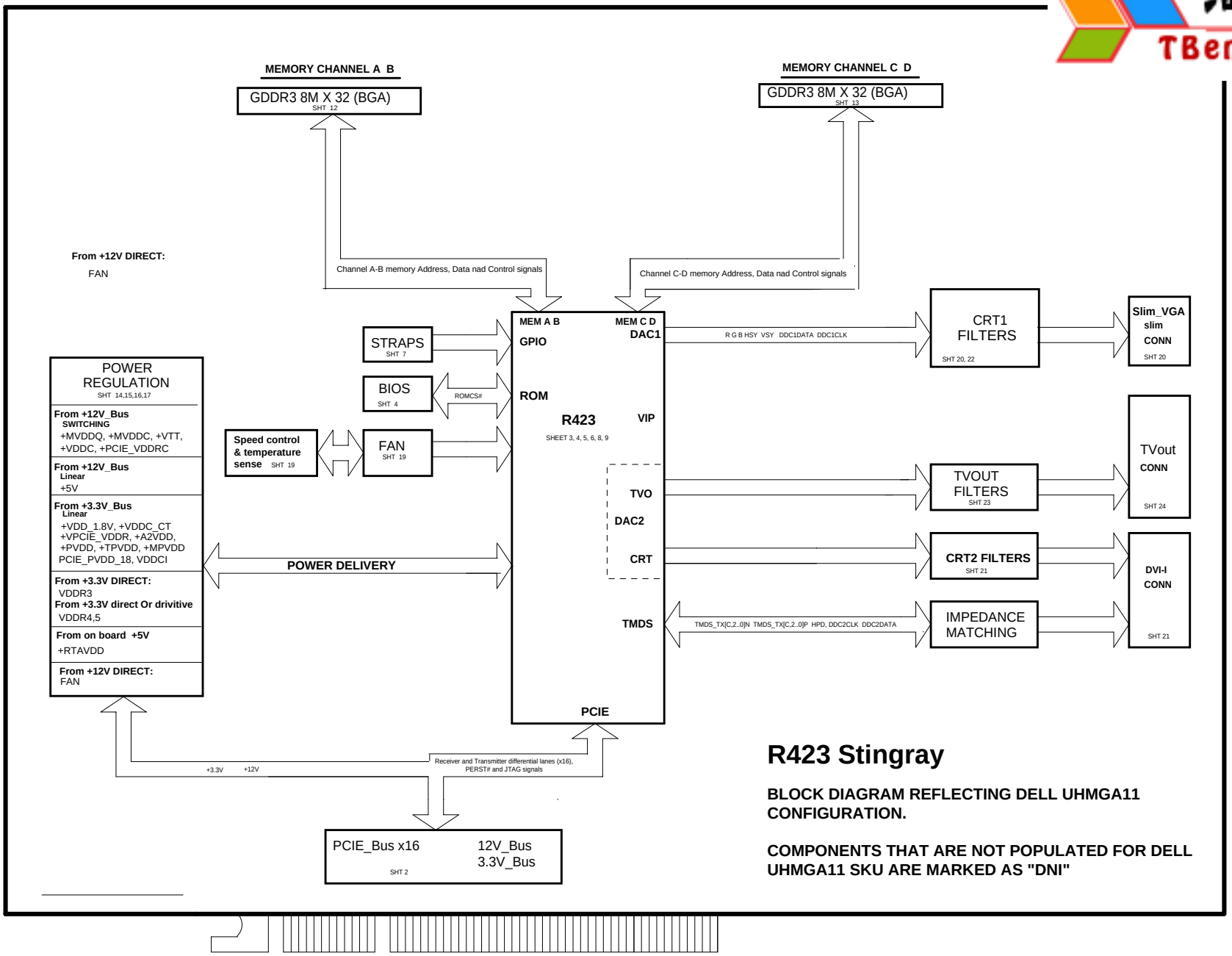

R423 Stingray

BLOCK DIAGRAM REFLECTING DELL UHMGA11 CONFIGURATION.

COMPONENTS THAT ARE NOT POPULATED FOR DELL UHMGA11 SKU ARE MARKED AS "DNI"

ATI Technologies Inc.
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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I
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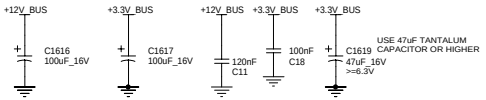
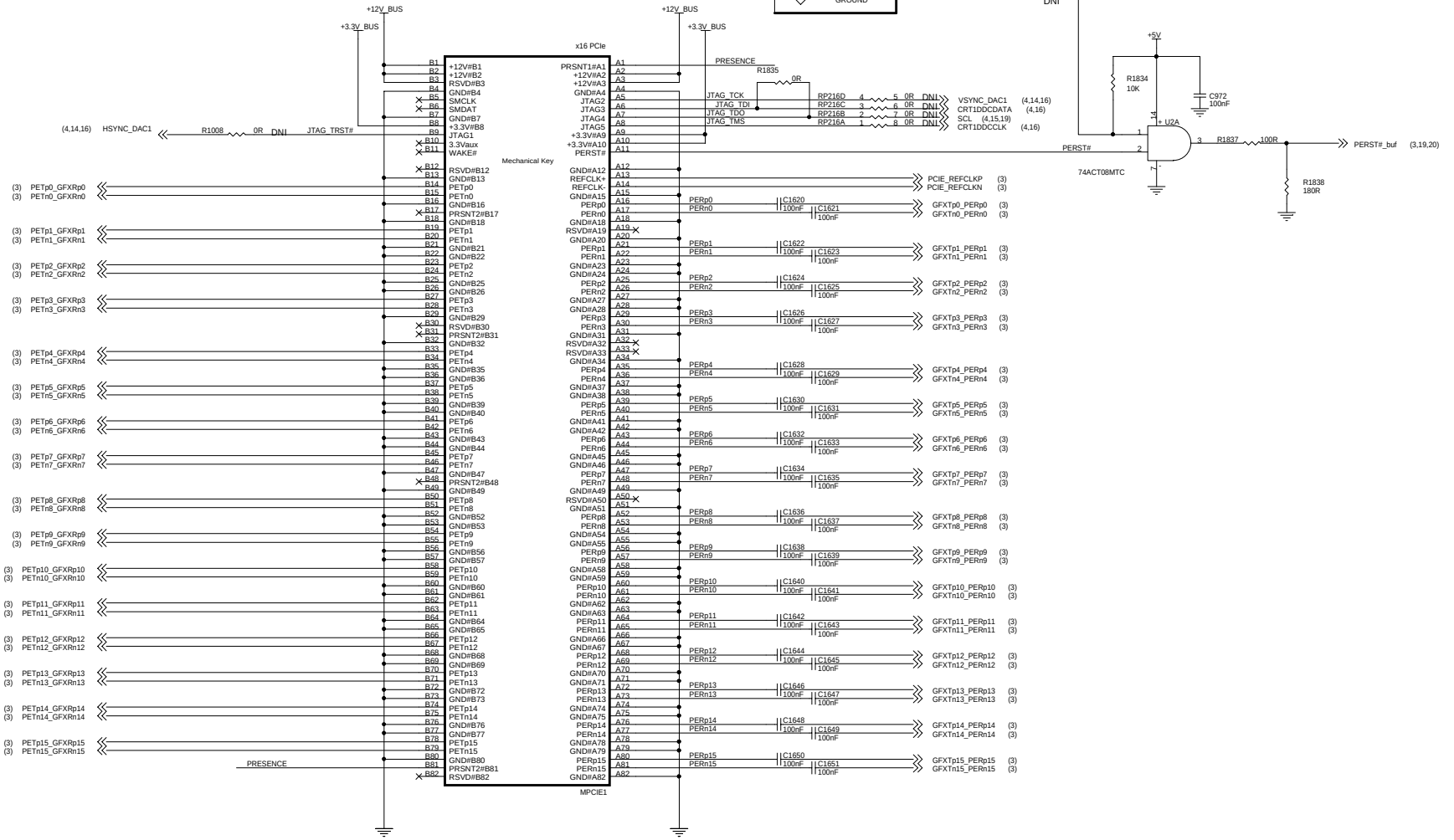
PCI-EXPRESS EDGE CONNECTOR



SYMBOL LEGEND

DNI	DO NOT INSTALL
#	ACTIVE LOW
	DIGITAL GROUND
	ANALOG GROUND



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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I		
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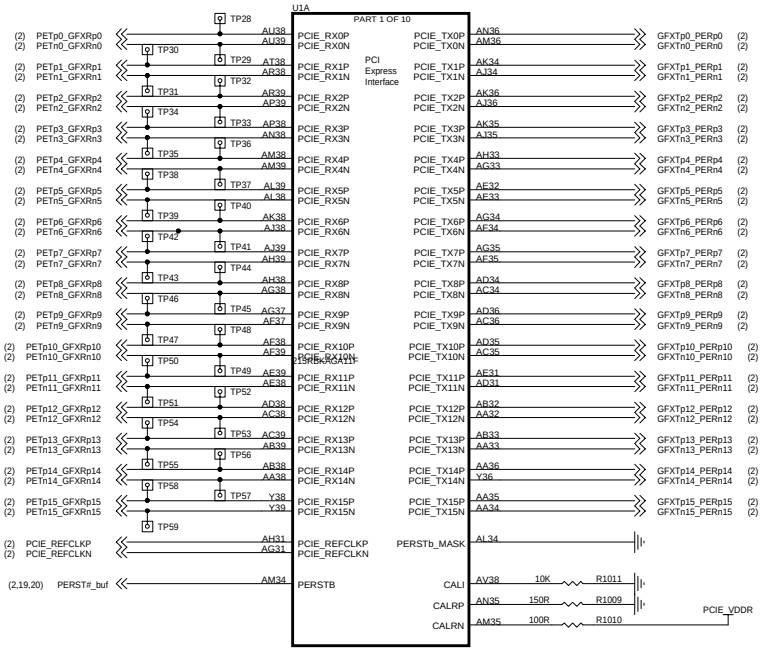
ATI PN# 215RBKAGA11F



<Variant Name>

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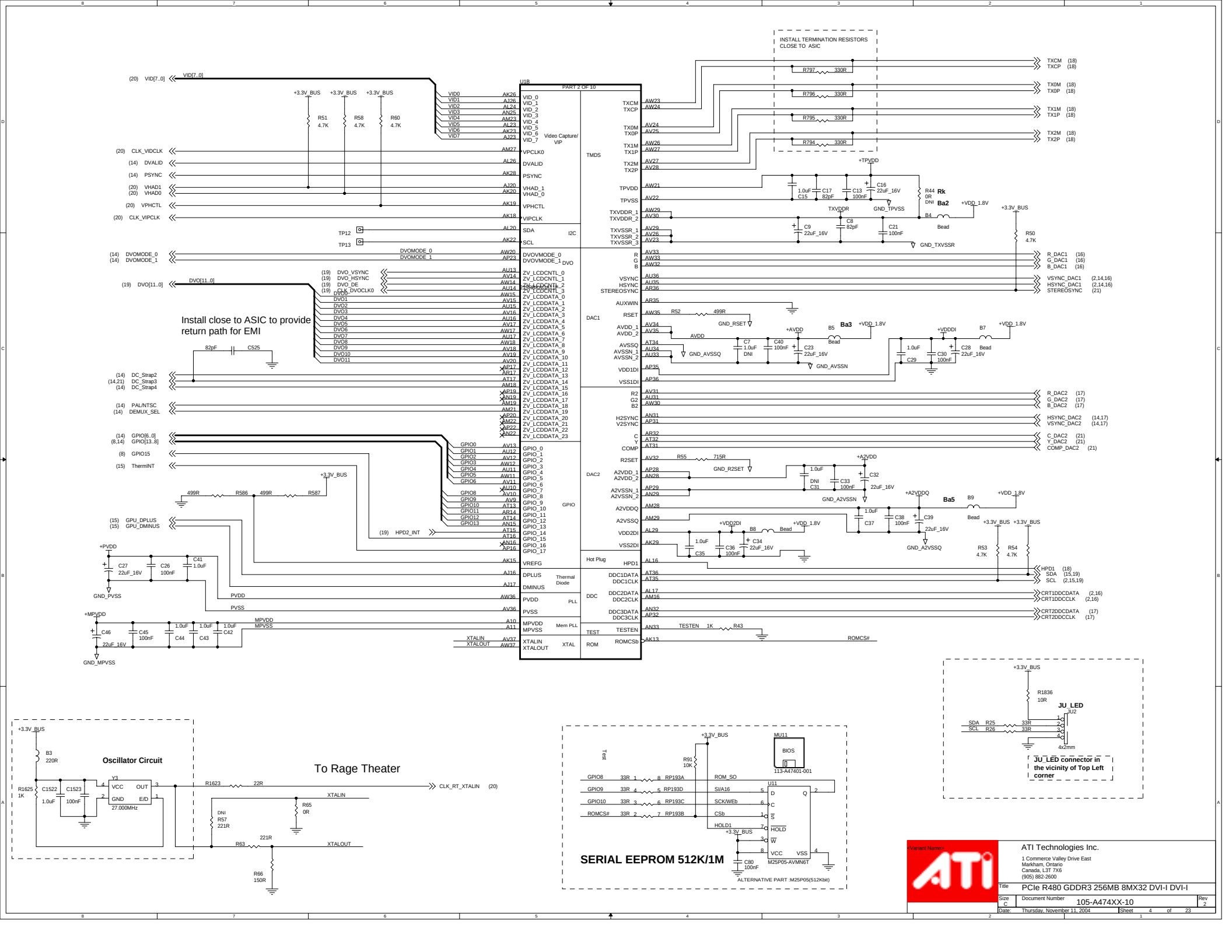
INSTALL TERMINATION RESISTORS CLOSE TO ASIC
U1B
PART 2 OF 10
Video Capture/ VIP
I2C
DVO
TMDS
DAC1
DAC2
GPIO
Thermal Diode
PLL
Mem PLL
XTAL
Hot Plug
DDC
TEST
ROM
Install close to ASIC to provide return path for EMI
Oscillator Circuit
27.000MHz
To Rage Theater
SERIAL EEPROM 512K/1M
ALTERNATIVE PART :M25P05(512Kbit)
JU_LED
JU_LED connector in the vicinity of Top Left corner
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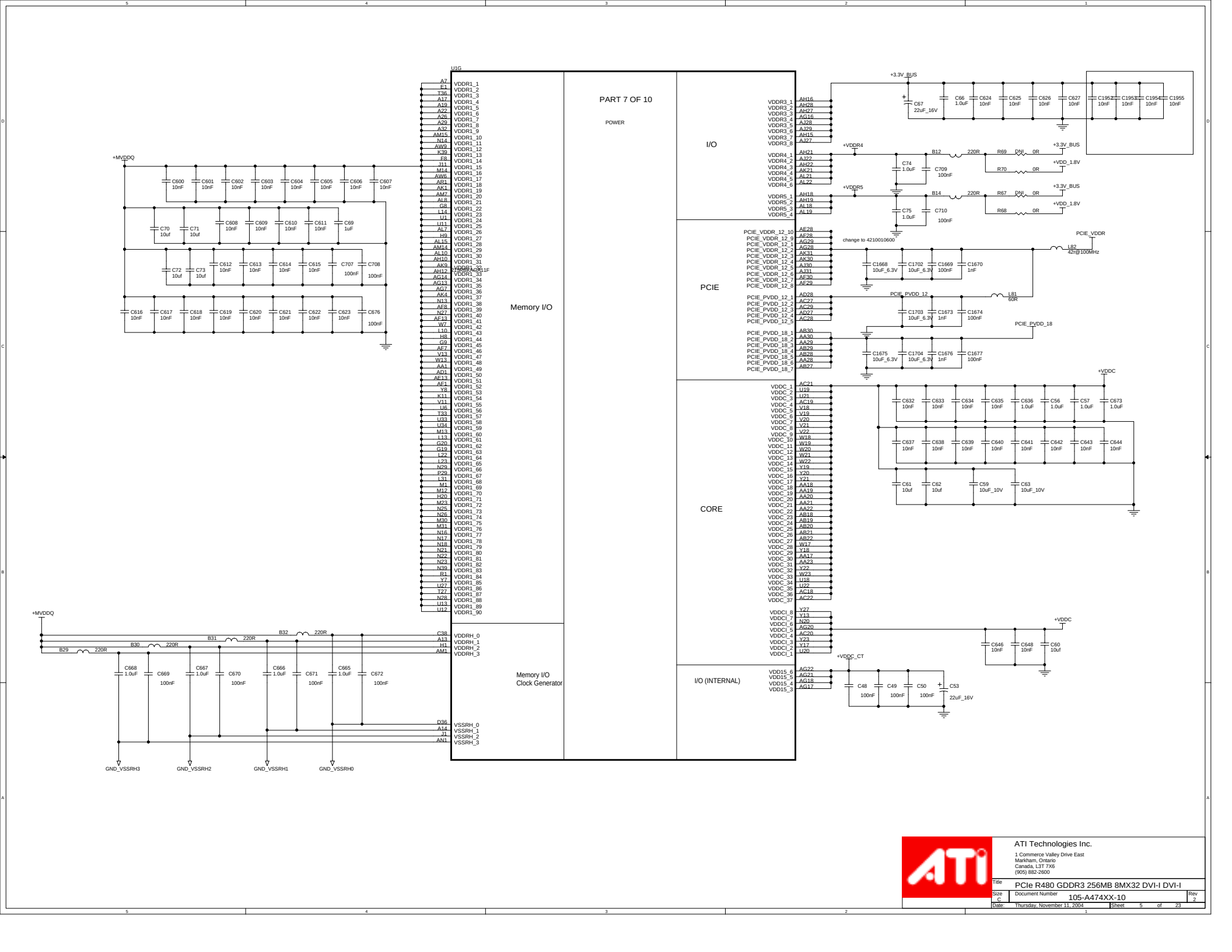
PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I
105-A474XX-10
Thursday, November 11, 2004


U1G
PART 7 OF 10
POWER
Memory I/O
Memory I/O
Clock Generator
I/O
PCIE
CORE
I/O (INTERNAL)
+MVDDQ
+3.3V_BUS
+VDDR4
+VDDR5
+VDD_1.8V
+VDDC
+VDDC_CT
PCIE_VDDR
PCIE_PVDD_12
PCIE_PVDD_18
change to 4210010600
L82
42r@100MHz
L81
60R
GND_VSSRH3
GND_VSSRH2
GND_VSSRH1
GND_VSSRH0
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PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I
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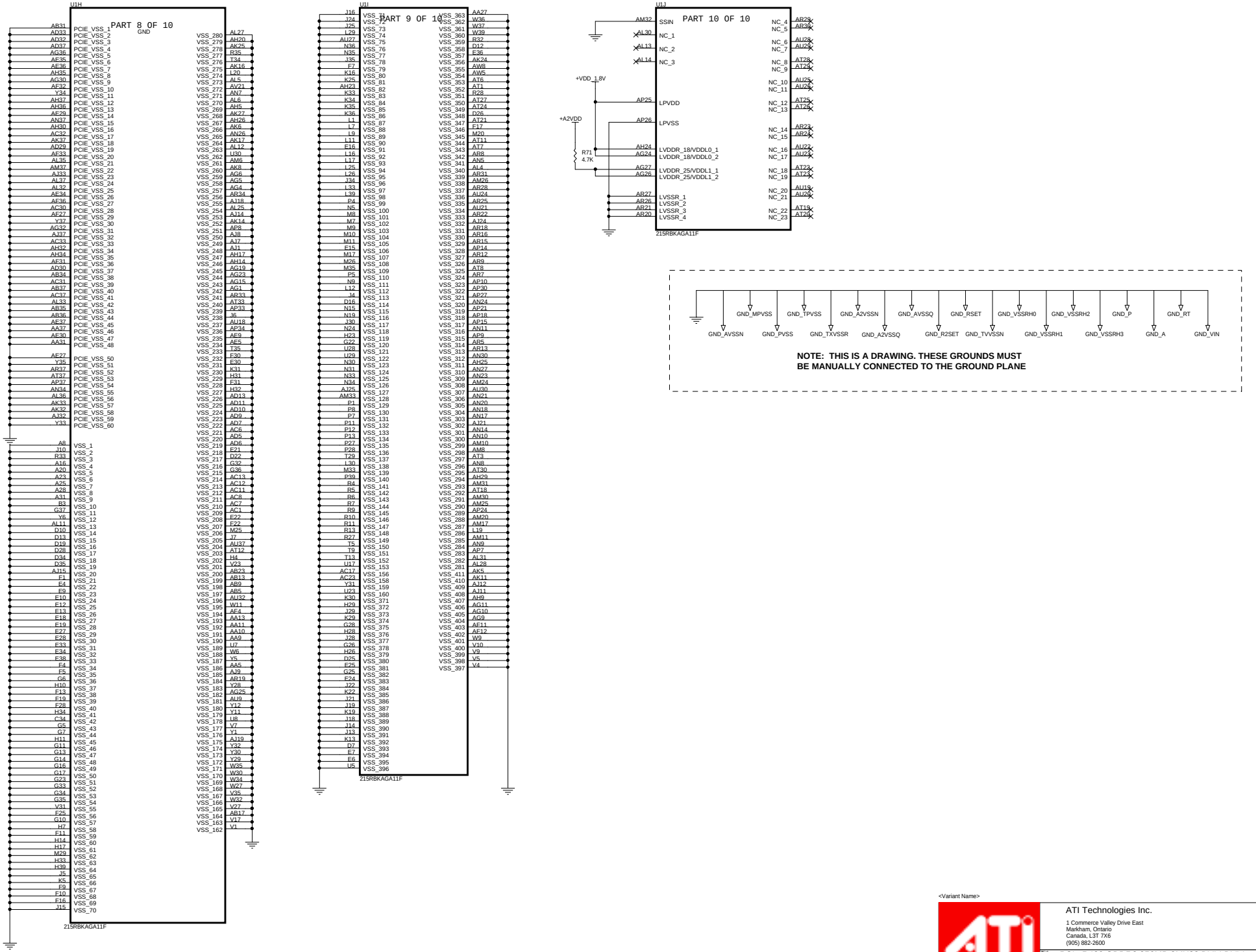

<variant_name>

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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I	
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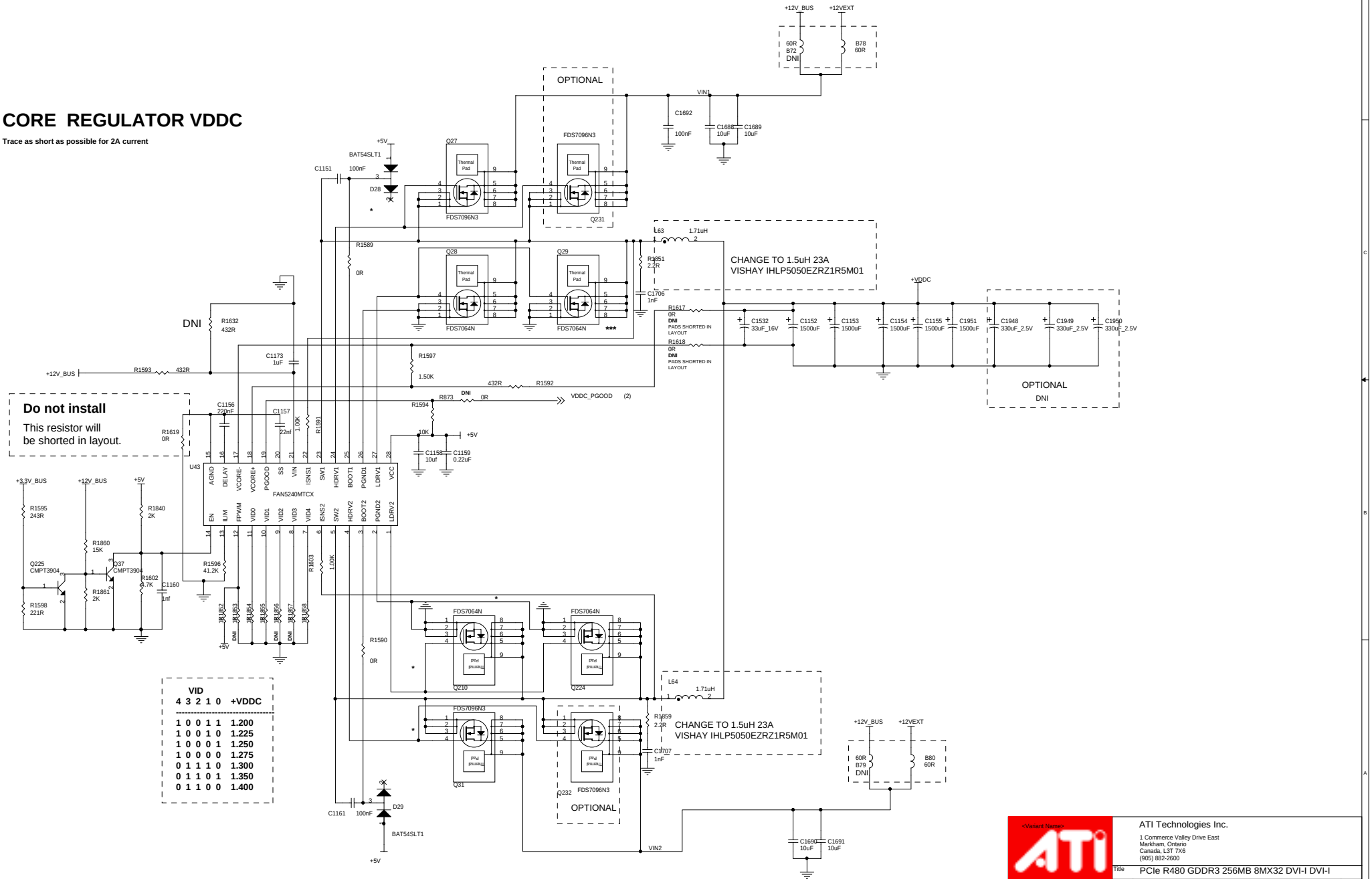
CORE REGULATOR VDDC

* Trace as short as possible for 2A current



VID 4 3 2 1 0	+VDDC
1 0 0 1 1	1.200
1 0 0 1 0	1.225
1 0 0 0 1	1.250
1 0 0 0 0	1.275
0 1 1 1 0	1.300
0 1 1 0 1	1.350
0 1 1 0 0	1.400

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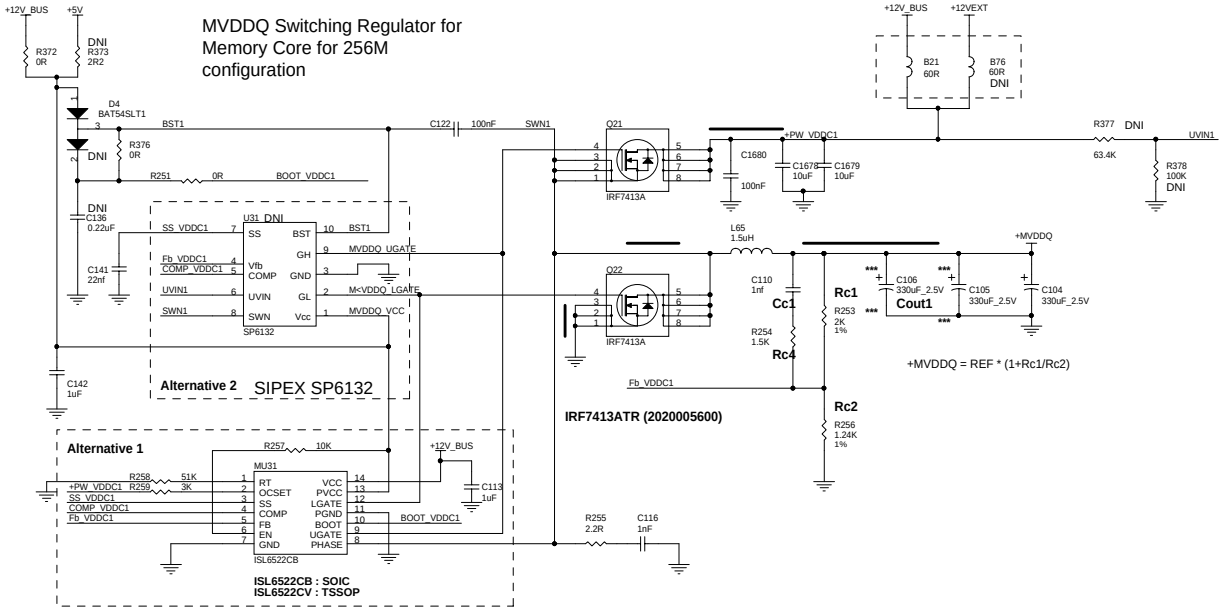
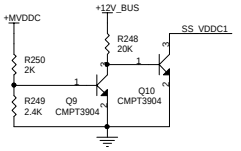
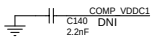


POWER SEQUENCING CIRCUIT:

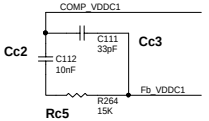


DESIGN NOTES:

Add this Capacitor for SP6132



Compensation Circuit



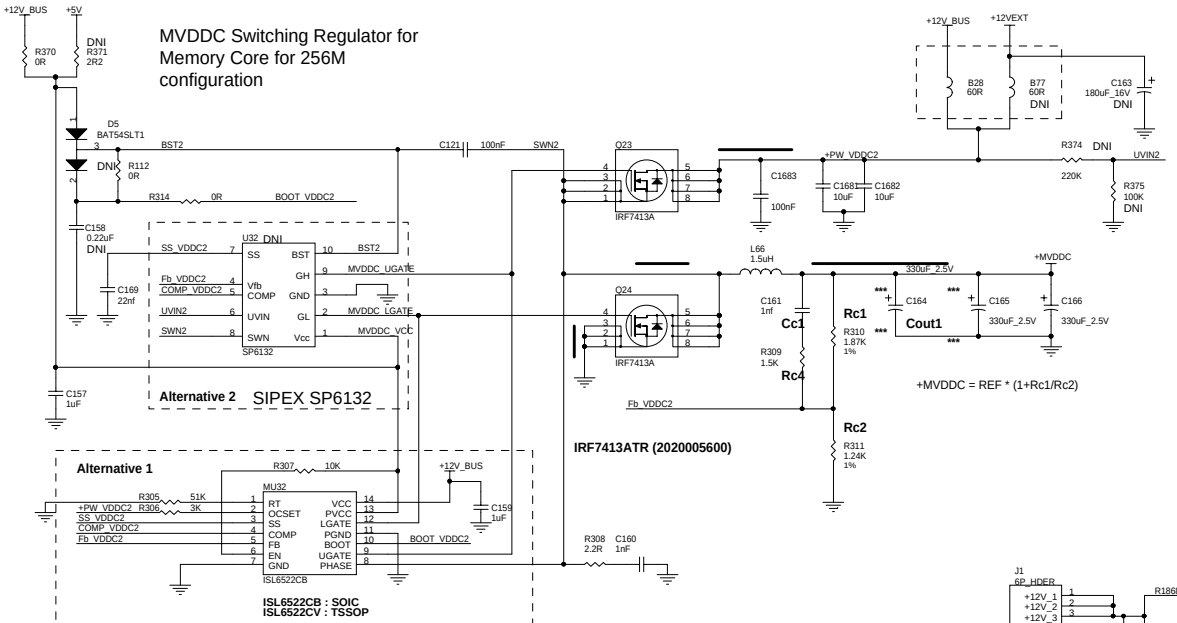
FOR ALTERNATE #2

Change C142 for 10uF

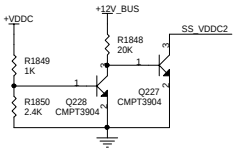
Change C122 for 1uF

Replace R251 with a bead

Swap Rc4 with Cc1

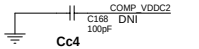


POWER SEQUENCING CIRCUIT:

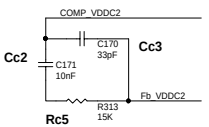


DESIGN NOTES:

Add this Capacitor for SP6132



Compensation Circuit



FOR ALTERNATE #2

Change C157 for 10 uF

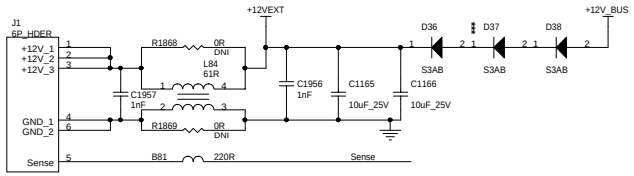
Change C121 for 1 uF

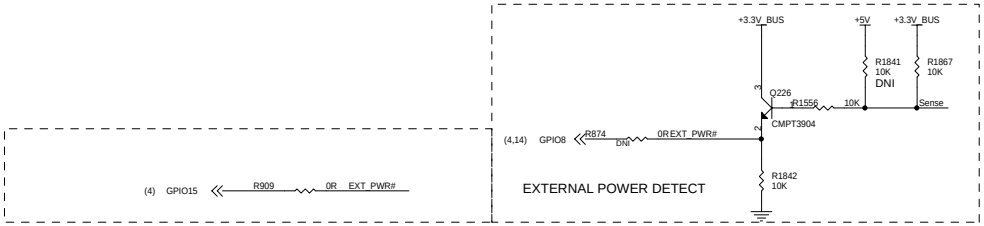
Replace C764 by 0 Ohm resistor

Remove R954

Replace R314 with a bead

Swap Rc4 with Cc1





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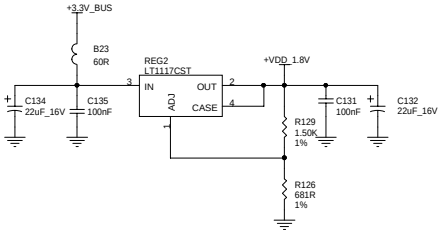
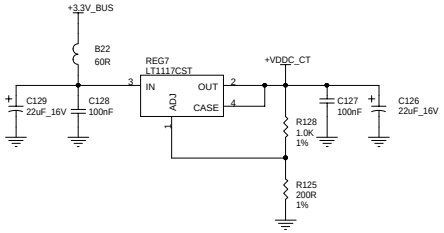
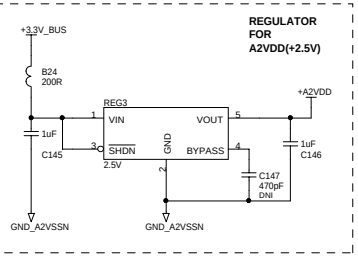
+1.8V Regulator for analog power supplies

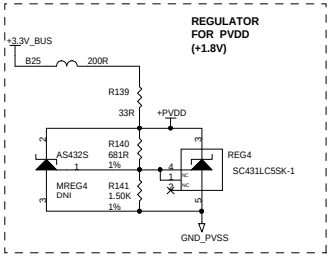


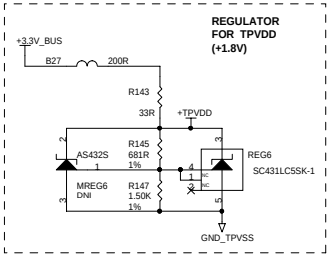
Max 400 mA if all 1.8 V analog power supplies are connected

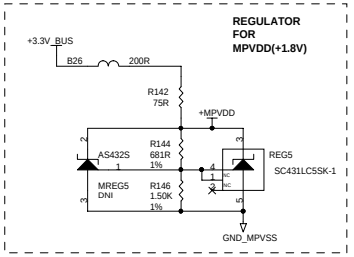
+1.5V Regulator for VDDC_CT (VDD15)



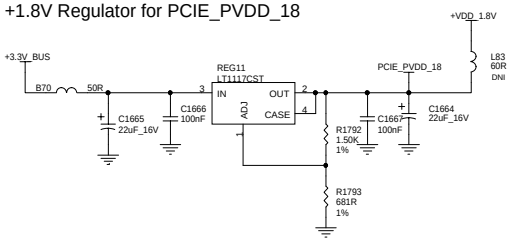


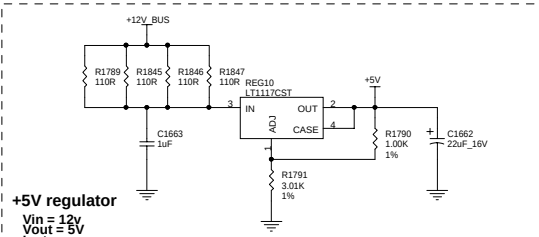






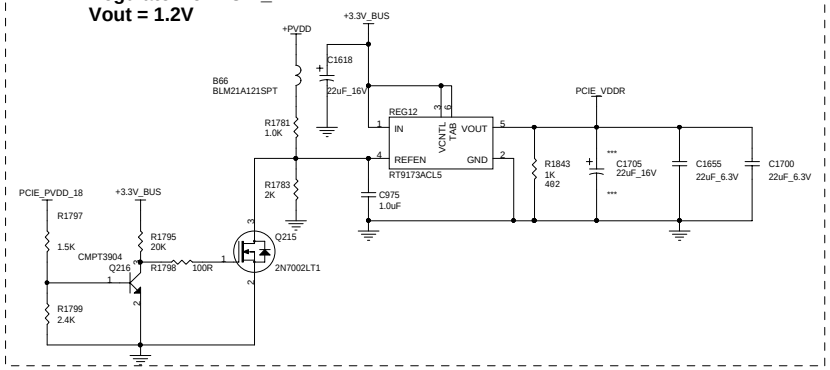
+1.8V Regulator for PCIE_PVDD_18





+5V regulator
Vin = 12v
Vout = 5V
Iout =

Regulator for PCIE_VDDR
Vout = 1.2V



<Variant Name>

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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I	
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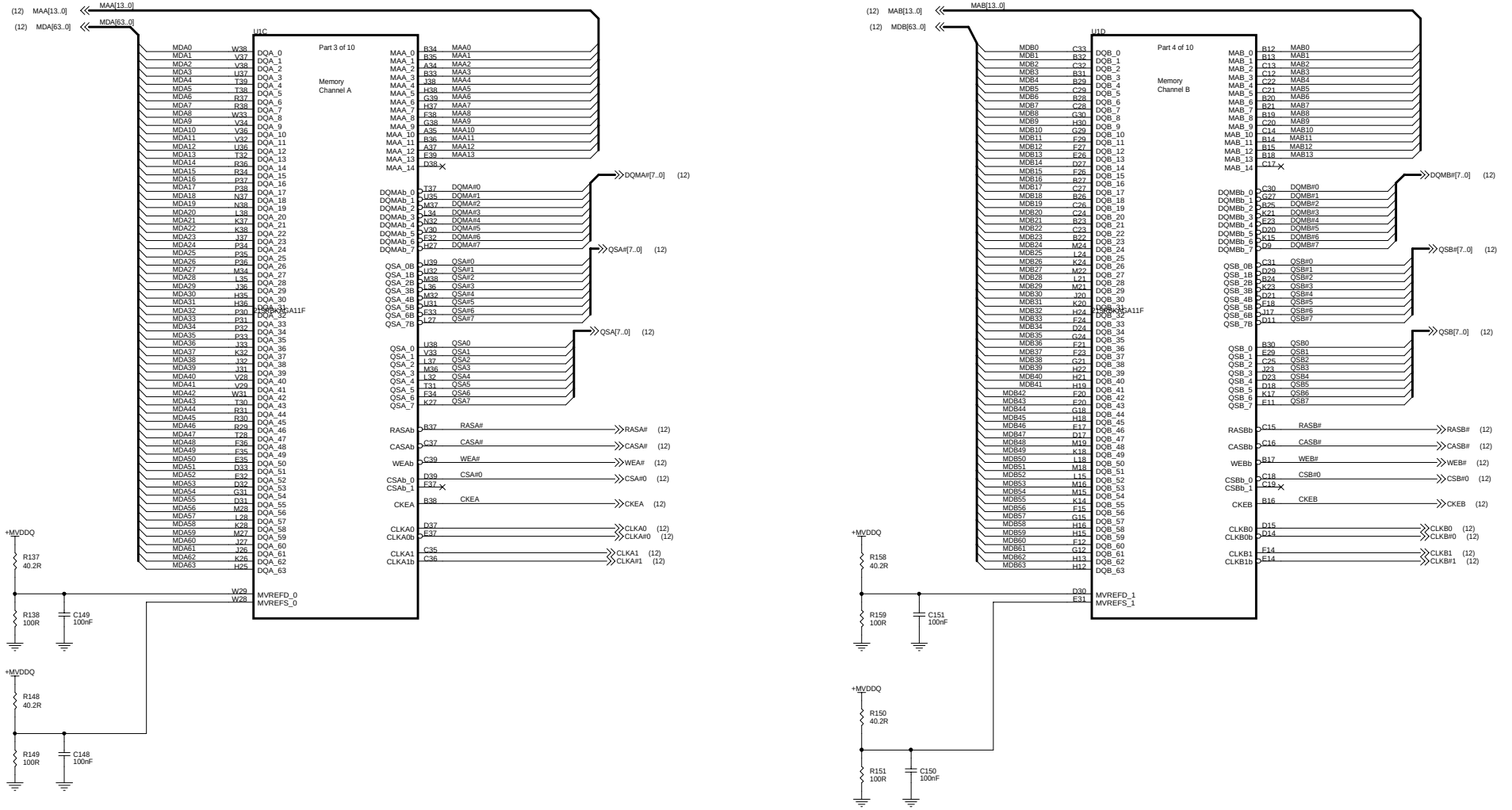
R423 MEMORY CHANNELS A and B



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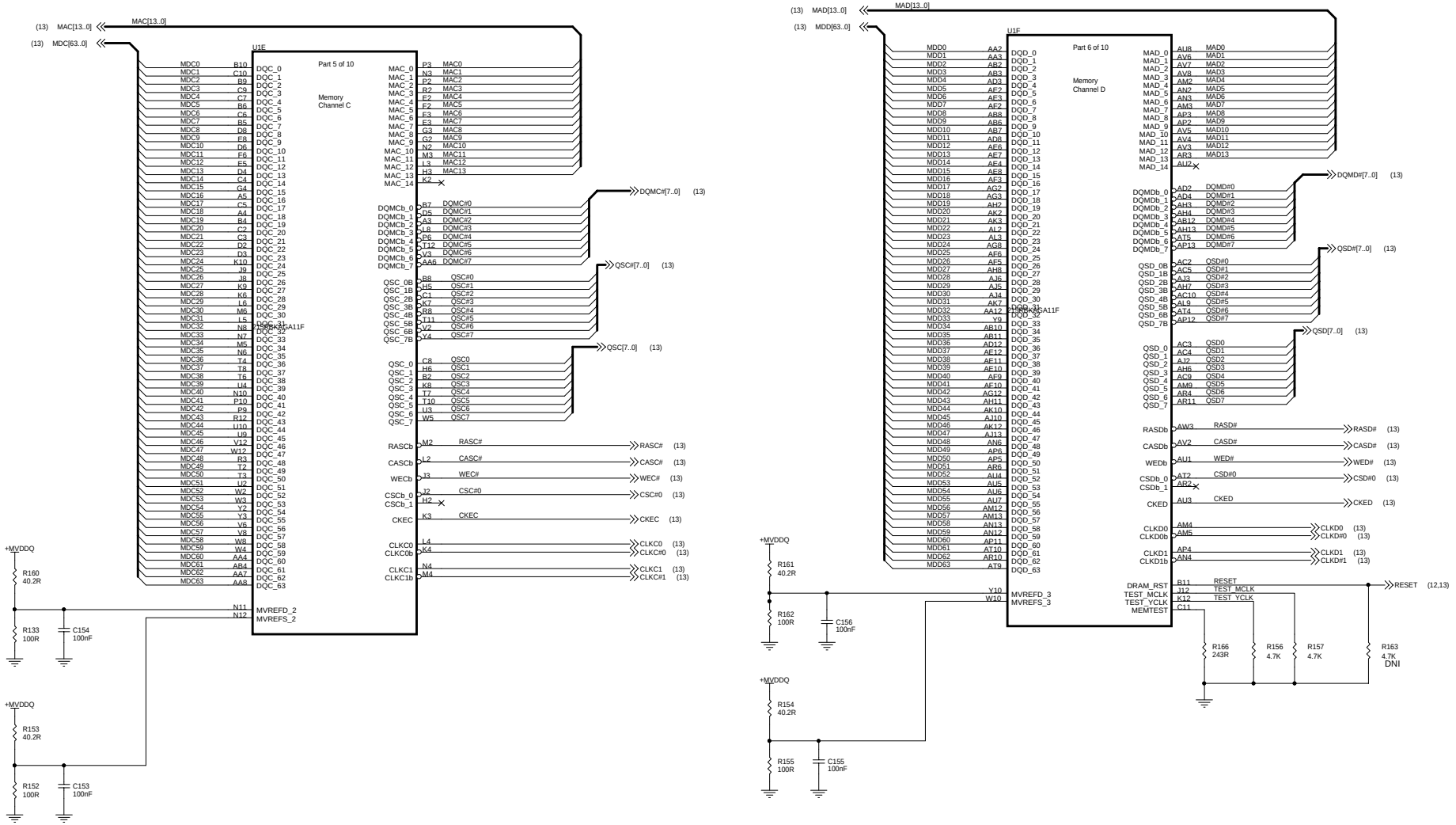
R-420 MEMORY CHANNELS C and D



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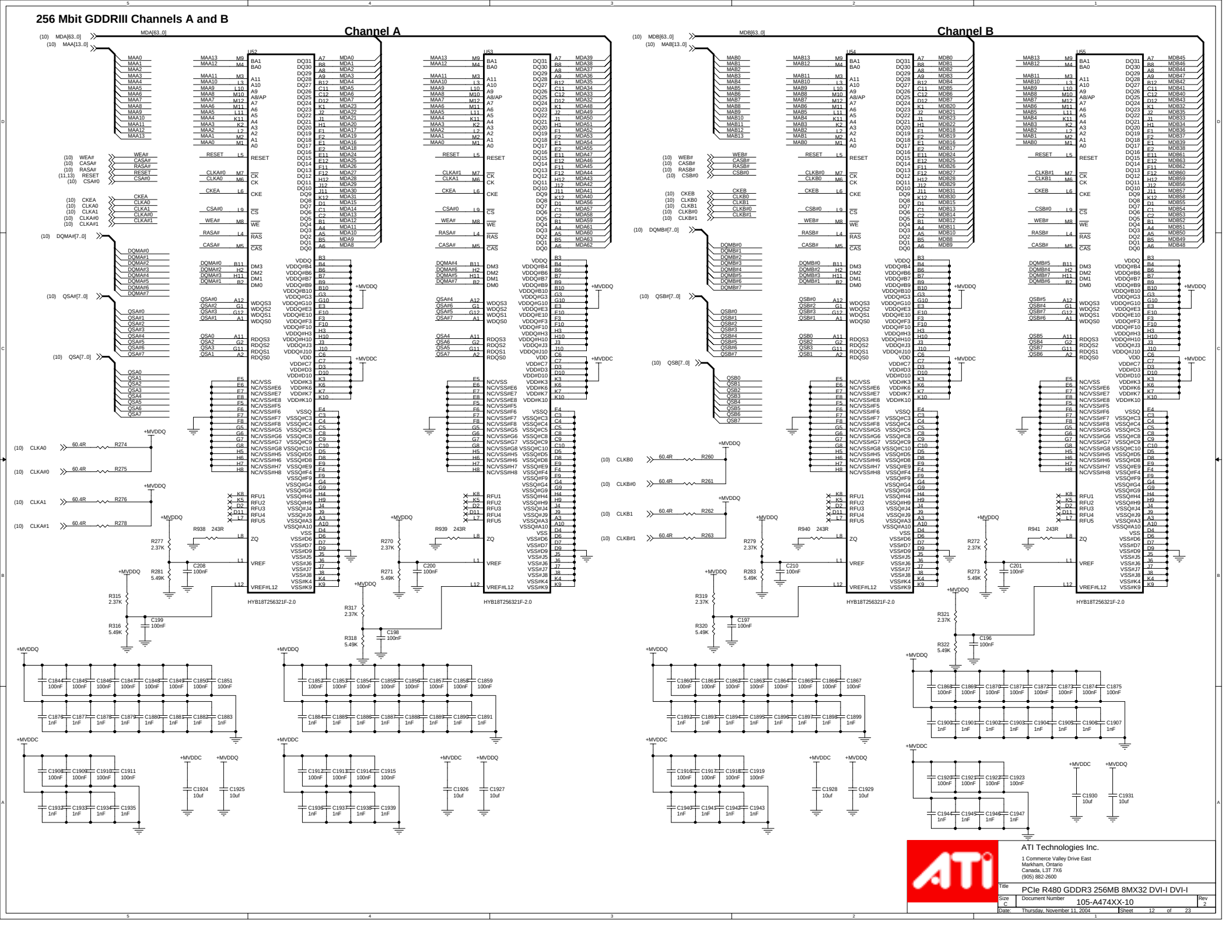
256 Mbit GDDRIII Channels A and B



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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I		
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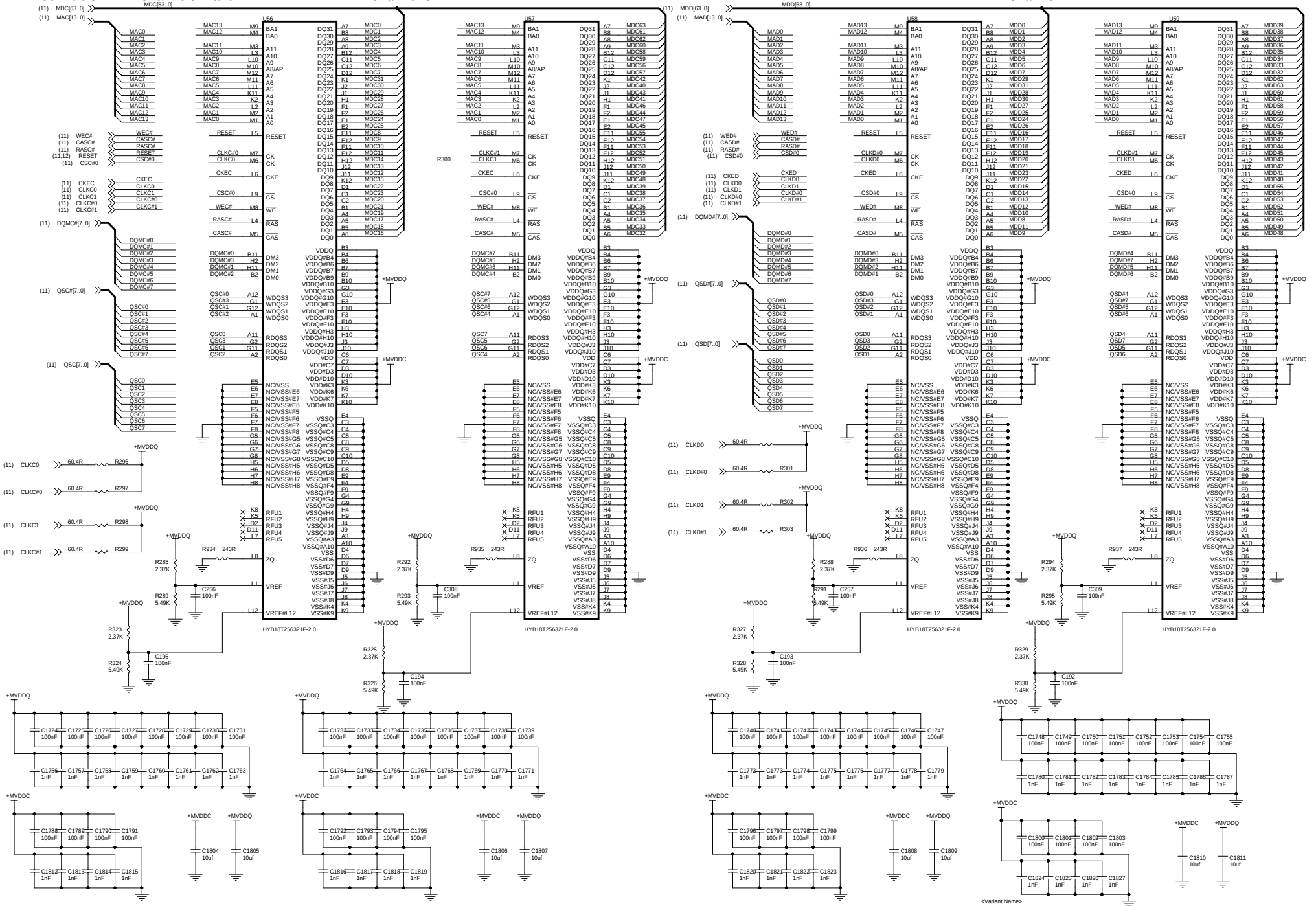
256 Mbit GDDRIII Channels A and B

Channel C

Channel D



<Variant Name>

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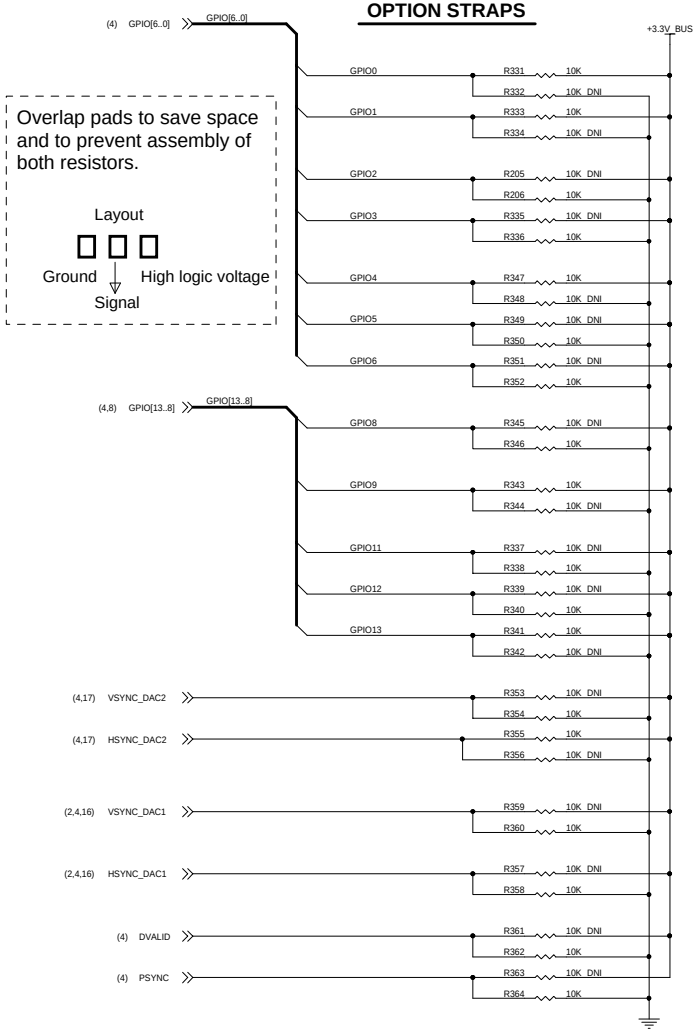
OPTION STRAPS



R423 Shared Straps — REV. 0.0

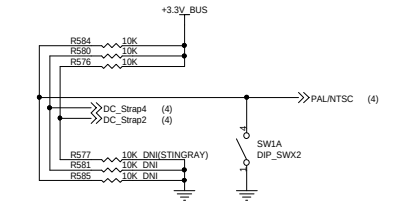
STRAPS	PIN	DESCRIPTION	DEFAULT
FEATURE0	GPIO(0)	Transmitter Power Savings Enable 0: 50% Tx output swing for mobile mode 1: full Tx output swing (Desktop must have an external pullup)	0
FEATURE1	GPIO(1)	Transmitter De-emphasis Enable 0: Tx de-emphasis disabled for mobile mode 1: Tx de-emphasis enabled (Desktop must have an external pullup)	0
PCIE_MODE (ATI Internal)	GPIO(3:2)	PCIE mode: 00: PCI Express 1.0A mode 01: Kyrene-compatible mode 10: PCI Express 1.0 mode 11: Short-circuit internal loopback and PCI Express 1.0A mode	00
REVERSE_LANES	GPIO(4)	REVERSE_LANES 0: normal mode 1: reverse mode	0
FORCE _COMPLIANCE	GPIO(5)	Force chip to get to compliance state quickly for Tester purposes 0: Normal operation 1: Force to compliance state	0
PLL_BW (ATI Internal)	GPIO(6)	0: Full PLL Bandwidth 1: Reduced PLL bandwidth	0
DEBUG_ACCESS	GPIO(8)	Strap to set the debug muxes to bring out DEBUG signals even if registers are inaccessible 0: Disable debug access 1: Enable debug access	0
ROMIDCFG(3:0)	GPIO(9,13:11)	If no ROM attached, controls chip IDis. If rom attached identifies ROM type. GPIO[9,13,12,11] 000x - No ROM,CHG_ID=00 001x - No ROM, CHG_ID=01 010x - No ROM, CHG_ID=10 011x - No ROM, CHG_ID=11 1001 - 1M Serial AT25F1024 ROM (Atmel) 1010 - 1M Serial AT45DB011 ROM (Atmel) 1011 - 1M Serial M25P10 ROM (ST) **1100 - 512K Serial M25P05 ROM (ST)** 1101 - 1M Serial SST45LF010 ROM (SST) 1M Serial W45B512 ROM (WinBond) 512K Serial W45B012 ROM (WinBond) 1110 - 1M Serial SST25VF010 ROM (SST) 512K Serial SST25VF512 ROM (SST) 1111 - 1M NX25F011B ROM (NexFlash) **Chip IDs:** Chip ID is based on substrate fuses and CHG_ID strap (which comes from ROM if used, or pin straps if no ROM is connected): CHG_ID = ROMIDCFG[2:1] = GPIO[13:12]	1100
MULTIFUNC(1:0)	H2SYNC, V2SYNC	Multi-function device select 00 - single function device. 01 - two function device. **10 - two function device.** 11 - two function device.	10
VIP_DEVICE	VSYNC	Indicates if any slave VIP host devices drove this in low during reset. 0 - Slave VIP host port devices present **1 - No slave VIP host port devices reporting presence during reset**	1
RFU	HSYNC	RFU **0 - Normal** 1 - Not used	0

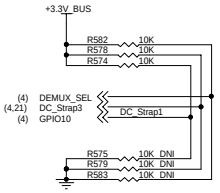
R423 Dedicated Straps — REV. 0.0

ZV_VOLTAGE_SEL0	DVOVMODE_0	DVOVMODE_0 is for ZV_LCDCNTL and ZV_LCDDATA(11:0). **0 - 3.3 V signaling** 1 - 1.8 V signaling	0
ZV_VOLTAGE_SEL1	DVOVMODE_1	DVOVMODE_1 is for ZV_LCDDATA(23:12) **0 - 3.3 V signaling** 1 - 1.8 V signaling	0

Board Straps — REV. 0.0

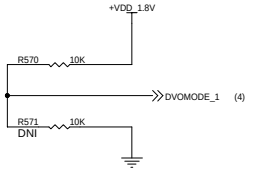
STRAPS	PIN	DESCRIPTION	DEFAULT
MEMTYPE(1:0)	DVALID, PSYNC.	Memory connected to R420 identification for BIOS **00 - Samsung GDDR 3 memory 144 Ball BGA package** 01 - TBD 10 - TBD 11 - TBD	000
DC_Strap1	GPIO(10)	Internal TMDS Enabled 0 - Disabled **1 - Enabled**	1
DC_Strap2	LCDDATA(13)	Video Capture Enabled **0 - Disabled** 1 - Enabled	0
DC_Strap3	LCDDATA(14)	Not defined	0
DC_Strap4, DEMUX_SEL	LCDDATA(15,19)	Video capture enable 00 - DAC2 Off **01 - DAC2 On as CRT** 10 - DAC2 On as TVOUT 11 - DAC2 On as TVOUT and CRT	01
PAL/NTSC	LCDDATA(18)	TVO Standard Default (Resistor pull-up and switch short to GND) 0 - PAL (on board resistor pull-down and switch closed) **1 -NTSC (on board resistor pull-up)**	1
EXT_PWR	GPIO15	External power cable detect **0 - Cable is properly connected** 1 - Cable is not properly connected. Software should prevent the board from booting, should display a warning at screen and should decrease engine and memory clock speed.	NA

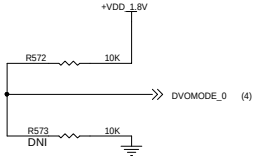




WARNING

Some of those straps must be connected to +VDD_1.8V if ZV_LCDATA bus is set to 1.8 V.





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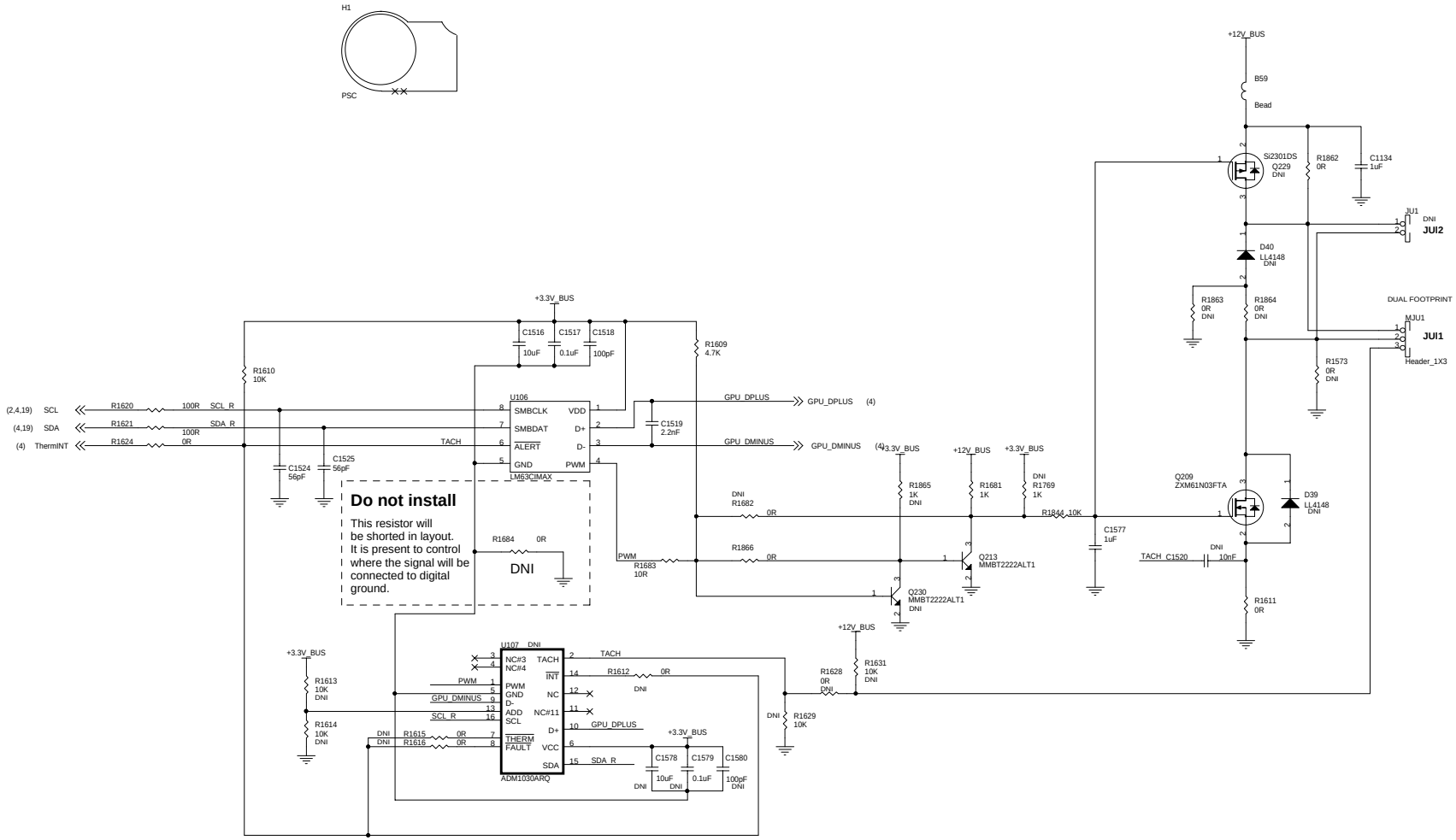
(905) 882-2600

Title: PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I

Size: C | Document Number: 105-A474XX-10 | Rev: 2

Date: Thursday, November 11, 2004 | Sheet 14 of 23

TEMPERATURE SENSE AND SPEED CONTROLLED FAN



Change to Maxim part

<Variant Name>

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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I	
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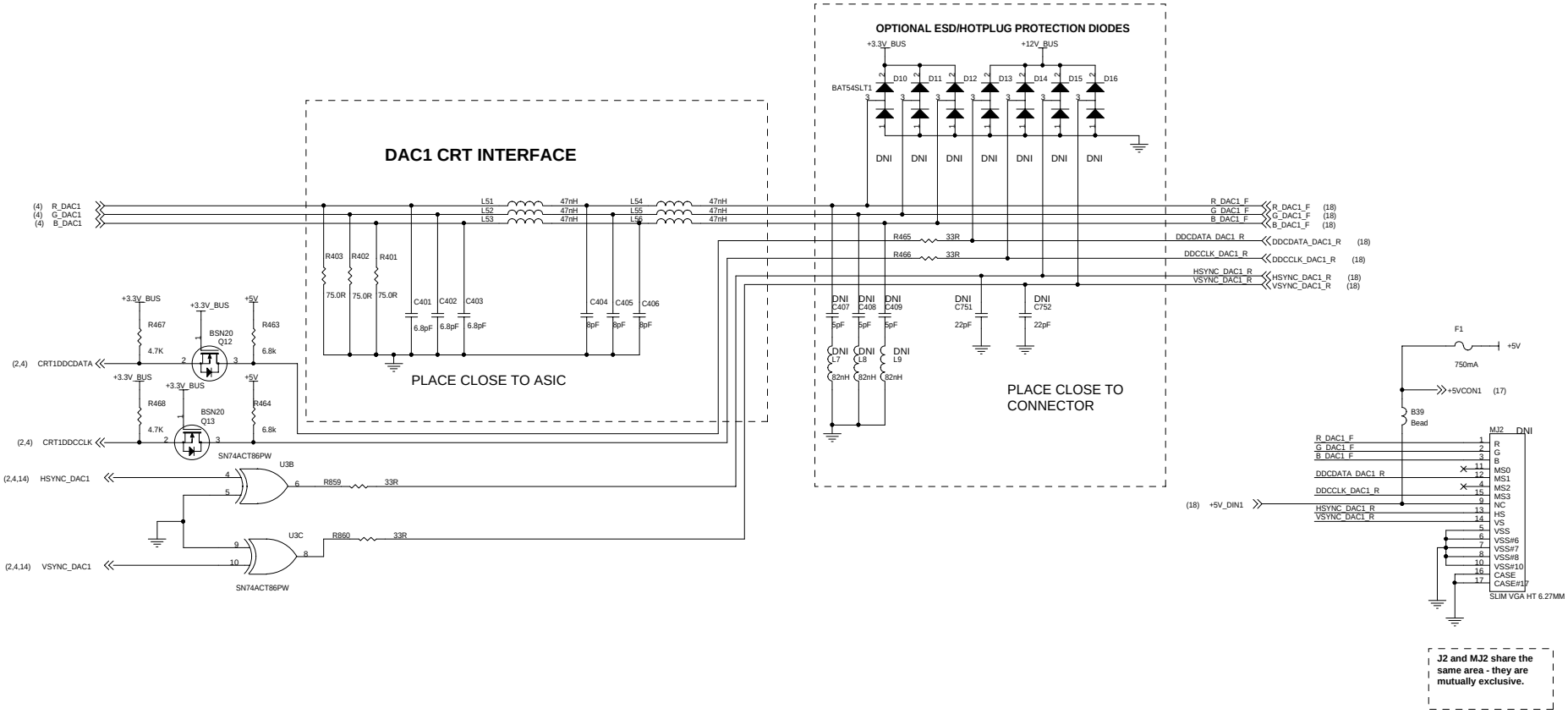

<Variant Name>

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Title	PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I		
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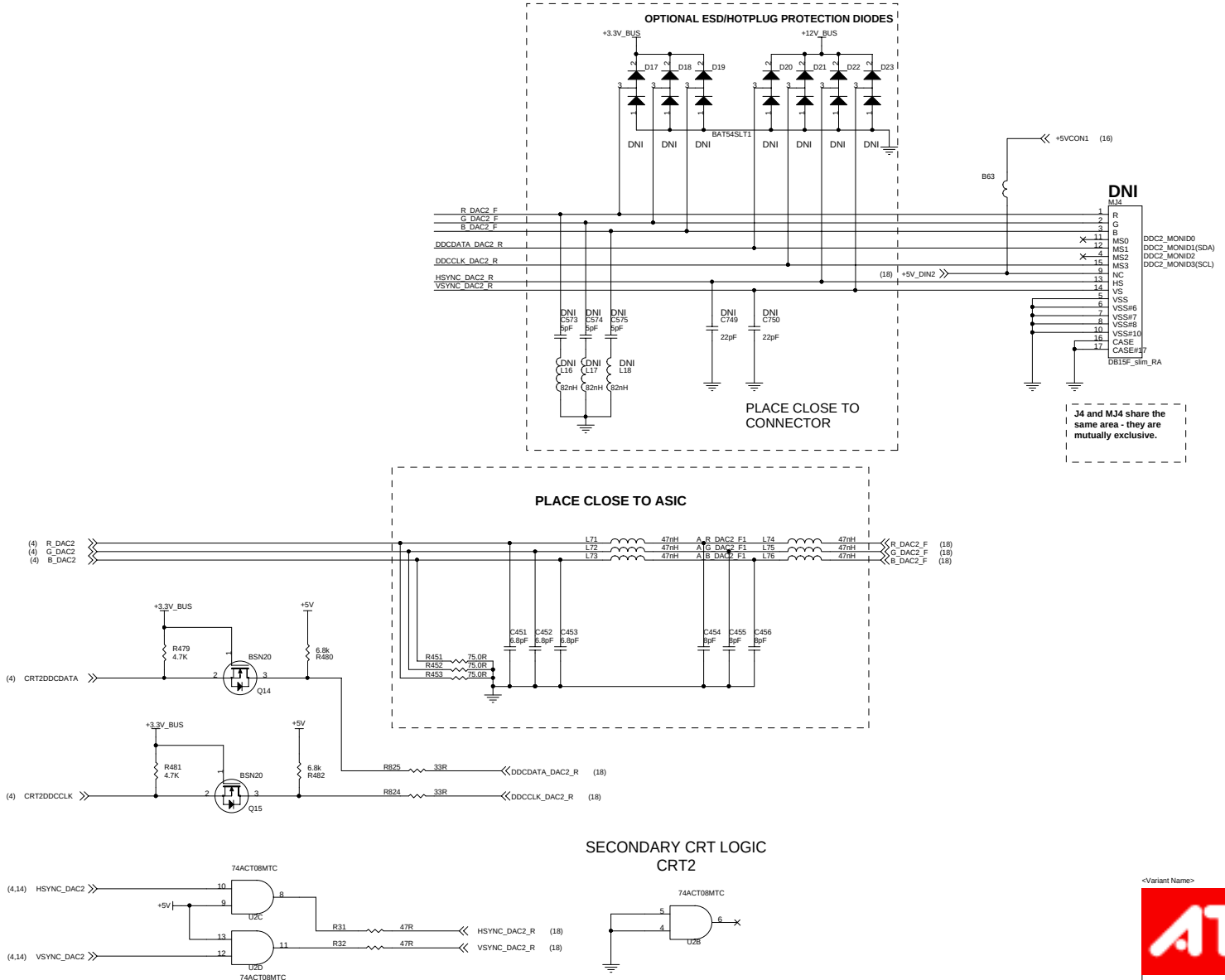

<Variant Name>

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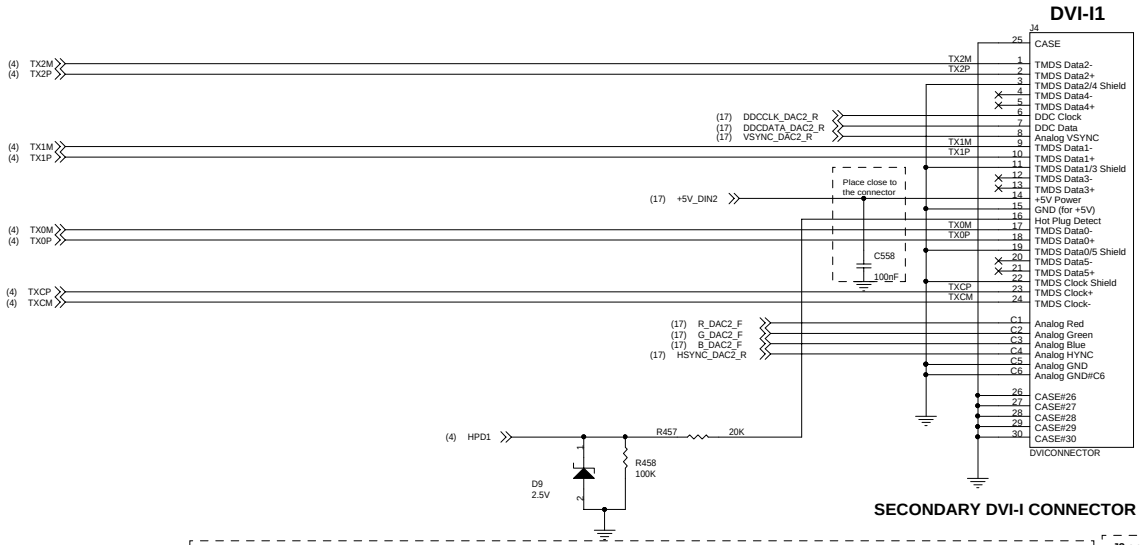
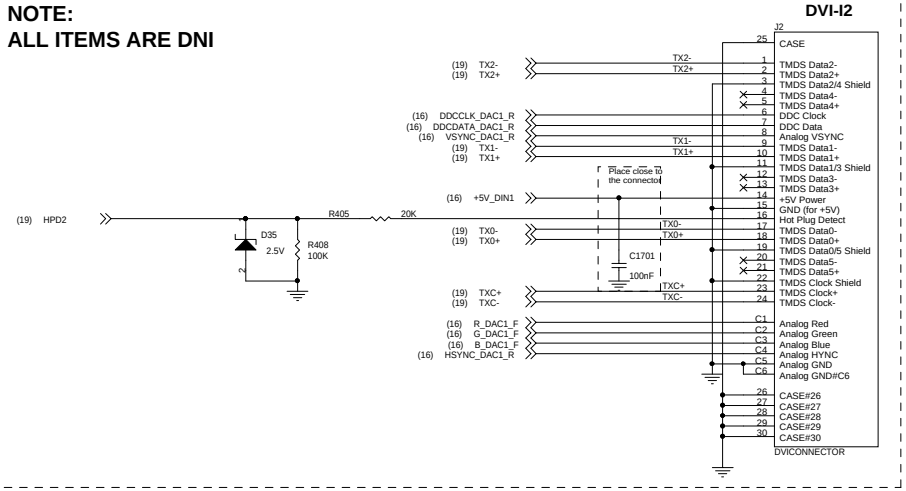
PRIMARY DVI-I CONNECTOR (DVI-I1)



SECONDARY DVI-I CONNECTOR

NOTE:
ALL ITEMS ARE DNI

J2 and MJ2 share the same area - they are mutually exclusive.



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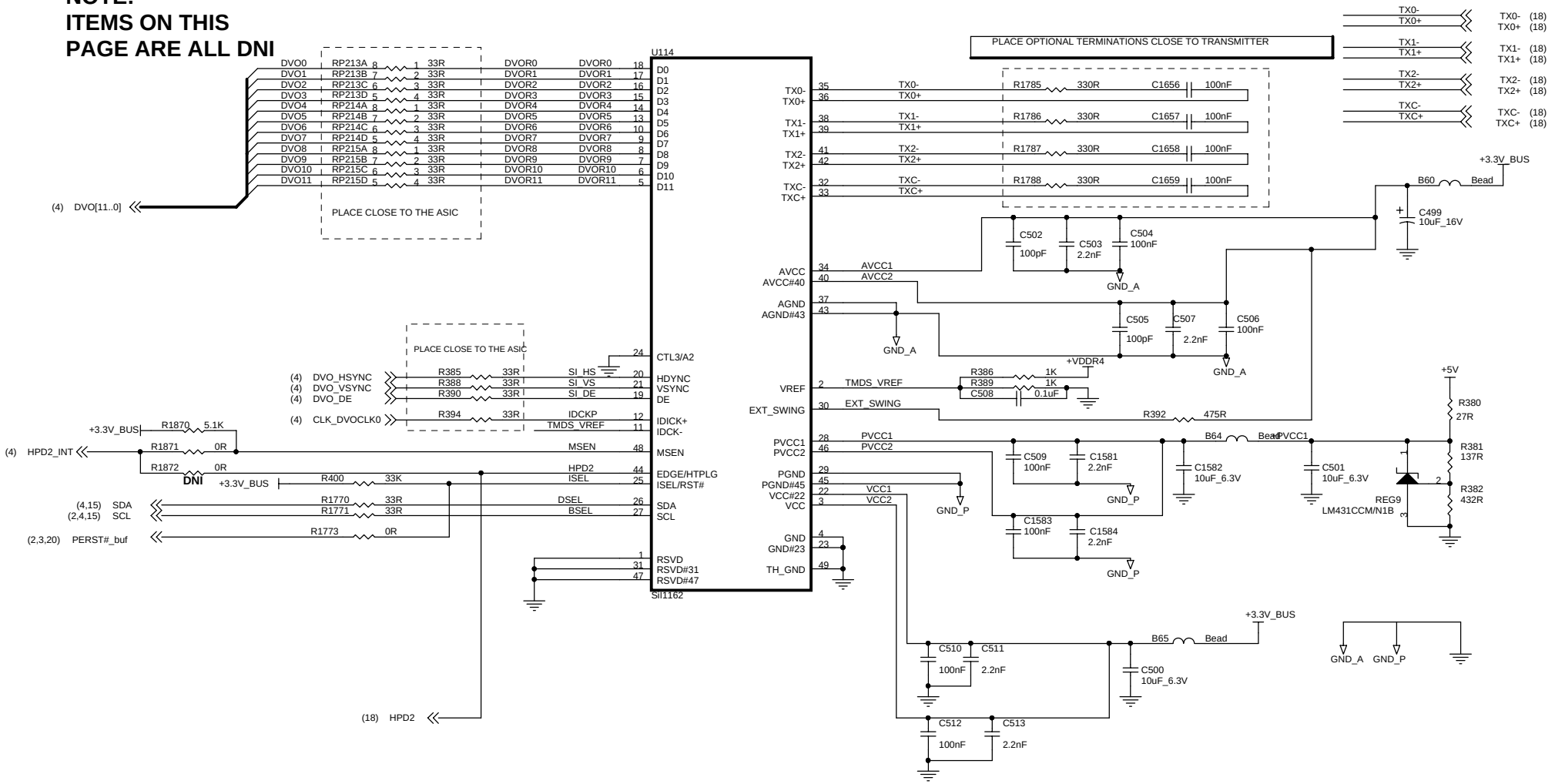
SILICON IMAGE TMDS TRANSMITTER

NOTE:
ITEMS ON THIS
PAGE ARE ALL DNI



<Variant Name>

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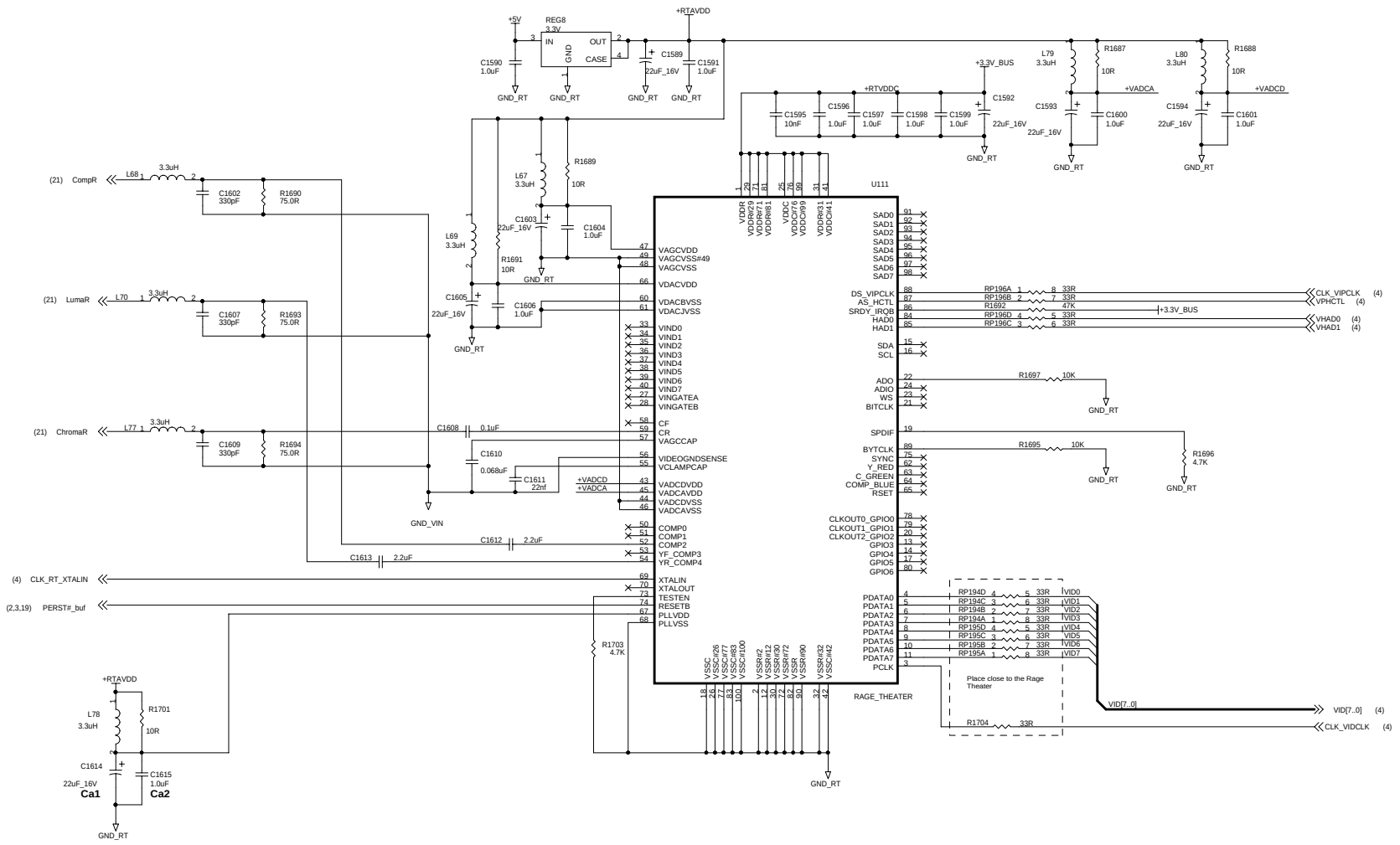
NOTE:
ITEMS ON THIS
PAGE ARE ALL DNI



IMPORTANT

Layout Guide line of THEATER

#1 : Ca1 and Ca2 have to be placed as close as possible to the respective pins of Rage THEATER

#2 : GND_VIN should be seperated from Digital or Chassis Ground and have no loops

#3 : GND_VIN should be connected to Digital GND plane at one point as close as possible to pin 56 of THEATER

Put 2D line as close as possible to pin 56 of Rage Theater

GND_RT GND_VIN

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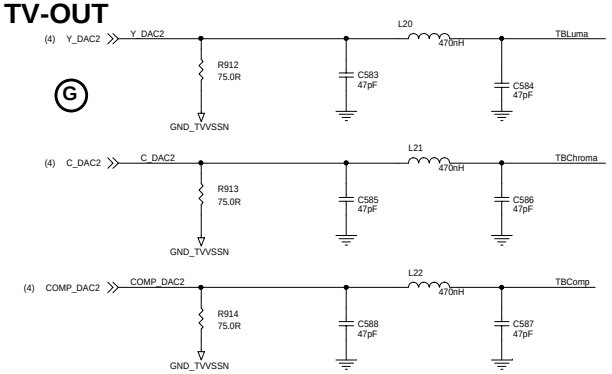
TV-OUT

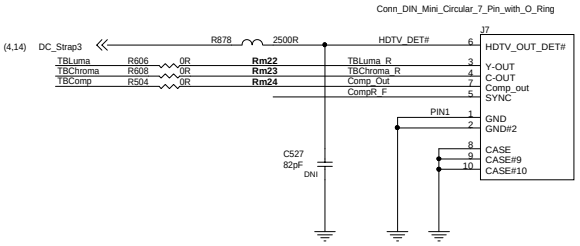


G

Footprint - M1

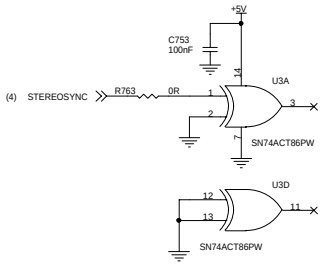
TV Out (SVHS) MiniDIN 7-pin

Jm1



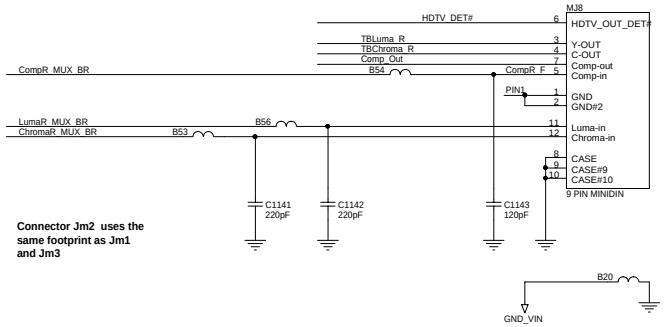
A

Connector Jm1 uses the same footprint as Jm2 and Jm3



NOTE:
ALL ITEMS ARE DNI

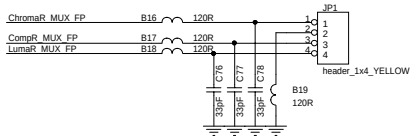
Jm2



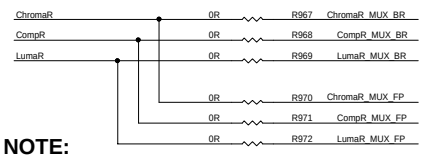
C

Connector Jm2 uses the same footprint as Jm1 and Jm3

NOTE:
ALL ITEMS ARE DNI



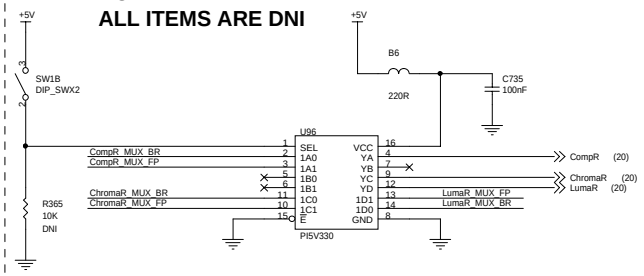
VI MUX BYPASS DNI



NOTE:
ALL ITEMS ARE DNI

VI MUX

NOTE:
ALL ITEMS ARE DNI



	Install	DNI
TV-OUT 7-PIN MiniDIN **102-00302-00** **102-00305-00**	A B E	C
VIVO 9-PIN MiniDIN **102-00303-00** **102-00306-00**	C	A B E
No Options (Just DB15)		A B C E

A C share the same footprint

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DVI SCREWS

ASSY1

SCREW
JACKSCREW
ASSY

ASSY3

SCREW
JACKSCREW
ASSY

ASSY5

SCREW
PAN_HEAD

DVI SCREWS

ASSY2

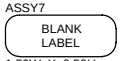
SCREW
JACKSCREW
ASSY

ASSY4

SCREW
JACKSCREW
ASSY

MISC. BOARD PARTS

ASSY7

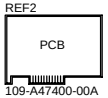


1.50W_X_0.50H
ASSY

ASSY8

6_X_11
ASSY

REF2



109-A47400-00A

REF3

ATI_LOGO_LABEL

ASSY6

BRACKET

VGA, VID OUT, DVI

ASSY10

BRACKET
DUAL

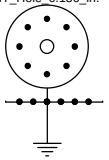
DUAL, VGA, DIN, DVI

ASSY11

BRACKET

80200365A0

MT1
MT_Hole_0.136_in.



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Title

PCIe R480 GDDR3 256MB 8MX32 DVI-I DVI-I

Schematic No.

105-A474XX-10

Date:

Thursday, November 11, 2004

REVISION HISTORY

Rev 2

Sch Rev	PCB Rev	Date	REVISION DESCRIPTION
0	00A	13/06/04	Initial revision of the schematic based on 105-A319xx-00: - Added decoupling caps for GDDR3 memory devices
1	00	12/10/04	- Seperated VDDC input power to VIN1 and VIN2 (added B and B) - Added HPD2_INT for the second DVI connector (using ext TMDS)
2	10	11/11/04	- PCB change only: extended gnd on layer 10 to ensure connection to fan screws - No electrical changes.