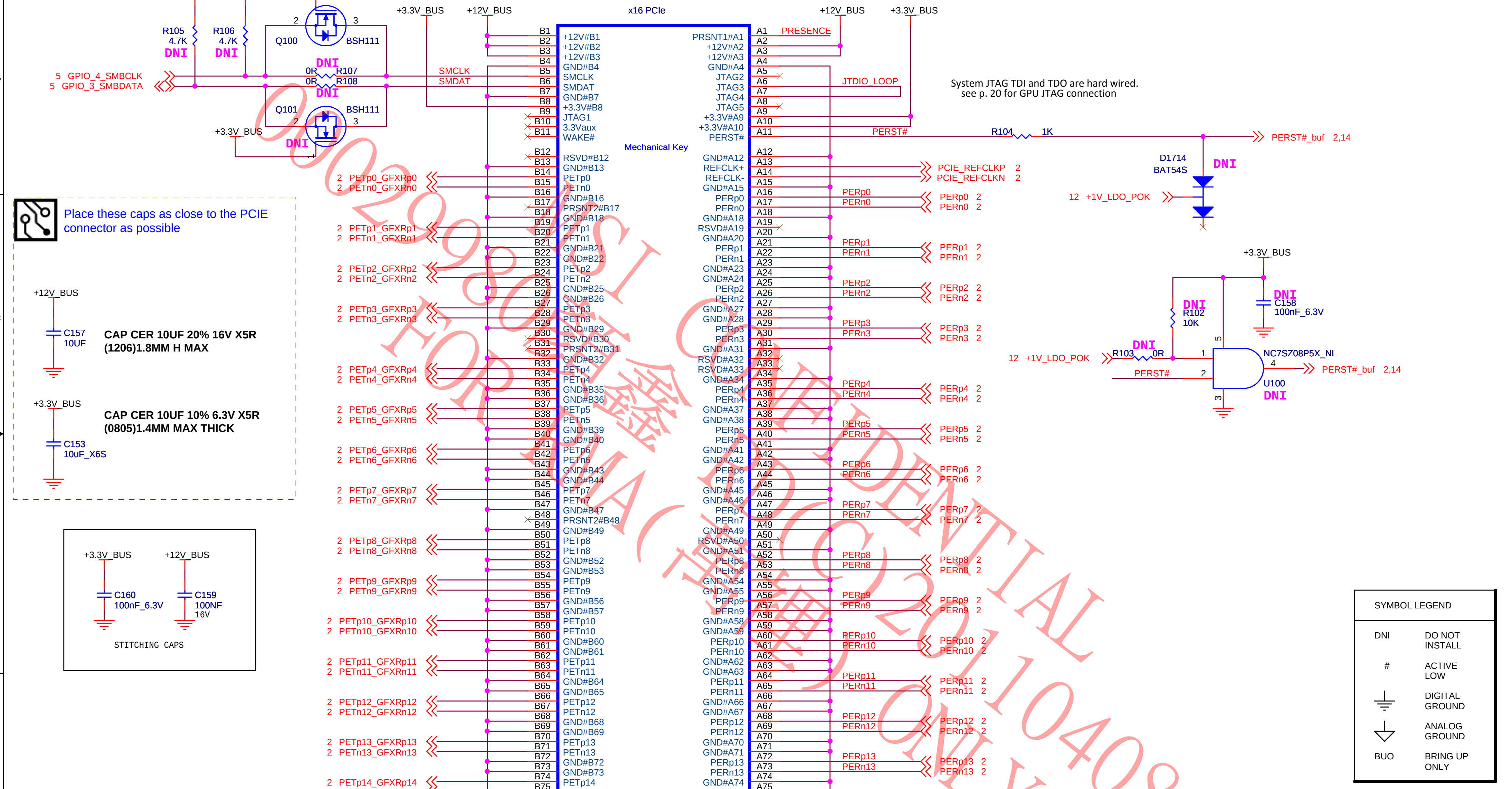
PCI-EXPRESS EDGE CONNECTOR



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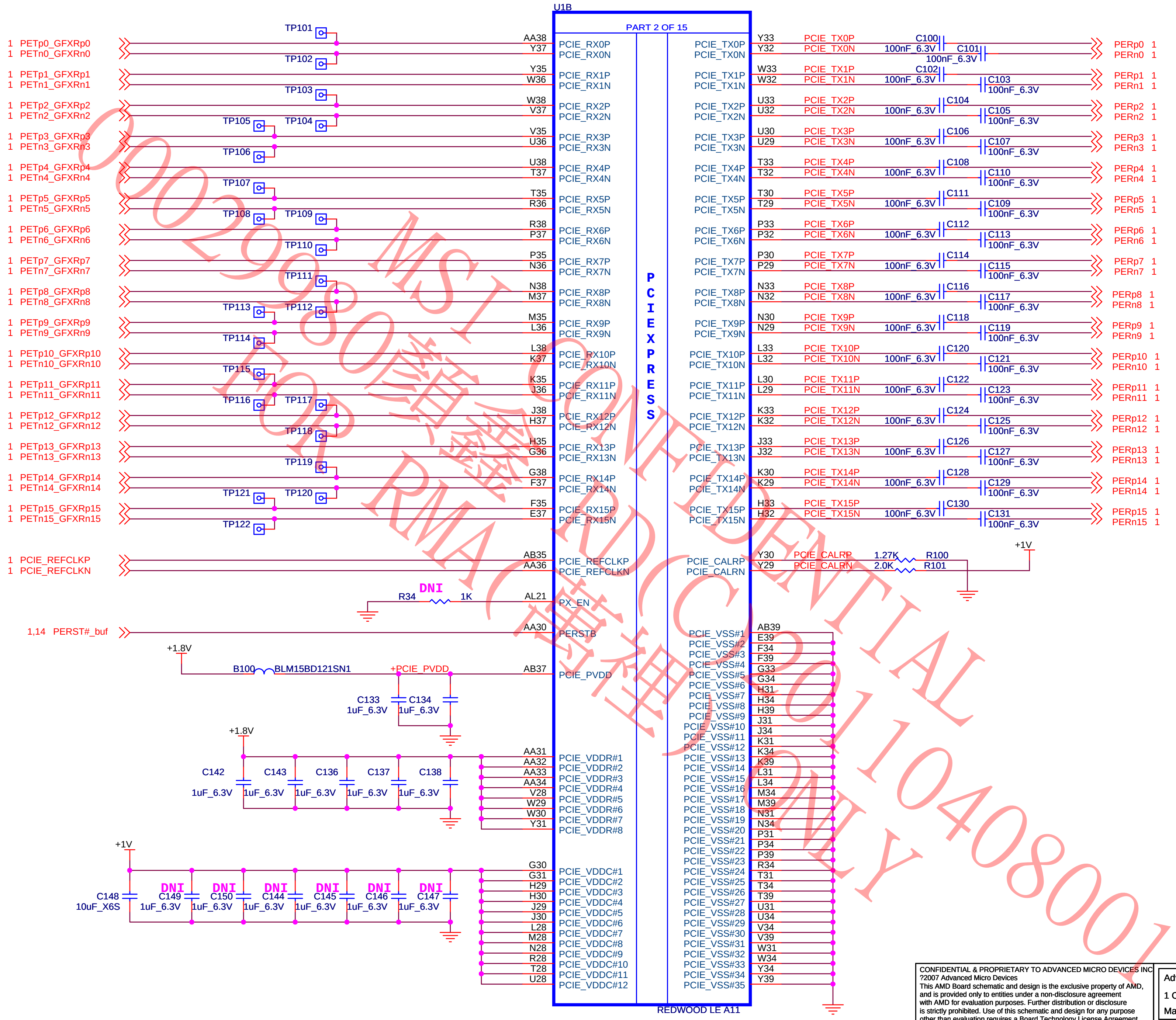
Date: Wednesday, February 23, 2011 | Rev 03

Sheet 1 of 17

Title: RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP | Doc No. 102-C24901-00



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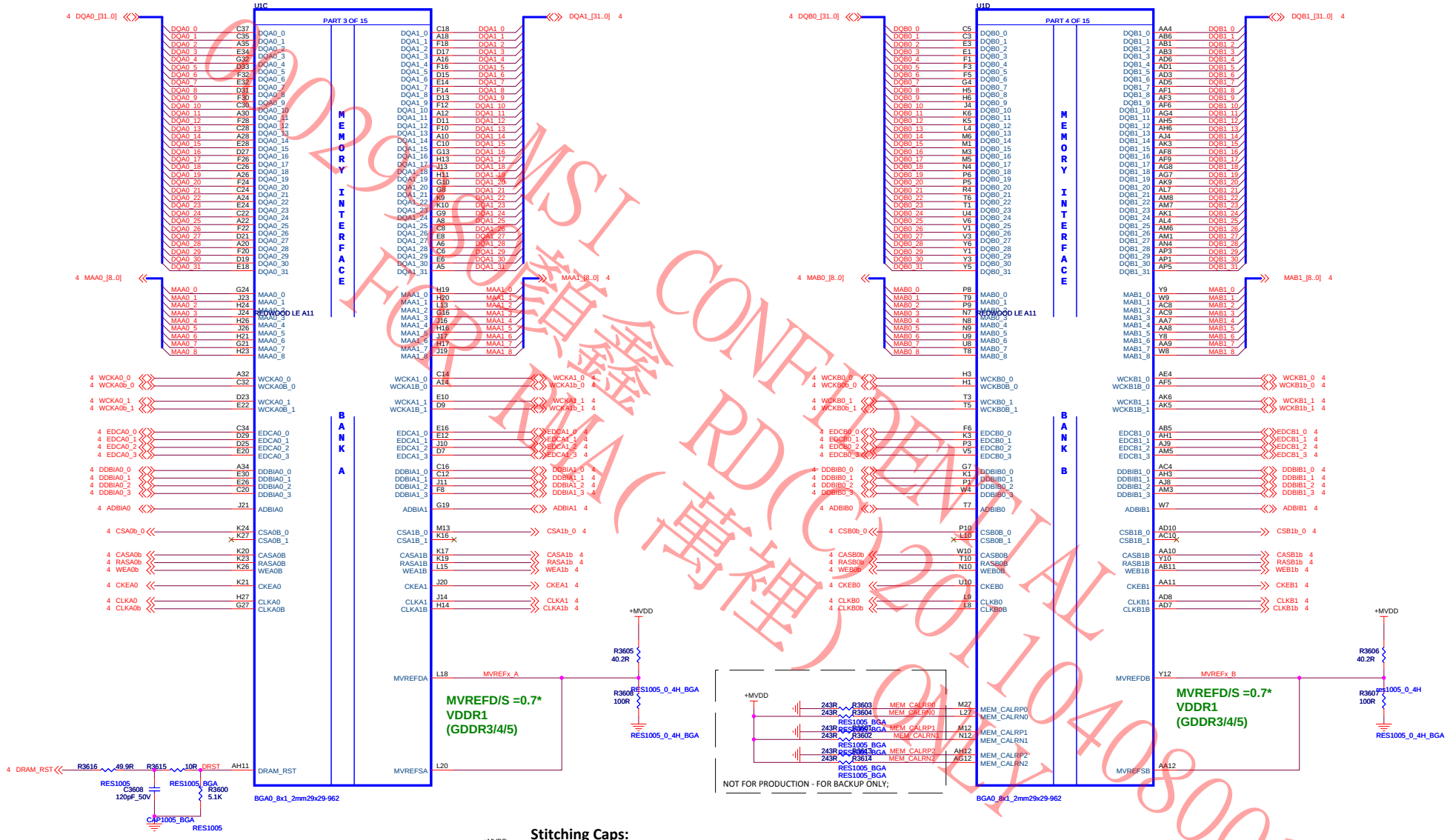
Date: Wednesday, February 23, 2011	Rev 03
Sheet 2 of 17	
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP	Doc No. 102-C24901-00

MSTS(Andy)



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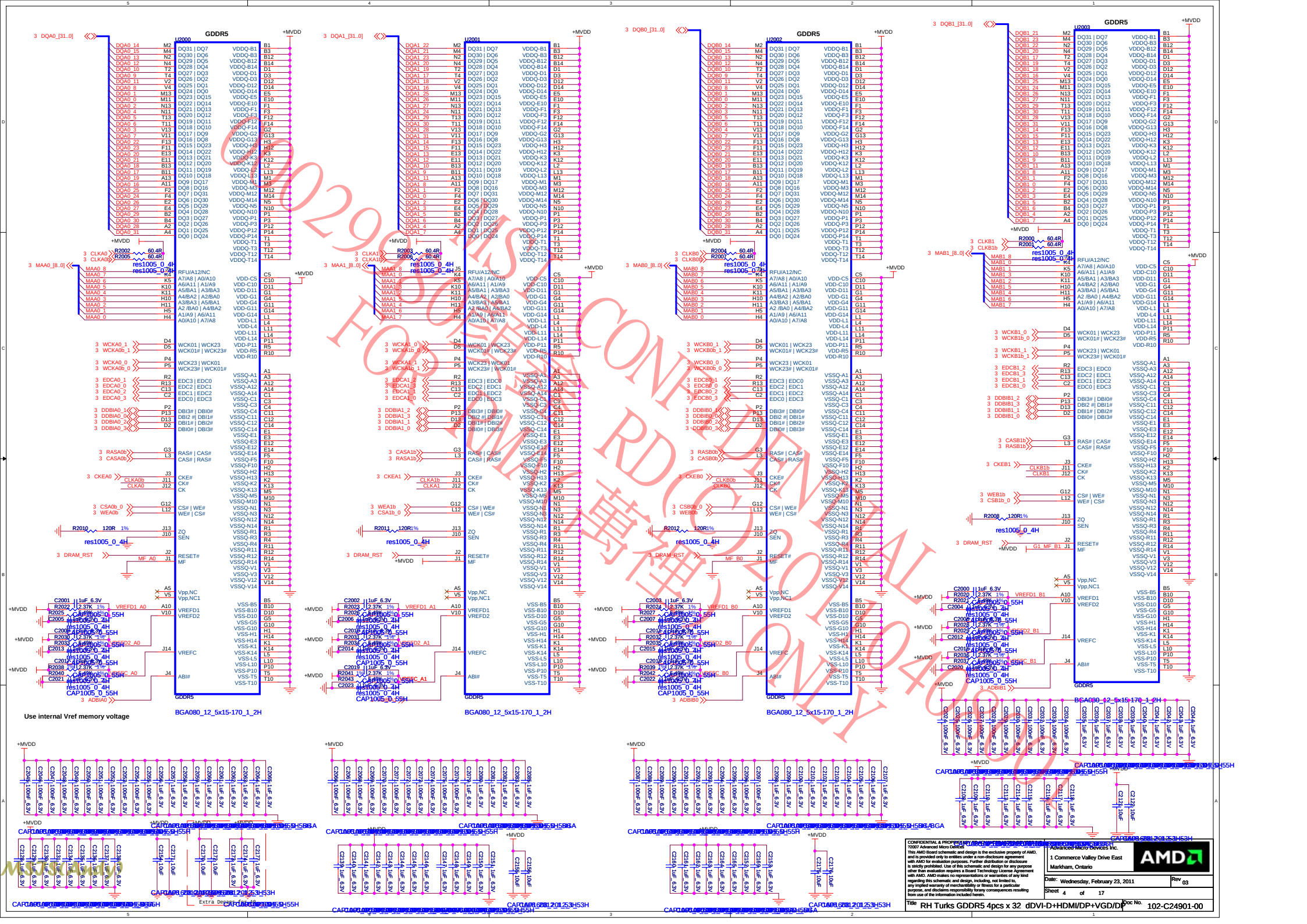
Rev	03
Sheet	3 of 17
Title	RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP
Doc No.	102-C24901-00

MSI(Andy)


GDDR5
BGA080_12_5x15-170_1_2H
Use internal Vref memory voltage
Extra Decoupling for 4pcs
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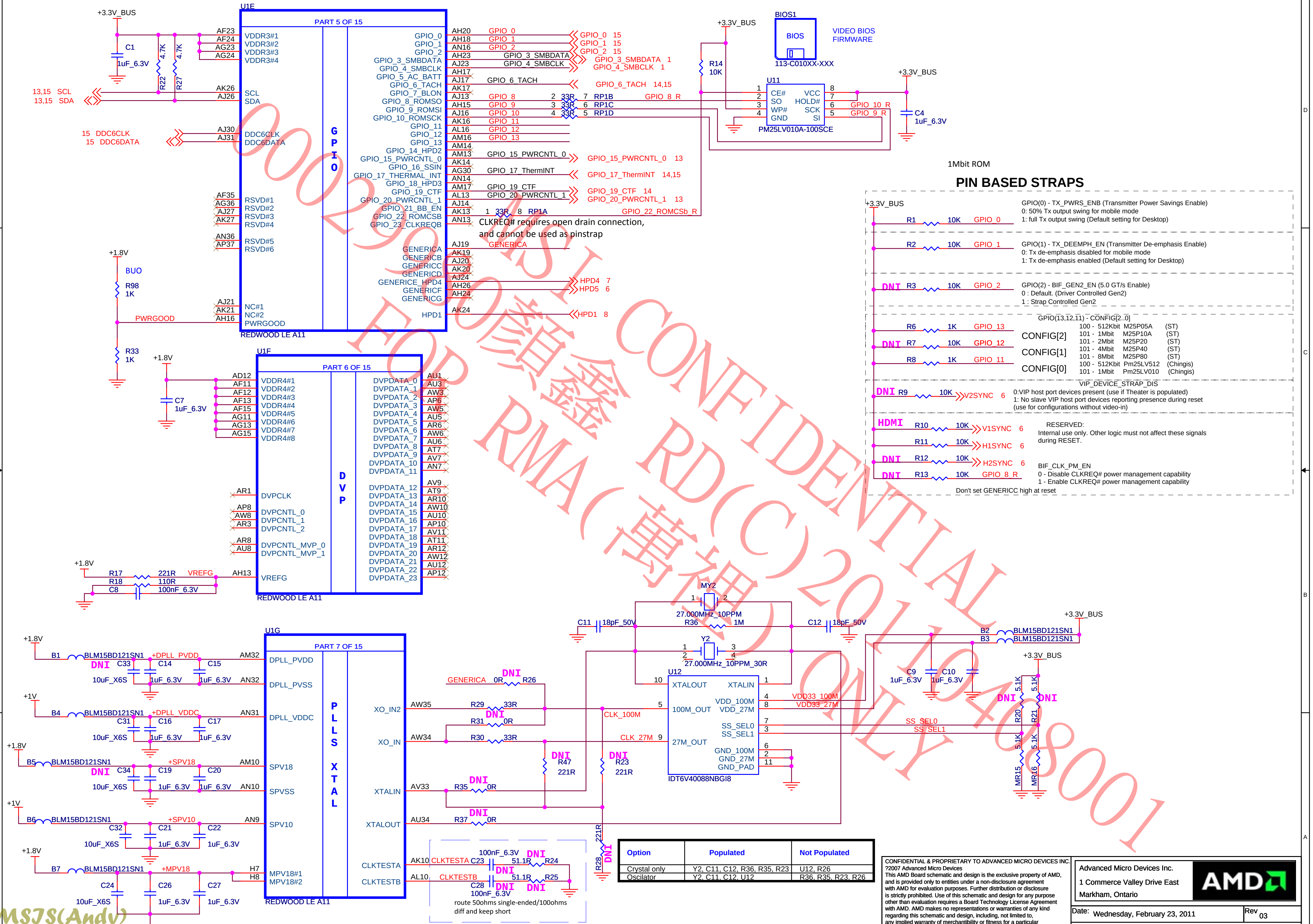
Sheet 4 of 17
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP
Doc No. 102-C24901-00



Option	Populated	Not Populated
Crystal only	Y2, C11, C12, R36, R35, R23	U12, R26
Oscilator	Y2, C11, C12, U12	R36, R35, R23, R26

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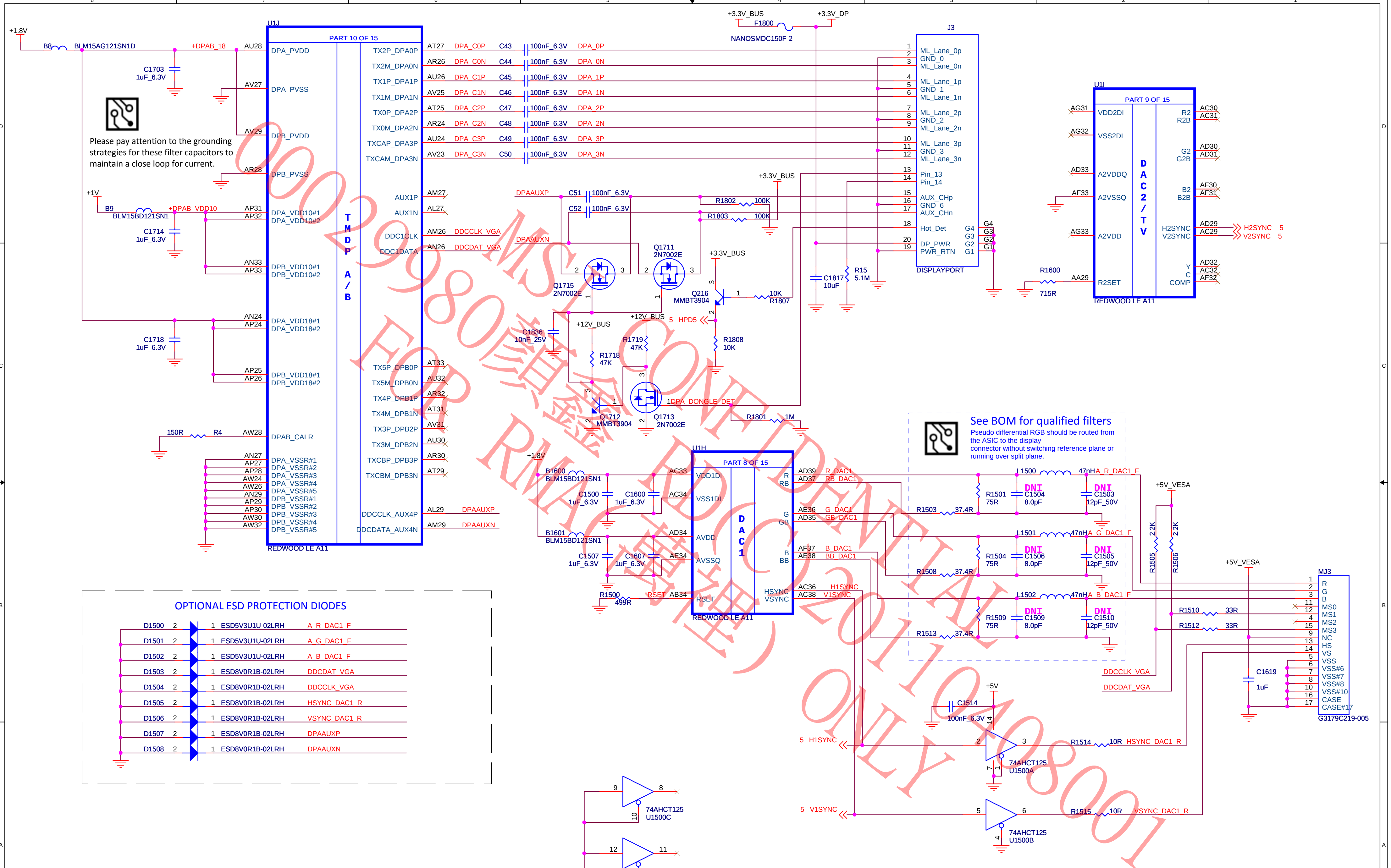
Title: RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP

Doc No. 102-C24901-00



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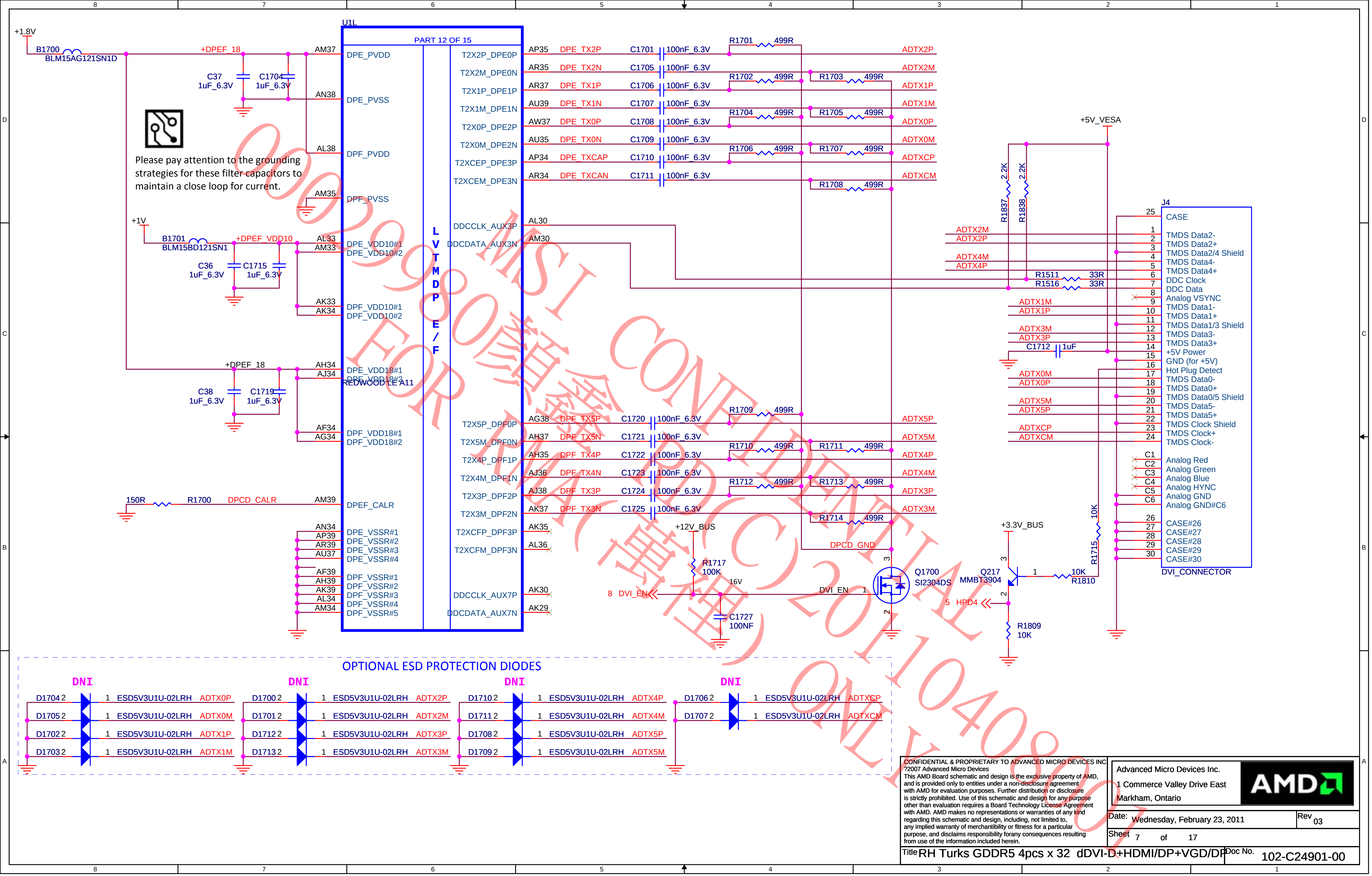
Date: Thursday, February 24, 2011 Rev 03

Sheet 6 of 17

Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGA/DP Doc No. 102-C24901-00



U1L
PART 12 OF 15
LVTMDP E/F
REDWOOD LE A11
+1.8V
B1700 BLM15AG121SN1D
+DPEF_18
C37 1uF_6.3V
C1704 1uF_6.3V
Please pay attention to the grounding strategies for these filter capacitors to maintain a close loop for current.
+1V
B1701 BLM15BD121SN1
+DPEF_VDD10
C36 1uF_6.3V
C1715 1uF_6.3V
+DPEF_18
C38 1uF_6.3V
C1719 1uF_6.3V
150R R1700 DPCD_CALR
AM37 DPE_PVDD
AN38 DPE_PVSS
AL38 DPF_PVDD
AM35 DPF_PVSS
AL33 DPE_VDD10#1
AM33 DPE_VDD10#2
AK33 DPF_VDD10#1
AK34 DPF_VDD10#2
AH34 DPE_VDD18#1
AJ34 DPE_VDD18#2
AF34 DPF_VDD18#1
AG34 DPF_VDD18#2
AM39 DPEF_CALR
AN34 DPE_VSSR#1
AP39 DPE_VSSR#2
AR39 DPE_VSSR#3
AU37 DPE_VSSR#4
AF39 DPF_VSSR#1
AH39 DPF_VSSR#2
AK39 DPF_VSSR#3
AL34 DPF_VSSR#4
AM34 DPF_VSSR#5
T2X2P_DPE0P AP35 DPE_TX2P C1701 100nF_6.3V
T2X2M_DPE0N AR35 DPE_TX2N C1705 100nF_6.3V
T2X1P_DPE1P AR37 DPE_TX1P C1706 100nF_6.3V
T2X1M_DPE1N AU39 DPE_TX1N C1707 100nF_6.3V
T2X0P_DPE2P AW37 DPE_TX0P C1708 100nF_6.3V
T2X0M_DPE2N AU35 DPE_TX0N C1709 100nF_6.3V
T2XCEP_DPE3P AP34 DPE_TXCAP C1710 100nF_6.3V
T2XCEM_DPE3N AR34 DPE_TXCAN C1711 100nF_6.3V
DDCCLK_AUX3P AL30
DDCDATA_AUX3N AM30
T2X5P_DPF0P AG38 DPF_TX5P C1720 100nF_6.3V
T2X5M_DPF0N AH37 DPF_TX5N C1721 100nF_6.3V
T2X4P_DPF1P AH35 DPF_TX4P C1722 100nF_6.3V
T2X4M_DPF1N AJ36 DPF_TX4N C1723 100nF_6.3V
T2X3P_DPF2P AJ38 DPF_TX3P C1724 100nF_6.3V
T2X3M_DPF2N AK37 DPF_TX3N C1725 100nF_6.3V
T2XCFP_DPF3P AK35
T2XCFM_DPF3N AL36
DDCCLK_AUX7P AK30
DDCDATA_AUX7N AK29
R1701 499R ADTX2P
R1702 499R R1703 499R ADTX2M
ADTX1P
R1704 499R R1705 499R ADTX1M
ADTX0P
R1706 499R R1707 499R ADTX0M
ADTXCP
R1708 499R ADTXCM
R1709 499R ADTX5P
R1710 499R R1711 499R ADTX5M
ADTX4P
R1712 499R R1713 499R ADTX4M
ADTX3P
R1714 499R ADTX3M
DPCD_GND
+5V_VESA
R1837 2.2K
R1838 2.2K
R1511 33R
R1516 33R
C1712 1uF
J4
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
DVI_CONNECTOR
ADTX2M ADTX2P ADTX4M ADTX4P ADTX1M ADTX1P ADTX3M ADTX3P ADTX0M ADTX0P ADTX5M ADTX5P ADTXCP ADTXCM
+12V_BUS
R1717 100K
16V
8 DVI_EN
C1727 100NF
DVI_EN
Q1700 SI2304DS
+3.3V_BUS
Q217 MMBT3904
10K R1810
R1715 10K
5 HPD4
R1809 10K
OPTIONAL ESD PROTECTION DIODES
DNI
D1704 ESD5V3U1U-02LRH ADTX0P
D1705 ESD5V3U1U-02LRH ADTX0M
D1702 ESD5V3U1U-02LRH ADTX1P
D1703 ESD5V3U1U-02LRH ADTX1M
D1700 ESD5V3U1U-02LRH ADTX2P
D1701 ESD5V3U1U-02LRH ADTX2M
D1712 ESD5V3U1U-02LRH ADTX3P
D1713 ESD5V3U1U-02LRH ADTX3M
D1710 ESD5V3U1U-02LRH ADTX4P
D1711 ESD5V3U1U-02LRH ADTX4M
D1708 ESD5V3U1U-02LRH ADTX5P
D1709 ESD5V3U1U-02LRH ADTX5M
D1706 ESD5V3U1U-02LRH ADTXCP
D1707 ESD5V3U1U-02LRH ADTXCM
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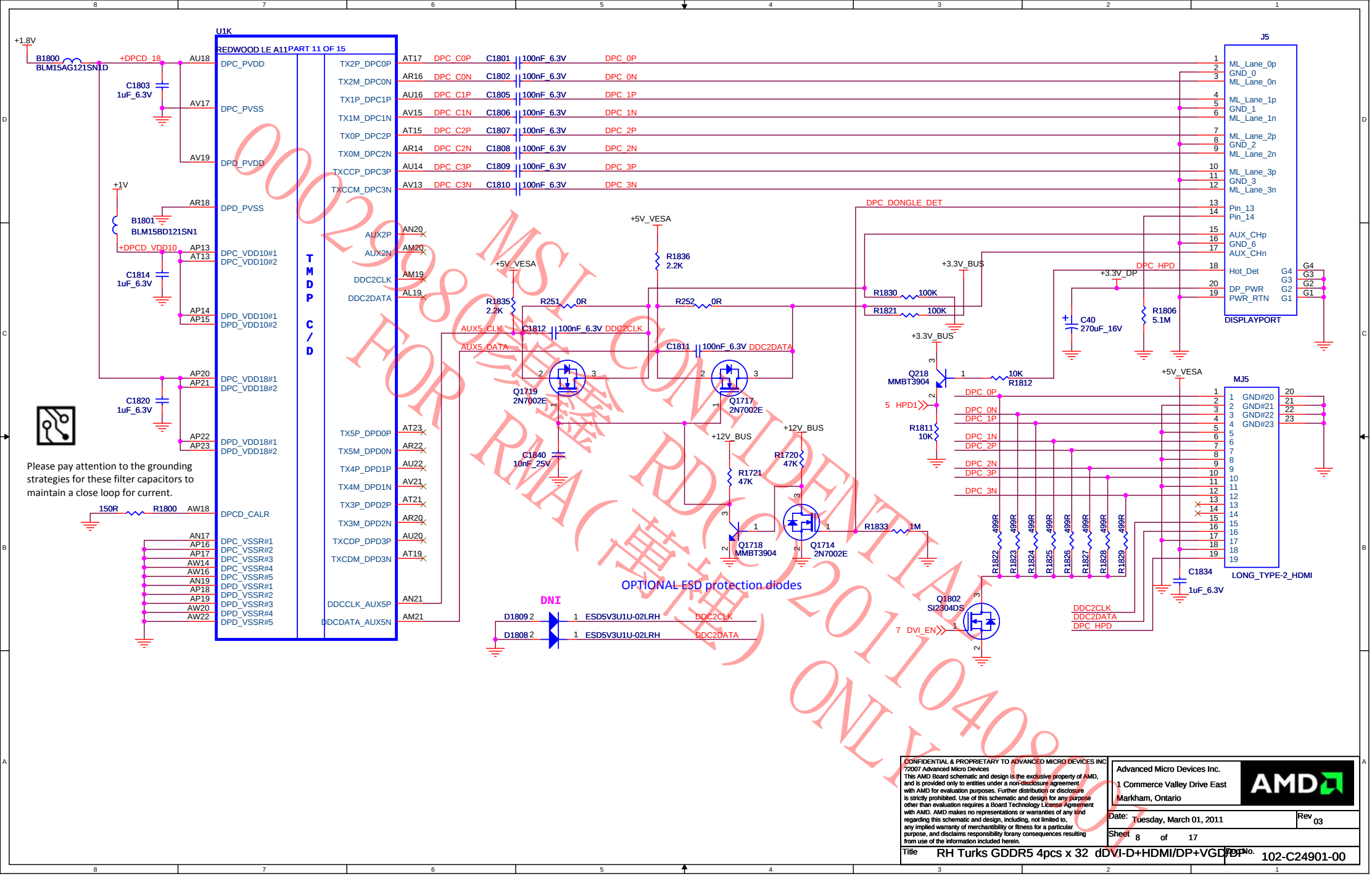
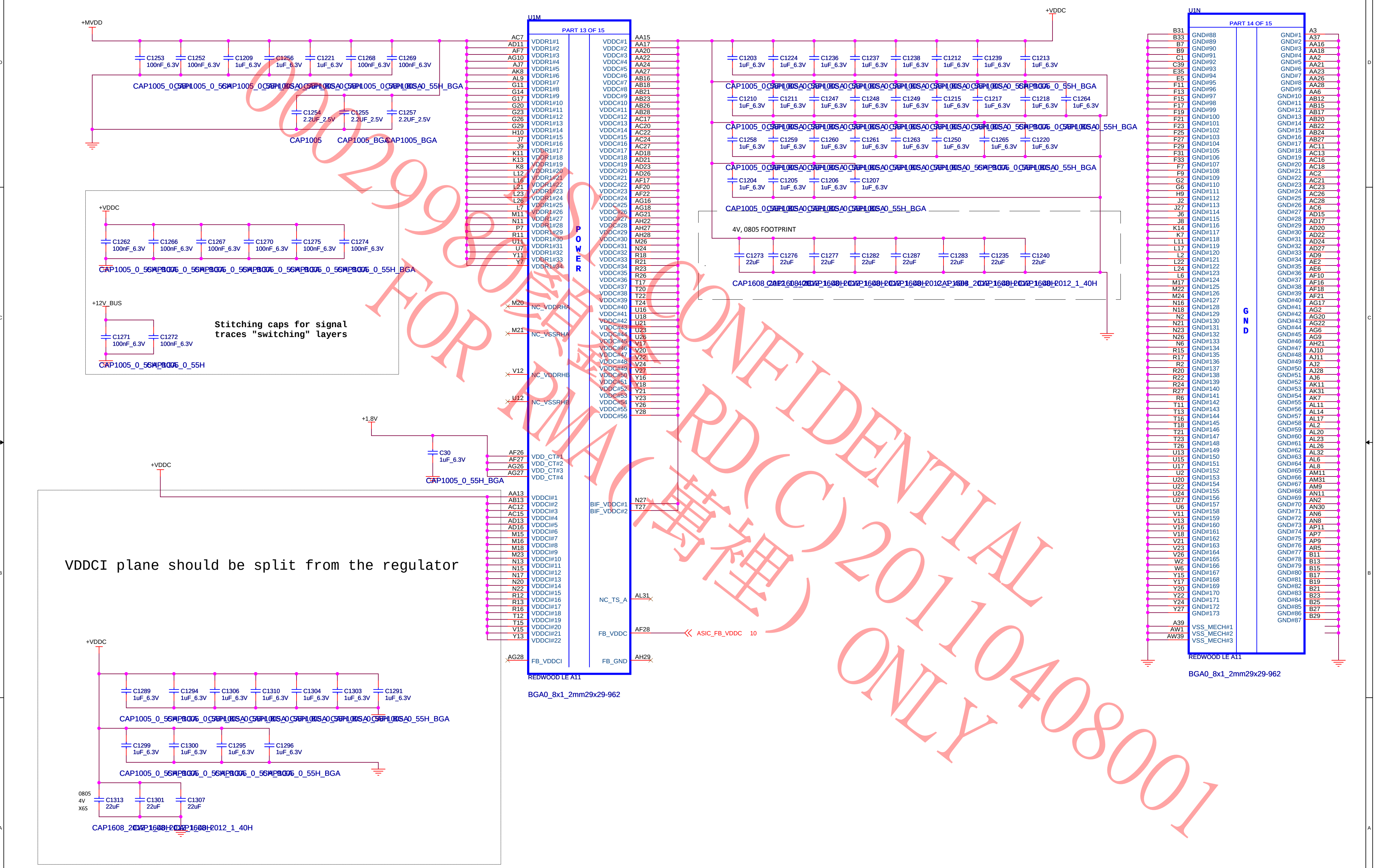
AMD
Date: Wednesday, February 23, 2011
Rev 03
Sheet 7 of 17
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP
Doc No. 102-C24901-00

MSIS(Andy)





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Rev 03
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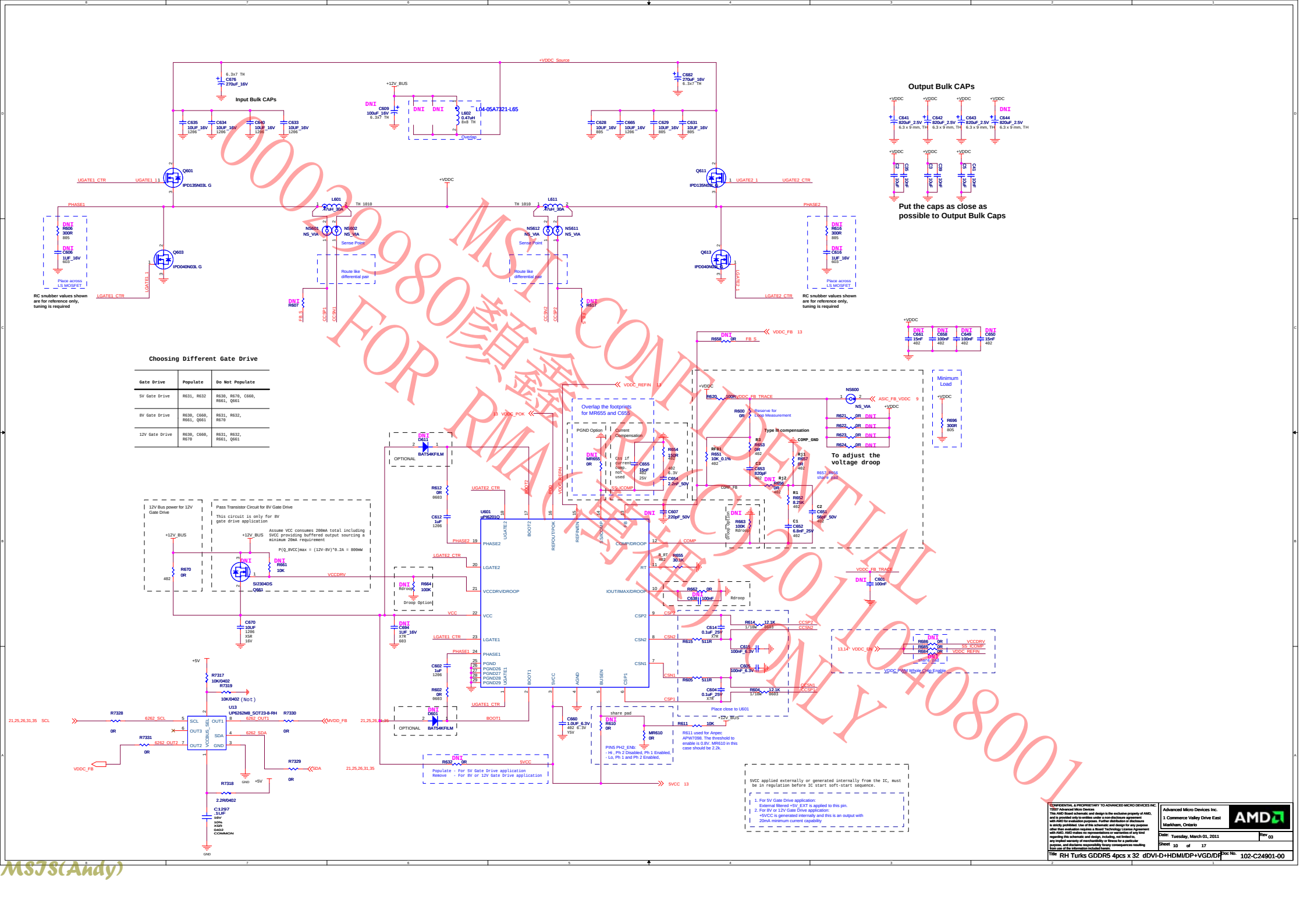
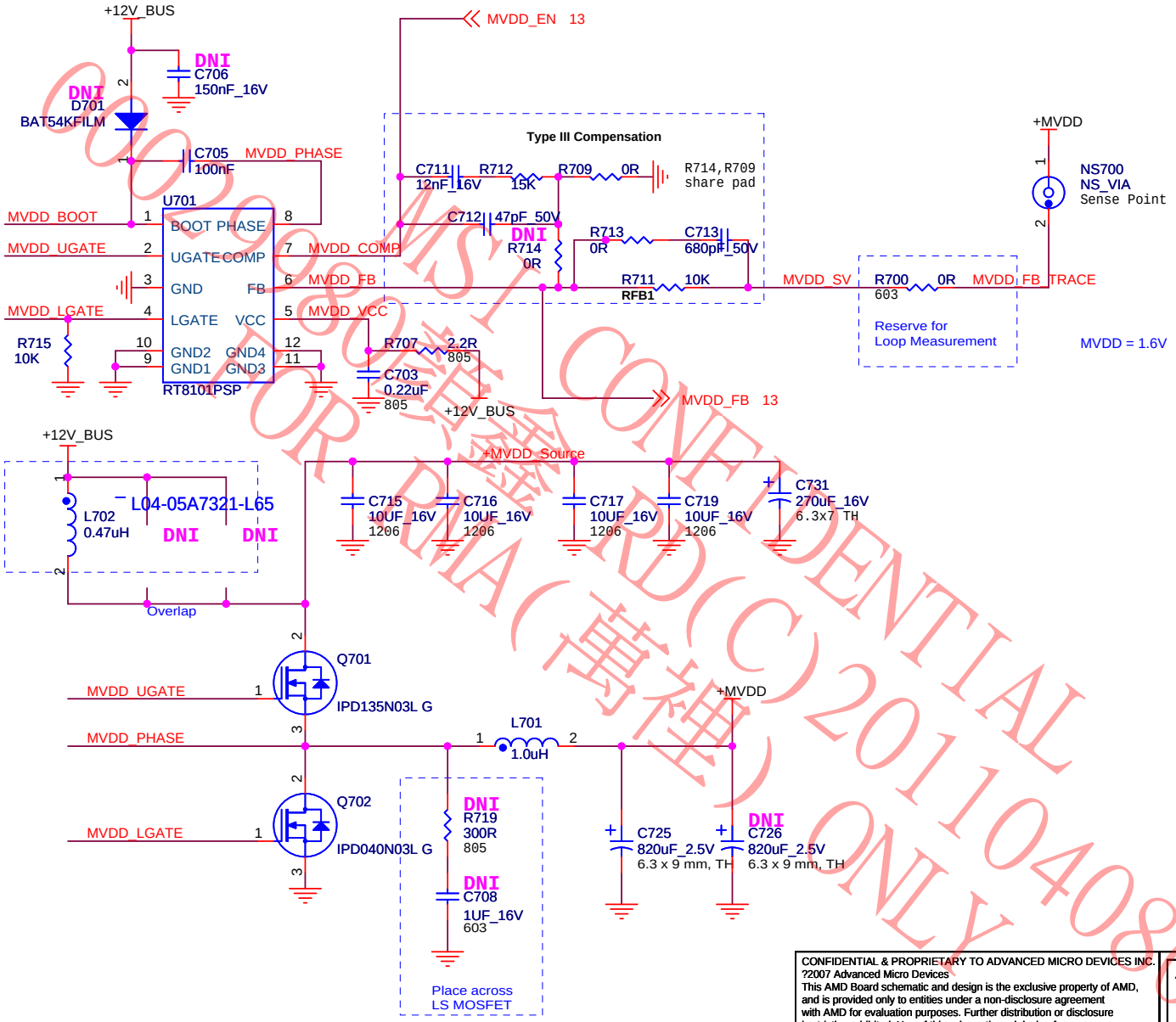
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP
Doc No. 102-C24901-00





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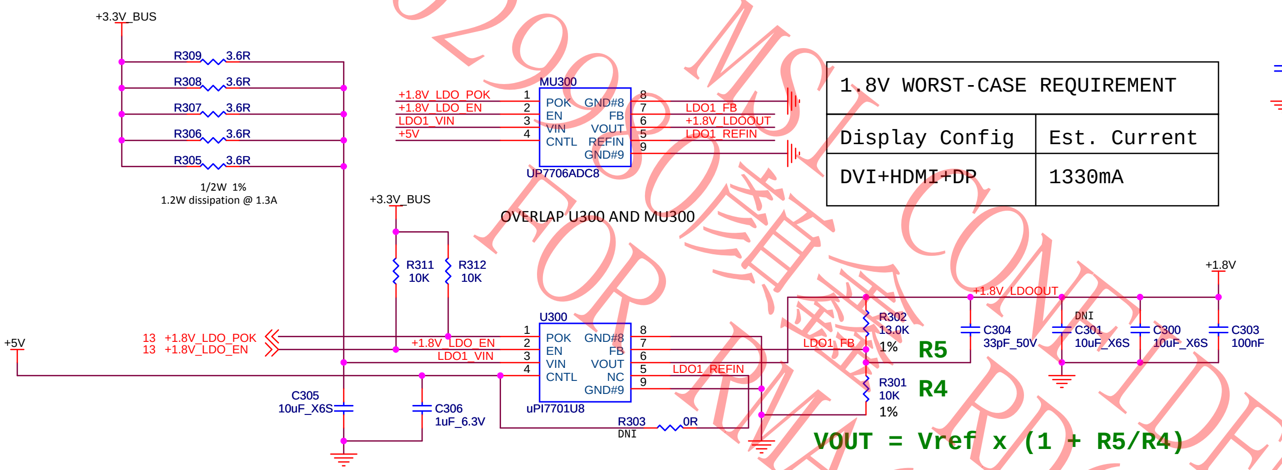
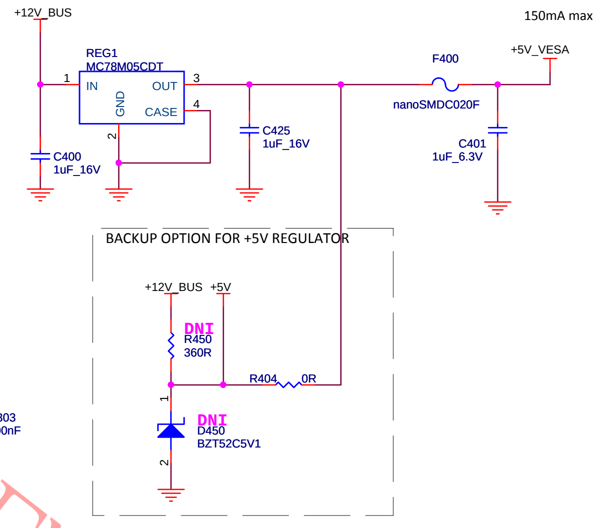
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP	Doc No. 102-C24901-00

LDO #1: Vin = 3.00V to 3.60V (3.3V +/- 9%) Vout = +1.8V +/- 2%; Iout = 1.3A (TBV) RMS MAX
PCB: 50 to 70mm sq. copper area for cooling

Regulator for +5V and +5V_VESA
Iout max = 150mA (VGA+DVI+HDMI)

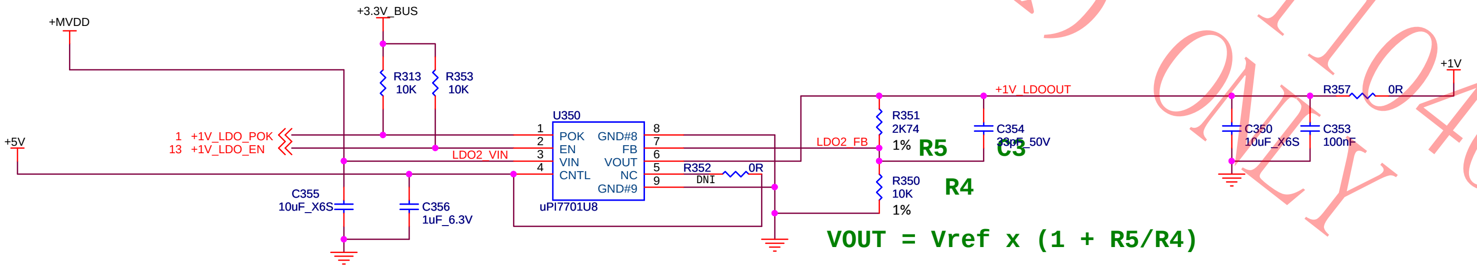


1.8V WORST-CASE REQUIREMENT	
Display Config	Est. Current
DVI+HDMI+DP	1330mA



LDO #2: Vin = +1.32V to 1.84VMAX Vout = +1.01V +/- 2% Iout = 1.7A (TBV) RMS MAX
PCB: 50 to 70mm sq. copper area for cooling

1.0V WORST-CASE REQUIREMENT	
Display Config	Est. Current
DVI+HDMI+DP	1560mA



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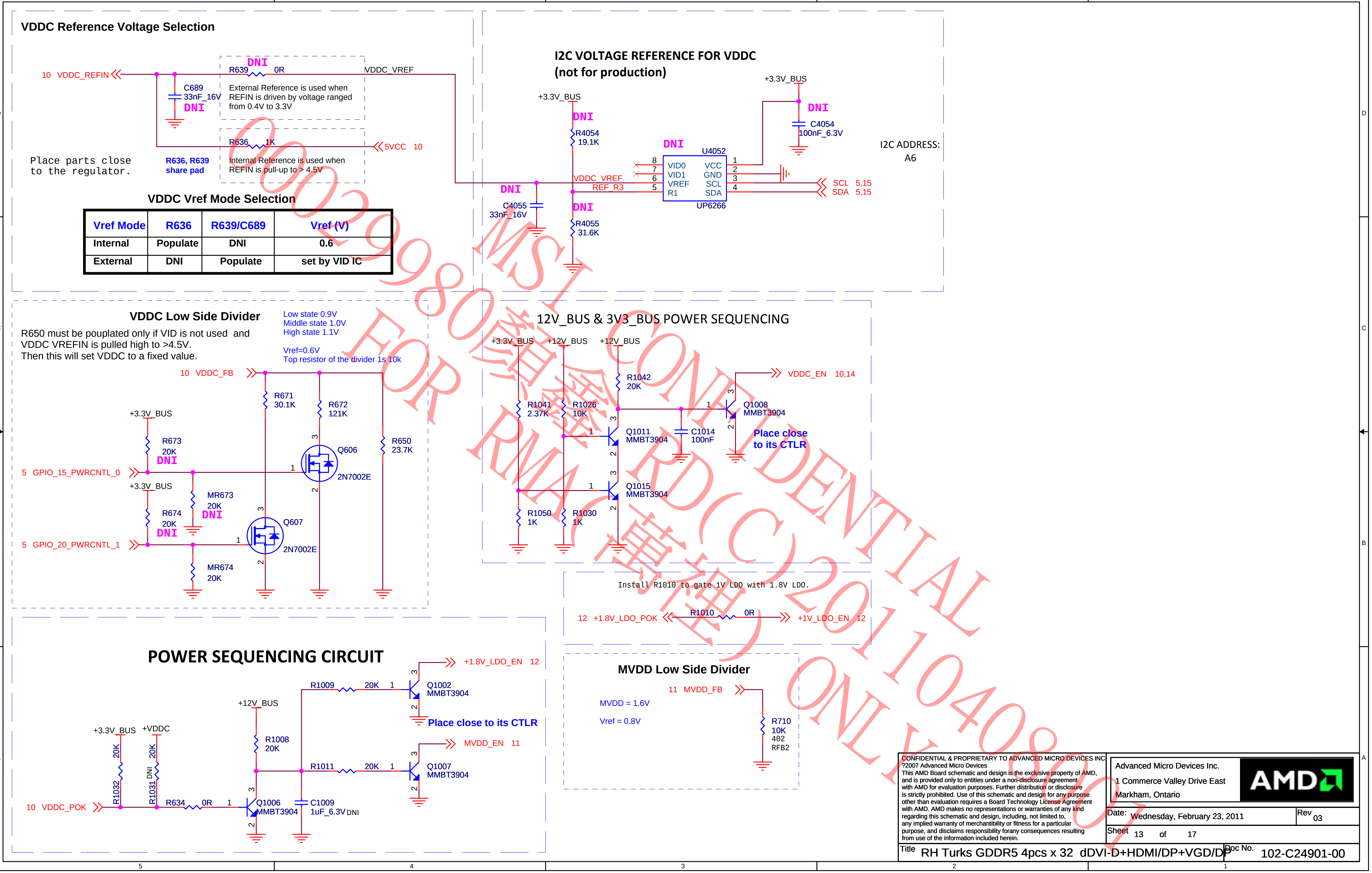
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP Doc No. 102-C24901-00



VDDC Vref Mode Selection

Vref Mode	R636	R639/C689	Vref (V)
Internal	Populate	DNI	0.6
External	DNI	Populate	set by VID IC

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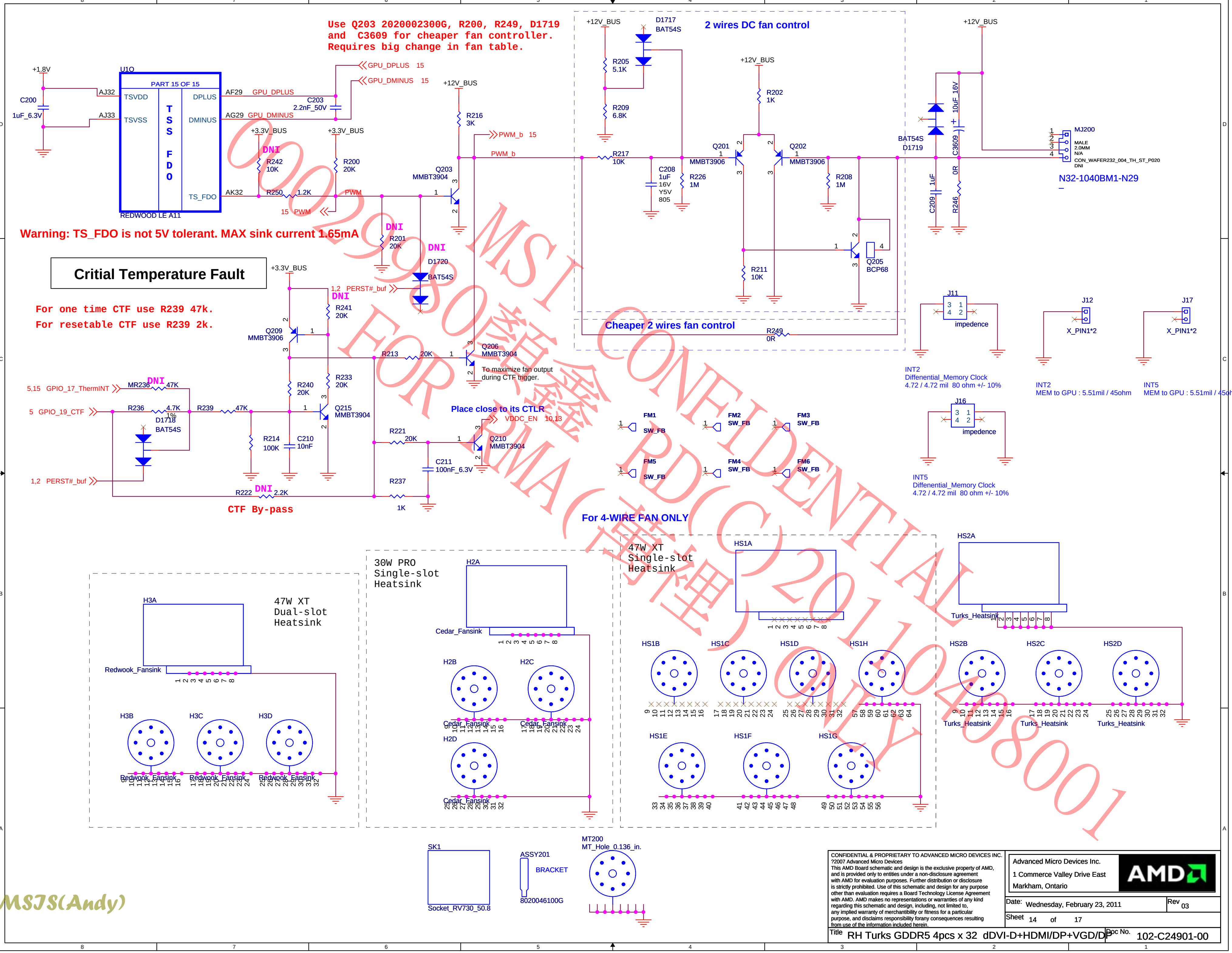
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP | Doc No. 102-C24901-00



Use Q203 2020002300G, R200, R249, D1719 and C3609 for cheaper fan controller. Requires big change in fan table.
2 wires DC fan control
Cheaper 2 wires fan control
Warning: TS_FDO is not 5V tolerant. MAX sink current 1.65mA
Critial Temperature Fault
For one time CTF use R239 47k.
For resetable CTF use R239 2k.
To maximize fan output during CTF trigger.
Place close to its CTLR
CTF By-pass
For 4-WIRE FAN ONLY
U10
PART 15 OF 15
TSVDD
TSVSS
DPLUS
DMINUS
TS_FDO
TSS FDO
REDWOOD LE A11
GPU_DPLUS 15
GPU_DMINUS 15
PWM_b 15
15 PWM
1,2 PERST#_buf
5,15 GPIO_17_ThermINT
5 GPIO_19_CTF
1,2 PERST#_buf
VDDC_EN 10,13
+1.8V
+3.3V_BUS
+12V_BUS
C200 1uF_6.3V
C203 2.2nF_50V
R242 10K
R200 20K
R250 1.2K
R216 3K
Q203 MMBT3904
R201 20K
D1720 BAT54S
R241 20K
Q209 MMBT3906
R213 20K
Q206 MMBT3904
R240 20K
R233 20K
MR236 47K
R236 4.7K
R239 47K
D1718 BAT54S
Q215 MMBT3904
R214 100K
C210 10nF
R221 20K
Q210 MMBT3904
C211 100nF_6.3V
R237 1K
R222 2.2K
DNI
D1717 BAT54S
R205 5.1K
R209 6.8K
R217 10K
C208 1uF 16V Y5V 805
R226 1M
R202 1K
Q201 MMBT3906
Q202 MMBT3906
R208 1M
R211 10K
Q205 BCP68
R249 0R
BAT54S D1719
C3609 10uF 16V
C209 1uF
R246 0R
MJ200
MALE 2.0MM N/A CON_WAFER232_004_TH_ST_P020 DNI
N32-1040BM1-N29
J11 impedence
J12 X_PIN1*2
J17 X_PIN1*2
INT2 Diffenential_Memory Clock 4.72 / 4.72 mil 80 ohm +/- 10%
INT2 MEM to GPU : 5.51mil / 45ohm
INT5 MEM to GPU : 5.51mil / 45ohm
J16 impedence
INT5 Diffenential_Memory Clock 4.72 / 4.72 mil 80 ohm +/- 10%
FM1 SW_FB
FM2 SW_FB
FM3 SW_FB
FM5 SW_FB
FM4 SW_FB
FM6 SW_FB
47W XT Dual-slot Heatsink
H3A Redwook_Fansink
H3B H3C H3D Redwook_Fansink
30W PRO Single-slot Heatsink
H2A Cedar_Fansink
H2B H2C H2D Cedar_Fansink
47W XT Single-slot Heatsink
HS1A HS1B HS1C HS1D HS1H HS1E HS1F HS1G
HS2A Turks_Heatsink
HS2B HS2C HS2D Turks_Heatsink
SK1 Socket_RV730_50.8
ASSY201 BRACKET 8020046100G
MT200 MT_Hole_0.136_in.
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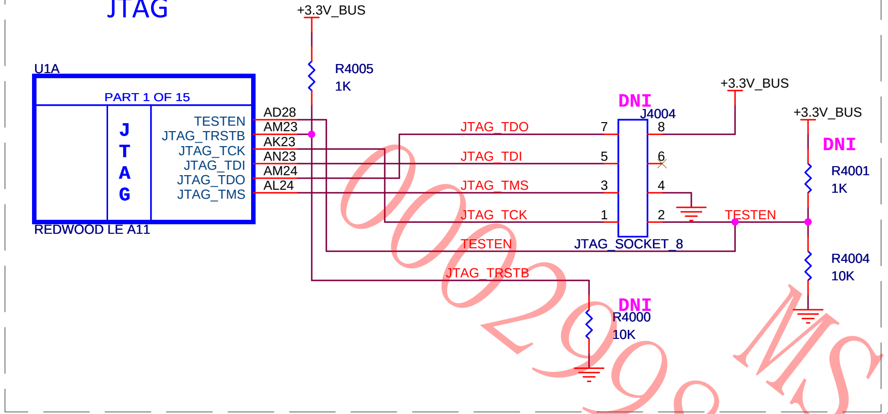
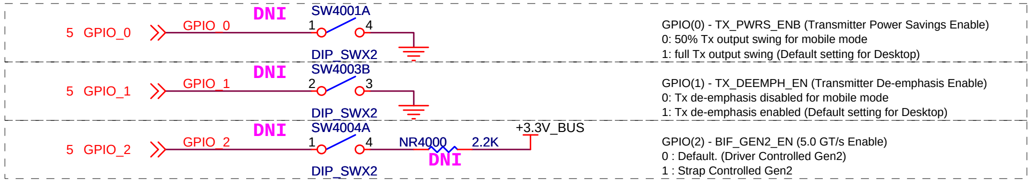
Date: Wednesday, February 23, 2011
Rev 03
Sheet 14 of 17
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP
Doc No. 102-C24901-00
MSI CONFIDENTIAL FOR RMA (PD(C) 2011040008001 ONLY)
MSIS(Andy)

JTAG



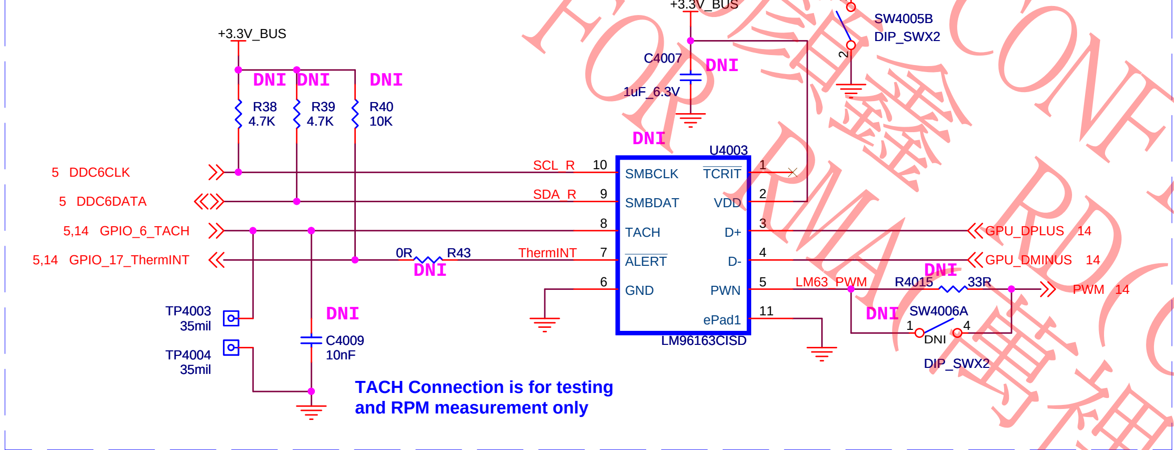
SWITCH CONNECTIONS TO PINSTRAPS



SCL/SDA PORT DEBUG ACCESS

Place connector on the back side
(easily accessible and not blocked by the heatsink).

LM96163 FOR BACKUP THERMAL CONTROL



TACH Connection is for testing and RPM measurement only

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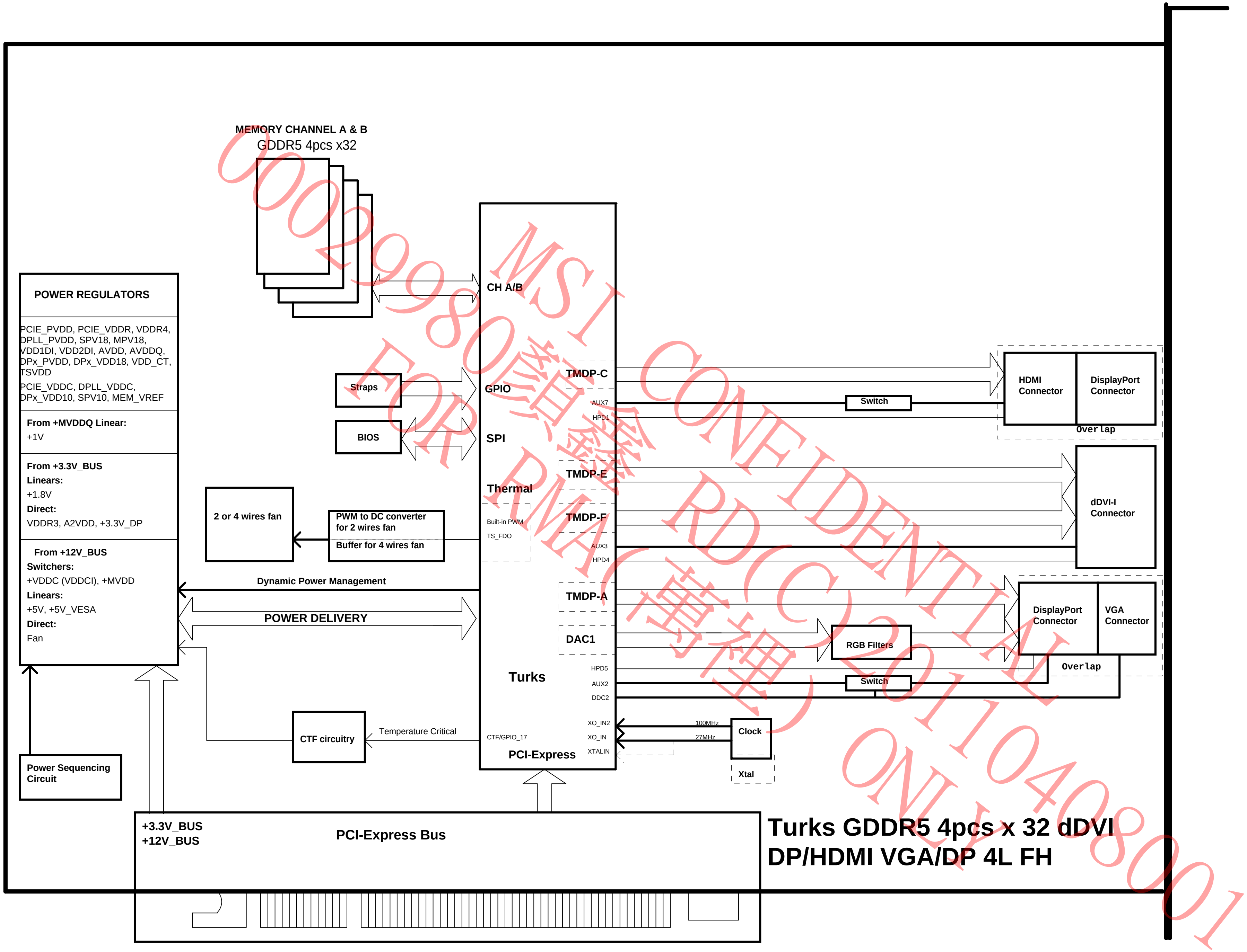
Title RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP | Doc No. 102-C24901-00

MSTS(Andy)



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Canada, L3T 7X6
(905) 882-2600

Date:	Wednesday, February 23, 2011	Rev	03
Sheet of	102-C24901-00		
Title	RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP	Doc No.	16 17

Title	Schematic No.	Date:
RH Turks GDDR5 4pcs x 32 dDVI-D+HDMI/DP+VGD/DP	102-C24901-00	Thursday, February 24, 2011

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 03

Sch Rev	PCB Rev	Date	REVISION DESCRIPTION
00A	00A	Nov 11, 2010	1)Based on: C333-00A 2) Changed stack-up. L2 and L3 became 1oz copper.
		02.22.2011	1. ADD UP6262 IN P.10 2. remove SCL/SDA PORT DEBUG ACCESS P.15 3. FAN to 4-pin , remove 4-pin circuits 4. change L602 L702 to R50, remove R724 B701 5. remove R609 B702