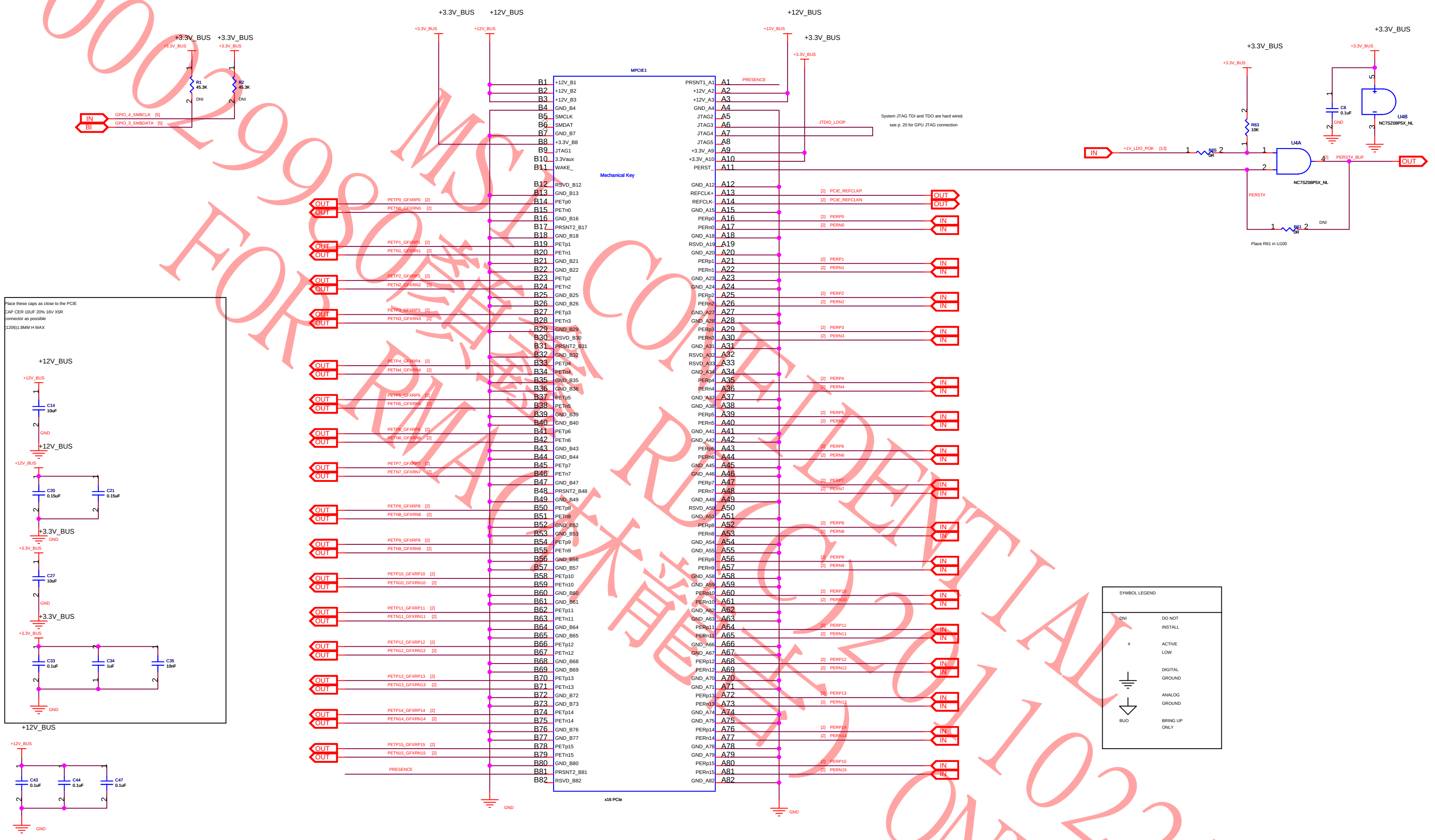
PCI-EXPRESS EDGE CONNECTOR



Advanced Micro Devices Inc.
No.1387, ZHANGDONG ROAD
SHANGHAI CHINA 201203

AMD

Date: Thursday, September 30, 2010	Rev P00
Sheet 1 of 18	
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/VGA PCI-E Edge Connector	Doc No. 105-C264XX-00A

CAICOS/CEDAR PCIe Interface

NOTE: Some of the PCIE testpoints will
be available through vias on traces.

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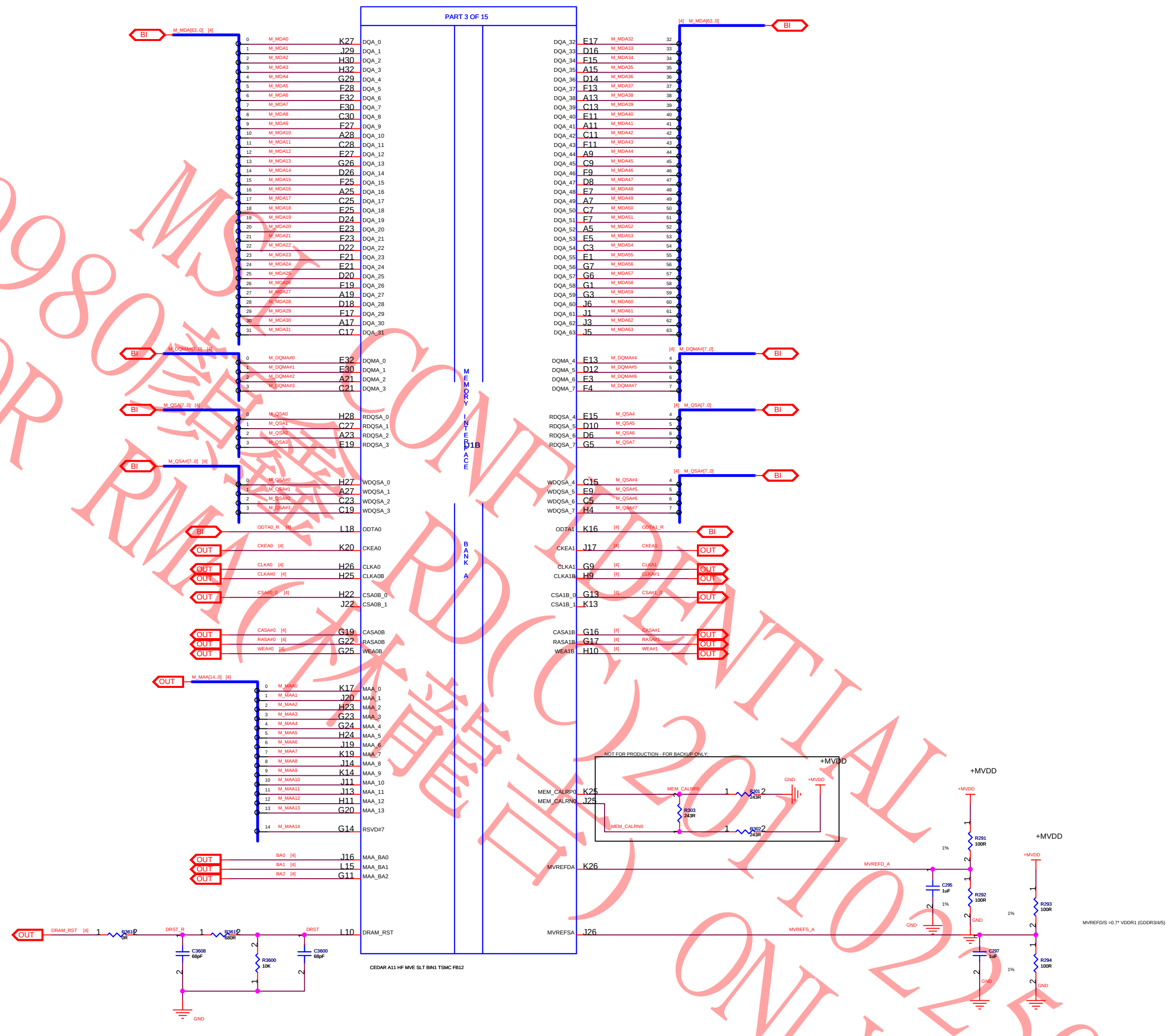
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA CAICOS PCIE Interface	Doc No. 105-C264XX-00A


PART 3 OF 15
MEMORY INTERFACE
U1B
BANK A
M_MDA[63..0]
M_DQMA#[7..0]
M_QSA[7..0]
M_QSA#[7..0]
M_MAA[14..0]
DQA_0 … DQA_63
DQMA_0 … DQMA_7
RDQSA_0 … RDQSA_7
WDQSA_0 … WDQSA_7
ODTA0
CKEA0
CLKA0
CLKA0B
CSA0B_0
CSA0B_1
CASA0B
RASA0B
WEA0B
MAA_0 … MAA_13
RSVD#7
MAA_BA0
MAA_BA1
MAA_BA2
DRAM_RST
ODTA1
CKEA1
CLKA1
CLKA1B
CSA1B_0
CSA1B_1
CASA1B
RASA1B
WEA1B
NOT FOR PRODUCTION - FOR BACKUP ONLY
MEM_CALRP0
MEM_CALRN0
MVREFDA
MVREFSA
+MVDD
GND
MVREFD/S =0.7* VDDR1 (GDDR3/4/5)
CEDAR A11 HF MVE SLT BIN1 TSMC FB12

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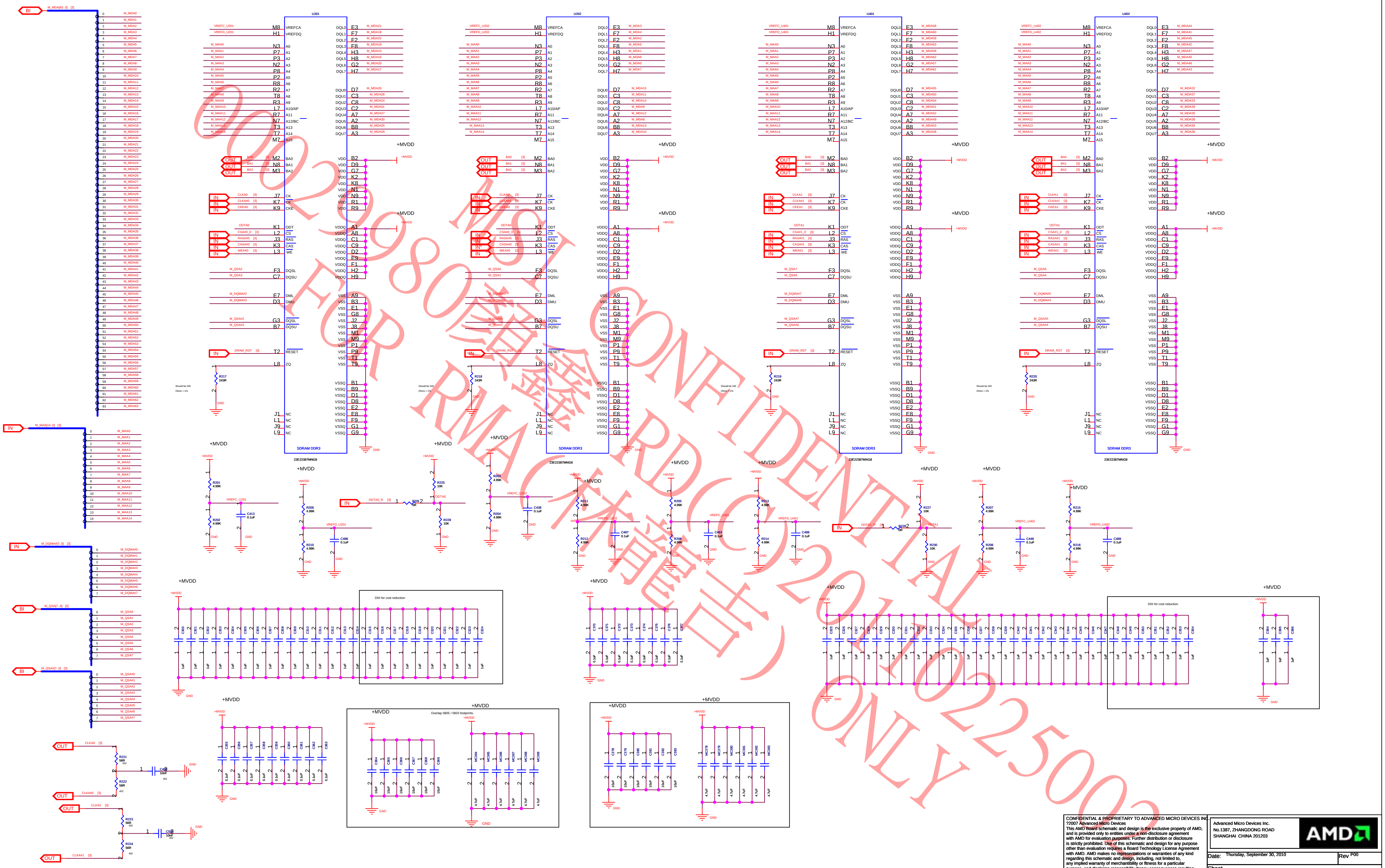
Title: HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA
CAICOS MEM I/F CHA

Doc No. 105-C264XX-00A

CHANNEL A: 256MB/512MB DDR3



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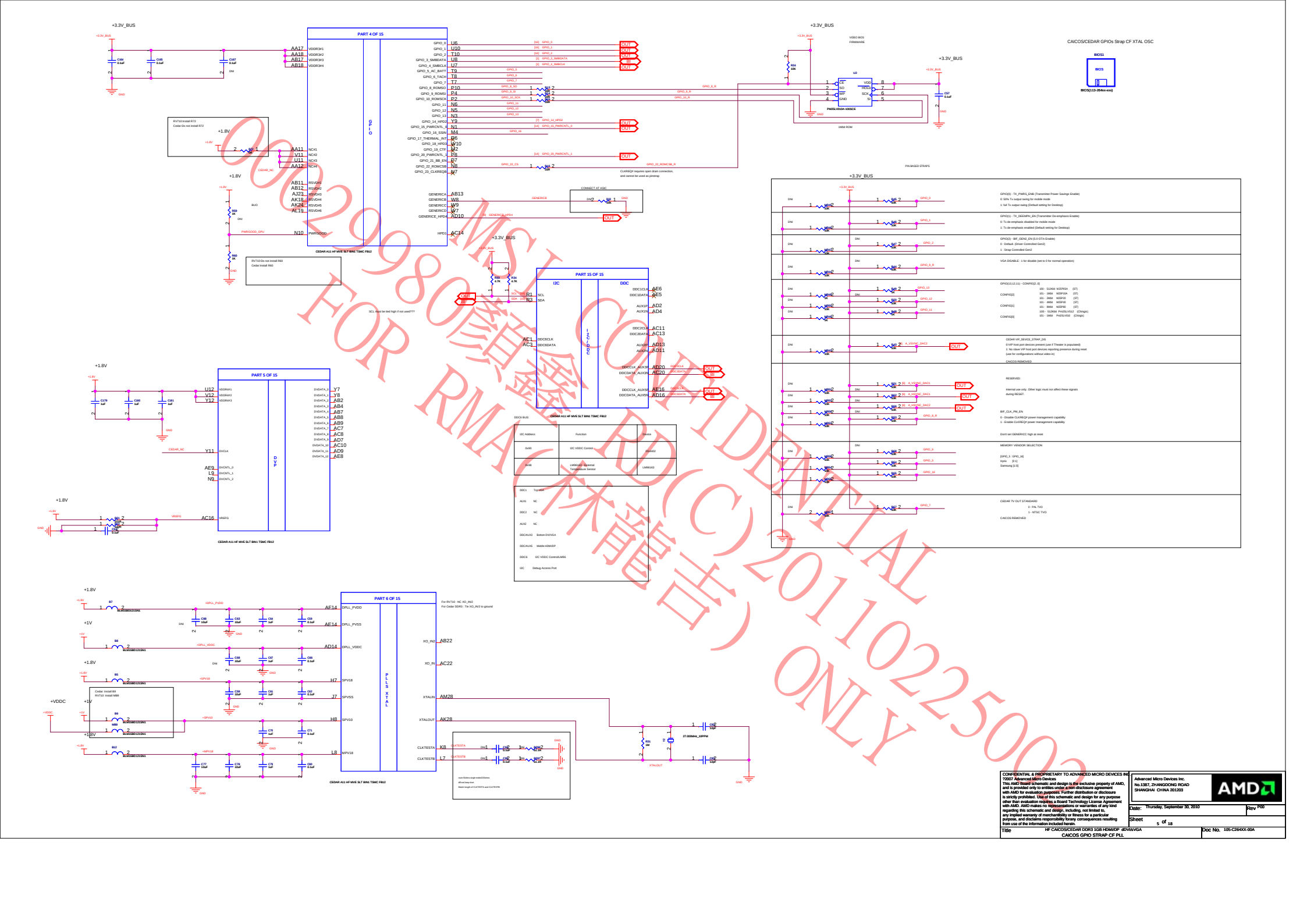
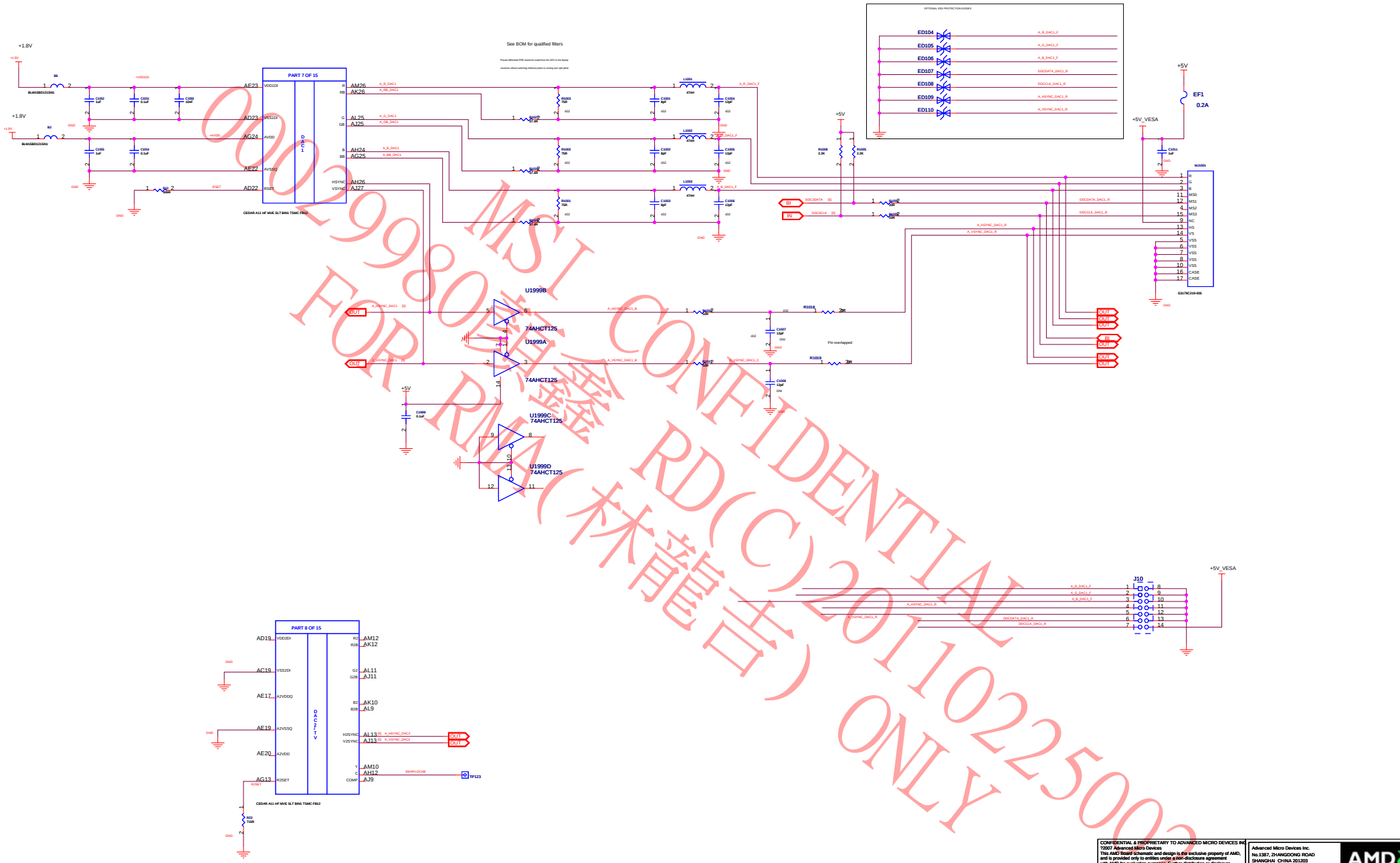
Date: Thursday, September 30, 2010
Rev P00

Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA
DDR3 CHA

Doc No. 105-C264XX-00A





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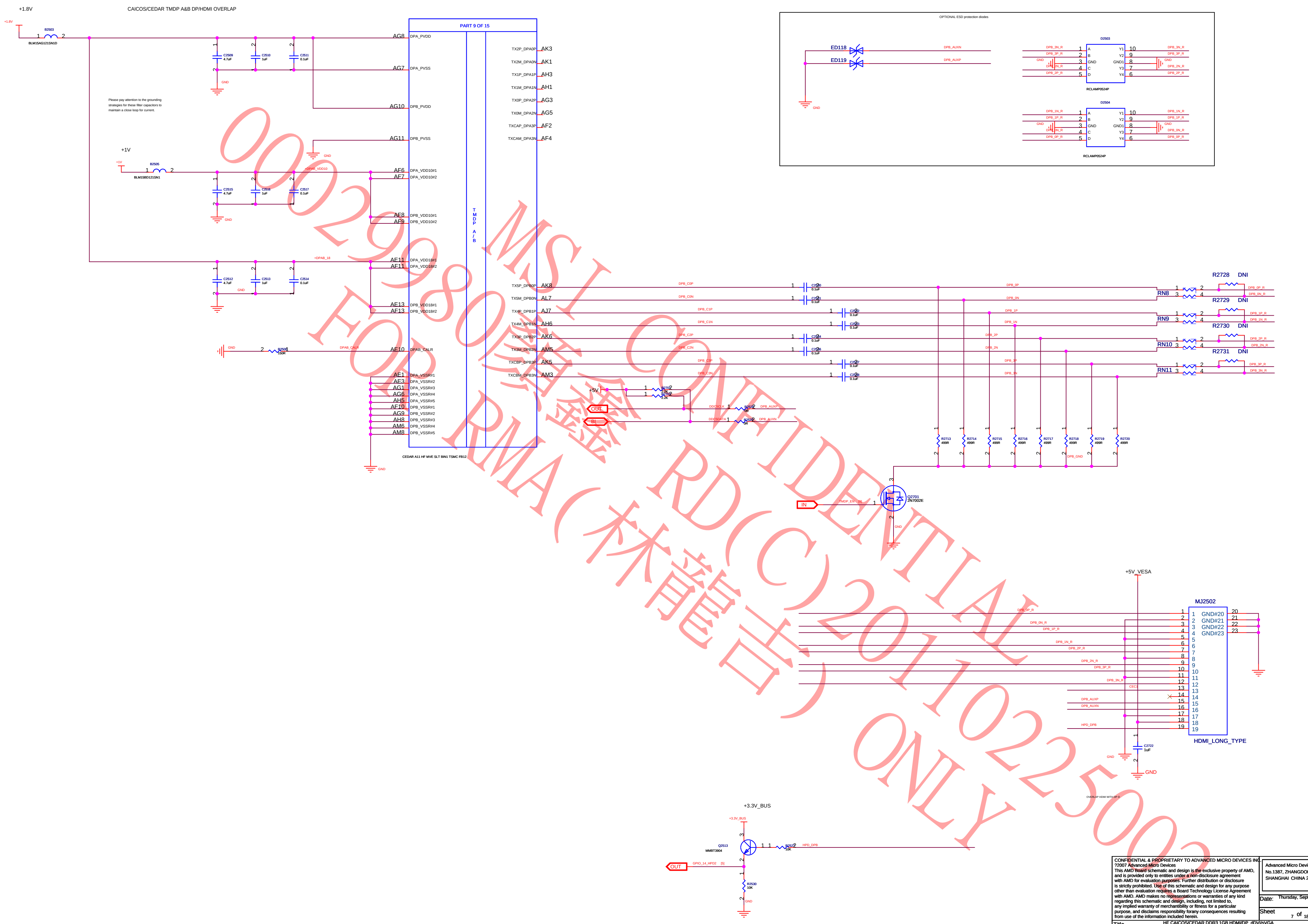
Sheet	6 of 18
Title	HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/dVGA CAICOS DAC
Doc No.	105-C26400-00A



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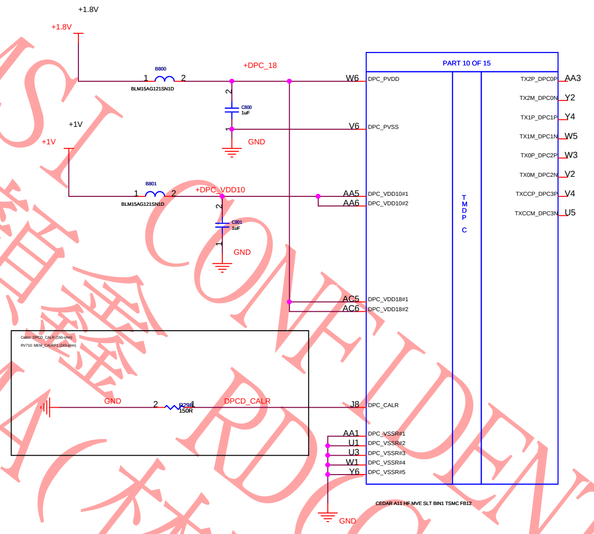
Title: HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA
CAICOS TMDP A&B HDMI/DP

Doc No. 105-C264XX-00A

CAICOS/CEDAR Display Port C (Unused)


+1.8V
+1.8V
B800
1 2
BLM15AG121SN1D
+DPC_18
C800
1uF
GND
+1V
+1V
B801
BLM15AG121SN1D
+DPC_VDD10
C801
1uF
GND
W6 DPC_PVDD
V6 DPC_PVSS
AA5 DPC_VDD10#1
AA6 DPC_VDD10#2
AC5 DPC_VDD18#1
AC6 DPC_VDD18#2
Cedar: DPCD_CALR (150-ohm)
RV710: MEM_CALRP1 (243-ohm)
GND
R298
150R
DPCD_CALR
J8 DPC_CALR
AA1 DPC_VSSR#1
U1 DPC_VSSR#2
U3 DPC_VSSR#3
W1 DPC_VSSR#4
Y6 DPC_VSSR#5
GND
PART 10 OF 15
TMDP C
TX2P_DPC0P AA3
TX2M_DPC0N Y2
TX1P_DPC1P Y4
TX1M_DPC1N W5
TX0P_DPC2P W3
TX0M_DPC2N V2
TXCCP_DPC3P V4
TXCCM_DPC3N U5
CEDAR A11 HF MVE SLT BIN1 TSMC FB12

Advanced Micro Devices Inc.
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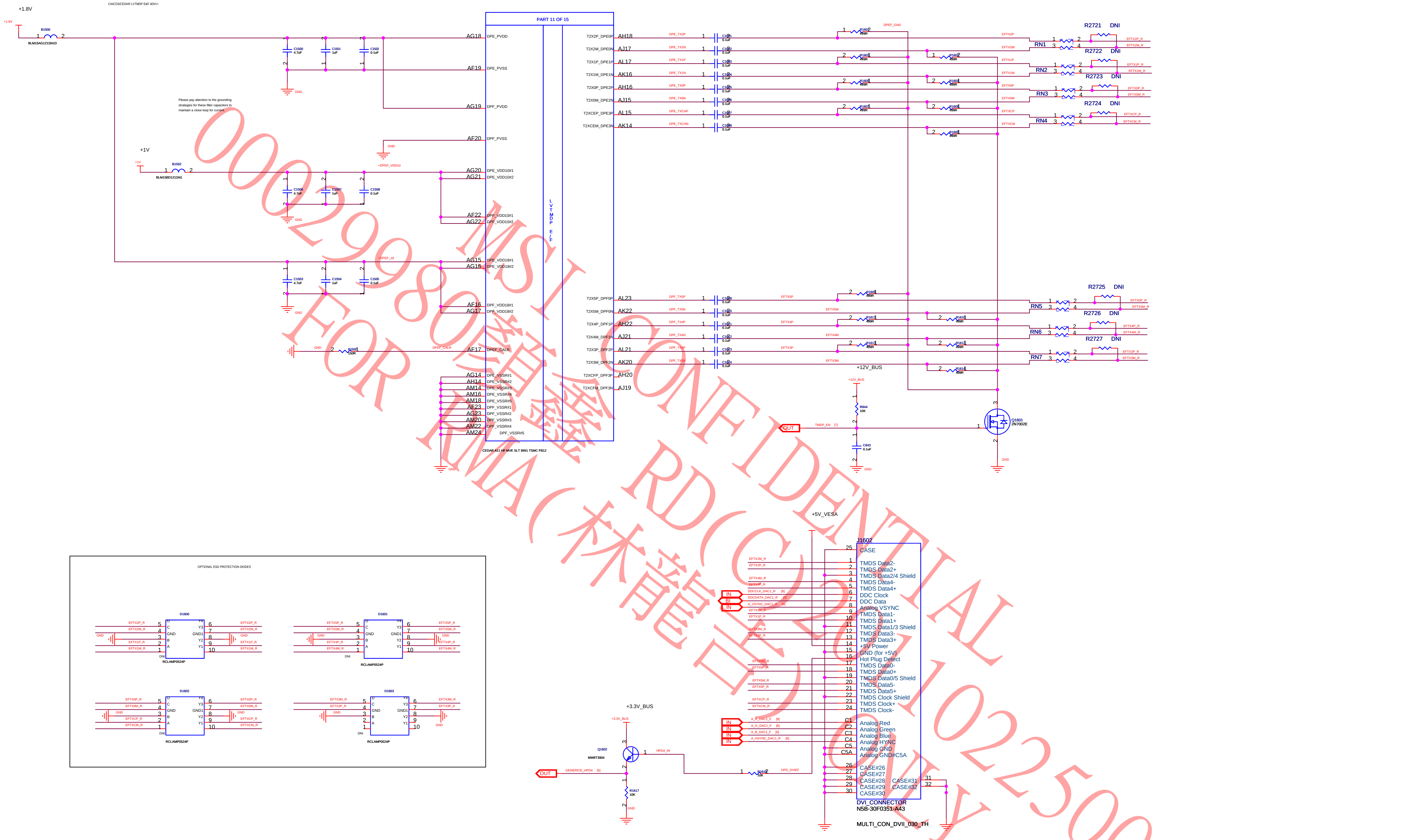
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA CAICOS TMDP C (UNUSED)	Doc No. 105-C264XX-00A

CAICOS/CEDAR LVTMDP E&F dDVI-I



+1.8V
B1500
BLM15AG121SN1D
C1500 4.7uF
C1501 1uF
C1502 0.1uF
Please pay attention to the grounding strategies for these filter capacitors to maintain a close loop for current.
+1V
B1502
BLM15BD121SN1
C1506 4.7uF
C1507 1uF
C1508 0.1uF
C1503 4.7uF
C1504 1uF
C1505 0.1uF
PART 11 OF 15
LVTMDP E/F
AG18 DPE_PVDD
AF19 DPE_PVSS
AG19 DPE_PVDD
AF20 DPE_PVSS
AG20 DPE_VDD10#1
AG21 DPE_VDD10#2
AF22 DPF_VDD10#1
AG22 DPF_VDD10#2
AG15 DPE_VDD18#1
AG16 DPE_VDD18#2
AF16 DPF_VDD18#1
AF17 DPF_VDD18#2
AF17 DPEF_CALR
AG14 DPE_VSSR#1
AH14 DPE_VSSR#2
AM14 DPE_VSSR#3
AM16 DPE_VSSR#4
AM18 DPE_VSSR#5
AF23 DPF_VSSR#1
AG23 DPF_VSSR#2
AM20 DPF_VSSR#3
AM22 DPF_VSSR#4
AM24 DPF_VSSR#5
CEDAR A11 HF MVE SLT BIN1 TSMC FB12
T2X2P_DPE0P AH18
T2X2M_DPE0N AJ17
T2X1P_DPE1P AL17
T2X1M_DPE1N AK16
T2X0P_DPE2P AH16
T2X0M_DPE2N AJ15
T2XCEP_DPE3P AL15
T2XCEM_DPE3N AK14
T2X5P_DPF0P AL23
T2X5M_DPF0N AK22
T2X4P_DPF1P AH22
T2X4M_DPF1N AJ21
T2X3P_DPF2P AL21
T2X3M_DPF2N AK20
T2XCFP_DPF3P AH20
T2XCFM_DPF3N AJ19
RN1 R2721 DNI
RN2 R2722 DNI
RN3 R2723 DNI
RN4 R2724 DNI
RN5 R2725 DNI
RN6 R2726 DNI
RN7 R2727 DNI
+12V_BUS
R844 10K
C843 0.1uF
Q1601 2N7002E
OUT TMDP_EN
OPTIONAL ESD PROTECTION DIODES
D1600 RCLAMP0524P
D1601 RCLAMP0524P
D1602 RCLAMP0524P
D1603 RCLAMP0524P
+5V_VESA
J1602
CASE
TMDS Data2-
TMDS Data2+
TMDS Data2/4 Shield
TMDS Data4-
TMDS Data4+
DDC Clock
DDC Data
Analog VSYNC
TMDS Data1-
TMDS Data1+
TMDS Data1/3 Shield
TMDS Data3-
TMDS Data3+
+5V Power
GND (for +5V)
Hot Plug Detect
TMDS Data0-
TMDS Data0+
TMDS Data0/5 Shield
TMDS Data5-
TMDS Data5+
TMDS Clock Shield
TMDS Clock+
TMDS Clock-
Analog Red
Analog Green
Analog Blue
Analog HYNC
Analog GND
Analog GND#C5A
CASE#26
CASE#27
CASE#28 CASE#31
CASE#29 CASE#32
CASE#30
DVI_CONNECTOR
N5B-30F0351-A43
MULTI_CON_DVII_030_TH
+3.3V_BUS
Q1602 MMBT3904
R1617 10K
OUT GENERICE_HPD4
HPD_DVIEF

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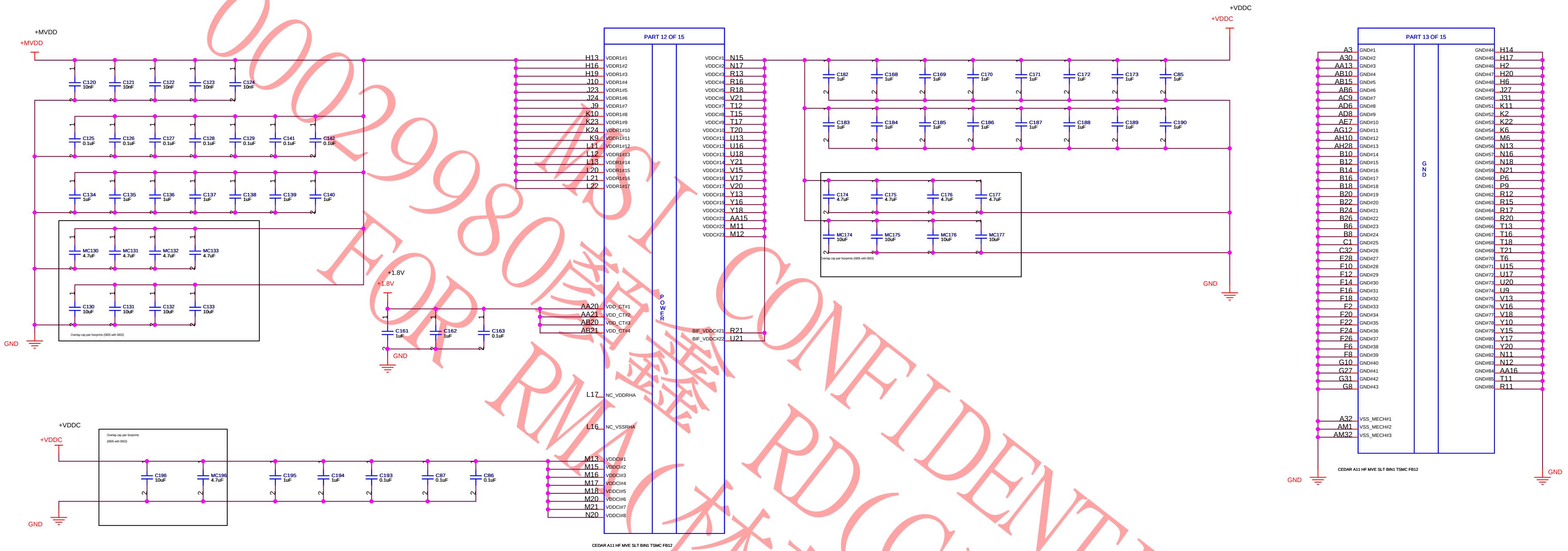
Title: HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/dVGA — CAICOS LVTMDP E&F dDVI-I

Doc No. 105-C264XX-00A

CAICOS/CEDAR Power & GND



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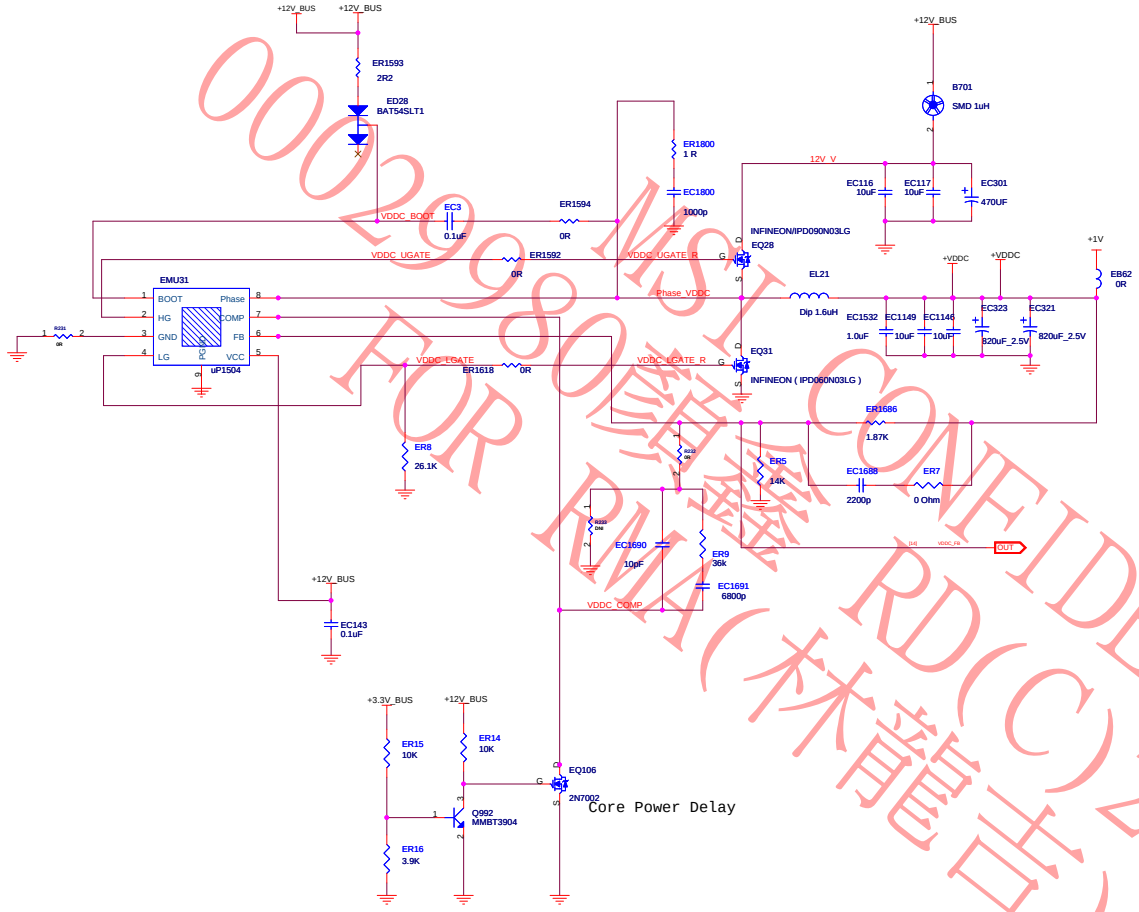
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA CAICOS POWER&GND	Doc No. 105-C264XX-00A



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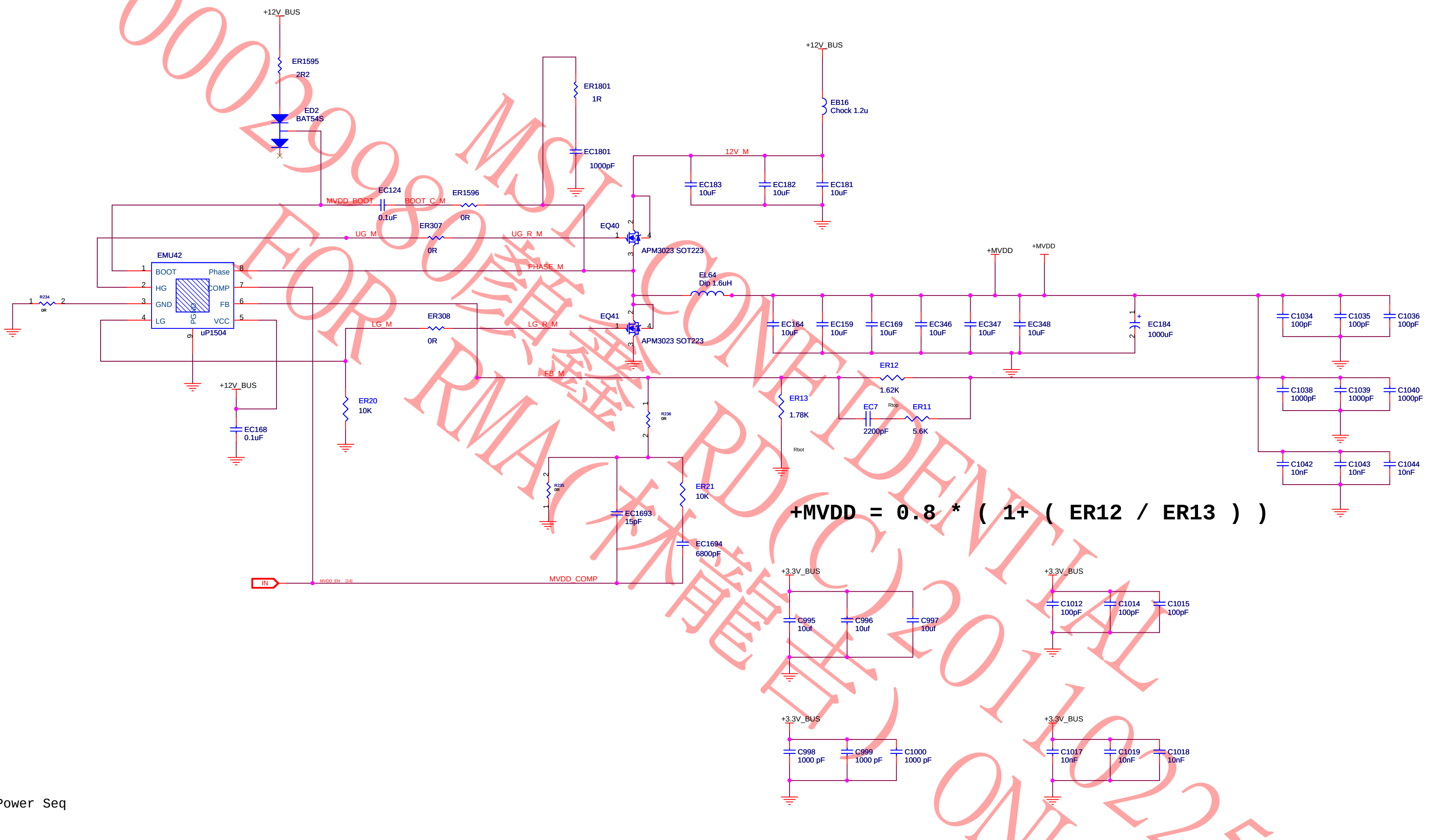
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA VDDC	Doc No. 105-C264XX-00A


+12V_BUS
ER1595
2R2
ED2
BAT54S
ER1801
1R
EC1801
1000pF
+12V_BUS
EB16
Chock 1.2u
12V_M
EC183
10uF
EC182
10uF
EC181
10uF
EC124
0.1uF
MVDD_BOOT
BOOT_C_M
ER1596
0R
ER307
0R
UG_M
UG_R_M
EQ40
APM3023 SOT223
EMU42
BOOT
HG
GND
LG
Phase
COMP
FB
VCC
uP1504
PHASE_M
R234
0R
EL64
Dip 1.6uH
+MVDD
+MVDD
EQ41
APM3023 SOT223
ER308
0R
LG_M
LG_R_M
FB_M
EC164
10uF
EC159
10uF
EC169
10uF
EC346
10uF
EC347
10uF
EC348
10uF
EC184
1000uF
C1034
100pF
C1035
100pF
C1036
100pF
C1038
1000pF
C1039
1000pF
C1040
1000pF
C1042
10nF
C1043
10nF
C1044
10nF
+12V_BUS
EC168
0.1uF
ER20
10K
R236
0R
ER12
1.62K
ER13
1.78K
Rbot
EC7
2200pF
Rtop
ER11
5.6K
R235
0R
ER21
10K
EC1693
15pF
EC1694
6800pF
IN
MVDD_EN
MVDD_COMP
+MVDD = 0.8 * (1+ (ER12 / ER13))
+3.3V_BUS
C995
10uf
C996
10uf
C997
10uf
+3.3V_BUS
C1012
100pF
C1014
100pF
C1015
100pF
+3.3V_BUS
C998
1000 pF
C999
1000 pF
C1000
1000 pF
+3.3V_BUS
C1017
10nF
C1019
10nF
C1018
10nF

Memory Power Seq

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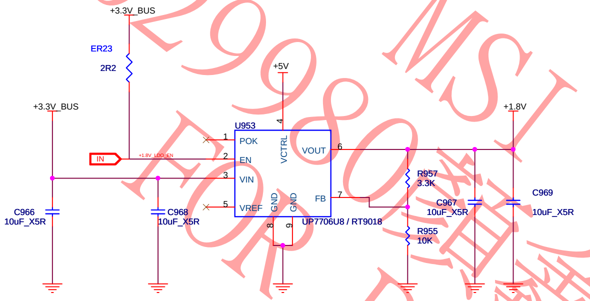
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/dVGA MVDD		Doc No. 105-C264XX-00A

Linear Regulators

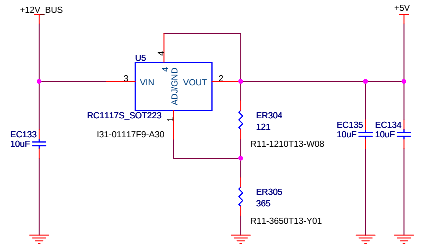
LDO #1: Vin = 3.00V to 3.60V (3.3V +/- 9%) Vout = +1.8V +/- 2%; Iout = 1.6A (TBV) RMS MAX

PCB: 50 to 70mm sq. copper area for cooling

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



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



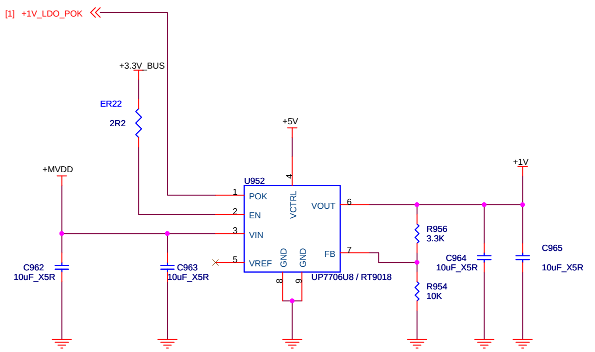
Vout=1.25V* [1+(ER305/ER304)]

Vout=0.8V * (1+ R957 / R955)

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



Vout=0.8V * (1+ R956 / R954)

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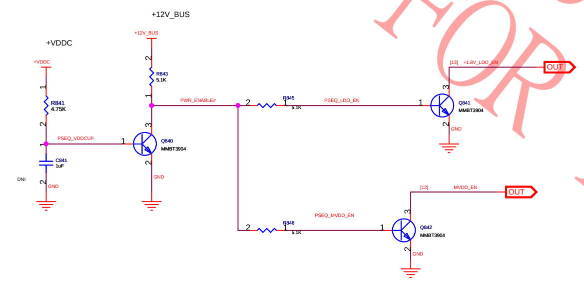
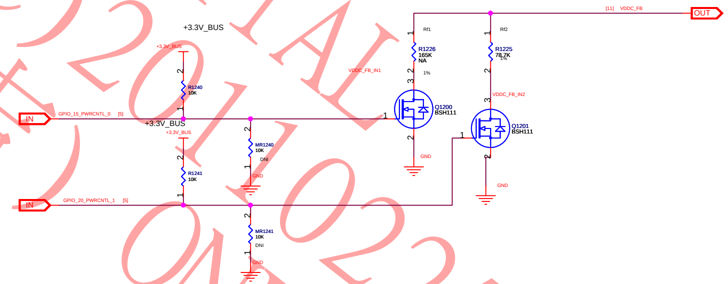
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA
LINEAR REGULATORS
Doc No. 105-C264XX-00A

POWER SEQUENCING CIRCUIT



VDDC Low Side Divider



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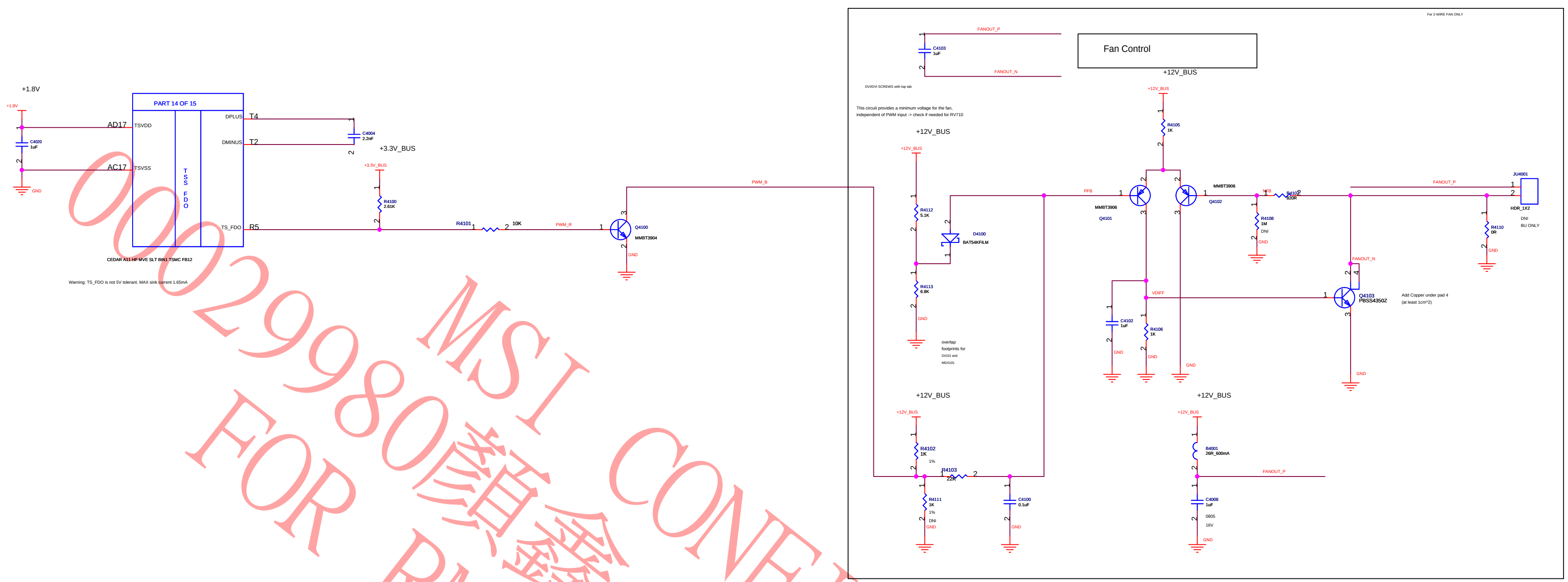
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA PWR& MGMT &SEQ	Doc No. 105-C264XX-00A

Mechanical and Thermal Management



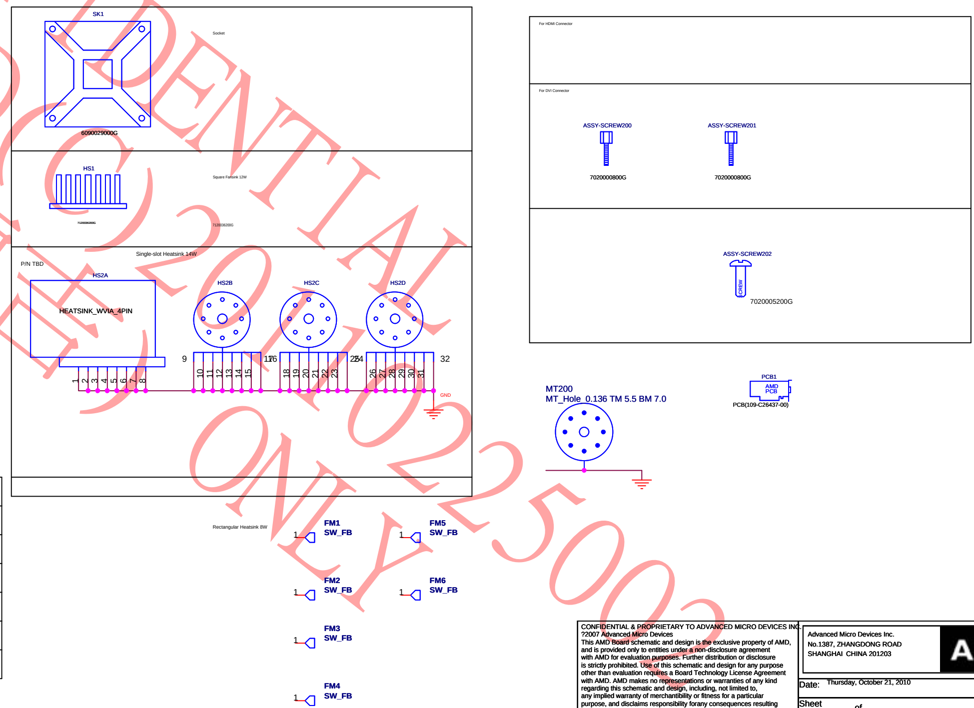
+1.8V
PART 14 OF 15
AD17
AC17
TSVDD
TSVSS
DPLUS
DMINUS
TS_FDO
T4
T2
R5
C4020 1uF
C4004 2.2nF
+3.3V_BUS
R4100 2.61K
R4101 10K
PWM_R
Q4100 MMBT3904
GND
CEDAR A11 HF MVE SLT BNG TSMC FB12
Warning: TS_FDO is not 5V tolerant. MAX sink current 1.65mA
Fan Control
C4103 1uF
FANOUT_P
FANOUT_N
DVI/DVI SCREWS with top tab
This circuit provides a minimum voltage for the fan, independent of PWM input -> check if needed for RV710
+12V_BUS
R4105 1K
R4112 5.1K
D4100 BAT54KFILM
R4113 6.8K
MMBT3906
Q4101
Q4102
R4108 1M DNI
R4109
R4110 0R
JU4001 HDR_1X2
DNI
BU ONLY
For 2-WIRE FAN ONLY
C4102 1uF
R4106 1K
VDIFF
Q4103 PBSS4350Z
Add Copper under pad 4 (at least 1cm^2)
overlap footprints for D4100 and R4101
R4102 1K 1%
R4103 22K
R4111 1K 1% DNI
C4100 0.1uF
R4001 26R_600mA
C4008 1uF 0805 16V

TOP
Single end
Address branch
50 ohm +/- 5 ohm
3.82 mils

Bottom
Single end
Memory data
45 ohm +/- 5 ohm
4.724 mils

TOP
Different
TMDS
85 ohm +/- 10 %
4.33 mils / 5.511 mils

Bottom
Different
PEX_PCIE
85 ohm +/- 10 %
4.921 mils / 6.889 mils



SK1
Socket
6090029000G
HS1
Square Fansink 12W
Single-slot Heatsink 14W
P/N TBD
HS2A
HEATSINK_WVIA_4PIN
HS2B
HS2C
HS2D
Rectangular Heatsink 8W
For HDMI Connector
For DVI Connector
ASSY-SCREW200
7020000800G
ASSY-SCREW201
7020000800G
ASSY-SCREW202
7020005200G
MT200
MT_Hole_0.136 TM 5.5 BM 7.0
PCB1
AMD PCB
PCB(109-C26437-00)
FM1 SW_FB
FM2 SW_FB
FM3 SW_FB
FM4 SW_FB
FM5 SW_FB
FM6 SW_FB

SKU	P/N	CONFIGURATION	Form Factor
JUNBONATOR	80200528A0G	dDVI-I + HDMI	FH / SS
JUNBONATOR-COMMERCIAL	8020052800G	dDVI-I + DP	FH / SS
JUNBONATOR-COMMERCIAL	8020051600G	DVI + DP	LP / SS
JUNBONATOR	80200516A0G	DVI +HDMI	LP / SS
	8020051700G	DVI + DP + VGA	FH / DS
	80200517A0G	DVI +HDMI+ VGA	FH / DS

Advanced Micro Devices Inc.
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SHANGHAI CHINA 201203

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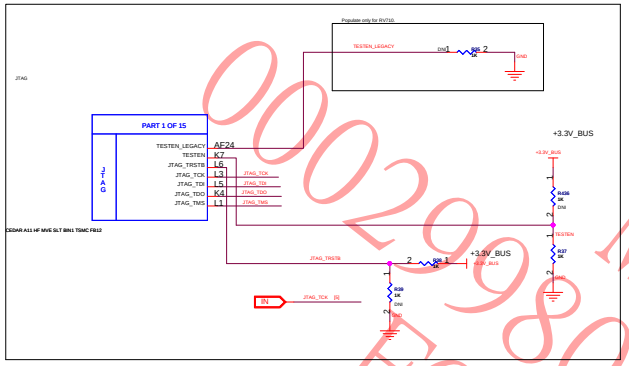
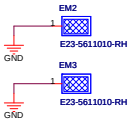
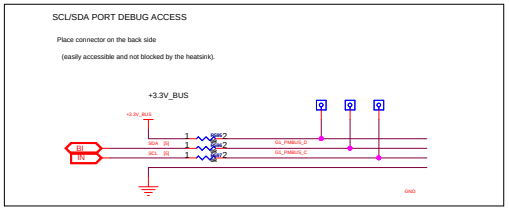
Title: HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA
MECH/THERMAL MANAGEMENT

Doc No. 105-C264XX-00A

(19) Debug Circuits







Advanced Micro Devices Inc.
No.1387, ZHANGDONG ROAD
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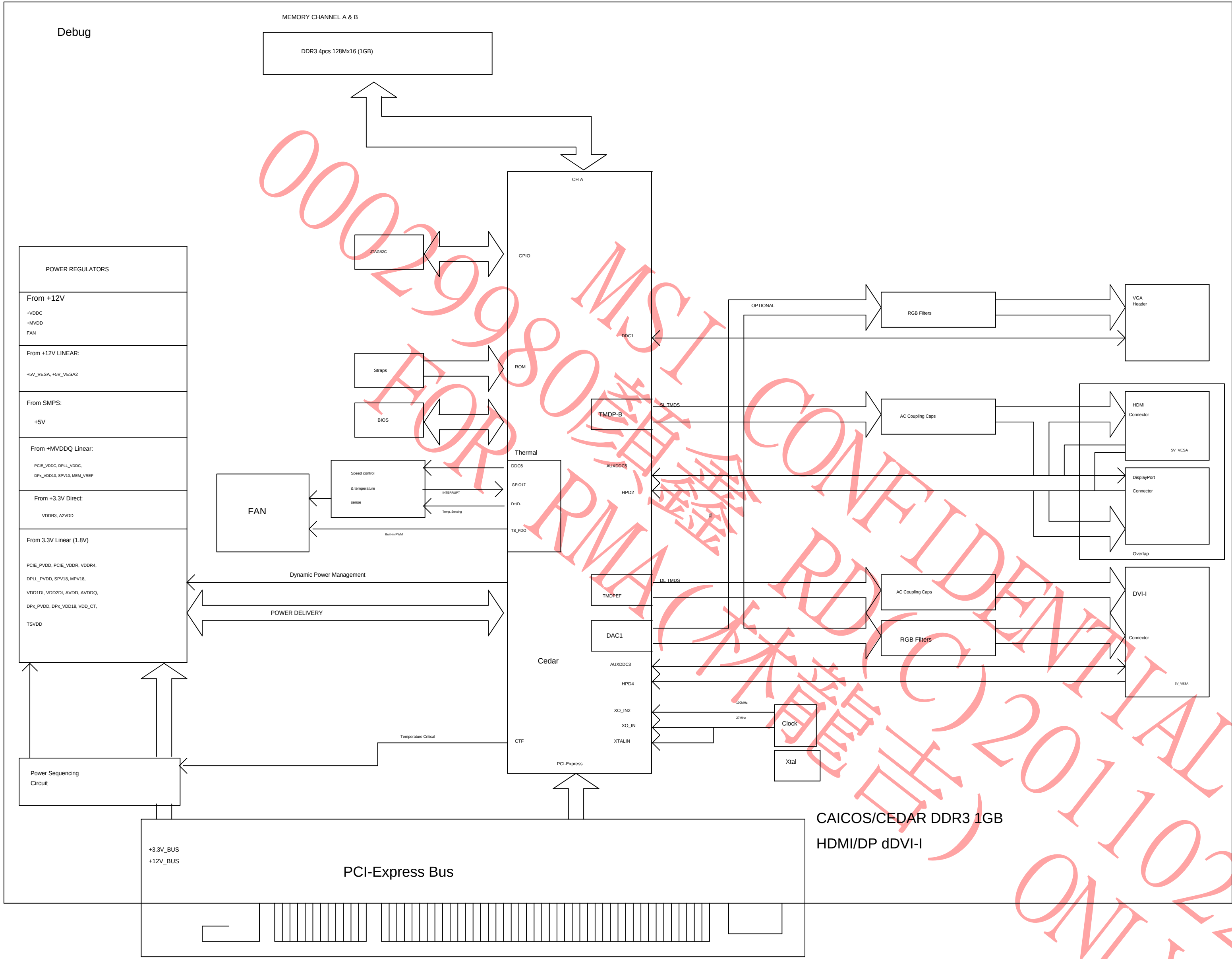
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA DEBUG CIRCUIT

Doc No. 105-C26400-00A


Debug
MEMORY CHANNEL A & B
DDR3 4pcs 128Mx16 (1GB)
CH A
JTAG/I2C
GPIO
POWER REGULATORS
From +12V
+VDDC
+MVDD
FAN
From +12V LINEAR:
+5V_VESA, +5V_VESA2
From SMPS:
+5V
From +MVDDQ Linear:
PCIE_VDDC, DPLL_VDDC,
DPx_VDD10, SPV10, MEM_VREF
From +3.3V Direct:
VDDR3, A2VDD
From 3.3V Linear (1.8V)
PCIE_PVDD, PCIE_VDDR, VDDR4,
DPLL_PVDD, SPV18, MPV18,
VDD1DI, VDD2DI, AVDD, AVDDQ,
DPx_PVDD, DPx_VDD18, VDD_CT,
TSVDD
Straps
ROM
BIOS
FAN
Speed control
& temperature
sense
INTERRUPT
Temp. Sensing
Built-in PWM
Thermal
DDC6
GPIO17
D+/D-
TS_FDO
OPTIONAL
RGB Filters
VGA
Header
DDC1
DL TMDS
TMDP-B
AC Coupling Caps
HDMI
Connector
5V_VESA
AUXDDC5
HPD2
DisplayPort
Connector
Overlap
Dynamic Power Management
POWER DELIVERY
DL TMDS
TMDPEF
AC Coupling Caps
DVI-I
DAC1
RGB Filters
Connector
Cedar
AUXDDC3
HPD4
5V_VESA
100MHz
27MHz
XO_IN2
XO_IN
XTALIN
Clock
Xtal
Temperature Critical
CTF
PCI-Express
Power Sequencing
Circuit
+3.3V_BUS
+12V_BUS
PCI-Express Bus

CAICOS/CEDAR DDR3 1GB

HDMI/DP dDVI-I

Advanced Micro Devices Inc.
No.1387, ZHANGDONG ROAD
SHANGHAI CHINA 201203

Date: Thursday, September 30, 2010		Rev P00
Sheet 17 of 18		
Title HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA BLOCK DIAGRAM		Doc No. 105-C264XX-00A

	Title	Schematic No.	Date:
AMD	HF CAICOS/CEDAR DDR3 1GB HDMI/DP dDVI/sVGA	105-C264XX-00A	Thursday, September 30, 2010

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 P00

Sch Rev	PCB Rev	Date	REVISION DESCRIPTION
00	00A	2010/03/31	Initial Caicos Schematic, based on C026XX-10
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