SAMSUNG

Model:SC-148B

CD-ROM service manual

CONTENTS

The design and part of this product is subject to change without prior notice for performance improvement.

Electronics

MAY, 1999
Printed in Korea
Code No.: BG68-00112A

Specifications

1. General Specifications

- Drive type : Computer built-in
- Power consumption : DC + 5V, 1.7A
  DC + 12V, 1.0A
- Dimensions : 149mm(W)X42.5mm(H)X200mm(L)
- Net Weight : 950g

2. Electrical Features

- Interface : ATAPI BUS(IDE)
- Data transfer rate 7200KByte / Sec MAX
  (5400KByte / Sec AVG.)
- ACCESS TIME : 1 / 3 stroke : Below 100msec
  full stroke : Below 180msec
- Buffer Capacity : 128Kbyte
- Error ratio : Mode 1: Below 10^{-12}
  Mode 2: Below 10^{-9}
- Frequency response : 20Hz~20KHz (Limeout)
  100Hz~20KHz (H / pout)
- Signal to noise ratio : 75dB(1KHz, Limeout)
  65dB(1KHz, H / pout)
- Distortion factor : 0.15% Less than(1KHz)
- Channel separation : 65dB(1KHz, Limeout)
  55dB(1KHz, H / pout)
- Signal output level : LINEOUT : 0.7 Vrms(±20%)
  H / PHONE : 0.6 Vrms(±20%)
- Used laser : Semiconductor laser

Cautions at Service

1. General Items

1) Be careful not to have your eyes or a part of body touch with laser diode at repair because this product uses laser diode.
2) Do not disassemble Pick-up at repair. If the laser diode is bad, replace the entire Pick-up.
3) Keep away from TV or other electrical units at repair to prevent influence from surrounding units.
4) If you replace the parts during repair, be sure to unplug the power cable before replacement.
5) If you insert a disc into the drive, be sure to load it correctly.
6) Because this unit can't be used by itself, surely mount it on PC (486 DMA support) and check the operations in use of private device driver floppy diskette. Refer to Instruction manual.
7)This unit has many parts with features related to safety and especially, for essential parts, the importance is indicated on circuit diagram and part list.
Be certain to use the parts with same specifications at replacing these parts.

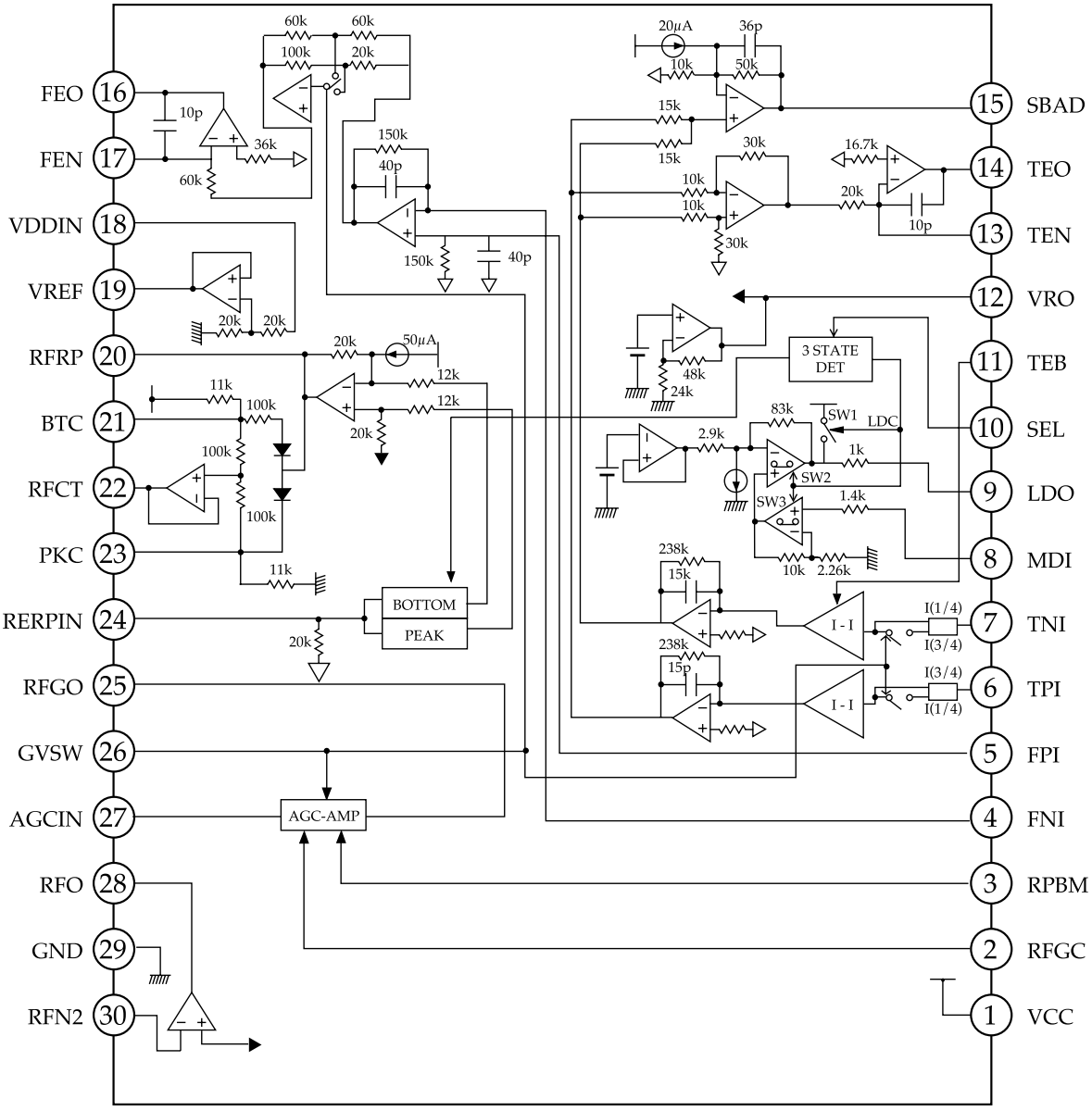
2. Earthing cautions at handling Pick-up

- Because the laser diode in optical Pick-up is subject to get out of order due to the potential difference occurring by electricity load charged in clothes or bodies, observe the following earthing items at handling.

1) Body earthing(hand) : Be sure to wear a wrist strip with one side earthed.(Impedance : Below 104). It removes the electricity formed in body.
2) Work table earthing : Put the earthed conductive plate (Impedance : Below 104) such as copper plate on work table.
3) Cautions for clothes : Do not have any clothes touch with Pick-up because the electricity formed in clothes is destroyed easily.

Main Components Block Diagram and Pin Description

TA2143FN(I.C-RF)



PIN DESCRIPTIONS

<table>
<tr><th>PIN NO</th><th>PIN NAME</th><th>FUNCTION</th></tr>
<tr><td>1</td><td>VCC</td><td>POWER SOURCE / VOLTAGE TERMINAL</td></tr>
<tr><td>2</td><td>RFGC</td><td>RF FREQUENCY CONTROL SIGNAL INPUT TERMINAL</td></tr>
<tr><td>3</td><td>RPBW</td><td>SEL TERMINAL COMBINATIAU DETELTOR CONTROL TERMINAL
<table>
<tr><td>RPBW</td><td>SEL</td><td>FC [kHz]</td></tr>
<tr><td>L / HiZ</td><td>L / HiZ</td><td>100</td></tr>
<tr><td>L / HiZ</td><td>L / HiZ</td><td>400</td></tr>
<tr><td>L / HiZ</td><td>L / HiZ</td><td>800</td></tr>
</table></td></tr>
<tr><td>4</td><td>FNI</td><td>MAIN BEAM AMP INPUT TERMINAL</td></tr>
<tr><td>5</td><td>FPI</td><td>MAIN BEAM AMP INPUT TERMINAL</td></tr>
<tr><td>6</td><td>TPI</td><td>SUB BEAM AMP INPUT TERMINAL</td></tr>
<tr><td>7</td><td>TNI</td><td>SUB BEAM AMP INPUT TERMINAL</td></tr>
<tr><td>8</td><td>MDI</td><td>MONITOR PHOTO-DIODE AMP INPUT TERMINAL</td></tr>
<tr><td>9</td><td>LDO</td><td>LASER DIODE AMP OUTPUT TERMINAL</td></tr>
<tr><td>10</td><td>SEL</td><td>APC CIRCHIT ON / OFF SIGNAL, LDO TERMINAL CONTROL INPUT TERMINAL.
BOTTOM / PEAK FREGUENCY SWITCH TERMINAL
<table>
<tr><td>SEL LEVEL</td><td>APC CIRCUIT</td><td>LDO</td></tr>
<tr><td>GND</td><td>OFF</td><td>100</td></tr>
<tr><td>HiZ</td><td>ON</td><td>CONTROL SIGNAL OUTPUT</td></tr>
<tr><td>VDD</td><td>ON</td><td>CONTROL SIGNAL OUTPUT</td></tr>
</table></td></tr>
<tr><td>11</td><td>TEB</td><td>TRACKING ERROR BALANCE CONTROL SIGNAL INPUT TERMINAL</td></tr>
<tr><td>12</td><td>VRO</td><td>STANDARD VOLTAGE OUTPUT TERMINAL VCC=5.0V VRD=2.1V</td></tr>
<tr><td>13</td><td>TEN</td><td>TRACKING ERROR SIGNAL GENERATING AMP REVERSE INPUT TERMINAL</td></tr>
<tr><td>14</td><td>TEO</td><td>TRACKING ERROR SIGNAL GENERATING AMP OUTPUT TERMINAL</td></tr>
<tr><td>15</td><td>SBAD</td><td>SUB BEAM ADDITIONAL SIGNAL OUTPUT TERMINAL</td></tr>
<tr><td>16</td><td>FEO</td><td>FOCUS ERROR SIGNAL GENERATING AMP OUTPUT TERMINAL</td></tr>
<tr><td>17</td><td>FEN</td><td>FOCUS ERROR SIGNAL GENERATING AMP REVERSE INPUT TERMINAL</td></tr>
<tr><td>18</td><td>VDDIN</td><td>VDD INPUT TERMINAL</td></tr>
<tr><td>19</td><td>VREF</td><td>STANDARD VOLTAGE(VREF)OUTPUT TERMINAL VDDIN=3.6[V] VREF=1.80[V]</td></tr>
<tr><td>20</td><td>RFRP</td><td>SIGNAL GENERATING AMP OUTPUT TERMINAL FOR TRACK COUNTER</td></tr>
<tr><td>21</td><td>BTC</td><td>RECT SIGNAL GENERATING BOTTOM DETECTOR CONTROL TERMINAL</td></tr>
<tr><td>22</td><td>RFCT</td><td>RFRP SIGNAL CENTER LEVEL OUTPUT TERMINAL</td></tr>
<tr><td>23</td><td>PKC</td><td>RFCT SIGNAL GENERATING PEAK DETECTOR CONTROL TERMINAL</td></tr>
<tr><td>24</td><td>RFRPIN</td><td>SIGNAL GENERATING AMP INPUT TERMINAL FOR TRACK COUNTER</td></tr>
<tr><td>25</td><td>RFGO</td><td>RF SIGNAL AMPLITUDE ADJUSTING AMP OUTPUT TERMINAL</td></tr>
<tr><td>26</td><td>GVSW</td><td>AGC,TE, FE AMP GAIN SWITCH TERMINAL
<table>
<tr><td>GVSW LEVEL</td><td>MODE</td></tr>
<tr><td>GND</td><td>CD-RW</td></tr>
<tr><td>HIZ</td><td>NORMAL</td></tr>
<tr><td>VCC</td><td>NORMAL</td></tr>
</table></td></tr>
<tr><td>27</td><td>AGCIN</td><td>RF SIGNAL AMPLITUDE ADJUSTING AMP INPUT TERMINAL</td></tr>
<tr><td>28</td><td>RFO</td><td>RF SIGNAL GENERATING AMP OUTPUT TERMINAL</td></tr>
<tr><td>29</td><td>GND</td><td>GND TERMINAL</td></tr>
<tr><td>30</td><td>RFN2</td><td>RF SIGNAL GENERATING AMP INPUT TERMINAL</td></tr>
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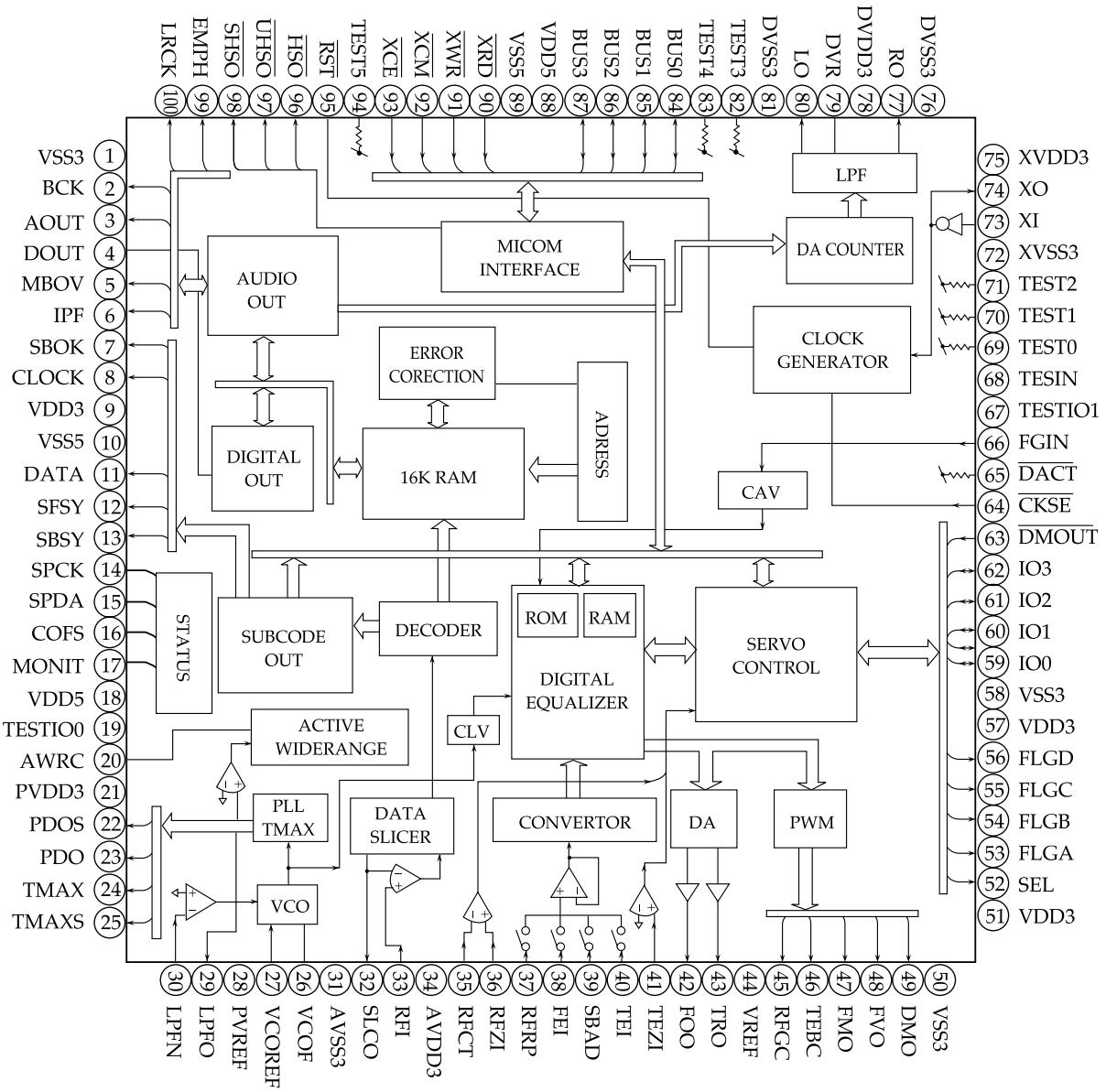
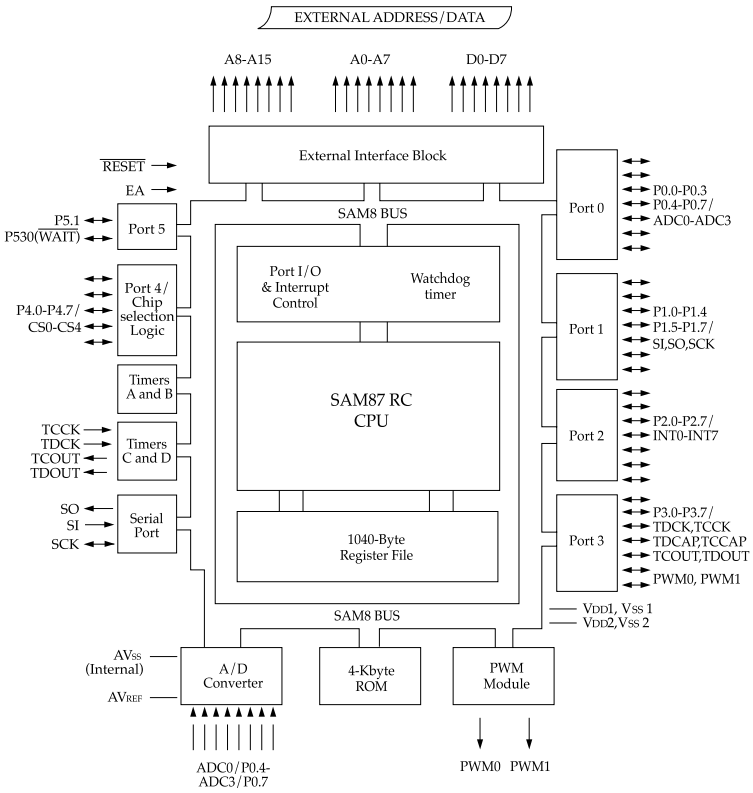
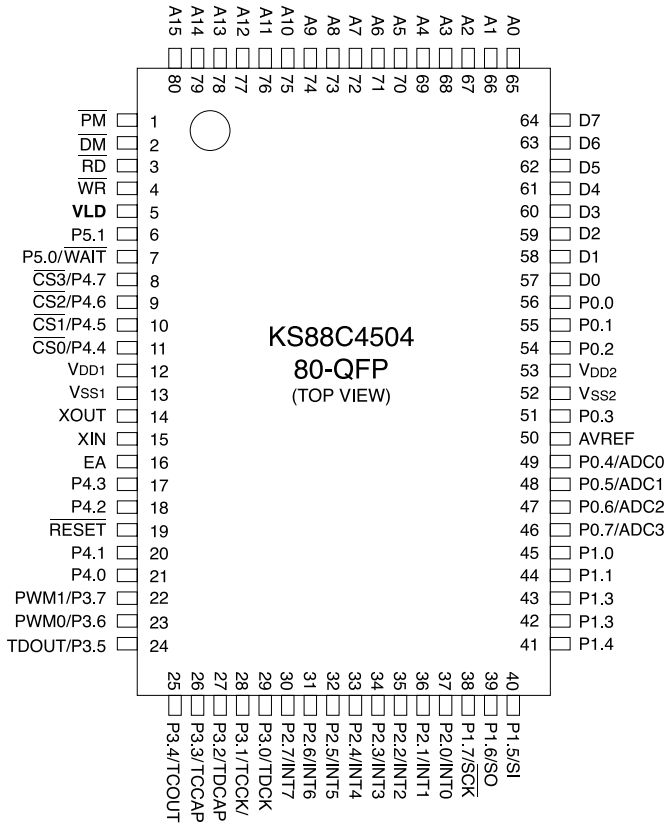


PIN DESCRIPTIONS

NO	SYMBOL	DESCRIPTIONS	NO	SYMBOL	DESCRIPTIONS
1	VSS3	DIGITAL GND TERMINAL	51	VDD3	DIGITAL +3.3V POWER SOURCE TERMINAL
2	BCK	BIT CLOCK OUTPUT TERMINAL (1.4112MHz)	52	SEL	APC CIRCUIT ON/OFF SIGNAL OUTPUT TERMINAL
3	AOUT	AUDIO DATA OUTPUT TERMINAL	53	FLGA	INTERNAL SIGNAL MONITOR OUTER FLAG OUTPUT TERMINAL
4	DOUT	DIGITAL OUT OUTPUT TERMINAL	54	FLGB	INTERNAL SIGNAL MONITOR OUTER FLAG OUTPUT TERMINAL
5	MBOV	BUFFER MEMORY OVER SIGNAL OUTPUT TERMINAL.OVER: H	55	FLGC	INTERNAL SIGNAL MONITOR OUTER FLAG OUTPUT TERMINAL
6	IPF	COMPLEMENTARY FLAG OUTPUT TERMINAL	56	FLGD	INTERNAL SIGNAL MONITOR OUTER FLAG OUTPUT TERMINAL
7	SBOK	CRCC RESULT OUTPUT TERMINAL FOR SUBCODE Q DATA	57	VDD3	DIGITAL +3.3V POWER TERMINAL
8	CLCK	SUBCODE P-W DATA READ CLOCK INPUT/OUTPUT TERMINAL	58	VSS3	DIGITAL GND TERMINAL
9	VDD3	DIGITAL +3.3V POWER TERMINAL	59	I00	GENERAL I/O TERMINAL
10	VSS5	DIGITAL GND TERMINAL	60	I01	GENERAL I/O TERMINAL
11	DATA	SUBCODE P-W DATA OUTPUT TERMINAL	61	I02	GENERAL I/O TERMINAL
12	SFSY	PLAY DEVICE FRAME SYNC SIGNAL OUTPUT TERMINAL	62	I03	GENERAL I/O TERMINAL
13	SBSY	SUBCODE BLOCKING OUTPUT TERMINAL	63	/DMOUT	IO 0,1 OUTPUT MODE SELECT TERMINAL
14	SPCK	OUTPUT TERMINAL FOR PROCESS STATUS SIGNAL READ CLOCK	64	/CKSE	"X" TAL SELECT TERMINAL
15	SPDA	PROCESS STATUSE OUTPUT TERMINAL	65	/DACT	DIGITAL/ANALOG CONVERT TEST MODE TERMINAL
16	COFS	ERROR CORRECTION CLOCK (7.35 KHz)OUTPUT TERMINAL	66	FGIN	CAV GENERATION FG SIGNAL INPUT TERMINAL
17	MONIT	LSI INTERNAL SIGNAL MOMITOR TERMINAL	67	TESI01	TEST INPUT TERMINAL
18	VDD5	DIGITAL + 5V POWER TERMINAL	68	TESIN	TEST INPUT TERMINAL
19	TESTIOO	TEST INPUT TERMINAL	69	TEST0	TEST MODE TERMINAL
20	AWRC	ANALOG SIGNAL OUTPUT TERMINAL	70	TEST1	TEST MODE TERMINAL
21	PVDD3	+3.3V POWER TERMINAL FOR PLL-EXCLUSIVELY	71	TEST2	TEST MODE TERMINAL
22	PDOS	POSITION GAP SIGNAL OUTPUT TERMINAL OF EFM & PLCK SIGNALS	72	XVSS3	MICOM CLOCK DRIVING CIRCUIT GND TERMINAL
23	PDO	POSITION GAP SIGNAL OUTPUT TERMINAL OF EFM & PLCK SIGNALS	73	XI	MICOM CLOCK DRIVING CIRCUIT INPUT TERMINAL
24	TMAXS	TMAX DETECTION RESULT OUTPUT TERMINAL	74	XO	MICOM CLOCK DRIVING CIRCUIT OUTPUT TERMINAL
25	TMAX	TMAX DETECTION RESULT OUTPUT TERMINAL	75	XVDD3	MICOM CLOCK DRIVING CIRCUIT +3.3V POWER TERMINAL
26	LPFN	AMP REVERSE INPUT TERMINAL FOR LOW-PASS FILTER	76	DVSS3	D/A CONVERT R CHANNEL ANALOG GND TERMINAL
27	LPFO	AMP OUTPUT TERMINAL FOR LOW-PASS FILTER	77	RO	R CHANNEL DATA OUTPUT TERMINAL
28	PVREF	VREF(+1.65V) FOR PLL ONLY	78	DVDD3	DIGITAL/ANALOG CONVERT +3.3V POWER TERMINAL
29	VCOREF	VCO CENTER FREQUENCY BASE LEVEL TERMINAL	79	DVR	DIGITAL/ANALOG CONVERT BASE VOLTAGE TERMINAL
30	VCOF	VCO FILTER TERMINAL	80	LO	L CHANNEL DATA OUTPUT TERMINAL
31	AVSS3	ANALOG GNDTERMINAL	81	DVSS3	D/A CONVERT L CHANNEL ANALOG GND TERMINAL
32	SLCO	DATA SLICE GENERATING DIGITAL/ANALOG CONVERT OUTPUT TERMINAL	82	TEST3	TEST MODE TERMINAL
33	RFI	RF SIGNAL INPUT TERMINAL	83	TEST4	TEST MODE TERMINAL
34	AVDD3	ANALOG +3.3V POWER TERMINAL	84	BUS0	DATA INPUT TERMINAL FOR MICOM INTERFACE
35	RFCT	RFRP SIGNAL CENTER LEVEL INPUT TERMINAL	85	BUS1	DATA INPUT TERMINAL FOR MICOM INTERFACE
36	RFZI	INPUT TERMINAL FOR RFRO ZERO CROSS	86	BUS2	DATA INPUT TERMINAL FOR MICOM INTERFACE
37	RFRP	RF RIPPLE SIGNAL INPUT TERMINAL	87	BUS3	DATA INPUT TERMINAL FOR MICOM INTERFACE
38	FEI	FOCUS ERROR SIGNAL INPUT TERMINAL	88	VDD5	DIGITAL 5V POWER SOURCE TERMINAL
39	SBAD	SUBBEAM ADDITION SIGNAL INPUT TERMINAL	89	VSS5	DIGITAL GNDTERMINAL
40	TEI	TRACKING ERROR SIGNAL INPUT TERMINAL	90	/XRD	READ SIGNAL FOR MICOM INTERFACE
41	TEZI	TRACKING ERROR ZERO CROSS INPUT TERMINAL	91	/XWR	WRITE SIGNAL FOR MICOM INTERFACE
42	FDO	FOCUS EQ. OUTPUT TERMINAL	92	/XCM	FIRST WORD RECOGNIZE SIGNAL FOR MICOM INTERFACE
43	TRO	TRACKING EQ. OUTPUT TERMINAL	93	/XCE	MICOM INTERFACE CHIP ENABLE TERMINAL
44	VREF	ANALOG-BASED POWER TERMINAL(+1.65V)	94	TEST5	TEST MODE SELECT TERMINAL
45	RFGC	RF AMPLITUDE CONTROL SIGNAL OUTPUT TERMINAL	95	/RST	RESET INPUT TERMINAL
46	TEBC	TRACKING BALANCE CONTROL SIGNAL OUTPUT TERMINAL	96	/HSO	PLAY SPEED MODE FLAG OUTPUT TERMINAL
47	FMO	FEED EQ. OUTPUT TERMINAL	97	/UHSO	PLAY SPEED MODE FLAG OUTPUT TERMINAL
48	FVO	SPEED ERROR OR FEED SEARCH OUTPUT TERMINAL	98	/SHSO	PLAY SPEED MODE FLAG OUTPUT TERMINAL
49	DMO	DISK EQ OUTPUT TERMINAL	99	EMPH	EMPHASIS FLAG OUTPUT TERMINAL OF SUBCODE QDATA
50	VSS3	DIGITAL GND TERMINAL	100	LRCK	CHANNEL CLOCK (44.1KHz) OUTPUT TERMINAL

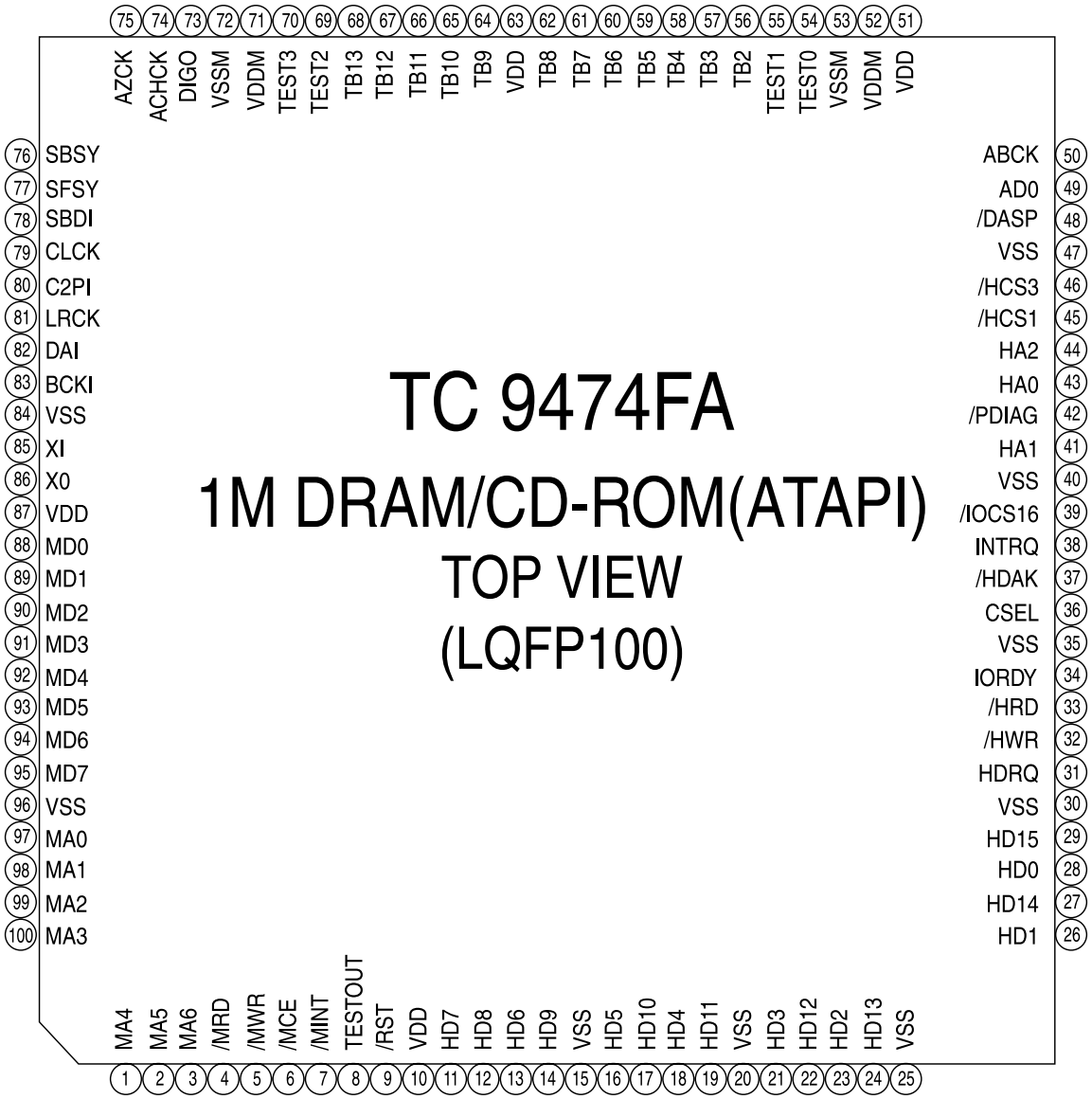




PIN DESCRIPTIONS

NO	ORIGIN	NAME	I/O	FUNCTION	NO	ORIGIN	NAME	I/O	FUNCTION
1	/PM	/CE	O	EXT PROM CHIP ENABLE	41	P1.4	MT1	I	PRODUCT TEST PINO
2	/DM	/UCS	O	INTERFACE CHIP SELECT	42	P1.3	MT2	I	PRODUCT TEST PIN1
3	/RD7	/URD	O	INTERFACE CHIP READ	43	P1.2	MT3	I	PRODUCT TEST PIN2
4	/WR	/UWR	O	INTERFACE CHIP WRITE	44	P1.2	TRO_SW	O	TRO CONTROL SWITCH
5	VLD	VLD	I	VOLTAGE LEVEL DETECT	45	P1.0	STEP_P1	O	STEP MOTOR ENABLE
6	P5.1/AS	N.C.	O	N.C	46	P0.7/ADC3	0.5Vref	O	RESET CONTROL
7	P5.0/	N.C.	O	N.C	47	R0.6/ADC2	FMO	I	FMO
8	P4.7/CS3	/XCE	O	DSP CHIP SELECT	48	P0.5/ADC1	/EJECT	I	EJECT BUTTON
9	P4.6/CS2	/XCM	O	DSP FIRST COMMAND	49	P0.4/ADC0	/PLAY	I	N.C
10	P4.5/CS1	/XRD	O	DSP READ	50	AVREF	AVREF	I	ADC REFERENCE VOLTAGE
11	P4.4/CS0	/XWR	I/O	DSP WRITE	51	P0.3	SLEEP_SW	O	SELLP MODE CONTROL
12	VDD1	VDD	I	VCC	52	VSS2	VSS2	I	VSS2
13	VSS1	VSS	I	GND	53	VDD2	VDD2	I	VDD2
14	Xout	Xout	O	CRYSTAL OUTPUT	54	P0.2	EMPHA	O	AUDIO EMPHASIS CONTROL
15	Xin	Xin	I	CRYSTAL INPUT	55	P0.1	/XRST	O	OUTPUT DEVICE RESET
16	VPP/EA	EA	I	ADDRESSING MODE SELECT	56	P0.0	LED_BUSY	O	LED BUSY CONTROL
17	P4.3	BUS3	I/O	DSP COMMAND BUS3	57	D0	D0	I	EXT PROM DATA0
18	P4.2	BUS2	I/O	DSP COMMAND BUS2	58	D1	D1	I	EXT PROM DATA1
19	/RESET	/RESET	I	MICOM RESET	59	D2	D2	I	EXT PROM DATA2
20	P4.1	BUS1	I/O	DSP COMMAND BUS1	60	D3	D3	I	EXT PROM DATA3
21	P4.0	BUS0	I/O	DSP COMMAND BUS0	61	D4	D4	I	EXT PROM DATA4
22	PWM1	PWM1	O	PWM CONTROL	62	D5	D5	I	EXT PROM DATA5
23	PWM0	PWM0	O	PWM CONTROL	63	D6	D6	I	EXT PROM DATA6
24	P3.5	CENT	O	DRIVE IC RESET	64	D7	D7	I	EXT PROM DATA7
25	P3.4	CENT	O	CENTER SERVO CONTROL	65	A0	A0	O	EXT PROM ADDRESS 0
26	P3.3	SPM_FG	I	SPINDLE MOTOR CONTROL	66	A1	A1	O	EXT PROM ADDRESS 1
27	P3.2	SPIN_CTL	O	CPINDLE BRAKE CONTROL	67	A2	A2	O	EXT PROM ADDRESS 2
28	P3.1	/OPEN	I	OPEN LIMIT SWITCH	68	A3	A3	O	EXT PROM ADDRESS 3
29	P3.0	/CLOSE	I	CLOSE LIMIT SWITCH	69	A4	A4	O	EXT PROM ADDRESS 4
30	P2.7/INT7	RF_CON	O	PLL CONTROL	70	A5	A5	O	EXT PROM ADDRESS 5
31	P2.6/INT6	N.C.	I/O	N.C	71	A6	A6	O	EXT PROM ADDRESS 6
32	P2.5/INT5	/SCOR	I	DSP SYNC INTERRUPT	72	A7	A7	O	EXT PROM ADDRESS 7
33	P2.4/INT4	TR_OUT	O	TRAY OPEN CONTROL	73	A8	A8	O	EXT PROM ADDRESS 8
34	P2.3/INT3	TR_IN	O	TRAY CLOSE CONTROL	74	A9	A9	O	EXT PROM ADDRESS 9
35	P2.2/INT2	D_INT	I	ROM DECODER INTERRUPT	75	A10	A10	O	EXT PROM ADDRESS 10
36	P2.1/INT1	FLGC	I	FOCUS O.K.	76	A11	A11	O	EXT PROM ADDRESS 11
37	P2.0/INT0	FLGA	I	TRACKING EPROR ZERO	77	A12	A12	O	EXT PROM ADDRESS 12
38	P1.7	MON	O	SPINDLE MOTOR ON/OFF	78	A13	A13	O	EXT PROM ADDRESS 13
39	P1.6	SPM_DIR	I	N.C	79	A14	A14	O	EXT PROM ADDRESS 14
40	P1.5	AMUTE	O	AUDIO MUTE CONTROL	80	A15	A15	O	EXT PROM ADDRESS 15

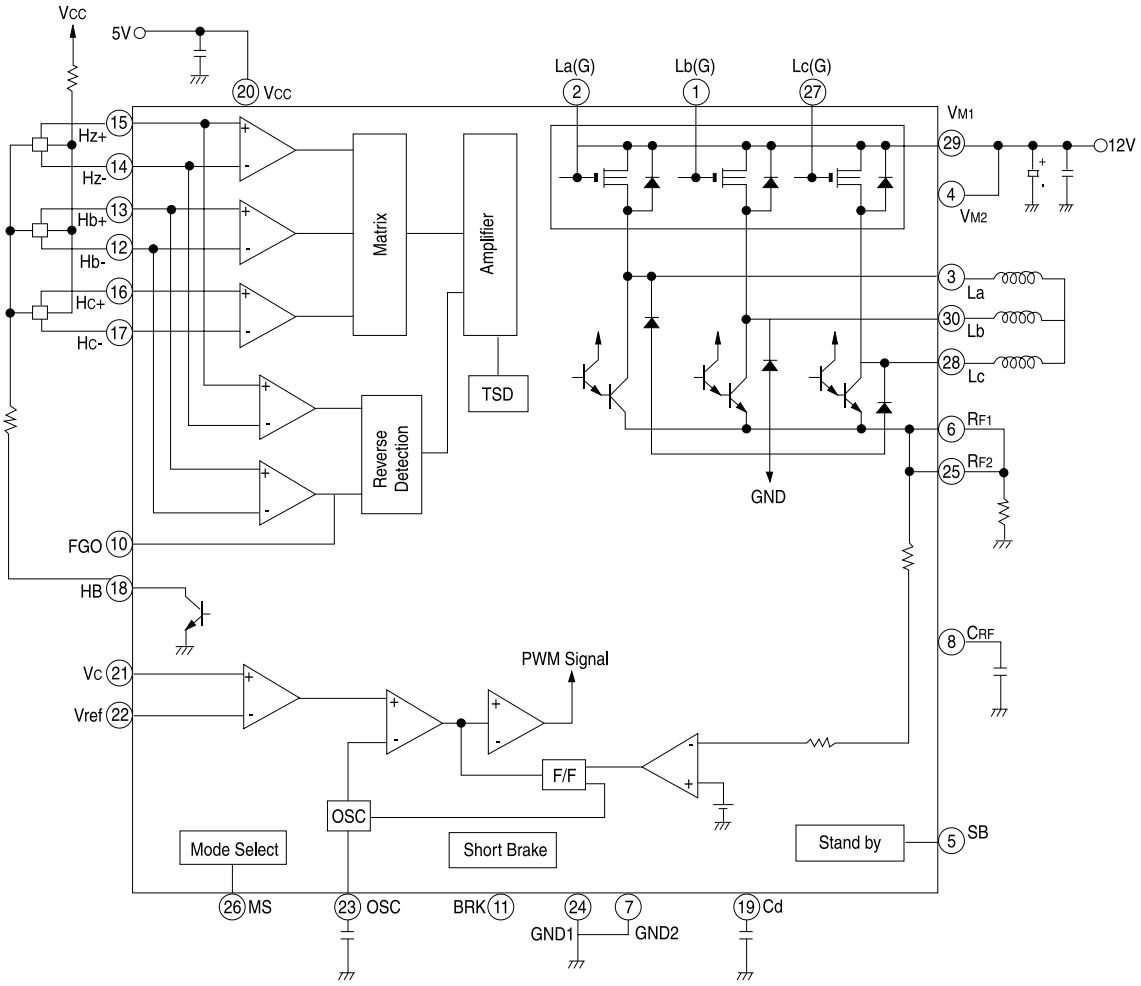
TC9474FA(I.C-DECODER)



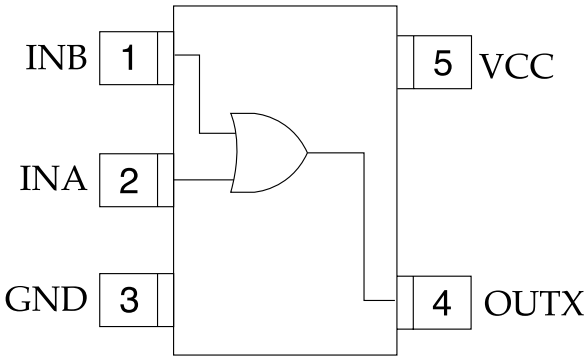
PIN DESCRIPTIONS

NO	SYMBOL	DESCRIPTIONS	NO	SYMBOL	DESCRIPTIONS
1	MA4	MICOM ADDRESS INPUT	51	VDD	POWER SOURCE TERMINAL
2	MA5	MICOM ADDRESS INPUT	52	VDD	POWER SOURCE TERMINAL
3	MA6	MICOM ADDRESS INPUT	53	VSS	GROUND TERMINAL
4	MRD	MICOM READ SIGNAL INPUT	54	TEST0	TEST TERMINAL
5	MWR	MICOM WRITE SIGNAL INPUT	55	TEST1	TEST TERMINAL
6	MCE	CHIP ENABLE SIGNAL INPUT	56	TB2	TEST TERMINAL
7	MINT	INTERRUPT REQUEST OUTPUT	57	TB3	TEST TERMINAL
8	TESTOUT	TEST OUTPUT	58	TB4	TEST TERMINAL
9	RST	RESET TERMINAL	59	TB5	TEST TERMINAL
10	VDD	POWER SOURCE TERMINAL	60	TB6	TEST TERMINAL
11	HD7	HOST DATA INPUT	61	TB7	TEST TERMINAL
12	HD8	HOST DATA INPUT	62	TB8	TEST TERMINAL
13	HD6	HOST DATA INPUT	63	VPB	GROUND TERMINAL (DRAM AREA)
14	HD9	HOST DATA INPUT	64	TB9	TEST TERMINAL
15	VSS	GROUND TERMINAL	65	TB10	TEST TERMINAL
16	HD5	HOST DATA INPUT	66	TB11	TEST TERMINAL
17	HD10	HOST DATA INPUT	67	TB12	TEST TERMINAL
18	HD4	HOST DATA INPUT	68	TB13	TEST TERMINAL
19	HD11	HOST DATA INPUT	69	TB14	TEST TERMINAL
20	VSS	GROUND TERMINAL	70	TEST2	TEST TERMINAL
21	HD3	HOST DATA INPUT	71	TEST3	TEST TERMINAL
22	HD12	HOST DATA INPUT	72	VDDM	POWER SOURCE TERMINAL
23	HD2	HOST DATA INPUT	73	VSSM	GROUND TERMINAL
24	HD13	HOST DATA INPUT	74	ACHCK	LRCK OUTPUT FOR DAC ON FAST PLAY
25	VSS	GROUND TERMINAL	75	AZCK	BASE CLOCK INPUT ON FAST PLAY
26	HD1	HOST DATA INPUT	76	SBSY	SUBCODE BLOCK SYNC OUTPUT
27	HD14	HOST DATA INPUT	77	SFSY	SUBCODE DATA SYNC FRAME INPUT
28	HD0	HOST DATA INPUT	78	SBDI	SUBCODE DATA INPUT
29	HD15	HOST DATA INPUT	79	CLCK	SUBCODE DATA CLOCK OUTPUT
30	VSS	GROUND TERMINAL	80	C2PI	DATA CORRECTION FLAG INPUT
31	HDRQ	DATA REQUEST TERMINAL	81	LRCK	CHANNEL CLOCK INPUT
32	HWR	HOST WRITE SIGNAL INPUT	82	DAI	DATA SIGNAL INPUT
33	HRD	HOST READ SIGNAL INPUT	83	BCKI	BIT CLOCK INPUT
34	IORDY	IO TRANSFER READY OUTPUT	84	VSS	GROUND TERMINAL
35	VSS	GROUND TERMINAL	85	XI	MASTER CLOCK I/O
36	CSEL	CABLE SELECT INPUT	86	XO	MASTER CLOCK I/O
37	HDAK	DATA ACKNOWLEDGE INPUT	87	VDD	POWER SOURCE TERMINAL
38	INTRQ	INTERRUPT SIGNAL OUTPUT	88	MD0	MICOM DATA I/O
39	IOCS16	DATA BIT WIDE SELECT OUTPUT	89	MD1	MICOM DATA I/O
40	VSS	GROUND TERMINAL	90	MD2	MICOM DATA I/O
41	HA1	HOST ADDRESS 1 INPUT	91	MD3	MICOM DATA I/O
42	PDIAG	POST DIAGNOSTIC I/O	92	MD4	MICOM DATA I/O
43	HA0	HOST ADDRESS 0 INPUT	93	MD5	MICOM DATA I/O
44	HA2	HOST ADDRESS 2 INPUT	94	MD6	MICOM DATA I/O
45	HCS1	CHIP SELECT 1 INPUT	95	MD7	MICOM DATA I/O
46	HCS3	CHIP SELECT 3 INPUT	96	VSS	GROUND TERMINAL
47	VSS	GROUND TERMINAL	97	MA0	MICOM ADDRESS INPUT
48	DASP	DRIVE ACTIVE OUTPUT	98	MA1	MICOM ADDRESS INPUT
49	ADA	DATA OUTPUT FOR DAC ON FAST PLAY	99	MA2	MICOM ADDRESS INPUT
50	ABCK	BCK OUTPUT FOR DAC ON FAST PLAY	100	MA3	MICOM ADDRESS INPUT

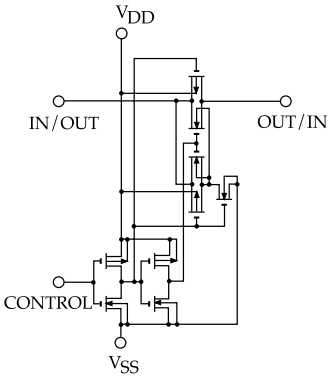
TA8493AF(I.C-DRIVE)

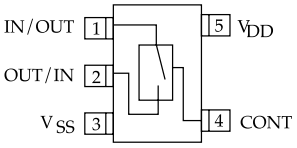


7S32(I.C-OR GATE)

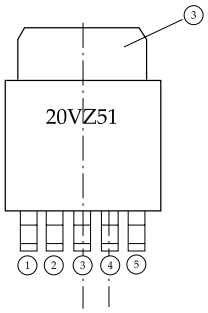


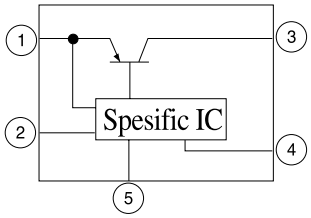
4S66F(I.C-SWITCH)





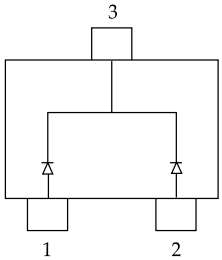
PQ20WZ51(I.C-REGULATOR)



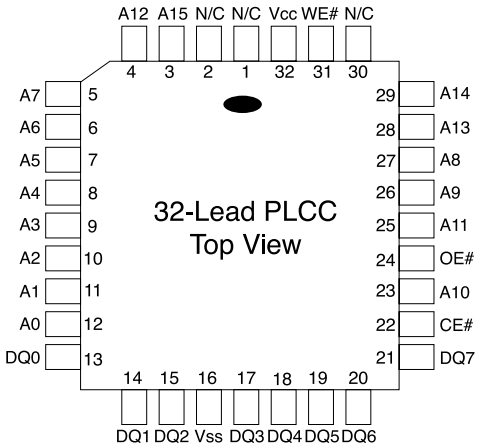


Pin No	Pin Name
①	DC input(VIN)
②	ON / OFF control terminal(VC)
③	DC output(VO)
④	Output voltage minute adjustment terminal(VADJ)
⑤	GND

DAP202K(DIODE ARRAY)



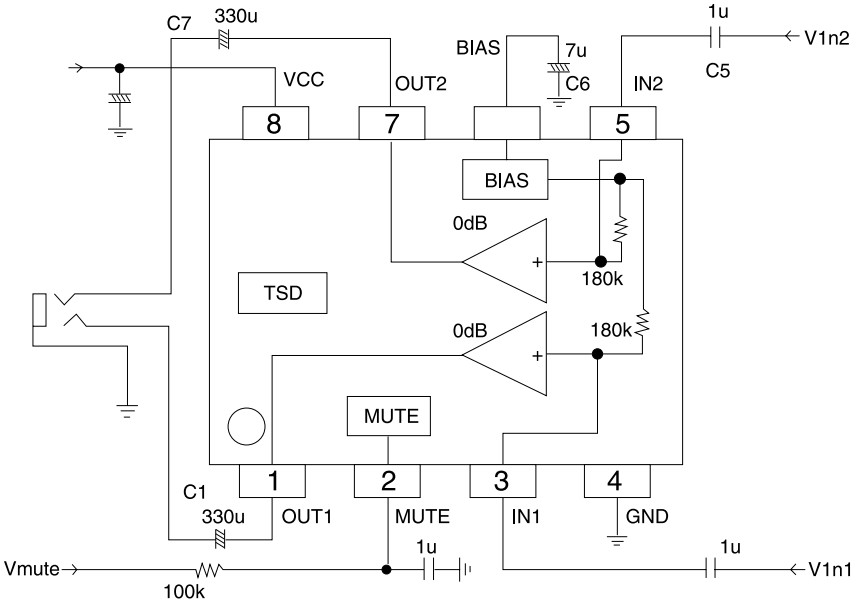
29EE512-70(I.C-FLASH MEMORY)



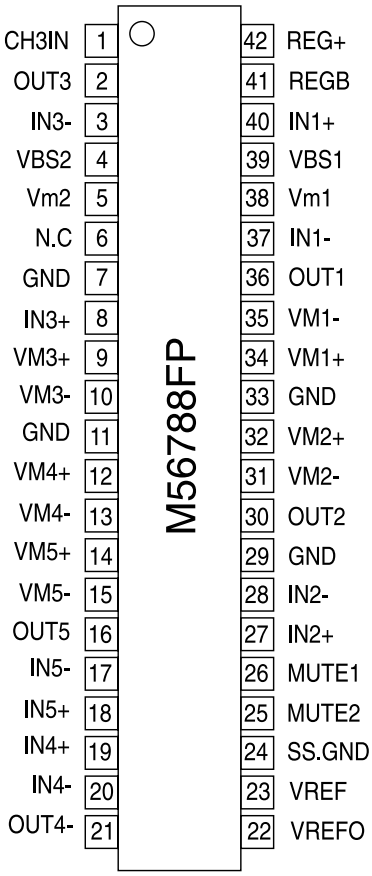
- PIN DESCRIPTION

Symbol	Pin Name	Functions
A15-A7	Row Address Inputs	To provide memory addresses. Row addresses define a page for a write cycle.
A6-A0	Column Address Inputs	Column Addresses are toggled to load page data.
DQ7-DQ0	Data Input/output	To output data during read cycles and receive input data during write cycles. Data is internally latched during a write cycle. The outputs are in tri-state when OE# or CE# is high.
OE#	Chip Enable	To activate the device when CE# is low.
OE#	Output Enable	To gate the data output buffers.
WE#	Write Enable	To control the write operations
Vcc	Power Supply	To provide 5-volt supply(±10%)
Vss	Ground	
NC	No Connection	Unconnected pins.

BH3541F(I.C-H/P AMP)



M56788FP(I.C-DRIVE)



- PIN DESCRIPTION

Terminal	Symbol	Terminal function	Terminal	Symbol	Terminal function
①	CH3IN	CH3 non-inverted input	㉒	VREF0	Reference voltage output
②	OUT3	E3 amplifier output	㉓	VREF	Reference voltage input
③	IN3-	E3 amplifier inverted input	㉔	SS.GND	Small signal GND
④	VBS2	Bootstrap power supply	㉕	MUTE2	CH5 mute
⑤	Vm2	Motor power supply	㉖	MUTE1	CH1-4mute
⑥	N.C	N.C	㉗	IN2+	E2 amplifier non-inverted input
⑦,⑪	GND	Motor GND	㉘	IN2-	E2 amplifier inverted input
⑧	IN3+	E3 amplifier non-inverted input	㉙,㉝	GND	Motor GND
⑨	VM3(-)	CH3 inverted output	㉚	OUT2	E2 amplifier output
⑩	VM3(+)	CH3 non-inverted output	㉛	VM2(-)	CH2 inverted output
⑫	VM4(+)	CH4 non-inverted output	㉜	VM2(+)	CH2 non-inverted output
⑬	VM4(-)	CH4 inverted output	㉞	VM1(+)	CH1non-inverted output
⑭	VM5(+)	CH5 non-inverted output	㉟	VM1(-)	CH1 inverted output
⑮	VM5(-)	CH5 inverted output	㊱	OUT1	E1 amplifier ouptut
⑯	OUT5	E5 amplifier output	㊲	IN1-	E1 amplifier inverted input
⑰	IN5-	E5 amplifier inverted input	㊳	Vm1	Motor power supply
⑱	IN5+	E5 amplifier non-inverted input	㊴	VBS1	Bootstrap power supply
⑲	IN4+	E4 amplifier non-inverted input	㊵	IN1+	E1 amplifier non-inverted input
⑳	IN4-	E4 amplifier inverted input	㊶	REGB	Regulator PNP base connect
㉑	OUT4	E4 amplifier output	㊷	REG+	Regulator voltage setting resistor

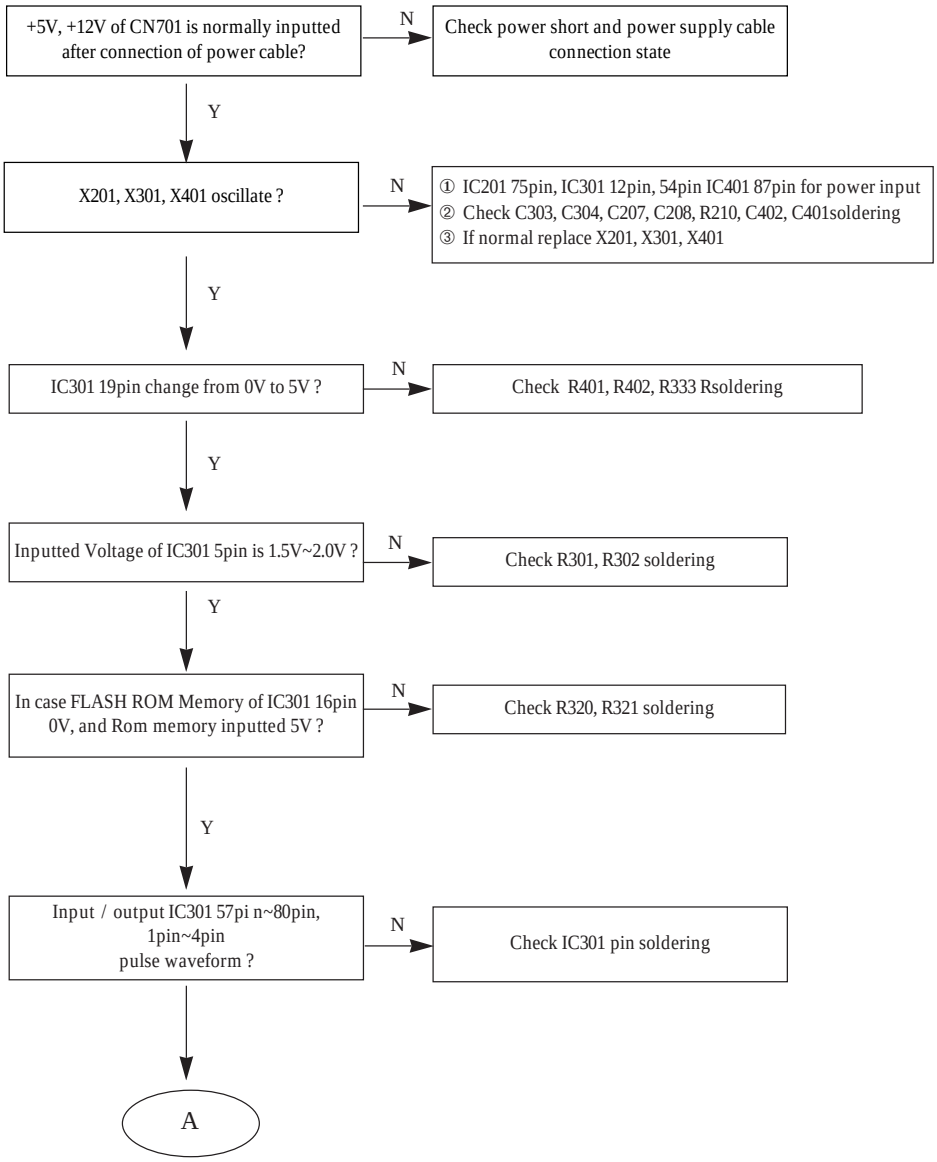
PIN ASSIGNMENT

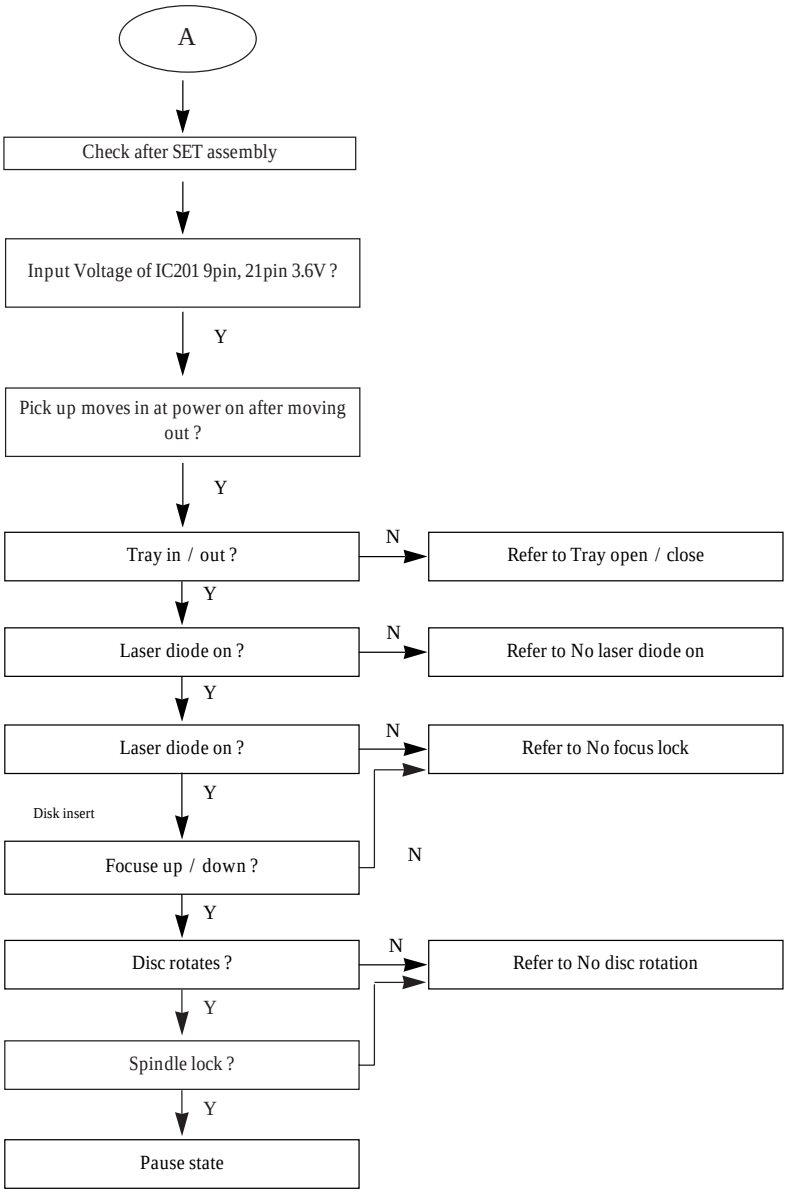
TERMINAL NO.	TERMINAL SYMBOL	FUNCTION	REMARKS
1	L_b(G)	b-phase upper side power transistor (base)output terminal	Keep open.
2	L_a(G)	a-phase upper side power transistor (base)output terminal	Keep open.
3	L_a	a-phase output terminal	Connect to the coil.
4	V_{M2}	Supply voltage terminal for motor drive	Connect to V_{M1} externally.
5	SB	RUN / STOP control terminal	H-:RUN, L:STOP
6	R_{F1}	Output current detection terminal	Sets limiter current value. Connect to R_{F2} externally and between this terminal and GND.
7	GND2	GND	-
8	C_{RF}	Output current filter terminal	Connect a capacitor between this terminal and GND.
9	N.C		
10	FGO	FG amplifier output terminal	Outputs a signal whose frequency is determined by the CD rotation frequency.
11	BRK	Brake mode select terminal	Output mode when $V_C > V_{ref}$
12	H_b-	b-phase negative hall signal input terminal	Connect to hall element output terminal.
13	H_b+	b-phase positive hall signal input terminal	Connect to hall element output terminal.
14	H_a-	a-phase negative hall signal input terminal	Connect to hall element output terminal.
15	H_a+	a-phase positive hall signal input terminal	Connect to hall element output terminal.
16	H_c+	c-phase positive hall signal input terminal	Connect to hall element output terminal.
17	H_c-	a-phase negative hall signal input terminal	Connect to hall element output terminal.
18	HB	Hall element bias terminal	Open collector output, Connect to the negative side of hall element bias line.
19	Cd	Forward / reverse changeover gain adjustment terminal	Adjust a rotation direction changeover gain
20	V_{CC}	Supply voltage terminal for control circuits	$V_{CC(opr)}$=4.4~5.5V
21	V_C	Control amplifier inputer terminal	Use the control signal as input.
22	V_{ref}	Control amplifier reference voltage input terminal	Use the reference voltage for the control amplifier as input.
23	OSC	Triangular wave oscillation terminal	Connect a capacitor between the control amplifier as input.
24	GND1	GND	-
25	R_{F2}	Output current detection terminal	Sets limiter current value. Connect to R_{F1} externally and between this terminal and GND.
26	MS	Mode select terminal	Determines output mode.
27	L_C(G)	c-phase upper side power transistor (base) output terminal	Keep open.
28	L_C	c-phase output terminal	Connect to the coil.
29	V_{M1}	Supply voltage terminal for motor drive	Connect to V_{M2} externally.
30	L_b	b-phase output terminal	Connect to the coil.

Troubleshooting

Equipments required at repair
1. Oscilloscope(100MHz or more) 2. PROBE for Oscilloscope(10:1)
3. PC(486 ormore)

Verify the circuit of power unit and the first status(Plug-in the power cable without I/F cable and verify.)



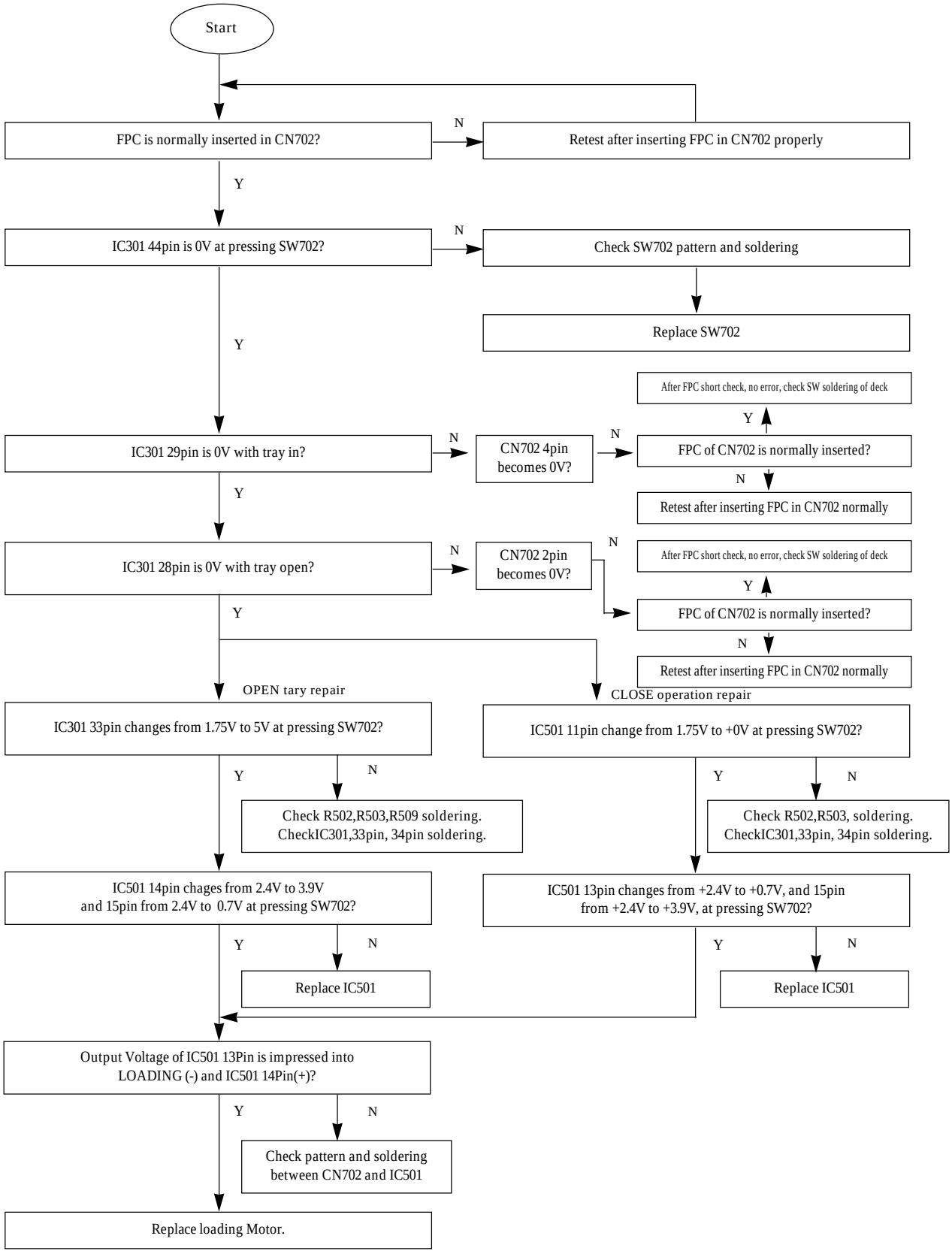


1TRACK JUMP TE

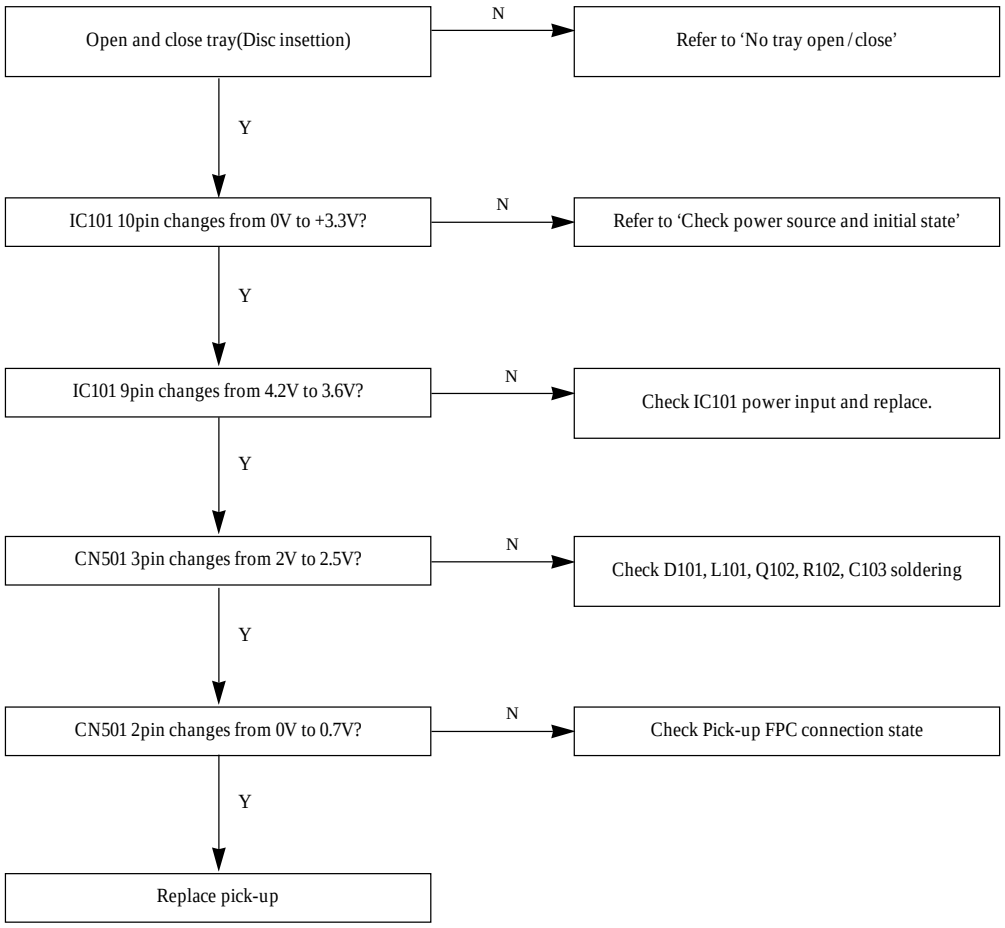
※ Pause state : LED off as disc rotation state and continue 1 track jump

No tray open / close

* FPC : Flexible Printed Circuit



No laser on



No SLED operation

Move pick-up out.

Insert 2 FPC and power cord.

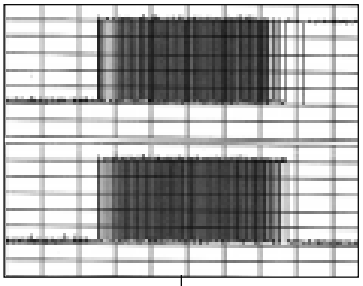
Pick-up moves in?

Y → SLED runs normally.

N

The below waveform is outputted in IC301 22Pin, 23pin ?

N → Refer to 'Check power source and initial state'



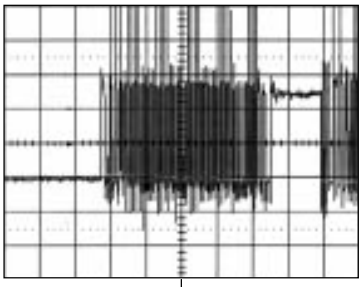
Y

The below signal is inputted in CN503 $\overline{A}$,A, B,$\overline{B}$ termial?

N → Voltage of IC501 4pin - 12V, 5pin - 5V?

Y → Check R506, R507, R512 soldering.

N → After checking IC501 soldering, no error, replace IC



Y

The opposition signal is inputted in CN503 A, $\overline{A}$, B, $\overline{B}$ termial?

N

Y

Replace SLED Motor.

No spindle motor rotation

Insert disc.

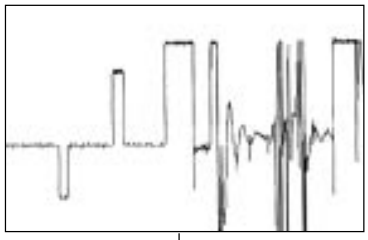
Y

Focus lock? — N → Refer to 'No focus lock'

Y

The below waveform is inputted in IC502 22Pin? — N → Refer to 'No focus lock'

Spindle motor kick signal



Y

IC502 4Pin, 29pin is 12V? → Refer to 'No focus lock'

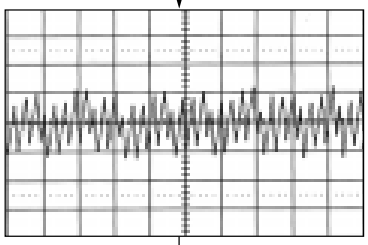
Y

IC502 5Pin is 5V? — N → Check IC301 38pin soldering, Check R323 soldering

Y

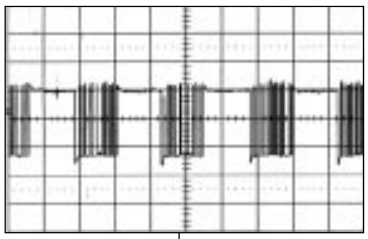
The below waveform is inputted in IC502 — N → Check C519 soldering, Check IC502 23pin soldering

Y



Y

IC502 5Pin is 5V? — N → Replace IC502



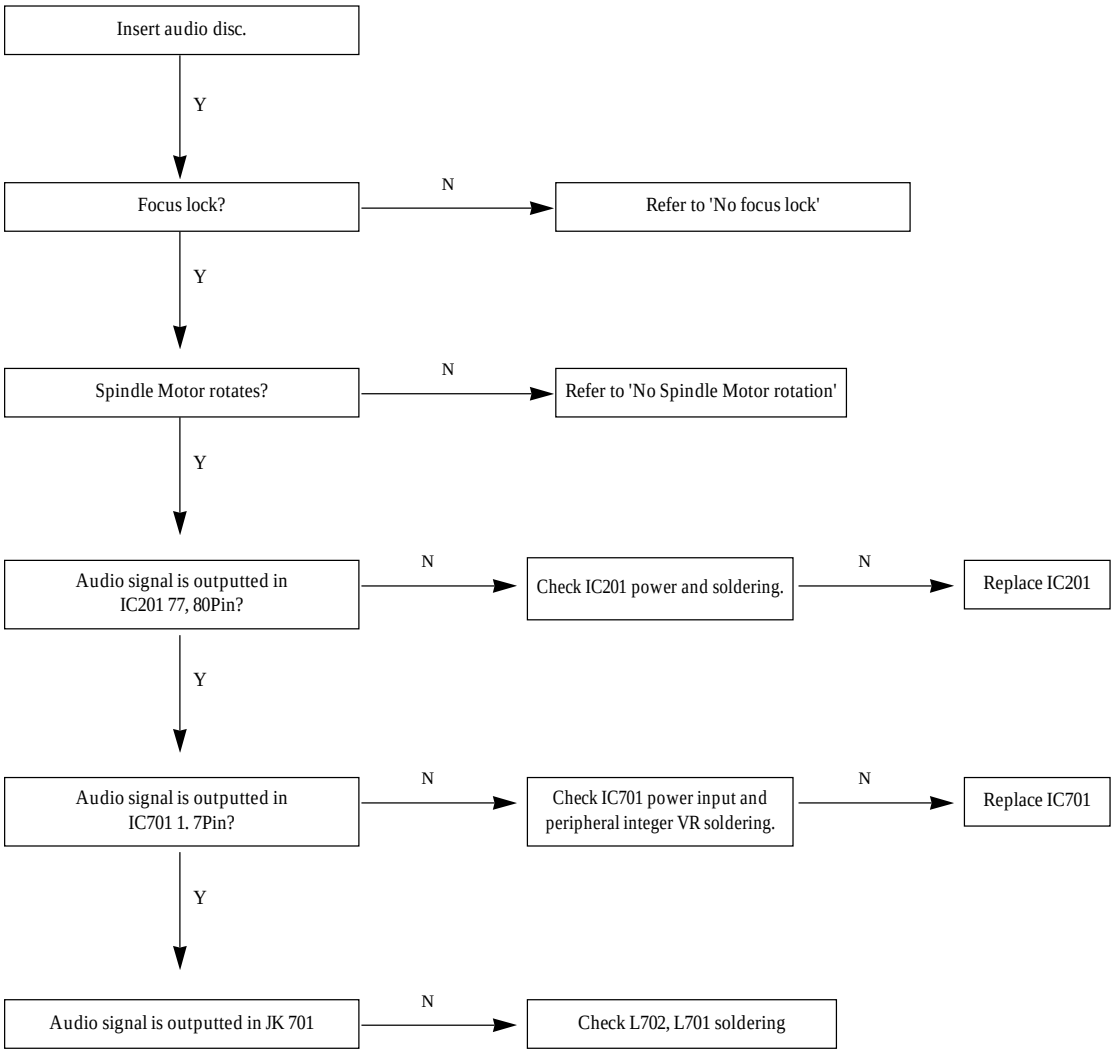
Y

Spindle Motor FPC is connected? — N → Replace IC502

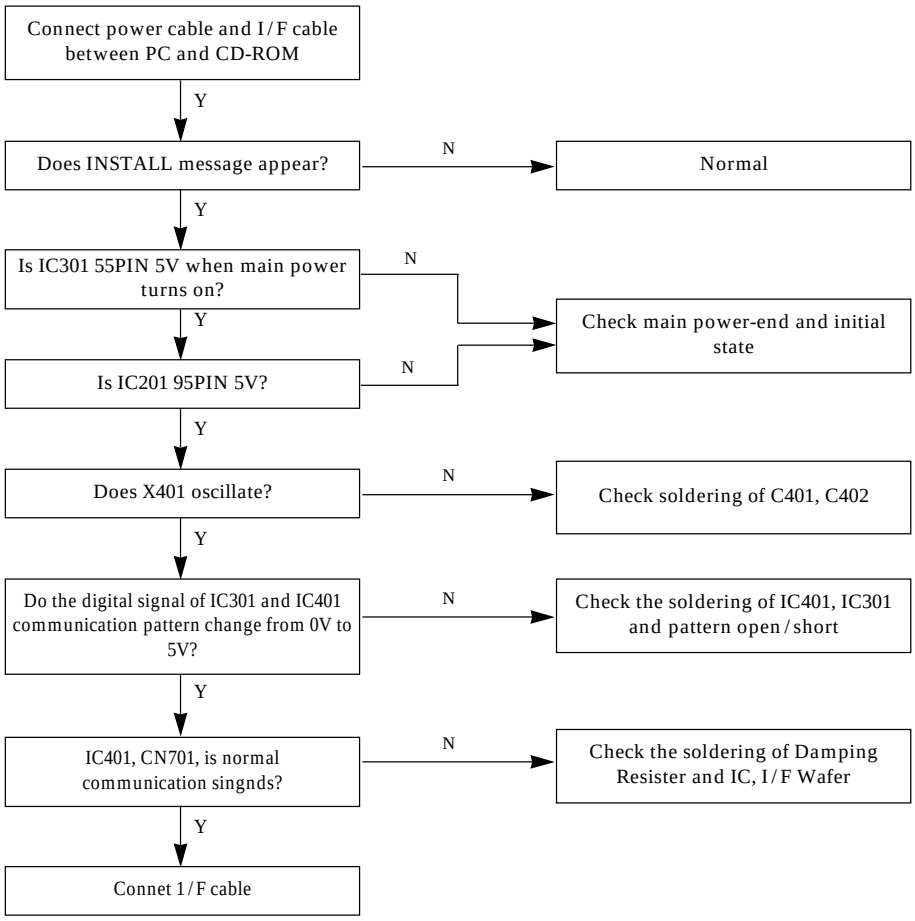
Y

Replace spindle Motor

No audio output



When installing is impossible



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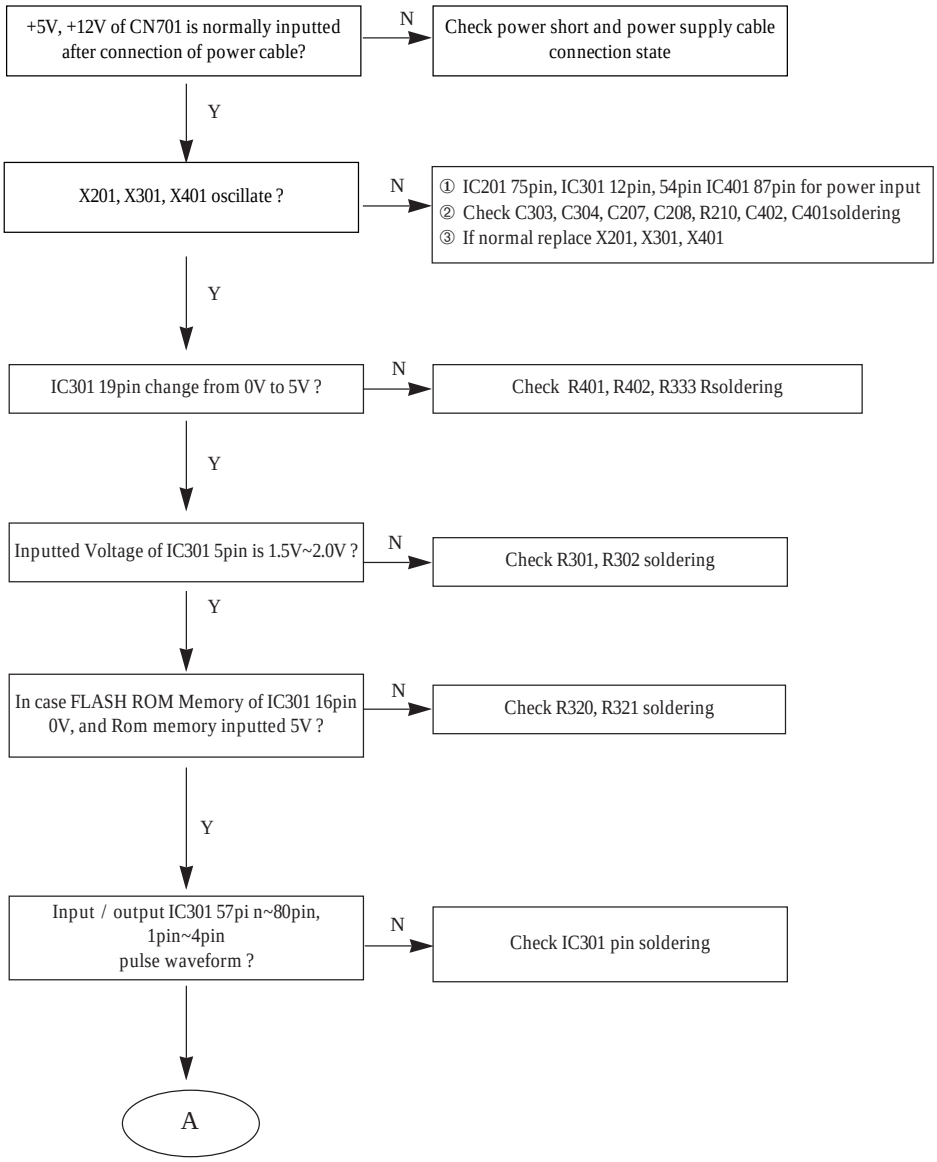

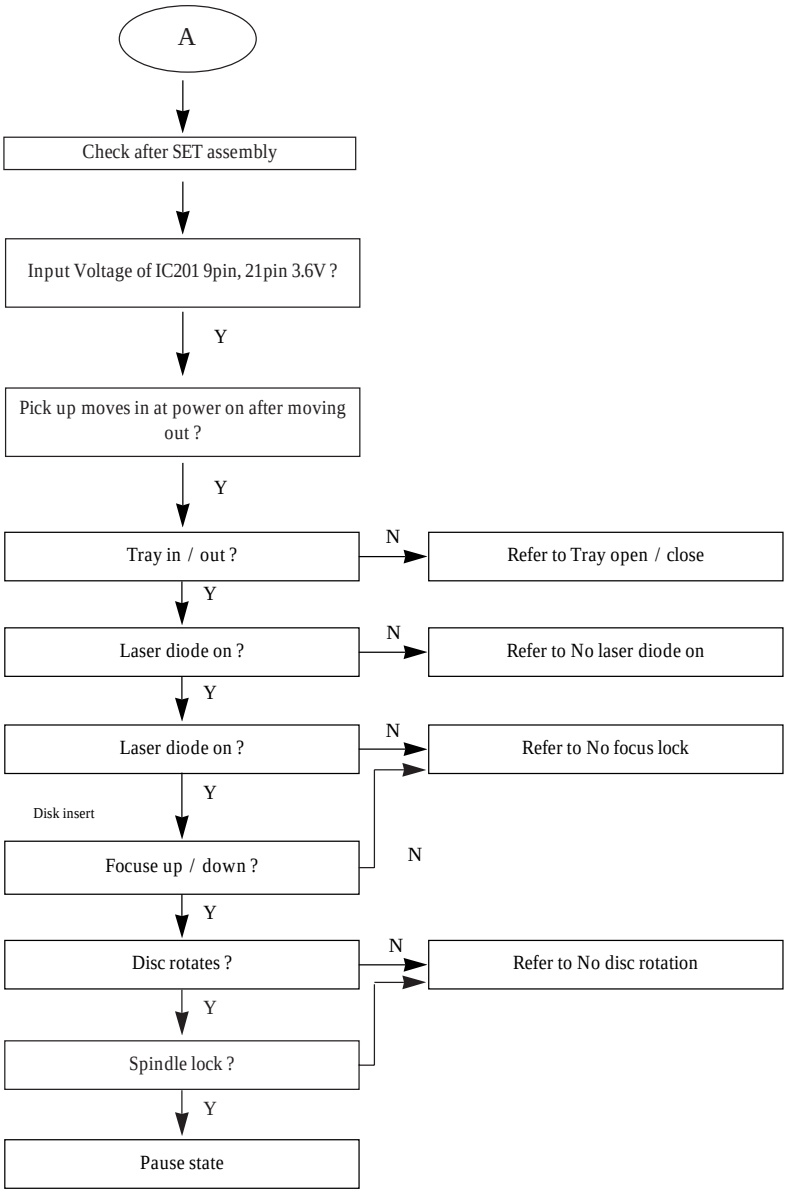

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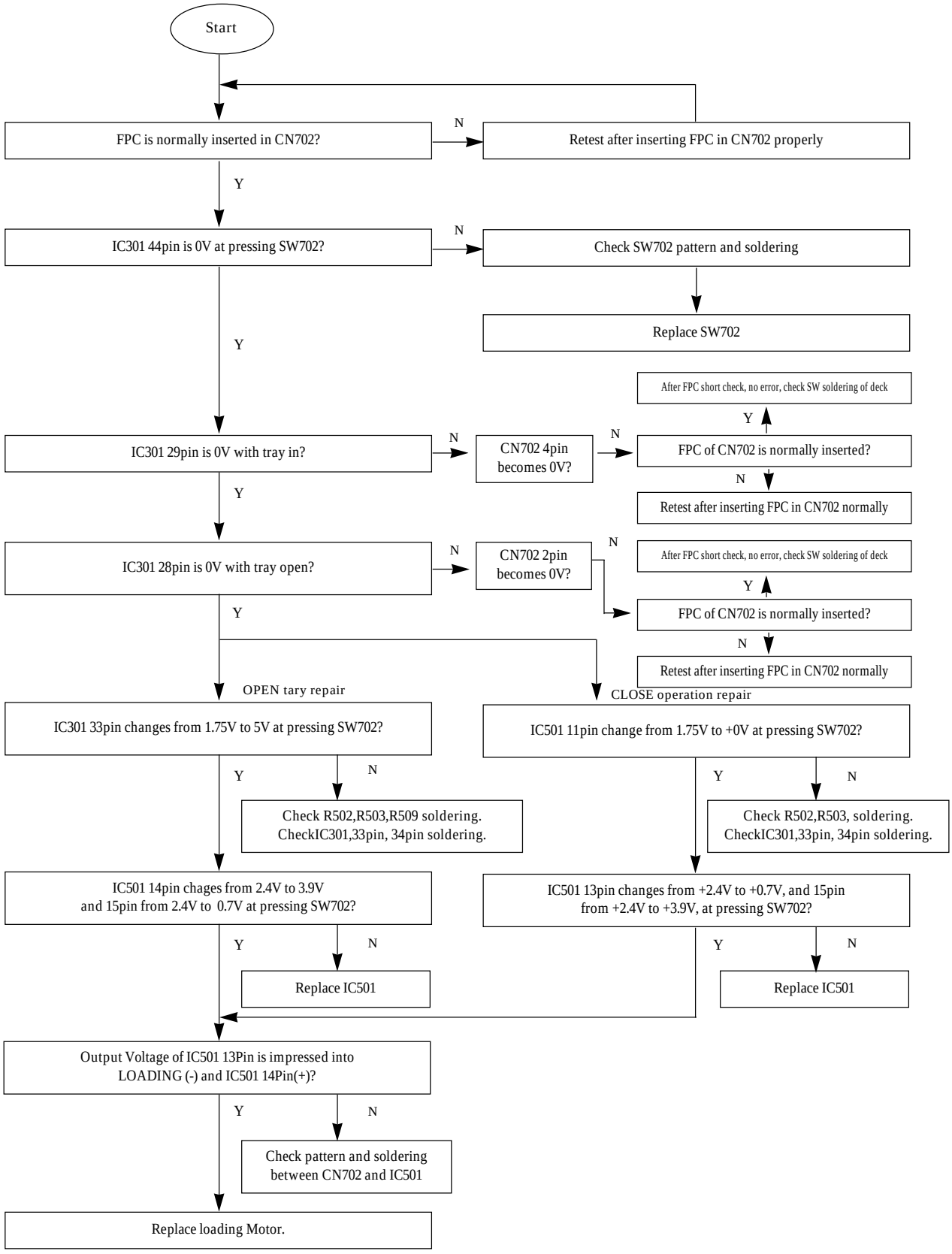
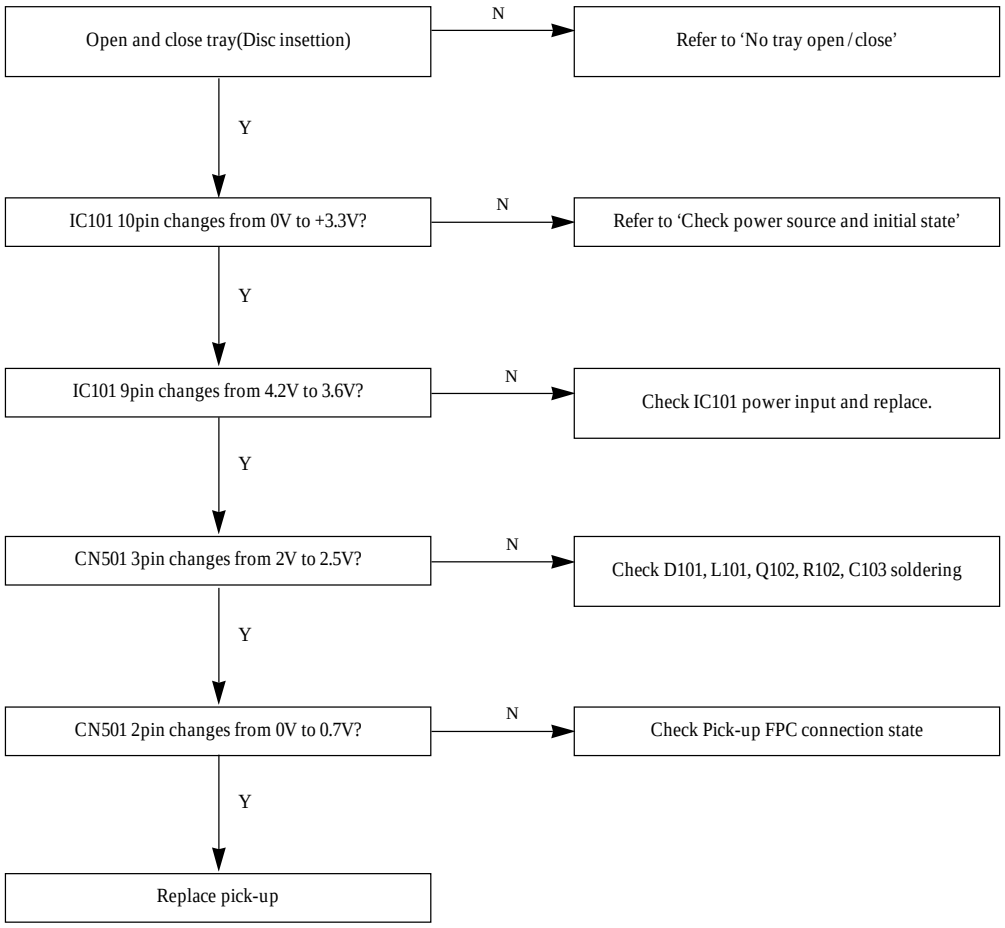


No laser on



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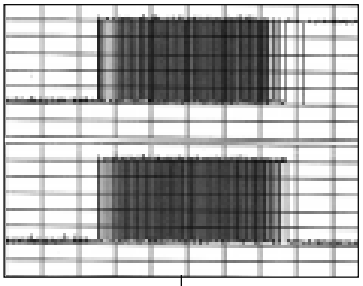

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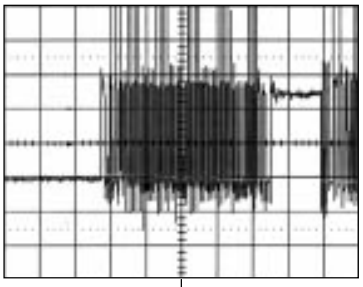


Y

The opposition signal is inputted in CN503 A, $\overline{A}$, B, $\overline{B}$ termial?

N

Y

Replace SLED Motor.

No spindle motor rotation

Insert disc.

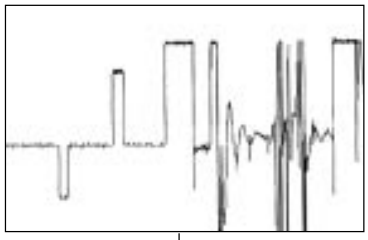
Y

Focus lock? — N → Refer to 'No focus lock'

Y

The below waveform is inputted in IC502 22Pin? — N → Refer to 'No focus lock'

Spindle motor kick signal



Y

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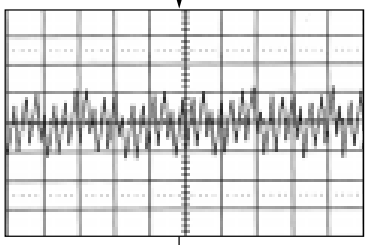
Y

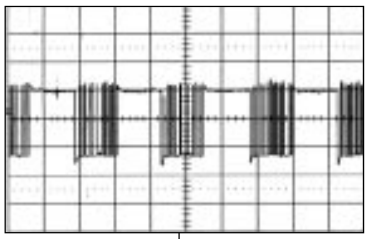
The below waveform is inputted in IC502 — N → Check C519 soldering, Check IC502 23pin soldering

Y



Y

IC502 5Pin is 5V? — N → Replace IC502



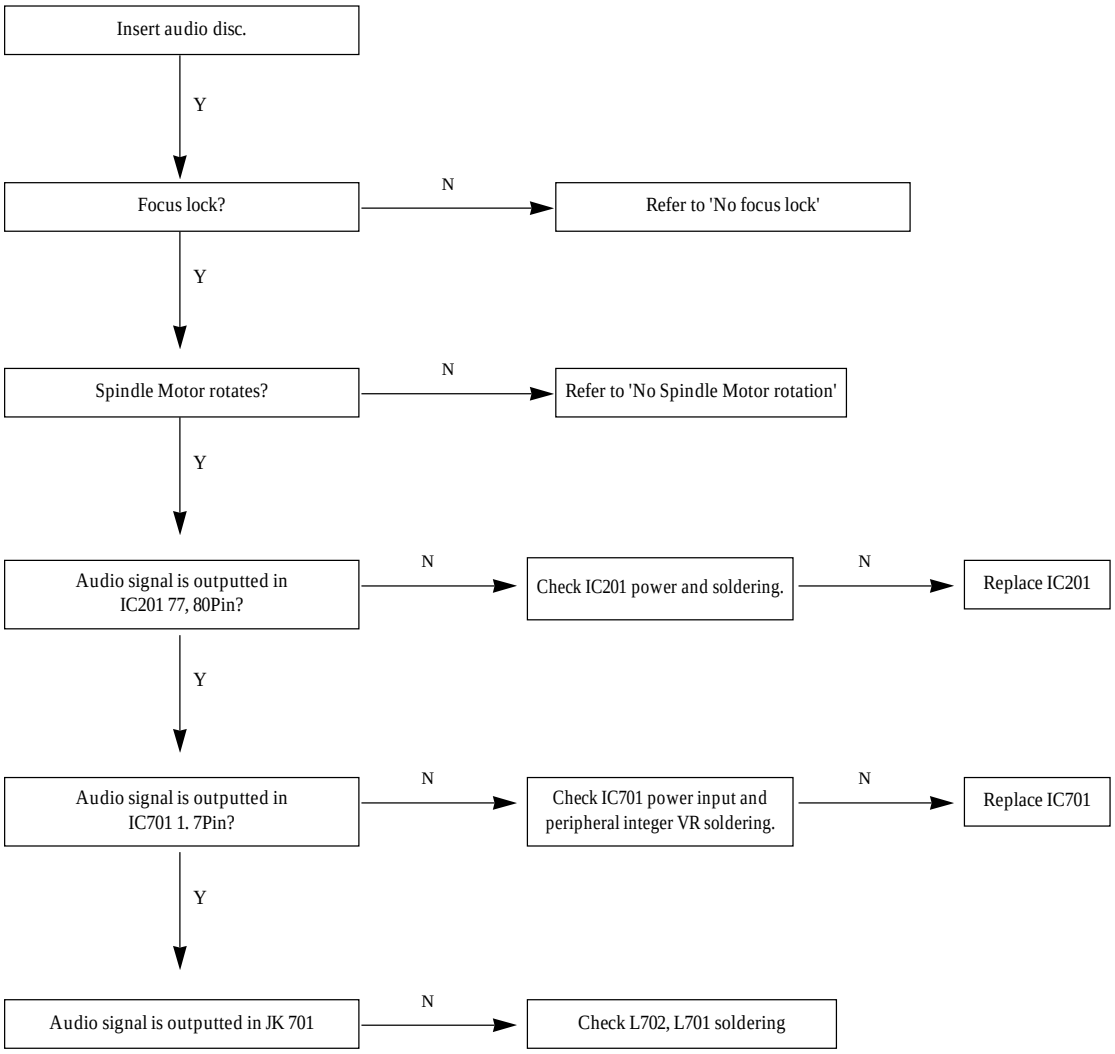
Y

Spindle Motor FPC is connected? — N → Replace IC502

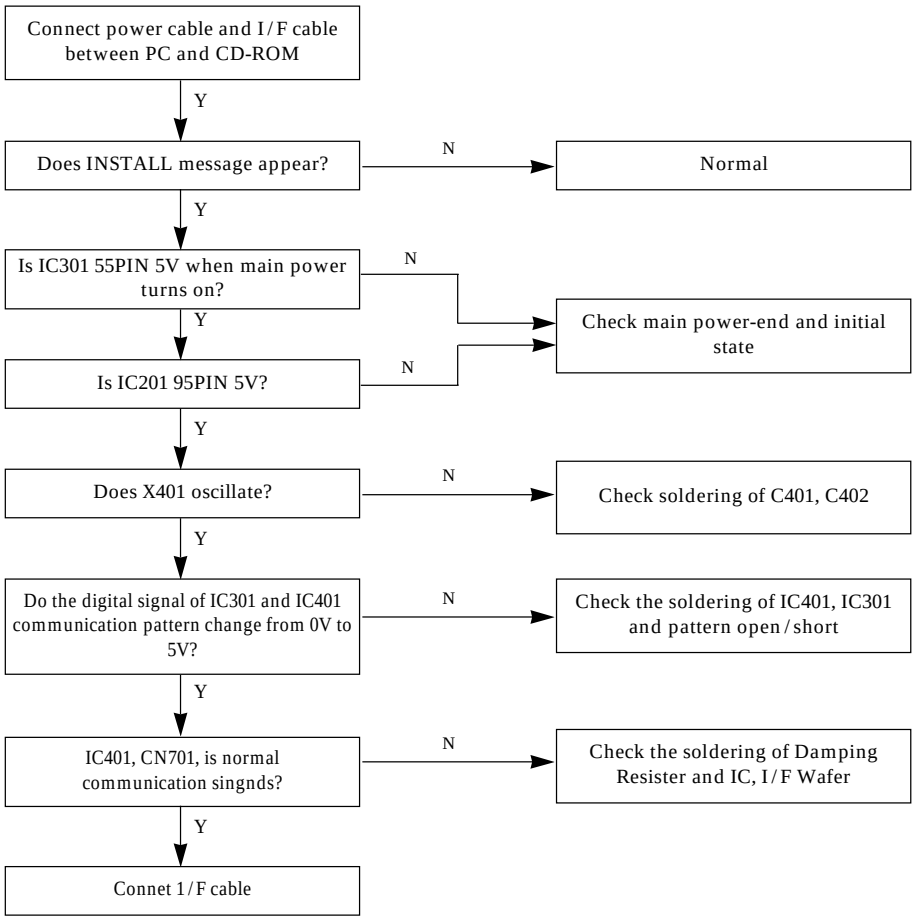
Y

Replace spindle Motor

No audio output

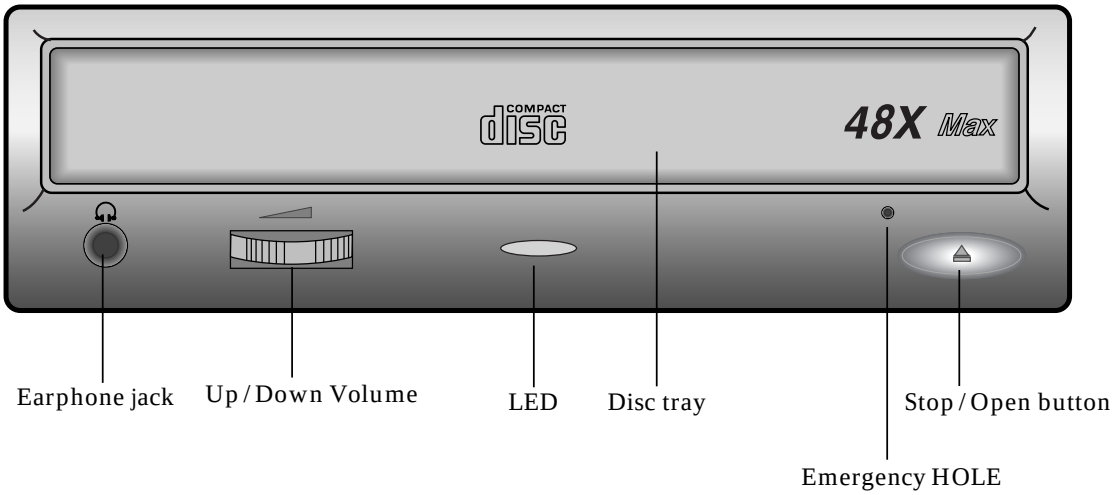


When installing is impossible

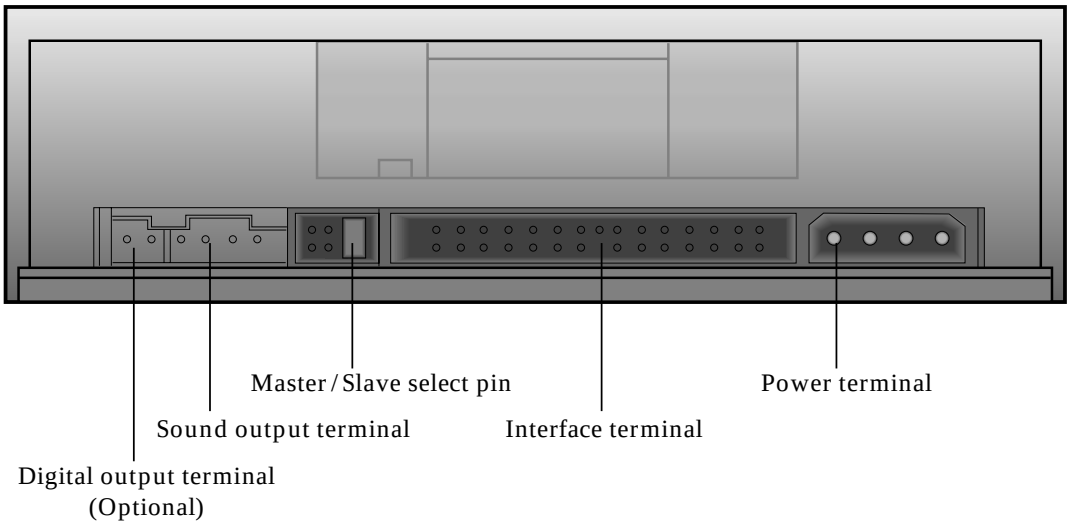


External Part Name

1.Front



2.Rear



Disassembly Method

1. COVER BOTTOM ASSY disassembly

Remove 4 screws ㉛ on the bottom of COVER BOTTOM ASSY, lift the back up and disassemble ㉛COVER BOTTOM ASSY as shown in the figure of the next page.

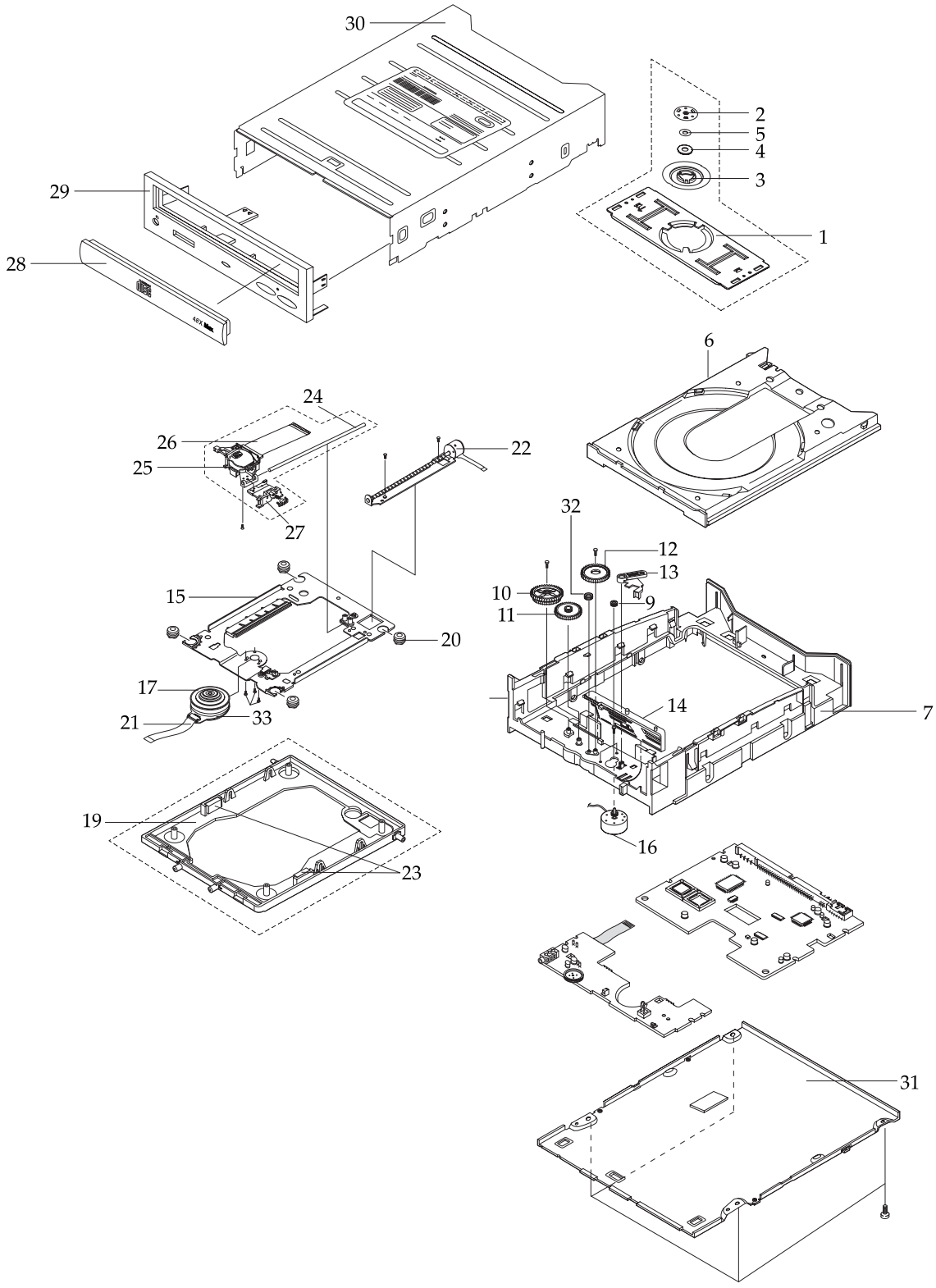
2. COVER-TOP disassembly

After disassembling 6 hooks of FRONT ASSY ㉙ from COVER TOP ㉚ , pull COVER TOP ㉚ forward and disassemble it.

3. ASSY DECK+PCB MAIN disassembly

Disassemble FPC PICK-UP ㉔ and FPC MOTOR ㉕ connected between assy deck and PCB main, then disassemble between deck and PCB main.

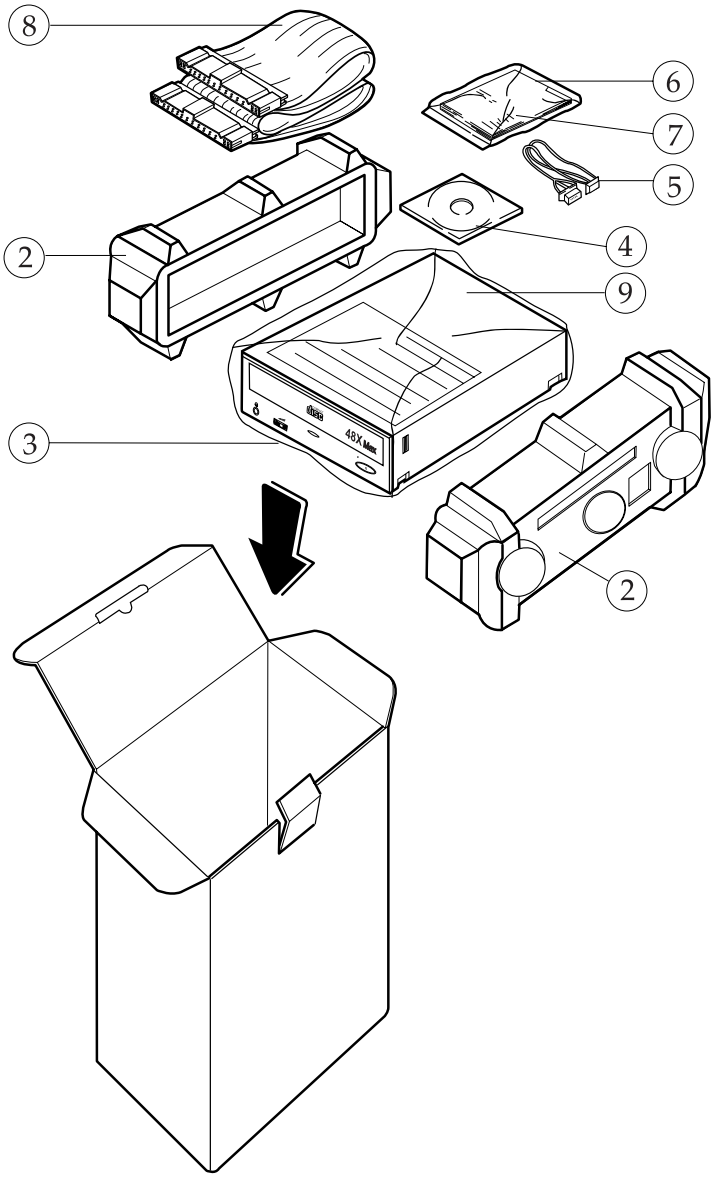
Exploded Views



Device Part List

NO	PARTS	SPECFICATION	COUNT	Code
	FULL DESK ASSY			
	ASS'Y CLAMPER			BG97-00013A
1	-BRKT CLAMPER	SECC 0.8T		BG61-00010A
2	-CLAMPER UPPER	POM		BG66-90013A
3	-CLAMPER LOWER	POM		BG66-00001A
4	-MAGNET CLAMPER	Nd-Fe-B(N35H)		BG33-30001D
5	-BRKT MAGNET	SECC 0.8T		BG61-00018A
6	TRAY DISC	PC / ABS		BG66-00002A
	ASS'Y LOADING			BG97-00017A
7	-MAIN FRAME	ABS		BG61-00011A
16	-MOTOR DC	SM-2412L		BG31-00002A
	-SCREW MACHNE	M1.7*3		AC60-10027A
9	-GEAR MOTOR	POM M90-44		BG66-20139A
11	-GEAR B	DELLIN 100P		BG66-20140A
12	-GEAR A	POM(M90-44)		BG66-20141A
32	-GEAR D	NYLON66(ZYTEL 101L)		BG66-20143A
10	-GEAR TRAY	DELLIN 100P		BG66-00004A
13	-RING SPRING	POM(M90-44)		BG60-42003A
	-SPRING LEVER	SUS304WPB		BG61-60038A
	-LEVER SWITCH	POM(M90-44)		BG66-30017A
14	-SLIDE CAM	PBT		BG66-00003A
	-SCREW TAPTITE	M1.7*5		AH60-10145A
33	MOTOR SPINDLE	5E7		BG31-00010A
17	ASS'Y TURN TABLE			BG97-00071A
	-TURN TABLE ABS	AL		BG66-00010A
	-BRKT T / T	SECC 1.0T		BG61-00018A
	-COVER T / T	SUS 0.3T		BG63-30018A
	-BALL TURN TABLE	NI TRONIC		BG70-10316A
	-RUBBER T / T	CR 0.45T Ø28*21		BG73-10107A
	SCREW SP MOTOR	M1.7*3		BG60-10020A
	ASSY FEEDING			BG97-00021A
19	-CHASSIS SUB	ABS+PC		BG61-00001A
15	MAIN BASE(M)	OUTSERT		BG61-00002A
	SECC 1.6T			BG61-00004A
20	-RUBBER INSULATOR	BUTYL		BG73-00001A
	-SCREW TAPPING			AH60-10143A
21	-FFC SP MOTOR	POLYESTER 11P		BG41-00021A
22	-MOTOR STEP	SPS-15RF-051K		BG31-00001A
	-SCREW TAPPING	M1.7*5(BLK)		AC60-10059A
23	-PAD DECK	PORON		BG69-00012A
	SCREW SP MOTOR	M1.7*3		AC60-10059A
24	SHAFT PU(R)	SUS420J2(89)		BG61-00009A
25	PICK UP	KSS575B		BG30-00002A
26	FFC PICK UP	POLYESTER 17P		BG41-00009A
27	ASS'Y SLIDER STEP			BG97-00018A
	SLIDER STEP	POM(NW-02)		BG66-00005A
	HOLDER-SLIDER			
	SPRING-STEP			
28	DOOR TRAY	ABS		BG64-00007A
29	PANEL FRONT ASSY			BG97-00250A
	-PANEL FRONT	ABS		
	-KNOB EJECT	ABS		
	-LENS LED	ACRYL MILKY		
30	COVER TOP	SECC 0.6T		BG63-00011A
31	ASS'Y COVER BOTTOM			BG97-00251A
32	SCREW-TAPTITE	M2.6 * 6		AC60-10074A
33	BRKT-MAIN BASE	SECC 1.6T		BG61-00029A

Packing Options



NO	CODE NO.	PARTS	SPECIFICATION	Q' TY	REMAR
1	BG69-00017A	PACKING-CASE	SW-1E	1	**K**
2	BG69-20327A	CUSHION-SET	EPS	2	
3	BG69-30305A	BAG-PE	LDPE	1	
4	BG46-30001J	DISC-FLOPPY	3.5 INCH	1	
5	BG39-42001A	CABLE-WIRE HARNESS	4P	1	
6	BG69-30307A	PE-BAG	LDPE	1	
7	BG68-00043A	MANUAL-USERS		1	
8	BG39-30002A	CABLE-IF	380MM	1	

Electrical Parts List

SC-148B MAIN PCB

IC

NO	CODE NO	LOC.NO	Qty	SPEC
1	0801-002143	IC310	1	7S32
2	1001-001003	IC203	1	TC4S66F
3	1003-001221	IC501	1	M56788FP
4	1003-001227	IC502	1	TA8493AF
5	1005-001006	IC401	1	TC9474FA
6	1203-001500	IC602	1	PQ20WZ5U
7	1103-001144	IC304	1	29EE512-70
8	BG09-00002A	IC301	1	KS88C4504-14
9	0904-001367	IC201	1	TC9450BF
10	1201-001476	IC101	1	TA2143FN

C-CHIP

1	2203-000384	C401,C402	2	15P
2	2203-000062	C215,C217,C218	3	473
3	2203-000189	C104,C209,C225,C230,C301 C307,C313,C403,C404,C405 C406,C506,C508,C510,C516, C517,C522,C524,C117,C211 C106,C113,C213,C221,C116 C308,C312,C314,C602,C606 C607	31	104
4	2203-000257	C503,C306 C202,C203,C224,C609	6	103
5	2203-000560	C112 C111	2	224
6	2203-000919	C210	1	474
7	2203-000626	C408 C207,C208	3	22P
8	2203-000715	C204,C216,C219	3	332
9	2203-000783	C201	1	331
10	2203-000815	C110	1	33P
11	2203-001052	C206	1	561
12	2203-001195	C303,C304	2	7P
13	2203-001607	C519 C511	2	221
14	2203-001630	C608	1	334
15	2203-001656	C502	1	471
16	2203-001662	C227	1	562
17	2203-001724	C212,C302 C228	3	475(3216)
18	2203-001596	C205,C105 C109,C512	4	225(3215)
19	2203-002793	C115,C214,C409	3	105(2012)
20	2404-001001	C712,C715	2	10/16V
21	2402-000136	C523 C509	2	22/16V
22	2402-000179	C103,C504,C604,C107	4	47/16V
23	2402-001009	C226,C601	2	100/6.3V

R-CHIP

NO	CODE NO	LOC.NO	Qty	SPEC
1	2007-000034	R520,R521,R522,R523,R524 R525,R535	7	1(1/8W)
2	2007-000060	R516	1	100K-F
3	2007-000070	R205,R325,R333 R280,R310,R108,R109	7	0
4	2007-000071	R402,R403,R406,R408,R409 R518	6	22
5	2007-000074	R101	1	100
6	2007-000077	R732	1	470
7	2007-000078	R316,R317,R318,R401,R135, R117,R119,R201,R202,R326 R315,R713,R714,R320	15	1K
8	2007-000080	R615	1	2K
9	2007-000082	R203,R204,R207,R208,R106	5	3.3K
10	2007-000084	R311,R312,R313,R314,R335 R118	6	4.7K
11	2007-000090	R432,R443,R711 R327,R433,R437,R438,R439 R440,R442,R526,R527,R717 R718	14	10K
12	2007-000092	R301,R503	2	15K
13	2007-000094	R112,R113,R276,R277,R278 R502	6	22K
14	2007-000097	R441,R336,R323 R104,R105,R110,R111,R114 R116,R435	10	47K
15	2007-000098	R531,R533	2	56K
16	2007-000100	R507,R510,R511,R512	4	68K
17	2007-000102	R319,R504,R506,R514,R529 R532,R337,R271,R304,R305 R321	11	100K
18	2007-000109	R210	2	1M
19	2007-000122	R436	1	1.2K
20	2007-000123	R715,R720	2	1.5K
21	2007-000125	R509	1	3.9K
22	2007-000134	R272,R273,R274	3	33K
23	2007-000312	R102	1	10(3216)
24	2007-000402	R404,R405,R407,R410,R411 R412,R413,R414	8	150
25	2007-000651	R302	1	27K/F
26	2007-000781	R211	1	33(2012)
27	2007-001134	R519	1	68
28	2007-001157	R614	1	750
29	2007-001179	R275	1	8.2K
30	2007-001442	R137,R136	2	10
31	2011-000002	NR401,NR402,NR403,NR404	4	22

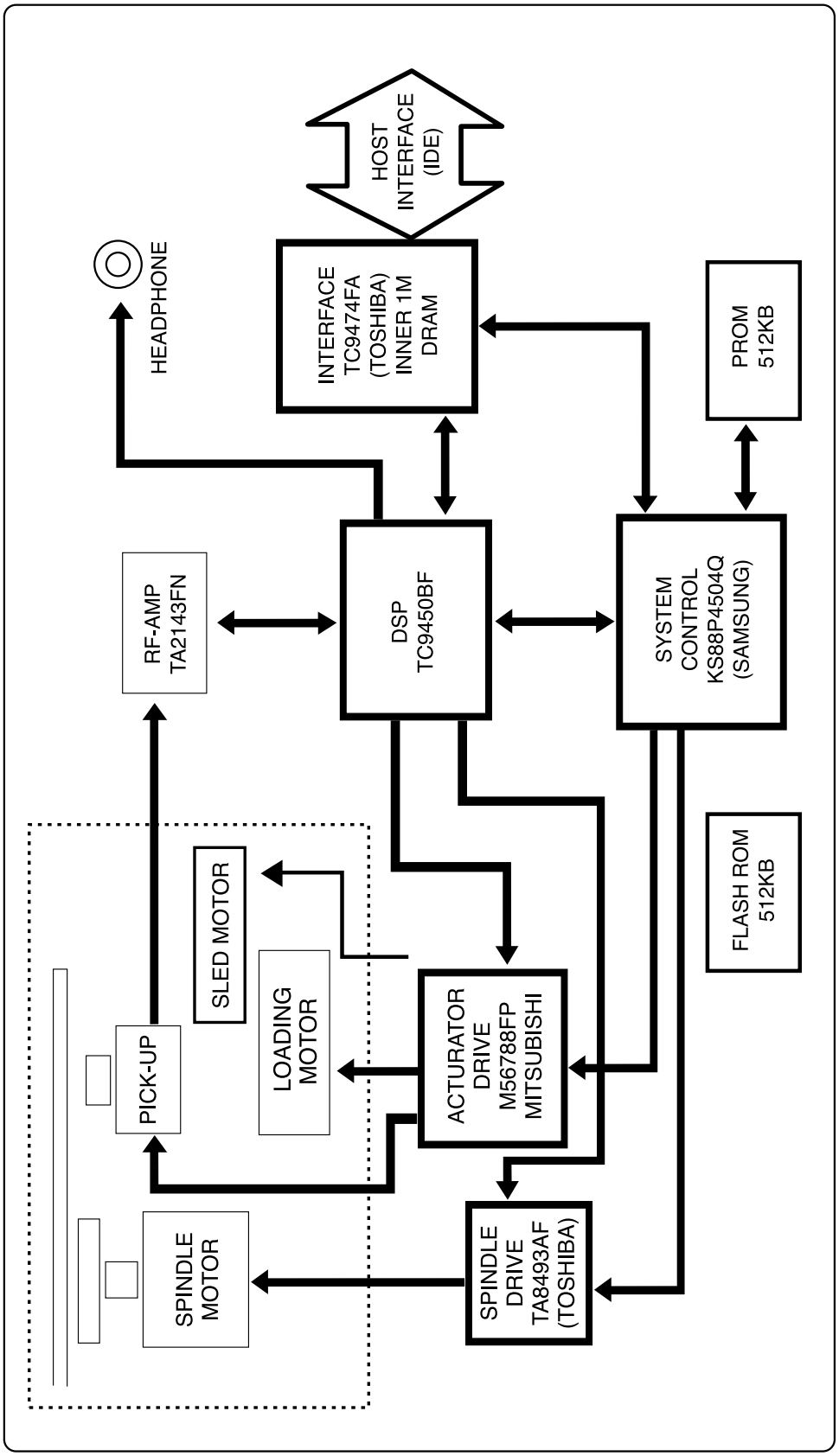
OTHERS

NO	CODE NO	LOC.NO	Qty	SPEC
1	2703-000398	L101	1	10uH
2	2802-001046	X401	1	50MHZ
3	2802-001047	X201	1	33.8688MHZ
4	2802-001068	X301	1	20MHZ
5	3301-001082	B601,B602,B603,B604	4	BEAD
6	3704-000249	IC306S	1	SOCKET-IC
7	3708-001346	CN702	1	13PIN
8	3708-001347	CN503	1	4PIN
9	3708-001348	CN502	1	11PIN
10	3708-001380	CN501	1	17PIN
11	3711-003262	CN701	1	5IN1
12	0407-000116	D101	1	DAP202K
13	0501-000251	Q102,Q501	2	BC807
14	0501-000534	Q702,Q703	2	2SC2412K
15	0501-000150	Q701	1	2SA1037
16	BG41-00018A	PCB	0.25	PCB

SC-148B FRONT PCB

NO	CODE NO	LOC.NO	Qty	SPEC
1	BG41-00019A	PCB	0.2	PCB-FRONT;SC-148B,-,-,1.6T*247*162
2	2401-001246	C701,C702	2	C-AL;4.7uF,20%,25V,WT,TP,3.5x5mm,2.
3	2401-000249	C703,C705	2	C-AL;100uF,20%,10V,GP,TP,6.3x5,2.5
4	2401-001476	C704,C709	2	C-AL;47uF,20%,10V,GP,TP,6.3x5mm,2.5
5	2401-000213	C710,C706,C707	3	C-AL;100nF,20%,50V,GP,TP,3x5,2.5
6	BG41-00004A	CN701	1	FPC;FFC-FRONT,0.3,13P,SD-604F
7	0601-001332	D701	1	LED;CBI,GRN,2.9mm,567nm
8	BG14-10001N	IC701	1	IC-H/P AMP;BH3543,SOP,8P,H/P AMP for CD-ROM
9	3722-001338	JK701	1	JACK-DC POWER;6P/3C,3.6mm,SN,BLK,NO
10	3301-001015	L701,L702	2	CORE-FERRITE BEAD
11	2001-000380	R701,R702	2	R-CARBON;160KOHM,5%,1/8W,AA,TP,1.8X3.2MM
12	2001-000515	R703	1	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM
13	2001-000281	R704	1	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM
14	2001-000281	R705		R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM
15	2001-000745	R707	1	R-CARBON;4.7OHM,5%,1/8W,AA,TP,1.8X3.2MM
16	3404-001030	SW703	2	SWITCH-TACT;12V,50MA,100±30GF,7.1X7.0X1
17	3404-001030	SW702	2	SWITCH-TACT;12V,50MA,100±30GF,7.1X7.0X1
18	AH34-22001B	SW701	1	SWITCH-PUSH LEVER;DC5V,-,100,5.7mm,40g,2
19	2101-001053	VR701		VR-ROTARY
20	3811-000389	W701	1	WIRE-NO SHEATH CU;SPCW,300V,52.4mm,1/0.5

Block Diagram



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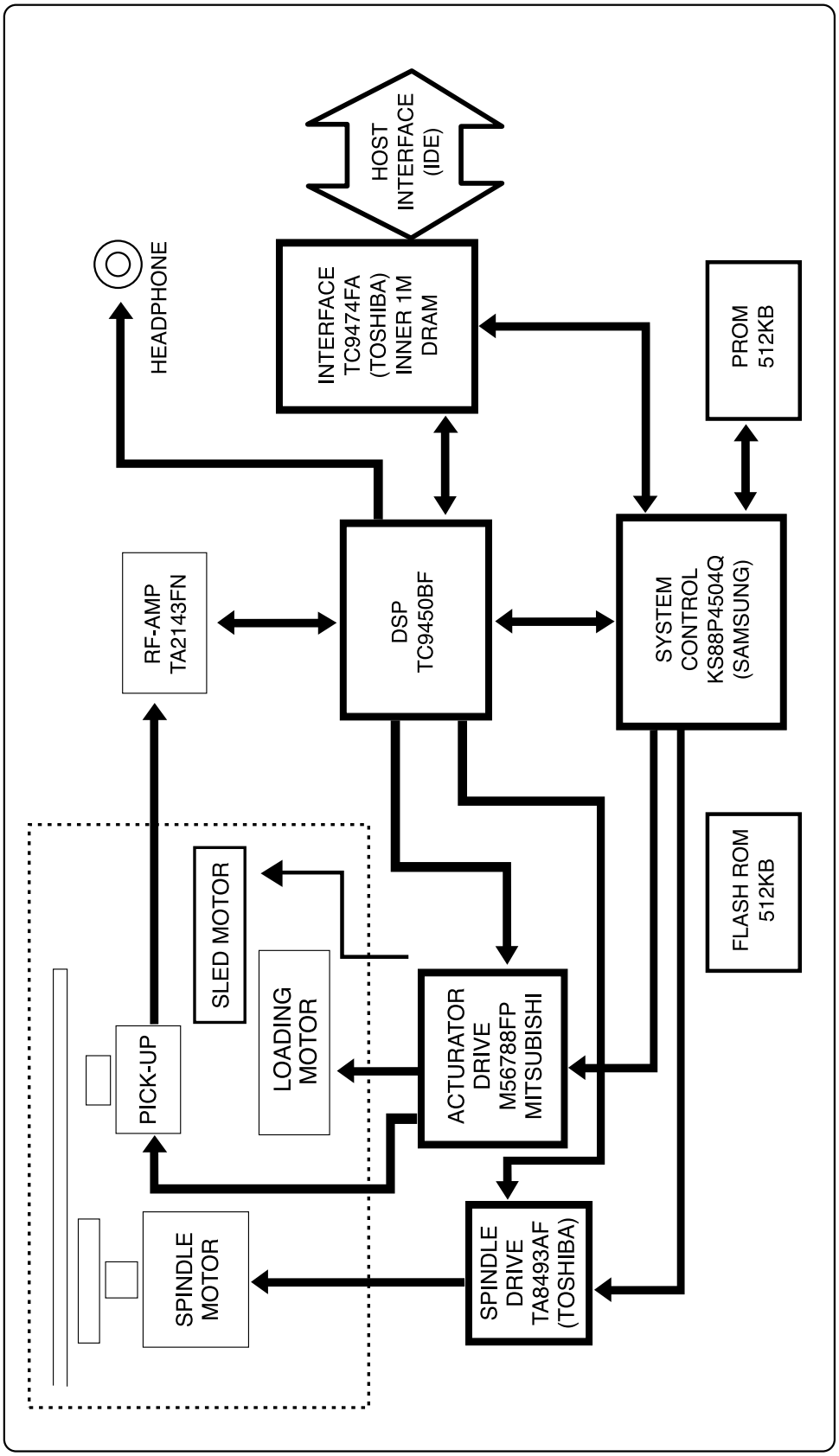
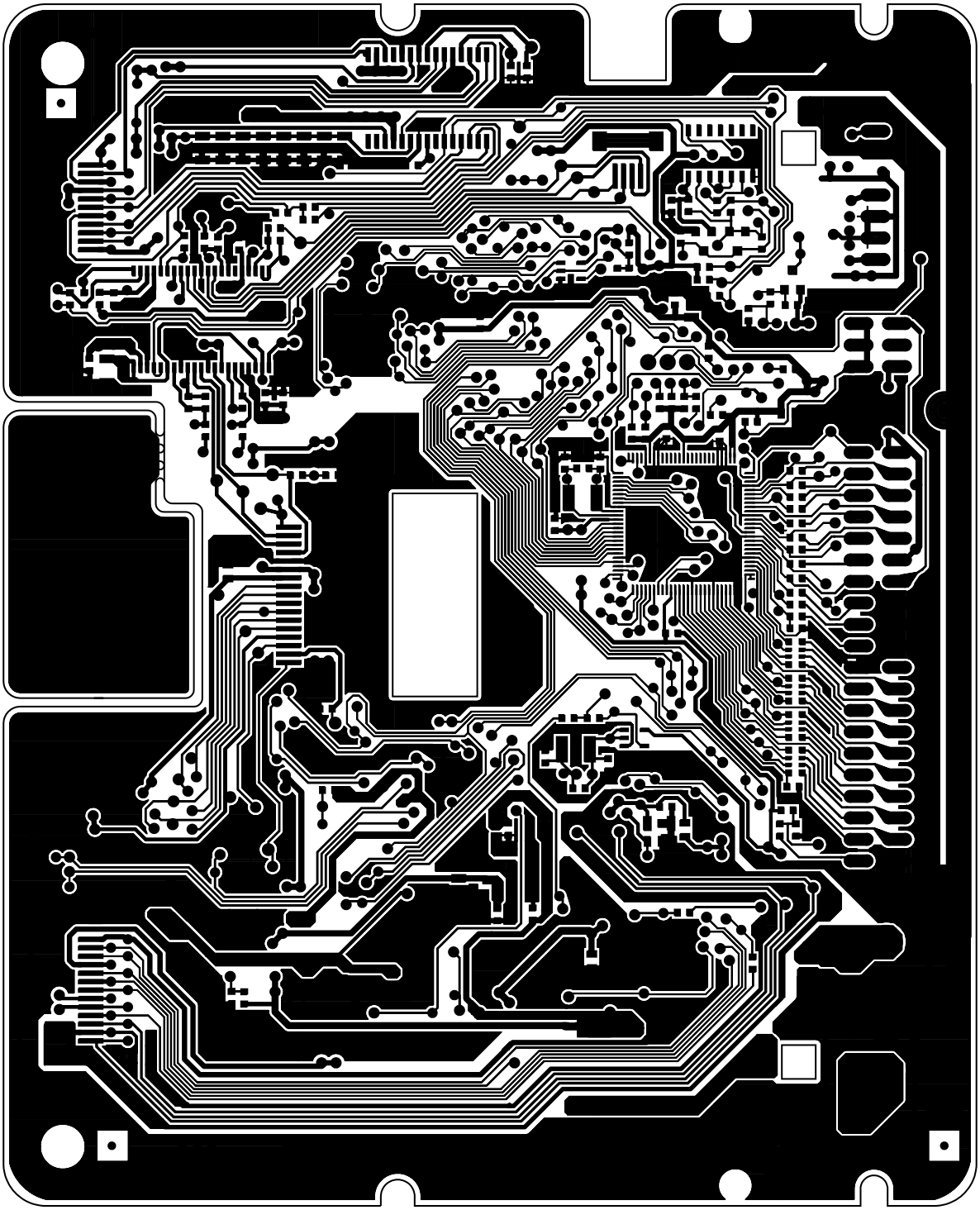


Operational Position Diagram



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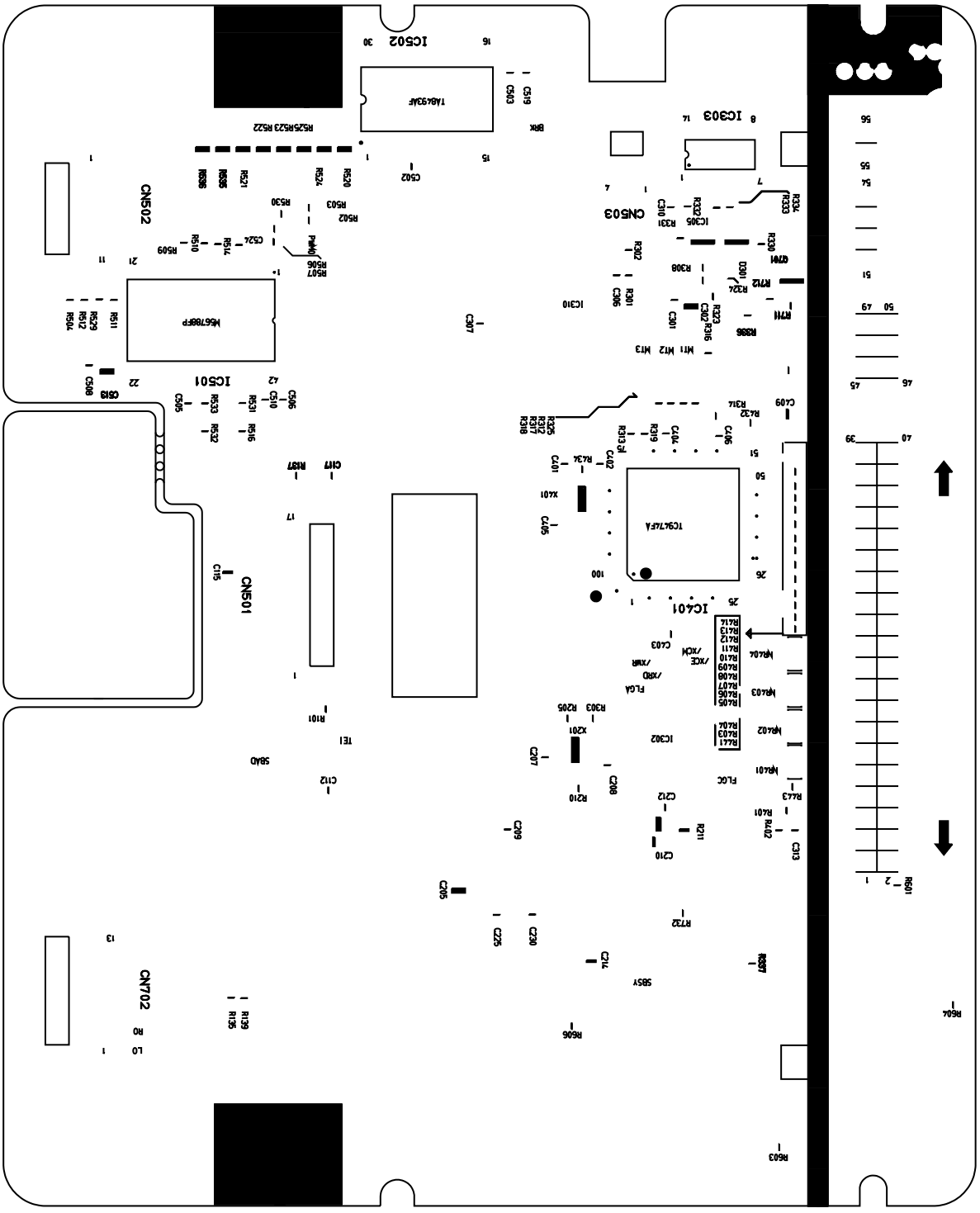

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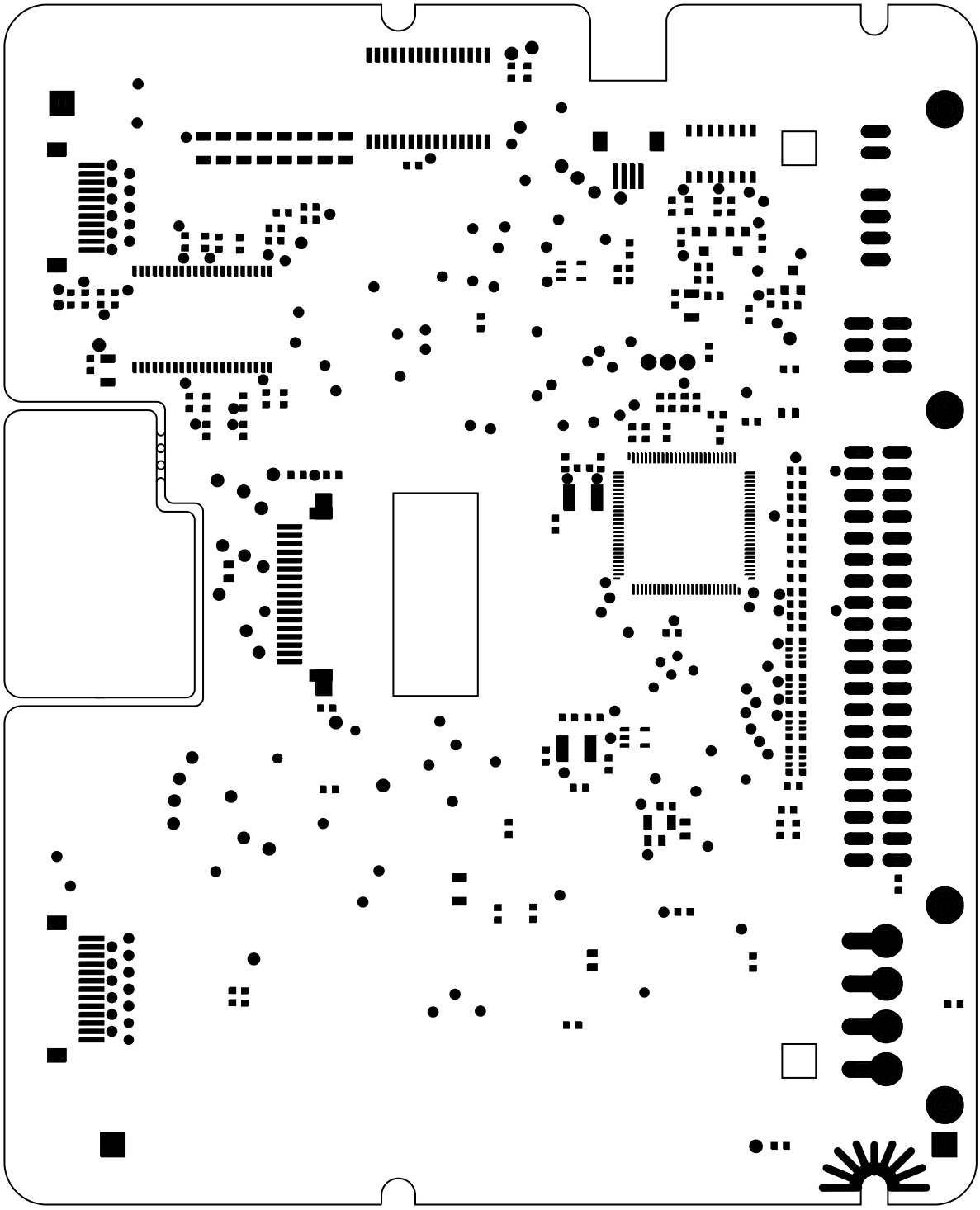

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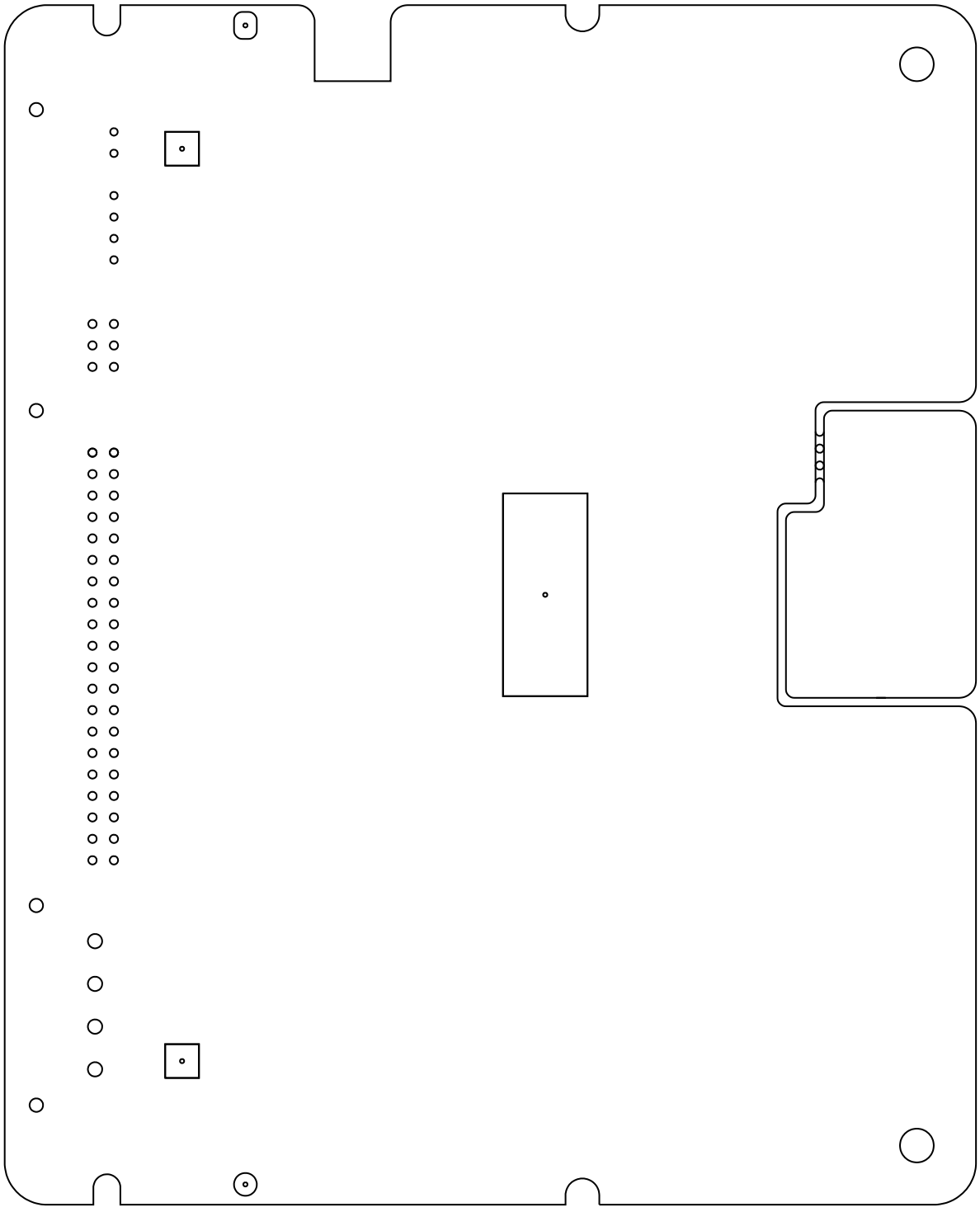

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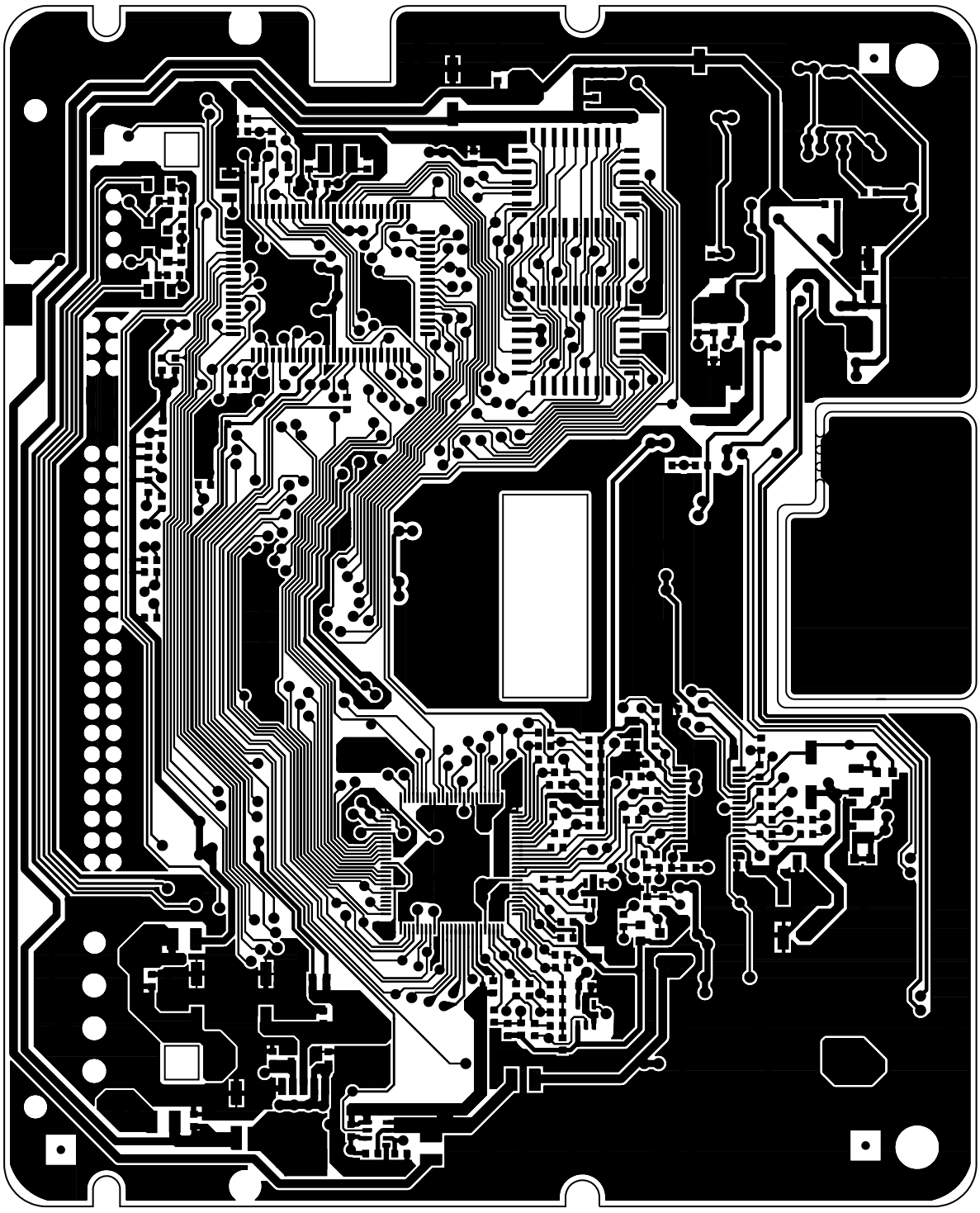

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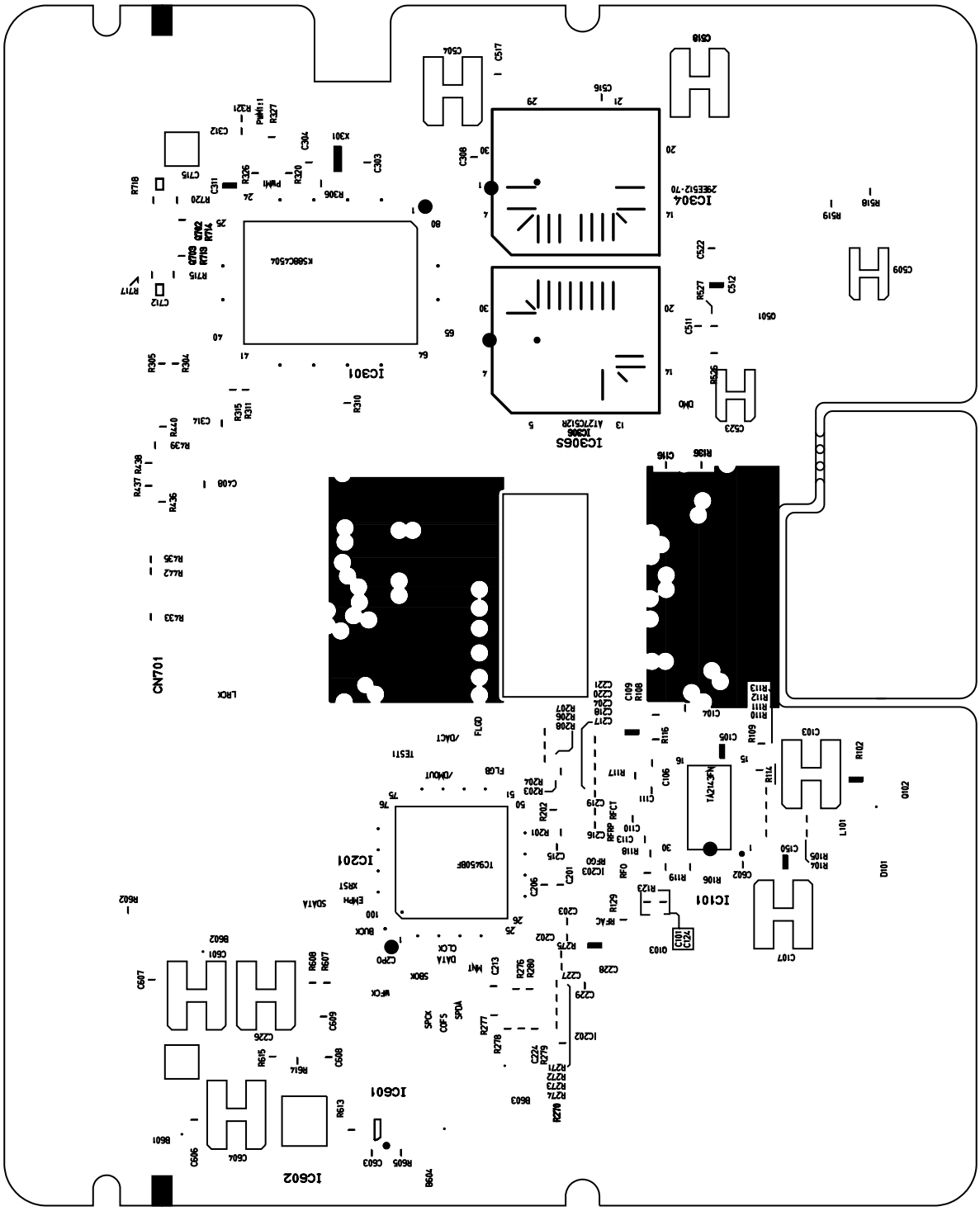

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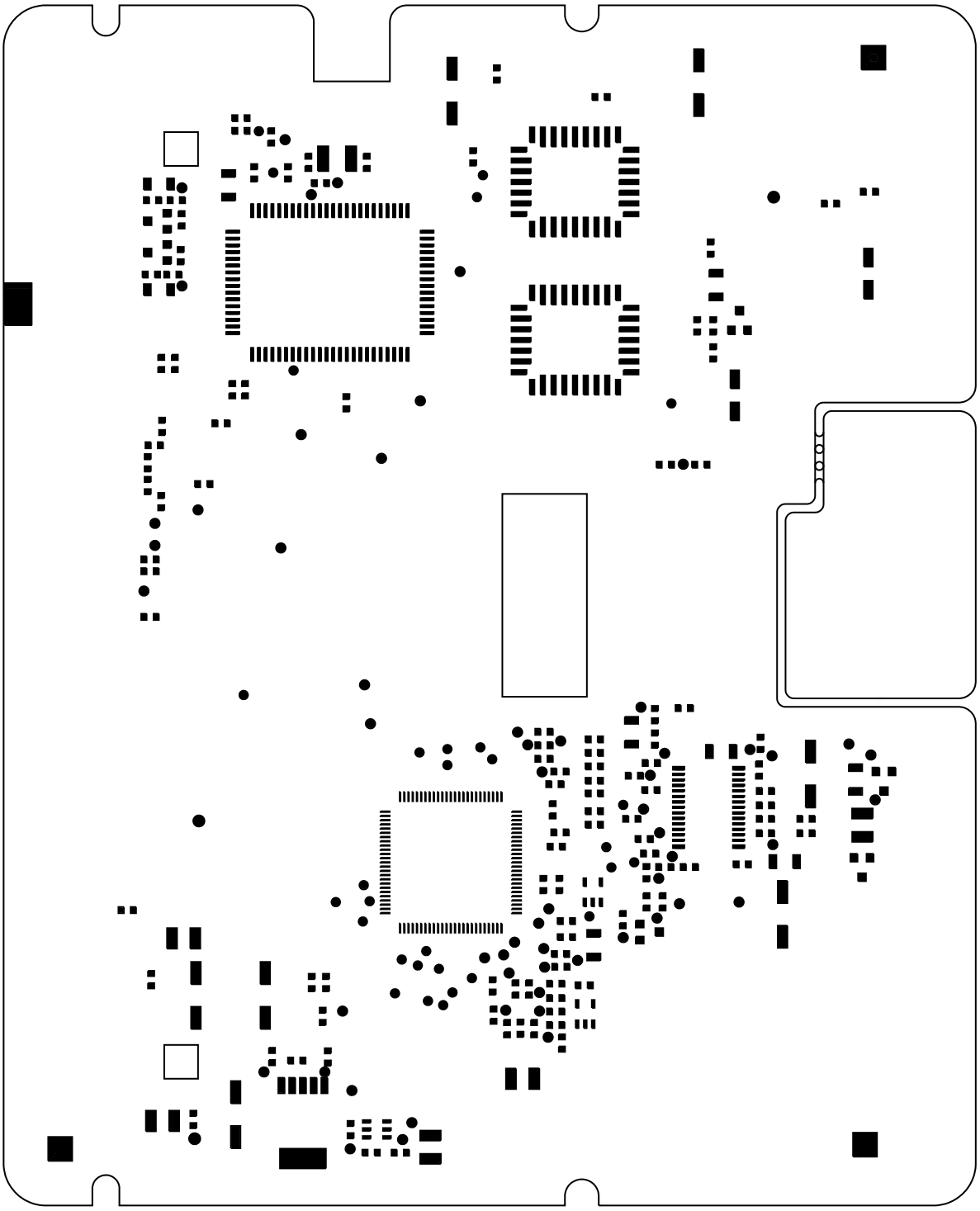

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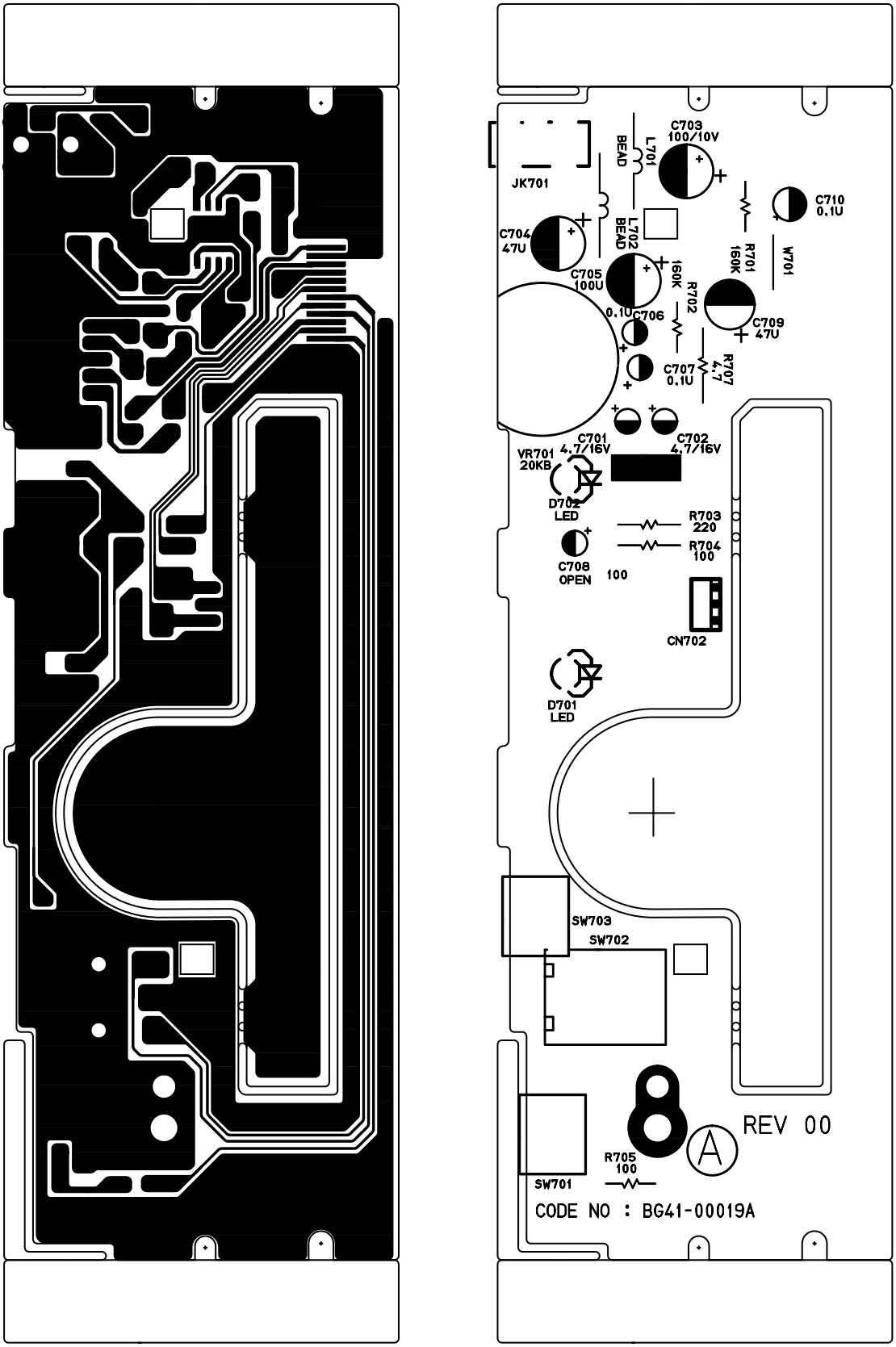

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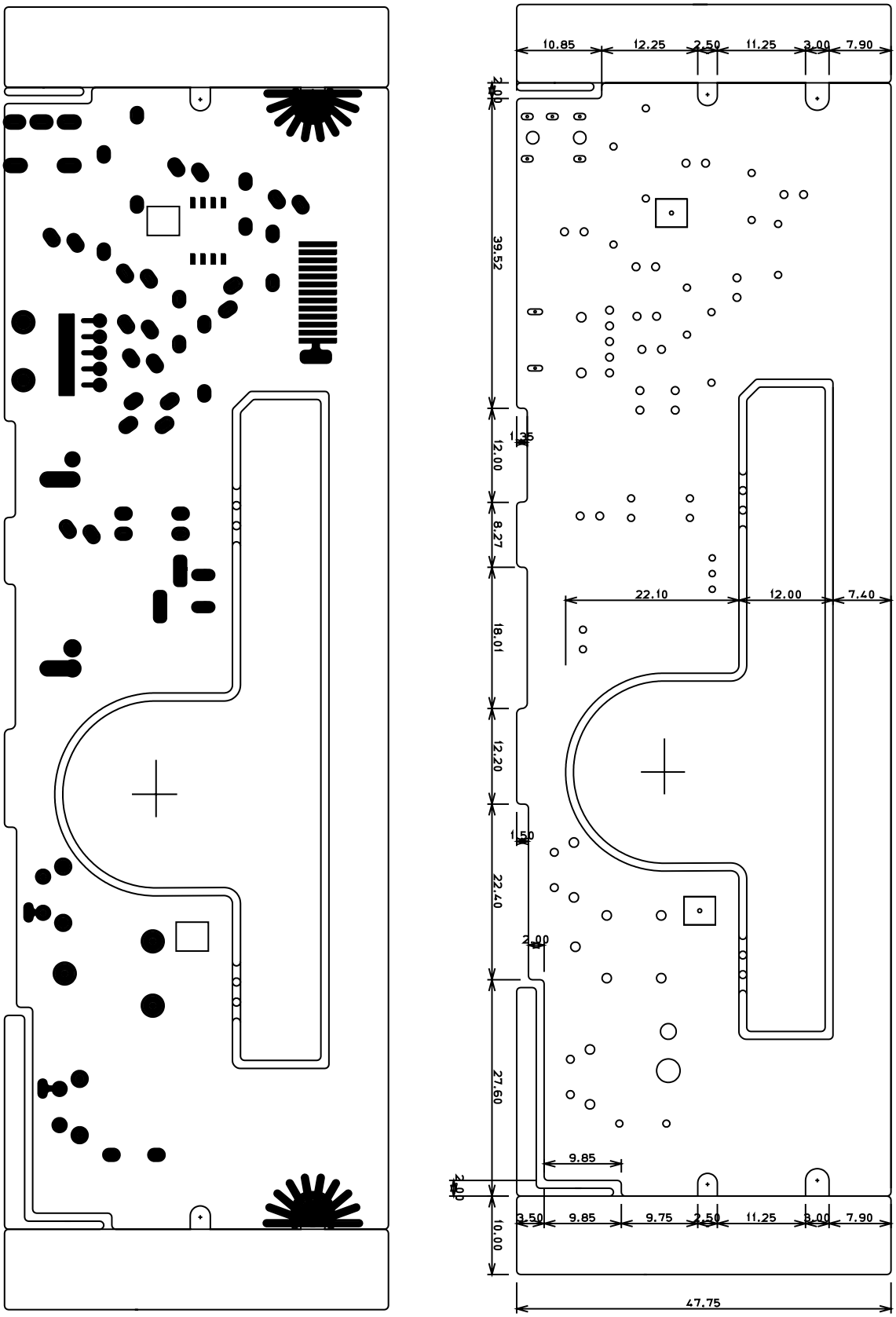

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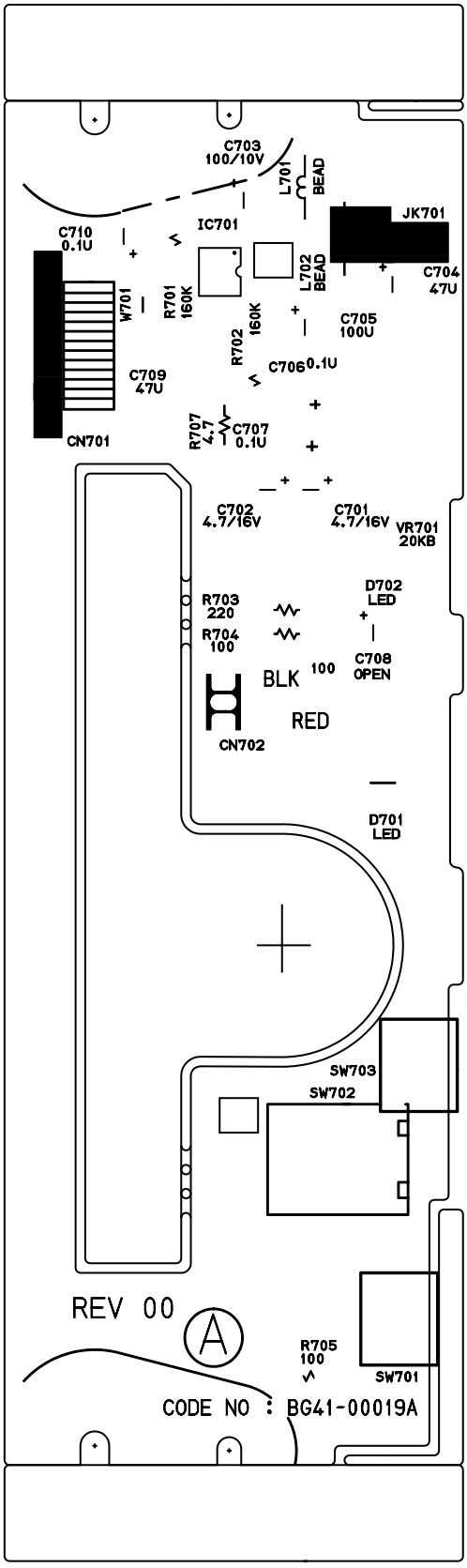

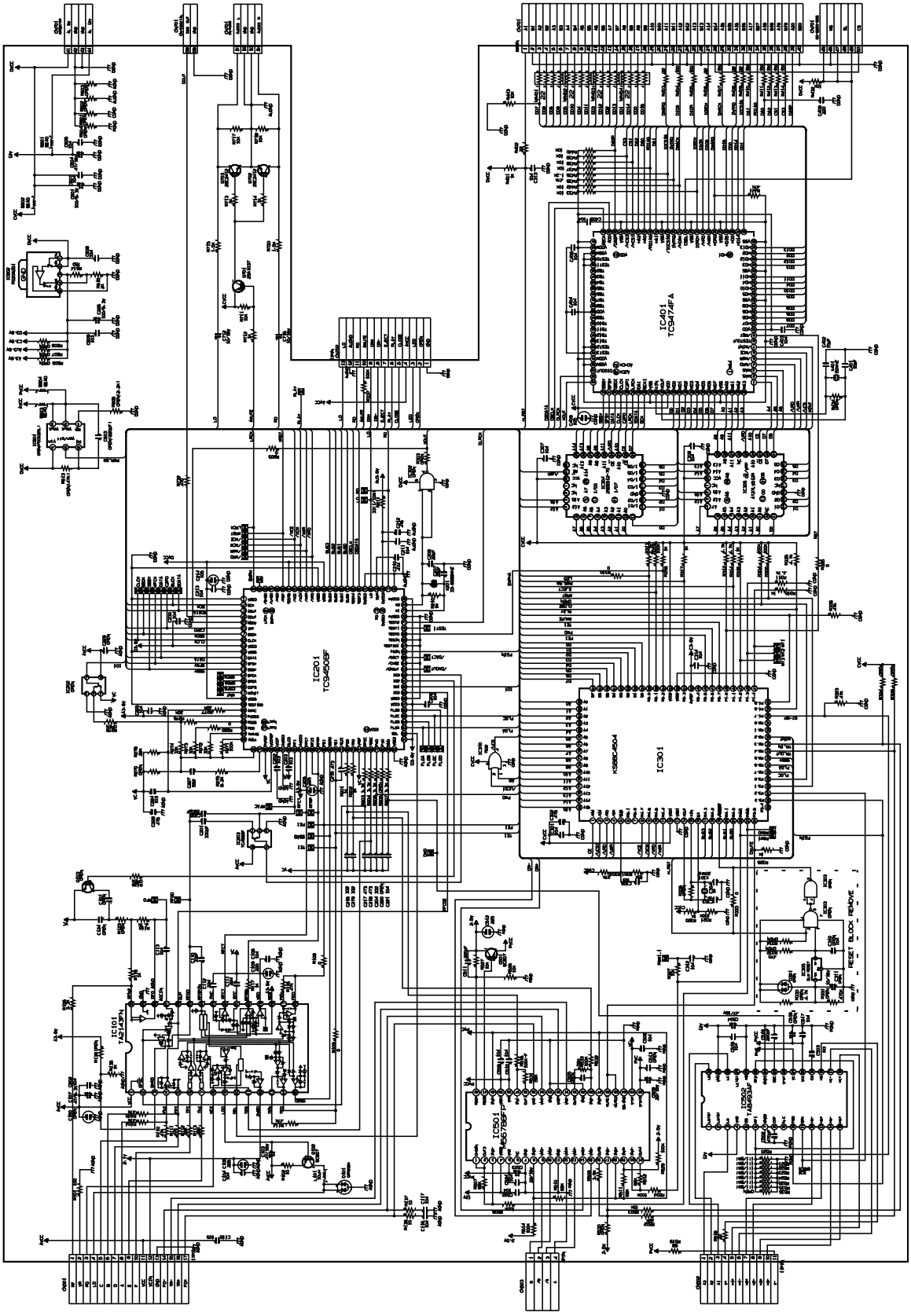

Circuit Diagram