

SERVICE MANUAL

RADIO RECEIVER

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-008-349-8T1).

SPECIFICATIONS

Power source	AC 120 V, 60 Hz
Output	280 mW (EIAJ)
Power consumption	4 W
Speaker	57 mm, 8 ohms
Frequency range	FM: 87.5 – 108.1 MHz (200 kHz steps) AM: 530 – 1,710 kHz (10 kHz steps)
Antennas	WEATHER: 1 – 7 ch Wire antenna for FM and WEATHER Ferrite bar antenna for AM
Maximum outside dimensions	124 (W) × 155.2 (H) × 105.5 (D) mm (5 × 6 1/8 × 4 1/4 in.)
Weight	Approx. 696 g, 1.53 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-RU4-901-010	IB,U(3L)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".

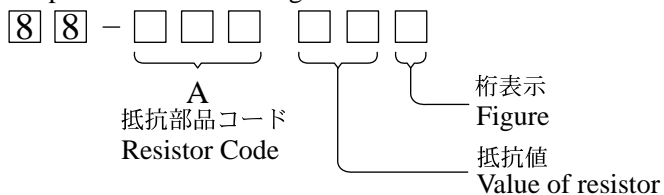
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C409	87-010-380-010		CAP,E 47-16 SME
	8A-RUA-605-010	IC,CXA1619BS		C502	87-012-286-080		CAP, U 0.01-25
	8A-RU4-609-010	IC,NJM567		C503	87-010-831-080		C-CAP,U,0.1-16F
	8A-RU4-610-010	IC,LC72343G		C504	87-010-831-080		C-CAP,U,0.1-16F
				CF101	87-A91-162-010		FLTR,PFS450A7
TRANSISTOR				CF102	87-PC4-617-010		FLTR,SFE10.7MA5
	89-327-124-080	TR,2SC2712Y,SI(150MHZ		CF103	87-PC4-617-010		FLTR,SFE10.7MA5
	87-A30-146-080	TR,2SD1468S-S		L105	S0-101-151-000		COIL,110UH
	89-327-144-080	TR,2SC2714Y		L107	87-003-152-080		COIL,100UH
	87-026-268-080	C-TR,RN2411		△L108	87-003-171-010		TROIDAL COIL FL5R100
	87-026-483-080	TR,DTA123JS		△L109	87-003-171-010		TROIDAL COIL FL5R100
	S7-805-000-020	TR,PE8050B,C,D		SPK101	8A-RU6-617-010		SPKR,DIA57 80HM 0.5W
	89-318-155-080	TR,2SC1815 (0.4W)		SW401	88-CD6-668-010		SW,2P2T SK22F03
	S7-855-000-020	TR,PE8550B,C		SW402	88-CD6-668-010		SW,2P2T SK22F03
	89-341-165-080	CHIP TRANSISTOR 2SC4116GR		SW403	88-CD6-668-010		SW,2P2T SK22F03
	87-026-213-080	C-TR,DTC114YK		SW404	88-CD6-668-010		SW,2P2T SK22F03
	89-508-804-080	C-FET,2SK880Y		SW405	8A-RU4-607-010		SW,TACT
DIODE				T501	S8-539-390-750		IFT,R0002-0H07-853939 7.5MM
	87-017-408-080	DIODE RB441Q		VC101	8A-RU6-624-010		TRIMMER,30P GRN
	87-017-925-080	C-VARACTOR,KV1460		VR101	87-A90-412-010		SFR,50K H FRB65
	87-A40-593-040	C-DIODE,1SS356		VR102	87-024-172-080		SEMI-FIXED RESISTOR, 10K
	87-A40-799-040	V-CAP KV1610S		WH401	S1-001-002-000		CONN,10P
	87-070-345-080	DIODE,IN4148	LCD C.B	WH402	S1-001-002-000		CONN,10P
	87-A40-398-010	DIODE,1N4001		C501	87-010-550-040		CAP,E 100-6.3V
	87-A40-041-010	ZENER,RD6.2B1ES		C505	87-010-831-080		C-CAP,U,0.1-16F
	87-A40-027-010	ZENER,RD3.9B1ES		C507	87-015-031-010		CAP,E 3.3-25V
	S0-100-511-200	DIODE,1N5231B		C508	87-012-286-080		CAP, U 0.01-25
	87-020-339-080	CHIP DIODE,1SS226		C511	87-012-188-080		C-CAP,U 47P-50 CH
MAIN C.B				C512	87-010-078-080		CAP,E 47-6.3 5L
BPF1	8A-RU4-605-010	FLTR,BPF GFWB4-T		C513	87-012-284-080		CAP, U 6800P-50
C103	87-012-167-080	C-CAP,U 5P-50 CH		C514	87-A10-047-080		C-CAP,U 1-10 Z F
C104	87-012-164-080	C-CAP,U 2P-50 CK		C516	87-015-968-040		CAP,E4.7-16V
C106	87-012-286-080	CAP, U 0.01-25		C520	87-015-968-040		CAP,E4.7-16V
C107	87-012-286-080	CAP, U 0.01-25		C523	87-012-286-080		CAP, U 0.01-25
C108	87-012-286-080	CAP, U 0.01-25		C530	87-A10-047-080		C-CAP,U 1-10 Z F
C110	87-012-162-080	C-CAP,U 1P-50 CK		C564	87-012-286-080		CAP, U 0.01-25
C111	87-016-553-080	CAP,CER 560P-2K K BN DE		DIP1	8A-RU4-603-010		LCD,AIW4235
C116	87-016-553-080	CAP,CER 560P-2K K BN DE		L501	87-003-154-080		COIL,220UH
C119	87-010-029-080	CAP,E 1-50 BK		LED1	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C120	87-010-028-080	CAP,E 0.47-50 BK		LED2	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C121	87-015-683-080	CAP,E 33-16V		LED3	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C124	87-010-064-080	CAP,E 100-10		LED4	S0-252-012-020		LED-G,KM2520SGT27(GRN)
C126	87-010-231-080	ELECTROLYTIC 220-10KS		SW508	8A-RU6-615-010		SW,TACT PLATE LARGE
C128	87-010-029-080	CAP,E 1-50 BK		SW509	8A-RU6-615-010		SW,TACT PLATE LARGE
C129	87-010-027-080	CAP,E 0.22-50 BK		SW510	8A-RU6-615-010		SW,TACT PLATE LARGE
C130	87-010-028-080	CAP,E 0.47-50 BK		SW511	8A-RU6-615-010		SW,TACT PLATE LARGE
C131	87-010-911-080	CAP,E 10-50 ASF		SW512	8A-RU6-615-010		SW,TACT PLATE LARGE
C132	87-010-936-080	CAP, ELECT 4.7-50		SW513	8A-RU6-615-010		SW,TACT PLATE LARGE
C139	87-A11-827-080	CAP,CER 22P-50 J RH		WH403	S0-601-202-000		CONN,6P
C140	87-A11-843-080	CAP,CER 10P-50 D CH		WH404	S0-201-202-000		CONN,2P
C142	87-010-911-080	CAP,E 10-50 ASF	KEY C.B	X501	87-030-349-010		VIB,XTAL 75K
C143	87-012-164-080	C-CAP,U 2P-50 CK		SW500	8A-RU6-615-010		SW,TACT PLATE LARGE
C146	87-010-029-080	CAP,E 1-50 BK		SW501	8A-RU6-615-010		SW,TACT PLATE LARGE
C147	87-A11-834-080	CAP,CER 1P-50 C CH		SW502	8A-RU6-615-010		SW,TACT PLATE LARGE
C154	87-010-231-080	ELECTROLYTIC 220-10KS		SW503	8A-RU6-615-010		SW,TACT PLATE LARGE
C155	87-010-027-080	CAP,E 0.22-50 BK		SW504	8A-RU6-615-010		SW,TACT PLATE LARGE
C156	87-010-067-040	CAP,E 0.1-50V		SW505	8A-RU6-615-010		SW,TACT PLATE LARGE
C158	87-012-286-080	CAP, U 0.01-25		SW506	8A-RU6-615-010		SW,TACT PLATE LARGE
C159	87-010-936-080	CAP, ELECT 4.7-50					
C166	87-012-286-080	CAP, U 0.01-25					
C169	87-012-286-080	CAP, U 0.01-25					
C405	87-010-236-080	CAP,E 1000-10V					
C406	87-010-380-010	CAP,E 47-16 SME					
C408	87-010-064-080	CAP,E 100-10					

- 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

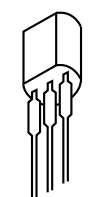
Chip Resistor Part Coding



チップ抵抗
Chip resistor

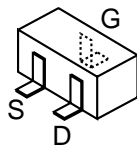
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法/Dimensions (mm)			抵抗コード : A Resistor Code : A	
				外形/Form	L	W		t
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION



E C B

2SD467C
PE8550B



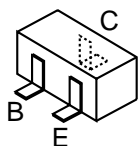
S G D

2SK880



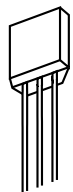
E C B

2SC1815
2SD1468



B C E

DTC114YK
2SC4116
RN2411
2SC2712Y
2SC2714Y

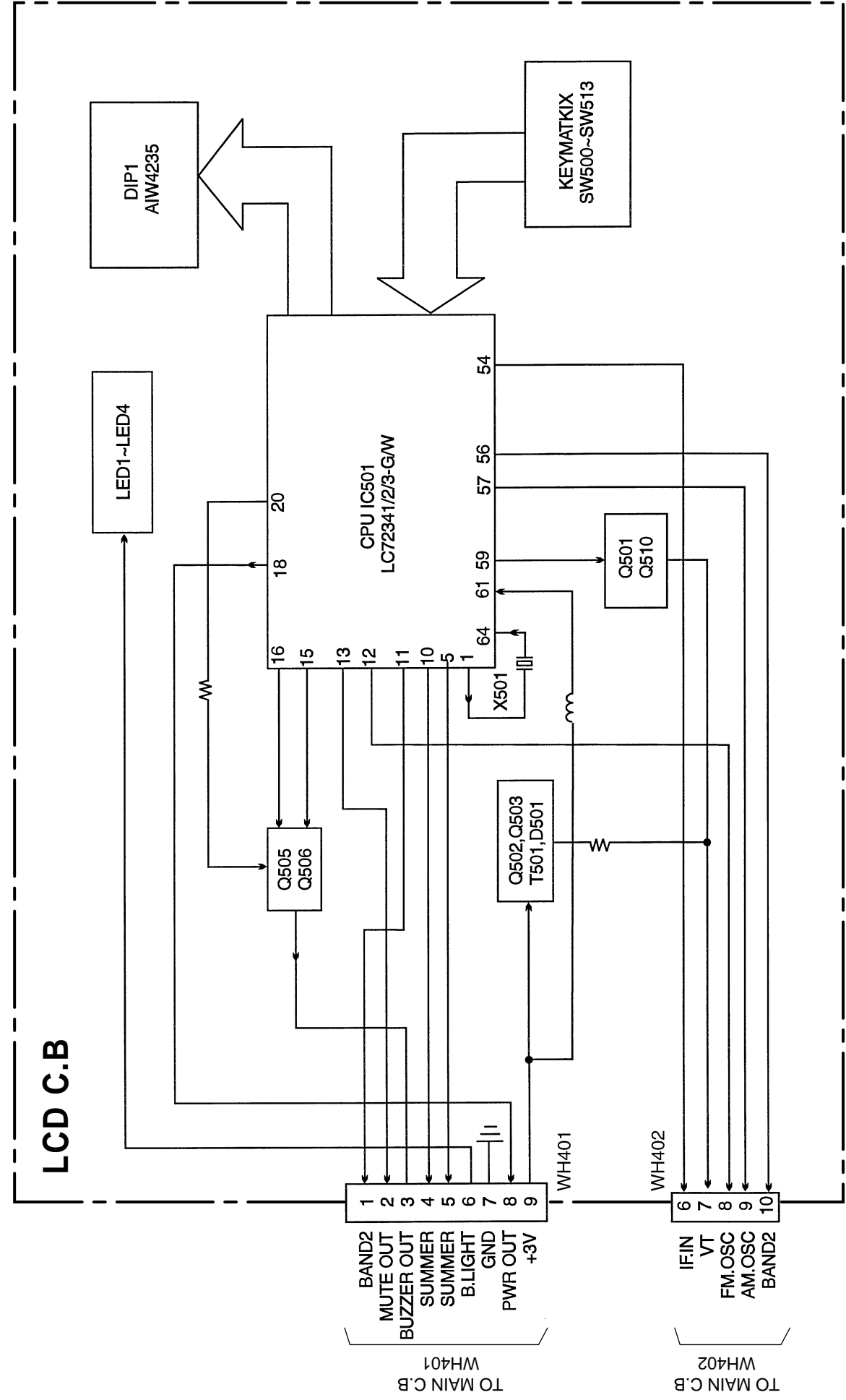
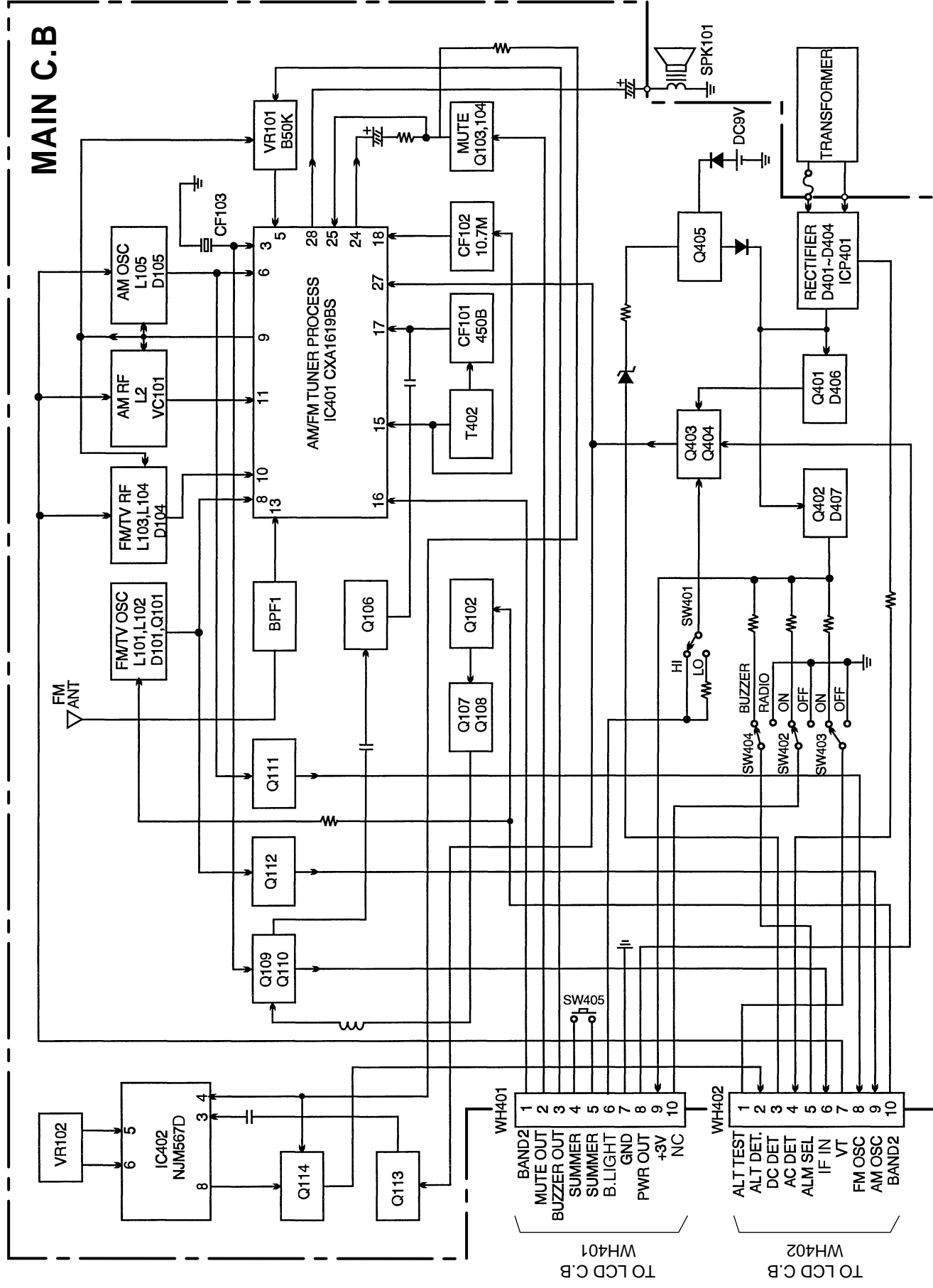


E C B

DTC114ES
DTA123JS

BLOCK DIAGRAM-1 (TUNER)

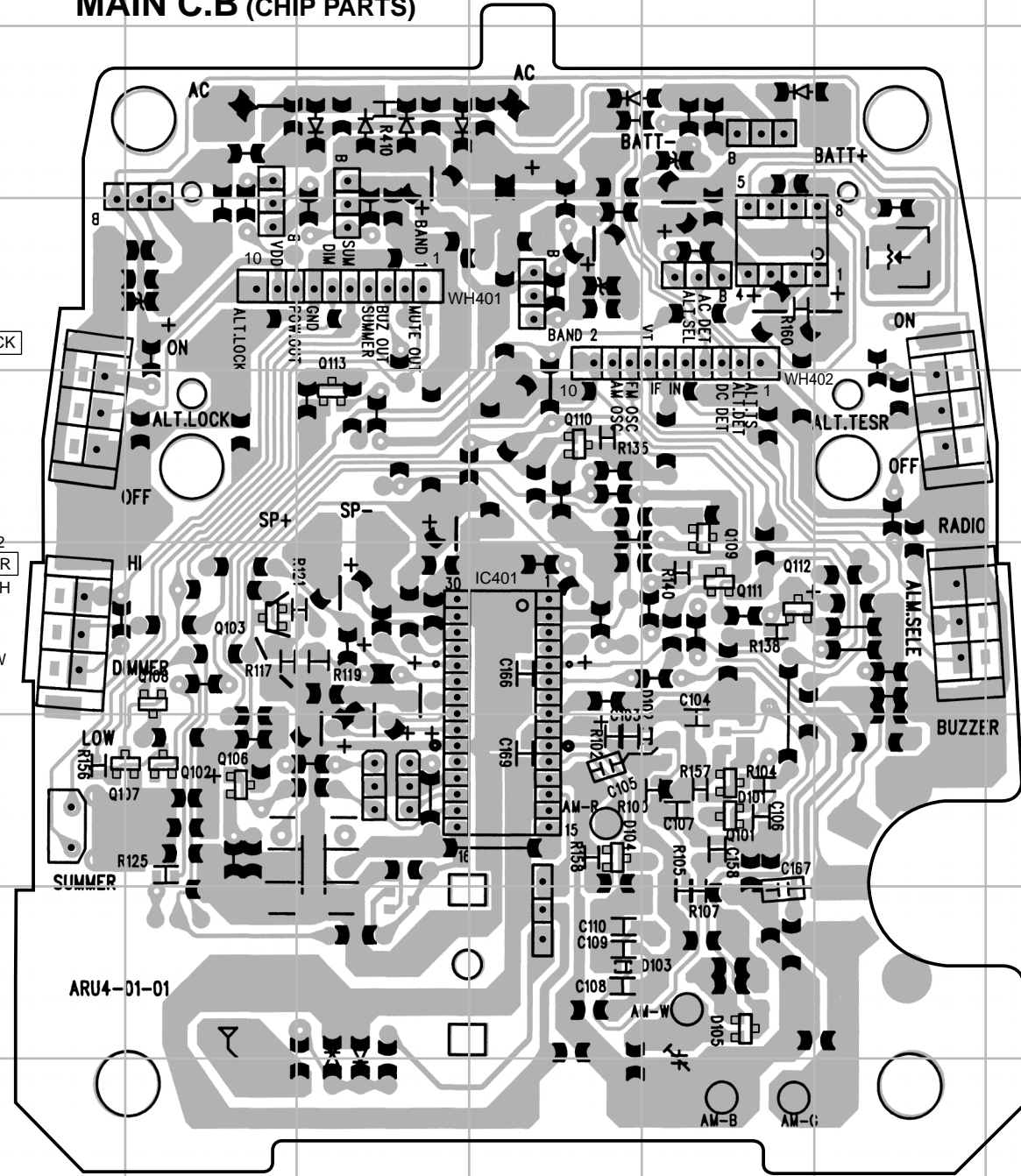
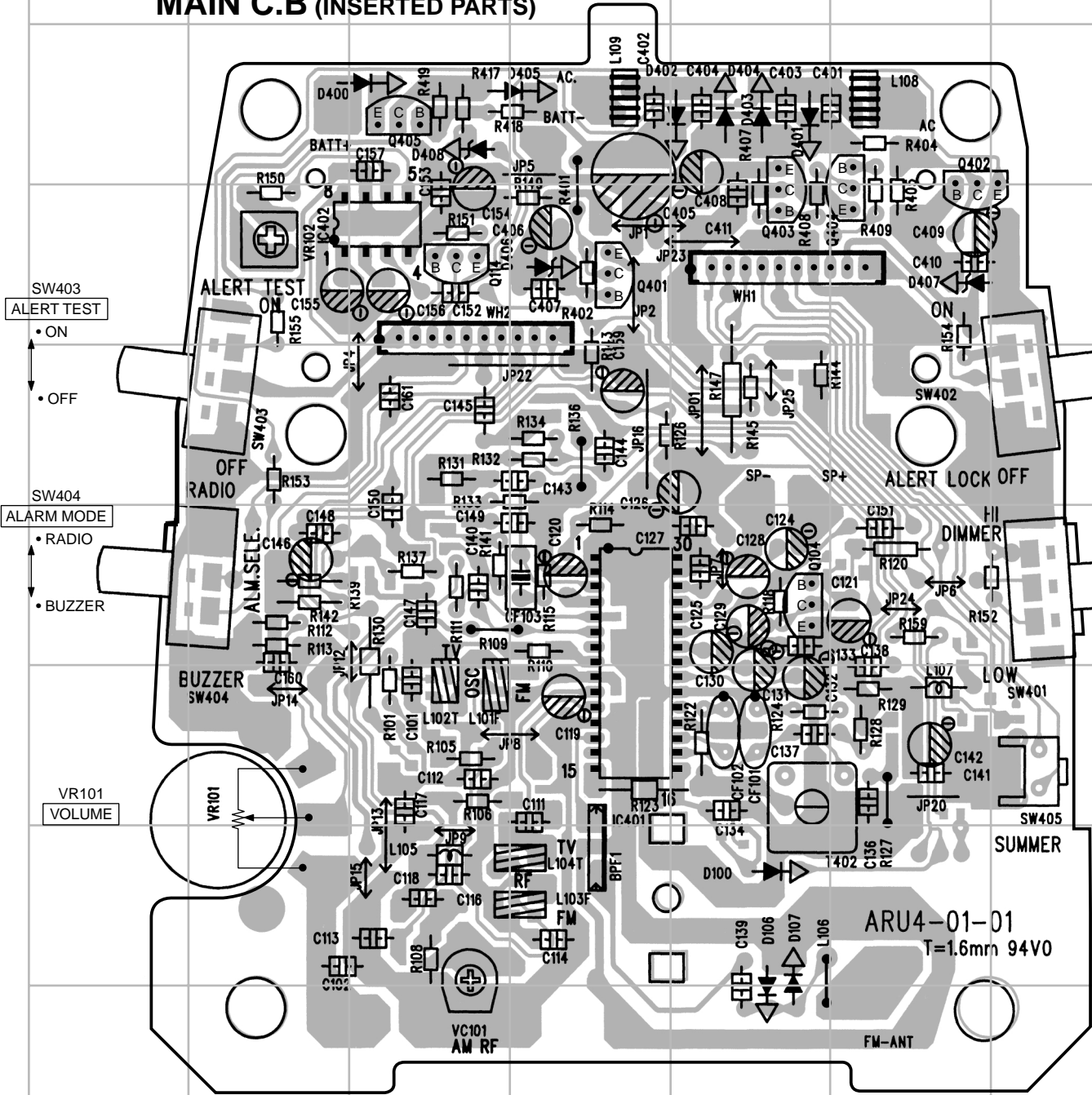
BLOCK DIAGRAM-2 (CPU)



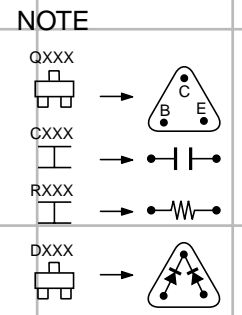
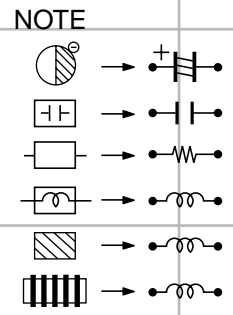
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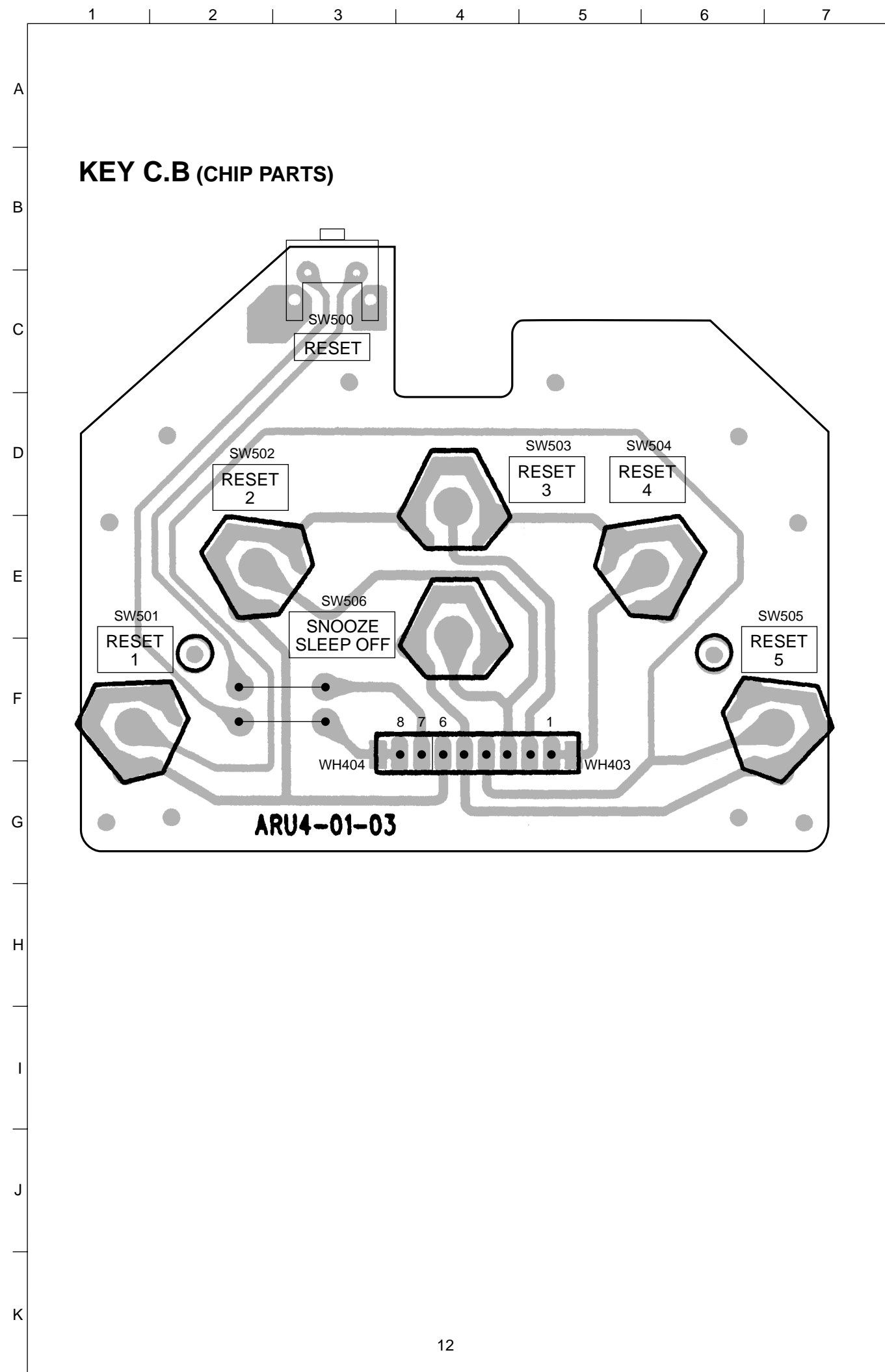
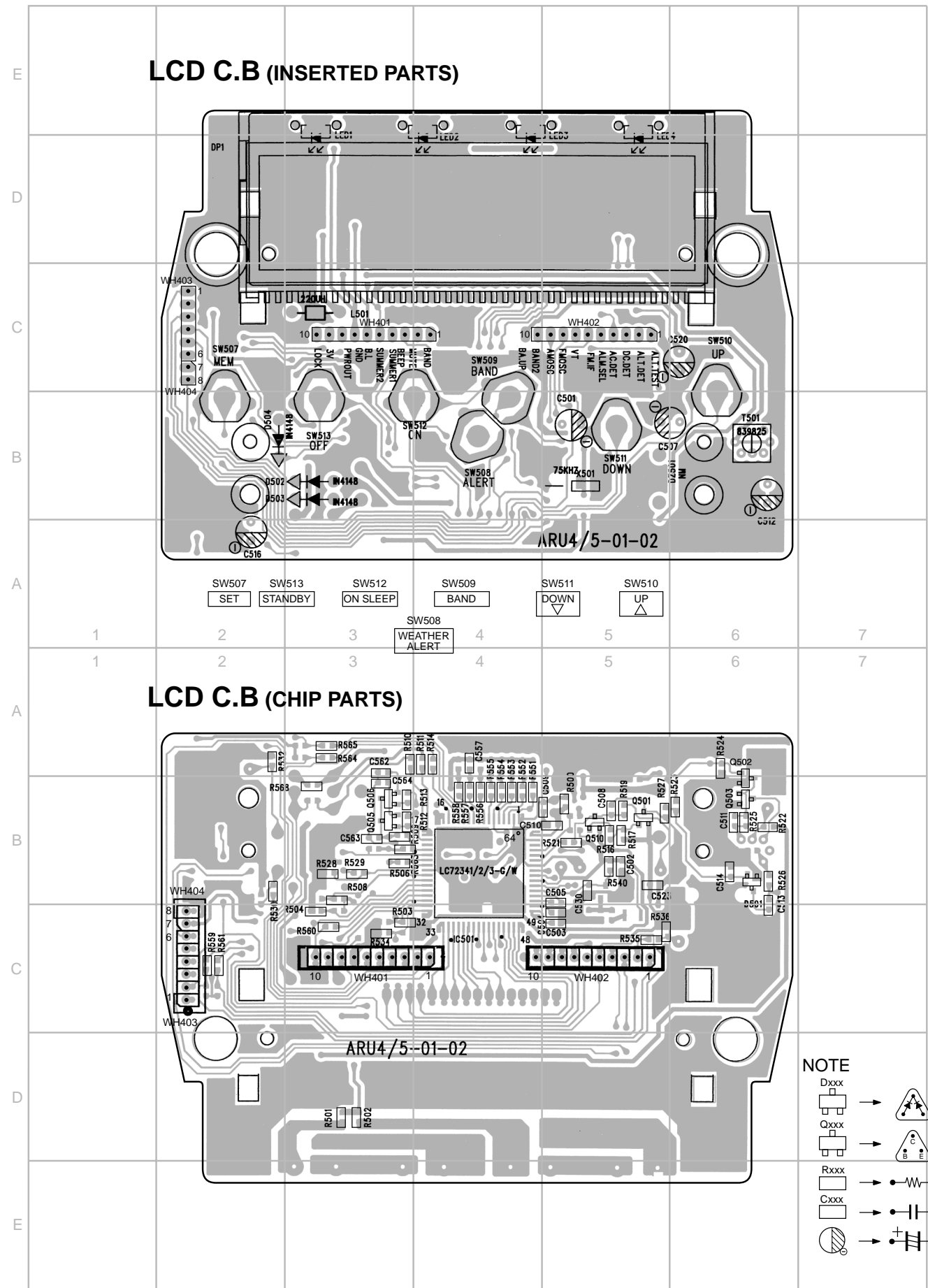
MAIN C.B (INSERTED PARTS)

MAIN C.B (CHIP PARTS)

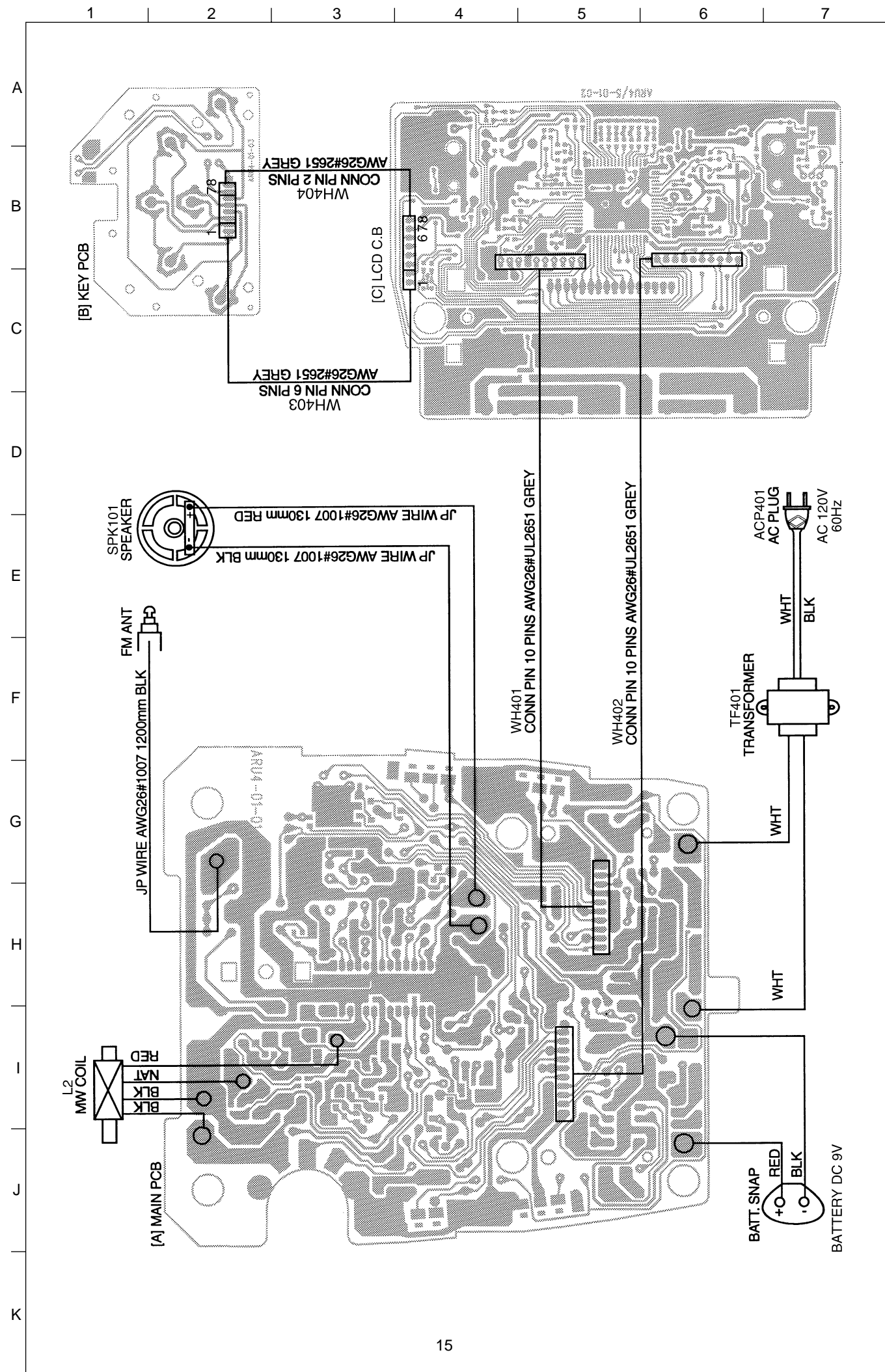


A A
B B
C C
D D
E E
F F
G G
H H
J J





WIRING-4 (CONNECTION DIAGRAM)

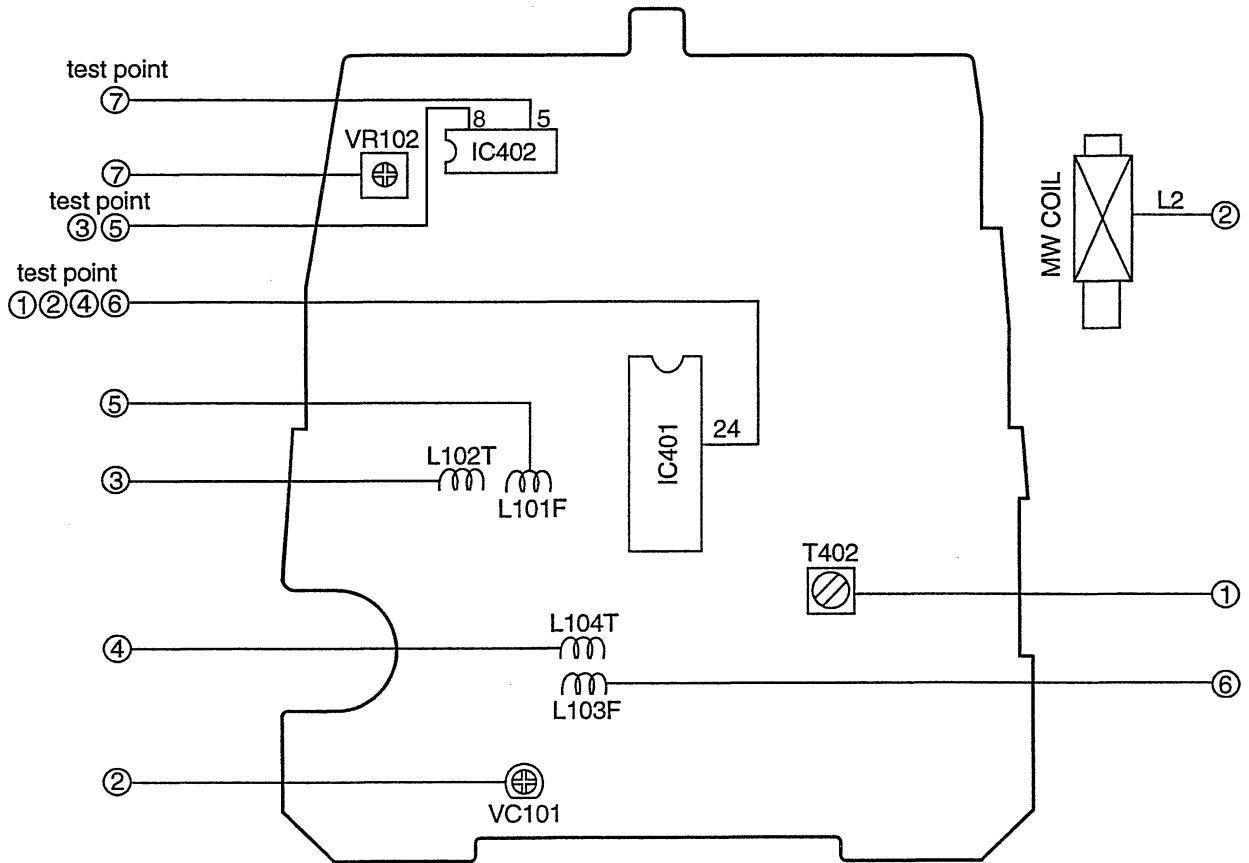


LCD DISPLAY



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

ELECTRICAL ADJUSTMENT



1. AM IF Adjustment

Test point: IC401 (CXA1619BS) 24PIN

Adjustment location: T402

T402 ----- 450kHz

2. MW Tracking Adjustment

Test point: IC401 (CXA1619BS) 24PIN

Adjustment location: L2, VC101

L2 ----- 600kHz waveform max.

VC101----- 1400kHz waveform max.

3. TV Frequency Range Adjustment

Test point: IC402 (NJM567D) 8PIN

Adjustment location: L102T

Set frequency to be 2CH

Adjust L102T so that voltage of that test point

is $8.0V \pm 0.2V$

4. TV Tracking Adjustment

Test point: IC401 (CXA1619BS) 24PIN

5. FM Frequency Range Adjustment

Test point: IC402 (NJM567D) 8PIN

Adjustment location: L101F

Set frequency to be 87.5MHz

Adjust L101F so that voltage of that test point is $2.5V \pm 0.1V$

6. FM Tracking Adjustment

Test point: IC401 (CXA1619BS) 24PIN

Adjustment location: L103F

L103F ----- 88.1MHz waveform max.

7. ALERT Frequency Range Adjustment

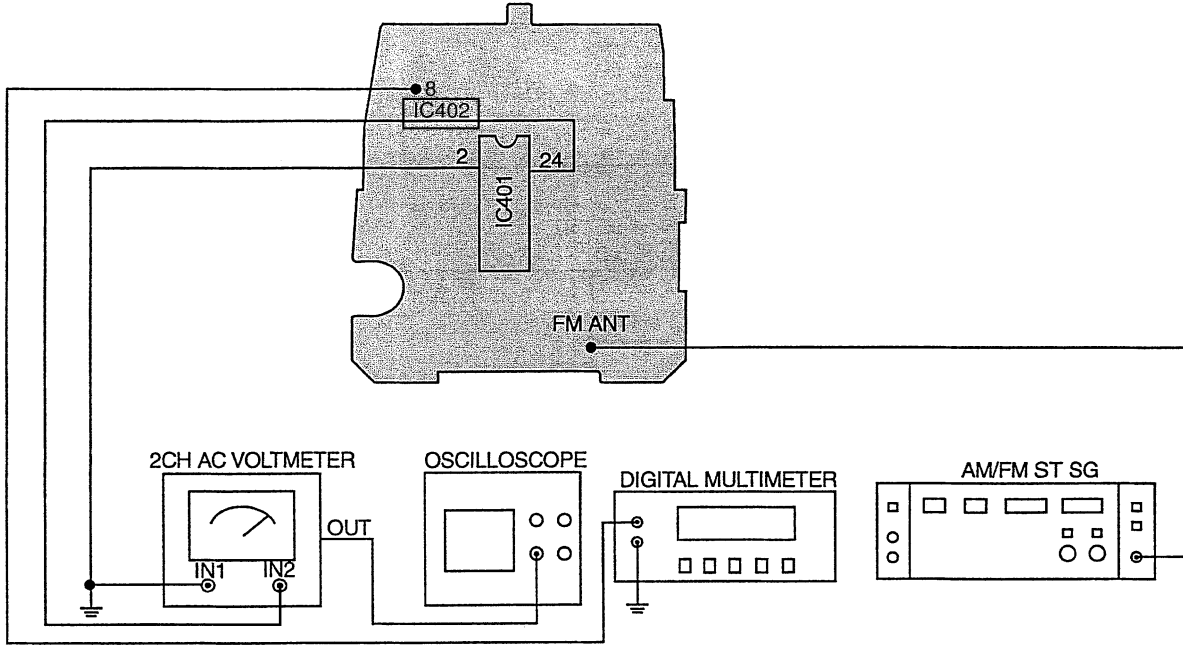
Test point: IC402 (NJM567D) 5PIN

Adjustment location: VR102

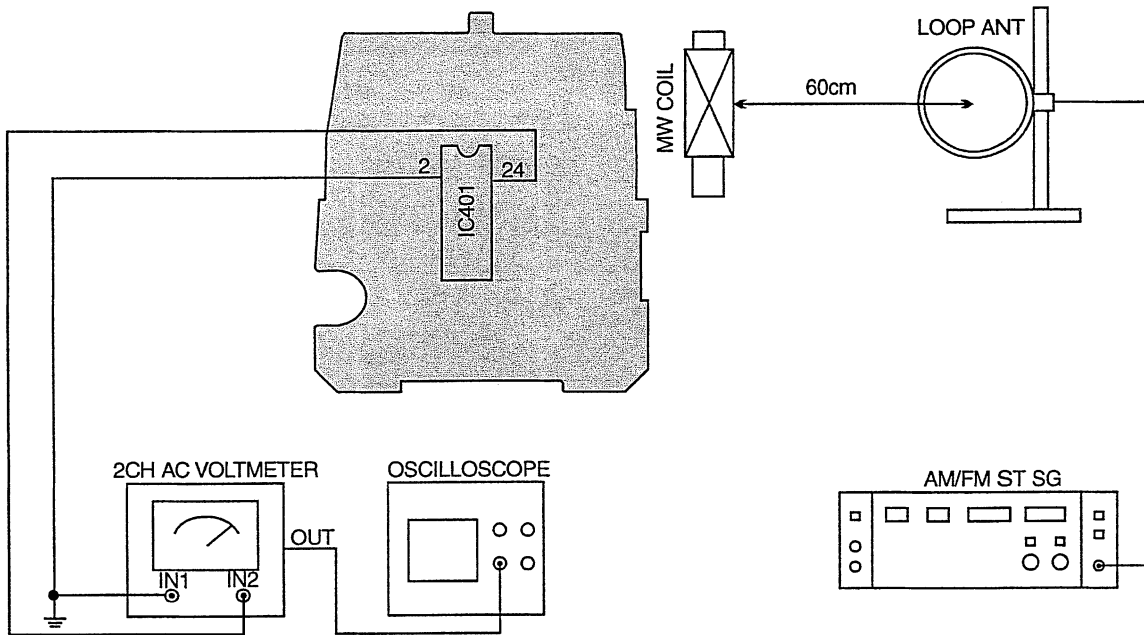
VR102 ----- $1050Hz \pm 3Hz$

EQUIPMENT CONNECTION DIAGRAMS

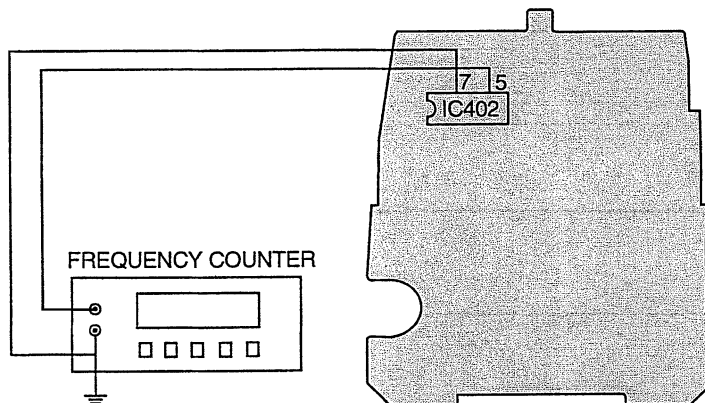
FM SECTION



AM SECTION



ALERT SECTION



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

IC402 (NJM567)

PIN'S NUMBER	1	2	3	4	5	6	7	8
FM	4.37	4.23	2.15	5.57	2.66	2.63	0	2.57

TRANSISTOR	Q401(2SD467C)			Q402(2SC1815GR)			Q403(PE8550)			Q112(2SC2714Y)		
	E	C	B	E	C	B	E	C	B	E	C	B
FM	5.60	8.86	6.26	3.96	7.76	3.30	4.85	5.57	5.60	2.94	4.57	2.26
TRANSISTOR	Q404(2SC1815GR)			Q405(PE8550)			Q102(2SC2712)			Q106(2SC2714Y)		
	E	C	B	E	C	B	E	C	B	E	C	B
FM	0.72	0	0	0	3.42	8.87	0	0	0.69	0.27	0.15	0
TRANSISTOR	Q103(2SC2712Y)			Q104(2SA1468)			Q109(2SC2714Y)			Q101(2SC2712Y)		
	E	C	B	E	C	B	E	C	B	E	C	B
FM	0.60	0	0	0	0	2.00	0.06	0.20	0	0.69	0.06	0
TRANSISTOR	Q114(DTA123JS)			Q113(2SC2714Y)			Q108(RN2411)			Q107(2SC2712Y)		
	E	C	B	E	C	B	E	C	B	E	C	B
FM	5.50	0	5.51	0.82	1.76	0.13	4.98	0.12	5.58	0	4.98	0

TRANSISTOR	Q110(2SC2714Y)			Q111(2SC2714Y)		
	E	C	B	E	C	B
AM	0	0.15	0	0.16	0.25	0

TRANSISTOR	Q103(2SC2712)			Q104(2SA1468)		
	E	C	B	E	C	B
MUTE	1.50	5.57	2.23	0	0	2.53

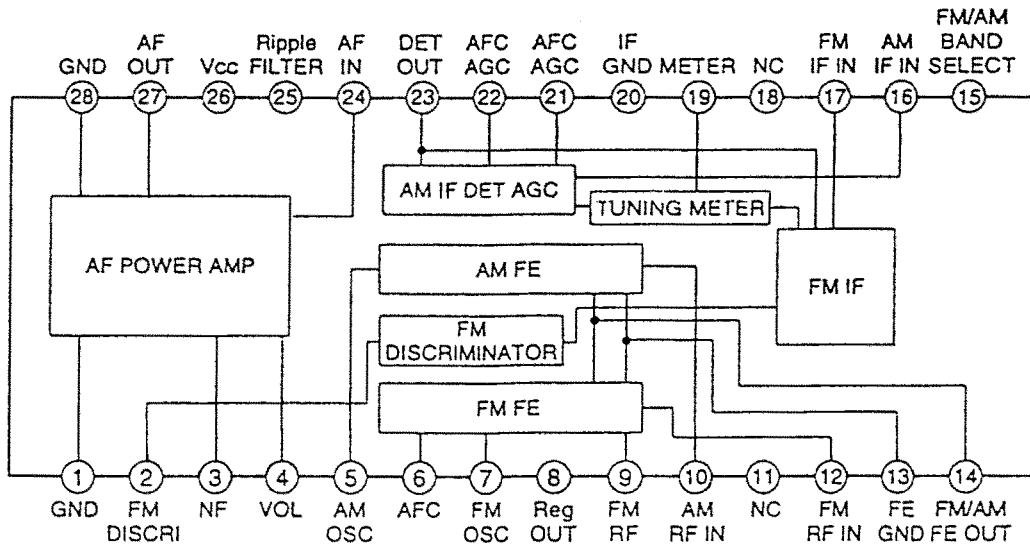
CPU SECTION

C501 (LC72343G)

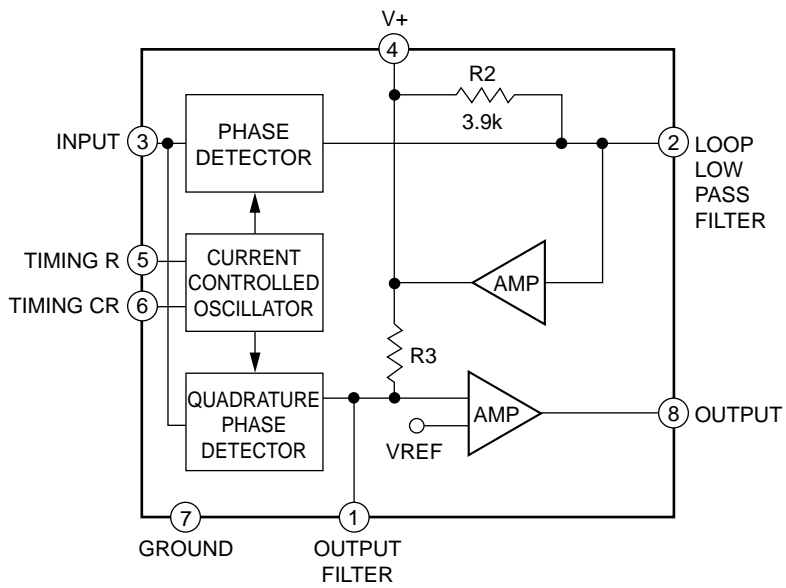
PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13
FM	1.28	0	0	0	0	0	2.36	0.08	0.08	0.08	2.55	0	0
PIN'S NUMBER	14	15	16	17	18	19	20	21	22	23	24	25	26
FM	0	0	0	0	2.32	0	0	2.15	3.02	2.91	0	0	0
PIN'S NUMBER	27	28	29	30	31	32	33	34	35	36	37	38	39
FM	0	1.16	1.14	1.12	3.03	0	1.49	1.49	1.49	1.49	1.49	1.49	1.49
PIN'S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



IC, NJM567



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	$\overline{\text{RES}}$	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.

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-RU4-003-010		PANEL, FRONT U	16	8A-RU3-201-010		HLDR, DIS
2	8A-RU3-013-010		WINDOW, LCD	17	8A-RU3-208-010		HLDR, BAR-ANT
3	8A-RU4-001-010		CABI, FRONT U	18	8A-RU3-209-010		FOOT, RUBBER
4	8A-RU3-008-010		BTN, SUMMER	19	8A-RU3-204-010		PLATE, LCD
5	8A-RU4-004-010		BTN, ALERT	20	8A-RU4-000-000		BATTERY SNAP T
6	8A-RU3-004-010		BTN, FUNCTION	21	8A-RU3-203-010		FLTR, LCD
7	8A-RU3-006-010		BTN, SNOOZE	22	8A-RU3-206-010		PLATE, SW COVER
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-RU4-002-010		CABI, REAR U	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 80HM0.5W				
14	S1-115-090-200		PT, 28WEI35/15 120V:8V				
15	8A-RU4-007-010		DOOR, BATTERY				



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

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