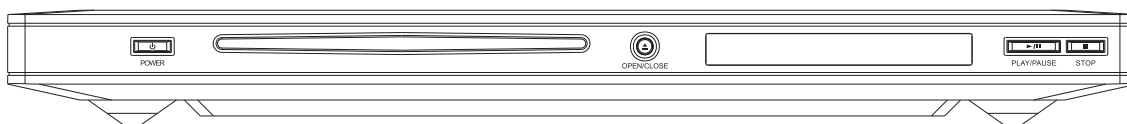


# SERVICE MANUAL

## DV975S



# CONTENTS

---

1.	SAFETY PRECAUTIONS .....	1
2.	PREVENTION OF ELECTRO STATIC DISCHARGE(ESD)TO ELECTROSTATICALLY SENSITIVE(ES)DEVICES .....	1
3.	CONTROL BUTTON LOCATIONS AND EXPLANATIONS .....	2
4.	PREVENTION OF STATIC ELECTRICITY DISCHARGE .....	3
5.	ASSEMBLING AND DISASSEMBLING THE MECHANISM UNIT .....	4
5.1	MISCELLANEOUS .....	8
6.	ELECTRICAL CONFIRMATION .....	9
6.1	VIDEO OUTPUT (LUMINANCE SIGNAL) CONFIRMATION .....	9
6.2	VIDEO OUTPUT(CHROMINANCE SIGNAL) CONFIRMATION .....	10
7.	MPEG BOARD CHECK WAVEFORM .....	11
8.	AM29LV160D .....	12
8.1	HY57V641620HG .....	17
8.2	MT1389 .....	20
9.	SCHEMATIC & PCB WIRING DIAGRAM .....	23
10.	SPARE PARTS LIST .....	39

# 1. SAFETY PREAUTIONS

## 1.1 GENERAL GUIDELINES

1. When servicing, observe the original lead dress. if a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barrier, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

## 2.PREVENTION OF ELECTRO STATIC DISCHARGE(ESD)TO ELECTROSTATICALLY SENSITIVE(ES)DEVICES

Some semiconductor(solid state)devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive(ES)Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge(ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially availabel discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices,place the assembly on a conductive surface such as alminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as anti-static (ESD protected)can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, alminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

### Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

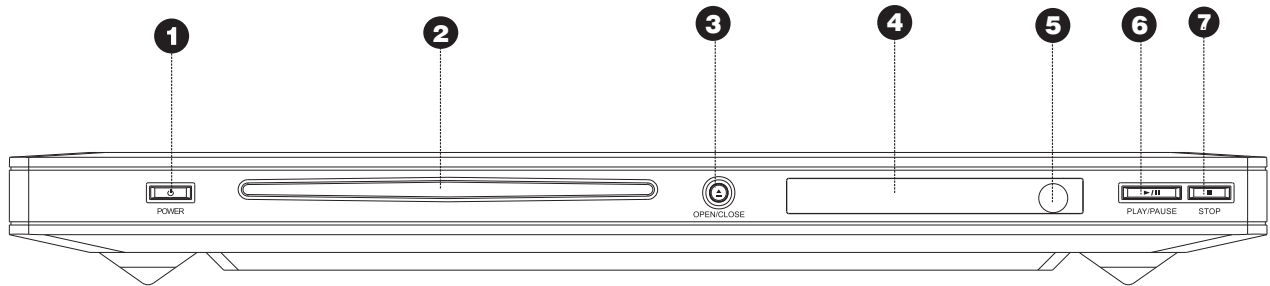
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity(ESD).

notice (1885x323x2 tiff)

### IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are imporant for safety. These parts are marked by  $\triangle$  in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

## ■ Front Panel Illustration



**1** POWER switch

**4** Display window

**7** STOP button

**2** Door

**5** IR SENSOR

**3** OPEN/CLOSE button

**6** PLAY/PAUSE button

## 4. PREVENTION OF STATIC ELECTRICITY DISCHARGE

The laser diode in the traverse unit (optical pickup) may break down due to static electricity of clothes or human body. Use due caution to electrostatic breakdown when servicing and handling the laser diode.

### 4.1. Grounding for electrostatic breakdown prevention

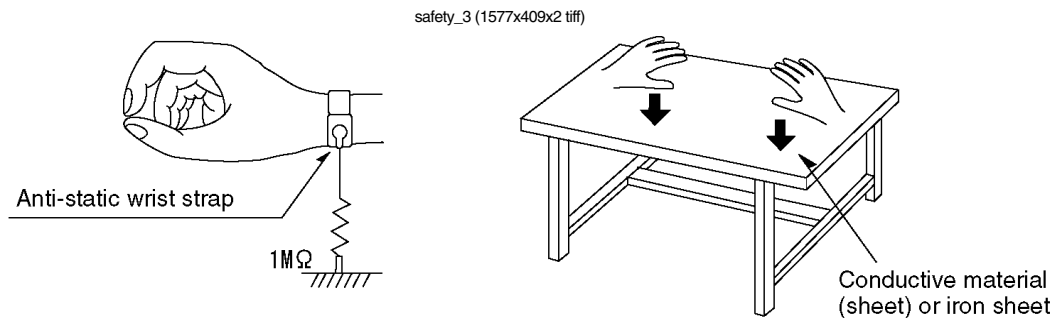
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

#### 4.1.1. Worktable grounding

1. Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.

#### 4.1.2. Human body grounding

- 1 Use the anti-static wrist strap to discharge the static electricity from your body.



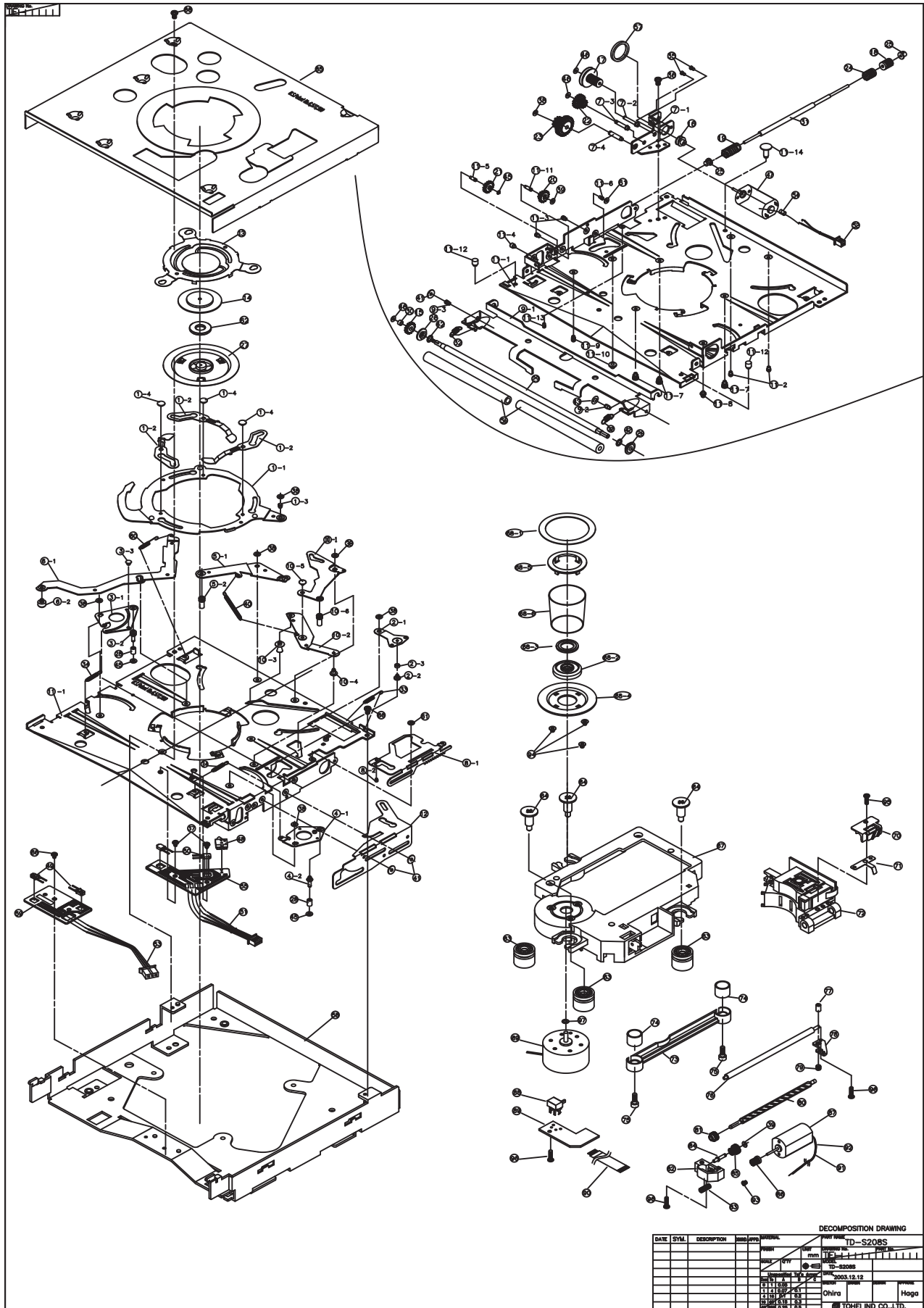
#### 4.1.3. Handling of optical pickup

1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide).
2. Do not use a tester to check the laser diode for the optical pickup. Failure to do so will damage the laser diode due to the power supply in the tester.

### 4.2. Handling precautions for Traverse Unit (Optical Pickup)

1. Do not give a considerable shock to the traverse unit (optical pickup) as it has an extremely high-precision structure.
2. When replacing the optical pickup, install the flexible cable and cut its short lead with a nipper. See the optical pickup replacement procedure in this Technical Guide. Before replacing the traverse unit, remove the short pin for preventing static electricity and install a new unit. Connect the connector as short times as possible.
3. The flexible cable may be cut off if an excessive force is applied to it. Use caution when handling the cable.
4. The half-fixed resistor for laser power adjustment cannot be adjusted. Do not turn the resistor.

## 5. Assembling and disassembling the mechanism unit



## Parts List

NO.	PART CODE	PART NAME	DRAWING#	Q' ty	NOTE
1	C8A001	AS-CLAMPER-PLATE	TE-14048	(1)	
1-1	C8P001	CLAMPER-PLATE	TE-13980	1	
1-2	C8P002	LIFTER CAM	TE-13981	3	
1-3	C8H001	CL-PLATE-SFT	TE-13982	1	
1-4	C8H002	LIFTER CAM-SFT	TE-13983	3	
2	C8A002	AS-TIMING-LEVER	TE-14049	(1)	
2-1	C8P003	TIMING-LEVER	TE-13984	1	
2-2	C8H003	T-LEVER-SHAFT	TE-13985	1	
2-3	C8H004	T-LEVER-COLOR	TE-13986	1	
3	C8A003	AS-D-G-LEVER-L	TE-14050	(1)	
3-1	C8P004	D-GUIDE-LEVER-L	TE-13987	1	
3-2	C8H005	DISC-OPEN-SFT-L	TE-13988	1	
3-3	C8H040	CLP-GUIDE-SFT	TE-14359	1	
4	C8A004	AS-D-G-LEVER-R	TE-14051	(1)	
4-1	C8P005	D-GUIDE-LEVER-R	TE-13989	1	
4-2	C8H006	DISC-OPEN-SFT-R	TE-14004	1	
5	C8A005	AS-LINK-LEVER-L	TE-14052	(1)	
5-1	C8P006	LINK-LEVER-L	TE-13990	1	
5-2	C8H007	D-SELECT-SHAFT	TE-14005	1	
6	C8A006	AS-D-SELECT-LEVER	TE-14053	(1)	
6-1	C8P007	DISC-SELECT-LEVER	TE-13991	1	
6-2	C8H008	D-SELECT-SFT-A	TE-14006	1	
7	C8A007	AS GEAR-BASE	TE-14054	(1)	
7-1	C8P008	GEAR-BASE	TE-13992	1	
7-2	C8H009	TWIN GEAR-SHAFT	TE-14007	1	
7-3	C8H010	C-GEAR-A-SHAFT	TE-14008	1	
7-4	C8H011	C-GEAR-B-SHAFT	TE-14009	1	
8	C8A008	AS-RACK-PLATE	TE-14055	(1)	
8-1	C8P009	RACK-PLATE	TE-13993	1	
8-2	C8H012	RACK-PLATE-SHAFT	TE-14010	1	
9	C8A009	AS-ROLLER-BASE	TE-14056	(1)	
9-1	C8P010	ROLLER BASE	TE-13994	1	
9-2	C8H013	R-B-SHAFT-L	TE-14011	1	
9-3	C8H014	R-B-SHAFT-R	TE-14012	1	
10	C8A010	AS LINK-CHANGE	TE-14057	(1)	
10-1	C8P011	LINK-LEVER-R	TE-13995	1	
10-2	C8P012	CHANGE-LEVER	TE-13996	1	
10-3	C8H015	C-LEVER-SFT-A	TE-14013	1	
10-4	C8H016	C-LEVER-SFT-B	TE-14014	1	
10-5	C8H017	C-LEVER-SFT-C	TE-14015	1	
10-6	C8H007	D-SELECT-SHAFT	TE-14005	1	
11	C8A015	AS LOADER BASE	TE-14058	(1)	
11-1	C8P013	LOADER BASE	TE-13997	1	
11-2	C8H019	LEVER-SHAFT	TE-14017	2	

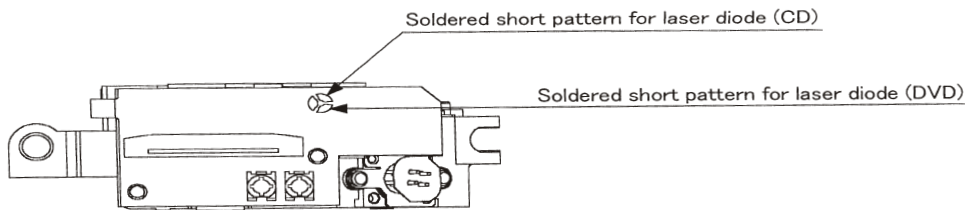
NO.	PART CODE	PART NAME	DRAWING#	Q'ty	NOTE
11-3	C8H020	CAM-SHAFT	TE-14018	2	
11-4	C8H021	CAM-GUIDE-SFT	TE-14019	1	
11-5	C8H022	ROLLER-GEAR-SFT	TE-14020	1	
11-6	C8H023	L-P-GUIDE-SFT-A	TE-14021	1	
11-7	C8H024	CLAMP-GUIDE-SFT	TE-14022	3	
11-8	C8H025	D-G-A-SHAFT-L	TE-14023	1	
11-9	C8H026	D-G-A-SHAFT-R	TE-14024	1	
11-10	C8H031	TIMING-LVR-SFT-N	TE-14065	1	
11-11	C8H027	GEAR-LOAD-SFT	TE-14025	1	
11-12	C8H034	D-G-SHAFT	TE-14162	2	
11-13	C8H038	L-P-GUIDE-SFT-B	TE-14222	1	
11-14	C8H035	EJECT-GUIDE-SFT	TE-14192	1	
12	C8P014	CAM-R	TE-13998	1	
13	C8P015	CLAMPER-TOP	TE-13999	1	
14	C8P023	YOKE-LO	TE-14124	1	
15	C8G001	ROLLER-GEAR	TE-14029	1	
16	C8G002	MOTOR-PULLY	TE-14030	1	
17	C8G003	PULLY-GEAR	TE-14031	1	
18	C8G004	HERICAL-GEAR	TE-14032	1	
19	C8G005	WORM-LOAD	TE-14033	1	
20	C8G006	GEAR-LOAD-A	TE-14034	1	
21	C8G007	IDLE-GEAR-ROLLER	TE-14035	1	
22	C8G008	CHUCK-GEAR-A	TE-14036	1	
23	C8G009	CHUCK-GEAR-B	TE-14037	1	
24	C8G010	WORM-CHUCK	TE-14038	1	
25	C8G011	SHAFT-CAP	TE-14039	2	
26	C8G012	BERRING-ROLLER	TE-14040	2	
27	C8G022	CLAMPER-LO	TE-14122	1	
28	C8G014	DISC-OPEN-COLOR	TE-14042	2	
29	C8H028	ROLLER-SHAFT	TE-14026	1	
30	C8H029	ROLLER-COLOR	TE-14027	1	
31	C8H030	WORM-SHAFT	TE-14028	1	
32	C8S006	ROLLER-SPRING	TE-14104	2	
33	C8S008	LEVER-SPRING	TE-14106	1	
34	C8S005	D-GUIDE-SP	TE-14103	2	
35	S14N102	M1.4×2 PRECISION SCREW TYPE-1 BK		2	
36	S20N303	M2×3 PRECISION SCREW TYPE-3		1	
37	S17N015	M1.7×1.5 PRECISION SCREW TYPE-3-N		2	
38	P16C325	PSW1.6×3.5×0.25C(BK)		7	
39	P12CR32	PSW1.2×3.2×0.25C(RED)		2	
40	C8S007	C-LEVER-SPRING	TE-14105	1	
41	P16C504	PSW1.6×5×0.4C(BK)		3	
42	P22W413	PSW2.2×4×0.13		2	
43	C8P029	SPRING-WASHER	TE-14251	1	
45	P12C202	PSW1.2×2.0×0.25C		3	
46	P12C404	PSW1.2×4×0.4C		3	
47	M01T278	MT M1N10FB10K		1	or WN3VB(M01T294)
48	S01W205	ESE22MH23		1	
49	E01L980	PT4800BC		2	
50	E01L975	GL4800		2	
51	C8G036	CNW4P-TL-S	TE-14342	1	
52	C8G034	CNW2P-TL-S	TE-14340	1	
53	C8G035	CNW3P-TL-S	TE-14341	1	

NO.	PART CODE	PART NAME	DRAWING#	Q' ty	NOTE
54	C5G022	φ2.5×3 SUMITUBE(BK)	TE-13780	1	
55	C8P040	SW-PCB-SO	TE-14884	1	
56	C8G032	ROLLER	TE-14290	2	
57	C8G017	LOADING BELT-L	TE-14102	1	
58	C2P164	MAIN-BASE-758M	TE-15237	1	
59	C8P046	SENSOR-PCB-HF	TE-15029	1	
60	C8S009	LEVER-SPRING-S	TE-14358	1	
61	P12CR02	PSW1.2×3.2×0.2C(RED)		2	
62	C4G074	MAGNET-TD	TE-14912	1	
63	C2G083	DAMPER IDLE	TE-14089	3	
64	C1H011	SCW-DAMPER	TE-13324	3	
65	C8P028	TD-S-TOP-COVER	TE-14188	1	
66	B20TK04	M2×4 BIND S-TIGHT		3	
67	D4G005	CHAS-PU-25	TE-14917	1	
68	D4A002	T/T-EL-ASSY		(1)	
68-1	A2G182	RUBBER-M32	TE-12482	1	
68-2	D4H005	T-T-BUSH-EL2	TE-15232	1	
68-3	C8P042	YOKE-E	TE-14931	1	
68-4	C8P041	TABLE-E	TE-14930	1	
68-5	C8G043	T-T-ELEVATOR	TE-14934	1	
68-6	C8S010	ELEVATOR-SPG	TE-14932	1	
69	M01T303	MT RF-300F-12350		1	
70	D4G003	GEAR-RACK	TE-14915	1	
71	D4P001	RACK-SPG-25	TE-14927	1	
72	D4G010A	SF-HD60		1	
73	D4G002	SFT-SUB-25	TE-14914	1	
74	D4S001	TILT-SP-25	TE-14929	2	
75	D4H003	M2×5 SCREW	TE-14937	2	
76	D4H002	SFT-MAIN-25	TE-14926	1	
77	D4S002	SPRING-TILT-28	TE-15320	1	
78	D1P001	PLATE-MAIN-OUT	TE-14384	1	
79	D1H012	M2.6×3 TILT SCREW	TE-14685	1	
80	D4H006	SHAFT-LEAD-28	TE-15321	1	
81	D1G003	GEAR-LEAD	TE-14395	1	
82	D4G004	HOLDER-25	TE-14916	1	
83	D1S001	SPG-LEAD	TE-14380	1	
84	D1H003	SHAFT-GEAR	TE-14385	1	
85	D1G004	GEAR-MIDDLE	TE-14396	1	
86	D1G002	GEAR-MOTOR	TE-14391	1	
87	M01T278	MT M1N10FB10K		1	
88	S01W016	SW ESE11SH2C		1	or SPPB14
89	D4P002	SW-PCB-25	TE-14928	1	
90	D3P004	FFC 1.0-6 L=110	TE-14853	1	
91	D4G008	LEAD-WIRE-25-A	TE-15147	1	
92	D4G009	LEAD-WIRE-25-B	TE-15147	1	
93	S14N003	M1.4×3 PRECISION SCREW TYPE-3		1	
94	D4H004	M1.7×1.8 SCREW		3	
95	B20B004	M2×4 BIND B-TIGHT		1	
96	S17B305	M1.7×5 PRECISION SCREW TYPE-3 B-TIGHT		3	
97	P19W325	PSW1.95×3.5×0.25		1	

## 5.1 MISCELLANEOUS

### 5.1.1 Protection of the LD(Laser diode)

Short the parts of LD circuit pattern by soldering.



### 5.1.2 Cautions on assembly and adjustment

Make sure that the workbenches, jigs, tips, tips of soldering irons and measuring instruments are grounded, and that personnel wear wrist straps for ground.

Open the LD shortlands quickly with a soldering iron after a circuit is connected.

Keep the power source of the pick-up protected from internal and external sources of electrical noise.

Refrain from operation and storage in atmospheres containing corrosive gases (such as  $H_2S$ ,  $SO_2$ ,  $NO_2$  and  $Cl_2$ ) or toxic gases or in locations containing substances (especially from the organic silicon, cyan, formalin and phenol groups) which emit toxic gases. It is particularly important to ensure that none of the above substances are present inside the unit. Otherwise, the motor may no longer run.

# 6.Electrical Confirmation

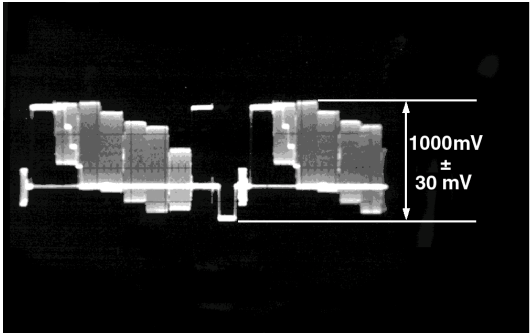
## 6.1. Video Output (Luminance Signal) Confirmation

DO this confirmation after replacing a P.C.B.

Measurement point	Mode	Disc
Video output terminal	Color bar 75% PLAY(Title 46):DVDT-S15 PLAY(Title 12):DVDT-S01	DVDT-S15 or DVDT-S01
Measuring equipment,tools	Confirmation value	
200mV/dir,10 μ sec/dir	1000mVp-p±30mV	

Purpose:To maintain video signal output compatibility.

- 1.Connect the oscilloscope to the video output terminal and terminate at 75 ohms.
- 2.Confirm that luminance signal(Y+S)level is 1000mVp-p±30mV



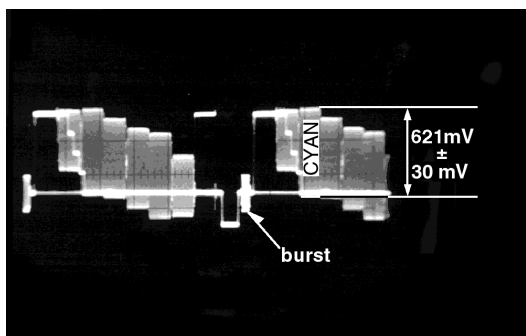
## 6.2 Video Output(Chrominance Signal) Confirmation

Do the confirmation after replacing P.C.B.

Measurement point	Mode	Disc
Video output terminal	Color bar 75% PLAY(Title 46):DVDT-S15 PLAY(Title 12):DVDT-S01	DVDT-S15 or DVDT-S01
Measuring equipment,tools	Confirmation value	
Screwdriver,Oscilloscope 200mV/dir,10 $\mu$ sec/dir	621mVp-p $\pm$ 30mV	

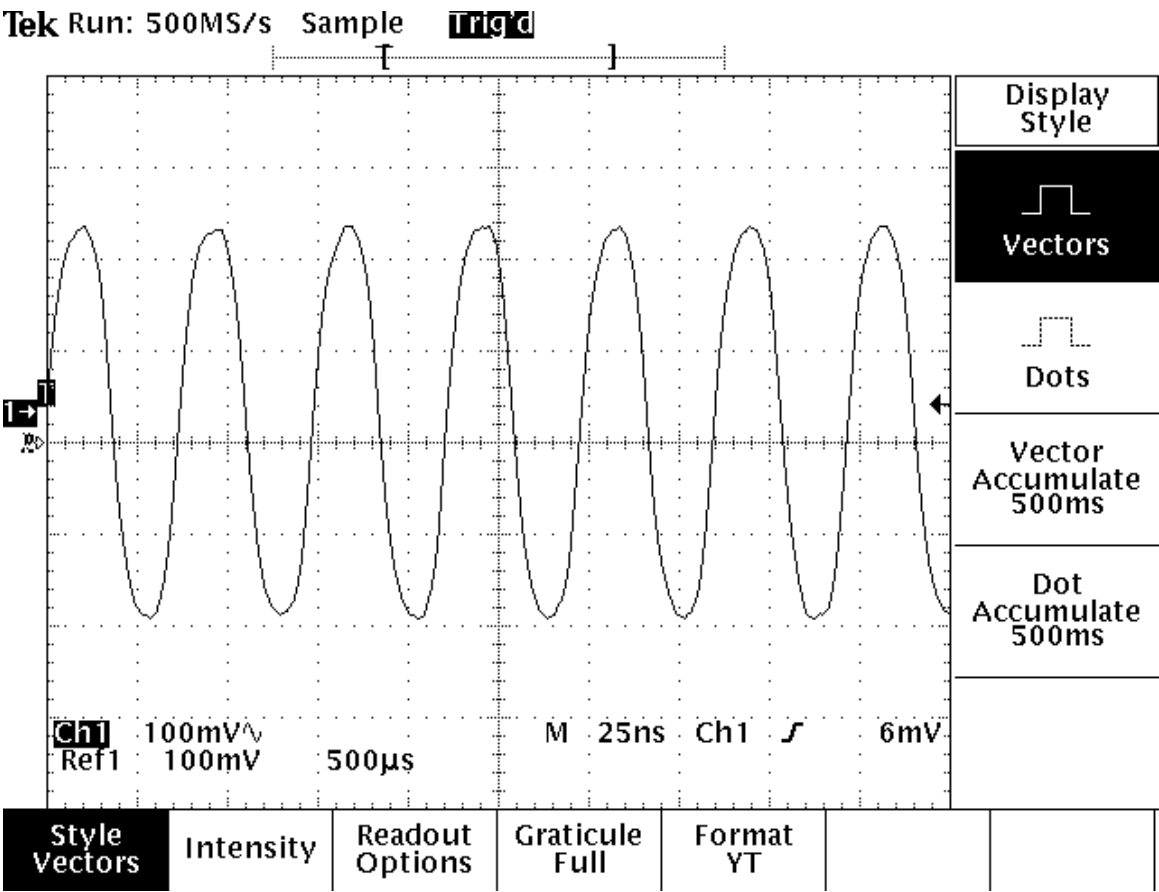
Purpose:To maintain video signal output compatibility.

- 1.Connect the oscilloscope to the video output terminal and terminate at 75 ohme.
- 2.Confirm that the chrominance signal(C)level is 621 mVp-p $\pm$ 30mV

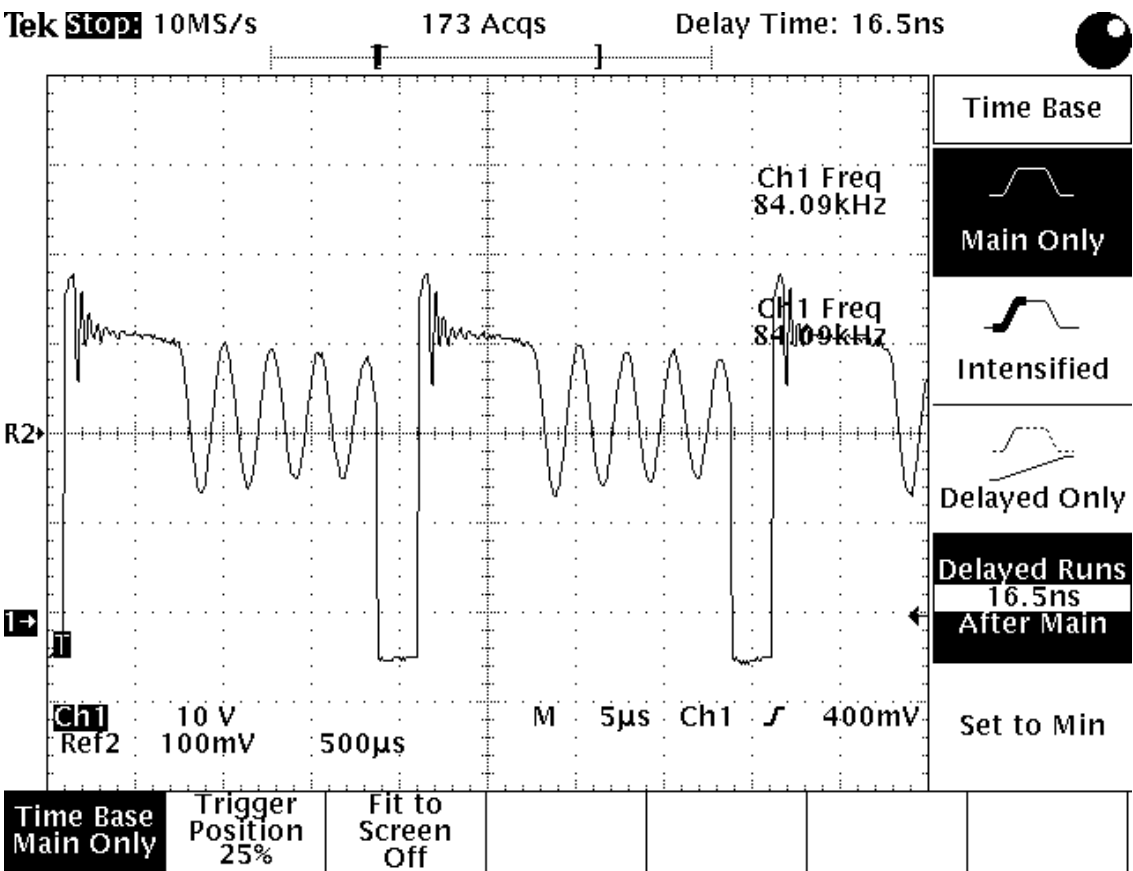


# 7.MPEG BOARD CHECK WAVEFORM

## 7.1 27MHz WAVEFORM



## 7.2 IC NCP1200P60 PIN.5 WAVEFORM DIAGRAM



## 8. Am29LV160D

### 16 Megabit (2 M x 8-Bit/1 M x 16-Bit) CMOS 3.0 Volt-only Boot Sector Flash Memory

#### DISTINCTIVE CHARACTERISTICS

##### ■ Single power supply operation

- Full voltage range: 2.7 to 3.6 volt read and write operations for battery-powered applications
- Regulated voltage range: 3.0 to 3.6 volt read and write operations and for compatibility with high performance 3.3 volt microprocessors

##### ■ Manufactured on 0.23 $\mu$ m process technology

- Fully compatible with 0.32  $\mu$ m Am29LV160B device

##### ■ High performance

- Access times as fast as 70 ns

##### ■ Ultra low power consumption (typical values at 5 MHz)

- 200 nA Automatic Sleep mode current
- 200 nA standby mode current
- 9 mA read current
- 20 mA program/erase current

##### ■ Flexible sector architecture

- One 16 Kbyte, two 8 Kbyte, one 32 Kbyte, and thirty-one 64 Kbyte sectors (byte mode)
- One 8 Kword, two 4 Kword, one 16 Kword, and thirty-one 32 Kword sectors (word mode)
- Supports full chip erase
- Sector Protection features:
  - A hardware method of locking a sector to prevent any program or erase operations within that sector
  - Sectors can be locked in-system or via programming equipment
  - Temporary Sector Unprotect feature allows code changes in previously locked sectors

##### ■ Unlock Bypass Program Command

- Reduces overall programming time when issuing multiple program command sequences

##### ■ Top or bottom boot block configurations available

##### ■ Embedded Algorithms

- Embedded Erase algorithm automatically preprograms and erases the entire chip or any combination of designated sectors
- Embedded Program algorithm automatically writes and verifies data at specified addresses

##### ■ Minimum 1,000,000 write cycle guarantee per sector

##### ■ 20-year data retention at 125°C

- Reliable operation for the life of the system

##### ■ Package option

- 48-ball FBGA
- 48-pin TSOP
- 44-pin SO

##### ■ CFI (Common Flash Interface) compliant

- Provides device-specific information to the system, allowing host software to easily reconfigure for different Flash devices

##### ■ Compatibility with JEDEC standards

- Pinout and software compatible with single-power supply Flash
- Superior inadvertent write protection

##### ■ Data# Polling and toggle bits

- Provides a software method of detecting program or erase operation completion

##### ■ Ready/Busy# pin (RY/BY#)

- Provides a hardware method of detecting program or erase cycle completion (not available on 44-pin SO)

##### ■ Erase Suspend/Erase Resume

- Suspends an erase operation to read data from, or program data to, a sector that is not being erased, then resumes the erase operation

##### ■ Hardware reset pin (RESET#)

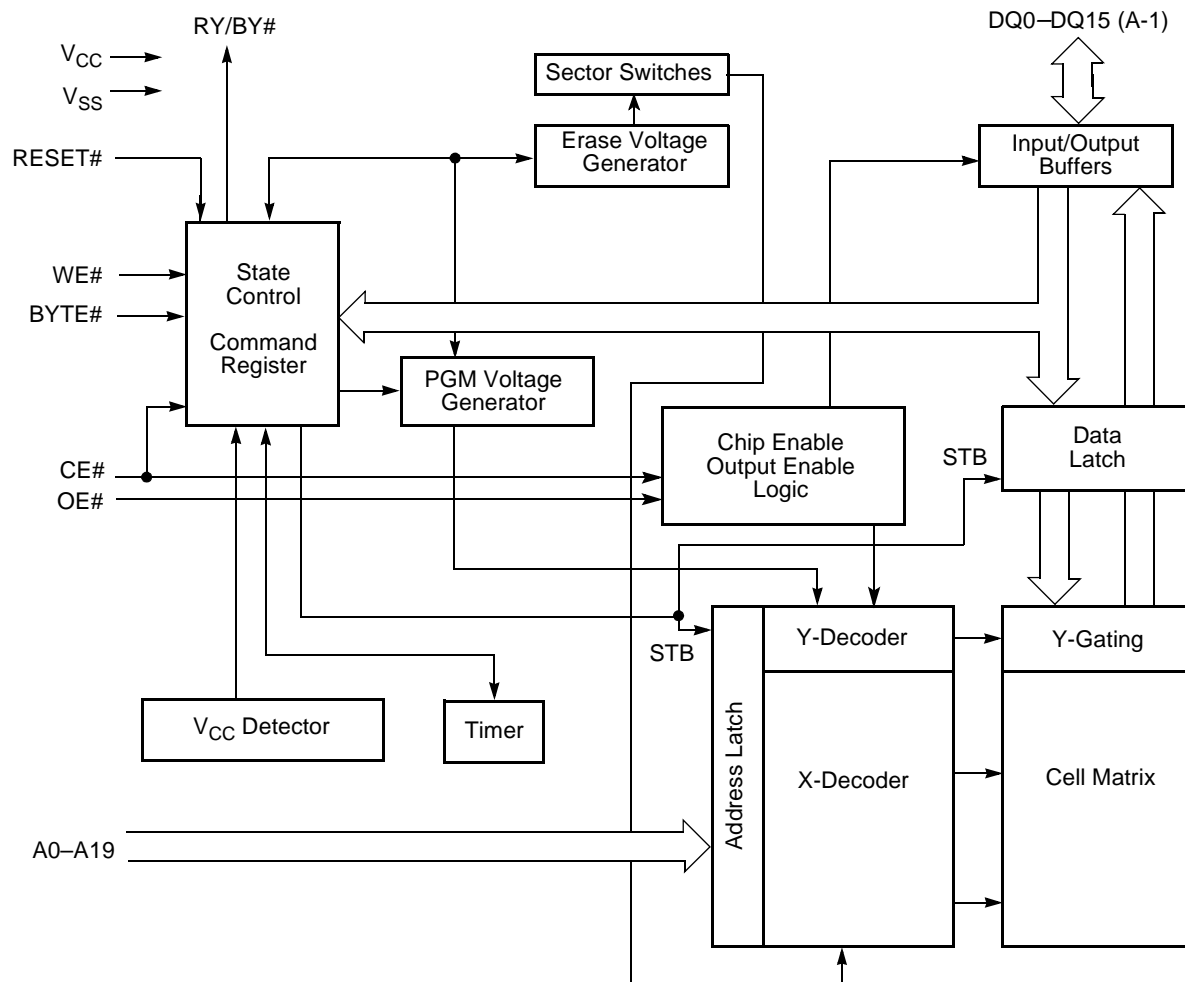
- Hardware method to reset the device to reading array data

## PRODUCT SELECTOR GUIDE

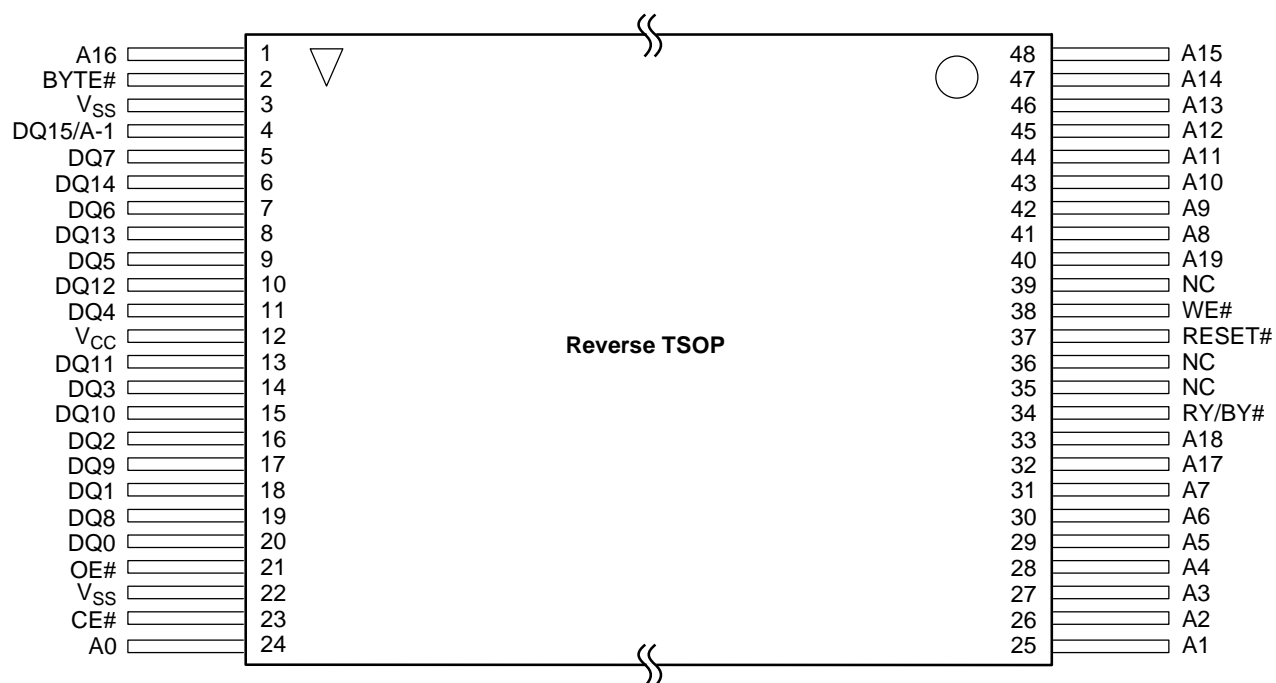
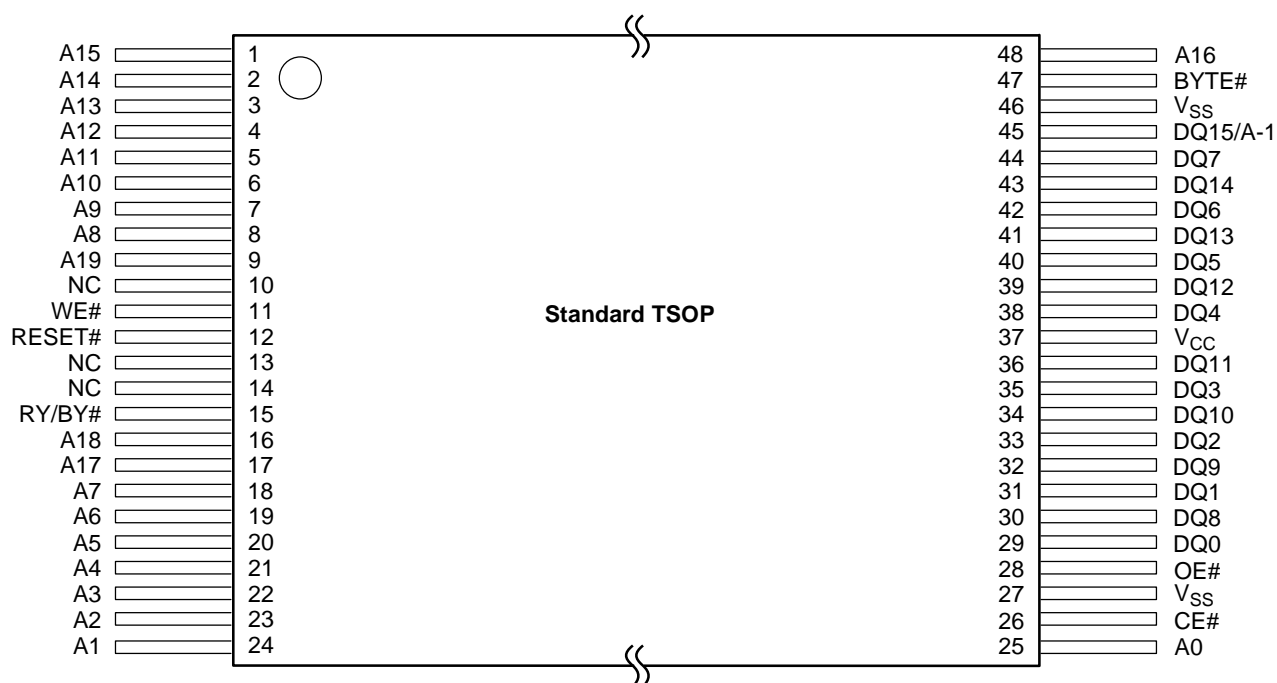
Family Part Number		Am29LV160D		
Speed Option	Voltage Range: $V_{CC} = 2.7\text{--}3.6\text{ V}$	<b>-70</b>	<b>-90</b>	<b>-120</b>
Max access time, ns ( $t_{ACC}$ )		70	90	120
Max CE# access time, ns ( $t_{CE}$ )		70	90	120
Max OE# access time, ns ( $t_{OE}$ )		30	35	50

**Note:** See “AC Characteristics” for full specifications.

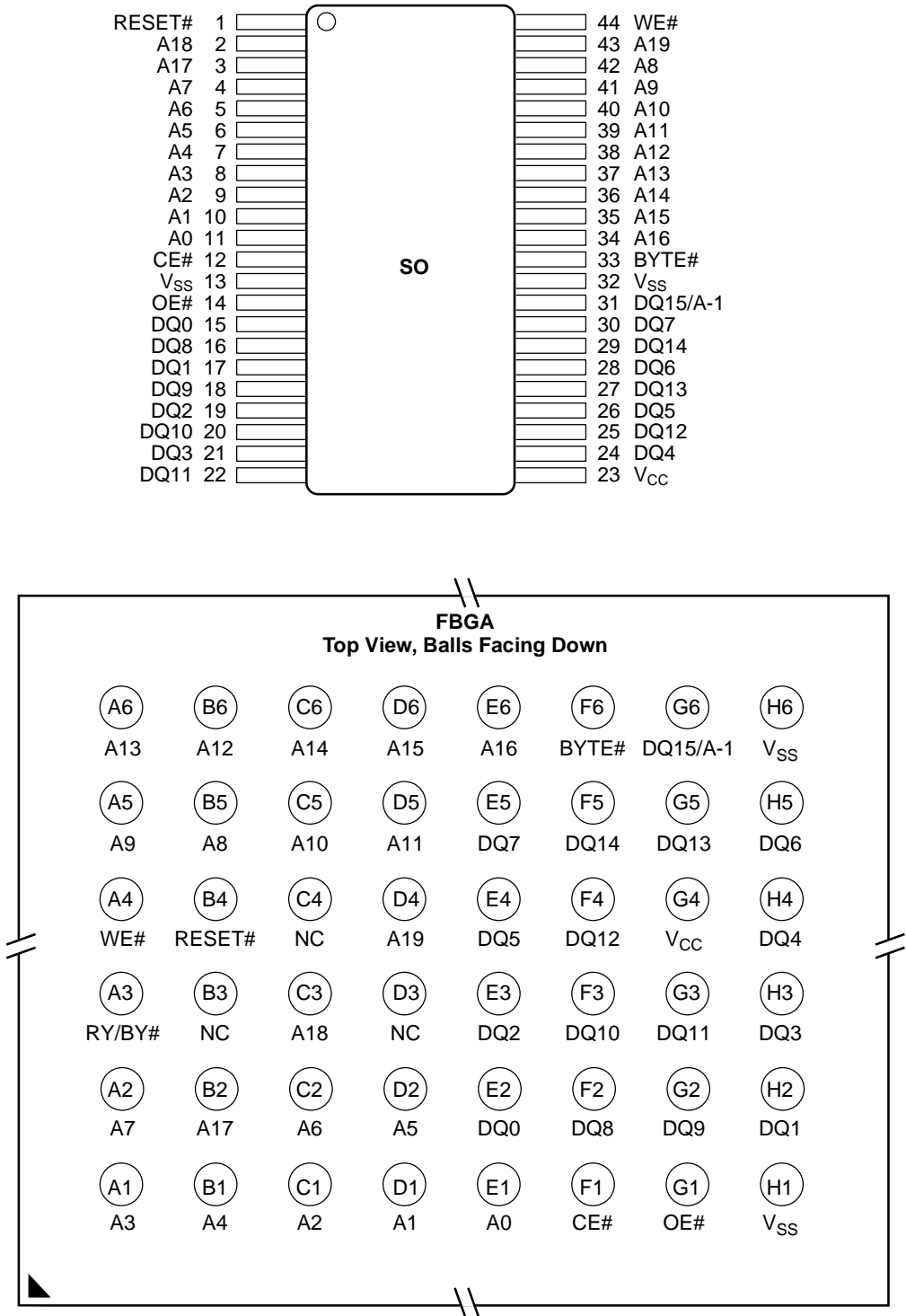
## BLOCK DIAGRAM



# CONNECTION DIAGRAMS



CONNECTION DIAGRAMS



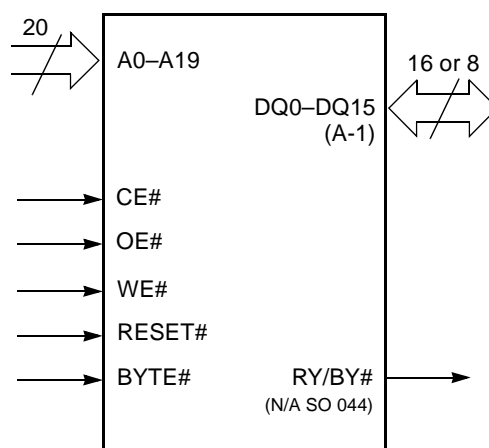
Special Handling Instructions

Special handling is required for Flash Memory products in FBGA packages.

Flash memory devices in FBGA packages may be damaged if exposed to ultrasonic cleaning methods. The package and/or data integrity may be compromised if the package body is exposed to temperatures above 150°C for prolonged periods of time.

**PIN CONFIGURATION**

A0–A19	=	20 addresses
DQ0–DQ14	=	15 data inputs/outputs
DQ15/A-1	=	DQ15 (data input/output, word mode), A-1 (LSB address input, byte mode)
BYTE#	=	Selects 8-bit or 16-bit mode
CE#	=	Chip enable
OE#	=	Output enable
WE#	=	Write enable
RESET#	=	Hardware reset pin
RY/BY#	=	Ready/Busy output (N/A SO 044)
V <sub>CC</sub>	=	3.0 volt-only single power supply (see Product Selector Guide for speed options and voltage supply tolerances)
V <sub>SS</sub>	=	Device ground
NC	=	Pin not connected internally

**LOGIC SYMBOL**

## 8.1 HY57V641620HG

### DESCRIPTION

The Hyundai HY57V641620HG is a 67,108,864-bit CMOS Synchronous DRAM, ideally suited for the main memory applications which require large memory density and high bandwidth. HY57V641620HG is organized as 4banks of 1,048,576x16.

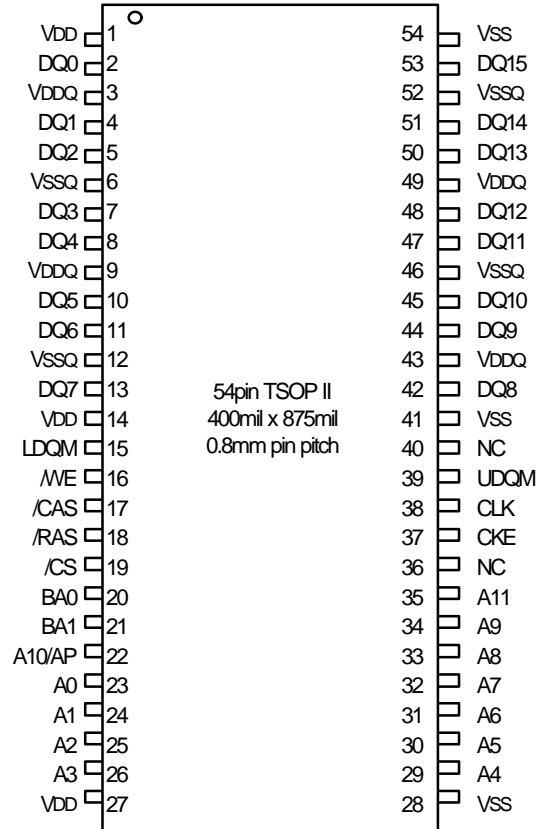
HY57V641620HG is offering fully synchronous operation referenced to a positive edge of the clock. All inputs and outputs are synchronized with the rising edge of the clock input. The data paths are internally pipelined to achieve very high bandwidth. All input and output voltage levels are compatible with LVTTTL.

Programmable options include the length of pipeline (Read latency of 2 or 3), the number of consecutive read or write cycles initiated by a single control command (Burst length of 1,2,4,8 or Full page), and the burst count sequence(sequential or interleave). A burst of read or write cycles in progress can be terminated by a burst terminate command or can be interrupted and replaced by a new burst read or write command on any cycle. (This pipelined design is not restricted by a `2N` rule.)

### FEATURES

- Single 3.3±0.3V power supply <sup>Note)</sup>
- All device pins are compatible with LVTTTL interface
- JEDEC standard 400mil 54pin TSOP-II with 0.8mm of pin pitch
- All inputs and outputs referenced to positive edge of system clock
- Data mask function by UDQM or LDQM
- Internal four banks operation
- Auto refresh and self refresh
- 4096 refresh cycles / 64ms
- Programmable Burst Length and Burst Type
  - 1, 2, 4, 8 or Full page for Sequential Burst
  - 1, 2, 4 or 8 for Interleave Burst
- Programmable  $\overline{\text{CAS}}$  Latency ; 2, 3 Clocks

### PIN CONFIGURATION

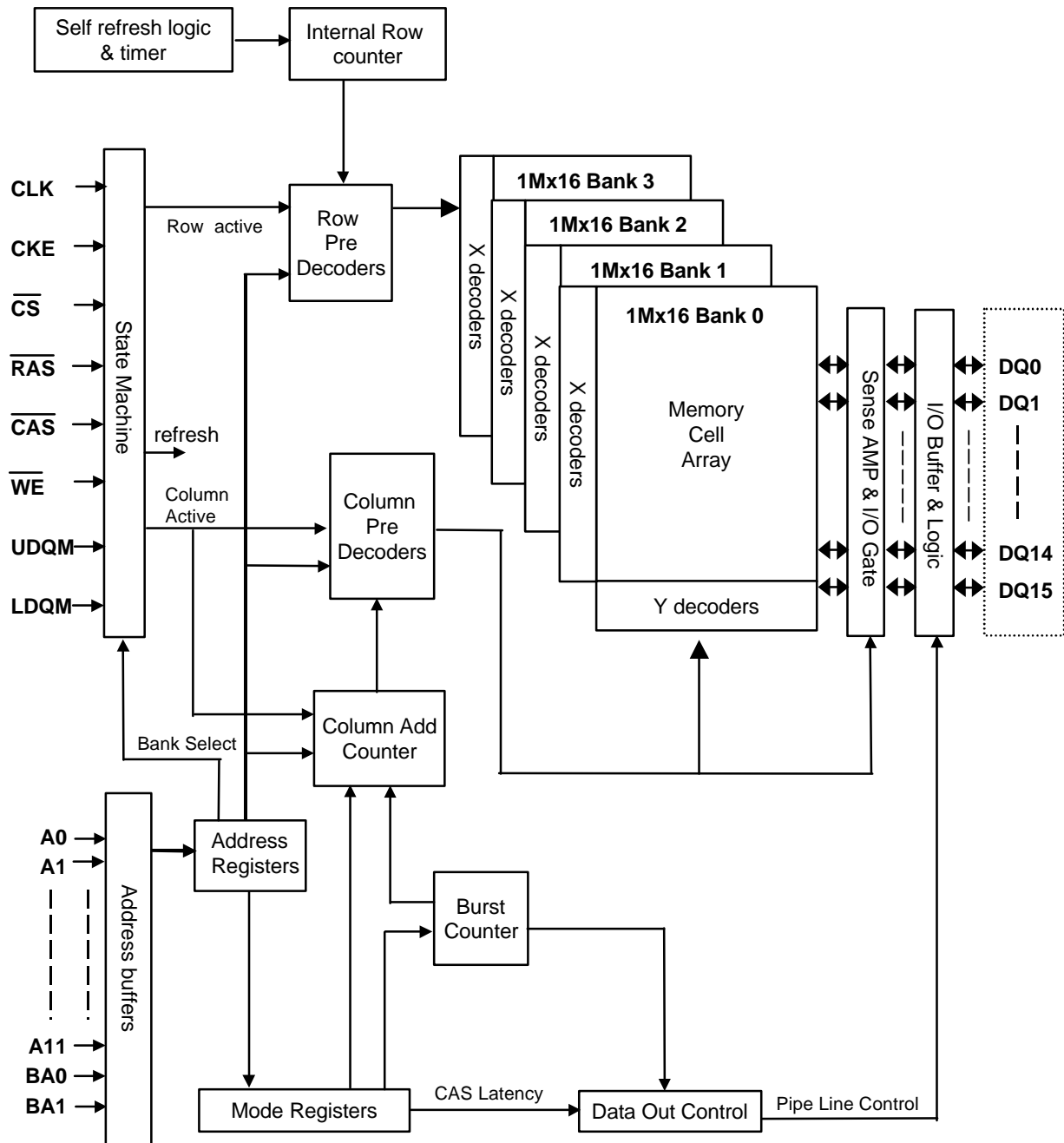


### PIN DESCRIPTION

PIN	PIN NAME	DESCRIPTION
CLK	Clock	The system clock input. All other inputs are registered to the SDRAM on the rising edge of CLK
CKE	Clock Enable	Controls internal clock signal and when deactivated, the SDRAM will be one of the states among power down, suspend or self refresh
$\overline{CS}$	Chip Select	Enables or disables all inputs except CLK, CKE and DQM
BA0,BA1	Bank Address	Selects bank to be activated during $\overline{RAS}$ activity Selects bank to be read/written during $\overline{CAS}$ activity
A0 ~ A11	Address	Row Address : RA0 ~ RA11, Column Address : CA0 ~ CA7 Auto-precharge flag : A10
$\overline{RAS}$ , $\overline{CAS}$ , $\overline{WE}$	Row Address Strobe, Column Address Strobe, Write Enable	$\overline{RAS}$ , $\overline{CAS}$ and $\overline{WE}$ define the operation Refer function truth table for details
LDQM, UDQM	Data Input/Output Mask	Controls output buffers in read mode and masks input data in write mode
DQ0 ~ DQ15	Data Input/Output	Multiplexed data input / output pin
VDD/VSS	Power Supply/Ground	Power supply for internal circuits and input buffers
VDDQ/VSSQ	Data Output Power/Ground	Power supply for output buffers
NC	No Connection	No connection

## FUNCTIONAL BLOCK DIAGRAM

1Mbit x 4banks x 16 I/O Synchronous DRAM



## 8.2 MT1389

## MT1389

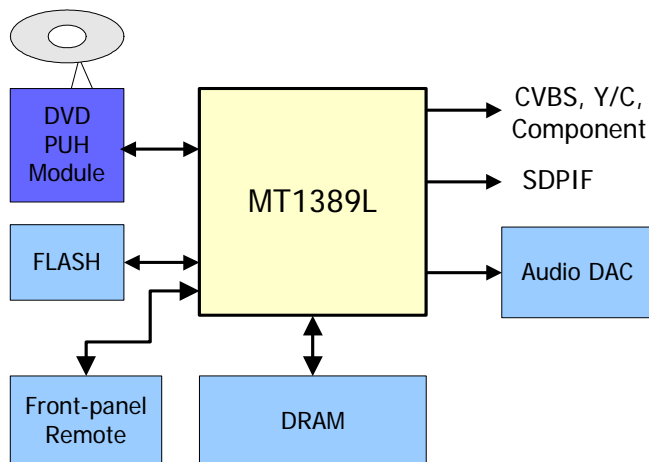
### Progressive-Scan DVD Player SOC

*Specifications are subject to change without notice*

**MediaTek MT1389** is a DVD player system-on-chip (SOC) which incorporates advanced features like high quality TV encoder and state-of-art de-interlace processing. The MT1389 enables consumer electronics manufacturers to build high quality, cost-effective DVD players, portable DVD players or any other home entertainment audio/video devices.

Based on MediaTek's world-leading DVD player SOC architecture, the MT1389 is the 3<sup>rd</sup> generation of the DVD player SOC. It integrates the MediaTek 2<sup>nd</sup> generation front-end analog RF amplifier and the Servo/MPEG AV decoder.

The progressive scan of the MT1389 utilized a proprietary advanced motion-adaptive de-interlace algorithm to achieve the best movie/video playback. It can easily detect 3:2/2:2 pull down source and restore the correct original pictures. It also supports a patent-pending edge-preserving algorithm to remove the saw-tooth effect.



DVD Player System Diagram Using MT1389

#### Key Features

- RF/Servo/MPEG Integration
- High Performance Audio Processor
- Motion-Adaptive, Edge-Preserving De-interlace
- 108MHz/12-bit, 6 CH TV Encoder

#### Applications

- Standard DVD Players
- Portable DVD Players

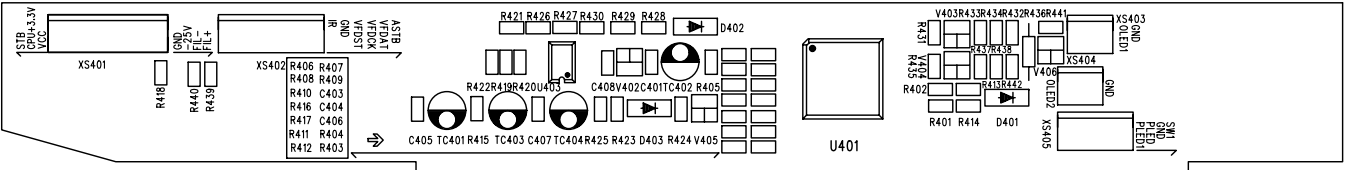
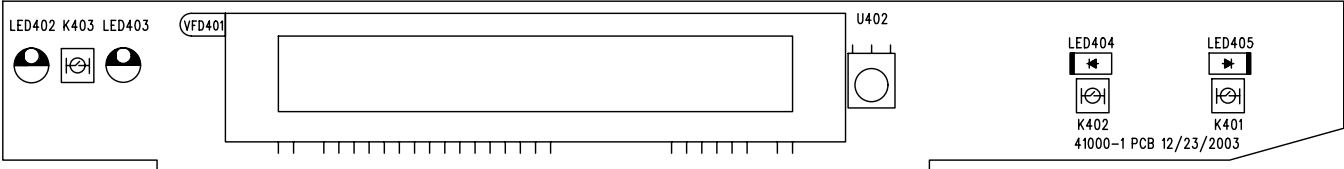
## General Feature List

- Super Integration DVD player single chip
  - High performance analog RF amplifier
  - Servo controller and data channel processing
  - MPEG-1/MPEG-2/JPEG video
  - Dolby AC-3/DTS/DVD-Audio
  - Unified memory architecture
  - Versatile video scaling & quality enhancement
  - OSD & Sub-picture
  - 2-D graphic engine
  - Built-in clock generator
  - Built-in high quality TV encoder
  - Built-in progressive video processor
  - Audio effect post-processor
  - Audio input port
- High Performance Analog RF Amplifier
  - Programmable fc
  - Dual automatic laser power control
  - Defect and blank detection
  - RF level signal generator
- Speed Performance on Servo/Channel Decoding
  - DVD-ROM up to 4XS
  - CD-ROM up to 24XS
- Channel Data Processor
  - Digital data slicer for small jitter capability
  - Built-in high performance data PLL for channel data demodulation
  - EFM/EFM+ data demodulation
  - Enhanced channel data frame sync protection & DVD-ROM sector sync protection
- Servo Control and Spindle Motor Control
  - Programmable frequency error gain and phase error gain of spindle PLL to control spindle motor on CLV and CAV mode
  - Built-in ADCs and DACs for digital servo control
  - Provide 2 general PWM
  - Tray control can be PWM output or digital output
- Embedded Micro controller
  - Built-in 8032 micro controller
  - Built-in internal 373 and 8-bit programmable lower address port
- 1024-bytes on-chip RAM
- Up to 4M bytes FLASH-programming interface
- Supports 5/3.3-Volt. FLASH interface
- Supports power-down mode
- Supports additional serial port
- DVD-ROM/CD-ROM Decoding Logic
  - High-speed ECC logic capable of correcting one error per each P-codeword or Q-codeword
  - Automatic sector Mode and Form detection
  - Automatic sector Header verification
  - Decoder Error Notification Interrupt that signals various decoder errors
  - Provide error correction acceleration
- Buffer Memory Controller
  - Supports 16Mb/32Mb/64Mb/128Mb SDRAM
  - Supports 16-bit SDRAM data bus
  - Provide the self-refresh mode SDRAM
  - Block-based sector addressing
  - Support 3.3 Volt. DRAM Interface
- Video Decode
  - Decodes MPEG1 video and MPEG2 main level, main profile video (720/480 and 720x576)
  - Smooth digest view function with I, P and B picture decoding
  - Baseline, extended-sequential and progressive JPEG image decoding
  - Support CD-G titles
- Video/OSD/SPU/HLI Processor
  - Arbitrary ratio vertical/horizontal scaling of video, from 0.25X to 256X
  - 65535/256/16/4/2-color bitmap format OSD,
  - 256/16 color RLC format OSD
  - Automatic scrolling of OSD image
  - Slide show transition as DVD-Audio Specification
- 2-D Graphic Engine
  - Support decode Text and Bitmap
  - Support line, rectangle and gradient fill
  - Support bitblt
  - Chroma key copy operation
  - Clip mask

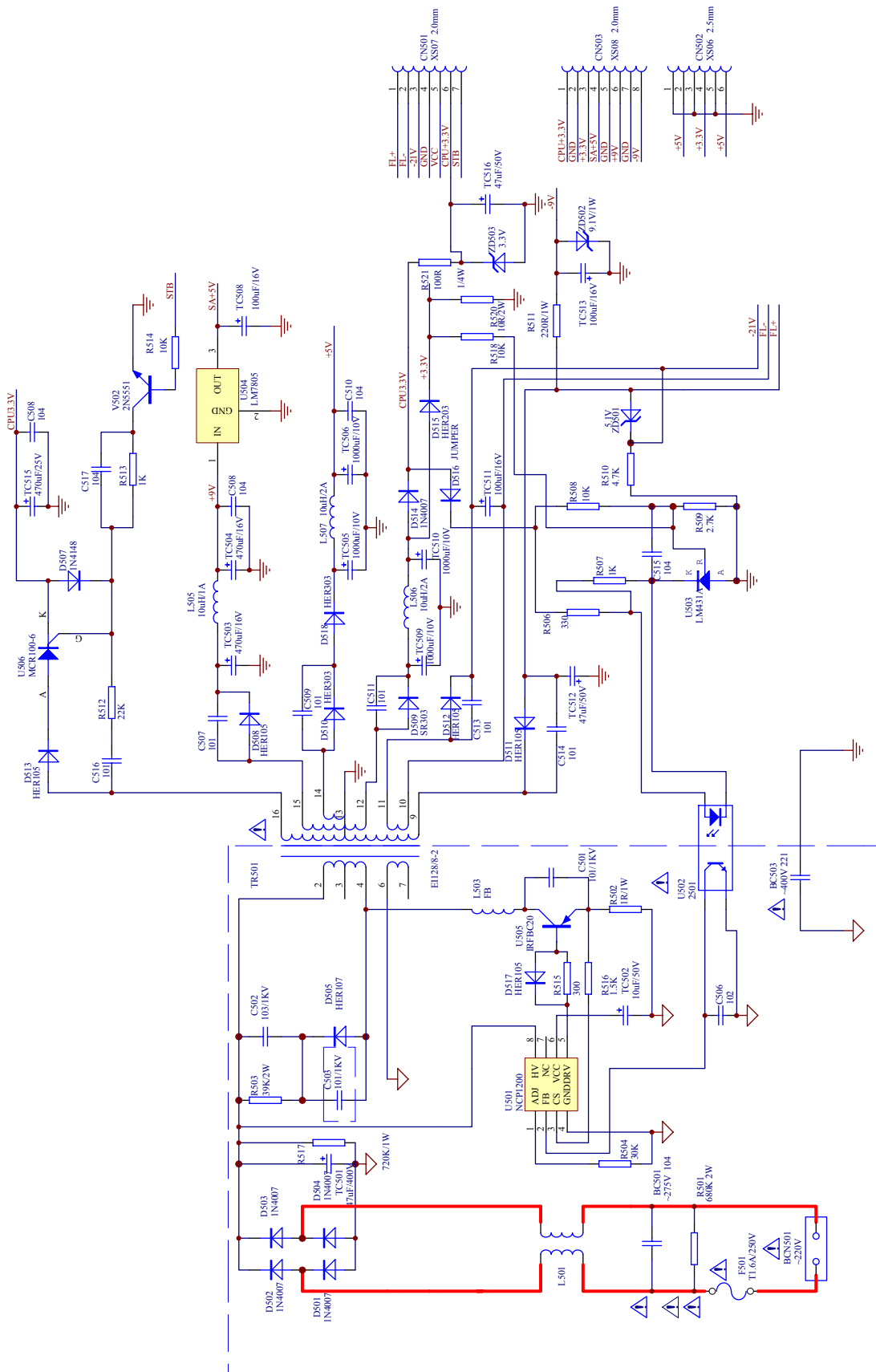
- Audio Effect Processing
  - Dolby Digital (AC-3)/EX decoding
  - DTS/DTS-ES decoding
  - MLP decoding for DVD-Audio
  - MPEG-1 layer 1/layer 2 audio decoding
  - MPEG-2 layer1/layer2 2-channel audio
  - High Definition Compatible Digital (HDCD)
  - Windows Media Audio (WMA)
  - Advanced Audio Coding (AAC)
  - Dolby ProLogic II
  - Concurrent multi-channel and downmix out
  - IEC 60958/61937 output
    - PCM / bit stream / mute mode
    - Custom IEC latency up to 2 frames
  - Pink noise and white noise generator
  - Karaoke functions
    - Microphone echo
    - Microphone tone control
    - Vocal mute/vocal assistant
    - Key shift up to +/- 8 keys
    - Chorus/Flanger/Harmony/Reverb
  - Channel equalizer
  - 3D surround processing include virtual surround and speaker separation
- TV Encoder
  - Six 108MHz/12bit DACs
  - Support NTSC, PAL-BDGHINM, PAL-60
  - Support 525p, 625p progressive TV format
  - Automatically turn off unconnected channels
  - Support PC monitor (VGA)
  - Support Macrovision 7.1 L1, Macrovision 525P and 625P
  - CGMS-A/WSS
  - Closed Caption
- Progressive Output
  - Automatic detect film or video source
  - 3:2 pull down source detection
  - Advanced Motion adaptive de-interlace
  - Edge Preserving
  - Minimum external memory requirement
- Audio Input
  - Line-in/SPDIF-in for versatile audio processing
- Outline
  - 256-pin LOFP package
  - 3.3/1.8-Volt. Dual operating voltages



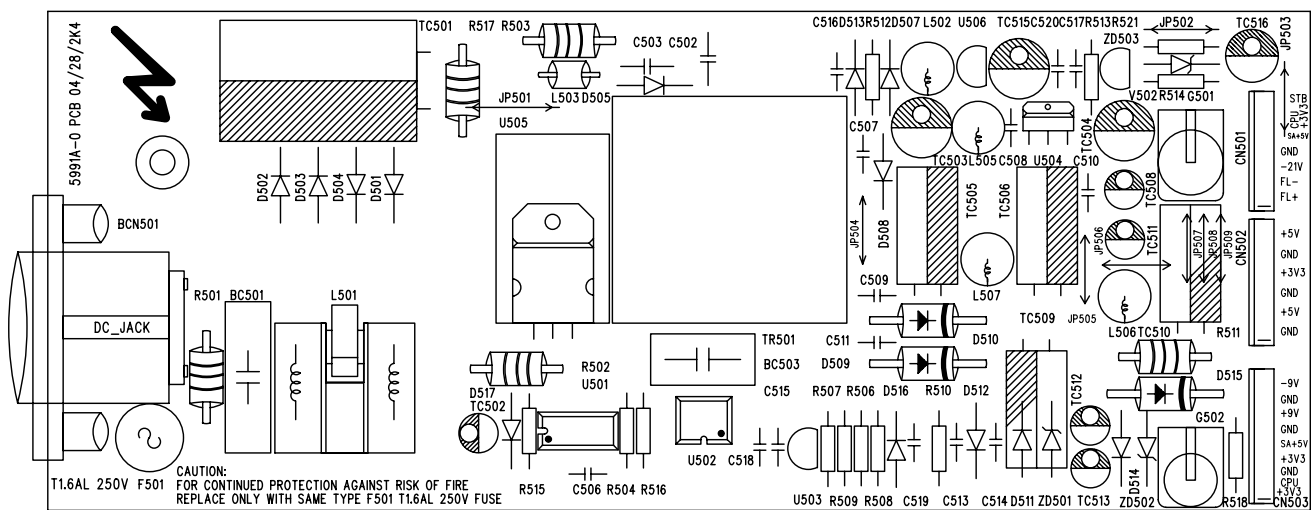
FRONT SCHEMATIC DIAGRAM



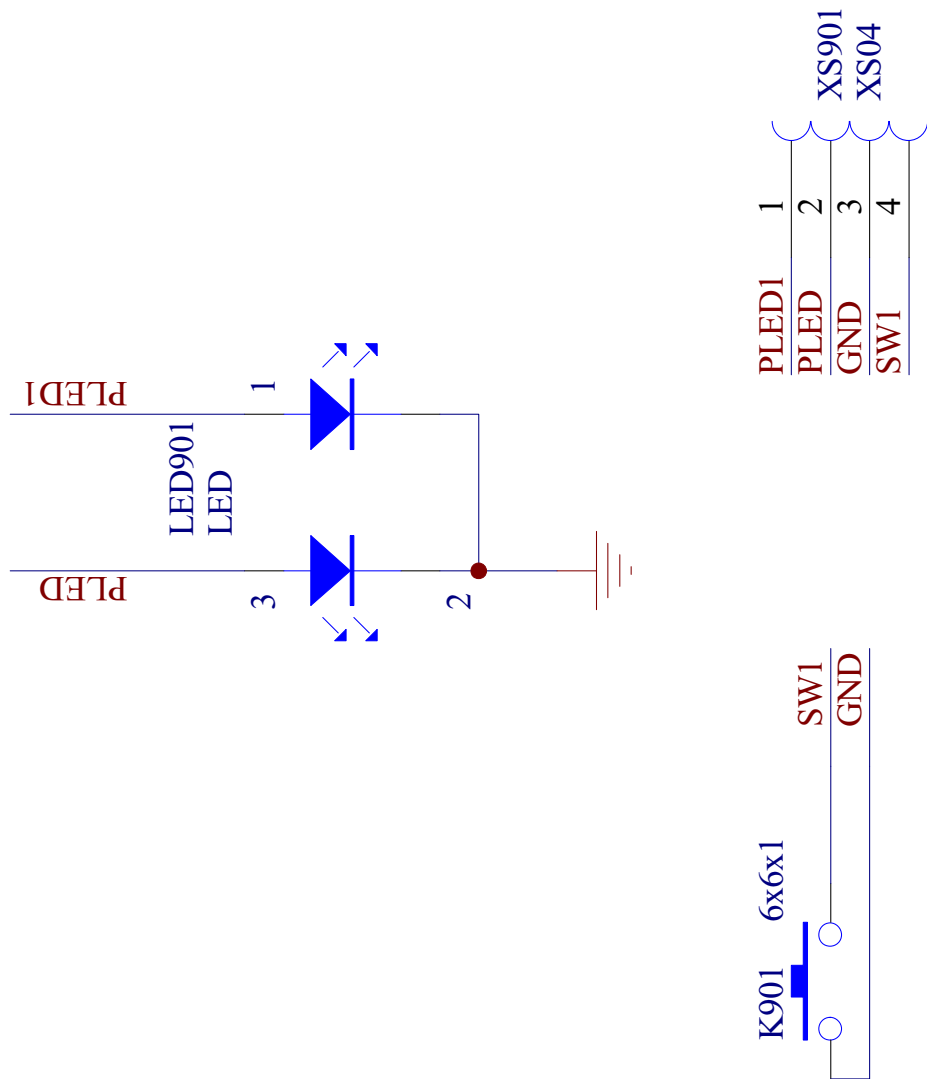
## POWER BOARD SCHEMATIC DIAGRAM



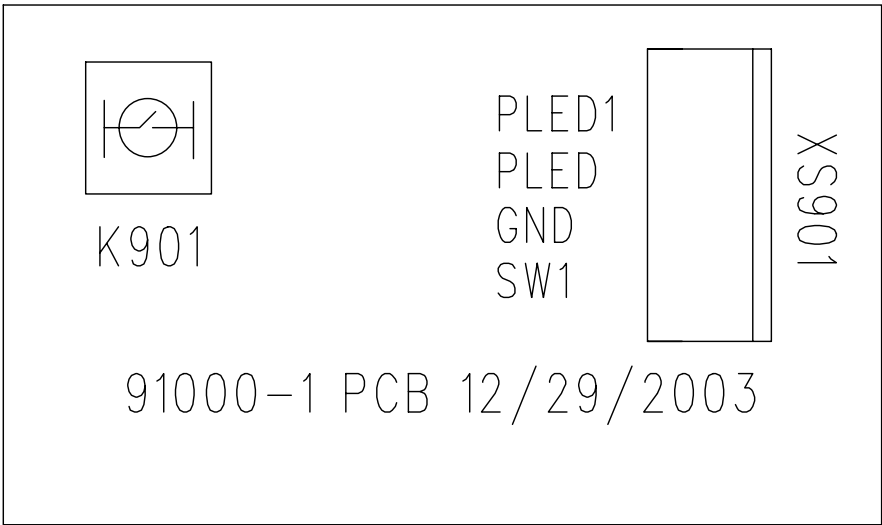
## POWER BOARD SCHEMATIC DIAGRAM



### SUBSIDIARY PANEL 1 SCHEMATIC DIAGRAM

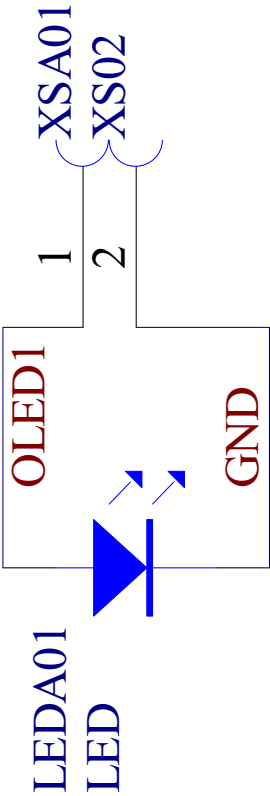


SUBSIDIARY PANEL 1 SCHEMATIC DIAGRAM

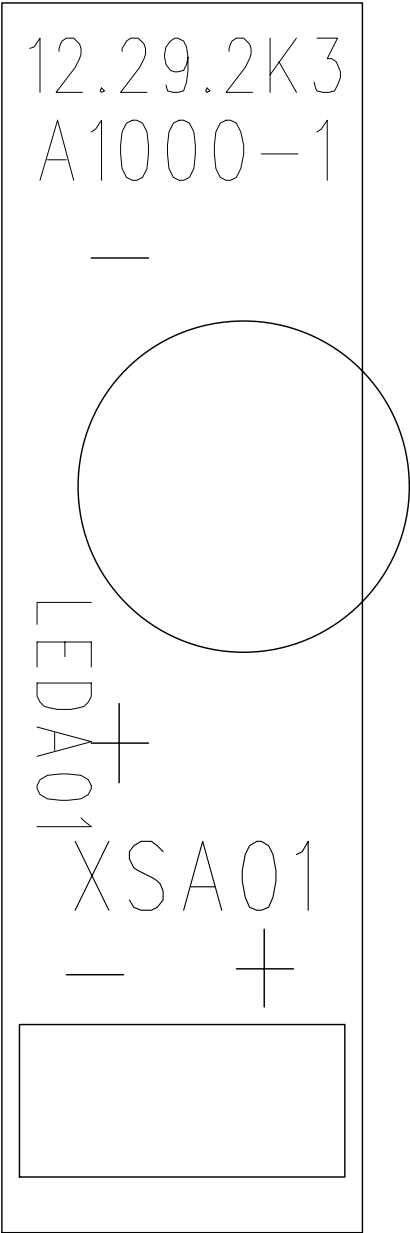


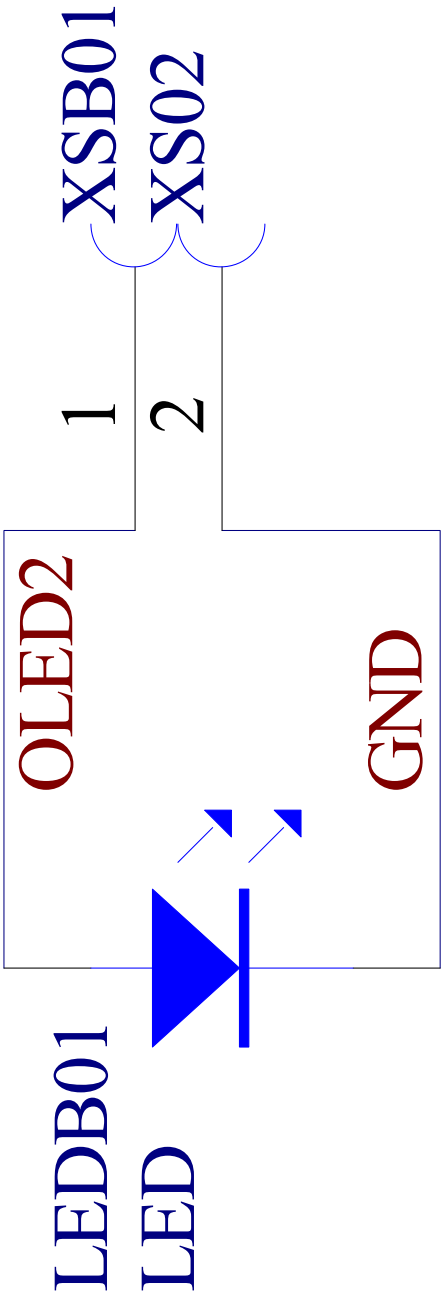
SILKSCREEN TOP

SUBSIDIARY PANEL 2 SCHEMATIC DIAGRAM

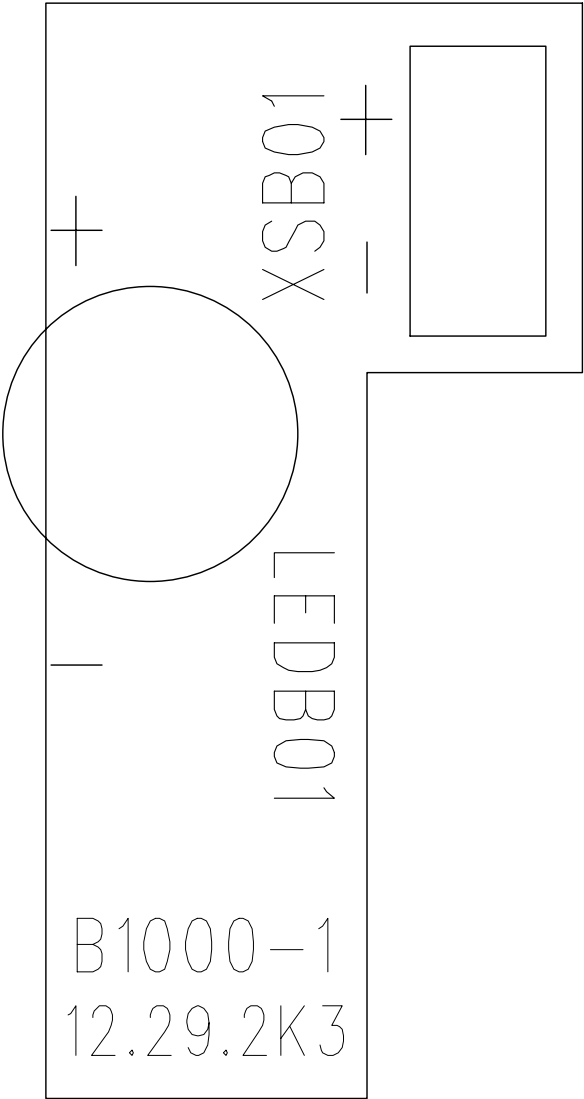


SUBSIDIARY PANEL 2 SCHEMATIC DIAGRAM

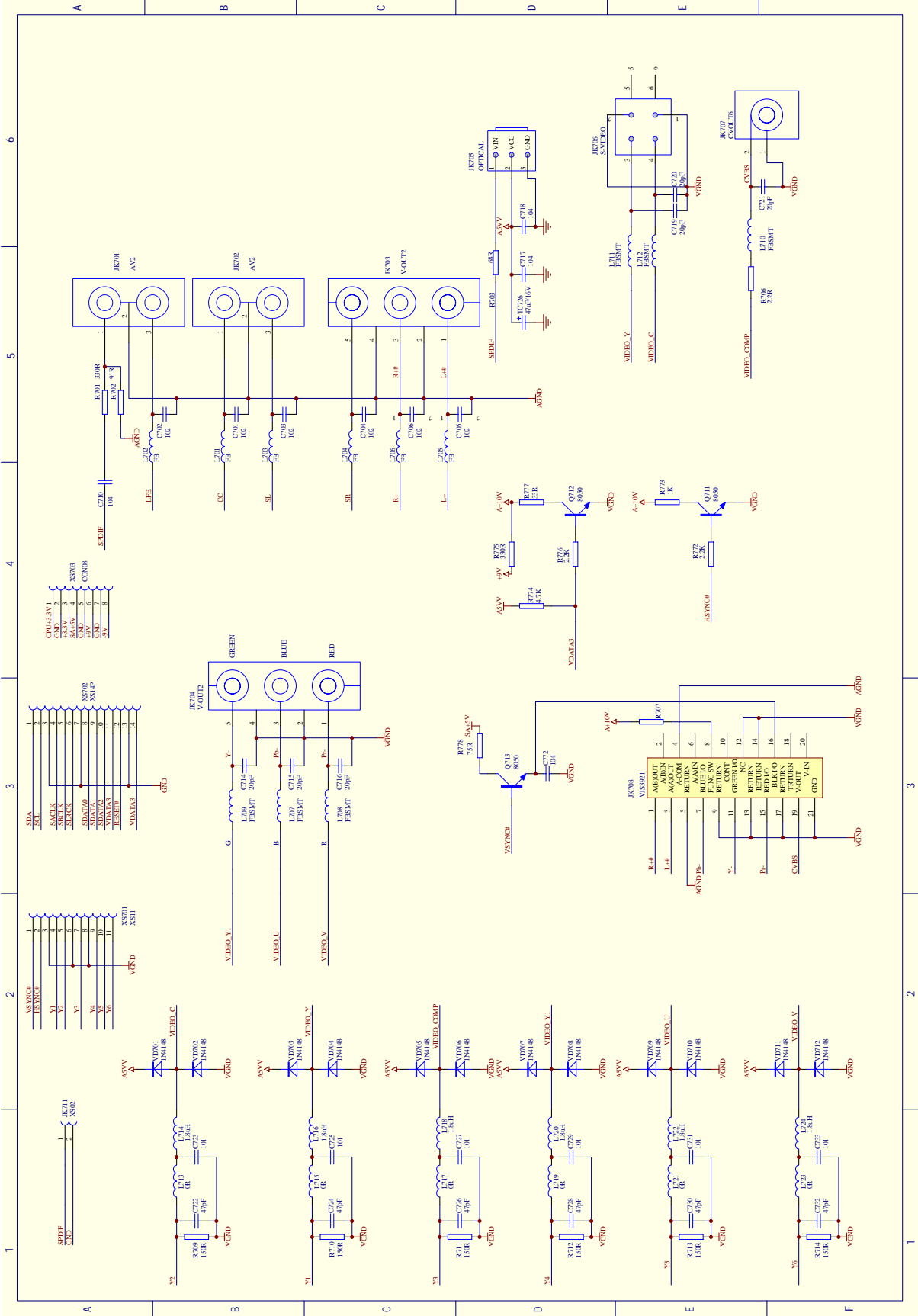




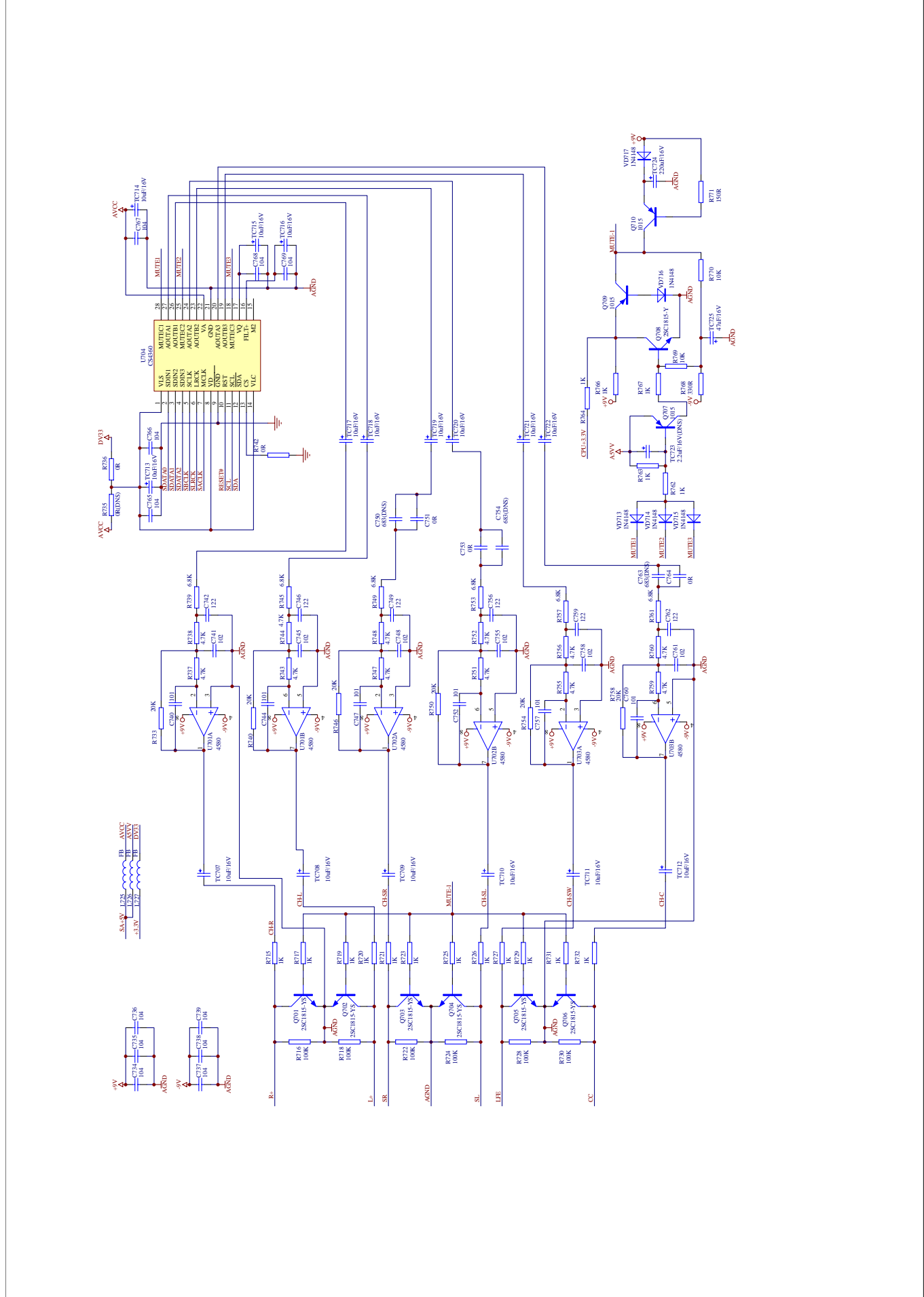
SUBSIDIARY PANEL 3 SCHEMATIC DIAGRAM



OUTPUT BOARD SCHEMATIC DIAGRAM

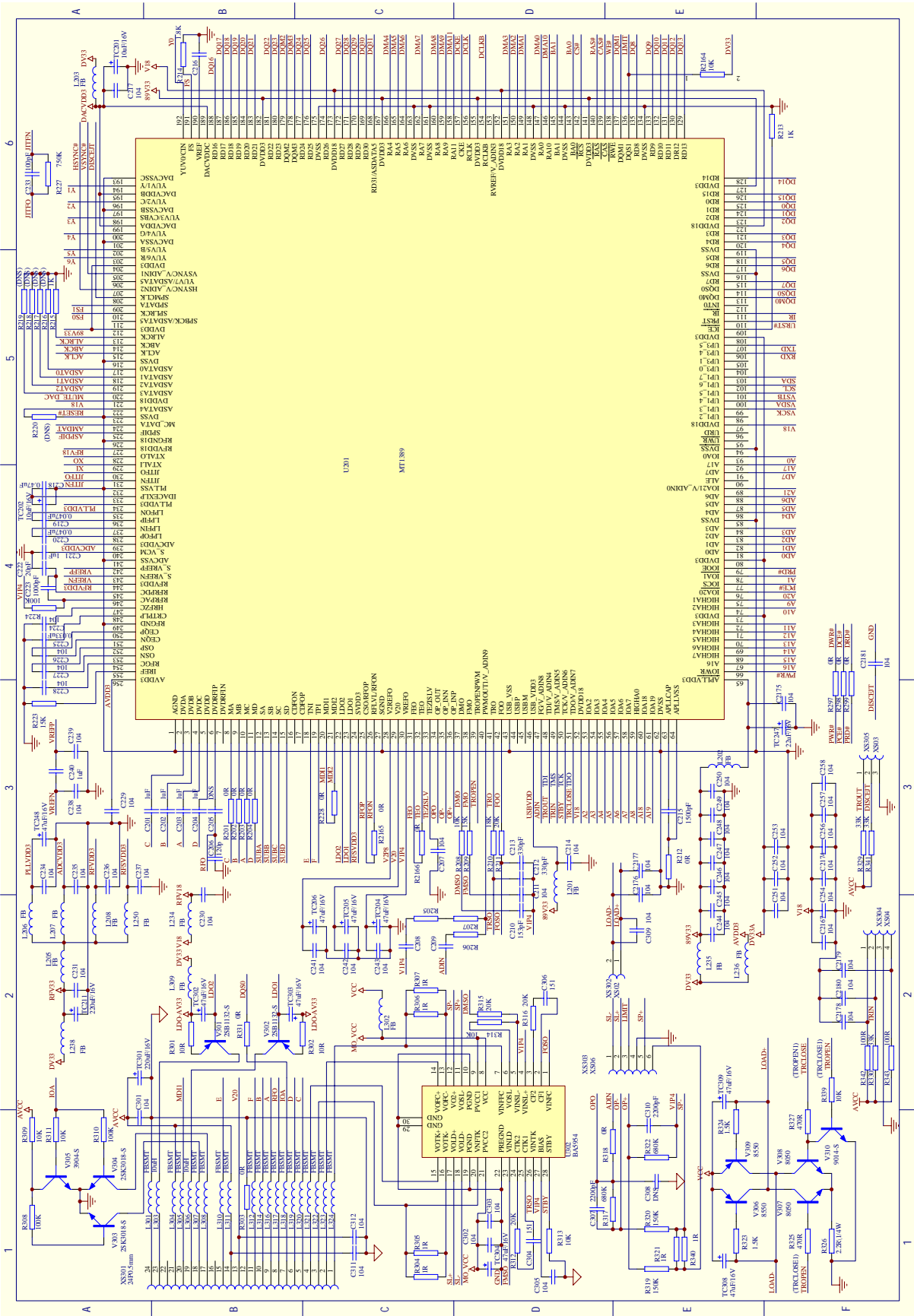


OUTPUT BOARD SCHEMATIC DIAGRAM

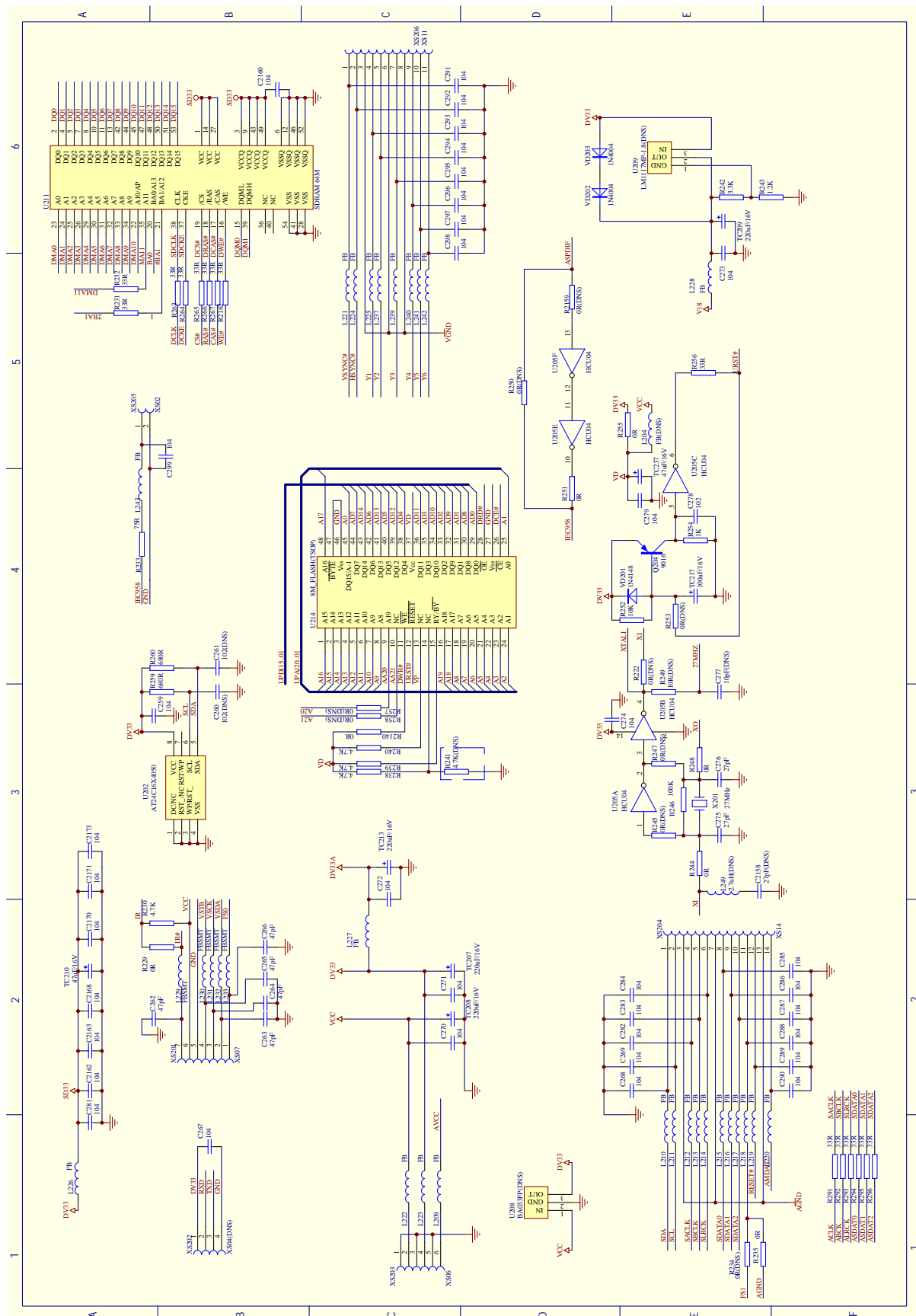




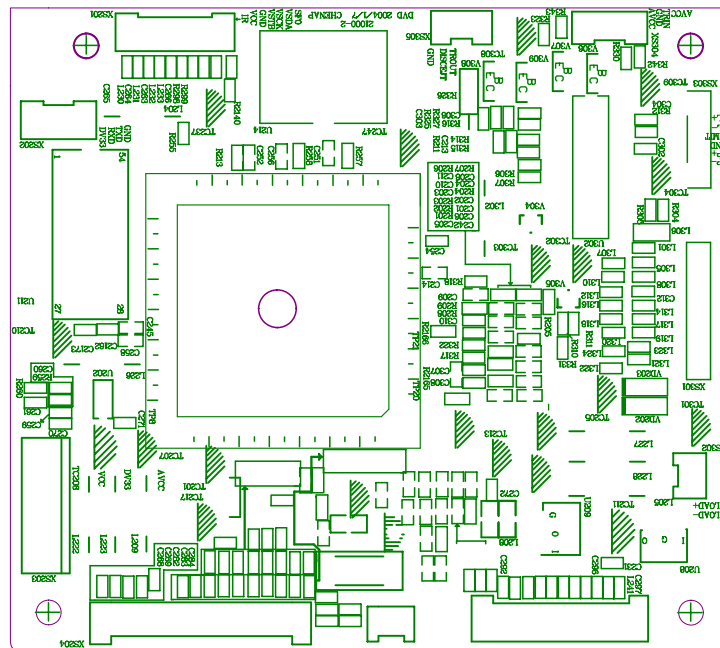
MIAN SCHEMATIC DIAGRAM



## MIAN SCHEMATIC DIAGRAM



## MIAN SCHEMATIC DIAGRAM



# 10. SPARE PARTS LIST

## DV975s MATERIAL LIST

### 1. DECODE BOARD

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		SMD RESISTOR	1/16W 0Ω ±5%	23	R201~R204,R212,R228,R234,R245,R247,R222,R251,R255,R297~R299,R303,R318,R331,R2159,R2165,R2166 ,R257,R258
2		SMD RESISTOR	1/16W 75Ω ±5%	1	R233
3		CARBON FILM RESISTOR	1/4W2.2Ω±5%	1	R326
4		SMD RESISTOR	1/16W1Ω±5%	6	R304~R307,R321,R340
5		SMD RESISTOR	1/16W 10Ω ±5%	2	R301,R302
6		SMD RESISTOR	1/16W 33Ω ±5%	16	L202,R231,R232,R256,R263~R267 ,R291~R296,R2162
7		SMD RESISTOR	1/16W 100Ω ±5%	6	R325,R327,R323,R324,R342,R343
8		SMD RESISTOR	1/16W 680Ω ±5%	2	R259,R260
9		SMD RESISTOR	1/16W 1K ±5%	3	R213,R215 ,R254
10		SMD RESISTOR	1/16W 1.5K ±5%	1	R243
11		SMD RESISTOR	1/16W 510Ω ±5%	1	R214
12		SMD RESISTOR	1/16W 3.3K ±5%	1	R242
13		SMD RESISTOR	1/16W 4.7K ±5%	4	R238~R240,R2140
14		SMD RESISTOR	1/16W 10K ±5%	9	R208,R229,R252,R309,R311,R313,R314,R339,R2164
15		SMD RESISTOR	1/16W 15K ±5%	2	R209,R223
16		SMD RESISTOR	1/16W 20K ±5%	4	R211,R312,R315,R316
17		SMD RESISTOR	1/16W 33K ±5%	3	R329,R330,R341
18		SMD RESISTOR	1/16W 18K ±5%	1	R210
19		SMD RESISTOR	1/16W 150K ±5%	2	R319,R320
20		PRECISION SMD RESISTOR	1/16W 680K ±1%	2	R317,R322
21		PRECISION SMD RESISTOR	1/16W 750K ±1%	1	R227
22		SMD RESISTOR	1/16W 100K ±5%	4	R224,R308,R310,R246
23		CD	CD11 16V10U±20%5×11 2	2	TC201,TC202
24		CD	CD11 10V220U±20%6×12 2.5	1	TC217
25		CD	CD11 16V220U±20%6×12 2.5	6	TC207~TC209,TC211,TC213,TC301
26		CD	CD11 16V47U±20%5×11 2	12	TC204~TC206,TC210,TC247,TC237,TC302~TC304,TC308,TC309 ,TC248
27		SMD CAPACITOR	50V 20P ±5% NPO 0603	1	C222
28		SMD CAPACITOR	50V 27P ±5% NPO 0603	2	C275,C276
29		SMD CAPACITOR	50V 47P ±5% NPO 0603	5	C262~C266
30		SMD CAPACITOR	50V 101 ±5% NPO 0603	1	C206
31		SMD CAPACITOR	50V 331 ±5% NPO 0603	2	C212,C213
32		SMD CAPACITOR	50V 391 ±5% NPO 0603	1	C233
33		SMD CAPACITOR	50V 151 ±5% NPO 0603	2	C304,C306
34		SMD CAPACITOR	50V 104 +80%-20% 0603	61	C207,C211,C214,C216,C217,C224 ,C226~C231,C234~C239,C241~C254,C256~C259,C267,C270~C274, C279,C281,C301~C303,C305,C309,C311,C312,C2160,C2162,C2163, C2167,C2168,C2170,C2171,C2173 ~C2175

	34.1	SMD CAPACITOR	25V 104 +80%-20% 0603	61	C207,C211,C214,C216,C217,C224 ,C226~C231,C234~C239,C241~C254,C256~C259,C267,C270~C274,C279,C281,C301~C303,C305,C309,C311,C312,C2160,C2162,C2163,C2167,C2168,C2170,C2171,C2173~C2175
35		SMD CAPACITOR	16V 105 +80%-20% 0603	6	C201~C204,C221,C240
36		SMD CAPACITOR	50V 102 ±10% 0603	2	C278,C223
37		SMD CAPACITOR	50V 152 ±10% 0603	1	C215
38		SMD CAPACITOR	50V 222 ±10% 0603	2	C307,C310
39		SMD CAPACITOR	50V 153 ±10% 0603	1	C210
40		SMD CAPACITOR	16V 333 ±10% 0603	1	C225
41		SMD CAPACITOR	16V 473 ±10% 0603	2	C219,C220
42		SMD CAPACITOR	16V474 +80%-20% 0603	1	C218
43		SMD INDUCTOR	10UH ±10% 2012	2	L303,L306
44		MAGNETIC BEADS INDUCTO	RH354708	8	L205,L209,L222,L223,L226,L227,L228,L302
45		SMD MAGNETIC BEADS	FCM1608K-221T05	52	L201,L203,L207~L208,L229~L232,L234~L236,L238,L250,L301,L304,L305,L307~L312,L314,L316~L324 ,L210~L221,L224,L225,L237,L239~L243
46		SMD CAPACITOR	50V 10P ±5% NPO 0603	20	C282~C298,C268,C269,C299
47		SMD RESISTOR	1/16W 4.7Ω ±5%	1	L206
48		SMD DIODE	1N4148	1	VD201
	48.1	SMD DIODE	LS4148	1	VD201
	48.2	SMD DIODE	LL4148	1	VD201
49		TRIODE	C8050	2	V307,V308
50		TRIODE	8550C	2	V306,V309
51		SMD TRIODE	9014C	1	V310
52		TRIODE	9015C	1	Q204
53		SMD TRIODE	3904	1	V305
54		SMD TRIODE	2SK3018	2	V303,V304
55		SMD TRIODE	2SB1132	2	V301,V302
56		IC	MM74HCU04M SOP	1	U205
	56.1	IC	HCU04 SOP	1	U205
57		IC	HY57V641620HGT-7 TSOP	1	U211
	57.1	IC	KSV464P4JA-70 TSOP	1	U211
58		IC	LM1117MP-ADJ SOT-223	1	U209
59		IC	24C02N SOP	1	U202
60		IC	MT1389EE QFP	1	U201
61		IC	BA5954FP HSOP	1	U302
62		CRYSTAL OSCILLATOR	27.00MHz 49-S	1	X201
63		PCB	21000-2	1	
64		SOCKET	2P 2.0mm	2	XS302 , XS205
65		SOCKET	3P 2.0mm	1	XS305
66		SOCKET	6P 2.0mm	1	XS201
67		SOCKET	11P 2.0mm	1	XS206
68		SOCKET	14P 2.0mm	1	XS204
69		SOCKET	6P 2.5mm	1	XS203

70		SOCKET	4P 2.0mm	1	XS304
71		CABLE SOCKET	6P 1.0mm SMD WITH CLASP	1	XS303
72		CABLE SOCKET	24P 0.5mm SMD WITH CLASP	1	XS301

## 2. MAIN PANEL

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		SOFT SPONGE	12×6×5 DOUBLE-FACED, HARD	1	CONNECT IR SENSOR WITH PCB 1PCS
2		SMD DIODE	1N4148	2	D401~D402
3		IC	D16312GB QFP	1	U401
	3.1	IC	PT6312LQ QFP	1	U401
4		DISPLAY SCREEN	HNV 06SC22 BLUE SCREEN	1	VFD401
	4.1	DISPLAY SCREEN	VFD16-0604	1	VFD401
	4.2	DISPLAY SCREEN	HNV 06SC22	1	VFD401
5		LIGHT TOUCH RESTORE SWITCH	HORIZONTAL 6×6×1	3	K401 ~ K403
6		IR SENSOR	HS0038B3V	1	U402
7		SMD RESISTOR	1/16W 0Ω ±5%	2	R420,R421
8		SMD RESISTOR	1/16W 10Ω ±5%	7	R418,R433,R434,R437,R438,R439 ,R440
9		CARBON FILM RESISTOR	1/6W75 ±5% SHAPED 7.5	1	R436
10		SMD RESISTOR	1/16W 75Ω ±5%	1	R432
11		SMD RESISTOR	1/16W 100Ω ±5%	1	R415
12		SMD RESISTOR	1/16W 10K ±5%	6	R416,R417,R419,R422,R427,R428
13		SMD RESISTOR	1/16W 33K ±5%	8	R401~R404,R411~R414
14		SMD RESISTOR	1/16W 51K ±5%	1	R405
15		SMD RESISTOR	1/16W 330Ω ±5%	2	R430,R441
16		SMD RESISTOR	1/16W 1K ±5%	9	R406~R410,R429,R431,R435,R442
17		SOFT SPONGE	12×6×4 DOUBLE-FACED, HARD	3	CONNECT MAIN PANEL, VFD SCREEN AND FRONT PANEL PCB 3PCS
18		SMD RADIATION DIODE	LTST-C930TBKT	2	LED04,LED05
19		RADIATION DIODE	3B3HC COLORLESS WITH BLU	2	LED402,LED403
20		CD	CD11C 16V22U±20%4×7 1.5	1	TC403
21		SMD CAPACITOR	50V 104 +80%-20% 0603	4	C401,C405,C407,C408
22		CD	CD11C 16V33U±20%5×7 2	3	TC401,TC402,TC404
23		SMD TRIODE	8050D	2	V403,V404
24		SMD TRIODE	8550D	2	V402,V406
25		PCB	41000-1	1	
26		SOFTWARE PROGRAM EPROM	ROM969S-0A(53S )	1	
27		FLAT CABLE	5-6P90 2.0 2 SOCKET WITH L NEEDLE REVERSE 5 CORD	1	XS402
28		FLAT CABLE	7P60 2.0 2 SOCKET WITH L NEEDLE REVERSE	1	XS401
29		SOCKET	4P 2.0mm	1	XS405
30		SOCKET	2P 2.0mm	2	XS403,XS404

## 3.OUTPUT BOARD

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		CARBON FILM RESISTOR	1/4W1.5K±5% SHAPED 10	1	R516
2		CARBON FILM RESISTOR	1/4W330 ±5% SHAPED 10	1	R506

3		CARBON FILM RESISTOR	1/4W1K±5% SHAPED 10	2	R507,R513
4		CARBON FILM RESISTOR	1/4W100 ±5% SHAPED10	1	R521
5		METAL FILM RESISTOR	1/4W3.3K±1% SHAPED 10	1	R509
6		METAL FILM RESISTOR	1/4W12K±1% SHAPED 10	1	R518
7		METAL FILM RESISTOR	1/4W10K±1%	1	R508
8		METAL OXIDE FILM RESISTOR	1W1 ±5% SHAPED FLAT 15×7	1	R502
9		CARBON FILM RESISTOR	1/4W30K±5% SHAPED 10	1	R504
10		CARBON FILM RESISTOR	1/4W10K±5% SHAPED 10	1	R514
11		CARBON FILM RESISTOR	1/4W4.7K±5% SHAPED 10	1	R510
12		CARBON FILM RESISTOR	1/4W22K±5% SHAPED 10	1	R512
13		METAL OXIDE FILM RESISTOR	1W 220 ±5% SHAPED R 15×8	1	R511
14		METAL OXIDE FILM RESISTOR	2W68K±5% SHAPED FLAT 15×7	1	R503
15		HIGH VOLTAGE RESISTOR	1/2W680K±5%	1	R501
16		CARBON FILM RESISTOR	1/4W300 ±5% SHAPED 10	1	R515
17		METAL OXIDE FILM RESISTOR	1W720K±5% SHAPED FLAT 15×	1	R517
18		MAGNETIC BEADS INDUCTOR	RH354708	1	L503
19		PORCELAIN CAPACITOR	50V 100P ±10% 5mm	5	C507,C509,C511,C513,C514
20		PORCELAIN CAPACITOR	1000V 103 +80%-20% 7.5mm	1	C502
21		TERYLENE CAPACITOR	100V 102 ±5% 3.5mm	1	C506
22		PORCELAIN CAPACITOR	50V 104 ±20% 5mm	5	C508,C510,C517,C515,C520
23		PORCELAIN CAPACITOR	1000V 101 +80%-20% 7.5mm	2	C516,C503
	23.1	PORCELAIN CAPACITOR	1000V 101 ±10% 7.5mm	2	C516,C503
24		CERAMIC CAPACITOR	CT81 250VAC221±20% 10mm	1	BC503
	24.1	CERAMIC CAPACITOR	CT81 250VAC221±10% 10mm	1	BC503
25		TERYLENE CAPACITOR	275V 104 ±20% 15mm	1	BC501
	25.1	TERYLENE CAPACITOR	275V 104 ±10% 15mm	1	BC501
26		CD	CD11T 16V100u±20%6×12 2.5	3	TC508,TC511,TC513
27		CD	CD11T 25V100U±20%6×12 2.5	2	TC503,TC504
28		CD	CD11T 50V10U±20%5×11 2	1	TC502
29		CD	CD11T 50V47u±20%6×12 2.5	3	TC512,TC515,TC516
30		CD	CD11T 10V1000u±20%8×16 3.5	4	TC505,TC506,TC509,TC510
31		CD	KM 400V47U±20%16×25 7.5	1	TC501
32		CHOKE COIL	VERTICAL 10UH 1A 5mm	2	L505,L502
33		CHOKE COIL	VERTICAL 10UH 2A 5mm	2	L506,L507
34		SWITCHING POWER TRANSFORMER	BCK-28-503S	1	TR501
35		DIODE	HER105	5	D508,D511,D512,D513,D514
36		SCHOTTKY DIODE	SR360	3	D509,D510,D515
37		DIODE	HER107	1	D505
38		VOLTAGE REGULATOR DIODE	5.1V 1/2W	1	ZD501
39		VOLTAGE REGULATOR DIODE	9.1V 1W	1	ZD502
40		VOLTAGE REGULATOR DIODE	3.3V 1/2W	1	ZD503
41		DIODE	1N4148	2	D507,D517
42		DIODE	1N4007	4	D501~D504
43		TRIODE	2N5551	1	V502
44		IC	NCP1200P60 DIP	1	U501
45		IC	P4NC60 PLASTIC SEALED TO-2	1	U505
	45.1	IC	SSS4N60B TO-220	1	U505
46		IC	TLV431 TO-92	1	U503
47		POWER GRID FILTER	JLB1153 33uH + -0%	1	L501
48		PHOTOELECTRIC COUPLER	HS817	1	U502
49		CONTROLLABLE SILICON	MCR100-6	1	U506
	49.1	CONTROLLABLE SILICON	NCR169D TO-92	1	U506

50	SOCKET	8P 2.0mm	1	CN503
51	SOCKET	6P 2.5mm	1	CN502
52	CONNECTION CORDS	0.6 SHAPED 12.5mm	1	JP501
53	CONNECTION CORDS	0.6 SHAPED 10mm	9	JP502~JP509,D516
54	HEAT RADIATION BOARD	11×15×25 BLACK AB905	1	U505 FOR HEAT RADIATION
55	TAPPING SCREW	BT 3×8 BLACK	1	FIXED HEAT RADIATION BOARD
56	FUSE	T1.6AL 250V WITH PIN	1	F501
57	GROUND CHIP OF POWER BOARD	AB903	2	G501,G502
58	IC	LM7805 GOLD SEALED TO-220	1	U504
59	PCB	5991A-0	1	
60	SOCKET	7P 2.0mm	1	CN501
61	8-SHAPED POWER SOCKET	SA-2S-129	1	BCN501

#### 4. AV BOARD

NO	MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1	SMD RESISTOR	1/16W 100Ω ±5% 0603	1	R702
2	SMD RESISTOR	1/16W 0Ω ±5% 0603	11	C751,C753,C764,L714,L716,L718,L720,L722,L724,R707,R742
3	CARBON FILM RESISTOR	1/6W33 ±5% SHAPED 7.5	1	R777
4	SMD RESISTOR	1/16W 68Ω ±5% 0603	1	R703
5	SMD RESISTOR	1/16W 75Ω ±5% 0603	6	R709~R714
6	CARBON FILM RESISTOR	1/6W75 ±5% SHAPED 7.5	1	R778
7	SMD RESISTOR	1/16W1Ω±5% 0603	1	R706
8	CARBON FILM RESISTOR	1/6W150Ω±5%	1	R771
9	SMD RESISTOR	1/16W 220Ω ±5% 0603	1	R701
10	CARBON FILM RESISTOR	1/6W330Ω±5%	2	R768,R775
11	SMD RESISTOR	1/16W 1K ±5% 0603	11	R715,R717,R719,R720,R721,R723,R726,R729,R762,R763,R767
12	CARBON FILM RESISTOR	1/6W1K±5%	7	R731,R725,R764,R766,R727,R732,R773
13	SMD RESISTOR	1/16W 2.2K ±5% 0603	2	R776,R772
14	SMD RESISTOR	1/16W 4.7K ±5% 0603	11	R737,R738,R743,R744,R747,R751,R752,R755,R756,R759,R760
15	CARBON FILM RESISTOR	1/6W4.7K±5%	2	R748,R774
16	SMD RESISTOR	1/16W 6.8K ±5% 0603	6	R739,R745,R749,R753,R757,R761
17	SMD RESISTOR	1/16W 10K ±5% 0603	2	R769,R770
18	SMD RESISTOR	1/16W24K±5% 0603	6	R733,R740,R746,R750,R754,R758
19	SMD RESISTOR	1/16W 100K ±5% 0603	6	R716,R718,R722,R724,R728,R730
20	SMD INDUCTOR	1.8UH ±10% 1608	6	L713,L715,L717,L719,L721,L723
21	SMD CAPACITOR	50V 20P ±5% 0603	6	C714,C715,C716,C719,C720,C721
22	SMD CAPACITOR	50V 47P ±5% NPO 0603	12	C722~C733
23	SMD CAPACITOR	50V 101 ±5% NPO 0603	6	C740,C744,C747,C752,C757,C760
24	SMD CAPACITOR	50V 102 ±10% 0603	12	C701~C706,C741,C745,C748,C755,C758,C761
25	SMD CAPACITOR	50V 122 ±10% 0603	5	C742,C746,C756,C759,C762

26		PORCELAIN CAPACITOR	50V 122 ±10% 5mm	1	C749
27		SMD CAPACITOR	50V 104 +80%-20% 0603	14	C710,C717,C718,C735,C736,C737,C738,C739,C765,C766,C767,C768,C769,C772
28		PORCELAIN CAPACITOR	50V 104 +80%-20% 5mm	1	C734
29		CD	CD11C 16V10U±20%4×7 1.5	16	TC707~TC722
30		CD	CD11 16V47U±20%5×11 2	2	TC725,TC726
31		CD	CD11 16V220U±20%6×12 2.5	1	TC724
32		SMD MAGNETIC BEADS	FCM1608K-221T05	11	L701~L703,L707,L708,L710~L712,L725,L726 L727
33		MAGNETIC BEADS INDUCTO	RH354708	4	L704~L706,L709
34		SMD DIODE	1N4148	17	VD701~VD717
35		SMD TRIODE	C1815	6	Q701~Q706
36		TRIODE	C1815Y	1	Q708
37		TRIODE	2SA1015	3	Q707,Q709,Q710
38		TRIODE	S8050D	3	Q711~Q713
39		IC	NJM4558M SOP	3	U701~U703
40		IC	CS4360 SSOP	1	U704
41		ELECTRO-OPTIC TRANSFORMER	TX179ATW	1	JK705
	41.1	ELECTRO-OPTIC TRANSFORMER	TX179AT	1	JK705
42		CONNECTION CORDS	0.6 SHAPED 10mm	9	JP720,JP721,JP714,JP734,JP703,JP708~JP710,JP741
43		CONNECTION CORDS	0.6 SHAPED 7.5mm	14	JP719,JP711~JP712,JP702,JP716,JP739,R736,JP726,JP750~JP754,JP722
44		CONNECTION CORDS	0.6 SHAPED 5mm	23	JP723~JP725,JP746,JP731,JP715,JP745,JP747,JP748,JP749,JP733,JP735~JP738,JP707,JP701,JP704,JP705,JP743,JP744,JP717,JP757
45		TERMINAL SOCKET	S-VIDEO	1	JK706
46		TERMINAL SOCKET	AV1-8.4-5G-2 YELLOW	1	JK707
47		TERMINAL SOCKET	AV3-8.4-6G-2	1	JK704
48		TERMINAL SOCKET	AV3-8.4 (RED, WHITE, RED)	1	JK703
49		TERMINAL SOCKET	AV2-8.4 (WHITE, WHITE)	1	JK702
50		TERMINAL SOCKET	AV2-8.4 (RED, BLACK)	1	JK701
51		SCART SOCKET	SCART-01	1	JK708
52		PCB	7991S-0	1	
53		SOCKET	2P 2.0mm	1	JK711
54		SOCKET	8P 2.0mm	1	XS703
55		SOCKET	11P 2.0mm	1	XS701
56		SOCKET	14P 2.0mm	1	XS702

#### 5. SUBSIDIARY 1

NO	MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1	SMD DOUBLE-COLOR RADIATION DIODE	RADIATION ON TOP 0603×2 R	1	LED901
2	LIGHT TOUCH RESTORE SWITCH	HORIZONTAL 6×6×1	1	K901
3	FLAT CABLE	4P250 2.0 2 SOCKET WITH L NEEDLE, THE SAME DIRECTION	1	XS901
4	PCB	91000-1	1	

**6. SUBSIDIARY BOARD 2**

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		RADIATION DIODE	3B3HC COLORLESS WITH BLU	1	LEDA01
2		PCB	A1000-1	1	
3		FLAT CABLE	2P 210 2.0 1 SOCKET RED, BLAC	1	XSA01

**7. SUBSIDIARY BOARD 3**

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		RADIATION DIODE	3B3HC COLORLESS WITH BLU	1	LEDB01
2		PCB	B1000-1	1	
3		FLAT CABLE	2P 70 2.0 1 SOCKET RED, BLAC	1	XSB01