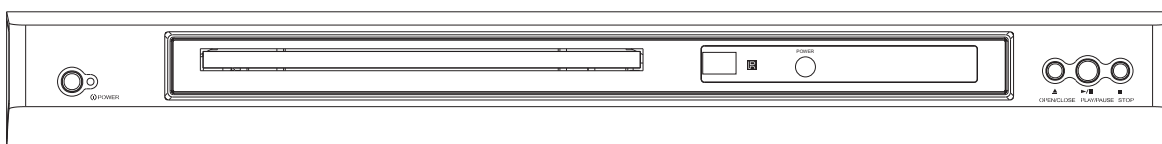


SERVICE MANUAL

DV311S



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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.

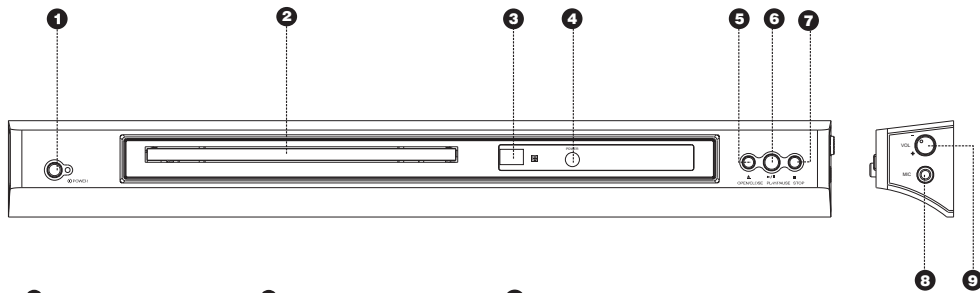
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity(ESD).

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 POWER indicator LED

5 OPEN/CLOSE button

6 PLAY/PAUSE button

7 STOP button

8 MIC jack

9 MIC VOLUME knob

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

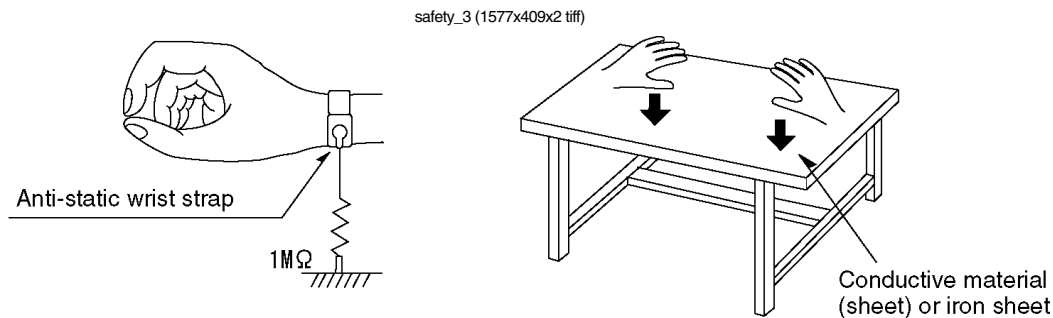
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

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

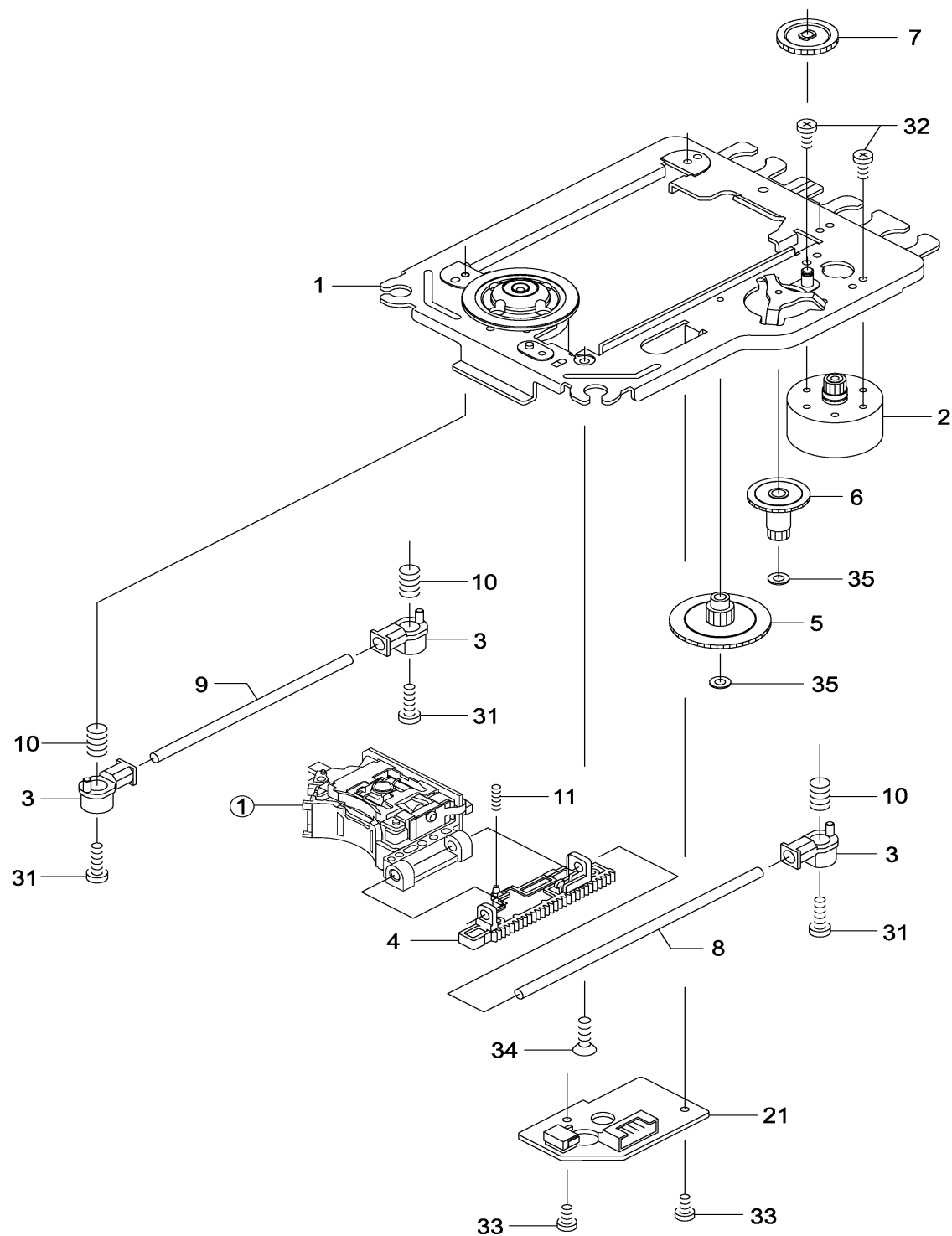
1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide).
2.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

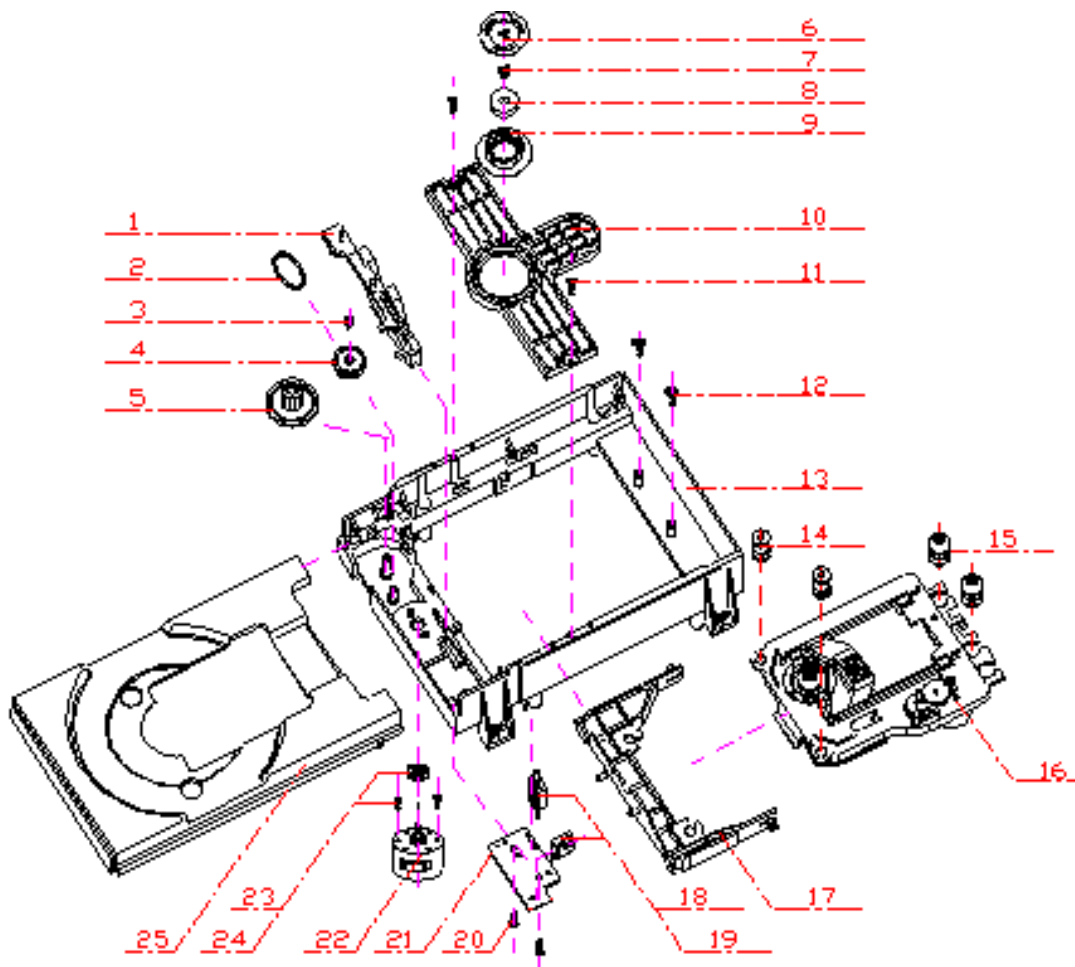
Materials to Pic (1)

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

[illegible]

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

5.2 Bracket Exploded View and Part List



Pic (2)

Materials to Pic(2)

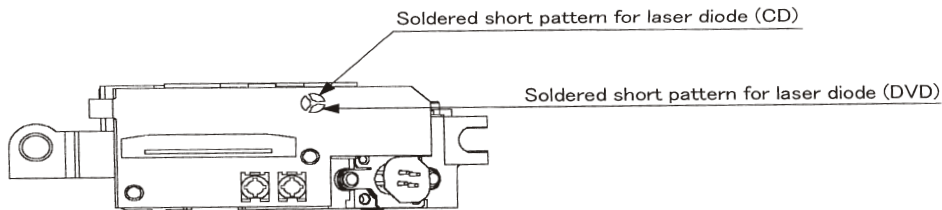
- | | |
|-----------------------------------|--------------------------|
| 1.bracket | 14. front silicon rubber |
| 2.belt | 15. Back silicon rubber |
| 3.screw | 16. Pick-up |
| 4.belt wheel | 17. Pick-up |
| 5.gearwheel | 18. switch |
| 6.iron chip | 19. Five-pin flat plug |
| 7. Immobility mechanism 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

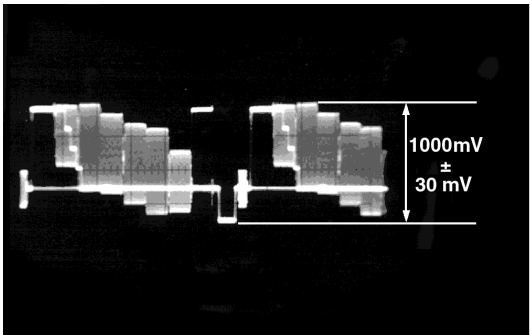
6.1. Video Output (Luminance Signal) Confirmation

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

Measurement point	Mode	Disc
Video output terminal	Color bar 75% 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



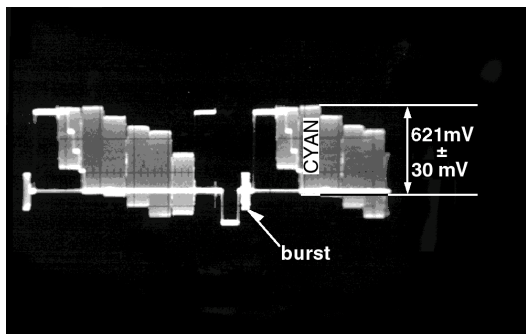
6.2 Video Output(Chrominance Signal) Confirmation

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 μ sec/dir	621mVp-p \pm 30mV	

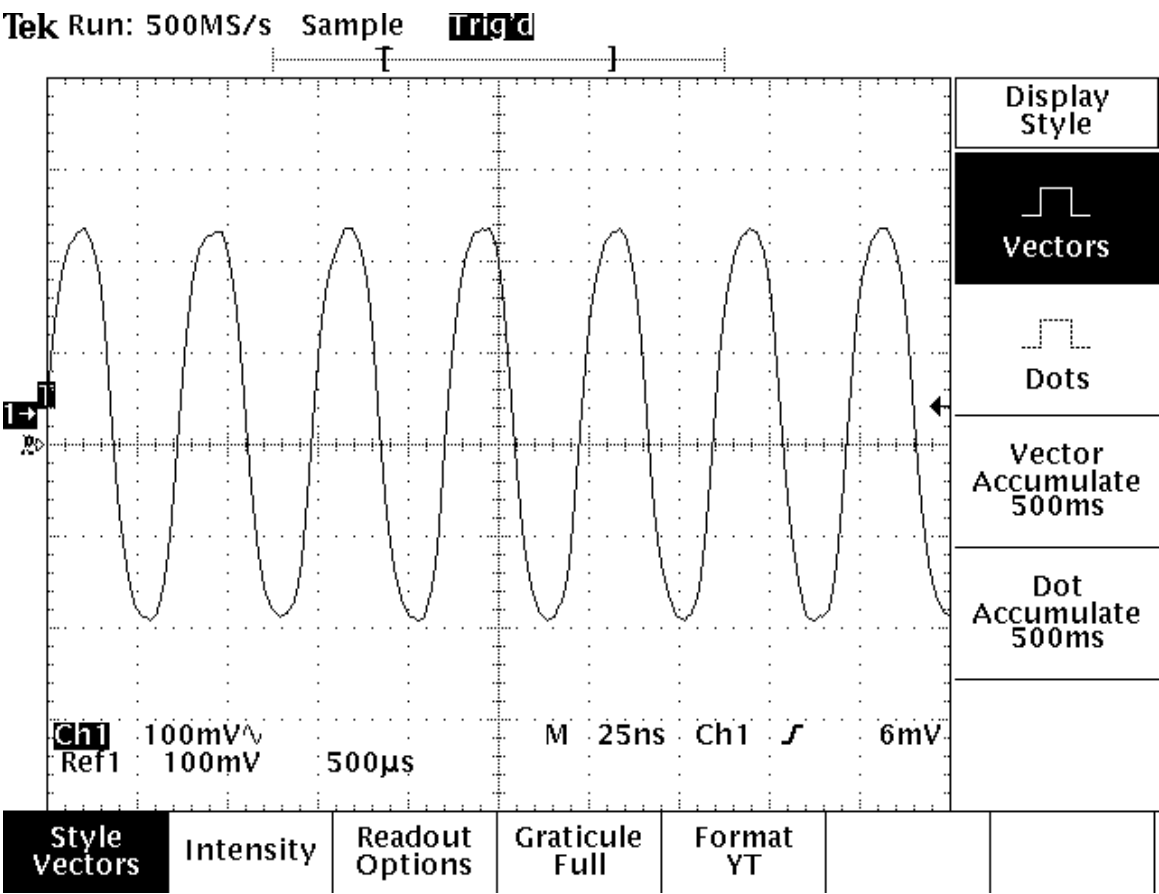
Purpose:To maintain video signal output compatibility.

- 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

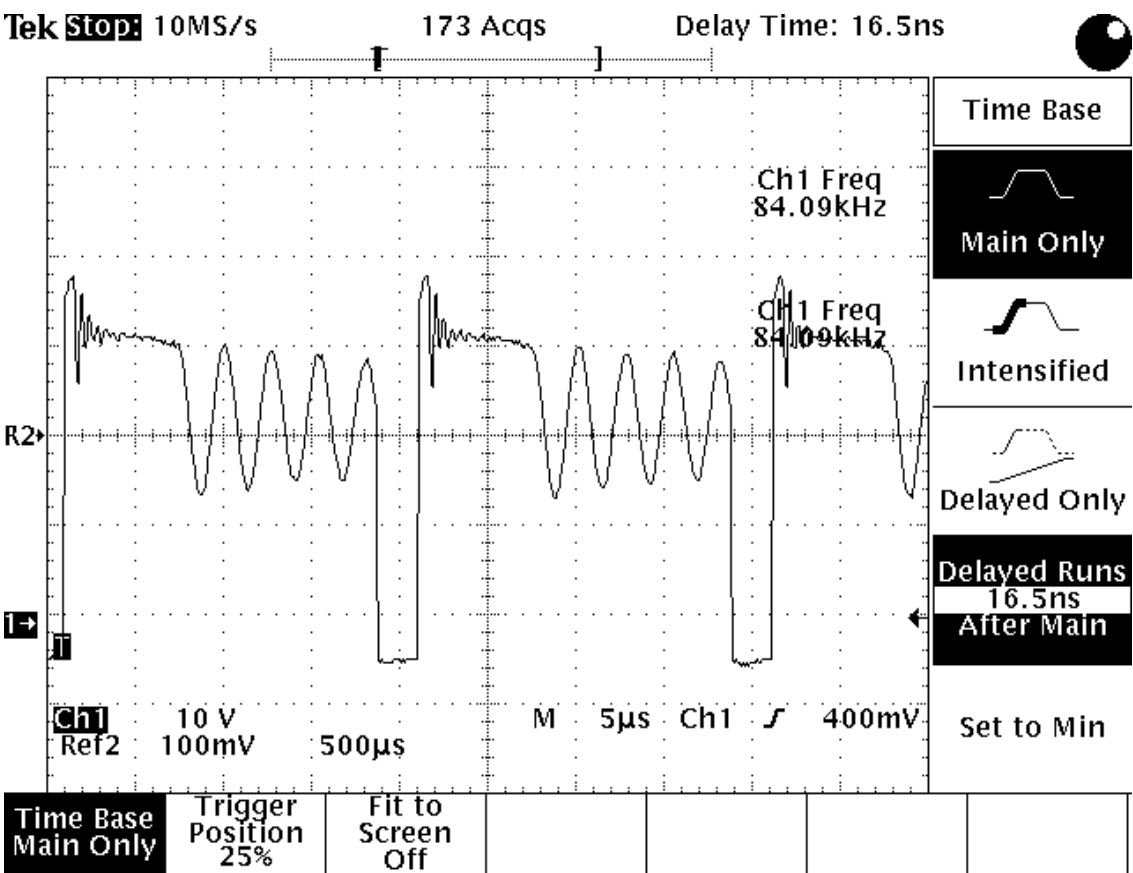


7.MPEG BOARD CHECK WAVEFORM

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 μ m process technology

- Fully compatible with 0.32 μ 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#)

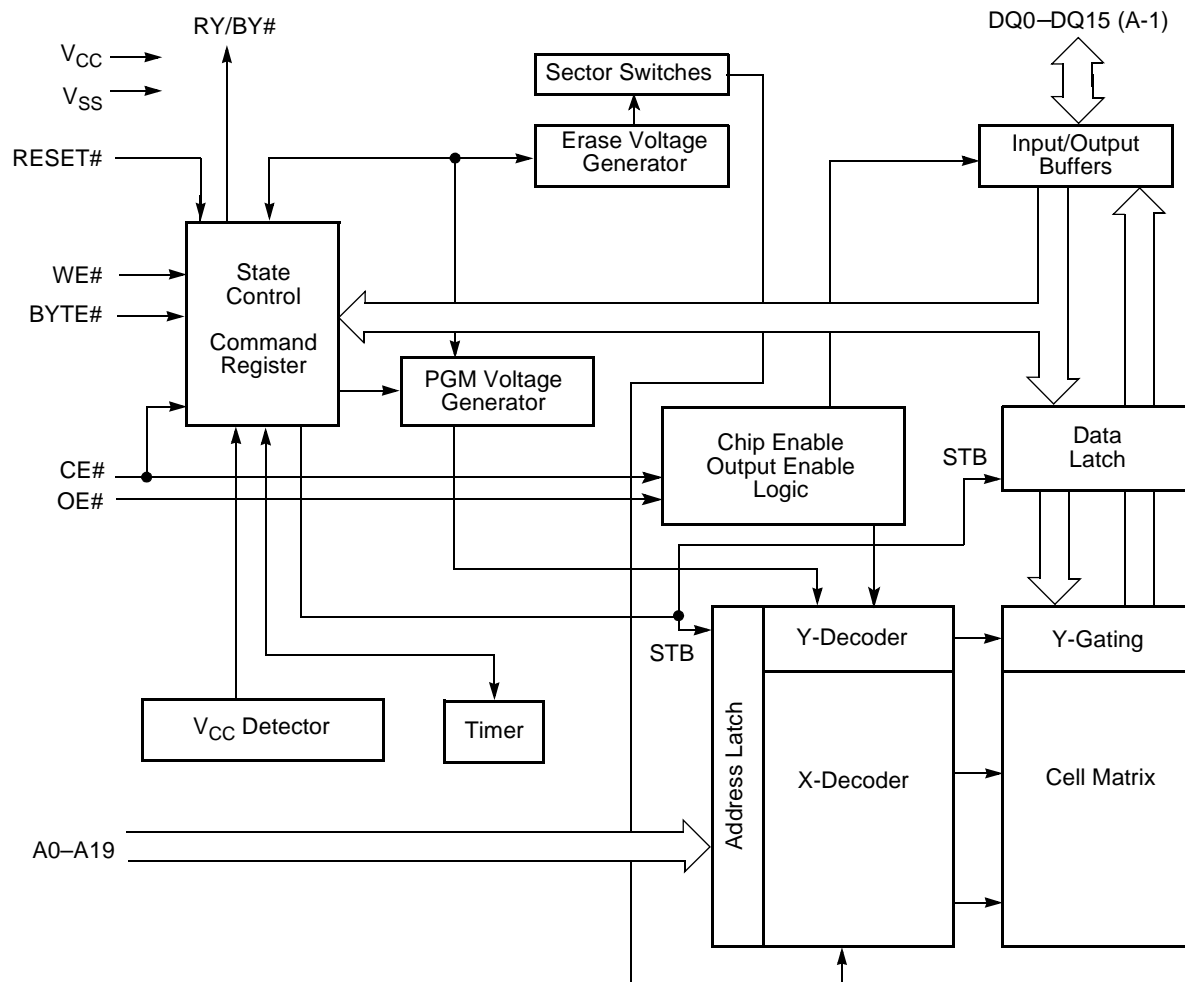
- Hardware method to reset the device to reading array data

PRODUCT SELECTOR GUIDE

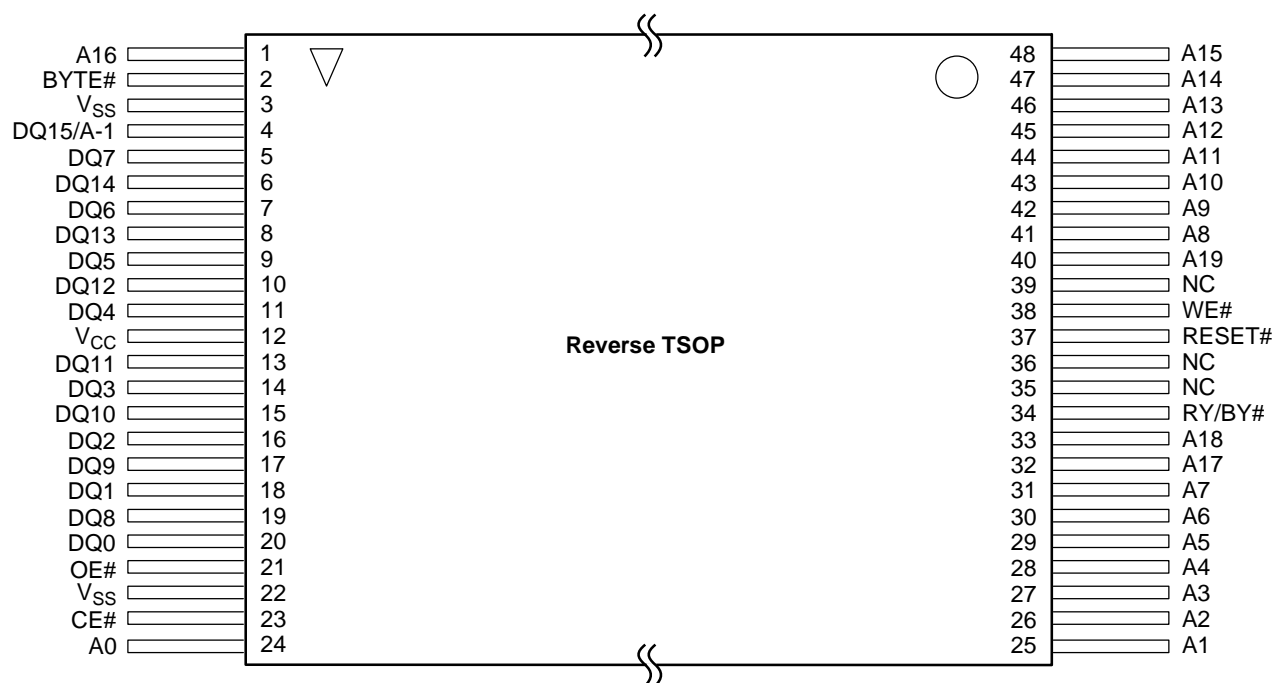
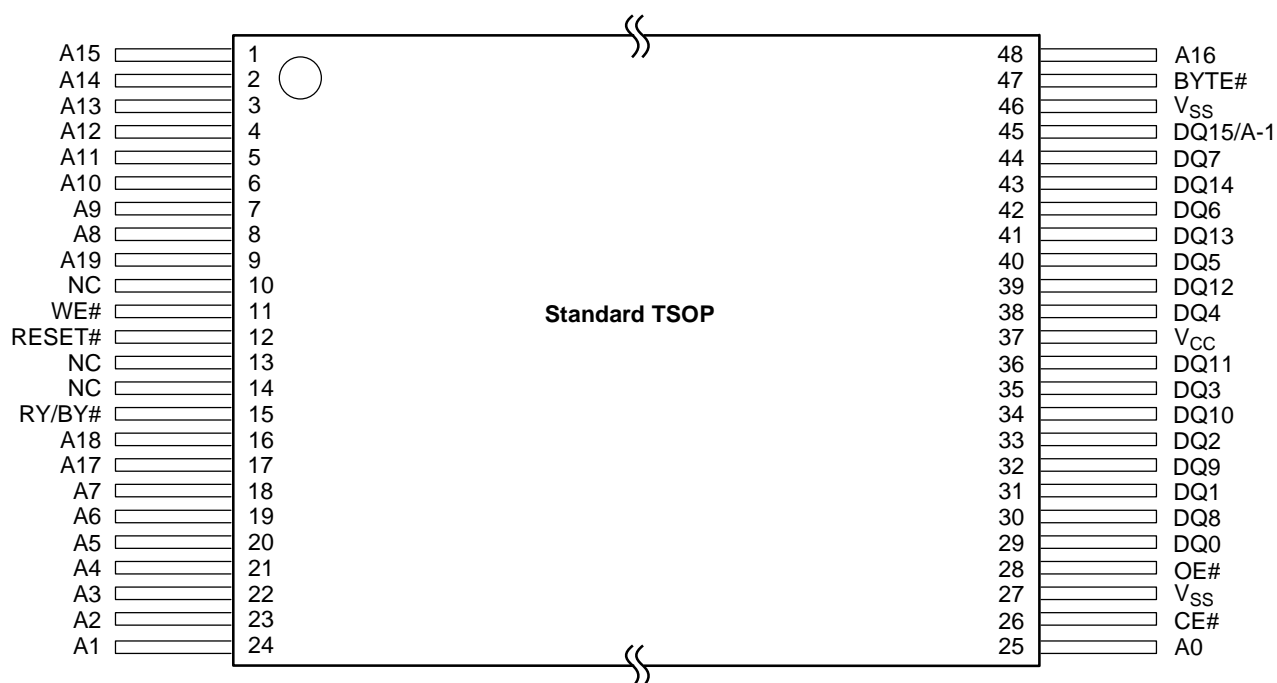
Family Part Number		Am29LV160D		
Speed Option	Voltage Range: $V_{CC} = 2.7\text{--}3.6\text{ V}$	-70	-90	-120
Max access time, ns (t_{ACC})		70	90	120
Max CE# access time, ns (t_{CE})		70	90	120
Max OE# access time, ns (t_{OE})		30	35	50

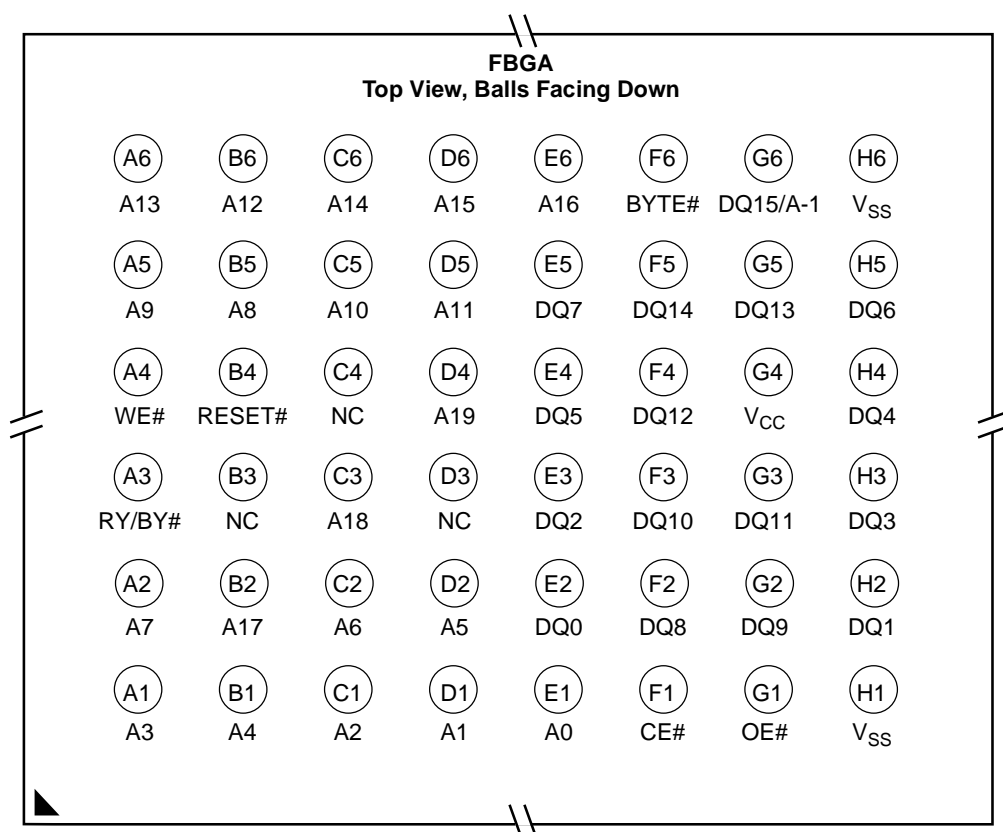
Note: See “AC Characteristics” for full specifications.

BLOCK DIAGRAM



CONNECTION DIAGRAMS

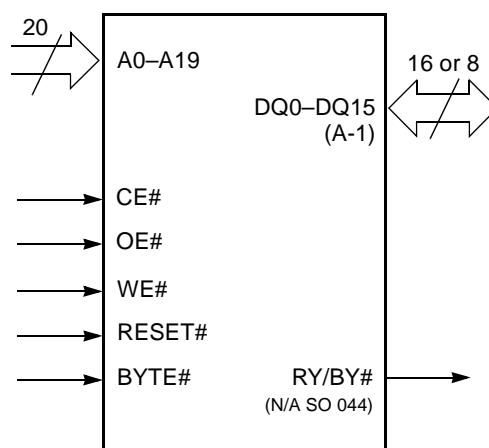




Flash memory devices in FBGA packages may be damaged if exposed to ultrasonic cleaning methods. The package and/or data integrity may be compromised if the package body is exposed to temperatures above 150°C for prolonged periods of time.

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 _{CC}	=	3.0 volt-only single power supply (see Product Selector Guide for speed options and voltage supply tolerances)
V _{SS}	=	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.

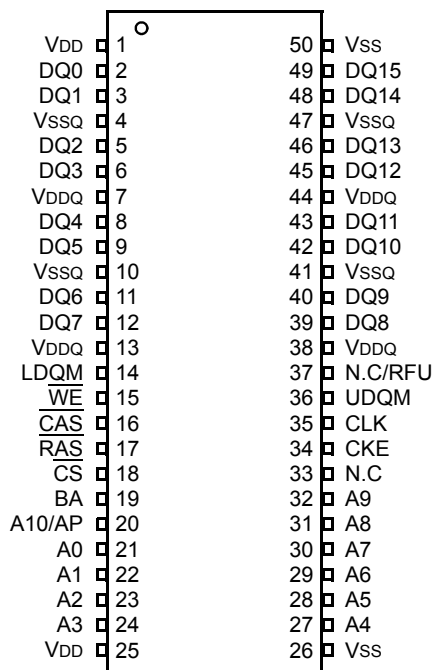
ORDERING INFORMATION

Part NO.	MAX Freq.	Interface	Package
K4S161622H-TC55	183MHz	LVTTL	50pin 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)

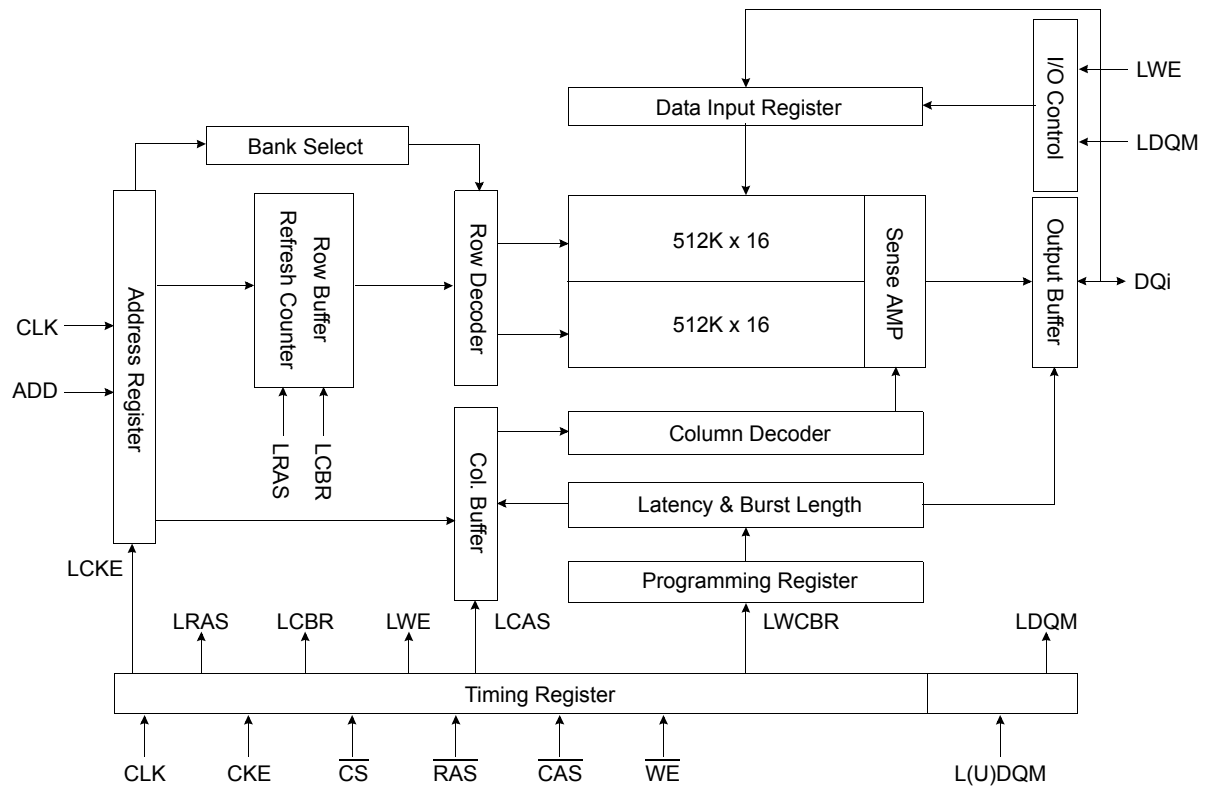


50PIN TSOP (II)
(400mil x 825mil)
(0.8 mm PIN PITCH)

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 ₀ ~ A _{10/AP}	Address	Row / column addresses are multiplexed on the same pins. Row address : RA ₀ ~ RA ₁₀ , column address : CA ₀ ~ CA ₇
BA	Bank Select Address	Selects bank to be activated during row address latch time. 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. 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 ₀ ~ 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/ Reserved for Future Use	This pin is recommended to be left No Connection on the device.

FUNCTIONAL BLOCK DIAGRAM



* Samsung Electronics reserves the right to change products or specification without notice.

8.2 MT1389

MT1389

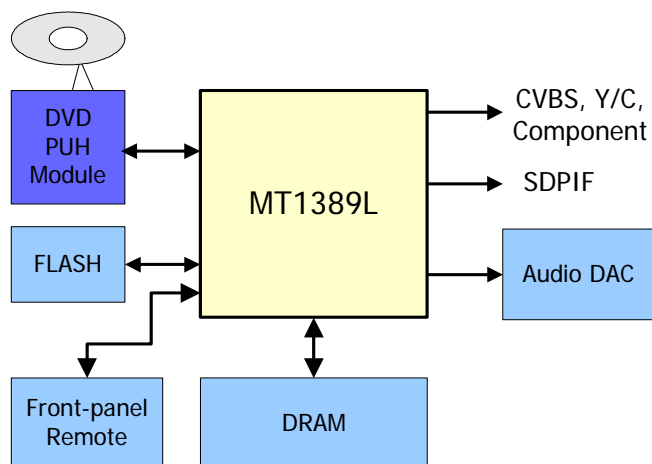
Progressive-Scan DVD Player SOC

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 3rd generation of the DVD player SOC. It integrates the MediaTek 2nd 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

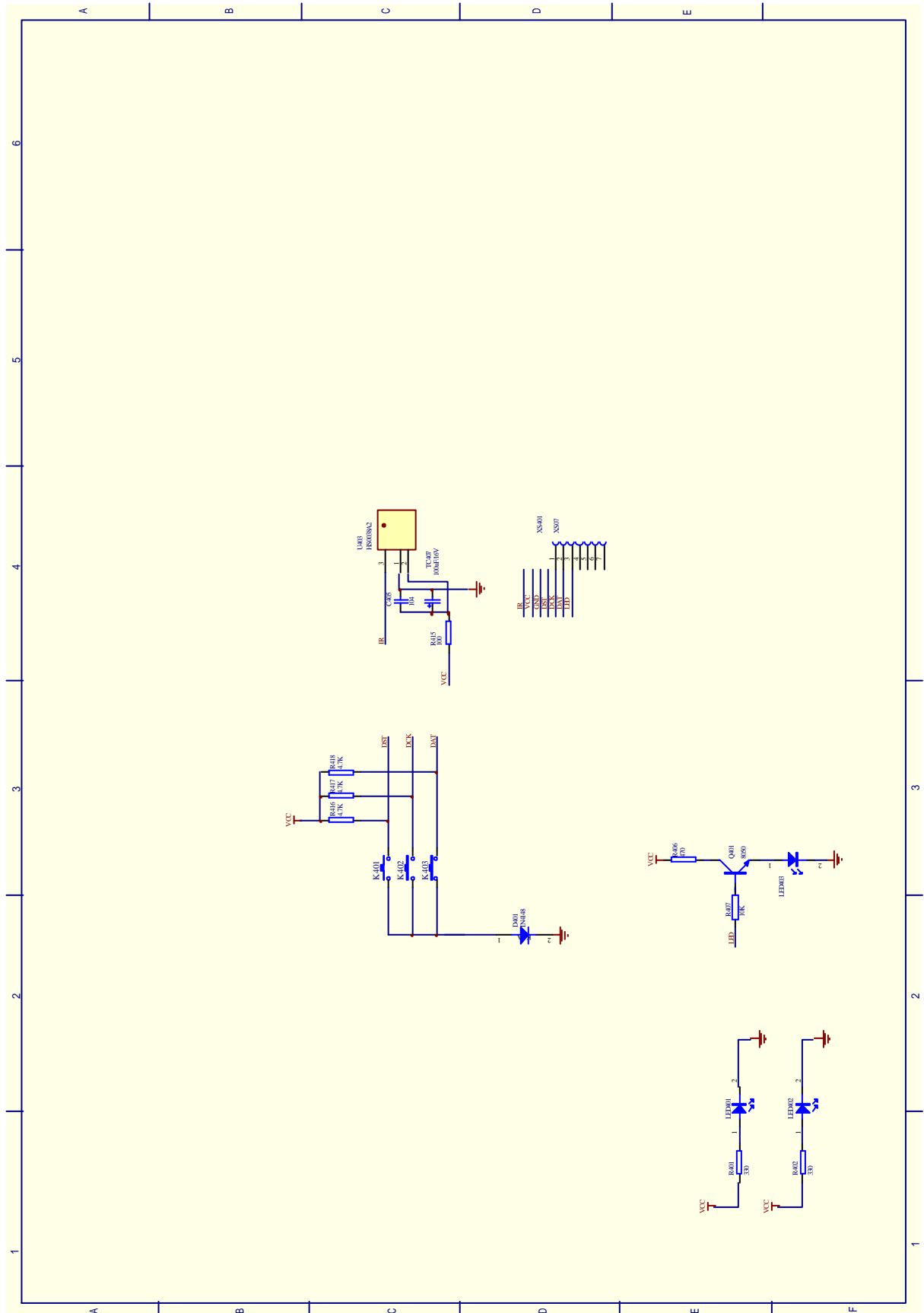
General Feature List

- 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

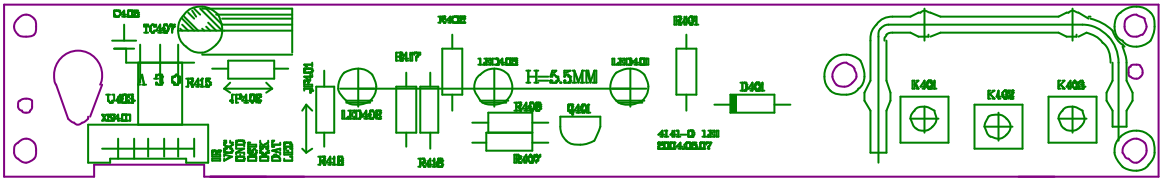
- Audio Effect Processing
 - Dolby Digital (AC-3)/EX decoding
 - DTS/DTS-ES decoding
 - MLP decoding for DVD-Audio
 - MPEG-1 layer 1/layer 2 audio decoding
 - MPEG-2 layer1/layer2 2-channel audio
 - High Definition Compatible Digital (HDCD)
 - Windows Media Audio (WMA)
 - Advanced Audio Coding (AAC)
 - 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

9. SCHEMATIC & PCB WIRING DIAGRAM

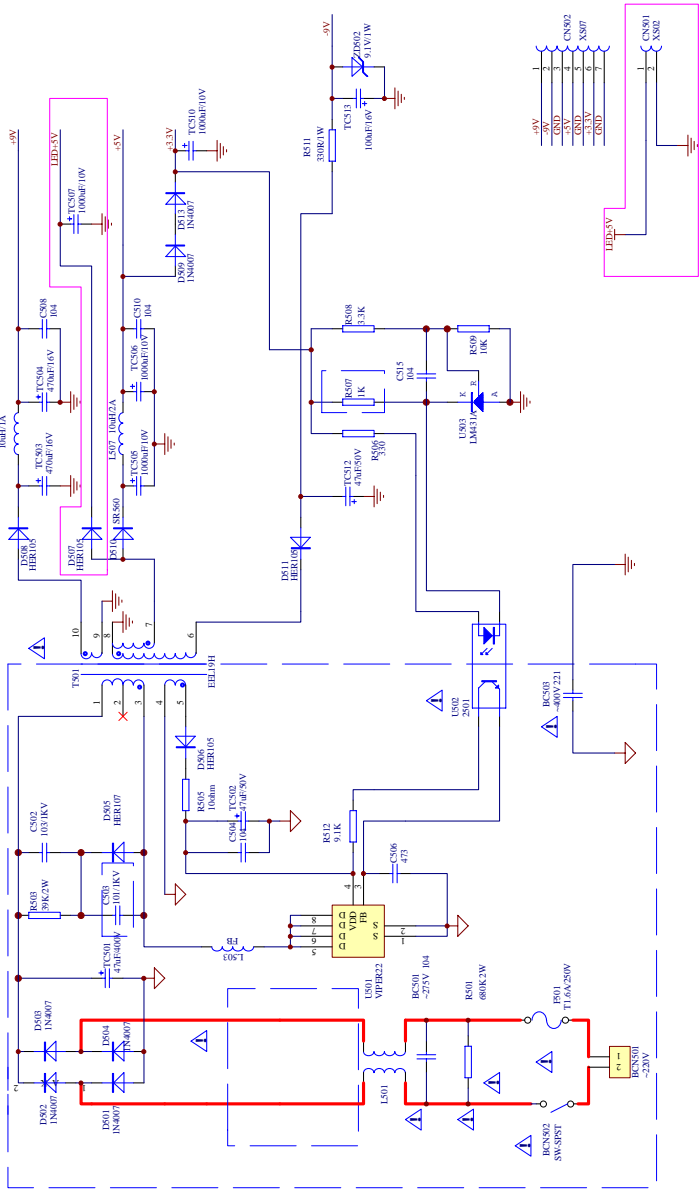
FRONT SCHEMATIC DIAGRAM



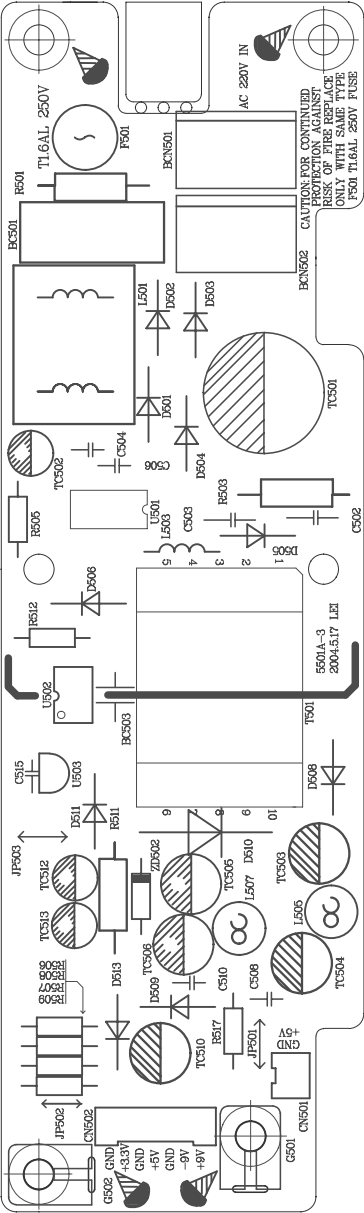
FRONT SCHEMATIC DIAGRAM



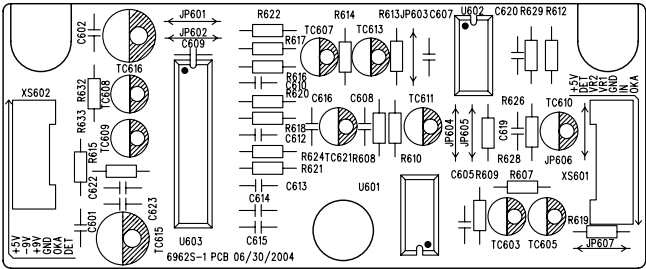
POWER BOARD SCHEMATIC DIAGRAM



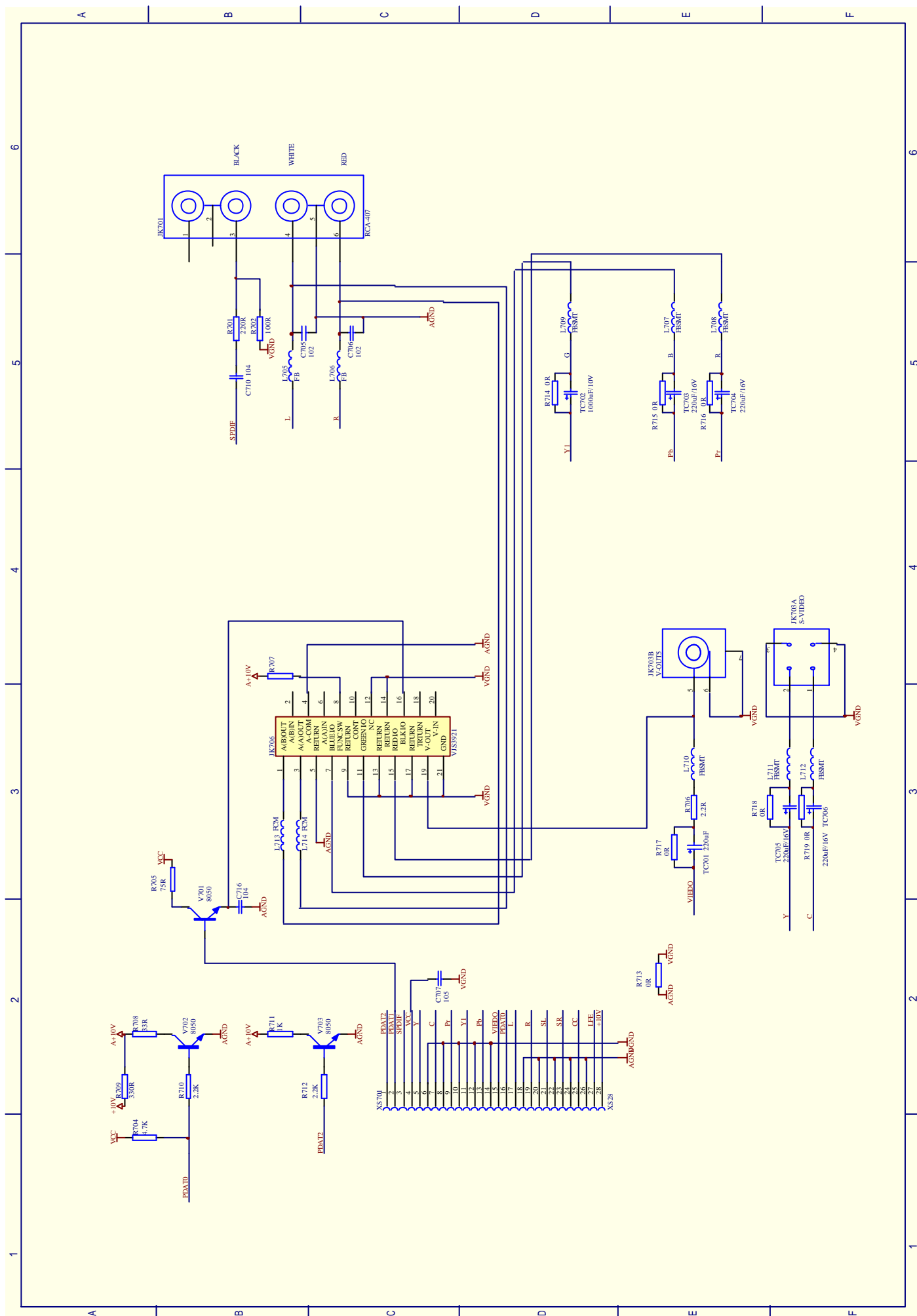
POWER BOARD SCHEMATIC DIAGRAM



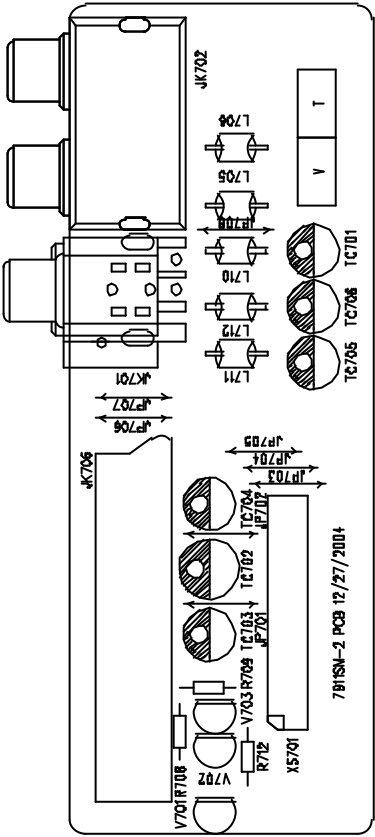
OK SCHEMATIC DIAGRAM



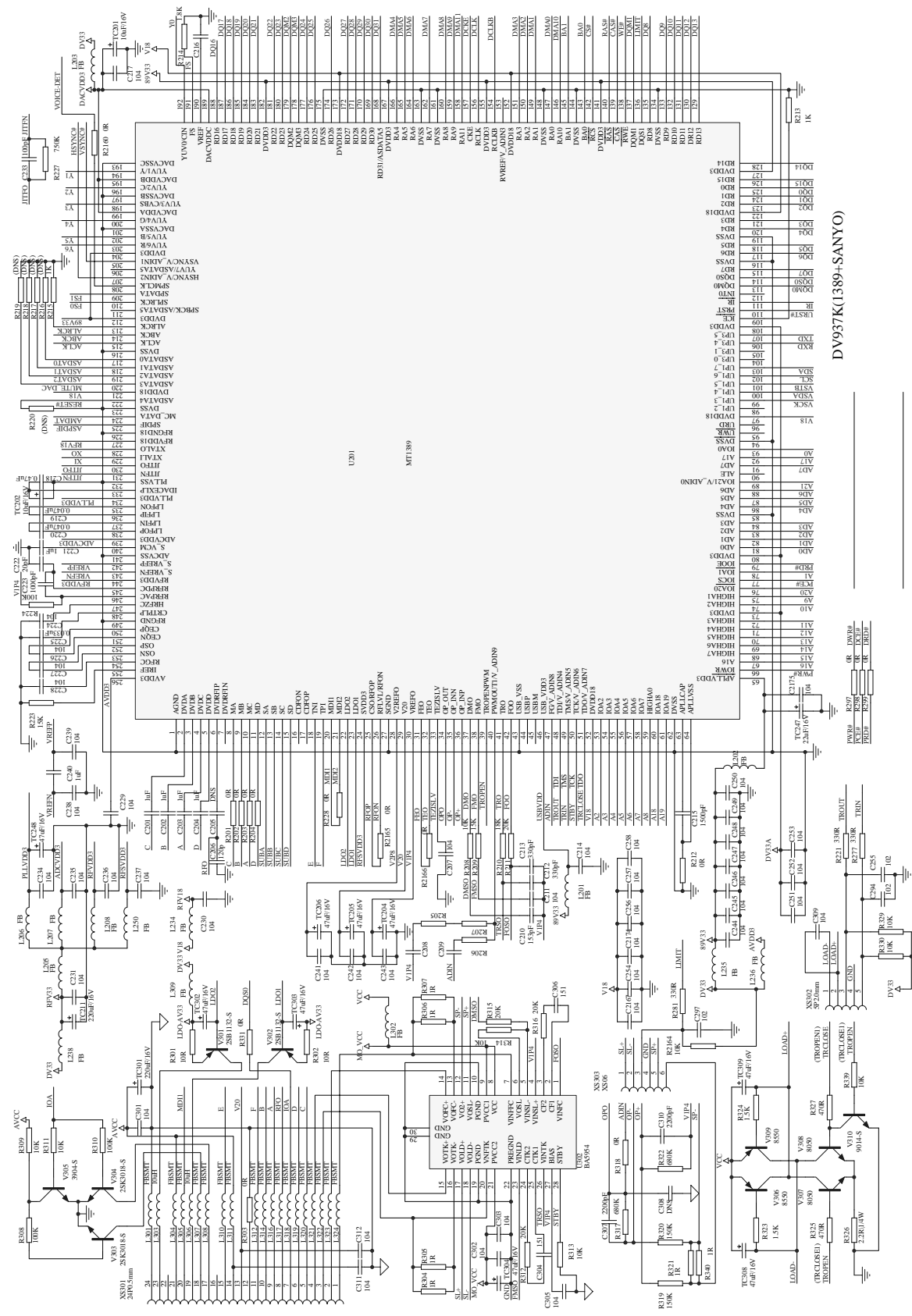
OUTPUT BOARD SCHEMATIC DIAGRAM



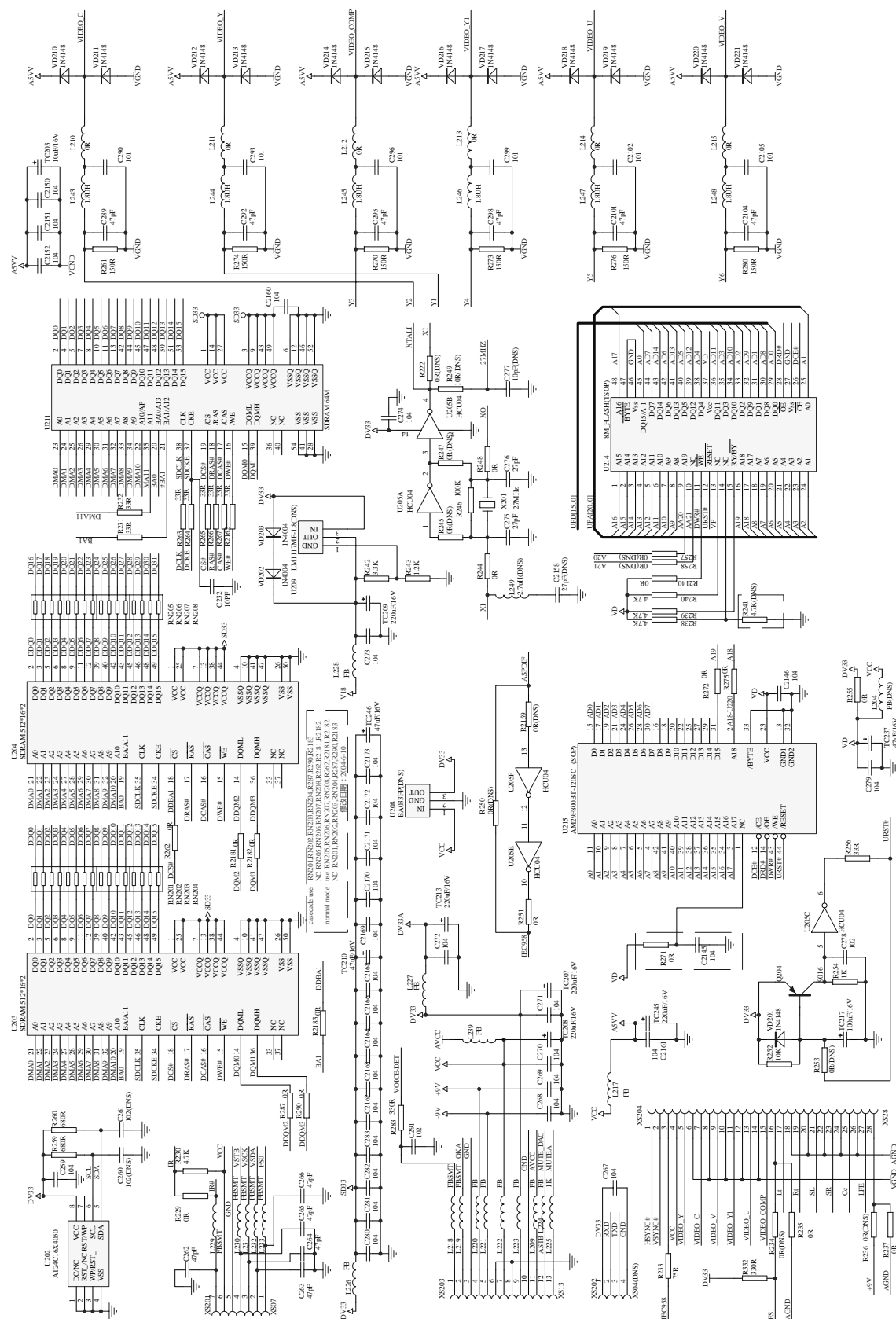
OUTPUT BOARD SCHEMATIC DIAGRAM



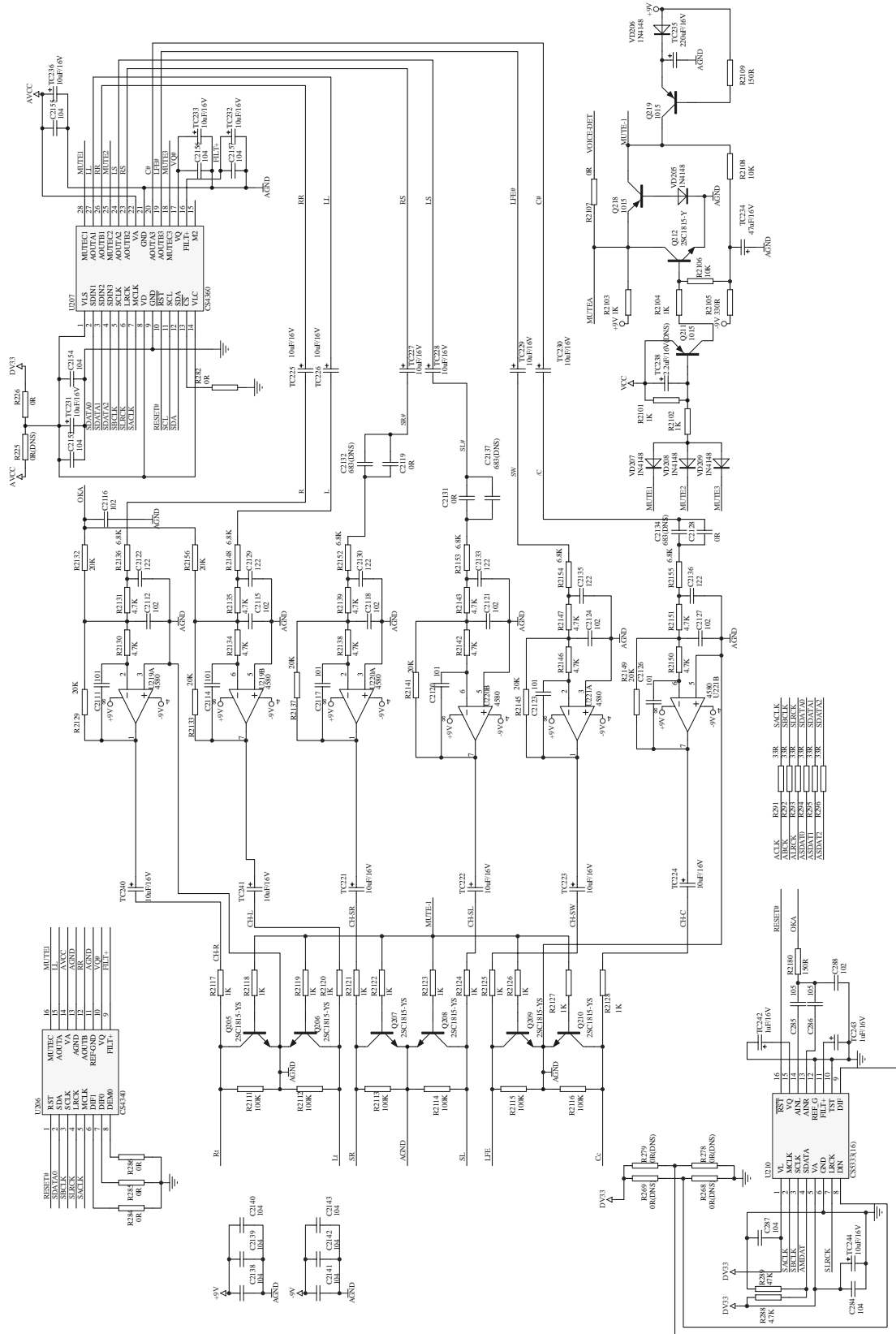
MIAN SCHEMATIC DIAGRAM



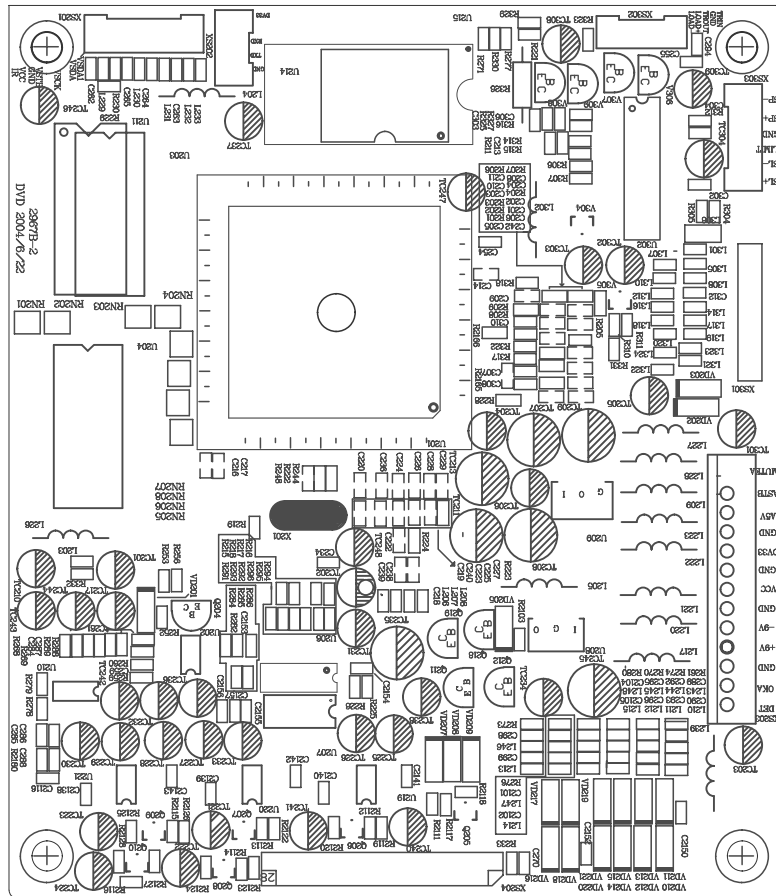
MIAN SCHEMATIC DIAGRAM



MIAN SCHEMATIC DIAGRAM



MIAN SCHEMATIC DIAGRAM



10. SPARE PARTS LIST

DV311S MATERIAL LIST

1. MAIN PANEL

MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	UNIT	UANTITI	LOCATION
5232805	SOFT SPONGE SPACER	6×6×2.5 DOUBLE-FACED HARD	PCS	1	IPC FOR IR SENSOR
0000276	CARBON FILM RESISTOR	1/4W100Ω±5% SHAPED 10	PCS	1	R415
0570006	DIODE	1N4148	PCS	1	D401
1340003	LIGHT TOUCH RESTORE SWITCH	HORIZONTAL 6×6×1	PCS	3	K401~K403
0200139	PORCELAIN CAPACITOR	50V 104 +80%-20% 5mm	PCS	1	C405
260206	CD	CD11C 10V100U±20%5×7 2	PCS	1	TC407
0000278	CARBON FILM RESISTOR	1/4W330Ω±5% SHAPED 10	PCS	1	R402
0000294	CARBON FILM RESISTOR	1/4W10K±5% SHAPED 10	PCS	3	R416~R418
0620002	RADIATION DIODE	Φ3 RED	PCS	1	LED402
2360002	IR SENSOR	HS0038B	PCS	1	U403
2121539	FLAT CABLE	6P150 2.0 2PLUG WITH L NEEDLE THE SAME DIRECTION	PCS	1	XS401
2100003	CONNECTION CORDS	Φ0.6 SHAPED 7.5mm	PCS	1	JP402
1563163	PCB	4141-0	PCS	1	

1. POWER BOARD

MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	UNIT	UANTITI	LOCATION
0000294	CARBON FILM RESISTOR	1/4W10K±5% SHAPED 10	PCS	1	R507
10256	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
570005	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
200228	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
260594	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
210066	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
460394	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

1. OUTPUT BOARD

MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	UNIT	UANTITI	LOCATION
0090008	SMD RESISTOR	1/16W 220Ω ±5% 0603	PCS	1	R701
0000123	CARBON FILM RESISTOR	1/6W330Ω±5% SHAPED 7.5	PCS	1	R709
0000481	CARBON FILM RESISTOR	1/6W33Ω±5% SHAPED 7.5	PCS	1	R708
0090181	SMD RESISTOR	1/16W 100Ω ±5% 0603	PCS	1	R702
90002	SMD RESISTOR	1/16W 2.2Ω ±5% 0603	PCS	1	R706
0090019	SMD RESISTOR	1/16W 4.7K ±5% 0603	PCS	1	R704
0090014	SMD RESISTOR	1/16W 1K ±5% 0603	PCS	1	R711
0090017	SMD RESISTOR	1/16W 2.2K ±5% 0603	PCS	1	R710
132	CARBON FILM RESISTOR	1/6W2.2K±5% SHAPED 7.5	PCS	1	R712
0090006	SMD RESISTOR	1/16W 75Ω ±5% 0603	PCS	1	R705
0310066	SMD CAPACITOR	50V 102 ±10% 0603	PCS	2	C705,C706
0310207	SMD CAPACITOR	50V 104 ±20% X7R 0603	PCS	3	C707,C710,C716
0310543	SMD CAPACITOR	50V 104 ±10% X7R 0603	PCS	3	C707,C710,C716
310222	SMD CAPACITOR	25V 104 ±20% X7R 0603	PCS	3	C707,C710,C716
0090001	SMD RESISTOR	1/16W 0Ω ±5% 0603	PCS	7	R714~R719,R707
0780050	TRIODE	S8050D	PCS	3	V701~V703
0390095	SMD MAGNETIC BEADS	FCM1608K-221T05	PCS	5	L713,L714,L707~L709
0390057	MAGNETIC BEADS INDUCTOR	RH354708	PCS	5	L705,L706,L710~L712
1910140	TERMINAL SOCKET	AV4-8.4-5G-5 BLACK	PCS	1	JK702
1910129	TERMINAL SOCKET	SA-001-012 BLACK IRON PIECE SCREEN-SHIELDED	PCS	1	JK701
1940140	CABLE SOCKET	14P 1.0mm STRAIGHT DUAL LINE PLUG	PCS	1	XS701
2100004	CONNECTION CORDS	Φ0.6 SHAPED 10mm	PCS	8	JP701~JP708
1860029	SCART SOCKET	SCART-01	PCS	1	JK706
1563580	PCB	7911SM-2	PCS	1	

1. OK BOARD 1

MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	UNIT	UANTITI	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
137	CARBON FILM RESISTOR	1/6W10K±5% SHAPED 7.5	PCS	5	R617,R621,R620,R624,R612
0000118	CARBON FILM RESISTOR	1/6W10Ω±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	R610
141	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	R608
0260127	CD	CD11 16V4.7U±20%5×11 2	PCS	6	TC603,TC607,TC610,TC611,TC613,TC621
260021	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
200125	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
200117	PORCELAIN CAPACITOR	50V 561 +80%-20% 5mm	PCS	2	C610,C612
0880124	IC	NJM4558D DIP	PCS	2	U601,U602
1940023	SOCKET	7P 2.0mm	PCS	2	XS601,XS602

2100003	CONNECTION CORDS	Φ0.6 SHAPED 7.5mm	PCS	7	JP601~JP607
1563408	PCB	6962S-3	PCS	1	
880230	IC	PT2399 DIP	PCS	1	U603

1. OK BOARD 2

MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	UNIT	UANTIT	LOCATION
0000137	CARBON FILM RESISTOR	1/6W10K±5% SHAPED 7.5	PCS	1	R605
0000133	CARBON FILM RESISTOR	1/6W4.7K±5% SHAPED 7.5	PCS	1	R623
0000140	CARBON FILM RESISTOR	1/6W22K±5% SHAPED 7.5	PCS	1	R601
0000126	CARBON FILM RESISTOR	1/6W560Ω±5% SHAPED 7.5	PCS	1	R603
0260241	CD	CD11C 16V4.7U±20%4×7 1.5	PCS	1	TC601
0200206	PORCELAIN CAPACITOR	50V 103 +80%-20% 5mm	PCS	1	C603
0390057	MAGNETIC BEADS INDUCTOR	RH354708	PCS	3	L602,L603,L604
1980048	MIC SOCKET	ST-403-070-100	PCS	1	MIC602
0160184	ROTATED POTENTIOMETER	WH09JTC1Z11-A10K-F30	PCS	1	VR602
1563075	PCB	6501A-2	PCS	1	
0200138	PORCELAIN CAPACITOR	50V 104 ±20% 5mm	PCS	1	C604
0200139	PORCELAIN CAPACITOR	50V 104 +80%-20% 5mm	PCS	1	C604
0200125	PORCELAIN CAPACITOR	50V 102 +80%-20% 5mm	PCS	2	C605,C606
200124	PORCELAIN CAPACITOR	50V 102 ±20% 5mm	PCS	2	C605,C606
2121576	FLAT CABLE	7P90 2.0 2PLUG WITH L NEEDLE REVERSE	PCS	1	XS601

1. DECODE BOARD

MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	UNIT	UANTIT	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
90272	SMD RESISTOR	1/16W1Ω±5% 0603	PCS	6	R304~R307,R321,R340
90003	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	3	R221,R277,R281
0090011	SMD RESISTOR	1/16W 470Ω ±5% 0603	PCS	2	R325,R327
90013	SMD RESISTOR	1/16W 680Ω ±5% 0603	PCS	2	R259,R260
0090014	SMD RESISTOR	1/16W 1K ±5% 0603	PCS	9	R213,R215,R2103,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
0090021	SMD RESISTOR	1/16W 6.8K ±5% 0603	PCS	2	R2136,R2148
0090023	SMD RESISTOR	1/16W 10K ±5% 0603	PCS	16	R208,R229,R252,R309,R311,R313,R314,R329,R330,R339,R2164,R2106,R2101,R2102,R2105,R2108
90024	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
90197	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
260028	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	16	C262~C265,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
310067	SMD CAPACITOR	50V 152 ±10% 0603	PCS	1	C215
0310068	SMD CAPACITOR	50V 222 ±10% 0603	PCS	2	C307,C310
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
310362	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 INDUCTOR	RH354708	PCS	11	L205,L217,L220,L221,L222,L223,L227,L228,L226,L302,L239
0390095	SMD MAGNETIC BEADS	FCM1608K-221T05	PCS	34	L201,L203,L207~L208,L234~L236,L238,L250,L309,L229~L232,L301,L304,L305,L307,L308,L310~L312,L314,L316~L324,L218,L219
90106	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
780193	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
880322	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
882257	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