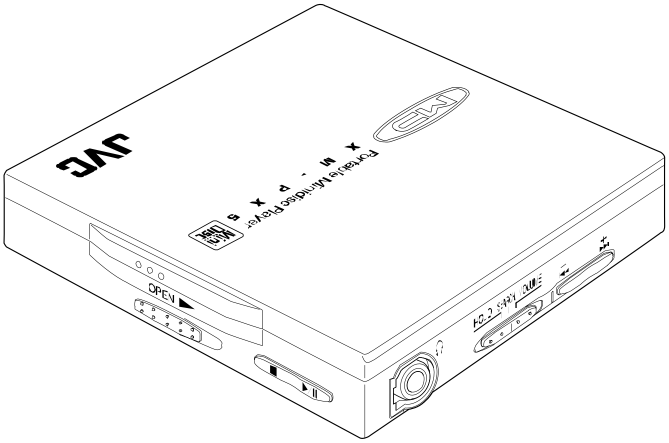
JVC

SERVICE MANUAL

PORTABL MINIDISC PLAYER

XM-PX5SL



Areas suffix

B --------------------------------- U.K.
E ------------- Continental Europe
EN -------------- Northern Europe

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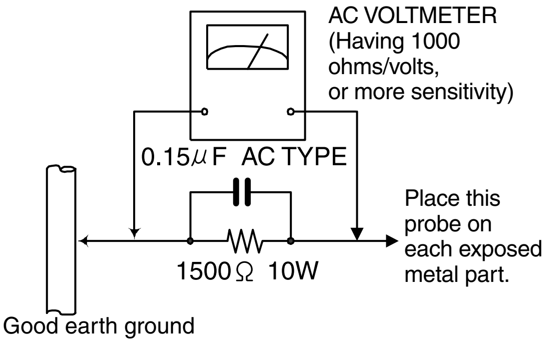
Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer`s warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet , particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10W resistor paralleled by a 0.15 μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to eachexposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. voltage measured Any must not exceed 0.75 V AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

⚠ ***CAUTION*** **Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.**

Attention when MD pick up is exchanged

1. About the static electricity protection measures

The laser diode in the traverse unit (optical pick up) is easy to be destroyed by clothes and the human body to the electrified static electricity.

Please note the explosion by static electricity when repairing.

2. About the earth processing for the electrostatic destruction prevention

In the equipment which uses an optical pick up (laser diode), an optical pick up is destroyed by the static electricity of the work environment.

Please do the earth processing and work.

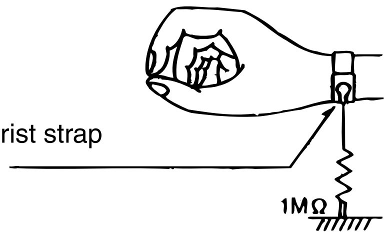
1) Earth of work stand

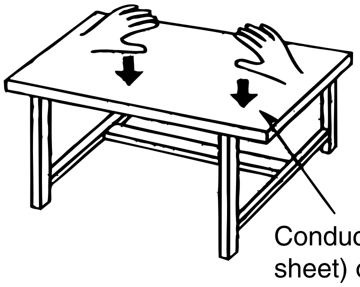
Please pull the conductive material (conductive sheet) or the iron plate to the depository place of the traverse unit (optical pick up), and take the earth to ground.

2) Human body earth

Please use the anti-static wrist strap to exhaust the electrified static electricity to the human body.

anti-static wrist strap





Conductive material (conductive sheet) or the iron plate

3. Handling the optical pick up

1) Please return according to a correct procedure based on short processing after exchanging parts.
2) Do not use a tester to check the condition of the laser diode in the optical pick up .The tester 's internal power source can easily destroy the laser diode.

4. Attention when unit is disassembled

Please refer to "Disassembling method" for how to detach .

1) Please be sure to solder before a flexible wire is removed from connector CN301 on a main printed circuit board as shown in Figure 2.
   if you removes without soldering.the MD picking up assembly might destroy
2) When installing , solder in the part of short round should be removed after a flexible wire is connected with CN301

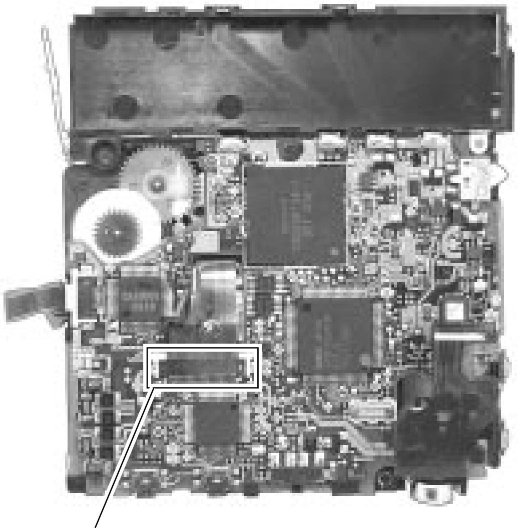


Fig 1

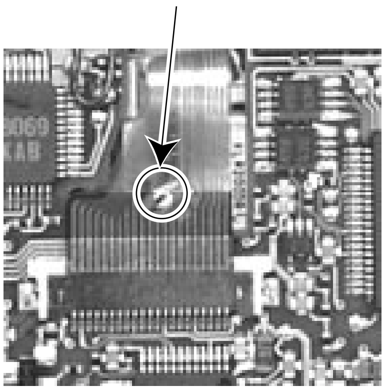


Fig 2

Important for Laser Products

1.CLASS 1 LASER PRODUCT

2.DANGER : Invisible laser radiation when open and inter lock failed or defeated. Avoid direct exposure to beam.

3.CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.

4.CAUTION : The compact disc player uses invisible laserradiation and is equipped with safety switches whichprevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.

5.CAUTION : If safety switches malfunction, the laser is able to function.

6.CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

⚠ ***CAUTION*** **Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.**

VARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle.Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning,når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

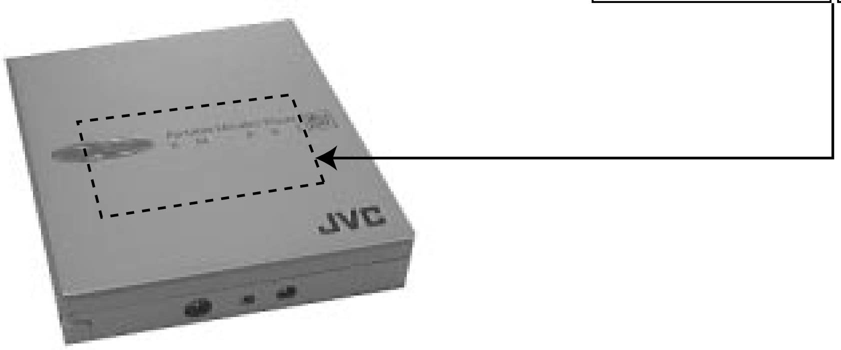
WARNING LABEL

DANGER : Invisibie laser radiation when open and interlock or defeated.
AVOID DIRECT EXPOSURE TO BEAM (e)

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle.Älä katso säteeseen. (d)

VARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen. (s)

ADVARSEL :Usynlig laserstråling ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling. (f)



Disassembly method

■ Removing the MD door ass'y

(See Fig.1 and 2)

1. Open the door by moving the eject knob.

2. Remove the four screws A attaching the MD door assy. Detach the MD door ass'y from the main body.

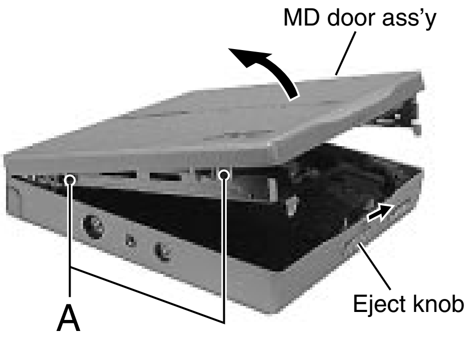

MD door ass'y
A
Eject knob

Fig.1

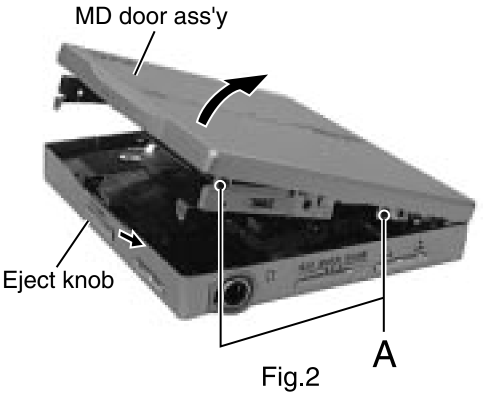

MD door ass'y
Eject knob
A

Fig.2

■ Removing the holder ass'y

(See Fig.3 and 4)

1. Turn the holder ass'y as shown in Fig.3.

2. Pull the side arm (L) marked a outward, then remove. Open the holder ass'y as shown in Fig.4.

3. Move the U-shaped notch marked b in the direction of the arrow and release it from the shaft.

4. Move the part c inward and pull out the holder ass'y from the shaft.

ATTENTION: When reassembling, first reattach the part c to the shaft of the chassis ass'y. And next, fit the U-shaped notch to the shaft.

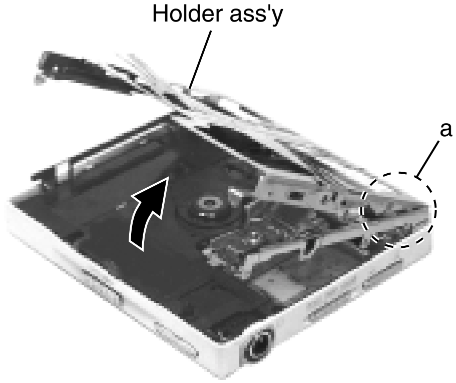

Holder ass'y
a

Fig.3

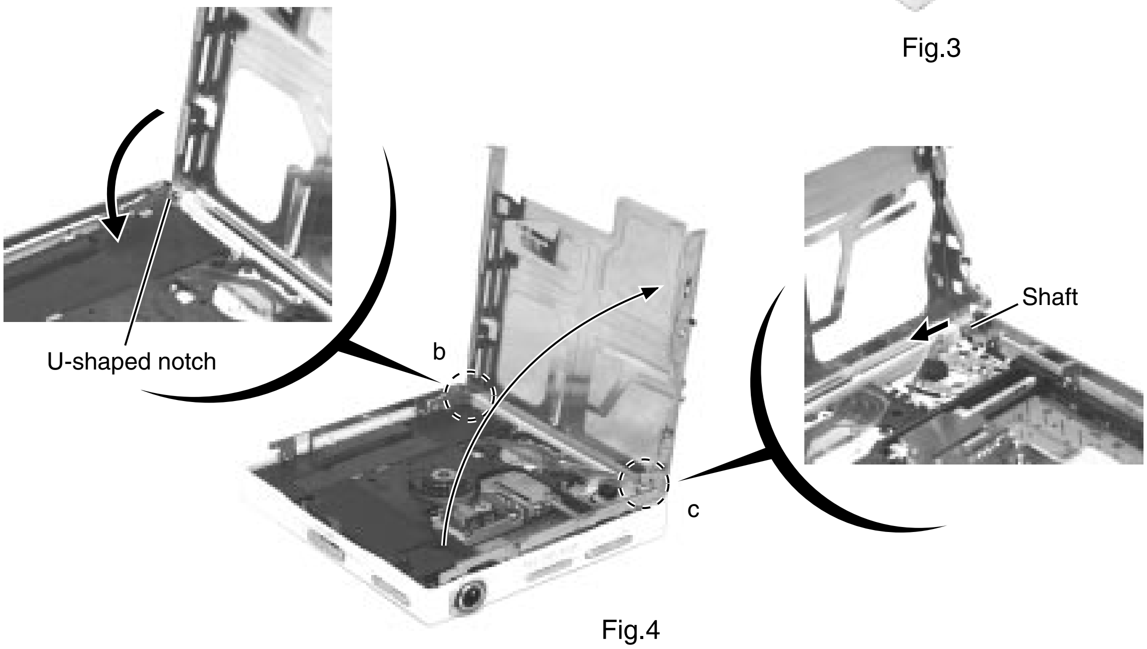

U-shaped notch
b
c
Shaft

Fig.4

■Removing the chassis ass'y (See Fig.5 and 6)

1. Remove the two screws B and the one screw C attaching the chassis assy. Remove the one screw D attaching the jack cover.
2. Open the battery lid and release the tab d from the battery contact. Pull out the battery lid.
3. Remove the one screw E attaching the arm (L).
4. Remove the chassis ass'y and the arm (L) while releasing them from the headphone jack on the bottom case.

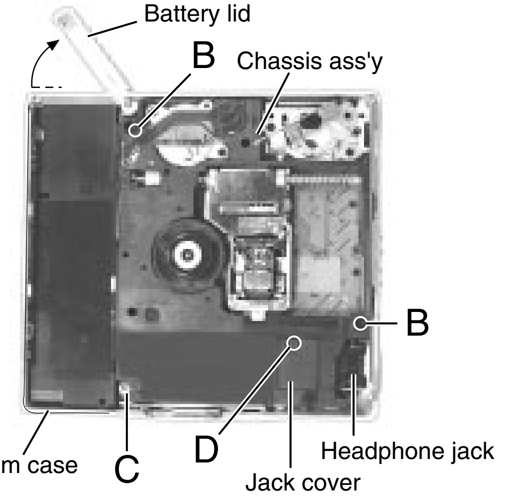

Battery lid
B
Chassis ass'y
B
Bottom case
C
D
Jack cover
Headphone jack

Fig.5

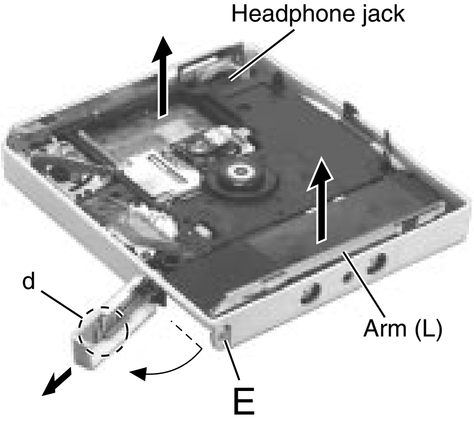

Headphone jack
d
Arm (L)
E

Fig.6

■Removing the main P.W. board and the battery holder(See Fig.7 and 8)

1. Use a soldering bit provided with ground to solder or unsolder the short round.
2. Ground the set and the P.W.board. The voltage level of the ground should be equal to that of the soldering bit.
3. Prevent static electricity using an earth band, etc.
4. Solder the short round of the pickup FRC for short circuit.
5. Disconnect the flexible wires from the connector CN301 and CN801 on the main P.W.Board.
6. Remove the one screw F attaching the main P.W.board. Remove the main P.W.board and the battery holder, then reverse them.
7. Disconnect the flexible wire from connector CN601 on the main P.W.board.
8. Unsolder the soldered joint of the main P.W.board and the battery holder P.W.board.

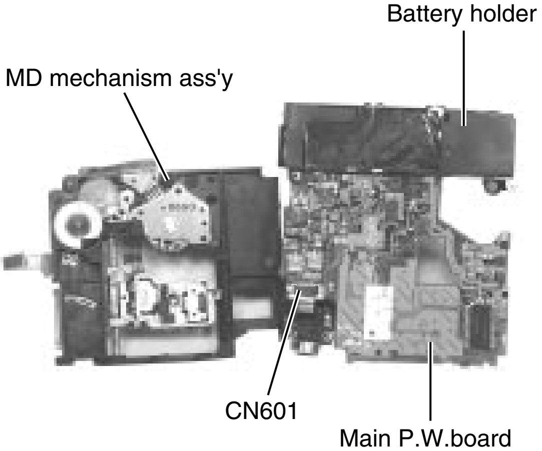

Battery holder
MD mechanism ass'y
CN601
Main P.W.board

Fig.8

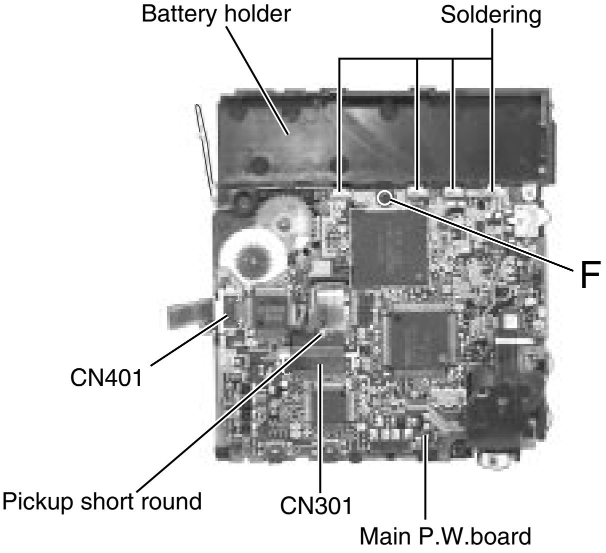

Battery holder
Soldering
F
CN401
Pickup short round
CN301
Main P.W.board

Fig.7

<Removal of the MD mechanism>

■ Removing the spindle motor(See Fig.9)

1. Unsolder the part d of the flexible wire extending from the underside of the chassis ass'y to the spindle motor. At this time, do not spill flux on the gear and others.

2. Remove the three screws F attaching the spindle motor and detach it from the chassis ass'y.

■ Removing the pickup unit(See Fig.9)

1. Remove the slit washer and the worm gear from the underside of the chassis ass'y.
2. Remove the screw G attaching the shaft holder, then detach the shaft.

3. Pull out the part f and g in the directions of the arrows to remove the pickup unit and the lead screw.

■ Removing the pickup(See Fig.10 and 11)

1. Remove the screw H attaching the lead spring, then detach the lead spring.

2. Pull out the shaft from the pickup.

ATTENTION: When handling the pickup unit, touch the parts marked in Fig.11 only.

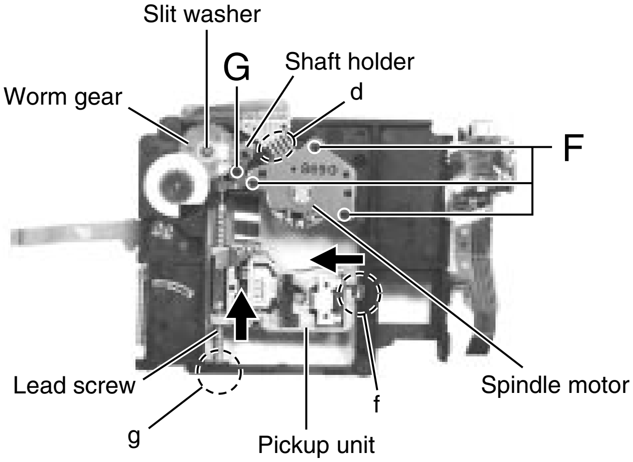

Slit washer
G
Shaft holder
d
Worm gear
F
Lead screw
f
Spindle motor
g
Pickup unit

Fig.9

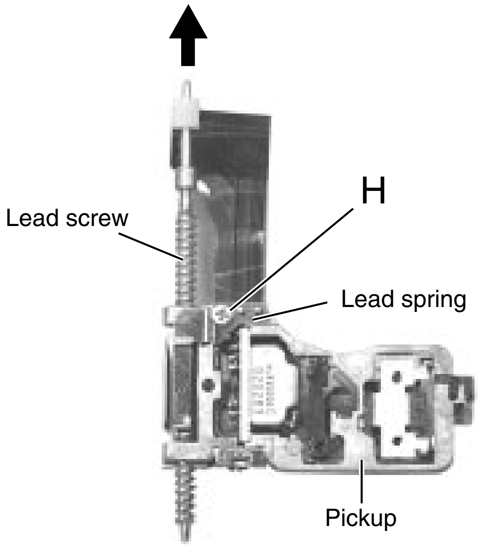

Lead screw
H
Lead spring
Pickup

Fig.10

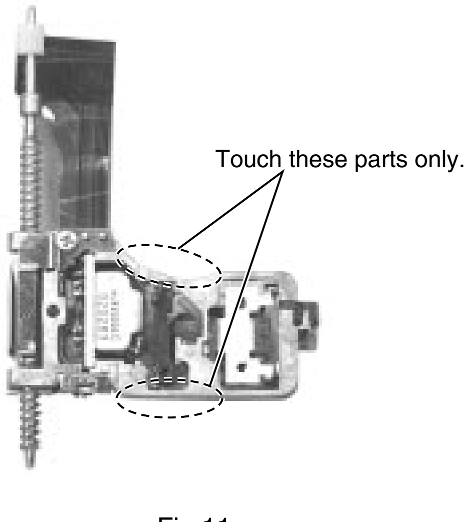

Touch these parts only.

Fig.11

■Removing the feed motor(See Fig.12)

1. Peel off the part h of the flexible wire on the underside of the feed motor.

2. Unsolder the solder joint j connecting the flexible wire to the feed motor.

3. Peel off the part i of the flexible wire.

4. Remove the two screws I attaching the feed motor on the upper side of the chassis ass'y.

ATTENTION: When reassembling, reattach the flexible wire with an adhesive tape and solder the appropriate part.

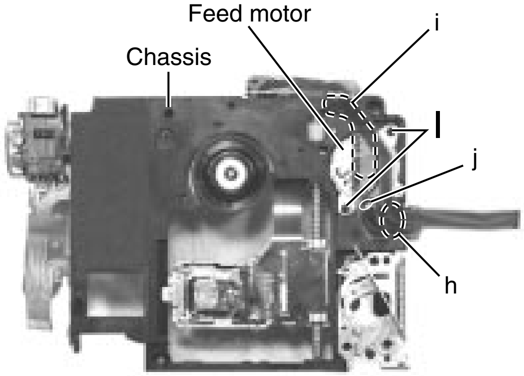


Fig.12

■Removing the SW P.W.B ass'y (See Fig.13)

1. Remove the SW P.W.B ass'y attached to the side of the chassis ass'y with the double-sided tape.

2. When reassembling, reattach the SW P.W.B ass'y with an adhesive tape as before.

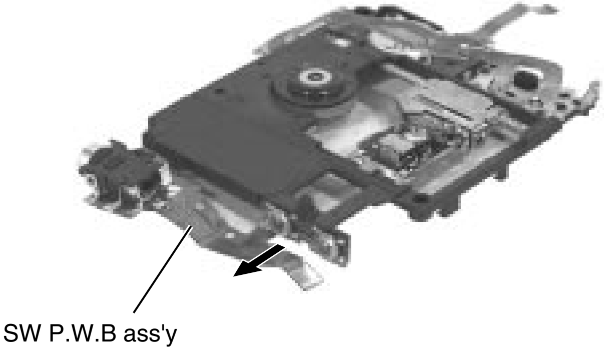


Fig.13

Maintenance of MD pickup

1. Cleaning of pickup lens

(1) Prior to changing the pickup, clean the pickup lens.

(2) For cleaning the lens, use the following cotton swab after mearsing it in alcohol.

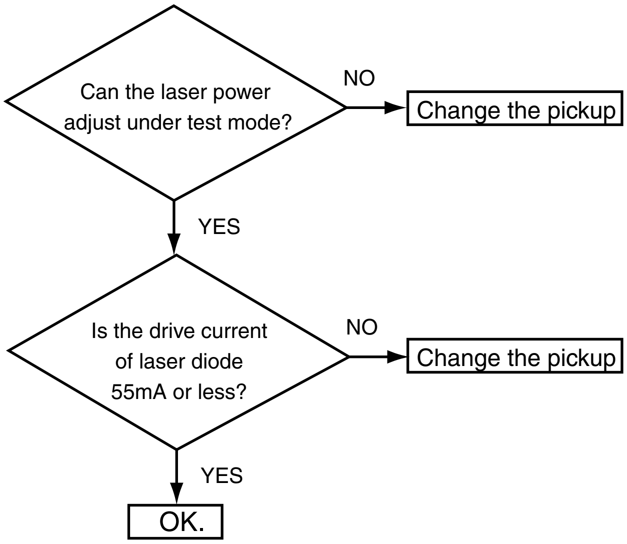
Product No. JCB-B4; Manufacturer;Nippon Cotton Swab

2. Confirmation of the service life of laser diode when the service life of the laser diode has been exhausted, the following symptoms will appear.

(1) The RF output (EFM output and eye pattern amplitude) will become lower.

(2) The drive current required for light emitting of laser diode will be increased.

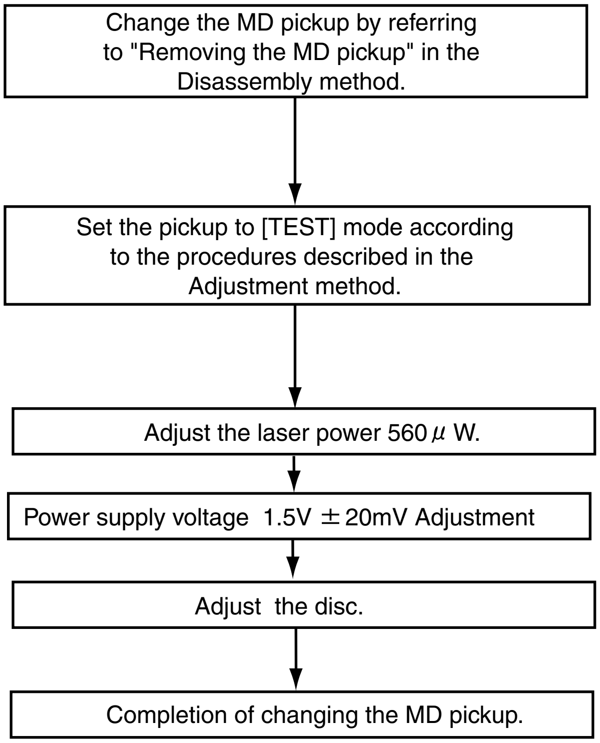
Confirm the service life according to the following flow chart:


Can the laser power adjust under test mode?
NO
Change the pickup
YES
Is the drive current of laser diode 55mA or less?
NO
Change the pickup
YES
OK.

3. Method of measuring the drive current of laser diode

When the voltage measured at the both side of carbon resistor R301 on the MD servo P.C. board (LVB20008) have become 12.1mV or over, the service life of the laser diode is judged to have been exhausted.

Procedures of changing the MD pickup


Change the MD pickup by referring to "Removing the MD pickup" in the Disassembly method.
Set the pickup to [TEST] mode according to the procedures described in the Adjustment method.
Adjust the laser power 560 μ W.
Power supply voltage 1.5V ± 20mV Adjustment
Adjust the disc.
Completion of changing the MD pickup.

Be sure to perform not only adjustment and operation of this system so carefully as not to directly look at the laser beam or touch on the body.

4. About Semi-solid state resistor of pick up

This is adjusted in the maker of pick up .
Be careful please not to touch pick up .

Adjustment method

Test mode setting method

Press < PLAY MODE + DISPLAY + BASS > and < PLAY >key together more than 3sec. at power off condition.
< VOL− >→next item .< VOL+ >before item.

--- LCD indication ---

0. TMD-V2

Test mode setting OK. Indicate at 2sec.
- When LCD indicate [NG] at another item, Return back this item by press (STOP) key

１．レジューム

Resume initialize
- LCD Indication change :[OK→ショリチュウ→レジューム]

* ショリチュウ→Initializing
* レジューム → Resume

２．サーボ

Servo initialize
- LCD Indication change : [OK→ショリチュウ→ サーボ]

* ショリチュウ→Initializing
* サーボ →Servo

３．Pレーザ

PLAY LASER
- Executes by < BASS > LCD Indication change :[XX:YY]
- Up by < VOL+> .Down by <VOL−> LCD Indication change :[VW.YY]
- Setting by <STOP> LCD Indication change :[OK→ Pレーザ]

*Pレーザ→PLAY LASER

- Laser power adjust 560μW≧adjust

Adjust power-supply voltage 1.5v ± 20mv before the laser power is adjusted and stops.

４．フィード

FEED
- Executes by < BASS > LCD Indication change :[FwdBwd]
- <VOL+> :Pickup is go to outside < VOL-> :Pickup is go to inside
- Press < STOP > LCD Indication change :[OK→ フィード]

* フィード → FEED

5. MoTG

MO TG
- Executes by < BASS >
  LCD Indication change : [OK → ショリチュウ → MoTG]

* ショリチュウ → Adjusting

6.Mチョウセイ

MO DISC ADJUST
- Executes by < BASS >
  LCD Indication change : [ショリチュウ→ OK →XXYYZZ]

* ショリチュウ → Adjusting

Press < STOP >
LCD Indication change : [OK→Mチョウセイ]

* Mチョウセイ → MO DISC ADJUST

7. ＰｒＴＧ

Pre TG
- Executes by < BASS >
  LCD Indication change : [ショリチュウ →OK→PreTG]

* ショリチュウ → Adjusting

イ

８．Pチョウセ

Pre DISC ADJUST
- Executes by < BASS >
  LCD Indication change : [ショリチュウ →OK→XXYYZZ]
- Press < STOP >

* ショリチュウ → Adjusting

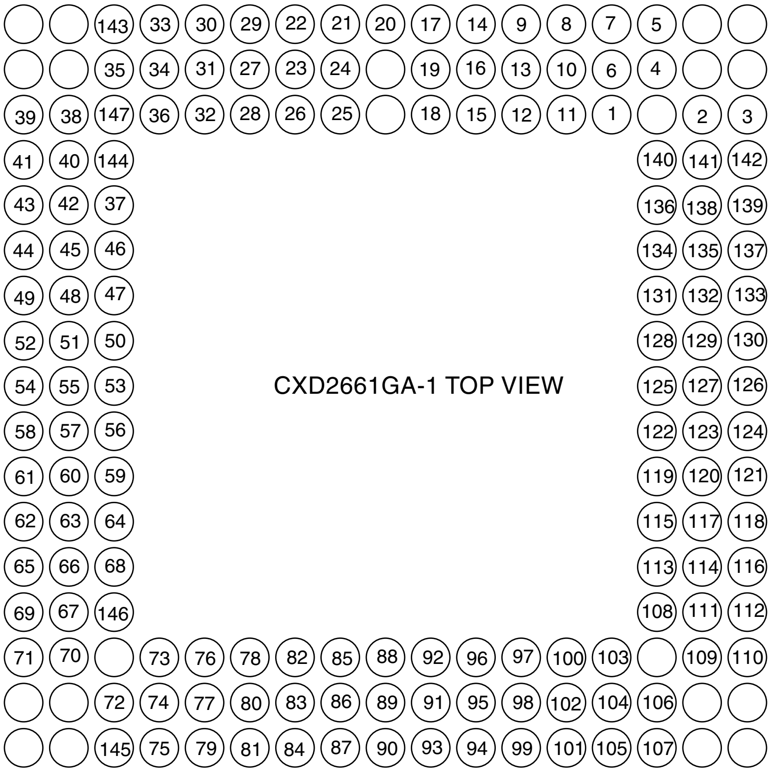
９．リセット

RESET
- Executes by < BASS >
  LCD Indication : Left out the test mode ,power off ,and END.

Description of major ICs

■ CXD2661GA-1 (IC351) : DSP

1.Pin Layout


143 33 30 29 22 21 20 17 14 9 8 7 5
35 34 31 27 23 24 19 16 13 10 6 4
39 38 147 36 32 28 26 25 18 15 12 11 1 2 3
41 40 144 140 141 142
43 42 37 136 138 139
44 45 46 134 135 137
49 48 47 131 132 133
52 51 50 128 129 130
54 55 53 CXD2661GA-1 TOP VIEW 125 127 126
58 57 56 122 123 124
61 60 59 119 120 121
62 63 64 115 117 118
65 66 68 113 114 116
69 67 146 108 111 112
71 70 73 76 78 82 85 88 92 96 97 100 103 109 110
72 74 77 80 83 86 89 91 95 98 102 104 106
145 75 79 81 84 87 90 93 94 99 101 105 107

2.Function

Pin no.	Symbol	I/O	Function
1	VDCO	-	VDD for internal logic (1.8V)
2	MNT0	I/O	Monitor input/output
3	MNT1	O	Monitor output
4	MNT2	O	Monitor output
5	MNT3	O	Monitor output
6	SWDT	I	Microcomputer serial bus data writing input
7	SCLK	I	Microcomputer serial bus clock input
8	XLAT	I	Microcomputer serial bus latch input
9	VSCO	-	GND for internal logic (1.8V)
10	SRDT	O	Microcomputer serial bus data reading output
11	SENS	O	An internal state output to the address of the microcomputer seriall bus.
12	XRST	I	Resets input "L"=reset
13	SQSY	O	PTGR=0 : ADIP sync output,PTGR=1 : DISC SUB-Q sync output
14	MTFLGL	O	Lch 0 data detection flag output
15	TST1	I	Test terminal "L"
16	XINT	O	Interrupt status output
17	TST2	I	Test terminal "L"
18	VDIOSC	-	Vdd for OSC cell (2.4V)
19	OSCI	I	X 'tal oscillation circuit input
20	OSCO	O	X 'tal oscillation circuit output
21	VSIOSC	-	GND for OSC cell
22	DAVSSL	-	Build in DAC GND (Lch)
23	VREFL	O	Built-in DAC VREF (Lch)
24	AOUTL	O	Built-in DAC Lch output
25	DAVDDL	-	Built-in DAC VDD (Lch 2.4V)
26	DAVDDR	-	Built-in DAC VDD (Lch 2.4V)
27	AOUTR	O	Built-in DAC Rch output
28	VREFR	O	Built-in DAC VREF (Rch)
29	DAVSSR	-	Built-inDAC GND (Rch)
30	VSC1	-	GND for internal logic
31	TST9	I	Test terminal "H"
32	TST3	I	Test terminal "L"
33	TST4	I	Test terminal "L"
34	DOUT	O	Digital audio output
35	NC	-	OPEN

2.Function(2)

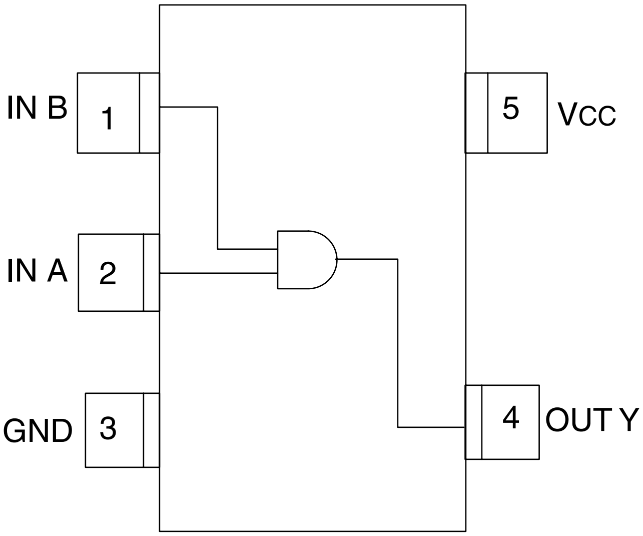
Pin NO.	Symbol	I/O	Function
36	VDC1	-	VDD for internal logic. (1.8V)
37	VDC2	-	VDD for internal logic. (1.8V)
38	DATA1	I	External audio data input terminal to internal DAC
39	TST5	I	Test terminal "L"
40	TST6	I	Test terminal "L"
41	TST7	I	Test terminal "L"
42	DADT	O	Data output to external D/A converter
43	LRCK	O	LR clock for external D/A converter (44.1kHz)
44	VSC2	-	GND for internal logic. (1.8V)
45	XBCK	O	Bit clock for external D/A converter (2.8224MHz)
46	F256	O	11.2896MHz clock output (X'tal)
47	A03	O	Address output for external DRAM When external DRAM is not used, OPEN.
48	A04	O	Address output for external DRAM When external DRAM is not used, OPEN.
49	A02	O	Address output for external DRAM When external DRAM is not used, OPEN.
50	A05	O	Address output for external DRAM When external DRAM is not used, OPEN.
51	A01	O	Address output for external DRAM When external DRAM is not used, OPEN.
52	A06	O	Address output for external DRAM When external DRAM is not used, OPEN.
53	VDIO1	-	VDD for I/O cell (2.4V)
54	VSIO1	-	GND for I/O cell
55	A00	O	Address output for external DRAM When external DRAM is not used, OPEN.
56	A07	O	Address output for external DRAM When external DRAM is not used, OPEN.
57	A10	O	Address output for external DRAM When external DRAM is not used, OPEN.
58	A08	O	Address output for external DRAM When external DRAM is not used, OPEN.
59	A09	O	Address output for external DRAM When external DRAM is not used, OPEN.
60	XRAS	O	RAS output for external DRAM When external DRAM is not used, OPEN.
61	IXOE	O	Open
62	IXWE	O	Open
63	XCAS	O	CAS output for external DRAM When external DRAM is not used, OPEN.
64	D1	I/O	Data I/O for external DRAM When external DRAM is not used, OPEN.
65	D2	I/O	Data I/O for external DRAM When external DRAM is not used, OPEN.
66	D0	I/O	Data I/O for external DRAM When external DRAM is not used, OPEN.
67	D3	I/O	Data I/O for external DRAM When external DRAM is not used, OPEN.
68	VDC3	-	VDD for 1.8V internal logic
69	VSC3	-	VSS for 1.8V internal logic
70	A11	O	Open
71	XOE	O	Output enable output for external DRAM When external DRAM is not used, OPEN.
72	XWE	O	Write enable output for external DRAM When external DRAM is not used, OPEN.
73	MVCI	I	Clock input from external VCO
74	ASYO	O	Playback EFM binarization signal output
75	ASYI	I	Playback EFM comparator slice level input
76	AVD1	I	Analog power supply (2.4V)
77	BIAS	I	Playback EFM comparator bias current input
78	RFI	I	Playback EFM RF signal input
79	AVS1	-	Analog GND
80	PCO	O	Phase comparison output for playback EFM system mastering PLL
81	FILI	I	Filter input for playback EFM system mastering PLL
82	FILO	O	Filter output for playback EFM system mastering PLL
83	CLTV	I	Internal VCO control voltage input for playback EFM system mastering PLL
84	PEAK	I	Peak holding input of optical amount signal (From CXA2523AR)
85	BOTM	I	Bottom holding input of optical amount signal
86	ABCD	I	Optical amount signal input (From CXA2523AR)
87	FE	I	Focus error signal input (From CXA2523AR)
88	AUX1	I	Assistance A/D input (when not using .connect to analog power supply)
89	VC	I	Middle point voltage input (From CXA2523AR)
90	ADIO	O	Open
91	ADRT	I	A/D converter operation range upper bound voltage input
92	AVD2	-	Analog power supply (2.4V)
93	AVS2	-	Analog GND
94	ADRB	I	A/D converter operation range lower bound voltage input
95	SE	I	SLED error input (From CXA2523AR)
96	TE	I	Tracking error input (From CXA2523AR)
97	DCHG	I	Connects with an analog power supply of low impedance
98	APC	I	Error signal input for laser digital APC (From CXA2523AR)
99	ADFG	I	ADIP binary-coded FM signal input (22.05±1kHz) (From CXA2523)
100	VDIO2	-	VDD for I/O (2.4V)
101	VSIO2	-	VSS for I/O (2.4V)
102	F0CONT	O	Filter cutting off control output of CXA2523
103	XLRF	O	Latch output for CXA2523 control
104	CKRF	O	Clock output for CXA2523 control
105	DTRF	O	Data output for CXA2523 control
106	APCREF	O	Reference PWM output for laser APC
107	LDDR	O	PWM output for laser digital APC

2.Function (3)

Pin NO.	Symbol	I/O	Function
108	VDC4	-	VDD for internal logic (1.8V)
109	TRDR	O	Tracking servo drive PWM output (-)
110	TFDR	O	Tracking servo drive PWM output (+)
111	FFDR	O	Focus servo drive PWM output (+)
112	FRDR	O	Focus servo drive PWM output (-)
113	FS4	O	176.4KHZ clock output (X 'tal)
114	SRDR	O	SLED servo drive PWM output (-)
115	SFDR	O	SLED servo drive PWM output (+)
116	VSC4	-	GND for internal logic
117	SPRD	O	Spindle servo drive output (PWM - or polarity)
118	SPFD	O	Spindle servo drive output (PWM + or PWM absolute value)
119	FGIN	I	FG input for spindle CAV servo
120	TESTI	I	Test input. Connects to GND.
121	TEST2	I	Test input. Connects to GND.
122	TEST3	I	Test input. Connects to GND.
123	MTFLGR	O	Rch 0 data detection flag output
124	SPVS	O	Brush less spindle moter Absolute value PWM output
125	VDIO3	-	VDD for I/O cell (2.4V)
126	VSIO3	-	VSS for I/O cell
127	SPDU	O	Brush less spindle moter three phases drive logic output. (U) When not using , open.
128	SPDV	O	Brush less spindle moter three phases drive logic output. (V) When not using , open.
129	SPDW	O	Brush less spindle moter three phases drive logic output. (W) When not using , open.
130	SPCU	I	Brush less spindle moter drive comparate input. (U) When not using, connects to GND.
131	SPCV	I	Brush less spindle moter drive comparate input. (V) When not using, connects to GND.
132	SPCW	I	Brush less spindle moter drive comparate input. (W) When not using, connects to GND.
133	SLDU	O	Brush less SLED moter three phases drive logic output.(U) Two phases drive logic outpu(1+)
134	SLDV	O	Brush less SLED moter three phases drive logic output.(V) Two phases drive logic outpu(1-)
135	SLDW	O	Brush less SLED moter three phases drive logic output.(W) Two phases drive logic outpu(2+)
136	VDC5	-	VDD for internal logic. (1.8V)
137	VSC5	-	GND for internal logic.
138	SLCU	I	Brush less SLED moter three phases drive comparate input.(U) Two phases drive comparate input.(1)
139	SLCV	I	Brush less SLED moter three phases drive comparate input.(V) Two phases drive comparate input.(2)
140	SLCW	I/O	Brush less SLED moter three phases drive comparate input.(W) SLED two phases drive logic outpu(2-)
141	SLVS	O	Brush less SLED moter absolute value PWM output. When not using , open.
142	BYPS	O	Brush less SLED moter supplementary output.
143	DVSS0	-	GND for built-in 16 M bits DRAM
144	DVDDO	-	VDD for built-in 16 M bits DRAM. (2.4V)
145	DVSS1	-	GND for built-in 16 M bits DRAM.
146	DVDD1	-	VDD for built-in 16 M bits DRAM. (2.4V)
147	TST8	-	OPEN

■ TC7S08FU-X (IC2) : 2Input and Gate

1.Pin Layout and Block Diagram

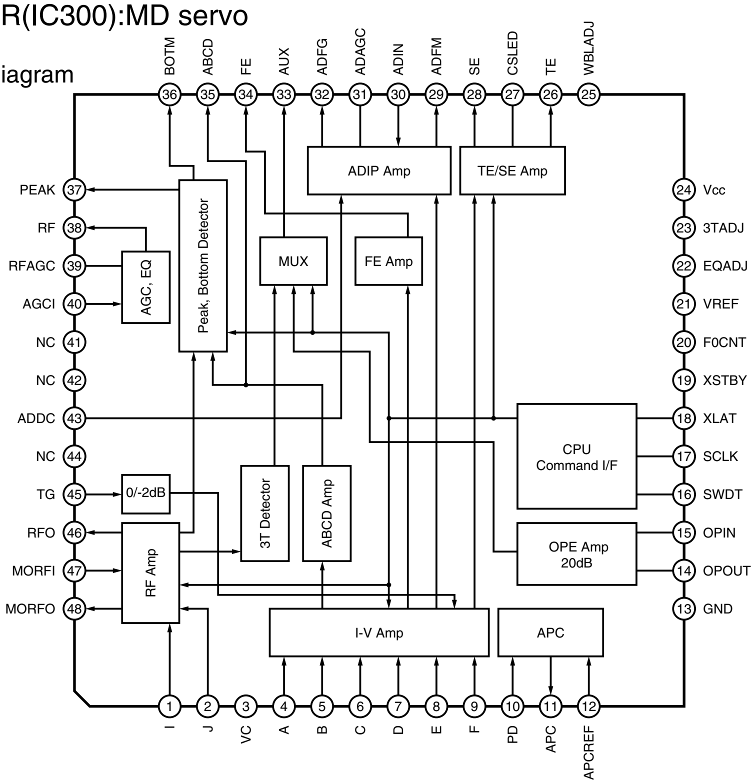


2.Function Truth Table

A	B	Y
L	L	L
L	L	L
H	L	L
H	H	H

■CXA2588R(IC300):MD servo

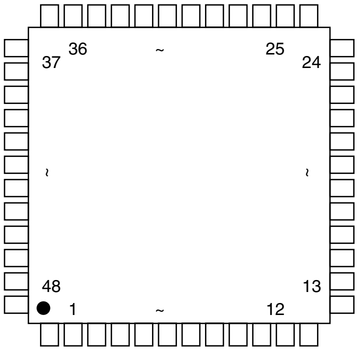
1.Block Diagram

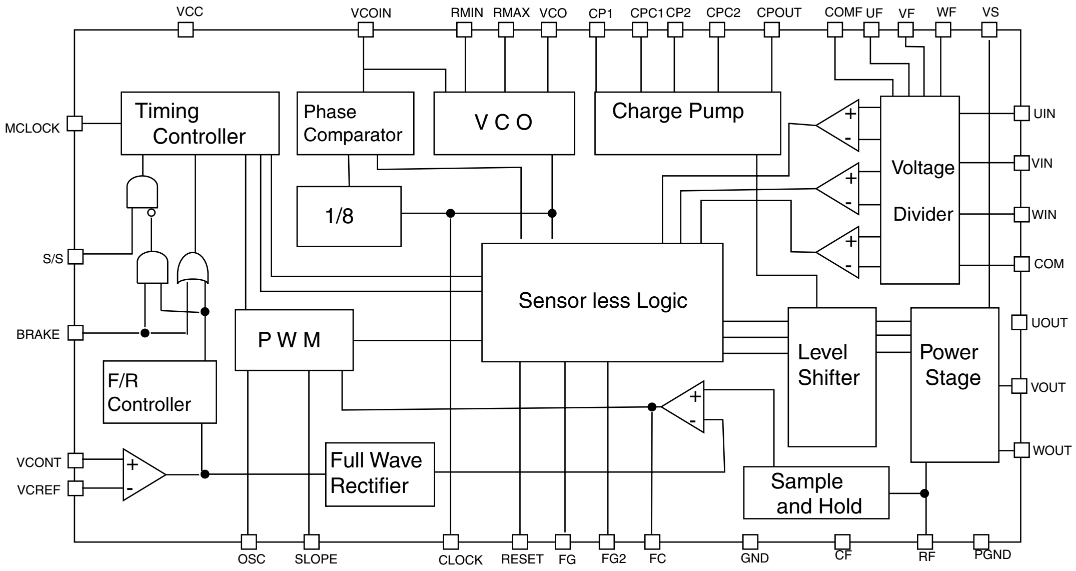

BOTM
ABCD
FE
AUX
ADFG
ADAGC
ADIN
ADFM
SE
CSLED
TE
WBLADJ
36
35
34
33
32
31
30
29
28
27
26
25
ADIP Amp
TE/SE Amp
PEAK 37
RF 38
RFAGC 39
AGCI 40
NC 41
NC 42
ADDC 43
NC 44
TG 45
RFO 46
MORFI 47
MORFO 48
AGC, EQ
Peak, Bottom Detector
MUX
FE Amp
0/-2dB
RF Amp
3T Detector
ABCD Amp
CPU Command I/F
OPE Amp 20dB
I-V Amp
APC
24 Vcc
23 3TADJ
22 EQADJ
21 VREF
20 F0CNT
19 XSTBY
18 XLAT
17 SCLK
16 SWDT
15 OPIN
14 OPOUT
13 GND
1
2
3
4
5
6
7
8
9
10
11
12
I
J
VC
A
B
C
D
E
F
PD
APC
APCREF

2.Function

Pin No.	Symbol	I/O	Function
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal j input
3	VC	O	Vcc/2voltage output
4	A	I	A current input for main beam servo signal
5	B	I	B current input for main beam servo signal
6	C	I	C current input for main beam servo signal.
7	D	I	D current input for main beam servo signal.
8	E	I	E current input for main beam servo signal.
9	F	I	F current input for main beam servo signal.
10	PD	I	Reflection light quantity monitor signal input.
11	APC	O	Laser APC output.
12	APCREF	I	Reference voltage input for laser power intensity setting.
13	GND	-	GND.
14	OPOUT	O	User operational amplifier output.
15	OPIN	I	20dB operational amplifier input.
16	SWDT	I	Data input for microcomputer serial interface.
17	SCLK	I	Shift clock input for microcomputer serial interface.
18	XLAT	I	Latch input for microcomputer serial interface .On when low.
19	XSTBY	I	Standby setting .Normal operation when high.standby when low.
20	FOCNT	I	Internal current source setting.
21	VREF	O	Reference voltage output.
22	EQADJ	I/O	EQ center frequency setting.
23	3TADJ	I/O	BPF3T center frequency setting.
24	Vcc	I/O	Power supply.
25	WBLADJ	I/O	BPF22 center freqency setting.
26	TE	O	Tracking error signal output.
27	CSLED	O	Sled error signal LPF capacitor connection.
28	SE	O	Sled error signal output.
29	ADFM	O	ADIP FM signal output.
30	ADIN	I	ADIP signal comparator input.
31	ADAGC	-	ADIPAGC capacitor connection.
32	ADFG	O	ADIP binary signal output.
33	AUX	O	I3 output signal output. Switched by the serial command.
34	FE	O	Focus error signal output
35	ABCD	O	Reflection light quantity signal output for main beam servo detector.
36	BOTM	O	RF/ABCD bottom hold signal output.
37	PEAK	O	RF/ABCD Peak holding signal output
38	RF	O	RF equalizer output.
39	RFAGC	-	RFAGC capacitor connection.
40	AGCI	I	RF AGC input.
41	NC	-	No connected.
42	NC	-	No connected.
43	ADDC	I/O	ADIP amp feedback circuit capacitor connection.
44	NC	-	No connected.
45	TG	I	Tracking gain setting terminal
46	RFO	O	RF amplifier output.This is used as the eye pattern checkpoint.
47	MORFI	I	GROOVE RF signal AC coupled input.
48	MORFO	O	GROOVE RF signal output.

■ CXA8069M (IC450) : Sensorless moter driver

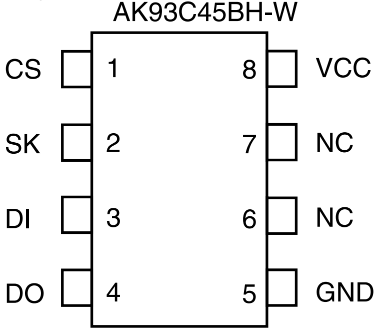

36
~
25
37
24
48
13
1
~
12


VCC
VCOIN
RMIN
RMAX
VCO
CP1
CPC1
CP2
CPC2
CPOUT
COMF
UF
VF
WF
VS
MCLOCK
Timing Controller
Phase Comparator
V C O
Charge Pump
1/8
Voltage Divider
UIN
VIN
WIN
COM
S/S
Sensor less Logic
BRAKE
P W M
Level Shifter
Power Stage
UOUT
VOUT
WOUT
F/R Controller
VCONT
VCREF
Full Wave Rectifier
Sample and Hold
OSC
SLOPE
CLOCK
RESET
FG
FG2
FC
GND
CF
RF
PGND

Pin no.	Symbol	Function	Pin no.	Symbol	Function
1	NC		25	VCOIN	For controlling frequency of VCO
2	RF	For monitoring motor current	26	CLOCK	For CLOCK signal monitor
3	VS	For supplying the voltage to the power stage	27	GND	
4	NC		28	CF	For sample and hold circuit to mesasure motor current
5	CPC1	For connecting to the first charge pump capacitor	29	OSC	For oscillating sawtooth PWM
6	CP1	For connecting to the first charge pump capacitor	30	SLOPE	For oscillating sawtooth for soft-switching
7	CPC2	For connecting to the second charge pump capacitor	31	MCLOCK	For input of clock
8	CP2	For connecting to the second charge pump capacitor	32	VCC	For supplying the voltage except the power section
9	CPOUT	For connecting to the third charge pump capacitor	33	NC	
10	GND	For GND except the power section	34	VS	For supplying the voltage to the power stage
11	S/S	For start and stop	35	RF	For monitoring motor current
12	BRAKE	For brake	36	NC	
13	VCONT	For controlling velocity	37	RESET	For resetting register
14	VCREF	For reference to control velocity	38	WIN	For sensing back electro magnetic force of coils
15	FG	For FG output	39	WOUT	For output
16	FG2	For FG output of dividing Pin15 signal by 2	40	NC	
17	FC	For control amp phase compensation	41	VIN	For sensing back electro magnetic force of coils
18	VCO	For setting oscilation frequency of VCO	42	VOUT	For output
19	RMAX	For setting max.frequency of VCO	43	NC	
20	RMIN	For setting min.frequency of VCO	44	NC	
21	COMF	For shaping waveform of motor voltage	45	UIN	For sensing back electro magnetic force of coils
22	WF	For shaping waveform of motor voltage	46	UOUT	For output
23	VF	For shaping waveform of motor voltage	47	COM	For the common voltage sensing
24	UF	For shaping waveform of motor voltage	48	PGND	For the GND for power stage guarding

■ AK93C45BH-W(IC502 IC503):1024 bits EEPROM

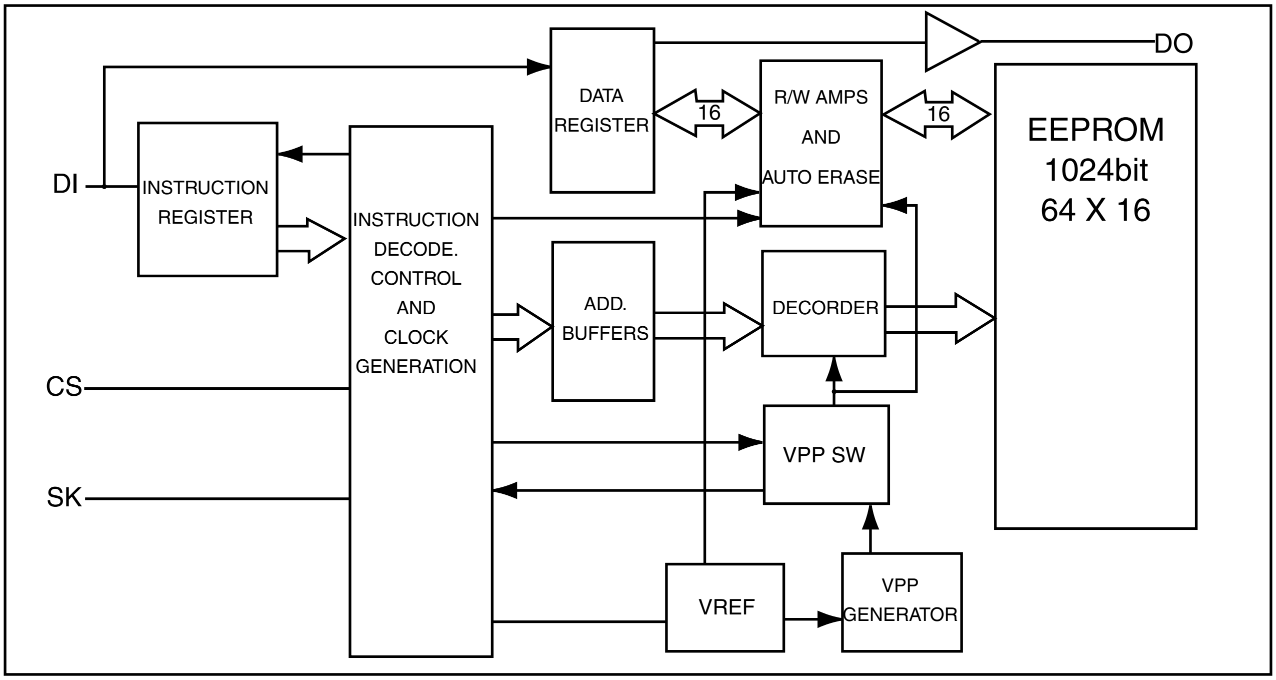
1.Pin Layout


AK93C45BH-W
CS 1
SK 2
DI 3
DO 4
8 VCC
7 NC
6 NC
5 GND

2.Pin Functions

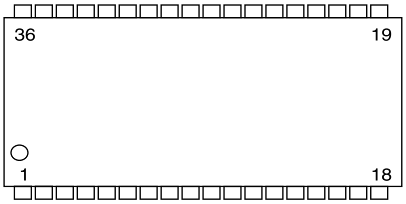
Symbol	Function
CS	Chip Select
SK	Serial Data Clock
DI	Serial Data Input
DO	Serial Data Output
Vcc	Power Supply
GND	Ground
NC	Non connection

3.Block Daiagram

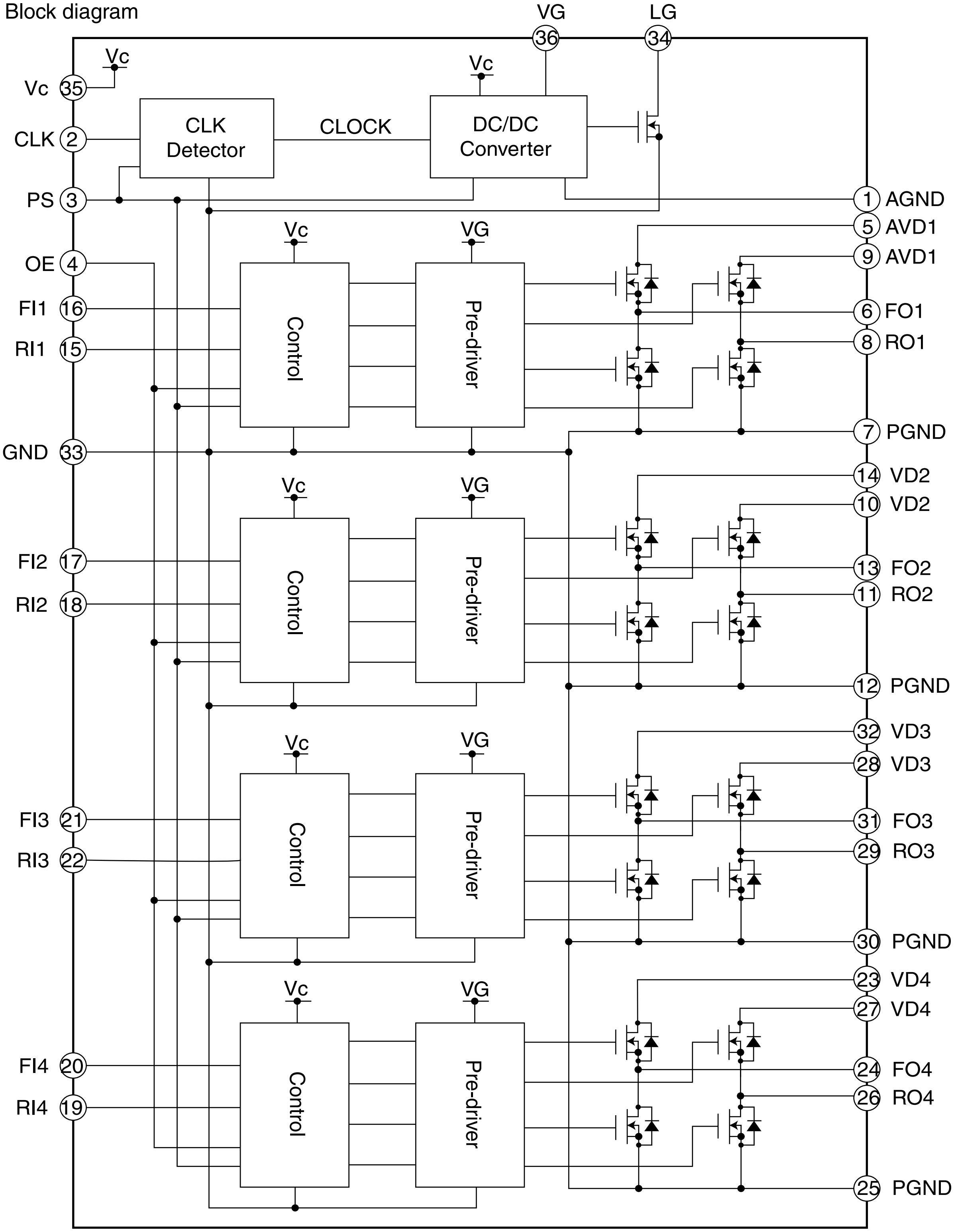

DI
CS
SK
DO
INSTRUCTION REGISTER
INSTRUCTION DECODE. CONTROL AND CLOCK GENERATION
DATA REGISTER
16
R/W AMPS AND AUTO ERASE
16
EEPROM 1024bit 64 X 16
ADD. BUFFERS
DECORDER
VPP SW
VREF
VPP GENERATOR

■MPC17A39DTB-X (IC400) : 4ch Bridge driver

1. Pin layout



2. Block diagram

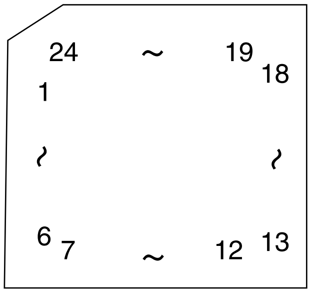

VG
36
LG
34
Vc
Vc 35
CLK 2
PS 3
OE 4
FI1 16
RI1 15
GND 33
FI2 17
RI2 18
FI3 21
RI3 22
FI4 20
RI4 19
CLK Detector
CLOCK
DC/DC Converter
Vc
VG
Control
Pre-driver
1 AGND
5 AVD1
9 AVD1
6 FO1
8 RO1
7 PGND
14 VD2
10 VD2
13 FO2
11 RO2
12 PGND
32 VD3
28 VD3
31 FO3
29 RO3
30 PGND
23 VD4
27 VD4
24 FO4
26 RO4
25 PGND

3. Pin function

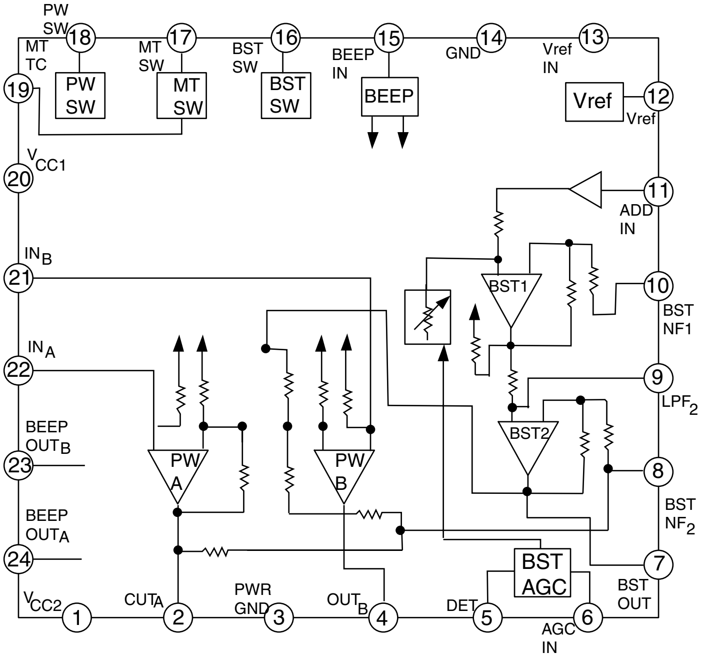
Pin No.	Symbol	Function
1	AGND	DC/DC converter circuit ground terminal
2	CLK	External clock input terminal
3	PS	Standby mode control terminal
4	OE	Output enable terminal
5	VD1	Driver power supply terminal
6	FO1	Driver output terminal
7	PGND	Power ground terminal
8	RO1	Driver output terminal
9	VD1	Driver power supply terminal
10	VD2	Driver power supply terminal
11	RO2	Driver output terminal
12	PGND	Power ground terminal
13	FO2	Driver output terminal
14	VD2	Driver power supply terminal
15	RI1	Channel 1 control signal input terminal
16	FI1	Channel 1 control signal input terminal
17	FI2	Channel 2 control signal input terminal
18	RI2	Channel 2 control signal input terminal
19	RI4	Channel 4 control signal input terminal
20	FI4	Channel 4 control signal input terminal
21	FI3	Channel 3 control signal input terminal
22	RI3	Channel 3 control signal input terminal
23	VD4	Driver output terminal
24	FO4	Driver output terminal
25	PGND	Power ground terminal
26	RO4	Power ground terminal
27	VD4	Driver power supply terminal
28	VD3	Driver power supply terminal
29	RO3	Driver output terminal
30	PGND	power ground terminal
31	FO3	Driver output terminal
32	VD3	Driver power supply terminal
33	GND	Control circuit ground terminal
34	LG	DC/DC converter increased voltage inductance or diode connect terminal
35	VC	Control circuit power supply terminal
36	VG	Pre-driver circuit power supply terminal

■ JCV8002-W(IC601) : Head phone amp

1. Pin Layout


24
~
19
18
1
~
~
6
7
~
12
13

2. Block diagram

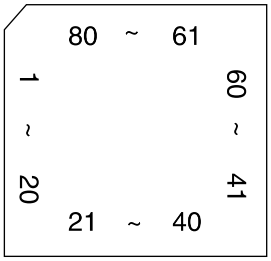

PW SW
18
MT SW
17
BST SW
16
BEEP IN
15
GND
14
Vref IN
13
MT TC
19
PW SW
MT SW
BST SW
BEEP
Vref
12
Vref
VCC1
20
11
ADD IN
INB
21
BST1
10
BST NF1
INA
22
9
LPF2
BEEP OUTB
23
BST2
PW A
PW B
8
BST NF2
BEEP OUTA
24
BST AGC
7
BST OUT
VCC2
1
CUTA
2
PWR GND
3
OUTB
4
DET
5
6
AGC IN

3. Pin function

Pin no.	Symbol	FUNCTION
1	V_{CC2}	V_{CC2} (+B) in power amplifier output section
2	OUT_A	Power amplifier output
3	PWR GND	GND in power amplifier output section
4	OUT_B	Power amplifier output
5	DET	Smoothness of level detection of boost AGC
6	AGC IN	BST amplifier input signal level variable control by input lever to boost AGC input terminal
7	BST OUT	Output terminal of BST amplifier2
8	BST NF_2	Terminal NF of BST amplifier2
9	LPF_2	Output BST amplifier1
10	BST NF_1	NF of BST amplifier1
11	ADD IN	ADD amplifier input
12	V_{ref}	Reference voltage output
13	V_{ref}IN	Reference voltage input
14	GND	Ground
15	BEEP IN	Beep input terminal
16	BST SW	Beep output terminal
17	MT SW	Mute switch input
18	PW SW	Power On/OFF switch input
19	MT TC	Mute smoothing Power mute switch
20	V_{CC1}	Main parts V_{CC}
21	IN_B	Power amplifier input
22	IN_A	Power amplifier input
23	BEEP OUT_B	Beep output terminal
24	BEEP OUT_A	Beep output terminal

■ UPD784225GK-605(IC501) : CUP

1.Pin layout

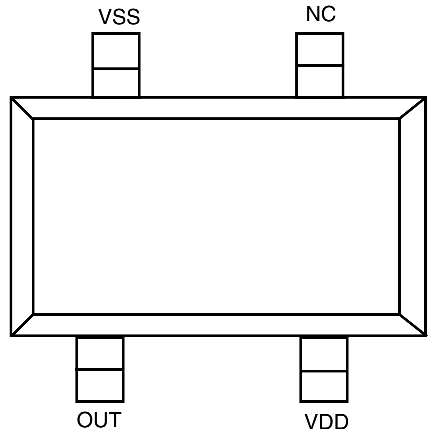


2.Function

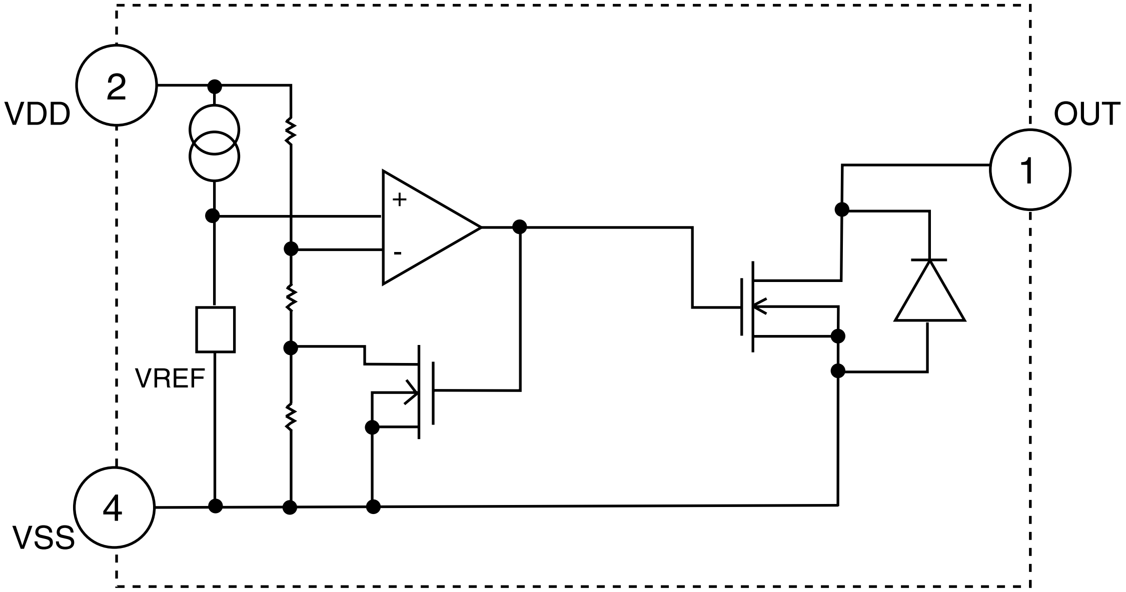
Pin NO.	Symbol	Function	Pin NO.	Symbol	Function
1	ANI5	Connect to GND	41	-	No connected
2	ANI6	Connect to GND	42	-	No connected
3	SPSEL	No connected	43	-	No connected
4	AVSS	Connect to GND	44	-	Test terminal
5	ACB	Test terminal	45	-	Test terminal
6	-	No connected	46	-	No connected
7	AVREF1	Standard voltage for analog	47	RFVCTL	Test terminal
8	RMRX	Remote control data input terminal	48	PSAVE	No connected
9	RMTX	Remote control data output terminal	49	RPON	RP ON signal output terminal
10	-	No connected	50	DPON	DP ON signal output terminal
11	SRDT	Serial data reading input	51	REMOFF	Remote control OFF signal output terminal
12	SWDT	Serial data writing input	52	CS2	Chip select 2
13	SCLK	Serial bus clock output	53	SCL	Serial clock signal output terminal
14	-	No connected	54	DI	Data output terminal
15	BEEP	BEEP output	55	CS1	Chip select 1
16	PSW	Power ON/OFFoutput terminal	56	MNT0	Monitor 0 input terminal
17	MONDATA	Test terminal	57	MNT3	Monitor 3 input terminal
18	MONCLK	Test terminal	58	SENS	DSP internal state input terminal
19	XRST2	Standby setting output terminal	59	DO	Data input terminal
20	TG	Tracking gain setting terminal	60	RESET	Reset signal input terminal
21	-	No connected	61	XINT	Interrupt status input terminal
22	-	No connected	62	SQSY	Sync input terminal
23	XRST	Reset signal output	63	-	No connected
24	XLAT	Serial bus latch output	64	RPLY	Remote control play detection terminal
25	LVCTL	LSI Power supply control signal output	65	DOOR	Door open/close detection terminal
26	LDON	Laser diode ON signal output terminal	66	PLAYKEY	PLAY key detection terminal
27	RFOFF	RF OFF signal output terminal	67	VSS0	Connect to GND
28	SLOFF	SLED OFF signal output terminal	68	VDD1	Standard voltage terminal
29	-	No connected	69	X2	Connect to crystal oscillation
30	MUTE	Mute signal output terminal	70	X1	Connect to crystal oscillation
31	POWER	No connected	71	VPP	Test terminal
32	DIR	Test terminal	72	XT2	No connected
33	DSS1	Connects to GND	73	XT1	Connect to GND
34	PS	Standby mode output terminal	74	VDD0	Connect to GND
35	SS	Start/Stop output terminal	75	AVD0	Standard voltage terminal
36	MON1	Test terminal	76	KEY	Remote control stop key detection terminal
37	MON2	Test terminal	77	BATTERY	Battery voltage detection terminal
38	MONXLAT	Test terminal	78	TEMP	Connect to temperature detector
39	-	No connected	79	ANI3	Connect to GND
40	-	No connected	80	ANI4	Connect to GND

■ S-80822ANNP-W (IC504): Reset switch

1.Pin layout

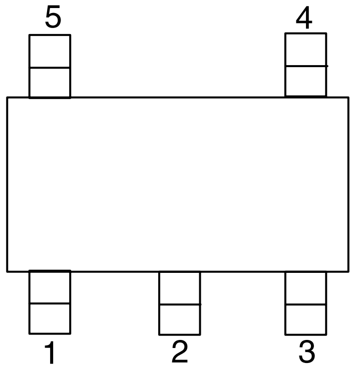

VSS
NC
OUT
VDD

2.Block Daiagram


2
VDD
+
-
VREF
4
VSS
OUT
1

■ XC6367B101M-X (IC461 IC901 IC921 IC941): Regulator

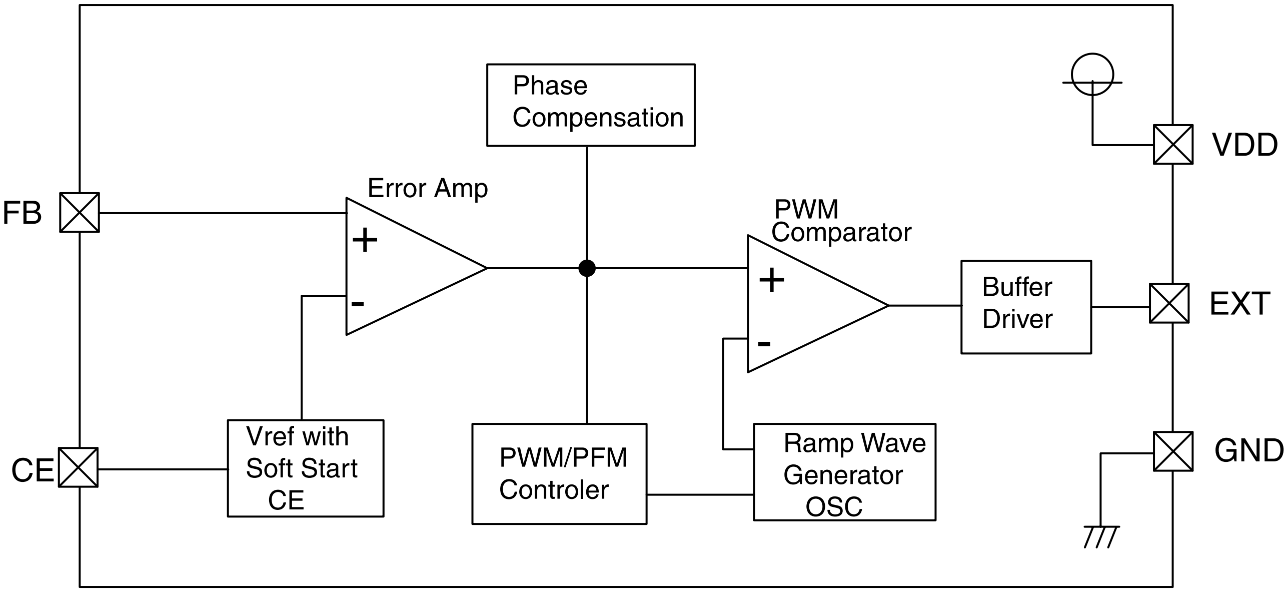
1.Pin Layout



2.Function

Pin NO.	Symbol	Function
1	FB	Output voltage feed back input
2	VDD	Power supply
3	CE	Chip enable
4	GND	Ground
5	EXT	External transistor connection

3.Block Diagram


Phase Compensation
Error Amp
PWM Comparator
FB
+
-
+
-
VDD
EXT
GND
CE
Buffer Driver
Vref with Soft Start CE
PWM/PFM Controler
Ramp Wave Generator OSC

< MEMO >

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