

harman/kardon

# Model FL8385

## 5 Disc Compact Disc Changer

# SERVICE MANUAL



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Rev1 3/2004

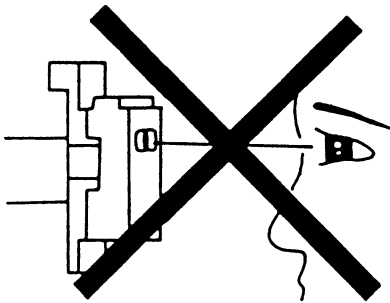
## LASER BEAM SAFETY PRECAUTIONS

**CLASS 1 LASER PRODUCT**

**CLASS 1 LASER PRODUCT**

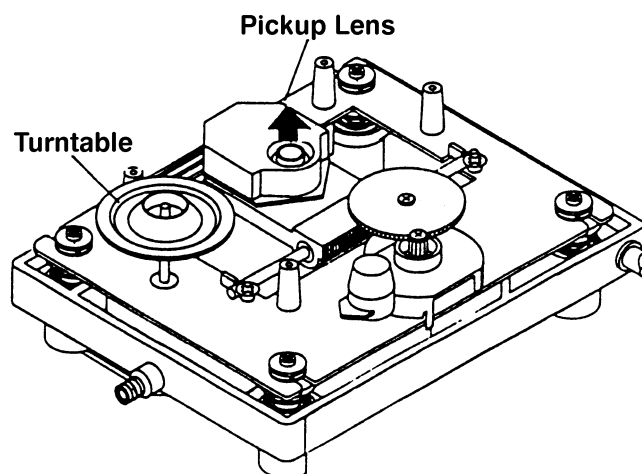
**CAUTION**  
**Invisible laser radiation when the unit is open.**  
**Do not stare into beam.**

CAUTION: USE OF ANY CONTROLS, ADJUSTMENT, OR PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

This compact disc player uses a pickup that emits a laser beam. The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 1 foot away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.



**CAUTION:**

Using controls and adjustment, or doing procedures other than those specified herein, may result in hazardous radiation exposure.

## SAFETY PRECAUTIONS



### WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**Caution:** To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

**Attention:** Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.

## HANDLING LASER PICKUP

The laser diode in the optical system of this player can be damaged by electrostatic discharge from your clothes or your body. Proper electrostatic grounding for service personal is required during servicing.

## BEFORE REPAIRING THE COMPACT DISC PLAYER

### Preparation

Human Body Grounding:

Many of the components used in this compact disc player, including the laser pickup, are sensitive to electrostatic discharge. Service personal should be grounded with an electrostatic armband (1 Mohm).

Caution:

Static charge on clothing does not escape through a body grounding wrist band.

Be careful not to contact the pickup or electrical components with your clothing.

Workbench and Tool Grounding:

A properly-grounded electroconductive plate (1Mohm) or metal sheet should be fitted to the workbench surface. Tools and instruments (such as soldering irons and scopes) should be grounded to prevent AC leakage.



Fig. 1

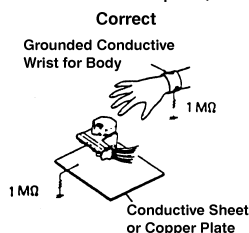


Fig. 2

Note: Laser diodes are so susceptible to damage from static electricity that, even if a static discharge does not ruin a diode, it can shorten its life or cause it to work improperly.

# FL8385 TECHNICAL SPECIFICATIONS

## Signal Format

Sampling Frequency	44.1kHz
HDCD Processing	Burr-Brown™ PCM1732
D/A Conversion	Dual 18-Bit
Oversampling	8 Times

## Discrete Analog Output Section

Error Correction	CIRC System
Frequency Response	20Hz – 20kHz +0, –1dB
THD (1KHz)	<0.02% @1kHz (30KHz Filter)
THD (1KHz)	<0.02% @1kHz (No Filter)
THD 20Hz~20KHz 0dB	<0.02% @1kHz (30KHz Filter)
Dynamic Range	>97dB
S-Noise Ratio 0dB A-weighted (A Filter)	>97dB
Channel Separation 1KHz 0dB (30KHz Filter)	80dB
Channel Balance	±0.5dB
De-emphasis (5KHz,16KHz)	±0.5dB
Line-Level Output (no HDCD)	1.0 Vrms ±1dB
Line-Level Output (HDCD Output)	2.0 Vrms ±2dB
Digital Output	Coax

## Headphone output specification under 32 ohm load

Maximum Headphone Output Level 1KHz 0dB	1.5Vp-p
Frequency Response (20~20KHz)	±1dB
THD 20~20KHz 0dB (30KHz Filter)	0.1%

## Test Disc Specification

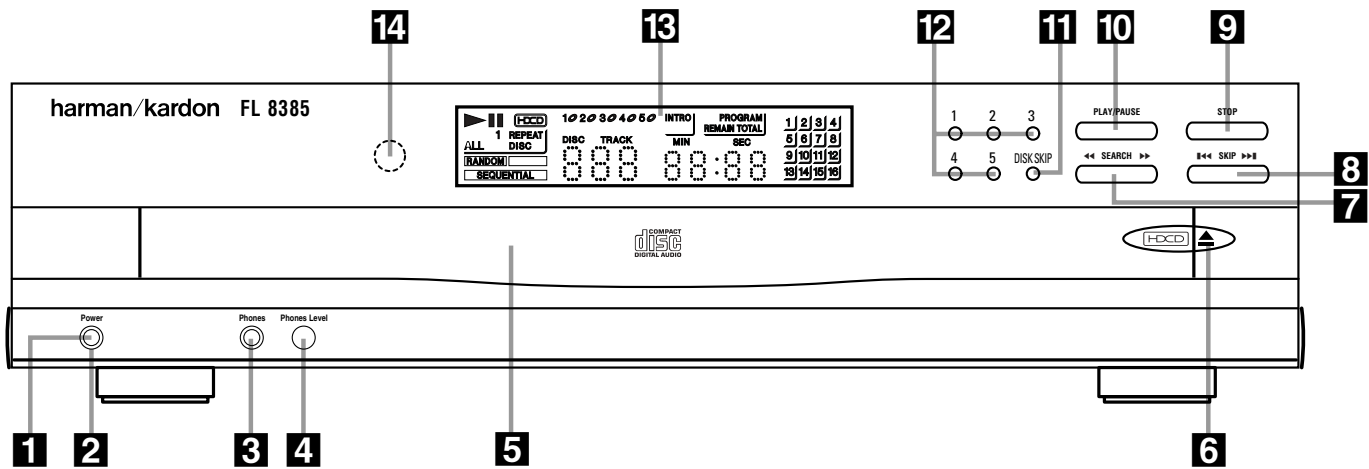
	Typical	Limit
Black Dot TCD 725B	1000um	600um
Interruption MCD-131	900um	600um
Finger print	75um	65um
Vertical Deviation MCD-151	0.92mm	0.92mm
Eccentricity TCD 712	40um	140um
8cm test disc TCD 783	Last Track	Last Track
Access Time 1st to last track YEDS18	4 sec	10 sec

## General

Power Requirement	120V/60Hz
Power Consumption	≈20 Watts
Dimensions	Height 5.1" (129mm) Width 17.3" (440mm) Depth 15.2" (386mm)
Weight	14.5 lb (6.6kg)

Depth measurement includes knobs and buttons. Height measurement includes feet and chassis. All features and specifications are subject to change without notice.

## FRONT-PANEL CONTROLS



- 1** Power Switch
- 2** Status Mode Indicator
- 3** Headphones Jack
- 4** Headphones Level Control
- 5** CD Drawer

- 6** Open/Close Button
- 7** Search Button
- 8** Skip Button
- 9** Stop Button
- 10** Play/Pause Button

- 11** Disc Skip Button
- 12** Disc Select Buttons
- 13** Information Display
- 14** Remote Sensor

**NOTE:** To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at [www.harmankardon.com](http://www.harmankardon.com).

**1 Power Switch:** Press this switch to apply power to the FL 8385. When the FL 8385 is first turned on by pressing this switch, the **Status Mode Indicator 2** will turn blue, and the **Information Display 13** will light. Press the switch again to turn the unit off; the **Status Mode Indicator 2** will turn amber, indicating that the unit is in a Standby mode. When the FL 8385 is connected to a switched AC outlet, such as those found on the back of many audio products, it will return to the Standby mode when power is applied to the switched outlet without any further press of the switch.

**2 Status Mode Indicator:** When the FL 8385 is in the On mode, this indicator will glow blue. When the unit is off, the indicator will glow amber, indicating that the unit is still connected to the AC main supply.

**3 Headphones Jack:** Connect a set of standard headphones to this jack for private listening.

**4 Headphones Level Control:** Turn this knob to increase or decrease the volume level for headphones connected to the FL 8385's **Headphones Jack 3**. Note that changing this level will not change the sound level for the unit's main output, as that remains constant.

#### NOTES:

- Always adjust the headphones level to the minimum possible to avoid the possibility of damage to the listener's hearing from unwanted white noise or other transient noises.
- When inserting a disc, wait until the FL 8385 has recognized the disc before using headphones in order to avoid the possibility of hearing potentially damaging white noise.

**5 CD Drawer:** This drawer holds the discs that will be played. Press the **Open/Close Button 6** to open the drawer so that discs may be inserted.

**6 Open/Close Button:** Press this button to open or close the disc drawer. DO NOT push the drawer to close it or damage to the transport mechanism may result.

**7 Search Button:** Press one side of this button to search forward ►► or the other side of the button to search backwards ◀◀ through a disc to locate a particular portion of the disc being played.

**8 Skip Button:** Press one side of this button to move to the next track ►► or the other side of the button to move back to the previous track ◀◀ on the disc being played.

**9 Stop Button:** Press this button to stop the disc currently being played.

**10 Play/Pause Button:** Press this button to start the playback of a CD. If the CD drawer is open, pressing this button will automatically close the drawer. Press this button once during play to momentarily pause a disc. When the button is pressed again, the disc will resume play at the point it was paused.

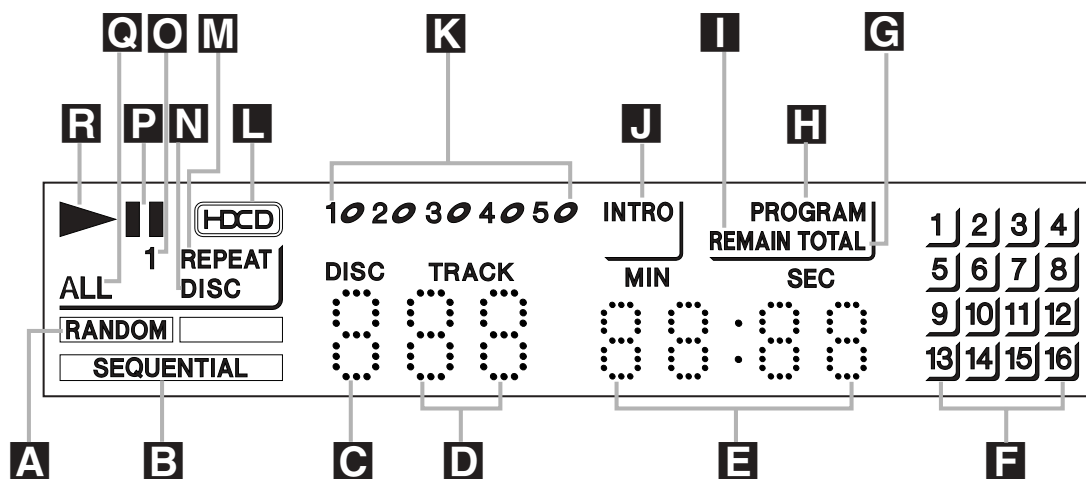
**11 Disc Skip Button:** Press this button to change to the next disc. If a disc position is empty, the FL 8385 will automatically search for the next position that contains a disc.

**12 Disc Select Buttons:** Press one of these buttons to select the disc in a specific position in the CD drawer.

**13 Information Display:** This display provides details about the operation of the FL 8385.

**14 Remote Sensor:** The sensor behind this window receives commands from the remote control. Keep this area clear if you wish to use the FL 8385 with a remote control.

## FRONT-PANEL INFORMATION DISPLAY



- A** Random Indicator
- B** Sequential Indicator
- C** Disc Number Display
- D** Track Number Display
- E** Time Display
- F** Remaining Tracks Display

- G** Total Time Indicator
- H** Program Indicator
- I** Remaining Time Indicator
- J** Intro Scan Indicator
- K** Loaded Disc Indicators
- L** HDCD Indicator

- M** Repeat Indicator
- N** Disc Mode Indicator
- O** Single Mode Indicator
- P** Pause Indicator
- Q** All Mode Indicator
- R** Play Indicator

**NOTE:** To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at [www.harmankardon.com](http://www.harmankardon.com).

**A Random Indicator:** This indicator will light when any of the three Random modes described on page 12 have been selected.

**B Sequential Indicator:** This indicator will light when the Random, All, Sequential playback mode has been selected. The FL 8385 will play all tracks on the current disc in random order, then advance to the next available disc and play all of its tracks in random order, and so on until all discs have been played once.

**C Disc Number Display:** The current disc number will be displayed here.

**D Track Number Display:** The current track number will be displayed here.

**E Time Display:** This indicator will display either the total running time of the disc currently playing, the total running time of the track currently playing or the time remaining on the currently playing disc. See page 12 for more information on the **Time Display E**.

**F Remaining Tracks Display:** When a disc is first selected, the numbers for each of the tracks on that disc will light, up to 16 tracks. During playback the current track number will flash, and all remaining track numbers will remain lit. The numbers of the preceding tracks will go dark. When playback is stopped, all of the track numbers available on the current disc will light, even if they were previously played. If a disc contains more than 16 tracks, the higher-numbered tracks may be played and their numbers will appear in the **Track Number Display D** when selected, but those numbers will not appear in the **Remaining Tracks Display F**.

**G Total Time Indicator:** This indicator will light when the total time on the current disc has been selected for display. See page 12 for more information on the time display function.

**H Program Indicator:** This indicator will light when the FL 8385 has been placed in programmed-play mode. It will remain lit while a play list is being programmed and during playback of a play list.

**I Remaining Time Indicator:** This indicator will light when the remaining time on the current disc or in the current track has been selected for display. See page 12 for more information on the time display function.

**J Intro Scan Indicator:** This indicator will light when the Intro Search mode has been selected as described on page 13. This mode enables you to search for a particular track by previewing the first 10 seconds of each track of each loaded disc, and then selecting the desired track.

**K Loaded Disc Indicators:** When the unit is turned on, the indicators for all disc positions will light, with the current disc indicated by a flashing red ring. As the FL 8385 circulates through all disc positions, the indicators for positions found to be empty will go out. This display will refresh any time the **CD Drawer 5** is opened.

## FRONT - PANEL INFORMATION DISPLAY

**L HDCD Indicator:** This indicator will light when a disc encoded in the HDCD format is played. In order to benefit from the FL 8385's HDCD decoding, the **Analog Audio Outputs 5** must be connected to corresponding inputs on your receiver or processor, and those inputs must be selected. If you have only connected the **Coaxial Digital Audio Output 2** to your receiver or processor, you will not hear HDCD playback unless your receiver/processor includes an HDCD decoder. Playback of non-HDCD-encoded discs using the **Analog Audio Outputs 5** will be enhanced due to the improved filters incorporated in the FL 8385's microprocessor.

**M Repeat Indicator:** This indicator will light when any of the four repeat modes described on pages 13 and 14 has been selected.

**N Disc Mode Indicator:** This indicator will light when either the Random, All Tracks/Discs or Repeat Disc modes has been selected.

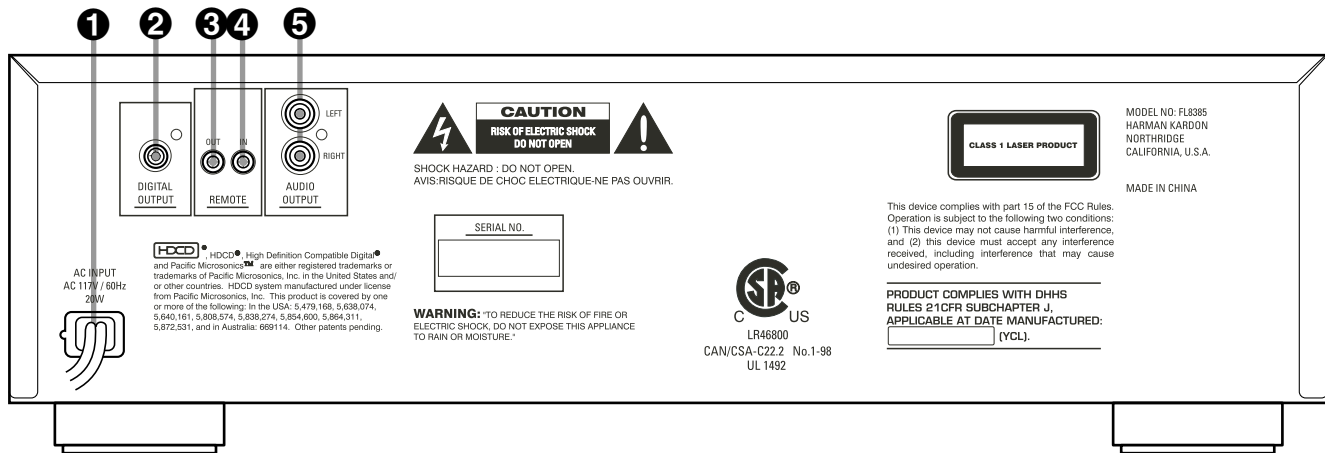
**O Single Mode Indicator:** This indicator will light when either the Random 1 disc or Repeat 1 track or disc modes has been selected.

**P Pause Indicator:** This indicator will light when playback has been paused.

**Q All Mode Indicator:** This indicator will light when any of the Random All Sequential, Random All Tracks/Discs or Repeat All Discs modes has been selected.

**R Play Indicator:** This indicator will light during playback.

## REAR-PANEL CONNECTIONS



- 1** AC Power Cord
- 2** Coaxial Digital Output
- 3** Remote Control Output

- 4** Remote Control Input
- 5** Analog Audio Outputs

**NOTE:** To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at [www.harmankardon.com](http://www.harmankardon.com).

**1 AC Power Cord:** Connect this plug to an AC outlet. If the outlet is switch-controlled, make certain that the switch is in the ON position.

**2 Coaxial Digital Output:** Connect this jack to the coaxial-digital input of a digital audio/video receiver or an external digital-to-analog converter for direct access to the digital signals of the FL 8385. DO NOT connect this jack to the standard audio inputs of any device.

**3 Remote Control Output:** Connect this jack to the input of another compatible Harman Kardon remote controlled device to have the remote sensor on the FL 8385 provide signals to other products.

**4 Remote Control Input:** Connect the output of a remote infrared sensor or the remote control output of another compatible Harman Kardon product. This will enable the remote control system to operate even when the front panel **Remote Sensor 14** is blocked. It will also allow use of the FL 8385 with optional, external control systems.

**5 Analog Audio Outputs:** Connect these jacks to the analog CD audio inputs of your receiver, surround processor or preamplifier.

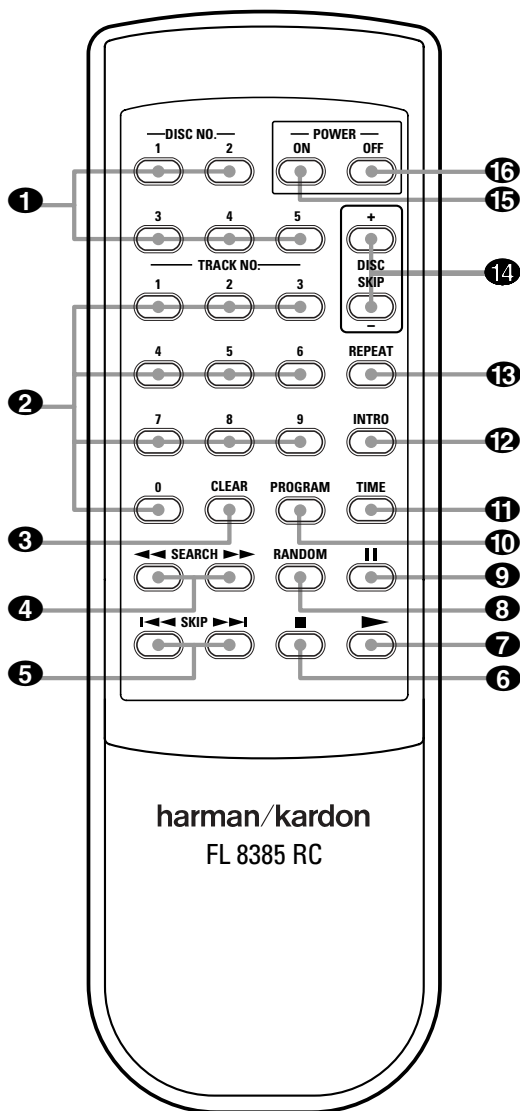


## REMOTE CONTROL FUNCTIONS

- ❶ Disc-Select Buttons
- ❷ Numeric Buttons
- ❸ Clear Button
- ❹ Search Buttons
- ❺ Skip Buttons
- ❻ Stop Button
- ❼ Play Button
- ❽ Random Button
- ❾ Pause Button
- ❿ Program Button
- ⓫ Time Button
- ⓬ Intro Button
- ⓭ Repeat Button
- ⓮ Disc Skip Buttons
- ⓯ Power On Button
- ⓰ Power Off Button

**NOTE:** To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at [www.harmankardon.com](http://www.harmankardon.com).

- ❶ **Disc-Select Buttons:** Press one of these buttons to select the disc in a specific position in the CD drawer.
- ❷ **Numeric Buttons:** Press these buttons to select a specific track on a disc. The FL 8385 will immediately go to the track and begin to play it. These buttons are also used to enter track numbers into the memory for preprogrammed-play lists. (See page 13 for complete information on programming the FL 8385.)
- ❸ **Clear Button:** Press this button to remove tracks from a programmed sequence. Each press of the button will remove one track, starting with the last track programmed to play. (See page 13 for complete information on programming the FL 8385.)
- ❹ **Search Buttons:** Press these buttons to search forward ►► or backwards ◀◀ through a disc to locate a particular portion of the selection being played.
- ❺ **Skip Buttons:** Press one of these buttons to move to the next track ►► or to move back to the previous track ◀◀ on the disc being played.
- ❻ **Stop Button:** Press this button to stop the disc currently being played.



- ❼ **Play Button:** Press this button to start the playback of a CD. If the CD drawer is open, pressing this button will automatically close the drawer.
- ❽ **Random Button:** Press this button to play all of the tracks on a disc in a random order. (See page 12 for more information.)
- ❾ **Pause Button:** Press this button once to momentarily pause a disc. When the button is pressed again, the disc will resume play from the point at which it was paused.
- ❿ **Program Button:** This button is used to program the playback of a disc in a particular order. (See page 13 for complete instructions on programming the FL 8385.)

⓫ **Time Button:** In normal operation, the display will show the running time of the track being played. Press the button once to check the time remaining for the track in play. Press the button again to view the total play time remaining for the disc in play. (See page 12 for more information.)

⓬ **Intro Button:** Press this button to put the FL 8385 into the Intro Scan mode. When you press this button, the unit will play the first 10 seconds of each track on the disc, and then move to the next track. Press the button again to defeat the function and continue full play of the current track. (See page 13 for more information.)

⓭ **Repeat Button:** Press this button once to continuously repeat the track currently being played. Press it a second time to repeat the entire disc. (See pages 13 and 14 for more information.)

⓮ **Disc Skip Buttons:** Press these buttons to change to the next disc. If a disc position is empty, the FL 8385 will automatically search for the next position that contains a disc.

⓯ **Power On Button:** When the FL 8385 is plugged into an active AC outlet, press this button to turn the unit on. The **Status Mode Indicator** ❷ will turn blue. If the unit is plugged into a switched outlet, power must be applied to the switched outlet in order for the **Power On Button** ⓯ to be effective.

⓰ **Power Off Button:** Press this button to turn the unit off; the **Status Mode Indicator** ❷ will turn amber, indicating that the unit is in a Standby mode.

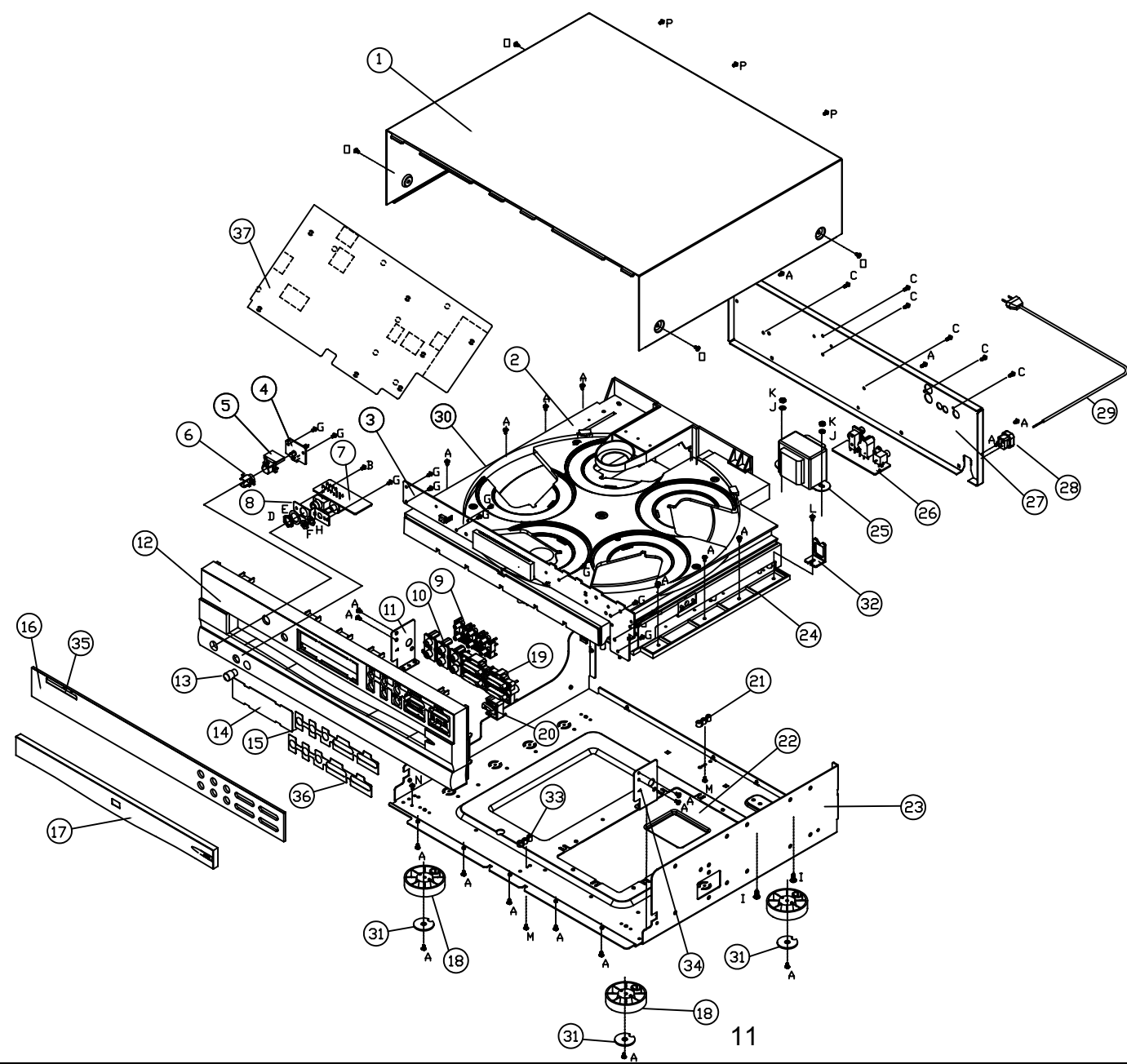
# TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	SOLUTION
No lights on front panel	<ul style="list-style-type: none"> <li>• No AC power</li> </ul>	<ul style="list-style-type: none"> <li>• Make certain that the AC power cord is plugged into a live outlet</li> </ul>
Remote does not appear to operate	<ul style="list-style-type: none"> <li>• Main Power Switch turned off</li> <li>• Weak batteries</li> <li>• Blocked sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Turn on Main Power Switch</li> <li>• Install fresh batteries, observing polarity indications</li> <li>• Remove obstructions from the front panel sensor, or connect a remote sensor to the <b>Remote Control Input 4</b> jack on the rear panel</li> </ul>
Front panel lights but CD does not play	<ul style="list-style-type: none"> <li>• Disc upside down</li> <li>• Moisture inside unit</li> </ul>	<ul style="list-style-type: none"> <li>• Turn CD over so that label side faces up</li> <li>• Leave the unit turned ON for 30 minutes to allow moisture to evaporate</li> </ul>
Play indicator lights but no sound is heard	<ul style="list-style-type: none"> <li>• Receiver or preamp and amp not turned on</li> <li>• Poor connections</li> <li>• Wrong source selected</li> </ul>	<ul style="list-style-type: none"> <li>• Turn on all necessary equipment</li> <li>• Make certain connections are secure and made to the correct (e.g., <b>CD</b>) input</li> <li>• Select CD source on receiver or preamp</li> </ul>
Sound skips or stutters during play	<ul style="list-style-type: none"> <li>• Disc may be damaged</li> <li>• Surface vibrations</li> </ul>	<ul style="list-style-type: none"> <li>• Try another disc</li> <li>• Isolate the unit from vibration by placing it on a firm surface or move it further away from speakers</li> </ul>
Sound is continually distorted	<ul style="list-style-type: none"> <li>• Incorrect input</li> </ul>	<ul style="list-style-type: none"> <li>• Make certain that the FL 8385 is connected to a line-level audio input, NOT a digital audio or phono input</li> </ul>

FL8385

harman/kardon

REV.	DESCRIPTION	PROJECT ENGR./DATE	APPROVAL /DATE
<b>FL8385</b>			



P	7003-006001-113	SCREW M3X6 STP B/H (ND)	3
Q	7003-006001-063	SCREW M3X6 STP W/H (ND)	4
N	7003-006001-112	SCREW M3X6 STP B/H (Zn)	1
M	7003-016002-112	SCREW M3X16 PTP B/H(Zn)	2
L	7003-008001-111	SCREW M3X8 STP B/H(KBLACK)	2
K	6600-120040-000	HEX NUT M4	2
J	7104-010010-022	WASHER M4	4
I	7004-010010-112	SCREW M4X10 B/H	2
H	7107-212004-022	WASHER M7	1
G	7003-008002-112	SCREW M3X8 PTP B/H	41
F	6600-120070-000	HEX NUT M7	1
E	7112-018006-022	WASHER M12	1
D	6600-120120-000	HEXNUT M12	1
C	7003-008002-111	SCREW M3X8 PTP B/H(KBLACK)	6
B	7003-006002-112	SCREW M3X6 PTP B/H(Zn)	6
A	7003-006001-111	SCREW M3X6 STP B/H(KBLACK)	33
37	9483-801000-012	MAIN BOARD ASSY	1
36	6083-810016-000	DIFFUSER (GREEN)	1
35	6583-810004-000A	LOGO BADGE (SILVER)	1
34	6583-810003-000	BRACKET FP RIGHT	1
33	6083-510011-000	STAND FRONT-5CD	1
32	6083-510016-000	BRACKET WIRE	1
31	6600-070003-000	PAD FOOT	6
30	6083-510013-001	BRACKET 5CD-SIDE1	1
29	2610-218300-002	POWER CORD	1
28	6600-180007-000	BUSH ACSRF-5B	1
27	6583-510003-003-08	REAR CABINET SILKSCREEN	1
26	9483-801000-291	OUTPUT BOARD ASSY	1
25	3200-480150-400	TRANSFORMER	1
24	6083-510014-001	BRACKET 5CD-SIDE2	1
23	6583-510001-006	BOTTOM CABINET	1
22	6583-510010-000	COVER PLATE	1
21	6083-510012-000	STAND REAR-5CD	1
20	6083-810006-000-02	BUTTON OPEN/CLOSE PAINTED	1
19	6083-810007-000-02	BUTTON PLAY PAINTED	1
18	6029-010012-001-02	FOOT	4
17	6083-810002-000-02	CD DOOR PAINTED	1
16	6083-810003-001-02	WINDOWS DISPLAY	1
15	6083-810010-000	DIFFUSER	1
14	6083-810011-000	FILTER FL	1
13	6083-810013-000A01	KNOB VR PAINTED	1
12	6083-810001-000-03	FRONT PANEL	1
11	6583-810002-000	BRACKET FP LEFT	1
10	6083-810009-000-02	CAP BUTTON DISC	1
9	6083-810004-000A01	BUTTON DISC	1
8	6583-510006-000	BRACKET PHONES	1
7	9483-850100-021	ASSY PCB PHONES	1
6	6083-810015-000	INDICATOR STANDBY	1
5	6083-810014-000-02	BUTTON STANDBY	1
4	9483-850100-111	ASSY PCB STANDBY	1
3	9483-850100-261	ASSY PCB FL	1
2	9600-505007-001	5CD MECHANISM	1
1	6583-810001-002-02	TOP CABINET PAINTED	1
No	PARTS No	PARTS NAME	QTY

**YANION COMPANY LIMITED**

NOTE: UNLESS OTHERWISE SPECIFIED:  
 1. TOLERANCE: ± 0.10 MM (0.004 IN)  
 2. ALL DIMENSIONS ARE IN MM.  
 3. BREAK ALL SHARP CORNERS.  
 4. FOR SURET METAL PARTS, SURFACE IS 6061-T6 ALUMINUM UNLESS OTHERWISE SPECIFIED.

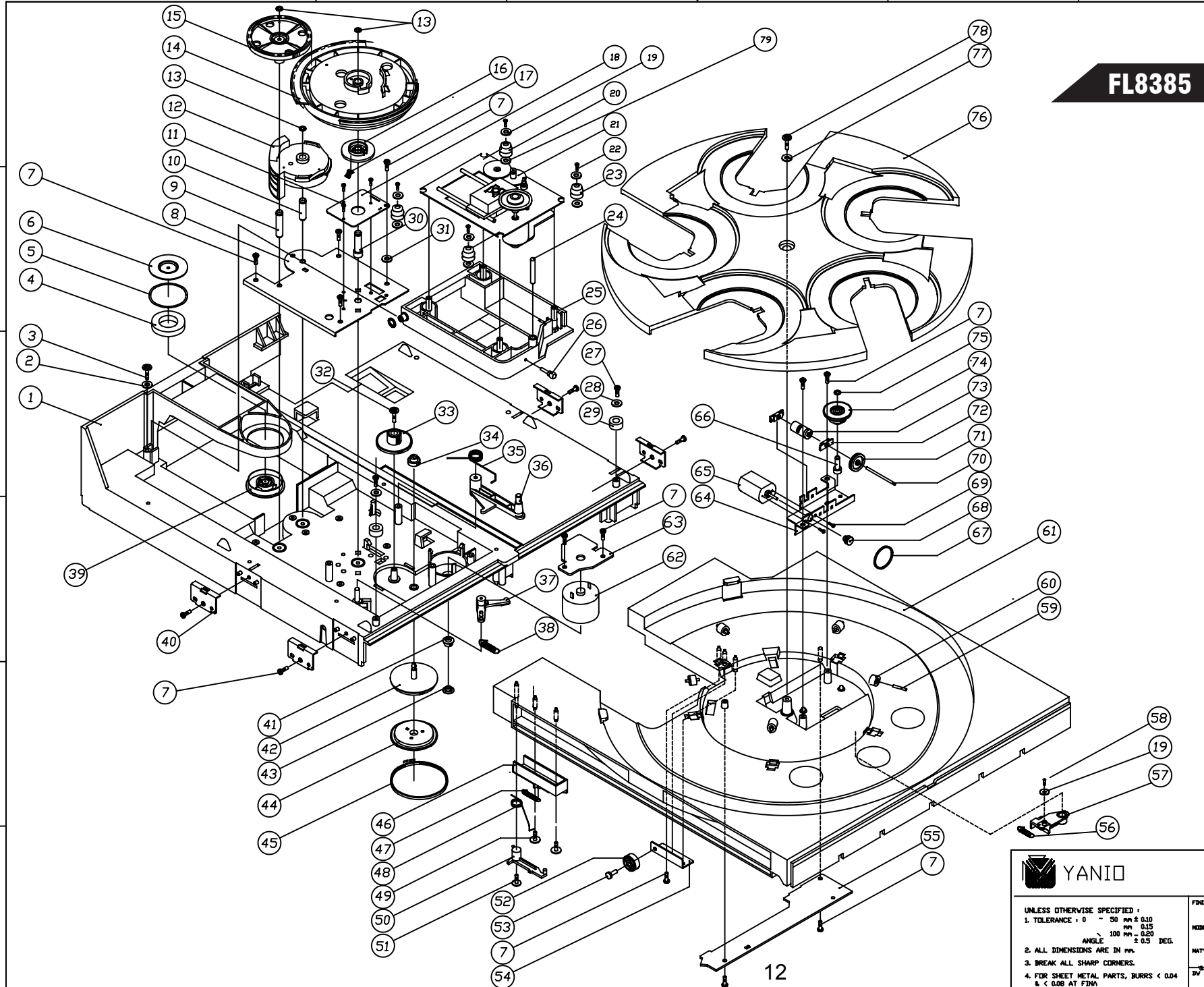
FORM: **FL8385** DRAWN BY: **WXG** CHECKED BY: **WXG** APPROVED BY: **WXG**

DATE: **11/11/01** SHEET: **1** OF **1**

EXPLODED VIEW

EXPLODE: **A0** 9601-838500-001 A

**FL385**



No.	Parts No.	Parts Name	Qty.
1	6005-050050-007	Base, 5CD	1
2	7103-314101-022	washer M3.3x14#1	1
3	7003-012002-062	Screw M3X12 P.T.P. W/H	1
4	6600-150006-001	Chucking Magnet	1
5	6600-140001-000	Felt Ring	1
6	6591-060007-000	Chucking metal plate	1
7	7003-080015-112	Screw M3X8 P.T.P. B/H	13
8	6505-050008-001	Bracket, Gear	1
9	6600-020197-001	Pin, Cabinet Top	1
10	6600-020198-000	Pin, Control Can	1
11	7002-060601-022	Screw M2X6 S.T.P. P/H	2
12	6005-050008-001	Control Can	1
13	7105-010005-030	Washer Lock 5X10X0.5	3
14	6005-050006-004	Can Cabinet	1
15	6005-050007-000	Gear, Cabinet Top	1
16	6005-050025-002	Switch Cover	1
17	6505-050007-001	Contact Plate	1
18	14841-010705-026	PCB, Switch	1
19	7102-712705-022	washer M2.7x12.7x0.6	5
20	6600-1700176-000	CushionScd 30 deg	2
21	3009-213000-000	sony CD MECHA 213ccn	1
22	7002-608002-022	Screw M2.6x8 ptp P/H	4
23	6600-170077-000	Cushion 5cd 40 deg	2
24	6600-020199-001	Pin Lock	1
25	6505-050030-001	Bracket CD Mecha	1
26	6600-020200-002	Pin, Round	1
27	7003-060602-112	Screw M3x6 P.T.P. B/H	2
28	7103-209008-022	washer M3.2x9x0.8	2
29	6600-170021-000	Cushion Ring	2
30	6600-020196-002	Pin, Can Cabinet	1
31	7103-012001-022	Washer M3X12X1mm	3
32	7003-080002-062	Screw M3X8 P.T.P. W/H ZN	1
33	6005-050005-000	Intermediate Gear	1
34	6005-050011-000	Idler, Gear	1
35	6600-010211-000	Spring, Lever Lock, Outer	1
36	6005-050014-004	Lever Lock, Outer	1
37	6005-050015-000	Lever Lock	1
38	6600-0101210-001	Spring Lever Lock	1
39	6091-060006-000	Chucking Pulley	1
40	6505-050002-001	Cabinet Holder A	4
41	6005-050023-001	Pulley, Motor	1
42	6005-050034-001	Driven Pulley	1
43	6005-050024-000	Pulley Disc	1
44	6005-050035-000	Drive Pulley Plate	1
45	6600-090065-000	Timing Belt,SEM180 90T	1
46	6005-050094-003	Gear Block	1
47	6600-010212-002	Spring, Gear Block	1
48	6600-010213-000	Spring, Gear Block Arm	1
49	7002-608002-062	Screw M2.6x8 ptp W/H	2
50	6005-050005-001	Gear Block Arm	1
51	7002-620002-062	Screw M2.6x20 P.T.P. W/H ZN	1
52	6005-050017-000	Roller	1
53	6600-020202-000	Pin, Roller	1
54	6505-050005-001	Bracket, Roller	1
55	9400-501000-134	Sensor Board Assy Rev A	1
56	6600-010290-001	Spring, lever lock	1
57	6005-050026-002	lever lock	1
58	7002-010002-032	Screw M2x10 ptp 1/p	1
59	6600-020203-000	Shaft, T.I. Roller	5
60	6600-080001-000	Pinch Roller	5
61	6005-050002-011	Cabinet Top	1
62	RF-5007B-14415 B/V9	Motor	1
63	4800-310210-001	Loader Board	1
64	6505-050004-004	Motor Bracket	1
65	FF-1305H-11340-2444A	Motor (MABUCHI)	1
66	6600-020201-001	SCD Shaft, Gear Rotary 1	
67	6600-090052-000	SCD Belt Rotary	1
68	6005-050018-000	Motor Pulley	1
69	7002-003010-111	Screw M2x3 B/H (Black)	2
70	6600-020268-000	Shaft Dia. 2x34mm	1
71	6005-050020-000	Pulley Rotary	1
72	6005-050019-000	Shaft Bushing	2
73	6005-050022-000	Gear Worm	1
74	6005-050021-000	Gear rotary	1
75	7103-006005-130	Washer 3x6x0.5mm CUT	1
76	6005-050051-000	Turntable	1
77	7103-012010-022	Washer M3X12#1	1
78	7003-012002-062	Screw M3X12 P.T.P. B/H	1
79	7106-212505-022	plan washer 6.2x12.5x0.5	6

UNLESS OTHERWISE SPECIFIED :

1. TOLERANCE : 0 - 50 mm ± 0.10  
mm 0.15  
100 mm ± 0.20  
ANGLE : 100 mm ± 0.5 DEG.

2. ALL DIMENSIONS ARE IN mm.

3. BREAK ALL SHARP CORNERS.

4. FOR SHEET METAL PARTS, BURRS < 0.04 & < 0.08 AT FINI.

FINISH -

MODEL SCD

MATL ref. to BOM

DATE

SCALE

SHEET 1 OF 1

1 MECVHA ASSY FOR FL9

SIZE A2

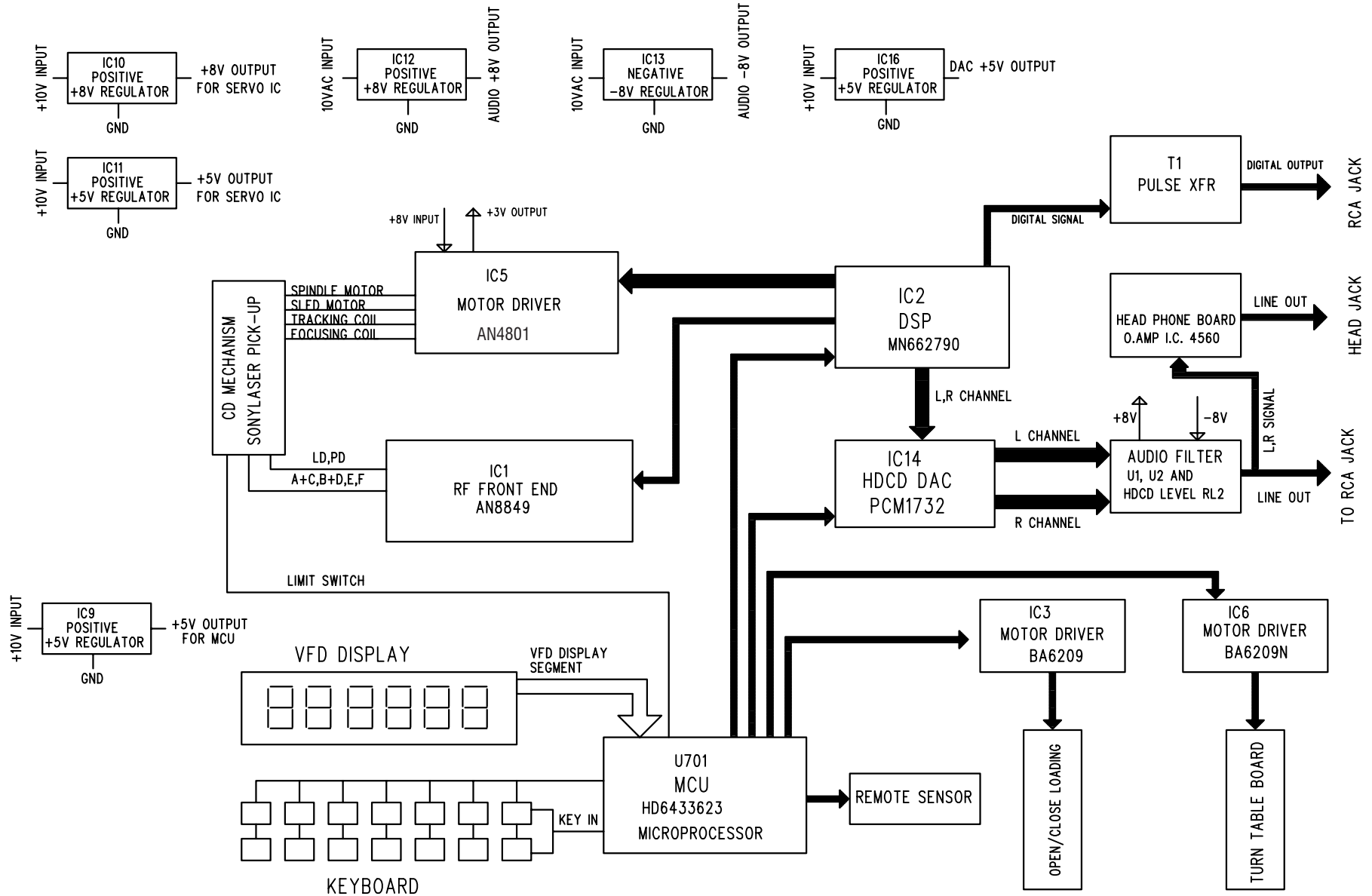
REV

DRAWN BY WXG

CHECKED BY

APPROVED BY

8



## **Audio Characteristics Test Procedure**

### **Test Equipment**

1. 3346 CD Player Evaluating Filter x 2 (NF Electronic Instrument)
2. VP7722 Panasonic Audio Analyzer
3. Sony YEDS18 Test CD disc

### **Procedure**

#### **Equipment Setup**

1. The audio output of the CD player under test is connected to the CD filter L & R inputs.
2. The outputs from the filter are connected to the Audio Analyzer.

#### **Check the output Voltage**

1. Set the mode of the filter to 'THRU'
2. Set the mode of Audio Analyzer to 'LEVEL' mode
3. Select track 2 of the test disc and play the CD disc
4. The output voltage and gain of the R & L channels are taken by pressing the respective buttons on the control board of Audio Analyzer.

#### **Frequency Response**

1. Set the mode of the filter to reference level mode.
2. Select the track 3, 4, 5, and 6 of the test disc and run it under 'Play' mode.
3. Check the output of the R & L Channels

#### **Total Harmonic Distortion**

1. Set the mode of the filter to 'DIST/CH-SP' mode
2. Set the audio analyzer to 'DIST' mode.
3. Set the unit of the audio analyzer to '%' mode
4. Select the track 2, 4, and 5 on the test disc and run them under 'PLAY' mode
5. Check the % of each R & L channels

**Signal to Noise Ratio**

1. Set the mode of the filter to ' S/N' mode
2. Play track 2 of the test disc
3. The unit of the audio analyzer is set to dB mode
4. Press the S/N key on the control panel of the audio analyzer
5. Play track 7
6. Measure the data of S/N ratio

**Dynamic Range**

1. Set the mode of the filter to ' D-Range' mode
2. Set the audio analyzer to ' DIST' Mode
3. Set the unit of the audio analyzer to ' dB' mode
4. Play track 17 of the test disc
5. The dynamic range should be  $|A| + 60\text{dB}$

**Channel Separation**

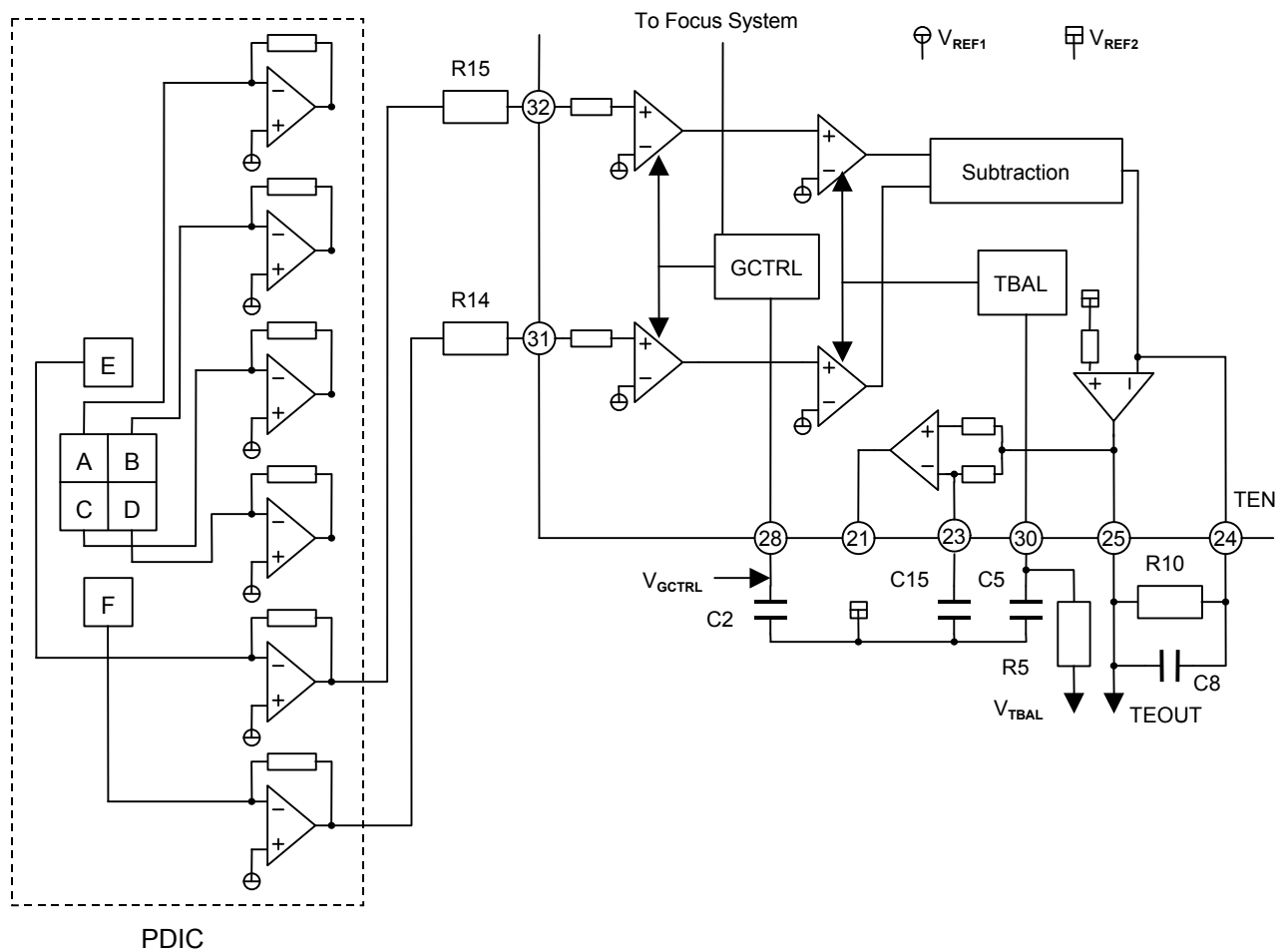
1. Set the mode of the filter to ' DIST/CH-SP' mode
2. Set the audio analyzer to ' LEVEL' mode
3. Play the tracks 8, 9, 10 & 11
4. The measured results is the difference between L & R channel

**De-emphasis**

1. Press the ' THRU' button of the CD filter
2. Play the track 2 of the test disc
3. Press the ' Relative Level' and make it ' ON'
4. Select the track 12 and 13 and measure the L & R channels value

## FUNCTION DESCRIPTION

### Tracking System



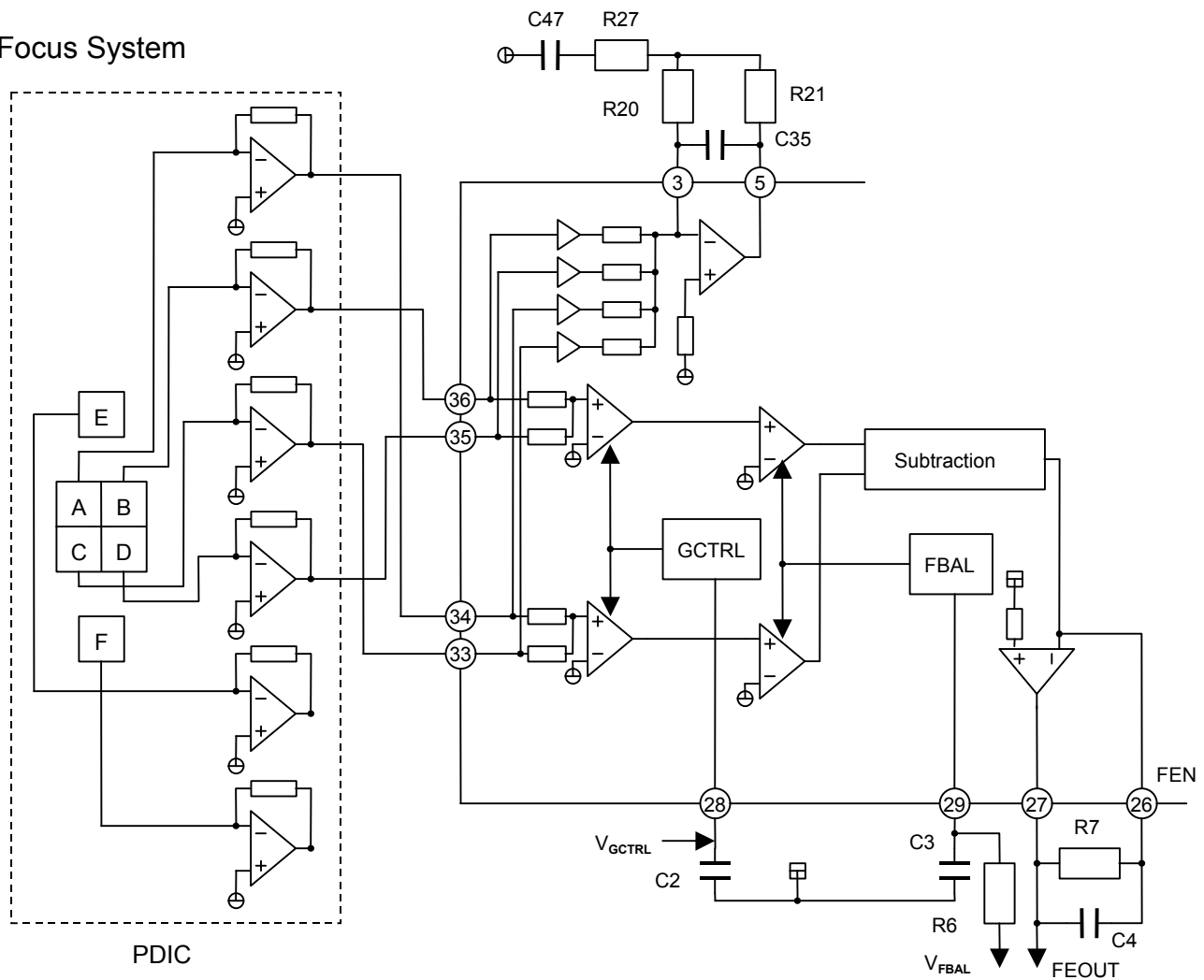
The tracking error output of E and F is given to Pin 25 (TEOUT). C8 is required for oscillation-proof. R10 is chosen such that TEOUT of Pin 25 become 1.4Vp-p.

During alignment procedure, the DSP IC (MN662790) will adjust the tracking balance voltage  $V_{TBAL}$  from Pin 31.  $V_{TBAL}$  varies with reference to the center voltage  $V_{REF2}$  ( $=1.65\text{ V}$ ) within  $\pm 0.5\text{ V}$ .

The tracking gain will change according to the type of disc. For normal disc or CDR disc,  $V_{GCTRL}$  is set to  $V_{REF2}$ ; for CDRW disc  $V_{GCTRL}$  is set to  $V_{REF2} - 0.75\text{ V}$ . At the same time, the focus gain is changed too.



## Focus System

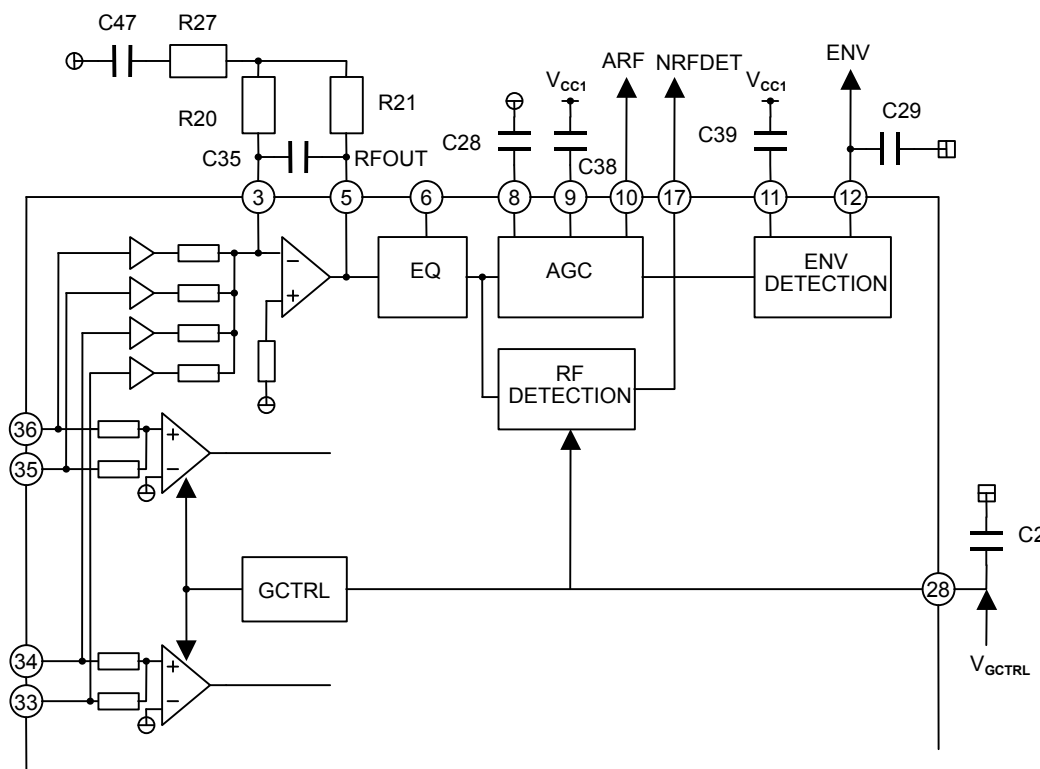


The focus error output of A, B, C and D are given to Pin 27. C4 is required for oscillation-proof. R7 is set such that FEOUT of Pin 27 becomes 1.46 Vp-p.

During alignment procedure, the DSP IC (MN662790) will adjust the focus balance voltage  $V_{FBAL}$  from Pin 30.  $V_{FBAL}$  varies with reference to the center voltage  $V_{REF2}$  ( $=1.65$  V) within  $\pm 0.5$  V.

The focus gain will change according to the type of disc. For normal disc or CDR disc,  $V_{GCTRL}$  is set to  $V_{REF2}$ ; for CDRW disc  $V_{GCTRL}$  is set to  $V_{REF2} - 0.75$  V. At the same time, the tracking gain is changed too.

## RF, EQ, AGC



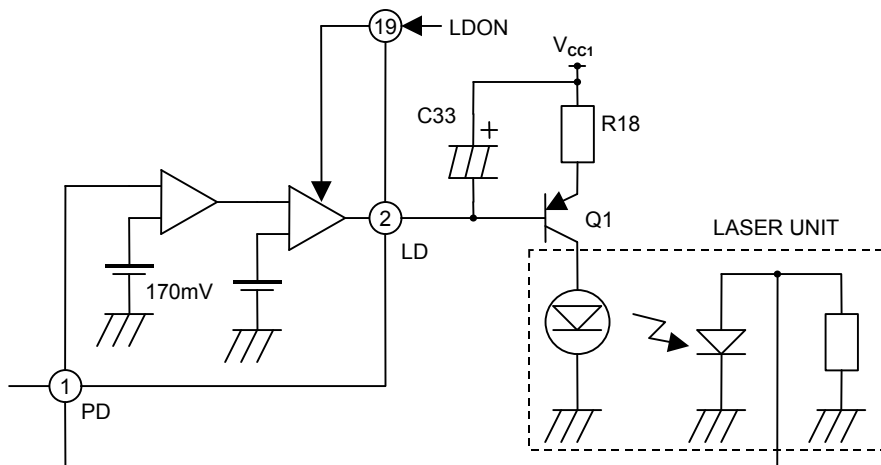
The signals A, B, C and D input from PDIC are composed into the RF signal by the RF Addition Amp, then output from RFOUT of Pin 5. This Amp is designed so that RFOUT is about 0.5 Vp-p for normal CD disc (about 0.4 Vp-p for CDR and 0.12 Vp-p for CDRW).

RF signal from Pin 5 is then input to the AGC block through the EQ block (the EQ characteristic is fixed for single speed operation in this design). It is then gain-controlled and output to Pin 10 ARF. The AGC block maintains the output level of ARF to about 1.0Vp-p for all types of disc. C38 connected to Pin 9 is for the AGC loop filter.

The RF Detection block detects the amplitude of the RF signal inputted from the EQ block. Inputted RF signal is detected after passing through a high-pass filter. Detection level is changed in accordance with the voltage of GCTRL Pin 28.

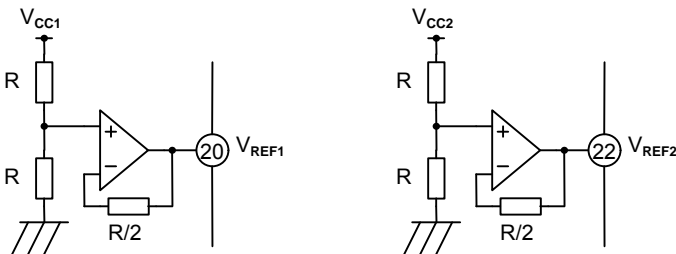
The ENV detection block detects the fluctuation of the 3T-composition in the RF signal which is needed for focus balance adjustment. C39 connected to Pin 11 forms a filter for detecting the signal fluctuation. The ENV output signal from Pin 12 is filtered by C29.

APC



The laser diode has large negative temperature characteristic in its optical output when driven with a constant current on laser diode. Therefore, the output on processing monitor photo diode, must be a controlled current for getting regular output power, thus the APC (Auto Power Control) circuit is composed.

Reference Power Supply



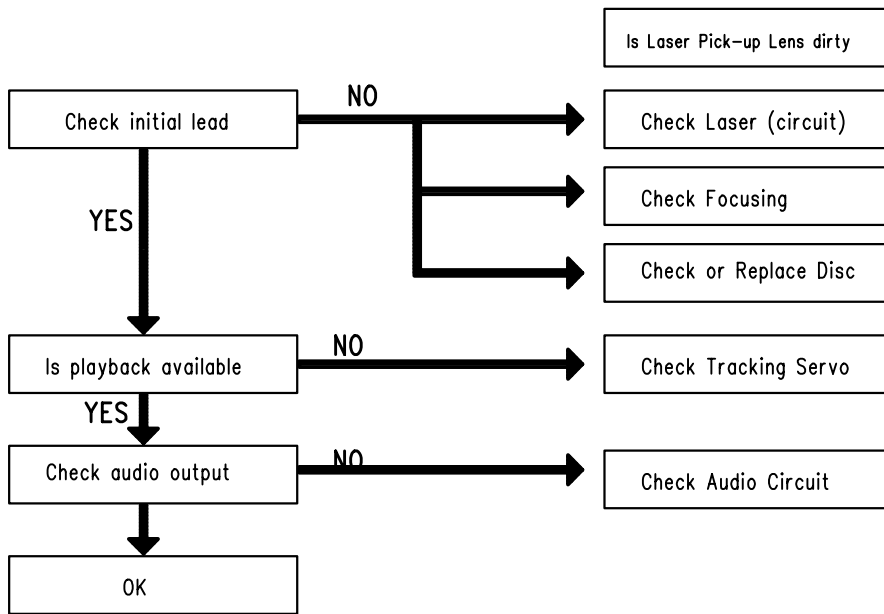
A reference power supply for servo is built-in. The current capacity of the reference supply is about 3 mA.

$$V_{REF1} = 1/2 V_{CC1} = 2.5 V$$

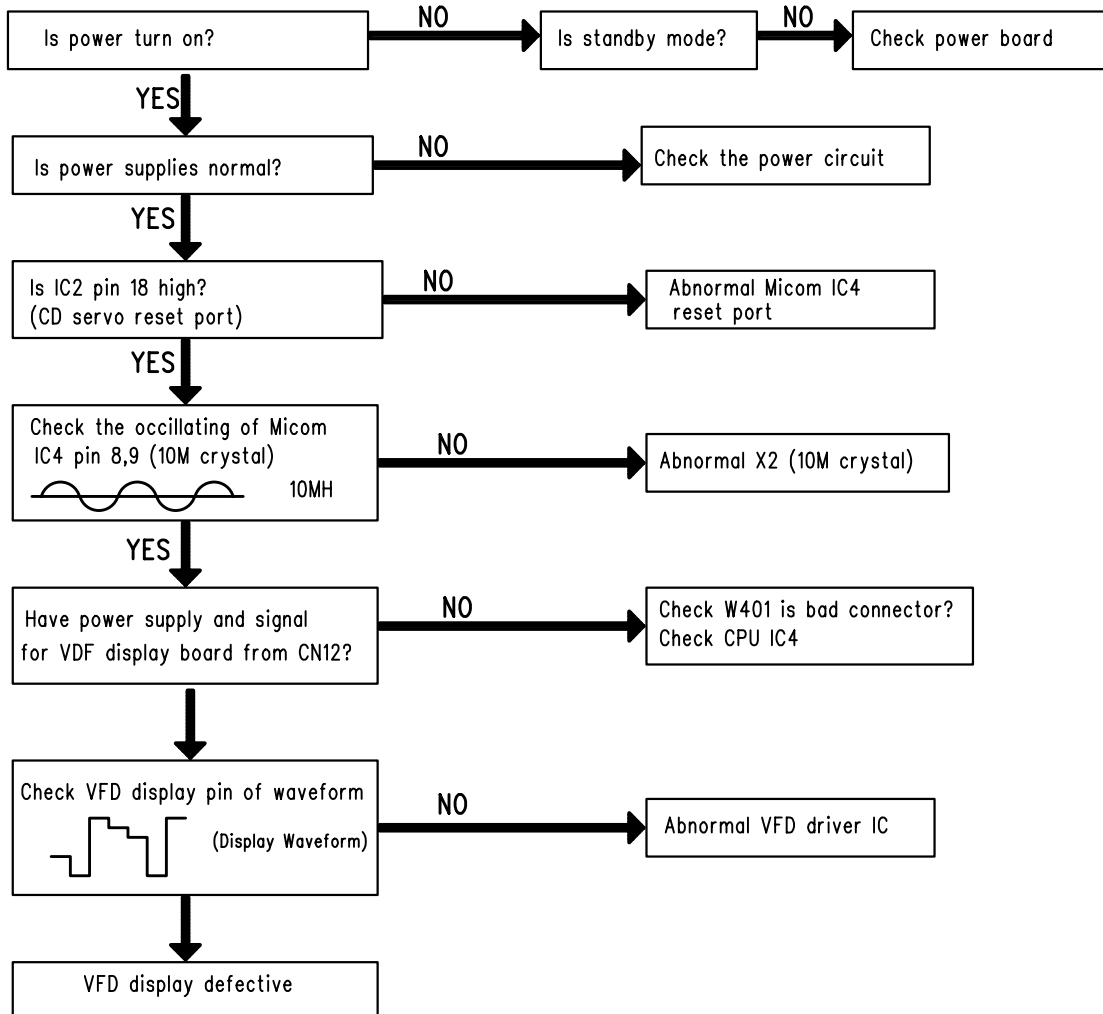
$$V_{REF2} = 1/2 V_{CC2} = 1.65 V$$

where  $V_{CC1} = 5 V$  and  $V_{CC2} = 3.3 V$

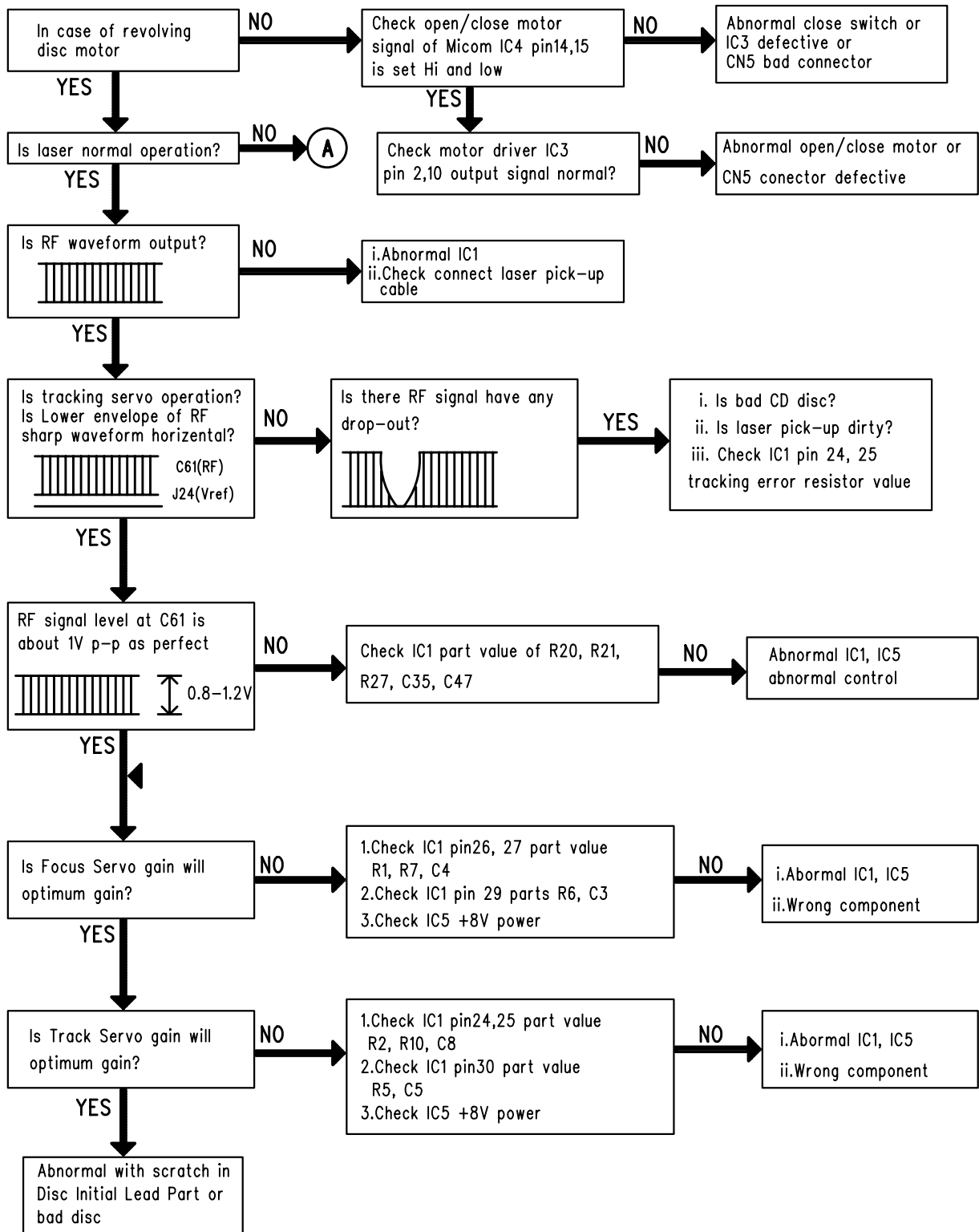
### Check CD Player Is Normal Operational?



### In Case of Abnormal Indication

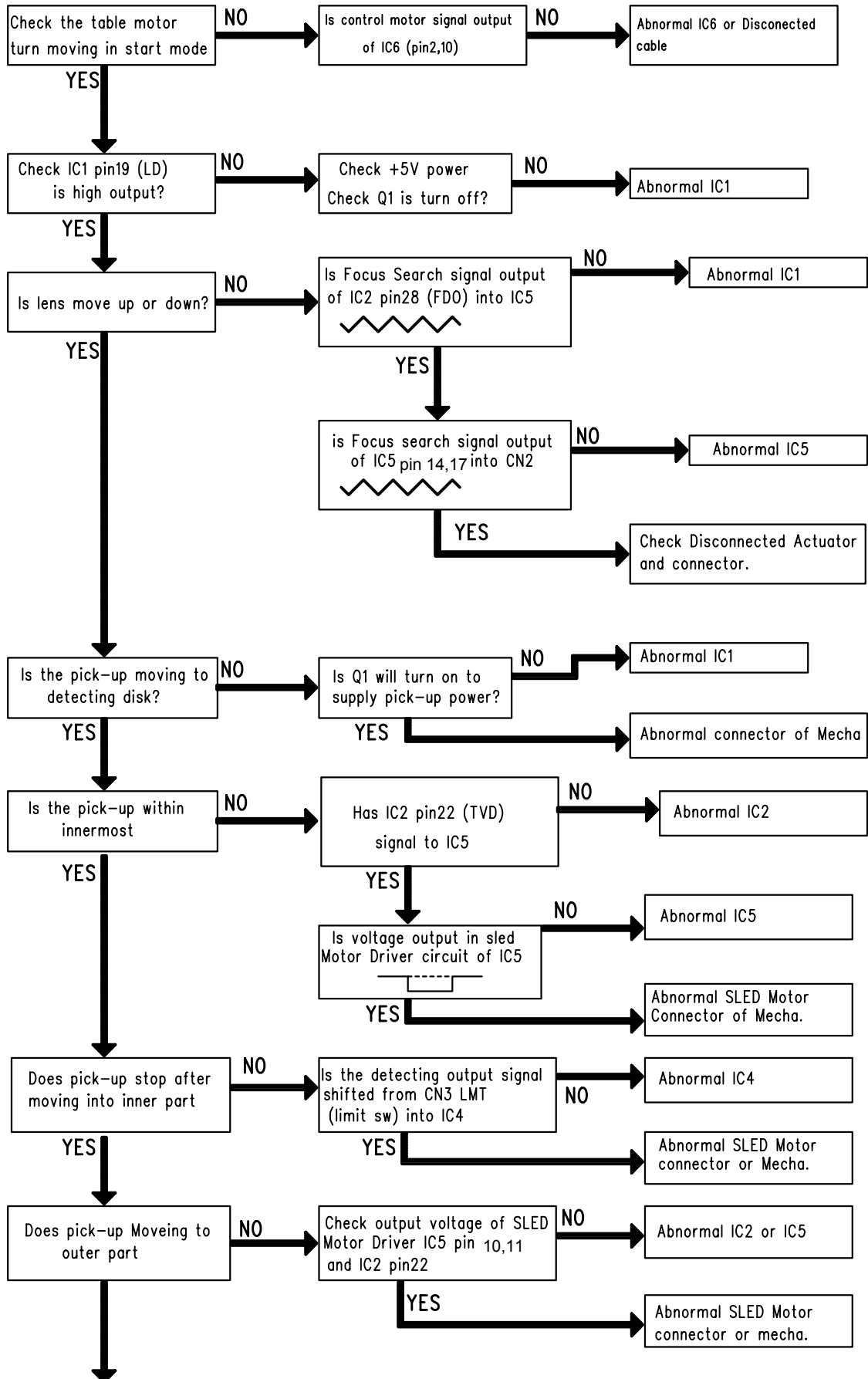


### When Initial Lead-In Is Not Operational

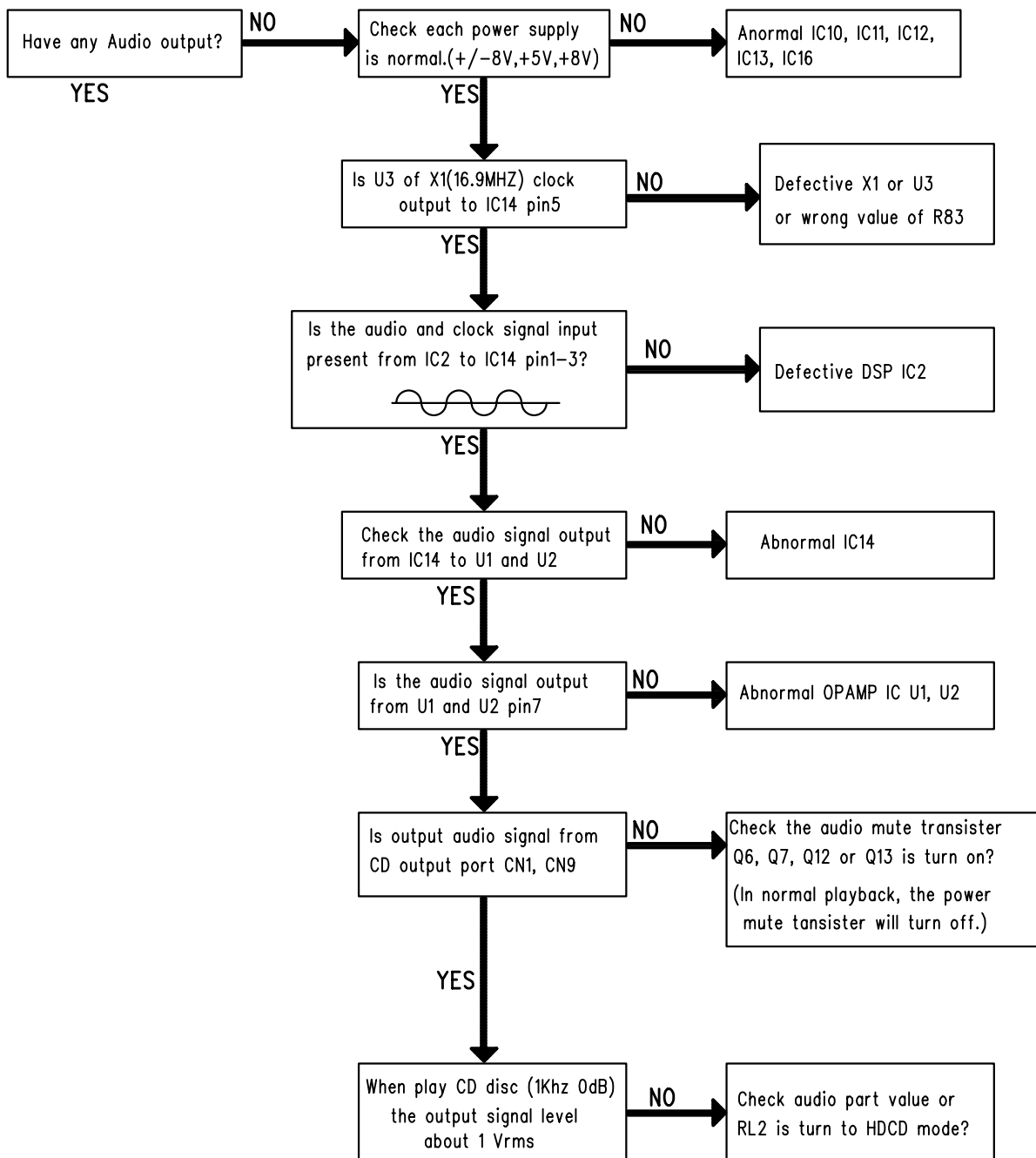


Remark: (A) is next page

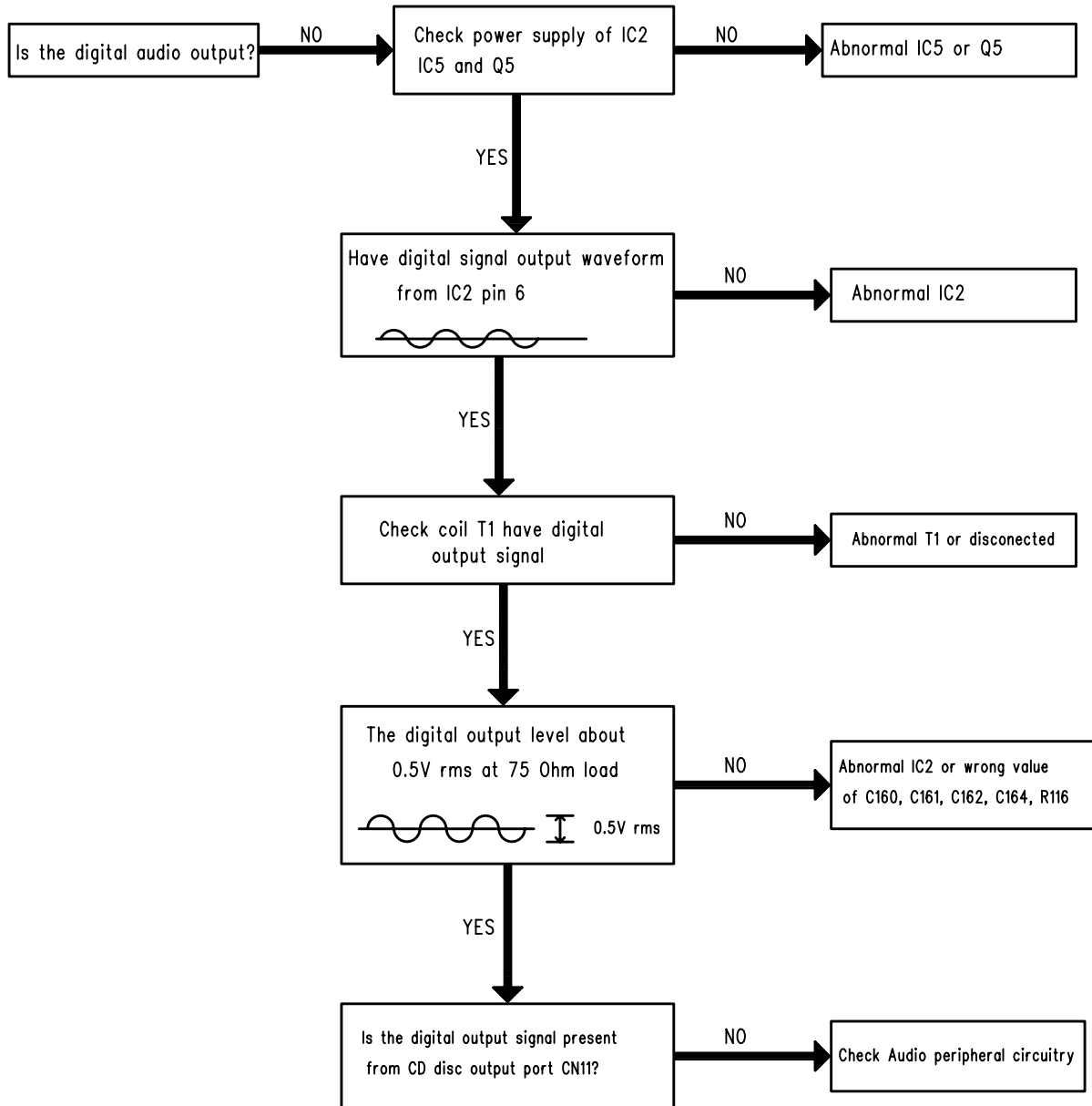
**A: When Laser is NOT Operation**



2) Audio Circuit Checking

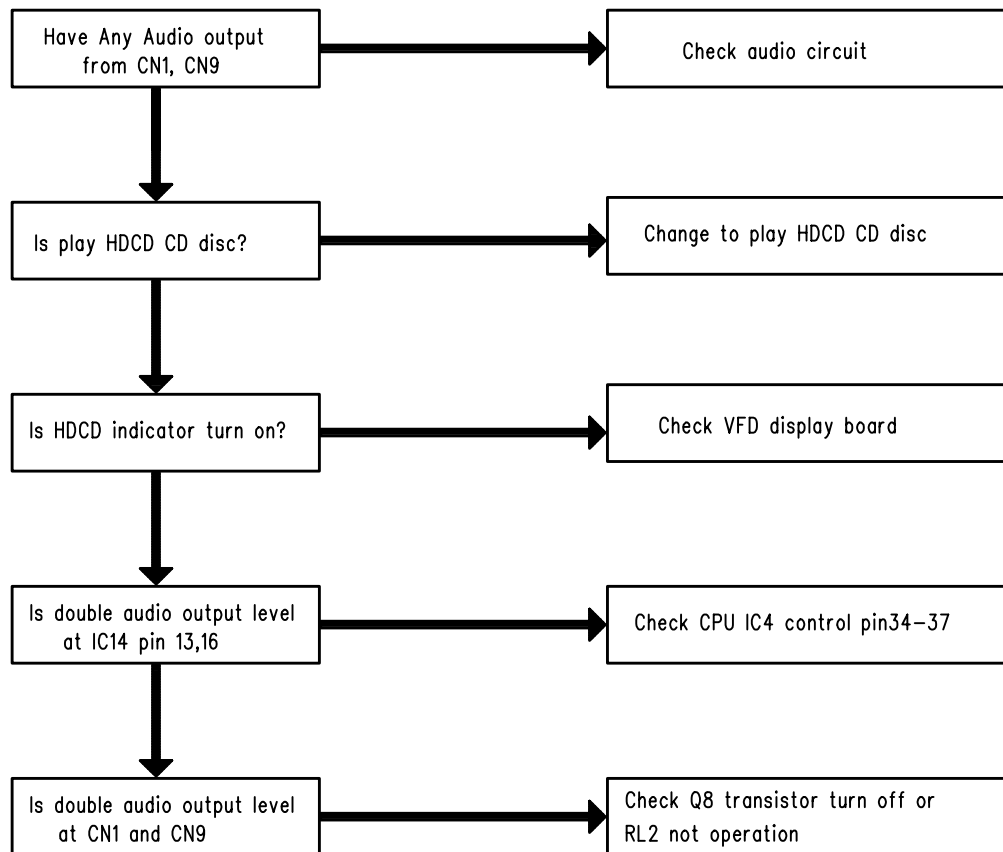


### 3) Check Digital Audio Circuit





#### 4) Check HCDC Circuit



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# MN662790RSA1

## Signal Processing LSI for CD Players

### ■ Overview

The MN662790RSA is a CD signal processing LSI that, on a single chip, combines optics servos for the CD player (focus, tracking, and traverse servos), digital signal processing (EFM demodulation and error correction), digital servo processing for the spindle motor, digital filter, and D/A converter, so thus covers all signal processing functions from the head's RF amplifier onward.

### ■ Features

#### (Optics servo)

- Focus, tracking, and traverse servos
- Automatic adjustment functions for FO/TR gain, FO/TR offset, and FO/TR balance
- Built-in D/A converter for drive voltage output
- Built-in dropout countermeasures
- Anti-shock functions
- Built-in track cross counter
- Traverse speed detection function

#### (Digital Signal Processing)

- Built-in DSL and PLL
- Frame synchronization detection, holding, and insertion
- Subcode data processing
  - Subcode Q data CRC check
  - Built-in subcode Q data register
- CIRC error detection and correction
  - C1 decoder: duplex error correction
  - C2 decoder: triplex error correction
  - Built-in 16-K bits of RAM for use in de-interleaving
- Audio data interpolation
  - Averaging or retention of previous values
  - Digital attenuation (–12 dB)
- Audio data peak level detection function
- Digital audio interface (EIAJ format)
- Audio data serial interface for input and output

#### (Spindle Motor Servo)

- CLV digital servo
- Switchable servo gain

#### (Audio circuits)

- Digital filter using 8-fold oversampling
- Built-in D/A converter (1-bit D/A converter)
- Built-in differential operational amplifier (secondary low pass filter)

#### (Other)

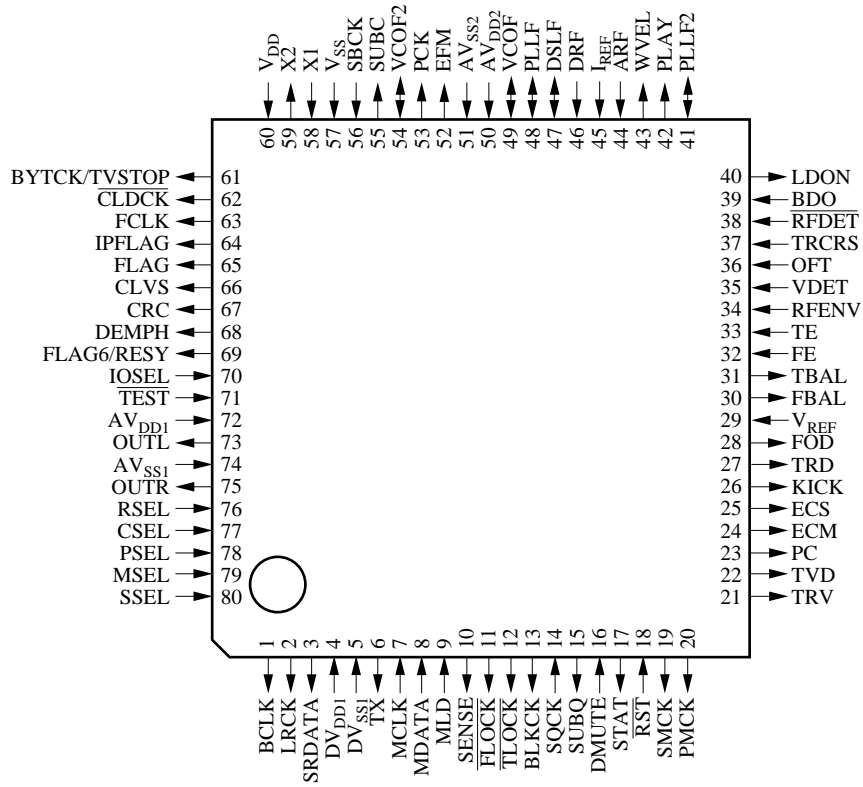
- Built-in playback pitch control function (normal speed only) ( $\pm 13\%$ )
- Support for quadruple-speed playback (digital servo and signal processing block only)
- Built-in support for jitter-free disc rotation synchronization playback
- Oscillator shutdown mode
- Power management mode
- Operating voltage 3.3 V for internal circuit; 5 V for Digital input pins

### ■ Applications

- CD players

MN662790RAS1

■ Pin Assignment

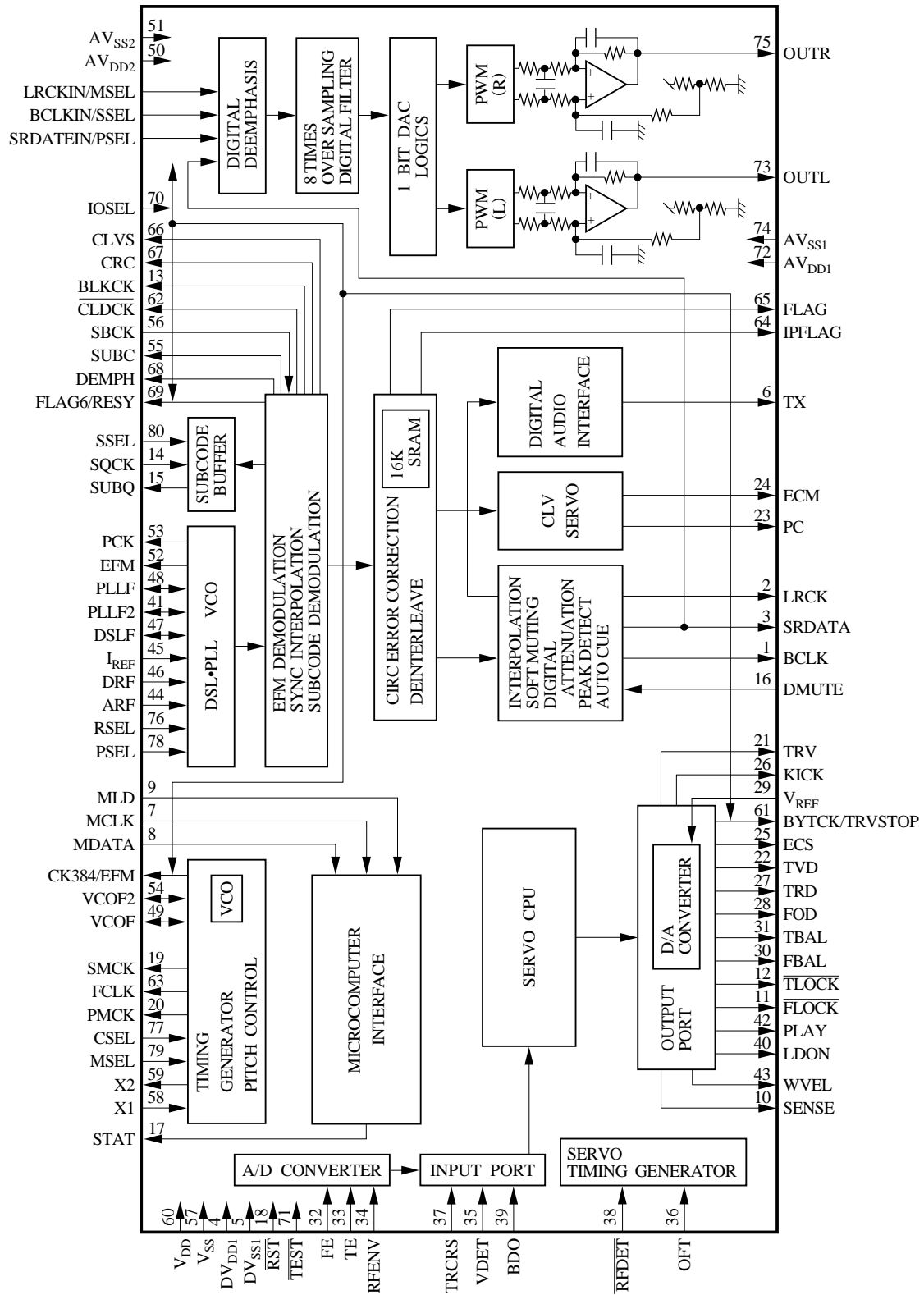


(TOP VIEW)

QFS080-P-1414

MN662790RAS1

■ Block Diagram



## MN662790RAS1

## ■ Pin Descriptions

Pin No.	Symbol	I/O	Function Description
1	BCLK	O	SRDATA bit clock output.
2	LRCK	O	Left/right channel discrimination signal output.
3	SRDATA	O	Serial data output.
4	DV <sub>DD1</sub>	I	Power supply for digital circuits.
5	DV <sub>SS1</sub>	I	Ground for digital circuits.
6	TX	O	Digital audio interface output signal.
7	MCLK	I	Microcomputer command clock input. (Data is latched at rising edge.)
8	MDATA	I	Microcomputer command data input.
9	MLD	I	Microcomputer command load signal input. "L" level: load.
10	SENSE	O	Sense signal output. (OFT, FESL, NACEND, NAJEND, SFG, and NWTEND)
11	$\overline{\text{FLOCK}}$	O	During default operation, focus servo convergence signal. "L" level: convergence. During command execution, direction detection output for external track counter.
12	$\overline{\text{TLOCK}}$	O	During default operation, tracking servo convergence signal. "L" level: convergence. During command execution, traverse speed control output.
13	BLKCK	O	Subcode block clock signal ( $f_{\text{BLKCK}}=75$ Hz)
14	SQCK	I	External clock input for subcode Q register
15	SUBQ	O	Subcode Q data output
16	DMUTE	I	Muting input. (Effective only for an output bit rate of 64 f <sub>s</sub> ) "H" level: muting.
17	STAT	O	Status signal. (CRC, CLVS, TTSTOP, JCLVS, SQOK, FLAG6, SENSE, $\overline{\text{FLOCK}}$ , $\overline{\text{TLOCK}}$ , rpm data, and FCLV)
18	$\overline{\text{RST}}$	I	Reset input. "L" level: reset.
19	SMCK	O	If MSEL is "H" level, 8.4672 MHz clock signal output. If MSEL is "L" level, 4.2336 MHz clock signal output
20	CSEL	O	Oscillation frequency selection: "H" is 33.8688MHz; "L" is 16.9344MHz.
21	TRV	O	Traverse forced feed output. (tristate)
22	TVD	O	Traverse drive output.
23	PC	O	Spindle motor ON signal. "L" level: ON (default).
24	ECM	O	Spindle motor drive signal (forced mode output). (tristate)
25	ECS	O	Spindle motor drive signal (servo error signal output). (tristate)
26	KICK	O	Kick pulse output. (tristate)
27	TRD	O	Tracking drive output.
28	FOD	O	Focus drive output.
29	V <sub>REF</sub>	I	Reference voltage for DA output (TVD, ECS, TRD, FOD, FBAL, and TBAL).
30	FBAL	O	Focus balance adjustment output.
31	TBAL	O	Tracking balance adjustment output.
32	FE	I	Focus error signal input. (analog input)

## MN662790RAS1

## ■ Pin Descriptions (continued)

Pin No.	Symbol	I/O	Function Description
33	TE	I	Tracking error signal input. (analog input)
34	RFENV	I	RF envelope signal input. (analog input)
35	VDET	I	Vibration detection signal input. "H" level: vibration detected.
36	OFT	I	Offtrack signal input. "H" level: offtrack.
37	TRCRS	I	Track cross signal input. (analog input)
38	RFDET	I	RF detection signal input. "L" level: detected.
39	BDO	I	Dropout signal input. "H" level: dropout.
40	LDON	O	Laser ON signal output. "H" level: ON.
41	PLL2	I/O	PLL loop filter characteristic selection pin.
42	TOFS	O	Tracking offset adjustment or DSL balance output(D/A output).
43	WVEL	O	Double-speed status signal output. "H" level: double-speed.
44	ARF	I	RF signal input.
45	I <sub>REF</sub>	I	Reference current input pin.
46	DRF	I	DSL bias pin.
47	DSL2	I/O	DSL loop filter pin.
48	PLL	I/O	PLL loop filter pin.
49	VCO	I/O	VCO loop filter pin.
50	AV <sub>DD2</sub>	I	Power supply for analog circuits (DSL, PLL, D/A converter output, and A/D converter).
51	AV <sub>SS2</sub>	I	Ground for analog circuits (DSL, PLL, D/A converter output, and A/D converter).
52	EFM or CK384	O	EFM signal output. EFM output when IOSEL is "H" level. <ul style="list-style-type: none"> <li>•Crystal oscillator 16.9344-MHz clock output when IOSEL is "L" level.</li> <li>•384 f<sub>s</sub> output from signal processing block. (During variable-pitch operation, this is the VCO clock.)</li> </ul> Commands permit switching among the above three outputs.
53	PCK or DSLB	O	PLL derived clock or DSL balance output. f <sub>PCK</sub> = 4.3218 MHz.
54	VCO2	I/O	VCO loop filter pin.
55	SUBC	O	Subcode serial output.
56	SBCK	I	Serial clock input for subcode serial output.
57	V <sub>SS</sub>	I	Ground for oscillator circuit.
58	X1	I	Crystal oscillator circuit input/output pins. f = 16.9344 MHz, 33.8688 MHz.
59	X2	O	Crystal oscillator circuit output/output pins. f = 16.9344 MHz, 33.8688 MHz.
60	V <sub>DD</sub>	I	Oscillator circuit power supply.
61	BYTCK or TRVSTOP	O	When IOSEL is "H" level, byte clock signal output. When IOSEL is "L" level, traverse stop signal output. "H" level: stop mode.
62	CLDCK	O	Subcode frame clock signal output pin. (f <sub>CLDCK</sub> = 7.35 kHz)
63	FCLK	O	Crystal frame clock signal output. (f <sub>FCLK</sub> = 7.35 kHz)
64	IPFLAG	O	Interpolation flag signal output. "H" level: interpolation.
65	FLAG	O	Flag signal output.

## MN662790RAS1

## ■ Pin Descriptions (continued)

Pin No.	Symbol	I/O	Function Description
66	CLVS	O	Spindle servo phase synchronization signal output. "H" level: CLV. "L" level: rough servo.
67	CRC	O	During default operation, subcode CRC check result output. "H" level: OK. "L" level: no good. During command execution, pulse output for external track counter.
68	DEMPH	O	De-emphasis detection signal output. "H" level: ON.
69	FLAG6 or RESY	O	When IOSEL is "L" level, FLAG6 output, signal for resetting address of RAM for error correction de-interleave. "L" level: address reset. When IOSEL is "H" level, RESY output, frame resynchronization signal. "H" level: synchronized. "L" level: out of sync.
70	$\overline{\text{IOSEL}}$	I	Mode selection pin
71	TEST	I	Test pin. Keep this at "H" level.
72	AV <sub>DD1</sub>	I	Power supply for analog circuits. (common use for left and right channel audio outputs.)
73	OUTL	O	Left channel audio output.
74	AV <sub>SS1</sub>	I	Ground for analog circuits. (common use for left and right channel audio outputs.)
75	OUTR	O	Right channel audio output.
76	RSEL	I	RF signal polarity selection pin. "H" level: bright level is "H." "L" level: bright level is "L."
77	V <sub>CC5V</sub>	I	5-V power supply applied to pins for 5-V input.
78	PSEL	I	When IOSEL is "H" level, test pin. Keep this at "L" level. When IOSEL is "L" level, SRDATA input.
79	MSEL	I	When IOSEL is "H" level, frequency selection pin for SMCK pin output. "H" level: SMCK=8.4672 MHz When IOSEL is "L" level, LRCK input. "H" level: left channel data. "L" level: right channel data. SMCK output fixed at 4.2336 MHz.
80	SSEL	I	When IOSEL is "H" level, SUBQ pin output mode selection pin. "H" level: buffered subcode Q mode. "L" level: CLDCK synchronization mode. When IOSEL is "L" level, BCKL input. Buffered subcode Q mode.

# AN8849SB

Head amplifier IC for CD-ROM drive (for 24 times speed or more)

## ■ Overview

The AN8849SB is a head amplifier IC for digital servo. It can configure an efficient CD-ROM system in combination with the MN662752, and allows a full-automatic adjustment of tracking balance-gain-offset and focus balance-gain-offset with fewer external parts.

Built-in functions are a variable equalizer, wide band RF amp. and AGC which meet CAV playback with 24 times speed or more.

## ■ Features

- Variable equalizer which meets CAV playback with 24 times speed or more CAV playback.
- Wide band RF amp. and AGC ( $f_c = 20$  MHz or more (-3 dB))
- Balance adjustment function built-in  
Focus error amp./tracking error amp.
- CD-RW playback compatible.

Variable gain

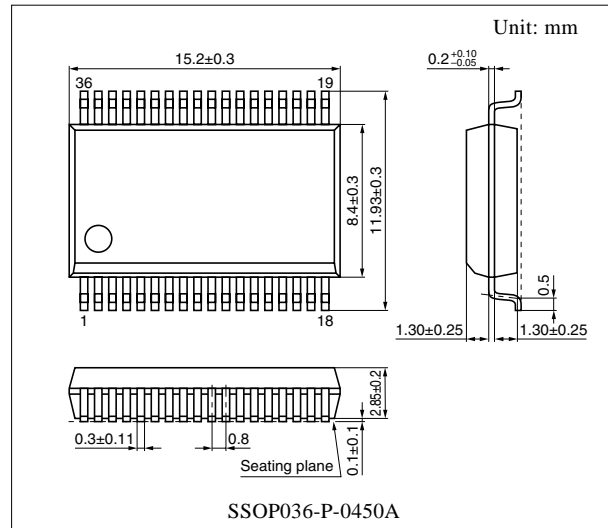
Focus error amp./tracking error amp.

(to +16.9 dB)

- OFTR/BDO detection
- APC amp.

## ■ Applications

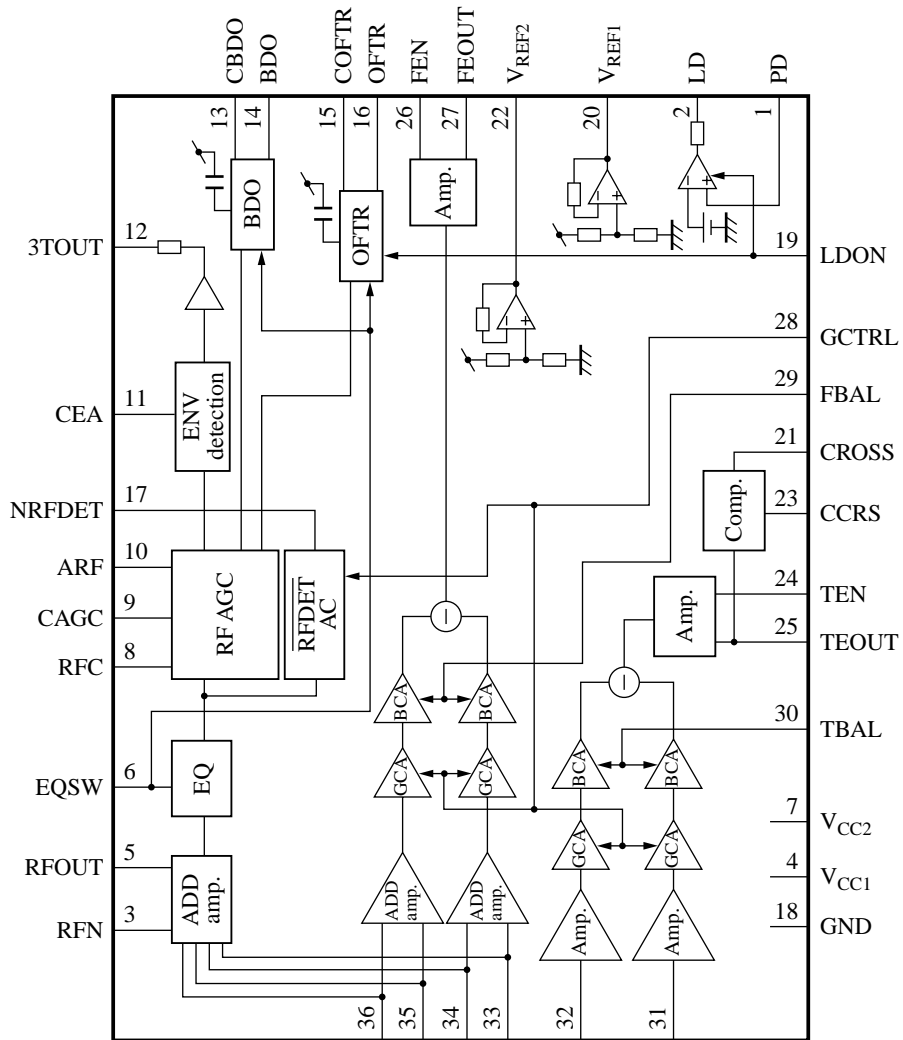
- CD/CD-ROM drive





AN8849SB

■ Block Diagram



## AN8849SB

## ■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	APC amp. input pin	18	GND pin
2	APC amp. output pin	19	APC & masking control pin
3	RF addition amp. inverted input pin	20	V <sub>REF1</sub> output pin
4	Power supply pin 1	21	CROSS output pin
5	RF addition amp. output pin	22	V <sub>REF2</sub> output pin
6	EQ characteristics control pin	23	Capacitor connection pin for CROSS
7	Power supply pin 2	24	TE amp. inverted input pin
8	Capacitor connection pin for HPF of AGC input	25	TE amp. output pin
9	AGC loop filter connection pin	26	FE amp. inverted input pin
10	AGC output pin	27	FE amp. output pin
11	Capacitor connection pin for HPF amp.	28	GCTRL pin
12	3TENV output pin	29	FBAL control pin
13	Capacitor connection pin for RF dark-side envelope detection	30	TBAL control pin
		31	Tracking signal input pin 1
14	BDO output pin	32	Tracking signal input pin 2
15	Capacitor connection pin for RF right-side envelope detection	33	Focus signal input pin 4
		34	Focus signal input pin 2
16	OFTR output pin	35	Focus signal input pin 3
17	NRFDET output pin	36	Focus signal input pin 1

## ■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage 1 *1	V <sub>CC1</sub>	5.8	V
Supply voltage 2 *1	V <sub>CC2</sub>	5.8	V
Supply current 1 *1	I <sub>CC1</sub>	55	mA
Supply current 2 *1	I <sub>CC2</sub>	2.5	mA
Power dissipation *1, *2	P <sub>D</sub>	333.5	mW
Operating ambient temperature *1	T <sub>opr</sub>	-20 to +75	°C
Storage temperature *1	T <sub>stg</sub>	-55 to +125	°C

Note) \*1: Except for the power dissipation, operating ambient temperature and storage temperature, all ratings are for T<sub>a</sub> = 25°C.

$$*2: P_D = V_{CC1} \cdot I_{CC1} + V_{CC2} \cdot I_{CC2}$$

## ■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage 1	V <sub>CC1</sub>	4.5 to 5.5	V
Supply voltage 2	V <sub>CC2</sub>	3.0 to 5.5	V

Note) Apply voltage to satisfy V<sub>CC2</sub> - V<sub>CC1</sub> < 0.3 V.

# AN8814SB

## 4-channel driver IC for optical disk drive

### Overview

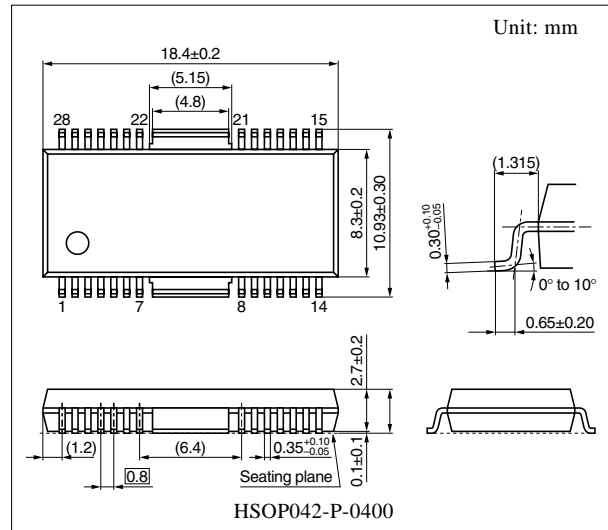
The AN8814SB is a BTL system 4-channel driver and is encapsulated in the SMD package which excels in heat radiation characteristic.

### Features

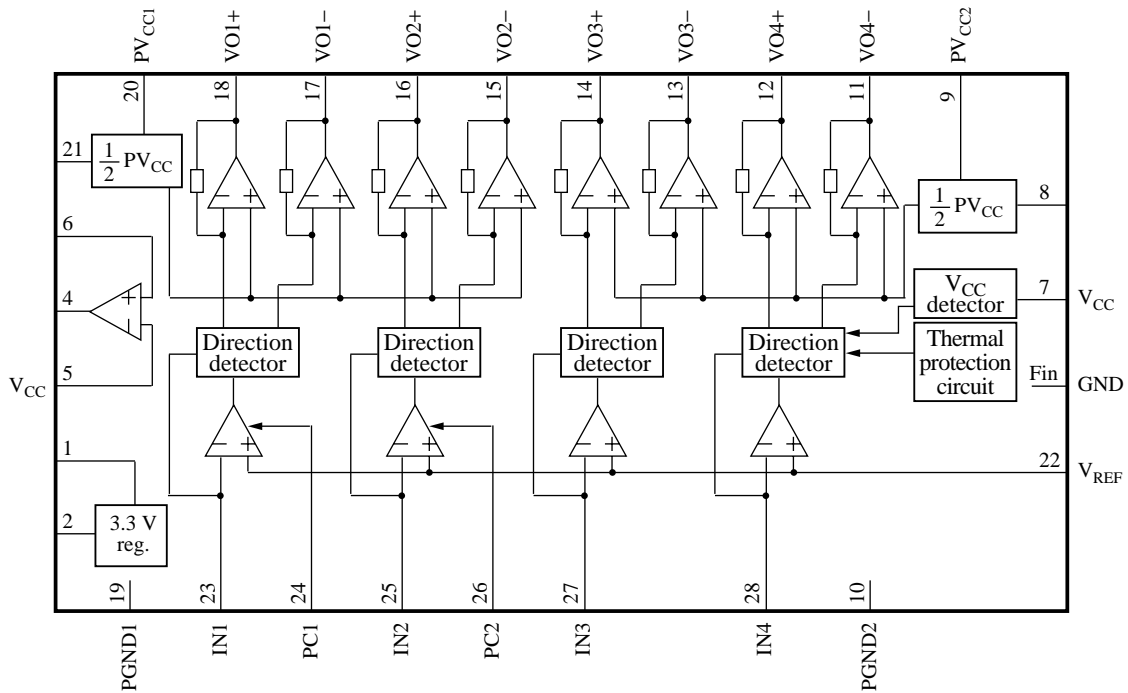
- Wide output dynamic range regardless of reference voltage of the system
- Driver I/O gain setting is possible with an additional external resistor
- 3.3 V supply voltage is available due to an external PNP-tr.
- Additional OP-amp. built-in

### Applications

- MD, CD/CD-ROM drive
- DVD/DVD-ROM drive



### Block Diagram



## AN8814SB

## ■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	Base control pin for an external transistor of 3.3 V regulator	15	Motor driver-2 reverse rotation output pin
		16	Motor driver-2 forward rotation output pin
2	3.3 V regulator output monitor pin	17	Motor driver-1 reverse rotation output pin
3	N.C. pin	18	Motor driver-1 forward rotation output pin
4	Op-amp. output pin	19	Driver GND pin 1
5	Op-amp. inverted input pin	20	Driver power supply pin 1
6	Op-amp. non-inverted input pin	21	1/2 PV <sub>CC</sub> output pin 1
7	Power supply pin	22	V <sub>REF</sub> input pin
8	1/2 PV <sub>CC</sub> output pin 2	23	Motor driver-1 input pin
9	Driver power supply pin 2	24	PC (power cut) input pin 1
10	Driver GND pin 2	25	Motor driver-2 input pin
11	Motor driver-4 reverse rotation output pin	26	PC (power cut) input pin 2
12	Motor driver-4 forward rotation output pin	27	Motor driver-3 input pin
13	Motor driver-3 reverse rotation output pin	28	Motor driver-4 input pin
14	Motor driver-3 forward rotation output pin	Fin	GND pin

## ■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	SV <sub>CC</sub>	17	V
Supply current	I <sub>CC</sub>	—	mA
Power dissipation *2	P <sub>D</sub>	542	mW
Operating ambient temperature *1	T <sub>opr</sub>	-30 to +85	°C
Storage temperature *1	T <sub>stg</sub>	-55 to +150	°C

Note) \*1: Except for the operating ambient temperature and storage temperature, all ratings are for T<sub>a</sub> = 25°C.

\*2: T<sub>a</sub> = 85°C.

Referring to "■ Application Circuit Example", following the allowable power dissipation characteristic curve of "■ Application Notes".

## ■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	SV <sub>CC</sub> , PV <sub>CC1</sub> , PV <sub>CC2</sub>	4.0 to 14	V

Burr - Brown®



PCM1732

For most current data sheet and other product information, visit [www.burr-brown.com](http://www.burr-brown.com)

## *SoundPLUS™* 24-Bit, 96kHz, Stereo Audio DIGITAL-TO-ANALOG CONVERTER With HDCD® Decoder

### FEATURES

- ENHANCED MULTI-LEVEL  $\Delta\Sigma$  DAC
- INPUT AUDIO DATA WORD: 16-, 20-, 24-Bit
- SAMPLING FREQUENCY ( $f_s$ ): 16kHz - 96kHz
- SYSTEM CLOCK: 256, 384, 512, 768 $f_s$
- HIGH PERFORMANCE:
  - THD+N: -96dB
  - Dynamic Range: 104dB
  - SNR: 104dB
- AUDIO OUTPUT LEVEL:  $0.57 \times V_{CC}$  (Vp-p)
- 8x OVERSAMPLING DIGITAL FILTER WITH HDCD DECODER:
  - Stopband Attenuation: -120dB
  - Passband Ripple:  $\pm 0.00001$ dB
  - HDCD Filter Optimized for 44.1kHz to 48kHz and 88.2kHz to 96kHz
- MULTI-FUNCTIONS:
  - Digital De-emphasis
  - Soft Mute
  - Digital Attenuation
  - Zero Detect
  - Digital Gain Scaling
  - Reversible Output Phase
- +5V SINGLE-SUPPLY OPERATION
- SMALL SO-28 PACKAGE

NOTE: An HDCD license from Pacific Microsonics, Inc. is required to purchase the PCM1732.

HDCD® is a registered trademark of Pacific Microsonics, Inc.

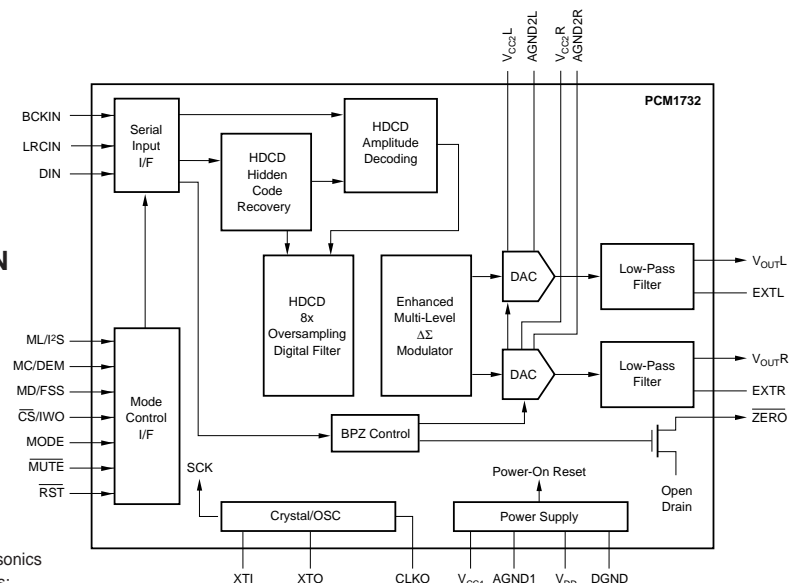
HDCD® technology is provided under license from Pacific Microsonics Inc. The PCM1732's design is covered by the following patents:  
 In the USA: 45,479,168, 5,638,074, 5,640,161, 5,808,574, 5,838,274, 5,854,600, 5,864,311, 5,872,531.  
 In Australia: 669,114.  
 Other patents pending.

### DESCRIPTION

The PCM1732 is designed for mid- to high-grade digital audio applications which achieve 96kHz sampling rates with 24-bit audio data, such as High Definition Compatible Digital (HDCD) CD players, DVD players, mini-disc players and AV receivers.

PCM1732 uses a newly-developed "enhanced, multi-level delta-sigma modulator" architecture that improves audio dynamic performance and reduces jitter sensitivity.

The internal digital filter operates at 8x oversampling at a 96kHz sampling rate, with -120dB stopband attenuation.



# SPECIFICATIONS

## 24-Bit Data Performance

All specifications at +25°C, +V<sub>CC</sub> = +V<sub>DD</sub> = +5V, f<sub>S</sub> = 44.1kHz, and SYSCLK = 384f<sub>S</sub>, unless otherwise noted.

PCM1732					
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>RESOLUTION</b>		24		Bits	
<b>DATA FORMAT</b>					
Audio Data Interface Format			Standard/I <sup>2</sup> S		
Data Bit Length			16/20/24 Selectable		
Audio Data Format			MSB-First, Binary Two's Complement		
Sampling Frequency (f <sub>S</sub> )		16		96	kHz
System Clock Frequency <sup>(1)</sup>			256/384/512/768f <sub>S</sub>		
System Clock Duty Cycle		40		60	%
<b>DIGITAL INPUT/OUTPUT LOGIC LEVEL</b>					
Input Logic Level (except XTI): V <sub>IH</sub>		2.0			V
				0.8	V
Output Logic Level (CLKO): V <sub>OH</sub>	I <sub>OH</sub> = 2mA	4.5			V
	I <sub>OL</sub> = 4mA			0.5	V
<b>CLKO PERFORMANCE<sup>(2)</sup></b>					
Output Rise Time	20 ~ 80% V <sub>DD</sub> , 10pF		5.5		ns
Output Fall Time	80 ~ 20% V <sub>DD</sub> , 10pF		4		ns
Output Duty Cycle	10pF Load		30		%
<b>DYNAMIC PERFORMANCE<sup>(3, 4)</sup></b>					
THD+N	V <sub>O</sub> = 0dB	f <sub>S</sub> = 44.1kHz	-96	-90	dB
		f <sub>S</sub> = 96kHz	-94		dB
	V <sub>O</sub> = -60dB	f <sub>S</sub> = 44.1kHz	-42		dB
Dynamic Range		f <sub>S</sub> = 44.1kHz, EIAJ A-weighted	98	104	dB
		f <sub>S</sub> = 96kHz, A-weighted		103	dB
Signal-to-Noise Ratio <sup>(5)</sup>		f <sub>S</sub> = 44.1kHz, EIAJ A-weighted	98	104	dB
		f <sub>S</sub> = 96kHz, A-weighted		103	dB
Channel Separation		f <sub>S</sub> = 44.1kHz	96	104	dB
		f <sub>S</sub> = 96kHz		101	dB
<b>DC ACCURACY</b>					
Gain Error			±1.0	±3.0	% of FSR
Gain Mismatch Channel-to-Channel			±1.0	±3.0	% of FSR
Bipolar Zero Error	V <sub>O</sub> = 0.5V <sub>CC</sub> at Bipolar Zero		±30	±60	mV
<b>ANALOG OUTPUT</b>					
Output Voltage <sup>(6)</sup>	Full Scale (0dB)		0.57 V <sub>CC</sub>		Vp-p
Center Voltage			0.5 V <sub>CC</sub>		V
Load Impedance	AC Load	5			kΩ
<b>DIGITAL FILTER PERFORMANCE</b>					
<b>Filter Characteristics 1</b>					
(f <sub>S</sub> = 44.1kHz/48kHz optimal)					
Passband		±0.002dB		0.471f <sub>S</sub>	
		-3dB		0.487f <sub>S</sub>	
Stopband			0.515f <sub>S</sub>		
Passband Ripple		< 0.453f <sub>S</sub>		±0.0001	dB
Stopband Attenuation		Stopband = 0.515f <sub>S</sub>	-109		dB
		Stopband = 0.520f <sub>S</sub>	-123		dB
Delay Time				81/f <sub>S</sub>	sec
<b>Filter Characteristics 2</b>					
(f <sub>S</sub> = 88.2kHz/96kHz optimal)					
Passband		±0.005dB		0.395f <sub>S</sub>	
		-3dB		0.441f <sub>S</sub>	
Stopband			0.538f <sub>S</sub>		
Passband Ripple		< 0.341f <sub>S</sub>		±0.0001	dB
Stopband Attenuation		Stopband = 0.538f <sub>S</sub>	-132		dB
Delay Time				31/f <sub>S</sub>	sec
De-Emphasis Error				±0.1	dB
<b>INTERNAL ANALOG FILTER</b>					
-3dB Bandwidth			100		kHz
Passband Response	f = 20kHz		-0.16		dB
<b>POWER SUPPLY REQUIREMENTS</b>					
Voltage Range	V <sub>DD</sub> , V <sub>CC</sub>	4.5	5	5.5	VDC
Supply Current: I <sub>CC</sub> + I <sub>DD</sub>	f <sub>S</sub> = 44.1kHz		35	105	mA
	f <sub>S</sub> = 96kHz		93		mA
Power Dissipation	f <sub>S</sub> = 44.1kHz		425	525	mW
	f <sub>S</sub> = 96kHz		465		mW
<b>TEMPERATURE RANGE</b>					
Operating		-25		+70	°C
Storage		-55		+100	°C
Thermal Resistance, θ <sub>JA</sub>			67		°C/W

NOTES: (1) Refer to the System Clock section of this data sheet. (2) An external buffer is recommended. (3) Dynamic performance specifications are tested with 20kHz low-pass filter and THD+N specifications are tested with 30kHz LPF, 400Hz HPF, Average Mode. (4) Dynamic performance specifications are tested with HDCD gain scaling set to analog gain scaling. (5) SNR is tested with infinite zero detection off. (6) Output level is for sine wave. DAC outputs 0.64 V<sub>CC</sub> (peak-to-peak) due to filter response as transient.

# SPECIFICATIONS

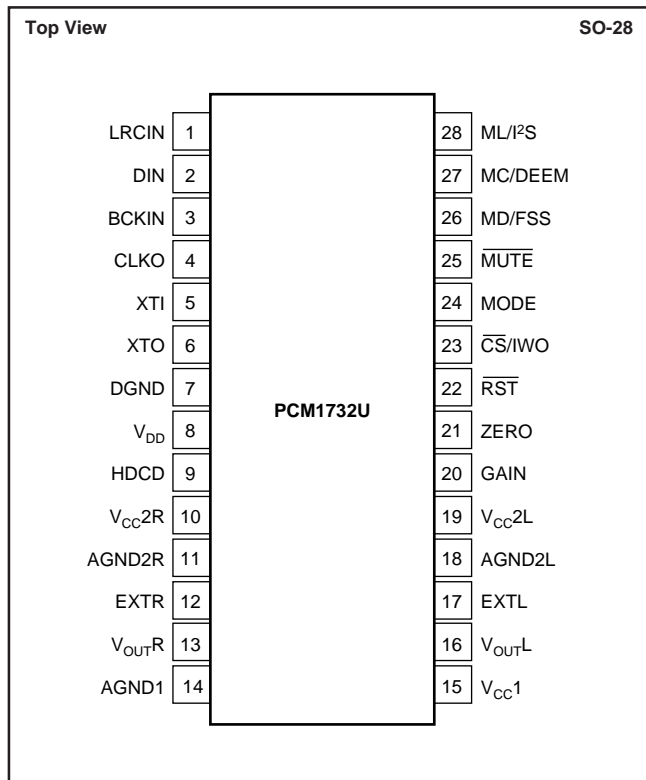
## 16-Bit Data Performance

All specifications at +25°C, +V<sub>DD</sub> = +V<sub>CC</sub> = +5V, f<sub>S</sub> = 44.1kHz, and SYSCLK = 384f<sub>S</sub>, unless otherwise noted. For discussion of HDCD scaling options, see the Applications Considerations section of this data sheet.

PARAMETER	CONDITIONS	PCM1732U			UNITS
		MIN	TYP	MAX	
<b>DYNAMIC ANALOG PERFORMANCE, STANDARD CD, ANALOG HDCD SCALING<sup>(1)</sup></b>					
Total Harmonic Distortion + Noise	0dBFS		-95		dB
V <sub>O</sub> = 0dB			-37		dB
V <sub>O</sub> = -60dB			99		dB
Dynamic Range	EIAJ A-Weighted				dB
Output Voltage, Sine Wave	0dBFS <sup>(2)</sup>		0.57V <sub>CC</sub>		Vp-p
<b>DYNAMIC ANALOG PERFORMANCE, HDCD CD, ANALOG HDCD SCALING<sup>(3)</sup></b>					
Total Harmonic Distortion + Noise	0dBFS		-94		dB
V <sub>O</sub> = 0dB			-38		dB
V <sub>O</sub> = -60dB			104		dB
Dynamic Range	EIAJ A-Weighted <sup>(4)</sup>				dB
Output Voltage, Sine Wave	0dBFS, Without Peak Extend <sup>(2)</sup>		0.57V <sub>CC</sub>		Vp-p
	0dBFS, With Peak Extend <sup>(5)</sup>		0.285V <sub>CC</sub>		Vp-p
	+6dBFS <sup>(5, 6)</sup>		0.57V <sub>CC</sub>		Vp-p
<b>DYNAMIC ANALOG PERFORMANCE, Standard CD, Digital HDCD SCALING<sup>(1)</sup></b>					
Total Harmonic Distortion + Noise	0dBFS		-92		dB
V <sub>O</sub> = 0dB			-33		dB
V <sub>O</sub> = -60dB			96		dB
Dynamic Range	EIAJ A-Weighted				dB
Output Voltage, Sine Wave	0dBFS		0.285V <sub>CC</sub>		Vp-p
<b>DYNAMIC ANALOG PERFORMANCE, HDCD CD, Digital HDCD SCALING<sup>(2)</sup></b>					
Total Harmonic Distortion + Noise	0dBFS		-91		dB
V <sub>O</sub> = 0dB			-34		dB
V <sub>O</sub> = -60dB			104		dB
Dynamic Range	EIAJ A-Weighted <sup>(4)</sup>				dB
Output Voltage, Sine Wave	0dBFS		0.285V <sub>CC</sub>		Vp-p
	+6dBFS <sup>(5)</sup>		0.57V <sub>CC</sub>		Vp-p

NOTES: (1) Without dither. (2) Gain pin is LOW. (3) With the rectangular PDF dither. (4) Including Peak Extend to +6dBFS. (5) Gain pin is HIGH. (6) +6dBFS is the full Peak Extend, while dynamic range numbers are with Peak Extend.

**PIN CONFIGURATION**



**PIN ASSIGNMENTS**

PIN	NAME	I/O	DESCRIPTION
1	LRCIN	IN	Left and Right Clock Input. This clock is equal to the sampling rate, f <sub>s</sub> . <sup>(1)</sup>
2	DIN	IN	Serial Audio Data Input <sup>(1)</sup>
3	BCKIN	IN	Bit Clock Input for Serial Audio Data <sup>(1)</sup>
4	CLKO	OUT	Buffered System Clock Output.
5	XTI	IN	Oscillator Input/External Clock Input <sup>(2)</sup>
6	XTO	OUT	Oscillator Output
7	DGND	—	Digital Ground
8	V <sub>DD</sub>	—	Digital Power +5V
9	HDCD	OUT	HDCD Encoded Data Detect
10	V <sub>CC2R</sub>	—	Analog Power +5V, Rch
11	AGND2R	—	Analog Ground, Rch
12	EXTR	—	Common Mode Voltage for Analog Output Amp, Rch
13	V <sub>OUTR</sub>	OUT	Analog Voltage Output, Rch
14	AGND1	—	Analog Ground
15	V <sub>CC1</sub>	—	Analog Power +5V
16	V <sub>OUTL</sub>	OUT	Analog Voltage Output, Lch
17	EXTL	—	Common Mode Voltage for Analog Output Amp, Lch
18	AGND2L	OUT	Analog Ground, Lch
19	V <sub>CC2L</sub>	—	Analog Power +5V, Lch
20	GAIN	OUT	External (analog) Gain Scaling
21	ZERO	OUT	Zero Data Flag
22	RST	IN	Reset. When this pin is LOW, the digital filter and modulators are held in reset. <sup>(3)</sup>
23	CS/IWO	IN	Chip Select/Input Format Selection. When this pin is LOW, the Mode Control interface is enabled. <sup>(4)</sup>
24	MODE	IN	Mode Control Select: H = Software; L = Hardware <sup>(3)</sup>
25	MUTE	IN	Mute Control <sup>(3)</sup>
26	MD/FSS	IN	Mode Data/Sampling Rate Range Select <sup>(3)</sup>
27	MC/DEM	IN	Mode Clock/De-Emphasis Select <sup>(3)</sup>
28	ML/I <sup>2</sup> S	IN	Mode Latch/Input Format Select <sup>(3)</sup>

NOTES: (1) Schmitt Trigger input. (2) CMOS logic level input. (3) Schmitt Trigger input with pull-up resistor. (4) Schmitt Trigger input with pull-down resistor.

**ABSOLUTE MAXIMUM RATINGS**

Power Supply Voltage	+6.5V
+V <sub>CC</sub> to +V <sub>DD</sub> Difference	±0.1V
Input Logic Voltage	-0.3V to (V <sub>DD</sub> + 0.3V)
Input Current (except power supply)	±10mA
Power Dissipation	750mW
Operating Temperature Range	-25°C to +70°C
Storage Temperature	-55°C to +125°C
Lead Temperature (soldering, 5s)	+260°C
Lead Temperature (reflow, 10s)	+235°C

**PACKAGE/ORDERING INFORMATION**

PRODUCT	PACKAGE	PACKAGE DRAWING NUMBER <sup>(1)</sup>	SPECIFIED TEMPERATURE RANGE	PACKAGE MARKING	ORDERING NUMBER <sup>(2)</sup>	TRANSPORT MEDIA
PCM1732U	SO-28	217	-25°C to +70°C	PCM1732U	PCM1732U	Rails
"	"	"	"	"	PCM1732U/1K	Tape and Reel

NOTES: (1) For detailed drawing and dimension table, please see end of data sheet, or Appendix C of Burr-Brown IC Data Book. (2) Models with a slash (/) are available only in Tape and Reel in the quantities indicated (e.g., /1K indicates 1000 devices per reel). Ordering 1000 pieces of "PCM1732U/1K" will get a single 1000-piece Tape and Reel. For detailed Tape and Reel mechanical information, refer to Appendix B of Burr-Brown IC Data Book.

**ELECTROSTATIC DISCHARGE SENSITIVITY**

This integrated circuit can be damaged by ESD. Burr-Brown recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.



## Motor driver ICs

# Reversible motor driver

## BA6209 / BA6209N

The BA6209 and BA6209N are reversible-motor drivers suitable for brush motors. Two logic inputs allow three output modes : forward, reverse, and braking. The motor revolving speed can be set arbitrarily by controlling the voltage applied to the motor with the control pin voltage  $V_R$ .

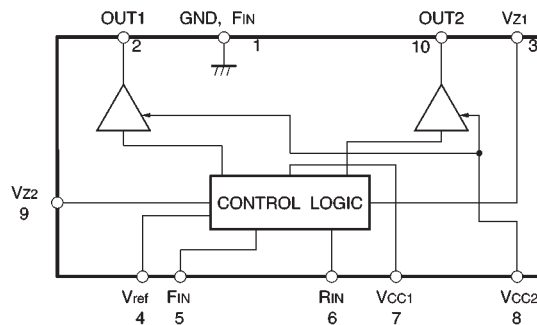
### ●Applications

VCRs and cassette tape recorders

### ●Features

- 1) Power transistors can handle a large current (1.6A maximally).
- 2) Brake is applied when stopping the motor.
- 3) Built-in function to absorb rush currents generated by reversing and braking.
- 4) Motor speed controlling pin.
- 5) Small standby current. ( $V_{CC} = 12V$ ,  $I_o = 5.5mA$  typically)
- 6) Stable operation during mode changes either from forward to reverse or vice versa.
- 7) Interface with CMOS devices.

### ●Block diagram



## MCU Pin Arrangement and Functions

### Pin Arrangement

IC4 MCU 8380-2 HD6433643RB63H HITACHI

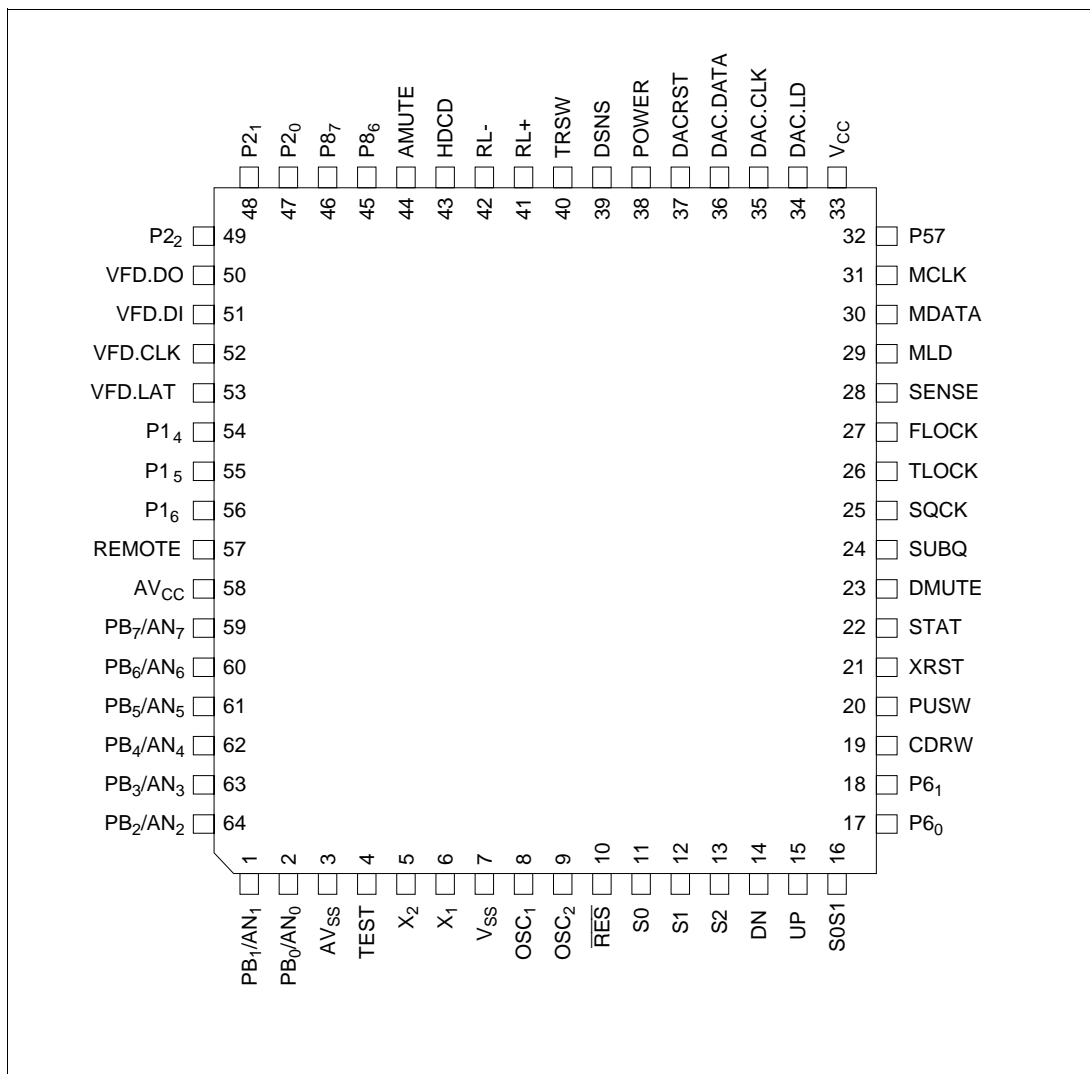


Figure 1.2 Pin Arrangement

HITACHI

IC4 MCU 8380-2 HD6433643RB63H HITACHI

Internal Block Diagram

Figure 1.1 shows a block diagram.

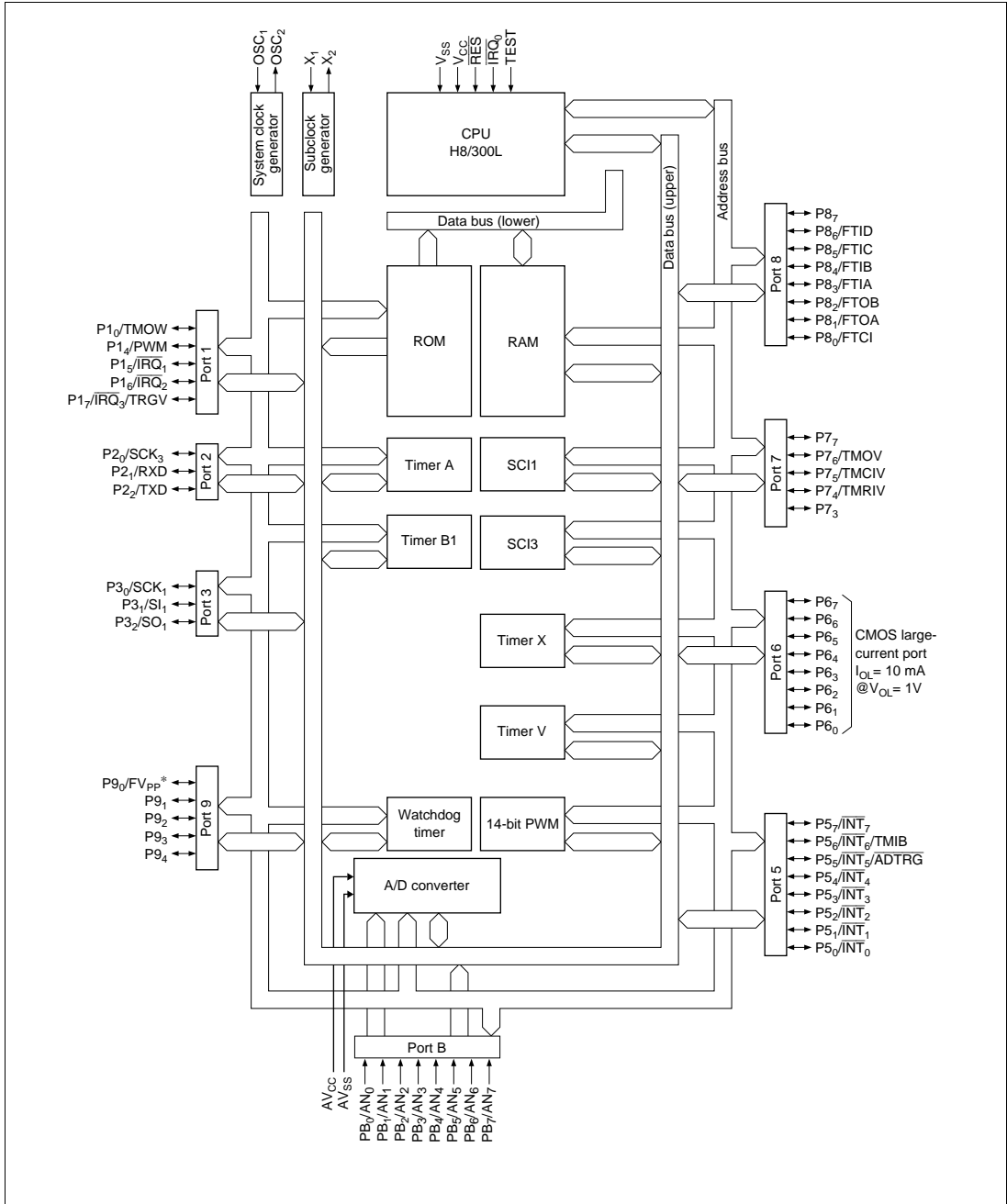


Figure 1.1 Block Diagram

HITACHI

## IC4 MCU 8380-2 HD6433643RB63H HITACHI

## Pin Functions

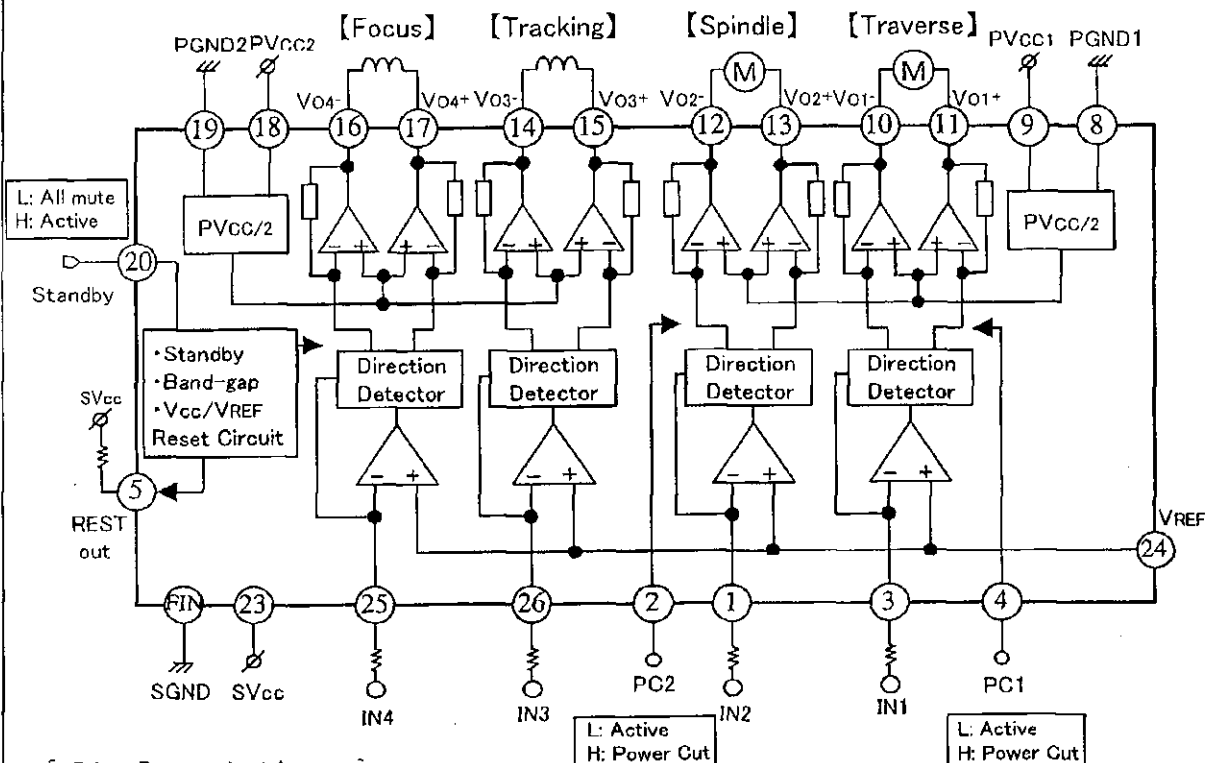
Pin	Name	Description
1	PB1	No connection
2	PB0	No connection
3	AVSS	Connected 0V
4	TEST	Connected 0V
5	X2	No connection
6	X1	Connected 5V
7	VSS	MCU ground line; connected to 0V
8	OSC1	10MHz crystal input
9	OSC2	10MHz crystal input
10	RES	MCU reset line; 0V = reset; 5V = normal operation
11	S0	CD Changer Mechanism door position switch
12	S1	CD Changer Mechanism door position switch
13	S2	CD Changer Mechanism door position switch
14	DN	CD Changer Mechanism door motor control line
15	UP	CD Changer Mechanism door motor control line
16	S0S1	CD DSP SUBQ ready input; high pulse for SUBQ ready
17	P60	No connection
18	P61	No connection
19	CDRW	CDRW RF gain control; 0V=CDRW
20	PUSW	Laser pickup inner switch; 5V=pickup at inner position
21	XRST	CD DSP reset line; 0V = DSP reset
22	STAT	CD DSP internal status output
23	DMUTE	CD DSP mute control; 5V = mute on
24	SUBQ	SUBQ output
25	SQCK	SUBQ output serial clock
26	TLOCK	No connection
27	FLOCK	No connection
28	SENSE	No connection
29	MLD	CD DSP command latch
30	MDATA	CD DSP serial command data
31	MCLK	CD DSP serial command clock
32	P57	No connection
33	VCC	MCU power supply; connected to 5V
34	DAC.LD	PCM1732 serial command latch
35	DAC.CLK	PCM1732 serial command clock
36	DAC.DATA	PCM1732 serial command data
37	DACRST	PCM1732 reset pin; 0V = reset
38	POWER	Servo power on/off control; 5V = power on
39	DSNS	Disc detection optical sensor output; 0V = disc present
40	TRSW	Carousel position detection optical sensor output
41	RL+	Carousel motor line
42	RL-	Carousel motor line
43	HDCCD	HDCCD decoding status from PCM1732; 5V = HDCCD
44	AMUTE	System mute control; 0V = mute
45	P86	No connection

## IC4 MCU 8380-2 HD6433643RB63H HITACHI

46	P87	No connection
47	P20	No connection
48	P21	No connection
49	P22	No connection
50	VFD.DO	Display driver status serial data
51	VFD.DI	Display driver command serial data
52	VFD.CLK	Display driver command serial clock
53	VFD.LAT	Display driver command serial latch
54	P14	No connection
55	P15	No connection
56	P16	CD DSP internal status for auto-adjustment
57	REMOTE	IR remote signal input
58	AVCC	Connected to 5V
59	PB7	No connection
60	PB6	No connection
61	PB5	No connection
62	PB4	No connection
63	PB3	No connection
64	PB2	No connection

AN4801SB

[ Block Diagram ]

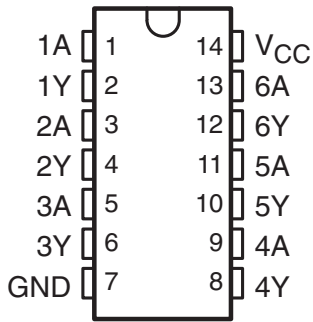


[ Pin Descriptions ]

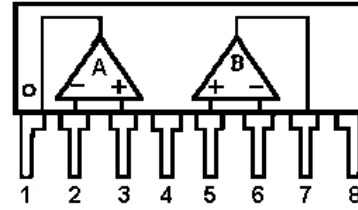
Pin No.	Function	Pin No.	Function
1	Driver 2 input	16	Driver 4 inverted output
2	Power Cut input (Channel 2 mute)	17	Driver 4 forward output
3	Driver 1 input	18	Power supply 2 for driver
4	Power Cut input (Channel 1 mute)	19	Ground 2 for driver
5	Reset output	20	Standby input
6	N. C.	21	N. C.
7	N. C.	22	N. C.
8	Ground 1 for driver	23	Power supply
9	Power supply 1 for driver	24	VREF input
10	Driver 1 inverted output	25	Driver 4 input
11	Driver 1 forward output	26	Driver 3 input
12	Driver 2 inverted output	FIN	Ground
13	Driver 2 forward output		
14	Driver 3 inverted output		
15	Driver 3 forward output		

# Integrated Circuit Diagrams

## IC SN74HCU04 SOP(T.I.)



## IC NJM4560L

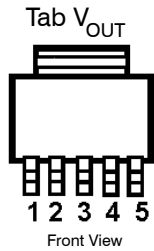


### PIN FUNCTION

1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V

## IC B1117N

SOT-223-5

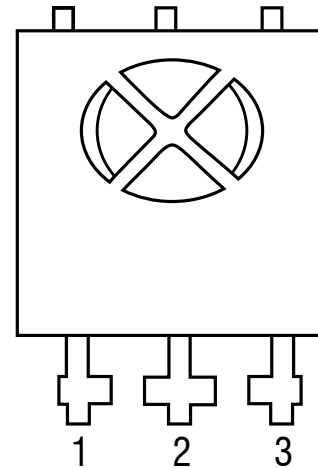


- #1 Sense
- #2 Adj/GND
- #3 OUT
- #4 Control
- #5 V<sub>IN</sub>

Front View

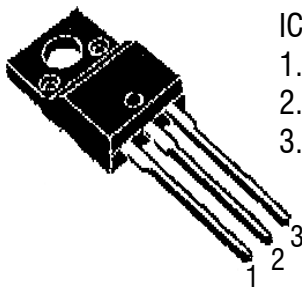
## INFARED SENSOR

TCD1600



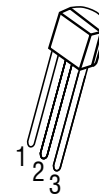
1. Vout
2. GND
3. VCC

## IC 7805



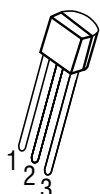
- IC 7805
- 1.-Input
- 2.-Output
- 3.-GND

## N CHANNEL, TRANS, BS170



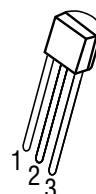
1. Source
2. Gate
3. Drain

## TRANS, PNP, SS8550C



1. Collector
2. Base
3. Emitter

## TRANS, NPN, 2SC1740, KSR1003

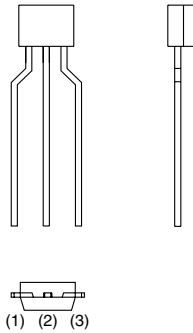


1. Emitter
2. Collector
3. Base

# Integrated Circuit Diagrams

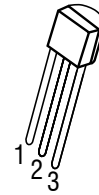
## DTC114E/S

XTOR  
NPN



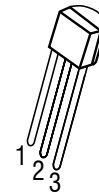
(1) GND  
(2) OUT  
(3) IN

## TRANS, PNP KSR2003



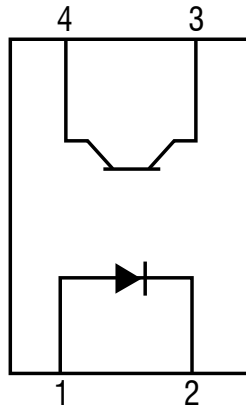
1. EMITTER  
2. COLLECTOR  
3. BASE

## TRANS, PNP KSB564A-Y



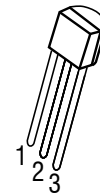
1. EMITTER  
2. BASE  
3. COLLECTOR

## IC LTV817B



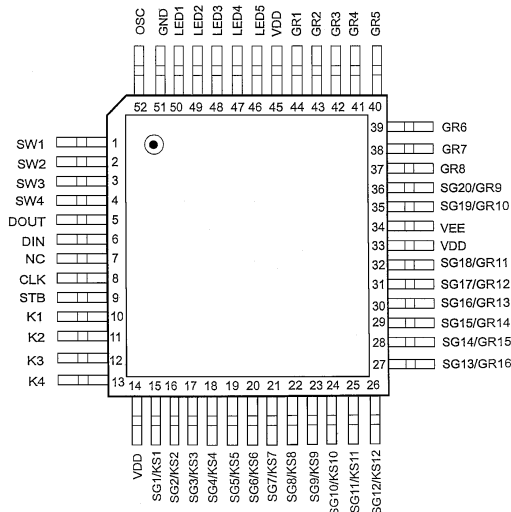
1. Anode                      3. Emitter  
2. Cathode                    4. Collector

## TRANS, PNP, DTA124ESA



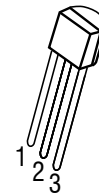
1. GND  
2. Out  
3. In

## PIN CONFIGURATION IC PT 6311



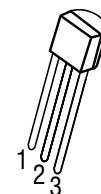
## IC 78L08

Package Outline  
(TO-92) (Micro)



1. OUT  
2. GND  
3. IN

## IC (NJRC) 79L08 TO92



1. COMMON  
2. IN  
3. OUT



## FL8385 Mechanical Parts List

Part Number	Ref. Designator	Description	Qty.
4002-016128-000		FERRITE RING 'T16X12X8' MM	3
4002-311975-000		TOROID COILS 'T31X19X7.5MM'	3
9683-850100-001		FL8385 MECHAN ASSY 120V UL VFD(HARMAN/KARDON)REV A	1
2610-218300-002		AC POWER CORD NON-INTEGRAL SPT-2 UL/CSA(LUEN MING)	1
3200-480150-400		TRANSFORMER EI48 117V CUL #4801Y52T (WINBOND)	1
6029-010012-001-02		W SILVER HOT STAMPING FEET (TOYO FOIL NO.2LV-38)	4
6029-010012-001		PLASTIC FOOT	1
6083-510011-000		STAND, FRONT-5CD	1
6083-510012-000		STAND, REAR-5CD	1
6083-510013-001		BRACKET, 5CD-SIDE 1	1
6083-510014-001		BRACKET, 5CD-SIDE 2	1
6083-510016-000		BRACKET, WIRE	1
6083-810002-000-02		CD DOOR W HK FINE ANTHRACTIVE 334.132.P-F/PAINTED	1
6083-810002-000		DOOR ,CD (PS 94HB)	1
6083-810003-001-02		HARMAN/KARDON FL8385 DISPLAY LENS W SILKSCREEN	1
6083-810003-001		WINDOW DISPLAY (ACRYLIC) 438.6X42.9	1
6083-810010-000		DIFFUSER	1
6083-810016-000		DIFFUSER	1
6583-510001-006		BOTTOM CABINET	1
6583-510003-003-08		HARMAN KARDON FL8385(120V) CSA VR R/P W SILKSCREEN	1
6583-510003-003		FL8370 REAR PANEL	1
6583-510010-000		COVER PLATE	1
6583-810001-002-02		TOP CABINET W/ALCOR 40211 VINGL PAINTED	1
6583-810001-002		TOP CABINET FL8380	1
6583-810002-000		BRACLCT, FP LEFT (1.0 SECC)	1
6583-810003-000		BRACLCT, FP RIGHT (1.0 SECC)	1
6583-810004-000A		HARMAN KARDON LOGO BADGE (SILVER)	1
6600-070003-000		CD90R05 RUBBER PAD,LEG	4
6600-120040-000		SCREW NUT M4X7X3	2
6600-180007-000		AC CORD BUSHING (PG5RF-5B)	1
6600-210096-000		FOAM SPONGE PADCOCK 60X20X16 MM	1
6600-240003-001		CLOSE END CONNECTOR (CE-1)	2
7003-006001-063		SCREW M3X6 S.T.P. W/H NI-PLATED	4
7003-006001-111		SCREW M3X6 S.T.P. B/H (BLACK)	33
7003-006001-112		SCREW M3X6 S.T.P. B/H	1
7003-006001-113		SCREW M3X6 S.T.P B/H NI-PLATED	3
7003-006002-112		SCREW M3X6 P.T.P. B/H	3
7003-008002-111	DIG BD RP	SCREW M3X8 P.T.P. B/H (BLACK)	2
7003-008002-111	R.P.-5CD	SCREW M3X8 P.T.P. B/H (BLACK)	4
7003-008002-112		SCREW M3X8 P.T.P. B/H	12
7003-016002-112		SCREW M3X16 PTP B/H ZN	2
7004-010010-112		SCREW M4X10 B/H	2
7104-010010-022	BKT-B.C	WASHER M4X10X1MM	1
7104-010010-022	R.P-B.C	WASHER M4X10X1MM	1
7104-010010-022	XFORMER	WASHER M4X10X1MM	2
8583-850100-301		FL8385 FRONT PANEL (HARMAN/KARDON) REV A	1
6083-810001-000-03		HARMAN KARDON FL8385 F/P W/334.132.P-F/PAINTED	1
6083-810001-000		FL8380 FRONT PANEL (HIPS 94HB)	1
6083-810004-000A01		SIX SMALL ROUND BUTTON W HK-PF102/PAINTED	1
6083-810004-000A		BUTTON DISC (BLACK)	1
6083-810006-000-02		OPEN/CLOSE KNOB W HK FINE ANTHRCITE 334.132.P-F1	1
6083-810006-000		BUTTON, OPEN/CLOSE (PS 94HB)	1
6083-810007-000-02		FOUR RECTNGLE BUTTONS W HK-PF102/PAINTED	1
6083-810007-000		BUTTON, PLAY (PS 94HB)	1
6083-810009-000-02		SIX BUTTON SLELVES W HK-PF102/PAINTED	1
6083-810009-000		CAP BUTTON DIMMER (PS 94HB)	1
6083-810011-000		FILTER, FL (PVC 0.5t)	1
6083-810013-000A01		PHONES LEVEL KNOB W HK AFINE NTHRCITE 334.132.P-F1	1
6083-810013-000A		KNOB, VR (PS 94HB) WHITE	1
6083-810014-000-02		POWER KNOR W 334.132.P-F/PAINTED	1
6083-810014-000		BUTTON, STANDBY HIPS(94HB)	1
6083-810015-000		INDICATOR, STANDBY SAN(MILKY)	1
6583-510006-000		BRACKET, PHONES (MIC)	1
6600-210035-000		PADCOCK 10X10X7MM	1
6600-210060-000		PADCOCK 70X12X6t	1
7003-006002-112		SCREW M3X6 P.T.P. B/H	1
7003-008002-112		SCREW M3X8 P.T.P. B/H	12

Part Number	Ref. Designator	Description	Qty.
<b>5CD MECHA ASSY</b>			
2501-062801-150	MECH.TO MB.	6PIN 280MM 2CONN RIBBON CABLE AWG#28 2MMP	1
2503-162509-090		16PIN 250MM FLAT FLEXIBLE CABLE	1
6505-050002-001		CABINET HOLDER A	4
7003-008002-112		SCREW M3X8 P.T.P. B/H	4
8500-055110-301		CABINET TOP ASSY FOR FL8380	1
6005-050002-011		CABINET TOP	1
6005-050004-003		GEAR BLOCK	1
6005-050005-001		GEAR BLOCK ARM	1
6005-050026-002		LEVER LOCK, T.T.	1
6005-050027-000		BUSH, ROLLER	1
6005-050028-000		WASHER, BUSH	1
6005-050051-000		TRUNTABLE	1
6600-010212-002		5CD SPRING, GEAR BLOCK	1
6600-010213-000		5CD SPRING, GEAR BLOCK ARM	1
6600-010290-001		SPRING LEVER LOCK	1
6600-020203-000		5CD SHAFT, T.T. ROLLER	5
6600-020297-000		PIN, ROLLER LOCK	1
6600-080001-000		YN21R D03/04 PINCH ROLLER	5
6600-170056-000		RUBBER RING 3.2X5.2X2	1
7002-010002-032		SCREW M2X10 P.T.P. 1/P	1
7002-608002-002		SCREW M2.6X8 P.T.P W/H D6.5	2
7002-620002-062		SCREW M2.6X20 P TYPE W/H ZN	1
7003-008002-112		SCREW M3X8 P.T.P. B/H	5
7003-012002-062		SCREW M3X12 P.T.P. W/H	1
7102-712706-022		WASHER DIA2.7XDIA12.7X0.6mm ST/ZN	1
7103-012010-022		WASHER M3X12X1MM	1
8500-055040-301		MOTOR BRACKET ASSY	1
6005-050019-000		SHAFT BUSHING	2
6005-050020-000		PULLEY ROTARY	1
6005-050021-000		GEAR ROTARY	1
6005-050022-000		GEAR WORM	1
6600-020268-000		SHAFT DIA. 2X34MM	1
6600-090052-000		5CD BELT ROTARY	1
7002-003010-111		SCREW M2X3 B/H (BLACK)	2
7103-006005-130		WASHER 3X6X0.5MM CUT	1
8500-055010-300		MOTOR ASSY	1
2500-021001-050		2PIN 100MM 1CONN CABLE AWG#28 UL1571 2mmP	1
6005-050018-000		MOTOR PULLEY	1
FF130SH11340-2684A		MOTOR FF-130SH-11340-02684A (MABUCHI)	1
8500-055040-100		MOTOR BRACKET SUB-ASSY	1
6505-050004-004		MOTOR BRACKET	1
6600-020201-001		5CD SHAFT, GEAR ROTARY	1
8500-055050-100		BRACKET ROLLER ASSY	1
6005-050017-000		ROLLER	1
6505-050005-001		BRACKET ROLLER	1
6600-020202-000		5CD PIN, ROLLER	1
9400-501001-134		5CD SENSOR BOARD ASSY REV D	1
1001-205316-000	R4	CARBON FILM RESISTOR 1.2M OHM 1/6W +-5%	1
1004-701316-000		CARBON FILM RESISTOR 470 OHM 1/6 W +-5%	1
1007-501316-000		CARBON FILM RESISTOR 750 OHM 1/6W +-5%	1
1102-101014-000	C1	ELECT. CAP. 100uF/16V +-20% 105□	1
1302-170000-100	Q1	TRANSISTOR FET BS170 TO-92	1
1401-141480-000	D1	DIODE 1N4148	1
1401-141480-000	D2	DIODE 1N4148	1
2300-002010-000		RIGHT ANGLE CONN WAFER 2PIN 2MMP	1
2300-006010-000		HORIZONTAL CONN. WAFER 6 PINS 2mmP	1
2500-021201-050		2PIN 120MM 1CONN CABLE AWG#28 2MMP	1
2506-062501-150		6PIN 250MM 2CONN RIBBON CABLE AWG#28 2MMP	1
3001-820000-000		INFRARED SENSOR ST-8LR2 OPTO-SENSOR	1
3004-206000-000		PHOTO COUPLER SG206 OPTO-SENSOR	1
3100-800000-000		EMITTING DIODE EL-8L OPTO-SENSOR	1
4841-010130-004		5CD SENSOR BD REV D	1
6005-050029-001		HOLDER SENSOR	1
6005-050032-000		COVER, HOLDER, SENSOR	1
8500-055230-101		BASE 5CD ASSY REV A	1
6005-050006-004		CONTROL CAM	1
6005-050007-000		GEAR, CABINET TOP	1

Part Number	Ref. Designator	Description	Qty.
6005-050008-001		CONTROL CAM	1
6005-050009-000		INTERMEDIATE GEAR	1
6005-050011-000		IDLER GEAR	1
6005-050014-004		LEVER LOCK, OUTER	1
6005-050015-000		LEVER LOCK	1
6005-050033-000		SUPPORT BRACKET	1
6005-050034-001		DRIVEN PULLEY 80T	1
6005-050035-000		DRIVEN PULLEY PLATE 80T	1
6005-050050-007		BASE, 5CD	1
6091-060006-000		CHUCKING PULLEY	1
6591-060007-000		CHUCKING METAL PLATE	1
6600-010210-001		SPRING LEVER LOCK	1
6600-010211-000		5CD SPRING, LEVER LOCK, OUTER	1
6600-090062-000		TIMING BELT, S2M180 90T	1
6600-140001-000		CD90F01 CHUCKING METAL PLATE FELT RING	1
6600-150006-001		CHUCKING MAGNET	1
6600-170021-000		5CD CUSHION RING	2
7002-006001-022		SCREW M2*6 S.T.P. P/H	2
7003-006002-112		SCREW M3X6 P.T.P. B/H	2
7003-008002-062		SCREWM3X8 P TYPE W/H ZN	1
7003-008002-112		SCREW M3X8 P.T.P. B/H	8
7003-008003-112		SCREW M3X8 B TYPE B/H ZN	1
7003-012002-062		SCREW M3X12 P.T.P. W/H	1
7103-207004-000		FIBRE WASHER M3.2X7X0.4MM	4
7103-209008-022		WASHER M3.2X9X0.8	3
7103-210012-022		PLAN WASHER 3.2X10X1.2t ZN	2
7103-314010-022		WASHER M3.3X14X1MM ST/ZN	1
7105-010005-030		WASHER LOCK 5X10X0.5MM	3
7106-212505-022		PLAN WASHER 6.2X12.5X0.5t	3
8500-055010-100		BRACKET GEAR ASSY	1
6505-050008-001		BRACKET, GEAR, SUB	1
6600-020196-002		PIN, CAM CABINET	1
6600-020197-001		PIN CABINET TOP	1
6600-020198-000		5CD PIN, CONTROL CAM	1
8500-055030-301		MOTOR ASSY	1
6005-050023-001		PULLEY MOTOR	1
6005-050024-000		PULLEY DISC	1
9400-501000-171		5CD SWITCH BOARD ASSY REV A	1
6005-050025-002		SWITCH COVER	1
6505-050007-001		CONTACT PLATE	1
6600-020270-004		BUSH, SWITCH COVER	1
9400-501000-211		5CD LOADER BOARD ASSY REV A	1
4800-310210-001		5CD LOADER BOARD REVA	1
RF-500TB-14415		DC MOTOR MABUCHI RF-500TB-14415 (DC002VT00003)	1
8500-055220-100		BRACKET, CD MECHA ASSY	1
3009-213000-000		SONY CD MECHANISM 213CCM	1
6005-050030-001		BRACKET, CD MECHA	1
6600-020199-001		PIN, LOCK	1
6600-020200-002		PIN, ROUND	1
6600-170076-000		CUSHION 5CD, 30 DEG. BLACK IIR	2
6600-170077-000		CUSHION 5CD 40 DEG. GREY IIR	2
7002-608002-022		SCREW M2.6X8 P.T.P. P/H	4
7102-712706-022		WASHER DIA2.7XDIA12.7X0.6mm ST/ZN	4
7106-212505-022		PLAN WASHER 6.2X12.5X0.5t	4
9400-501000-701		5CD TURN TABLE BOARD ASSY REV A	1
2300-002000-001		STRAIGHT CONN WAFER 2PIN 2MMP JST	1
2300-006000-000		STRAIGHT CONN. WAFER 6 PINS 2mmP	1
2501-062801-150		6PIN 280MM 2CONN RIBBON CABLE AWG#28 2MMP	1
4841-010700-006		5CD TURN TABLE REV F	1

## FL8385 Electrical Parts List

### HEADPHONE BOARD ASSY

#### Resistors

1001-001316-000	R403	CARBON FILM RESISTOR 100 OHM 1/6 W +-5%	1
1001-001316-000	R404	CARBON FILM RESISTOR 100 OHM 1/6 W +-5%	1
1001-002316-000	R409	CARBON FILM RESISTOR 1K OHM 1/6 W +-5%	1

Part Number	Ref. Designator	Description	Qty.
1001-002316-000	R410	CARBON FILM RESISTOR 1K OHM 1/6 W +-5%	1
1001-004316-000	R405	CARBON FILM RESISTOR 100K OHM 1/6 W +-5%	1
1001-004316-000	R406	CARBON FILM RESISTOR 100K OHM 1/6 W +-5%	1
1001-202316-000	R411	CARBON FILM RESISTOR 1.2K OHM 1/6 W +-5%	1
1001-202316-000	R412	CARBON FILM RESISTOR 1.2K OHM 1/6 W +-5%	1
1004-704316-000	R407	CARBON FILM RESISTOR 470K OHM 1/6 W +-5%	1
1004-704316-000	R408	CARBON FILM RESISTOR 470K OHM 1/6 W +-5%	1
1065-003500-130	VR401	VAR. RESISTOR 50k 1/4W +-20% ROTARY B-TYPE	1
1065-003500-131	VR401	VAR. RESISTOR 50K 1/4W +-20% ROTARY B-TYPE W/O NUT	1

*Capacitors*

1100-102044-000	C413	CERAMIC CAP. 1000PF/50V +-20%	1
1100-102044-000	C414	CERAMIC CAP. 1000PF/50V +-20%	1
1100-102044-000	EMC	CERAMIC CAP. 1000PF/50V +-20%	1
1100-103044-000	C410	CERAMIC CAP. 0.01UF/50V +-20%	1
1100-103044-000	C412	CERAMIC CAP. 0.01UF/50V +-20%	1
1100-103044-000	C416	CERAMIC CAP. 0.01UF/50V +-20%	1
1100-104044-000	EMC	CERAMIC CAP. 0.1uF/50V +-20%	1
1101-473062-000	C407	POLYESTER/MYLAR CAP. 0.047UF/100V +-5%	1
1101-473062-000	C408	POLYESTER/MYLAR CAP. 0.047UF/100V +-5%	1
1102-101024-000	C409	ELECT. CAP. 100UF/25V +-20%	1
1102-101024-000	C411	ELECT. CAP. 100UF/25V +-20%	1
1102-471014-000	C401	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1102-471014-000	C402	ELECT. CAP. 470uF/16V +-20% 8X12MM	1

*Semiconductors*

4145-600001-600	IC401	I.C. NJM4560L 8PINS SIL (NJRC)	1
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*Miscellaneous*

6600-120070-000		SCREW HEX NUT M7X0.75X2.0MM	1
7107-212004-022		SCREW WASHER M7X12X0.4MM	1
2300-006000-000	CN401	STRAIGHT CONN. WAFER 6 PINS 2mmP	1
2320-009911-000	JK401	6.4MM HEADPHONE JACK (JY-6303-02-030)	1
2320-009911-001		6.4MM HEADPHONE JACK W/O NUT (JY-6303-01-030)	1
6600-120120-000		SCREW HEX NUT M12X1.0X2.0MM	1
7112-018006-022		SCREW WASHER M12X18X0.6MM	1
2605-100502-000	EMC	50MM GND WIRE 1RING (M3) AWG#22 BLK	2

**FRONT/DISPLAY BOARD ASS'Y***Resistors*

1001-003316-000	R406	CARBON FILM RESISTOR 10K OHM 1/6 W +-5%	1
1001-003316-000	R407	CARBON FILM RESISTOR 10K OHM 1/6 W +-5%	1
1001-003316-000	R408	CARBON FILM RESISTOR 10K OHM 1/6 W +-5%	1
1001-003316-000	R409	CARBON FILM RESISTOR 10K OHM 1/6 W +-5%	1
1001-003316-000	R410	CARBON FILM RESISTOR 10K OHM 1/6 W +-5%	1
1003-301316-000	R404	CARBON FILM RESISTOR 330 OHM 1/6W +-5%	1
1003-901316-000	R411	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R412	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R413	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R414	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R415	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R416	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R417	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R418	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R419	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R420	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R421	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R422	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R423	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R424	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R425	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R426	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R427	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1003-901316-000	R428	CARBON FILM RESISTOR 390 OHM 1/6W +-5%	1
1004-701316-000	R403	CARBON FILM RESISTOR 470 OHM 1/6 W +-5%	1

Part Number	Ref. Designator	Description	Qty.
1005-103316-000	R401	CARBON FILM RESISTOR 51K OHM 1/6W +-5%	1
1007-500316-000	L1	CARBON FILM RESISTOR 75 OHM 1/6W +-5%	1
<i>Capacitors</i>			
1100-104044-000	C401	CERAMIC CAP. 0.1uF/50V +-20%	1
1102-100014-000	E401	ELECT. CAP. 10UF/16V +-20%	1
1102-100014-000	E402	ELECT. CAP. 10UF/16V +-20%	1
<i>Semiconductors</i>			
1300-114000-100	Q1	XTOR DTC114E/S NPN TO-92	1
1300-114000-100	Q2	XTOR DTC114E/S NPN TO-92	1
1401-141480-000	D402	DIODE 1N4148	1
1401-141480-000	D403	DIODE 1N4148	1
1401-141480-000	D404	DIODE 1N4148	1
1401-141480-000	D405	DIODE 1N4148	1
3001-260430-000	U402	INFRARED SENSOR PIC26043TM2 TCD1600 OPTO	1
3100-000000-021	D411	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D412	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D413	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D414	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D415	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D416	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D417	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D418	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D419	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D420	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D421	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D422	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D423	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D424	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D425	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D426	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D427	LED WHITE COLOR Ø3MM ROUND HEAD	1
3100-000000-021	D428	LED WHITE COLOR Ø3MM ROUND HEAD	1
3106-065210-000	U403	VFD DISPLAY HNA-065C21T	1
4163-110123-800	U401	IC PTC PT6311 QFP (VFP DRIVER)	1
3100-000000-017	D841	LED 5MM SUPER ORANGE/BLUE WHITE DIFFUSED(50B9SW-2)	1
<i>Miscellaneous</i>			
6583-810005-000	EMC	SHIELD PLATE PHONE PCB	1
6600-070003-000		CD90R05 RUBBER PAD,LEG	2
2400-020200-000	S841	TACT SW 2P2T KPT-1105A (5MM)	1
2500-051201-050	W841	5PIN 120MM 1CONN CABLE AWG#28 UL1571 2MMP	1
2300-005010-000	W403	RIGHT ANGLE CONN WAFER 5PIN 2mmP	1
2300-010001-900	W401	10PIN STRAIGHT CONN WAFER 2MMP SMT SM-TYPE	1
2400-020200-000	S401	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S402	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S403	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S404	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S405	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S406	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S407	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S408	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S409	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S410	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S411	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S413	TACT SW 2P2T KPT-1105A (5MM)	1
2400-020200-000	S415	TACT SW 2P2T KPT-1105A (5MM)	1
<b>MAIN BOARD ASS'Y</b>			
<i>Resistors</i>			
1001-000312-000	R13	CARBON FILM RESISTOR 10 OHM 1/2W +-5%	1
1001-000312-000	R64	CARBON FILM RESISTOR 10 OHM 1/2W +-5%	1
1001-000314-020	R72	CARBON FILM RESISTOR 10 OHM 1/4W +-5% AXIAL TAPE	1
1001-000316-020	R18	CARBON FILM RESISTOR 10 OHM 1/6W +-5% AXIAL TAPE	1

Part Number	Ref. Designator	Description	Qty.
1001-000320-000	R118	CARBON FILM RESISTOR 10 OHM 2W +-5%	1
1001-000320-000	R4	CARBON FILM RESISTOR 10 OHM 2W +-5%	1
1001-000320-000	R79	CARBON FILM RESISTOR 10 OHM 2W +-5%	1
1001-001316-020	R41	CARBON FILM RESISTOR 100 OHM 1/6W +-5% AXIAL TAPE	1
1001-001316-020	R60	CARBON FILM RESISTOR 100 OHM 1/6W +-5% AXIAL TAPE	1
1001-001316-020	R61	CARBON FILM RESISTOR 100 OHM 1/6W +-5% AXIAL TAPE	1
1001-001316-020	R62	CARBON FILM RESISTOR 100 OHM 1/6W +-5% AXIAL TAPE	1
1001-001316-020	R76	CARBON FILM RESISTOR 100 OHM 1/6W +-5% AXIAL TAPE	1
1001-001316-020	R77	CARBON FILM RESISTOR 100 OHM 1/6W +-5% AXIAL TAPE	1
1001-002316-020	R1	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R119	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R120	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R121	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R122	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R123	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R124	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R125	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R126	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R127	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R133	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R2	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R20	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R21	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R27	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R3	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R46	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R59	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R65	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-002316-020	R66	CARBON FILM RESISTOR 1K OHM 1/6W +-5% TP52	1
1001-003316-020	R114	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R132	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R28	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R42	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R43	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R44	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R45	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R69	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R71	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-003316-020	R75	CARBON FILM RESISTOR 10K OHM 1/6W +-5% TP52	1
1001-004316-020	R29	CARBON FILM RESISTOR 100K OHM 1/6W +-5% TP52	1
1001-004316-020	R6	CARBON FILM RESISTOR 100K OHM 1/6W +-5% TP52	1
1001-004316-020	R68	CARBON FILM RESISTOR 100K OHM 1/6W +-5% TP52	1
1001-004316-020	R82	CARBON FILM RESISTOR 100K OHM 1/6W +-5% TP52	1
1001-005316-020	R130	CARBON FILM RESISTOR 1M OHM 1/6W +-5% TP52	1
1001-006316-020	R31	CARBON FILM RESISTOR 10M OHM 1/6W +-5% AXIAL TAPE	1
1001-200316-020	R23	CARBON FILM RESISTOR 12 OHM 1/6W +-5% AXIAL TAPE	1
1001-201316-020	R17	CARBON FILM RESISTOR 120 OHM 1/6 W +-5% AXIAL TAPE	1
1001-502316-020	R48	CARBON FILM RESISTOR 1.5K OHM 1/6W +-5% AXIAL TAPE	1
1001-503316-020	R137	CARBON FILM RESISTOR 15K OHM 1/6 W +-5% AXIAL TAPE	1
1001-503316-020	R57	CARBON FILM RESISTOR 15K OHM 1/6 W +-5% AXIAL TAPE	1
1001-803316-020	R53	CARBON FILM RESISTOR 18K OHM 1/6W +-5% TP52	1
1002-201316-020	R25	CARBON FILM RESISTOR 220 OHM 1/6 W +-5% AXIAL TAPE	1
1002-202316-020	R40	CARBON FILM RESISTOR 2.2K OHM 1/6W +-5% TP52	1
1002-202316-020	R52	CARBON FILM RESISTOR 2.2K OHM 1/6W +-5% TP52	1
1002-203316-020	R55	CARBON FILM RESISTOR 22K OHM 1/6W +-5% TP52	1
1002-204316-020	R35	CARBON FILM RESISTOR 220K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R104	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R105	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R106	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R109	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R14	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R15	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-702316-020	R50	CARBON FILM RESISTOR 2.7K OHM 1/6W +-5% AXIAL TAPE	1
1002-703316-020	R7	CARBON FILM RESISTOR 27K OHM 1/6W +-5% TP52	1
1003-003316-020	R134	CARBON FILM RESISTOR 30K OHM 1/6W +-5% AXIAL TAPE	1
1003-302316-020	R51	CARBON FILM RESISTOR 3.3K OHM 1/6W +-5% TP52	1
1003-304316-020	R5	CARBON FILM RESISTOR 330K OHM 1/6W +-5% AXIAL TAPE	1
1003-903316-020	R10	CARBON FILM RESISTOR 39K OHM 1/6W +-5% AXIAL TAPE	1
1003-903316-020	R67	CARBON FILM RESISTOR 39K OHM 1/6W +-5% AXIAL TAPE	1
1004-700316-020	R107	CARBON FILM RESISTOR 47 OHM 1/6W +-5% TP52	1

Part Number	Ref. Designator	Description	Qty.
1004-700316-020	R110	CARBON FILM RESISTOR 47 OHM 1/6W +-5% TP52	1
1004-701316-020	R22	CARBON FILM RESISTOR 470 OHM 1/6 W +-5% AXIAL TAPE	1
1004-702316-020	R11	CARBON FILM RESISTOR 4.7K OHM 1/6W +-5% TP52	1
1004-702316-020	R12	CARBON FILM RESISTOR 4.7K OHM 1/6W +-5% TP52	1
1004-702316-020	R129	CARBON FILM RESISTOR 4.7K OHM 1/6W +-5% TP52	1
1004-703316-020	R135	CARBON FILM RESISTOR 47K OHM 1/6W +-5% TP52	1
1004-703316-020	R32	CARBON FILM RESISTOR 47K OHM 1/6W +-5% TP52	1
1004-703316-020	R33	CARBON FILM RESISTOR 47K OHM 1/6W +-5% TP52	1
1005-100316-020	R116	CARBON FILM RESISTOR 51 OHM 1/6W +-5% AXIAL TAPE	1
1005-102316-020	R36	CARBON FILM RESISTOR 5.1K OHM 1/6W +-5% AXIAL TAPE	1
1005-602316-020	R56	CARBON FILM RESISTOR 5.6K OHM 1/6W +-5% TP52	1
1006-202316-000	R136	CARBON FILM RESISTOR 6.2K OHM 1/6W +-5%	1
1006-802316-020	R73	CARBON FILM RESISTOR 6.8K OHM 1/6W +-5% AXIAL TAPE	1
1007-501316-020	R83	CARBON FILM RESISTOR 750 OHM 1/6W +-5% AXIAL TAPE	1
1009-100316-020	R131	CARBON FILM RESISTOR 91 OHM 1/6W +-5% AXIAL TAPE	1
1009-100316-020	R24	CARBON FILM RESISTOR 91 OHM 1/6W +-5% AXIAL TAPE	1
1009-100316-020	R70	CARBON FILM RESISTOR 91 OHM 1/6W +-5% AXIAL TAPE	1
1009-101316-020	R16	CARBON FILM RESISTOR 910 OHM 1/6W AXIAL TAPE	1
1009-102316-020	R49	CARBON FILM RESISTOR 9.1K OHM 1/6W +-5% AXIAL TAPE	1
1011-001018-020	R100	METAL FILM RESISTOR 100 OHM 1/8W +-1% AXIAL TAPE	1
1011-001018-020	R101	METAL FILM RESISTOR 100 OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R84	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R85	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R88	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R93	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R94	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R95	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R96	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R97	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R98	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-002018-020	R99	METAL FILM RESISTOR 1K OHM 1/8W +-1% AXIAL TAPE	1
1011-204018-020	R30	METAL FILM RESISTOR 120K OHM 1/8W +-1% AXIAL TYPE	1
1012-202018-020	R90	METAL FILM RESISTOR 2.2K OHM 1/8W +-1% AXIAL TAPE	1
1012-202018-020	R91	METAL FILM RESISTOR 2.2K OHM 1/8W +-1% AXIAL TAPE	1
1012-203018-020	R102	METAL FILM RESISTOR 22K OHM 1/8W +-1% AXIAL TAPE	1
1012-203018-020	R103	METAL FILM RESISTOR 22K OHM 1/8W +-1% AXIAL TAPE	1
1012-203018-020	R34	METAL FILM RESISTOR 22K OHM 1/8W +-1% AXIAL TAPE	1
1012-203018-020	R8	METAL FILM RESISTOR 22K OHM 1/8W +-1% AXIAL TAPE	1
1012-203018-020	R9	METAL FILM RESISTOR 22K OHM 1/8W +-1% AXIAL TAPE	1
1013-902018-020	R108	METAL FILM RESISTOR 3.9K OHM 1/8W +-1% AXIAL TAPE	1
1013-902018-020	R111	METAL FILM RESISTOR 3.9K OHM 1/8W +-1% AXIAL TAPE	1
1016-802018-020	R89	METAL FILM RESISTOR 6.8K 1/8W +-1% AXIAL TAPE	1
1016-802018-020	R92	METAL FILM RESISTOR 6.8K 1/8W +-1% AXIAL TAPE	1

*Capacitors*

1100-102043-000	C51	CERAMIC CAP. 1000PF/50V +-10%	1
1100-102043-000	C61	CERAMIC CAP. 1000PF/50V +-10%	1
1100-103043-000	C154	CERAMIC CAP. 0.01uF/50V +-10%	1
1100-103043-000	C62	CERAMIC CAP. 0.01uF/50V +-10%	1
1100-104044-000	C102	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C103	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C106	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C107	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C108	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C109	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C113	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C115	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C117	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C119	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C120	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C122	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C124	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C126	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C127	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C14	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C143	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C146	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C147	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C15	CERAMIC CAP. 0.1uF/50V +-20%	1

Part Number	Ref. Designator	Description	Qty.
1100-104044-000	C150	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C151	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C158	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C159	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C160	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C164	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C166	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C18	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C2	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C20	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C23	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C24	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C27	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C28	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C34	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C42	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C48	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C55	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C57	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C59	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C63	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C65	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C7	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C76	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C77	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C79	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C80	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C81	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C83	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C85	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C86	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C88	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C9	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C90	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C95	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C96	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C97	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C98	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	C99	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-104044-000	EMC	CERAMIC CAP. 0.1uF/50V +-20%	1
1100-150043-000	C35	CERAMIC CAP. 15PF +-10%	1
1100-220043-000	C10	CERAMIC CAP. 22pF/50V +- 10%	1
1100-220043-000	C30	CERAMIC CAP. 22pF/50V +- 10%	1
1100-220043-000	C31	CERAMIC CAP. 22pF/50V +- 10%	1
1100-220043-000	C50	CERAMIC CAP. 22pF/50V +- 10%	1
1100-331043-000	C25	CERAMIC CAP. 330PF/50V +-10%	1
1100-333043-000	C49	CERAMIC CAP. 0.033UF/50V +-10%	1
1100-471043-000	C58	CERAMIC CAP. 470PF/50V +-10%	1
1100-471043-000	C8	CERAMIC CAP. 470PF/50V +-10%	1
1100-473043-000	C16	CERAMIC CAP. 0.047uF/50V +-10%	1
1100-473043-000	C17	CERAMIC CAP. 0.047uF/50V +-10%	1
1100-473043-000	C36	CERAMIC CAP. 0.047uF/50V +-10%	1
1100-473043-000	C37	CERAMIC CAP. 0.047uF/50V +-10%	1
1100-680043-000	C12	CERAMIC CAP. 68pF/50V +-10%	1
1100-680043-000	C13	CERAMIC CAP. 68pF/50V +-10%	1
1101-102062-000	C67	POLYESTER/MYLAR CAP. 0.001UF/100V +-5%	1
1101-102062-000	C70	POLYESTER/MYLAR CAP. 0.001UF/100V +-5%	1
1101-103062-000	C71	POLYESTER/MYLAR CAP. 0.01UF/100V +-5%	1
1101-222062-000	C133	POLYESTER/MYLAR CAP. 2200PF/100V +-5%	1
1101-222062-000	C135	POLYESTER/MYLAR CAP. 2200PF/100V +-5%	1
1101-222062-000	C40	POLYESTER/MYLAR CAP. 2200PF/100V +-5%	1
1101-273062-000	C29	POLYESTER CAP. 0.027UF/100V +-5%	1
1101-273062-000	C39	POLYESTER CAP. 0.027UF/100V +-5%	1
1101-332062-000	C128	POLYESTER/MYLAR CAP. 0.0033UF/100V +-5%	1
1101-332062-000	C129	POLYESTER/MYLAR CAP. 0.0033UF/100V +-5%	1
1101-562062-000	C41	POLYESTER/MYLAR CAP. 5600PF/100V +-5%	1
1102-100024-000	C114	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C116	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C118	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C121	ELECT. CAP. 10UF/25V +-20%	1



Part Number	Ref. Designator	Description	Qty.
1102-100024-000	C123	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C125	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C144	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C145	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C152	ELECT. CAP. 10UF/25V +-20%	1
1102-100024-000	C153	ELECT. CAP. 10UF/25V +-20%	1
1102-101014-000	C161	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101014-000	C43	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101014-000	C56	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101014-000	C64	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101014-000	C78	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101014-000	C82	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101014-000	C91	ELECT. CAP. 100uF/16V +-20% 105□	1
1102-101024-000	C100	ELECT. CAP. 100UF/25V +-20%	1
1102-101024-000	C104	ELECT. CAP. 100UF/25V +-20%	1
1102-101024-000	C92	ELECT. CAP. 100UF/25V +-20%	1
1102-101024-000	C93	ELECT. CAP. 100UF/25V +-20%	1
1102-101034-000	C89	ELECT. CAP. 100UF/35V +-20%	1
1102-102024-000	C32	ELECT. CAP. 1000UF/25V +-20%	1
1102-102024-000	C52	ELECT. CAP. 1000UF/25V +-20%	1
1102-107014-000	C156	ELECT. CAP. 1UF/16V +-20%	1
1102-220014-000	C21	ELECT. CAP. 22uF/16V +-20%	1
1102-220014-000	C60	ELECT. CAP. 22uF/16V +-20%	1
1102-220014-000	C68	ELECT. CAP. 22uF/16V +-20%	1
1102-221014-000	C112	ELECT. CAP. 220UF/16V +-20%	1
1102-221014-000	C165	ELECT. CAP. 220UF/16V +-20%	1
1102-221014-000	C19	ELECT. CAP. 220UF/16V +-20%	1
1102-221014-000	C22	ELECT. CAP. 220UF/16V +-20%	1
1102-221014-000	C26	ELECT. CAP. 220UF/16V +-20%	1
1102-221014-000	C66	ELECT. CAP. 220UF/16V +-20%	1
1102-221014-000	C75	ELECT. CAP. 220UF/16V +-20%	1
1102-221034-000	C87	ELECT. CAP. 220UF/35V +-20%	1
1102-222024-000	C84	ELECT. CAP. 2200UF/25V +-20%	1
1102-227044-000	C157	ELECT. CAP. 2.2UF/50V +-20%	1
1102-470014-000	C130	ELECT. CAP. 47uF/16V +-20%	1
1102-470014-000	C131	ELECT. CAP. 47uF/16V +-20%	1
1102-470014-000	C33	ELECT. CAP. 47uF/16V +-20%	1
1102-470024-000	C138	ELECT. CAP. 47UF/25V +-20%	1
1102-470024-000	C139	ELECT. CAP. 47UF/25V +-20%	1
1102-471014-000	C101	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1102-471014-000	C105	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1102-471014-000	C110	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1102-471014-000	C111	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1102-471014-000	C142	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1102-471014-000	C94	ELECT. CAP. 470uF/16V +-20% 8X12MM	1
1106-105044-000	C149	MONO CAP. 1UF/50V +-20%	1
1106-155043-000	C38	MONO CAP. 1.5UF/50V +-10%	1
1106-224043-000	C69	MONO. CAP. 0.22uF/50V +-10%	1
1106-334043-000	C46	MONO CAP. 0.33UF/50V +-10%	1
1106-474043-000	C44	MONO CAP. 0.47UF/50V +-10%	1
1181-101042-000	C136	CERAMIC CAP. 100PF/50V +-5% NPO	1
1181-101042-000	C137	CERAMIC CAP. 100PF/50V +-5% NPO	1
1181-101042-000	C140	CERAMIC CAP. 100PF/50V +-5% NPO	1
1181-101042-000	C141	CERAMIC CAP. 100PF/50V +-5% NPO	1
1181-121042-000	C47	CERAMIC CAP. 120PF/50V +-5% NPO	1
1181-221042-000	C132	CERAMIC CAP. 220PF/50V +-5% NPO	1
1181-221042-000	C134	CERAMIC CAP. 220PF/50V +-5% NPO	1
1181-221042-000	C4	CERAMIC CAP. 220PF/50V +-5% NPO	1

*Semiconductors*

4111-170991-100	IC17	I.C. B1117N-3.3 SOT 223 (BAY LINEAR)	1
4117-320104-600	IC14	PCM1732 VOLTAGE OUTPUT DELTA-SIGMA DAC BURR-BROWN	1
4145-600001-600	U1	I.C. NJM4560L 8PINS SIL (NJRC)	1
4145-600001-600	U2	I.C. NJM4560L 8PINS SIL (NJRC)	1
4148-010102-000	IC5	I.C. AN4801SB SMT 26PIN MOTOR DRIVER (PANASONIC)	1
4162-090002-300	IC3	I.C. BA6209 SIL MOTOR DRIVER (ROHM)	1
4162-090002-301	IC6	IC BA6209N SIL MOTOR DRIVER WITHOUT HEAT SINK ROHM	1
4166-279122-000	IC2	I.C. MN662790RSA1 QFP TYPE 80PIN DSP (PANASONIC)	1
4174-040102-910	U3	I.C. SN74HCU04 SOP (T.I.)	1

Part Number	Ref. Designator	Description	Qty.
4178-050334-700	IC11	I.C. L7805CV TO220 THOMSON	1
4178-050334-700	IC16	I.C. L7805CV TO220 THOMSON	1
4178-050334-700	IC9	I.C. L7805CV TO220 THOMSON	1
4178-080302-600	IC10	I.C. L7808CV TO-220 (SGS-THOMSON)	1
4178-080310-000	IC12	I.C. 78L08 TO92 (MIRCO)	1
4179-080311-600	IC13	I.C. 79L08 TO92 (NJRC)	1
4188-490102-000	IC1	I.C. AN8849SB SMT TYPE 36PIN ASP (PANASONIC)	1
4201-838000-600	IC4	I.C. 5 DISC MCU 8380-2 HD6433643RB63H HITACHI	1
1300-100300-100	Q10	TRANSISTOR NPN KSR1003 (SAMSUNG)	1
1300-114000-100	Q2	XTOR DTC114E/S NPN TO-92	1
1300-114000-100	Q8	XTOR DTC114E/S NPN TO-92	1
1300-114000-100	Q9	XTOR DTC114E/S NPN TO-92	1
1300-174000-100	Q12	TRANSISTOR NPN 2SC1740 TO-92	1
1300-174000-100	Q13	TRANSISTOR NPN 2SC1740 TO-92	1
1300-174000-100	Q3	TRANSISTOR NPN 2SC1740 TO-92	1
1300-174000-100	Q6	TRANSISTOR NPN 2SC1740 TO-92	1
1300-174000-100	Q7	TRANSISTOR NPN 2SC1740 TO-92	1
1301-124000-400	Q11	TRANSISTOR DTA124ESA PNP SC-72 ROHM	1
1301-564000-100	Q1	TRANSISTOR PNP KSB564A-Y (SAMSUNG)	1
1301-855000-100	Q4	TRANSISTOR PNP SS8550C TO-92 (SAMSUNG)	1
1401-101000-000	IC7	BRIDGE RECTIFIER DB101 50V 1A UL	1
1401-101000-000	IC8	BRIDGE RECTIFIER DB101 50V 1A UL	1
1401-113300-000	D10	DIODE 1SS133, ROHM	1
1401-113300-000	D11	DIODE 1SS133, ROHM	1
1401-140040-000	D2	DIODE RECTIFIER 1N4004	1
1401-140040-000	D3	DIODE RECTIFIER 1N4004	1
1401-140040-000	D4	DIODE RECTIFIER 1N4004	1
1401-140040-000	D5	DIODE RECTIFIER 1N4004	1
1401-141480-000	D1	DIODE 1N4148	1
1401-141480-000	D6	DIODE 1N4148	1
1401-141480-000	D9	DIODE 1N4148	1
1402-240001-200	D7	ZENER DIODE DZ24V	1
1402-331201-200	Z3	ZENER DIODE 3.3V 1/2W +-5%	1
1402-471201-200	D8	ZENER DIODE 4.7V 1/2W	1
1402-620001-200	Z1	ZENER DIODE 6.2V 1/2W	1
1402-620001-200	Z2	ZENER DIODE 6.2V 1/2W	1

*Miscellaneous*

1500-650400-000	L4	INDUCTOR COIL 65UH + -20%	1
1500-650400-000	L6	INDUCTOR COIL 65UH + -20%	1
1503-353400-100	L20	FERRITE COILS B3534	1
1504-100300-100	L10	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L11	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L21	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L22	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L23	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L24	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L25	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L3	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L5	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L8	AXIAL INDUCTOR 10UH +-10%	1
1504-100300-100	L9	AXIAL INDUCTOR 10UH +-10%	1
1600-100003-000	X2	CRYSTAL 10MHZ +-30PPM 49U TYPE	1
1600-169343-000	X1	CRYSTAL 16.9344 +- 30 PPM 49U3H TYPE	1
2300-003000-001	CN10	STRAIGHT CONN WAFER 3PIN 2MMP JST	1
2300-003100-000	CN8	STRAIGHT CONN. WAFER 3 PINS 2.5mmP	1
2300-006000-000	CN3	STRAIGHT CONN. WAFER 6 PINS 2mmP	1
2300-006000-000	CN5	STRAIGHT CONN. WAFER 6 PINS 2mmP	1
2300-006000-000	CN6	STRAIGHT CONN. WAFER 6 PINS 2mmP	1
2300-006100-000	CN7	STRAIGHT CONN. WAFER 6PINS 2.5mmP	1
2301-016901-000	CN2	16PIN FILM TYPE CABLE STRAIGHT CONN	1
2501-103601-140	CN12	10PIN 360MM 2CONN CABLE #26 2MMP JST (1 BOARD IN)	1
2510-026001-060	CN11	2PIN 600MM 1CONN SHIELD CABLE AWG#30 2MMP	1
2510-043501-060	CN1	4PIN 350MM 1CONN SHIELD CABLEX2 AWG#30 2MMP	1
2511-034701-160	CN10	3PIN 470MM 2CONN SHIELD CABLE JST #30 2MMP (SHS)	1
2511-067001-150	CN9	6PIN 700MM 2CONN 3WIRE SHIELD CABLEX2 #28 2MMP	1
3299-838000-000	T1	DIGITAL OUTPUT COIL FOR FL8380	1
4030-100000-001	F2	SLOW BLOW MICRO FUSE 1A	1
4030-100000-001	F3	SLOW BLOW MICRO FUSE 1A	1

Part Number	Ref. Designator	Description	Qty.
4030-160000-512	F1	FUSE 1.6A 250V GLASS TUBE SLOW BLOW (BELL 5TT1.6)	1
4031-004000-000	F1	FUSE CLIP FOR 5X20MM HF-004/P	2
4050-000005-002	RL2	RELAY DC 5V 20.8(L)X12HX9.9W 2P2T 120VAC/60V DC 2A	1
4050-212000-003	RL1	RELAY DC12V 29.1(L)X20.6(H)X12.5(W) 2P2T 5A/250VAC	1
6500-010011-000	IC5	HEAT SINK	1
6501-010001-000	IC10	HEAT SINK	1
6501-010001-000	IC11	HEAT SINK	1
6501-010001-000	IC16	HEAT SINK	1
6583-810006-000	EMC	SHIELD PLATE MIAN PCB	1
6600-070124-000		RUBBER PAD FOR FL8380	1
6600-120030-001		NUT M3 HEX M3X5.5X2.4MM	3
7003-008010-111		SCREW M3X8 B/H BLACK	3
7103-207004-000		FIBRE WASHER M3.2X7X0.4MM	1

**OUTPUT BOARD ASS'Y***Resistors*

1001-001316-000	R751	CARBON FILM RESISTOR 100 OHM 1/6 W +-5%	1
1002-701316-000	R753	CARBON FILM RESISTOR 270 OHM 1/6W +-5%	1
1003-902316-000	R750	CARBON FILM RESISTOR 3.9K OHM 1/6 W +-5%	1
1004-700316-000	R754	CARBON FILM RESISTOR 47 OHM 1/6W +-5%	1
1004-700316-000	R755	CARBON FILM RESISTOR 47 OHM 1/6W +-5%	1
1004-703316-000	R752	CARBON FILM RESISTOR 47K OHM 1/6 W +-5%	1

*Capacitors*

1100-102043-000	C755	CERAMIC CAP. 1000PF/50V +-10%	1
1100-102043-000	C762	CERAMIC CAP. 1000PF/50V +-10%	1
1100-102043-000	EMC	CERAMIC CAP. 1000PF/50V +-10%	3
1100-151044-000	C751	CERAMIC CAP. 150PF/50V +-20%	1
1100-151044-000	C752	CERAMIC CAP. 150PF/50V +-20%	1
1102-101014-000	E750	ELECT. CAP. 100uF/16V +-20% 105□	1

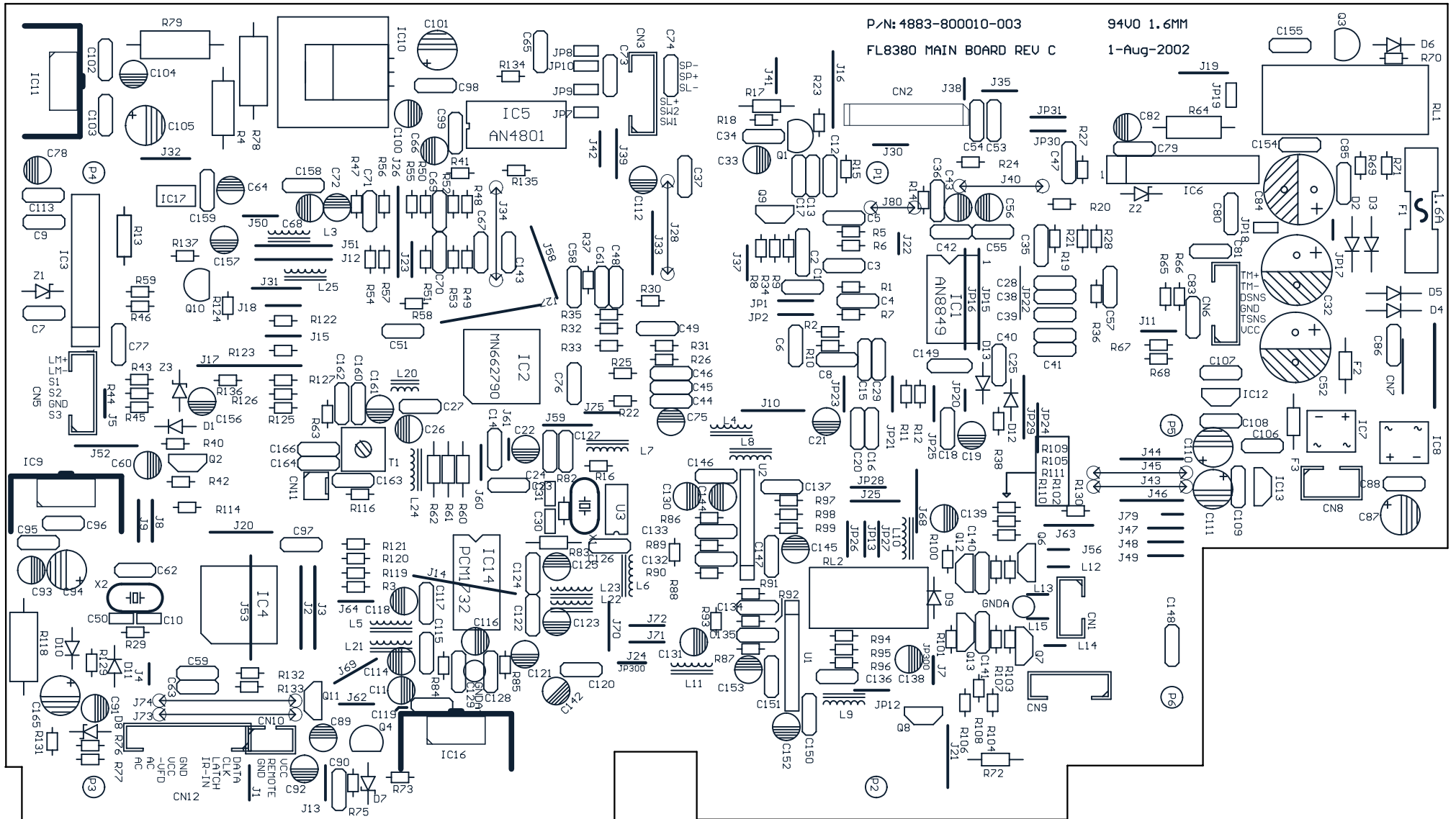
*Semiconductors*

1301-200300-100	Q750	TRANSISTOR PNP KSR2003 (SAMSUNG)	1
1401-141480-000	D1	DIODE 1N4148	1
1401-141480-000	D2	DIODE 1N4148	1
4181-700010-000	U750	I.C. LTV817B LITON	1

*Miscellaneous*

2300-002000-001	W753	STRAIGHT CONN WAFER 2PIN 2MMP JST	1
2300-003000-001	W751	STRAIGHT CONN WAFER 3PIN 2MMP JST	1
2300-004000-002	W752	STRAIGHT CONN WAFER 4PINS 2MMP JST	1
2321-003911-002	U754	MIC JACK 3.5MM JY-3510*01-130	1
2321-003911-002	U755	MIC JACK 3.5MM JY-3510*01-130	1
2330-002901-000	U753	RCA JACK RJ-1081-020-000	1
2330-003901-304	RCA 1	RCA JACK WITH SHIELD PLATE RCA-213D(□□)	1

PCB LAYOUT



P/N: 4883-800010-003  
FL8380 MAIN BOARD REV C

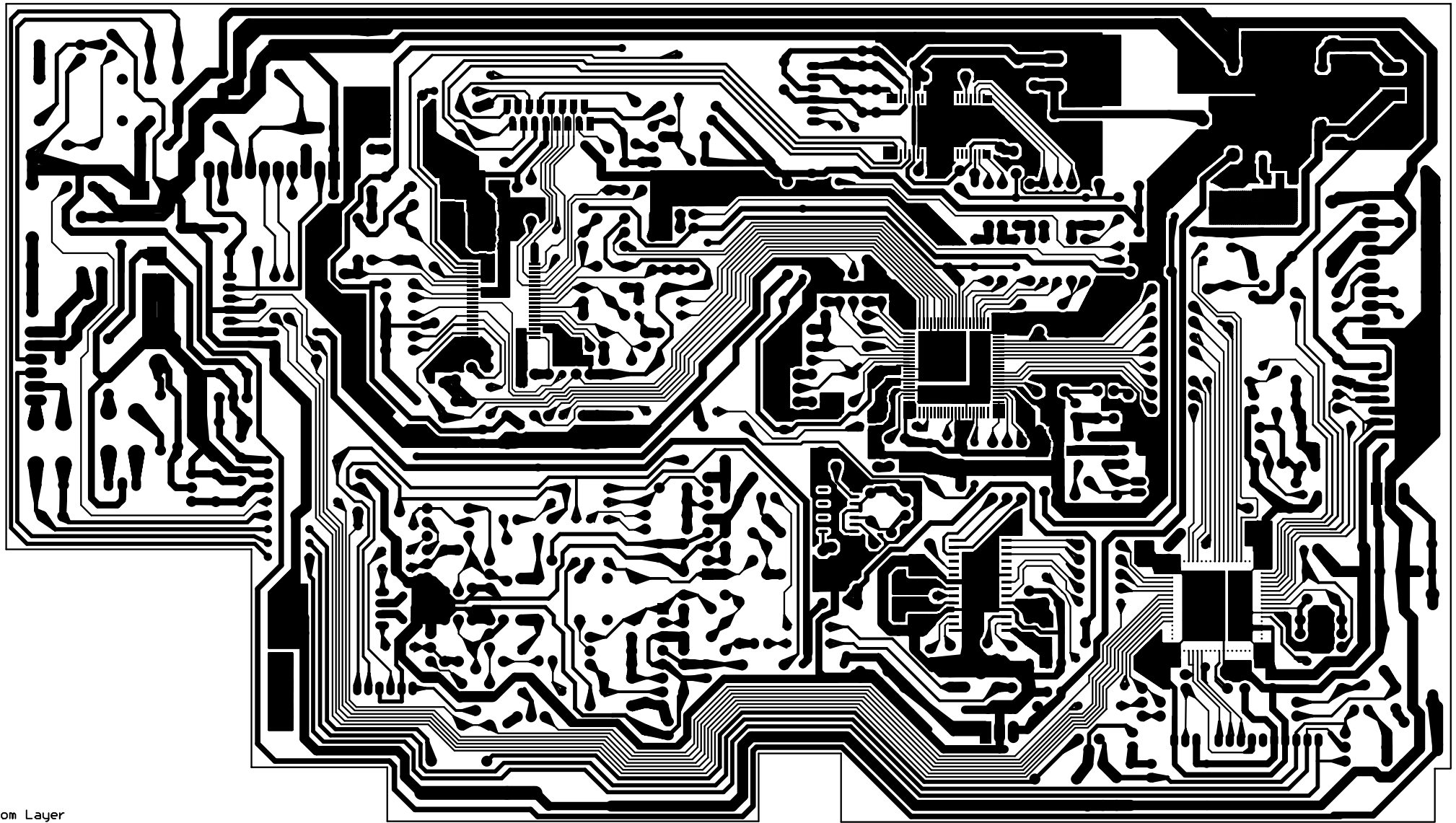
94UO 1.6MM  
1-Aug-2002

Top Overlay  
Mechanical Layer 4

PURPOSE:	PRODUCTION:	SHEET:	OF	R
PREPARED BY:	CHECKED BY:	APPROVED BY:		

PCB LAYOUT

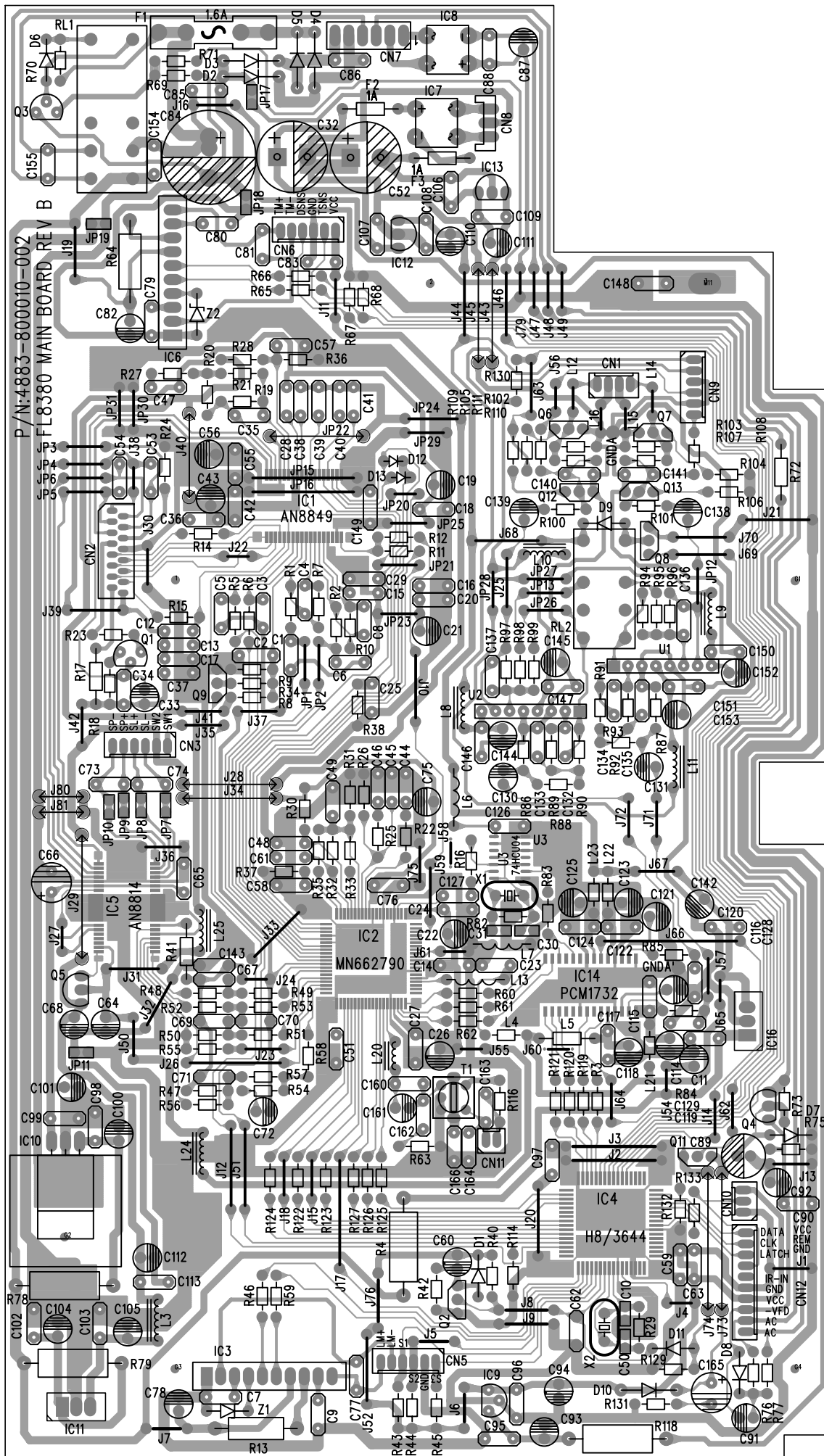
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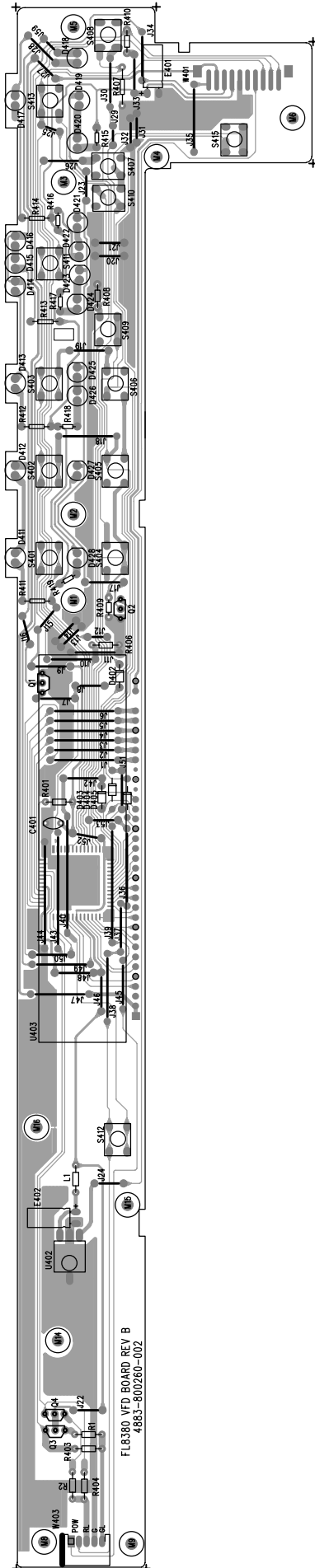
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PURPOSE:	PRODUCTION:	SHEET: OF	REV: C
	CHECKED BY:	APPROVED BY:	

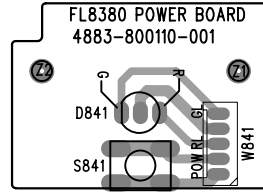
# FL8385 MAIN BOARD



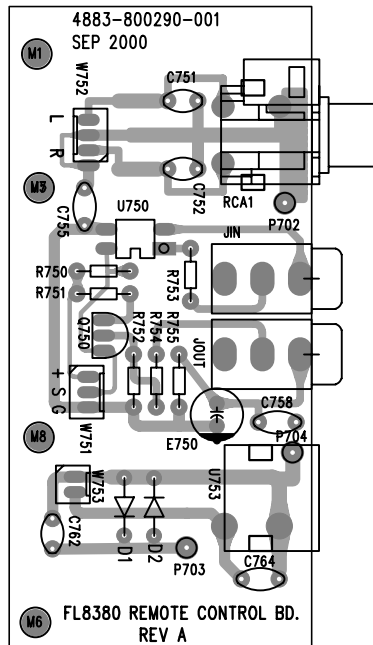
FL8385 DISPLAY BOARD



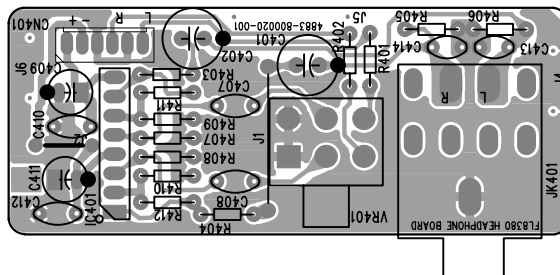
FL8385 POWER BOARD

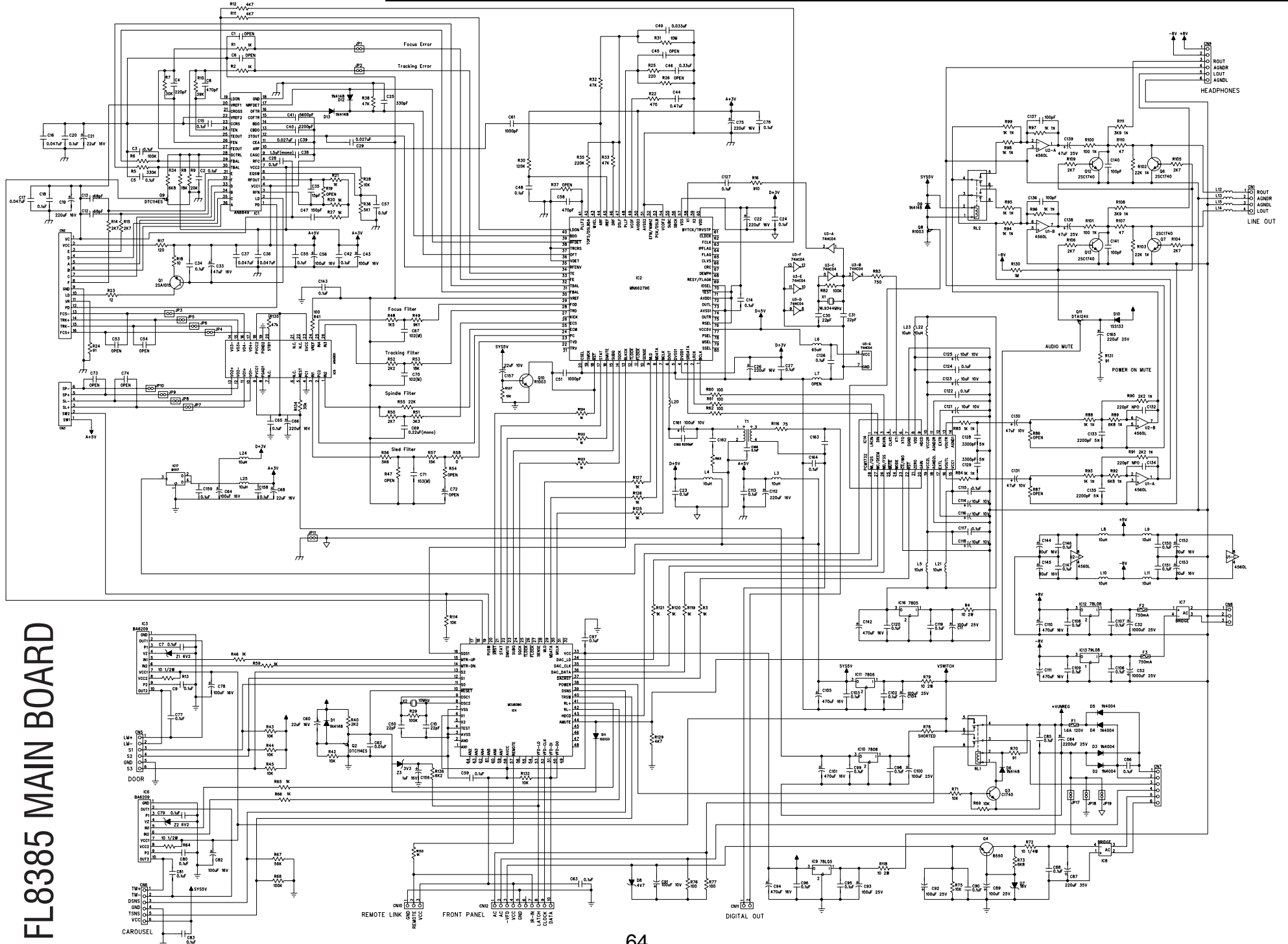


FL8385 IR REMOTE BOARD



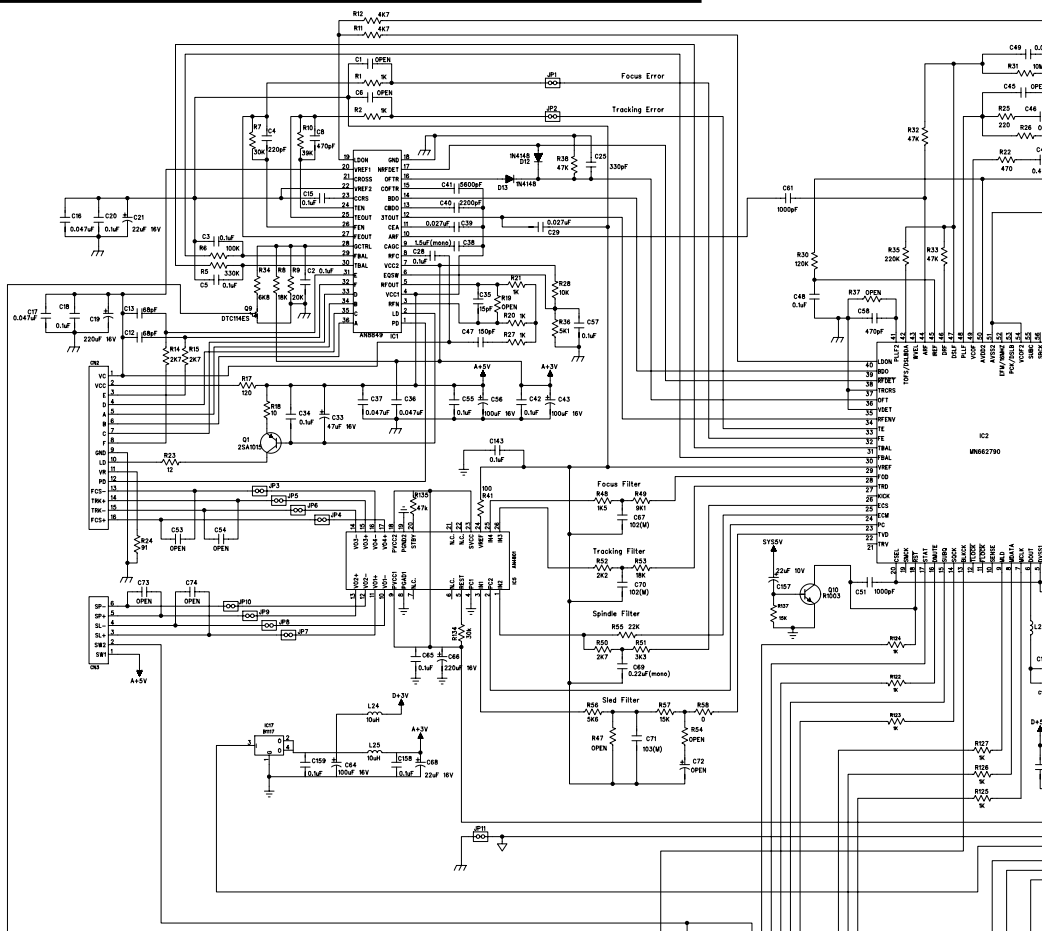
FL8385 HEADPHONE BOARD



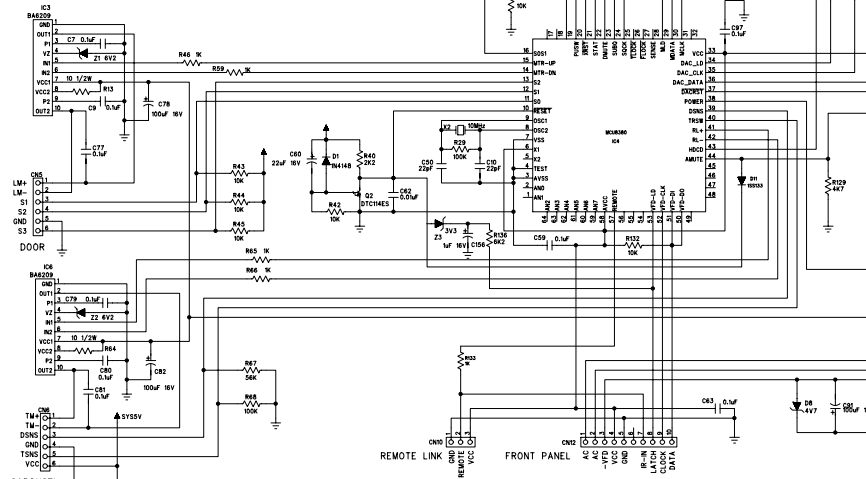


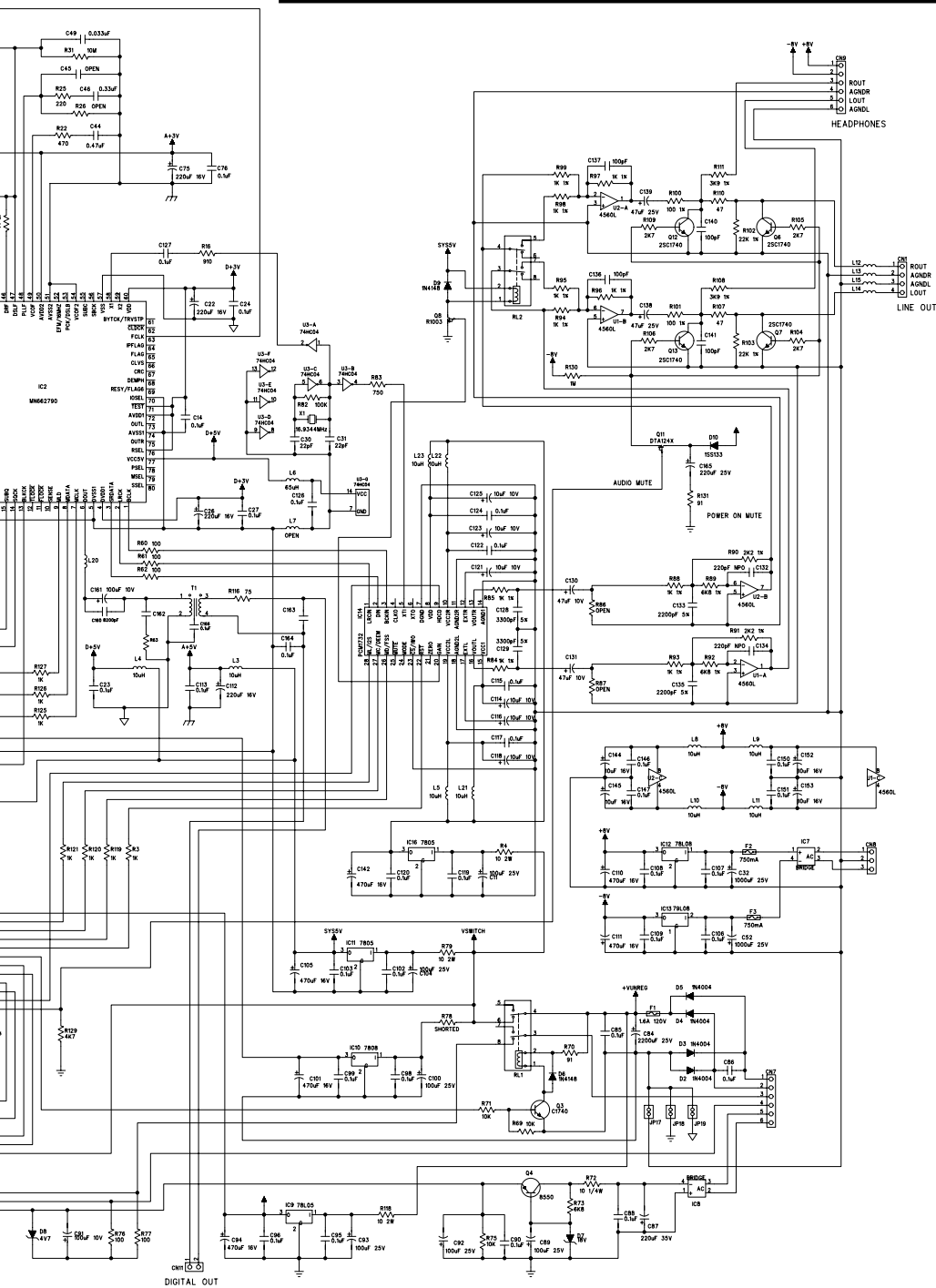
FL8385 MAIN BOARD

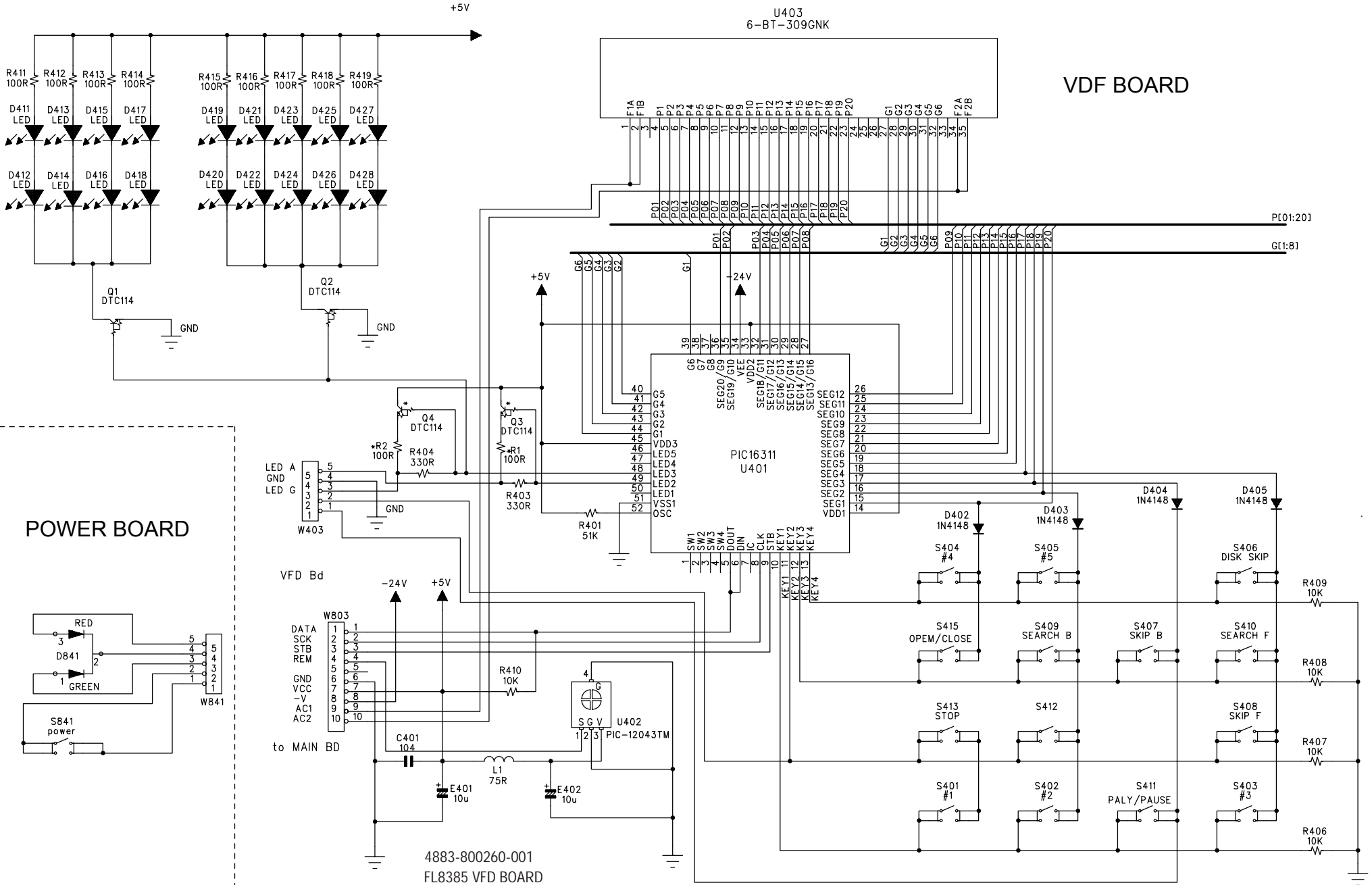


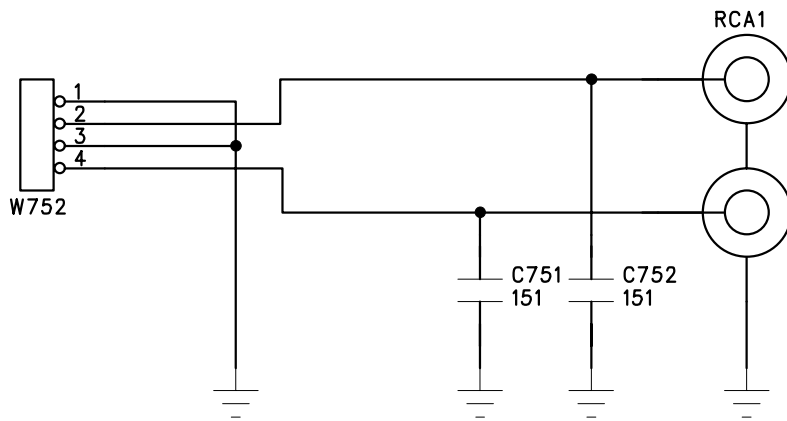
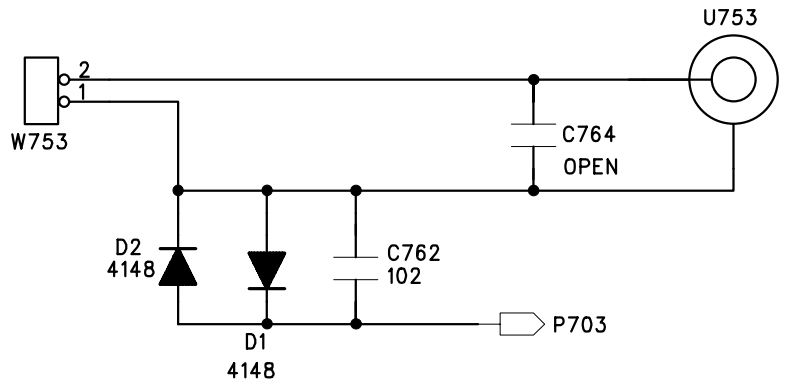


FL8385 MAIN BOARD

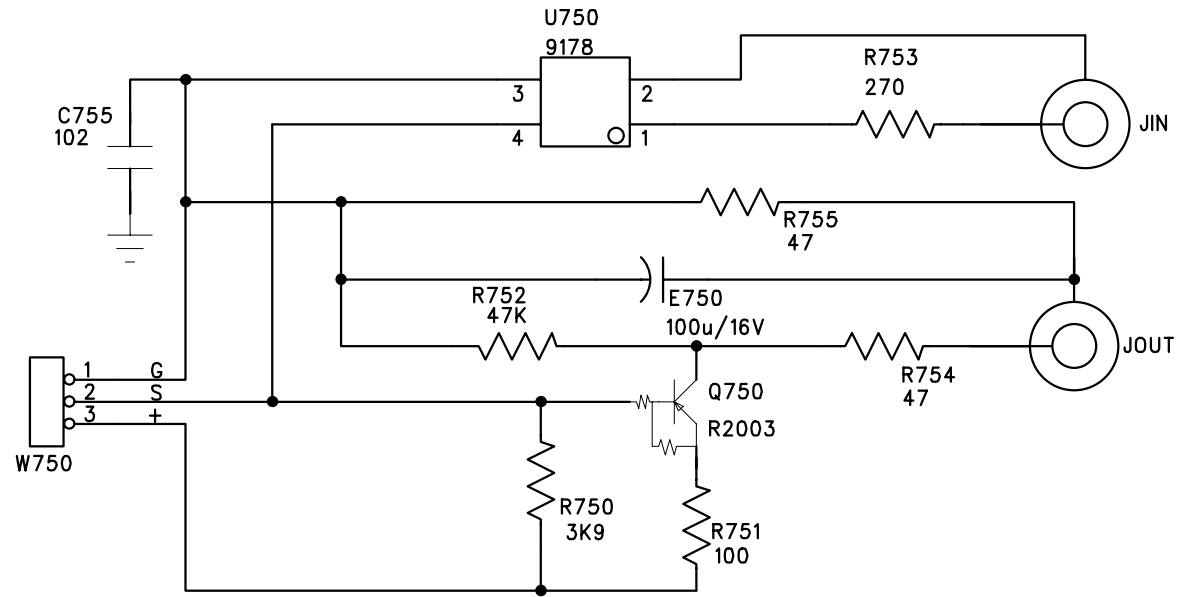


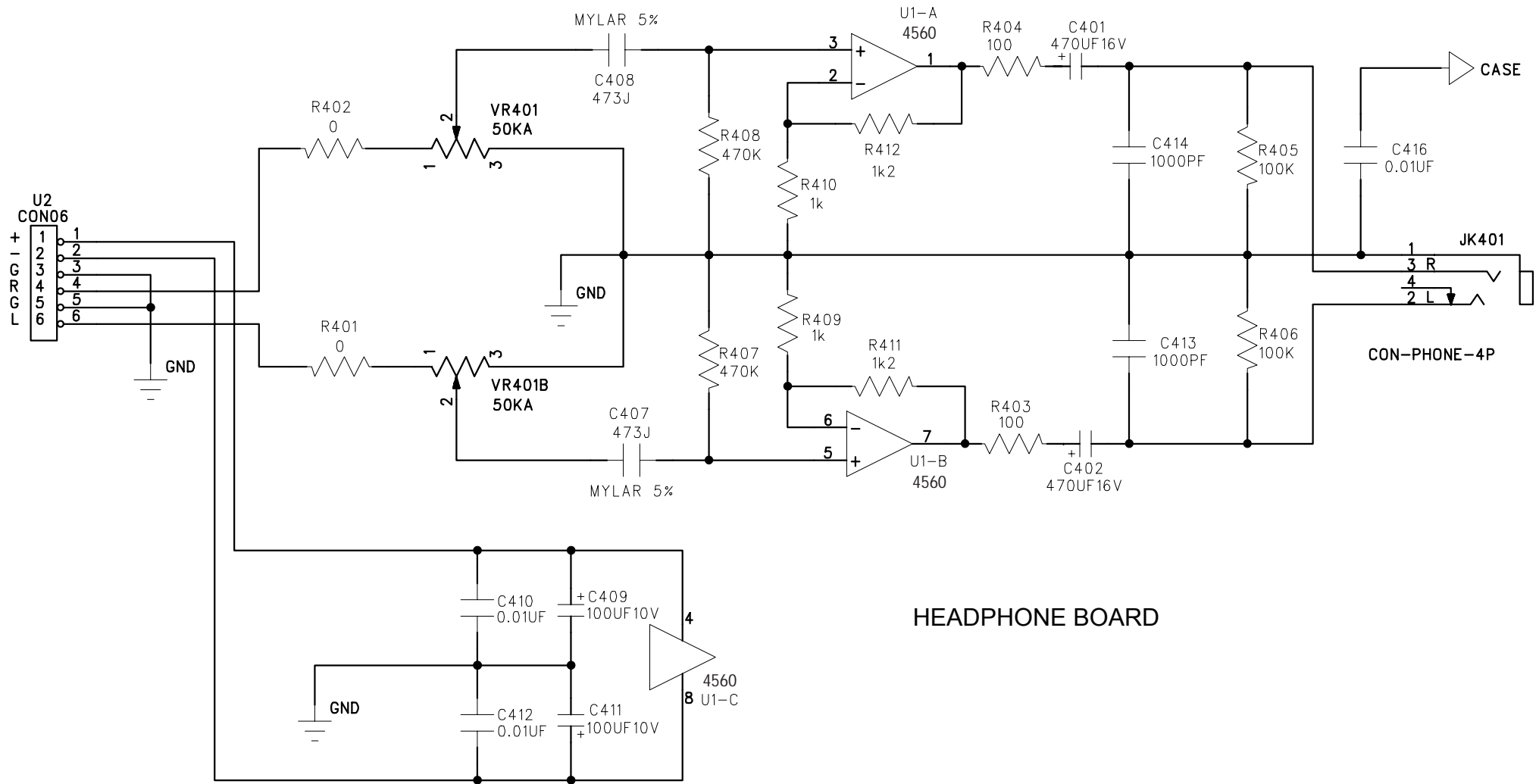






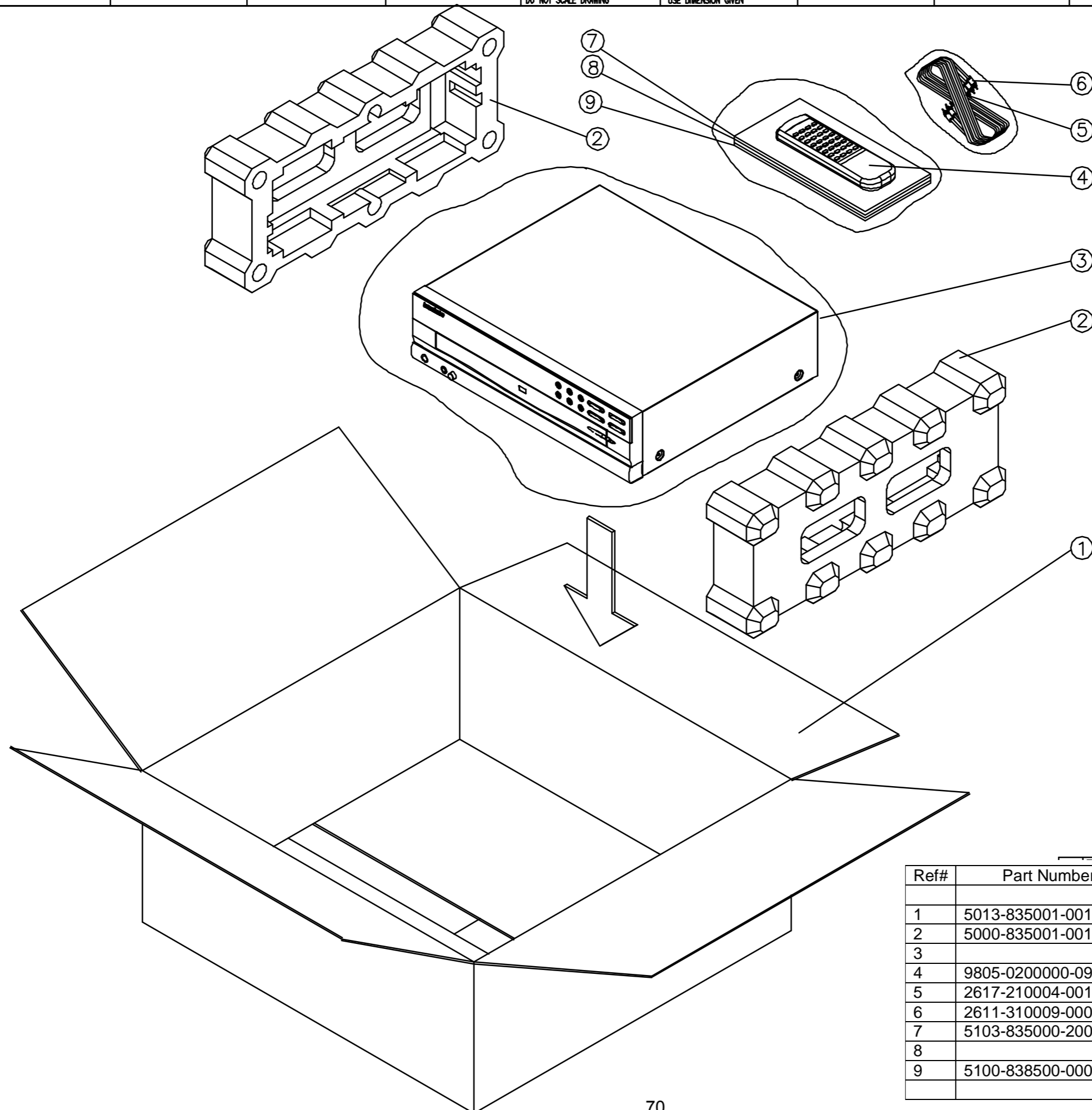
REMOTE IN/OUT BOARD





HEADPHONE BOARD

REV	DESCRIPTION	PROJECT ENGR/DWG	APPROVAL /DWG



Ref#	Part Number	Description	Qty
1	5013-835001-001-15	OUTER CARTON	1
2	5000-835001-001	FOAM END PADS	2
3		FL8385 CD PLAYER	1
4	9805-0200000-091	FL8385 REMOTE CONTROL	1
5	2617-210004-001	3.5MM 2-COND. 1000MM CABLE	1
6	2611-310009-000	1M AUDIO CABLE	1
7	5103-835000-200	WARRANTY SHEET	1
8		INTRODUCTION CARD	1
9	5100-838500-000	OWNER'S MANUAL	1