PCB100

5V
5V
VDDQ (×18)
3.3V (×6)
TYPEDET#
SPARE
SPARE
OVERCNT#
RESERVED
RESERVED
CLK
RST#
GNT#
REQ#
FRAME#
IRDY#
TRDY#
DEVSEL#
STOP#
PAR
INTB#
PERR#
SERR#
USB+
USB-
GND
3.3Vaux/KEY
3.3V/KEY
RSVD/KEY
GND/KEY
+12V
KEY/3.3Vaux
KEY/RSVD
KEY/3.3V
KEY/GND
RSVD/Vrefgc

180-10078-0000-A00
CON_AGP_UNI_124P
PCB

PCIAD[0:31]

RE1 and CE1 by pass for EMI
CLOSE GPU

RE1
0R 5%
SMD0402
NO_STUFF

CE1
0.1uF 10%
X7R 10V
SMD0402
NO_STUFF

PCICBE[0:3]

U100A

PCIAD0 ... PCIAD31
PCICBE0# ... PCICBE3#
PCICLK
PCIRST#
PCIGNT#
PCIREQ#
PCIFRAME#
PCIIRDY#
PCITRDY#
PCIDEVSEL#
PCISTOP#
PCIPAR
PCIINTA#
AGPRBF#
AGPWBF#
AGPPIPE#
AGPST0
AGPST1
AGPST2
AGPADSTB1#
AGPADSTB1
AGPADSTB0
AGPADSTB0#
AGPBUSY#
AGPSTOP#
AGPVREF
TESTMODE

VDD
VD50CLAMP
VDD33
AGPVDDQ

IC NV17 GPU BGA604
ic_nv17_bga604_1mm
GPU

Place on bottom side.

| South | West | North | East | NVVDD |

C113 470pF 5% NPO 50V C0603MS COMMON
C114 470pF 5% NPO 50V C0603MS COMMON
C115 470pF 5% NPO 50V C0603MS COMMON
C116 470pF 5% NPO 50V C0603MS COMMON
C117 4u7 10% X5R 6.3V SMD0805 COMMON

C119 4700pF10% X7R 50V C0603MS COMMON
C120 4700pF10% X7R 50V C0603MS COMMON
C121 4700pF10% X7R 50V C0603MS COMMON
C122 4700pF10% X7R 50V C0603MS COMMON
C123 4u7 10% X5R 6.3V SMD0805 COMMON

C124 0.1uF 10% X7R 25V C0603MS COMMON
C125 0.1uF 10% X7R 25V C0603MS COMMON
C126 0.1uF 10% X7R 25V C0603MS COMMON
C127 0.1uF 10% X7R 25V C0603MS COMMON
C128 4u7 10% X5R 6.3V SMD0805 COMMON

top - North-West
Place cosest to GPU — C131 4700pF10% X7R 50V C0603MS COMMON
Place in second — C132 0.1uF 10% X7R 25V C0603MS COMMON

place on bottom South-West
C133 4700pF10% X7R 50V C0603MS COMMON
C136 0.1uF 10% X7R 25V C0603MS COMMON

place South-West of BGA — C137 4u7 10% X5R 6.3V SMD0805 COMMON
place North-West of BGA — C138 4u7 10% X5R 6.3V SMD0805 COMMON

C129 0.1uF 10% X7R 25V C0603MS COMMON
C130 0.1uF 10% X7R 25V C0603MS COMMON
Place on bottom side under the BGA.

Place close to the AGP connector
C100 4u7 10% X5R 6.3V SMD0805 COMMON
C101 0.022uF 10% X7R 50V C0603MS COMMON

C110 0.047uF 10% X7R 25V C0603MS COMMON
C111 0.047uF 10% X7R 25V C0603MS COMMON
C112 0.047uF 10% X7R 25V C0603MS COMMON

place close to the AGP connector
C118 4u7 10% X5R 6.3V SMD0805 COMMON

Pull down resistor. Use trace to short the pads.

DEBUG
AGP2x

C102 0.022uF 10% X7R 50V C0603MS COMMON
C103 0.022uF 10% X7R 50V C0603MS COMMON
C104 0.022uF 10% X7R 50V C0603MS COMMON
C105 0.022uF 10% X7R 50V C0603MS COMMON Place closest to GPU

C106 0.1uF 10% X7R 25V C0603MS COMMON
C107 0.1uF 10% X7R 25V C0603MS COMMON
C108 0.1uF 10% X7R 25V C0603MS COMMON
C109 0.1uF 10% X7R 25V C0603MS COMMON Place in second row

R101 220K 5% R0603MS COMMON
R102 220K 5% R0603MS COMMON
R103 10K 5% R0603MS COMMON

R104 10K SMD0402 COMMON 5%

R105 1K5 1% R0603MS COMMON
R106 75R 1% R0603MS COMMON
R108 1K5 1% R0603MS COMMON
R109 75R 1% R0603MS COMMON
R107 301K 1% R0603MS COMMON
R110 221K 1% R0603MS COMMON

C139 470pF 10% X7R 50V C0603MS COMMON
C143 470pF 10% X7R 50V SMD0402 COMMON

C140 0.022uF 10% X7R 50V C0603MS COMMON
C141 0.47uF 10% X7R 16V SMD0805 COMMON Place close to the AGP connector

C142 0.047uF 10% X7R 16V SMD0402 NO_STUFF

AVQHI
AVQLO
AGPVREFGC
AGPVREFCG

COMMON

C146 47000p-0402 No stuff
PCIRST
R111 22 No stuff
R112 22
BUS_PCIRST
U101A 74LCX14 No stuff
U101B 74LCX14 No stuff
C145 10p No stuff
C144 10p No stuff

1. AGP interface, core decoupling

Micro-Star International Co., LTD.
MS-8847 base on P73 modify
Size Custom
Document Number AGP
Rev 00A
Date: Friday, September 20, 2002
Sheet 2 of 11

P73, NV17, 4/8Mx16 DDR, 32/64MB, Dual RGB, TV-out, Video Capture, AGP4X

PCI DEVICE ID = 0X172 FOR GF4-MX420-XX.

nVIDIA

```
PRIMARY  ** VGA1  DAC_A ** I2C1.
SECONDARY ** VGA2  DAC_B ** I2C0.
VIDCAP   ** VIP 7114 I2C2.
9pin DIN ** RGB2 I2C2.          See PDS for Hookup
```

P73-A00-X01

Created SCH from P78-X16 for I/O Netlist only

P73-A00-X02

CREATED NX16 MEMORY, DECOUPLING FROM P78

P73-A00-X03

ADDED MEM & CORE FROM P70 PS FOR ISL6529

SAA7114 DECAPS ADDED AND CHANGED TO 0402

P73-A00-X04

PCB Footprint for RAM added

P73-A00-X05

C620, C621 Removed
Extra Mem Decaps removed

P73-A00-X06

PCB Footprint for Inductor, Stacked DB15, ISL6529 added

PCB Footprint for L305, L307, L308, L316-L324
changed to 0603 from 0805.
Added X-Comp R750, R751.

P73-A00-X07

TV-XTAL should be 18pf CL.
Each memory with separate clock

P73-A00-X08

U700-Parallel ROM and C700 decap Removed for space

P73-A00-X09

0603 to 0402 Package Changes for 49 components

P73-A00-X10

Design Review Updates

0603 to 0402 Package Changes for 33 components

0805 to 0603 Package Changes for 17 components

0402 to 0603 Package Changes for 10 components

Removed 25 components

P73-A00-X11

Swaps in Memory termination RN201, RN203, RN205, RN207

P73-A00-X12

C606, C615 TH replacements, Removed for want of space.

P73-A00-X13

Memory bus swaps on 1/11/02-Swap 2

P73-A00-X14

Memory bus swaps on 1/12/02-Swap 3

P73-A00-X15

Memory bus byte swaps as per NV17-Ball
arrangement

P73-A00-X16

Memory bus byte and bit swaps as per layout

TV Filter moved to VGA2 page with more routing notes

P73-A00-X17

The C397, C311, C318 changed to 0603 from 0402
for two trace routing near GPU break out.
P300-2 Mounting pins removed from CGND

P73-A00-X18

Added X Components C824 to C830 to FBVDDQ

P73-A00-X19

Added X Components C831 to C832 to FBVDDQ

R610, R612 for FBVDDQ re-fixed to have <5K for Rfb

P73-A00-X20- X-Rel Candidate

Clean-up for Agile upload
Memory de-coupling values modified as per layout.

P73-A00-X21- ECO-3893

Q600 Should be FET istead of BJT
Transistor.

P73-A00-X22-

Corrected NV17-S sku in the table in this page

P73-A01-X01

The RED and GREEN signal to TV filter
interchanged. Corrected by swapping CVBS_YOUT
and COUT.

P73-A01-X02

Corrected by swapping CVBS_YOUT and COUT at DIN

Type 3 Compensation Values for ISL6529 changed
C616---NS---47nF
R614---NS---8.06K
C618---33nF---70nF
R611---16.2K---6.65K
C619---33nF----1.8nF

AGPSTOP to 3.3V.
R616 -47R inseries to 12V for ISL6529 is too
high, changed to 4.7R

P73-A01-X03-Final Netlist

R616 -4.7R inseries to 12V for ISL6529 is changed to 0R

R624 - Added 2.2R inseries to 5V for ISL6529.

ISL6529 Compensation Res to be Type 2 with
Snubber coponents stuffed. Values under test.

P73-A01-X04-For X-Rel

The Type 2 Compensation works better than Type 3 Compensation.
C616. R614 No Stuff, R614 Nostuff, C618 3300pf, R611 16.2K,
C619 33pF, R616 0R
Snubber values are
R626 2.2R, C617 2200PF

P73-A01-X05-ECO4193

The Type 3 Compensation works better than Type 2 Compensation
in the new layout with new values tried at Intersil.
C616-47nF. R614-10R, C618 1000pf, R611-10K, C619 1500pF.

Stuff Option	Meaning
COMMON	Common to all assemblies and 1st VGA comps
NO STUFF	Not present in any assembly
VIDCAP	Video In or Video Capture
VGA2	2nd VGA Components and Conenctor
DSUB	Standard single VGA Connector
TV	Second DAC channel goes to Svideo connector as TV Out
TVO	4pin DIN for TV Only
1117	Fixed 1117 linear regulator for A3.3V
1117_ADJ	Adjustable 1117 linear regulator for A3.3V
NO_1117	Connect A3.3V to 3.3V. No 1117 regulator.
CLAMP1	VGA1 Sync/I2C Clamping diodes
RGB_PROT	RGB Protection diodes on primary DAC outputs
CLAMP2	VGA2 Sync/I2C Clamping diodes
RGB2_PROT	RGB Protection diodes on secondary DAC outputs
CLAMP3	VIDCAP I2C/Video In Clamping diodes
TVCLAMP	TV Red/Green Clamping diodes
GPU	GPU ONLY
NV17-S	IDSTRAP OPTION-172H
MEMORY	Memory only
M2-8V	Memory PS output 2.8V
M2-5V	Memory PS output 2.5V
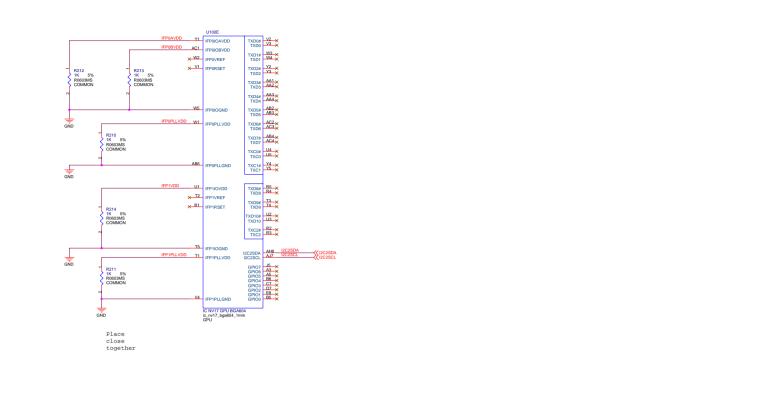
MS-8878 BASE ON P73 MODIFY

Page 1. Add CE1 and RE1 for EMI solution.
          Add compability with M/B.
          rename , C22 to C144,R4 to R111,R5 to R112,R6 to R113,U1 to U101
          change NET name, U100.AH17 to BUF_PCIRST_ also at the R112 and C144.
Page 4. U300.9,U300.10,U300.1,U300.2 and U300.7 pin connect to GND.

Page 5. remove VGA2 function.

Page 9. Remove SAA7114H function and ADD AV-OUT & S_OUT conector.

          remove L500,C500,C505,C506,C538,C539,C507,C508
Page 10. C613,C604,C605,C614,L600 and L601 change to DIP type,ADD C620 , Q1 change to AOS4800

Page 11. R704~R719,R726~R733,R745,R746 PAD size change to 0603 type and Add R747 10k ohm.
          Add parallel bios function.

          R746,R747 stuff (00)

Page 6 . Add Fan power function.

MS-8878 VER:310 MODIFY

Page 2. Add 74XCT74 buffer for PCI_RST function.
Page 5. Add 75ohm and bypass Cap. for TV-OUT function.
Page 9. Swap S-OUT.3 and S-OUT.4 net name.
Page 10. Change DIP type CAP. footprint.
Page 11. Change U1000.22 net name.

{Item}\t{Quantity}\t{Reference}\t{Value}\t{Assembly}\t{MAIN}\t{NVPN}\t{Source Package}\t{AVL1}\t{AVL2}\t{AVL3}\t{AVL4}\t{AVL5}
Item\tQuantity\tReference\tValue\tAssembly\tMAIN\tNVPN\tSource Package\tAVL1\tAVL2\tAVL3\tAVL4\tAVL5

140-10073-0000-A01
602-10073-0000-A01

Micro-Star International Co., LTD.

MS-8847 base on P73 Modify

MS-8878 base on P73 Modify

Size Custom

Document Number
TOP PAGE

Rev
00A

Date: Friday, September 20, 2002   Sheet   3   of   11

3.a Dual DAC, 1st VGA

Place close to connector — DDC1VCC

Place close to connector

Chasis Ground connection. Place one near DB15 north, One between DB15 and DIN

Place near GPU

Place near Gate

Decoupling sync driver

Need not be close to connector

Place close to connector

Place close together

Place close to GPU

Place closest to GPU

37.5 ohm trace till 75R resistors

37.5 ohm trace till resistors

Place close to output filters

Place all near connector

Place in ouput filter section

Place close together

See note above

STARTING VALUE ONLY

5V FUSE_MINISMDC035-050 F300 COMMON polyswitch 1A 6V DDC5V

R300 2K2 5% COMMON R0603MS
R301 33R 5% COMMON R0603MS
R302 2K2 5% COMMON R0603MS
R303 33R 5% COMMON R0603MS

I2C1SDA / TI2C1SDA
I2C1SCL / TI2C1SCL

L300 SMD0805 220R 5% COMMON Ferrite
L301 L0603MS 150_220 20% COMMON Ferrite
L302 L0603MS 150_220 20% COMMON Ferrite
L303 L0603MS 150_220 20% COMMON Ferrite
L304 L0603MS 150_220 20% COMMON Ferrite

C300 220pF 5% NPO 25V C0603MS COMMON
C301 220pF 5% NPO 25V C0603MS COMMON
C302 220pF 5% NPO 25V C0603MS COMMON
C304 22pF 5% NPO 50V C0603MS COMMON
C305 22pF 5% NPO 50V C0603MS COMMON

D300 BAV99 70V IC_SOT23_123 CLAMP1 — MI2C1SDA
D301 BAV99 70V IC_SOT23_123 CLAMP1 — MI2C1SCL
D302 BAV99 70V IC_SOT23_123 CLAMP1 — MCRT1HSYNC
D303 BAV99 70V IC_SOT23_123 CLAMP1 — MCRT1VSYNC

U300C IC 74ACT08 SO14 5V IC_SO14_150MIL COMMON
U300A IC 74ACT08 SO14 5V IC_SO14_150MIL COMMON
U300B IC 74ACT08 SO14 5V IC_SO14_150MIL COMMON — C1HS / C1HSBUF
U300D IC 74ACT08 SO14 5V IC_SO14_150MIL COMMON — C1VS / C1VSBUF

C303 0.1uF 10% X7R 25V C0603MS COMMON

R304 15R 5% COMMON R0603MS
R305 15R 5% NO_STUFF SMD0402
R306 15R 5% COMMON R0603MS
R307 15R 5% NO_STUFF SMD0402

U100D IC NV17 GPU BGA604 ic_nv17_bga604_1mm GPU

I2C1SCL AH7 / I2C1SDA AH6
CRTHSYNC AJ9 / CRTVSYNC AJ8 — CRT1HSYNC / CRT1VSYNC
DACVDD AK11 / DACRED AH11 — DAC1RED
DACVREF AJ11 / DACGREEN AG12 — DAC1GREEN
DACRSET AJ10 / DACBLUE AF11 — DAC1BLUE
DACGND AK9
I2C0SCL AF9 / I2C0SDA AG8 — I2C0SCL / I2C0SDA
CRT2HSYNC AE4 / CRT2VSYNC AD5 — CRT2HSYNC / CRT2VSYNC
DAC2VDD AF1 / DAC2RED AD4 — DAC2RED
DAC2VREF AE2 / DAC2GREEN AE3 — DAC2GREEN
DAC2RSET AD2 / DAC2BLUE AD3 — DAC2BLUE
DAC2GND AD1
PLLVDD AK7
XTALSSIN AH10 / XTALOUTBUFF AG10 — XTALOUTBUFF_R
XTALIN AH9 / XTALOUT AF10 — XTALOUT

DAC1VDD / DAC1VREF / DAC1RSET
DAC2VDD / DAC2VREF / DAC2RSET
XTALSSIN / XTALIN

L306 L0603MS 150_220 20% COMMON Ferrite
L309 L0603MS 150_220 20% COMMON Ferrite
L310 L0603MS 150_220 20% COMMON Ferrite

C306 4u7 10% X5R 6.3V SMD0805 COMMON
C307 4700pF 10% X7R 16V C0603MS COMMON
C308 470pF 5% NPO 50V C0603MS COMMON
C309 0.01u 10% X7R 50V C0603MS COMMON
R311 113R 1% R0603MS COMMON
C310 4u7 10% X5R 6.3V SMD0805 COMMON
C311 4700pF 10% X7R 16V C0603MS COMMON
C312 470pF 5% NPO 50V C0603MS COMMON
C313 0.01u 10% X7R 50V C0603MS COMMON
R315 124R:63.4R 1% R0603MS VGA2:TV
C316 4u7 10% X5R 6.3V SMD0805 COMMON
C317 4u7 10% X5R 6.3V SMD0805 COMMON
C318 4700pF 10% X7R 16V C0603MS COMMON
C319 470pF 5% NPO 50V C0603MS COMMON
R316 10K 5% R0603MS COMMON

Y300 XTAL_2P_HC49SM VGA2:TV 14.318MHz:27MHz 50/100/5ppm:10/10/5ppm 18pF:18pF
C320 18pF 5% NPO 50V C0603MS COMMON STARTING VALUE ONLY
C321 18pF 5% NPO 50V C0603MS COMMON STARTING VALUE ONLY

L319 L0603MS 68nH F1R Ferrite 5% COMMON
L320 L0603MS 68nH F1G Ferrite 5% COMMON
L321 L0603MS 68nH F1B Ferrite 5% COMMON
L305 L0603MS 68nH Ferrite 5% COMMON
L307 L0603MS 68nH Ferrite 5% COMMON
L308 L0603MS 68nH Ferrite 5% COMMON

R310 75R 1% R0603MS COMMON
R309 75R 1% R0603MS COMMON
R308 75R 1% R0603MS COMMON

C329 10p 5% COG 50V C0603MS COMMON
C330 22pF 5% NPO 50V C0603MS NO_STUFF
C331 10p 5% COG 50V C0603MS COMMON
C332 10p 5% COG 50V C0603MS COMMON
C333 22pF 5% NPO 50V C0603MS NO_STUFF
C334 10p 5% COG 50V C0603MS COMMON
C335 10p 5% COG 50V C0603MS COMMON
C336 22pF 5% NPO 50V C0603MS NO_STUFF
C337 10p 5% COG 50V C0603MS COMMON

D304 BAV99 70V IC_SOT23_123 RGB_PROT — MDAC1RED
D305 BAV99 70V IC_SOT23_123 RGB_PROT — MDAC1GREEN
D306 BAV99 70V IC_SOT23_123 RGB_PROT — MDAC1BLUE

C314 4u7 10% X5R 6.3V SMD0805 COMMON
C315 4u7 10% X5R 6.3V SMD0805 COMMON

P300-1 DUAL:SINGLE VGA2:DSUB CON_15PF_DSUB_RA

DAC1RED / DAC1GREEN / DAC1BLUE
CRT2HSYNC / CRT2VSYNC
DAC2RED 5 / DAC2GREEN 5 / DAC2BLUE 5

A3.3V   5V   GND

U100E

IFP0AVDD   Y1   IFP0IOAVDD   TXD0#   V2
IFP0BVDD   AC1   IFP0IOBVDD   TXD0   V3
  W2   IFP0VREF   TXD1#   W3
  V1   IFP0RSET   TXD1   W4
   TXD2#   Y2
   TXD2   Y3
   TXD3#   AA1
   TXD3   AA2
   TXD4#   AA3
   TXD4   AA4
W5   IFP0IOGND   TXD5#   AB2
   TXD5   AB3
IFP0PLLVDD   W1   IFP0PLLVDD   TXD6#   AC2
   TXD6   AC3
   TXD7#   AB4
   TXD7   AC4
   TXC0#   U4
AB5   IFP0PLLGND   TXC0   U5
   TXC1#   Y4
   TXC1   Y5

IFP1VDD   U1   IFP1IOVDD   TXD8#   R5
  T2   IFP1VREF   TXD8   R4
  R1   IFP1RSET   TXD9#   T3
   TXD9   T4
   TXD10#   U2
   TXD10   U3
   TXC2#   R2
T5   IFP1IOGND   TXC2   R3
IFP1PLLVDD   T1   IFP1PLLVDD   I2C2SDA   AH8   I2C2SDA
   I2C2SCL   AJ7   I2C2SCL
   GPIO7   J5
   GPIO6   A3
   GPIO5   A5
   GPIO4   B6
   GPIO3   C7
   GPIO2   D7
V4   IFP1PLLGND   GPIO1   E8
   GPIO0   B5

IC NV17 GPU BGA604
ic_nv17_bga604_1mm
GPU

R212   1K   5%   R0603MS   COMMON
R213   1K   5%   R0603MS   COMMON
R210   1K   5%   R0603MS   COMMON
R214   1K   5%   R0603MS   COMMON
R211   1K   5%   R0603MS   COMMON

GND

I2C2SDA
I2C2SCL

Place
close
together

U100F

IC NV17 GPU BGA604
ic_nv17_bga604_1mm
GPU

A3.3V

R500
1k   5%
SMD0402
NO_STUFF

Pin	Signal		Signal	Pin

ROMCS#   AH5   ROMCS-   11
ROMA14   N2   ROMA14   11
ROMA15   F1   ROMA15   11

DVOVSYNC   AH2   DVOVSYNC   11
DVOHSYNC   AH1   DVOHSYNC   11
DVODE   AG6   DVODE   11

DVOCLKIN   AG3   DVOCLKIN
DVOCLKOUT   AG2   DVOCLKOUT
DVOCLKOUT#   AG5   DVOCLKOUT#

DVOD0   AK5   DVOD0
DVOD1   AJ6   DVOD1
DVOD2   AK4   DVOD2
DVOD3   AJ5   DVOD3
DVOD4   AK2   DVOD4
DVOD5   AJ3   DVOD5
DVOD6   AJ1   DVOD6
DVOD7   AH3   DVOD7
DVOD8   AK1   DVOD8
DVOD9   AJ2   DVOD9
DVOD10   AK3   DVOD10
DVOD11   AJ4   DVOD11

11   DVOD[0:11]   DVOD[0:11]

BUFRST#   A7   BUFFRST-   BUFFRST-

VIPPCLK   C2   VIPPCLK
VIPHAD1   B1   VIPHAD1   VIPHAD1   11
VIPHAD0   D2   VIPHAD0   VIPHAD0   11
VIPHCTL   C4   VIPHCTL-
VIPHCLK   B4   VIPHCLK

VIPD0   K2   VIPD0
VIPD1   K3   VIPD1
VIPD2   J2   VIPD2
VIPD3   K1   VIPD3
VIPD4   H1   VIPD4
VIPD5   J3   VIPD5
VIPD6   H3   VIPD6
VIPD7   H2   VIPD7

VIPD[0:7]   11

NC   AF12
NC   AF2
NC   AG2
NC   AH12
NC   AH13
NC   AJ12
NC   AK10
NC   AK3
NC   C16
NC   G28
NC   J4

VDDDVO   AE5
VDDDVO   AF4
VDDDVO   AF5

DVOVREF   AG1   DVOVREF

R520
10k   5%
R0603MS
COMMON

GND

3.3V

R505
1K   1%
R0603MS
COMMON

GND

3.3V

R509
1K   1%
R0603MS
COMMON

C524
0.047uF   10%
X7R   16V
SMD0402
COMMON

GND   GND

Place south
west of
GPU.

3.3V   3.3V

C530
0.022uF   20%
X7R   16V
C0603MS
COMMON

C529
4u7   10%
X5R   6.3V
SMD0805
COMMON

GND   GND

Place close
to P500

5   COUT   COUT   COUT

A3.3V   D502
BAV99   70V
IC_SOT23_123
TVCLAMP
GND

5   CVBS_YOUT   CVBS_YOUT   CVBS_YOUT

A3.3V   D503
BAV99   70V
IC_SOT23_123
TVCLAMP
GND

5   PBOUT   PBOUT   PBOUT

A3.3V   D504
BAV99   70V
IC_SOT23_123
CLAMP3
GND

AV_OUT

PBOUT

JACK+RCA-D3-SB-YL

GND

S_OUT

COUT

CVBS_YOUT

MINIDIN-D4-BK

GND   GND

A3.3V

C501
4u7   10%
X5R 6.3V
C0805MS
VIDCAP
GND

C502
0.1uF   10%
X7R   10V
C0603MS
VIDCAP
GND

C503
0.1uF   10%
X7R   10V
C0603MS
VIDCAP
GND

C504
0.1uF   10%
X7R   10V
C0603MS
VIDCAP
GND

C525
2200pF   20%
X7R   16V
C0603MS
VIDCAP
GND

C526
2200pF   20%
X7R   16V
C0603MS
VIDCAP
GND

C527
2200pF   20%
X7R   16V
C0603MS
VIDCAP
GND

C535
0.01uF   20%
X7R   16V
C0603MS
VIDCAP
GND

C536
0.01uF   20%
X7R   16V
C0603MS
VIDCAP
GND

C537
0.01uF   20%
X7R   16V
C0603MS
VIDCAP
GND

C528
0.1uF   10%
X7R   10V
C0603MS
VIDCAP
GND

C531
0.1uF   10%
X7R   10V
C0603MS
VIDCAP
GND

C532
0.1uF   10%
X7R   10V
C0603MS
VIDCAP
GND

HOLE
GND
HOLE_157PTH

GND   1

FM2   FM1   FM5
SW_FB   SW_FB   SW_FB

FM7   FM4   FM6   FM3
SW_FB   SW_FB   SW_FB   SW_FB

5. TV out,video capture

Micro-Star International Co., LTD.

MS-8847 base on P73 modify

Size   Document Number   Rev
Custom   TV out , video capture   00A

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Analog 3.3V

3.3V
R601 1 2 0R 5%
NO_1117   SMD0805

5V

U601
VIN VOUT
GND TAB
EZ1117-3.3:EZ1117-ADJ
SOT_223
1117:1117_ADJ
A33ADJ

A3.3V

C601
22uF 20%
ALE 10V
80mA 1.8Ohm
10UF_25V_SMD
1117:1117_ADJ
GND

R602 1%
100R
R0603MS
1117:1117_ADJ

R605
0R:165R 5%:1%
R0603MS
1117:1117_ADJ
GND

C602
47uF 20%
ALE 6.3V
150mA 0.76Ohm
CAP_ALE_SMD_5_0
COMMON
GND

Ripple rejection
1/2/Pi/R?/fRipple

C603
22uF 20%
ALE 10V
80mA 1.8Ohm
10UF_25V_SMD
NO_STUFF
GND

For adjustable regulators:
A3.3V=1.25V*(1+R605/R602)+Iadj*R605

Iadj=55uA-120uA

3.3V
C1001
C0603MS 1 2 1000pF 10%
NO_STUFF   X7R 10V
5V

3.3V
C605
1000uF 20%
ALE 6.3V
0.45A <P_esr>
GNDGND

L600
CHKM3052 1.2uH 20%
COMMON   Troic _

F3.3V

C604
1000uF 20%
ALE 6.3V
0.45A <P_esr>
GNDGND

FOR DESKTOP-NV17
NVVDD DESIGN TARGET 1.584min/1.616max
NVVDD QUAL TARGET 1.550min/1.700max

NVVDD=1.60V +/-50mV /4A

FBVDDQ=2.53V
+/-30mV

2.5V

K4H281638D-TCB3- 2.5V
HY5DU281622AT-6 2.5V

Q600
20V
MTD3055V
DPAKSGD
COMMON

Can be
placed
on
Bottom

FBVDDQ
C614
1000uF 20%
ALE 6.3V
0.45A <P_esr>
GNDGND

Place close
to FET

5V
R624
2R2
R0603MS
COMMON
5%

12V
R616
0R
R0603MS
COMMON
5%

C609
1uF 20%
X5R 16V
C0603MS
COMMON
GND

5V_IN
12V_IN

C608
1uF 20%
X5R 16V
C0603MS
COMMON
GND

C612
0.047uF 10%
X7R 16V
SMD0402
COMMON
GND

TP603
FBVDDQ
HOLE_48C28P
NO_STUFF
2-5V:2-6V

TP604
L_FB
HOLE_48C28P
NO_STUFF
L_FB

L_GATE
L_GATE

4.64k:4.75k
R610 1 2
R0603MS
1%

R612
2.1k:2.1k
R0603MS 1%
2-5V:2-6V

TP605
GND
HOLE_48C28P
NO_STUFF
GND

ISL6528:
FBVDDQ=0.8V*(1+R610/R612)
R610   4.64k   4.75k
R612   2.10k   2.10K
FBVDDQ 2.56V   2.6V

U600
5V   12V
NC   UG 14
DRV1 LG 1
NC   FB 9
FB2 COMP 10
NC
GND PGND
COMMON
ISL6529
IC_SO14_150MIL

Use multiple
vias for GND
connection
GND

HDRV R604 2R2 5% HGATE
COMMON   R0603MS

LDRV R609 2R2 5% LGATE
COMMON   R0603MS

SW_FB
SW_COMP

PHASE

Q1B
AOS4800
COMMON

C607
4u7 10%
X5R 6.3V
SMD0805
COMMON
GND

Place close to each other

Q1A
AOS4800
COMMON

D24
10MQ040N
COMMON

GND GND GND

4 PTH Minimum
to FET Pin1

L601
FB4
COMMON 4.7uH 20%
Troic _

R626
2R2 5%
R0603MS
COMMON

SNUB
C617
2200pF 10%
X7R 10V
C0603MS
COMMON
GND

C616 10%
47nF 10V
COMMON X7R
C0603MS

R614
10R 5%
COMMON
R0603MS

GND

NVVDD

C613
1000uF 20%
ALE 6.3V
0.45A <P_esr>
GNDGND

C620
1000uF 20%
EL 6.3V
450mA <P_esr>
COMMON
GND

C611
4u7 10%
X5R 6.3V
SMD0805
COMMON
GND

TP600
NVVDD
HOLE_48C28P
NO_STUFF

R615
1k 1%
R0603MS
COMMON

ISL6528: TYPE 3 COMPENSATION
NVVDD=0.8V*(1+R615/R617)FOR LOW ESR CAPS

SW_FB

C618
C0603MS 1 2 1000pF 20% SW_CMP
COMMON   X7R 50V

R611 1 2 10K 1%
COMMON   R0603MS

SW_COMP
C619
C0603MS 1 2 1500pF 10%
COMMON   X7R 10V

TP601
SW_FB
HOLE_48C28P
NO_STUFF

R617
1k 1%
R0603MS
COMMON

KEEP TEST POINT LEGEND VISIBLE

GND

USE MAX WIDTH OF TRACES AS POSSIBLE

FBVDDQ   FBVDD   3.3V

FBVDD=FBVDDQ   FBVDD=AGP3.3V

RN208A 1 2 0R 5%
NO_STUFF   RN0603
RN208C 5 6 0R 5%
NO_STUFF   RN0603
RN208B 3 4 0R 5%
NO_STUFF   RN0603
RN208D 7 8 0R 5%
NO_STUFF   RN0603

RN209A 1 2 0R 5%
COMMON   RN0603
RN209C 5 6 0R 5%
COMMON   RN0603
RN209B 3 4 0R 5%
COMMON   RN0603
RN209D 7 8 0R 5%
COMMON   RN0603

C622
100uF 20%
ALE 16V
230mA 0.44Ohm
CAP_VA_8X10
COMMON
GND

Place together

FBVDD
The FBVDD can take either FBVDDQ or AGP3.3V. Place the
resistors accordingly for plane split.

PORC_REG[30:0]

Bit	Signal	Register	Description
Bit_0	DVOD0	R701 10k 5% R0603MS	PCI_AD_SWAP — 0: REVERSED-Not supported / 1: NORMAL Default
Bit_1	DVOD1	R703 10k 5% R0603MS	SUB_VENDOR — 0: system BIOS / 1: adapter BIOS-Default
Bit_2	DVOD2	R704 NO_STUFF 10k 5% R0603MS / R705 8M16 10k 5%	RAM_CFG0
Bit_3	DVOD3	R706 NO_STUFF 10k 5% R0603MS / R707 8M16 10k 5%	RAM_CFG1
Bit_4	DVOD4	R708 8M16 10k 5% R0603MS / R709 NO_STUFF 10k 5%	RAM_CFG2
Bit_5	DVOD5	R710 NO_STUFF 10k 5% R0603MS / R711 8M16 10k 5%	RAM_CFG3

RAM_CFG[3:0]
1011: 8Mx16 DDR SDRAM, DQS per 8 bits, dll-on, low drive strength-Default

Bit	Signal	Register	Register
Bit_6	DVOD6	R712 NS:10k 5% VGA2:TV R0603MS	R713 10k:NS5% VGA2:TV R0603MS	CRYSTAL0
Bit_22	VIPD6	R714 10kNS 5% VGA2:TV R0603MS	R715 NS:10k5% VGA2:TV R0603MS	CRYSTAL1

CRYSTAL[1:0]
00: 13.5MHz-Not Supported
01: 14.318MHz- VGA2
10: 27MHz - TV
11: Reserved

Bit	Signal	Register	Register
Bit_7	DVOD7	R716 NO_STUFF 10k 5% R0603MS	R717 COMMON 10k 5% R0603MS	TVMODE0
Bit_8	DVOD8	R718 VGA2:TV NS:10k 5% R0603MS	R719 VGA2:TV 10k:NS 5% R0603MS	TVMODE1

TVMODE[1:0]
00: RESERVED
01: NTSC - Default
10: PAL
11: DAC2-VGA2

Bit	Signal	Register	Register	Description
Bit_9	DVOD9	R722 COMMON 10k 5% SMD0402		AGP4x — 0: enabled - Default / 1: disabled
Bit_11	VIPD7	R724 COMMON 10k 5% SMD0402	R725 NO_STUFF 10k 5% SMD0402	AGP_FW — 0: enabled - Default / 1: disabled

Bit	Signal	Register	Register	Description
Bit_12	VIPD4	R726 NV17-S 10k 5% R0603MS	R727 NO_STUFF 10k 5% R0603MS	PCI_DEVID0
Bit_13	VIPD5	R728 NO_STUFF 10k 5% R0603MS	R729 NV17-S 10k 5% R0603MS	PCI_DEVID1
Bit_20	VIPD3	R730 NV17-S 10k 5% R0603MS	R731 NO_STUFF 10k 5% R0603MS	PCI_DEVID2
Bit_21	DVOHSYNC	R732 NV17-S 10k 5% R0603MS		PCI_DEVID3
Bit_14	DVOD11		R735 COMMON 10k 5% SMD0402	BUS_TYPE — 0: PCI / 1: AGP- Default

PCI_DEVID[3:0]
0001: NV17-xx/GF4-MX440-xx
0010: NV17-S-XX/GF4-MX420-xx
1000: NV17-GL-XX

0x172

Bit	Signal	Register	Register
Bit_16	VIPD0	R736 COMMON 10k 5% SMD0402	USER0
Bit_17	VIPD1	R738 COMMON 10k 5% SMD0402	USER1
Bit_18	VIPHAD0	R740 COMMON 10k 5% SMD0402	USER2
Bit_19	VIPHAD1	R742 COMMON 10k 5% SMD0402	USER3

USER[0]=0: PC
USER[0]=1: MAC- NOT SUPPORTED

Bit	Signal	Register	Register
Bit_29	DVOD10	R747 COMMON 10k 5% R0603MS	R745 COMMON 10k 5% R0603MS	ROMTYPE0
Bit_30	VIPD2	R746 COMMON 10k 5% R0603MS	No stuff	ROMTYPE1

ROMTYPE[1:0]
00: Parallel PLCC bios
01: Serial AT25F Default
10: Notused
11: Reserved

GND

M2
Passive
COMMON
HEATSINK, PASSIVE, MECH HOLD DOWN, 53mm X 64mm

M401
BRACKET
2VGASTD:2VGALP:VGADINSTD:VGADINLP
151-10000-5001-000:151-10000-6001-000:151-10000-0017-000:151-10000-3007-000

CHASSIS GND RES WITH DB15

NO STUFF (OPTION)

DVOD[0:11]
VIPD[0:7]

U701
SI / SCK / SO / CS
VDD / HOLD / WF / GND
512Kor1Mbit
IC_SO8
COMMON

DVOD0 / DVOD1 / VIPD0
ROMCS-

R748 10K SMD0402 NO_STUFF 5%

C701 0.1u 10% X7R 25V SMD0603 COMMON

3.3V
GND

ROMA14
ROMA15
DVOVSYNC
DVOHSYNC
DVODE
VIPHAD0
VIPHAD1

DVOD[0:11]
VIPD[0:7]

U1000
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 NC/A16 NC/A17
O0 O1 O2 O3 O4 O5 O6 O7
CE OE WE VDD GND NC
150NS

DVOD0...DVOD11
VIPD0...VIPD7
DVOVSYNC DVOHSYNC ROMA14 ROMA15 OVODE
ROMCS-
VIPHAD0
VIPHAD1

R1000 10K NI
C1000 0.1u
3.3V

4.a FB0..31 DDR

Micro-Star International Co., LTD.

MS-8847 base on P73 modify

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4.b FB32..63 DDR

Micro-Star International Co., LTD.

MS-8847 base on P73 modify

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R314
75R 1%
R0603MS
COMMON

C338
10p   5%
COG   50V
C0603MS
VGA2

GND

R313
75R 1%
R0603MS
COMMON

C341
10p   5%
COG   50V
C0603MS
VGA2

GND

For Impedence refer
Expert's parasitic
property

R312
75R 1%
R0603MS
COMMON

C344
10p   5%
COG   50V
C0603MS
VGA2

GND

C509
C0603MS   1   2   22pF   5%
TV   NPO   50V

COUT   COUT   9

4   DAC2RED   DAC2RED

37.5 OHM TRACES UPTO CONNECTOR P300

L501
L0603MS   1   2 1.8uH 5%
            Inductor
L0805MS   1   2 1.8uH 5%
TV   Inductor   35mA
C511
TV

270p   5% L602 Place close
COG   50V   to L323
C0603MS
TV

GND

C512
330p   5%
COG   50V
C0603MS
TV

GND

PLACE
L501, L502, L503
ON OPPOSITE SIDE OF
L322, L323, L324
RESPECTIVELY

TO DIN CONNECTOR

C515
C0603MS   1   2   22pF   5%
TV   NPO   50V

CVBS_YOUT   CVBS_YOUT   9

4   DAC2GREEN   DAC2GREEN

37.5 OHM TRACES UPTO CONNECTOR P300

L502
L0603MS   1   2 1.8uH 5%
L603   Inductor
L0805MS   1   2 1.8uH 5%
TV   Inductor   35mA
C517
TV

270p   5%   Place close
COG   50V   to L322
C0603MS
TV

GND

C518
330p   5%
COG   50V
C0603MS
TV

GND

Place these TV-out
filters along the RGB
filters above towards
P500.

PLACE
C336, C341, C344
ON TOP OF
C511, C517, C522
RESPECTIVELY

C520
C0603MS   1   2   22pF   5%
VIDCAP   NPO   50V

PBOUT   PBOUT   9

4   DAC2BLUE   DAC2BLUE

37.5 OHM TRACES UPTO CONNECTOR P300

L503
L0603MS   1   2 1.8uH 5%
L604   Inductor
L0805MS   1   2 1.8uH 5%
TV   Inductor   35mA
C522
VIDCAP

270p   5%   Place close
COG   50V   to L324
C0603MS
VIDCAP

GND

C523
330p   5%
COG   50V
C0603MS
VIDCAP

GND

VERIFY SKU FOR PROTECTION DIODES

Note: No Decaps for Dual DSUB
       in this Sheet

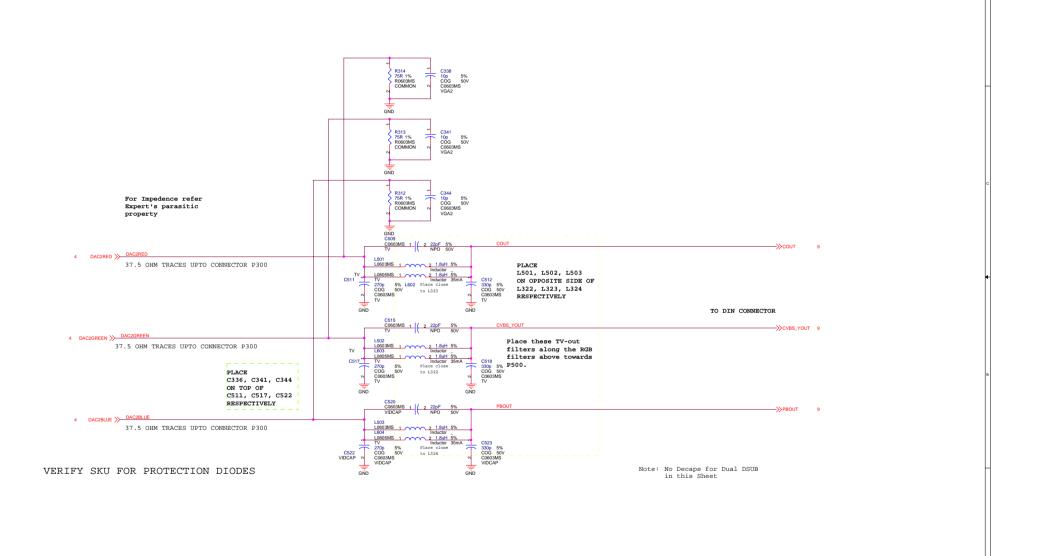Micro-Star International Co., LTD.
MS-8847 base on P73 modify
Size   Document Number   Rev
C   Dual DAC, 2nd VGA   00A
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