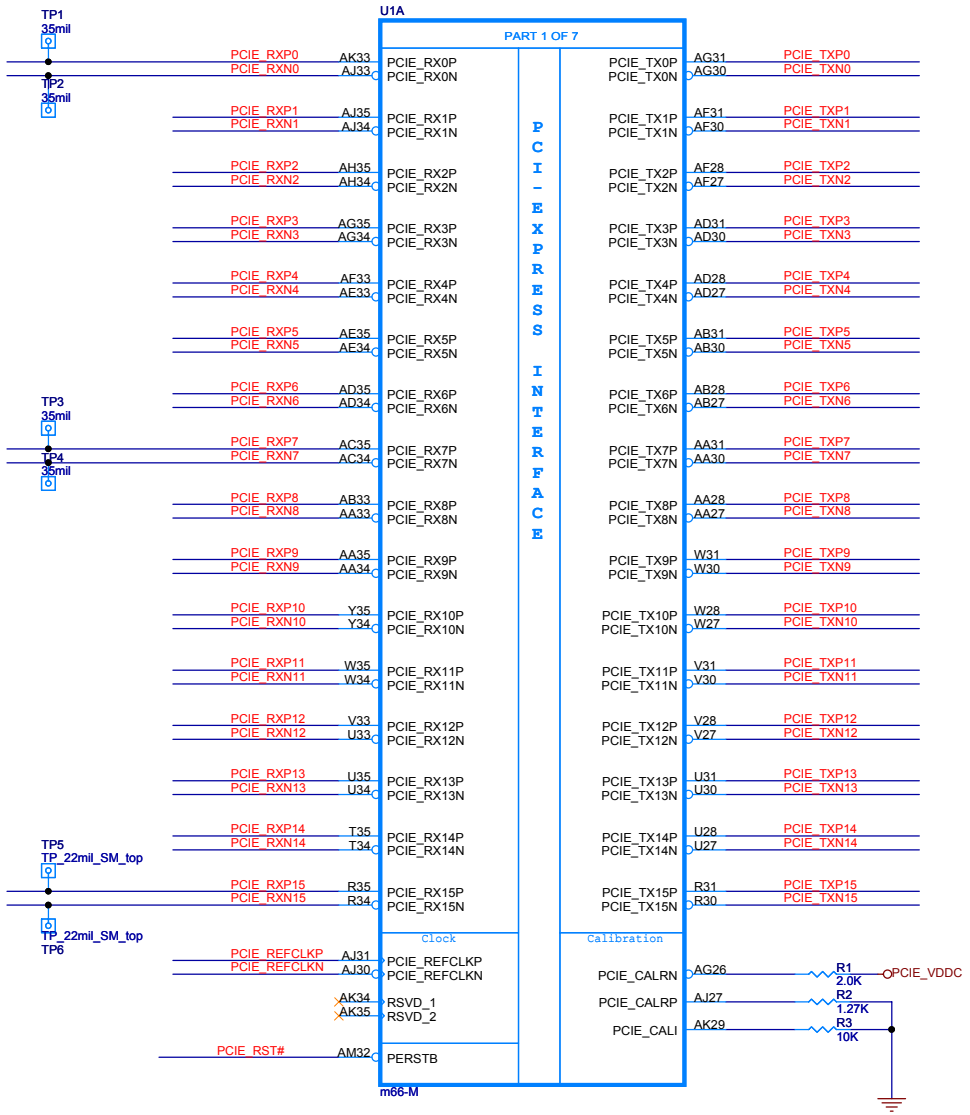


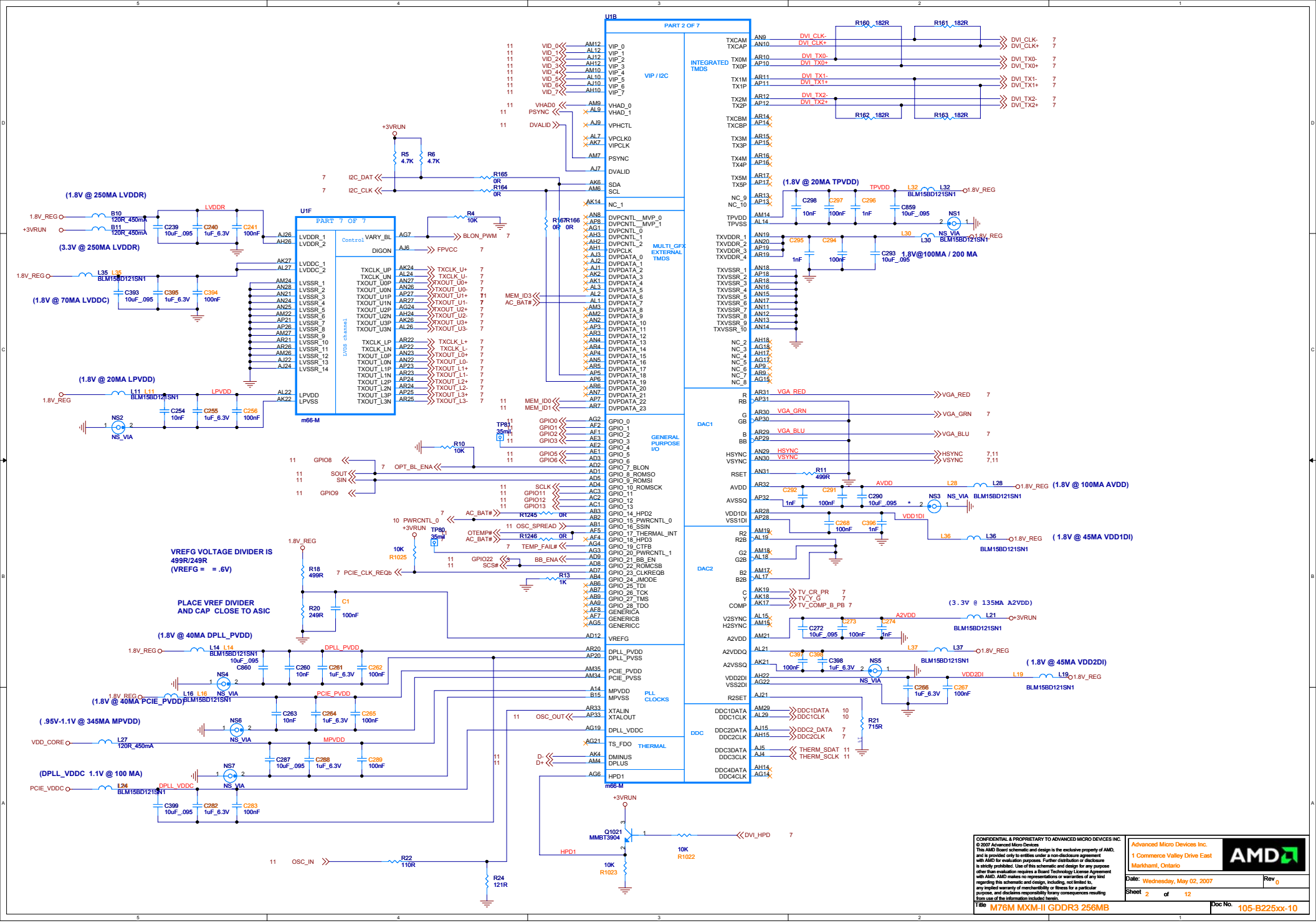
Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

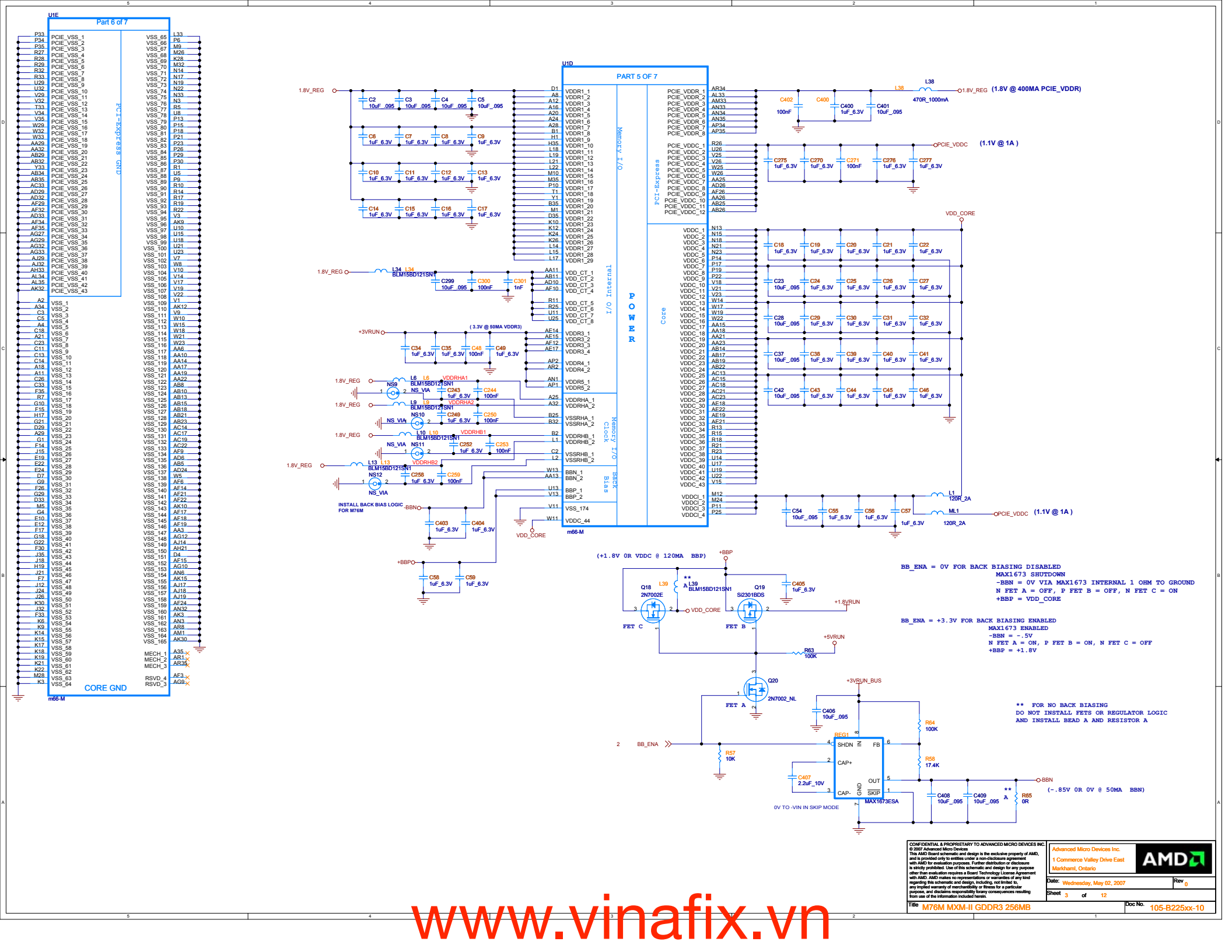
Date: Wednesday, May 02, 2007 Rev 0

Sheet 1 of 12

Title M76M MXM-II GDDR3 256MB

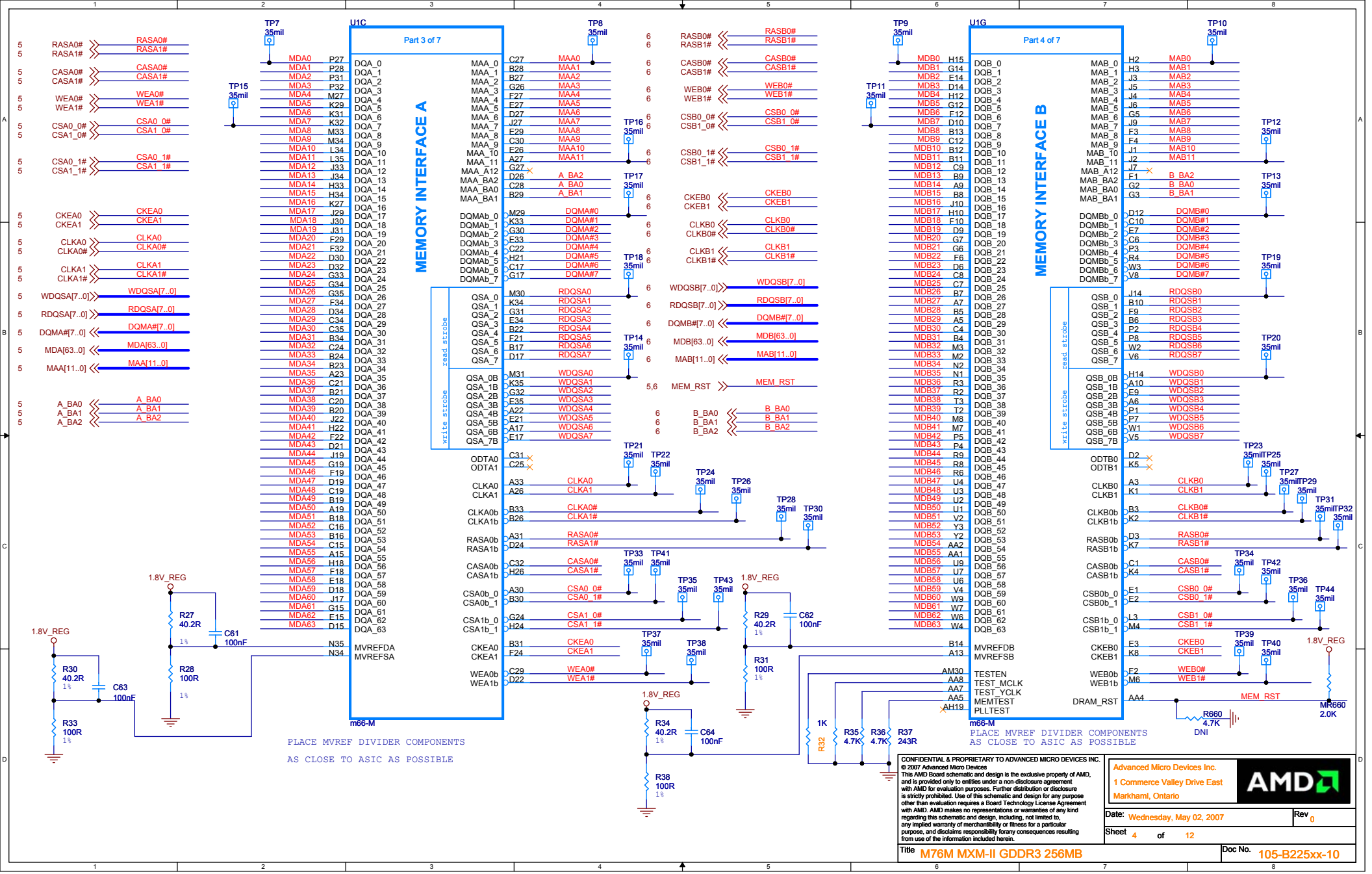
Doc No. 105-B225xx-10


U1B
PART 2 OF 7
VIP / I2C
INTEGRATED TMDS
MULTI_GFX EXTERNAL TMDS
GENERAL PURPOSE I/O
DAC1
DAC2
DDC
PLL CLOCKS
THERMAL
m66-M
U1F
PART 7 OF 7
LVDS channel
m66-M
(1.8V @ 250MA LVDDR)
(3.3V @ 250MA LVDDR)
(1.8V @ 70MA LVDDC)
(1.8V @ 20MA LPVDD)
(1.8V @ 20MA TPVDD)
1.8V@100MA / 200 MA
(1.8V @ 100MA AVDD)
(1.8V @ 45MA VDD1DI)
(1.8V @ 45MA VDD2DI)
(3.3V @ 135MA A2VDD)
VREFG VOLTAGE DIVIDER IS 499R/249R (VREFG = .6V)
PLACE VREF DIVIDER AND CAP CLOSE TO ASIC
(1.8V @ 40MA DPLL_PVDD)
(1.8V @ 40MA PCIE_PVDD)
(.95V-1.1V @ 345MA MPVDD)
(DPLL_VDDC 1.1V @ 100 MA)
www.vinafix.vn



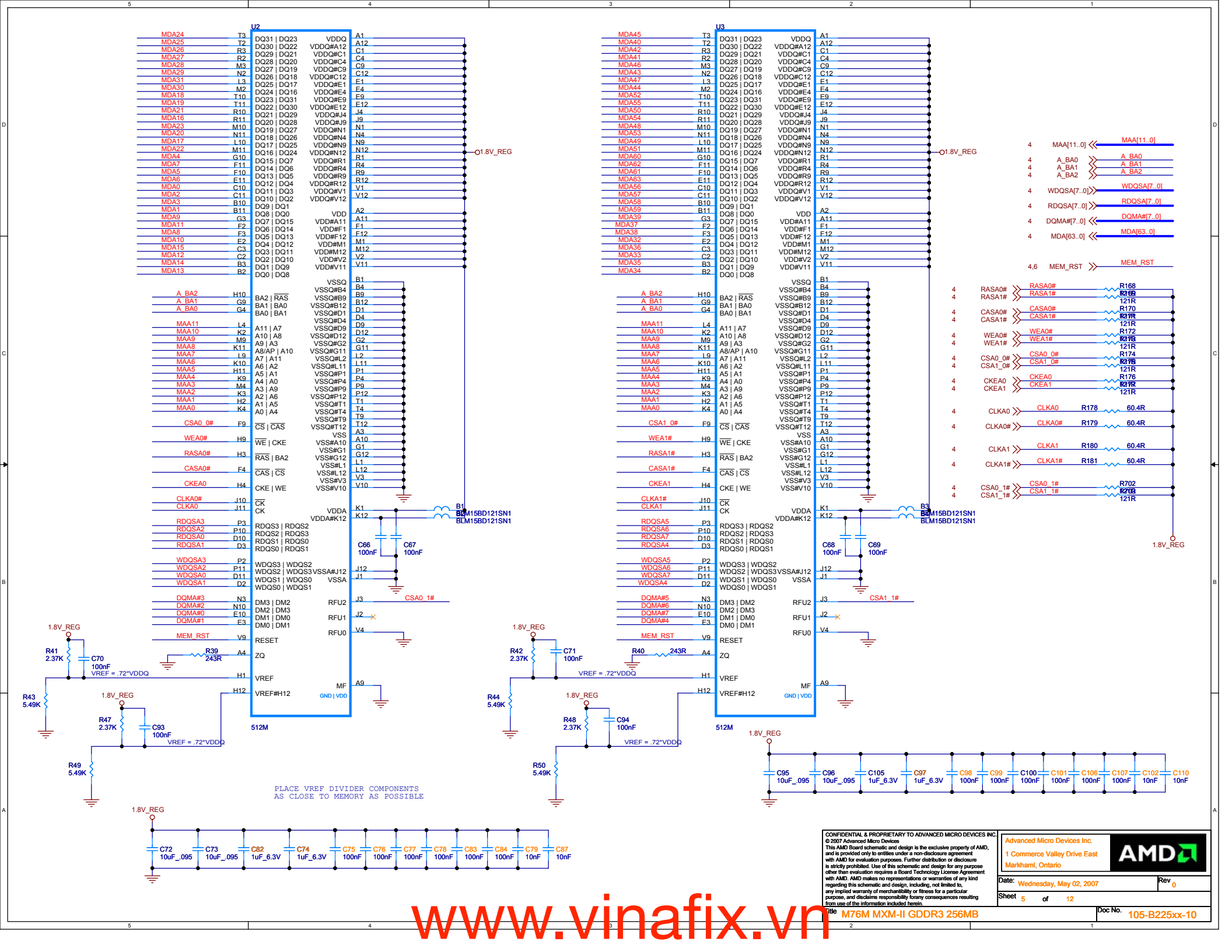
Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

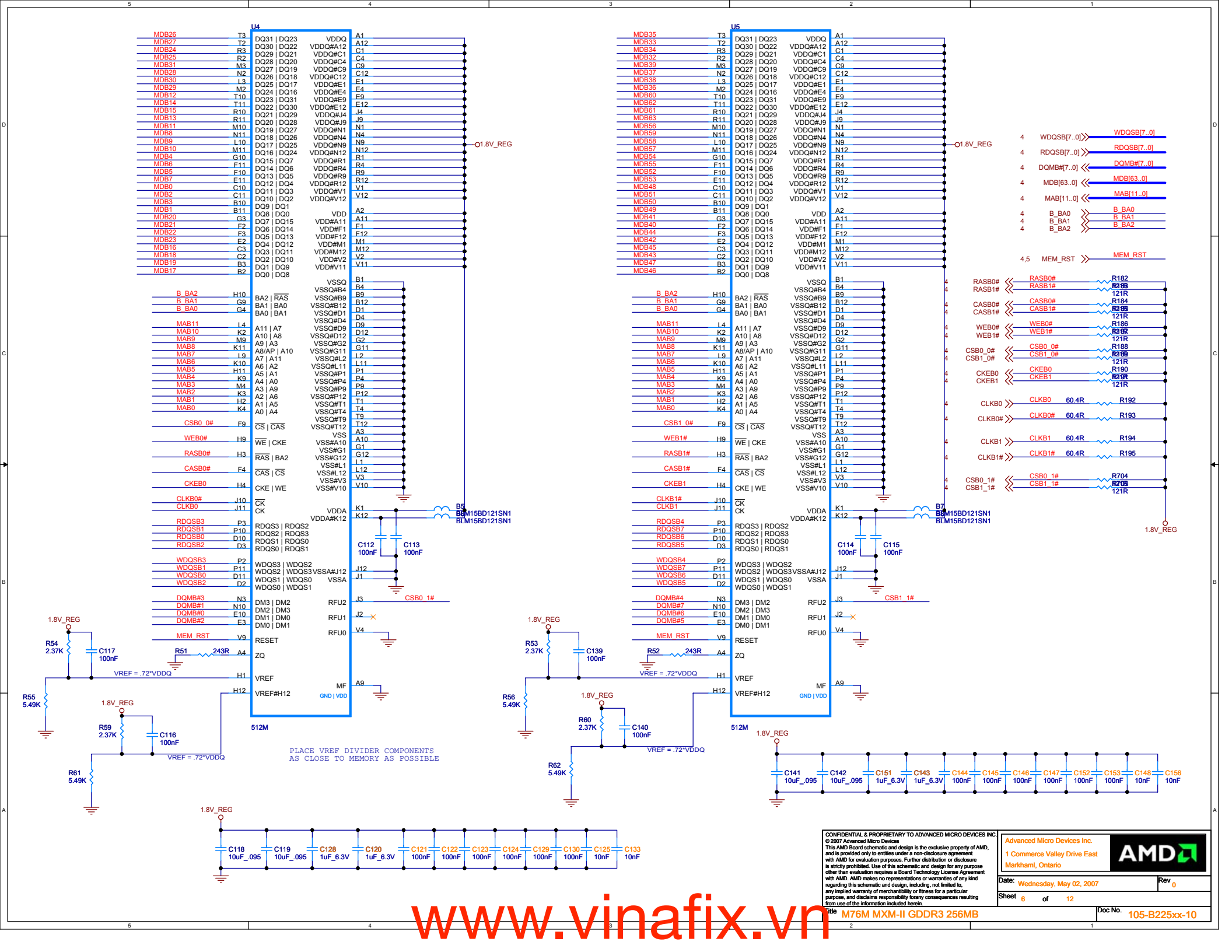
Date: Wednesday, May 02, 2007 Rev 0
Sheet 3 of 12
Title M76M MXM-II GDDR3 256MB
Doc No. 105-B225xx-10



Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

Date:	Wednesday, May 02, 2007
Rev	0
Sheet	4 of 12
Title	M76M MXM-II GDDR3 256MB
Doc No.	105-B225xx-10





PLACE CAPS ON THIS PAGE AS CLOSE TO CONNECTOR AS POSSIBLE

MPCIE1

G_PWR_SRC

C352 100nF_50V
C353 1nF
C354 100nF_50V

Mechanical Key

+1.8VRUN

RUNPWROK_BUS

+5VRUN

C355 100nF
C356 1nF

+3VRUN

R196 10K
C359 100nF
NC7SZ08P5X_NL
U16
TEMP_FAIL#
OPTION STRAP
R197 0R
RUNPWROK
RUNPWROK 10

R198 0R BL_BRIGHT
BL_ENA
R199 DNI 0R
BLON_PWM 2
R200 0R
OPT_BL_ENA 2
OPTION STRAPS

Power up Glitch control CKT

+5VRUN
C861 100nF
U6
NC7WB66K8X
BL_BRIGHT_MB
FPVCC_MB
R228 DNI 10K
R229 DNI 0R BL_BRIGHT
R230 DNI 0R FPVCC
BL_BRIGHT
FPVCC
R202 100K
Q15
MMBT3904
R227 100K
+3VRUN_EN 10

PCIE_TXN15 PCIE_TXP15 100nF C357 C358
PCIE_TXN14 PCIE_TXP14 100nF C360 C361
PCIE_TXN13 PCIE_TXP13 100nF C362 C363
PCIE_TXN12 PCIE_TXP12 100nF C364 C365
PCIE_TXN11 PCIE_TXP11 100nF C366 C367
PCIE_TXN10 PCIE_TXP10 100nF C368 C369
PCIE_TXN9 PCIE_TXP9 100nF C370 C371
PCIE_TXN8 PCIE_TXP8 100nF C372 C373
PCIE_TXN7 PCIE_TXP7 100nF C374 C375
PCIE_TXN6 PCIE_TXP6 100nF C376 C377
PCIE_TXN5 PCIE_TXP5 100nF C378 C379
PCIE_TXN4 PCIE_TXP4 100nF C380 C381
PCIE_TXN3 PCIE_TXP3 100nF C382 C383
PCIE_TXN2 PCIE_TXP2 100nF C384 C385
PCIE_TXN1 PCIE_TXP1 100nF C386 C387
PCIE_TXN0 PCIE_TXP0 100nF C388 C389

PCIE_RXN15 PCIE_RXP15
PCIE_RXN14 PCIE_RXP14
PCIE_RXN13 PCIE_RXP13
PCIE_RXN12 PCIE_RXP12
PCIE_RXN11 PCIE_RXP11
PCIE_RXN10 PCIE_RXP10
PCIE_RXN9 PCIE_RXP9
PCIE_RXN8 PCIE_RXP8
PCIE_RXN7 PCIE_RXP7
PCIE_RXN6 PCIE_RXP6
PCIE_RXN5 PCIE_RXP5
PCIE_RXN4 PCIE_RXP4
PCIE_RXN3 PCIE_RXP3
PCIE_RXN2 PCIE_RXP2
PCIE_RXN1 PCIE_RXP1
PCIE_RXN0 PCIE_RXP0

2 VGA_RED VGA_RED
2 VGA_GRN VGA_GRN
2 VGA_BLU VGA_BLU

2 TV_Y_G TV_CR_PR
2 TV_CR_PR TV_COMP_B_PB
2 TV_COMP_B_PB

1 PCIE_REFCLKP PCIE_REFCLKP
1 PCIE_REFCLKN PCIE_REFCLKN
1 PCIE_RST# PCIE_RST#
1 PCIE_RXP[15..0] PCIE_RXP[15..0]
1 PCIE_RXN[15..0] PCIE_RXN[15..0]
1 PCIE_TXP[15..0] PCIE_TXP[15..0]
1 PCIE_TXN[15..0] PCIE_TXN[15..0]

2 DVI_TX0- DVI_TX0-
2 DVI_TX0+ DVI_TX0+
2 DVI_TX1- DVI_TX1-
2 DVI_TX1+ DVI_TX1+
2 DVI_TX2- DVI_TX2-
2 DVI_TX2+ DVI_TX2+
2 DVI_CLK- DVI_CLK-
2 DVI_CLK+ DVI_CLK+

2 PCIE_CLK_REQb R1028 DNI 0R 10K R1027

11 MB_THERM#

2,11 HSYNC
2,11 VSYNC
10 DDC1CLK_MB
10 DDC1DATA_MB

2 AC_BAT# 10K R1026

2 DVI_HPD

R203 0R
R204 150R
R205 150R
R206 150R
PLACE TERMINATIONS CLOSE TO CONNECTOR

R207 150R
R208 150R
R209 150R
R218 0R

2 TXOUT_L0- TXOUT_L0-
2 TXOUT_L0+ TXOUT_L0+
2 TXOUT_L1- TXOUT_L1-
2 TXOUT_L1+ TXOUT_L1+
2 TXOUT_L2- TXOUT_L2-
2 TXOUT_L2+ TXOUT_L2+
2 TXOUT_L3- TXOUT_L3-
2 TXOUT_L3+ TXOUT_L3+
2 TXCLK_L- TXCLK_L-
2 TXCLK_L+ TXCLK_L+

2 TXOUT_U0- TXOUT_U0-
2 TXOUT_U0+ TXOUT_U0+
2 TXOUT_U1- TXOUT_U1-
2 TXOUT_U1+ TXOUT_U1+
2 TXOUT_U2- TXOUT_U2-
2 TXOUT_U2+ TXOUT_U2+
2 TXOUT_U3- TXOUTU3+
2 TXCLK_U- TXCLK_U-
2 TXCLK_U+ TXCLK_U+

2 I2C_CLK I2C_CLK
2 I2C_DAT I2C_DAT

2 FPVCC FPVCC

DVI_HPD
DVI_CLK- DVI_CLK+
DVI_TX2- DVI_TX2+
DVI_TX1- DVI_TX1+
DVI_TX0- DVI_TX0+

TXCLK_U- TXCLK_U+
TXOUT_U3- TXOUT_U3+
TXOUT_U2- TXOUT_U2+
TXOUT_U1- TXOUT_U1+
TXOUT_U0- TXOUT_U0+
TXCLK_L- TXCLK_L+
TXOUT_L3- TXOUT_L3+
TXOUT_L2- TXOUT_L2+
TXOUT_L1- TXOUT_L1+
TXOUT_L0- TXOUT_L0+

FPVCC_MB
BL_BRIGHT_MB
BL_ENA
I2C_DAT
I2C_CLK

3V3RUN

VGA_RED
VGA_GRN
VGA_BLU

TV_CR_PR
TV_Y_G
TV_COMP_B_PB

SMB_DAT
SMB_CLK
MB_THERM#

PCIE_REFCLKN
PCIE_REFCLKP
PCIE_RST#

+5VRUN
+3VRUN
R210 DNI 6.8K
Q16
BSH111
R213 0R
SMB_CLK
PBAT_SMBCLK 11
OPTION STRAP

SM BUS 3V/5V LEVEL SHIFT

R214 DNI 6.8K
Q17
BSH111
R217 0R
SMB_DAT
PBAT_SMBDAT 11
OPTION STRAP

R215 2.2K
R216 2.2K
DDC2_DATA 2
DDC2CLK 2

+3VRUN_BUS
C390 2.2uF_6.3V
C391 100nF
C392 1nF

Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

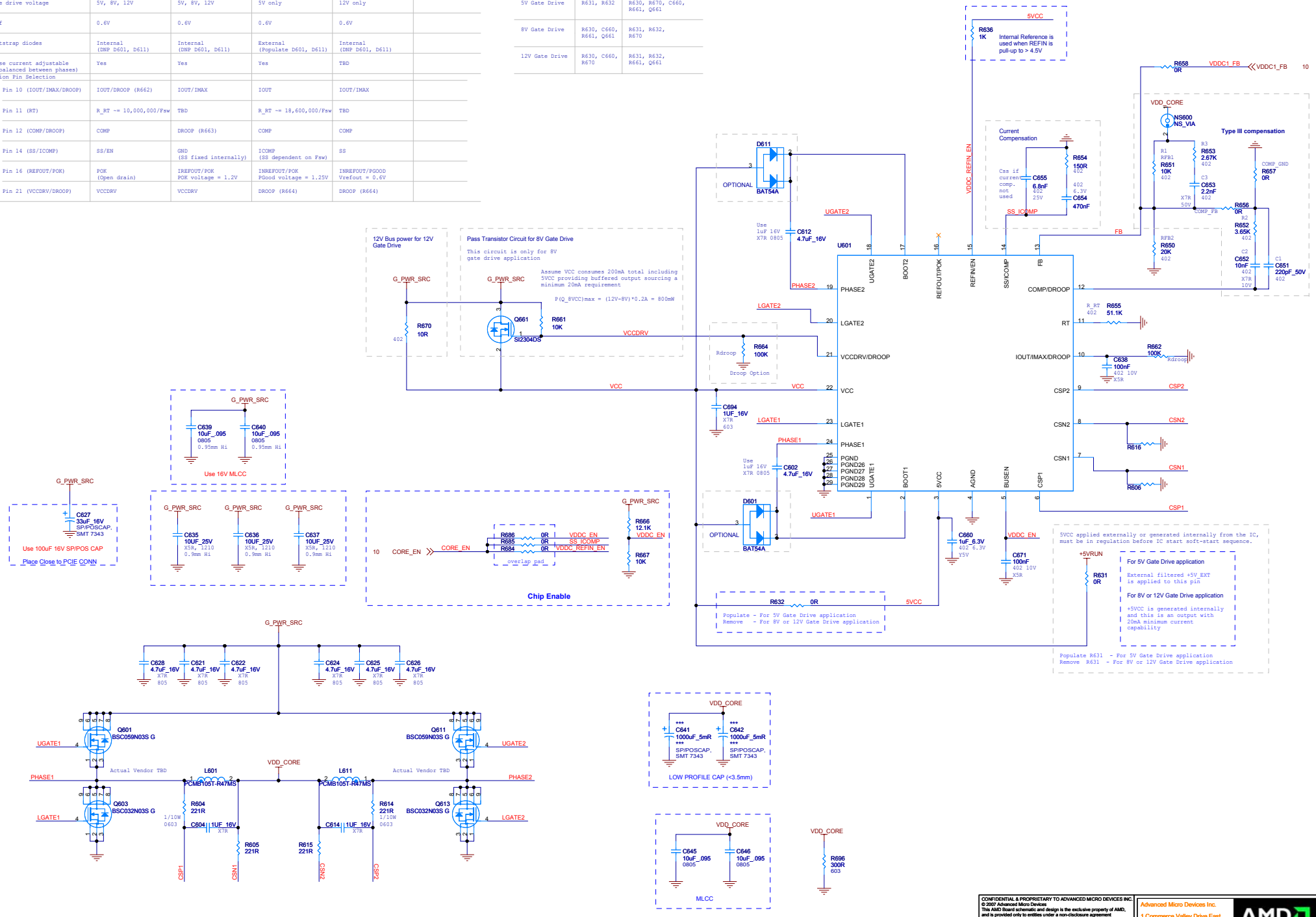
Date: Wednesday, May 02, 2007 Rev 0
Sheet 7 of 12
Title M76M MXM-II GDDR3 256MB
Doc No. 105-B225xx-10

Information on Compatable Controller Parts

	PWM IC #1	PWM IC #2	PWM IC #3	PWM IC #4
Gate drive voltage	5V, 8V, 12V	5V, 8V, 12V	5V only	12V only
Vref	0.6V	0.6V	0.6V	0.6V
Bootstrap diodes	Internal (DNP D601, D611)	Internal (DNP D601, D611)	External (Populate D601, D611)	Internal (DNP D601, D611)
Phase current adjustable (unbalanced between phases)	Yes	Yes	Yes	TBD
Option Pin Selection				
Pin 10 (IOUT/IMAX/DROOP)	IOUT/DROOP (R662)	IOUT/IMAX	IOUT	IOUT/IMAX
Pin 11 (RT)	R_RT ~= 10,000,000/Fsw	TBD	R_RT ~= 18,600,000/Fsw	TBD
Pin 12 (COMP/DROOP)	COMP	DROOP (R663)	COMP	COMP
Pin 14 (SS/ICOMP)	SS/EN	GND (SS fixed internally)	ICOMP (SS dependent on Fsw)	SS
Pin 16 (REFOUT/POK)	POK (Open drain)	IREFOUT/POK POK voltage = 1.2V	INREFOUT/POK PGood voltage = 1.25V	INREFOUT/PGOOD Vrefout = 0.6V
Pin 21 (VCCDRV/DROOP)	VCCDRV	VCCDRV	DROOP (R664)	DROOP (R664)

Choosing Different Gate Drive

Gate Drive	Populate	Do Not Populate
5V Gate Drive	R631, R632	R630, R670, C660, R661, Q661
8V Gate Drive	R630, C660, R661, Q661	R631, R632, R670
12V Gate Drive	R630, C660, R670	R631, R632, R661, Q661

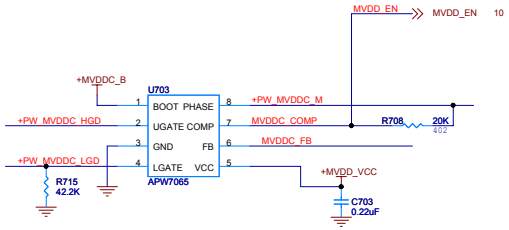


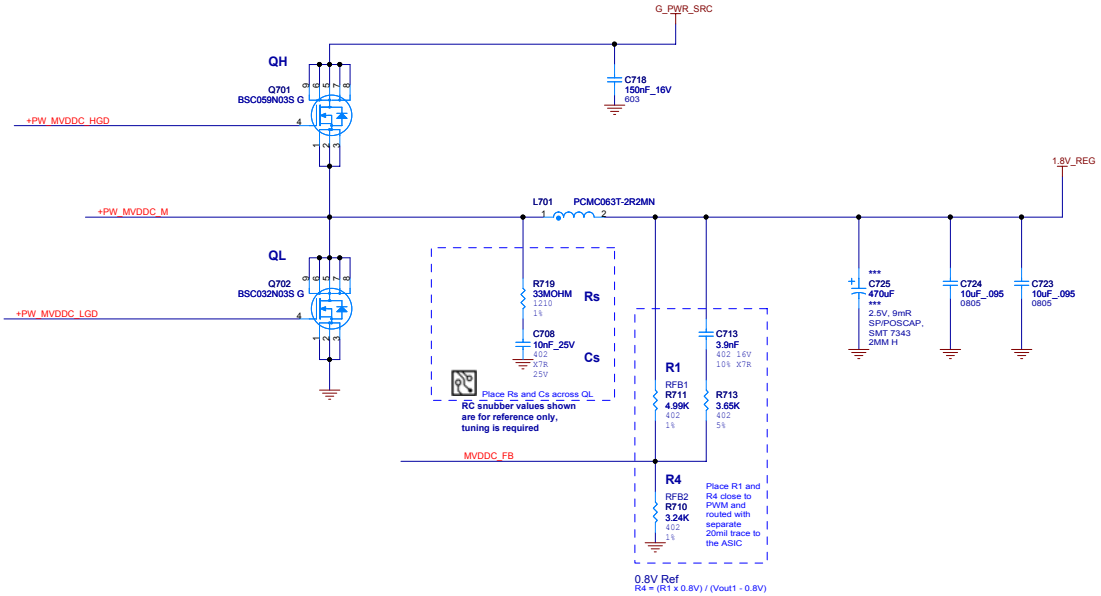
Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

Date: Wednesday, May 02, 2007 Rev 0

Sheet 8 of 12

Title M76M MXM-II GDDR3 256MB Doc No. 105-B225xx-10





List of supported foodprint

The following ICs are not necessarily evaluated by AMD, please refer to BOM for evaluation status

- ANPEC APW7120/APW7065 (12V)
- CAT CAT7583 (12V)
- INTERSIL ISL6545
- NEXSEM NX2114/2307
- RICHTEK RT9214/RT8101
- OnSemi ON1582
- uPI UP6101 (No Ext_Vref in)
- uPI UP6103 (with Ext_Vref in, can use voltage console UP6261 to change Vout)

SMPS02- Regulator for MVDD

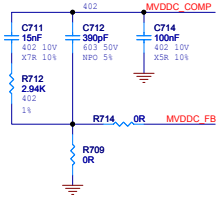
Vout = 1.8V ~ 2.85V

Part	Vout	RFB1	RFB2
0.8V Ref	2.03V (1.98V~2.08V)	4.99K p/n 3160499100G	3.24K p/n 3160324100G

SMPS02 Specifications

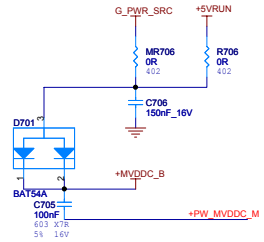
	Nominal Value ; Tolerance	Adjustable range / Notes
Vin (power stage)	12V ; +/-8% PCIe	ATX12V ver. 2.2 +/-5%
Vout	2V ; +2%/-2%	1.8V ~ 2.85V
Vout ripple (DC)	50mVpp	
Iout	6Aavg, 8Adc max	
Step load	3Amax	
Vout ripple (AC)	+/-10% or 200mVpp @ 3A step load	
Switching Freq.	~300kHz	TBD
Protections		

COMPENSATION CIRCUIT



FILTERED SMPS VCC

BOOT CIRCUIT



Layout guideline for Nexsem NX2114/2307

1- Position the controller (U703) such that LGate(pin4) is the closet to gate of the MOSFETs. You can place the gate resistors R721 and R722 next to the gate of the MOSFETs. Make the gate drive traces(PW MVDDC LGD and PW MVDDC HGD) as short and as wide as possible to reduce the trace inductance.
2- Place the bypass capacitors for Vcc as well as Boost caps as close to the controller as possible. They are as follows;
Vcc bypass cap is C703, and Boost cap is C705.
3- Voltage amplifier compensation network. Place C714 close to the pin 7. Place the rest of the compensation network close to the pins 7 and 6. These are R710, R711, R713, C713 and R712, C711 and C712.

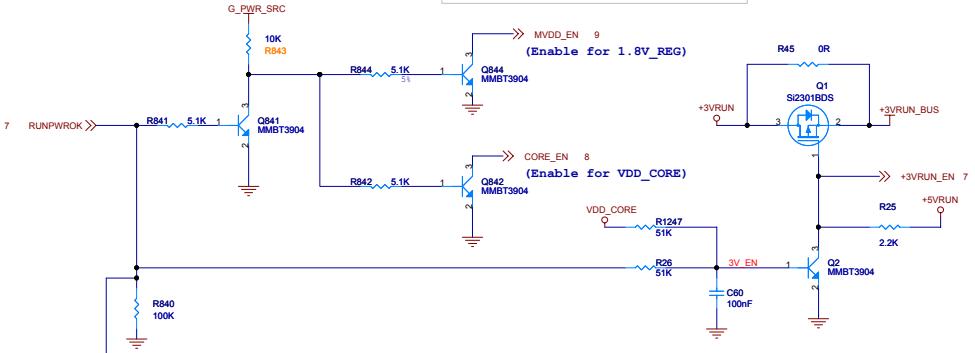
Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

Date: Wednesday, May 02, 2007 Rev 0

Sheet 9 of 12

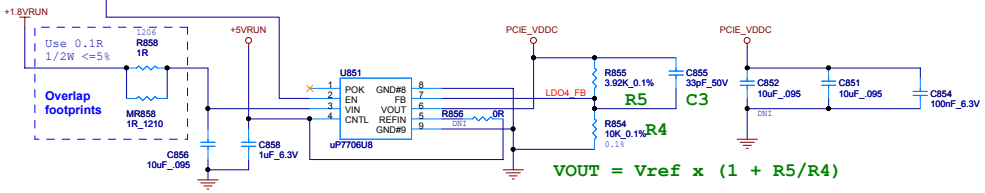
Title M76M MXM-II GDDR3 256MB Doc No. 105-B225xx-10

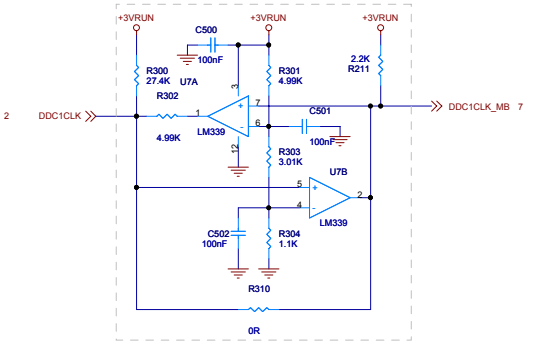
Power Up Sequencing

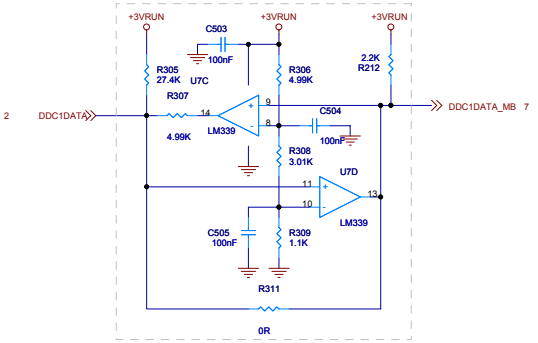


LDO #4: Vin = +1.8V +/-5% Vout = +1.1V +/- 3% Iout = 2A (TBV) RMS MAX

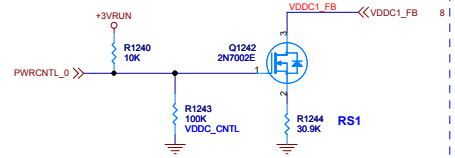
PCB: 50 to 70mm sq. copper area for cooling



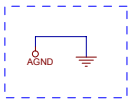




VDDC Voltage Control



	VDDC	RS1	PWRCNTL_0
0.6V Ref	.9V	N/A	LOW
	1.0V	59.0K 1% ATI # 3160590200G	HIGH
	1.1V	30.9K 1% ATI # 3160309200G	HIGH
	1.2V	20.0K 1% ATI # 3160200200G	HIGH



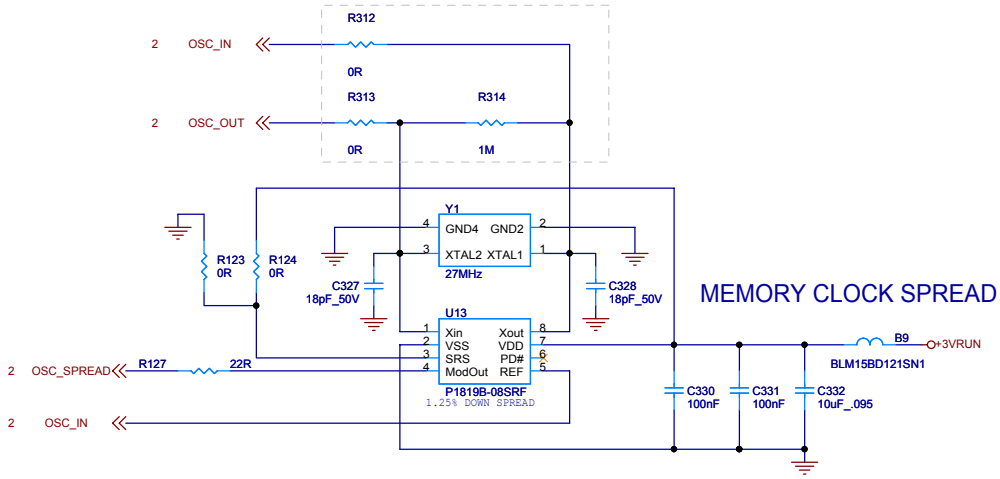
Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

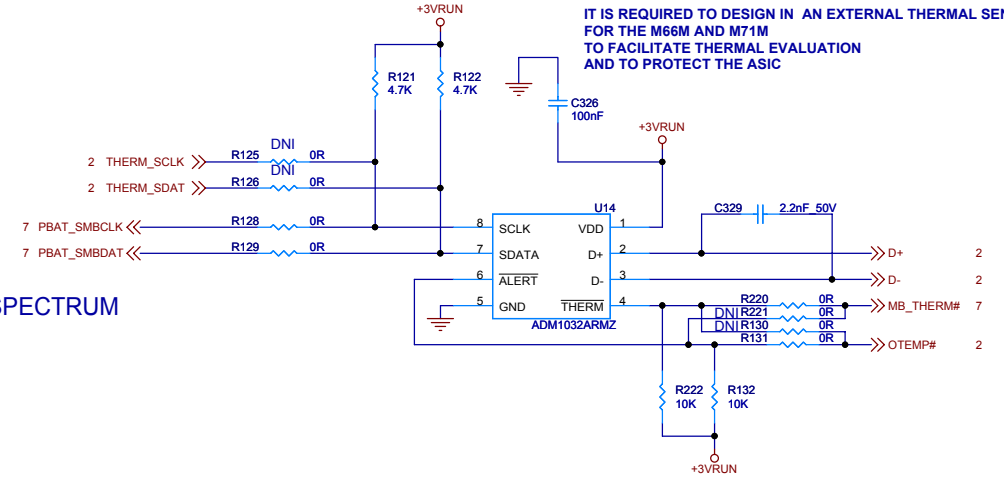
Date: Wednesday, May 02, 2007 Rev 0

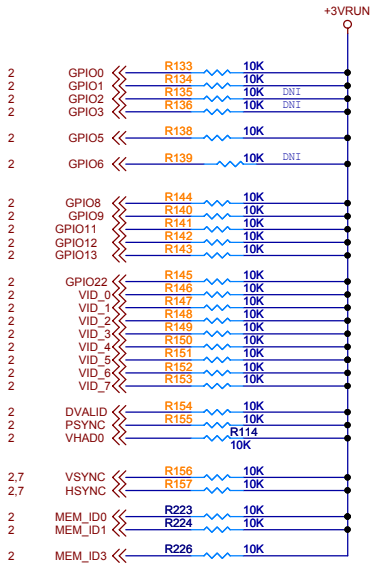
Sheet 10 of 12

Title M76M MXM-II GDDR3 256MB Doc No. 105-B225xx-10

Crystal Option only







CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

RECOMMENDED SETTINGS
0= DO NOT INSTALL RESISTOR
1 = INSTALL 10K RESISTOR
X = DESIGN DEPENDANT
NA = NOT APPLICABLE

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	M66M,M71M	M72M,M76M
BIF_MSI_DIS	VID1	MESSAGE SIGNAL INTERRUPT ENABLED	NA	0
BIF_64BAR_EN_A	VID5	64 BIT BARS DISABLED	NA	0
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	X	X
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	1	1
BIF_DEBUG_ACCESS	GPIO4	DEBUG SIGNALS NOT MUXED OUT	0	0
PLL_IBIAS_RD_1	GPIO6	(M66/71)BIAS CURRENT FOR PCIE PHY PLL MSBIT (M72/76)RSVD	0	0
PLL_IBIAS_RD_0	GPIO5	Internal Use - Reserved	1	0
BIOS_ROM_EN	GPIO_22_ROMCSB	ENABLE EXTERNAL BIOS ROM	1	1
ROMIDCFG(3:0)	GPIO[13:11,9]	SERIAL ROM TYPE OR MEMORY APERATURE SIZE SELECT	XX X X	X X X X
VIP_DEVICE_STRAP_ENA	VSYNC	IGNORE VIP DEVICE STRAPS	X	X
BIF_VGA DIS	PSYNC	VGA ENABLED	NA	O
MEM_TYPE	UNUSED GPIO	MEMORY TYPE,MAKE AND SIZE INFO	X X X	X X X

AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

VID0 VID2 VID3 VID4 VID6 VID7 HSYNC DVALID GPIO2 GPIO3 GPIO5 GPIO6 GPIO8 VHAD0

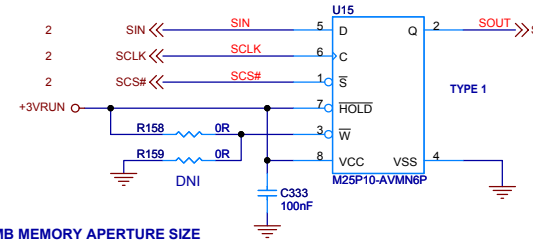
PULLUP PADS ARE NOT REQUIRED FOR THESE STRAPS BUT IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

GPIO_28_TDO GENERICC GPIO21_BB_EN GPIO_23_CLKREQB (DRIVES LOW DURING RESET) H2SYNC V2SYNC

GPIO(9,13:11) - CONFIG[3..0]

0010 - 512Kbit AT25F512A (Atmel)
0011 - 1Mbit AT25F1024A (Atmel)
0100 - 512Kbit M25P05A (ST)
0101 - 1Mbit M25P10A (ST)
0101 - 2Mbit M25P20 (ST)
0100 - 512Kbit Pm25LV512 (Chingis)
0101 - 1Mbit Pm25LV010 (Chingis)

FLASH ROM



A 256MB MEMORY APERTURE SIZE CAN BE DEFINED USING A SEPARATE ROM OR STRAPPING

Advanced Micro Devices Inc.
1 Commerce Valley Drive East
Markham, Ontario

Date: Wednesday, May 02, 2007 Rev 0
Sheet 11 of 12
Title M76M MXM-II GDDR3 256MB Doc No. 105-B225xx-10

<Variant Name>

Title
M76M MXM-II GDDR3 256MB

Schematic No.
105-B225xx-10

Date:
Wednesday, May 02, 2007

REVISION HISTORY

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

Rev 0

Sch Rev	PCB Rev	Date	REVISION DESCRIPTION
0	00A	27/12/06	Initial Design Based on B131
1	00B	27/03/07	Q2 REPLACE TO 2021390400G R1245 ADD 3150000000 (option to connect AC/BAT# to GPIO14) R1246 ADD 3150000000 (option to connect AC/BAT# to GPIO17) R709 ADD 3150000000G (MVDD TO SUPPORT NEW PART) R714 ADD 3150000000G (MVDD TO SUPPORT NEW PART) R715 ADD 3160422200G (MVDD TO SUPPORT NEW PART) R1247 ADD 3150051300G (OPTION TO USE VDD_CORE TO SWITCH +3.3RUN)
2	00	24/04/07	Q15 REPLACE TO 2021390400G (now NPN for +3VRUN_EN inverter) U6 ADD 2430003000G (DUAL SPST) R202 REPLACE TO 3150010400G (now 100K pull up) C859 ADD 4214010600G (10uF on TPVDD) C860 ADD 4214010600G (10uF on DPLL_PVDD) R201 REMOVED R229 ADD 3150000000G (Option to Bypass U6) R230 ADD 3150000000G (Option to Bypass U6) R228 ADD 3150010300G (Pull down on BL_BRIGHT_MB) R227 ADD 3150010400G (Q15 base resistor) R25 REPLACE TO 3150022200G (change to 2.2K so Q15 base load doesn't cuase too much voltage drop) C861 ADD 4170010400G (U6 Decupling cap)
3	10	01/05/07	U7 ADD 2480001900G (Active level shifter for DDC1) R304 ADD 3160110100G (Active level shifter for DDC1) R309 ADD 3160110100G (Active level shifter for DDC1) R300 ADD 3160274200G (Active level shifter for DDC1) R305 ADD 3160274200G (Active level shifter for DDC1) R303 ADD 3160301100G (Active level shifter for DDC1) R308 ADD 3160301100G (Active level shifter for DDC1) R301 ADD 3160499100G (Active level shifter for DDC1) R302 ADD 3160499100G (Active level shifter for DDC1) R306 ADD 3160499100G (Active level shifter for DDC1) R307 ADD 3160499100G (Active level shifter for DDC1) C500 ADD 4170010400G (Active level shifter for DDC1) C501 ADD 4170010400G (Active level shifter for DDC1) C502 ADD 4170010400G (Active level shifter for DDC1) C503 ADD 4170010400G (Active level shifter for DDC1) C504 ADD 4170010400G (Active level shifter for DDC1) C505 ADD 4170010400G (Active level shifter for DDC1) R310 ADD 3150000000G (Bypass Active level shifter for DDC1) R311 ADD 3150000000G (Bypass Active level shifter for DDC1) R312 ADD 3150000000G (Crystal only option) R313 ADD 3150000000G (Crystal only option) R314 ADD 3160100400G (Crystal only option)