Service Manual

# Model VF-16

## DIGITAL MULTITRACKER

FOSTEX®

**CAUTION**

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION:

POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.

The lightening flash with arrowhead symbol, within an equilateral triangle, 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.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

## "WARNING"

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

## SAFETY INSTRUCTIONS

1. Read instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain instructions - The safety and operating instructions should be retained for future reference.
3. Heed warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow instructions - All operating and use instructions should be followed.
5. Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage requiring Service - The appliance should be serviced by qualified service personnel when:
    A. The power supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked changed in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

## TABLE OF CONTENTS



## NOTES

* Service mode, exploded view, PCB assembly, parts list and circuit diagrams are given in this manual to assist the service technician in maintaining the Model VF-16.

* Following accessories are supplied with VF-16 as the standard accessories.

| | |
|---|---|
| VF-16 English owner's manual | : 8288451100 |
| VF-16 Japanese owner's manual | : 8288452100 |

* Following is the packing material for the Model VF-16.

| | |
|---|---|
| Carton, inner, VF-16 | : 8228735000 |
| Carton, outer, VF-16 | : 8228913000 |
| Packing, side, L, VF-16 | : 8228463000 |
| Packing, side, R, VF-16 | : 8228464000 |

## CAUTION

⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components. Refer to the Fostex Parts List and ensure exact replacement.

# 1. SPECIFICATIONS

## *DEFINITION*

**Specification Unit** 0 dBV = 1 Vrms

**Standard Condition**

Measure the specifications referring to the chart below.

* Fader position & PAN assignment in each setting.

| | Odd CH. | | Even CH. | | Master | | AUX | | Eff Send | | PRE/POST | Effect |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Level | PAN | Level | PAN | Level | Balance | 1 | 2 | 1 | 2 | | |
| SETTING 1 | 80 | L | 80 | R | 80 | C | 80 | 80 | 0 | 0 | POST | - |
| SETTING 2 | 80 | L | 80 | L | 80 | C | 80 | 80 | 0 | 0 | POST | - |

## *SPECIFICATIONS*

**Standard Input**

**Input A ~ F**

**Connector** PHONE, unbalanced

**Input level** -50 ~ +2 dBV

**Impedance** 50 kΩ or more

**Input G, H**

**Connector** PHONE, unbalanced / XLR, balanced (Pin-2: HOT)

**Input level** -50 ~ +2 dBV

**Impedance** 50 kΩ or more (PHONE), 1 kΩ or more (XLR)

**Insert 1, 2**

**Connector** Stereo PHONE (ring)

**Input level** -10 dBV

**Impedance** 10 kΩ or more

**DATA IN**

**Connector** Square shape optical

**Format** IEC consumer Optical Standard EN60958 (S/P DIF)
Alesis Proprietary Mutichannel Optical Digital Interface

**PEAK LED On Level (INPUT A ~ H)** Full scale level - 2 dB ± 1 dB

**Standard Output**

**STEREO OUT**

**Connector** RCA pin, unbalanced

**Output level** -10 dBV

**Impedance** 10 kΩ or more

**MONITOR OUT**

**Connector** PHONE, unbalanced

**Output level** -10 dBV

**Impedance** 10 kΩ or more

**PHONES OUT**

**Connector** Stereo PHONE, unbalanced

**Output level** 20 mW or more (16 Ω load)

**Impedance** 16 ~ 50 Ω

**AUX SEND 1**

**Connector** Stereo PHONE (tip), unbalanced

**Output level** -10 dBV

**Impedance** 10 kΩ or more

**AUX SEND 2**

**Connector** Stereo PHONE (ring), unbalanced

**Output level** -10 dBV

**Impedance** 10 kΩ or more

**INSERT 1, 2**

**Connector** Stereo PHONE (tip), unbalanced

**Output level** -10 dBV

**Impedance** 10 kΩ or more

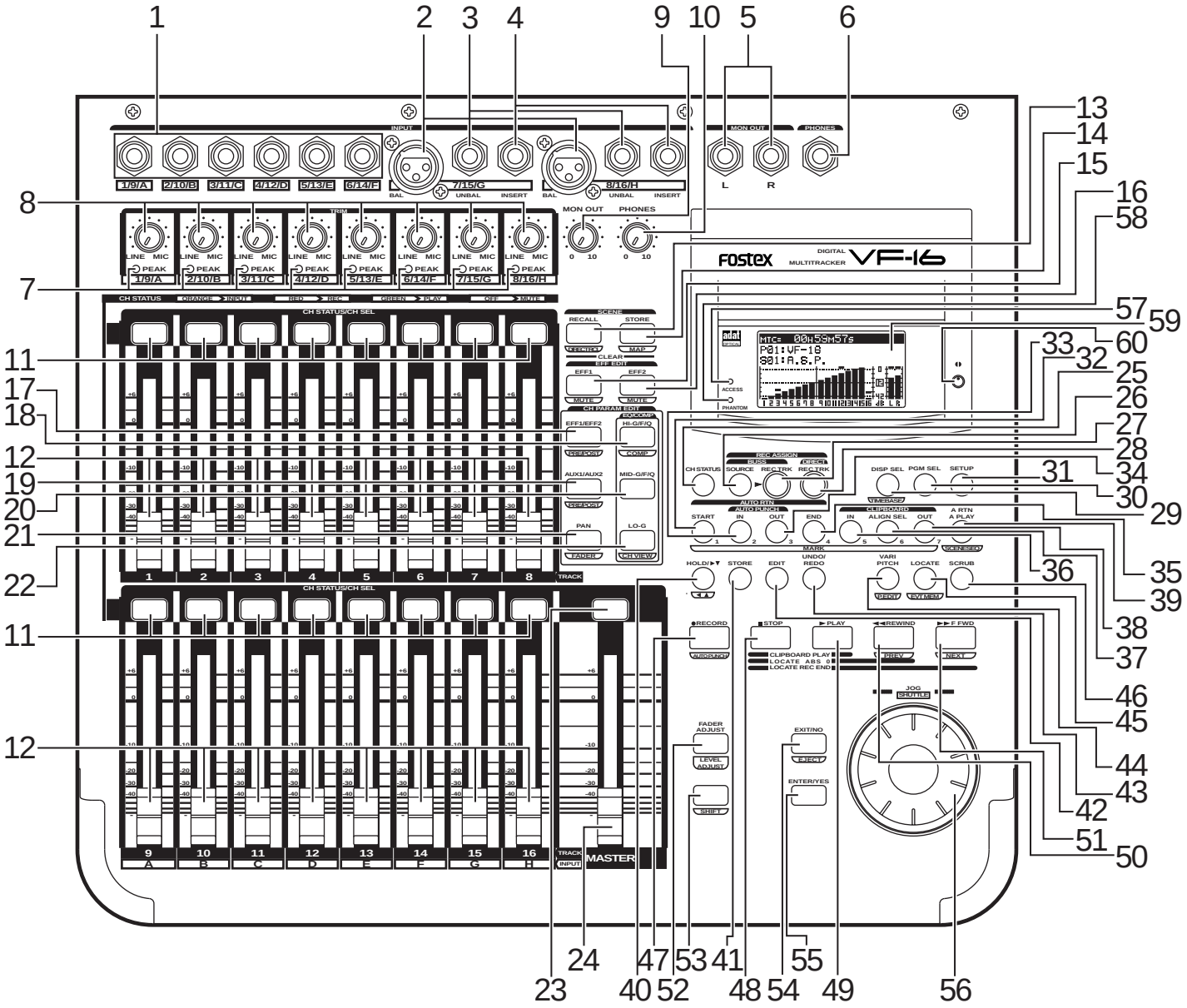
| | |
|---|---|
| **Phantom power** | |
| **Connector** | XLR |
| **Output level** | 48 ± 4 V (ON/OFF by SETUP mode) |
| **Impedance** | 10 kΩ or more |
| **DATA OUT** | |
| **Connector** | Square shape optical |
| **Format** | IEC consumer Optical Standard EN60958 (S/P DIF**)** |
| | Alesis Proprietary Mutichannel Optical Digital Interface |
| **Control System Input & Output** | |
| **SCSI DATA** | |
| **Connector** | Half pitch 50-pin female |
| **Protocol** | SCSI-2, unbalanced transfer method |
| **Transfer type** | Asynchronous |
| **Number of units connected** | 1 |
| **MIDI IN/OUT** | |
| **Connector** | DIN 5-pin |
| **Format** | MIDI standard |
| **PUNCH IN/OUT** | |
| **Connector** | PHONE (TTL level) |
| **Output Level (SETTING 1)** | |
| **INPUT (+2 dBV, 1 kHz)→ STEREO OUT** | -10 dBV ± 2 dB |
| **INPUT (-50 dBV, 1 kHz)→ STEREO OUT** | -10 dBV ± 2 dB |
| **INPUT (+2 dBV, 1 kHz)→ AUX SEND 1, 2** | -10 dBV ± 2 dB |
| **Frequency Response (SETTING 1)** | |
| **INPUT (+2 dBV, 20 ~ 20 kHz)→ MONITOR OUT** | +1, -2 dB |
| **INPUT (-50 dBV, 20 ~ 20 kHz)→ MONITOR OUT** | +1, -3 dB |
| **INPUT (+2 dBV, 20 ~ 20 kHz)→ AUX SEND 1, 2** | +1, -2 dB |
| **EQ Characteristics (SETTING 1)** | |
| **HI (Frequency: 500 ~ 20 kHz, Q: 0.1 ~ 20)** | ±18 dB ± 3 dB |
| **MID (Frequency: 500 ~ 20 kHz, Q: 0.1 ~ 20)** | ±18 dB ± 3 dB |
| **LO (Frequency: 400 Hz)** | ±18 dB ± 3 dB |
| **S/N (SETTING 1, Σ: SETING 2)** | |
| **INPUT (+2 dBV)→ MONITOR OUT** | 88 dB or more (with 20kHz LPF + A-curve filter*) |
| **INPUT (-50 dBV)→ MONITOR OUT** | 80 dB or more (with 20kHz LPF + A-curve filter*) |
| **INPUT A ~ H Σ (+2 dBV)→ MONITOR OUT** | 79 dB or more (with 20kHz LPF + A-curve filter*) |
| **INPUT A ~ H Σ (-50 dBV)→ MONITOR OUT** | 74 dB or more (with 20kHz LPF + A-curve filter*) |
| **PHONES OUTPUT residual noise** | -85 dBV or less (with 20kHz LPF + A-curve filter*) |
| **T.H.D. (SETTING 1)** | |
| **INPUT (+2 dBV)→ MONITOR OUT (-10 dBV)** | 0.05 % or less (with 20kHz LPF + A-curve filter*) |
| **INPUT (-40 dBV)→ MONITOR OUT (0 dBV)** | 0.05 % or less (with 20kHz LPF + A-curve filter*) |
| **INPUT (+2 dBV)→ PHONES OUT (20 mW/16 Ω)** | 0.05 % or less (with 20kHz LPF + A-curve filter*) |
| **Dynamic Range (SETTING 1)** | |
| **INPUT (+2 dBV)→ MONITOR OUT (-10 dBV)** | 88 dB or more (with 20kHz LPF + A-curve filter*) |
| **Crosstalk (SETTING 1)** | 60 dB or more (Frequency: 1 kHz) |
| **Click Noise (SETTING 1)** | |
| **Power ON/OFF** | -20 dBVp-p or less |
| **Other switching** | -30 dBVp-p or less |
| ***GENERAL*** | |
| **Dimensions** | 380 (W) x 98 (H) x 335 (D) mm |
| **Weight** | Approx. 4.0 kg |
| **Power Requirement** | 100V AC, 120V AC, 230V AC |
| **Power Consumption** | 15 W |

* A-curve filter: with IEC 651A characteristic

Specifications are subject to change without notice for product improvement.

# 2. CONTROLS, INDICATORS & CONNECTORS

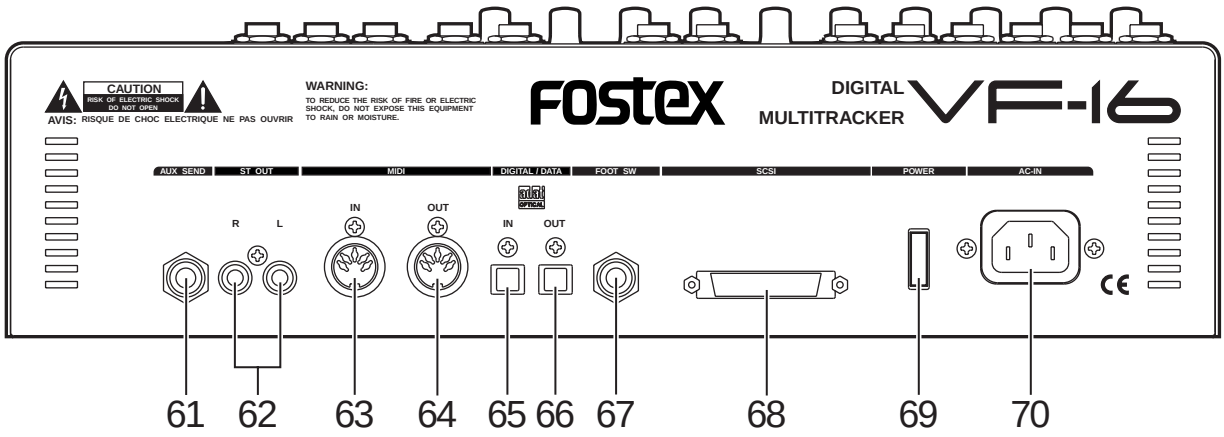
## < Top Panel Section >




1. [INPUT] (unbalanced) terminal: A ~ F
2. [INPUT BAL] (balanced) terminal: G, H
3. [INPUT UNBAL] (unbalanced) terminal: G, H
4. [INSERT] terminal: G, H
5. [MON OUT] terminal: L, R
6. [PHONES] terminal
7. [PEAK] LED: 1 ~ 8
8. [TRIM] knob: 1 ~ 8
9. [MON OUT] knob
10. [PHONES] knob
11. [CH STATUS/CH SEL] key: 1 ~ 16 channel
12. Channel fader: 1 ~ 16 channel
13. [SCENE - RECALL / DIRECT RCL] key
14. [SCENE - STORE / MAP] key
15. [EFF EDIT - EFF1 / MUTE] key
16. [EFF EDIT - EFF2 / MUTE] key
17. [CH PARAM EDIT - EFF1/EFF2 / PRE/POST] key
18. [CH PARAM EDIT - EQ/COMP - HI-G/F/Q / COMP] key
19. [CH PARAM EDIT - AUX1/AUX2 / PRE/POST] key
20. [CH PARAM EDIT - EQ/COMP - MID-G/F/Q] key
21. [CH PARAM EDIT - PAN / FADER] key
22. [CH PARAM EDIT - EQ/COMP - LO-G / CH VIEW] key
23. [MASTER CH STATUS/CH SEL] key
24. [MASTER] fader
25. [INPUT SEL] key
26. [REC ASSIGN - BUSS - SOURCE] key
27. [REC ASSIGN - BUSS - REC TRK] key
28. [REC ASSIGN - DIRECT - REC TRK] key
29. [DISP SEL / TIMEBASE] key
30. [PGM SEL] key
31. [SETUP] key
32. [AUTO RTN - START / MARK1] key
33. [AUTO PUNCH - IN / MARK2] key
34. [AUTO PUNCH - OUT / MARK3] key

35. [AUTO RTN - END / MARK4] key
36. [CLIPBOARD - IN / MARK5] key
37. [CLIPBOARD - ALIGN SEL / MARK6] key
38. [CLIPBOARD - OUT / MARK7] key
39. [A RTN/A PLAY / SCENE SEQ] key
40. [HOLD/▶▼] key / ◀▲
41. [STORE] key
42. [EDIT] key
43. [UNDO/REDO] key
44. [VARI PITCH / P.EDIT] key
45. [LOCATE / LOC MEM] key
46. [SCRUB] key
47. [RECORD / AUTO PUNCH] key
48. [STOP] key
49. [PLAY] key
50. [REWIND / PREV] key
51. [F FWD / NEXT] key
52. [FADER ADJUST / LEVEL ADJUST] key
53. [SHIFT] key
54. [EXIT/NO / EJECT] key
55. [ENTER/YES] key
56. [JOG / SHUTTLE] key
57. [ACCESS] LED
58. [PHANTOM] LED
59. LCD
60. Contrast adjusting knob

## < Rear Panel Section >




61. [AUX SEND - 1/2] terminal
62. [ST OUT - L/R] terminal
63. [MIDI IN] terminal
64. [MIDI OUT] terminal
65. [DIGITAL/DATA IN] terminal
66. [DIGITAL/DATA OUT] terminal
67. [FOOT SW] terminal
68. [SCSI] terminal
69. [POWER]
70. [AC IN] terminal

# 3. SOFTWARE UPDATE

Since the 8Mbit flash ROM is mounted on the MAIN PCB assy, the VF-16 software can be updated through the SCSI port. Please refer to the following explanation for correct software updating procedures.

## 3-1. Required Tools

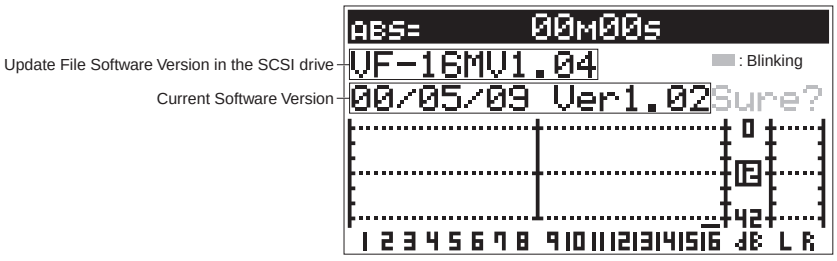
The following tools/equipment are required to update the VF-16 software.

1. IBM PC/AT compatible computer with SCSI board
2. Removable type SCSI drive
3. Cable between the removable type SCSI drive and the SCSI board
4. Cable between the removable type SCSI drive and the VF-16 (D-SUB half-pitch 50-pin)
5. A Utility software to extract the WinZip compressed file

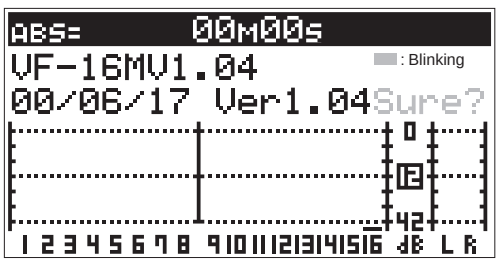
## 3-2. Software Updating Procedures

Presuming that the updated software is correctly sent to you via email and is copied into your computer.

1. Connect the removable type SCSI drive to the IBM PC/AT compatible computer SCSI port.
2. Insert the diskette to the removable type SCSI drive and format it by the computer on which Windows 95/98 is running.
3. Using the utility software, extract the WinZip compressed software file. The extracted file name is “vf-16mvX.XX”. (X.XX indicates the version number. For example, if the software version number is V1.04, the file name is vf-16mv1.04.)
3. Copy the updated software file “vf-16mvX.XX” to the removable type SCSI drive (diskette).
4. Set the removable type SCSI drive ID to 1 ~ 6 and connect to the VF-16 SCSI port.
5. Power on the removable type SCSI drive and then VF-16.
6. Insert the diskette with the updated software file “vf-16mvX.XX”.
7. The VF-16 automatically finds the software update file in the SCSI drive/disk and is put into the software update mode. In this condition, the current software version / programming date, the updated file software version in the SCSI drive are displayed and “SURE?” blinks on the LCD. The example below indicates the condition that the V1.02 software (programming date: 00/05/09) is going to be updated to V1.04.




8. Press the [ENTER/YES] key to start updating the software.
9. The VF-16 LCD shows “Loading !”, “Writing !”, etc and after a while, the following appears on the LCD. This indicates that the software is correctly updated. Press the [STOP] key or [EXIT/NO] key to eject the disk.




10. Power off the VF-16 and the connected SCSI drive.
11. Disconnect the SCSI drive from the VF-16 and power on the VF-16 again.
12. Confirm the software version number and the programming date while in the boot up procedures. For your information, they can also be checked by the Service Mode explained later.

# 4. SERVICE MODE

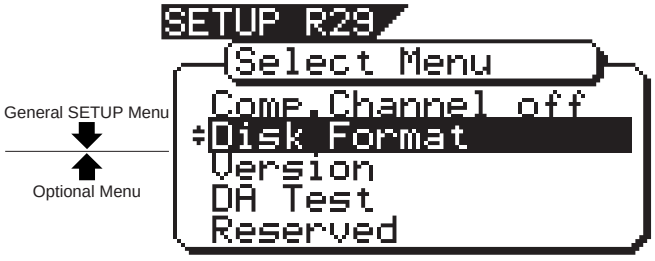
There are various optional modes available in the VF-16 Service Mode. Please utilize them when servicing the unit.

## 4-1. Putting VF-16 into Service Mode

The way of putting the VF-16 into Service Mode is as follow. (Presuming that a 3.5” HDD has already been installed and correctly formatted.)

1. Power on the VF-16.
2. While holding down the [STOP] key and [SHIFT] key, press the [SETUP] key.

Various optional menus will be displayed in addition to the general SETUP menus. Rotate the JOG dial or press the REW / F FWD key to select the desired optional mode and then press the [ENTER/YES] key while the menu is displayed.

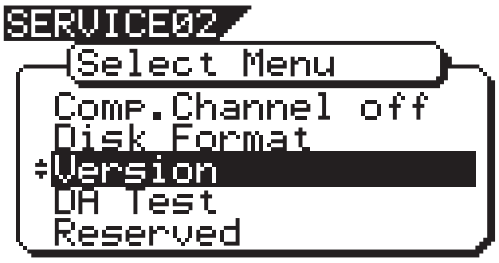



The optional modes currently available on the VF-16 are as follow.

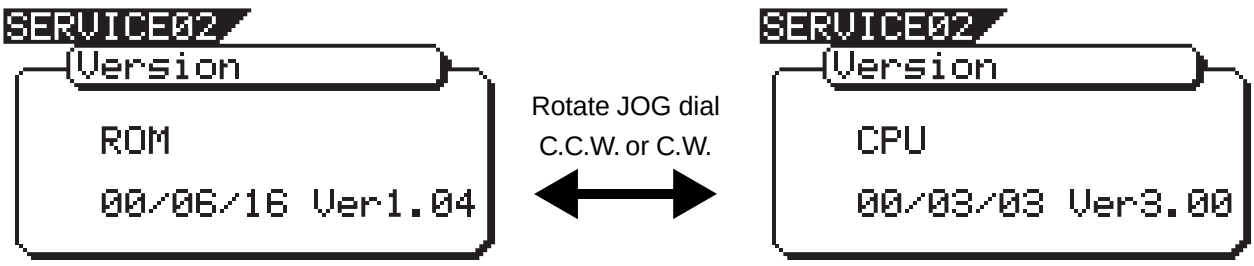
- Version
- DA Test
- Self Check
- Offset Display (ON/OFF)
- Initializing Disk
- Flash ROM
- Free Block Check
- Product Initialize

## 4-2. Flash ROM (software) version

This mode is used to check the Flash ROM (software) and CPU version currently installed on the VF-16 MAIN PCB. While selecting the service menu “Version”, press the [ENTER/YES] key.

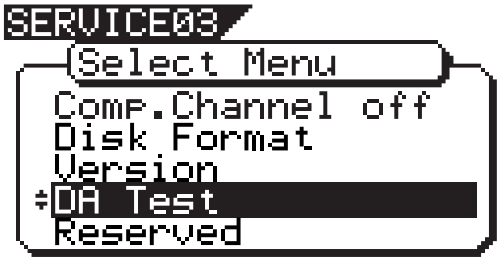



Rotating the JOG dial either C.C.W. or C.W. changes the display contents between the Flash ROM version and the CPU version.

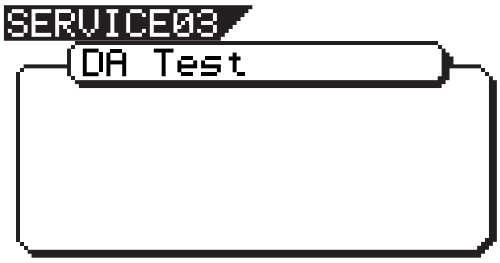


## 4-3. DA Test

This menu is not currently working.




Even though the [ENTER/YES] key is pressed, the following is just displayed. To go on, press the [ENTER/YES] key.

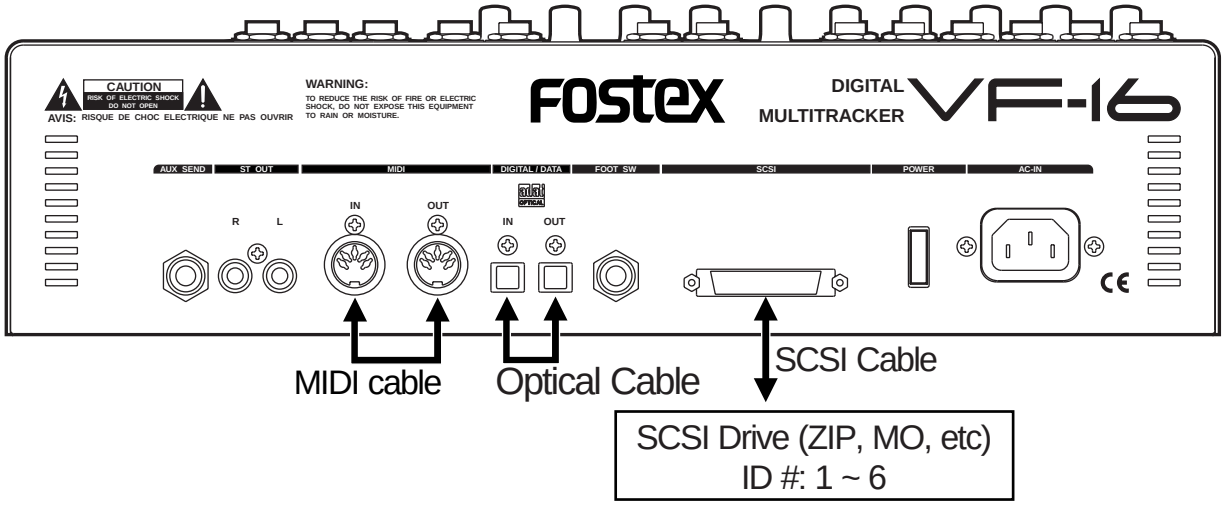



## 4-4. Self Check

This menu automatically tests the following points in order.

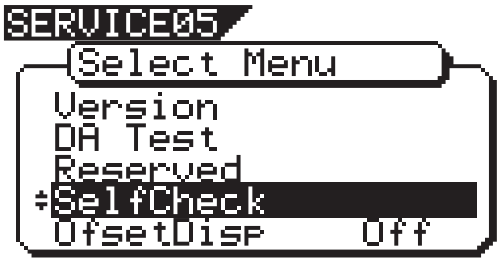
1. SCSI port → 2. ATA (E-IDE) bus → 3. MIDI in/out circuit → 4. S/P DIF digital signal in/out → 5. ADAT digital signal in/out → 6. Phantom power (+48V) → 7. A/D and D/A circuit (Input Monitor)

**< Cable connection when in "SelfCheck" mode >**



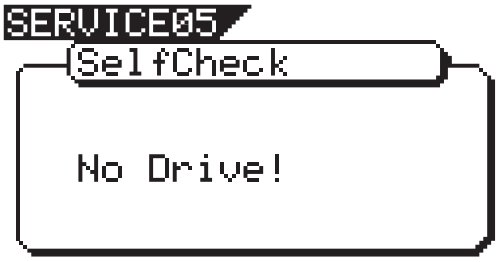

**CAUTION:** In order not to form a MIDI signal loop, connect the MIDI cable IN and OUT after putting the VF-16 into the Service Mode.

In order to execute the "SelfCheck" test, connect the cables and SCSI drives as shown above. Then, press the [ENTER/YES] key while the "SelfCheck" menu is selected.



### 4-4-1. SCSI Port Check

If the VF-16 does not recognize a connected SCSI drive or the SCSI drive is not actually connected, the following will be displayed on the LCD.




The following will be displayed when the SCSI drive is connected properly but the disk is not put in the drive.


The following will be displayed when the disk put in the SCSI drive is not formatted.


The following will be displayed when the SCSI drive (ZIP 100 in this case) is correctly recognized.


### 4-4-2. ATA (E-IDE) Bus Check

This test checks if data can be properly read out from the preformatted internal E-IDE hard disk.


If the “ALTERNATE STATUS” indicating the hard disk condition cannot be read out correctly, the following will be displayed.

### 4-4-3. MIDI In/Out Check

By connecting the MIDI IN and OUT ports, this test checks if the reply against the ID inquiry is correctly received. If not, the prompt below will be displayed.


### 4-4-4. S/P DIF In/Out Check

By connecting the DATA IN and OUT terminals, this test checks if the S/P DIF signal output by itself is correctly received. If the PLL circuit is not in a “LOCKED” condition, the prompt below will be displayed.


### 4-4-5. Adat In/Out Check

By connecting the DATA IN and OUT terminals, this test checks if the ADAT digital signal output by itself is correctly received. If the PLL circuit is not in a “LOCKED” condition, the prompt below will be displayed.


### 4-4-6. Phantom Voltage Check

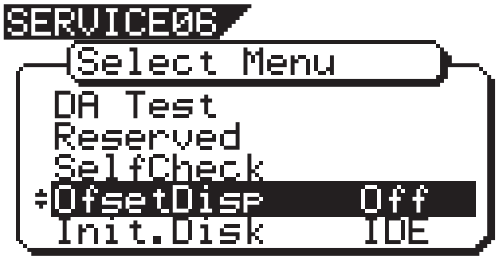
When the following is displayed, phantom power (DC +48V) is supposed to be applied between the pin-2 (HOT) and pin-1 (GND) / pin-3 (COLD) and pin-1 (GND) of XLR balanced input jack. Check the voltage between the pins using a multimeter, etc. Pressing the [ENTER/YES] key would forward the Self Check test.


### 4-4-7. A/D and D/A Circuit Check (Input Monitoring)

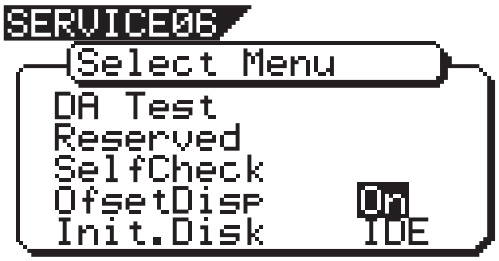
The VF-16 automatically checks the before mentioned points in the Self Check mode. If the VF-16 is working properly, the following will appear on the LCD and the VF-16 is automatically put into Input Monitoring mode.

## 4-5. Offset Display

This mode determines if the offset value against a master machine should be displayed when the VF-16 is working as a slave machine. If you would like to turn ON the offset display, press the [ENTER/YES] key while in the following display condition. (The default setting is at “off”.)




Then, turn the jog dial C.W. to change the setting to “ON” and press the [ENTER/YES] key.



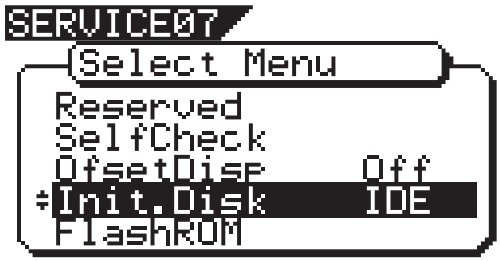

This allows to display the offset value when the MTC (Select by [TIME BASE] key.) and REMAIN (Select by [DISP SEL] key.) are selected. The example below indicates that the offset value is “00H00M00S00F00SF”.


## 4-5. Initializing Disk

This is the mode to initializes a 3.5” internal E-IDE hard disk drive or an external SCSI drive connected to the SCSI port.

**CAUTION 1:** If both the external SCSI drive and the internal 3.5” E-IDE hard disk drive are connected at the same time, the drive currently selected by the SETUP menu “Drive_Sel?” will be initialized.

**CAUTION 2:** This mode is exclusively designed for our manufacturer. To initialize the disk, use the ERASE function in the Format SETUP menu instead.




If the [ENTER/YES] key is pressed in the above display condition, the drive name to be initialized (IDE or SCSI) is displayed and “SURE?” will start blinking.

In this condition, pressing the [ENTER/YES] key one more time would initialize the recognized disk drive. This mode puts the disk back to the condition originally formatted.

## 4-6. Flash ROM

This mode is used when copying the system software from EPROMs to Flash ROM. As mentioned in the section "3. SOFTWARE UPDATE" (page 8), the VF-16 software inside the Flash ROM can be updated through the SCSI port. However, if something wrong happens when updating the software (e.g. A blackout occurred while updating the software.), the VF-16 might not be able to boot up using the system software inside the Flash ROM.
In this case, the following procedures must be taken.

1. Power off the VF-16 and disconnect the AC cable from the AC IN socket.
2. Plug the VF-16 EPROMs into the ROM CARD PCB assy sockets (U1 and U2). The SW on the ROM CARD PCB assy must be set to "EPROM" side.
3. Open up the top panel assy by loosening screws on both sides and on top, so that the ROM CARD PCB assy can be vertically plugged into the 50-pin connector J5 on the MAIN PCB assy.
4. Connect the AC cable and power on the VF-16.

In this condition, the VF-16 is booted up using the system software inside the EPROMs. The next procedures to take are as follows.

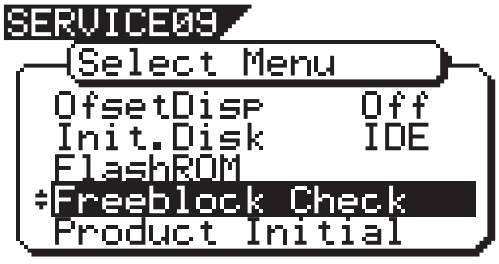
5. Put the VF-16 into the Service Mode, rotate the jog dial and select "FlashROM" menu.


Then, press the [ENTER/YES] key.
The display indicates the following and "SURE?" will start blinking.

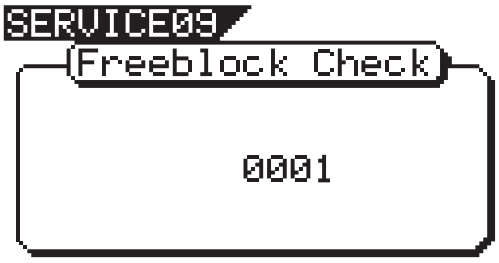

6. Press the [ENTER/YES] key to copy the system software from EPROMs to Flash ROM. The display shows "Erase ROM", "Write ROM" and then "COMPLETED!" in order.
7. In order to confirm that the VF-16 is correctly booted up using the system software inside the Flash ROM, power off the VF-16, disconnect the ROM CARD PCB assy and power it back on again.
8. After confirming that the VF-16 is booted up using the Flash ROM, referring to the section "3. SOFTWARE UPDATE" (page 8), update the system software inside the Flash ROM through SCSI port to the latest one.

## 4-7. Free Block Check

This mode is used to check the condition of the diskette inserted into an external SCSI drive connected to the VF-16 or the internal E-IDE hard disk drive. The drive to be checked is the one currently selected by the SETUP menu "Drive_Sel?".



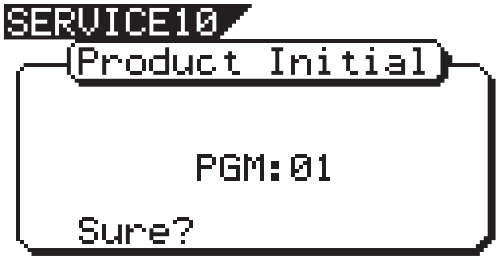
Press the [ENTER/YES] key in the above display condition. The display indicates the free audio file numbers.




If the Free Block indicates a large number even right after formatting and no signal is recorded or if the recorded signal on the E-IDE HDD is frequently skipped, the diskette / hard disk drive can be judged to be in a bad condition.

## 4-8. Product Initialize

This mode is exclusively used at our assembly line and has nothing to do with servicing the unit.

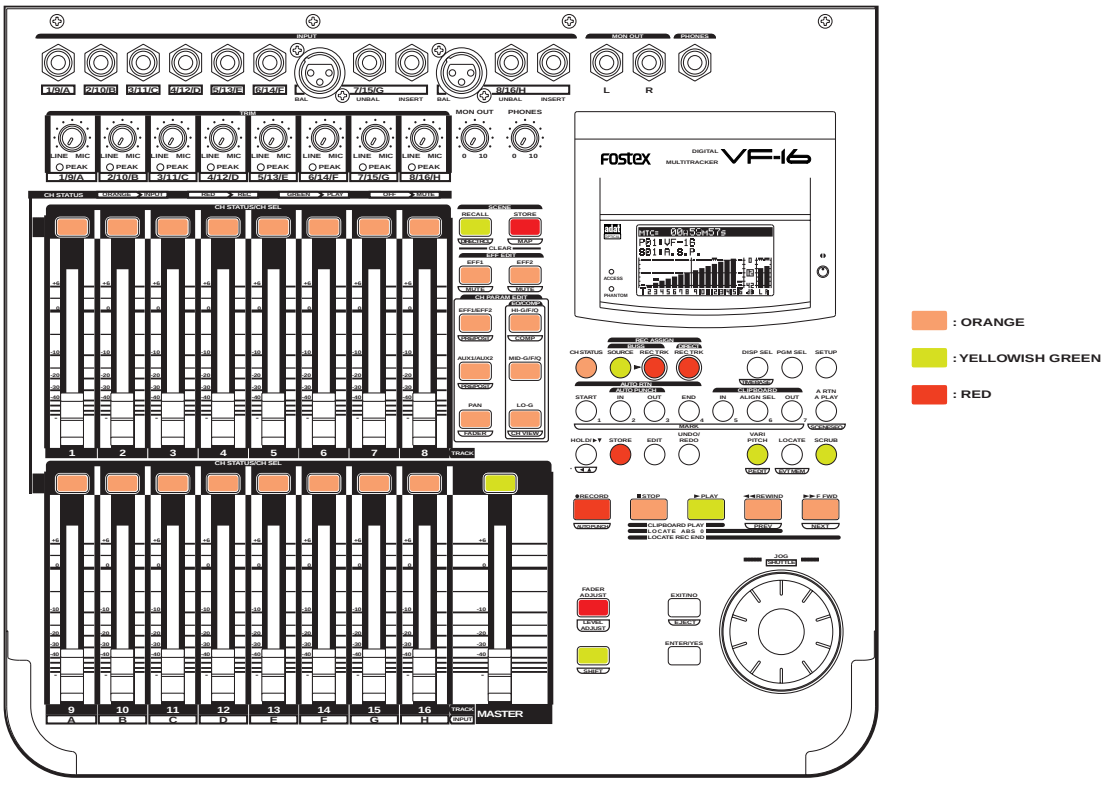




## 4-9. Key & LED Check Tests

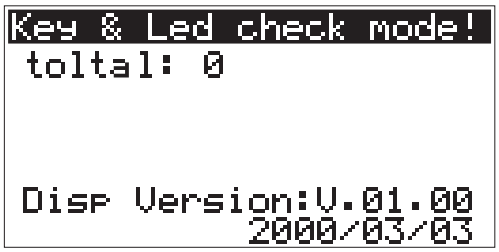
These two tests are different from the before mentioned tests. It is not necessary to put the unit into the Service Mode to execute these tests.

### 4-9-1. Key & LED Check

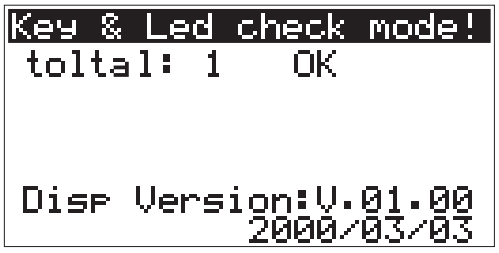
This test checks in which color the LEDs on the top panel is lit and if the key is correctly pressed or not. To execute, press the CH9 (A) STATUS/CH SEL key while holding down the SHIFT and STOP keys. The LEDs are lit in the following color.



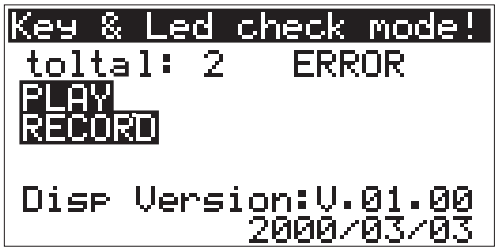
The LCD indicates the following in this mode.




If one of the keys on the top panel is pressed, the LCD indicates the following. The message “OK” indicates that the pressed key (SW) is in good contact.



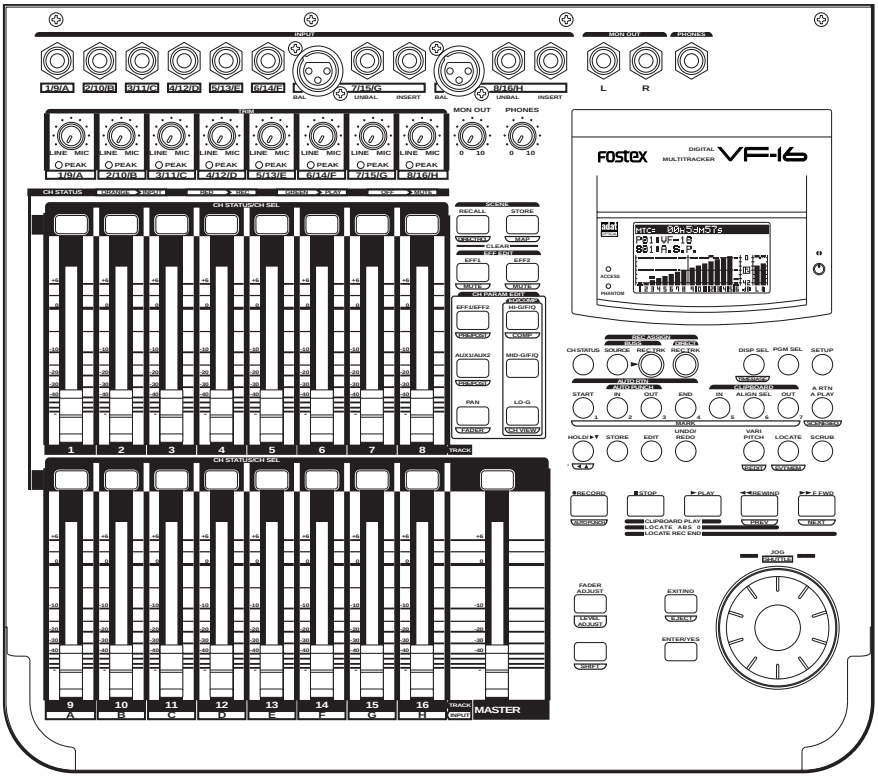

If two or more keys on the top panel are pressed at the same time, the message “ERROR” will be displayed on the LCD. In the meantime, the names of the pressed keys are displayed. The example below indicates that the [RECORD] and [PLAY] keys are pressed at the same time.



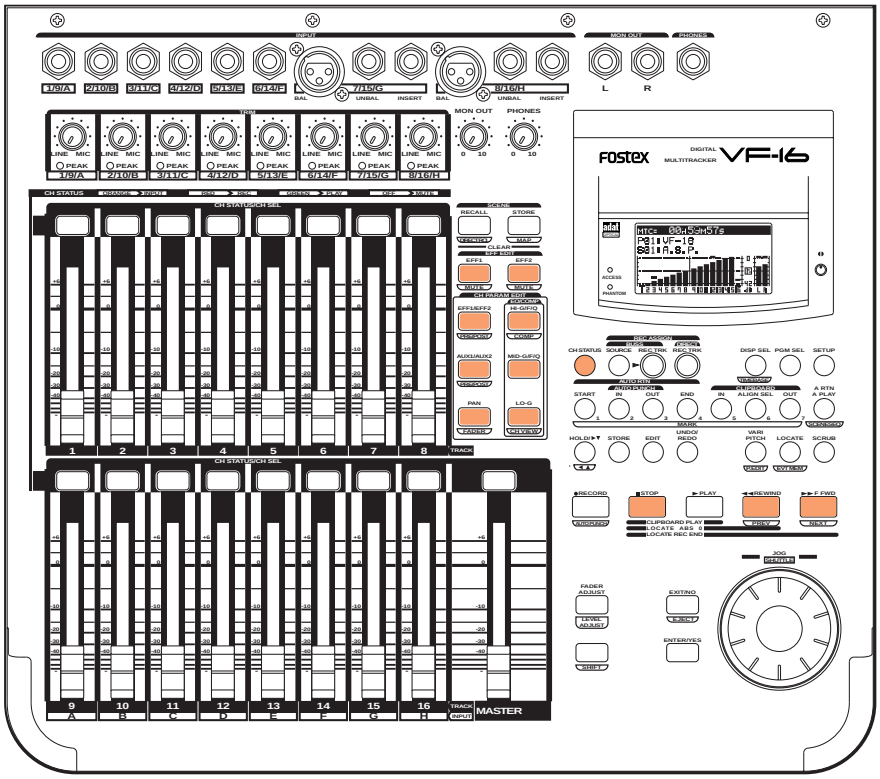

To get out of the test mode, press the MASTER key while holding down the SHIFT and STOP keys.

### 4-9-2. LED Check 2

This test checks in which (orange / yellowish green / red) color the LEDs on the top panel are lit. Especially the CH STATUS/CH SEL keys are lit in different color depending on the recording mode, etc. To execute, press the CH10 (B) STATUS/CH SEL key while holding down the SHIFT and STOP keys. No LED is lit right after the VF-16 is put into this test. Then, every time the [ENTER/YES] key is pressed, the orange, yellowish green and red LEDs are lit in order.

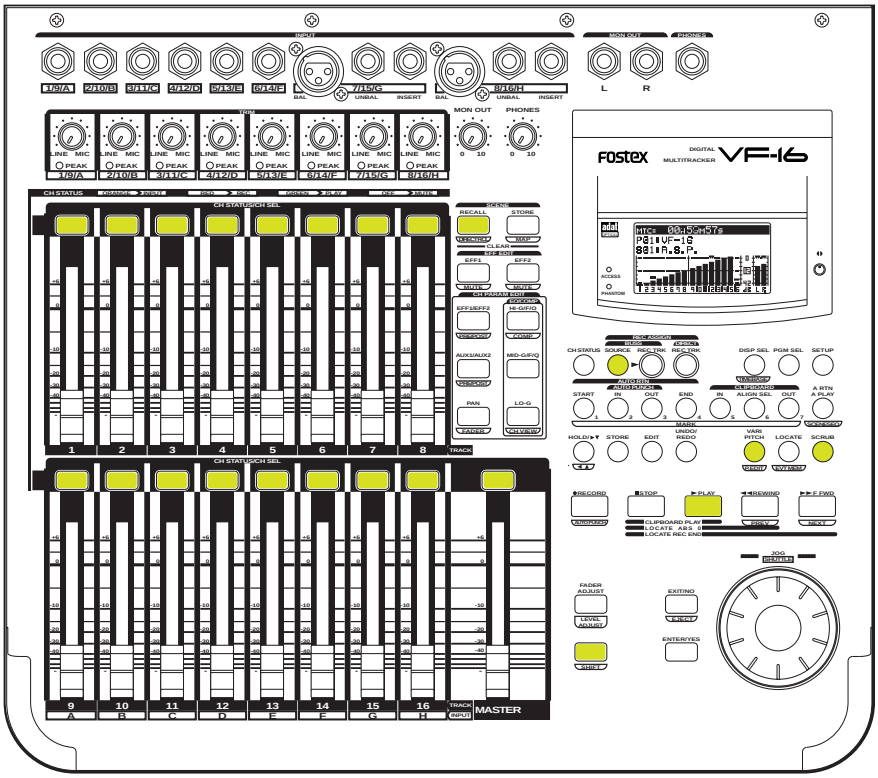


**Press the ENTER/YES key.**



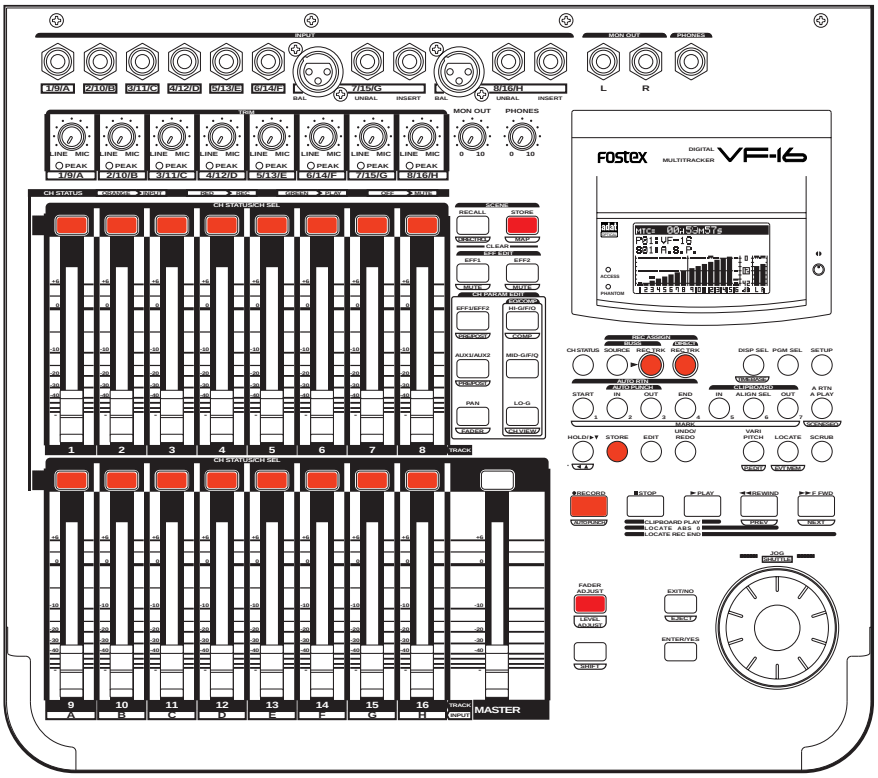

: ORANGE

**Press the ENTER/YES key.**




: YELLOWISH GREEN

**Press the ENTER/YES key.**




To get out of the test mode, press the MASTER key while holding down the [SHIFT] and [STOP] keys.

# 5. ERROR CODE LIST

The chart below indicates the error code number and corresponding description. Since the error code list is basically designed for our engineers to improve the software, the description is quite technical. If you find the VF-16 with one of the error codes displayed, we encourage you to update the software to the latest one first. In case updating the software does not solve the problem, we would like you to inform us about details.

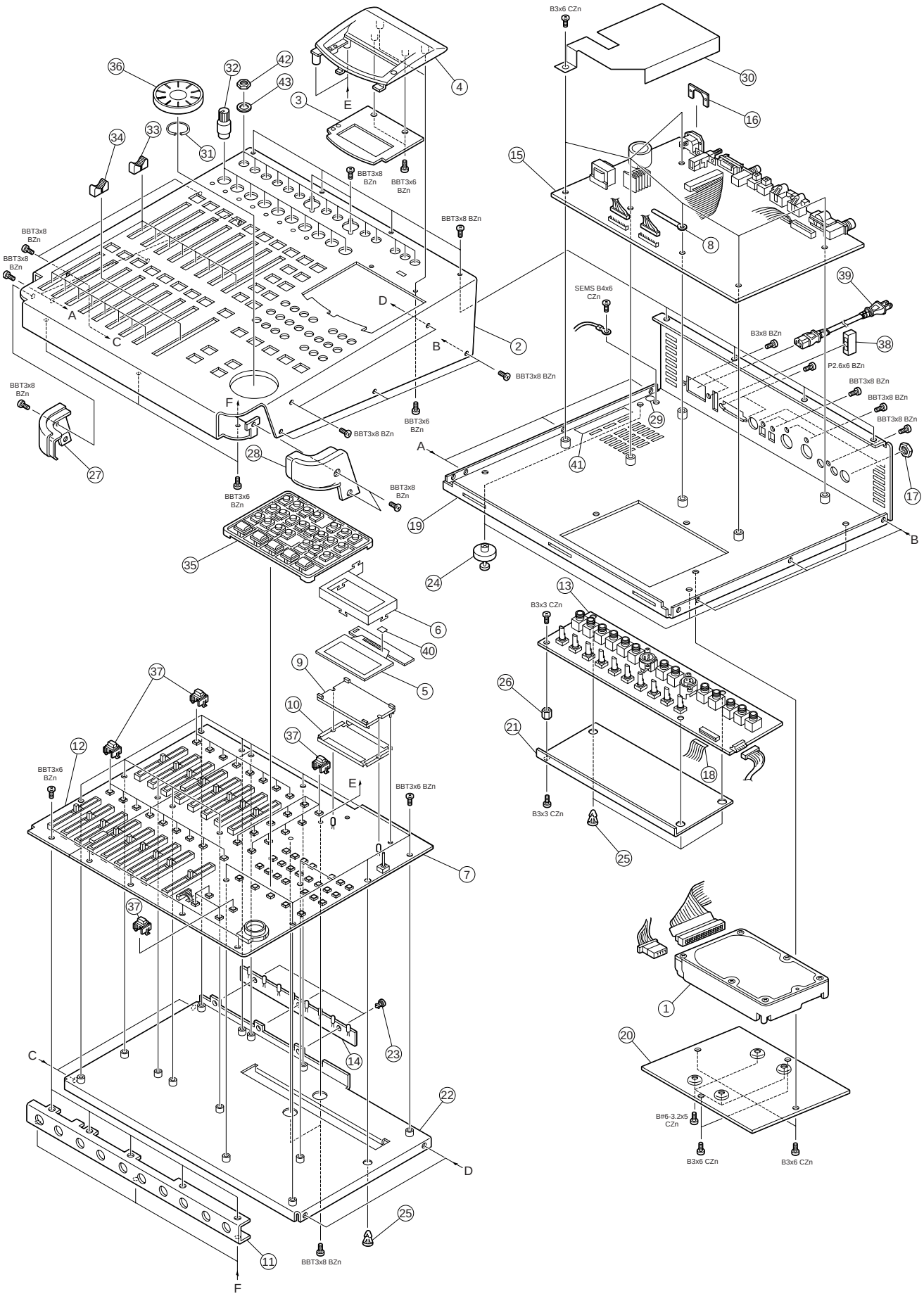
| VF-16 ERROR CODE LIST | |
|---|---|
| **ERROR CODE** | **DESCRIPTION** |
| 1 | VF-16 tries to access the address which does not exist. |
| 3 | SCSI drive does not boot up correctly during SCSI drive access operation |
| 9 | When saving system region sector, its address is registered in Free_block File during Free block File checking procedure. |
| 10 | Link_pointer which links Audio File indicates smaller address (out of region) than Link_File address region in RAM. |
| 11 | Link_pointer indicates larger address (out of region) than Link_File address region in RAM. |
| 12 | “Pointer_addre” calculation of Link_Pointer is not correct. |
| 14 | Link_Pointer during recording/reproducing indicates smaller address (out of region) than actual Link_File address region. |
| 15 | Link_Pointer during recording/reproducing indicates larger address (out of region) than actual Link_File address region. |
| 16 | “Pointer_addre” calculation of Link_Pointer during recording/reproducing is not correct. |
| 20 | src_cash_load: Improper access of link address occurred while PASTE editing. |
| 21 | bak_cash_load: Program link during PASTE/MOVE editing is incorrect. |
| 22 | bak_cash_load: Incompatibility problem occurred on program link during PASTE/MOVE editing. |
| 30 | Error when executing MOVE editing. Improper Link Pointer. Error in “bak_cash_load” function. |
| 31 | Error when executing MOVE editing. Improper Link Pointer. Error in “bak_cash_load” function. |
| 32 | Error when executing MOVE editing. Improper Link Pointer. Error in “bak_cash_load” function. |
| 39 | This error code is displayed when reading / writing test in Self Check mode fails. |
| 40 | dis_cah_load: Improper access occurred when recording/reproducing. |
| 41 | dis_cah_load: Improper access occurred when recording/reproducing. |
| 42 | dis_cah_load: Improper access occurred when recording/reproducing. |
| 45 | get_non_des_block: Remaining disk capacity is insufficient. |
| 52 | non_des_cash_save_sub: Improper access occurred when recording/reproducing. |
| 60 | remake_free_block: There was improper access to program management region. |
| 61 | remake_free_block: There was improper access to program management region. |
| 62 | remake_free_block: Number of manageable events exceeds limit. |
| 63 | remake_free_block: There was improper access to program management region. |
| 64 | remake_free_block: There is an overlapping section in program management region. |
| 96 | There was improper access to program management region. |
| 97 | There was improper access to program management region when saving System File. |
| 99 | There was improper access when fading in/out. |

# 6. EXPLODED VIEW, PCB ASSEMBLY & PARTS LIST

## ● VF-16 OVERALL EXPLODED VIEW & PARTS LIST

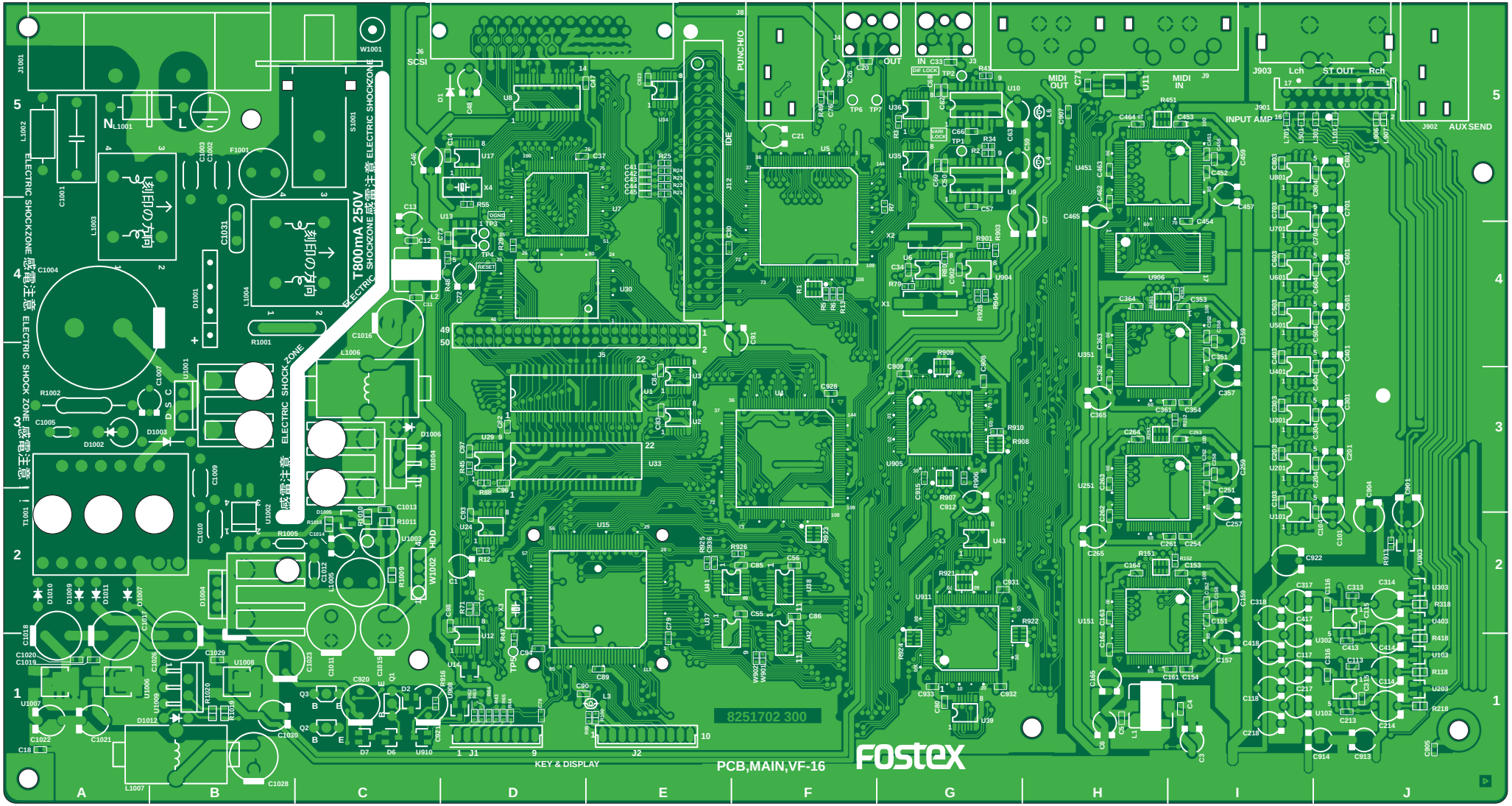
| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | 8270 8820 51 | Hard disk assy, IDE, 3.5”, 5.1GB |
| 2 | 8221 3331 00 | Panel, top, VF-16 |
| 3 | 8212 6910 00 | Window, LCD, VF-16 |
| 4 | 8212 6950 00 | Panel, LCD, VF-16 |
| 5 | 8260 5740 00 | LCD assy, VF-16 |
| 6 | 8221 3130 00 | Bracket, LCD, VF-16 |
| 7 | 8274 2550 00 | PCB assy, Key, VF-16 |
| 8 | 8207 0117 01 | Holder, cord, CS-1 |
| 9 | 8212 6920 00 | Plate, reflect, LCD, VF-16 |
| 10 | 8216 7330 00 | Sheet, LCD, VF-16 |
| 11 | 8221 3340 00 | Bracket, PCB, VF-16 |
| 12 | 8274 2790 00 | PCB assy, Key 2, VF-16 |
| 13 | 8274 2530 00 | PCB assy, Mic/Mon, VF-16 |
| 14 | 8274 2770 00 | PCB assy, Peak, VF-16 |
| ⚠ 15 | 8274 2540 00 | PCB assy, Main, VF-16 |
| 16 | 8221 2610 00 | Bracket, AC-IN, FD-8/VF-16 |
| 17 | 8245 3400 00 | Nut, phone jack |
| 18 | 8276 8396 30 | Cable, flat, FFC, 17P, L300 |
| 19 | 8221 3110 00 | Panel, bottom, VF-16 |
| 20 | 8221 1930 00 | Cover, HD, DMT-8VL/VF-16 |
| 21 | 8221 3350 00 | Shield, power, VF-16 |
| 22 | 8221 3372 00 | Chassis, VF-16 |
| 23 | 8207 0047 01 | Plastic rivet, #1C18 |
| 24 | 8207 0120 00 | Foot, FF-822 |
| 25 | 8207 0046 04 | Spacer, PCB, 5RT |
| 26 | 8204 0090 01 | Spacer, M3 x 5 |
| 27 | 8212 6590 03 | Pad, side, L, N19 |
| 28 | 8212 6590 04 | Pad, side, R, N19 |
| 29 | 8218 2630 00 | Sticker, GND |
| 30 | 8216 7400 00 | Sheet, isolation, VF-16 |
| 31 | 8214 3950 00 | Spring, jog, VM88/VF-16 |
| 32 | 8226 2230 01 | Knob, volume, C |
| 33 | 8226 2490 03 | Knob, fader, N19 |
| 34 | 8226 2490 02 | Knob, fader, R |
| 35 | 8226 2630 00 | Button assy, control, VF-16 |
| 36 | 8226 2620 00 | Knob, jog, VF-16 |
| 37 | 8226 2460 01 | Button, 7 x 13, LED |
| 38 | 8226 0130 02 | Button, push, B |
| ⚠ 39 | 8276 8010 00 | Cord, power, UL/CSA, VM0033-0089, USA/CSA/CND |
| | 8276 8021 00 | Cord, power, CEE, 0309B-0310B, EUR |
| | 8276 8000 00 | Cord, power, DM, VM1292-1298, JPN |
| | 8276 9170 00 | Cord, power, BS, 3C, KP610-KS31A, UK |
| 40 | 8218 7100 00 | Label, screw |
| 41 | 8218 0160 00 | Label, fuse, caution |
| 42 | N/A | (Comes with phone jack) |
| 43 | N/A | (Comes with phone jack) |

## ● VF-16 OVERALL EXPLODED VIEW & PARTS LIST

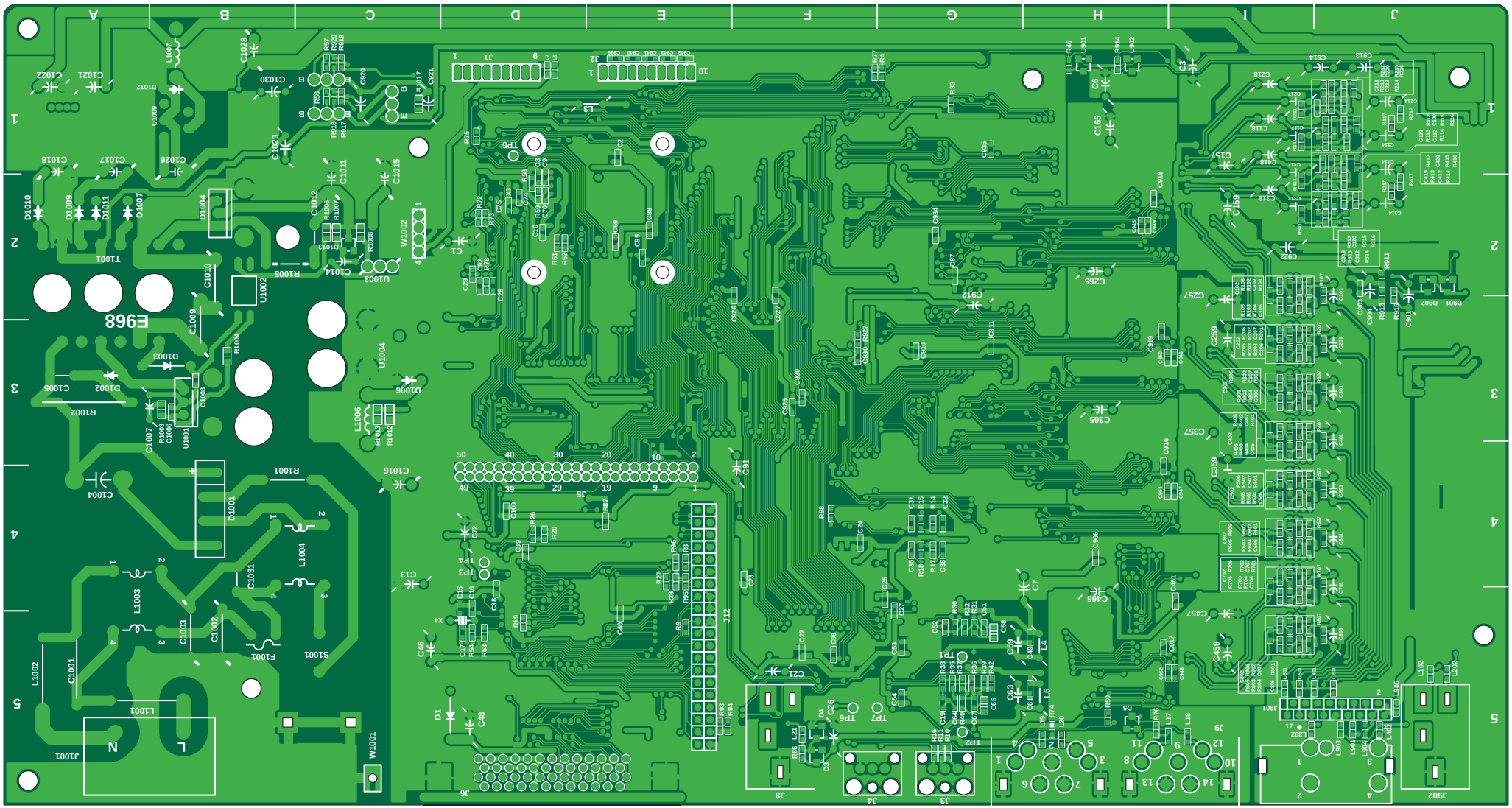


## ● VF-16 PCB ASSEMBLIES

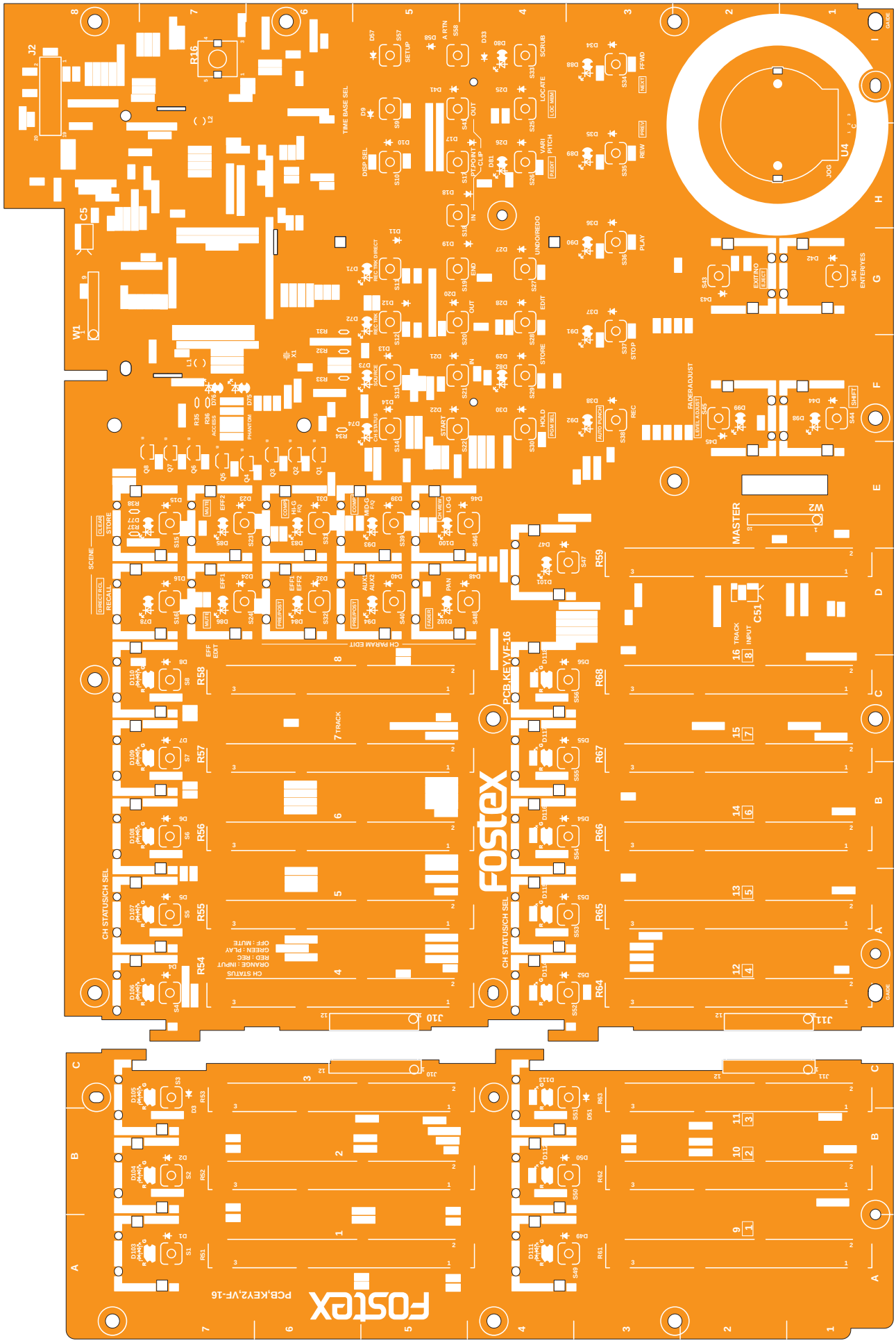
### • Parts Side of MAIN PCB



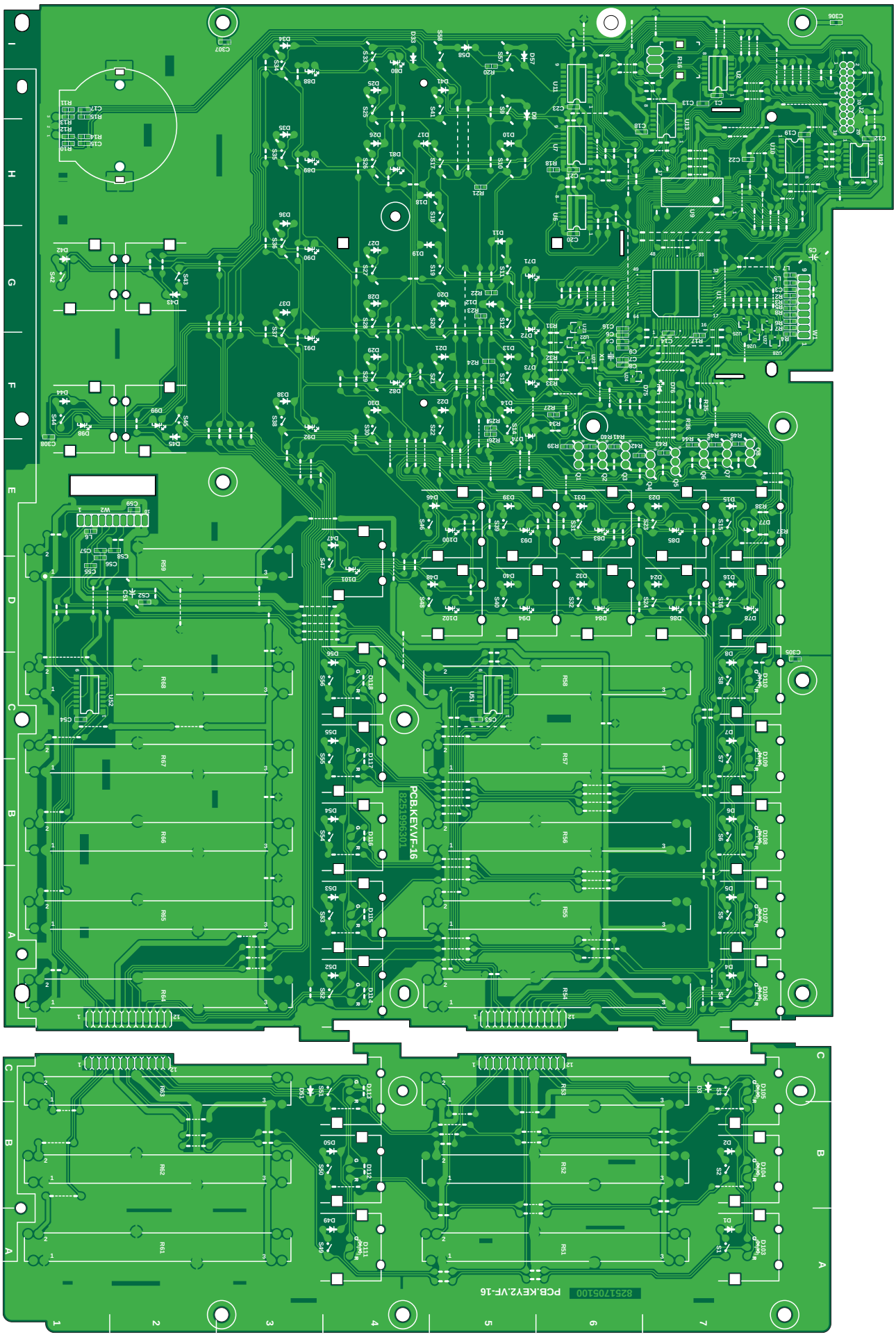
• **Foil Side of MAIN PCB**



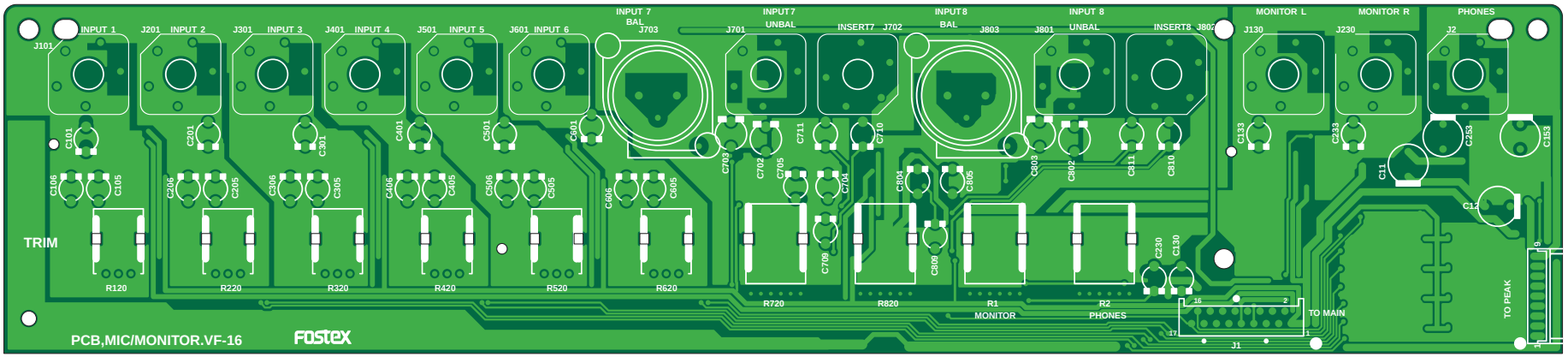
## • Parts Side of KEY & KEY2 PCB

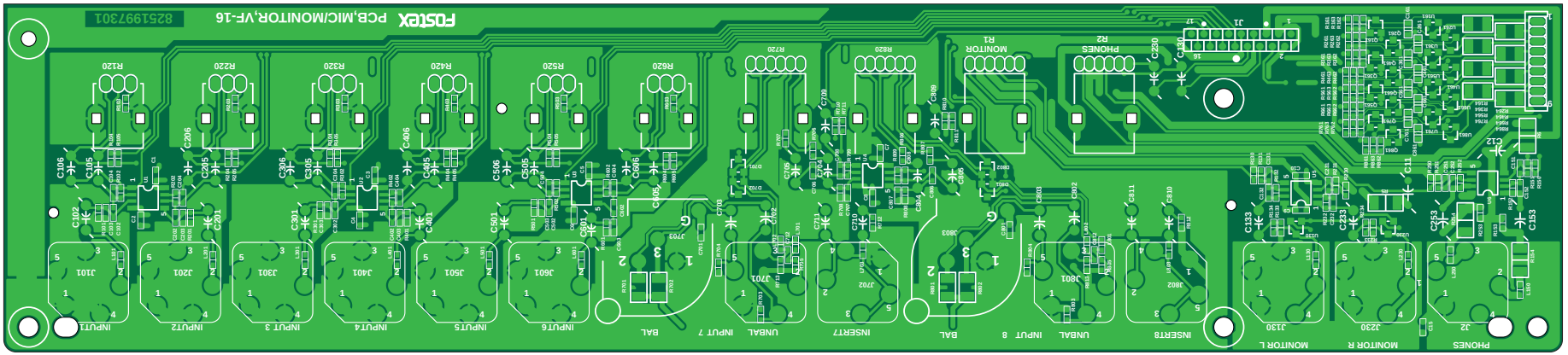


• **Foil Side of KEY & KEY2 PCB**

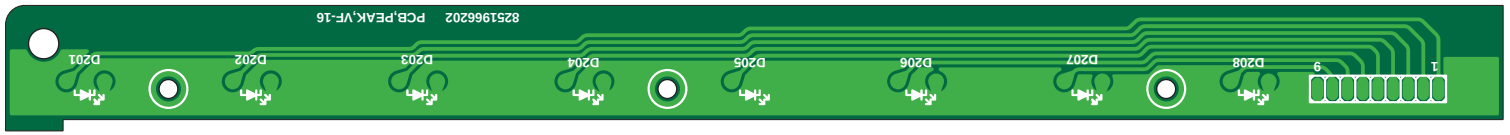


## • Parts& Foil Side of MIC/MON PCB

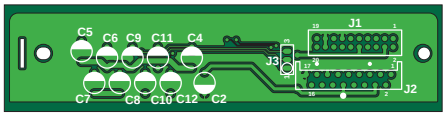


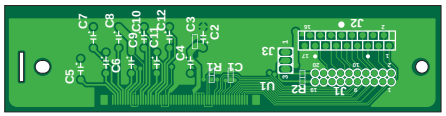



## • Parts& Foil Side of PEAK LED PCB

## • Parts& Foil Side of LCD PCB





# ● VF-16 Parts List

**• Main PCB assy**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8274 2540 00 | PCB Assy, Main, VF-16 |
| | 8251 7022 00 | Plain PCB, Main, VF-16 |

**ICs**

| Ref. No. | Part No. | Description |
|---|---|---|
| U001 | 8236 0831 30 | SOJ, DG, DRAM, MSM5118160-60JS-7R1 |
| U002 | 8236 5450 00 | ST, TSSOP, 74VHC00 |
| U003 | 8236 5450 74 | ST, TSSOP, 74VHC74 |
| U004, 005 | 8236 0818 00 | QFP, DG, gate array, ASPI |
| U006 | 8236 5459 04 | ST, TSSOP, 74VHCU04 |
| U007 | 8236 0828 00 | QFP, DG, SCSI, MB86604L |
| U008 | 8236 0829 00 | SOP, DG, SCSI term, BH9595FP-Y |
| U009, 010 | 8236 5034 00 | ST, DG, VCO, TC9246F |
| U011 | 8234 5047 00 | OPT, ST, photo, PC410T |
| U012 | 8236 5450 14 | ST, TSSOP, 74VHC14 |
| U013 | 8236 5025 00 | ST, AN, reset, NJM2103M |
| U014 | 8236 5701 01 | ST, DG, driver, DTC114EK |
| U015 | 8236 0868 00 | QFP, DG, CPU, SH7042, 33MHz, OTP |
| U017 | 8236 5459 04 | ST, TSSOP, 74VHCU04 |
| U024 | 8236 5450 32 | ST, TSSOP, 74VHC32 |
| U029 | 8236 5451 57 | ST, TSSOP, 74VHC157 |
| U030 | 8236 0840 11 | TSOP, DG, FROM, M29F400T-400 |
| U033 | 8236 0831 30 | SOJ, DG, DRAM, MSM5118160-60JS-7R1 |
| U034 | 8236 5450 32 | ST, TSSOP, 74VHC32 |
| U035 | 8236 5450 00 | ST, TSSOP, 74VHC00 |
| U036 | 8236 5450 74 | ST, TSSOP, 74VHC74 |
| U037 | 8236 5451 38 | ST, TSSOP, 74VHC138 |
| U038 | 8236 5452 73 | ST, TSSOP, 74VHC273 |
| U039 | 8236 5450 32 | ST, TSSOP, 74VHC32 |
| U040 | | N/A |
| U041 | 8236 5450 32 | ST, TSSOP, 74VHC32 |
| U042 | 8236 5452 73 | ST, TSSOP, 74VHC273 |
| U043 | 8236 5450 08 | ST, TSSOP, 74VHC08 |
| U101~801 | 8236 5050 11 | ST, AN, op amp, NJM2115M (TEI) |
| U102, 302 | 8236 5412 00 | ST, AN, op amp, NJM4565M |
| U103~403 | 8236 5702 01 | ST, DG, driver, DTC314TK |
| U151~451 | 8236 0861 00 | QFP, DG, DSP, AK7716 |
| U901, 902 | 8236 5701 01 | ST, DG, driver, DTC114EK |
| U903 | 8236 5708 03 | ST, DG, driver, DTB114EK |
| U904 | 8236 5450 04 | ST, TSSOP, 74VHC04 |
| U905 | 8236 0858 00 | QFP, DG, gate array, SAA |
| U906 | 8236 0846 10 | TSOP, DG, SRAM, LC361000ATLL-70-TLM |
| U908 | 8236 5701 01 | ST, DG, driver, DTC114EK |
| U910 | 8236 5701 01 | ST, DG, driver, DTC114EK |
| U911 | 8236 0858 00 | QFP, DG, gate array, SAA |
| U1001 | 8236 5410 06 | V, AN, power, MIP166 |
| U1002 | 8234 1081 00 | OPT, H, photo coupler, ON3171 |
| U1003 | 8236 5409 00 | VT, AN, regulator, AN1431T |
| U1004 | 8236 0859 00 | V, AN, DC-DC, PQ1CF1 |
| U1006 | 8236 5403 15 | ST, AN, regulator, L78M15TLL-TL |
| U1007 | 8236 5404 15 | ST, AN, regulator, NJM79M15DLA |
| U1008 | 8236 5403 01 | ST, AN, regulator, L78M05T-TL |
| U1009 | 8236 0853 00 | V, AN, DC-DC, PQ1CF2 |

**TRANSISTORs**

| Ref. No. | Part No. | Description |
|---|---|---|
| Q001, 002 | 8234 5055 00 | VT, NPN, 2SC1627Y |
| Q003 | 8234 5054 00 | VT, PNP, 2SA817AY |

**DIODEs**

| Ref. No. | Part No. | Description |
|---|---|---|
| D001 | 8234 1050 00 | VF, schottky, EK13 |
| D002~005 | 8234 5028 00 | ST, DAN202K |
| D006, 007 | 8234 7508 80 | ST, zener, DZD24Y |
| D901 | 8234 5028 00 | ST, DAN202K |
| D902 | 8234 7506 00 | ST, RB400D |
| D1001 | 8234 1077 00 | V, stack, 600VAC, 1.5A, D2SBA60 |
| D1002 | 8234 5052 00 | V, 600V, 1.7A, S2V60-4002 |
| D1003 | 8234 1079 00 | HT, 80V, 0.2A, MA171 |
| D1004 | 8234 1080 00 | V, 200V, 5.0A, MA649 |
| D1005 | 8234 5028 00 | ST, DAN202K |
| D1006 | 8234 1084 00 | VT, schottky, EK03W |
| D1007 | 8234 1085 00 | HT, fast recovery, D1NL40 |
| D1009~11 | 8234 1085 00 | HT, fast recovery, D1NL40 |
| D1012 | 8234 1084 00 | VT, schottky, EK03W |
| D1013 | 8234 5028 00 | ST, DAN202K |

**RESISTORs**

| Ref. No. | Part No. | Description |
|---|---|---|
| R001 | 8230 5081 01 | ST, R array, 100Ω x 4, 5%, CN1J4 |
| R002, 003 | 8242 5051 02 | Filter, ST, EMI, EXC3BB, 102 |
| R004 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R005~007 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R008 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R009 | 8230 5105 62 | ST, carbon, 1/15W, 5.6kΩ, 5% |
| R010 | 8230 5103 32 | ST, carbon, 1/15W, 3.3kΩ, 5% |
| R011 | 8230 5102 22 | ST, carbon, 1/15W, 2.2kΩ, 5% |
| R012 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R013 | 8242 5051 02 | Filter, ST, EMI, EXC3BB, 102 |
| R014 | 8230 5101 05 | ST, carbon, 1/15W, 1MΩ, 5% |
| R015 | 8230 5100 00 | ST, carbon, 1/15W, 0Ω, 5% |
| R016 | 8230 5103 31 | ST, carbon, 1/15W, 330Ω, 5% |
| R017 | 8230 5101 05 | ST, carbon, 1/15W, 1MΩ, 5% |
| R018 | | N/A |
| R019 | 8230 5104 72 | ST, carbon, 1/15W, 4.7kΩ, 5% |
| R020 | | N/A |
| R021~025 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R026, 027 | 8230 5100 00 | ST, carbon, 1/15W, 0Ω, 5% |
| R028 | | N/A |
| R029 | 8230 5104 72 | ST, carbon, 1/15W, 4.7kΩ, 5% |
| R030 | 8230 5101 52 | ST, carbon, 1/15W, 1.5kΩ, 5% |
| R031 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R032 | 8230 5102 24 | ST, carbon, 1/15W, 220kΩ, 5% |

| Ref. No. | Part No. | Description |
|---|---|---|
| R033 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R034 | 8242 5051 02 | Filter, ST, EMI, EXC3BB, 102 |
| R035 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R036 | 8230 5105 62 | ST, carbon, 1/15W, 5.6kΩ, 5% |
| R037 | | N/A |
| R038 | 8230 5103 31 | ST, carbon, 1/15W, 330Ω, 5% |
| R039 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R040 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R041 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| R042 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R043 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R044 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R045~048 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R049 | 8230 5103 31 | ST, carbon, 1/15W, 330Ω, 5% |
| R050 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R051 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R052 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R053 | 8230 5102 21 | ST, carbon, 1/15W, 220Ω, 5% |
| R054, 055 | 8230 5101 05 | ST, carbon, 1/15W, 1MΩ, 5% |
| R056, 057 | 8230 5104 73 | ST, carbon, 1/15W, 47kΩ, 5% |
| R058 | 8230 5103 32 | ST, carbon, 1/15W, 3.3kΩ, 5% |
| R059 | 8230 5102 21 | ST, carbon, 1/15W, 220Ω, 5% |
| R062~065 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R066 | 8230 5101 52 | ST, carbon, 1/15W, 1.5kΩ, 5% |
| R071 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R072 | | N/A |
| R073 | 8230 5100 00 | ST, carbon, 1/15W, 0Ω, 5% |
| R074~076 | 8230 5102 21 | ST, carbon, 1/15W, 220Ω, 5% |
| R077 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R078 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R079 | 8242 5051 02 | Filter, ST, EMI, EXC3BB, 102 |
| R080 | | N/A |
| R087 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R088 | | N/A |
| R093, 094 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R095, 096 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R098, 099 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R100 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R1..601 | 8230 5103 33 | ST, carbon, 1/15W, 33kΩ, 5% |
| R701,801 | 8230 5101 83 | ST, carbon, 1/15W, 18kΩ, 5% |
| R1..602 | 8230 5104 72 | ST, carbon, 1/15W, 4.7kΩ, 5% |
| R7..802 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R1..803 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R1..804 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R1..805 | 8230 5103 31 | ST, carbon, 1/15W, 330Ω, 5% |
| R1..806 | 8230 5103 31 | ST, carbon, 1/15W, 330Ω, 5% |
| R1..807 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R1..411 | 8230 5103 92 | ST, carbon, 1/15W, 3.9kΩ, 5% |
| R1..412 | 8230 5103 92 | ST, carbon, 1/15W, 3.9kΩ, 5% |
| R1..413 | 8230 5102 72 | ST, carbon, 1/15W, 2.7kΩ, 5% |
| R1..414 | 8230 5102 01 | ST, carbon, 1/15W, 200Ω, 5% |
| R1..415 | 8230 5102 01 | ST, carbon, 1/15W, 200Ω, 5% |
| R1..416 | 8230 5102 72 | ST, carbon, 1/15W, 2.7kΩ, 5% |
| R1..417 | 8230 5104 73 | ST, carbon, 1/15W, 47kΩ, 5% |
| R1..418 | 8230 5001 01 | ST, carbon, 1/10W, 100Ω, 5% |

| Ref. No. | Part No. | Description |
|---|---|---|
| R1..451 | 8230 5081 01 | ST, R array, 100Ω x 4, 5%, CN1J4 |
| R152~352 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R901 | | N/A |
| R903 | 8242 5051 02 | Filter, ST, EMI, EXC3BB, 102 |
| R904 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R906 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R907~909 | 8230 5081 01 | ST, array, 100 x 4, 5%, CN1J4 |
| R910 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R911, 912 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R913~915 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R916 | 8230 5004 73 | ST, carbon, 1/10W, 47kΩ, 5% |
| R917~920 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R921~924 | 8230 5081 01 | ST, array, 100 x 4, 5%, CN1J4 |
| R925 | | N/A |
| R926 | 8230 5100 00 | ST, carbon, 1/15W, 0Ω, 5% |
| R927 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R928 | 8242 5051 02 | Filter, ST, EMI, EXC3BB, 102 |
| R1001 | | Wire, jumper, IPS-1041-4, F10 |
| R1002 | 8230 1251 04 | H, metal, 2W, 100kΩ, 5%, F20, RSS |
| R1003, 04 | 8230 5005 69 | ST, carbon, 1/10W, 5.6Ω, 5% |
| R1005 | 8230 1243 30 | HT, metal, 1/2W, 33Ω, 5%, RSS |
| R1006 | 8230 5003 31 | ST, carbon, 1/10W, 330Ω, 5% |
| R1007 | 8230 5001 03 | ST, carbon, 1/10W, 10kΩ, 5% |
| R1008 | 8230 5004 71 | ST, carbon, 1/10W, 470Ω, 5% |
| R1009 | 8230 5003 93 | ST, carbon, 1/10W, 39kΩ, 5% |
| R1010, 11 | 8230 5001 03 | ST, carbon, 1/10W, 10kΩ, 5% |
| R1012 | 8230 5003 02 | ST, carbon, 1/10W, 3kΩ, 5% |
| R1013 | 8230 5001 02 | ST, carbon, 1/10W, 1kΩ, 5% |
| R1017 | 8230 5004 73 | ST, carbon, 1/10W, 47kΩ, 5% |
| R1018 | 8230 5001 03 | ST, carbon, 1/10W, 10kΩ, 5% |
| R1019 | 8230 5003 02 | ST, carbon, 1/10W, 3kΩ, 5% |
| R1020 | 8230 5001 02 | ST, carbon, 1/15W, 1kΩ, 5% |

### CAPACITORs

ALU = Electrolytic type

CER = Ceramic type

PES = Mylar type

| Ref. No. | Part No. | Description |
|---|---|---|
| C001 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C002 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C003 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C004, 005 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C006, 007 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C008 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C009~012 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C013 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C014 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C015, 016 | 8233 5123 30 | ST, CER, 50V, 33pF, 5%, CC11SL |
| C017 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C018 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C019, 020 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C021 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C022~025 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C026 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C027 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |

| Ref. No. | Part No. | Description |
|---|---|---|
| C028 | 8233 5131 01 | ST, CER, 50V, 100PF, 15%, CC11R |
| C029 | | N/A |
| C030 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C031, 032 | 8233 5122 20 | ST, CER, 50V, 22PF, 5%, CC11SL |
| C033, 034 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C035, 036 | | N/A |
| C037~040 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C041~045 | | N/A |
| C046 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C047 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C048 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C049~051 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C052 | 8233 5121 50 | ST, CER, 50V, 15pF, 5%, CC11SL |
| C053~057 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C058 | 8233 5164 74 | ST, CER, 16V, 0.47µF, 20%, KC20E |
| C059 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C060 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C061, 062 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C063 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C064 | 8233 5121 50 | ST, CER, 50V, 15PF, 5%, CC11SL |
| C065 | 8233 5164 74 | ST, CER, 16V, 0.47µF, 20%, KC20E |
| C066, 067 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C068~070 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C071 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C072 | 8232 1461 05 | VT, ALU, 50V, 1µF, 20%, SME-VB |
| C073 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C074, 075 | 8233 5123 30 | ST, CER, 50V, 33pF, 5%, CC11SL |
| C076 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C077 | 8233 5131 01 | ST, CER, 50V, 100pF, 15%, CC11R |
| C078 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C079 | | N/A |
| C080 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C081 | | N/A |
| C082~087 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C088, 089 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C090 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C091 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C092 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C093 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C094 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C095 | 8233 5131 01 | ST, CER, 50V, 100pF, 15%, CC11R |
| C096~098 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C099 | | N/A |
| C100 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C1..801 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C1..802 | 8233 5131 52 | ST, CER, 50V, 0.0015µF, 15%, CC11R |
| C1..803 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C1..804 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C1..806 | | N/A |
| C1..807 | | N/A |
| C1..412 | 8233 5138 21 | ST, CER, 50V, 820pF, 15%, CC11R |
| C1..413 | 8233 5138 21 | ST, CER, 50V, 820pF, 15%, CC11R |
| C1..414 | 8232 1431 07 | VT, ALU, 16V, 100µF, 20%, SME-VB |
| C115, 315 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C116, 316 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C1..417 | 8232 1434 76 | VT, ALU, 16V, 47µF, 20%, SME-VB |
| C1..418 | 8232 1434 76 | VT, ALU, 16V, 47µF, 20%, SME-VB |
| C1..419 | 8233 5136 82 | ST, CER, 50V, 0.0068µF, 15%, CC11R |
| C1..420 | 8233 5136 82 | ST, CER, 50V, 0.0068µF, 15%, CC11R |
| C1..451 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..452 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..453 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..454 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..457 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C1..458 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..459 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C1..461 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..462 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..463 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..464 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1..465 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C901 | 8232 1431 07 | VT, ALU, 16V, 100µF, 20%, SME-VB |
| C902, 903 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C904 | 8232 3711 87 | VT, ALU, 16V, 180µF, 20%, LXV, D6.3 |
| C905 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C906 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C907 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C908~911 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C912 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C913, 914 | 8232 1434 76 | VT, ALU, 16V, 47µF, 20%, SME-VB |
| C915~919 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C920, 921 | 8232 3824 76 | VT, ALU, 63V, 47µF, 20%, LXV, D8 |
| C922 | 8232 3711 87 | VT, ALU, 16V, 180µF, 20%, LXV, D6.3 |
| C923 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C925~928 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C929 | | N/A |
| C930 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C931~934 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C935 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C936 | | N/A |
| C939-943 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C945~952 | | N/A |
| C1001 | 8232 3521 04 | V, PES, 250VAC, 0.1µF, 20%, ECQ-UMV |
| C1002, 03 | 8232 3542 22 | VT, CER, 250V, 0.0022µF, 20%, ECK-ZNS |
| C1004 | 8232 3241 07 | V, ALU, 400V, 100µF, 20%, SMH-VNSN, D25.4 |
| C1005 | 8232 3491 03 | VT, PES, 630V, 0.01µF, 10%, ECQ-EKF3 |
| C1006 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1007 | 8232 1434 76 | VT, ALU, 16V, 47µF, 20%, SME-VB |
| C1008 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1009, 10 | 8232 3542 22 | VT, CER, 250V, 0.0022µF, 20%, ECK-ZNS |
| C1011 | 8232 3574 77 | VT, ALU, 16V, 470µF, 20%, LXV, D10 |
| C1012 | 8232 3533 91 | VT, CER, 500V, 390pF, 10%, ECK-ZHT |
| C1013 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1014 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C1015, 16 | 8232 3574 77 | VT, ALU, 16V, 470µF, 20%, LXV, D10 |

| Ref. No. | Part No. | Description |
|---|---|---|
| C1017, 18 | 8232 3584 77 | VT, ALU, 25V, 470µF, 20%, LXV, D10 |
| C1019, 20 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1021, 22 | 8232 3711 87 | VT, ALU, 16V, 180µF, 20%, LXV, D6.3 |
| C1023 | 8232 3824 76 | VT, ALU, 63V, 47µF, 20%, LXV, D8 |
| C1026 | 8232 3584 77 | VT, ALU, 25V, 470µF, 20%, LXV, D10 |
| C1028 | 8232 3574 77 | VT, ALU, 16V, 470µF, 20%, LXV, D10 |
| C1029 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |
| C1030 | 8232 3711 87 | VT, ALU, 16V, 180µF, 20%, LXV, D6.3 |

### MISCELLANEOUS

| Ref. No. | Part No. | Description |
|---|---|---|
| E1801 | | N/A (TP001) |
| E1802 | | N/A (TP002) |
| E1803 | | N/A (TP003) |
| E1804 | | N/A (TP004) |
| E1805 | | N/A (TP005) |
| E1806 | 8276 0010 00 | Pin, header, TP006 |
| E1807 | 8276 0010 00 | Pin, header, TP007 |
| ⚠ F1001 | 8239 8010 08 | Fuse, VT, SEMKO, TLAG, 0.8A, 250V, TR5-T |
| J001 | 8245 1711 09 | Connector, PI, jack, 8283, 9P, WHT |
| J002 | 8245 1711 10 | Connector, PI , jack, 8283, 10P, WHT |
| J003 | 8245 5530 10 | Connector, opt, GPIF37R1 |
| J004 | 8245 5520 10 | Connector, opt, GPIF38T2 |
| J005 | 8245 3220 50 | Connector, PI , header, 50P, P2.0, 9210B |
| J006 | 8245 3290 50 | Connector, PL, D-SUB, 50P, P1.27, ECI2 |
| J008 | 8245 3390 04 | Connector, PL , jack, phone, YKB21-5074 |
| J009 | 8245 4200 00 | Connector, PL , jack, DIN5P (shield), YKF51-5053 |
| J012 | 8277 4770 30 | Cable assy, FC, 40P/F-/B, L300, reverse |
| J901 | 8245 2720 17 | Connector, PI , jack, FPC 17P |
| J902 | 8245 3390 04 | Connector, PL , jack, phone, YKB21-5074 |
| J903 | 8245 3130 01 | Connector, PL , jack, RCA, 2P, BLK, W/S |
| J1001 | 8245 3210 00 | Connector, PL, jack, AC inlet, 3P, 0714-FR7 |
| L001, 002 | 8242 5025 60 | Core, ST, CDRH104, 56µH |
| L003, 004 | 8242 1962 23 | Coil, PVT, 22µH, 5%, LF5.0S |
| L005 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L006 | 8242 1962 23 | Coil, PVT, 22µH, 5%, LF5.0S |
| L007 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L017~021 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L101~801 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L102~402 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L901 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L903~907 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L1001, 02 | 8242 1340 01 | Filter, EMI, 6 hole |
| L1003 | 8242 2491 02 | Filter, line, 1mH, 2.2A, ELFI5NO22A |
| L1004 | 8242 2741 83 | Filter, line, 18mH, 0.5A, ELF18D210 |
| L1005 | 8242 2501 03 | Coil, PV, 10µH, 2A, ELC |
| L1006, 07 | 8242 2640 01 | Coil, DC-DC, R17, 256µH |
| S1001 | 8253 4610 02 | SW, P, push, power, SDDLB1-B1-F2 |
| T1001 | 8242 2720 00 | Transformer, SW POWER, ER2810, D12-A15-A53 |
| W001 | | N/A |
| W901 | | N/A |
| W902 | 8230 5100 00 | Resistor, ST, carbon, 1/15W, 0Ω, 5% |
| W1001 | 8277 1630 15 | Cable assy, earth lug - SIN1.8, L150 |
| W1002 | 8277 3184 20 | Cable assy, 4P, 5395-CNC, L200 |
| X001 | 8256 1700 01 | Resonator, ST, XTL, 22.579MHZ, FUP-FBB3A |
| X003 | 8256 1790 02 | Resonator, PT, CER, 8MHz, EFOEN |
| X004 | 8256 1710 01 | Resonator, PT, CER, 20.00MHz, KBR |
| Y4201 | 8207 0015 00 | Heat sink, OSH-1625-SP |

### • Key PCB assy

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8274 2550 00 | PCB Assy, Key, VF-16 |
| | 8251 9662 01 | Plain PCB, Key, VF-16 |

### ICs

| Ref. No. | Part No. | Description |
|---|---|---|
| U001 | 8236 0869 00 | QFP, DG, CPU, VF-16 KEY, H8/3217ZTAT |
| U002 | 8236 5600 14 | ST, DG, 74HC14 |
| U004 | 8256 1870 00 | Module, jog, SRGPWJ |
| U006 | 8236 5600 74 | ST, DG, 74HC74 |
| U007 | 8236 5601 38 | ST, DG, 74HC138 |
| U008 | | N/A |
| U009 | 8236 0846 10 | TSOP, DG, SRAM, LC361000ATLL-70-TLM |
| U010 | 8236 5600 10 | ST, DG, 74HC10 |
| U011 | 8236 5601 38 | ST, DG, 74HC138 |
| U012, 013 | 8236 5600 32 | ST, DG, 74HC32 |
| U021~028 | 8236 5056 00 | ST, DG, driver, DTD113ZK |
| U051, 052 | 8236 5630 52 | ST, DG, 74HC4052 |

### TRANSISTORs

| Ref. No. | Part No. | Description |
|---|---|---|
| Q001~008 | 8234 1008 02 | VT, PNP, 2SA1150Y |

### DIODEs

| Ref. No. | Part No. | Description |
|---|---|---|
| D001~003 | | N/A |
| D004~048 | 8234 5007 00 | HT, 1SS136 |
| D049~051 | | N/A |
| D052~058 | 8234 5007 00 | HT, 1SS136 |
| D059~064 | | N/A |
| D071, 072 | 8234 5040 01 | Opt, VT, LED, red, LT3D31W |
| D073 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D074 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D075 | 8234 5040 01 | Opt, VT, LED, red, LT3D31W |
| D076 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D077 | 8234 5040 01 | Opt, VT, LED, red, LT3D31W |
| D078 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D079 | | N/A |

| Ref. No. | Part No. | Description |
|---|---|---|
| D080, 081 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D082 | 8234 5040 01 | Opt, VT, LED, red, LT3D31W |
| D083~086 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D087 | | N/A |
| D088, 089 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D090 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D091 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D092 | 8234 5040 01 | Opt, VT, LED, red, LT3D31W |
| D093, 094 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D095~097 | | N/A |
| D098 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D099 | 8234 5040 01 | Opt, VT, LED, red, LT3D31W |
| D100 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D101 | 8234 5040 04 | Opt, VT, LED, grn, LT3E31W |
| D102 | 8234 5040 03 | Opt, VT, LED, ylw, LT3H31W |
| D103~105 | | N/A |
| D106~110 | 8234 5058 00 | Opt, VT, LED, grn-red, SPR-325MVW |
| D111~113 | | N/A |
| D114~118 | 8234 5058 00 | Opt, VT, LED, grn-red, SPR-325MVW |

### RESISTORs

| Ref. No. | Part No. | Description |
|---|---|---|
| R001 | | N/A |
| R002 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R003~008 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R009 | | N/A |
| R010, 011 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R012~015 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R016 | 8240 2930 08 | Pot, PI, RT09, 500kΩB, EVUF2A, 25 |
| R017 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R018 | 8230 5104 73 | ST, carbon, 1/15W, 47kΩ, 5% |
| R019 | | N/A |
| R020~027 | 8230 5104 73 | ST, carbon, 1/15W, 47kΩ, 5% |
| R031~038 | 8230 1381 01 | HT, carbon, 1/4W, 100Ω, 5% |
| R039~046 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R054~059 | 8240 2960 01 | Slide VR, EWAQF X05, 10kΩB |
| R064~068 | 8240 2960 01 | Slide VR, EWAQF X05, 10kΩB |

### CAPACITORs

ALU = Electrolytic type

CER = Ceramic type

| Ref. No. | Part No. | Description |
|---|---|---|
| C001 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C002 | | N/A |
| C003 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C004 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C005 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C006 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C007, 008 | 8233 5123 00 | ST, CER, 50V, 30pF, 5%, CC11SL |
| C009 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C010, 011 | | N/A |
| C012 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C013 | | N/A |
| C014, 015 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C016 | 8233 5134 71 | ST, CER, 50V, 470pF, 15%, CC11R |
| C017~023 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C051 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C052~059 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C305~308 | 8233 5151 04 | ST, CER, 25V, 0.1µF, +80, CC11F |

### MISCELLANEOUS

| Ref. No. | Part No. | Description |
|---|---|---|
| E0901, 02 | | N/A |
| E0903 | | Jumper, F5.0 |
| E0904 | | Jumper, F7.5 |
| E0905 | | Jumper, F10.0 |
| E0906 | | Jumper, F12.5 |
| E0907 | | Jumper, F15.0 |
| E0908 | | Jumper, F20.0 |
| E0909 | | Jumper, F25.0 |
| E0910 | | Jumper, F30.0 |
| J001 | | N/A |
| J002 | 8245 3220 20 | Connector, PI , header, 20P, P2.0, 9210B |
| J010, 011 | 8245 3600 12 | Connector, PL, socket, 12P, 9110S-12L |
| L001, 002 | 8239 1160 00 | Lamp, 5V, 75mA |
| L003, 004 | | N/A |
| L005~007 | 8242 5041 21 | Filter, ST, EMI, EXC3BP,121 |
| S001~003 | | N/A |
| S004~048 | 8253 1350 02 | SW, PT, tact, SKQNAB |
| S049~051 | | N/A |
| S052~058 | 8253 1350 02 | SW, PT, tact, SKQNAB |
| S059~064 | | N/A |
| W001 | 8276 7790 50 | Cable assy, 9P, WHTMT/F-MT/BS, L500 |
| W002 | 8276 7800 35 | Cable assy, 10P, WHTMT/F-MT/BS, L350 |
| X001 | 8256 5004 01 | Resonator, PT, CER, 16.00MHz, CSA |

**• LCD assy**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8260 5740 00 | Assy, LCD, VF-16 |

| Ref. No. | Part No. | Description |
|---|---|---|
| A101 | 8260 5750 00 | LCD module, 128 x 64 |
| A102 | 8274 2560 00 | PCB assy, LCD, VF-16 |

**• LCD Module**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8260 5750 00 | Module, LCD, VF-16 |

| Ref. No. | Part No. | Description |
|---|---|---|
| E101 | 8256 1860 00 | Display, LCD, 128 x 64 |
| E102 | 8236 0856 00 | IC, TCP, driver, T6K04 |
| Y101 | 8216 6961 00 | ACF, AC-7104, 2 x 55mm |
| A101 | 8260 5750 50 | LD sub module, 128 x 64 |

**• LCD PCB assy**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8274 2560 00 | PCB Assy, LCD, VF-16 |
| | 8251 9922 01 | Plain PCB, LCD, VF-16 |

| Ref. No. | Part No. | Description |
|---|---|---|
| R001 | 8230 5107 53 | Resistor, ST, carbon, 1/15W, 75kΩ, 5% |
| R002 | | N/A |
| C001 | | N/A |
| C002 | 8232 1431 06 | Capacitor, VT, ALU, 16V, 10µF, 20%, SME-VB |
| C003 | 8233 5131 03 | Capacitor, ST, CER, 50V, 0.01µF, 15%, CC11R |
| C004 | 8232 1462 25 | Capacitor, VT, ALU, 50V, 2.2µF, 20%, SME-VB |
| C005~009 | 8232 1461 05 | Capacitor, VT, ALU, 50V, 1µF, 20%, SME-VB |
| C010~012 | 8232 1462 25 | Capacitor, VT, ALU, 50V, 2.2µF, 20%, SME-VB |
| J001 | 8245 3230 20 | Connector, PI, socket, 20P, P2.0, 9269S-B |

**• MIC/MON PCB assy**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8274 2530 00 | PCB Assy, MIC/MON, VF-16 |
| | 8251 9973 01 | Plain PCB, MIC/MON, VF-16 |

**ICs**

| Ref. No. | Part No. | Description |
|---|---|---|
| U001~004 | 8236 5405 00 | SOP, AN, NJM2068MD (TEI) |
| U005 | 8236 5412 00 | ST, AN, op amp, NJM4565M |
| U006 | 8236 7205 00 | ST, AN, NJM4556AM |
| U130, 230 | 8236 5702 01 | ST, DG, driver, DTC314TK |
| U161~861 | 8236 5704 01 | ST, DG, driver, DTA114EK |

**TRANSISTORs**

| Ref. No. | Part No. | Description |
|---|---|---|
| Q161~861 | 8234 6003 05 | ST, NPN, 2SC2412KR/S |

**DIODEs**

| Ref. No. | Part No. | Description |
|---|---|---|
| D701, 801 | 8234 5028 00 | ST, DAN202K |
| D702, 802 | 8234 5029 00 | ST, DAP202K-T146 |

**RESISTORs**

| Ref. No. | Part No. | Description |
|---|---|---|
| R001, 002 | 8240 2940 02 | Pot, PI, RT12, 10kΩAA, EVJY15 |
| R005, 006 | 8230 5034 79 | ST, carbon, 1/2W, 4.7Ω, 5% |
| R101~601 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R102~602 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R103~603 | 8230 5103 90 | ST, carbon, 1/15W, 39Ω, 5% |
| R104~604 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R105~605 | | N/A |
| R120~620 | 8240 2930 05 | Pot, PI, RT09, 20kΩC, EVUF2L |
| R701, 801 | 8230 5126 82 | ST, carbon, 1/4W, 6.8kΩ, 1% |
| R702, 802 | 8230 5126 82 | ST, carbon, 1/4W, 6.8kΩ, 1% |
| R703, 803 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R704, 804 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R705, 805 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R706, 806 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R707, 807 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R708, 808 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R709, 809 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R710, 810 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R711, 811 | 8230 5101 01 | ST, carbon, 1/15W, 100Ω, 5% |
| R712, 812 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R713, 813 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R720, 820 | 8240 2940 04 | Pot, PI, RT12, 500kΩCC, EVJY95 |
| R130, 230 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R131, 231 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R132, 232 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R133, 233 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R134, 234 | 8230 5101 02 | ST, carbon, 1/15W, 1kΩ, 5% |
| R150, 250 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R151, 251 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R151, 252 | 8230 5101 04 | ST, carbon, 1/15W, 100kΩ, 5% |
| R153, 253 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R154, 254 | 8230 5035 60 | ST, carbon, 1/2W, 56Ω, 5% |
| R161~661 | 8230 5102 73 | ST, carbon, 1/15W, 27kΩ, 5% |
| R761, 861 | 8230 5101 33 | ST, carbon, 1/15W, 13kΩ, 5% |
| R162~662 | 8230 5103 32 | ST, carbon, 1/15W, 3.3kΩ, 5% |
| R762, 862 | 8230 5101 03 | ST, carbon, 1/15W, 10kΩ, 5% |
| R163~663 | 8230 5104 74 | ST, carbon, 1/15W, 470kΩ, 5% |
| R763, 863 | 8230 5101 05 | ST, carbon, 1/15W, 1MΩ, 5% |
| R164~864 | 8230 5022 02 | ST, carbon, 1/4W, 2kΩ, 5% |

**CAPACITORs**

ALU = Electrolytic type

CER = Ceramic type

| Ref. No. | Part No. | Description |
|---|---|---|
| C001~010 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C011, 012 | 8232 1432 27 | VT, ALU, 16V, 220µF, 20%, SME-VB |
| C015 | | N/A |
| C101~601 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C102~602 | | N/A |
| C103~603 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C104~604 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C105~605 | 8232 1421 07 | VT, ALU, 10V, 100µF, 20%, SME-VB |
| C106~606 | 8232 1424 76 | VT, ALU, 10V, 47µF, 20%, SME-VB |
| C701, 801 | 8233 5131 03 | ST, CER, 50V, 0.01µF, 15%, CC11R |
| C702, 802 | 8232 2964 76 | VT, ALU, 50V, 47µF, 20%, LLA |
| C703, 803 | 8232 2964 76 | VT, ALU, 50V, 47µF, 20%, LLA |
| C704, 804 | 8232 1504 76 | VT, ALU, 16V, 47µF, 20%, SME-VP-BP |
| C705, 805 | 8232 1504 76 | VT, ALU, 16V, 47µF, 20%, SME-VP-BP |
| C706, 806 | | N/A |
| C707, 807 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C708, 808 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C709, 809 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C710, 810 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C711, 811 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |

| Ref. No. | Part No. | Description |
|---|---|---|
| C712, 812 | 8233 5131 01 | ST, CER, 50V, 100pF, 15%, CC11R |
| C130, 230 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C131, 231 | | N/A |
| C132, 232 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C133, 233 | 8232 1431 06 | VT, ALU, 16V, 10µF, 20%, SME-VB |
| C151, 251 | | N/A |
| C152, 252 | 8233 5122 20 | ST, CER, 50V, 22pF, 5%, CC11SL |
| C153, 253 | 8232 1432 27 | VT, ALU, 16V, 220µF, 20%, SME-VB |
| C161~861 | 8233 5164 74 | ST, CER, 16V, 0.47µF, 20%, KC20E |

**MISCELLANEOUS**

| Ref. No. | Part No. | Description |
|---|---|---|
| J001 | 8245 2721 17 | Connector, PL, jack, FPC, 17P |
| J002 | 8245 3570 00 | Connector, PI, jack, phone, NY234 |
| J003 | 8245 1721 09 | Connector, PL, jack, 8283, 9P, WHT |
| J101~801 | 8245 3570 00 | Connector, PI, jack, phone, NY234 |
| J702, 802 | 8245 3570 00 | Connector, PI, jack, phone, NY234 |
| J703, 803 | 8245 2680 00 | Connector, PI , jack, XLR31, 3P, NC3FAV1-0 |
| J130, 230 | 8245 3570 00 | Connector, PI, jack, phone, NY234 |
| L101~801 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L702, 802 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L703, 803 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L130, 230 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |
| L150, 250 | 8242 5041 21 | Filter, ST, EMI, EXC3BP, 121 |

**RESISTORs**

| Ref. No. | Part No. | Description |
|---|---|---|
| R051~053 | 8240 2960 01 | Slide VR, EWAQF X05, 10kΩB |
| R061~063 | 8240 2960 01 | Slide VR, EWAQF X05, 10kΩB |

**MISCELLANEOUS**

| Ref. No. | Part No. | Description |
|---|---|---|
| E0201 | | Jumper, F5.0 |
| E0202 | | Jumper, F7.5 |
| E0203 | | Jumper, F10.0 |
| J010, 011 | 8245 3610 12 | Connector, PL, header, 12P, 9176B-12L |
| S001~003 | 8253 1350 02 | SW, PT, tact, SOR-112HS |
| S049~051 | 8253 1350 02 | SW, PT, tact, SOR-112HS |

**• PEAK LED PCB assy**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8274 2770 00 | PCB Assy, Peak LED, VF-16 |
| | 8251 9962 02 | Plain PCB, Peak LED, VF-16 |

| Ref. No. | Part No. | Description |
|---|---|---|
| D201~208 | 8234 1046 01 | Diode, opt, LED, red, SLR-332VC-TE7 |
| E001 | | N/A |
| W201 | 8276 7790 20 | Cable assy, 9P, WHTMT/F-MT/BS, L200 |

**• KEY2 PCB assy**

| Ref. No. | Part No. | Description |
|---|---|---|
| | 8274 2790 00 | PCB Assy, Key2, VF-16 |
| | 8251 7050 00 | Plain PCB, Key2, VF-16 |

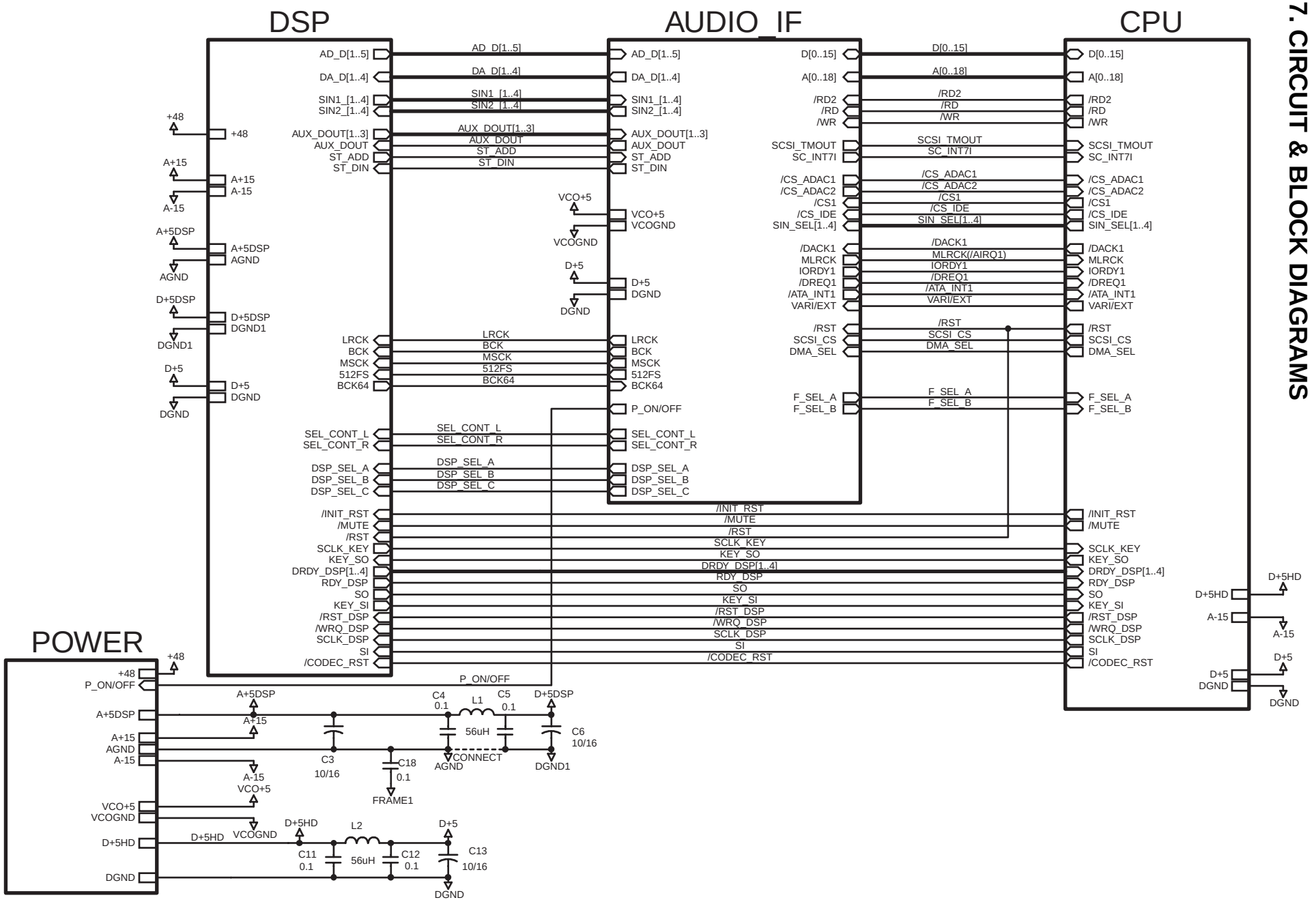
**DIODEs**

| Ref. No. | Part No. | Description |
|---|---|---|
| D001~003 | 8234 5007 00 | HT, 1SS136 |
| D049~051 | 8234 5007 00 | HT, 1SS136 |
| D103~105 | 8234 5058 00 | Opt, VT, LED, grn-red, SPR-325MVW |
| D111~113 | 8234 5058 00 | Opt, VT, LED, grn-red, SPR-325MVW |

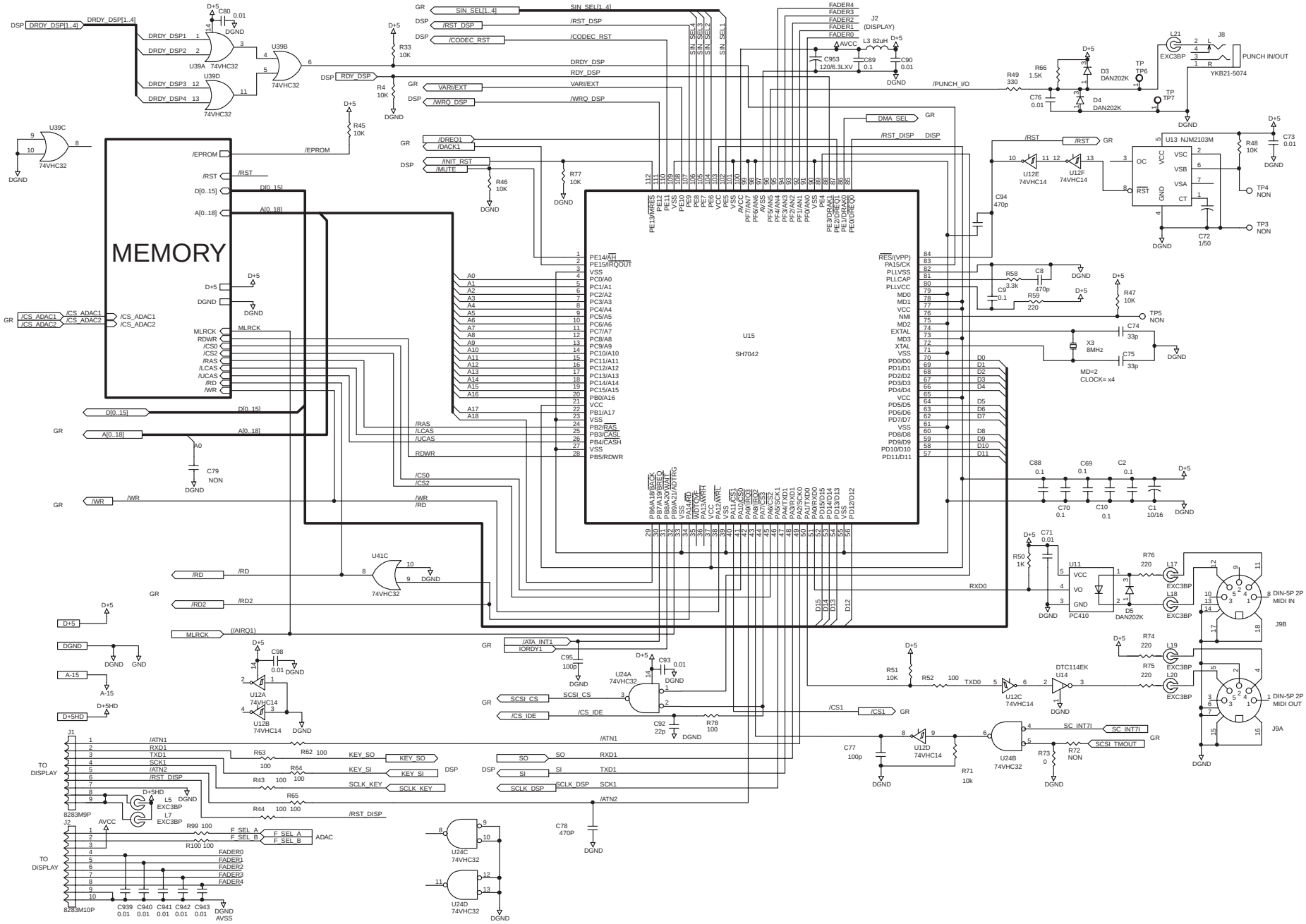
**● Abbreviation**

| | |
|---|---|
| S: | Surface mount |
| V: | Vertical mount |
| P: | Penetrate mount |
| T: | Taping device |
| F: | Forming device |
| L: | L form |
| I: | I form |
| SOJ: | Small Outline package with J leads |
| QFP: | Quad Flat Package |
| SOP: | Small Outline Package |
| TSOP: | Thin Small Outline Package |
| TSSOP: | Thin Shrink Small Outline Package |
| DIP: | Dual In-line Package |
| 220: | TO-220 type |
| DG: | Digital |
| AN: | Analog |

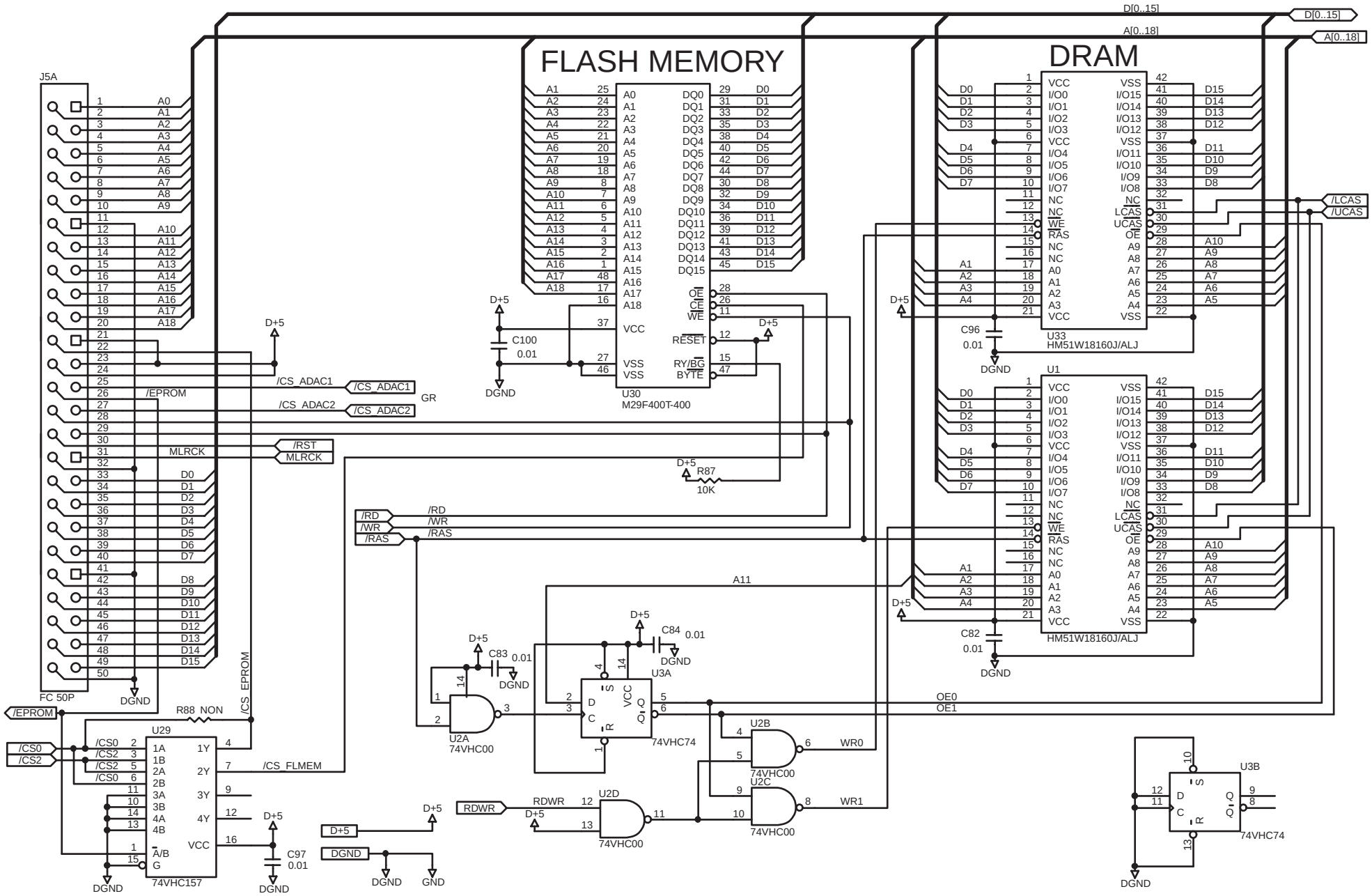
## ● ROOT, MAIN PCB, VF-16



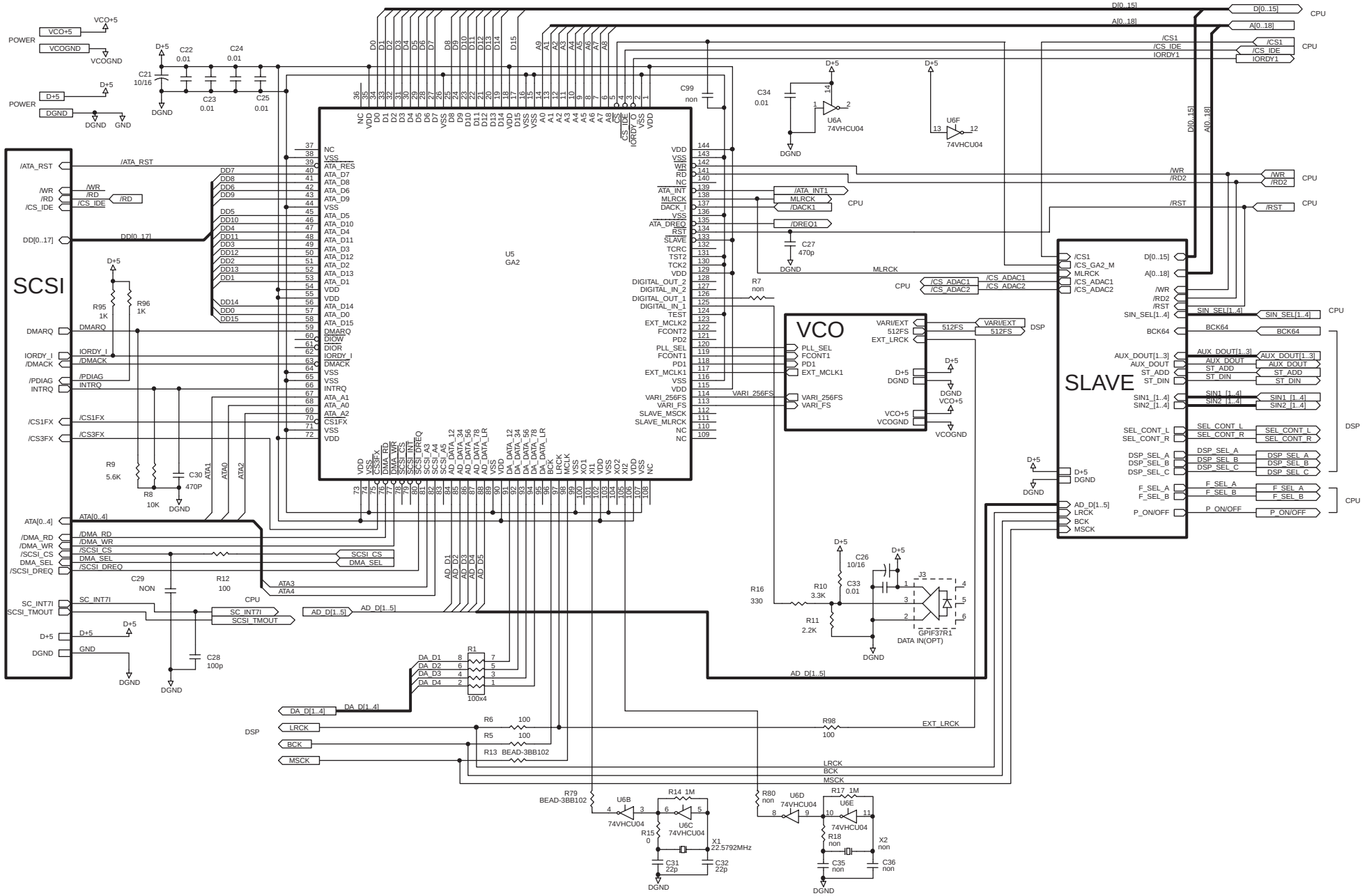
# ● CPU, MAIN PCB, VF-16



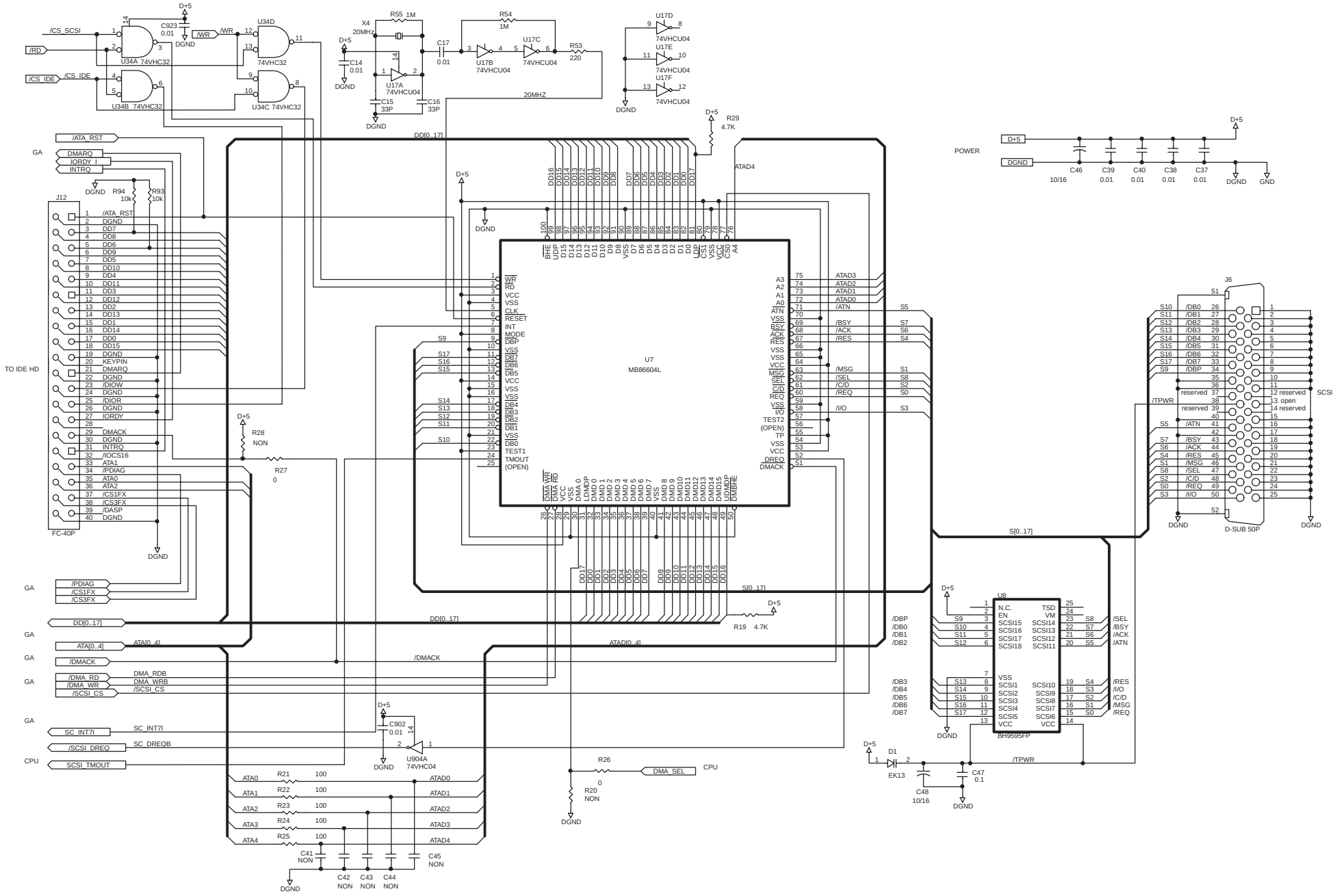
## ● MEMORY, MAIN PCB, VF-16



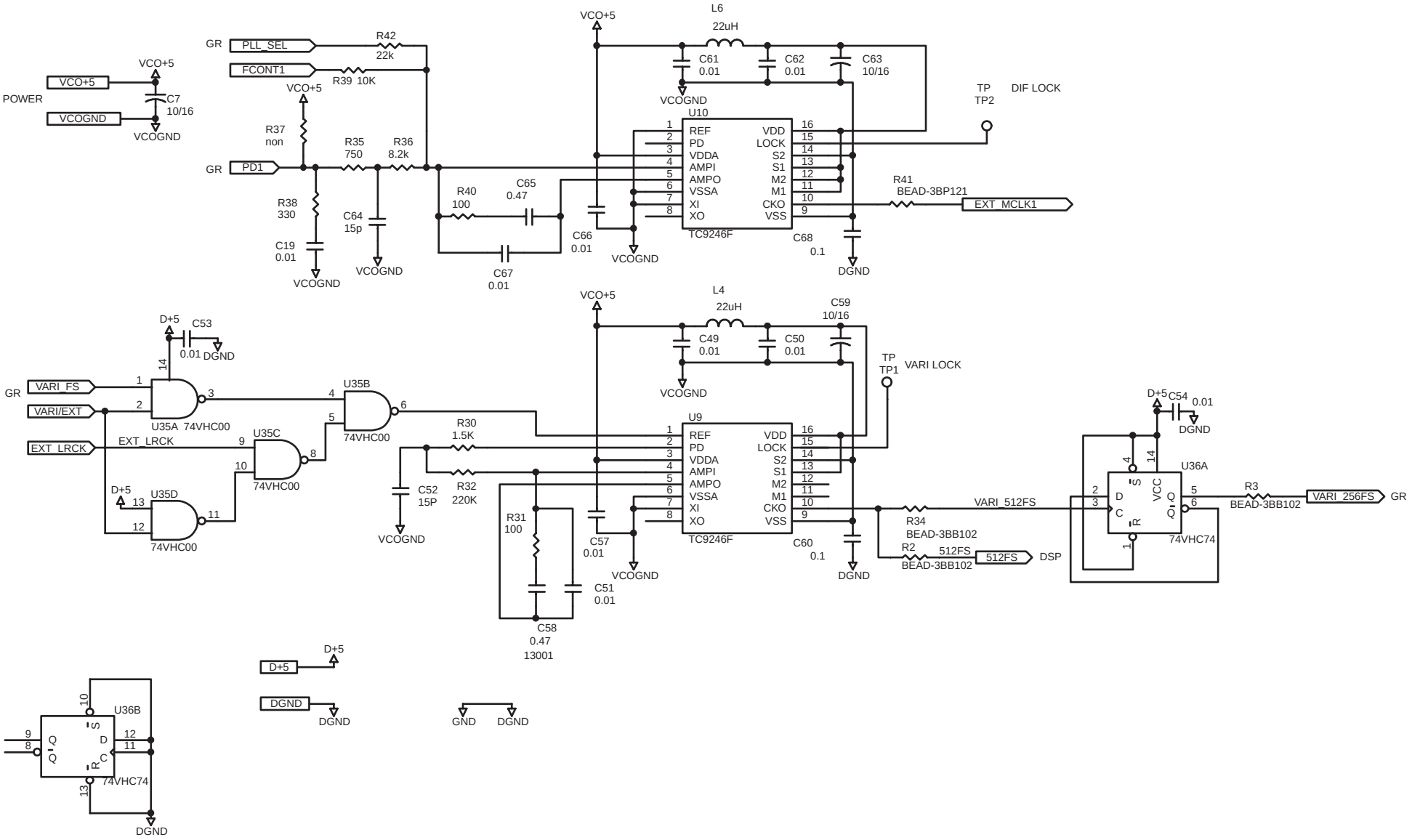
# ●GATE ARRAY, MAIN PCB, VF-16



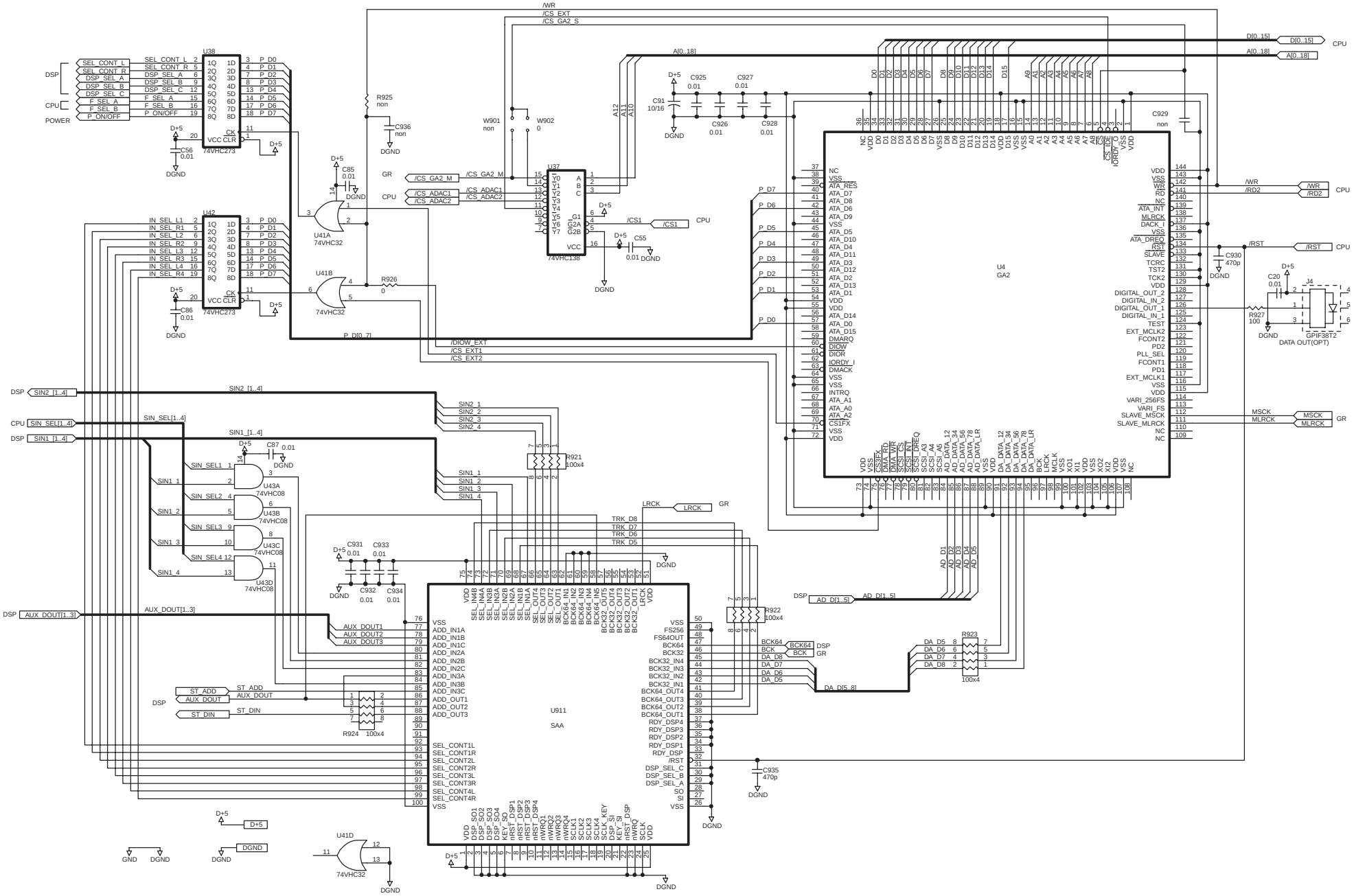
# ● SCSI I/F, MAIN PCB, VF-16



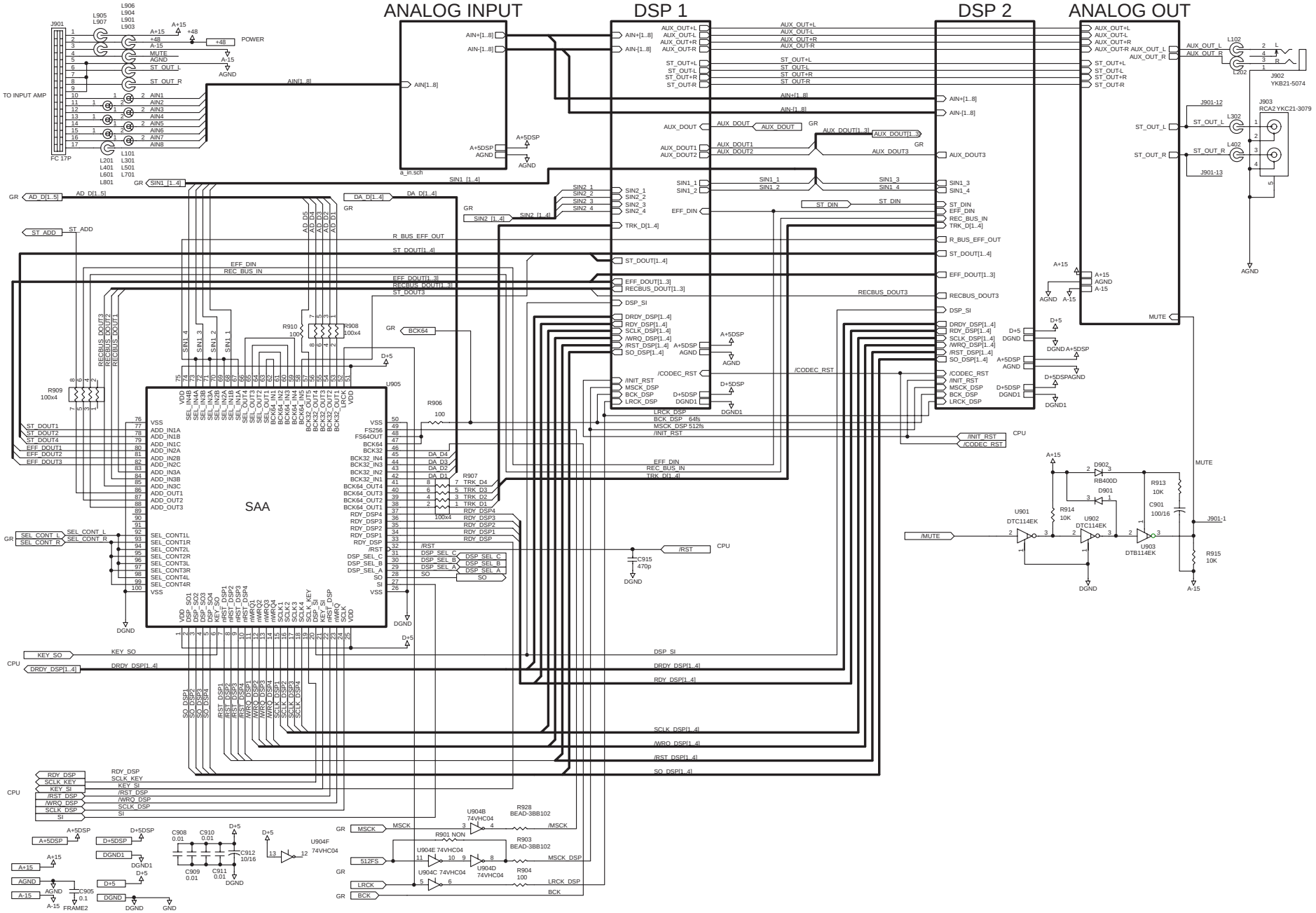
## ● VCO, MAIN PCB, VF-16



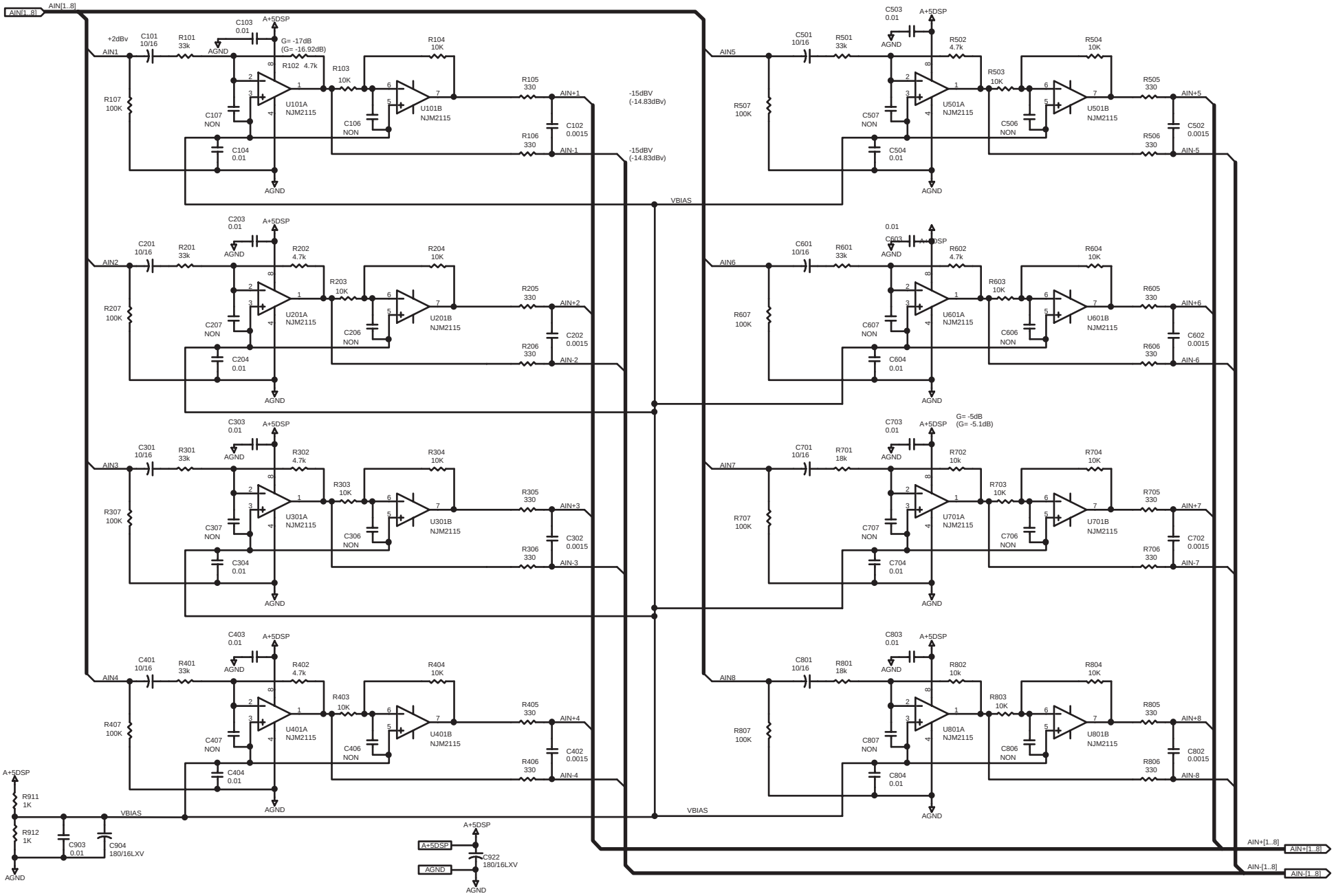
# ● SLAVE GR, MAIN PCB, VF-16



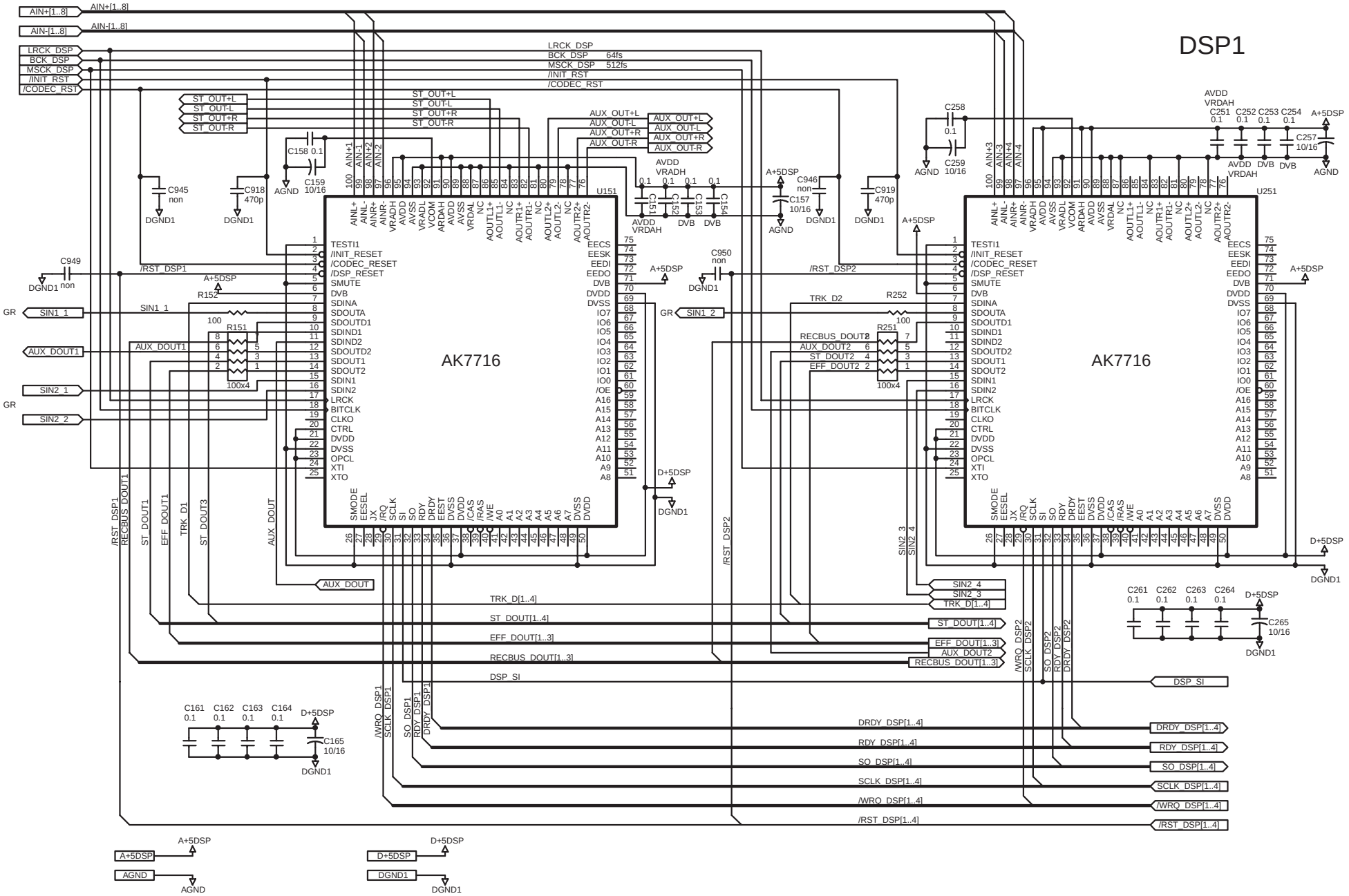
# ●ROOT, DSP, MAIN PCB, VF-16



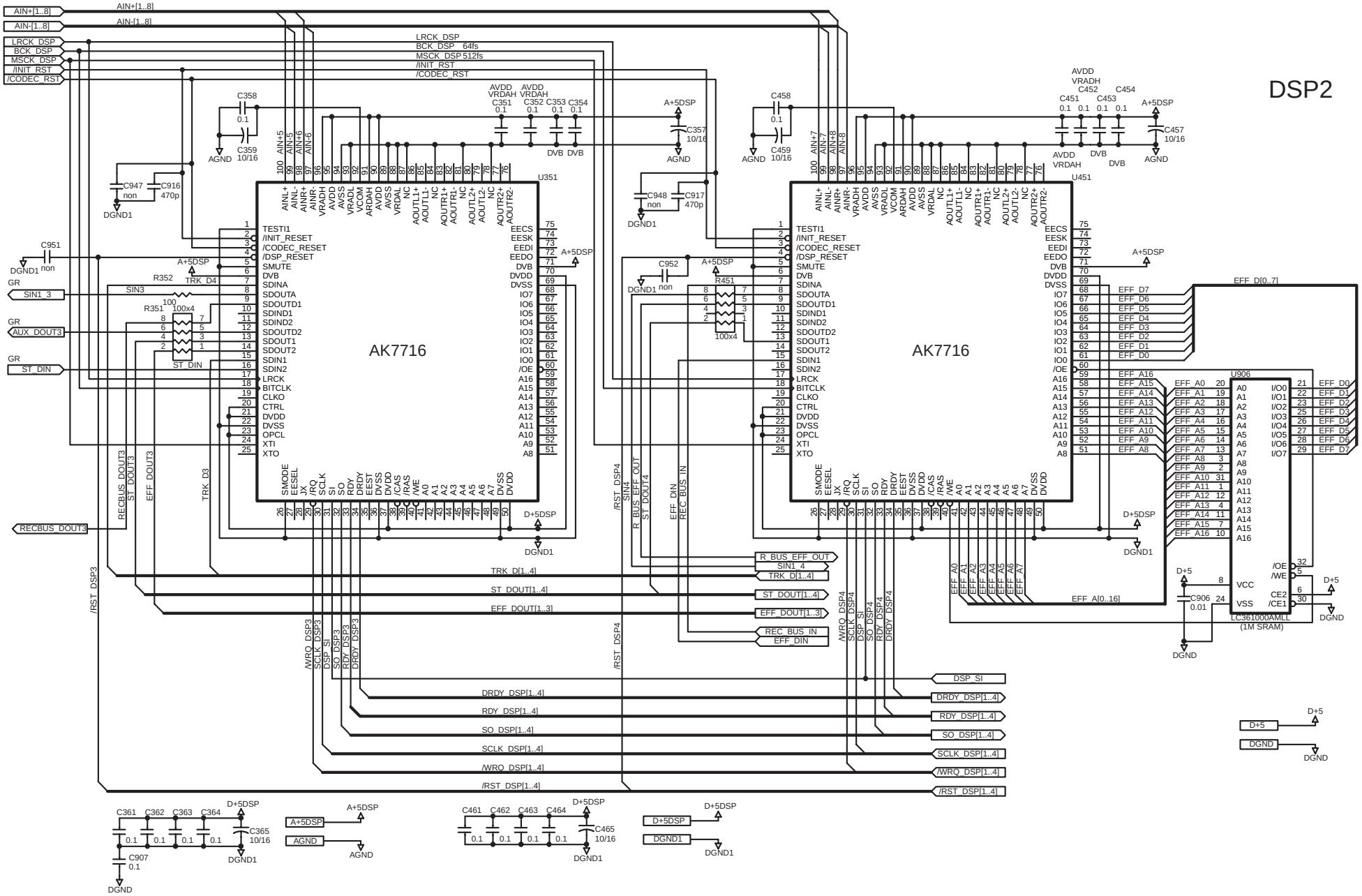
# ●ANALOG IN, MAIN PCB, VF-16



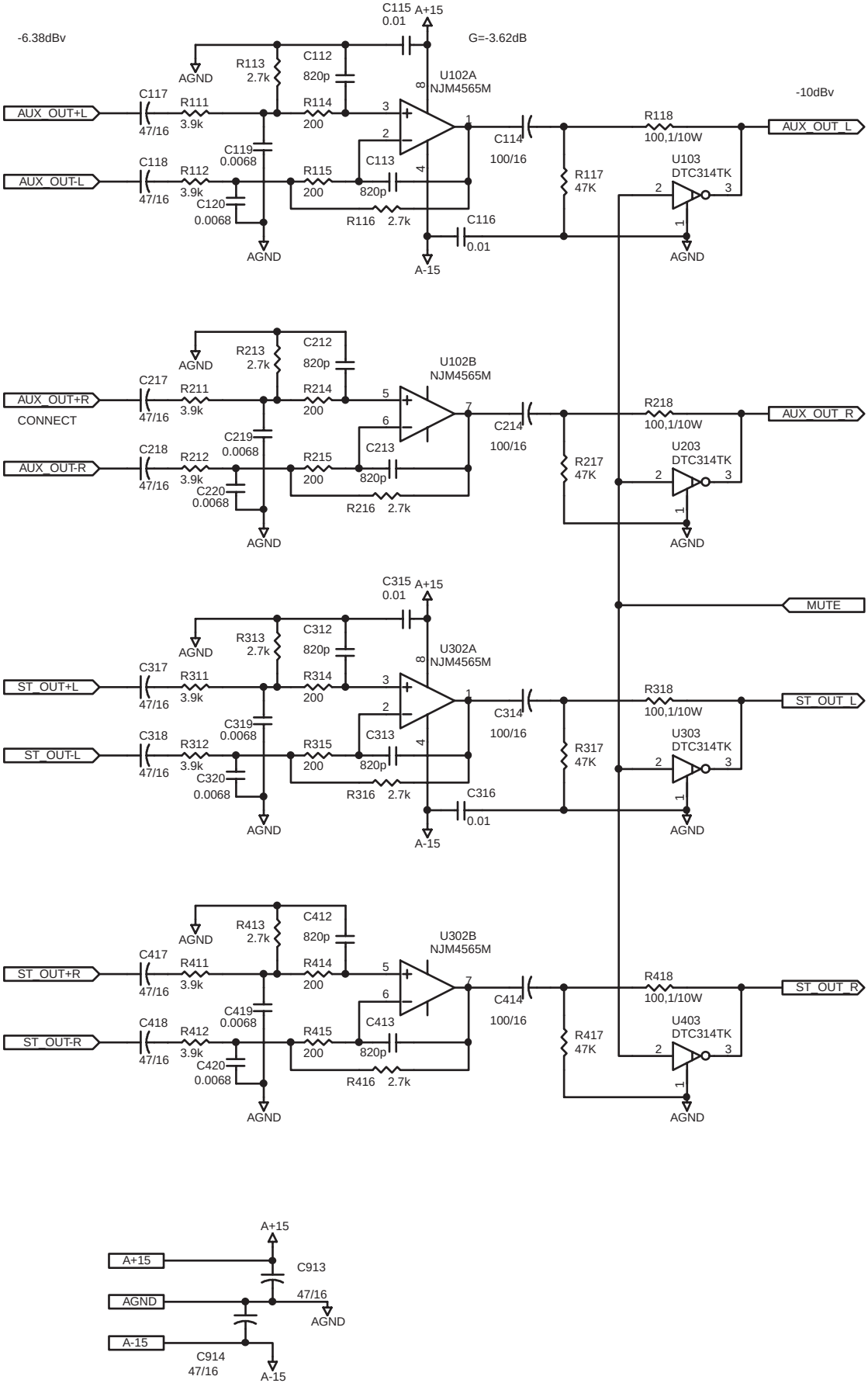
# ●DSP1, MAIN PCB, VF-16



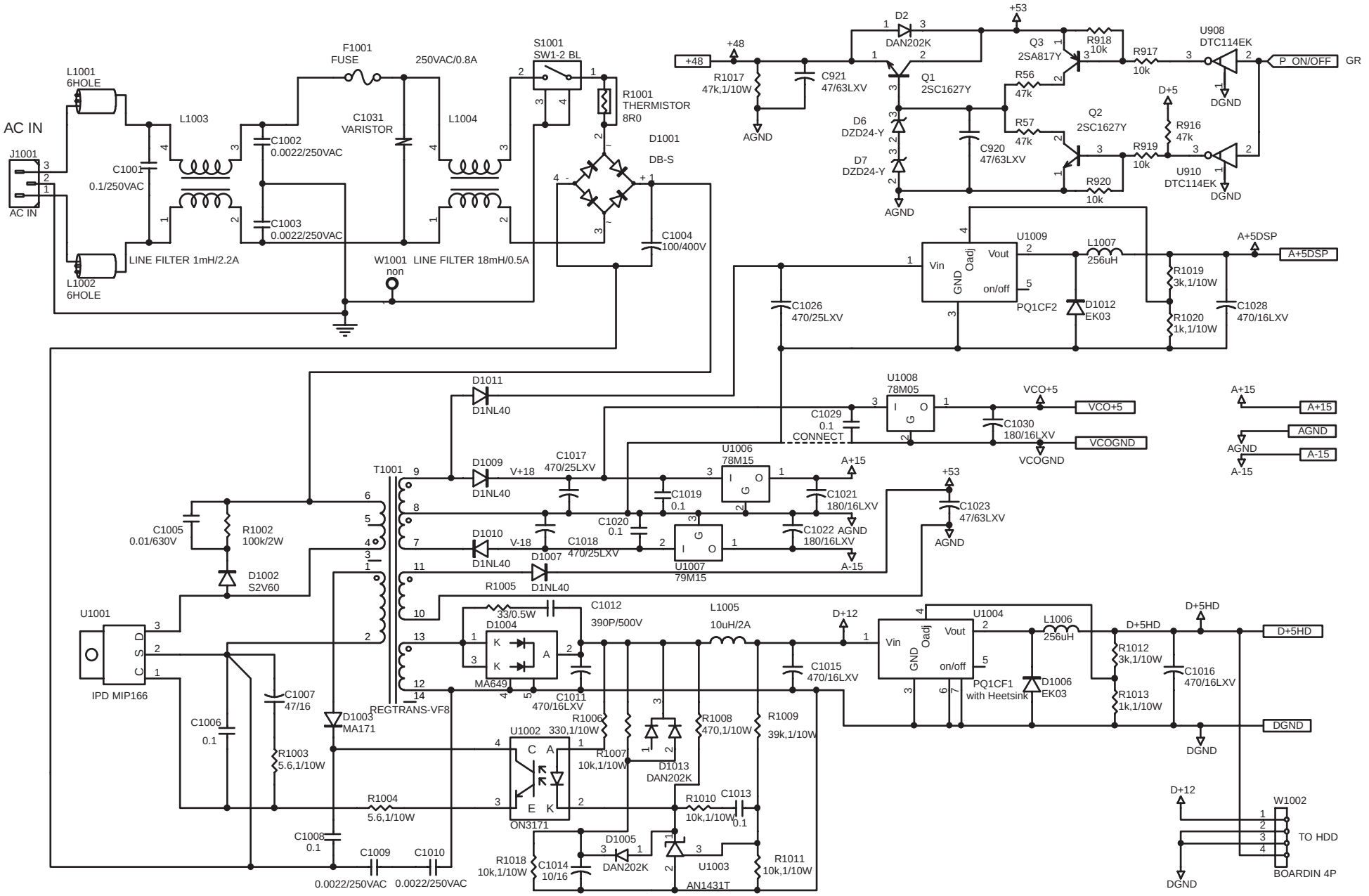
# ●DSP2, MAIN PCB, VF-16



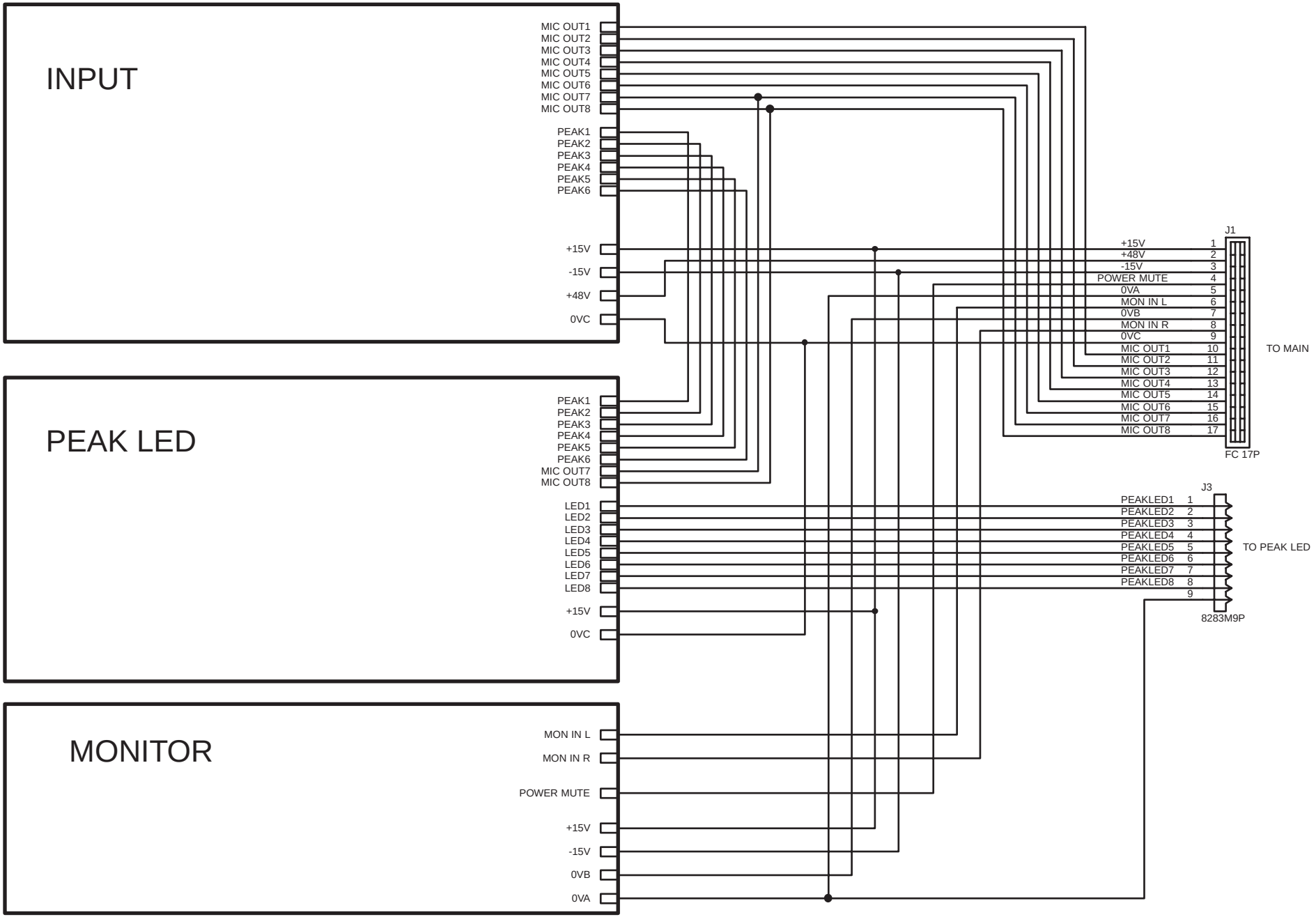
## ● ANALOG OUT, MAIN PCB, VF-16



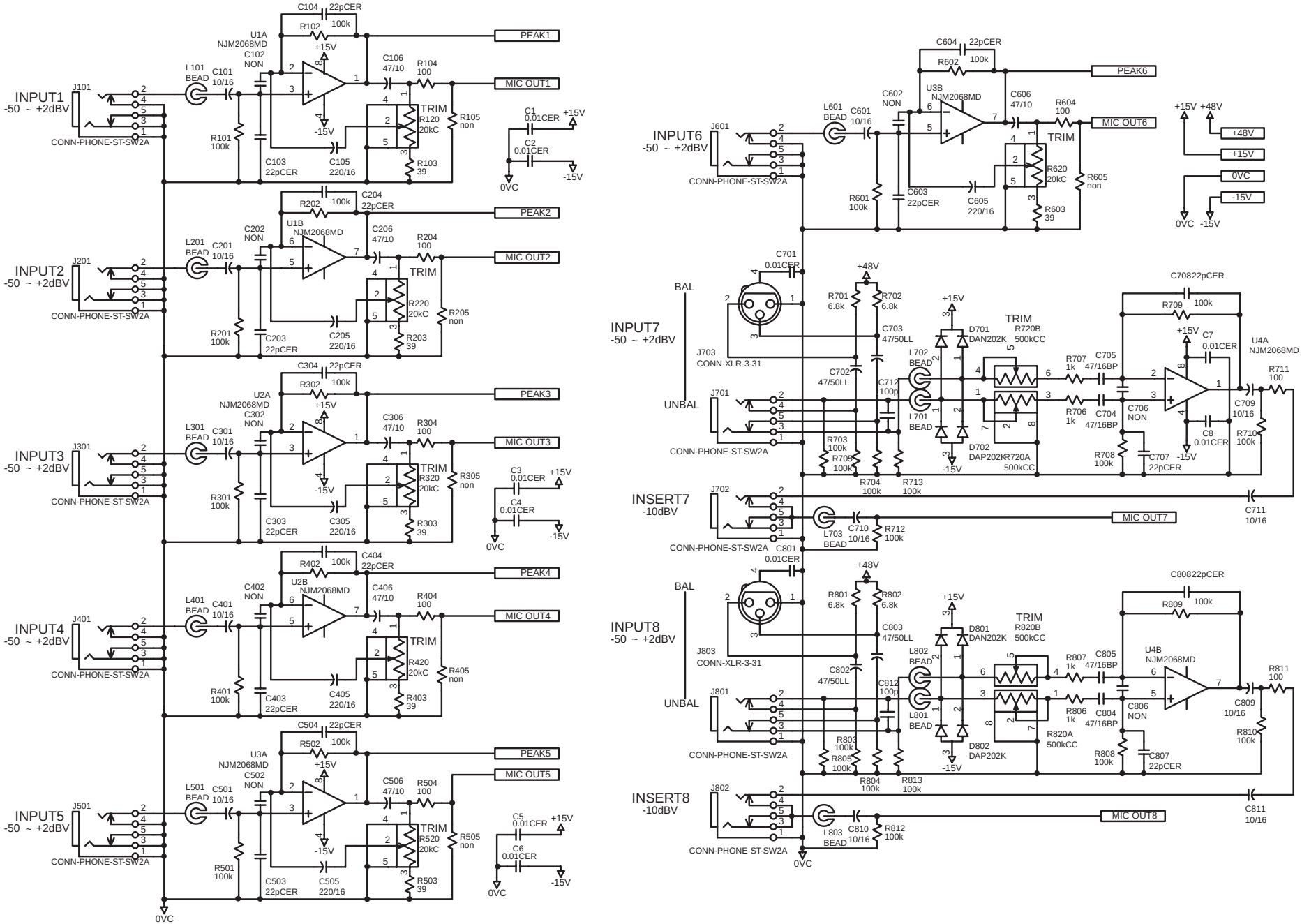
## ● POWER, MAIN PCB, VF-16



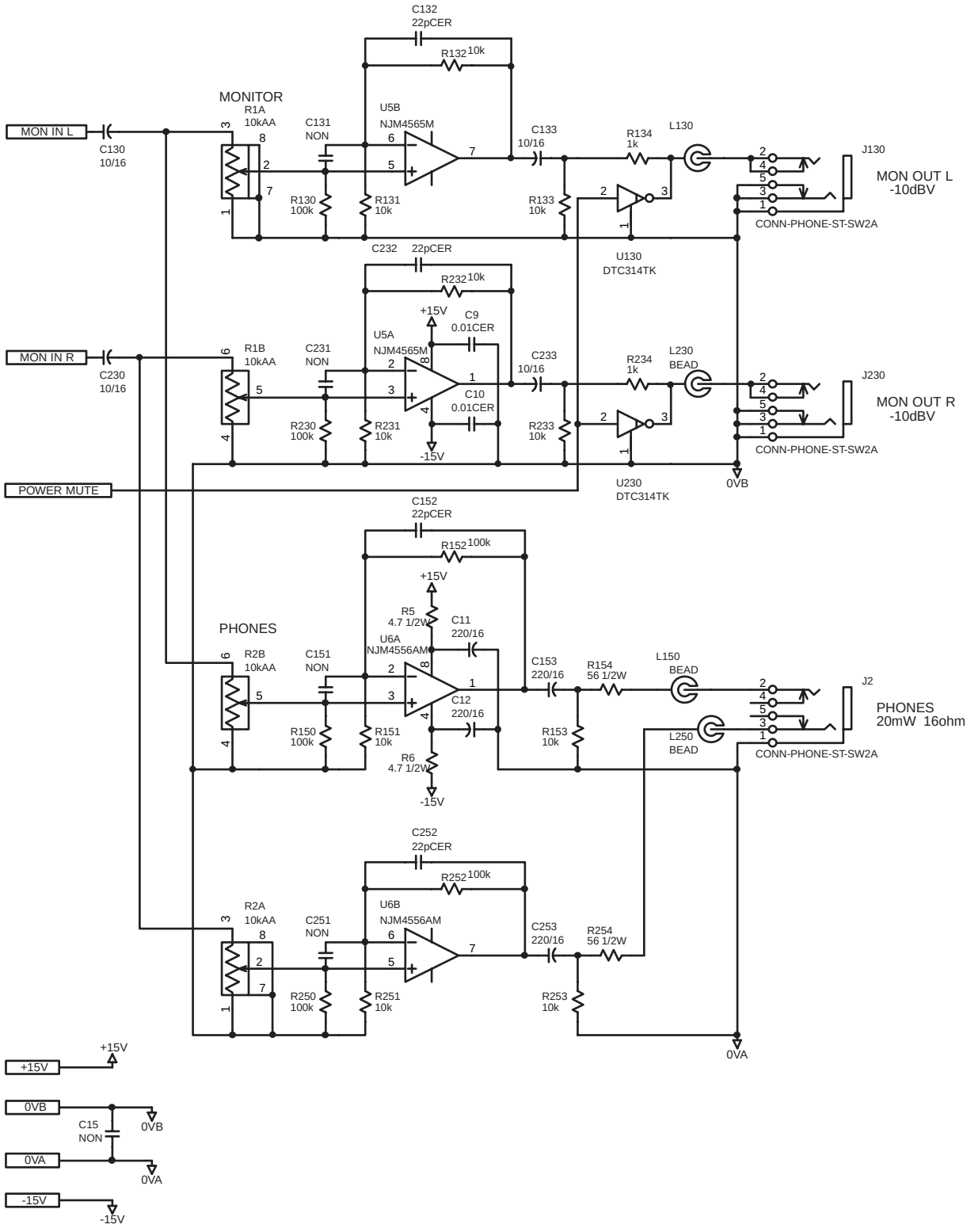
## ● ROOT, MIC/MONITOR PCB, VF-16



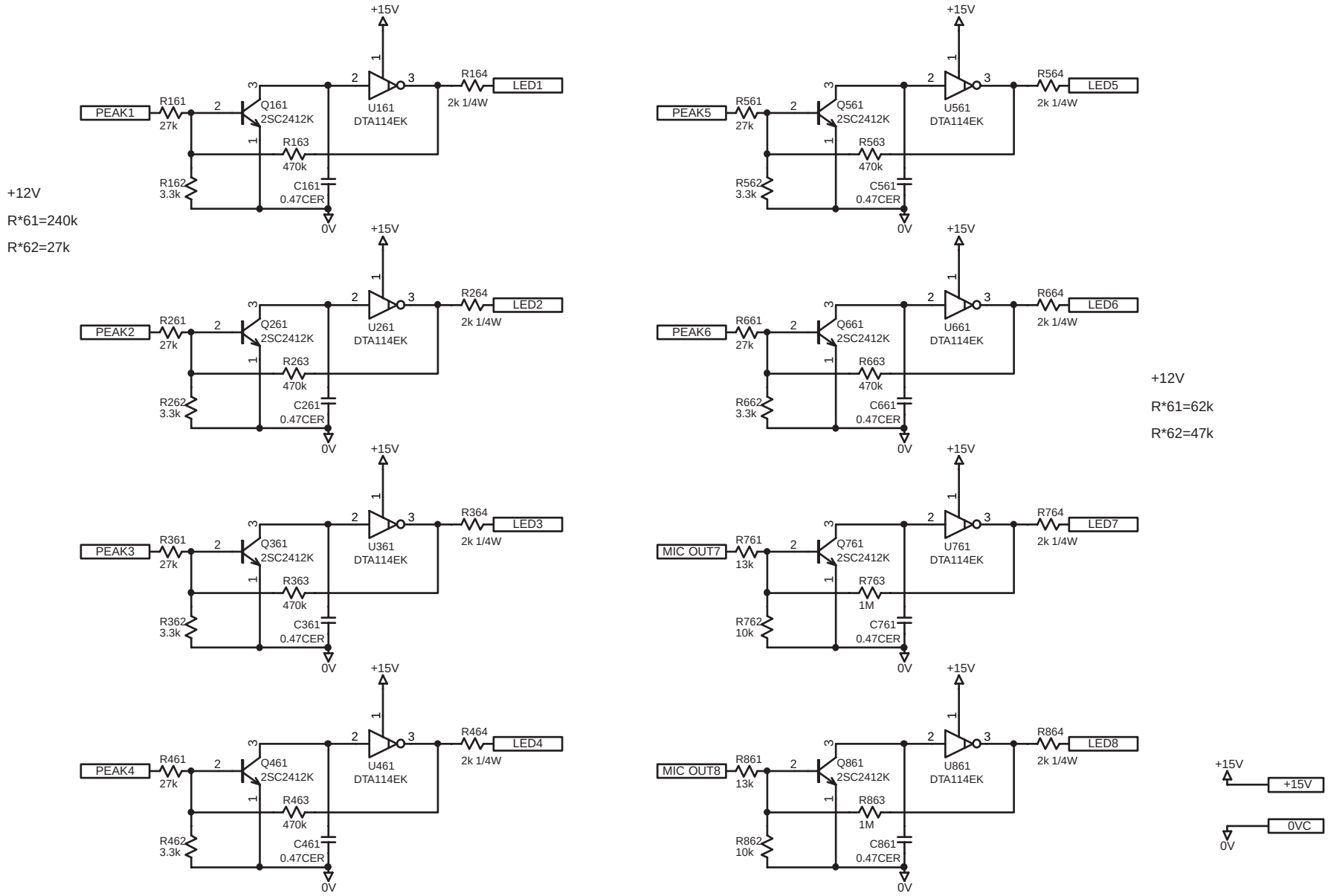
## ● INPUT, MIC/MONITOR PCB, VF-16



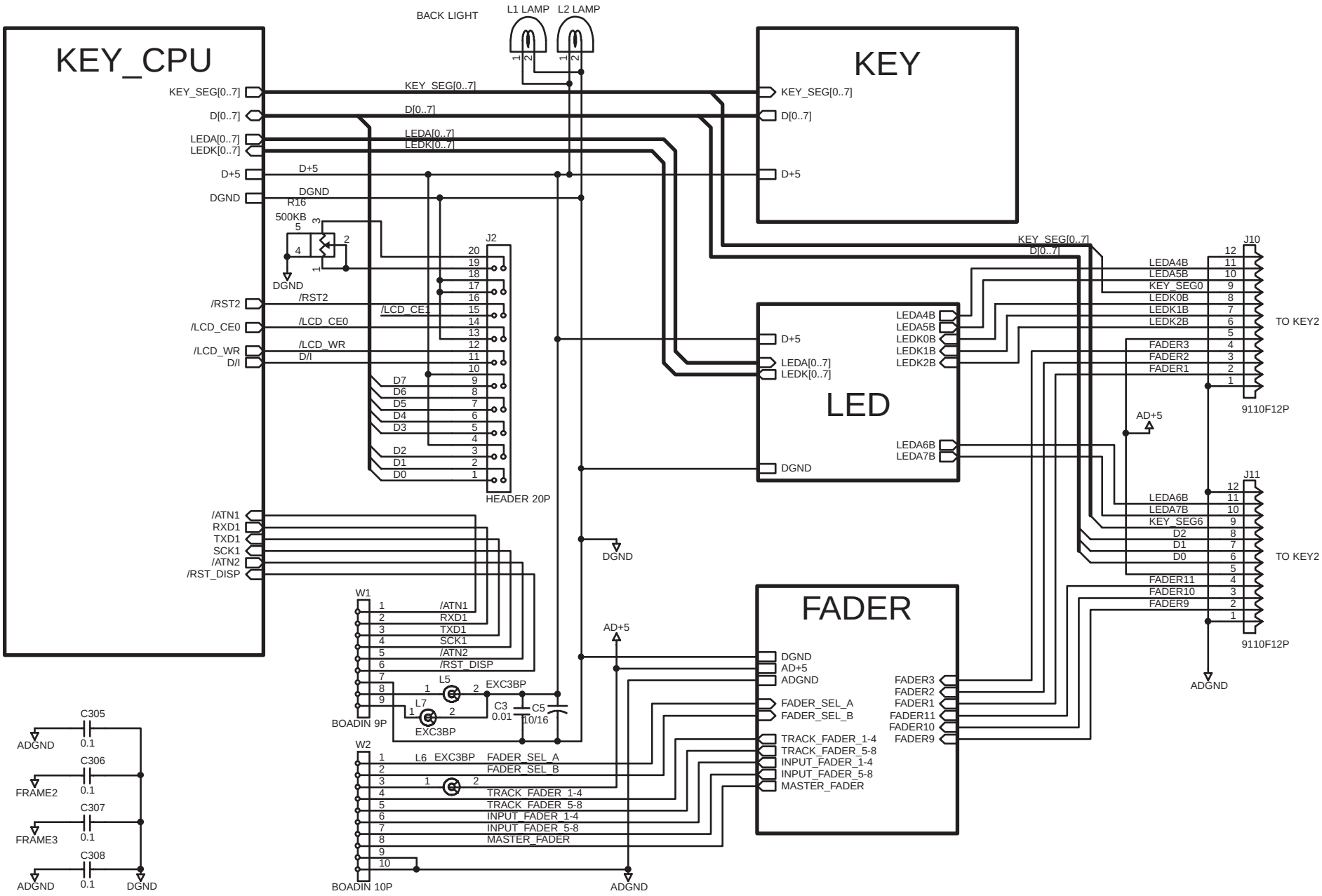
## ● MONITOR, MIC/MONITOR PCB, VF-16



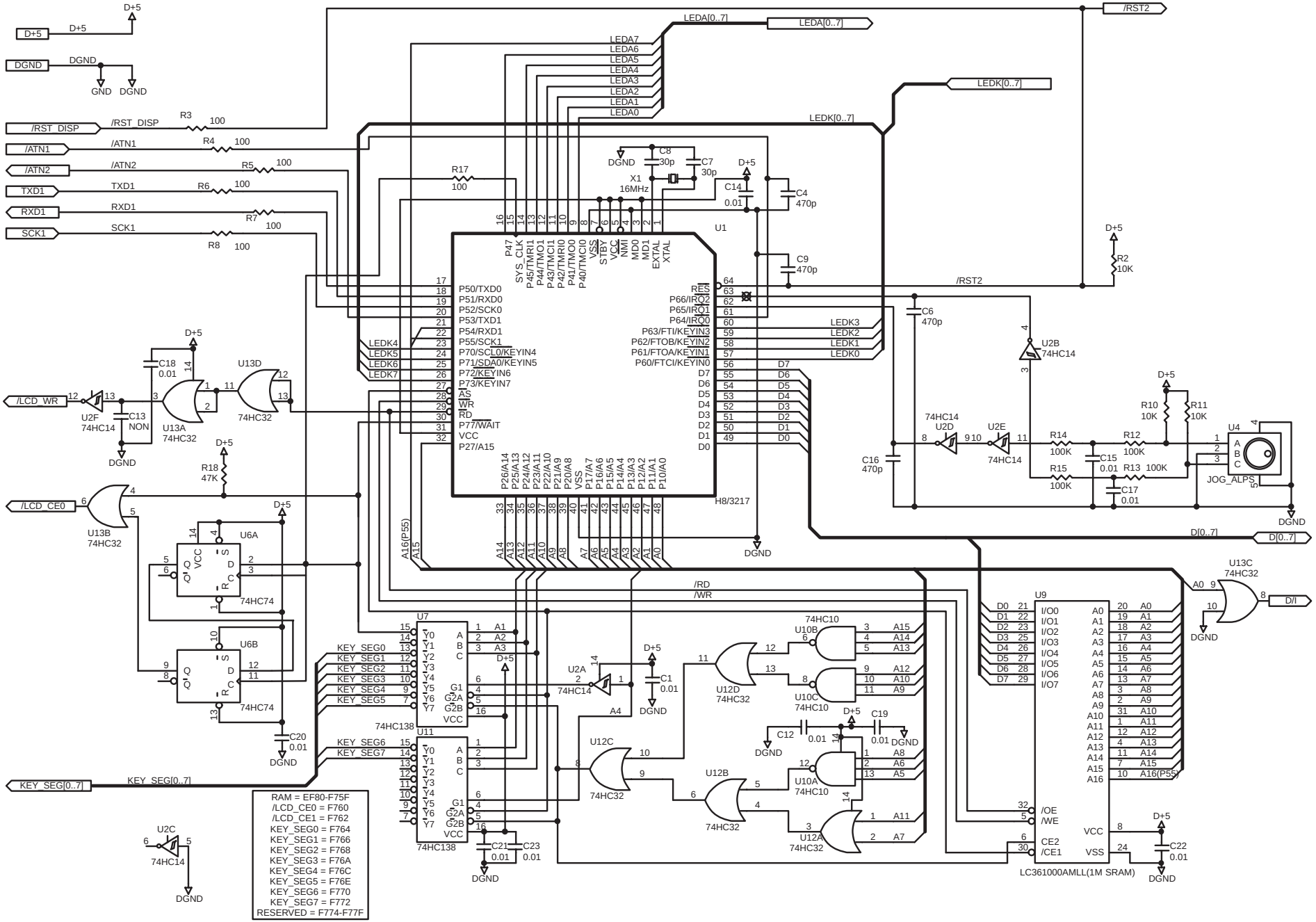
## ● PEAK LED, MIC/MONITOR PCB, VF-16



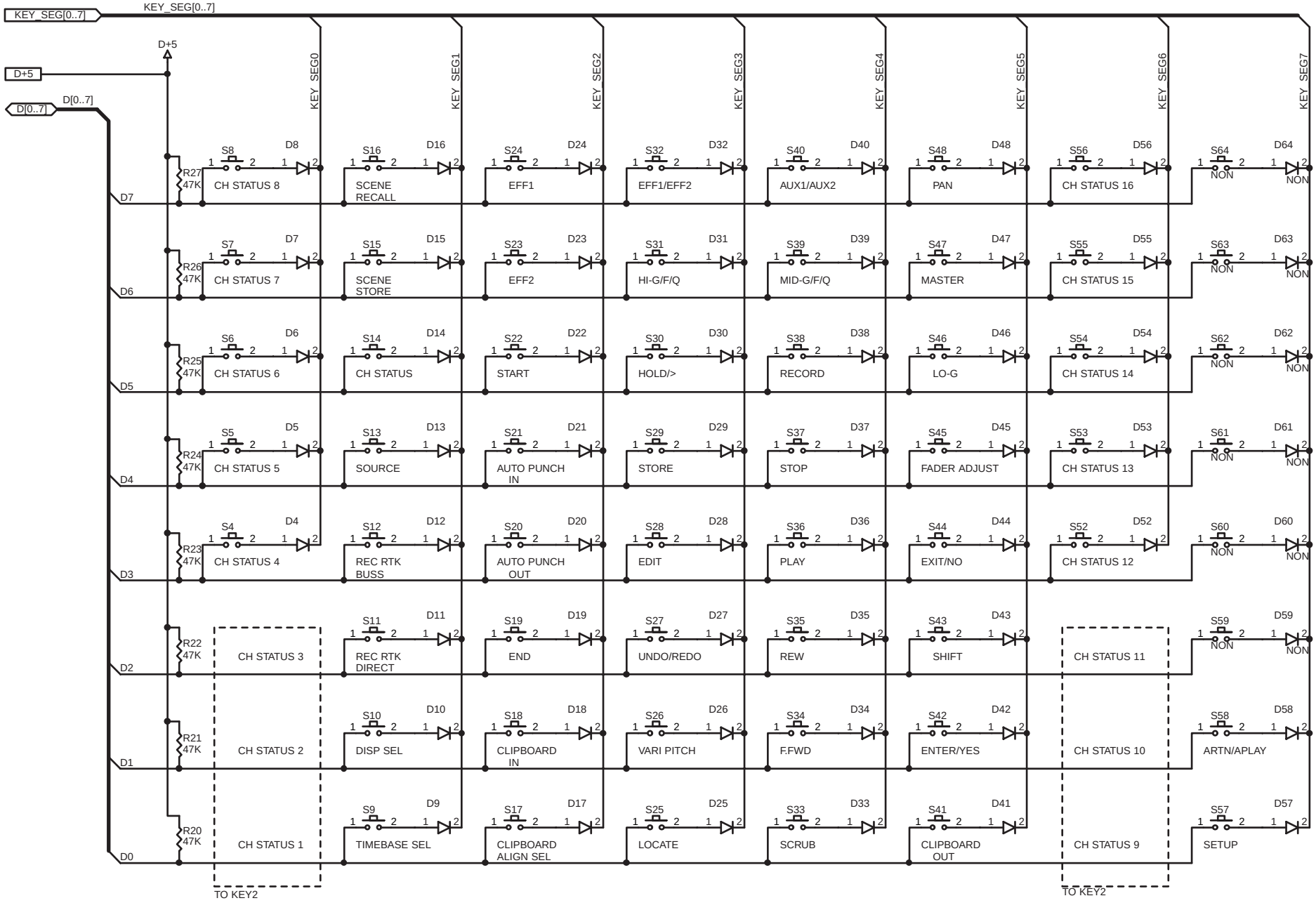
## ● ROOT, KEY PCB, VF-16



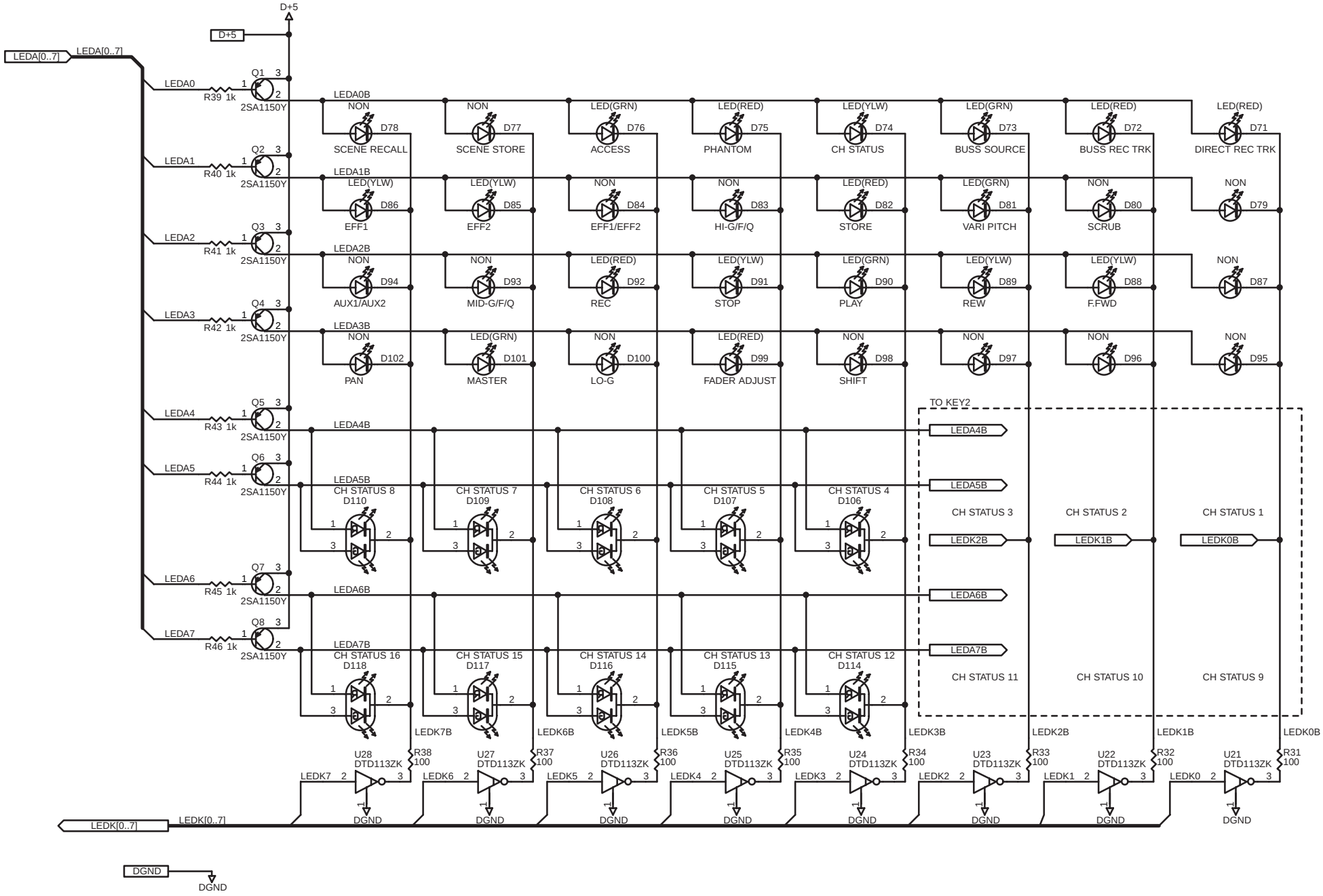
## ● CPU, KEY PCB, VF-16



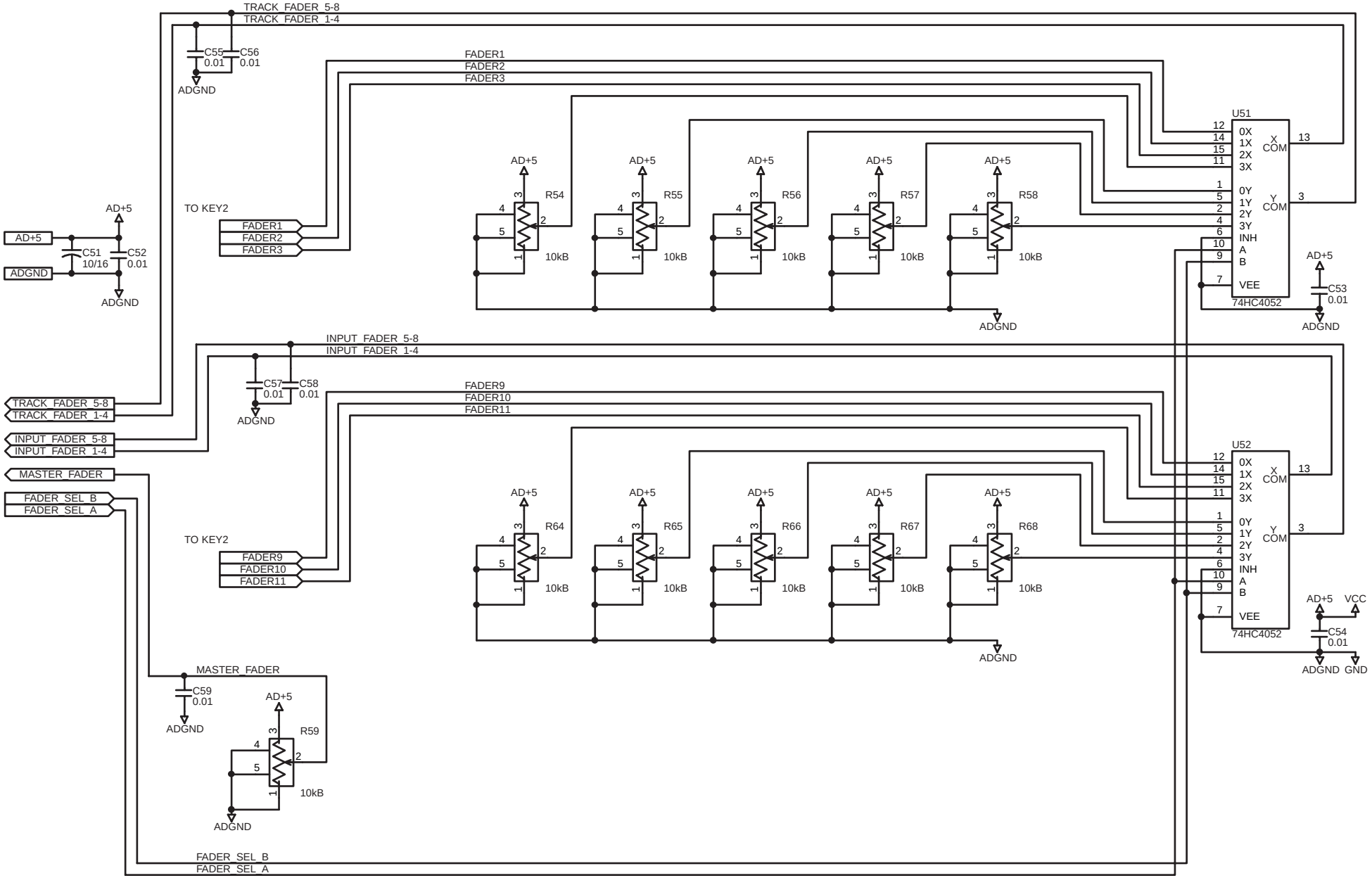
## ● KEY, KEY PCB, VF-16



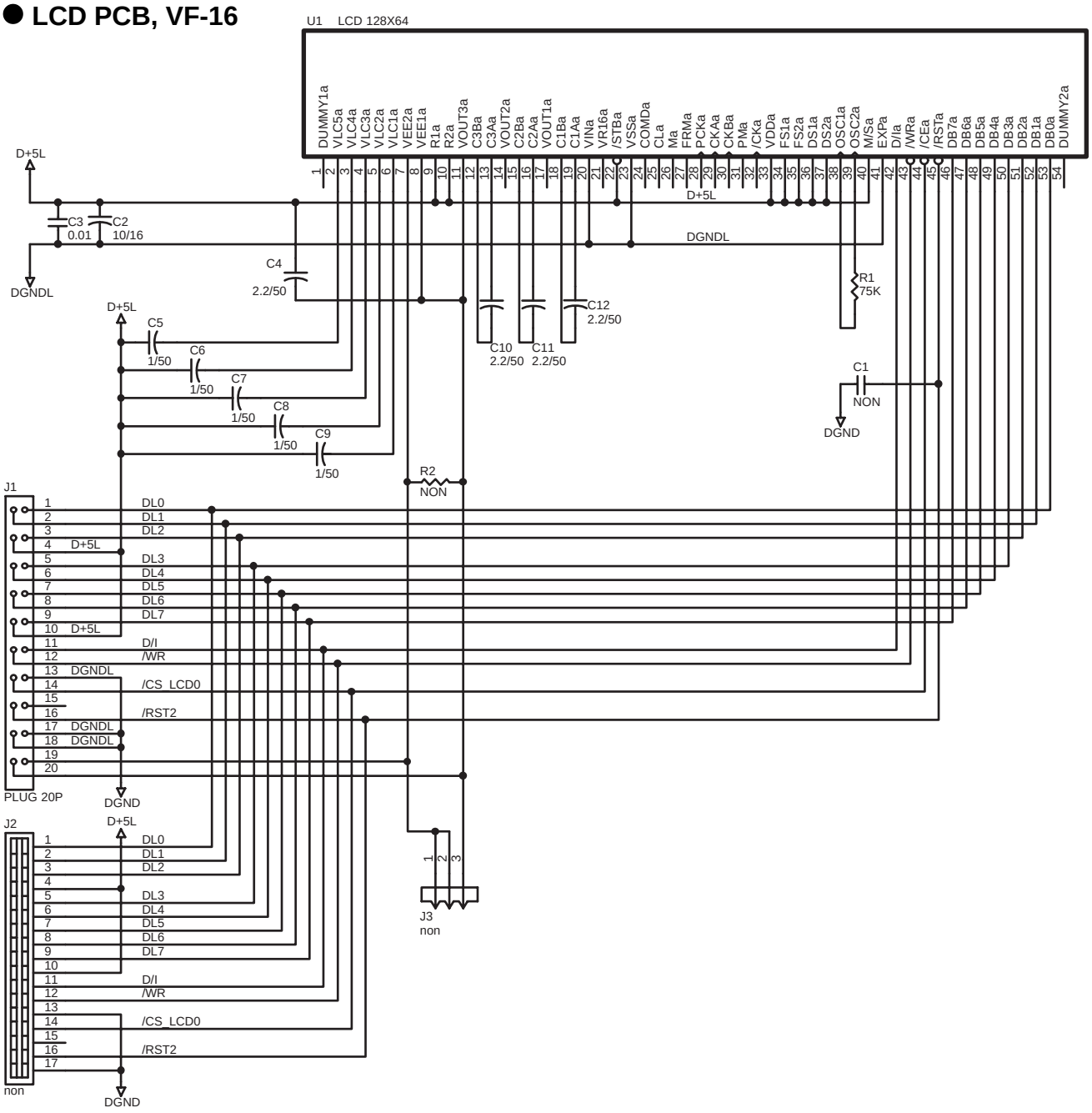
## ● LED, KEY PCB, VF-16



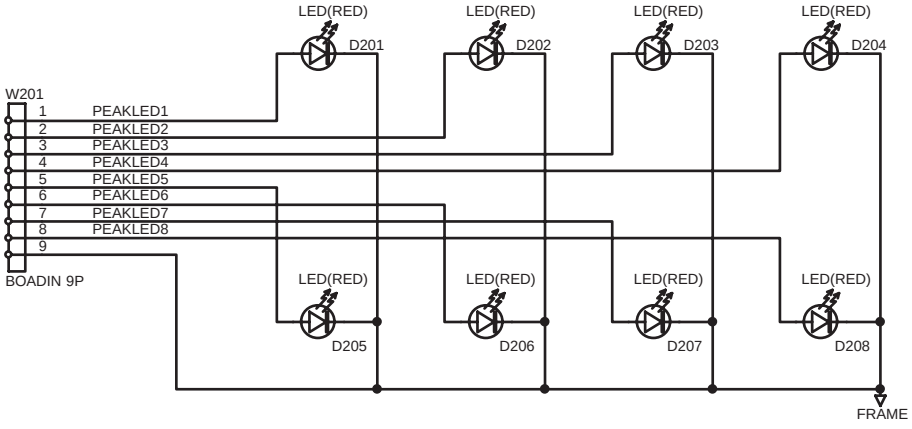
## ● FADER, KEY PCB, VF-16



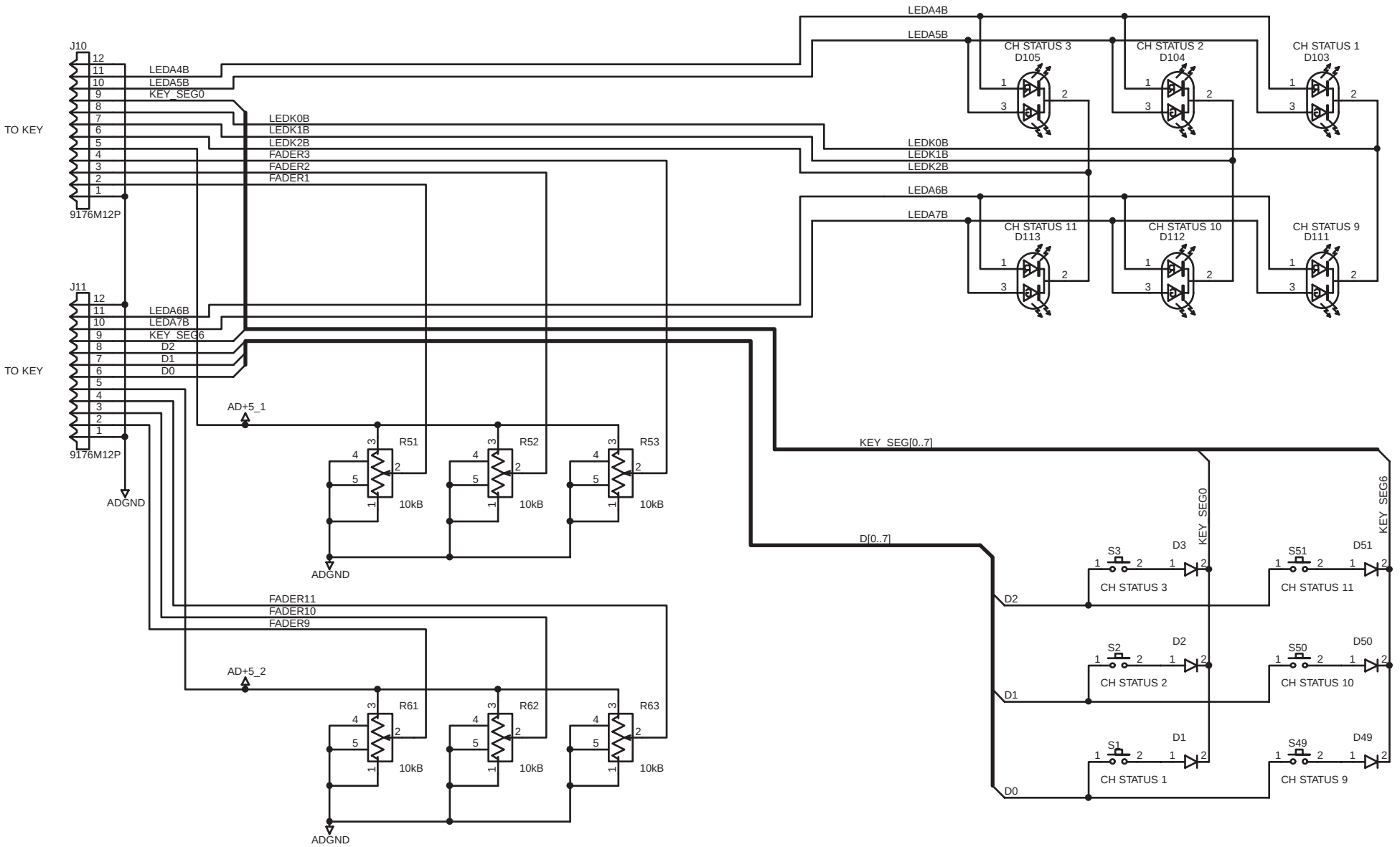
## ● LCD PCB, VF-16



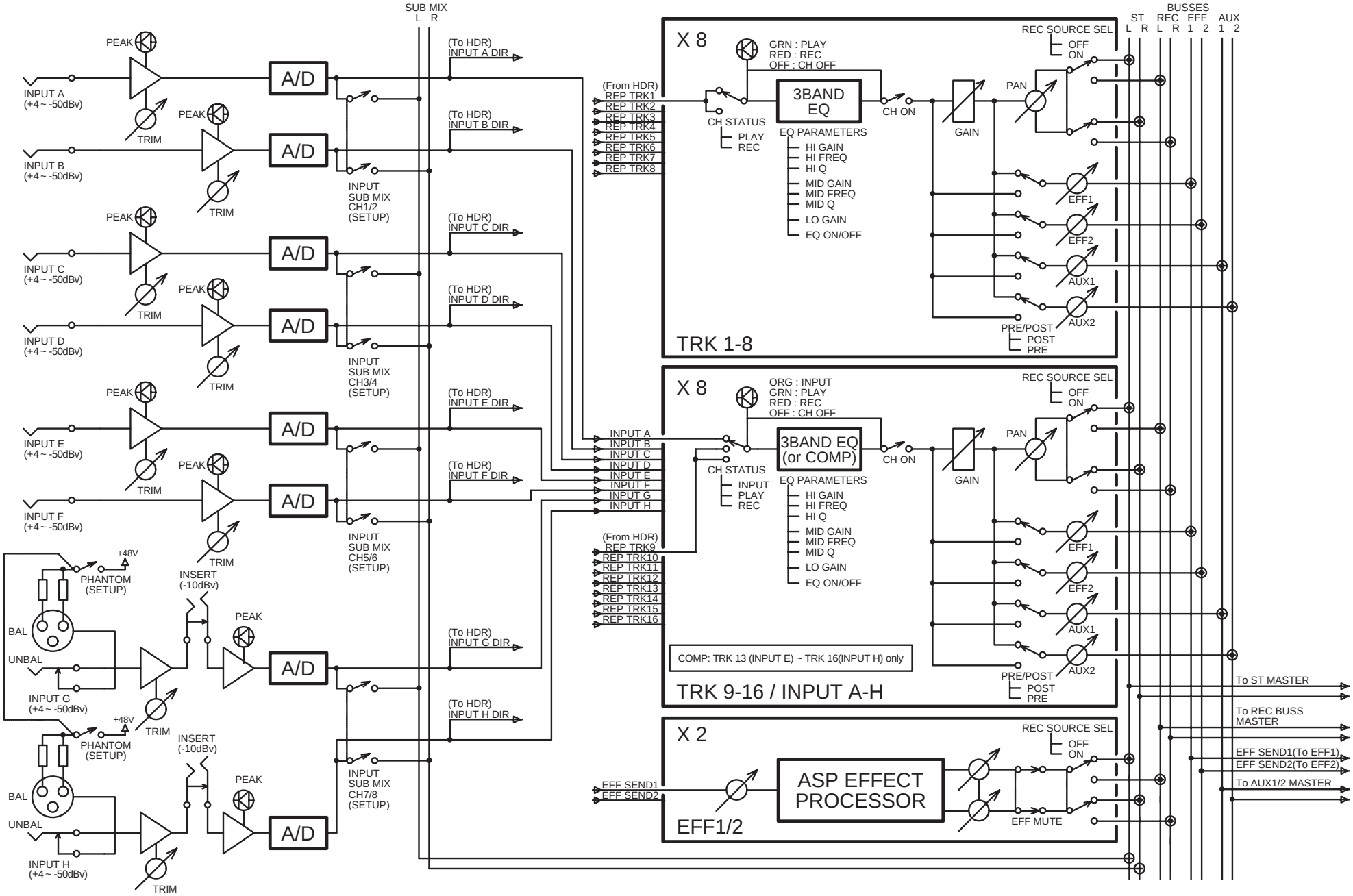

## ● PEAK LED PCB, VF-16



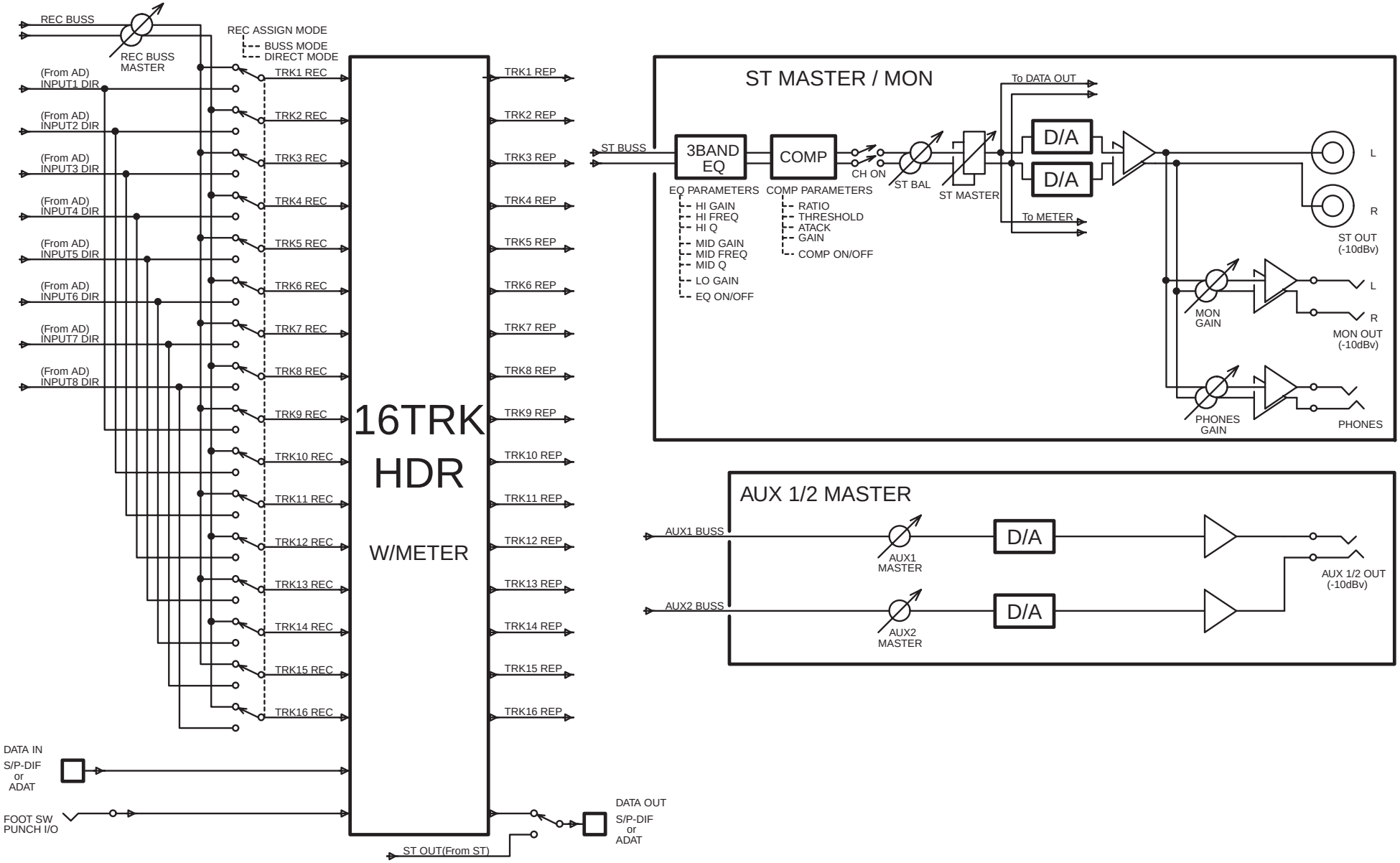
## ● KEY2 PCB, VF-16



## ● BLOCK DIAGRAM (INPUT), VF-16



## ● BLOCK DIAGRAM (OUTPUT), VF-16



**FOSTEX CORPORATION** 3-2-35 Musashino, Akishima, Tokyo, Japan 196-0021
**FOSTEX CORPORATION OF AMERICA** 15431 Blackburn Ave., Norwalk, CA 90650, U.S.A.