THOMSON DTH175EL

Service Manual

Table of Contents

General Section

Cautions/Warnings

Product Safety Notice

Parts marked with the symbol ⚠ in the schematic diagram have critical characteristics.

Use ONLY replacement pares recommended by the manufacturer.

It is recommended that the unit be operated from a suitable DC supply or batteries during initial check out procedures.

Leakage Current Check/Resistance Check

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to insulated resistance check.

If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 240 K ohms, the unit is defective.

WARNING: DO NOT return the unit to the customer until the problem or located and corrected.

Safe Warnings

Protection of Eyes from Laser Beam

To protect eyes from invisible laser beam during servicing

DO NOT LOOK AT THE LASER BEAM

Laser Caution

CAUTION

Adjusting the knobs, switches, and controls, etc. or taking actions not specified herein may result in a harmful emission of laser beams. This CD Changer must be adjusted and repaired only by qualified service personnel.

Laser symbol:

CAUTION- INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED AVOID EXPOSURE TO BEAM.
VORSICHTI-UNSICHTBARE LASERSTRAHLUNG TRITT AUS.WENN DECKEL GEOFFNET UND WENN SICHERHEITSVERRIEGELUNG uBERBRuCKT IST. NICHT DEM STRAHL AUSSETZENI
VARNING- OSYNLIG LASERSTRALNING NAR DENNA DEL AR OPPNAD OCH SPARR AR URKOPPLAD STRALEN AR FARLIG.
ADVARSEL- USYNLIG LASERSTRALING VED ABNING NAR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION.UNDGA UDSAETTELSE FOR STRALING.

THIS IS COMPACT DISC PLAYER IS CLASSIFIED AS A CLASS 1 LASER PRODUCT.

THE LASS 1 LASER PRODUCT LABEL IS LOCATED ON THE REAR EXTERIOR.

Precautions

ESD Precautions in Repairing

1. Do not apply excessive pressure on the mechanical parts (moving pares), including the Pickup Block, as extremely high mechanical precision or required in these parts.
2. When soldering the microprocessor and signal processing IC's, use a ceramic soldering iron or a soldering iron whose metal part is grounded since they are not resistant to static electricity.
3. When removing the solder or soldering the laser shorting lands for the Pickup Block, use a ceramic soldering iron or a soldering iron whose metal part is grounded since the laser diode or not resistant to static electricity.

DVD Loading Unit Precautions when handling the Mechanism Block

1. Do not loosen any screws in the Pickup Block.
2. Do not adjust any screws in the Mechanism Block except for "Tilt Adjust Screws", as they are adjusted precisely at the factory.
3. Replacement of the Pickup Block is impossible. Always replace the Traverse Ass'y when the Pickup Block needed to be replaced. Do not touch the lens or lens holder of the Pickup Block.
4. The Guide Rails of the Pickup Block are greased. Take care when handing.
5. When you try to slide the Pickup Block, do not press or pull it directly. Always turn the dive gears with your fingers.
6. Be sure that the anti-slipping rubber on the turntable or clean. If there is dust or it is greasy, clean the part with the liquid that contains 50% each of alcohol and water.
7. When removing the Mechanism P.C.B. Ass'y, you need to short-circuit the laser diode shorting lands beforehand.

Software Upgrade

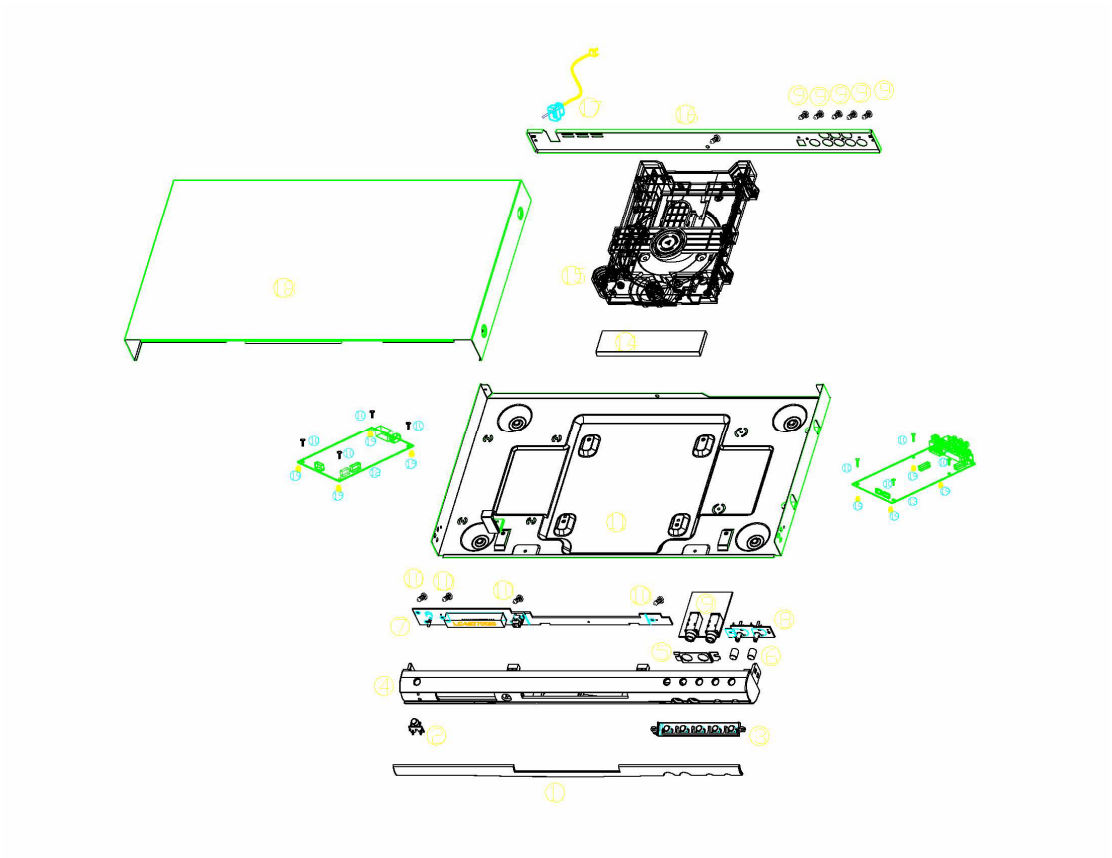
You can upgrade DVD Player using the software we provide as following step:

- Creating a software upgrade CD
- Use only a new CD-R/CD-RW(not an erased one).
- Give the CD a name of your choice(e.g. version and unit name).
- Burn the unpacked documents on the CD-R/CD-RW.
- The root directory(uppermost level) of the software upgrade CD

Attention: If a failure should occur during the software upgrade (e.g. a mains failure), it may happen that the units function and a restart of the upgrade function are no longer possible. If this should be the case, you must replace the intergraded FLASH ICs with preprogrammed ICs (see corresponding spare parts list).

- Insert the upgrade CD (see corresponding spare parts list) and observe the hints on the display and on the screen of the TV set.
- Carry out an initialization of the set.

Exploded View



Circuit Diagram and Component Layout

MPEG IC Block Diagrams

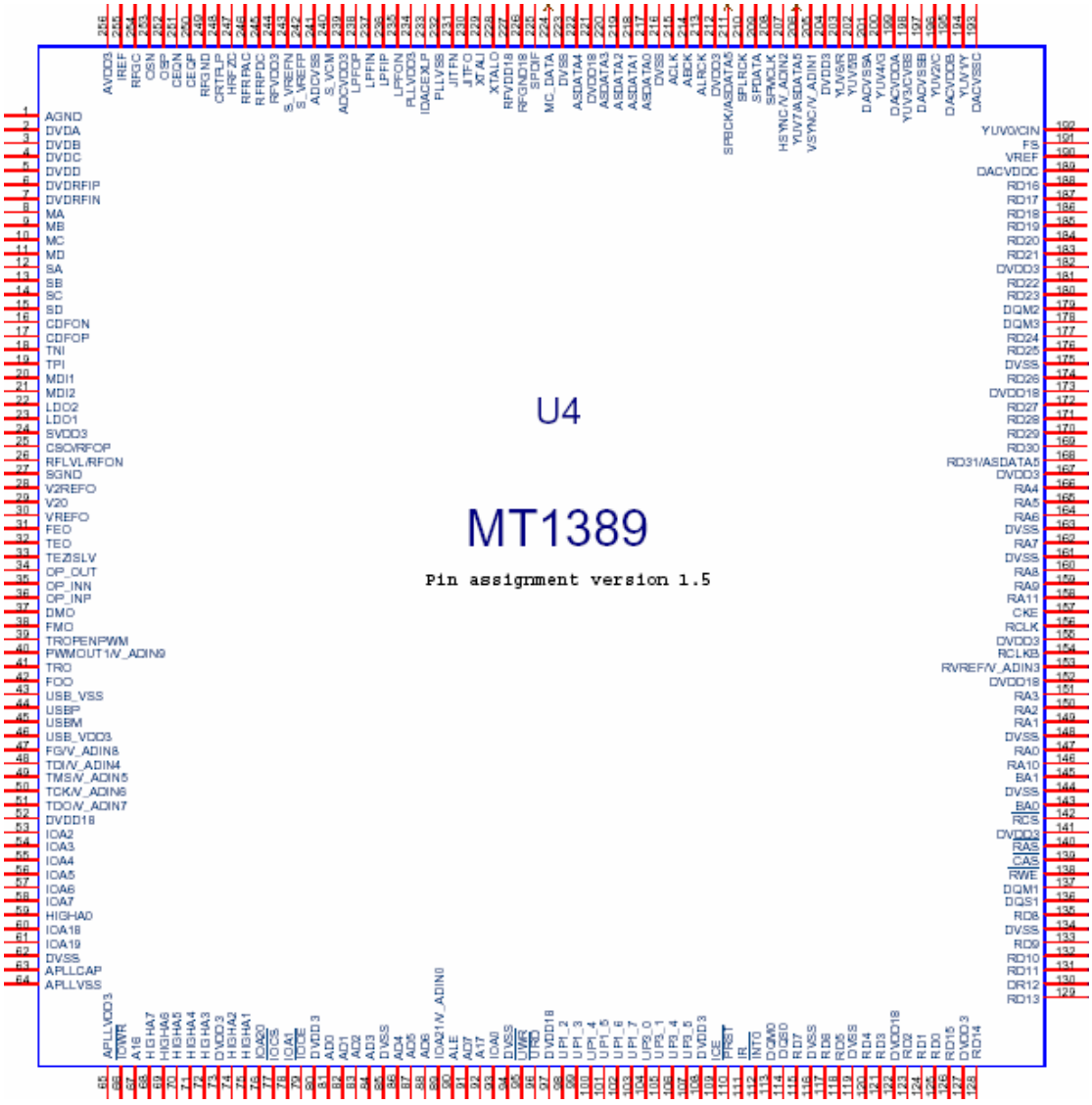


Fig. 2-1 MT1389

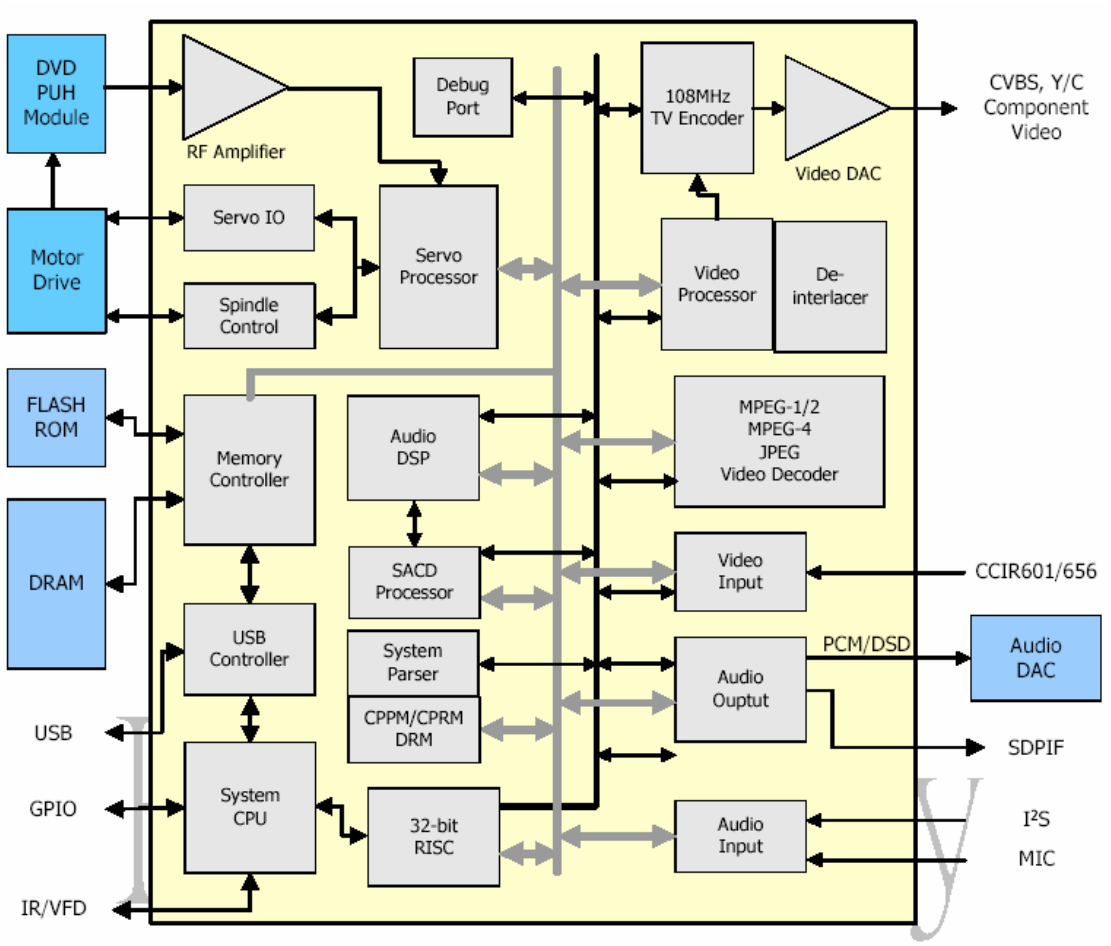


Fig. 2-2 Functional block diagram

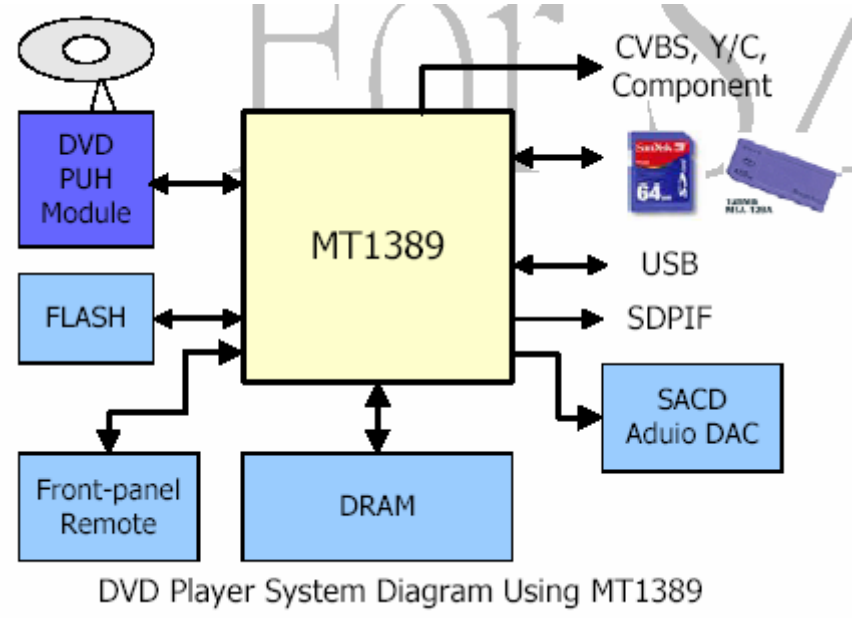


Fig.2-3 DVD Player system Diagram

Table1. 1389C Pin Description

Abbr. :

SR : Slew Rate

PU : Pull Up

PD : Pull Down

SMT : Schmitt Trigger

2MA~16MA : Output buffer driving strength.

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Pin	Main	Alt.	Type	Description
			RF Interface (28)	
226	RFGND18		Ground	Analog ground
227	RFVDD18		Power	Analog power 1.8V
250	CEQP		Analog	
251	CEQN		Analog	
252	OSP		Analog	RF Offset cancellation capacitor connecting
253	OSN		Analog	RF Offset cancellation capacitor connecting
254	RFGC		Analog	RF AGC loop capacitor connecting for DVD-ROM
255	IREF		Analog Input	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS.
256	AVDD3		Power	Analog power 3.3V
1	AGND		Ground	Analog ground
2	DVDA		Analog Input	AC coupled input path A
3	DVDB		Analog Input	AC coupled input path B
4	DVDC		Analog Input	AC coupled input path C
5	DVDD		Analog Input	AC coupled input path D
6	DVDRFIP		Analog Input	AC coupled DVD RF signal input RFIP
7	DVDRFIN		Analog Input	AC coupled DVD RF signal input RFIN
8	MA		Analog Input	DC coupled main-beam RF signal input A
9	MB		Analog Input	DC coupled main-beam RF signal input B
10	MC		Analog Input	DC coupled main-beam RF signal input C
11	MD		Analog Input	DC coupled main-beam RF signal input D
12	SA		Analog Input	DC coupled sub-beam RF signal input A
13	SB		Analog Input	DC coupled sub-beam RF signal input B
14	SC		Analog Input	DC coupled sub-beam RF signal input C
15	SD		Analog Input	DC coupled sub-beam RF signal input D
16	CDFON		Analog Input	CD focusing error negative input
17	CDFOP		Analog Input	CD focusing error positive input
18	TNI		Analog Input	3 beam satellite PD signal negative input
19	TPI		Analog Input	3 beam satellite PD signal positive input

Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
ALPC (4)				
20	MDI1		Analog Input	Laser power monitor input
21	MDI2		Analog Input	Laser power monitor input
22	LDO2		Analog Output	Laser driver output
23	LDO1		Analog Output	Laser driver output
ADC for SACD (5)				
239	ADCVDD3		Power	Analog 3.3V Power for ADC
240	S_VCM		Analog	
241	ADCVSS		Ground	Analog ground for ADC
242	S_VREFP		Analog	
243	S_VREFN		Analog	
Reference Voltage (3)				
28	V2REFO		Analog output	Reference voltage 2.8V
29	V20		Analog output	Reference voltage 2.0V
30	VREFO		Analog output	Reference voltage 1.4V
Analog Monitor Output (7)				
24	SVDD3		Power	Analog power 3.3V
25	CSO	RFOP	Analog output	1) Central servo 2) Positive main beam summing output
26	RFLVL	RFON		1) RFRP low pass, or 2) Negative main beam summing output
27	SGND		Ground	Analog ground
31	FEO		Analog output	Focus error monitor output, or
32	TEO		Analog output	Tracking error monitor output
33	TEZISLV		Analog	
Analog Servo Interface (6)				
244	RFVDD3		Power	Analog Power
245	RFRPDC		Analog output	RF ripple detect output
246	RFRPAC		Analog Input	RF ripple detect input(through AC-coupling)
247	HRFZC		Analog Input	High frequency RF ripple zero crossing
248	CRTPLP		Analog	Defect level filter capacitor connecting
249	RFGND		Ground	Analog Power
RF Data PLL Interface (9)				
230	JITFO		Analog output	The output terminal of RF jitter meter.
231	JITFN		Analog Input	The input terminal of RF jitter meter.
232	PLLVSS		Ground	Ground pin for data PLL and related analog circuitry.

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
233	IDACEXLP		Analog	
234	PLLVDD3		Power	Power pin for data PLL and related analog circuitry.
235	LPFON		Analog Output	The negative output of loop filter amplifier
236	LPFIP		Analog Input	The positive input terminal of loop filter amplifier.
237	LPFIN		Analog Input	The negative input terminal of loop filter amplifier.
238	LPFOP		Analog Output	The positive output of loop filter amplifier
Motor and Actuator Driver Interface (10)				
34	OP_OUT		Analog output	Op amp output.
35	OP_INN		Analog input	Op amp negative input
36	OP_INP		Analog input	Op amp positive input
37	DMO		Analog Output	Disk motor control output. PWM output.
38	FMO		Analog Output	Feed motor control. PWM output.
39	TROPENPWM		Analog Output	Tray PWM output / Tray open output.
40	PWMOUT1	V_ADIN9	Analog Output	1) 1st General PWM output, or 2) Version AD input 9
41	TRO		Analog Output	Tracking servo output. PDM output of tracking servo compensator.
42	FOO		Analog Output	Focus servo output. PDM output of focus servo compensator
47	FG (Diogital pin)	V_ADIN8	LVTTL 3.3V Input, Schmitt Input, pull up , with analog input path for V_ADIN8	1) Motor Hall sensor input, or 2) Version AD input 8
General Power/Ground (32)				
52,97,122,152,173,221	DVDD18		Power	1.8V power pin for internal digital circuitry
85,116,144,163,216	DVSS		Ground	1.8V Ground pin for internal digital circuitry
73,80,108,127,141,155,167,182,212	DVDD3		Power	3.3V power pin for internal digital circuitry
62,94,119,134,148,161,175,223	DVSS		Ground	3.3V Ground pin for internal digital circuitry
204	DVDD3		Power	3.3V power pin Video DAC digital circuitry only
63	APLLCAP		Analog	APLL External Capacitance connection
64	APLLVSS		Ground	Ground pin for audio clock circuitry
65	APLLVDD3		Power	3.3V Power pin for audio clock circuitry
Micro Controller and Flash Interface (48)				

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
59	HIGHA0		Inout 2~16MA, SR PU	Microcontroller address 8
75	HIGHA1		Inout 2~16MA, SR PU	Microcontroller address 9
74	HIGHA2		Inout 2~16MA, SR PU	Microcontroller address 10
72	HIGHA3		Inout 2~16MA, SR PU	Microcontroller address 11
71	HIGHA4		Inout 2~16MA, SR PU	Microcontroller address 12
70	HIGHA5		Inout 2~16MA, SR PU	Microcontroller address 13
69	HIGHA6		Inout 2~16MA, SR PU	Microcontroller address 14
68	HIGHA7		Inout 2~16MA, SR PU	Microcontroller address 15
91	AD7		Inout 2~16MA, SR	Microcontroller address/data 7
88	AD6		Inout 2~16MA, SR	Microcontroller address/data 6
87	AD5		Inout 2~16MA, SR	Microcontroller address/data 5
86	AD4		Inout 2~16MA, SR	Microcontroller address/data 4
84	AD3		Inout 2~16MA, SR	Microcontroller address/data 3
83	AD2		Inout 2~16MA, SR	Microcontroller address/data 2
82	AD1		Inout 2~16MA, SR	Microcontroller address/data 1
81	AD0		Inout 2~16MA, SR	Microcontroller address/data 0
93	IOA0		Inout 2~16MA, SR PU	Microcontroller address 0 / IO
78	IOA1		Inout 2~16MA, SR PU	Microcontroller address 1 / IO

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
53	IOA2		Inout 2~16MA, SR PU	Microcontroller address 2 / IO
54	IOA3		Inout 2~16MA, SR PU	Microcontroller address 3 / IO
55	IOA4		Inout 2~16MA, SR PU	Microcontroller address 4 / IO
56	IOA5		Inout 2~16MA, SR PU	Microcontroller address 5 / IO
57	IOA6		Inout 2~16MA, SR PU	Microcontroller address 6 / IO
58	IOA7		Inout 2~16MA, SR PU	Microcontroller address 7 / IO
67	A16		Output 2~16MA, SR	Flash address 16
92	A17		Output 2~16MA, SR	Flash address 17
60	IOA18		Inout 2~16MA, SR SMT	Flash address 18 / IO
61	IOA19		Inout 2~16MA, SR SMT	Flash address 19 / IO
76	IOA20		Inout 2~16MA, SR SMT	Flash address 20 / IO
89	IOA21	V_ADIN0	Inout 2~16MA, SR SMT	1) Flash address 21 / IO 2) While External FLASH size <= 2MB: I) Version AD input port 0, or II) GPIO
90	ALE		Inout 2~16MA, SR PU, SMT	Microcontroller address latch enable
79	IOOE#		Inout 2~16MA, SR SMT	Flash output enable, active low / IO
66	IOWR#		Inout 2~16MA, SR SMT	Flash write enable, active low / IO
77	IOCS#		Inout 2~16MA, SR PU, SMT	Flash chip select, active low / IO

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
95	UWR#		Inout 2~16MA, SR PU, SMT	Microcontroller write strobe, active low
96	URD#		Inout 2~16MA, SR PU, SMT	Microcontroller read strobe, active low
98	UP1_2		Inout 4MA, SR PU, SMT	Microcontroller port 1-2
99	UP1_3		Inout 4MA, SR PU, SMT	Microcontroller port 1-3
100	UP1_4		Inout 4MA, SR PU, SMT	Microcontroller port 1-4
101	UP1_5		Inout 4MA, SR PU, SMT	Microcontroller port 1-5
102	UP1_6	SCL	Inout 4MA, SR PU, SMT	1) Microcontroller port 1-6 2) I^2C clock pin
103	UP1_7	SDA	Inout 4MA, SR PU, SMT	1) Microcontroller port 1-7 2) I^2C data pin
104	UP3_0	RXD	Inout 4MA, SR PU, SMT	1) Microcontroller port 3-0 2) 8032 RS232 RXD
105	UP3_1	TXD	Inout 4MA, SR PU, SMT	1) Microcontroller port 3-1 2) 8032 RS232 TXD
106	UP3_4	RXD SCL	Inout 4MA, SR PU, SMT	1) Microcontroller port 3-4 2) Hardwired RD232 RXD 3) I^2C clock pin
107	UP3_5	TXD SDA	Inout 4MA, SR PU, SMT	1) Microcontroller port 3-5 2) Hardwired RD232 TXD 3) I^2C data pin
111	IR		Input SMT	IR control signal input
112	INT0#		Inout 2~16MA, SR PU, SMT	Microcontroller external interrupt 0, active low
Audio interface (14)				

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
208	SPMCLK	SCLK0	Inout	1) Audio DAC master clock of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 clock pin II) GPIO
209	SPDATA	SDIN0	Inout	1) Audio data of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 data-in II) GPIO
210	SPLRCK	SDO0	Inout	1) Audio left/right channel clock of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 data-out II) GPIO
211	SPBCK	SDCS0 ASDATA5	Inout	1) Audio bit clock of SPDIF input 2) While SPDIF input is not used: I) Serial interface port 0 chip select II) Audio serial data 5 part I : DSD data sub-woofer channel or Microphone output III) GPIO
213	ALRCK		Inout 4MA, PD, SMT	1) Audio left/right channel clock 2) Trap value in power-on reset: I) 1: use external 378 II) 0: use internal 378
214	ABCK	Fs64	Output 4MA	1) Audio bit clock 2) Phase de-modulation
215	ACLK		Inout 4MA	Audio DAC master clock
217	ASDATA0		Inout 4MA PD SMT	1) Audio serial data 0 (Front-Left/Front-Right) 2) DSD data left channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation
218	ASDATA1		Inout 4MA PD SMT	1) Audio serial data 1 (Left-Surround/Right-Surround) 2) DSD data right channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While only 2 channels output: I) GPIO
219	ASDATA2		Inout 4MA PD SMT	1) Audio serial data 2 (Center/LFE) 2) DSD data left surround channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While only 2 channels output: I) GPIO

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
220	ASDATA3		Inout 4MA PD SMT	1) Audio serial data 3 (Center-back/ Center-left-back/Center-right-back, in 6.1 or 7.1 mode) 2) DSD data right surround channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While only 2 channels output: I) GPIO
222	ASDATA4	INT1#	Inout 4MA PD SMT	1) Audio serial data 4 (Down-mixed Left/Right) 2) DSD data center channel 3) Trap value in power-on reset : I) 1 : manufactory test mode II) 0 : normal operation 4) While only 2 channels output: I) Microcontroller external interrupt 1 II) GPIO
224	MIC_DATA	INT2#	Inout	1) Microphone serial input 2) While not support Microphone: I) Microcontroller external interrupt 2 II) GPIO
225	SPDIF		Output 2~16MA, SR : ON/OFF	SPDIF output
Video Interface (18)				
189	DACVDDC		Power	3.3V power pin for VIDEO DAC circuitry
190	VREF		Analog	Bandgap reference voltage
191	FS		Analog	Full scale adjustment
192	YUV0	CIN	Output 4MA, SR	1) Video data output bit 0 2) Compensation capacitor
193	DACVSSC		Ground	Ground pin for VIDEO DAC circuitry
194	YUV1	Y	Output 4MA, SR	1) Video data output bit 1 2) Analog Y output
195	DACVDDB		Power	3.3V power pin for VIDEO DAC circuitry
196	YUV2	C	Output 4MA, SR	1) Video data output bit 2 2) Analog chroma output
197	DACVSSB		Ground	Ground pin for VIDEO DAC circuitry
198	YUV3	CVBS	Output 4MA, SR	1) Video data output bit 3 2) Analog composite output
199	DACVDDA		Power	3.3V power pin for VIDEO DAC circuitry
200	YUV4	Y/G	Output 4MA, SR	1) Video data output bit 4 2) Green or Y
201	DACVSSA		Ground	Ground pin for VIDEO DAC circuitry
202	YUV5	B/Cb/Pb	Output 4MA, SR	1) Video data output bit 5 2) Blue or CB

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
203	YUV6	R/Cr/Pr	Output 4MA, SR	1) Video data output bit 6 2) Red or CR
205	VSYN	V_ADIN1	Inout 4MA, SR SMT	1) Vertical sync input/output 2) While no External TV-encoder: I) Vertical sync for video-input II) Version AD input port 1 III) GPIO
206	YUV7	INT3# ASDATA5	Inout 4MA, SR SMT	1) Video data output bit 7 2) While no External TV-encoder: I) Microcontroller external interrupt 3 II) Audio serial data 5 part II : DSD data sub-woofer channel or Microphone output III) GPIO
207	HSYN	INT4# V_ADIN2	Inout 4MA, SR SMT	1) Horizontal sync input/output 2) While no External TV-encoder: I) Horizontal sync for video-input II) Microcontroller external interrupt 4 III) Version AD input port 2 IV) GPIO
MISC (8)				
43	USB_VSS			USB ground pin
44	USBP			USB port DPLUS analog pin
45	USBM			USB port DMINUS analog pin
46	USB_VDD3			USB Power pin 3.3V
110	PRST#		Input PU, SMT	Power on reset input, active low
109	ICE		Input PD, SMT	Microcontroller ICE mode enable
228	XTALO		Output	27M crystal out
229	XTALI		Input	27M crystal in
Dram Interface (63) (Sorted by position)				
188	RD16	LLC_CLK		1) DRAM data 16 2) While using 16-bits wide DRAM: I) Line Locked Clock input/output II) GPIO
187	RD17	YUVIN0		1) DRAM data 17 2) While using 16-bits wide DRAM: I) Video input data 0 II) GPIO
186	RD18	YUVIN1		1) DRAM data 18 2) While using 16-bits wide DRAM: I) Video input data 1 II) GPIO

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
185	RD19	YUVIN2		1) DRAM data 19 2) While using 16-bits wide DRAM: I) Video input data 2 II) GPIO
184	RD20	YUVIN3		1) DRAM data 20 2) While using 16-bits wide DRAM: I) Video input data 3 II) GPIO
183	RD21	YUVIN4		1) DRAM data 21 2) While using 16-bits wide DRAM: I) Video input data 4 II) GPIO
181	RD22	YUVIN5		1) DRAM data 22 2) While using 16-bits wide DRAM: I) Video input data 5 II) GPIO
180	RD23	YUVIN6		1) DRAM data 23 2) While using 16-bits wide DRAM: I) Video input data 6 II) GPIO
179	DQM2	YUVIN7		1) Data Mask 2 2) While using 16-bits wide DRAM: I) Video input data 7 II) GPIO
178	DQM3	INT6# USB_CLK		1) Data Mask 3 2) While using 16-bits wide DRAM: I) Microcontroller external interrupt 6 II) USB port CLK input (48Mhz) part II III) GPIO
177	RD24	SDIN1 MS_BS		1) DRAM data 24 2) While using 16-bits wide DRAM: I) Serial interface port 1 data-in II) MS Card BS pin part II III) GPIO
176	RD25	SDO1 MS_SDIO		1) DRAM data 25 2) While using 16-bits wide DRAM: I) Serial interface port 1 data-out II) MS Card SDIO pin part II III) GPIO
174	RD26	SDCS1 MSCLK		1) DRAM data 26 2) While using 16-bits wide DRAM: I) Serial interface port 1 chip select II) Memory Stick Clock part II III) GPIO

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
172	RD27	SCLK2 SDCLK		1) DRAM data 27 2) While using 16-bits wide DRAM: I) Serial interface port 2 clock pin II) Security Disk Clock part II III) GPIO
171	RD28	SDIN2 SD_CMD		1) DRAM data 28 2) While using 16-bits wide DRAM: I) Serial interface port 2 data-in II) SD Card CMD pin part II III) GPIO
170	RD29	SDO2 SD_DAT		1) DRAM data 29 2) While using 16-bits wide DRAM: I) Serial interface port 2 data-out II) SD Card Data pin part II III) GPIO
169	RD30	SDCS2		1) DRAM data 30 2) While using 16-bits wide DRAM: I) Serial interface port 2 chip select II) GPIO
168	RD31	INT5# ASDATA5		1) DRAM data 31 2) While using 16-bits wide DRAM: I) Microcontroller external interrupt 5 II) Audio serial data 5 part III : DSD data sub-woofer channel or Microphone output III) GPIO
166	RA4			DRAM address 4
165	RA5			DRAM address 5
164	RA6			DRAM address 6
162	RA7			DRAM address 7
160	RA8			DRAM address 8
159	RA9			DRAM address 9
158	RA11	GPIO		1) DRAM address bit 11 2) While using DRAM size <=4MB: I) GPIO
157	CKE			DRAM clock enable
156	RCLK			Dram clock
154	RCLKB	USB_CLK		1) Dram clock invert 2) While not using DDR: I) USB port CLK input (48Mhz) part I
153	RVREF	V_ADIN3		1) Reference voltage for DDR DRAM 2) While not using DDR : Version AD input port 3
151	RA3			DRAM address 3
150	RA2			DRAM address 2
149	RA1			DRAM address 1
147	RA0			DRAM address 0
146	RA10			DRAM address 10

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
145	BA1			DRAM bank address 1
143	BA0			DRAM bank address 0
142	RCS#			DRAM chip select, active low
140	RAS#			DRAM row address strobe, active low
139	CAS#			DRAM column address strobe, active low
138	RWE#			DRAM Write enable, active low
137	DQM1			Data mask 1
136	DQS1	INT7# MS_BS		1) Data strobe 1 for DDR DRAM 2) While not using DDR: I) Microcontroller external interrupt 7 II) MS Card BS pin part I III) GPIO
135	RD8			DRAM data 8
133	RD9			DRAM data 9
132	RD10			DRAM data 10
131	RD11			DRAM data 11
130	RD12			DRAM data 12
129	RD13			DRAM data 13
128	RD14			DRAM data 14
126	RD15			DRAM data 15
125	RD0			DRAM data 0
124	RD1			DRAM data 1
123	RD2			DRAM data 2
121	RD3			DRAM data 3
120	RD4			DRAM data 4
118	RD5			DRAM data 5
117	RD6			DRAM data 6
115	RD7			DRAM data 7
114	DQS0	SCLK1 MS_SDIO		1) Data strobe 0 for DDR DRAM 2) While not using DDR: I) Serial interface port 1 clock pin II) MS Card SDIO pin part I III) GPIO
113	DQM0			Data mask 0
JTAG Interface(4)				
48	TDI	SDO3 V_ADIN4 SD_DAT	Inout	1) JTAG data in 2) While not using Boundary Scan: I) Serial interface port 3 data-out II) Version AD input port 4 III) SD Card Data pin part I IV) GPIO

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Table1. 1389C Pin Description (continued)

Pin	Main	Alt.	Type	Description
49	TMS	SDIN3 V_ADIN5 SD_CMD	Inout	1) 2) While not using Boundary Scan: I) Serial interface port 3 data-in II) Version AD input port 5 III) SD Card CMD pin part I IV) GPIO
50	TCK	SCLK3 V_ADIN6 SDCLK	Inout	1) JTAG clock 2) While not using Boundary Scan: I) Serial interface port 3 clock pin II) Version AD input port 6 III) Security Disk Clock part I IV) GPIO
51	TDO	SDCS3 V_ADIN7 MSCLK	Inout	1) JTAG data out 2) While not using Boundary Scan: I) Serial interface port 3 chip-select II) Version AD input port 7 III) Memory Stick Clock part I IV) GPIO

Note:

1. The Main column is the main function, Alt. Means alternative function.
2. The multi-function GPIO pins are set to green characters.
3. The video input port and external TV encoder mode can not both use CCIR-601 mode, at least one of them should be in CCIR-656 mode.

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Power supply Circuit Diagram and Component Layout

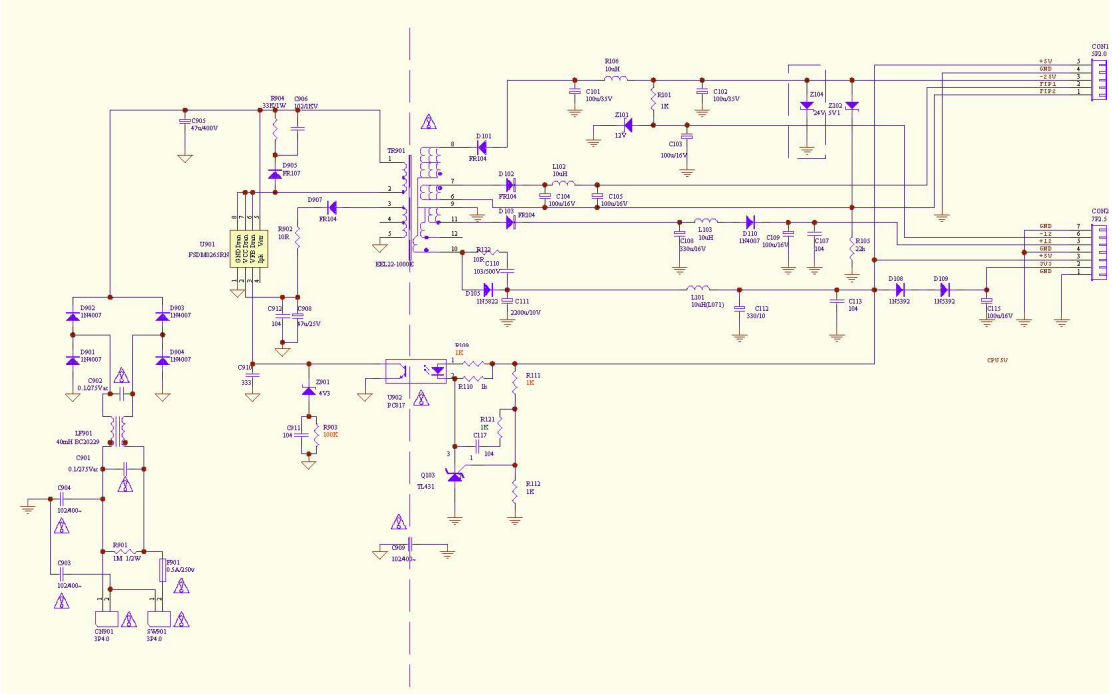


Fig 2-4 Power Supply Circuit Diagram

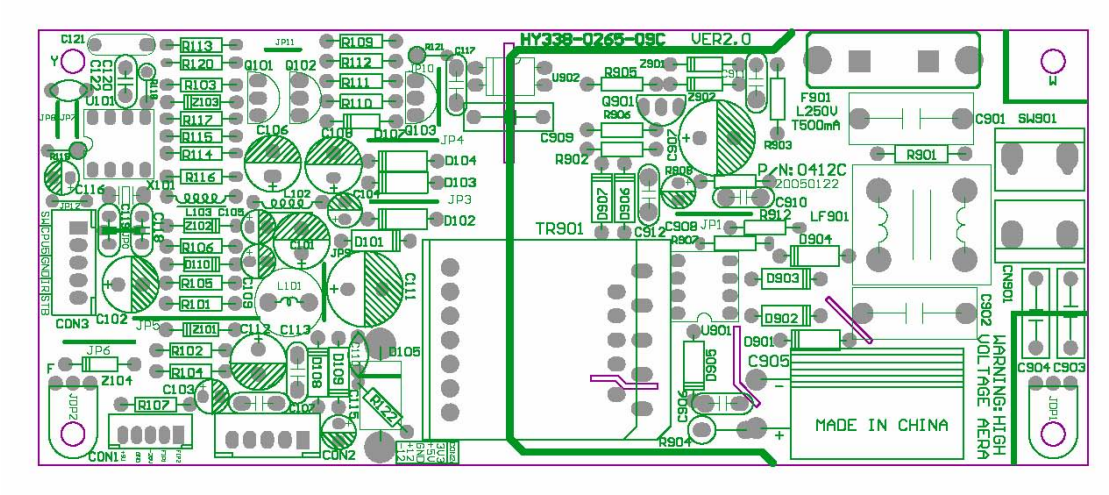


Fig 2-5 Power Supply Assembly Drawing

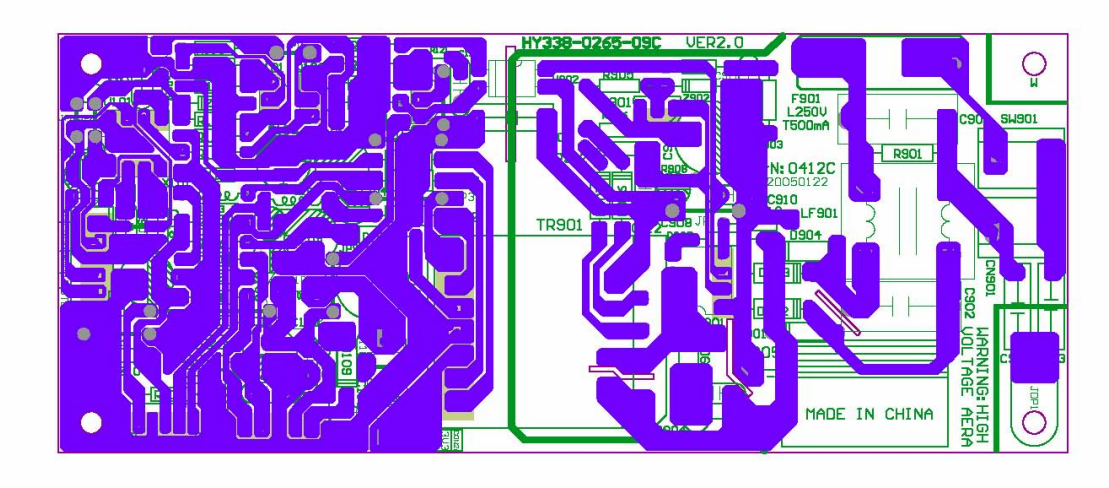


Fig 2-6 Power Supply Composite

MPEG Circuit Diagram and Component Layout

MPEG Circuit Diagram

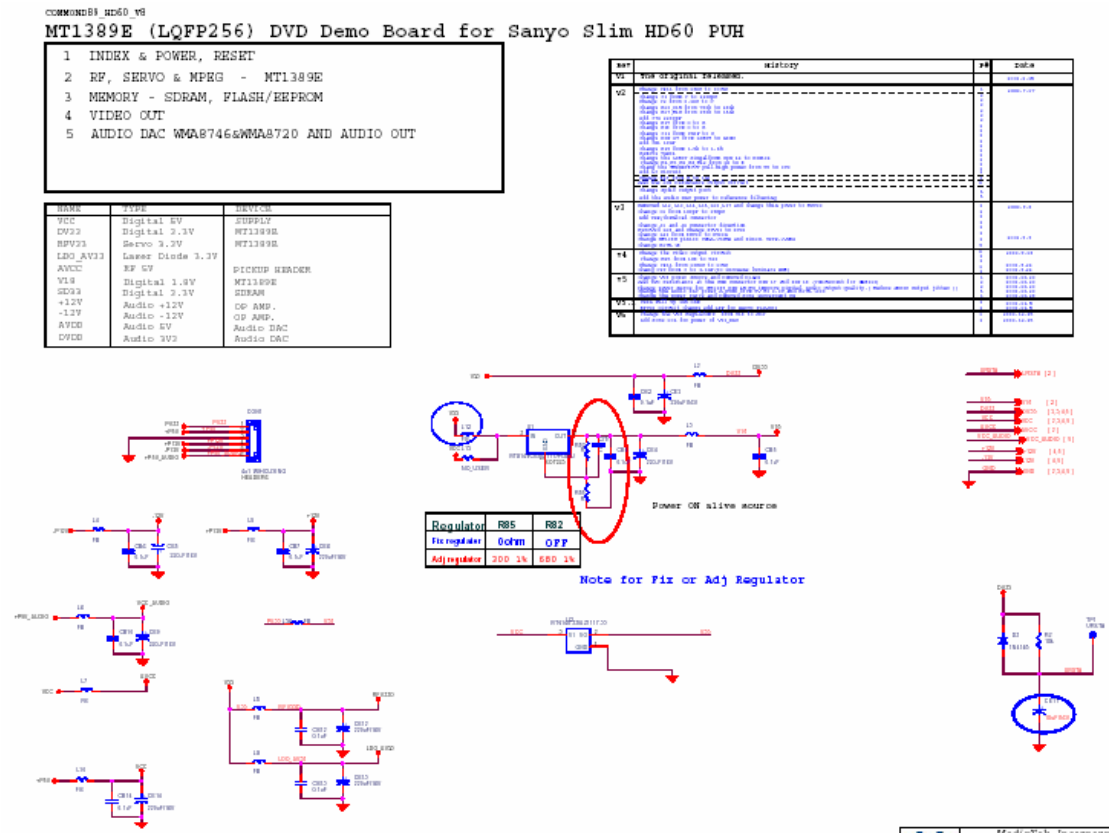


Fig 2-7 Index and Power Interface

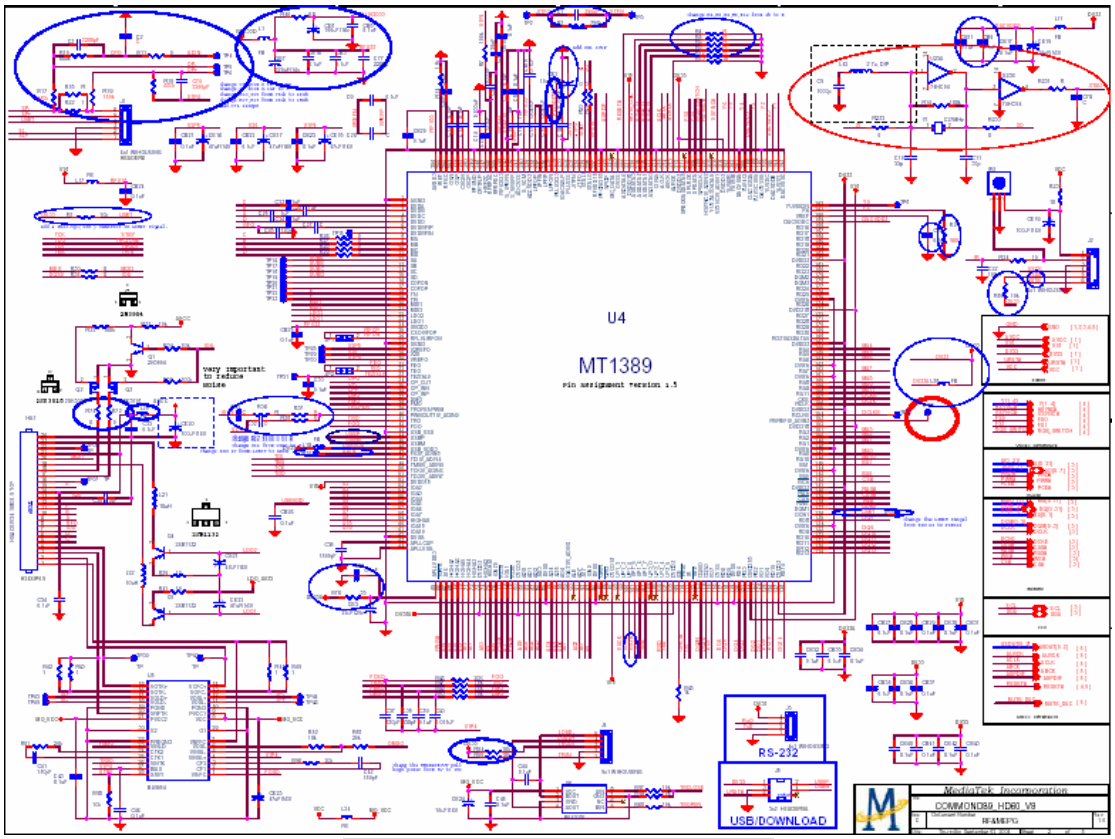


Fig2-8 MTK1389 MPEG & RF

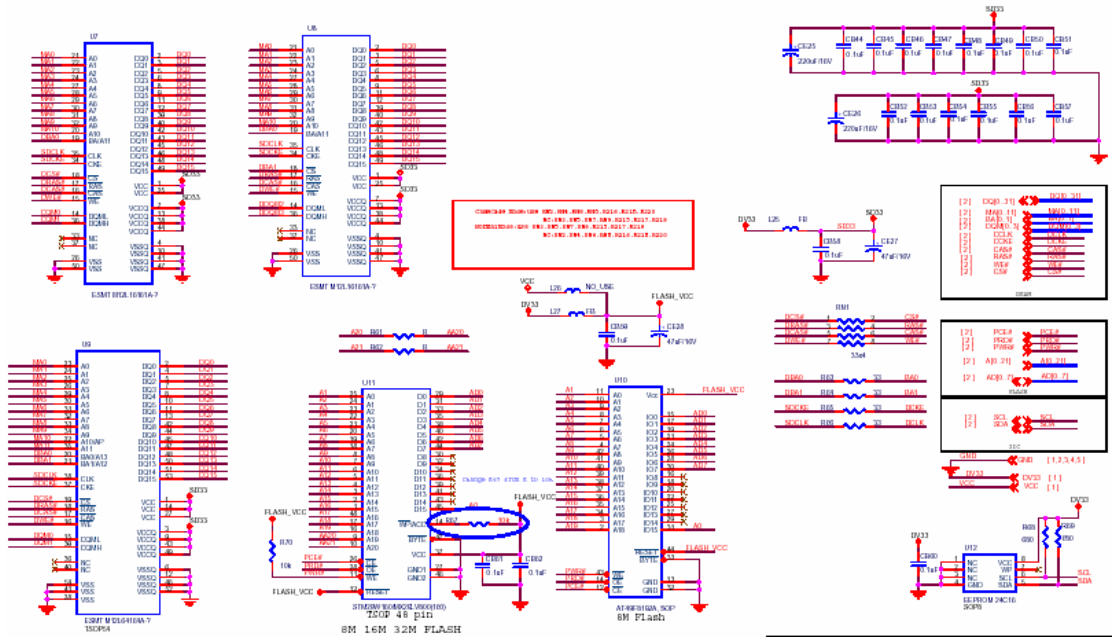


Fig 2-9 SDRAM & FLASH

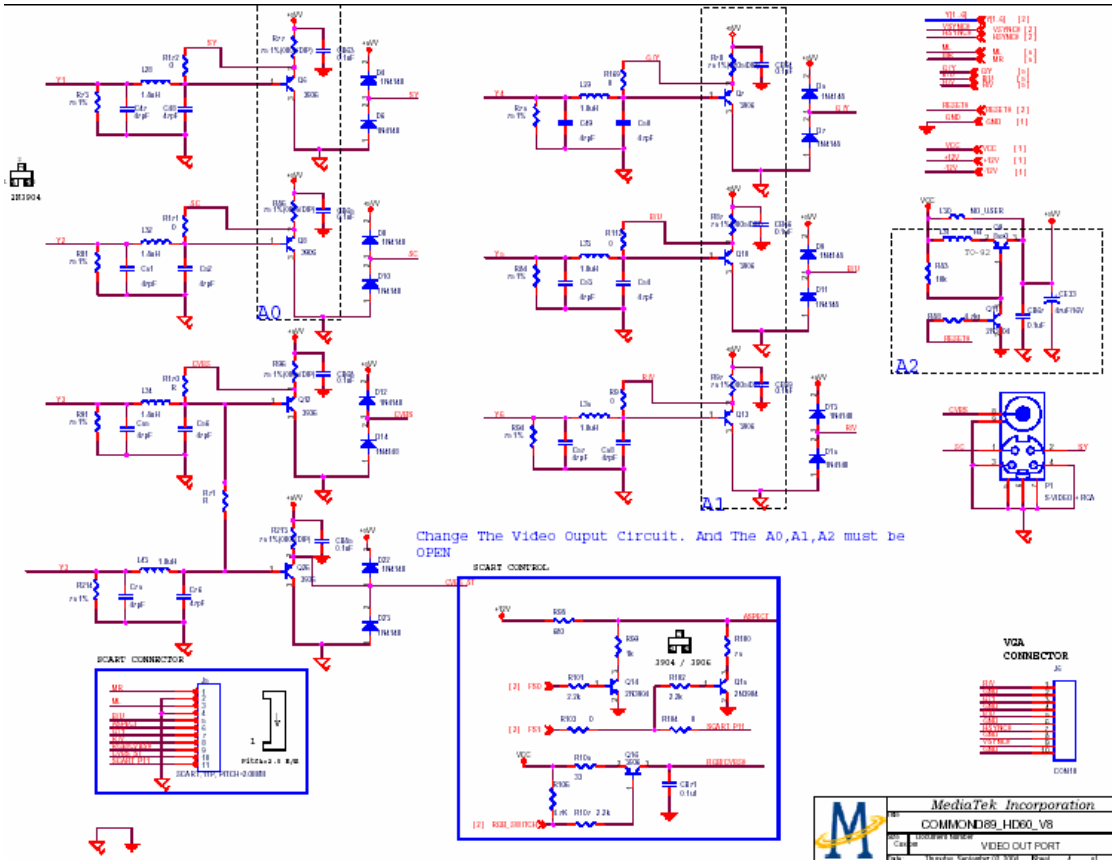


Fig 2-10 Video output

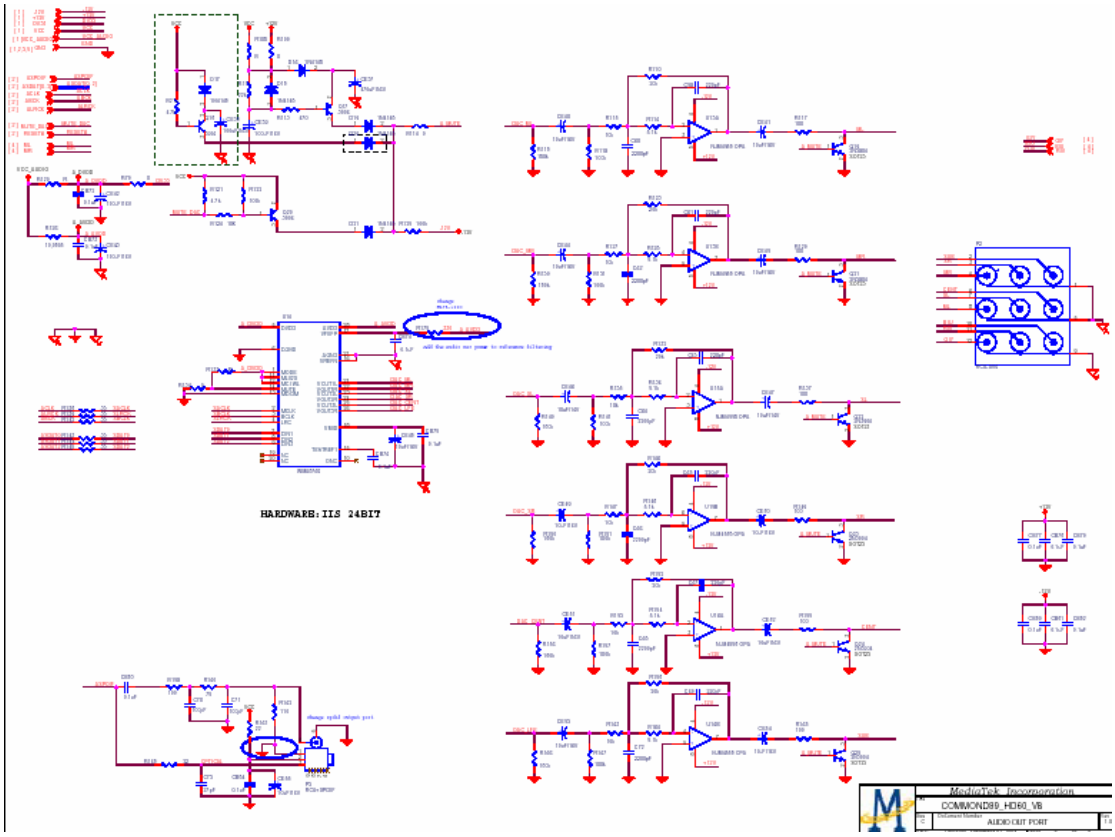


Fig 2-11 Audio output

MPEG Assembly Drawing

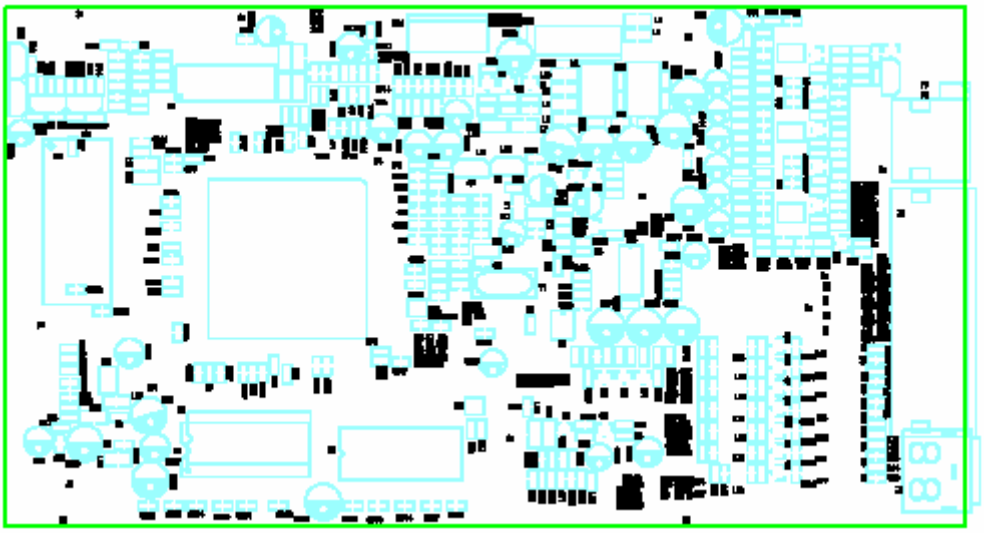
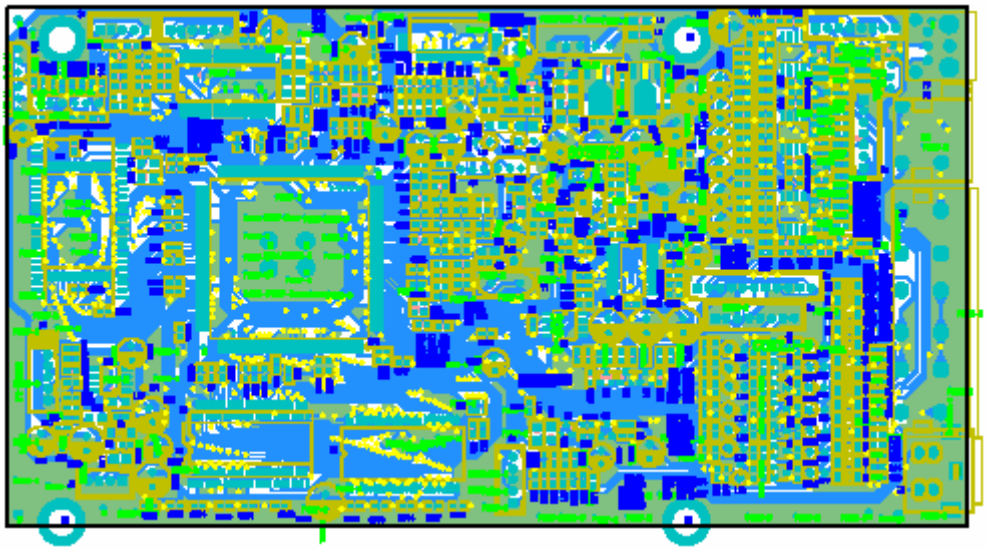


Fig 2-12 MPEG Assembly Drawing

MPEG Composite



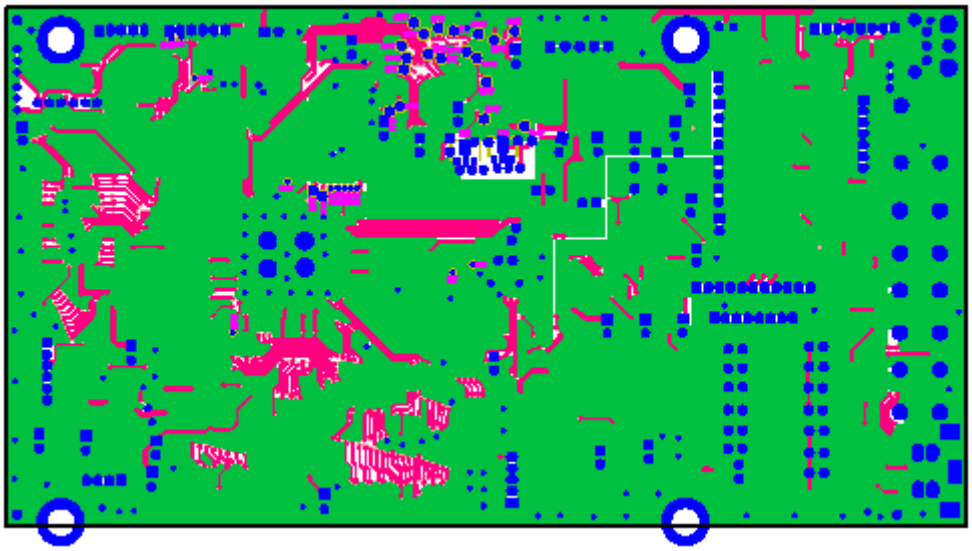


Fig2-13 MPEG Composite

Front panel Circuit Diagram and Component Layout

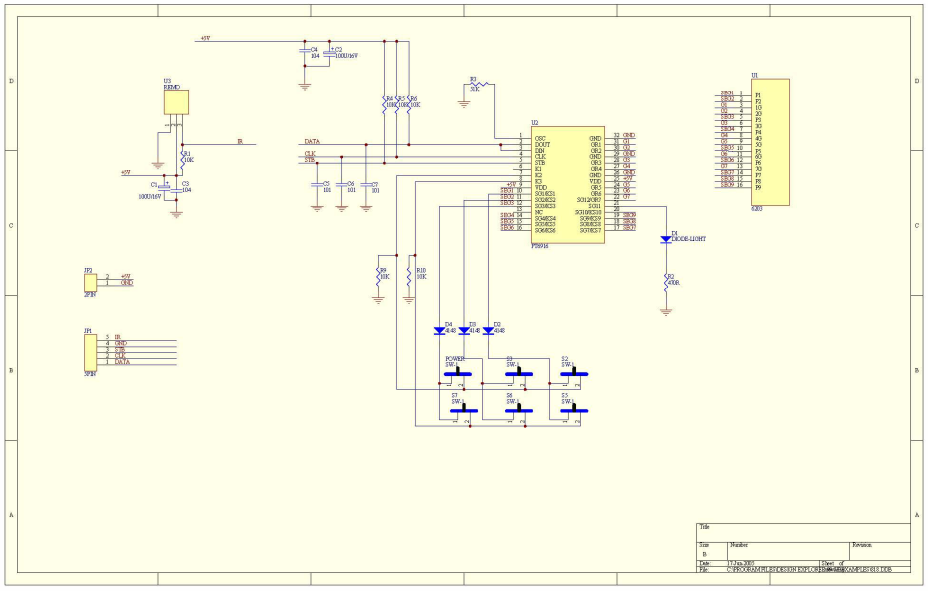


Fig 2-14 Front Panel Circuit Diagram

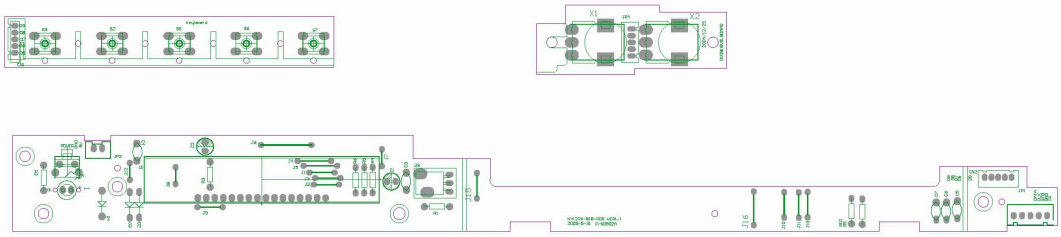


Fig 2-15 Front Panel Assembly Drawing

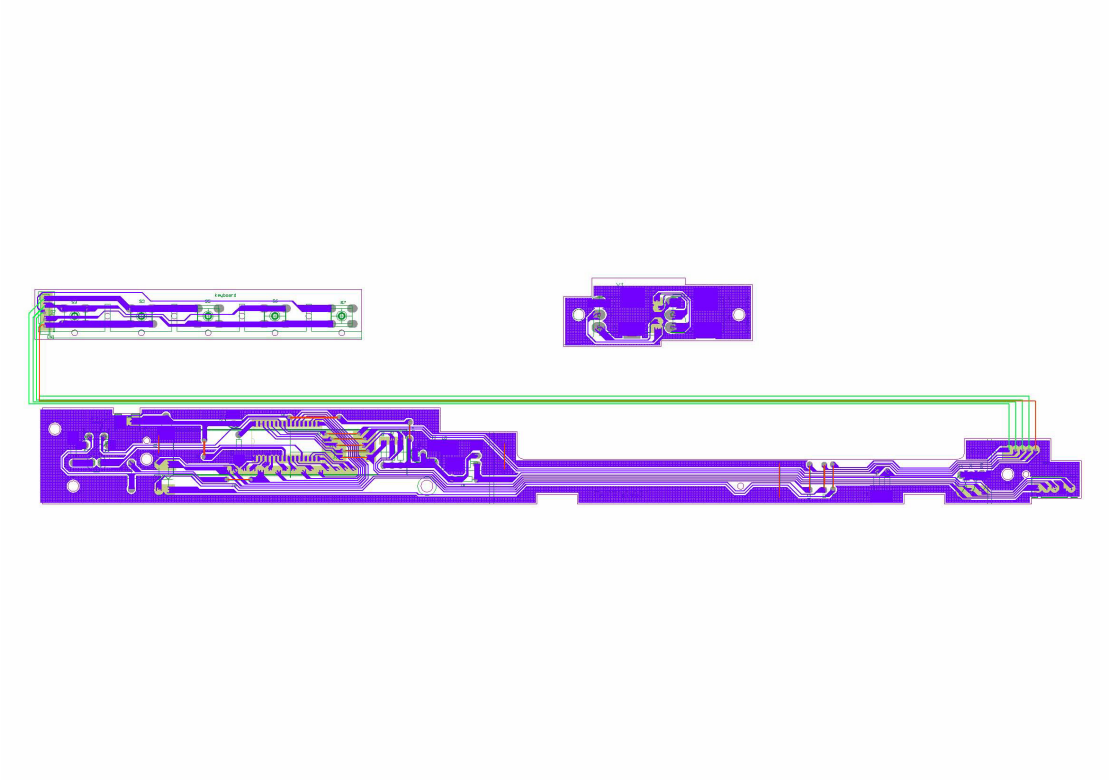
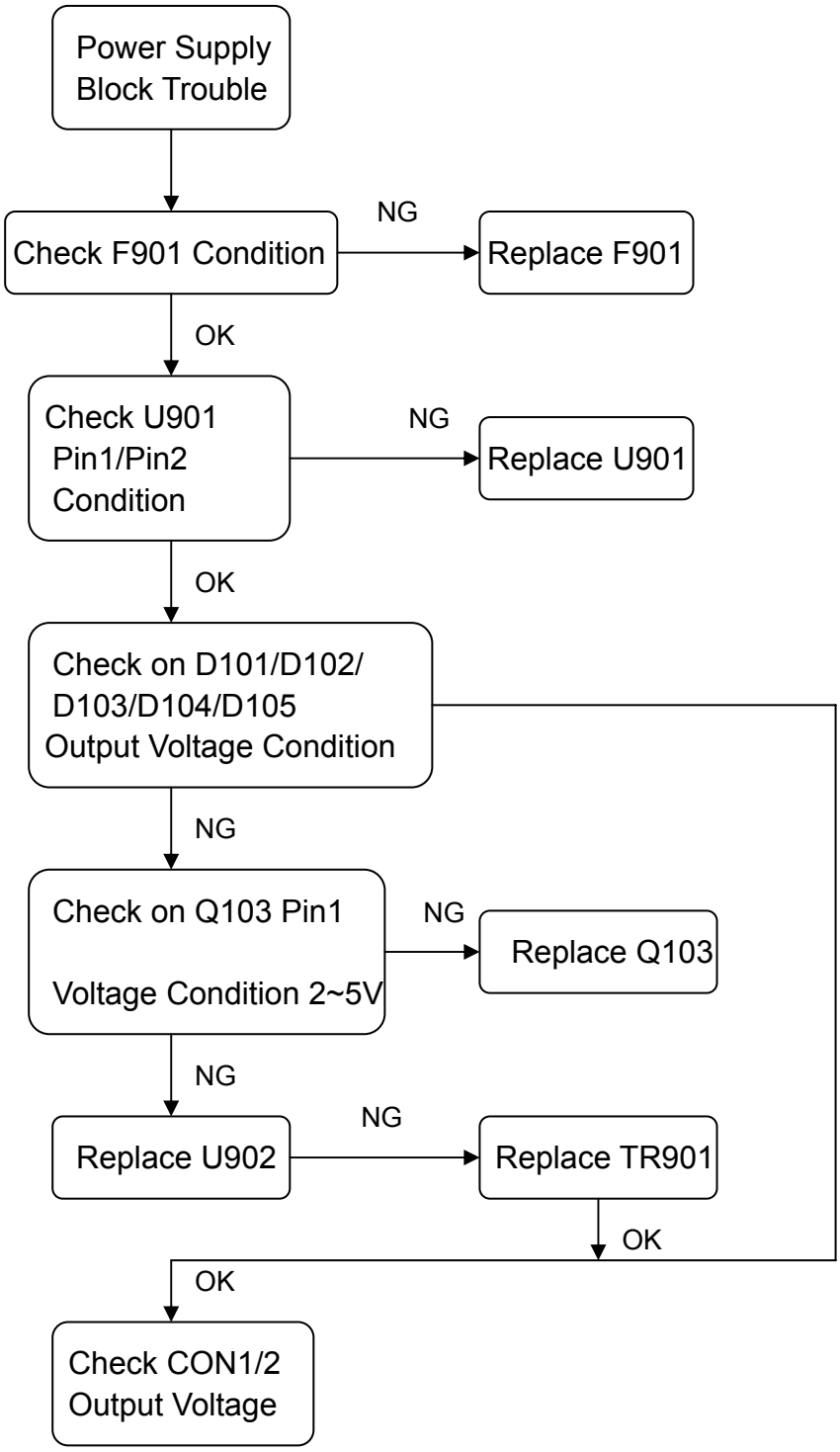


Fig 2-16 Front Panel Composite

Servicing Procedures

Power Supply Trouble Service Flow Chart



Read Disc Trouble Service Flow Chart

Read disc problem in a DVD player is a very complicated issue that may involve complex issues. This problem is not only relation to the electronic circuit, but also very much relation to the operation environment.

DVD loading unit is a very complicate part that contains big number of ESD components, which require specific equipment, tools and technique to repair; in general, service technician is not suggested to disassemble the DVD loading unit. It is suggest proving the trouble and replacing the complete DVD loading unit, instead of repairing the DVD loading unit in local workshop.

It is suggested to prove the faulty of a DVD loading unit by replacement by a good DVD loading unit.

Before checking the "NO Disc" Trouble, ensure excluding the following possibilities:

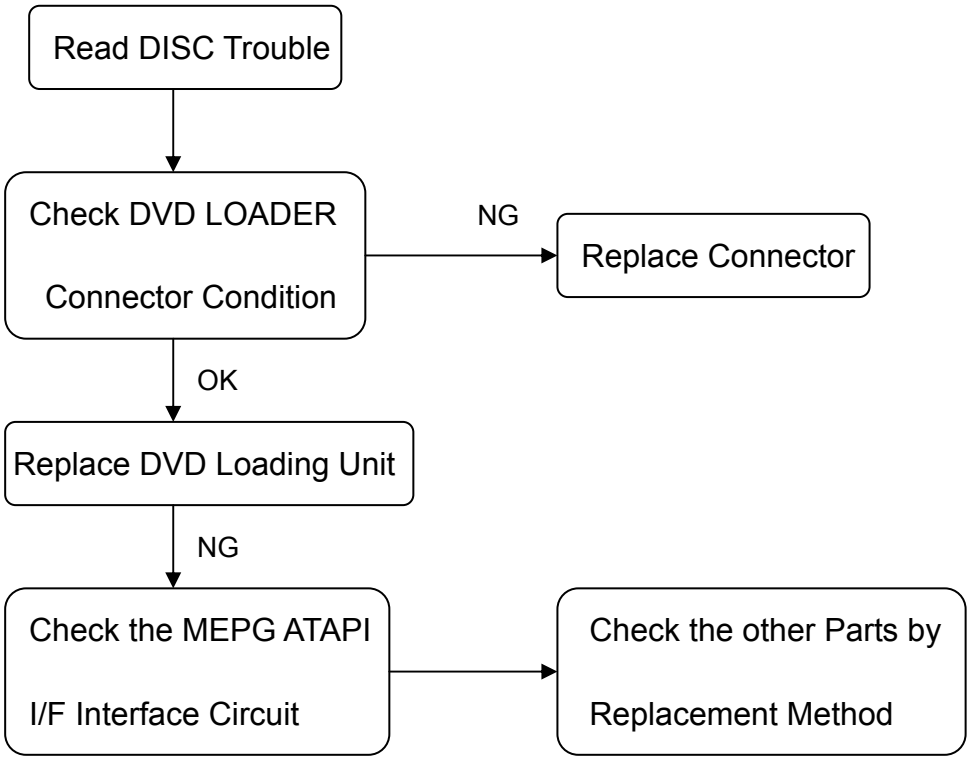
The test disc is damage.

AC power supply voltage dropped below the minimum required level.

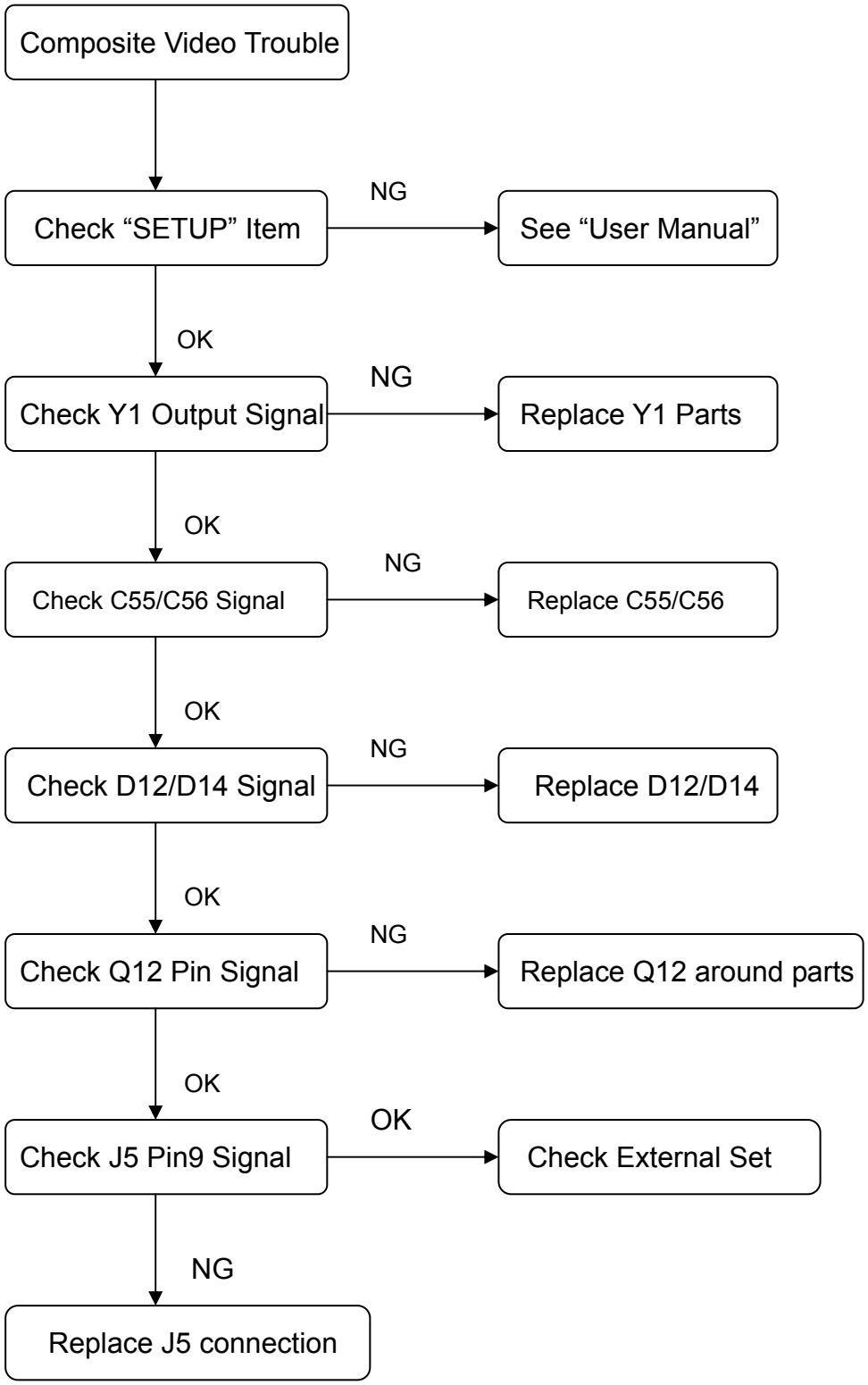
DVD disc region code and color system is not matching to the DVD player or system setting.

Moisture condensed inside the unit. (Power on the unit, without disc loaded, for 1/2 to 2 hours).

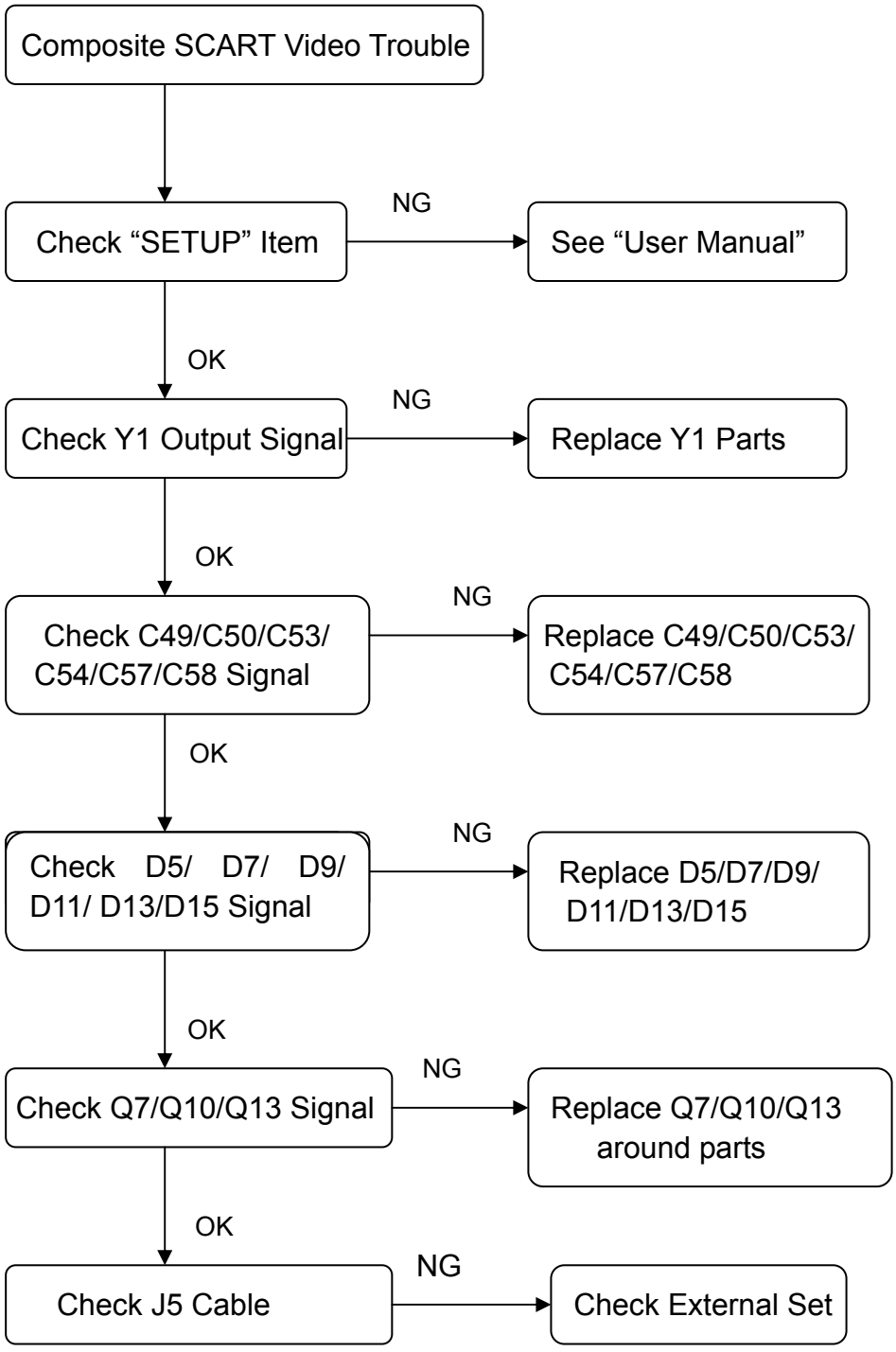
Service Flow Chart



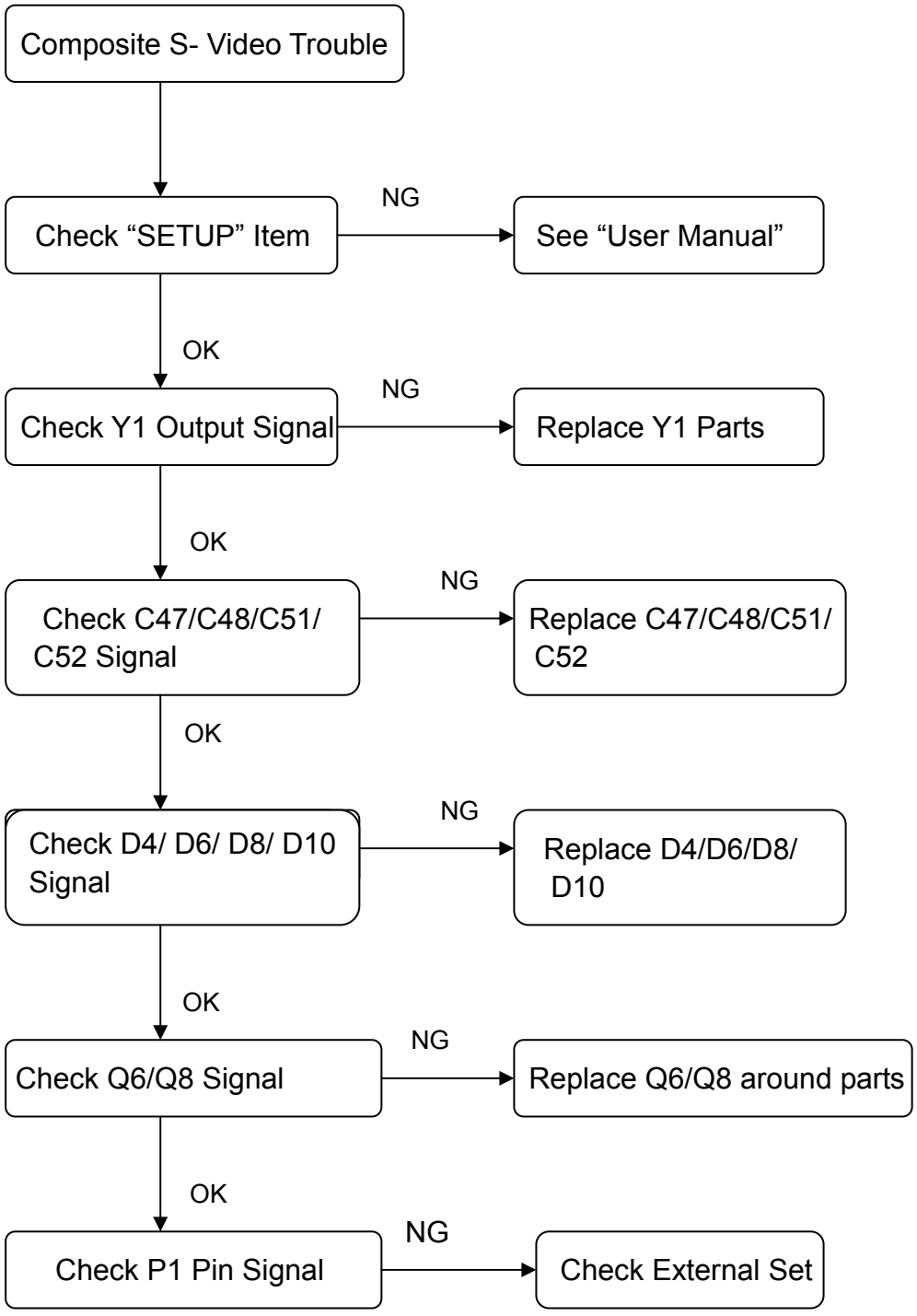
Composite Video Trouble Service Flow Chart



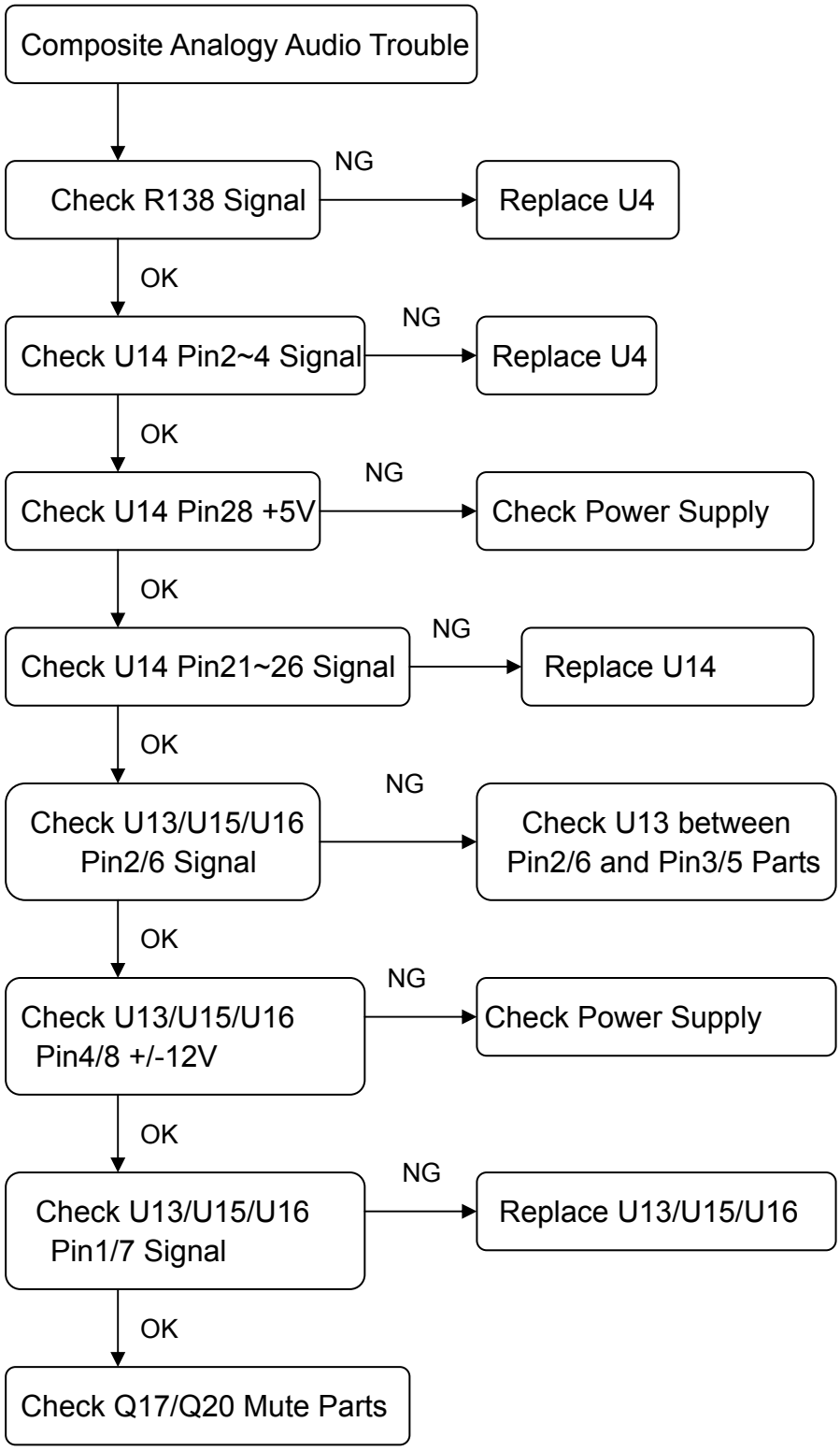
SCART Video Trouble Service Flow Chart



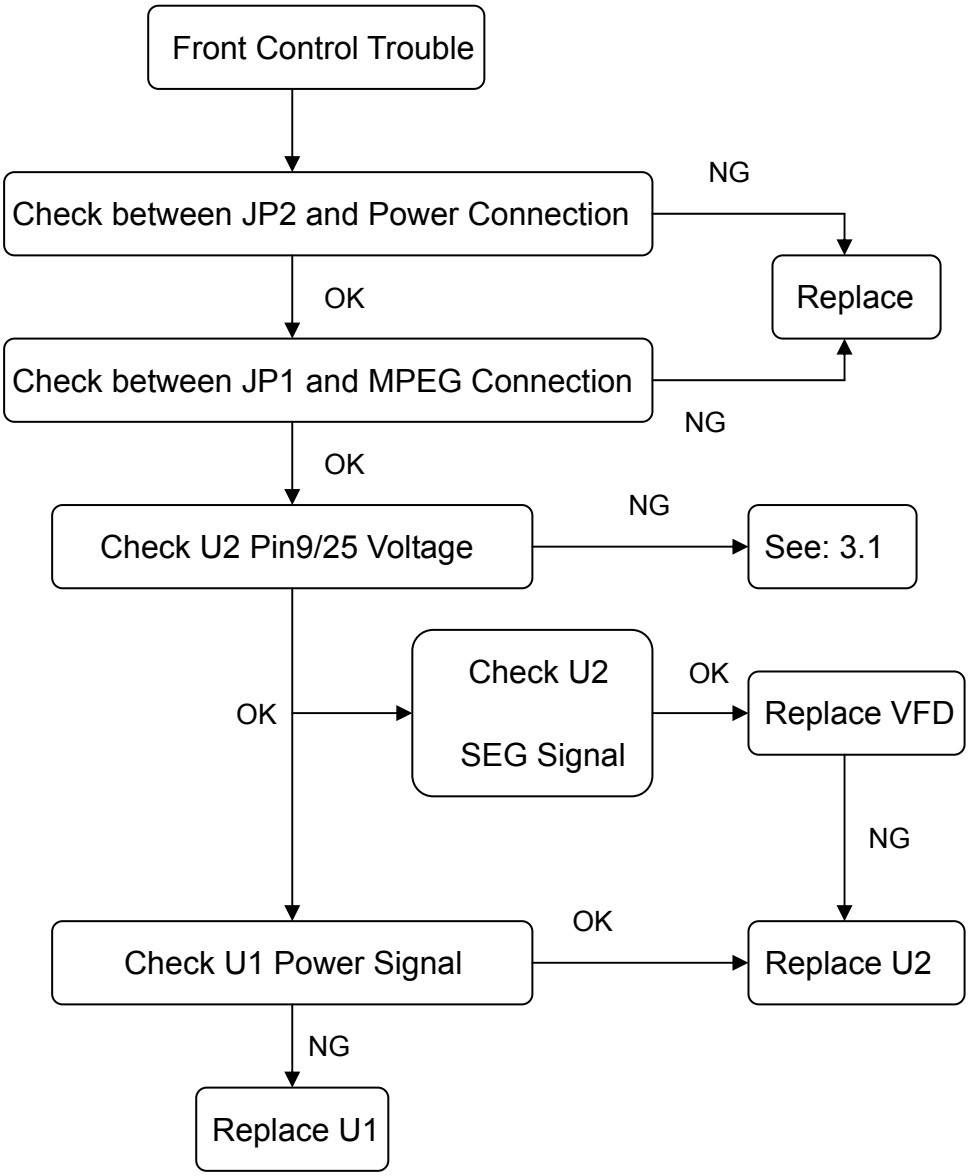
S- Video Trouble Service Flow Chart



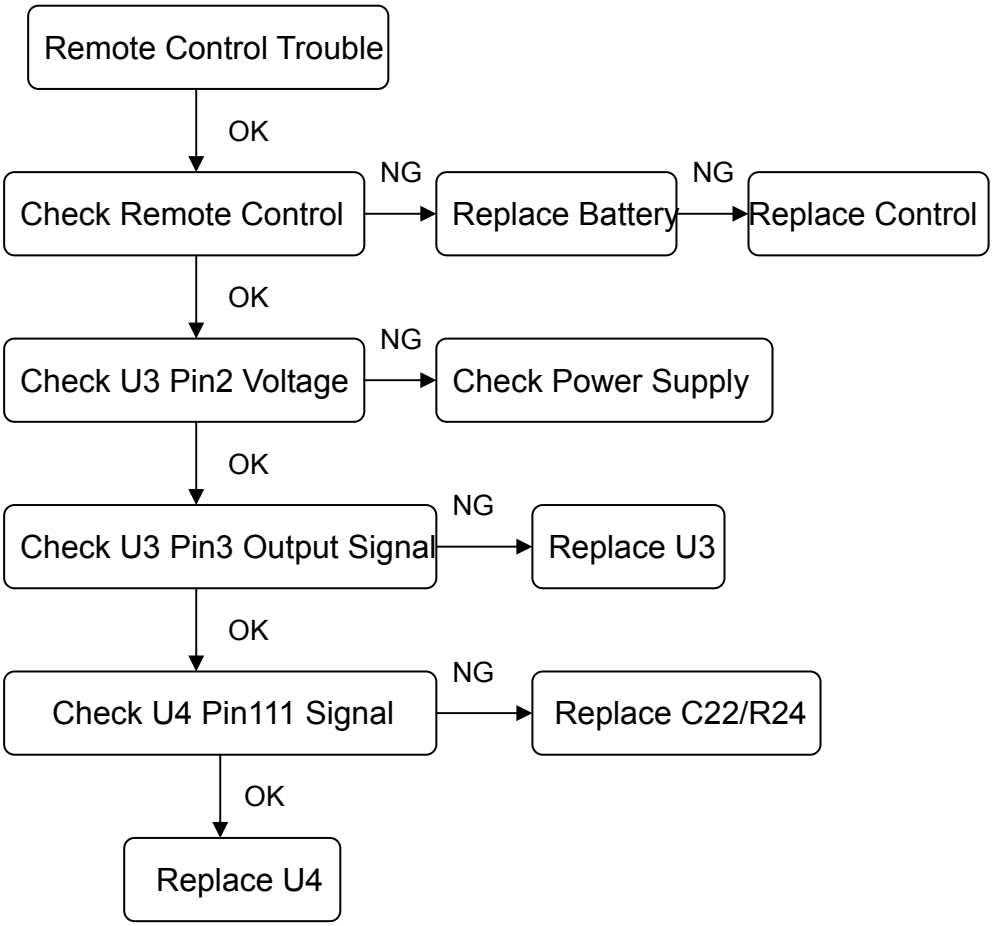
Composite Analogy Audio Trouble Service Flow Chart



Front Control Trouble Service Flow Chart



Remote Control Trouble Service Flow Chart



Parts List

Power parts list

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
		Carbon Resistor		
1	M2R1110030433110	RT14-1/4W-10R±5%	2	R122,R902
2	M2R1110230433110	RT14-1/4W-1K±5%	5	R111,R101,R110,R112,R121,
	M2R1120230433110	RT14-1/4W-2K±5%	1	R109
3	M2R1110430433110	RT14-1/4W-100K±5%	1	R903
4	M2R1110530233110	RT15-1/2W-1M±5%	1	R901
		Oxidation Resistor		
5	M2R8833330133110	RYG1-1W-33K-J	1	R904
		Transistor		
6	M2I000TL43100100	TL431-AC-(TO-92)	1	Q103
	M2IAZ431AZA00000	AZ431AZ-A	1	Q103
		AC Porcelain Capacitor		
7	M2C1102G54000022	CT7-400VAC-102-M	2	C909,C903
		Terylene Capacitor		
8	M2C4333H30000011	CL11-100V-333-J	1	C910
9	M2C4104H30000022	CL11-100V-104-J	1	C911
		Porcelain Capacitor		
10	M2C1104F84000022	CT-50V-104-Z	4	C107,C113,C117,,C912
		HI-VOLT Porcelain Capacitor		
11	M2C1102M84000022	CT81-1KV-102-Z	1	C906
12	M2C1103L84000022	CT81-500V-103-Z	1	C110
		ELECT Capacitor		
13	M2C2476G59162522	CD29-47U-400V-M-105℃（16*25）	1	C905
14	M2C2336N59162622	CD263-33U-450V-M-105(16*26)	1	C905
15	M2C2107T59081522	CD288-35V-100U-M（8*15）	2	C101,C102
16	M2C2107B59051122	CD288-16V-100U-M（5*11）	6	C103,C109,C115
17	M2C2337B59081222	CD288-16V-330U-M（8*12）	1	C108
18	M2C2228C57102022	CD288-10V-2200U-M（10*20）	1	C111
19	M2C2476E59051122	CD288-25V-47U-M（5*11）	1	C908
20	M2C2337C59631222	CD288-10V-330U-M（6.3*12）	1	C112
		Polypropylene Capacitor		
21	M2C5104F49000022	0.1UFK-275VAC	1	C901
		Diode		
22	M2D1IN4007220000	1N4007-（DO-41A）	5	D901,D902,D903,D904,D110
23	M2D10FR107220000	FR107（DO-41）	1	D905

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
24	M2D10FR104220000	FR104（DO-41）	3	D101,,D103,D907
25	M2D1IN5392220000	1N5392-（DO-41）	2	D108,D109
26	M2D1IN5822220000	IN5822	1	D105
		Certain VOLT Diode		
27	M2D1BZX12V220000	BZX-12V-1/2W-（DO-35）	1	Z101,
29	M2D1BZX4V3220000	BZX-4V3-1/2W-（DO-35）	1	Z901
		Inductor		
30	M2H20000L0710000	L-071	1	D106
31	M2H4LGA10UHK0307	LGA0307-10uH-K	2	L103,R106
32	M2H20BC202290000	BC20229	1	LF901
		IC		
33	M2IFSDL016500100	FSDL0165	1	U901
34	M2I00PC817B00000	PC817B-DIP4	1	U902
		Insurance Managing		
35	M2U110T0A5250V00	T0.5A 250V	1	F901
		Insurance Managing Header		
36	M2P3300000520000	5*20	2	F901
		Transformer		
37	M2T11EEL221001E0	EEL22-1001E	1	TR901
		Jack		
38	M2P2200000VH3000	VH-3	1	CN901
	M2P220000VH3B000	VH-3-B	1	SW901(SWITCH SW901）
39	M2P000000PH5A000	PH-5A	1	CON1
40	M2P000TJC35AB000	TJC3-5A-B	1	CON2
		Jump Wire		
41	**********	J--10mm	5	JP1,JP4,JP6,R907,D107
42	**********	J--8mm	3	JP9,JP10,SW901(STB 4.5W SW901)
43	**********	J-18mm	1	JP5
		Ground Slice		
44	M2A00GDP31400001	GDP-314	2	GDP1 GDP2
		PCB		
45	M2B0HY338PN0412C	HY338-0265-09C V2.0 P/N:0412C	1	PCB
	******	20050122		

MEPG Parts List

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
		Chip Resistor		
1	M2R0000030811000	RC-05K000OT	2	L3,L10
2	M2R001R030811000	RC-05K1R0JT	4	R42~R45
3	M2R0033030811000	RC-05K330JT	1	R82
4	M2R0000031000000	RC-03K000OT	24	R11,R20,R21,R26~R31,R40,R79,R80,
				R89,R90,R103,R104,R114,R134
				R172,R171,R169,R112,R9,R161
4**	M2R0000031000000	RC-03K000OT	1	R61 16M FLASH
5	M2R001R031000000	RC-03K1R0JT	1	R22
6	M2R006R831000000	RC-03K6R8JT	1	R92
7	M2R0010031000000	RC-03K100JT	5	R23,R24,R39,R41,R126
8	M2R0022031000000	RC-03K220JT	1	R168
9	M2R0033031000000	RC-03K330JT	7	R63~R66,R105,R139,R142
10	M2R0075031000000	RC-03K750JT	2	R100,R160
11	M2R0075021000000	RC－03K750FT	6	R73,R75,R81,R84,R91,R94
12	M2R0010131000000	RC-03K101JT	1	R159
13	M2R0011131000000	RC-03K111JT	1	R162
14	M2R0030121000000	RC-03K301FT	1	R60
15	M2R0033131000000	RC-03K331JT	1	R175
16	M2R0047131000000	RC-03K471JT	5	R108,R193,R194,R197,R198
17	M2R0056131000000	RC-03K561JT	1	R25
18	M2R0068121000000	RC-03K681FT	4	R59,R68,R69,R98
19	M2R0091031000000	RC-03K910JT	1	R214
20	M2R0010231000000	RC-03K102JT	19	R117,R129,R137,R149,R155,R165,R99
				R179,R181,R183,R185,R187,R189
				R6,R48,R199,R200,R74,R176(Karaoke)
21	M2R0022231000000	RC-03K222JT	3	R101,R102,R107
22	M2R0027231000000	RC-03K272JT	1	R122
23	M2R0039231000000	RC-03K392JT	2	R202,R204(Karaoke)
24	M2R0047231000000	RC-03K472JT	4	R106,R121,R173,R72(Karaoke)
25	M2R0051231000000	RC-03K512JT	6	R116,R128,R136,R148,R154,R164
26	M2R0082231000000	RC-03K822JT	2	R201,R203(Karaoke)
27	M2R0010331000000	RC-03K103JT	25	R1,R33,R34,R50,R52,R54,R55,R58
				R70,R113,R124,R57,R191,R192,R195
				R196,R212,R115,R127,R135,R147
				R163,R2,R153,R67

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
28	M2R0015331000000	RC-03K153JT	2	R14,R49
29	M2R0018331000000	RC-03K183JT	1	R47
30	M2R0020331000000	RC-03K203JT	4	R46,R51,R53,R56
31	M2R0022331000000	RC-03K223JT	6	R110,R123,R132,R146,R152,R158
32	M2R0010431000000	RC-03K104JT	18	R7,R16,R32,R35,R111,R125,R119
				R131,R141,R151,R157,R167,R178
				R182,R184,R186,R188,R180
33	M2R0015431000000	RC-03K154JT	2	R17,R19
34	M2R0018431000000	RC-03K184JT	6	R118,R130,R140,R150,R156,R166
35	M2R0068431000000	RC-03K684JT	2	R10,R15
36	M2R0075431000000	RC-03K754JT	1	R3
		Metal Oxidation Resistor		
37	M2R0075030811000	RC-05K750JT	2	R96,R213
		Resistor Array		
38	M2R9933031099004	RCML16W330JT	2	RN1,RN2
		Chip Capacitor		
39	M2C0100F30060300	CC-0603CG100JN500T	6	C59,C61,C63,C65,C67,C69
40	M2C0200F30060300	CC-0603CG200J500NT	3	C4,C10,C11
41	M2C0220F30060300	CC-0603CG220J500NT	12	C85~C88,C77~C84
42	M2C0270F30060300	CC-0603CG270J500NT	1	C73
43	M2C0470F30060300	CC-0603CG470J500NT	14	C47~C58,C75,C76
44	M2C0101F30060300	CC-0603CG101J500NT	3	C22,C70,C71
45	M2C0121F30060300	CC-0603CG121J500NT	1	C28
46	M2C0151F30060300	CC-0603CG151J500NT	2	C41,C42
47	M2C0331F30060300	CC-0603CG331J500NT	2	C37,C38
48	M2C0391F30060300	CC-0603CG391J500NT	3	C1,C89,C90
49	M2C0102F44060300	CC-0603B102K500NT	3	C5,C6,*C44*
50	M2C0152F44060300	CC-0603B152K500NT	1	C35
51	M2C0222F44060300	CC-0603B222K500NT	2	C3,C74
52	M2C0332F44060300	CC-0603B332K500NT	6	C60,C62,C64,C66,C68,C72
53	M2C0153F54060300	CC-0603F153M500NT	1	C40
54	M2C0333F54060300	CC-0603F333M500NT	1	C14
55	M2C0473F54060300	CC-0603F473M500NT	2	C17,C18
56	M2C0104F84060300	CC-0603F104Z500NT	87	CB1,CB2,CB4~CB8,CB10,CB12~CB37
				CB38,CB9,CB11,CB40,CB42~CB43
				CB50~CB55,CB57~CB63,CB65,CB67
				CB77~CB82,C7~C9,C12,C13
				C21,C29,C30,C33,C34,C36,C39

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
				C43,C46,CB83,CB68,CB71,CB85
				CB84,CB64,CB66,CB69 CB72~CB76
57	M2C0474B84080500	CC-0805F474Z160NT	1	C19
58	M2C0105B84060300	CC-0603F105Z160NT	6	C15,C16,C23~C26
		ELECT Capacitor		
59	M2C2106B57051122	CD11-16V-10U-M	11	CE40,CE44,CE46,CE48,CE49,CE51
				CE53,CE1,CE15,CE24,CE55
60	M2C2476B89051122	CD11-16V-47U-M	11	CE7,CE16~CE18,CE21~CE23,CE27
				CE28,CE33,CE37
61	M2C2107B57051122	CD11-16V-100U-M	4	CE19,CE20,CE3,CE11
62	M2C2227B59061222	CD11-16V-220U-M	12	CE2,CE4~CE6,CE9,CE42,CE43,CE25
				CE12~CE14 ,CE26
63	M2C2477C57631222	CD11-10V-470UF-M（6.3*12）	1	CE38
		Color loop Inductor		
64	M2H4LGA10UHK0307	LGA0307--10UH-K	2	L21,L22
65	M2HL018U500A0805	L0805-1.8uH-500mA	7	L28,L32,L29,L33,L34,L35,L43
		Chip Inductor		
66	M2H0500M02U70805	L0805-2.7UH-500MA-K	1	L42
		Chip Magnetism Bead		
67	M2HL500M070R0805	L0805-500mA-70R	12	L2,L4,L5,L7~L9,L11,L19,L20,L25 ,L30
				L26
				L27
68	M2HL500M600R0603	L0603-500mA-600R	13	L12~L16,L18,L23,L44~L49
		Chip Diode		
69	M2D0IN4148110000	IN4148(LL-34)	18	D3,D4,D6,D8,D10,D19~D21,D12,D14
				D5,D7,D9,D11,D13,D15,D22,D23
		VOLT REG Diode		
70	M2D1HZ5C20000000	HZ5C2	1	D17
71	M2D1BZX9V1220000	BZX-9V1-1/2W(DO-35)	1	D18
		Chip Transistor		
72	M2Q02SK301800000	2SK3018（SOT23）	2	Q2,Q3
73	M2Q002N390400000	2N3904S(SOT-23)	9	Q1,Q14,Q15Q19,Q21~Q25
74	M2Q00BT390600000	BT3906 (SOT23)	4	Q20,Q12,Q16,Q26
75	M2Q000A101500000	2SA1015-(SOT-23)	2	Q17,Q18,
76	M2Q000D130400000	KTD1304-(SOT-23)	1	Q34(Karaoke)
77	M2Q100A101502200	2SA1015-(TO-92)	1	Q27(Karaoke)
		Transistor		
77	M2Q100S8550D2200	S8550D-(TO-92)	4	Q4,Q5,Q28Q29
78	M2Q100S8050D2200	S8050D-(TO-92)	2	Q30,Q31

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
		Jack		
79	M2P88FPC24005000	JP24-05M	1	HA1
80	M2P000000PH5A000	PH-5A	1	J4
81	M2P000000PH6A000	PH-6A	1	J1
82	M2P00000PH6AB000	PH-6A-B	1	J2
83	M2P0000TJC35A000	TJC3-5A	1	CON1
84	M2P11AV684120003	AV6-8.4-12-03	1	CN8
85	M2P11000RCA1A000	RCA-1A-COAX	1	P4
86	M2P00000PH10A000	PH-10A	1	J5
87	M2P00000PH7AB000	PH-7A-B	1	J7
88	M2P000000PH8A000	PH-8A	1	J9(Karaoke)
89	M2P660000S4KB000	S-4KB	1	P1
90	M2IDLT1131A00000	DLT1131A	1	P3
	M2I0GP1F32T00100	GP1F553TZ/554TZ	1	P3
		Crystal		
91	M2L1127M00003000	27MHz±30PPM-THIRD-20Pf	1	Y1
		Crystal Mat		
92	M2IAZ11170000000	AZ1117H-ADJ-SOT223	1	U1
93	M2IAZ1117H330000	AZ1117-3.3V-SOT223	1	U2
94	M2I000D595400000	D5954FP	1	U5
	M2I00AT565400000	AT5654	1	U5
95	M2I0AT24C0200000	AT24C02-SSOP8	1	U12
96	M2I0MT1389FE0000	MT1389FE-C-LQFP256A	1	U4
	M2IEM8165TS00000	EM636165TS-6	2	U7 ,U8
	M2IEM636165TS000	EM636165TS-7	2	U7 ,U8
	M2IM12L16161A000	M12L16161A-7T	2	U7 ,U8
97	M2IVT36171600000	VT361716T-6AA	2	U7 ,U8
	M2IVT36171600001	VT361716T-6AA(FA)	2	U7 ,U8
	M2ITM50S11600000	TM50S116T-7	2	U7 ,U8
	M2ITM50S11600060	TM50S116T-6	2	U7 ,U8
98	M2IM12L64164A000	M12L64164A-TSOP54	1	U9 Choose one(when don't use U7, U8)
99	M2I0V64162000000	HY57V641620HG T-6,TSOP54	1	U9 Choose one(when don't use U7, U8)
	M2IAT49BV162A000	AT49BV162A-TSOP(16M,5V)	1	U11
	M2I29LV160700000	MX29LV160ABTC－70－TSOP	1	U11
	M2IMX29LV160ATT1	MX29LV160ATTI－70－TSOP	1	U11
	M2IM29LV160TE000	MBM29LV160TE-70-TSOP	1	U11
	M2I29LV160BTC000	MX29LV1600BBTC	1	U11
100	M2I039VF08800000	SST39VF088-70-4C-EK	1	U11
	M2IS29AL00800002	S29LV008D70TA102-TSOP48	1	U11

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
	M2I0M29W80070000	M29W800DT-TSOP48	1	U11
	M2I029W800B70000	M29W800DB-TSOP48	1	U11
	M2IMX29LV800AT00	MX29LV800ATTI—70—TSOP	1	U11
	M2IAT49LV8192000	AT49LV8192AT-70TC	1	U11
	M2IAT49F8192AT00	AT49F8192AT-70TC	1	U11
101	M2IAZ4558AM00000	AZ4558AM-SSOP8	3	U13,U15,U16
102	M2I0WM8766000000	WM8766-SSOP28	1	U14
		PCB		
103	M2B1HY6551389C12	HY655-1389C-0S0 VER1.2	1	MPEG Board

Front panel parts list

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
		Carbon Resistor		
1	M2R1147130633110	RT13-1/6W-470R±5%	1	R2
2	M2R1110330633110	RT13-1/6W-10K±5%	6	R1 R4 R5 R6 R9 R10
3	M2R1151330633110	RT13-1/6W-51K±5%	1	R3
		Porcelain Capacitor		
4	M2C1101F44000022	CC1-50V-101-K	3	C5 C6 C7
5	M2C1104F84000022	CT1-50V-104-Z	2	C3 C4
		ELECT Capacitor		
6	M2C2107B57051122	CD11-16V-100UF-M（5×11）	2	C1 C2
		Diode		
7	M2D1IN4148110000	1N4148-（D0-35）	3	D2 D3 D4
		LED Light		
8	M2D100374N220000	LT0374N-43-M1	1	D1
		IC		
9	M2I00PT696100000	PT6961-SOP32	1	U2
		IR		
10	M2IAT138BST15M20	AT138BST-15M2	1	U3
		Jiggle Switch		
11	M2S0KFCA06D05001	KFC-A06-2WB（230g)	1	POWER
12	M2S00KAO06060501	Jiggle Switch 6*6*3.1	5	S2 S3 S5 S6 S7
		LED		
13	M2G11LCM07013G00	LC-MO7013G	1	U1
		Potentiometer		
14	M2V11121NL200103	WH121N-2-A10K-F15	2	X1,X2
		Jump wire		
15	**********	J-5MM	3	J7,J8,J12
16	**********	J-7.5MM	8	J1,J2,J3,J9,J10,J11,J13,J15
17	**********	J-10MM	3	J4,J5,J16
18	**********	J-15MM	1	J6
		Sponge mat		
19	M4P4400500503522	W5*L5*H3.5	2	LED
		PCB		
20	M2B0HY122AP0502A	HY122A-818-00S VER1.1	1	one side
		P/N:0502A		
21	M2B0KEYBOARD0000	KEYBOARD	1	one side
22	M2B0VOLBOARD0000	VOL BOARD	1	one side

AV Output parts list

6CH

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
		Chip Resistor		
1	M2R0000030811000	RC-05K000OT	6	L1 L2 L3 L4 L5 L6
		Socket		
2	M2P000000PH7A000	PH-7A	1	CN2
3	M2P11AV684120004	AV6-8.4-12-04	1	CN1
		PCB		
4	M2B100HY5996CH11	HY599-6CH Ver1.1	1	PCB (one side)

SCART

NO.	PART NO.	DESCRIPTION	QTY	LOCATION
		Capacitor		
1	M2C0101F30080500	CC-0805CG101JN500T	8	C1~C8
		Jumper Wire		
2	**********	J-4.5~10mm	2	A1 A2
		Socket		
3	M2P000000PH9A000	PH-9A	1	CN_2
4	M2P99000CS103000	CS-103	1	SCART
		Screen Cushion		
5	M2A00SCART000000	SCART	1	Chart NO.：0SCART-24-01
		PCB		
6	M2B00000HY811001	HY811-001 VER: B	1	PCB