

DENON

Hi-Fi Personal Component System

SERVICE MANUAL

PERSONAL COMPONENT SYSTEM D-F10

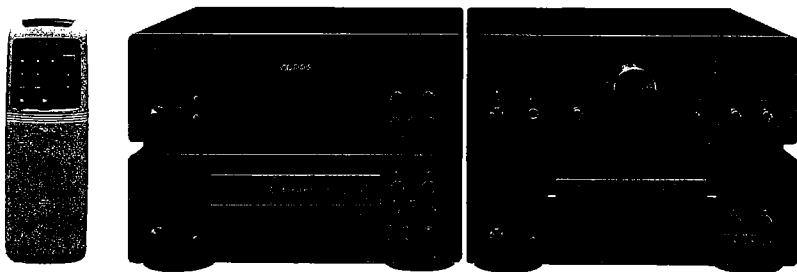
UNIT No. UTU-F10 (AM, FM Stereo Tuner)

UNIT No. UPA-F10 (Pre-Main Amplifier)

UNIT No. UCD-F10 (Compact Disc Player)

UNIT No. UDR-F10 (Cassette Tape Deck)

Europe Model



COMPACT
disc
DIGITAL AUDIO

• The D-F10 Personal Component System consists of the following:

AM, FM Stereo Tuner Unit	UTU-F10
Remote Control Unit	RC-172
Pre-Main Amplifier Unit	UPA-F10
CD player Unit	UCD-F10
Cassette Deck Unit	UDR-F10

MAIN FEATURES

- **RDS compatible**
Compatible with various RDS services, including program service name (PS), program type identification (PTY), traffic program identification (TP) and clock time (CT).
- **Quality power for high quality sound**
55W + 55W (4 ohm DIN) high quality amplifier and terminals for large speakers.
- **High sound quality, multi-function CD player**
Edit function for automatically dividing the tracks on a CD for recording onto sides A and B of a tape. S.L.C for playback with high quality sound.
- **Cassette deck with Dolby B, C and HX-Pro circuits**
For playback and recording of high quality sound.
- **Two types of timers**
Two timer settings can be made – everyday and sleep.
- **Easy-to-use remote control unit**
The most frequently used keys are located on the front, with the remaining keys enclosed under a sliding cover.
- **Auto on function**
The power turns on automatically and playback begins when the play button on the CD player or the cassette deck or the tuner preset up/down buttons on the remote control unit are pressed.

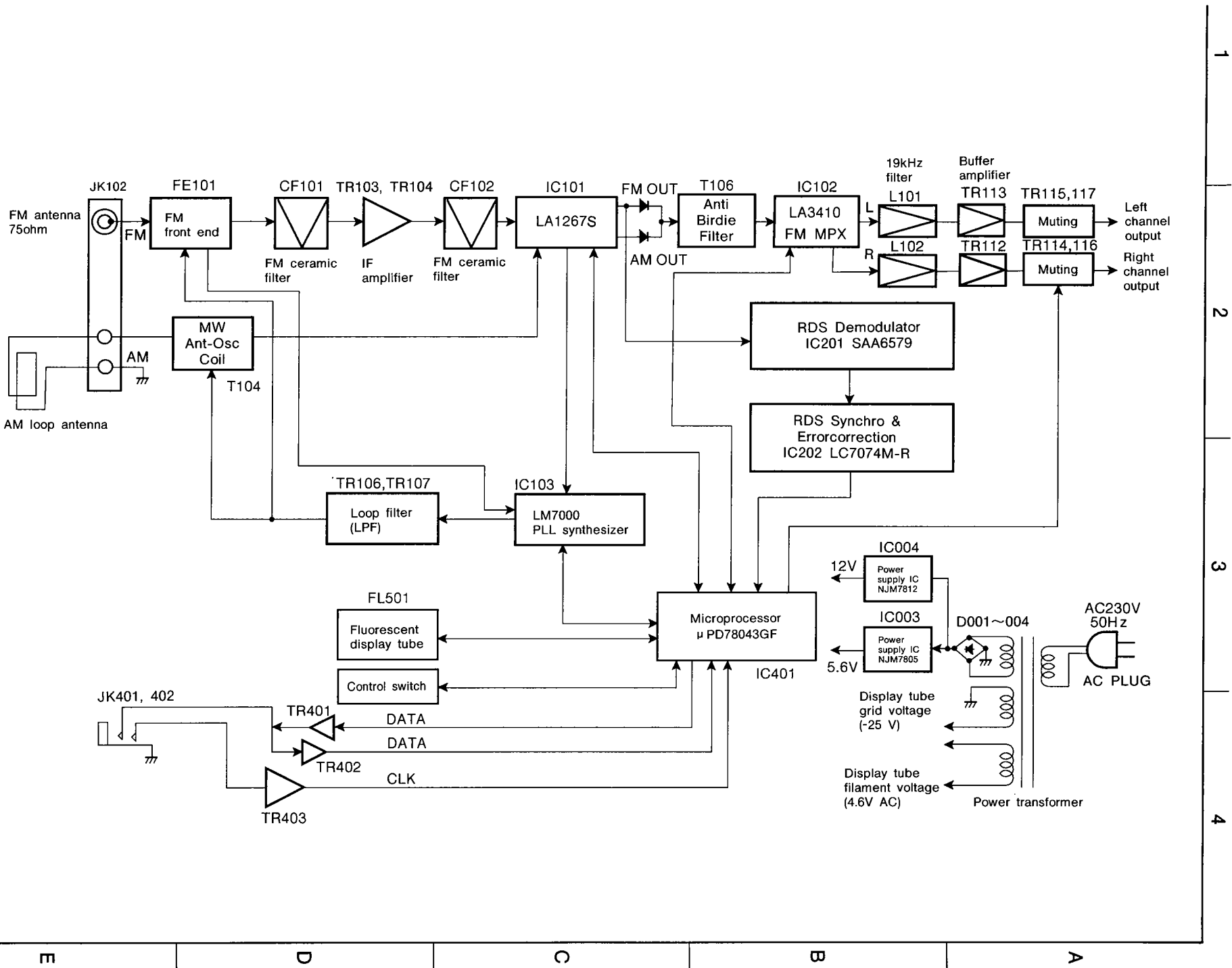
BEFORE USING

- **Moving the system**
To prevent short-circuiting or damage of connection cords, be sure to unplug the power cord and disconnect all connection cords before moving the system.
In addition, always remove CDs before moving the system. If not, the CD may be scratched.
- **Before turning the power on**
Check again that all connections are proper and that the connection cords are not damaged. Always set the power switch to the STANDBY position before disconnecting connection cords.
- Humming may be produced if the system is set near a TV set or other audio component or its connection cords. If this happens, try changing the position of the equipment and connection cords.
- Do not move the system abruptly from a cold place to a warm place, as this may cause dew (water droplets) to form in the set, preventing proper operation. If this happens, wait one hour before using the system.
- **Be sure to keep this manual**
The illustrations used in this manual may differ from the actual system.

Check that the following parts are included in the package aside from the main unit:

- **UPA-F10 (pre-main amplifier unit)**
 - Remote control unit (RC-172) 1
 - R6P/AA batteries 2
 - Operating instructions 1
- **UTU-F10 (AM/FM stereo tuner)**
 - FM antenna 1
 - AM loop antenna 1
 - System connector cable 1
 - RCA pin-plug cord 1
 - AC cord 1
 - Inst. Sheet 1
- **UCD-F10 (compact disc player)**
 - System connector cable 1
 - RCA pin-plug cord 1
 - AC cord 1
 - Inst. Sheet 1
- **UDR-F10 (cassette tape deck)**
 - System connector cable 1
 - RCA pin-plug cord 2
 - Inst. Sheet 1

NIPPON COLUMBIA CO., LTD.



BLOCK DIAGRAM

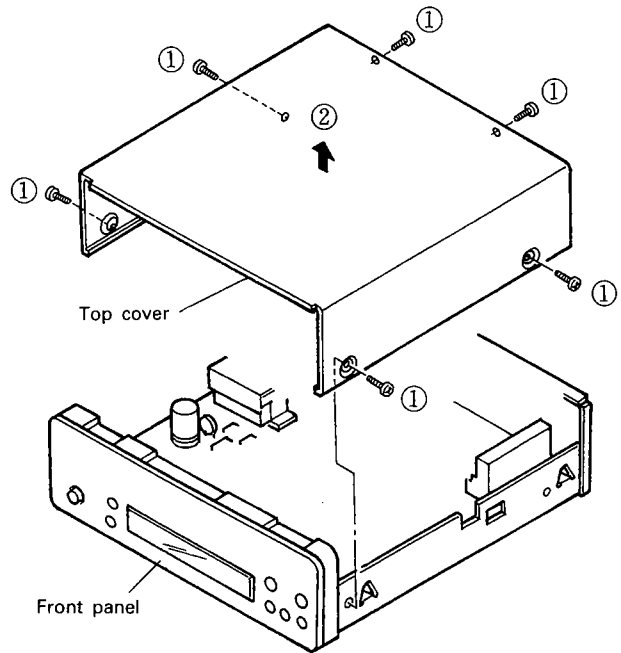
TUNER SECTION

TUNER SECTION**DISASSEMBLY PROCEDURES**

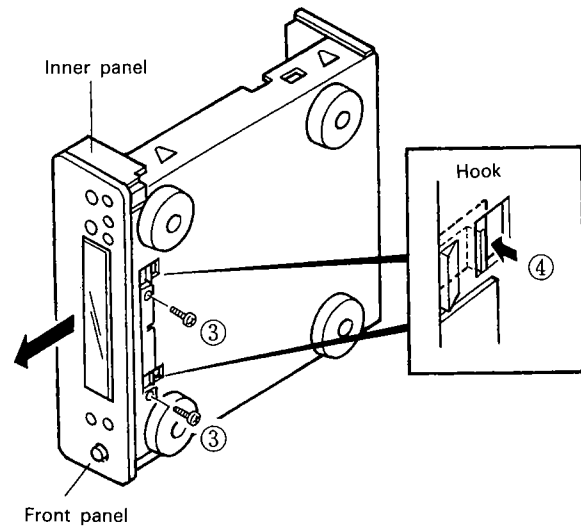
(Assembly is performed in the reverse order.)

1. Removing the Top Cover and the Front Panel

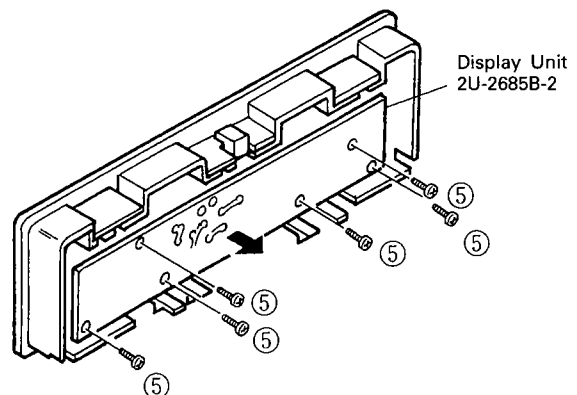
- ① Remove the six screws which fasten the top cover.
- ② Remove the top cover (upward) in the direction of the arrow.



- ③ Remove the two screws which fasten front panel.
- ④ Release the inner panel hooks from the chassis while pulling the panels in the direction of the arrow to remove the inner panel and the front panel as one unit.

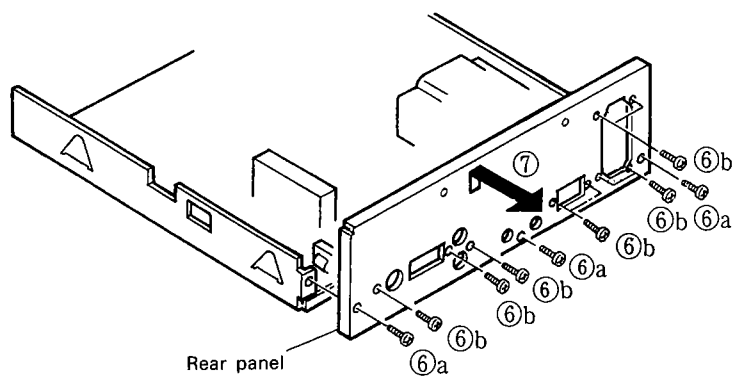
**2. Removing the Units****Display Unit (2U-2685B-2)**

- ⑤ Remove the six screws which fasten the display unit.

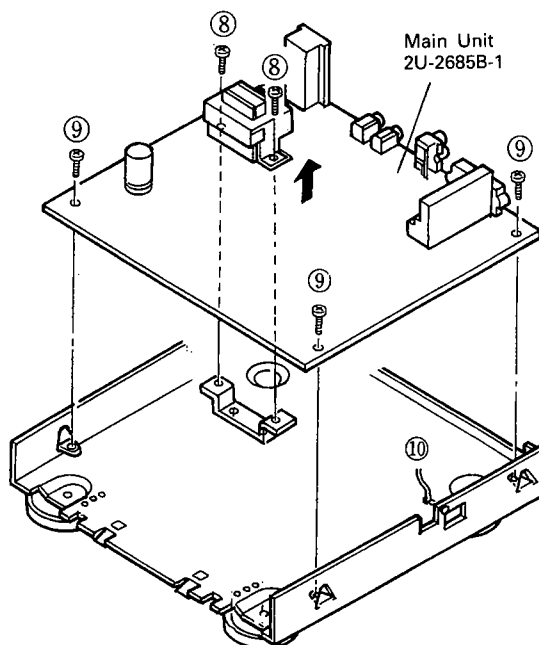


TUNER SECTION**3. Removing the Rear Panel**

- ⑥ Remove the three "a" screws and seven "b" screws which fasten the rear panel.
- ⑦ Remove the rear panel in the direction of the arrow.

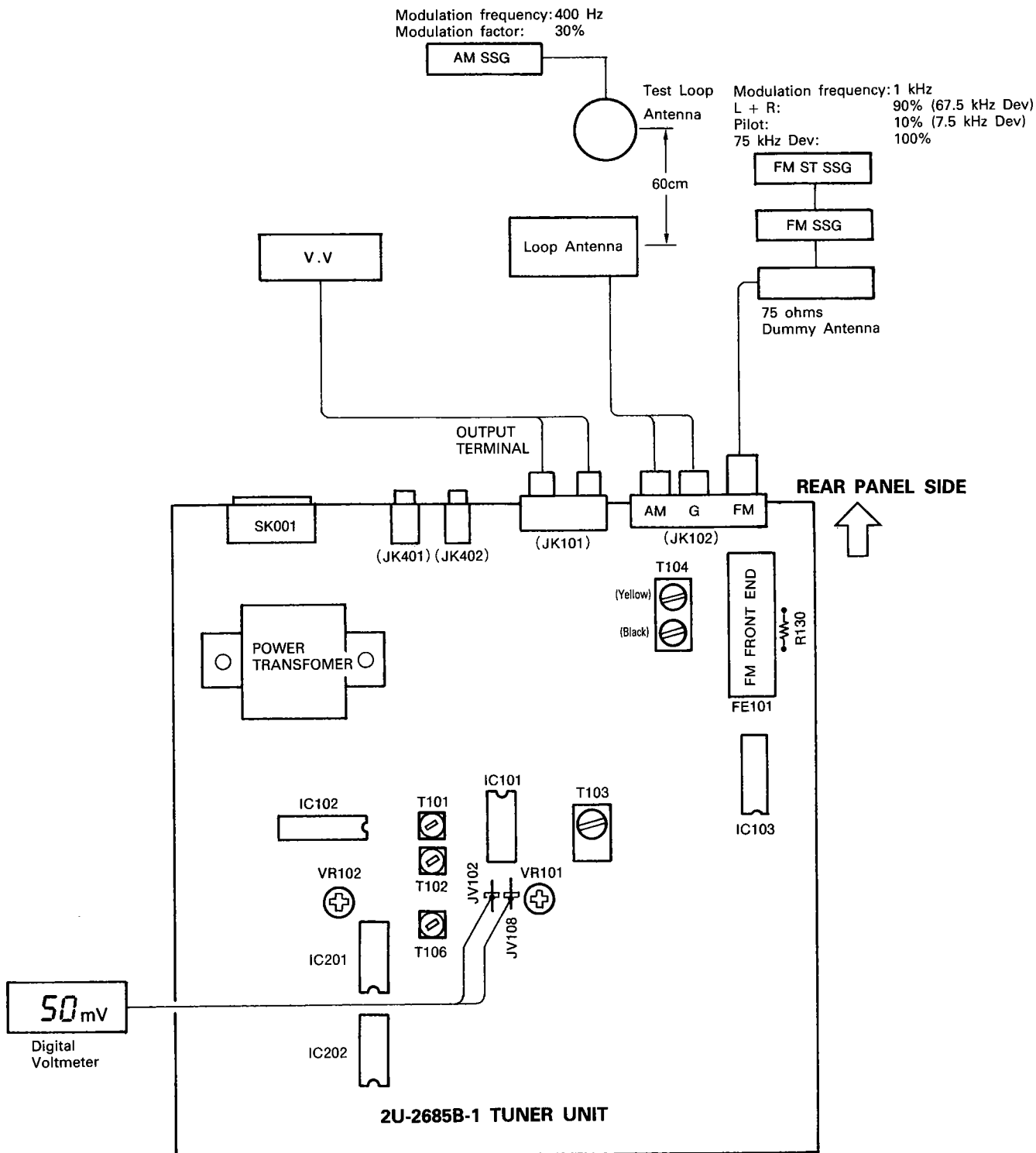
**Main Unit (2U-2685B-1)**

- ⑧ Remove the two screws which fasten the transformer.
- ⑨ Remove the three screws which fasten the main unit.
- ⑩ Remove the solder of the wire which goes between the chassis ground screw and the front end.



TUNER SECTION

ADJUSTMENTS



TUNER SECTION

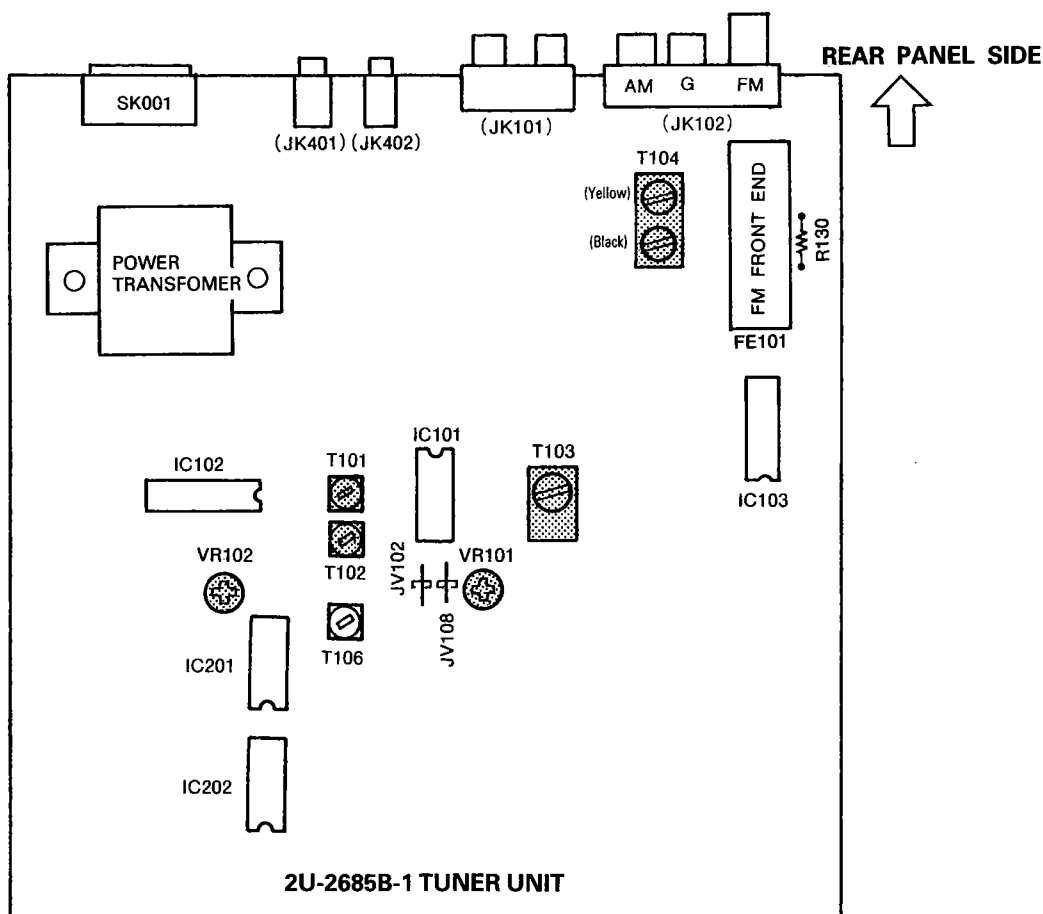
1. FM adjustment (BAND button: FM, MONO/STEREO button: STEREO)

Step	Adjustment item	Tuning point (channel setting)	Input					Output		Adjustment location	Setting value	Notes
			Measuring Instrument	Frequency	Input level	Modulation	Connection location	Measuring instrument	Connection location			
1	FM DC balance	98.00MHz	FM S.G.	98.00MHz	60dB μ	1kHz 75kHz DEV	FM antenna terminal	Digital volt meter	⊕ JV108 ⊖ JV102	T101	0 \pm 50mV	Perform with monaural modulation signal
2	Distortion	"	"	"	"	"	"	Distortion factor meter	Output jack	T102	Minimum distortion	"
3	Repeat Steps 1 and 2.											
4	Auto stop level	98.00MHz	FM S.G.	98.00MHz	22dB μ	1kHz 75kHz DEV	FM antenna terminal	Check for the lighting of TUNED	Output jack	VR101	Input level 22dB μ \pm 4dB	(Level at which TUNED lights up) Level at which the output is provided
5	Stereo separation	"	FM stereo modulator FM S.G.	"	60dB μ	1kHz L or R: 67.5kHz DEV Pilot; 7.5kHz DEV	"	VTVM Oscilloscope	"	VR102	Minimum R.ch. Output	Perform with L.ch. Input of FM stereo modulator

2. AM adjustment (BAND button: AM)

Step	Adjustment item	Tuning point (channel setting)	Input					Output		Adjustment location	Setting value	Notes
			Measuring Instrument	Frequency	Input level	Modulation	Connection location	Measuring instrument	Connection location			
1	IF	Clear frequency (without a broadcast)	AM IF sweep	-	Level at which AGC is not applied	-	AM antenna terminal	Oscilloscope	Output jack	T103	Waveform maximum and symmetry	
2	Band edge	522kHz	-	-	-	-	-	Digital voltmeter	⊕ R103 (1k Ω) ⊖ G	T104 Black	1.2V \pm 0.2V	
		1611kHz	-	-	-	-	-			-	Approx. 7.8V	No place to adjust
3	Tracking	603kHz	AM S.G.	603kHz	Level at which AGC is not applied	400Hz 30%	Loop antenna	VTVM	Output terminal	T104 Yellow	Maximum output	
4	Repeat Steps 2 and 3, and set the output to maximum.											

2U-2685B-1 TUNER MAIN UNIT (Component Side)

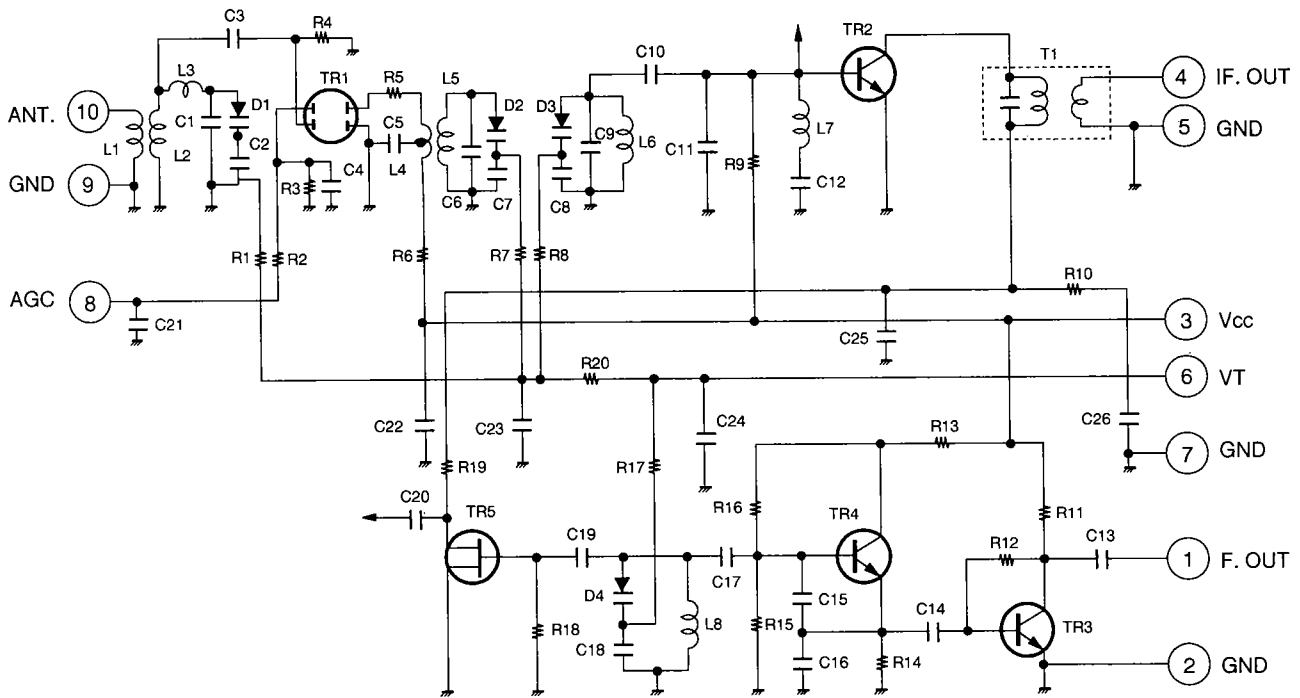
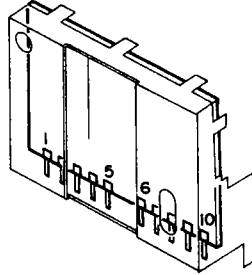


TUNER SECTION

Front End

Part No.: 216 0097 003

No.	Name	No.	Name
1	F. OUT	6	VT
2	GND	7	GND
3	Vcc	8	AGC
4	IF. OUT	9	GND
5	GND	10	ANT



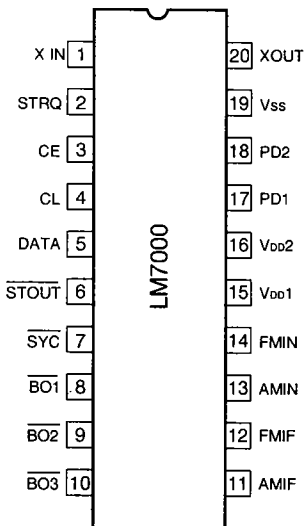
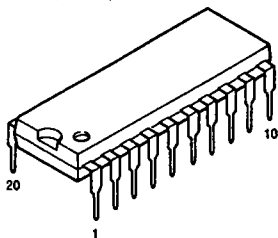
- Note
1. Terminal Number Refer to Overall Appearance
 2. Receiving Frequency 87.5 ~ 108 MHz
 3. Input Impedance ⑨ ~ ⑩ 75 ohm
 4. Output Impedance 300 ohm
 5. Supply Voltage 12 V
 6. Tuning Voltage 1.0 ~ 9.0 V

SEMICONDUCTORS

TUNER SECTION

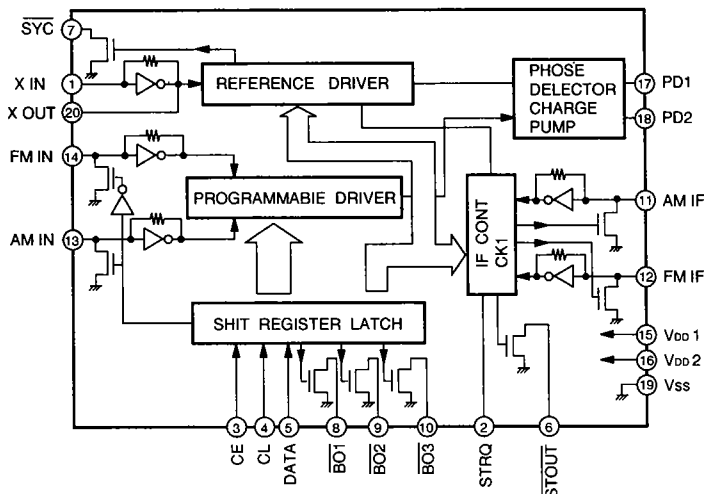
• IC's

LM7000 (IC103)

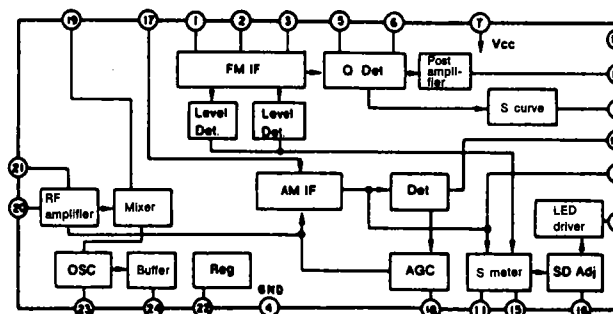
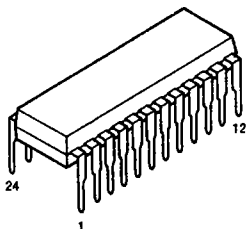


Pin Description

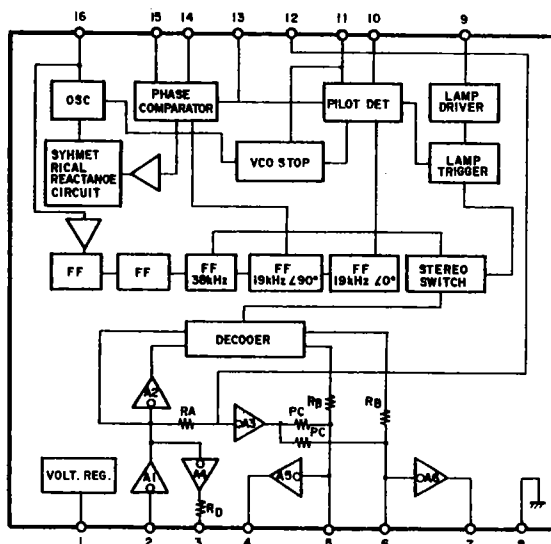
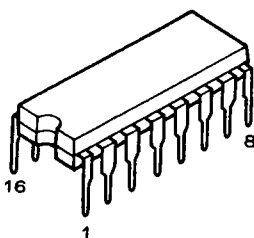
- SYC : Clock (400 kHz) for the controller
- XIN, XOUT : X'tal oscillator (7.2 MHz) with built-in feedback resistor
- FM IN, AM IN : Local oscillator signal input
- CE, CL, DATA : Data input
- B01, B02, B03 : Band data output. B01 can be set as the time base output (8 Hz).
- STRQ : IF counter request input
- STOUT : Auto research stop signal output
- VDD1, VDD2, VSS : Power supply (VDD2 is a back-up power supply)
- AMF, FMIF : IF signal input
- PD1, PD2 : Charge pump output



LA1267S (IC101)



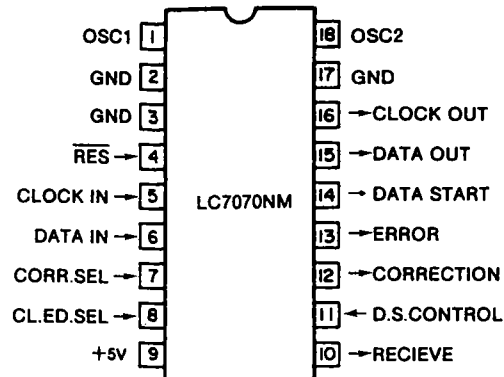
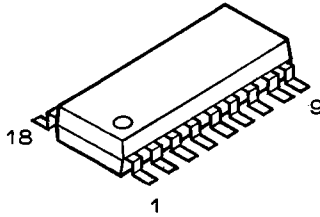
LA3410 (IC102)



TUNER SECTION

LC7074M-R (IC202)

Pin Arrangement



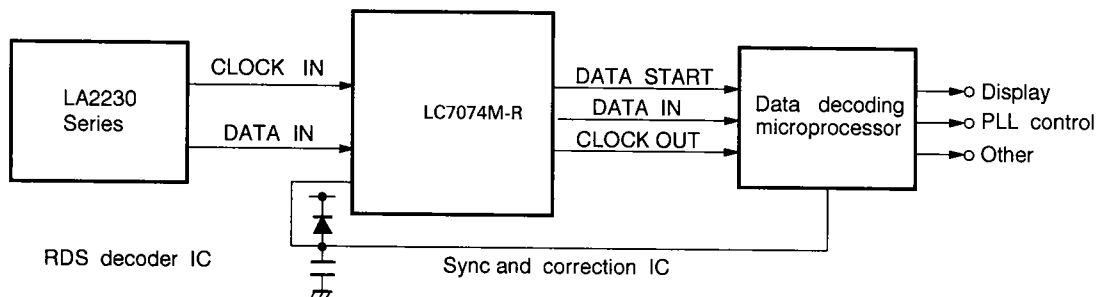
● Pin Description

Symbol	Pin No.	I/O	Function/Details	At Time of Reset
OSC1 OSC2	1 18	Input Output	· 4 MHz ceramic oscillator connection.	
CLOCK IN	5	Input	· RDS LA2230 series demodulation clock input.	"H" output
DATA IN	6	Input	· RDS LA2230 series demodulation data input.	"H" output
CORR. SEL	7	Input	· Error correction on/off selection input. · Sets the IC to correct errors in the RDS demodulation data or to output the data without correction. When input is 0 : No corrections are made When input is 1 : Corrections are executed	"H" output
CL. ED. SEL	8	Input	· Serial data clock polarity selection input. When input is 0 : Serial data output is enabled at the rise of the output clock. (Serial data output changes at the fall of the output clock.) When input is 1 : Serial data output is enabled at the fall of the output clock. (Serial data output changes at the rise of the output clock.) NOTE: Set at the time of RES input.	"H" output
D.S. CONTROL	11	Input	· Block data start signal control input. When input is 0 : Data start signal is output for all blocks. When input is 1 : Data start signal is output for only the second block.	"H" output
RECEIVE	10 (NC)	Output	· Output during RDS data reception. · After the completion of sync detection, there is a low-level output while the serial data is being output. There is a high-level output at other times. · Open drain output.	"H" output
CORRECTION	12 (NC)	Output	· Output with or without error correction. · There is a low-level output when the output data of the serial data output have been corrected or when correction is not possible. There is a high-level output when correction has not been applied. · Open drain output.	"H" output
ERROR	13 (NC)	Output	· Presence of error output. · There is a low-level output when the output data of the serial data output has an error and correction is not possible. There is a high-level output when there is no error or when the error has been corrected. · Open drain output.	"H" output
DATA START	14	Output	· Block data start signal of the serial data output. Output with pull-up resistor:	"H" output

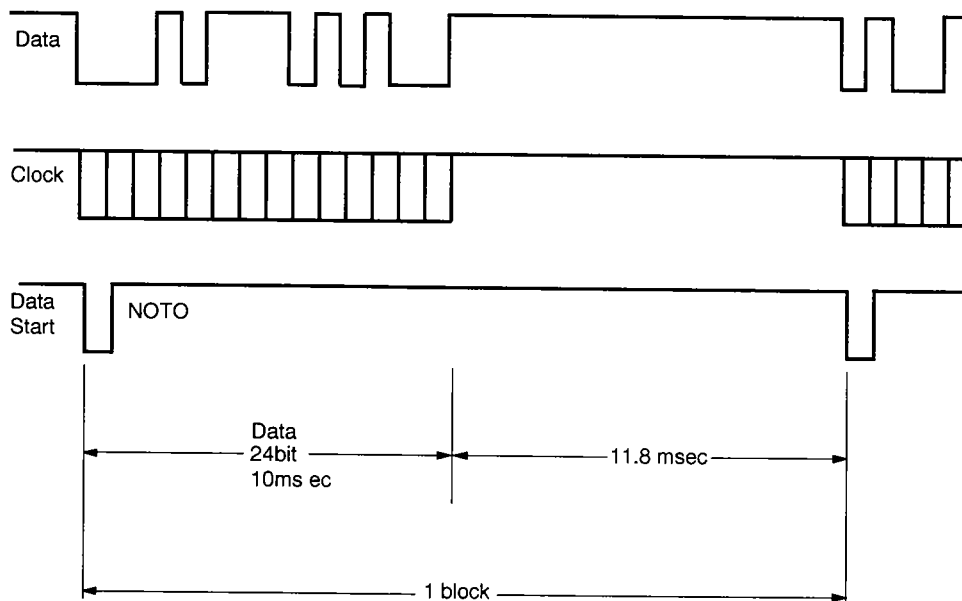
TUNER SECTION

Symbol	Pin No.	I/O	Function/Details	At Time of Reset
DATA OUT	15	Output	· Data output of the serial data output. Output with pull-up resistor:	"H" output
CLOCK OUT	16	Output	· Clock output of the serial data output. Output with pull-up resistor:	"H" output
$\overline{\text{RES}}$	4	Input	· System reset input. · Reset and restart is accomplished by inputting the low level for 4 or more clock cycles.	

Structure of the RDS Data Processing System



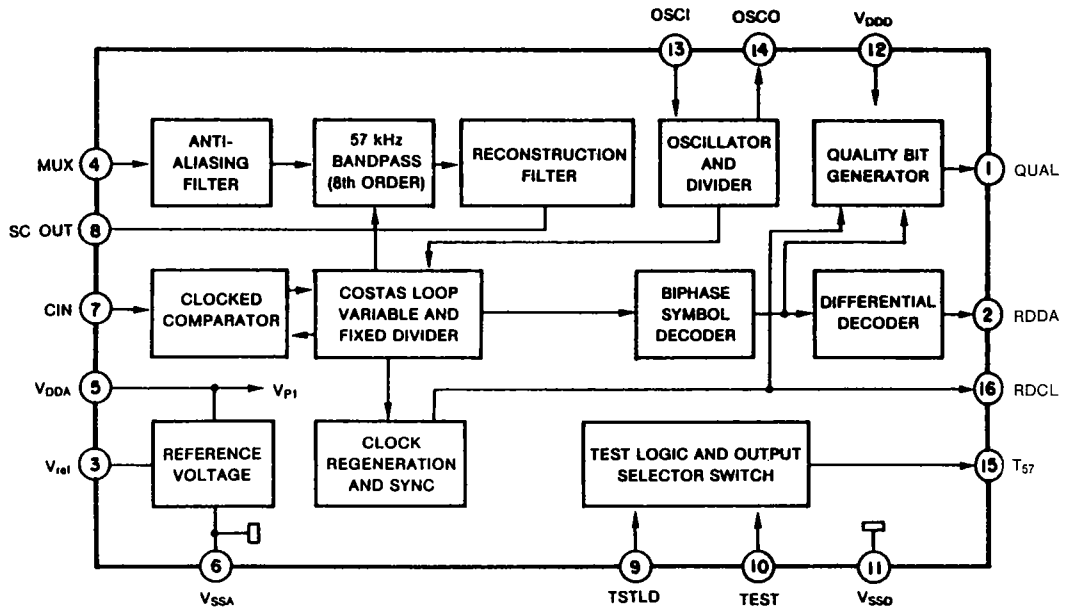
Serial Data Output Timing Chart



NOTE: Using the D.S. CONTROL input, only the second block among the entire 4 blocks of RDS data can be switched between the data start output and the total blocks' data start output.

TUNER SECTION

SAA6579 (IC201)

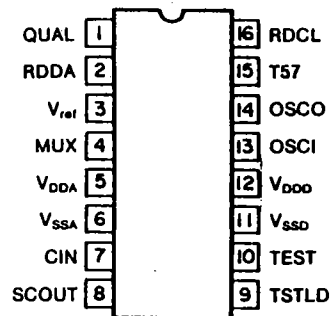


Block diagram and application circuit

Pin Description

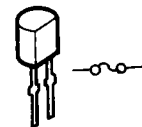
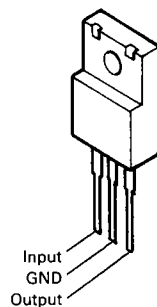
SYMBOL	PIN	DESCRIPTION
QUAL	1	quality indication output
RDDA	2	RDS data output
Vref	3	reference voltage output (0.5 V _{DDA})
MUX	4	multiplex signal input
V _{DDA}	5	+5 V supply voltage for analog part
V _{SSA}	6	ground for analog part (0 V)
CIN	7	subcarrier input to comparator
SCOUT	8	subcarrier output of reconstruction filter
TSTLD	9	test control
TEST	10	test enable
V _{SSD}	11	ground for digital part (0 V)
V _{DD}	12	+5 V supply voltage for digital part
OSCI	13	oscillator input
OSCO	14	oscillator output
T57	15	57 kHz clock signal output
RDCL	16	RDS clock output

Pin configuration



NJN7805FA(S) (IC003)
 NJN7812FA(S) (IC004)

• IC PROTECTOR

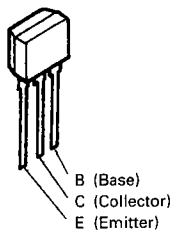


ICP-N15 (IC001)

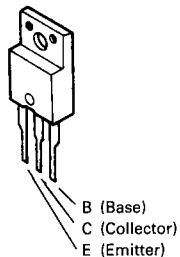
TUNER SECTION

● **Transistors**

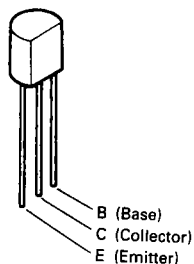
2SA933S (S)
2SC1740S (E)



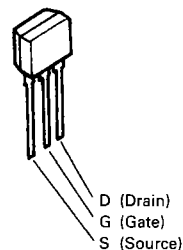
2SA1488 (Y)/(G)



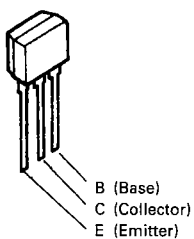
2SC2410S



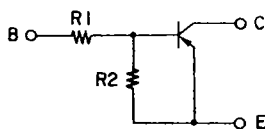
2SK365 (BL/GR)



DTA114ES PNP Type
DTC144ES } NPN Type
DTC343TS }

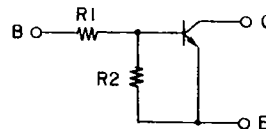


PNP Type
DTA ES Series



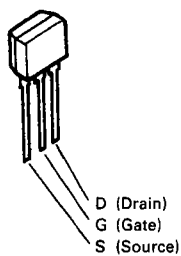
	R1	R2
DTA114ES	10 kohm	10 kom

NPN Type
DTC ES/TS Series



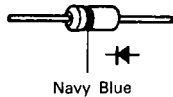
	R1	R2
DTC144ES	47 kohm	47 kom
DTC343TS	4.7 kohm	-

2SK161 (GR)

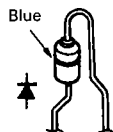


● **Diodes**

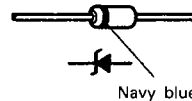
1SS270A



1SR35-200A

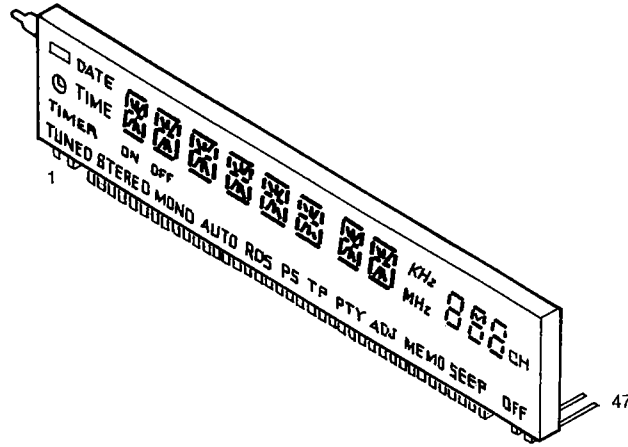


HZS4A-1
HZS6A-1
HZS6B-1
HZS9A-1
HZS27-1



TUNER SECTION

- **Fluorescent Display Tube 11BT27GK**
(Part No.: 393 8012 002)

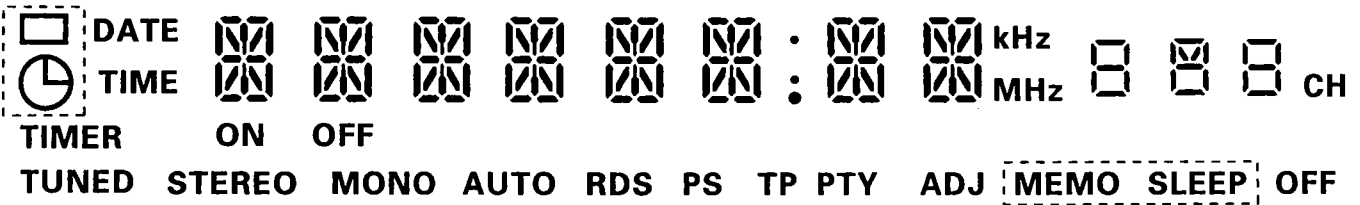


Pin Connections

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Connection	F1	F1	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pin No.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
Connection	NC	NC	NC	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F2	F2	

- NOTE**
- 1) F1 and F2: Filaments
 - 2) NP: No pin
 - 3) NC: No connection
 - 4) 1 G through 11 G: Grid

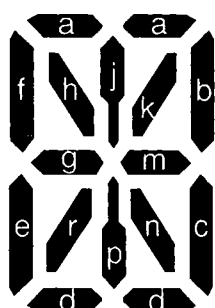
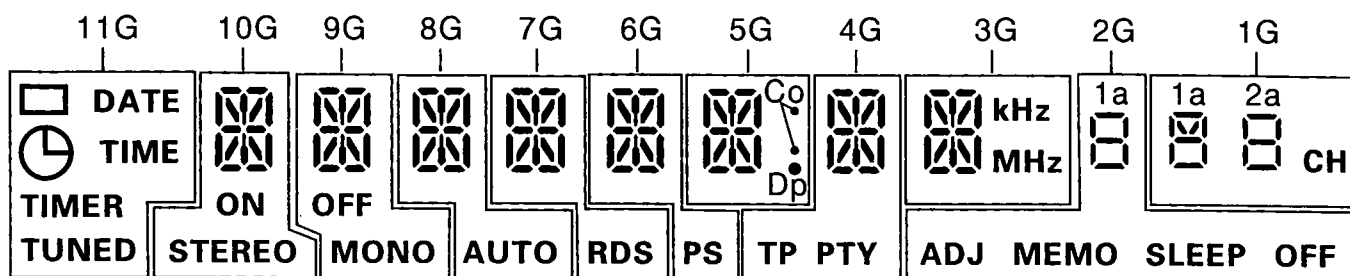
Pattern Details



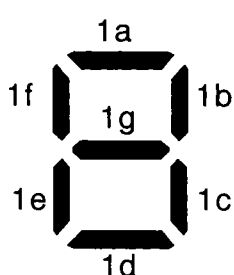
Illumination colors
 Reddish orange (Rsh.O x = 0.645, y = 0.355) [] portion of above pattern
 Green (G. x = 0.235, y = 0.405) Other portions

TUNER SECTION

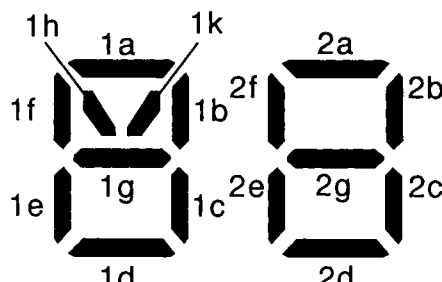
GRID ASSIGNMENT



(10G~3G)



(2G)



(1G)

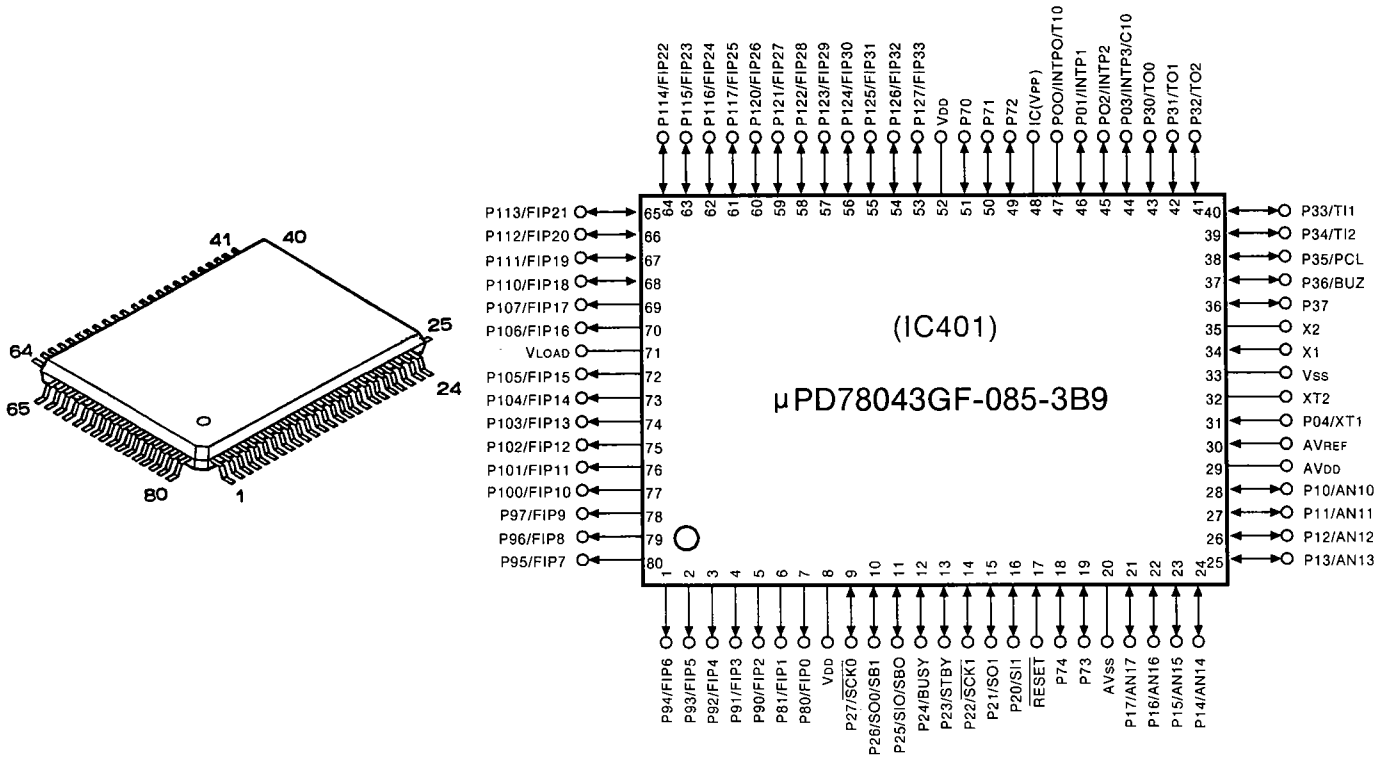
ANODE CONNECTION

	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1		a	a	a	a	a	a	a	a	1a	1a
P2	DATE	b	b	b	b	b	b	b	b	1b	1b
P3		c	c	c	c	c	c	c	c	1c	1c
P4	TIME	d	d	d	d	d	d	d	d	1d	1d
P5	TIMER	e	e	e	e	e	e	e	e	1e	1e
P6	TUNED	f	f	f	f	f	f	f	f	1f	1f
P7	—	g	g	g	g	g	g	g	g	1g	1g
P8	—	h	h	h	h	h	h	h	h	ADJ	1h, 1k
P9	—	j	j	j	j	j	j	j	j	MEMO	2a
P10	—	k	k	k	k	k	k	k	k	SLEEP	2b
P11	—	m	m	m	m	m	m	m	m	OFF	2c
P12	—	n	n	n	n	n	n	n	n	—	2d
P13	—	p	p	p	p	p	p	p	p	—	2e
P14	—	r	r	r	r	r	r	r	r	—	2f
P15	—	ON	OFF	AUTO	RDS	PS	col	TP	KHz	—	2g
P16	—	STEREO	MONO	—	—	—	Dp	PTY	MHz	—	CH

TUNER SECTION

MICROPROCESSOR DOCUMENTATION

μPD78043GF-085-3B9 : 262 1937 204



1. Overview

The functions of this microprocessor comprise the following three types.

- a. **Tuner functions**
 - Control operations required for receiving FM and AM broadcasts.
- b. **Timer functions**
 - These functions count the clock of the 24-hour display.
 - These functions perform two types of timer operations, "everyday and sleep."
- c. **Display functions**
 - These functions output the drive signals of the fluorescent display tube.

NOTE 1 Plugging the power cord into a power outlet while depressing both the STANDBY and MEMORY buttons will automatically register the frequencies used for tracking adjustments to the preset memory. These frequencies can be used for adjustments and other purposes.

	P1	P2	P3	P4	P5	P6	P7	P8	—	—
AM (kHz)	522	603	846	999	1098	1404	1512	1611		
	P11	P12	P13	P14	P15	—	—	—	—	—
FM (MHz)	87.50	84.00	98.00	100.10	108.00					

※ P9, P10, and P21 through P30 are AM 522 kHz, and P16 through P20 are FM 87.50 MHz.

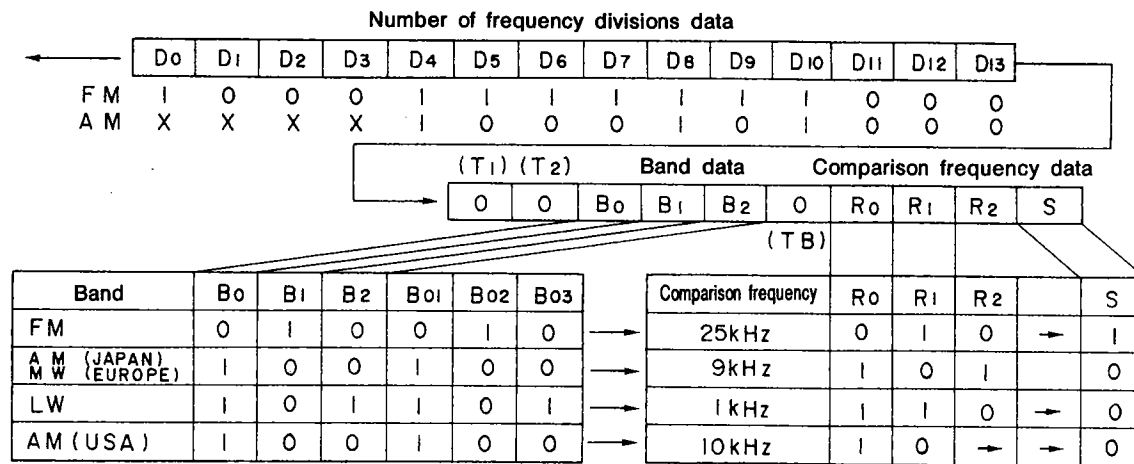
NOTE 2 Plugging the power cord into a power outlet while depressing both the MEMORY and BAND buttons will initialize all settings including the current time and the contents of the timers and preset memory.

2. Receiving Band Table

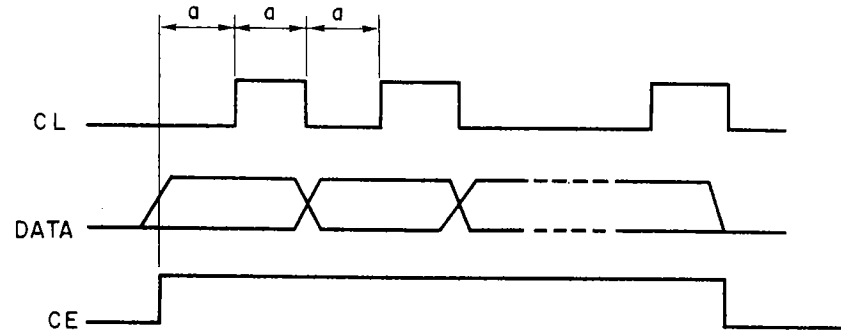
Band	Receiving frequency	Local oscillator frequency	IF	Frequency division ratio	Comparison frequency	Step frequency	Other
FM	87.50~108.00MHz	98.20~118.70MHz	10.7MHz	1	25kHz	50kHz	
AM	522~1611kHz	972~2061kHz	450kHz	-	9kHz	9kHz	

3. Signals sent to the LM7000 Programmable Divider

- a. Signals to the programmable divider are sent from 3 sources: CE OUT, CLOCK OUT, and DATA OUT.
- b. The programmable divider takes in DATA at CLOCK $\overline{\text{f}}$, when CE equals 1.
- c. The data is a 24-bit serial signal which is taken in to the programmable divider from the LSB. (At the AM setting, D₀ through D₃ are ignored, so that D₄ becomes the LSB.)
- d. The data is made up of the number of frequency divisions data, the band data, and the comparison frequency data. (See diagram below.)



- e. Timing for sending
a = 2.5 μsec



• Pin Description

No.	Port Name	Function Name	I/O	Ini	ACT	Function
1	P94/FIP6	7G	O	L	H	Fluorescent tube digit signal output
2	P93/FIP5	6G	O	L	H	Fluorescent tube digit signal output
3	P92/FIP4	5G	O	L	H	Fluorescent tube digit signal output
4	P91/FIP3	4G	O	L	H	Fluorescent tube digit signal output
5	P90/FIP2	3G	O	L	H	Fluorescent tube digit signal output
6	P81/FIP1	2G	O	L	H	Fluorescent tube digit signal output
7	P80/FIP0	1G	O	L	H	Fluorescent tube digit signal output
8	V _{DD}	5V	-	-	-	+5 V
9	P27/SCK0	SBCLK	O	L	H	DENON BUS clock
10	P26/SO0/SB1	TXD0	O	L	H	DENON BUS data output
11	P25/SI0/SB0	RXD	I	L	H	DENON BUS data input
12	P24/BUSY	RDS Reset	O	L	L	LC7070 reset output
13	P23/STBY	PLLCE	O	H	H	PLL serial data selection output
14	P22/SCK1	CC lock	I/O	H	-	RDS data fetch clock input and PLL control clock output
15	P21/SO1	PLL Data	O	H	-	PLL serial data output
16	P20/SI1	RDS Data	I	H	-	RDS serial data input
17	RESET	RESET	I	H	H	Reset
18	P74	PLLSTRQ	O	L	L	IF count operation request output
19	P73	Signal In	I	H	L	RF signal detection signal input
20	AV _{SS}	GND	-	-	-	A/D converter ground
21	P17/ANI7	Tuned In	I	H	-	FM/AM sync signal input
22	P16/ANI6	NC	I	H	-	V _{DD} connection
23	P15/ANI5	NC	I	H	-	V _{DD} connection
24	P14/ANI4	NC	I	H	-	V _{DD} connection
25	P13/ANI3	NC	I	H	-	V _{DD} connection
26	P12/ANI2	NC	I	H	-	V _{DD} connection
27	P11/ANI1	ANI1	I	-	-	Key input *1
28	P10/ANI0	ANI0	I	-	-	Key input *2
29	AV _{DD}	AV _{DD}	-	-	-	Analog 5 V (Common power supply with V _{DD} as a measure against leakage)
30	AV _{REF}	AV _{REF}	-	-	-	+5 V (A/D converter reference voltage)
31	P04/XT1	XT1	I	-	-	32.7 kHz (Xtal input oscillator for the clock)
32	XT2	XT2	O	-	-	32.7 kHz (Xtal output oscillator for the clock)
33	V _{SS}	V _{SS}	-	-	-	Digital ground
34	X1	OSCI	I	-	-	4.19 MHz (Xtal input)
35	X2	OSCO	O	-	-	4.19 MHz (Xtal output)
36	P37	Power ON	O	H	H	Power on/off switching
37	P36/BUZ	NC	O	L	L	Open
38	P35/PCL	XTP	O	-	-	Xtal oscillator output (for frequency adjustments)
39	P34/TI2	NC	O	L	L	Open
40	P33/TI1	50/60	I	-	-	AC power supply frequency (50/60 Hz) detection
41	P32/TO2	Local/DX	O	L	-	RF signal strength control signal output
42	P31/TO1	AUTO/MONO	O	L	-	Stereo (Auto)/Mono switching
43	P30/TO0	NC	O	L	L	Open
44	P03/INTP3/CI0	RDS Start	I	H	L	RDS signal start detection
45	P02/INTP2	NC	O	L	L	Open
46	P01/INTP1	RXD	I	H	H	DENON BUS data signal input (Transfer start request detection)
47	P00/INTP0/T10	REMOCON	I	-	-	Remote control received data input
48	IC(V _{PP})	V _{PP}	-	-	-	Ground (Set to 5 V when PROM program is used)
49	P72	AM Stereo	I	H	L	AM stereo signal detection
50	P71	Stop In	I	H	L	IF count sync detection
51	P70	Stereo In	I	H	L	FM stereo recovery detection
52	V _{DD}	V _{DD}	-	-	-	5 V
53	P127/FIP33	Mute Out	O	L	L	Mute output
54	P126/FIP32	NC	O	L	L	Open
55	P125/FIP31	NC	O	L	L	Open
56	P124/FIP30	NC	O	L	L	Open
57	P123/FIP29	NC	O	L	L	Open
58	P122/FIP28	Diode In	I	-	L	AM STEREO, EX, RDS, and ADJUST functions selection switch (diode) state detection
59	P121/FIP27	Jumper	I	-	H	Destination (Switch (diode) for USA, Europe, and frequency) state detection
60	P120/FIP26	Seg16	O	L	L	Segment 16 output
61	P117/FIP25	Seg15	O	L	L	Segment 15 output
62	P116/FIP24	Seg14	O	L	L	Segment 14 output
63	P115/FIP23	Seg13	O	L	L	Segment 13 output
64	P114/FIP22	Seg12	O	L	L	Segment 12 output
65	P113/FIP21	Seg11	O	L	L	Segment 11 output
66	P112/FIP20	Seg10	O	L	L	Segment 10 output
67	P111/FIP19	Seg9	O	L	L	Segment 9 output
68	P110/FIP18	Seg8	O	L	L	Segment 8 output
69	P107/FIP17	Seg7	O	L	L	Segment 7 output
70	P106/FIP16	Seg6	O	L	L	Segment 6 output
71	V _{LOAD}	V _{LOAD}	-	-	-	-High B
72	P105/FIP15	Seg5	O	L	L	Fluorescent tube digit signal output
73	P104/FIP14	Seg4	O	L	L	Fluorescent tube digit signal output
74	P103/FIP13	Seg3	O	L	L	Fluorescent tube digit signal output
75	P102/FIP12	Seg2	O	L	L	Fluorescent tube digit signal output
76	P101/FIP11	Seg1	O	L	L	Fluorescent tube digit signal output
77	P100/FIP10	11G	O	L	L	Fluorescent tube digit signal output
78	P97/FIP9	10G	O	L	L	Fluorescent tube digit signal output
79	P96/FIP8	9G	O	L	L	Fluorescent tube digit signal output
80	P95/FIP7	8G	O	L	L	Fluorescent tube digit signal output

*1: Each of the following buttons CLOCK/DISPLAY, TIMER, BAND, MONO/STEREO, and TUNING up/down
*2: Each of the following buttons PRESET up/down, PANEL, CT, PTY, RDS, MEMO, and DIMMER

TUNER SECTION

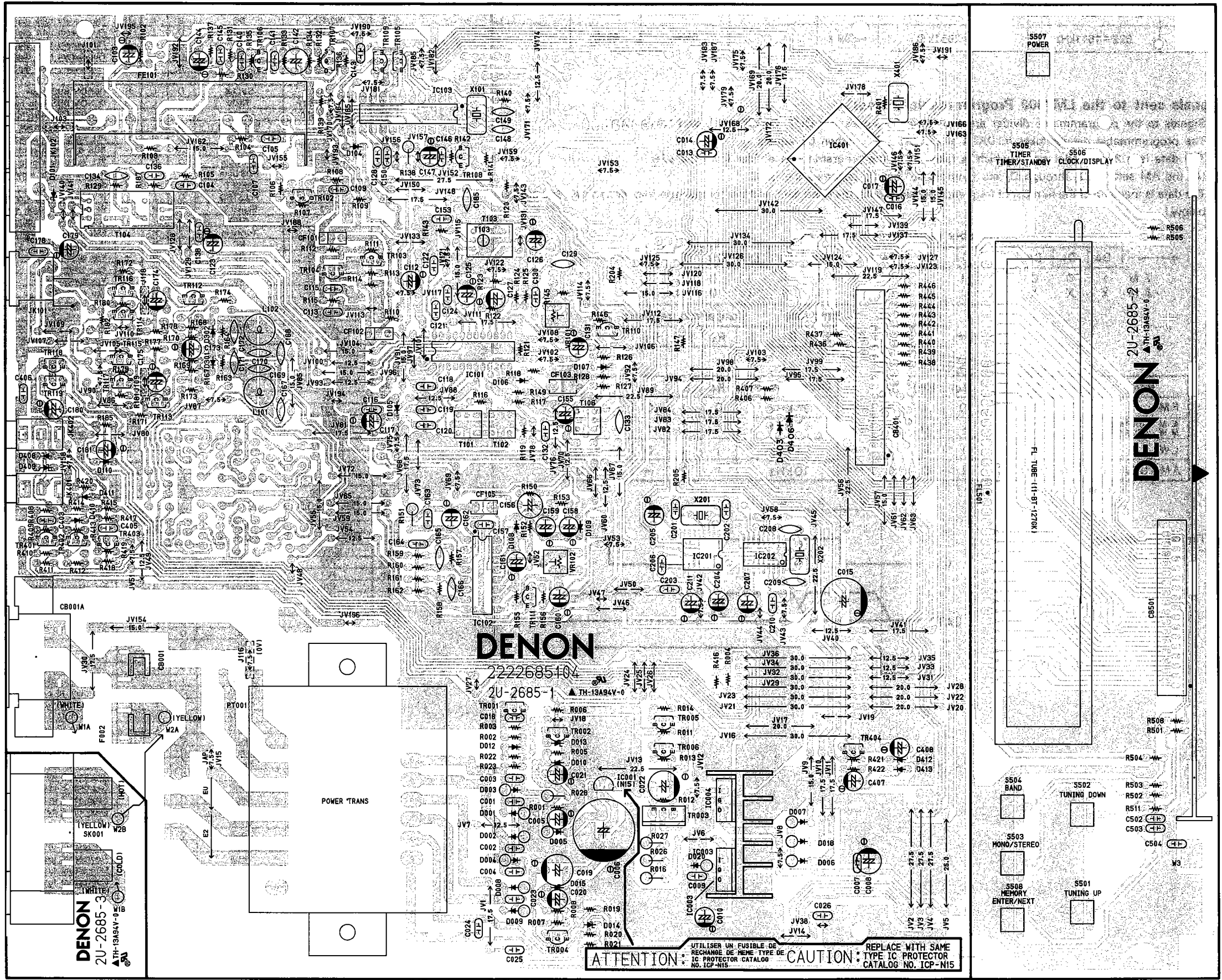
PRINTED WIRING BOARD

1 2 3 4 5 6 7 8

UTU-F10 2U-2685B TUNER UNIT ASS'Y

Component Side

2U-2685B	
-1	Main Unit
-2	Display Unit
-3	Outlet Unit



A

B

C

D

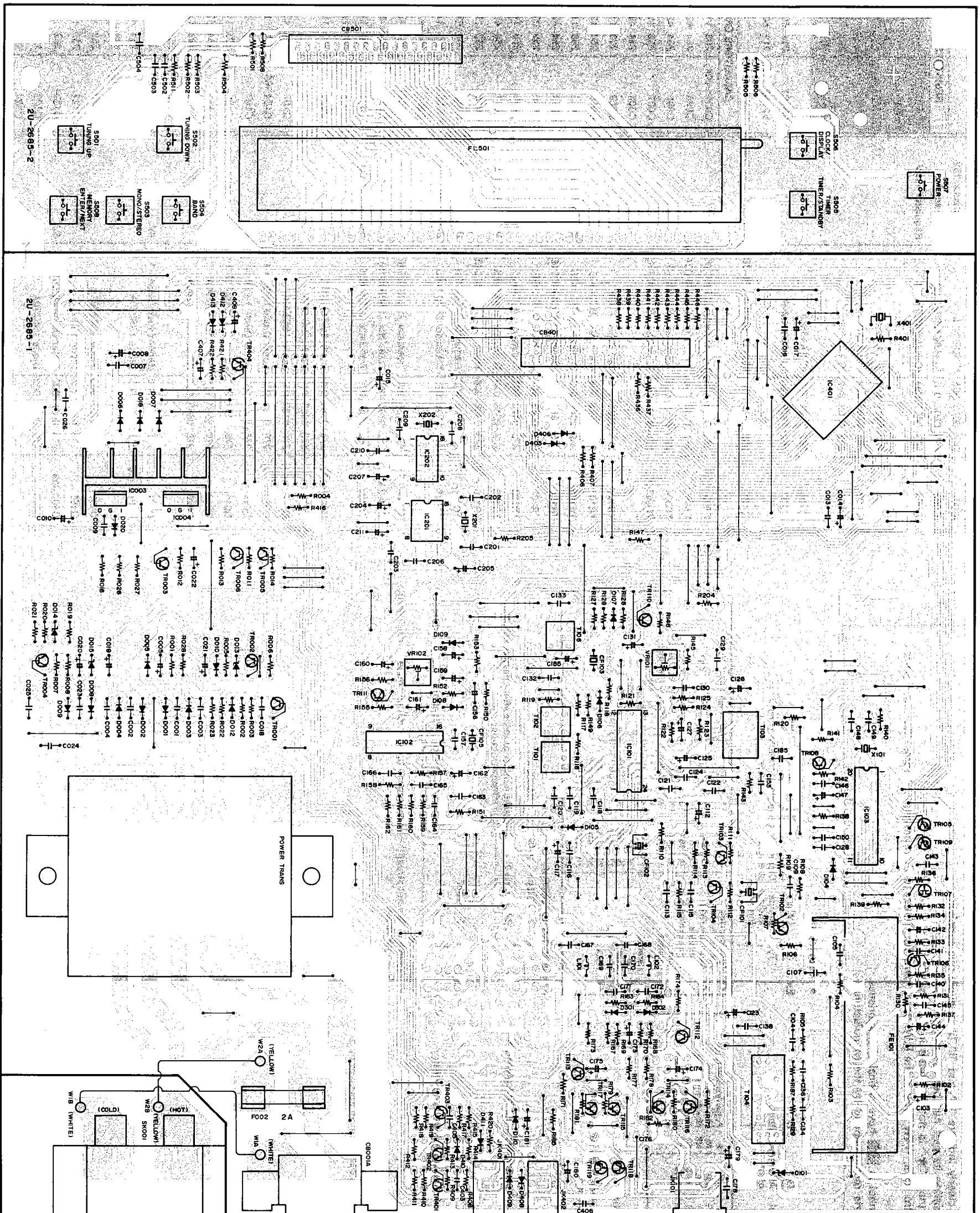
E

ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE IC PROTECTOR CATALOG NO. ICP-N15

CAUTION: REPLACE WITH SAME TYPE IC PROTECTOR CATALOG NO. ICP-N15

1 2 3 4 5 6 7 8

Pattern Side



TUNER SECTION

NOTE ON PARTS LIST

- Part indicated with the mark "●" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W. Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol Δ have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

● **Resistors**

Ex.: **RN** **14K** **2E** **182** **G** **FR**
 Type Shape and performance Power Resistance Allowable error Others

RD : Carbon Film	2B : 1/8W	F : ±1%	P : Pulse-resistant type
RC : Composition	2E : 1/4W	G : ±2%	NL : Low noise type
RS : Metallic oxide Film	2H : 1/2W	J : ±5%	NB : Non-burning type
RW : Winding	3A : 1W	K : ±10%	FR : Fuse-resistor
RN : Metal film	3D : 2W	M : ±20%	F : Lead wire forming
RK : Metal mixture	3F : 3W		
RM : Carbon chip	3H : 5W		

※ **Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
 Indicates number of zeros after effective number
 2-digit effective number

• Units: ohm

1 R 2 ⇒ 1.2 ohm
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.

• Units: ohm

※ **Capacity (electrolyte only)**

2 2 2 ⇒ 2200 μF
 Indicates number of zeros after effective number.
 2-digit effective number.

• Units: μF

2 R 2 ⇒ 2.2 μF
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.

• Units: μF

● **Capacitors**

Ex.: **CE** **04W** **1H** **2R2** **M** **BP**
 Type Shape and performance Dielectric strength Capacity Allowable error Others

CE : Aluminum foil electrolyte	0J : 6.3V	F : ±1%	HS : High stability type
CA : Aluminum solid electrolyte	1A : 10V	G : ±2%	BP : Non-polar type
CS : Tantalum electrolyte	1C : 16V	J : ±5%	HR : Ripple-resistant type
CO : Film	1E : 25V	K : ±10%	DL : For charge and discharge
CK : Ceramic	1V : 35V	M : ±20%	HF : For assuring high frequency
CC : Ceramic	1H : 50V	Z : +80%	U : UL part
CP : Oil	2A : 100V	-20%	C : CSA part
CM : Mica	2B : 125V	P : +100%	W : UL-CSA type
CF : Metallized	2C : 160V	-0%	F : Lead wire forming
CH : Metallized	2D : 200V	C : ±0.25pF	
	2E : 250V	D : ±0.5pF	
	2H : 500V	= : Others	
	2J : 630V		

※ **Capacity (except electrolyte)**

2 2 2 ⇒ 2200pF = 2200 μμF = 0.0022 μF
 (More than 2) Indicates number of zeros after effective number.
 2-digit effective number.

• Units: pF

2 2 1 ⇒ 220pF
 (0 or 1) Indicates number of zeros after effective number.
 2-digit effective number.

• Units: pF

• When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

2U-2685B TUNER UNIT ASS'Y PARTS LIST

Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTORS GROUP				RESISTORS GROUP (Not included Carbon Film ±5%, 1/4W Type. Refer to the Schematic Diagram for those Parts.)			
FL501	393 8012 002	F.L. Tube 11BT27GK		ΔR016	244 2052 928	Metal Oxide 47 ohm 1W (NB)	RS14B3A470JNBS (S)
IC001	268 0073 905	IC ICP-N15	IC Protector 15V	ΔR026	244 2052 928	Metal Oxide 47 ohm 1W (NB)	RS14B3A470JNBS (S)
IC003	263 0809 006	IC NJM7805FA (S)	Regulator +5V	ΔR028	241 2378 908	Carbon Film 1 ohm 1/4W (NB)	RD14B2E010JNBS
IC004	263 0801 004	IC NJM7812FA (S)	Regulator +12V	ΔR138	241 2376 907	Carbon Film 10 ohm 1/4W (NB)	RD14B2E100JNBS
IC101	263 0831 003	IC LA1267S		ΔR151	241 2377 947	Carbon Film 100 ohm 1/4W (NB)	RD14B2E101JNBS
IC102	263 0584 004	IC LA3410		VR101	211 6093 967	Semi Fixed Resist. 47k ohm	V06PB473
IC103	262 0703 002	IC LM7000		VR102	211 6093 970	Semi Fixed Resist. 100k ohm	V06PB104
IC201	262 1701 906	IC SAA6579		CAPACITORS GROUP			
IC202	262 1929 204	IC LC7074M-R		C001~004	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
IC401	262 1937 204	ICμPD78043GF-085-3B9	μ-com	C005	254 4260 948	Electrolytic 1μF/50V	CE04W1H010M
TR001,002	273 0388 906	Transistor 2SC1740S (E)		C006	254 4259 700	Electrolytic 2200μF/35V	CE04W1V222MC
TR003	271 0206 008	Transistor 2SA1488 (Y)/(G)		C007	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
TR004	271 0192 002	Transistor 2SA933S (S)		C008	254 4254 941	Electrolytic 100μF/16V	CE04W1C101M
TR005,006	273 0388 906	Transistor 2SC1740S (E)		C009	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
TR102	275 0051 909	FET 2SK161 (GR)		C010	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
TR103,104	273 0422 901	Transistor 2SC2410S		C013	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
TR105	269 0046 003	Transistor DTA114ES	Built in Resistor	C014	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
TR106	273 0388 906	Transistor 2SC1740S (E)		C015	259 0008 002	Backup Cap. 47000μF/5.5V	ECCS5R5H473
TR107	275 0053 907	FET 2SK365 (BL/GR)		C016	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
TR108	273 0422 901	Transistor 2SC2410S		C017	254 4252 930	Electrolytic 100μF/10V	CE04W1A101M
TR109	269 0046 003	Transistor DTA114ES	Built in Resistor	C018	253 1197 914	Ceramic Cap. 0.1μF/25V	CK14F1E104Z
TR110~113	273 0388 906	Transistor 2SC1740S (E)		C019	254 4261 921	Electrolytic 100μF/50V	CE04W1H101M
TR114~117	269 0146 903	Transistor DTC343TS	Built in Resistor	C020	254 4258 918	Electrolytic 10μF/35V	CE04W1V100M
TR118,119	269 0046 003	Transistor DTA114ES	Built in Resistor	C021	254 4260 948	Electrolytic 1μF/50V	CE04W1H010M
TR401	273 0388 906	Transistor 2SC1740S (E)		C022	254 4258 950	Electrolytic 100μF/35V	CE04W1V101M
TR402,403	271 0192 002	Transistor 2SA933S (S)		C023	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
TR404	269 0040 902	Transistor DTC144ES	Built in Resistor	C024	253 1197 914	Ceramic Cap. 0.1μF/25V	CK14F1E104Z
D001~009	276 0553 905	Diode 1SR35-200A		C025	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
D010	276 0432 903	Diode 1SS270A		C026	253 1197 914	Ceramic Cap. 0.1μF/25V	CK14F1E104Z
D012	276 0432 903	Diode 1SS270A		C103	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
D013	276 0467 907	Zener Diode HZS9A-1	9V	C104,105	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
D014	276 0461 903	Zener Diode HZS6A-1	6V	C107	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
D015	276 0482 908	Zener Diode HZS27-1	27V	C109	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
D018	276 0553 905	Diode 1SR35-200A		C112	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
D020	276 0553 905	Diode 1SR35-200A		C113	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
D101	276 0455 906	Zener Diode HZS4A-1	4V	C115	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
D104~110	276 0432 903	Diode 1SS270A		C116	253 1196 915	Ceramic Cap. 0.022μF/25V	CK14F1E223Z
D403	276 0432 903	Diode 1SS270A		C117	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
D406	276 0432 903	Diode 1SS270A		C118,119	253 1196 915	Ceramic Cap. 0.022μF/25V	CK14F1E223Z
D408,409	276 0462 902	Zener Diode HZS6B-1	6V	C120	253 1190 908	Ceramic Cap. 10pF/50V	CK14SL1H100J
D410~412	276 0432 903	Diode 1SS270A		C121	253 1196 902	Ceramic Cap. 0.01μF/25V	CK14F1E103Z
				C122	253 1193 934	Ceramic Cap. 100pF/50V	CK14B1H101K
				C123	254 4254 909	Electrolytic 10μF/16V	CE04W1C100M
				C124	253 1196 915	Ceramic Cap. 0.022μF/25V	CK14F1E223Z

TUNER SECTION

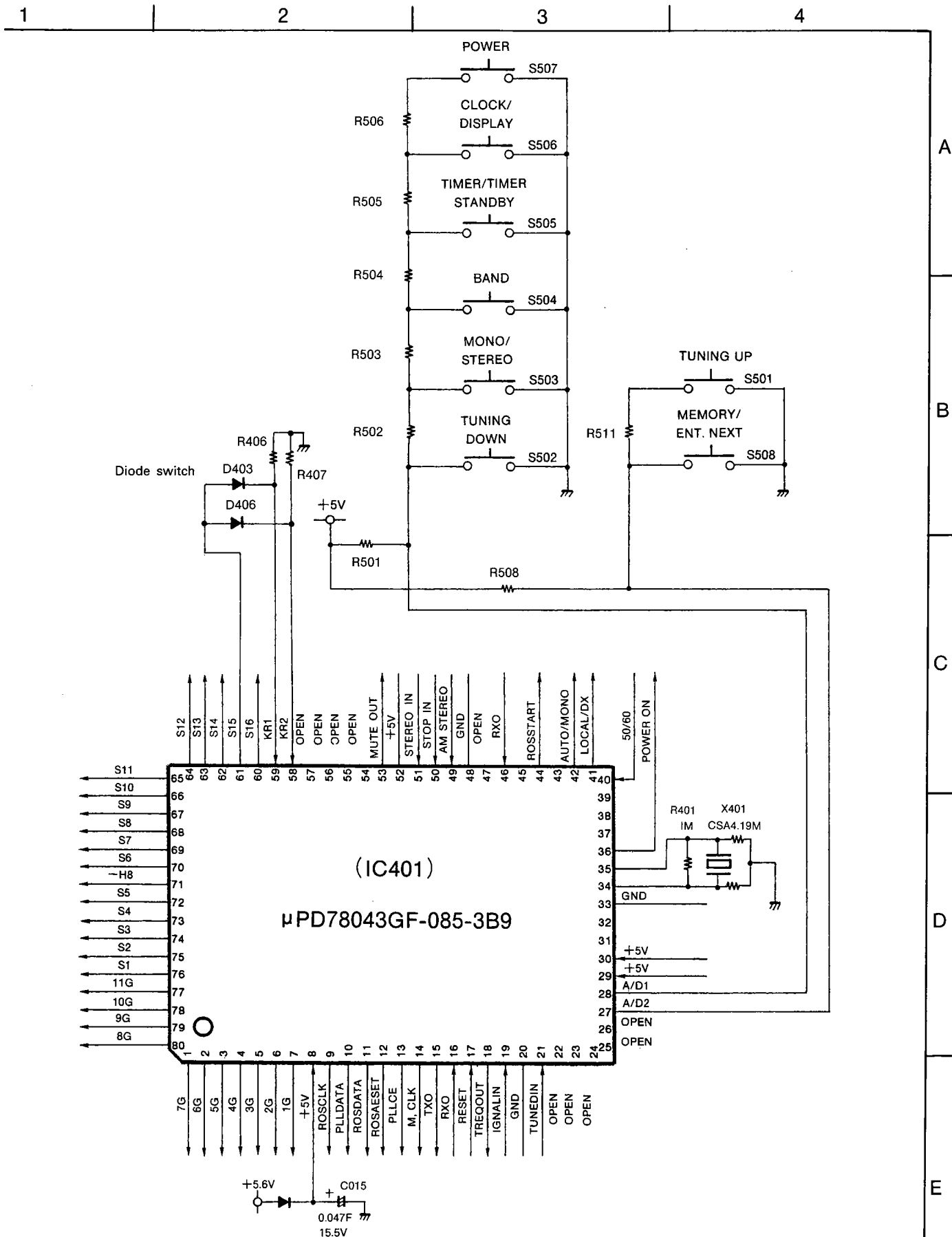
Ref. No.	Part No.	Part Name	Remarks	Ref. No.	Part No.	Part Name	Remarks	Qty
C125	254 4258 905	Electrolytic 4.7µF/35V	CE04W1V4R7M	C210	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z	
C126	254 4260 964	Electrolytic 3.3µF/50V	CE04W1H3R3M	C211	254 4252 927	Electrolytic 47µF/10V	CE04W1A470M	
C127	254 4254 909	Electrolytic 10µF/16V	CE04W1C100M	C403	253 1194 959	Ceramic Cap. 1000pF/50V	CK14B1H102K	
C128	253 1194 959	Ceramic Cap. 1000pF/50V	CK14B1H102K	C405	253 1194 959	Ceramic Cap. 1000pF/50V	CK14B1H102K	
C129	253 9030 976	BC Ceramic Cap. 0.015µF/25V	CK45=1E153K	C406	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z	
C130	253 1197 914	Ceramic Cap. 0.1µF/25V	CK14F1E104Z	C407	254 4260 948	Electrolytic 1µF/50V	CE04W1H010M	
C131	254 4260 964	Electrolytic 3.3µF/50V	CE04W1H3R3M	C502,503	253 1194 959	Ceramic Cap. 1000pF/50V	CK14B1H102K	
C132	253 1191 923	Ceramic Cap. 33pF/50V	CK14SL1H330J	C504	253 1196 915	Ceramic Cap. 0.022µF/25V	CK14F1E223Z	
C133	255 4201 984	Polypropylene 560pF/50V	CQ93P1H561J	OTHER GROUP				
C134	253 4536 967	Ceramic Cap. 18pF/50V	CC45SL1H180J			(P.W. Board)		(1)
C136	253 1197 901	Ceramic Cap. 0.047µF/50V	CK14F1H473Z					
C138	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z					
C140	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z					
C141	253 1196 915	Ceramic Cap. 0.022µF/25V	CK14F1E223Z					
C142	254 3056 917	Electrolytic 1µF/50V (Bipole)	CE04D1H010MBP	L101,102	235 0020 097	Inductor 39mH		2
C143	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z		212 5604 910	Tact Switch		8
C144	254 4254 938	Electrolytic 47µF/16V	CE04W1C470M	CF101,102	261 0064 007	Ceramic Filter SFT10.7MS2		2
C145,146	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z	CF103	261 0101 009	Ceramic Filter BFU450C4N		1
C147	254 4258 947	Electrolytic 47µF/35V	CE04W1V470M	CF105	261 0103 007	Ceramic Resonator CSB456F11		1
C148	253 3125 900	Ceramic Cap. 15pF/50V	CC45CH1H150J (Temp.)	T101	231 2905 008	FM IF DET Trans (A)		1
C149	253 3127 908	Ceramic Cap. 18pF/50V	CC45CH1H180J (Temp.)	T102	231 2906 007	FM IF DET Trans (B)		1
C150	253 1193 934	Ceramic Cap. 100pF/50V	CK14B1H101K	T103	231 3034 004	AM IFT		1
C153	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z	T104	231 1913 004	MW Ant. -Osc Coil		1
C155	254 4260 948	Electrolytic 1µF/50V	CE04W1H010M	T106	232 0152 005	Anti Birdie Filter		1
C156	254 3056 917	Electrolytic 1µF/50V (Bipole)	CE04D1H010MBP	FE101	216 0097 003	Front End (U)		1
C157	253 1197 901	Ceramic Cap. 0.047µF/50V	CK14F1H473Z	X101	399 0075 003	Crystal Resonator	7.2MHz	1
C158	254 4260 964	Electrolytic 3.3µF/50V	CE04W1H3R3M	X201	399 0178 007	Crystal	4.332MHz	1
C159	254 4260 935	Electrolytic 0.47µF/50V	CE04W1HR47M	X202	399 0041 901	Ceramic Resonator	CSA4.00MG	1
C160	254 4254 909	Electrolytic 10µF/16V	CE04W1C100M	X401	399 0196 908	Ceramic Resonator	EF0EC4194T4	1
C161	254 4260 948	Electrolytic 1µF/50V	CE04W1H010M	JK101	205 0274 004	2P Conn. Base		1
C162	254 4254 938	Electrolytic 47µF/16V	CE04W1C470M	JK102	205 0847 004	3P Antenna Terminal (PAL/F)		1
C163	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z	JK401,402	204 8421 005	Mini Jack		2
C164	253 1193 992	Ceramic Cap. 330pF/50V	CK14B1H331K	Δ	202 0040 909	Fuse Clip		2
C165,166	253 1179 945	Ceramic Cap. 220pF/50V	CK14B1H221K	ΔSK001A	203 3964 001	3P AC Outlet		1
C167,168	253 1117 907	Ceramic Cap. 2700pF/50V	CK45B1H272K	ΔCB001A	203 2349 009	2P Inlet		1
C169,170	253 1115 909	Ceramic Cap. 1800pF/50V	CK45B1H182K	ΔPT001	233 6069 003	Power Trans.		1
C171,172	253 1180 934	Ceramic Cap. 1200pF/50V	CK45B1H122K	ΔF002	206 1015 061	Fuse 2A		1
C173	254 4254 938	Electrolytic 47µF/16V	CE04W1C470M		513 2024 027	Fuse Label		1
C174,175	254 4260 951	Electrolytic 2.2µF/50V	CE04W1H2R2M	CB401,501	205 0736 005	33P FFC Conn. Base		2
C178	253 1196 902	Ceramic Cap. 0.01µF/25V	CK14F1E103Z		461 0665 009	Rubber Sheet		2
C180	254 4252 930	Electrolytic 100µF/10V	CE04W1A101M		203 0548 022	1P Contact Ass'y		1
C181	254 4254 909	Electrolytic 10µF/16V	CE04W1C100M					
C185	253 1193 934	Ceramic Cap. 100pF/50V	CK14B1H101K					
C201,202	253 3131 907	Ceramic Cap. 27pF/50V	CC45CH1H270J (Temp.)					
C203	253 1193 934	Ceramic Cap. 100pF/50V	CK14B1H101K					
C204	254 4260 951	Electrolytic 2.2µF/50V	CE04W1H2R2M					
C205	254 4252 927	Electrolytic 47µF/10V	CE04W1A470M					
C206	253 1194 920	Ceramic Cap. 560pF/50V	CK14B1H561K					
C207	254 4252 927	Electrolytic 47µF/10V	CE04W1A470M					
C208,209	253 1191 910	Ceramic Cap. 30pF/50V	CK14SL1H300J					

TUNER SECTION

Ref. No.	Part No.	Part Name	Remarks	Qty
	203 0548 035	1P Contact Ass'y		1
	203 0497 021	1P Contact Ass'y		1

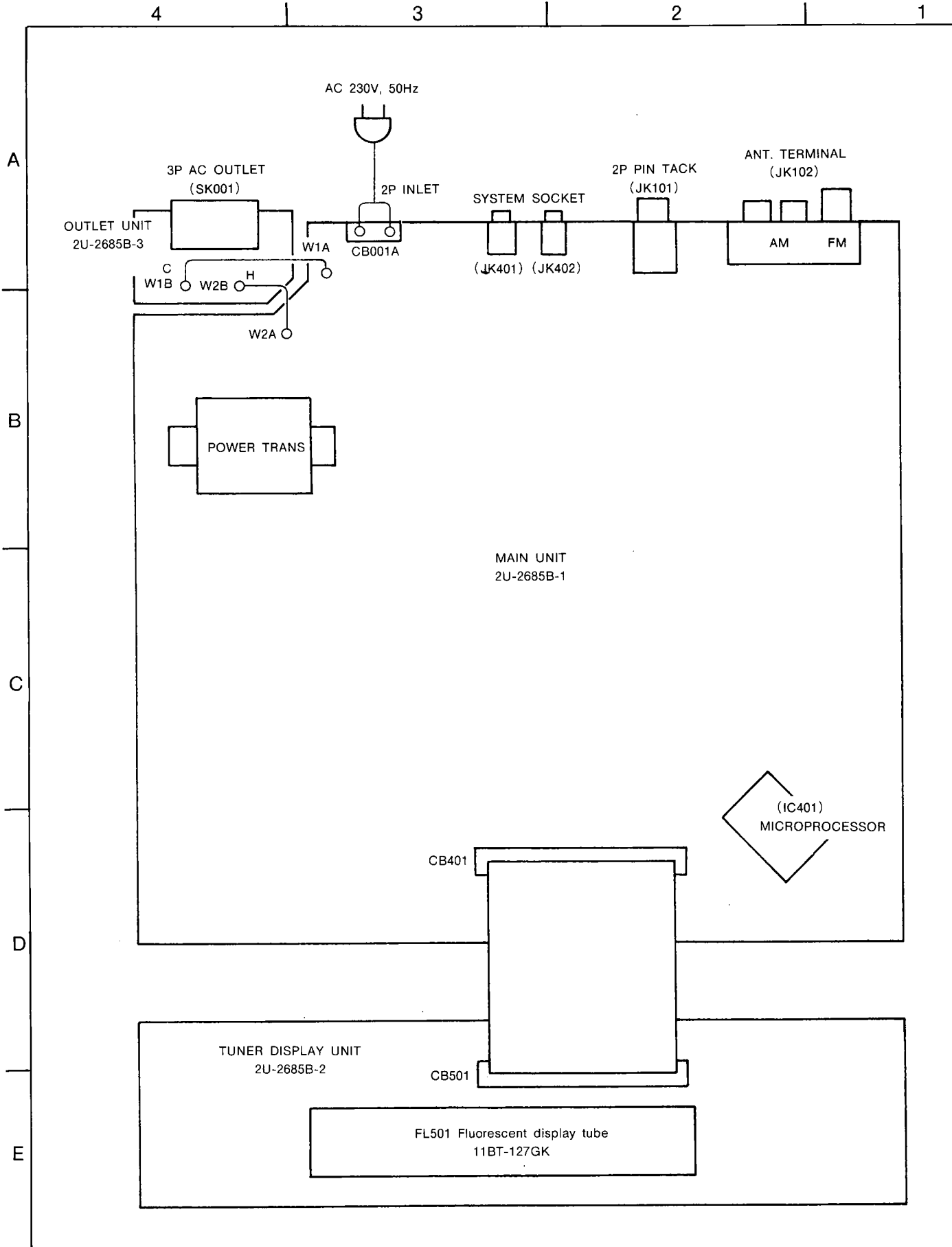
TUNER SECTION

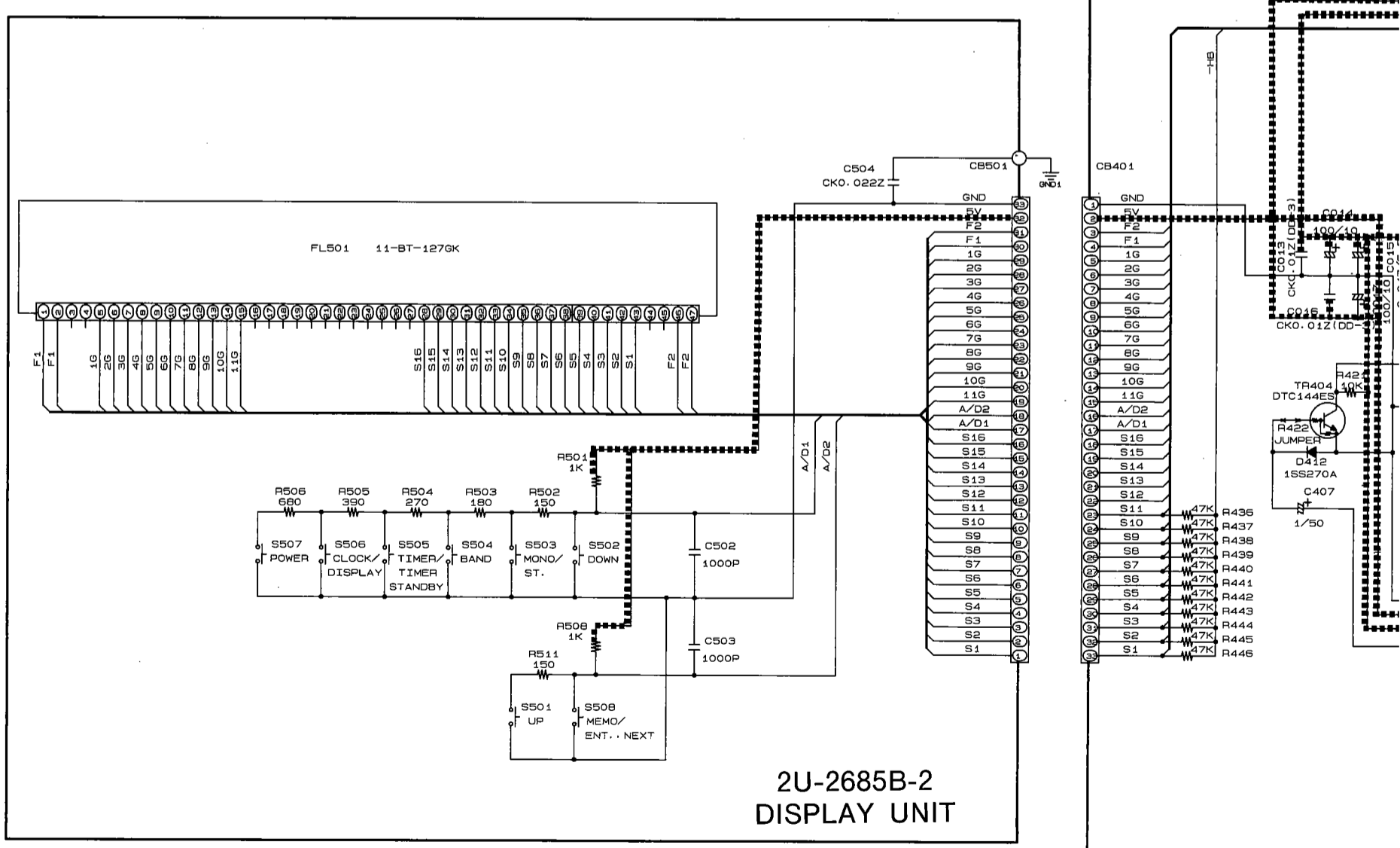
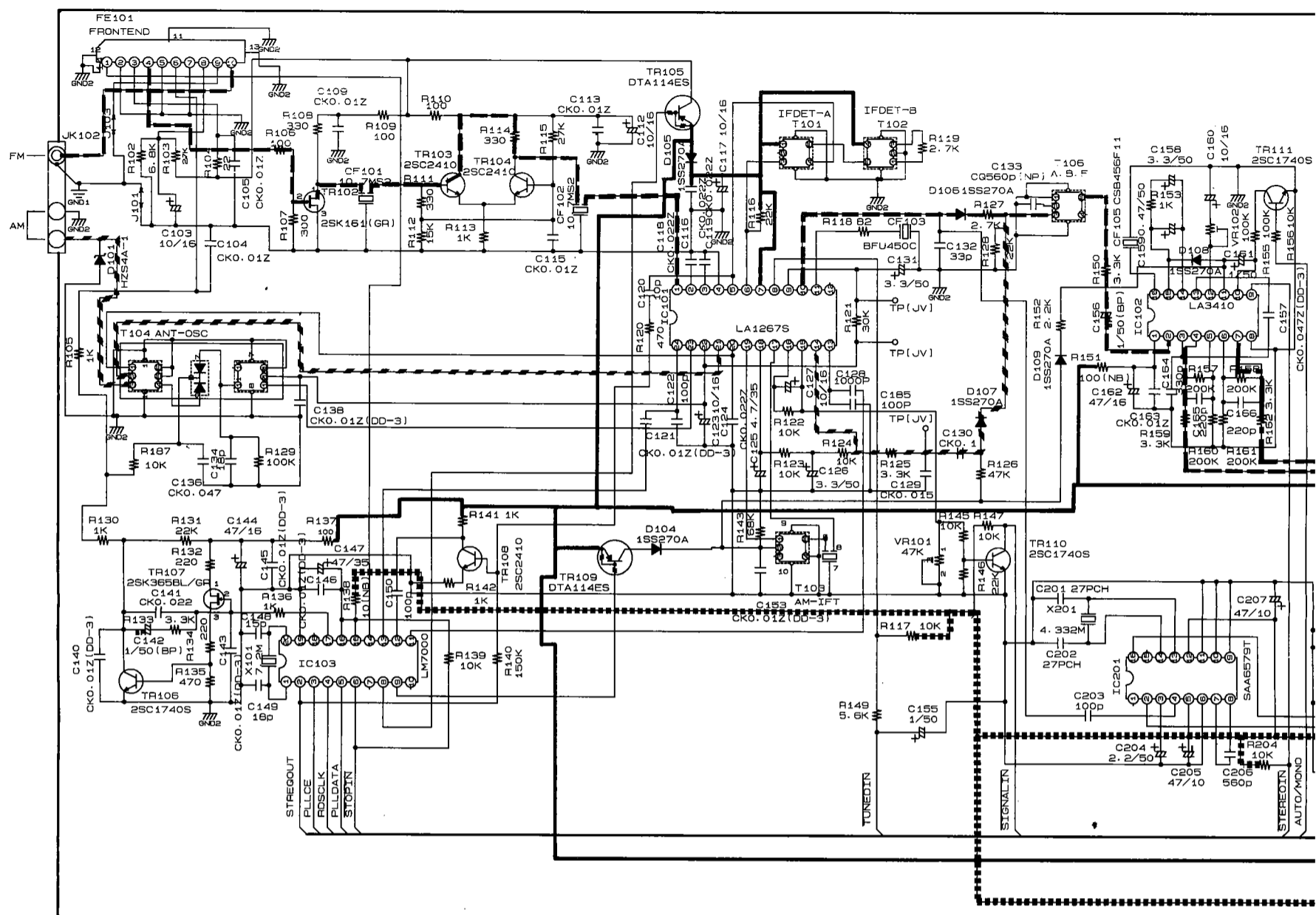
MICROPROCESSOR PERIPHERAL WIRING DIAGRAM



TUNER SECTION

WIRING DIAGRAM





——— +12 LINE
 + 5 LINE
 - - - - FM Lch SIGNAL LINE

——— Rch SIGNAL LINE
 - - - - AM R. Lch SIGNAL LINE

CAUTION:
 Before returning the unit to the customer, make sure you make either (1) a lead leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either defective.

WARNING
 DO NOT return the unit to the customer until the problem is located and corrected.

7

8

9

10

11

A

B

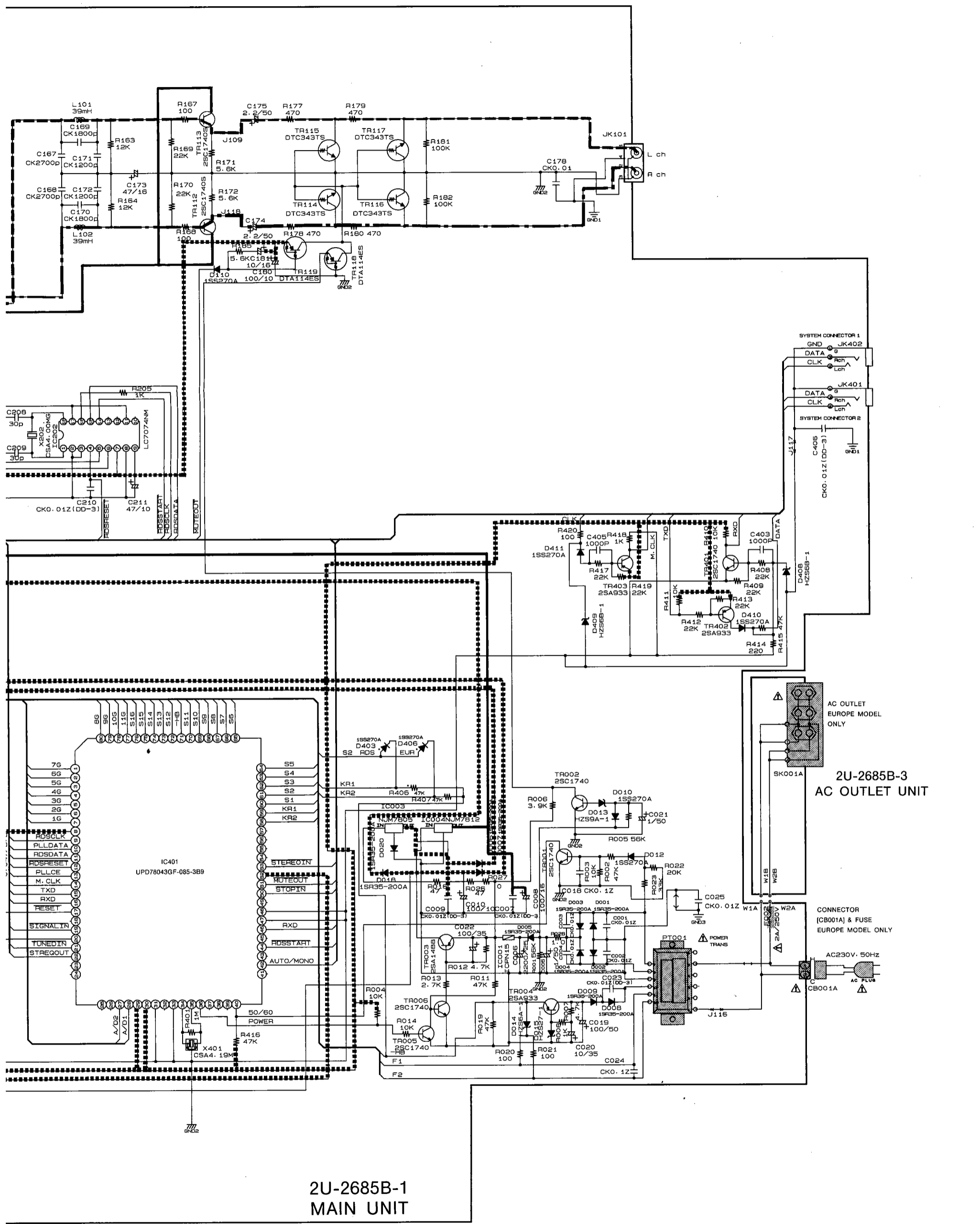
C

D

E

F

G



2U-2685B-1
MAIN UNIT

2U-2685B-3
AC OUTLET UNIT

WARNING:

Parts marked with this symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

NOTES

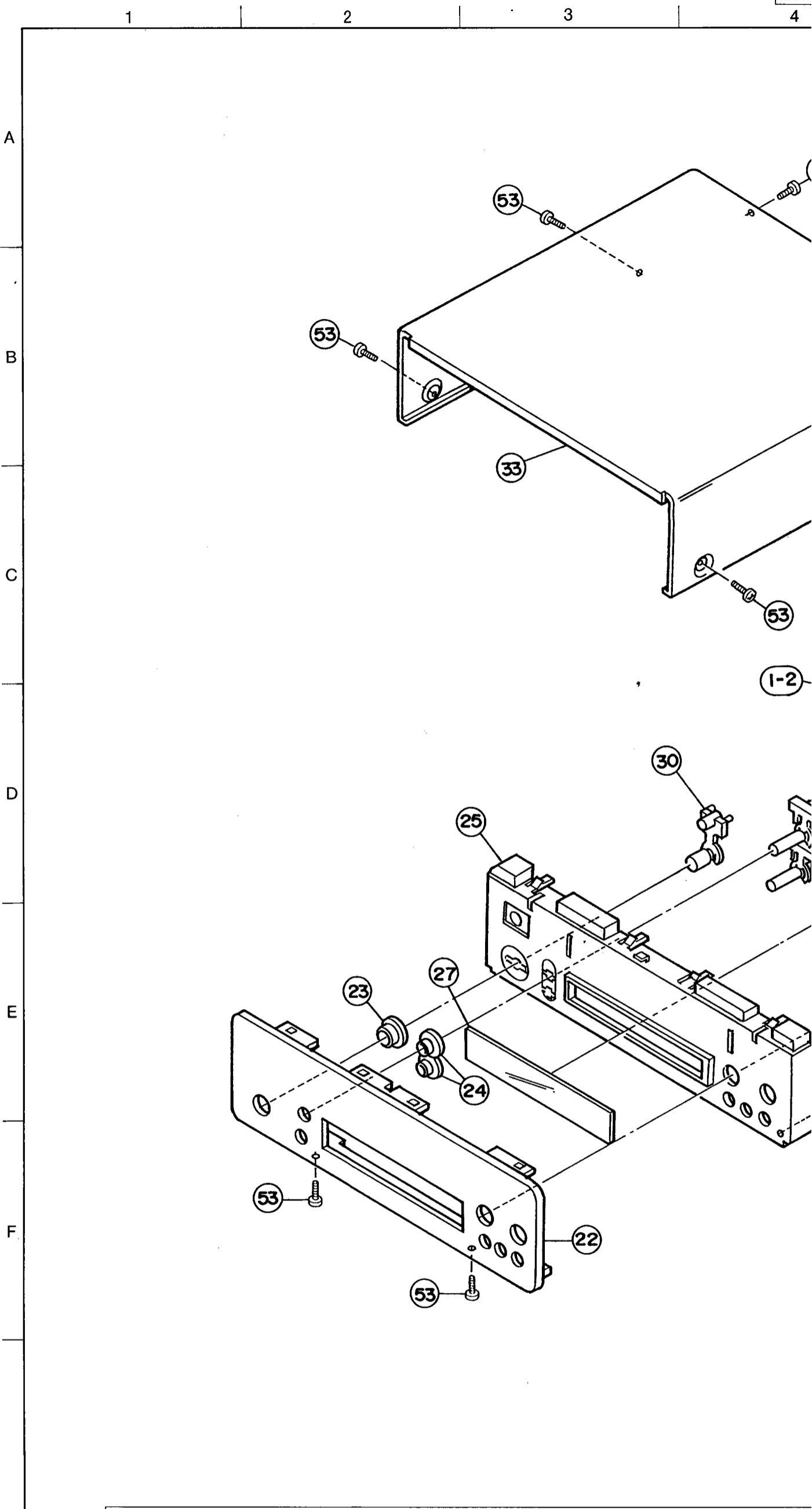
ALL RESISTANCE VALUES IN OHM K=1,000 OHM M=1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P=MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

age current check or (2) a line to chassis resistance check. If the
er side of the power cord is less than 240 Kohms, the unit is

TUNER SECTION

PARTS LIST OF UTU-F10 EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks	Q'ty
1	2U- 2685 B	Tuner Unit Ass'y		1 ^S
1-1	—	Main Unit		(1)
1-2	—	Display Unit		(1)
1-3	—	Outlet Unit		(1)
2	393 8012 002	F.L. Tube 11BT127GK	FL501	1
3	—	—		
4	216 0097 003	Front End (U)	FE101	1
5	254 4259 700	Chemicon 2200µF/35V	C006	1
6	—	—		
7	205 0736 005	33P FFC Conn. Base	CB401,501	2
8	205 0274 004	2P Conn. Base	JK101	1
9	204 8421 005	Mini Jack	JK401,402	2
10	205 0847 004	3P Ant. Terminal (PAL/F)	JK102	1
△ 11	203 3964 001	3P AC Outlet	SK001A	1
12	411 9115 251	Main Chassis		1
13	412 3783 213	Trans Bracket		1
14	GEN 2798	Foot Ass'y		4
15	105 1111 112	Rear Panel (Tuner)		1
16	—	—		
17	—	—		
18	—	—		
19	412 2814 028	Card Spacer (L=10)		1
△ 20	233 6096 003	Power Trans		1
21	—	—		
22	144 2363 045	Front Panel (Tuner)		1
23	146 9294 113	Knob Ring (A)		1
24	146 9295 112	Knob Ring (B)		2
25	146 9287 324	Inner Panel (Tuner)		1
26	—	—		
27	143 0872 001	Window		1
28	113 9276 115	Button (5 Key)	4 Gang	1
29	113 1656 018	Tact Button (1 Key)	4 Gang	2
30	113 1654 104	Power Button Ass'y		1
31	009 0106 008	33P FF Cable		1
32	—	—		
33	102 0545 117	Top Cover		1
34	461 0866 009	Rubber Sheet	Put on F.L. Tube	2
35	513 2241 101	Rating Sheet		1
△ 36	203 2349 009	2P Inlet	CB001A	1
△ 37	206 1015 061	Fuse 2A	F002	1
38	461 0859 003	Spacer	for or AC	1
39	—	—		
40	—	—		
SCREWS				
51	473 7004 003	Tapping Screw (S) 4×8		4
52	473 7002 018	Tapping Screw (S) 3×8		8
53	473 7015 018	Tapping Screw (S) 3×8	Black	11
54	477 0064 107	Fixing Screw		7
55	473 7505 007	Tapping Screw (P) 2.6×8		6
56	477 0276 018	Earth Screw		1
57	475 2003 005	Spring Washer φ 3	for E. Screw	1
58	473 7500 015	Tapping Screw (P) 3×8		2
59	—	—		
60	—	—		
PACKING & ACCESSORIES (Not included EXPLODED VIEW)				
101	505 0241 005	Cabinet Cover		1
102	503 1091 106	Cushion		1
103	GEN 2740	Envelope Sub. Ass'y		1 ^S
103-1	505 9125 009	:Poly Cover		(1)
103-2	231 1914 003	Loop Antenna		(1)
103-3	395 0021 000	FM Ant. Ass'y		(1)
103-4	203 2310 009	2P Pin Cord	L=1000	(1)
103-5	203 2315 004	Stereo Miniplug Cord	L=500	(1)
△ 103-6	206 2108 003	:AC Conn. with Plug		(1)
103-7	511 2653 007	Inst. Sheet		(1)
104	503 1061 000	:Top Cushion		1
105	501 1781 009	Carton Case		1
106	—	—		
107	—	—		



NOTE ON PARTS LIST

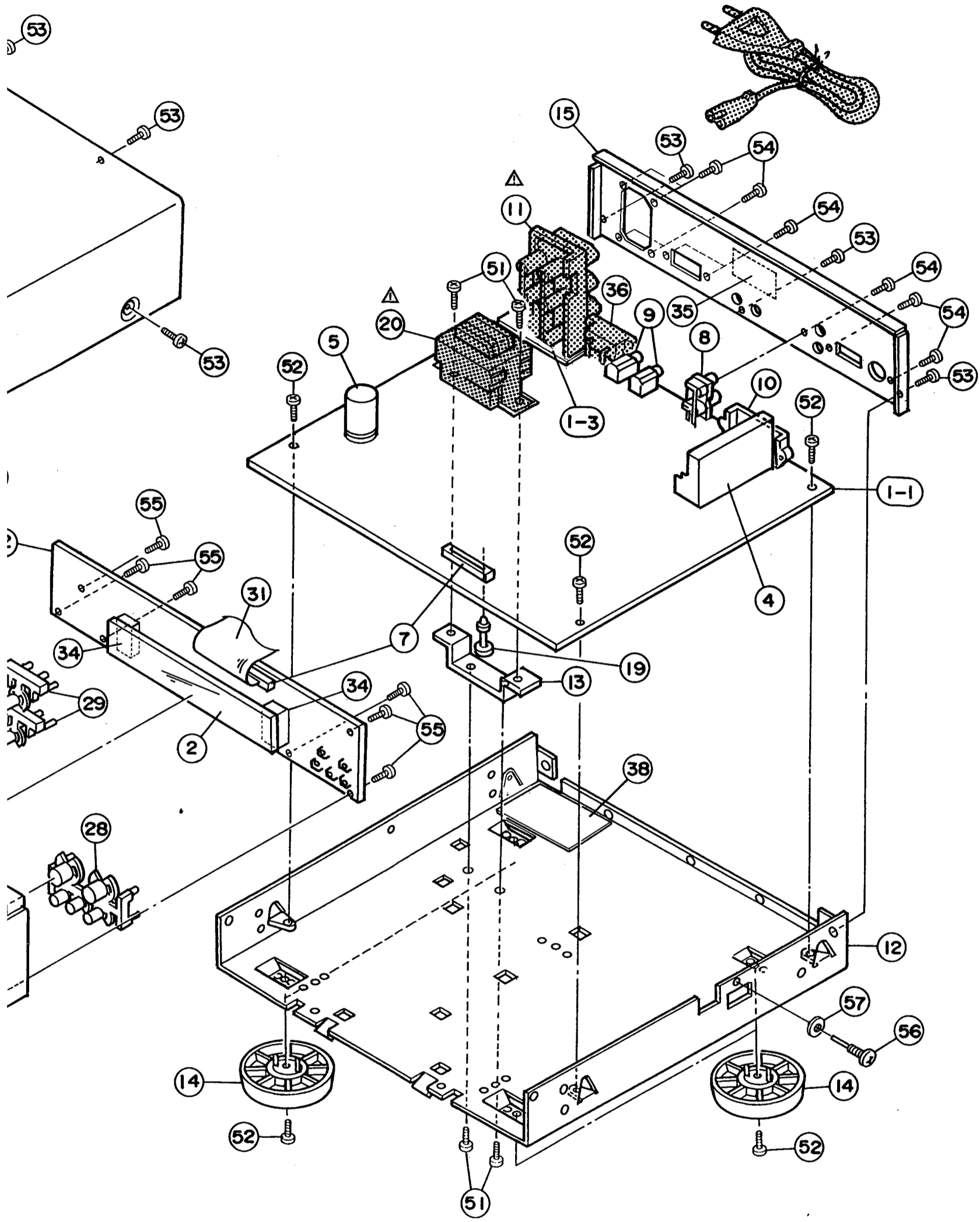
- Part indicated with the mark "●" are not always in stock and possibly to take a long period of time for supplying, or i supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "1" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.

WARNING:

Parts marked with this symbol △ ★ have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

EXPLODED VIEW

4 5 6 7 8 9



or in some case