PG165-A00

TU116 6GB GDDR5, 192b, X32
DVI-D + DP + HDMI

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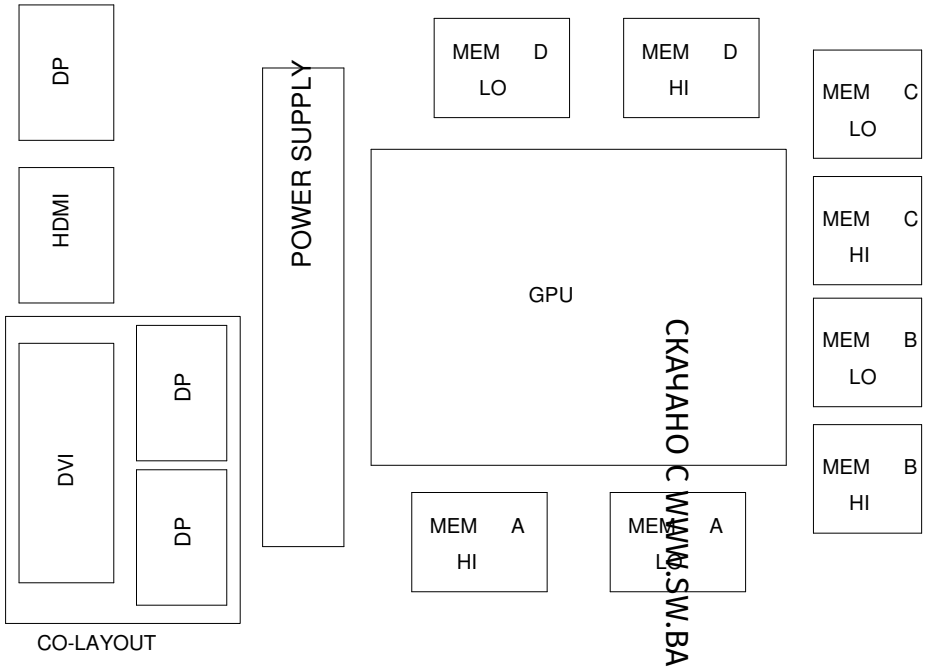
Page2: Block Diagram



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

Power Supply:

- Power Supply NVVDD-PH6
- Power Supply NVVDD-PH5
- Power Supply NVVDD-PH4
- Power Supply NVVDD-PH3
- Power Supply NVVDD-PH2
- Power Supply NVVDD-PH1

→ EXT_12V 8PIN PWR

- Power Supply FBVDDQ-PH2
- Power Supply FBVDDQ-PH1

→ PEX_12V Finger

- Power Supply 5V
- PEX_VDD
- 1V8
- Fan
- DP_PWR

→ PEX_3V3 FINGER

ASSEMBLY
PAGE DETAIL

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Block Diagram

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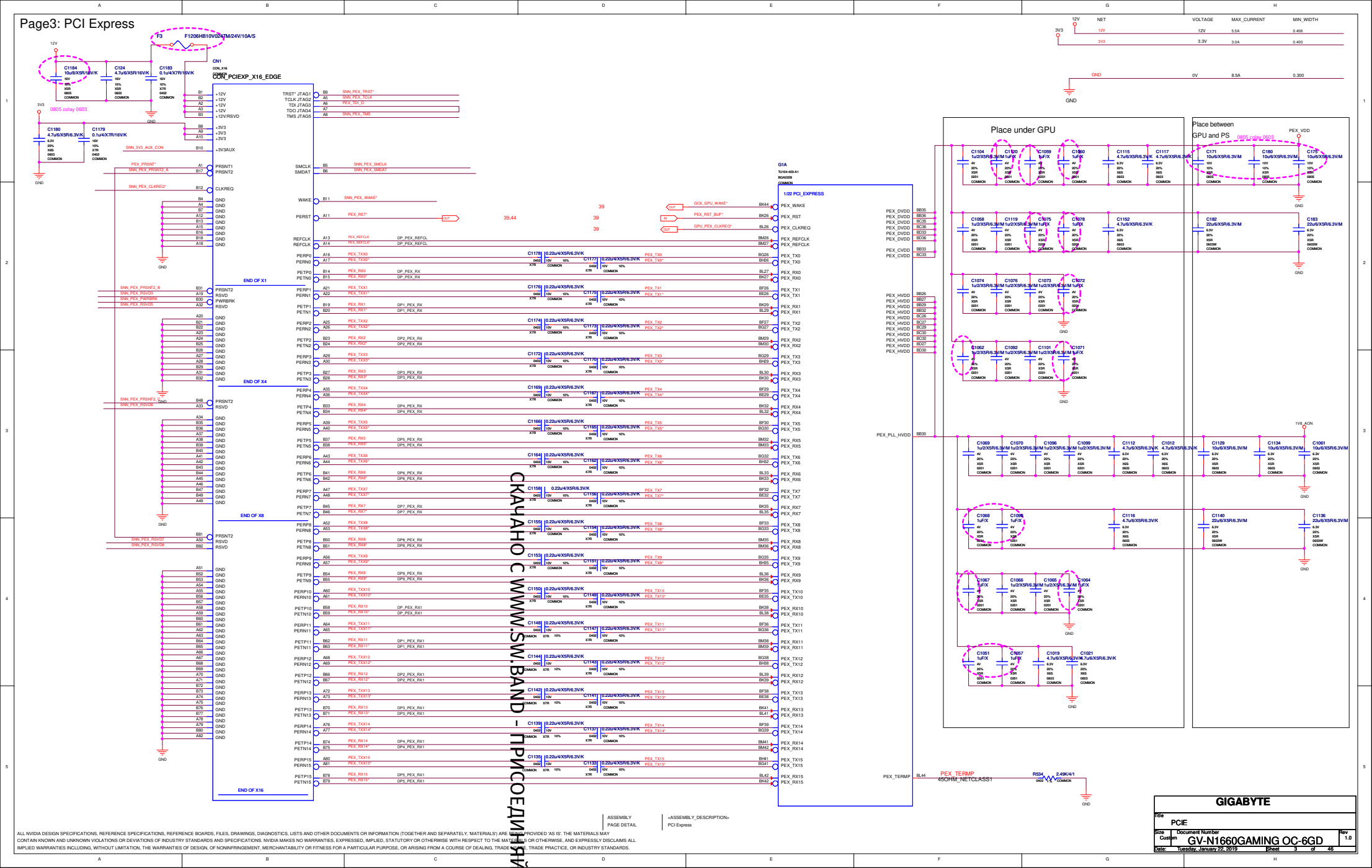
Page3: PCI Express



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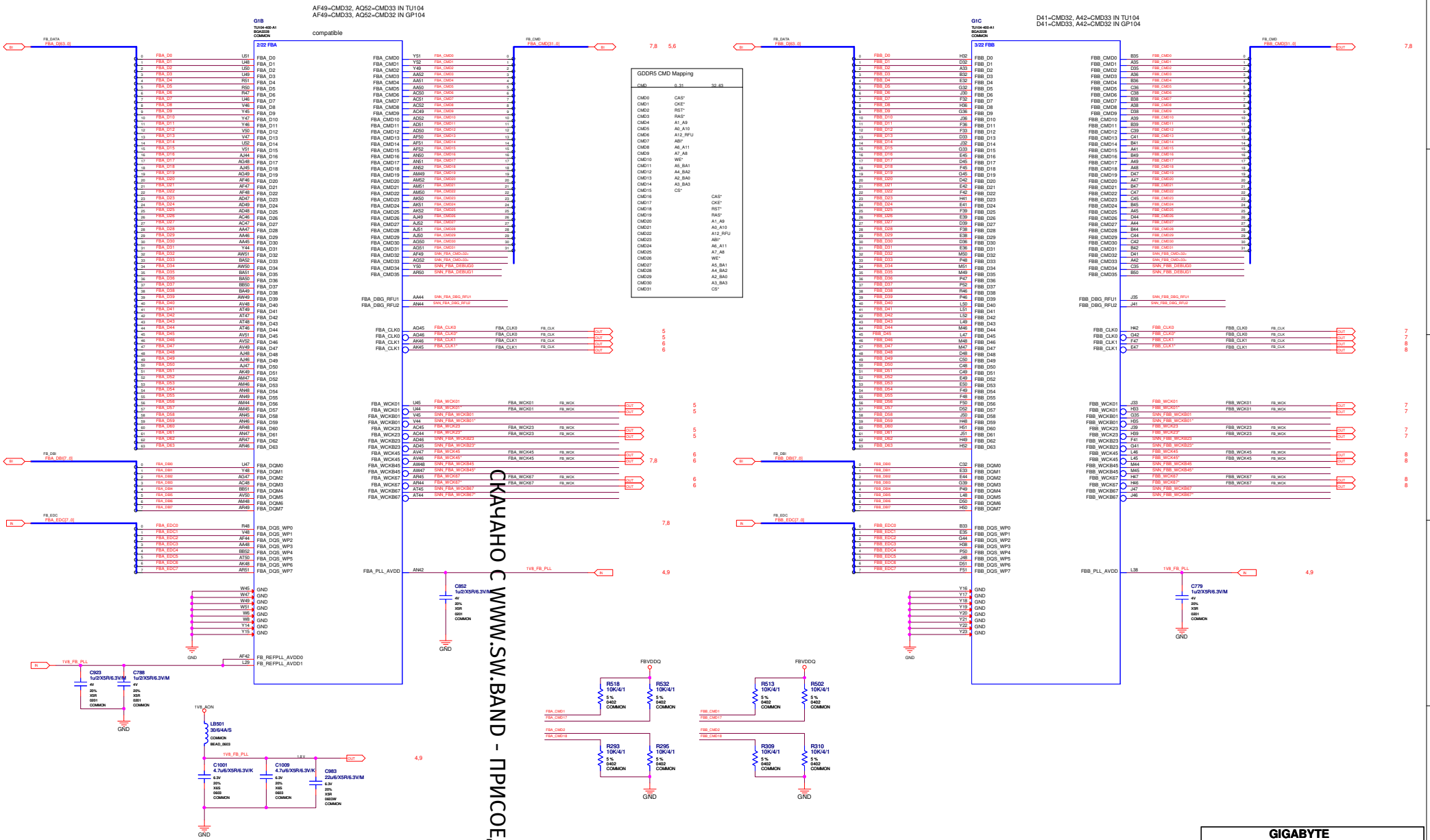
Page4: MEMORY: GPU Partition A/B



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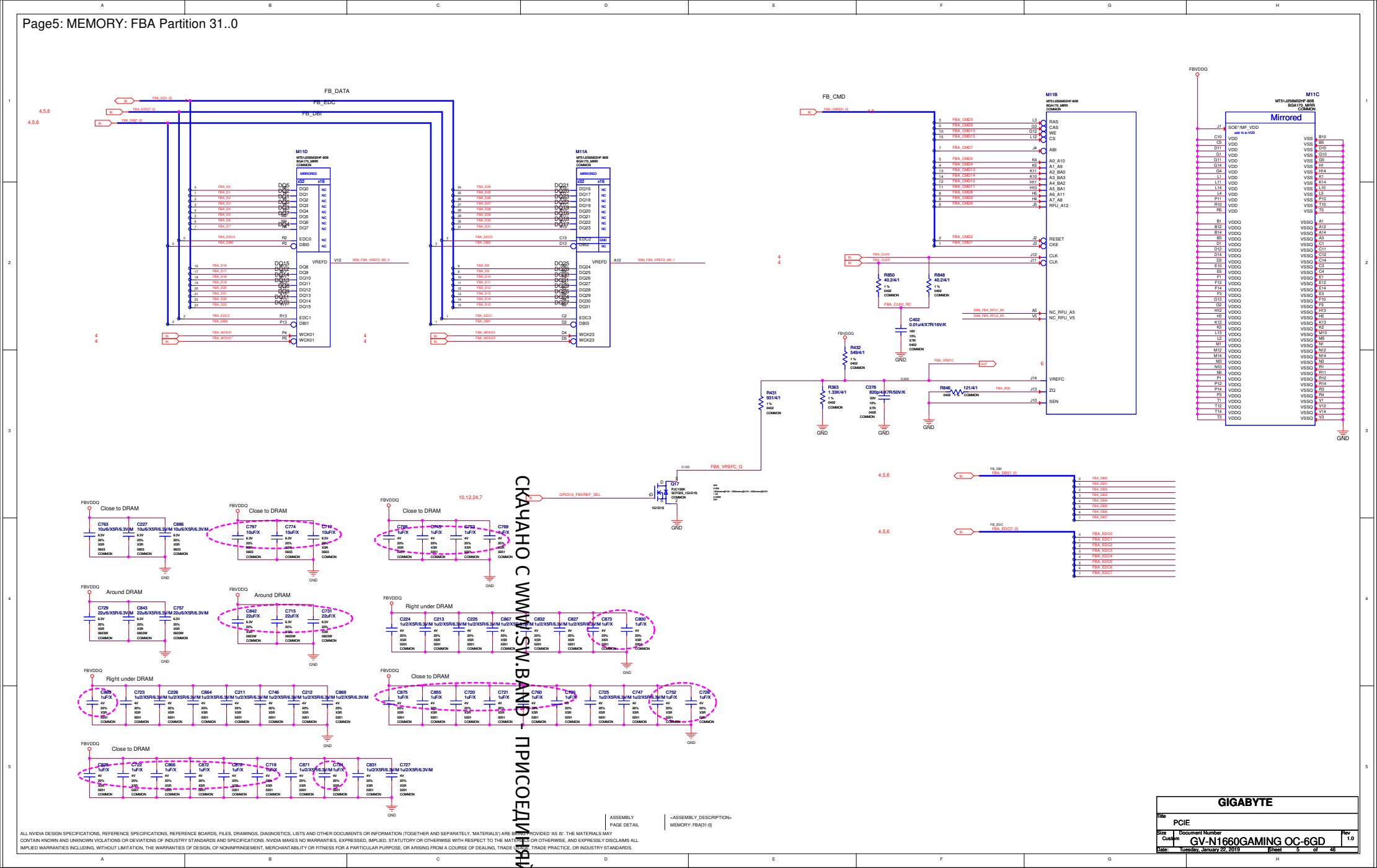
Page5: MEMORY: FBA Partition 31..0



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBA[31:0]

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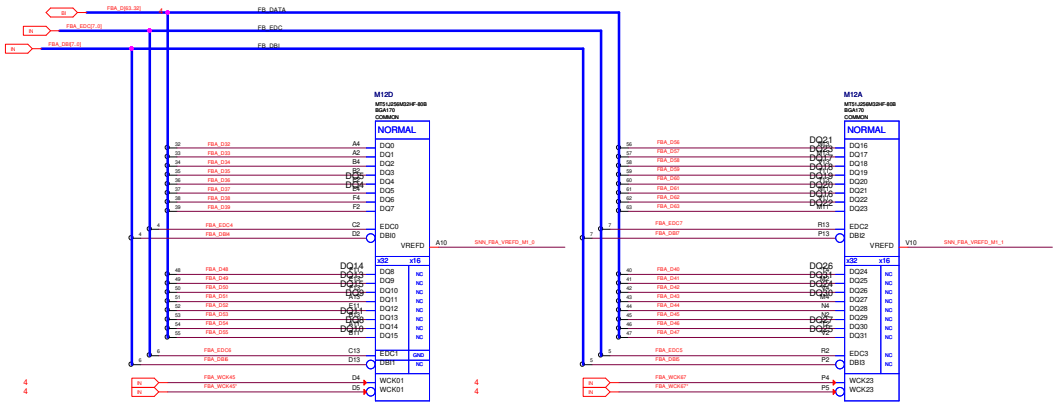
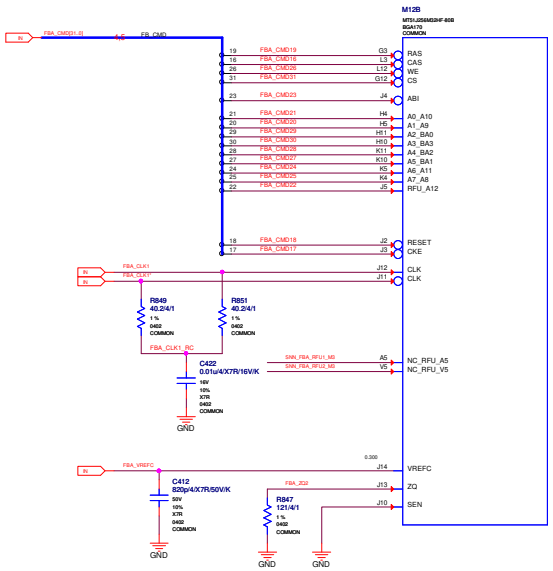
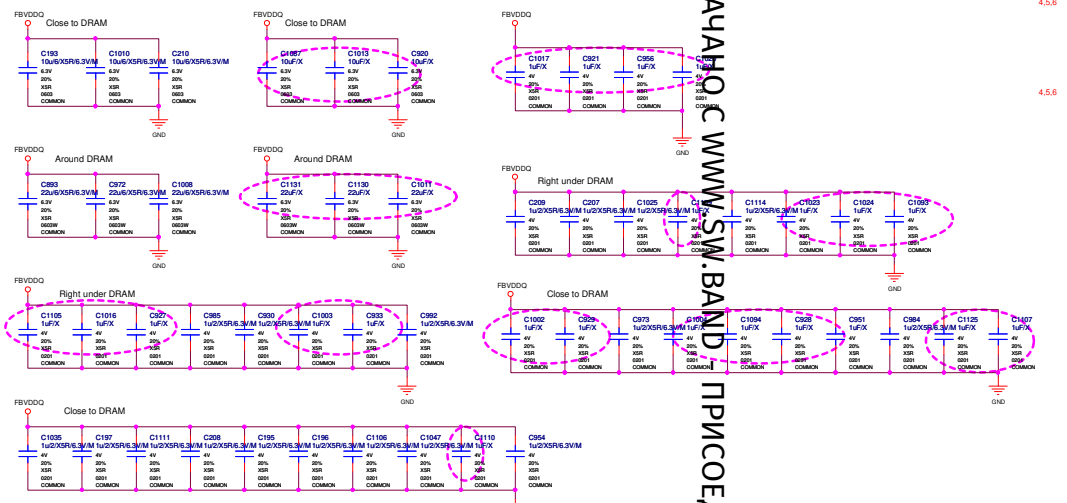
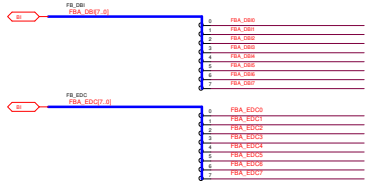
Page6: MEMORY: FBA Partition 63..32









СКАЧАНОС WWW.SW.BAND ПРИСОЕДИНЯЙСЯ!

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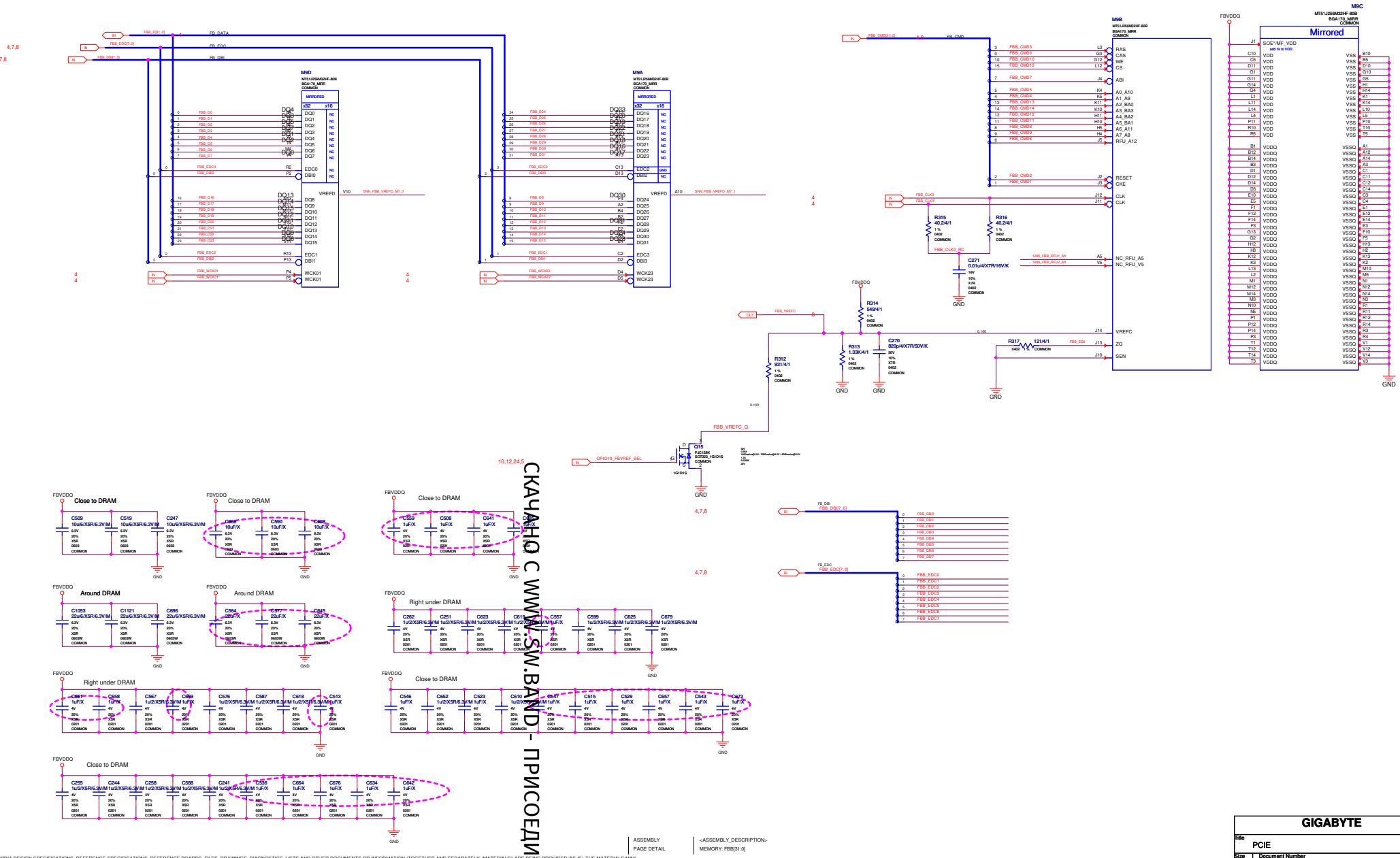
Page7: MEMORY: FBB Partition 31..0



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
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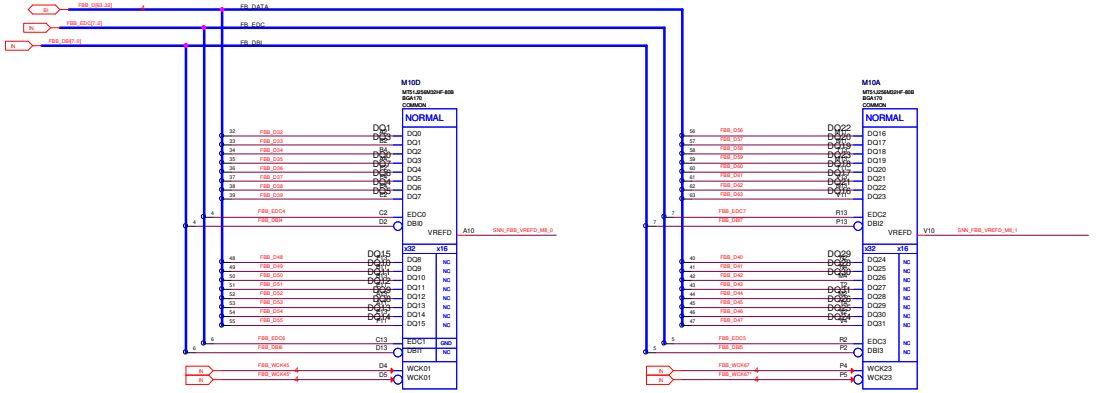

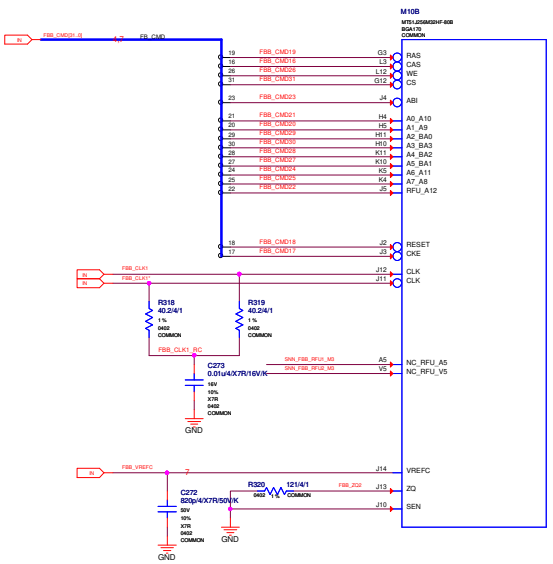

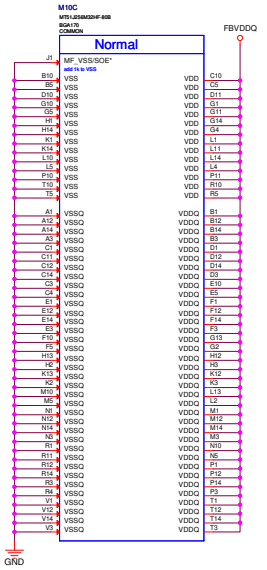

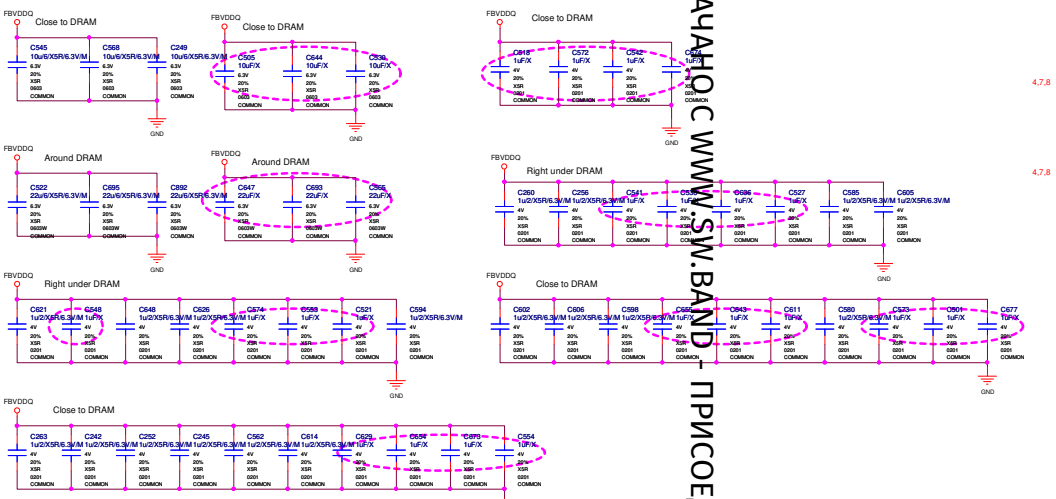

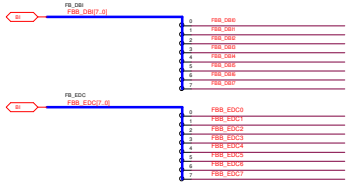

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBB[63:32]

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Page9: MEMORY: GPU Partition C/D

A17=CMD32, D17=CMD33 IN TU104
A17=CMD33, D17=CMD32 IN GP104

V4=CMD32, U1=CMD33 IN TU104
V4=CMD33, U1=CMD32 IN GP104

GDDR5 CMD Mapping

CMD	0..31	32..63
CMD0	CAS*	
CMD1	CKE*	
CMD2	RST*	
CMD3	RAS*	
CMD4	A1_A9	
CMD5	A0_A10	
CMD6	A12_RFU	
CMD7	ABI*	
CMD8	A6_A11	
CMD9	A7_A8	
CMD10	WE*	
CMD11	A5_BA1	
CMD12	A4_BA2	
CMD13	A2_BA0	
CMD14	A3_BA3	
CMD15	CS*	
CMD16		CAS*
CMD17		CKE*
CMD18		RST*
CMD19		RAS*
CMD20		A1_A9
CMD21		A0_A10
CMD22		A12_RFU
CMD23		ABI*
CMD24		A6_A11
CMD25		A7_A8
CMD26		WE*
CMD27		A5_BA1
CMD28		A4_BA2
CMD29		A2_BA0
CMD30		A3_BA3
CMD31		CS*

СКАЧАНО С WWW.SW.BAND – ПРИСОЕДИНЯЙСЯ!

ASSEMBLY
PAGE DETAIL

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MEMORY: GPU FB_CD

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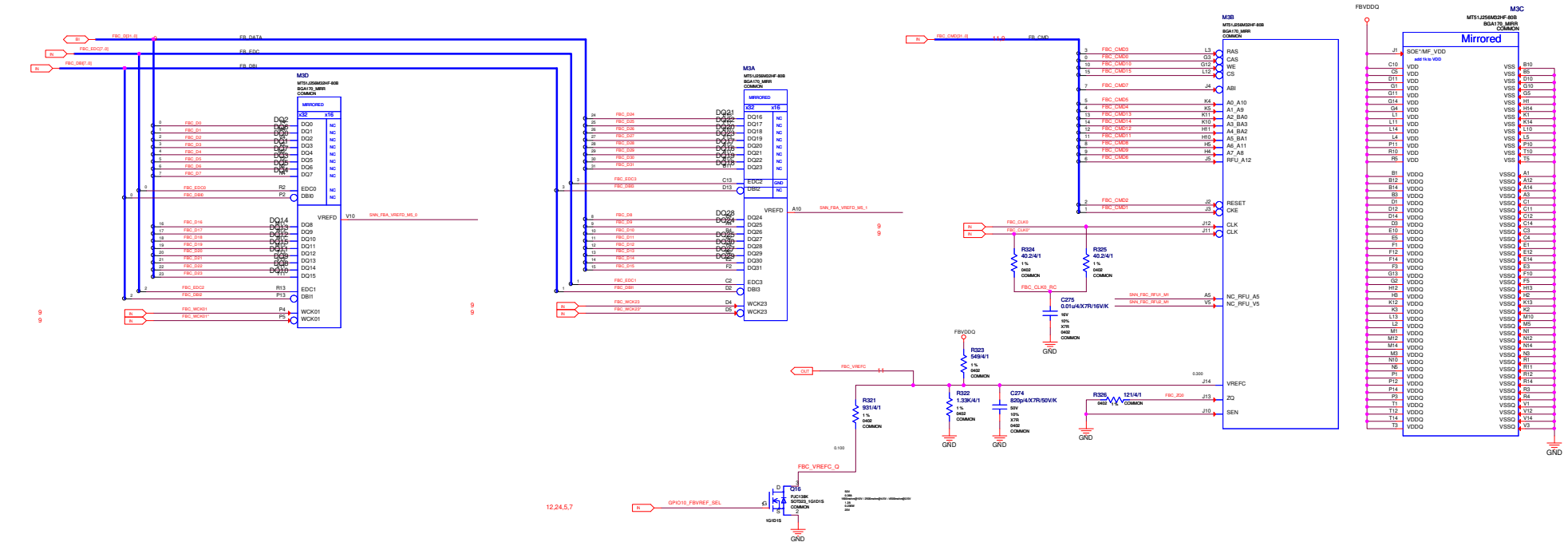

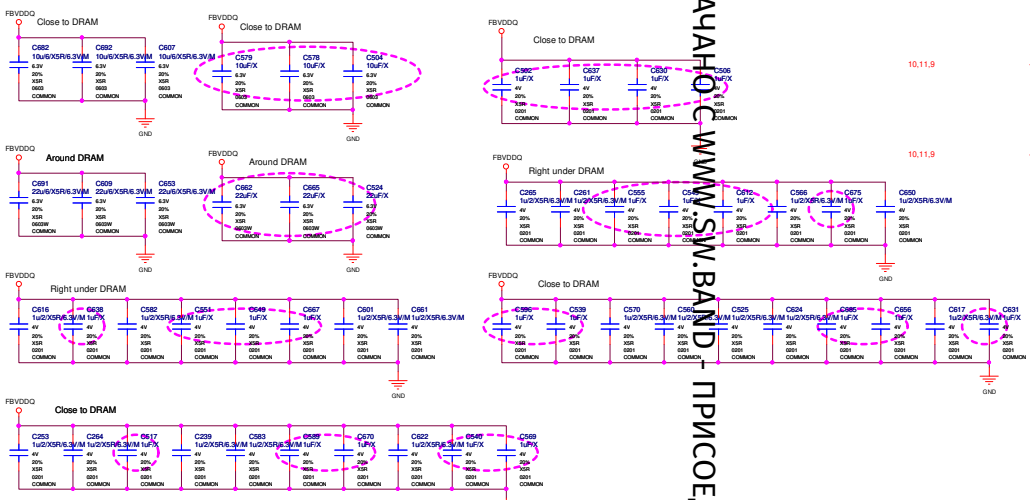

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBC[31:0]

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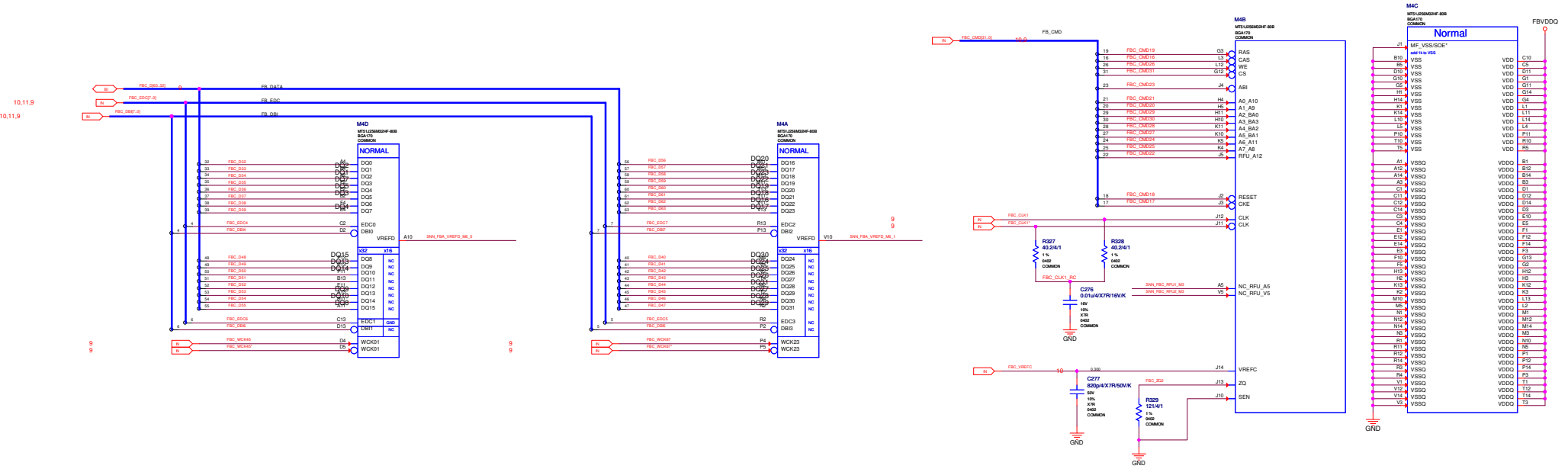
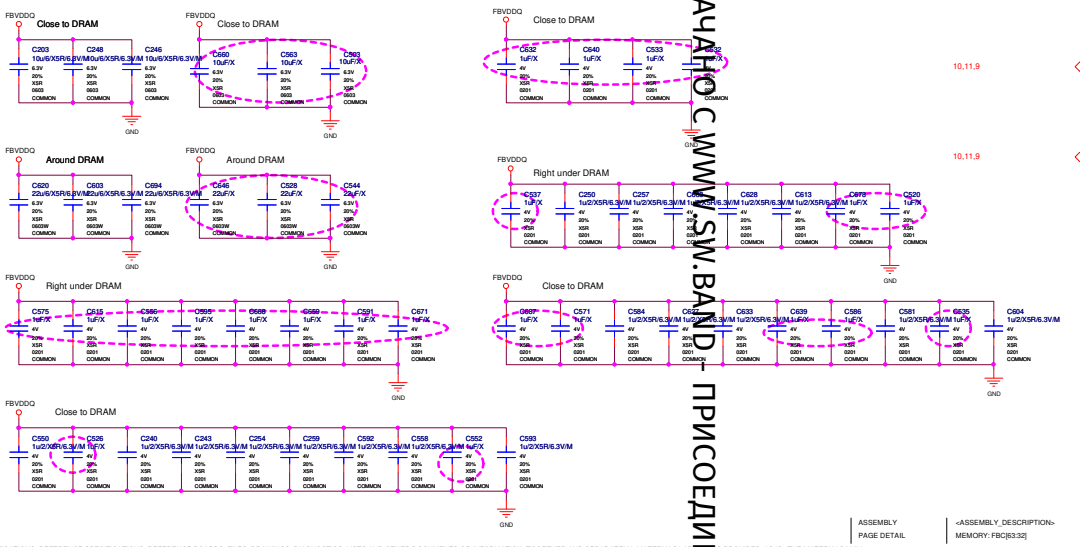
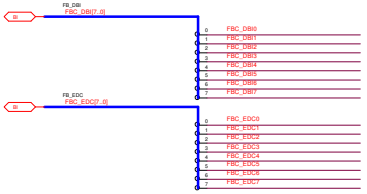
Page11: MEMORY: FBC Partition 63..32







СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBC[63:32]

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GIGABYTE

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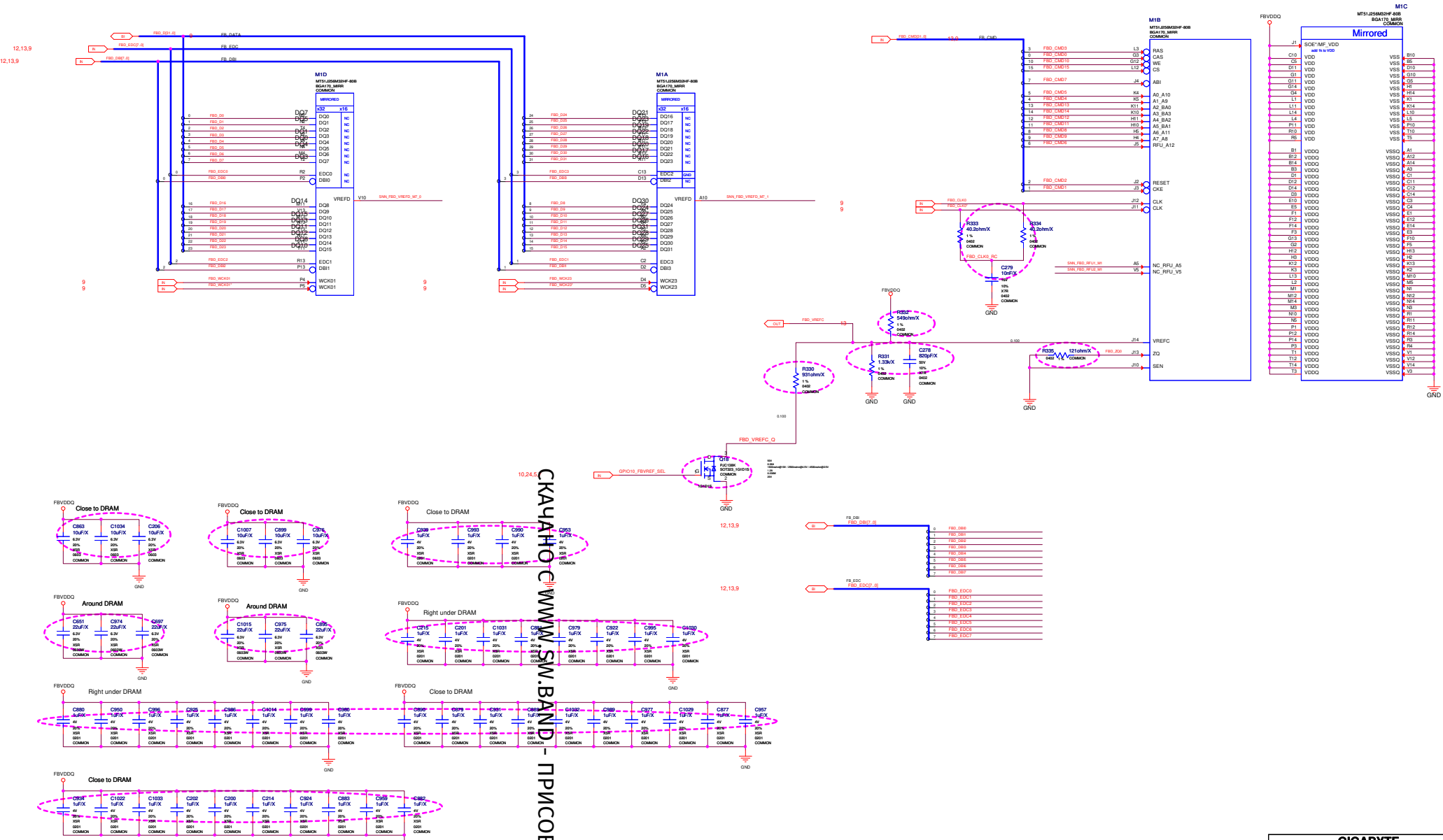

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBD[31:0]

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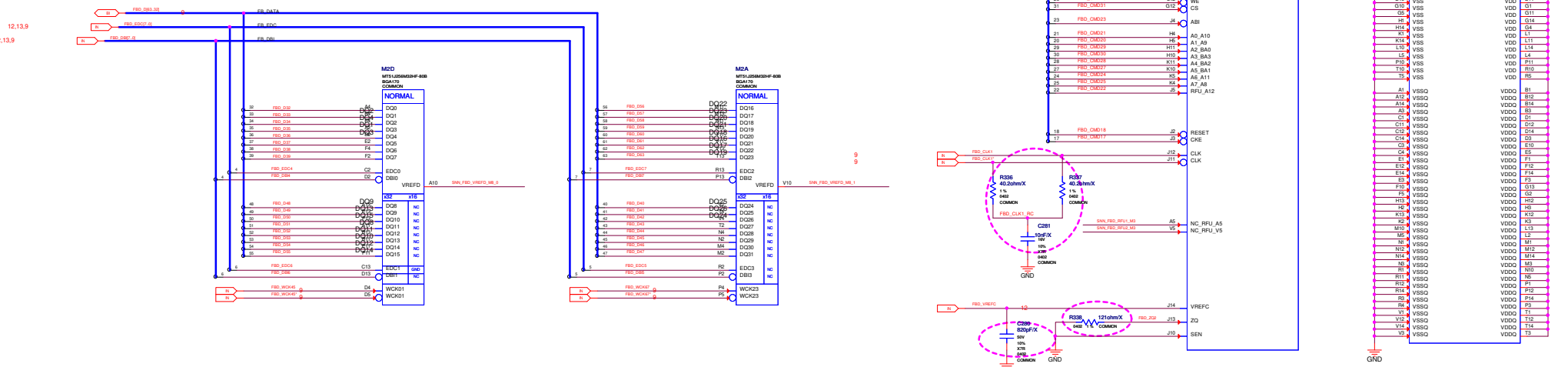
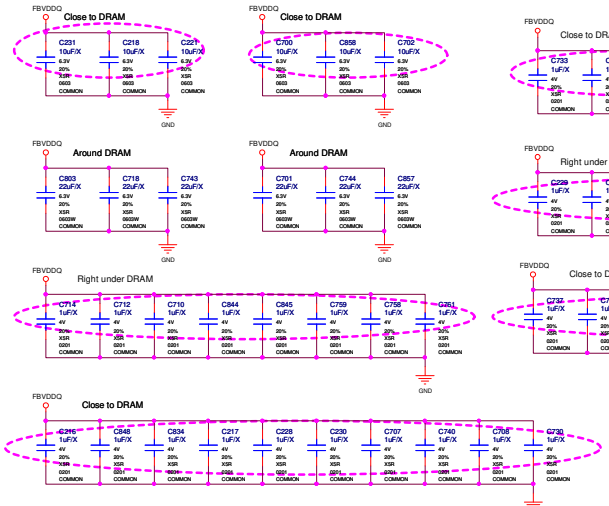
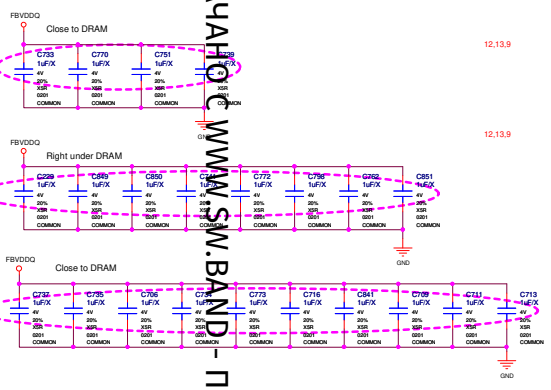
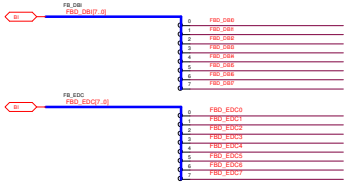
Page13: MEMORY: FBD Partition 63..32









СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MEMORY: FBD[63:32]

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GIGABYTE

Title: PCIE

Size	Document Number	Rev
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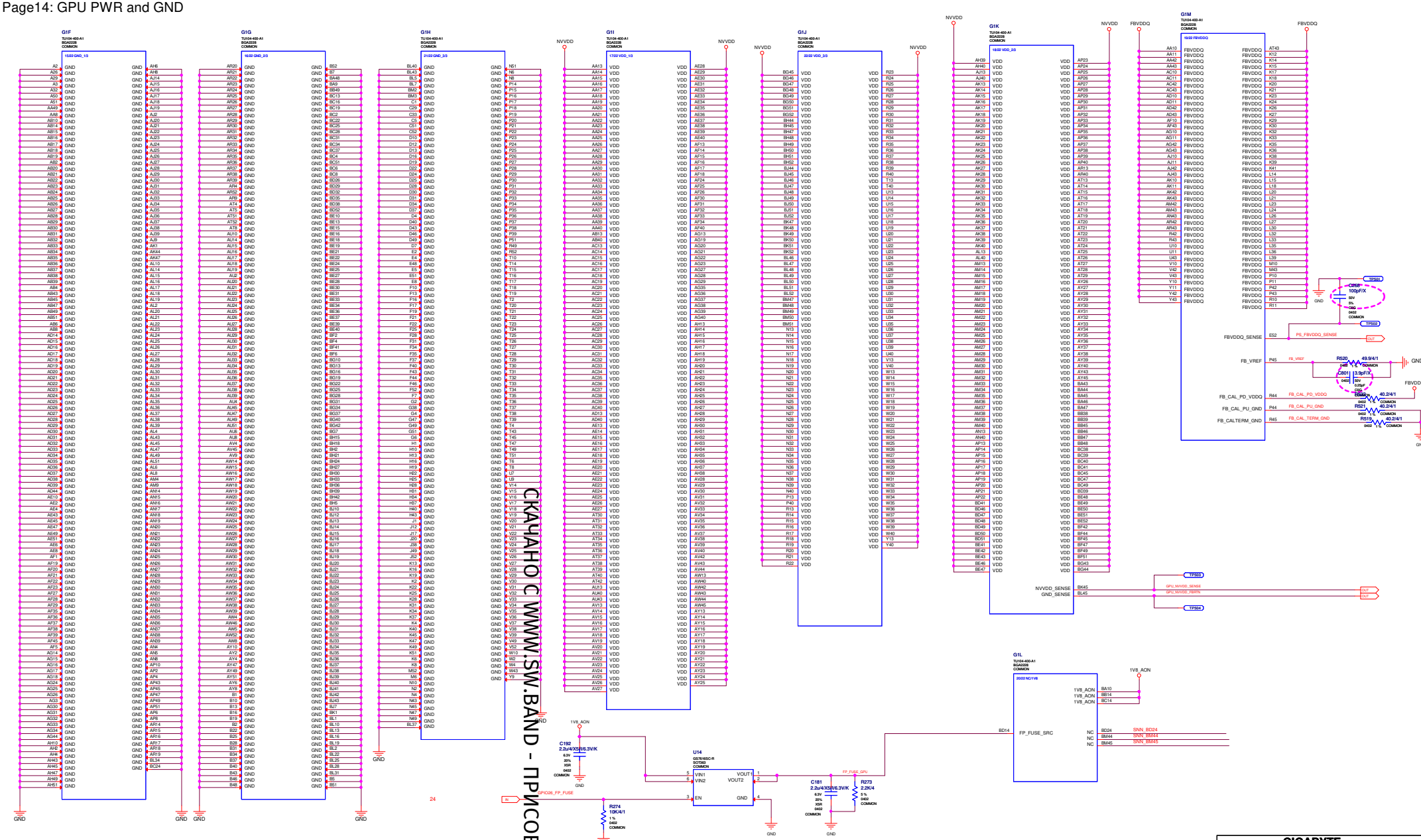
Page14: GPU PWR and GND



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	GPU PWR & GND

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GIGABYTE

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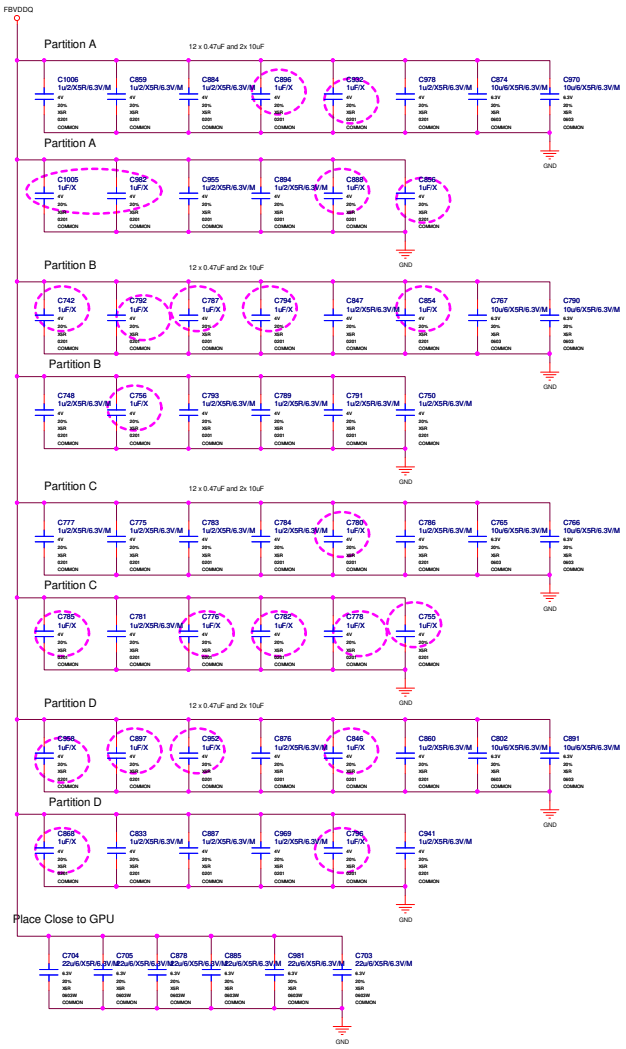
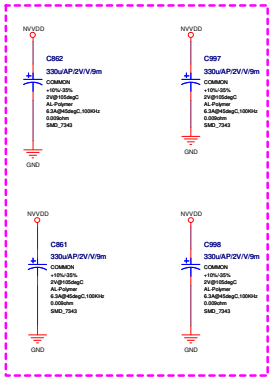
Page15: GPU DECOUPLING 1

FBVDDQ



NVVDD



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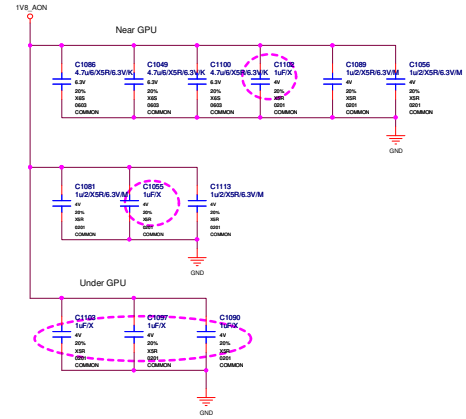

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

ASSEMBLY
PAGE DETAIL

<ASSEMBLY_DESCRIPTION>
GPU DECOUPLING 1

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE		
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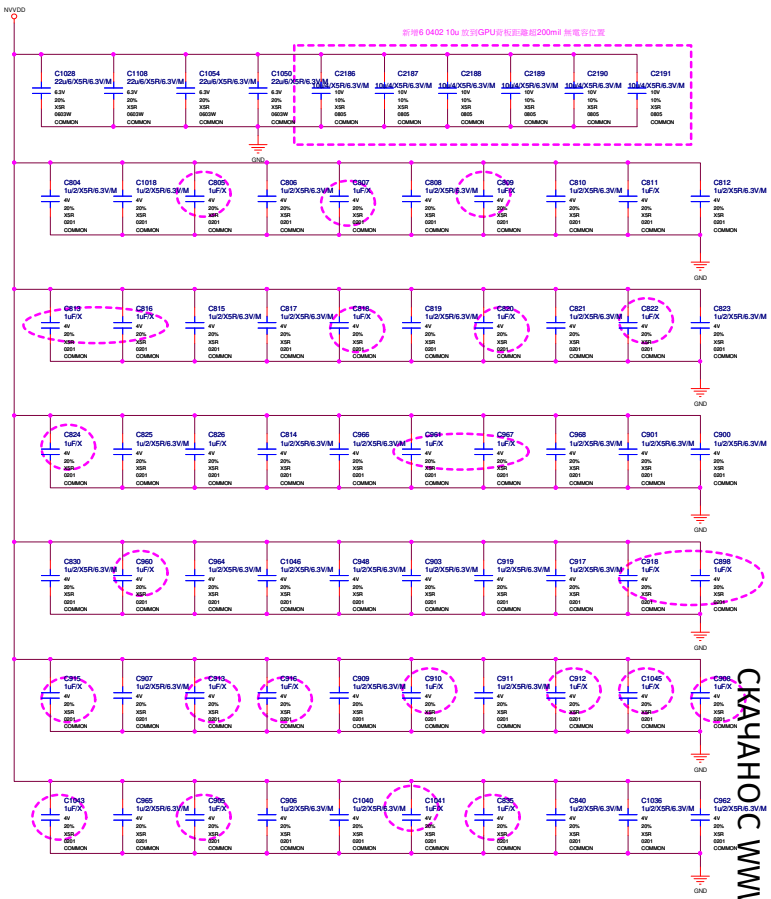
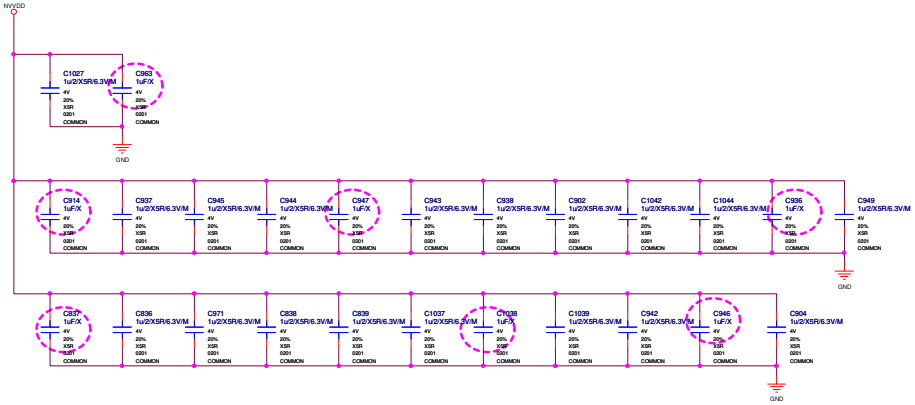
Page16: GPU DECOUPLING 2

NVVDD





СКАЧАНОС WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ

ASSEMBLY <ASSEMBLY_DESCRIPTION>
PAGE DETAIL GPU DECOUPLING 2

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE

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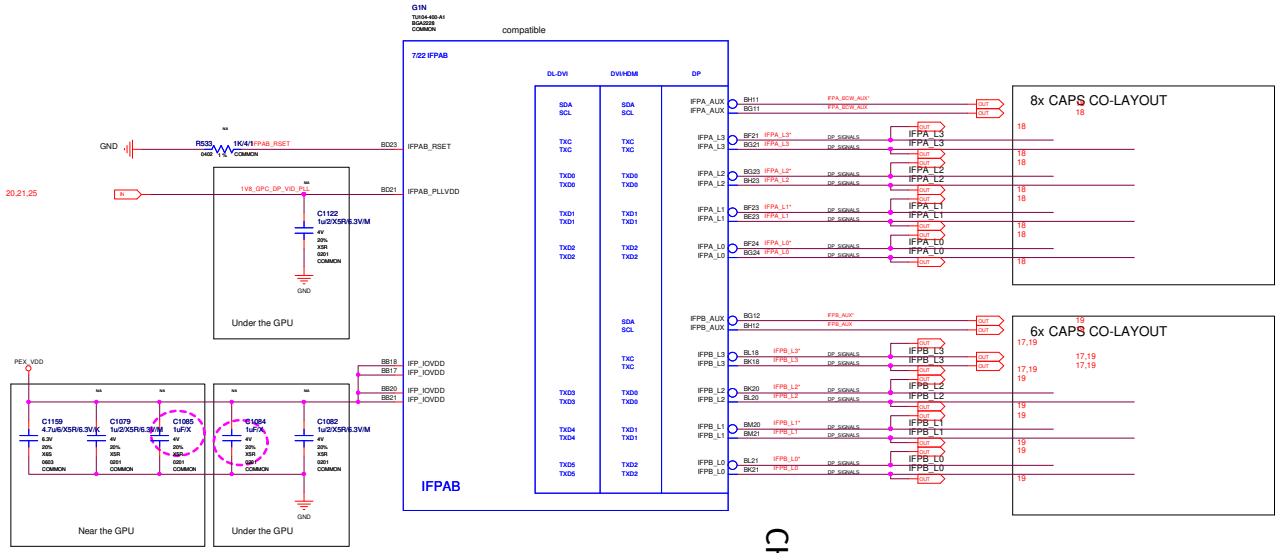
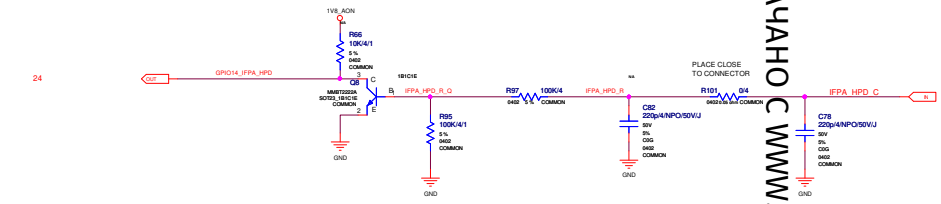
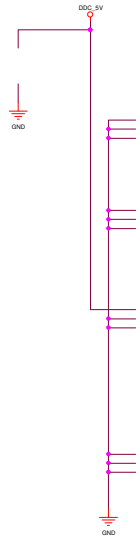
Page17: IFPAB DVI-D-DL







СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY <ASSEMBLY_DESCRIPTION>
PAGE DETAIL IO: IFPAB DVI-D-DL

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Title: PCIE		
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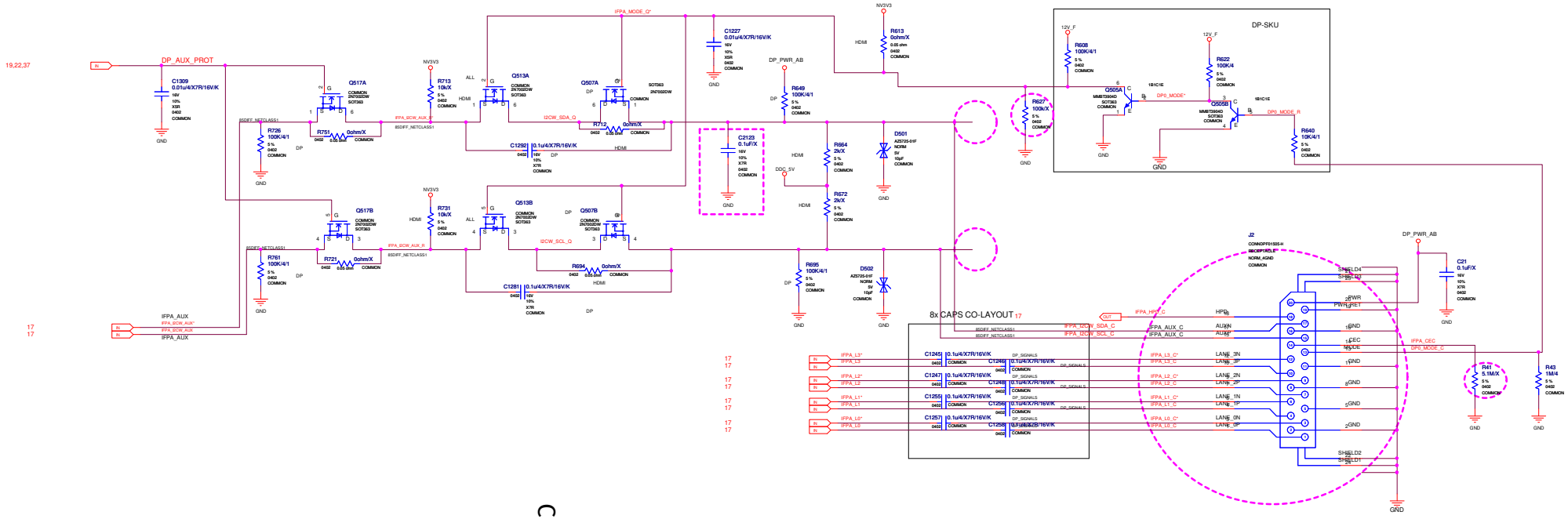
Page18: IFPA DP



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY | <ASSEMBLY_DESCRIPTION>
PAGE DETAIL | IO: IFPA DP

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GIGABYTE

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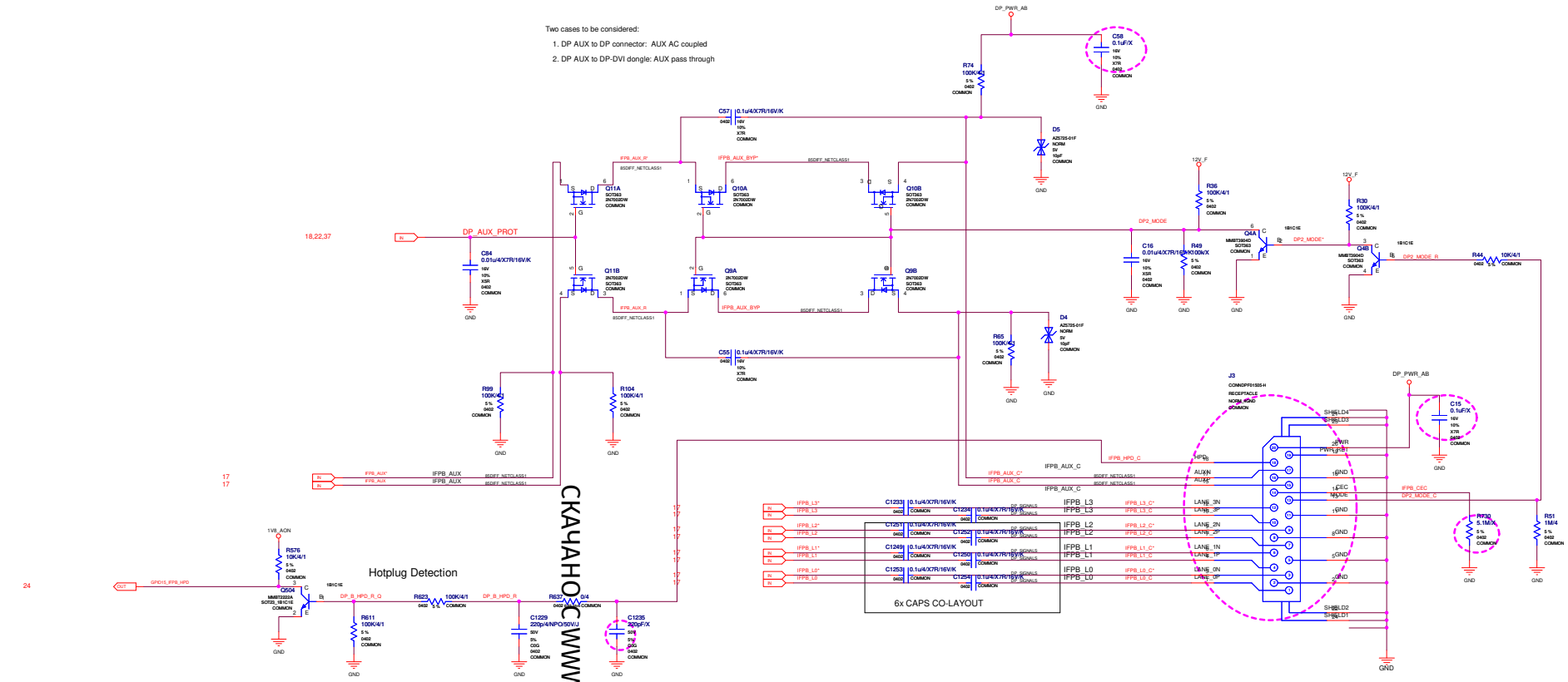
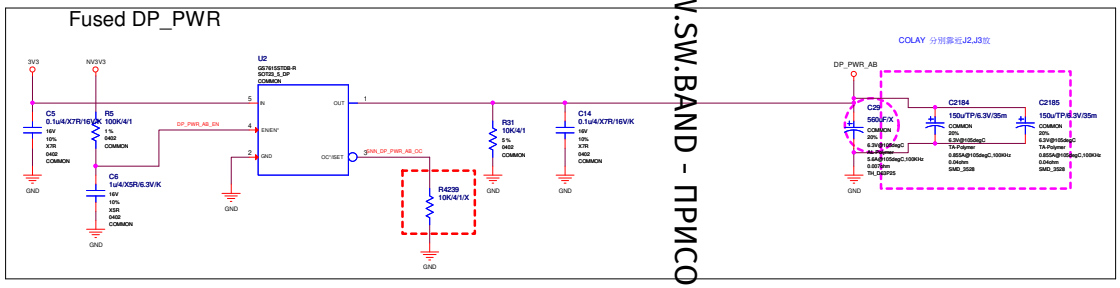
Page19: IFPB DP





СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY
PAGE DETAIL

<ASSEMBLY_DESCRIPTION>
IO: IFPB DP

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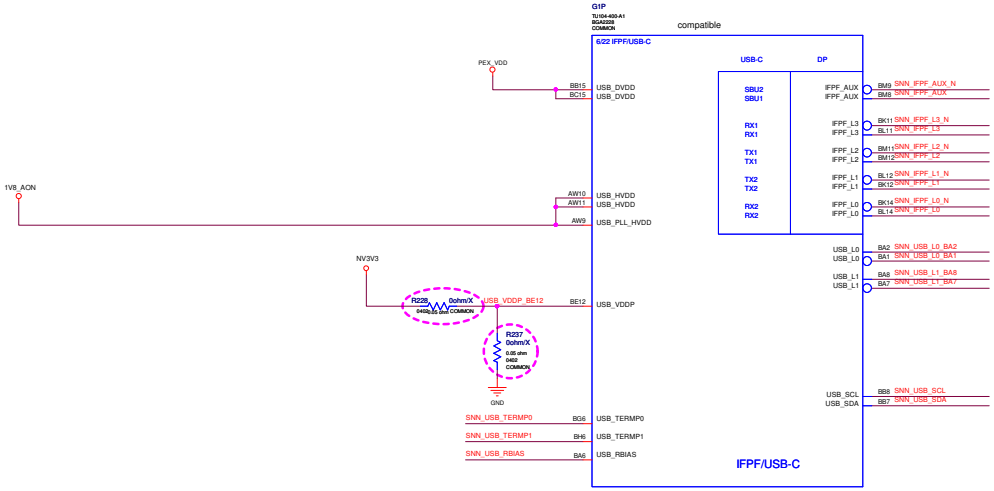
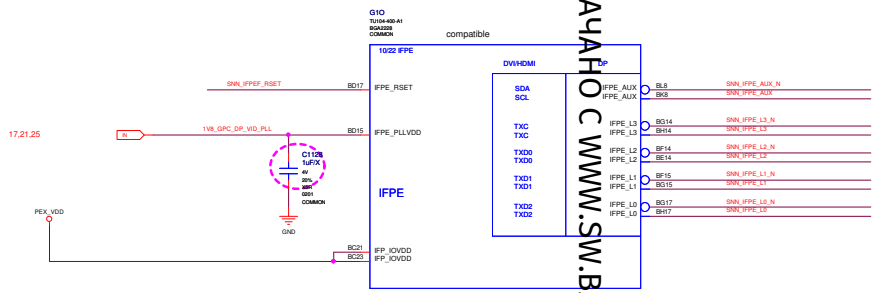
GIGABYTE

Page20: IFPE & IFPF NC





СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY <ASSEMBLY_DESCRIPTION>
PAGE DETAIL

IO: IFPE & IFPF NC

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GIGABYTE		
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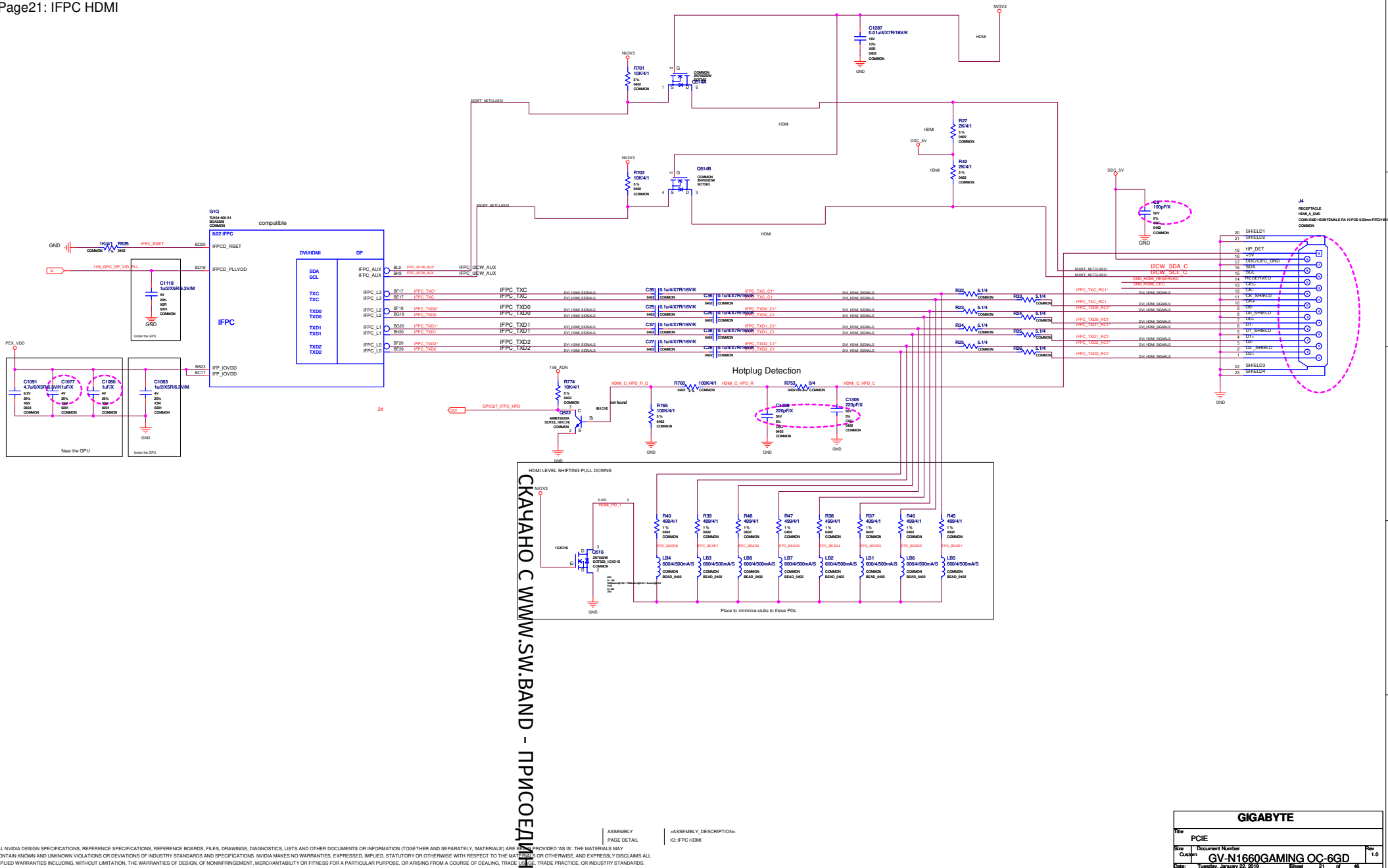
14-DEC-2018

Page21: IFPC HDMI



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙТЕСЬ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IO: IFPC HDMI

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Page22: IFPD DP

Two cases to be considered:

1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through

compatible

Hotplug Detection

Under the GPU

Fused DP_PWR

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

ASSEMBLY
PAGE DETAIL

<ASSEMBLY_DESCRIPTION>
IO: IFPD DP

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GIGABYTE		
Title: PCIE		
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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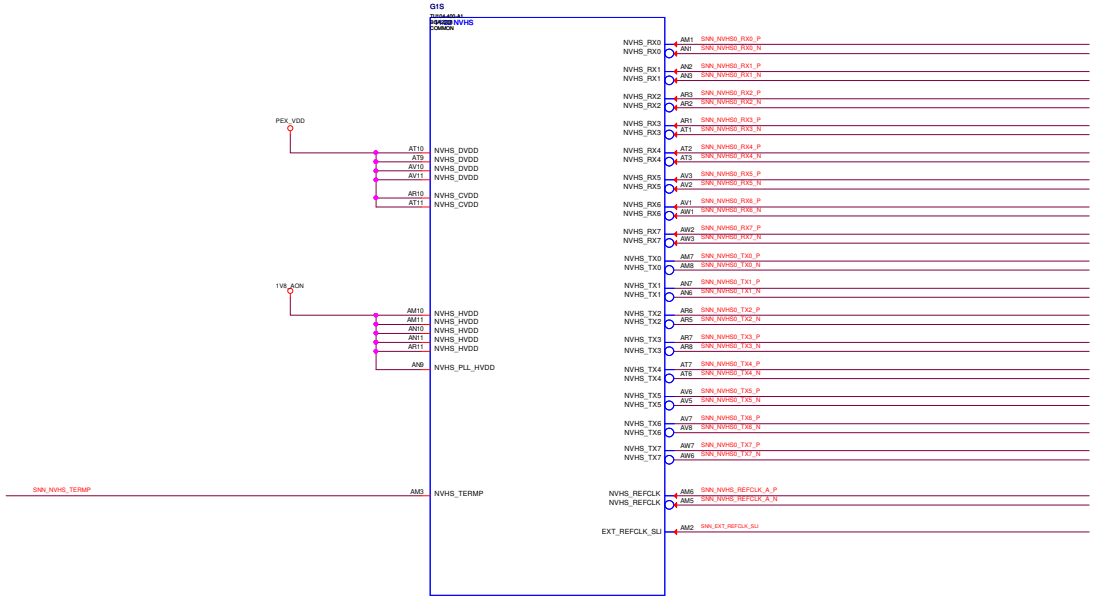
Page23: NVHS INTERFACE AND FRAME LOCK



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	IO: NVHS INTERFACE AND FRAME LOCK

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GIGABYTE		
Title: PCIE		
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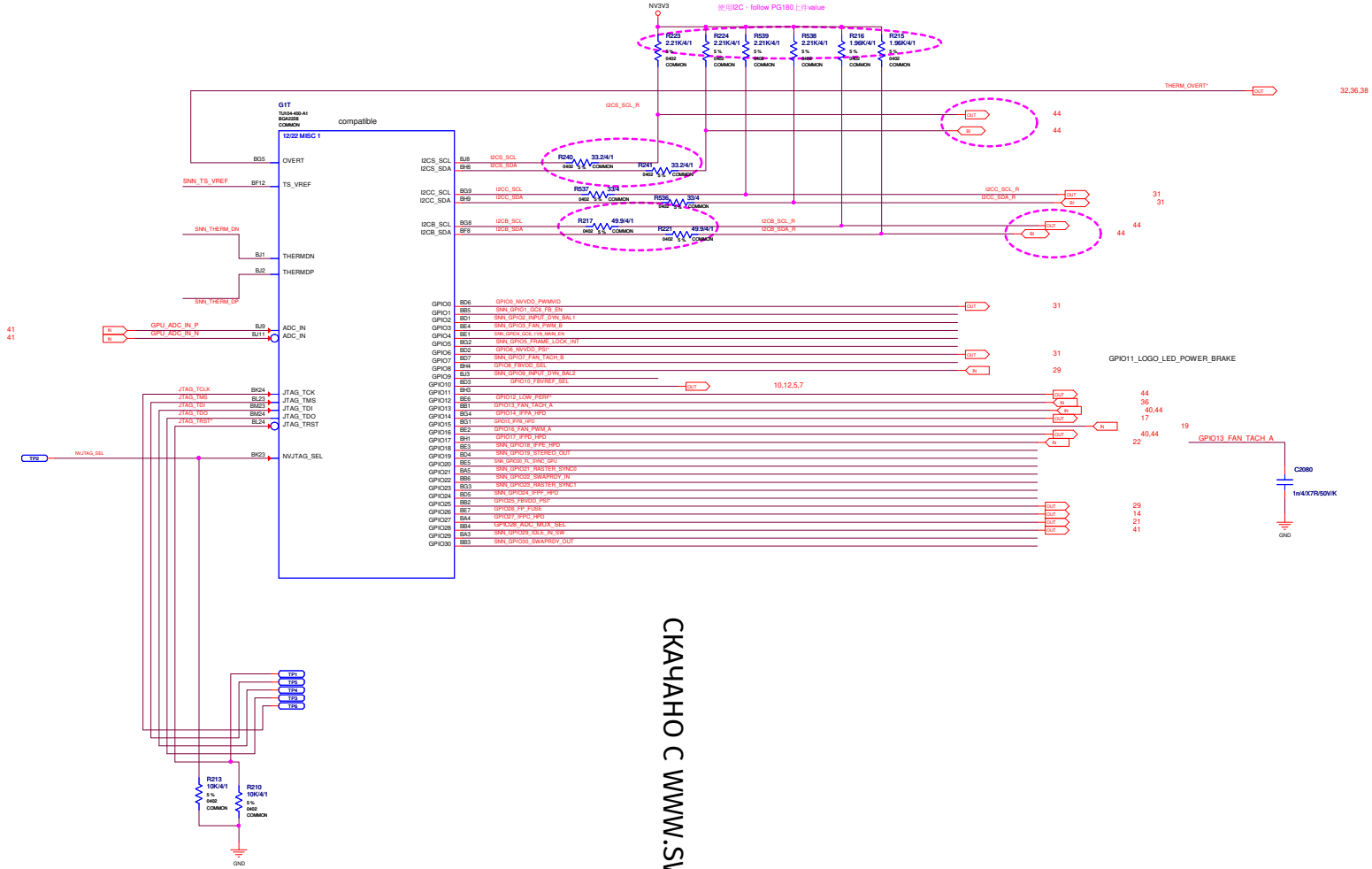
Page24: MISC1: JTAG, GPIO, ADC, I2C, OVERT



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY <ASSEMBLY_DESCRIPTION>
PAGE DETAIL MISC1: JTAG,GPIO,ADC,I2C,OVERT

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GIGABYTE		
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Page25: MISC2: ROM, XTAL, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]
L	L	L	00000
L	L	H	00001
L	H	L	00010
L	H	H	00011
H	H	L	00110
H	H	H	00111
L	L	M	01000

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	0000	Samsung 8Gb 256Mx32 K4G80325FC-HC25
L	L	H	0001	Micron 8Gb 256Mx32 MT51J256M32HF-80:B
L	H	L	0010	Hynix 8Gb 256Mx32 H5GC8H24AJR-R2C
L	H	H	0011	Hynix 8Gb 256Mx32 H5GQ8H24MJR-R4C
H	H	L	0110	
H	H	H	0111	
L	L	M	1000	
L	M	L	1001	

ROM_SO	ROM_SI	ROM_SCLK	DUMMY[2:0],FS_OVERT	1:ENABLE 0:DISABLE	
L	L	L	XXX1	FS_OVERT ENABLE	DEFAULT
L	L	M	XXX0	FS_OVERT DISABLE	

STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
M	H	H	1	1	1	1
M	H	L	1	1	1	0
M	L	H	1	1	0	1
M	L	L	1	1	0	0
L	H	M	1	0	1	1
L	M	H	1	0	1	0
L	M	L	1	0	0	1
L	L	M	1	0	0	0
H	H	H	0	1	1	1
H	H	L	0	1	1	0
H	L	H	0	1	0	1
H	L	L	0	1	0	0
L	H	H	0	0	1	1
L	H	L	0	0	1	0
L	L	H	0	0	0	1 DEFAULT
L	L	L	0	0	0	0

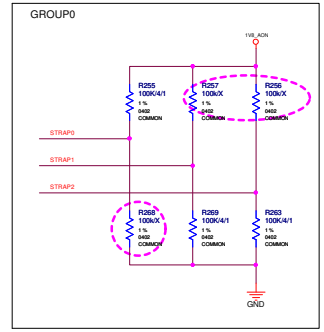
H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V

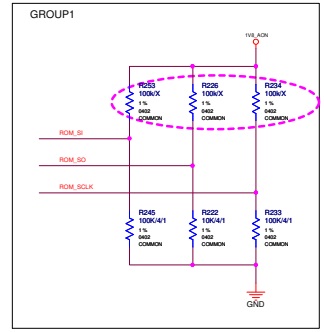
1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

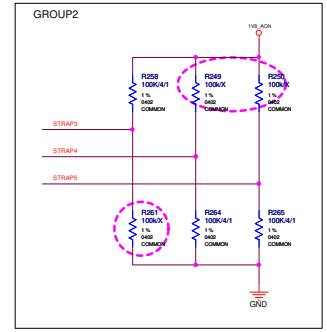
1:DEVID_SEL REBRAND
0:DEVID_SEL ORIGNAL

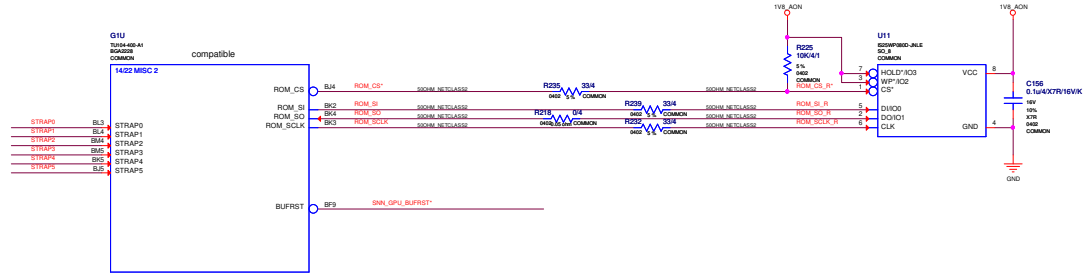
1:PCIE_CFG LOW POWER
0:PCIE_CFG HIGH POWER

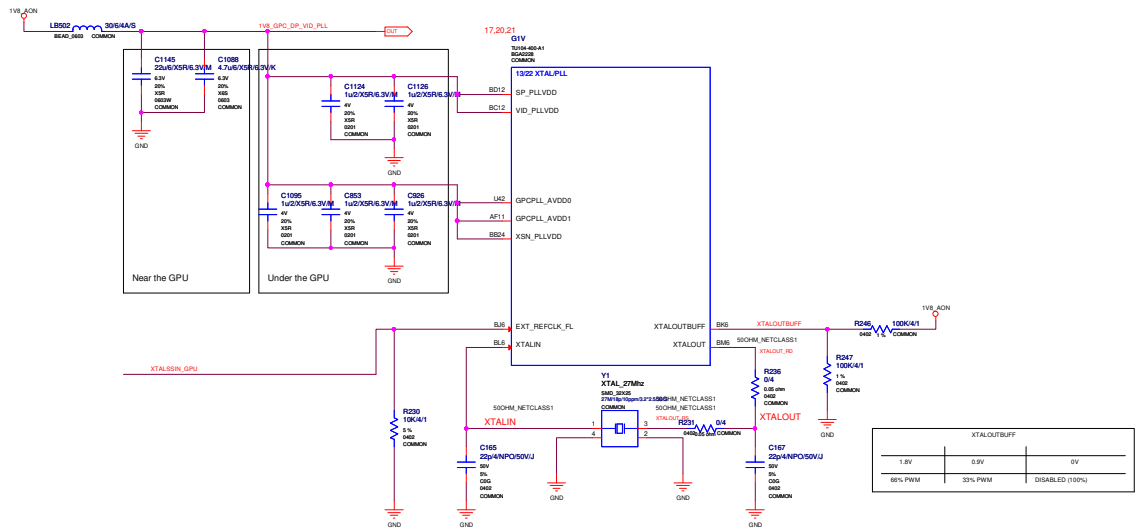
1:VGA_DEVICE ENABLE
0:VGA_DEVICE DISABLE











СКАЧАНО С WWW.SW.BAND - ПРОСТО ЕДИНЫЙ

ASSEMBLY <ASSEMBLY_DESCRIPTION>
PAGE DETAIL MISC2: ROM, XTAL,STRAPS

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GIGABYTE

Title: PCIE

Size: Custom | Document Number: GV-N1660GAMING OC-6GD | Rev: 1.0

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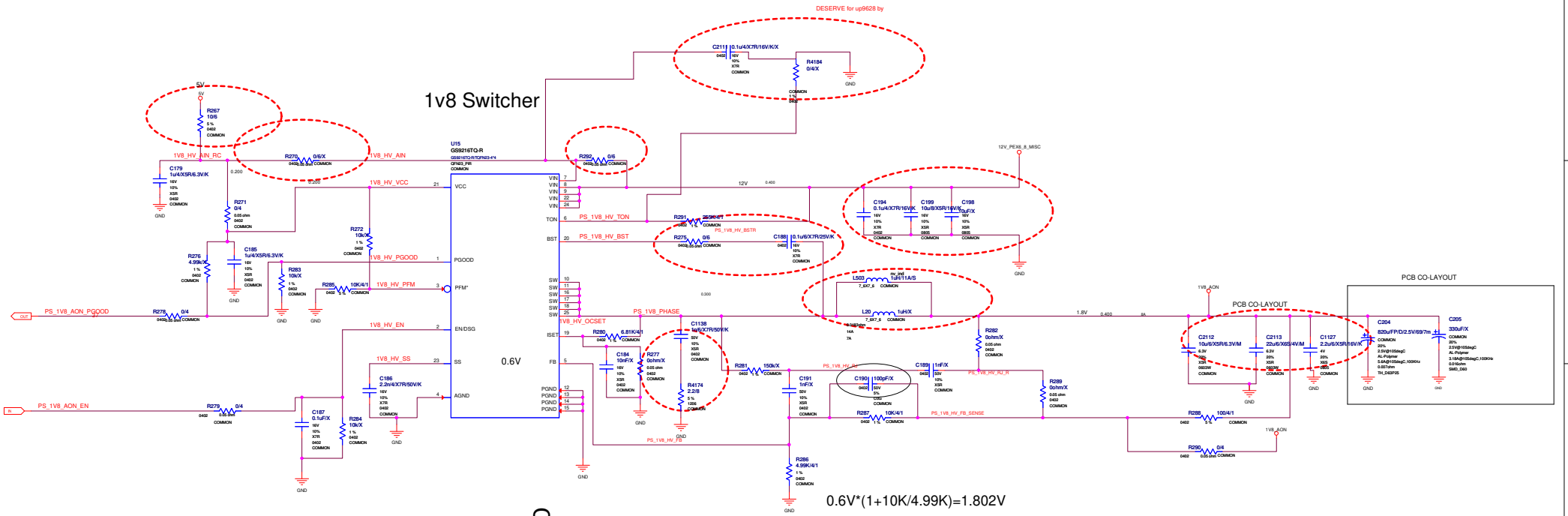

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙТЕСЬ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: 1V8_AON

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GIGABYTE		
Title: PCIE		
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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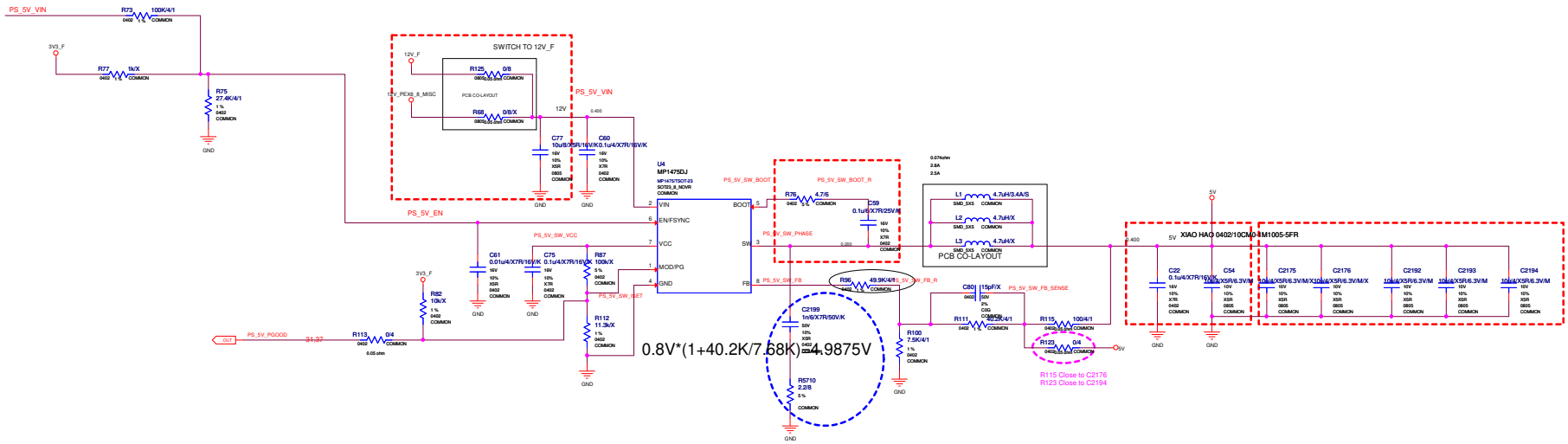
Page28: PS: 5V



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

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PAGE DETAIL	PS: 5V

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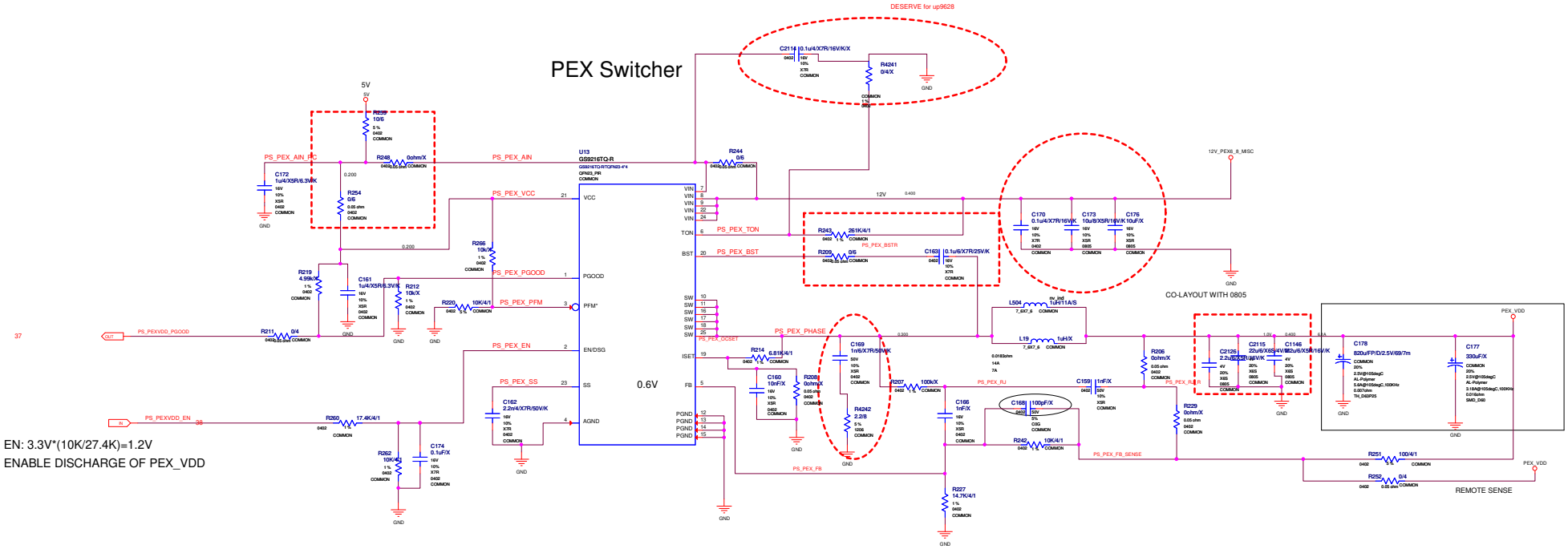
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
Date: Tuesday, January 22, 2019	Sheet 27 of 46	



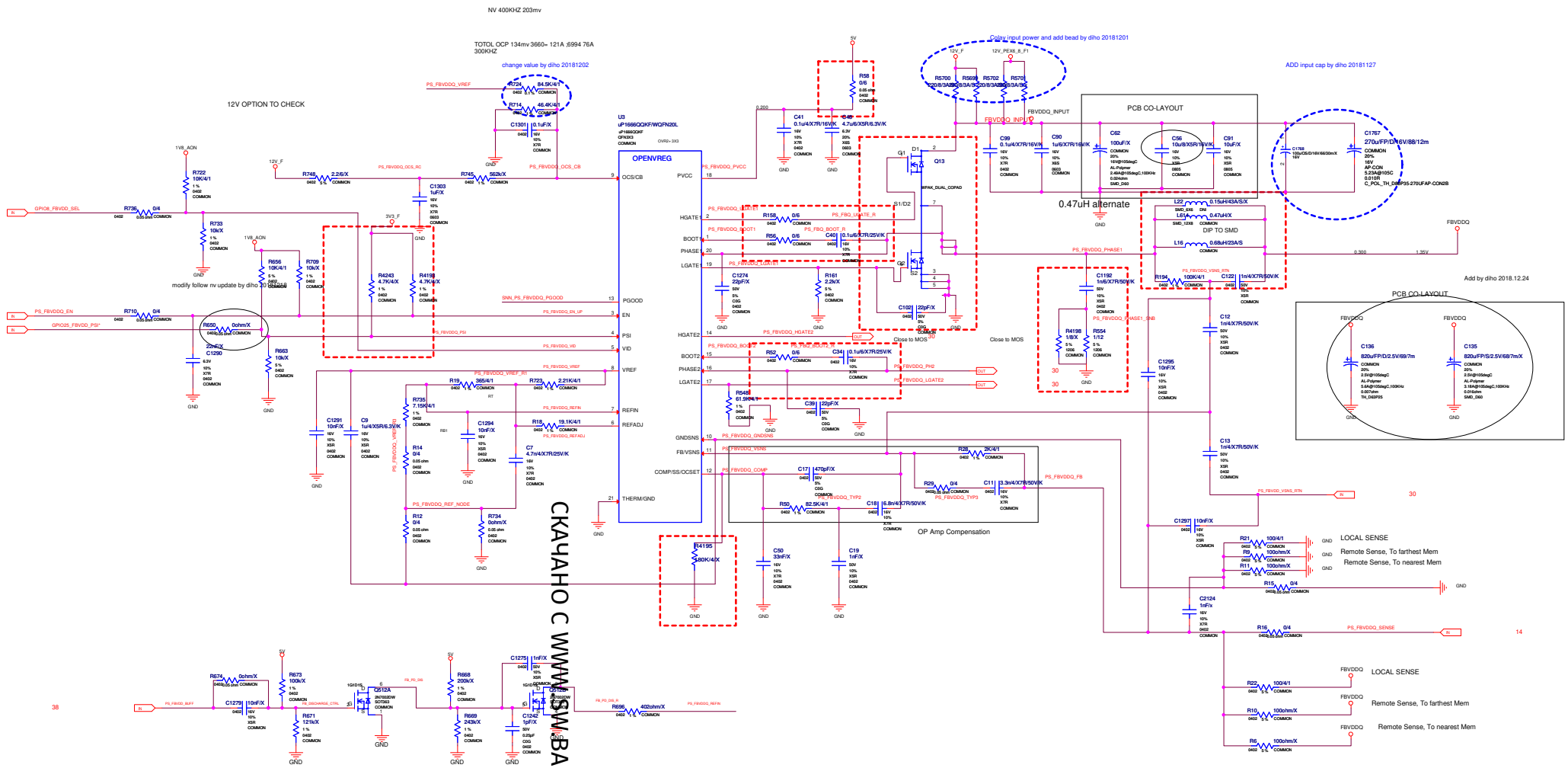
СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: PEXVDD

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

GIGABYTE		
Title: PCIE		
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
Date: Tuesday, January 22, 2019	Sheet 28 of 46	

Page30: PS: FBVDDQ



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

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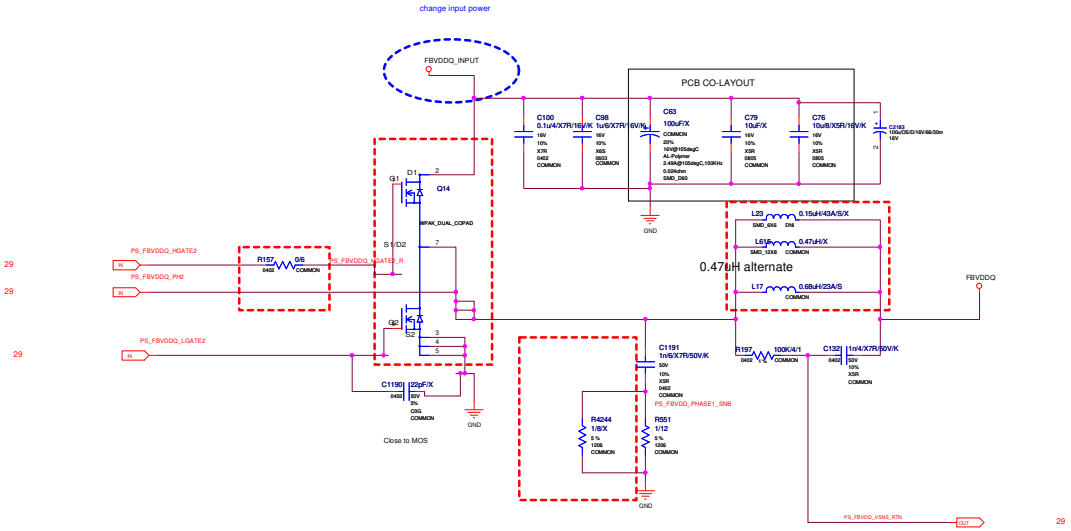

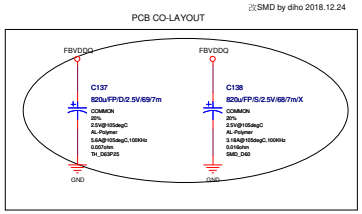

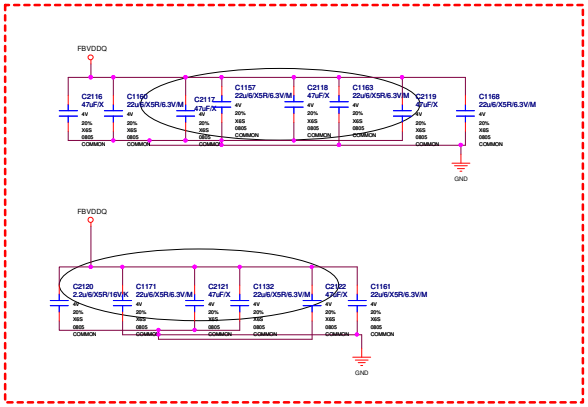

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

ASSEMBLY | <ASSEMBLY_DESCRIPTION>
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GIGABYTE		
Title: PCIE		
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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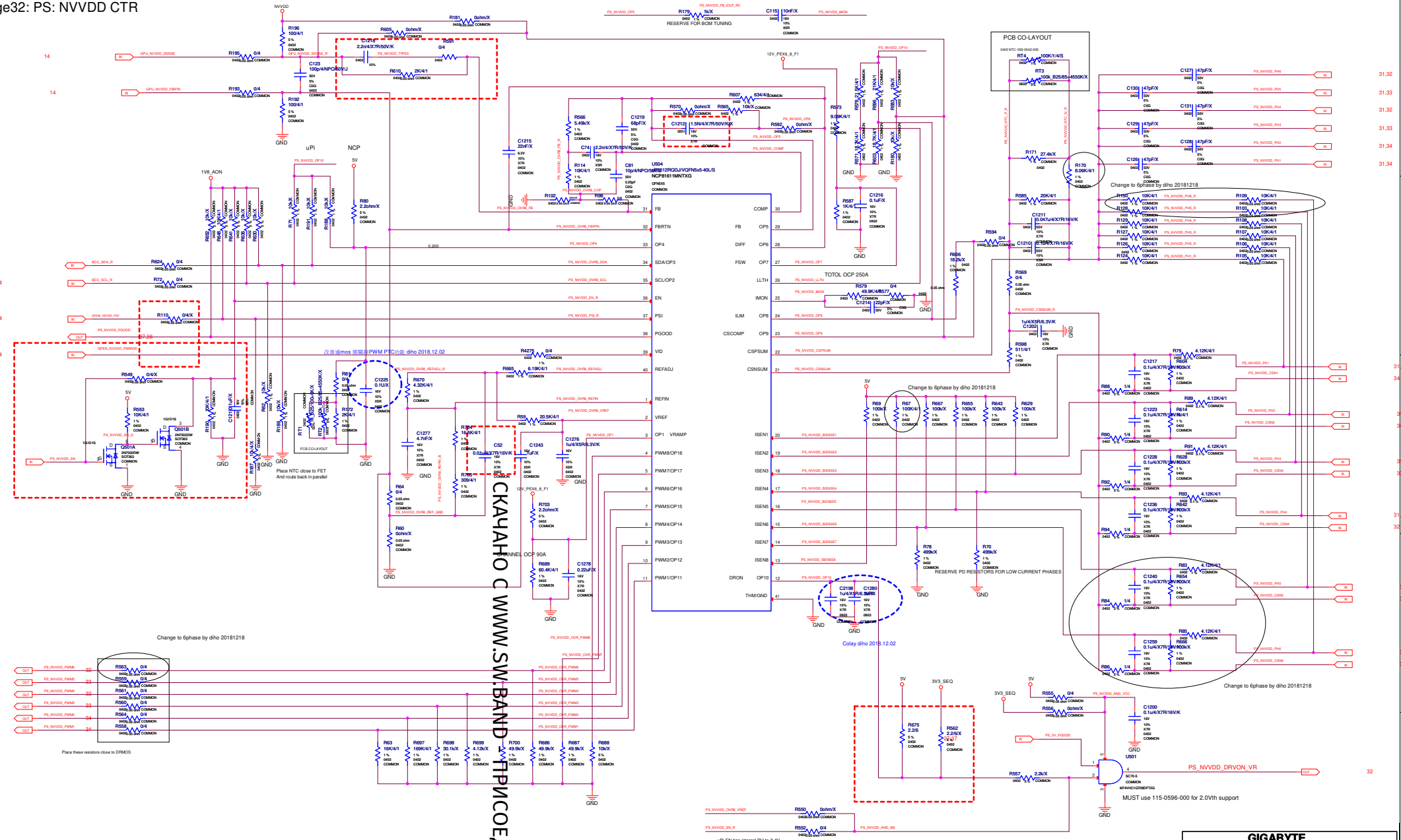
Page32: PS: NVVDD CTR



СКАЧАНО С WWW.SW.BAND ПРИСОЕДИНЯЙТЕСЬ

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: NVVDD Controller

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Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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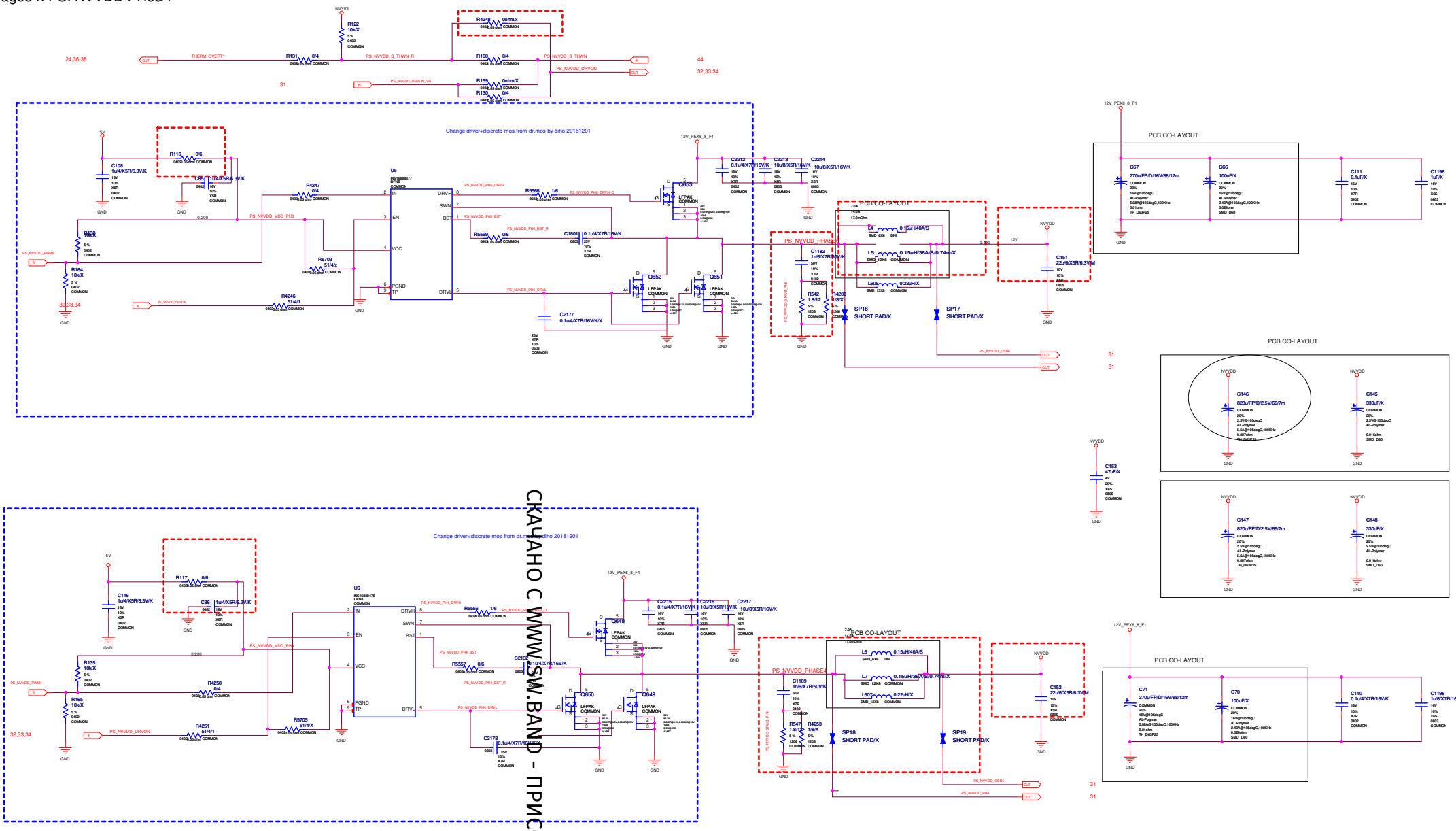

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: NVVDD Phase 6,4

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS AND OTHER DOCUMENTS OR INFORMATION (TOGETHER AND SEPARATELY, 'MATERIALS') ARE BEING PROVIDED 'AS IS'. THE MATERIALS MAY CONTAIN KNOWN AND UNKNOWN VIOLATIONS OR DEVIATIONS OF INDUSTRY STANDARDS AND SPECIFICATIONS. NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE WITH RESPECT TO THE MATERIALS OR OTHERWISE, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

Title	PCIE
Size	Custom
Document Number	GV-N1660GAMING OC-6GD
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Date:	Tuesday, January 22, 2019
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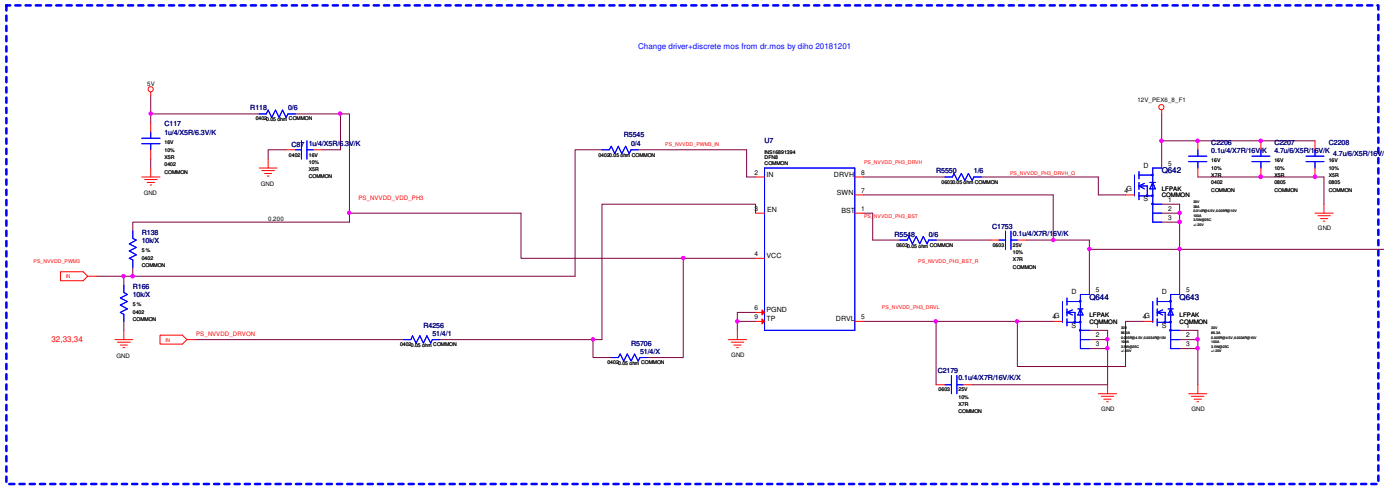
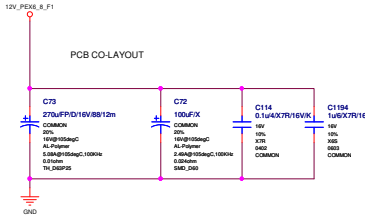
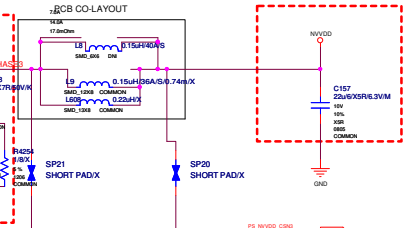
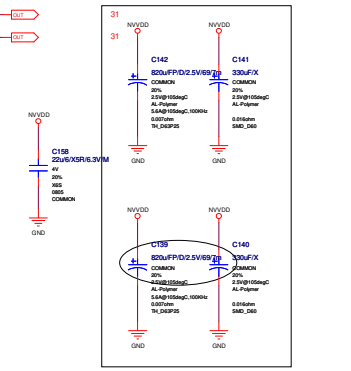
GIGABYTE

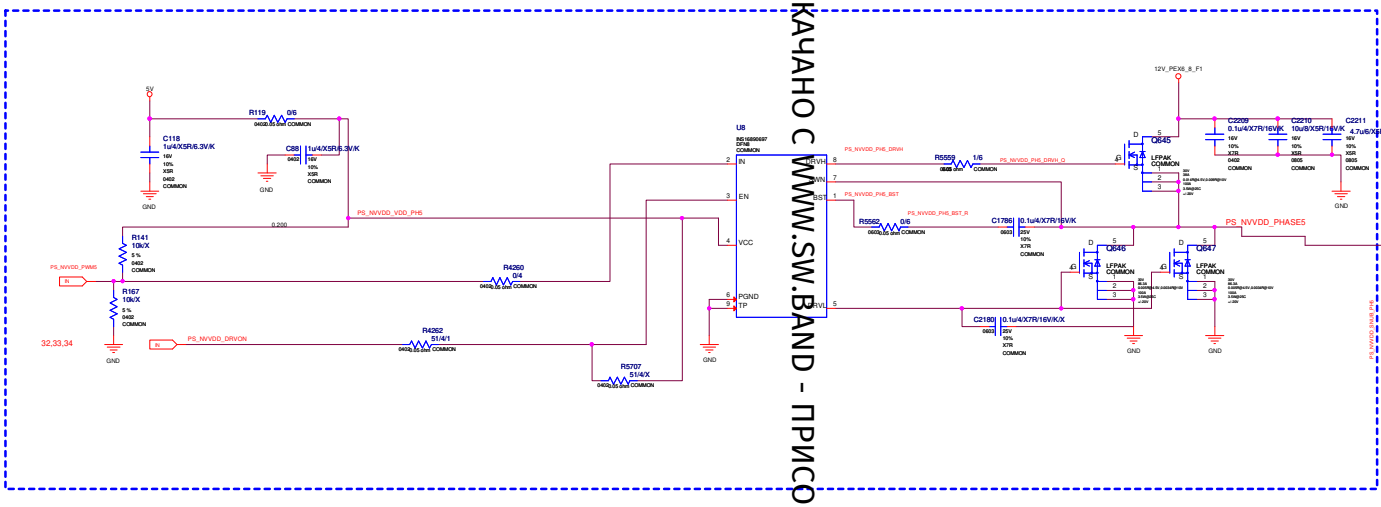
Page35: PS: NVVDD PH3&5

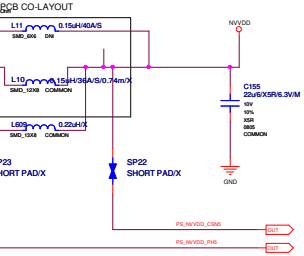


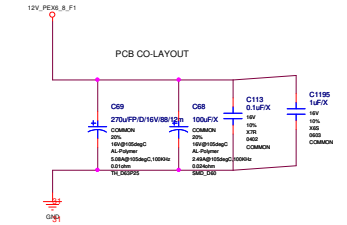












СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: NVVDD Phase 3,5

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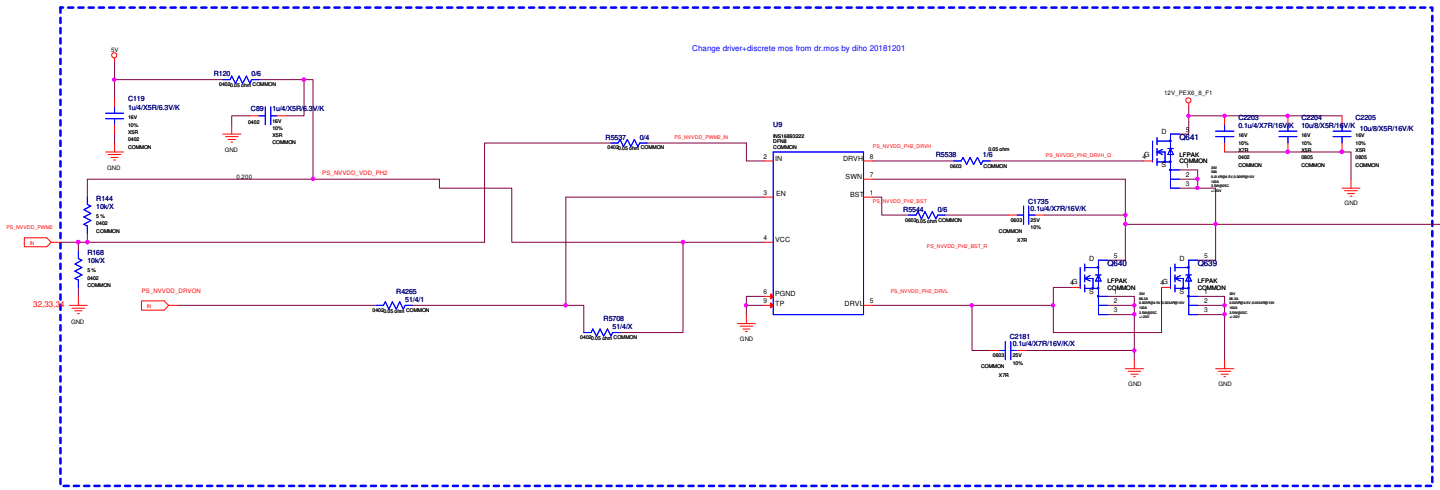
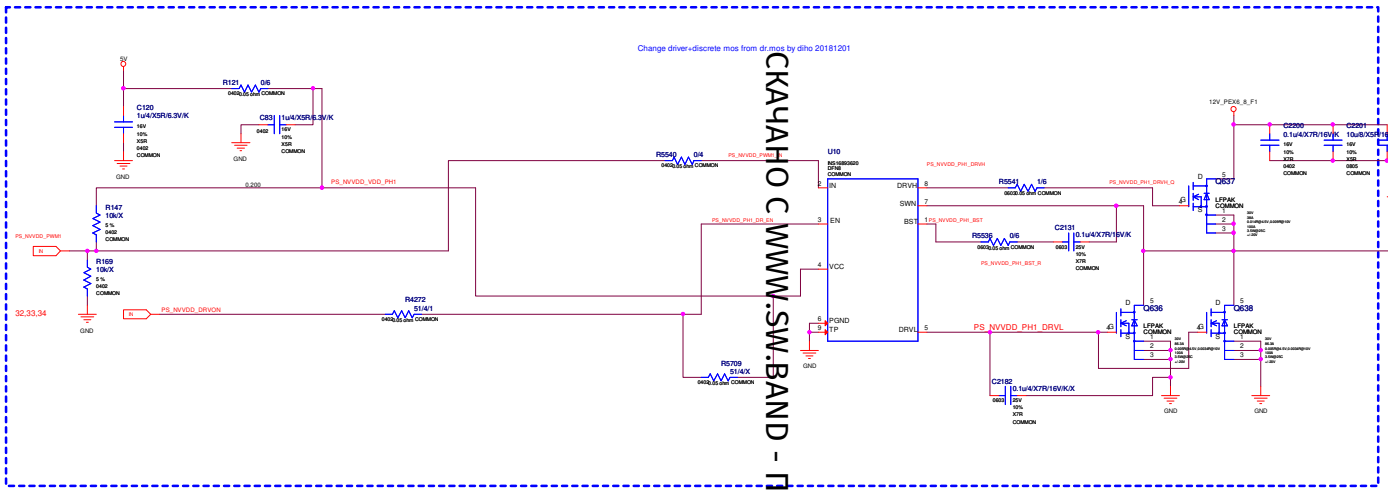
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
Date: Tuesday, January 22, 2019	Sheet 33 of 46	





СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	PS: NVVDD Phase 2,1

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GIGABYTE		
Title: PCIE		
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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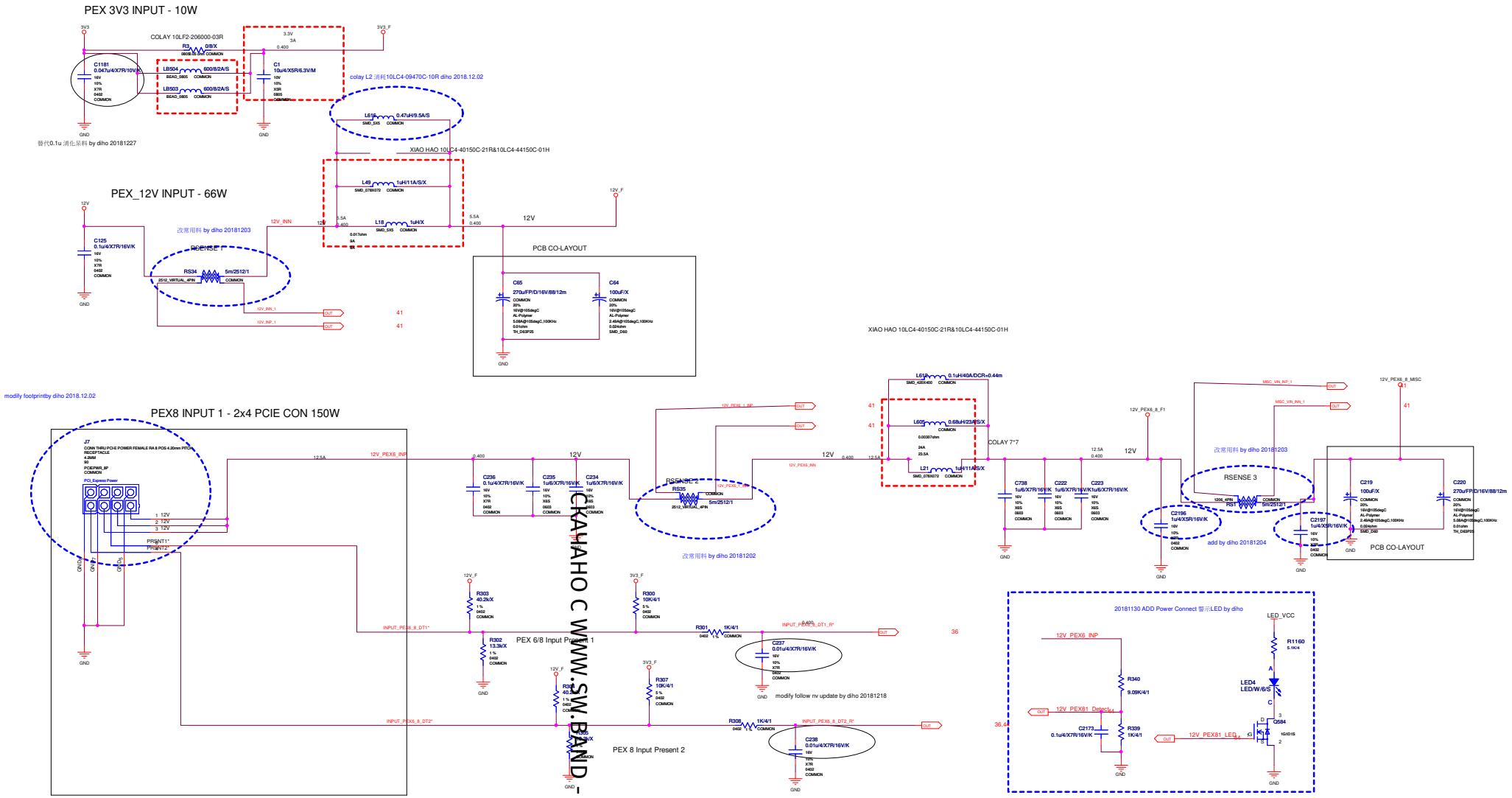
Page38: PS: Inputs, Filtering, and Monitoring



ASSEMBLY
PAGE DETAIL

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PS: Input, Filtering, and Monitoring

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GIGABYTE

Title	PCIE	
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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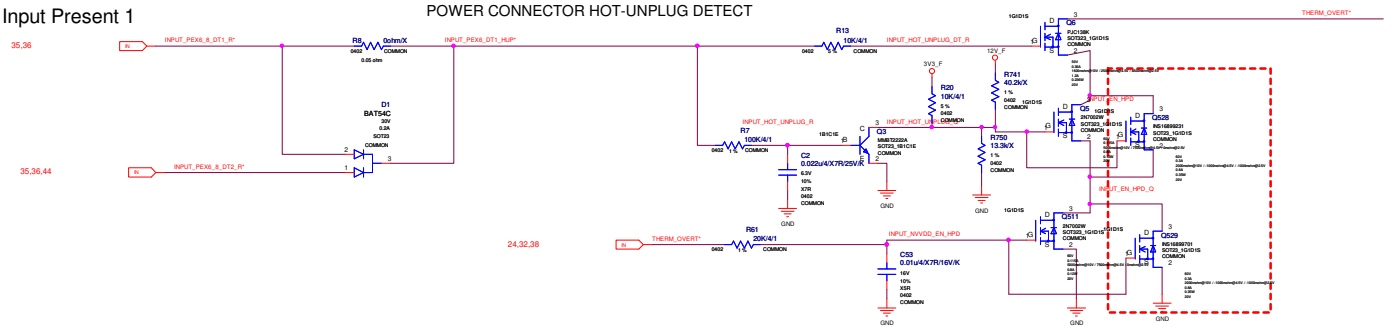
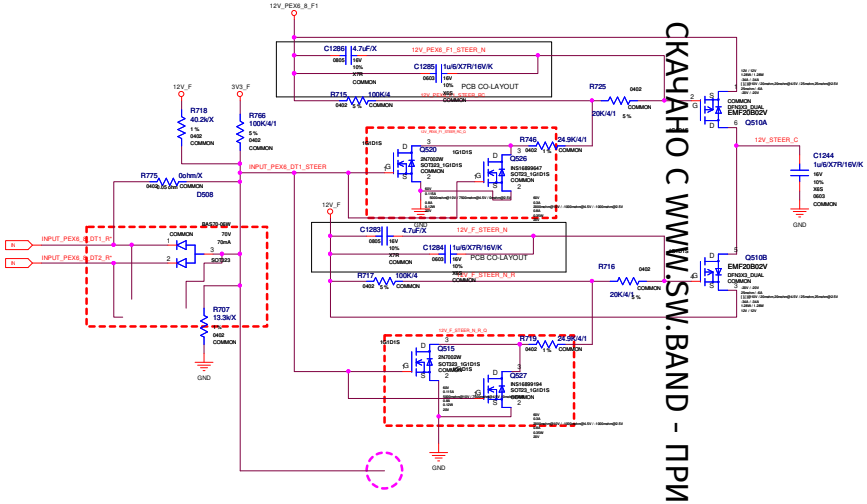
PEX Input Present 1

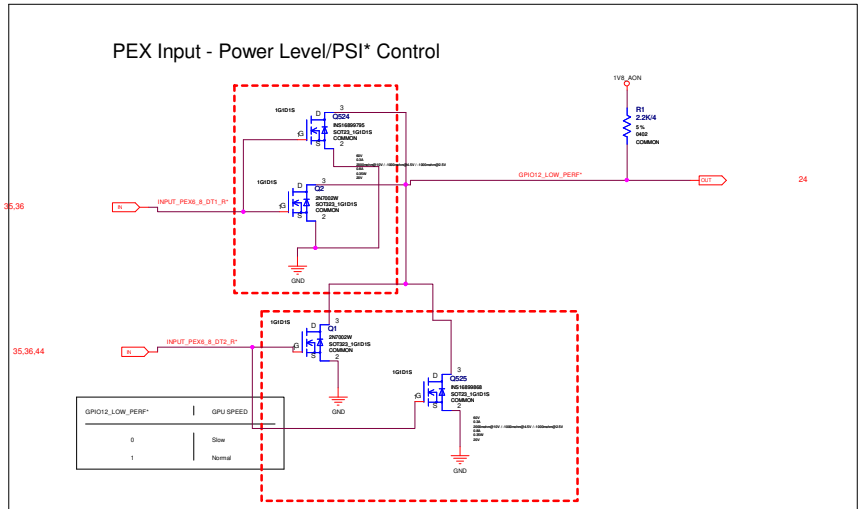


12V CURRENT STEERING (UNDER POWER BOOT):

GUIDES CURRENT FROM PEX EDGE TO PEX 6 PIN INPUT AREA



PEX Input - Power Level/PSI* Control



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙ

ASSEMBLY
PAGE DETAIL

<ASSEMBLY_DESCRIPTION>
PS: STEERING, UPB & HOT-UNPLUG

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GIGABYTE		
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Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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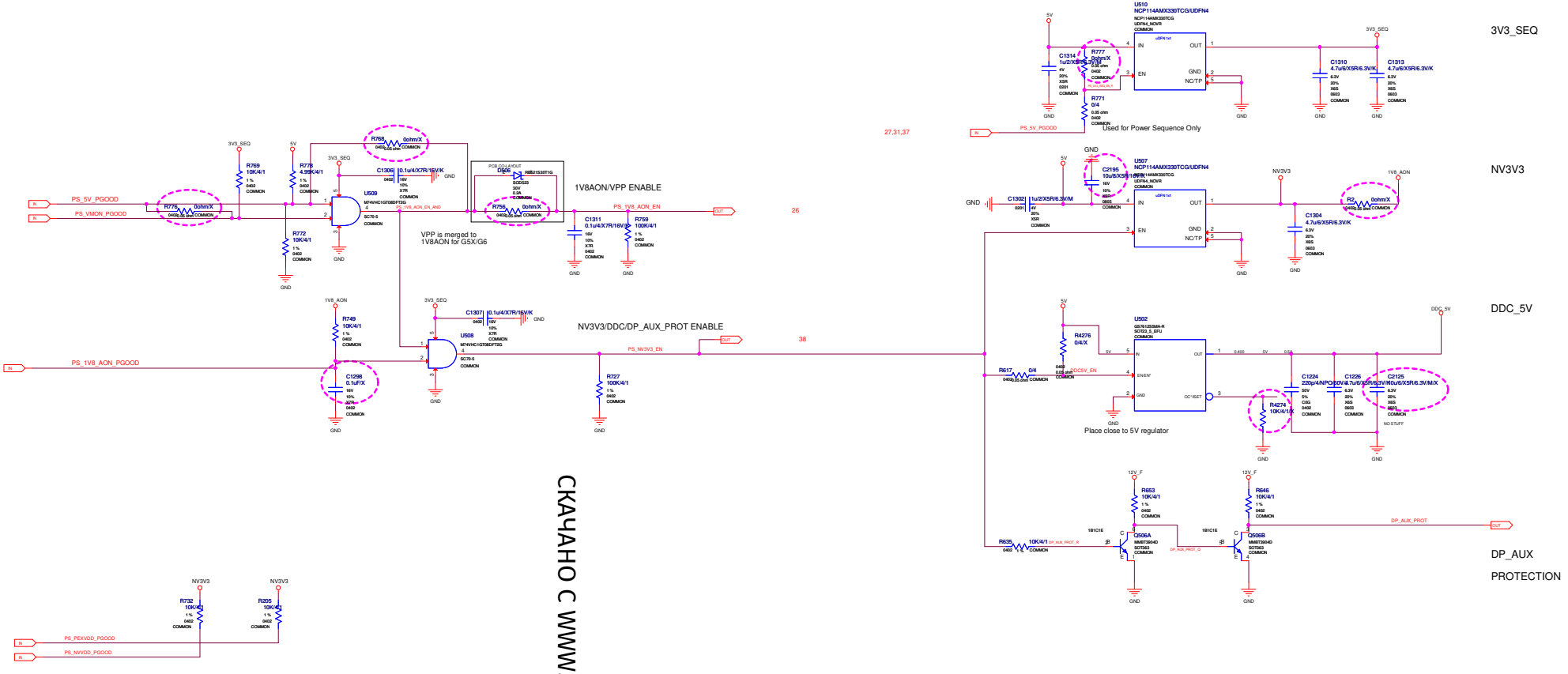
Page37: SEQ:1V8_AON, 3V3_SEQ, NV3V3, DDC_5V, DP_AUX_PROT



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: 1V8_AON, 3V3_SEQ, NV3V3, DDC_5V, DP_AUX_PROT

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Title: PCIE		
Size: Custom	Document Number: GV-N1660GAMING OC-6GD	Rev: 1.0
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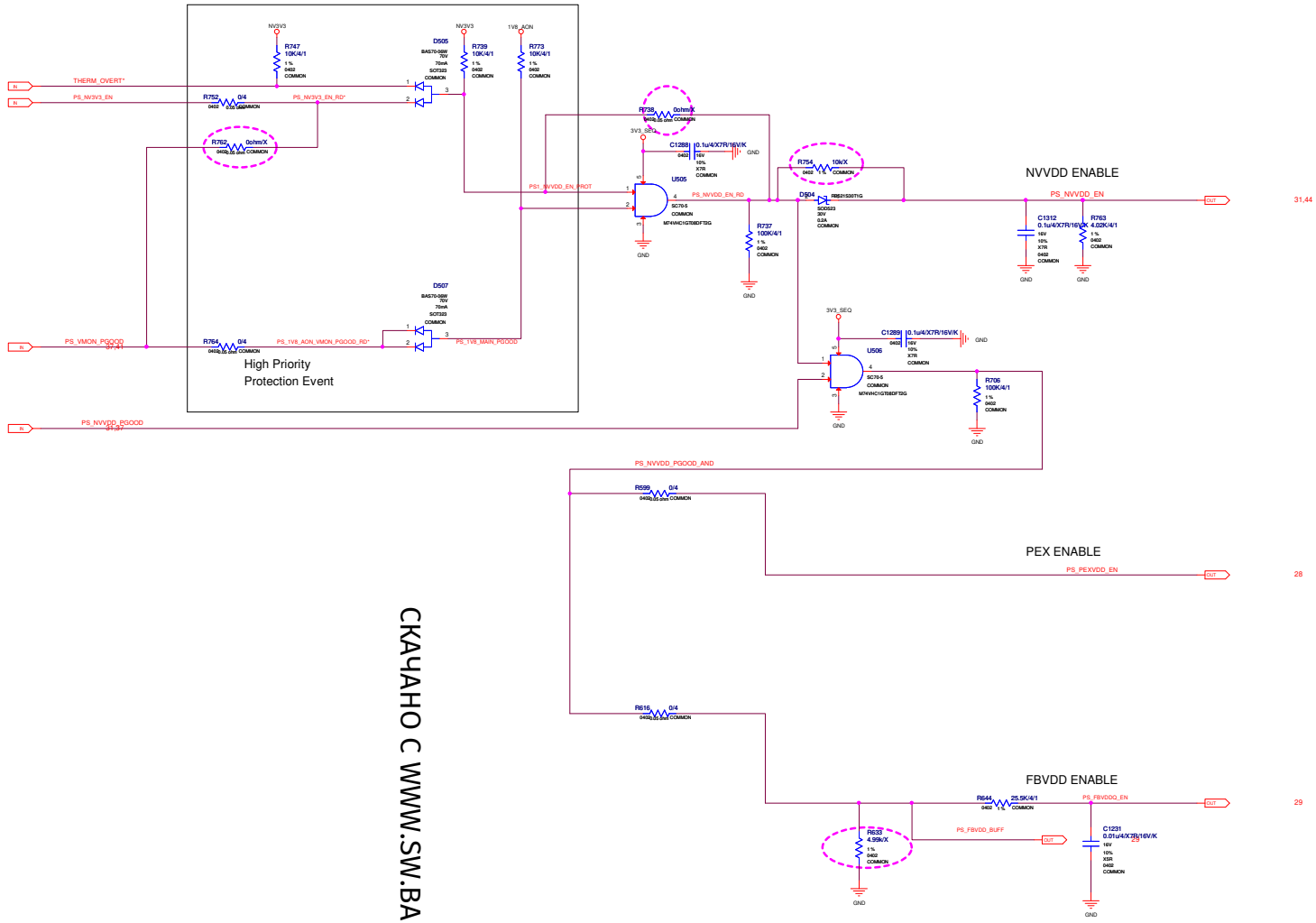

СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	SEQ: NVVDD, PEX, FBVDDQ ENABLE

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Title: PCIE			
Size: Custom	Document Number: GV-N1660GAMING OC-6GD		Rev: 1.0
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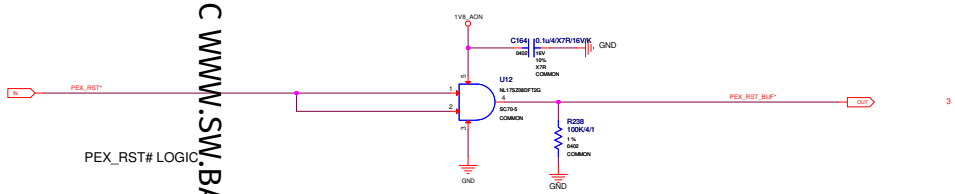
PU ON GPU SIDE
NC ON GOLD FINGER SIDE

PU ON GPU SIDE
NC ON GOLD FINGER SIDE



PEX_RST# LOGIC

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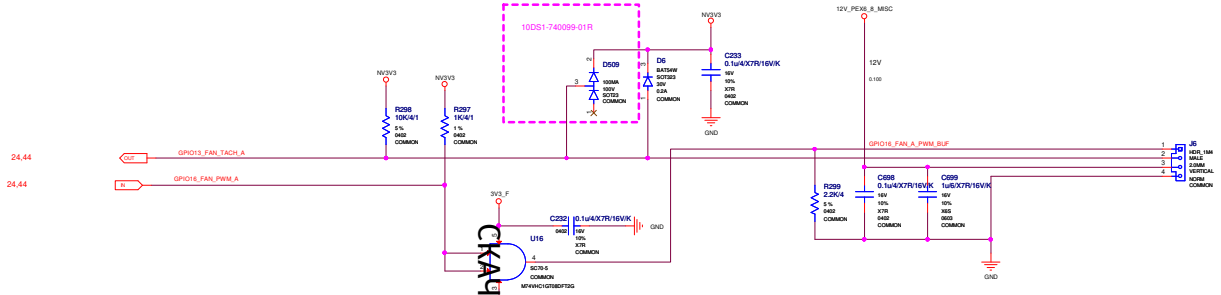

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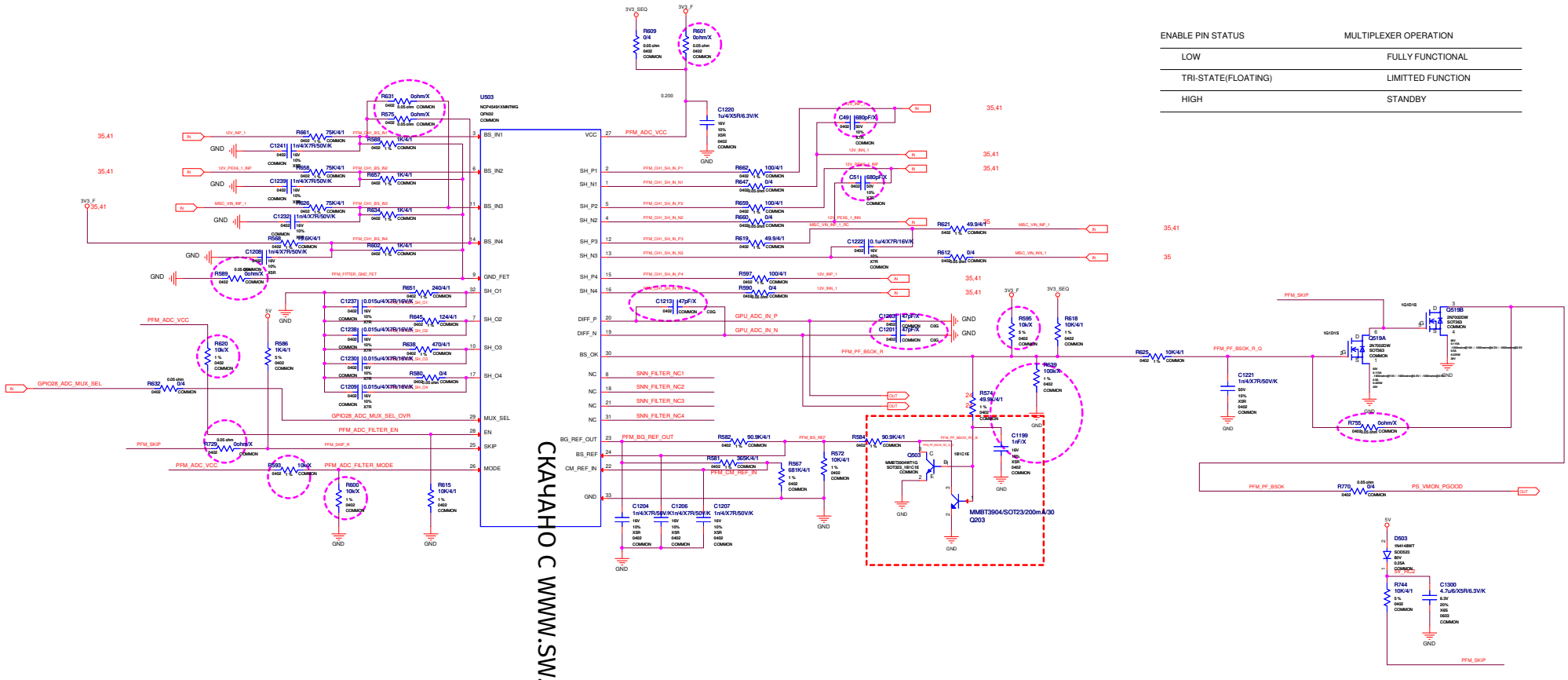
MODE PIN STATUS	MULTIPLEXER OPERATION
LOW	DEVICE A
TRI-STATE(FLOATING)	STAND-ALONE
HIGH	DEVICE B

ENABLE PIN STATUS	MULTIPLEXER OPERATION
LOW	FULLY FUNCTIONAL
TRI-STATE(FLOATING)	LIMITTED FUNCTION
HIGH	STANDBY



СКАЧАНО С WWW.SW.BAND - ПРИСОЕДИНЯЙСЯ!

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PAGE DETAIL PS: OVRM_PWR SENSE

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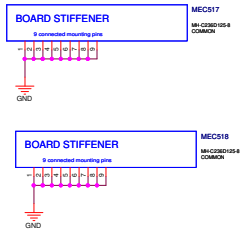
Brackets:

Brackets:



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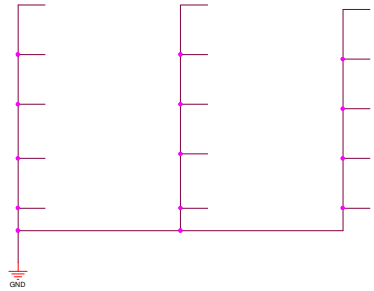

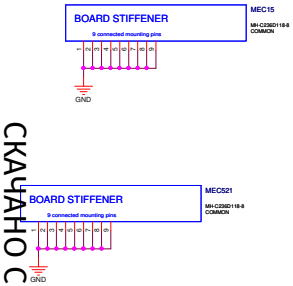

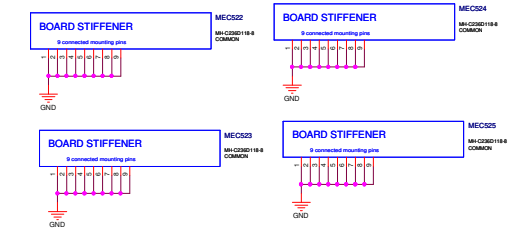

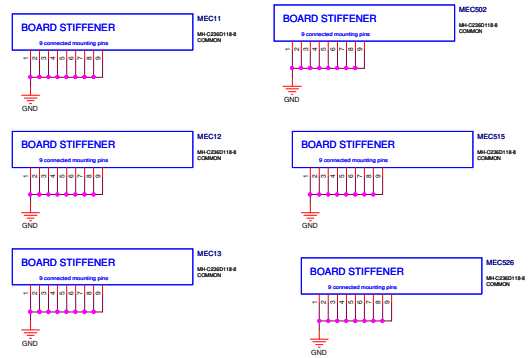

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ASSEMBLY	<ASSEMBLY_DESCRIPTION>
PAGE DETAIL	MECH

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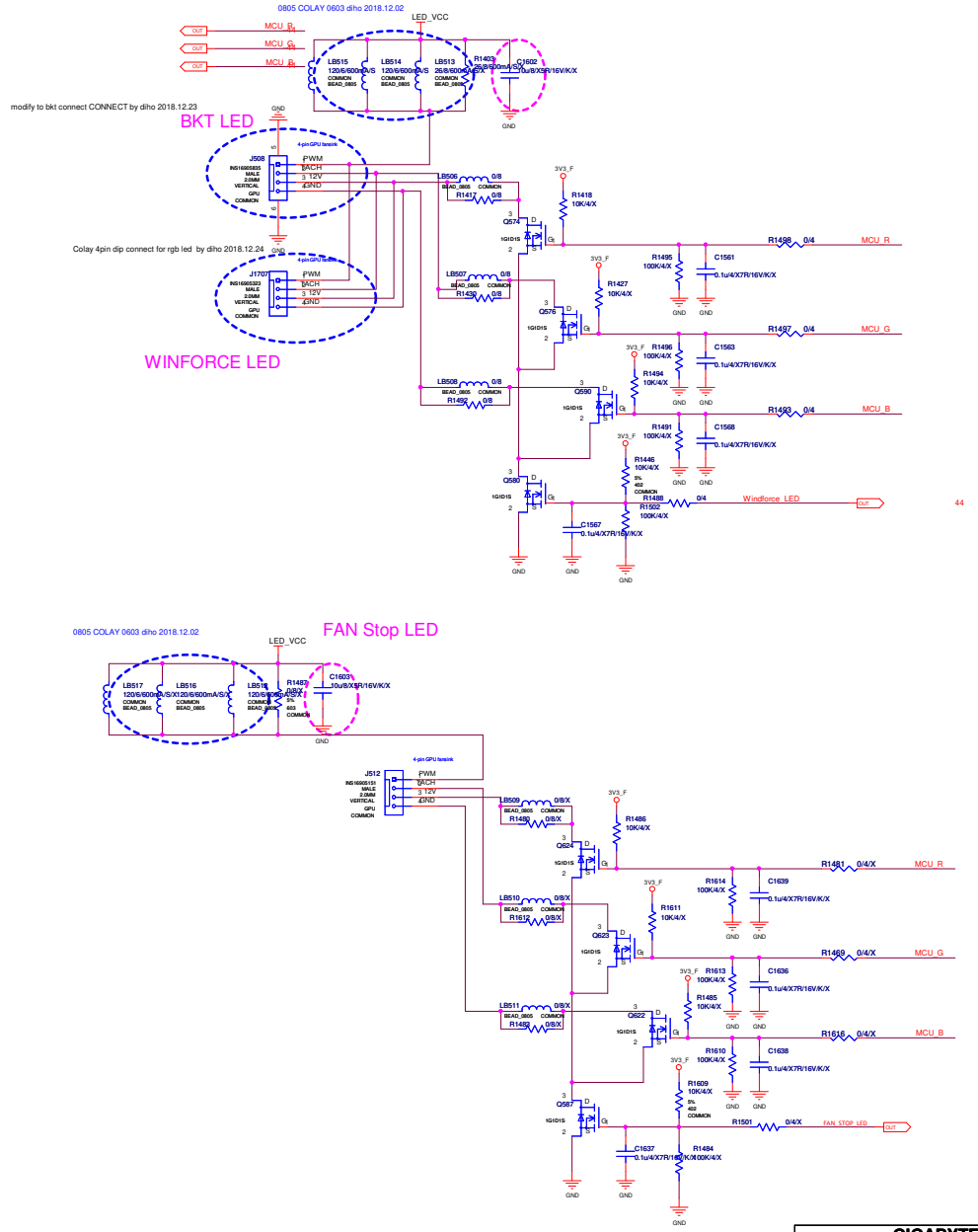
Page40: LED_LED



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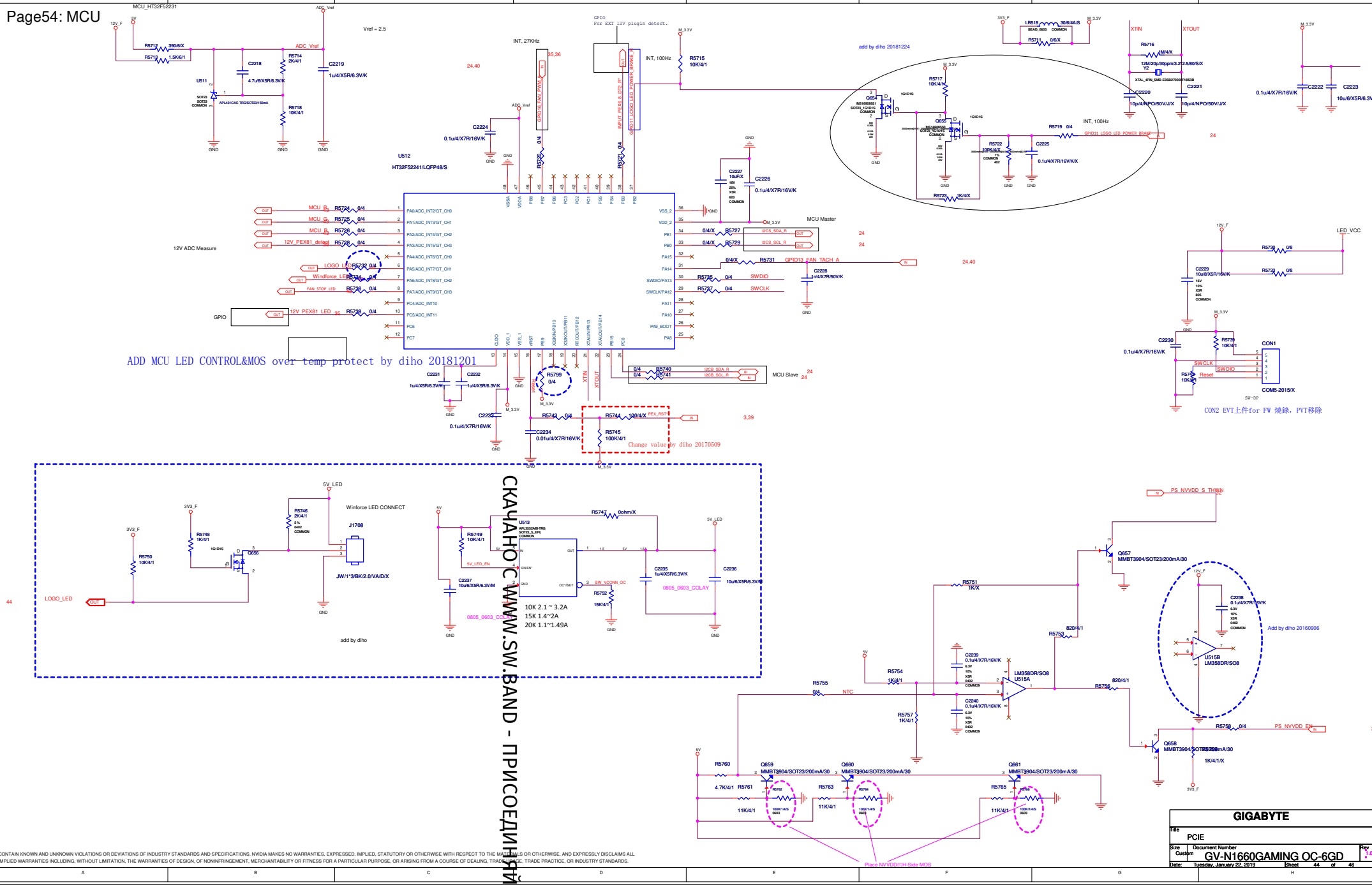
Page54: MCU



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History

Date	Modify
2019.01.04	First version

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