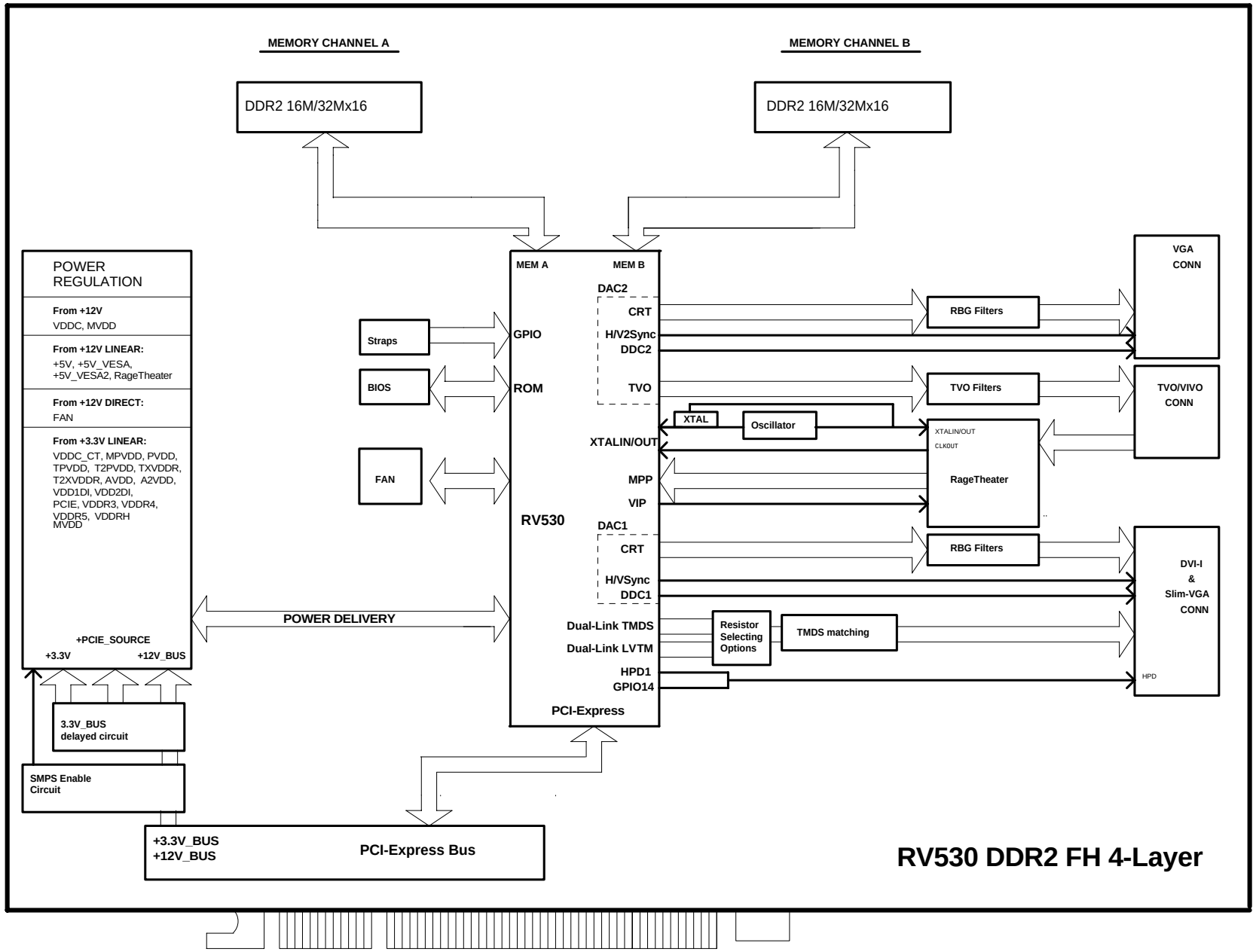
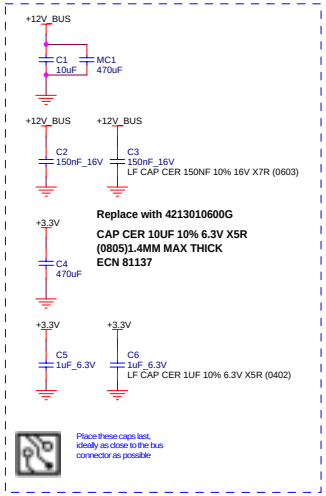
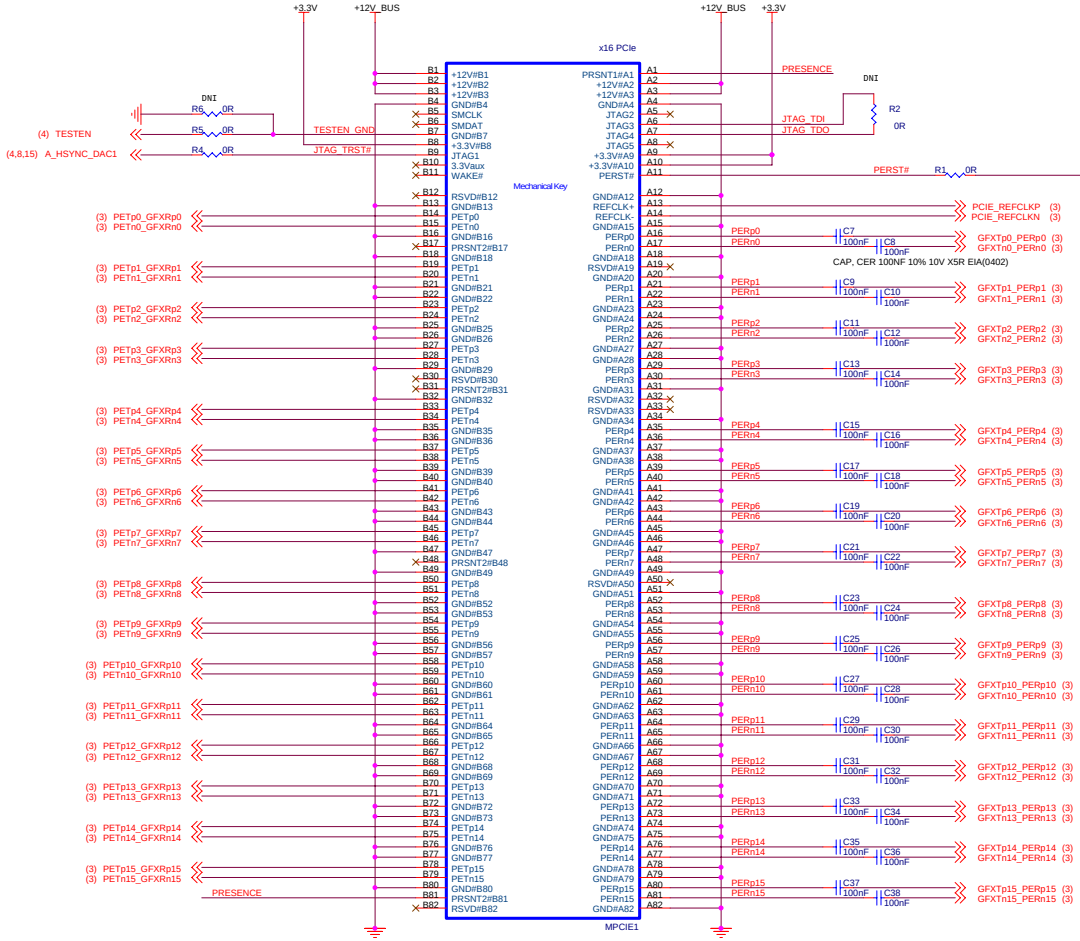



| | |
|---|---|
| Micro-Star International Co., LTD. | |
| MS-V044 RV530/DDRII | |
| Size: C | Document Number: |
| Rev: 00A | |
| Date: Monday, September 12, 2005 | Sheet 1 of 19 |

# PCI-EXPRESS EDGE CONNECTOR




Power Sequence Circuit to ensure SMPS_EN is released after +12V_BUS and +3.3V_BUS are both in regulation.
Pull-up may or may not be required on SMPS_EN signal depending on SMPS design.

Node 1 When +12V ramps above min Vbe, SMPS_EN will be helt low

Node 2 When +3.3V gets close to regulation, one of the two conditions of releasing SMPS_EN is active

Target ~ 900mV when +3.3 at min regulation (worse case)

Typical trigger when +3.3V ramps above 2.2V (650mV)

Node 3 When +12V gets close to regulation, one of the two conditions of releasing SMPS_EN is active

Target ~ 1.25V when +12 at min regulation (worse case)

Typical trigger when +12V ramps above 10V (1.1V)

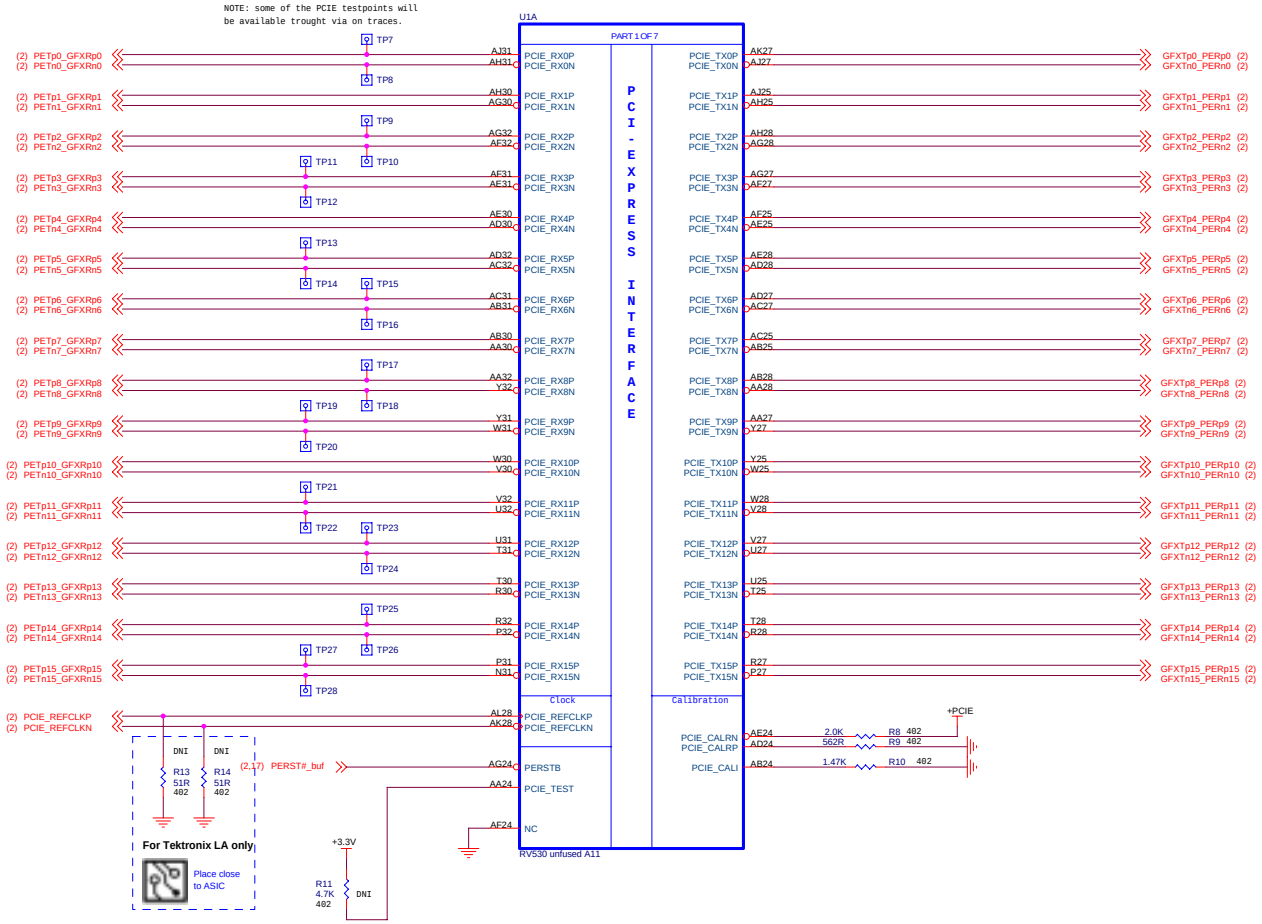
| SYMBOL LEGEND | |
|---|---|
| DNI | DO NOT INSTALL |
| # | ACTIVE LOW |
| | DIGITAL GROUND |
| | ANALOG GROUND |

Micro-Star International Co., LTD.

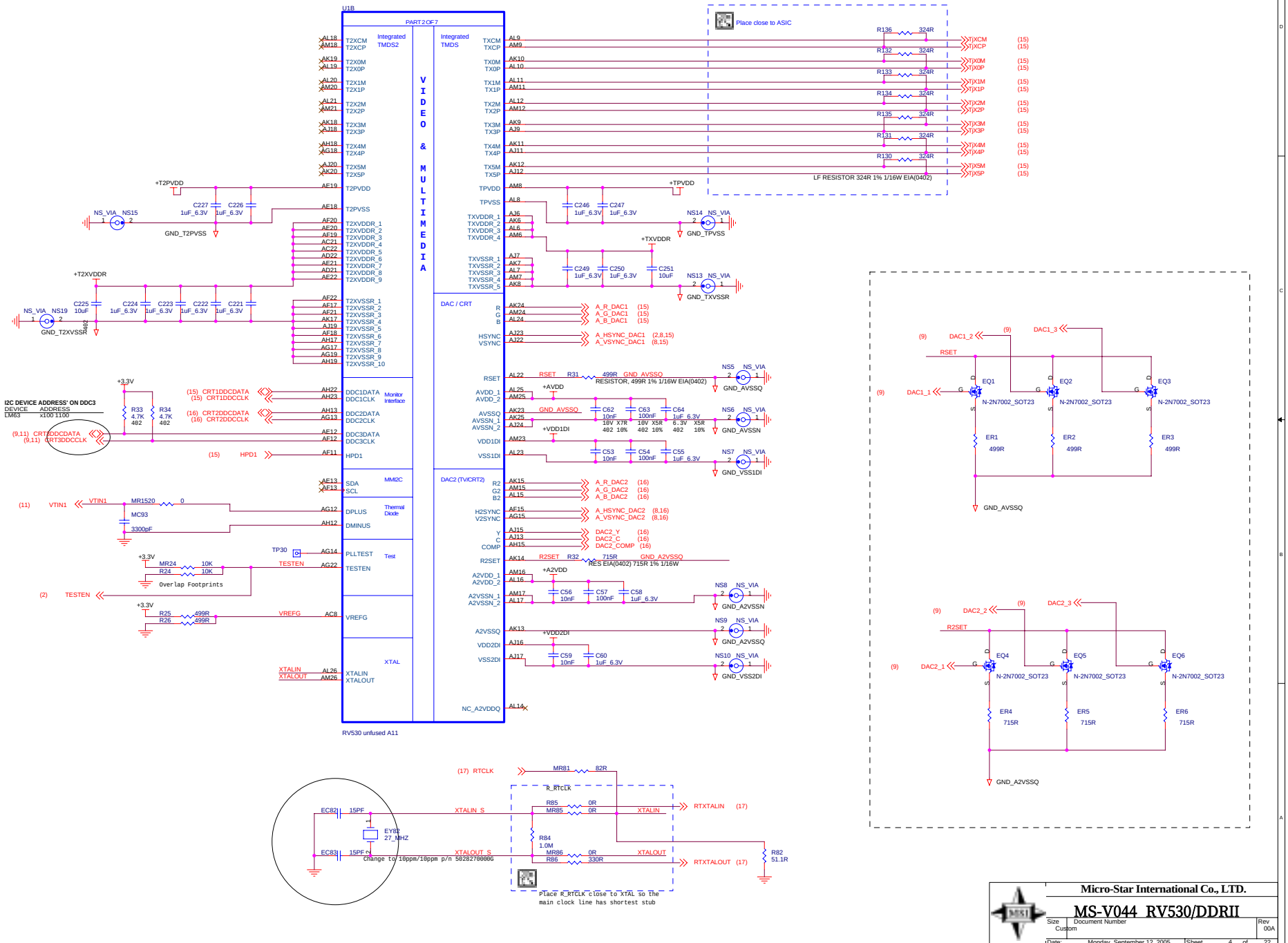
MS-V044 RV530/DDRII

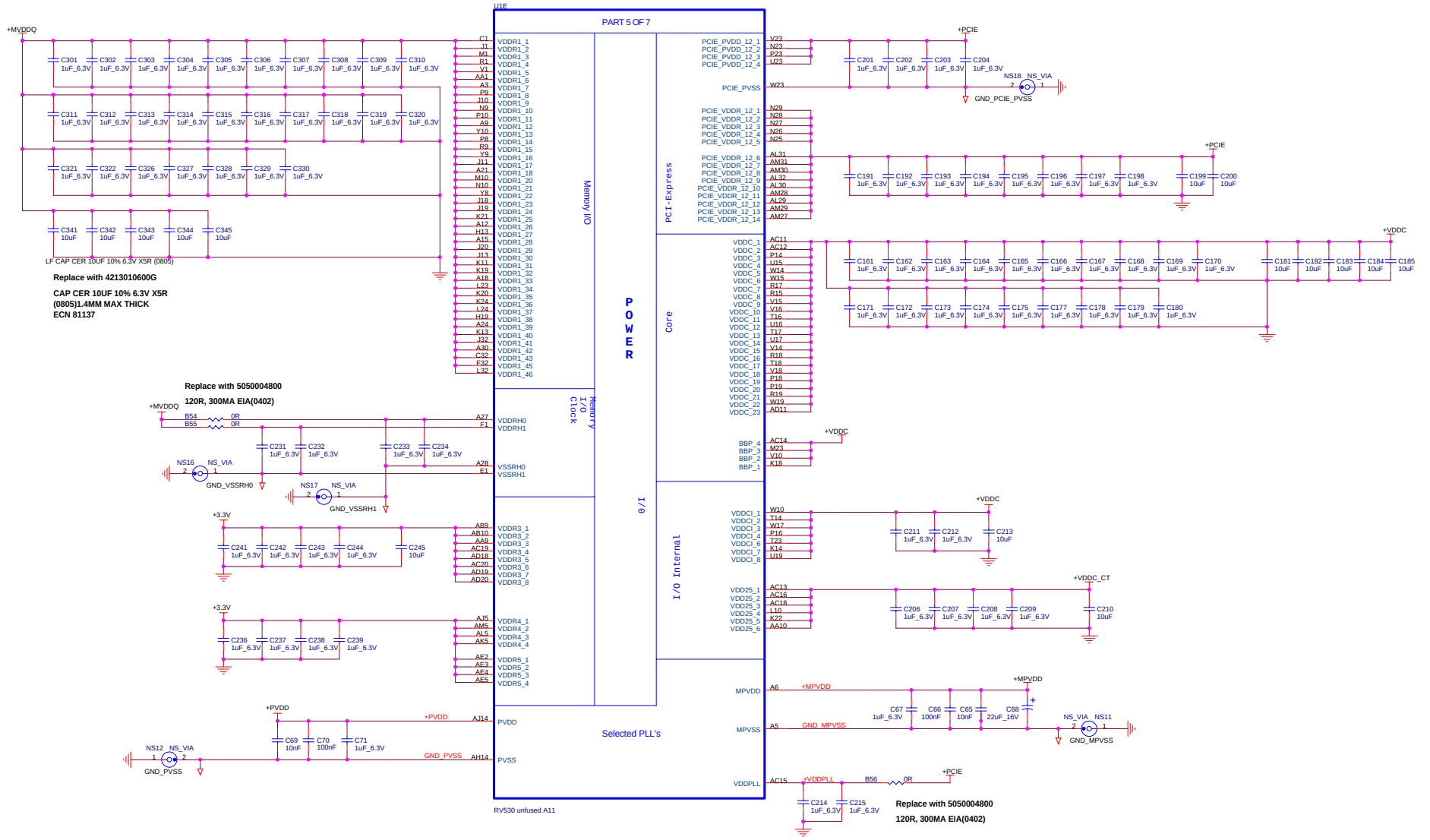
| Size | Document Number | Rev |
|---|---|---|
| C | | 0A |

Date: Monday, September 12, 2005 Sheet 2 of 19



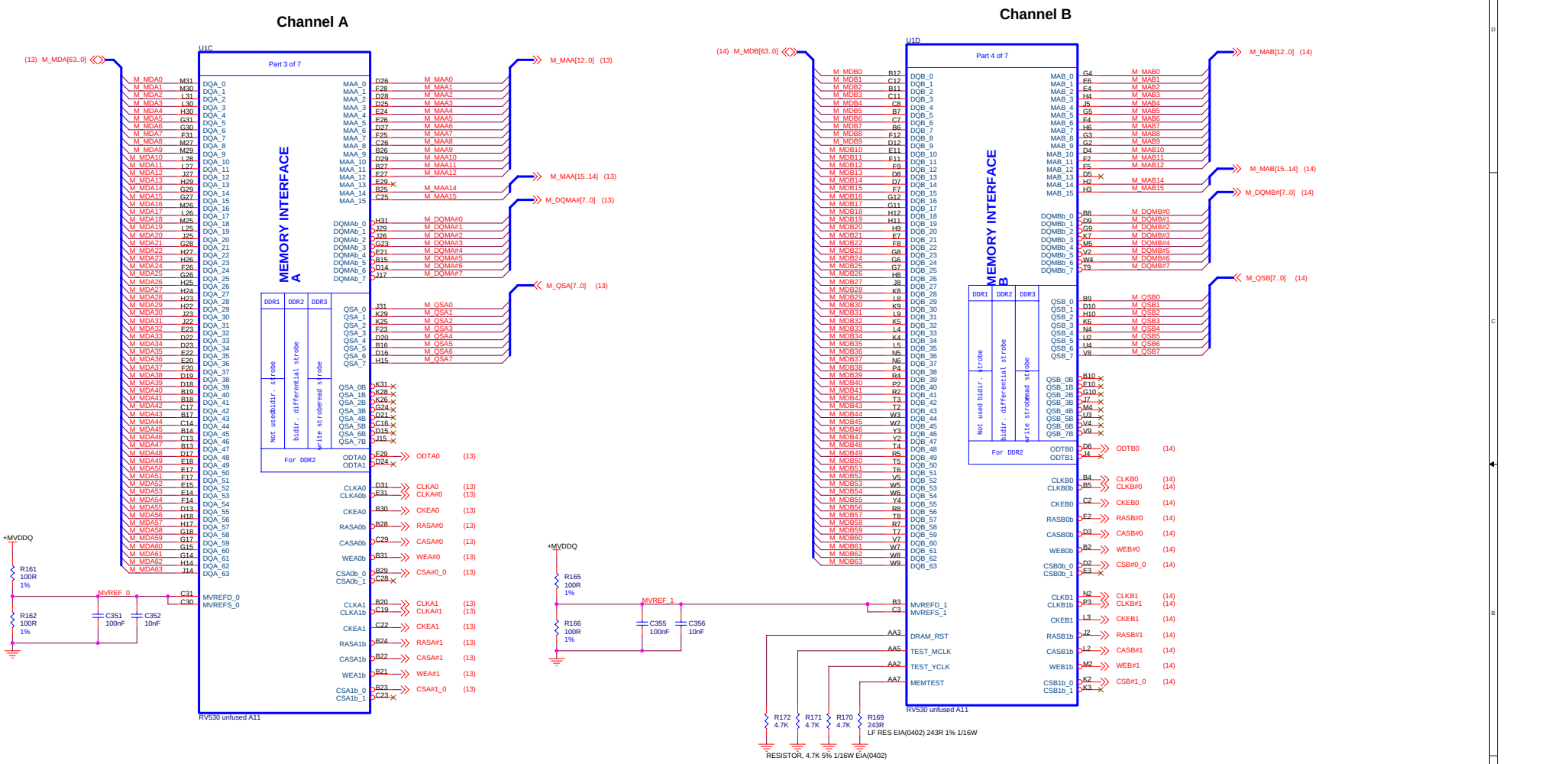

| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
| MS-V044 RV530/DDRII | | |
| Size C | Document Number | Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 3 of 22 | |


U1B
PART 2 OF 7
VIDEO & MULTIMEDIA
Integrated TMDS2
Integrated TMDS
DAC / CRT
DAC2 (TV/CRT2)
Monitor Interface
MM2C
Thermal Diode
Test
XTAL
RV530 unfused A11
Place close to ASIC
LF RESISTOR 324R 1% 1/16W EIA(0402)
I2C DEVICE ADDRESS' ON DDC3
DEVICE ADDRESS
LM63 x100 1100
Overlap Footprints
Change to 10ppm/10ppm p/n 50282700006
Place R_RTCLK close to XTAL so the main clock line has shortest stub
N-2N7002_SOT23
Micro-Star International Co., LTD.
MS-V044 RV530/DDRII
Size Custom
Document Number
Rev 00A
Date: Monday, September 12, 2005
Sheet 4 of 22

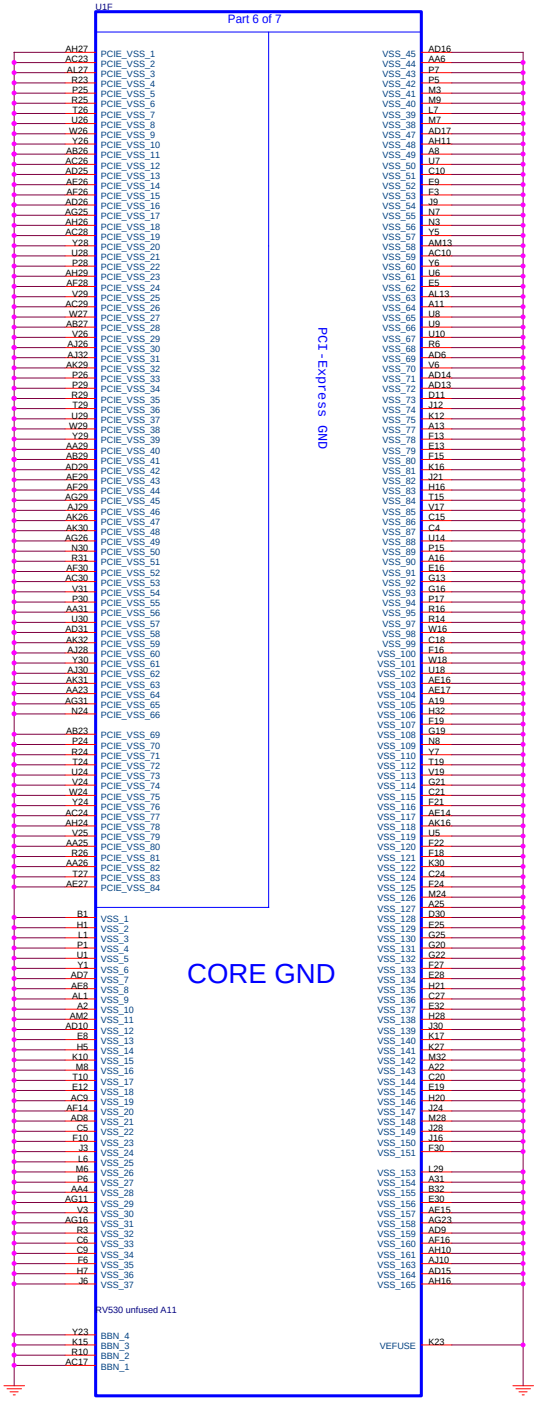



| | | | |
|---|---|---|---|
| Micro-Star International Co., LTD. | | | |
| MS-V044 RV530/DDRII | | | |
| Size: C | Document Number | | Rev: 00A |
| Date: Monday, September 12, 2005 | Sheet 5 of 22 | | |

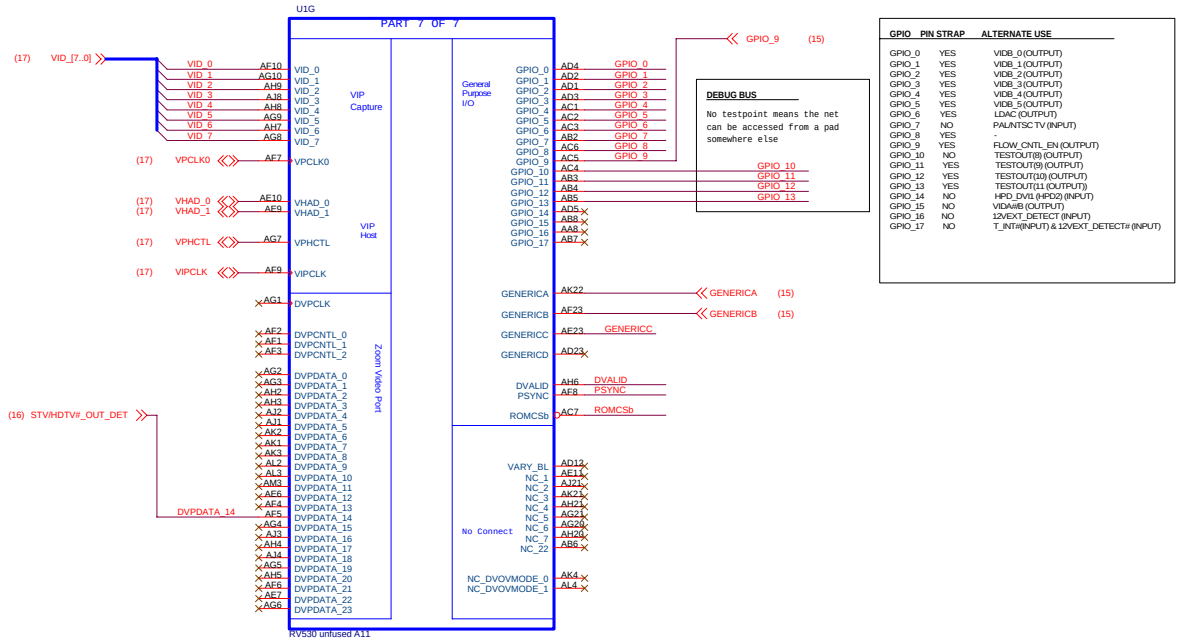
# RV530 MEMORY CHANNELS A and B




| | | | |
|---|---|---|---|
| Micro-Star International Co., LTD. | | | |
| MS-V044 RV530/DDRII | | | |
| Size C | Document Number | | Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 6 of 22 | | |

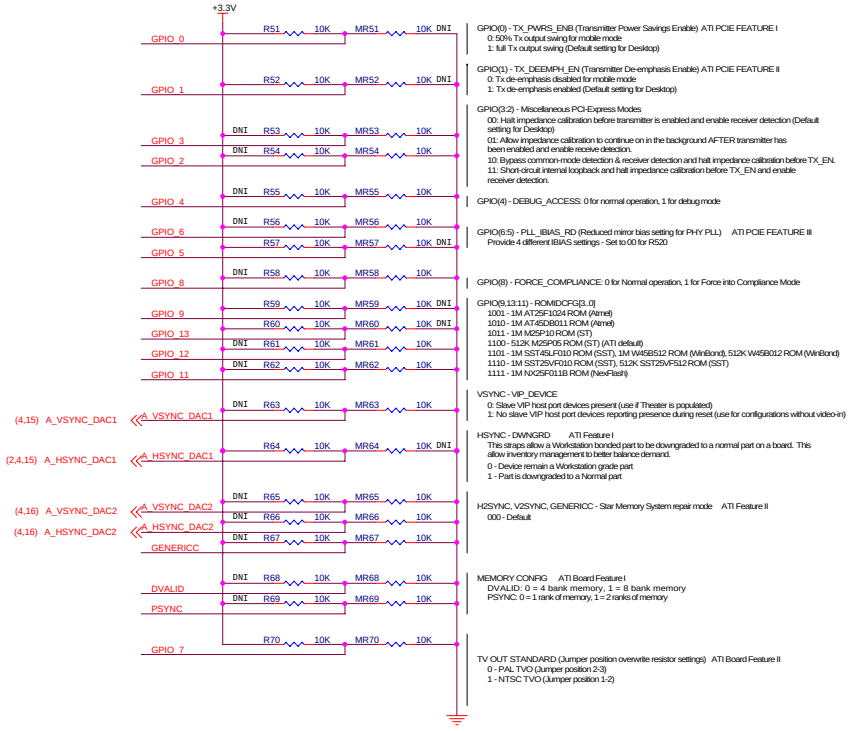


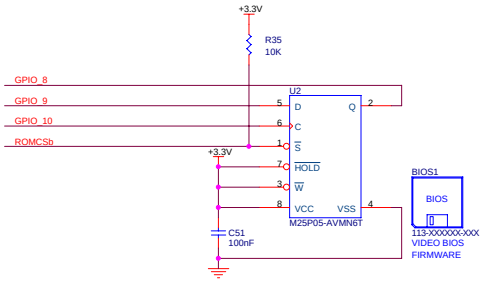

| | |
|---|---|
| Micro-Star International Co., LTD. | |
| MS-V044 RV530/DDRII | |
| Size: C | Document Number: |
| Rev: 00A | |
| Date: Monday, September 12, 2005 | Sheet 7 of 22 |




| GPIO | PIN STRAP | ALTERNATE USE |
|---|---|---|
| GPIO_0 | YES | VIDB_0 (OUTPUT) |
| GPIO_1 | YES | VIDB_1 (OUTPUT) |
| GPIO_2 | YES | VIDB_2 (OUTPUT) |
| GPIO_3 | YES | VIDB_3 (OUTPUT) |
| GPIO_4 | YES | VIDB_4 (OUTPUT) |
| GPIO_5 | YES | VIDB_5 (OUTPUT) |
| GPIO_6 | YES | LDAC (OUTPUT) |
| GPIO_7 | NO | PAL/NTSC TV (INPUT) |
| GPIO_8 | YES | - |
| GPIO_9 | YES | FLOW_CNTL_EN (OUTPUT) |
| GPIO_10 | NO | TESTOUT(8) (OUTPUT) |
| GPIO_11 | YES | TESTOUT(9) (OUTPUT) |
| GPIO_12 | YES | TESTOUT(10) (OUTPUT) |
| GPIO_13 | YES | TESTOUT(11 (OUTPUT)) |
| GPIO_14 | NO | HPD_DVI1 (HPD2) (INPUT) |
| GPIO_15 | NO | VIDA/#B (OUTPUT) |
| GPIO_16 | NO | 12VEXT_DETECT (INPUT) |
| GPIO_17 | NO | T_INT#(INPUT) & 12VEXT_DETECT# (INPUT) |

## PIN BASED STRAPS




Micro-Star International Co., LTD.

MS-V040 RV530/DDRII

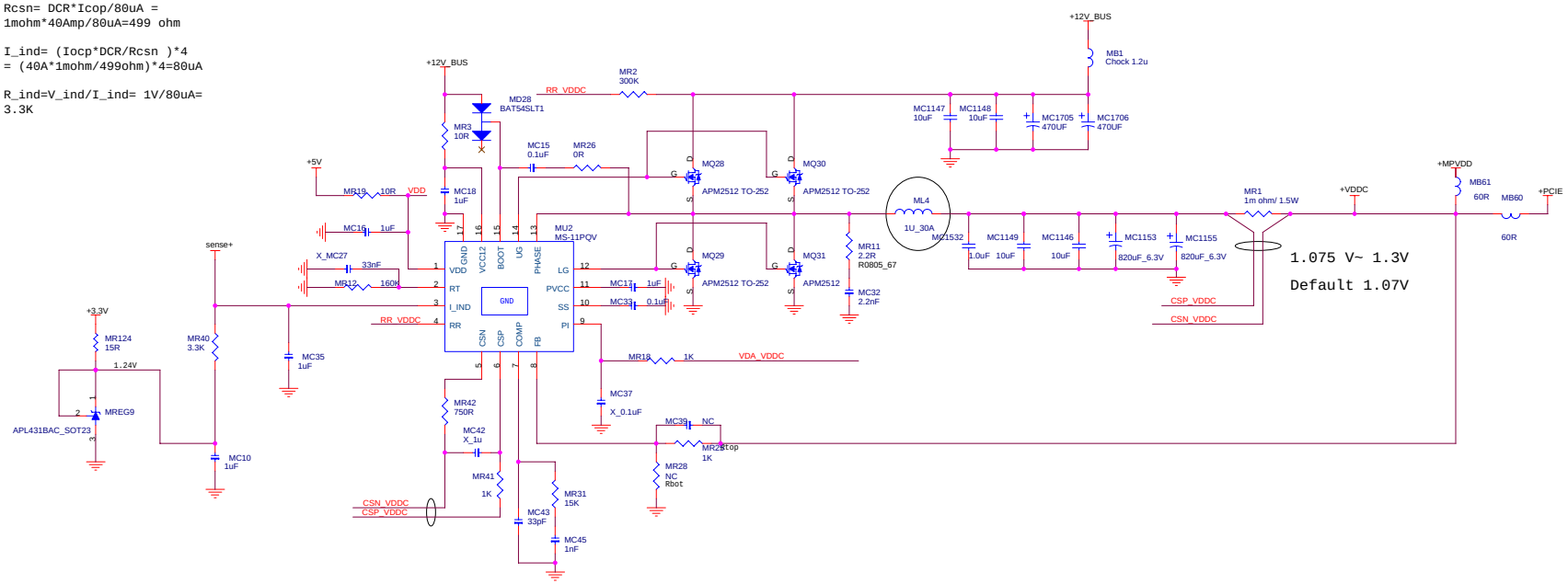
| Size | Document Number | Rev |
|---|---|---|
| C | | 00A |

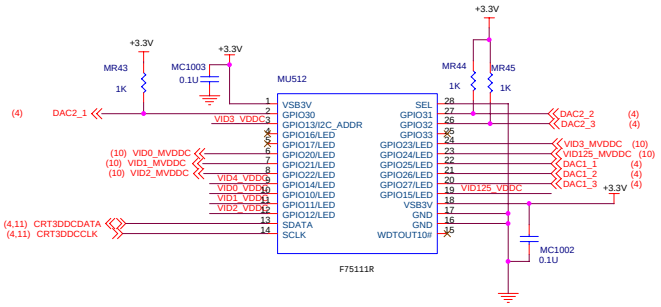
Date: Monday, September 12, 2005 Sheet 8 of 22

Rcsn= DCR*Icop/80uA =
1mohm*40Amp/80uA=499 ohm

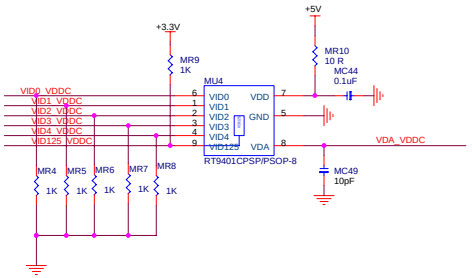
I_ind= (Iocp*DCR/Rcsn )*4
= (40A*1mohm/499ohm)*4=80uA

R_ind=V_ind/I_ind= 1V/80uA=
3.3K




| VDA_VDDC | VID125 | VID0 | VID1 | VID2 | VID3 | VID4 |
|---|---|---|---|---|---|---|
| 1.075V | 1 | 0 | 0 | 0 | 0 | 0 |
| 1.0875V | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.100V | 1 | 0 | 1 | 1 | 1 | 1 |
| 1.1125V | 0 | 0 | 1 | 1 | 1 | 1 |
| 1.125V | 1 | 1 | 0 | 1 | 1 | 1 |
| 1.1375V | 0 | 1 | 0 | 1 | 1 | 1 |
| 1.150V | 1 | 0 | 0 | 1 | 1 | 1 |
| 1.1625V | 0 | 0 | 0 | 1 | 1 | 1 |
| 1.175V | 1 | 1 | 1 | 0 | 1 | 1 |
| 1.1875V | 0 | 1 | 1 | 0 | 1 | 1 |
| 1.20V | 1 | 0 | 1 | 0 | 1 | 1 |
| 1.2125V | 0 | 0 | 1 | 0 | 1 | 1 |
| 1.225V | 1 | 1 | 0 | 0 | 1 | 1 |
| 1.2375V | 0 | 1 | 0 | 0 | 1 | 1 |
| 1.25V | 1 | 0 | 0 | 0 | 1 | 1 |
| 1.2625V | 0 | 0 | 0 | 0 | 1 | 1 |
| 1.275V | 1 | 1 | 1 | 1 | 0 | 1 |
| 1.2875V | 0 | 1 | 1 | 1 | 0 | 1 |
| 1.300V | 1 | 0 | 1 | 1 | 0 | 1 |



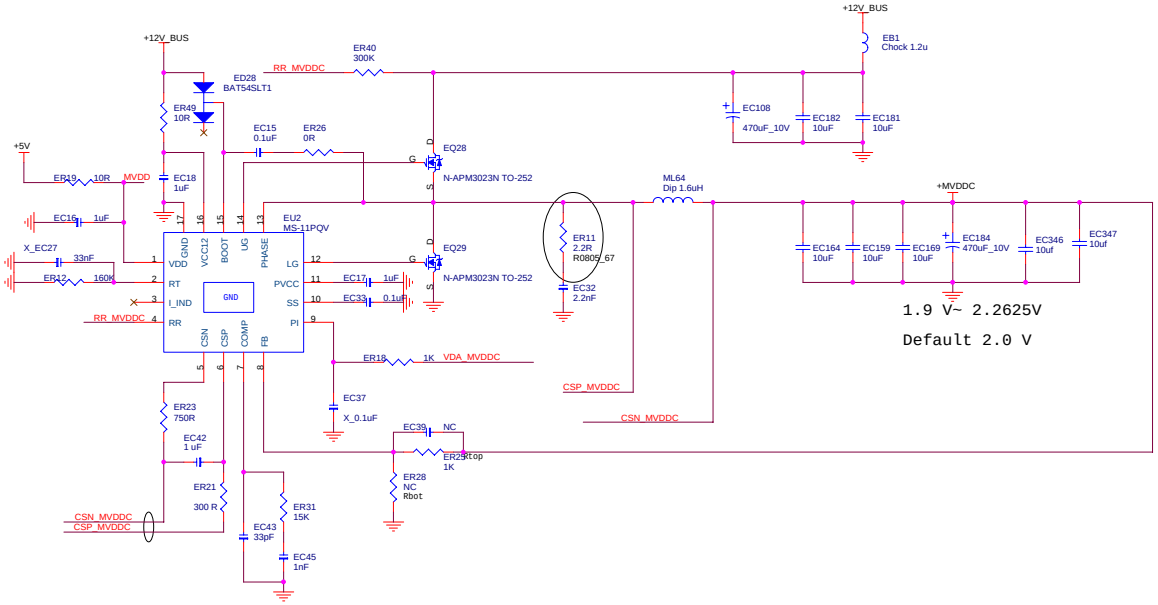

VDDC_ GPIO:10~15

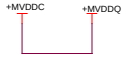
MVDDC_ GPIO:20~24

DAC1_ GPIO:25~28

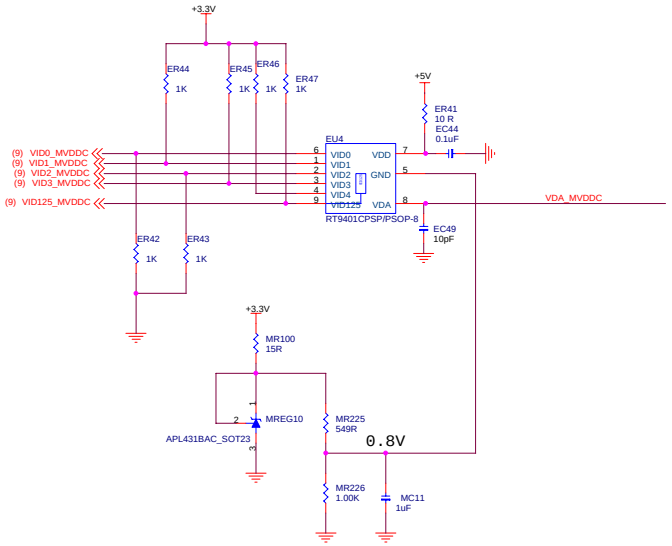
DAC2_GPIO:30~32

| | |
|---|---|
| Micro-Star International Co., LTD. | |
| MS-V044 RV530/DDRII | |
| Size: Custom | Document Number: Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 9 of 22 |




| +MVDDC | VDA PWR | VID125 | VID0 | VID1 | VID2 | VID3 | VID4 |
|---|---|---|---|---|---|---|---|
| 1.900V | 1.100V | 1 | 0 | 1 | 1 | 1 | 1 |
| 1.9125V | 1.1125V | 0 | 0 | 1 | 1 | 1 | 1 |
| 1.925V | 1.125V | 1 | 1 | 0 | 1 | 1 | 1 |
| 1.9375V | 1.1375V | 0 | 1 | 0 | 1 | 1 | 1 |
| 1.950V | 1.150V | 1 | 0 | 0 | 1 | 1 | 1 |
| 1.9625V | 1.1625V | 0 | 0 | 0 | 1 | 1 | 1 |
| 1.975V | 1.175V | 1 | 1 | 1 | 0 | 1 | 1 |
| 1.9875V | 1.1875V | 0 | 1 | 1 | 0 | 1 | 1 |
| 2.00V | 1.20V | 1 | 0 | 1 | 0 | 1 | 1 |
| 2.0125V | 1.2125V | 0 | 0 | 1 | 0 | 1 | 1 |
| 2.025V | 1.225V | 1 | 1 | 0 | 0 | 1 | 1 |
| 2.0375V | 1.2375V | 0 | 1 | 0 | 0 | 1 | 1 |
| 2.05V | 1.25V | 1 | 0 | 0 | 0 | 1 | 1 |
| 2.0625V | 1.2625V | 0 | 0 | 0 | 0 | 1 | 1 |
| 2.075V | 1.275V | 1 | 1 | 1 | 1 | 0 | 1 |
| 2.0875V | 1.2875V | 0 | 1 | 1 | 1 | 0 | 1 |
| 2.100V | 1.300V | 1 | 0 | 1 | 1 | 0 | 1 |
| 2.1125V | 1.3125V | 0 | 0 | 1 | 1 | 0 | 1 |
| 2.125V | 1.325V | 1 | 1 | 0 | 1 | 0 | 1 |
| 2.1375V | 1.3375V | 0 | 1 | 0 | 1 | 0 | 1 |
| 2.150V | 1.350V | 1 | 0 | 0 | 1 | 0 | 1 |
| 2.1625V | 1.3625V | 0 | 0 | 0 | 1 | 0 | 1 |
| 2.175V | 1.375V | 1 | 1 | 1 | 0 | 0 | 1 |
| 2.1875V | 1.3875V | 0 | 1 | 1 | 0 | 0 | 1 |
| 2.200V | 1.400V | 1 | 0 | 1 | 0 | 0 | 1 |
| 2.2125V | 1.4125V | 0 | 0 | 1 | 0 | 0 | 1 |
| 2.225V | 1.425V | 1 | 1 | 0 | 0 | 0 | 1 |
| 2.2375V | 1.4375V | 0 | 1 | 0 | 0 | 0 | 1 |
| 2.250V | 1.450V | 1 | 0 | 0 | 0 | 0 | 1 |
| 2.2625V | 1.4625V | 0 | 0 | 0 | 0 | 0 | 1 |





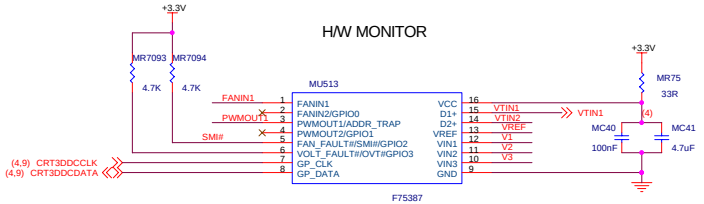
Micro-Star International Co., LTD.

MS-V044 RV530/DDRII

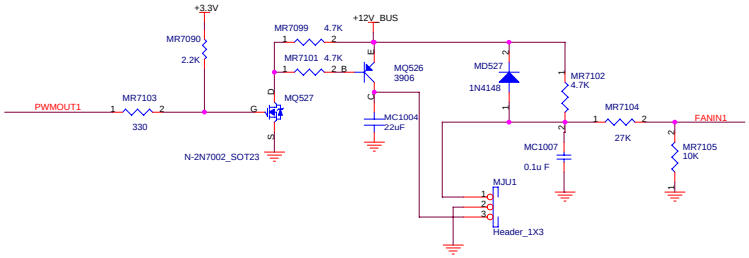
Size: Custom | Document Number | Rev: 00A

Date: Monday, September 12, 2005 | Sheet 10 of 22

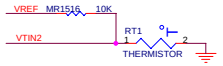
## H/W MONITOR



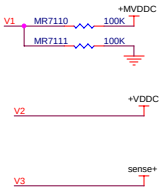

## PWM FAN SPEED CONTROL



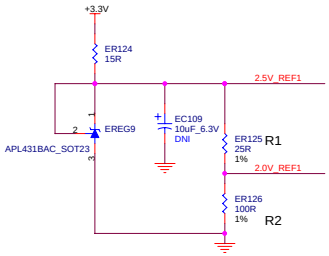

## TEMPERATURE MONITOR

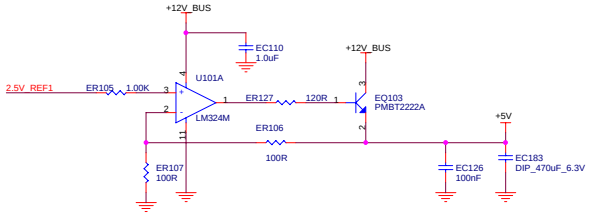


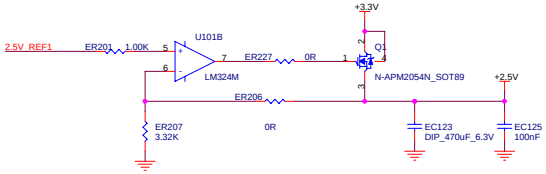

## VOLTAGE SENSORING CIRCUIT

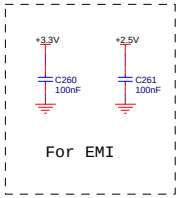



| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
| MS-V044 RV530/DDRII | | |
| Size: Custom | Document Number | Rev: 0A |
| Date: Monday, September 12, 2005 | Sheet 11 of 19 | |

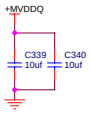


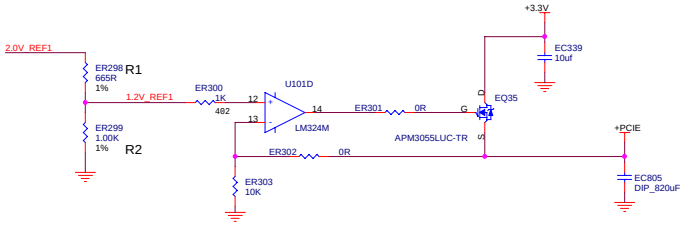







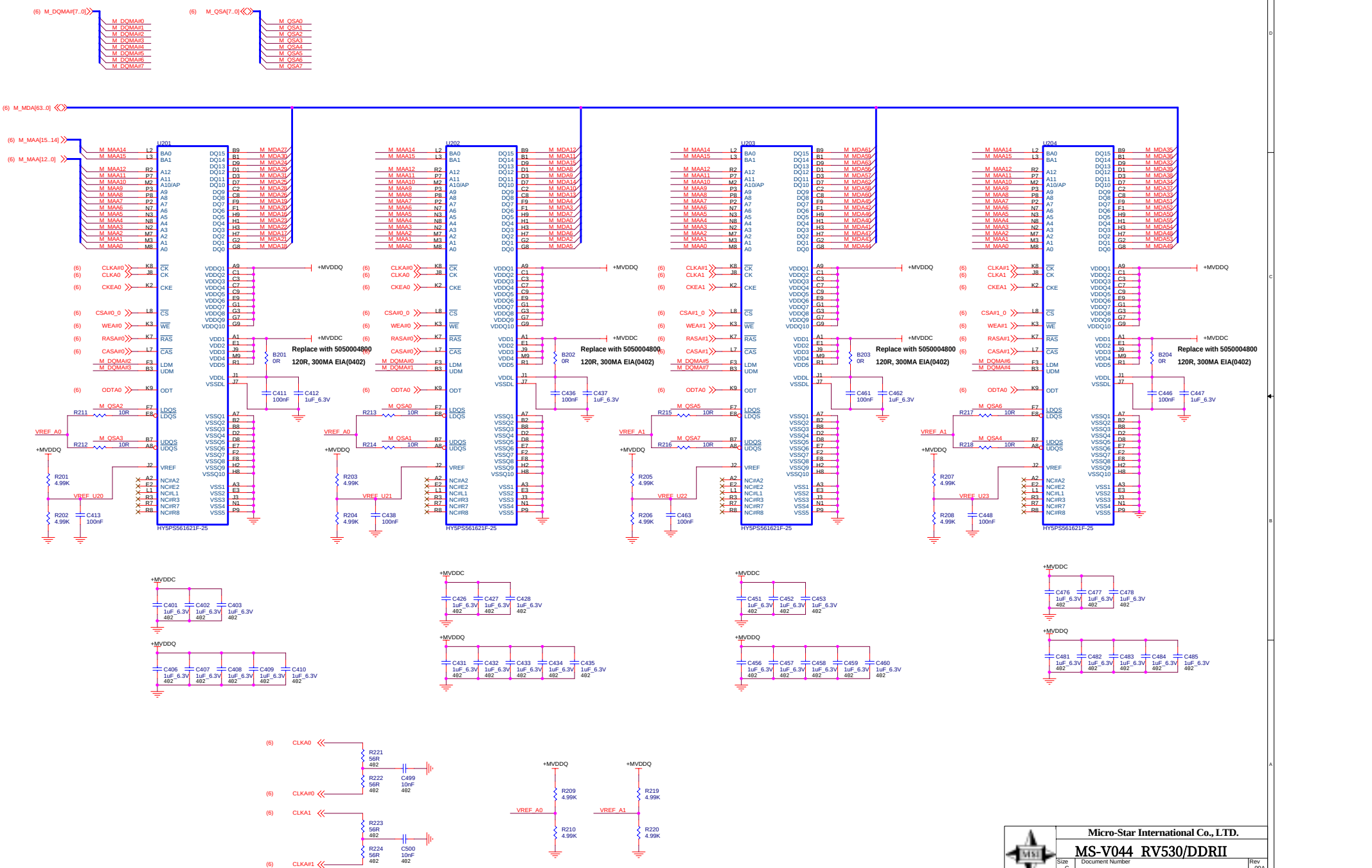





**Replace with 5050004800**
**120R, 300MA EIA(0402)**

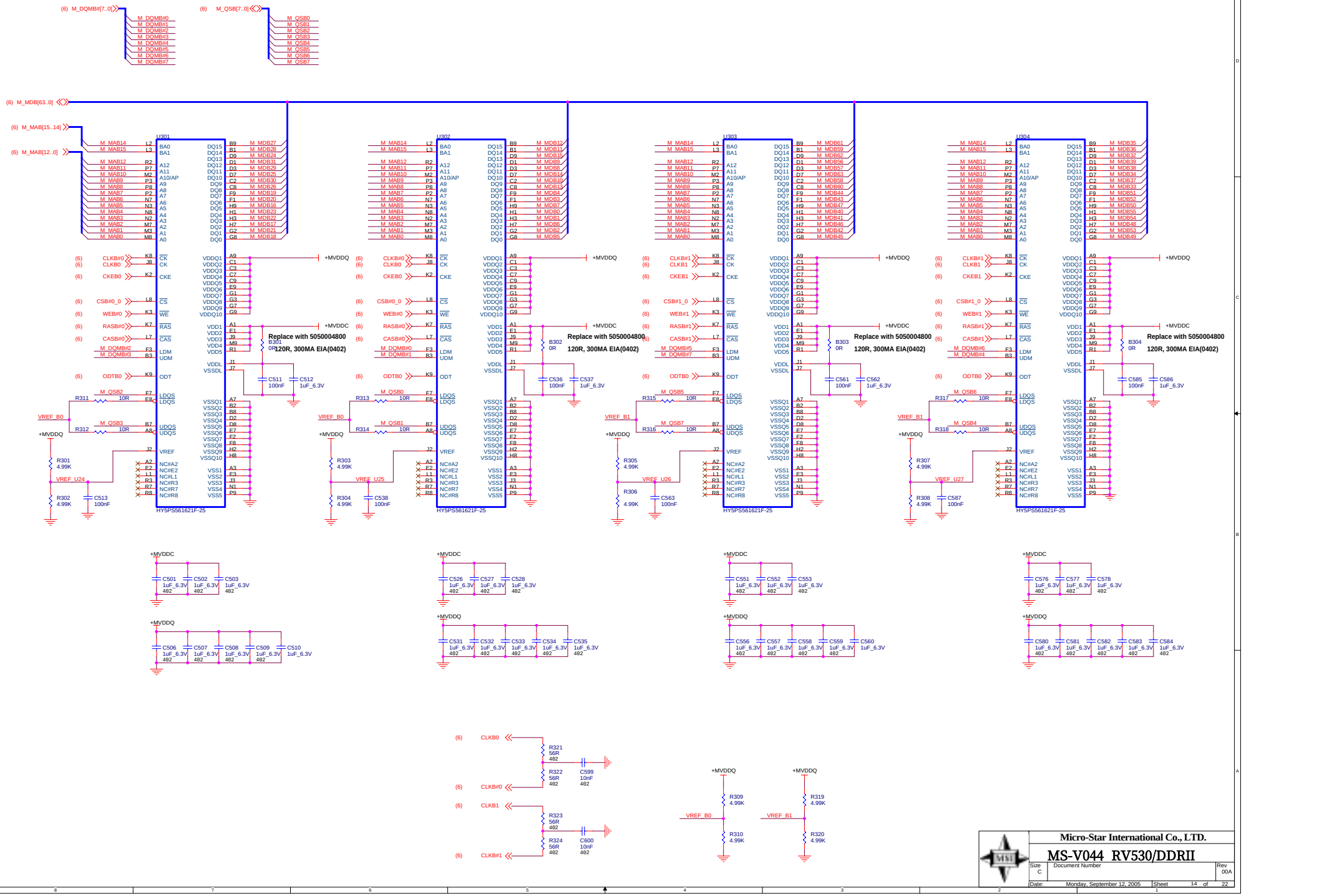
| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
| MS-V044 RV530/DDRII | | |
| Size C | Document Number | Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 12 of 22 | |

# CHANNEL A: RANK 0 128MB DDR2

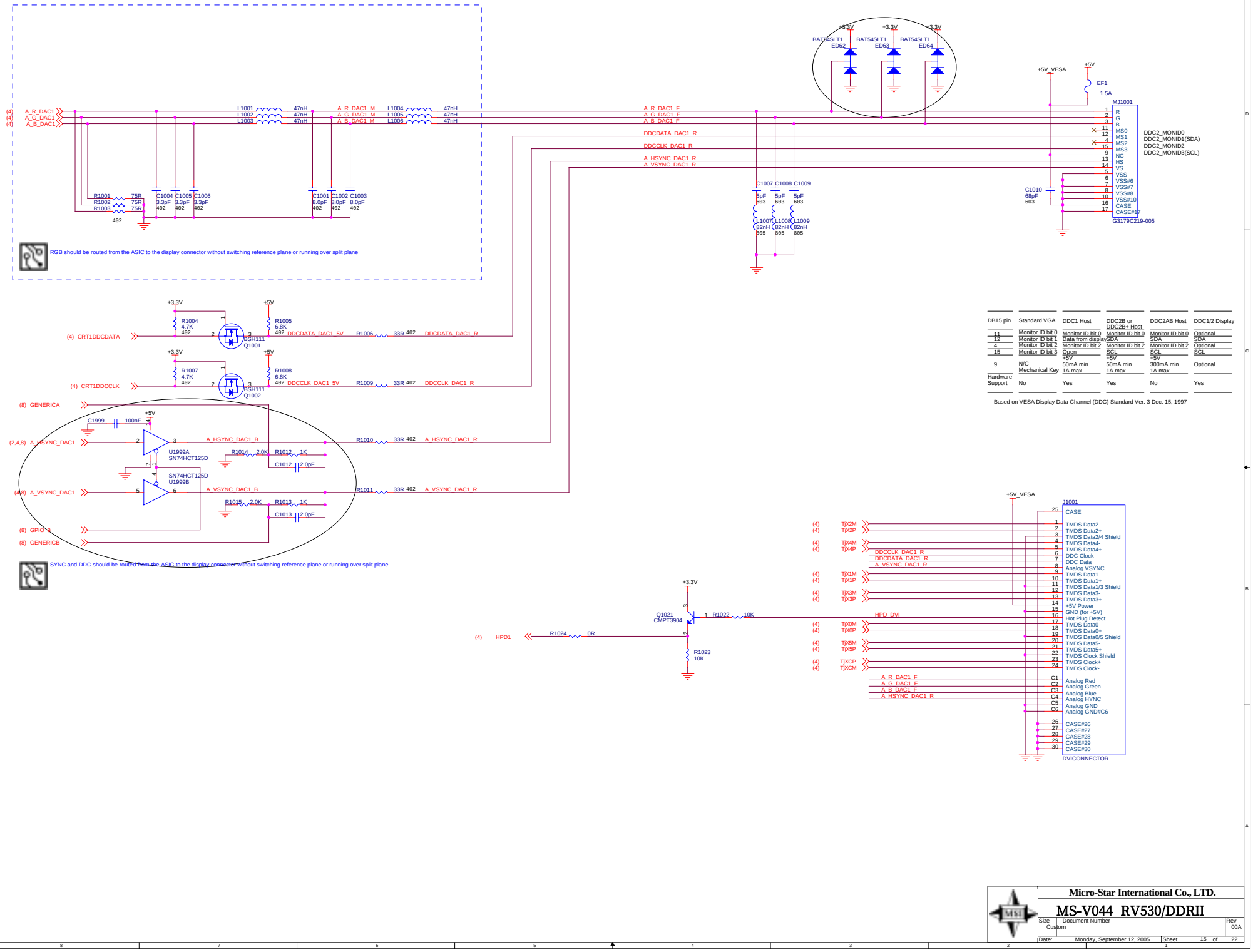



| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
| MS-V044 RV530/DDRII | | |
| Size C | Document Number | Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 13 of 22 | |

# CHANNEL B: RANK 0 128MB DDR2



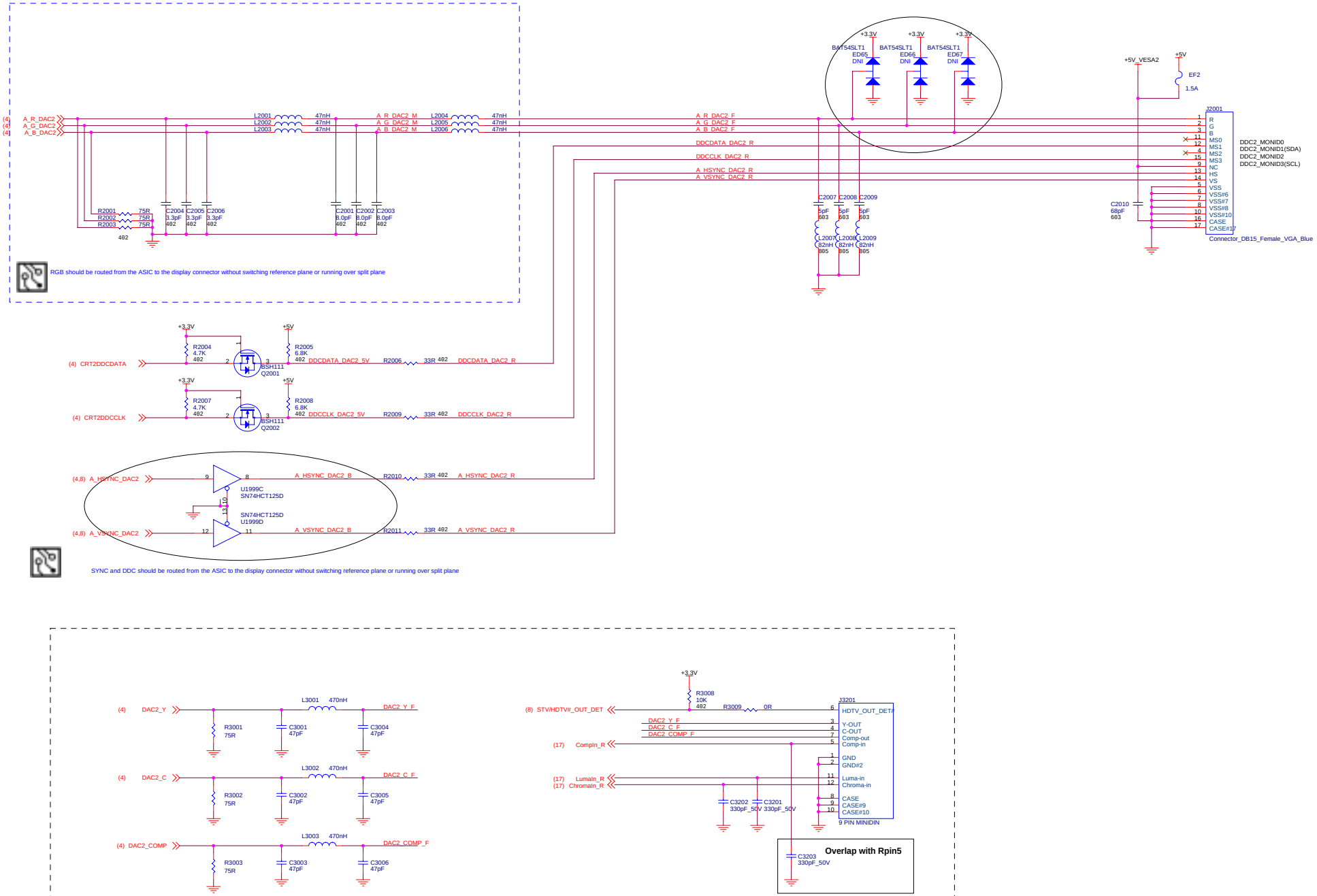

| | |
|---|---|
| Micro-Star International Co., LTD. | |
| MS-V044 RV530/DDRII | |
| Size C | Document Number Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 14 of 22 |



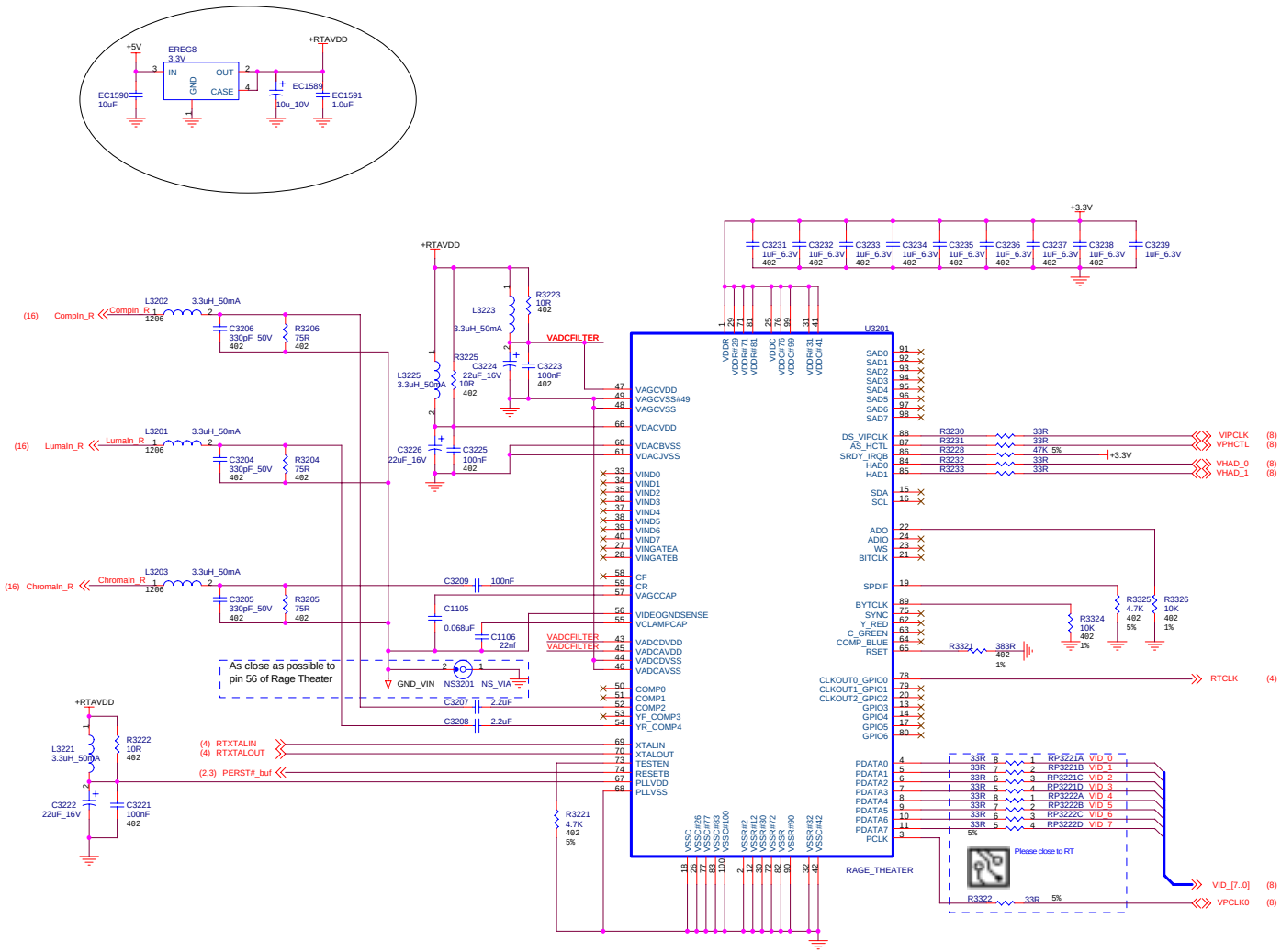

| DB15 pin | Standard VGA | DDC1 Host | DDC2B or DDC2B+ Host | DDC2AB Host | DDC1/2 Display |
|---|---|---|---|---|---|
| 11 | Monitor ID bit 0 | Monitor ID bit 0 | Monitor ID bit 0 | Monitor ID bit 0 | Optional |
| 12 | Monitor ID bit 1 | Data from display | SDA | SDA | SDA |
| 4 | Monitor ID bit 2 | 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 Mechanical Key | +5V 50mA min 1A max | +5V 50mA min 1A max | +5V 300mA min 1A max | Optional |
| Hardware Support | No | Yes | Yes | No | Yes |

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

| | | | |
|---|---|---|---|
| Micro-Star International Co., LTD. | | | |
| MS-V044 RV530/DDRII | | | |
| Size: Custom | Document Number | | Rev: 00A |
| Date: Monday, September 12, 2005 | | Sheet 15 of 22 | |




| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
| MS-V040_RV530/DDRII | | |
| Size: Custom | Document Number | Rev: 00A |
| Date: Monday, September 12, 2005 | Sheet 16 of 22 | |




| | | | |
|---|---|---|---|
| Micro-Star International Co., LTD. | | | |
| MS-V040 RV530/DDRII | | | |
| Size C | Document Number | | Rev 00A |
| Date: Monday, September 12, 2005 | | Sheet 17 of 18 | |

DVI/VGA SCREWS

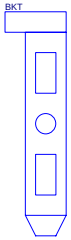
SCREW1
SCREW
JACKSCREW ASSY
7020000800

SCREW2
SCREW
JACKSCREW ASSY
7020000800

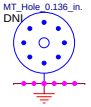
SCREW3
SCREW
JACKSCREW ASSY
7020000800

SCREW4
SCREW
JACKSCREW ASSY
7020000800

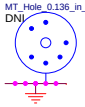
BKT



MT1
MT_Hole_0.136_in.
DNI



MT2
MT_Hole_0.136_in_6VIA
DNI



FM1
SW_FB

FM5
SW_FB

FM2
SW_FB

FM6
SW_FB

FM3
SW_FB

FM4
SW_FB

PCB

H2

LOW PROFILE HS

| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
| MS-V044 RV530/DDRII | | |
| Size C | Document Number | Rev 00A |
| Date: Monday, September 12, 2005 | Sheet 18 of 22 | |