

SERVICE MANUAL

DV967S



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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.

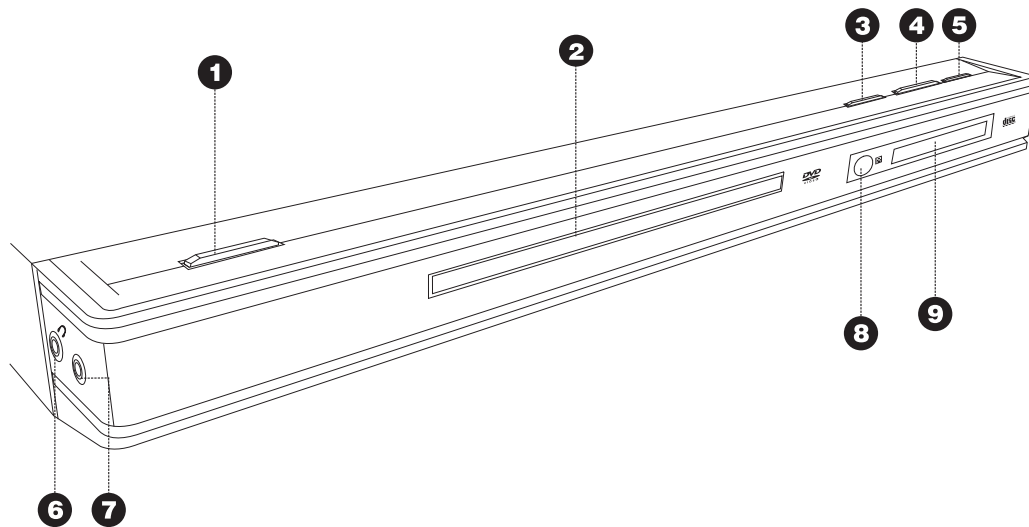
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity(ESD).

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



❶ POWER switch

❹ PLAY/PAUSE button

❷ MIC jack

❷ Disc tray

❺ STOP button

❸ IR SENSOR

❸ OPEN/CLOSE button

❻ Headphone jack

❹ Display window

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

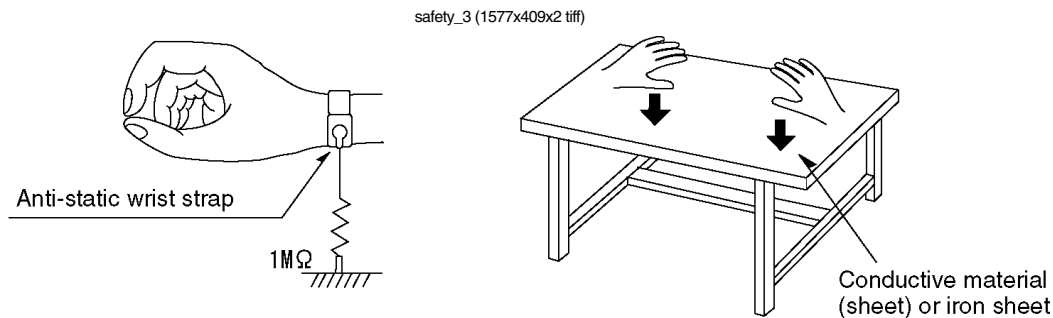
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

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

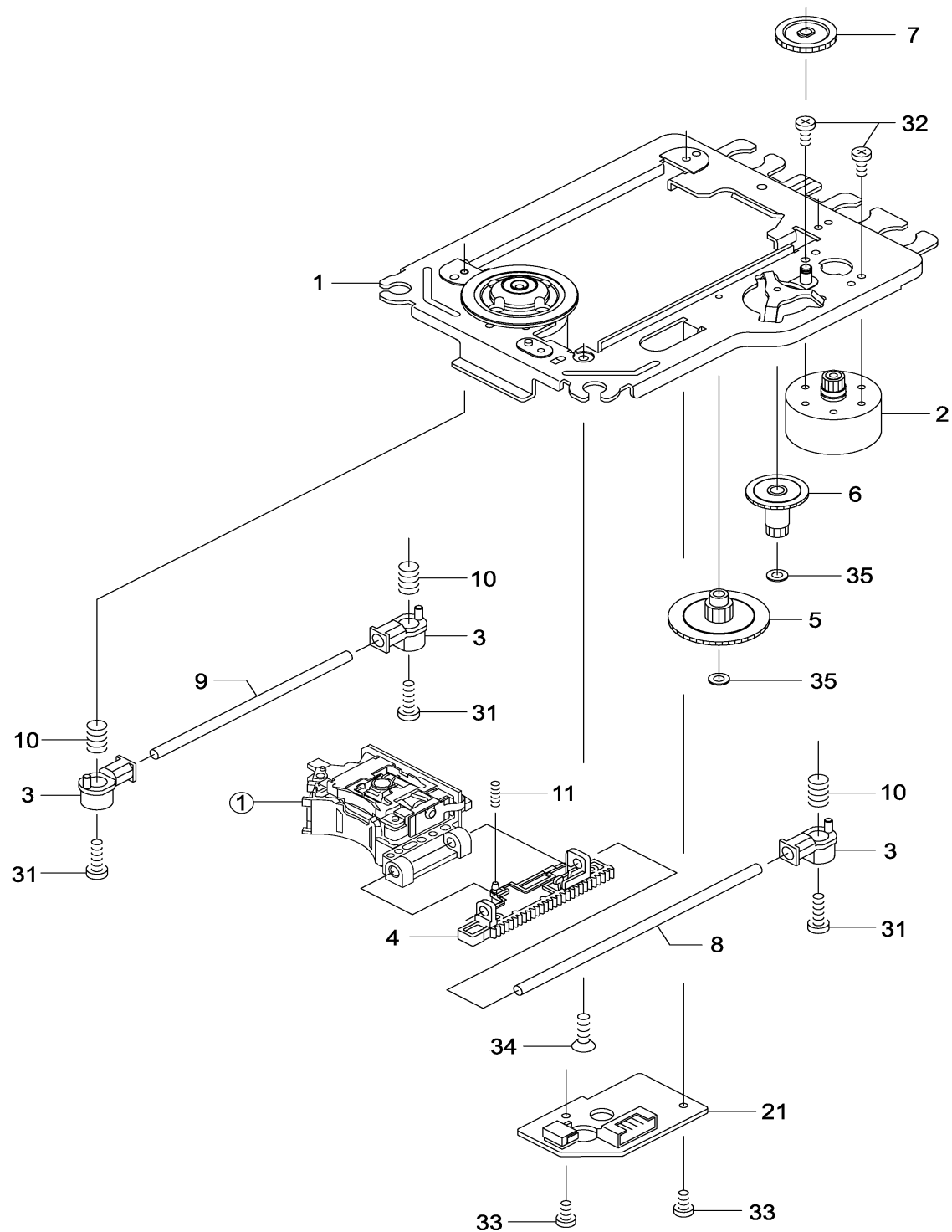
1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuited. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide).
2.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

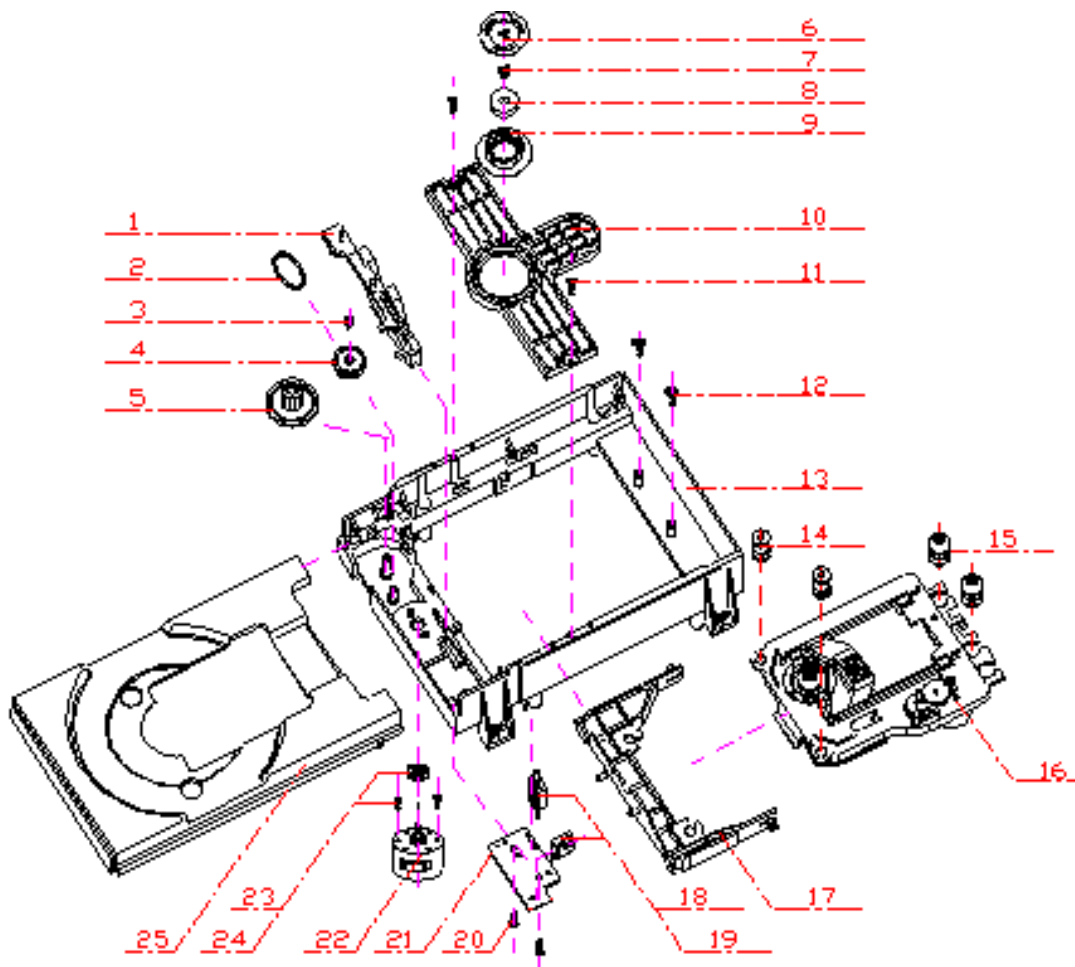
Materials to Pic (1)

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)

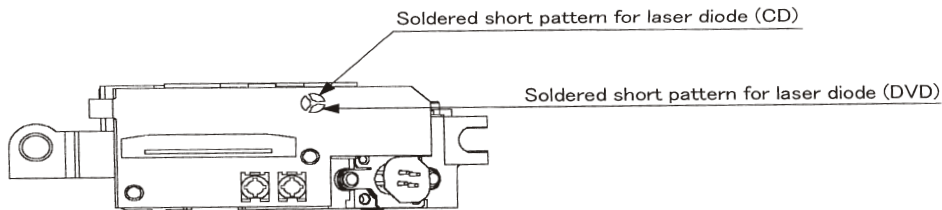
- | | |
|-----------------------------------|--------------------------|
| 1.bracket | 14. front silicon rubber |
| 2.belt | 15. Back silicon rubber |
| 3.screw | 16. Pick-up |
| 4.belt wheel | 17. Pick-up |
| 5.gearwheel | 18. switch |
| 6.iron chip | 19. Five-pin flat plug |
| 7. Immobility mechanism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

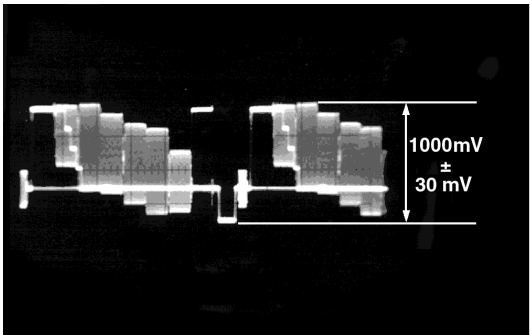
6.1. Video Output (Luminance Signal) Confirmation

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



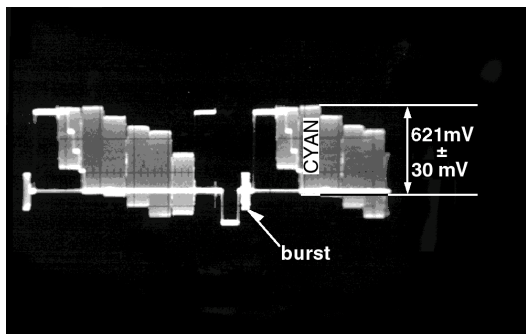
6.2 Video Output(Chrominance Signal) Confirmation

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	

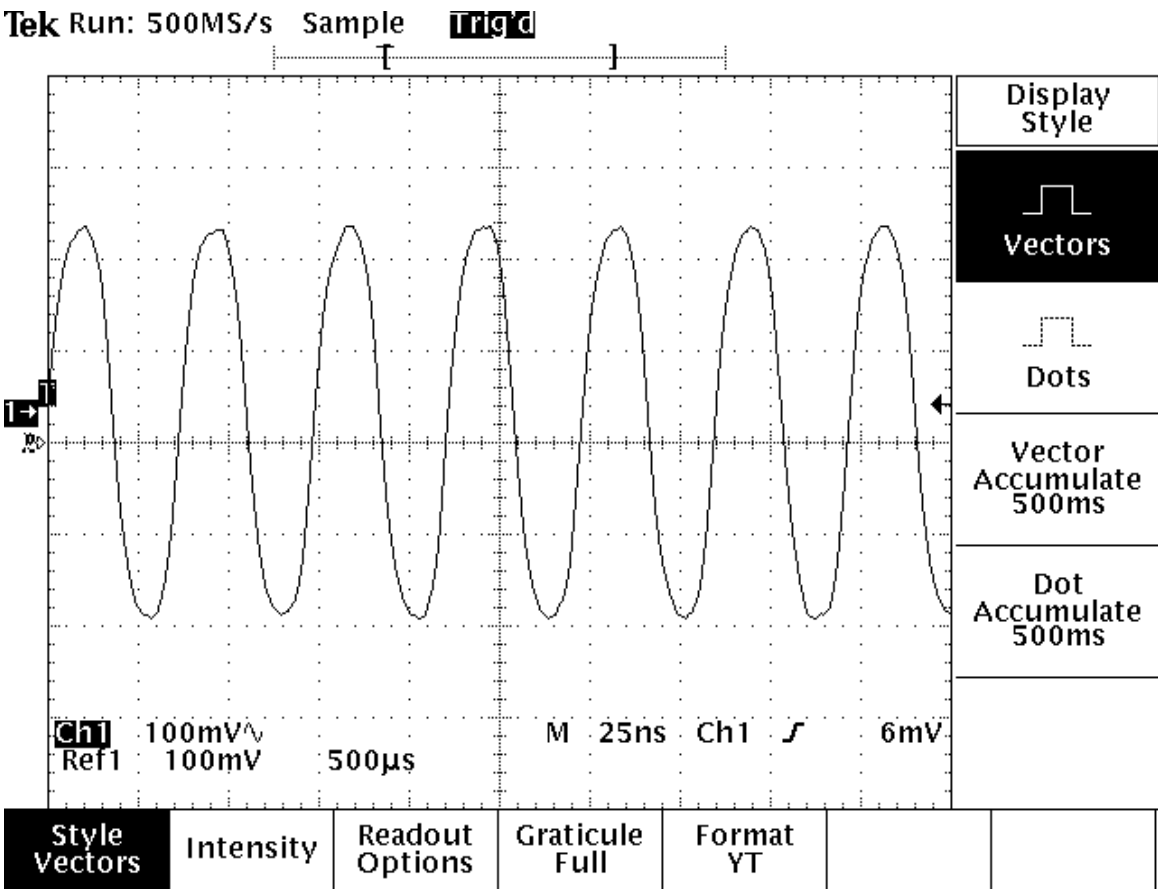
Purpose:To maintain video signal output compatibility.

- 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

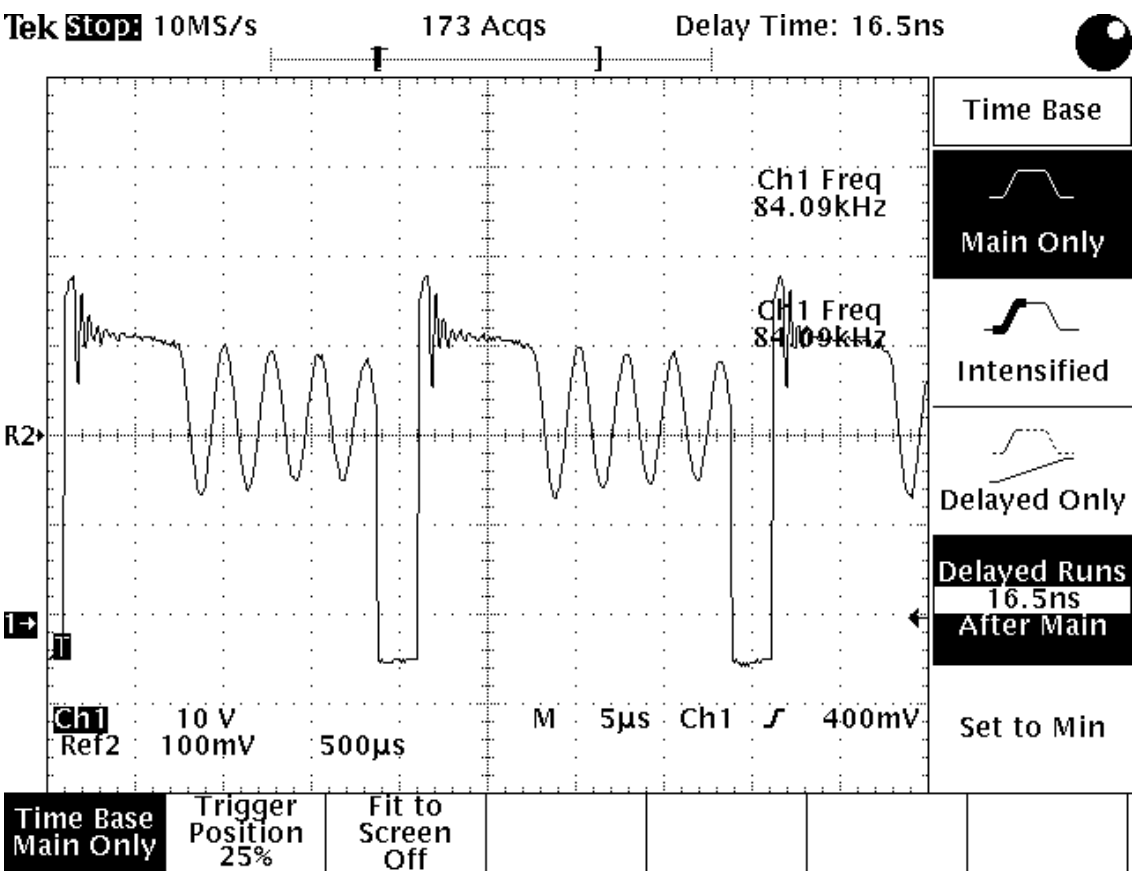


7.MPEG BOARD CHECK WAVEFORM

7.1 27MHz WAVEFORM



7.2 IC NCP1200 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#)

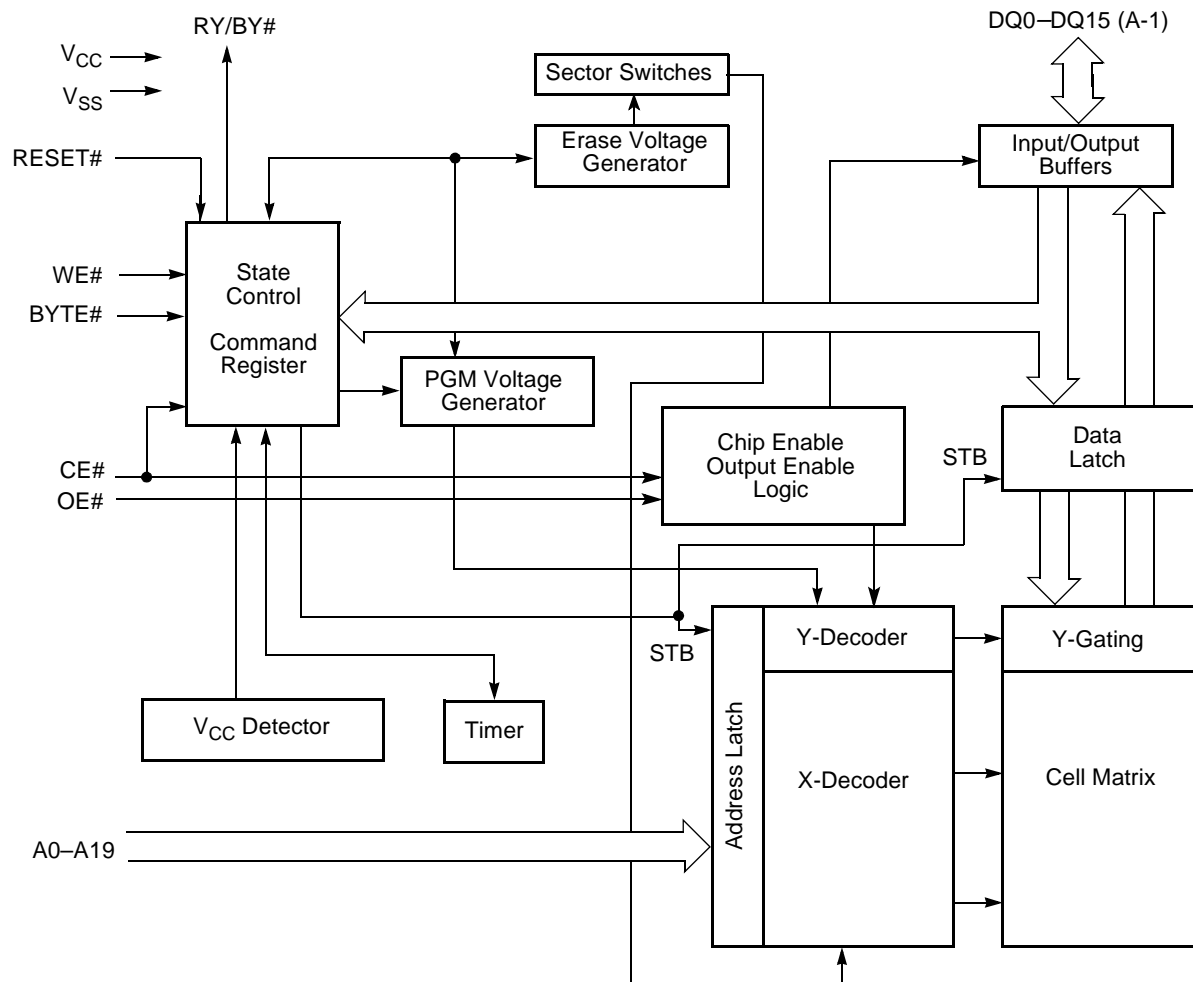
- Hardware method to reset the device to reading array data

PRODUCT SELECTOR GUIDE

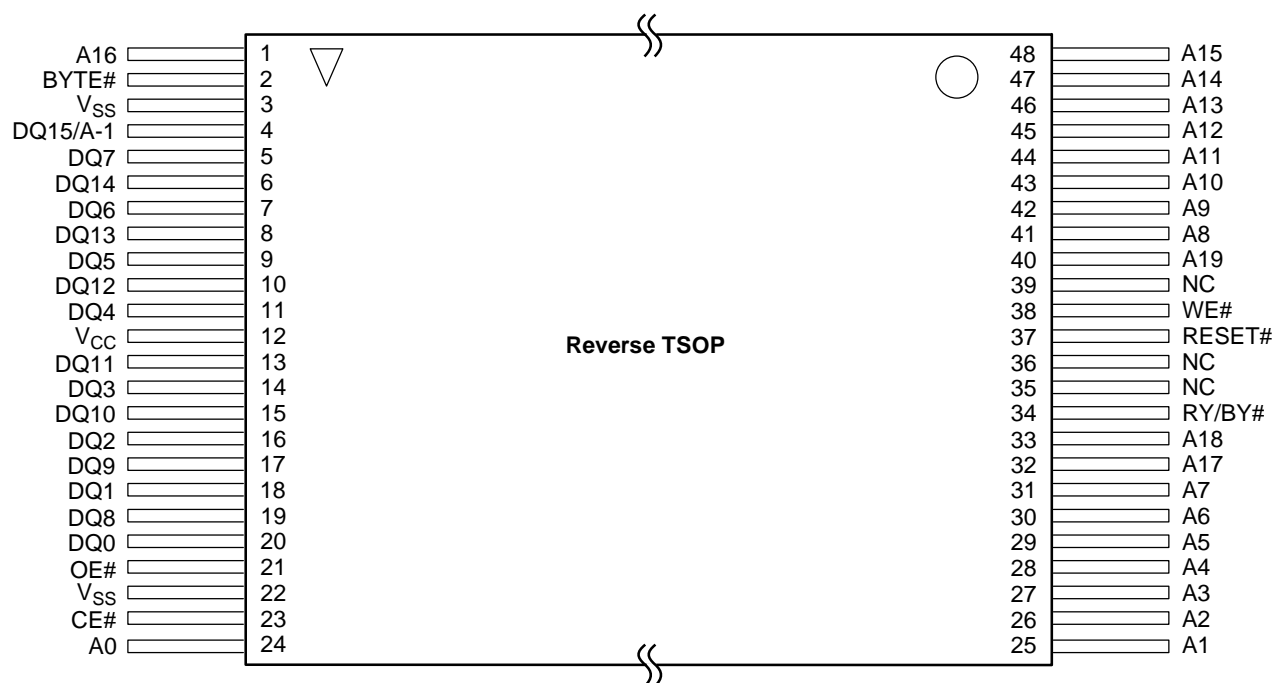
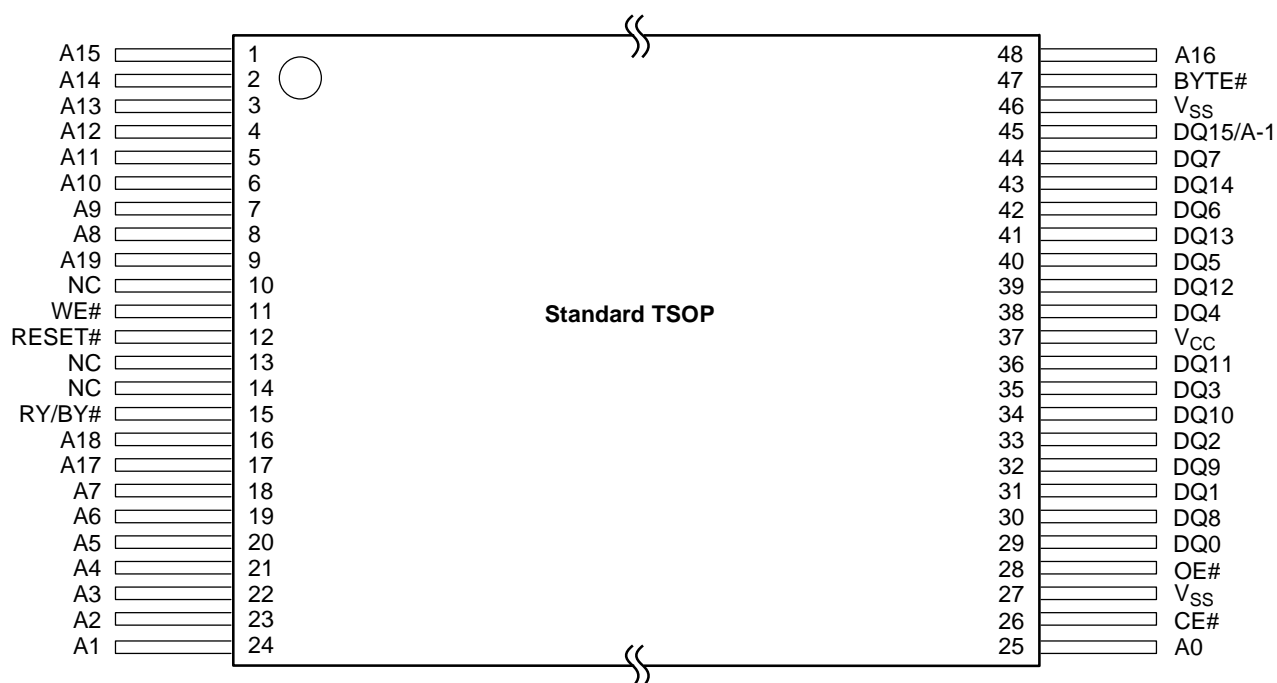
Family Part Number		Am29LV160D		
Speed Option	Voltage Range: $V_{CC} = 2.7\text{--}3.6\text{ V}$	-70	-90	-120
Max access time, ns (t_{ACC})		70	90	120
Max CE# access time, ns (t_{CE})		70	90	120
Max OE# access time, ns (t_{OE})		30	35	50

Note: See “AC Characteristics” for full specifications.

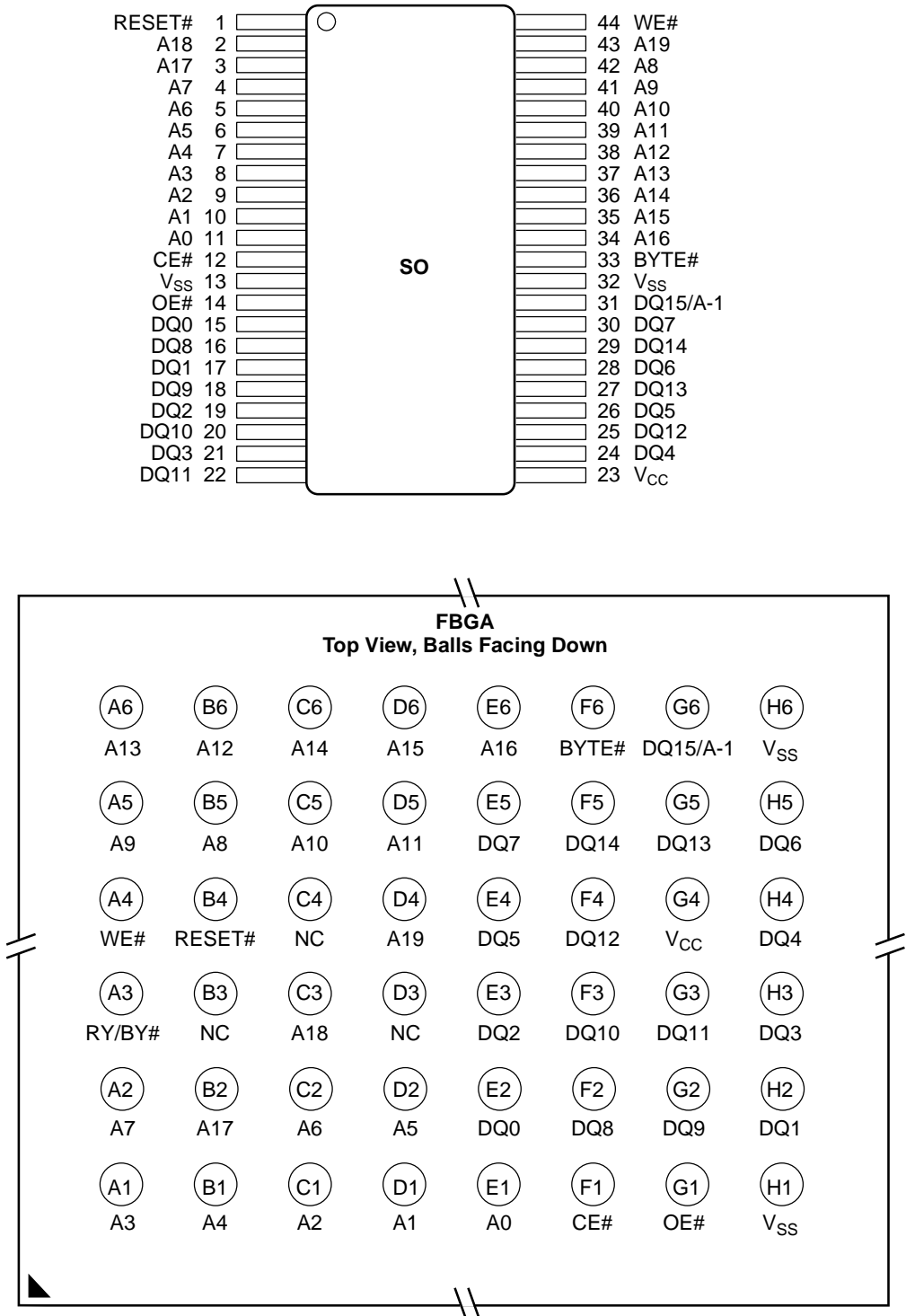
BLOCK DIAGRAM



CONNECTION DIAGRAMS



CONNECTION DIAGRAMS



Special Handling Instructions

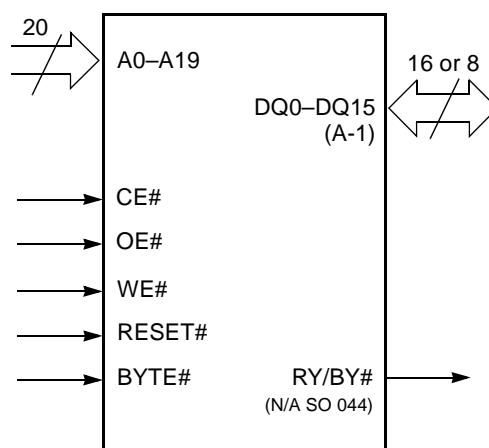
Special handling is required for Flash Memory products in FBGA packages.

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

PIN CONFIGURATION

A0–A19	=	20 addresses
DQ0–DQ14	=	15 data inputs/outputs
DQ15/A-1	=	DQ15 (data input/output, word mode), A-1 (LSB address input, byte mode)
BYTE#	=	Selects 8-bit or 16-bit mode
CE#	=	Chip enable
OE#	=	Output enable
WE#	=	Write enable
RESET#	=	Hardware reset pin
RY/BY#	=	Ready/Busy output (N/A SO 044)
V _{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



8.1 HY57V641620HG

DESCRIPTION

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

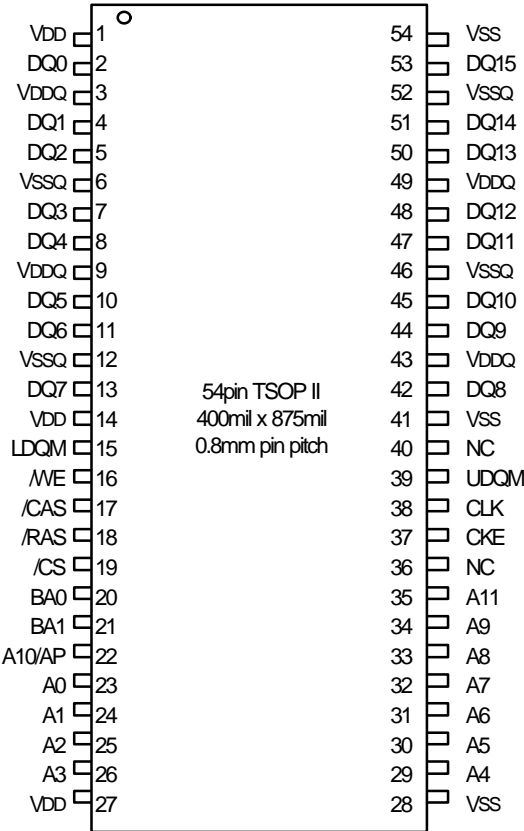
HY57V641620HG is offering fully synchronous operation referenced to a positive edge of the clock. All inputs and outputs are synchronized with the rising edge of the clock input. The data paths are internally pipelined to achieve very high bandwidth. All input and output voltage levels are compatible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

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

FEATURES

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

PIN CONFIGURATION

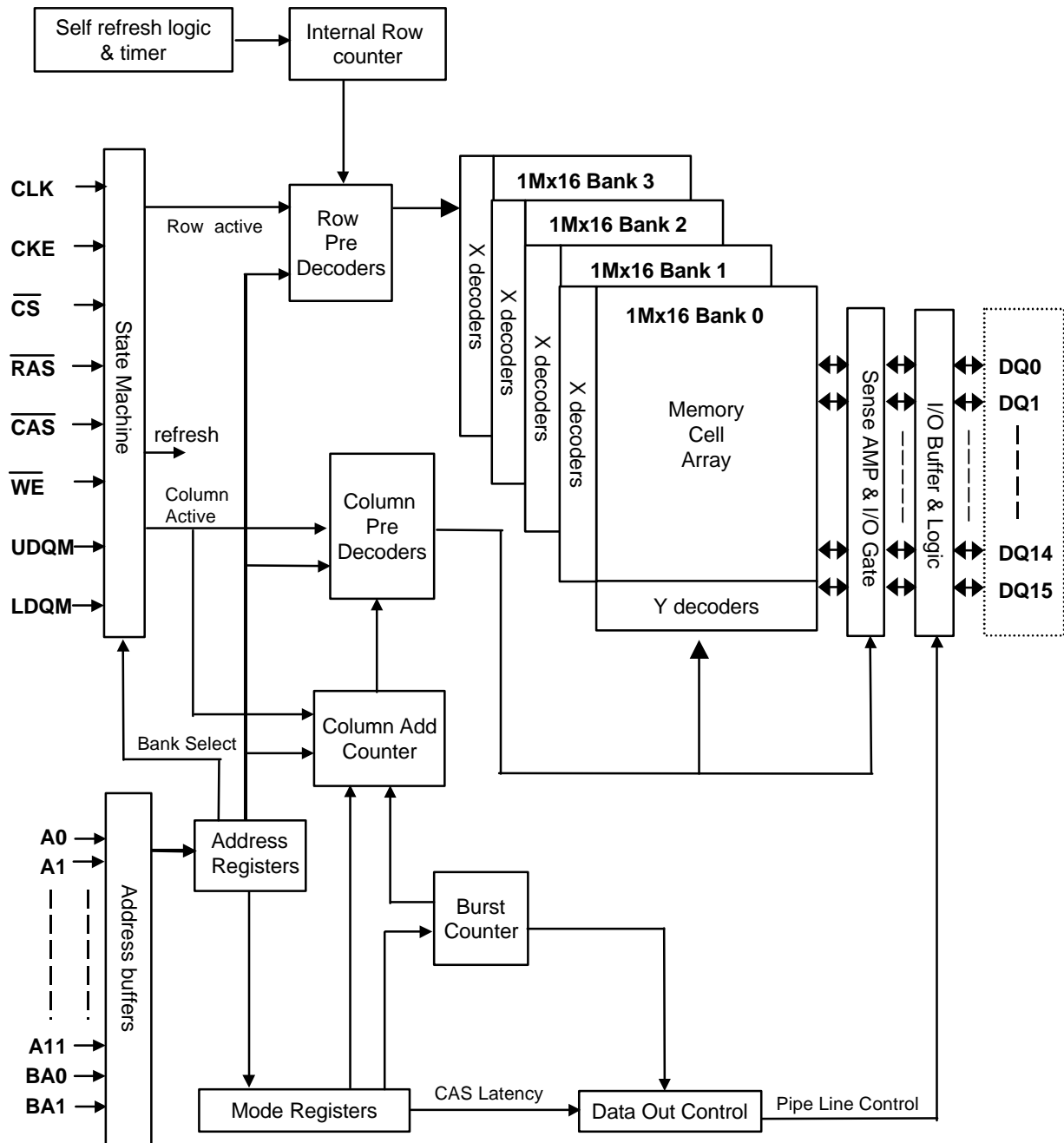


PIN DESCRIPTION

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

FUNCTIONAL BLOCK DIAGRAM

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



8.2 MT1389

MT1389

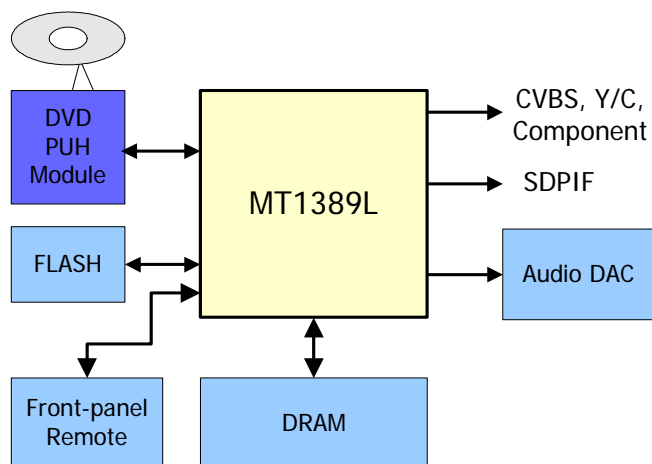
Progressive-Scan DVD Player SOC

Specifications are subject to change without notice

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

Based on MediaTek's world-leading DVD player SOC architecture, the MT1389 is the 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

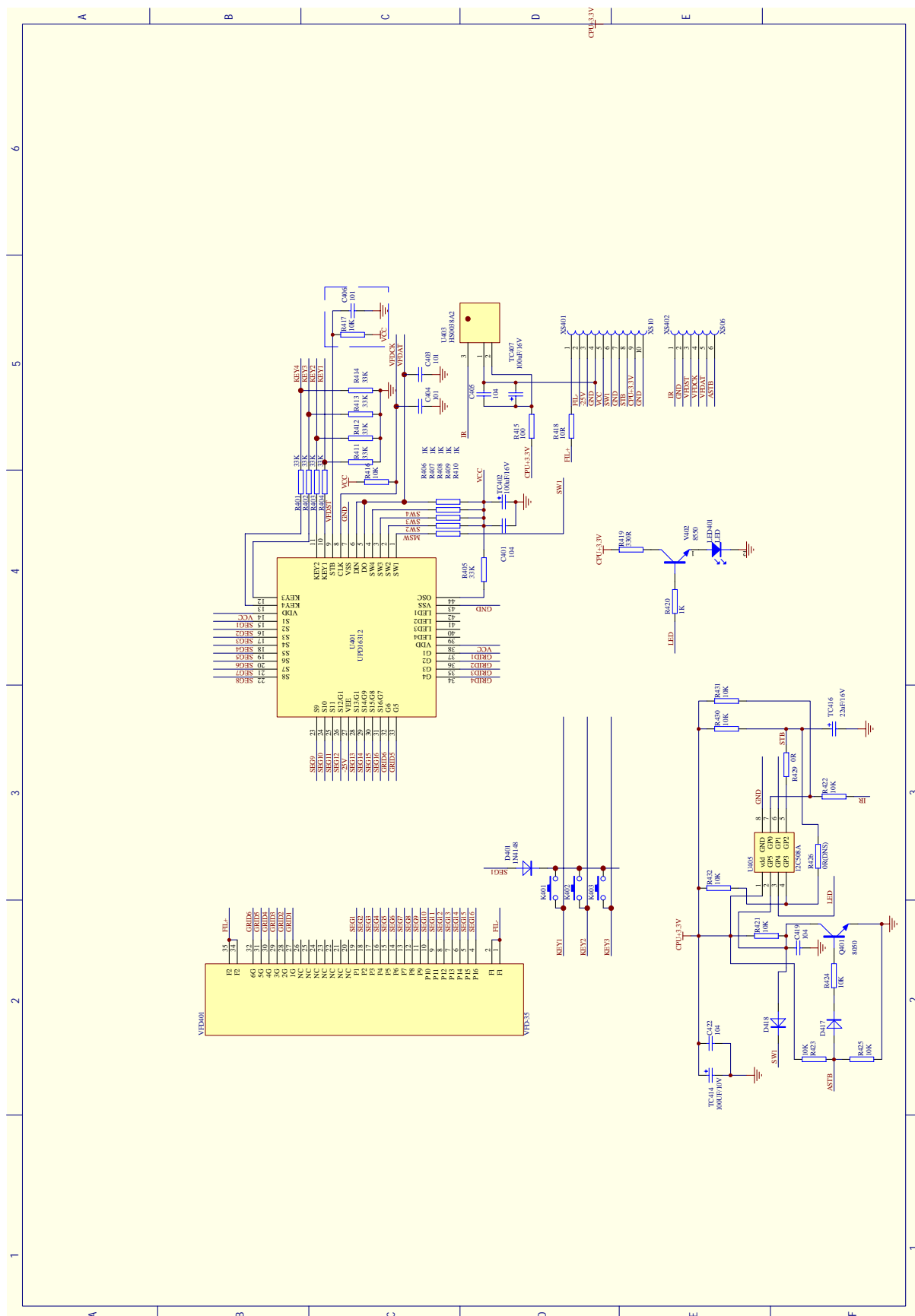
General Feature List

- 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

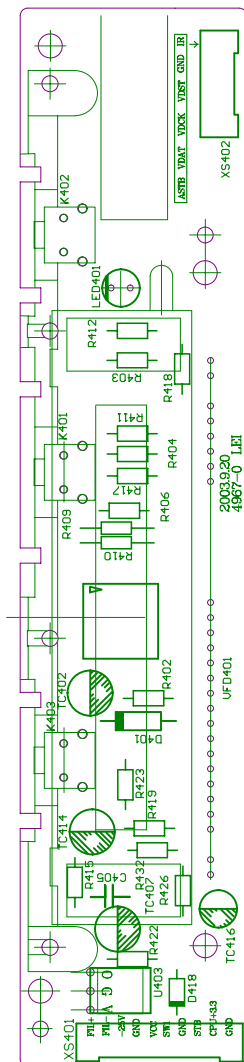
- Audio Effect Processing
 - Dolby Digital (AC-3)/EX decoding
 - DTS/DTS-ES decoding
 - MLP decoding for DVD-Audio
 - MPEG-1 layer 1/layer 2 audio decoding
 - MPEG-2 layer1/layer2 2-channel audio
 - High Definition Compatible Digital (HDCD)
 - Windows Media Audio (WMA)
 - Advanced Audio Coding (AAC)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

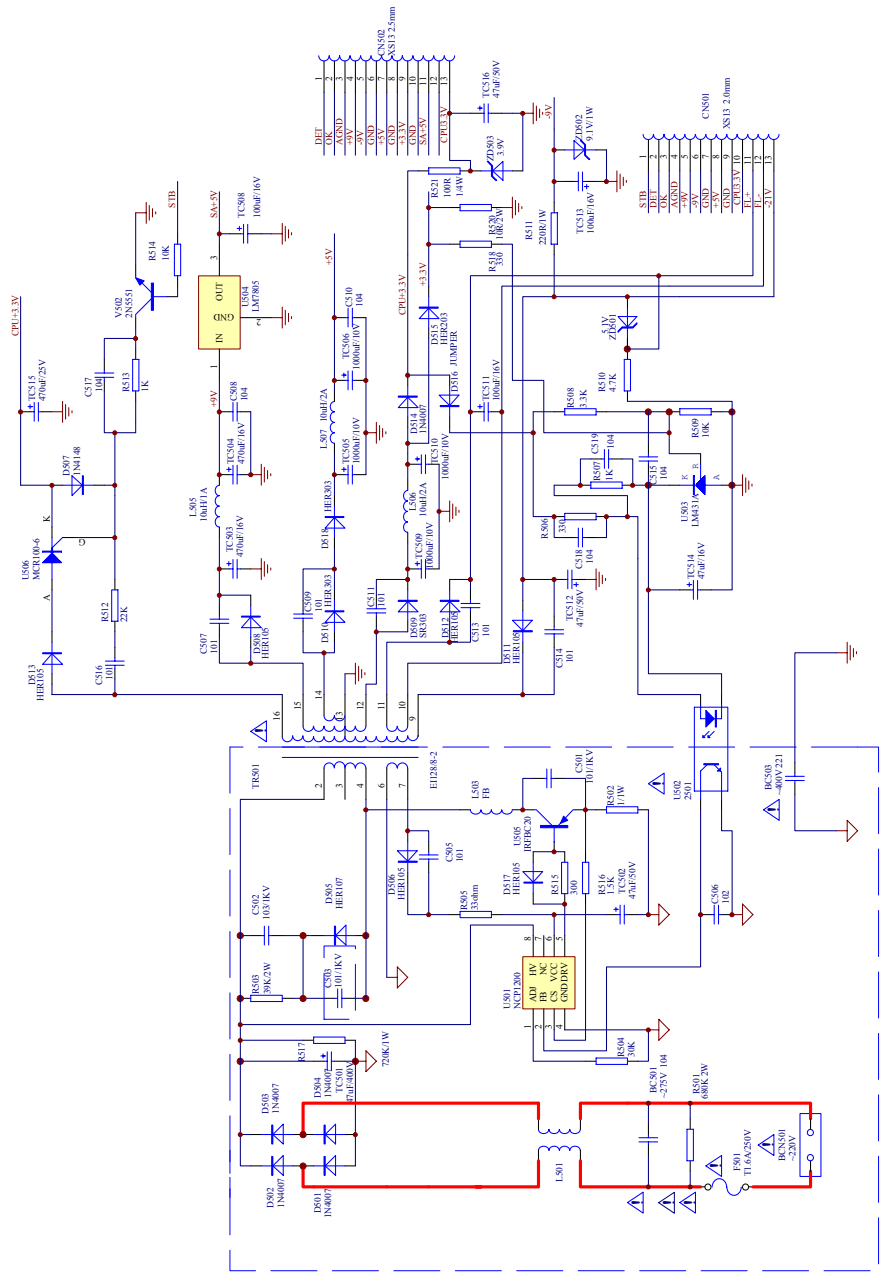
FRONT SCHEMATIC DIAGRAM



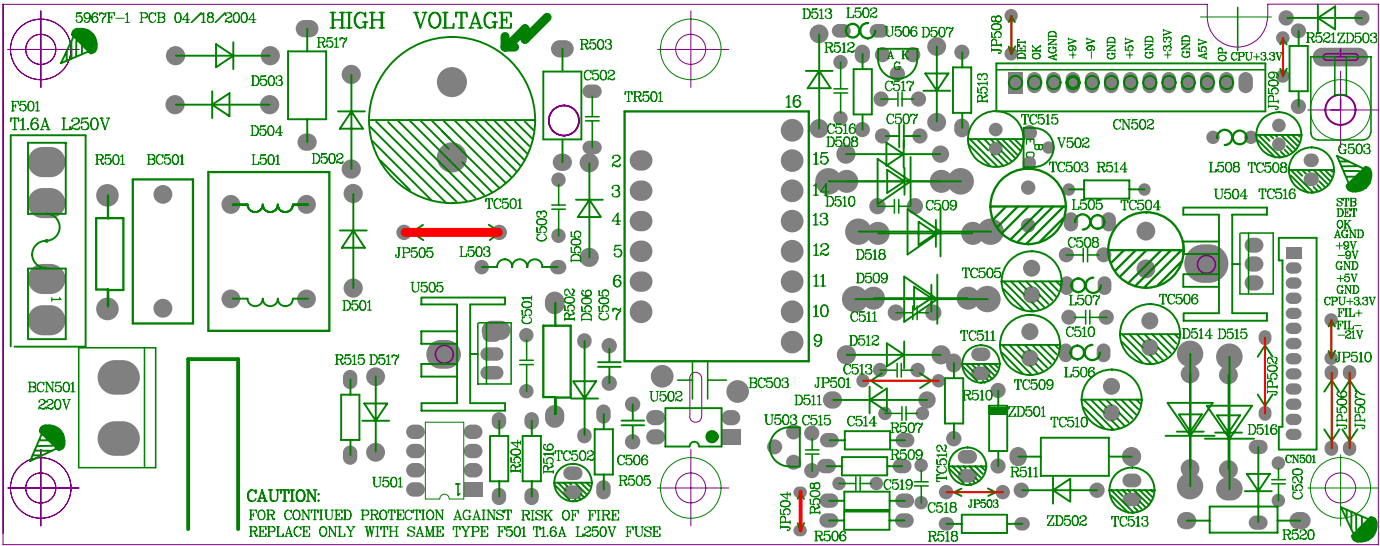
FRONT SCHEMATIC DIAGRAM



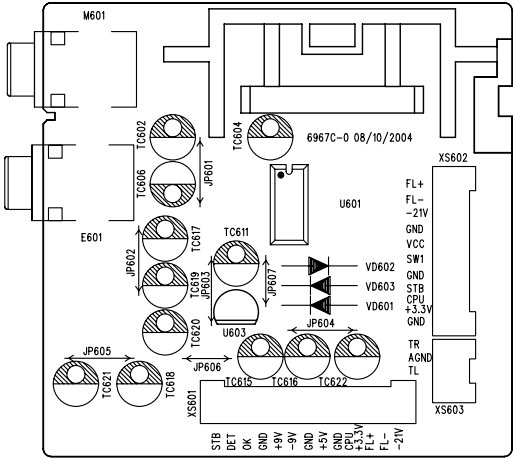
POWER BOARD SCHEMATIC DIAGRAM



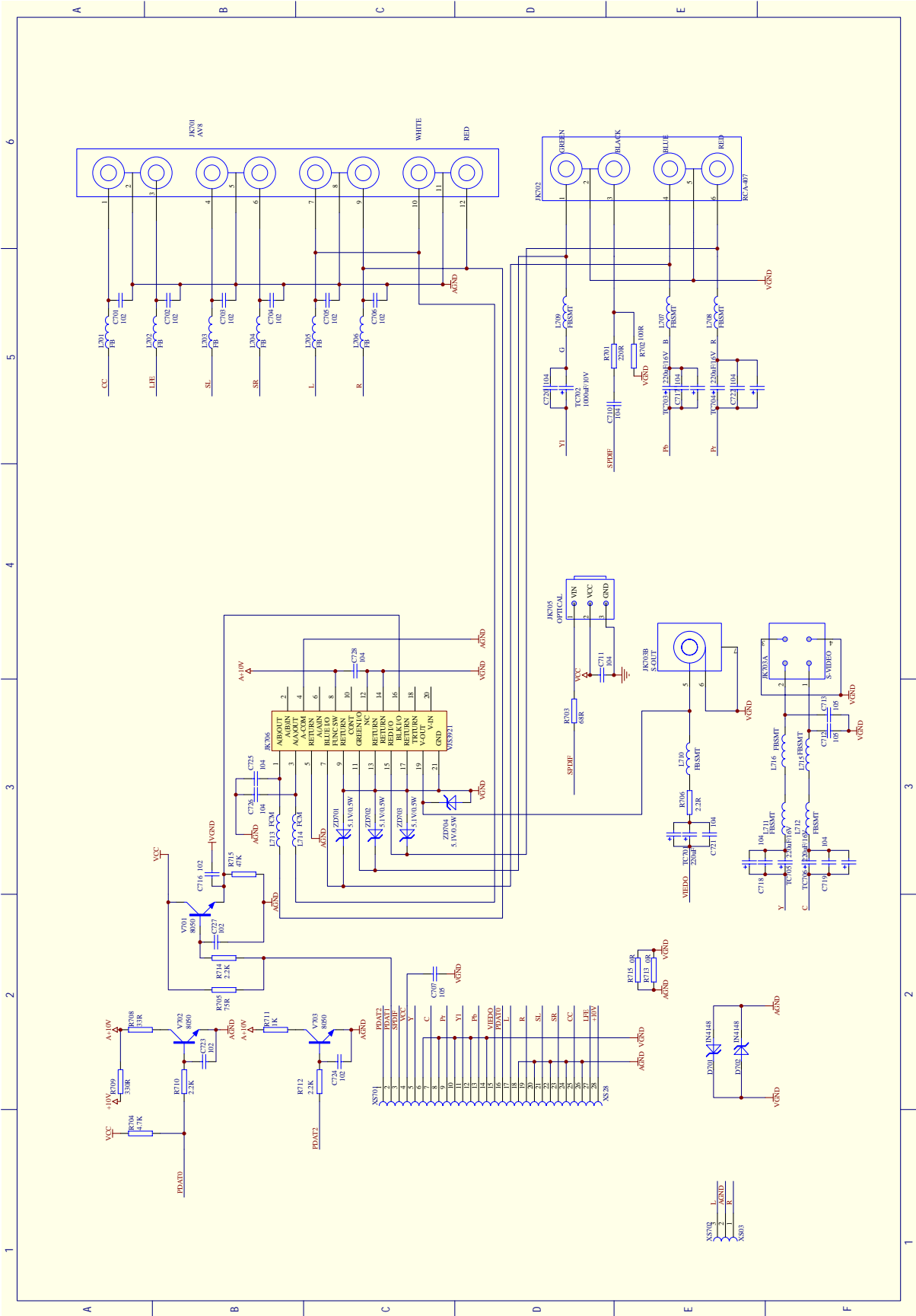
POWER BOARD SCHEMATIC DIAGRAM



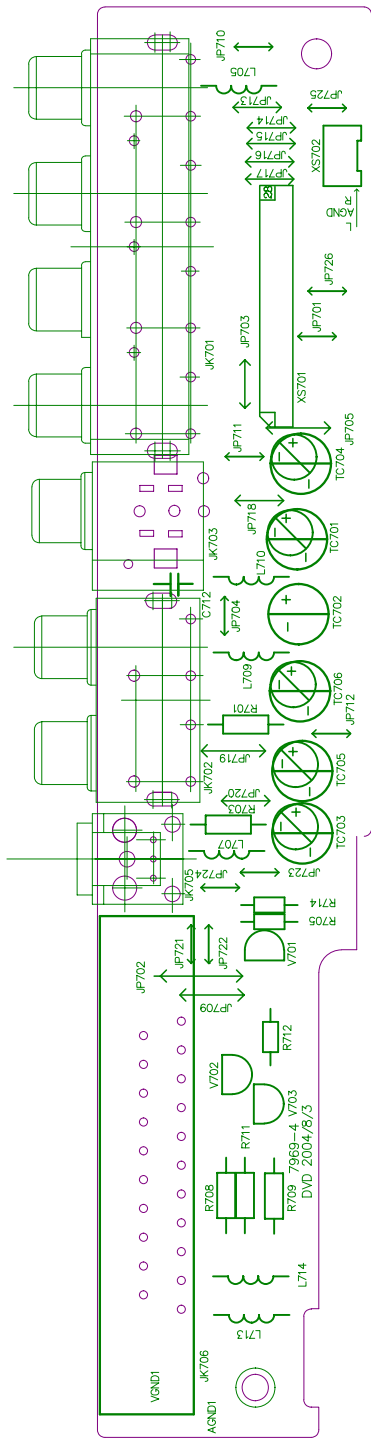
OK SCHEMATIC DIAGRAM



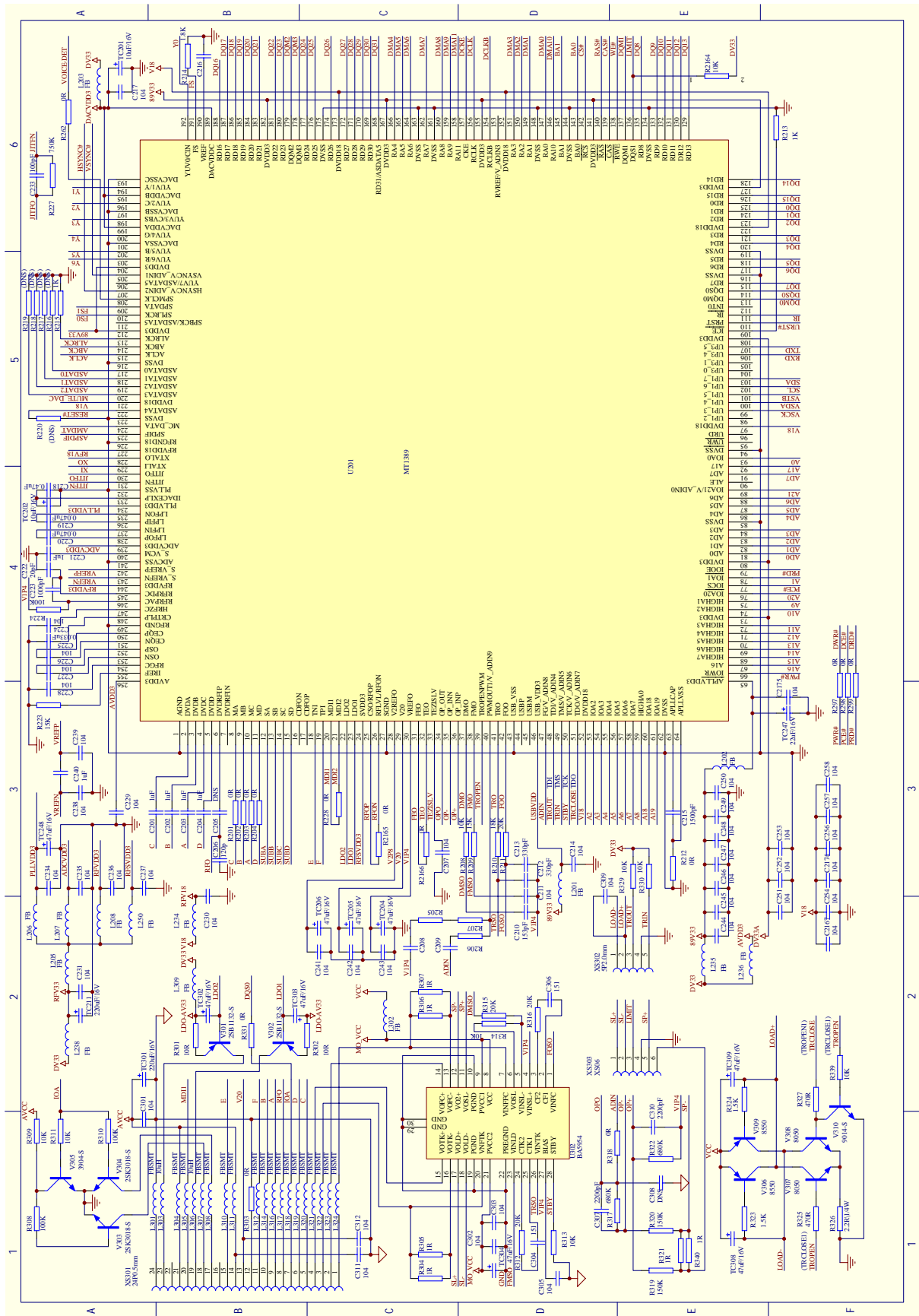
OUTPUT BOARD SCHEMATIC DIAGRAM



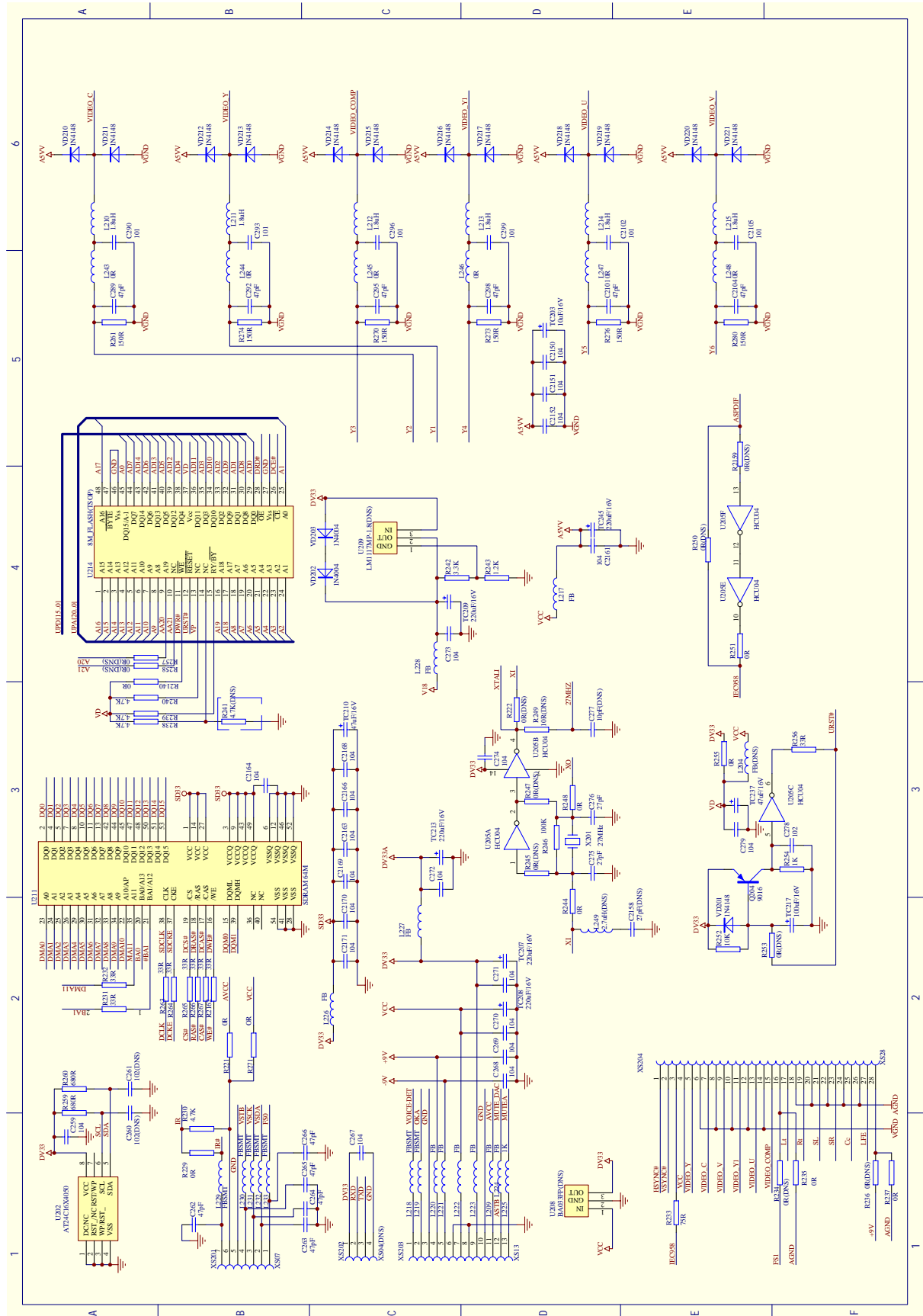
OUTPUT BOARD SCHEMATIC DIAGRAM



MIAN SCHEMATIC DIAGRAM

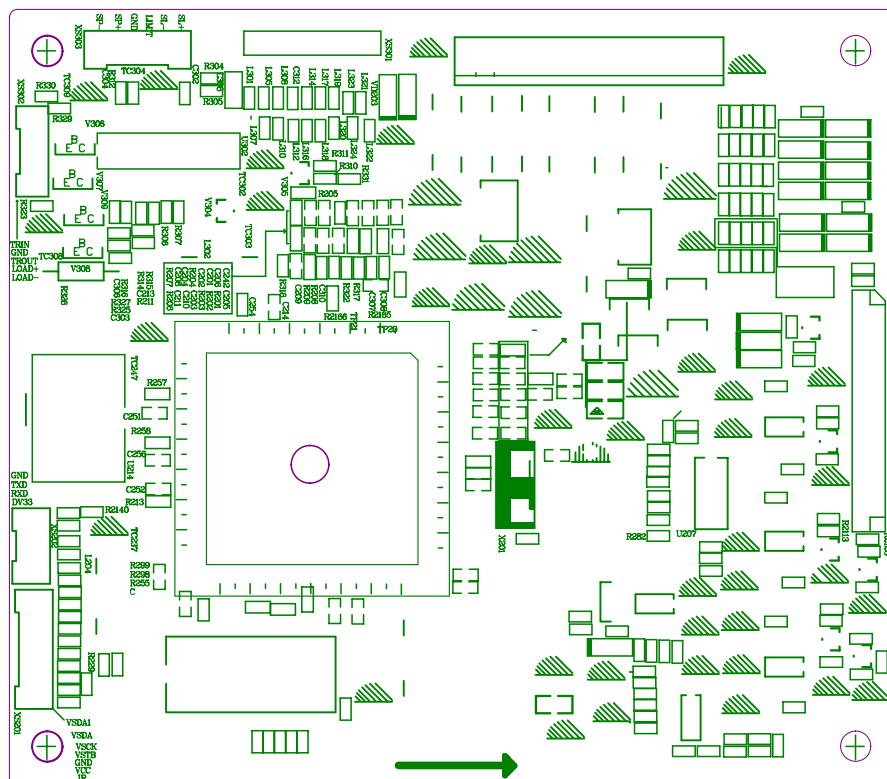


MIAN SCHEMATIC DIAGRAM



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MIAN SCHEMATIC DIAGRAM



10. SPARE PARTS LIST

DV967S MATERIAL LIST

1. MAIN PANEL

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		SOFT SPONGE	15×7×13.5 DOUBLE-FACED, HARD	2	CONNECT VFD DISPLAY SCREEN WITH FRONT PANEL PCB
2		SOFT SPONGE	8×8×14.5 DOUBLE-FACED, HARD	1	CONNECT IR SENSOR WITH FRONT PANEL PCB
3		DIODE	1N4148	2	D401,D418
4		IC	D16312GB QFP	1	U401
	4.1	IC	PT6312LQ QFP	1	U401
5		DISPLAY SCREEN	HNV 06SC22 BLUE SCREEN	1	VFD401
	5.1	DISPLAY SCREEN	VFD16-0604	1	VFD401
	5.2	DISPLAY SCREEN	HNV 06SC22	1	VFD401
6		LIGHT TOUCH RESTORE SWITCH	KFC-A06-2WB L3.8	3	K401~K403
7		FLAT CABLE	5-6P120 2.0 2 SOCKET WITH L NEEDLE REVERSE 5 CORD	1	XS402
8		IR SENSOR	HS0038B3V	1	U403
9		CARBON FILM RESISTOR	1/6W10 ±5%	1	R418
10		CARBON FILM RESISTOR	1/6W100 Ω ±5% SHAPED 7.5	1	R415
11		CARBON FILM RESISTOR	1/6W10K±5% SHAPED 7.5	3	R406,R417,R432
12		CARBON FILM RESISTOR	1/4W10K±5% SHAPED 10	2	R409,R410
13		SMD RESISTOR	1/16W 10K ±5% 0603	6	R407,R408,R416,R421,R430,R431
14		CARBON FILM RESISTOR	1/6W33K±5% SHAPED 7.5	5	R402~R404,R411~R412
15		SMD RESISTOR	1/16W 33K ±5% 0603	3	R401,R413~R414
16		SMD RESISTOR	1/16W 51K ±5% 0603	1	R405
17		CARBON FILM RESISTOR	1/6W330 ±5%	1	R419
18		SMD RESISTOR	1/16W 1K ±5% 0603	1	R420
19		RADIATION DIODE	Φ3 RED	1	LED401
20		CD	CD11C 50V47U±20% 8×9 3.5	1	TC414
21		CD	CD11 16V22U±20%5×11 2	1	TC416
22		SMD CAPACITOR	50V 104 +80%-20% 0603	3	C401,C419,C422
23		SMD CAPACITOR	50V 104 +80%-20% 5mm	1	C405
24		SMD RESISTOR	1/16W 0 ±5% 0603	1	R429
25		CD	CD11C 16V100U±20%6×7 2.5	2	TC407,TC402
26		SMD CAPACITOR	50V 101 ±5% 0805	3	C403,C404,C406
27		SMD TRIODE	8550D	1	V402
28		PCB	4967-0	1	
29		CONNECTION CORD	Φ0.6 SHAPED 7.5mm	1	R422
30		SOFTWARE EPROM	ROM967S-0(518)	1	U405
31		FLAT CABLE	10-2/13P300/350 2.0 T3 WITH L NEEDLE 10 CORD	1	XS401

2. POWER BOARD

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		CARBON FILM RESISTOR	1/4W1.5K±5% SHAPED 10	1	R516
2		CARBON FILM RESISTOR	1/4W330 Ω ±5% SHAPED 10	1	R506
3		CARBON FILM RESISTOR	1/4W1K±5% SHAPED 10	2	R507,R513
4		METAL OXIDE FILM RESISTOR	2W10 Ω ±5% SHAPED FLAT 15×7	1	R520
5		CARBON FILM RESISTOR	1/4W100 Ω ±5% SHAPED 10	1	ZD503
6		METAL FILM RESISTOR	1/4W2.7K±1% SHAPED 10	1	R509
7		METAL FILM RESISTOR	1/4W10K±1%	2	R508,R518
8		METAL OXIDE FILM RESISTOR	1W1 Ω ±5% SHAPED FLAT15×7	1	R502
9		CARBON FILM RESISTOR	1/4W30K±5% SHAPED 10	1	R504
10		CARBON FILM RESISTOR	1/4W10K±5% SHAPED 10	1	R514
11		CARBON FILM RESISTOR	1/4W4.7K±5% SHAPED 10	1	R510
12		CARBON FILM RESISTOR	1/4W22K±5% SHAPED 10	1	R512

13		METAL OXIDE FILM RESIST	1W 220 Ω \pm 5% SHAPED R 15×8	1	R511
14		METAL OXIDE FILM RESIST	2W68K \pm 5% SHAPED FLAT 15×7	1	R503
15		HIGH VOLTAGE RESISTOR	1/2W680K \pm 5%	1	R501
16		CARBON FILM RESISTOR	1/4W300 Ω \pm 5% SHAPED 10	1	R515
17		METAL OXIDE FILM RESIST	1W720K \pm 5% SHAPED FLAT 15×7	1	R517
18		MAGNETIC BEADS INDUCTOR	RH354708	1	L503
19		PORCELAIN CAPACITOR	50V 100P \pm 10% 5mm	5	C507,C509,C511,C513,C514
20		PORCELAIN CAPACITOR	1000V 103 +80%-20% 7.5mm	1	C502
21		TERYLENE CAPACITOR	100V 102 \pm 5% 3.5mm	1	C506
22		PORCELAIN CAPACITOR	50V 104 \pm 20% 5mm	7	C508,C510,C517,C515,C518,C519,C520
23		PORCELAIN CAPACITOR	1000V 101 +80%-20% 7.5mm	3	C516,C503,C501
	23.1	PORCELAIN CAPACITOR	1000V 101 \pm 10% 7.5mm	3	C516,C503,C501
24		CERAMIC CAPACITOR	CT81 250VAC221 \pm 20% 10mm	1	BC503
	24.1	CERAMIC CAPACITOR	CT81 250VAC221 \pm 10% 10mm	1	BC503
25		TERYLENE CAPACITOR	275V 104 \pm 20% 15mm	1	BC501
	25.1	TERYLENE CAPACITOR	275V 104 \pm 10% 15mm	1	BC501
26		CD	CD11T 16V100 μ \pm 20%6×12 2.5	3	TC508,TC511,TC513
27		CD	CD11T 25V470 μ \pm 20%10×16 5	2	TC503,TC504
28		CD	CD11T 50V22 μ \pm 20%5×11 2	1	TC502
29		CD	CD11T 50V47 μ \pm 20%6×12 2.5	2	TC512,TC515
30		CD	CD11T 10V1000 μ \pm 20%8×16 3.5	4	TC505,TC506,TC509,TC510
31		CD	CD294 400V47 μ \pm 20%22×25 10	1	TC501
32		CHOKE COIL	VERTICAL 10UH 1A 5mm	2	L502,L505
33		CHOKE COIL	VERTICAL 10UH 2A 5mm	2	L506,L507
34		SWITCHING POWER TRANSFORMER	BCK-28-0272	1	T501
35		DIODE	HER105	5	D508,D511,D512,D513,D514
36		DIODE	HER306	1	D510
37		DIODE	HER303	2	D515,D518
38		SCHOTTKY DIODE	SR360	1	D509
39		DIODE	HER107	1	D505
40		VOLTAGE REGULATOR DIODE	5.1V 1/2W	1	ZD501
41		VOLTAGE REGULATOR DIODE	9.1V 1W	1	ZD502
42		DIODE	1N4148	2	D507,D517
43		DIODE	1N4007	4	D501~D504
44		TRIODE	2N5551	1	V502
45		IC	NCP1200P60 DIP	1	U501
46		IC	P4NC60 PLASTIC SEALED TO-220	1	U505
	46.1	IC	SSS4N60B TO-220	1	U505
47		IC	TLV431 TO-92	1	U503
48		POWER GRID FILTER	UT-20 40mH \pm 20% 10×13	1	L501
49		PHOTO-ELECTRIC COUPLER	HS817	1	U502
50		CONTROLLABLE SILICON	MCR100-6	1	U506
	50.1	CONTROLLABLE SILICON	NCR169D TO-92	1	U506
51		SOCKET	13P 2.5mm	1	CN502
52		SOCKET	2P 8.0mm 2#	1	BCN501
53		CONNECTION CORD	Φ 0.6 SHAPED 5mm	4	JP504,JP508,JP509,JP510
54		CONNECTION CORD	Φ 0.6 SHAPED 12.5mm	1	JP505
55		CONNECTION CORD	Φ 0.6 SHAPED 10mm	6	JP501,JP502,JP506,JP507, D516, R521
56		CONNECTION CORD	Φ 0.6 SHAPED 7.5mm	1	JP503
57		HEAT RADIATION BOARD	11×15×25 WHITE AB905	2	FIXED HEAT RADIATION BOARD
58		TAPPING SCREW	BT 3×8 BLACK	2	U504,U505 FOR HEAT RADIATION
59		FUSE	T1.6AL 250V	1	F501
60		FUSE HOLD	BLX-2	1	FOR F501

61		GROUND CHIP OF POWER BOARD	AB903	1	G503
62		IC	LM7805 GOLD SEALED TO-220	1	U504
63		PCB	5967F-1	1	
64		SOCKET	13P 2.0mm	1	CN501

3. OUTPUT BOARD

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		SMD RESISTOR	1/16W 100Ω ±5% 0603	1	R702
2		SMD RESISTOR	1/16W 2.2Ω ±5% 0603	1	R706
3		SMD CAPACITOR	50V 102 ±10% 0603	13	C701~C706,C716,C723~C728
4		SMD CAPACITOR	25V 104 +80%-20% 0603	1	C710
	4.1	SMD CAPACITOR	50V 104 +80%-20% 0603	1	C710
5		SMD MAGNETIC BEADS	FCM1608K-221T05	8	L701~L704,L706,L708,L715,L716
6		SMD CAPACITOR	50V 20P ±5% NPO 0603	1	C713
7		SMD RESISTOR	1/16W 4.7K ±5% 0603	1	R704
8		SMD RESISTOR	1/16W 47K ±5% 0603	1	R715
9		SMD RESISTOR	1/16W 2.2K ±5% 0603	1	R710
10		SMD CAPACITOR	16V 105 +80%-20% 0603	2	C707,C711
11		SMD RESISTOR	1/16W 0Ω ±5% 0603	8	L711,L712,C717~C722
12		SMD DIODE	1N4148	2	D701,D702
	12.1	SMD DIODE	LS4148	2	D701,D702
	12.2	SMD DIODE	LL4148	2	D701,D702
13		SMD VOLTAGE REGULATOR DIODE	5.1V 1/2W	4	ZD701~ZD704
14		PCB	7969-4	1	
15		CARBON FILM RESISTOR	1/4W68Ω±5%	1	R703
16		CARBON FILM RESISTOR	1/4W220Ω±5%	1	R701
17		CARBON FILM RESISTOR	1/4W2.2K±5% SHAPED 10	1	R711
18		CARBON FILM RESISTOR	1/6W2.2K±5% SHAPED 5	2	R712,R714
19		CARBON FILM RESISTOR	1/4W2K±5% SHAPED 10	1	R709
20		CARBON FILM RESISTOR	1/6W4.7K±5% SHAPED 7.5	1	R705
21		MAGNETIC BEADS INDUCTOR	RH354708	6	L705,L707,L709,L710,L713,L714
22		ELECTRO-OPTICAL TRANSFORMER	TX179ATW	1	JK705
	22.1	ELECTRO-OPTICAL TRANSFORMER	TX179AT	1	JK705
23		TERMINAL SOCKET	AV4-8.4-6G-3	1	JK702
24		TERMINAL SOCKET	SA-001-012 BLACK METAL SCREEN-SHIELDED	1	JK703
25		TERMINAL SOCKET	AV8-8.4-6G-3	1	JK701
26		CABLE SOCKET	14P 1.0mm STRAIGHT DUAL LINE PLUG	1	XS701
27		CONNECTION CORD	0.6 SHAPED 5mm	11	JP701,JP704,JP710~JP712,JP721~JP726
28		CONNECTION CORD	0.6 SHAPED 7.5mm	8	JP703,JP713~JP718,JP720
29		CONNECTION CORD	0.6 SHAPED 10mm	3	JP705,JP709,JP719
30		CONNECTION CORD	0.6 SHAPED 12.5mm	1	JP702
31		SCART SOCKET	SCART-01	1	JK706
32		PORCELAIN CAPACITOR	50V 20P ±10% NPO 5mm	1	C712
33		TRIODE	S8050D	3	V701~V703
34		SOCKET	3P 2.0mm	1	XS702
35		CARBON FILM RESISTOR	1/4W33Ω±5%	1	R708

4. OK BOARD

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		SMD RESISTOR	1/16W 10Ω ±5% 0603	3	R621,R622,R641

2		SMD RESISTOR	1/16W 330Ω ±5% 0603	1	R616
3		SMD RESISTOR	1/16W 560Ω ±5% 0603	1	R604
4		SMD RESISTOR	1/16W 1K ±5% 0603	7	R608,R611,R619,R637,R638, R623,R625
5		SMD RESISTOR	1/16W 10K ±5% 0603	6	R606,R620,R618,R633,R634, R642
6		SMD RESISTOR	1/16W 22K ±5% 0603	2	R602,R610
7		SMD RESISTOR	1/16W 100K ±5% 0603	2	R615,R617
8		SMD CAPACITOR	50V 47P ±5% NPO 0603	1	C606
9		SMD CAPACITOR	50V 103 ±10% 0603	1	C604
10		SMD CAPACITOR	50V 104 +80%-20% 0603	5	C601,C602,C608,C617,C618
	10.1	SMD CAPACITOR	25V 104 +80%-20% 0603	5	C601,C602,C608,C617,C618
11		CD	CD110 16V47U±20%5×11 2	4	TC611,TC615,TC616,TC622
	11.1	CD	CD11 16V47U±20%5×11 2	4	TC611,TC615,TC616,TC622
	11.2	CD	CD11C 16V47U±20%5×7 2	4	TC611,TC615,TC616,TC622
12		CD	CD11 16V4.7U±20%5×11 2	2	TC602,TC604
13		CD	CD11 16V22U±20%5×11 2	1	TC606
	13.1	CD	CD11 25V22U±20%5×11 2	1	TC606
14		SMD MAGNETIC BEADS	FCM1608K-221T05	1	L601
15		DIODE	1N4148 SHAPED 10mm	3	VD601~VD603
16		IC	NJM4558D DIP	1	U601
	16.1	IC	KA4558 DIP	1	U601
17		MIC SOCKET	ST-403-070-100	2	MIC601,E601
18		SOCKET	10P 2.0mm	1	XS602
19		SOFT FLAT CABLE	13P50 2.0 2 SOCKET WITH L NEEDLE REVERSE	1	XS601
20		SOCKET	3P 2.0mm CURVING PLUG	1	XS603
21		LIGHT TOUCH RESTORE SWITCH	HORIZONTAL 6×6×1	1	K601
22		PCB	6967C-0	1	
23		CONNECTION CORD	0.6 SHAPED 10mm	5	JP601 ~ JP605
24		CONNECTION CORD	0.6 SHAPED 7.5mm	2	JP607,JP606
25		SMD RESISTOR	1/16W 3.3K ±5% 0603	1	R628
26		SMD RESISTOR	1/16W 3.9K ±5% 0603	5	R627,R629~R632
27		SMD RESISTOR	1/16W 4.7Ω ±5% 0603	2	R635,R636
28		CD	CD11 25V47U±20%5×11 2	2	TC617,TC618
29		CD	CD11C 16V100U±20%6×7 2.5	3	TC619~TC621
30		SMD CAPACITOR	50V104 ±20% 0603	5	C612~C616
31		SMD CAPACITOR	50V 104 ±20% 0805	1	C609
32		IC	TDA1308 SOP	1	U602
34		IC	HA178L05PA TO-92M	1	U603
35		SMD RESISTOR	1/16W 56K ±5% 0603	2	R624,R626

5. DECODE BOARD

NO		MATERIAL	SPECIFICATIONS/PART NUMBER	QUANTITY	LOCATION
1		SMD RESISTOR	1/16W 0Ω ±5% 0603	36	C2119,C2128,C2131,L210~L215, R201~R204,R212,R221,R226, R228,R234,R236,R245,R247, R222,R251,R255,R257,R258, R282,R297,R298,R299,R303, R318,R331,R2159,R268,R279
2		SMD RESISTOR	1/16W 75Ω ±5% 0603	7	R233,R261,R270,R273,R274, R276,R280
3		CARBON FILM RESISTOR	1/4W2.2Ω±5%	1	R326
4		SMD RESISTOR	1/16W1Ω±5% 0603	6	R304~R307,R321,R340
5		SMD RESISTOR	1/16W 10Ω ±5% 0603	2	R301,R302

6		SMD RESISTOR	1/16W 33Ω ±5% 0603	16	R231,R232,R256,R263~R267, R291~R296,R2162 ,L202
7		SMD RESISTOR	1/16W 150Ω ±5% 0603	2	R2109,R2180
8		SMD RESISTOR	1/16W 330Ω ±5% 0603	1	R2105
9		SMD RESISTOR	1/16W 470Ω ±5% 0603	2	R325,R327
10		SMD RESISTOR	1/16W 680Ω ±5% 0603	2	R259,R260
11		SMD RESISTOR	1/16W 1K ±5% 0603	20	L225,R213,R215,R2101~R21 04,R2117,R2118~R2128 ,R254
12		SMD RESISTOR	1/16W 1.5K ±5% 0603	3	R323,R324,R243
13		SMD RESISTOR	1/16W 510Ω ±5% 0603	1	R214
14		SMD RESISTOR	1/16W 3.3K ±5% 0603	1	R242
15		SMD RESISTOR	1/16W 4.7K ±5% 0603	16	R238~R240,R2130,R2131,R2 134,R2135,R2138~R2140,R21 42,R2143,R2146,R2147,R215 0,R2151
16		SMD RESISTOR	1/16W 6.8K ±5% 0603	6	R2136,R2148,R2152~R2155
17		SMD RESISTOR	1/16W 10K ±5% 0603	12	R208,R229,R252,R309,R311, R313,R314,R329,R330,R339, R2164,R2106
18		SMD RESISTOR	1/16W 15K ±5% 0603	2	R209,R223
19		SMD RESISTOR	1/16W 20K ±5% 0603	4	R211,R312,R315,R316
20		SMD RESISTOR	1/16W 27K ±5% 0603	2	R2129,R2133
21		SMD RESISTOR	1/16W24K±5% 0603	4	R2137,R2141,R2145,R2149
22		SMD RESISTOR	1/16W 18K ±5% 0603	1	R210
23		SMD RESISTOR	1/16W 47K ±5% 0603	1	R289
24		SMD RESISTOR	1/16W 150K ±5% 0603	2	R319,R320
25		PRECISION SMD RESISTOR	1/16W 680K ±1% 0603	2	R317,R322
26		PRECISION SMD RESISTOR	1/16W 750K ±1% 0603	1	R227
27		SMD RESISTOR	1/16W 100K ±5% 0603	10	R224,R308,R310,R2111~R21 16 ,R246
28		CD	CD11 16V10U±20%5×11 2	20	TC201,TC202,TC217,TC221~ TC233,TC236, TC240,TC241 ,TC244
29		CD	CD11 16V1U±20%5×11 2	2	TC242,TC243
30		CD	CD11 16V220U±20%6×12 2.5	8	TC207~TC209,TC211,TC213, TC235,TC245,TC301
31		CD	CD11 16V47U±20%5×11 2	13	TC204~TC206,TC210,TC234, TC237,TC302~TC304,TC308, TC309 ,TC247,TC248
32		SMD CAPACITOR	50V 20P ±5% NPO 0603	1	C222
33		SMD CAPACITOR	50V 27P ±5% NPO 0603	2	C275,C276
34		SMD CAPACITOR	50V 47P ±5% NPO 0603	17	C262~C266,C289,C290,C292, C293,C295,C296,C298,C299, C2101,C2102,C2104,C2105
35		SMD CAPACITOR	50V 101 ±5% NPO 0603	8	C233,C2111,C2114,C2117,C2 120,C2123,C2126,C206
36		SMD CAPACITOR	50V 331 ±5% NPO 0603	2	C212,C213
37		SMD CAPACITOR	50V 151 ±5% NPO 0603	2	C304,C306
38		SMD CAPACITOR	50V 104 +80%-20% 0603	74	C207,C211,C214,C216,C217, C224,C226~C231,C234~C239 ,C241~C254,C256~C259,C26 7~C274,C279,C2170,C2171,C 301~C303,C305,C309,C311,C 312,C2138~C2143,C2153~C2 157,C2161,C2163,C2166,C21 74,C2175,C2169,C2168,C284, C287

	38.1	SMD CAPACITOR	25V 104 +80%-20% 0603	74	C207,C211,C214,C216,C217,C224,C226~C231,C234~C239,C241~C254,C256~C259,C267~C274,C279,C2170,C2171,C301~C303,C305,C309,C311,C312,C2138~C2143,C2153~C2157,C2161,C2163,C2166,C2174,C2175,C2169,C2168,C284,C287
39		SMD CAPACITOR	16V 105 +80%-20% 0603	8	C201~C204,C221,C240,C285,C286
40		SMD CAPACITOR	50V 102 ±10% 0603	9	C2112,C2115,C288,C2118,C2121,C2124,C2127,C223,C278
41		SMD CAPACITOR	50V 122 ±10% 0603	6	C2122,C2129,C2130,C2133,C2135,C2136
42		SMD CAPACITOR	50V 152 ±10% 0603	1	C215
43		SMD CAPACITOR	50V 222 ±10% 0603	2	C307,C310
44		SMD CAPACITOR	50V 153 ±10% 0603	1	C210
45		SMD CAPACITOR	16V 333 ±10% 0603	1	C225
46		SMD CAPACITOR	16V 473 ±10% 0603	2	C219,C220
47		SMD CAPACITOR	16V474 +80%-20% 0603	1	C218
48		SMD INDUCTOR	10UH ±10% 2012	2	L303,L306
49		SMD INDUCTOR	1.8UH ±10% 1608	6	L243~L248
50		MAGNETIC BEADS INDUCTOR	RH354708	11	L205,L209,L217,L220,L221,L222,L223,L227,L228,L226,L302
51		SMD MAGNETIC BEADS	FCM1608K-221T05	36	L201,L203,L207~L208,L224,L234~L236,L238,L250,L309,L218,L219,L229~L233,L301,L304,L305,L307,L308,L310~L312,L314,L316~L324
52		SMD RESISTOR	1/16W 4.7Ω ±5% 0603	1	L206
53		SMD DIODE	1N4148	18	VD201,VD205~VD221
	53.1	SMD DIODE	LS4148	18	VD201,VD205~VD221
	53.2	SMD DIODE	LL4148	18	VD201,VD205~VD221
54		TRIODE	C8050	2	V307,V308
55		TRIODE	8550C	2	V306,V309
56		SMD TRIODE	9014C	1	V310
57		TRIODE	9015C	1	Q204
58		TRIODE	C1815Y	1	Q212
59		SMD TRIODE	C1815	6	Q205~Q210
60		TRIODE	2SA1015	3	Q211,Q218,Q219
61		SMD TRIODE	3904	1	V305
62		SMD TRIODE	2SK3018	2	V303,V304
63		SMD TRIODE	2SB1132	2	V301,V302
64		IC	NJM4558M SOP	3	U219 , U220 , U221
	64.1	IC	RC4558D SOP	3	U219 , U220 , U221
65		IC	MM74HCU04M SOP	1	U205
	65.1	IC	HCU04 SOP	1	U205
66		IC	HY57V641620HGT-7 TSOP	1	U211
	66.1	IC	KSV464P4JA-70 TSOP	1	U211
67		IC	LM1117MP-ADJ SOT-223	1	U209
68		IC	CS4360 SSOP	1	U207
69		IC	24C02N SOP	1	U202
70		IC	MT1389EE QFP	1	U201
71		IC	BA5954FP HSOP	1	U302
72		IC	CS5333 SSOP	1	U210
73		CRYSTAL OSCILLATOR	27.00MHz 49-S	1	X201
74		CABLE SOCKET	14P 1.0mm STRAIGHT DUAL LINE PLUG	1	XS204

75		PCB	2937K-5	1	
76		SOCKET	5P 2.0mm	1	XS302
77		SOCKET	6P 2.0mm	1	XS303
78		SOCKET	7P 2.0mm	1	XS201
79		SOCKET	13P 2.5mm	1	XS203
80		CABLE SOCKET	24P 0.5mm SMD WITH CLASP	1	XS301