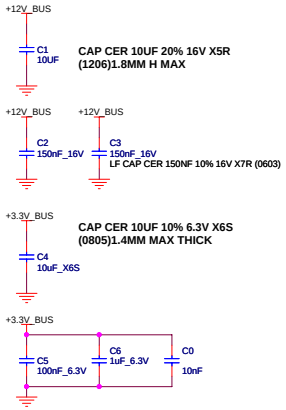
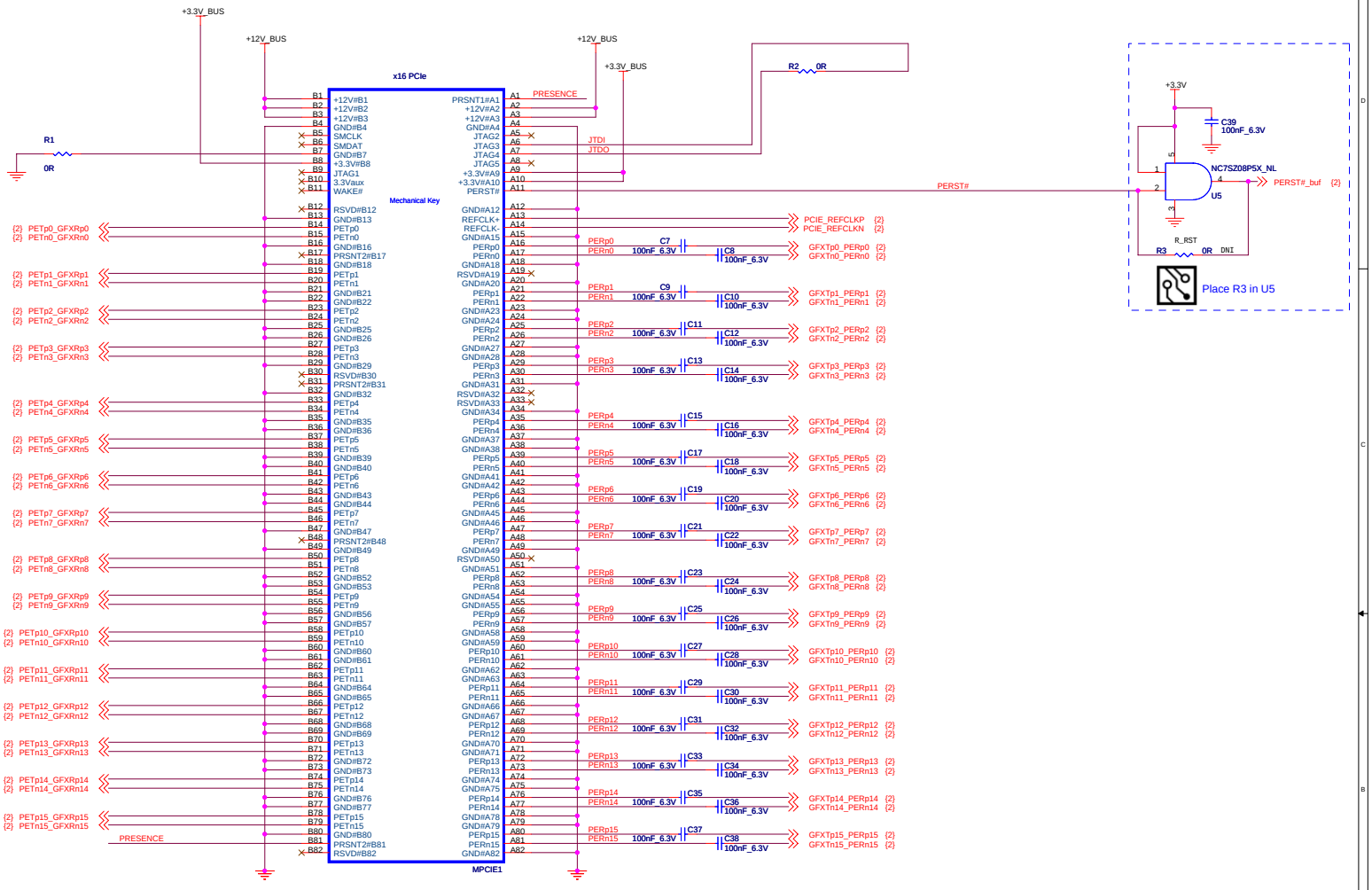
PCI-EXPRESS EDGE CONNECTOR



Place these caps as close to the PCIE connector as possible



SYMBOL LEGEND	
DNI	DO NOT INSTALL
#	ACTIVE LOW
	DIGITAL GROUND
	ANALOG GROUND
BUO	BRING UP ONLY

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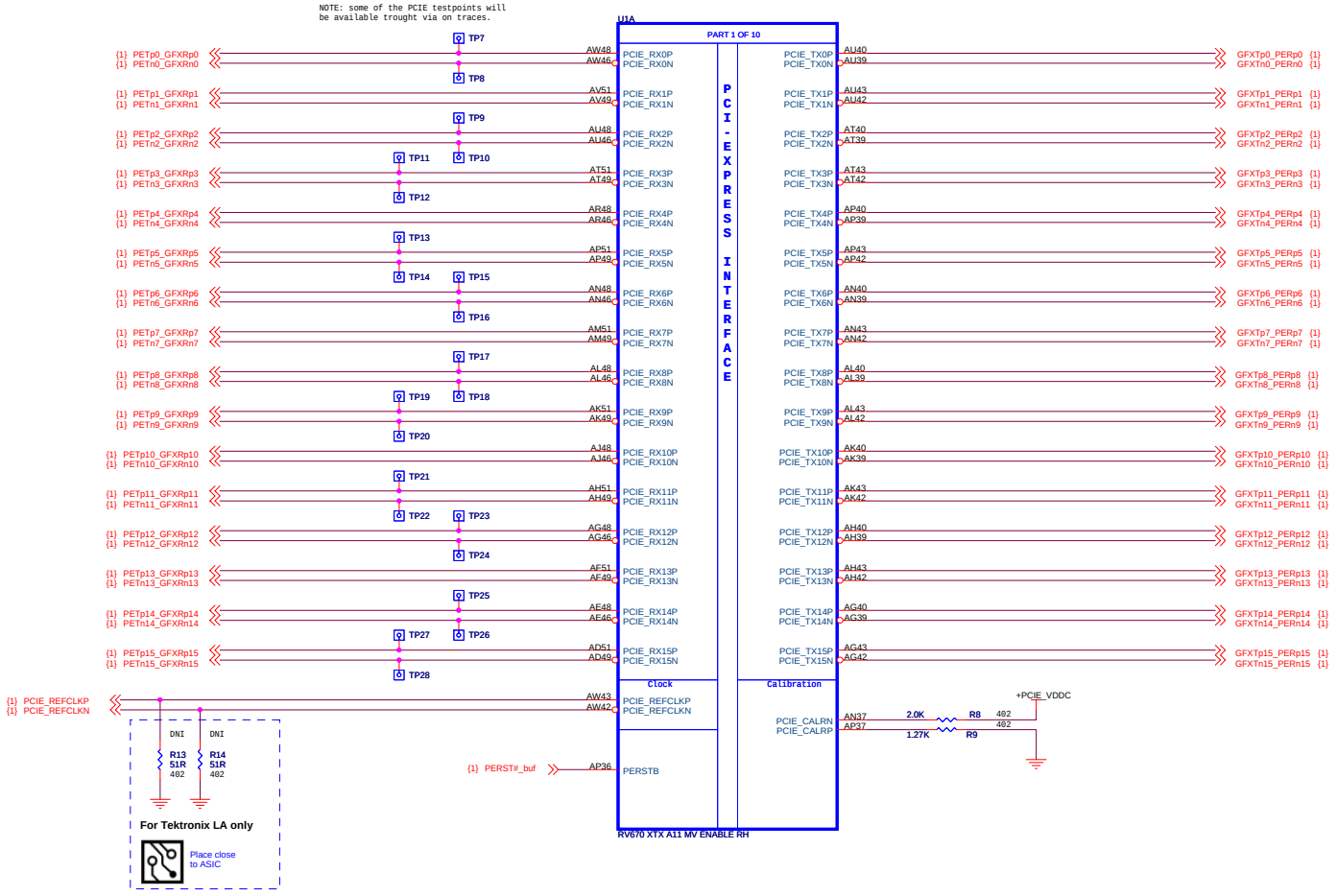
Date:	Tuesday, February 19, 2008
Rev	1
Sheet	1 of 21
Title	RH RV670 - PCI-E Edge Connector
Doc No.	105-B340xx-00B



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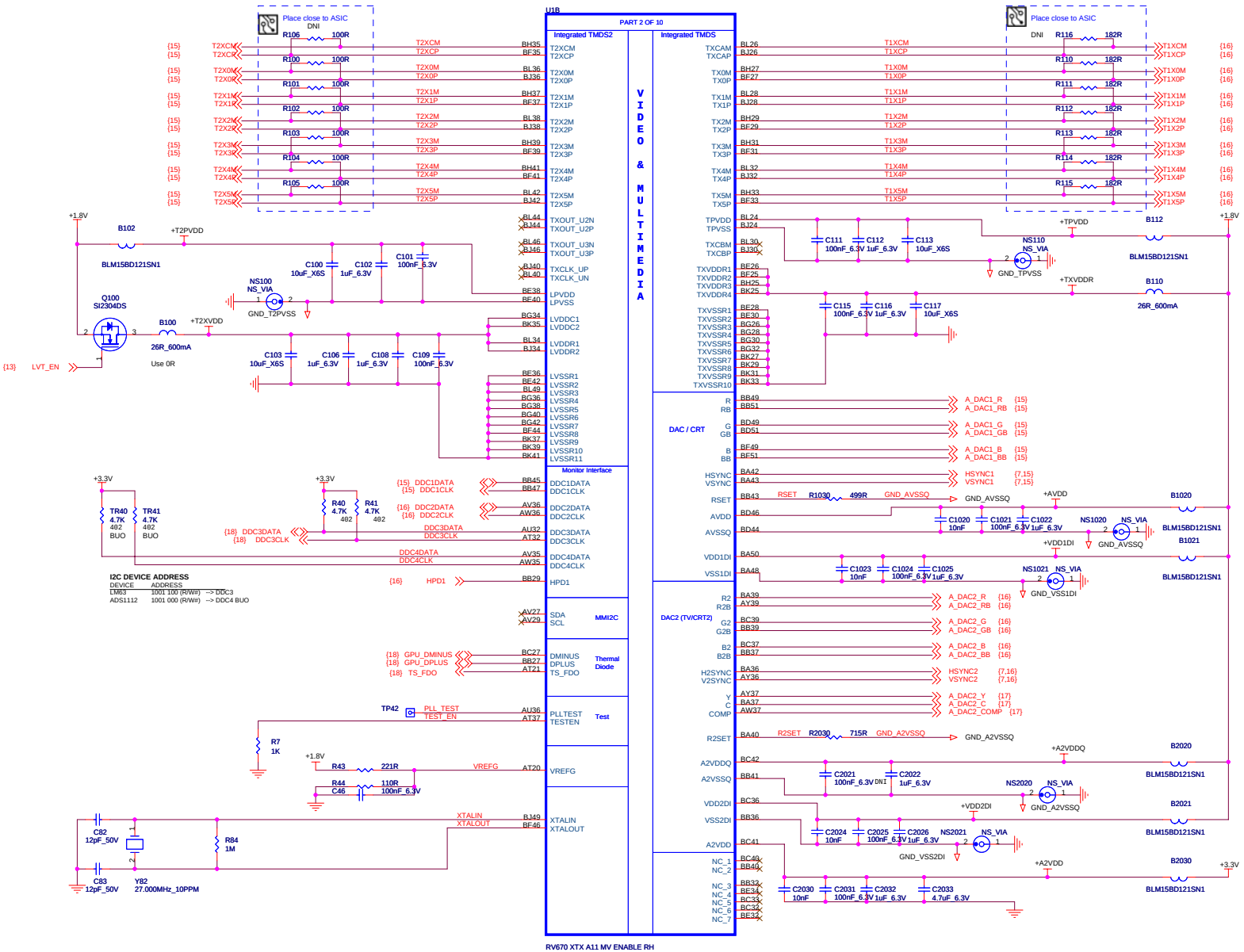
Date: Tuesday, February 19, 2008 Rev 1

Sheet 2 of 21

Title RH RV670 - ASIC PCIE_Interface

Doc No. 105-B340xx-00B

Recommended caps:
(see BOM for qualified values/vendors)
10uF , X6S, 0805, 6.3V, 1.4MM MAX THICK
4.7uF , X6S/X5R, 0603, 6.3V/4V
1uF, X6S, 0402, 6.3V
100nF, X7R, 0402
10nF , X7R, 0402



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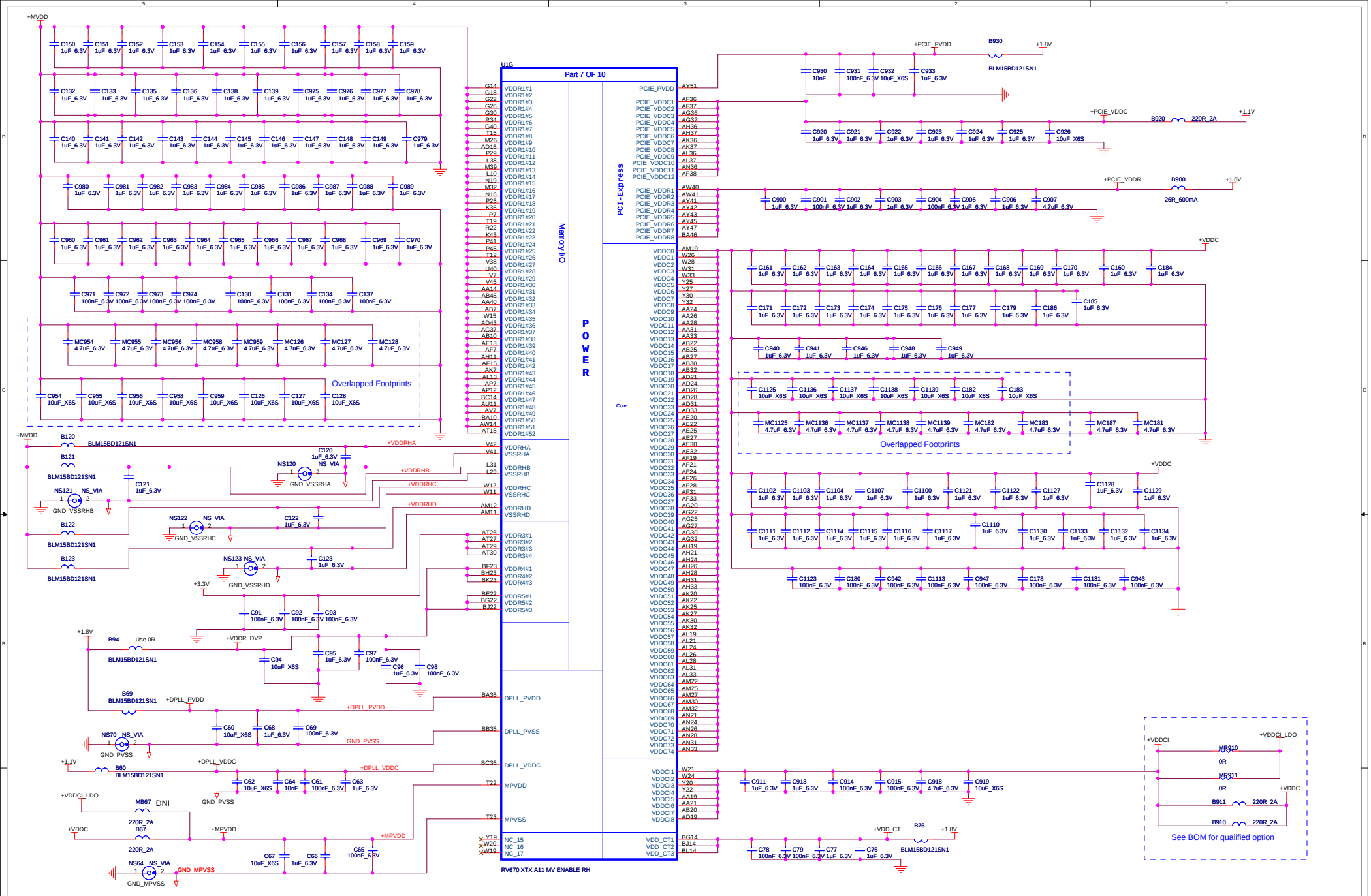
Date:	Tuesday, February 19, 2008
Rev	1
Sheet	3 of 21
Title	RH RV670 - ASIC MAIN
Doc No.	105-B340xx-00B



Recommended caps:
(see BOM for qualified values/vendors)
10uF , X6S, 0805, 6.3V, 1.4MM MAX THICK
4.7uF , X6S/X5R, 0603, 6.3V/4V
1uF, X6S, 0402, 6.3V
100nF, X7R, 0402
10nF , X7R, 0402

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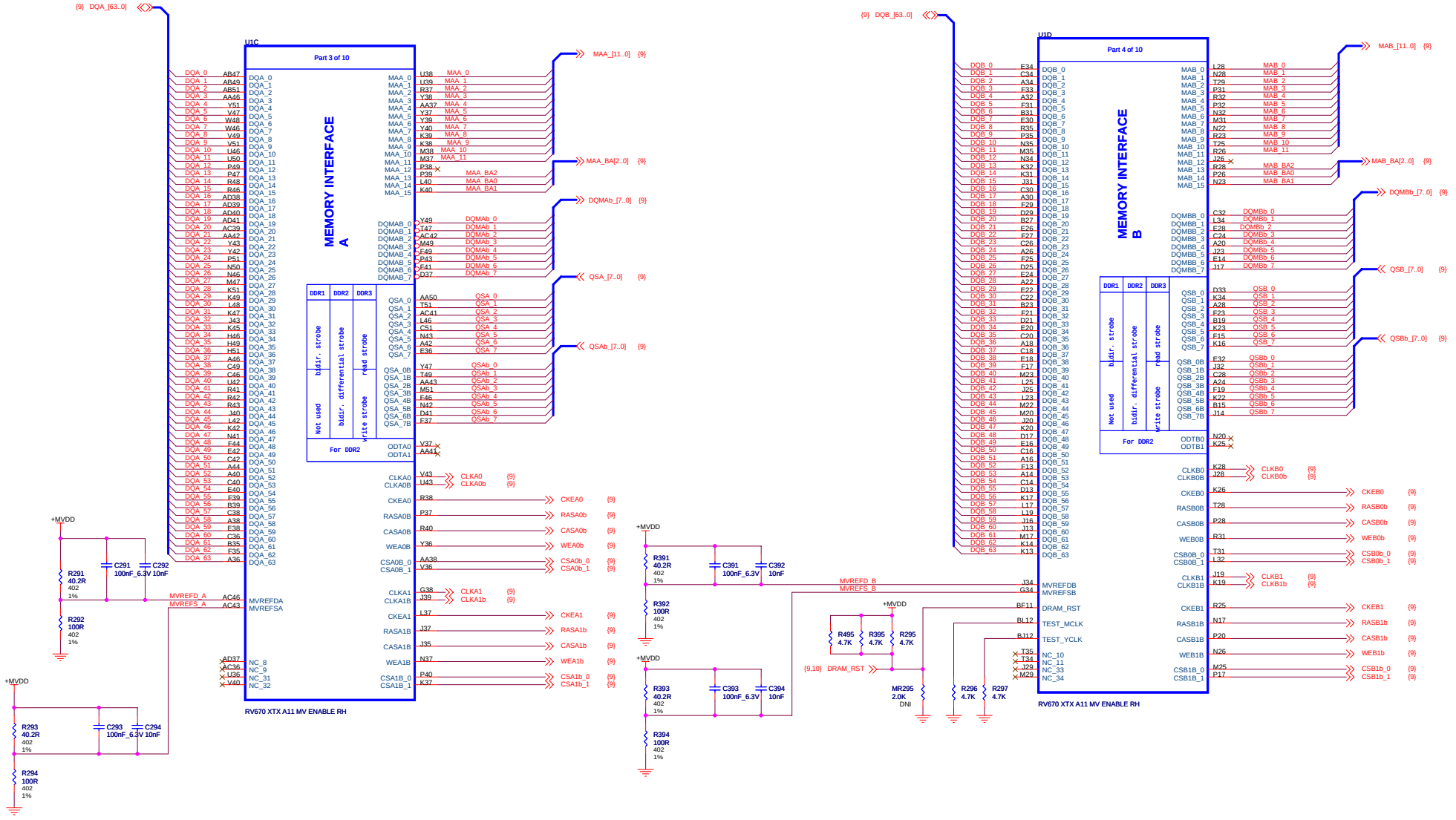
Date: Tuesday, February 19, 2008 Rev 1
Sheet 4 of 21
Title RH RV670 - ASIC Power
Doc No. 105-B340xx-00B



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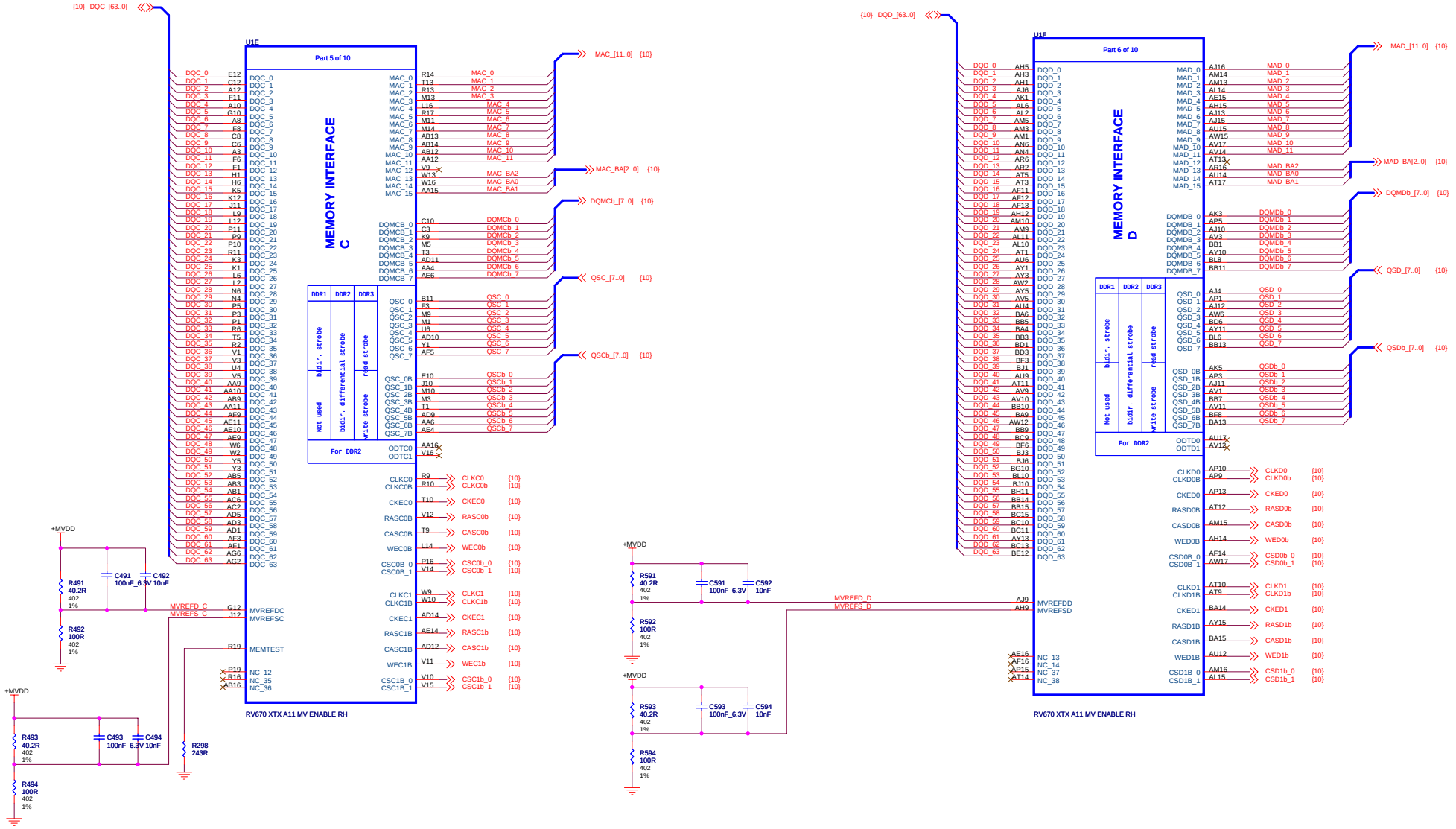
Date: Tuesday, February 19, 2008 Rev 1

Sheet 5 of 21

Title RH RV670 - ASIC Memory Interface (Channel A & B)

Doc No. 105-B340xx-00B



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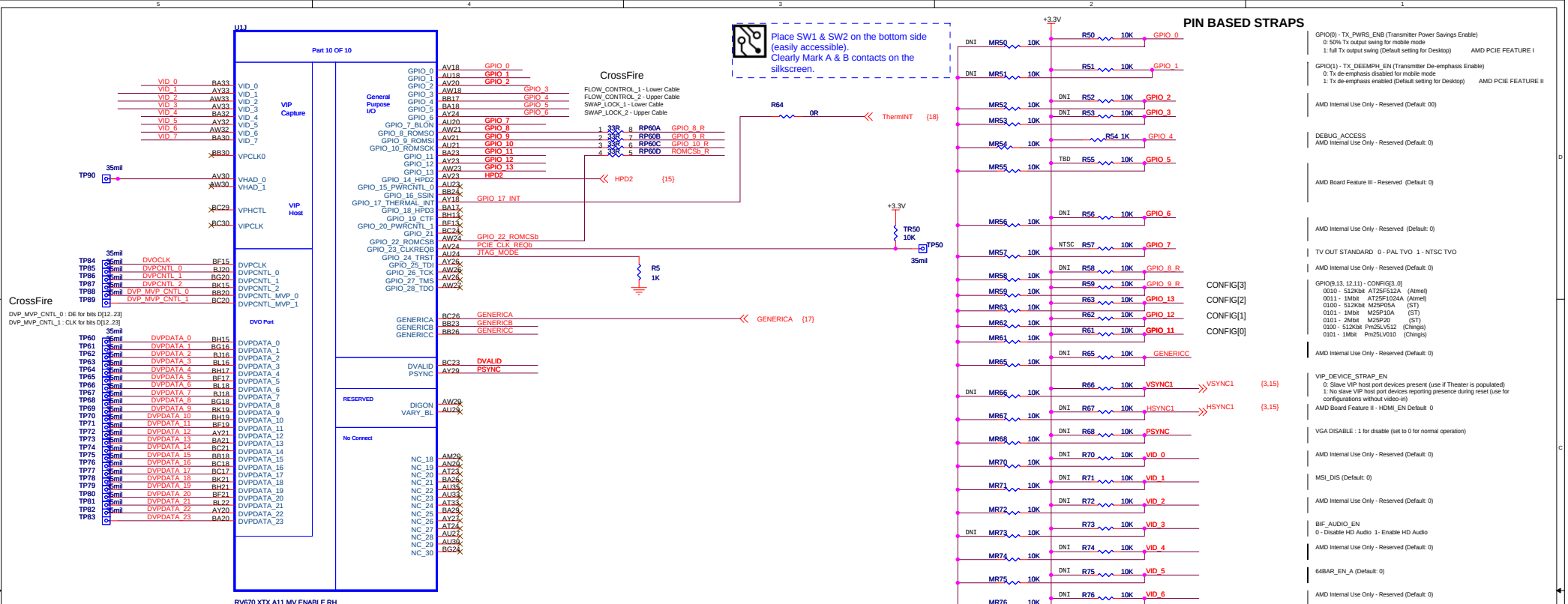
Markham, Ontario

Date: Tuesday, February 19, 2008 Rev 1

Sheet 6 of 21

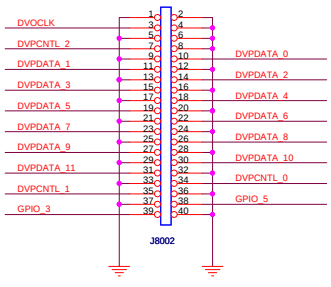
Title RH RV670 - ASIC Memory Interface (Channel C & D)

Doc No. 105-B340xx-00B

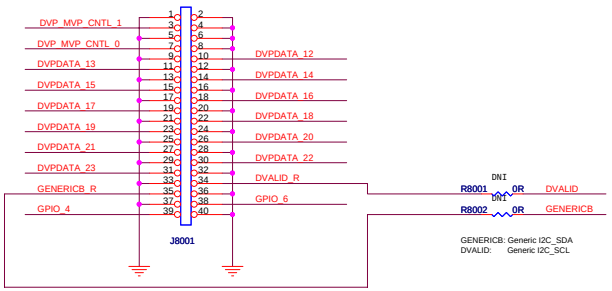


CrossFire Card-Edge

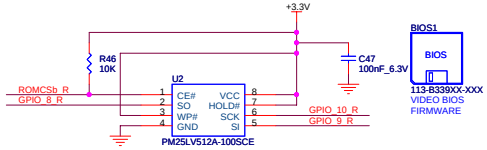
Lower Cable Card Edge



Upper Cable Card Edge



Bundle B **Bundle A (closer to the bracket)**



PN 2280007900G for 1Mbit (PM25LV010A-100SCE)

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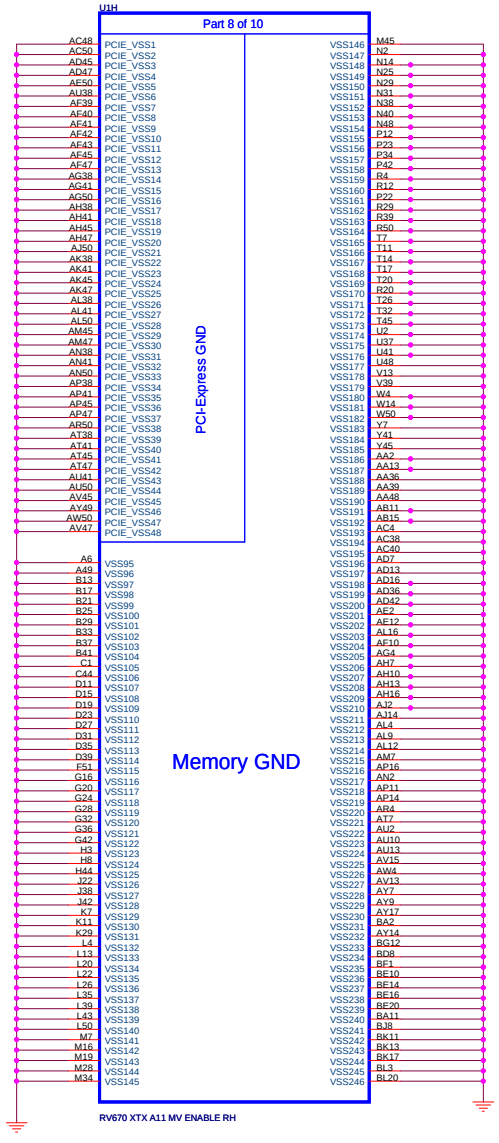
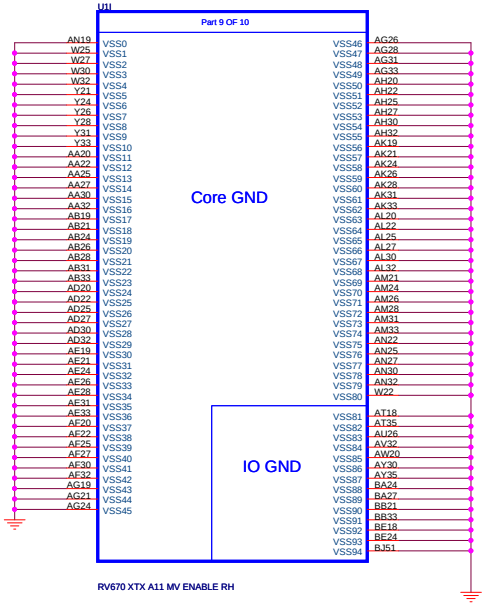
Markham, Ontario

Date: Tuesday, February 19, 2008 Rev 1
Sheet 7 of 21
Title RH RV670 - ASIC DVO, VIP & GPIOs
Doc No. 105-B340xx-00B





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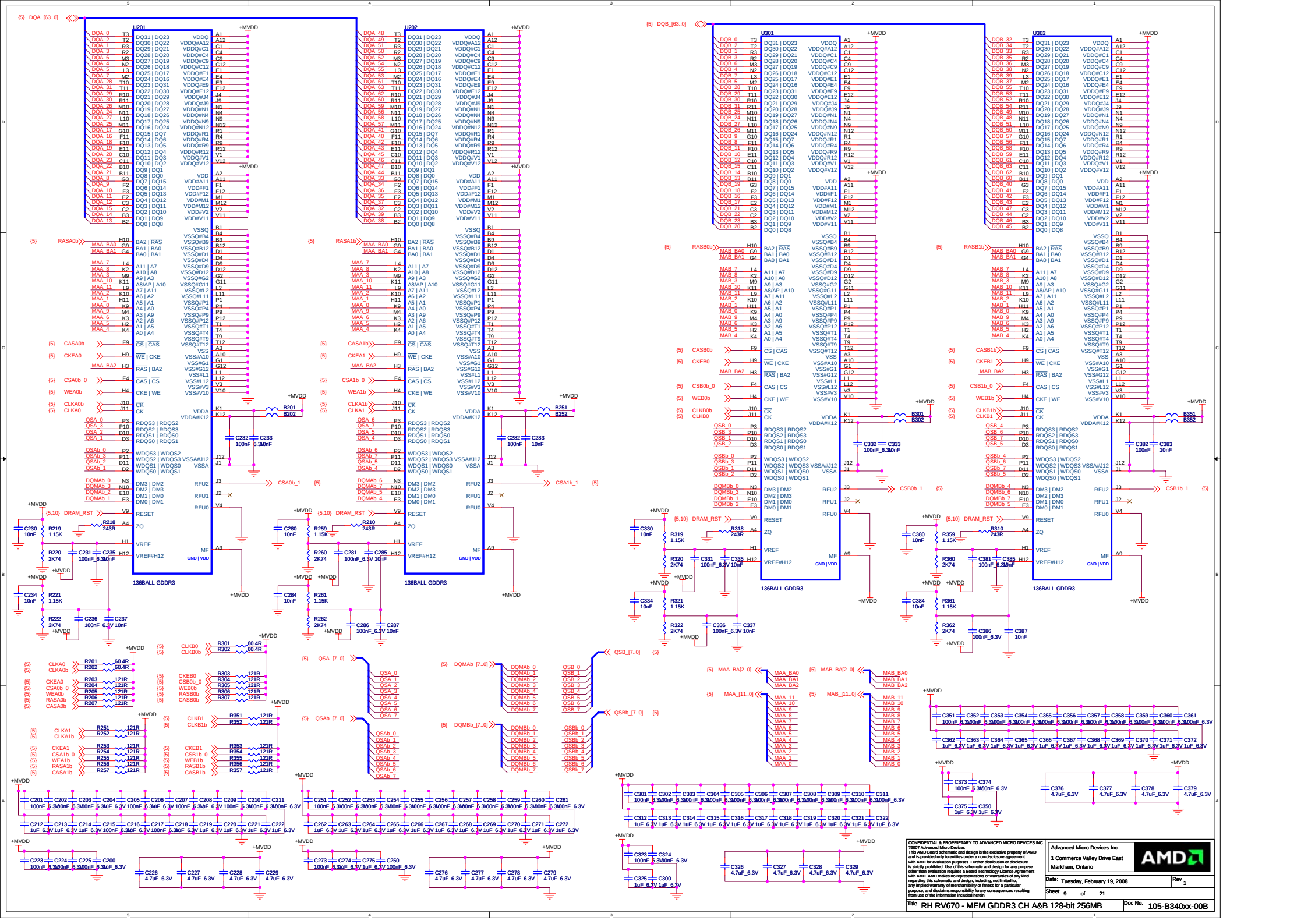
Date: Tuesday, February 19, 2008 Rev 1

Sheet 8 of 21

Title RH RV670 - ASIC Grounds

Doc No. 105-B340xx-00B



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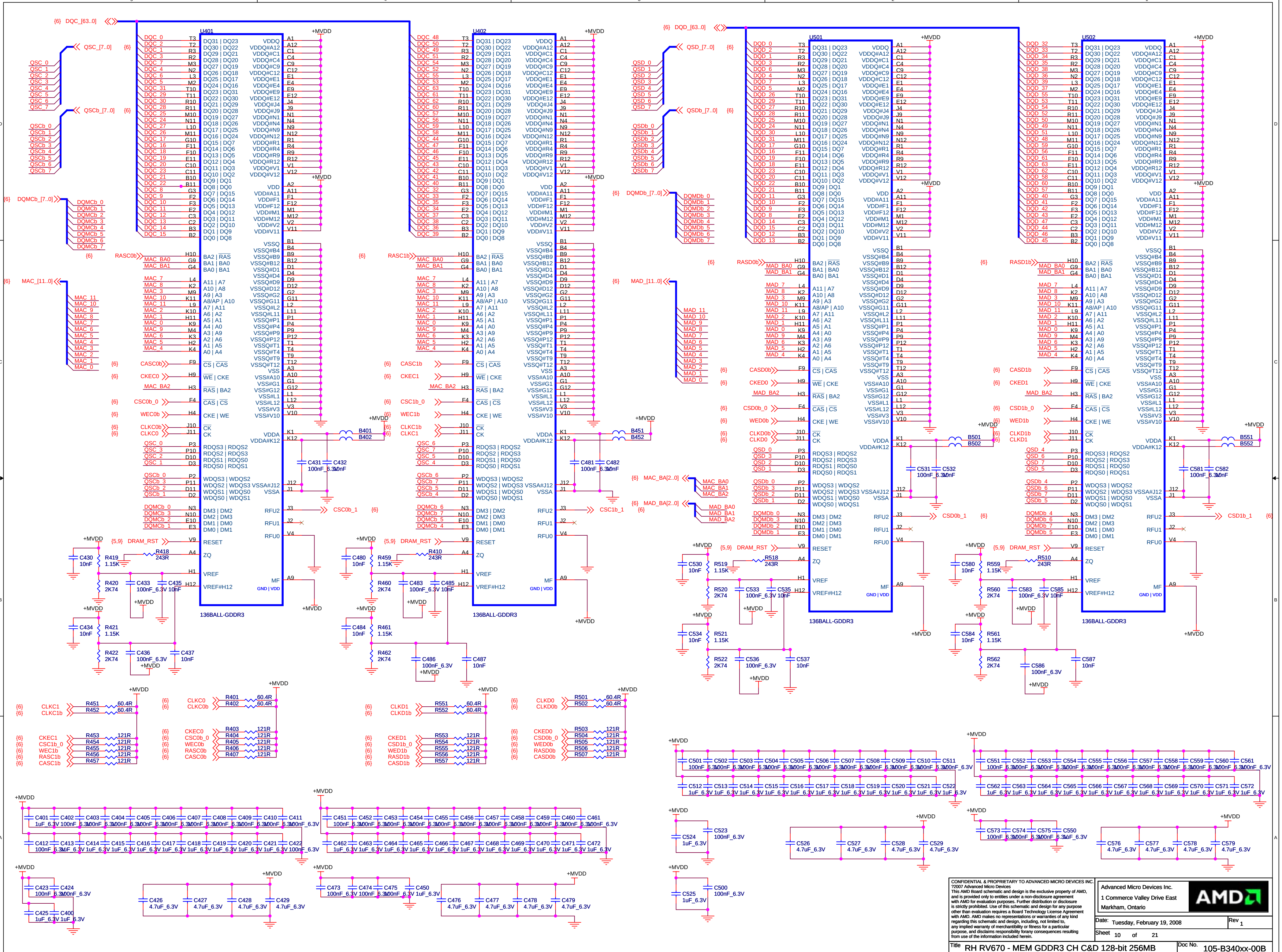
Markham, Ontario

Date:	Tuesday, February 19, 2008
Rev	1
Sheet	9 of 21
Title	RH RV670 - MEM GDDR3 CH A&B 128-bit 256MB
Doc No.	105-B340xx-00B



Advanced Micro Devices Inc.
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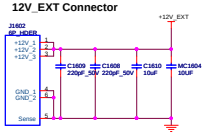
Date: Tuesday, February 19, 2008 | Rev 1

Title RH RV670 - MEM GDDR3 CH C&D 128-bit 256MB

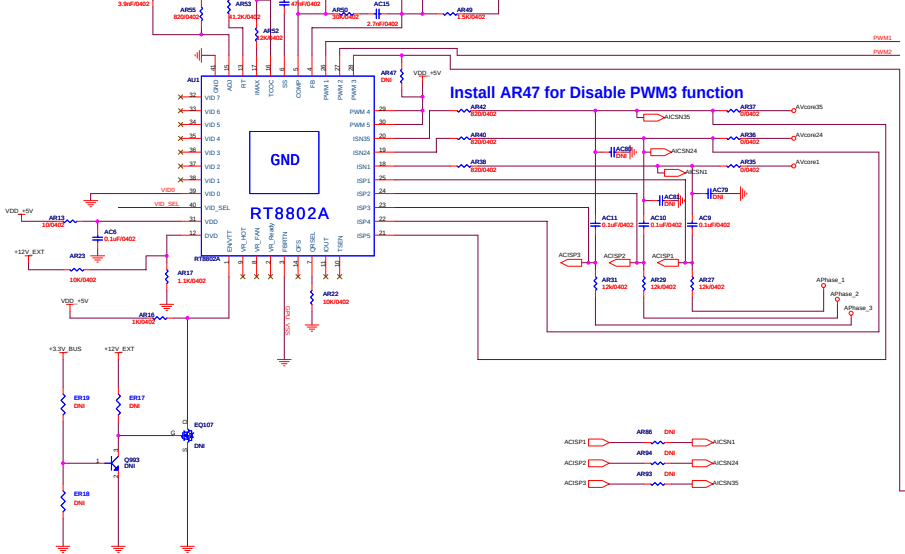
Doc No. 105-B340xx-00B

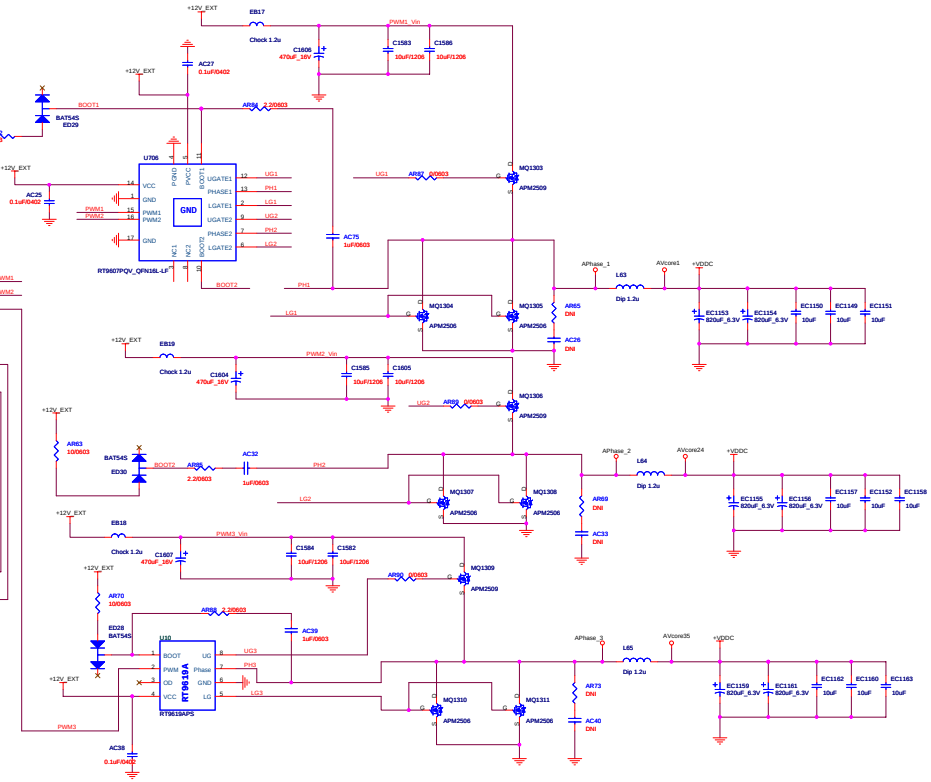
12V_EXT Connector

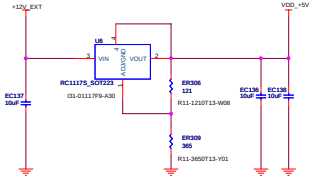


+VDDC=0.8 * (1+ (AR49 / AR82))

Install AR47 for Disable PWM3 function







Vout=1.25V* [1+(ER305/ER304)]

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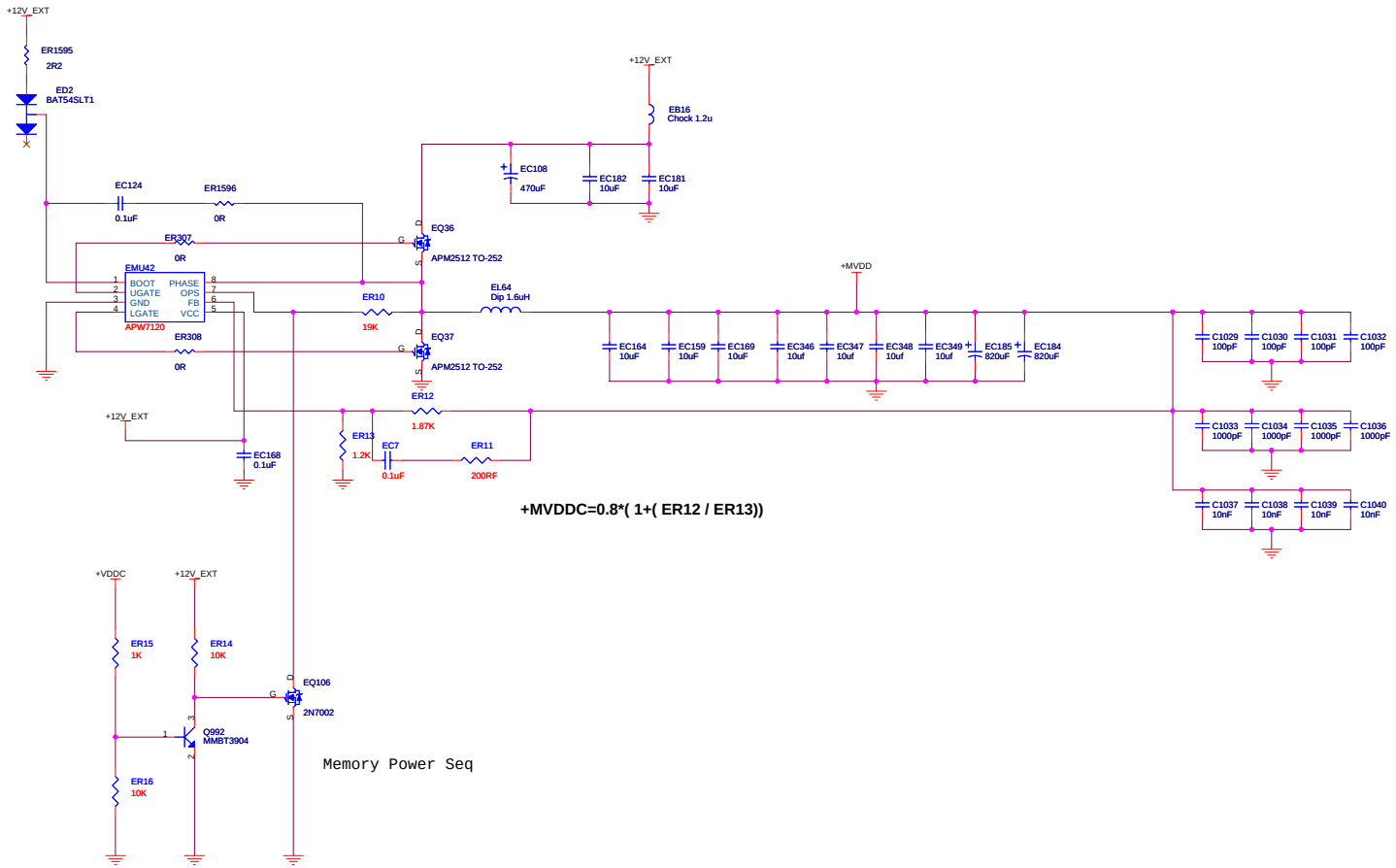
Date: Tuesday, February 19, 2008 Rev: 1
Sheet 11 of 21
Title: RH RV670 - VDDC SMPS 03
Doc No. 105-B340xx-008



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Date:	Tuesday, February 19, 2008
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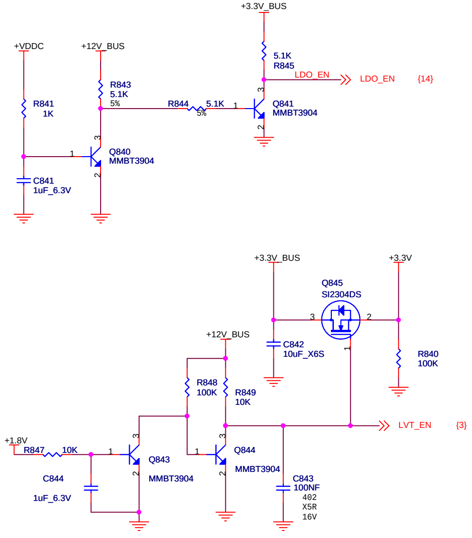
Sheet	12 of 21
Title	RH RV670 - MVDD SMPS 02
Doc No.	105-B340xx-00B

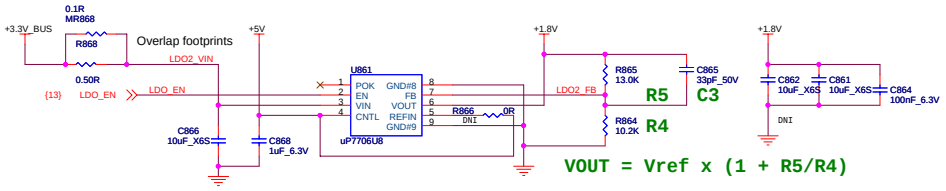
Power up Sequencing



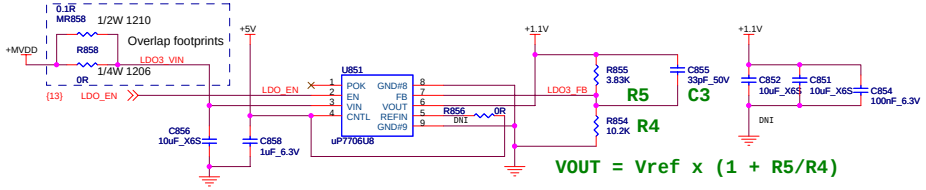
ATI Technologies Inc. 1 Commerce Valley Drive East, Markham, Ontario, Canada, L3T 7X6, (905) 882-2600	Advanced Micro Devices Inc. 1 Commerce Valley Drive East, Markham, Ontario	
Title: RV630 GDDR3 - Power Management	Date: Tuesday, February 19, 2008	Rev 1
Sheet 13 of 21		
Size: Custom	Document Number: 105-B148xx-00A	Rev A
Title: RH RV670 - Power Management	Doc No. 105-B340xx-00B	
Date: Tuesday, February 19, 2008	Sheet 13 of 21	

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

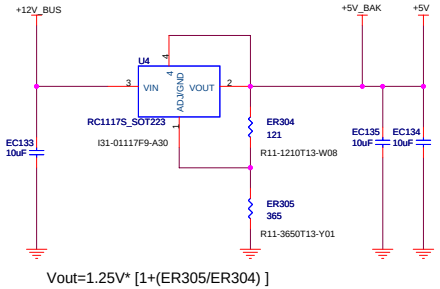
LDO #2: Vin = 2.5V to 3.6V MAX Vout = +1.8V +/- 3% Iout = 0.8A (TBV) RMS MAX
PCB: 50 to 70mm sq. copper area for cooling



LDO #3: Vin = +1.70V to 2.1VMAX Vout = +1.1V +/- 3% Iout = Up to 1.3A (TBV) RMS MAX
PCB: 50 to 70mm sq. copper area for cooling

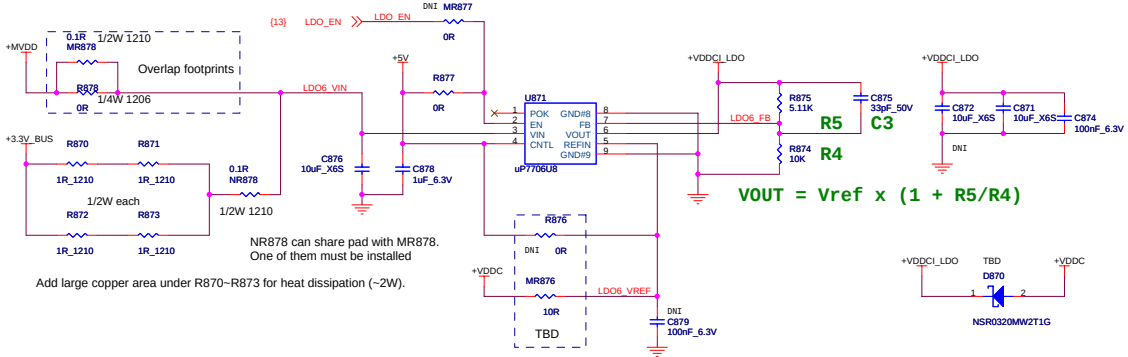


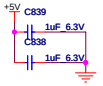
LDO #6: For fixed output voltage: Vin = +1.70V to 2.1V MAX Vout = +1.20V +/- 3% Iout = 1.3A (TBV) RMS MAX
PCB: 50 to 70mm sq. copper area for cooling



Vout=1.25V* [1+(ER305/ER304)]

LDO #6: For tracking VDDC: Vin = TBD Vout = TBD Iout = 1.3A (TBV) RMS MAX
PCB: 50 to 70mm sq. copper area for cooling





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Date: Tuesday, February 19, 2008 Rev 1

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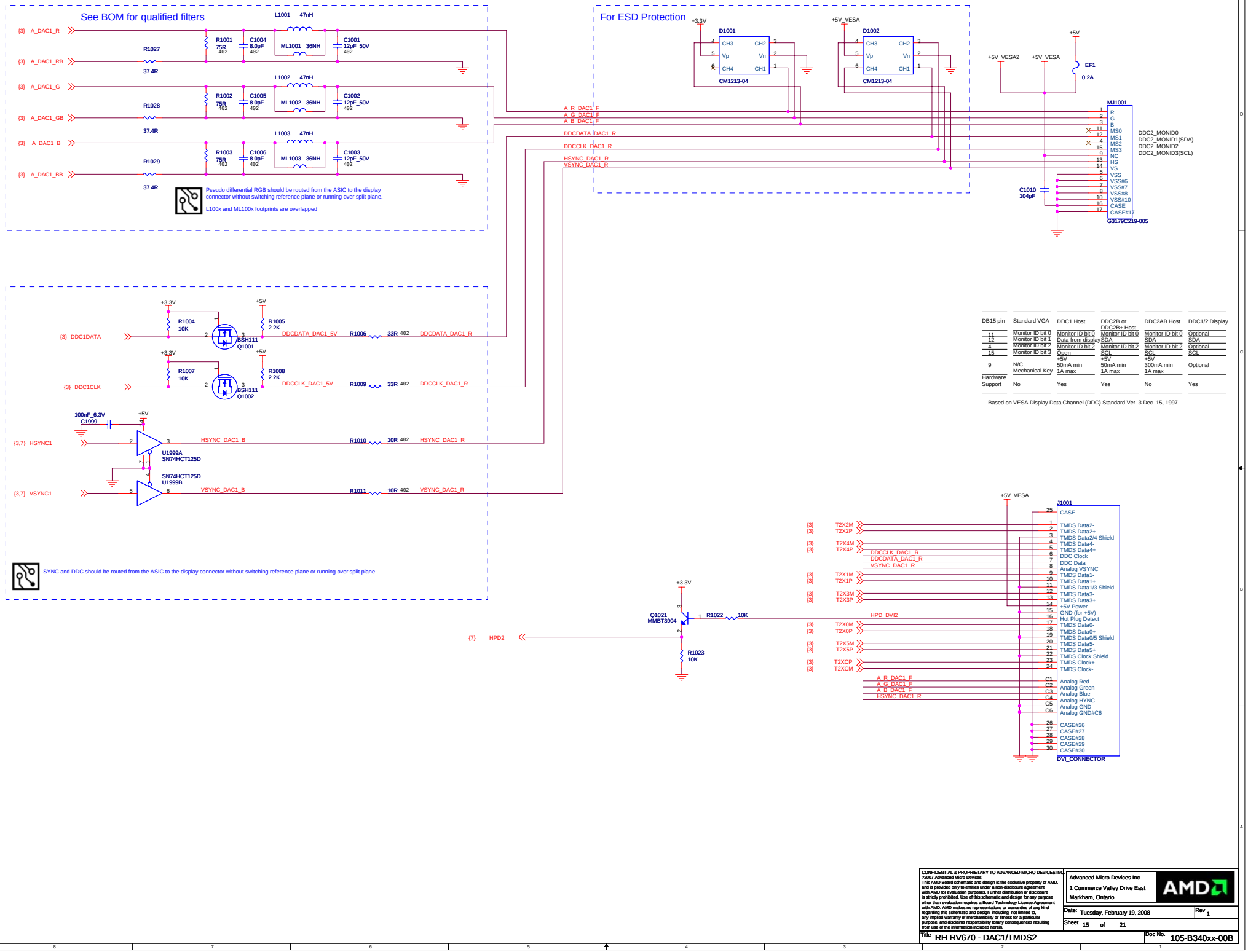
Title RH RV670 - Linear Regulators

Doc No. 105-B340xx-00B



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Date: Tuesday, February 19, 2008 Rev 1

Sheet 15 of 21

Title: RH RV670 - DAC1/TMDS2

Doc No. 105-B340xx-00B

See BOM for qualified filters

{3} A_DAC2_R
{3} A_DAC2_RB
{3} A_DAC2_G
{3} A_DAC2_GB
{3} A_DAC2_B
{3} A_DAC2_BB

R2027 37.4R
R2028 37.4R
R2029 37.4R

L2001 47nH, ML2001 36NH
L2002 47nH, ML2002 36NH
L2003 47nH, ML2003 36NH

R2001 75R 402, C2004 8.0pF 402, C2001 12pF_50V 402
R2002 75R 402, C2005 8.0pF 402, C2002 12pF_50V 402
R2003 75R 402, C2006 8.0pF 402, C2003 12pF_50V 402

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

+3.3V
+5V_VESA2

D2001 CM1213-04
D2002 CM1213-04

A_R_DAC2_F
A_G_DAC2_F
A_B_DAC2_F
DDCDATA_DAC2_R
DDCCLK_DAC2_R
HSYNC_DAC2_R
VSYNC_DAC2_R

MJ2001 G3179C219-005

DDC2_MONID0
DDC2_MONID1(SDA)
DDC2_MONID2
DDC2_MONID3(SCL)

{3} DDC2DATA
{3} DDC2CLK

R2004 10K, R2005 2.2K 402, Q2001 BSH111
R2007 10K, R2008 2.2K 402, Q2002 BSH111

DDCDATA_DAC2_5V
DDCCLK_DAC2_5V

R2006 33R 402 DDCDATA_DAC2_R
R2009 33R 402 DDCCLK_DAC2_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
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
15	Monitor ID bit 3	Open	SCL	SCL	SCL
9	N/C	+5V 50mA min 1A max	+5V 50mA min 1A max	+5V 300mA min 1A max	Optional
Hardware Support	Mechanical Key	No	Yes	Yes	No	Yes

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

{3,7} HSYNC2
{3,7} VSYNC2

U1999C SN74HCT125D
SN74HCT125D U1999D

HSYNC_DAC2_B
VSYNC_DAC2_B

R2010 10R 402 HSYNC_DAC2_R
R2011 10R 402 VSYNC_DAC2_R

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

+3.3V

Q2021 MMBT3904

R2022 10K
R2023 10K

{3} HPD1
HPD_DVI1

+5V_VESA2

J2001 DVI_CONNECTOR

{3} T1X2M
{3} T1X2P
{3} T1X4M
{3} T1X4P
DDCCLK_DAC2_R
DDCDATA_DAC2_R
VSYNC_DAC2_R
{3} T1X1M
{3} T1X1P
{3} T1X3M
{3} T1X3P
{3} T1X0M
{3} T1X0P
{3} T1X5M
{3} T1X5P
{3} T1XCP
{3} T1XCM
A_R_DAC2_F
A_G_DAC2_F
A_B_DAC2_F
HSYNC_DAC2_R

Pin	Signal
25	CASE
1	TMDS Data2-
2	TMDS Data2+
3	TMDS Data2/4 Shield
4	TMDS Data4-
5	TMDS Data4+
6	DDC Clock
7	DDC Data
8	Analog VSYNC
9	TMDS Data1-
10	TMDS Data1+
11	TMDS Data1/3 Shield
12	TMDS Data3-
13	TMDS Data3+
14	+5V Power
15	GND (for +5V)
16	Hot Plug Detect
17	TMDS Data0-
18	TMDS Data0+
19	TMDS Data0/5 Shield
20	TMDS Data5-
21	TMDS Data5+
22	TMDS Clock Shield
23	TMDS Clock+
24	TMDS Clock-
C1	Analog Red
C2	Analog Green
C3	Analog Blue
C4	Analog HYNC
C5	Analog GND
C6	Analog GND#C6
26	CASE#26
27	CASE#27
28	CASE#28
29	CASE#29
30	CASE#30

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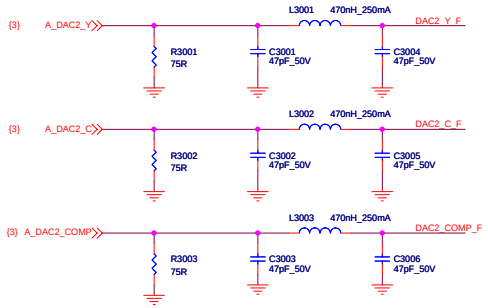
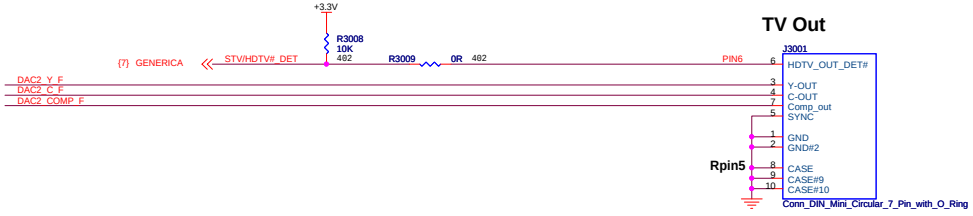
Date: Tuesday, February 19, 2008
Rev 1
Sheet 16 of 21
Title RH RV670 - DAC2/TMDS1
Doc No. 105-B340xx-00B





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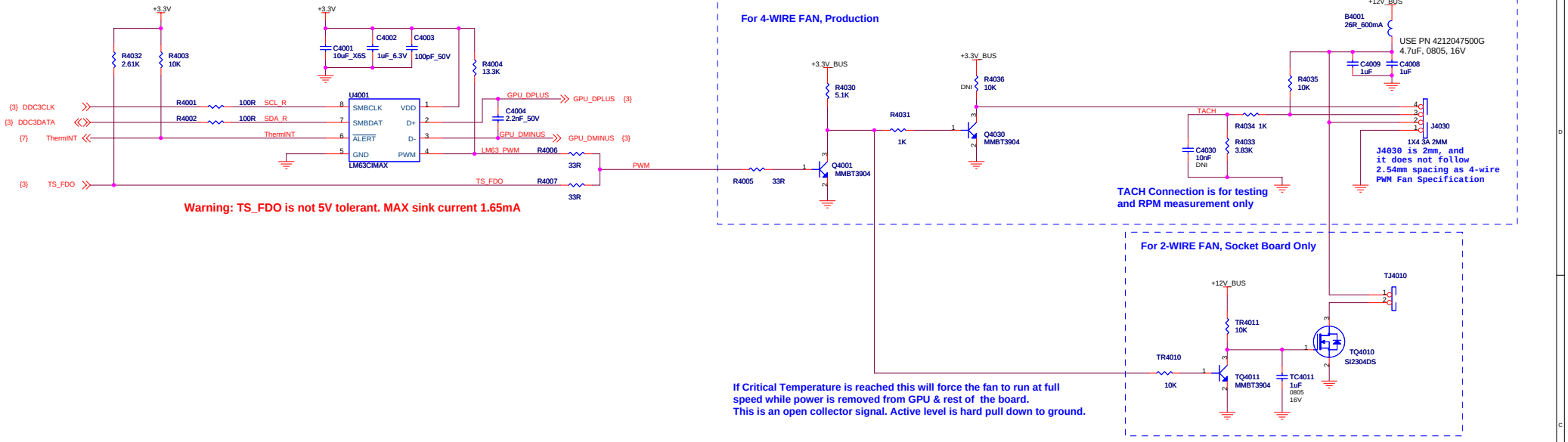
1 Commerce Valley Drive East
Markham, Ontario

Date: Tuesday, February 19, 2008 Rev 1

Sheet 17 of 21

Title RH RV670 - TV OUT

Doc No. 105-B340xx-00B



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Date: Tuesday, February 19, 2008	Rev 1
Sheet 18 of 21	
Title RH RV670 - Thermal Management	Doc No. 105-B340xx-00B

ASSY-SCREW2
SCREW
JACKPOST, HEX, 3/16 AF, 4-40 INT/EXT
<3rd part field>

ASSY-SCREW1
SCREW
JACKPOST, HEX, 3/16 AF, 4-40 INT/EXT
<3rd part field>

ASSY-SCREW4
SCREW
JACKPOST, HEX, 3/16 AF, 4-40 INT/EXT
<3rd part field>

ASSY-SCREW3
SCREW
JACKPOST, HEX, 3/16 AF, 4-40 INT/EXT
<3rd part field>

MT1
MT_Hole_0.136 TM 5.5 BM 7.0

SK1
Socket_RV670/M88L

PCB1
PCB
109-B34031-00B

ASSY1
ANTISTATIC BAG
6_X_11

BKT1
BRACKET
8020038600G

ASSY-SCREW5
SCREW
SCREW

BKT2
BRACKET
80200386B0G

BKT1: DVI - DIN -DVI
BKT2: DVI - DVI
ASSY-SCREW5 only for Slim-VGA with upper or lower tab bracket

FM1 SW_FB
FM2 SW_FB
FM3 SW_FB
FM4 SW_FB
FM5 SW_FB
FM6 SW_FB

J7 impedence
J4 impedence
J2 impedence
J1 impedence

J3 X_PIN1*2
J6 X_PIN1*2
J9 X_PIN1*2
J11 X_PIN1*2

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Date: Tuesday, February 19, 2008
Rev 1
Sheet 19 of 21
Title RH RV670 - Mechanical
Doc No. 105-B340xx-00B

<variant_name>

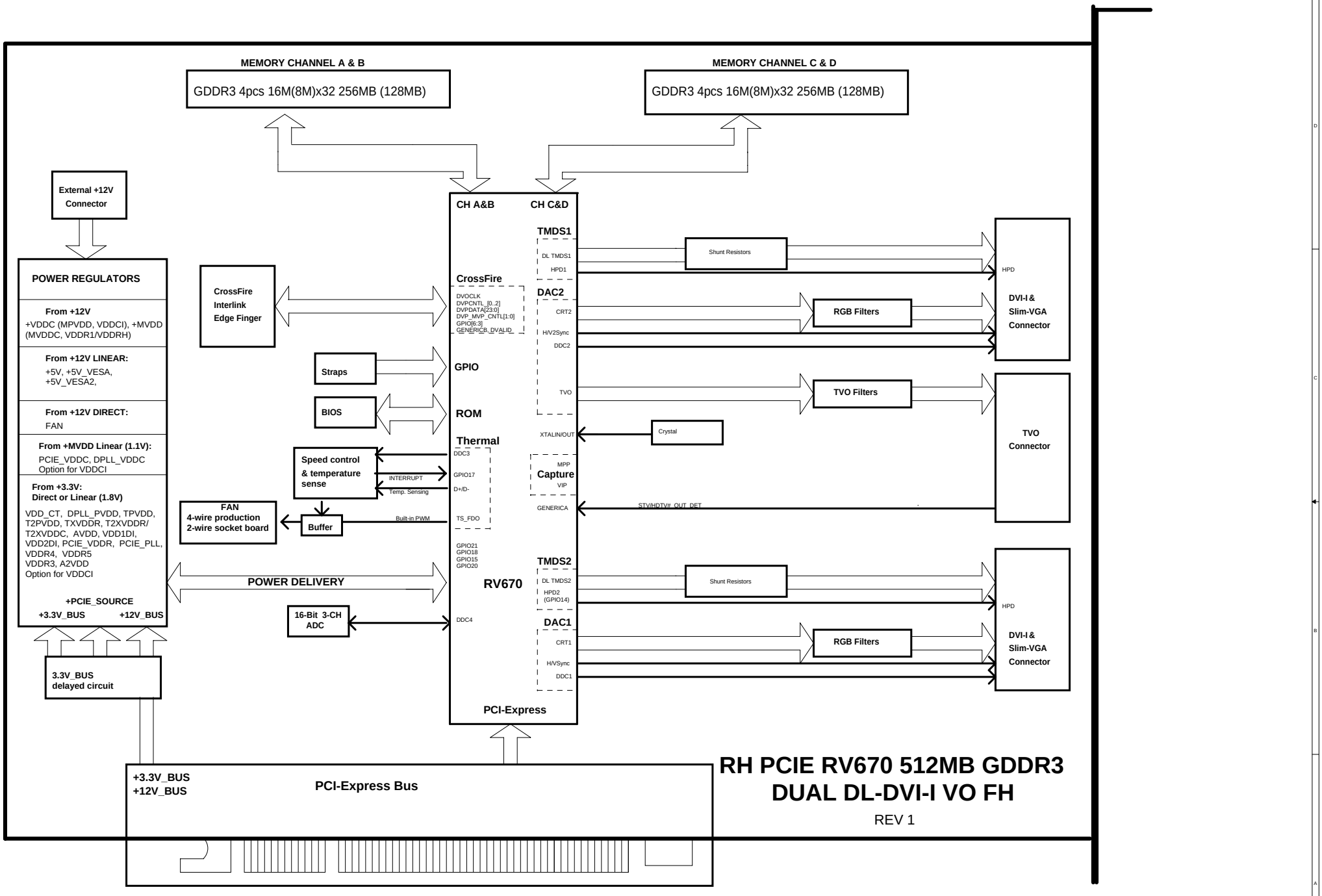
Title	Schematic No.	Date:
RH PCIE RV670 512MB GDDR3 DUAL DL-DVI-I VO FH	105-B340xx-00B	Tuesday, February 19, 2008

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	07/05/11	Initial design for RV670 GDDR3 (Revival) based on B339
1	00B	07/08/1	(pg 1) Adding R1 and connecting switch #7 of TSW1. Some mother boards require B7 to be grounded. Table-1 updated accordingly (pg 7) Adding R64 and MR64 to select HOT_PLUG_DET or ThermINT as the interrupt source. (pg 13) Adding R1617, MR1617, R1616, Q1613, R1615, R1618, and R1619 as option to support hot plug detection of external cable. (pg 13) Adding R1282, MR1282, R1283, MR1283, R1284, MR1284, R1281, R1285, Q1280, and C1280 as option for thermal protection for VDDC SMPS MOSFETs (pg 13) Adding MC1603 (overlapped with C1603) (pg 14) Adding D870 as option for power up sequencing (pg 18) Adding heatsink symbol/footprint (Layout) Increasing spacing between DDC4DATA & DDC4CLK going to U1270 to reduce the crosstalk



RH PCIE RV670 512MB GDDR3 DUAL DL-DVI-I VO FH

REV 1

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