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**Service Manual**

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**Model**

**DE-1**

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20-bit Dual Multi Effect Processors

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**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 CORRE-  
SPONDANTE DE LA PRISE ET POUSSER  
JUSQU' AU FOND.



The lightning 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 MOIS-  
TURE.”

## 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.
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 change 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.



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.

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### NOTES

- \* Parts List and circuit diagrams are given in this manual to assist the service technician in maintaining the Model DE-1.
- \* The following accessories are supplied with DE-1 as the standard accessories.

Owner's manual	: 8288441100 (for domestic & export model)
Foot assy, S	: 8260561000

- \* Following is the packing material for the Model DE-1.

Packing, L, DE-1	: 8228454000
Packing, R, DE-1	: 8228455000
Carton, inner, DE-1	: 8228729000

### 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

## INPUT & OUTPUT

### INPUT (x 2)

Connector	Ø 6 mm phone jack / unbalanced
Input level	-10 dBV
Impedance	20 kΩ or more

### STEREO OUTPUT (L & R)

Connector	Ø 6 mm phone jack / unbalanced
Output level	-10 dBV
Impedance	10 kΩ or more

### FOOT SWITCH (x 1)

Ø 6 mm phone jack (Optional Model 8051)

## OTHERS

Frequency Response	+ 1, -2 dB at 20 Hz ~ 14.5 kHz
Dynamic Range	86 dB (IHF A)
AD / DA Converter	20-bit
Total Harmonic Distortion	0.1 % at 100 Hz ~ 10 kHz (w / LPF)
Crosstalk	60 dB at 1 kHz
Sampling Frequency	32 kHz

## GENERAL

Dimensions	220 (W) × 187 (D) × 43 (H) mm
Weight	1.0 kg (excluding AC adaptor)
Power Requirement	
JPN	100 V AC
USA / CND	120 V AC
UK / EUR	230 V AC
Power supply	DC 9 V (center: positive), 600 mA
AC Adaptor	AD-9B

## STANDARD ENVIRONMENT

Standard Temperature	20 ± 2 °C
Standard Humidity	65 ± 5 %

## ENVIRONMENT CONDITION

### Characteristics Guaranteed

Temperature	+ 5 °C ~ + 40 °C
Humidity	30 ~ 70 %
AC voltage deviation	± 5 % or less

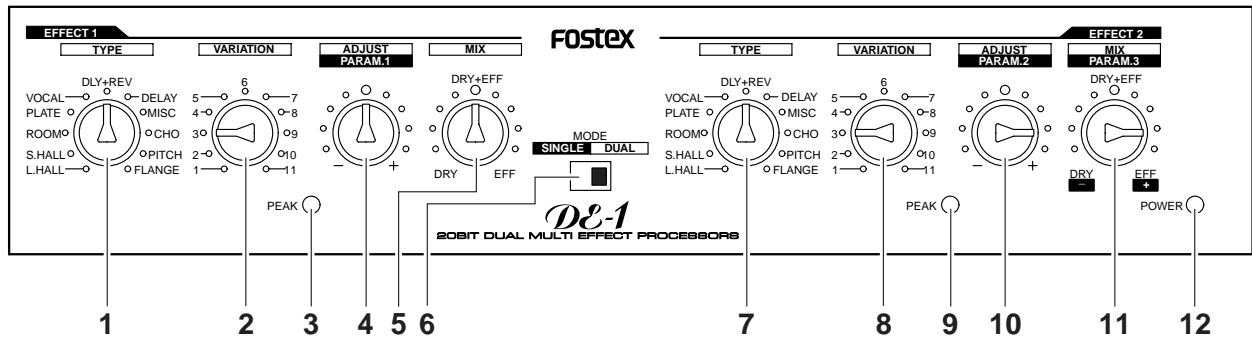
### Operation Guaranteed

Temperature	+ - 5 °C ~ + 45 °C
Humidity	85 % or less
AC voltage deviation	± 10 % or less

\* Specifications and appearance are subject to change without notice for product improvement.

## 2. CONTROLS, INDICATORS & CONNECTORS

### < Front Panel >



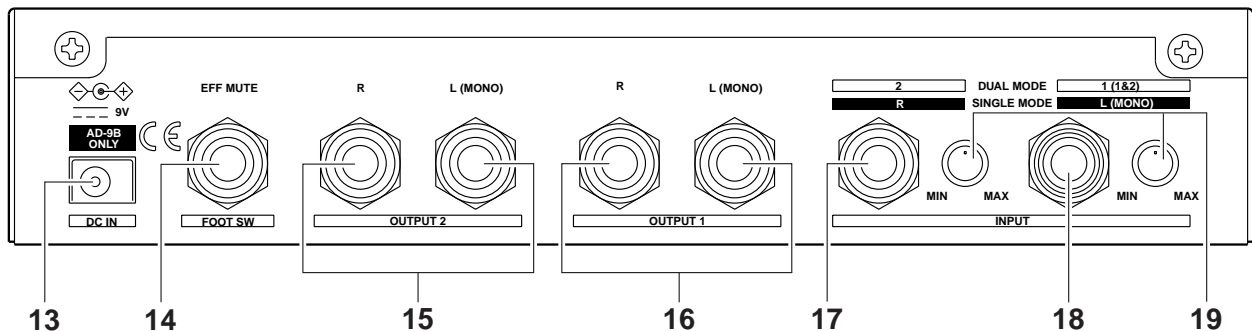
### < DUAL MODE >

- |                          |                          |
|--------------------------|--------------------------|
| 1. EFFECT 1 TYPE SW      | 7. EFFECT 2 TYPE SW      |
| 2. EFFECT 1 VARIATION SW | 8. EFFECT 2 VARIATION SW |
| 3. PEAK LED              | 9. PEAK LED              |
| 4. EFFECT 1 ADJUST knob  | 10. EFFECT 2 ADJUST knob |
| 5. EFFECT 1 MIX knob     | 11. EFFECT 2 MIX knob    |
| 6. MODE SW               | 12. POWER LED            |

### < SINGLE MODE >

- |                              |                               |
|------------------------------|-------------------------------|
| 1. TYPE SW                   | 7. Not functioning            |
| 2. VARIATION SW              | 8. Not functioning            |
| 3. PEAK LED (L channel)      | 9. PEAK LED (R channel)       |
| 4. PARAM. (PARAMETER) 1 knob | 10. PARAM. (PARAMETER) 2 knob |
| 5. MIX knob                  | 11. PARAM. (PARAMETER) 3 knob |
| 6. MODE SW                   | 12. POWER LED                 |

### < Rear Panel >



### < DUAL MODE >

- |                           |                                 |
|---------------------------|---------------------------------|
| 13. DC INLET socket       | 17. INPUT 2 jack socket         |
| 14. Foot SW socket        | 18. INPUT 1 (1 & 2) jack socket |
| 15. OUTPUT 2 jack sockets | 19. INPUT LEVEL knobs           |
| 16. OUTPUT 1 jack sockets |                                 |

### < SINGLE MODE >

- |                     |                                |
|---------------------|--------------------------------|
| 13. DC INLET socket | 17. INPUT L (MONO) jack socket |
| 14. Foot SW socket  | 18. INPUT R jack socket        |
| 15. Not functioning | 19. INPUT LEVEL knobs          |
| 16. Not functioning |                                |

### 3. EXPLODED VIEW, PCB ASSEMBLY AND PARTS LIST

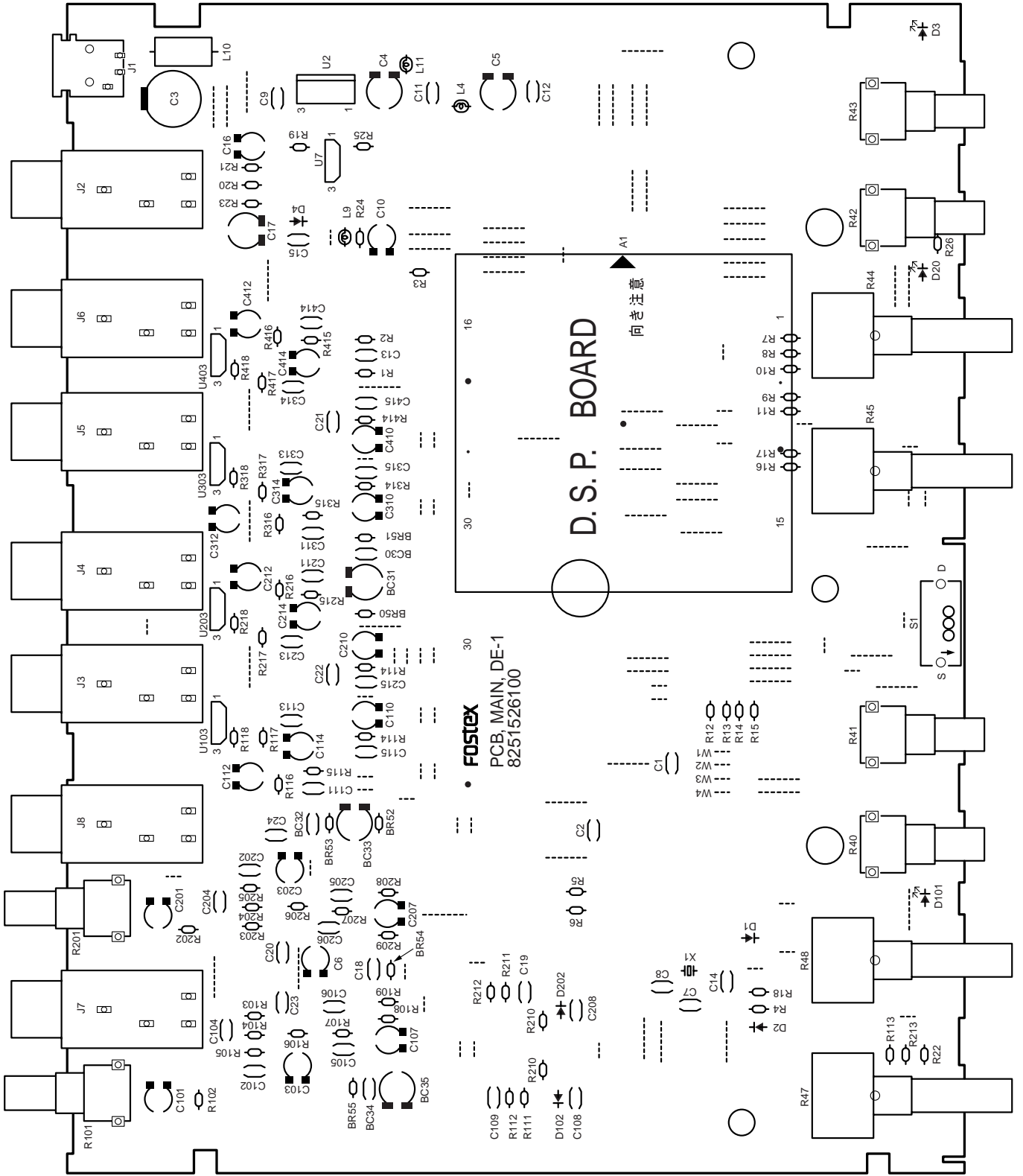
#### ● DE-1 OVERALL EXPLODED VIEW & PARTS LIST

Ref. No.	Part No.	Description
1	8221287000	Panel, front, DE-1
2	8221288000	Panel, top, DE-1
3	8221289000	Chassis, VC-8/DE-1
4	8274207000	PCB assy, Main, DE-1
5	8274208000	PCB assy, DSP, DE-1
6	8221292000	Bracket, volume, DE-1
7	8216700100	Shield, EMI, DE-1
8	8216702000	Sheet, screw, DE-1
9	8226189001	Knob, volume, grey, N
10	8226190001	Knob, volume, green, N
11	8226191001	Knob, volume, blue, N
△12	8270818003	AC adaptor, AD-9B, USA/CSA
	8270818006	AC adaptor, AD-9B, EUR
	8270818007	AC adaptor, AD-9B, UK
	8270818010	AC adaptor, AD-9B, JPN
13	8216636101	Cushion, button, FD-4/DE-1



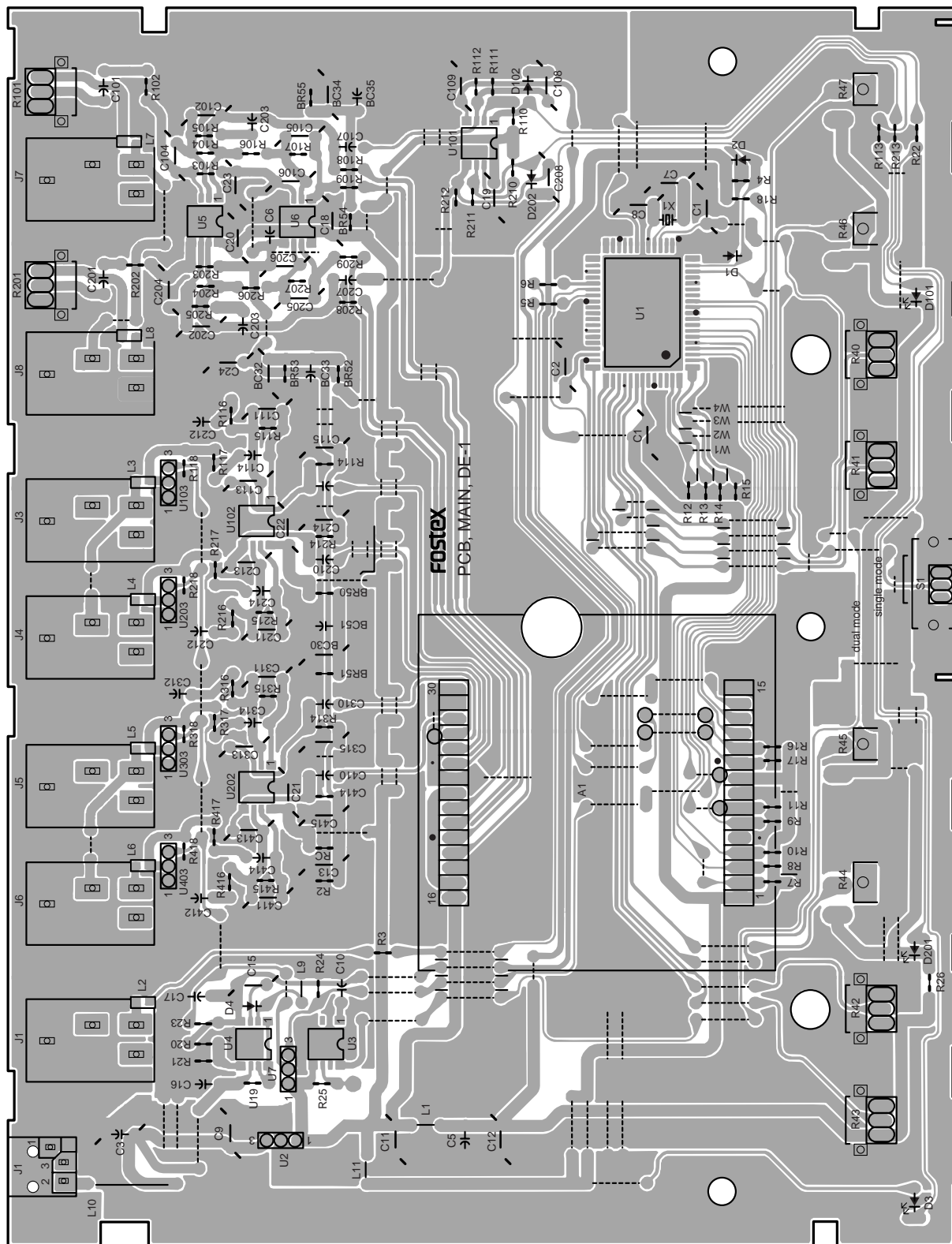
● DE-1 PCB PATTERN DRAWING

● Parts side of MAIN PCB

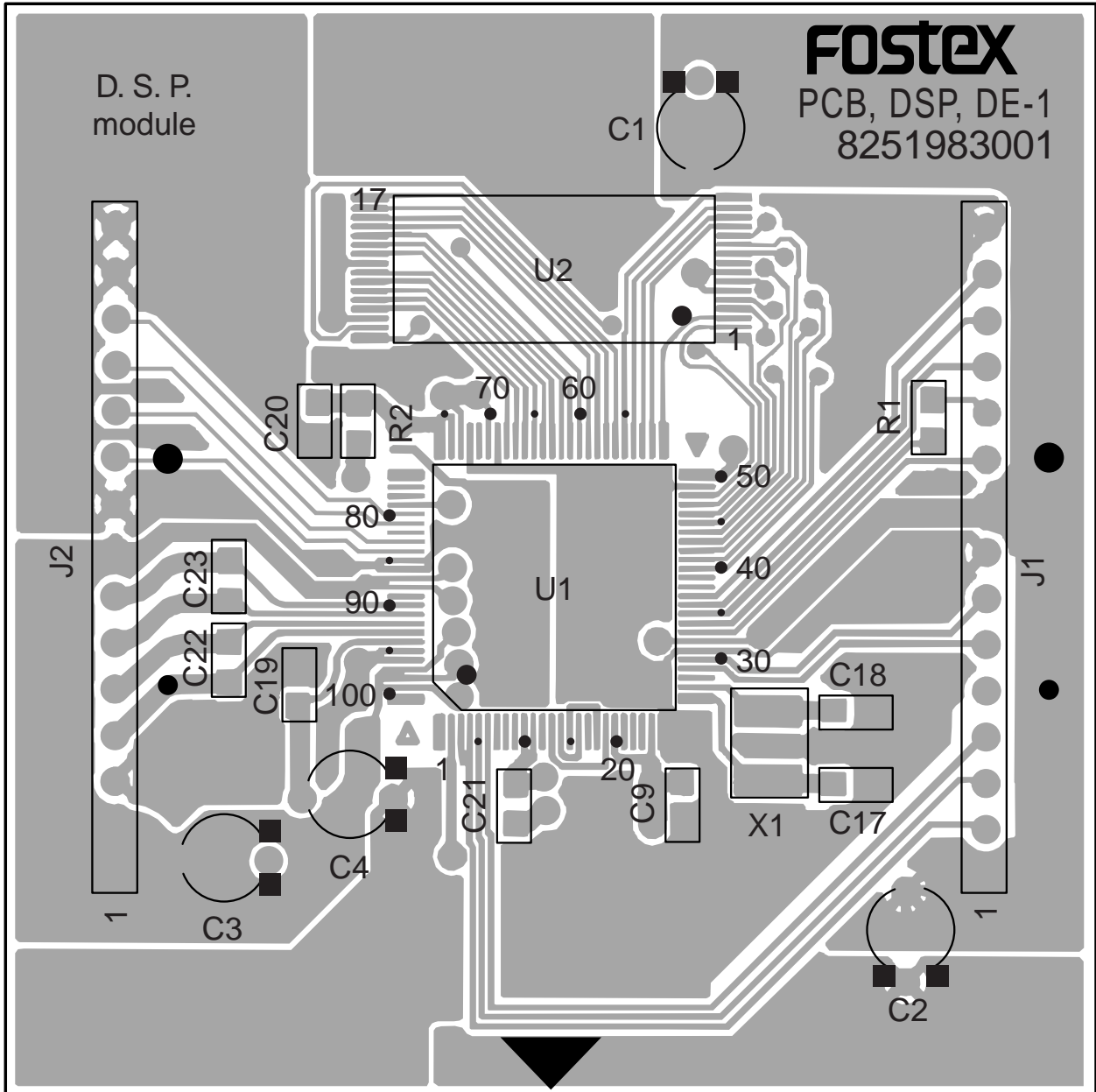




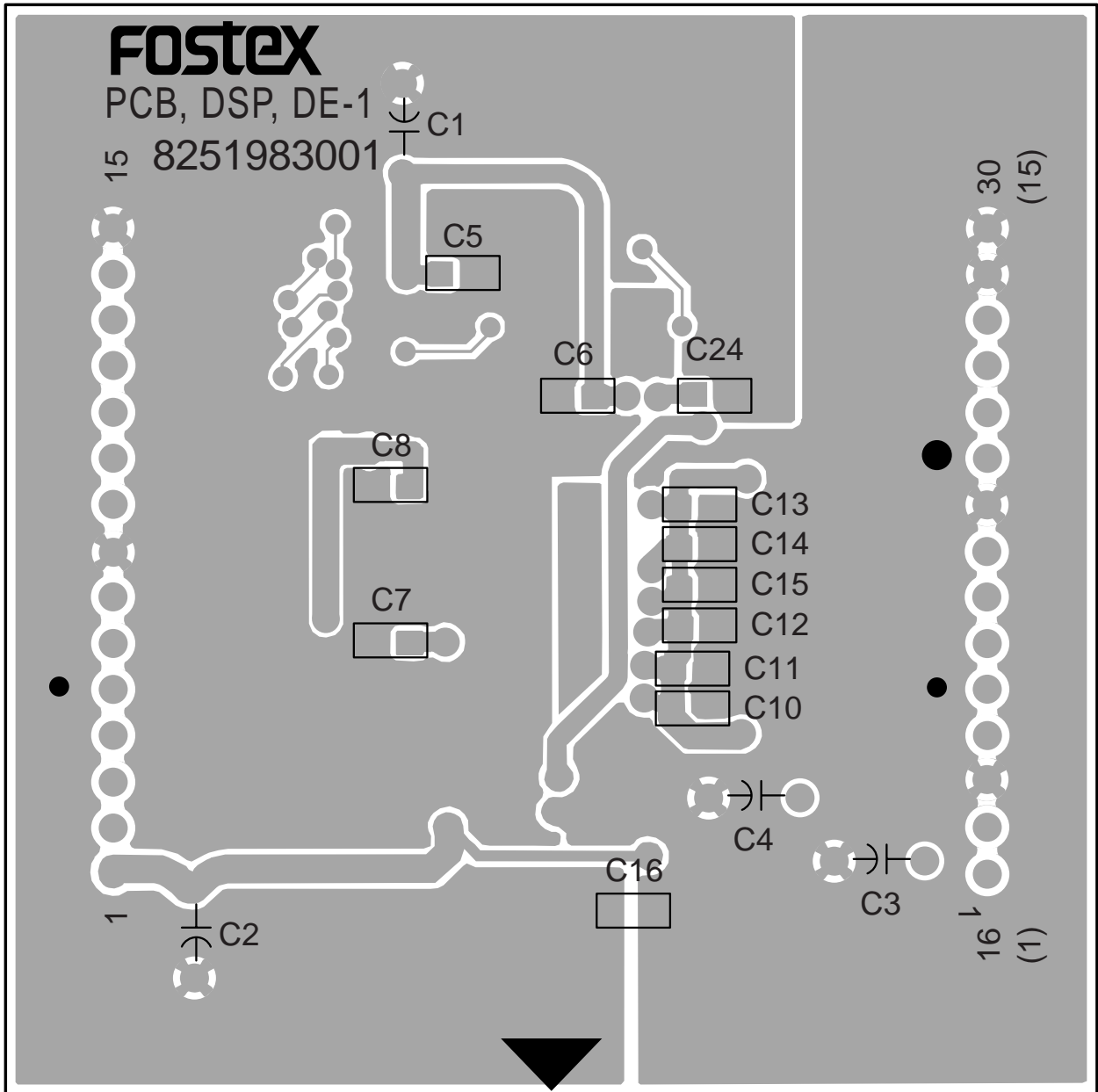
• Foil side of MAIN PCB



• Parts sides of DSP PCB



• Foil sides of DSP PCB



## ● DE-1 Parts List

### • MAIN PCB assy

Ref. No.	Part No.	Description
	8274 2070 00	PCB assy, Main, DE-1
B101	8251 5261 00	Plain PCB, Main, DE-1

#### ICs

Ref. No.	Part No.	Description
U001	8236 0852 00	QFP, DG, CPU, TMP87PM40AF
U002	8236 0320 01	220, AN, regulator, NJM78M05FA
U003	8236 5025 00	ST, AN, reset, NJM2103M
U004	8236 5413 00	ST, AN, DC-DC, NJM2360M
U005, 006	8236 5050 11	ST, AN, op amp, NJM2115M
U007	8236 0782 01	PT, DG, driver, DTA114ES
U101	8236 5412 00	ST, AN, op amp, NJM4565M
U102, 202	8236 5050 11	ST, AN, op amp, NJM2115M
U103~403	8236 5043 00	PT, DG, driver, DTA314STP

#### DIODES

Ref. No.	Part No.	Description
D001, 002	8234 5007 00	HT, 1SS136
D003	8234 1046 02	Opt., VT, LED, GRN, SR-332MC-TE7
D004	8234 0196 02	HT, DSK10C-BT
D101, 201	8234 1046 01	Opt., VT, LED, RED, SR-332MC-TE7
D102, 202	8234 5007 00	HT, 1SS136

#### RESISTORS

Ref. No.	Part No.	Description
R001~003	8230 1381 02	HT, carbon, 1/4W, 1k $\Omega$ , 5%
R004	8230 1381 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R005, 006	8230 1381 01	HT, carbon, 1/4W, 100 $\Omega$ , 5%
R007~016	8230 1381 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R017	8230 1383 31	HT, carbon, 1/4W, 330 $\Omega$ , 5%
R018	8230 1381 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R019	8230 1381 09	HT, carbon, 1/4W, 1 $\Omega$ , 5%
R020	8230 1381 02	HT, carbon, 1/4W, 1k $\Omega$ , 5%
R021	8230 1388 22	HT, carbon, 1/4W, 8.2k $\Omega$ , 5%
R022	8230 1383 01	HT, carbon, 1/4W, 300 $\Omega$ , 5%
R023	8230 1381 04	HT, carbon, 1/4W, 100k $\Omega$ , 5%
R024	8230 1381 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R025	8230 1384 73	HT, carbon, 1/4W, 47k $\Omega$ , 5%
R026	8230 1383 30	HT, carbon, 1/4W, 33 $\Omega$ , 5%
R040~043	8240 2870 06	Pot., PL, RT09, 10k $\Omega$ B, XV092, 20
R044~047	8240 2920 01	Pot., PL, RK16311, 10k $\Omega$ B, ROT
R101, 201	8240 2870 07	Pot., PL, RT09, 50k $\Omega$ A, XV092, 20
R102, 202	8230 1382 03	HT, carbon, 1/4W, 20k $\Omega$ , 5%
R103, 203	8230 1382 03	HT, carbon, 1/4W, 20k $\Omega$ , 5%
R104, 204	8230 1382 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R105, 205	8230 1388 23	HT, carbon, 1/4W, 82k $\Omega$ , 5%
R106, 206	8230 1382 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R107, 207	8230 1382 03	HT, carbon, 1/4W, 10k $\Omega$ , 5%
R108, 208	8230 1383 31	HT, carbon, 1/4W, 330 $\Omega$ , 5%
R109, 209	8230 1383 31	HT, carbon, 1/4W, 330 $\Omega$ , 5%

Ref. No.	Part No.	Description
R110, 210	8230 1381 53	HT, carbon, 1/4W, 15k $\Omega$ , 5%
R111, 211	8230 1381 82	HT, carbon, 1/4W, 1.8k $\Omega$ , 5%
R112, 212	8230 1385 63	HT, carbon, 1/4W, 56k $\Omega$ , 5%
R113, 213	8230 1383 01	HT, carbon, 1/4W, 300 $\Omega$ , 5%
R114~414	8230 1381 04	HT, carbon, 1/4W, 100k $\Omega$ , 5%
R115~415	8230 1382 73	HT, carbon, 1/4W, 27k $\Omega$ , 5%
R116~416	8230 1381 04	HT, carbon, 1/4W, 100k $\Omega$ , 5%
R117~417	8230 1382 02	HT, carbon, 1/4W, 2k $\Omega$ , 5%
R118~418	8230 1381 04	HT, carbon, 1/4W, 100k $\Omega$ , 5%

#### CAPACITORS

ALU = Electrolytic type

CER = Ceramic type

PES = Mylar type

Ref. No.	Part No.	Description
C001, 002	8232 8181 04	VT, CER, 25V, 0.1 $\mu$ F, +80-20%, YF
C003	8232 1434 77	VT, ALU, 16V, 470 $\mu$ F, 20%, SME-VB
C004~006	8232 1421 07	VT, ALU, 10V, 100 $\mu$ F, 20%, SME-VB
C007, 008	8232 8013 30	VT, CER, 50V, 33pF, 5%, SL
C009	8232 8031 03	VT, CER, 50V, 0.01 $\mu$ F, +80-20%, YF
C010	8232 1461 05	VT, ALU, 50V, 1 $\mu$ F, 20%, SME-VB
C011~013	8232 8031 03	VT, CER, 50V, 0.01 $\mu$ F, +80-20%, YF
C014	8232 8014 71	VT, CER, 50V, 470pF, 5%, SL
C015	8232 8011 22	VT, CER, 50V, 0.0012 $\mu$ F
C016	8232 1421 07	VT, ALU, 10V, 100 $\mu$ F, 20%, SME-VB
C017	8232 1431 07	VT, ALU, 16V, 100 $\mu$ F, 20%, SME-VB
C018~022	8232 8031 03	VT, CER, 50V, 0.01 $\mu$ F, +80-20%, YF
C023, 024		N/A
C101, 201	8232 1431 06	VT, ALU, 16V, 10 $\mu$ F, 20%, SME-VB
C102, 202	8232 8011 00	VT, CER, 50V, 10pF $\pm$ 0.5pF, SL
C103, 203	8232 1421 07	VT, ALU, 10V, 100 $\mu$ F, 20%, SME-VB
C104, 204		N/A
C105, 205	8232 8011 00	VT, CER, 50V, 10pF $\pm$ 0.5pF, SL
C106, 206		N/A
C107, 207	8232 1431 06	VT, ALU, 16V, 10 $\mu$ F, 20%, SME-VB
C108, 208	8232 8181 04	VT, CER, 25V, 0.1 $\mu$ F, +80-20%, YF
C109	232 8031 03	VT, CER, 50V, 0.01 $\mu$ F, +80-20%, YF
C110~410	8232 1431 06	VT, ALU, 16V, 10 $\mu$ F, 20%, SME-VB
C111~411	8232 8011 00	VT, CER, 50V, 10pF $\pm$ 0.5pF, SL
C112~412	8232 1421 07	VT, ALU, 10V, 100 $\mu$ F, 20%, SME-VB
C113~413		N/A
C114~414	8232 1431 06	VT, ALU, 16V, 10 $\mu$ F, 20%, SME-VB
C115~415		N/A

#### MISCELLANEOUS

Ref. No.	Part No.	Description
E001		Jumper, F5
E002		Jumper, F10
J001	8245 5440 00	Connector, PL, jack, DC-Inlet, YKB31-0014

Ref. No.	Part No.	Description
J002~008	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
L001	8242 1962 23	Coil, pvt, 22 $\mu$ H, 5%, LF-5.0S
L002	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L003~006	8230 5000 00	Resistor, ST, carbon, 1/10W, 0 $\Omega$ , 5%
L007, 008	8242 5011 21	Filter, ST, EMI, 120, 25%, MMZ2012S
L009	8242 1976 83	Coil, pvt, 68 $\mu$ H, 5%, LF7.5
L010		Jumper, F15
L011	8242 1976 83	Coil, pvt, 68 $\mu$ H, 5%, LF7.5
S001	8253 6550 17	SW, PL, slider, 1-2, non-shortening, SSSF1, cover
W001~004		N/A
X001	8256 1790 02	Resonator, PV, CER, 8MHz, EFOEN
Y801	8245 3400 00	Nut, phone jack

### • DSP PCB assy

Ref. No.	Part No.	Description
	8274 2080 00	PCB assy, Main, DE-1
B101	8251 9830 01	Plain PCB, DSP, DE-1

### ICs

Ref. No.	Part No.	Description
U001	8236 0849 00	QFP, DG, DSP, AK7712AVT
U002	8236 0846 00	TSOP, DG, SRAM, TC551001CFT-70L

### RESISTORS

Ref. No.	Part No.	Description
R001	8230 5001 01	ST, carbon, 1/10W, 100 $\Omega$ , 5%
R002	8230 5001 00	ST, carbon, 1/10W, 10 $\Omega$ , 5%

### CAPACITORS

ALU = Electrolytic type

CER = Ceramic type

PES = Mylar type

Ref. No.	Part No.	Description
C001~004	8232 2181 06	VT, ALU, 16V, 10 $\mu$ F, 20%, SRE
C005~015	8233 5041 03	ST, CER, 25V, 0.01 $\mu$ F, 10%, CC20R
C016	8233 5041 04	ST, CER, 25V, 0.1 $\mu$ F, 10%, CC20R
C017, 018	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C019~021	8233 5041 04	ST, CER, 25V, 0.1 $\mu$ F, 10%, CC20R
C022, 023	8233 5001 52	ST, CER, 50V, 0.0015 $\mu$ F, 5%, CC20R
C024	8233 5041 03	ST, CER, 25V, 0.01 $\mu$ F, 10%, CC20R

### MISCELLANEOUS

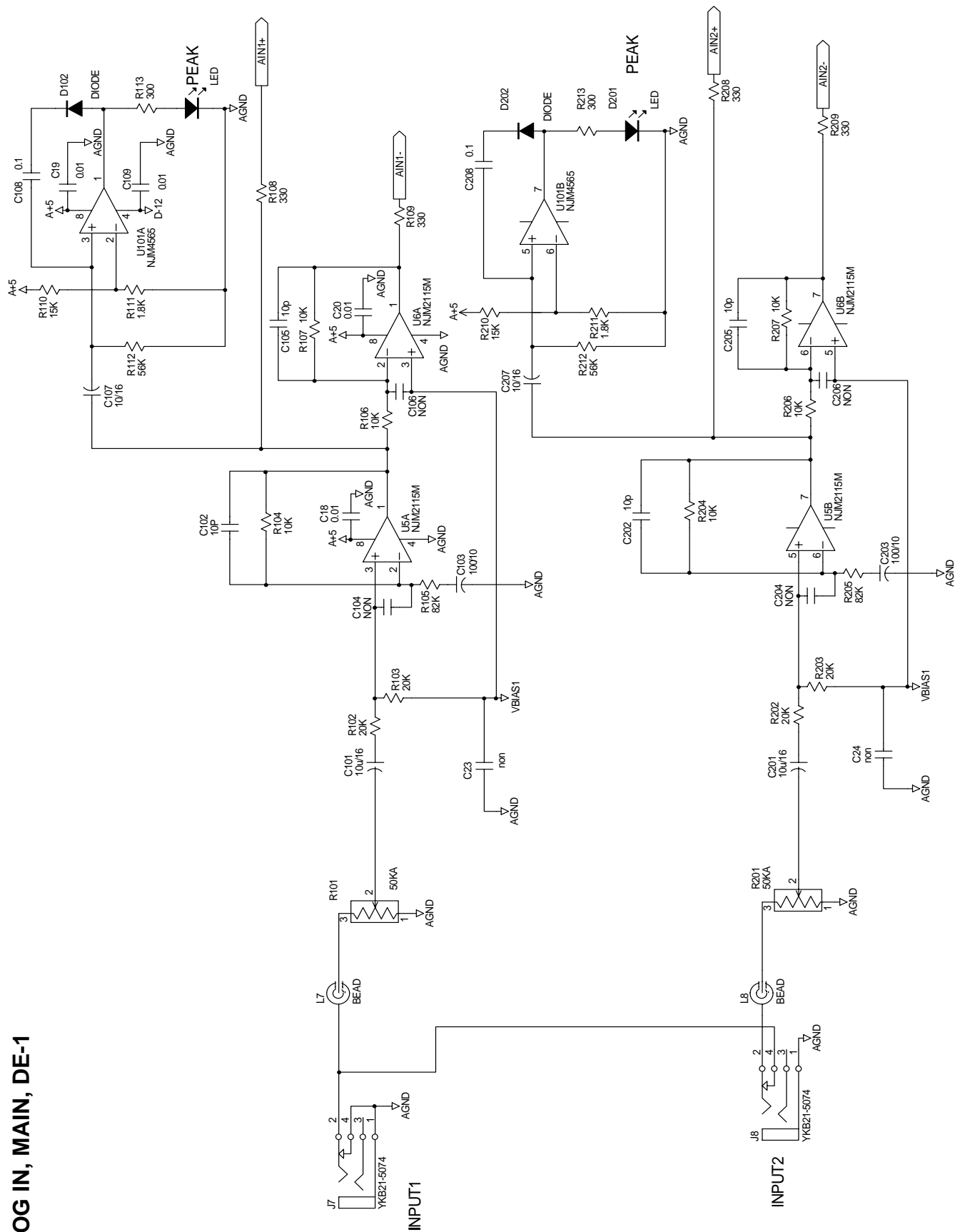
Ref. No.	Part No.	Description
X001	8256 1830 01	Resonator, ST, CER, 16.384MHz, EFOD
J001, 002	8245 3260 15	Connector, plug, 15P, IMSA-1068Z006

### ● Abbreviation

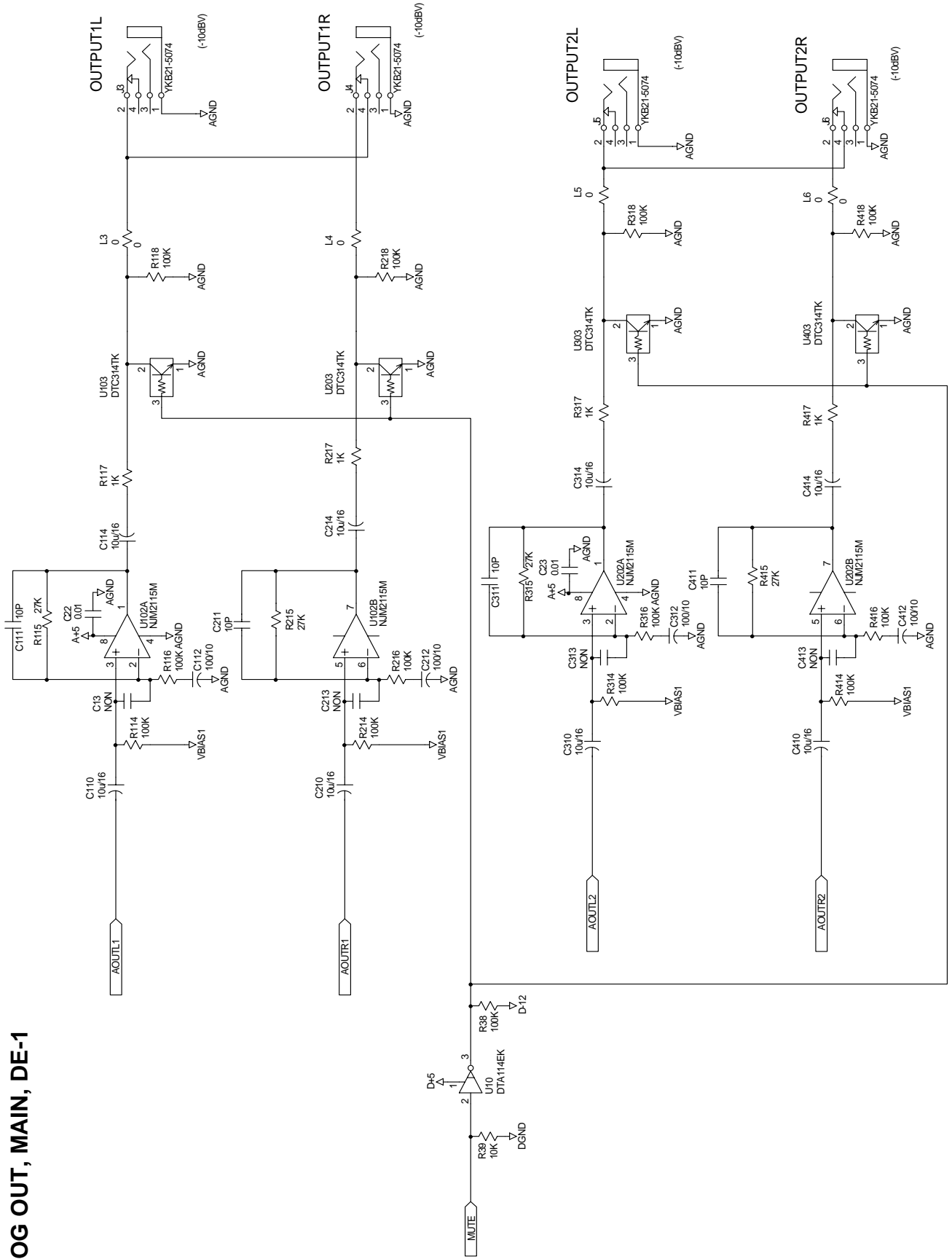
QFP:	Quad Flat Package
220:	TO-220 type
AN:	Analog
DG:	Digital
ST:	Surface mounting Taping device
HT:	Horizontal mount taping device
V:	Vertical mount
VT:	Vertical mount Taping device
PI:	Penetrate mount I form (straight)
PL:	Penetrate mount L form (right angle)
PT:	Penetrate mount Taping device
PIT:	Penetrate mount I form Taping device
TSOP:	Thin Small Outline Package



● ANALOG IN, MAIN, DE-1

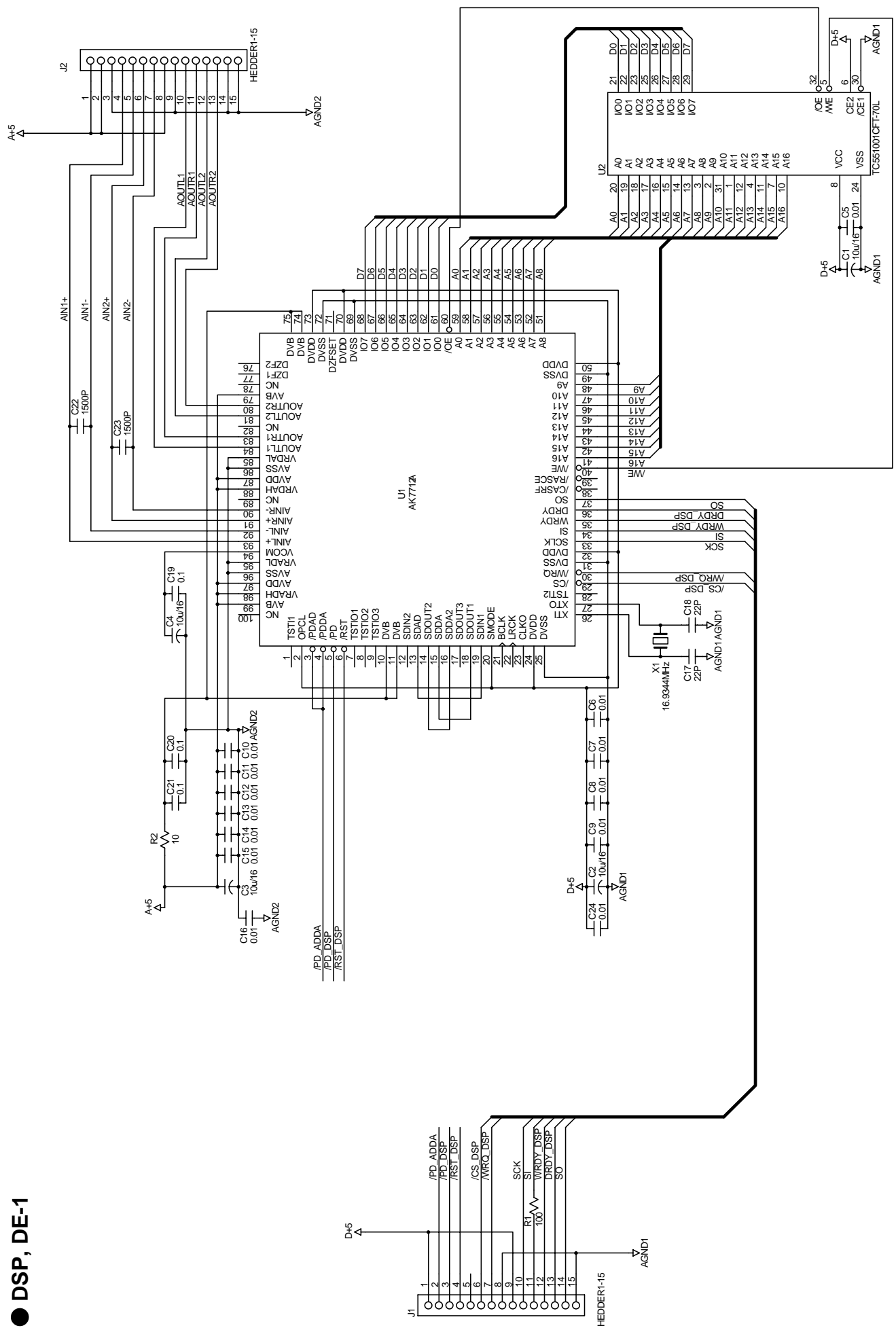


● ANALOG OUT, MAIN, DE-1

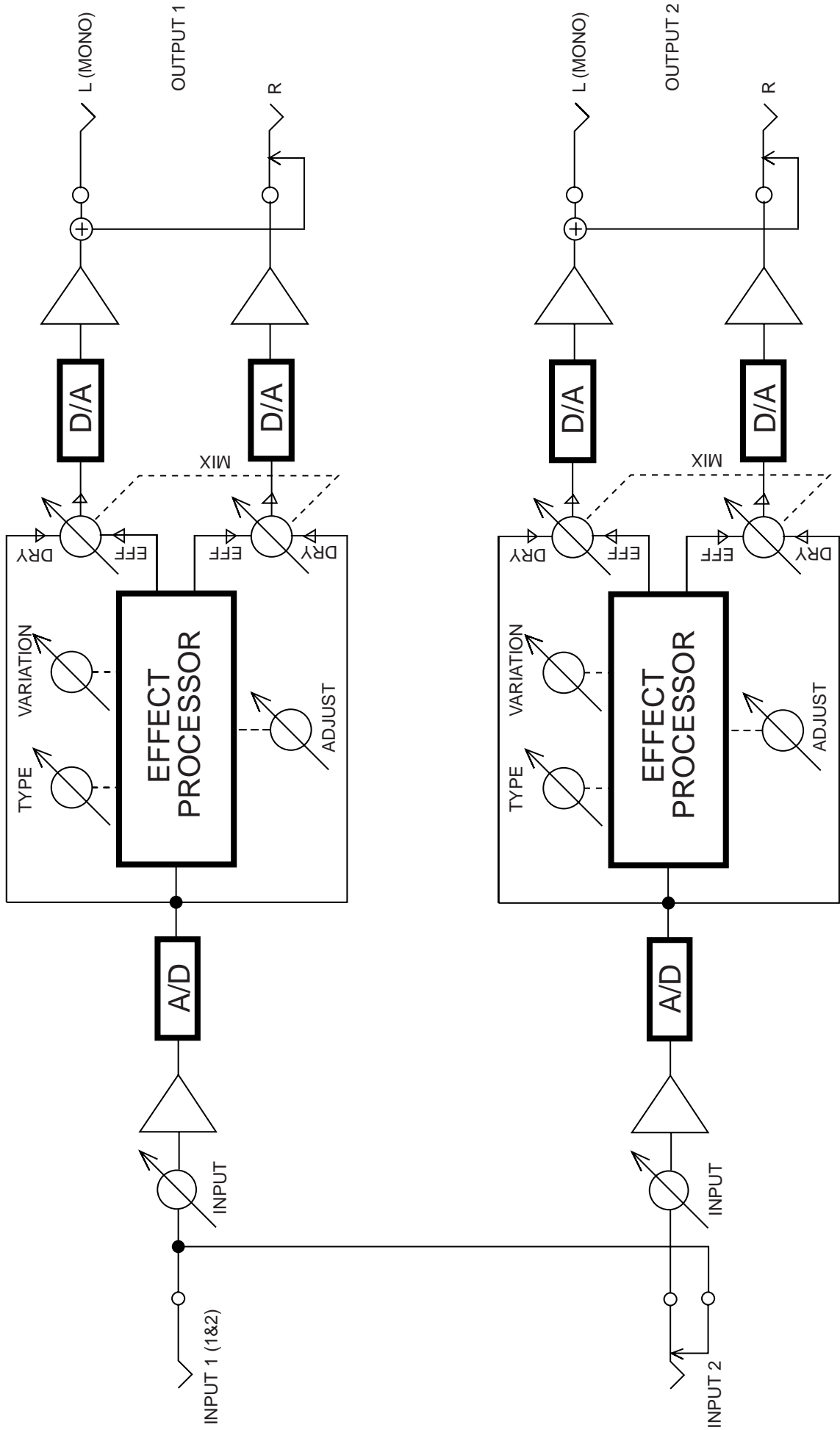




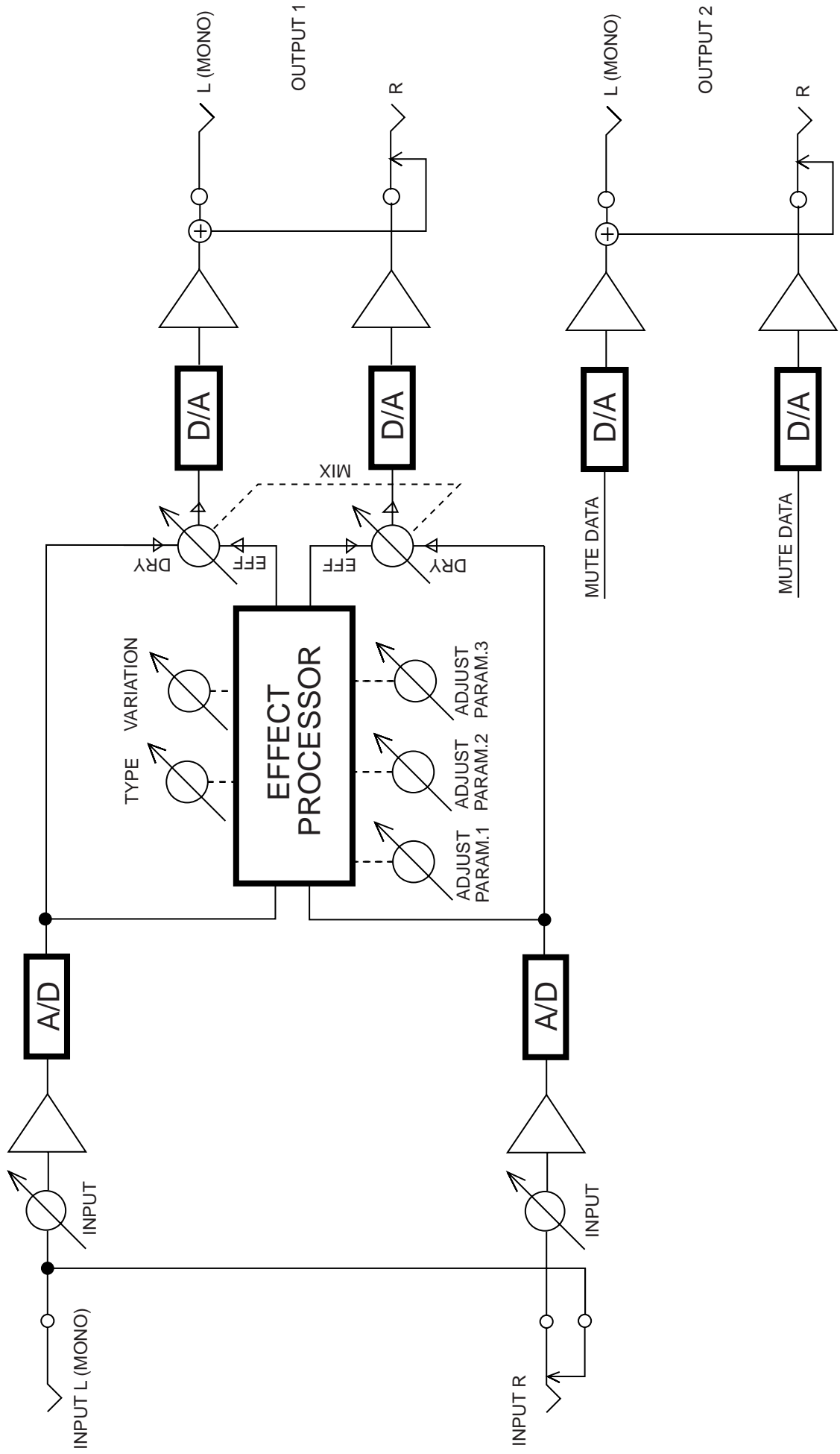
● DSP, DE-1



- BLOCK DIAGRAM
- DUAL MODE



• SINGLE MODE



**Fostex**<sup>®</sup>

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