

SERVICE MANUAL

RADIO RECEIVER

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-008-348-9T2).

SPECIFICATIONS

Power source	AC 230 V, 50 Hz
Output	280 mW (EIAJ)
Power consumption	4 W
Speaker	57 mm, 8 ohms
Frequency range	FM: 87.5 – 108 MHz (50 kHz steps) MW: 531 – 1,602 kHz (9 kHz steps) LW: 144 - 288 kHz (1 kHz steps)
Antennas	FM wire antenna Ferrite bar antenna for MW and LW
Maximum outside dimensions	124 (W) × 155.2 (H) × 105.5 (D) mm
Weight	Approx. 692 g, 1.52 lbs

- Design and specifications are subject to change without notice.

ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8A-RU5-905-010	IB,EZ(EGF)C	
1	8A-RU5-907-010	IB,EZ(PHNCZ)C	
1	8A-RU5-906-010	IB,EZ(SID)C	

ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
 If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

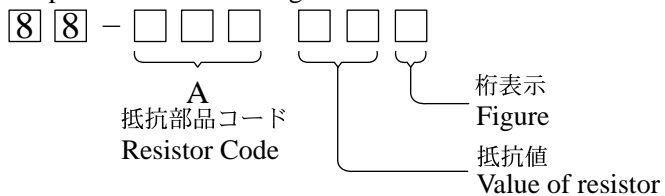
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C517	87-018-131-010		CAP,1000P
	8A-RUA-605-010	IC,CXA1619BS		C518	87-018-131-010		CAP,1000P
	S7-172-340-1A0	IC,LC72343G-9961		C521	87-A11-144-080		CAP,TC U 0.1-50 K B
				C523	87-018-131-010		CAP,1000P
				C524	87-018-131-010		CAP,1000P
TRANSISTOR				C526	87-015-683-080		CAP,E 33-16V
	89-414-680-080	TR,2SD1468S		CF401	87-008-554-010		FLTR,CDA10.7MG
	86-NFZ-657-080	TR,2SC1923(O)		CF402	87-PC4-617-010		FLTR,SFE10.7MA5
	87-026-447-080	TR,2SC1740S		CF403	8A-RH2-611-010		FLTR,SFU450 B
	89-320-011-280	TR,2SC2001K		△ICP401	87-001-486-010		ICP-N15
	89-110-155-080	TR,2SA1015(0.4W)		L401	88-RU7-608-010		BAR-ANT,LW-MW
	S7-805-000-020	TR,PE8050B,C,D		L402	S2-500-041-200		016-250004-120,COIL ANT LW
	S7-855-000-020	TR,PE8550B,C		L405	S0-104-782-000		COIL,0.47UH
	89-318-155-080	TR,2SC1815 (0.4W)		L406	8A-RU6-621-010		COIL,FM BPF 4T-4.5-0.8
	S9-011-800-180	TR,2SK118R		SW404	S2-200-711-000		SW,SLIDE SK22F03G7
	87-026-214-080	TR,DTA114YS		SW405	8A-RU4-607-010		SW,TACT
	87-026-200-080	TR,DTC114ES		T401	S8-539-390-750		IFT,R0002-0H07-853939 7.5MM
	89-324-585-080	TR,2SC2458GR		T402	88-RU7-612-010		IFT,AM-IF 10MM YEL
	89-341-165-070	C-TR,2SC4116GR		T403	S8-206-440-070		IFT,LW OSC 7MM
	87-026-213-010	C-TR,DTC114YK		TC401	8A-RU6-624-010		TRIMMER CAP 30P
	89-508-804-080	C-FET,2SK880Y		TC402	8A-RU6-624-010		TRIMMER,30P GRN
DIODE				VR401	8A-RU6-616-010		VR,RTRY 50KA H
	87-017-567-080	DIODE,SVC342M-V		WH3	S0-801-352-000		CONN PIN 8 PINS
	87-A40-226-080	DIODE,SVC251SPA		WH401	S1-001-002-000		CONN,10P
	87-070-345-080	DIODE,IN4148		WH403	S0-701-002-000		CONN,7P
	S0-100-221-200	ZENER DIODE 2.2V	LCD C.B				
	87-A40-398-010	DIODE,1N4001		C501	87-015-696-010		CAP,E 10-6.3V
	87-A40-041-010	ZENER,RD6.2B1ES		C502	87-012-286-080		CAP, U 0.01-25
	87-A40-027-010	ZENER,RD3.9B1ES		C503	87-010-831-080		C-CAP,U,0.1-16F
	87-017-408-080	C-DIODE,RB441Q		C504	87-010-831-080		C-CAP,U,0.1-16F
	87-020-339-080	CHIP DIODE,1SS226		C505	87-010-831-080		C-CAP,U,0.1-16F
MAIN C.B				C507	87-A10-723-040		CAP,E 2.2-35V
C416	87-018-127-010	CELA SOL 470P		C508	87-012-286-080		CAP, U 0.01-25
C421	87-018-131-010	CAP,1000P		C511	87-012-188-080		C-CAP,U 47P-50 CH
C423	87-018-131-010	CAP,1000P		C512	87-010-078-080		CAP,E 47-6.3 5L
C424	87-018-147-010	CAP TC-U 10P-50 CH		C513	87-012-284-080		CAP, U 6800P-50
C427	87-010-404-010	CONDENSER 4.7-50		C514	87-A10-047-080		C-CAP,U 1-10 Z F
C431	87-010-112-010	CAP,E 100-16V		C523	87-012-286-080		CAP, U 0.01-25
C432	87-A11-144-080	CAP,TC U 0.1-50 K B		DP1	8A-RU4-603-010		LCD,ATW4235
C433	87-010-248-010	CAP, ELECT 220-10V		DZ501	S0-100-221-200		ZENER DIODE 2.2V
C434	87-A11-144-080	CAP,TC U 0.1-50 K B		L501	87-003-154-080		COIL,220UH
C435	87-010-405-010	CAP 50-10SME		LED1	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C436	87-010-545-010	E-CAP 0.22-50		LED2	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C437	87-010-400-010	CAP, ELECT 0.47-50SME		LED3	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C438	87-015-695-010	801UF 50V CAP		LED4	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C439	87-010-404-010	CONDENSER 4.7-50		SW507	8A-RU6-615-010		SW,TACT PLATE LARGE
C441	87-A11-140-080	CAP,TC U 0.047-50 K B		SW508	8A-RU6-615-010		SW,TACT PLATE LARGE
C448	87-A11-132-080	CAP,TC U 0.01-50 K B		SW509	8A-RU6-615-010		SW,TACT PLATE LARGE
C449	87-A10-129-010	CAP,CER 3P-50 K CH		SW510	8A-RU6-615-010		SW,TACT PLATE LARGE
C451	87-010-404-010	CONDENSER 4.7-50		SW511	8A-RU6-615-010		SW,TACT PLATE LARGE
C455	87-018-131-010	CAP,1000P		SW512	8A-RU6-615-010		SW,TACT PLATE LARGE
C456	87-018-109-010	CAP,TC-U 22P-50 SL		SW513	8A-RU6-615-010		SW,TACT PLATE LARGE
C457	87-018-114-010	CAP,TC-U 39P-50 SL		T501	S8-398-250-550		IFT 0002-839825 5.5mm
C463	87-010-249-010	CAP,E 470-16V	KEY C.B	X501	87-030-349-010		VIB,XTAL 75K
C464	87-010-248-010	CAP, ELECT 220-10V					
C467	87-010-112-010	CAP,E 100-16V		SW301	8A-RU6-615-010		SW,TACT PLATE LARGE
C476	87-A10-127-010	CAP,CER 1P-50 K CH		SW302	8A-RU6-615-010		SW,TACT PLATE LARGE
C477	87-018-147-010	CAP TC-U 10P-50 CH		SW303	8A-RU6-615-010		SW,TACT PLATE LARGE
C478	87-010-405-010	CAP 50-10SME		SW304	8A-RU6-615-010		SW,TACT PLATE LARGE
C497	87-A11-144-080	CAP,TC U 0.1-50 K B		SW305	8A-RU6-615-010		SW,TACT PLATE LARGE
C503	87-018-131-010	CAP,1000P		SW306	8A-RU6-615-010		SW,TACT PLATE LARGE
C504	87-010-404-010	CONDENSER 4.7-50		SW500	8A-RU6-615-010		SW,TACT PLATE LARGE
C508	87-010-112-010	CAP,E 100-16V					
C511	87-018-131-010	CAP,1000P					
C512	87-010-112-010	CAP,E 100-16V					
C513	87-010-405-010	CAP 50-10SME					

- Regarding connectors, they are not stocked as they are not the initial order items.
The connectors are available after they are supplied from connector manufacturers upon the order is received.

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

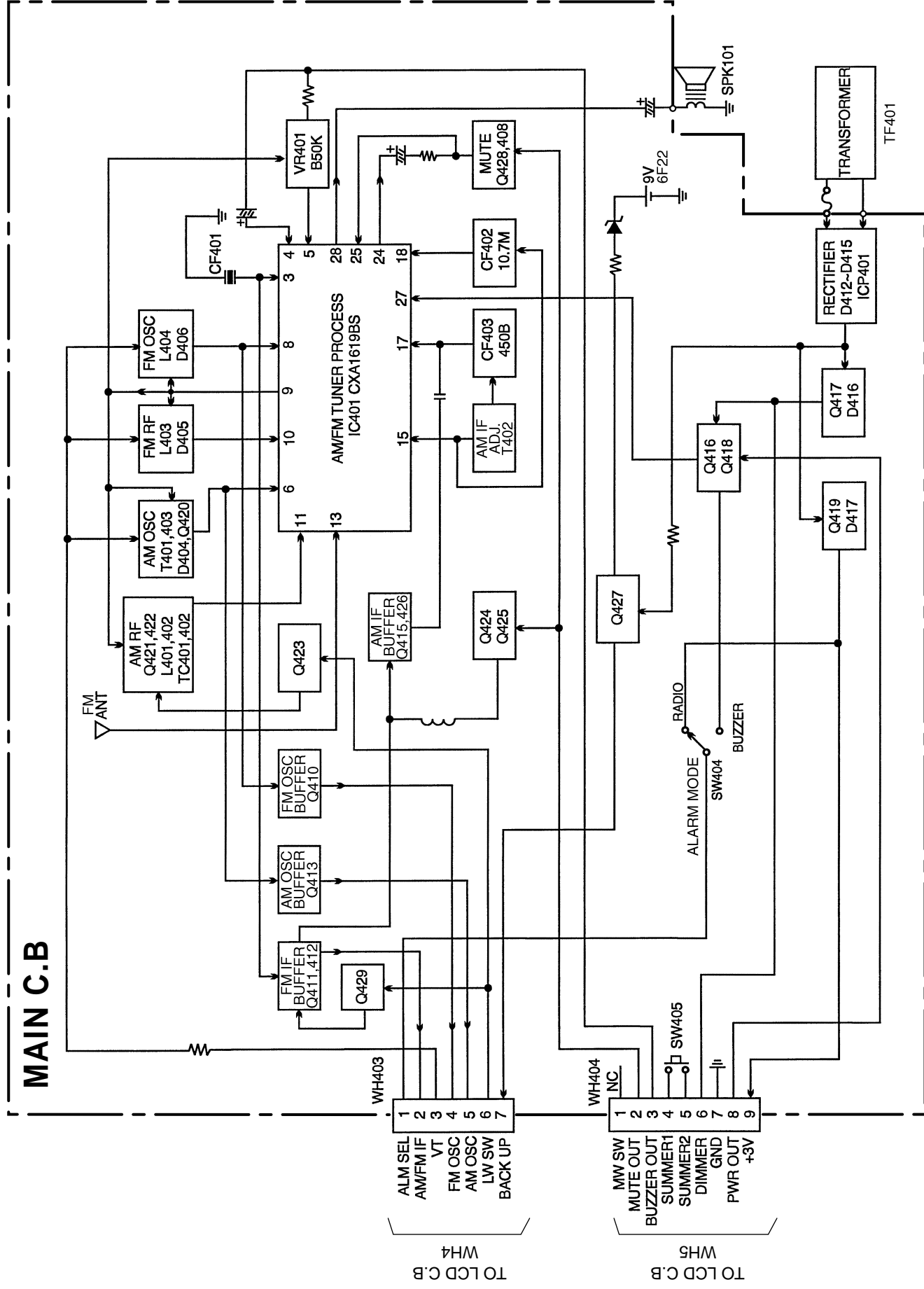
Chip Resistor Part Coding



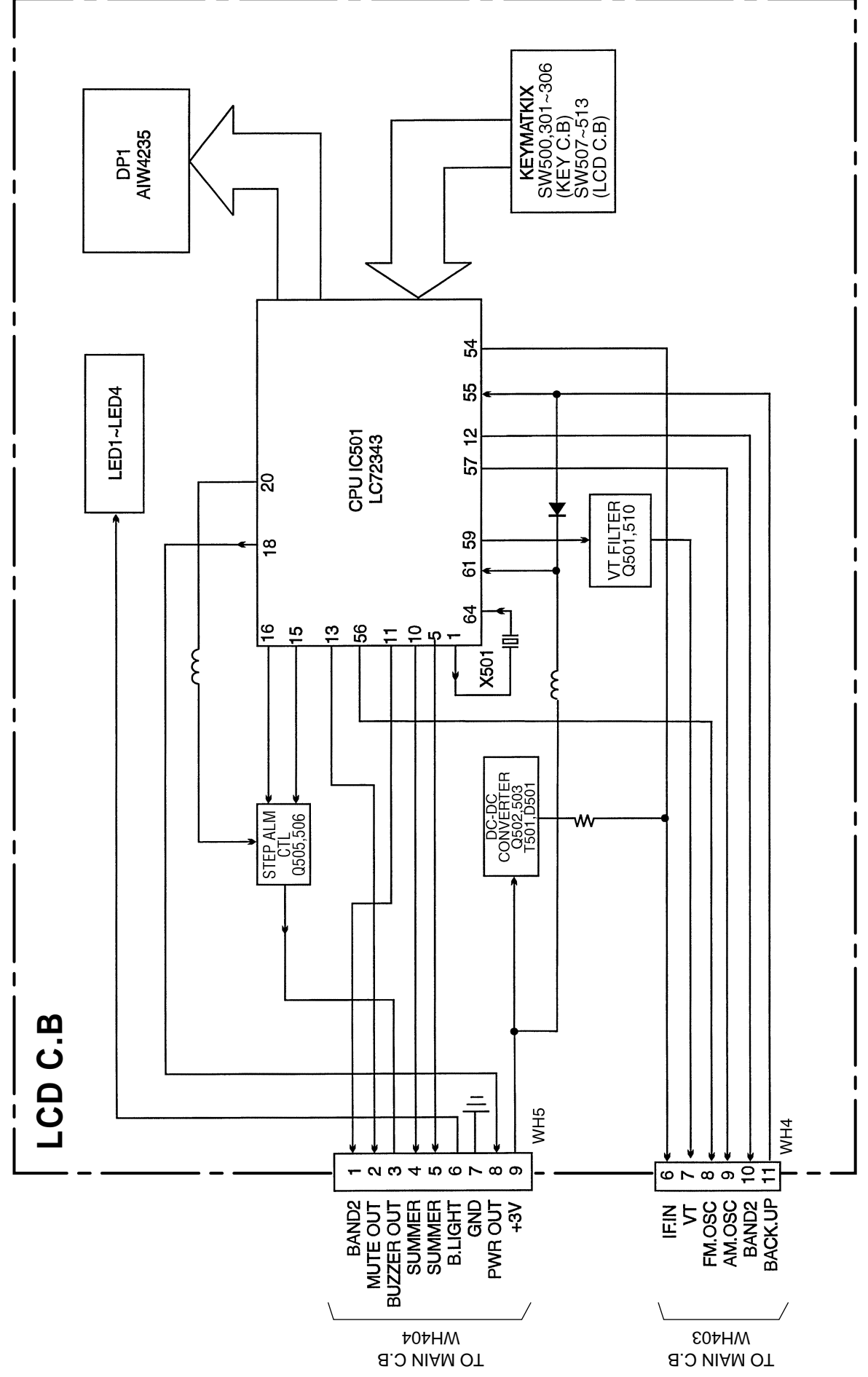
チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法/Dimensions (mm)			抵抗コード : A Resistor Code : A	
				外形/Form	L	W		t
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

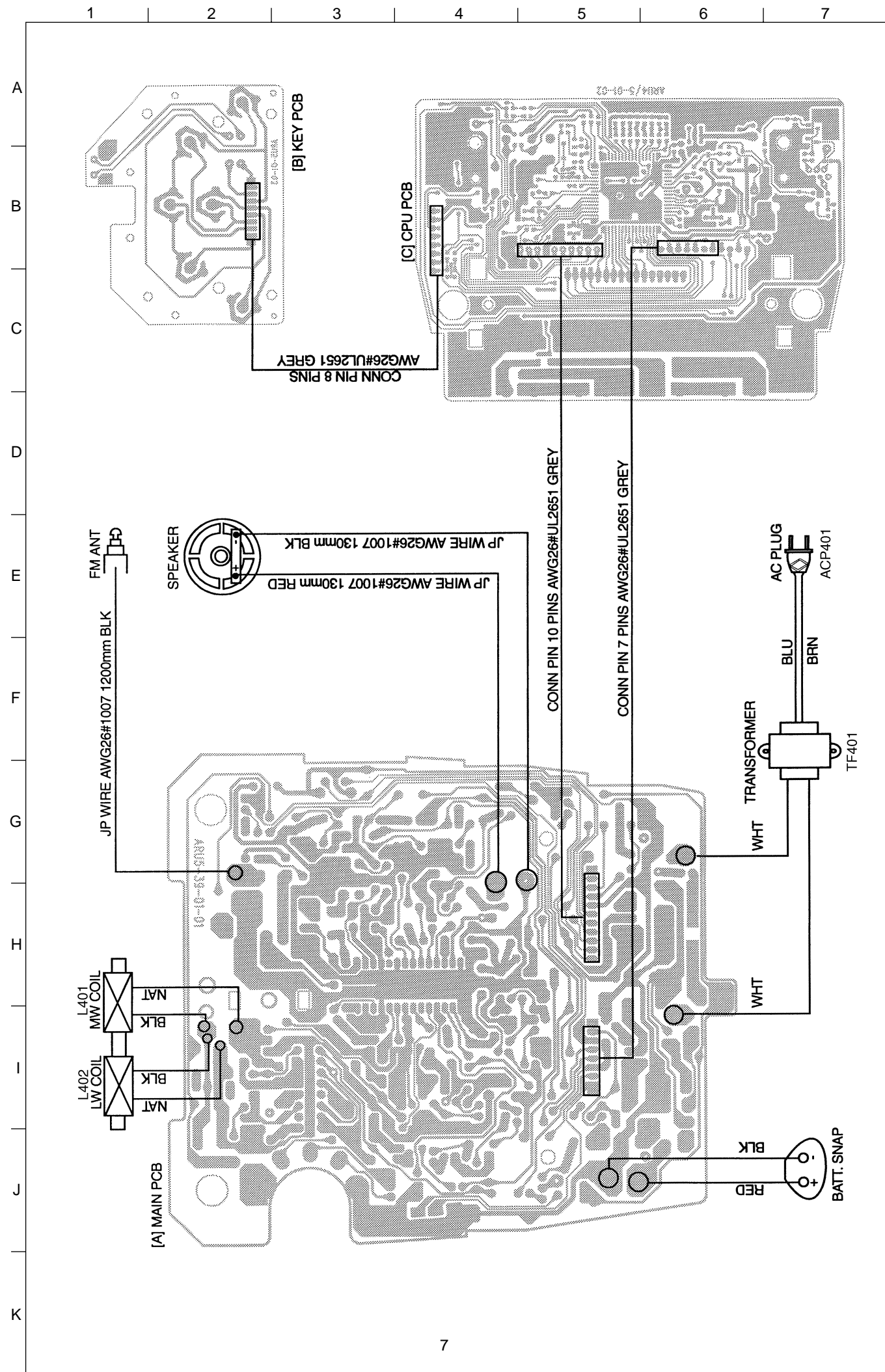
BLOCK DIAGRAM-1 (MAIN)



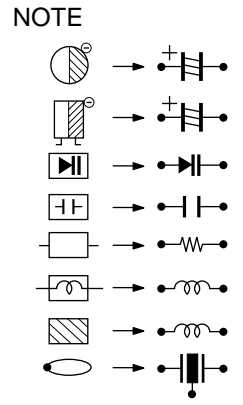
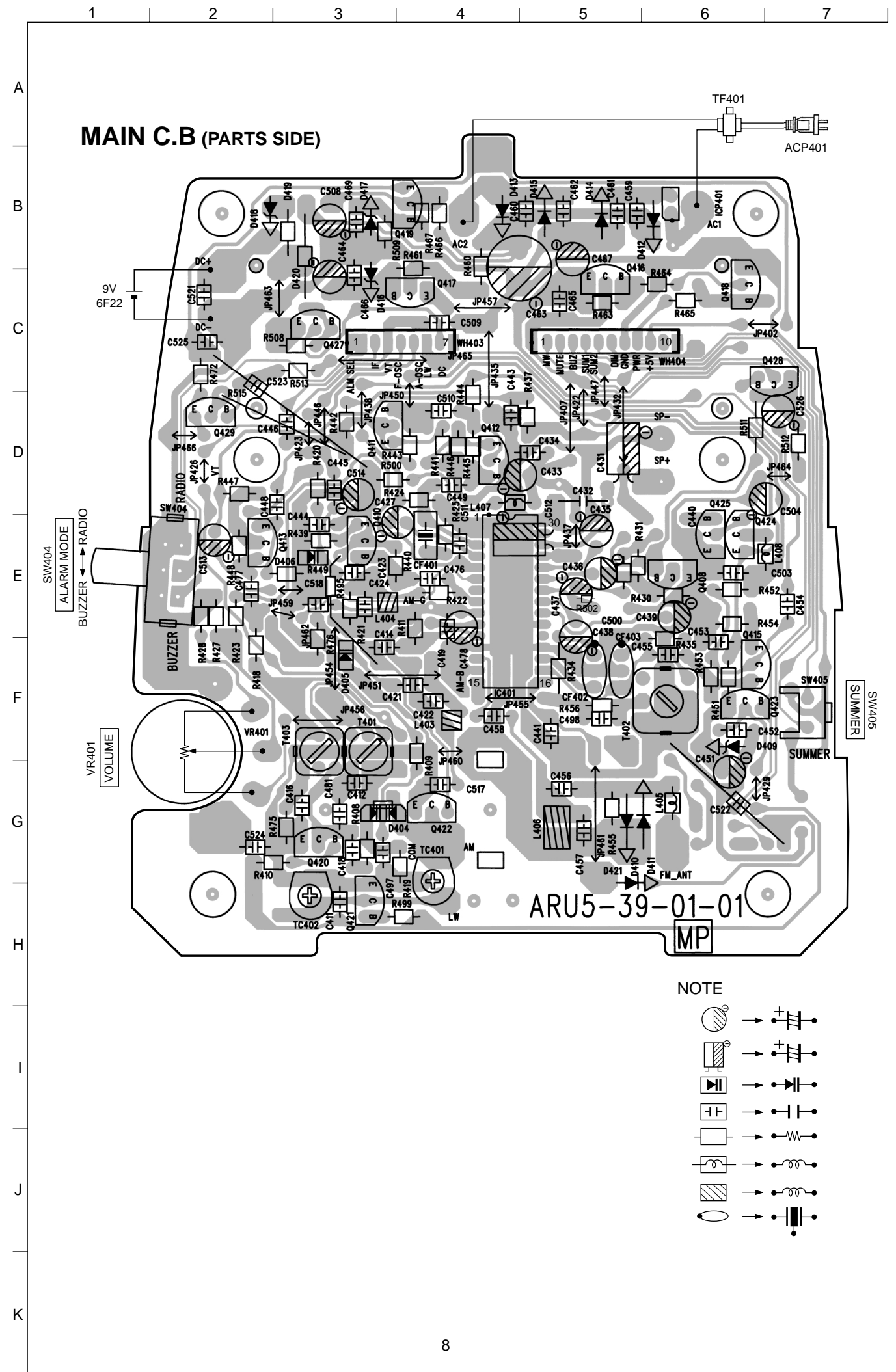
BLOCK DIAGRAM-2 (CPU)



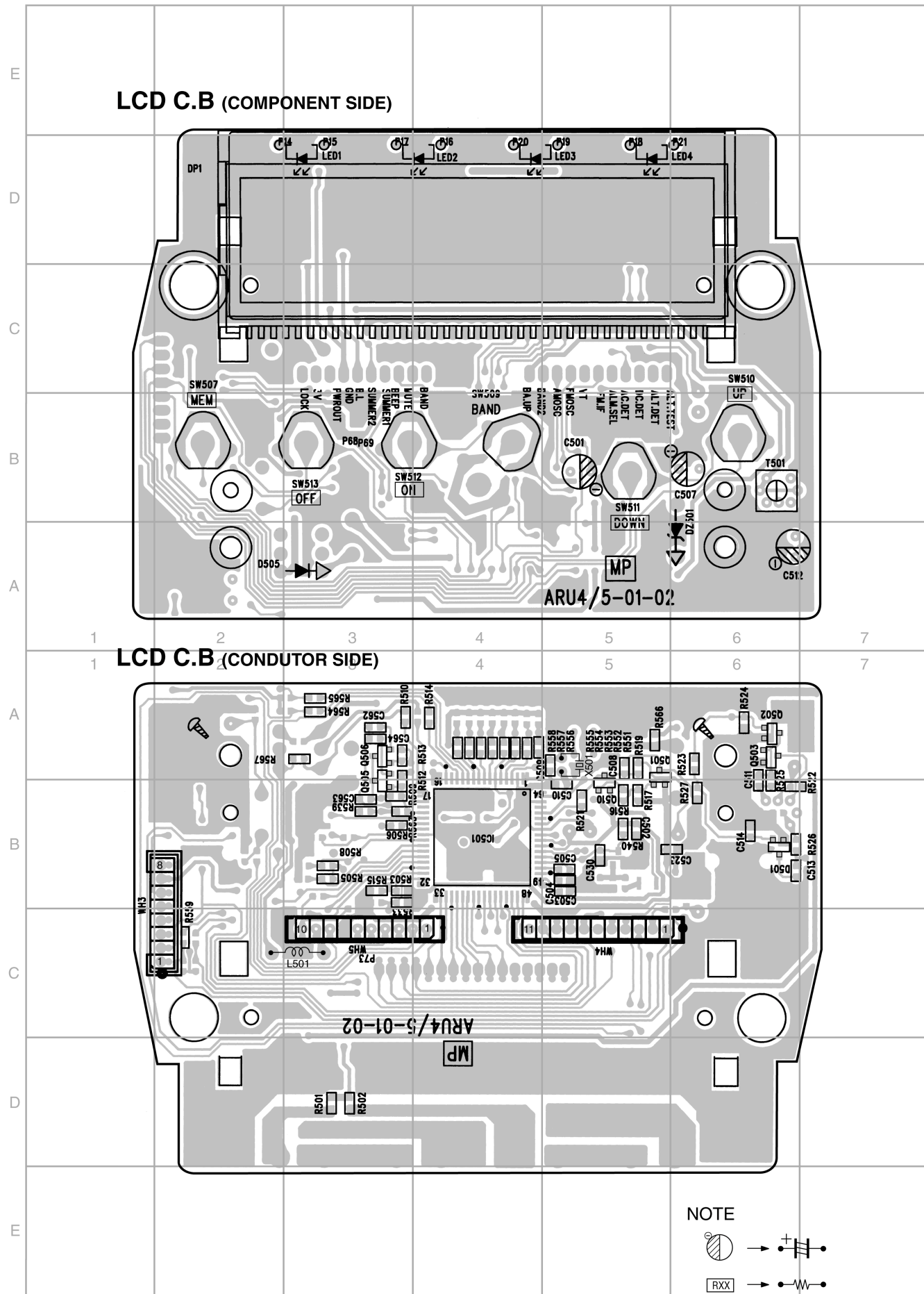
WIRING-1 (CONNECTION DIAGRAM)



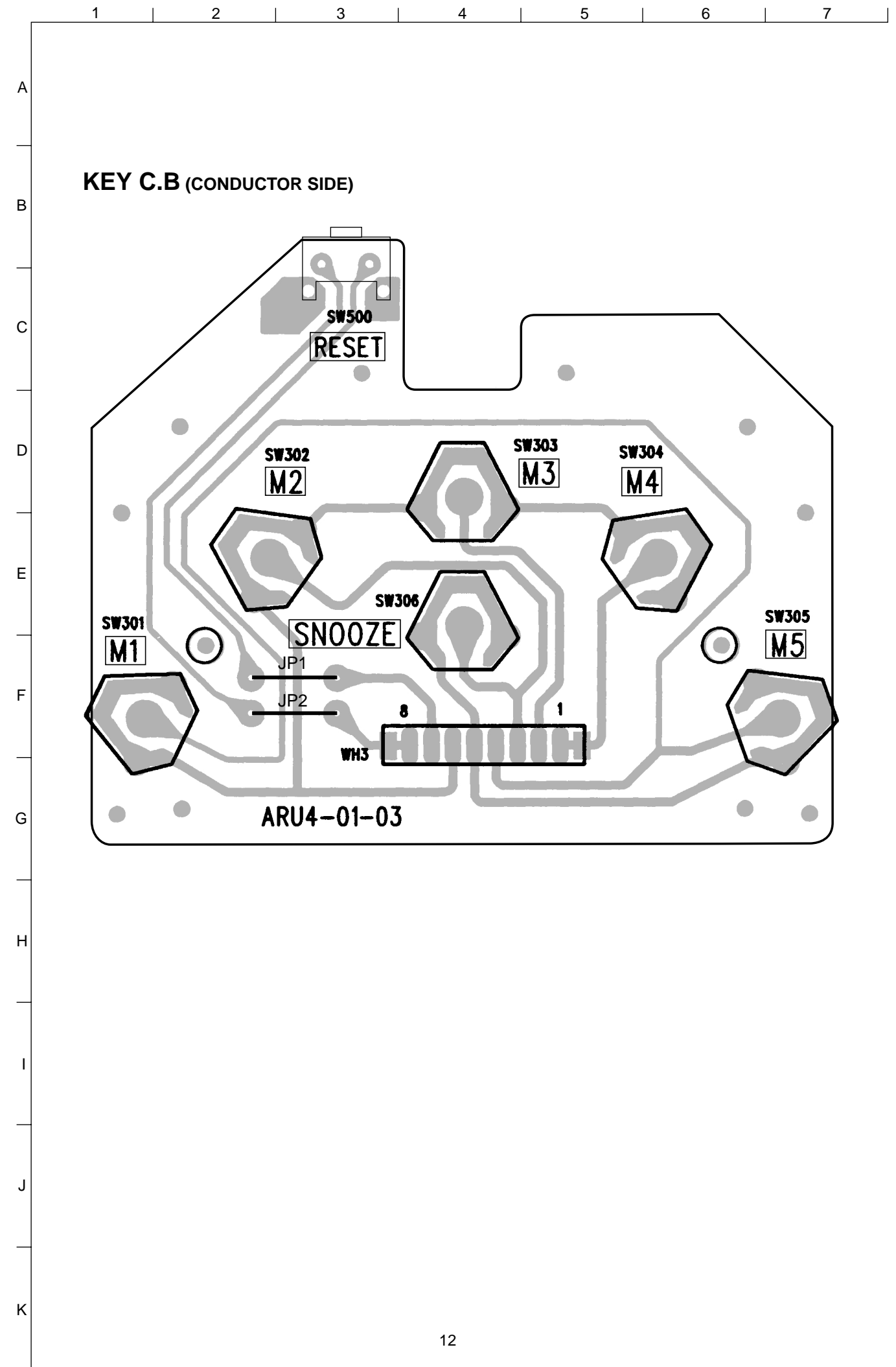
WIRING-2 (MAIN)

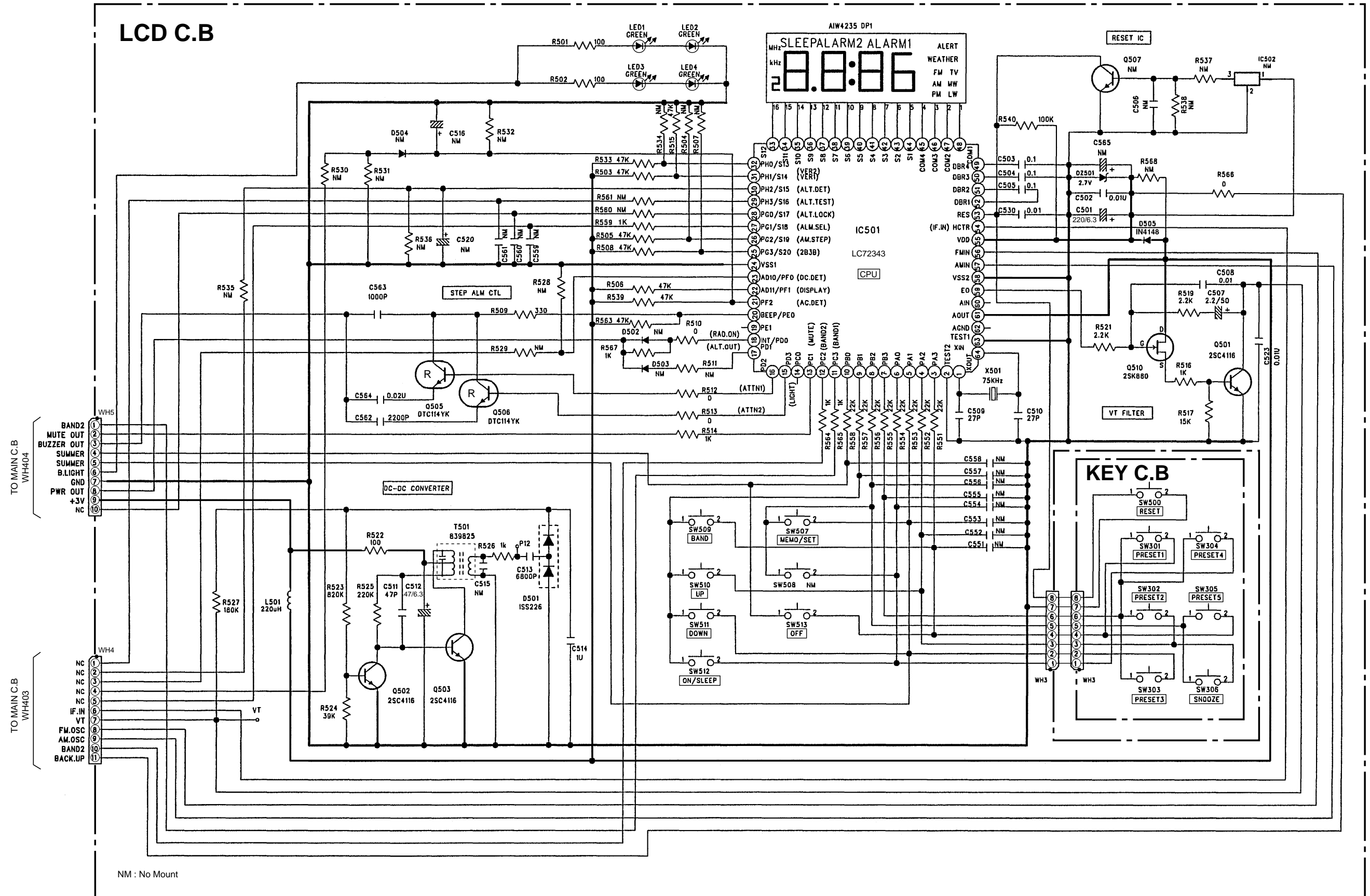


WIRING-3 (LCD)



WIRING-4 (KEY)





ELECTRICAL ADJUSTMENT

VOLTAGE CHART

TUNER & POWER AMP SECTION

TEST CONDITION : SET AM/FM TUNER ON ONE FREQUENCY

IC401 (CXA1619BS)

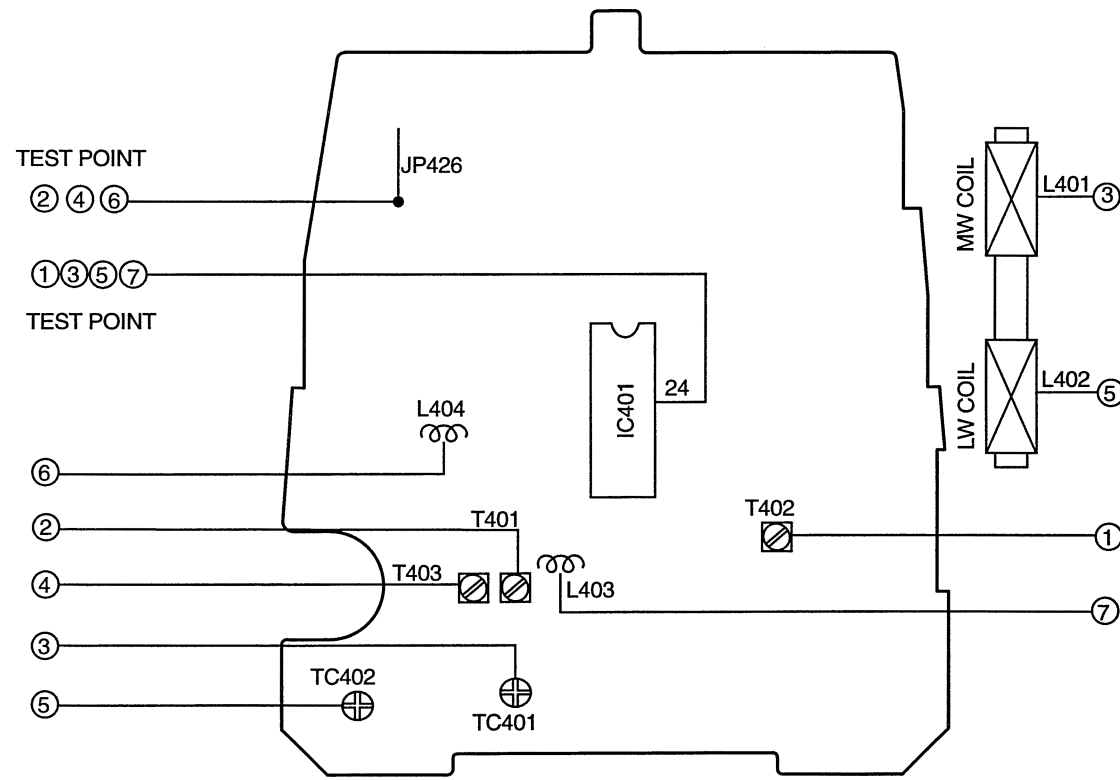
PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10
AM	0	0	5.07	2.82	0.40	1.26	0	1.26	1.26	1.26
FM	0	0	4.58	2.81	0.84	1.26	0	1.25	1.26	1.26
BUZZER	0	0	5.04	2.82	0.22	1.26	0	1.26	1.26	1.26
PIN'S NUMBER	11	12	13	14	15	16	17	18	19	20
AM	1.26	0	0	0	0.22	0.18	0	0.18	0	0.12
FM	1.25	0	0.34	0	1.19	1.36	0	1.36	0	0
BUZZER	1.26	0	0	0	0.22	0.18	0	0.18	0	0.46
PIN'S NUMBER	21	22	23	24	25	26	27	28	29	30
AM	0	1.47	1.10	1.03	0	5.05	5.58	2.83	0	0
FM	0	1.37	1.18	1.15	0	5.03	5.58	2.82	0	0
BUZZER	0	1.47	1.09	1.02	0	5.05	5.58	2.83	0	0

TRANSISTOR	Q410(2SC1923)			Q411(2SC1740)			Q412(2SC1740)			Q424(DTA114YS)		
	E	C	B	E	C	B	E	C	B	E	C	B
FM	1.13	2.64	1.88	0	0.12	0.12	0	0.11	0.12	5.58	0.12	5.50
TRANSISTOR	Q425(DTC114ES)			Q418(PE8550)			Q417(PE8050)			Q416(2SA1015)		
	E	C	B	E	C	B	E	C	B	E	C	B
FM	0	5.50	0	5.60	5.58	4.84	5.58	7.58	6.28	0	0.02	0.74
TRANSISTOR	Q419(2SC1815GR)			Q427(2SA1015)			Q503(2SC4116)			Q510(2SK880)		
	E	C	B	E	C	B	E	C	B	G	S	D
FM	3.35	7.05	4.03	7.65	2.40	7.88	0	3.26	0.57	0.26	0.58	3.20
TRANSISTOR	Q501(2SC4116)			Q502(2SC4116)								
	E	C	B	E	C	B						
FM	0	6.04	0.55	0	0.57	0.51						

TRANSISTOR	Q413(2SC1740)			Q415(2SC2001)		
	E	C	B	E	C	B
AM	1.79	2.66	2.44	0	0.30	0.28

TRANSISTOR	Q429(2SC1815GR)			Q420(2SC1740)			Q421(2SD1468)			Q422(2SK118)		
	E	C	B	E	C	B	E	C	B	E	C	B
LW	0	0	0.64	0	0	0.72	0	0	0.68	0	0	1.98
TRANSISTOR	Q423(DTA114YS)											
	E	C	B									
LW	2.42	0	2.25									

TRANSISTOR	Q408(2SD1468)			Q428(2SC2458GR)		
	E	C	B	E	C	B
MUTE	0	0	2.29	1.63	5.56	2.24



1. AM IF Adjustment

Test point: IC401 (CXA1619BS) 24PIN
Adjustment location: T402
T402 ----- 450kHz

5. LW Tracking Adjustment

Test point: IC401 (CXA1619BS) 24PIN
Adjustment location: L402, TC402
L402 ----- 189kHz waveform max.
TC402 ----- 243kHz waveform max.

2. MW Frequency Range Adjustment

Test point: JP426
Adjustment location: T401
Set frequency to be 531kHz
Adjust T401 so that voltage of that test point is 1.2V±0.1V

6. FM Frequency Range Adjustment

Test point: JP426
Adjustment location: L404
Set frequency to be 87.5MHz
Adjust L404 so that voltage of that test point is 2.5V±0.1V

3. MW Tracking Adjustment

Test point: IC401 (CXA1619BS) 24PIN
Adjustment location: L401, TC401
L401 ----- 603kHz waveform max.
TC401 ----- 1404kHz waveform max.

7. FM Tracking Adjustment

Test point: IC401 (CXA1619BS) 24PIN
Adjustment location: L403
L403 ----- 88.1MHz waveform max.

4. LW Frequency Range Adjustment

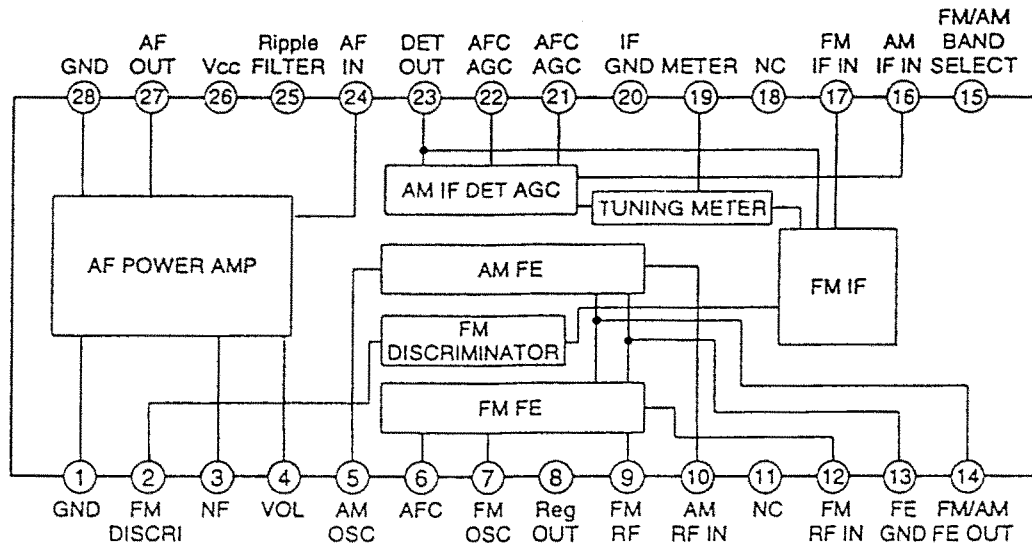
Test point: JP426
Adjustment location: T403
Set frequency to be 144kHz
Adjust T403 so that voltage of that test point is 1.0V±0.1V

**CPU SECTION
IC501 (LC72343)**

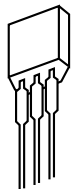
PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
FM	1.28	0	0	0	0	0	2.36	0.08	0.08	0.08	2.55	0
PIN'S NUMBER	13	14	15	16	17	18	19	20	21	22	23	24
FM	0	0	0	0	0	2.32	0	0	2.15	3.02	2.91	0
PIN'S NUMBER	25	26	27	28	29	30	31	32	33	34	35	36
FM	0	0	0	1.16	1.14	1.12	3.03	0	1.49	1.49	1.49	1.49
PIN'S NUMBER	37	38	39	40	41	42	43	44	45	46	47	48
FM	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
PIN'S NUMBER	49	50	51	52	53	54	55	56	57	58	59	60
FM	1.52	2.99	1.98	0.50	2.53	1.26	2.55	0	0	0	0.26	0.08
PIN'S NUMBER	61	62	63	64								
FM	2.56	0	0	0								

TRANSISTOR	Q505(DTC114YKA)			Q506(DTC114YKA)		
	E	C	B	E	C	B
BUZZER	2.50	3.20	2.56	2.50	3.20	2.56

IC BLOCK DIAGRAM
IC, CXA1619BS



TRANSISTOR ILLUSTRATION



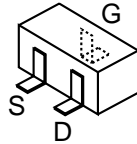
ECB

DTA114YS



ECB

2SC1923
2SC2001

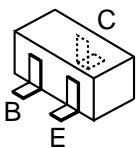


2SK880



ECB

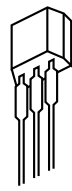
2SC1740
2SC1815
PE8050
PE8550
2SD1468
2SA1015



DTC114YK
2SC4116



ECB
DTC114ES
2SC2458



DGS
2SK118

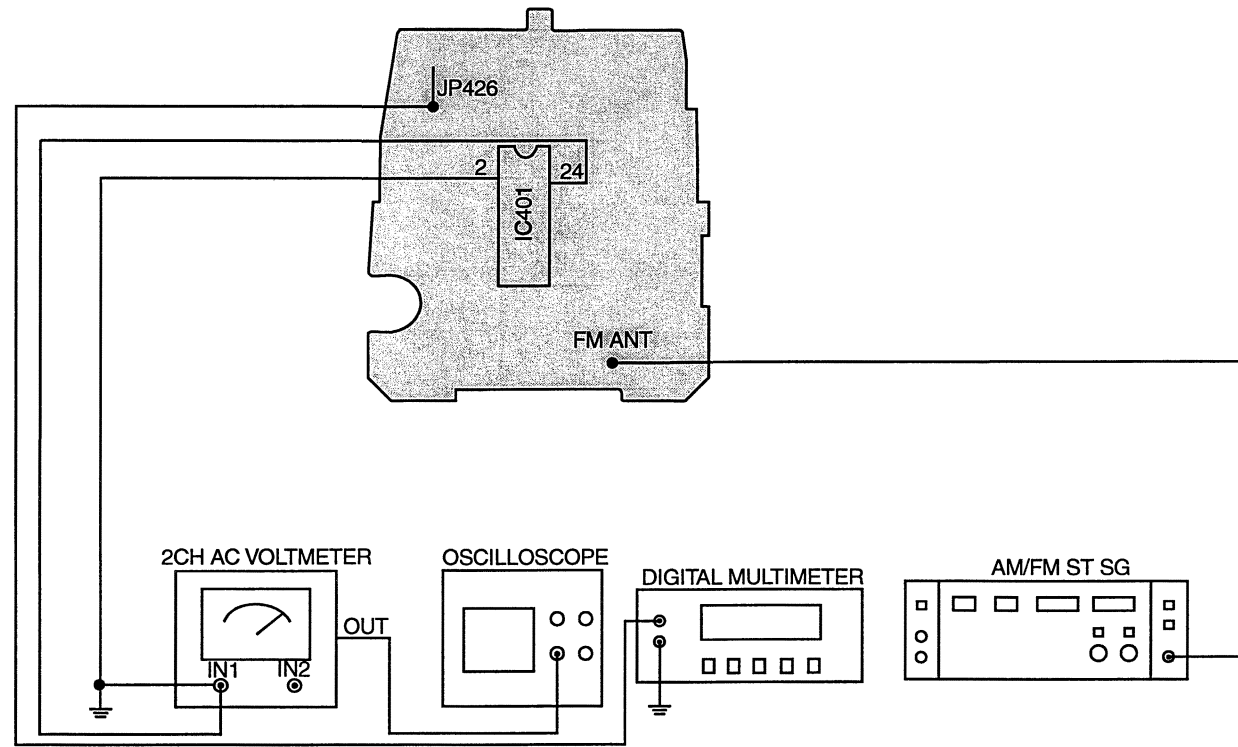
IC DESCRIPTION

IC, LC72343G

Pin No.	Pin Name	I/O	Description
1	XOUT	O	Connections for a 75kHz crystal oscillator element.
2	TEST2	I	IC test pins. These pins must be tied to ground.
3	PA3	I	Special-purpose key return signal input port.
4	PA2	I	
5	PA1	I	
6	PA0	I	
7	PB3	O	Special-purpose key source signal output port.
8	PB2	O	
9	PB1	O	
10	PB0	O	
11	PC3	I/O	General-purpose I/O port.
12	PC2	I/O	
13	PC1	I/O	
14	PC0	I/O	
15	PD3	I/O	
16	PD2	I/O	
17	PD1	I/O	
18	$\overline{\text{INT}}/\text{PD0}$	I/O	
19	PE1	O	General-purpose output port.
20	BEEP/PE0	O	
21	PF2	I	General-purpose input and A/D converter input shared function port.
22	PF1/ADI1	I	
23	PF0/ADI0	I	
24	VSS	—	Ground pin.
25	PG3/S20	I/O	LCD driver segment output and general-purpose I/O shared function port.
26	PG2/S19	I/O	
27	PG1/S18	I/O	
28	PG0/S17	I/O	
29	PH3/S16	I/O	
30	PH2/S15	I/O	
31	PH1/S14	I/O	
32	PH0/S13	I/O	
33-44	S12-S1	O	LCD driver segment output pins.
45	COM4	O	LCD driver common output pins.
46	COM3	O	
47	COM2	O	
48	COM1	O	
49	DBR4	—	LCD power supply stepped-up voltage pins.
50	DBR3	—	
51	DBR2	—	
52	DBR1	—	

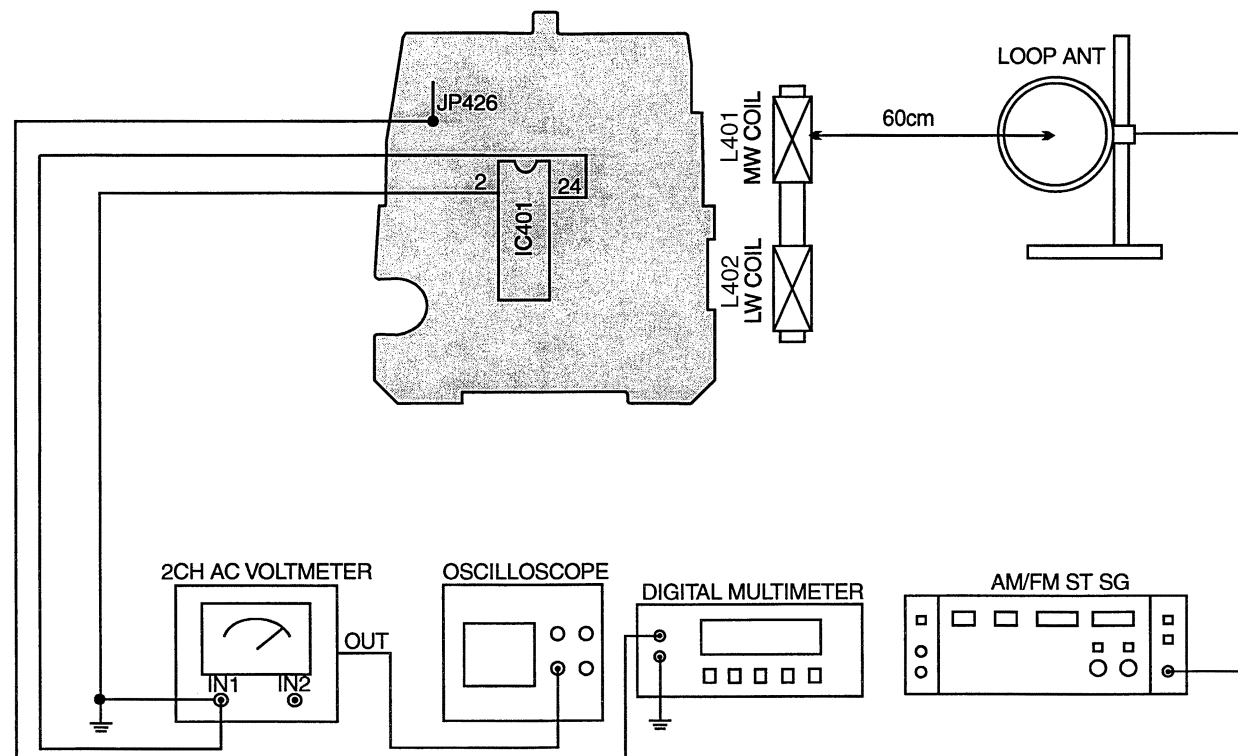
Pin No.	Pin Name	I/O	Description
53	RES	I	System reset input.
54	HCTR	I	Universal counter dedicated input port.
55	VDD	—	Power supply pin.
56	FMIN	I	FM VCO (local oscillator) input.
57	AMIN	I	AM VCO (local oscillator) input.
58	VSS	—	Ground pin.
59	E0	O	The main charge pump output.
60	AIN	O	Transistor used for the low-pass filter amplifier. Connect AGND to ground.
61	AOUT	O	
62	AGND	O	
63	TEST1	I	IC test pins. These pins must be tied to ground.
64	XIN	I	Connections for a 75kHz crystal oscillator element.

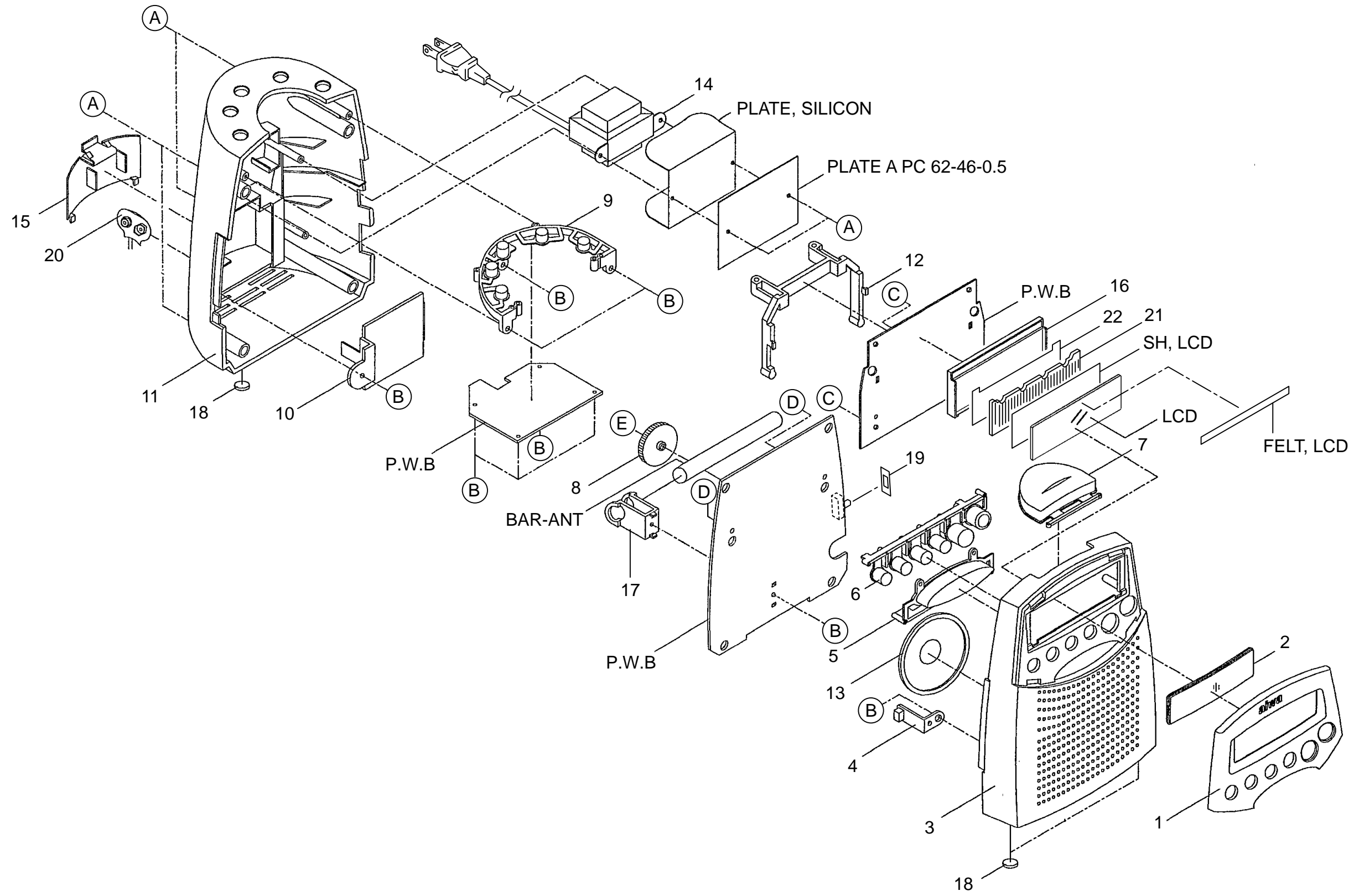
FM SECTION



No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COM1	COM1	---	---	---	LW	TV	ALERT	2d	---	---	3d	---	Dot	4d	MHz	kHz
COM2	---	COM2	---	---	MW	WEATHER	☀	ALARM1	2a	Colon	ALARM2	3a	SLEEP	---	4a	---
COM3	---	---	COM3	---	PM	FM	1b	2f	2g	2b	3f	3g	3b	4f	4g	4b
COM4	---	---	---	COM4	AM	1a,d,e,g	1c	2e	---	2c	3e	---	3c	4e	5	4c

AM SECTION





MECHANICAL PARTS LIST 1/1

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。
 If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8A-RU5-003-010		PANEL,FRONT EZ S	16	8A-RU3-201-010		HLDR,DIS
2	8A-RU3-013-010		WINDOW,LCD	17	8A-RU3-208-010		HLDR,BAR-ANT
3	8A-RU5-001-010		CABI,FRONT EZ S	18	8A-RU3-209-010		FOOT,RUBBER
4	8A-RU3-008-010		BTN,SUMMER	19	8A-RU3-206-010		PLATE,SW COVER
5	8A-RU5-005-010		COVER, KEY	20	8A-RU3-615-010		SOCKET, 2P BATT 9V
6	8A-RU3-004-010		BTN,FUNCTION	21	8A-RU3-203-010		FLTR,LCD
7	8A-RU3-006-010		BTN,SNOOZE	22	8A-RU3-204-010		PLATE,LCD
8	8A-RU3-009-010		KNOB,RTRY VOL	A	87-751-099-410		VTZ+3-15 W/O SLOT
9	8A-RU3-005-010		BTN,PRESET	B	87-B10-156-010		VTZ+3-8
10	8A-RU4-006-010		COVER, BATTERY DOOR	C	87-743-073-410		UT2+2.6-6
11	8A-RU5-002-010		CABI,REAR EZ S	D	87-B10-158-010		VTZ+3-6
12	8A-RU3-205-010		HLDR,PWB	E	87-263-531-310		SCREW V+1.7-5
13	8A-RU6-617-010		SPKR,DIA57 8OHM 0.5W				
14	S1-115-090-200		PT,U 120V W/AC CORD				
15	8A-RU3-007-010		COVER, BACK				



COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange	GM	Metallic Green
YM	Metallic Yellow	DM	Metallic Orange	PT	Transparent Pink

アイワ株式会社 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)

AIWA CO.,LTD. 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110-8710, JAPAN TEL:03 (3827) 3111