AKAI

DVD-PLAYER

Model:

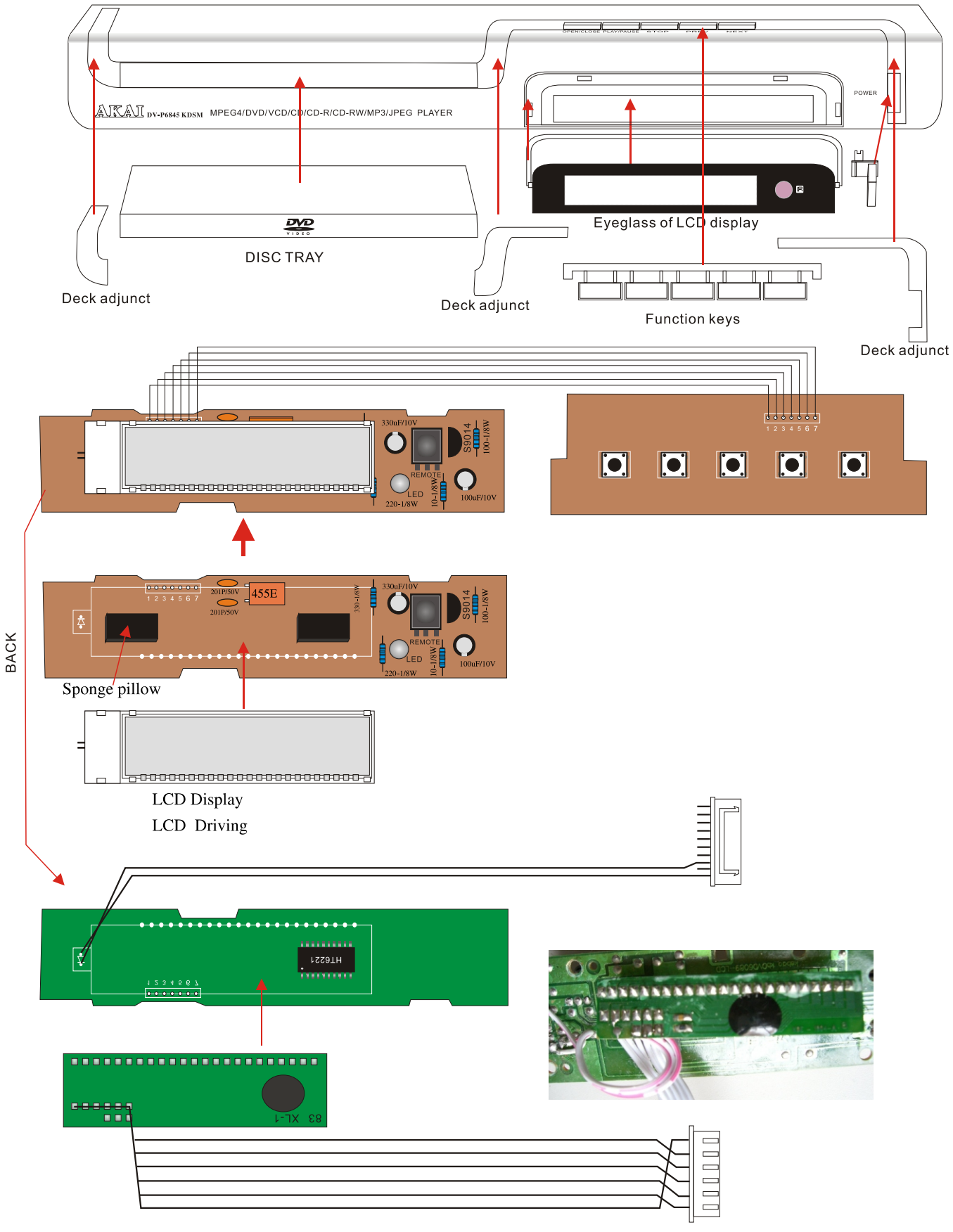
DV-P6845KDSM

SERVICE MANUAL

www.akai.ru

CONTENTS

FRONT PANEL & FRONT PANEL PCB BOARD



Front Panel Assembly — BOM

BOM NO. :KB-BOM-K

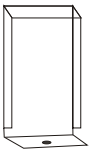
Item	Description	Type	QTY (PCS)	Remark	Picture
1	Front panel and Fittings	AKAI-DV-P6845 KDSM			
2	Front panel		1		
3	Power Knob		1		
4	All Funtion Knob		1		
5	PCB Board Assy'		1		
6	Resistor	100 ohm-1/8W	2		
7		220 ohm-1/8W	1		
8		330ohm-1/8W	1		
9		10ohm-1/8W	1		
10	Capacitance	201P/50V	2		
11		330uF/10V	1		
12		100uF/10V	1		
13	crystal	455E	1		
14	radiating tube	5V	1		
15	Jiggle switch	6*6*5.5mm	5		
16	IC	6221	1		
17	LCD Display	Special	1		
18	LCD Driving	Special	1		
19	Remote Control Receiving		1		
20	Audion	9014	1		
21	Sponge pillow	8*8*8mm	1	use for Remote Control Receiving	
22		15*8*6mm	2		
23	VGA		1		
24	Power switch	SW-3	1		
25	Screw	PWA2.8*10(W=10)	2		
26		PB3*6	4	use for control PCB	
27	Isolation tube	∅20mm	1		
28	PAPER WASHER	∅3 1mm	1		
29	Connector wire	XH6P, 2468#L=300mm	1	decoder-->panel	
30	Connector wire	H3P,L=130mm	1	Power Board-->PowerON/OFF	
31	Connector wire	3P, 2468# L=90mm	1	Front panel board-->Front panel board	
32	Connector wire	7P, 2468# L=100mm	1	Front panel board-->Front panel board	
	End!				

Components of appendant

STAND FOR DECODER BOARD & POWER BOARD

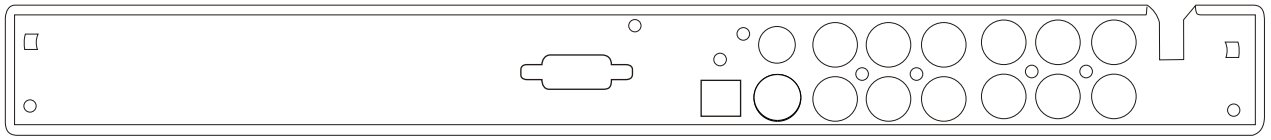
*6 H=8mm Ø3.5mm

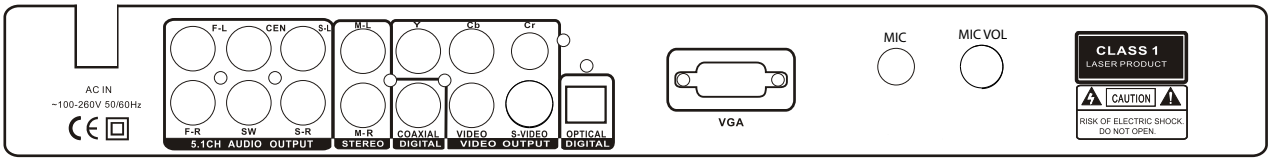
STAND FOR TOP COVER



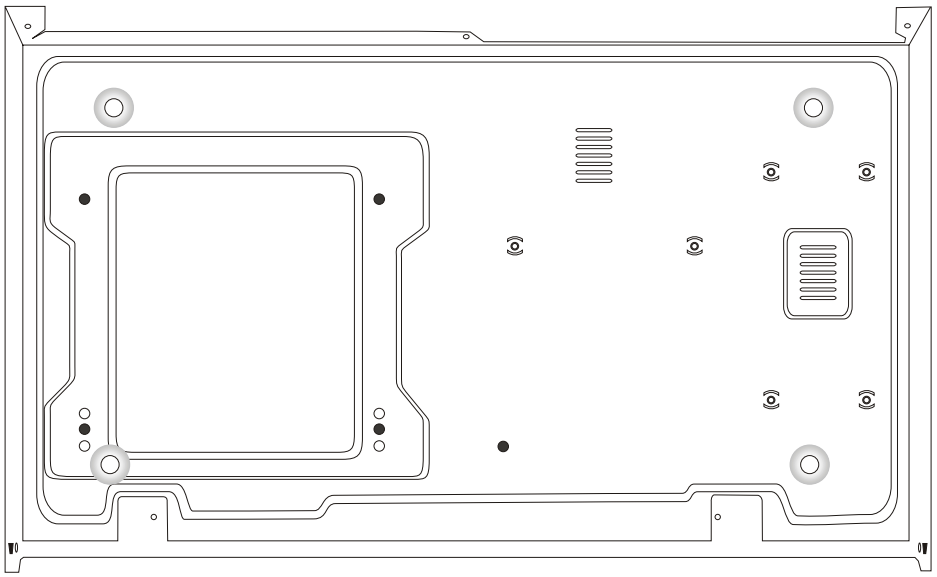
H=38mm

BACK BOARD

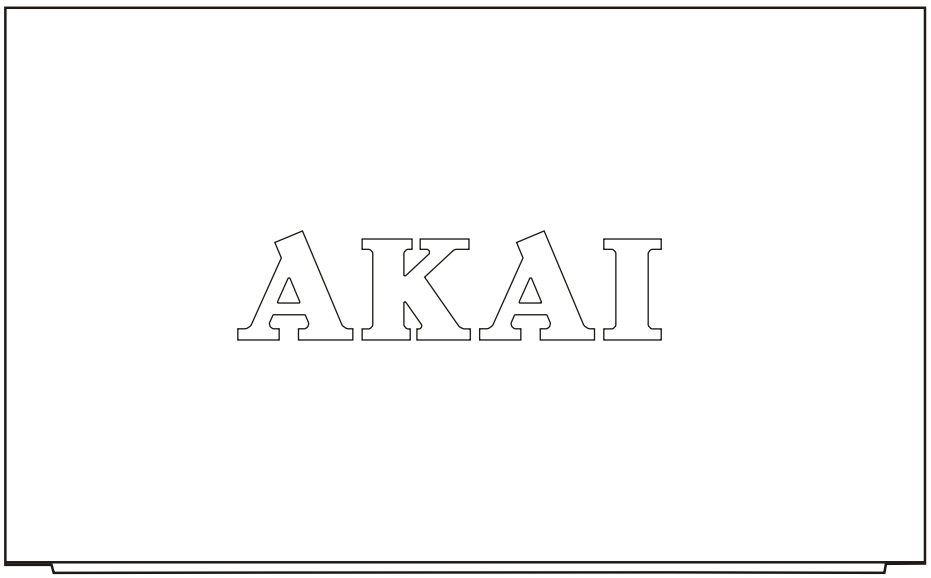




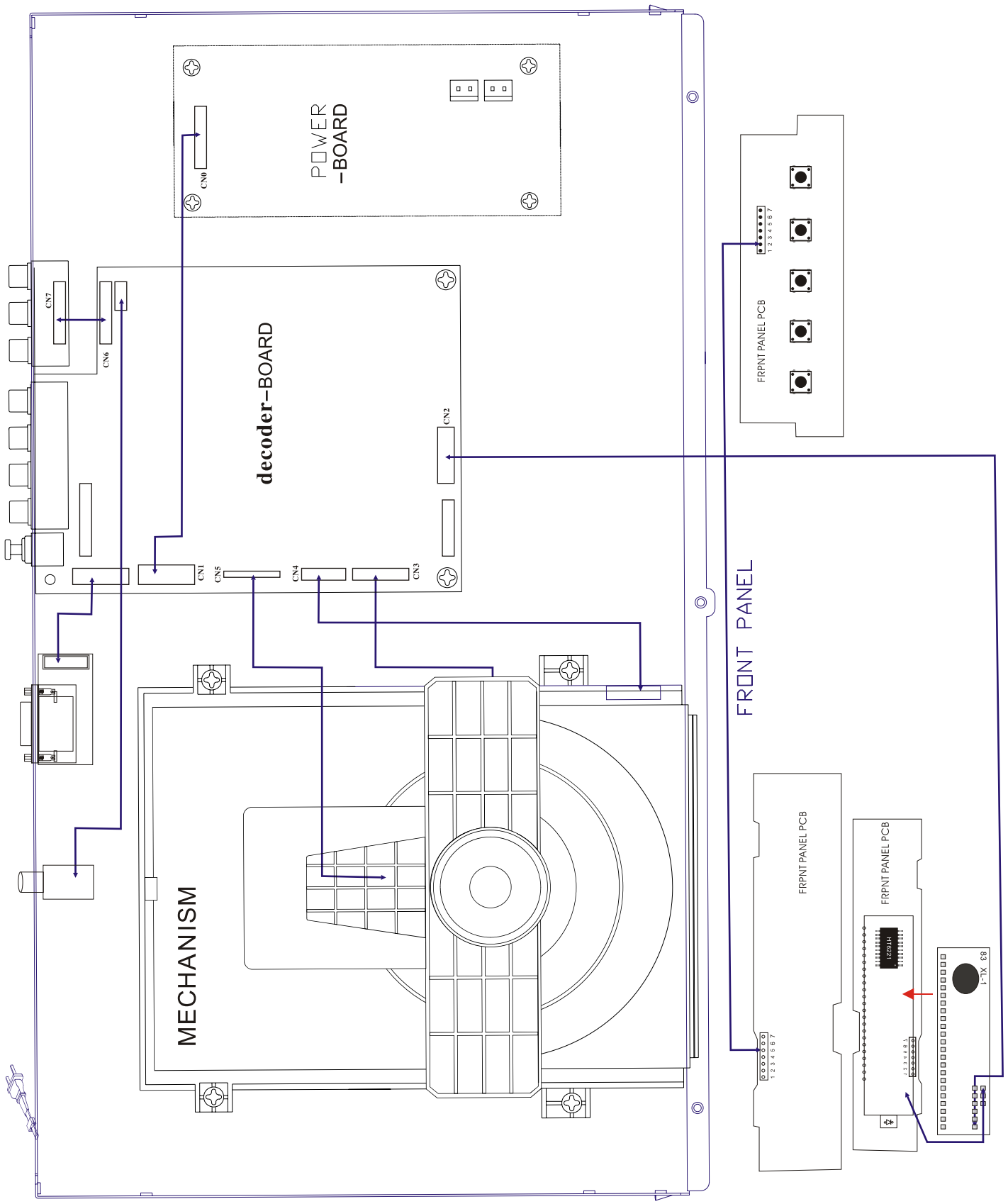
BOTTOM BOARD



TOP COVER



BLOCK DIAGRAM (CABLE CONNECTIONS)

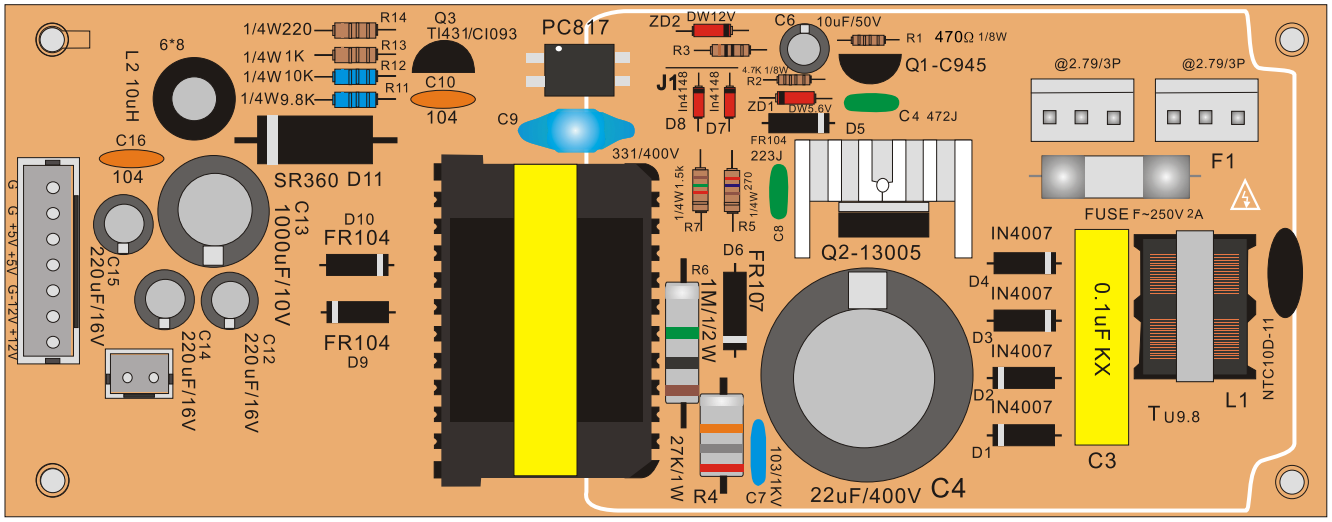


Setting and connect—BOM

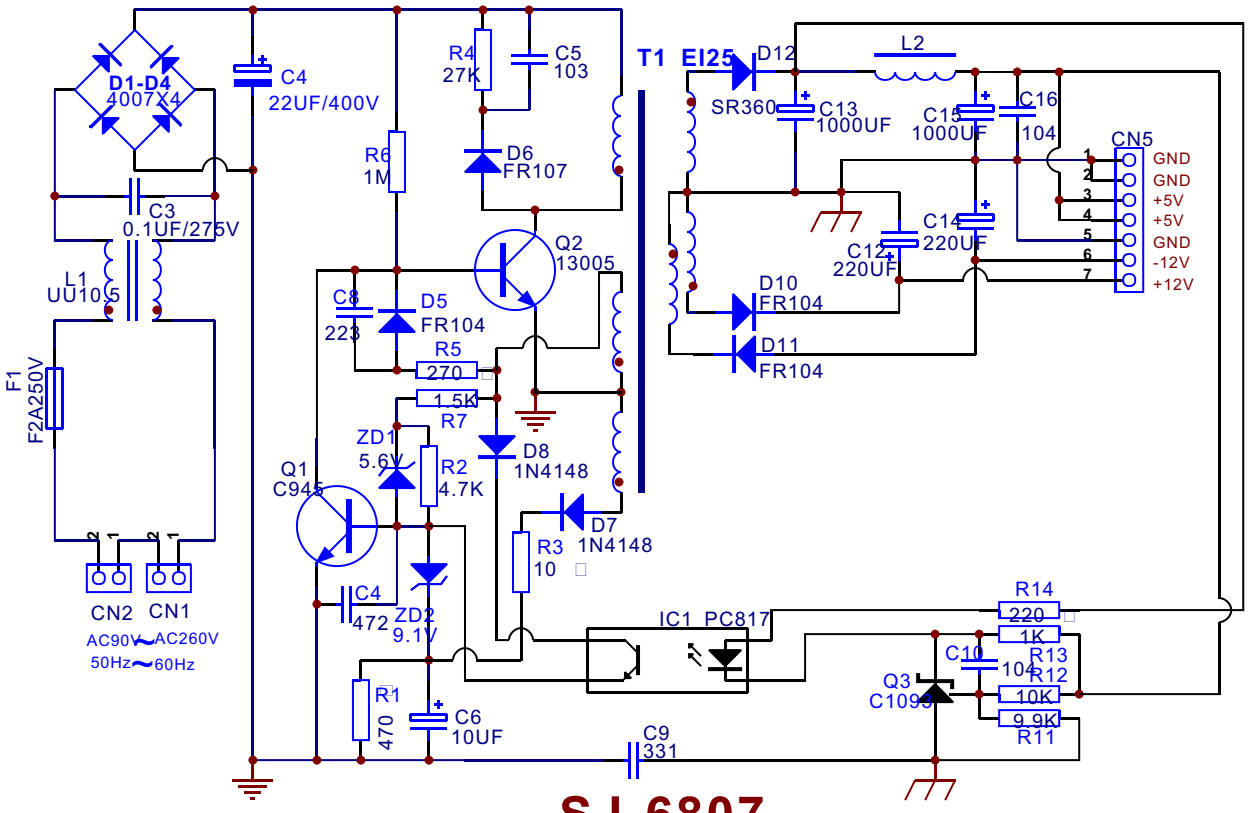
BOM NO. :KB-BOM-K

Item	Description	Type	QTY (PCS)	Remark	Picture
1	Front panel Assy'	AKAI-DV-P6845 KDSM	1		
2	Mechnaism	SANSUNG	1	901 plastic frame	
3	Decoder	Sup8202D 5.1CH	1		
4	Cable tie		3		
5	Power Board Assy'	KB-DVD9-LCD	1		
6	Iron box		1	include:top cover/back board/bottom board	
7	Screw	PWM3*5	2	use for front panel	
8		PWM3*6	9	use for iron box	
9		PWM3*7	4	use for mechanism	
10		SPM3*10	2	use for decoder	
11		SPWM3*14	4	use for power board	
12		SKM3*6	2	use for front panel	
13		PB3*8	6	use for S/AV	
14	Glue pole	5MM	2	use for decoder	
15		8MM	4	use for power board	
16	Feet rubber	¢15*6mm	4		
17	Power wire	two round	1	CE/VDE	
18	Sponge pillow	20*10*1mm	2	use for power board	
19	Isolation pillow	20*18*0.3mm	1		
20	Rubber pillow	20*10*2.5mm	2	use for mechanism	
21	Out Carton		1		
22	gift box		1		
23	Packing bag		1		
24	Accessories bag		1		
25	Poly form		1		
26	Remote controller		1		
27	Manual		1		
28	QC sticker		1		
29	Serial no.		1		
30	AV wire		1		
31	Battery		1		
32	sticker		1		
33	logo sticker		1		
34	hangtag/hanging card		1		
35	Warranty card	special	1		
36	Connector wire	XH7P/XH6P,22#L=180mm	1	power board--> Decoder Board	
37	Connector wire	PH10P, 2468#L=300mm	1	decoder-->panel	
38	Connector wire	PH/XH6P,2468#L=150mm	1	VGA OUT--> decoder	
39	Connector wire	PH7P,2468#L=70mm	1	5.1 CH OUT--> decoder	
40	Connector wire	PH5P,2468#L=170mm	1	mechanism-->decoder	
41	Connector wire	PH6P,2468#L=170mm	1	mechanism-->decoder	
42	Flexible Flat wire	24P,L=120mm	1	decoder-->Mechnaism	
	End!				

POWER BOARD



POWER BOARD -schematic diagram



SJ-6807

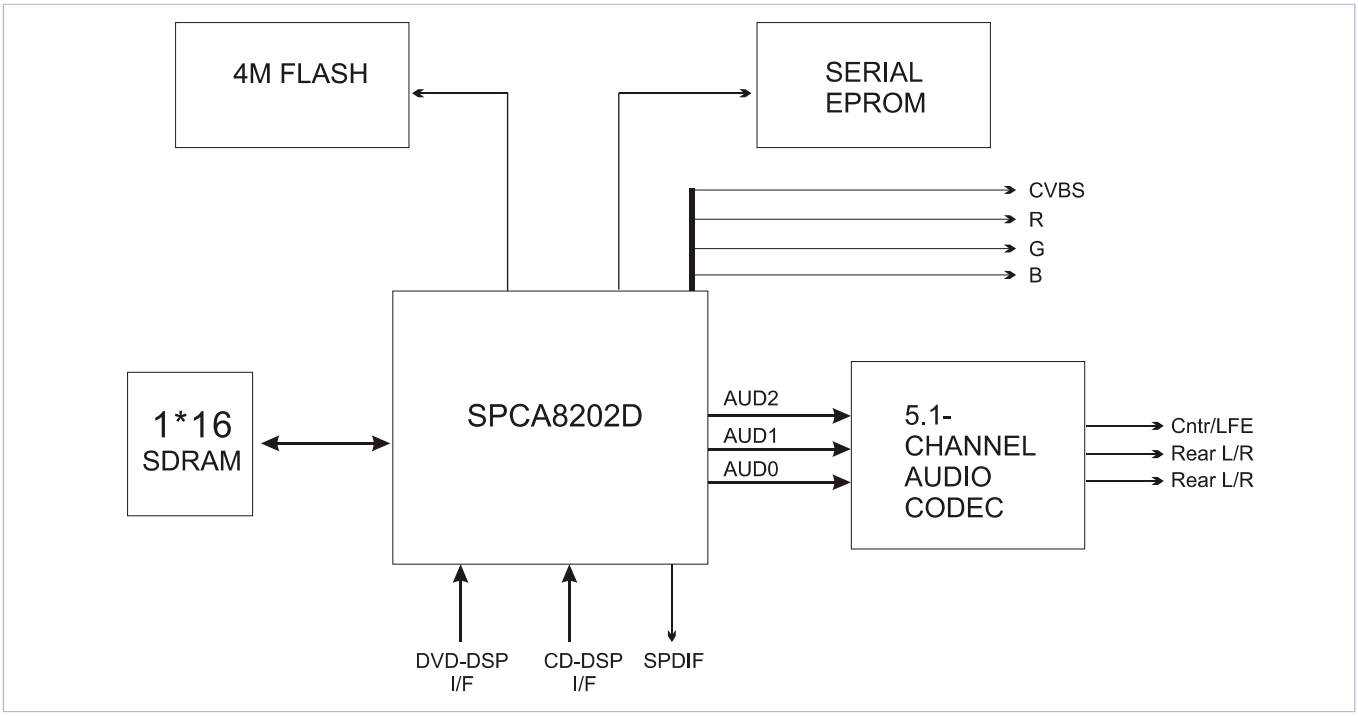
Specifications are subject to change without prior notice.

BOM of Power Board of DVD-9

Item	Model	Description	Qty (PCS)	Remark	Picture
1	Resistance	27K 1W	1	R4	
2		1M 1/2W	1	R6	
3		220Ω 1/4W	1	R14	
4		270Ω 1/4W	1	R5	
5		1k 1/4W	1	R13	
6		1.5K 1/4W	1	R7	
7		10Ω 1/6W	1	R3	
8		470Ω 1/6W	1	R1	
9		4.7k 1/6W	1	R2	
10		10k 1/4W	1	R12	
11		9.8k 1/4W	1	R11	
12		10D-9	1	NTC1	
13	Jump	9mm	1	J1	
14	Capacitance	103M 1kv	1	C7	
15		2A 223J	1	C8	
16		2A 432J	1	C4	
17		104/50V	2	C10 C16	
18		AC400V 331K	1	C9	
19		220UF/25V	3	C12 C14 C15	
20		10UF/50V	1	C6	
21		1000uF/10V	1	C13	
22		33uF/400V	1	C5	
23		0.1UF 275V	4	C3	
24	Diode	IN4007	4	D1 D2 D3 D4	
25		HER107	1	D6	
26		FR104	3	D5 D10 D11	
27		SR360	1	D12	
28		IN4148	2	D7 D8	
29		12V 1/2W	1	ZD2	
30		5.6V 1/2W	1	ZD1	
31	IC	EL816	1	IC1	
32		KA431	1	Q3	
33	Audion	C945	1	Q1	
34		13005	1	Q2	
35	Plug	2PIN2.54mm	1	CN4	
36		7PIN2.54mm	1	CN5	
37		3PIN3.96mm	2	CN1 CN2	
38	Inductance	6*8	1	L2	
39	Soldering Piece	4.2mm	1		
40	Isolation pillow		1		
41	insulator		1		
42	radiator		1		
43	Screw	PB3*6	1		
44	High Frequency Transformer	EE-25 5+8	1	T1	
45	Fuse	2A 250V	1	F1	
46	Rejector	UU9.8	1	L1	
47	PCB board	SJ-6807	1		

FUNCTIONAL DESCRIPTIONS

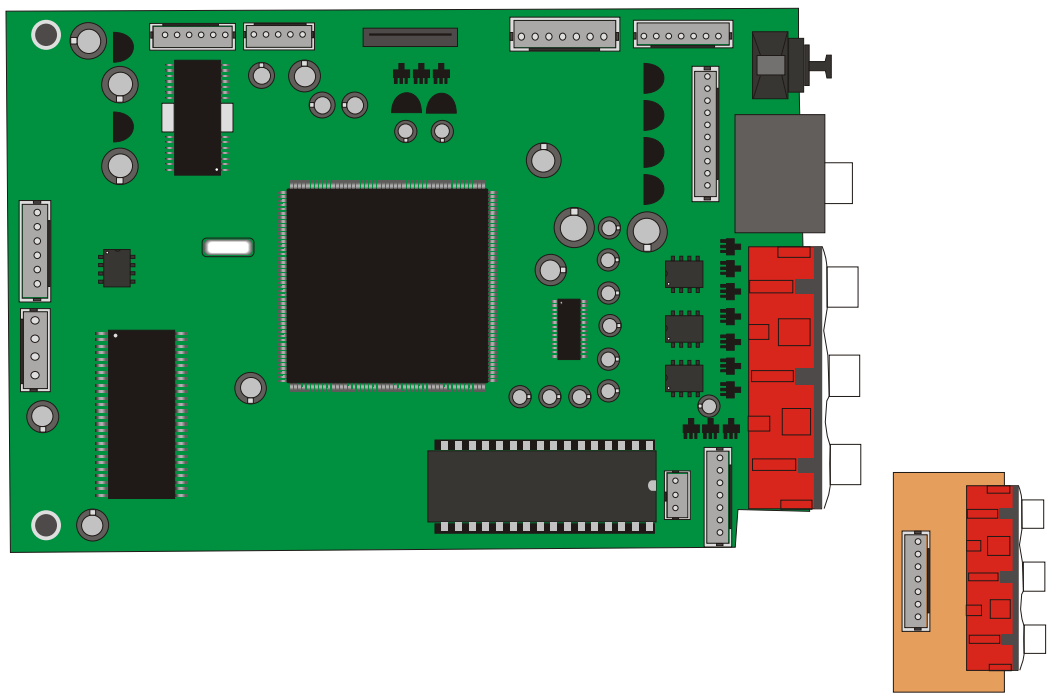
DECODER



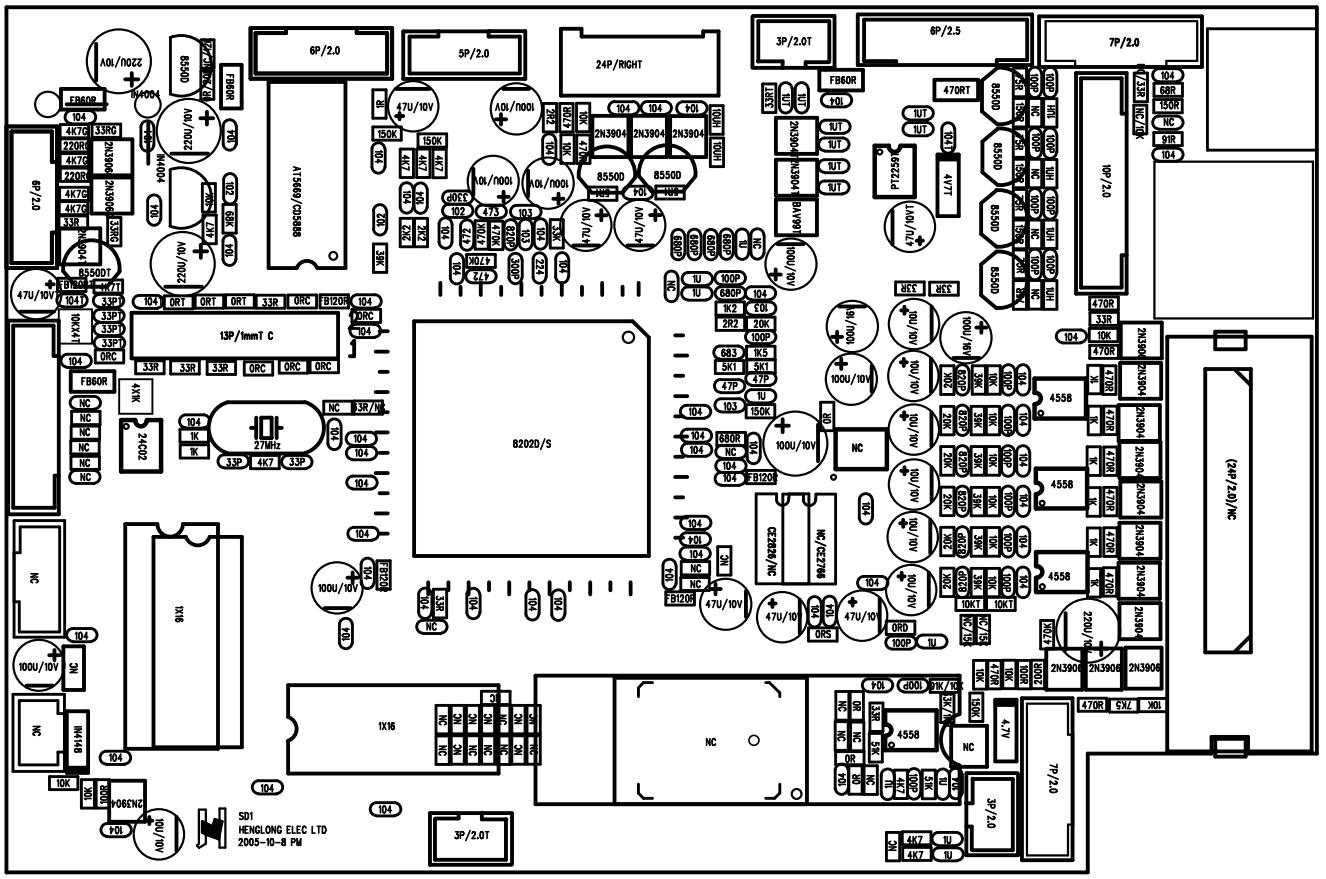
This board implements the back-end circuitry of a DVD player. It is composed of the following subsystems:

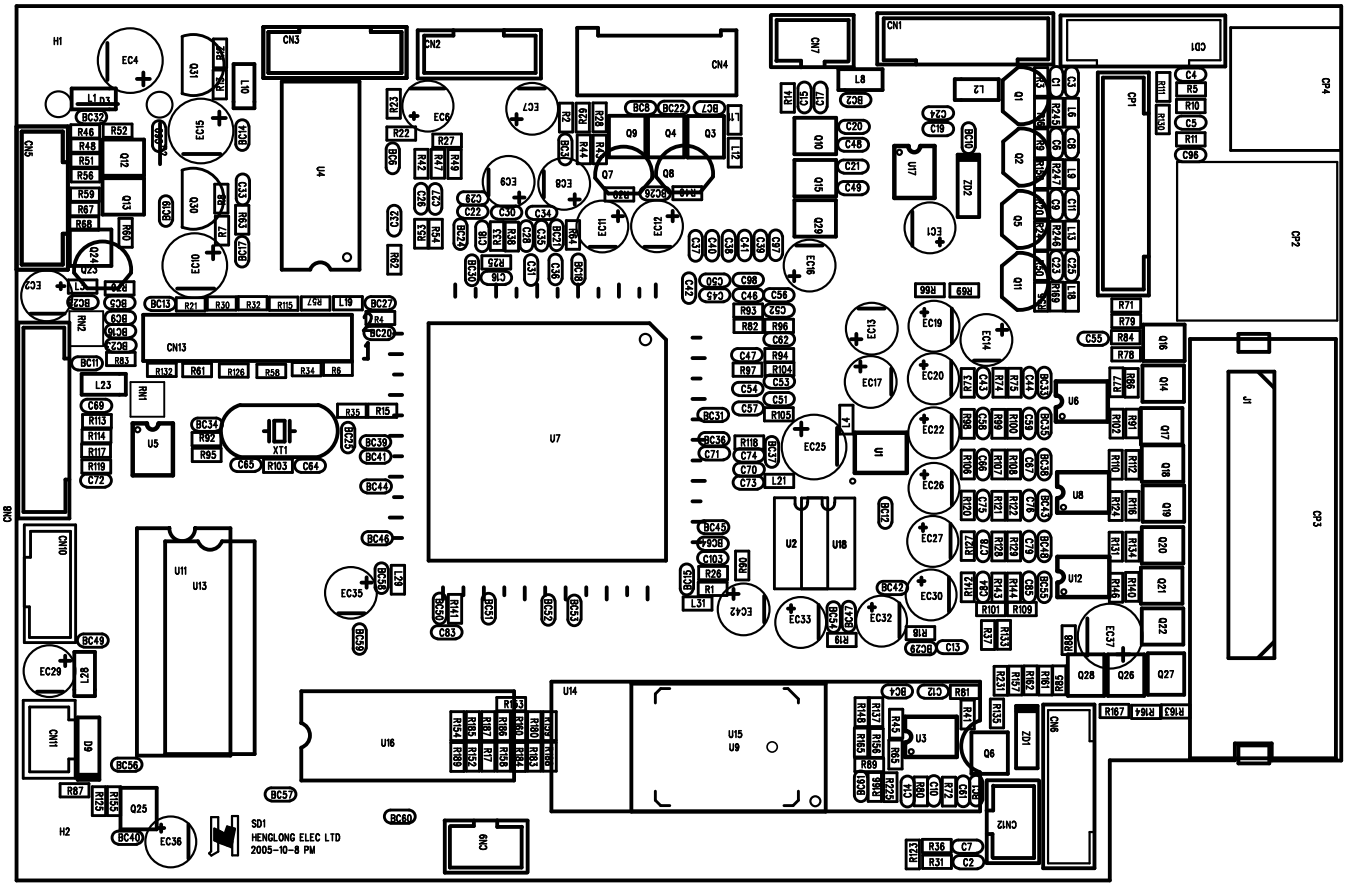
* Microcontroller which does main control to all other sub-blocks of the system including user interface, driver interface, audio/video output.
* Vaddis A/V Decoder IC decodes the bitstream coming from the DVD front-end drive, and Optionally performs audio and video effects.
* Audio Codec

DECODER

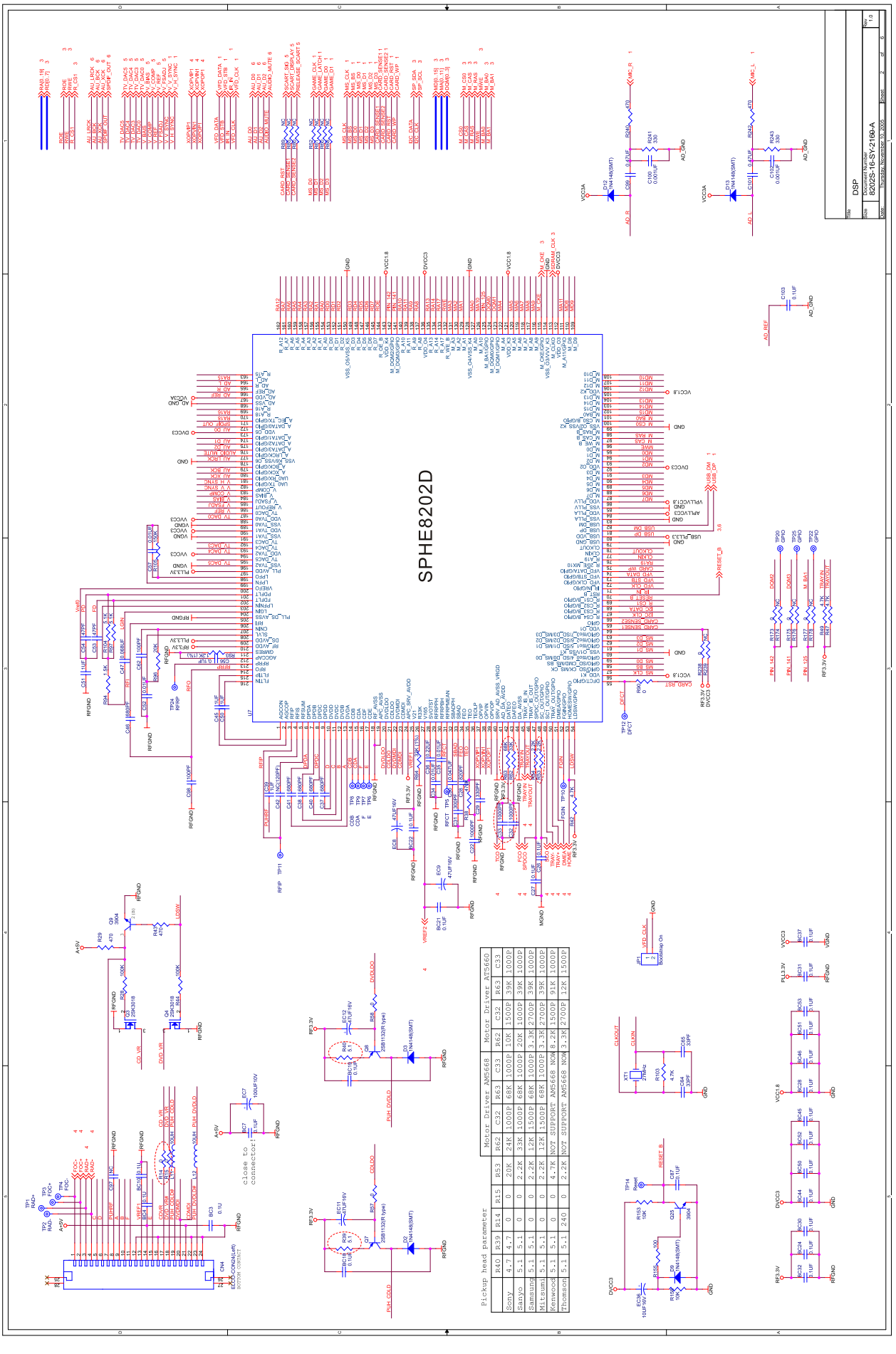


Place and datas of decoder

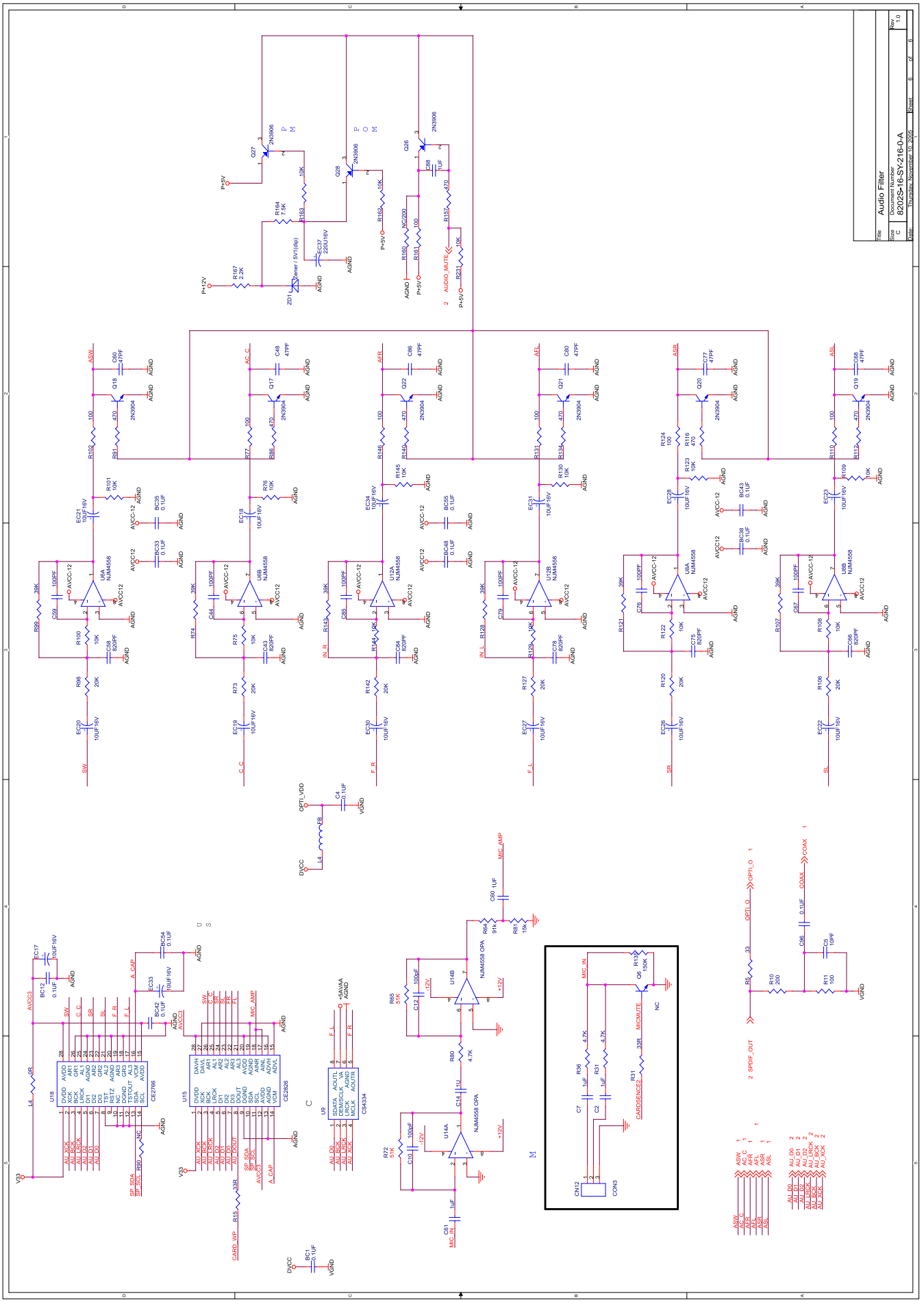




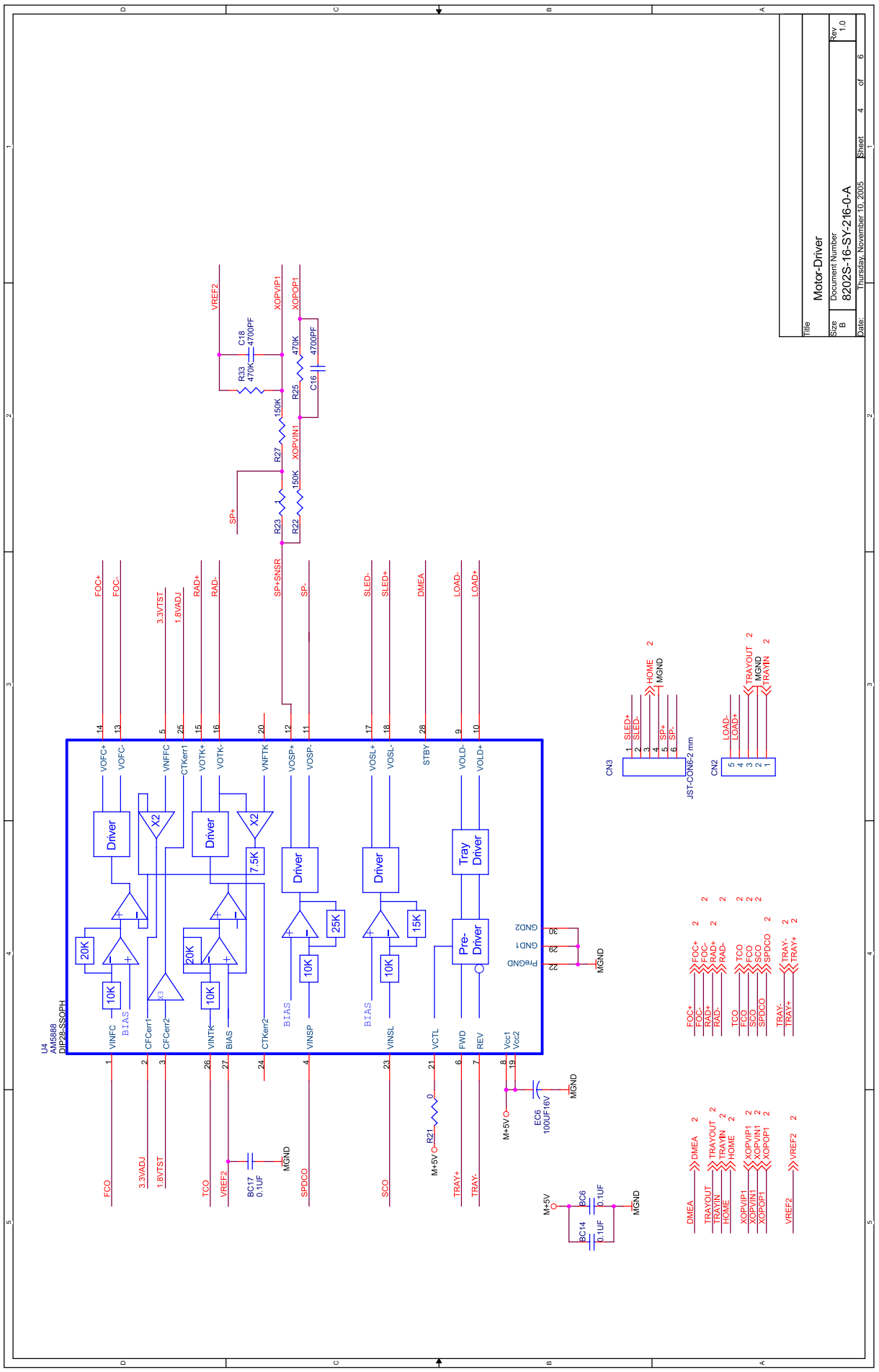
DECODER -schematic diagram



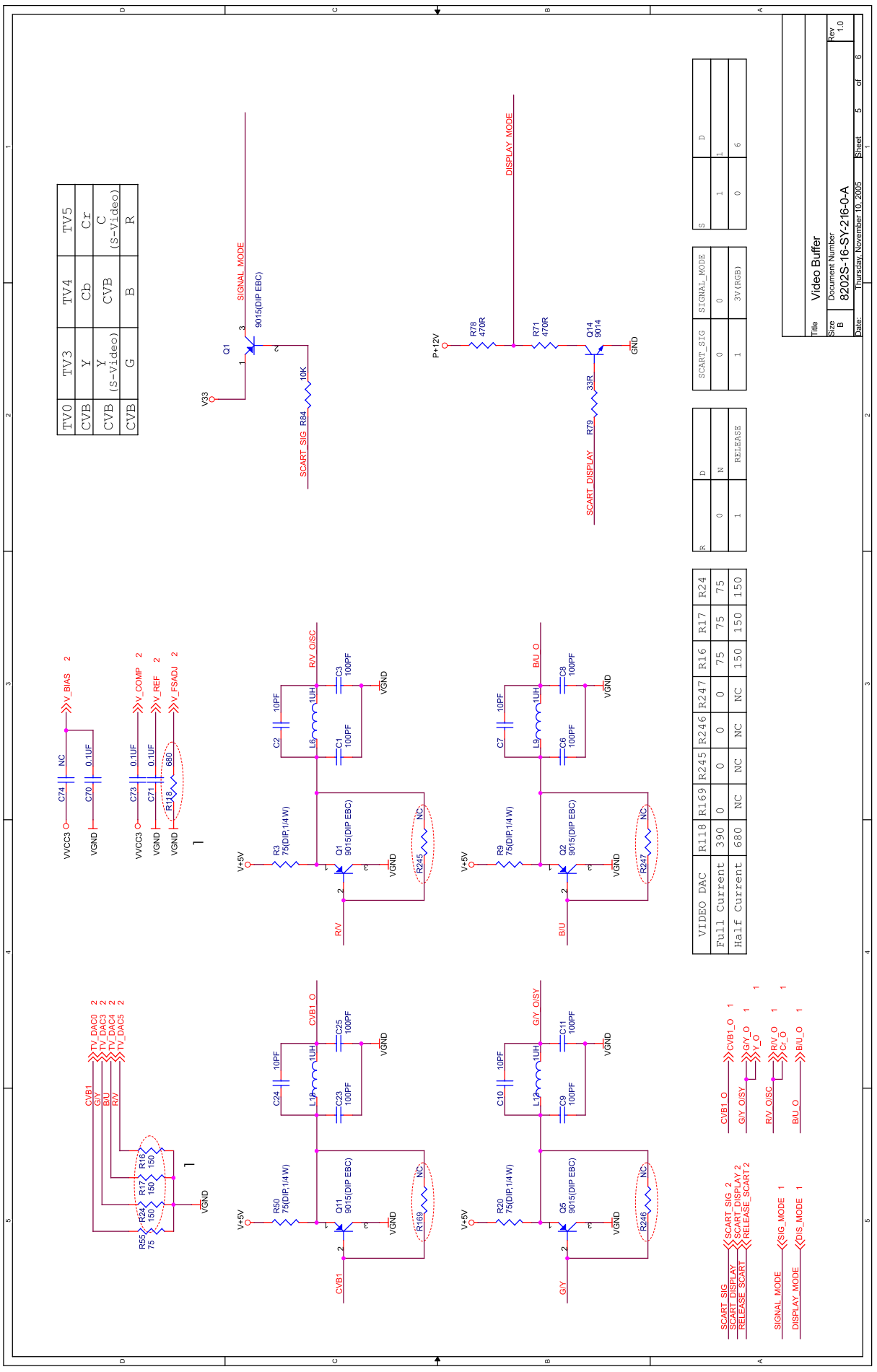
DECODER -schematic diagram



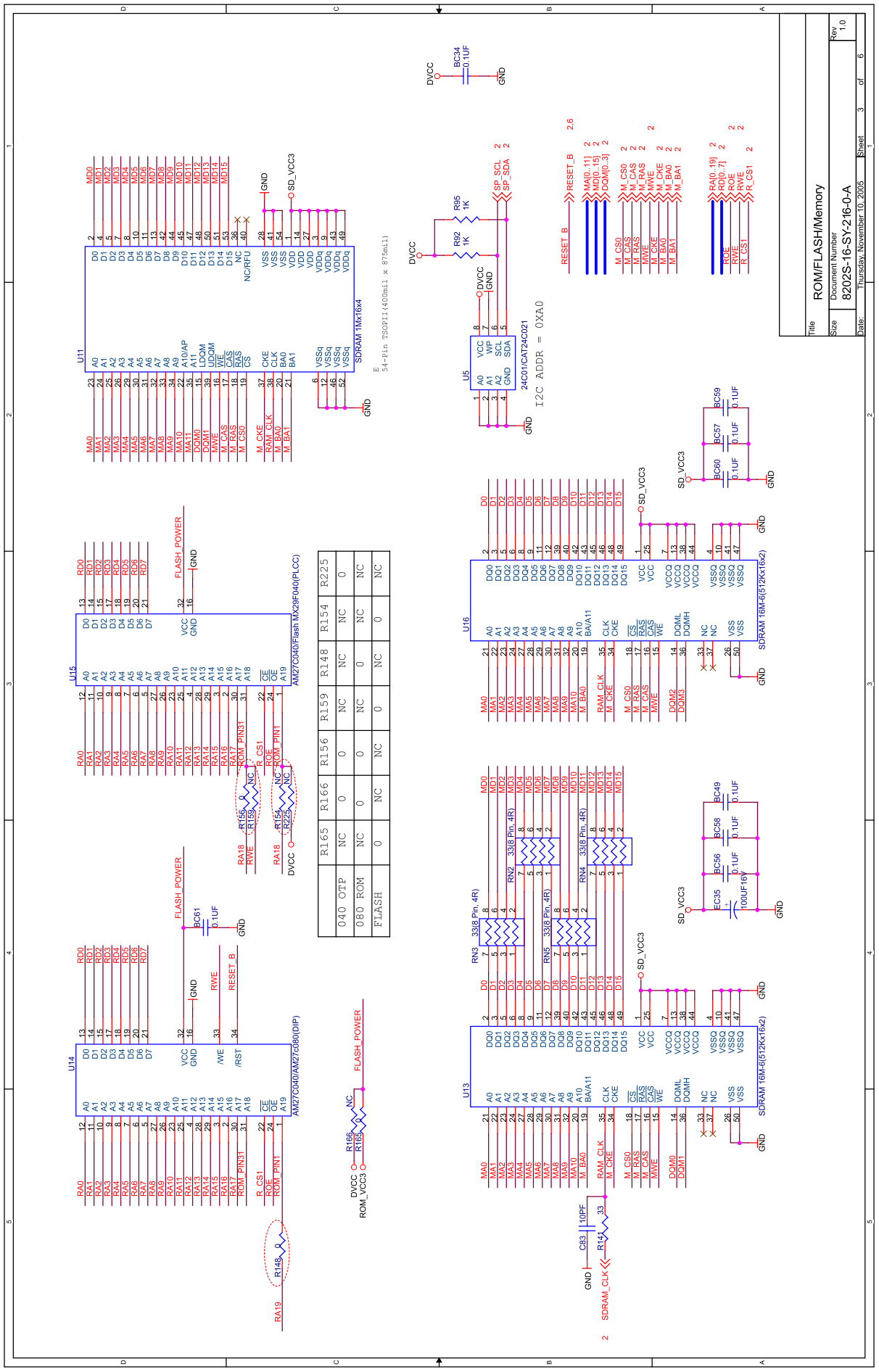
DECODER -schematic diagram



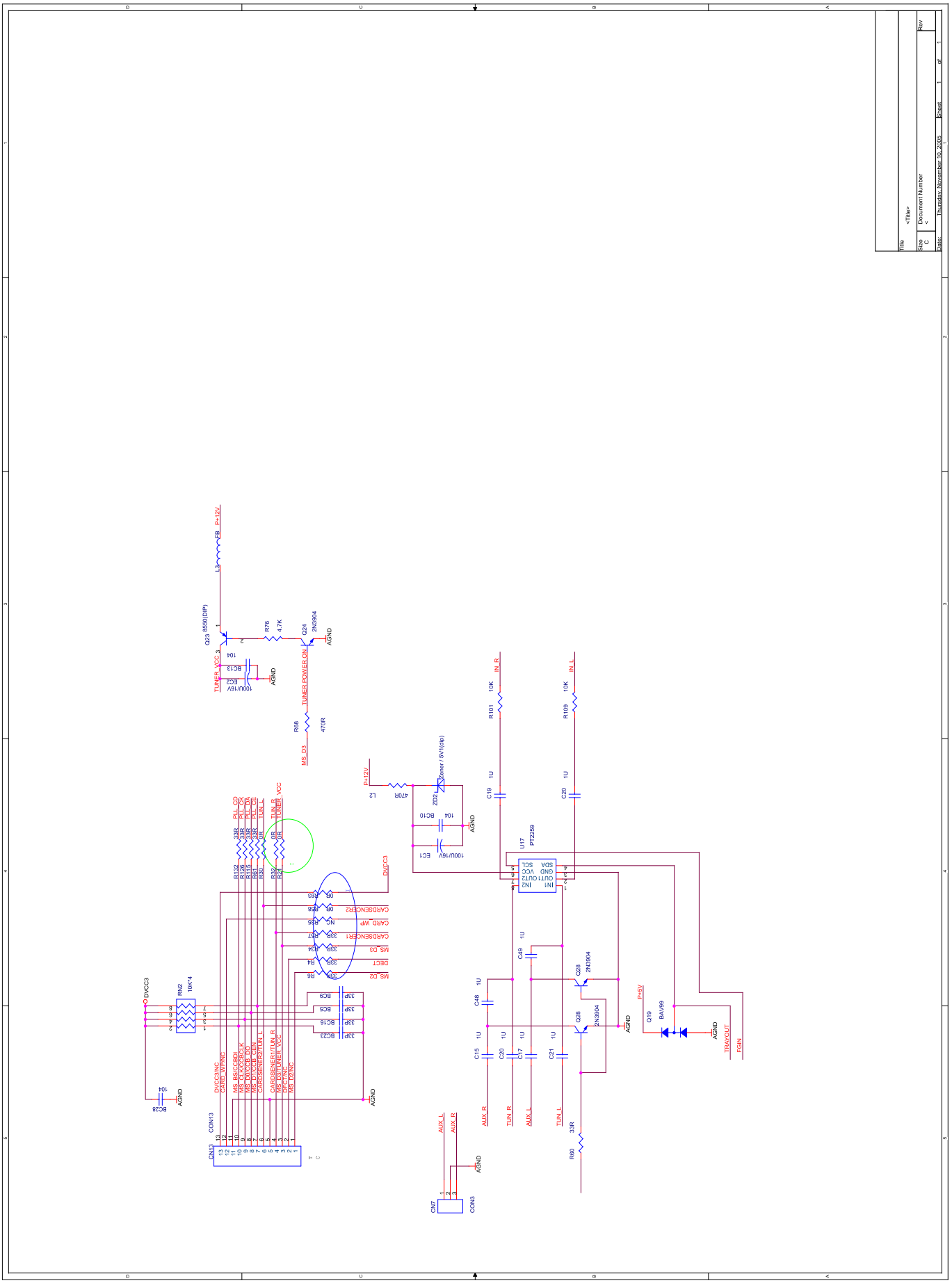
DECODER-schematic diagram



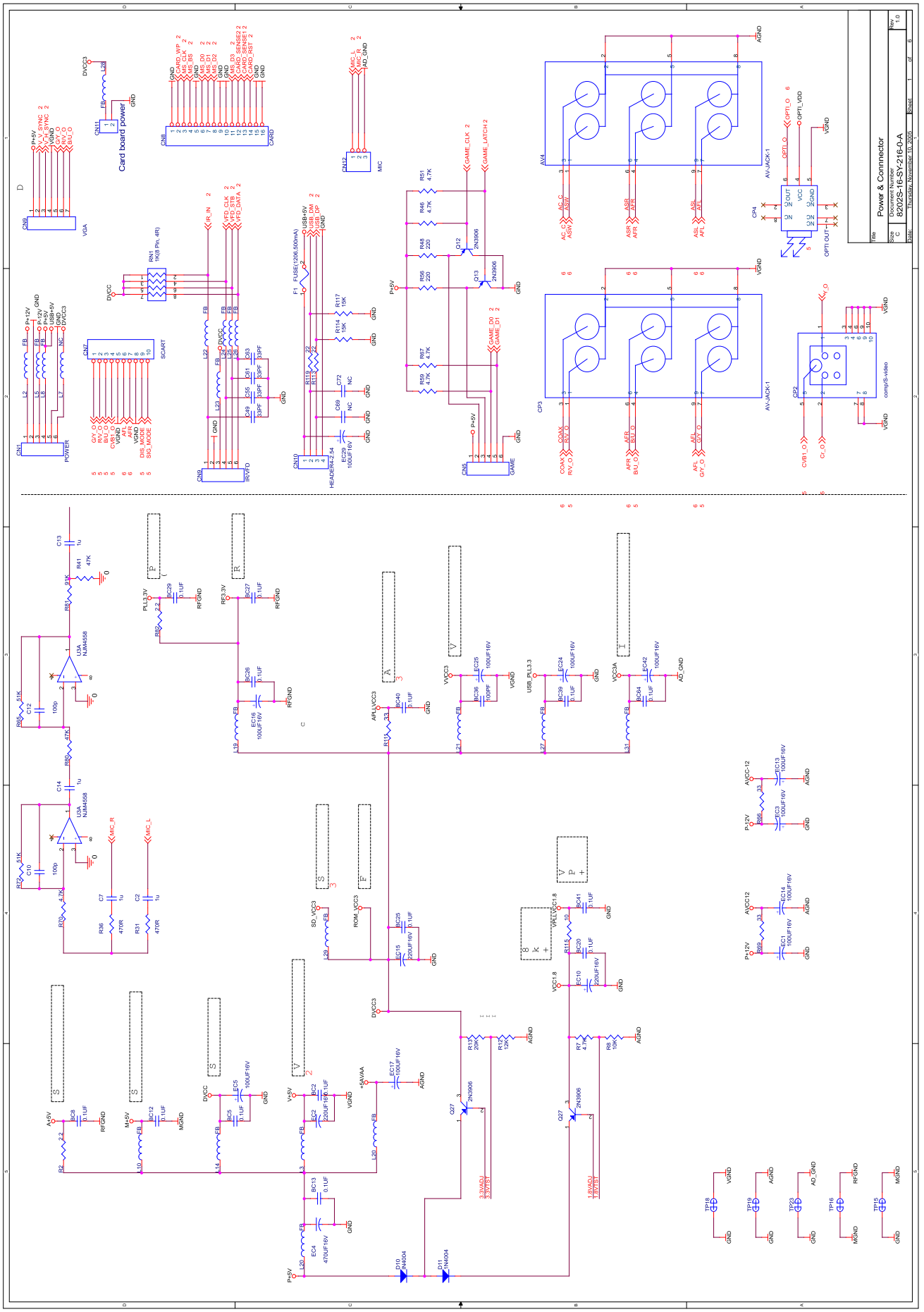
DECODER -schematic diagram



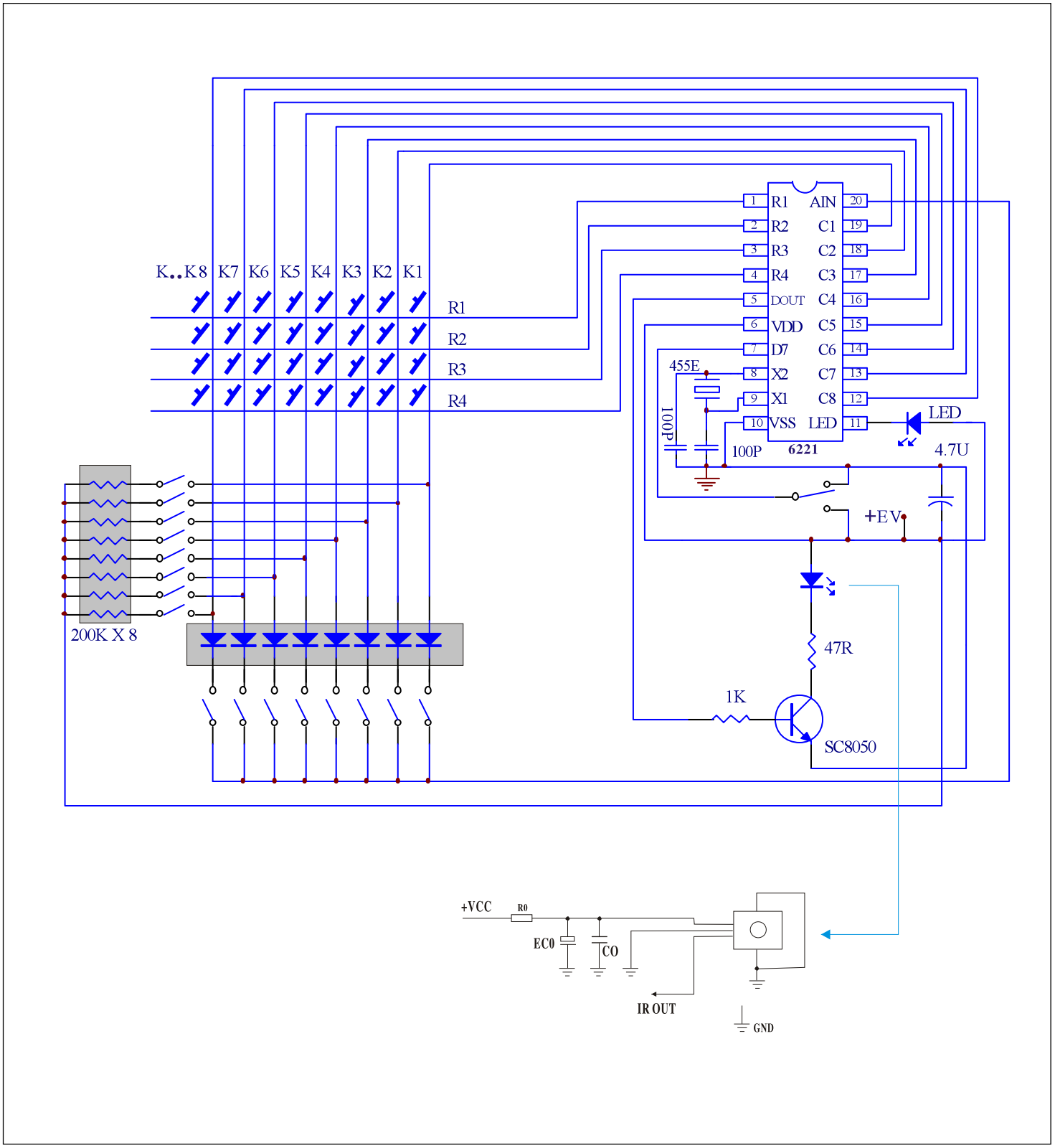
DECODER-schematic diagram



DECODER-schematic diagram



Front panel PCB –schematic diagram



Parts parameter

Electronic characteristics:

ITEM	SYMBOL	CONDITION	MIN.	TYPE	MAX.	UNIT
Supply voltage	**VDD**		**2.2**	**3.0**	**5.5**	**V**
Stand-by currant (Oscillator OFF)	ISB	VDD=3.0V	-	-	5.0	uA
Operating current (Oscillator ON)	IOP	VDD=3.0V No lead	-	60	100	uA
Driving current (DOUT)	IOH1	VDD=3.0V VO=1.5V	-	250	-	uA
Sinking current (DOUT)	IOL1	VDD=3.0V VO=0.3V	-	800	-	uA
Driving current (LED)	IOH2	VDD=3.0V VO=2.7V	-	-70	-	uA
Sink current (LED)	IOL2	VDD=3.0V VO=0.3V	-	3.8	-	mA
Driving current (C1/C8)	IOH3	VDD=3.0V VO=2.7V	-1.0	-2.0	-	mA
Sinking current (C1/C8)	IOL3	VDD=3.0V VO=0.3V	20	25	-	uA
Input HIGH voltage(R1-R8)	VIH1	VDD=3.0V	1.9	-	3.0	V
Input LOW voltage (R1-R8)	VIL1	VDD=3.0V	0	-	0.8	V
Input HIGH voltage(C1-C8)	VIH2	VDD=3.0V	1.0	-	3.0	V
Input LOW voltage (C1-C8)	VIL2	VDD=3.0V	0	-	0.5	V
Input HIGH voltage (AIN)	VIH3	VDD=3.0V	1.25	-	3.0	V
Input LOW voltage (AIN)	VIL3	VDD=3.0V	0	-	0.5	V
Pull LOW resistor (AIN)	RPL1	-	-	240K	-	Ω
Pull HIGH resistor (AIN)	RPH	-	-	290K	-	Ω
Pull LOW resistor (R1-R8)	RPL2	-	-	300K	-	Ω
Pull LOW resistor (C1-C8)	RPL3	-	-	900K	-	Ω
System frequence (X2)	Fosc	Resonator 455 KHz	-	455	-	KHz

- SMPS

  The mains power look through POWER BOARD-schematic diagram

- Adopt small lens: can adopt SANSUNG. Mipseumi .
- Thomson act lens

Electric specification

- Drive cell:adoptCD5888CB-12400 electricity machine
- Electricity machine work voltage is 3V-5.9V
- General work voltage is 3.3V-5V
- Unilateralism(com or go) move time:<1.5S(add 5V voltage)
- In 5°C-10°C work current is <120mA

● Testing condition

⅄ Position: level placed

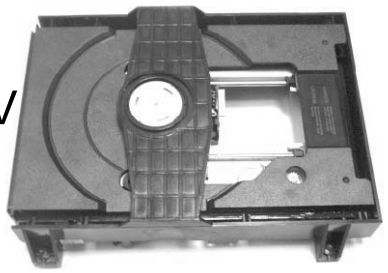
⅄▲ environment: temperature 22±2˚C

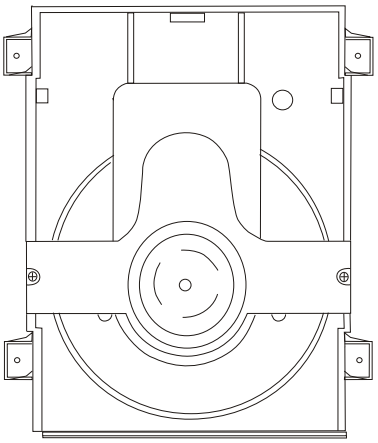
Humidity 50±5%

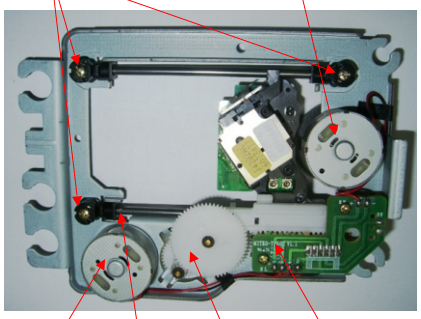
⅄▲ Turnover storehouse voltage:5V±0.5V

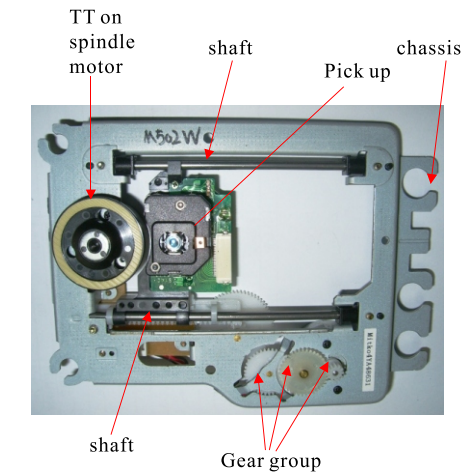
⅄▲ Standard DVD lens testing frock

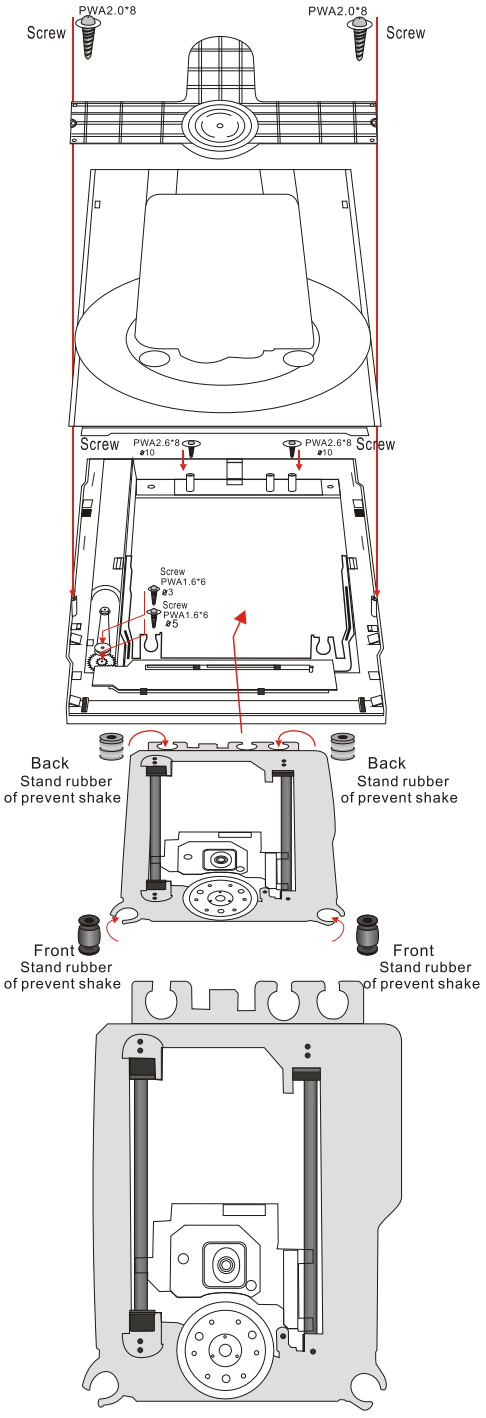
⅄▲ Standard DVD testing dish











● DESCRIPTION OF THE INTEGRATED CIRCUITS

⅄ SMPS TRANSFORMER

⅄▲GENERAL INFORMATION

Main Voltage Operations:	90Vac - 260 Vac
Main Drop-out Voltage:	Max. 90 Vac
Mains STart-up Voltage:	Max. 90 Vac
Operating Frequency:	60/50 KHz

⅄▲ELECTRICAL CHARACTERISTICS

⅄ STATIC CHARACTERISTICS

WINDING		INDUCTANCE	DESCRIPTION
Primary Inductance		1.5mH 610%	<0.50W

Primary Leakage inductance (Pin 2-4) L1.5mH

⅄▲ WITHSTANDING VOLTAGE

The transformer shall sithstanding a voltage of 4 Kvms for 1 minute and 1 mA between primary and seconday winding and also 2 Kvms for 1 minute and 1 mA between primary winding with core and secondary winding with core.

⅄▲ INSULATION RESISTANCE

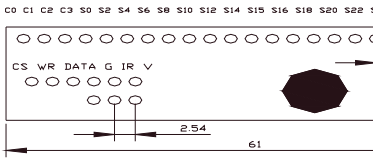
The insulation resistance shall be ore than 500M between primary and seconday windings when the applied voltage 300 Vdc for 1 minute

⅄▲ ELECTRICAL CHARACTERISTICS

▲ Before taking measurement Pp01 will be to give 5.0Vdc on 5.0Vdc line at Minimum setting of controls and a mains voltage 220 Vac.

▲ Before taking a measurement, DVD set should be working at least 5 minutes on Normal condition

FRONT PANEL DRIVER IC FOR VIR(ML1904-LCD driver)



Features

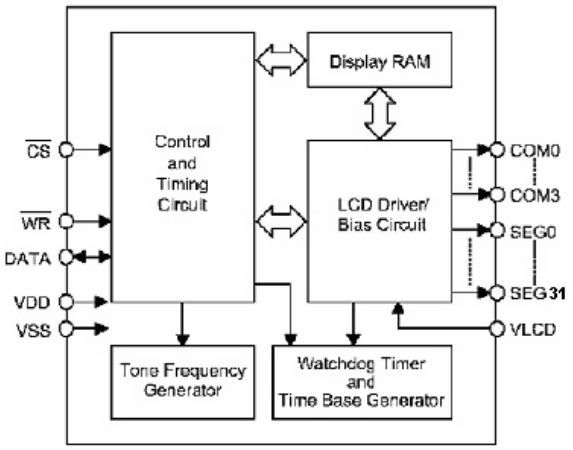
- Operating voltage : 2.4V~5.2V
- Built-in 256KHz RC oscillator
- Selection of 1/2 or 1/3 bias, and selection of 1/2 or 1/3 or 1/4 duty LCD applications
- Internal time base frequency sources
- Power down command reduces power consumption
- 19x4 LCD driver
- Built-in 19x4 bit display RAM
- Internal LCD driving frequency source
- Software configuration feature
- Data mode and command mode instructions
- Write address auto increment
- Three data accessing modes
- VLCD pin for adjusting LCD operating voltage

General Description

The ML1904 is a 76 patterns (19x4), memory mapping, and multi-function LCD driver. The S/W configuration feature of the ML1904 makes it suitable for multiple LCD applications including LCD modules and display subsystems. Only three or four lines are required for the interface between the host controller and the ML1904. The ML1904 contains a power down command to reduce power consumption.

Note: CSB: Chip selection
WRB, DATA: Serial interface
COM0~COM3, SEG0~SEG31: LCD outputs

Block Diagram



Pad Description

Pad No.	Pad Name	I/O	Function
2	CSB	I	Chip selection input with pull high resistor When the CS is logic high, the data and command read from or written to the ML1904are disabled. The serial interface circuit is also reset. But if CS is at logic low level and is input to the CS pad, the data and command transmission between the host controller and the ML1904are all enabled.
3	DATA	I/O	Serial data input/output with pull high resistor
4	WRB	I	WRITE clock input with pull high resistor Data on the DATA line are latched into the ML1904on the rising edge of the WR signal.
5	VSS	-	Negative power supply, ground
6	VLCD	I	LCD power input
7	VDD	-	Positive power supply
8~11	COM0~COM3	O	LCD common outputs
12~291	SEG31~SEG0	O	LCD segment outputs

Absolute Maximum Ratings

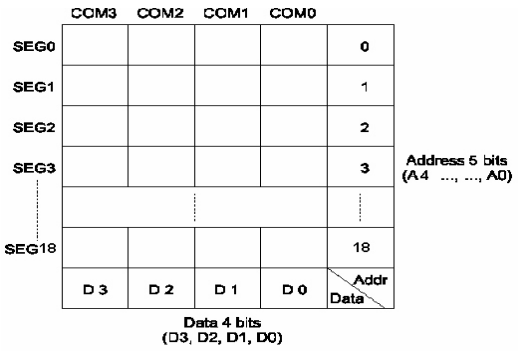
Supply Voltage	.....	- 0.3V	~	5.5V
Storage Temperature	.....	- 50°C	~	125°C
Input Voltage	.....	VSS - 0.3V	~	VDD + 0.3V
Operating Temperature	.....	- 25°C	~	75°C

Note: These are stress ratings only. Stresses exceeding the range specified under _Absolute Maximum Ratings_ may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability

● Functional Description

Display Memory RAM

The static display memory (RAM) is organized into 19x4 bits and stores the displayed data. The contents of the RAM are directly mapped to the contents of the LCD driver. Data in the RAM can be accessed by the READ, WRITE, and READ- MODIFY-WRITE commands. The following is a mapping from the RAM to the LCD pattern



⅄ System Oscillator

The ML1904 system clock is used to generate the time base, LCD driving clock. The source of the clock is from an on chip RC oscillator (256 KHz). The configuration of the system oscillator is as shown. After the SYS DIS command is executed, the system clock will stop and the LCD bias generator will turn off. That command is, however, available only for the on chip RC oscillator. Once the system clock stops, the LCD display will become blank.

The LCD OFF command is used to turn the LCD bias generator off. After the LCD bias generator switches off by issuing the LCD OFF command, using the SYS DIS command reduces power consumption, serving as a system power down command. But if the external clock source is chosen as the system clock, using the SYS DIS command can neither turn the oscillator off nor carry out the power down mode. At the initial system power on, the ML1904 is at the SYS DIS state.

⅄ LCD Driver

The ML1904 is a 128 (19x4) pattern LCD driver. It can be configured as 1/2 or 1/3 bias and 2 or 3 or 4 commons of LCD driver by the S/W configuration. This feature makes the ML1904suitable for multiply LCD applications. The LCD driving clock is derived from the system clock. The value of the driving clock is always 256Hz, an on chip RC oscillator frequency, or an external frequency. The LCD corresponding commands are summarized in the table. The bold form of 1 0 0, namely 1 0 0, indicates the command mode ID. If successive commands have been issued, the command mode ID except for the first command will be omitted. The LCD OFF command turns the LCD display off by disabling the LCD bias generator. The LCD ON command, on the other hand, turns the LCD display on by enabling the LCD bias generator. The BIAS and COM are the LCD panel related commands. Using the LCD related commands; the ML1904 can be compatible with most types of LCD panels.

⅄ Command Format

The ML1904 can be configured by the S/W setting. There are two mode commands to configure the ML1904 resources and to transfer the LCD display data. The configuration mode of the ML1904 is called command mode, and its command mode ID is 1 0 0. The command mode consists of a system configuration command, a system frequency selection command, a LCD configuration command, and an operating command. The following are the data mode IDs and the command mode ID:

Operation	Mode	ID
READ	Data	1 1 0
WRITE	Data	1 0 1
READ-MODIFY-WRITE	Data	1 0 1
COMMAND	Command	1 0 0

The mode command should be issued before the data or command is transferred. If successive commands have been issued, the command mode ID, namely 100, can be omitted. While the system is operating in the non-successive command or the non-successive address data mode, the CS pin should be set to "1" and the previous operation mode will be reset also. Once the CS pin returns to "0" a new operation mode ID should be issued first.

● Interfacing

Only four lines are required to interface with the ML1904.. The CS line is used to initialize the serial interface circuit and to terminate the communication between the host controller and the ML1904. If the CS pin is set to “1”, the data and command issued between the host controller and the ML1904 are first disabled and then initialized. Before issuing a mode command or mode switching, a high level pulse is required to initialize the serial interface of the ML1904. The DATA line is the serial data input/output line. Data to be written or commands to be written have to be passed through the DATA line. The WR line is the WRITE clock input. The data, address, and command on the DATA line are all clocked into the ML1904 on the rising edge of the WR signal.

● Pad Coordinates

No.	Pin Name	X	Y	No.	Pin Name	X	Y
1	SEG0	75	1406	18	SEG26	1995	1086
2	CSB	75	1246	19	SEG24	1995	1246
3	DATA	75	1086	20	SEG22	1995	1406
4	WRB	75	926	21	SEG20	1835	1406
5	VSS	75	766	22	SEG18	1675	1406
6	VLCD	75	606	23	SEG16	1515	1406
7	VDD	75	446	24	SRG15	1355	1406
8	COM0	75	286	25	SEG14	1195	1406
9	COM1	75	126	26	SRG12	1035	1406
10	COM2	1995	126	27	SEG10	875	1406
11	COM3	1995	286	28	SEG8	715	1406
12	SEG31	1995	446	29	SEG6	555	1406
13	SEG30	1995	606	25	SEG4	395	1406
14	SEG29	1995	766	26	SEG2	235	1406
18	SEG28	1995	966		LOGO	1200	340

● TO-220 Plastic-Encapsulate Transistors Q2 – 278.13005 TRANSISTOR(NPN)

FEATURES

Power dissipation	Collector current	Collector-base voltage	Operating and storage junction temperature range
P_{CM}: 2.0 W (Tamb=25℃)	I_{CM}: 2.5 A	$V_{(BR)CBO}$: 700 V	T_J,T_{stg}:-55℃to+150℃

ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V(BR)_{CBO}$	I_C=1mA,I_E=0	700			V
Collector-emitter breakdown voltage	$V(BR)_{CEO}$	I_C=10mA,I_B=0	400			V
Emitter-base breakdown voltage	$V(BR)_{EBO}$	I_E=1mA,I_C=0	9			V
Collector cut-off current	I_{CBO}	V_{CB}=700V,I_E=0			100	μA
Collector cut-off current	I_{CEO}	V_{CE}=400V,I_B=0			500	μA
Emitter cut-off current	I_{EBO}	V_{EB}=9V,I_C=0			100	μA
DC current gain	$h_{FE(1)}$	V_{CE}=5V,I_C=1000mA	10		40	
	$h_{FE(2)}$	V_{CE}=5V,I_C=2000mA	8			
Collector-emitter saturation voltage	V_{CE}(sat)	I_C=2000mA,I_B=500mA			0.6	V
Base-emitter saturation voltage	V_{BE}(sat)	I_C=2000mA,I_B=500mA			1.6	V
Base-emitter voltage	V_{BE}	I_E=2000mA			1.5	V
Transition frequency	f_T	V_{CE}=10V,I_E=100mA f=1MHZ	5			MHz
Fall time	t_f	I_C=500mA,I_{B1}=I_{B2}=10mA V_{CC}=100V			1.0	μs
Storage time	t_s				4.0	μs

CLASSIFICATION OF $h_{FE(1)}$

Rank	A	B	C	D	E	F
Range	10～15	15～20	20～25	25～30	30～35	35～40

● SMPS PROGRAMMABLE SHUNT REGULATOR (FAIRCHILD TL 431)

Features

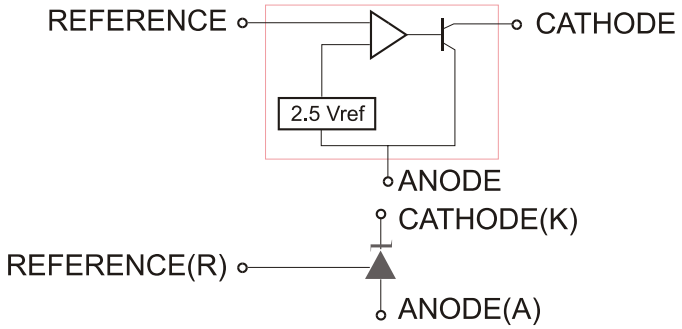
* Programmable output voltage to 36volts
* Low dynamic output impedance 0.20 typical
* Sink current capability of 1.0 to 100mA
* Equivalent full-range temperature coefficient
  of 50 ppm ℃ typical
* Temperature compensated for operation over full rated operating temperature range
* Low output noise voltage
* Fast turn-on response

Description

The TL 431/TL 431A are three-terminal adjustable regulator series with a guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between VREF (approximately 2.5 volts) and 36 volts with two external resistors. These devices have a gypical dynamic output impedanceof 2.0W Active oupput circuity provides a very sharp turn-on characteristic making these devices excel lent replacement for zener diodes in many applications

TO-92

1. Ref 2. Arode 3. Cathode



⅄ Absolute maximum ratings

Parameter	Symbol	Value	Unit
Cathode voltage	VKA	37	V
Cathode current Range (Continuous)	IKA	-100 ~ +150	MAI
Reference Input Current Range	IREF	0.05 ~ +10	MA
Power dissipation D,Z Sffix Package N Suffix Package	PD	 770 1000	 MW MW
Operating Temperature Range	TOPR	-25 ~ +85	℃
Storage Temperature Range	TSTG	-65 ~ +150	℃

⅄ Recommended Operating conditions

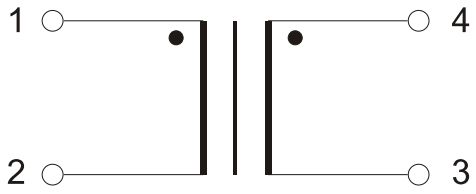
Parameter	Symbol	Value	Value	Value	Unit
Cathode voltage	VKA	VREF	-	36	V
Cathode Current	IKA	1.0	-	100	MA

● LINE FILTER (2 X 60mH)

ELECTRICAL DATA

Inductance: L1-2=L3-4-30mH - 15% - +20%
Resistance: R 1-2 = R 3-4 = 1.5 ohm (max)
Rated current: Irms = 0.50 A
(F= 1 Khz V= 1 Vms)

CIRCUIT DIAGRAM

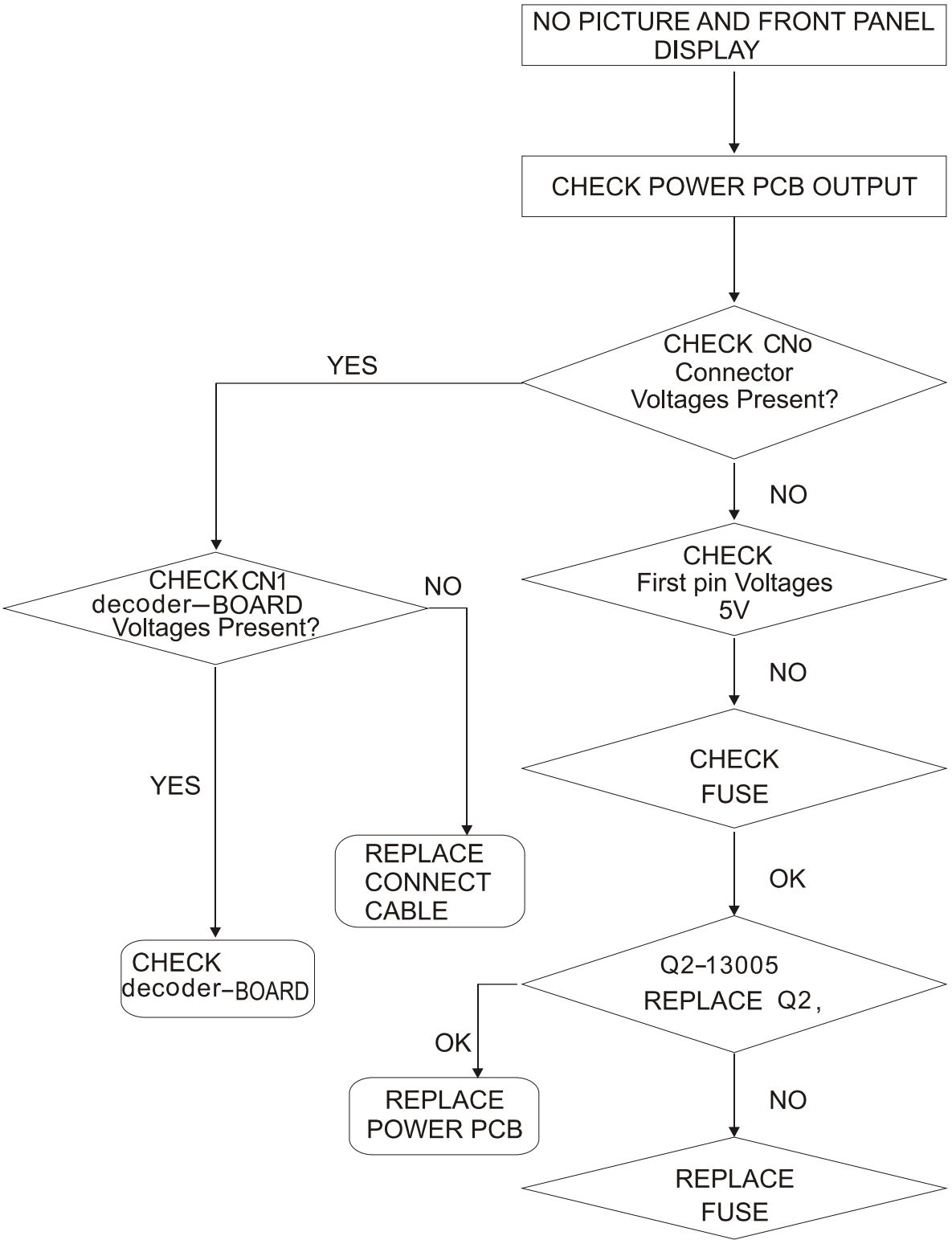


LEAKAGE INDUCTANCE

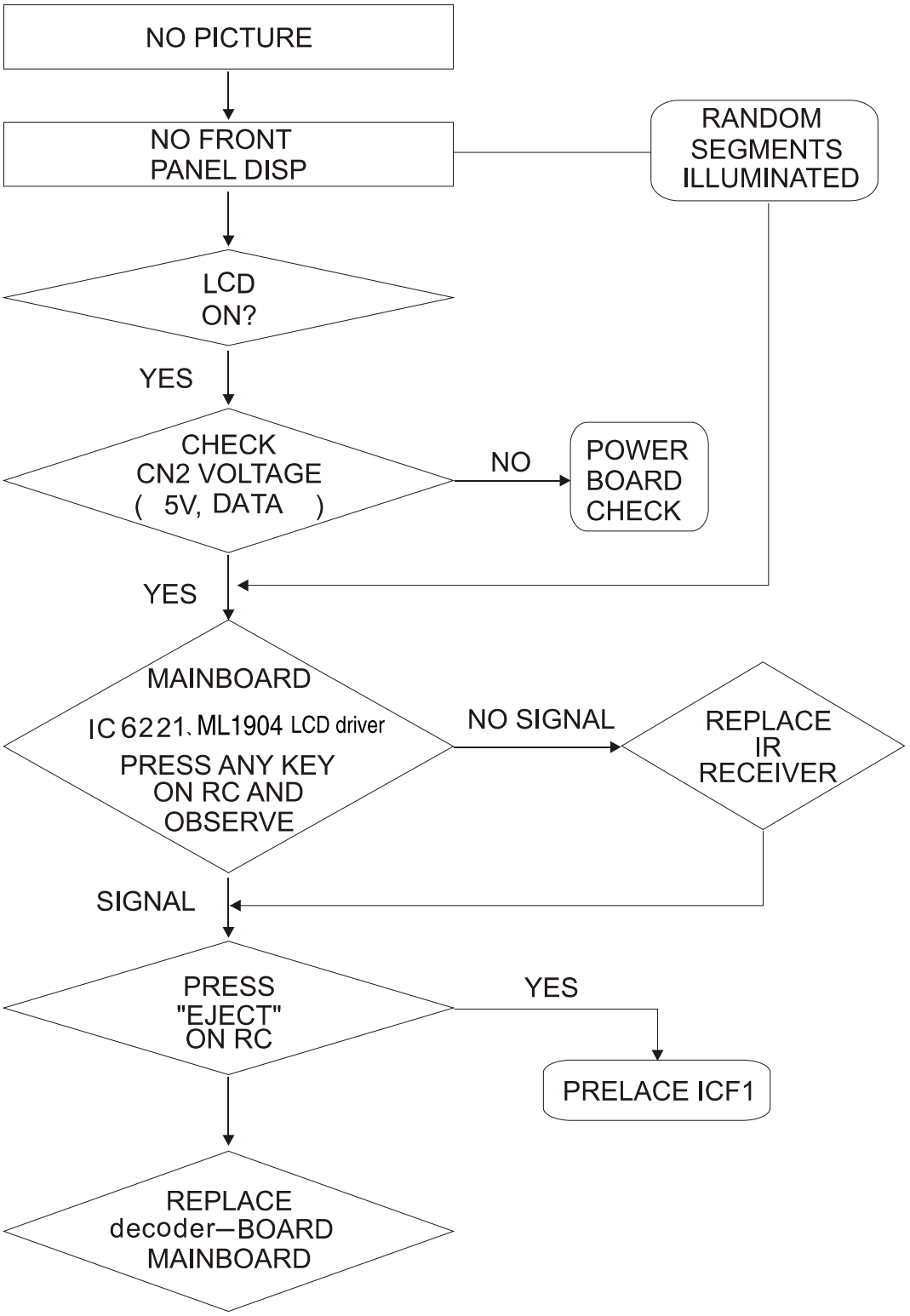
L 1-2 = L 3-4 100+/- 20%uH NOTES

● FAULT TRACING FLOW CHART

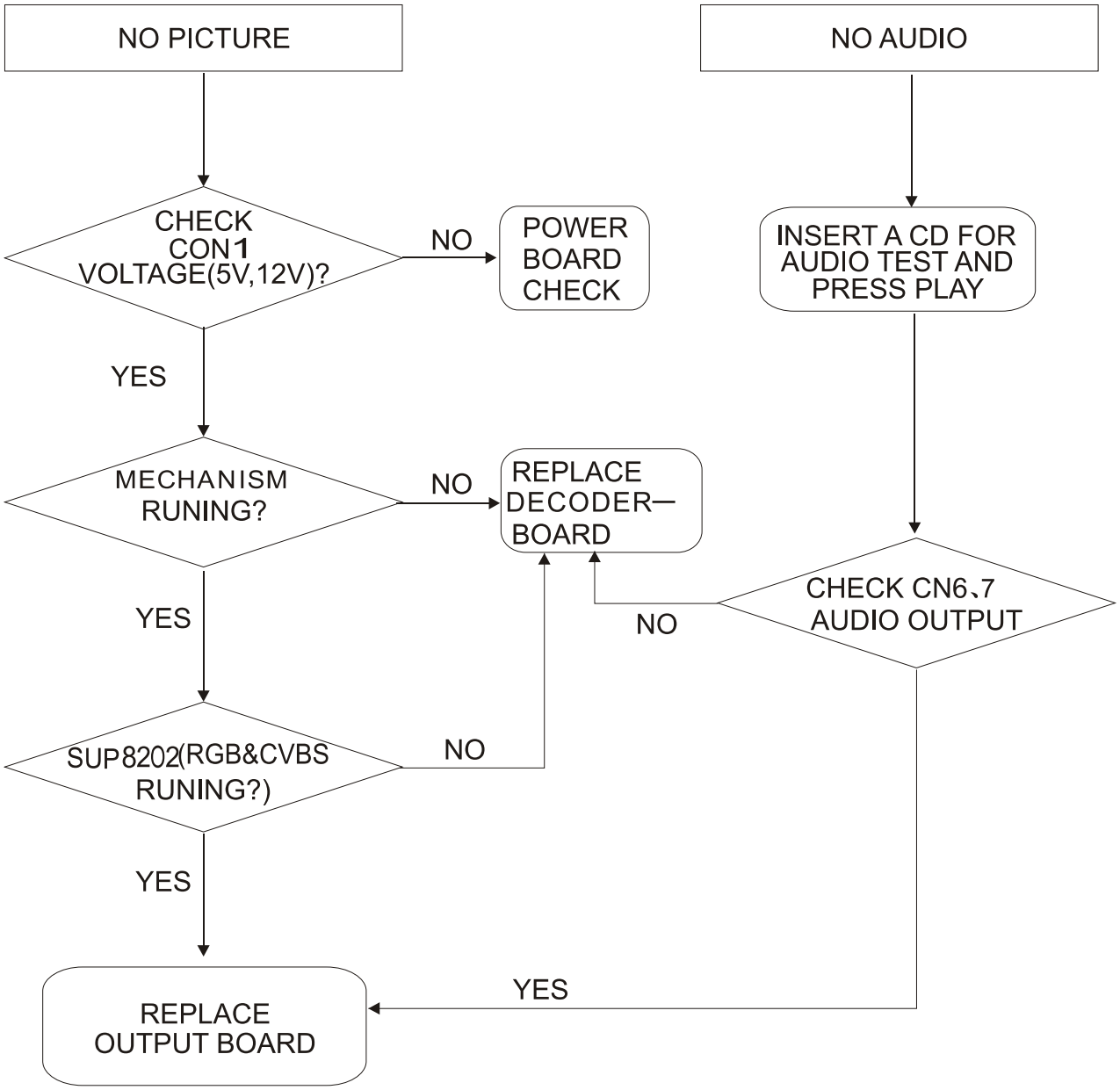
⅄▲ POWER SUPPLY



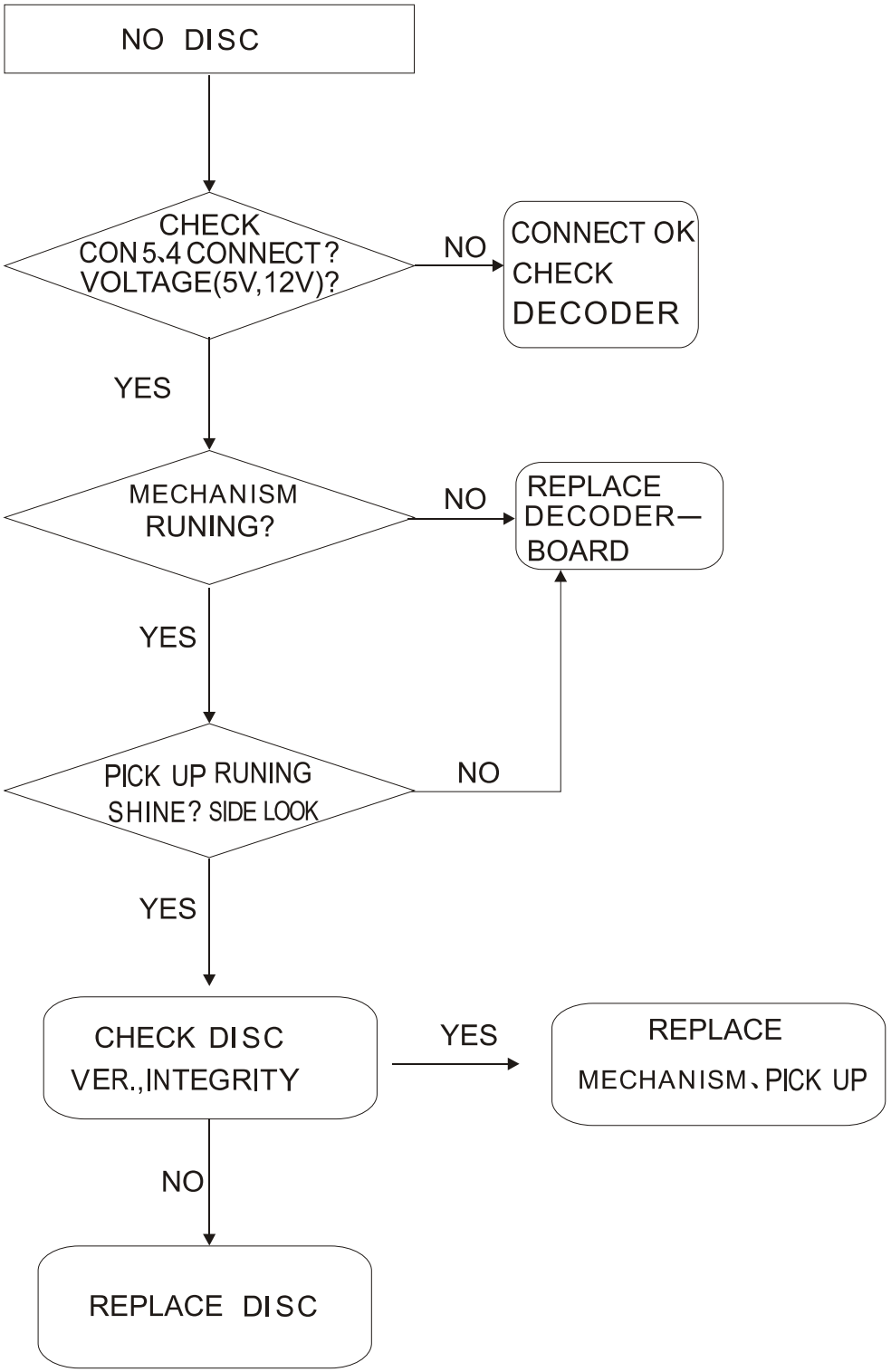
⅄▲ FRONT PANEL


NO PICTURE
NO FRONT PANEL DISP
RANDOM SEGMENTS ILLUMINATED
LCD ON?
YES
CHECK CN2 VOLTAGE (5V, DATA)
NO
POWER BOARD CHECK
YES
MAINBOARD
IC 6221、ML1904 LCD driver
PRESS ANY KEY ON RC AND OBSERVE
NO SIGNAL
REPLACE IR RECEIVER
SIGNAL
PRESS "EJECT" ON RC
YES
PRELACE ICF1
REPLACE decoder—BOARD MAINBOARD

⅄▲DECODER－BOARD



⅄▲ MECHANISM


NO DISC
CHECK
CON5、4 CONNECT?
VOLTAGE(5V,12V)?
NO
CONNECT OK
CHECK
DECODER
YES
MECHANISM
RUNING?
NO
REPLACE
DECODER—
BOARD
YES
PICK UP RUNING
SHINE? SIDE LOOK
NO
YES
CHECK DISC
VER.,INTEGRITY
YES
REPLACE
MECHANISM、PICK UP
NO
REPLACE DISC