

P403-B00 DESI GN -- G84-200, 256 MB DDR2, DVI -I , VGA, HDTV

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SKU	VARIANT	NVPN	ASSEMBLY
B	BASE	600-10403-0000-200	BASE LEVEL GENERIC SCHEMATIC ONLY, COMMON & NO_STUFF ASSEMBLY NOTES AND BOM NOT FINAL
1	SKU0020	600-10403-0020-200	P403-B00 G86-300 459/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI -I -DL+VGA+HDTV-Out
2	SKU0023	600-10403-0023-200	P403-B00 G86-303 459/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI -I -DL+VGA+HDTV-Out HDCP
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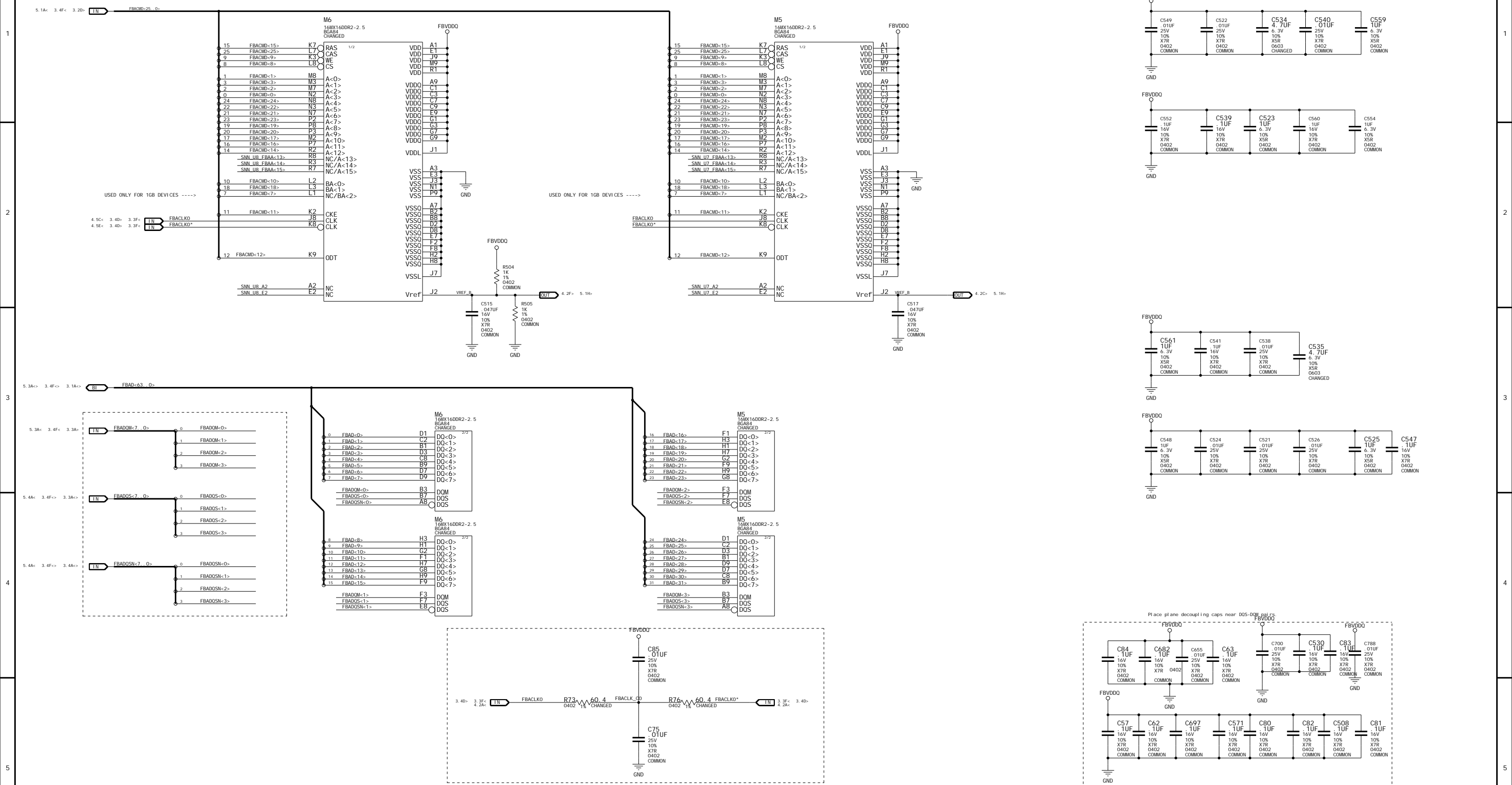


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FBA MEMORY 1st bank 0..31  
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



ASSEMBLY	P403-B00 G86-303 459/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI -I -DL+VGA+HDTV-Out HDCP
PAGE DETAIL	FBA 16Mx16 DDR2 MEMORIES, BANK 0..31

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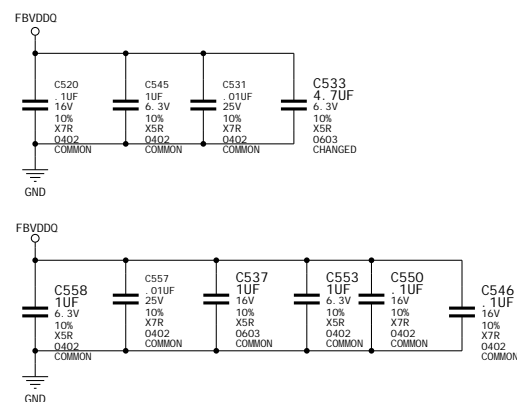
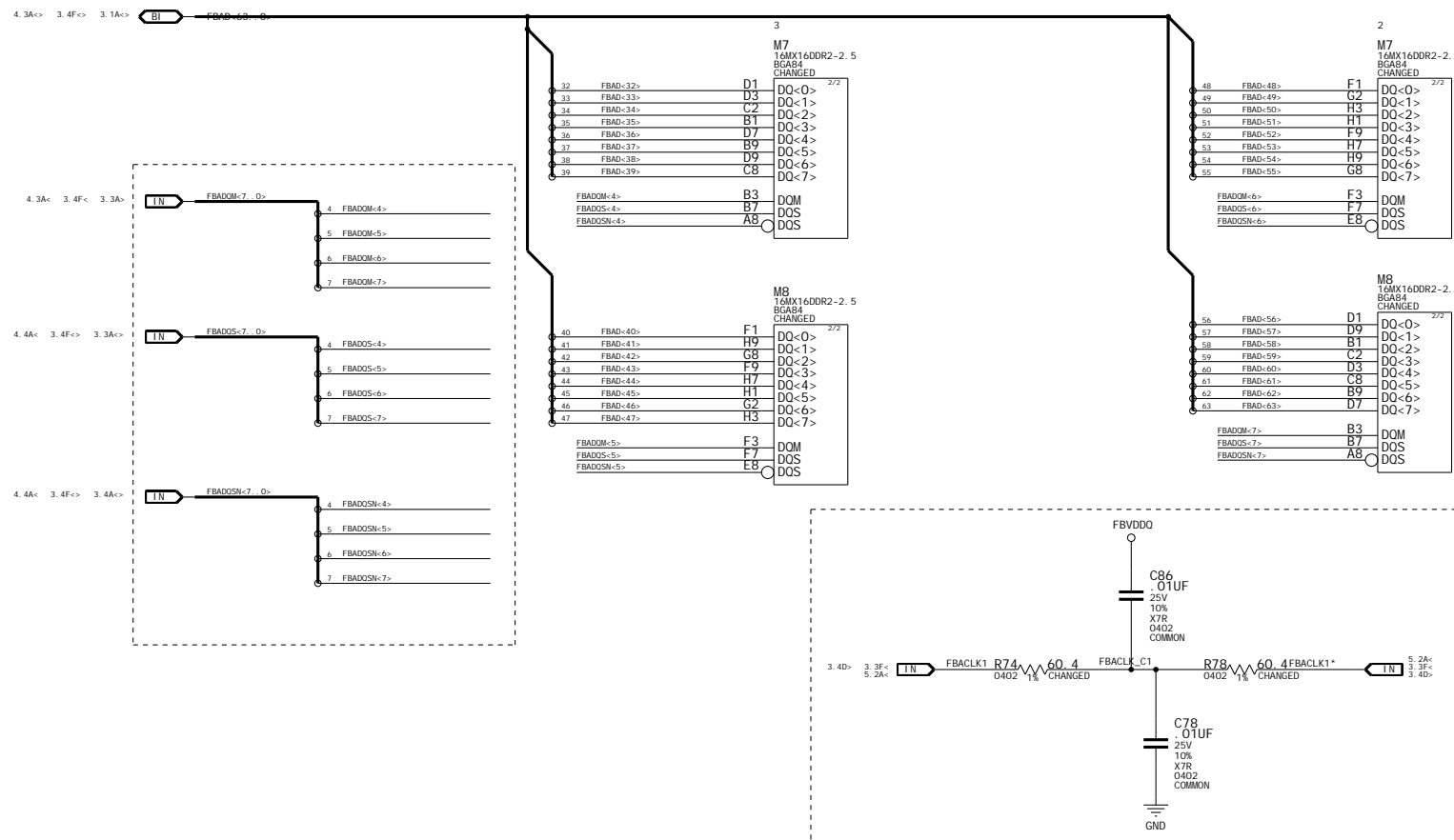
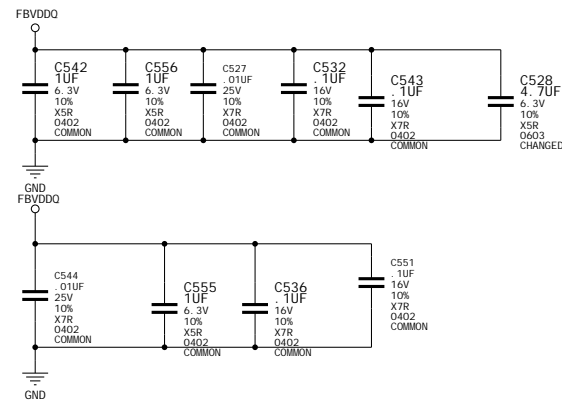
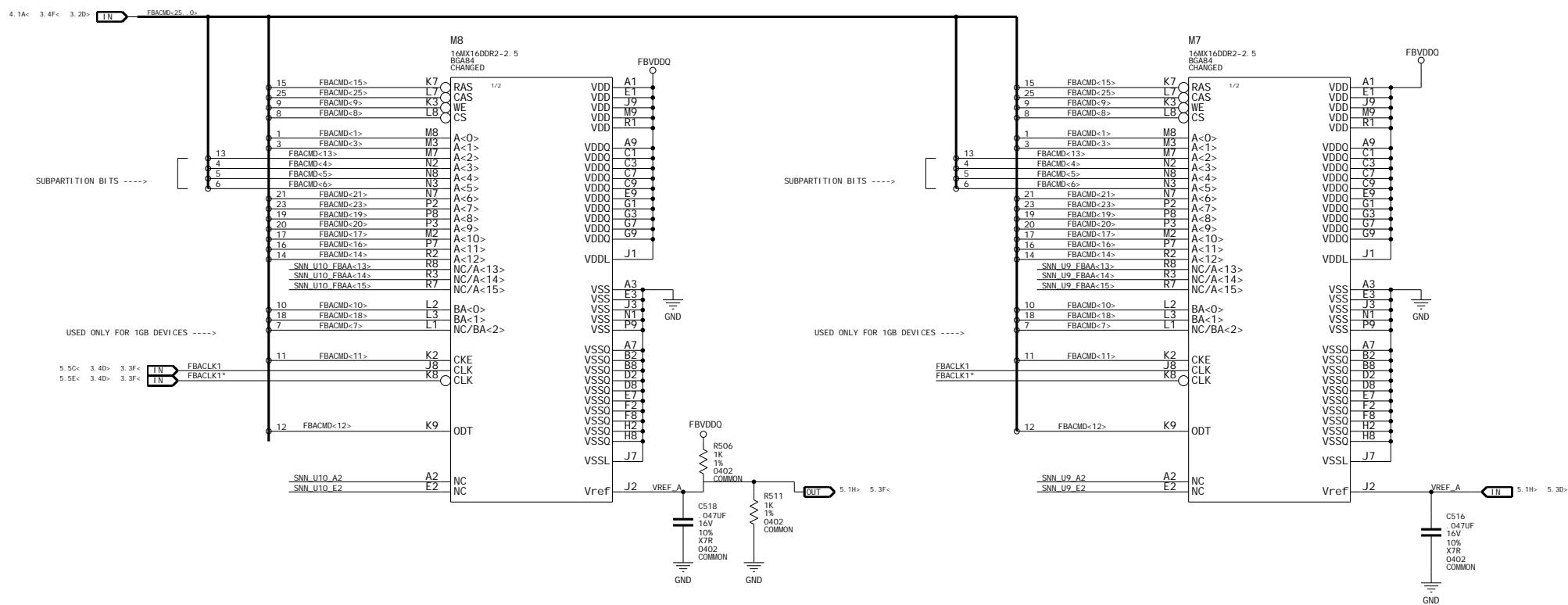
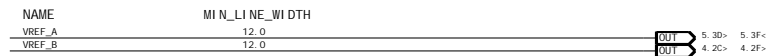
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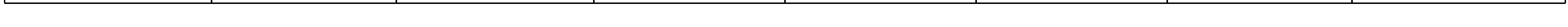
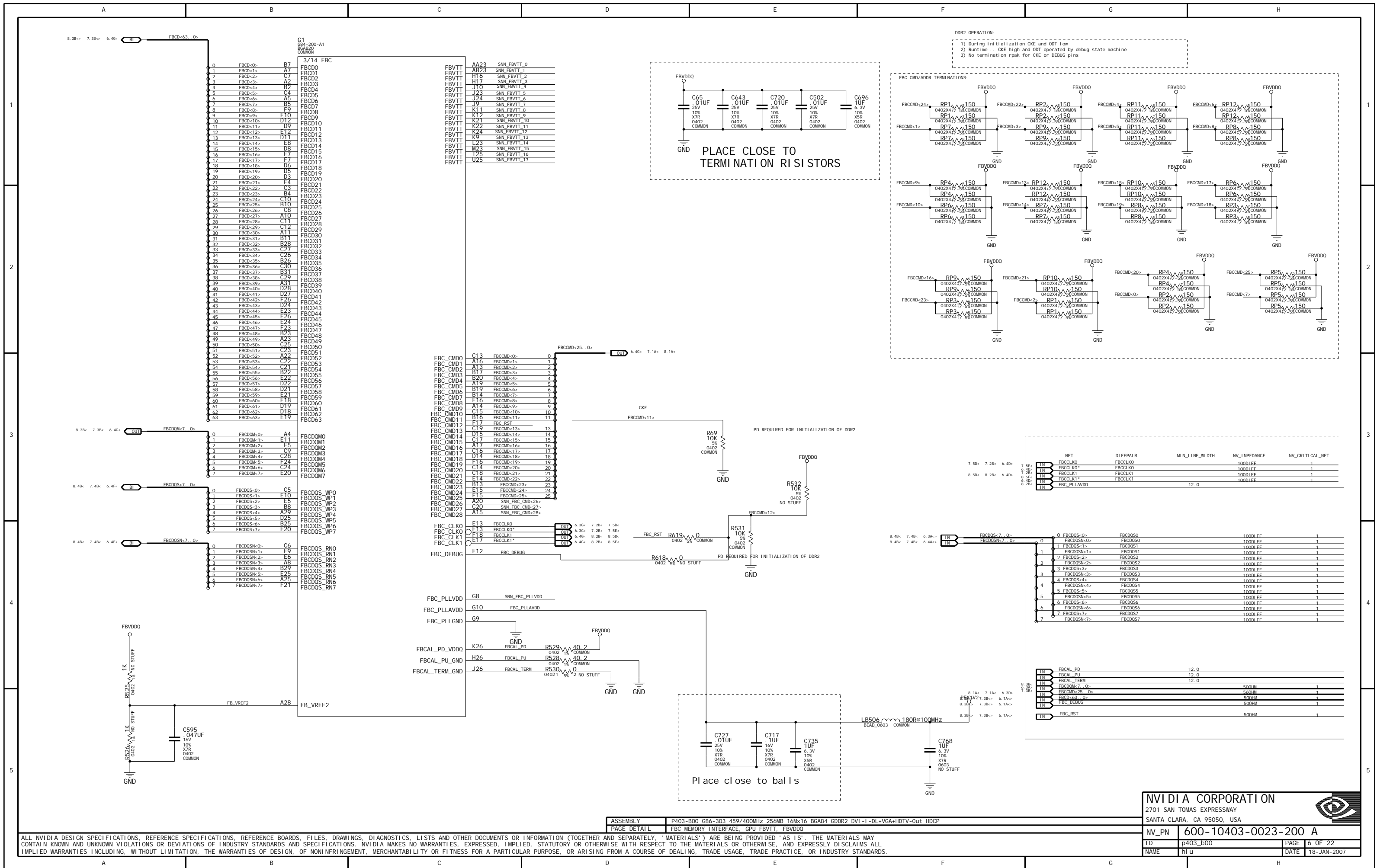


PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

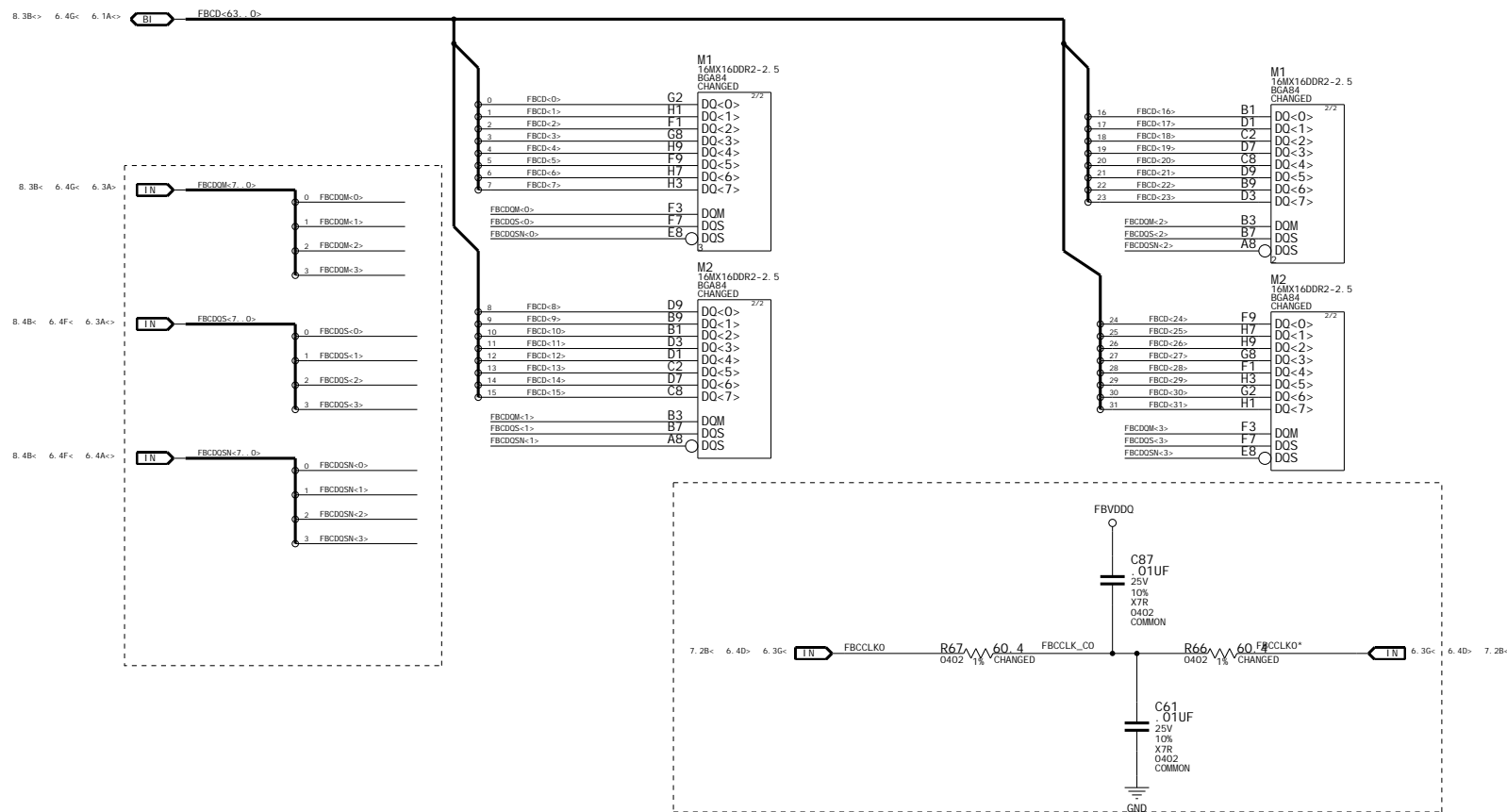
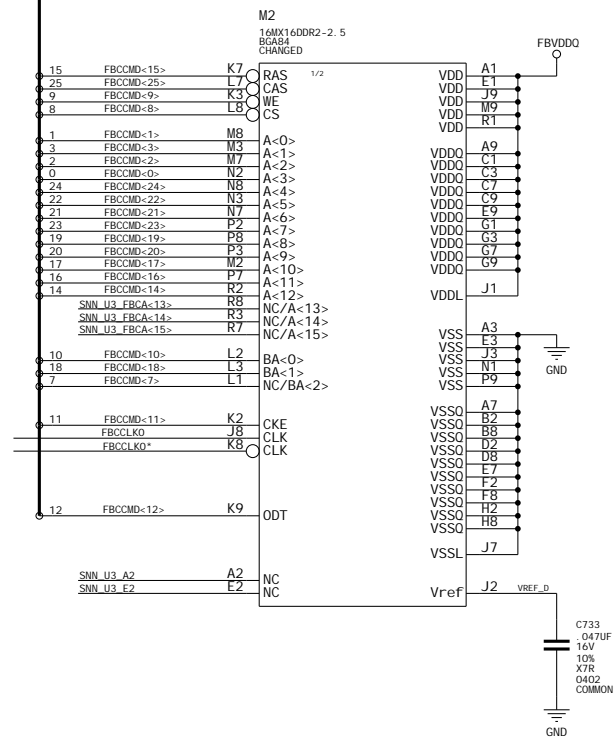


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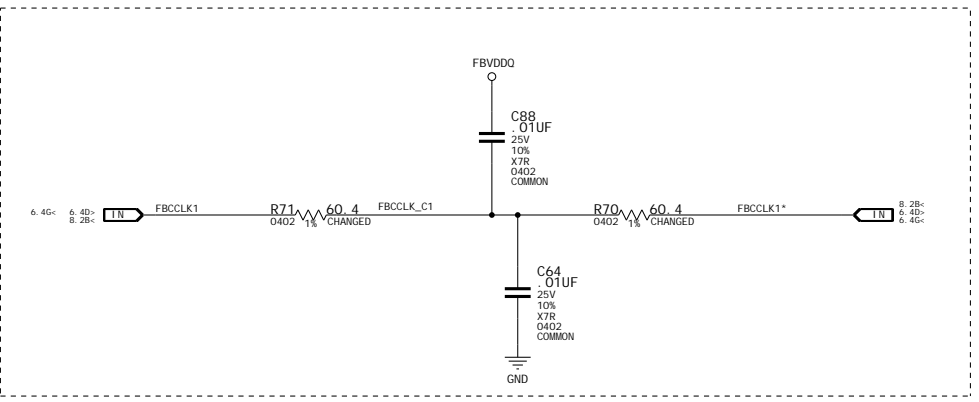
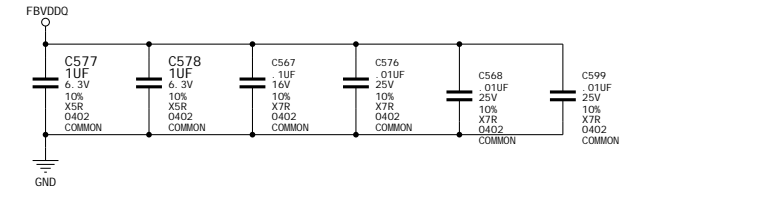
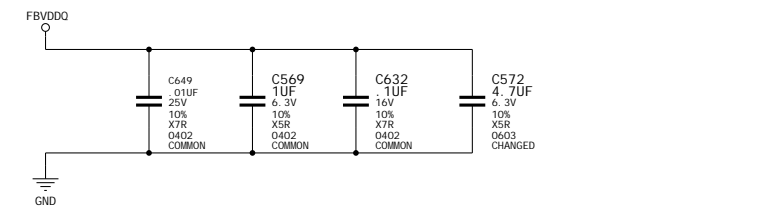
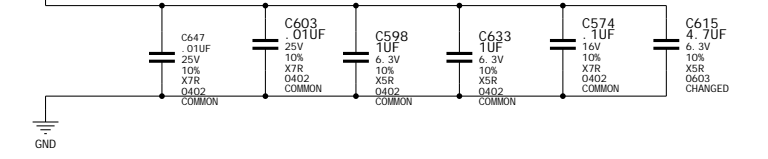
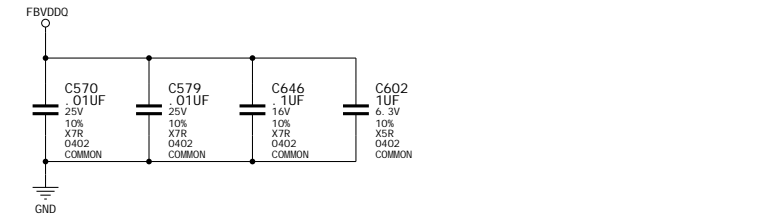
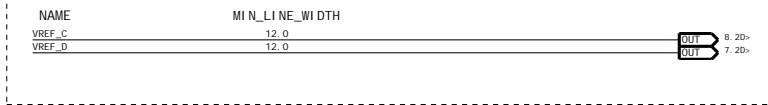
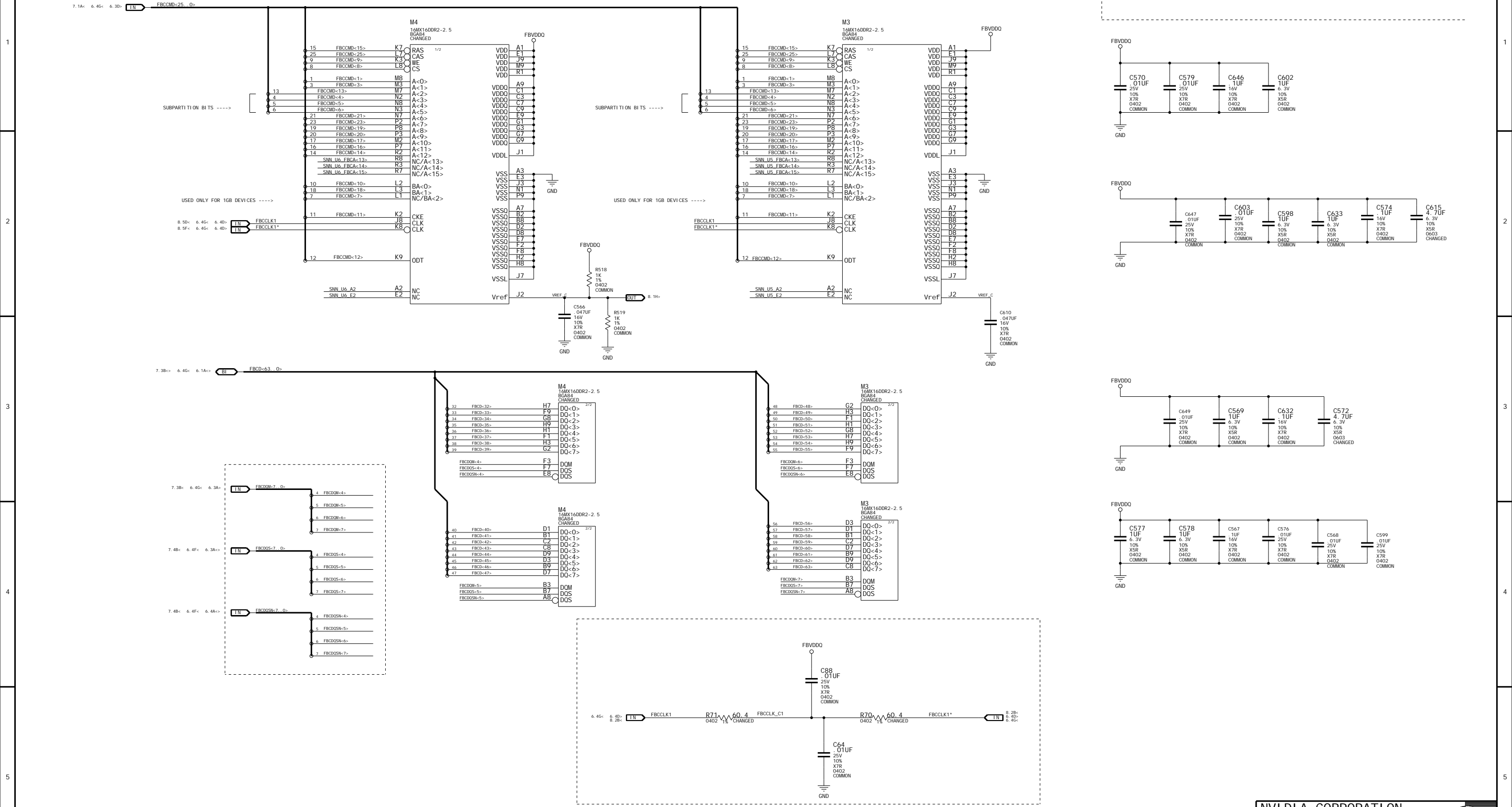
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



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FBC MEMORY 2nd bank 32..63




PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY



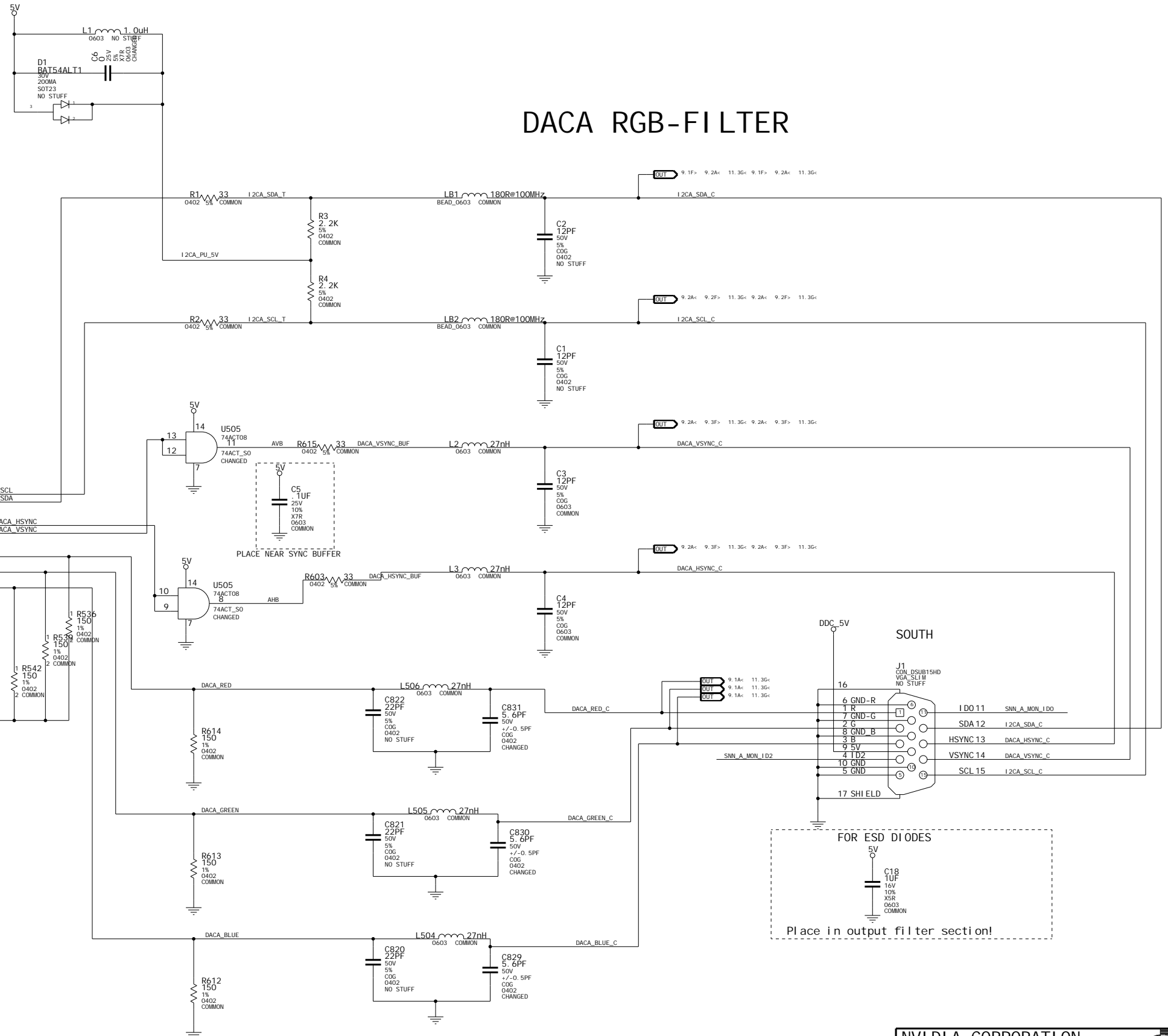


NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
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		IN	DACA_RED	1	56OHM
		IN	DACA_GREEN	1	56OHM
		IN	DACA_BLUE	1	56OHM
11. 3G<	9. 4F>	IN	DACA_RED_C	1	56OHM
11. 3G<	9. 4F>	IN	DACA_GREEN_C	1	56OHM
11. 3G<	9. 4F>	IN	DACA_BLUE_C	1	56OHM
		IN	DACA_HSYNC	2	50OHM
		IN	DACA_VSYNC	2	50OHM
		IN	AVB	2	50OHM
		IN	AHB	2	50OHM
		IN	DACA_HSYNC_BUF	2	50OHM
		IN	DACA_VSYNC_BUF	2	50OHM
11. 3G<	9. 3F>	IN	DACA_HSYNC_C	2	50OHM
11. 3G<	9. 3F>	IN	DACA_VSYNC_C	2	50OHM
		IN	I2CA_SCL	2	50OHM
		IN	I2CA_SDA	2	50OHM
		IN	I2CA_SCL_T	2	50OHM
		IN	I2CA_SDA_T	2	50OHM
11. 3G<	9. 2F>	IN	I2CA_SCL_C	2	50OHM
11. 3G<	9. 1F>	IN	I2CA_SDA_C	2	50OHM

	NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
	DACA_VDD	3.30000V	0.07A	16.0
	DACA_VREF			10.0
	DACA_RST			10.0

## DACA RGB-FILTER



Place in output filter section!

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NET	NV_CRITICAL	NV_IMPEDANCE	DIFFPAIR
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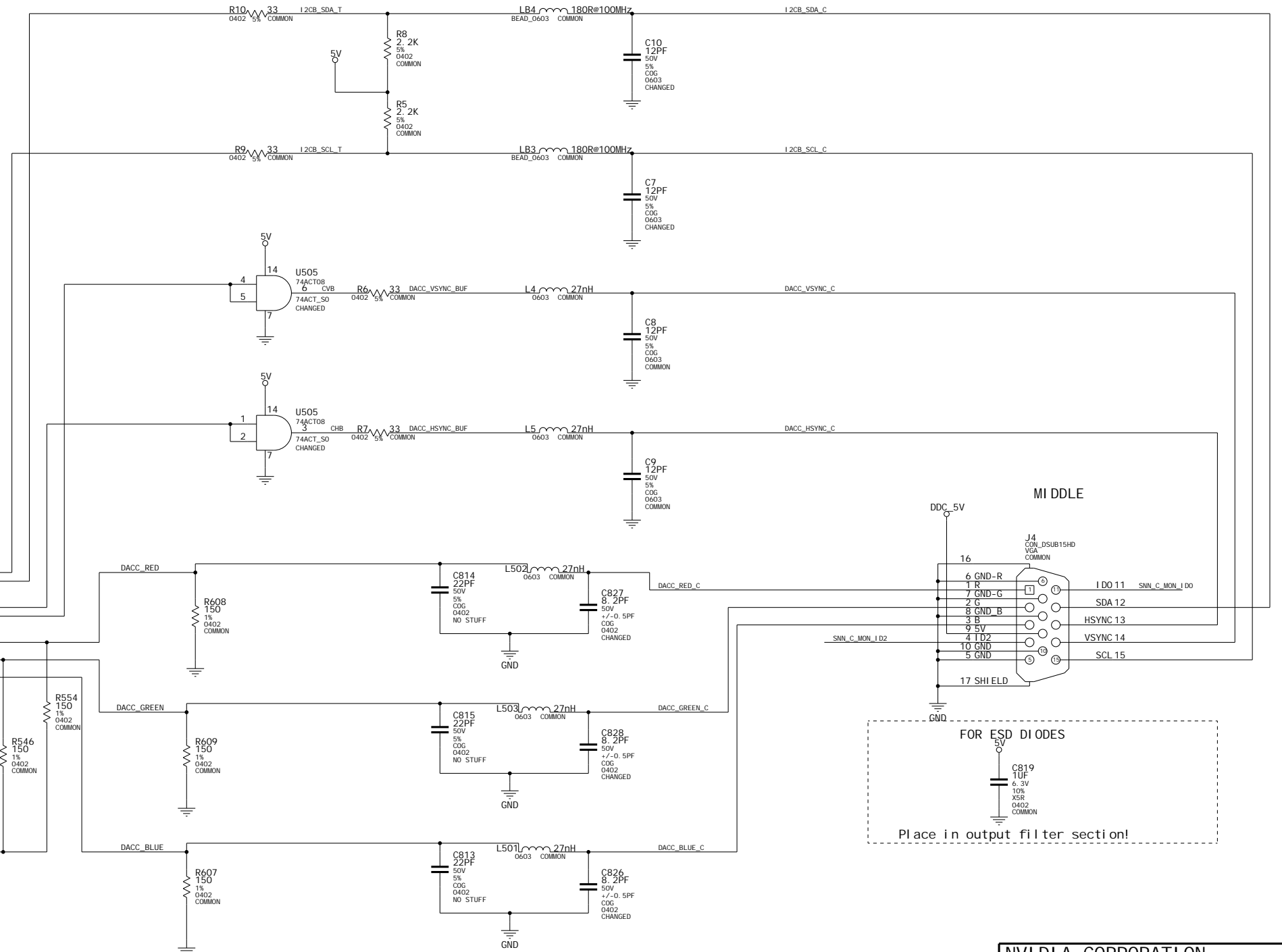
IN	DACC_RED	1	560HM
IN	DACC_GREEN	1	560HM
IN	DACC_BLUE	1	560HM
IN	DACC_RED_C	1	560HM
IN	DACC_GREEN_C	1	560HM
IN	DACC_BLUE_C	1	560HM

10	DACC_HSYNC	2	500HM
10	DACC_VSYNC	2	500HM
10	CVB	2	500HM
10	CHB	2	500HM
10	DACC_HSYNC_BUF	2	500HM
10	DACC_VSYNC_BUF	2	500HM
10	DACC_HSYNC_C	2	500HM
10	DACC_VSYNC_C	2	500HM

1N	I2CB_SCL	2	500HM
1N	I2CB_SDA	2	500HM
1N	I2CB_SCL_T	2	500HM
1N	I2CB_SDA_T	2	500HM
1N	I2CB_SCL_C	2	500HM
1N	I2CB_SDA_C	2	500HM

NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
DACC_VDD	3.30000V	0.14A	16.0
DACC_VREF			10.0
DACC_RESET			10.0

## DACC RGB-FILTER



Place in output filter section!

ASSEMBLY	P403-B00 G86-303 459/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I -DL+VGA+HDTV-Out HDCP
PAGE DETAIL	DACC FILTERS, DACC SYNC BUFFERS & DB15 MID

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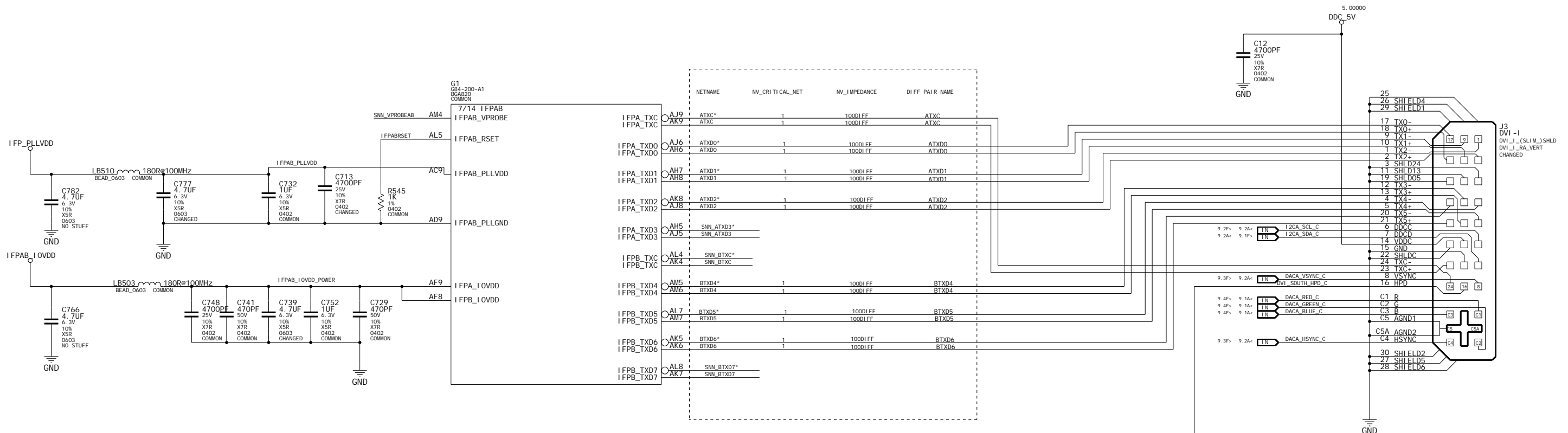
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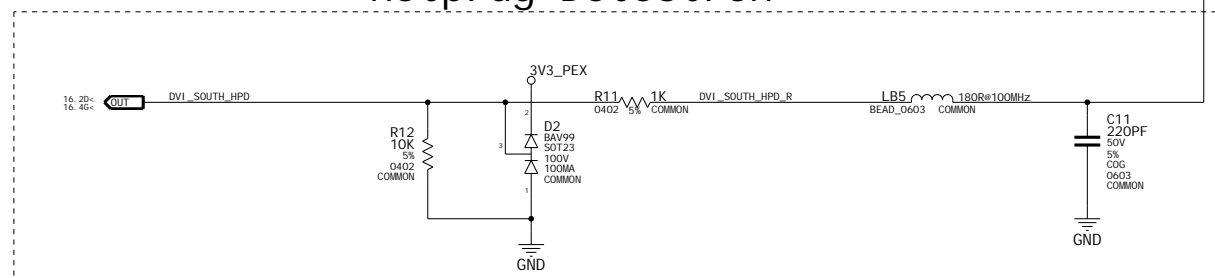
## INTERNAL TMDS .. LINK A &amp; B

## I FPAB NET RULES

	NET	NV_CRI TI CAL	NV_I MPEDANCE	DI FFPAI R
	NET	VOLTAGE	MAX_CURRENT	MI N_WI DTH
IN	I FPAB_PLLVDD	1.80000V	0.04A	16.0
IN	I FPABRSET			12.0



## Hotplug Detection



## INTERNAL TMDS .. LINK C

## I FPAB NET RULES

NET

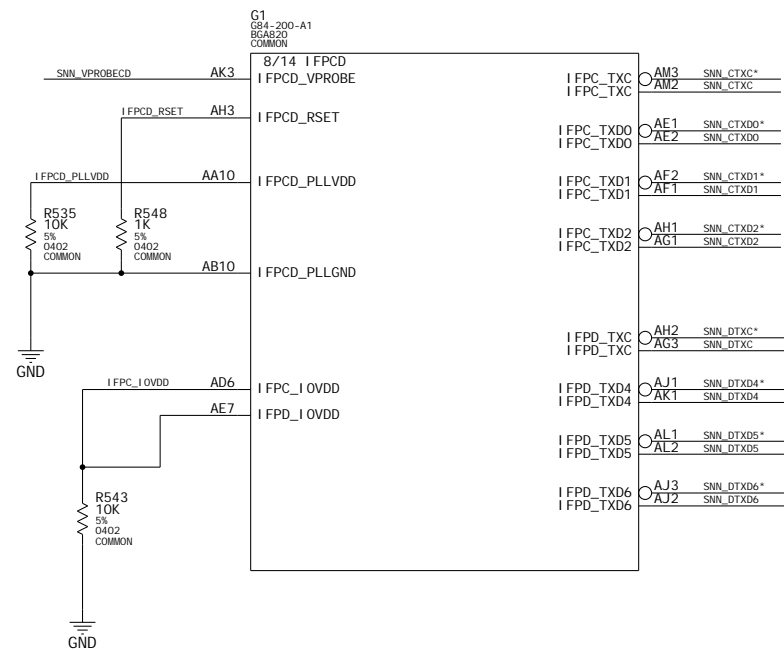
MI N\_WI DTH



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I FPCD\_RSET

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12.0

ASSEMBLY	P403-B00 G86-303 459/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I -DL+VGA+HDTV-Out HDCP
PAGE DETAIL	TMDS LINK C

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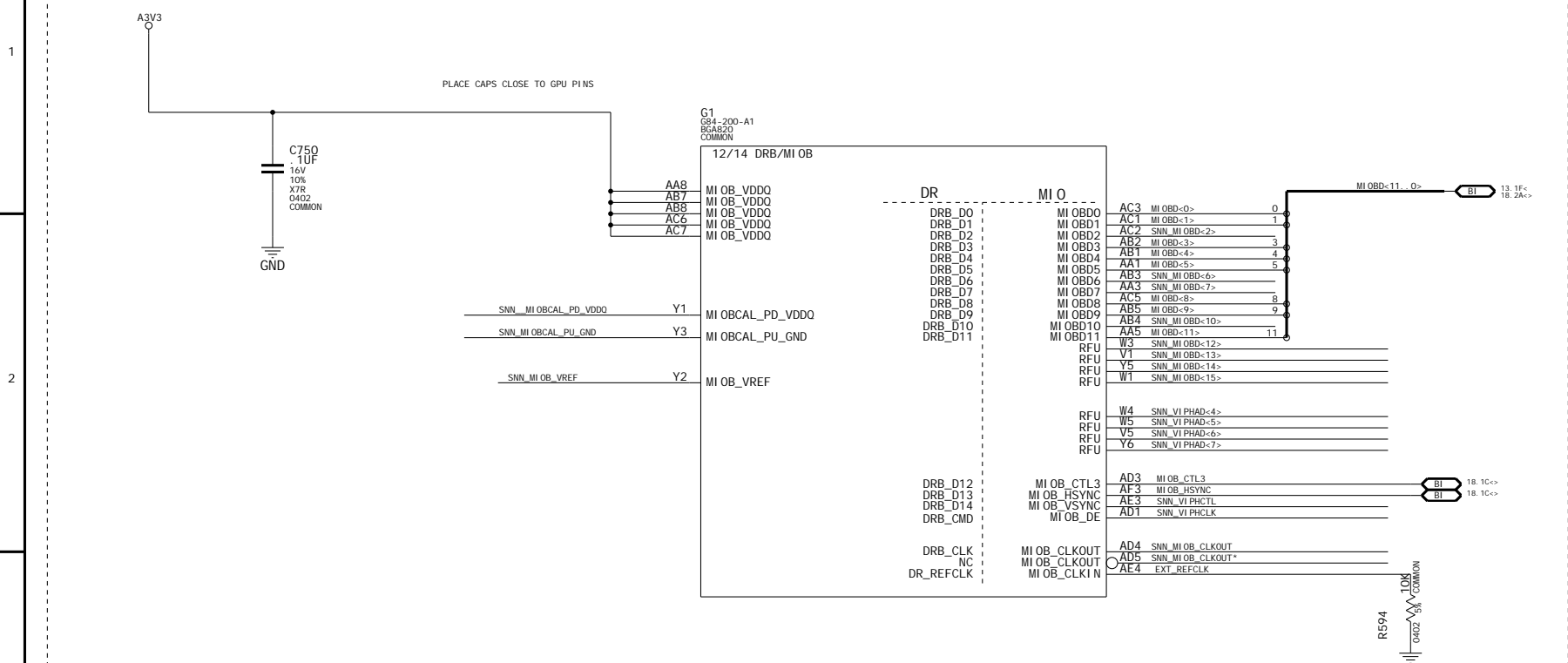
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G3 VI P/MI 0B



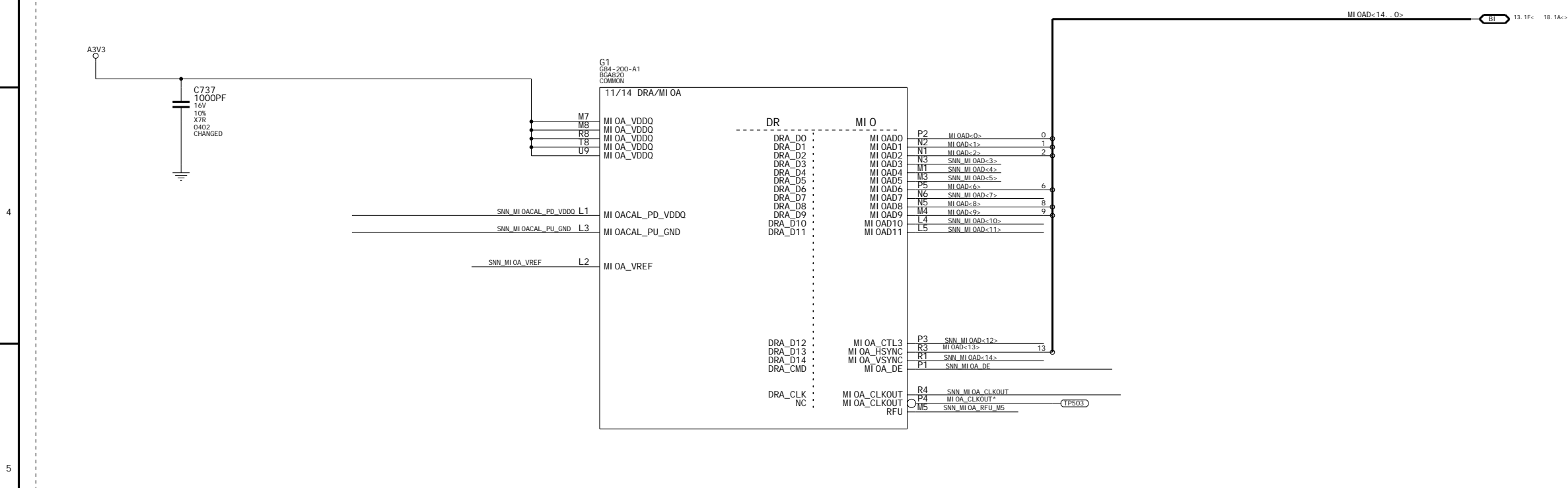
## MI 0 NET RULES

	NET	NV_CRI TI CAL	NV_I MPEDANCE	DI FFPAI R
1B. 1A<> 13. 3F<>	IN MI LOAD<14. 0>	2	500HM	
	IN EXT REFCLK	2	500HM	
	IN MI OA_CLKOUT	2	500HM	
	IN MI OA_DE	2	500HM	

18. 2A<> 13. 1E<>  MI OBD<11. . 0> 2 500HM

	NET	VOLTAGE	MAX_CURRENT	MI_N_WI_DTH
IN	MI_OA_VREF	1.25000V		12.0
IN	MI_OACAL_PD_VDDQ	2.50000V		12.0
IN	MI_OACAL_PU_GND	0.000000V		12.0

G3 MI OA



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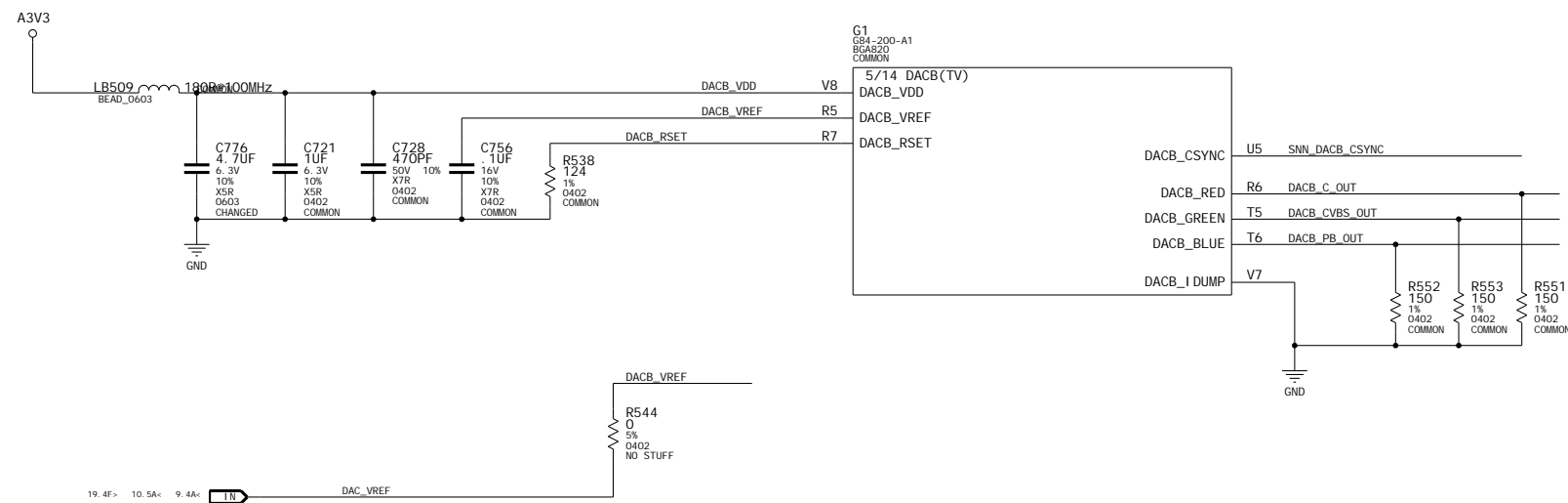
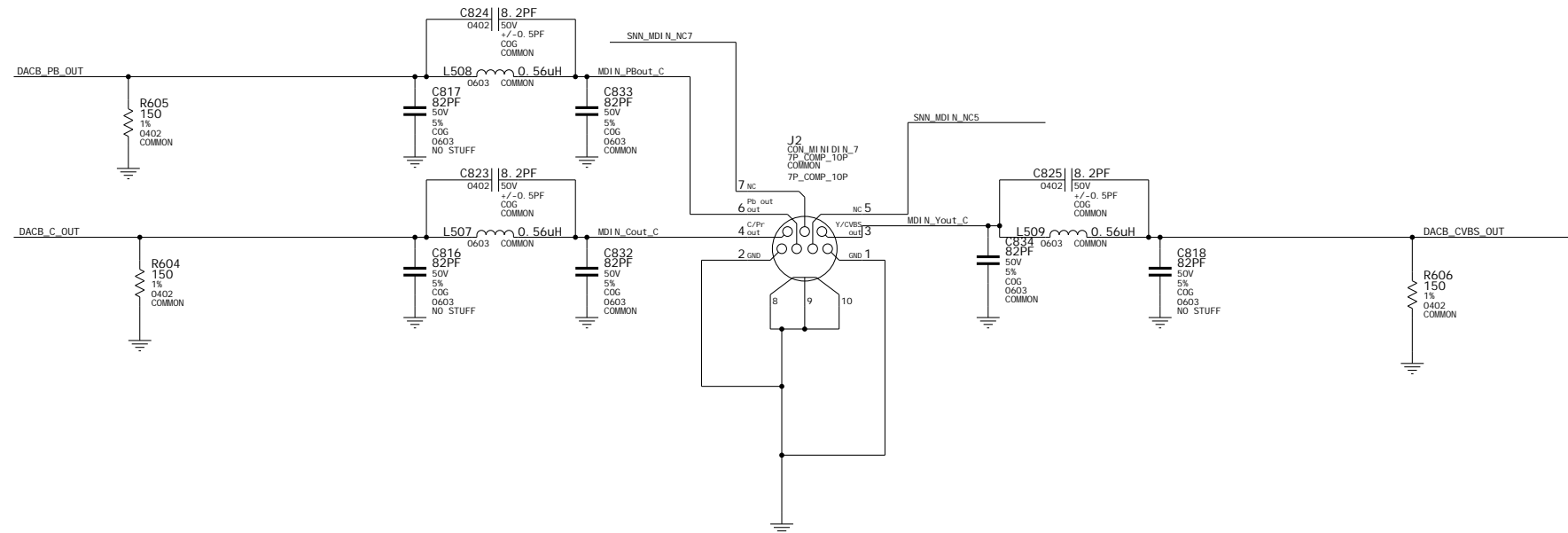
DACB . . Mini DIN VIDEO OUT CONNECTOR

# DACB NET RULES

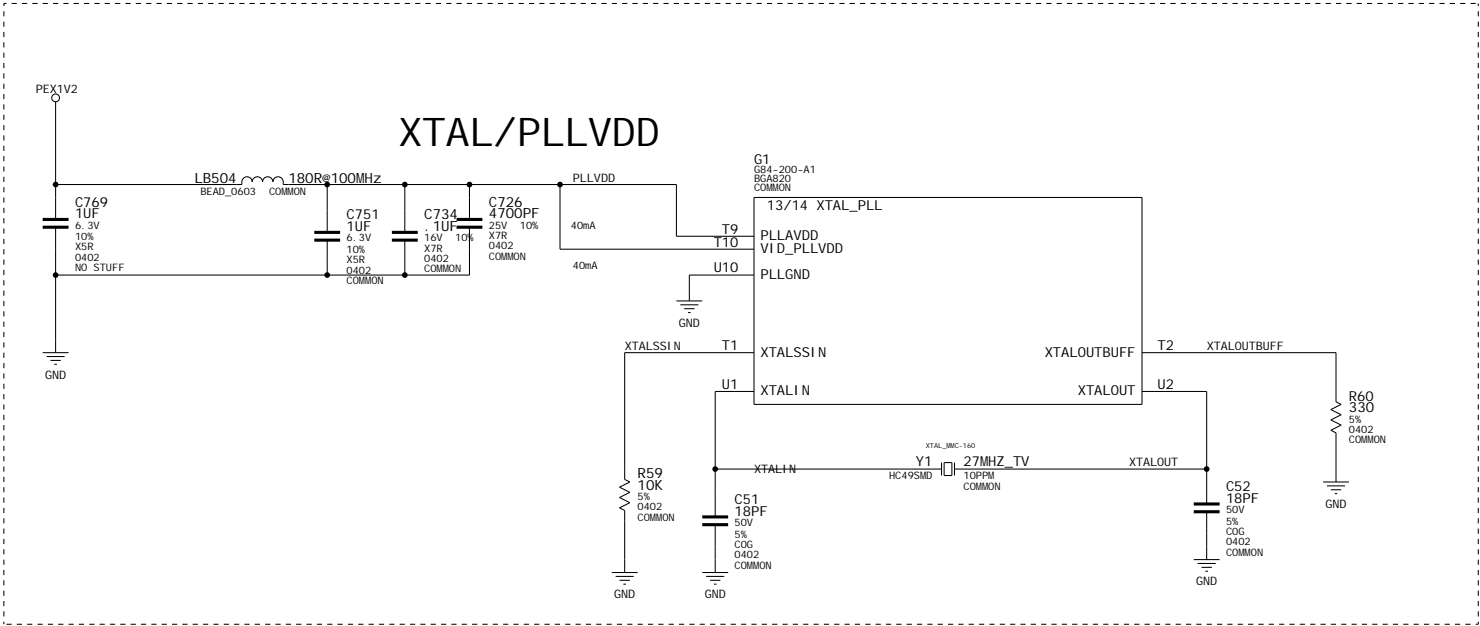
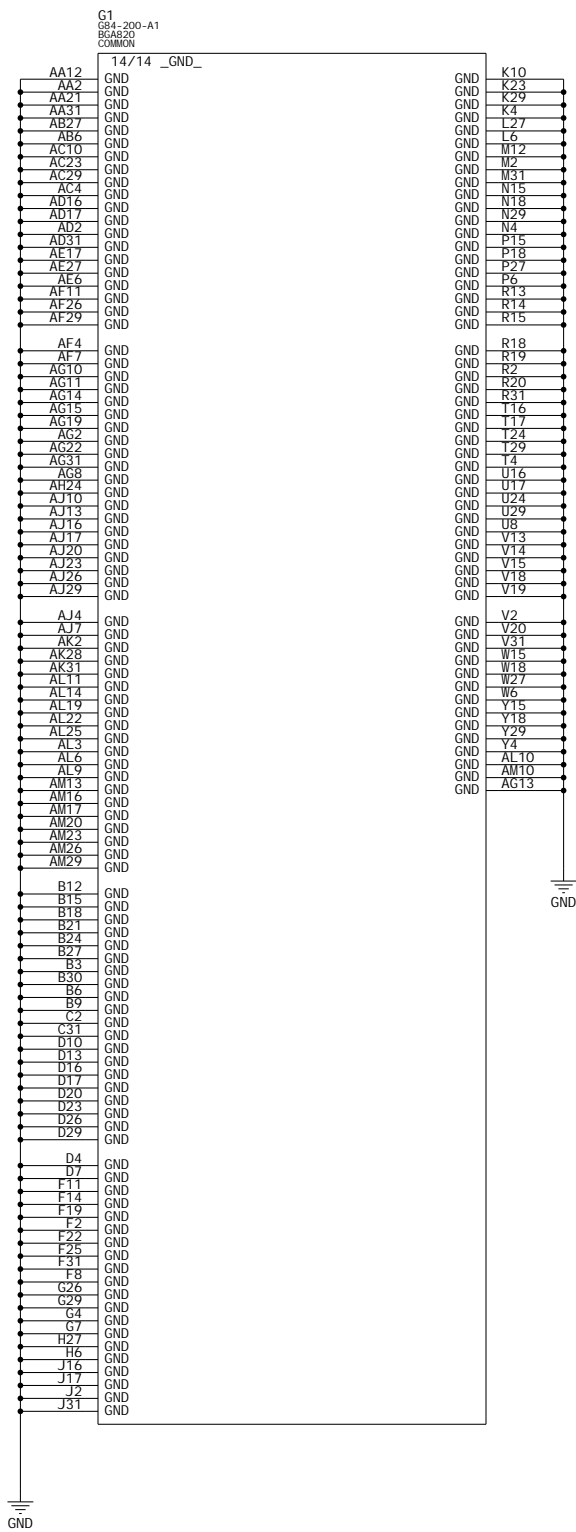
NET		NV_CRI T I CAL	NV_I MPEDANCE	DI FFPAI R
IN	DACB_C_OUT	1	560HM	
IN	MDI N_COUT_C	1	560HM	
IN	DACB_CVBS_OUT	1	560HM	
IN	MDI N_YOUT_C	1	560HM	
IN	DACB_PB_OUT	1	560HM	
IN	MDI N_PBOUT_C	1	560HM	

TN	MDIN_SCL_C	2	500HM
TN	MDIN_SDA_C	2	500HM

	NET	VOLTAGE	MAX_CURRENT	MIN_WIDTH
IN	DACB_VDD	3.30000V	0.07A	16.0
IN	DACB_VREF			16.0
IN	DACB_RSET			16.0



GPU GND CONNECTION, XTAL



NET	NV_CRI T1 CAL	NV_I MPEDANCE	DI FFPAI R
T10 XTALIN	1	500HM	
T10 XTALOUT	1	500HM	

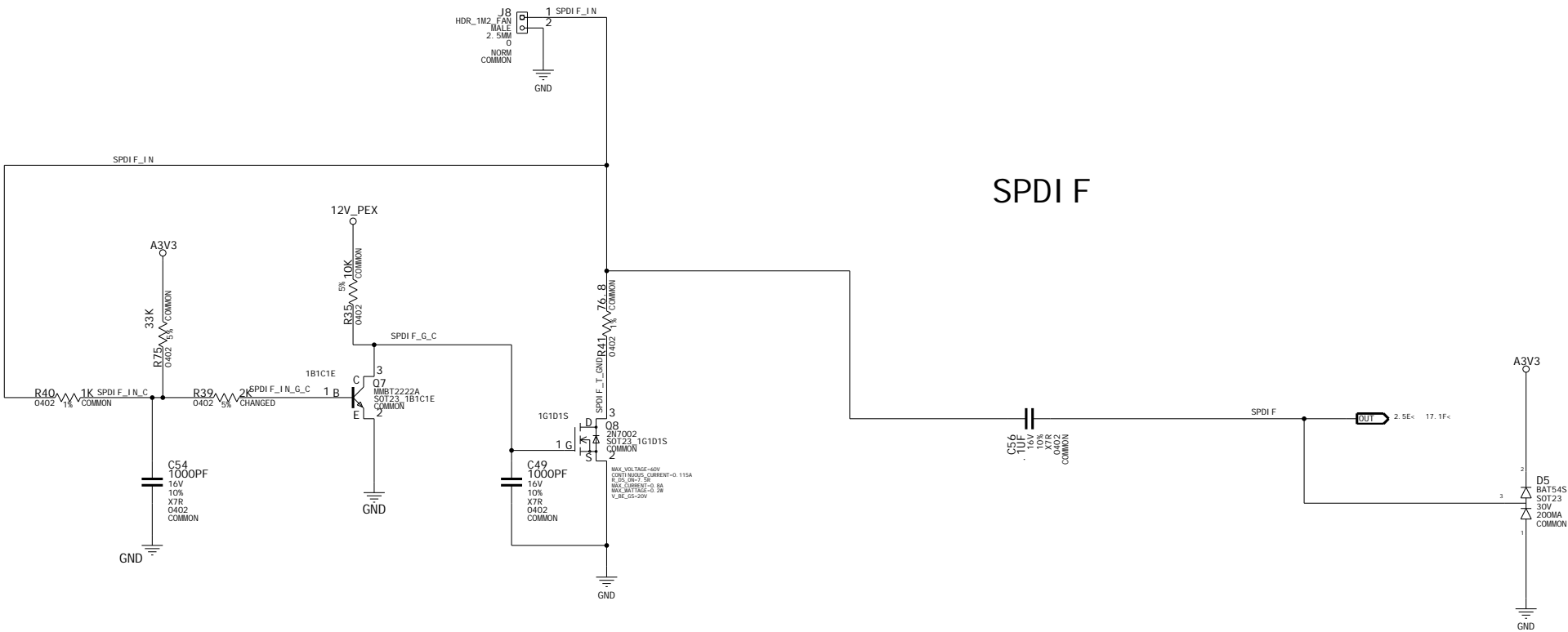
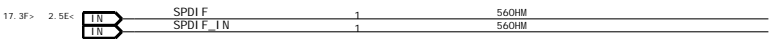
NET	VOLTAGE	MAX_CURRENT	MI N_WI DTH
T10 PLLVD	1.2V	0.3A	12MI L

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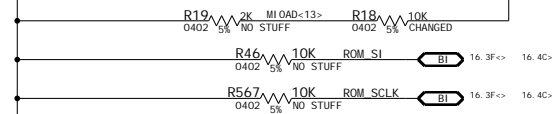
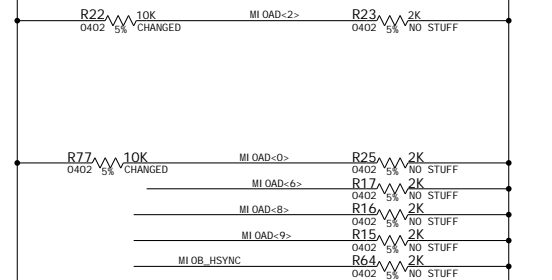
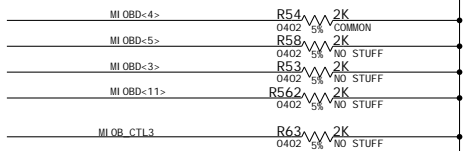
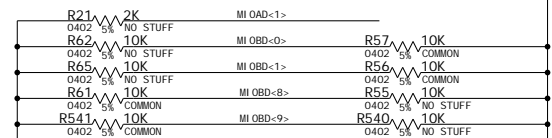
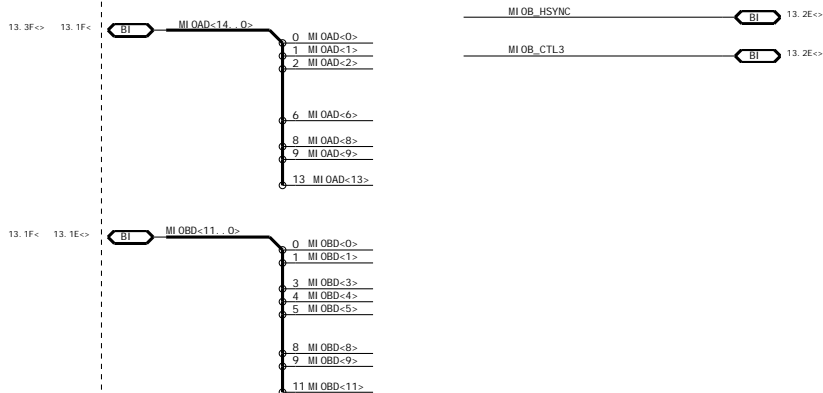
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# BI OS, Straps, Mi sc

## Straps

Assembly: BIOS

## Mechanical parts



REG: NV\_PEXTDEV\_BOOT\_0

Bit Signal	VALUE_ID	VALUES
00: GV_WIDTH	GV_WIDTH	0=Wide (G80)
01: SUB_VENDOR	SUB_VENDOR	0=No BIOS
02: RAM_CFG_0	RAM_CFG[3:0]	0001=16Mx32 DDR3 256-bit Infineon 0010=16Mx32 DDR3 256-bit Synix 0101=16Mx32 DDR3 256-bit Hynix 0110=16Mx32 DDR3 256-bit Samsung 0111=16Mx32 DDR3 256-bit Hynix 1010=16Mx32 DDR3 256-bit Hynix 1011=16Mx32 DDR3 256-bit Samsung 1101=16Mx32 DDR3 256-bit Hynix 1110=16Mx32 DDR3 256-bit Samsung
03: RAM_CFG_1	RAM_CFG[3:0]	0001=16Mx32 DDR3 256-bit Infineon 0010=16Mx32 DDR3 256-bit Synix 0101=16Mx32 DDR3 256-bit Hynix 0110=16Mx32 DDR3 256-bit Samsung 0111=16Mx32 DDR3 256-bit Hynix 1010=16Mx32 DDR3 256-bit Hynix 1011=16Mx32 DDR3 256-bit Samsung 1101=16Mx32 DDR3 256-bit Hynix 1110=16Mx32 DDR3 256-bit Samsung
04: RAM_CFG_2	RAM_CFG[3:0]	0001=16Mx32 DDR3 256-bit Infineon 0010=16Mx32 DDR3 256-bit Synix 0101=16Mx32 DDR3 256-bit Hynix 0110=16Mx32 DDR3 256-bit Samsung 0111=16Mx32 DDR3 256-bit Hynix 1010=16Mx32 DDR3 256-bit Hynix 1011=16Mx32 DDR3 256-bit Samsung 1101=16Mx32 DDR3 256-bit Hynix 1110=16Mx32 DDR3 256-bit Samsung
05: RAM_CFG_3	RAM_CFG[3:0]	0001=16Mx32 DDR3 256-bit Infineon 0010=16Mx32 DDR3 256-bit Synix 0101=16Mx32 DDR3 256-bit Hynix 0110=16Mx32 DDR3 256-bit Samsung 0111=16Mx32 DDR3 256-bit Hynix 1010=16Mx32 DDR3 256-bit Hynix 1011=16Mx32 DDR3 256-bit Samsung 1101=16Mx32 DDR3 256-bit Hynix 1110=16Mx32 DDR3 256-bit Samsung
06: CRYSTAL_0	CRYSTAL	0=27MHz 1=14.31818MHz
07: TV_MODE_0	TV_MODE[2:0]	000=NTSC_M 001=NTSC_J 010=PAL_M 011=PAL_N 100=PAL_60 101=PAL_60H 110=Reserved_0 111=Reserved_1
08: TV_MODE_1	TV_MODE[2:0]	000=NTSC_M 001=NTSC_J 010=PAL_M 011=PAL_N 100=PAL_60 101=PAL_60H 110=Reserved_0 111=Reserved_1
09: TVMODE[2]	TVMODE[2]	000=NTSC_M 001=NTSC_J 010=PAL_M 011=PAL_N 100=PAL_60 101=PAL_60H 110=Reserved_0 111=Reserved_1

Bit Signal	VALUE_ID	VALUES
10: PCI_DEVID_0	PCI_DEVID[3:0]	0000=Reserved_0 0001=Reserved_1 0010=Reserved_2 0011=Reserved_3 0100=Reserved_4 0101=Reserved_5 0110=Reserved_6 0111=Reserved_7 1000=Reserved_8 1001=Reserved_9 1010=Reserved_10 1011=Reserved_11 1100=Reserved_12 1101=Reserved_13 1110=Reserved_14 1111=Reserved_15
11: PCI_DEVID_1	PCI_DEVID[3:0]	0000=Reserved_0 0001=Reserved_1 0010=Reserved_2 0011=Reserved_3 0100=Reserved_4 0101=Reserved_5 0110=Reserved_6 0111=Reserved_7 1000=Reserved_8 1001=Reserved_9 1010=Reserved_10 1011=Reserved_11 1100=Reserved_12 1101=Reserved_13 1110=Reserved_14 1111=Reserved_15
12: PCI_DEVID_2	PCI_DEVID[3:0]	0000=Reserved_0 0001=Reserved_1 0010=Reserved_2 0011=Reserved_3 0100=Reserved_4 0101=Reserved_5 0110=Reserved_6 0111=Reserved_7 1000=Reserved_8 1001=Reserved_9 1010=Reserved_10 1011=Reserved_11 1100=Reserved_12 1101=Reserved_13 1110=Reserved_14 1111=Reserved_15
13: PCI_DEVID_3	PCI_DEVID[3:0]	0000=Reserved_0 0001=Reserved_1 0010=Reserved_2 0011=Reserved_3 0100=Reserved_4 0101=Reserved_5 0110=Reserved_6 0111=Reserved_7 1000=Reserved_8 1001=Reserved_9 1010=Reserved_10 1011=Reserved_11 1100=Reserved_12 1101=Reserved_13 1110=Reserved_14 1111=Reserved_15
14: FB[0]	FB[0]	000=Reserved_0 001=Reserved_1 010=Reserved_2 011=Reserved_3 100=Reserved_4 101=Reserved_5 110=Reserved_6 111=Reserved_7
15: FB[1]	FB[1]	000=Reserved_0 001=Reserved_1 010=Reserved_2 011=Reserved_3 100=Reserved_4 101=Reserved_5 110=Reserved_6 111=Reserved_7
16: FB[2]	FB[2]	000=Reserved_0 001=Reserved_1 010=Reserved_2 011=Reserved_3 100=Reserved_4 101=Reserved_5 110=Reserved_6 111=Reserved_7

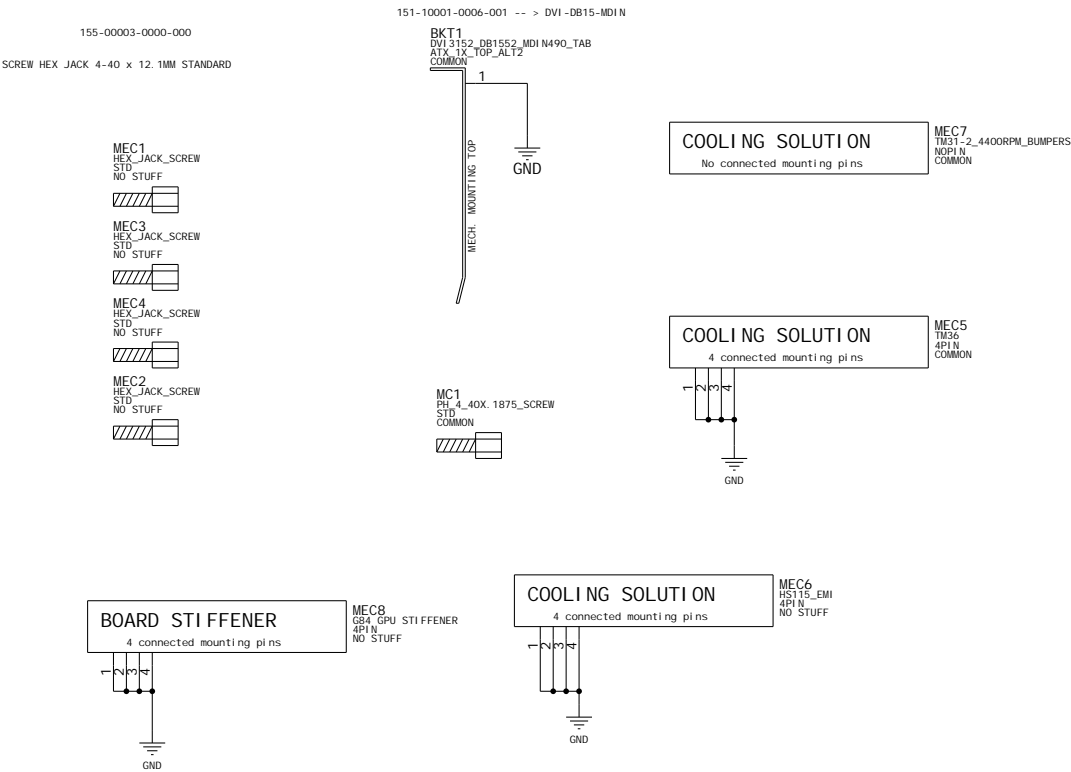
Bit Signal	VALUE_ID	VALUES
22: ROM_TYPE_0	ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F 10 Serial_SST45VF 11 JREIL
23: ROM_TYPE_1	ROM_TYPE[1:0]	00 Parallel 01 Serial_AT25F 10 Serial_SST45VF 11 JREIL
24: USER_0	STRAP_USER[3:0]	0000 (default)
25: USER_1	STRAP_USER[3:0]	0000 (default)
26: USER_2	STRAP_USER[3:0]	0000 (default)
27: USER_3	STRAP_USER[3:0]	0000 (default)

Bit Signal	VALUE_ID	VALUES
17: PEX_PLL_EN_TERM100	PEX_PLL_EN_TERM100	0 (default -- internal term on)
18: 3GIO_PADCFG_LUT_ADR[0]	3GIO_PADCFG_LUT_ADR[0]	0000=Desktop 0001=Mobile 0010=Mobile NTHRS LLAMP 0011=Mobile NTHRS LLAMP 0100=Mobile NTHRS LLAMP 0101=Mobile NTHRS LLAMP 0110=Mobile NTHRS LLAMP 0111=Mobile NTHRS LLAMP 1000=Desktop 1001=Mobile 1010=Mobile NTHRS LLAMP 1011=Mobile NTHRS LLAMP 1100=Mobile NTHRS LLAMP 1101=Mobile NTHRS LLAMP 1110=Mobile NTHRS LLAMP 1111=Mobile NTHRS LLAMP
19: 3GIO_PADCFG_LUT_ADR[1]	3GIO_PADCFG_LUT_ADR[1]	0000=Desktop 0001=Mobile 0010=Mobile NTHRS LLAMP 0011=Mobile NTHRS LLAMP 0100=Mobile NTHRS LLAMP 0101=Mobile NTHRS LLAMP 0110=Mobile NTHRS LLAMP 0111=Mobile NTHRS LLAMP 1000=Desktop 1001=Mobile 1010=Mobile NTHRS LLAMP 1011=Mobile NTHRS LLAMP 1100=Mobile NTHRS LLAMP 1101=Mobile NTHRS LLAMP 1110=Mobile NTHRS LLAMP 1111=Mobile NTHRS LLAMP
20: 3GIO_PADCFG_LUT_ADR[2]	3GIO_PADCFG_LUT_ADR[2]	0000=Desktop 0001=Mobile 0010=Mobile NTHRS LLAMP 0011=Mobile NTHRS LLAMP 0100=Mobile NTHRS LLAMP 0101=Mobile NTHRS LLAMP 0110=Mobile NTHRS LLAMP 0111=Mobile NTHRS LLAMP 1000=Desktop 1001=Mobile 1010=Mobile NTHRS LLAMP 1011=Mobile NTHRS LLAMP 1100=Mobile NTHRS LLAMP 1101=Mobile NTHRS LLAMP 1110=Mobile NTHRS LLAMP 1111=Mobile NTHRS LLAMP
21: 3GIO_PADCFG_LUT_ADR[3]	3GIO_PADCFG_LUT_ADR[3]	0000=Desktop 0001=Mobile 0010=Mobile NTHRS LLAMP 0011=Mobile NTHRS LLAMP 0100=Mobile NTHRS LLAMP 0101=Mobile NTHRS LLAMP 0110=Mobile NTHRS LLAMP 0111=Mobile NTHRS LLAMP 1000=Desktop 1001=Mobile 1010=Mobile NTHRS LLAMP 1011=Mobile NTHRS LLAMP 1100=Mobile NTHRS LLAMP 1101=Mobile NTHRS LLAMP 1110=Mobile NTHRS LLAMP 1111=Mobile NTHRS LLAMP

31: StrapOverride per SW

REG: NV\_STRAP\_1

Bit Signal	VALUE_ID	VALUES
15: Slot Clock Configuration	SLOT_CLK_CFG	0=Disable 1=Enable
12: MI_O_EN_33V_0	MI_OA_VDDQ Voltage	0=2.5V 1=3.3V
13: MI_O_EN_33V_1	MI_OB_VDDQ Voltage	0=2.5V 1=3.3V
16: PCI_I_OBAR	PCI_I_OBAR	0=Disable 1=Enable



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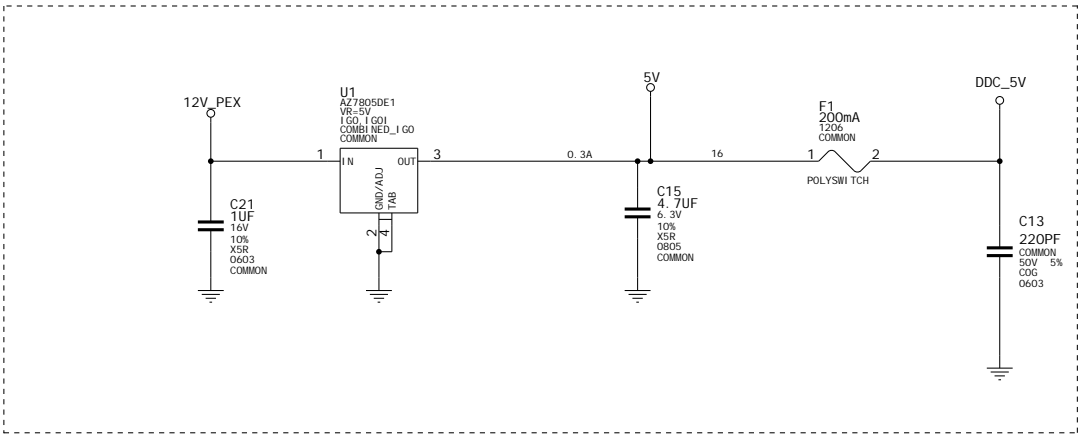
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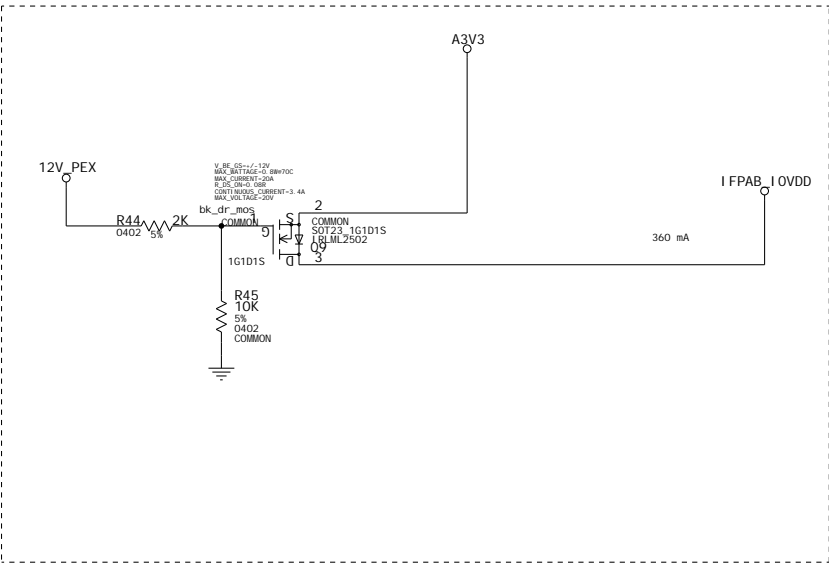
NAME rlu DATE 18-JAN-2007

Power Supply: TMD5\_I0VDD A3V3 DDC\_5V I FP\_PLLVDD

DDC 5V

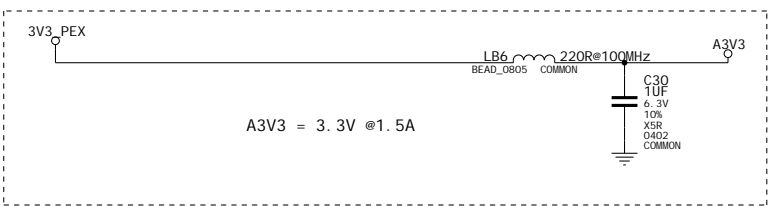


TMD5\_I0 SUPPLY WITH BACKDRIVE PROTECTION

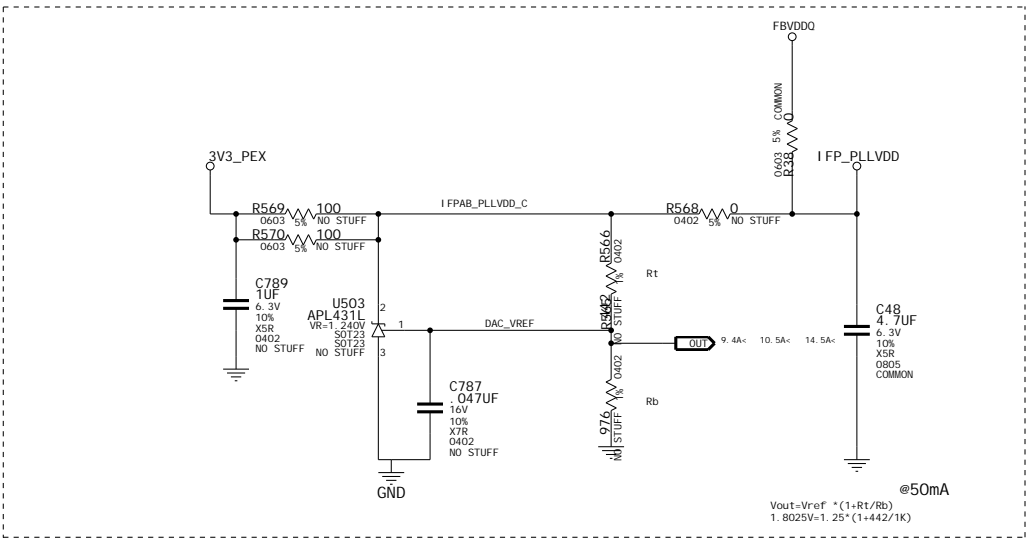


NETNAME	MAX_CURRENT	MIN_LENGTH	VOLTAGE
DDC_5V	0.1A	12.0	5.00000V
A3V3	1.5A	30.0	3.30000V
I FPAB_I0VDD	0.3A	16	3.30000V
GND		35.0	0.00000V
I FP_PLLVDD	0.3A	16	1.80000V

A3V3 Power Supply



I FP\_PLL SUPPLY



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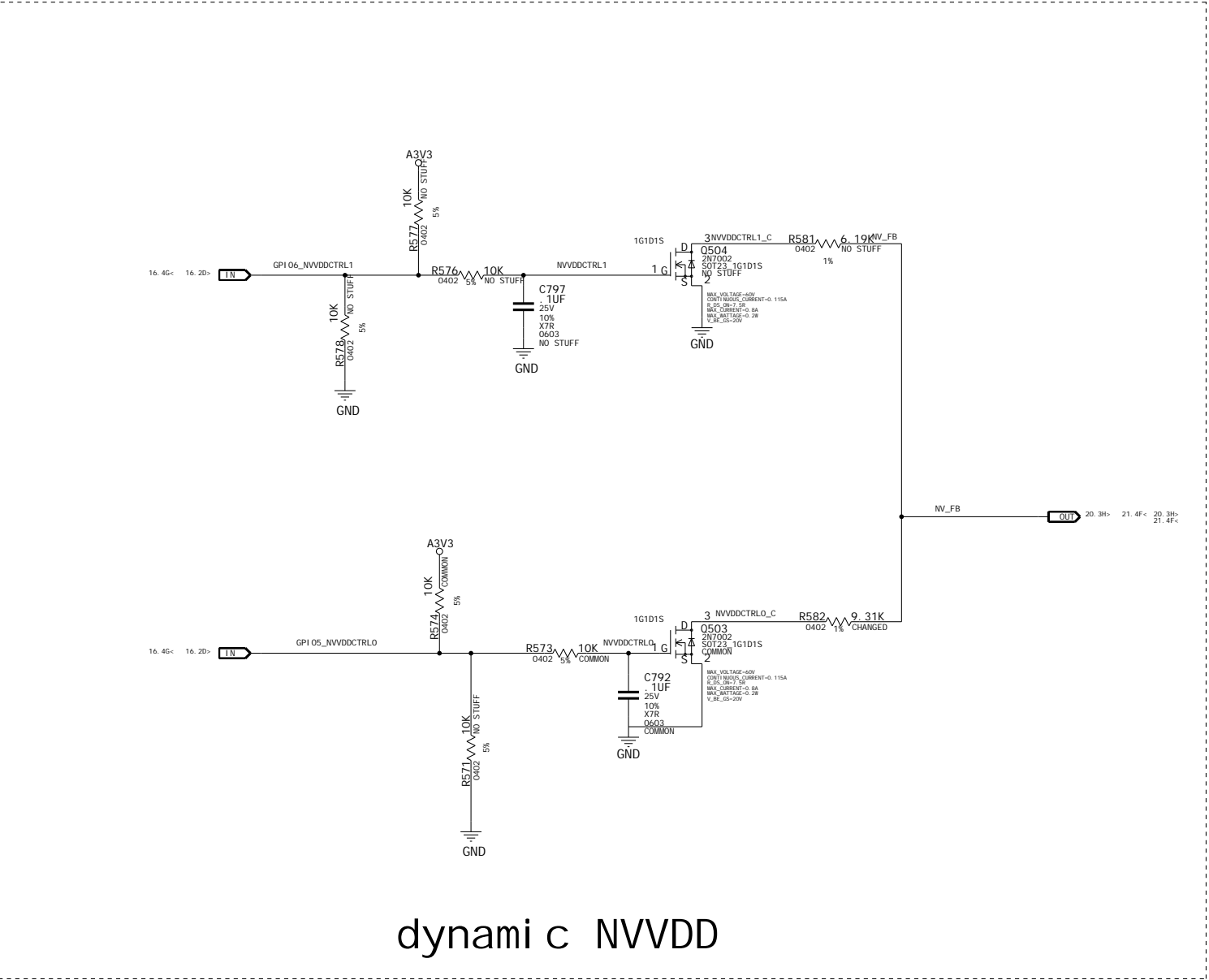
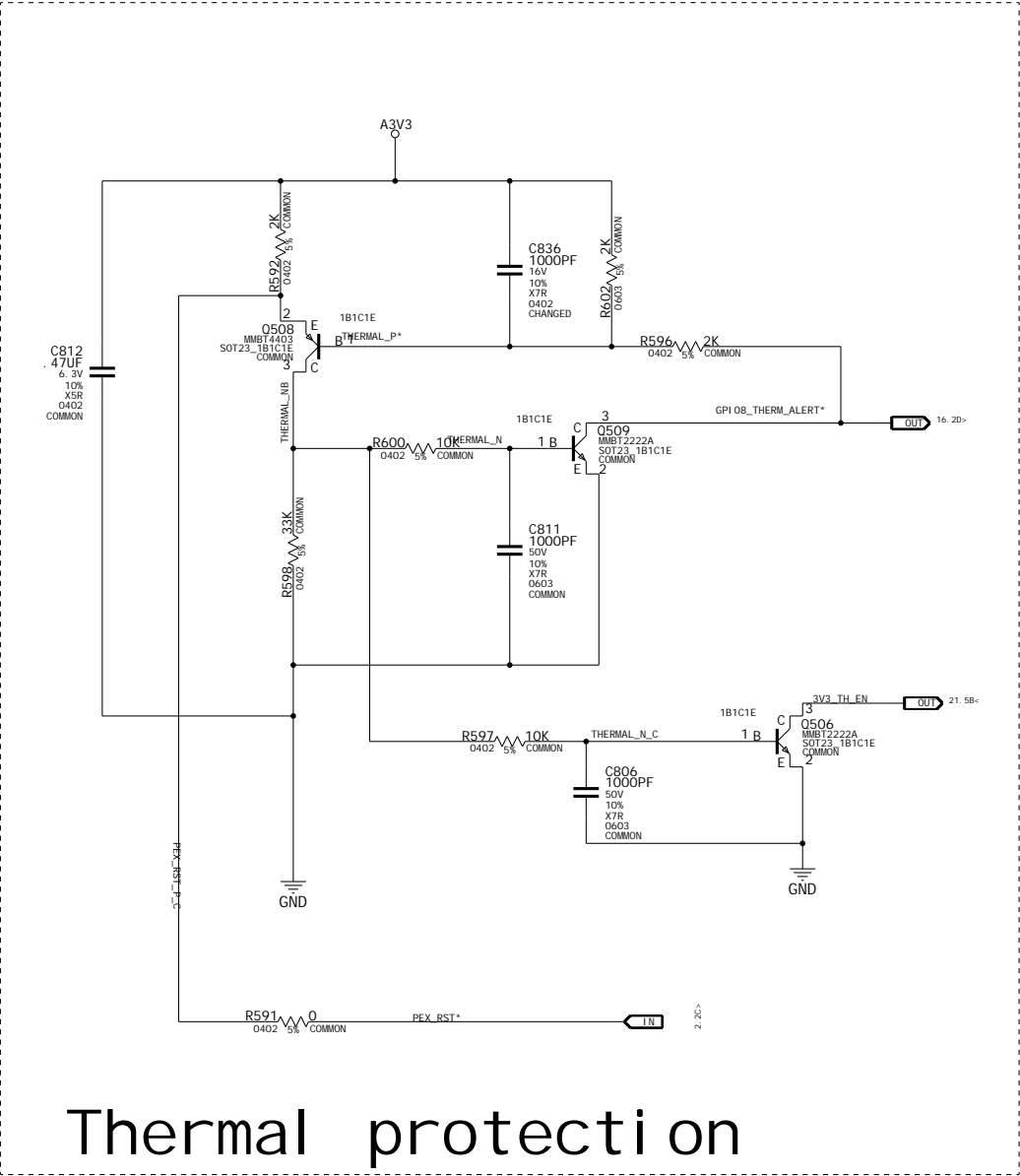
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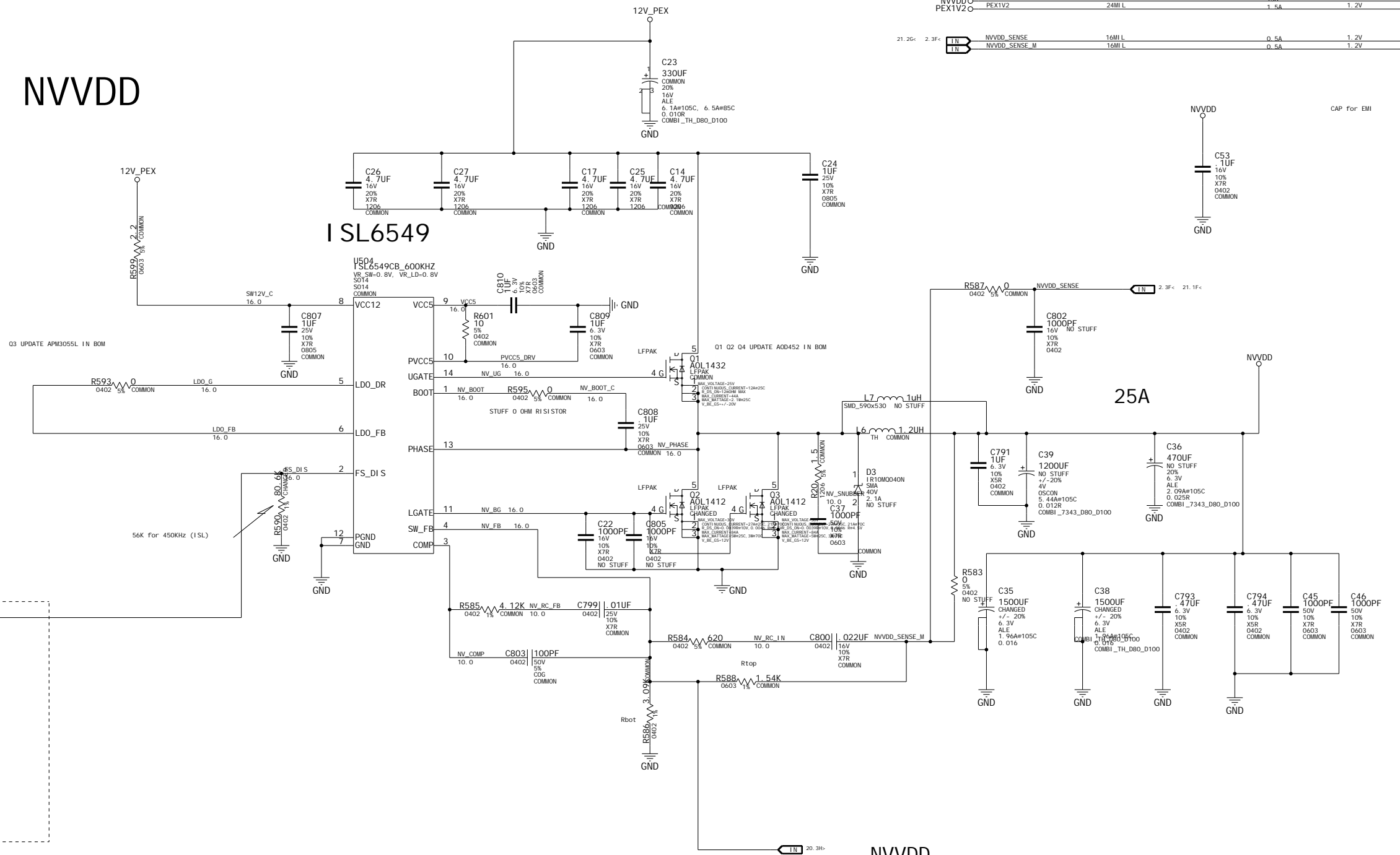
NV\_PN 600-10403-0023-200 A

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thermal protection and dynamic NVVDD



PowerSupply I: NVVDD



NVVDD

Vout	=	VRef	*	(1+Rtop/Rbot)	
1.1V	=	0.8V	*	(1+(1.54k/4.02k))	(I SL6549)
1.2V	=	0.8V	*	(1+(1.54k/3.09k))	(I SL6549)

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<b>NV_PN</b>		<b>600-10403-0023-200 A</b>		
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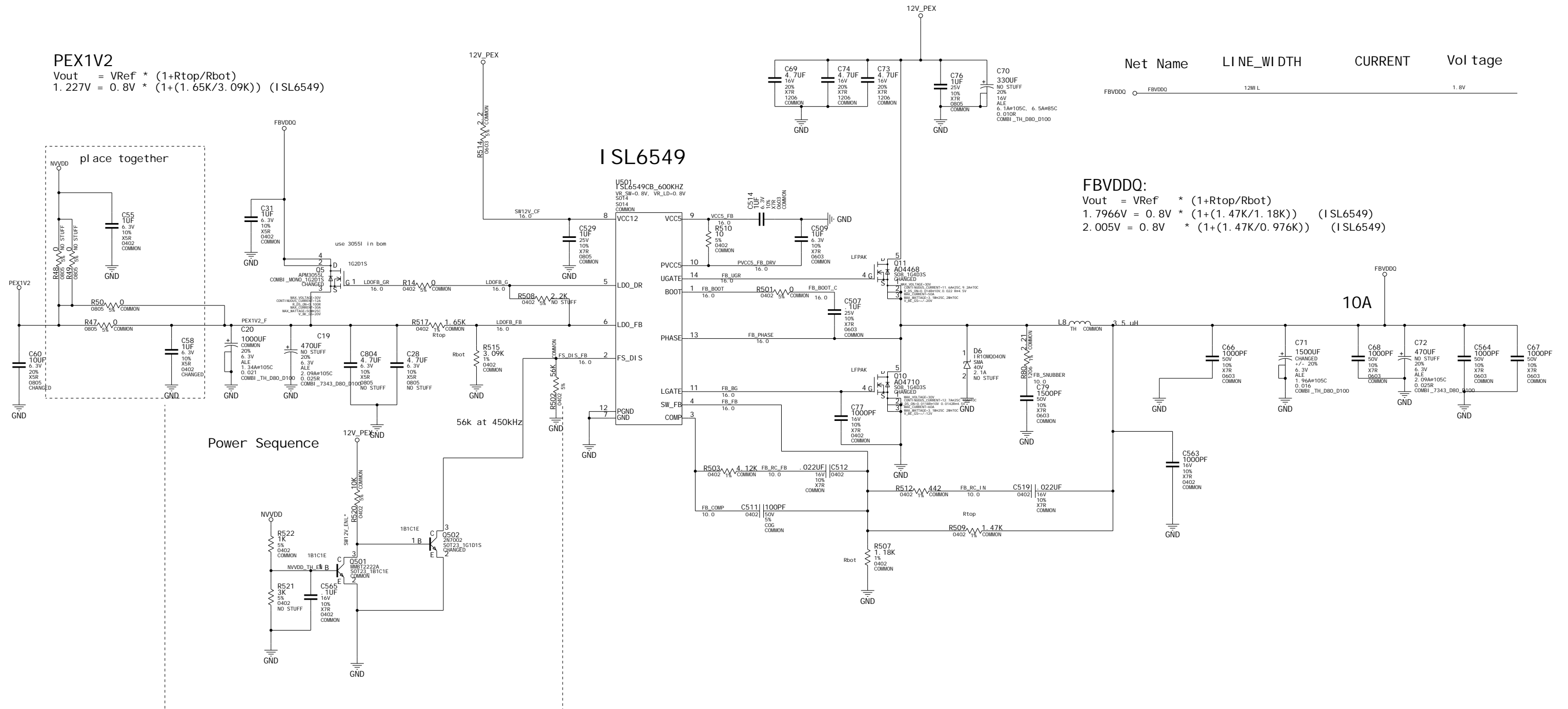
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## PowerSupply111: FBVDDQ, PEX1V2

PEX1V2

$$V_{out} = V_{Ref} * (1 + R_{top}/R_{bot})$$

$$1.227V = 0.8V * (1 + (1.65K/3.09K)) \quad (I\ SL6549)$$



ASSEMBLY	P403-B00 G86-303 459/400MHz 256MB 16Mx16 BGA84 GDDR2 DVI-I -DL+VGA+HDTV-Out HDCP
PAGE DETAIL	PowerSupplyIII: FBVDDQ, PLLVDD

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