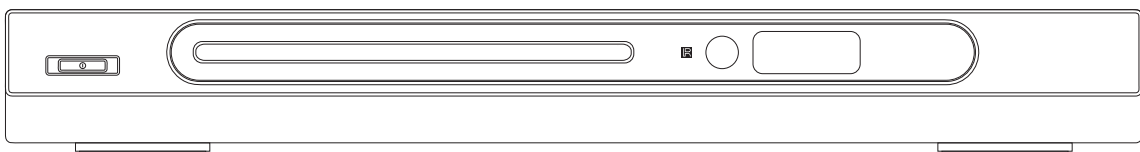


# **SERVICE MANUAL**

## **DV962S**



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# 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.

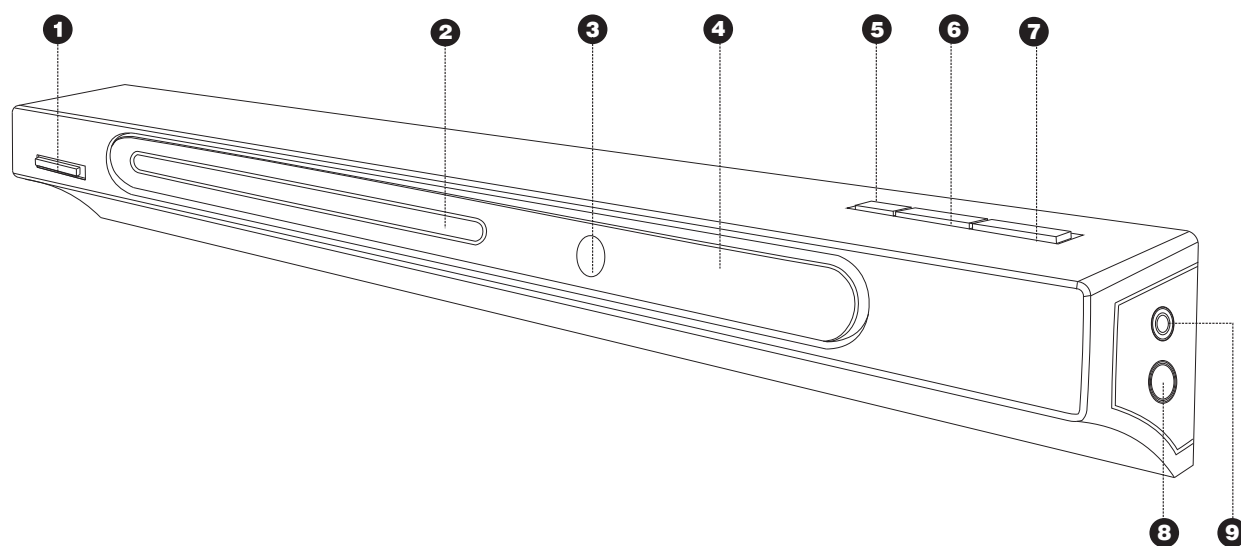
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity(ESD).

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

**2 Disc** tray

**3 IR SENSOR** button

**4 Display** window

**5 OPEN/CLOSE** button

**6 PLAY/PAUSE** button

**7 STOP** button

**8 MIC VOLUME** knob

**9 MIC** jack

## 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

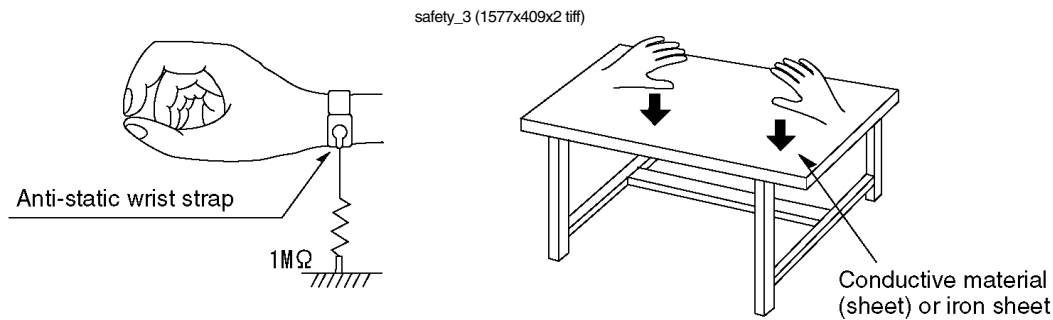
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

#### 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

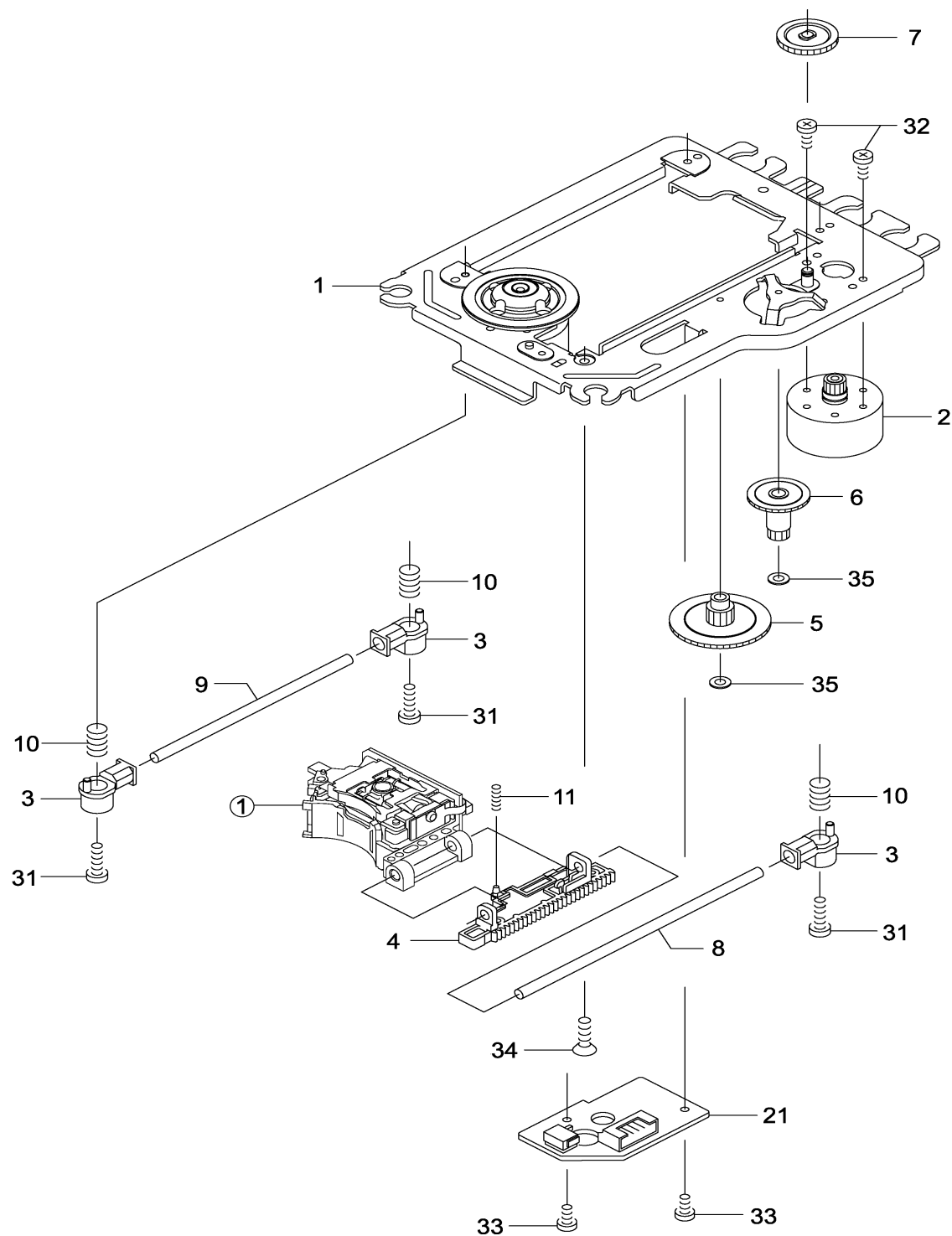
1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide).
2. 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

### 5.1 Optical pickup Unit Exploded View and Part List



Pic (1)

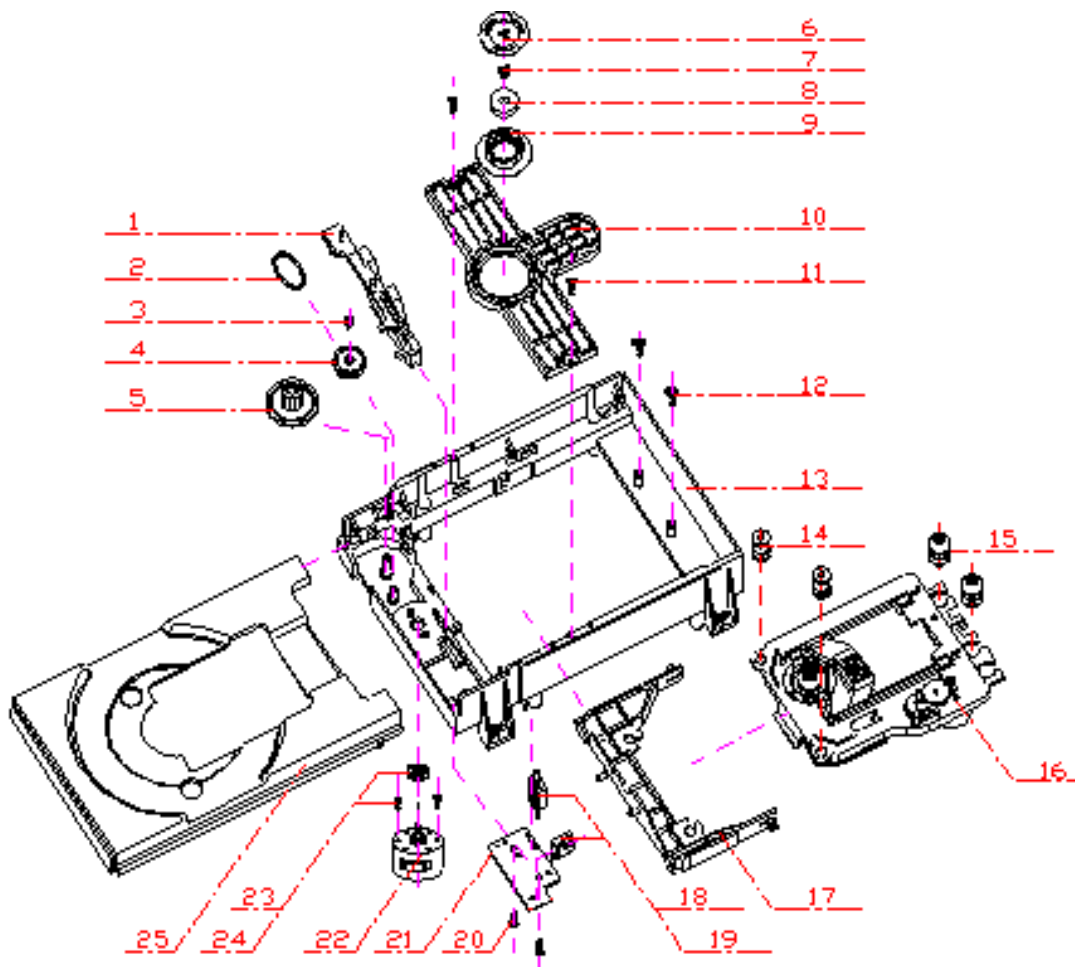
### Materials to Pic (1)

| No. | PARTS CODE    | PARTS NAME                 | Q' ty |
|-----|---------------|----------------------------|-------|
| ①   | 14692200      | SF-HD60                    | 1     |
| 1   | 1EA0311A06300 | ASSY, CHASSIS, COMPLETE    | 1     |
| 2   | 1EA0M10A15500 | ASSY, MOTOR, SLED          | 1     |
| Or  | 1EA0M10A15501 | ASSY, MOTOR, SLED          | 1     |
| 3   | 1EA2451A24700 | HOLDER, SHAFT              | 3     |
| 4   | 1EA2511A29100 | GEAR, RACK                 | 1     |
| 5   | 1EA2511A29200 | GEAR, DRIVE                | 1     |
| 6   | 1EA2511A29300 | GEAR, MIDDLE, A            | 1     |
| 7   | 1EA2511A29400 | GEAR, MIDDLE, B            | 1     |
| 8   | 1EA2744A03000 | SHAFT, SLIDE               | 1     |
| 9   | 1EA2744A03100 | SHAFT, SLIDE, SUB          | 1     |
| 10  | 1EA2812A15300 | SPRING, COMP, TYOUSEI      | 3     |
| 11  | 1EA2812A15400 | SPRING, COMP, RACK         | 1     |
|     |               |                            |       |
| 21  | 1EA0B10B20100 | ASSY, PWB                  | 1     |
| Or  | 1EA0B10B20200 | ASSY, PWB                  | 1     |
|     |               |                            |       |
| 31  | SEXEA25700--- | SPECIAL SCREW BIN+-M2X11   | 3     |
| 32  | SEXEA25900--- | SPECIAL SCREW M1.7X2.2     | 2     |
| 33  | SFBPN204R0SE- | SCR S-TPG PAN 2X4          | 2     |
| 34  | SFSFN266R0SE- | SCR S-TPG FLT 2.6X6        | 1     |
| 35  | SWXEA15400--- | SPECIAL WASHER 1.8X4 X0.25 | 2     |

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

Note : This parts list is not for service parts supply.

## 5.2 Bracket Exploded View and Part List



Pic (2)

### Materials to Pic(2)

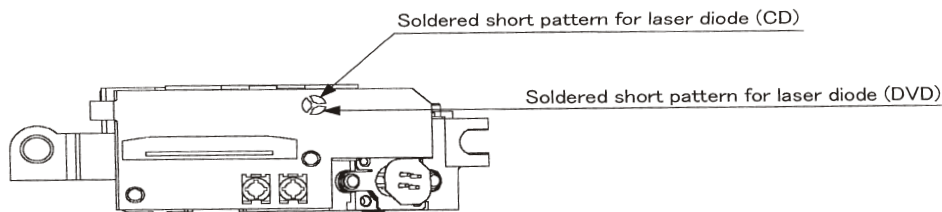
- |                                   |                          |
|-----------------------------------|--------------------------|
| 1.bracket                         | 14. front silicon rubber |
| 2.belt                            | 15. Back silicon rubber  |
| 3.screw                           | 16. Pick-up              |
| 4.belt wheel                      | 17. Pick-up              |
| 5.gearwheel                       | 18. switch               |
| 6.iron chip                       | 19. Five-pin flat plug   |
| 7. Immobility mechanism equipment | 20. screw                |
| 8. Magnet                         | 21. PCB                  |
| 9. Platen                         | 22. motor                |
| 10. Bridge bracket                | 23. Motor wheel          |
| 11. screw                         | 24. screw                |
| 12. screw                         | 25.tray                  |
| 13. Big bracket                   |                          |

**Before going process with disassembly and installation, please carefully both peruse the chart and confirm the materials.**

## 5.3 MISCELLANEOUS

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

Short the parts of LD circuit pattern by soldering.



### 5.3.2 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 short lands 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

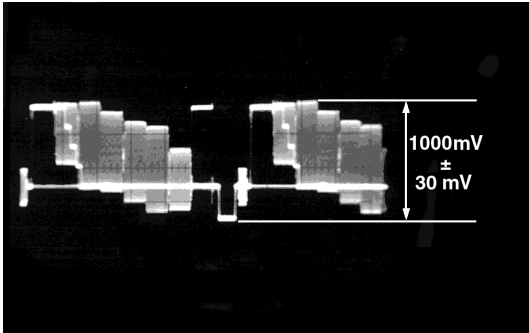
## 6.1. Video Output (Luminance Signal) Confirmation

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

| Measurement point         | Mode                                                                | Disc                       |
|---------------------------|---------------------------------------------------------------------|----------------------------|
| Video output terminal     | Color bar 75%<br>PLAY(Title 46):DVDT-S15<br>PLAY(Title 12):DVDT-S01 | DVDT-S15<br>or<br>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



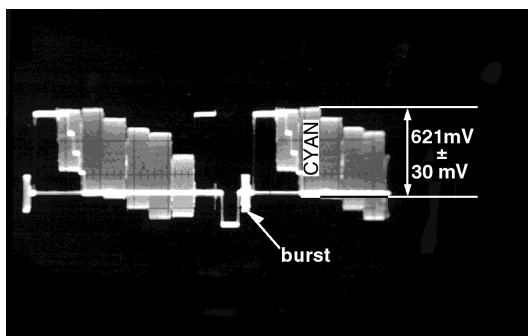
## 6.2 Video Output(Chrominance Signal) Confirmation

Do the confirmation after replacing P.C.B.

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

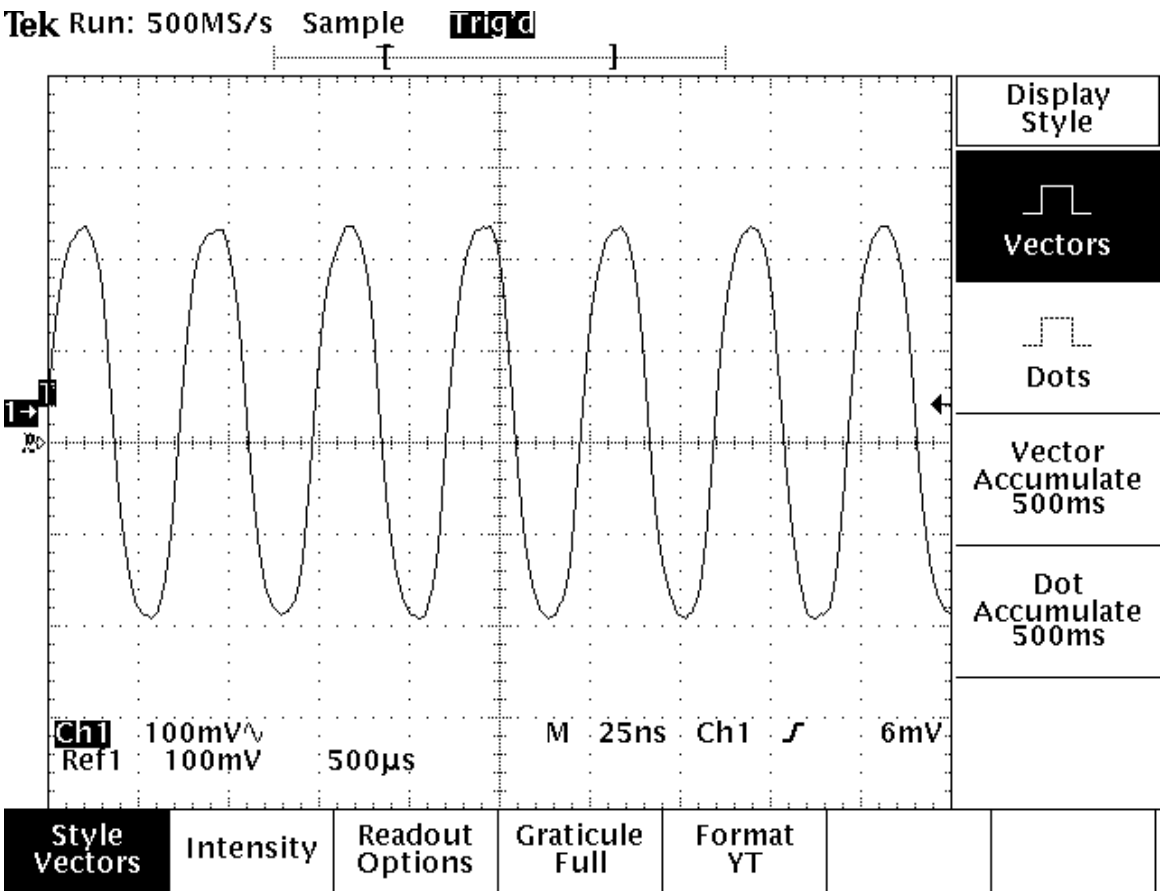
Purpose:To maintain video signal output compatibility.

- 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

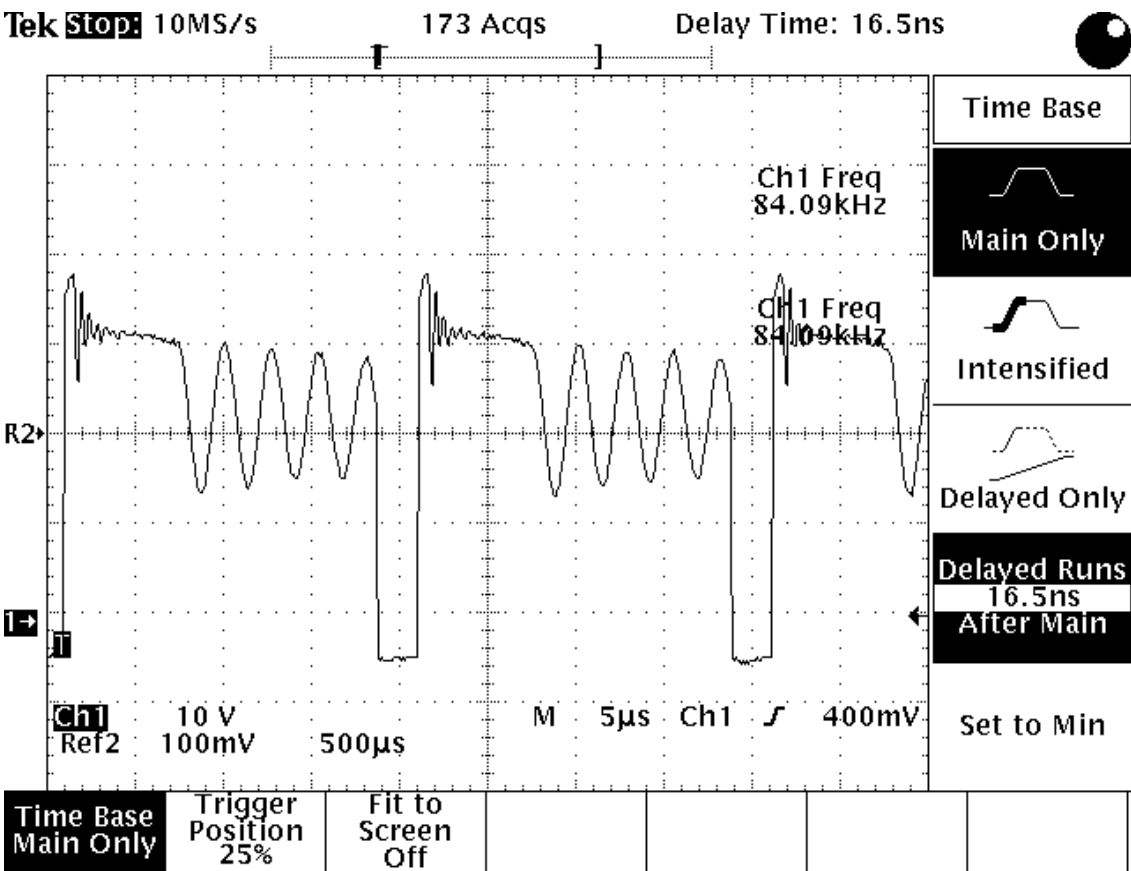


# 7.MPEG BOARD CHECK WAVEFORM

## 7.1 27MHz WAVEFORM



## 7.2 IC VIPER22 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

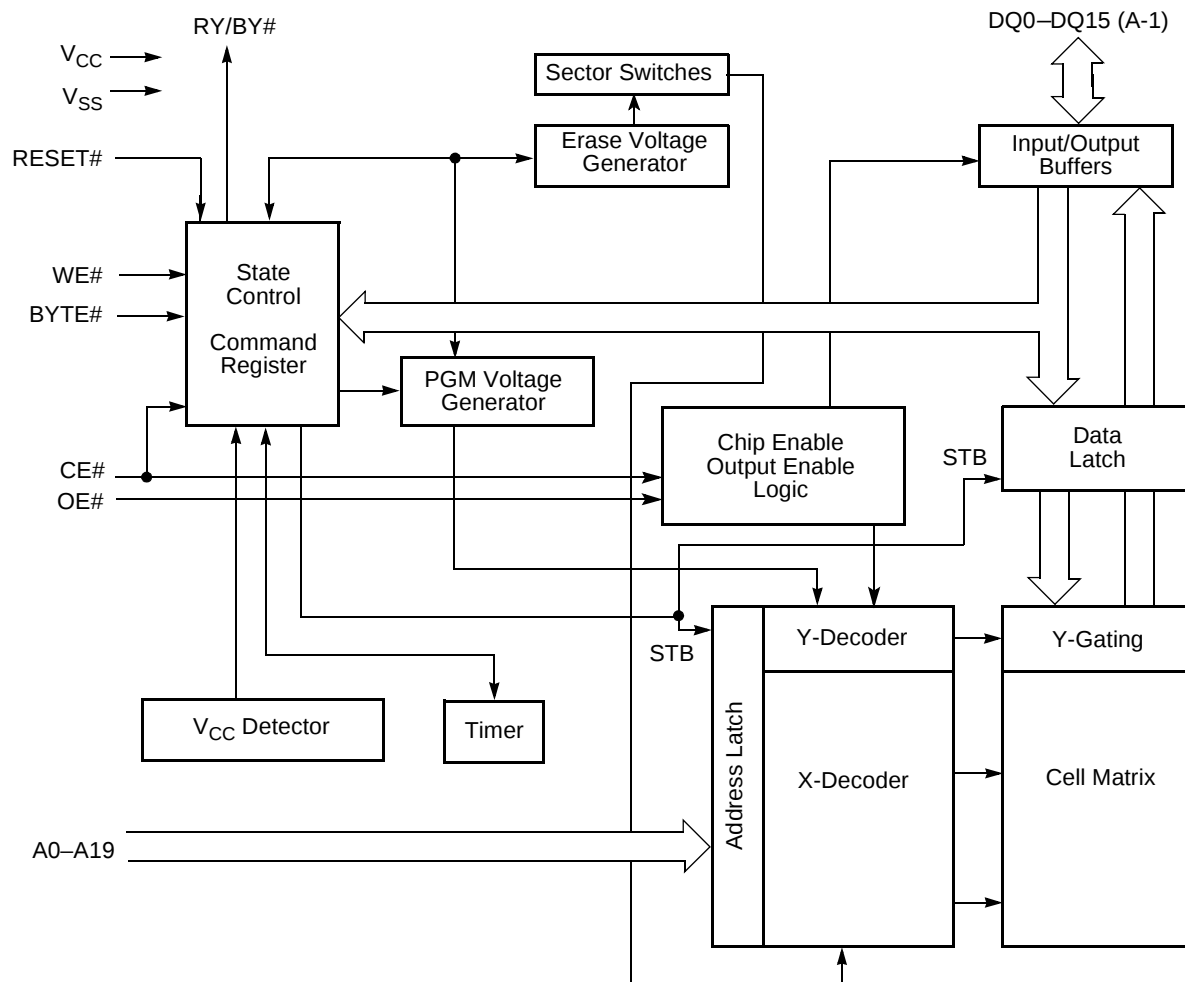
##### ■ Hardware reset pin (RESET#)

- Hardware method to reset the device to reading array data

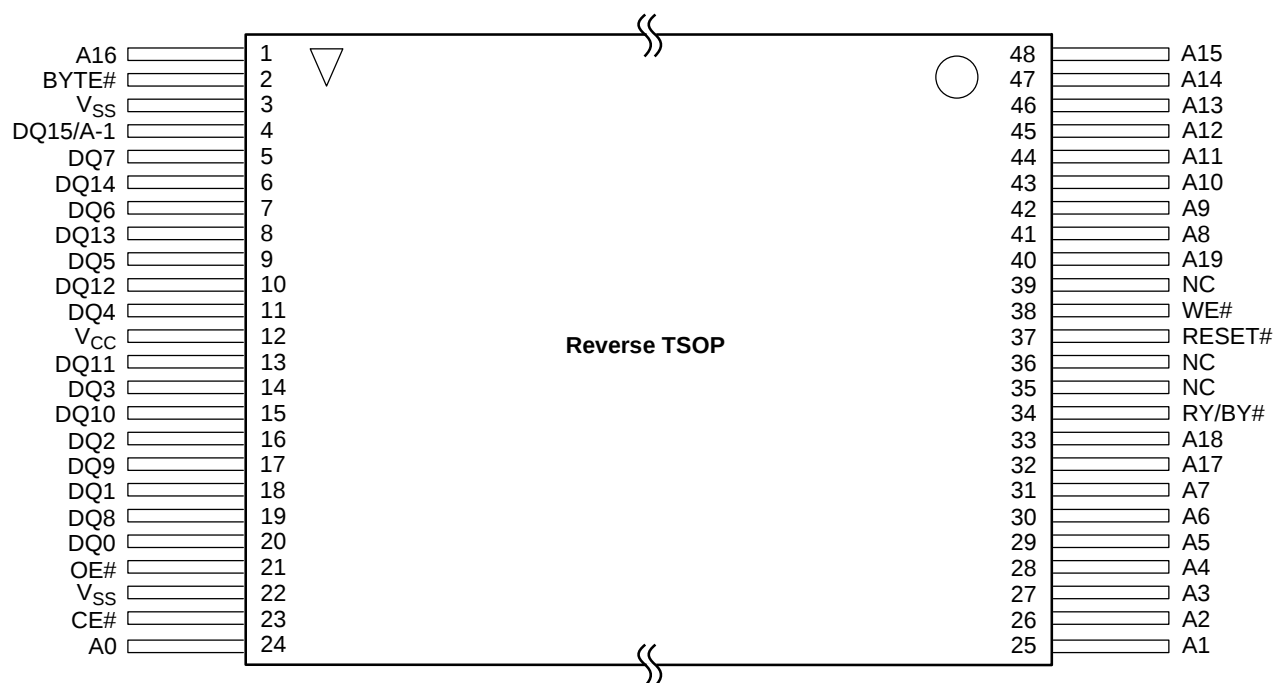
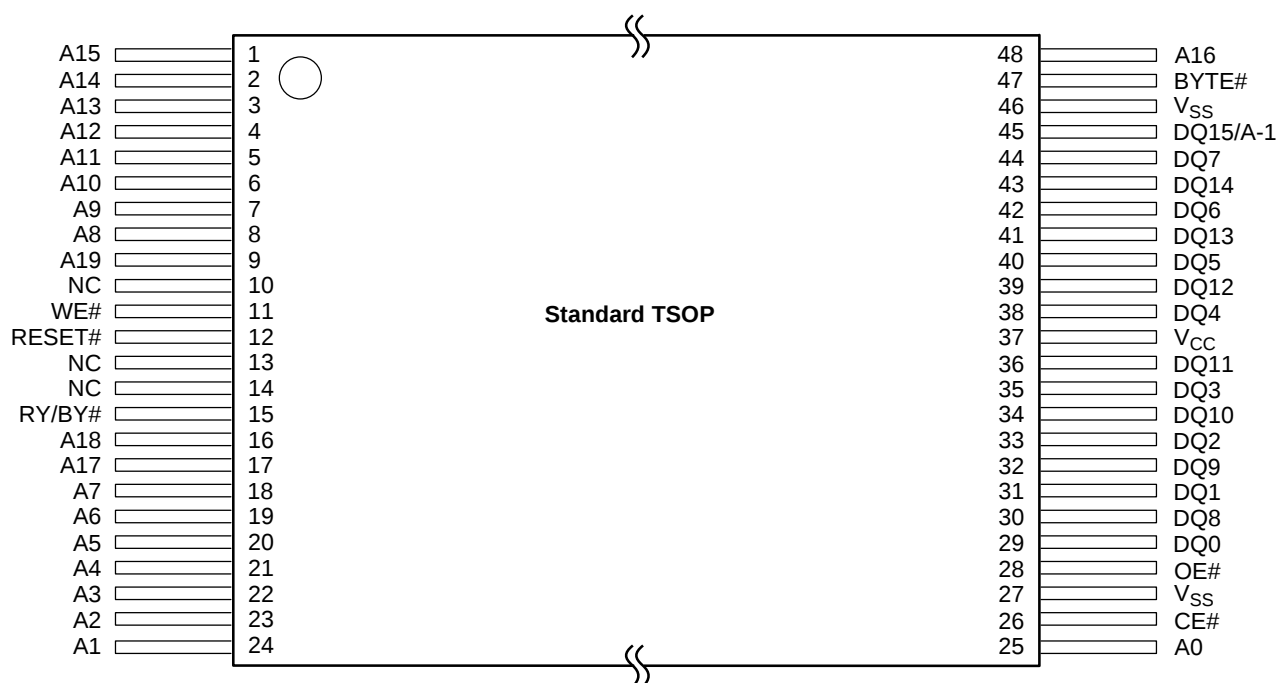
**PRODUCT SELECTOR GUIDE**

| 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          |

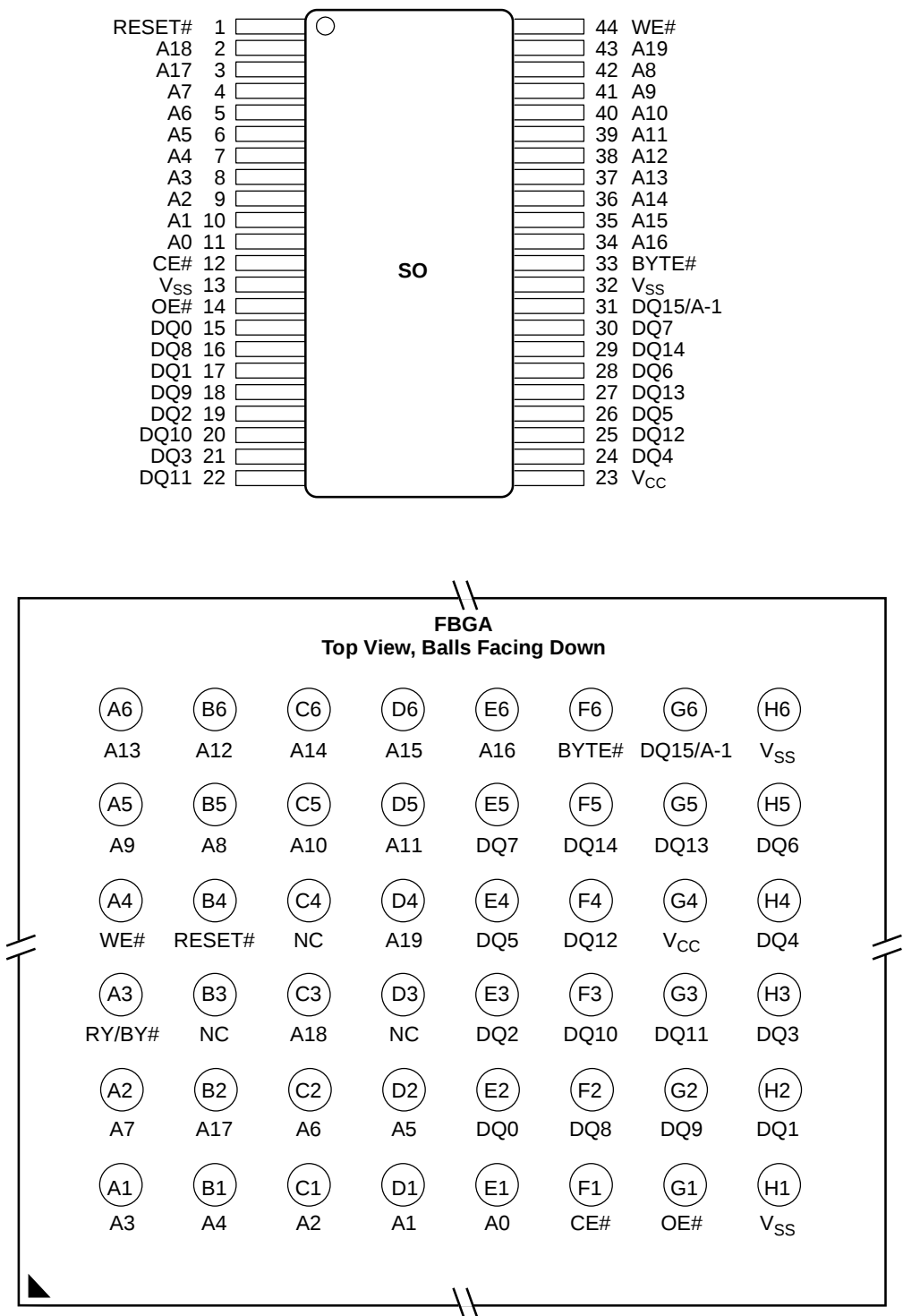
**Note:** See “AC Characteristics” for full specifications.

**BLOCK DIAGRAM**


## CONNECTION DIAGRAMS



CONNECTION DIAGRAMS



Special Handling Instructions

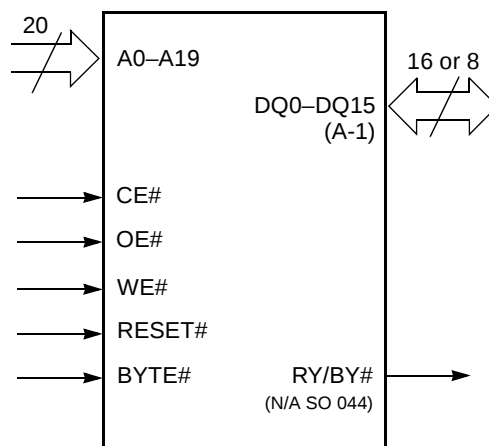
Special handling is required for Flash Memory products in FBGA packages.

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),<br>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<br>(N/A SO 044)                                                                                    |
| V <sub>CC</sub> | = | 3.0 volt-only single power supply<br>(see Product Selector Guide for speed<br>options and voltage supply tolerances) |
| V <sub>SS</sub> | = | Device ground                                                                                                        |
| NC              | = | Pin not connected internally                                                                                         |

## LOGIC SYMBOL



**512K x 16Bit x 2 Banks SDRAM****FEATURES**

- 3.3V power supply
- LVTTL compatible with multiplexed address
- two banks operation
- MRS cycle with address key programs
  - CAS Latency ( 2 & 3)
  - Burst Length (1, 2, 4, 8 & full page)
  - Burst Type (Sequential & Interleave)
- All inputs are sampled at the positive going edge of the system clock
- Burst Read Single-bit Write operation
- DQM for masking
- Auto & self refresh
- 32ms refresh period (2K cycle)

**GENERAL DESCRIPTION**

The K4S161622H is 16,777,216 bits synchronous high data rate Dynamic RAM organized as 2 x 524,288 words by 16 bits, fabricated with SAMSUNG's high performance CMOS technology. Synchronous design allows precise cycle control with the use of system clock I/O transactions are possible on every clock cycle. Range of operating frequencies, programmable burst length and programmable latencies allow the same device to be useful for a variety of high bandwidth, high performance memory system applications.

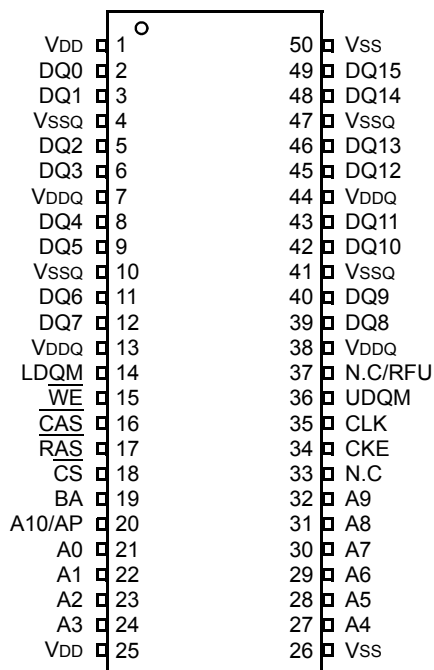
**ORDERING INFORMATION**

| Part NO.        | MAX Freq. | Interface | Package           |
|-----------------|-----------|-----------|-------------------|
| K4S161622H-TC55 | 183MHz    | LVTTL     | 50pin<br>TSOP(II) |
| K4S161622H-TC60 | 166MHz    |           |                   |
| K4S161622H-TC70 | 143MHz    |           |                   |
| K4S161622H-TC80 | 125MHz    |           |                   |

| Organization | Row Address | Column Address |
|--------------|-------------|----------------|
| 1Mx16        | A0~A10      | A0-A7          |

Row & Column address configuration

## PIN CONFIGURATION (TOP VIEW)



50PIN TSOP (II)  
(400mil x 825mil)  
(0.8 mm PIN PITCH)

## PIN FUNCTION DESCRIPTION

| Pin                                 | Name                                      | Input Function                                                                                                                                                                    |
|-------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLK                                 | System Clock                              | Active on the positive going edge to sample all inputs.                                                                                                                           |
| $\overline{\text{CS}}$              | Chip Select                               | Disables or enables device operation by masking or enabling all inputs except CLK, CKE and L(U)DQM                                                                                |
| CKE                                 | Clock Enable                              | Masks system clock to freeze operation from the next clock cycle. CKE should be enabled at least one cycle prior to new command. Disable input buffers for power down in standby. |
| A <sub>0</sub> ~ A <sub>10/AP</sub> | Address                                   | Row / column addresses are multiplexed on the same pins.<br>Row address : RA <sub>0</sub> ~ RA <sub>10</sub> , column address : CA <sub>0</sub> ~ CA <sub>7</sub>                 |
| BA                                  | Bank Select Address                       | Selects bank to be activated during row address latch time.<br>Selects bank for read/write during column address latch time.                                                      |
| $\overline{\text{RAS}}$             | Row Address Strobe                        | Latches row addresses on the positive going edge of the CLK with $\overline{\text{RAS}}$ low. Enables row access & precharge.                                                     |
| $\overline{\text{CAS}}$             | Column Address Strobe                     | Latches column addresses on the positive going edge of the CLK with $\overline{\text{CAS}}$ low. Enables column access.                                                           |
| $\overline{\text{WE}}$              | Write Enable                              | Enables write operation and row precharge.<br>Latches data in starting from CAS, WE active.                                                                                       |
| L(U)DQM                             | Data Input/Output Mask                    | Makes data output Hi-Z, tSHZ after the clock and masks the output. Blocks data input when L(U)DQM active.                                                                         |
| DQ <sub>0</sub> ~ 15                | Data Input/Output                         | Data inputs/outputs are multiplexed on the same pins.                                                                                                                             |
| VDD/VSS                             | Power Supply/Ground                       | Power and ground for the input buffers and the core logic.                                                                                                                        |
| VDDQ/VSSQ                           | Data Output Power/Ground                  | Isolated power supply and ground for the output buffers to provide improved noise immunity.                                                                                       |
| N.C/RFU                             | No Connection/<br>Reserved for Future Use | This pin is recommended to be left No Connection on the device.                                                                                                                   |

The block diagram illustrates the internal architecture of the 512K x 16-bit SRAM. At the bottom, a **Timing Register** receives external control signals:  $\overline{\text{CLK}}$ ,  $\overline{\text{CKE}}$ ,  $\overline{\text{CS}}$ ,  $\overline{\text{RAS}}$ ,  $\overline{\text{CAS}}$ ,  $\overline{\text{WE}}$ , and  $\text{L(U)DQM}$ . The  $\overline{\text{CLK}}$  signal is also connected to an **Address Register** and a **Row Buffer Refresh Counter**. The **Address Register** also receives an **ADD** input and provides **LCKE** to the **Col. Buffer**. The **Row Buffer Refresh Counter** is controlled by **LRAS** and **LCBR**. The **Col. Buffer** is controlled by **LCAS** and provides signals to the **Row Decoder** and **Column Decoder**. The **Row Decoder** selects one of two **512K x 16** memory arrays. The **Column Decoder** selects one of two **512K x 16** memory arrays. The **Sense AMP** is connected to the outputs of the memory arrays and the **Column Decoder**. The **Latency & Burst Length** block is connected to the **Col. Buffer** and the **Output Buffer**. The **Programming Register** is connected to the **Latency & Burst Length** block and the **Output Buffer**. The **Output Buffer** is controlled by **LDQM** and provides the **DQi** output. The **I/O Control** block is connected to the **Output Buffer** and provides **LWE** and **LDQM** signals. The **Data Input Register** is connected to the **I/O Control** block and the **Row Decoder**. The **Bank Select** block is connected to the **Address Register** and the **Row Decoder**.



## 8.2 MT1389

## MT1389

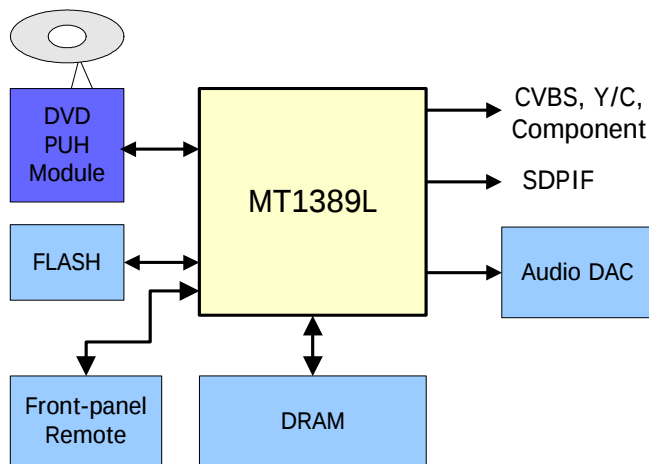
### Progressive-Scan DVD Player SOC

*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

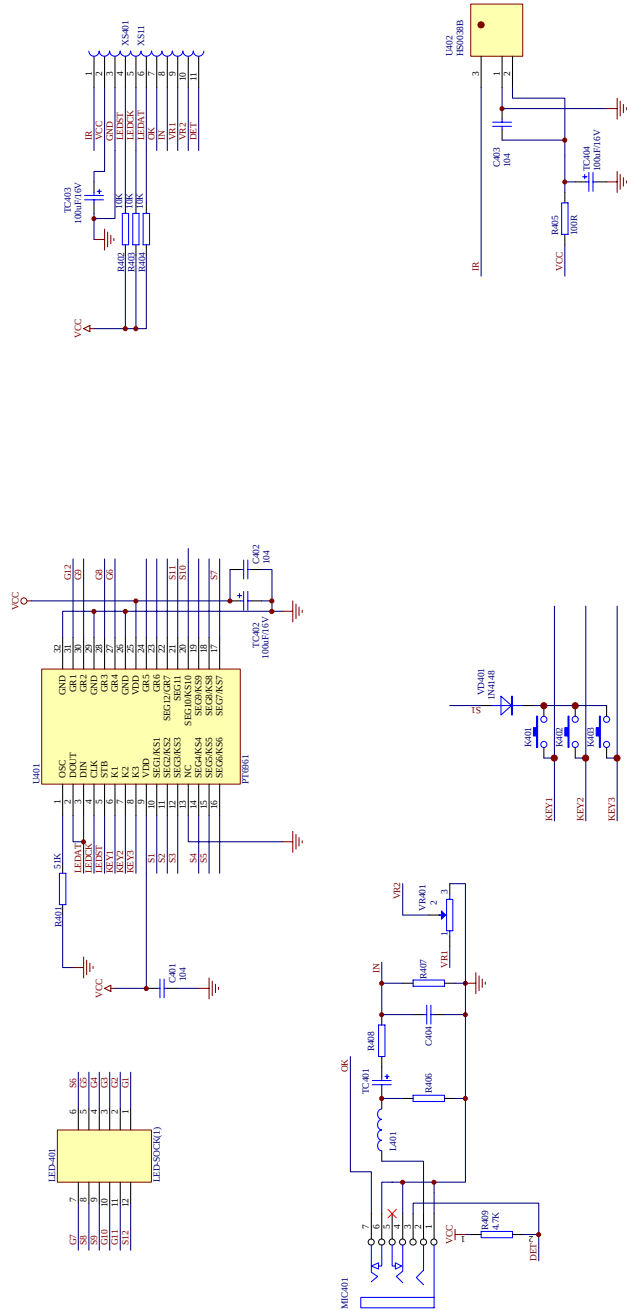
## General Feature List

- 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

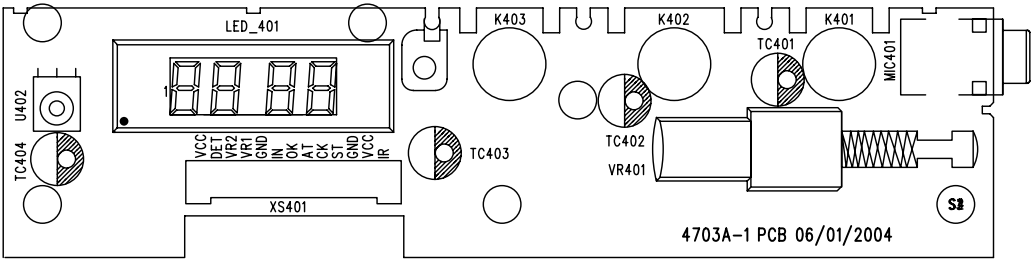
- Audio Effect Processing
  - Dolby Digital (AC-3)/EX decoding
  - DTS/DTS-ES decoding
  - MLP decoding for DVD-Audio
  - MPEG-1 layer 1/layer 2 audio decoding
  - MPEG-2 layer1/layer2 2-channel audio
  - High Definition Compatible Digital (HDCD)
  - Windows Media Audio (WMA)
  - Advanced Audio Coding (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 LQFP package
  - 3.3/1.8-Volt. Dual operating voltages

9. SCHEMATIC & PCB WIRING DIAGRAM

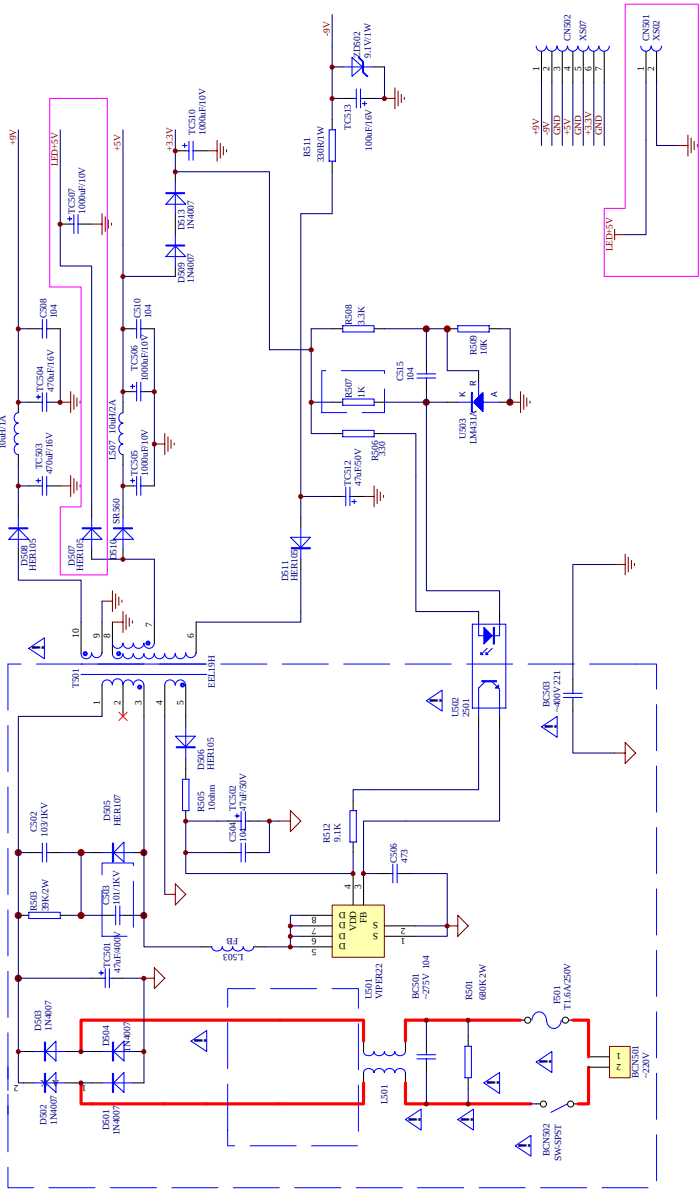
FRONT SCHEMATIC DIAGRAM



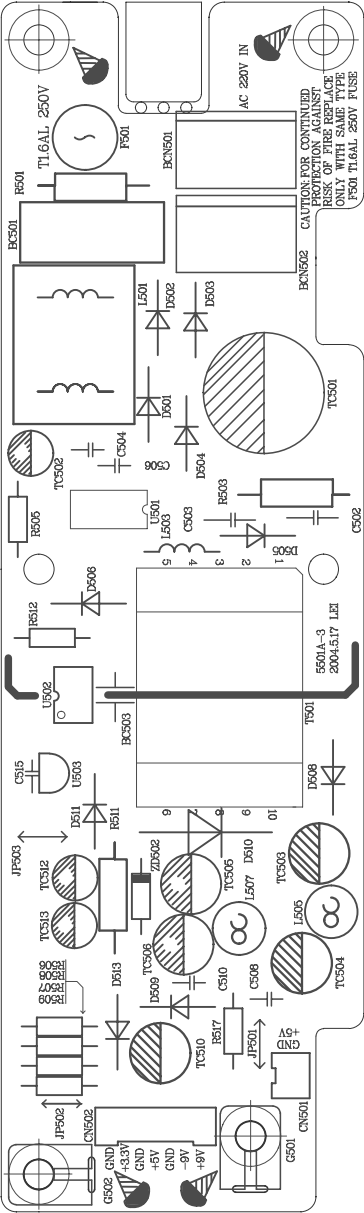
FRONT SCHEMATIC DIAGRAM



POWER BOARD SCHEMATIC DIAGRAM

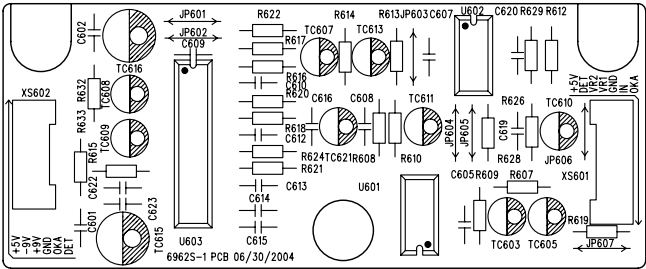


POWER BOARD SCHEMATIC DIAGRAM

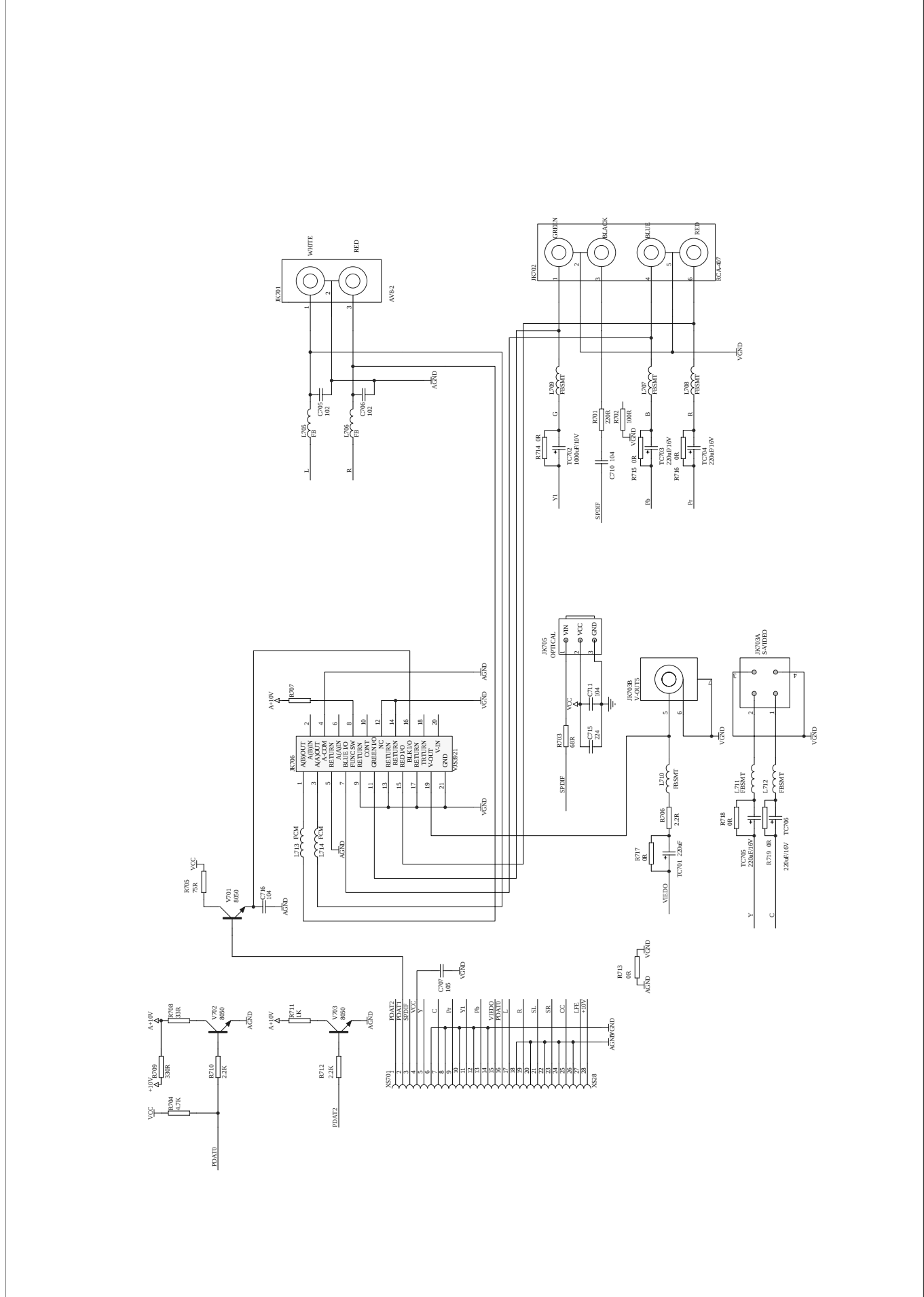




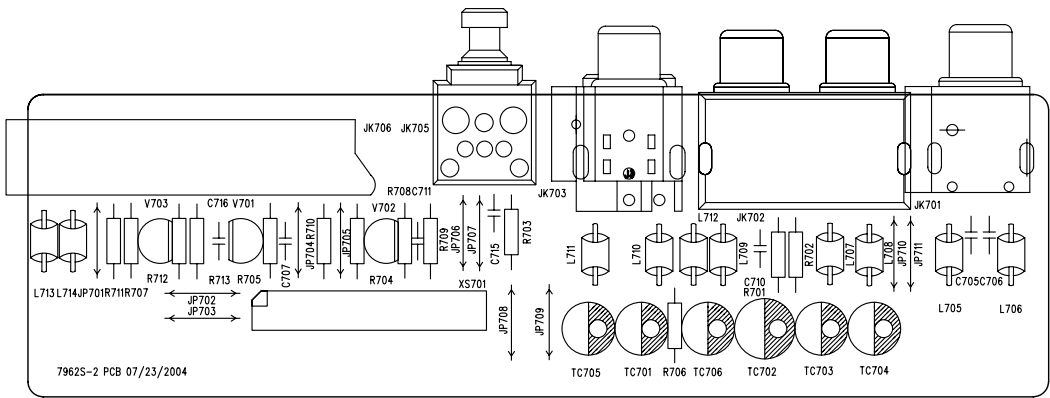
OK SCHEMATIC DIAGRAM



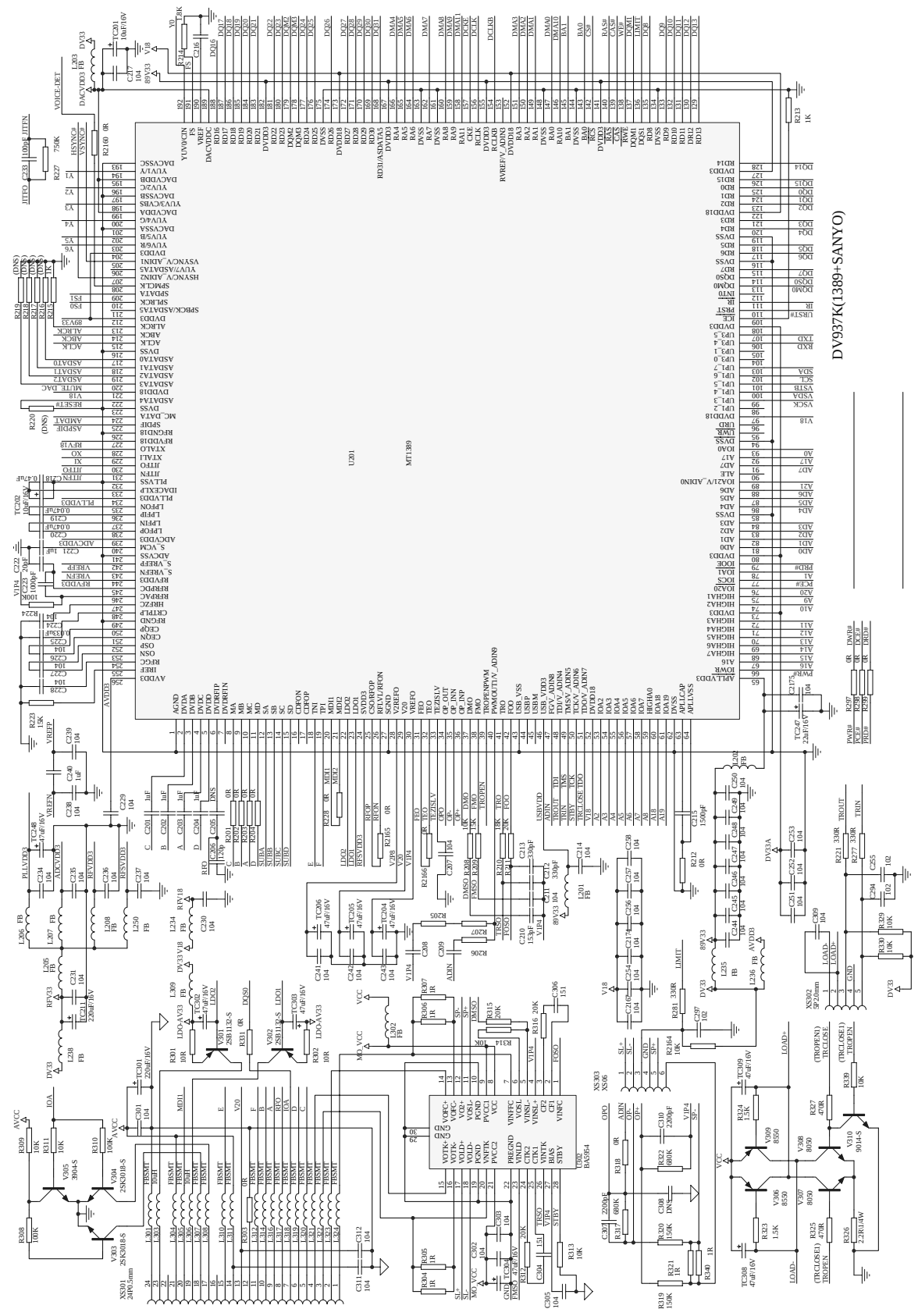
OUTPUT BOARD SCHEMATIC DIAGRAM



OUTPUT BOARD SCHEMATIC DIAGRAM

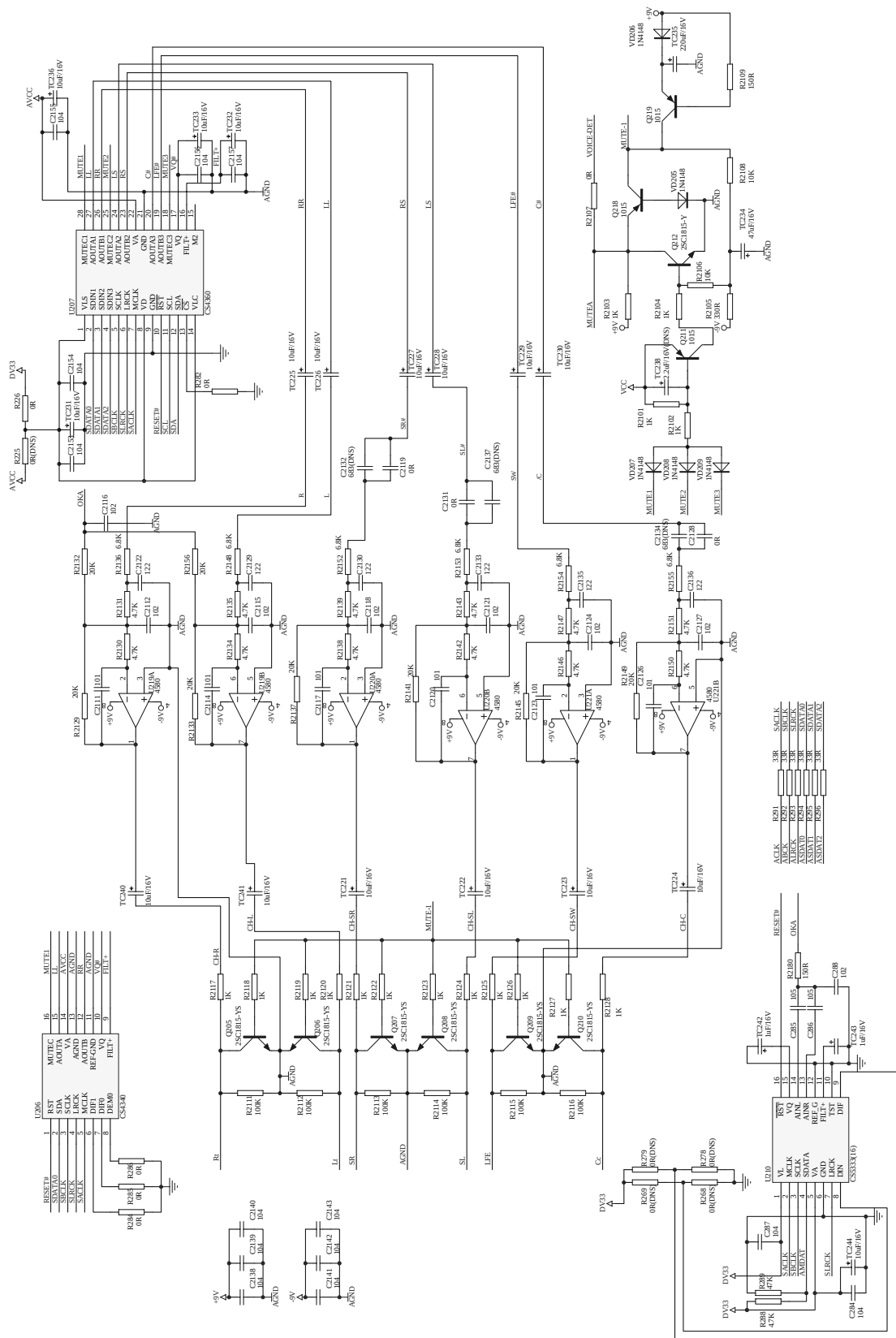


# MIAN SCHEMATIC DIAGRAM

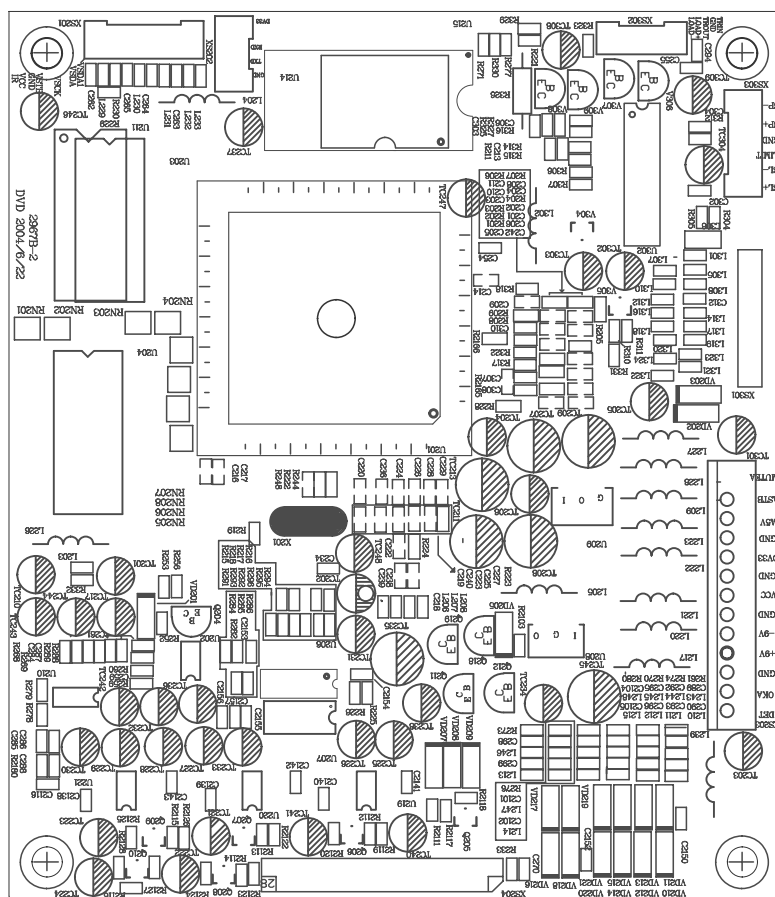




# MIAN SCHEMATIC DIAGRAM



# MIAN SCHEMATIC DIAGRAM



# 10. SPARE PARTS LIST DV962S-2 MATERIAL LIST

## 1. MAIN FRONT PANEL

| MATERIAL CODE | MATERIAL NAME              | SPECIFICATIONS                              | UNIT | QUANTITY | LOCATION                         |
|---------------|----------------------------|---------------------------------------------|------|----------|----------------------------------|
| 5233123       | SOFT SPONGE SPACER         | 10×10×13 DOUBLE-FACED, HARD                 | PCS  | 1        | 1PC FOR IR SENSOR                |
| 5233021       | SOFT SPONGE SPACER         | 13×8×13.5 DOUBLE-FACED, HARD                | PCS  | 2        | 2PCS FOR LED AND FRONT PANEL PCB |
| 1340064       | LIGHT TOUCH RESTORE SWITCH | KFC-A06-2WB L3.8                            | PCS  | 3        | K401~K403                        |
| 0260241       | CD                         | CD11C 16V4.7U±20%4×7 1.5                    | PCS  | 1        | TC401                            |
| 0260206       | CD                         | CD11C 10V100U±20%5×7 2                      | PCS  | 3        | TC402,TC403,TC404                |
| 1200574       | DISPLAY SCREEN             | TOF-2482AG-B18                              | PCS  | 1        | LED401                           |
| 2360024       | IR SENSOR                  | LTOP-4338                                   | PCS  | 1        | U402                             |
| 2360002       | IR SENSOR                  | HS0038B                                     | PCS  | 1        | U402                             |
| 2360006       | IR SENSOR                  | 9052-4                                      | PCS  | 1        | U402                             |
| 0881426       | IC                         | PT6961 SOP                                  | PCS  | 1        | U401                             |
| 1980048       | MICROPHONE SOCKET          | ST-403-070-100                              | PCS  | 1        | MIC401                           |
| 0160184       | ROTATED POTENTIOMETER      | WH09JTC1Z11-A10K-F30                        | PCS  | 1        | VR401                            |
| 2121525       | FLAT CABLE                 | 12-6/6P150/100 2.0 T3 WITH L NEEDLE REVERSE | PCS  | 1        | XS401                            |
| 0090181       | SMD RESISTOR               | 1/16W 100Ω ±5% 0603                         | PCS  | 1        | R405                             |
| 0090192       | SMD RESISTOR               | 1/16W 51K ±5% 0603                          | PCS  | 1        | R401                             |
| 0090023       | SMD RESISTOR               | 1/16W 10K ±5% 0603                          | PCS  | 4        | R402,R403,R404,R407              |
| 0090019       | SMD RESISTOR               | 1/16W 4.7K ±5% 0603                         | PCS  | 1        | R409                             |
| 0090012       | SMD RESISTOR               | 1/16W 560Ω ±5% 0603                         | PCS  | 1        | R408                             |
| 0090026       | SMD RESISTOR               | 1/16W 22K ±5% 0603                          | PCS  | 1        | R406                             |
| 0310084       | SMD CAPACITOR              | 50V 104 +80%-20% 0603                       | PCS  | 3        | C401,C402,C403                   |
| 0310072       | SMD CAPACITOR              | 50V 103 ±10% 0603                           | PCS  | 1        | C404                             |
| 0390095       | SMD MAGNETIC BEADS         | FCM1608K-221T05                             | PCS  | 2        | L401,L402                        |
| 0700007       | SMD DIODE                  | 1N4148                                      | PCS  | 1        | VD401                            |
| 1631681       | PCB                        | 4703A-1                                     | PCS  | 1        |                                  |
|               |                            |                                             |      |          |                                  |

## 2. POWER BOARD

| MATERIAL CODE | MATERIAL NAME             | SPECIFICATIONS            | UNIT | QUANTITY | LOCATION            |
|---------------|---------------------------|---------------------------|------|----------|---------------------|
| 0000294       | CARBON FILM RESISTOR      | 1/4W10K±5% SHAPED 10      | PCS  | 1        | R507                |
| 0010256       | METAL FILM RESISTOR       | 1/4W3.6K±1% SHAPED 10     | PCS  | 1        | R508                |
| 0000461       | CARBON FILM RESISTOR      | 1/4W9.1K±5% SHAPED 10     | PCS  | 1        | R512                |
| 0010064       | METAL FILM RESISTOR       | 1/4W10K±1% SHAPED 10      | PCS  | 1        | R509                |
| 0000431       | CARBON FILM RESISTOR      | 1/4W75Ω ±5% SHAPED 10     | PCS  | 1        | R505                |
| 0010135       | METAL OXIDE FILM RESISTOR | 2W39K±5% SHAPED FLAT 15×9 | PCS  | 1        | R503                |
| 0580054       | VOLTAGE REGULATOR DIODE   | 9.1V 1W                   | PCS  | 1        | ZD502               |
| 0010250       | METAL OXIDE FILM RESISTOR | 1W22Ω ±5% SHAPED R 15×8   | PCS  | 1        | R511                |
| 0000380       | CARBON FILM RESISTOR      | 1/4W510Ω ±5% SHAPED 10    | PCS  | 1        | R506                |
| 0070001       | HIGH VOLTAGE RESISTOR     | 1/2W680K±5%               | PCS  | 1        | R501                |
| 0570005       | DIODE                     | 1N4007                    | PCS  | 4        | D501~D504           |
| 0200138       | PORCELAIN CAPACITOR       | 50V 104 ±20% 5mm          | PCS  | 4        | C504,C508,C510,C515 |
| 0200224       | PORCELAIN CAPACITOR       | 1000V 103 +80%-20% 7.5mm  | PCS  | 1        | C502                |

|         |                             |                            |     |   |                   |
|---------|-----------------------------|----------------------------|-----|---|-------------------|
| 0200223 | PORCELAIN CAPACITOR         | 1000V 101 +80%-20% 7.5mm   | PCS | 1 | C503              |
| 0200228 | PORCELAIN CAPACITOR         | 1000V 101 ±10% 7.5mm       | PCS | 1 | C503              |
| 0210049 | TERYLENE CAPACITOR          | 50V 473 ±10% 6mm           | PCS | 1 | C506              |
| 0260559 | CD                          | CD11T 50V47u±20%6×12 2.5   | PCS | 2 | TC502,TC512       |
| 0260563 | CD                          | KM 400V47U±20%18×20 7.5    | PCS | 1 | TC501             |
| 0260557 | CD                          | CD11T 16V100u±20%6×12 2.5  | PCS | 1 | TC513             |
| 0260594 | CD                          | CD11T 25V220U±20%8×12 3.5  | PCS | 2 | TC503,TC504       |
| 0260560 | CD                          | CD11T 10V1000u±20%8×16 3.5 | PCS | 3 | TC505,TC506,TC510 |
| 0390057 | MAGNETIC BEADS INDUCTOR     | RH354708                   | PCS | 1 | L503              |
| 0410010 | CHOKE COIL                  | VERTICAL 10UH 1A 5mm       | PCS | 1 | L505              |
| 0410011 | CHOKE COIL                  | VERTICAL 10UH 2A 5mm       | PCS | 1 | L507              |
| 1080011 | PHOTOELECTRIC COUPLER       | HS817                      | PCS | 1 | U502              |
| 1080006 | PHOTOELECTRIC COUPLER       | PC817                      | PCS | 1 | U502              |
| 0570011 | DIODE                       | RL202                      | PCS | 2 | D513,D509         |
| 0570013 | DIODE                       | HER105                     | PCS | 3 | D506,D508,D511    |
| 0570014 | DIODE                       | HER107                     | PCS | 1 | D505              |
| 0680010 | SCHOTTKY DIODE              | SR560 DO-27                | PCS | 1 | D510              |
| 0880553 | IC                          | LM431ACZ TO-92             | PCS | 1 | U503              |
| 0880581 | IC                          | TL431C TO-226AA(LP)        | PCS | 1 | U503              |
| 0880800 | IC                          | 431L TO-92                 | PCS | 1 | U503              |
| 0882041 | IC                          | MIK431C TO-92              | PCS | 1 | U503              |
| 0210066 | TERYLENE CAPACITOR          | 275V 104 ±20% 15mm         | PCS | 1 | BC501             |
| 0210070 | TERYLENE CAPACITOR          | 275V 104 ±10% 15mm         | PCS | 1 | BC501             |
| 0200267 | CERAMIC CAPACITOR           | CT81 250VAC221±20% 10mm    | PCS | 1 | BC503             |
| 0200268 | CERAMIC CAPACITOR           | CT81 250VAC221±10% 10mm    | PCS | 1 | BC503             |
| 0460394 | SWITCHING POWER TRANSFORMER | BCK-19-0179                | PCS | 1 | T501              |
| 1000004 | POWER GRID FILTER           | UT-20 40mH ±20% 10×13      | PCS | 1 | L501              |
| 1563407 | PCB                         | 5501A-4                    | PCS | 1 |                   |
| 2100003 | CONNECTION CORDS            | Φ0.6 SHAPED 7.5mm          | PCS | 2 | JP501,JP503       |
| 2100010 | CONNECTION CORDS            | Φ0.6 SHAPED 5mm            | PCS | 1 | JP502             |
| 2100004 | CONNECTION CORDS            | Φ0.6 SHAPED 10mm           | PCS | 1 | R517              |
| 2300021 | FUSE                        | T1.6AL 250V                | PCS | 1 | F501              |
| 1940045 | SOCKET                      | 2P 8.0mm 2#                | PCS | 2 | BCN501,BCN502     |
| 1940023 | SOCKET                      | 7P 2.0mm                   | PCS | 1 | CN502             |
| 1940022 | SOCKET                      | 4P 2.0mm                   | PCS | 1 | CN501             |
| 0881933 | IC                          | VIPER22A DIP8              | PCS | 1 | U501              |
| 3870115 | GROUND CHIP OF POWER BOARD  | AB903                      | PCS | 2 | G501,G502         |
|         |                             |                            |     |   |                   |

### 3. OK BOARD

| MATERIAL CODE | MATERIAL NAME        | SPECIFICATIONS         | UNIT | QUANTITY | LOCATION                 |
|---------------|----------------------|------------------------|------|----------|--------------------------|
| 0000129       | CARBON FILM RESISTOR | 1/6W1K±5% SHAPED 7.5   | PCS  | 3        | R607,R619,R626           |
| 0000133       | CARBON FILM RESISTOR | 1/6W4.7K±5% SHAPED 7.5 | PCS  | 2        | R622,R628                |
| 0000134       | CARBON FILM RESISTOR | 1/6W5.1K±5% SHAPED 7.5 | PCS  | 1        | R616                     |
| 0000137       | CARBON FILM RESISTOR | 1/6W10K±5% SHAPED 7.5  | PCS  | 5        | R617,R621,R620,R624,R612 |

|         |                      |                                |     |   |                                     |
|---------|----------------------|--------------------------------|-----|---|-------------------------------------|
| 0000118 | CARBON FILM RESISTOR | 1/6W10 $\Omega$ ±5% SHAPED 7.5 | PCS | 2 | R632,R633                           |
| 0000338 | CARBON FILM RESISTOR | 1/6W15K±5% SHAPED 7.5          | PCS | 2 | R614,R618                           |
| 0000341 | CARBON FILM RESISTOR | 1/6W18K±5% SHAPED 7.5          | PCS | 1 | R615                                |
| 0000144 | CARBON FILM RESISTOR | 1/6W47K±5% SHAPED 7.5          | PCS | 1 | R608                                |
| 0000141 | CARBON FILM RESISTOR | 1/6W27K±5% SHAPED 7.5          | PCS | 1 | R629                                |
| 0000142 | CARBON FILM RESISTOR | 1/6W33K±5% SHAPED 7.5          | PCS | 2 | R609,R613                           |
| 0000339 | CARBON FILM RESISTOR | 1/6W3.3K±5% SHAPED 7.5         | PCS | 1 | R610                                |
| 0260127 | CD                   | CD11 16V4.7U±20%5×11 2         | PCS | 6 | TC603,TC607,TC610,TC611,TC613,TC621 |
| 0260021 | CD                   | CD11 16V22U±20%5×11 2          | PCS | 1 | TC605                               |
| 0260258 | CD                   | CD11 10V47U±20%5×7 2           | PCS | 1 | TC609                               |
| 0260200 | CD                   | CD11C 16V47U±20%5×7 2          | PCS | 1 | TC609                               |
| 0260040 | CD                   | CD11 25V100U±20%6×12 2.5       | PCS | 3 | TC608,TC615,TC616                   |
| 0200106 | PORCELAIN CAPACITOR  | 50V 101 +80%-20% 5mm           | PCS | 3 | C607,C605,C620                      |
| 0200125 | PORCELAIN CAPACITOR  | 50V 102 +80%-20% 5mm           | PCS | 1 | C619                                |
| 0200206 | PORCELAIN CAPACITOR  | 50V 103 +80%-20% 5mm           | PCS | 1 | C616                                |
| 0200139 | PORCELAIN CAPACITOR  | 50V 104 +80%-20% 5mm           | PCS | 7 | C601,C602,C622,C609,C613,C614,C623  |
| 0200153 | PORCELAIN CAPACITOR  | 50V 392 ±20% 5mm               | PCS | 2 | C608,C615                           |
| 0200117 | PORCELAIN CAPACITOR  | 50V 561 +80%-20% 5mm           | PCS | 2 | C610,C612                           |
| 0880124 | IC                   | NJM4558D DIP                   | PCS | 2 | U601,U602                           |
| 1940005 | SOCKET               | 6P 2.0mm                       | PCS | 1 | XS601                               |
| 1940023 | SOCKET               | 7P 2.0mm                       | PCS | 1 | XS602                               |
| 2100003 | CONNECTION CORDS     | Φ0.6 SHAPED 7.5mm              | PCS | 7 | JP601~JP607                         |
| 1563408 | PCB                  | 6962S-3                        | PCS | 1 |                                     |
| 0880230 | IC                   | PT2399 DIP                     | PCS | 1 | U603                                |
|         |                      |                                |     |   |                                     |

#### 4. AV BOARD

| MATERIAL CODE | MATERIAL NAME        | SPECIFICATIONS                 | UNIT | QUANTITY | LOCATION  |
|---------------|----------------------|--------------------------------|------|----------|-----------|
| 0000171       | CARBON FILM RESISTOR | 1/4W68 $\Omega$ ±5%            | PCS  | 1        | R703      |
| 0000362       | CARBON FILM RESISTOR | 1/4W220 $\Omega$ ±5% SHAPED 10 | PCS  | 1        | R701      |
| 0000278       | CARBON FILM RESISTOR | 1/4W330 $\Omega$ ±5% SHAPED 10 | PCS  | 1        | R709      |
| 0000273       | CARBON FILM RESISTOR | 1/4W33 $\Omega$ ±5% SHAPED 10  | PCS  | 1        | R708      |
| 0000276       | CARBON FILM RESISTOR | 1/4W100 $\Omega$ ±5% SHAPED 10 | PCS  | 1        | R702      |
| 0000268       | CARBON FILM RESISTOR | 1/4W2.2 $\Omega$ ±5% SHAPED 10 | PCS  | 1        | R706      |
| 0000289       | CARBON FILM RESISTOR | 1/4W4.7K±5% SHAPED 10          | PCS  | 1        | R704      |
| 0000283       | CARBON FILM RESISTOR | 1/4W1K±5% SHAPED 10            | PCS  | 1        | R711      |
| 0000286       | CARBON FILM RESISTOR | 1/4W2.2K±5% SHAPED 10          | PCS  | 2        | R710,R712 |
| 0000431       | CARBON FILM RESISTOR | 1/4W75 $\Omega$ ±5% SHAPED 10  | PCS  | 1        | R705      |

|         |                           |                                             |     |    |                     |
|---------|---------------------------|---------------------------------------------|-----|----|---------------------|
| 0200125 | PORCELAIN CAPACITOR       | 50V 102 +80%-20% 5mm                        | PCS | 2  | C705,C706           |
| 0200139 | PORCELAIN CAPACITOR       | 50V 104 +80%-20% 5mm                        | PCS | 4  | C707,C710,C711,C716 |
| 0200237 | PORCELAIN CAPACITOR       | 50V 224 ±10% 5mm                            | PCS | 1  | C715                |
| 0200298 | PORCELAIN CAPACITOR       | 50V 224±20% 5mm                             | PCS | 1  | C715                |
| 0090001 | SMD RESISTOR              | 1/16W 0Ω ±5% 0603                           | PCS | 6  | R714~R719           |
| 0780050 | TRIODE                    | S8050D                                      | PCS | 3  | V701~V703           |
| 0390057 | MAGNETIC BEADS INDUCTOR   | RH354708                                    | PCS | 10 | L713,L714,L705~L712 |
| 1090045 | ELECTRO-OPTIC TRANSFORMER | TX179ATW                                    | PCS | 1  | JK705               |
| 1090024 | ELECTRO-OPTIC TRANSFORMER | TX179AT                                     | PCS | 1  | JK705               |
| 1910078 | TERMINAL SOCKET           | AV4-8.4-6G-3                                | PCS | 1  | JK702               |
| 1910129 | TERMINAL SOCKET           | SA-001-012 BLACK IRON SHEET SCREEN-SHIELDED | PCS | 1  | JK703               |
| 1910062 | TERMINAL SOCKET           | AV2-8.4--6G                                 | PCS | 1  | JK701               |
| 1940140 | CABLE SOCKET              | 14P 1.0mm STRAIGHT DUAL LINE PLUG           | PCS | 1  | XS701               |
| 2100004 | CONNECTION CORDS          | Φ0.6 SHAPED 10mm                            | PCS | 12 | JP701~JP711,R707    |
| 1860029 | SCART SOCKET              | SCART-01                                    | PCS | 1  | JK706               |
| 1563282 | PCB                       | 7962S-2                                     | PCS | 1  |                     |
|         |                           |                                             |     |    |                     |
|         |                           |                                             |     |    |                     |
|         |                           |                                             |     |    |                     |

#### 5. DECODE BOARD

| MATERIAL CODE | MATERIAL NAME         | SPECIFICATIONS       | UNIT | QUANTITY | LOCATION                                                                                                                                            |
|---------------|-----------------------|----------------------|------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 0090001       | SMD RESISTOR          | 1/16W 0Ω ±5% 0603    | PCS  | 36       | L210~L215,R201~R204,R212,R228,R234,R236,R245,R247,R222,R251,R255,R257,R258,R298,R299,R303,R318,R331,R2159,R297,R284~R286,R287,R290,R2183,R2107,R283 |
| 0090006       | SMD RESISTOR          | 1/16W 75Ω ±5% 0603   | PCS  | 7        | R233,R261,R270,R273,R274,R276,R280                                                                                                                  |
| 0100034       | SMD RESISTOR NETWORKS | 1/16W0Ω±5% 0603×4 8P | PCS  | 4        | RN201~RN204                                                                                                                                         |
| 0000375       | CARBON FILM RESISTOR  | 1/4W2.2Ω±5%          | PCS  | 1        | R326                                                                                                                                                |
| 0090272       | SMD RESISTOR          | 1/16W1Ω±5% 0603      | PCS  | 6        | R304~R307,R321,R340                                                                                                                                 |
| 0090003       | SMD RESISTOR          | 1/16W 10Ω ±5% 0603   | PCS  | 2        | R301,R302                                                                                                                                           |
| 0090005       | SMD RESISTOR          | 1/16W 33Ω ±5% 0603   | PCS  | 14       | R231,R232,R256,R263~R267,R291~R294,R2162,L202                                                                                                       |
| 0090232       | SMD RESISTOR          | 1/16W 150Ω ±5% 0603  | PCS  | 2        | R2109,R2180                                                                                                                                         |
| 0090009       | SMD RESISTOR          | 1/16W 330Ω ±5% 0603  | PCS  | 4        | R2105,R221,R277,R281                                                                                                                                |
| 0090011       | SMD RESISTOR          | 1/16W 470Ω ±5% 0603  | PCS  | 2        | R325,R327                                                                                                                                           |
| 0090013       | SMD RESISTOR          | 1/16W 680Ω ±5% 0603  | PCS  | 2        | R259,R260                                                                                                                                           |
| 0090014       | SMD RESISTOR          | 1/16W 1K ±5% 0603    | PCS  | 11       | R213,R215,R2101~R2104,R2117~R2120,R254                                                                                                              |
| 0090016       | SMD RESISTOR          | 1/16W 1.5K ±5% 0603  | PCS  | 3        | R323,R324,R243                                                                                                                                      |
| 0090249       | SMD RESISTOR          | 1/16W 510Ω ±5% 0603  | PCS  | 1        | R214                                                                                                                                                |
| 0090018       | SMD RESISTOR          | 1/16W 3.3K ±5% 0603  | PCS  | 1        | R242                                                                                                                                                |
| 0090019       | SMD RESISTOR          | 1/16W 4.7K ±5% 0603  | PCS  | 8        | R238~R240,R2130,R2131,R2134,R2135,R2140                                                                                                             |

|         |                        |                          |     |    |                                                                                                                                                                                                            |
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| 0090021 | SMD RESISTOR           | 1/16W 6.8K ±5% 0603      | PCS | 2  | R2136,R2148                                                                                                                                                                                                |
| 0090023 | SMD RESISTOR           | 1/16W 10K ±5% 0603       | PCS | 12 | R208,R229,R252,R309,R311,R313,R314,R329,R330,R339,R2164,R2106                                                                                                                                              |
| 0090024 | SMD RESISTOR           | 1/16W 15K ±5% 0603       | PCS | 2  | R209,R223                                                                                                                                                                                                  |
| 0090025 | SMD RESISTOR           | 1/16W 20K ±5% 0603       | PCS | 6  | R211,R312,R315,R316,R2129,R2133                                                                                                                                                                            |
| 0090255 | SMD RESISTOR           | 1/16W24K±5% 0603         | PCS | 2  | R2132,R2156                                                                                                                                                                                                |
| 0090188 | SMD RESISTOR           | 1/16W 18K ±5% 0603       | PCS | 1  | R210                                                                                                                                                                                                       |
| 0090197 | SMD RESISTOR           | 1/16W 150K ±5% 0603      | PCS | 2  | R319,R320                                                                                                                                                                                                  |
| 0090231 | PRECISION SMD RESISTOR | 1/16W 680K ±1% 0603      | PCS | 2  | R317,R322                                                                                                                                                                                                  |
| 0090319 | PRECISION SMD RESISTOR | 1/16W 750K ±1% 0603      | PCS | 1  | R227                                                                                                                                                                                                       |
| 0090034 | SMD RESISTOR           | 1/16W 100K ±5% 0603      | PCS | 6  | R224,R308,R310,R2111,R2112,R246                                                                                                                                                                            |
| 0260019 | CD                     | CD11 16V10U±20%5×11 2    | PCS | 10 | TC201,TC202,TC217,TC232,TC233,TC236,TC240,TC241,TC225,TC226                                                                                                                                                |
| 0260028 | CD                     | CD11 16V220U±20%6×12 2.5 | PCS | 8  | TC207~TC209,TC211,TC213,TC235,TC245,TC301                                                                                                                                                                  |
| 0260025 | CD                     | CD11 16V47U±20%5×11 2    | PCS | 14 | TC204~TC206,TC210,TC234,TC237,TC302~TC304,TC308,TC309,TC247,TC248,TC246                                                                                                                                    |
| 0310085 | SMD CAPACITOR          | 50V 20P ±5% NPO 0603     | PCS | 2  | C222,C232                                                                                                                                                                                                  |
| 0310190 | SMD CAPACITOR          | 50V 27P ±5% NPO 0603     | PCS | 2  | C275,C276                                                                                                                                                                                                  |
| 0310045 | SMD CAPACITOR          | 50V 47P ±5% NPO 0603     | PCS | 17 | C262~C265,C266,C289,C290,C292,C293,C295,C296,C298,C299,C2101,C2102,C2104,C2105                                                                                                                             |
| 0310047 | SMD CAPACITOR          | 50V 101 ±5% NPO 0603     | PCS | 4  | C233,C2111,C2114,C206                                                                                                                                                                                      |
| 0310051 | SMD CAPACITOR          | 50V 331 ±5% NPO 0603     | PCS | 2  | C212,C213                                                                                                                                                                                                  |
| 0310048 | SMD CAPACITOR          | 50V 151 ±5% NPO 0603     | PCS | 2  | C304,C306                                                                                                                                                                                                  |
| 0310084 | SMD CAPACITOR          | 50V 104 +80%-20% 0603    | PCS | 77 | C207,C211,C214,C216,C217,C224,C226~C231,C234~C239,C241~C254,C256~C259,C267~C274,C279,C280~C282,C301~C303,C305,C309,C311,C312,C2138~C2143,C2155~C2157,C2160,C2161,C2163,C2164,C2168,C2169,C2166,C2170~C2175 |
| 0310058 | SMD CAPACITOR          | 25V 104 +80%-20% 0603    | PCS | 77 | C207,C211,C214,C216,C217,C224,C226~C231,C234~C239,C241~C254,C256~C259,C267~C274,C279,C280~C282,C301~C303,C305,C309,C311,C312,C2138~C2143,C2155~C2157,C2160,C2161,C2163,C2164,C2168,C2169,C2166,C2170~C2175 |
| 0310234 | SMD CAPACITOR          | 16V 105 +80%-20% 0603    | PCS | 6  | C201~C204,C221,C240                                                                                                                                                                                        |
| 0310066 | SMD CAPACITOR          | 50V 102 ±10% 0603        | PCS | 9  | C2112,C2115,C223,C278,C255,C291,C294,C297,C2116                                                                                                                                                            |
| 0310231 | SMD CAPACITOR          | 50V 122 ±10% 0603        | PCS | 2  | C2122,C2129                                                                                                                                                                                                |
| 0310067 | SMD CAPACITOR          | 50V 152 ±10% 0603        | PCS | 1  | C215                                                                                                                                                                                                       |
| 0310068 | SMD CAPACITOR          | 50V 222 ±10% 0603        | PCS | 2  | C307,C310                                                                                                                                                                                                  |

|         |                            |                                   |     |    |                                                                                                                       |
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| 0310201 | SMD CAPACITOR              | 50V 153 ±10% 0603                 | PCS | 1  | C210                                                                                                                  |
| 0310055 | SMD CAPACITOR              | 16V 333 ±10% 0603                 | PCS | 1  | C225                                                                                                                  |
| 0310056 | SMD CAPACITOR              | 16V 473 ±10% 0603                 | PCS | 2  | C219,C220                                                                                                             |
| 0310362 | SMD CAPACITOR              | 16V474 +80%-20% 0603              | PCS | 1  | C218                                                                                                                  |
| 0390044 | SMD INDUCTOR               | 10UH ±10% 2012                    | PCS | 2  | L303,L306                                                                                                             |
| 0390096 | SMD INDUCTOR               | 1.8UH ±10% 1608                   | PCS | 6  | L243~L248                                                                                                             |
| 0390057 | MAGNETIC BEADS<br>INDUCTOR | RH354708                          | PCS | 11 | L205,L217,L220,L221,L222,L223,L227,L228,L226,L302,L239                                                                |
| 0390095 | SMD MAGNETIC BEADS         | FCM1608K-221T05                   | PCS | 35 | L201,L203,L207~L208,L234~L236,L238,L250,L309,L229~L233,L301,L304,L305,L307,L308,L310~L312,L314,L316~L324<br>L218,L219 |
| 0090106 | SMD RESISTOR               | 1/16W 4.7Ω ±5% 0603               | PCS | 1  | L206                                                                                                                  |
| 0700007 | SMD DIODE                  | 1N4148                            | PCS | 16 | VD201,VD205~VD207,VD210~VD221                                                                                         |
| 0700001 | SMD DIODE                  | LS4148                            | PCS | 16 | VD201,VD205~VD207,VD210~VD221                                                                                         |
| 0700002 | SMD DIODE                  | LL4148                            | PCS | 16 | VD201,VD205~VD207,VD210~VD221                                                                                         |
| 0780029 | TRIODE                     | C8050                             | PCS | 2  | V307,V308                                                                                                             |
| 0780030 | TRIODE                     | 8550C                             | PCS | 2  | V306,V309                                                                                                             |
| 0780062 | SMD TRIODE                 | 9014C                             | PCS | 1  | V310                                                                                                                  |
| 0780033 | TRIODE                     | 9015C                             | PCS | 1  | Q204                                                                                                                  |
| 0780020 | TRIODE                     | C1815Y                            | PCS | 1  | Q212                                                                                                                  |
| 0780197 | SMD TRIODE                 | C1815                             | PCS | 2  | Q205,Q206                                                                                                             |
| 0780043 | TRIODE                     | 2SA1015                           | PCS | 3  | Q211,Q218,Q219                                                                                                        |
| 0780040 | SMD TRIODE                 | 3904                              | PCS | 1  | V305                                                                                                                  |
| 0780193 | SMD TRIODE                 | 2SK3018                           | PCS | 2  | V303,V304                                                                                                             |
| 0780115 | SMD TRIODE                 | 2SB1132                           | PCS | 2  | V301,V302                                                                                                             |
| 0880185 | IC                         | NJM4558M SOP                      | PCS | 1  | U219                                                                                                                  |
| 0880562 | IC                         | 4580 SOP                          | PCS | 1  | U219                                                                                                                  |
| 0880361 | IC                         | 4558 SOP                          | PCS | 1  | U219                                                                                                                  |
| 0880322 | IC                         | MM74HCU04M SOP                    | PCS | 1  | U205                                                                                                                  |
| 0880513 | IC                         | HCU04 SOP                         | PCS | 1  | U205                                                                                                                  |
| 0881275 | IC                         | IC42S16100-7T SOP                 | PCS | 2  | U203,U204                                                                                                             |
| 0881182 | IC                         | LM1117MP-ADJ SOT-223              | PCS | 1  | U209                                                                                                                  |
| 0881124 | IC                         | CS4340-KS SOP                     | PCS | 1  | U206                                                                                                                  |
| 0881031 | IC                         | 24C02N SOP                        | PCS | 1  | U202                                                                                                                  |
| 0882257 | IC                         | MT1389FE/C(C VERSION) QFP         | PCS | 1  | U201                                                                                                                  |
| 0881378 | IC                         | BA5954FP HSOP                     | PCS | 1  | U302                                                                                                                  |
| 0960020 | CRYSTAL OSCILLATOR         | 27.00MHz 49-S                     | PCS | 1  | X201                                                                                                                  |
| 1940140 | CABLE SOCKET               | 14P 1.0mm STRAIGHT DUAL LINE PLUG | PCS | 1  | XS204                                                                                                                 |
| 1631889 | PCB                        | 2967B-3                           | PCS | 1  |                                                                                                                       |
| 1940024 | SOCKET                     | 5P 2.0mm                          | PCS | 1  | XS302                                                                                                                 |
| 1940005 | SOCKET                     | 6P 2.0mm                          | PCS | 2  | XS303,XS201                                                                                                           |
| 1940030 | SOCKET                     | 10P 2.5mm                         | PCS | 1  | XS203                                                                                                                 |
| 1940094 | CABLE SOCKET               | 24P 0.5mm SMD WITH CLASP          | PCS | 1  | XS301                                                                                                                 |
|         |                            |                                   |     |    |                                                                                                                       |