

PCI-EXPRESS EDGE CONNECTOR

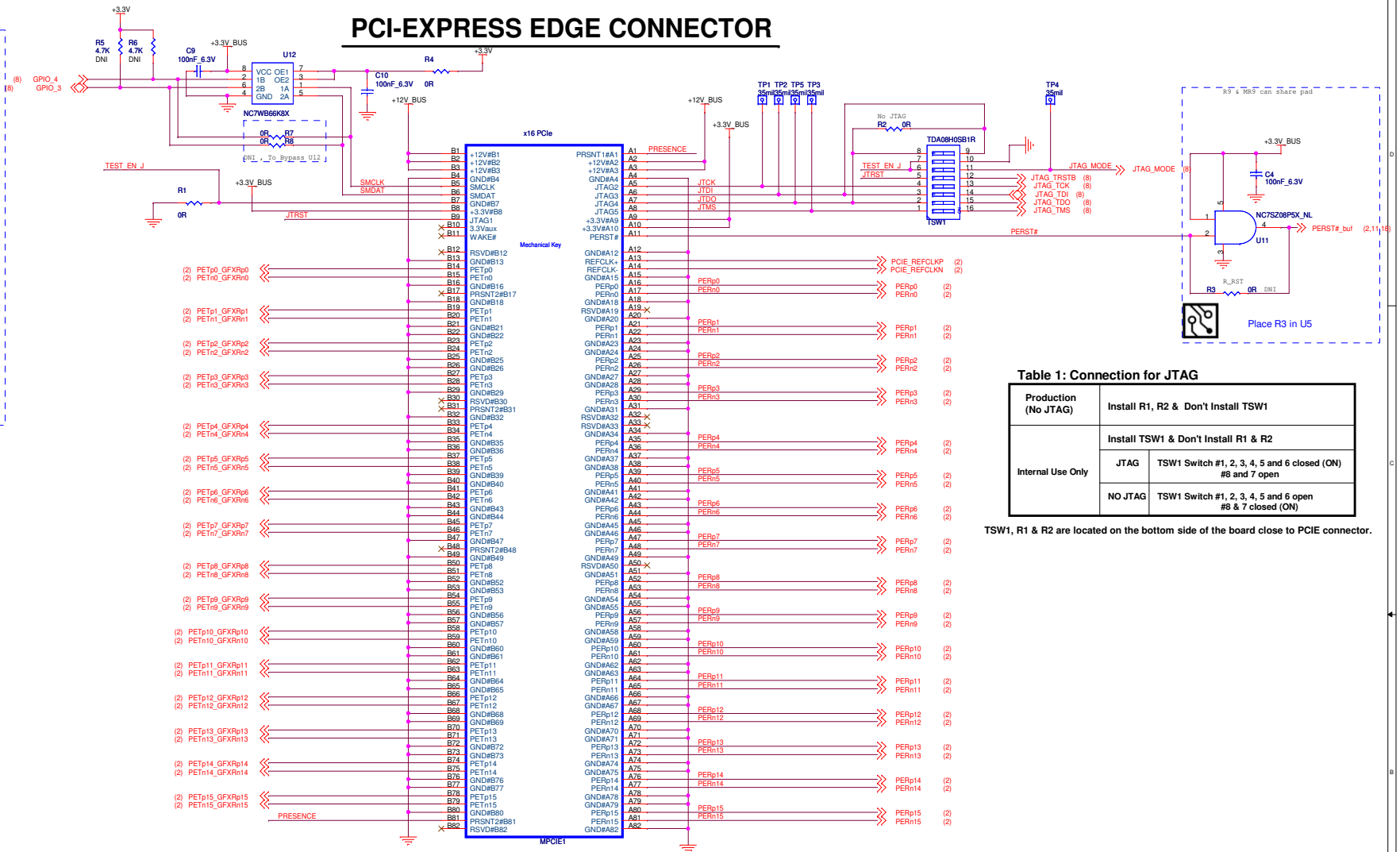
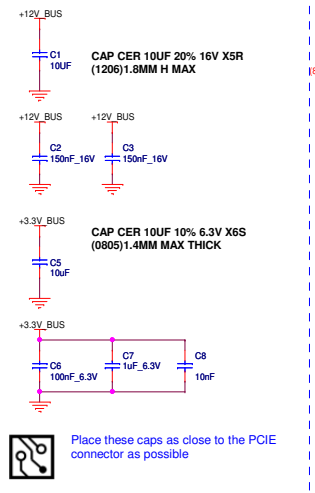


Table 1: Connection for JTAG

Production (No JTAG)	Install R1, R2 & Don't Install TSW1
Internal Use Only	Install TSW1 & Don't Install R1 & R2
	JTAG: TSW1 Switch #1, 2, 3, 4, 5 and 6 closed (ON) #8 and 7 open
NO JTAG	TSW1 Switch #1, 2, 3, 4, 5 and 6 open #8 & 7 closed (ON)

TSW1, R1 & R2 are located on the bottom side of the board close to PCIe connector.

SYMBOL LEGEND

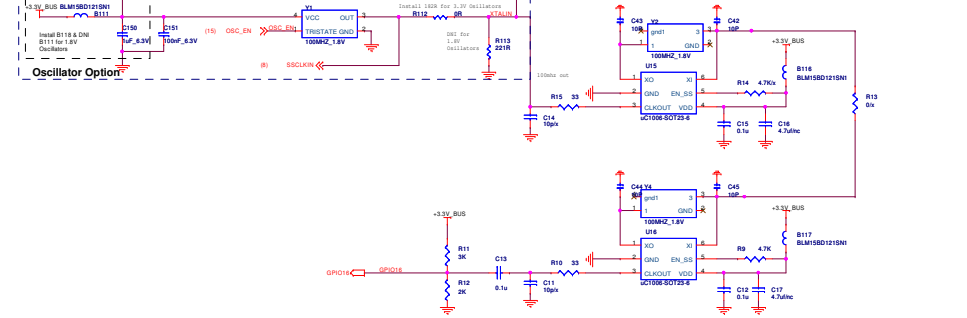
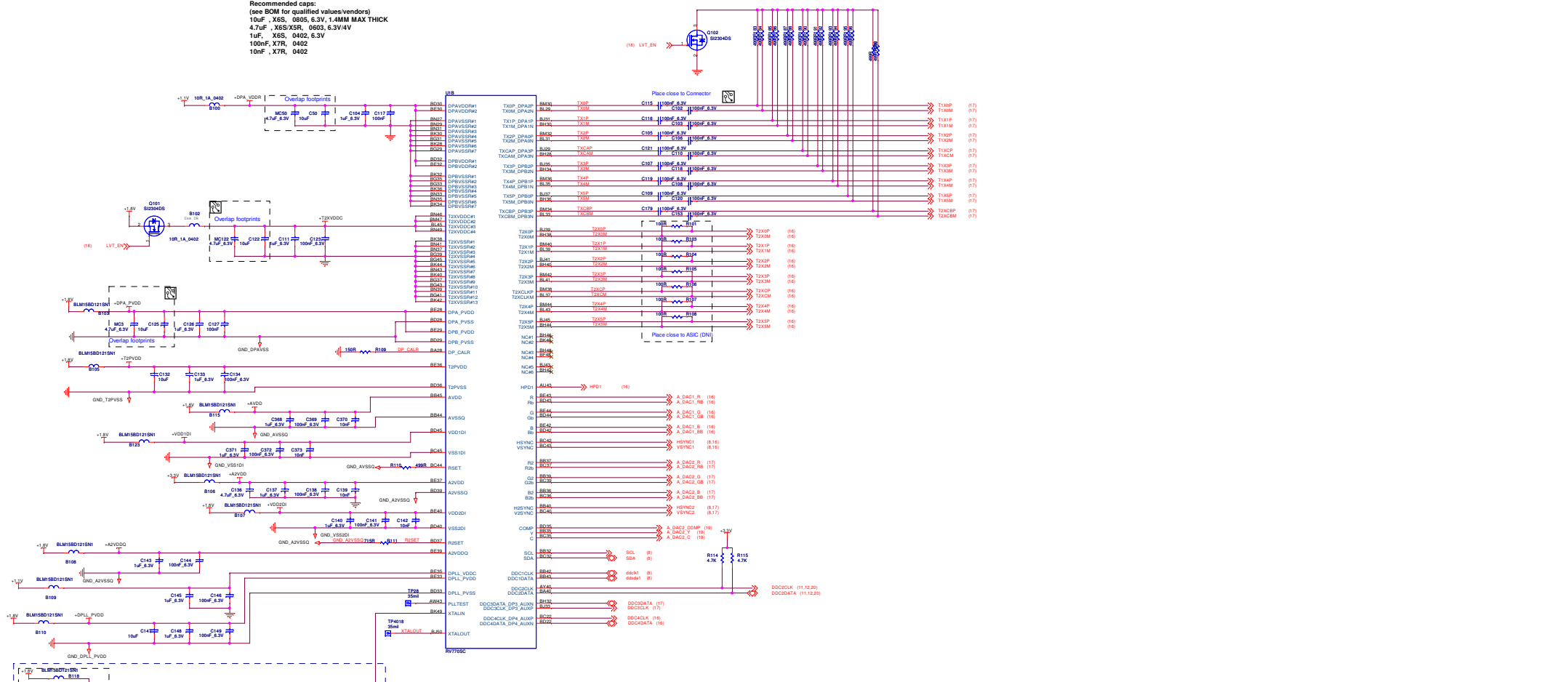
DNI	DO NOT INSTALL
#	ACTIVE LOW
⊥	DIGITAL GROUND
⏏	ANALOG GROUND
⏏	BRING UP ONLY

NOTE: some of the PCIe testpoints will be available through via on traces.

UIA



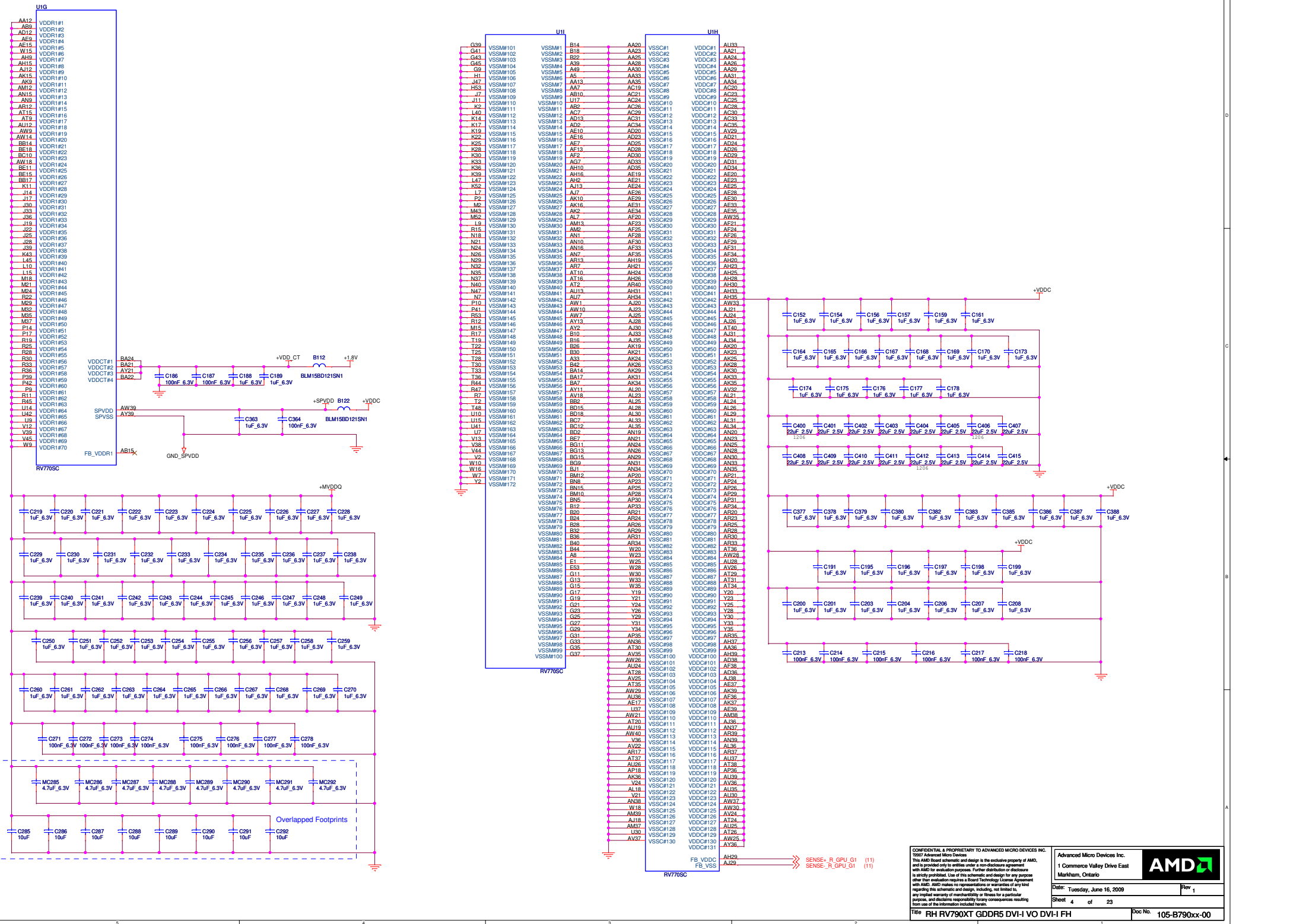
Recommended caps:
 (see BOM for qualified values/vendors)
 10uF , X6S, 0805, 6.3V, 1.4MM MAX THICK
 4.7uF , X6S/XSR, 0603, 6.3V/4V
 1uF , X6S, 0402, 6.3V
 100nF, X7R, 0402
 10nF , X7R, 0402

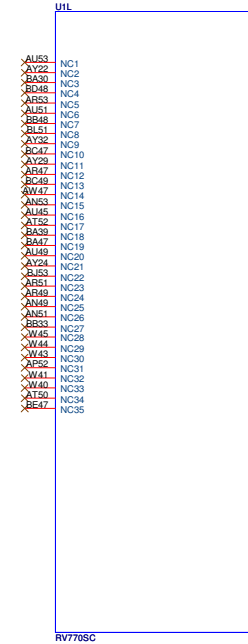
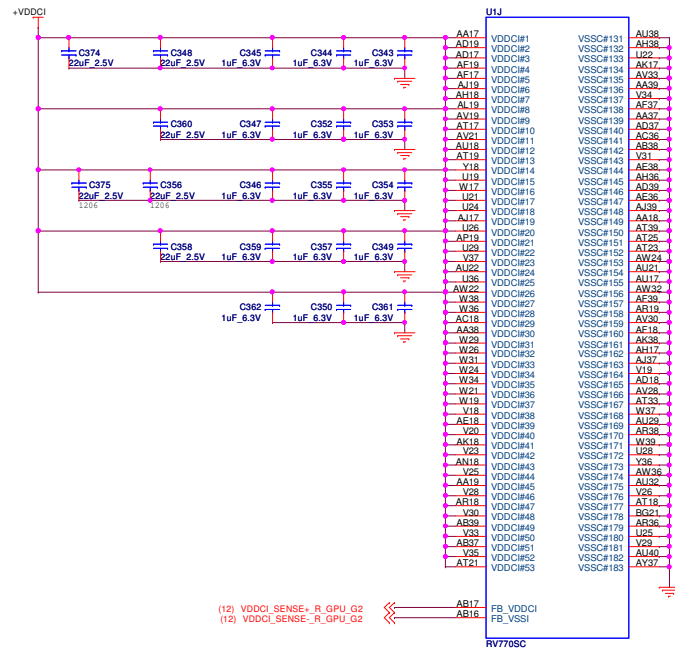


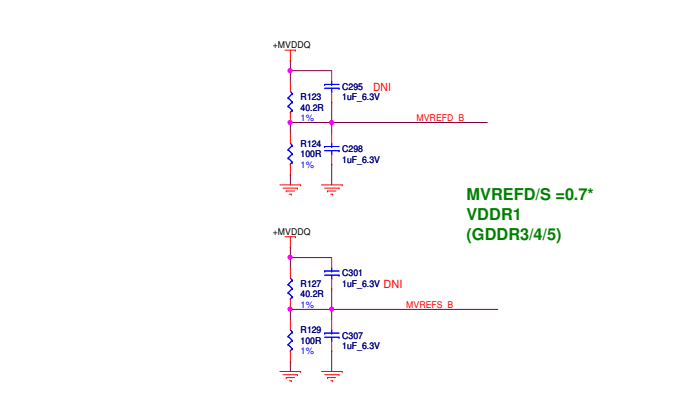
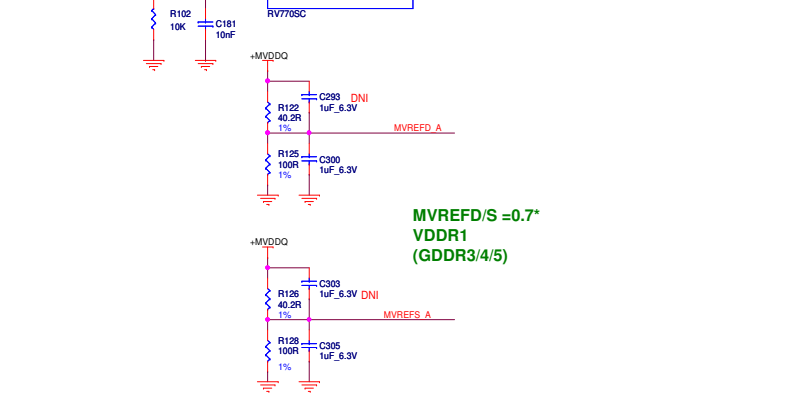
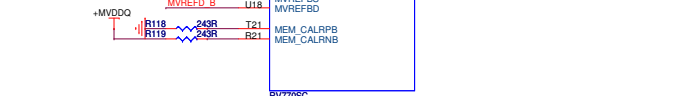
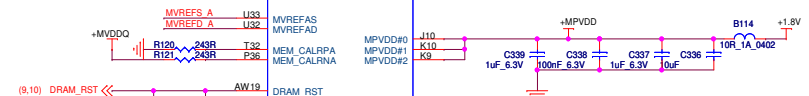
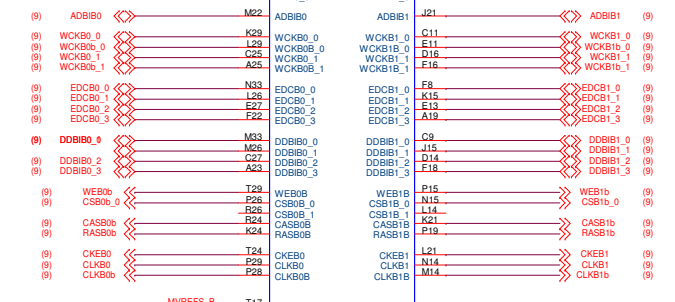
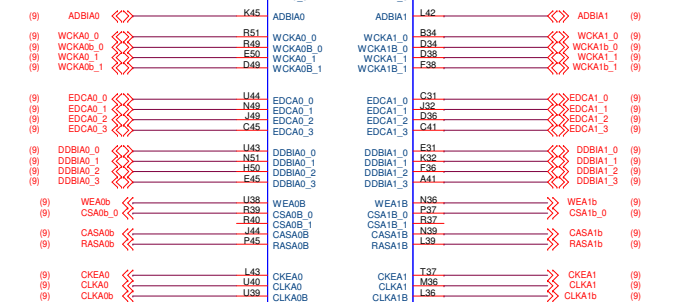
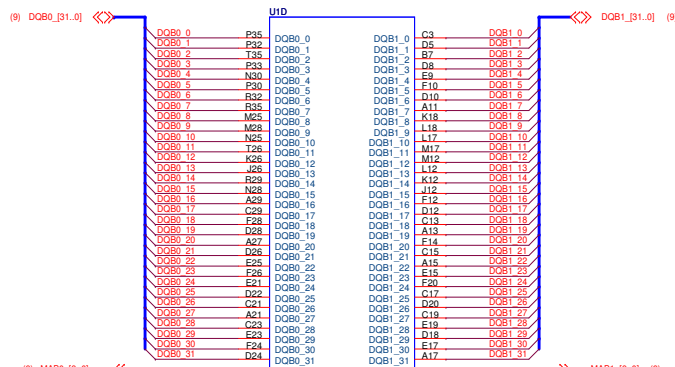
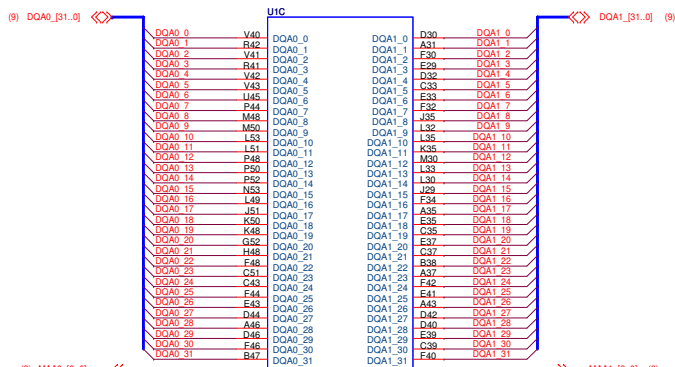
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Advanced Micro Devices Inc.
 1 Governance Valley Drive East
 Markham, Ontario
 Date: Tuesday, June 16, 2009
 Sheet 3 of 23
 Doc No: 105-8790xx-00

RH RV790XT GDDR5 DVH VO DVI-I FH

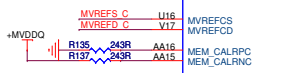
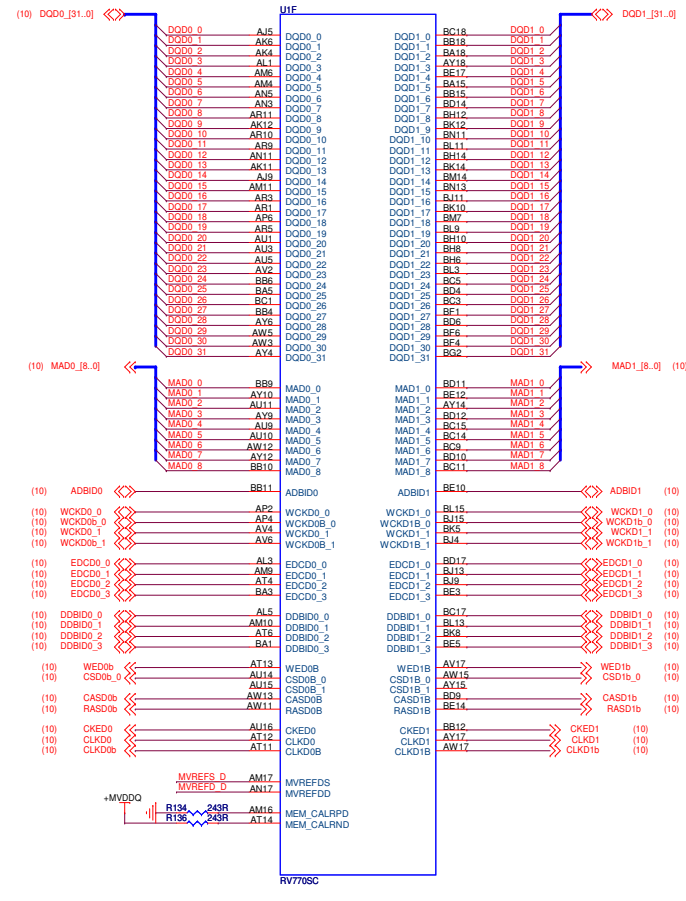
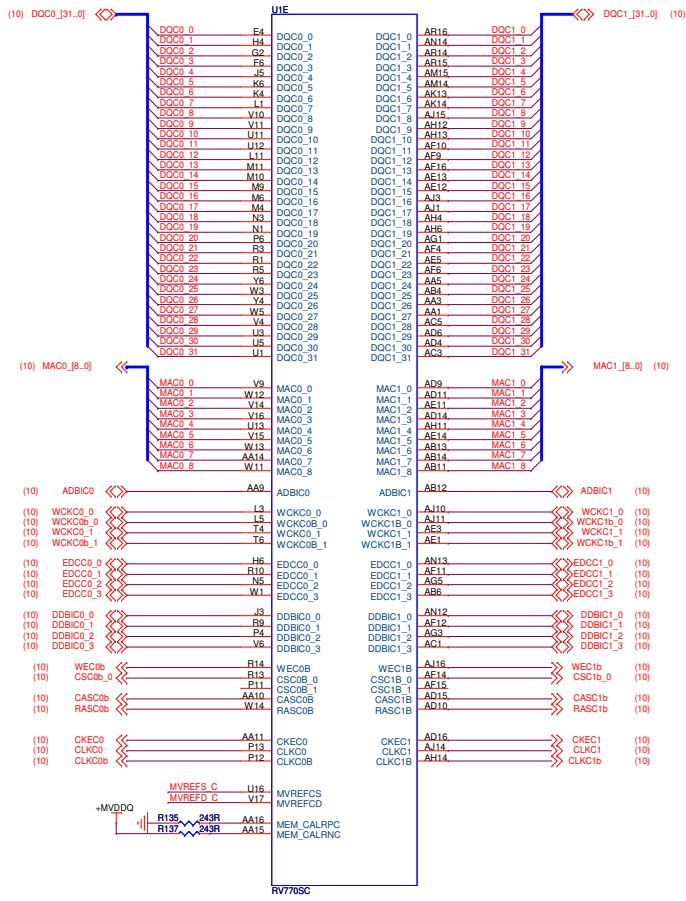






MVREFD/S = 0.7*
VDDR1
(GDDR3/4/5)

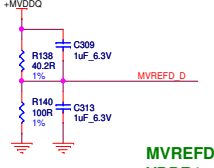
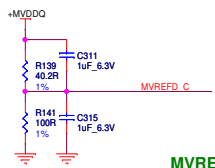
MVREFD/S = 0.7*
VDDR1
(GDDR3/4/5)

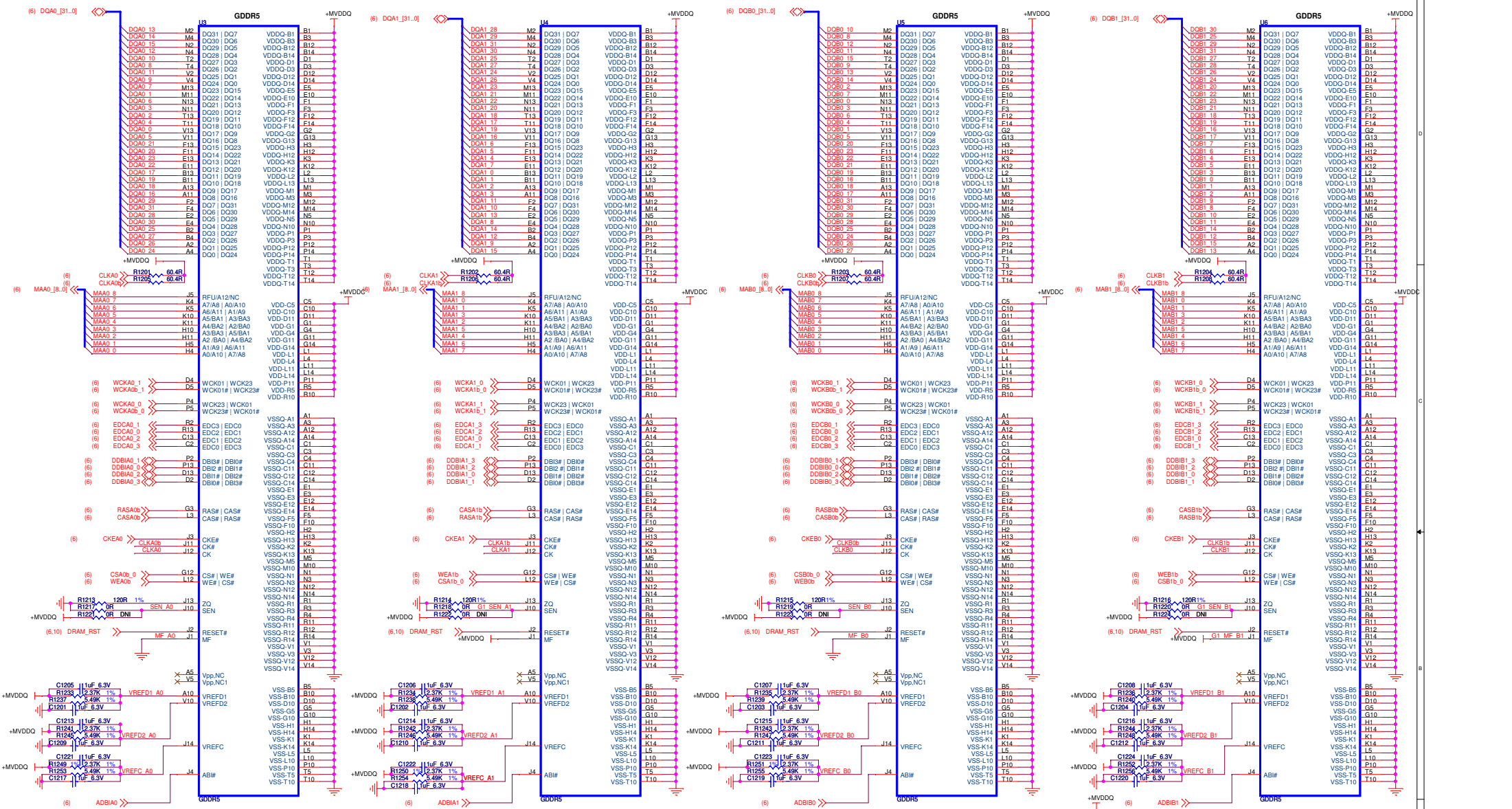


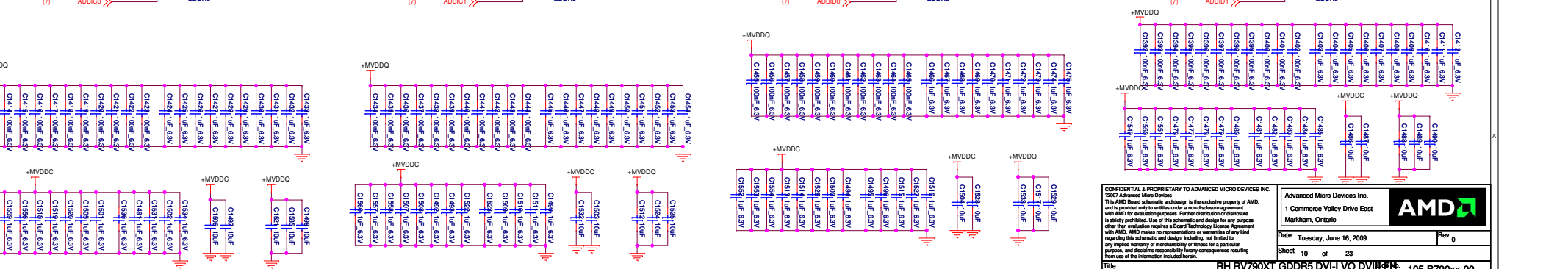
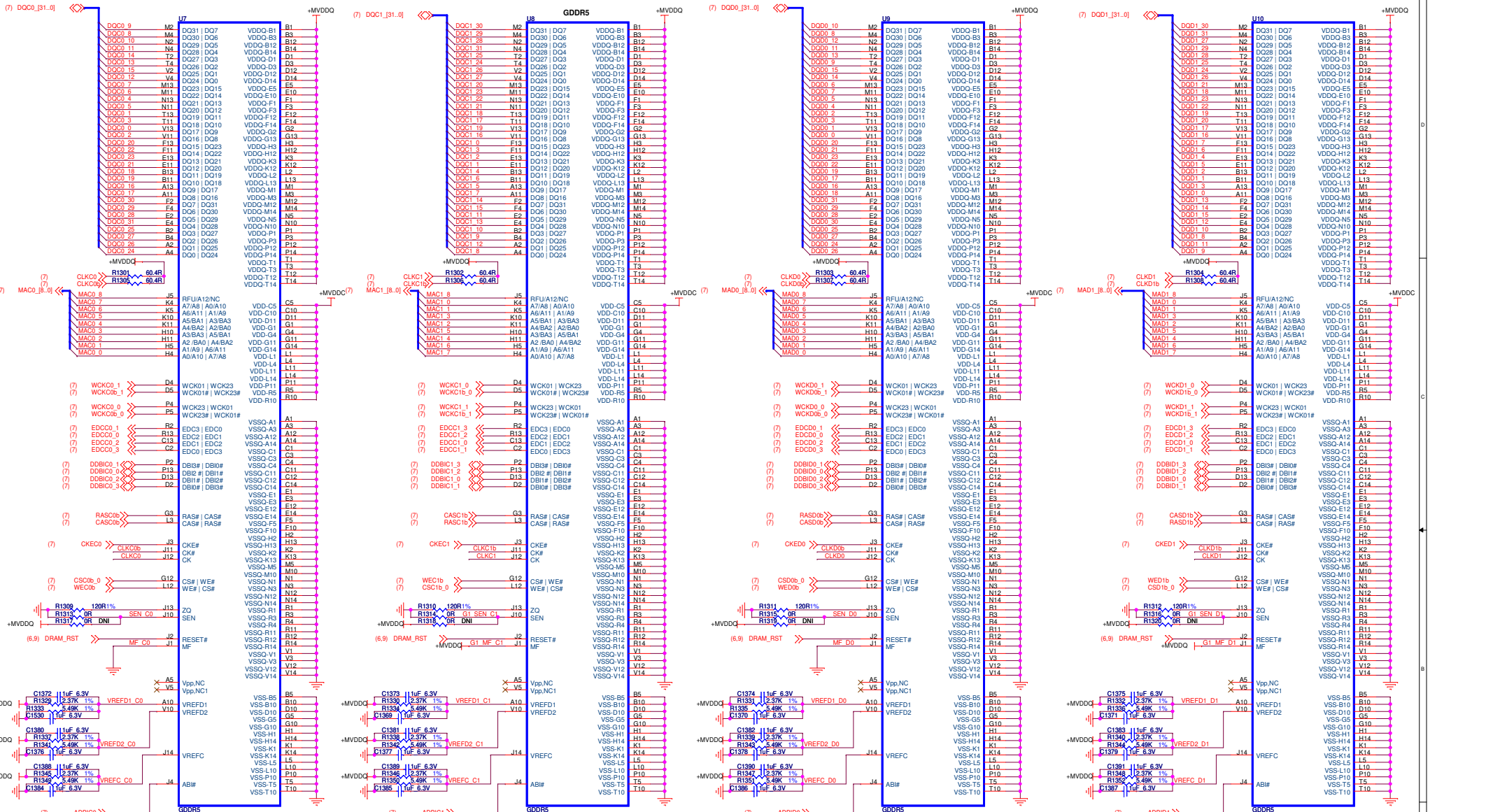
MVREFD/S = 0.7*
VDDR1
(GDDR3/4/5)



MVREFD/S = 0.7*
VDDR1
(GDDR3/4/5)





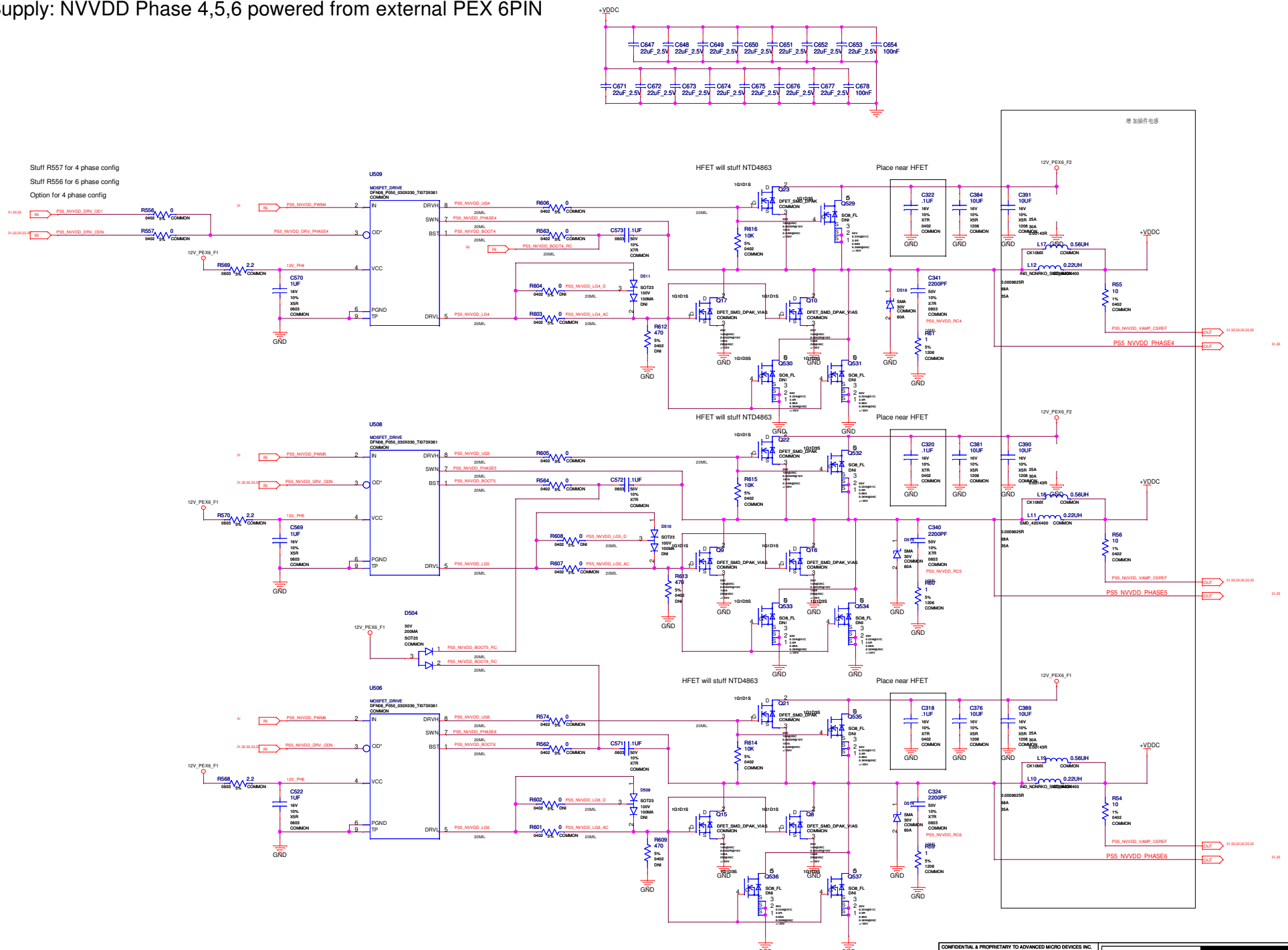


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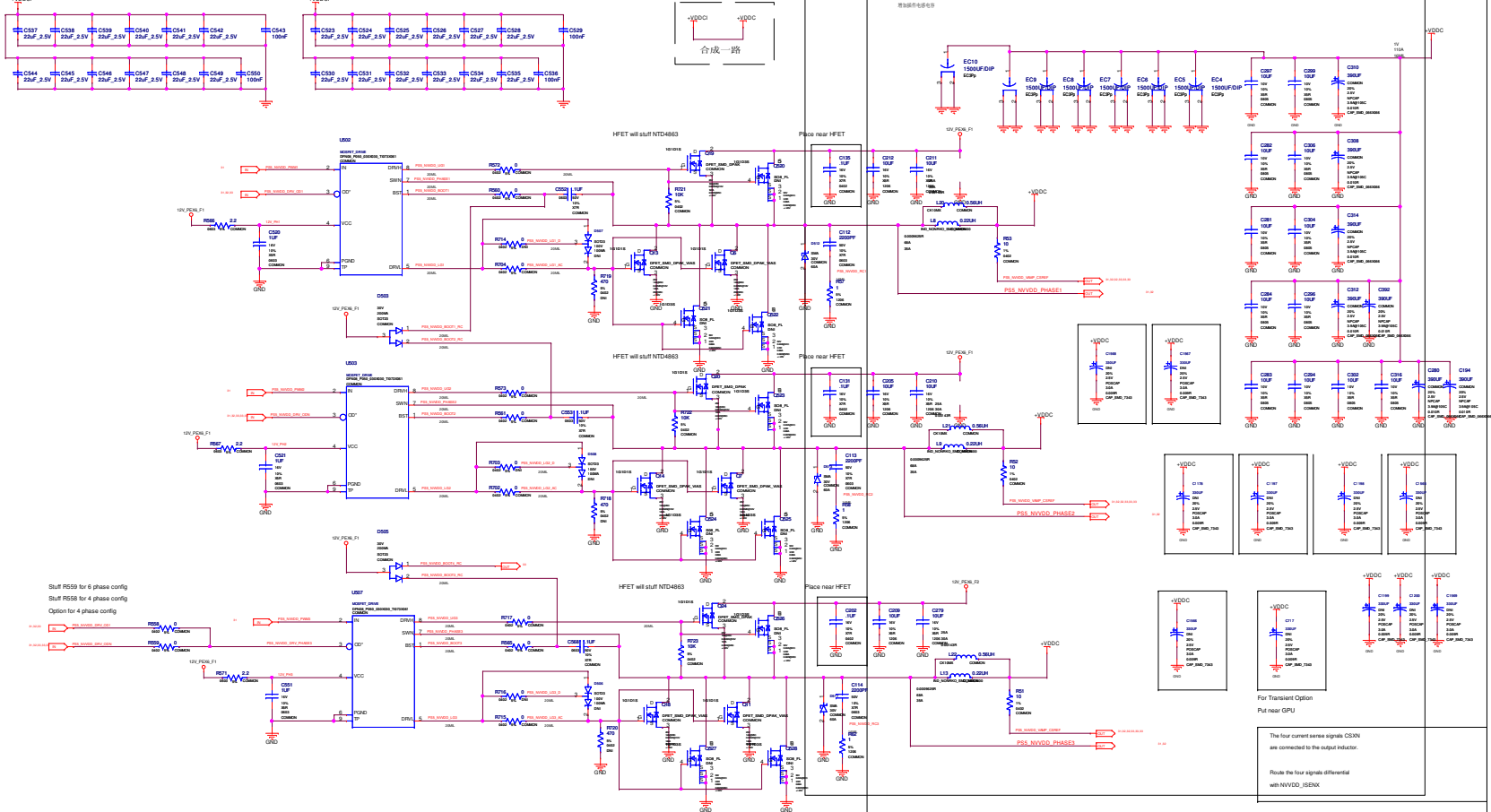
Advanced Micro Devices Inc.
 1 Markham Valley Drive East
 Markham, Ontario
 Date: Tuesday, June 16, 2009
 Sheet 10 of 23
 Rev 0
 Title: RH RV790XT GDDR5 DVH-1 VO DV1#P#P# 105-B790xx-00

Power Supply: NVVDD Phase 4,5,6 powered from external PEX 6PIN

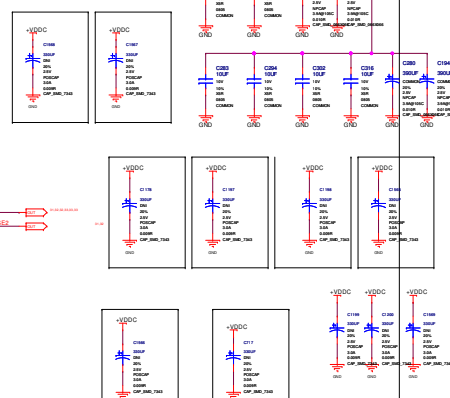
Stuff R557 for 4 phase config
 Stuff R556 for 6 phase config
 Option for 4 phase config



Power Supply: NVVDD Phase 1,2,3 powered from external PEX 6PIN

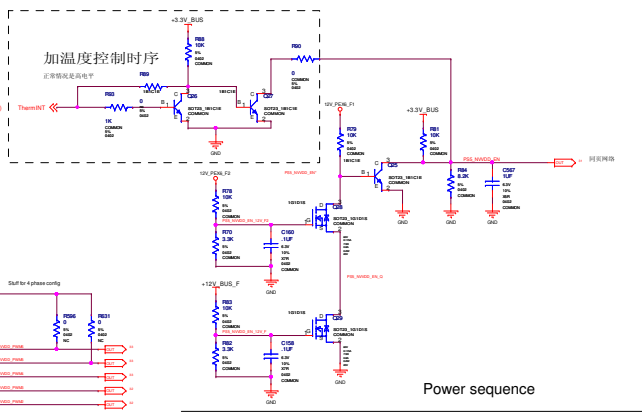
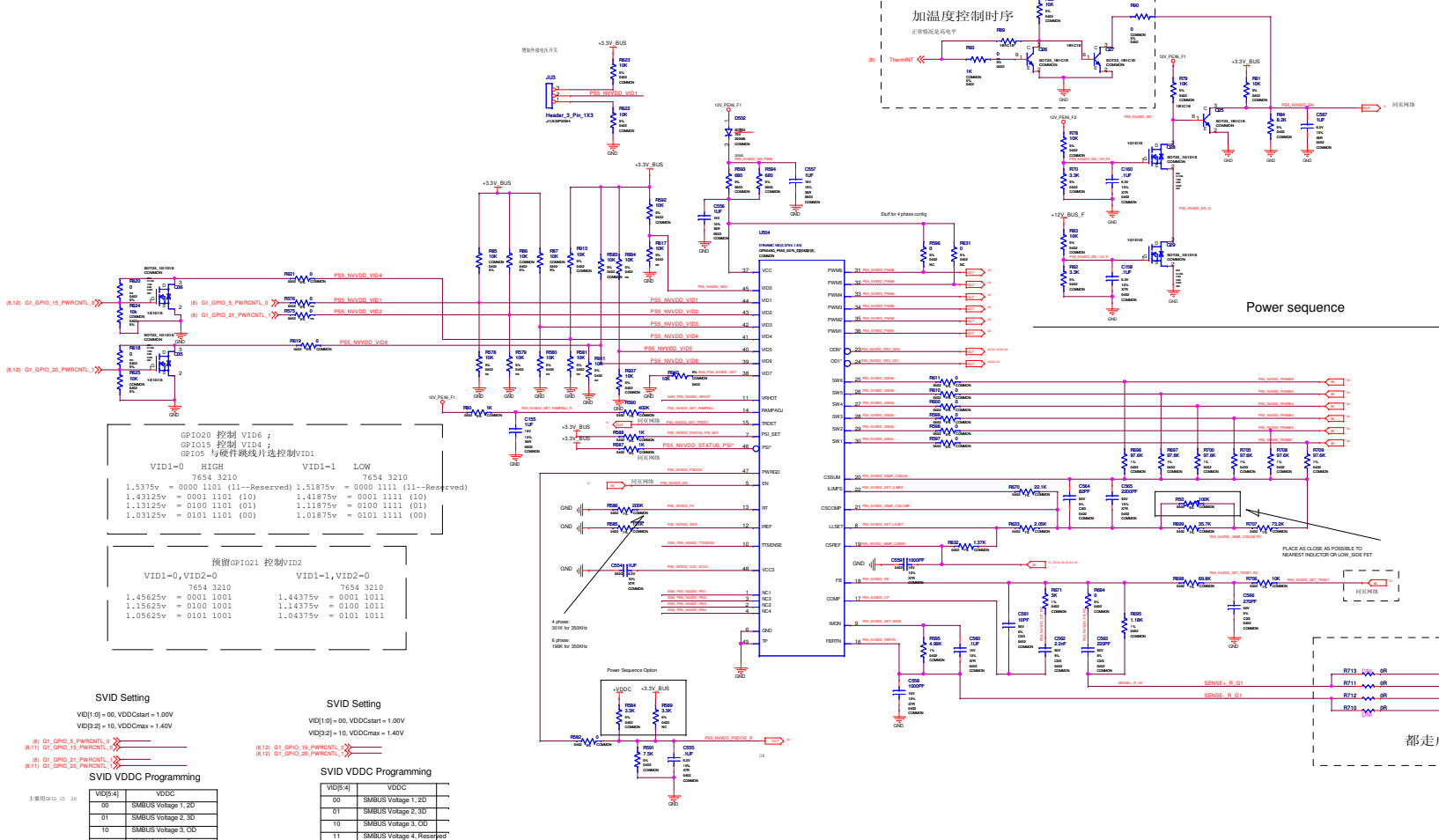


合成一路



For Transient Option
Put near GPU
The four current sense signals CS1N are connected to the output inductor.
Route the four signals differential with NVVDD_SEN1.

Power Supply: NVVDD Regulator



GP1020 控制 VID6 ;
GP1015 控制 VID4 ;
GP105 与硬件跳线片选控制 VID1

VID1=0 HIGH	VID1=1 LOW
7654 3210	7654 3210
1.5375v = 0000 1101 (11--Reserved)	1.51875v = 0000 1111 (11--Reserved)
1.43125v = 0001 1101 (10)	1.41875v = 0001 1111 (10)
1.33125v = 0100 1101 (01)	1.11875v = 0100 1111 (01)
1.03125v = 0101 1101 (00)	1.01875v = 0101 1111 (00)

预留GP1021 控制VID2

VID1=0, VID2=0	VID1=1, VID2=0
7654 3210	7654 3210
1.45625v = 0001 1001	1.44375v = 0001 1011
1.35625v = 0100 1001	1.14375v = 0100 1011
1.05625v = 0101 1001	1.04375v = 0101 1011

SVID Setting
VID[0] = 00, VDDCstart = 1.00V
VID[2] = 10, VDDCmax = 1.40V

(B) G1_GPIO_5_PWRCONTL_0
(B11) G1_GPIO_15_PWRCONTL_0
(B) G1_GPIO_21_PWRCONTL_0
(B11) G1_GPIO_30_PWRCONTL_0

SVID VDDC Programming

VID[0-4]	VDDC
00	SMBUS Voltage 1_2D
01	SMBUS Voltage 2_3D
10	SMBUS Voltage 3_CD
11	SMBUS Voltage 4_Reserved

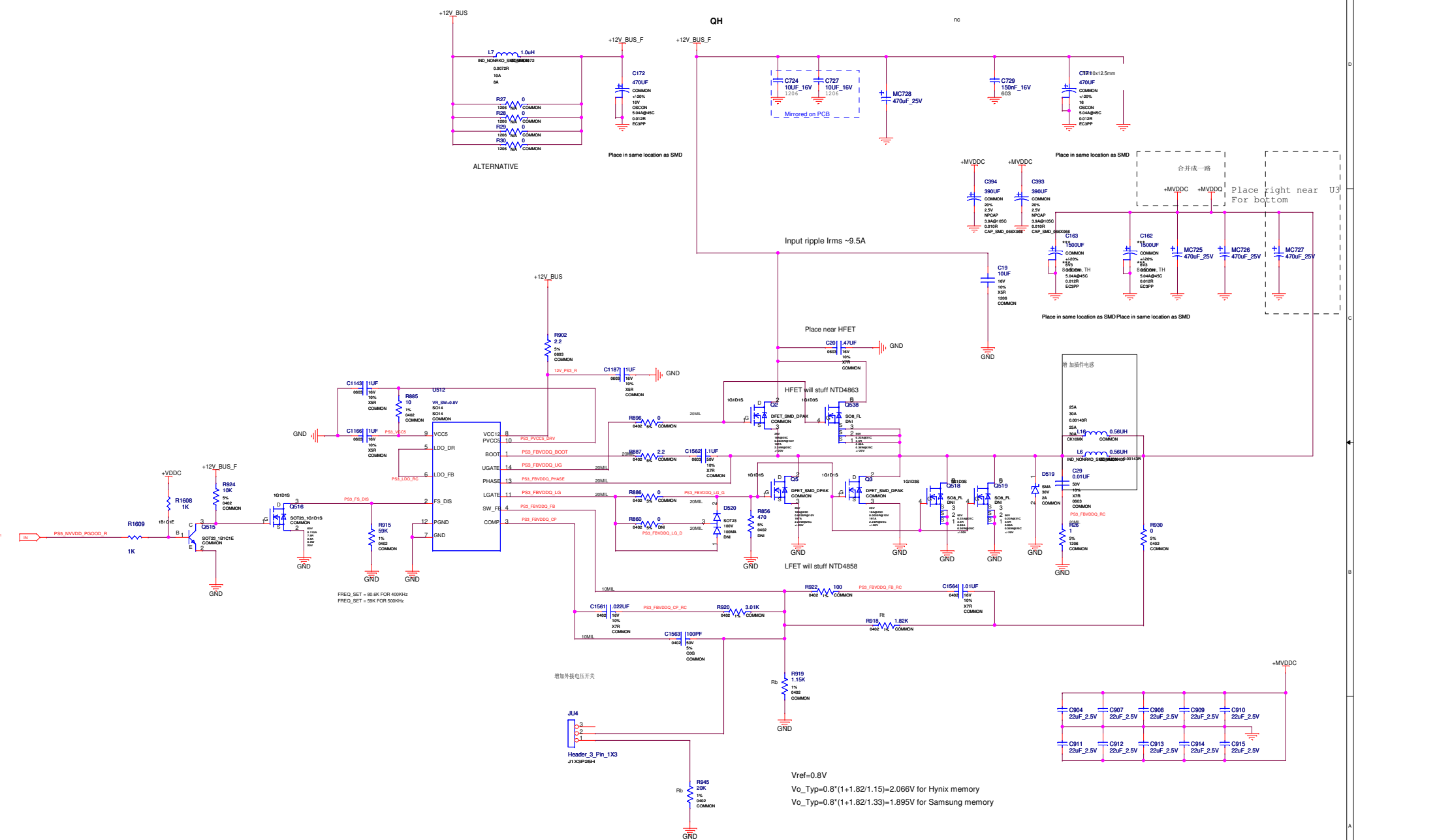
SVID Setting
VID[0] = 00, VDDCstart = 1.00V
VID[2] = 10, VDDCmax = 1.40V

(B12) G1_GPIO_15_PWRCONTL_0
(B12) G1_GPIO_30_PWRCONTL_0

SVID VDDC Programming

VID[0-4]	VDDC
00	SMBUS Voltage 1_2D
01	SMBUS Voltage 2_3D
10	SMBUS Voltage 3_CD
11	SMBUS Voltage 4_Reserved

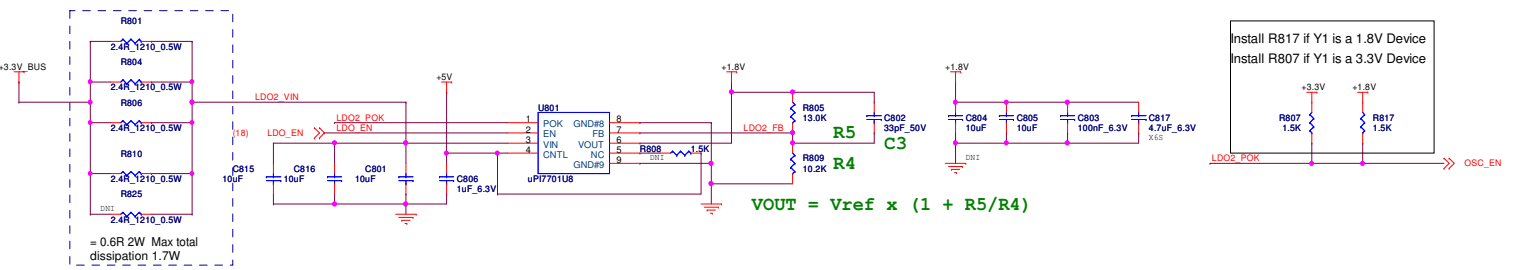




FREQ_SET = 80.0K FOR 400KHz
 FREQ_SET = 59K FOR 500KHz

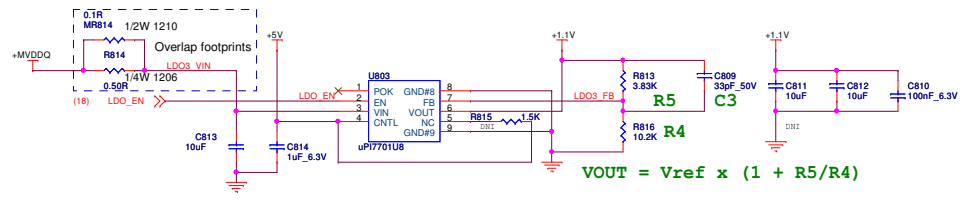
Vref=0.8V
 Vo_Typ=0.8*(1+1.82/1.15)=2.066V for Hynix memory
 Vo_Typ=0.8*(1+1.82/1.33)=1.895V for Samsung memory

LDO #2: Vin = 2.5V to 3.6V MAX Vout = +1.8V +/- 3% Iout = 1.7A (TBV) RMS MAX
PCB: Min 70mm sq. copper area for cooling

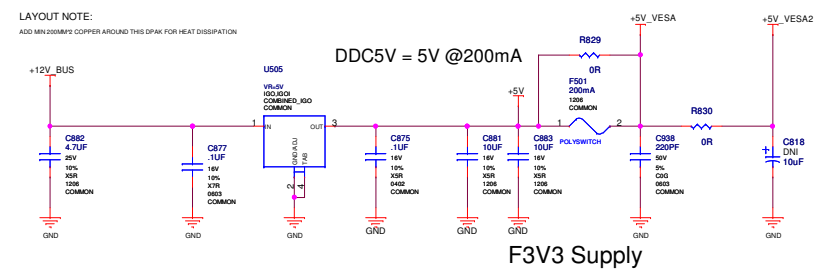


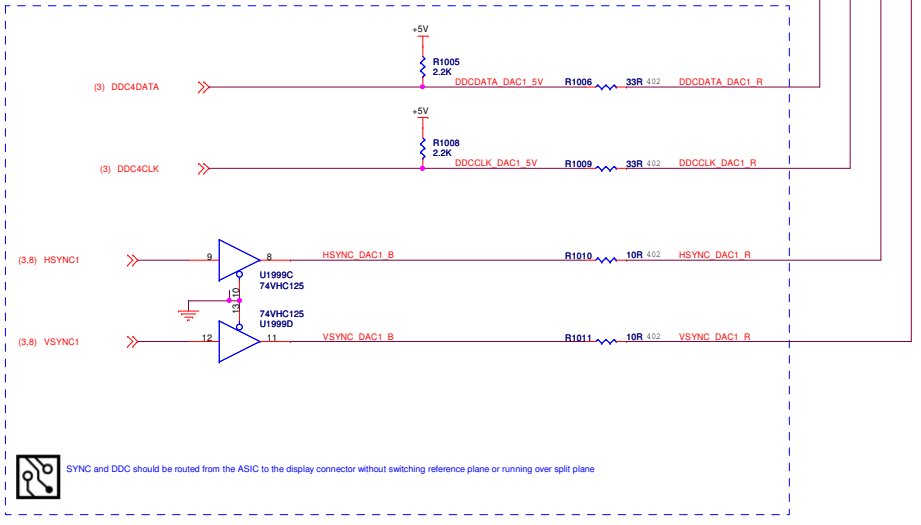
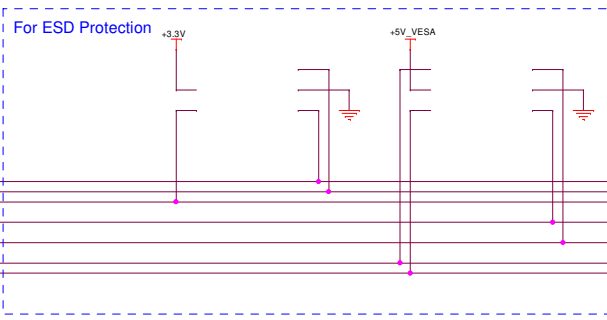
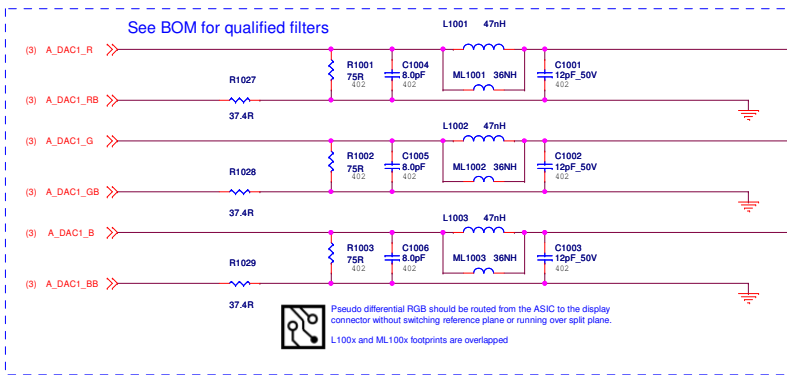
Regulators for +5V, +5V_VESA and +5V_VESA2

LDO #3: Vin = +1.50V to 2.1VMAX Vout = +1.1V +/- 3% Iout = Up to 1.3A (TBV) RMS MAX
PCB: Min 70mm sq. copper area for cooling

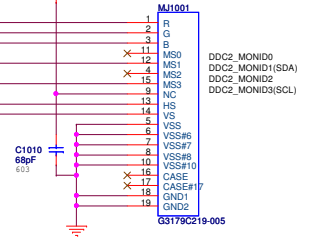


5V and DDC5V Supply



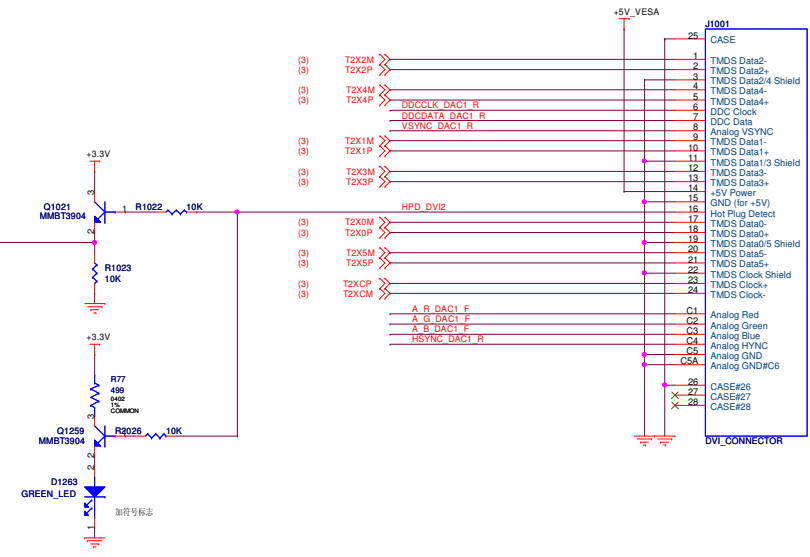


A R DAC1 F
A G DAC1 F
A B DAC1 F
DDCDATA_DAC1_R
DDCLK_DAC1_R
HSYNC_DAC1_R
VSYNC_DAC1_R

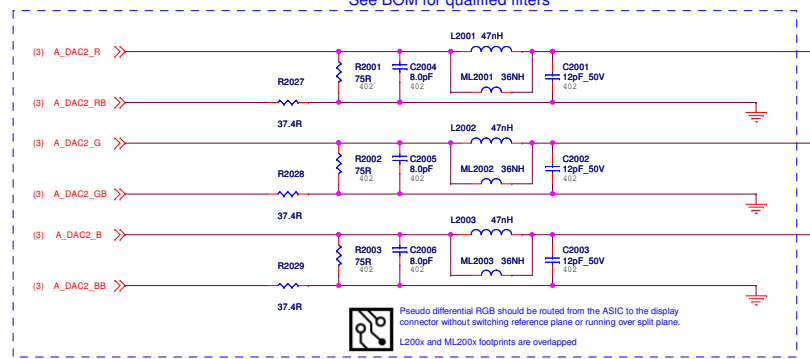


DB15 pin	Standard VGA	DDC1 Host	DDC2B or DDC2B+ Host	DDC2AB Host	DDC1/2 Display
11	Monitor ID bit 0	Monitor ID bit 0	Monitor ID bit 0	Monitor ID bit 0	Optional SDA
12	Monitor ID bit 1	Data from display	SDA	SDA	Optional SDA
4	Monitor ID bit 2	Open	Monitor ID bit 2	Monitor ID bit 2	Optional SCL
15	Monitor ID bit 3				Optional SCL
9	N/C	+5V	+5V	+5V	Optional
Hardware Support	No	Yes	Yes	No	Yes

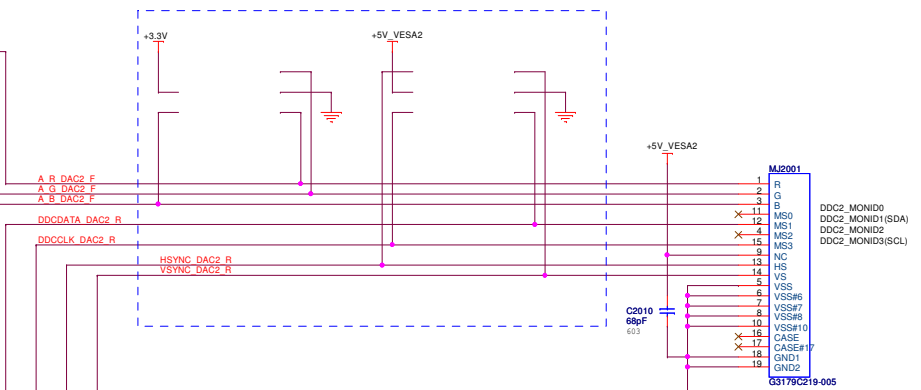
Based on VESA Display Data Channel (DDC) Standard Ver. 3. Dec. 15, 1997



See BOM for qualified filters

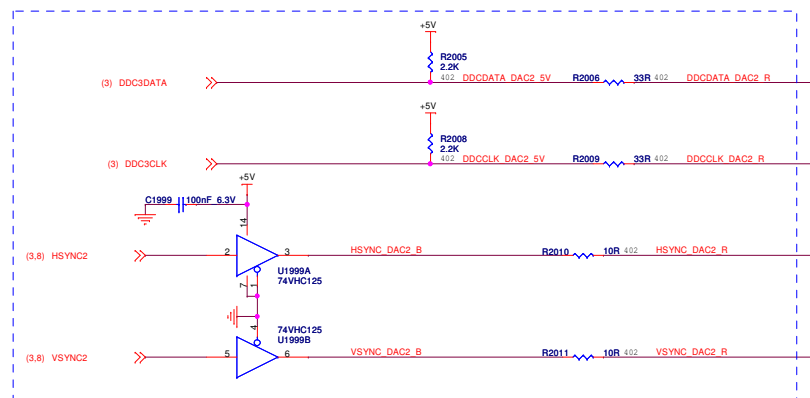


Pseudo differential RGB should be routed from the ASIC to the display connector without switching reference plane or running over split plane.
L200x and ML200x footprints are overlapped

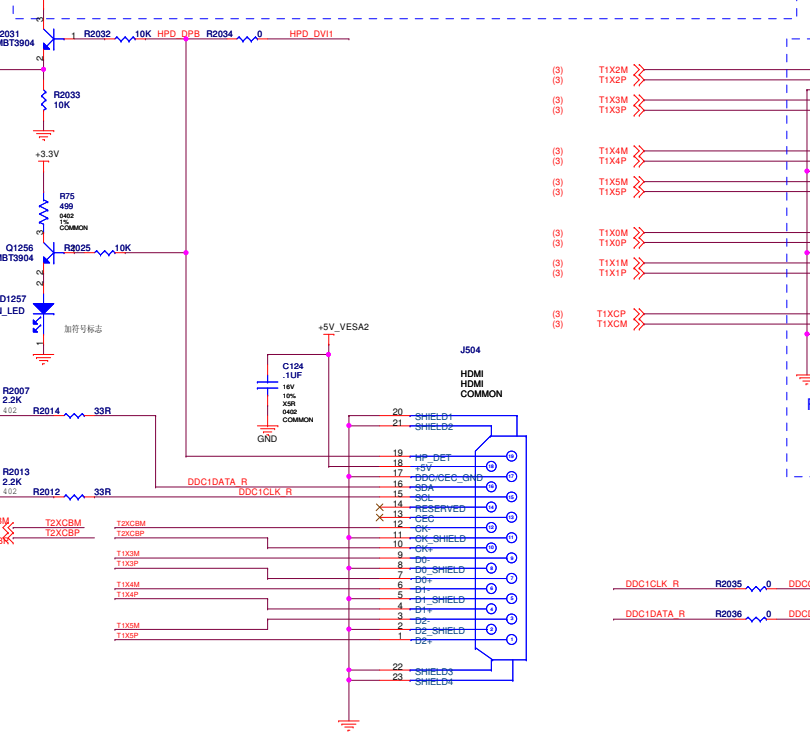


DB15 pin	Standard VGA	DDC1 Host	DDC2B or DDC2B+ Host	DDC2AB Host	DDC1/2 Display
11	Monitor ID bit 0	Monitor ID bit 0	Monitor ID bit 0	Monitor ID bit 0	Optional SDA
12	Monitor ID bit 1	Data from display	SDA	SDA	SDA
4	Monitor ID bit 2	Monitor ID bit 2	Monitor ID bit 2	Monitor ID bit 2	Optional SCL
15	Monitor ID bit 3	Open	SCL	Monitor ID bit 2	SCL
9	N/C	+5V	+5V	+5V	Optional
10	N/C	50mA min	50mA min	50mA min	
13	Mechanical Key	1A max	1A max	1A max	
Hardware Support	No	Yes	Yes	No	Yes

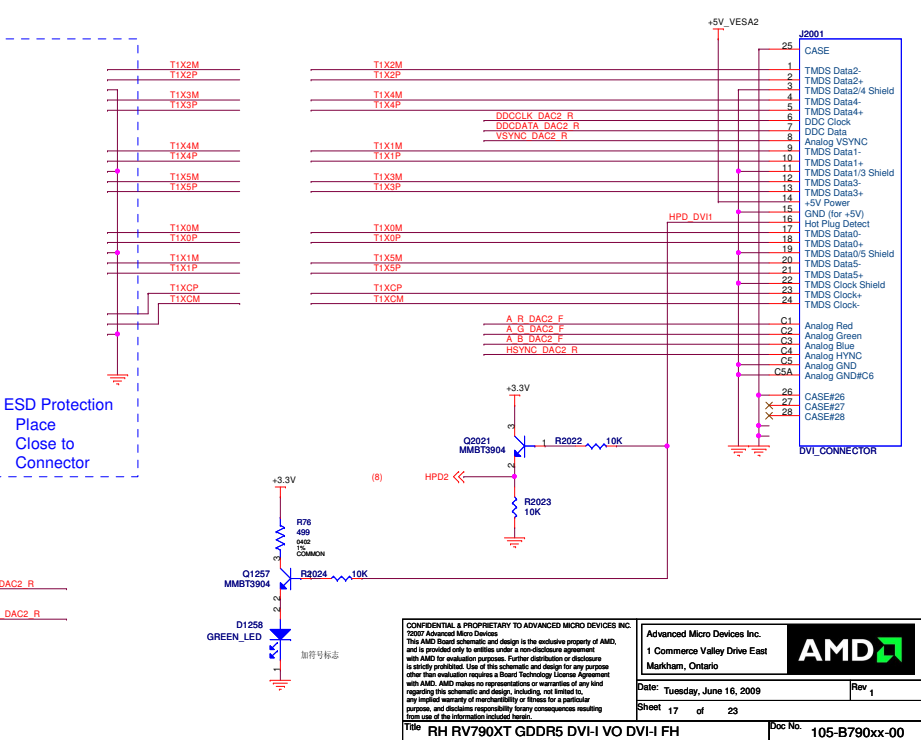
Based on VESA Display Data Channel (DDC) Standard Ver. 3 Dec. 15, 1997



SYNC and DDC should be routed from the ASIC to the display connector without switching reference plane or running over split plane



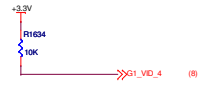
For ESD Protection Place Close to Connector



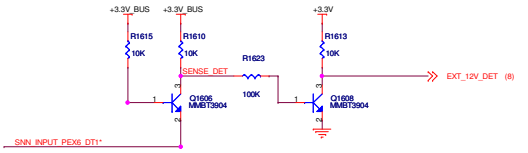
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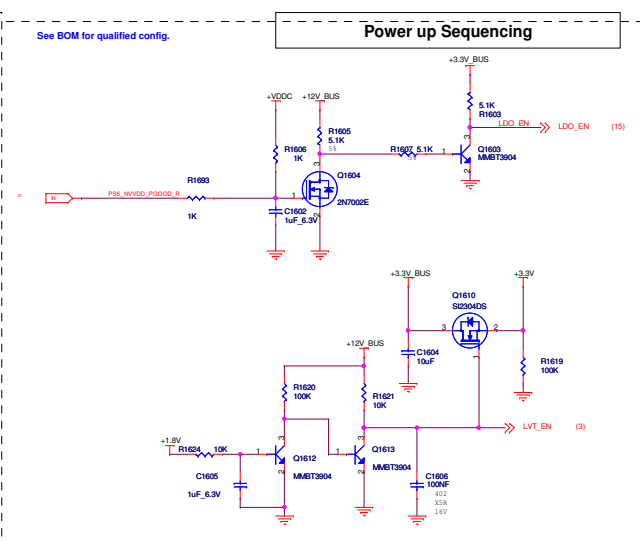
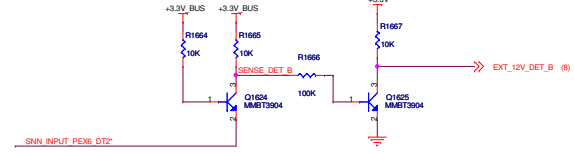
Date: Tuesday, June 16, 2009 Rev 1
 Sheet 17 of 23
 Title: RH RV790XT GDDR5 DVI-I VO DVI-I FH Doc No: 105-B790xx-00



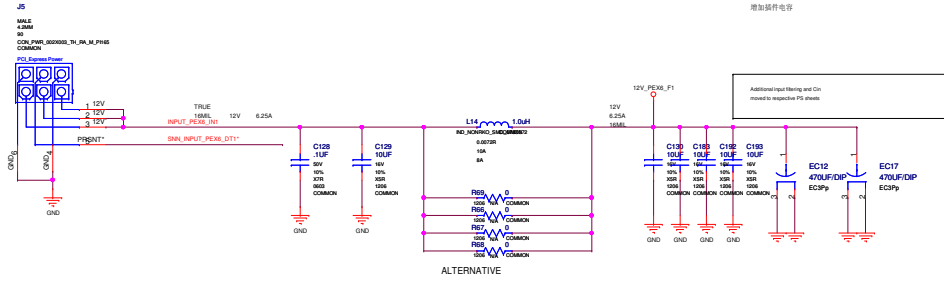
Phase Control Support



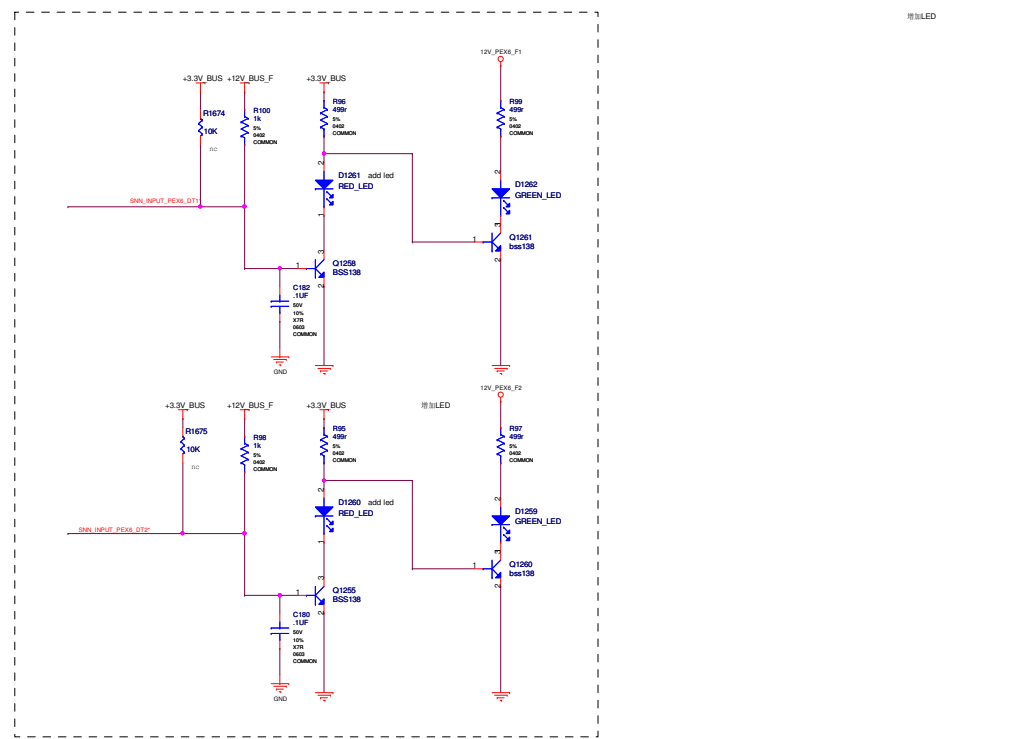
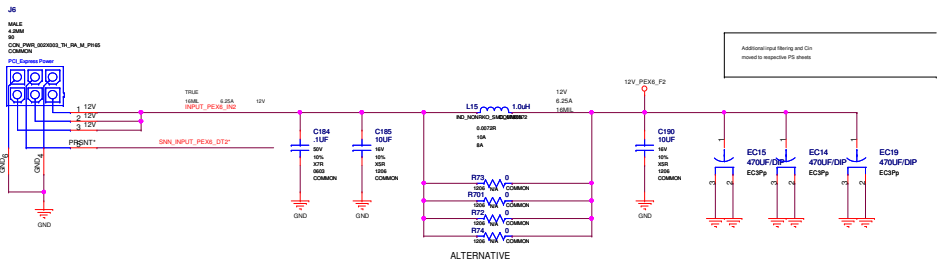
Phase Control Support

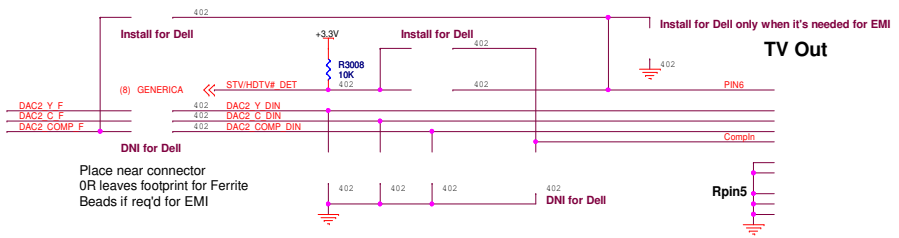
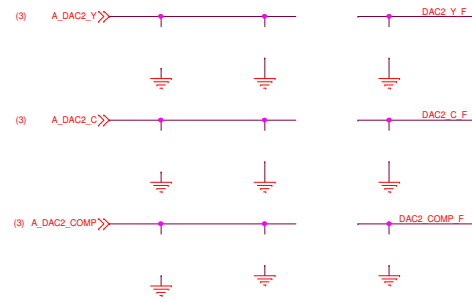


PEX6 INPUT 1 - 2x3 PCIE CON 75W MUST BE ATTACHED AND POWERED TO START BOARD



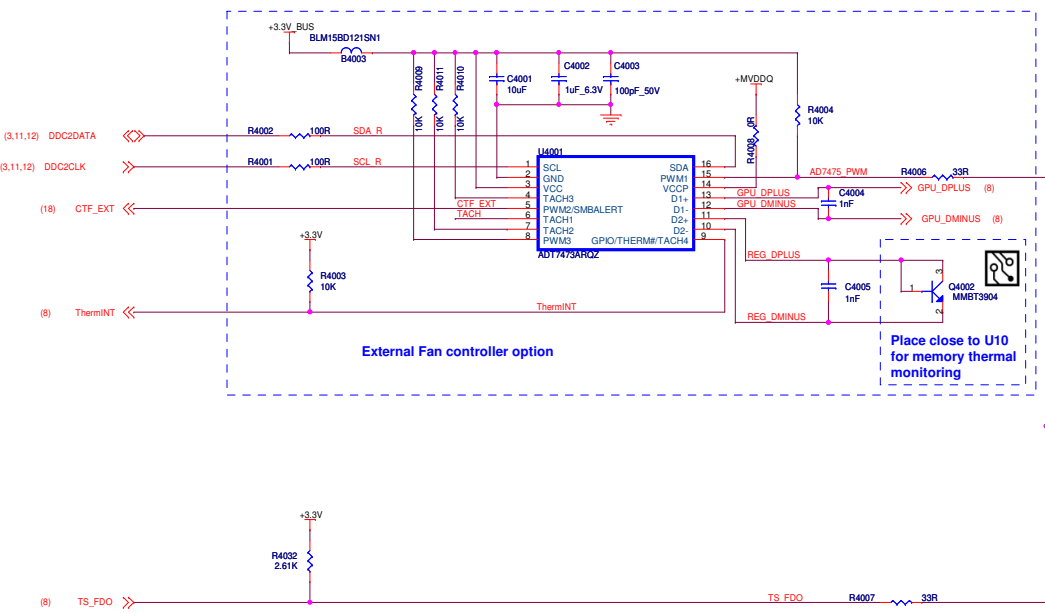
PEX6 INPUT 2 - 2x3 PCIE CON 75W MUST BE ATTACHED AND POWERED TO START BOARD





DNI for Dell
Place near connector
OR leaves footprint for Ferrite
Beads if req'd for EMI

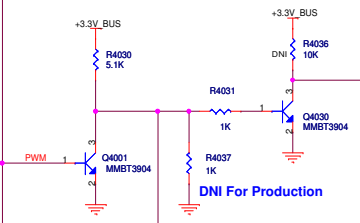
- 4-pin Svideo MiniDIN P/N 6070001000G



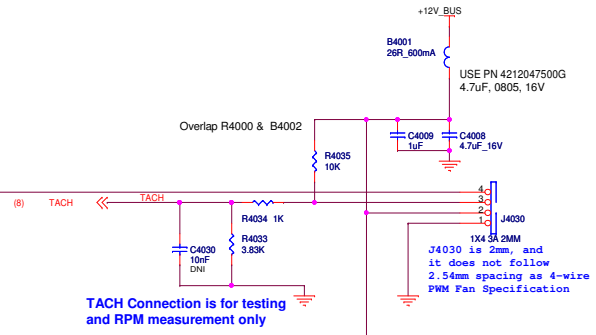
Warning: TS_FDO is not 5V tolerant. MAX sink current 1.65mA

(18) FAN_FULL_SPEED#

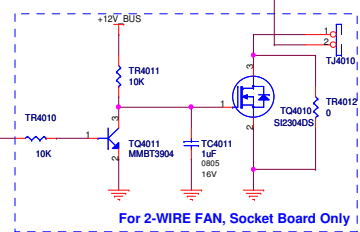
For 4-WIRE FAN, Production



DNI For Production

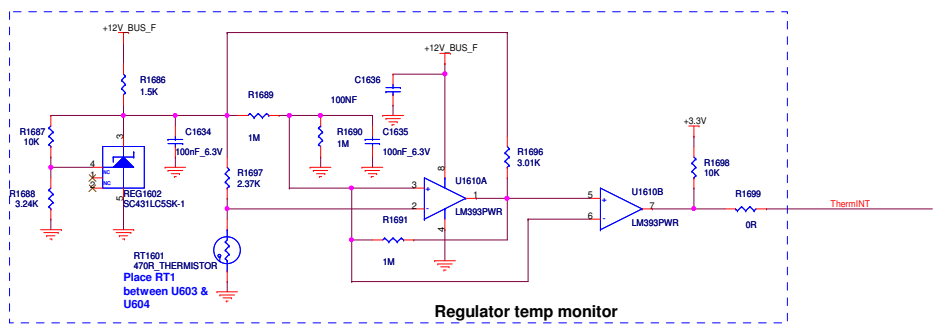


TACH Connection is for testing and RPM measurement only

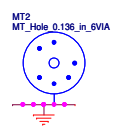
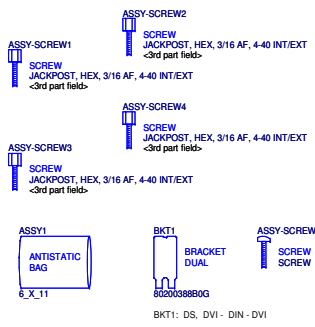


For 2-WIRE FAN, Socket Board Only

If Critical Temperature is reached this will force the fan to run at full speed while power is removed from GPU & rest of the board. This is an open collector signal. Active level is hard pull down to ground.



Regulator temp monitor





Title

RH RV790XT GDDR5 DVI-I VO DVI-I FH

Schematic No.

105-B790xx-00

Date:

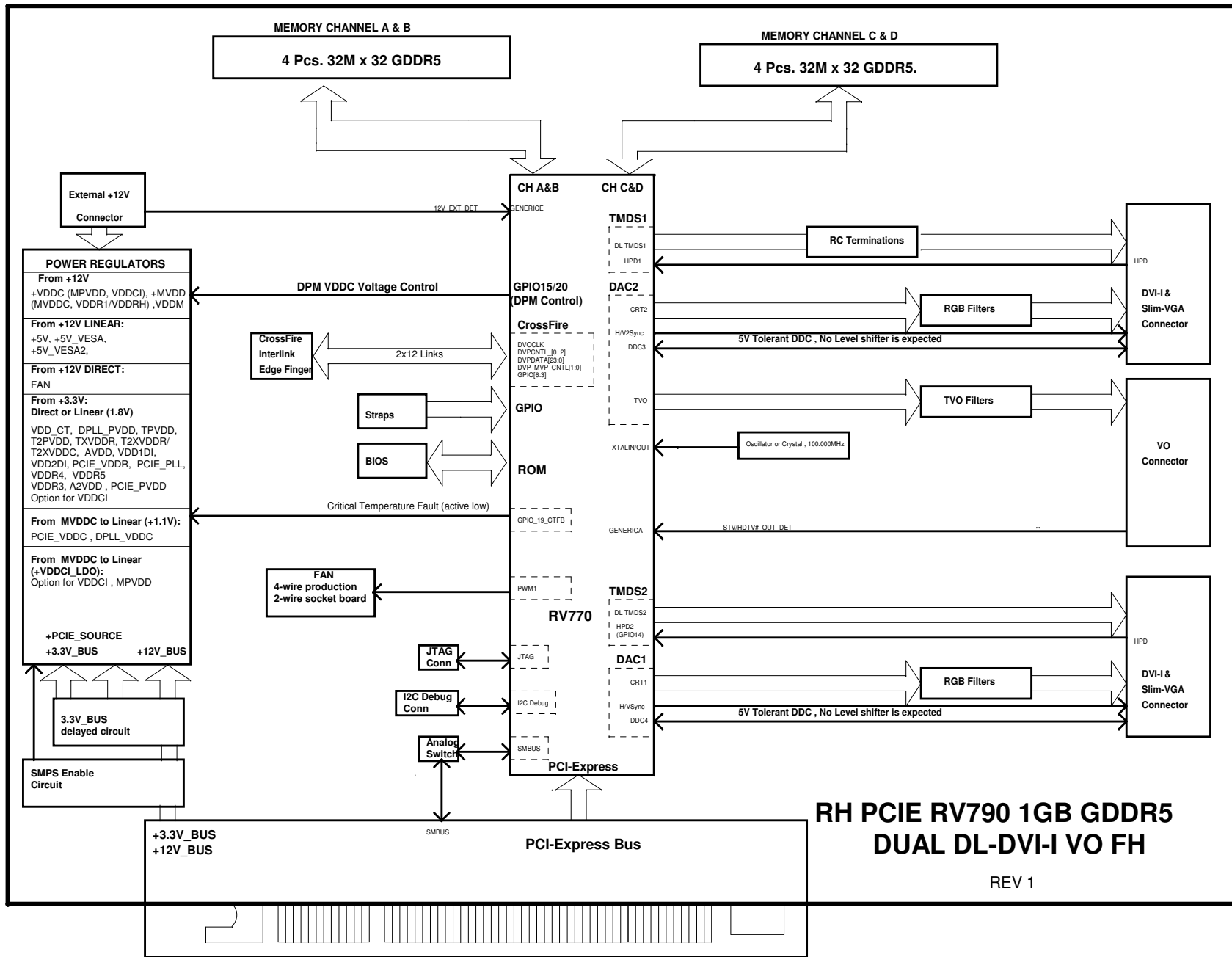
Tuesday, June 16, 2009

REVISION HISTORY

NOTE: This schematic represents the PCB, it does not represent any specific SKU.
For Stuffing options (component values, DNI#, ? please consult the product specific BOM.
Please contact AMD representative to obtain latest BOM closest to the application desired.

Rev 1

Sch Rev	PCB Rev	Date	REVISION DESCRIPTION
0	00A	08/01/04	Initial design for B790
	00	09/02/03	-00 Release with no Schematic change however C817 is refreshed to correct the footprint issue on rev A



**RH PCIE RV790 1GB GDDR5
DUAL DL-DVI-I VO FH**

REV 1