ORDER NO. AD9607155C8

Service Manual

Receiver

Home THX control receiver

DOLBY SURROUND PRO · LOGIC

SA-TX50

LUCASFILM THX®

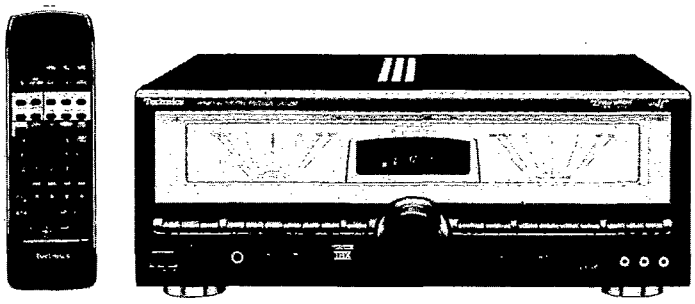
Manufactured under license from Lucasfilm Ltd. U.S. patent numbers 5,043,970; 5,189,703; and 5,222,059. Foreign patents pending. Lucasfilm, THX and Home THX Cinema are registered trademarks of Lucasfilm Ltd.

Colour

(B)...Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy.	
(GU)	Asia, Middle Near East and Africa, Latin America, .	
(GN)	Oceania.	



Specifications (DIN 45 500)

■ POWER AMPLIFIER SECTION

(POWER AMPLIFIER INPUT)

Power output
- **DIN 1 kHz (T.H.D. 1%)** 2×130 W (6 Ω)

20 Hz–20 kHz continuous power output both channels driven 2×125 W (6 Ω)

Total harmonic distortion
- **rated power at 20 Hz–20 kHz** 0.05% (6 Ω)
- **half power at 1 kHz** 0.03% (6 Ω)

Power output at the Dolby Pro Logic operation
- **DIN 1 kHz (T.H.D. 1%)**
  - **Front** 2×120 W (6 Ω)
  - **Center** 120 W (6 Ω)
  - **Surround** 2×100 W (6 Ω)

Intermodulation distortion
- **rated power at 60 Hz: 7 kHz=4:1, SMPTE** 0.3% (8 Ω)

Damping factor 25 (6 Ω)

Load impedance
- **Front**
  - **A or B** 4–16 Ω
  - **A and B** 8–16 Ω
- **Center** 4–16 Ω
- **Surround** 4–16 Ω

■ PRE AMPLIFIER SECTION

Frequency response
- **CD, TAPE, VCR 1, VCR 2, VCR 3, VDP, VDP6CH, TV** 20 Hz–20 kHz, ±1 dB

Input sensitivity and impedance
- **CD, TAPE, VCR 1, VCR 2, VCR 3, VDP, VDP6CH, TV** 300 mV/34 kΩ

S/N at rated power (6 Ω)
- **CD, TAPE, VCR 1, VCR 2, VCR 3, VDP, VDP6CH, TV** 70 dB

Tone controls
- **BASS** 50 Hz, +10 to –10 dB
- **TREBLE** 20 kHz, +10 to –10 dB

* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents: U.S. numbers 3,632,886, 3,7,56,792 and 3,959,590; Canada numbers 1,004,603 and 1,037,877.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

■ FM TUNER SECTION

Frequency range 87.50–108.00 MHz

Sensitivity
- **S/N 30 dB** 1.5 µV/75 Ω
- **S/N 26 dB** 1.3 µV/75 Ω
- **S/N 20 dB** 1.2 µV/75 Ω

IHF usable sensitivity 1.5 µV/75 Ω (IHF '58)

IHF 46 dB stereo quieting sensitivity 22 µV/75 Ω

Total harmonic distortion
- **MONO** 0.2%
- **STEREO** 0.3%

S/N
- **MONO** 60 dB (75 dB, IHF)
- **STEREO** 58 dB (71 dB, IHF)

Frequency response 20 Hz–15 kHz, +1 dB, –2 dB

Alternate channel selectivity
- **±400 kHz** 65 dB

Capture ratio 1 dB

Image rejection at 98 MHz 40 dB

IF rejection at 98 MHz 70 dB

Spurious response rejection at 98 MHz 70 dB

AM suppression 50 dB

Stereo separation
- **1 kHz** 40 dB

Carrier leak
- **19 kHz** –30 dB (–35 dB, IHF)
- **38 kHz** –50 dB (–55 dB, IHF)

Channel balance (250 Hz–6.3 kHz) ±1.5 dB

Limitting point 1.2 µV

Bandwidth
- **IF amplifier** 180 kHz

Technics®

■Fan Motor Troubleshooting Guide

The Model SA-TX50 employ fan motor error sensing electronics.
If the cooling fan is not operation and "OVER LOAD" is displayed on the FL display, check the fan motor and its driving circuit.

"OVERLOAD" is displayed on the FL display.

Is the air cooling path blocked or the fan motor jammed by any external obstacle?
YES → Remove the obstacle.
NO

Remove the fan from the unit.

Is the fan motor's DC resistance 20~30Ω ?
NO → Fan motor failure
Short circuit: DC resistance below 5Ω
Open circuit: DC resistance over 1kΩ
YES

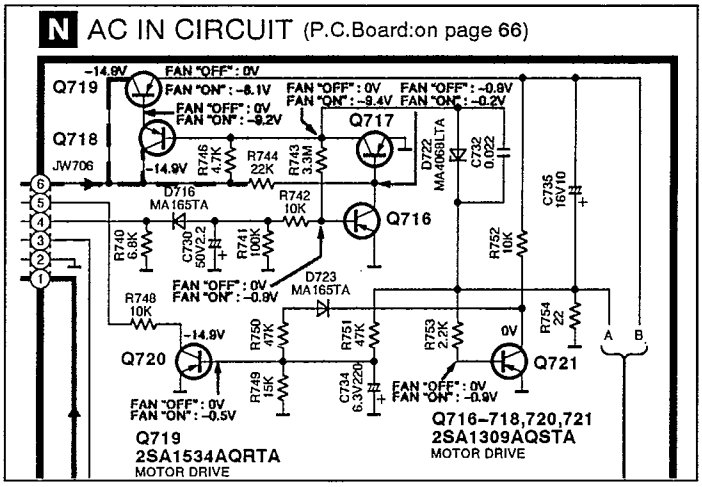
Reinstall the fan on the unit.

Are the terminal voltage of Q716~Q719 normal in both active and inactive states of the fan motor? (See table 1.)
NO → Check the integrity of Q716~Q719 and the fan motor driving circuit. (See Fig.1.)
YES

Ref No. \ Voltage		fan. off	fan. on
Q716	E	0V	0V
	C	−0.9V	−0.2V
	B	0V	−0.9V
Q717	E	0V	0V
	C	0V	−9.4V
	B	−0.9V	−0.2V
Q718	E	0V	−9.2V
	C	−14.9V	−14.9V
	B	0V	−9.4V
Q719	E	0V	−8.1V
	C	−14.9V	−14.9V
	B	0V	−9.2V

(Table 1)

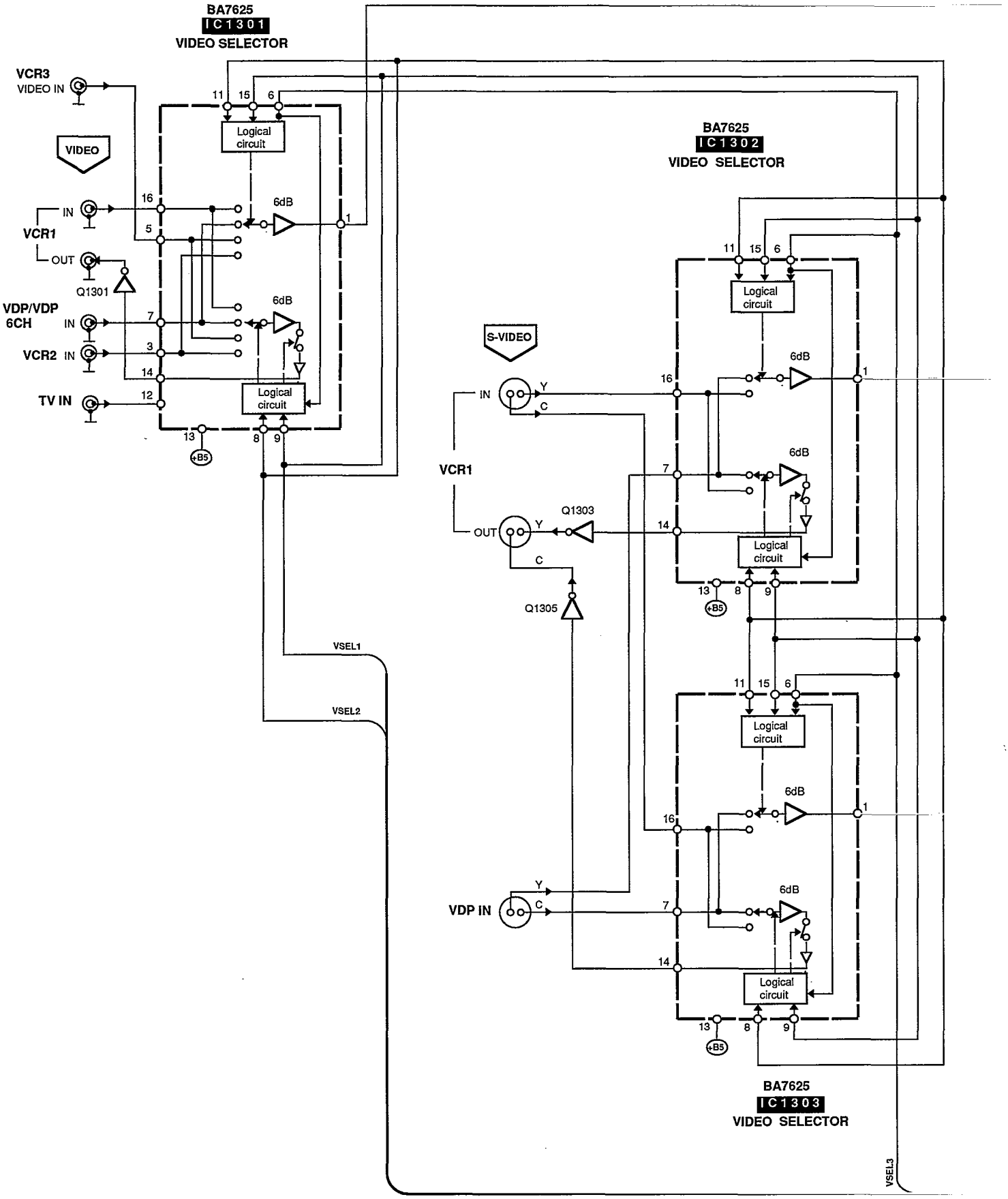
Fig. 1

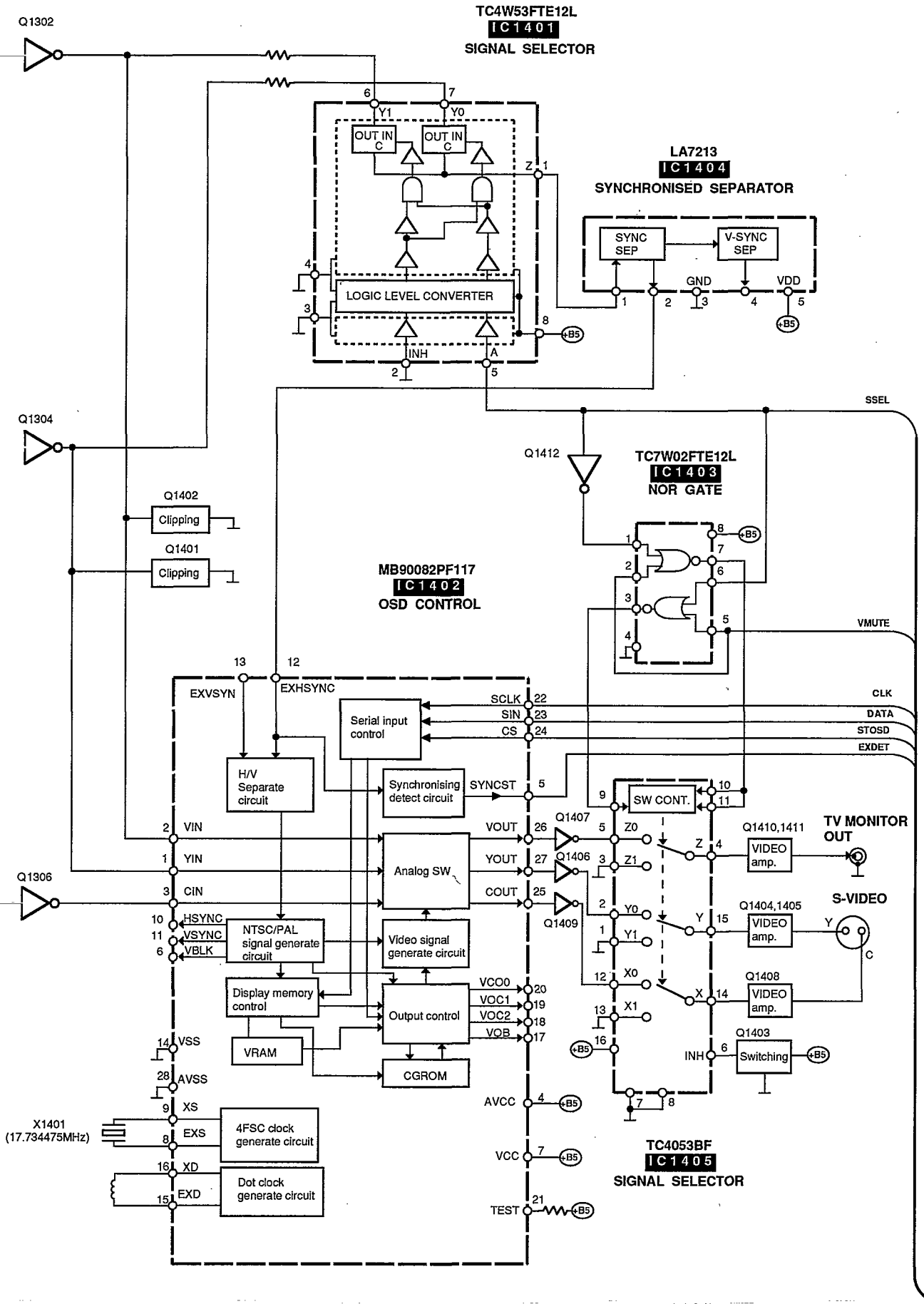


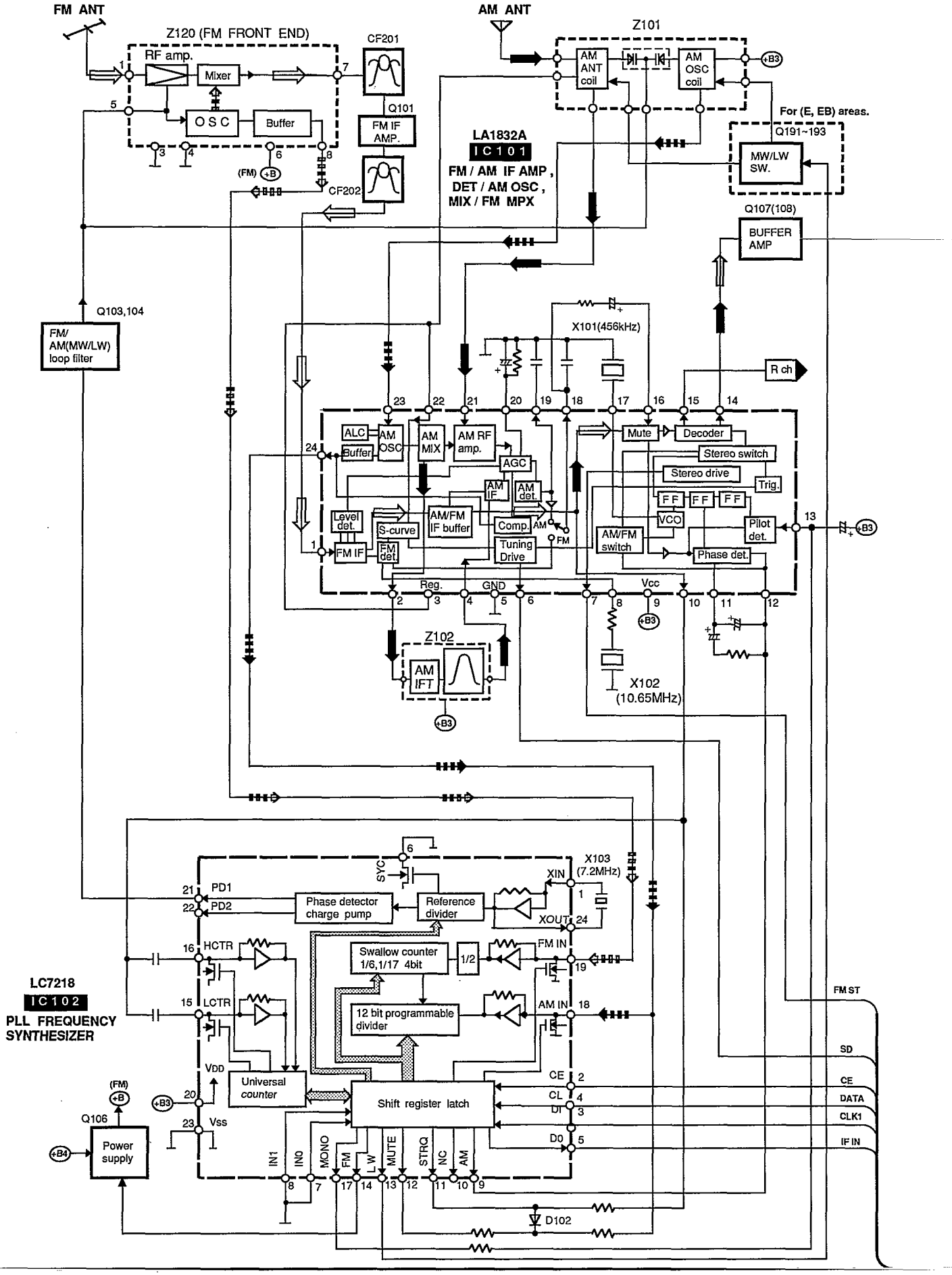
Is an audio signal present at pins ① and ④ of IC801 or pins ① and ④ of IC802 or pin ⑦ of IC803.
NO → The power IC (IC801 or IC802 or IC803) is defective.
YES

The fan motor, power ICs and fan driver are functioning normally.

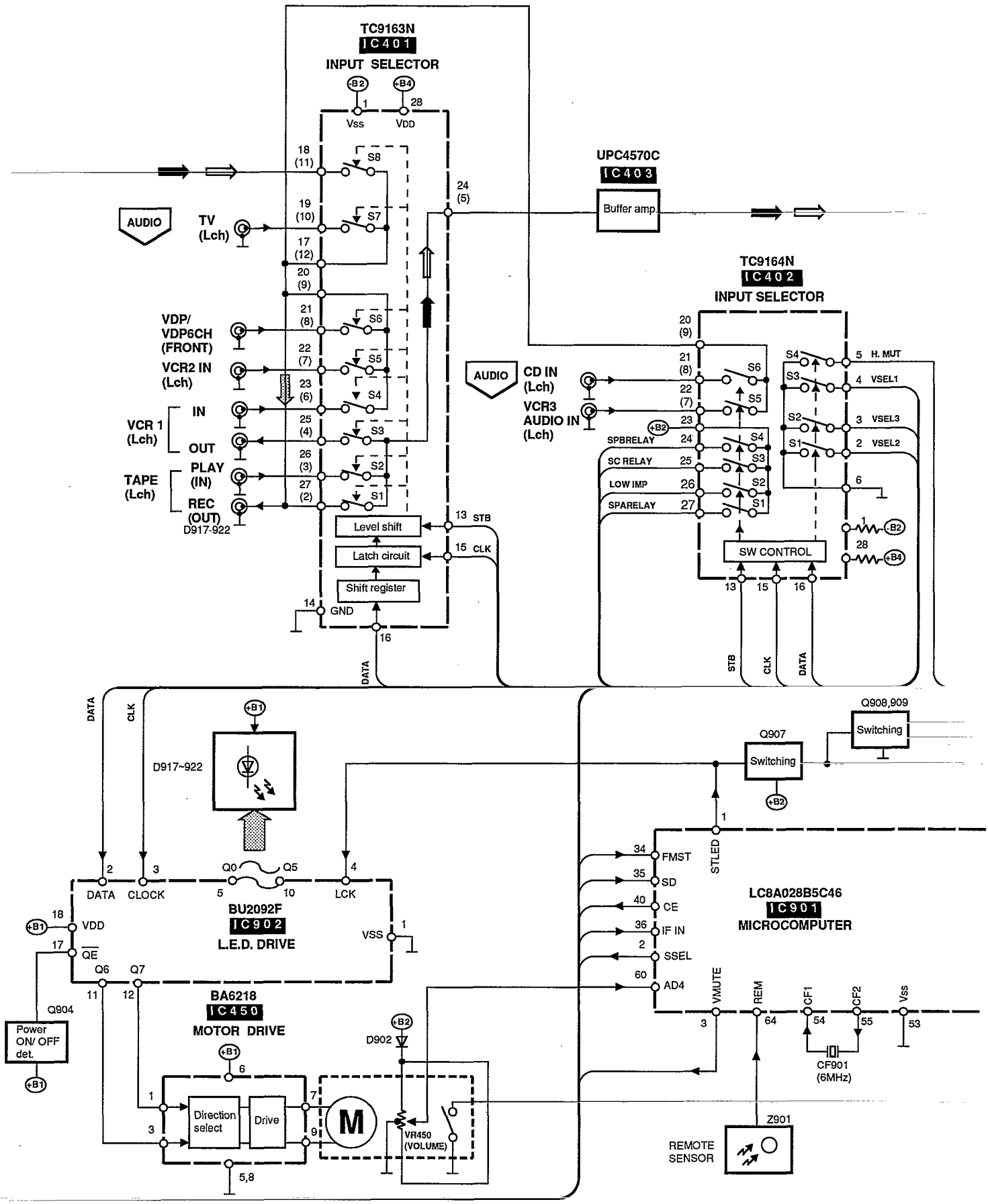
■Block Diagram



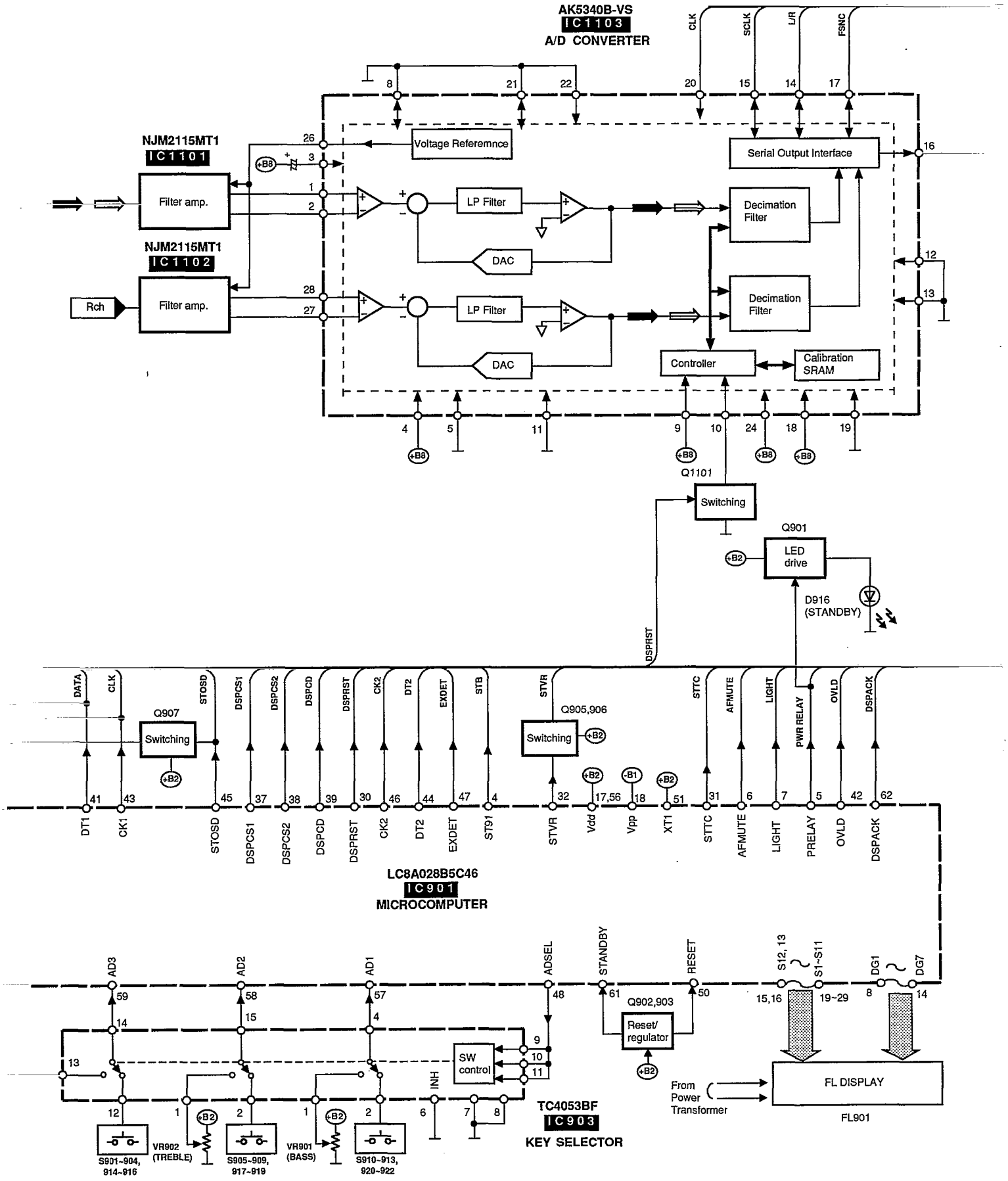

TC4W53FTE12L
IC1401
SIGNAL SELECTOR
LA7213
IC1404
SYNCHRONISED SEPARATOR
SYNC SEP
V-SYNC SEP
GND
VDD
LOGIC LEVEL CONVERTER
INH
SSEL
Q1302
Q1304
Q1306
Q1412
TC7W02FTE12L
IC1403
NOR GATE
Q1402
Clipping
Q1401
Clipping
MB90082PF117
IC1402
OSD CONTROL
VMUTE
CLK
DATA
STOSD
EXDET
EXVSYN
EXHSYNC
Serial input control
SCLK
SIN
CS
H/V Separate circuit
Synchronising detect circuit
SYNCST
SW CONT.
VIN
YIN
CIN
HSYNC
VSYNC
VBLK
NTSC/PAL signal generate circuit
Analog SW
VOUT
YOUT
COUT
Video signal generate circuit
Display memory control
VRAM
Output control
VCO0
VOC1
VOC2
VOB
CGROM
VSS
AVSS
AVCC
VCC
TEST
XS
EXS
XD
EXD
X1401
(17.734475MHz)
4FSC clock generate circuit
Dot clock generate circuit
Q1407
Q1406
Q1409
Z0
Z1
Y0
Y1
X0
X1
Q1410,1411
VIDEO amp.
TV MONITOR OUT
Q1404,1405
S-VIDEO
Q1408
Q1403
Switching
TC4053BF
IC1405
SIGNAL SELECTOR

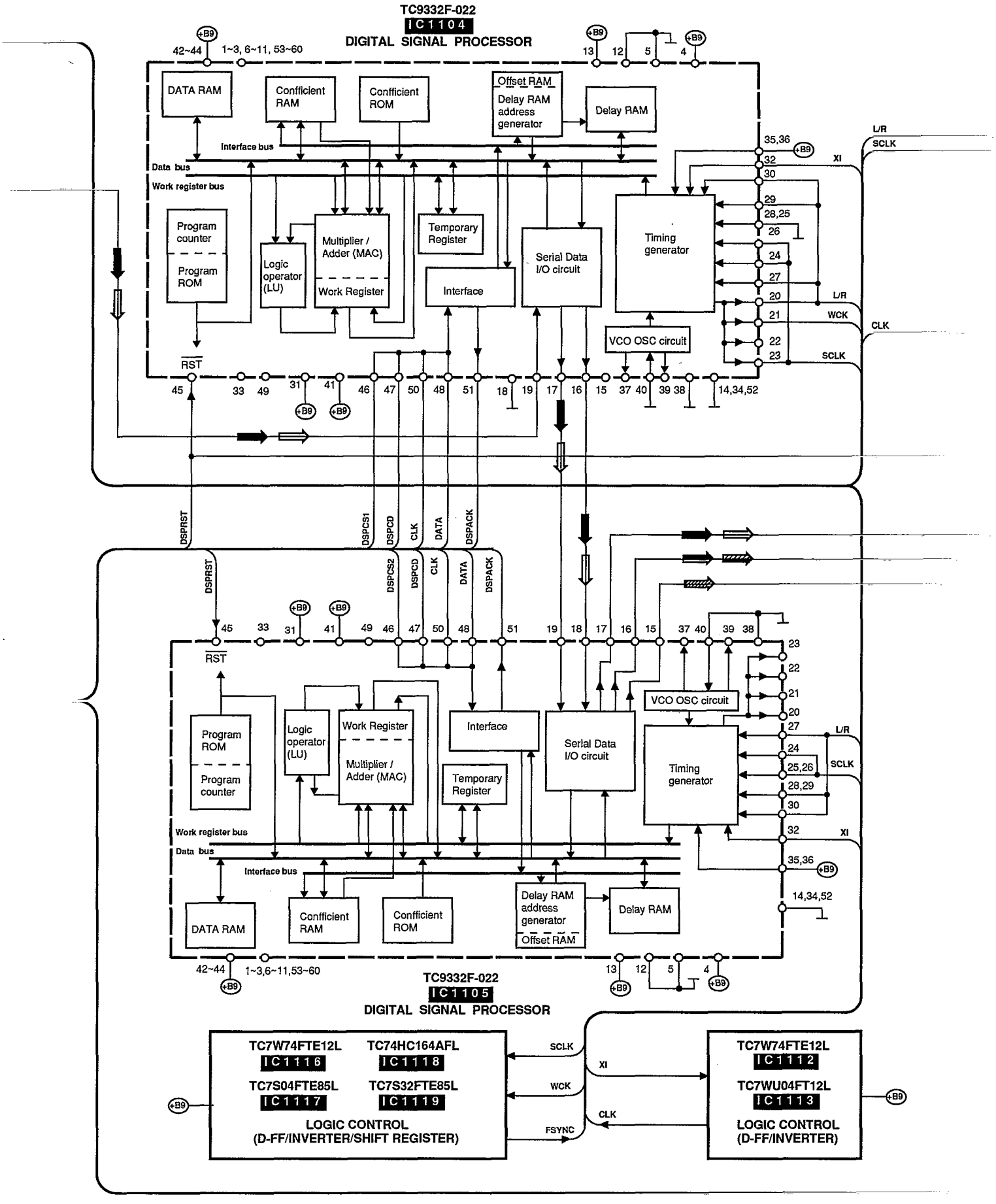

FM ANT
AM ANT
Z120 (FM FRONT END)
RF amp.
Mixer
O S C
Buffer
CF201
Q101
FM IF AMP.
CF202
Z101
AM ANT coil
AM OSC coil
For (E, EB) areas.
Q191~193
MW/LW SW.
LA1832A
IC101
FM / AM IF AMP , DET / AM OSC , MIX / FM MPX
Q107(108)
BUFFER AMP
Q103,104
FM/ AM(MW/LW) loop filter
X101(456kHz)
R ch
ALC
AM OSC
Buffer
AM MIX
AM RF amp.
AGC
AM IF
AM det.
Mute
Decoder
Stereo switch
Stereo drive
Trig.
F F
VCO
Pilot det.
Level det.
S-curve
AM/FM IF buffer
Comp.
Tuning Drive
FM IF
FM det.
AM/FM switch
Phase det.
Reg.
GND
Vcc
Z102
AM IFT
X102 (10.65MHz)
LC7218
IC102
PLL FREQUENCY SYNTHESIZER
SYC
X103 (7.2MHz)
XIN
XOUT
PD1
PD2
Phase detector charge pump
Reference divider
HCTR
LCTR
Swallow counter 1/6,1/17 4bit
1/2
FM IN
12 bit programmable divider
AM IN
VDD
Universal counter
Shift register latch
Vss
CE
CL
DI
DO
Q106
Power supply
IN1
IN0
MONO
FM
L/W
MUTE
STRQ
NC
AM
D102
FM ST
SD
CE
DATA
CLK1
IF IN

● Signal line : FM signal : FM OSC signal : AM(MW/LW) signal : AM OSC signal
: Rec out signal ※ ( ) indicates pin No. of right channel.

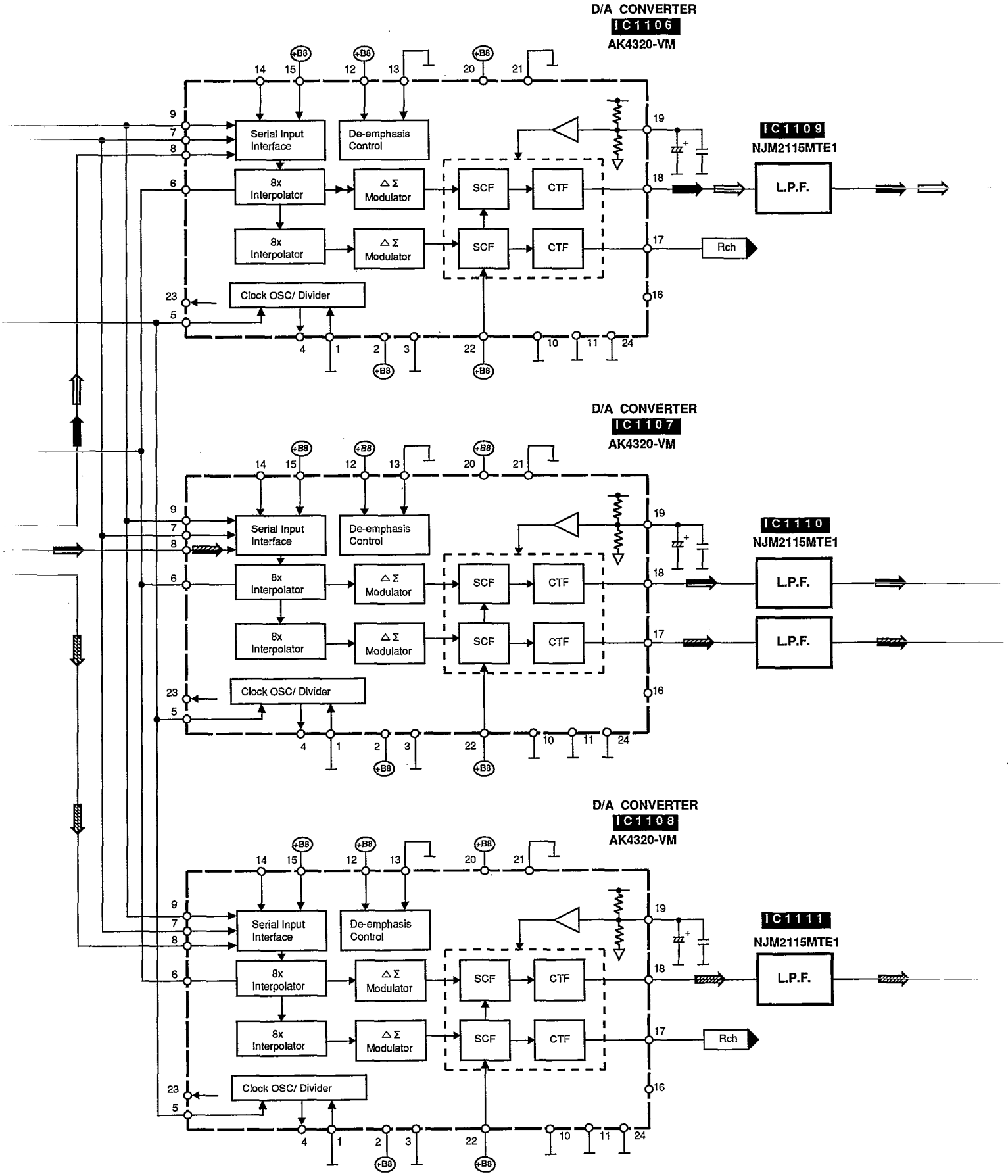


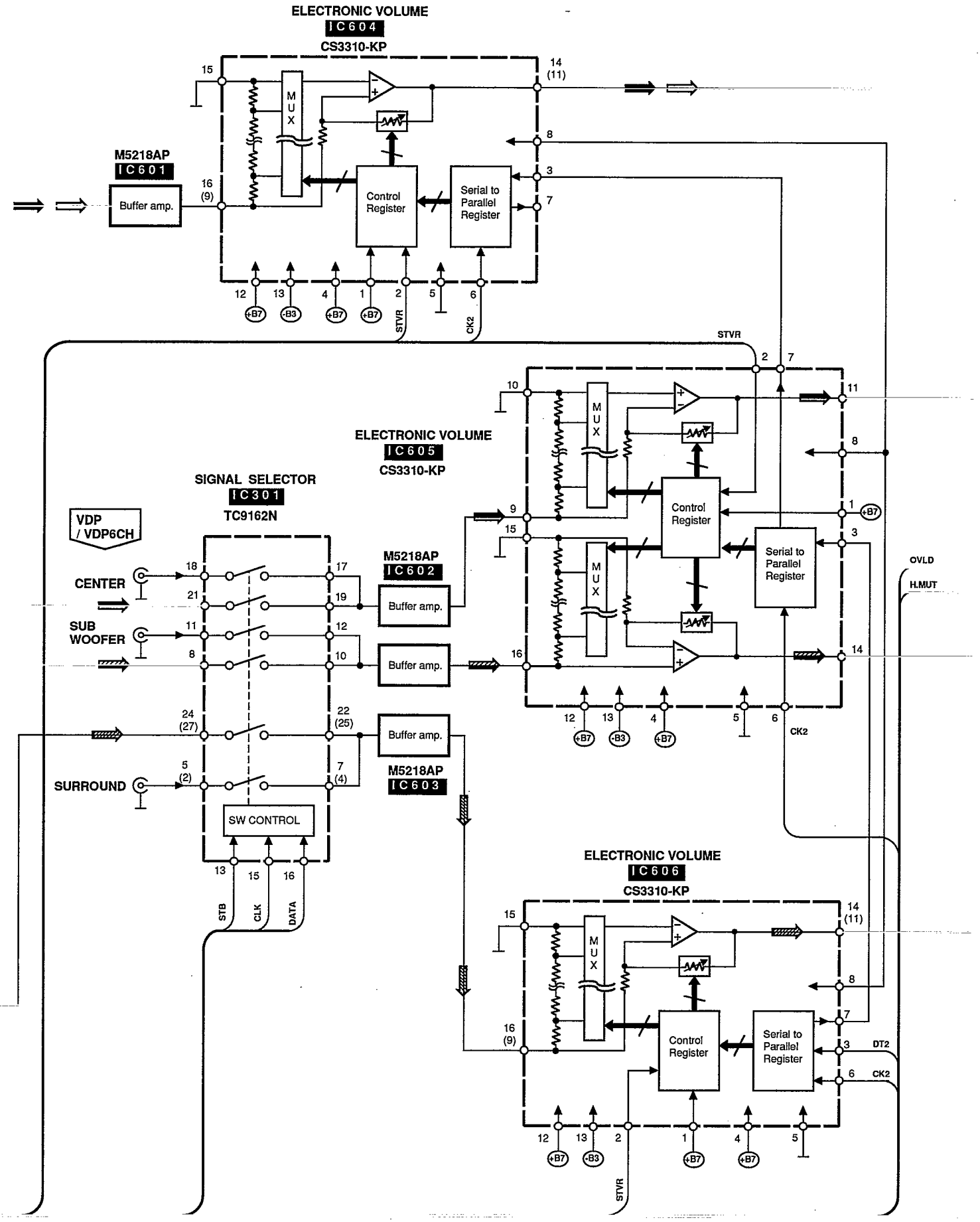
• Signal line ⇨ : FM signal ➡ : AM(MW/LW) signal
⇨ : Subwoofer signal ⇨ : Surround speaker drive signal ⇨ : Center speaker drive signal



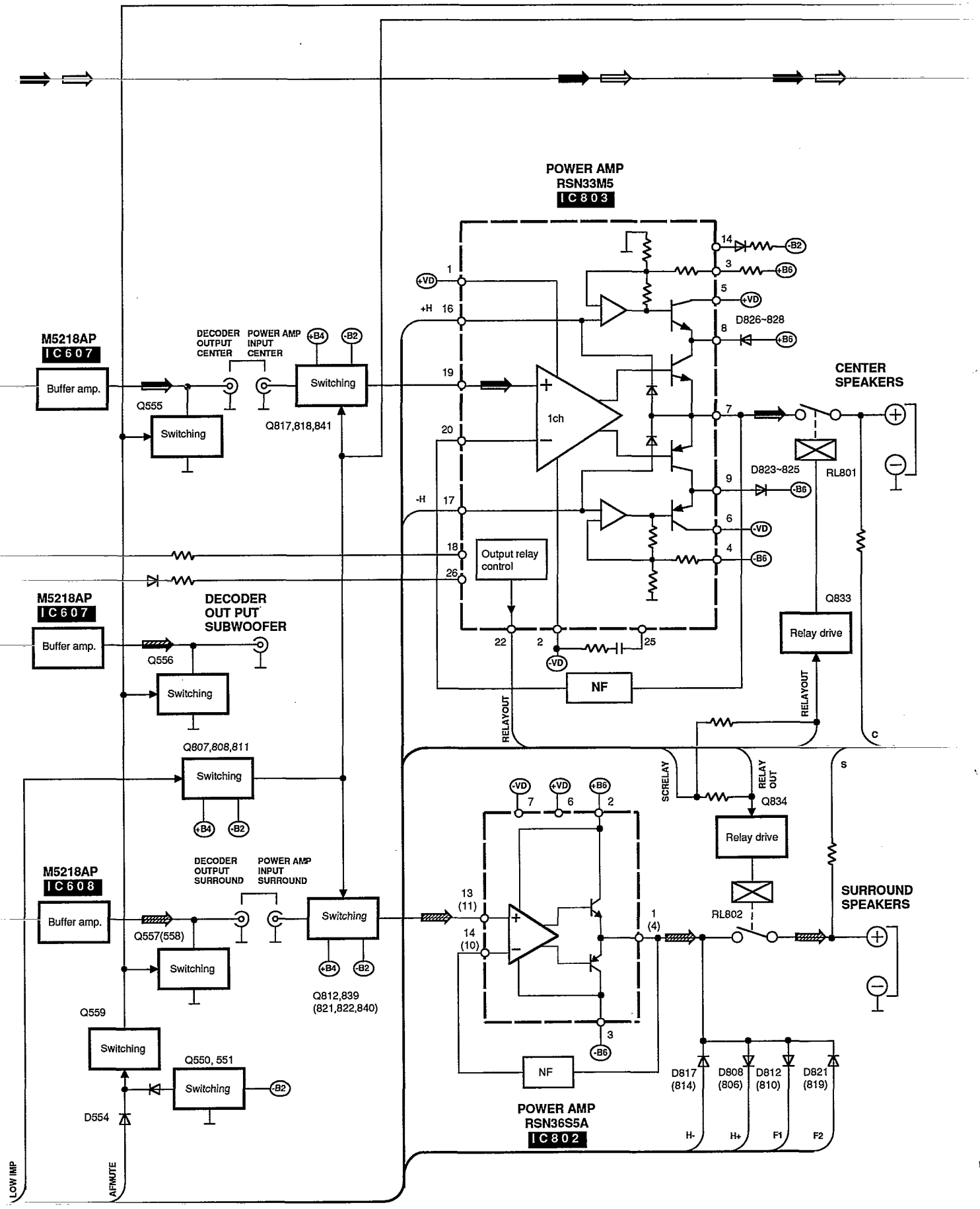

TC9332F-022
IC1104
DIGITAL SIGNAL PROCESSOR
DATA RAM
Confficient RAM
Confficient ROM
Offset RAM
Delay RAM address generator
Delay RAM
Interface bus
Data bus
Work register bus
Program counter
Program ROM
Logic operator (LU)
Multiplier / Adder (MAC)
Work Register
Temporary Register
Interface
Serial Data I/O circuit
Timing generator
VCO OSC circuit
RST
L/R
SCLK
XI
WCK
CLK
DSPRST
DSPCS1
DSPCS2
DSPCD
CLK
DATA
DSPACK
TC9332F-022
IC1105
DIGITAL SIGNAL PROCESSOR
TC7W74FTE12L IC1116
TC74HC164AFL IC1118
TC7S04FTE85L IC1117
TC7S32FTE85L IC1119
LOGIC CONTROL
(D-FF/INVERTER/SHIFT REGISTER)
SCLK
WCK
FSYNC
XI
CLK
TC7W74FTE12L IC1112
TC7WU04FT12L IC1113
LOGIC CONTROL
(D-FF/INVERTER)

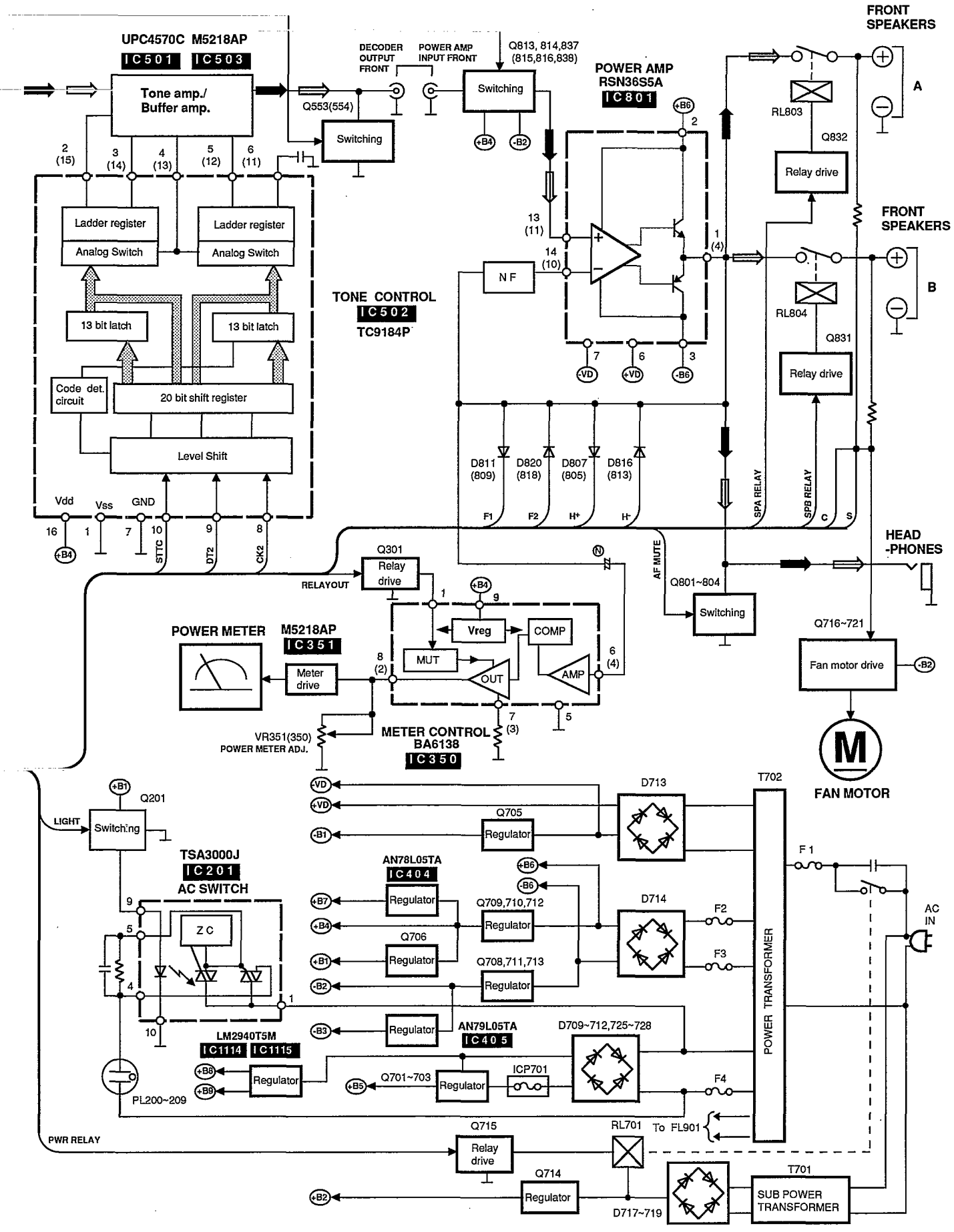
• Signal line : FM signal : AM(MW/LW) signal
: Subwoofer signal : Surround speaker drive signal : Center speaker drive signal



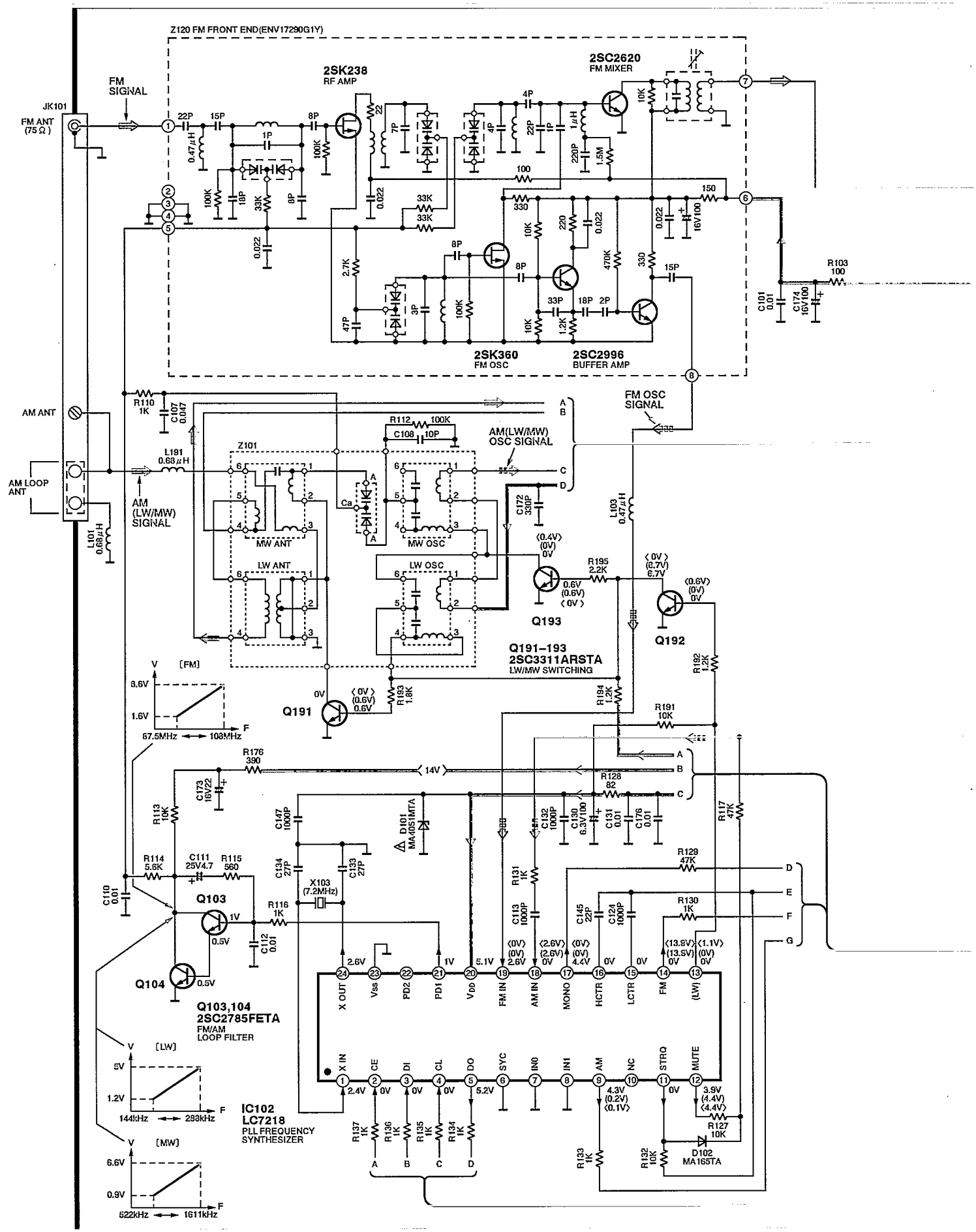

ELECTRONIC VOLUME
IC604
CS3310-KP
M5218AP
IC601
Buffer amp.
MUX
Control Register
Serial to Parallel Register
STVR
CK2
ELECTRONIC VOLUME
IC605
CS3310-KP
SIGNAL SELECTOR
IC301
TC9162N
VDP / VDP6CH
CENTER
SUB WOOFER
SURROUND
SW CONTROL
STB
CLK
DATA
M5218AP
IC602
M5218AP
IC603
ELECTRONIC VOLUME
IC606
CS3310-KP
OVLD
H.MUT
DT2
CK2

• Signal line : FM signal : AM(MW/LW) signal
: Subwoofer signal : Surround speaker drive signal : Center speaker drive signal

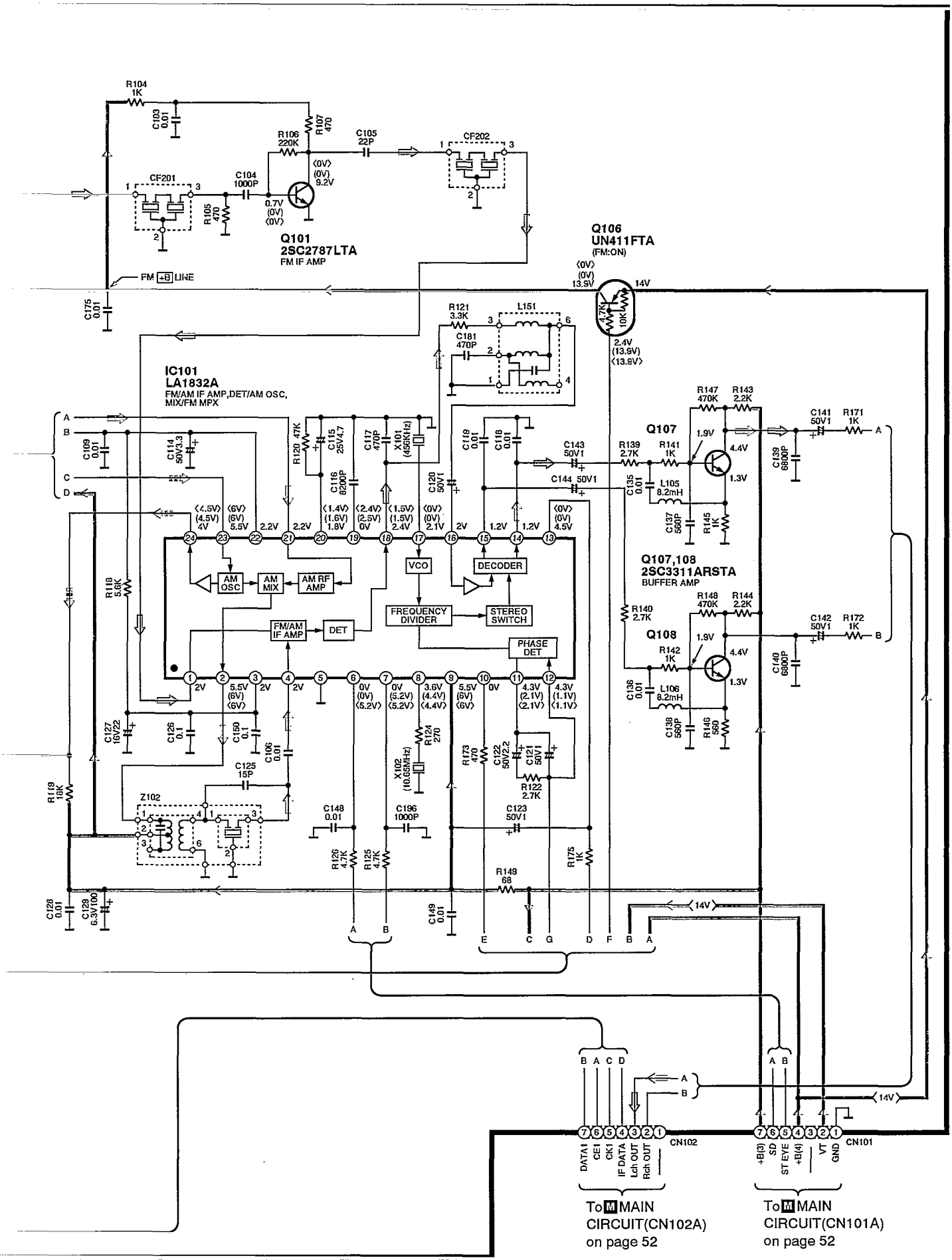



UPC4570C M5218AP
IC501 IC503
Tone amp./ Buffer amp.
DECODER OUTPUT FRONT
POWER AMP INPUT FRONT
Q813, 814,837 (815,816,838)
Switching
Q553(554)
Switching
POWER AMP RSN36S5A
IC801
FRONT SPEAKERS
A
RL803
Q832
Relay drive
FRONT SPEAKERS
B
RL804
Q831
Relay drive
Ladder register
Analog Switch
Ladder register
Analog Switch
13 bit latch
13 bit latch
Code det. circuit
20 bit shift register
Level Shift
TONE CONTROL
IC502
TC9184P
NF
D811 (809)
D820 (818)
D807 (805)
D816 (813)
SPA RELAY
SPB RELAY
Vdd
Vss
GND
STTC
DT2
CK2
RELAYOUT
Q301
Relay drive
AF MUTE
Q801~804
Switching
HEAD -PHONES
POWER METER
M5218AP
IC351
Meter drive
Vreg
COMP
MUT
OUT
AMP
Q716~721
Fan motor drive
FAN MOTOR
VR351(350)
POWER METER ADJ.
METER CONTROL
BA6138
IC350
LIGHT
Q201
Switching
TSA3000J
IC201
AC SWITCH
ZC
AN78L05TA
IC404
Regulator
Q705
Regulator
Q709,710,712
Regulator
Q706
Regulator
Q708,711,713
Regulator
D713
D714
T702
POWER TRANSFORMER
F1
F2
F3
F4
AC IN
LM2940T5M
IC1114 IC1115
Regulator
AN79L05TA
IC405
Regulator
Q701~703
Regulator
ICP701
D709~712,725~728
PL200~209
PWR RELAY
Q715
Relay drive
RL701
To FL901
Q714
Regulator
D717~719
T701
SUB POWER TRANSFORMER

A TUNER CIRCUIT For [E,EB] areas. (P.C. Board: on page 60)



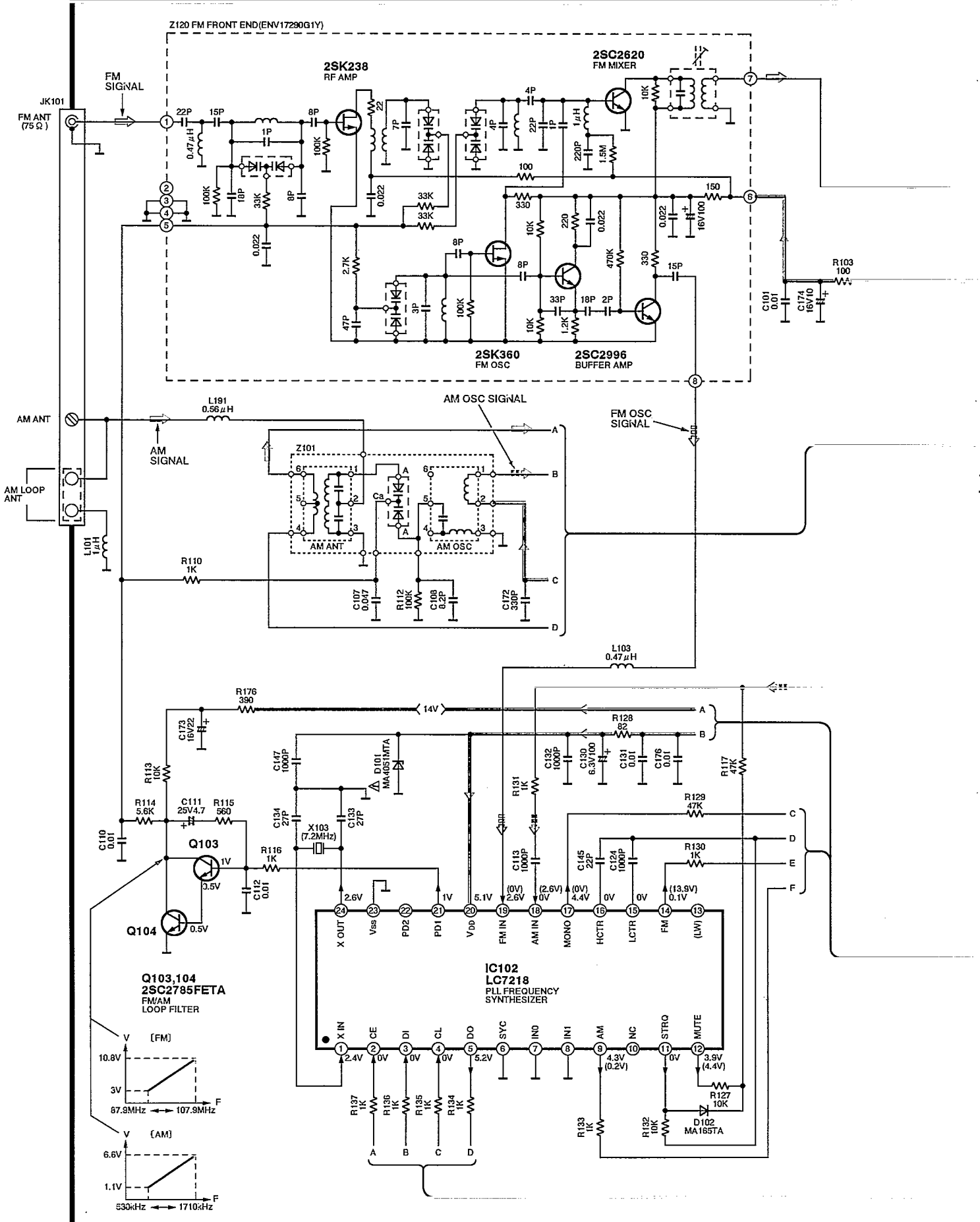
Notes: ● ⟹ : FM signal ● ⟹ : FM OSC signal
● ⟹ : AM signal ● ⟹ : AM OSC signal



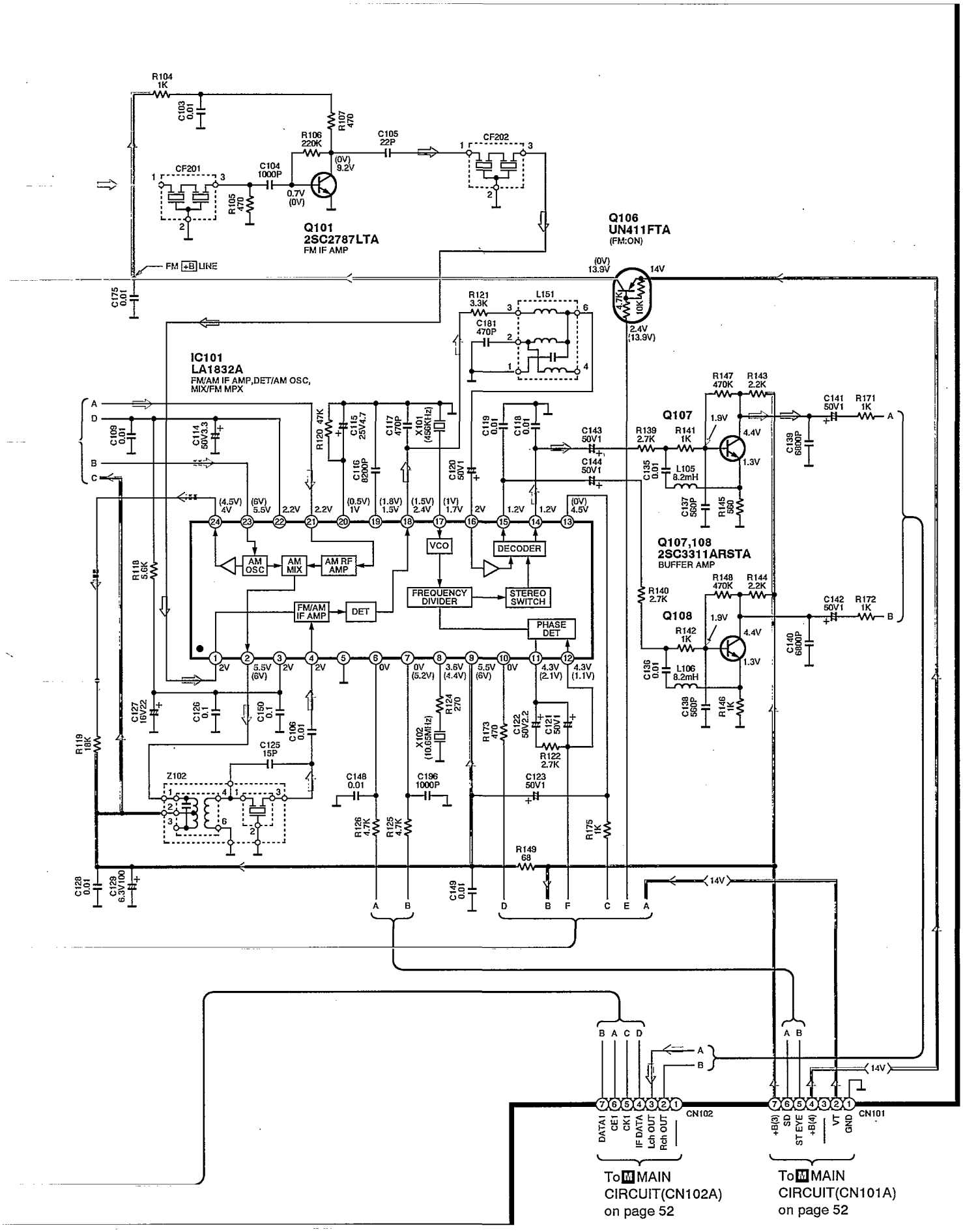
To M MAIN CIRCUIT(CN102A) on page 52

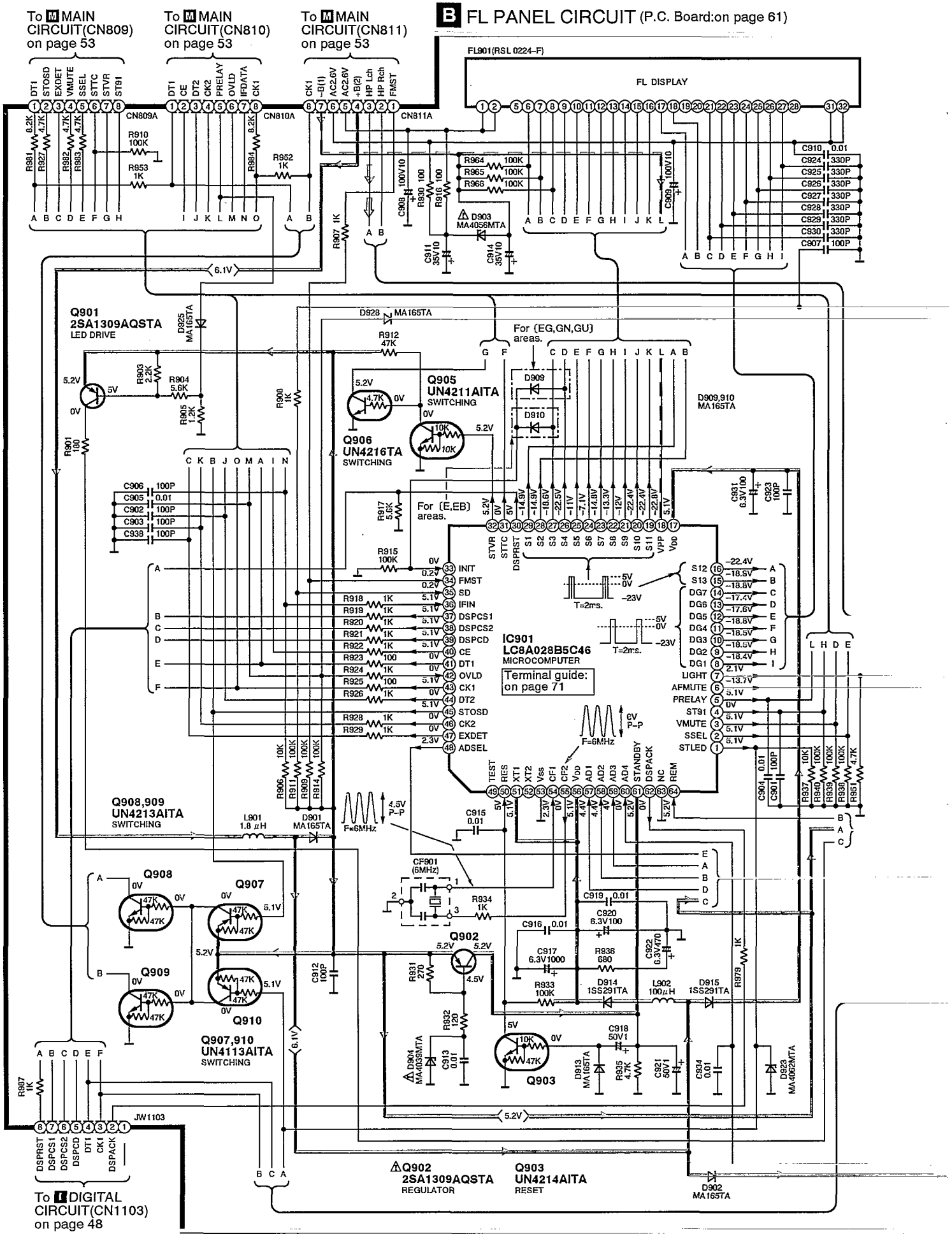
To M MAIN CIRCUIT(CN101A) on page 52

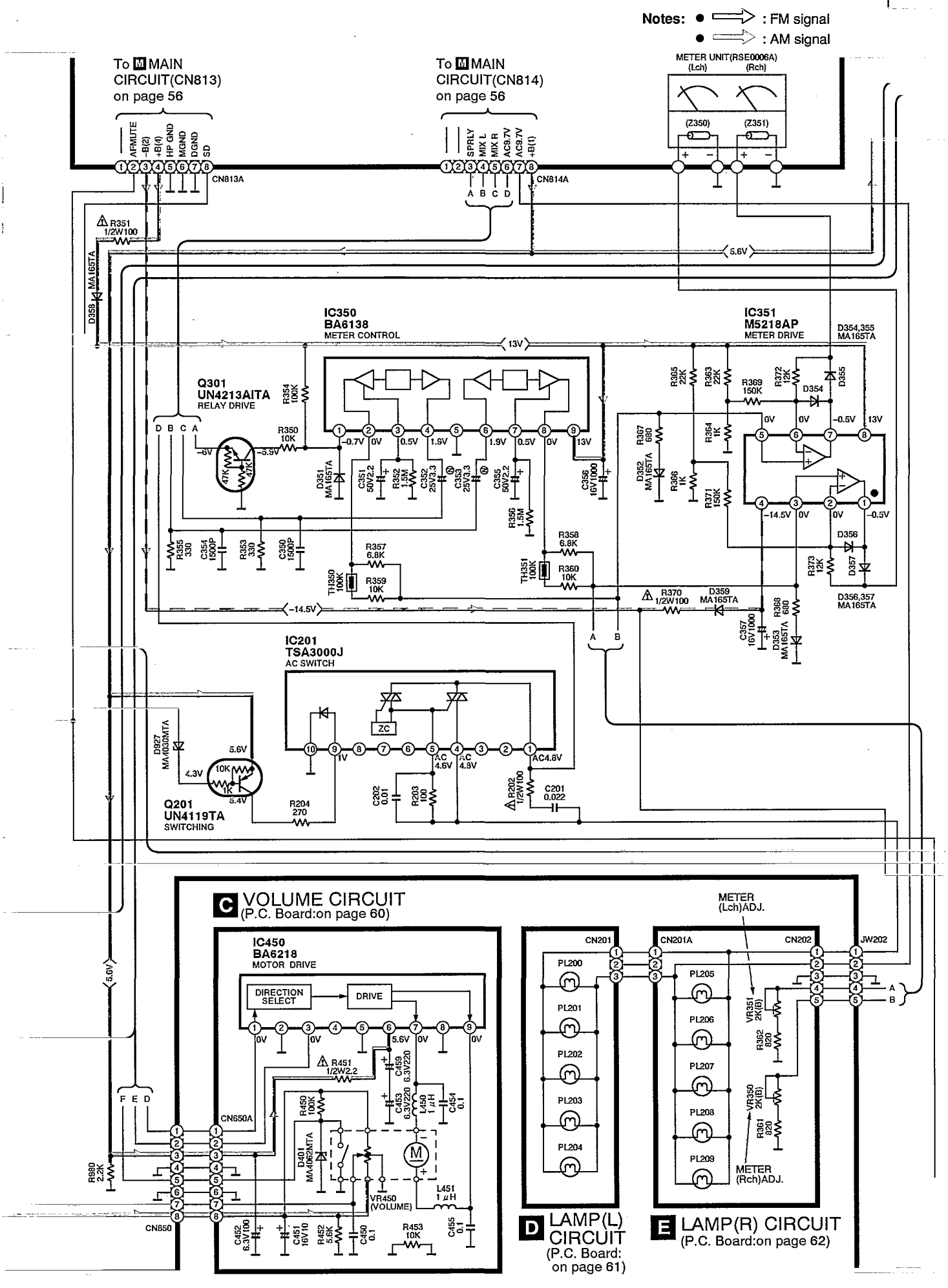
A TUNER CIRCUIT For {EG,GN,GU} areas. (P.C. Board: on page 60)



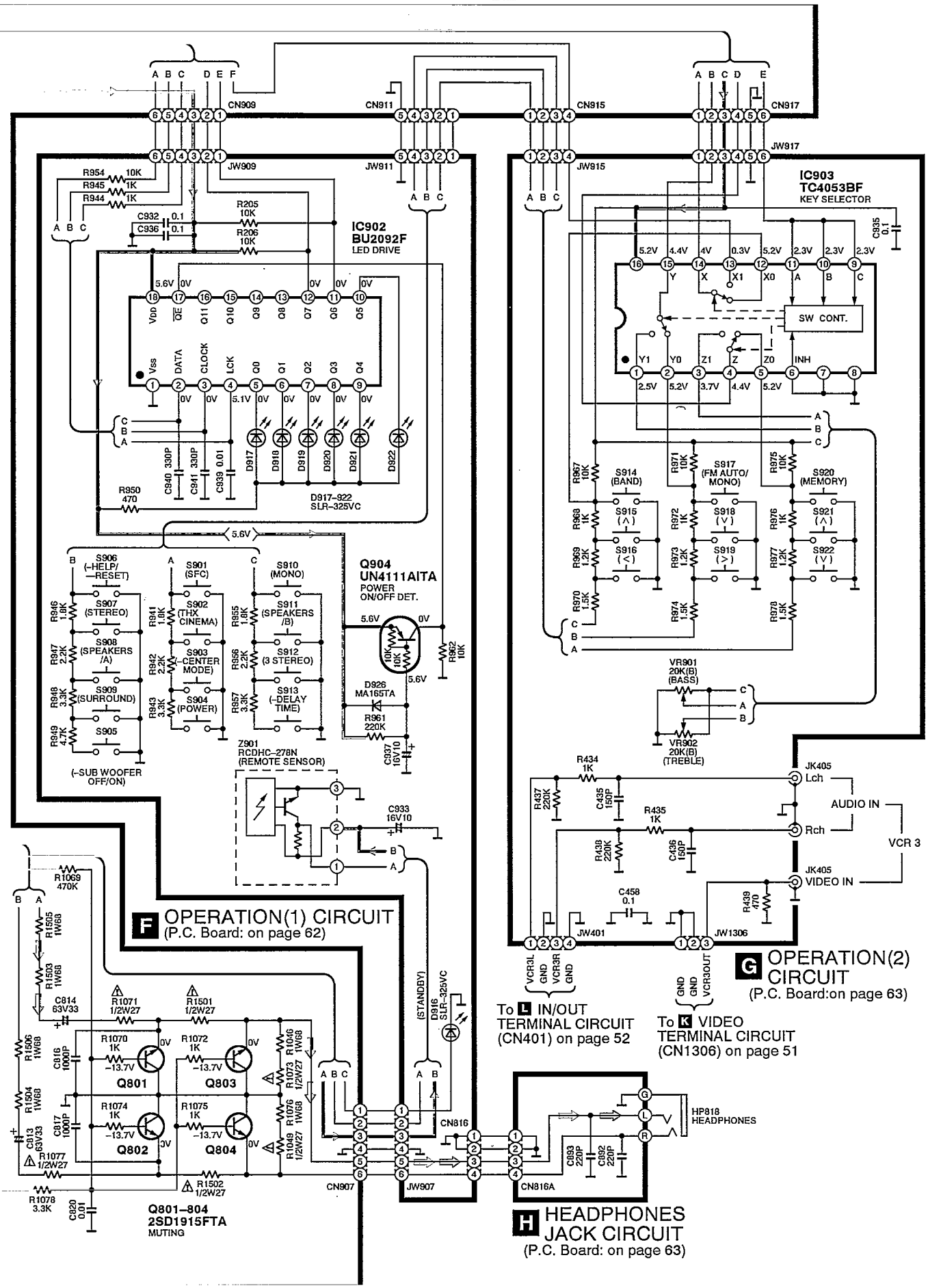
Notes: ● ⟹ : FM signal ● ⟹ : AM signal ● ⇨ : FM OSC signal ● ⇨ : AM OSC signal




To M MAIN CIRCUIT(CN809) on page 53
To M MAIN CIRCUIT(CN810) on page 53
To M MAIN CIRCUIT(CN811) on page 53
B FL PANEL CIRCUIT (P.C. Board:on page 61)
FL901(RSL 0224-F)
FL DISPLAY
CN809A
CN810A
CN811A
Q901 2SA1309AQSTA LED DRIVE
Q905 UN4211AITA SWITCHING
Q906 UN4216TA SWITCHING
Q908,909 UN4213AITA SWITCHING
Q907,910 UN4113AITA SWITCHING
Q902 2SA1309AQSTA REGULATOR
Q903 UN4214AITA RESET
IC901 LC8A028B5C46 MICROCOMPUTER
Terminal guide: on page 71
For (EG,GN,GU) areas.
For (E,EB) areas.
D909,910 MA165TA
To I DIGITAL CIRCUIT(CN1103) on page 48
JW1103


Notes: : FM signal
: AM signal
To MAIN CIRCUIT(CN813) on page 56
To MAIN CIRCUIT(CN814) on page 56
METER UNIT(RSE0006A)
(Lch) (Rch)
(Z350) (Z351)
MUTE B(2) +B(4) HP GND MGND DGND SD
SPRLY MIX L MIX R AC9.7V AC9.7V +B(t)
CN813A
CN814A
R351 1/2W100
D358 MA165TA
5.6V
IC350
BA6138
METER CONTROL
13V
IC351
M5218AP
METER DRIVE
D354,355 MA165TA
Q301
UN4213AITA
RELAY DRIVE
R354 100K
R350 10K
D351 MA165TA
C351 50V2.2
R352 1.5M
C352 25V3.3
C353 25V3.3
C355 50V2.2
C356 16V1000
R356 1.5M
R355 330
C354 1500P
R353 330
C350 1500P
R357 6.8K
R359 10K
TH350 100K
TH351 100K
R358 6.8K
R360 10K
R365 22K
R363 22K
R369 150K
R372 12K
D354
D355
R367 680
R364 1K
D352 MA165TA
R366 1K
R371 150K
D356
D357
R373 12K
D356,357 MA165TA
R370 1/2W100
D359 MA165TA
C357 16V1000
R368 680
D353 MA165TA
-14.5V
IC201
TSA3000J
AC SWITCH
ZC
AC4.8V
D927 MA4030MTA
Q201
UN4119TA
SWITCHING
R204 270
C202 0.01
R203 100
R202 1/2W100
C201 0.022
C VOLUME CIRCUIT
(P.C. Board:on page 60)
IC450
BA6218
MOTOR DRIVE
DIRECTION SELECT
DRIVE
R451 1/2W2.2
C459 6.3V220
C453 6.3V220
L450 1 μH
C454 0.1
R450 100K
D401 MA4062MTA
VR450 (VOLUME)
L451 1 μH
C455 0.1
R453 10K
C452 6.3V100
C451 16V10
R452 5.6K
C450 0.1
R980 2.2K
CN650A
CN650
CN201
CN201A
CN202
JW202
PL200
PL201
PL202
PL203
PL204
PL205
PL206
PL207
PL208
PL209
METER (Lch)ADJ.
METER (Rch)ADJ.
VR351 2K(B)
VR350 2K(B)
R362 820
R361 820
D LAMP(L) CIRCUIT
(P.C. Board: on page 61)
E LAMP(R) CIRCUIT
(P.C. Board:on page 62)

B FL PANEL CIRCUIT (P.C. Board: on page 61)



F OPERATION(1) CIRCUIT
(P.C. Board: on page 62)

G OPERATION(2) CIRCUIT
(P.C. Board:on page 63)

To **L** IN/OUT TERMINAL CIRCUIT (CN401) on page 52

To **K** VIDEO TERMINAL CIRCUIT (CN1306) on page 51

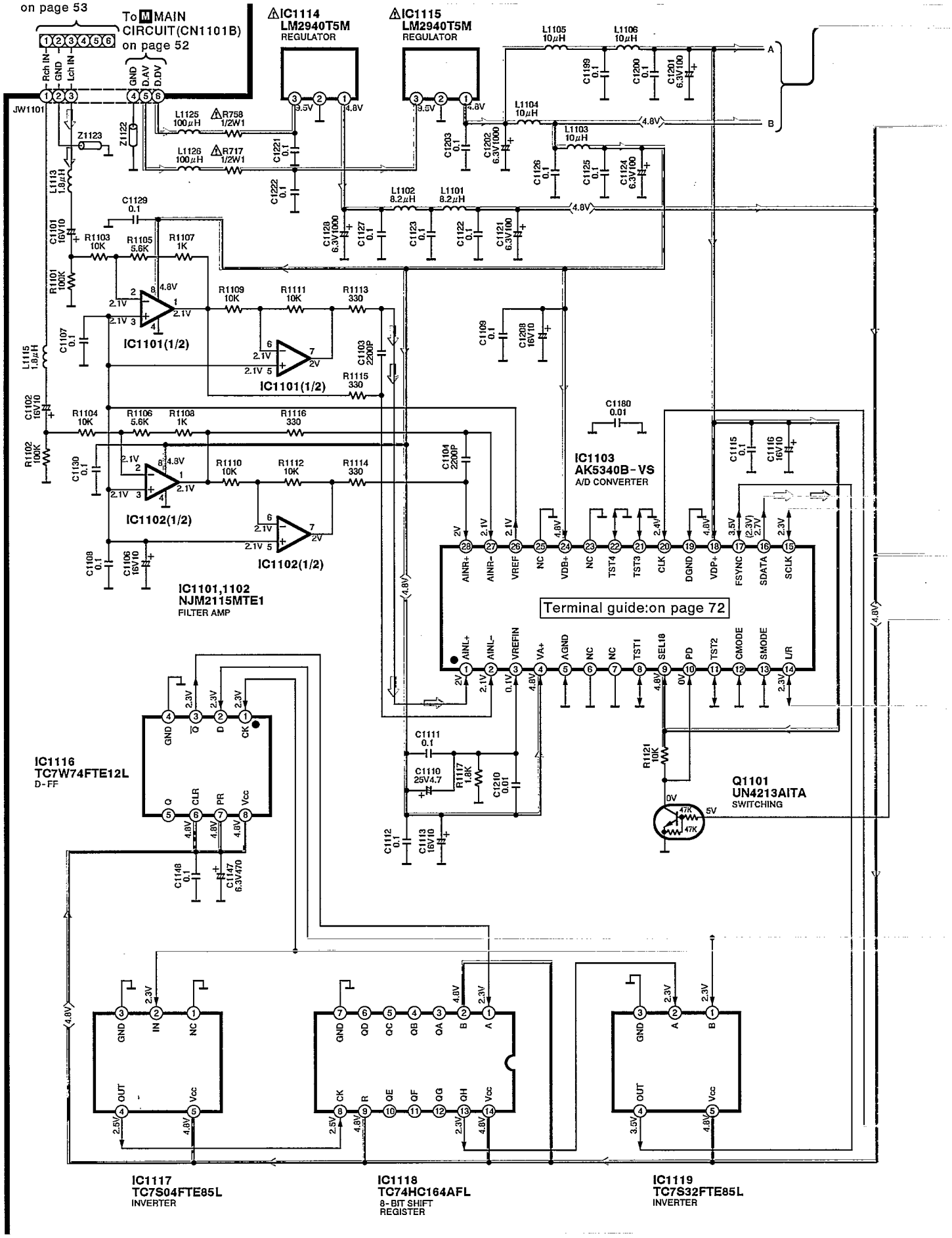
H HEADPHONES JACK CIRCUIT
(P.C. Board: on page 63)

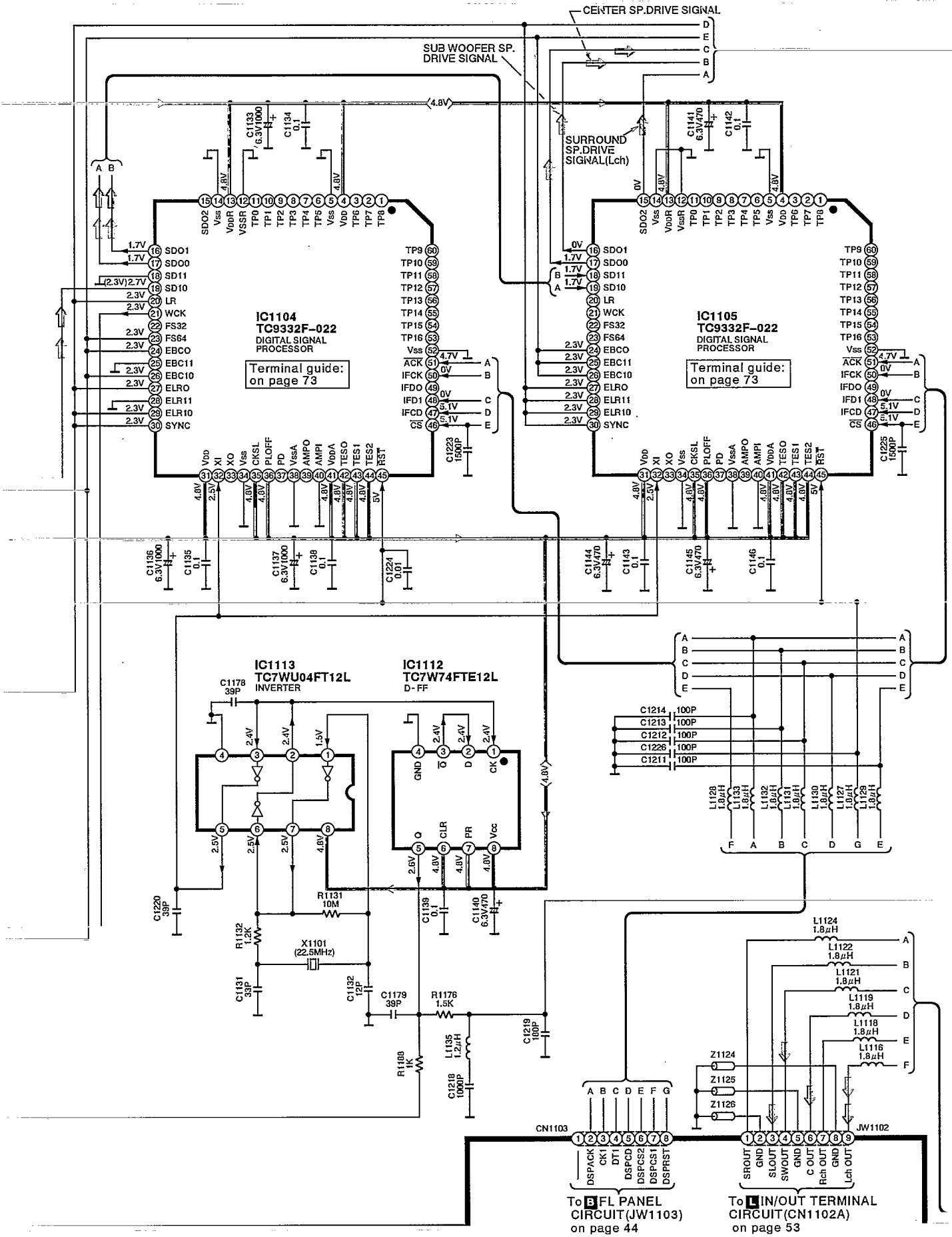
Notes: ● ⇨ : FM signal
● ⇨ : AM signal

To L IN/OUT TERMINAL CIRCUIT(CN1101A) on page 53

To M MAIN CIRCUIT(CN1101B) on page 52

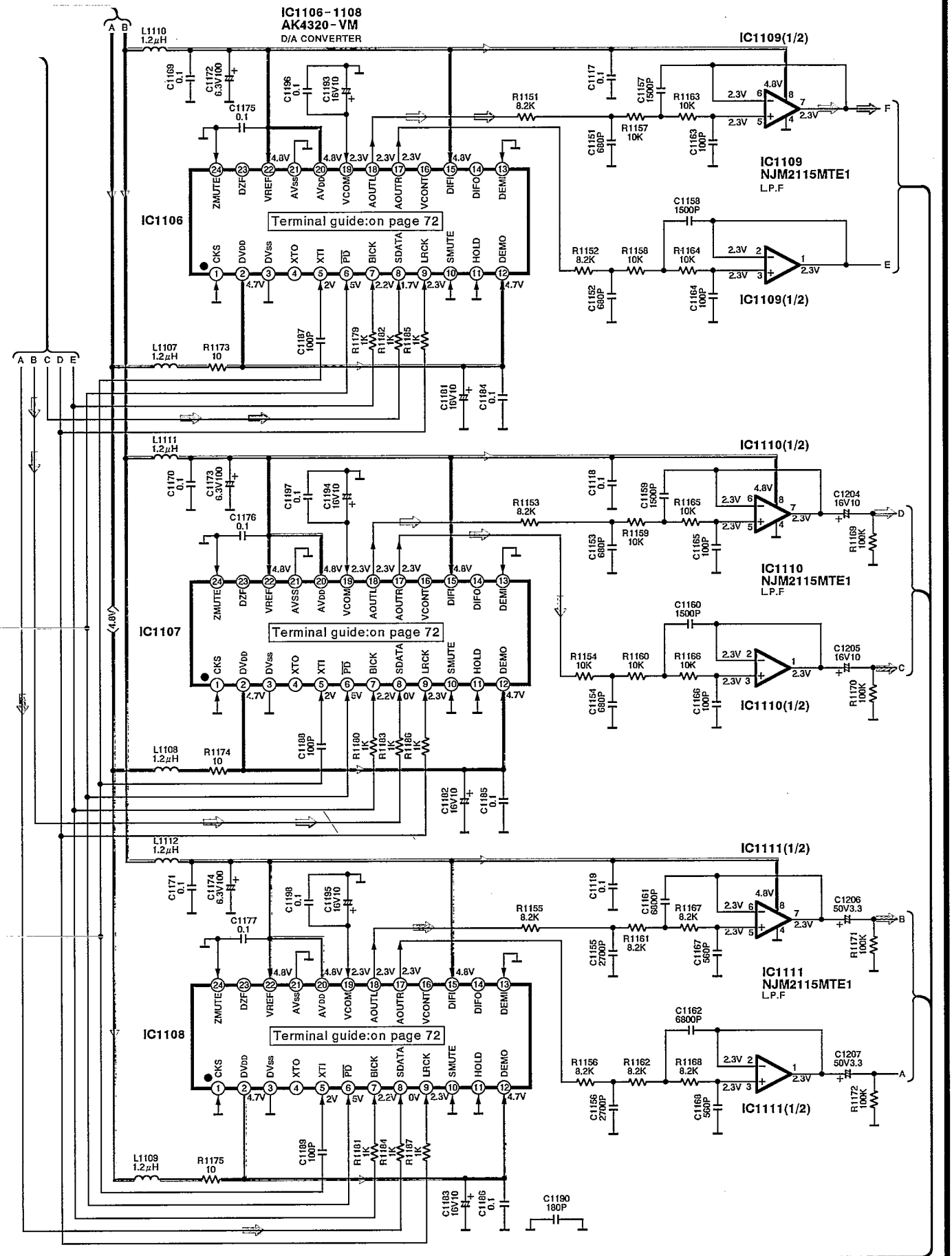
I DIGITAL CIRCUIT (P.C.Board:on page 64)




CENTER SP.DRIVE SIGNAL
SUB WOOFER SP. DRIVE SIGNAL
SURROUND SP.DRIVE SIGNAL(Lch)
IC1104
TC9332F-022
DIGITAL SIGNAL PROCESSOR
Terminal guide: on page 73
IC1105
TC9332F-022
DIGITAL SIGNAL PROCESSOR
Terminal guide: on page 73
IC1113
TC7WU04FT12L
INVERTER
IC1112
TC7W74FTE12L
D-FF
X1101 (22.5MHz)
CN1103
JW1102
To B FL PANEL CIRCUIT(JW1103) on page 44
To L IN/OUT TERMINAL CIRCUIT(CN1102A) on page 53

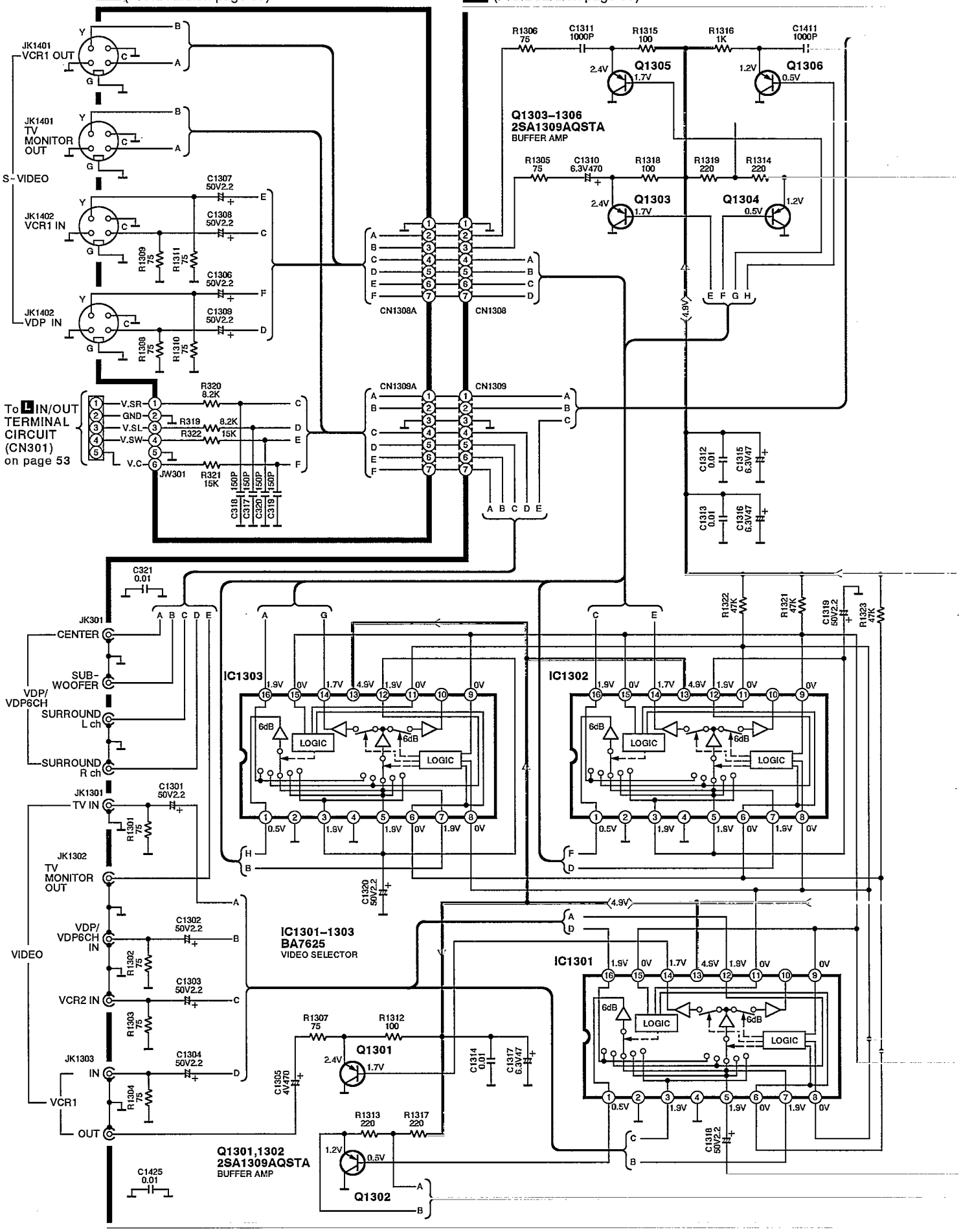
Notes: ● ⇨ : FM signal
● ⇨ : AM signal
● ⇨ : Surround speaker drive signal (Lch)
● ⇨ : Subwoofer speaker drive signal
● ⇨ : Center speaker drive signal

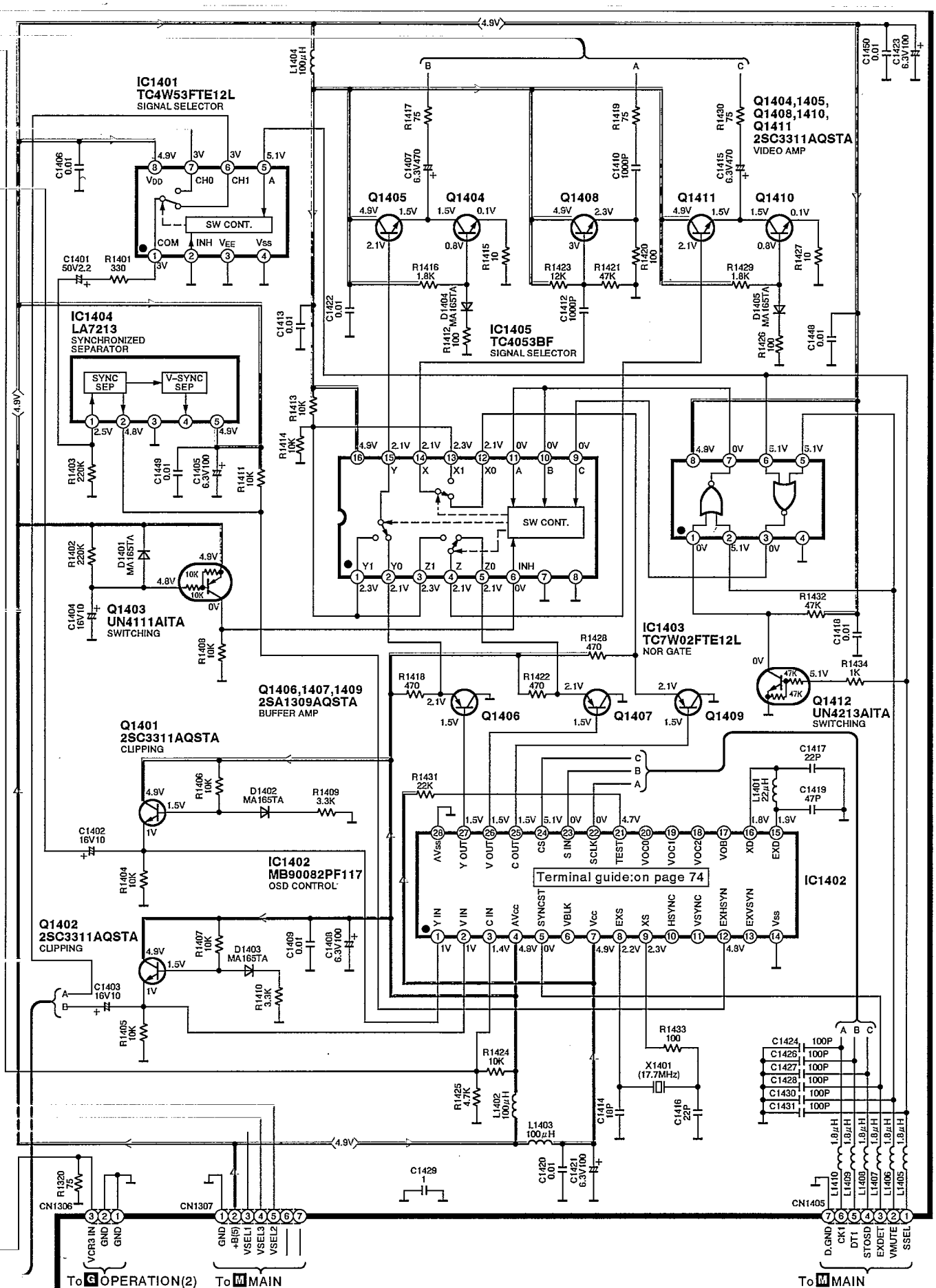
I DIGITAL CIRCUIT
(P.C.Board:on page 64)



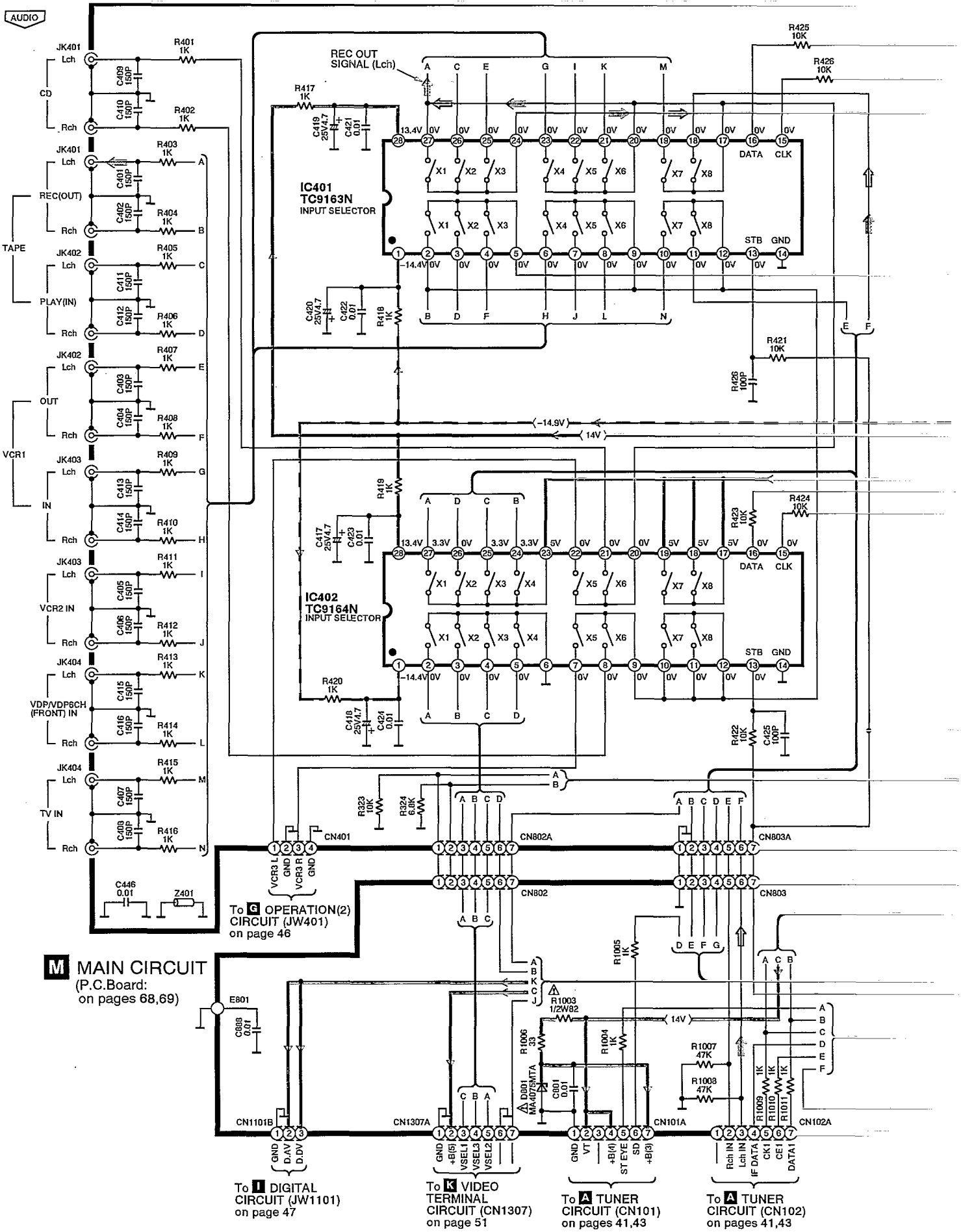
J S-VIDEO JACK CIRCUIT
(P.C.Board:on page 65)

K VIDEO TERMINAL CIRCUIT
(P.C.Board:on page 65)

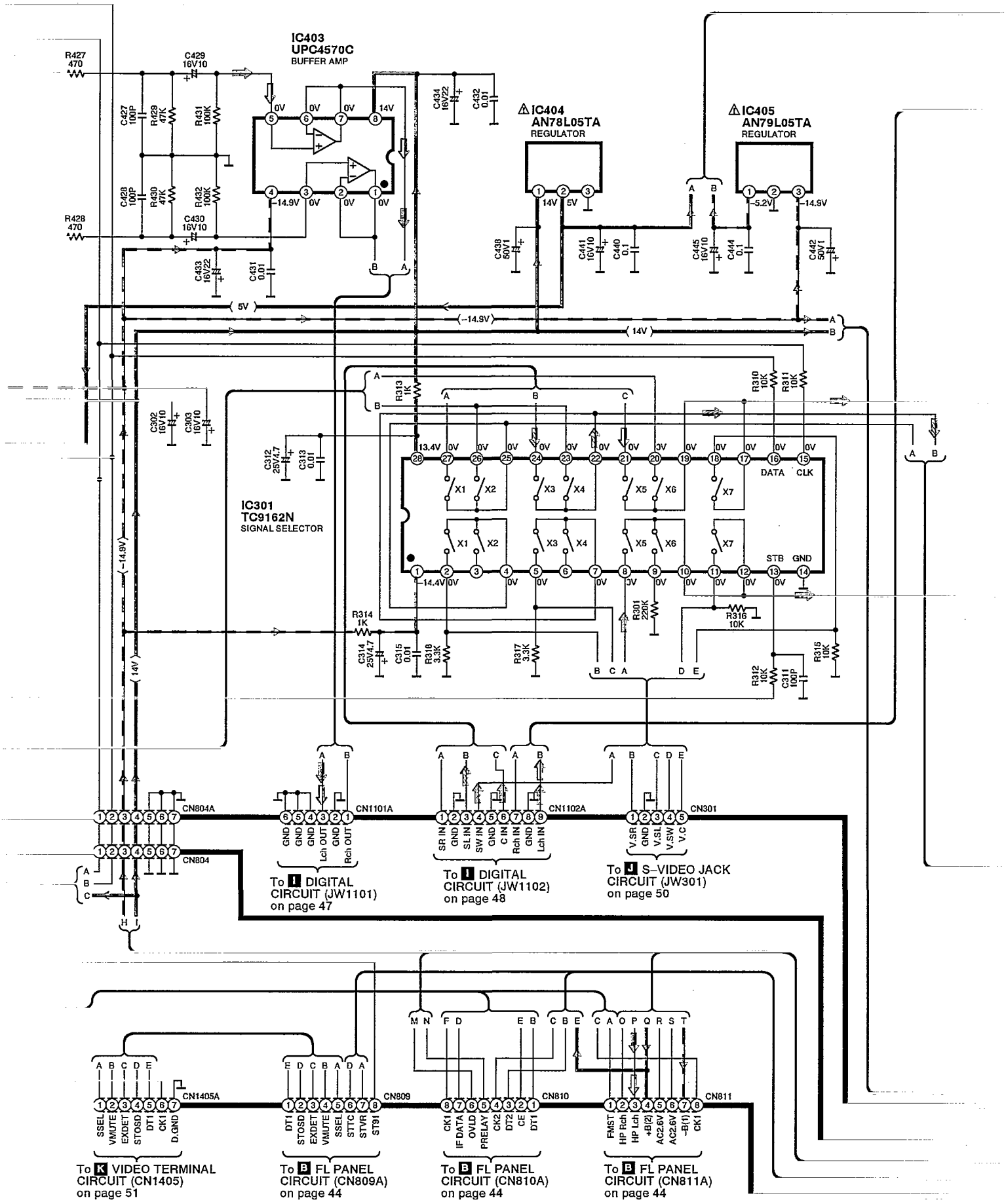



IC1401
TC4W53FTE12L
SIGNAL SELECTOR
SW CONT.
IC1404
LA7213
SYNCHRONIZED SEPARATOR
SYNC SEP
V-SYNC SEP
Q1405
Q1404
Q1408
Q1411
Q1410
Q1404,1405,
Q1408,1410,
Q1411
2SC3311AQSTA
VIDEO AMP
IC1405
TC4053BF
SIGNAL SELECTOR
SW CONT.
IC1403
TC7W02FTE12L
NOR GATE
Q1403
UN4111AITA
SWITCHING
Q1412
UN4213AITA
SWITCHING
Q1406,1407,1409
2SA1309AQSTA
BUFFER AMP
Q1401
2SC3311AQSTA
CLIPPING
Q1402
2SC3311AQSTA
CLIPPING
IC1402
MB90082PF117
OSD CONTROL
Terminal guide:on page 74
X1401
(17.7MHz)
CN1306
CN1307
CN1405
VCR3 IN
GND
GND
GND
+B(5)
VSEL1
VSEL3
VSEL2
D.GND
CK1
DT1
STOSD
EXDET
VMUTE
SSEL
To G OPERATION(2) CIRCUIT(JW1306) on page 46
To M MAIN CIRCUIT(CN1307A) on page 52
To M MAIN CIRCUIT(CN1405A) on page 53

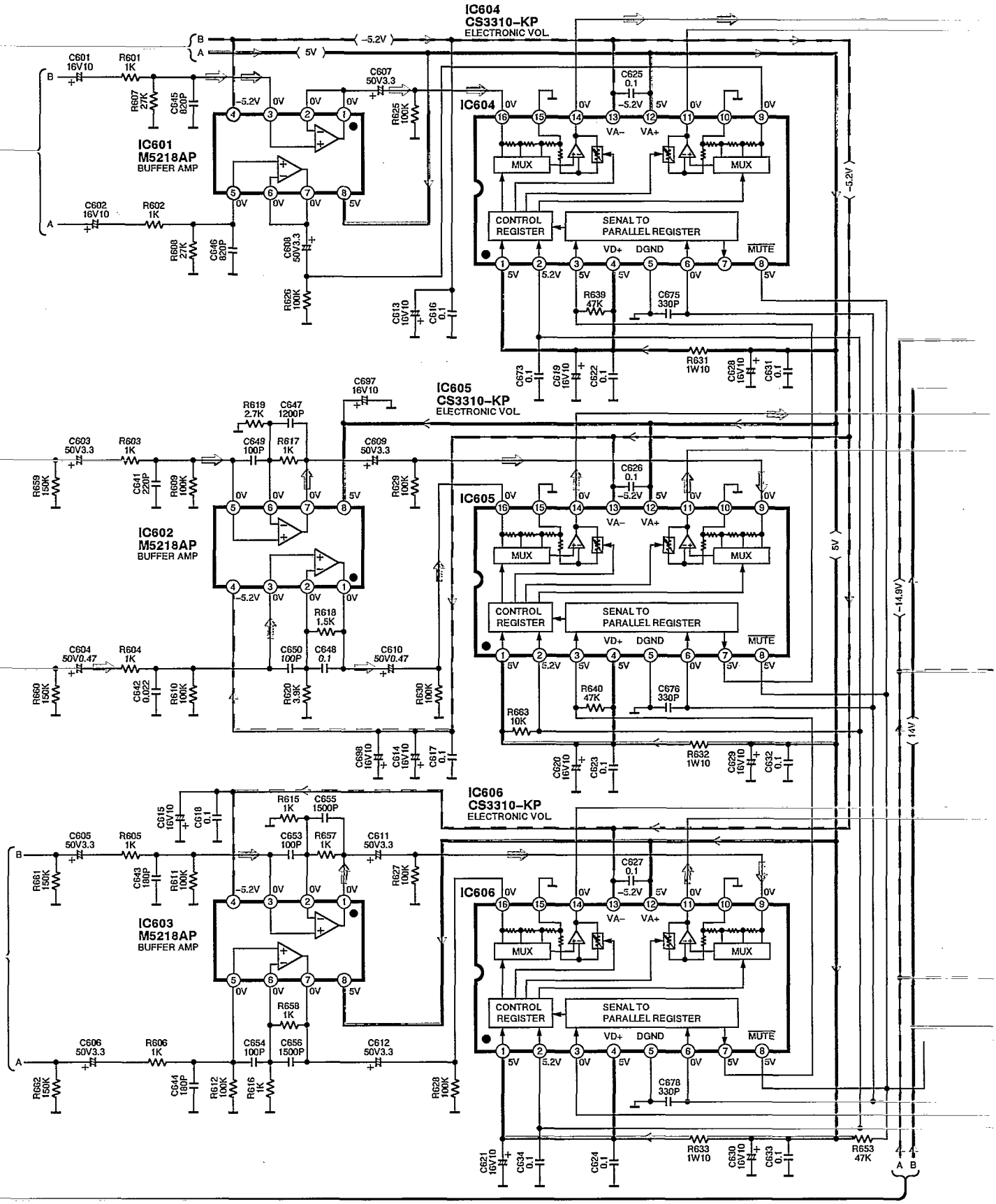
L IN/OUT TERMINAL CIRCUIT (P.C.Board:on page 67)



Notes: ● : FM signal ● : AM signal ● : Surround speaker drive signal (Lch) ● : Subwoofer speaker drive signal ● : Center speaker drive signal ● : Rec out signal (Lch)

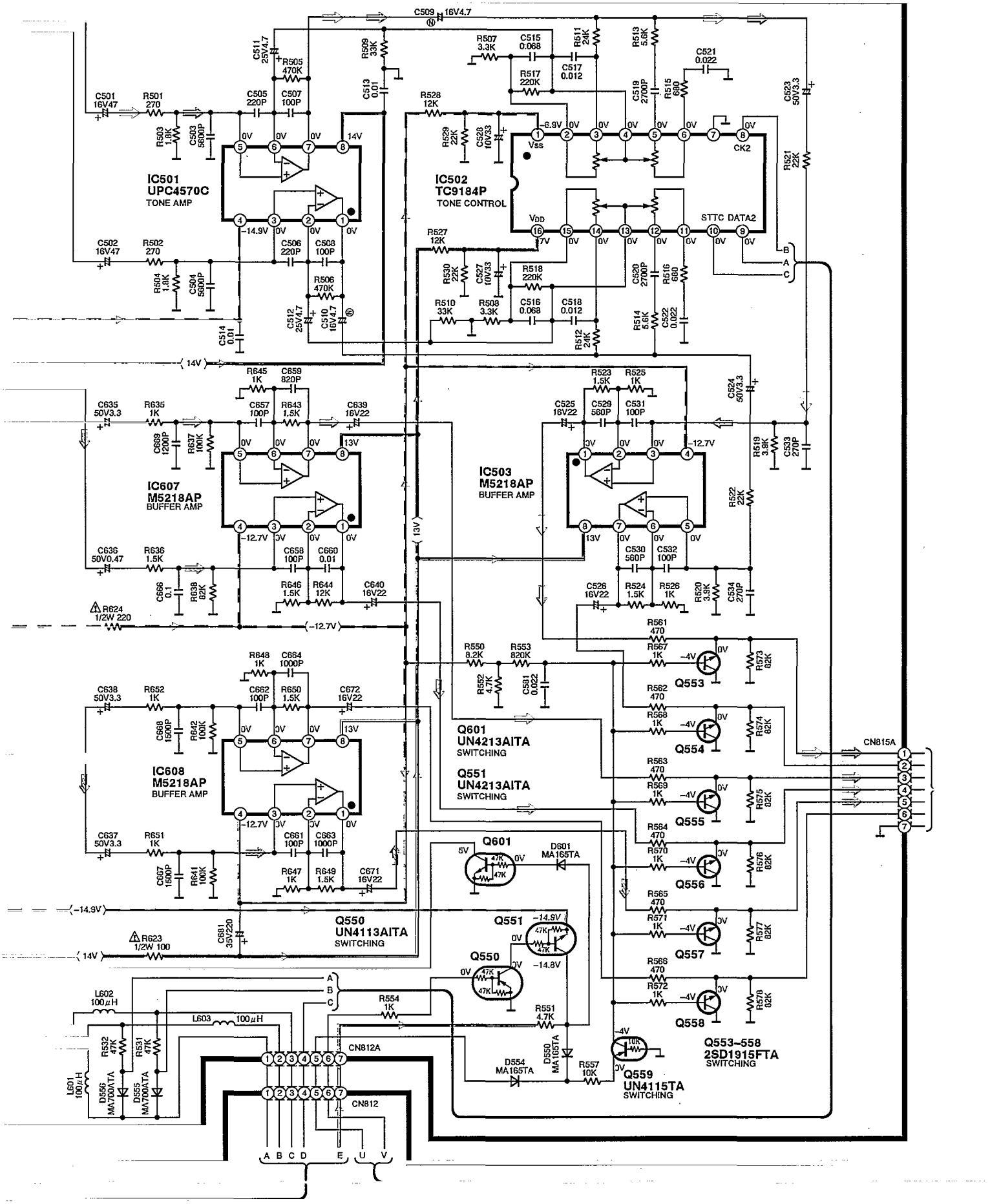


L IN/OUT TERMINAL CIRCUIT (P.C.Board:on page 67)

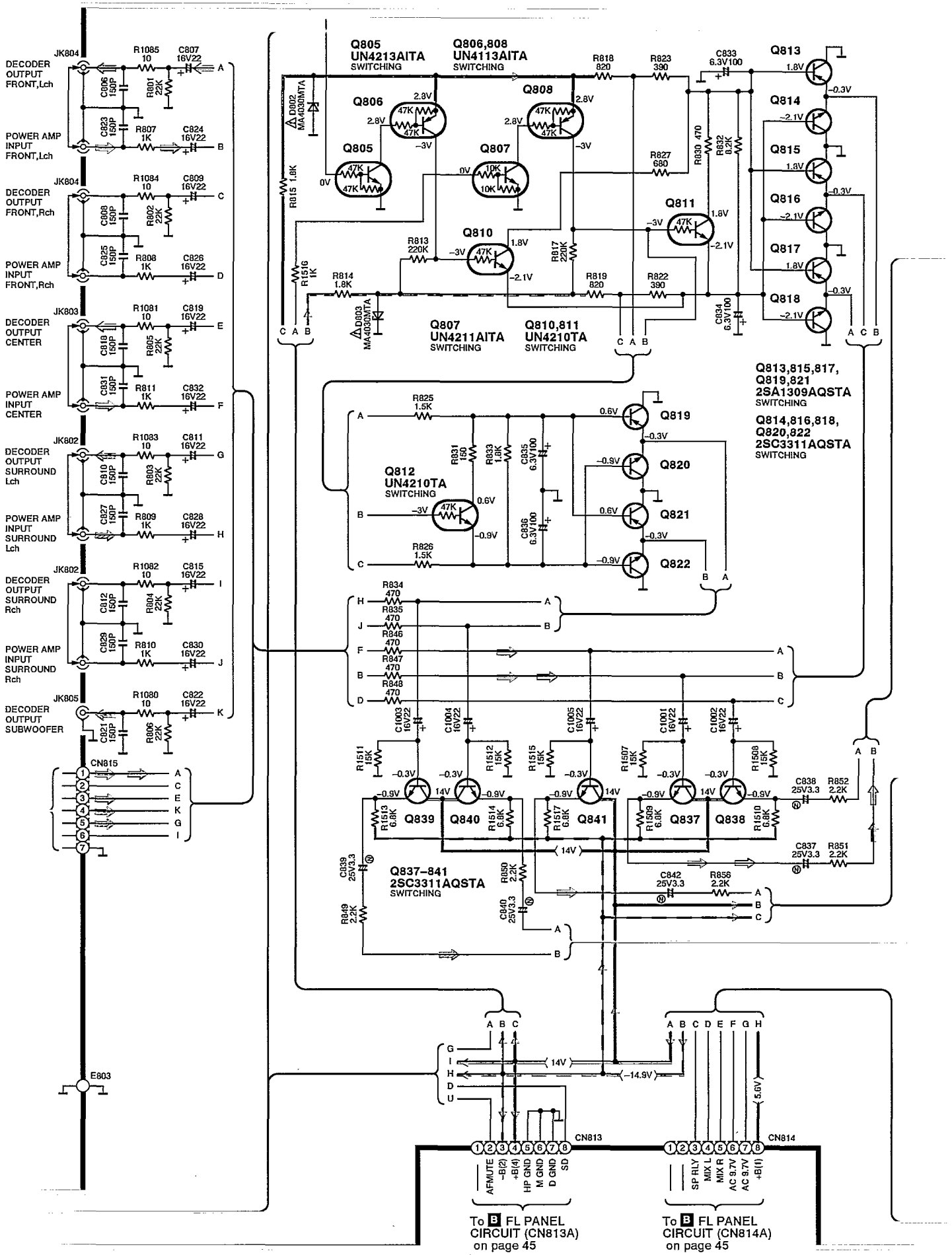


M MAIN CIRCUIT (P.C.Board:on pages 68,69)

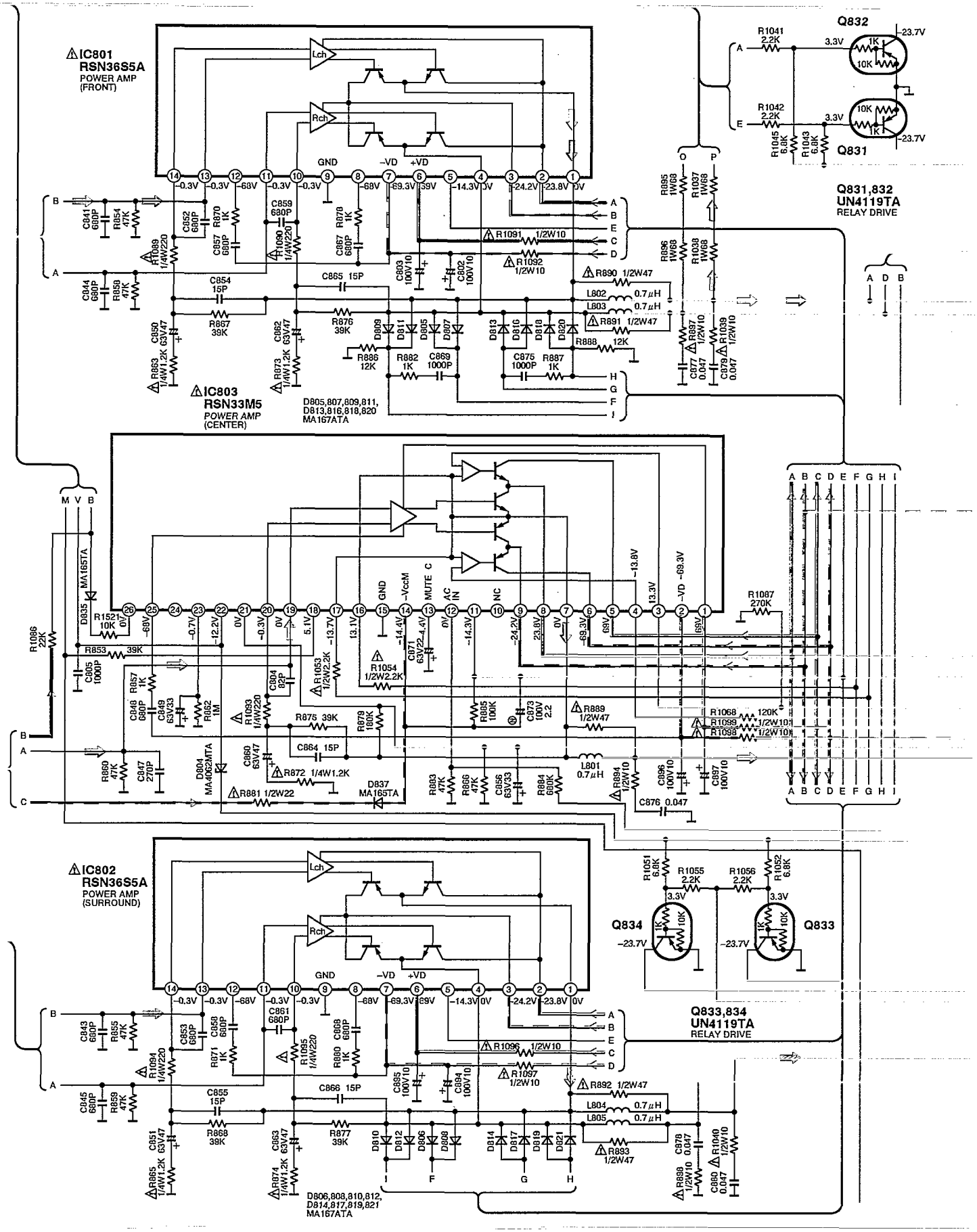
Notes: ● : FM signal ● : AM signal ● : Surround speaker drive signal (Lch) ● : Subwoofer speaker drive signal ● : Center speaker drive signal



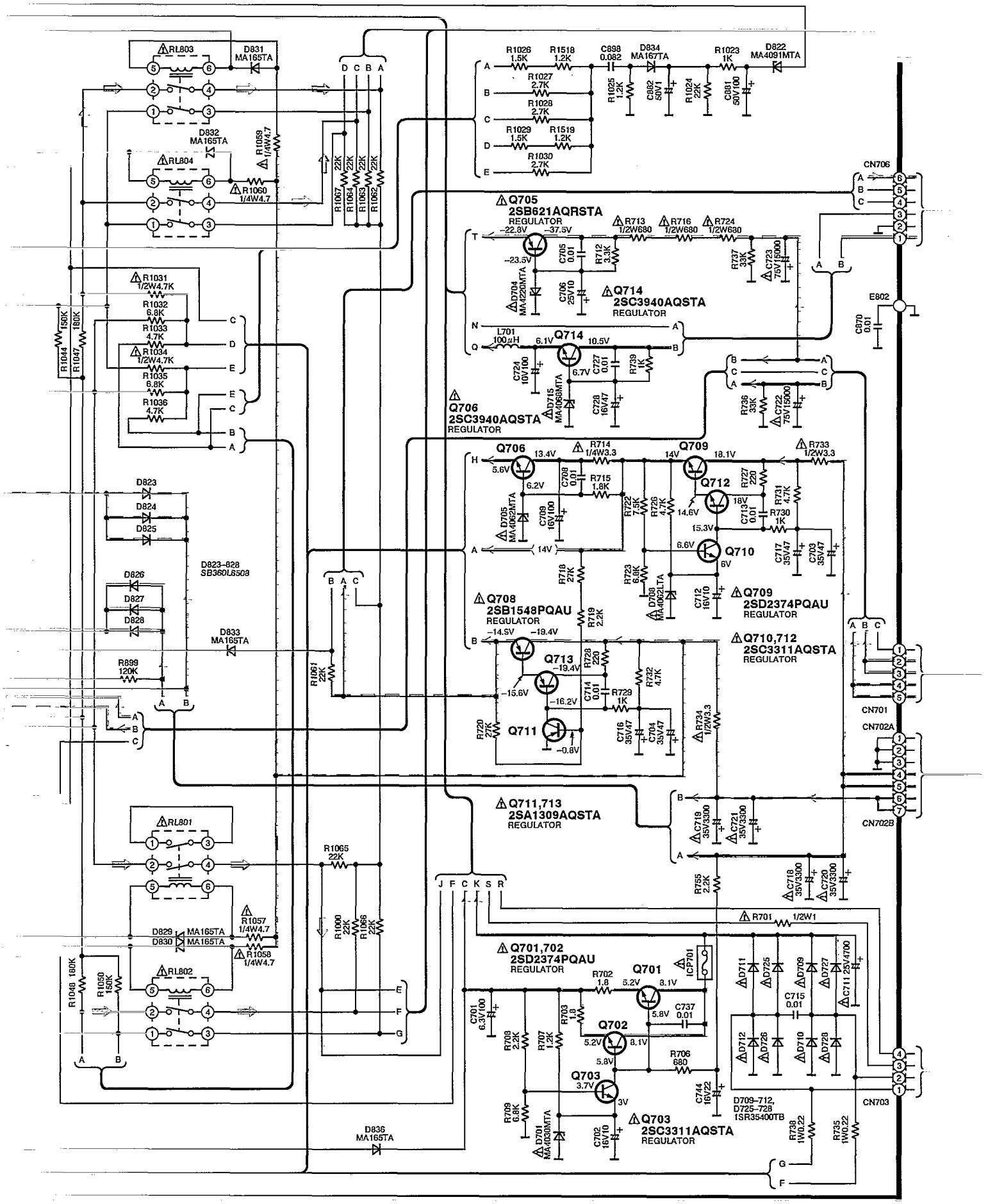
M MAIN CIRCUIT (P.C.Board:on pages 68,69)



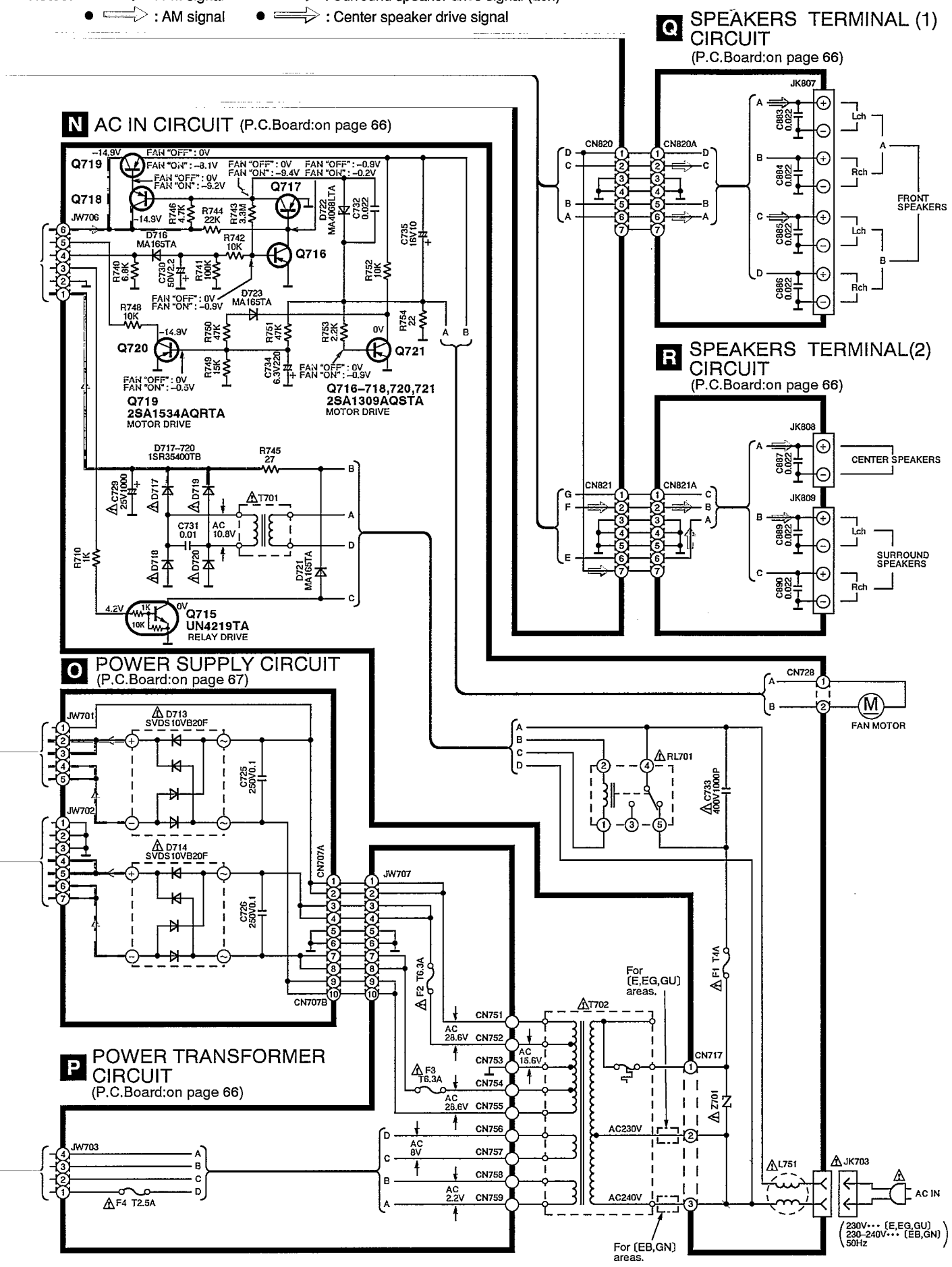
Notes: ● : FM signal ● : AM signal ● : Surround speaker drive signal (Lch) ● : Subwoofer speaker drive signal ● : Center speaker drive signal



M MAIN CIRCUIT (P.C.Board:on pages 68,69)



Notes: ● ⇨ : FM signal ● ⇨ : Surround speaker drive signal (Lch)
● ⇨ : AM signal ● ⇨ : Center speaker drive signal



■Wiring Connection Diagram