN1
ACES-CON26-11-GP
20.K0315.026
2nd = 20.K0370.026

USBCN2
ACES-CON10-18-GP
20.K0315.010
2nd = 20.K0392.010



RF_CN1
ACES-CON2-11-GP
20.F0772.002



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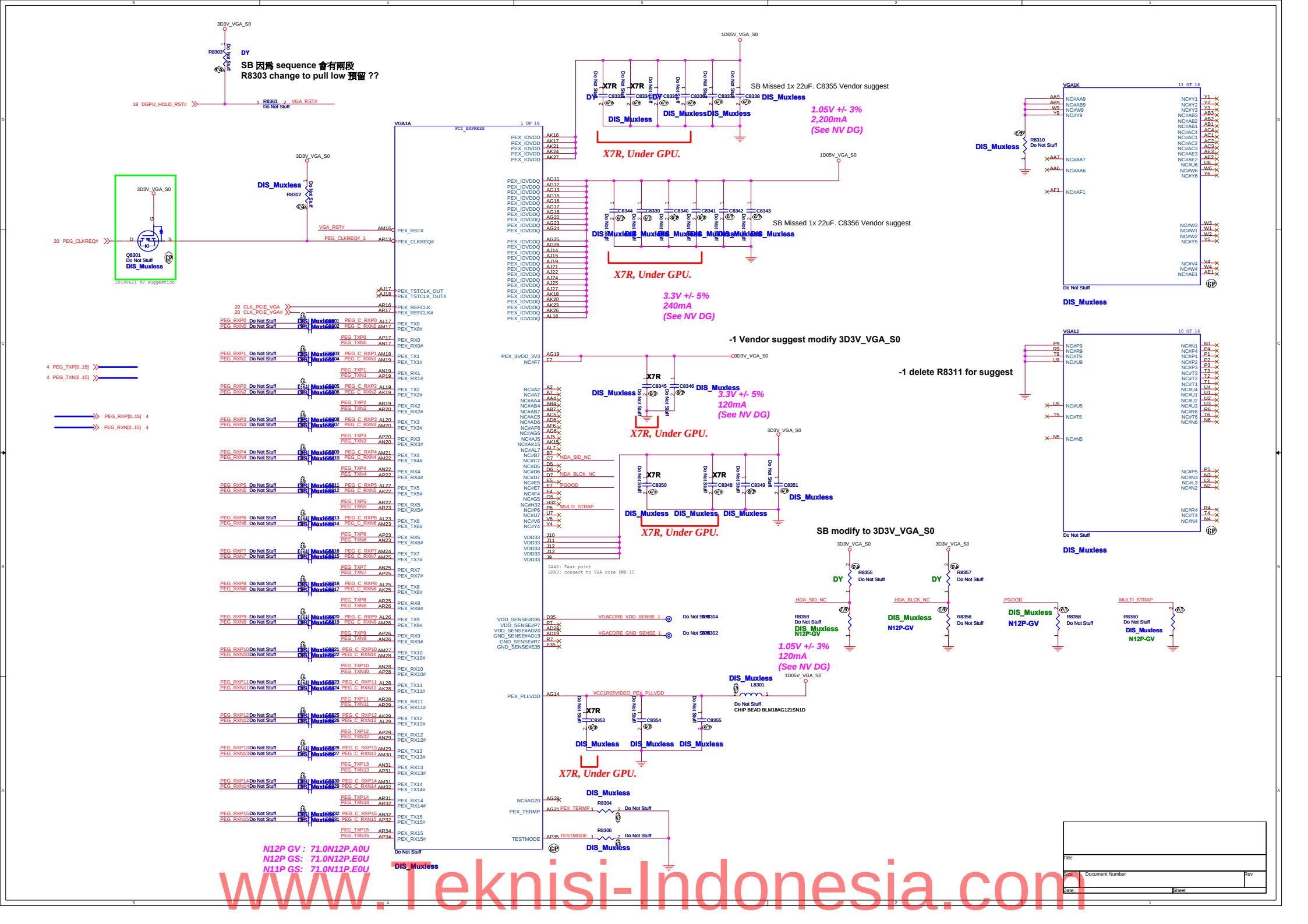
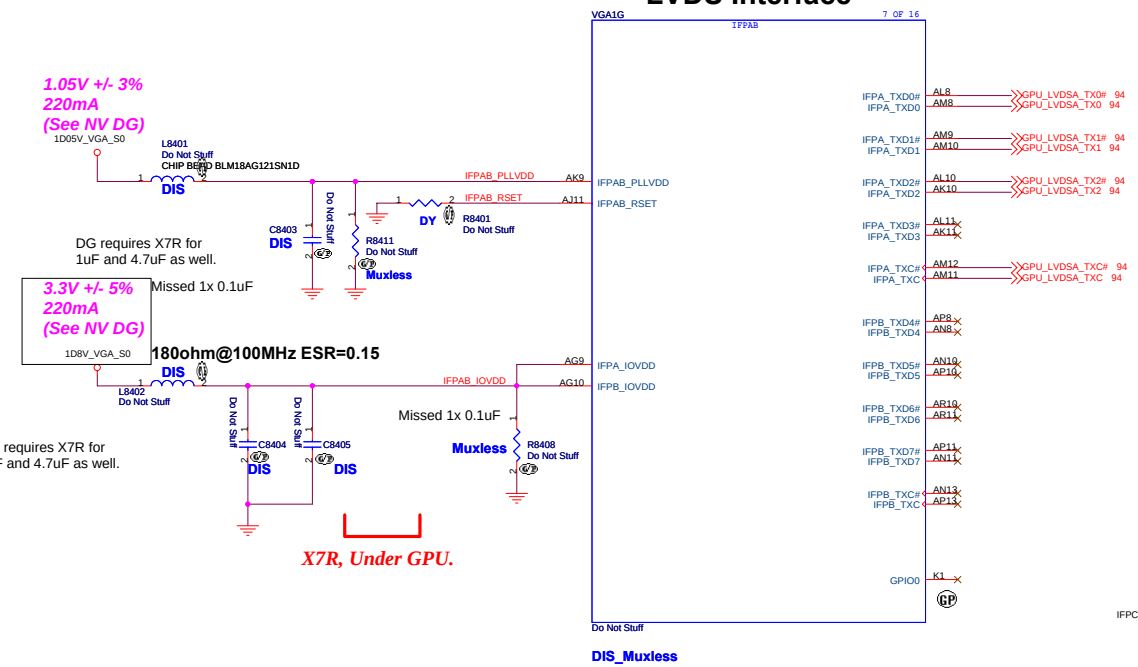
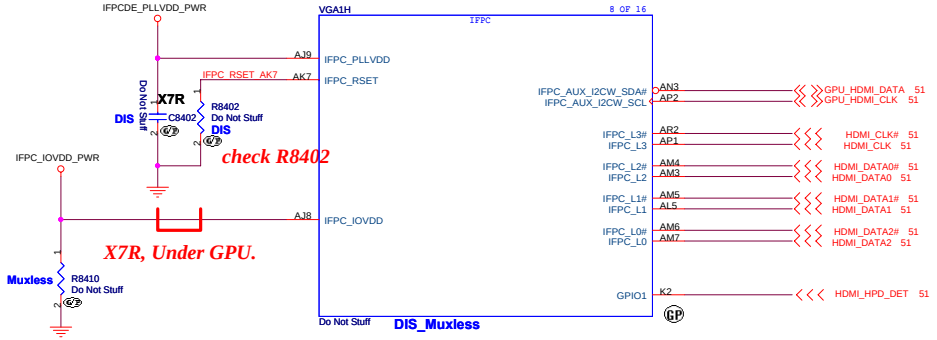
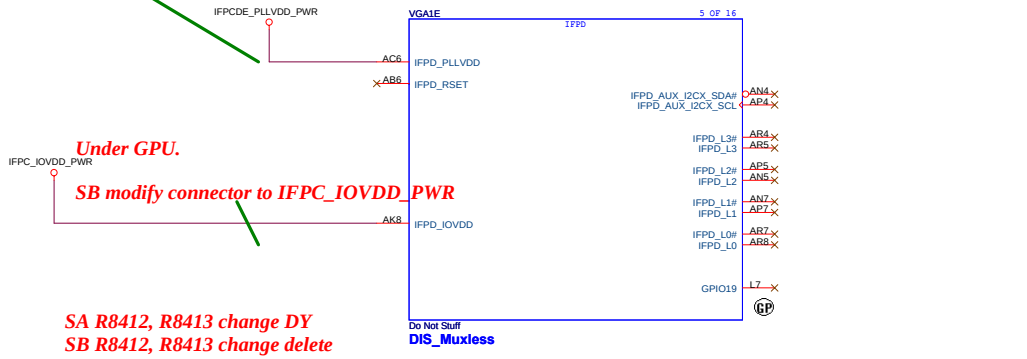
Date: | Sheet

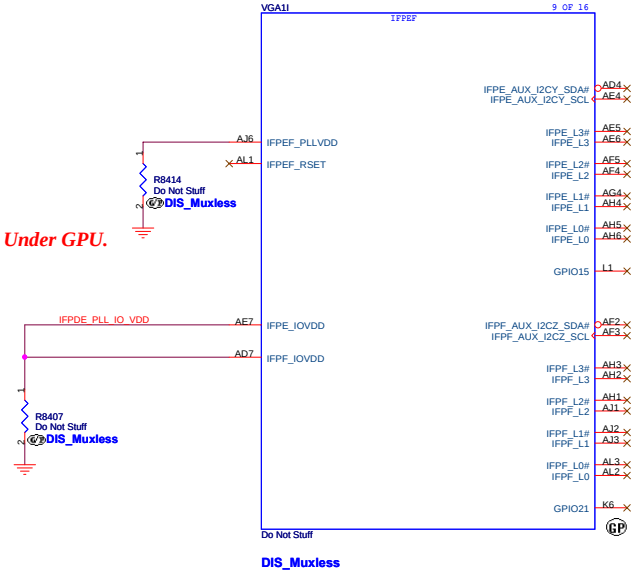

SB 因爲 sequence 會有兩段
R8303 change to pull low 預留 ??
SB Missed 1x 22uF. C8355 Vendor suggest
1.05V +/- 3%
2,200mA
(See NV DG)
X7R, Under GPU.
SB Missed 1x 22uF. C8356 Vendor suggest
3.3V +/- 5%
240mA
(See NV DG)
-1 Vendor suggest modify 3D3V_VGA_S0
-1 delete R8311 for suggest
SB modify to 3D3V_VGA_S0
1.05V +/- 3%
120mA
(See NV DG)
3.3V +/- 5%
120mA
(See NV DG)
N12P GV : 71.0N12P.A0U
N12P GS: 71.0N12P.E0U
N11P GS: 71.0N11P.E0U
www.Teknisi-Indonesia.com

LVDS Interface

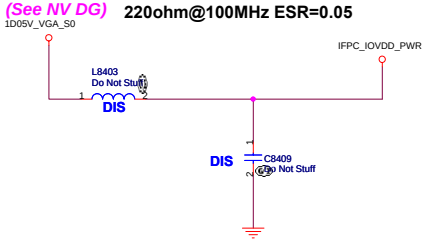


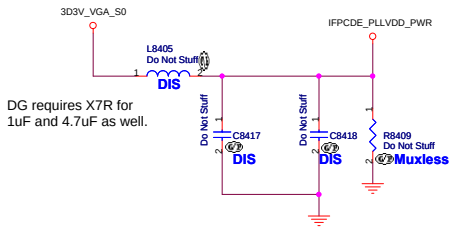






HDMI Interface





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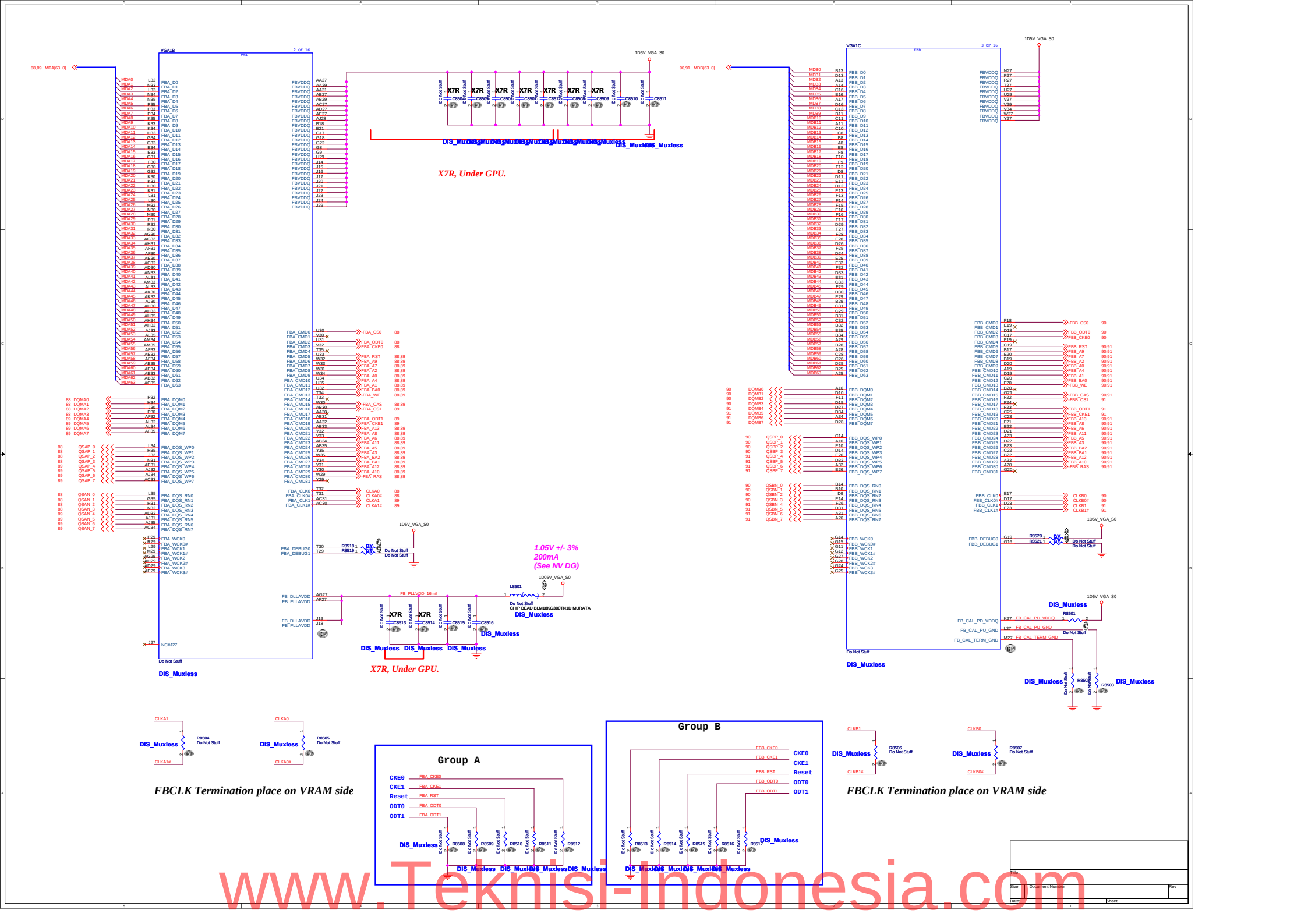
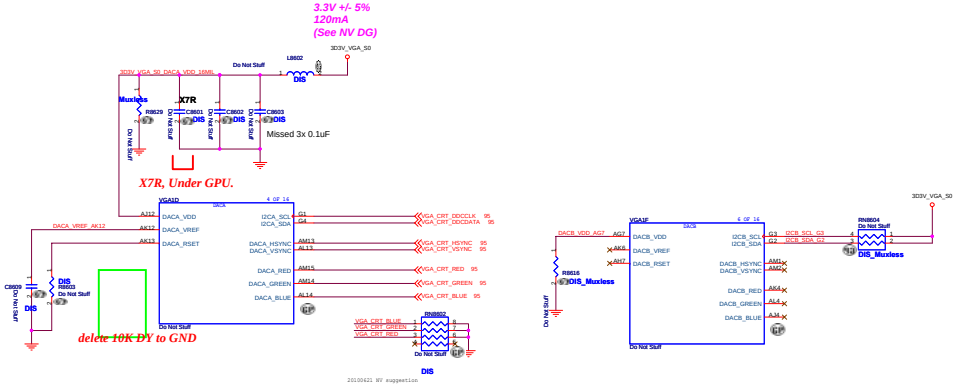
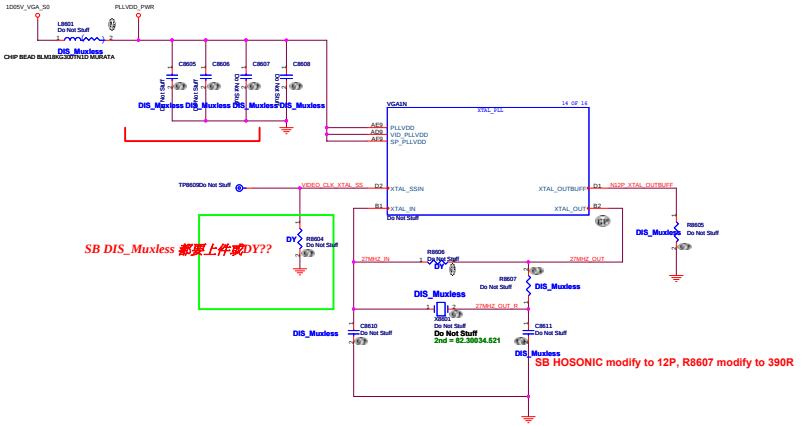
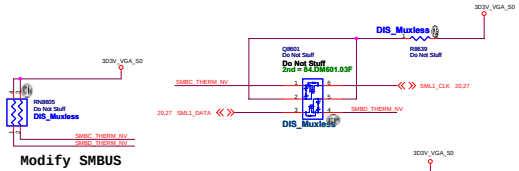
Size	Document Number	Rev
Date:		Sheet

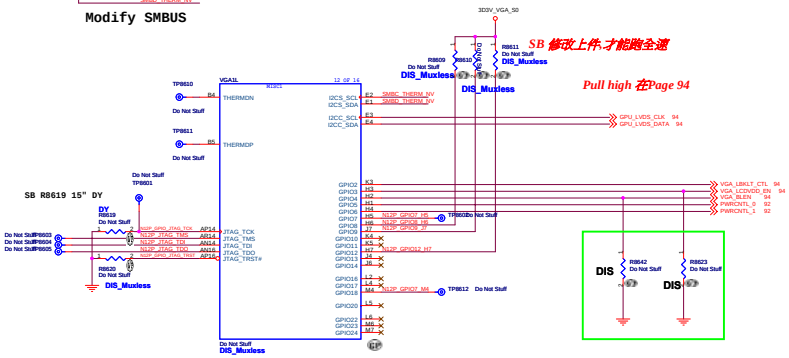




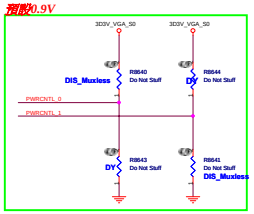


VGA Thermal sensor P2800



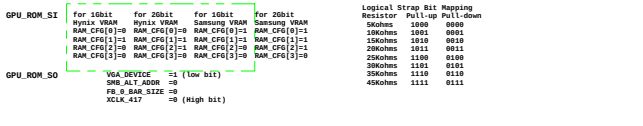


SJM50-CP SUPPORT							
P-STATE	NVVDD_ALT_V1	NVVDD_ALT_V0	N11M-GE1	N11M-GE2	N11M-OP1	N11P-GE1	N12P-GE Fermi
P12	0	0	0.85V	0.85V	0.85V	0.80V	0.85V
P8	0	1	0.85V	0.85V	0.85V	0.85V	0.9V
P0	1	0	1.03V	1.03V	1.03V	0.95V	0.95V



NVIDIA TABLE

	Hynix 2G 0110 128*16*8 800MHZ	Hynix 1G 0000 64*16*8 800MHZ	Samsung 1G 0011 64*16*8 800MHZ	Samsung 512 64*16*4 800MHZ	Samsung 2G 0111 128*16*8 800MHZ
RO M_SIPD R8627	34.8Kohm 64.34825.6DL	5Kohm 64.49915.6DL	20Kohm 64.20025.6DL	20Kohm 64.20025.6DL	45Kohm 64.45325.6DL



Logical Strap Bit Mapping

Resistor	Pull-up	Pull-down
5Kohms	1000	0000
10Kohms	1001	0001
15Kohms	1010	0010
20Kohms	1011	0011
25Kohms	1100	0100
30Kohms	1101	0101
35Kohms	1110	0110
45Kohms	1111	0111

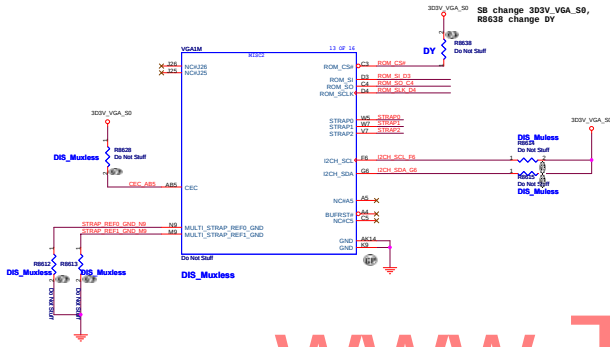
TABLE
NVIDIA 71.0N12P.E0U -1 modify N12P GV setting 71.0N12P.A0U

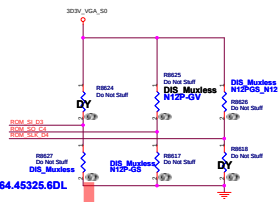
	N12P-GS DEV ID: 0x0DF4	N12P-GV DEV ID: 0x1050	N11P-GE Fermi DEV ID: 0x0DF1 (0001)	N11P-GS Fermi DEV ID: 0x0DF0 (0000)	N12P-GE DEV ID: 0x0DF5 (0101)
STRAP2 PU	25Kohm 64.24925.6DL	45Kohm ES 45K QS 5K 64.49915.6DL	10Kohm 63.10334.1DL	5Kohm 64.49915.6DL	30Kohm 64.30025.6DL

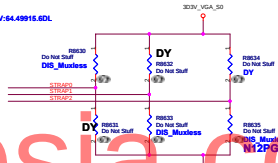
STRAP0 USER[0]=1 USER[1]=1 USER[2]=1 USER[3]=1 — N12P-GS — N12P-GV — N11P-GE Pull Low — N11P-GS Pull Low — N12P-GE
USE 1111 (45K)

STRAP1 3GIO_PADCFG[0]=1 3GIO_PADCFG[1]=1 3GIO_PADCFG[2]=1 3GIO_PADCFG[3]=1
USE 0110 (35K)

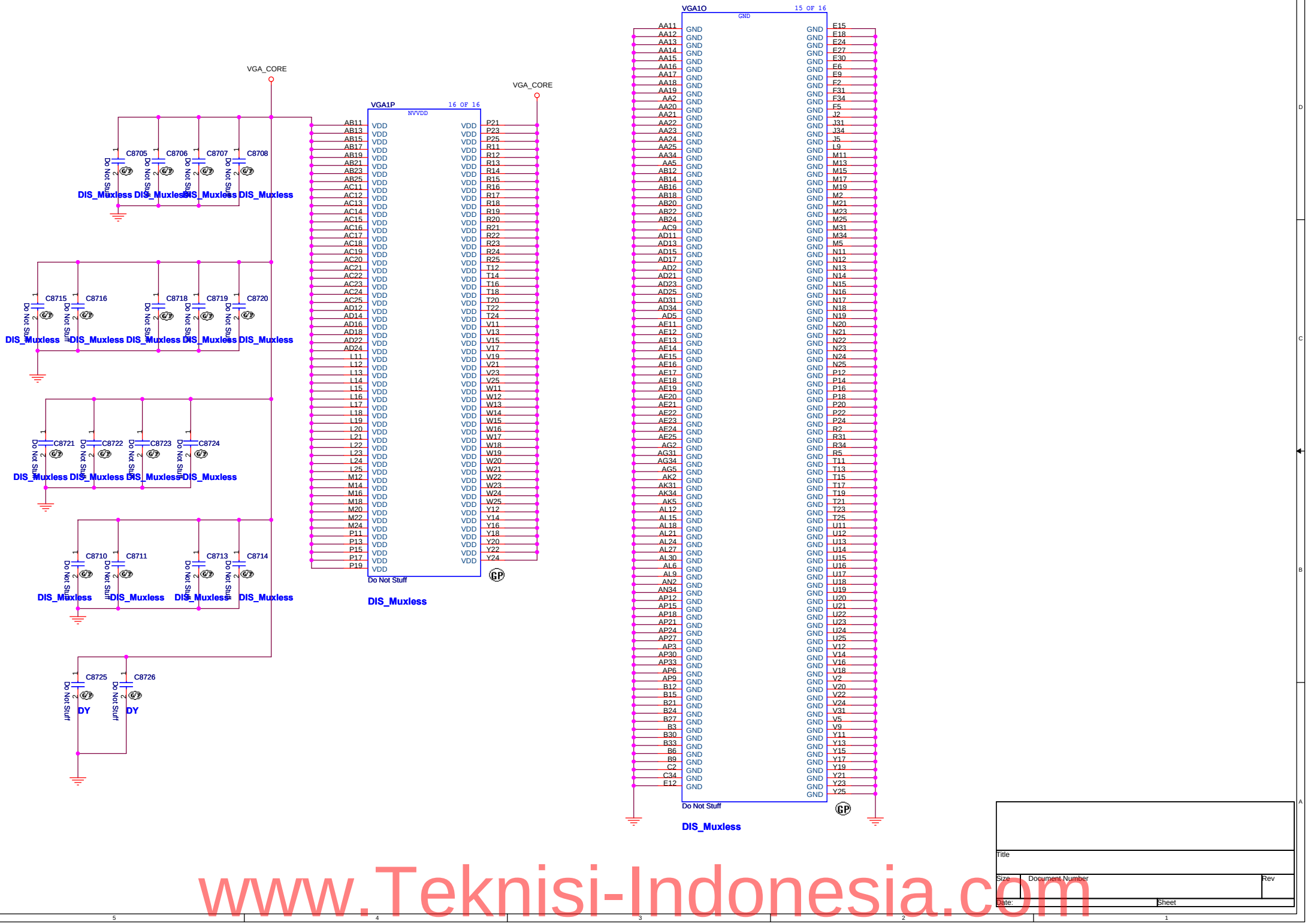
STRAP2
PCI_DEVID[0]=1 N12P-GS GF108-730-A1 0x0DF4 (0X4) (0100)
PCI_DEVID[1]=0 N12P-GV1 GF108-705-A1 0x0DF7 (0X7) (0111)
PCI_DEVID[2]=0 N11P-GS Fermi 0x0DF0 (0000)
PCI_DEVID[3]=0 N11P-GE Fermi 0x0DF1 (0001)

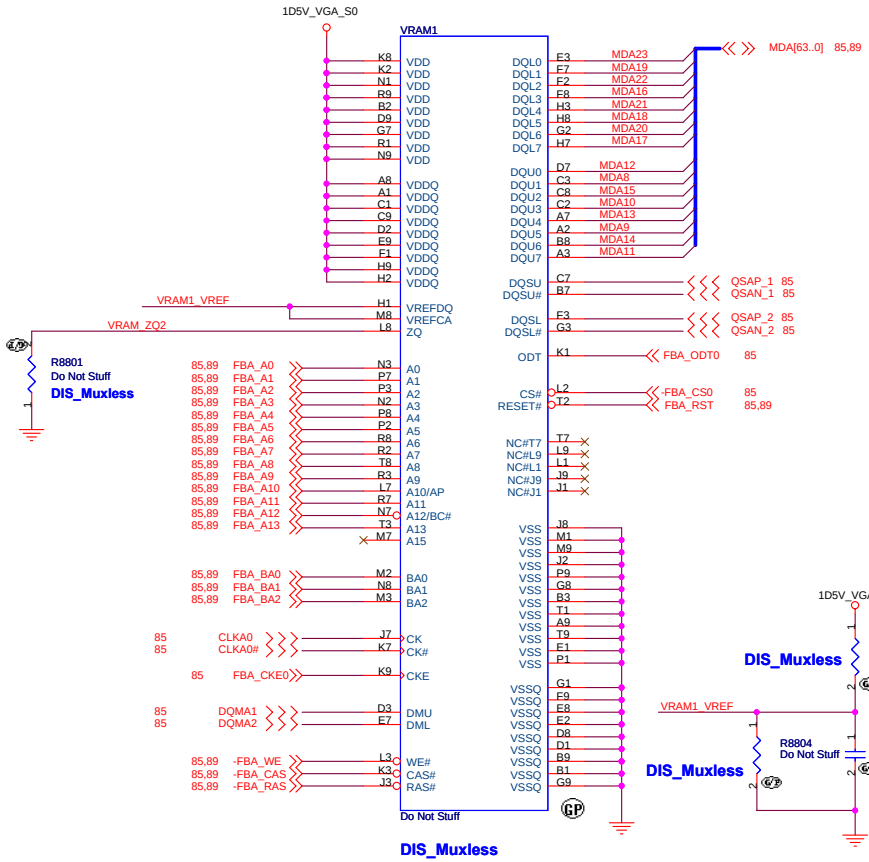




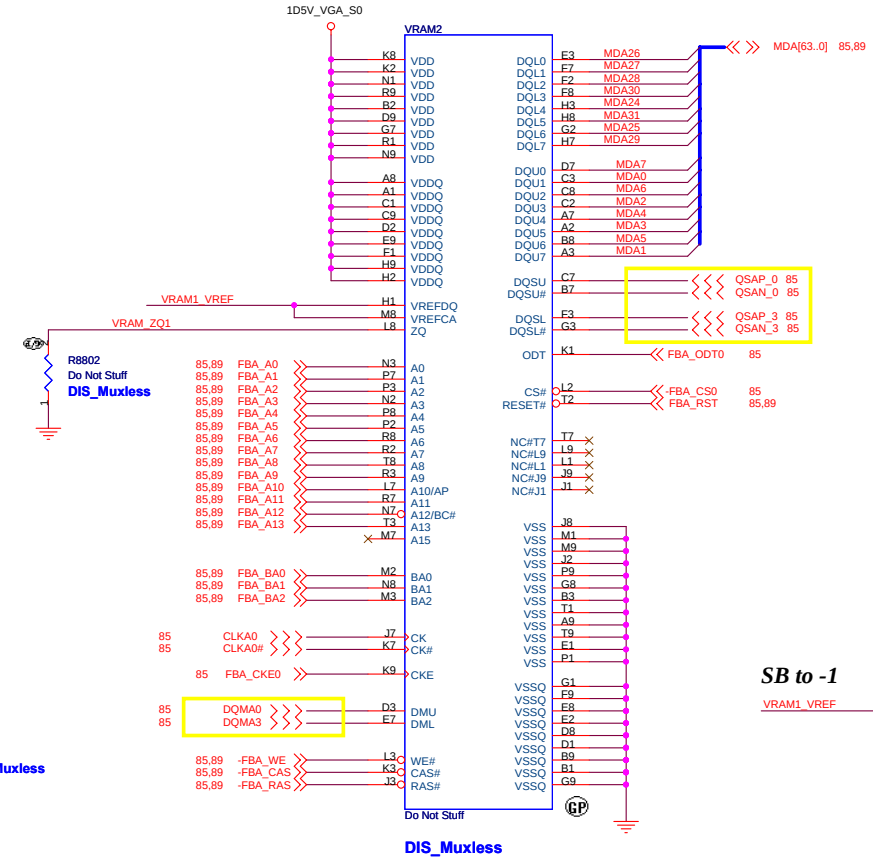


Hy2G_64.34825.6DL,Hy1G_64.15025.6DL,Sam1G512M_64.20025.6DL,Sam2G_64.45325.6DL



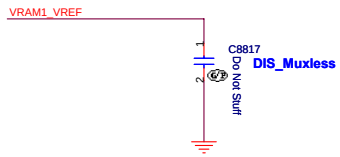


VRAM = N12PGS_N12PGV

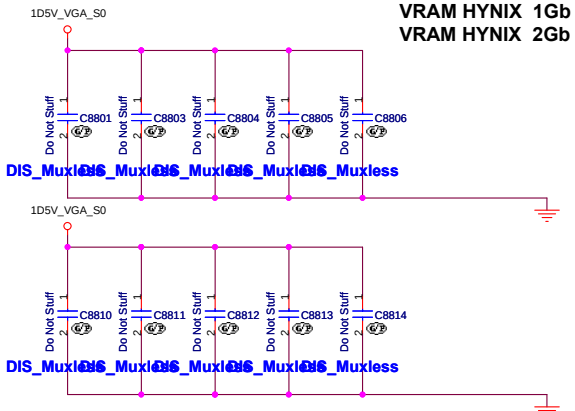


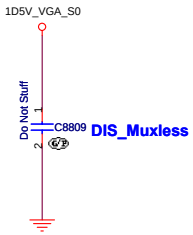
VRAM = N12PGS_N12PGV

SB to -1



VRAM SAMSUNG 1Gb VR.1GB0B.006
VRAM HYNIX 1Gb 72.51G63.C0U/VR.1GB0G.005
VRAM HYNIX 2Gb VR.2GB0G.001





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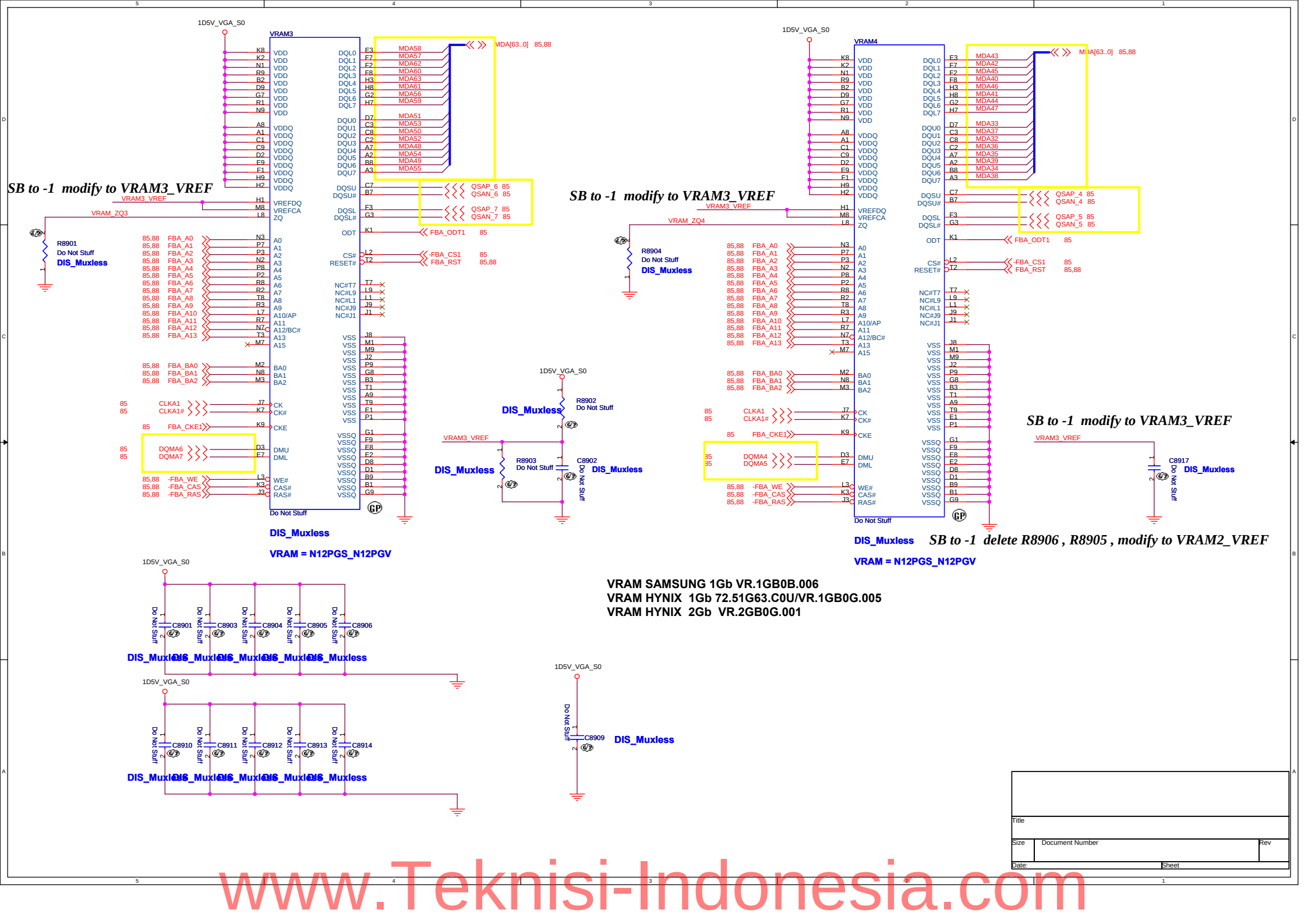
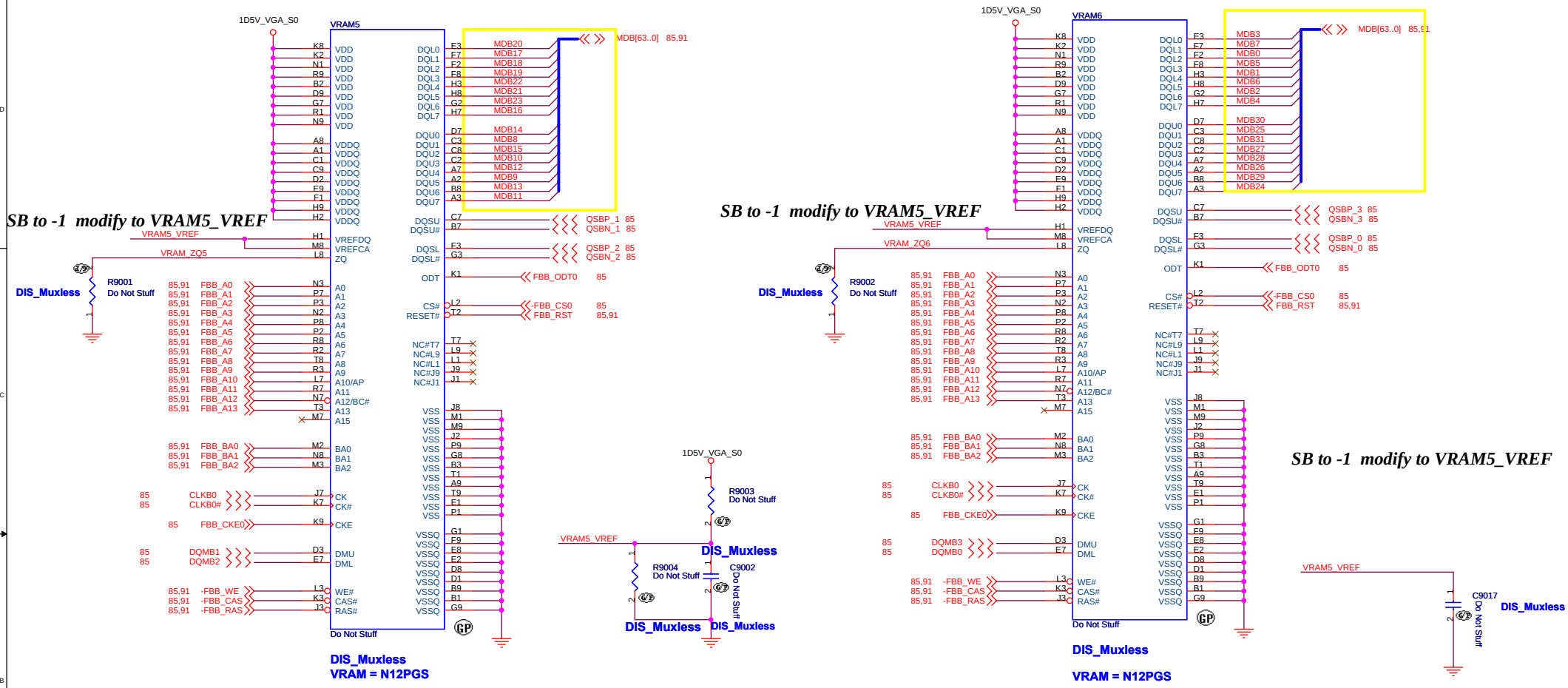
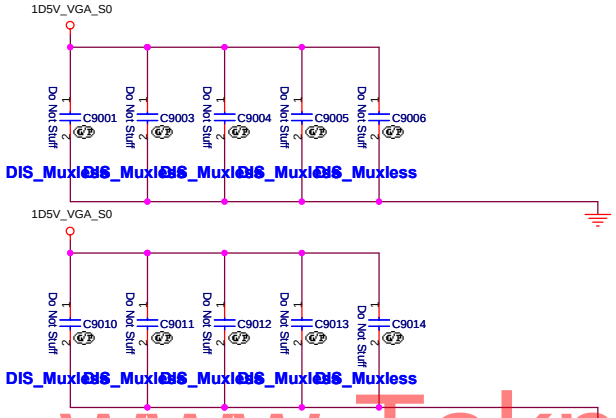
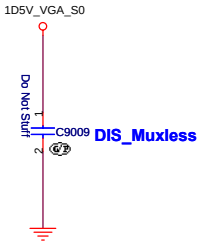
Date:
Sheet





VRAM SAMSUNG 1Gb VR.1GB0B.006
VRAM HYNIX 1Gb 72.51G63.C0U/VR.1GB0G.005
VRAM HYNIX 2Gb VR.2GB0G.001





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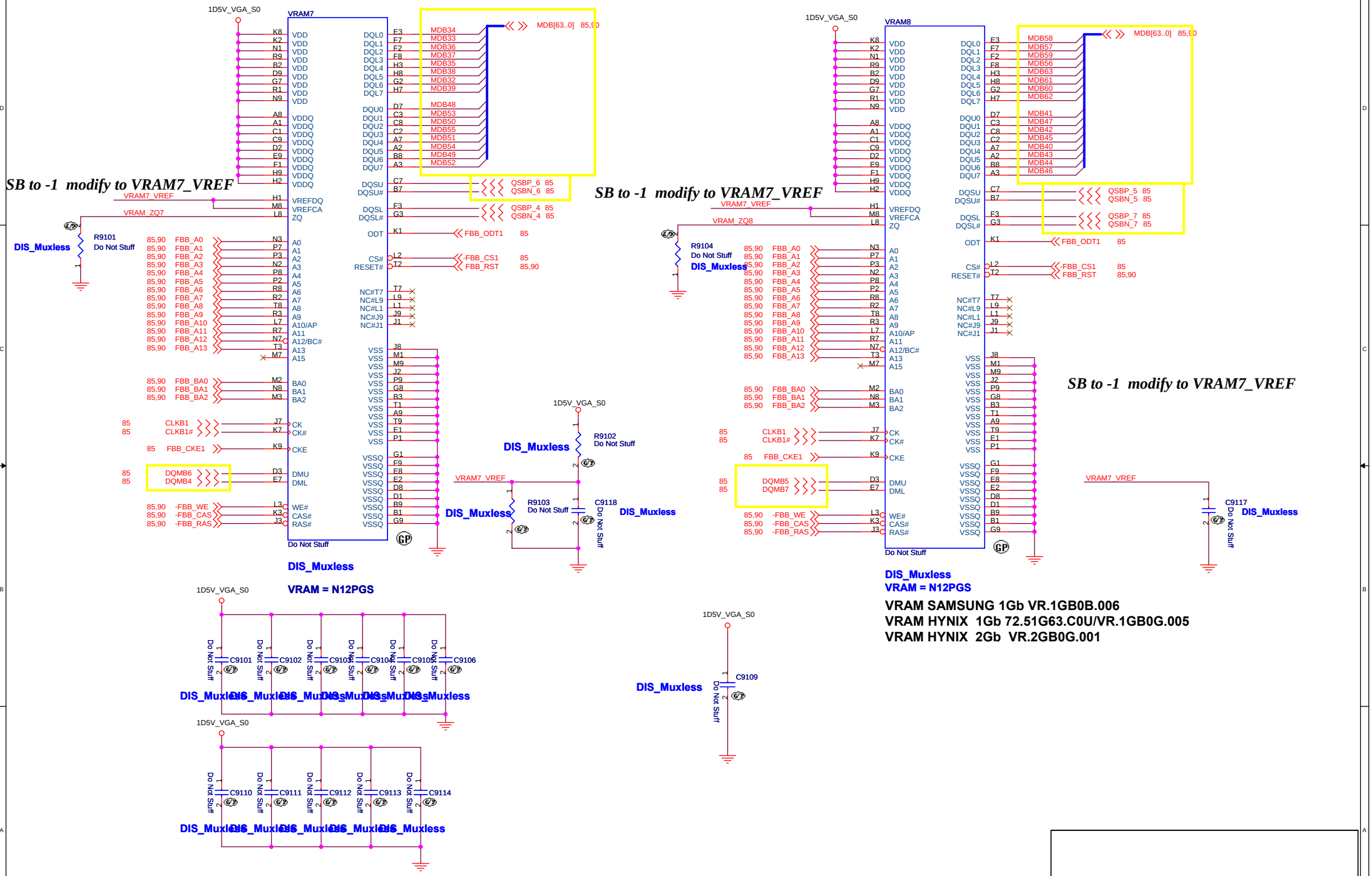


20100715

SSID = PWR.Plane.Regulator_GFX

20100719

SB 20100831

20100715

SB 20100831

Vout=0.75V*(R1+R2)/R2

Design Current = 21.94A
24.14A<OCP< 28.53A

RT8208A

N12P GS

P-State	PWR_VGA_CORE_D1	PWR_VGA_CORE_D0	VGA_CORE_PWR
P8 , P12	L	L	0.825V
P0 - HOT	L	H	0.975V
P0 - COLD	H	L	1.00V
	H	H	

I/P cap: 10U 25V K1206 X5R/ 78.10622.52L
Inductor: 1.5UH PCMC104T-1R5MN Cyntec DCR:4.2mohm Isat =33Arms 68.1R510.10J
O/P cap: 330U 2V EEFSX0D331ER 9mOhm 3Arms Panasonic/ 79.33719.L01
H/S: SI7686DP/ POWERPAK-8/11mOhm/14mOhm@4.5Vgs/ 84.07686.037
L/S: SiR460DP/ POWERPAK-8/ 4.9mOhm/6.1mohm@4.5Vgs/ 84.00460.037

Switching freq-->350KHz

Frequency setting
470K -->165KHz
200K -->323KHz
100K -->500KHz

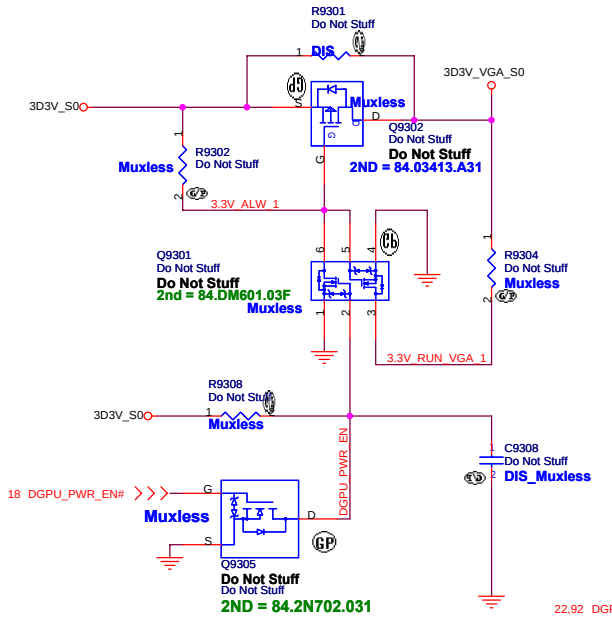
SB to -1 modify PR9213 VGA_Core to 1.05V

Vout=0.75V*(R1+R2)/R2

N12P GV

P-State	PWR_VGA_CORE_D1	PWR_VGA_CORE_D0	VGA_CORE_PWR
P8 , P12	L	L	0.85V
P0 - HOT	L	H	1.00V
P0 - COLD	H	L	1.025V
	H	H	

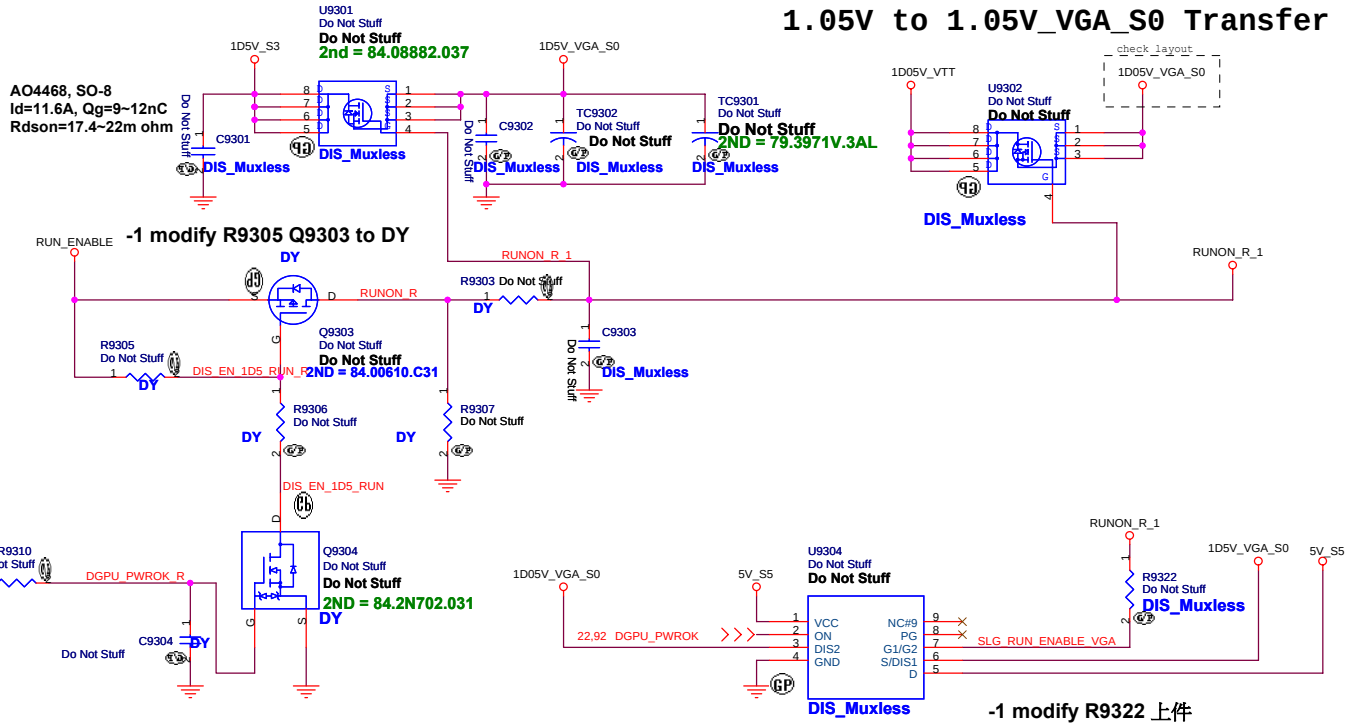
+3VS to 3.3V_DELAY Transfer



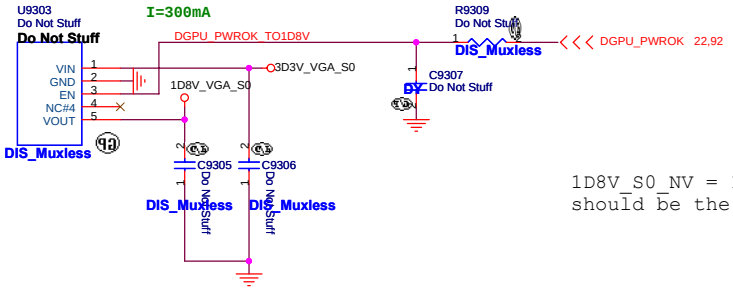
1D5V_VGA_S0

SB modify to 84.03006.A37

1.05V to 1.05V_VGA_S0 Transfer

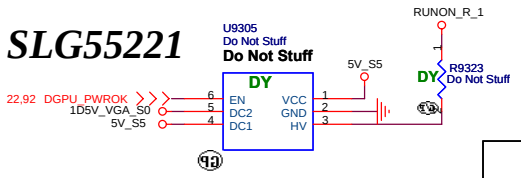


+3VS to 1.8V Transfer



1D8V_S0_NV = IFPA_IOVDD & IFPB_IOVDD, it should be the latest ramp up rail.

-1 co-layout SLG55221



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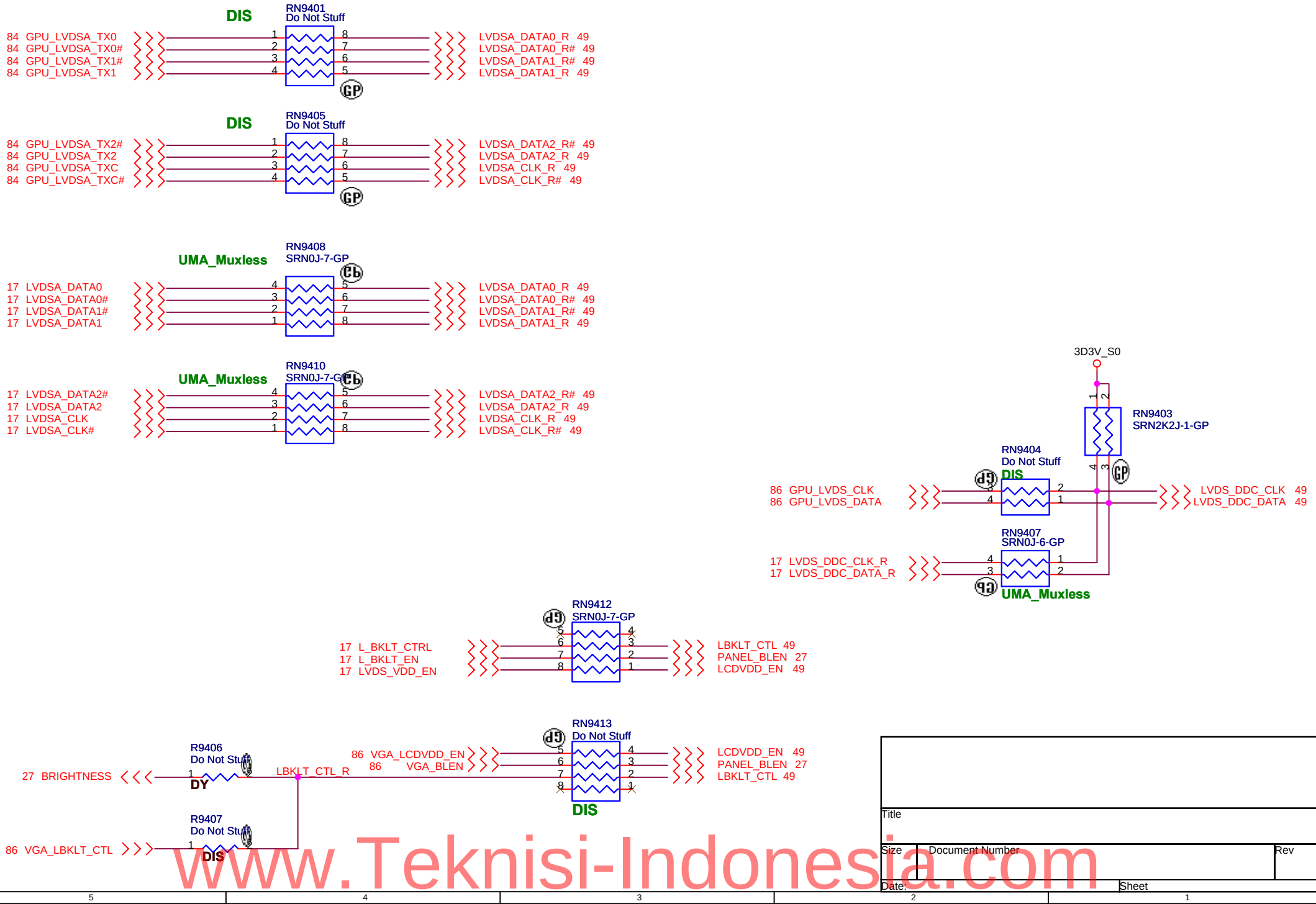
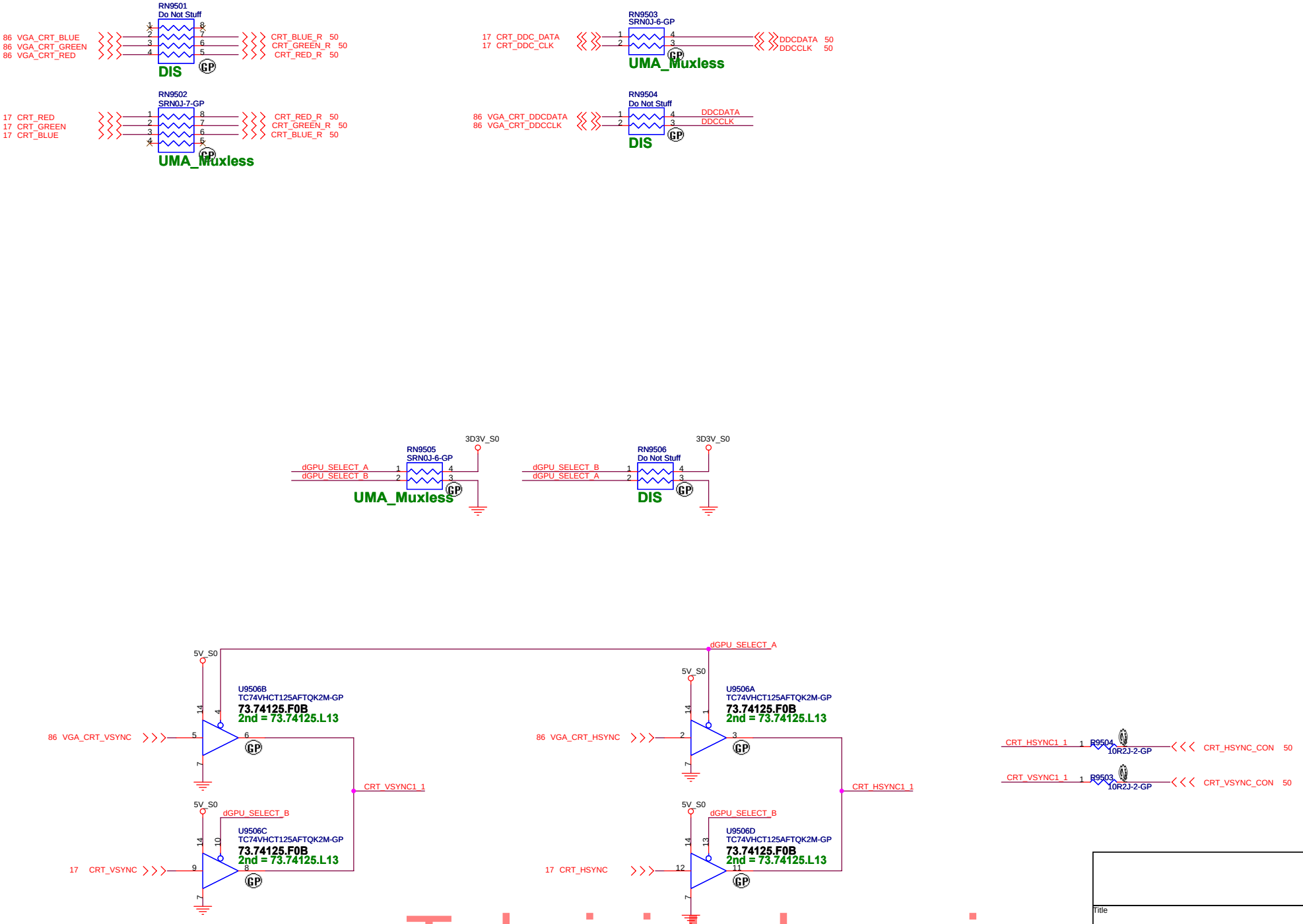
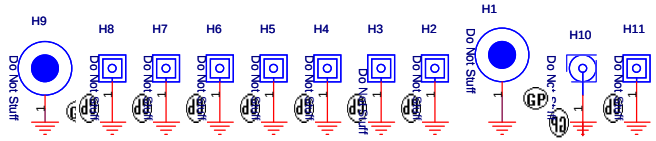
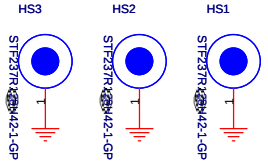
Size	Document Number	Rev
Date:		Sheet



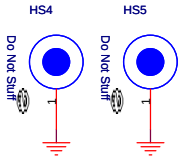




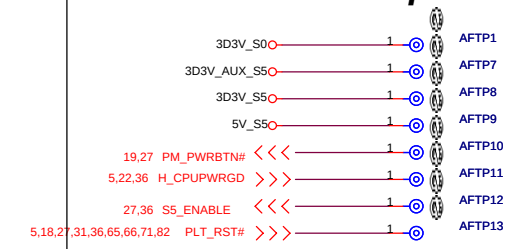
CPU



VGA



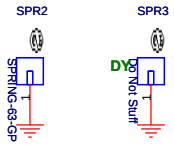
Check test point



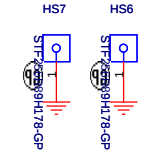
Test Point放在Dimm Door打開可量測處

SB to -1 BOM add SPR2

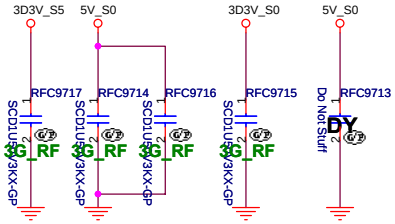
-2 delete SPR5

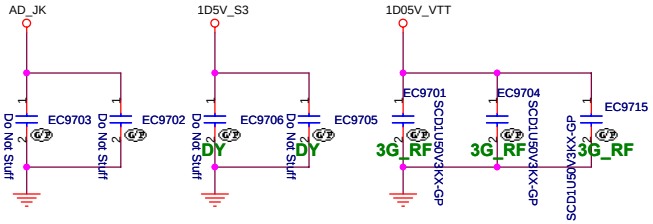


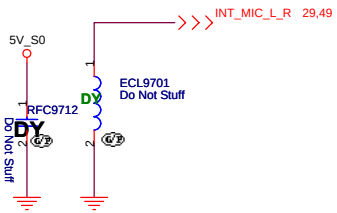
Change:34.40V16.001

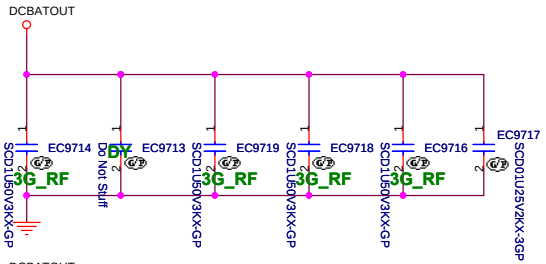


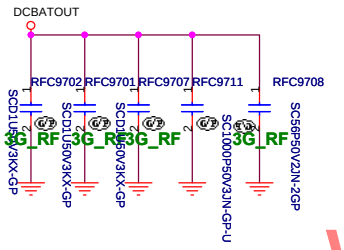
3G Sku

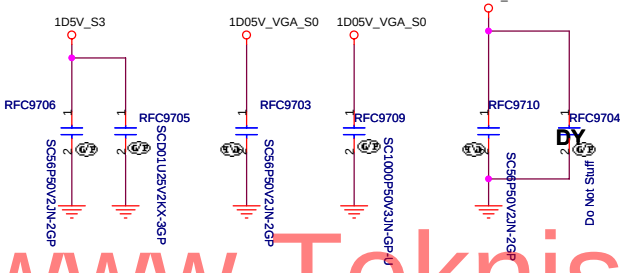


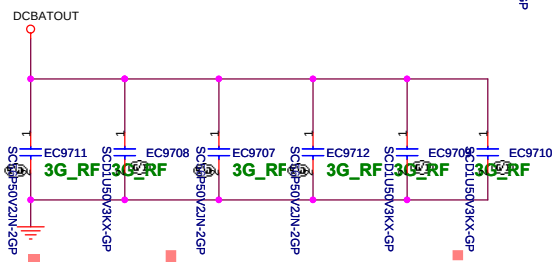












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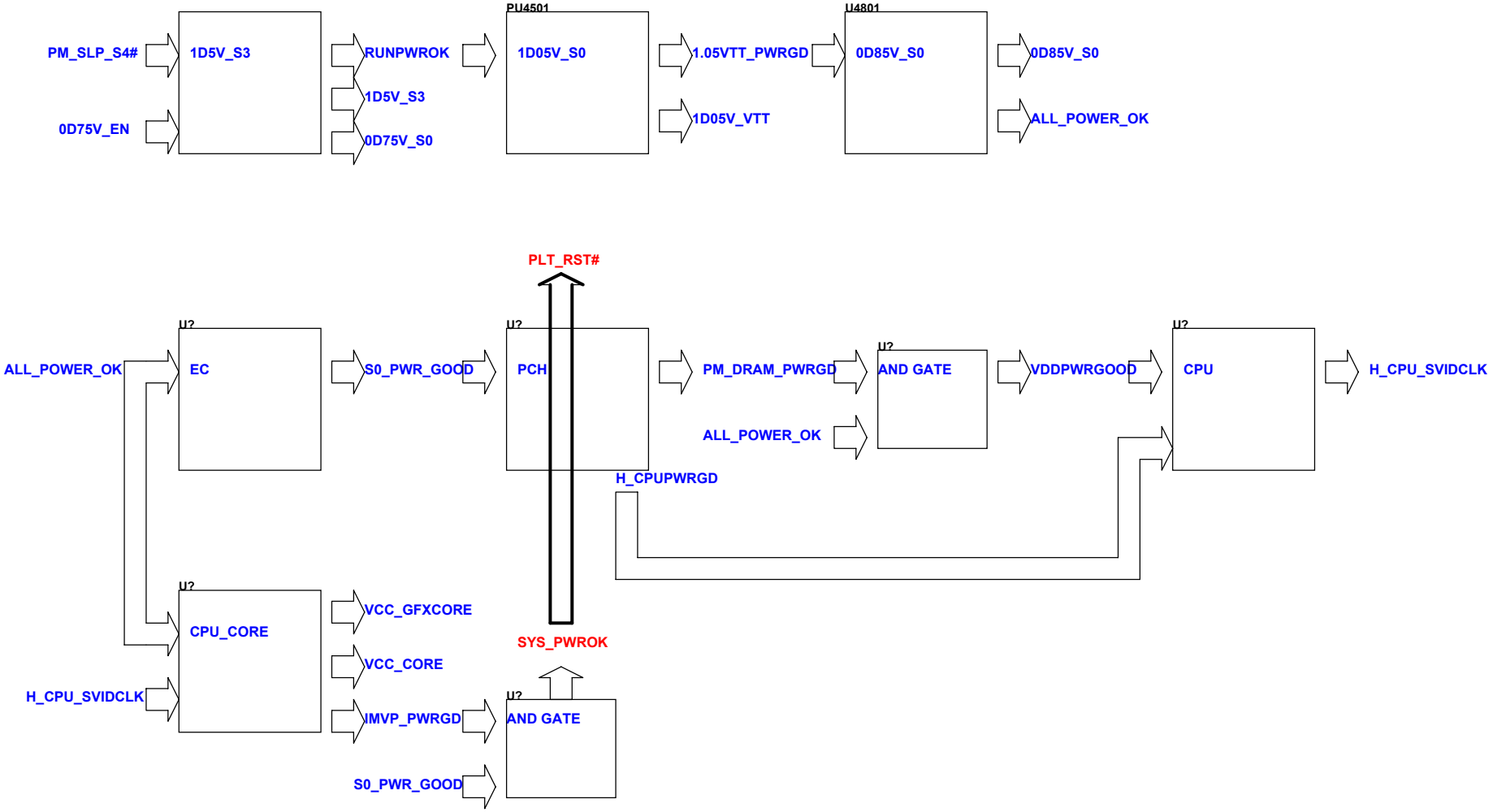
Date: | Sheet



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Size | Document Number | Rev

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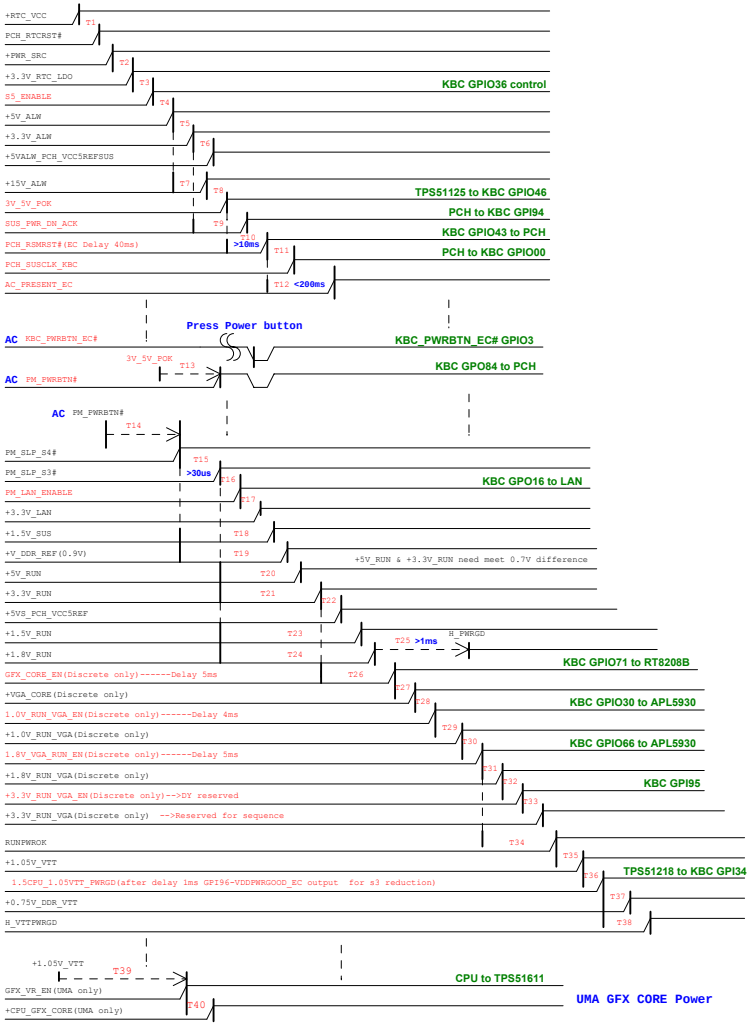
Intel-Power Up Sequence

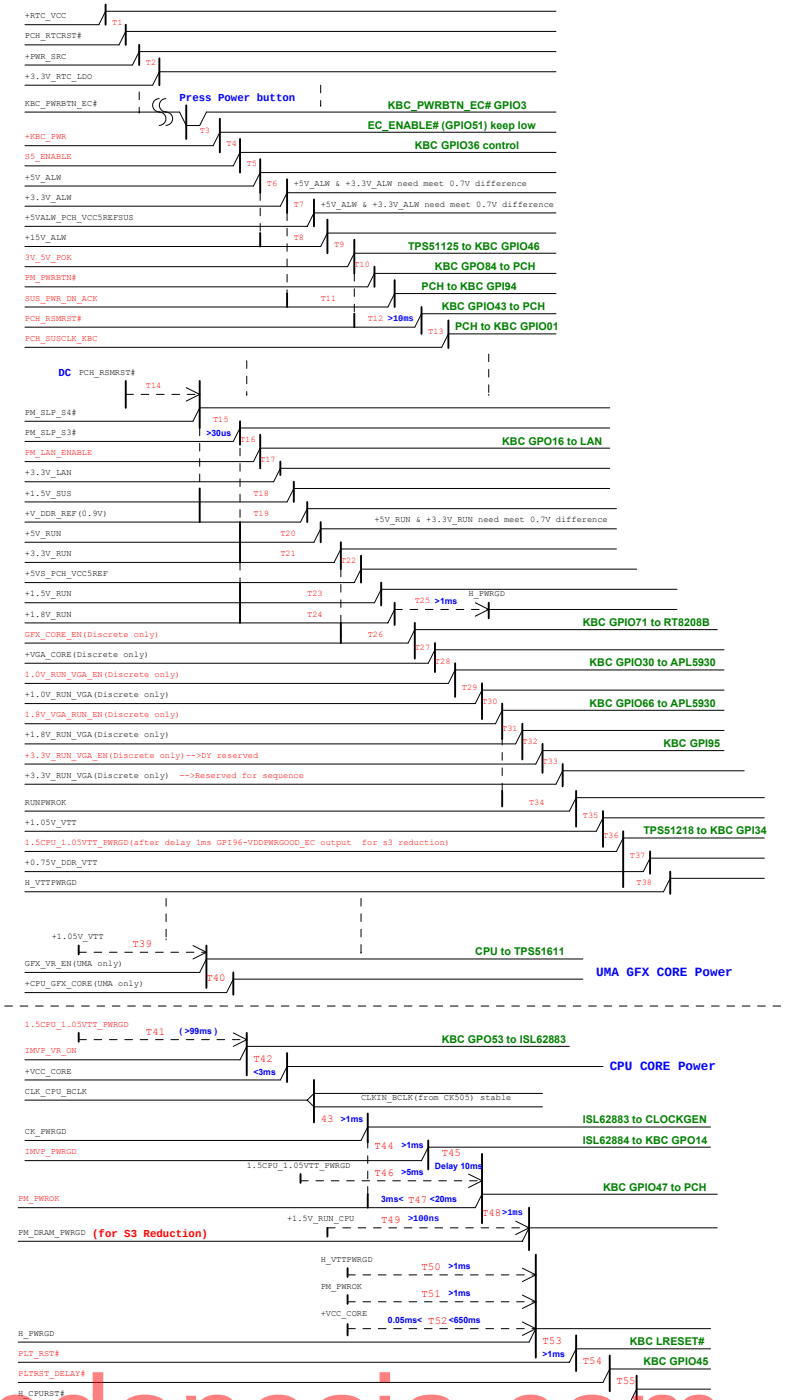
(AC mode)

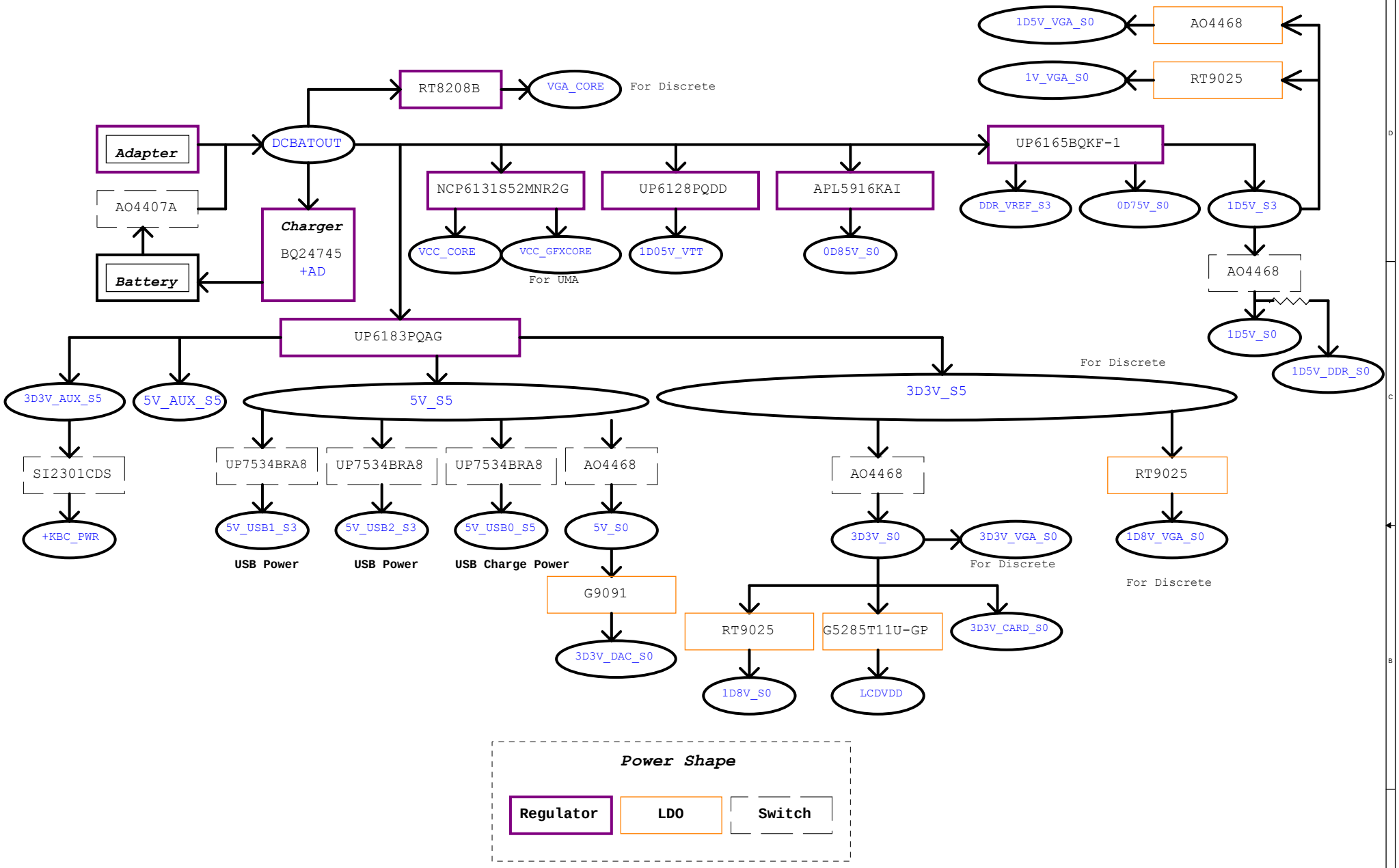
red word: KBC GPIO



(DC mode)

red word: KBC GPIO





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Size | Document Number | Rev

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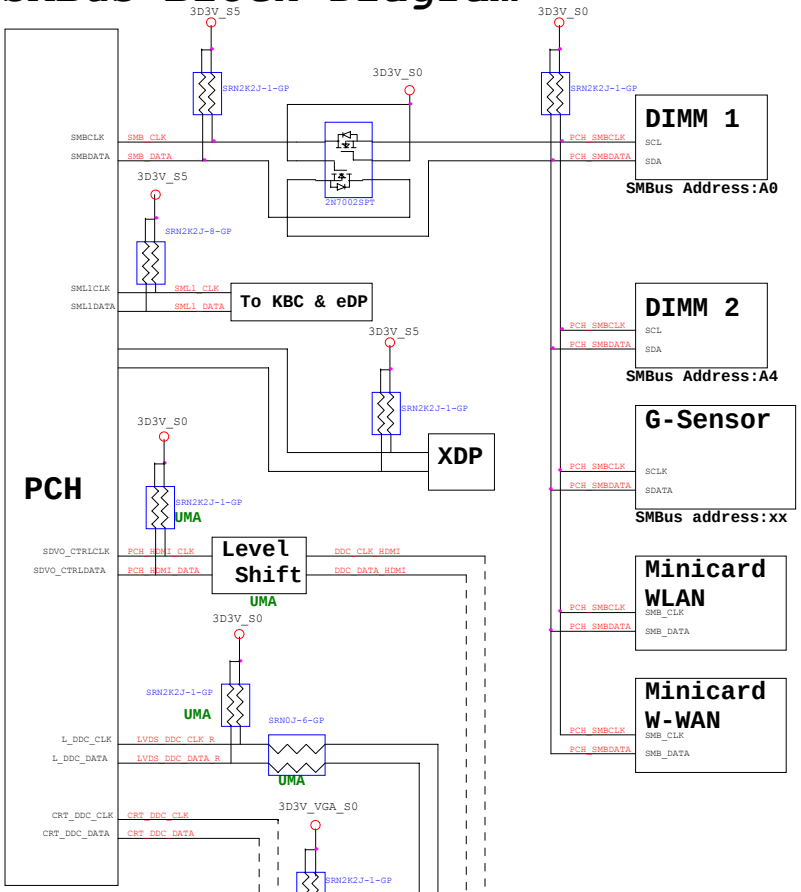
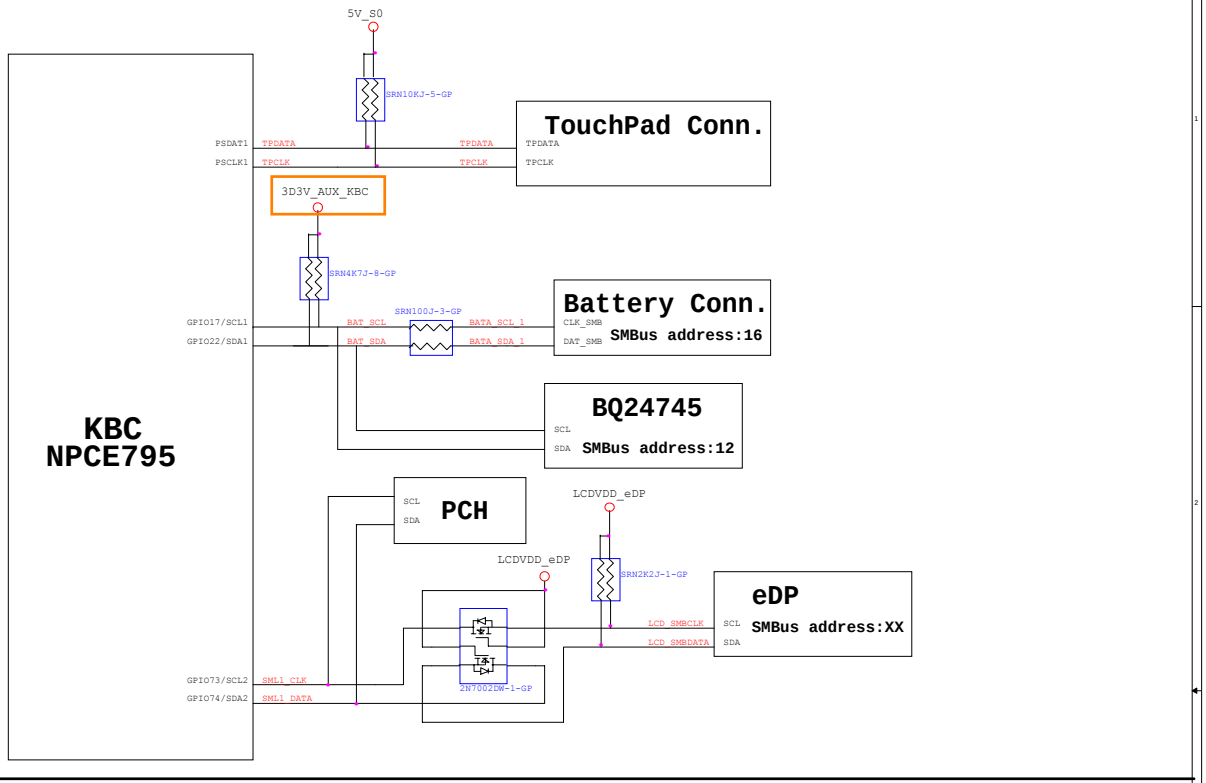
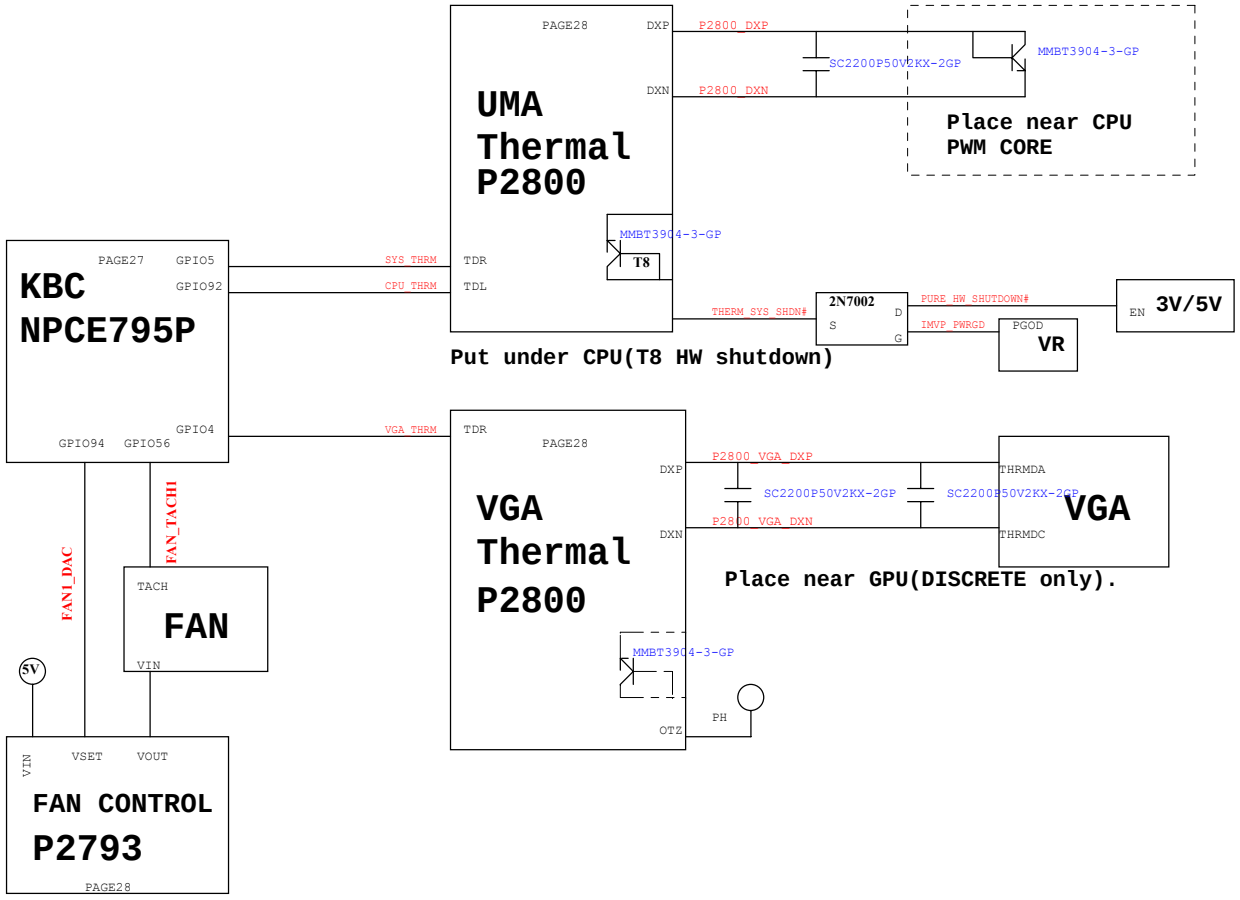
PCH SMBus Block Diagram



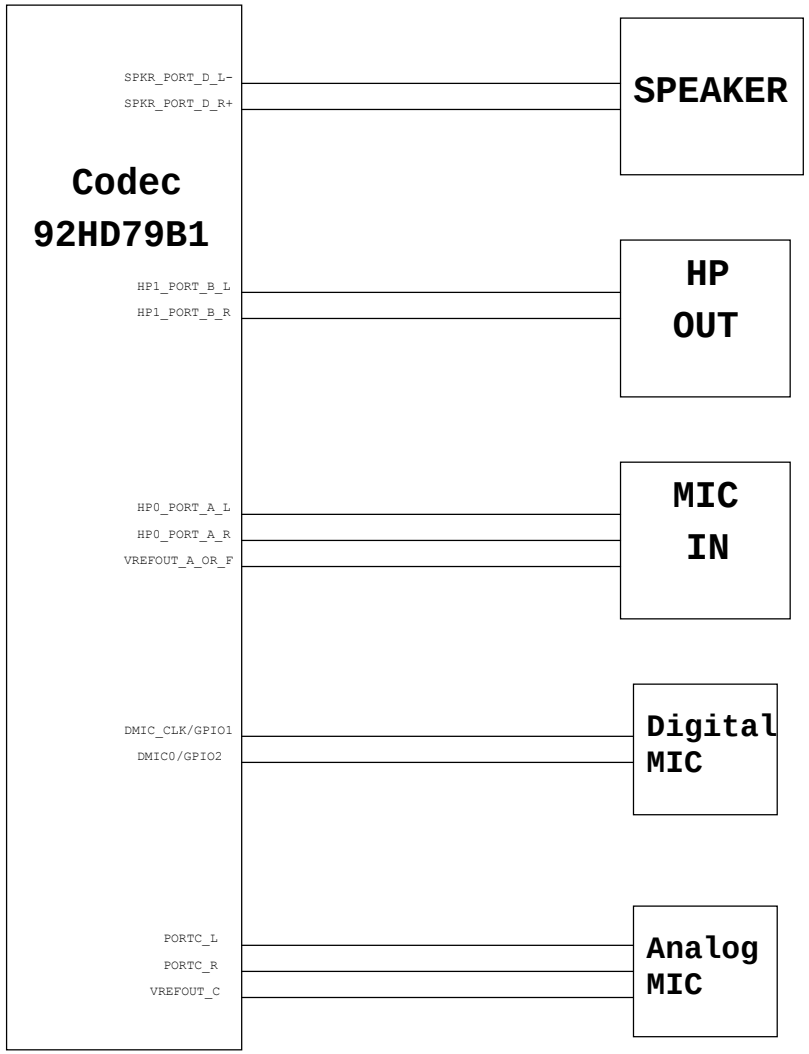
KBC SMBus Block Diagram



Thermal Block Diagram



Audio Block Diagram



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