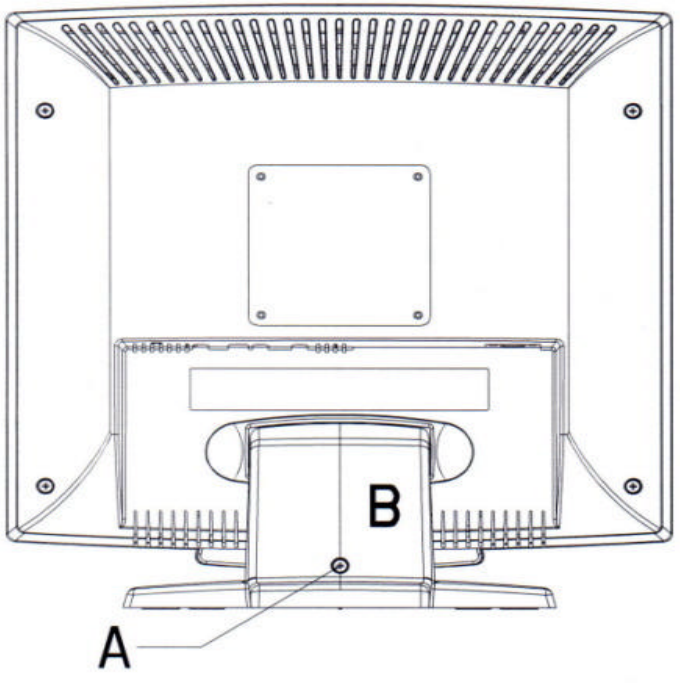
L7CMS/L7CMT

Tatung LCD Monitors

Service Manual



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1. Precautions and Notices

1.1 Safety Precautions

Although LCD monitors are displays without high voltage as that in the CRTs, the following precautions still should be take care of.

1) Observe all cautions and safety related notes located inside the display cabinet and on the display chassis.
2) Operation of these displays outside the cabinet or with the cover removed involves a shock hazard from the display backlight' s inverter. Work on the display should not be attempted by anyone who is not thoroughly familiar with precautions necessary when working on high voltage equipment.
3) Before returning a serviced display to the customer, a thorough safety test must be performed to verify that the display is safe to operate without danger or shock.

1.2 Product Safety Notice

1) Many electrical and mechanical parts in this chassis provide special visual safety protection. The protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.
2) Before replacing any of these components, read the parts list manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics, as specified in the parts list may create shock, fire or other hazards.

1.3 Service Notes

1) When replacing parts or circuit boards, wrap the wires around terminals before soldering.
2) Keep wires away from high temperature components.
3) Keep cable and their shielding in their original position so as to reduce interference.

2. Specifications

2.1 Monitor Specification

LCD Module	17-in, active matrix TFT, anti-glare coating, 0.264 mm pixel pitch
Display Size	337.9 mm x 270.3 mm
Viewing Angle	
Left/Right	80° / 80°(Typical)
Up/Down	40° /80°(Typical)
Luminance	250 cd/m^2 (Typical)
Contrast Ratio	400 : 1 (Typical)
Display Colors	16.7 million
Power Input	100 ~ 240 V_{AC} Full Range, 50/60 Hz (External AC adapter)
Maximum power consumption	< 45W
Signal Input	
Video Signal	RGB positive 0.7V_{PP}, 75ohm
Sync signals	Separate & Composite, TTL Level
Line (horizontal) frequency	31.5 kHz ~ 80 kHz
Raster (vertical) frequency	56 Hz ~ 75 Hz
Pixel dot clock	135 MHz (maximum)
Recommended mode	1280 x 1024 @ 60 Hz
Pedestal tilt	20° forward, -5°backward
Dimensions (W x H x D)	424 x 438 x 86 mm (without base)
Weight	7.0 kg
Operating Conditions	
Temperature	5° ~ 40°C at altitude 0 ~ 2000m 5° ~ 30°C at altitude 2000 ~ 3000m
Humidity	20% ~ 85% RH, non-condensing
Altitude	3000m Max.
Storage Conditions	
Temperature	-20° ~ 60°C
Humidity	5% ~ 95% RH
Altitude	10000m Max.

2.2– Analog Inputs

Mode No.	Mode Name Resolution	H.Freq.(KHZ) V.Freq.(HZ)	H. Polarity V. Polarity	Pixel CLK (MHZ)
1	VGA 60HZ 640*480	31.469 59.941	— —	25.175
2	VGA 72HZ 640*480	37.804 72.81	— —	31.5
3	VGA 75HZ 640*480	37.5 75.0	— —	31.5
4	SVGA 56HZ 800*600	35.156 56.25	+ +	36.0
5	SVGA 60HZ 800*600	37.879 60.317	+ +	40.0
6	SVGA 72HZ 800*600	48.077 72.188	+ +	50.0
7	SVGA 75HZ 800*600	46.875 75.0	+ +	49.5
8	XGA 60HZ 1024*768	48.363 60.004	— —	65.0
9	XGA 70HZ 1024*768	56.476 70.069	— —	75.0
10	XGA 75HZ 1024*768	60.023 75.029	+ +	78.75
11	SXGA 60HZ 1280*1024	63.981 60.020	+ +	108
12	SXGA 75HZ 1280*1024	79.976 75.025	+ +	135
13	MAC SVGA 640*480	35.0 66.667	— —	30.24
14	MAC SVGA 832*624	493725 74.550	— —	57.283
15	US TEXT 720*400	31.469 70.087	— +	28.322
16	VGA 70HZ 640*350	31.469 70.087	+ —	25.175

Note: ***The display is capable of going beyond these recommended modes.***

3. Control Buttons and Functions

There are four control buttons located at the lower part of the front panel of your display:

⇨ **POWER**: Push to turn on or turn off the display. The power indicator (Green) will light while the display is on.

⇨ **Select**: Display the On-Screen Display (OSD) "**Main Menu**" , selects items for user adjustment, and execute the function selected.

Note: ***Hold down this key for 2 seconds will clear OSD menu.***

⇨ **Up(△)**: Move upward through the choice in the OSD submenu. If an adjustment bar is displayed, this button increases the setting value.

Note: ***This key is also used as 'direct key' to bring-up OSD "Audio Menu".***

⇨ **Down(▽)**: Move downward through the choice in the OSD submenu. If an adjustment bar is displayed, this button decreases the setting value.

Note: ***This key is also used as 'direct key'. When the OSD "Main Menu" is inactive, press this key will execute 'Auto Setup' function.***

Detail contral function please reference User's Manual

4. Disassembly Instructions

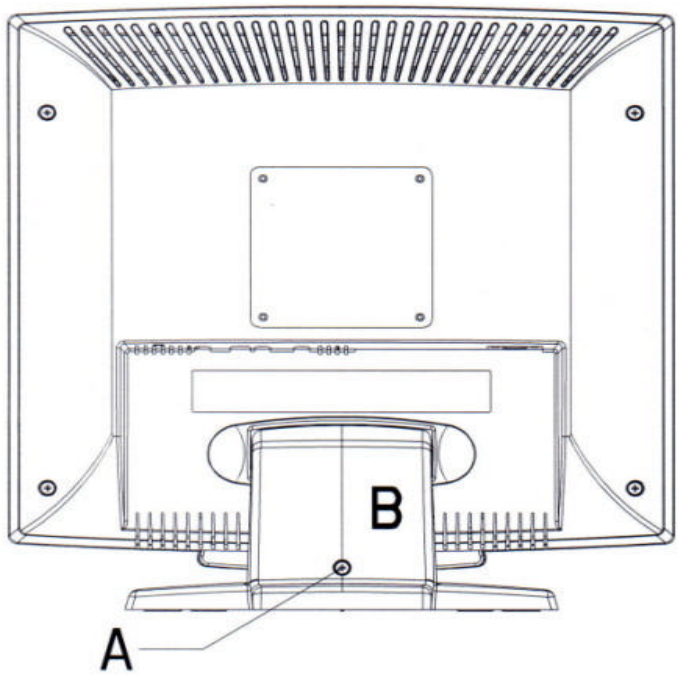
To disassembly the monitor, follow the steps as below:

1) Face Down the Monitor.

Note: ***Face down the monitor on a smooth plane with a soft material on that plane to protect the panel faceplate.***

2) Hinge Cover Removal

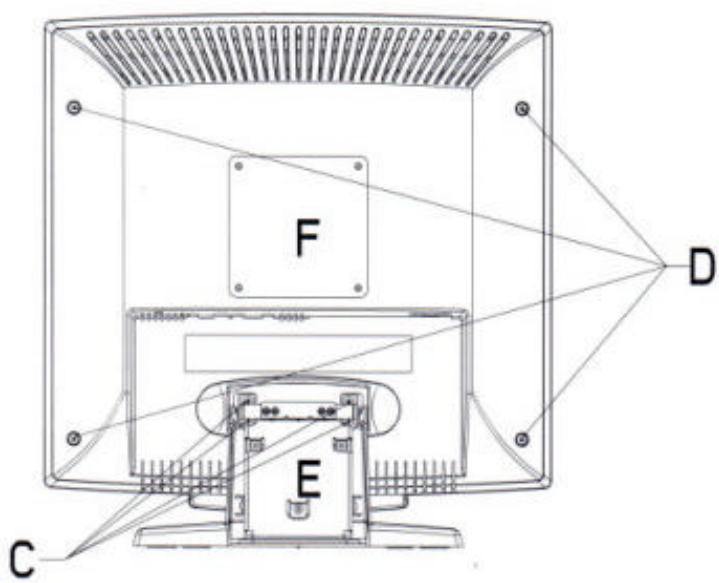
As below, remove the screw indicated by "A" from the hinge cover, and then remove the hinge cover (indicated by "B") for the base.



3) Base and Back Cover Removal:

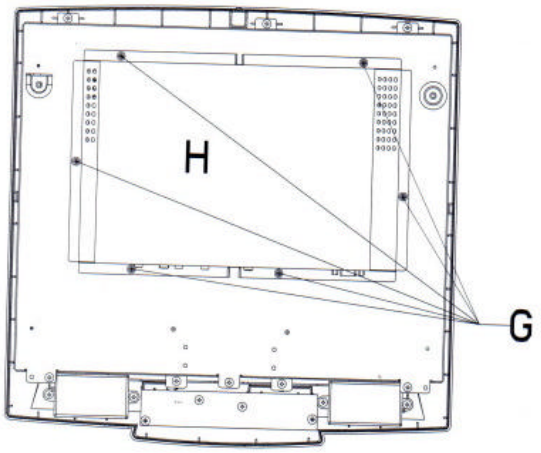
As below, after removing the hinge cover, there will be 4 screws (indicated by “C”), and remove them. Then you can remove the whole base of the monitor.

Remove 4 screws indicated as “D” of the back cover. Then remove the back cover with care .



4) Metallic Cover Removal:

Remove 6 screws indicated as “G” from the back metallic cover. Then remove the back metallic cover.



5) PCB Assembly Removal:

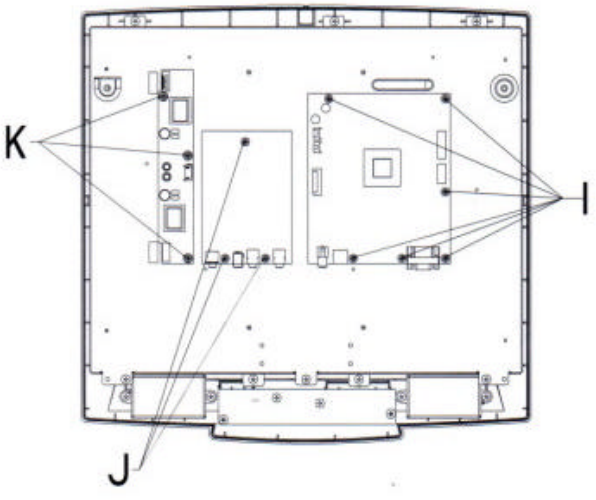
Caution: ***When serving or replacing the panel, disconnect the DC power jack completely.***

(a) Unplug all connected wires from the PCB.

(b) Remove 3 screws indicated as “K” from the inverter board, and then remove the board carefully.

(c) Remove 2 screws indicated as “J” from the audio board, and then remove the board carefully.

(d) Remove 7 screws indicated as “I” from the main board connected with front cover.



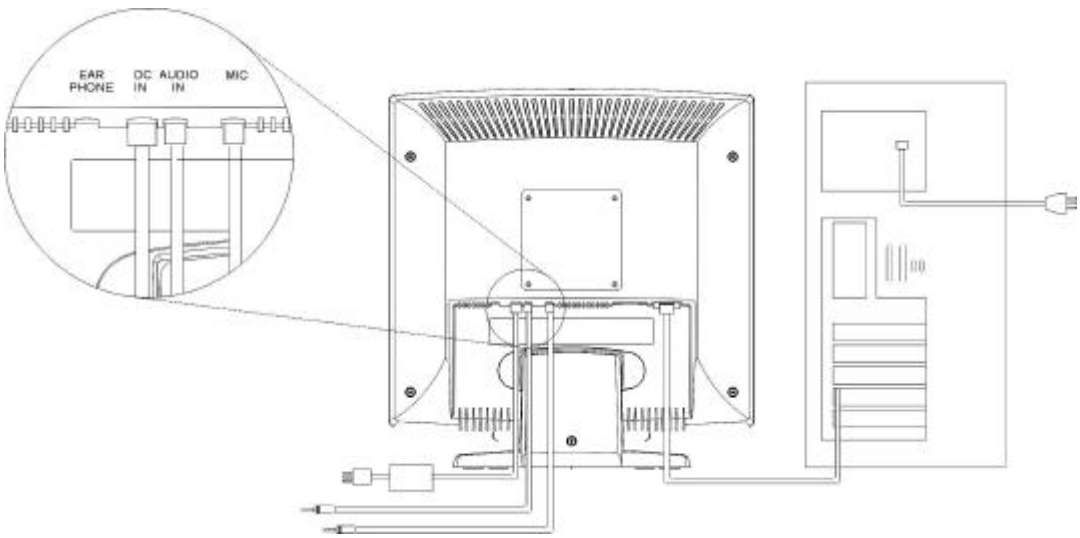
5. General Connection and Applications

Procedures for installing and using this CML171SX LCD monitor are described as below.

5.1 Connecting the monitor to the computer

1) Place the display on a flat, sturdy surface. Choose an area free from excessive heat, moisture, and sunlight. Avoid possible sources of electromagnetic interference, such as transformers, motors, and fluorescent lighting.

2) Locate the AC power adapter with attached power cable and then connect the power cable to the power jack on the back of the display. Plug the three-prong power cord into a power outlet, and plug the other end into the AC power adapter. The three-prong power cord is a shielded type and is provided as a safety precautions to ensure proper electrical grounding.



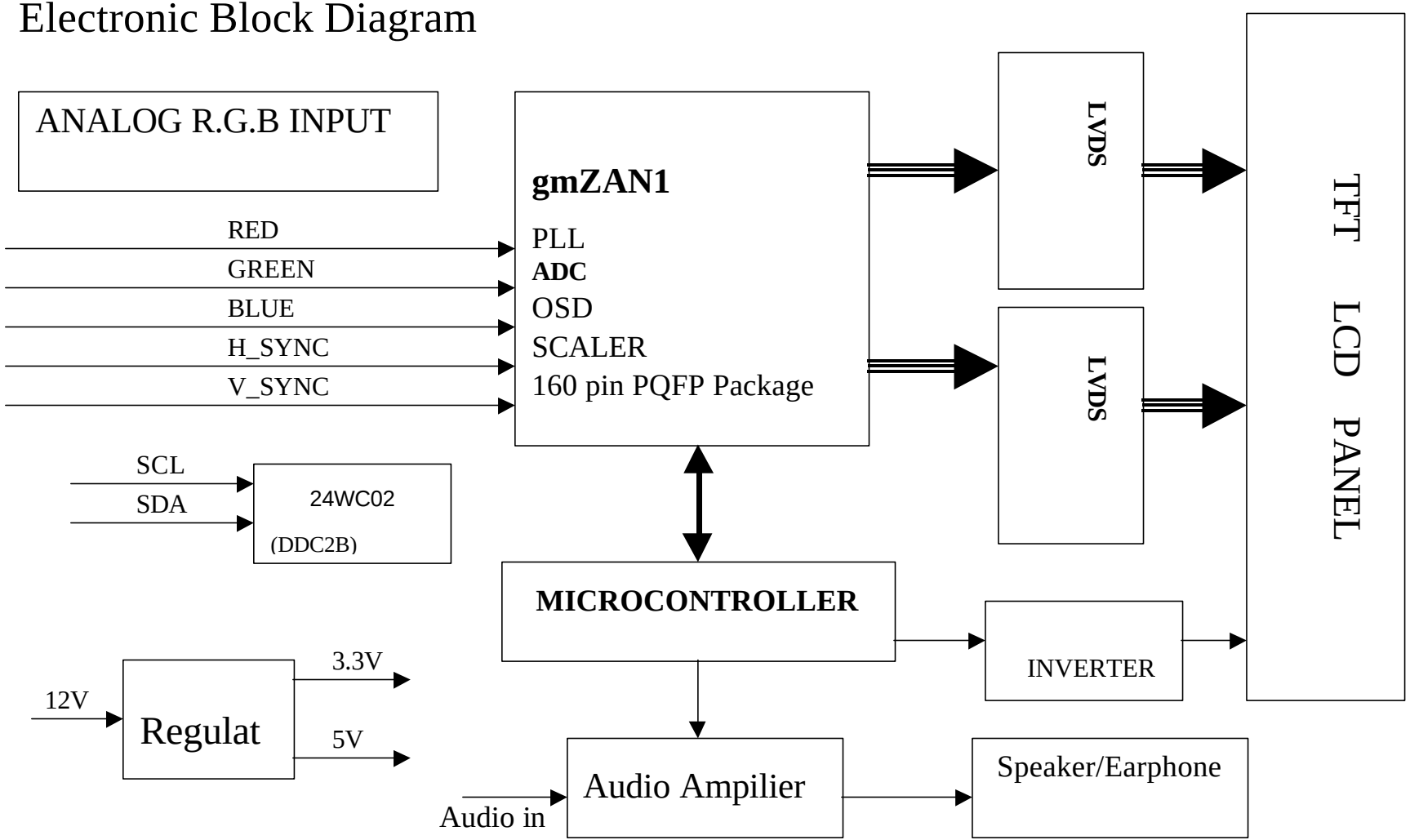
Plug the D-SUB 15-pin analog signal cable into the Analog Input port on the back of the display. Connect the other end of the signal cable into your computer's VGA output port. The assignment of the pins of the connector is as follows:

Pin Assignment of 15-pin D-SUB connector			
1	Red Video	9	+5V for DDC circuit
2	Green Video	10	Logic Ground
3	Blue Video	11	Monitor Ground
4	Monitor Ground	12	DDC-Serial Data
5	DDC-Return	13	H-Sync.
6	Red Ground	14	V-Sync.
7	Green Ground	15	DDC-Serial Clock
8	Blue Ground		

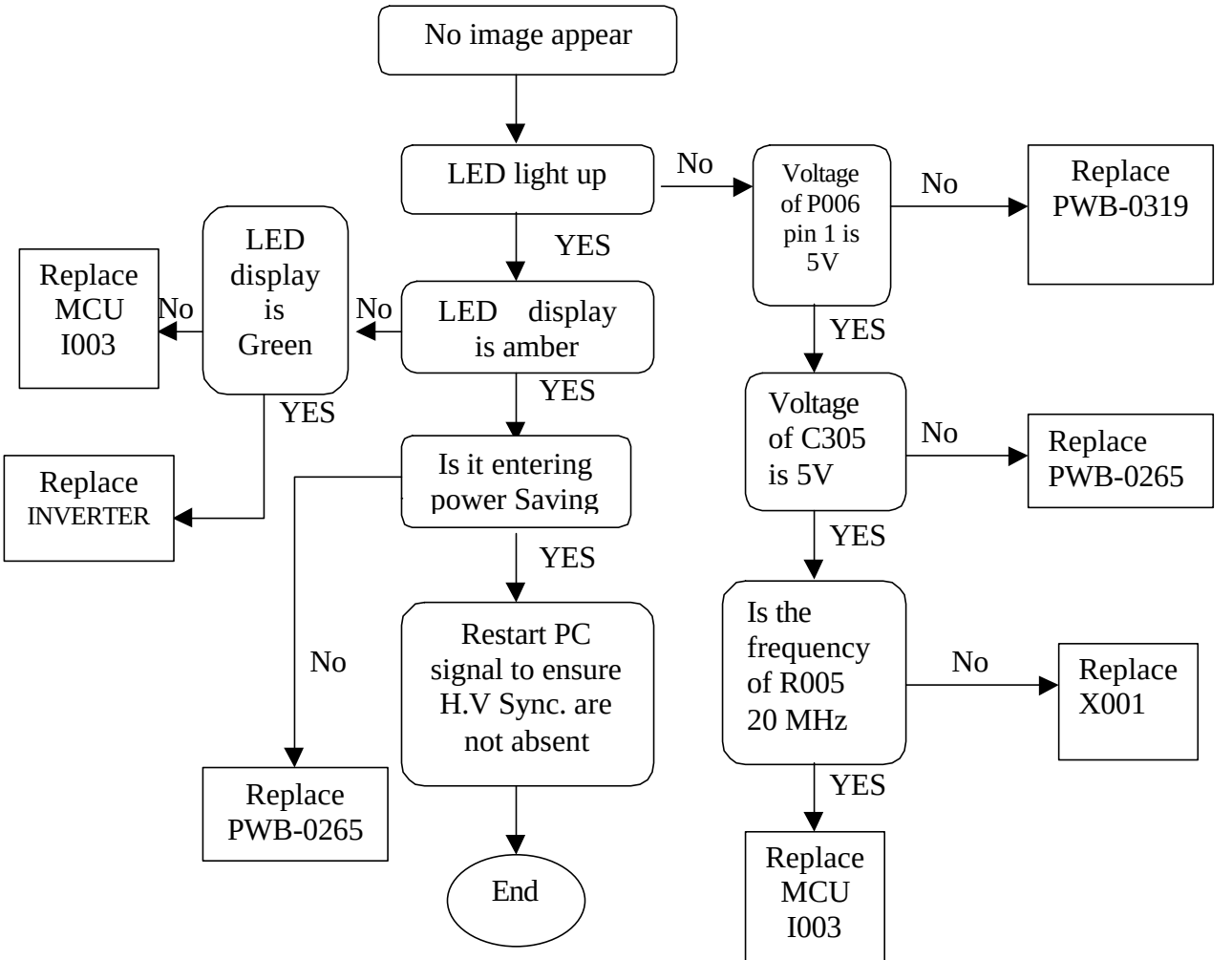
3) First turn the PC power switch ON. Then apply power to the display by pressing the power button to turn the monitor on. The power indicator LED will then illuminate.

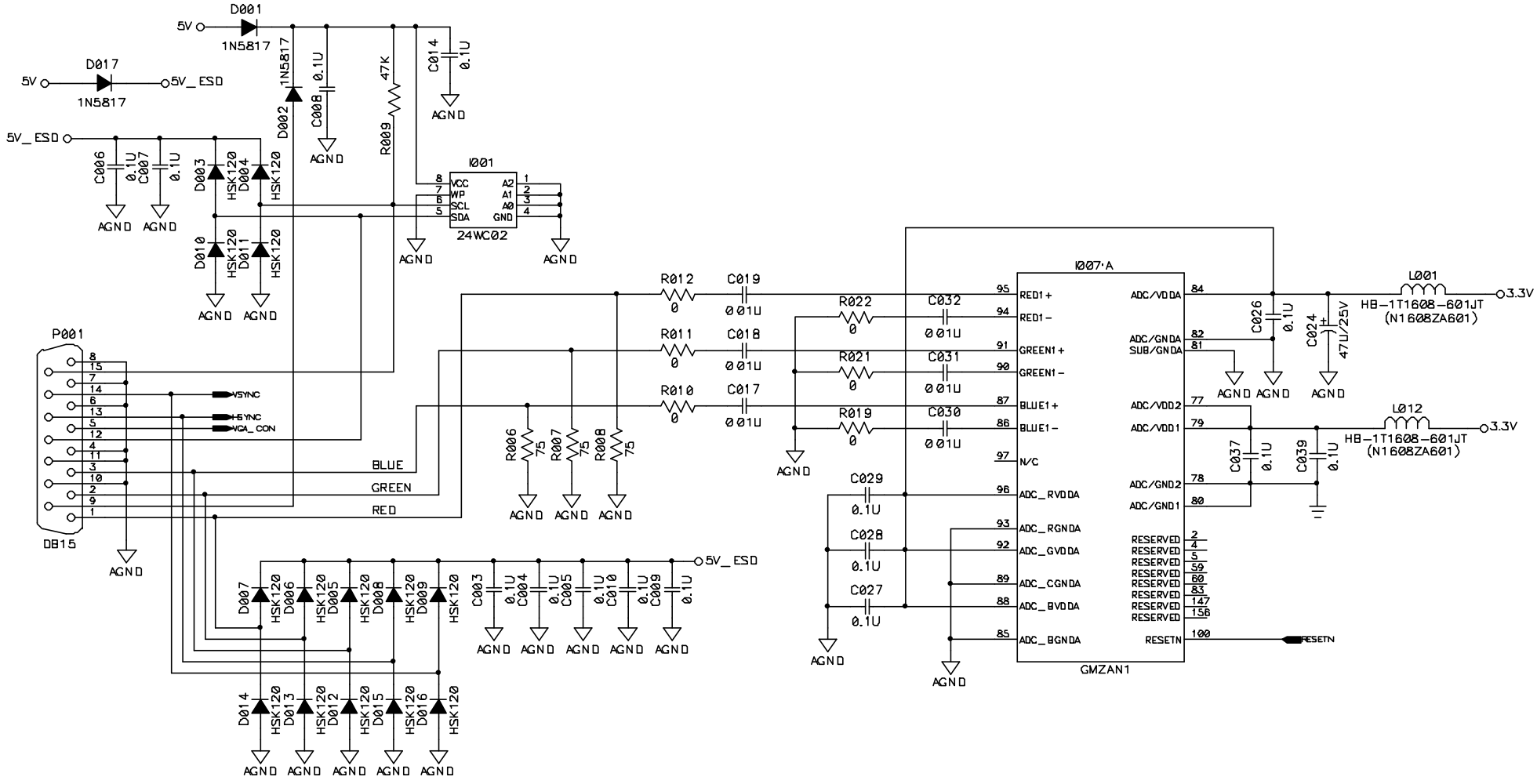
Note: ***Do not force the cable into the connector; line it up carefully so that you don't bend the pins.***

6. Electronic Block Diagram



Troubleshooting Flow Chart





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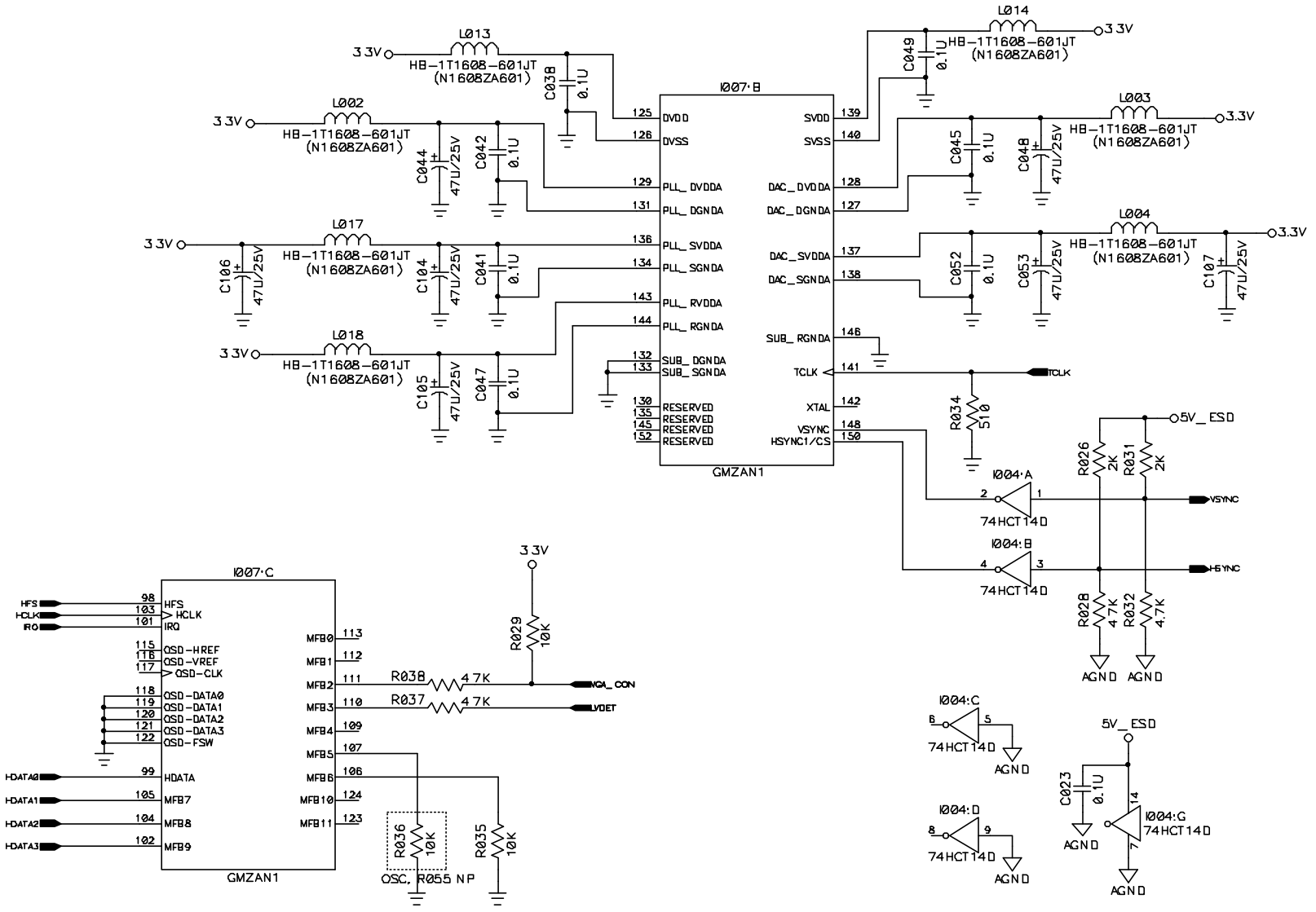
Filename PWB-0265-01.sch		Sheet 1 of 6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L002
L003
L017
L004
L018
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C049
C044
C042
C045
C048
C106
C104
C041
C052
C053
C107
C105
C047
0.1U
47U/25V
I007:B
DVDD
DVSS
PLL_DVDDA
PLL_DGNDA
PLL_SVDDA
PLL_SGNDA
PLL_RVDDA
PLL_RGNDA
SUB_DGNDA
SUB_SGNDA
RESERVED
SVDD
SVSS
DAC_DVDDA
DAC_DGNDA
DAC_SVDDA
DAC_SGNDA
SUB_RGNDA
TCLK
XTAL
VSYNC
HSYNC1/CS
GMZAN1
R034
510
I004:A
I004:B
74HCT14D
R026
R031
2K
5V_ESD
VSYNC
HSYNC
R028
R032
4.7K
AGND
I007:C
HFS
HCLK
IRQ
OSD-HREF
OSD-VREF
OSD-CLK
OSD-DATA0
OSD-DATA1
OSD-DATA2
OSD-DATA3
OSD-FSW
HDATA
MFB7
MFB8
MFB9
MFB0
MFB1
MFB2
MFB3
MFB4
MFB5
MFB6
MFB10
MFB11
R029
10K
R038
R037
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LVDET
R036
R035
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I004:D
I004:E
I004:F
I004:G
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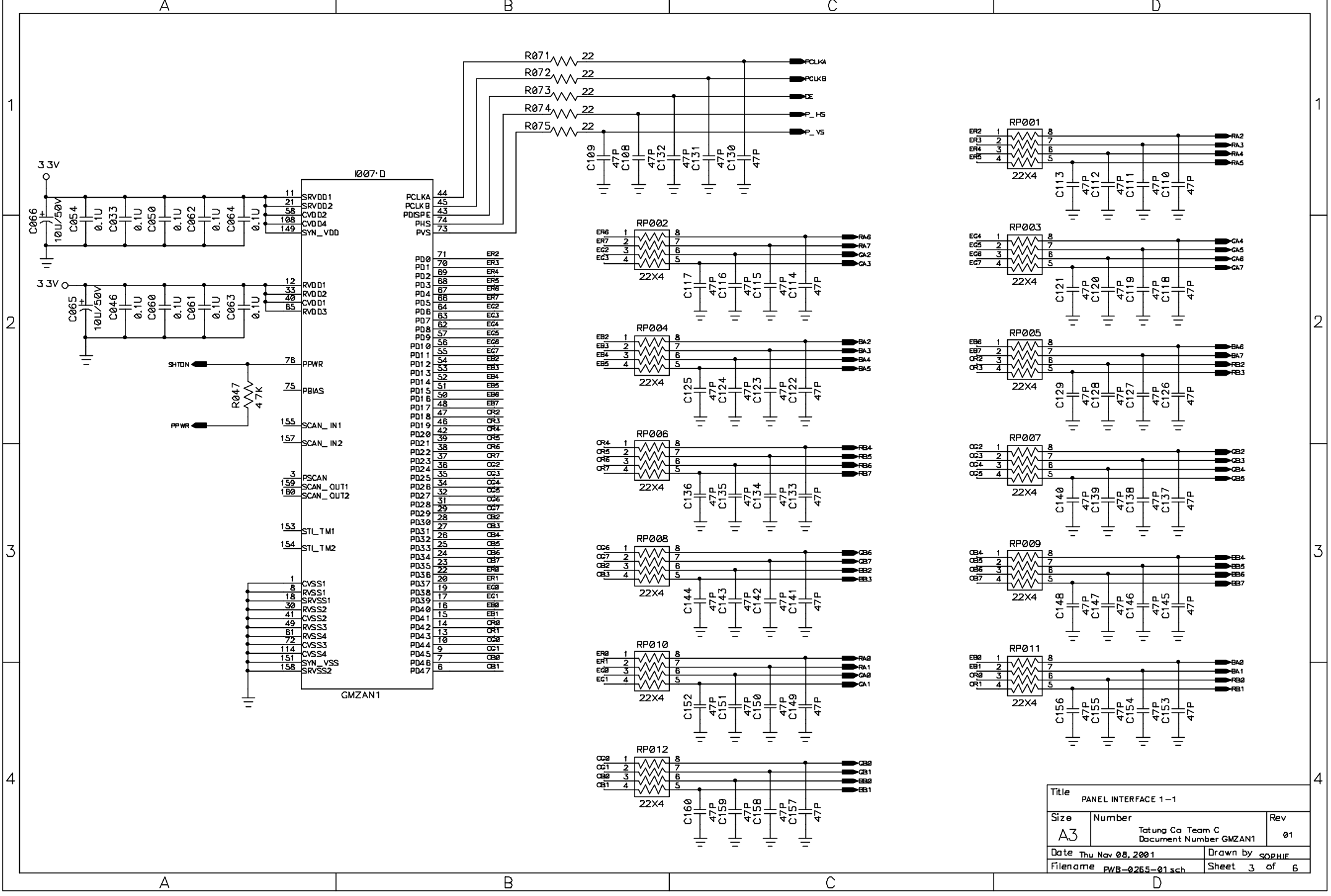
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C046 0.1U
C060 0.1U
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C063 0.1U
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PPWR
R047 47K
I007-D
GMZAN1
SRVDD1
SRVDD2
CVDD2
CVDD4
SYN_VDD
RVDD1
RVDD2
CVDD1
RVDD3
PPWR
PBIAS
SCAN_IN1
SCAN_IN2
PSCAN
SCAN_OUT1
SCAN_OUT2
STI_TM1
STI_TM2
CVSS1
RVSS1
SRVSS1
RVSS2
CVSS2
RVSS3
RVSS4
CVSS3
CVSS4
SYN_VSS
SRVSS2
PCLKA
PCLKB
PDISPE
PHS
PVS
PD0 PD1 PD2 PD3 PD4 PD5 PD6 PD7 PD8 PD9 PD10 PD11 PD12 PD13 PD14 PD15 PD16 PD17 PD18 PD19 PD20 PD21 PD22 PD23 PD24 PD25 PD26 PD27 PD28 PD29 PD30 PD31 PD32 PD33 PD34 PD35 PD36 PD37 PD38 PD39 PD40 PD41 PD42 PD43 PD44 PD45 PD46 PD47
ER2 ER3 ER4 ER5 ER6 ER7 EG2 EG3 EG4 EG5 EG6 EG7 EB2 EB3 EB4 EB5 EB6 EB7 CR2 CR3 CR4 CR5 CR6 CR7 CG2 CG3 CG4 CG5 CG6 CG7 CB2 CB3 CB4 CB5 CB6 CB7 ER0 ER1 EG0 EG1 EB0 EB1 CR0 CR1 CG0 CG1 CB0 CB1
R071 22
R072 22
R073 22
R074 22
R075 22
PCLKA
PCLKB
DE
P_HS
P_VS
C109 47P
C108 47P
C132 47P
C131 47P
C130 47P
RP001
RP002
RP003
RP004
RP005
RP006
RP007
RP008
RP009
RP010
RP011
RP012
22X4
RA2 RA3 RA4 RA5
RA6 RA7 CA2 CA3
CA4 CA5 CA6 CA7
BA2 BA3 BA4 BA5
BA6 BA7 RB2 RB3
RB4 RB5 RB6 RB7
CB2 CB3 CB4 CB5
CB6 CB7 EB2 EB3
EB4 EB5 EB6 EB7
RA0 RA1 CA0 CA1
CB0 CB1 EB0 EB1
BA0 BA1 RB0 RB1
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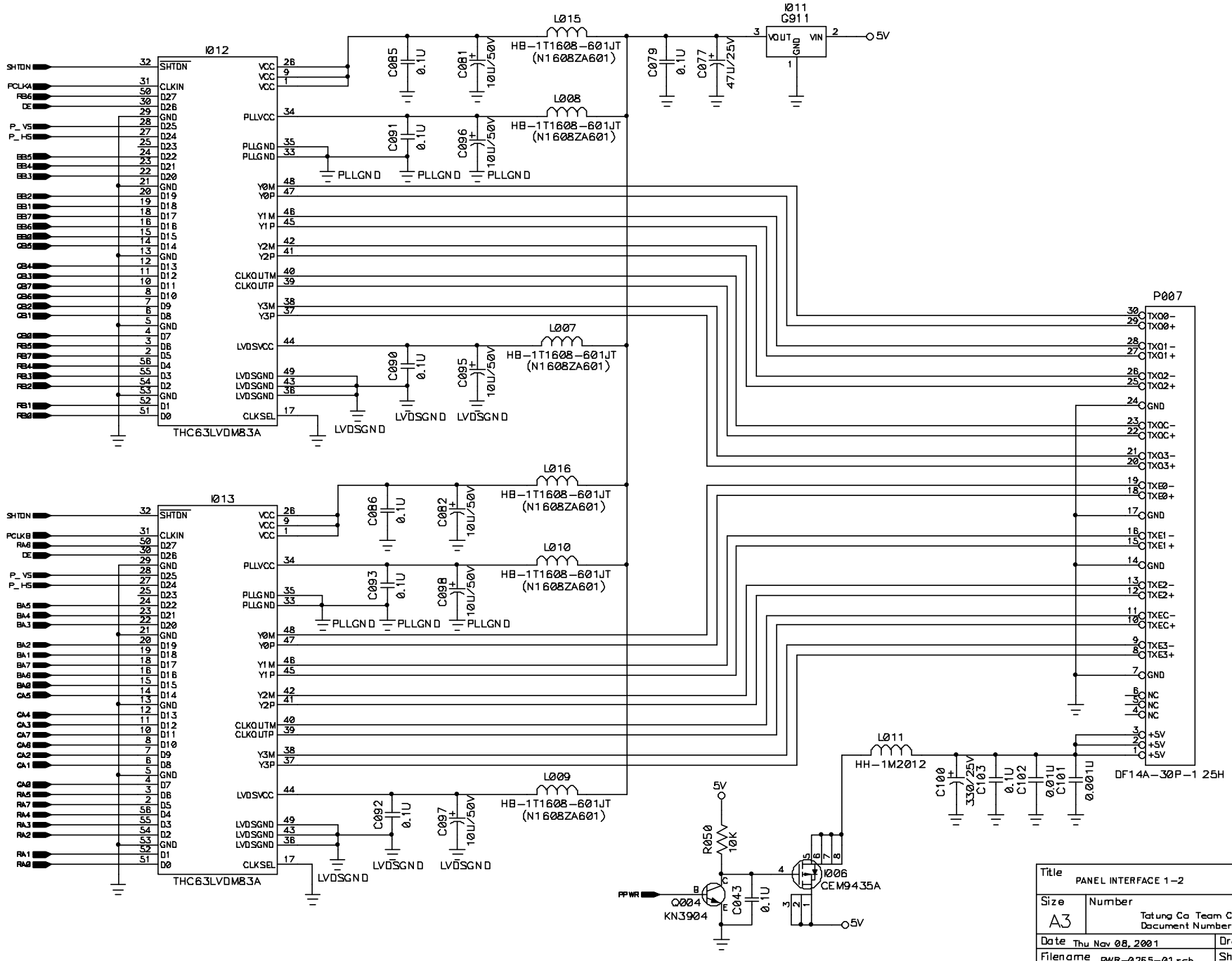
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L016
L010
L009
I011
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C085
0.1U
C081
10U/50V
C079
C077
47U/25V
C091
C096
C090
C095
C086
C082
C093
C098
C092
C097
LVDSGND
PLLGND
P007
DF14A-30P-1.25H
L011
HH-1M2012
C100
330/25V
C103
C102
C101
0.001U
R050
10K
Q004
KN3904
C043
I006
CEM9435A
PPWR
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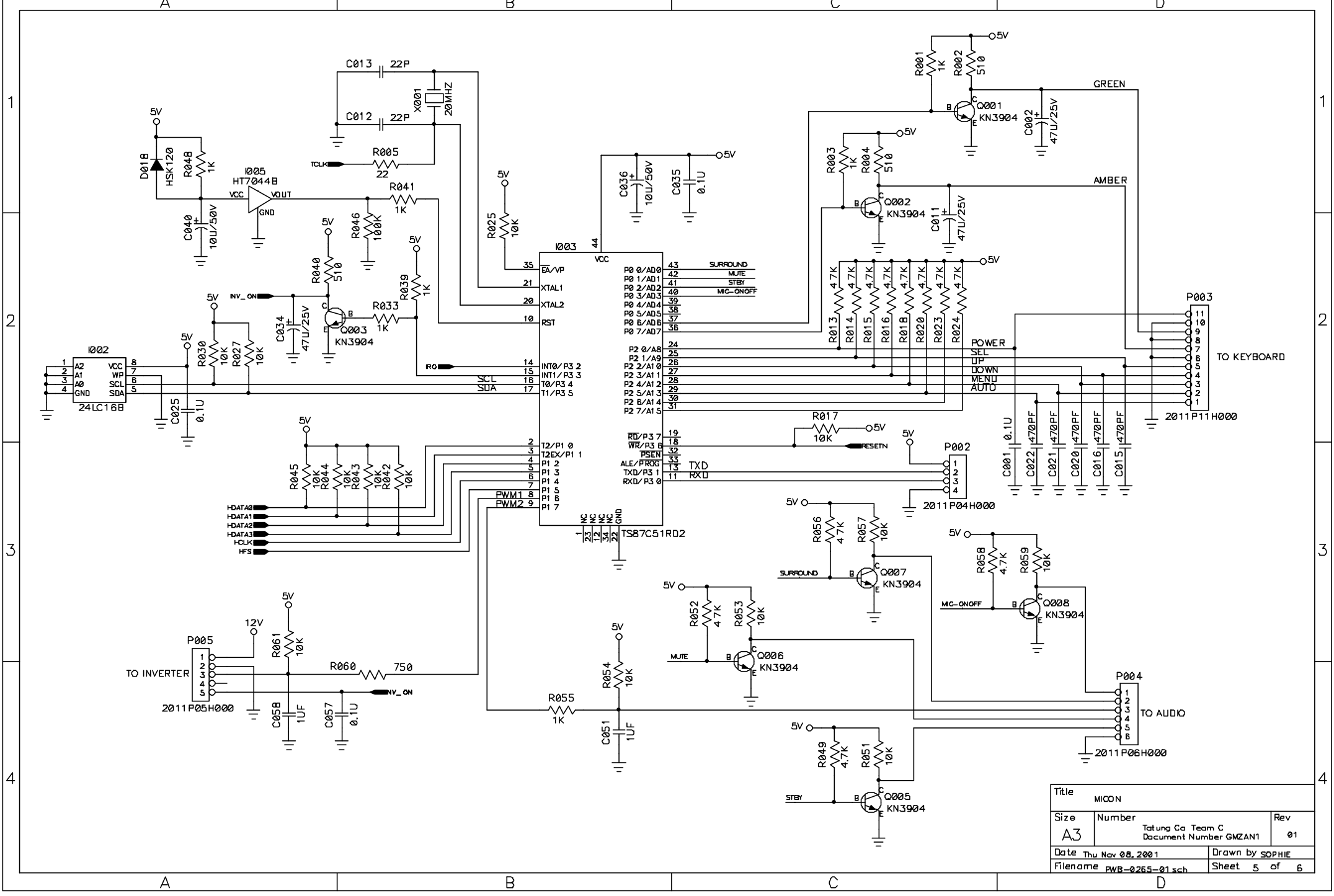
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C012 22P
X001 20MHZ
TCLK
R005 22
D018 HSK120
R048 1K
I005 HT7044B
VCC VOUT GND
R041 1K
C040 10U/50V
R046 100K
R040 510
R039 1K
R033 1K
Q003 KN3904
INV_ON
C034 47U/25V
I002 24LC16B
R030 10K
R027 10K
C025 0.1U
R025 10K
C036 10U/50V
C035 0.1U
I003 TS87C51RD2
EA/VP
XTAL1
XTAL2
RST
INT0/P3.2
INT1/P3.3
T0/P3.4
T1/P3.5
SCL
SDA
IRQ
T2/P1.0
T2EX/P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
PWM1
PWM2
RD/P3.7
WR/P3.6
PSEN
ALE/PROG
TXD/P3.1
RXD/P3.0
TXD
RXD
P0.0/AD0 SURROUND
P0.1/AD1 MUTE
P0.2/AD2 STBY
P0.3/AD3 MIC-ONOFF
P0.4/AD4
P0.5/AD5
P0.6/AD6
P0.7/AD7
P2.0/A8
P2.1/A9
P2.2/A10
P2.3/A11
P2.4/A12
P2.5/A13
P2.6/A14
P2.7/A15
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R044 10K
R043 10K
R042 10K
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HDATA1
HDATA2
HDATA3
HCLK
HFS
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RESETN
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R001 1K
R002 510
Q001 KN3904
C002 47U/25V
GREEN
R003 1K
R004 510
Q002 KN3904
C011 47U/25V
AMBER
R013 4.7K
R014 4.7K
R015 4.7K
R016 4.7K
R018 4.7K
R020 4.7K
R023 4.7K
R024 4.7K
POWER
SEL
UP
DOWN
MENU
AUTO
P003 2011P11H000
TO KEYBOARD
C001 0.1U
C022 470PF
C021 470PF
C020 470PF
C016 470PF
C015 470PF
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Q007 KN3904
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R058 4.7K
R059 10K
Q008 KN3904
MIC-ONOFF
R052 4.7K
R053 10K
Q006 KN3904
MUTE
R054 10K
C051 1UF
R055 1K
R049 4.7K
R051 10K
Q005 KN3904
STBY
P004 2011P06H000
TO AUDIO
P005 2011P05H000
TO INVERTER
12V
R061 10K
R060 750
C058 1UF
C057 0.1U
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Date Thu Nov 08, 2001
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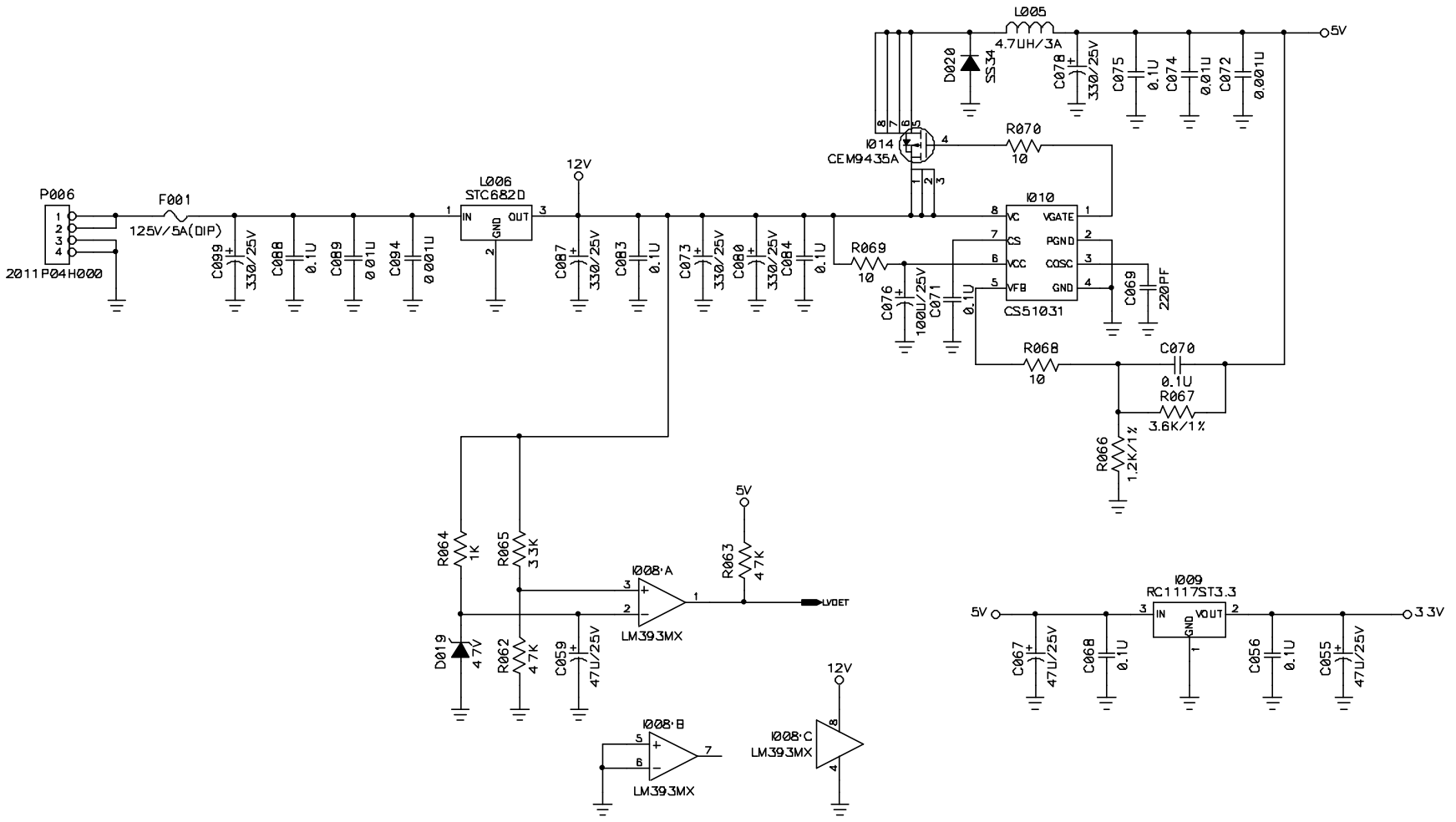

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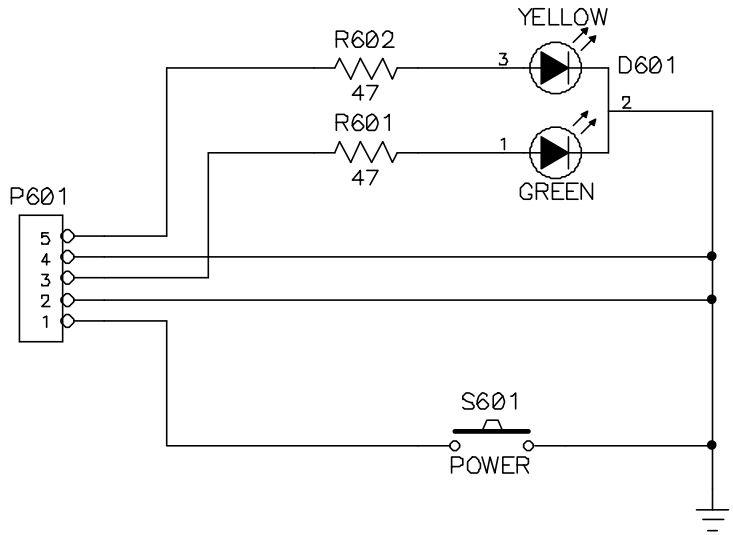

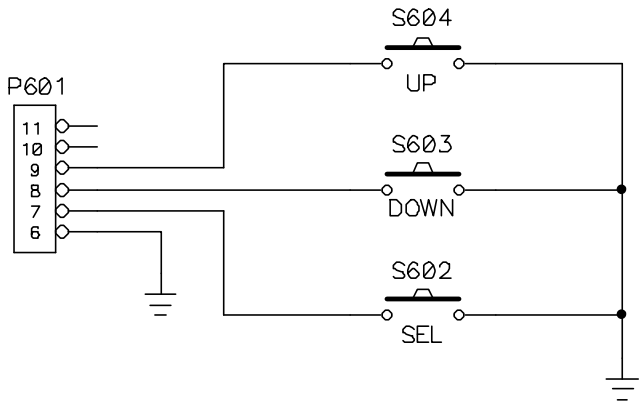

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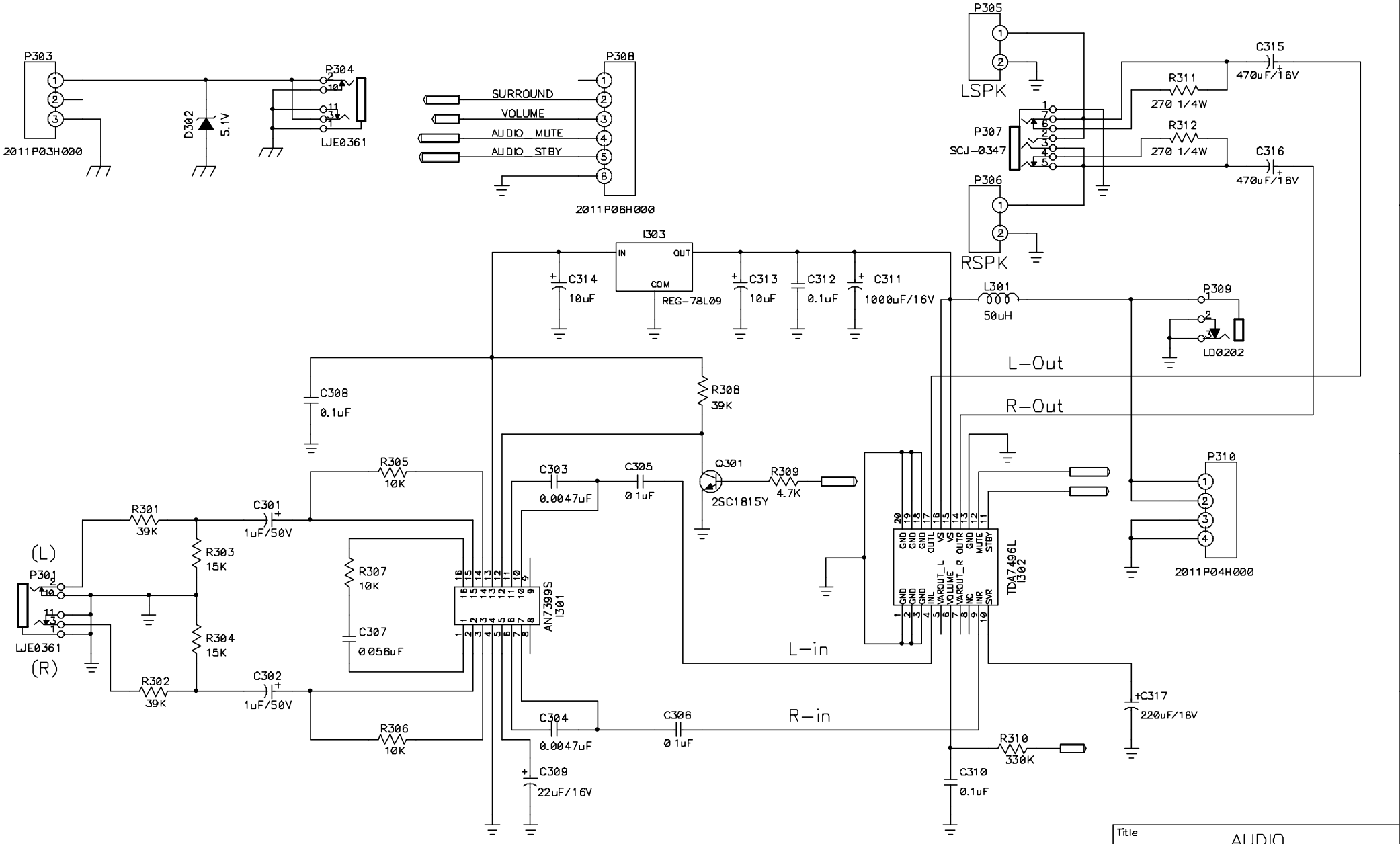

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Appendix E.

MECHANICAL DISASSEMBLY

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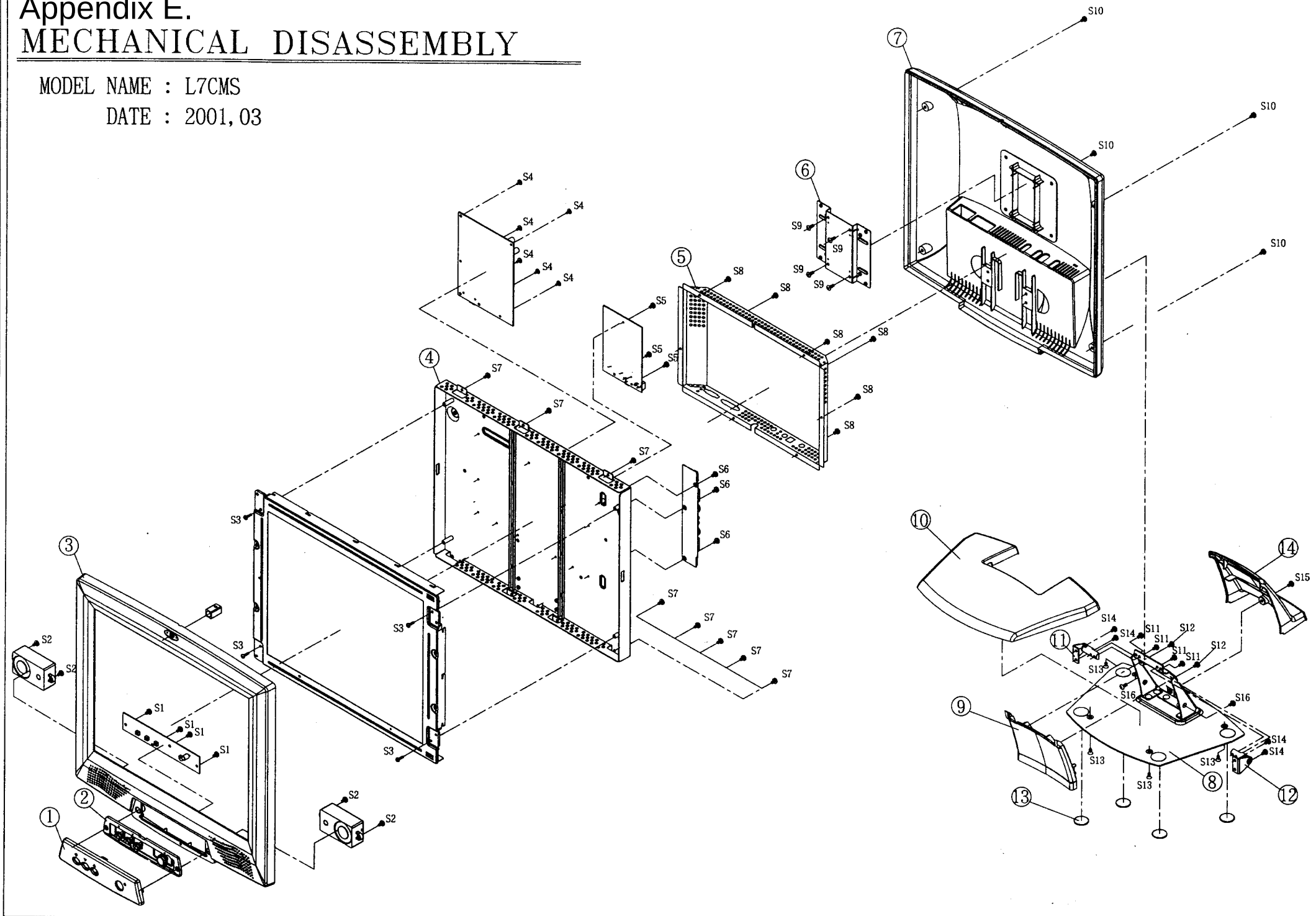
DATE : 2001, 03



APPENDIX F.

Service parts

Description	Part Number
WIRE ASS'Y SIGNAL CABLE	5057415162
AC/DC ADAPTOR	5061369403
PPOWER CORD,Europe	5056705939
POWER CORD,UK	5056705992
WIRE ASS'Y W/05P CONN.	5057405110
Inverter Assembly	5000100023
ASSEMBLY,PCB-MAIN	5097699603
ASSEMBLY,PCB-AUDIO BOARD	5097699704
ASSEMBLY,PCB-KEY BOARD	5097699803
QUICK TIE,PVC	5071000510
AUDIO SIGNAL CABLE	5057402323
Microphone Wire Ass'y	5055120001
WIRE ASS'Y 6PIN CONNECTOR	5057406127
WIRE ASS'Y 30PIN CONNECTOR	5057430002
Speaker Box Ass'y	5055120200
MODEL LABEL	5030434421
USER'S MANUAL	5030034701
BRACKET-LCD	5642720700
BRACKET SMIELD	5646248800
SCREW,PRWS M3.0x06 S-ZN-Cc	7136160652
SCREW ISO PPW M3.0X06 S-ZN-CC	7000311032
TAPE OF AL FOIL	5648006502
SCREW ISO PPW M3.0X10 S-ZN-CC	7000311042
BASE #31455	5642283002
SCREW BFB M4.0X08 S-ZN-CC	7034251152
NECK-F #31455	5642282802
SCREW,PZP M4.0X10	7134251482
SCREW ISO PP M4.0X06 S-ZN-CC	7001260612
NECK-B #31455	5642282902
SCREW,PZS M4.0x08 S-PC	7134251156
NECK BRACKET	5642721200
RUBBER FOOT	5642025400
HINGE-L	5642721400
SCREW MS CROSS PANHEAD SW	7190030022
HINGE-R	5642721500
SCREW MS CROSS PANHEAD SW	7190030022
FRONT COVER(TATUNG)#31455	5642282600
SCREW,PZP M4.0X10	7134251482
FRONT PANEL #31455	5642381702
BUTTON-4KEY #31455	5642842900
SCREW,PZP M4.0X10	7134251482
VISA MOUNT BRACKET	5642721300
SCREW,PZP M4.0X10	7134251482
BACK COVER #31455	5642282702
SCREW,PZS M4.0x08 S-PC	7134251156
SCREW,PZS M4.0x10 ZN-BLK	7134251456
DECORTING PLATE (#31455)	5642417203
RS CARTON L7CMS (NATURAL)	9513050156
EPS PAD-L L7CM	9523050156
EPS PAD-R L7CM	9523050256
PE BAG	9533020256
TCO99 LOGO	5635582100
TCO 99 LABEL 紙箱	5635578602