



**AKAI**

## **DVD PLAYER**

Models:

DV-P6336KDM

DV-P6834KDSM

DV-P6835KDM

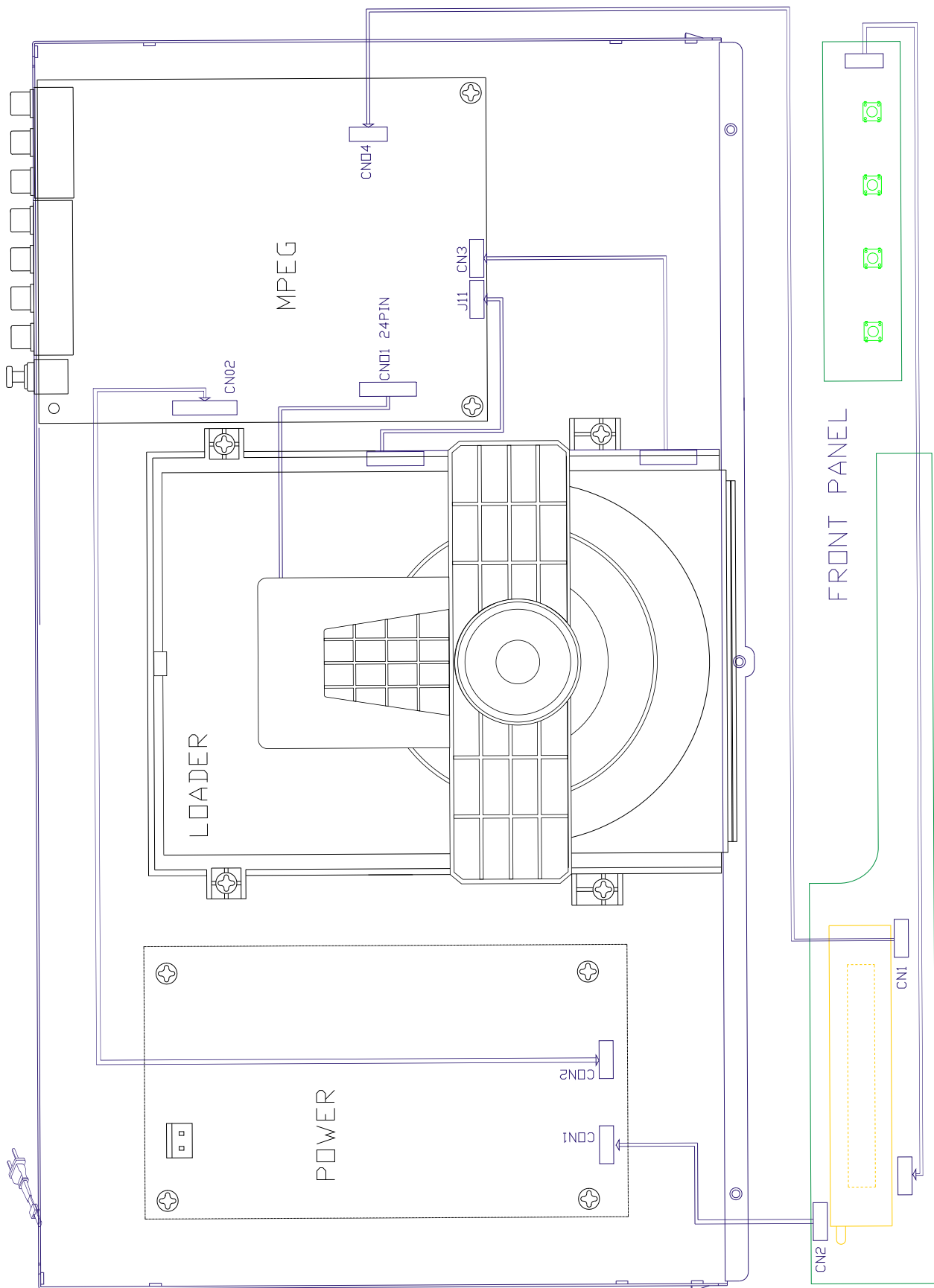
DV-P6837KDSM

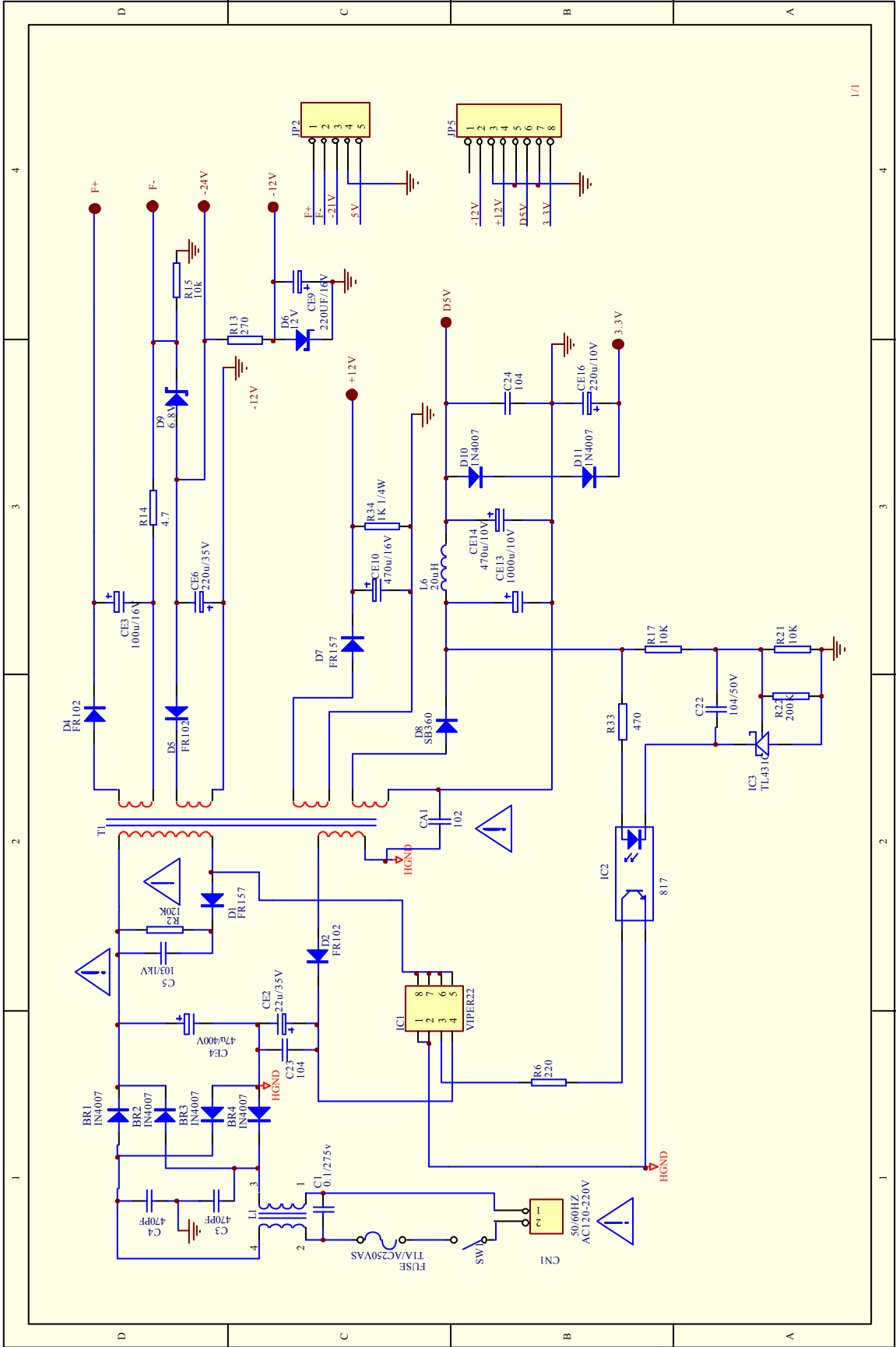
# **SERVICE MANUAL**

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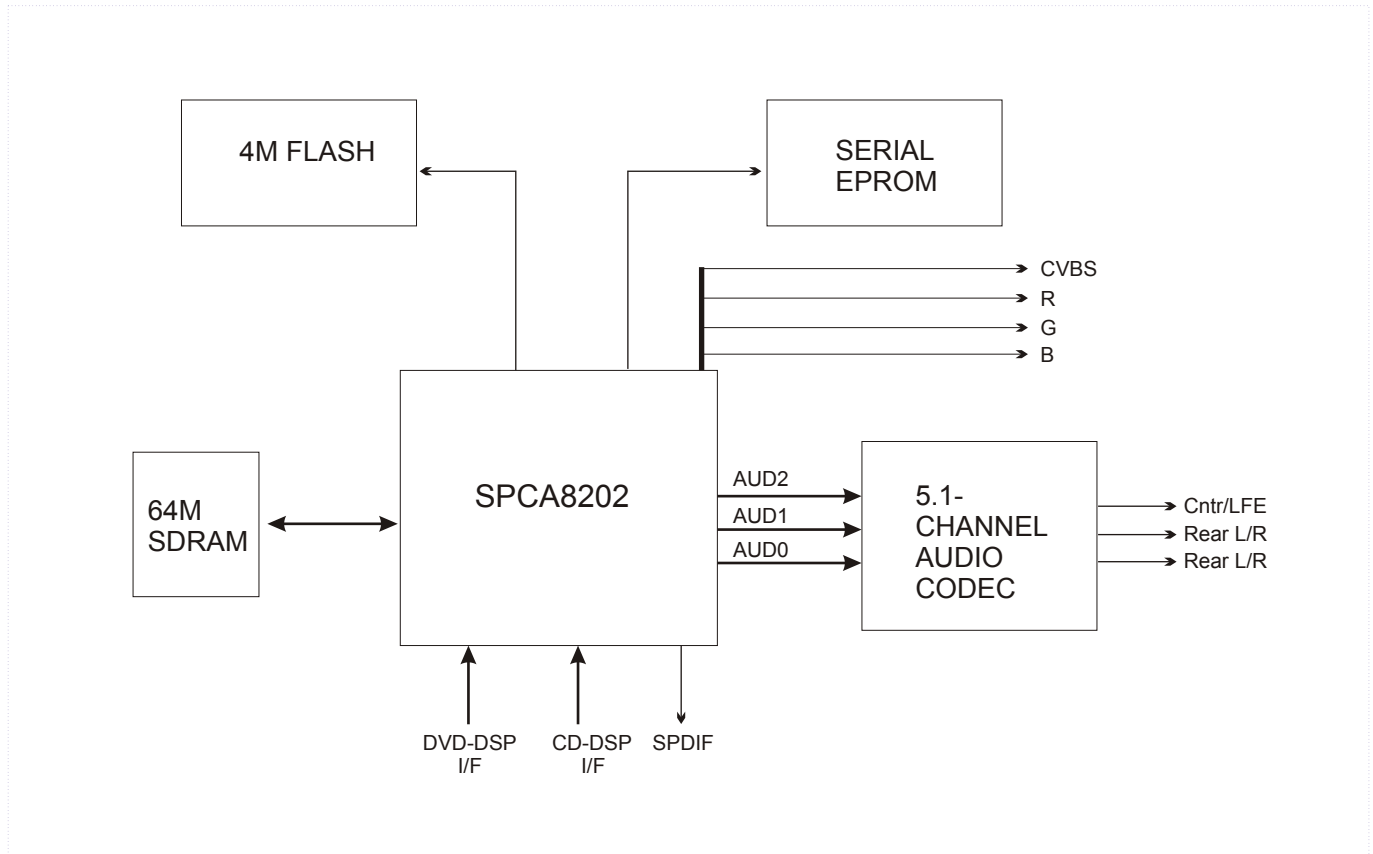
## 2. BLOCK DIAGRAM (CABLE CONNECTIONS)





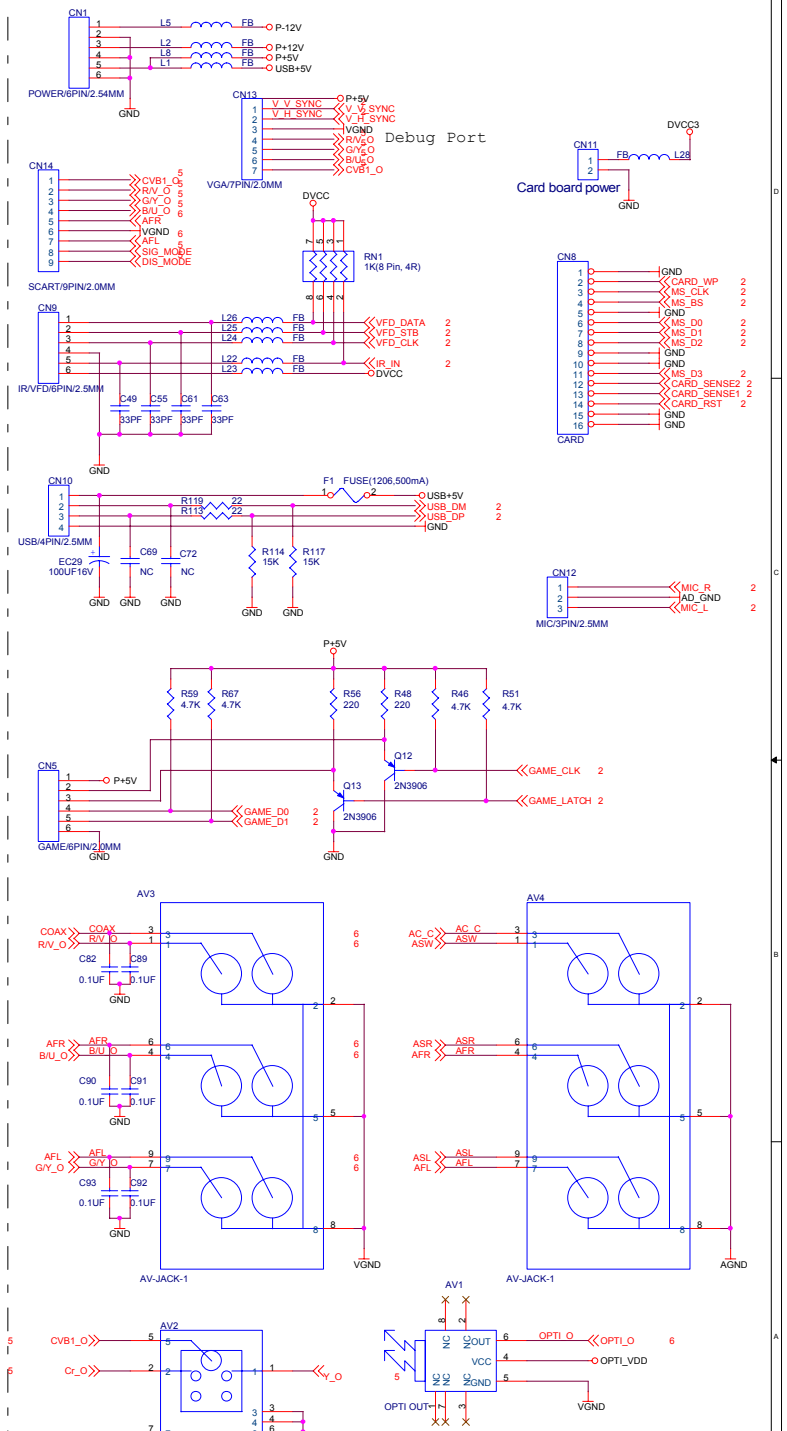
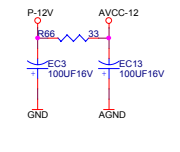
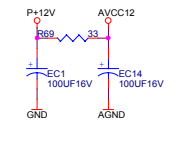
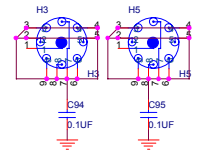
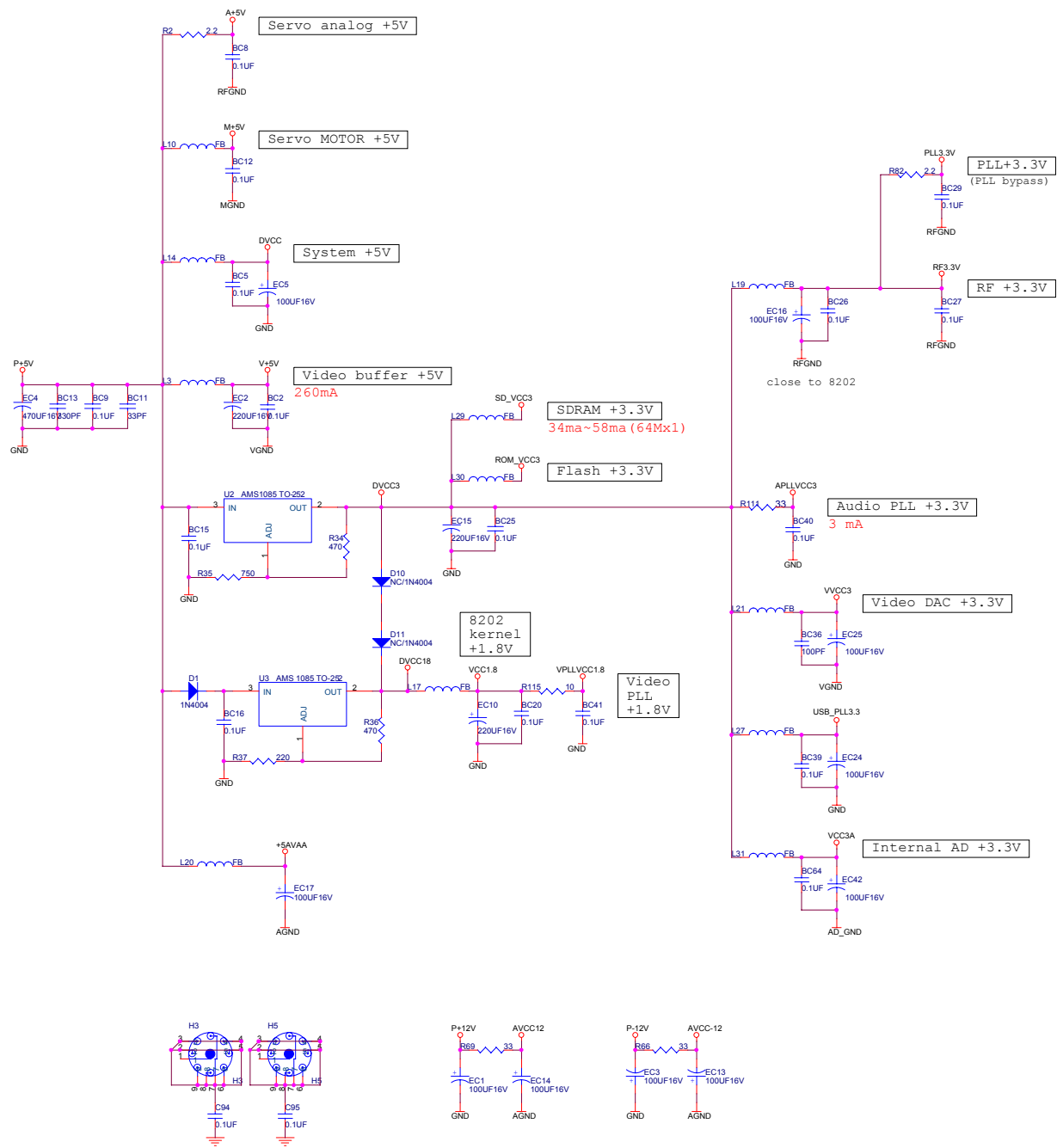
## 4. FUNCTIONAL DESCRIPTIONS

### 4.1 DVD MPEG board

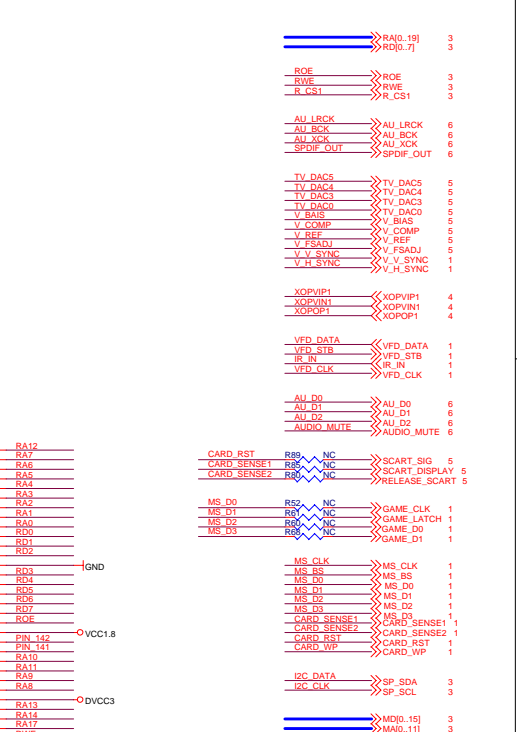
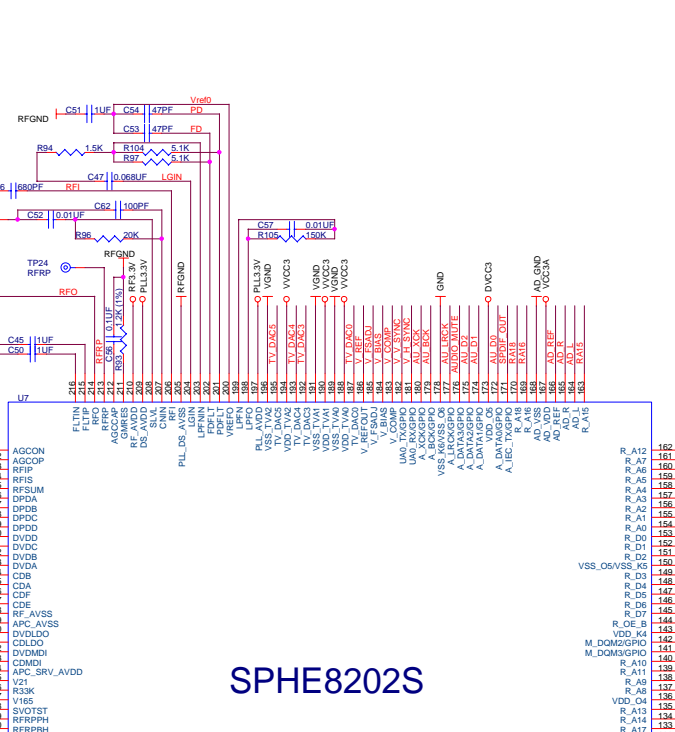
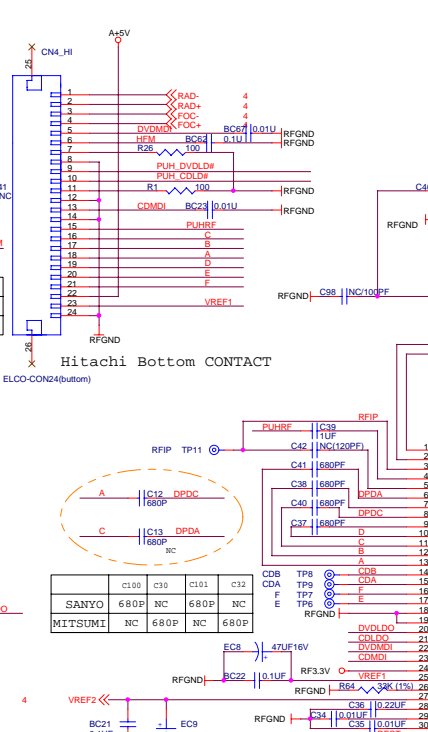
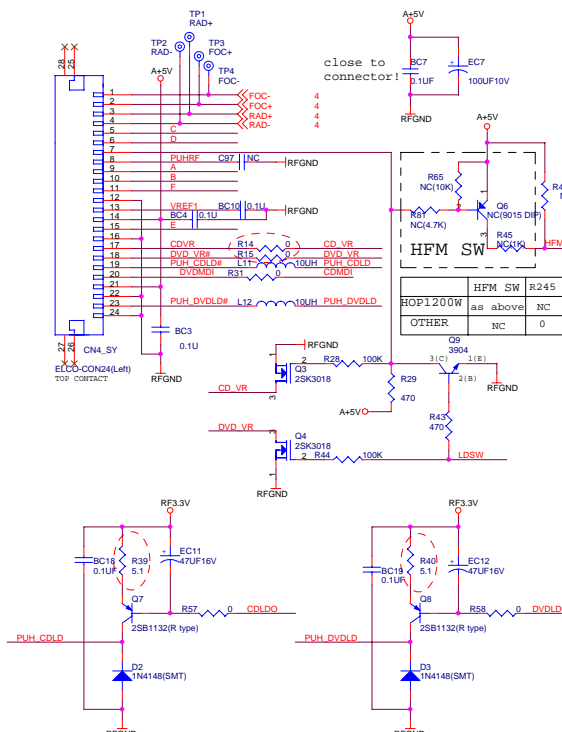


This board implements the back-end circuitry of a DVD player. It is composed of the following subsystems:

- \* 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

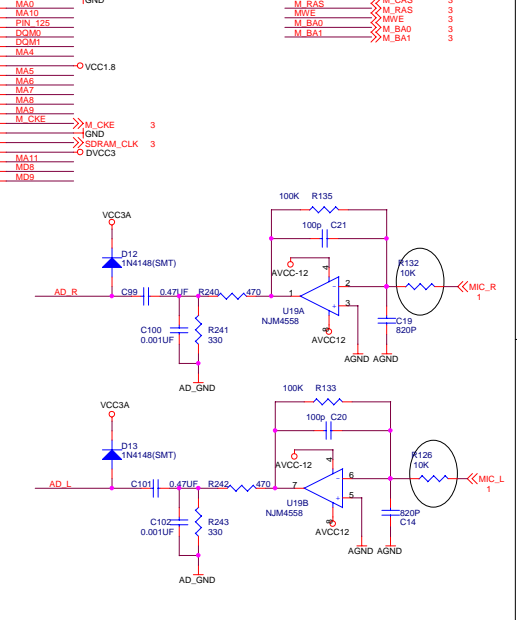
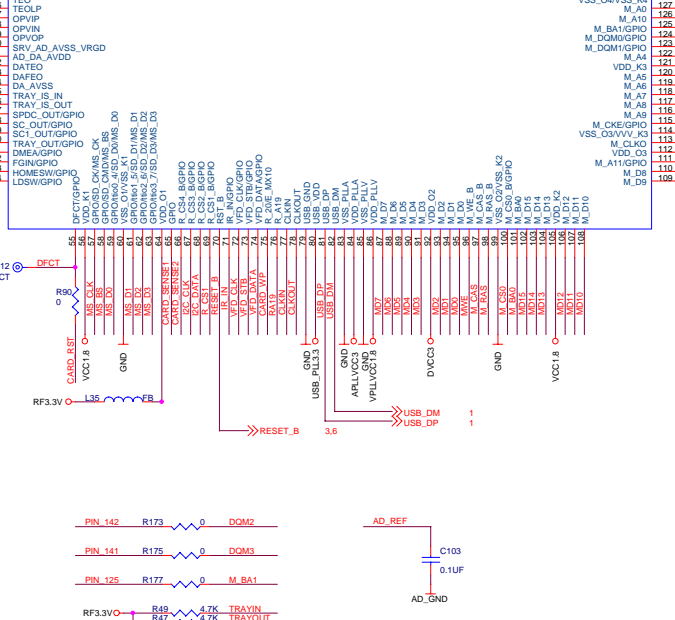
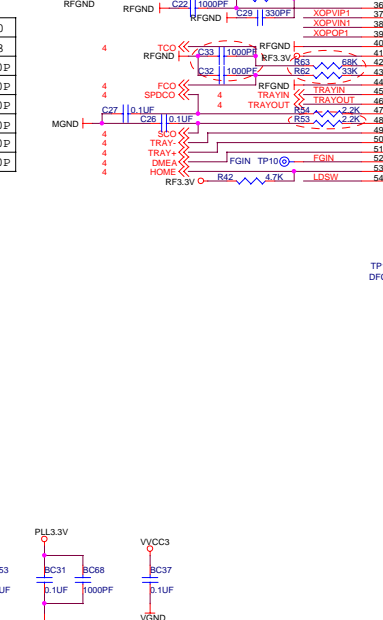
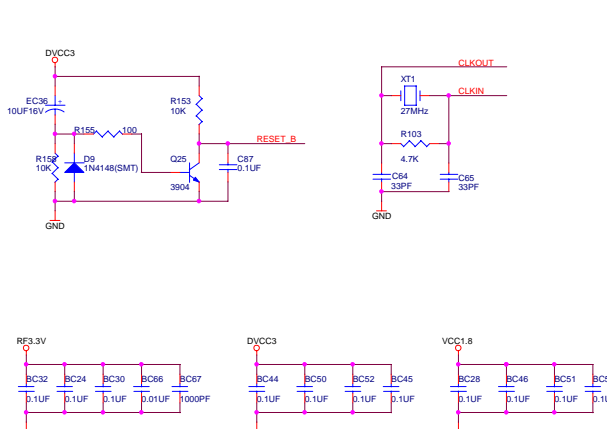


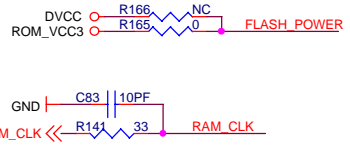
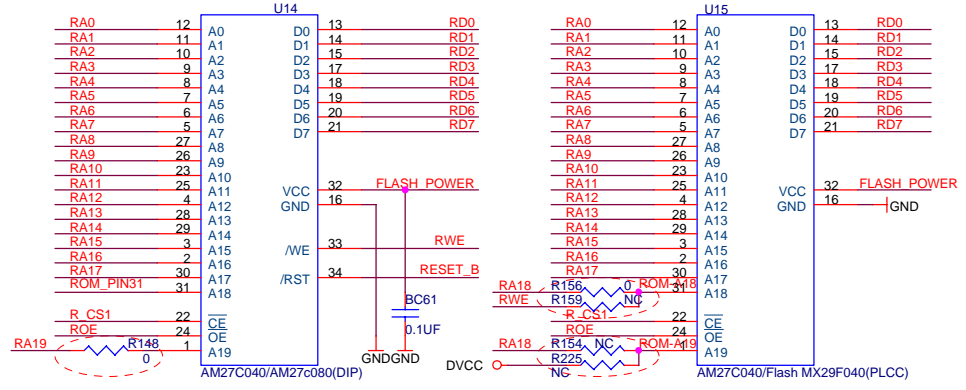
SUNPLUS TECHNOLOGY			
Title	Power & Connector		Rev
Size	Document Number	8202S-16-SY-216-0-B	1.0
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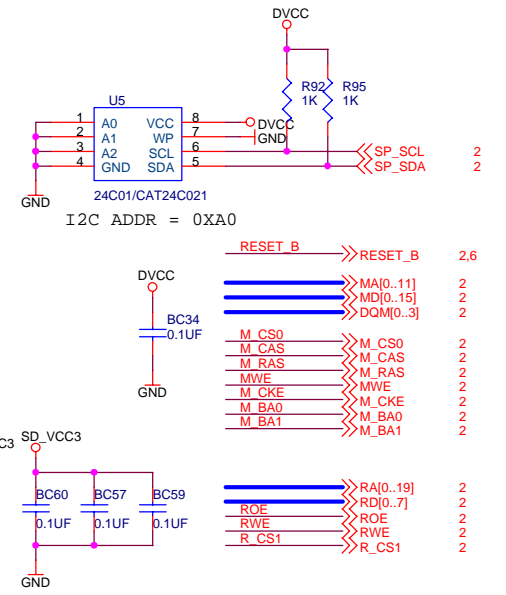
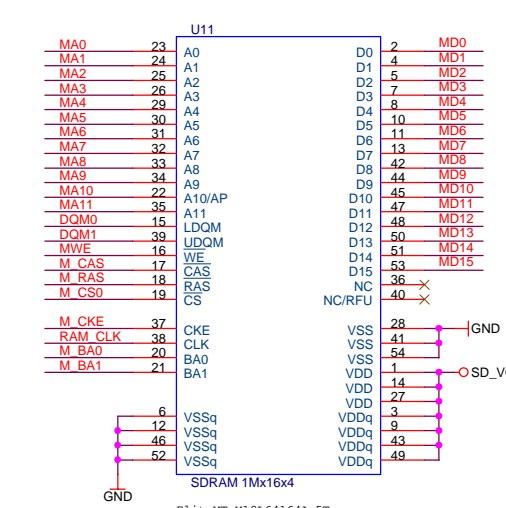
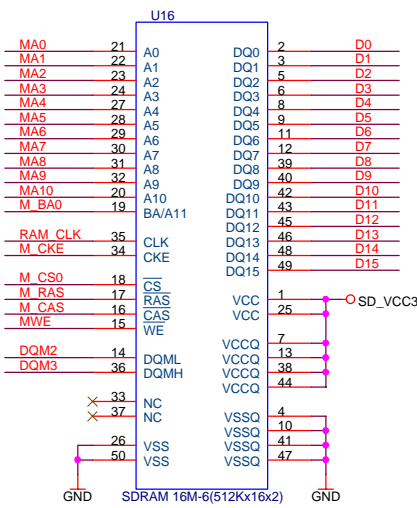
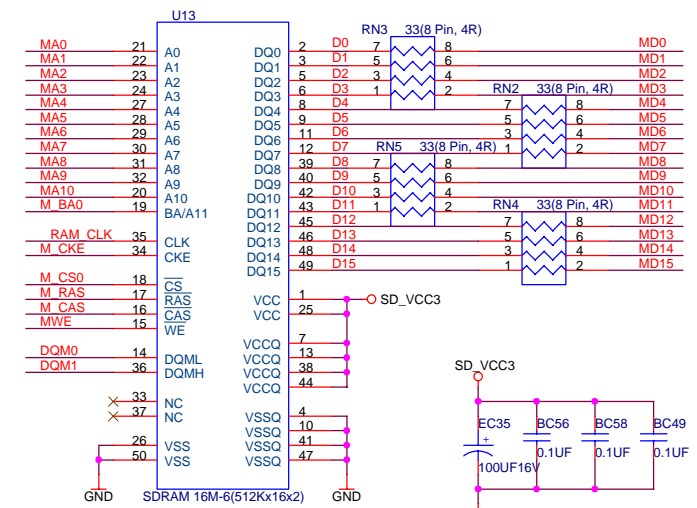
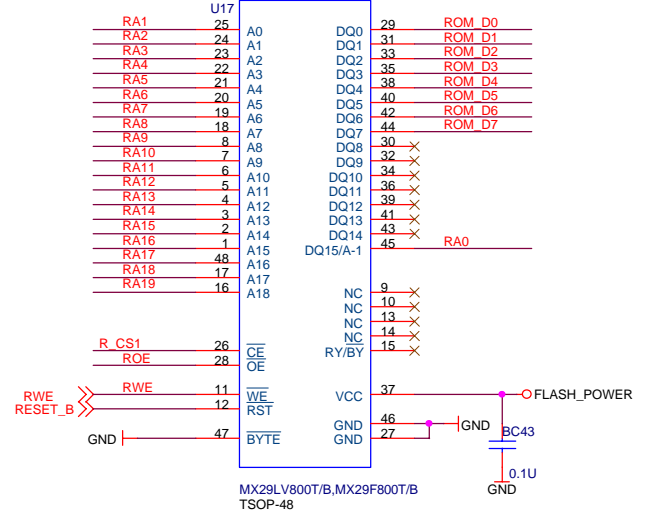
Pickup head parameter

	R40	R39	R14	R15	R53	R62	C32	R63	C33	R62	C32	R63	C33
Sony	4.7	4.7	0	0	20K	24K	1000P	68K	1000P	10K	1500P	39K	1000P
Sanyo	5.1	5.1	0	0	2.2K	33K	1000P	68K	1000P	20K	1000P	39K	1000P
Samsung	5.1	5.1	0	0	2.2K	12K	1500P	68K	1000P	3.3K	2700P	39K	1000P
Mitsumi	5.1	5.1	0	0	2.2K	12K	1500P	68K	1000P	3.3K	2700P	39K	1000P
Kenwood	5.1	5.1	0	0	4.7K	NOT SUPPORT	AM5668	NOW	8.2K	1500P	91K	1000P	
Thomson	5.1	5.1	240	0	2.2K	NOT SUPPORT	AM5668	NOW	3.3K	2700P	12K	1500P	





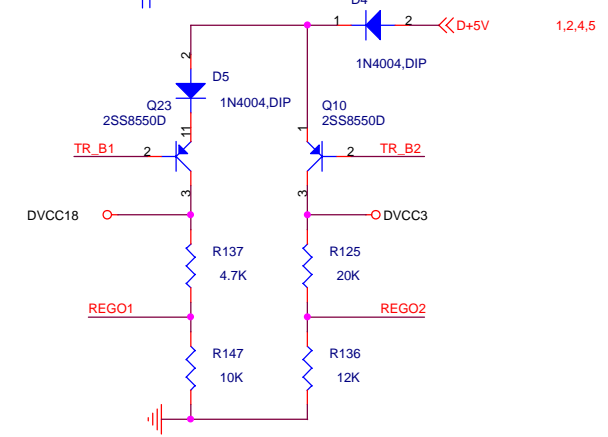
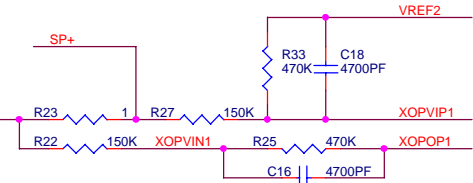
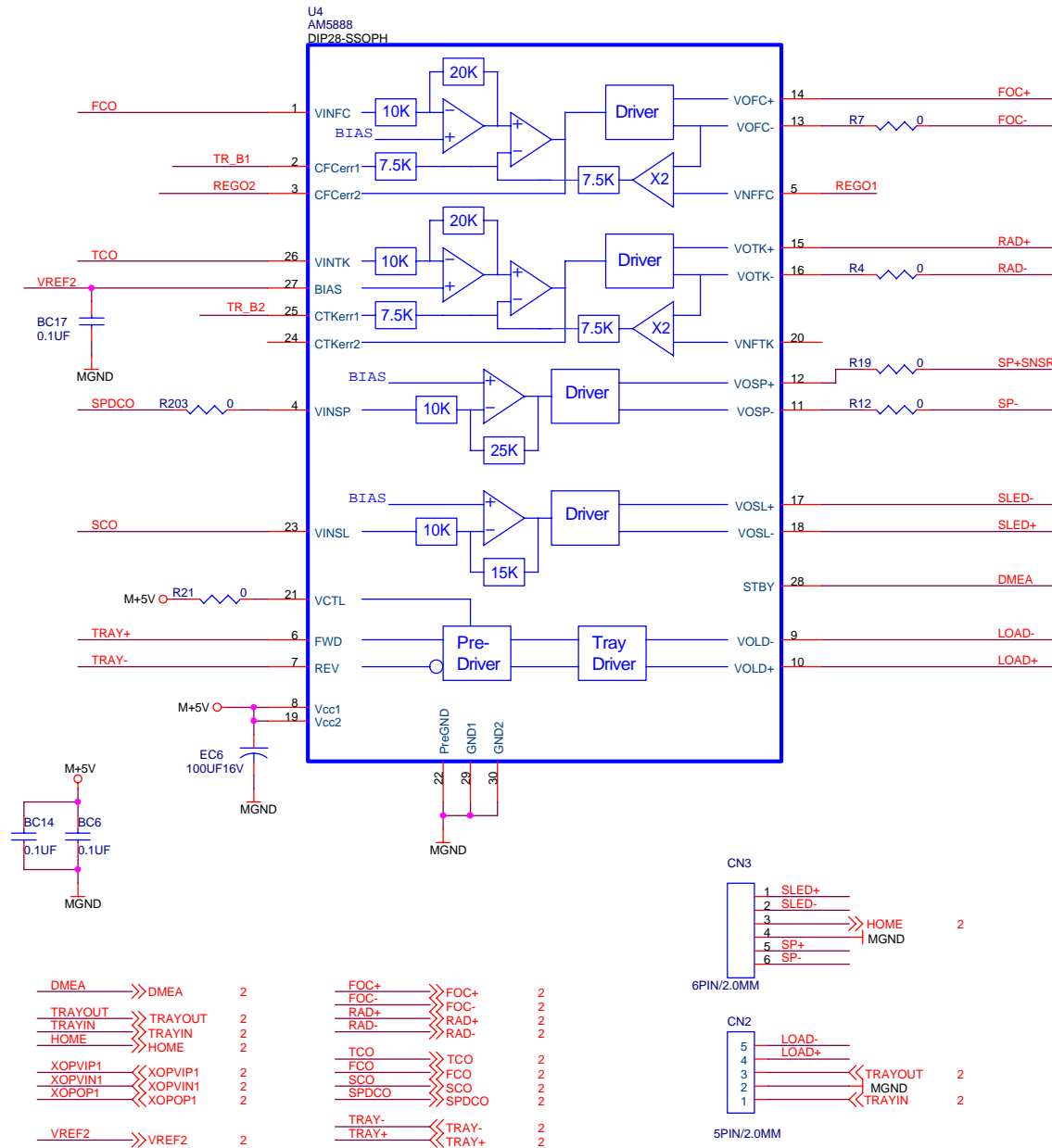
	R165	R166	R156	R159	R148	R154	R225
040 OTP	NC	0	0	NC	NC	NC	0
080 ROM	NC	0	0	NC	0	NC	NC
FLASH	0	NC	NC	0	NC	0	NC



EliteMT M12L64164A-5T  
54-Pin TSOPII (400mil x 875mil)

SUNPLUS TECHNOLOGY		
Title ROM/FLASH/Memory		
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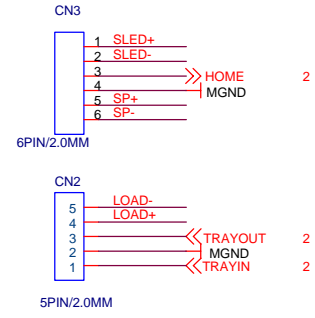
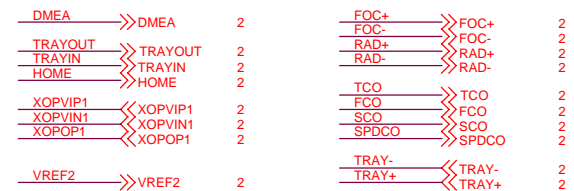




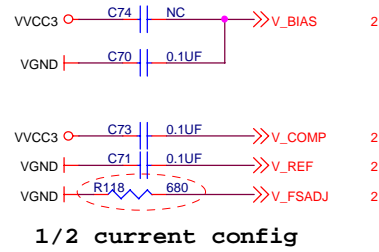
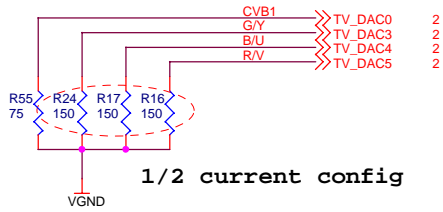
Motor Driver Parameter

	R13	R19	R12	R18	R7	R8	R4	R6	R30	R32	C15	C17	R248
AT5660 & AT5665	0	NC	NC	0	1	1	1	1	22K	22K	330p	330p	0
AM5668	NC	0	0	NC	0	NC	0	NC	NC	NC	NC	NC	NC

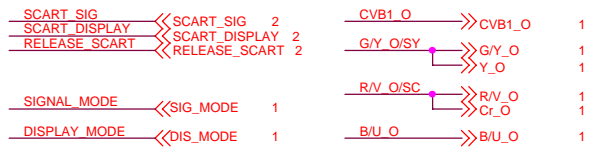
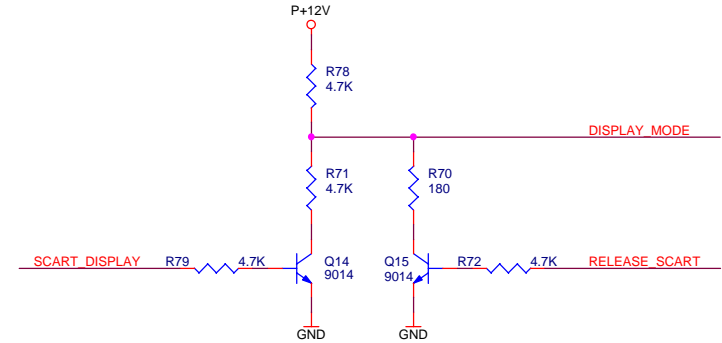
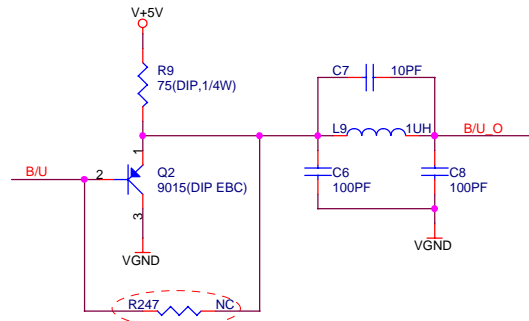
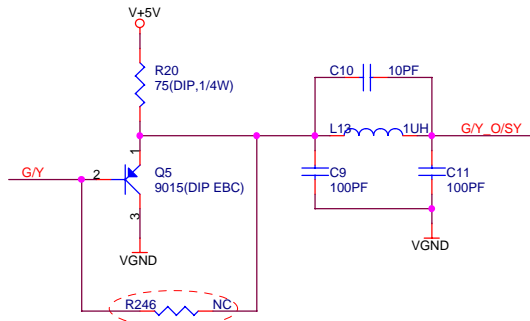
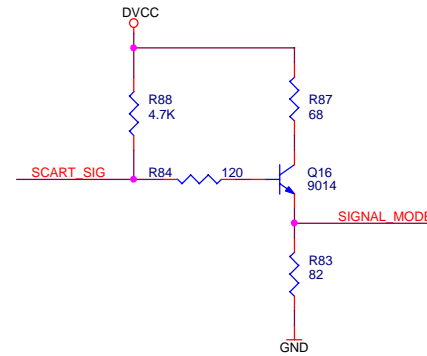
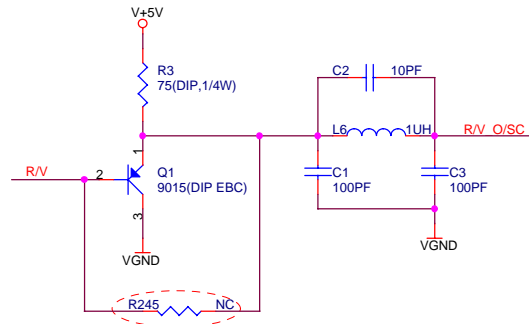
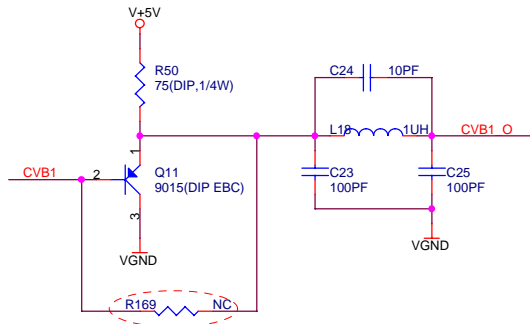
	R201	R202	R203	R204
AT5660 & AM5668	0	NC	0	NC
AT5665	NC	0	NC	0



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Title Motor-Driver			
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TV0	TV3	TV4	TV5
CVB	Y	Cb	Cr
CVB	(S-Video) CVB		C (S-Video)
CVB	G	B	R



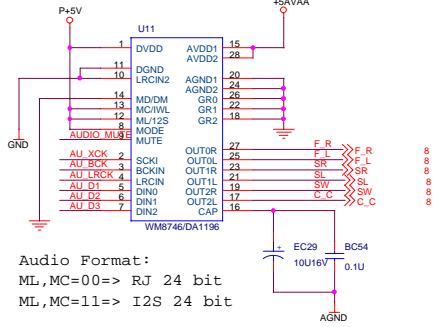
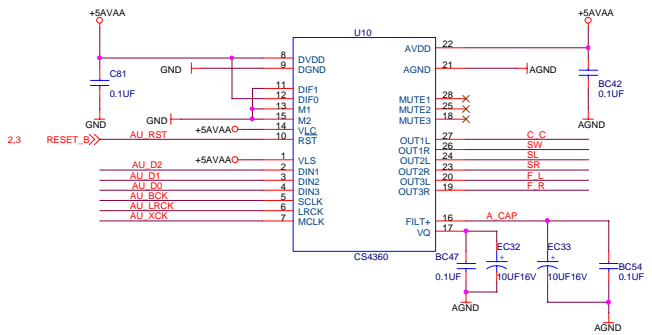
VIDEO DAC	R118	R169	R245	R246	R247	R16	R17	R24
Full Current	390	0	0	0	0	75	75	75
Half Current	680	NC	NC	NC	NC	150	150	150

RELEASE_SCART	DISPLAY_MODE
0	Not RELEASE
1	RELEASE

SCART_SIG	SIGNAL_MODE
0	0V(CVBS)
1	3V(RGB)

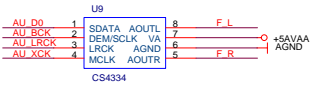
SCART_DISPLAY	DISPLAY_MODE
1	12V(9.5V--12V 4:3)
0	6V(5V--8V 16:9)

<b>SUNPLUS TECHNOLOGY</b>		
Title <b>Video Buffer</b>		
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Audio Format:  
 ML,MC=00=> RJ 24 bit  
 ML,MC=11=> I2S 24 bit

Audio Format:  
 ML,MC=00=> RJ 24 bit  
 ML,MC=01=> RJ 20 bit  
 ML,MC=10=> I2S 16 bit  
 ML,MC=11=> I2S 24 bit

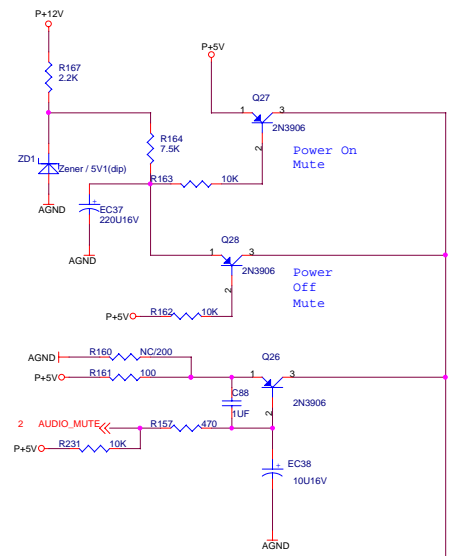
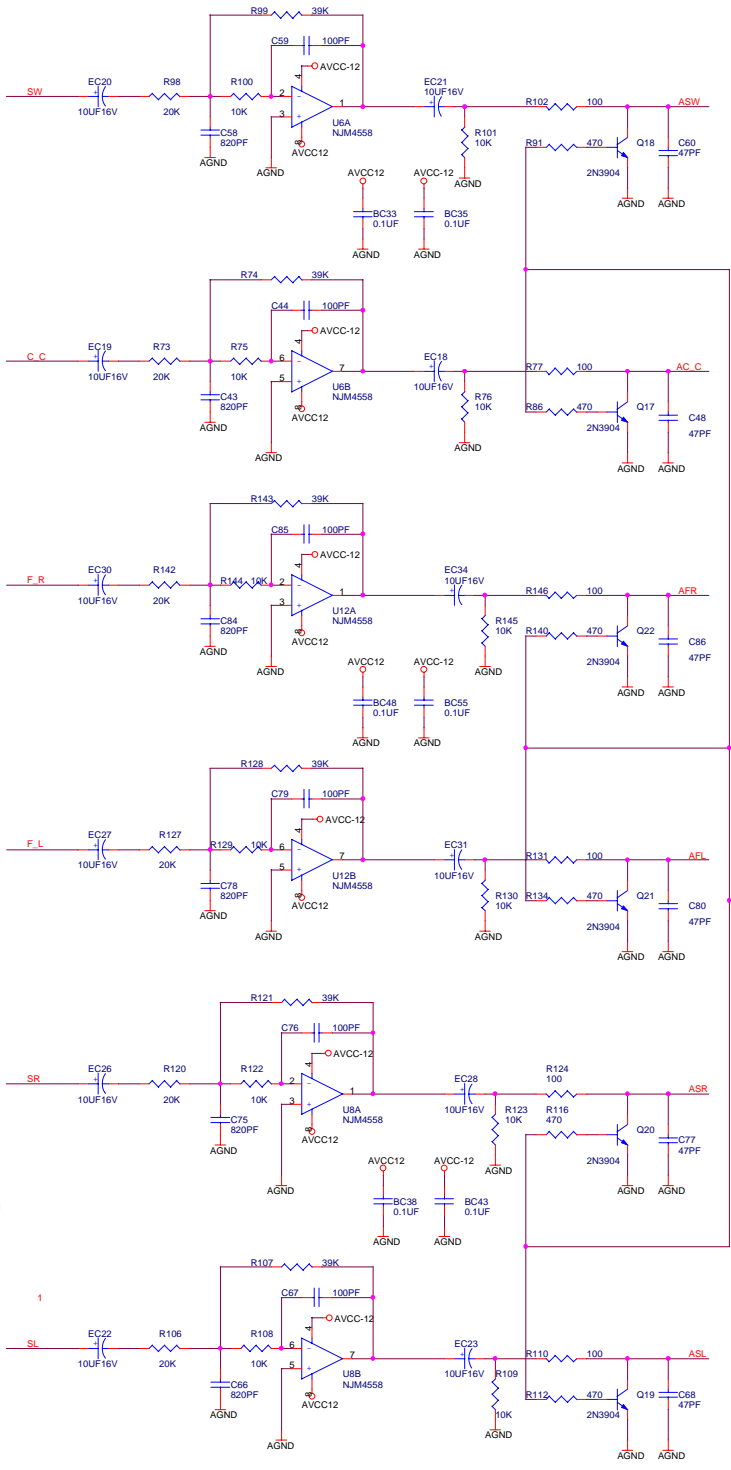
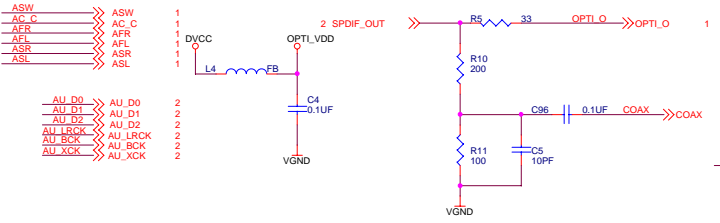


CS4334 I2S format only

CS4360 Format

DIF1	DIF0	AUDIO INTERFACE
0	0	LJ 24 bits
0	1	I2S
1	0	RJ 16bits
1	1	RJ 24 bits

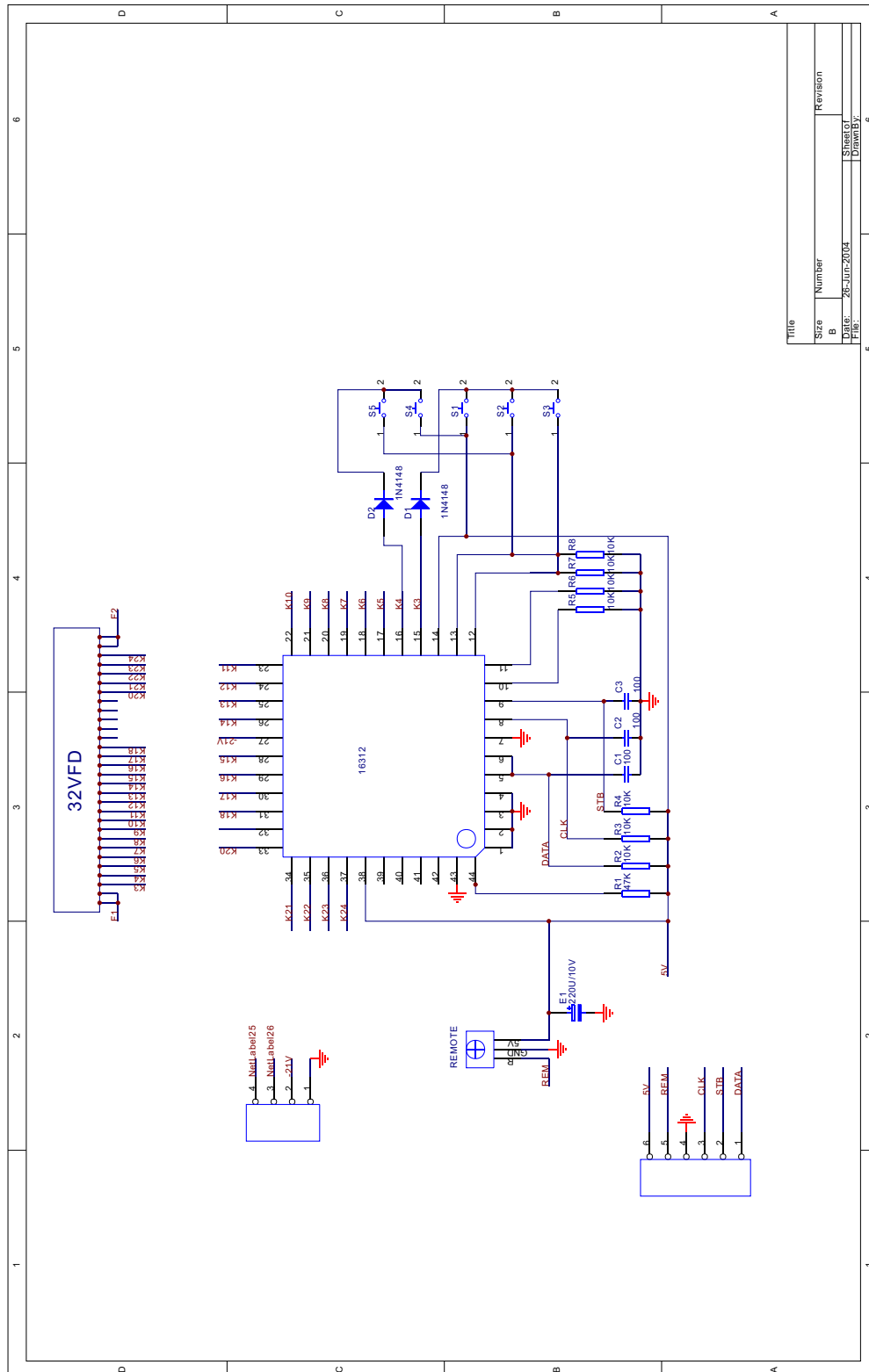
Replace GND with VGND For Himage mechanism



## 4.2 Front Panel

The front panel I/O is controlled by the PIC508 and PT 6312 (Optional) driver.

A.



## 4.2.1 Front Panel Interface

### 6 Pin, Data Connector Pin Assignments

PIN	NAME	I/O	DESCRIPTION
1	REM	I	Front Panel Data input
2	DATA	I	IR sensor interrupt
3	CLK	O	Front Panel chip select
4	STB	O	Front Panel clock
5	GND	O	Front Panel Data output
6	VCC		

### 6 Pin, Power Connector Pin Assignments

PIN	NAME	FROM	DESCRIPTION
1	VFD 1	SMPS	Segment and grid Voltage of the VFD
2	VFD 2	SMPS	Provide a DC supply to the cathode. To overcome the voltage difference between one and the other of the cathode.
3	-21V	SMPS	
4	STBY	SMPS	
5	GND	SMPS	
6	+5V	SMPS	Supplies IR and Front IC

There are 3 different devices operated by the PIC508 and Pt6312 (Optional):

- \* Vacuum Fluorescent Display (VFD)
- \* Push-buttons
- \* LEDs

There is an option for a tray lamp and a joystick which is not currently assembled. The VFD display is custom made, implemented in a 6 grids by 16 segment matrix.

The VFD needs special voltage supply for operation:

- \* V<sub>kk</sub> which is -21V needed to drive the segments and grids of the VFD.
- \* V<sub>f1</sub>, V<sub>f2</sub> which powers the electron cloud filament (cathode) with a differential voltage of 3.5V. This is a floating voltage difference generated by the power supply, and is biased to -21V in the front panel board by a Zener circuit from the -21V (V<sub>kk</sub>) supply. Moving the bias towards a more positive number will reduce the segment brightness. V<sub>f1</sub> & V<sub>f2</sub> provide a DC supply to the cathode. To overcome the voltage difference between one end and the other of the cathode, it is geometrically tilted so that the segments observe the same potential and have all the same brightness. Other way to overcome the problem is to employ an AC supply to power the V<sub>f1</sub> and V<sub>f2</sub>.

## 4.3 SMPS

The mains power(220VAC) fed from N1 is filtered through C1, L1, C2 and L2 then rectified by D1, D2, D3 and D4 and generates an output at 300VDC. This 300VDC fed to T1 (pin2, pin4) which connects to 5L0380R(pin2), then 5L0380R will automatically generate a 50KHz square waveform, this 50KHz square waveform controls the ON/OFF between 5L0380R pin2 and the ground. In normal condition, T1 primary (between pin2 and pin4) will create a 50KHz square waveform which is controlled by 5L0380R, this signal then fed to T1 and generates 2 different potential voltages of 12V and 5V between pin17, pin14 and pin16, pin14 respectively. The 12VDC and 5VDC then rectified by D7, D8, D9 and then filtered by L3, L4, L5, C9, C10 and C11. The feedback voltage is controlled by Ic3 TL431 and IC2 PC817. When the output voltage is higher than 5V, the voltage at TL431(2.5V) is compared with R10 and send out a signal to 5L0380R, the output square waveform then will change to adjust the output voltage, this acts as a voltage stabilizer.

---

4.4.1 Adopt small lens: can adopt DV34.Hittachi .Mipseumi . Thomson act lens

4.5 Electric specification

4.5.1 Drive cell:adopt RF-300CA-10500 electricity machine

5.2 Electricity machine work voltage is 3V-5.9V

5.3 General work voltage is 3.3V-5V

5.4 Unilateralism(com or go) move time:<1.5S(add 5V voltage)

5.5 In 5 °C-10°C work current is <120mA

4.6 Testing condition

6.1 Position: level placed

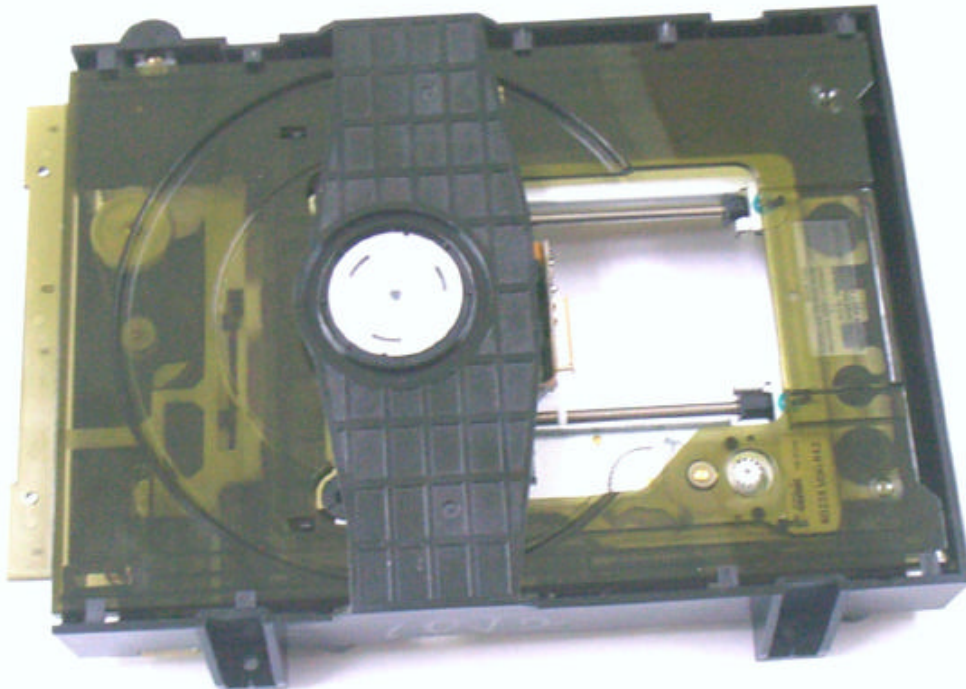
6.2 environment: temperature  $22\pm 2$  °C

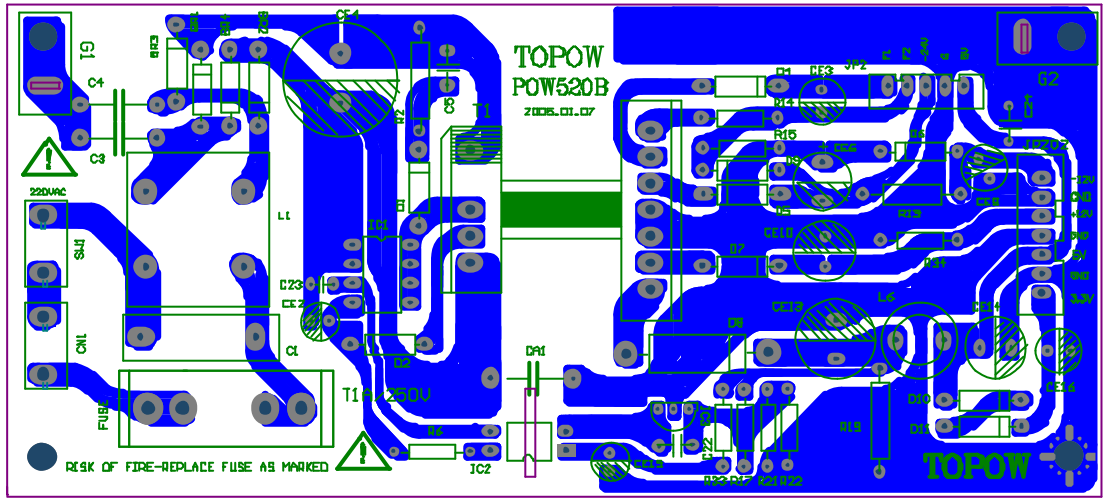
Humidity  $50\pm 5\%$

6.3 Turnover storehouse voltage: $5V\pm 0.5V$

• 6.4 Standard DVD lens testing frock

6.5 Standard DVD testing dish





## 5. DESCRIPTION OF THE INTEGRATED CIRCUITS

### 5.1 SMPS TRANSFORMER

#### 1. GENERAL INFORMATION

Main Voltage Operations:	90Vac - 265 Vac
Main Drop-out Voltage:	Max. 90 Vac
Mains Start-up Voltage:	Max. 90 Vac
Operating Frequency:	60 KHz

#### 2. ELECTRICAL CHARACTERISTICS

##### 2.1 STATIC CHARACTERISTICS

WINDING	PIN. NO	INDUCTANCE	DESCRIPTION
Primary Inductance	2-4	1.5mH 610%	<0.50W

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

##### 2.2 WITHSTANDING VOLTAGE

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

##### 2.3 INSULATION RESISTANCE

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

##### 2.4 ELECTRICAL CHARACTERISTICS

1. 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.
2. Before taking a measurement, DVD set should be working at least 5 minutes on Normal condition



## 5.2 FRONT PANEL DRIVER IC FOR VIR (PT6312)

### 5.2.1 General Description

Operating Supply Voltage Range (TA=25 , VSS=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Supply Voltage range 1	VDD	4.5	5.0	5.5	V
Operating Supply Voltage range 2	VEE	VEE - 32	VEE - 30	VEE - 0	V

Absolute maximum ratings (Ta=25 , VSS=0 V,0)

Parameter	Symbol	Limits	Unit
Applied voltage 1	VDD	-0.3 ~ 7.0	V
Applied boltage 1	VEE	VDD+0.3 ~ VDD -35	V
Input Voltage	VIN	-0.3 ~ VDD +0.3	V
Power dissipation	PD	850*1	MV
Operating Temperature	TOPR	-25 ~ 75	
Storage Temperature	TSTG	-55 ~ 125	

### Pin Description

Pin	Name	Pin No .	I/O	Function
VDD	Power supply pin 1	14, 38	I	Connected to the power supply of the system
OSC	Oscillation pin	44	I/O	Connected to the oscillation capacitor
VSS	GND pin	7, 43	I	Connected to the ground of the system
SI	Serial data input	6	I	Serial data input starting from MSB
SO	Serial data output	5		Serial data output starting from MSB
SCK	Serial Clock input	8	I	Serial data read at rising edge
CS	Serial Chip select	9	I	Serial initialization at "L", effective at "H"
S1~S11	High with standing voltage output pin for segment	15~25	O	Output pin for segment Output: Pch open drain + pull - down resistance
VEE	Power supply pin 2	27	I	Pull - down resistance connection for FLP driver
G1~G6	High with standing voltage output pin for grid	37~32	O	Output pin for grid Output: Pch open drain + pull - down resistance
S12/G11 ~S16/G7	High with standing voltage output pin for segment / grid	26, 28~31	O	Segment / grid output selectable pin Output: Pch open drain + pull - down resistance
L1~L4	Output pin for LED	42~39	O	Output pin for LED; output is CMOS output
K1~K4	Key data input pin	10~13	I	Data input pin for key scanning
SW1~SW4	General - purpose input pin	1~4	I	General - purpose input pin Input data sent to microcomputer in serial fromat

## 5.3 SWPS CONTROLLER IC (VIPer22A) VIPer22AS

### LOW POWER OFF LINE SMPS PRIMARY SWITCHER

#### TYPICAL POWER CAPABILITY

Mains type	SO-8	DIP-8
European (195 - 265 Vac)	12 W	20 W
US / Wide range (85 - 265 Vac)	7 W	12 W

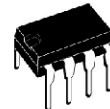
- FIXED 60 KHZ SWITCHING FREQUENCY
- 9V TO 38V WIDE RANGE VDD VOLTAGE
- CURRENT MODE CONTROL
- AUXILIARY UNDERVOLTAGE LOCKOUT WITH HYSTERESIS
- HIGH VOLTAGE START UP CURRENT SOURCE
- OVERTEMPERATURE, OVERCURRENT AND OVERVOLTAGE PROTECTION WITH AUTORESTART

#### DESCRIPTION

The VIPer22A combines a dedicated current mode PWM controller with a high voltage Power



SO-8



DIP-8

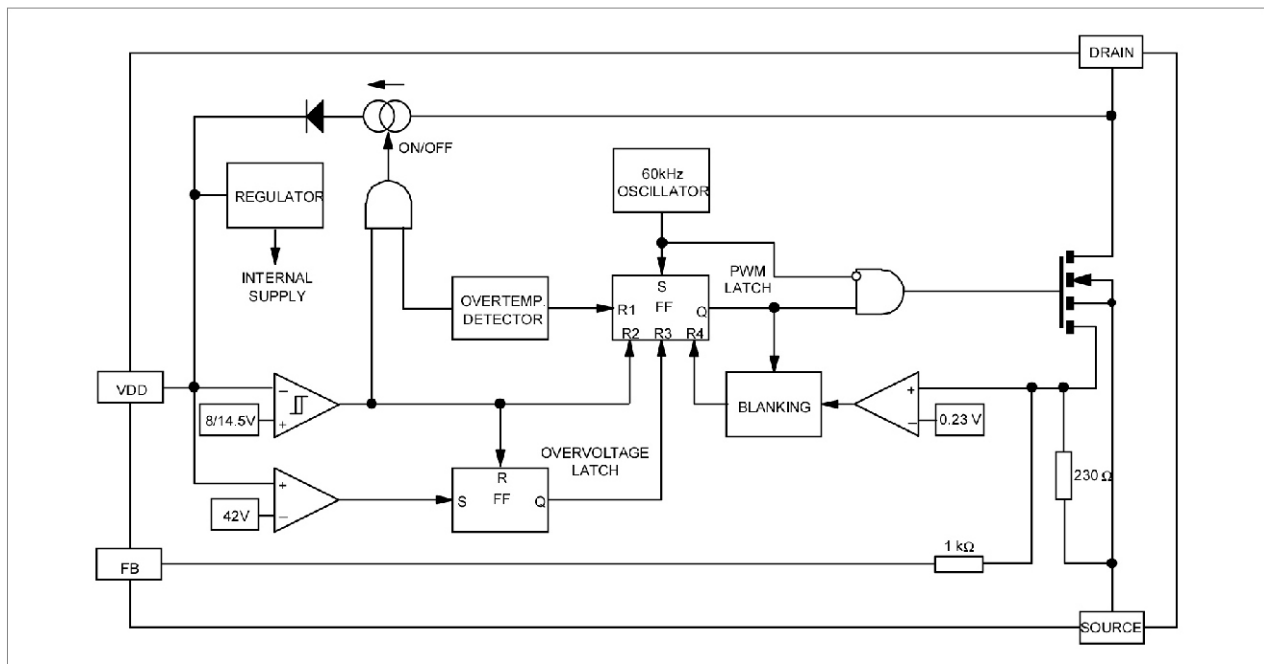
#### ORDER CODES

PACKAGE	TUBE	T&R
SO-8	VIPer22AS	VIPer22AS13TR
DIP-8	VIPer22ADIP	-

MOSFET on the same silicon chip. Typical applications cover off line power supplies for battery charger adapters, standby power supplies for TV or monitors, auxiliary supplies for motor control, etc. The internal control circuit offers the following benefits:

- Large input voltage range on the  $V_{DD}$  pin accommodates changes in auxiliary supply voltage. This feature is well adapted to battery charger adapter configurations.
- Automatic burst mode in low load condition.
- Overvoltage protection in hiccup mode.

#### BLOCK DIAGRAM



## VIPer22ADIP / VIPer22AS

ELECTRICAL CHARACTERISTICS ( $T_j=25^\circ\text{C}$ ,  $V_{DD}=18\text{V}$ , unless otherwise specified)

## SUPPLY SECTION

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{DDch}$	Start Up Charging Current	$V_{DS}=100\text{V}$ ; $V_{DD}=0\text{V} \dots V_{DDon}$ (See fig. 2)		-1		mA
$I_{DDoff}$	Start Up Charging Current in Thermal Shutdown	$V_{DD}=5\text{V}$ ; $V_{DS}=100\text{V}$ $T_j > T_{SD} - T_{HYST}$	0			mA
$I_{DD0}$	Operating Supply Current Not Switching	$I_{FB}=2\text{mA}$		3	5	mA
$I_{DD1}$	Operating Supply Current Switching	$I_{FB}=0.5\text{mA}$ ; $I_D=50\text{mA}$ (Note 1)		4.5		mA
$D_{RST}$	Restart Duty Cycle	(See fig. 3)		16		%
$V_{DDoff}$	$V_{DD}$ Undervoltage Shutdown Threshold	(See fig. 2 & 3)	7	8	9	V
$V_{DDon}$	$V_{DD}$ Start Up Threshold	(See fig. 2 & 3)	13	14.5	16	V
$V_{DDhyst}$	$V_{DD}$ Threshold Hysteresis	(See fig. 2)	5.8	6.5	7.2	V
$V_{DDovp}$	$V_{DD}$ Overvoltage Threshold		38	42	46	V

Note: 1. These test conditions obtained with a resistive load are leading to the maximum conduction time of the device.

## OSCILLATOR SECTION

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$F_{OSC}$	Oscillator Frequency Total Variation	$V_{DD}=V_{DDoff} \dots 35\text{V}$ ; $T_j=0 \dots 100^\circ\text{C}$	54	60	66	kHz

## PWM COMPARATOR SECTION

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$G_{ID}$	$I_{FB}$ to $I_D$ Current Gain	(See fig. 4)		560		
$I_{Dlim}$	Peak Current Limitation	$V_{FB}=0\text{V}$ (See fig. 4)	0.56	0.7	0.84	A
$I_{FBsd}$	$I_{FB}$ Shutdown Current	(See fig. 4)		0.9		mA
$R_{FB}$	FB Pin Input Impedance	$I_D=0\text{mA}$ (See fig. 4)		1.2		$k\Omega$
$t_d$	Current Sense Delay to Turn-Off	$I_D=0.4\text{A}$		200		ns
$t_b$	Blanking Time			500		ns
$t_{ONmin}$	Minimum Turn On Time			700		ns

## OVERTEMPERATURE SECTION

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$T_{SD}$	Thermal Shutdown Temperature	(See fig. 5)	140	170		$^\circ\text{C}$
$T_{HYST}$	Thermal Shutdown Hysteresis	(See fig. 5)		40		$^\circ\text{C}$

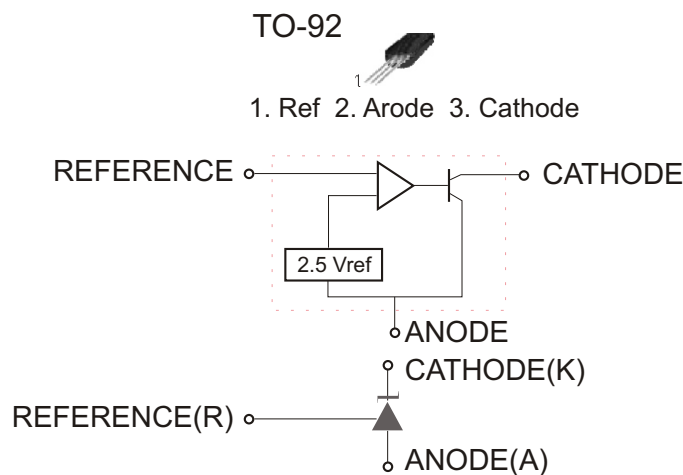
## 5.4 SMPS PROGRAMMABLE SHUNT REGULATOR (FAIRCHILD TL 431)

### 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 typical dynamic output impedance of 2.0Ω. Active output circuitry provides a very sharp turn-on characteristic making these devices excellent replacement for zener diodes in many applications.



### Absolute maximum ratings

Parameter	Symbol	Value	Unit
Cathode voltage	VKA	37	V
Cathode current Range (Continuous)	IKA	-100 ~ +150	MA
Reference Input Current Range	IREF	0.05 ~ +10	MA
Power dissipation D,Z Suffix 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

## 5.5 LINE FILTER (2 X 60mH)

### ELECTRICAL DATA

Inductance: L1-2=L3-4=30mH - 15% - +20%

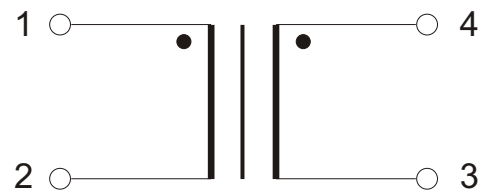
Resistance: R 1-2 = R 3-4 = 1.5 ohm (max)

Rated current: I<sub>rms</sub> = 0.50 A  
(F= 1 Khz V= 1 Vms)

### LEAKAGE INDUCTANCE

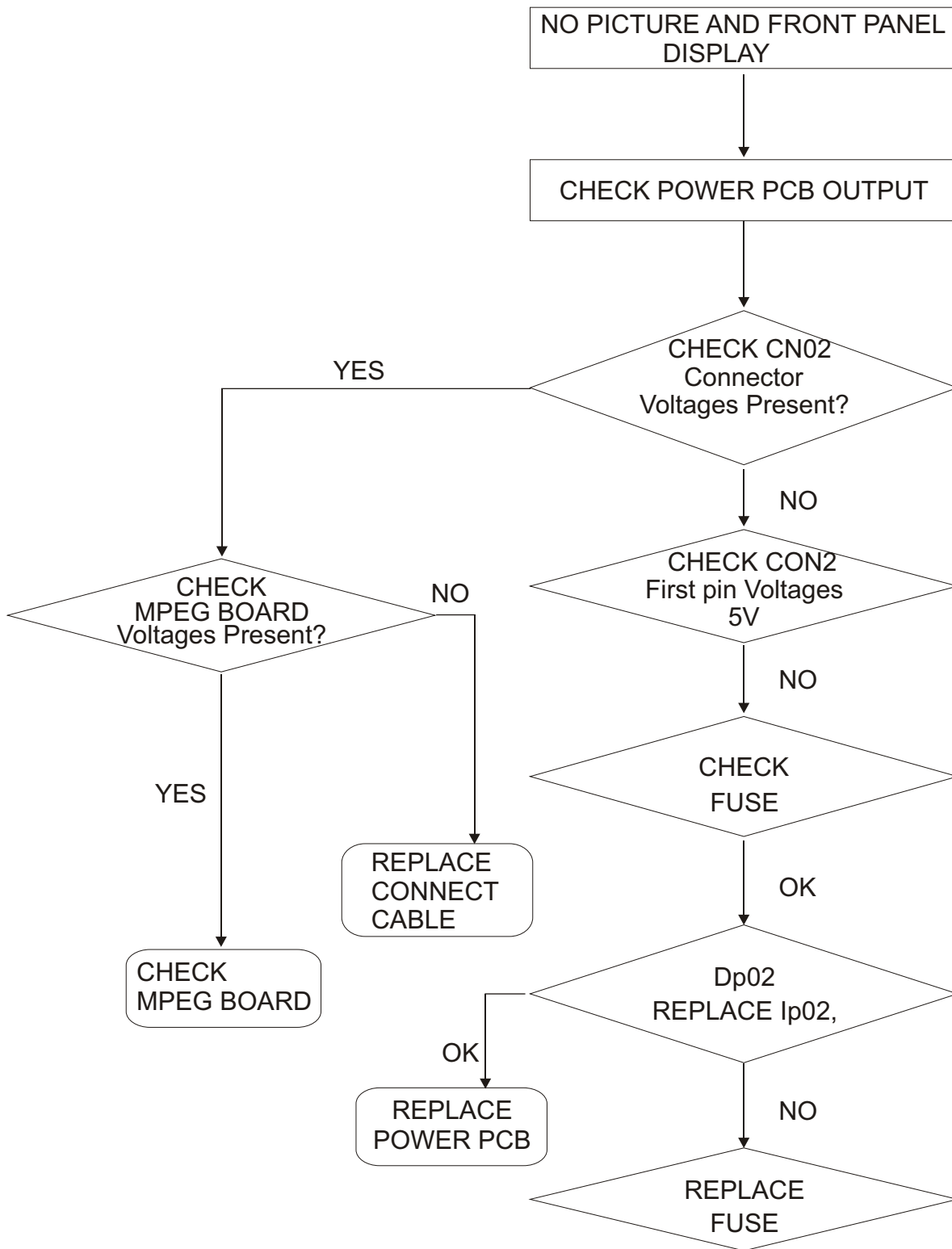
L 1-2 = L 3-4      100+/- 20%uH      NOTES

CIRCUIT DIAGRAM

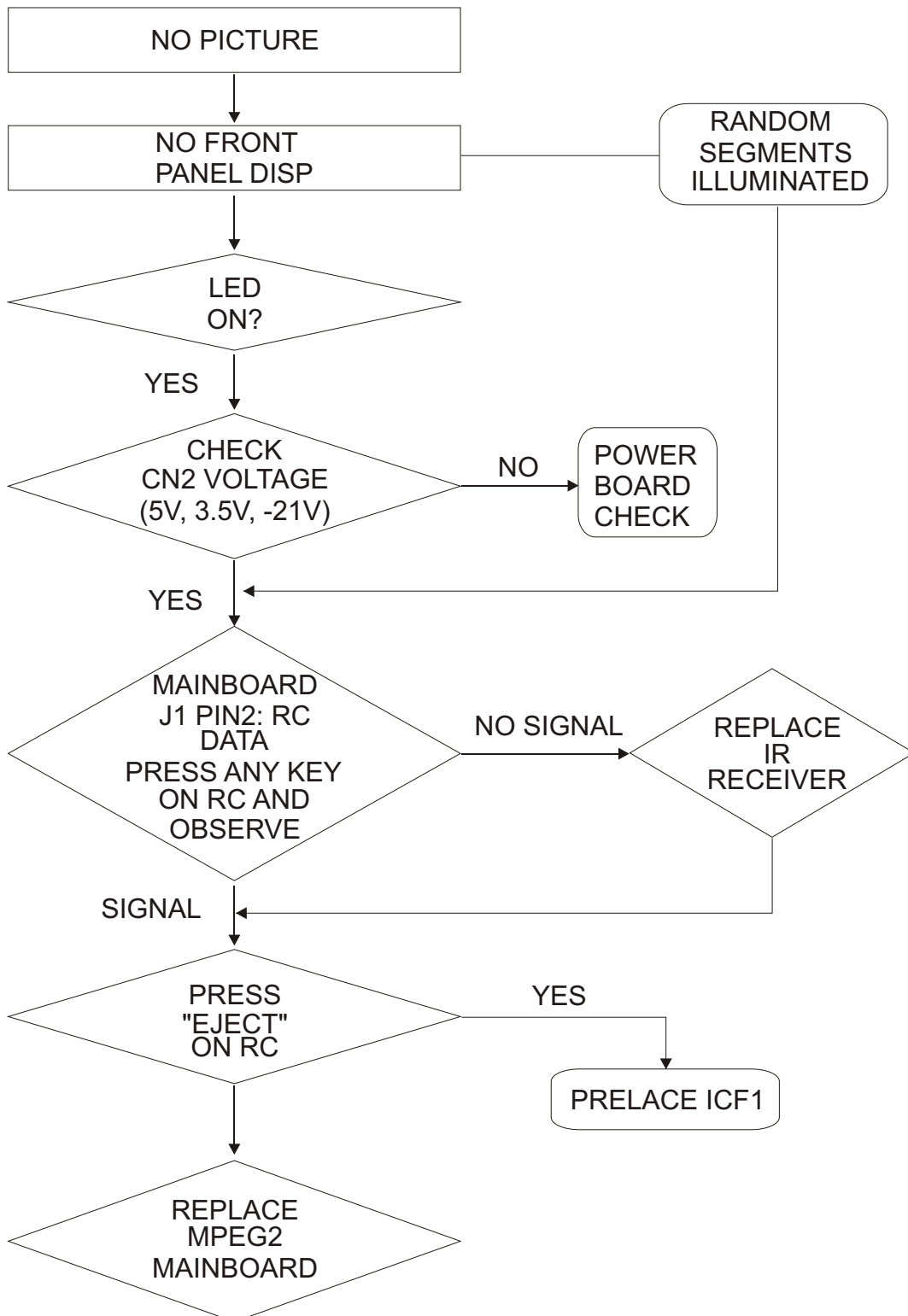


## 6. FAULT TRACING FLOW CHART

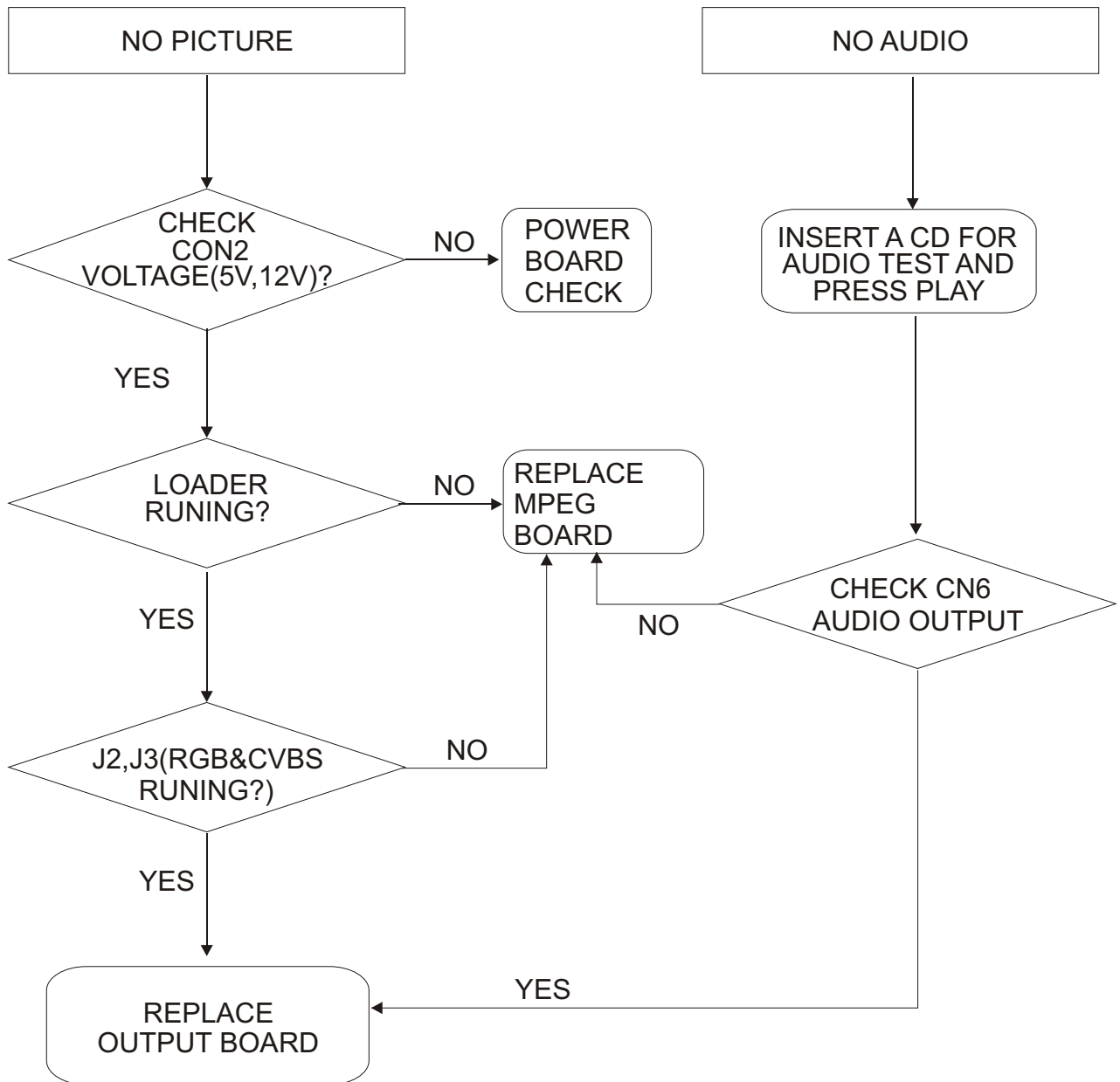
### 6.1 POWER SUPPLY



## 6.2 FRONT PANEL



### 6.3 MPEG BOARD





resistance	220 1/4W $\pm 5\%$	R6	1
resistance	470 1/4W $\pm 5\%$	R33	1
resistance	1K 1/4W $\pm 5\%$	CE11	1
resistance	10K 1/4W $\pm 5\%$	R15	1
resistance	200K 1/4W $\pm 5\%$	R22	1
resistance	120K 1/2W $\pm 5\%$	R2	1
resistance	10K 1/4W $\pm 1\%$	R2	2
resistance	270 1W $\pm 5\%$	R13	1
resistance	470 1W $\pm 5\%$	R19	1
jump	0.6mm L=10mm	R14	1
capacitance	0.1uF/50V + 80% - 20%	C22 C24	2
capacitance	0.047uF/50V + 80% - 20%	C23	1
capacitance	0.01uF/1KV + 80% - 20%	C5	1
capacitance	1000pF/250V-Y1 $\pm 20\%$	CA1	1
capacitance	0.1uF/275V-X2	C1	1
capacitance	22uF/50V $\pm 20\%$	CE2	1
capacitance	100uF/16V $\pm 20\%$	CE3	1
capacitance	220uF/16V $\pm 20\%$	CE9	1
capacitance	220uF/35V $\pm 20\%$	CE6	1
capacitance	470uF/16V $\pm 20\%$	CE10 CE14	2
capacitance	1000uF/16V $\pm 20\%$	CE13	1
capacitance	33uF/400V $\pm 20\%$	CE4	1
inductance	17uH	L6	1
diode	IN4007	BR1 BR2 BR3 BR4	4
fast diode	FR104	D2 D4 D5	3
fast diode	FR157	D1 D7	2
diode	SB360	D8	1
ziner	6.8V 1/2W	D9	1
ziner	12V 1/2W	D6	1
fuse clamp		FUSE	2
fuse	1.6A/250V	FUSE	1
filter	UU10.5	L1	1
switch transformer	HC EEL19	T1	1
connector panel	4.2mm	G2	1
connector	VH 3.96mm	CN1 SW1	2
connector	XH 5P/2.54mm	JP2	1
connector	XH 7P/2.54mm	JP202	1
optically coupled	817	IC2	1
ic	TL431	IC3	1
ic	VIPer22A	IC1	1