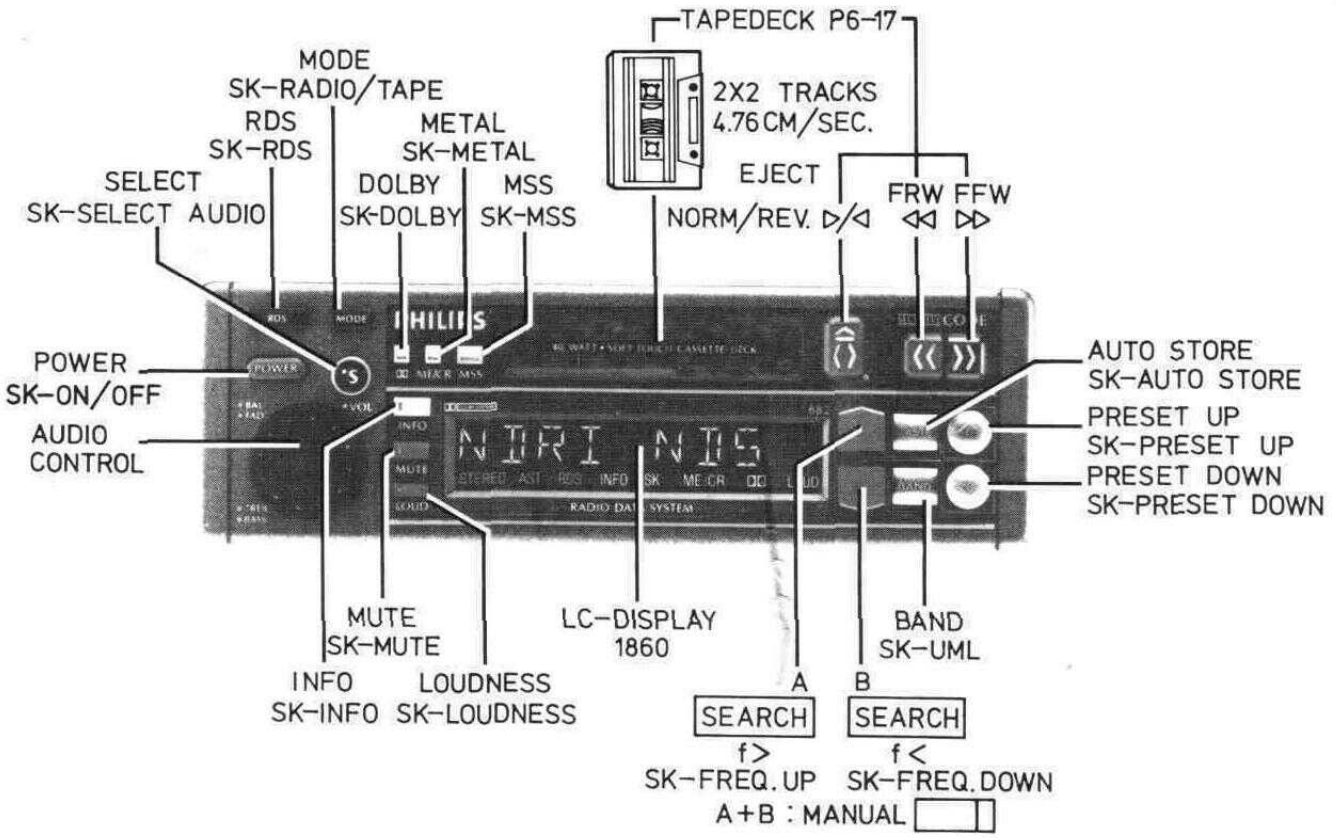
Cassette car radio 22DC682/00

Service
Service
Service

For circuit description see Car radio cluster family.
For repair information of the cassette deck see Service Manual of Car cassette deck P6-17.

Service Manual

12 V



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SERVICING HINTS

ESD 

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce service life drastically. When repairing, make sure that you are connected to the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

SERVICE TEST PROGRAMME

The test programme can be called without first entering the security code.

DISPLAY TEST

This test is called by switching on the set **while** keeping the keys **"preset-up" and "band"** depressed. A number of easily recognizable patterns are then displayed in succession. (see figs. 1a to 1d). If you want to make one of the patterns visible for a longer time, you only have to keep any arbitrary key pressed for the required time. The test is stopped by switching of the set.

SOFTWARE CHECK

In this set are two so called OTP's (One Time Programmable) µC's applicated. This has been done in order to be flexible in case of future software changes. The software check gives the possibility to readout the ROMcode and to display it, for both the applied µC's. This is a usefull feature in case of software related customer complaints. The format of the readout is as shown in figure 1.e.
The explanation of the format is given below:

M Next 3 characters refer to the Main chipset

E Main - Interface µC software pair indicator

3 Software release version Main processor

B Main µC - Main EEprom software pair indicator

I next 3 characters refer to the Interface chipset

E Interface - Main µC software pair indicator

3 Software release version Interface processor

B Interface µC - Interface EEprom software pair indicator

The 3th and 6th digit should always be matching otherwise the µC's in the set cannot communicate properly with each other.

The microprocessor and EEprom within a chipset should also match.
The EEprom pair indicator has to be read from the EEprom itselves.

This test is called by switching on the set **while** keeping the keys **"Tune down" and "Preset down"** depressed. The test can be stopped by switching of the set.

DISASSEMBLY

- Demounting the RDS unit is done by removing two screws obviously used for securing the bracket. The lower metal housing part of the unit is removed by unsnapping the metal snaps.
- After removing first the lower then the upper metal housing parts, two PCB's, hold together by a plastic holder, are left.
  The plastic holder supports the thick-film unit which is vulnerable.
- Opening the unit is done by lifting the PCB, which does not contain the thick-film, on the ends indicated by the two arrows on the white plastic holder.
- Mounting is done in reverse order.

- Measurements on the stereo decoder panel.
  To perform measurements on the stereo decoder panel it will be necessary to remove the tape deck.
- To prevent metal parts from bending the tape deck may not be removed from the set at the cassette lift.

SECURITY CODE

General

To reduce the risk of theft, this car radio has a built-in electronic lock. The security code has been entered in the factory and cannot be changed by the customer. The security code consists of four figures varying between "0000" and "9999". The figures are selected by pressing the ^ and ˇ keys and are entered by pressing the key p̂

If the Security Code has been activated and the power supply is interrupted, the radio will only operate for 5 minutes interrupted by beeps. The radio then mutes. The Security Code must then be entered. The radio will operate for a further 5 minutes, again interrupted by beeps, before confirming whether the correct code was entered.

If the correct code had been entered, a beep will be heard and the radio will operate normally. If however an incorrect code had been entered, a warning tone will be heard and the radio mutes. It is then possible to enter a code again. This process continues unless the correct Security Code is entered.
This will happen each time the car radio is switched on until the correct code has been entered.

Activiting the security code

Proceed as follows:

- While keeping the ^ button pressed, switch on the radio. The radio mutes and the displays shows 'CODE'.

Entering the code:

- Press the p̂ button.
- Press the ^ or ˇ button until the display shows the **first** figure of the Security Code.
- Press the p̂ button again.
- Press the ^ or ˇ button until the display shows the **second** figure of the Security Code.
- Press the p̂ button again.
- Press the ^ or ˇ button until the displays shows the **third** figure of the Security Code.
- Press the p̂ button again.
- Press the ^ or ˇ until the display shows the **fourth** figure of the Security Code.
- Press the p̂ button once more.

Example: Suppose the code is 7349

Action	**Display**
	CODE
- Press p̂	0
Select with ^/ˇ	**7**
- Press p̂	7 0
Select with ^/ˇ	7 **3**
- Press p̂	7 3 0
Select with ^/ˇ	7 3 **4**
- Press p̂	7 3 4 0
Select with ^/ˇ	7 3 4 **9**
- Press p̂	

If the **correct code** had been entered, the radio will play for 5 minutes, possibly interrupted by beeps. **Do not switch off the radio.** After the 5 minutes is up, a beep will be heard and the radio will operate normally.

If however an **incorrect code** had been entered, the radio will play for 5 minutes, possibly interrupted by beeps. After the 5 minutes is up, a warning tone will be heard, the radio mutes and the display shows 'CODE'. It is then possible to enter a code again (as described before). This process continues until the correct Security Code has been entered.

If the protection is active, the display briefly shows 'CODE' each time you switch on the radio.

Switching off the code

Proceed as follows:

- While keeping the ˇ button pressed, switch on the radio. The radio mutes and the display shows 'CODE'.
- Enter the code in the same way as described in "Activiting the Security code".

Note: If the set is presented for repair with the security code switched on, and the customer has not stated the right code, the set will not be able to function.
Replacing the EEPROM by a "non-coded" EEPROM and/or replacing the microprocessor will not help in thas case.

AUTO-STORE

Auto-Store is an automatic search tuning system which enables you to store six additional stations by simply pressing the AST button. This can be done on both FM and MW.

Programming by Auto-Store

a Select FM or MW with the BAND selector.
b Keep the AST button pressed until you hear a beep.

– The radio mutes, the display shows 'AST' flashing and the frequency indication or station name disappears.

The selected waveband is scanned quickly and the six strongest stations are automatically programmed on the six presets.
Each time that a frequency is stored, the display shows the preset number and the frequency of the station.
When all presets have been stored the radio switches to the Auto-Store operation mode indicated by a beep.
Now you are listening to the strongest station in this area programmed on preset number 1.
If the LW band is selected and the AST button is pressed, you hear an error beep.
– In this case, press the BAND selector once more (for MW) or twice (for FM) and then repeat step ***b*** above.

Remarks:

– If under certain circumstances it is not possible for the radio to find six stations, the remaining presets (e.g. 5 and 6) are programmed with '0000'. If you later select such a preset the radio will mute.

– If one of the stations is not desired (e.g. preset 4 has the same station as preset 2), you can store the next strongest station by selecting preset 4 and pressing either the ˆ or ˇ button until the 'AST' indication starts flashing. You will hear a beep when a new station has been stored on this preset.

– If a station with traffic information is found, the INFO mode is stored automatically.

Operation of Auto-Store

After programming you only need to
a Select the FM or MW band with the BAND selector.
b Briefly press the AST button: the display shows 'AST'.
c Use the ˆ/ˇ buttons to select one of the presets.
The display shows the frequency and the Auto-Store preset number. If an RDS broadcast is received, the frequency is replaced by the RDS station name after about 10 seconds.

- To leave the Auto-Store operator mode, press the BAND selector.
The radio returns to normal operation on the current waveband.

WHAT IS RDS?

RDS (Radio Data System) is a system on FM, whereby an inaudible stream of data is transmitted in addition to the normal radio signal. This data contains various information including station/transmitter identification, traffic information and a list of alternative frequencies for the radio station being received.

The list of alternative frequencies can be examned by an RDS radio to see whether the signal received from another transmitter, for the same station, is better than the current one. If so, the radio automatically switches to the better signal with another frequency. A new list of alternative frequencies is then received.

The main advantage of RDS is easier tuning of your desired station, especially on a long journey. Once you have tuned to an RDS station the radio maintains the best possible reception of the chosen station by automatically retuning to alternative frequencies.

OPERATION

Reception of RDS stations

When you switch on the radio and select the FM band, the radio is automatically in the RDS mode. If an RDS transmission is received, the display shows the station name and the 'RDS' indication. If the radio tunes to the same station or another frequency, the display shows the new frequency for 10 seconds before returning to the station name. The 'RDS' indication may flash for a short while after tuning to a new RDS transmission.
- To see the frequency of a station whose name is displayed, press the ˆ and ˇ buttons simultaneously.
The frequency is displayed for 10 seconds.

Reception of non-RDS stations

If a non-RDS transmission is received, 'RDS' flashes on the display to indicate that it has no RDS information. As the radio has no list of alternative frequencies, it cannot retune if the signal gets weak.

- To stop the 'RDS' indication from flashing, press the RDS button.

Disabling RDS

- To disable the RDS mode, press the RDS button.
The 'RDS' indication goes out and the radio stops searching for alternative frequencies.

- To activate the RDS mode, press the RDS button again.

Note: If RDS is disabled while programming an FM station, the disabling is also programmed.
Later, when selecting this FM preset, it is not necessary to disable RDS again.

WAVEBAND

- Select the desired waveband by pressing the BAND selector one or more times.
The display shows the selected waveband:
LW for long wave,

. . . V — position AM

. . . V* — position AM, with signal, set tuned

. . . V MU — position AM, with signal, set muted (search/mode)

. . . V — position FM M = Mono, S = Stereo

. . . V* — position FM, with signal, set tuned

. . . V BK — position FM + SK + BK (info in)

. . . V DK — position FM + SK + BK + DK (info in)

. . . V — position play, normal

. . . V — position play, reverse

. . . V MSS — position fast wind, MSS

. . . V ME — position play, METAL

. . . V DB — position play, DOLBY

1150 FM tuner

C101 = GND
C102 = –
C103 = GND
C104 = 0.0 V
C105 = 0.1 V / 1.7 V
C106 = 8.4 V
C107 = 1.3 - 5.5 V MP-7
C108 = 0.1 V / 1.4 V
C109 = GND
C110 = 1.7 V
C111 = 3.0 V
C112 = 8.4 V / 0.2 V
C113 = 1.8 V

1155 Thi-Fi IAC

1 = N.C.
2 = 2.5 V
3 = N.C.
4 = 0.5 V / 1.0 - 5.0 V*
5 = 4.2 V
6 = 7.8 V
7 = 8.2 V
8 = GND

1601 Thi-Fi Stereo Decoder

1 = 5.0 VM / 0.7 VS
2 = 3.5 V
3 = 3.4 V
4 = 2.5 V
5 = 3.4 V
6 = GND
7 = 0.5 V / 1.8 V*
8 = 8.3 V
9 = 1.0 V / 5.0 V*
10 = 0.5 V / 4.6 V*
11 = 4.9 V / 0.0 V
12 = 3.5 V
13 = 0.0 V / 5.0 V MU
14 = 5.0 V / 0.0 V MU
15 = 3.4 V
16 = 3.4 V
17 = 3.4 V
18 = 3.4 V
19 = 3.4 V
20 = 3.4 V

1602 Thi-Fi Dolby B

1 = 0.0 V / 5.0 V DB
2 = 4.2 V
3 = 4.2 V
4 = 3.4 V
5 = GND
6 = GND
7 = 3.4 V
8 = 4.2 V
9 = GND
10 = 8.4 V

6105 TEA6100

1 = 8.3 V / 8.2 V
2 = 0.6 V
3 = 0.5 V MP-5 / 1.0 - 5.0 V*
4 = 0.0 V
5 = 0.6 V MP-6 / 0.1 V*
6 = 40 kHz
7 = GND
8 = 8.3 V
9 = SCL (4.6 V)
10 = SDA (4.6 V)
11 = 4.1 V MP-3 / 4.5 V
12 = 4.6 V
13 = 4.6 V
14 = 2.4 V
15 = 4.4 V
16 = 3.0 V
17 = 3.0 V
18 = 3.0 V
19 = 3.0 V
20 = GND

6106 TSA6057

1 = 4 MHz
2 = 4 MHz
3 = 4.7 V
4 = GND
5 = 1.8 V
6 = 1.8 V
7 = 1.8 V
8 = 8.3 V / ≤ 0.8 V
9 = 40 kHz
10 = SDA (4.6 V)
11 = SCL (4.6 V)
12 = GND
13 = 1.3 - 5.5 V
14 = 2.1 V
15 = N.C.
16 = 8.5 V

6111 TEA6200

1 = 6.6 V
2 = 4.0 V
3 = 8.2 V
4 = 8.2 V
5 = 8.2 V
6 = 8.2 V
7 = 0.7 V
8 = 4.0 V
9 = 4.0 V
10 = 4.0 V
11 = 6.7 V
12 = 1.4 V MP-4
13 = 4.7 V
14 = 8.4 V / 0.2 V
15 = 4.7 V
16 = 4.7 V
17 = GND
18 = 1.0 V
19 = 1.3 V
20 = 3.3 V

6112 TEA6310T

1 = SDA (4.6 V)
2 = GND
3 = 3.9 V
4 = 3.9 V
5 = 3.9 V
6 = 3.9 V
7 = 3.9 V
8 = N.C.
9 = 6.6 V
10 = N.C.
11 = 7.7 V
12 = N.C.
13 = N.C.
14 = 3.9 V
15 = 3.9 V
16 = N.C.
17 = N.C.
18 = GND
19 = N.C.
20 = 3.9 V
21 = GND
22 = 3.9 V
23 = 3.9 V
24 = 3.9 V
25 = 3.9 V
26 = 3.9 V
27 = 7.8 V
28 = SCL (4.6 V)

6113/6114 TDA1516Q

1 = 2.2 V
2 = 2.2 V
3 = GND
4 = 2.2 V
5 = 6.7 V
6 = 14.3 V
7 = GND
8 = 14.3 V
9 = 6.7 V
10 = 14.3 V
11 = 14.2 V
12 = 6.7 V
13 = 2.2 V

6115/6117 BC847B

e = 3.3 V
b = 3.9 V
c = 7.8 V

6116/6118 BC847B

e = 3.3 V
b = 1.8 V
c = 7.8 V

6119/6122 L4916

1 = 14.2 V
2 = 2.5 V
3 = N.C.
4 = 8.4 V
5 = GND
6 = GND
7 = GND
8 = GND

6123 BD438

e = 14.3 V
b = 13.5 V
c = 14.2 V

6128 L4904

1 = 12.8 V
2 = 8.4 V
3 = 5.6 V
4 = GND
5 = N.C.
6 = 4.2 V
7 = 5.0 V
8 = 5.0 V

6129 BC847B

e = GND
b = 0.6 V
c = 0.0 V

6130 BC847B

e = GND
b = 0.0 V
c = 4.9 V

6133 BC847B

e = GND
b = 0.7 V
c = 0.0 V

6140 TA7784P

1 = 8.1 V
2 = 3.3 V
3 = 0.0 V / 4.9 V
4 = 3.3 V
5 = 2.9 V
6 = 2.9 V
7 = 2.9 V
8 = GND
9 = 2.9 V
10 = N.C.
11 = 2.9 V
12 = 2.9 V
13 = 2.9 V
14 = 3.3 V
15 = 0.1 V / 4.9 V ME
16 = 3.3 V

6150 TMP42C70N

1 = 2 MHz
2 = 2 MHz
3 = 5.0 V / 0.5 V
4 = 0.0 V / 4.8 V MU
5 = 0.0 V / 4.9 V
6 = 4.6 V
7 = 0.0 V / 4.8 V MSS / 0.0 V
8 = 0.0 V / 4.8 V MU
9 = N.C.
10 = N.C.
11 = N.C.
12 = 4.0 V / 4.0 V / 0.0 V MSS
13 = 4.5 V / 1.5 V
14 = GND
15 = 0.1 V / 4.9 V ME
16 = SDA (4.6 V)
17 = SCL (4.6 V)
18 = 0.4 V / 10 V / 0.4 V
19 = 4.6 V
20 = N.C.
21 = N.C.
22 = N.C.
23 = N.C.
24 = N.C.
25 = N.C.
26 = N.C.
27 = N.C.
28 = 4.9 V

6151 BC847B

e = GND
b = 0.0 V / 0.7 V MU
c = 5.0 V / 0.0 V MU

6153 BC847B

e = GND
b = 0.6 V / 0.0 V MSS
c = 14.2 V MSS / 0.1 V

6160 LA2000

1 = 1.9 V
2 = –
3 = 1.9 V
4 = N.C.
5 = GND
6 = 0.0 V / 4.8 V MSS / 0.0 V
7 = N.C.
8 = N.C.
9 = 8.5 V

6166 TMP47P800N

1 = 0.0 V / 5.0 V DB
2 = 5.0 VM / 7.0 VS
3 = 0.0 V / 5.0 V MU / 5.0 V
4 = 4.9 V / 0.0 V
5 = 5.0 V / 5.0 V / 0.1 V / ▷/◁ A RADIO / A:EJECT/WIND/MODE
6 = 5.0 V / 0.0 V BEEP
7 = 5.0 V
8 = N.C.
9 = N.C.
10 = N.C.
11 = N.C.
12 = N.C.
13 = 5.0 V
14 = GND
15 = GND
16 = 5.0 V
17 = 3.5 V
18 = 5.0 V
19 = 5.0 V
20 = 5.0 V
21 = GND
22 = 5.0 V
23 = 5.0 V
24 = 0.0 V / 5.0 V DX (AST)
25 = 7.6 V / 0.0 V / 0.0 V
26 = 5.0 V
27 = 5.0 V
28 = 5.0 V
29 = 5.0 V
30 = GND
31 = 4 MHz
32 = 4 MHz
33 = 4.9 V
34 = 4.2 V
35 = 4.8 V DK
36 = 4.8 V BK
37 = 0.4 V / 10 V / 0.4 V / ▷ ◁
38 = 0.5 V / 5.0 V
39 = N.C.
40 = SDA (4.6 V)
41 = SCL (4.6 V)
42 = 5.0 V

6169 MC78L05ACP

1 = 13.4 V
2 = GND
3 = 5.0 V

6170/6402 X2404I

1 = GND
2 = GND
3 = GND
4 = GND
5 = SDA (4.6 V)
6 = SCL (4.6 V)
7 = GND
8 = 5.0 V

6601/6602 BC858B

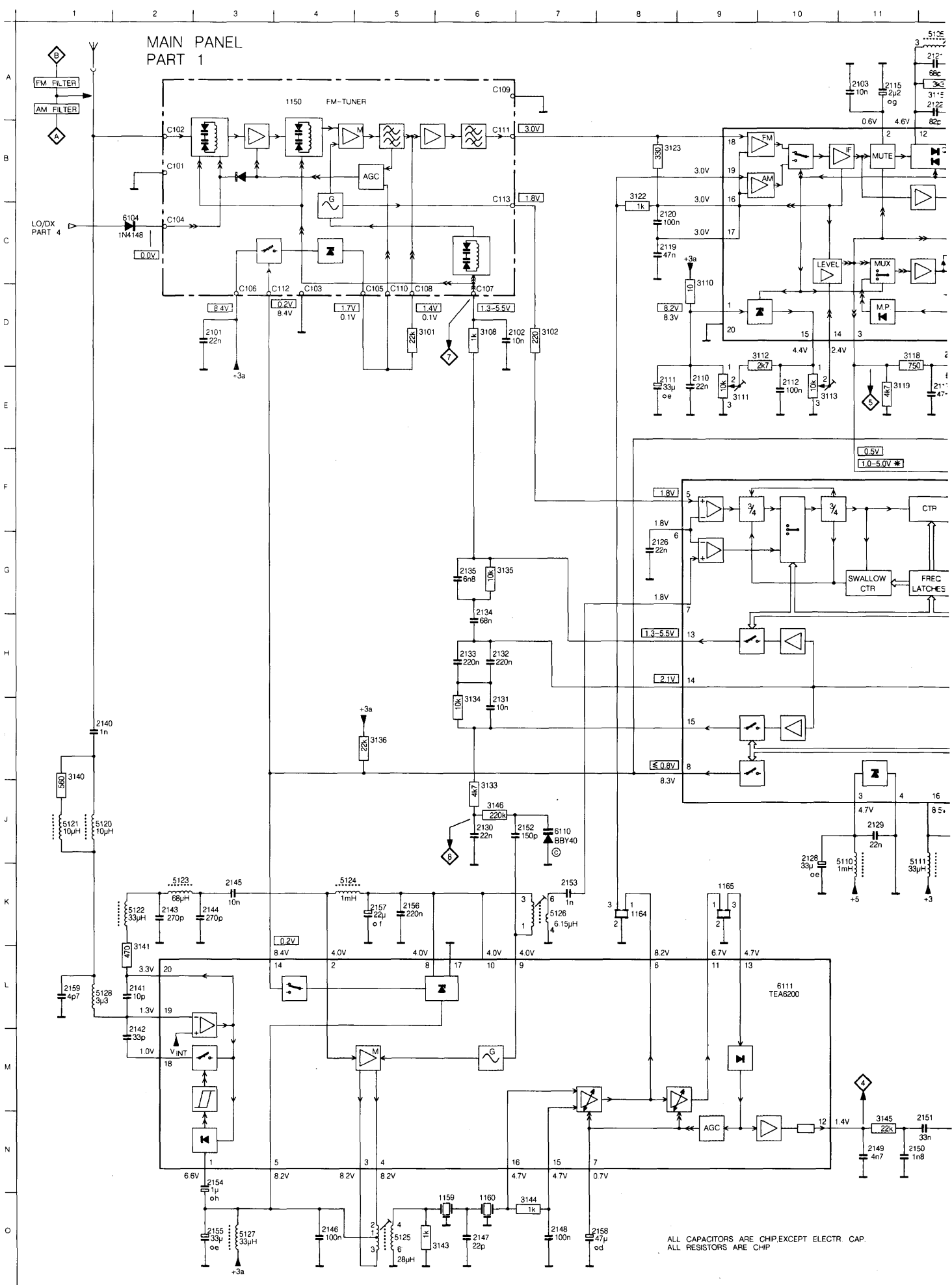
e = 1.4 V
b = 0.8 V / 1.3 V*
c = 1.4 V / 0.0 V*

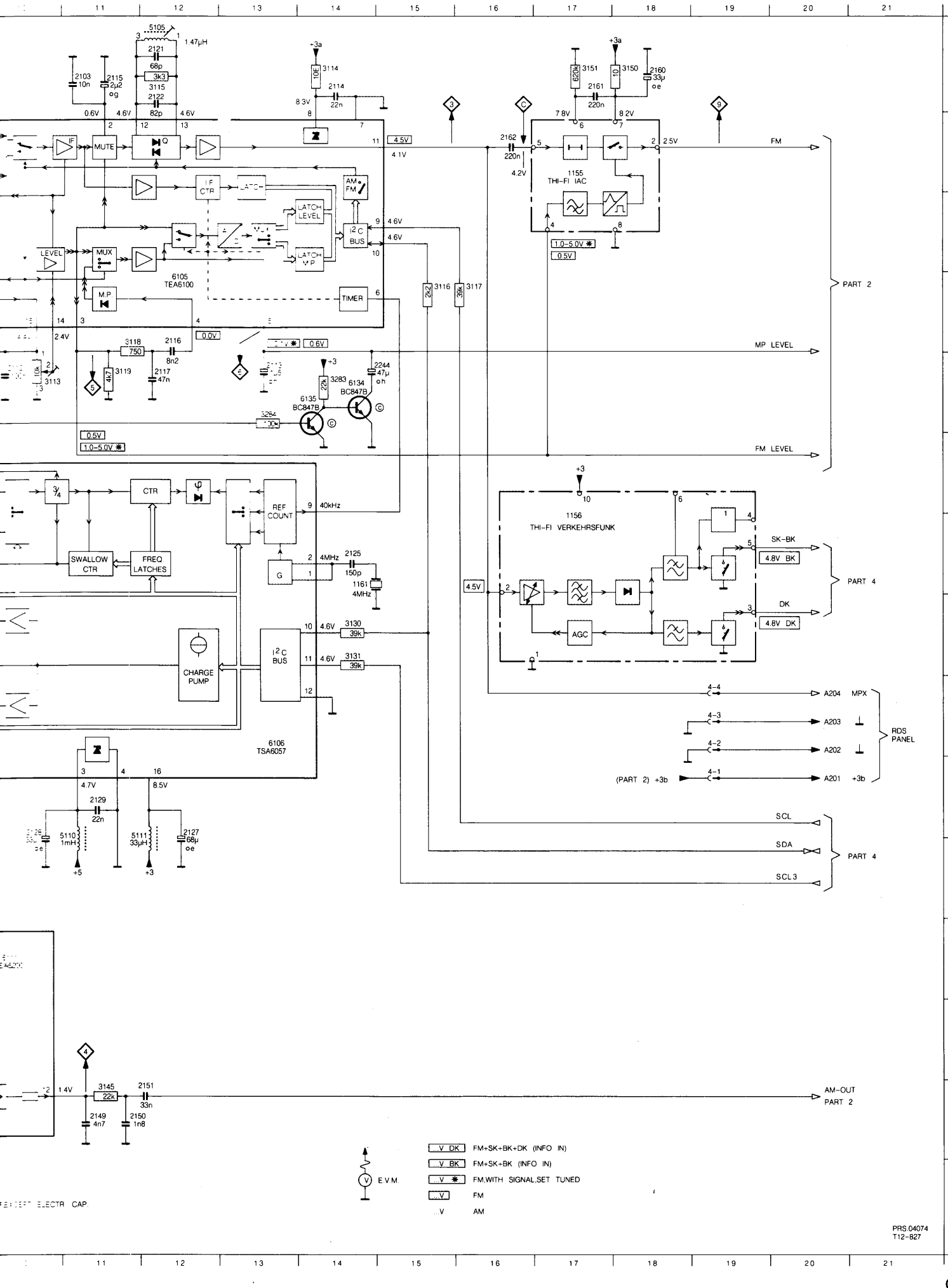
6604 BC847B

e = 0.0 V
b = 0.6 V / 0.1 V*
c = 1.0 V / 5.0 V*

6606/6607 BC847B

e = 1.9 V
b = 2.6 V
c = 5.5 V

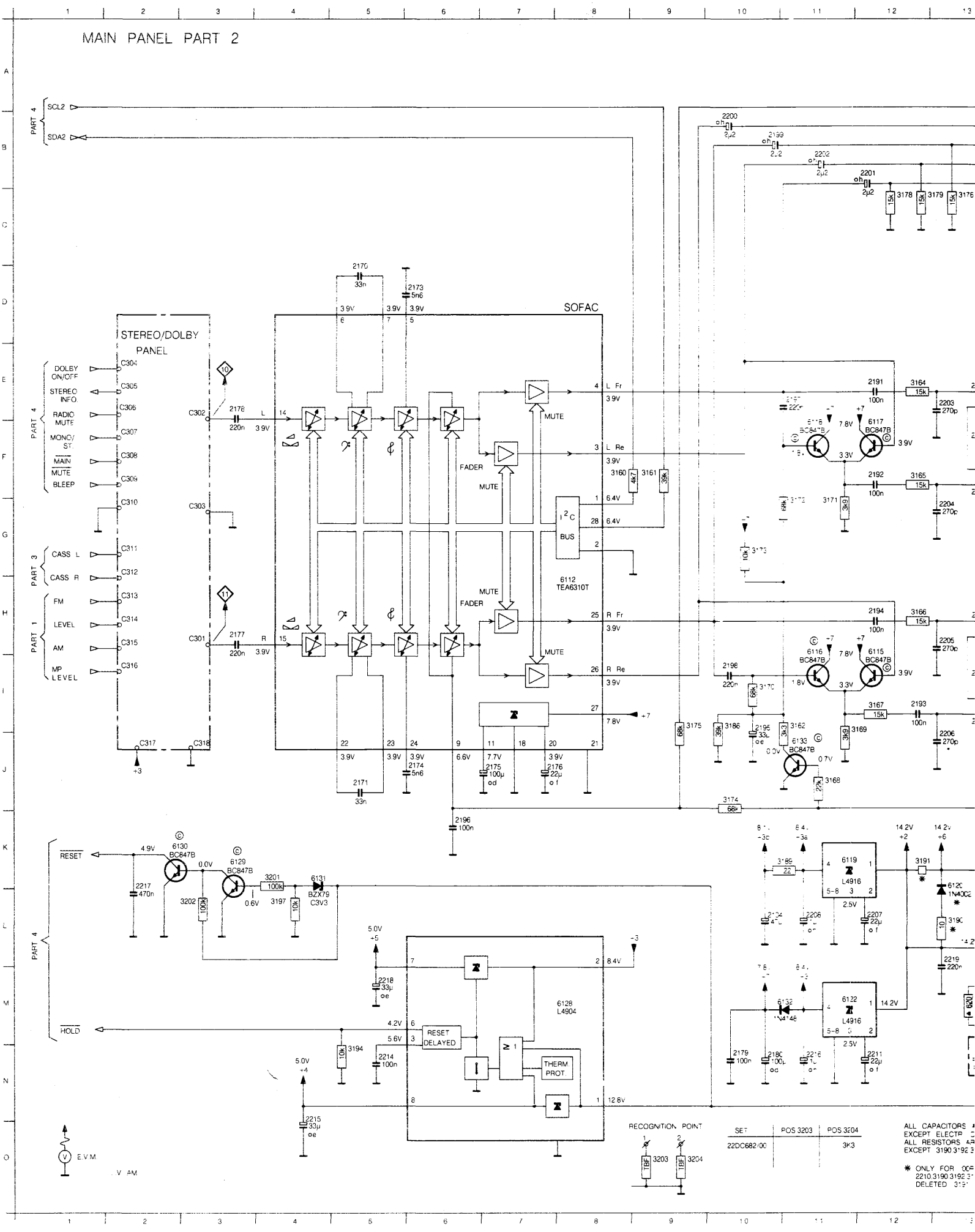

MAIN PANEL
PART 1
FM FILTER
AM FILTER
LO/DX
PART 4
1150 FM-TUNER
AGC
6104
1N4148
6111
TEA6200
FM
AM
IF
MUTE
LEVEL
MUX
M.P
CTR
SWALLOW CTR
FREC LATCHES
ALL CAPACITORS ARE CHIP,EXCEPT ELECTR. CAP.
ALL RESISTORS ARE CHIP

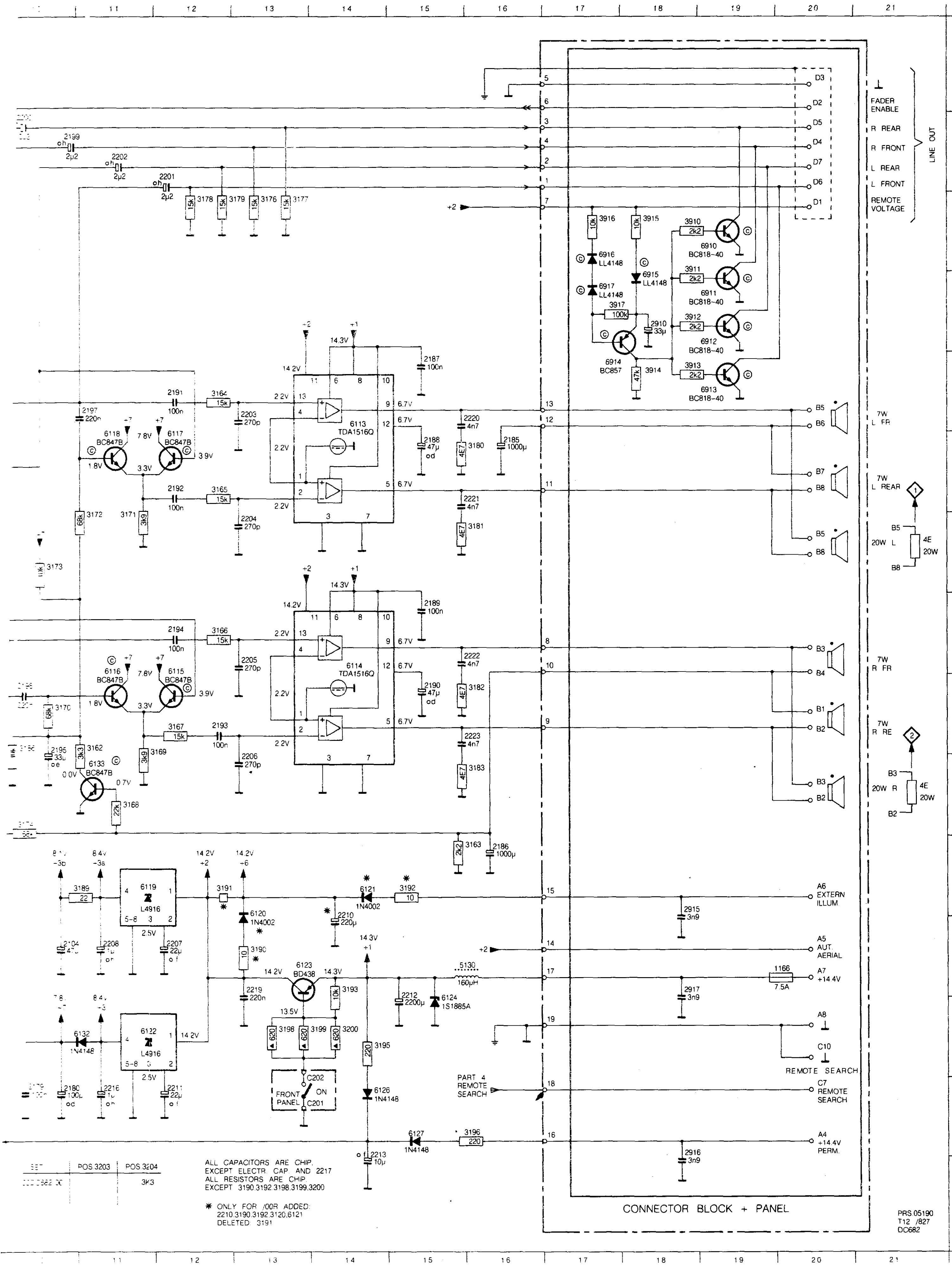


1150 A 4
1155 B17
1156 G17
1159 O 6
1160 O 6
1161 G14
1164 K 8
1165 K 9
2101 D 3
2102 D 7
2103 A11
2110 E 9
2111 E 8
2112 E10
2113 E13
2114 A14
2115 A11
2116 D12
2117 E12
2119 C 8
2120 C 8
2121 A12
2122 A12
2125 G14
2126 G 8
2127 J12
2128 J10
2129 J11
2130 J 6
2131 I 6
2132 H 6
2133 H 6
2134 G 6
2135 G 6
2140 I 1
2141 L 2
2142 M 2
2143 K 2
2144 K 3
2145 K 3
2146 O 4
2147 O 6
2148 O 7
2149 N11
2150 N12
2151 N12
2152 J 7
2153 K 7
2154 N 3
2155 O 3
2156 K 5
2157 K 5
2158 O 8
2159 L 1
2160 A18
2161 A17
2162 B16
2244 E15
3101 D 5
3102 D 7
3108 D 6
3110 C 9
3111 E 9
3112 D10
3113 E10
3114 A14
3115 A12
3116 D15
3117 D16
3118 D11
3119 E11
3122 B 8
3123 B 8
3130 H14
3131 H14
3133 J 6
3134 I 6
3135 G 6
3136 I 5
3140 I 1
3141 L 2
3143 O 6
3144 O 7
3145 N11
3146 J 6
3150 A18
3151 A17
3283 E14
3284 E13
5105 A12
5110 J11
5111 J11
5120 J 1
5121 J 1
5122 K 2
5123 K 2
5124 K 4
5125 O 5
5127 O 3
5128 L 1
6104 C 2
6105 D12
6106 I13
6110 J 7
6111 L10
6134 E14
6135 E14

PRS.04074
T12-827

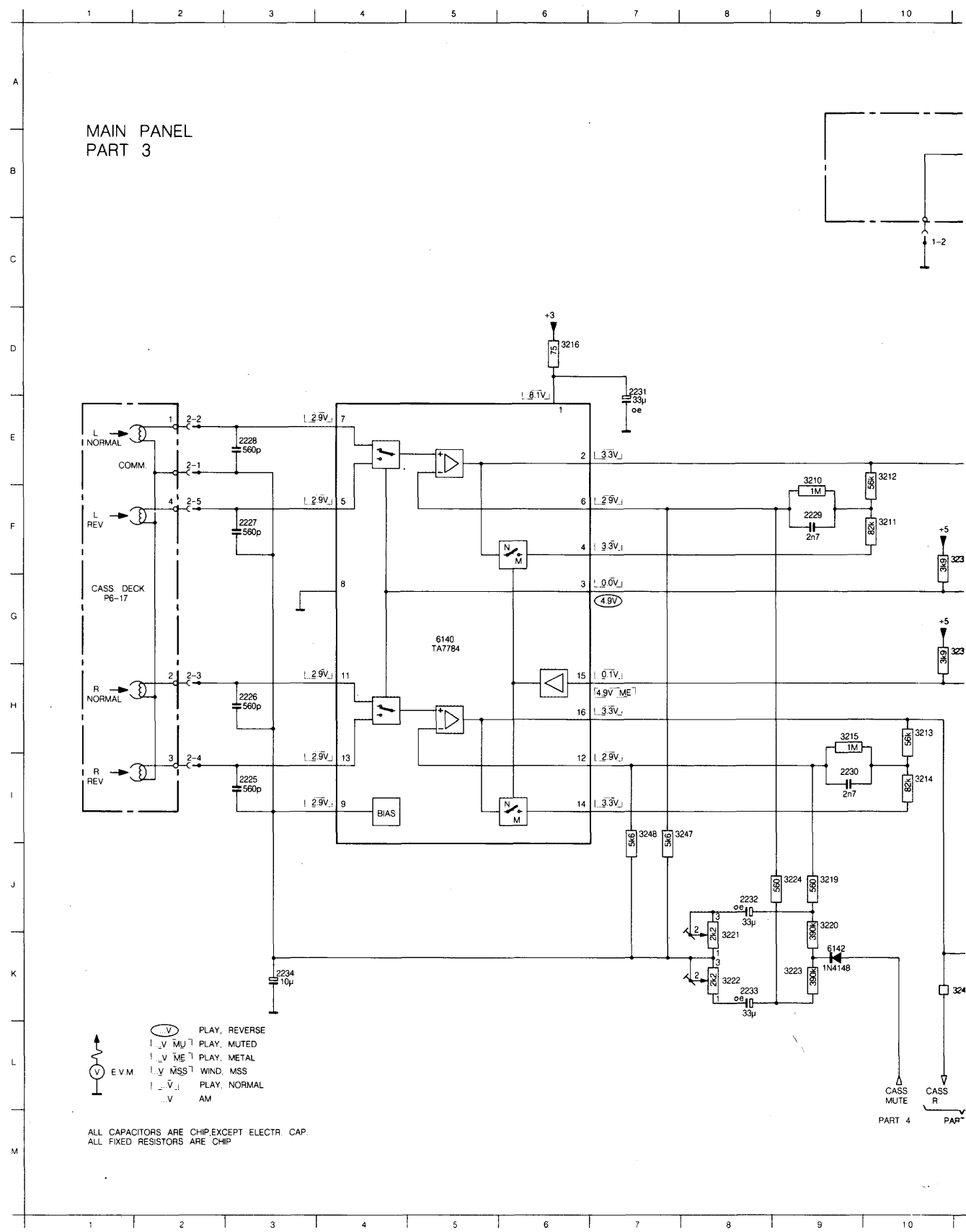
MAIN PANEL PART 2



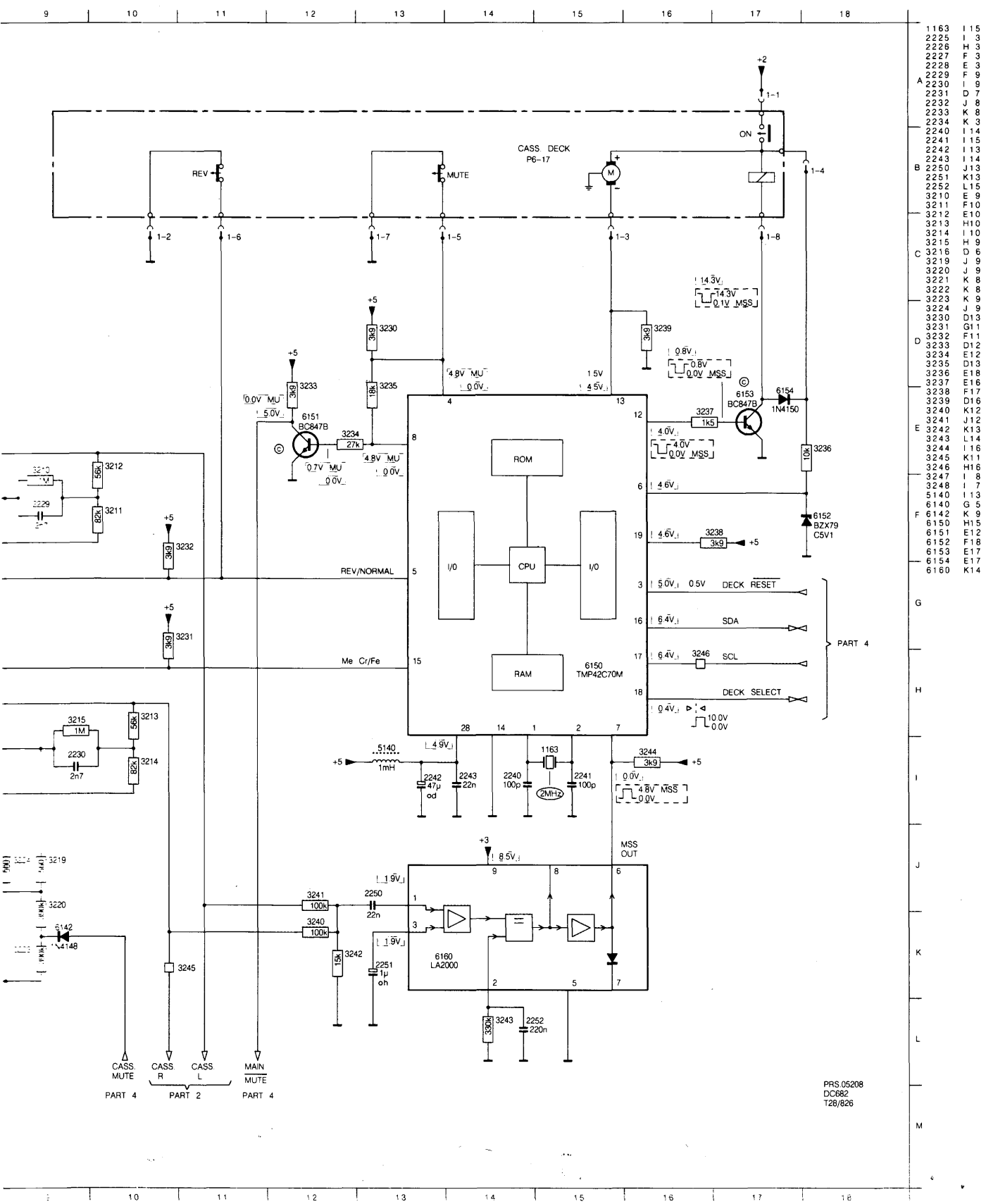


1166	L20
2104	L10
2170	D 5
2171	J 5
2173	D 6
2174	J 6
2175	J 7
2176	J 8
2177	H 3
2178	E 3
2179	N10
2180	N10
2185	F16
2186	K16
2187	E15
2188	F15
2189	H15
2190	I 15
2191	E12
2192	F12
2193	I 12
2194	H12
2195	I 10
2196	K 6
2197	E11
2198	I 10
2199	B10
2200	B10
2201	B12
2202	B11
2203	E13
2204	G13
2205	H13
2206	J13
2207	L12
2208	L11
2210	K14
2211	N12
2212	L15
2213	N14
2214	N 5
2215	N 4
2216	N11
2217	K 2
2218	M 5
2219	L13
2220	E16
2221	F16
2222	H16
2223	I 16
2910	D18
2915	K18
2916	N18
2917	L18
3160	F 8
3161	F 9
3162	I 11
3163	K16
3164	E12
3165	F12
3166	H12
3167	I 12
3168	J11
3169	I 12
3170	I 10
3171	G11
3172	G11
3173	G10
3174	J10
3175	I 9
3176	C13
3177	C13
3178	C12
3179	C13
3180	F16
3181	G16
3182	I 16
3183	J16
3186	I 10
3189	K11
3190	L13
3191	K12
3192	K15
3193	L14
3194	N 5
3195	M14
3196	N16
3197	L 4
3198	M13
3199	M14
3200	M14
3201	K 4
3202	L 3
3203	O 9
3204	O 9
3910	C18
3911	C18
3912	D18
3913	E18
3914	E18
3915	C18
3916	C17
3917	D17
5130	L16
6112	H 8
6113	E14
6115	H12
6116	H11
6117	F12
6118	F11
6119	K11
6120	K13
6121	K14
6122	M11
6123	L13
6124	M15
6126	N14
6127	N15
6128	M 8
6129	K 3
6130	K 3
6131	K 4
6132	M11
6133	J11
6910	C19
6911	D19
6912	D19
6913	E19
6914	E17
6915	D18
6916	C17
6917	D17

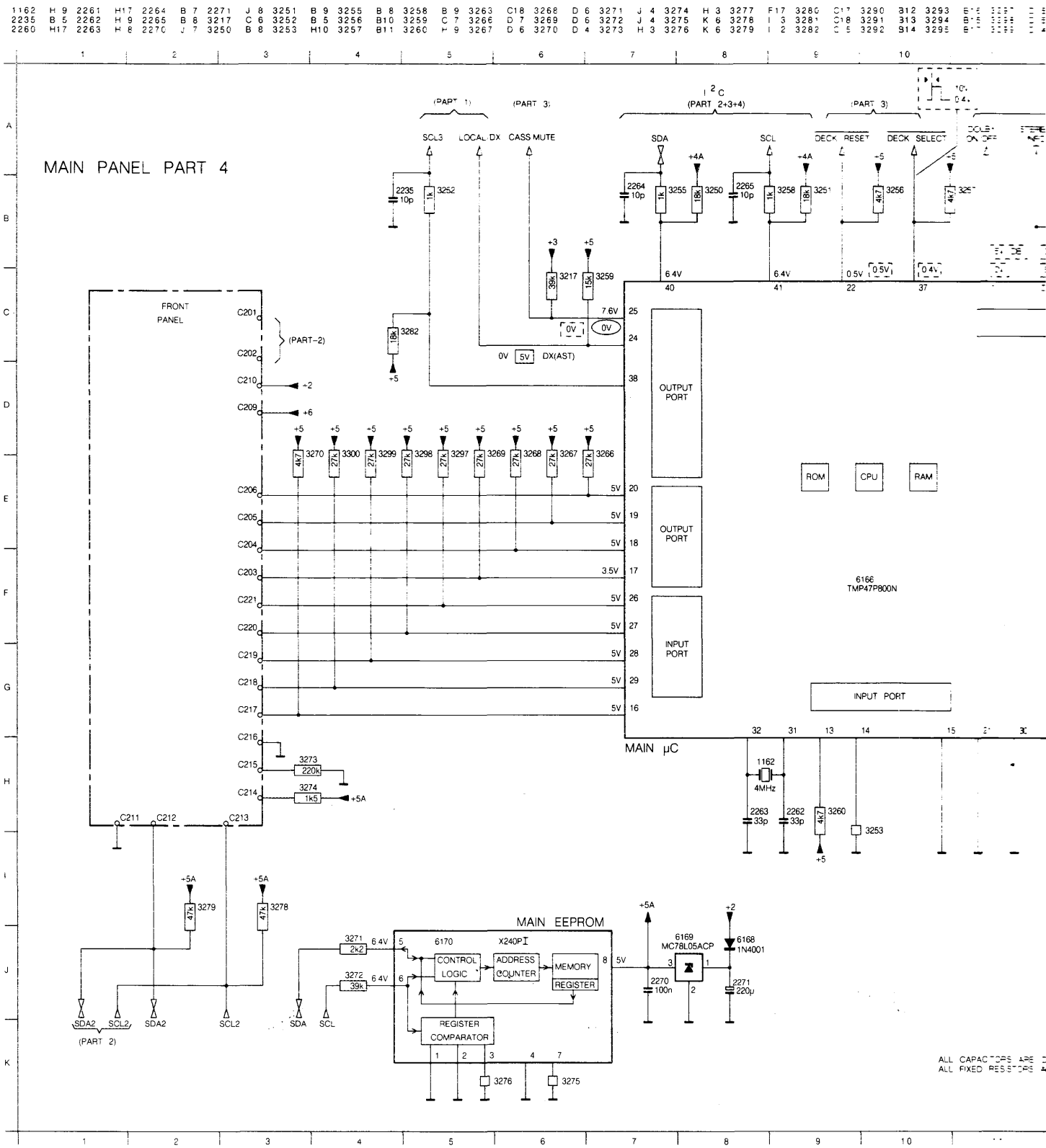
MAIN PANEL
PART 3



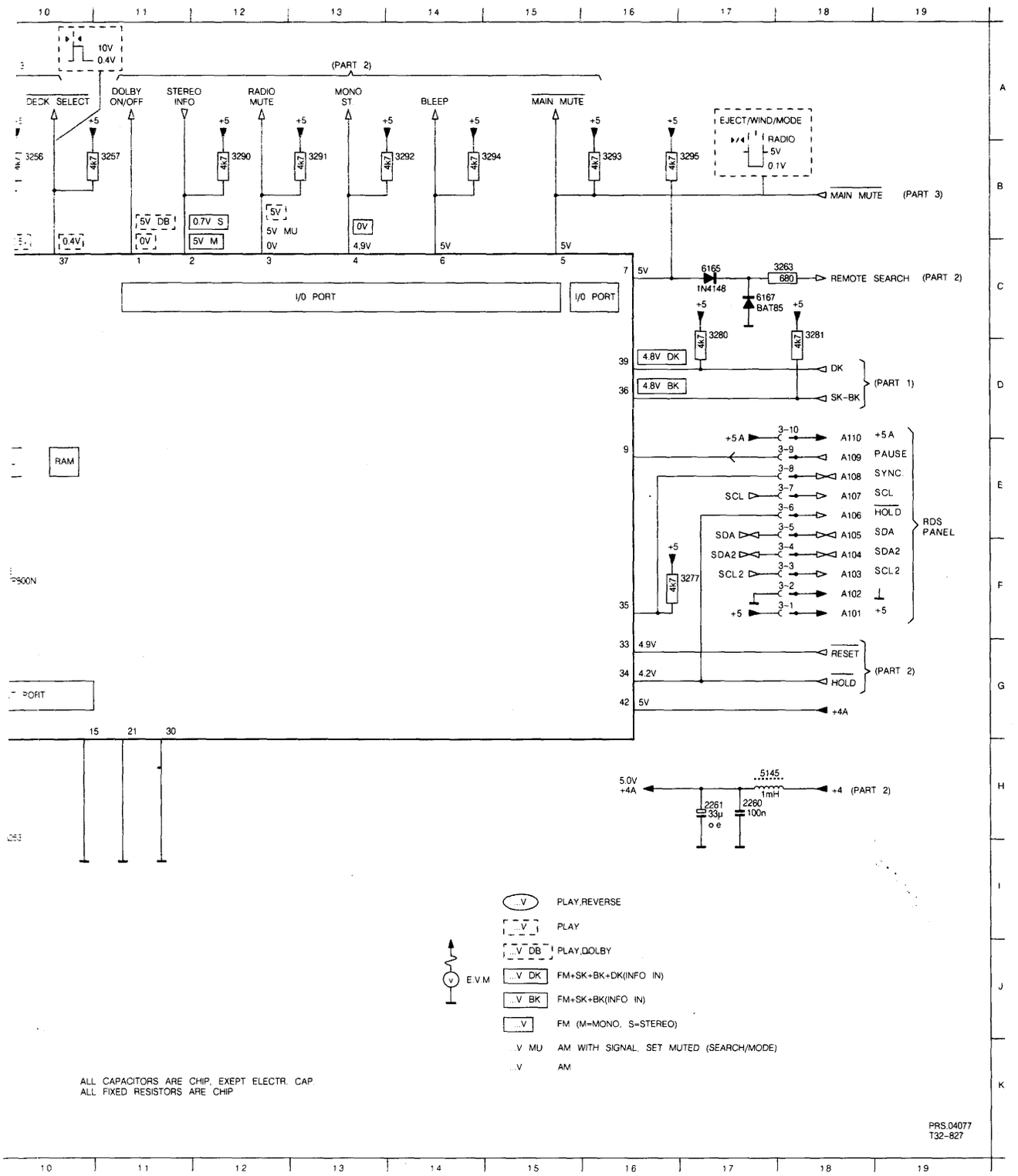
ALL CAPACITORS ARE CHIP,EXCEPT ELECTR. CAP.
ALL FIXED RESISTORS ARE CHIP



1163 I 15
2225 I 3
2226 H 3
2227 F 3
2228 E 3
2229 F 9
2230 I 9
2231 D 7
2232 J 8
2233 K 8
2234 K 3
2240 I 14
2241 I 15
2242 I 13
2243 I 14
2250 J 13
2251 K13
2252 L15
3210 E 9
3211 F10
3212 E10
3213 H10
3214 I 10
3215 H 9
3216 D 6
3219 J 9
3220 J 9
3221 K 8
3222 K 8
3223 K 9
3224 J 9
3230 D13
3231 G11
3232 F11
3233 D12
3234 E12
3235 D13
3236 E18
3237 E16
3238 F17
3239 D16
3240 K12
3241 J12
3242 K13
3243 L14
3244 I 16
3245 K11
3246 H16
3247 I 8
3248 I 7
5140 I 13
6140 G 5
6142 K 9
6150 H15
6151 E12
6152 F18
6153 E17
6154 E17
6160 K14


MAIN PANEL PART 4
MAIN µC
MAIN EEPROM
FRONT PANEL
(PART-2)
(PART 1)
(PART 3)
I²C (PART 2+3+4)
(PART 3)
SCL3
LOCAL DX
CASS MUTE
SDA
SCL
DECK RESET
DECK SELECT
OUTPUT PORT
OUTPUT PORT
INPUT PORT
INPUT PORT
ROM
CPU
RAM
6166 TMP47P800N
4MHz
6170 X240PI
CONTROL LOGIC
ADDRESS COUNTER
MEMORY REGISTER
REGISTER COMPARATOR
6169 MC78L05ACP
6168 1N4001
(PART 2)
ALL CAPACITORS ARE
ALL FIXED RESISTORS

312 3293 B16 3297 D 5 3300 D 4 6166 F10 6169 J 6
313 3294 B15 3298 D 5 5145 H17 6167 C17 6170 J 5
314 3295 B17 3299 D 4 6165 C17 6168 J 8



ALL CAPACITORS ARE CHIP, EXEPT ELECTR. CAP.
ALL FIXED RESISTORS ARE CHIP

PRS.04077
T32-827

. . . V position AM
. . . V* position AM, with signal, set tuned
. . . V MU position AM, with signal, set muted (search/mode)
. . . V position FM M = Mono, S = Stereo
. . . V* position FM, with signal, set tuned
. . . V BK position FM + SK + BK (info in)
. . . V DK position FM + SK + BK + DK (info in)
. . . V position play, normal
. . . V position play, reverse
. . . V MSS position fast wind, MSS
. . . V ME position play, METAL
. . . V DB position play, DOLBY

1150 FM tuner

C101 = GND
C102 = –
C103 = GND
C104 = 0.0 V
C105 = 0.1 V / 1.7 V
C106 = 8.4 V
C107 = 1.3 - 5.5 V MP-7
C108 = 0.1 V / 1.4 V
C109 = GND
C110 = 1.7 V
C111 = 3.0 V
C112 = 8.4 V / 0.2 V
C113 = 1.8 V

1155 Thi-Fi IAC

1 = N.C.
2 = 2.5 V
3 = N.C.
4 = 0.5 V / 1.0 - 5.0 V*
5 = 4.2 V
6 = 7.8 V
7 = 8.2 V
8 = GND

1601 Thi-Fi Stereo Decoder

1 = 5.0 VM / 0.7 VS
2 = 3.5 V
3 = 3.4 V
4 = 2.5 V
5 = 3.4 V
6 = GND
7 = 0.5 V / 1.8 V*
8 = 8.3 V
9 = 1.0 V / 5.0 V*
10 = 0.5 V / 4.6 V*
11 = 4.9 V / 0.0 V
12 = 3.5 V
13 = 0.0 V / 5.0 V MU
14 = 5.0 V / 0.0 V MU
15 = 3.4 V
16 = 3.4 V
17 = 3.4 V
18 = 3.4 V
19 = 3.4 V
20 = 3.4 V

1602 Thi-Fi Dolby B

1 = 0.0 V / 5.0 V DB
2 = 4.2 V
3 = 4.2 V
4 = 3.4 V
5 = GND
6 = GND
7 = 3.4 V
8 = 4.2 V
9 = GND
10 = 8.4 V

6105 TEA6100

1 = 8.3 V / 8.2 V
2 = 0.6 V
3 = 0.5 V / 1.0 - 5.0 V* MP-5
4 = 0.0 V
5 = 0.6 V / 0.1 V* MP-6
6 = 40 kHz
7 = GND
8 = 8.3 V
9 = SCL (4.6 V)
10 = SDA (4.6 V)
11 = 4.1 V MP-3 / 4.5 V
12 = 4.6 V
13 = 4.6 V
14 = 2.4 V
15 = 4.4 V
16 = 3.0 V
17 = 3.0 V
18 = 3.0 V
19 = 3.0 V
20 = GND

6106 TSA6057

1 = 4 MHz
2 = 4 MHz
3 = 4.7 V
4 = GND
5 = 1.8 V
6 = 1.8 V
7 = 1.8 V
8 = 8.3 V / ≤ 0.8 V
9 = 40 kHz
10 = SDA (4.6 V)
11 = SCL (4.6 V)
12 = GND
13 = 1.3 - 5.5 V
14 = 2.1 V
15 = N.C.
16 = 8.5 V

6111 TEA6200

1 = 6.6 V
2 = 4.0 V
3 = 8.2 V
4 = 8.2 V
5 = 8.2 V
6 = 8.2 V
7 = 0.7 V
8 = 4.0 V
9 = 4.0 V
10 = 4.0 V
11 = 6.7 V
12 = 1.4 V MP-4
13 = 4.7 V
14 = 8.4 V / 0.2 V
15 = 4.7 V
16 = 4.7 V
17 = GND
18 = 1.0 V
19 = 1.3 V
20 = 3.3 V

6112 TEA6310T

1 = SDA (4.6 V)
2 = GND
3 = 3.9 V
4 = 3.9 V
5 = 3.9 V
6 = 3.9 V
7 = 3.9 V
8 = N.C.
9 = 6.6 V
10 = N.C.
11 = 7.7 V
12 = N.C.
13 = N.C.
14 = 3.9 V
15 = 3.9 V
16 = N.C.
17 = N.C.
18 = GND
19 = N.C.
20 = 3.9 V
21 = GND
22 = 3.9 V
23 = 3.9 V
24 = 3.9 V
25 = 3.9 V
26 = 3.9 V
27 = 7.8 V
28 = SCL (4.6 V)

6113/6114 TDA1516Q

1 = 2.2 V
2 = 2.2 V
3 = GND
4 = 2.2 V
5 = 6.7 V
6 = 14.3 V
7 = GND
8 = 14.3 V
9 = 6.7 V
10 = 14.3 V
11 = 14.2 V
12 = 6.7 V
13 = 2.2 V

6115/6117 BC847B

e = 3.3 V
b = 3.9 V
c = 7.8 V

6116/6118 BC847B

e = 3.3 V
b = 1.8 V
c = 7.8 V

6119/6122 L4916

1 = 14.2 V
2 = 2.5 V
3 = N.C.
4 = 8.4 V
5 = GND
6 = GND
7 = GND
8 = GND

6123 BD438

e = 14.3 V
b = 13.5 V
c = 14.2 V

6128 L4904

1 = 12.8 V
2 = 8.4 V
3 = 5.6 V
4 = GND
5 = N.C.
6 = 4.2 V
7 = 5.0 V
8 = 5.0 V

6129 BC847B

e = GND
b = 0.6 V
c = 0.0 V

6130 BC847B

e = GND
b = 0.0 V
c = 4.9 V

6133 BC847B

e = GND
b = 0.7 V
c = 0.0 V

6140 TA7784P

1 = 8.1 V
2 = 3.3 V
3 = 0.0 V / 4.9 V
4 = 3.3 V
5 = 2.9 V
6 = 2.9 V
7 = 2.9 V
8 = GND
9 = 2.9 V
10 = N.C.
11 = 2.9 V
12 = 2.9 V
13 = 2.9 V
14 = 3.3 V
15 = 0.1 V / 4.9 V ME
16 = 3.3 V

6150 TMP42C70N

1 = 2 MHz
2 = 2 MHz
3 = 5.0 V / 0.5 V
4 = 0.0 V / 4.8 V MU
5 = 0.0 V / 4.9 V
6 = 4.6 V
7 = 0.0 V / 4.8 V MSS / 0.0 V
8 = 0.0 V / 4.8 V MU
9 = N.C.
10 = N.C.
11 = N.C.
12 = 4.0 V / 4.0 V / 0.0 V MSS
13 = 4.5 V / 1.5 V
14 = GND
15 = 0.1 V / 4.9 V ME
16 = SDA (4.6 V)
17 = SCL (4.6 V)
18 = 0.4 V / 10 V / 0.4 V
19 = 4.6 V
20 = N.C.
21 = N.C.
22 = N.C.
23 = N.C.
24 = N.C.
25 = N.C.
26 = N.C.
27 = N.C.
28 = 4.9 V

6151 BC847B

e = GND
b = 0.0 V / 0.7 V MU
c = 5.0 V / 0.0 V MU

6153 BC847B

e = GND
b = 0.6 V / 0.0 V MSS
c = 14.2 V MSS / 0.1 V

6160 LA2000

1 = 1.9 V
2 = –
3 = 1.9 V
4 = N.C.
5 = GND
6 = 0.0 V / 4.8 V MSS / 0.0 V
7 = N.C.
8 = N.C.
9 = 8.5 V

6166 TMP47P800N

1 = 0.0 V / 5.0 V DB
2 = 5.0 VM / 7.0 VS
3 = 0.0 V / 5.0 V MU / 5.0 V
4 = 4.9 V / 0.0 V
5 = 5.0 V / 5.0 V / 0.1 V / A RADIO / A:EJECT/WIND/MODE
6 = 5.0 V / 0.0 V BEEP
7 = 5.0 V
8 = N.C.
9 = N.C.
10 = N.C.
11 = N.C.
12 = N.C.
13 = 5.0 V
14 = GND
15 = GND
16 = 5.0 V
17 = 3.5 V
18 = 5.0 V
19 = 5.0 V
20 = 5.0 V
21 = GND
22 = 5.0 V
23 = 5.0 V
24 = 0.0 V / 5.0 V DX (AST)
25 = 7.6 V / 0.0 V / 0.0 V
26 = 5.0 V
27 = 5.0 V
28 = 5.0 V
29 = 5.0 V
30 = GND
31 = 4 MHz
32 = 4 MHz
33 = 4.9 V
34 = 4.2 V
35 = 4.8 V DK
36 = 4.8 V BK
37 = 0.4 V / 10 V / 0.4 V
38 = 0.5 V / 5.0 V
39 = N.C.
40 = SDA (4.6 V)
41 = SCL (4.6 V)
42 = 5.0 V

6169 MC78L05ACP

1 = 13.4 V
2 = GND
3 = 5.0 V

6170/6402 X2404I

1 = GND
2 = GND
3 = GND
4 = GND
5 = SDA (4.6 V)
6 = SCL (4.6 V)
7 = GND
8 = 5.0 V

6601/6602 BC858B

e = 1.4 V
b = 0.8 V / 1.3 V*
c = 1.4 V / 0.0 V*

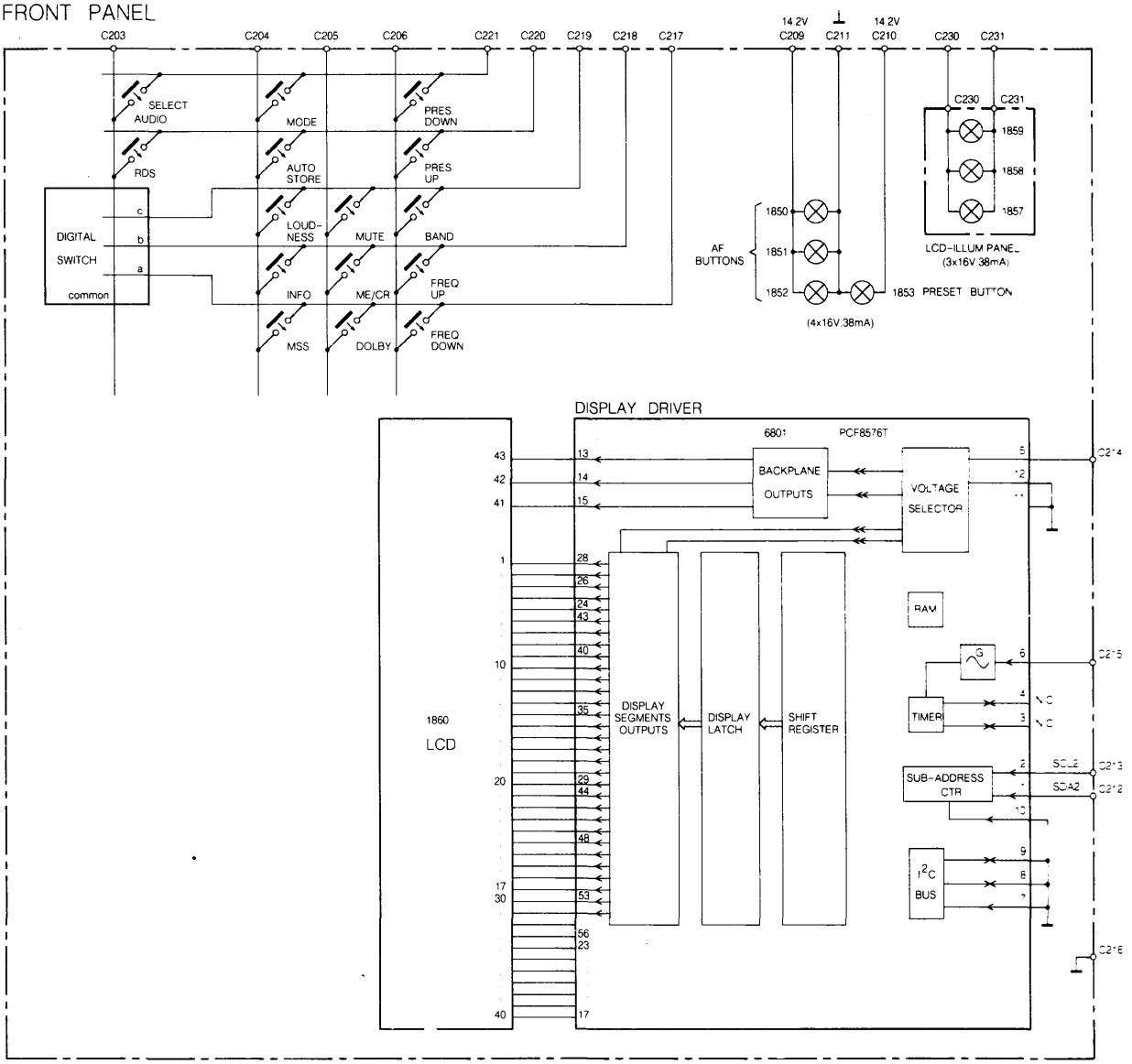
6604 BC847B

e = 0.0 V
b = 0.6 V / 0.1 V*
c = 1.0 V / 5.0 V*

6606/6607 BC847B

e = 1.9 V
b = 2.6 V
c = 5.5 V

FRONT PANEL

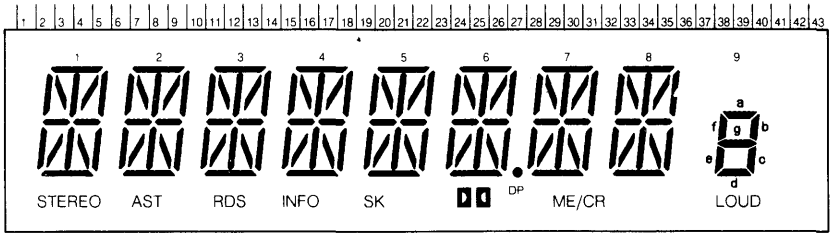


L.C.D. PINNING

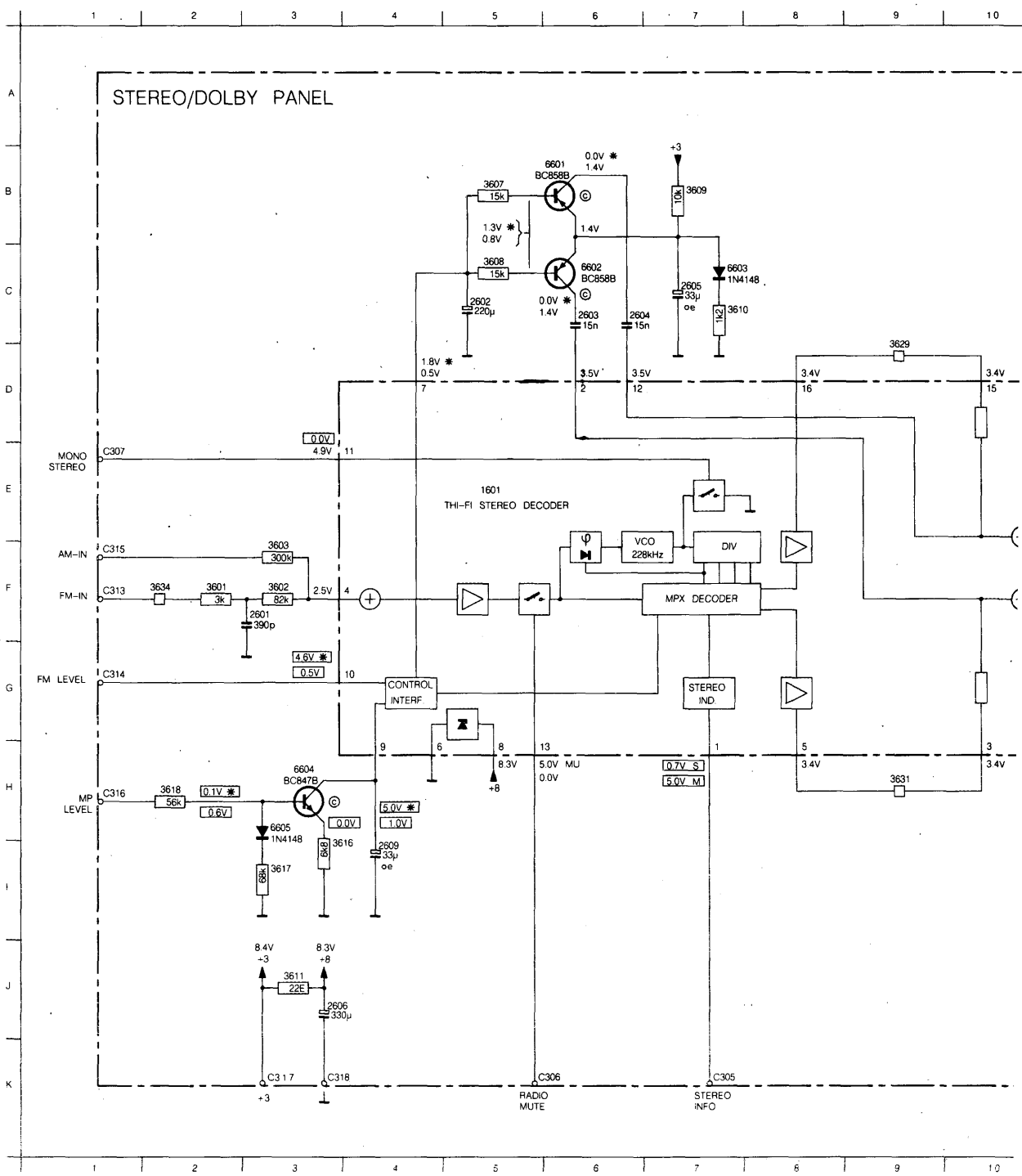
DISPLAY PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
COMMON A	F1	H1	A1	J1	B1	F2	H2	A2	J2	B2	F3	H3	A3	J3	B3	F4	H4	A4	J4	B4
COMMON B	E1	G1	I1	K1	C1	E2	G2	I2	K2	C2	E3	G3	I3	K3	C3	E4	G4	I4	I4	C4
COMMON C	STEREO	M1	D1	L1	AST	a9	M2	D2	L2	RDS	b9	M3	D3	L3	INFO	g9	M4	D4	L4	SK

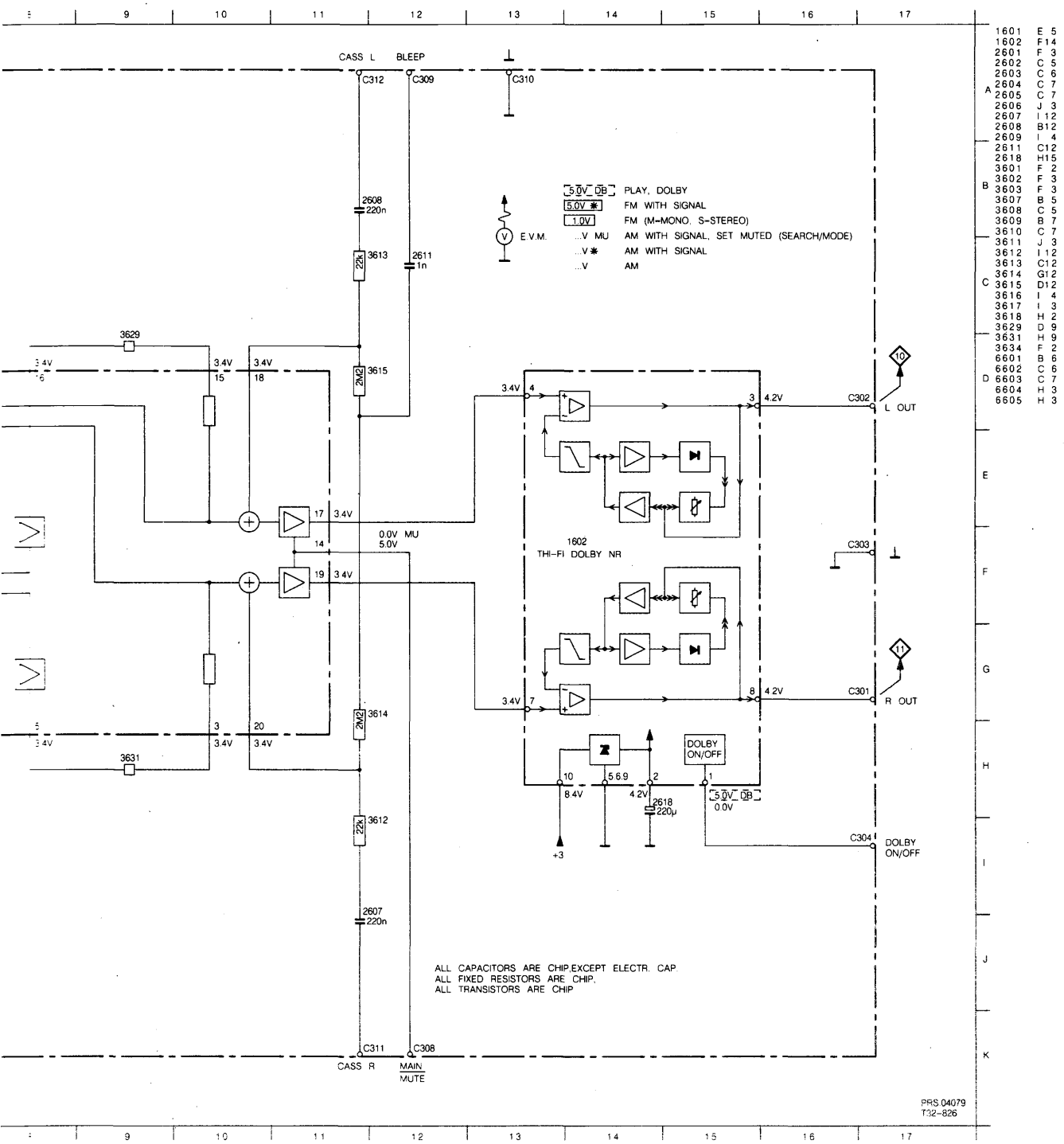
DISPLAY PIN	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
COMMON A	F5	H5	A5	J5	B5	F6	H6	A6	J6	B6	F7	H7	A7	J7	B7	F8	H8	A8	J8	B8
COMMON B	E5	G5	I5	K5	C5	E6	G6	I6	K6	C6	E7	G7	I7	K7	C7	E8	G8	I8	I8	C8
COMMON C	c9	M5	D5	L5	DP	ME/CR	M6	D6	L6	DP	LOUD	M7	D7	L7	d9	e9	M8	D8	L8	f9

DISPLAY PIN	41	42	43
COMMON A	A		
COMMON B		B	
COMMON C			C

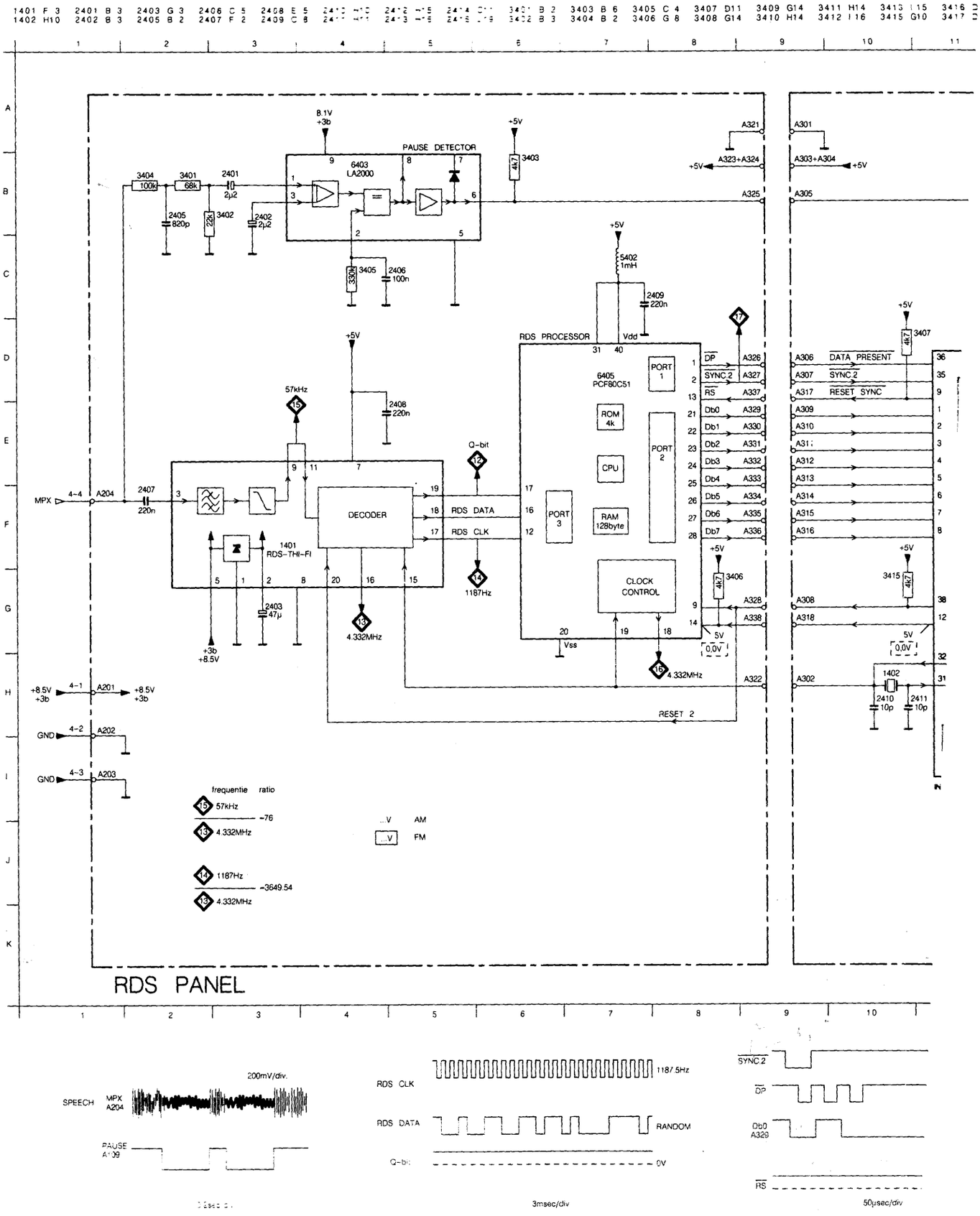


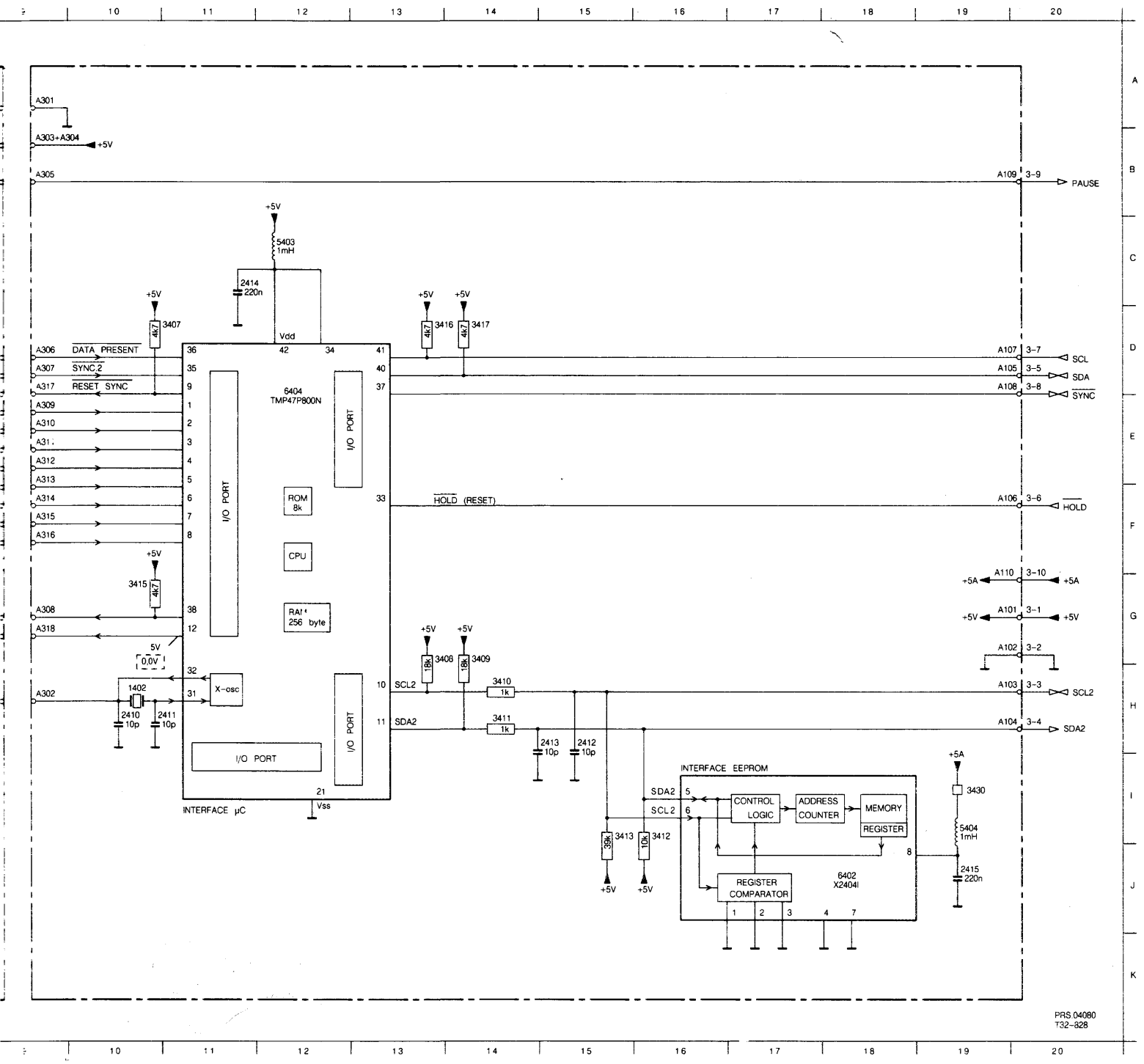
PRS.04078
T32-827

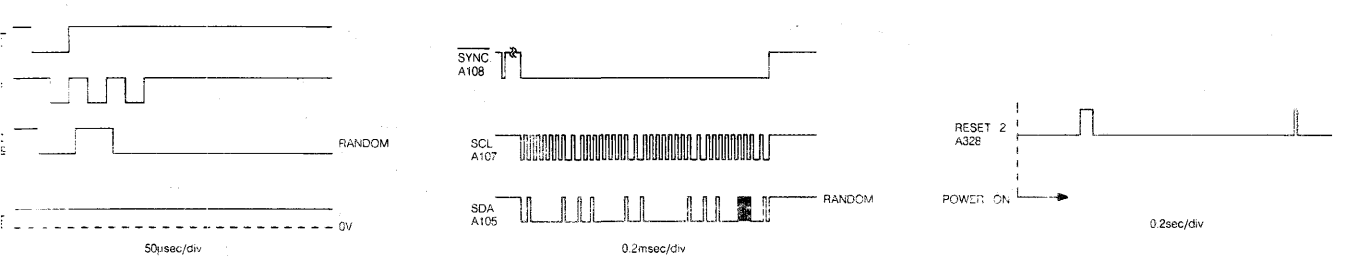

STEREO/DOLBY PANEL
6601 BC858B
6602 BC858B
6603 1N4148
6604 BC847B
6605 1N4148
3607 15k
3608 15k
3609 10k
3610 1k2
3611 22E
3616 6k8
3617 68k
3618 56k
3629
3631
2602 220µ
2603 15n
2604 15n
2605 33µ oe
2606 330µ
2609 33µ oe
0.0V * 1.4V
1.3V * 0.8V
1.4V
0.0V * 1.4V
+3
1.8V * 0.5V
3.5V
3.5V
3.4V
3.4V
MONO STEREO
C307
0.0V 4.9V
1601 THI-FI STEREO DECODER
AM-IN
C315
3603 300k
FM-IN
C313
3634
3601 3k
3602 82k
2.5V
2601 390p
VCO 228kHz
DIV
MPX DECODER
4.6V * 0.5V
FM LEVEL
C314
CONTROL INTERF
STEREO IND.
8.3V
+8
5.0V MU
0.0V
0.7V S
5.0V M
3.4V
MP LEVEL
C316
0.1V * 0.6V
0.0V
5.0V * 1.0V
8.4V +3
8.3V +8
C317
C318
+3
C306
RADIO MUTE
C305
STEREO INFO



1601 E 5
1602 F14
2601 F 3
2602 C 5
2603 C 6
2604 C 7
2605 C 7
2606 J 3
2607 I 12
2608 B12
2609 I 4
2611 C12
2618 H15
3601 F 2
3602 F 3
3603 F 3
3607 B 5
3608 C 5
3609 B 7
3610 C 7
3611 J 3
3612 I 12
3613 C12
3614 G12
3615 D12
3616 I 4
3617 I 3
3618 H 2
3629 D 9
3631 H 9
3634 F 2
6601 B 6
6602 C 6
6603 C 7
6604 H 3
6605 H 3


1401 F 3 2401 B 3 2403 G 3 2406 C 5 2408 E 5 3401 B 2 3403 B 6 3405 C 4 3407 D11 3409 G14 3411 H14 3413 I 15 3416 D
1402 H10 2402 B 3 2405 B 2 2407 F 2 2409 C 8 3402 B 3 3404 B 2 3406 G 8 3408 G14 3410 H14 3412 I 16 3415 G10 3417 D
PAUSE DETECTOR
6403 LA2000
RDS PROCESSOR
6405 PCF80C51
DECODER
1401 RDS-THI-FI
ROM 4k
RAM 128byte
CPU
PORT 1
PORT 2
PORT 3
CLOCK CONTROL
RDS DATA
RDS CLK
RESET 2
DATA PRESENT
SYNC.2
RESET SYNC
57kHz
1187Hz
4.332MHz
Q-bit
MPX
frequentie ratio
57kHz
4.332MHz
-76
1187Hz
4.332MHz
-3649.54
AM
FM
RDS PANEL
SPEECH
MPX A204
200mV/div.
PAUSE A109
RDS CLK
1187.5Hz
RDS DATA
RANDOM
Q-bit
0V
SYNC.2
DP
Db0 A329
RS
3msec/div
50µsec/div


A301
A303+A304
+5V
A305
A109 3-9 PAUSE
5403 1mH
2414 220n
Vdd
A306 DATA PRESENT
A307 SYNC 2
A317 RESET SYNC
3407 4k7
3416 4k7
3417 4k7
A107 3-7 SCL
A105 3-5 SDA
A108 3-8 SYNC
6404 TMP47P800N
I/O PORT
ROM 8k
CPU
RAM 256 byte
HOLD (RESET)
A106 3-6 HOLD
3415 4k7
A308
A318
A110 3-10 +5A
A101 3-1 +5V
A102 3-2
3408 18k
3409 18k
3410 1k
3411 1k
SCL2
SDA2
A103 3-3 SCL2
A104 3-4 SDA2
2413 10p
2412 10p
X-osc
1402
2410 10p
2411 10p
A302
INTERFACE µC
INTERFACE EEPROM
CONTROL LOGIC
ADDRESS COUNTER
MEMORY
REGISTER
REGISTER COMPARATOR
6402 X2404I
3413 39k
3412 10k
3430
5404 1mH
2415 220n
PRS.04080
T32-828


RANDOM
0V
50µsec/div
SYNC A108
SCL A107
SDA A105
RANDOM
0.2msec/div
RESET 2 A328
POWER ON
0.2sec/div