HISTORY:

X00:
first version for layout start. No video capture, no stereo. NO DRC CHECK.

X01:
fixed PCB footprints for IC_SO14_150MIL and CON_DVI-I_RA
added end-termination r-packs for address-status-bus
changed RGB filter to integrated 5-pole only
added video capture, BIOS, Strapping
changed RefDes
NO DRC CHECK

X02:
added missing end termination for FBBAx
added stereo 3pin header
added clamp diodes for TV-out and video capture
changed topology for 2nd DDC (VGA / DVI)
NO DRC CHECK

X03:
splitted analog/digital suply for SAA7113 (no component change)
Fixed some RefDes
Changed the strapping resistors cases to 0402
NO DRC CHECK

X04:
changed C617 to SMD0603
changed U502 and U503 to TSSOP14
added CKE connection to the memories
added D505 to the stereo section
changed L501, L502, L503 to 0603
NO DRC CHECK

X05:
changed U601 to SOT223-DPAK-D2PAK
added bracket
changed L600 to IND_CDR73
added VIP connector
NO DRC CHECK

X06:
deleted VIP
changed TPs to HOLE_48C28P
changed switcher gate circuit (no component change)
added C641 and C642 to the linear voltage regulator
pinswap of memory termination
NO DRC CHECK

X07:
deleted page 10: 5.b VIVo
changed filter topology for RGB
added return traces for RGB
NO DRC CHECK

X08:
added TV filter caps with reference to GND (C511,C517,C522)
separated RGB returns (NOTE: there will be a change for DAC2)
NO DRC CHECK

X09:
added net names to unused panel signals (test points)
NO DRC CHECK

X10:
added decoupling for DVO rail (C529 and C530)
added GND connection to pin 1 of U700
added R520 pull down for DVOCLKIN
DRC CHECK DONE

X11:
changed caps in power section to the combined footprints

X12:
data bus swappings

X13:
swapped CLKs for U201 and U202

X14:
connected the RGB returns of VGA2 together

X15:
update materials

X16:
update stuffings

X17-A01:
release A01
changed DVOVDD from VID3.3V to A3.3V
add linear regulator for NV17's VDD33
connected the IFP-RSETs to GND
deleted C134 and C135

X18:
change to target release A02
changed I2C assignments
added I2C filter components for ViVo (L506,L507,R521-R524,D506,D507,C531,C532)

X19:
added R243-R250 for clock pull-up.

X20-A02:
material changes.

X21-A03:
fixed values and descriptions for R609, R613 and C640
changed the RGB filter topology:
- delete R325-R330
- connect all DACRTN to GND
- move the 75R termination resistors to the connector
changed RGB clamping to A3.3V
add testpoint net XTALOUTBUFF
changed XTAL-load caps C320 and C321 to 18pF
removed obsolete 0603 0Ohm resistors
NO_STUFFed the stereo 3-pin header.

X22-A03:
changed bulk decoupling in VGA section from 3.3V to A3.3V
fixed DAC1BLUE (net name was missing)

X23-A03:
changed VDD33 to A3.3V

X24-A03:
added C643 for memory core decoupling

X25-A03:
changed the long body VGA connector to a three pin type
changed C425 connection for fan decoupling

Stuffing Options	Meaning
COMMON	common components for all skus
NO_STUFF	no assembly at all
XTAL_27	stuff the 27MHz xtal for the GPU
XTAL_14	stuff the 14.318MHz xtal for the GPU
VIVO	stuff video I/O
VIDCAP	stuff video capture
TV_OUT	stuff TV-out
DVI-I	stuff the DVI-I option
DVI	stuff the DVI-D option
2NDVGA	stuff a second VGA
NO_DVI	don't stuff any DVI
SYNC_DRIVER2	stuff the termination resistors for the DACB syncs
SYNC_DRIVER	stuff the sync driver chip
NO_SYNC_DRIVER2	bypass the sync driver for the DAC B syncs
NO_SYNC_DRIVER	bypass the sync driver for the DAC A syncs
STEREOSYNCS	stuff the switchable stereo sync circuit
STEREOSYNC2	sync stereo to DAC B
STEREOSYNC1	sync stereo to DAC A
STEREO	stuff the generic stereo circuit
SI2C_PROT	stuff the protection diodes for syncs and I2C at DAC A
RGB_PROT	stuff the protection diodes for RGB at DAC A
2NDVGA_RGB_PROT	stuff the protection diodes for RGB at DAC B
2NDSI2C_PROT	stuff the protection diodes for syncs and I2C at DAC B
SET_NVVDD_ISL	set NVVDD voltage at Intersil switcher
SET_NVVDD_IRU	set NVVDD voltage at IR/Uniseml switcher
SET_FBVDDQ_ISL	set FBVDDQ voltage at Intersil switcher
SET_FBVDDQ_IRU	set FBVDDQ voltage at IR/Uniseml switcher
NO_1117	bypass the A3.3V regulator to AGP3.3V
ISL	stuff the Intersil switcher
IRU	stuff the IR/Unisem switcher
FBVDD_3.3	connect FBVVDD with AGP3.3V
FBVDD_2.5	connect FBVVDD with FBVDDQ
1117_ADJ	stuff the adjustable regulator for A3,3V
1117	stuff the fixed regulator for A3,3V
PASSIVE_HS	have passive heatsink
FAN	fan sink and components
BRCKT_VGA_TV_VGA	Bracket VGA-TV-VGA
BRCKT_VGA_TV_DVI	Bracket VGA-TV-DVI
BRCKT_VGA_TV	Bracket VGA-TV
BRCKT_VGA	Bracket VGA
MEMSTRAP1111	strap memory to 1111
MEM-64B	stuff 64 bit memory - 2pcs
MEM-128B	stuff 128 bit memory - 4pcs
NV17-128D	stuff NV17-128D

140-10070-0000-A03
602-10070-0000-A03

Micro-Star International Co., LTD.

MS-8882-P70-A03

Size: Custom Document Number Rev: 0A

TOP PAGE

Date: Thursday, May 02, 2002   Sheet 1 of 16

Micro-Star International Co., LTD.

MS-8882-P70-A03

Document Number: **NV17___ FRAME BUFFER**

Rev: 0A

Date: Thursday, May 02, 2002 — Sheet 3 of 16

Memory decoupling

Memory decoupling

Place close to memory

Place close to memory

Place close to memory

Place in memory section

Place in memory section

Place at end of stub

U202
SMSC-128M-TQFP100
IC_PQFP100
MEM-128B

U203
SMSC-128M-TQFP100
IC_PQFP100
MEM-128B

Micro-Star International Co., LTD.		
	MS-8882-P70-A03	
Size	Document Number	Rev
Custom	FRAME BUFFER 64..127	0A
Date:	Thursday, May 02, 2002	Sheet 5 of 16

Place close together

Place close to GPU

Place closest to GPU

Place close together

Decoupling sync driver

Route 37.5Ohm

Route 37.5Ohm

Place in ouput filter section

Place close together

DDC5V

DOC1VCC

I2C1SDA   TI2C1SDA   MI2C1SDA

I2C1SCL   TI2C1SCL   MI2C1SCL

C1HS   C1HSBUF   MCRT1HSYNC

C1VS   C1VSBUF   MCRT1VSYNC

MDAC1RED

MDAC1GREEN
MI2C1SDA
MDAC1BLUE
MCRT1HSYNC
DDC1VCC
MCRT1VSYNC
MI2C1SCL

DAC1VDD
DAC1VREF
DAC1RSET
DAC1GND

DACVDD   DACRED   DAC1RED
DACVREF   DACGREEN DAC1GREEN
DACRSET   DACBLUE   DAC1BLUE
DACGND

I2C0SCL   I2C0SDA   CRTHSYNC CRT1HSYNC
I2C0SDA   I2C0SCL   CRTVSYNC CRT1VSYNC

CRT2HSYNC
CRT2VSYNC

DAC2VDD   DAC2RED   DAC2RED
DAC2VREF DAC2GREEN DAC2GREEN
DAC2RSET DAC2BLUE DAC2BLUE
DAC2GND

PLLVDD

XTALSSIN XTALOUTBUFF XTALOUTBUFF
XTALIN   XTALOUT   XTALOUT

U100D
NV17-128D

Y300 27MHz(SMD)
XTAL_2P_HC49SM
XTAL_14:XTAL_27

(-------- SAA 7108 --------)

DECODER
SAA7114

ENCODER
SAA7102

'CODEC-PH-SAA7108E
VIVO:TV_OUT_PH:VIDCAP
BGA156

IO CONNECTOR

Place south
west of
GPU.

CON_S_VIDEO_9P_STD
VIVO:TV_OUT:VIDCAP:STEREO_OUT
P500

U100F
ic_nv17_bga604_1mm_skt
NV17-Pro:NV17-P-GL

12V

R600
10 5%
SMD0603
IRU

U800
V12   V12SW
DRV2   DRV1
VFB2   VFB1
GND   VHyst
IR-IRU3003CS
IC_SO8
IRU

C600
1u-08/05%
X7R   25V
SMD0805
IRU

R603
470
SMD0603

L_GATE_IRU
L_GATE   S_GATE
L_FB   SW_FB
         SW_COMP

C604
1u-08/05%
X7R   25V
SMD0805

GND

U901
μA78L05
VIN   VOUT
GND

EC1
22u   16V
5402R02-053
C-DIP4520 10%

EC2
22u   16V
5402R02-053
C-DIP4520 10%

GND

FB1
80-25%
HZ0805E601R-00
L0809MS

FB2
60_0805
HZ0805E601R-00
L0809MS

EC3
100u   16V
5402R02-053
C-DIP4520

EC4
100u   16V
5402R02-053
C-DIP4520

EC5
10u
C-DIP4520
5402R02-053
10%

GND

C601
22u   20%
ALE   10V
80mA 1.80nm
CAP_SANYO_CASE_B
1117:1117_ADJ

R601
NO_1117   SMD0805

U801
VIN   VOUT
GND   TAB
IC_DPAK_223
1117:1117_ADJ

R602
100   1%
SMD0603

C602
20%
6.3V
150mA 0.78Ohm
CAP_ALE_SMD_5_0
COMMON

C605
22u   20%
ALE   10V
80mA 1.80nm
CAP_SANYO_CASE_B
NO_STUFF

R605
562   5%:1%
SMD0603
1117:1117_ADJ

Can be placed on same location.
Alternative stuffing

GND

For adjustable regulators:
A3.3V=1.250*(1+R605/R602)+Iadj*R605

Iadj=55uA-120uA

3.3V

C611
100u   20%
ALE   6.3V
0.45A 170mO
CAPS_SMD_8_0-10_0_SANYO
COMMON

GND

Can be placed on same location.
Alternative stuffing

The inductor can be placed
on top of the resistors.
Alternative stuffing

C608
470u   N/A
OSCON N/A
N/A   N/A
CAPS_TH_3_5-8-5_0_10
NO_STUFF

C616
4.7u-0805
X5R 6.3V
SMD0805
COMMON

Can be placed on same location.
Alternative stuffing

FBVDDQ

FBVDDQ

NIKO-P3056D-S-TO252
Q601

R609
6.8K5%
IRU   SMD0603

C618
470p   5%
COG   50V

L_GATE
L_GATE

TP603
FBVDDQ
HOLE_48C28P
NO_STUFF

R610
180
SET_FBVDDQ_ISL:SET_FBVDDQ_IRU

TP604
L_FB
HOLE_48C28P
NO_STUFF

L_FB
L_FB

C627
1500uF   20%
ALE   6.3V
0.67A 90mO
CAPS_SMD_8_0-10_0_SANYO
COMMON

GND

Can be placed on same location.
Alternative stuffing

R613
1K 5%
SMD0603
IRU

GND

ISL6539:
FBVDDQ=0.8V*(1+R610/R612)

R610   9.25k   9.09k
R612   3.93k   4.02k
FBVDDQ 2.52V   2.61V

IRU3033
FBVDDQ=1.20V*(1+R610/R612)

R612
180   1%
SMD0603
SET_FBVDDQ_ISL:SET_FBVDDQ_IRU

TP605
GND
HOLE_48C28P
NO_STUFF

GND

FBVDD

FBVDDQ   FBVDD

FBVDD=FBVDDQ   **FBVDD=AGP3.3V**

R618   0_0805
FBVDD_2.5   SMD0805
R621   0_0805
FBVDD_2.5   SMD0805
R22   0_0805
FBVDD_2.5   SMD0805
R24   0_0805
FBVDD_2.5   SMD0805

R19   0_0805
FBVDD_3.3   SMD0805
R23   0_0805
FBVDD_3.3   SMD0805
R25   0_0805
FBVDD_3.3   SMD0805

3.3V

C643
100u   20%
ALE   16V
230mA 0.44Ohm
CAP_ALE_SMD_8_3
COMMON

GND

S_GATE R604
IRU:ISL
1.5K
5%   3%
SMD0603

Q604
P45N03LD-S-TO252
TO252

PHASE
3A 20V
SK320
CASE_403A_03_B
COMMON

GND

L601
1nH
COMMON
4.7u 20%

NVVDD=1.6V

NVVDD

C620
4.7u-0805
X5R 6.3V
SMD0805
COMMON

GND

TP800
NVVDD
HOLE_48C28P
NO_STUFF

R615
1K 1%
SMD0603
SET_NVVDD_ISL:SET_NVVDD_IRU

C622
1500uF   20%
ALE   6.3V
0.67A 90mO
CAPS_SMD_8_0-10_0_SANYO
COMMON

GND

Can be placed on same location.
Alternative stuffing

SW_FB

C634
1500uF   20%
ALE   6.3V
0.67A 90mO
CAPS_SMD_8_0-10_0_SANYO
COMMON

GND

Can be placed on same location.
Alternative stuffing

C639
SMD0603   0
ISL:IRU

X7R:NULL 50V:NULL

R616
ISL:IRU
270K
15:5%
SMD0603

TP801
SW_FB
HOLE_48C28P
NO_STUFF

C640
SMD0603   10p_0603
ISL:IRU   COG   50V

5%
50V

ISL6539:
NVVDD=0.8V*(1+R615/R617)

IRU3033
NVVDD=1.25V*(1+R615/R617)

R617
3.57K   1%
SMD0603
SET_NVVDD_ISL:SET_NVVDD_IRU

TP802
GND
HOLE_48C28P
NO_STUFF

GND

SW_FB
SW_COMP

SW_FB
SW_COMP

S_GATE
SW_FB
SW_COMP

H1

CHANGE 0402 TO 0603

#	Signal	Description
0	PCI_AD_SWAP	0: REVERSED 1: NORMAL default
1	SUB_VENDOR	0: system BIOS 1: adapter BIOS default
2	RAM_CFG_0	[3:0]
3	RAM_CFG_1	1111: 4Mx32 DDR SDRAM, DQS per 32 bits, S11-on, low drive strength
4	RAM_CFG_2	
5	RAM_CFG_3	
6	CRYSTAL_0	[1:0]
22	CRYSTAL_1	00: 13.5MHz 01: 14.318MHz 10: 27MHz 11: unknown
7	TVMODE_0	[1:0]
8	TVMODE_1	00: SECAM 01: NTSC 10: PAL 11: VGA
9	AGP4x	0: enabled default 1: disabled
11	AGP_FW	0: enabled default 1: disabled
12	PCI_DEVID_0	[3:0]
13	PCI_DEVID_1	0001: MV17-128D
20	PCI_DEVID_2	
21	PCI_DEVID_3	
14	BIOS_TYPE	0: PCI 1: AGP default
16	USER_0	USER[0]=0: PC USER[0]=1: MAC
17	USER_1	
18	USER_2	
19	USER_3	
29	ROMTYPE_0	[1:0]
30	ROMTYPE_1	00: parallel default 01: serial AT25F 10: serial 25P45V not supported 11: serial future not supported

DVOD[0:11]
VIPD[0:7]
DVOD0
DVOD1
VIPD0
ROMCS_

DVOHSYNC
VIPHAD0
VIPHAD1

U7D1
SI VDD
SCK HOLD
SO WP
CS GND
64Kx8-5ns
3.3V
IC_SO8
NO_STUFF

3.3V
GND

A3.3V

R801 1 2 0_0805 5% IFP0AVDD
NO_STUFF SMD0805

C800
100 1%
Resistor NULL
SMD0603
COMMON
GND

R800 1 2 0_0805 5% IFP0BVDD
NO_STUFF SMD0805

STUFFED WITH
100R TO SHUT
DOWN

C801
100 1%
Resistor NULL
SMD0603
COMMON

C802
0.1u 10%
X7R 16V
SMD0603
NO_STUFF

R803 1 2 1K 5% IFP0RSET
COMMON SMD0603

GND
GND

R802 1 2 0_0805 5% IFP0PLLVDD
NO_STUFF SMD0805

C807
4.7u 0805
X5R 6.3V
SMD0805
NO_STUFF
GND

C803
100 1%
Resistor NULL
SMD0603
COMMON
GND

A3.3V

L800 1 2 NULL IFP1VDD
SMD0805 Resistor
NO_STUFF

C804
100 1%
SMD0603
COMMON
1%

C805
0.1u 10%
X7R 16V
SMD0603

R804 1 2 1K 1% IFP1RSET
COMMON SMD0603

GND

L801 1 2 NULL IFP1PLLVDD
SMD0805 Resistor
NO_STUFF

C806
4.7u 0805
X5R 6.3V
SMD0805
NO_STUFF
GND

R805 1 2
100 1%
SMD0603
COMMON
GND

U100E

IFP0IOAVDD
IFP0IOBVDD
IFP0VREF
IFP0RSET

IFP0IOGND
IFP0PLLVDD

IFP0PLLGND

IFP1IOVDD
IFP1VREF
IFP1RSET

IFP1IOGND
IFP1PLLVDD

IFP1PLLGND

ic_nv17_bga604_1mm_skt
NV17-128D

TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN
P4 P3 P1 P8 P7 P6 P5 P2

TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN
P9 P18 P17 P11 P14 P12 P19 P15 P16 P10 P13 P30

TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN
P26 P22 P21 P20 P27 P23 P24 P25

TESTPIN TESTPIN TESTPIN TESTPIN TESTPIN   TESTPIN
P42 P40 P43 P46 P41   P45

I2C2SDA I2C2SDA
I2C2SCL I2C2SCL

MSPINT MSPINT T5

3.3V
R4730
2.2K
NO_STUFF

M1
Performance GPU
FANSINK
FAN

M2
Passive
HEATSINK_NV10
PASSIVE_HS

Micro-Star International Co., LTD.
MS-8882-P70-A03
Size Document Number   Rev
Custom   0A
                    NV17_DVI-I
Date: Thursday, May 02, 2002 Sheet 11 of 16

CE2-CE17 for EMI

FBVDDQ   FBVDD
2.8V

CE2
220p
SMD0603
NPO
5%
50V

CE3
220p
SMD0603
NPO
5%
50V

CE4
220p
SMD0603
NPO
5%
50V

CE5
220p
SMD0603
NPO
5%
50V

FM9 FM10 FM11 FM12 FM13 FM14 FM16 FM20 FM18 FM15 FM17 FM21 FM19 FM22 FM23

FM1 FM2 FM3 FM4 FM5 FM6 FM7 FM8

U902
MCTN-MT2032

VLNAn 1
GNDlna 2
VCClna 3
AVCClo1 4
AGNDlo1 5
NC 6
LO1tank1n 7
LO1tank1p 8
NC 9
LO1tank2n 10
LO1tank2p 11
NC 12
LO1tank3n 13
LO1tank3p 14
NC 15
LO1tank4n 16
LO1tank4p 17
NC 18
LO1tank5n 19
LO1tank5p 20

80 VLNAp
79 GNDlna
78 VCClna
77 NC
76 GNDmix1
75 MIX1on
74 MIX1op
73 VCCmix1
72 NC
71 VCCmix1
70 GNDomix2
69 VCComix2
68 VCCfmix2
67 MIX2np
66 MIX2inn
65 GNDfmix2
64 VSSmix2
63 FGAoutp
62 FGAoutn
61 VDDmix2

60 GNDcup
59 CUPtankp
58 CUPtankn
57 NC
56 NC
55 NC
54 VCCcup
53 CUPtune
52 NC
51 DGNDlo2
50 LBOcpump
49 NC
48 NC
47 DVCClo2
46 NC
45 NC
44 NC
43 NC
42 AFC
41 NC

21 NC
22 LO1tune
23 VSS3v
24 I2CA0
25 I2CA1
26 SDA
27 SCL
28 VDD2c
29 DVCClo1
30 LO1cpump
31 DGNDlo1
32 VSSsro
33 SROm
34 SROtp
35 VDDsro
36 VCCagc
37 DAGCin
38 GNDagc
39 NC
40 NC

MTIFOUTP 14
MTIFOUTN 14
MTAFC 14
MTAGC 14

8,15,16 TI2C2SDA
8,15,16 TI2C2SCL

VLN
VLN1
RFIN2
RFIN1
RFIN0

T1 TOKO-617DB1023
BAL1
BAL0
C3769 1000p
C3772 1000p

L2245 82nH N.I.
R4738 330 N.I.

C3767 22p
C3768 0.1u

C3774 68p
C3775 68p
C3776 1u
C3777 0.1u
C3778 22p

FC1
RF-D1
L2232 18n
L2233 18n
C3789 3p

C3779 0.68u-0805   R4740 47   LO0   LO1
C3781 0.68u-0805   R4741 47   LO2
R4743 47   LO3
R4744 47   LO4
R4745 47   LO5

C3791 0.68u-0805   LO6   R4747 200   C3792 0.68u-0805   LO7   C3793 22000P
R4749 27
C3794 0.1u   C3795 0.1u
SR1   SR0   VR1
Y901 5.25MHz
R4748 4.7K

C3761 33p 0603   BL3
C3762 33p 0603   BL4
R4736 22   R4737 22
TF1 B3910S B16022850 QCC88
BL1   BL2
BL5   R4735 100 N.I.
C3763 3.3p 0603   C3764 3.3p 0603
L2230 8.2n
BL7   BL8   BL9   BL10
C3765 22p   C3766 0.1u
GND

C3770 22p   C3771 0.1u

GNDcup 60
CUP0   R4739 47   CUP1   C3773 0.68u-0805

Dual layout with power inductor
10uH/1A GSRH4D28-100N

VCCTUNER   FLT1 0.1u   +5VA
IO2 IO1
GND GND
EC6 220u 10V
5402R02-053
C-DIP6025 10%

C3780 22p
C3782 22000P   R4742 200
LBO0   LBO1
C3783 0.68u-0805   C3784 0.68u-0805

DVC0
C3785 22p   C3786 1u   C3787 0.1u   C3788 4.7u-1206

AFC0   R4746 4.7K
C3790 0.1u

3.45x.25_LE5
3.45x.25_LE6

GND

JP1	VIF(MHz)	SIF(MHz)	TV System	Country
2-3 5-6	38.9	5.5	B/G	Europe
2-3	38.9	6.5	D/K	
2-3 4-5	38.9	6.0	I	U.K.
5-6	38.0	5.5	B/G	
	38.0	6.0	I	
4-5	38.0	6.5	D/K	
1-2 5-6	45.75	4.5	M/N	USA
1-2	38	4.5	M	
1-2 4-5	58.75	4.5	M	JAPAN

13 MTIFOUTP
13 MTIFOUTN

L2234
1u-1210
L2235
1u
N.D

FLT3
1x5-D-H06
VF3 IN+ OUT+ 4 VIF1
VF4 IN- OUT- 5 VIF2
GND 3
C3796
1p
GND

FLT5
IN+ OUT+ 4
IN- OUT- 5
GND 3
GND

JP1_1
JC-D2-GN-SB

JP1_2
JC-D2-GN-SB

U903
1 VIF1   VAGC 20 VAGC
2 VIF2   AFC 19   AFC
R4753 11K
R4754
FMP1 C3799 33000P
2.7K C3800 820p
3 TOP   VPLL 18 VPLL
4 FMPLL   VP 17
C3803 0.015u
5 DEEM   GND 16
R4757
AFD1 C3804 0.47u
0   C3806 0.1u
6 AFD   REF 15
7 FAGC   TAGC 14 TAGC
FAGC
8 AUD   CVBS 13 CVBS=2.0Vp-p   CVBS0
9 S0   TR 12   TR
10 S1   SIO 11
PH-TDA9880T

TOP
FMP
DEB
AFD
GND

S0
S1

GND GND
R4750 R4751
1.5K   150
N08
C3797 C3798
0.01u 220000P
+5VT
10u 16V
5402R02-053
C-DIP4520 10%
EC8
C3801 0.01u
GND
GND

REF C3805 REF0 Y902
GND 100p   4MHz(SMD) GND

+5VT
R4752
22K
MTAFC 13
R4755
13K
+5VT
C3802
0.1u
GND
GND

R4756
10K
R4758
33K
MTAGC 13
R4759
10K
C3807
0.01u
EC9
10u 16V
5402R02-053
C-DIP4520 10%
GND GND GND
C3808
0.1u

R4761 R4762
47K   47K
+5VT   GND GND +5VT
JP501
1 4
2 5
3 6
D2x3-BK
GND   GND

R4763
10K
GND

TVAUDIO 15,16
Vo(AF)=500mV(rms)

C3808
0.47u
R4760
3.3M
GND
SIF 15
SIF=49m(Vrms)

+5VT
C3809 EC10
0.1u   10u
DIP
Q904
NPN-B CMB-S
N06
R4764
75
R4766
220
GND
TVVIDEO 8

+5VT
FLT2
0.1u
IO2 IO1
GND 1
GND
3
EC7
100u
DIP
GND
+5VA
+5VT

Place close to TDA9880

Micro-Star International Co., LTD.
MS-8882-P70-A03
Size B
Document Number
TV-IF
Rev 0A
Date: Thursday, May 02, 2002
Sheet 14 of 16

EC21
10u
C3857
0.1u

14,16 TVAUDIO

AHVSS should be connected to ASG
to reduce cross coupling between
SCART input

EC29 10u
C3858 0.1u

Connect this ground
to VREF ground PIN

GND

Ground connection for
SIF input circuitry

GND

GND GND

5VD
L2246
10u

See SIF BPF Table

C3859 C3860
0.1u 1000p

EC23
10u

R4804 R4803
12K 470

U2223

C3862 51p
C3863 51p

GND

48 AVSS
47 MONO_IN
46 VREFTOP
45 SC1_IN_R
44 SC1_IN_L
43 ASG
42 SC2_IN_R
41 SC2_IN_L
40 ASG
39 NC
38 NC
37 NC
36 NC
35 NC
34 AGNDC
33 AHVSS

EC24 + 10u
3.7-7.7mA +8V

32 CAPL_M
31 AHVSUP
30 NC
29 SC1_OUT_L
28 SC1_OUT_R
27 VREF1
26 NC
25 NC
24 NC
23 NC
22 NC
21 DACM_L
20 DACM_R
19 VREF2
18 NC
17 NC

C3864 C3865 EC25
1000p 0.1u 10u

GND

VREF1 is served as a clean ground
for SCART output

C3813 1u SUB_L 16
C3815 1u SUB_R 16

C3812 C3814
1000p 1000p

VREF2 is a reference ground
for loudspeaker and headphone
output(DACMR/L)

SIF
SIF from
TV-IF

C3866 R4805
1000p 330

C3861
CZ
C3867 C3868 C3869
CW CX 0.01u

L2247 C3870 L2248 R4806
1uH 5% 0805 CY 1uH 5% 0805 3.9K

Q905
NPN-BC848B-S
SOT23
R4807
100

MSP34x5G-PMQFP64

49 AVSUP
50 ANA_IN+
51 ANA_IN-
52 NC
53 TESTEN
54 XTAL_IN
55 XTAL_OUT
56 TP
57 NC
58 NC
59 NC
60 D_CTR_I_OUT1
61 D_CTR_I_OUT0
62 ADR_SEL
63 STANDBYQ
64 NC

GND

Y2223
18.432MHz(SMD)

C3871 C3872
3.3p 3.3p

GND GND

11 MSPINT
R4809
0

R4810
GND
5VD 10K

GND

R4808
0

SIF BPF Table

SIF	CW	CX	CY	CZ
4.5M	1.5nF	1.5nF	8.2nF	NC
5.5M,6.0M 6.5M	910pF	470pF	3.9nF	390pF

1 I2C_SCL
2 I2C_SDA
3 I2S_CL
4 I2S_WS
5 I2S_DA_OUT
6 I2S_DA_IN1
7 ADR_DA
8 ADR_WS
9 ADR_CL
10 DV_SUP
11 DVSS
12 I2S_DA_IN2
13 NC
14 NC
15 NC
16 RESETQ

8,13,16 TI2C2SCL
8,13,16 TI2C2SDA

L2249
5VD 10u

EC26 C3873 C3874 C3875
10u 0.1u 1000p 100p

GND

GND
5VD

D3008
1N4148-S-LL34-75V

R4811
10K

EC27
10u

GND

5VD +5VP

L2250
10u
55-70mA

EC28 C3876
220u 0.1u

GND GND

5V

FB3
60_0805
L0805MS

REP

C3837
0.47u
C-0603SB

C3838
0.1u
C-0603SB

GND

5V

R4778
10K

IRDC364 - XTAL 12MHz for
NVMX11+SAA7108

IRDC366 - XTAL 16MHz for
SM2210+SAA7146

IRDC366 - XTAL 16MHz
for SAA7130, SAA7134

J901

2.5mm PHONEJACK

GND

5V

U906

	PB2	1		18	PB1	AUDIO_SEL1
	PB3	2		17	PB0	AUDIO_SEL0
8,13,15 TI2C2SCL	TCC	3		16	OSCI	
	/RESET	4		15	OSCO	R4780 1.5K
	VSS	5		14	VDD	
8,13,15 TI2C2SDA	PA0	6		13	PA7	
	PA1	7		12	PA6	5V
	PA2	8		11	PA5	
	PA3	9		10	PA4	AUDIO_MUTE

IRDC366

R4779
1K

C3843
1u

GND   GND

C3841 10%
30p
5404R28-019

Y904
16MHz(SMD)

C3842 10%
30p
5404R28-019

GND

14,15 TVAUDIO

EC19
4.7u-0805
TVAUDIO_L

EC20
4.7u-0805
TVAUDIO_R

J902

C3839   10%
33000P 16V
5404R24-030
AUDIO_IN_L

C3840
AUDIOIN_R

JACK+PHONE-D5
614R23-001 (LINE IN)

33000P
5404R24-030
16V
10%

GND

+5VP

U907

TVAUDIO_L	12	0X		X	13	XD
SUB_L	14	1X				
AUDIOIN_L	15	2X				
	11	3X				
TVAUDIO_R	1	0Y		Y	3	Y0
SUB_R	5	1Y				
AUDIOIN_R	2	2Y				
	4	3Y				
AUDIO_SEL0	10	A				
AUDIO_SEL1	9	B		VEE	7	
AUDIO_MUTE	6	INH		GND	8	

74HCT4052

VCC 16

GND

R4784 1K

R4785 1K

R4781
47 5%
5424R20-017

R4782
100   5%
5424R20-025
X2

R4783
150   5%
5424R20-029
X3

STEREOL

C3844
33000P
16V   10%
5404R24-030

C3845
0.015u
50V   10%
5404R28-023

C3846
6800P
10%
5404R28-019

GND

J903

JACK+PHONE-D5
614R23-001

C3847
0.1u

GND

GND

R4786
47 5%
5424R20-017
C3848
0.1u

R4787
100   5%
5424R20-025
Y2

R4788
150   5%
5424R20-029
Y3

STEREOR

C3849
33000P
16V   10%
5404R24-030

C3850
0.015u
50V   10%
5404R28-023

C3851
6800P
10%
5404R28-019

GND

GND

Micro-Star International Co., LTD.

MS-8882-P70-A03

Size B	Document Number	Rev 0A
	AUDIO & REMOTE	
Date:	Thursday, May 02, 2002	Sheet 16 of 16