

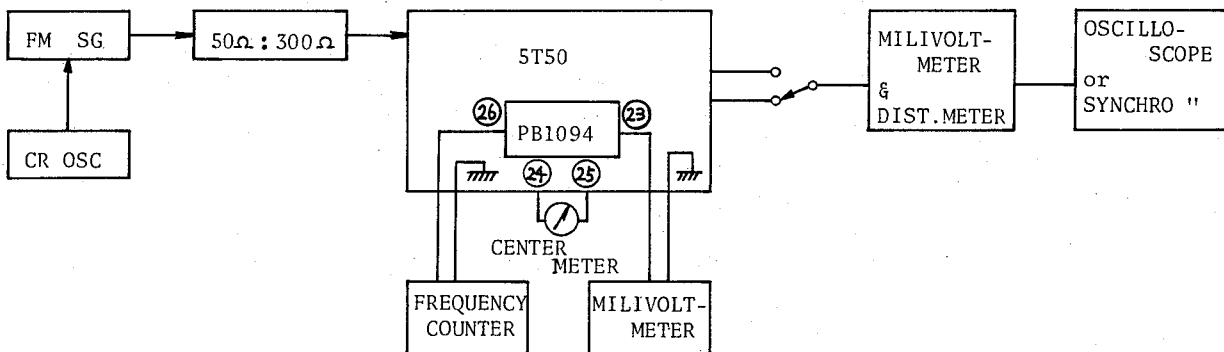
FREQUENCY SYNTHESIZED FM TUNER

**LABORATORY
REFERENCE
SERIES**

5T50

SERVICE MANUAL

5T50 Alignment Procedure (PB-1093, PB-1094)



Connect test equipment as per the diagram shown above. Use "300 ohms" terminal for the ANT Terminal, and set the attenuator to "OFF". Connect the Milivoltmeter and distortion meter to the "AUDIO OUTPUT 2", and set the level control to the "MAX." position. Then set the switches on the front panel of the 5T50 to the following positions;

- (1) Set 2 push switches provided to the left of the power switch to the "protruded" position.
- (2) Set the muting switch to the "off" position, and the other lever switch to the center "normal" position.
- (3) Set the Mode Switch to the "auto" position.
- (4) Depress the "manual" tuning switch.

Now, check the de-emphasis switch on PB1094. Then depress the power switch to "ON", and if no trouble found, proceed to the following alignment.

- (1) Set the receiving frequency to the edge of the lowest side. (In case a broadcasting station is located there, set it to a nearby frequency at which no signal is received.)
- (2) Set signal of SG to 400Hz, 100% modulation, output level 1mV, and adjust the frequency to that of the 5T50.
- (3) Set both of VR201 and VR202 on PB1094 to the extreme clockwise position.
- (4) Confirm 400Hz sine-wave on oscilloscope.
- (5) Adjust SG output to the minimum.
- (6) Obtain precise center indication on the center meter by adjusting T201 on PB1094.
- (7) Take same procedure as described in step No. 2.
- (8) Adjust T202 on PB1094 and obtain the minimum reading on the distortion meter. (no more than 0.1%)
- (9) Repeat steps No. 5 - No. 8 three or four times.

- (10) Repeat the same procedure as described in step No. 2.
- (11) Adjust VR202 to obtain 1V reading on the milivoltmeter.
- (12) Set signal of SG to 400Hz, 100% modulation, output level 1.5uV. (Do not change frequency.)
- (13) Adjust L101, L-102, L-103, L104 and L109 to obtain the maximum output of the milivoltmeter. (In this case, it is easier to find the max. point when SG output is adjusted in the range of 1uV - 2uV.)
- (14) Set the receiving frequency to the edge of the highest side. (In case a broadcasting station is located there, set it to a nearby frequency at which no signal is received. Adjust the frequency of SG to that of the 5T50.)
- (15) Adjust TC-1, TC-2, TC-3 and TC-4 on PB1093 to obtain the maximum output of milivoltmeter. (In this case, it is easier to find out the max. point when SG output is adjusted in the range of 1uV - 2uV.)
- (16) Repeat step No. 12 through No. 15 more than five times to obtain the best point each time.
- (17) Set receiving frequency and SG to mid-band or its vicinity (any position where there is no broadcasting station) of the receiving frequency-range.
- (18) Set SG to the receiving frequency, with 1kHz, 100% mono modulation, output 1mV.
- (19) Adjust VR001 or a calibration control of milivoltmeter to obtain precise 0dB reading on milivoltmeter.
- (20) Set the output of SG to the minimum.
- (21) Adjust VR201 to obtain -14.5dB reading on level meter.
- (22) Set SG to the condition described in step No. 18 and adjust distortion as described below.
- (23) Adjust T202 on PB1094 to obtain the minimum reading on distortion meter. (no more than 0.08%)
- (24) Set the output of SG to the minimum.
- (25) Adjust T201 on PB1094 to obtain "0" reading on the center meter.
- (26) Repeat steps No. 22 through No. 25 two or three times.
- (27) Set SG to the condition described in step No. 18 and turn off the modulation. At this time, adjust L401 and VR401 on PB1095 to obtain the best Signal-to-Noise figure on the milivoltmeter.
- (28) Adjust VR250 with a frequency counter connected to the No. 26 terminal on PB1094 to obtain 19kHz $\begin{matrix} +0 \\ -50 \end{matrix}$ Hz. (In this case, interstation noises will interfere with this adjustment unless signals are received.)
- (29) Connect stereo modulator (1kHz, L + R 90%, 19kHz pilot 10%) to SG and set its output to 1mV.
- (30) Adjust VR203 on PB1094 to obtain the maximum and well-balanced (L \rightarrow R , R \rightarrow L) separation characteristic. (refer to the specifications)

- (31) a. Adjust L109 on PB1093 to obtain the minimum distortion at the time of "stereo" mode reception. (no more than 0.1%) (CAUTION: Never turn L109 over a half-turn. In case distortion can not be reduced even if it is turned over a half, replace F201 on PB1094.) Then repeat step No. 29 - No. 30.
- b. Set SG modulation to 19kHz 10% only, and adjust L402 and VR402 on PB1095 to obtain the best S/N figure at 1mV output.

[DOLBY* ALIGNMENT] (except J-band, E-band)

- (32) Set the lever switch to the "dolby" position.
- (33) Connect stereo modulator (400Hz, L + R 50%, 19kHz pilot 9%) to SG and set its output to 1mV.
- (34) Adjust VR205a,b to obtain 500mV output level.
- (35) For the U-band model, set the "function" switch to the "test tone" position, while for the E and J-band model, depress the "rec. cal." button. (Both of these are 400Hz CR generator, but the switch location is different among U, E and J band.)
- (36) Adjust VR206 on PB1094 to obtain the following level.
- | | |
|------------|-------|
| test tone; | 500mV |
| rec. cal.; | 500mV |
- (37) Measure the distortion of test tone or rec. cal. and confirm that it is no more than 10%. Also the frequency should be 400Hz \pm 50Hz.
- (38) Set SG to the condition described in step No. 29.
- (39) Set the Mode Switch to the "stereo" position.
- (40) Switch the pilot signal of stereo modulator on and off, and confirm that the Stereo Indicator is turned on and off simultaneously. Also 1kHz sine-wave signal should be turned on or off.
- (41) Set SG to the condition described in step No. 29.
- (42) Confirm that the Stereo Indicator goes off and the circuitry operates in "mono" when the Mode Switch is set to the "mono" position.
- (43) Set the Muting Switch to the "normal" position, and confirm that the muting circuit operates when SG level (1.5uV - 2uV) is varied.
- (44) Set SG to the condition described in step No. 2.
- (45) Set the Muting Switch to the "normal" position, and confirm that the muting circuit operates when SG level (1.5uV - 2uV) is varied.
- (46) Set the Muting Switch to the "variable" position, and adjust the Muting Threshold VR on the back panel so that the muting circuit can operate for weak electric field at the "min" position, while for strong electric field at the "max." position respectively.

(47) Set SG to the condition described in step No. 29.

(48) Turn the Noise Filter on and confirm the following separation level.

U-band -----	-27dB	±4dB
E and J-band-----	-15dB	±4dB (max.)
	-27dB	±4dB (moderate)

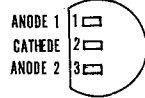
*DOLBY is the trademark of Dolby Laboratories, Inc.

1SV55

ABSOLUTE MAXIMUM RATINGS
($T_a=25^\circ\text{C}$)

Symbol	1SV55	Unit
V_R	-32	V
I_F	200	mA
P_d	280	mW
T_j	125	$^\circ\text{C}$
T_{stg}	-55 ~ +125	$^\circ\text{C}$

CONNECTION



ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

Symbol	Test Condition	min	typ	max	Unit
$V_{(BR)R}$	$I_R=-10\mu\text{A}$	-32	-	-	V
I_R	$V_R=-30\text{V}$			-50	nA
		$T_a=60^\circ\text{C}$		-0.5	μA
C_3	$V_R=-3\text{V}, f=1\text{MHz}$	37	-	42	pF
n_3	$C_3/C_{30}, f=1\text{MHz}$	2.5	-	2.8	
Q	$V_R=-3\text{V}, f=100\text{MHz}$	100	200	-	

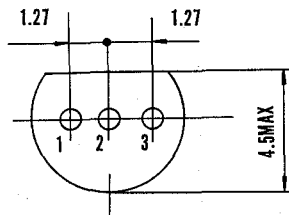
2SK30A

MAXIMUM RATING ($T_a=25^\circ\text{C}$)

SYMBOL	RATING	UNIT
V_{GDS}	-50	V
I_G	10	mA
P_D	100	mW
T_J	125	$^\circ\text{C}$
T_{stg}	-55 ~ 125	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
I_{GSS}	$V_{GS}=-30\text{V}, V_{DS}=0$	-	-	-1.0	nA
$V_{(BR)GDS}$	$V_{DS}=0, I_G=-100\mu\text{A}$	-50	-	-	V
I_{DSS}	$V_{DS}=10\text{V}, V_{GS}=0$	0.6	-	1.4	mA
V_P	$V_{DS}=10\text{V}, I_D=0.1\mu\text{A}$	-0.4	-	-5.0	V
g_m	$V_{DS}=10\text{V}, V_{GS}=0, f=1\text{kHz}$	1.2	-	-	$\text{m}\Omega$
C_{iss}	$V_{GS}=0, V_{DS}=0, f=1\text{MHz}$	-	8.2	-	pF
C_{rss}	$V_{GD}=-10\text{V}, V_{DS}=0, f=1\text{MHz}$	-	2.6	-	pF
NF	$V_{DS}=15\text{V}, V_{GS}=0$ $R_g=100\text{k}\Omega, f=120\text{Hz}$	-	0.5	5.0	dB



1.SOURCE
2.GATE
3.DRAIN

3SK45B

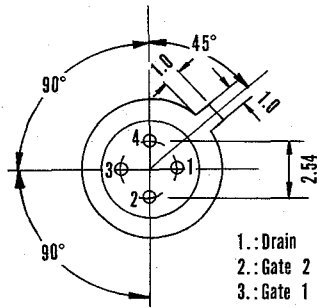
MAXIMUM RATING ($T_a=25^\circ\text{C}$)

Symbol	3SK45	Unit
V_{DS}	22	V
V_{G1S}	± 7	V
V_{G2S}	± 7	V
I_D	35	mA
P_{ch}	330	mW
T_{stg}	-65 ~ +175	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

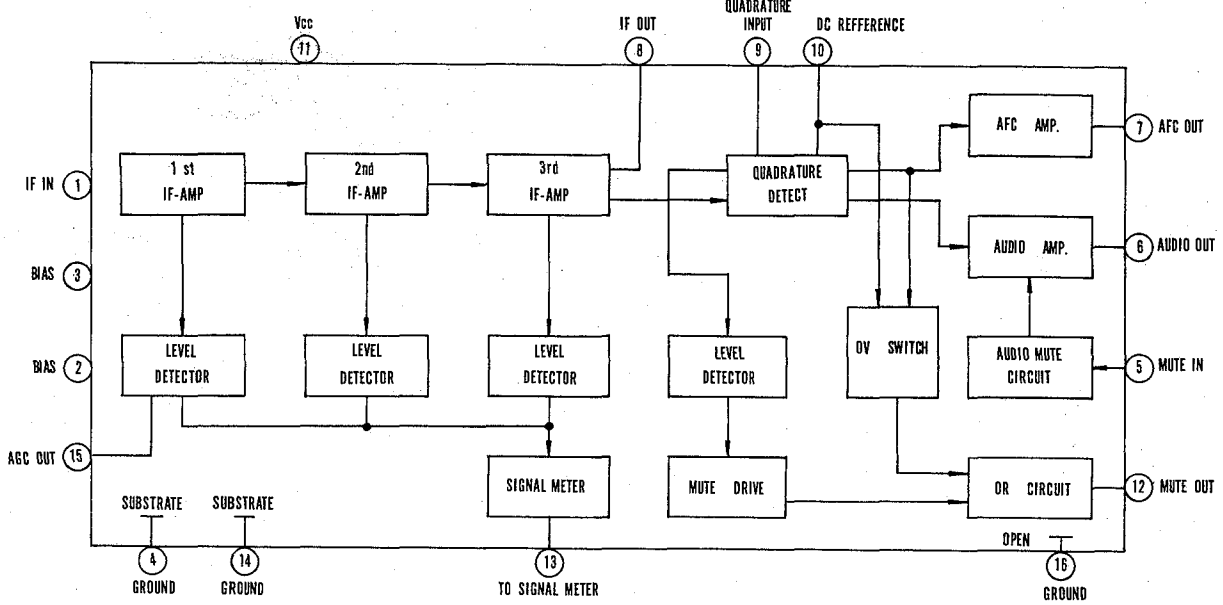
Symbol	Test Condition	min	type	max	Unit
$V_{G1S(\text{off})}$	$V_{DS}=15\text{V}, V_{G2S}=4\text{V}, I_D=100\mu\text{A}$	-0.3	-	-3.0	V
$V_{G2S(\text{off})}$	$V_{DS}=15\text{V}, V_{G1S}=0, I_D=100\mu\text{A}$	-	-	-2.0	V
I_{G1SS}	$V_{G1S}=\pm 7\text{V}, V_{DS}=0, V_{G2S}=0$	-	-	20	nA
I_{G2SS}	$V_{G2S}=\pm 7\text{V}, V_{DS}=0, V_{G1S}=0$	-	-	20	nA
I_{DSS}	$V_{DS}=15\text{V}, V_{G2S}=4\text{V}, V_{G1S}=0$	11	-	22	mA
I_{yfol}	$V_{DS}=15\text{V}, V_{G2S}=4\text{V}, I_D=10\text{mA}$ $f=1\text{kHz}, \text{Gate 1 to Drain}$	-	14	-	$\text{m}\Omega$
C_{iss}	$V_{DS}=15\text{V}, V_{G2S}=4\text{V}, I_D=10\text{mA}, f=1\text{MHz}$	-	4	-	pF
C_{rss}	$V_{DS}=15\text{V}, V_{G2S}=4\text{V}, I_D=10\text{mA}, f=1\text{MHz}$ Drain to Gate 1	-	0.02	0.03	pF
C_{oss}	$V_{DS}=15\text{V}, V_{G2S}=4\text{V}, I_D=10\text{mA}, f=1\text{MHz}$	-	2	-	pF
PG	$V_{DD}=15\text{V}, V_{G2S}=4\text{V}, I_D=10\text{mA}, f=200\text{MHz}$	17	20	-	dB
NF	$V_{DD}=15\text{V}, V_{G2S}=4\text{V}, I_D=10\text{mA}, f=200\text{MHz}$	-	2.2	3.3	dB

CONNECTION

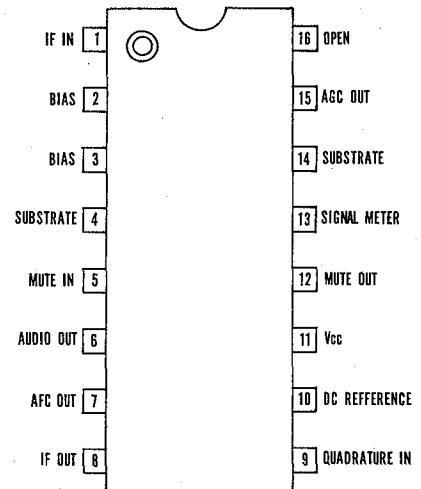


1.: Drain
2.: Gate 2
3.: Gate 1
4.: Source
(Case)

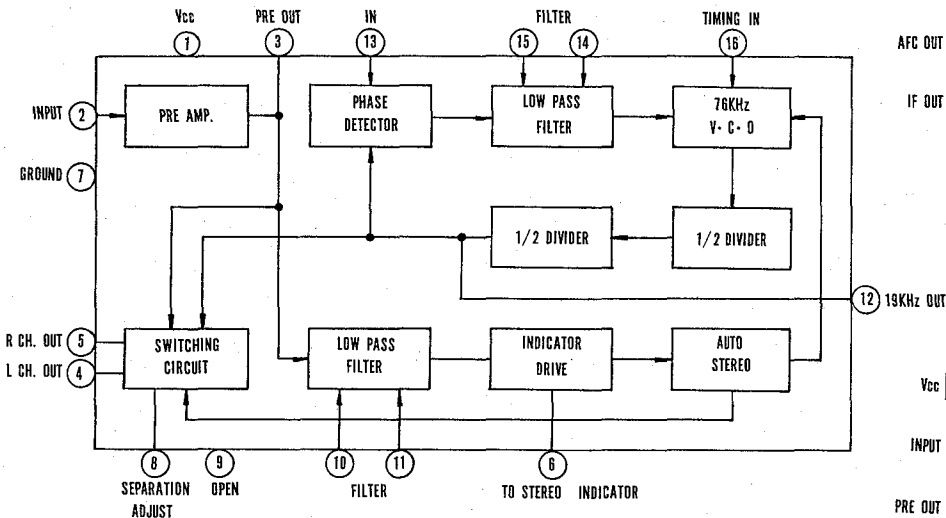
HA1137(IF & DETECT)
FUNCTIONAL BLOCK DIAGRAM



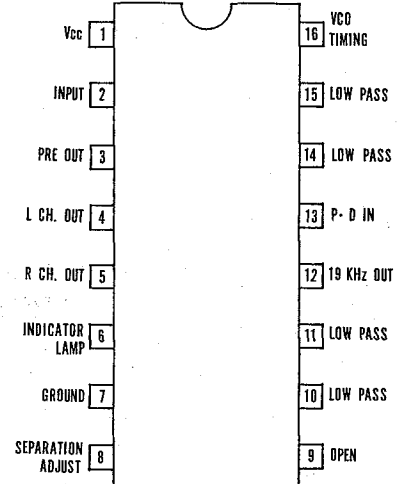
PIN CONNECTOR (TOP VIEW)



LA3350SS(MPX)
FUNCTIONAL BLOCK DIAGRAM



PIN CONNECTOR (TOP VIEW)



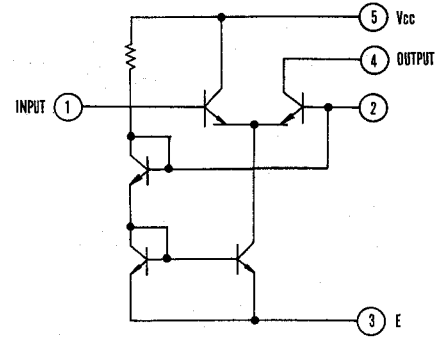
BA401(IF)

MAXIMUM RATING (T_a=25°C)

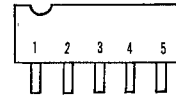
V _{CC} (V)	V _{out} (V)	V _{IN} (V)	P _d (mW)	T _{opr} (°C)	T _{stg} (°C)
15	24	±3	300	-25 ~ 75	-55 ~ 125

ELECTRICAL CHARACTERISTICS (T_a=25°C)

SIMB.	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
I _{CC}	V _{CC} =12V	6.5	10.5	14.5	mA
P _d	V _{CC} =12V	78	126	174	mW
G _v	V _{CC} =12V, R _g =50Ω, R _L =1K	26	32	38	dB
Z _{in}	V _{CC} =12V, f=10.7MHz	-	3.8	-	KΩ



PIN CONNECTION

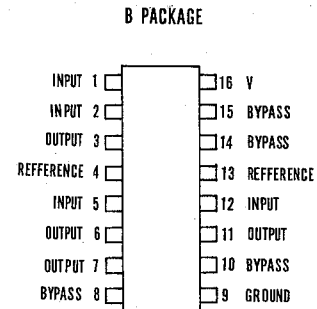


NE545B (DOLBY)

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	24 Volts
Operation Temperature Range	-20°C to +70°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 60 sec.)	300°C

PIN CONFIGURATION (Top View)



ELECTRICAL CHARACTERISTICS (V_{CC}= +10 to +16VOLTS, f = 20Hz to 15KHz; All levels referenced to 580mV rms at Pin 3 T_A = 25°C unless otherwise stated.)

PARAMETER	TEST CONDITONS	MIN.	TYP.	MAX.	UNITS
Voltage Gain (pins 5-3)	f = 1KHz Pins 6 and 2 connected	23	26	29	dB
Voltage Gain (Pins 3-7)	f = 1KHz		0		dB
Distortion	f = 1KHz, 0dB at Pin 7		0.05	0.1	%
Distortion	f = 1KHz, +10dB at Pin 7		0.2	0.5	%
Signal Handling	f = 1KHz, V _{CC} = +12 Volts		12		dB
Signal/Noise Ratio	f = 20Hz to 15KHz, R _S = 10KΩ Pins 6 and 2 connected		65		dB
Back to Back Frequency Response	f = 20Hz to 15KHz with respect to standard curve	-2	0	+2	dB
Input Resistance (Pin 5)		50	100		KΩ
Input Resistance (Pin 2)		3.9	5.6	6.7	KΩ
Output Resistance (Pin 6)		2.3	3.3	4.0	KΩ
Output Resistance (Pin 3)			80		Ω
Output Resistance (Pin 7)			80		Ω
Supply Current	V _{CC} = 12 Volts		21		mA
Supply Voltage Range		10		20	Volts

NJM4548 (DC AMP)

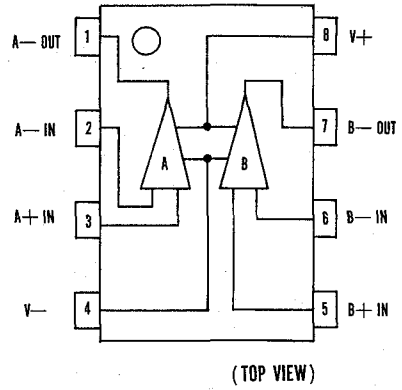
MAXIMUM RATING ($T_a=25^\circ\text{C}$)

V_S (V)	P_T (mW)	V_{ID} (V)	V_{ICM} (V)	T_{opr} ($^\circ\text{C}$)	T_{stg} ($^\circ\text{C}$)
± 18	500	± 30	± 15	$-20 \sim +75$	$-40 \sim +120$

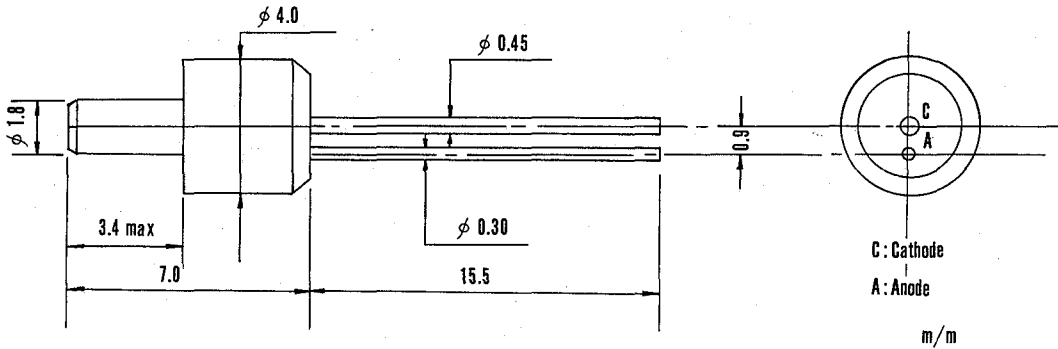
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

SIMB.	TEST CONDITIONS	MIN.	MAX.	UNITS.
V_{IO}	$R_S \leq 10K\Omega$		6.0	mV
I_{IO}	(input off SET)		200	nA
I_I	(input BIASS)		500	nA
G_V	$R_L \geq 2K\Omega, V_O = \pm 10V$	2×10^4		-
V_{Omax}	$R_L \geq 10K\Omega$	± 12	-	V
CMR	$R_S \leq 10K\Omega$	70	-	dB
V_{ICM}		± 12	-	V
S_{VR}	$R_S \leq 10K\Omega$	-	150	$\mu\text{V/V}$
V_n		-	1.8	μV

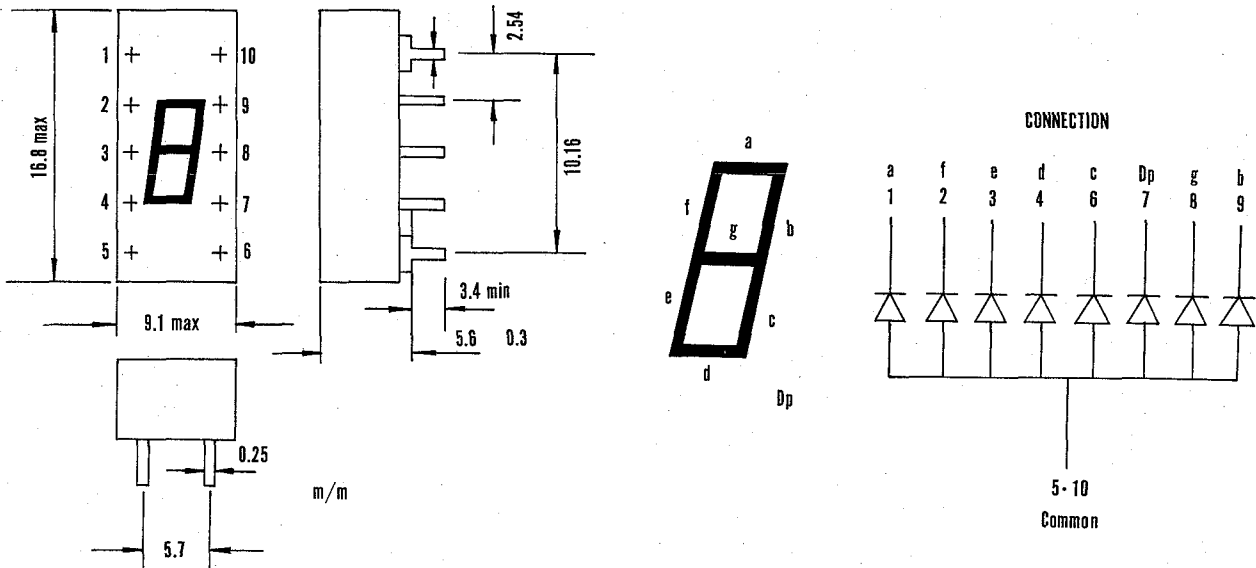
PIN CONNECTION



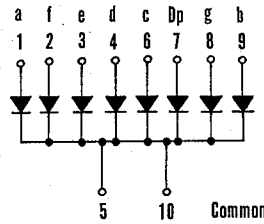
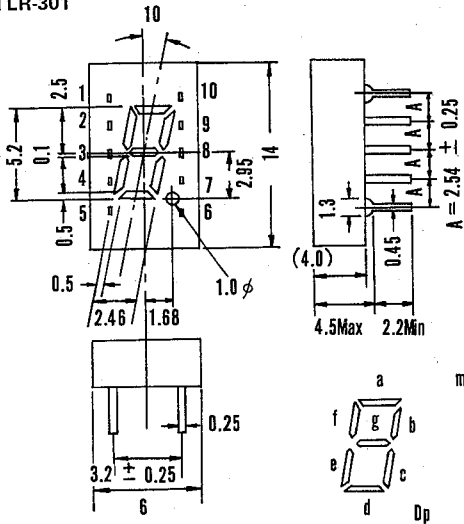
SLP-119B



SL-1171

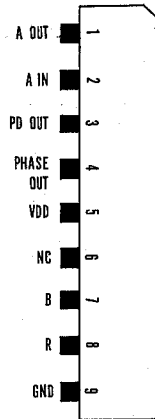


TLR-301



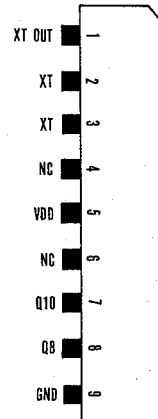
TC-5081 P

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{DD}	0 ~ 10	V
Input Voltage	V _{IN}	-C3 ~ V _{DD} +C3	V
Operating Temperature	T _{opr}	-30 ~ 85	°C
Storage Temperature	T _{stg}	-55 ~ 125	°C



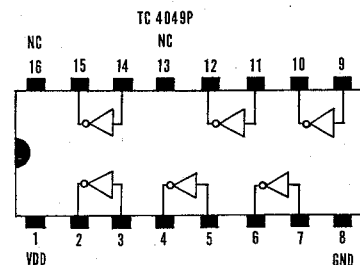
TC-5082 PL

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{DD}	10	V
Input Voltage	V _{IN}	-0.3 ~ V _{DD} +0.3	V
Operating Temperature	T _{opr}	-30~75	°C
Storage Temperature	T _{stg}	-55~125	°C

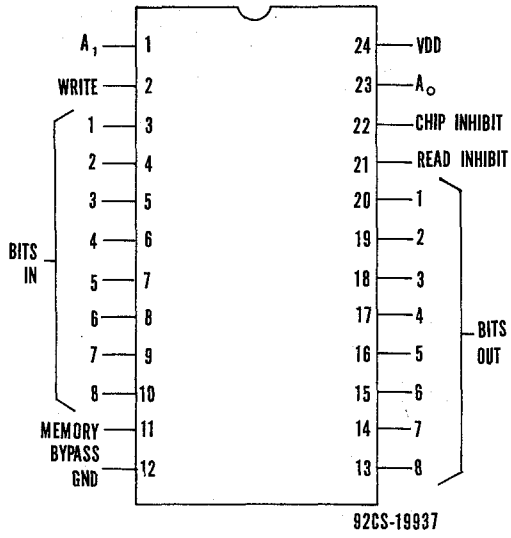


TC-4049 P

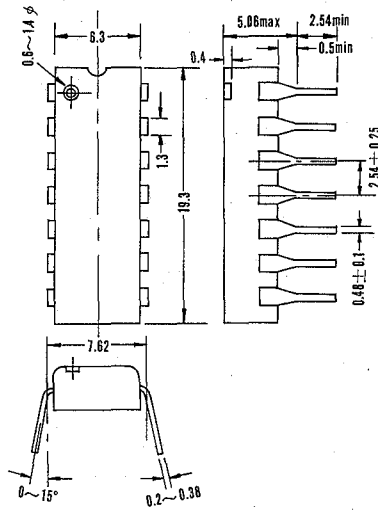
CHARACTERISTIC	SYMBOL	RATING	UNIT	
Supply Voltage	V _{DD}	3 ~ 16	V	
Input Voltage	V _{IN}	-0.3 ~ 16	V	
Fan out	C ² MOS	n ₁	50	-
	LTTL	n ₂	2	-
	HTL	n ₃	2	-
	TTL	n ₄	1	-
Operating Temp.	T _{opr}	-30 ~ 85	°C	



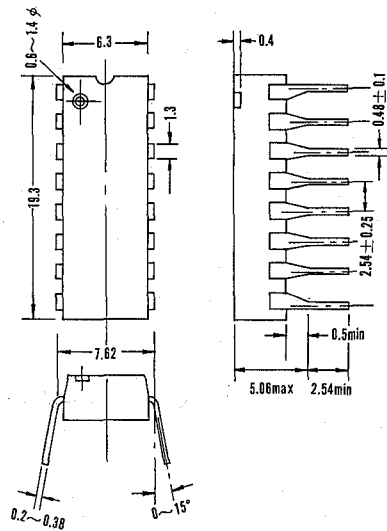
CD4036A



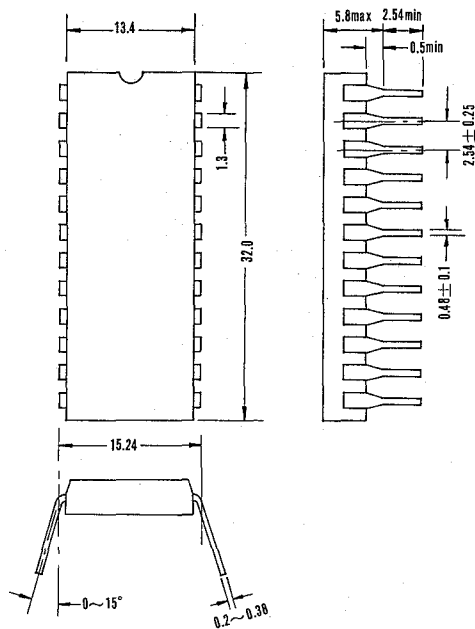
14PIN



16PIN



24PIN



IC CONVERSION TABLE

TEXAS	HITACHI	NS
SN7400N	HD7400P	DM7400
SN7401N	HD7401P	DM7401
SN7404N	HD7404P	DM7404
SN7405N	HD7405P	DM7405
SN7408N	HD7408P	DM7408
SN7410N	HD7410P	DM7410
SN7414N	HD7414P	
SN7430N	HD7430P	DM7430
SN7447AN	HD7447AP	
SN7493N	HD7493P	DM7493
SN74121N	HD74121P	DM74121
SN74145N	HD74145P	DM74145
SN74185N	—	DM74185
SN74190N	HD74190P	DM74190
SN74191N	HD74191P	DM74191
SN74192N	HD74192P	DM74192
SN74193N	HD74193P	DM74193
SN74S05N	HD74S05P	DM74S05
SN74S74N	HD74S74P	DM74S74
SN74S112N	HD74S112N	DM74S112

MAXIMUM RATING

The maximum rating indicates the marginal working limits of ICs. When ICs are used beyond these limits, it will lead to breakdown of internal elements. Therefore, to use the TTL ICs, it is essential that they are used within the limits specified below.

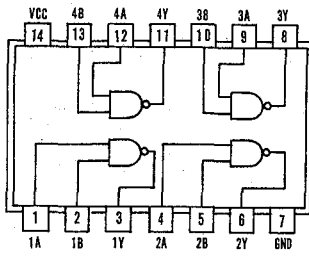
■ MAXIMUM RATINGS (Ta = -2 ~ +75°C)

Items	Symbols	HD74 series	HD74S series	units
power supply voltage	V _{CC} *	7.0	7.0	V
input voltage	V _{IN}	5.5	5.5	V
input/multi-emitter voltage	V _{BI} **	5.5	5.5	V
working temperature range	T _{opr}	-20 ~ + 75	-20 ~ + 75	°C
power consumption	P _T	800	800	mW
Shelf temperature	T _{stg}	-65 ~ +150	-65 ~ +150	°C

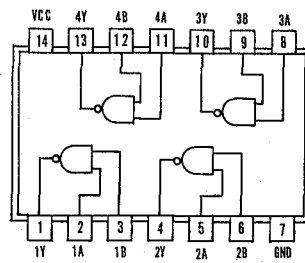
* unless otherwise specified, it is defined as voltage applied to GND terminal.

** voltage between input multi-emitters having external connection terminals, confined to same AND or NAND gates in the block diagram.

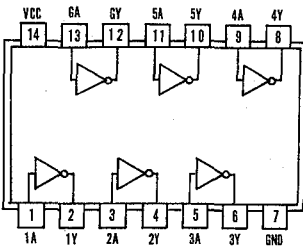
SN7400N



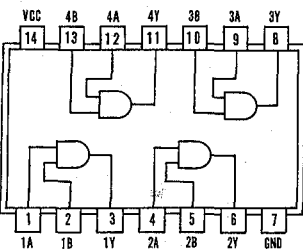
SN7401N



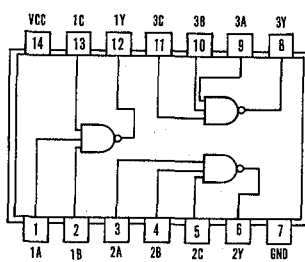
SN7404N, SN7405N



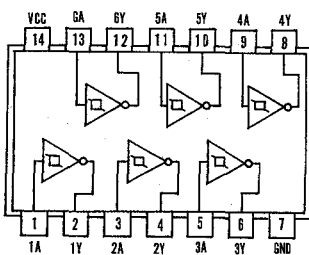
SN7408N



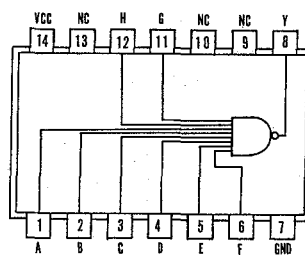
SN7410N



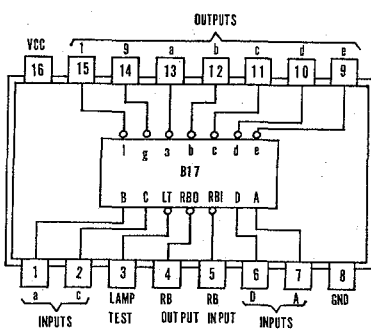
SN7414N



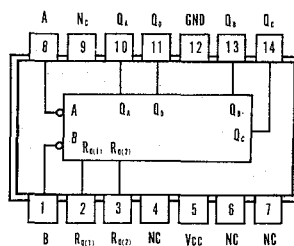
SN7430N



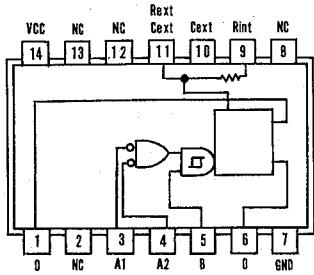
SN7447AN



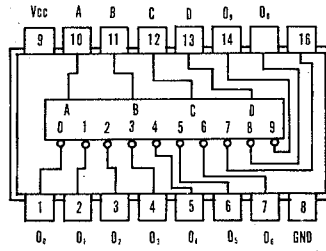
SN7493N



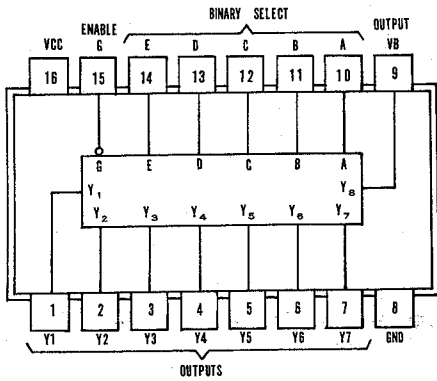
SN74121N



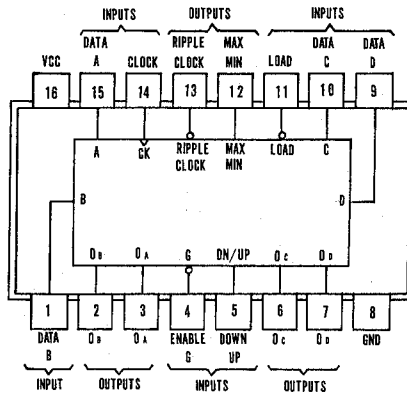
SN74145N



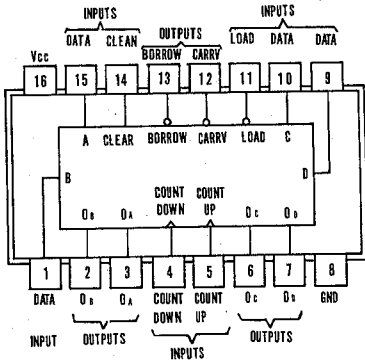
SN74185N



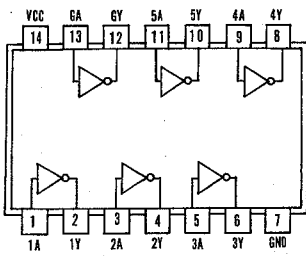
SN74190N, SN74191N



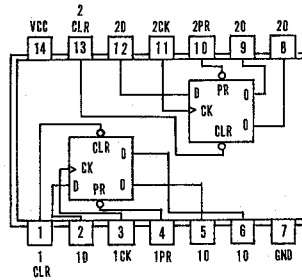
SN74192N, SN74193N



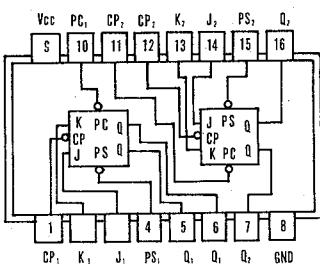
SN74S05N

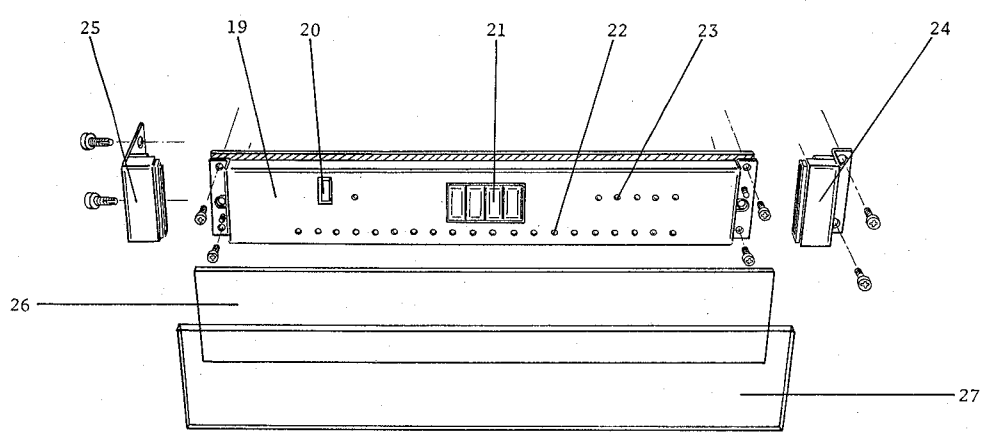
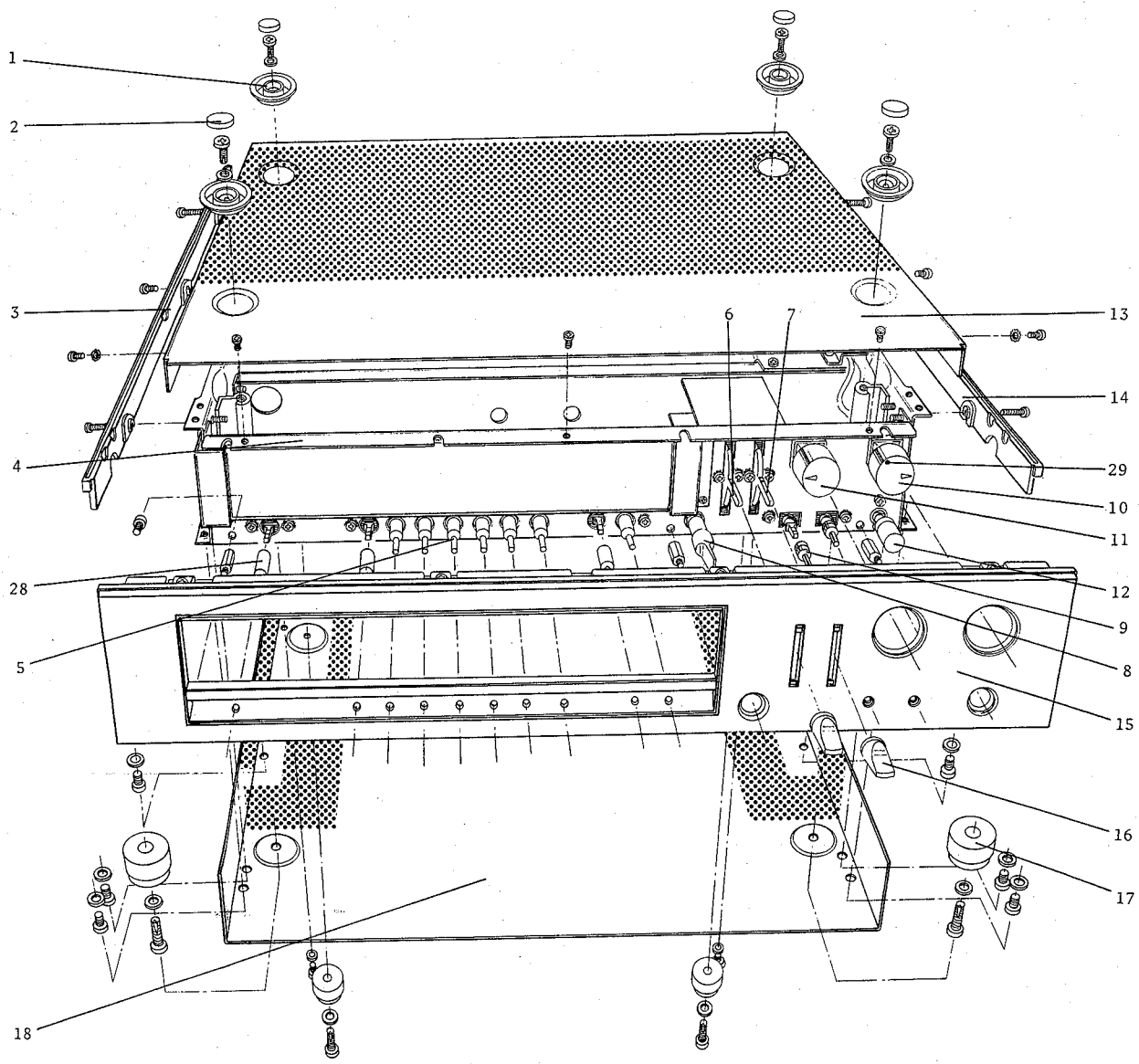


SN74S74N



SN74S112N





- | | | | | | |
|------------|------------------|------------|------------------|------------|------------------|
| 1. UW1072 | Spacer | 12. WJ1073 | Mould Knob | 21. TD0112 | LED SL-1171 |
| 2. UW1073 | Spacer | 13. UG1001 | Bonnet | 22. TD0088 | SLP-119B |
| 3. WC1029 | Side Mould Plate | 14. WC1028 | Side Mould Plate | 23. TD0088 | SLP-119B |
| 4. UB1031 | Sub-panel | 15. WA1079 | Front Panel (U) | 24. UR1155 | Fixing Metal (R) |
| 5. WJ1080 | Mould Knob | 15. WA1083 | Front Panel (F) | 25. UR1156 | Fixing Metal (L) |
| 6. SL0030 | Lever sw. | 16. WJ1071 | Mould Knob | 26. WE1058 | Protector |
| 7. SL0030 | Lever sw. | 17. WN1010 | Leg | 27. WM1029 | Dial Scale (U) |
| 8. WJ1076 | Mould Knob | 18. UE1088 | Bottom Plate | WM1032 | Dial Scale (F) |
| 9. WK1091 | Metal Knob | 19. UQ1015 | Panel (U) | 28. WJ1081 | Mould Knob |
| 10. WH1031 | Knob Set (UP) | UQ1017 | Panel (F) | 29. UU1027 | Return Spring |
| 11. WH1032 | Knob Set (DOWN) | 20. TD0113 | LED TLR-301 | | |

REPLACEMENT PARTS LIST

PB-1093 (FRONT END)

CAPACITORS (C... ceramic)

SYMBOL NO.	STOCK NO.	DESCRIPTION			
C101	CC0034	47pF	50V	C	±10% NPO.
102	CK0020	1000pF	50V	C	±10%
103	CK0011	0.01uF	25V	C	+80%-20%
104	CK0011	0.01uF	25V	C	+80%-20%
105	CK0011	0.01uF	25V	C	+80%-20%
106	CK0020	1000pF	50V	C	±10%
107	CG0001	1pF			
108	CC0014	22pF	50V	C	±10% NPO.
109	CC0020	10pF	50V	C	±1pF NPO.
110	CK0011	0.01uF	25V	C	+80%-20%
111	CK0011	0.01uF	25V	C	+80%-20%
112	CK0055	4700pF	50V	C	±20%
113	CC0012	10pF	50V	C	±1pF NPO.
114	CK0011	0.01uF	25V	C	+80%-20%
115	CC0013	15pF	50V	C	±10% NPO.
116	CC0012	10pF	50V	C	±1pF NPO.
117	CK0020	1000pF	50V	C	±10%
118	CK0011	0.01uF	25V	C	+80%-20%
119	CK0011	0.01uF	25V	C	+80%-20%
120	CC0037	5pF	50V	C	±0.5% NPO.
121	CK0011	0.01uF	25V	C	+80%-20%
122	CK0011	0.01uF	25V	C	+80%-20%
123	CC0148	33pF	50V	C	±10%
124	CC0014	22pF	50V	C	±10%
125	CK0020	1000pF	50V	C	±10%
126	CK0020	1000pF	50V	C	±10%
127	CK0011	0.01uF	25V	C	+80%-20%
128	CK0011	0.01uF	25V	C	+80%-20%
129	CK0011	0.01uF	25V	C	+80%-20%
130	CK0020	1000pF	50V	C	±10%

RESISTORS (±5%, 1/8 watts deposited carbon, unless noted otherwise)

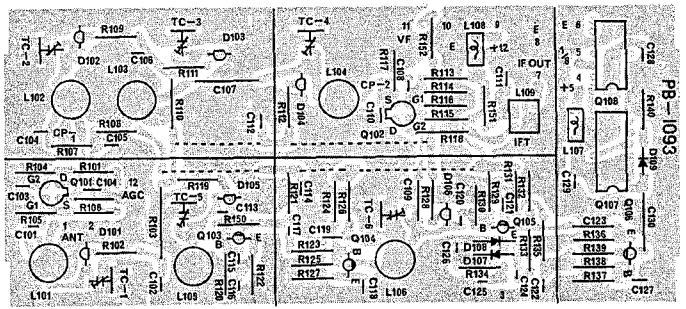
SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R101	RB0230	100k	R127	RB0184	1.2k
102	RB0230	100k	128	RB0230	100k
103	RB0222	47k	129	RB0206	10k
104	RB0254	1M	130	RB0200	5.6k
105	RB0230	100k	131	RB0150	47
106	RB0230	100k	132	RB0174	470
107	RB0158	100	133	RB0174	470
108	RB0158	100	134	RB0206	10k
109	RB0230	100k	135	RB0150	47
110	RB0222	47k	136	RB0168	270
111	RB0230	100k	137	RB0204	8.2k
112	RB0230	100k	138	RB0214	22k
113	RB0254	1M	139	RB0174	470
114	RB0230	100k	140	RB0170	330
115	RB0246	470k	151	RB0158	100
116	RB0230	100k	152	RB0222	47k
117	RB0174	470			
118	RB0150	47			
119	RB0230	100k			
120	RB0206	10k			
121	RB0174	470			
122	RB0194	3.3k			
123	RB0158	100			
124	RB0206	10k			
125	RB0206	10k			
126	RB0158	100			

SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
D101	TD0114	1SV55	Q101	TF0008	3SK45B
102	TD0114	1SV55	102	TF0008	3SK45B
103	TD0114	1SV55	103	TR0179	2SC385A
104	TD0114	1SV55	104	TR0179	2SC385A
105	TD0114	1SV55	105	TR0082	2SC784
106	TD0114	1SV55	106	TR0082	2SC784
107	TD0018	1K188FM-1	107	TC0049	HD74S112P
108	TD0018	1K188FM-1	108	TC0043	HD7493AP
109	TD0116	1S2075			

COILS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
L101	LA1110(E)	ANT COIL	L105	LA1114(E)	OSC-1
	LA1110(U)	ANT COIL		LA1114(U)	OSC-1
	LA1440(J)	ANT COIL		LA1444(J)	OSC-1
102	LA1111(E)	RF-1	106	LA1115(E)	OSC-2
	LA1111(U)	RF-1		LA1115(U)	OSC-2
	LA1441(J)	RF-1		LA1445(J)	OSC-2
103	LA1112(E)	RF-2	107	LA1084	18uH
	LA1112(U)	RF-2	108	LA1084	18uH
	LA1442(J)	RF-2			
104	LA1113(E)	RF-3			
	LA1113(U)	RF-3			
	LA1443(J)	RF-3			



PB-1094 (IF)

RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R201	RB0158	100	R231	RB0158	100
202	RB0182	1k	232	RB0222	47k
203	RB0170	330	233a	RB0200	5.6k
204	RB0222	47k	233b	RB0158	100
205	RB0158	100	234	RB0158	100
206	RB0182	1k	235	RB0230	100k
207	RB0190	2.2k	236	RB0226	68k
208	RB0222	47k	237	RB0182	1k
209	RB0240	270k	238		
210	RB0170	330	239	RB0208	12k
211	RB0158	100	240		
212	RB0198	4.7k	241	RB0248	560k
213	RB0158	100	242	RB0194	3.3k
214	RB0210	15k	243	RB0194	3.3k
215	RB0218	33k	244	RB0194	3.3k
216	RB0200	5.6k	245	RB0194	3.3k
217	RB0222	47k	246	RB0182	1k
218	RB0222	47k	247	RB0232	120k
219	RB0182	1k	248	RB0222	47k
220	RB0182	1k	249	RB0188	1.8k
221	RB0158	100	250	RB0170	330
222	RB0208	120k	251	RB0214	22k
223	RB0158	100	252	RB0158	100
224	RB0174	470	253	RB0200	5.6k
225	RB0190	2.2k	254	RB0158	100
226	RB0218	33k	255	RB0226	68k
227	RB0200	5.6k	256	RB0208	12k
228	RB0214	22k	257	RB0200	5.6k
229	RB0164	180	258	RB0182	1k
230	RD0141	22	259	RB0222	47k
			260	RB0222	47k

($\pm 5\%$, 1/2 watts deposited carbon)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R261	RB0242	330k	R320a	RB0216	27k
262	RB0230	100k	320b	RB0216	27k
263	RB0184	1.2k	321a	RB0198	4.7k
264	RB0158	100	321b	RB0198	4.7k
265	RB0158	100	322a	RB0190	2.2k
266	RB0222	47k	322b	RB0190	2.2k
267	RB0206	10k	323a	RB0164	180
268	RB0222	47k	323b	RB0164	180
269	RB0230	100k	324a	RB0250	680k
270	RB0206	10k	324b	RB0250	680k
271	RB0134	10	325a	RB0240	270k
	(±5%, 1/2 watts deposited carbon)		325b	RB0240	270k
272	RB0230	100k	326a	RB0234	150k
273	RB0234	150k	326b	RB0234	150k
274	RB0224	56k	327a	RB0230	100k
275	RB0216	27k	327b	RB0230	100k
276	RB0230	100k	328a	RB0150	47
277	RB0216	27k	328b	RB0150	47
278	RB0224	56k	329a	RB0194	3.3k
279	RB0234	150k	329b	RB0194	3.3k
280	RB0206	10k	330a	RB0222	47k
281	RB0222	47k	330b	RB0222	47k
282	RB0174	470	331a	RB0164	180
283	RB0134	10	331b	RB0164	180
284	RB0222	47k	332a	RB0206	10k
285	RB0206	10k	332b	RB0206	10k
286	RB0222	47k	333a	RB0206	10k
287	RB0206	10k	333b	RB0206	10k
288			334a	RB0234	150k
289	RB0214	22k	334b	RB0234	150k
290	RB0200	5.6k	335a	RB0158	100
291	RB0178	680	335b	RB0158	100
292	RB0174	470	336a	RB0164	180
293	RB0184	1.2k	336b	RB0164	180
294a	RB0238	220k	337a	RB0206	10k
294b	RB0238	220k	337b	RB0206	10k
295a	RB0214	22k	338a	RB0150	47
295b	RB0214	22k	338b	RB0150	47
296a	RB0154	68	339a	RB0222	47k
296b	RB0154	68	339b	RB0222	47k
297a	RB0184	1.2k	340	RB0158	100
297b	RB0184	1.2k	341	RB0246	470k
298a	RB0222	47k	342	RB0234	150k
298b	RB0222	47k	343	RB0202	6.8k
299	RB0210	15k	344	RB0182	1k
300	RB0184	1.2k	345	RB0134	10
301	RB0174	470	346	RB0188	1.8k
302	RB0182	1k	347	RB0194	3.3k
303	RB0190	2.2k	348	RB0230	100k
304	RB0182	1k	349	RB0246	470k
305	RB0192	2.7k	350	RB0230	100k
306	RB0182	1k	351	RB0248	560k
307	RB0194	3.3k	352	RB0182	1k
308	RB0182	1k	353	RB0230	100k
309	RB0196	3.9k	354	RB0232	120k
310	RB0182	1k	355		
311	RB0206	10k	356	RB0194	3.3k
312	RB0206	10k	357a	RB0182	1k
313	RB0206	10k	357b	RB0222	47k
314	RB0206	10k	358	—————	—————
315	RB0206	10k	359	—————	—————
316	RB0206	10k	360	—————	—————
317	RB0206	10k	370	RB0206	10k
318a	RB0242	330k	371	RB0206	10k
318b	RB0242	330k			
319a	RB0230	100k			
319b	RB0230	100k			

CAPACITORS (C...ceramic, E...electrolytic, M...mylar, T...tantalum, P...polystyrol)

SYMBOL NO.	STOCK NO.	DESCRIPTION				
C201	CC0011	470pF	50V	C	±20%	
202	CK0072	0.047uF	25V	C	+80%-20%	
203a	CK0011	0.01uF	25V	C	+80%-20%	
203b	CE0074	10uF	16V	E		
204	CC0011	470pF	50V	C	±20%	
205	CK0072	0.047uF	25V	C	+80%-20%	
206						
207	CK0011	0.01uF	25V	C	+80%-20%	
208	CK0011	0.01uF	25V	C	+80%-20%	
209	CK0011	0.01uF	25V	C	+80%-20%	
210	CK0011	0.01uF	25V	C	+80%-20%	
211	CK0011	0.01uF	25V	C	+80%-20%	
212	CK0072	0.047uF	25V	C	+80%-20%	
213	CK0072	0.047uF	25V	C	+80%-20%	
214a	CC0005	33pF	50V	C	±10% SL.	
214b	CK0072	0.047uF	25V	C	+80%-20%	
215	CK0011	0.01uF	25V	C	+80%-20%	
216	CE0098	1uF	50V	E		
217	CK0011	0.01uF	25V	C	+80%-20%	
218	CK0072	0.047uF	25V	C	+80%-20%	
219	CK0072	0.047uF	25V	C	+80%-20%	
220	CK0072	0.047uF	25V	C	+80%-20%	
221	CK0072	0.047uF	25V	C	+80%-20%	
222	CK0072	0.047uF	25V	C	+80%-20%	
223	CK0072	0.047uF	25V	C	+80%-20%	
224	CE0213	0.47uF	50V	E		
225	CK0072	0.047uF	25V	C	+80%-20%	
226a	CE0168	3.3uF	50V	E		
226b	CC0007	100pF	50V	C	±10% SL.	
227	CK0011	0.01uF	25V	C	+80%-20%	
228	CE0074	10uF	16V	E		
229	CE0075	22uF	16V	E		
230	CQ0009	0.047uF		M		
231	CE0079	220uF	16V	E		
232a	CQ0176	0.039uF		M		
232b	CQ0176	0.039uF		M		
232c	CS0021	0.47uF	25V	T		
233	CS0054	0.33uF	25V	T		
234	CS0054	0.33uF	25V	T		
235	CE0079	220uF	16V	E		
236	CK0072	0.047uF	25V	C	+80%-20%	
237a	CE0077	47uF	16V	E		
237b	CE0079	220uF	16V	E		
238a	CQ0041	1000pF		P		
238b	CE0079	220uF	16V	E		
239a	CE0084	4.7uF	25V	E		
239b	CE0077	47uF	16V	E		
240a	CE0098	1uF	50V	E		
240b	CE0084	4.7uF	25V	E		
241a	CE0098	1uF	50V	E		
241b	CC0011	470pF	50V	C	±20%	
242a	CQ0204	240pF		P		
242b	CQ0204	240pF		P		
242c	CK0072	0.047uF	25V	C	+80%-20%	
243a	CE0098	1uF	50V	E		
243b	CE0098	1uF	50V	E		
243c	CK0011	0.01uF	25V	C	+80%-20%	
244a	CE0079	220uF	16V	E		
244b	CK0072	0.047uF	25V	C	+80%-20%	
245a	CE0098	1uF	50V	E		
245b	CE0098	1uF	50V	E		
246a	CQ0029	0.33uF		M		
246b	CQ0029	0.33uF		M		
246c	CE0213	0.47uF	50V	E		
247a	CQ0005	0.1uF		M		
247b	CQ0005	0.1uF		M		
247c	CE0213	0.47uF	50V	E		
248a	CQ0157	0.018uF		M		
248b	CE0074	10uF	16V	E		

SYMBOL NO.	STOCK NO.	DESCRIPTION				
C248c	CE0074	10uF	16V	E		
249a	CE0074	10uF	16V	E		
249b	CE0074	10uF	16V	E		
249c	CE0099	2.2uF	50V	E		
250a	CQ0009	0.047uF		M		
250b	CQ0009	0.047uF		M		
250c	CK0020	1000pF	50V	C	±20%	
251a	CE0074	10uF	16V	E		
251b	CE0074	10uF	16V	E		
251c	CE0098	1uF	50V	E		
252a	CE0079	220uF	16V	E		
252b	CE0079	220uF	16V	E		
252c	CE0098	1uF	50V	E		
253a	CQ0316	4700pF		P		
253b	CQ0316	4700pF		P		
254a	CK0072	0.047uF	25V	C	+80%-20%	
254b	CE0074	10uF	16V	E		
254c	CE0074	10uF	16V	E		
255a	CQ0069	5600pF		P		
255b	CQ0069	5600pF		P		
256a	CQ0012	0.027uF		M		
256b	CQ0012	0.027uF		M		
256c	CK0072	0.047uF	25V	C	+80%-20%	
257a	CQ0266	1500pF		P		
257b	CQ0266	1500pF		P		
257c	CQ0016	0.01uF		M		
258	CE0079	220uF	16V	E		
259a	CE0213	0.47uF	50V	E		
259b	CE0084	4.7uF	25V	E		
259c	CE0084	4.7uF	25V	E		
260a	CE0079	220uF	16V	E		
260b	CE0079	220uF	16V	E		
261a	CQ0006	0.082uF		M		
261b	CQ0006	0.082uF		M		
261c	CQ0021	3300pF		M		
262	CQ0021	3300pF		M		
263a	CQ0022	0.0027uF		M		
263b	CQ0022	0.0027uF		M		
263c	CE0098	1uF	50V	E		
264a	CQ0175 (E,U)	0.018uF		M		
264b	CQ0175 (E,U)	0.018uF		M		
264c	CQ0016	0.01uF		M		
265a	CQ0022	0.0027uF		M		
265b	CQ0022	0.0027uF		M		
265c	CE0098	1uF	50V	E		
266	CE0213	0.47uF	50V	E		
267	CE0098	1uF	50V	E		
268	CE0084	4.7uF	25V	E		
269						
270	CK0072	0.047uF	25V	C	+80%-20%	
271	CE0213	0.47uF	50V	E		
272	CQ0016	0.01uF		M		
273	CE0213	0.47uF	50V	E		
274	CK0072	0.047uF	25V	C	+80%-20%	

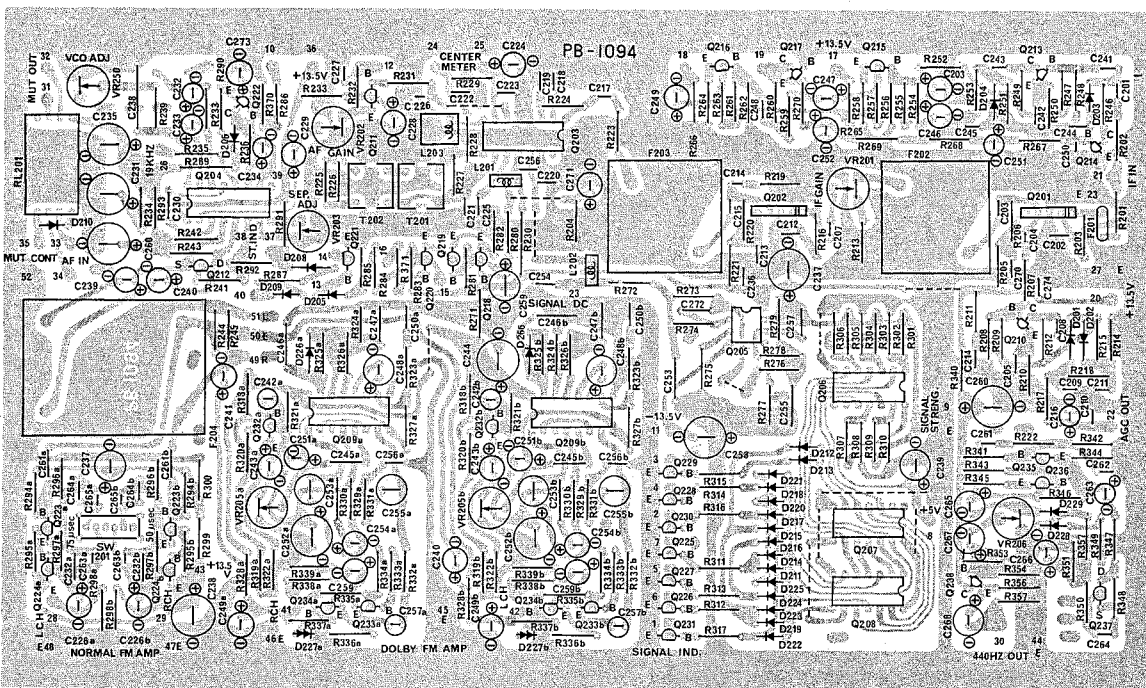
SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
D201	TD0018	1K188FM-1	D214	TD0116	1S2075
202	TD0018	1K188FM-1	215	TD0116	1S2075
203	TD0116	1S2075	216	TD0116	1S2075
204	TD0018	1K188FM-1	217	TD0116	1S2075
205	TD0116	1S2075	218	TD0116	1S2075
206	TD0116	1S2075	219	TD0116	1S2075
207			220	TD0116	1S2075
208	TD0060	WZ061	221	TD0116	1S2075
209	TD0116	1S2075	222	TD0116	1S2075
210	TD0116	1S2075	223	TD0116	1S2075
211	TD0116	1S2075	224	TD0116	1S2075
212	TD0116	1S2075	225	TD0116	1S2075
213	TD0116	1S2075	226	TD0018	1K188FM-1

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
D227a	TV0004	KB265	D229	TD0116	1S2075
227b	TV0004	KB265	230		
228	TD0116	1S2075			
Q201	TC0011	BA401	Q222	TR0025	2SC1345
202	TC0011	BA401	223a	TR0025	2SC1345
203	TC0014	HA1137	223b	TR0025	2SC1345
204	TC0012	LA3350SS	234a	TR0125	2SA836
205	TC0026	NJM4558	224b	TR0125	2SA836
206	TC0057	SN7414	225	TR0025	2SC1345
207	TC0057	SN7404	226	TR0025	2SC1345
208	TC0055	SN7408	227	TR0025	2SC1345
209a	TC0022	NE545B	228	TR0025	2SC1345
209b	TC0022	NE545B	229	TR0025	2SC1345
210	TR0092	2SC1674	230	TR0025	2SC1345
211	TR0025	2SC1345	231	TR0025	2SC1345
212	TF0007	2SK30-0	232a	TR0025	2SC1345
213	TR0092	2SC1674	232b	TR0025	2SC1345
214	TR0025	2SC1345	233a	TR0025	2SC1345
215	TR0025	2SC1345	233b	TR0025	2SC1345
216	TR0025	2SC1345	234a	TR0025	2SC1345
217	TR0025	2SC1345	234b	TR0025	2SC1345
218	TR0025	2SC1345	235	TR0025	2SC1345
219	TR0025	2SC1345	236	TR0125	2SA836
220	TR0025	2SC1345	237	TF0007	2SK30-0
221	TR0025	2SC1345	238	TR0025	2SC1345

TRIMMER POTENTIOMETERS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
VR201	RB0174	470	VR205b	RB0222	47k
202	RB0198	4.7k	206	RB0206	10k
203	RB0182	1k	207		
204			250	RB0198	4.7k
205a	RB0222	47k			



FILTERS, COILS & TRANSFORMERS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
F201	LA1104	CFSF-A	F204	LA1059	LUX1059
202	LA1060	LUX1060	205		
203	LA1060	LUX1060			
L201	LA1084	18uH	L204		
202	LA1084	18uH	205		
203	LA1085	LUX1058			
T201	LA1092	LUX1092	T204		
202	LA1093	LUX1093	205		
203					

RELAYS

SYMBOL NO.	STOCK NO.	DESCRIPTION
RL201	AY0027	FRL-664D

SWITCHES

SYMBOL NO.	STOCK NO.	DESCRIPTION
SW201	SS0012	SW343-1

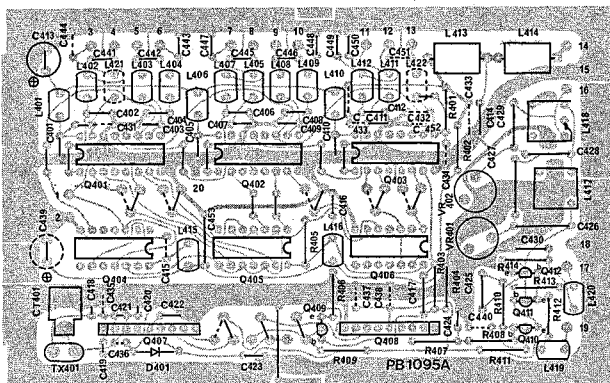
PB-1095A (SYNTHSIZER)

RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R401	RB0182	1k	R408	RB0198	4.7k
402	RB0118	2.2	409	RB0202	6.8k
403	RB0232	120k	410	RB0218	33k
404	RB0238	220k	411	RB0198	4.7k
405	RB0168	270	412	RB0166	220
406	RB0134	10	413	RB0218	33k
407	RB0198	4.7k	414	RB0198	4.7k

SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
Q401	TC0065	SN74192N	Q407	TC0072	TC5082P-L
402	TC0065	SN74192N	408	TC0071	TC5081P
403	TC0066	SN74193N	409	TR0146	2SC1740R
404	TC0048	HD74S74P	410	TR0178	2SC1682BL
405	TC0047	HD74S05P	411	TR0178	2SC1682BL
406	TC0047	HD74S05P	412	TR0003	2SC1000GR



CAPACITORS (C...ceramic, E... electrolytic, M...mylar, P...polystyrol)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C401	CK0072	0.047uF 25V C +80%-20%
405	CK0072	0.047uF 25V C +80%-20%
410	CK0072	0.047uF 25V C +80%-20%
413	CE0060	330uF 6.3V E
414	CK0009	0.1uF 25V C +80%-20%
416	CK0072	0.047uF 25V C +80%-20%
417	CC0009	220pF 50V C ±10% SL
418	CC0005	33pF 50V C ±10% SL
419	CC0080	15pF 50V C ±10% SL
420	CC0080	15pF 50V C ±10% SL
421	CC0033	10pF 50V C ±1pF SL
422	CK0059	0.047uF 50V C +80%-20%
423	CK0059	0.047uF 50V C +80%-20%
424	CK0024	2200pF 50V C ±20%
425	CQ0121	0.12uF 50V M ±10%
426	CQ0095	3300pF 50V P ±5%
427	CQ0095	3300pF 50V P ±5%
428	CQ0079	470pF 50V P ±5%
429	CQ0079	470pF 50V P ±5%
430	CK0059	0.047uF 50V C +80%-20%
441	CK0072	0.047uF 25V C +80%-20%
442	CK0072	0.047uF 25V C +80%-20%
443	CK0072	0.047uF 25V C +80%-20%
444	CK0072	0.047uF(E,J) 25V C +80%-20%
445	CK0072	0.047uF 25V C +80%-20%
446	CK0072	0.047uF 25V C +80%-20%
447	CK0072	0.047uF 25V C +80%-20%
448	CK0072	0.047uF 25V C +80%-20%
449	CK0072	0.047uF 25V C +80%-20%
450	CK0072	0.047uF 25V C +80%-20%
451	CK0072	0.047uF(J) 25V C +80%-20%
452	CK0018	330pF(E,J) 50V C ±20% SL
453	CK0072	0.047uF 25V C +80%-20%

COILS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
L401	LA1109	47uH	L412	LA1109	47uH
402	LA1109	47uH	413	LA1004	2uH
403	LA1109	47uH	414	LA1004	2uH
404	LA1109	47uH	415	LA1109	47uH
405	LA1109	47uH	416	LA1109	47uH
406	LA1109	47uH	417	LA1010	100mH
407	LA1109	47uH	418	LA1010	100mH
408	LA1109	47uH	419	LA1109	47uH
409	LA1109	47uH	420	LA1109	47uH
410	LA1109	47uH	421	LA1109	47uH(E,J)
411	LA1109	47uH	422	LA1109	47uH(J)

SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION
D401	TD0024	WZ081 VZ=8.1V

TRIMMER POTENTIOMETERS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
VR401	RB0238	220k	VR402	RB0238	220k
CT401	CT0009	20pF			
TX401	TX0001	12.8MHz			

PB-1096A (MEMORY CONTROL)

RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

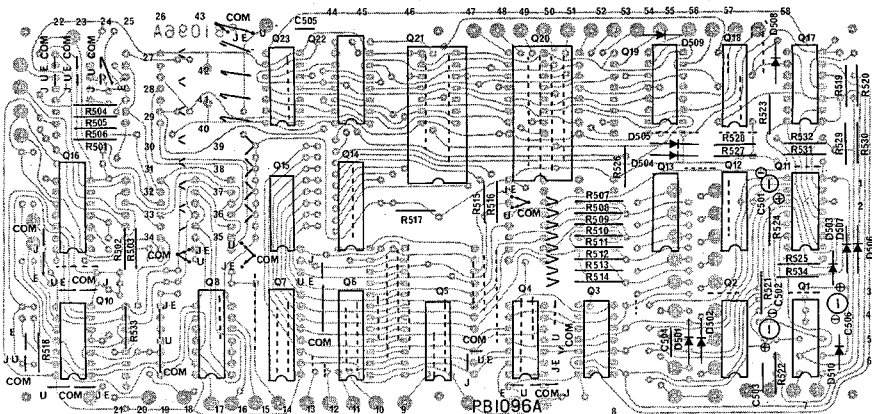
SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R501	RB0200	5.6k	R519	RB0200	5.6k
502	RB0200	5.6k	520	RB0200	5.6k
503	RB0200	5.6k	521	RB0174	470
504	RB0200	5.6k	522	RB0206	10k (U)
505	RB0200	5.6k	523	RB0206	10k
506	RB0200	5.6k	524	RB0218	33k
507	RB0232	120k	525	RB0200	5.6k
508	RB0232	120k	526	RB0200	5.6k
509	RB0232	120k	527	RB0192	2.7k
510	RB0232	120k	528	RB0192	2.7k
511	RB0232	120k	529	RB0200	5.6k
512	RB0232	120k	530	RB0200	5.6k
513	RB0232	120k	531	RB0200	5.6k
514	RB0232	120k	532	RB0200	5.6k
515	RB0232	120k	533	RB0200	5.6k (J,E)
516	RB0232	120k	534	RB0222	47k
517	RB0232	120k	535	RB0198	4.7k
518	RB0192	2.7k			

CAPACITORS (C...ceramic, E...electrolytic)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C501	CE0074	10uF 16V E
502	CE0213	0.47uF(U) 50V E
503	CK0009	0.1uF 25V C +80%-20%
504	CK0009	0.1uF 25V C +80%-20%
505	CK0072	0.047uF 25V C +80%-20%
506	CE0066	22uF 10V E
507	CK0009	0.1uF 25V C +80%-20%

SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
Q 1	TC0044	HD74121P (U)	Q12	TC0033	HD7400P
2	TC0033	HD7400P	13	TC0034	HD7401P
3	TC0041	HD7430P	14	TC0070	TC4049P
4	TC0036	HD7404P	15	TC0036	HD7404P
5	TC0041	HD7430P	16	TC0062	SN74185AN(J)
6	TC0045	HD74190P (J,E)		TC0062	SN74185AN(E)
	TC0045	HD74190P (U)	17	TC0037	HD7405P
7	TC0046	HD74191P (J)	18	TC0034	HD7401P
	TC0046	HD74191P (E)	19	TC0033	HD7400P
8	TC0046	HD74191P (U)	20	TC0073	CD4036AE
9			21	TC0073	CD4036AE
10	TC0037	HD7405P	22	TC0070	TC4049P
11	TC0044	HD74121P	23	TC0036	HD7404P
D501	TD0018	1K188FM-1	D506	TD0018	1K188FM-1
502	TD0018	1K188FM-1	507	TD0018	1K188FM-1
503	TD0018	1K188FM-1	508	TD0018	1K188FM-1
504	TD0018	1K188FM-1	509	TD0018	1K188FM-1
505	TD0018	1K188FM-1	510	TD0018	1K188FM-1



REPLACEMENT PARTS LIST

PB-1097A (SWITCH CONTROL)

RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R601	RB0200	5.6k	R627	RB0200	5.6k
602	RB0174	470	628	RB0196	3.9k
603	RB0174	470	629	RB0196	3.9k
604	RB0200	5.6k	630	RB0196	3.9k
605	RB0200	5.6k	631	RB0206	10k
606	RB0174	470	632	RB0160	120
607	RB0200	5.6k	633	RB0182	1k
608	RB0196	3.9k	634	RB0182	1k
609	RB0174	470	635	RB0190	2.2k
610	RB0234	150k	636	RB0234	150k
611	RB0200	5.6k	637	RB0198	4.7k
612	RB0174	470	638	RB0234	150k
613	RB0174	470	639	RB0190	2.2k
614	RB0200	5.6k	640	RB0182	1k
615	RB0174	470	641	RB0200	5.6k
616	RB0174	470	642	RB0234	150k
617	RB0160	120	643	RB0200	5.6k
618	RB0174	470	644	RB0200	5.6k
619	RB0216	27k	645	RB0200	5.6k
620	RB0234	150k	646	RB0174	470
621			647	RB0174	470
622	RB0196	3.9k	648	RB0200	5.6k
623	RB0200	5.6k	649	RB0174	470
624	RB0192	2.7k	650	RB0174	470
625	RB0200	5.6k	651	RB0174	470
626	RB0200	5.6k			

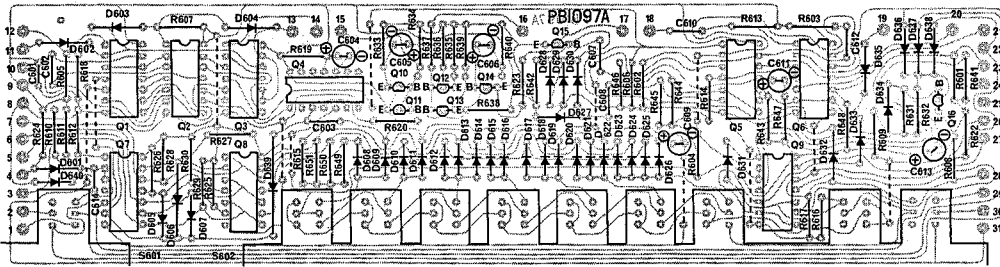
CAPACITORS (C...ceramic, E...electrolytic, T...tantalum)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C601	CK0009	0.1uF 25V C +80%-20%
602	CK0009	0.1uF 25V C +80%-20%
603	CK0009	0.1uF 25V C +80%-20%
604	CE0074	10uF 16V E
605	CE0099	2.2uF 50V E
606	CE0099	2.2uF 50V E
607	CK0009	0.1uF 25V C +80%-20%
608	CK0009	0.1uF 25V C +80%-20%
609	CE0213	0.47uF 50V E
610	CS0003	10uF 10V T
611	CE0074	10uF 16V E
612	CK0009	0.1uF 25V C +80%-20%
613	CE0061	47uF 6.3V E
614	CK0011	0.01uF C +80%-20%

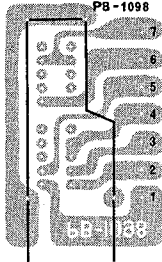
SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
D601	TD0018	1K188FM-1	D611	TD0116	1S2075
602	TD0018	1K188FM-1	612	TD0116	1S2075
603	TD0018	1K188FM-1	613	TD0116	1S2075
604	TD0018	1K188FM-1	614	TD0116	1S2075
605	TD0018	1K188FM-1	615	TD0116	1S2075
606	TD0018	1K188FM-1	616	TD0116	1S2075
607	TD0018	1K188FM-1	617	TD0116	1S2075
608	TD0116	1S2075	618	TD0116	1S2075
609	TD0116	1S2075	619	TD0116	1S2075
610	TD0116	1S2075	620	TD0116	1S2075

D621	TD0116	1S2075	D631	TD0018	1K188FM-1
622	TD0116	1S2075	632	TD0116	1S2075
623	TD0116	1S2075	633	TD0116	1S2075
624	TD0116	1S2075	634	TD0018	1K188FM-1
625	TD0116	1S2075	635	TD0018	1K188FM-1
626	TD0116	1S2075	636	TD0018	1K188FM-1
627	TD0018	1K188FM-1	637	TD0018	1K188FM-1
628	TD0018	1K188FM-1	638	TD0018	1K188FM-1
629	TD0018	1K188FM-1	639	TD0018	1K188FM-1
630	TD0018	1K188FM-1	640	TD0116	1S2075
Q 1	TC0036	HD7404P	Q 9	TC0034	HD7401P
2	TC0033	HD7400P	10	TR0029	2SC945
3	TC0033	HD7400P	11	TR0043	2SA733
4	TC0044	HD74121P	12	TR0029	2SC945
5	TC0037	HD7405P	13	TR0029	2SC945
6	TC0034	HD7401P	14	TR0043	2SA733
7	TC0037	HD7405P	15	TR0029	2SC945
8	TC0037	HD7405P	16	TR0043	2SA733



PB-1098



PB-1099A (U only)

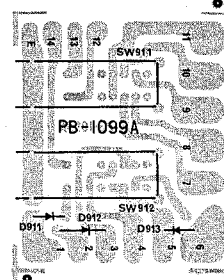
SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION
D911	TD0116	1S2075
912	TD0018	1K188FM-1
913	TD0116	1S2075

PB-1114B (J. E. only)

SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION
D911	TD0116	1S2075
912	TD0018	1K188FM-1
913	TD0116	1S2075



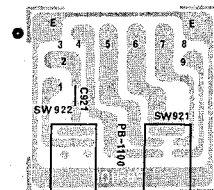
CAPACITORS (M...mylar)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C921	CQ0018	5600pF M
922	CQ0013	0.022uF M

PB-1100 (U only)

CAPACITORS (M...mylar)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C921	CQ0016	0.01uF M



PB-1101 (POWER SUPPLY)

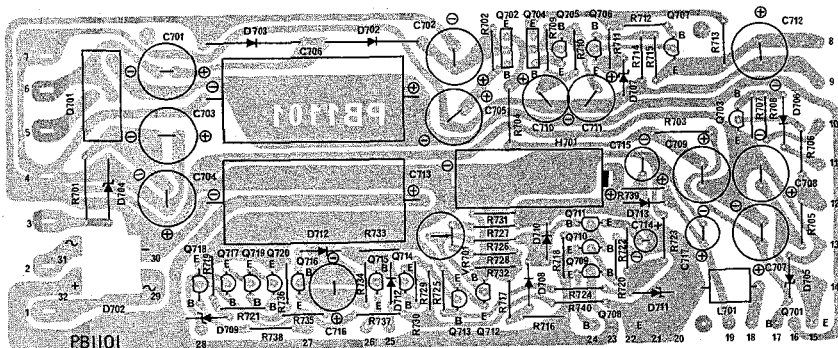
RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R701	RB0170	330	R721	RB0182	1k
702	RB0182	1k	722	RB0150	47
703	RD0130	1.2k(1/2watts)	723	RB0168	270
704	RD0130	1.2k(1/2watts)	724	RB0206	10k
705	RB0224	56k	725	RB0206	10k
706	RB0198	4.7k	726	RB0118	2.2
707	RB0238	220k	727	RB0198	4.7k
708	RB0222	47k	728	RB0196	3.9k
709	RB0200	5.6k	729	RB0194	3.3k
710	RB0206	10k	730	RB0206	10k
711	RB0190	2.2k	731	RB0206	10k
712	RB0182	1k	732	RB0182	1k
713	RB0150	47	733	RB0170	330
714	RB0214	22k	734	RB0214	22k
715	RB0214	22k	735	RB0206	10k
716	RB0182	1k	736	RB0206	10k
717	RB0164	180	737	RB0206	10k
718	RB0194	3.3k	738	RB0222	47k
719	RB0158	100	739	RB0172	390
720	RB0182	1k	740	RB0190	2.2k

VR701	RB0198	4.7k (B)
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CAPACITORS (E...electrolytic)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C701	CE0069	100uF 50V E
702	CE0069	100uF 50V E
703	CE0087	220uF 25V E
704	CE0087	220uF 25V E
705	CE0069	100uF 50V E
706	CE1188	2200uF 25V E
707	CE0087	220uF 25V E
708	CE0087	220uF 25V E
709	CE0087	220uF 25V E
710	CE0102	47uF 50V E
711	CE0102	47uF 50V E
712	CE0069	100uF 50V E
713	CE1171	3300uF 16V E
714	CE0098	1uF 50V E
715	CE0069	100uF 10V E
716	CE0060	330uF 6.3V E
717	CE0069	100uF 10V E
718	CE0099	2.2uF 50V E



SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
Q701		2SD235	Q711	TR0029	2SC945
702	TR0132	2SD414	712	TR0029	2SC945
703	TR0029	2SC945	713	TR0029	2SC945
704	TR0132	2SD414	714	TR0043	2SA733
705	TR0029	2SC945	715	TR0043	2SA733
706	TR0029	2SC945	716	TR0043	2SA733
707	TR0029	2SC945	717	TR0029	2SC945
708	TR0047	2SD235	718	TR0029	2SC945
709	TR0029	2SC945	719	TR0029	2SC945
710	TR0043	2SA733	720	TR0029	2SC945

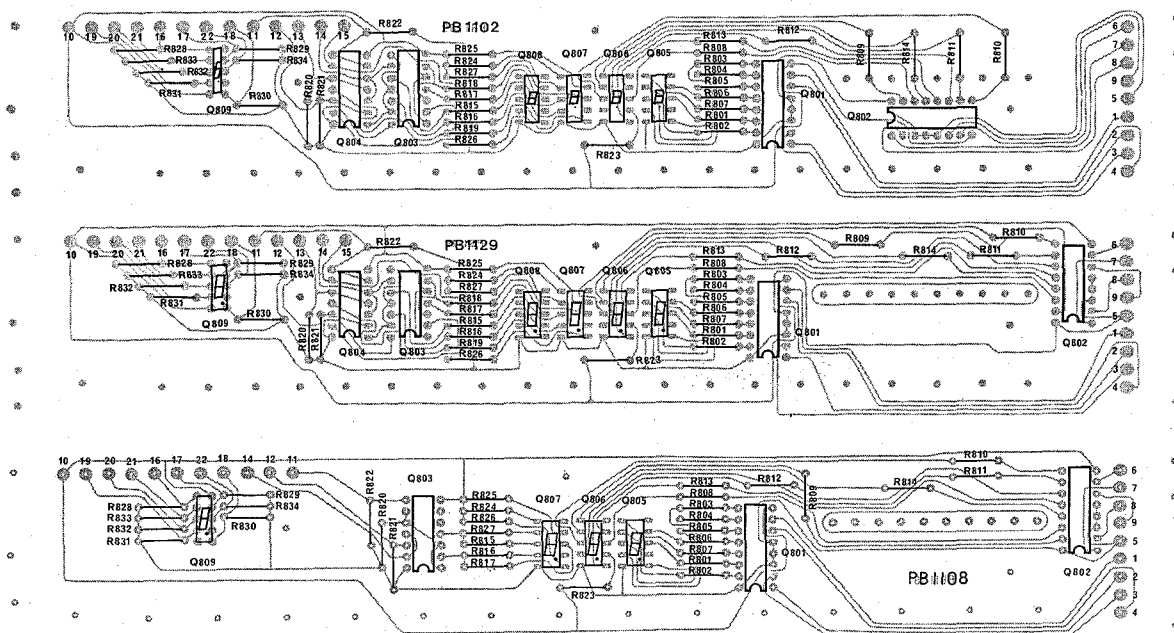
D701	TD0041	SIRBA10	D708	TD0116	1S2075
702a		S4VB10	709	TD0060	WZ-061
702b	TD0001	1N4001	710	TD0116	1S2075
703	TD0001	1N4001	711	TD0117	O2BZ-3.3
704	TD0079	WZ-140	712a	TD0018	1K188FM-1
705	TD0079	WZ-140	712b	TD0018	1K188FM-1
706	TD0018	1K188FM-1	713	TD0116	1S2075
707	TD0079	WZ-140			

H701	PA0004	2N-100AA(2.4V)	L701	LA1004	2mH
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PB-1102(U), PB-1108(J), PB-1129(E) (INDICATOR A)

RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R801	RB0170	330	R818	RB0170	330(U,E)
802	RB0170	330	819	RB0170	330(U,E)
803	RB0170	330	820	RB0194	3.3k
804	RB0170	330	821	RB0194	3.3k
805	RB0170	330	822	RB0194	3.3k
806	RB0170	330	823	RB0170	330
807	RB0170	330	824	RB0170	330
808	RB0170	330	825	RB0170	330
809	RB0170	330	826	RB0170	330
810	RB0170	330	827	RB0170	330
811	RB0170	330	828	RB0174	470
812	RB0170	330	829	RB0174	470
813	RB0170	330	830	RB0174	470
814	RB0170	330	831	RB0174	470
815	RB0170	330	832	RB0174	470
816	RB0170	330	833	RB0174	470
817	RB0170	330	834	RB0174	470



SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
Q801	TC0042	HD7447AP	Q805	TD0112	SL1171
802	TC0042	HD7447AP	806	TD0112	SL1171
803	TC0036	HD7404P (U,E)	807	TD0112	SL1171
	TC0037	HD7405P (J)	808	TD0112	SL1171(U,E)
804	TC0037	HD7405AP (U,E)	809	TD0113	TLR301

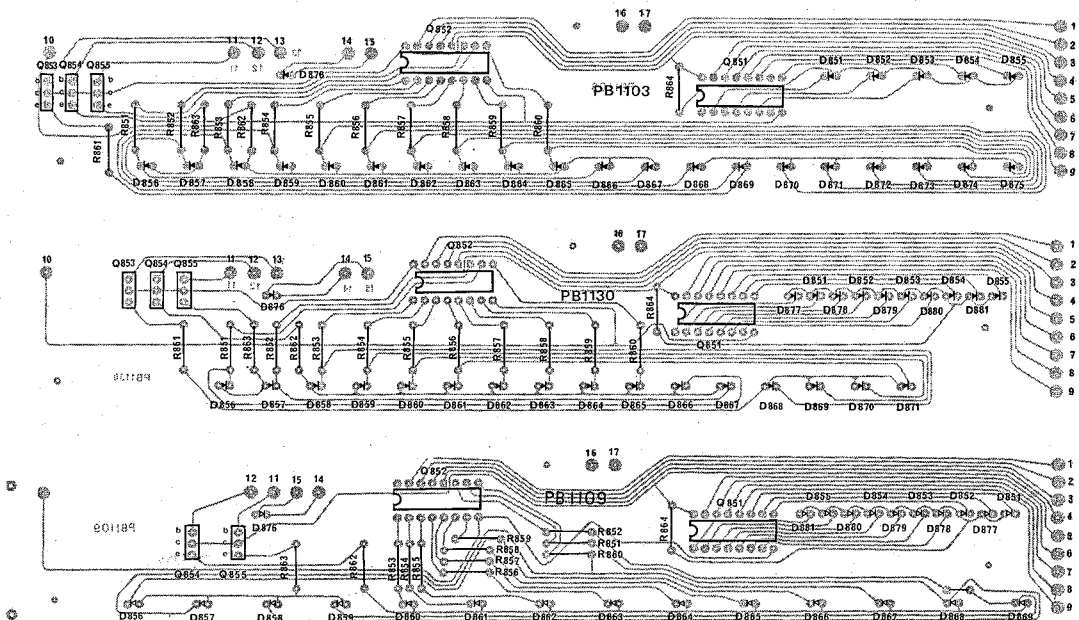
PB1103(U), PB-1109(J), PB-1130(E) (INDICATOR B)

RESISTORS (±5%, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R851	RB0118	2.2	R858	RB0118	2.2
852	RB0118	2.2	859	RB0118	2.2
853	RB0118	2.2	860	RB0118	2.2
854	RB0118	2.2	861	RB0170	330 (U,E)
855	RB0118	2.2	862	RB0170	330
856	RB0118	2.2	863	RB0170	330
857	RB0118	2.2	864	RB0170	330

SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
Q851	TC0076	SN74145N	D864	TD0088	SLP-119B
852	TC0076	SN74145N	865	TD0088	SLP-119B
853	TR0180	2SC2021 (U,E)	866	TD0088	SLP-119B
854	TR0180	2SC2021	867	TD0088	SLP-119B
855	TR0180	2SC2021	868	TD0088	SLP-119B
			869	TD0088	SLP-119B
D851	TD0088	SLP-119B	870	TD0088	SLP-119B (U,E)
852	TD0088	SLP-119B	871	TD0088	SLP-119B (U,E)
853	TD0088	SLP-119B	872	TD0088	SLP-119B (U)
854	TD0088	SLP-119B	873	TD0088	SLP-119B (U)
855	TD0088	SLP-119B	874	TD0088	SLP-119B (U)
856	TD0088	SLP-119B	875	TD0088	SLP-119B (U)
857	TD0088	SLP-119B	876	TD0088	SLP-119B
858	TD0088	SLP-119B	877	TD0088	SLP-119B (E,J)
859	TD0088	SLP-119B	878	TD0088	SLP-119B (E,J)
860	TD0088	SLP-119B	879	TD0088	SLP-119B (E,J)
861	TD0088	SLP-119B	880	TD0088	SLP-119B (E,J)
862	TD0088	SLP-119B	881	TD0088	SLP-119B (E,J)
863	TD0088	SLP-119B			



PB-1104A (ANTENNA TERMINAL)

RESISTORS ($\pm 5\%$, 1/8 watts deposited carbon, unless noted otherwise)

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
R931	RB0142	22	R938	RB0222	47k
932	RB0152	56	939	RB0222	47k
933	RB0152	56	940	RB0222	47k
934	RB0206	10k	941	RB0206	15k
935	RB0166	220	942	RB0228	82k
936	RB0206	10k	943	RB0222	47k
937	RB0206	10k	944	RB0222	47k

CAPACITORS (T...tantalum)

SYMBOL NO.	STOCK NO.	DESCRIPTION
C931	CS0019	0.22uF 25V T
932	CS0019	0.22uF 25V T

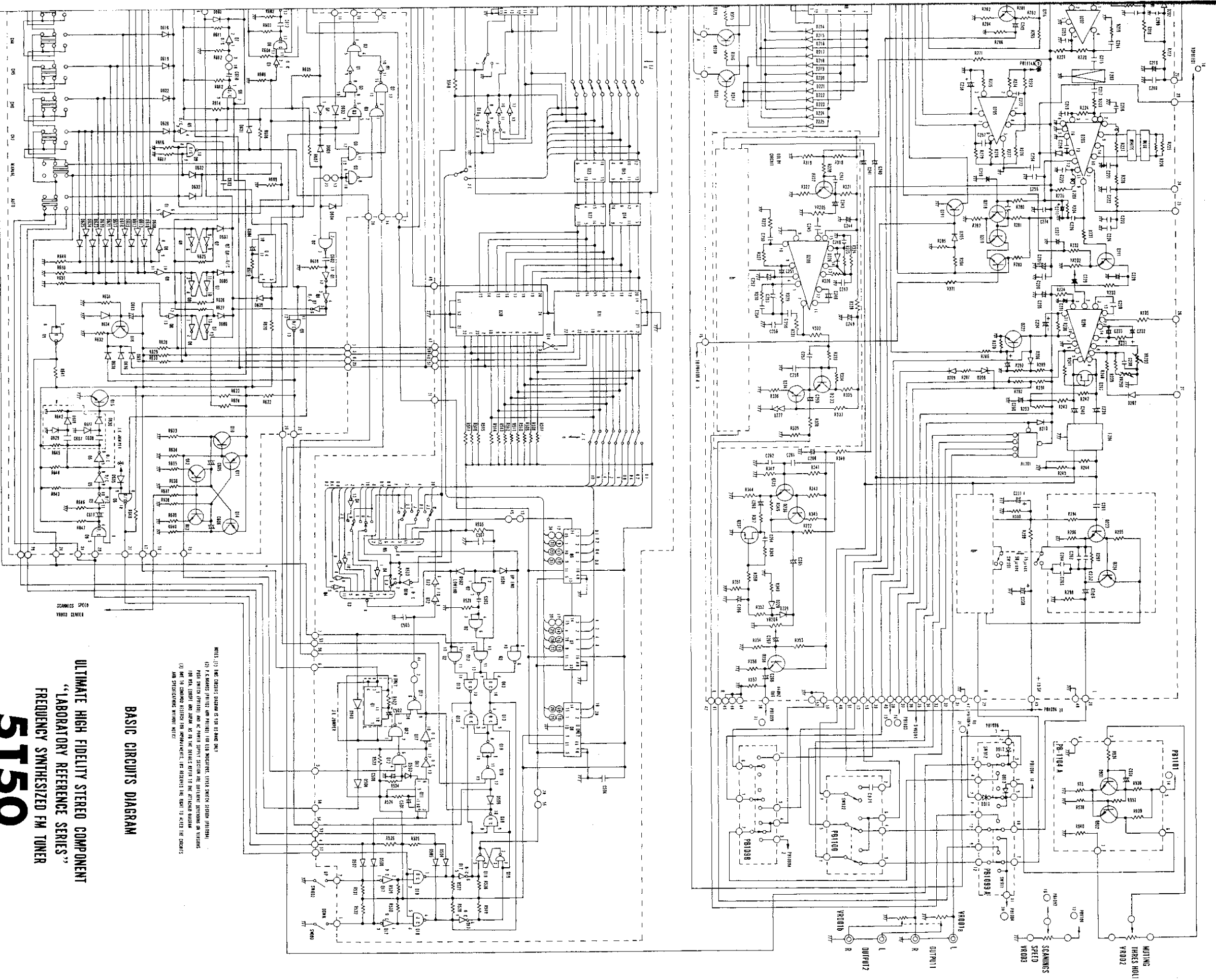
SEMICONDUCTORS

SYMBOL NO.	STOCK NO.	DESCRIPTION	SYMBOL NO.	STOCK NO.	DESCRIPTION
Q931	TR0025	2SC1345	Q933	TR0025	2SC1345
932	TR0025	2SC1345			



OTHER ELECTRONIC COMPONENTS

STOCK NO.	DESCRIPTION
CU0015	AC line capacitor (Europe)
CU0051	AC line capacitor (Japan & U.S.A.)
RV0147	Output control 5kBX2
RV0153	SCAN control & Muting control 10kB
AL0029	Illumination lamp 6V 200mA
BF0200	Primary fuse 0.16A (Scandinavia country)
BF0203	Primary fuse 0.25A (Europe except Scandinavia country)
BF0203	Secondary fuse 0.75A (Europe)
BF0308	Primary fuse 0.5A (Japan & U.S.A.)
BF0308	Secondary fuse 0.5A (Japan & U.S.A.)
BF0306	Secondary fuse 1A (Japan & U.S.A.)
PT2143A	Power transformer (U.S.A.)
PT2144A	Power transformer (Japan)
PT2146	Power transformer (Europe)
TD0118	Power rectifier S4VB10
TR0047	Power transistor 2S0235
RD0100	Line to shassis 1/2W 2.2M
SP0064	Power switch (Japan & U.S.A.)
SP0070	Power switch (Europe)
SP0068	Up-down key
SP0067	Memory switch
SP0065	Store switch
SR0079	Rotary switch
SL0030	Lever switch
SP0066	Push switch (U.S.A....Multipath & Noise filter Japan & Europe...Multipath & 400Hz tone)
SS0013	Antenna Attenuater switch

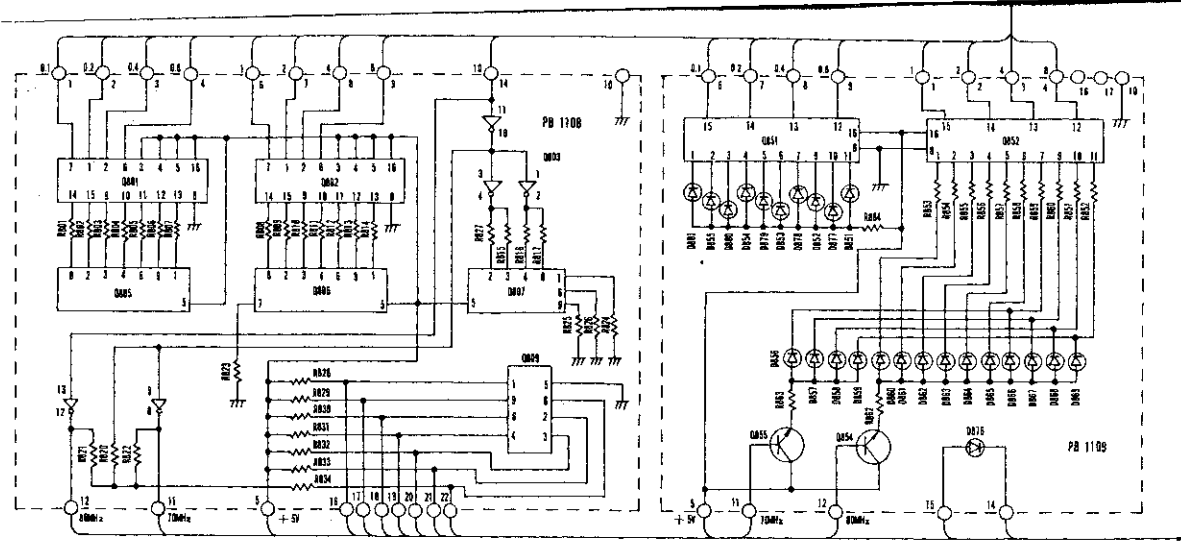


BASIC CIRCUITS DIAGRAM

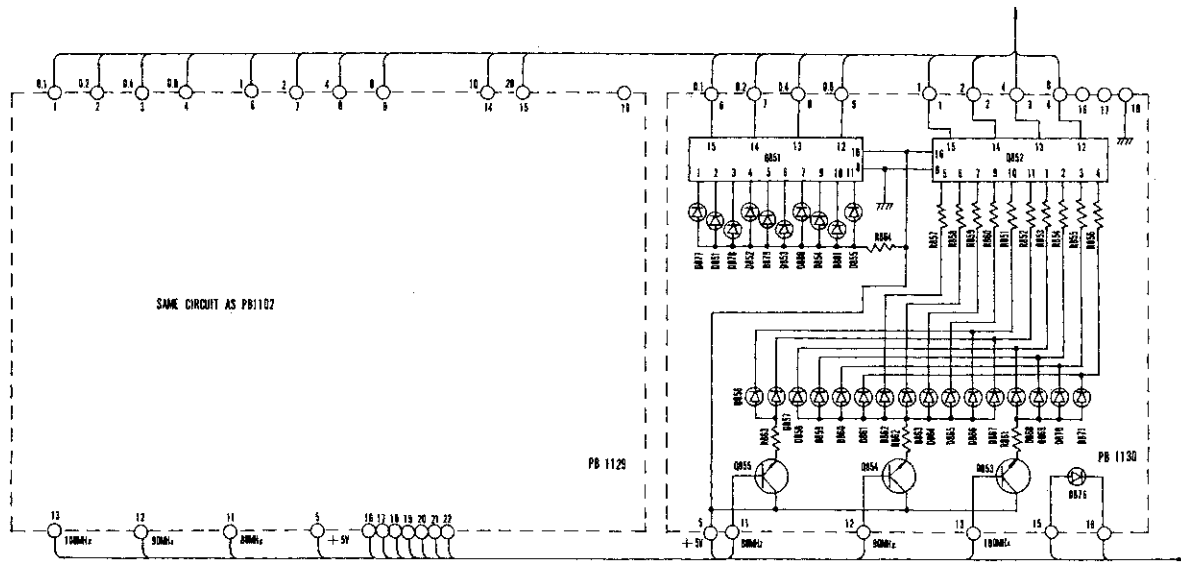
ULTIMATE HIGH FIDELITY STEREO COMPONENT
 "LABORATORY REFERENCE SERIES"
 FREQUENCY SYNTHESIZED FM TUNER

5T50

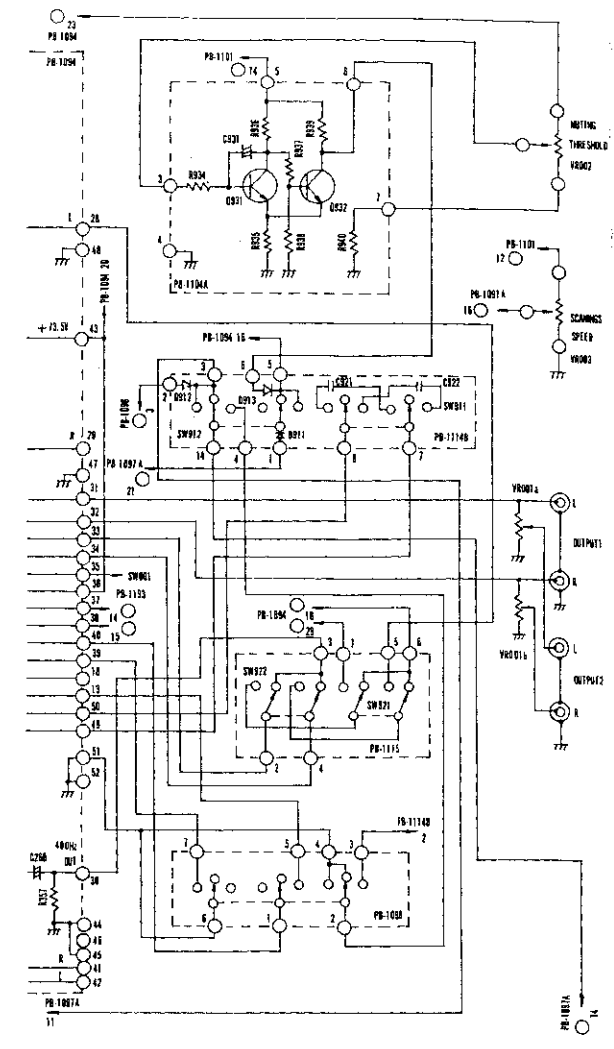
NOTE: (1) THE CIRCUIT DIAGRAM IS FOR 5T50 AND 5T51.
 (2) IC COMPONENTS (P81001) AND (P81002) USE THE RESISTANCE VALUES SHOWN. (P81003) THROUGH (P81004) USE THE VALUES SHOWN. (P81005) THROUGH (P81007) USE THE VALUES SHOWN. (P81008) THROUGH (P81010) USE THE VALUES SHOWN. (P81011) THROUGH (P81013) USE THE VALUES SHOWN. (P81014) THROUGH (P81016) USE THE VALUES SHOWN. (P81017) THROUGH (P81019) USE THE VALUES SHOWN. (P81020) THROUGH (P81022) USE THE VALUES SHOWN. (P81023) THROUGH (P81025) USE THE VALUES SHOWN. (P81026) THROUGH (P81028) USE THE VALUES SHOWN. (P81029) THROUGH (P81031) USE THE VALUES SHOWN. (P81032) THROUGH (P81034) USE THE VALUES SHOWN. (P81035) THROUGH (P81037) USE THE VALUES SHOWN. (P81038) THROUGH (P81040) USE THE VALUES SHOWN. (P81041) THROUGH (P81043) USE THE VALUES SHOWN. (P81044) THROUGH (P81046) USE THE VALUES SHOWN. (P81047) THROUGH (P81049) USE THE VALUES SHOWN. (P81050) THROUGH (P81052) USE THE VALUES SHOWN. (P81053) THROUGH (P81055) USE THE VALUES SHOWN. (P81056) THROUGH (P81058) USE THE VALUES SHOWN. (P81059) THROUGH (P81061) USE THE VALUES SHOWN. (P81062) THROUGH (P81064) USE THE VALUES SHOWN. (P81065) THROUGH (P81067) USE THE VALUES SHOWN. (P81068) THROUGH (P81070) USE THE VALUES SHOWN. (P81071) THROUGH (P81073) USE THE VALUES SHOWN. (P81074) THROUGH (P81076) USE THE VALUES SHOWN. (P81077) THROUGH (P81079) USE THE VALUES SHOWN. (P81080) THROUGH (P81082) USE THE VALUES SHOWN. (P81083) THROUGH (P81085) USE THE VALUES SHOWN. (P81086) THROUGH (P81088) USE THE VALUES SHOWN. (P81089) THROUGH (P81091) USE THE VALUES SHOWN. (P81092) THROUGH (P81094) USE THE VALUES SHOWN. (P81095) THROUGH (P81097) USE THE VALUES SHOWN. (P81098) THROUGH (P81100) USE THE VALUES SHOWN.



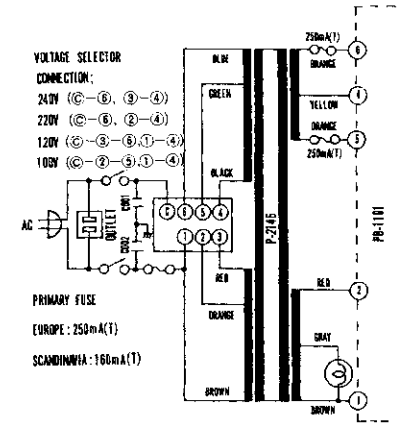
JAPANESE BAND DIAL INDICATOR



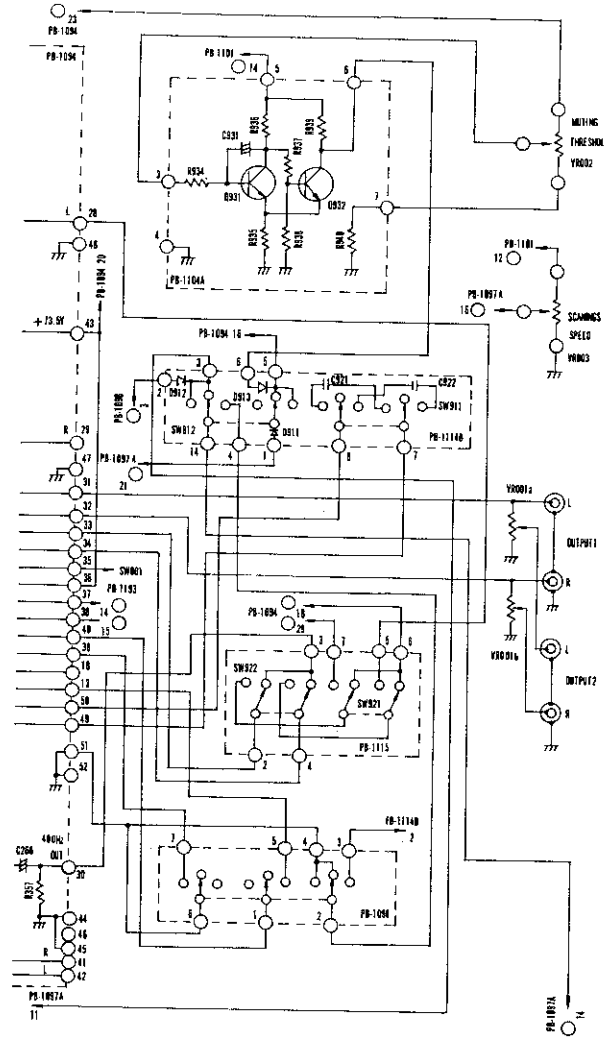
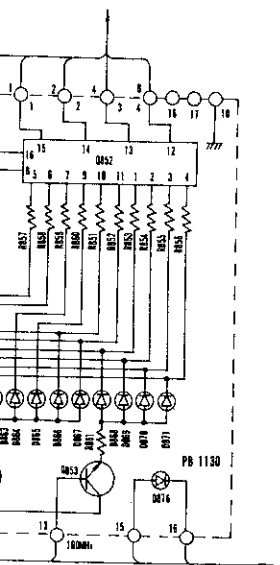
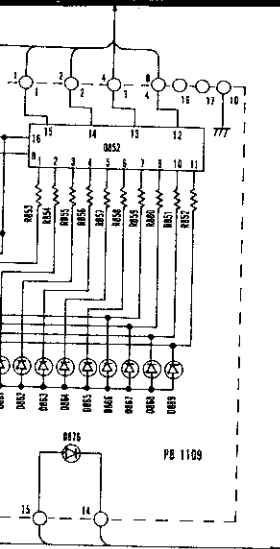
EUROPEAN BAND DIAL INDICATOR



lever switch and push switch circuit for Japan/Europe models



EUROPEAN BAND
In case of Japan band, P-2143A is replaced with P-2144A. Others remain unchanged.



lever switch and push switch circuit
for Japan/Europe models

d. P-2143A is replaced
others remain unchanged.

Specifications

Receiving Frequency:	88.1MHz – 107.9MHz (88.1MHz – 103.9MHz for European Version)
IHF Usable Sensitivity:	mono 9.8dBf (1.7 μ V) stereo 18.3dBf (4.5 μ V)
50dB Quieting Sensitivity:	mono 13.2dBf (2.5 μ V) stereo 36.1dBf (35 μ V)
Alternate Channel Selectivity:	70dB
AM Suppression Ratio:	62dB
Capture Ratio:	1.1dB
Image Response Ratio:	90dB
IF Response Ratio:	100dB
Spurious Response Ratio:	100dB
SCA Rejection Ratio:	65dB
Frequency Response:	50Hz – 10kHz \pm 0.2dB 30Hz – 15kHz +0.2, – 1.0dB
Tuning Accuracy:	0.003%
Signal to Noise Ratio (at 65dBf):	70dB
Muting & Stereo Threshold:	fixed 1.6 μ V variable 25 – 300 μ V
Total Harmonic Distortion:	mono 100Hz 0.1% 1kHz 0.08% 6kHz 0.15% stereo 100Hz 0.15% 1kHz 0.1% 6kHz 0.2%
Stereo Separation:	100Hz 40dB 1kHz 45dB 10kHz 40dB
Subcarrier Product Ratio:	65dB
Antenna Input Impedance:	75-ohm or 300-ohm
Output Level & Impedance:	fixed 1V, 100-ohm variable 0 – 1V, 1k-ohm
Additional Features:	Pure Electronic Memory Tuning Circuit, Auto-Tuning Circuit, Digital Signal Quality Indicator, Recording Calibrator, Audible Multi-Path Detection Circuit, Muting Level Adjuster, Scanning Speed Adjuster, Antenna Attenuator, Output Level Adjuster
Power Consumption:	30W
Dimensions:	442(W) x 400(D) x 101(H) mm (17-13/32 x 15-3/4 x 4")
Weight:	Net 8.7kgs (19.18 lbs.) Gross 10.0kgs (22.05 lbs.)

* Specifications and appearance design are subject to possible change without notice.