

Service  
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Service

# Service Manual



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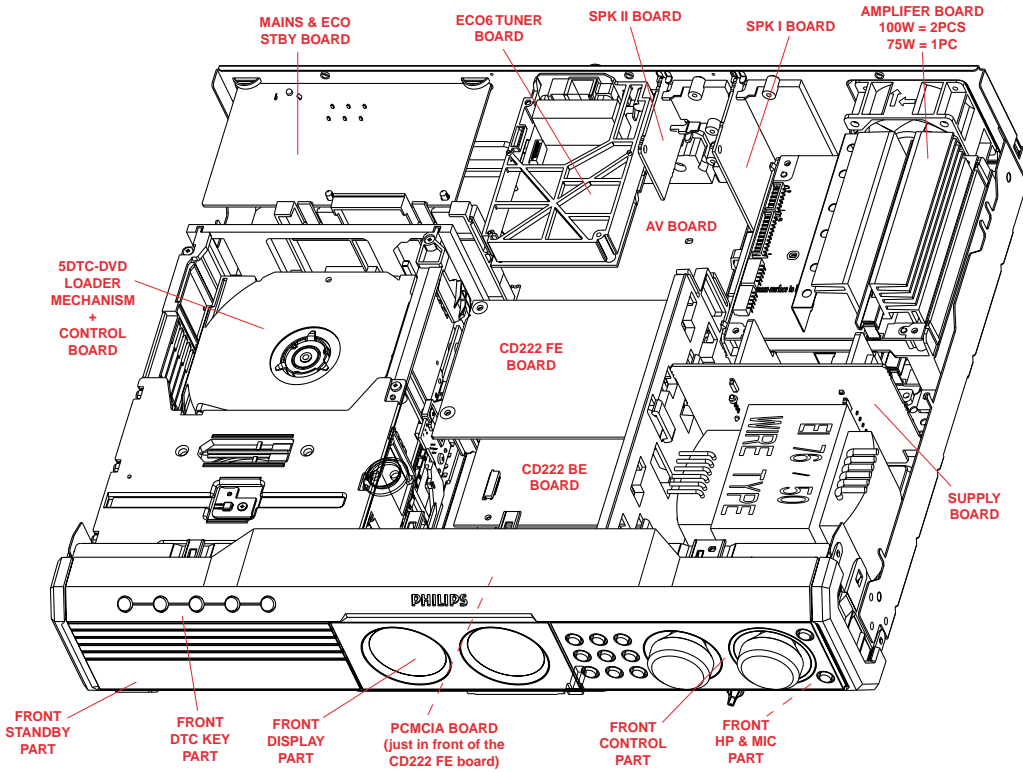
3139 785 30200

Version 1.0



# PHILIPS

# LOCATION OF PC BOARDS



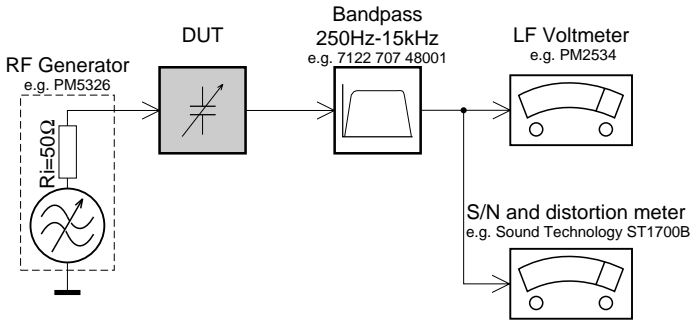
## VERSION VARIATIONS:

Type /versions:	MX3900D				MX3950D			
	/37				/37			
Features & Board in used:								
Karaoke	-				-			
News	-				-			
RDS	-				-			
Pro-Scan	X				X			
PCMCIA	-				-			
Standby - Clock Display	X				X			
ECO Standby - No Display	X				X			
Voltage Selector	-				-			
Digital In / Out	X				X			
Aux Input	X				X			
TV Input	X				X			
Line Output	X				X			
SCART output	-				-			
Pr, Pb & Y Outputs	X				X			
CVBS Output	X				X			
S-Video Output	X				X			
Headphone Socket	X				X			
Tuner board - ECO6 System non-Cenelec	X				X			
Tuner board - ECO6 System Cenelec	-				-			
Amplifier board - 1pc (75W 6-Channel)	X				X			
Amplifier board - 1pc (75W 7-Channel)	-				-			
Amplifier board - 2pc (100W 6-Channel)	-				-			



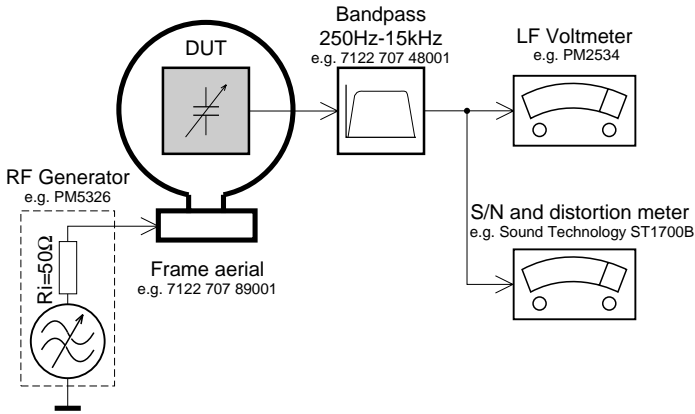
# MEASUREMENT SETUP

## Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

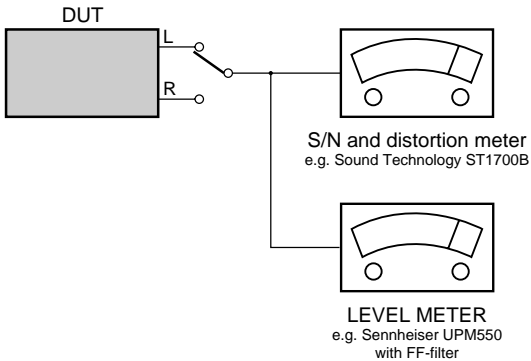
## Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage. Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

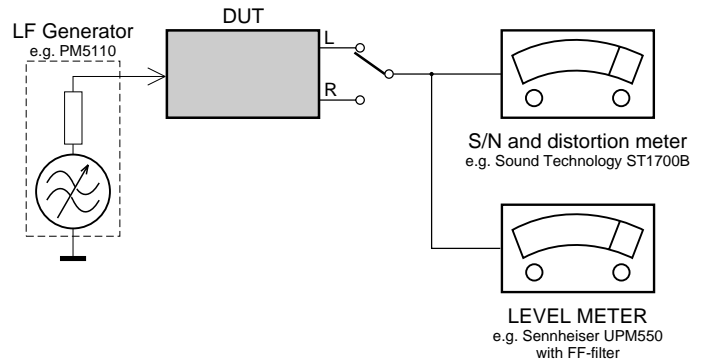
## CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)



## Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069 or Universal Test Cassette **Fe** SBC420 4822 397 30071





## SERVICE AIDS

### Service Tools:

Universal Torx driver holder .....	4822 395 91019
Torx bit T10 150mm .....	4822 395 50456
Torx driver set T6 - T20 .....	4822 395 50145
Torx driver T10 extended .....	4822 395 50423
Allen key set (1.5, 2, 2.5, 3, 4, 5, 6, 8mm) .....	5322 395 10754

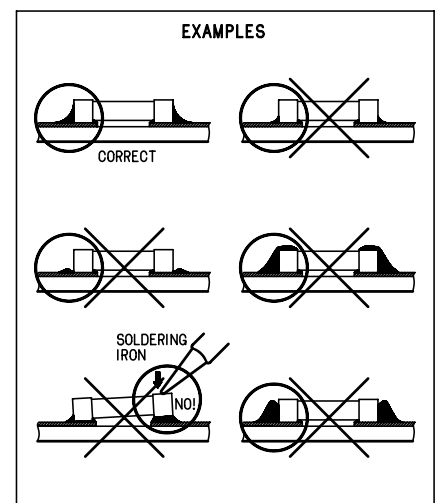
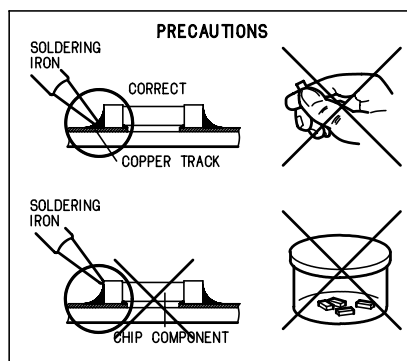
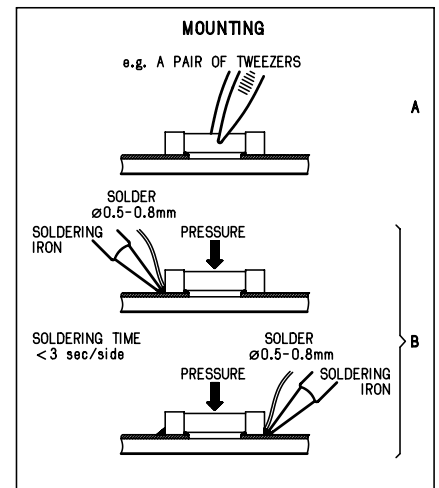
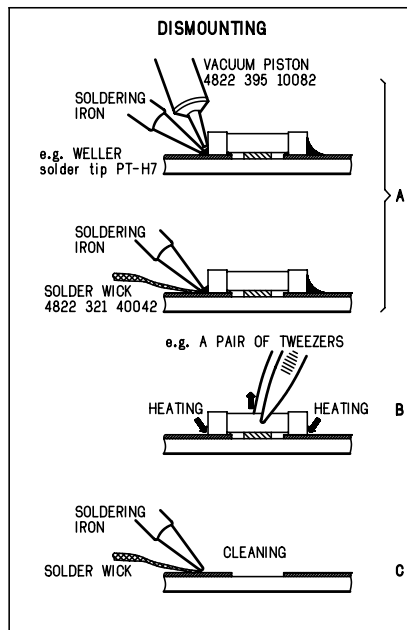
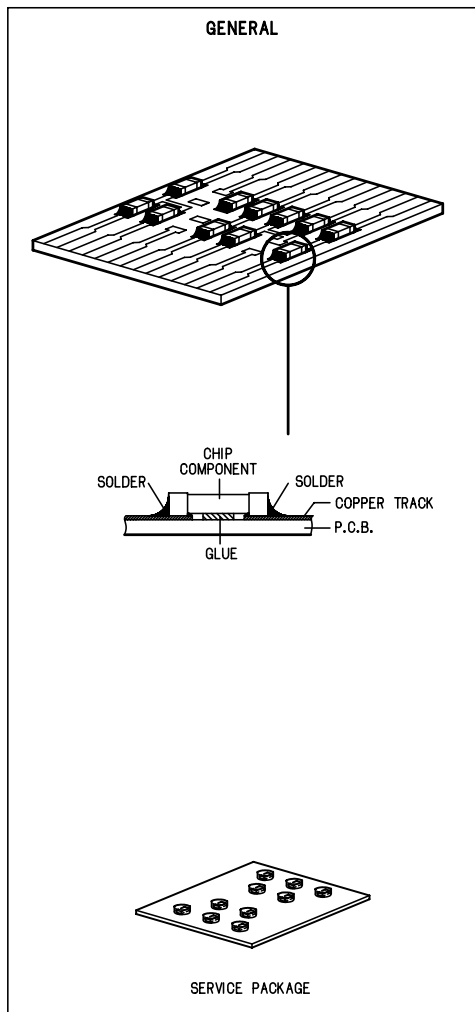
### Compact Disc:

SBC426/426A Test disc 5 + 5A .....	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz .....	4822 397 30155
SBC429 Audio Signals disc .....	4822 397 30184
SBC444/444A .....	4822 397 30245
CD-RW Printed Audio Test Disc .....	7104 099 96611
Dolby Pro-logic Test Disc .....	4822 395 10216

### ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm ...	4822 466 10953
Anti-static table mat - small 600x650x1.25mm .....	4822 466 10958
Anti-static wristband .....	4822 395 10223
Connector box (1M $\Omega$ ) .....	4822 320 11307
Extension cable (to connect wristband to conn. box) .....	4822 320 11305
Connecting cable (to connect table mat to conn. box) .....	4822 320 11306
Earth cable (to connect product to mat or box) ....	4822 320 11308
Complete kit ESD3 (combining all above products) .....	4822 320 10671
Wristband tester .....	4822 344 13999

## HANDLING CHIP COMPONENTS



**(GB) WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**ESD****(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**(F) ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).

Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(D) WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatistischen Entladungen (ESD).

Unvorsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**(I) AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**(GB)**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

**(F)**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

**(GB) Warning !**

Invisible laser radiation when open. Avoid direct exposure to beam.

**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

**(S) Varning !**

Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

**(I)**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

**(SF) Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alltiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**(DK) Advarse !**

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

## DISMANTLING INSTRUCTIONS

### Dismantling of the Front Panel assembly

- 1) Loosen the 9 screws to dismantle the Top Cover (pos 252)
  - 2 screws on each side
  - 5 screws on the Rear Panel (pos 251).
- 2) Loosen 4 screws A and 6 catches C1 to slide the Front Panel assembly (pos 101, 102, 103, etc) as per figure 1.

**Note: To remove the Source / Volume control pc board (pos 1105B) 2 nuts hidden below the control knob assembly (pos 133, 134 and 135) must first be removed.**

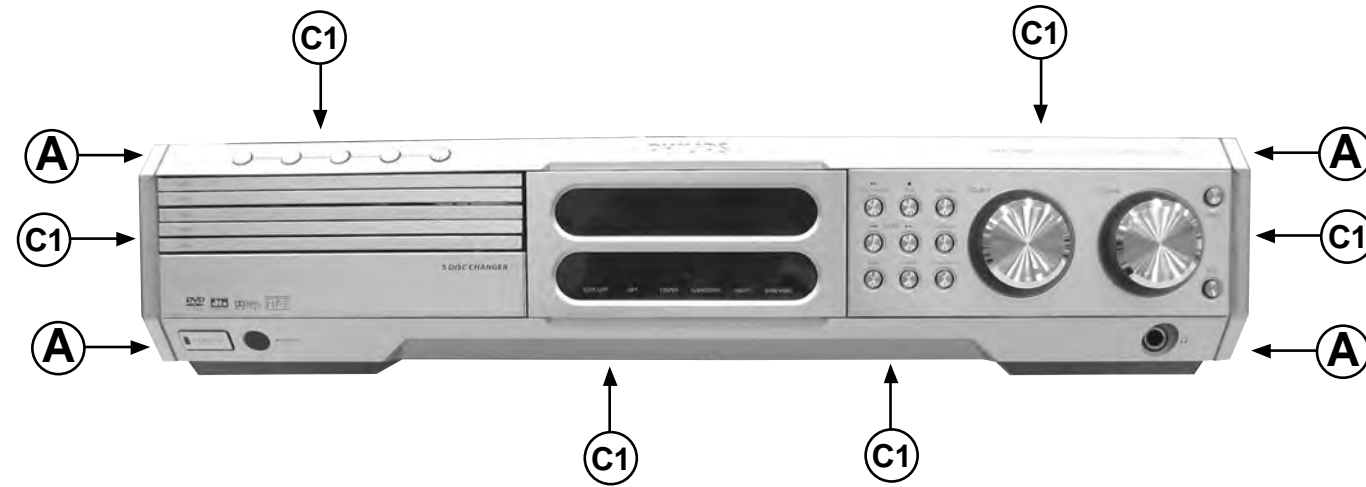


Figure 1

### Hints for re-assembly of Top Cover

Due to appearance design the Top cover (pos 252) is sandwiched between the Front panel (pos 101) and the 2 side covers (pos 102 & 103), this make it necessary to remove the 2 side covers before re-assembly of Top cover.

- 1) To remove the side cover use a small screw driver with marking 16mm from the tip end.
- 2) Insert the screw driver into slot (as shown in figure 2) and push the tip outwards to release the side cover catch. The side cover can be pull outwards as soon as the top catch is released.

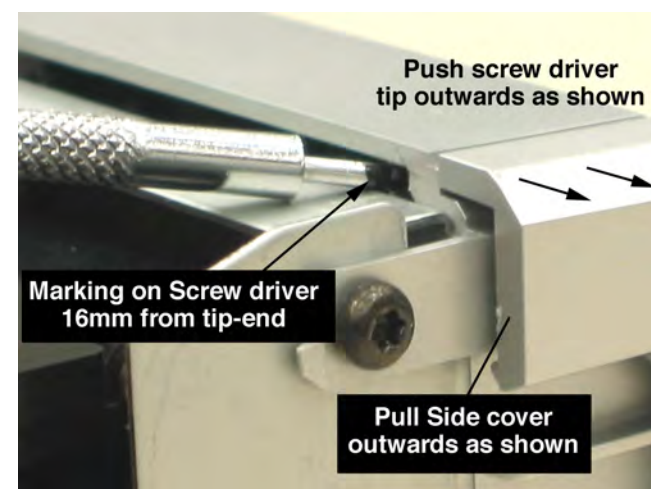
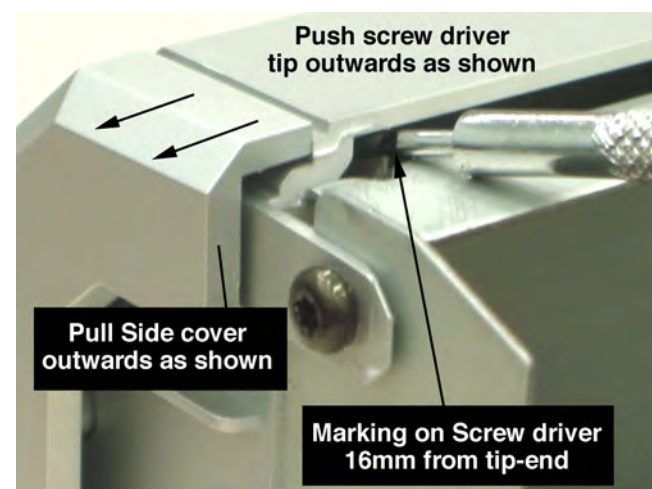


Figure 2

### Dismantling the Tuner, Mains and AV boards

- 1) Loosen 3 screws D and 2 catches C2 on the Rear panel (pos 251) to remove the Tuner board assembly (pos 1101) as per figure 3.
- 2) Loosen 1 screws E and 2 catches C3 to unslot the Mains board (pos 1102-A) out of the Rear panel as per figure 4.
- 3) Loosen bracket (pos 254) by turning a catch, sliding towards the outside and lifting it upwards as per figure 5.
- 4) Loosen 7 screws F and 2 C5 to separate Rear Plate assembly (pos 251 + 227) from the Bottom plate as per figure 3.
- 5) Uncatch C4 to remove the AV board (pos 1104) from the Bottom & Rear Plate assembly (pos 251 + 227) as per figure 5.

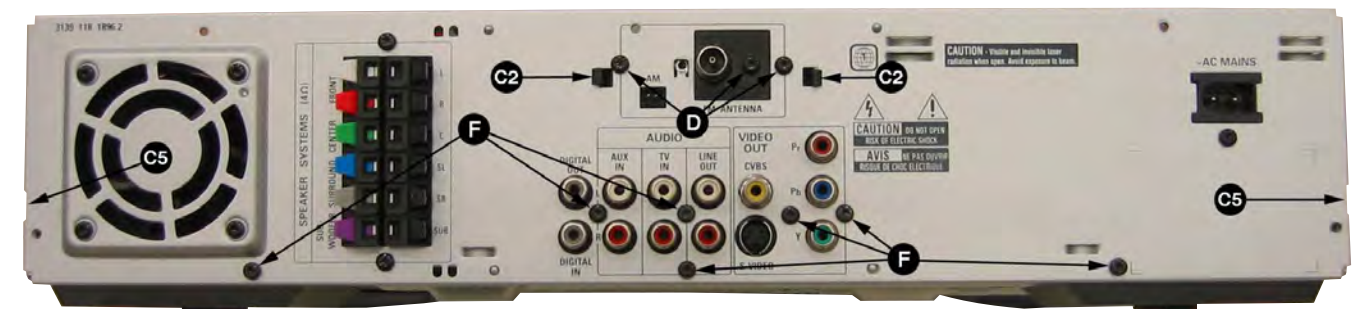


Figure 3

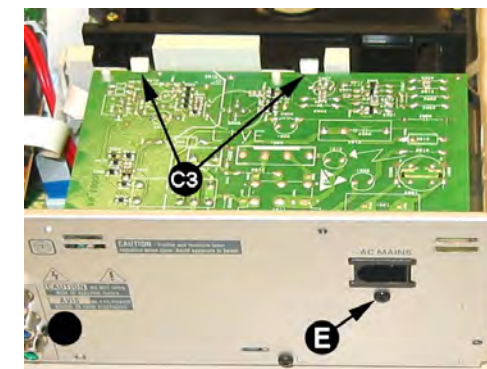


Figure 4

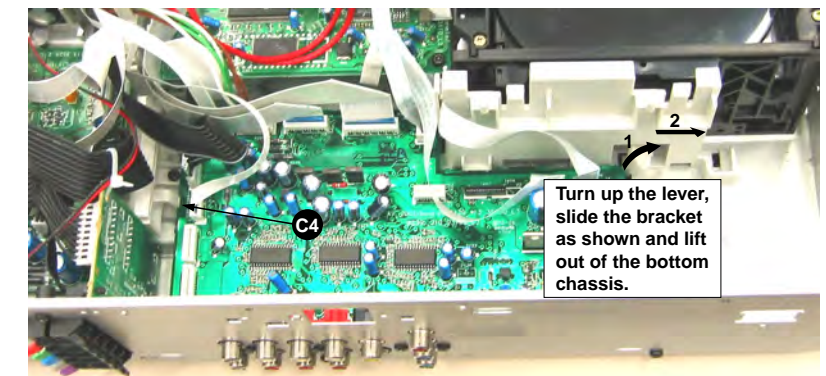


Figure 5

### Dismantling the 5DTC Module

- 1) Loosen 1 screws E and 2 catches C3 to remove the Mains board as per figure 4.
- 2) Loosen bracket (pos 254) by turning a catch, sliding towards the outside and lifting it upwards as per figure 5.
- 3) Loosen 3 screws G, lift up the 5DTC Module's (pos 1103-A) rear and pull the module out towards the rear as per figure 6.

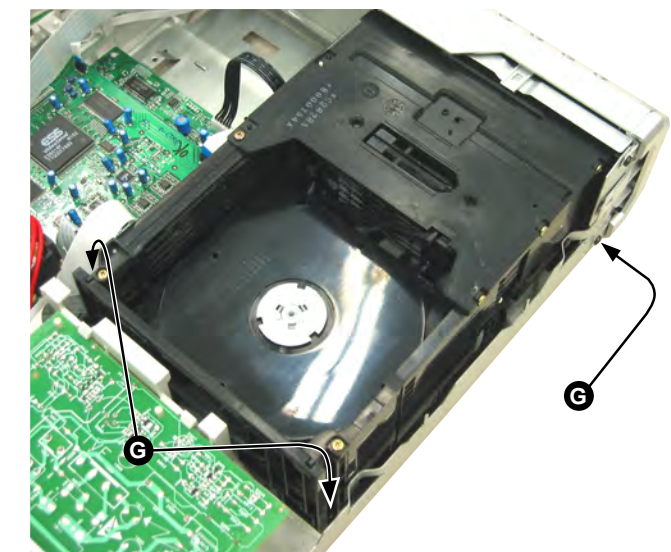


Figure 6



### Dismantling the Mono FE and BE boards

- 1) Loosen 2 screws and 2 catches to remove the Mono BE board (pos 1103-B).
- 2) Loosen 2 screws and 2 catches to remove the Mono FE board (pos 1103-C).

### Dismantling the Supply & Power Amplifier boards

- 1) Loosen 2 screws B mounting the Supply board's (pos 1102-B) heatsink to the Bottom Plate (pos 227) as per figure 7.

**Note:** During re-assembly care must be taken to ensure the Mains Transformer wires to the Supply board is routed properly below the board.

- 2) Loosen 4 screws C to dismantle the Power Amplifier board (pos 1102-D) from the Bottom Plate as per figure 7.

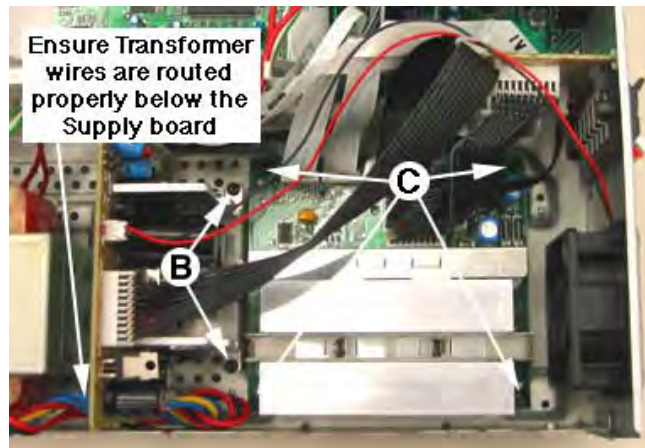
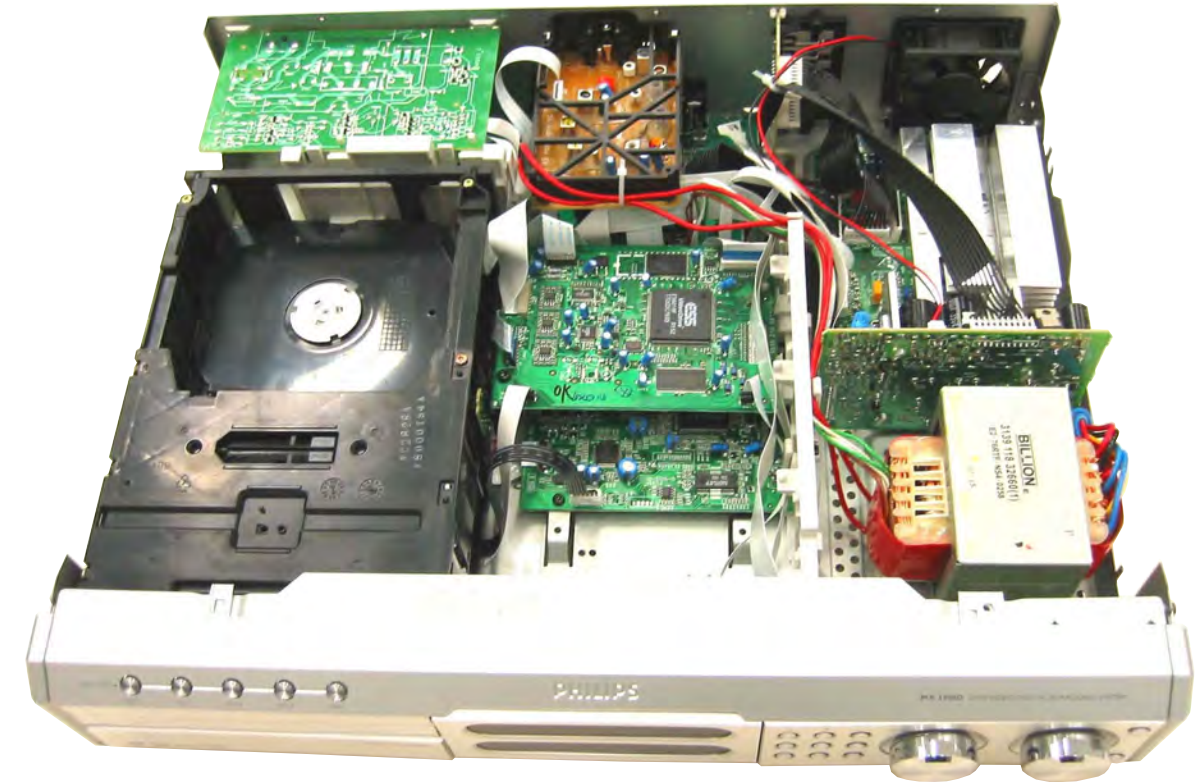


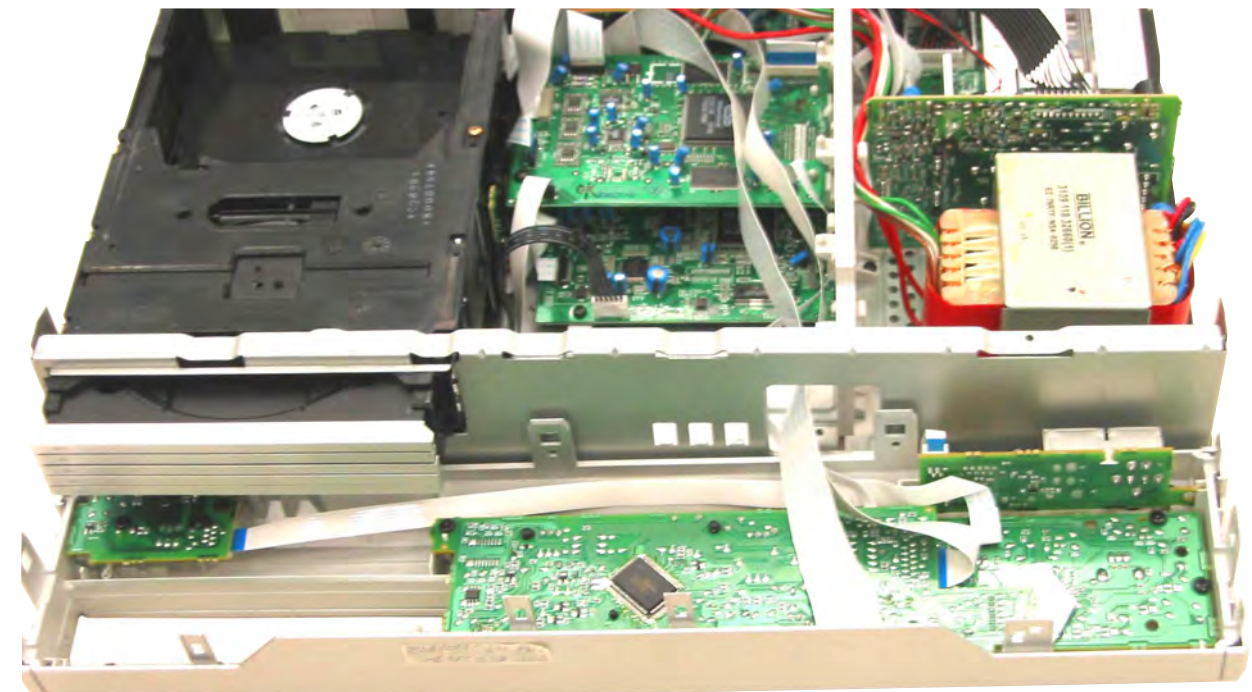
Figure 7

## Service positions

Service position A (Top cover removed)



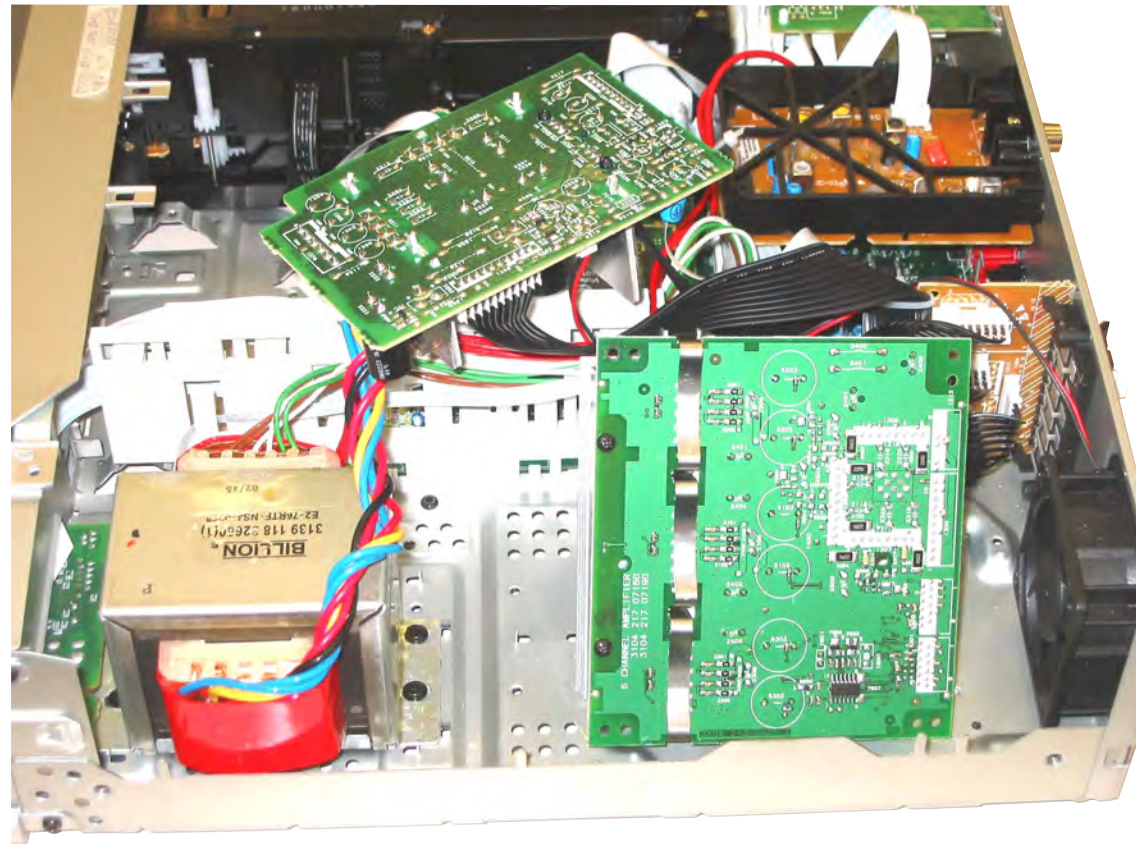
Service position B (Front Panel loosen)



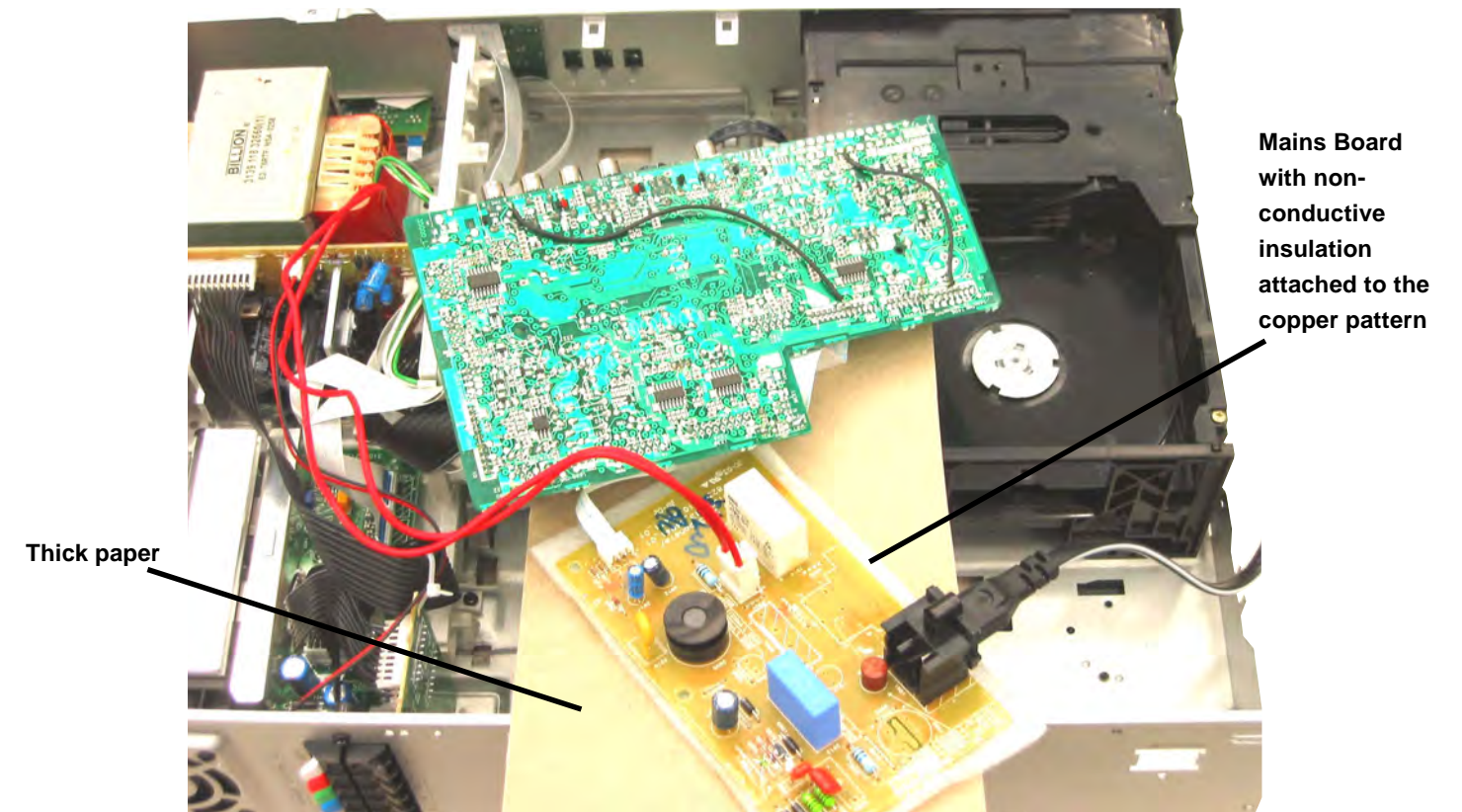


## Service positions

Service position C (Supply and Amplifier boards loosen)



Service position D (Mains & AV boards loosen)



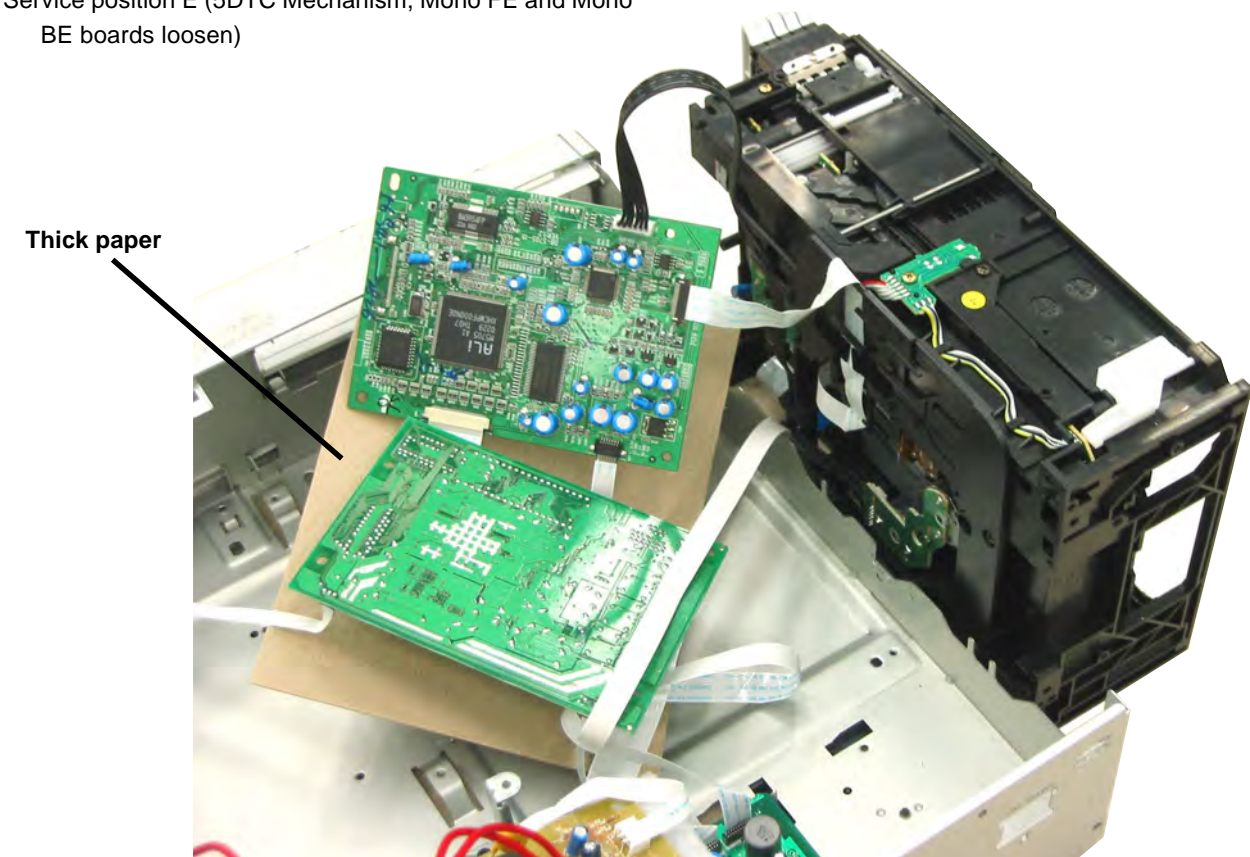
### Caution:

- 1) In some of the service positions the Mains supply is exposed, therefore service technicians have to exercise care to prevent electric shock.
- 2) The copper pattern on the Mains board should be covered with non-conductive insulation during fault-finding on other parts of the set.
- 3) Insulation sheet (eg. thick paper or cardboard) should be use during fault-finding to prevent short-circuiting of copper patterns to metallic surroundings.

### Note:

The ground connection between AV board stoko pin 1100 and Amplifier board stoko pin 1320 must be connect ed during Service pos C and D in order to have sound output at the Loudspeakers.

Service position E (5DTC Mechanism, Mono FE and Mono BE boards loosen)



# SERVICE TEST PROGRAM I

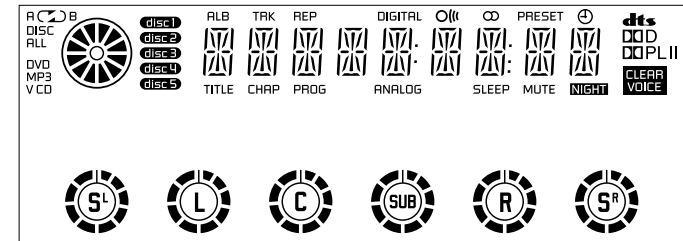
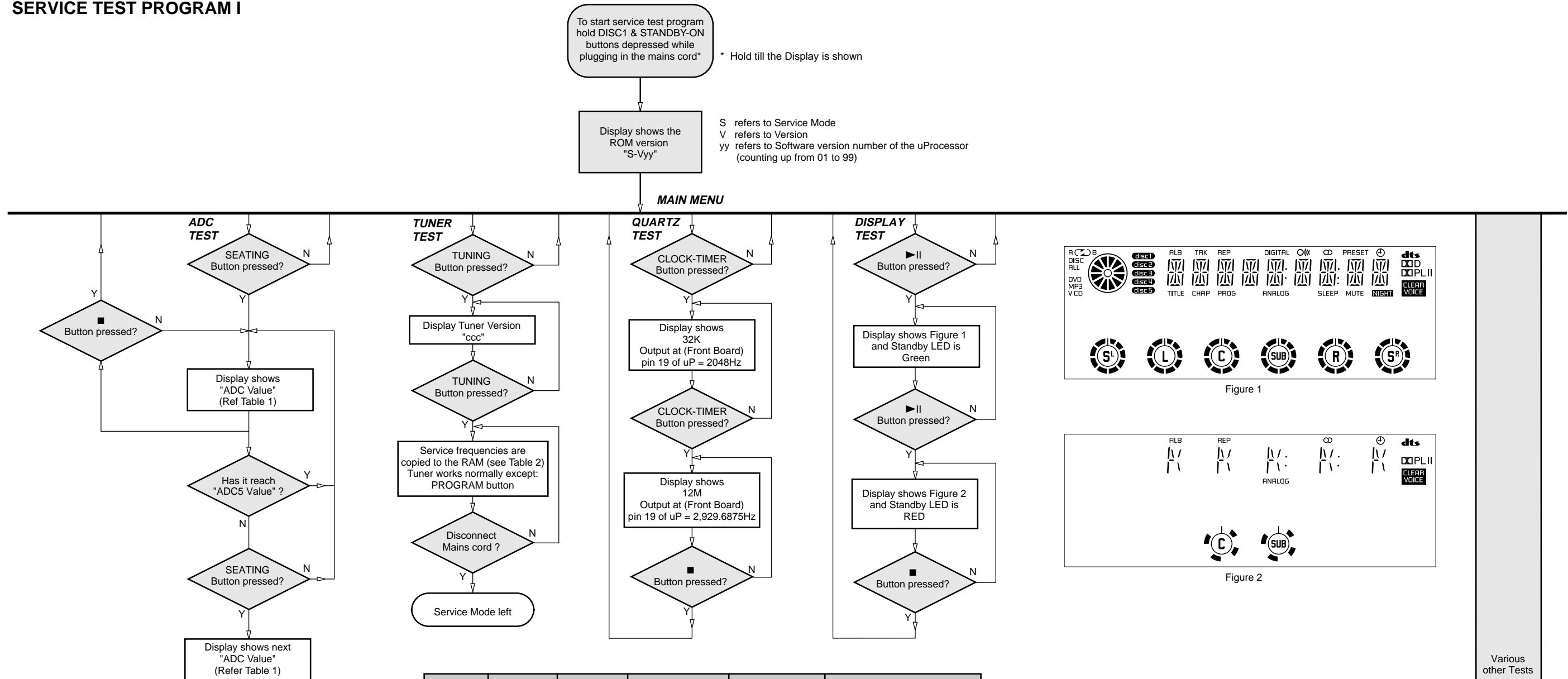


Figure 1

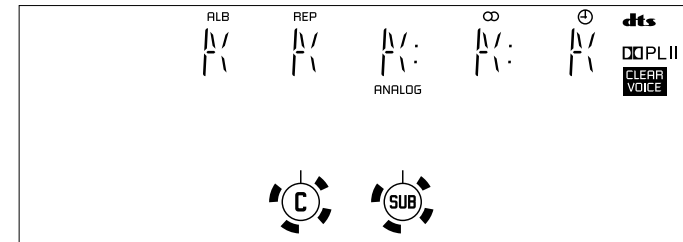


Figure 2

Various other Tests

Name	Input line to uProcessor IC	Remarks
ADC1	Key0	Return the value assign for each key button.
ADC2	Key1	Return the value assign for each key button.
ADC3	VU_IN	Varies according to the signal dc level
ADC4	MUX_DET	The set temperature is measured via this NTC line, if lower than 69 the set goes into Standby.
ADC5	Options	Return the value assign for the different possible options

Table 1

Note: ADC Test is used for checking the ADC inputs to the microprocessor. The display shows an ADC value between 0 and 255 for an input signal between 0 and 5V.

PRESET	Europe "EUR"	USA "USA"	Oversea "OSE"	East Europe "EAS"	East Eur. Extended-band "EAS"
1	87.5MHz	87.5MHz	87.5MHz	87.5MHz	65.81MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	530kHz	530/531kHz*	531kHz	74MHz
4	1602kHz	1700kHz	1700/1602kHz*	1602kHz	87.5MHz
5	558kHz	560kHz	560/558kHz*	558kHz	531kHz
6	1494kHz	1500kHz	1500/1494kHz*	1494kHz	1602kHz
7	87.5MHz	98MHz	98/87.5MHz*	87.5MHz	558kHz
8	87.5MHz	87.5MHz	87.5MHz	87.5MHz	1494kHz
9	87.5MHz	87.5MHz	87.5MHz	87.5MHz	98MHz
10	87.5MHz	87.5MHz	87.5MHz	87.5MHz	70.01MHz
11	98MHz	87.5MHz	87.5/98MHz*	98MHz	65.81MHz

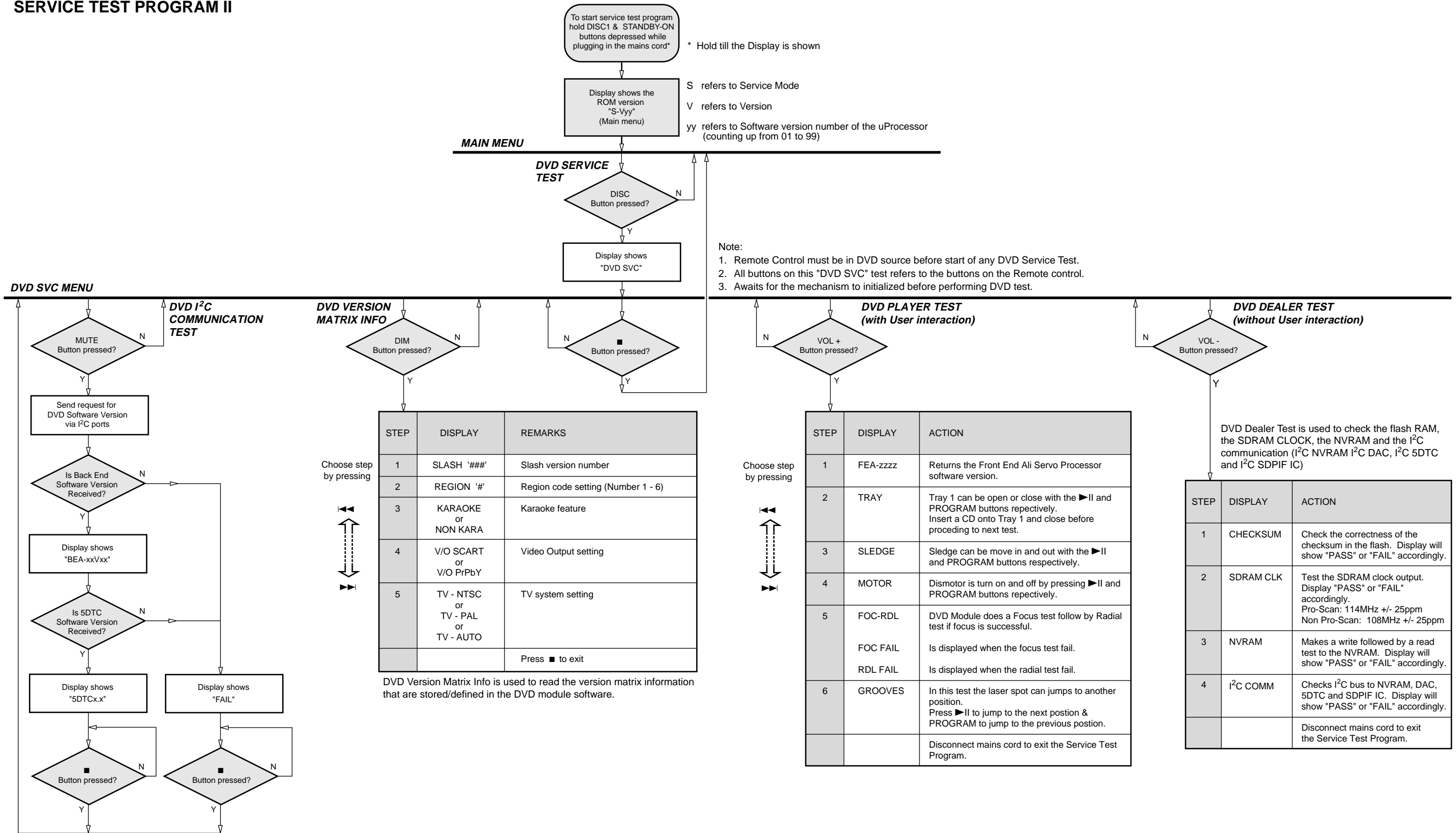
Table 2

Note: \* Depending on the selected grid frequency (9 or 10kHz).  
By holding the "DISC5" and "STANDBY-ON" buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:  
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.

TEST	Activated with	ACTION
EEPROM TEST	▶▶ ■ to Exit	Some test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT TEST	◀◀	Load default data. Display shows "NEW" for 1 second. <b>Caution!</b> <b>All presets from the customer will be lost!!</b>
AUTO STANDBY TOGGLE	SUBW + (Remote Control)	Pressing this button will toggle between the status "AUTO STANDBY ON" and "AUTO STANDBY OFF". The status will scroll once across the Display.
ROTARY ENCODER TEST	SOURCE / VOLUME Knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TEST PROGRAM	Disconnect mains cord	



**SERVICE TEST PROGRAM II**



DVD I<sup>2</sup>C Communication Test is used to test the I<sup>2</sup>C communication port between the DVD module and the microprocessor of the set.

## Reprogramming of DVD version matrix

### Caution:

**This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono BE board.**

After replacement/repair of the Mono BE board, the customer settings and also the region code may be lost. Reprogramming will put the set back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.

Reprogramming will be done by way of the Remote Control.  
Put the player in stop mode, Disc 1 with no disc loaded.

Do the following steps with the Remote Control:

- 1) Press **<DISC MENU>** followed by numerical keys **<1> <5> <9>**

The set display shows: **- 0 - 0 - 0 - 0 -**

- 2) Press now successively the following numerical keys :

for MX3900D/37 : **<1><1><4> <0><1><0> <0><0> US**

for MX3950D/37 : **<1><1><4> <0><1><0> <0><0> US**

for MX5500D/21S : **<3><2><4> <0><1><1> <0><0> AP**

for MX5500D/33S : **<3><5><4> <0><1><2> <0><0> AP - Korea**

for MX5500D/35S : **<3><5><4> <0><1><1> <0><0> AP - China**

for MX5500D/37 : **<1><1><4> <0><1><3> <0><0> US**

for MX5600D/37 : **<1><1><4> <0><1><3> <0><0> US**

for MX5700D/22S : **<2><2><4> <0><1><4> <0><0> Europe**

for MX5800SA/21R : **<3><2><3> <0><4><0> <0><8> AP**

for MX5800SA/21S : **<4><2><3> <0><4><0> <0><8> Australia, New Zealand**

for MX5800SA/22S : **<2><2><2> <0><4><2> <0><8> Europe**

for MX5800SA/33S : **<3><2><3> <0><4><1> <0><8> AP - Korea**

for MX5800SA/35S : **<6><2><3> <0><4><0> <0><8> China**

for MX5900SA/37 : **<1><1><1> <0><4><3> <0><8> US**

- 3) Press **<DISC MENU>** again. The set display will show: **DONE**.

Caution: The set needs about 3 seconds to reset to required setting.

- 4) Disconnect mains to ensure proper reset.

### Procedure for check Software version

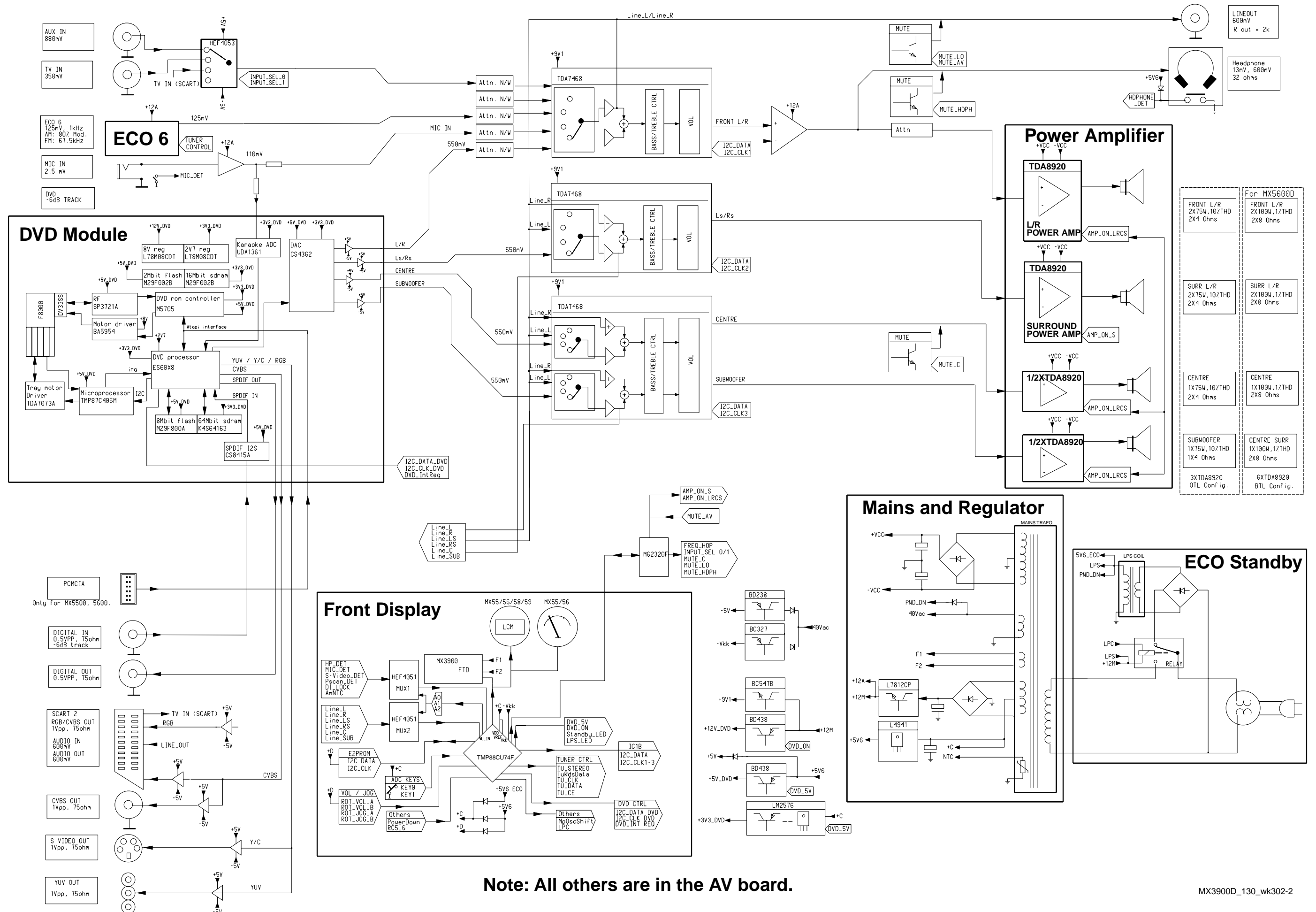
- 1) Select Disc with the Remote Control
- 2) Press **<SYSTEM MENU>**
- 3) Use the down key move all the way down (4x) to bottom of "Setup Menu".
- 4) Use the right key move to the sub-menu.
- 5) Use the down key move down (3x) to "Default" and down one more time to see the software version.
- 6) The TV screen will shows:  
R1000 BEA3131PV08 R2812 V72  
where 1000 = DVD version matrix info  
31V08 = BE software version  
2812 = FE software version  
72 = 5DTC servo version
- 7) Press **<OK>** three times to exit.

### Procedure to upgrade software

- 1) Power up the set and open tray Disc 1.
- 2) Place upgrade CD-ROM onto tray and close.
- 3) The set will display "DOWNLOAD" while the TV screen will shows:  
Reading --> Update BEA --> Writing --> Done -->  
Update FEA --> FEA Finish --> Unload Disc 1
- 4) Tray Disc 1 should then open.
- 5) The whole process should last for less than 2 minutes.  
Remove the upgrade CD-ROM and unplug the Mains supply.

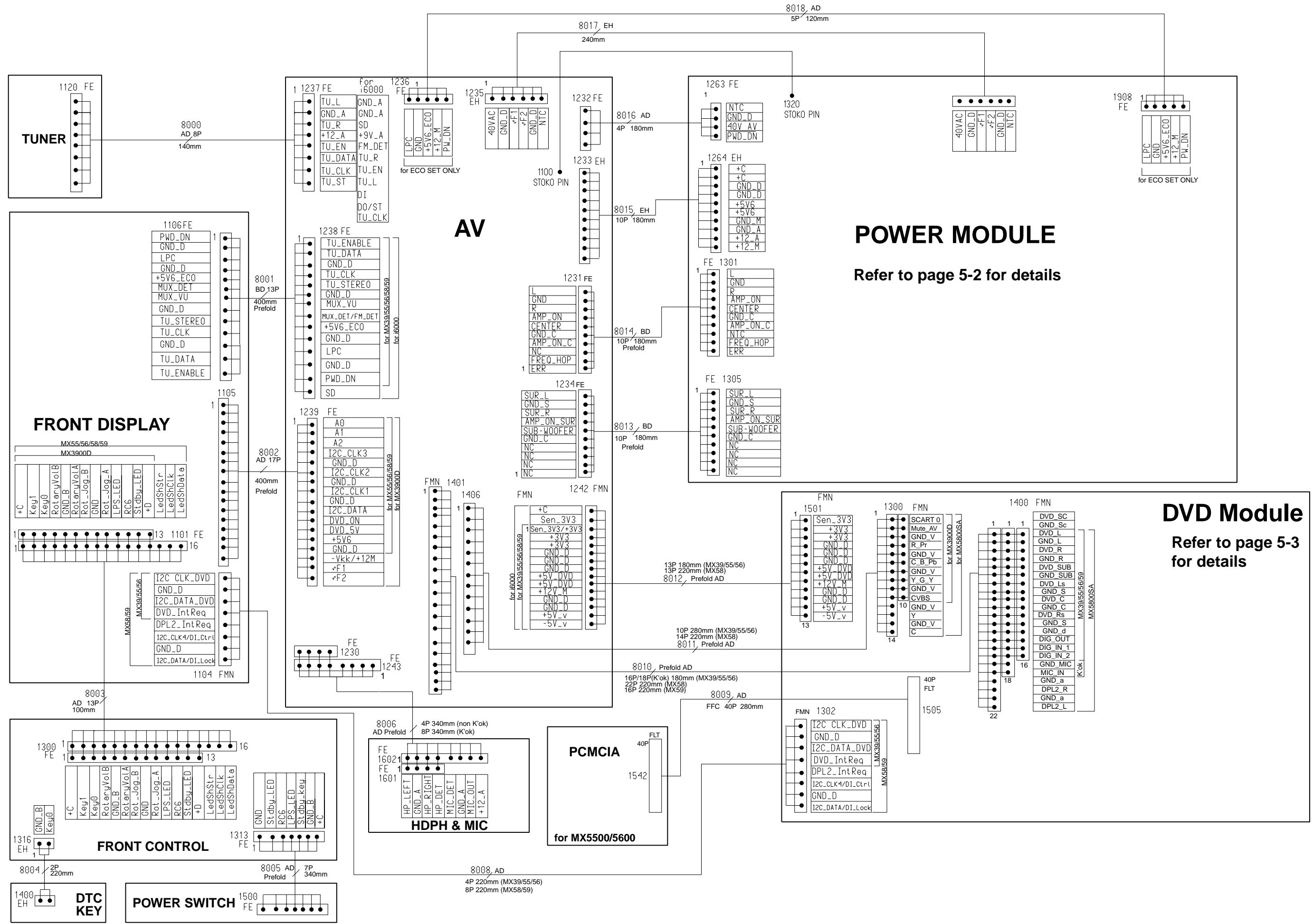


# SET BLOCK DIAGRAM



Note: All others are in the AV board.

# MAIN WIRING DIAGRAM

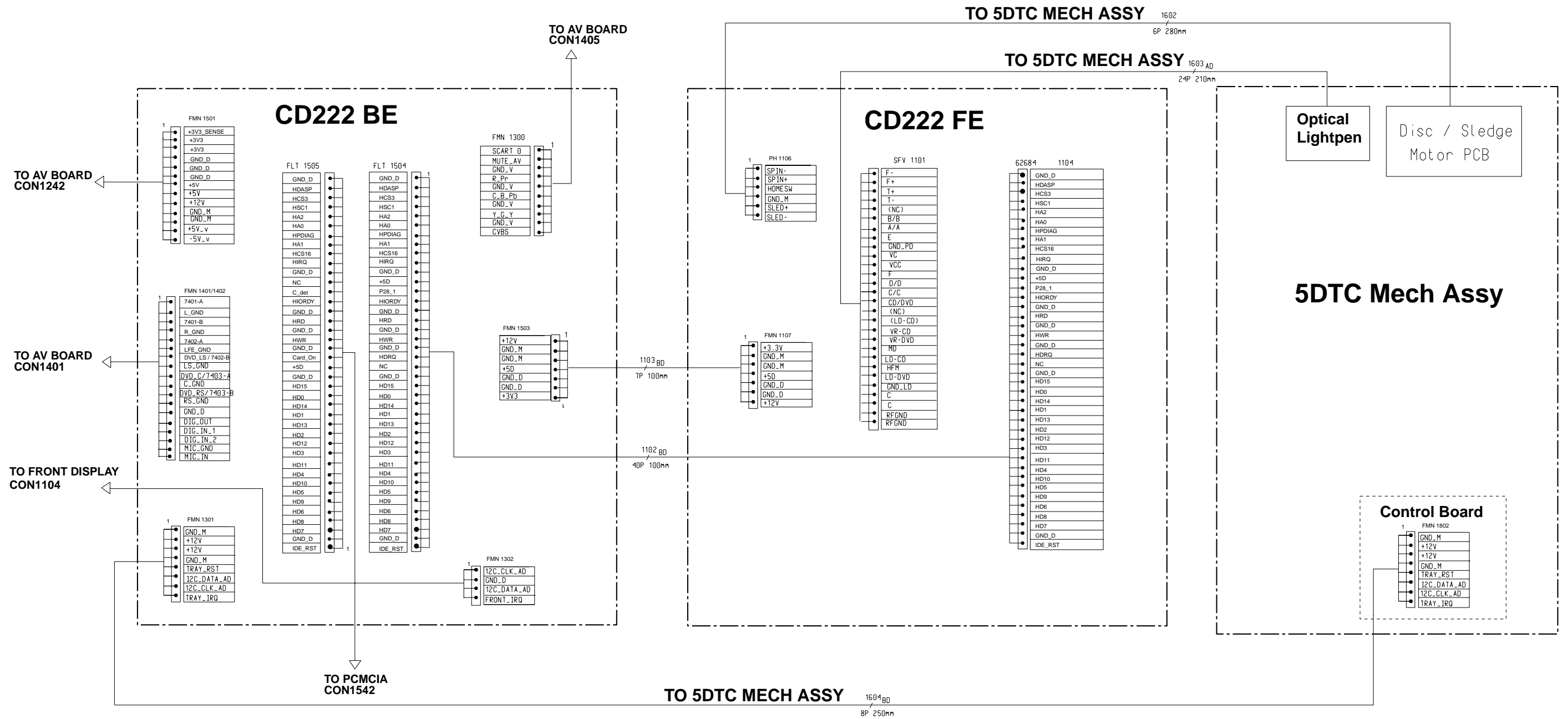


**POWER MODULE**  
Refer to page 5-2 for details

**DVD Module**  
Refer to page 5-3 for details



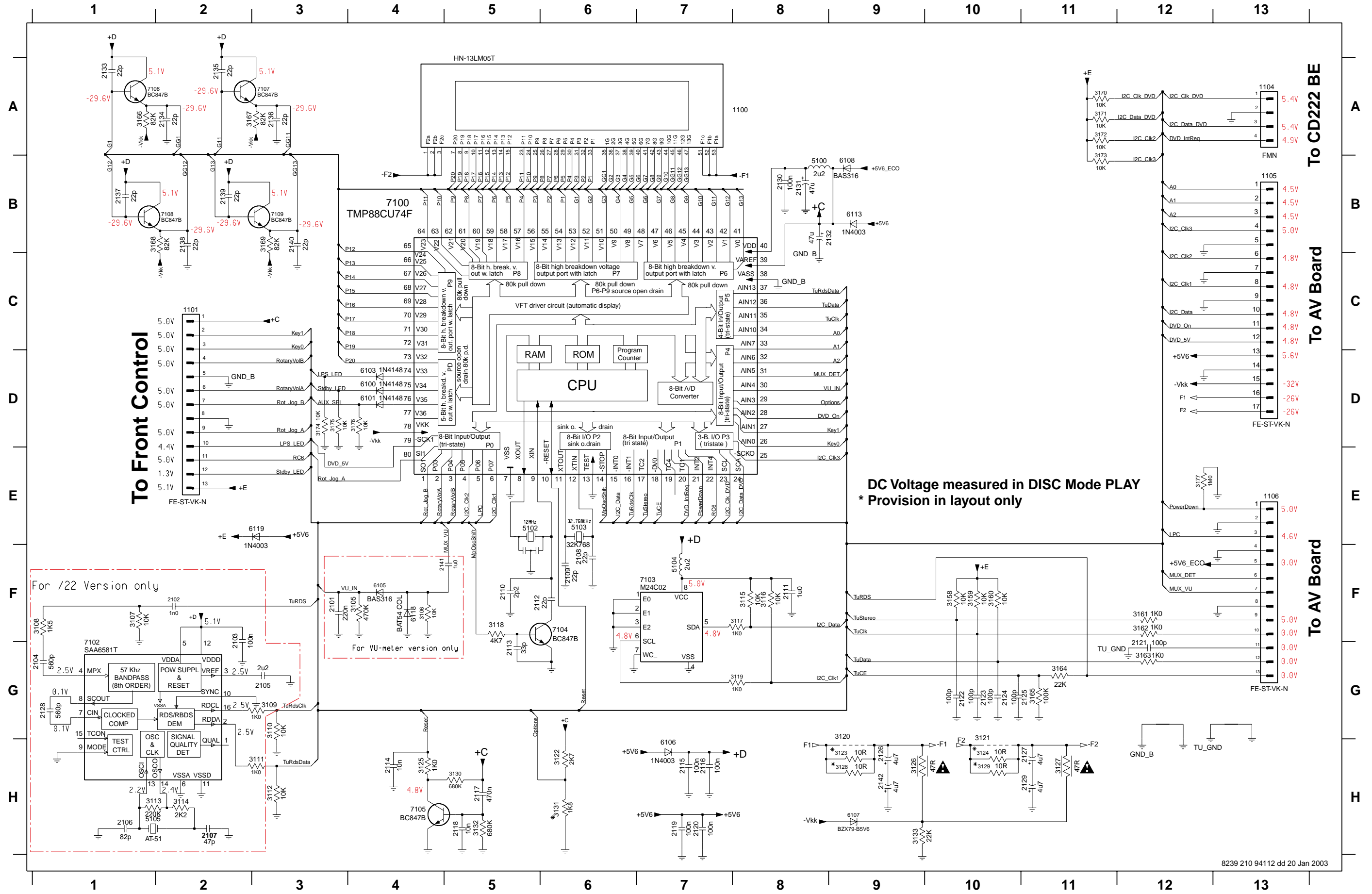
# WIRING DIAGRAM - DVD MODULE DETAILS





# FRONT DISPLAY PART - CIRCUIT DIAGRAM

1100 A8	1106 E13	2104 G1	2108 F6	2112 F5	2116 H7	2120 H7	2124 G10	2128 G1	2132 B8	2136 A3	2140 B3	3106 F4	3110 G3	3114 H2	3118 F5	3122 H6	3126 H9	3130 H5	3158 F10	3162 F12	3166 A1	3170 A11	3174 D3	5100 B8	5105 H1	6105 F4	6113 B9	7104 F6	7108 B2
1101 C2	2101 F3	2105 G3	2109 F6	2113 G5	2117 H5	2121 G12	2125 G11	2129 H11	2133 A1	2137 B1	2141 F4	3107 F1	3111 H3	3115 F8	3119 G8	3123 H9	3127 H11	3131 H6	3159 F10	3163 G12	3167 A2	3171 A11	3175 D3	5102 E5	6100 D4	6106 H7	6118 F4	7105 H4	7109 B3
1104 A13	2102 F2	2106 H1	2110 F5	2114 H4	2118 H5	2122 G10	2126 H9	2130 B8	2134 A2	2138 B2	2142 H9	3108 F1	3112 H3	3116 F8	3120 G9	3124 H10	3128 H9	3132 H5	3160 F10	3164 G11	3168 B1	3172 A11	3176 D4	5103 E6	6101 D4	6107 H9	6119 E3	7106 A1	
1105 B13	2103 F2	2107 H2	2111 F8	2115 H7	2119 H7	2123 G10	2127 H11	2131 B8	2135 A2	2139 B2	3105 F4	3109 G3	3113 H1	3117 F8	3121 H0	3125 H4	3129 H10	3133 H9	3161 F12	3165 G11	3169 B3	3173 B11	3177 E12	5104 F7	6103 D4	6108 B9	7103 F7	7107 A3	



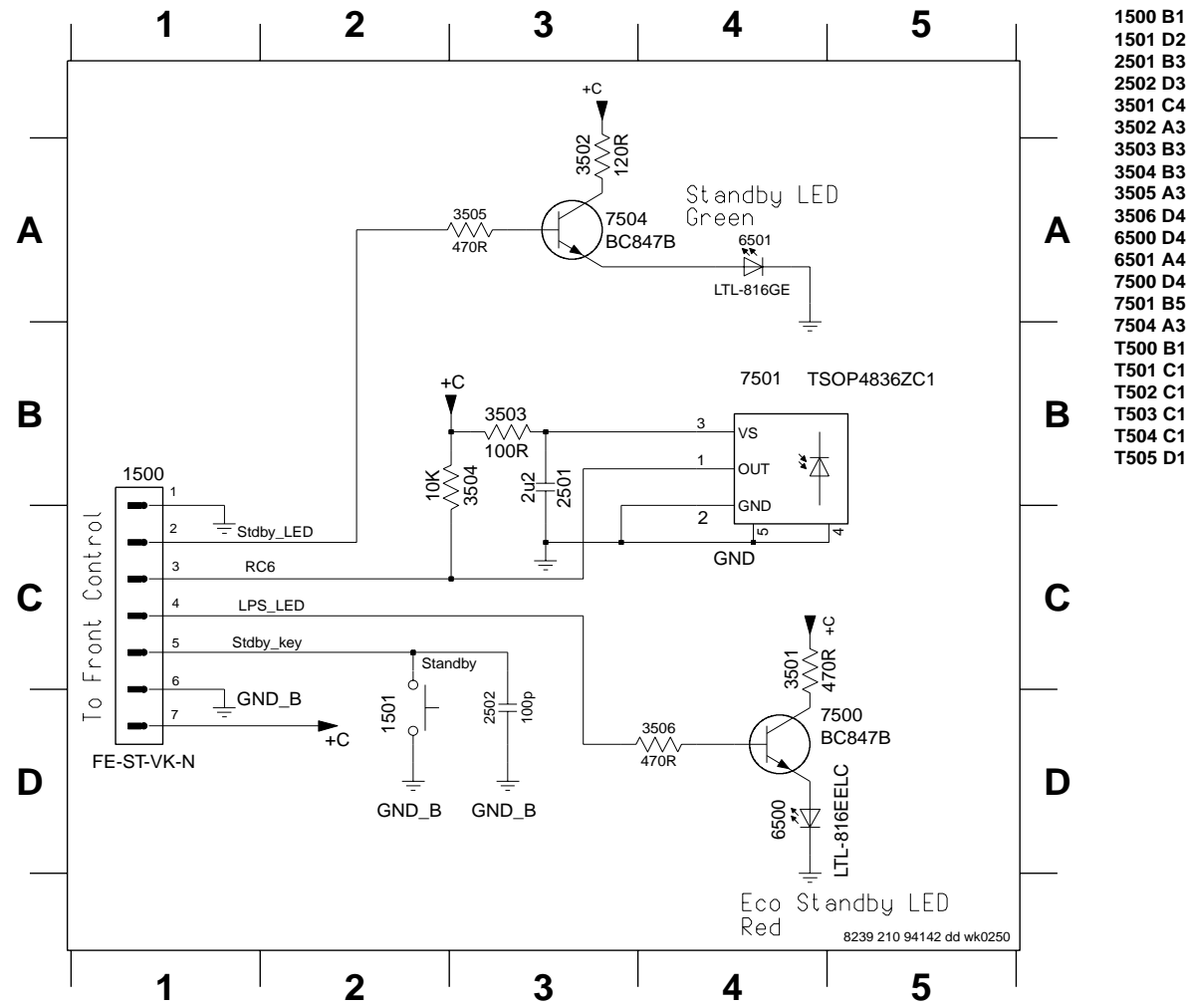






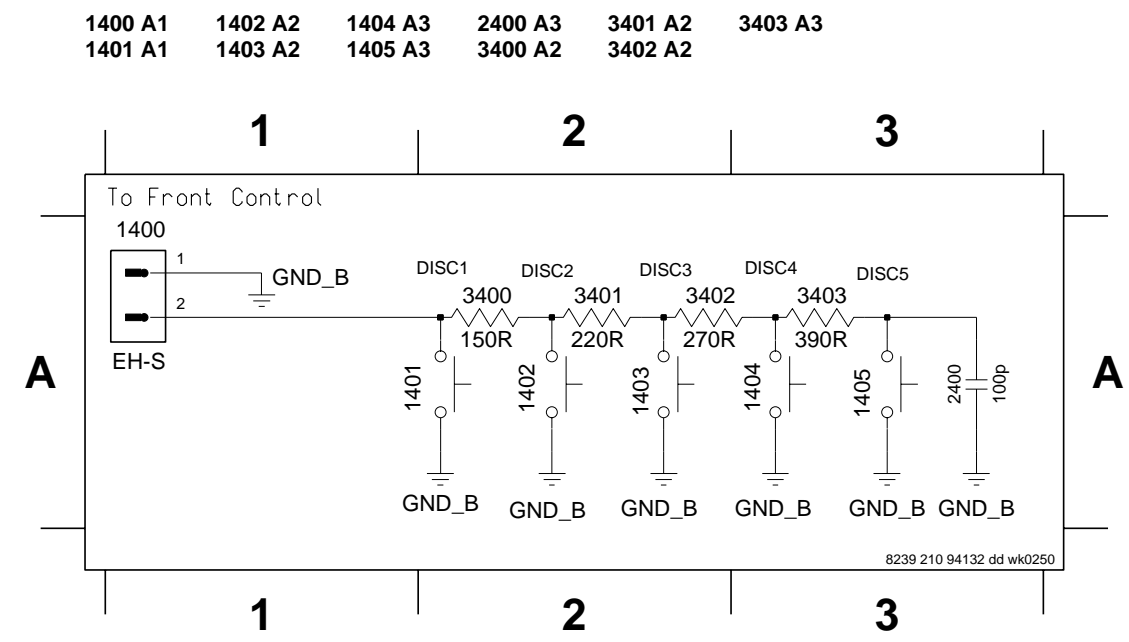


POWER SWITCH PART - CIRCUIT DIAGRAM



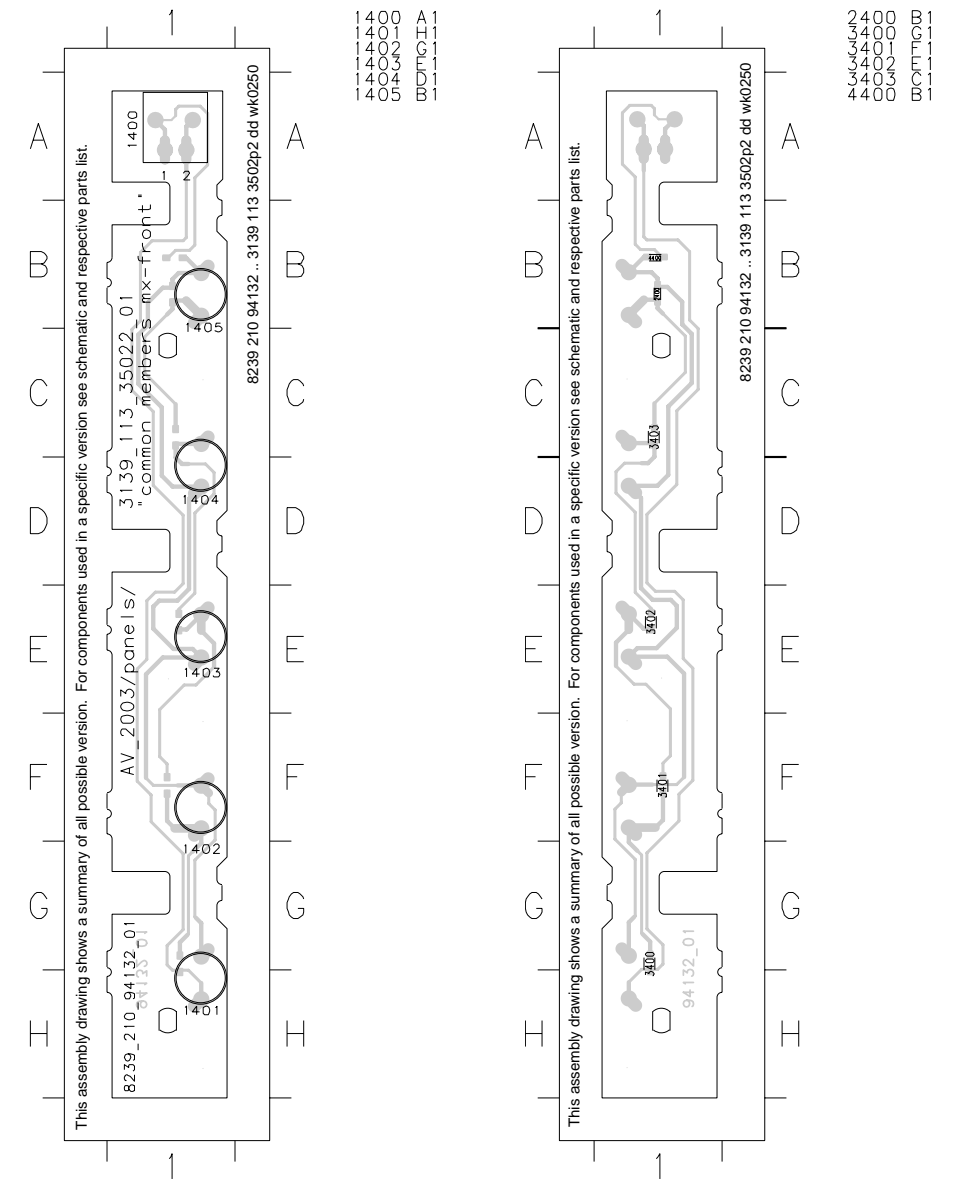
- 1500 B1
- 1501 D2
- 2501 B3
- 2502 D3
- 3501 C4
- 3502 A3
- 3503 B3
- 3504 B3
- 3505 A3
- 3506 D4
- 6500 D4
- 6501 A4
- 7500 D4
- 7501 B5
- 7504 A3
- T500 B1
- T501 C1
- T502 C1
- T503 C1
- T504 C1
- T505 D1

DTC KEY PART - CIRCUIT DIAGRAM

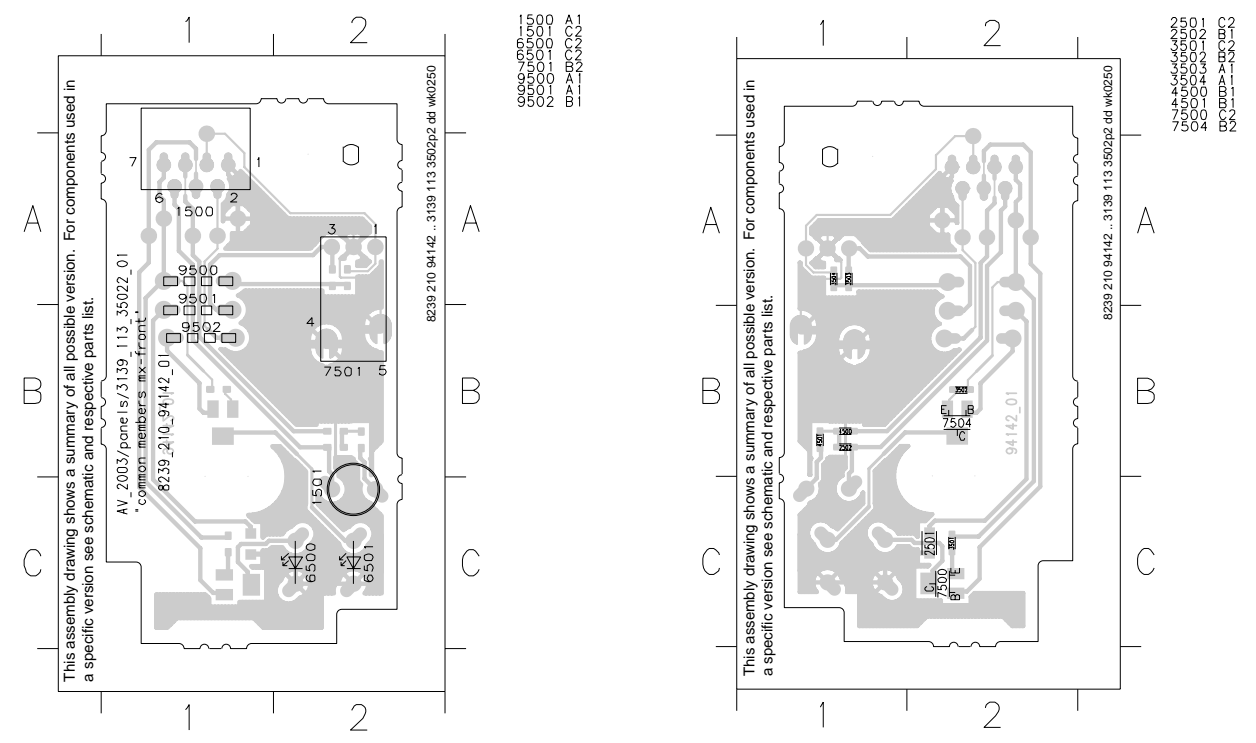


- 1400 A1
- 1401 A1
- 1402 A2
- 1403 A2
- 1404 A3
- 1405 A3
- 2400 A3
- 3400 A2
- 3401 A2
- 3402 A2
- 3403 A3

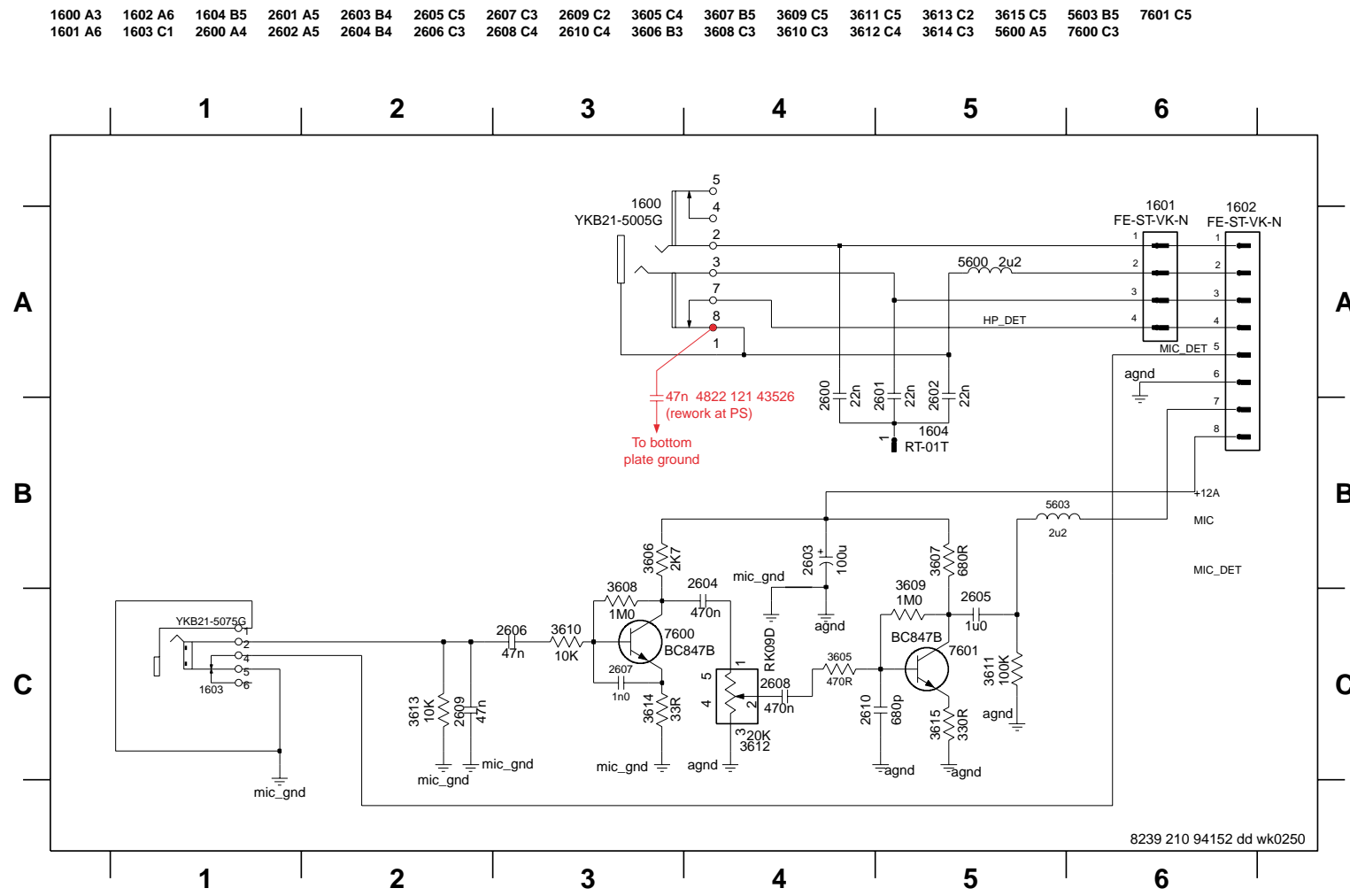
DTC KEY PART - COMPONENT & CHIP LAYOUTS



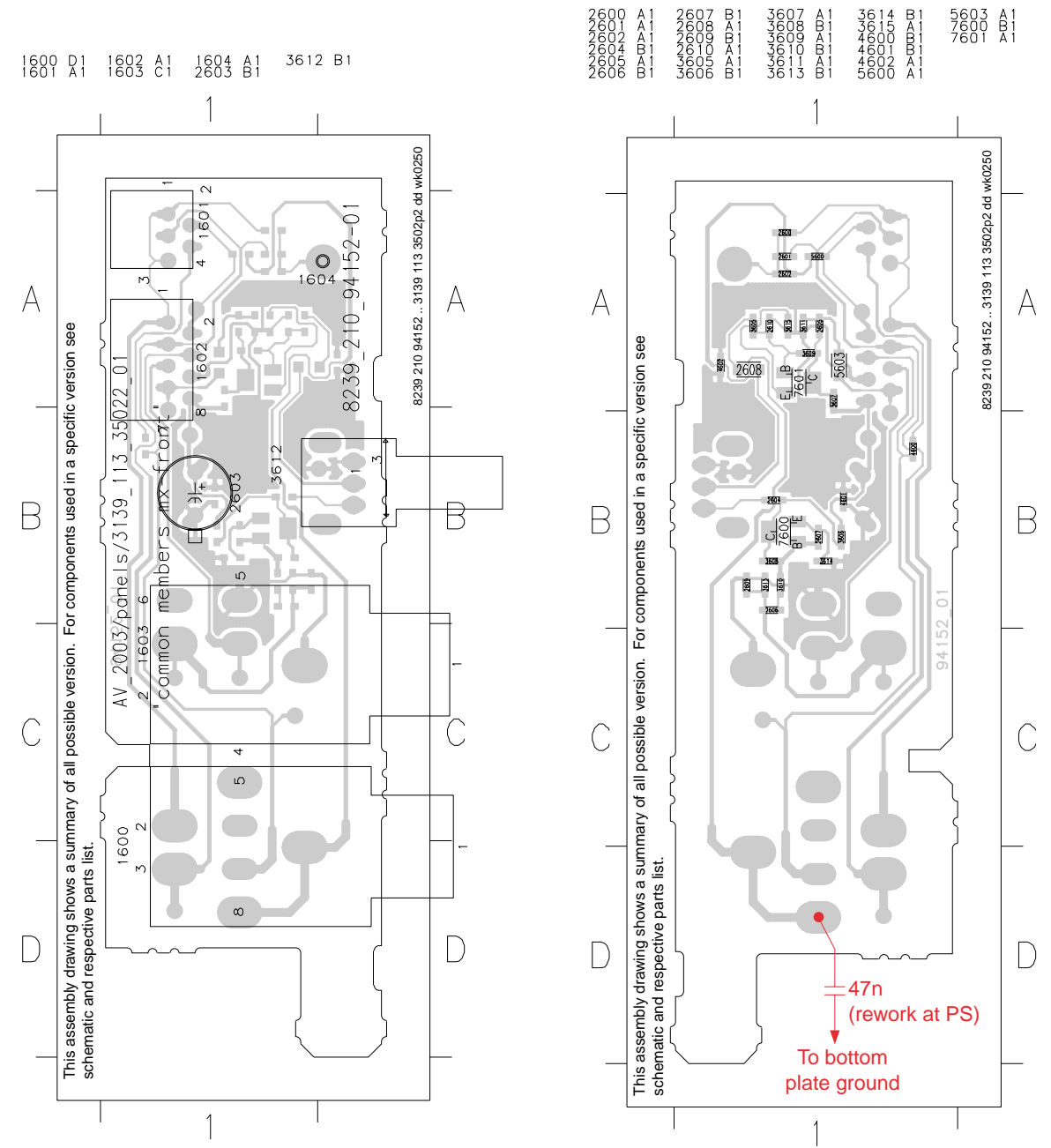
POWER SWITCH PART - COMPONENT & CHIP LAYOUTS



### HDPH & MIC PART - CIRCUIT DIAGRAM



### HDPH & MIC PART - COMPONENT & CHIP LAYOUTS



## ELECTRICAL PARTS LIST - FRONT BOARDS

## MISCELLANEOUS

1100	3139 110 53311	FTD Display HNA-13LM05T
1101	4822 267 10756	FFC Socket 13P Hort.
1104	2422 025 16979	FFC Socket 4P Hort.
1105	2422 025 14547	FFC Socket 17P Hort.
1106	4822 267 10756	FFC Socket 13P Hort.
1300	4822 267 10756	FFC Socket 13P Hort.
1301	4822 276 13775	Tact Switch
1302	4822 276 13775	Tact Switch
1303	4822 276 13775	Tact Switch
1304	4822 276 13775	Tact Switch
1305	4822 276 13775	Tact Switch
1306	4822 276 13775	Tact Switch
1307	4822 276 13775	Tact Switch
1308	4822 276 13775	Tact Switch
1309	4822 276 13775	Tact Switch
1310	4822 276 13775	Tact Switch
1311	4822 276 13775	Tact Switch
1313	4822 267 10956	FFC Socket 7P Hort.
1314	2422 129 16975	Rotary Encoder Volume
1315	2422 129 16974	Rotary Encoder Source
1401	4822 276 13775	Tact Switch
1402	4822 276 13775	Tact Switch
1403	4822 276 13775	Tact Switch
1404	4822 276 13775	Tact Switch
1405	4822 276 13775	Tact Switch
1500	4822 267 10956	FFC Socket 7P Hort.
1501	4822 276 13775	Tact Switch
1600	2422 026 05192	Headphone Socket D6,3
1601	4822 265 11183	FFC Socket 4P Hort.

## CAPACITORS

2108	4822 122 33761	22pF 5% 50V
2109	4822 122 33761	22pF 5% 50V
2110	4822 126 14223	2,2pF +/-0,25pF 50V
2111	3198 017 41050	1uF 10V
2112	4822 122 33761	22pF 5% 50V
2113	2222 867 15339	33pF 5% 50V
2114	5322 126 11583	10nF 10% 50V
2115	2238 586 59812	100nF 10% 50V
2116	2238 586 59812	100nF 10% 50V
2117	3198 017 44740	470nF 10V
2118	5322 126 11583	10nF 10% 50V
2119	2238 586 59812	100nF 10% 50V
2120	2238 586 59812	100nF 10% 50V
2121	2020 552 94427	100pF 5% 50V
2122	2020 552 94427	100pF 5% 50V
2123	2020 552 94427	100pF 5% 50V
2124	2020 552 94427	100pF 5% 50V
2125	2020 552 94427	100pF 5% 50V
2126	4822 124 22726	4,7uF 20% 35V
2127	4822 124 22726	4,7uF 20% 35V
2129	4822 124 22726	4,7uF 20% 35V

2130	2238 586 59812	100nF 10% 50V
2131	4822 124 40433	47uF 20% 25V
2132	4822 124 40433	47uF 20% 25V
2133	4822 122 33761	22pF 5% 50V
2134	4822 122 33761	22pF 5% 50V
2135	4822 122 33761	22pF 5% 50V
2136	4822 122 33761	22pF 5% 50V
2137	4822 122 33761	22pF 5% 50V
2138	4822 122 33761	22pF 5% 50V
2139	4822 122 33761	22pF 5% 50V
2140	4822 122 33761	22pF 5% 50V
2304	5322 126 11583	10nF 10% 50V
2305	5322 126 11583	10nF 10% 50V
2306	5322 126 11583	10nF 10% 50V
2307	5322 126 11583	10nF 10% 50V
2400	2020 552 94427	100pF 5% 50V
2501	4822 126 14491	2,2uF 10V 0805
2502	2020 552 94427	100pF 5% 50V
2600	4822 126 14494	22nF 10% 25V
2601	4822 126 14494	22nF 10% 25V
2602	4822 126 14494	22nF 10% 25V

## RESISTORS

3110	4822 051 30103	10k 5% 0,062W
3112	4822 051 30103	10k 5% 0,062W
3115	4822 051 30103	10k 5% 0,062W
3116	4822 051 30103	10k 5% 0,062W
3117	4822 051 30102	1k 5% 0,062W
3118	4822 051 30472	4k7 5% 0,062W
3119	4822 051 30102	1k 5% 0,062W
3120	4822 051 30008	OR Jumper 0603
3121	4822 051 30008	OR Jumper 0603
3122	4822 051 30272	2k7 5% 0,062W
3125	4822 051 30102	1k 5% 0,062W
3126	4822 052 10479 $\Delta$	47R 5% 0,33W
3127	4822 052 10479 $\Delta$	47R 5% 0,33W
3130	4822 051 30684	680k 5% 0,062W
3132	4822 051 30684	680k 5% 0,062W
3133	4822 051 30223	22k 5% 0,062W
3158	4822 051 30103	10k 5% 0,062W
3159	4822 051 30103	10k 5% 0,062W
3160	4822 051 30103	10k 5% 0,062W
3161	4822 051 30102	1k 5% 0,062W
3162	4822 051 30102	1k 5% 0,062W
3163	4822 051 30102	1k 5% 0,062W
3164	4822 051 30223	22k 5% 0,062W
3165	4822 117 13632	100k 1% 0,062W
3166	4822 117 12864	82k 5% 0,062W
3167	4822 117 12864	82k 5% 0,062W
3168	4822 117 12864	82k 5% 0,062W
3169	4822 117 12864	82k 5% 0,062W
3170	4822 051 30103	10k 5% 0,062W

## ELECTRICAL PARTS LIST - FRONT BOARDS

3171	4822 051 30103	10k 5% 0,062W
3172	4822 051 30103	10k 5% 0,062W
3173	4822 051 30103	10k 5% 0,062W
3174	4822 051 30103	10k 5% 0,062W
3175	4822 051 30103	10k 5% 0,062W
3176	4822 051 30103	10k 5% 0,062W
3177	4822 051 30105	1M 5% 0,062W
3303	4822 051 30151	150R 5% 0,062W
3304	4822 051 30221	220R 5% 0,062W
3305	4822 051 30271	270R 5% 0,062W
3306	4822 051 30391	390R 5% 0,062W
3307	4822 051 30561	560R 5% 0,062W
3308	4822 117 12968	820R 5% 0,62W
3309	4822 117 11817	1k2 1% 1/16W
3310	4822 117 12903	1k8 1% 0,063W
3311	4822 051 30272	2k7 5% 0,062W
3312	4822 051 30472	4k7 5% 0,062W
3330	4822 051 30272	2k7 5% 0,062W
3331	4822 051 30272	2k7 5% 0,062W
3332	4822 051 30103	10k 5% 0,062W
3333	4822 051 30103	10k 5% 0,062W
3334	4822 051 30103	10k 5% 0,062W
3335	4822 051 30103	10k 5% 0,062W
3336	4822 051 30103	10k 5% 0,062W
3400	4822 051 30151	150R 5% 0,062W
3401	4822 051 30221	220R 5% 0,062W
3402	4822 051 30271	270R 5% 0,062W
3403	4822 051 30391	390R 5% 0,062W
3501	4822 051 30471	470R 5% 0,062W
3502	4822 051 30121	120R 5% 0,062W
3503	4822 051 30101	100R 5% 0,062W
3504	4822 051 30103	10k 5% 0,062W
3505	4822 051 30471	470R 5% 0,062W
3506	4822 051 30471	470R 5% 0,062W
4100	4822 051 30008	OR Jumper 0603
4102	4822 051 30008	OR Jumper 0603
4103	4822 051 30008	OR Jumper 0603
4104	4822 051 30008	OR Jumper 0603
4105	4822 051 30008	OR Jumper 0603
4106	4822 051 30008	OR Jumper 0603
4107	4822 051 30008	OR Jumper 0603
4108	4822 051 30008	OR Jumper 0603
4109	4822 051 30008	OR Jumper 0603
4110	4822 051 30008	OR Jumper 0603
4111	4822 051 30008	OR Jumper 0603
4112	4822 051 30008	OR Jumper 0603
4113	4822 051 30008	OR Jumper 0603
4114	4822 051 30008	OR Jumper 0603
4115	4822 051 30008	OR Jumper 0603
4116	4822 051 30008	OR Jumper 0603
4117	4822 051 30008	OR Jumper 0603
4118	4822 051 30008	OR Jumper 0603

4119	4822 051 30008	OR Jumper 0603
4120	4822 051 30008	OR Jumper 0603
4121	4822 051 30008	OR Jumper 0603
4122	4822 051 30008	OR Jumper 0603
4123	4822 051 30008	OR Jumper 0603
4124	4822 051 30008	OR Jumper 0603
4125	4822 051 30008	OR Jumper 0603
4126	4822 051 30008	OR Jumper 0603
4127	4822 051 30008	OR Jumper 0603
4128	4822 051 30008	OR Jumper 0603
4129	4822 051 30008	OR Jumper 0603
4130	4822 051 30008	OR Jumper 0603
4131	4822 051 30008	OR Jumper 0603
4132	4822 051 30008	OR Jumper 0603
4133	4822 051 30008	OR Jumper 0603
4134	4822 051 30008	OR Jumper 0603
4135	4822 051 30008	OR Jumper 0603
4136	4822 051 30008	OR Jumper 0603
4137	4822 051 30008	OR Jumper 0603
4138	4822 051 30008	OR Jumper 0603
4139	4822 051 30008	OR Jumper 0603
4140	4822 051 30008	OR Jumper 0603
4141	4822 051 30008	OR Jumper 0603
4142	4822 051 30008	OR Jumper 0603
4143	4822 051 30008	OR Jumper 0603
4144	4822 051 30008	OR Jumper 0603
4145	4822 051 30008	OR Jumper 0603
4146	4822 051 30008	OR Jumper 0603
4147	4822 051 30008	OR Jumper 0603
4148	4822 051 30008	OR Jumper 0603
4149	4822 051 30008	OR Jumper 0603
4150	4822 051 30008	OR Jumper 0603
4151	4822 051 30008	OR Jumper 0603
4152	4822 051 30008	OR Jumper 0603
4153	4822 051 30008	OR Jumper 0603
4154	4822 051 30008	OR Jumper 0603
4155	4822 051 30008	OR Jumper 0603
4156	4822 051 30008	OR Jumper 0603
4301	4822 051 30008	OR Jumper 0603
4302	4822 051 30008	OR Jumper 0603
4303	4822 051 30008	OR Jumper 0603
4304	4822 051 30008	OR Jumper 0603
4305	4822 051 30008	OR Jumper 0603
4306	4822 051 30008	OR Jumper 0603
4307	4822 051 30008	OR Jumper 0603
4308	4822 051 30008	OR Jumper 0603
4309	4822 051 30008	OR Jumper 0603
4310	4822 051 30008	OR Jumper 0603
4311	4822 051 30008	OR Jumper 0603
4312	4822 051 30008	OR Jumper 0603
4313	4822 051 30008	OR Jumper 0603
4314	4822 051 30008	OR Jumper 0603

**ELECTRICAL PARTS LIST - FRONT BOARDS**

---

**RESISTORS**

---

4315	4822 051 30008	OR Jumper 0603	7105	5322 130 60159	BC847B
4316	4822 051 30008	OR Jumper 0603	7106	5322 130 60159	BC847B
4317	4822 051 30008	OR Jumper 0603	7107	5322 130 60159	BC847B
4318	4822 051 30008	OR Jumper 0603	7108	5322 130 60159	BC847B
4319	4822 051 30008	OR Jumper 0603	7109	5322 130 60159	BC847B
4320	4822 051 30008	OR Jumper 0603	7500	5322 130 60159	BC847B
4321	4822 051 30008	OR Jumper 0603	7501	9322 185 97667	IR RECEIVER TSOP4836ZC1
4323	4822 051 30008	OR Jumper 0603	7504	5322 130 60159	BC847B
4324	4822 051 30008	OR Jumper 0603			
4325	4822 051 30008	OR Jumper 0603			
4326	4822 051 30008	OR Jumper 0603			
4327	4822 051 30008	OR Jumper 0603			
4328	4822 051 30008	OR Jumper 0603			
4329	4822 051 30008	OR Jumper 0603			
4330	4822 051 30008	OR Jumper 0603			
4332	4822 051 30008	OR Jumper 0603			
4334	4822 051 30008	OR Jumper 0603			
4337	4822 051 30008	OR Jumper 0603			
4338	4822 051 30008	OR Jumper 0603			
4339	4822 051 30008	OR Jumper 0603			
4342	4822 051 30008	OR Jumper 0603			
4343	4822 051 30008	OR Jumper 0603			
4400	4822 051 30008	OR Jumper 0603			
4500	4822 051 30008	OR Jumper 0603			
4501	4822 051 30008	OR Jumper 0603			
4600	4822 051 30008	OR Jumper 0603			
4601	4822 051 30008	OR Jumper 0603			
4602	4822 051 30008	OR Jumper 0603			

Note: Only the parts mentioned in this list are normal service spare parts.

**COILS & FILTERS**

---

5100	3198 018 52280	Coil 2,2uH 10% 0603
5102	5322 242 73686	Ceram Resonator 12MHz
5103	4822 242 70938	X'tal Resonator 32,768kHz
5104	3198 018 52280	Coil 2,2uH 10% 0603
5600	3198 018 52280	Coil 2,2uH 10% 0603

**DIODES**

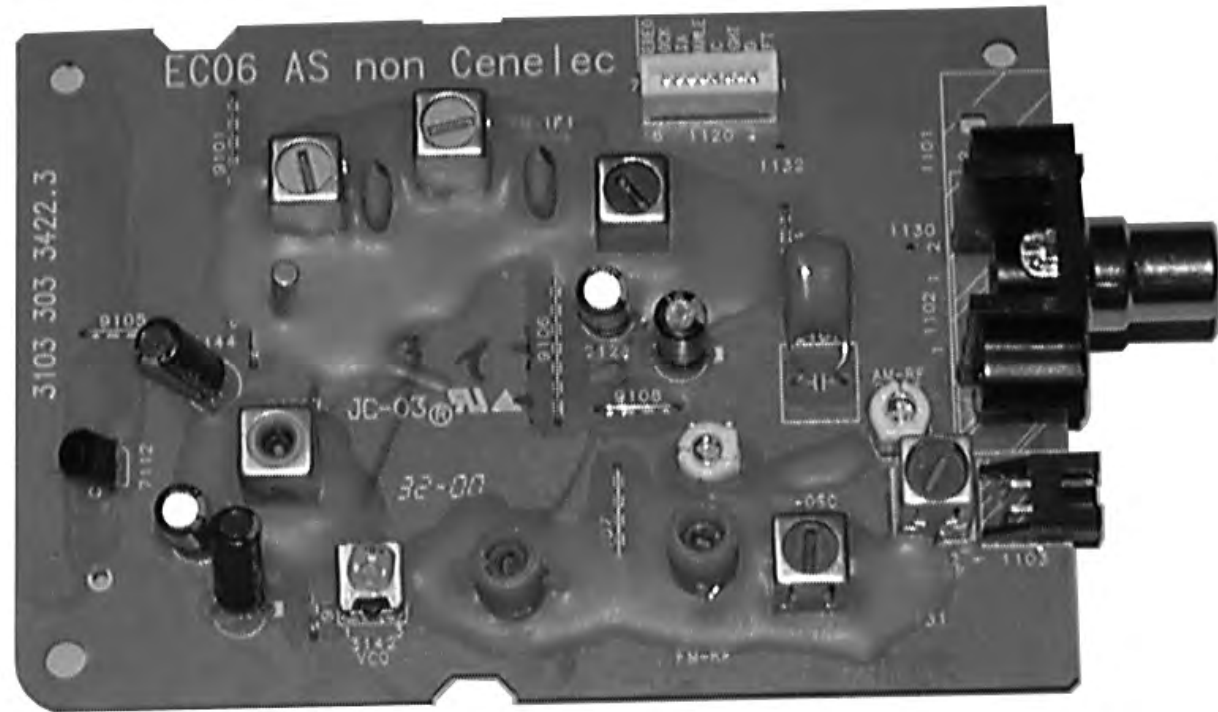
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6100	4822 130 30621	1N4148
6101	4822 130 30621	1N4148
6103	4822 130 30621	1N4148
6106	4822 130 31878	1N4003G
6107	4822 130 83206	BZX79-B5V6
6108	4822 130 11397	BAS316
6113	4822 130 31878	1N4003G
6119	4822 130 31878	1N4003G
6500	9322 179 76676	LTL-816EELC
6501	9322 183 96676	LTL-816GE

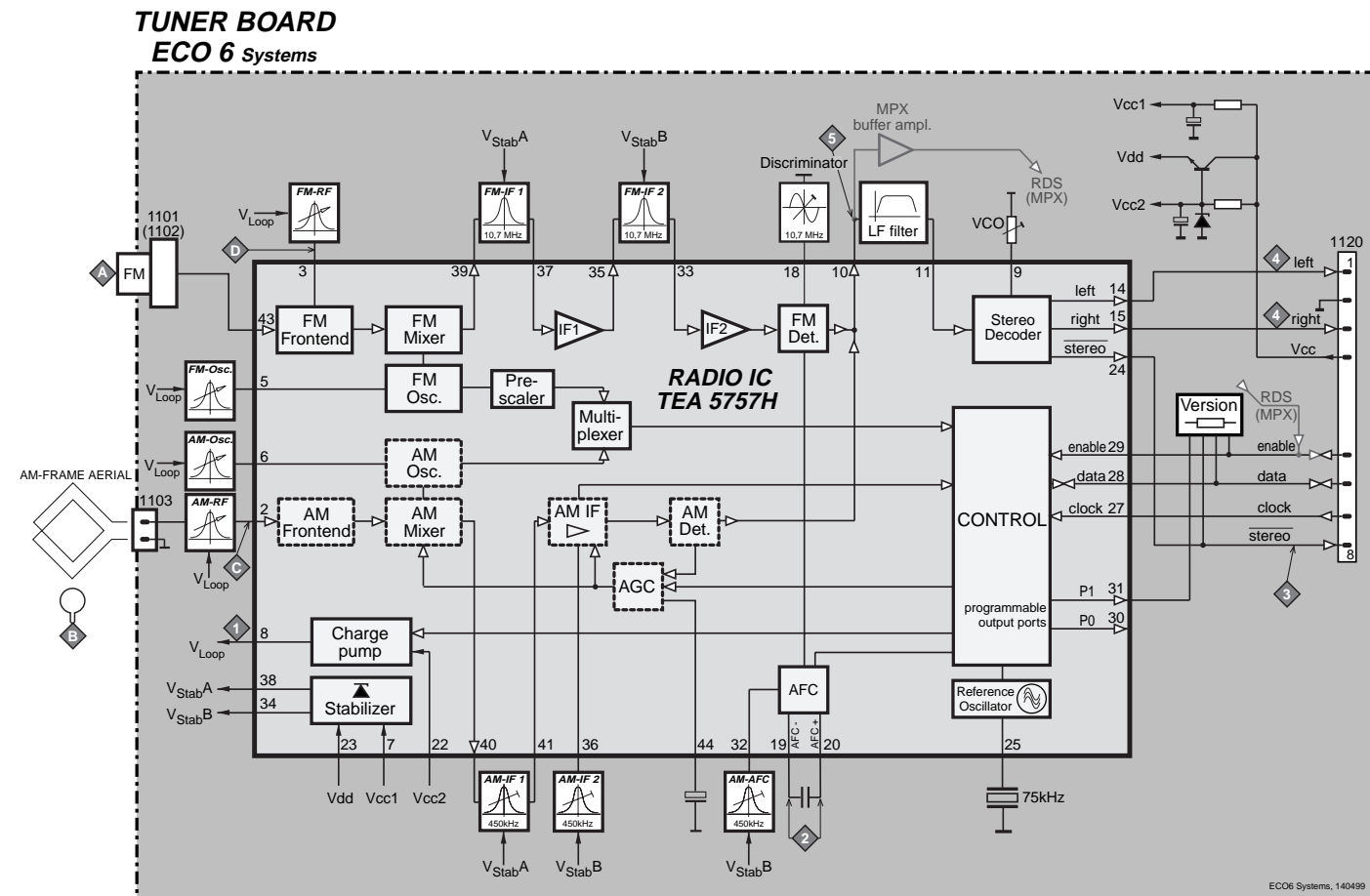
**TRANSISTORS & INTEGRATED CIRCUITS**

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7100	9322 128 19671	TMP88CU74F
7103	9322 145 26668	M24C02-WMN6
7104	5322 130 60159	BC847B



BLOCK DIAGRAM

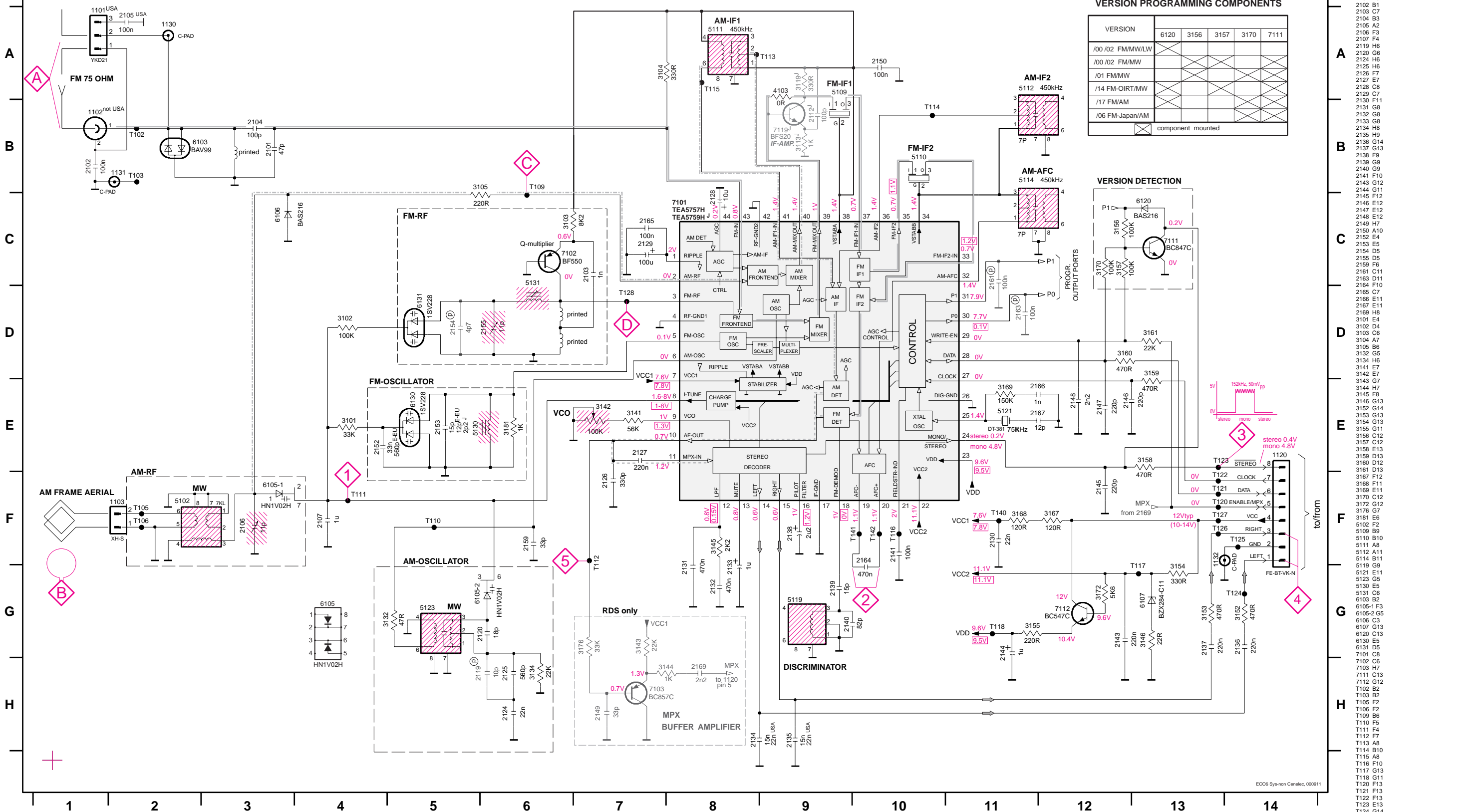


**ECO6 Tuner Board**  
version: *SYSTEMS non-CENELEC*

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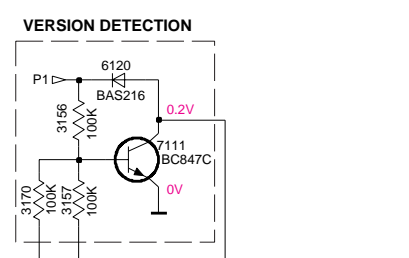
# TUNER BOARD ECO6 / SYSTEMS NON CENELEC



**VERSION PROGRAMMING COMPONENTS**

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW					
/00 /02 FM/MW					
/01 FM/MW					
/14 FM-OIRT/MW					
/17 FM/AM					
/06 FM-Japan/AM					

component mounted



- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 G13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 F12
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2152 A4
- 2153 E5
- 2154 D5
- 2155 D5
- 2159 F6
- 2161 C11
- 2163 D11
- 2164 F10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 H8
- 3101 E4
- 3102 D4
- 3103 C6
- 3104 A7
- 3105 B6
- 3132 G5
- 3134 H6
- 3141 E7
- 3142 E7
- 3143 G7
- 3144 H7
- 3145 F8
- 3146 G13
- 3152 G14
- 3153 G13
- 3154 G13
- 3155 G11
- 3156 C12
- 3157 C12
- 3158 E13
- 3159 D13
- 3160 D12
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 C12
- 3172 G12
- 3176 G7
- 3181 E6
- 5102 E2
- 5109 B9
- 5110 B10
- 5111 A8
- 5112 A11
- 5114 A11
- 5119 G9
- 5121 E11
- 5123 G5
- 5130 E5
- 5131 C6
- 5132 B2
- 6105 F3
- 6105-2 G5
- 6106 C3
- 6107 G13
- 6120 C13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C6
- 7103 H7
- 7111 C13
- 7112 F13
- 7127 F13
- T102 B2
- T103 B2
- T105 F2
- T106 F2
- T109 B6
- T110 F5
- T111 F4
- T112 F7
- T113 A8
- T114 B10
- T115 A8
- T116 B10
- T117 G10
- T118 G13
- T120 F13
- T121 F13
- T122 F13
- T123 F13
- T124 F13
- T125 F13
- T126 F13
- T127 F13
- T128 D7
- T140 F11
- T141 F10
- T142 F10

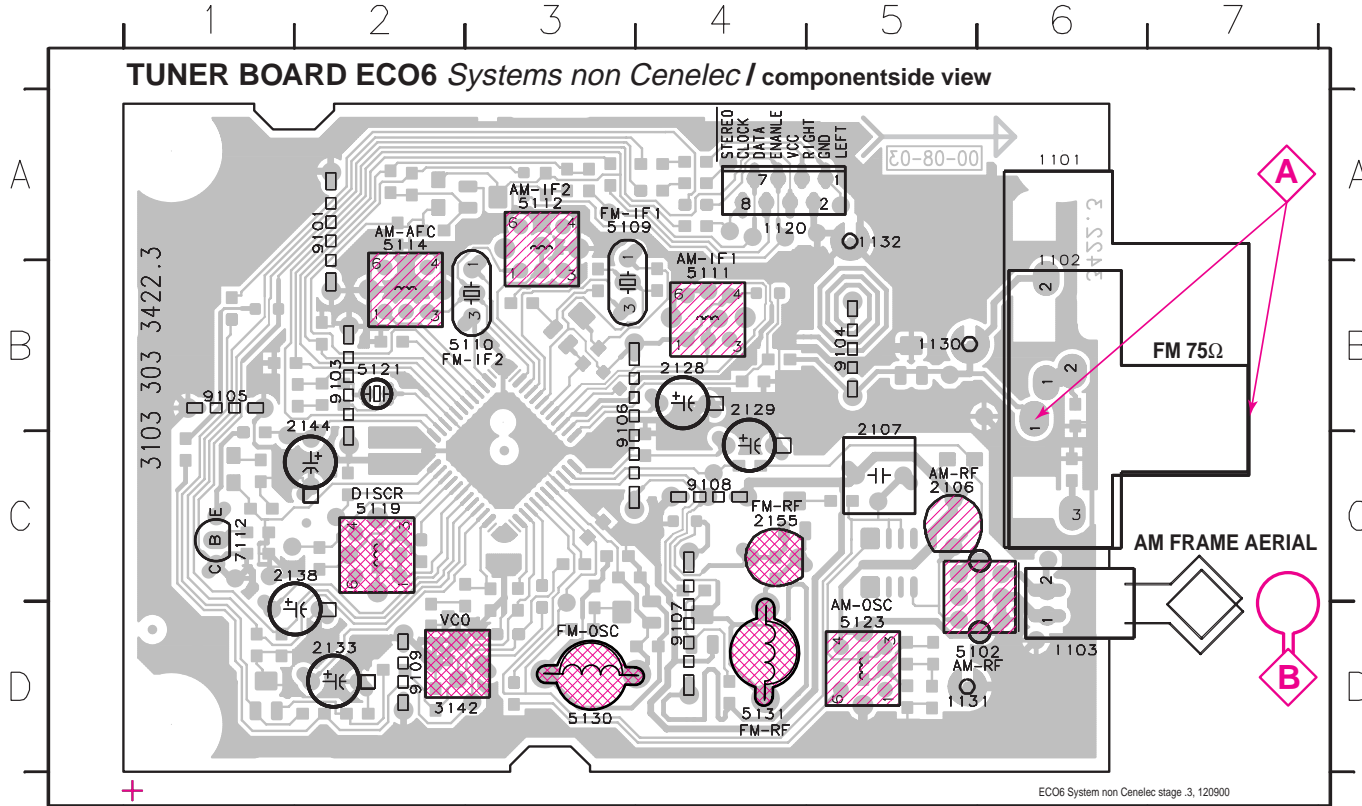
**LEGEND**  
 (P) ... for provision only  
 USA ... for USA version only  
 E-EU ... for East European version only  
 J ... for Japanese version only

...V FM mode stereo  
 ...V MW mode  
 ...V LW mode  
 voltages measured while set is tuned to a strong transmitter

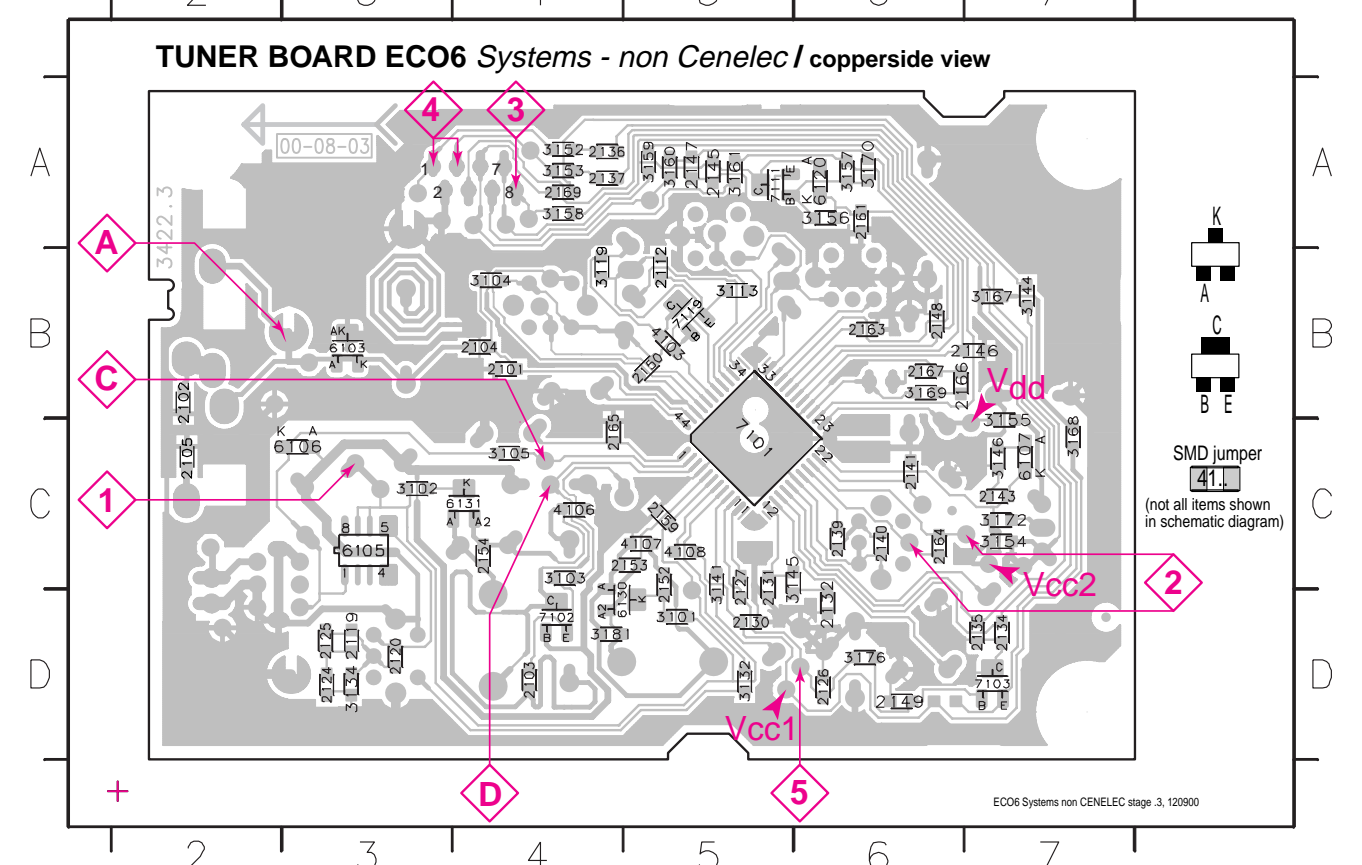
**Signal path**  
 — FM  
 - - - AM  
 . . . MPX (Audio Frequency)  
 ⇨ AF - left/right



1101 A6 1120 A4 1132 A5 2128 C4 2138 C2 3142 D2 5110 B3 5114 A2 5123 D5 7112 C1 9104 B5 9107 D4  
 1102 B6 1130 B5 2106 C5 2129 B4 2144 B2 5102 D6 5111 B4 5119 C2 5130 D3 9101 A2 9105 B1 9108 C4  
 1103 D6 1131 D5 2107 B5 2133 D2 2155 C4 5109 A3 5112 A3 5121 B2 5131 D4 9103 B2 9106 B3 9109 D2



2101 B4 2119 D3 2130 D5 2137 A4 2146 B7 2153 C5 2165 C4 3103 C4 3134 D3 3152 A4 3158 A4 3169 B6 4106 C4 6107 C7 7103 D7  
 2102 B1 2120 D3 2131 C5 2139 C6 2147 A5 2154 C4 2166 B6 3104 B4 3141 C5 3153 A4 3159 A5 3170 A6 4107 C5 6120 A6 7111 A5  
 2103 D4 2124 D3 2132 D6 2140 C6 2148 B6 2159 C5 2167 B6 3105 C4 3143 D6 3154 C7 3160 A5 3172 C7 4108 C5 6130 D4 7119 B5  
 2104 B4 2125 D3 2134 D7 2141 C6 2149 D6 2161 A6 2169 A4 3113 B5 3144 B7 3155 C7 3161 A5 3176 D6 6103 B3 6131 C4  
 2105 C1 2126 D6 2135 D7 2143 C7 2150 B5 2163 B6 3101 D5 3119 B5 3145 C5 3156 A6 3167 B7 3181 D4 6105 C3 7101 C5  
 2112 B5 2127 C5 2136 A4 2145 A5 2152 C5 3102 C3 3132 D5 3146 C7 3157 A6 3168 C7 4103 B5 6106 C3 7102 D4



These assembly drawings show a summary of all possible versions.  
 For components used in a specific version see schematic diagram respectively partlist.

TUNER ADJUSTMENT TABLE ( ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial )

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>LW</b> 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>MW</b> FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>FM IF</b>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
<b>FM RF</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
<b>VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<b>AM IF</b>						
<b>MW</b>	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
		C		5112		
<b>AM AFC</b>		C		5114	2	0 ± 2 mV DC
<b>AM RF<sup>3)</sup></b>						
<b>MW<sup>4)</sup></b> FM/MW/LW- and FM/MW-version (9kHz grid)	1494kHz	B	1494kHz	2106	5	
	531 - 1602kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	B	1500kHz	2106	5	
	560kHz		560kHz	5102		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

- 1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)
- 2) RC network serves for damping the IF-filter while adjusting the other one.
- 3) For AM RF adjustments the original frame antenna has to be used!
- 4) MW has to be aligned before LW.

↑ Repeat



MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101	4822 126 13692	47pF	1%	63V	
2102	4822 126 13838	100nF	10%	50V	not USA
2103	5322 122 31647	1nF	10%	63V	
2104	5322 122 32531	100pF	5%	50V	
2105	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1μF	20%	50V	
2120	4822 126 13689	18pF	1%	63V	
2124	5322 122 32654	22nF	10%	63V	
2125	2020 552 96199	560pF	1%	50V	
2126	5322 122 31863	330pF	5%	50V	
2127	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10μF	20%	63V	
2129	4822 124 41584	100μF	20%	10V	
2130	5322 122 32654	22nF	10%	63V	
2131	4822 126 13482	470nF	20%	16V	
2132	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1μF	20%	63V	
2134	4822 126 13188	15nF	5%	63V	not USA
2134	5322 122 32654	22nF	10%	63V	USA only
2135	4822 126 13188	15nF	5%	63V	not USA
2135	5322 122 32654	22nF	10%	63V	USA only
2136	4822 126 14076	220nF	20%	25V	
2137	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2μF	20%	50V	
2139	4822 126 14236	15pF	5%	50V	
2140	4822 126 13695	82pF	1%	63V	
2141	4822 126 13838	100nF	10%	50V	
2143	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1μF	20%	63V	
2145	4822 122 33575	220pF	5%	50V	
2146	4822 122 33575	220pF	5%	50V	
2147	4822 122 33575	220pF	5%	50V	
2148	4822 122 33127	2,2nF	10%	63V	
2149	5322 122 32659	33pF	5%	50V	RDS only
2150	4822 126 13838	100nF	10%	50V	
2152	4822 126 12105	33nF	5%	63V	not for East Europe
2152	5322 116 80853	560pF	5%	63V	for East Europe only
2153	4822 126 13486	15pF	2%	63V	not for East Europe
2153	4822 122 33926	12pF	2%	50V	for East Europe only
2155	2020 800 00191	3-11pF TRIMCAP.,N450			
2159	5322 122 32659	33pF	5%	50V	
2164	4822 126 13482	470nF	20%	16V	
2165	4822 126 13838	100nF	10%	50V	
2166	5322 122 31647	1nF	10%	63V	
2167	4822 122 33926	12pF	5%	50V	
2169	4822 122 33127	2,2nF	10%	63V	RDS only

RESISTORS

3101	4822 051 20333	33kΩ	5%	0,1W
3102	4822 117 10837	100kΩ	1%	0,1W
3103	4822 051 20822	8,2kΩ	5%	0,1W
3104	4822 117 13577	330Ω	1%	0,1W
3105	4822 117 11503	220Ω	5%	0,1W
3132	4822 051 20479	47Ω	5%	0,1W
3134	4822 051 20223	22kΩ	5%	0,1W
3141	4822 117 11148	56kΩ	1%	0,1W
3142	4822 100 12159	TRIMPOT. 100kΩ		

RESISTORS

3143	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145	4822 117 11449	2,2kΩ	1%	0,1W	
3146	4822 051 20229	22Ω	5%	0,1W	
3152	4822 051 20471	470Ω	5%	0,1W	
3153	4822 051 20471	470Ω	5%	0,1W	
3154	4822 117 13577	330Ω	1%	0,1W	
3155	4822 117 11503	220Ω	5%	0,1W	
3156	4822 117 10837	100kΩ	1%	0,1W	
3157	4822 117 10837	100kΩ	1%	0,1W	
3158	4822 051 20471	470Ω	5%	0,1W	
3159	4822 051 20471	470Ω	5%	0,1W	
3160	4822 051 20471	470Ω	5%	0,1W	
3161	4822 051 20223	22kΩ	5%	0,1W	
3167	4822 051 20121	120Ω	5%	0,1W	
3168	4822 051 20121	120Ω	5%	0,1W	
3169	4822 051 20154	150kΩ	5%	0,1W	
3170	4822 117 10837	100kΩ	1%	0,1W	
3172	4822 051 20562	5,6kΩ	5%	0,1W	
3176	4822 051 20333	33kΩ	5%	0,1W	RDS only
3181	4822 051 10102	1kΩ	2%	0,25W	
4103	4822 051 20008	CHIP JUMPER 0805			
4106	4822 051 20008	CHIP JUMPER 0805			
4107	4822 051 20008	CHIP JUMPER 0805			
4108	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550
7103	5322 130 42756	BC857C
7111	5322 130 42755	BC847C
7112	4822 130 44503	BC547C

INTEGRATED CIRCUITS

7101	9351 740 80557	TEA5757H/V1, RADIO IC
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# POWER MODULE PWR207

## (6 x 75W / 7 x 75W)

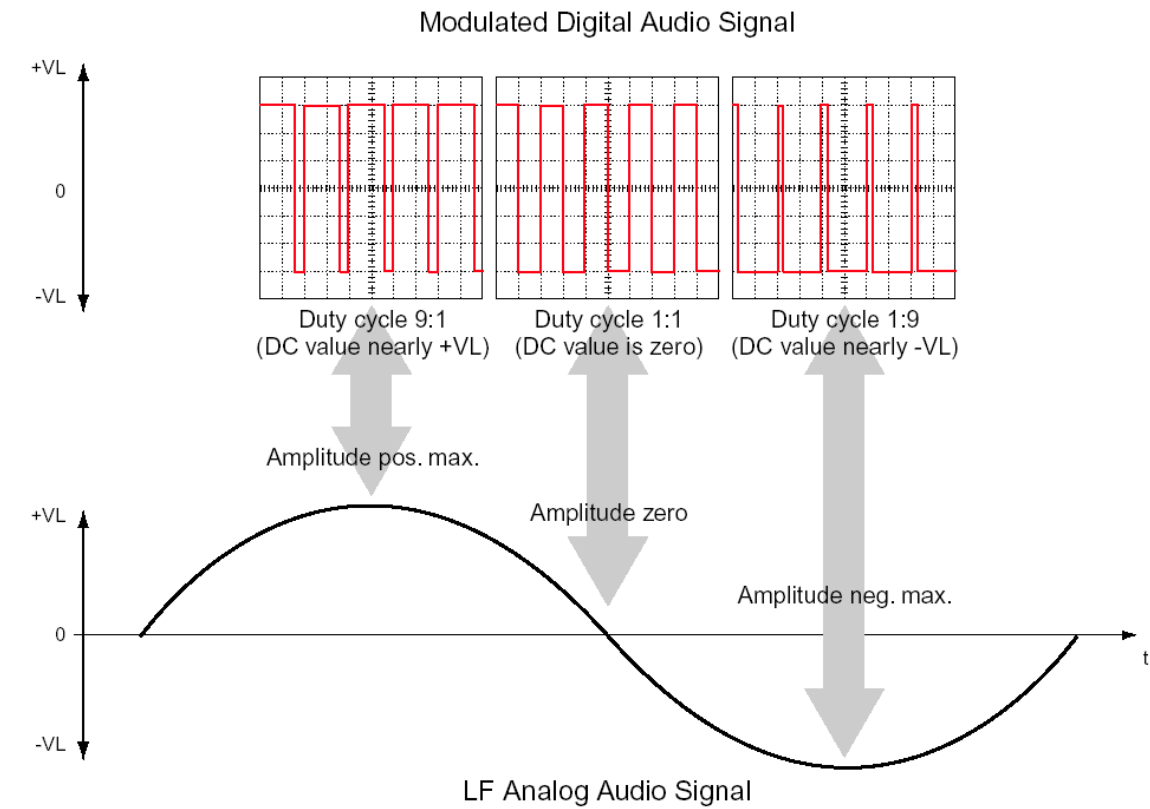
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## 6-channel class-D amplifier

### Basic operation of a class-D amplifier

Basically, the output stage of a class-D amplifier outputs a continuous square wave swinging between positive and negative power supplies with a fixed frequency ("clock" frequency) far beyond the audible range. The duty cycle of this square wave is modulated with the audio signal. The output is followed by a low-pass filter which eliminates the clock frequency and allows only the audio signal going to the speaker. See simplified drawing below.



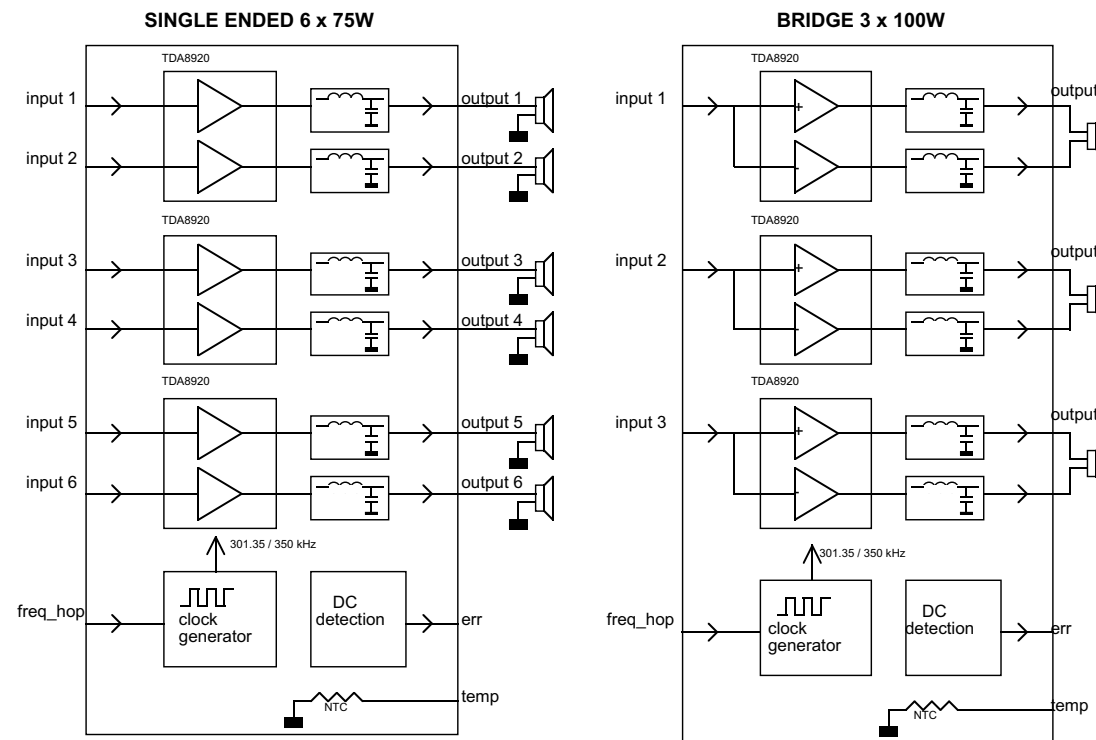
Compared to a conventional power amplifier the benefits of the Class-D amplifier are:

- higher efficiency
- lower power dissipation
- smaller heatsink required
- smaller mains transformer required

The main disadvantage of this concept is:

- The amplifier is operating with a high-frequency square wave at high amplitude and currents. This requires special precautions to prevent excessive electromagnetic radiation (EMC).

## Block diagram and operation



## • clock oscillator

The clock frequency is generated around IC7600. Using 2 extra transistors (7602 and 7608) and 2 ceramic resonators it can be operated at 2 frequencies: 602.7kHz and 700kHz. The frequency is selected by the signal "FREQ\_HOP" coming from connector 1301 pin 9.

When FREQ\_HOP is low, the output of 7600-1 will be high. This switches transistor 7602 on, and connects resonator 1600 (602.7kHz) to inverter 7600-3. Similarly, when FREQ\_HOP is high, resonator 1601 is connected to 7600-3.

The output frequency is divided by two by IC7607, resulting in 301.35kHz or 350kHz.

The purpose of a selectable clock frequency is related to the disturbance of the tuner which is built-in together with this amplifier. In MW, the software of the set microprocessor will select the other clock frequency in case the amplifier clock interferes with the tuned station.

## • Class-D amplifier TDA8920 and low-pass filter

The TDA8920 is a two channel audio power amplifier using class-D technology. The audio input signal is converted into a digital Pulse Width Modulated (PWM) signal via an analog input stage and PWM modulator. It is then fed to the power stage which outputs a high power PWM signal which switches between the main supply lines.

The TDA8920 is followed by a 2nd-order low-pass filter. It has a cut-off frequency around 50kHz and converts the PWM signal into analog audio signal across the loudspeaker.

The TDA8920 has a temperature protection and a current limiter built-in.

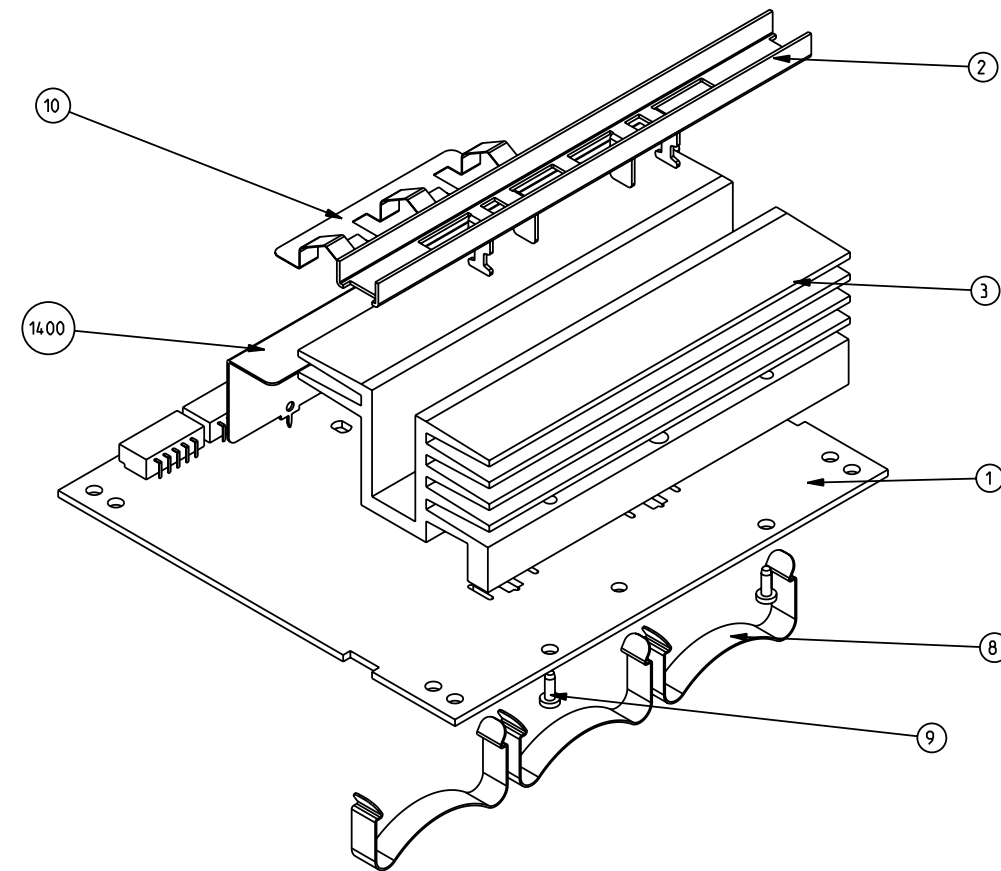
Furthermore, the IC can be put in active, mute and standby mode.

- Active mode (amplifier fully operational) with output signal.
- Mute mode; the amplifiers are operational, but the audio is muted
- Standby mode; with a very low supply current, the output stage is switched off.

## • DC-detection

The DC-detection circuit monitors all 6 outputs for DC. Whenever one or more outputs contain DC for more than 1 second, the circuit will be activated. A positive voltage will activate transistor 7710 and pin 10 of connector 1301 will be pulled down. In case of a negative voltage, transistor 7716 will be activated, which in turn activates 7710. The set microprocessor will take further action.

## MECHANICAL EXPLODED VIEW



3104 217 07180 bl110

## MECHANICAL PARTS LIST &amp; SCREWS

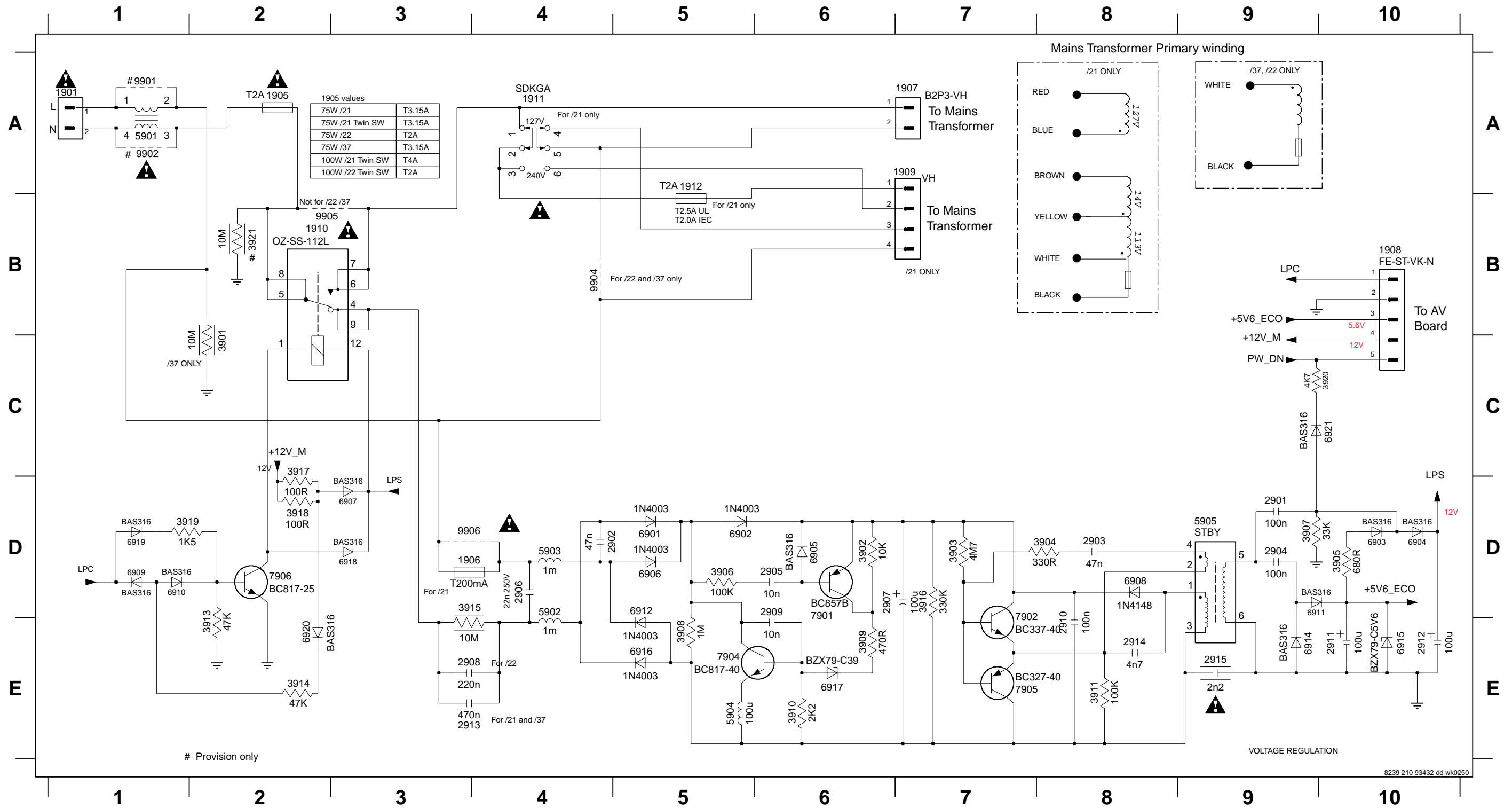
Part No.	Description	Quantity
8	4822 492 11735 SPRING, TRANSISTOR	
9	- D2.3 x 8	

Note: Only the parts mentioned in this list are normal service spare parts.



# MAINS & ECO STBY BOARD - CIRCUIT DIAGRAM

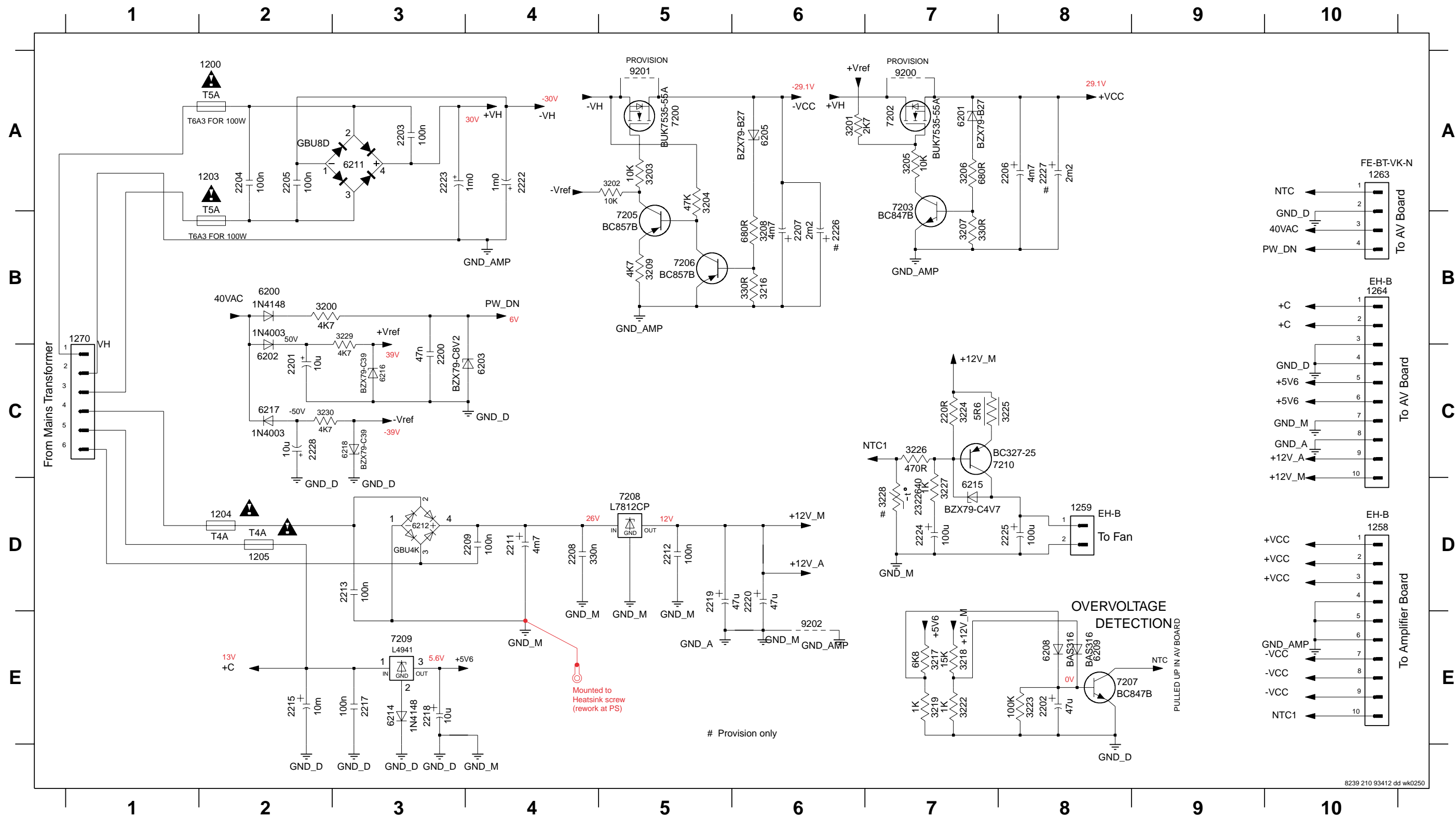
1901 A1	1908 B10	1912 A5	2904 D9	2908 E3	2912 E10	3901 C2	3905 D10	3909 E6	3914 E2	3918 D2	5901 A1	5905 D9	6904 D10	6908 D8	6912 D5	6917 E6	6921 C10	7905 E7	9904 B4
1905 A2	1909 A6	2901 D9	2905 D6	2909 D6	2913 E3	3902 D6	3906 D5	3910 E6	3915 D3	3919 D1	5902 D4	6901 D5	6905 D6	6909 D1	6914 E9	6918 D3	7901 D6	7906 D2	9905 B2
1906 D3	1910 B2	2902 D4	2906 D4	2910 E8	2914 E8	3903 D7	3907 D9	3911 E8	3916 D7	3920 C10	5903 D4	6902 D5	6906 D5	6910 D1	6915 E10	6919 D1	7902 E7	9901 A1	9906 D3
1907 A7	1911 A4	2903 D8	2907 D6	2911 E10	2915 E9	3904 D8	3908 E5	3913 E2	3917 C2	3921 B2	5904 E5	6903 D10	6907 D3	6911 D9	6916 E5	6920 E2	7904 E5	9902 A1	





# SUPPLY BOARD - CIRCUIT DIAGRAM

1200 A2	1258 D10	1270 B1	2203 A3	2207 B6	2212 D5	2218 E3	2223 A3	2227 A8	3202 A5	3206 A7	3216 B6	3222 E7	3226 C7	3230 C2	6203 C4	6211 A3	6216 C3	7202 A7	7207 E8	9200 A7
1203 A2	1259 D8	2200 C3	2204 A2	2208 D4	2213 D3	2219 D5	2224 D7	2228 C2	3203 A5	3207 B7	3217 E7	3223 E8	3227 D7	6200 B2	6205 A6	6212 D3	6217 C2	7203 A7	7208 D5	9201 A5
1204 D2	1263 A10	2201 C2	2205 A2	2209 D4	2215 E2	2220 D6	2225 D8	3200 B2	3204 A5	3208 B6	3218 E7	3224 C7	3228 D7	6201 A7	6208 E8	6214 E3	6218 C3	7205 B5	7209 E3	9202 E6
1205 D2	1264 B10	2202 E8	2206 A8	2211 D4	2217 E3	2222 A4	2226 B6	3201 A6	3205 A7	3209 B5	3219 E7	3225 C8	3229 B3	6202 C2	6209 E8	6215 D7	7200 A5	7206 B5	7210 C7	

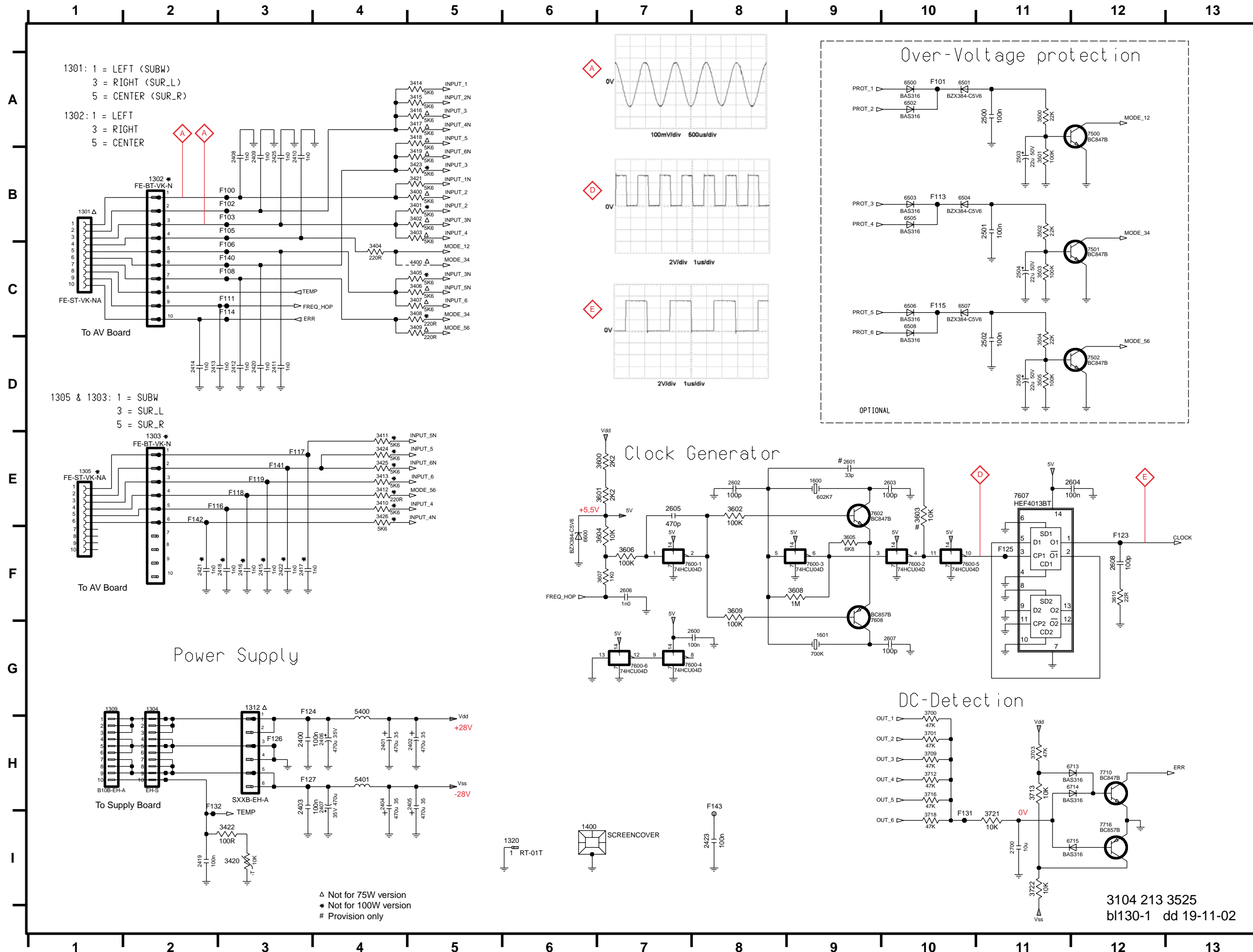








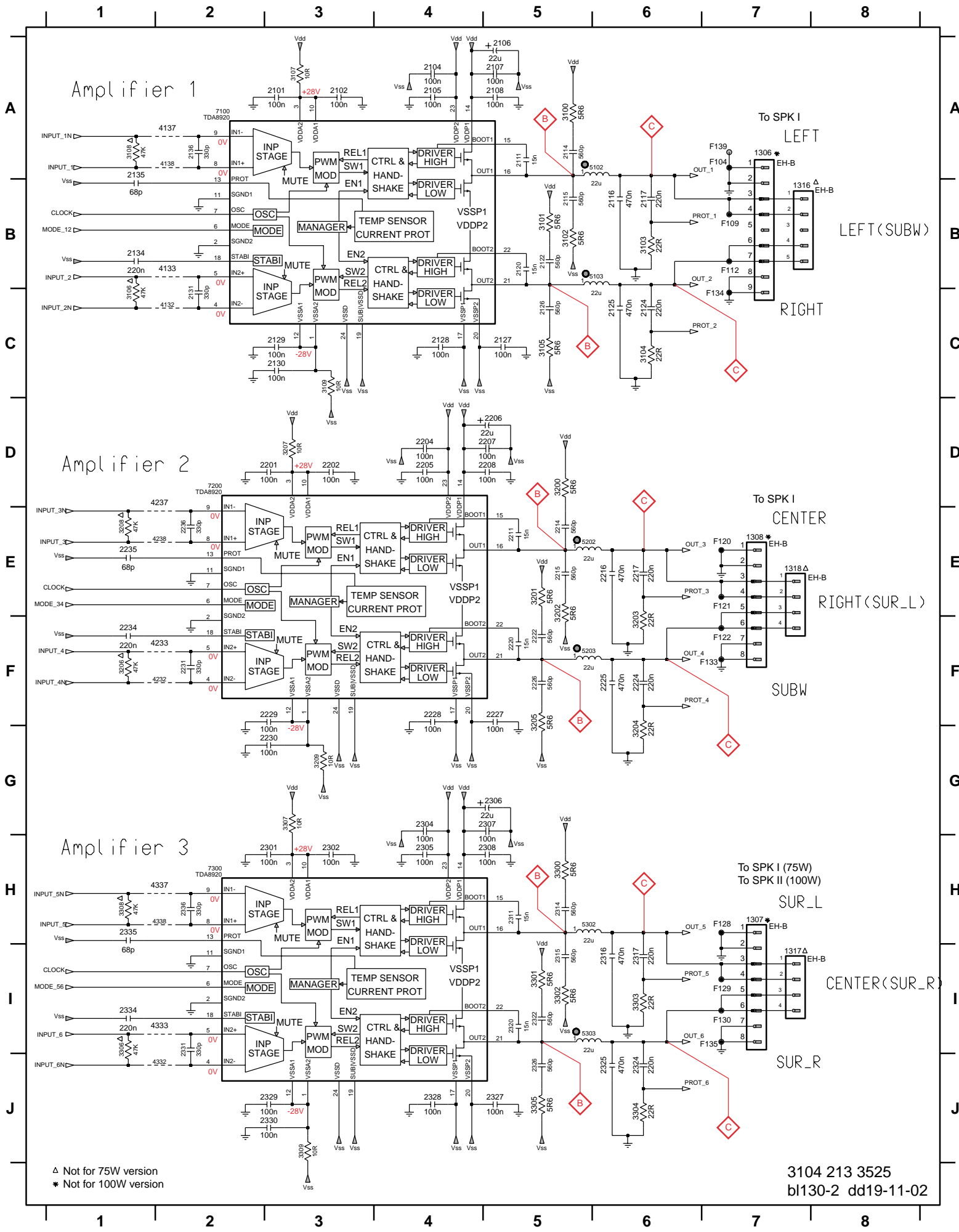
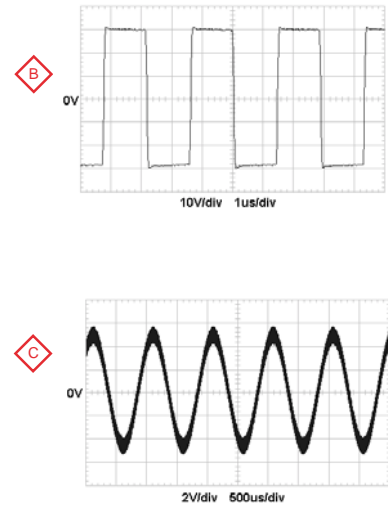
# AMPLIFIER BOARD - CLOCK GENERATOR & CONNECTION CIRCUIT



1301 B1	6505 B10
1302 B2	6506 C10
1303 E2	6507 C10
1304 G2	6508 C10
1305 E1	6600 F6
1309 G1	6713 H12
1312 G3	6714 H12
1320 I6	6715 H12
1400 I6	7500 A12
1600 E9	7501 C12
2400 H3	7502 D12
2401 H4	7600-1 F8
2402 H5	7600-2 F10
2403 H3	7600-3 F9
2404 H4	7600-4 G8
2405 H5	7600-5 F11
2406 H4	7600-6 G7
2407 H4	7602 E9
2408 B3	7607 E11
2409 B3	7608 F9
2410 B3	7710 H12
2411 D3	F100 B3
2412 D3	F101 A10
2413 D2	F102 B3
2414 D2	F103 B3
2415 F3	F105 B3
2416 F3	F106 C3
2417 F3	F108 C3
2418 F3	F111 C3
2419 I2	F113 B10
2420 D3	F114 C3
2421 F2	F115 C10
2422 F3	F116 E2
2423 I8	F117 E3
2425 B3	F118 E3
2500 A11	F119 E3
2501 B11	F123 F12
2502 D11	F124 G3
2503 B11	F125 F11
2504 C11	F126 H3
2505 D11	F127 H3
2600 G8	F131 H0
2601 E9	F132 H2
2602 E8	F140 C3
2603 E10	F141 E3
2604 E12	F142 E2
2605 E7	F143 H8
2606 F7	
2607 G10	
2608 F12	
2700 I11	
3400 B5	
3401 B5	
3402 B5	
3403 B5	
3404 C4	
3405 C5	
3406 C5	
3407 C5	
3408 C5	
3409 C5	
3410 E4	
3411 E4	
3412 E4	
3413 E4	
3414 A5	
3415 A5	
3416 A5	
3417 A5	
3418 A5	
3419 B5	
3420 I3	
3421 B5	
3422 I3	
3423 B5	
3424 E4	
3425 E4	
3426 E4	
3500 A11	
3501 B11	
3502 B11	
3503 C11	
3504 D11	
3505 D11	
3600 E7	
3601 E7	
3602 E8	
3603 E10	
3604 F7	
3605 F9	
3606 F7	
3607 F7	
3608 F9	
3609 F8	
3610 F12	
3700 G10	
3701 H10	
3703 H11	
3709 H10	
3712 H10	
3713 H11	
3716 H10	
3718 H10	
3721 I11	
3722 I11	
4400 C5	
5400 G4	
5401 H4	
6500 A10	
6501 A10	
6502 A10	
6503 B10	
6504 B10	

3104 213 3525  
bl130-1 dd 19-11-02

# AMPLIFIER BOARD - AMPLIFIER CIRCUIT



△ Not for 75W version  
 \* Not for 100W version

3104 213 3525  
 b130-2 dd19-11-02

- 1306 A7
- 1307 H7
- 1308 E7
- 1316 B7
- 1317 I7
- 1318 E7
- 2101 A3
- 2102 A3
- 2104 A4
- 2105 A4
- 2106 A5
- 2107 A5
- 2108 A5
- 2111 A5
- 2114 A5
- 2115 B5
- 2116 B6
- 2117 B6
- 2120 B5
- 2122 B5
- 2124 C6
- 2125 C6
- 2126 C5
- 2127 C5
- 2128 C4
- 2129 C3
- 2130 C3
- 2131 C2
- 2134 B1
- 2135 A1
- 2136 A2
- 2201 D3
- 2202 D3
- 2204 D4
- 2205 D4
- 2206 D5
- 2207 D5
- 2208 D5
- 2211 E5
- 2214 E5
- 2215 E5
- 2216 E6
- 2217 E6
- 2220 F5
- 2222 F5
- 2224 F6
- 2225 F6
- 2226 F5
- 2227 F5
- 2228 F4
- 2229 F3
- 2230 G3
- 2231 F2
- 2234 F1
- 2235 E1
- 2236 E2
- 2301 H3
- 2302 H3
- 2304 G4
- 2305 H4
- 2306 G5
- 2307 G5
- 2308 H5
- 2311 H5
- 2314 H5
- 2315 I5
- 2316 I6
- 2317 I6
- 2320 I5
- 2322 I5
- 2324 J6
- 2325 J6
- 2326 J5
- 2327 J5
- 2328 J4
- 2329 J3
- 2330 J3
- 2331 I2
- 2334 I1
- 2335 H1
- 2336 H2
- 3100 A5
- 3101 B5
- 3102 B5
- 3103 B6
- 3104 C6
- 3105 C5
- 3106 C1
- 3107 A3
- 3108 A1
- 3109 C3
- 3200 D5
- 3201 E5
- 3202 E5
- 3203 F6
- 3204 G6
- 3205 F5
- 3206 F1
- 3207 D3
- 3208 E1
- 3209 G3
- 3300 H5
- 3301 I5
- 3302 I5
- 3303 I6
- 3304 J6
- 3305 J5
- 3306 I1
- 3307 G3
- 3308 H1
- 3309 J3
- 4132 C2
- 4133 B2
- 4137 A2
- 4138 A2
- 4232 F2
- 4233 F2
- 4237 D2
- 4238 E2
- 4332 J2
- 4333 I2
- 4337 H2
- 4338 H2
- 5102 A6
- 5103 B6
- 5202 E5
- 5203 F5
- 5302 H5
- 5303 I5
- 7100 A2
- 7200 D2
- 7300 H2
- F104 A7
- F109 B7
- F112 B7
- F120 E7
- F121 E7
- F122 F7
- F128 H7
- F129 I7
- F130 F7
- F133 F7
- F134 C7
- F135 I7
- F139 A7





## ELECTRICAL PARTS LIST - MAINS &amp; ECO STBY, SUPPLY, SPEAKER (SPK I) &amp; SW-OUT (SPK II) BOARDS

## MISCELLANEOUS

8	4822 492 11735	SPRING, TRANSISTOR	2903	3198 017 34730	47nF 16V
1200	4822 071 55002	△ FUSE T5A 250V	2904	2238 586 59812	100nF 50V
1203	4822 071 55002	△ FUSE T5A 250V	2905	5322 126 11583	10nF 10% 50V
1204	9965 000 07786	△ FUSE T4A 250V	2906	2222 336 19106	22nF 20% 275V
1205	9965 000 07786	△ FUSE T4A 250V	2907	4822 124 40255	100uF 20% 63V
1263	4822 267 10733	FLEX CONN. 4PIN VERT.	2909	5322 126 11583	10nF 10% 50V
1270	2422 025 14044	CONN. 6PIN M3.96 VERT.	2910	2238 586 59812	100nF 50V
1303	2422 015 19885	LOUDSPEAKER SOCKET 12P	2911	4822 124 41584	100uF 20% 10V
1901	2422 030 00328	△ CONN. MAINS 2PIN 7A 125V	2912	4822 124 40207	100uF 20% 25V
1905	4822 252 51121	△ FUSE T3,15A 250V	2913	2222 338 22474	470nF 20% 275V
1907	4822 265 20723	CONN. 2PIN M7.92 VERT.	2914	4822 126 13193	4,7nF 10% 63V
1908	4822 267 10958	FLEX CONN. 5PIN HORT.	2915	2020 554 90173	△ 2,2nF 20% 250V
1910	2422 132 07519	△ RELAY 1P 12V 16A			

## CAPACITORS

2000	5322 126 11583	10nF 10% 50V
2001	5322 126 11583	10nF 10% 50V
2002	5322 126 11583	10nF 10% 50V
2003	5322 126 11583	10nF 10% 50V
2004	5322 126 11583	10nF 10% 50V
2005	5322 126 11583	10nF 10% 50V
2006	5322 126 11583	10nF 10% 50V
2007	5322 126 11583	10nF 10% 50V
2008	5322 126 11583	10nF 10% 50V
2009	5322 126 11583	10nF 10% 50V
2010	5322 126 11583	10nF 10% 50V
2011	5322 126 11583	10nF 10% 50V
2200	4822 126 12785	47nF +80/-20% 50V
2201	5322 124 40641	10uF 20% 100V
2202	4822 124 80231	47uF 20% 16V
2203	5322 121 42578	100nF 5% 250V
2204	5322 121 42578	100nF 5% 250V
2205	5322 121 42578	100nF 5% 250V
2206	4822 124 80563	4700uF 20% 35V
2207	4822 124 80563	4700uF 20% 35V
2208	5322 121 42661	330nF 5% 63V
2209	5322 121 42578	100nF 5% 250V
2211	4822 124 80563	4700uF 20% 35V
2212	5322 121 42386	100nF 5% 63V
2213	5322 121 42578	100nF 5% 250V
2215	2020 012 93745	10000uF 20% 16V
2217	2020 561 90365	100nF +80/-20% 50V
2218	4822 124 11947	10uF 20% 16V
2219	4822 124 81286	47uF 20% 16V
2220	4822 124 81286	47uF 20% 16V
2222	4822 124 12056	1000uF 20% 35V
2223	4822 124 12056	1000uF 20% 35V
2224	4822 124 41643	100uF 20% 16V
2225	4822 124 41643	100uF 20% 16V
2228	5322 124 40641	10uF 20% 100V
2901	2238 586 59812	100nF 50V
2902	4822 121 43526	47nF 5% 250V

## RESISTORS

3200	4822 116 52283	4k7 5% 0,5W
3201	4822 051 30272	2k7 5% 0,062W
3202	4822 051 30103	10k 5% 0,062W
3203	4822 051 30103	10k 5% 0,062W
3204	4822 117 12925	47k 1% 0,063W
3205	4822 051 30103	10k 5% 0,062W
3206	4822 051 30681	680R 5% 0,062W
3207	4822 051 30331	330R 5% 0,062W
3208	4822 051 30681	680R 5% 0,062W
3209	4822 051 30472	4k7 5% 0,062W
3216	4822 051 30331	330R 5% 0,062W
3217	4822 051 30682	6k8 5% 0,062W
3218	4822 051 30153	15k 5% 0,062W
3219	4822 051 30102	1k 5% 0,062W
3222	4822 051 30102	1k 5% 0,062W
3223	4822 117 13632	100k 1% 0,062W
3224	4822 116 83872	220R 5% 0,5W
3225	4822 052 10568	5R6 5% 0,33W
3226	4822 051 30471	470R 5% 0,062W
3227	4822 051 30102	1k 5% 0,062W
3228	4822 117 12063	NTC DC 5W 10k 5%
3229	4822 051 30472	4k7 5% 0,062W
3230	4822 051 30472	4k7 5% 0,062W
3901	4822 053 21106	10M 5% 0,5W
3902	4822 051 30103	10k 5% 0,062W
3903	4822 051 30475	4M7 5% 0,062W
3904	4822 051 30331	330R 5% 0,062W
3905	4822 051 30681	680R 5% 0,062W
3906	4822 117 13632	100k 1% 0,062W
3907	4822 051 30333	33k 5% 0,062W
3908	4822 051 30105	1M 5% 0,062W
3909	4822 051 30471	470R 5% 0,062W
3910	4822 051 30222	2k2 5% 0,062W
3911	4822 117 13632	100k 1% 0,062W
3913	4822 117 12925	47k 1% 0,063W
3914	4822 117 12925	47k 1% 0,063W
3915	4822 053 21106	10M 5% 0,5W
3916	4822 051 30334	330k 5% 0,062W

## ELECTRICAL PARTS LIST - MAINS &amp; ECO STBY, SUPPLY, SPEAKER (SPK I) &amp; SW-OUT (SPK II) BOARDS

3917	4822 116 52175	100R 5% 0,5W	7202	9340 561 95127	BUK7535-55A
3918	4822 116 52175	100R 5% 0,5W	7203	5322 130 60159	BC847B
3919	4822 051 30152	1k5 5% 0,062W	7205	4822 130 60373	BC857B
3920	4822 051 30472	4k7 5% 0,062W	7206	4822 130 60373	BC857B
4210	4822 051 30008	OR JUMPER 0603	7207	5322 130 60159	BC847B
4211	4822 051 30008	OR JUMPER 0603	7208	4822 209 33575	L7812CP
4212	4822 051 30008	OR JUMPER 0603	7209	4822 209 12335	L4941

## COILS &amp; FILTERS

5902	4822 157 53473	IND. FXD. 1000uH 10%
5903	4822 157 53473	IND. FXD. 1000uH 10%
5904	4822 157 11228	IND. FXD. 100uH 5%
5905	2422 549 45157	STANDBY TRANSFORMER

## DIODES

6200	4822 130 30621	1N4148
6201	3198 010 52790	BZX79-B27
6202	4822 130 31878	1N4003G
6203	4822 130 34382	BZX79-B8V2
6205	3198 010 52790	BZX79-B27
6208	4822 130 11397	BAS316
6209	4822 130 11397	BAS316
6211	4822 130 11139	GBU8D
6212	3198 010 10640	GBU4K
6214	4822 130 30621	1N4148
6215	4822 130 34174	BZX79-B4V7
6216	4822 130 34145	BZX79-B39
6217	4822 130 31878	1N4003G
6218	4822 130 34145	BZX79-B39
6901	4822 130 31878	1N4003G
6902	4822 130 31878	1N4003G
6903	4822 130 11397	BAS316
6904	4822 130 11397	BAS316
6905	4822 130 11397	BAS316
6906	4822 130 31878	1N4003G
6907	4822 130 11397	BAS316
6908	4822 130 30621	1N4148
6909	4822 130 11397	BAS316
6910	4822 130 11397	BAS316
6911	4822 130 11397	BAS316
6912	4822 130 31878	1N4003G
6914	4822 130 11397	BAS316
6915	4822 130 34173	BZX79-C5V6
6916	4822 130 31878	1N4003G
6917	4822 130 34145	BZX79-B39
6918	4822 130 11397	BAS316
6919	4822 130 11397	BAS316
6920	4822 130 11397	BAS316
6921	4822 130 11397	BAS316

## TRANSISTORS &amp; INTEGRATED CIRCUITS

7200	9340 561 95127	BUK7535-55A
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Note: Only the parts mentioned in this list are normal service spare parts.

## ELECTRICAL PARTS LIST - AMPLIFIER BOARD

## MISCELLANEOUS

0008	3104 211 29861	SPRING, IC
1302	4822 267 10729	FLEX CONN. 10PIN VERT.
1303	4822 267 10729	FLEX CONN. 10PIN VERT.
1600	2422 540 98514	CERAM RESONATOR 602,7KHZ
1601	2422 540 98568	CERAM RESONATOR 700KHZ

## CAPACITORS

2101	2222 580 15649	100nF 10% 50V
2102	2222 580 15649	100nF 10% 50V
2104	2222 601 55649	100nF 10% 100V
2105	2222 580 15649	100nF 10% 50V
2106	2020 021 91431	22uF 20% 100V
2107	2222 601 55649	100nF 10% 100V
2108	2222 580 15649	100nF 10% 50V
2111	4822 126 13188	15nF 5% 63V
2114	5322 116 80853	560pF 5% 63V
2115	5322 116 80853	560pF 5% 63V
2116	4822 121 51252	470nF 5% 63V
2117	2222 581 15654	220nF 10% 50V
2120	4822 126 13188	15nF 5% 63V
2122	5322 116 80853	560pF 5% 63V
2124	2222 581 15654	220nF 10% 50V
2125	4822 121 51252	470nF 5% 63V
2126	5322 116 80853	560pF 5% 63V
2127	2222 580 15649	100nF 10% 50V
2128	2222 580 15649	100nF 10% 50V
2129	2222 580 15649	100nF 10% 50V
2130	2222 580 15649	100nF 10% 50V
2131	4822 126 14241	330pF 50V
2134	2238 780 55654	220nF 10% 16V
2135	4822 126 13956	68pF 5% 63V
2136	4822 126 14241	330pF 50V
2201	2222 580 15649	100nF 10% 50V
2202	2222 580 15649	100nF 10% 50V
2204	2222 601 55649	100nF 10% 100V
2205	2222 580 15649	100nF 10% 50V
2206	2020 021 91431	22uF 20% 100V
2207	2222 601 55649	100nF 10% 100V
2208	2222 580 15649	100nF 10% 50V
2211	4822 126 13188	15nF 5% 63V
2214	5322 116 80853	560pF 5% 63V
2215	5322 116 80853	560pF 5% 63V
2216	4822 121 51252	470nF 5% 63V
2217	2222 581 15654	220nF 10% 50V
2220	4822 126 13188	15nF 5% 63V
2222	5322 116 80853	560pF 5% 63V
2224	2222 581 15654	220nF 10% 50V
2225	4822 121 51252	470nF 5% 63V
2226	5322 116 80853	560pF 5% 63V
2227	2222 580 15649	100nF 10% 50V
2228	2222 580 15649	100nF 10% 50V
2229	2222 580 15649	100nF 10% 50V

2230	2222 580 15649	100nF 10% 50V
2231	4822 126 14241	330pF 50V
2234	2238 780 55654	220nF 10% 16V
2235	4822 126 13956	68pF 5% 63V
2236	4822 126 14241	330pF 50V
2301	2222 580 15649	100nF 10% 50V
2302	2222 580 15649	100nF 10% 50V
2304	2222 601 55649	100nF 10% 100V
2305	2222 580 15649	100nF 10% 50V
2306	2020 021 91431	22uF 20% 100V
2307	2222 601 55649	100nF 10% 100V
2308	2222 580 15649	100nF 10% 50V
2311	4822 126 13188	15nF 5% 63V
2314	5322 116 80853	560pF 5% 63V
2315	5322 116 80853	560pF 5% 63V
2316	4822 121 51252	470nF 5% 63V
2317	2222 581 15654	220nF 10% 50V
2320	4822 126 13188	15nF 5% 63V
2322	5322 116 80853	560pF 5% 63V
2324	2222 581 15654	220nF 10% 50V
2325	4822 121 51252	470nF 5% 63V
2326	5322 116 80853	560pF 5% 63V
2327	2222 580 15649	100nF 10% 50V
2328	2222 580 15649	100nF 10% 50V
2329	2222 580 15649	100nF 10% 50V
2330	2222 580 15649	100nF 10% 50V
2331	4822 126 14241	330pF 50V
2334	2238 780 55654	220nF 10% 16V
2335	4822 126 13956	68pF 5% 63V
2336	4822 126 14241	330pF 50V
2400	2222 580 15649	100nF 10% 50V
2401	4822 124 80062	470uF 20% 35V
2402	4822 124 80062	470uF 20% 35V
2403	2222 580 15649	100nF 10% 50V
2404	4822 124 80062	470uF 20% 35V
2405	4822 124 80062	470uF 20% 35V
2406	4822 123 14026	470uF 20% 35V
2407	4822 123 14026	470uF 20% 35V
2408	5322 126 11578	1nF 10% 50V
2409	5322 126 11578	1nF 10% 50V
2410	5322 126 11578	1nF 10% 50V
2411	5322 126 11578	1nF 10% 50V
2412	5322 126 11578	1nF 10% 50V
2413	5322 126 11578	1nF 10% 50V
2414	5322 126 11578	1nF 10% 50V
2415	5322 126 11578	1nF 10% 50V
2416	5322 126 11578	1nF 10% 50V
2417	5322 126 11578	1nF 10% 50V
2418	5322 126 11578	1nF 10% 50V
2419	2238 586 59812	100nF 50V
2420	5322 126 11578	1nF 10% 50V
2421	5322 126 11578	1nF 10% 50V

## ELECTRICAL PARTS LIST - AMPLIFIER BOARD

2422	5322 126 11578	1nF 10% 50V
2423	2238 586 59812	100nF 50V
2425	5322 126 11578	1nF 10% 50V
2600	2238 586 59812	100nF 50V
2602	2020 552 94427	100pF 5% 50V
2603	2020 552 94427	100pF 5% 50V
2604	2238 586 59812	100nF 50V
2605	4822 126 13881	470pF 5% 50V
2606	5322 126 11578	1nF 10% 50V
2607	2020 552 94427	100pF 5% 50V
2608	2020 552 94427	100pF 5% 50V
2700	2020 552 96507	10uF +80/-20% 10V

## RESISTORS

3100	4822 051 10568	5R6 5% 0,25W
3101	4822 051 10568	5R6 5% 0,25W
3102	4822 051 10568	5R6 5% 0,25W
3103	2322 762 60229	22R 5% PRC221
3104	2322 762 60229	22R 5% PRC221
3105	4822 051 10568	5R6 5% 0,25W
3107	4822 051 30109	10R 5% 0,062W
3109	4822 051 30109	10R 5% 0,062W
3200	4822 051 10568	5R6 5% 0,25W
3201	4822 051 10568	5R6 5% 0,25W
3202	4822 051 10568	5R6 5% 0,25W
3203	2322 762 60229	22R 5% PRC221
3204	2322 762 60229	22R 5% PRC221
3205	4822 051 10568	5R6 5% 0,25W
3207	4822 051 30109	10R 5% 0,062W
3209	4822 051 30109	10R 5% 0,062W
3300	4822 051 10568	5R6 5% 0,25W
3301	4822 051 10568	5R6 5% 0,25W
3302	4822 051 10568	5R6 5% 0,25W
3303	2322 762 60229	22R 5% PRC221
3304	2322 762 60229	22R 5% PRC221
3305	4822 051 10568	5R6 5% 0,25W
3307	4822 051 30109	10R 5% 0,062W
3309	4822 051 30109	10R 5% 0,062W
3401	4822 051 30562	5k6 5% 0,063W
3404	4822 051 30221	220R 5% 0,062W
3405	4822 051 30562	5k6 5% 0,063W
3408	4822 051 30221	220R 5% 0,062W
3410	4822 051 30562	5k6 5% 0,063W
3411	4822 051 30562	5k6 5% 0,063W
3412	4822 051 30221	220R 5% 0,062W
3413	4822 051 30562	5k6 5% 0,063W
3414	4822 051 30562	5k6 5% 0,063W
3415	4822 051 30562	5k6 5% 0,063W
3420	2322 615 23103	NTC 10k 5% 0,125W
3421	4822 051 30562	5k6 5% 0,063W
3422	4822 051 30101	100R 5% 0,062W
3423	4822 051 30562	5k6 5% 0,063W

3424	4822 051 30562	5k6 5% 0,063W
3425	4822 051 30562	5k6 5% 0,063W
3426	4822 051 30562	5k6 5% 0,063W
3600	4822 051 30222	2k2 5% 0,062W
3601	4822 051 30222	2k2 5% 0,062W
3602	4822 117 13632	100k 1% 0,062W
3604	4822 051 30103	10k 5% 0,062W
3605	4822 051 30682	6k8 5% 0,062W
3606	4822 117 13632	100k 1% 0,062W
3607	4822 051 30102	1k 5% 0,062W
3608	4822 051 30105	1M 5% 0,062W
3609	4822 117 13632	100k 1% 0,062W
3610	4822 117 12139	22R 5% 0,062W
3700	4822 117 12925	47k 1% 0,063W
3701	4822 117 12925	47k 1% 0,063W
3703	4822 117 12925	47k 1% 0,063W
3709	4822 117 12925	47k 1% 0,063W
3712	4822 117 12925	47k 1% 0,063W
3713	4822 051 30103	10k 5% 0,062W
3716	4822 117 12925	47k 1% 0,063W
3718	4822 117 12925	47k 1% 0,063W
3721	4822 051 30103	10k 5% 0,062W
3722	4822 051 30103	10k 5% 0,062W
4132	4822 051 20008	OR JUMPER 0805
4133	4822 051 20008	OR JUMPER 0805
4137	4822 051 20008	OR JUMPER 0805
4138	4822 051 20008	OR JUMPER 0805
4232	4822 051 20008	OR JUMPER 0805
4233	4822 051 20008	OR JUMPER 0805
4237	4822 051 20008	OR JUMPER 0805
4238	4822 051 20008	OR JUMPER 0805
4332	4822 051 20008	OR JUMPER 0805
4333	4822 051 20008	OR JUMPER 0805
4337	4822 051 20008	OR JUMPER 0805
4338	4822 051 20008	OR JUMPER 0805

## COILS &amp; FILTERS

5102	2422 536 00496	IND. FXD. 22uH 10%
5103	2422 536 00496	IND. FXD. 22uH 10%
5202	2422 536 00496	IND. FXD. 22uH 10%
5203	2422 536 00496	IND. FXD. 22uH 10%
5302	2422 536 00496	IND. FXD. 22uH 10%
5303	2422 536 00496	IND. FXD. 22uH 10%
5400	4822 157 11411	FXD. IND. BEAD 100MHZ 80R
5401	4822 157 11411	FXD. IND. BEAD 100MHZ 80R

## DIODES

6600	3198 020 55680	BZX384-C5V6
6713	4822 130 11397	BAS316
6714	4822 130 11397	BAS316
6715	4822 130 11397	BAS316

**ELECTRICAL PARTS LIST - AMPLIFIER BOARD**

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TRANSISTORS & INTEGRATED CIRCUITS

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7100	9352 705 74518	TDA8920TH/N1R
7200	9352 705 74518	TDA8920TH/N1R
7300	9352 705 74518	TDA8920TH/N1R
7600	5322 209 11517	PC74HCU04T
7602	5322 130 60159	BC847B
7607	5322 209 14477	HEF4013BT
7608	4822 130 60373	BC857B
7710	5322 130 60159	BC847B
7716	4822 130 60373	BC857B

Note: Only the parts mentioned in this list are normal service spare parts.

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# AV BOARD

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## BRIEF INTRODUCTION OF THE AV BOARD

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The AV Board consists of the following features :

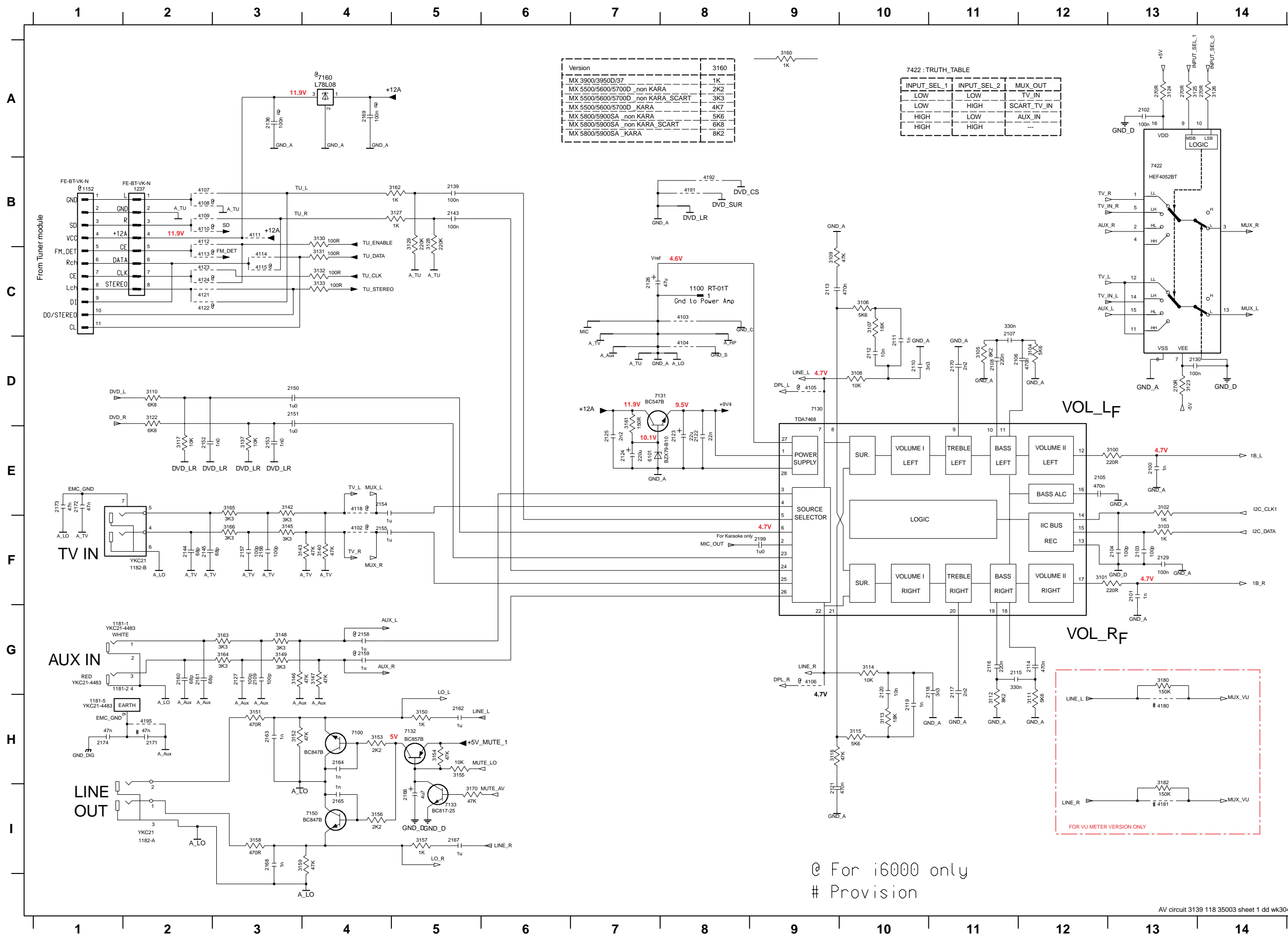
- a. IC 7130 (TDA7468D)  
 IC 7130 provides the source selection (TUNER, TV/AV Digital in, DVD/CD & AUX) and basic sound processing - bass, treble, volume & mute controls for the Front L/R loudspeakers.  
 Note: Although provided for, the AUX source (pin 3 and 26) are never selected & instead an additional IC 7422 (HEF4052BT) is used to include a TV in from the Scart connector socket.  
 Sound features are controlled by the microprocessor IC on the Front Board via I<sup>2</sup>C Bus.  
 Undesirable noise during source switching are muted off via the software of the microprocessor IC on the Front Board.
- b. IC 7422 (HEF4052BT)  
 This IC allows the addition of another TV source via the SCART connector socket. The output MUX\_L/MUX\_R will go to pin 4 and 25 of IC 7130.
- c. Line out mute  
 Line out mute is done via the transistors 7100, 7132, 7133 and 7150 during Power up/down, Source and sound switching (MUTE-LO, active low) and Disc & Digital in modes (MUTE\_AV, active high).
- d. Headphone amplifier / pre-amplifier  
 IC 7230 (NJM4556AM) is used as headphone amplifier and pre-amplification for the Front L/R signal to the Amplifier board. The transistors matrix 7200, 7231, 7232, 7233 and 7250 allows the headphone out to be muted when inserting the headphone
- e. IC 7304 and 7330 (TDA7468D)  
 IC 7304 and 7330 provides creation of matrix sound (via Line-L/R from IC 7130) during non-DVD source and sound processing - bass, treble, volume & mute controls for the Center/Subwoofer and Surround L/R loudspeakers respectively.  
 Sound features are controlled by the microprocessor IC on the Front Board via I<sup>2</sup>C Bus.  
 Undesirable noise during source switching are muted off via the software of the microprocessor IC on the Front Board.
- f. IC 7352 (74HC4051D)  
 This multiplexer output (MUX\_DET) informs the microprocess IC on the Front Board on the type of connection & condition the set is in.
- g. IC 7402 (M62320FP)  
 The IC serves as I<sup>2</sup>C Expander to provide for additional control lines required.







# INPUT, SOURCE SELECT & VOLUME CONTROL L/R CIRCUIT



Version	3160
MX 3900/3950D/37	1K
MX 5500/5600/5700D_non KARA	2K2
MX 5500/5600/5700D_non KARA_SCART	3K3
MX 5500/5600/5700D_KARA	4K7
MX 5800/5900SA_non KARA	5K6
MX 5800/5900SA_non KARA_SCART	6K8
MX 5800/5900SA_KARA	8K2

7422 : TRUTH_TABLE		
INPUT_SEL_1	INPUT_SEL_2	MUX_OUT
LOW	LOW	TV_IN
LOW	HIGH	SCART_TV_IN
HIGH	LOW	AUX_IN
HIGH	HIGH	---

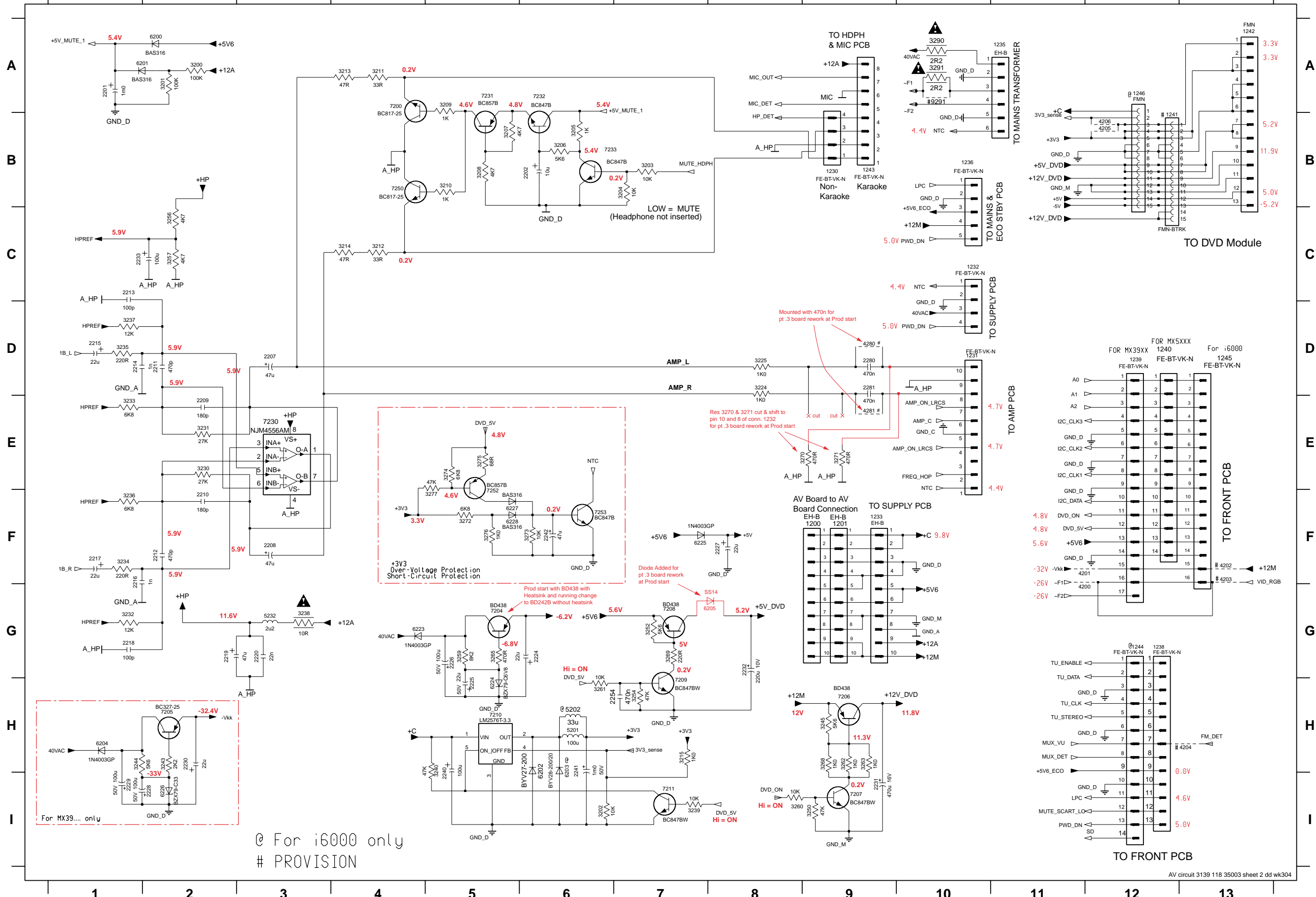
- 1100 C8
- 1152 B1
- 1181-1 G1
- 1181-2 G1
- 1181-5 H1
- 1182-A I2
- 1182-B F2
- 1237 B2
- 2100 E13
- 2101 F13
- 2102 A13
- 2103 F13
- 2104 F13
- 2105 E12
- 2106 D11
- 2107 C11
- 2108 D11
- 2109 G3
- 2110 D10
- 2111 D10
- 2112 D10
- 2113 C9
- 2114 G12
- 2115 G11
- 2116 G11
- 2117 G11
- 2118 G11
- 2119 H10
- 2120 G10
- 2121 I9
- 2122 E8
- 2123 E8
- 2124 E7
- 2125 E7
- 2126 C7
- 2127 G3
- 2129 F13
- 2130 D13
- 2136 A3
- 2139 B5
- 2143 B5
- 2144 F2
- 2145 F2
- 2150 D3
- 2151 D3
- 2152 E2
- 2153 E3
- 2154 E4
- 2155 F4
- 2156 F3
- 2157 F3
- 2158 G4
- 2159 G4
- 2160 G2
- 2161 G2
- 2162 H5
- 2163 H3
- 2164 H4
- 2165 I4
- 2166 I5
- 2167 I5
- 2168 I3
- 2169 A4
- 2170 D11
- 2171 H2
- 2172 E1
- 2173 E1
- 2174 H1
- 2199 F9
- 3100 E13
- 3101 F12
- 3102 E13
- 3103 F13
- 3104 D12
- 3105 D11
- 3106 C10
- 3107 C10
- 3108 D10
- 3109 C9
- 3110 D2
- 3111 H12
- 3112 H11
- 3113 H10
- 3114 G10
- 3115 H10
- 3116 H9
- 3117 E2
- 3122 D2
- 3123 D13
- 3124 A13
- 3125 A13
- 3126 A14
- 3127 B5
- 3128 B5
- 3129 B5
- 3130 B4
- 3131 C4
- 3132 C4
- 3133 C4
- 3137 E3
- 3140 F4
- 3142 E3
- 3143 F3
- 3145 F3
- 3146 G3
- 3147 G4
- 3148 G3
- 3149 G3
- 3150 H5
- 3151 H3
- 3152 H3
- 3153 H4
- 3154 H5
- 3155 H5
- 3156 I4
- 3157 I5
- 3158 I3
- 3159 I3

@ For i6000 only  
# Provision



# PRE-AMPLIFIER, SUPPLY & INTERCONNECTION CIRCUIT

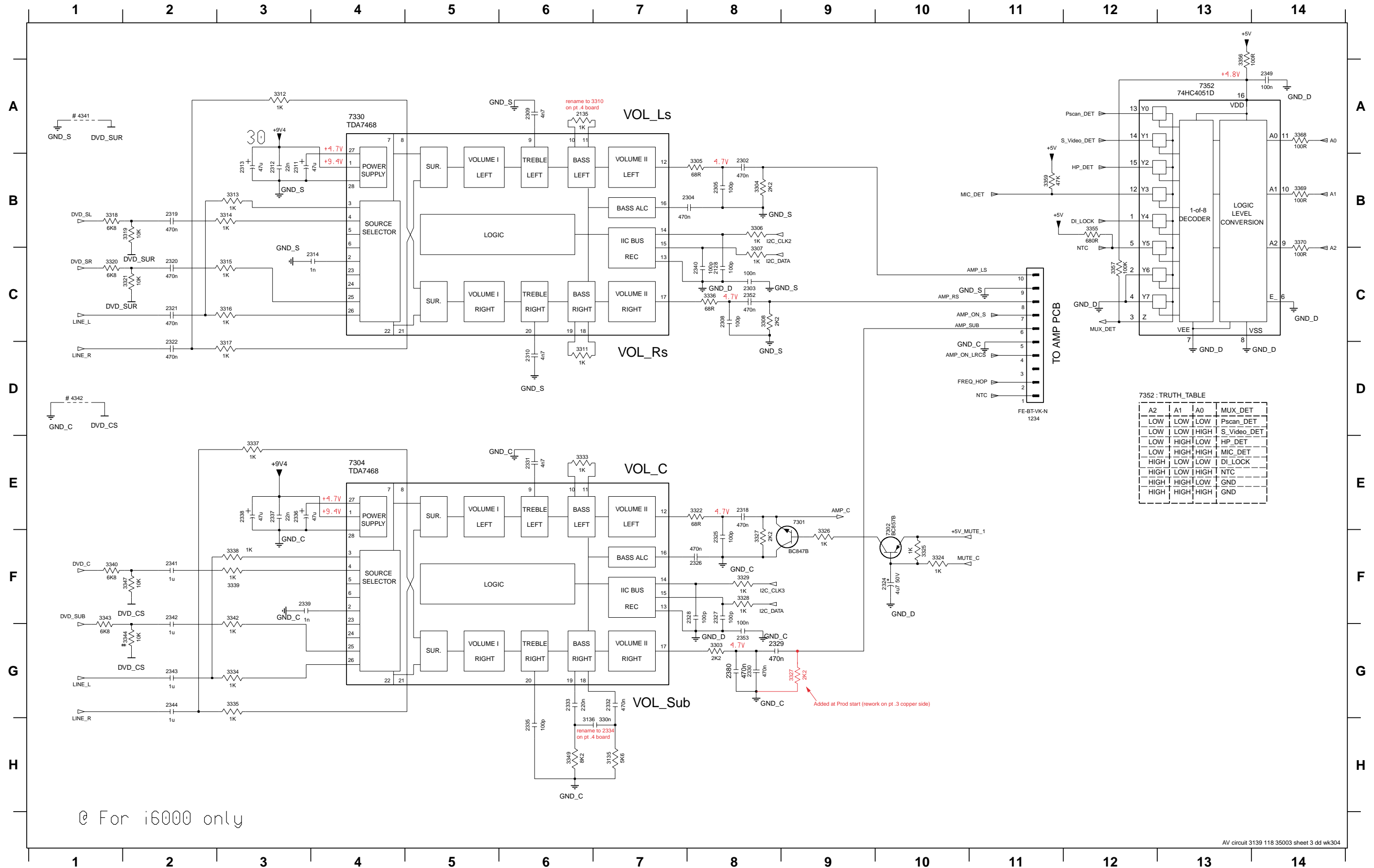
1200 F9	1233 F9	1240 D12	1245 D13	2208 F3	2213 C1	2218 G1	2226 G5	2231 I9	2242 F6	3201 A2	3206 B6	3211 A4	3224 D8	3233 E1	3238 G3	3245 H9	3257 C2	3263 H9	3271 E9	3276 F5	4201 F11	4206 B12	5232 G3	6204 H1	6227 F5	7206 H9	7211 I7	7250 B4
1201 F9	1235 A11	1241 B12	1246 A12	2209 E2	2214 D1	2219 G2	2227 F8	2232 G8	2254 H7	3202 I6	3207 B5	3212 C4	3225 D8	3234 F1	3239 I7	3250 I9	3259 G5	3265 G5	3272 F5	3277 F5	4202 F13	4208 D9	5200 A2	6205 G8	6228 F5	7207 I9	7230 E3	7252 E5
1230 B9	1236 B10	1242 A13	2201 A1	2210 F2	2215 D1	2220 G3	2228 I2	2233 C1	2280 D9	3203 B7	3208 B5	3213 A4	3230 E2	3235 D1	3240 H5	3252 G7	3260 I8	3268 H9	3273 F6	3290 A10	4203 F13	4281 E9	6201 A2	6223 G4	7200 A4	7208 G7	7231 A5	7253 F6
1231 D10	1238 G12	1243 B9	2202 B6	2211 D2	2216 F1	2224 G6	2229 I1	2240 I5	2281 D9	3204 B7	3209 A5	3214 C4	3231 E2	3236 F1	3243 H2	3254 H7	3261 H6	3269 G7	3274 E5	3291 A10	4204 H13	5201 H6	6202 H6	6224 H5	7204 G5	7209 H7	7232 A6	9291 A10
1232 C10	1239 D12	1244 G12	2207 D3	2212 F2	2217 F1	2225 H5	2230 H2	2241 H6	3200 A2	3205 B6	3210 B5	3215 H7	3232 G1	3237 D1	3244 H1	3256 C2	3262 H9	3270 E9	3275 E5	4200 G11	4205 B12	5202 H6	6203 H6	6225 I2	7205 H2	7210 H5	7233 B7	



@ For i6000 only  
# PROVISION

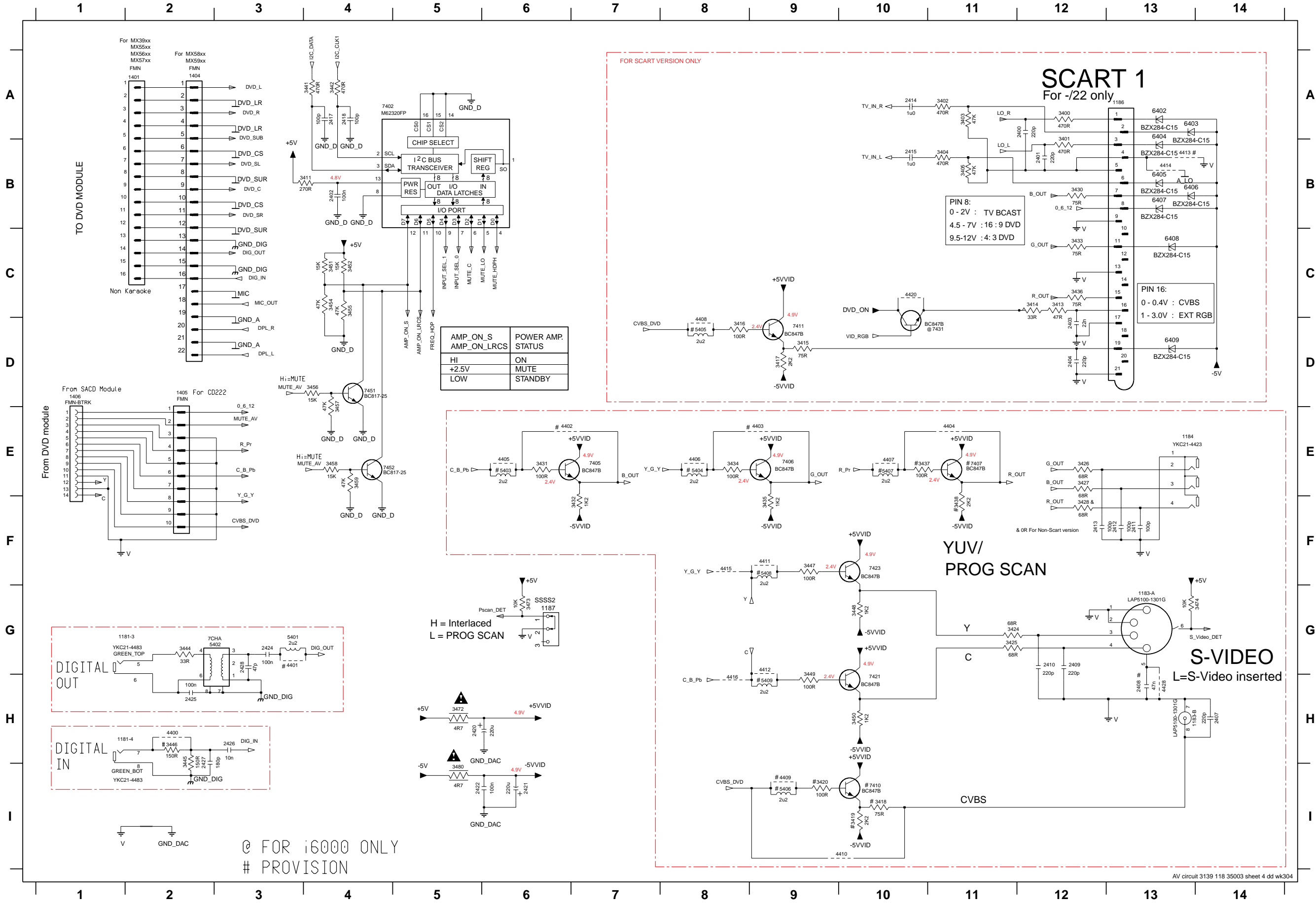
# VOLUME CONTROL SURR., CENTER & SW AND CONTROL MULTIPLEXER CIRCUIT

1234 D11 2302 B8 2305 B8 2310 D6 2313 B3 2319 B2 2322 D2 2326 F8 2329 G8 2332 G7 2336 E3 2339 F3 2342 F2 2349 A14 2380 G8 3303 G8 3306 B8 3311 D6 3314 B3 3317 D3 3320 C1 3324 F10 3327 F8 3333 E6 3336 C8 3339 F3 3343 F1 3349 H6 3357 C12 3369 B14 4342 D1 7304 E4  
 2128 C8 2303 C8 2308 C8 2311 B3 2314 C4 2320 C2 2324 F10 2327 F8 2330 G8 2333 G6 2337 E3 2340 C8 2343 G2 2352 C8 3135 H7 3304 B8 3307 C8 3312 A3 3315 C3 3318 B1 3321 C2 3325 F10 3328 F8 3334 G3 3337 E3 3340 F1 3344 G2 3355 B12 3359 B11 3370 B14 7301 E9 7330 A4  
 2135 A6 2304 B8 2309 A6 2312 B3 2318 E8 2321 C2 2325 F8 2328 F8 2331 E6 2335 H6 2338 E3 2341 F2 2344 G2 2353 G8 3136 H6 3305 B8 3308 C8 3313 B3 3316 C3 3319 B2 3322 E8 3326 F9 3329 F8 3335 G3 3338 F3 3342 F1 3347 F2 3356 A13 3368 A14 4341 A1 7302 F10 7352 A13



# DIGITAL I/O, S-VIDEO, SCART, & I<sup>2</sup>C EXPANDER CIRCUITS

1181-3 G2	1186 A13	1406 D1	2404 D12	2411 F13	2417 A4	2424 G3	3400 A12	3405 B11	3416 D8	3424 G11	3430 B12	3435 F9	3442 A4	3448 G10	3454 C4	3459 E4	4400 H2	4405 E6	4410 H0	4415 F8	5402 G3	5407 E10	6404 A13	6409 D13	7410 H0	7451 D4
1181-4 H2	1187 G6	2408 A11	2407 H14	2412 F12	2418 A4	2425 H2	3401 B12	3411 B4	3417 D8	3425 G11	3431 E6	3436 C12	3444 G2	3449 H9	3455 C4	3472 H5	4401 G3	4406 E8	4411 F9	4416 H8	5403 E6	5408 F9	6402 A4	7402 A4	7411 D9	7452 E4
1183-A G13	1401 A2	2401 B12	2408 H13	2413 F12	2420 H5	2428 H3	3402 A11	3413 C12	3418 H0	3426 E12	3432 F7	3437 E10	3445 H2	3450 H10	3456 D4	3473 G6	4402 E6	4407 E10	4412 G9	4420 C10	5404 E8	5409 H9	6405 B13	7405 E7	7421 H10	
1183-B H13	1404 A2	2402 B4	2409 G12	2414 A10	2421 I6	2427 H2	3403 A11	3414 C12	3419 I10	3427 E12	3433 C12	3438 F11	3446 H2	3451 C4	3457 D4	3474 G14	4403 E9	4408 D8	4413 B13	4428 H13	5405 D8	6402 A13	6407 B13	7406 E9	7423 F10	
1184 E13	1405 D2	2403 D12	2410 G12	2415 B10	2422 I5	2428 G3	3404 B11	3415 D9	3420 I9	3428 F12	3434 E8	3441 A4	3447 F9	3452 C4	3458 E4	3480 I5	4404 E11	4409 I9	4414 B13	5401 G3	5406 I9	6403 A13	6408 C13	7407 E11	7431 D11	



## ELECTRICAL PARTS LIST - AV BOARD

## MISCELLANEOUS

1181	2422 026 05399	Socket Cinch Dig-out/Aux-in	2144	4822 126 13956	68pF 5% 63V
1182	4822 267 31823	Socket Cinch TV-in/Line-out	2145	4822 126 13956	68pF 5% 63V
1183	2422 033 00468	Socket CVBS/S-Video Out	2150	4822 126 14043	1uF +80/-20% 16V
1184	2422 026 05342	Socket YUV Out	2151	4822 126 14043	1uF +80/-20% 16V
1187	2422 127 00476	Switch Pro-SCAN	2152	3198 016 31020	1nF 10% 25V
1230	4822 267 10733	FFC Socket 4P Vert.	2153	3198 016 31020	1nF 10% 25V
1231	4822 267 10729	FFC Socket 10P Vert.	2154	4822 126 14043	1uF +80/-20% 16V
1232	4822 267 10733	FFC Socket 4P Vert.	2155	4822 126 14043	1uF +80/-20% 16V
1234	4822 267 10729	FFC Socket 10P Vert.	2156	2020 552 94427	100pF 5% 50V
1236	4822 267 10954	FFC Socket 5P Vert.	2157	2020 552 94427	100pF 5% 50V
1237	4822 265 11515	FFC Socket 8P Vert.	2160	4822 126 13956	68pF 5% 63V
1238	4822 267 10738	FFC Socket 13P Vert.	2161	4822 126 13956	68pF 5% 63V
1239	4822 267 10871	FFC Socket 17P Vert.	2162	4822 126 14043	1uF +80/-20% 16V
1242	2422 025 16591	FFC Socket 13P Vert.	2163	3198 016 31020	1nF 10% 25V
1401	2422 025 16525	FFC Socket 16P Vert.	2164	3198 016 31020	1nF 10% 25V
1405	2422 025 16587	FFC Socket 10P Vert.	2165	3198 016 31020	1nF 10% 25V

## CAPACITORS

2100	3198 016 31020	1nF 10% 25V	2166	4822 124 40769	4,7uF 20% 100V
2101	3198 016 31020	1nF 10% 25V	2167	4822 126 14043	1uF +80/-20% 16V
2102	2238 586 59812	100nF 10% 50V	2168	3198 016 31020	1nF 10% 25V
2103	2020 552 94427	100pF 5% 50V	2170	4822 126 14238	2,2nF 50V
2104	2020 552 94427	100pF 5% 50V	2172	3198 017 34730	47nF 16V
2105	3198 017 44740	470nF 10V	2173	3198 017 34730	47nF 16V
2106	3198 017 44740	470nF 10V	2174	3198 017 34730	47nF 16V
2107	2020 552 96327	330nF 10% 16V	2201	4822 124 40184	1000uF 20% 10V
2108	4822 126 13879	220nF +80/-20% 16V	2202	4822 124 40248	10uF 20% 63V
2109	2020 552 94427	100pF 5% 50V	2207	4822 124 41751	47uF 20% 50V
2110	5322 126 11579	3,3nF 10% 63V	2208	4822 124 41751	47uF 20% 50V
2111	3198 016 31020	1nF 10% 25V	2209	4822 126 14508	180pF 5% 50V
2112	5322 126 11583	10nF 10% 50V	2210	4822 126 14508	180pF 5% 50V
2113	3198 017 44740	470nF 10V	2211	4822 126 13881	470pF 5% 50V
2114	3198 017 44740	470nF 10V	2212	4822 126 13881	470pF 5% 50V
2115	2020 552 96327	330nF 10% 16V	2213	2020 552 94427	100pF 5% 50V
2116	4822 126 13879	220nF +80/-20% 16V	2214	3198 016 31020	1nF 10% 25V
2117	4822 126 14238	2,2nF 50V	2215	4822 124 81151	22uF 20% 50V
2118	5322 126 11579	3,3nF 10% 63V	2216	3198 016 31020	1nF 10% 25V
2119	3198 016 31020	1nF 10% 25V	2217	4822 124 81151	22uF 20% 50V
2120	5322 126 11583	10nF 10% 50V	2218	2020 552 94427	100pF 5% 50V
2121	3198 017 44740	470nF 10V	2219	4822 124 40433	47uF 20% 25V
2122	4822 126 14494	22nF 10% 25V	2220	4822 126 14494	22nF 10% 25V
2123	4822 124 81151	22uF 20% 50V	2224	4822 124 81151	22uF 20% 50V
2124	4822 124 40196	220uF 20% 16V	2225	4822 124 81151	22uF 20% 50V
2125	4822 126 14238	2,2nF 50V	2226	4822 124 40255	100uF 20% 63V
2126	4822 124 40433	47uF 20% 25V	2227	4822 124 81151	22uF 20% 50V
2127	2020 552 94427	100pF 5% 50V	2228	4822 124 40255	100uF 20% 63V
2128	2020 552 94427	100pF 5% 50V	2229	4822 124 40255	100uF 20% 63V
2129	2238 586 59812	100nF 10% 50V	2230	4822 124 81151	22uF 20% 50V
2130	2238 586 59812	100nF 10% 50V	2231	4822 124 80791	470uF 20% 16V
2135	Refer to resistor 3310		2232	4822 124 40196	220uF 20% 16V
2139	2238 586 59812	100nF 10% 50V	2233	4822 124 41584	100uF 20% 10V
2143	2238 586 59812	100nF 10% 50V	2240	2020 012 93583	100uF 20% 25V
			2241	3198 026 51020	1000uF 20% 50V
			2242	4822 124 40433	47uF 20% 25V

## ELECTRICAL PARTS LIST - AV BOARD

2254	3198 017 44740	470nF 10V	2311	4822 124 40433	47uF 20% 25V
2280	3198 017 44740	470nF 10V	2312	4822 126 14494	22nF 10% 25V
2281	3198 017 44740	470nF 10V	2313	4822 124 40433	47uF 20% 25V
2282	3198 017 44740	470nF 10V	2314	3198 016 31020	1nF 10% 25V
2283	3198 017 44740	470nF 10V	2318	3198 017 44740	470nF 10V
2302	3198 017 44740	470nF 10V	2319	3198 017 44740	470nF 10V
2303	2238 586 59812	100nF 10% 50V	2320	3198 017 44740	470nF 10V
2304	3198 017 44740	470nF 10V	2321	3198 017 44740	470nF 10V
2305	2020 552 94427	100pF 5% 50V	2322	3198 017 44740	470nF 10V
2308	2020 552 94427	100pF 5% 50V	2324	4822 124 12032	4,7uF 20% 50V
2309	4822 126 13193	4,7nF 10% 63V	2325	2020 552 94427	100pF 5% 50V
2310	4822 126 13193	4,7nF 10% 63V	2326	3198 017 44740	470nF 10V
2311	4822 124 40433	47uF 20% 25V	2327	2020 552 94427	100pF 5% 50V
2312	4822 126 14494	22nF 10% 25V	2328	2020 552 94427	100pF 5% 50V
2313	4822 124 40433	47uF 20% 25V	2329	2020 552 96684	470nF 10% 16V
2314	3198 016 31020	1nF 10% 25V	2330	3198 017 44740	470nF 10V
2318	3198 017 44740	470nF 10V	2331	4822 126 13193	4,7nF 10% 63V
2319	3198 017 44740	470nF 10V	2332	2020 552 96684	470nF 10% 25V
2320	3198 017 44740	470nF 10V	2333	2020 552 96326	220nF 10% 16V
2321	3198 017 44740	470nF 10V	2334	2222 780 15656	330nF 10% 16V
2322	3198 017 44740	470nF 10V	2335	2020 552 94427	100pF 5% 50V
2324	4822 124 12032	4,7uF 20% 50V	2336	4822 124 40433	47uF 20% 25V
2325	2020 552 94427	100pF 5% 50V	2337	4822 126 14494	22nF 10% 25V
2326	3198 017 44740	470nF 10V	2338	4822 124 40433	47uF 20% 25V
2327	2020 552 94427	100pF 5% 50V	2339	3198 016 31020	1nF 10% 25V
2328	2020 552 94427	100pF 5% 50V	2340	2020 552 94427	100pF 5% 50V
2329	2020 552 96684	470nF 10% 16V	2341	4822 126 14043	1uF +80/-20% 16V
2330	3198 017 44740	470nF 10V	2342	4822 126 14043	1uF +80/-20% 16V
2331	4822 126 13193	4,7nF 10% 63V	2343	4822 126 14043	1uF +80/-20% 16V
2332	2020 552 96684	470nF 10% 25V	2344	4822 126 14043	1uF +80/-20% 16V
2333	2020 552 96326	220nF 10% 16V	2349	2238 586 59812	100nF 10% 50V
2334	2222 780 15656	330nF 10% 16V	2352	3198 017 44740	470nF 10V
2335	2020 552 94427	100pF 5% 50V	2353	2238 586 59812	100nF 10% 50V
2336	4822 124 40433	47uF 20% 25V	2380	2020 552 96684	470nF 10% 25V
2337	4822 126 14494	22nF 10% 25V	2402	2238 586 59812	100nF 10% 50V
2338	4822 124 40433	47uF 20% 25V	2407	4822 126 13883	220pF 5% 50V
2339	3198 016 31020	1nF 10% 25V	2409	4822 126 13883	220pF 5% 50V
2340	2020 552 94427	100pF 5% 50V	2410	4822 126 13883	220pF 5% 50V
2341	4822 126 14043	1uF +80/-20% 16V	2411	2020 552 94427	100pF 5% 50V
2342	4822 126 14043	1uF +80/-20% 16V	2412	2020 552 94427	100pF 5% 50V
2343	4822 126 14043	1uF +80/-20% 16V			
2344	4822 126 14043	1uF +80/-20% 16V			
2349	2238 586 59812	100nF 10% 50V			
2352	3198 017 44740	470nF 10V			
2353	2238 586 59812	100nF 10% 50V			
2380	2020 552 96684	470nF 10% 25V			
2402	2238 586 59812	100nF 10% 50V			
2407	4822 126 13883	220pF 5% 50V			
2409	4822 126 13883	220pF 5% 50V			
2410	4822 126 13883	220pF 5% 50V			
2411	2020 552 94427	100pF 5% 50V			
2412	2020 552 94427	100pF 5% 50V			

## ELECTRICAL PARTS LIST - AV BOARD

2413	2020 552 94427	100pF 5% 50V
2417	2020 552 94427	100pF 5% 50V
2418	2020 552 94427	100pF 5% 50V
2420	4822 124 40196	220uF 20% 16V
2421	4822 124 40196	220uF 20% 16V
2422	2238 586 59812	100nF 10% 50V
2424	2238 586 59812	100nF 10% 50V
2425	2238 586 59812	100nF 10% 50V
2426	5322 126 11583	10nF 10% 50V
2427	4822 126 14508	180pF 5% 50V
2428	4822 126 11785	47pF 5% 50V

## RESISTORS

3100	4822 051 30221	220R 5% 0,062W
3101	4822 051 30221	220R 5% 0,062W
3102	4822 051 30102	1k 5% 0,062W
3103	4822 051 30102	1k 5% 0,062W
3104	4822 051 30562	5k6 5% 0,063W
3105	4822 117 12902	8k2 1% 0,063W
3106	4822 051 30562	5k6 5% 0,063W
3107	4822 051 30183	18k 5% 0,062W
3108	4822 051 30103	10k 5% 0,062W
3109	4822 117 12925	47k 1% 0,063W
3110	4822 051 30682	6k8 5% 0,062W
3111	4822 051 30562	5k6 5% 0,063W
3112	4822 117 12902	8k2 1% 0,063W
3113	4822 051 30183	18k 5% 0,062W
3114	4822 051 30103	10k 5% 0,062W
3115	4822 051 30562	5k6 5% 0,063W
3116	4822 117 12925	47k 1% 0,063W
3117	4822 051 30103	10k 5% 0,062W
3122	4822 051 30682	6k8 5% 0,062W
3123	4822 051 30271	270R 5% 0,062W
3124	4822 051 30271	270R 5% 0,062W
3125	4822 051 30271	270R 5% 0,062W
3126	4822 051 30271	270R 5% 0,062W
3127	4822 051 30102	1k 5% 0,062W
3128	4822 117 12891	220k 1% 0,062W
3129	4822 117 12891	220k 1% 0,062W
3130	4822 051 30101	100R 5% 0,062W
3131	4822 051 30101	100R 5% 0,062W
3132	4822 051 30101	100R 5% 0,062W
3133	4822 051 30101	100R 5% 0,062W
3135	4822 051 30562	5k6 5% 0,063W
3136	Refer to capacitor 2334	
3137	4822 051 30103	10k 5% 0,062W
3140	4822 117 12925	47k 1% 0,063W
3142	4822 051 30332	3k3 5% 0,062W
3143	4822 117 12925	47k 1% 0,063W
3145	4822 051 30332	3k3 5% 0,062W
3146	4822 117 12925	47k 1% 0,063W
3147	4822 117 12925	47k 1% 0,063W

## ELECTRICAL PARTS LIST - AV BOARD

## RESISTORS

3148	4822 051 30332	3k3 5% 0,062W	3250	4822 117 12925	47k 1% 0,063W
3149	4822 051 30332	3k3 5% 0,062W	3252	4822 051 30562	5k6 5% 0,063W
3150	4822 051 30102	1k 5% 0,062W	3254	4822 117 12925	47k 1% 0,063W
3151	4822 051 30471	470R 5% 0,062W	3256	4822 051 30472	4k7 5% 0,062W
3152	4822 117 12925	47k 1% 0,063W	3257	4822 051 30472	4k7 5% 0,062W
3153	4822 051 30222	2k2 5% 0,062W	3259	4822 117 12902	8k2 1% 0,063W
3154	4822 117 12925	47k 1% 0,063W	3260	4822 051 30103	10k 5% 0,062W
3155	4822 051 30103	10k 5% 0,062W	3261	4822 051 30103	10k 5% 0,062W
3156	4822 051 30222	2k2 5% 0,062W	3262	4822 051 30102	1k 5% 0,062W
3157	4822 051 30102	1k 5% 0,062W	3263	4822 051 30102	1k 5% 0,062W
3158	4822 051 30471	470R 5% 0,062W	3265	4822 051 30471	470R 5% 0,062W
3159	4822 117 12925	47k 1% 0,063W	3268	4822 051 30102	1k 5% 0,062W
3160	4822 051 30102	1k 5% 0,062W	3269	4822 051 30221	220R 5% 0,062W
3161	4822 051 30151	150R 5% 0,062W	3270	4822 051 30471	470R 5% 0,062W
3162	4822 051 30102	1k 5% 0,062W	3271	4822 051 30471	470R 5% 0,062W
3163	4822 051 30332	3k3 5% 0,062W	3272	4822 051 30682	6k8 5% 0,062W
3164	4822 051 30332	3k3 5% 0,062W	3273	4822 051 30103	10k 5% 0,062W
3165	4822 051 30332	3k3 5% 0,062W	3274	4822 051 30682	6k8 5% 0,062W
3166	4822 051 30332	3k3 5% 0,062W	3275	4822 051 30689	68R 5% 0,063W
3170	4822 117 12925	47k 1% 0,063W	3276	4822 051 30102	1k 5% 0,062W
3200	4822 117 13632	100k 1% 0,062W	3277	4822 117 12925	47k 1% 0,063W
3201	4822 117 13632	100k 1% 0,062W	3290	4822 052 10228 Δ	2R2 5% 0,33W
3202	4822 051 30103	10k 5% 0,062W	3291	4822 052 10228 Δ	2R2 5% 0,33W
3203	4822 051 30103	10k 5% 0,062W	3302	4822 051 30223	22k 5% 0,062W
3204	4822 051 30103	10k 5% 0,062W	3303	4822 051 30222	2k2 5% 0,062W
3205	4822 051 30102	1k 5% 0,062W	3304	4822 051 30222	2k2 5% 0,062W
3206	4822 051 30562	5k6 5% 0,063W	3305	4822 051 30689	68R 5% 0,063W
3207	4822 051 30472	4k7 5% 0,062W	3306	4822 051 30102	1k 5% 0,062W
3208	4822 051 30472	4k7 5% 0,062W	3307	4822 051 30102	1k 5% 0,062W
3209	4822 051 30102	1k 5% 0,062W	3308	4822 051 30222	2k2 5% 0,062W
3210	4822 051 30102	1k 5% 0,062W	3310	4822 051 30102	1k 5% 0,062W
3211	4822 051 30339	33R 5% 0,062W	3311	4822 051 30102	1k 5% 0,062W
3212	4822 051 30339	33R 5% 0,062W	3312	4822 051 30102	1k 5% 0,062W
3213	4822 051 30479	47R 5% 0,062W	3313	4822 051 30102	1k 5% 0,062W
3214	4822 051 30479	47R 5% 0,062W	3314	4822 051 30102	1k 5% 0,062W
3215	4822 051 30102	1k 5% 0,062W	3315	4822 051 30102	1k 5% 0,062W
3224	4822 051 30102	1k 5% 0,062W	3316	4822 051 30102	1k 5% 0,062W
3225	4822 051 30102	1k 5% 0,062W	3317	4822 051 30102	1k 5% 0,062W
3230	4822 051 30273	27k 5% 0,062W	3318	4822 051 30682	6k8 5% 0,062W
3231	4822 051 30273	27k 5% 0,062W	3319	4822 051 30103	10k 5% 0,062W
3232	4822 051 30123	12k 5% 0,062W	3320	4822 051 30682	6k8 5% 0,062W
3233	4822 051 30682	6k8 5% 0,062W	3321	4822 051 30103	10k 5% 0,062W
3234	4822 051 30221	220R 5% 0,062W	3322	4822 051 30689	68R 5% 0,063W
3235	4822 051 30221	220R 5% 0,062W	3324	4822 051 30102	1k 5% 0,062W
3236	4822 051 30682	6k8 5% 0,062W	3325	4822 051 30102	1k 5% 0,062W
3237	4822 051 30123	12k 5% 0,062W	3326	4822 051 30102	1k 5% 0,062W
3238	4822 052 10109 Δ	10R 5% 0,33W	3327	4822 051 30222	2k2 5% 0,062W
3239	4822 051 30103	10k 5% 0,062W	3328	4822 051 30102	1k 5% 0,062W
3240	4822 117 12925	47k 1% 0,063W	3329	4822 051 30102	1k 5% 0,062W
3243	4822 051 30222	2k2 5% 0,062W	3333	4822 051 30102	1k 5% 0,062W
3244	4822 051 30562	5k6 5% 0,063W	3334	4822 051 30102	1k 5% 0,062W
3245	4822 051 30562	5k6 5% 0,063W	3335	4822 051 30102	1k 5% 0,062W

## ELECTRICAL PARTS LIST - AV BOARD

3336	4822 051 30689	68R 5% 0,063W	4114	4822 051 30008	OR Jumper 0603
3337	4822 051 30102	1k 5% 0,062W	4121	4822 051 30008	OR Jumper 0603
3338	4822 051 30102	1k 5% 0,062W	4123	4822 051 30008	OR Jumper 0603
3339	4822 051 30102	1k 5% 0,062W	4191	4822 051 30008	OR Jumper 0603
3340	4822 051 30682	6k8 5% 0,062W	4192	4822 051 30008	OR Jumper 0603
3342	4822 051 30102	1k 5% 0,062W	4195	4822 051 30008	OR Jumper 0603
3343	4822 051 30682	6k8 5% 0,062W	4200	4822 051 30008	OR Jumper 0603
3347	4822 051 30103	10k 5% 0,062W	4201	4822 051 30008	OR Jumper 0603
3349	4822 117 12902	8k2 1% 0,063W	4206	4822 051 30008	OR Jumper 0603
3355	4822 051 30681	680R 5% 0,062W	4280	Refer to cap 2282 for .pt 3 board rework	
3356	4822 051 30101	100R 5% 0,062W	4281	Refer to cap 2283 for .pt 3 board rework	
3357	4822 117 13632	100k 1% 0,062W	4400	4822 051 30008	OR Jumper 0603
3359	4822 117 12925	47k 1% 0,063W	4404	4822 051 30008	OR Jumper 0603
3368	4822 051 30101	100R 5% 0,062W	4405	4822 051 30008	OR Jumper 0603
3369	4822 051 30101	100R 5% 0,062W	4406	4822 051 30008	OR Jumper 0603
3370	4822 051 30101	100R 5% 0,062W	4407	4822 051 30008	OR Jumper 0603
3411	4822 051 30271	270R 5% 0,062W	4410	4822 051 30008	OR Jumper 0603
3424	4822 051 30689	68R 5% 0,063W	4411	4822 051 30008	OR Jumper 0603
3425	4822 051 30689	68R 5% 0,063W	4412	4822 051 30008	OR Jumper 0603
3426	4822 051 30689	68R 5% 0,063W	4415	4822 051 30008	OR Jumper 0603
3427	4822 051 30689	68R 5% 0,063W	4416	4822 051 30008	OR Jumper 0603
3428	4822 051 30008	OR Jumper 0603	4428	4822 051 30008	OR Jumper 0603
3431	4822 051 30101	100R 5% 0,062W	4500	4822 051 30008	OR Jumper 0603
3432	4822 117 11817	1k2 1% 0,062W	4501	4822 051 30008	OR Jumper 0603
3434	4822 051 30101	100R 5% 0,062W	4502	4822 051 30008	OR Jumper 0603
3435	4822 117 11817	1k2 1% 0,062W	4503	4822 051 30008	OR Jumper 0603
3441	4822 051 30471	470R 5% 0,062W	4504	4822 051 30008	OR Jumper 0603
3442	4822 051 30471	470R 5% 0,062W	4505	4822 051 30008	OR Jumper 0603
3444	4822 051 30339	33R 5% 0,062W	4506	4822 051 30008	OR Jumper 0603
3445	4822 051 30151	150R 5% 0,062W	4507	4822 051 30008	OR Jumper 0603
3447	4822 051 30101	100R 5% 0,062W	4508	4822 051 30008	OR Jumper 0603
3448	4822 117 11817	1k2 1% 0,062W	4509	4822 051 30008	OR Jumper 0603
3449	4822 051 30101	100R 5% 0,062W	4510	4822 051 30008	OR Jumper 0603
3450	4822 117 11817	1k2 1% 0,062W	4511	4822 051 30008	OR Jumper 0603
3451	4822 051 30153	15k 5% 0,062W	4512	4822 051 30008	OR Jumper 0603
3452	4822 051 30153	15k 5% 0,062W	4513	4822 051 30008	OR Jumper 0603
3454	4822 117 12925	47k 1% 0,063W	4514	4822 051 30008	OR Jumper 0603
3455	4822 117 12925	47k 1% 0,063W	4515	4822 051 30008	OR Jumper 0603
3456	4822 051 30153	15k 5% 0,062W	4516	4822 051 30008	OR Jumper 0603
3457	4822 117 12925	47k 1% 0,063W	4517	4822 051 30008	OR Jumper 0603
3458	4822 051 30153	15k 5% 0,062W	4518	4822 051 30008	OR Jumper 0603
3459	4822 117 12925	47k 1% 0,063W	4519	4822 051 30008	OR Jumper 0603
3472	4822 052 10478 Δ	4R7 5% 0,33W	4520	4822 051 30008	OR Jumper 0603
3473	4822 051 30103	10k 5% 0,062W	4521	4822 051 30008	OR Jumper 0603
3474	4822 051 30103	10k 5% 0,062W	4522	4822 051 30008	OR Jumper 0603
3480	4822 052 10478 Δ	4R7 5% 0,33W	4523	4822 051 30008	OR Jumper 0603
4103	4822 051 30008	OR Jumper 0603	4524	4822 051 30008	OR Jumper 0603
4104	4822 051 30008	OR Jumper 0603	4525	4822 051 30008	OR Jumper 0603
4107	4822 051 30008	OR Jumper 0603	4526	4822 051 30008	OR Jumper 0603
4109	4822 051 30008	OR Jumper 0603	4527	4822 051 30008	OR Jumper 0603
4111	4822 051 30008	OR Jumper 0603	4528	4822 051 30008	OR Jumper 0603
4112	4822 051 30008	OR Jumper 0603	4529	4822 051 30008	OR Jumper 0603



**ELECTRICAL PARTS LIST - AV BOARD****RESISTORS**

4530	4822 051 30008	OR Jumper 0603
4531	4822 051 30008	OR Jumper 0603
4532	4822 051 30008	OR Jumper 0603
4533	4822 051 30008	OR Jumper 0603
4534	4822 051 30008	OR Jumper 0603
4535	4822 051 30008	OR Jumper 0603
4536	4822 051 30008	OR Jumper 0603
4537	4822 051 30008	OR Jumper 0603
4538	4822 051 30008	OR Jumper 0603
4539	4822 051 30008	OR Jumper 0603
4540	4822 051 30008	OR Jumper 0603
4541	4822 051 30008	OR Jumper 0603
4542	4822 051 30008	OR Jumper 0603
4543	4822 051 30008	OR Jumper 0603
4544	4822 051 30008	OR Jumper 0603
4545	4822 051 30008	OR Jumper 0603
4546	4822 051 30008	OR Jumper 0603
4547	4822 051 30008	OR Jumper 0603
4548	4822 051 30008	OR Jumper 0603
4549	4822 051 30008	OR Jumper 0603
4550	4822 051 30008	OR Jumper 0603
4551	4822 051 30008	OR Jumper 0603
4552	4822 051 30008	OR Jumper 0603
4553	4822 051 30008	OR Jumper 0603
4554	4822 051 30008	OR Jumper 0603
4555	4822 051 30008	OR Jumper 0603
4556	4822 051 30008	OR Jumper 0603
4557	4822 051 30008	OR Jumper 0603
4558	4822 051 30008	OR Jumper 0603
4559	4822 051 30008	OR Jumper 0603
4560	4822 051 30008	OR Jumper 0603
4564	4822 051 30008	OR Jumper 0603
4579	4822 051 30008	OR Jumper 0603
4585	4822 051 30008	OR Jumper 0603
4593	4822 051 30008	OR Jumper 0603
4598	4822 051 30008	OR Jumper 0603
4599	4822 051 30008	OR Jumper 0603
4653	4822 051 30008	OR Jumper 0603

**COILS & FILTERS**

5201	2422 536 00548	Coil 100uH 15%
5232	4822 157 10586	Coil 2,2uH 10%
5401	4822 157 10586	Coil 2,2uH 10%
5402	4822 157 70601	Coil 100uH 10%

**DIODES**

6101	4822 130 61219	BZX79-B10
6200	4822 130 11397	BAS316
6201	4822 130 11397	BAS316
6202	4822 130 10871	SBYV27-200
6204	4822 130 31878	1N4003G
6205	9322 128 70685	SS14

6223	4822 130 31878	1N4003G
6224	4822 130 34278	BZX79-B6V8
6225	4822 130 31878	1N4003G
6226	4822 130 34142	BZX79-B33
6227	4822 130 11397	BAS316
6228	4822 130 11397	BAS316

**TRANSISTORS & INTEGRATED CIRCUITS**

7100	5322 130 60159	BC847B
7130	9322 150 74668	TDA7468D
7131	4822 130 40959	BC547B
7132	4822 130 60373	BC857B
7133	4822 130 42804	BC817-25
7150	5322 130 60159	BC847B
7200	4822 130 42804	BC817-25
7204	4822 130 40995	BD438
	9322 196 61687	BD242
7205	4822 130 41246	BC327-25
7206	4822 130 40995	BD438
7207	3198 010 42310	BC847BW
7208	4822 130 40995	BD438
7209	3198 010 42310	BC847BW
7210	9322 188 75682	LM2576T-3.3
7211	3198 010 42310	BC847BW
7230	4822 209 31378	NJM4556MB
7231	4822 130 60373	BC857B
7232	5322 130 60159	BC847B
7233	5322 130 60159	BC847B
7250	4822 130 42804	BC817-25
7252	4822 130 60373	BC857B
7253	5322 130 60159	BC847B
7301	5322 130 60159	BC847B
7302	4822 130 60373	BC857B
7304	9322 150 74668	TDA7468D
7330	9322 150 74668	TDA7468D
7352	9337 148 20653	74HC4051D
7402	4822 209 17345	M62320FP
7405	5322 130 60159	BC847B
7406	5322 130 60159	BC847B
7421	5322 130 60159	BC847B
7422	5322 209 11102	HEF4052BT
7423	5322 130 60159	BC847B
7451	4822 130 42804	BC817-25
7452	4822 130 42804	BC817-25

only for Prod start up  
running chang over

Note: Only the parts mentioned in this list are normal service spare parts.




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# 5DTC MODULE

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## (DVD Version)

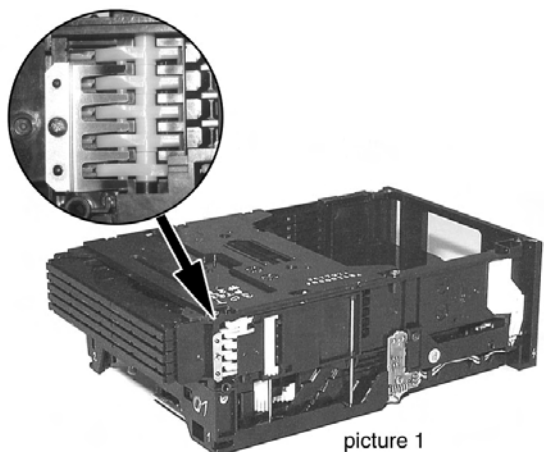
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For Mono-FE (Front End) and Mono-BE (Back End) PCB assemblies information see chapters 11 and 12 in this service documentation.

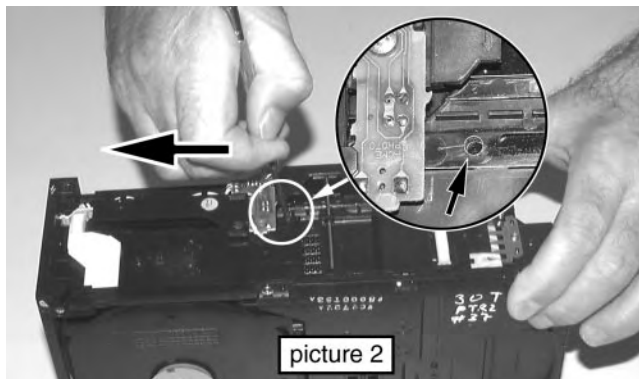
## Emergency opening of the trays

The trays of the 5DTC are mechanically locked.



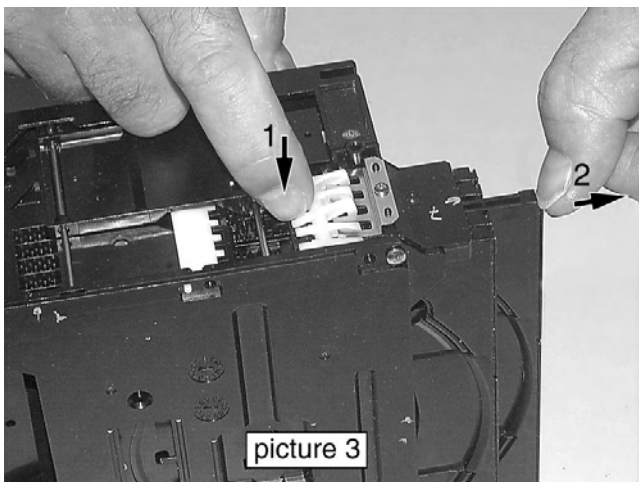
picture 1

To open tray 1, 2 and 3 move lever (pos 29) backwards (e.g. with a screwdriver - see picture 2) to its endposition.



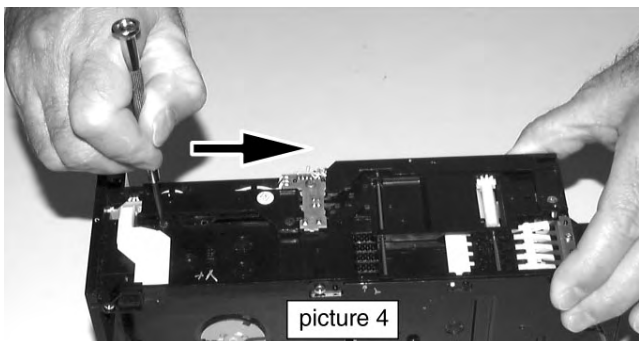
picture 2

Release the locking mechanism and pull out the tray (see picture 3).



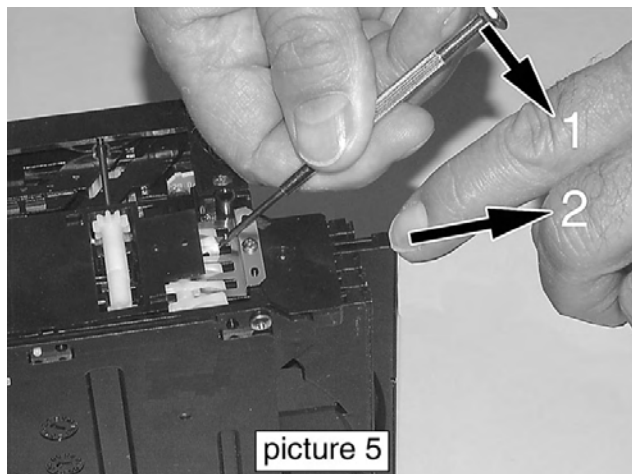
picture 3

To open tray 4 and 5 move lever (pos 29) forward to its endposition (see picture 4).



picture 4

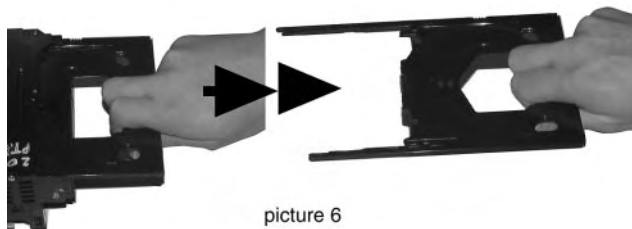
Release snap as shown in picture 5 and pull tray out.



picture 5

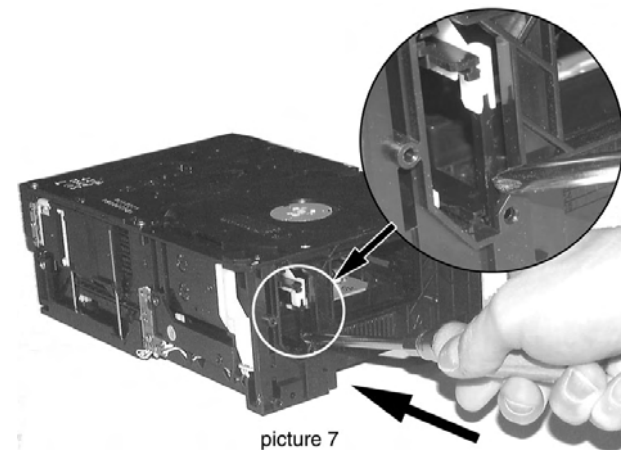
To remove a CD from Play Position perform following steps:

1. Open tray 1 as described before.
2. Tear the tray out with speed (see picture 6). The tray can be inserted afterwards without any alignment.



picture 6

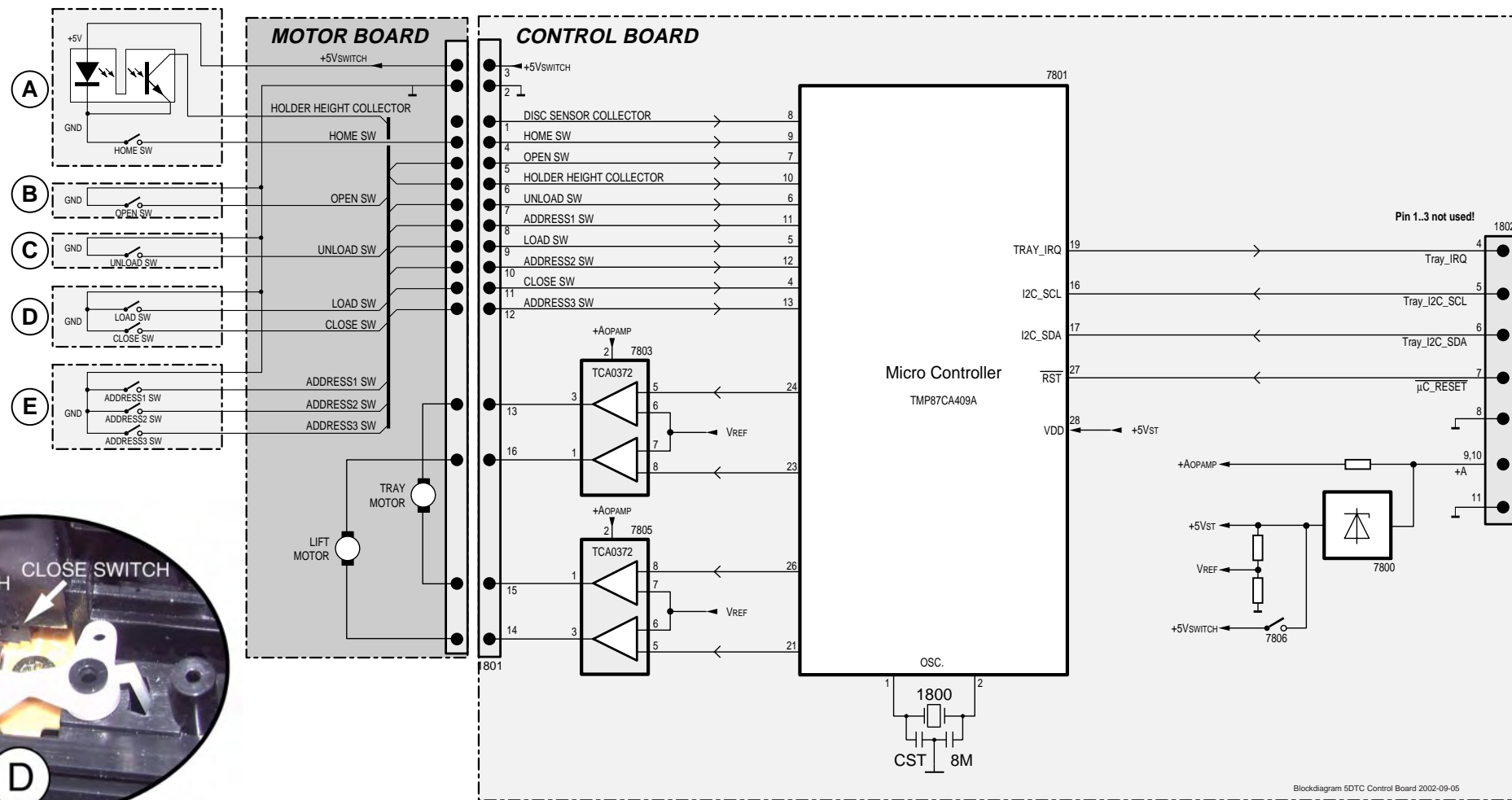
3. Move lever (pos 29) forward to its endposition (see picture 4).
4. Push lever (pos 31) forward (see picture 7).



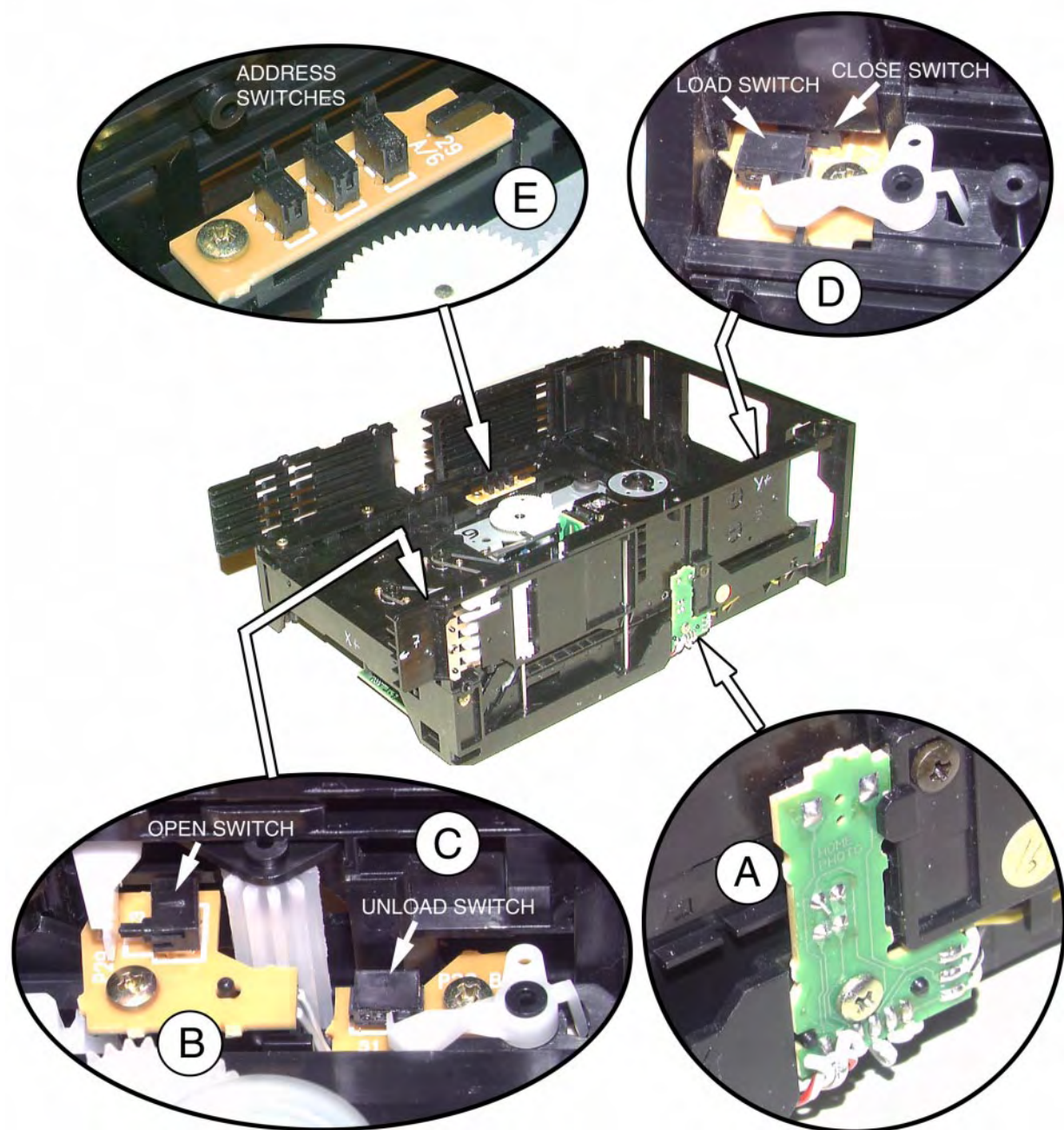
picture 7

5. Remove CD.

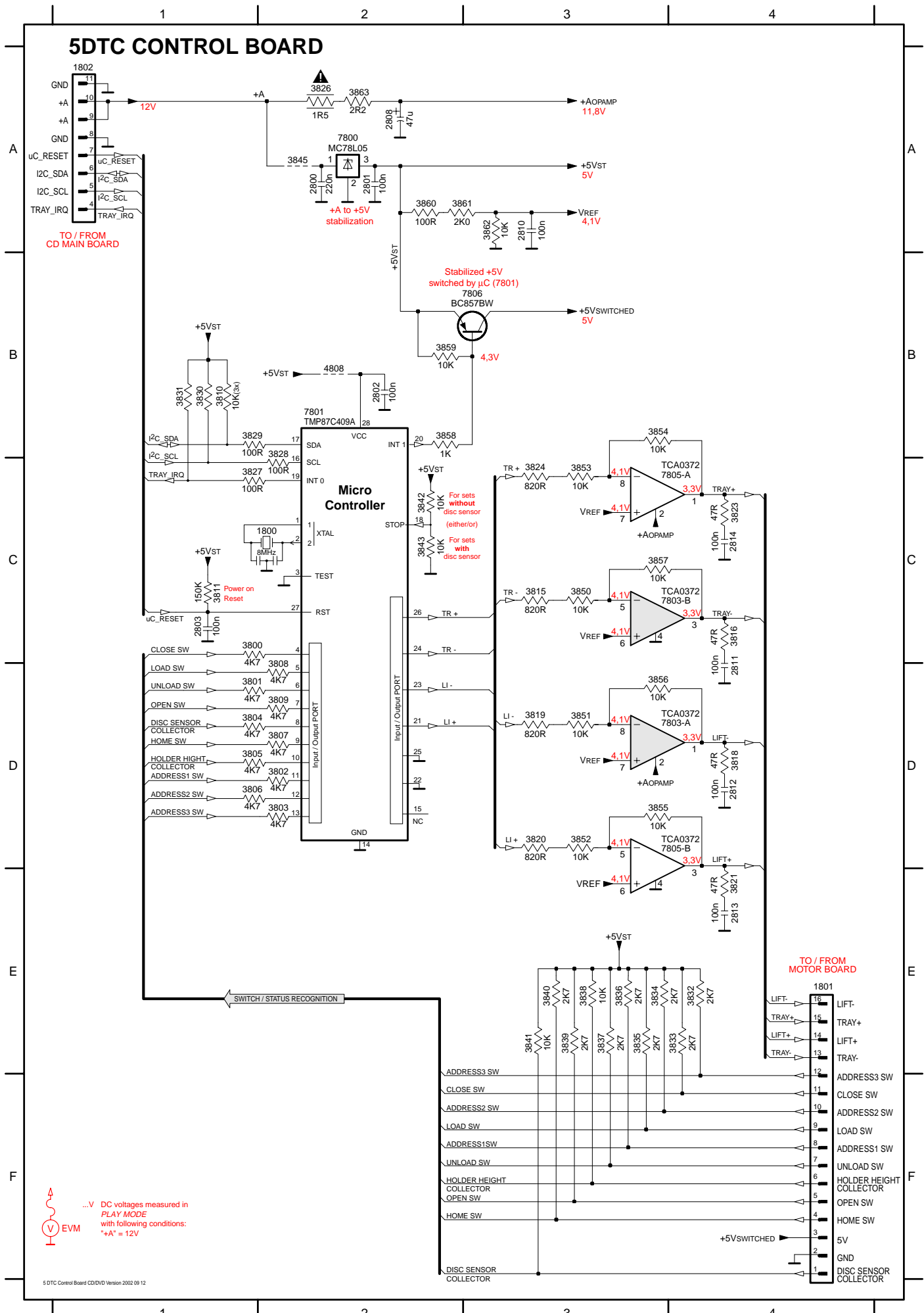
### Blockdiagram



### Location of switches





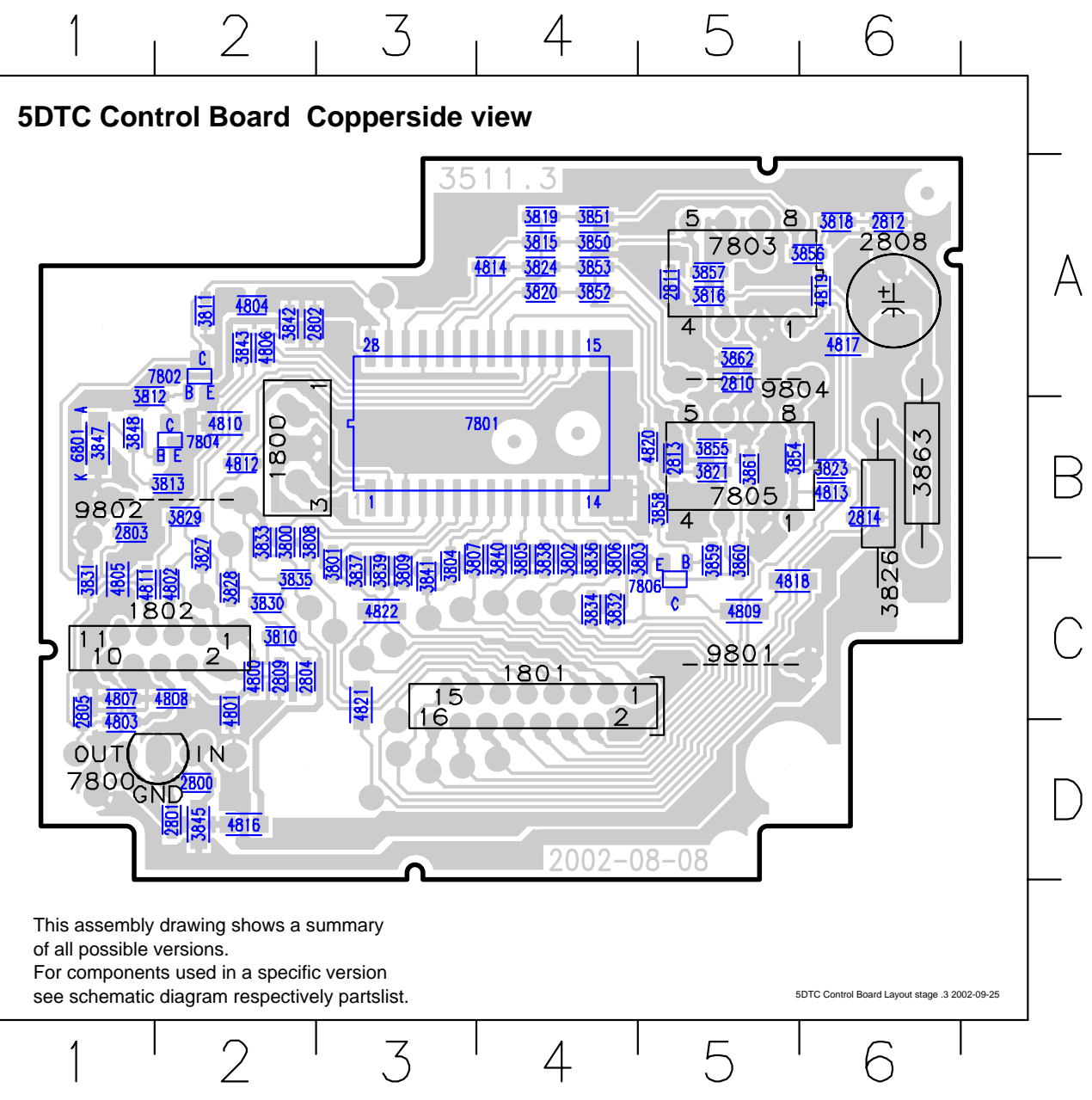


**MAPPING FOR CIRCUIT DIAGRAM**

1800	C2	2810	A3	3804	D1	3811	C1	3824	C3	3833	E4	3841	E3	3854	B3	3862	A3	7805-B	D3
1801	E4	2811	D4	3805	D1	3815	C3	3826	A2	3834	E3	3842	C2	3855	D3	3863	A2	7806	B3
1802	A1	2812	D4	3806	D1	3816	C4	3827	C1	3835	E3	3843	C2	3856	D3	4808	B2		
2800	A2	2813	E4	3807	D2	3818	D4	3828	C2	3836	E3	3845	A2	3857	C3	7800	A2		
2801	A2	2814	C4	3808	D1	3819	D3	3829	B1	3837	E3	3850	C3	3858	B2	7801	B2		
2802	B2	3800	C1	3808	D2	3820	D3	3830	B1	3838	E3	3851	D3	3859	B3	7803-A	D3		
2803	C1	3802	D2	3809	D2	3821	E4	3831	B1	3839	E3	3852	D3	3860	A2	7803-B	C3		
2808	A2	3803	D2	3810	B1	3823	C4	3832	E4	3840	E3	3853	C3	3861	A2	7805-A	C3		

**MAPPING FOR COMPONENT LAYOUT**

1800	B2	2810	A5	3806	C4	3819	A4	3832	C4	3843	A2	3857	A5	4804	A2	4816	D2	7803	A5
1801	C4	2811	A5	3807	C3	3820	A4	3833	B2	3845	D2	3858	B5	4805	C1	4817	A6	7804	B2
1802	C2	2812	A6	3808	B2	3821	B5	3834	C4	3847	B1	3859	C5	4806	A2	4818	C5	7806	C5
2800	D2	2813	B5	3809	C3	3823	B6	3835	C2	3848	B1	3860	C5	4807	C1	4819	A6	9801	C5
2801	D2	2814	B6	3810	C2	3824	A4	3836	C4	3850	A4	3861	B5	4808	C2	4820	B5	9802	B2
2802	A2	3800	B2	3811	A2	3826	B6	3837	C3	3851	A4	3862	A5	4809	C5	4821	C3	9804	A5
2803	B1	3801	C3	3812	A1	3827	B2	3838	C4	3852	A4	3863	B6	4810	B2	4822	C3		
2804	C2	3802	C4	3813	B2	3828	C2	3839	C3	3853	A4	4800	C2	4811	C1	6801	B1		
2805	C1	3803	C4	3815	A4	3829	B2	3840	C4	3854	B5	4801	C2	4812	B2	7800	D2		
2808	A6	3804	C3	3816	A5	3830	C2	3841	C3	3855	B5	4802	C2	4813	B6	7801	B4		
2809	C2	3805	C4	3818	A6	3831	C1	3842	A2	3856	A6	4803	D1	4814	A4	7802	A2		

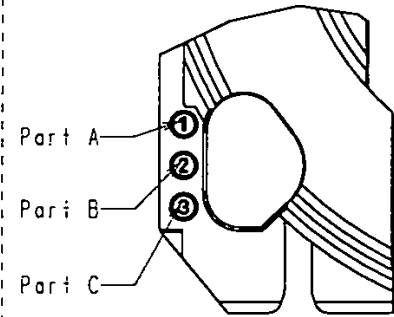


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

Exploded view 5DTC mechanic - for orientation only

Sketch-1

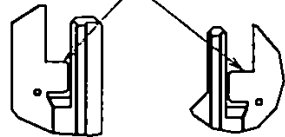
TRAY(SUB)	3	63	84	85	86
TRAY No.	TRAY 1	TRAY 2	TRAY 3	TRAY 4	TRAY 5
Part A	1	HOLE	1	HOLE	1
Part B	2	2	HOLE	HOLE	2
Part C	3	3	3	3	HOLE



Sketch-2

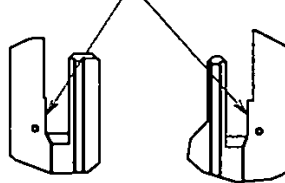
TRAY(MAIN)

There are ribs



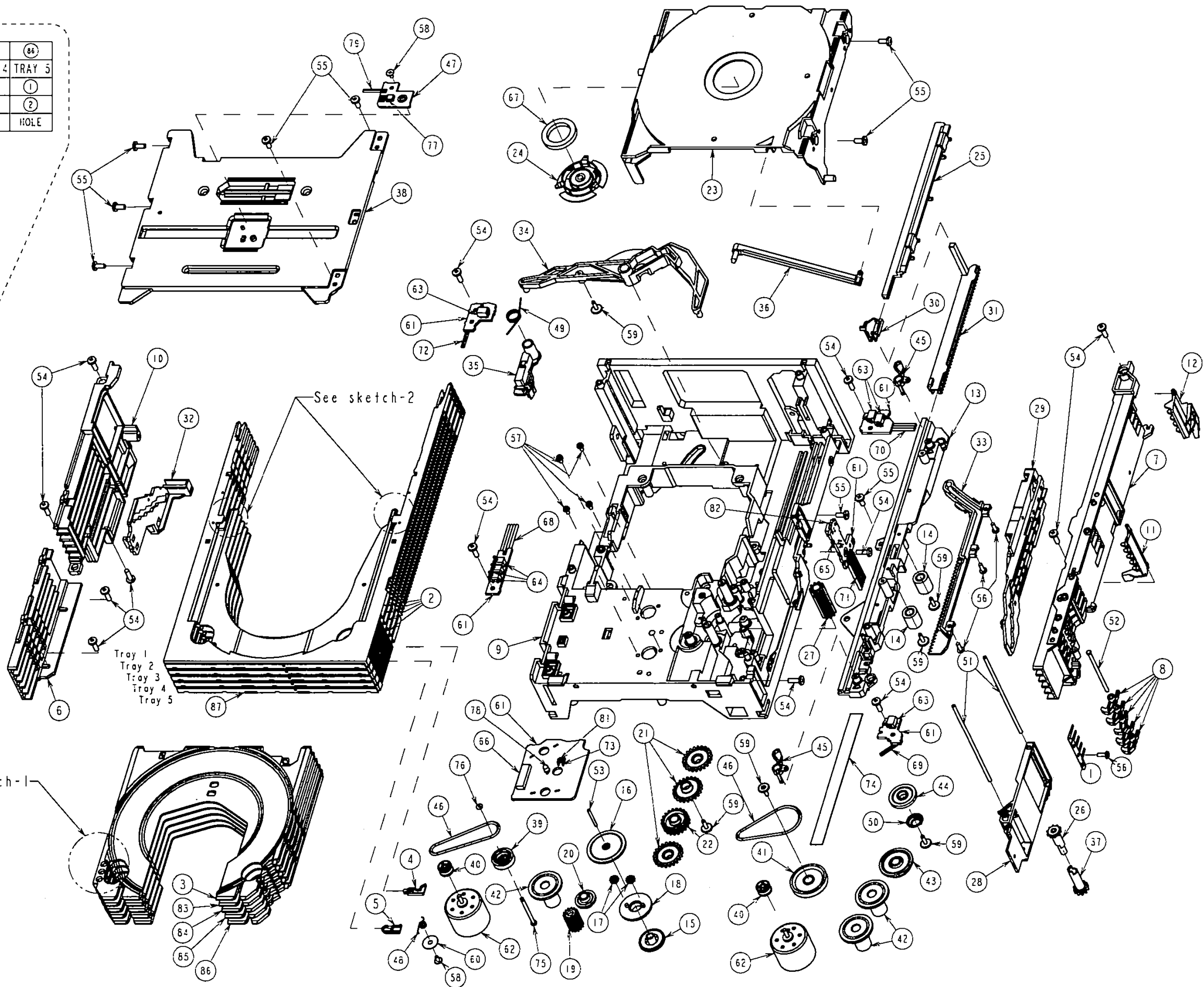
2 TRAY 1~4

With out ribs

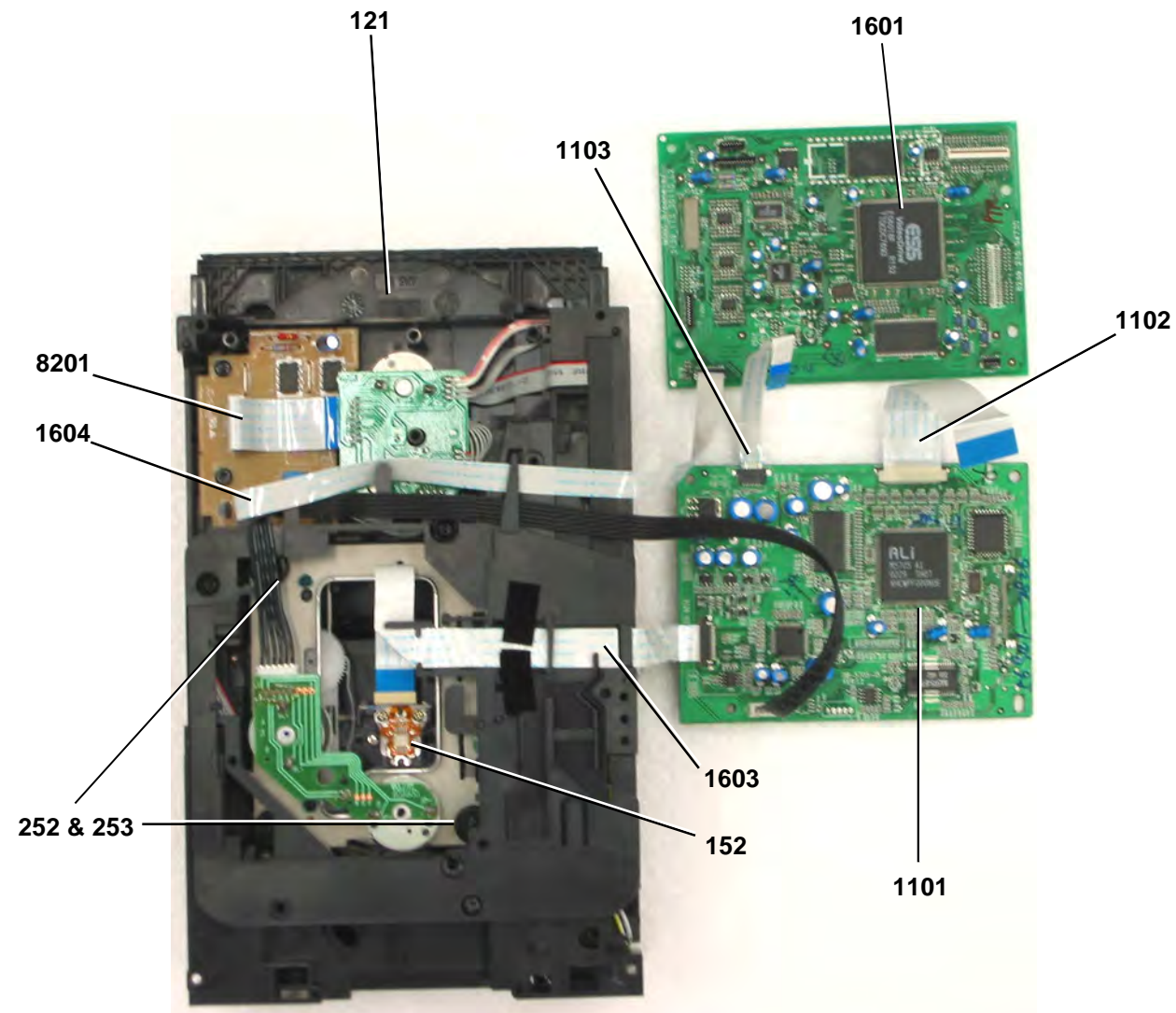


87 TRAY 5

See sketch-1



# DVD MODULE COMPONENTS



## DVD MODULE PARTS LIST

121	3103 308 54710	5DTC Mechanism w/o Electronics
152	3139 119 00311	DVD Mechanism Sanyo-DV33SS
252	3139 113 27501	Damper-Rubber (50 Degrees)
253	3139 113 27501	Damper-Rubber (50 Degrees)
1101	3139 118 56941	Mono FE (Front End) PCB Assembly CD222
1102	3139 111 02151	FFC Cable 40P 10cm BD
1103	3139 111 02141	FFC Cable 7P 10cm BD
1601	3139 118 56481	Mono BE (Back End) PCB Assembly CD222
1603	3139 111 01671	FFC Cable 24P 21cm AD
1604	3139 110 35620	FFC Cable 8P 25cm BD
8021	3103 308 93110	FFC Cable 16P 6cm AD

**Notes:**

For Mono FE and Mono BE pc board assembly electrical parts please refer to Chapter 11 and 12.

Note: Only the parts mentioned in this list are normal service spare parts.

## ELECTRICAL PARTS LIST - CONTROL BOARD

### MISCELLANEOUS

1800	4822 242 72066	Ceram Filter 8MHz
1801	2422 025 17065	FFC Connector 16Pin Vert.
1802	2422 025 17788	FFC Connector 8Pin Vert.

### CAPACITORS

2800	4822 126 13879	220nF +80/-20% 16V
2801	2238 586 59812	100nF 10% 50V
2802	2238 586 59812	100nF 10% 50V
2803	2238 586 59812	100nF 10% 50V
2808	4822 124 40433	47uF 20% 25V
2810	3198 017 34730	47nF 10% 16V
2811	2238 586 59812	100nF 10% 50V
2812	2238 586 59812	100nF 10% 50V
2813	2238 586 59812	100nF 10% 50V
2814	2238 586 59812	100nF 10% 50V

### RESISTORS

3800	4822 051 30472	4k7 5% 0,062W
3801	4822 051 30472	4k7 5% 0,062W
3802	4822 051 30472	4k7 5% 0,062W
3803	4822 051 30472	4k7 5% 0,062W
3804	4822 051 30472	4k7 5% 0,062W
3805	4822 051 30472	4k7 5% 0,062W
3806	4822 051 30472	4k7 5% 0,062W
3807	4822 051 30472	4k7 5% 0,062W
3808	4822 051 30472	4k7 5% 0,062W
3809	4822 051 30472	4k7 5% 0,062W
3810	4822 051 30103	10k 5% 0,062W
3811	4822 051 30154	150k 5% 0,062W
3815	5322 117 13057	820R 1% 0,063W
3816	4822 051 30479	47R 5% 0,062W
3818	4822 051 30479	47R 5% 0,062W
3819	5322 117 13057	820R 1% 0,063W
3820	5322 117 13057	820R 1% 0,063W
3821	4822 051 30479	47R 5% 0,062W
3823	4822 051 30479	47R 5% 0,062W
3824	5322 117 13057	820R 1% 0,063W
3826	4822 052 10228	2R2 5% 0,33W
3827	4822 051 30101	100R 5% 0,062W
3828	4822 051 30101	100R 5% 0,062W
3829	4822 051 30101	100R 5% 0,062W
3830	4822 051 30103	10k 5% 0,062W
3831	4822 051 30103	10k 5% 0,062W
3832	4822 051 30272	2k7 5% 0,062W
3833	4822 051 30272	2k7 5% 0,062W
3834	4822 051 30272	2k7 5% 0,062W
3835	4822 051 30272	2k7 5% 0,062W
3836	4822 051 30272	2k7 5% 0,062W
3837	4822 051 30272	2k7 5% 0,062W
3838	4822 051 30103	10k 5% 0,062W
3839	4822 051 30272	2k7 5% 0,062W
3840	4822 051 30272	2k7 5% 0,062W

3841	4822 051 30103	10k 5% 0,062W
3842	4822 051 30103	10k 5% 0,062W
3845	4822 051 20159	15R 5% 0,1W
3850	4822 117 12706	10k 1% 0,063W
3851	4822 117 12706	10k 1% 0,063W
3852	4822 117 12706	10k 1% 0,063W
3853	4822 117 12706	10k 1% 0,063W
3854	4822 117 12706	10k 1% 0,063W
3855	4822 117 12706	10k 1% 0,063W
3856	4822 117 12706	10k 1% 0,063W
3857	4822 117 12706	10k 1% 0,063W
3858	4822 051 30102	1k 5% 0,062W
3859	4822 051 30103	10k 5% 0,062W
3860	5322 117 13017	100R 1% 0,063W
3861	2322 704 62002	2k 1% 0,063W
3862	4822 117 12706	10k 1% 0,063W
3863	4822 053 10228	2R2 5% 1W
4800	4822 051 30008	OR Jumper 0603
4802	4822 051 30008	OR Jumper 0603
4803	4822 051 30008	OR Jumper 0603
4804	4822 051 30008	OR Jumper 0603
4805	4822 051 20008	OR Jumper 0805
4806	4822 051 30008	OR Jumper 0603
4807	4822 051 30008	OR Jumper 0603
4808	4822 051 30008	OR Jumper 0603
4809	4822 051 20008	OR Jumper 0805
4810	4822 051 20008	OR Jumper 0805
4811	4822 051 30008	OR Jumper 0603
4812	4822 051 30008	OR Jumper 0603
4813	4822 051 30008	OR Jumper 0603
4814	4822 051 30008	OR Jumper 0603
4816	4822 051 20008	OR Jumper 0805
4817	4822 051 20008	OR Jumper 0805
4818	4822 051 20008	OR Jumper 0805
4819	4822 051 30008	OR Jumper 0603
4820	4822 051 30008	OR Jumper 0603
4821	4822 051 20008	OR Jumper 0805
4822	4822 051 20008	OR Jumper 0805

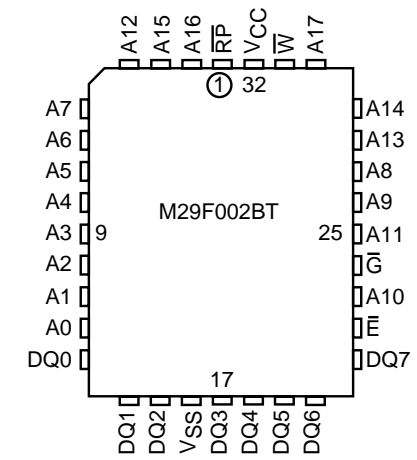
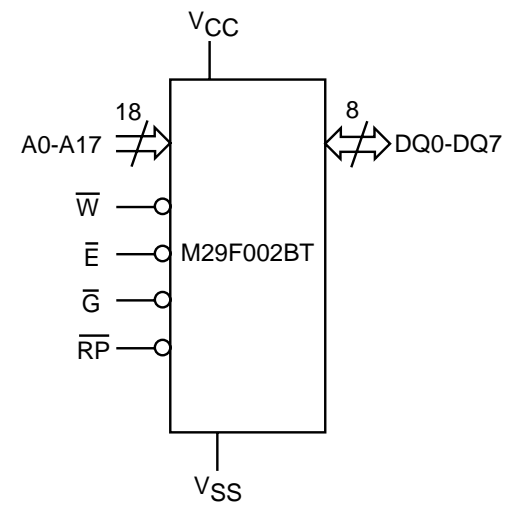
### TRANSISTORS & INTEGRATED CIRCUITS

7800	4822 209 72042	MC78L05ACP, Stabilizer
7801	9322 150 41668	TMP87P809M Microcontroller
7803	4822 209 62059	TCA0372DP1, 2-Fold Op-Amp.
7805	4822 209 62059	TCA0372DP1, 2-Fold Op-Amp.
7806	3198 010 42320	BC857BW

Note: Only the parts mentioned in this list are normal service spare parts.



**M29F002BT**



**Function Description**

A0-A17	Address Inputs
DQ0-DQ7	Data Inputs/Outputs
$\bar{E}$	Chip Enable
$\bar{G}$	Output Enable
$\bar{W}$	Write Enable
$\bar{RP}$	M29F002BT, M29F002BB: Reset/Block Temporary Unprotect  M29F002BNT, M29F002BNB: Not Connected Internally
V <sub>CC</sub>	Supply Voltage
V <sub>SS</sub>	Ground

# MONO-FE BOARD

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## M5705 (Ali) Features

### Data Separator

- Built-in data slicer and data PLL for data recovery from RF signal.
- Supports digital/analog slice level adjustment.
- Built-in auto calibration function.
- Built-in auto wire range control function.

### DVD-DSP

- Built-in synchronous pattern/ID detection /protection/separation.
- Built-in EFM+ (8 to 16) demodulation circuit.
- Built-in high performance RSPC ECC circuit.
- Supports up to 6X DVD-ROM system with ECC correcting "on the fly".
- Built-in descrambler/EDC circuit.

### CD-DSP

- Synchronous pattern detection, protection and interpolation.
- Built-in EFM demodulation circuit, subcode demodulation circuit.
- Dual C1 correction and quadruple C2 correction.
- Subcode Q data can output with audio data synchronously.

### Digital Servo

- Built-in A/D and D/A converters for servo control signals processing.
- Built-in digital controller for focus, tracking servo control of CD/DVD systems.
- Built-in CLV/CAV auxiliary function for spindle servo control.
- Built-in "Seek Sensor" auxiliary circuit for seek control.
- Automatic adjustment of focus servo and tracking servo, for loop gain, offset and balance.
- Built-in RF gain automatic adjustment function.
- Built-in AFC circuit and APC circuit for CLV and AFC circuit for CAV spindle servo of CD/DVD systems.
- Built-in defect and shock protection function.

### DRAM Interface

- Supports up to 16 Mb EDO DRAM and SDRAM.
- Separate buffer address pointers and automatic address calculation that save firmware effort.
- Read-ahead cache scheme for multimedia isochronous transfer.
- Protection logic preventing uncorrected sectors being released to the host.

### Target Search

- Built-in target sector searching circuit for auto-searching the target sector.
- Automatic data buffering after the target sector has been located.

### C3 ECC/EDC

- Programmable Reed-Solomon Product Code (RSPC) that allows different error correction schemes for CD-ROM.
- Built-in On-chip EDC function.
- Support up to 32X CD-ROM system with ECC correcting "on the fly".

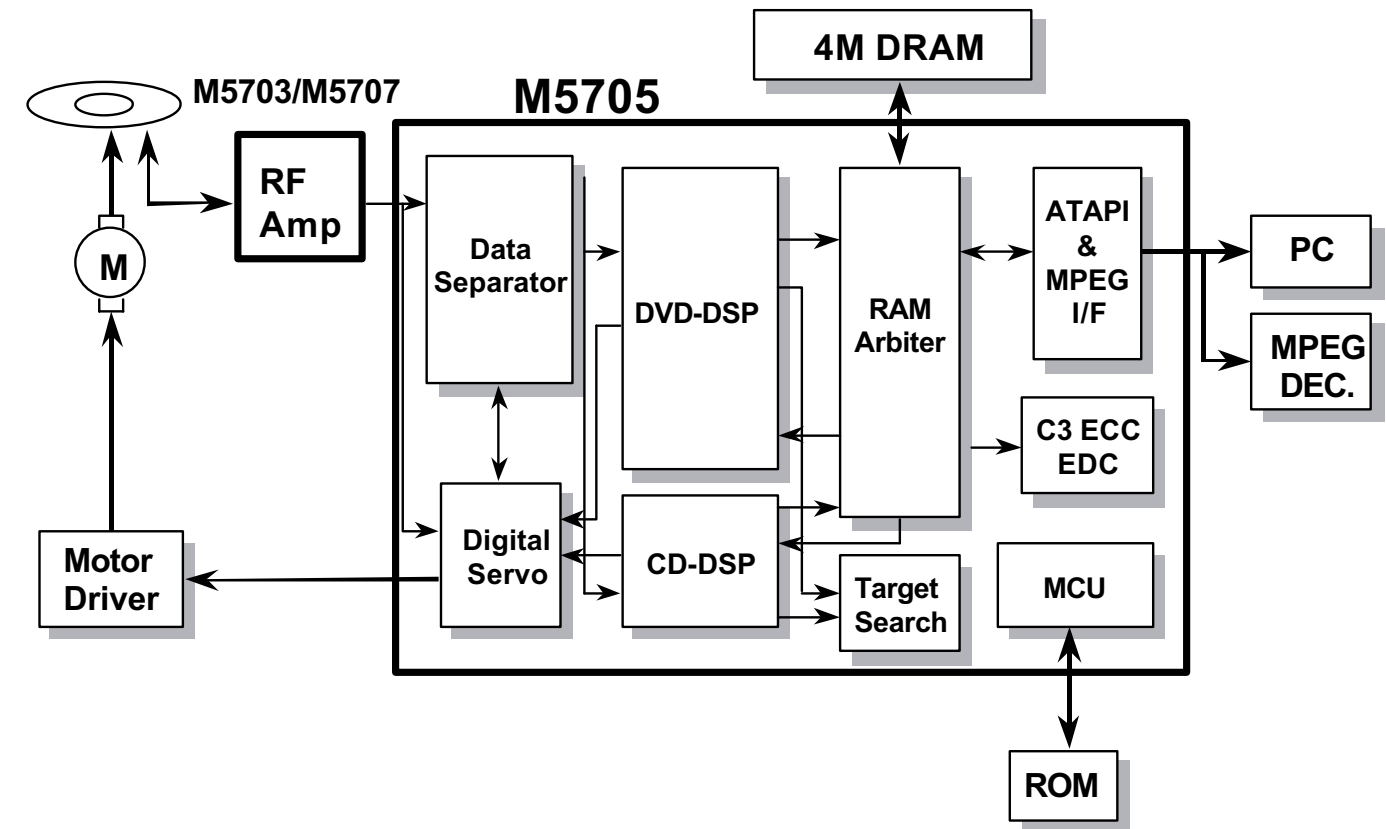
### Host Interface

- Supports ATA PIO mode 4 timing
- Supports Multiword DMA mode 2 timing
- Compliant with SFF-8020(ATAPI) 2.5, ATA 3(Overlapping feature), and SFF-8090 (ATAPI for DVD) standard
- High current drivers with slew rate control for direct connecting to the ATA bus and noise immunity.
- Automatic Read Control Circuit for host data transfer.
- Automatic wake up from power down on host reset or command write
- Automatic sequence for packet command receiving and Automatic updating of the host task file registers
- Supports ATAPI write command that can let user update firmware from PC.
- Built-in authentication circuit for copy protection.
- Multiplexed MPEG decoder interface (local bus).

### Microcontroller Interface

- Embedded microcontroller compatible with Intel 8032 command set
- Supports Intel 8032 series MCUs
- Supports Intel 8032 series MCUs and Hitachi H8 series MCUs.
- Supports automatically download firmware function directly from ATAPI interface to flash memory
- Supports "on-system" upgrade flash memory function from CD-R discs or ATAPI interface
- High speed register (buffer RAM) access to meet the requirement of high performance system
- Supports Direct mapped access to the buffer RAM using ready bit handshaking

## M5705 (Ali) Application



## M5705 Pins Descriptions

Pin Name	Pin No.	Type	Description
<b>Servo Data Slicer Interface Pins</b>			
XSRFIN	2	I/A	Analog RF signal input after passing through the equalizer.
XSIPIN	3	I/A	Inverting input pin of data slicer.
XSDSSLV	5	O/A	Slice level output pin.
XSRSLINT	6	I/A	Reference current setting pin for analog data slicer.
<b>Servo DAC Interface Pins</b>			
XSAWRC	8	O/A	Output for enlarge VCO range. Analog output from DAC buffer.
XSRFGC	9	O/A	RF gain control output.
XSEFGC	10	O/A	E,F gain control output.
XSFOCUS	11	O/A	Output voltage level for focusing buffer IC.
XSTRACK	12	O/A	Output voltage level for tracking buffer IC.
XSSLEG	13	O/A	Output voltage level for sledge buffer IC.
XSMOTOR	15	O/A	Output voltage level for spindle motor buffer IC.
<b>Servo Comparator Interface Pins</b>			
XSRFRPLP	17	I/A	High bandwidth low pass filter input for RFRP.
XSTELP	18	I/A	High bandwidth low pass filter input for TE.
<b>Servo ADC Interface Pins</b>			
XSVREF2	19	I/A	2.1V reference voltage input.
XSRFRP	20	I/A	RF ripple/envelope signal input.
XSTEXI	21	I/A	Tracking zero crossing input signal.
XSTEI	23	I/A	Tracking error input signal.
XSFEI	24	I/A	Focus error input signal.
XSCEI	25	I/A	1. Center error input signal. 2. Photo Interrupt Input.
XSSBAD	27	I/A	Sub-beam addition signal input.
<b>Servo PLL Interface Pins</b>			
XSPDIREF	166	I/A	Phase detector reference current generator. Connect a resistor between this pin and ground to set reference current.
XSFIREF	167	I/A	Frequency detector reference current generator. Connect a resistor between this pin and ground to set reference current.
XSPLLFTR2	169	I/A	Data PLL loop filter pin #2.
XSFDO	171	O/A	Output node of frequency detector charge pump circuit.
XSFTROPI	172	I/A	Input node of loop filter OP circuit.
XSVR_PLL	173	I/A	PLL reference voltage input.
XSPDOFTR2	174	I/A	Phase detector filter pin #1.
XSVREFO	175	O/A	Reference voltage output.
XSAWRCVCO	176	I/A	Auto Wide Range Control VCO input pin. For enlarge VCO range in CAV mode.
<b>Servo Control Interface Pins</b>			
XSDFACT	29	I	Defect detection signal input.
XSCSJ	30	O	Chip select signal for accessing control registers.
XSCLK	31	O	Clock output for accessing control registers.
XSDATA	32	I/O	Registers data input/output pin.
XSLDC	33	O	Laser diode on/off control output for both CD/DVD.
XSFGIN	34	I	Motor Hall sensor input.
XSSPDON	35	O	Spindle motor on output.
XSFLAG[3:0]	36,37, 38,39	O	These pins are used to monitor some status of servo control block.

Pin Name	Pin No.	Type	Description
<b>Microcontroller Interface Pins</b>			
XGPIO[2:0]	48,51,52	I/O	1. These pins are used as general purpose I/O bus. 2. When use internal microcontroller, XGPIO[2] can be used as programmable I/O port 3.6.
XMP1_7	40	I/O	Internal microcontroller programmable I/O port 1.7.
XMP1_6	41	I/O	Internal microcontroller programmable I/O port 1.6.
XMP1_5	43	I/O	<b>This pin is now changed to be NC.</b>
XMP1_4	44	I/O	Internal microcontroller programmable I/O port 1.4.
XMP1_3	45	I/O	Internal microcontroller programmable I/O port 1.3.
XMP1_2	47	I/O	Internal microcontroller programmable I/O port 1.2.
XMP1_1	49	I/O	Internal microcontroller programmable I/O port 1.1.
XMP1_0	57	I/O	Internal microcontroller programmable I/O port 1.0. This pin is default used as the A16 (microcontroller address line 16).
XMFSCSJ	46	I/O	Output chip select connected to external flash ROM chip enable pin.
XMPSENJ	54	I/O	Output program store enable connected to external ROM PSENJ pin.
XMALE	56	I/O	This signal is used as address latch signal in address/data mux mode.
XMCSJ	70	I/O	1. This signal must be asserted for all microcontroller accesses to the registers of this chip. 2. When use internal microcontroller, this signal can be used as programmable I/O port 3.1.
XMRDJ	71	I/O	1. This signal is used as the Read Strobe signal. 2. When use internal microcontroller, this signal can be used as programmable I/O port 3.0.
XMWRJ	72	I/O	This signal is used as the Write Strobe signal.
XMINT1J	73	I/O	1. This signal is an interrupt line to the microcontroller. 2. When use internal microcontroller, this signal can be used as programmable I/O port 3.7.
XMA[15:0]	91, 90, 89, 87, 74, 75, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86	I/O	These pins are used as address bus.
XMD[7:0]	69, 68, 67, 66, 65, 64, 63, 62	I/O	These pins are used as data bus for the 16-bit processor mode, or the address/data mux bus for the 8-bit processor mode.
<b>Miscellaneous Pins</b>			
XTPLCK	163	I/O	<b>PLCK test pin.</b>
XTSLRF	164	I/O	<b>SLRF test pin.</b>
XOSC1	59	I	<b>Crystal input/ System clock.</b> The input frequency from outside crystal or oscillator is 33.8688Mhz.
XOSC2	60	O	<b>Crystal output.</b>
XCRSTJ	53	I	<b>Chip Reset.</b> An asserted lowinput generates a component reset that stops all operations within the chip and deasserts all output signals. All input/output signals are set to input.

## M5705 Pins Descriptions

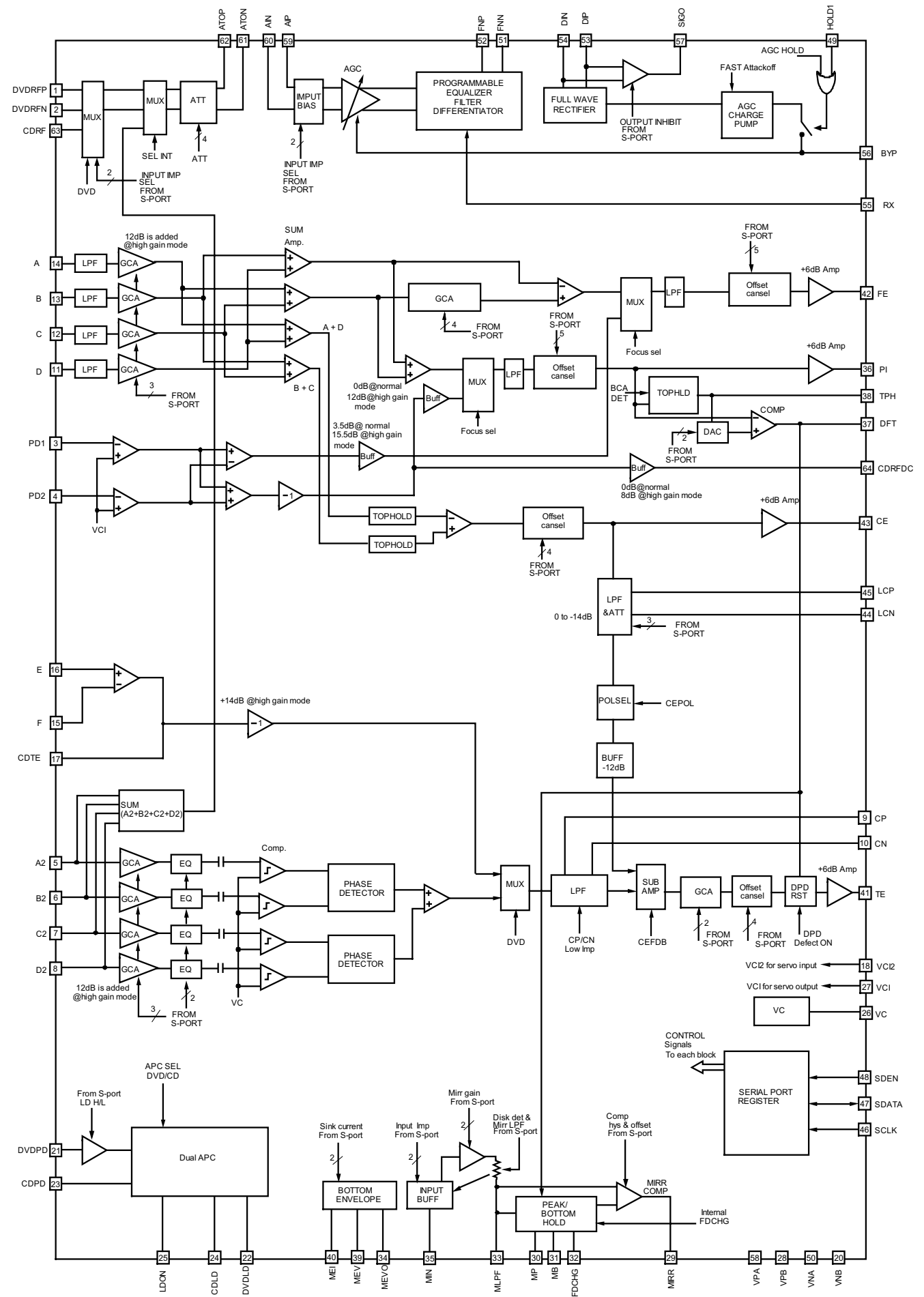
Pin Name	Pin No.	Type	Description
<b>Host Interface Pins</b>			
XHCS1J	94	I	This pin is used to select the command block task file registers.
XHCS3J	93	I	This pin is used to select the control block task file registers.
XHIORJ	103	I	Asserted by the host during a host I/O read operation.
XHIOWJ	104	I	Asserted by the host during a host I/O write operation.
XHDRQ	105	O	<b>1. DMA request.</b> This pin is configured as the DMA request signal, and is used during DMA transfer between the host and the controller. This pin is tri-stated when DMA transfers are not enabled. <b>2. MPEG acknowledge.</b> This pin is used as the ACKJ signal when MPEG interface mode is selected.
XHDACKJ	101	I	<b>1. DMA acknowledge.</b> This pin is configured as DACKJ, and is used as the DMA acknowledge signal during DMA data transfers. <b>2. MPEG request.</b> This pin is used as the REQ signal when MPEG interface mode is selected.
XHCS16J	99	O	<b>1. 16-bit data select.</b> This signal indicates that a 16-bit data transfer is active on the host data bus. This pin is open-drain tri-state output. <b>2. MPEG clock.</b> This pin is used as the CLOCK signal when MPEG interface mode is selected.
XHRSTJ	50	I	<b>Host Reset.</b> The reset of ATA bus
XHINT	100	O	<b>1. Host interrupt request.</b> This tri-state pin is the host interrupt request, and is asserted to indicate to the host that the controller needs attention. <b>2. MPEG begin.</b> This pin is used as the BEGIN signal when MPEG interface mode is selected.
XHPDIAGJ	97	I/O	This pin is used as the Passed Diagnostics signal, and may be an input or an open-drain output.
XHDASPJ	92	I/O	This pin is used as the Drive Active/ Slave Presentsignal, and is an input or an open-drain output. This pin is used for Master/Slave drive communication and/or for driving an LED.
XHIORDY	102	O	<b>1. I/O channel ready.</b> This signal is driven low to extend host transfer cycles when the controller is not ready to respond. This pin will be tri-stated when a read or write is not in progress. <b>2. MPEG error.</b> This pin is used as the ERROR signal when MPEG interface mode is selected.
XHA[2:0]	95, 98, 96	I	<b>Host address lines.</b> The host address lines A[2:0] are used to access the various host control, status, and data registers.
XHD[15:0]	106, 108, 111, 113, 116, 118, 120, 122, 123, 121, 119, 117, 114, 112, 109, 107	I/O	<b>1. Host data bus.</b> This bus is used to transfer data and status between the host and the controller. <b>2. MPEG data bus 7-0.</b> The HD[7:0] are used as the DATA[7:0] when MPEG interface mode is selected. <b>3. VCD I/F.</b> Bit3-0 are used as VCD I/F signal when VCD function is enabled. The relationship of bit3-0 and VCD I/F is as follow. HD0 → CD-DATA HD1 → CD-LRCK HD2 → CD-BCK HD3 → CD-C2PO

Pin Name	Pin No.	Type	Description
<b>RAM Interface Pins</b>			
XRSDCLK	143	O	This signal is the clock output for SDRAM.
XROEJ	147	O	This signal is used as the memory output enable for external DRAM buffers. After RSTJ is asserted, this signal will be low.
XRWEJ	142	O	This signal is asserted low when a buffer memory write operation is active.
XRRASJ	144	O	This signal is used as Row address output to external DRAM buffer. After RSTJ is asserted, this signal will be high.
XRCASJ	145	O	This signal is used as column address output to external DRAM. After RSTJ is asserted, this signal will be high.
XRA[11:0]	151, 152, 148, 149, 153, 155, 156, 157, 161, 160, 159, 158	O	<b>1. RAM address lines.</b> These are bits 11-0 for addressing the buffer memory. <b>2. Hardware setting.</b> The bits 6-0 are used as hardware setting for some functions. RA[9] : FLASH size is 64K/128K 1 : FLASH size is 64K. 0 : FLASH size is 128K. RA[8] : External CPU is 8032/H8 1 : 8032 0 : H8 RA[7] : Microcontroller programmable I/O port 1 pin control 1 : By internal microcontroller. 0 : By registers to decide input/output. RA[6] : System testpin output 1 : Normal operation. 0 : System test pin output. RA[5] : For testing purpose, don't need to set  RA[4] : IDE master/slave. 1 : Slave. 0 : Master. RA[3] : For testing purpose, don't need to set  RA[2] : For testing purpose, don't need to set  RA[1-0] : MCU Mode selection. 11 : Normal Mode (internal uP, internal address latch). 10 : Outside uP Mode (ICE Mode). 01 : Test mode for internal uP testing. 00 : Internal uP mode with external address latch.
XRD[15:0]	124, 126, 128, 131, 133, 135, 137, 140, 141, 139, 136, 134, 132, 129, 127, 125	I/O	These signals are the 8-bit parallel data lines to/from the buffer memory.

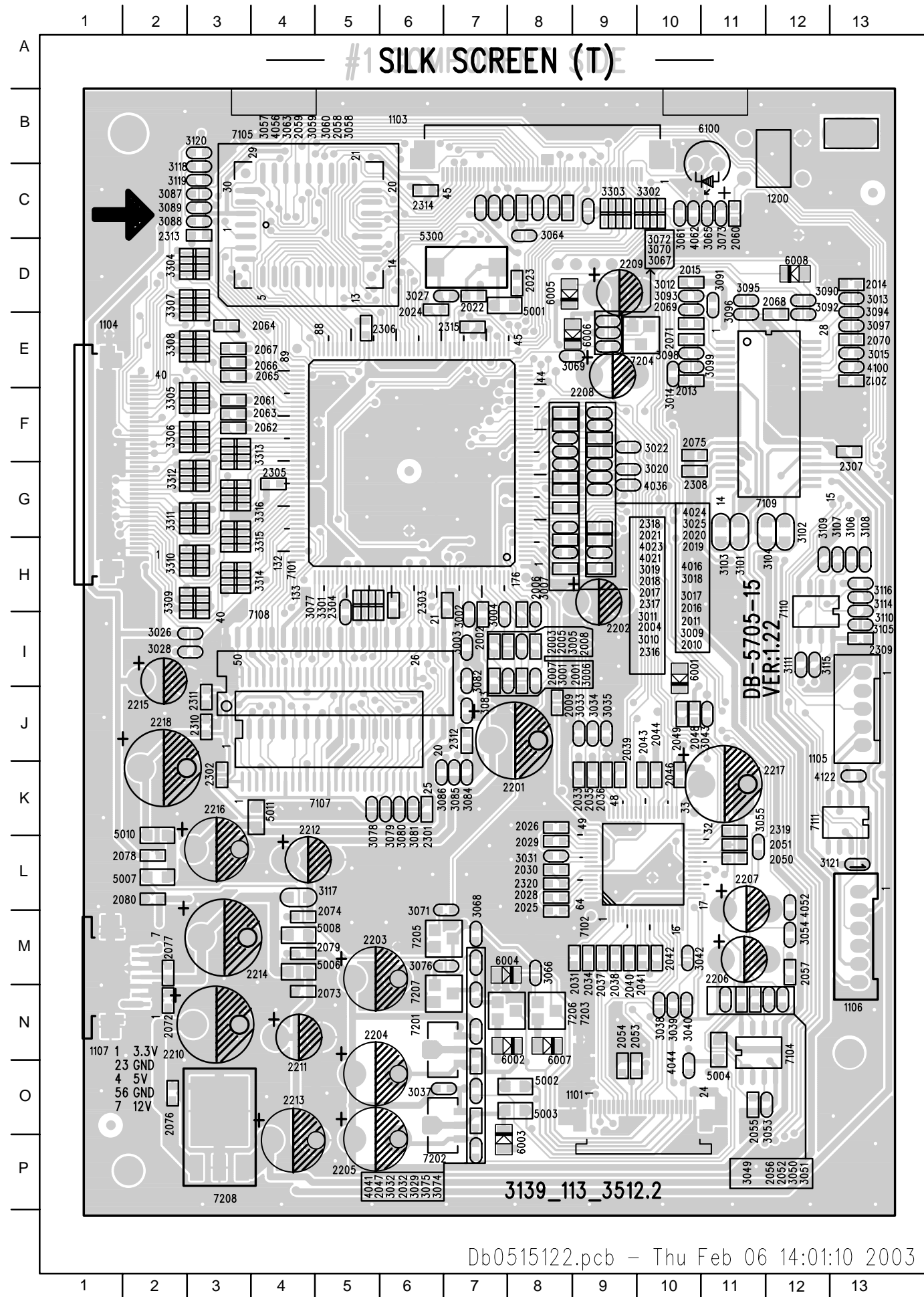
### M5705 Pins Descriptions

Pin Name	Pin No.	Description
<b>Power Pins</b>		
AVDD5_DS	4	Analog Power +5V for Data Slicer part.
AVDD5_DA	14	Analog Power +5V for DAC part.
AVDD5_AD	26	Analog Power +5V for ADC part.
AVDD5_PL	168	Analog Power +5V for Data PLL part.
VDD	7,55,58, 76,115, 146,150, 162	Power + 3.3V for digital core logic and pad.
AVSS_DS	1	Analog Ground for Data Slicer part.
AVSS_DA	16	Analog Ground for DAC part.
AVSS_AD	22	Analog Ground for ADC part.
AVSS_PL	170	Analog Ground for Data PLL part.
GND	28,42,61, 88,110, 130,138, 154,165	Digital Ground for core logic and pad.

### SP32721A Internal Block Diagram



TOP VIEW - SMD & COMPONENT LAYOUT

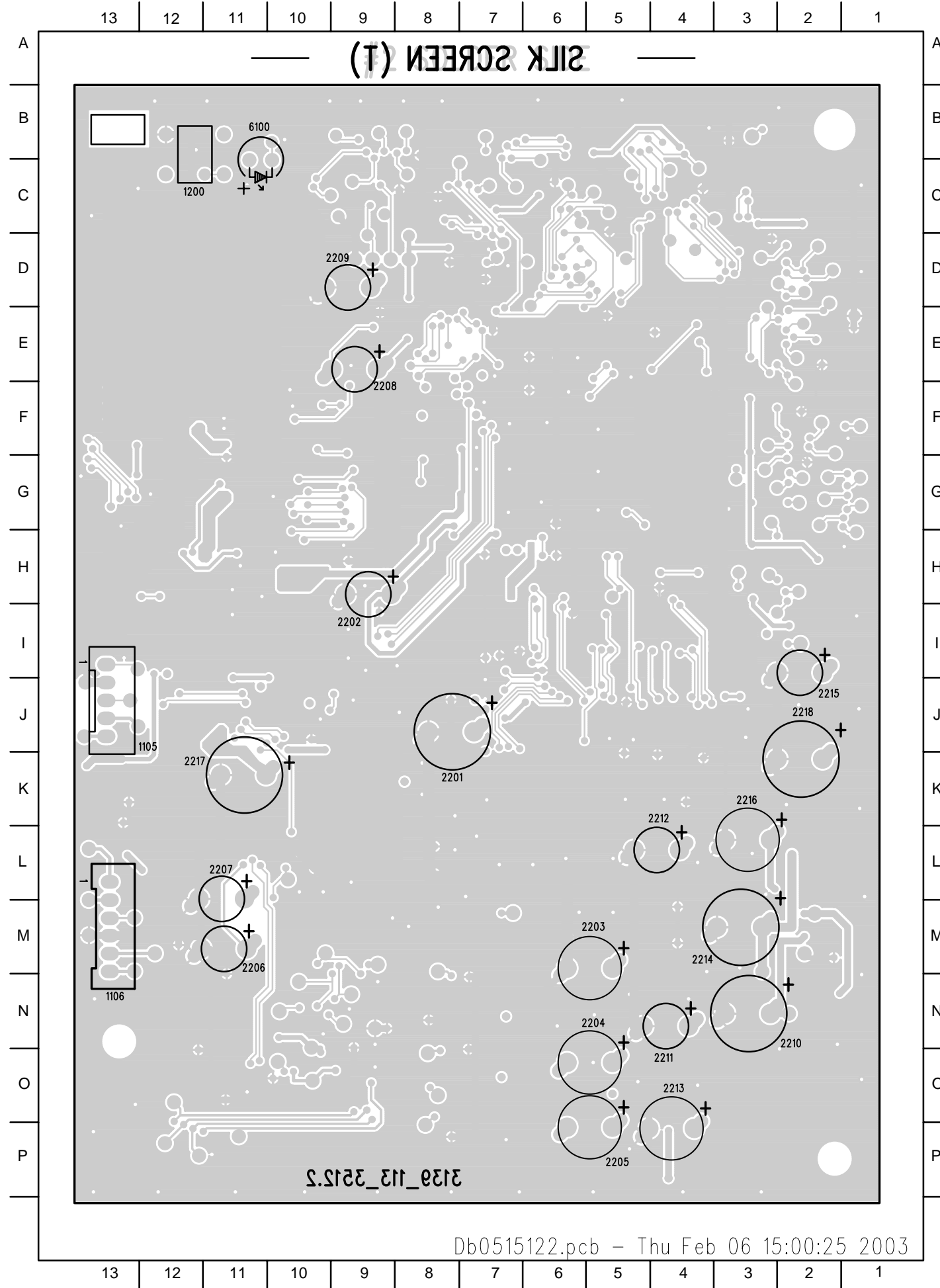


Db0515122.pcb - Thu Feb 06 14:01:10 2003

1101	O9	2310	J3	3301	H6
1102	C9	2311	I3	3302	C10
1103	B8	2312	J7	3303	C9
1104	F2	2313	C3	3304	C3
1105	I13	2314	B6	3305	E3
1106	M13	2315	D7	3306	F3
1107	M2	2316	G8	3307	D3
1200	B11	2317	G8	3308	D3
2001	I8	2318	E8	3309	H3
2002	H7	2319	K11	3310	G3
2003	I7	2320	L8	3311	G3
2004	G8	3001	I8	3312	F3
2005	I8	3002	H7	3313	F4
2006	H8	3003	I7	3314	H4
2007	I7	3004	H7	3315	G4
2008	I8	3005	I8	3316	F4
2009	I8	3006	I8	4016	F9
2010	G9	3007	H8	4021	F8
2011	G9	3009	G9	4023	F8
2012	E12	3010	G8	4024	E9
2013	E10	3011	G8	4036	F9
2014	D12	3012	D10	4041	P7
2015	C10	3013	D12	4044	N10
2016	G9	3014	E10	4052	L12
2017	F8	3015	D12	4056	B7
2018	F8	3017	F9	4062	C10
2019	F9	3018	F9	4100	E12
2020	F9	3019	F8	4122	J12
2021	F8	3020	F9	5001	D7
2022	D7	3022	F9	5002	O8
2023	D8	3025	E9	5003	O8
2024	D7	3026	H3	5004	N11
2025	L8	3027	D7	5006	M5
2026	K8	3028	I3	5007	L3
2028	L8	3029	N7	5008	M5
2029	K8	3031	K8	5010	K3
2030	L8	3032	O7	5011	K4
2031	M8	3033	J9	5300	C7
2032	N7	3034	J9	6001	I10
2033	J9	3035	J9	6002	N8
2034	M9	3037	O7	6003	O7
2035	J9	3038	N10	6004	M8
2036	J9	3039	N10	6005	D8
2037	M9	3040	N10	6006	D8
2038	M9	3042	M10	6007	N8
2039	J9	3043	J10	6008	C12
2040	M9	3049	M11	6100	B10
2041	M9	3050	M11	7101	F6
2042	M10	3051	M11	7102	L9
2043	J9	3053	O11	7104	N11
2044	J10	3054	M12	7105	C5
2046	J10	3055	K11	7107	J5
2047	O7	3057	B7	7108	I5
2048	J10	3058	C9	7109	E11
2049	J10	3059	B8	7110	H12
2050	L11	3060	B8	7111	K12
2051	K11	3061	C10	7201	N7
2052	M11	3063	B8	7202	O7
2053	N9	3064	C8	7203	N8
2054	N9	3065	C10	7204	D9
2055	O11	3066	M8	7205	M7
2056	M11	3067	D9	7206	N8
2057	M12	3068	M7	7207	M7
2058	B8	3069	E8	7208	O3
2059	B8	3070	D9		
2060	C11	3071	L7		
2061	F4	3072	D9		
2062	F4	3073	C11		
2063	F4	3074	M7		
2064	D4	3075	M7		
2065	F4	3076	M7		
2066	F4	3077	H5		
2067	D4	3078	K6		
2068	D11	3079	K6		
2069	D10	3080	K6		
2070	D12	3081	K6		
2071	D10	3082	I7		
2072	M3	3083	I7		
2073	M5	3084	J7		
2074	L5	3085	J7		
2075	F10	3086	J7		
2076	O3	3087	B3		
2077	M3	3088	C3		
2078	K2	3089	B3		
2079	M5	3090	D12		
2080	L2	3091	D10		
2201	J8	3092	D12		
2202	H9	3093	D10		
2203	M6	3094	D12		
2204	O6	3095	D11		
2205	O6	3096	D11		
2206	M11	3097	D12		
2207	L11	3098	D10		
2208	E9	3099	E10		
2209	D9	3101	G11		
2210	N3	3102	G11		
2211	N5	3103	G11		
2212	L5	3104	G11		
2213	O4	3105	H13		
2214	M4	3106	G12		
2215	I3	3107	G12		
2216	K3	3108	G13		
2217	J11	3109	G12		
2218	J3	3110	H13		
2301	K6	3111	I12		
2302	J3	3114	H13		
2303	H7	3115	I12		
2304	H6	3116	H13		
2305	F4	3117	L5		
2306	D6	3118	B3		
2307	F12	3119	B3		
2308	F10	3120	B3		
2309	H13	3121	L13		



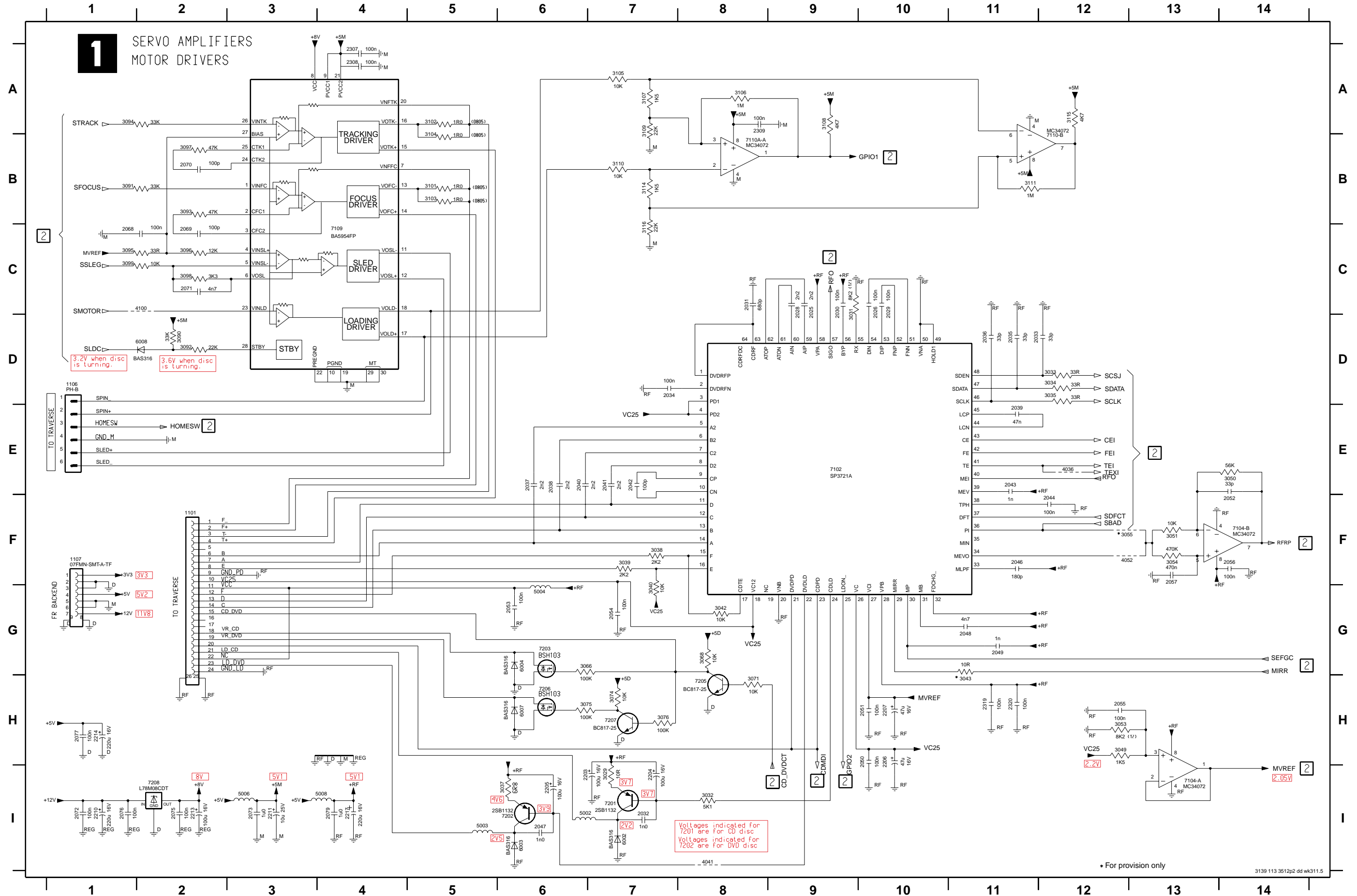
# BOTTOM VIEW - COMPONENT LAYOUT



- 1105 I13
- 1106 M13
- 1200 B11
- 2201 J8
- 2202 H9
- 2203 M6
- 2204 O6
- 2205 O6
- 2206 M11
- 2207 L11
- 2208 E9
- 2209 D9
- 2210 N3
- 2211 N5
- 2212 L5
- 2213 O4
- 2214 M4
- 2215 I3
- 2216 K3
- 2217 J11
- 2218 J3
- 6100 B10

# SERVO AMPLIFIERS & MOTOR DRIVERS CIRCUIT

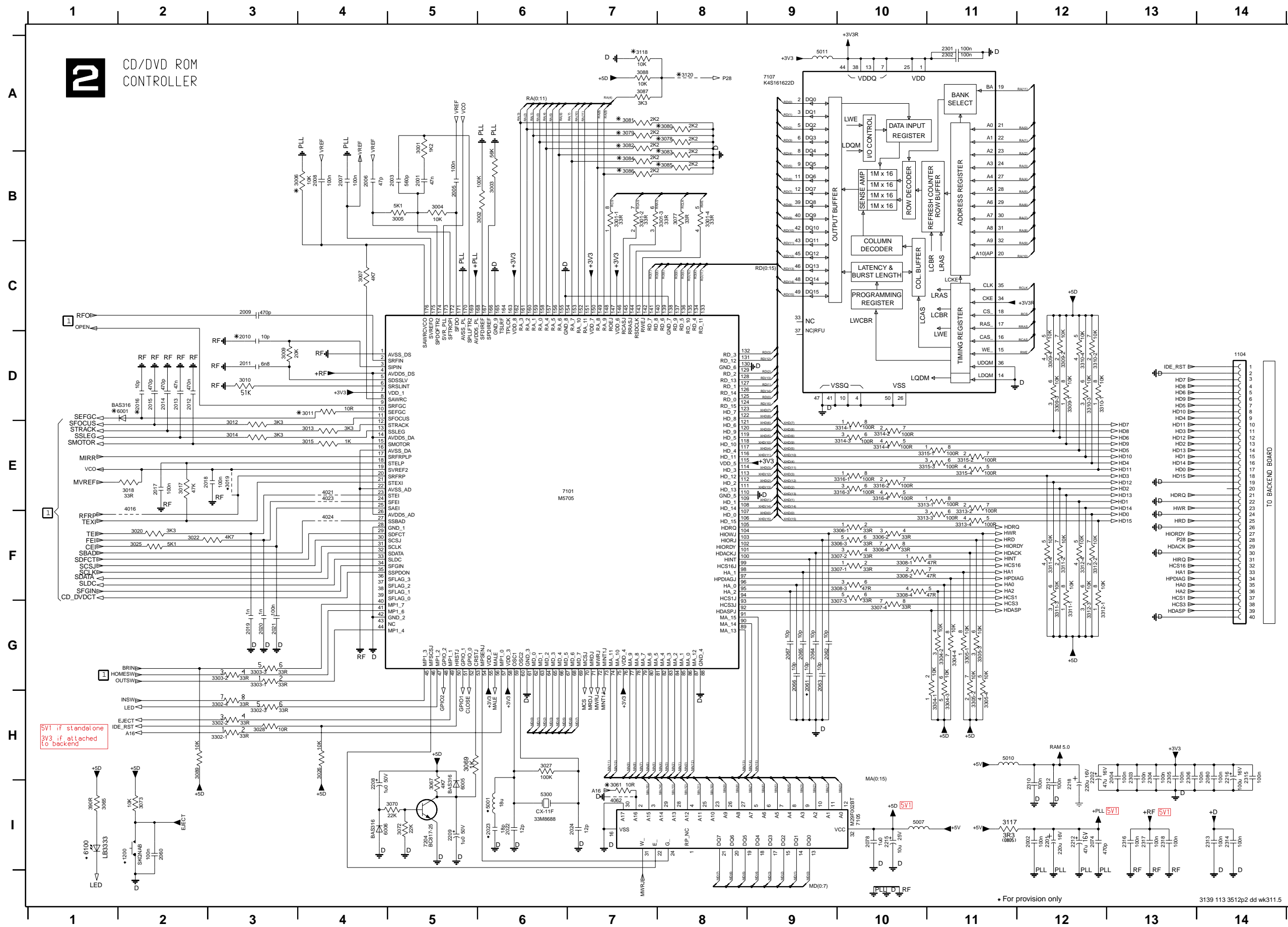
1101 F2	2029 C10	2035 D11	2041 E7	2048 G11	2054 G7	2070 B2	2077 H1	2207 H10	2307 A4	3031 D9	3038 F7	3050 E14	3068 G8	3091 B1	3097 B2	3104 B5	3110 B7	4041 I8	5006 I3	6008 D2	7201 I7	7208 I2
1106 D1	2030 C9	2036 D11	2042 E7	2049 G11	2055 H12	2071 C2	2079 I4	2210 H1	2308 A4	3032 I8	3039 F7	3051 F13	3071 H8	3092 D2	3098 C2	3105 A7	3111 B11	4052 F12	5008 I4	7102 E9	7202 I6	
1107 F1	2031 C8	2037 E6	2043 E11	2050 H10	2056 F14	2072 I1	2211 I3	2211 I3	2309 A8	3033 D12	3040 G7	3053 H12	3074 H7	3093 B2	3099 C1	3106 A8	3114 B7	4100 C2	6002 I7	7104-A I13	7203 G6	
2025 C9	2032 I7	2038 E6	2044 F12	2051 H10	2057 F13	2073 I3	2204 I7	2213 I2	2319 H11	3034 D12	3042 G8	3054 F13	3075 H6	3094 A1	3101 B5	3107 A7	3115 A12	5002 I6	6003 I6	7104-B F14	7205 H8	
2026 C10	2033 D11	2039 E11	2046 F11	2052 F14	2068 C1	2075 I2	2205 I6	2214 H1	2310 H11	3035 D12	3043 H11	3055 F12	3076 H7	3095 C1	3102 A5	3108 A9	3116 C7	5003 I5	6004 G6	7110-B A12	7206 H6	
2028 C9	2034 D7	2040 E6	2047 I6	2053 G6	2069 C2	2076 I1	2206 H10	2217 I4	3029 I7	3037 I6	3049 H12	3066 G6	3090 D2	3096 C2	3103 B5	3109 A7	4036 E12	5004 G6	6007 H6	7110A-A B8	7207 H7	



Voltages indicated for 7201 are for CD disc  
 Voltages indicated for 7202 are for DVD disc

• For provision only

# CD/DVD ROM CONTROLLER CIRCUIT



- 1104 D14
- 1200 I2
- 2001 B5
- 2002 I12
- 2003 B5
- 2004 H13
- 2005 B5
- 2006 B4
- 2007 B4
- 2008 B4
- 2009 C3
- 2010 D3
- 2011 D3
- 2012 D2
- 2013 D2
- 2014 D2
- 2015 D2
- 2016 D2
- 2017 E2
- 2018 E2
- 2019 G3
- 2020 G3
- 2021 G3
- 2022 I6
- 2023 I6
- 2024 I7
- 2060 I2
- 2061 G9
- 2062 G9
- 2063 G9
- 2064 G9
- 2065 G9
- 2066 G9
- 2067 G9
- 2074 I12
- 2078 I10
- 2080 H14
- 2201 I12
- 2202 H12
- 2208 I4
- 2209 I5
- 2212 I12
- 2215 I10
- 2216 H14
- 2218 I12
- 2301 A11
- 2302 A11
- 2303 H13
- 2304 H13
- 2305 H13
- 2306 H13
- 2310 I12
- 2312 I12
- 2313 I14
- 2314 I14
- 2315 H14
- 2316 I13
- 2317 I13
- 2318 I13
- 3001 A5
- 3002 B6
- 3003 B6
- 3004 B5
- 3005 B5
- 3006 B4
- 3007 C4
- 3009 D3
- 3010 D3
- 3011 D4
- 3012 E3
- 3013 E4
- 3014 E3
- 3015 E4
- 3017 E2
- 3018 E2
- 3019 E3
- 3020 F2
- 3022 F2
- 3025 F2
- 3026 H4
- 3027 H6
- 3028 H3
- 3061 I7
- 3065 I1
- 3067 I5
- 3069 H5
- 3070 I5
- 3072 I5
- 3073 I2
- 3077 B8
- 3078 A8
- 3079 A7
- 3080 A8
- 3081 A7
- 3082 A7
- 3083 B8
- 3084 B7
- 3085 B8
- 3086 B7
- 3087 A7
- 3088 A7
- 3089 H2
- 3117 I11
- 3118 A7
- 3120 A8
- 3301-1 B7
- 3301-2 B7
- 3301-3 B8
- 3301-4 B8
- 3302-1 H3
- 3302-2 H3
- 3302-3 H3
- 3302-4 H3
- 3303-1 G3
- 3303-2 G3
- 3303-3 G3



CD/DVD ROM CONTROLLER

1

1

5V1 if stand alone  
3V3 if attached to backend

\* For provision only

3139 113 3512p2 dd wk311.5

## ELECTRICAL PARTS LIST - MONO-FE BOARD

## MISCELLANEOUS

1101	3139 118 56941	FE (Front End) PCB Assembly CD222	2052	2222 867 15339	33pF 5% 50V
1104	2422 025 17529	FFC Socket 24P Hort.	2053	2238 586 59812	100nF 50V
1107	2422 025 17371	FFC Socket 40P Hort.	2054	2238 586 59812	100nF 50V
	2422 025 16806	FFC Socket 7P Hort.	2055	2238 586 59812	100nF 50V
			2056	2238 586 59812	100nF 50V
			2057	3198 017 44740	470nF 10V
			2058	4822 126 11785	47pF 5% 50V
			2059	4822 126 11785	47pF 5% 50V
			2060	2238 586 59812	100nF 50V
			2062	4822 122 33741	10pF 10% 50V
			2063	4822 122 33741	10pF 10% 50V
			2064	4822 122 33741	10pF 10% 50V
			2065	4822 122 33741	10pF 10% 50V
			2066	4822 122 33741	10pF 10% 50V
			2067	4822 122 33741	10pF 10% 50V
			2068	2238 586 59812	100nF 50V
			2069	2020 552 94427	100pF 5% 50V
			2070	2020 552 94427	100pF 5% 50V
			2071	4822 126 13193	4,7nF 10% 63V
			2072	2238 586 59812	100nF 50V
			2073	3198 017 41050	1uF 10V
			2074	4822 126 13881	470pF 5% 50V
			2075	2238 586 59812	100nF 50V
			2076	2238 586 59812	100nF 50V
			2077	2238 586 59812	100nF 50V
			2078	3198 017 41050	1uF 10V
			2079	3198 017 41050	1uF 10V
			2080	2238 586 59812	100nF 50V
			2201	2022 020 00625	220uF 20% 16V
			2202	4822 124 80231	47uF 20% 16V
			2203	4822 124 23052	100uF 20% 16V
			2204	4822 124 23052	100uF 20% 16V
			2205	4822 124 23052	100uF 20% 16V
			2206	4822 124 80231	47uF 20% 16V
			2207	4822 124 80231	47uF 20% 16V
			2208	4822 124 22651	1uF 20% 50V
			2209	4822 124 22651	1uF 20% 50V
			2210	2022 020 00625	220uF 20% 16V
			2211	4822 124 21732	10uF 20% 25V
			2212	4822 124 80231	47uF 20% 16V
			2213	4822 124 23052	100uF 20% 16V
			2214	2022 020 00625	220uF 20% 16V
			2215	4822 124 21732	10uF 20% 25V
			2216	4822 124 23052	100uF 20% 16V
			2217	2022 020 00625	220uF 20% 16V
			2218	2022 020 00625	220uF 20% 16V
			2301	2238 586 59812	100nF 50V
			2302	2238 586 59812	100nF 50V
			2303	2238 586 59812	100nF 50V
			2304	2238 586 59812	100nF 50V
			2305	2238 586 59812	100nF 50V
			2306	2238 586 59812	100nF 50V

## ELECTRICAL PARTS LIST - MONO-FE BOARD

2307	2238 586 59812	100nF 50V	3060	4822 051 30339	33R 5% 0,062W
2308	2238 586 59812	100nF 50V	3065	4822 051 30391	390R 5% 0,062W
2309	2238 586 59812	100nF 50V	3066	4822 117 13632	100k 1% 0,062W
2310	2238 586 59812	100nF 50V	3067	4822 051 30472	4k7 5% 0,062W
2312	2238 586 59812	100nF 50V	3068	4822 051 30103	10k 5% 0,062W
2313	2238 586 59812	100nF 50V	3069	4822 051 30102	1k 5% 0,062W
2314	2238 586 59812	100nF 50V	3070	4822 051 30223	22k 5% 0,062W
2315	2238 586 59812	100nF 50V	3071	4822 051 30103	10k 5% 0,062W
2316	2238 586 59812	100nF 50V	3072	4822 051 30223	22k 5% 0,062W
2317	2238 586 59812	100nF 50V	3073	4822 051 30103	10k 5% 0,062W
2318	2238 586 59812	100nF 50V	3074	4822 051 30103	10k 5% 0,062W
2319	2238 586 59812	100nF 50V	3075	4822 117 13632	100k 1% 0,062W
2320	2238 586 59812	100nF 50V	3076	4822 117 13632	100k 1% 0,062W
			3077	4822 051 30339	33R 5% 0,062W
			3087	4822 051 30332	3k3 5% 0,062W
			3088	4822 051 30103	10k 5% 0,062W
			3089	4822 051 30103	10k 5% 0,062W
			3090	4822 051 30333	33k 5% 0,062W
			3091	4822 051 30333	33k 5% 0,062W
			3092	4822 051 30223	22k 5% 0,062W
			3093	4822 117 12925	47k 1% 0,063W
			3094	4822 051 30333	33k 5% 0,062W
			3095	4822 051 30339	33R 5% 0,062W
			3096	4822 051 30123	12k 5% 0,062W
			3097	4822 117 12925	47k 1% 0,063W
			3098	4822 051 30332	3k3 5% 0,062W
			3099	4822 051 30103	10k 5% 0,062W
			3101	4822 051 20108	1R 5% 0,1W
			3102	4822 051 20108	1R 5% 0,1W
			3103	4822 051 20108	1R 5% 0,1W
			3104	4822 051 20108	1R 5% 0,1W
			3105	4822 051 30103	10k 5% 0,062W
			3106	4822 051 30105	1M 5% 0,062W
			3107	4822 051 30152	1k5 5% 0,062W
			3108	4822 051 30472	4k7 5% 0,062W
			3109	4822 051 30223	22k 5% 0,062W
			3110	4822 051 30103	10k 5% 0,062W
			3111	4822 051 30105	1M 5% 0,062W
			3114	4822 051 30152	1k5 5% 0,062W
			3115	4822 051 30472	4k7 5% 0,062W
			3116	4822 051 30223	22k 5% 0,062W
			3117	4822 051 20338	3R30 5% 0,1W
			3301	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
			3302	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
			3303	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
			3304	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
			3305	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
			3306	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
			3307	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
			3308	4822 117 13573	RES NETWORK 4 X 47R 5% 1206
			3309	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
			3310	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
			5001	4822 117 11817	1k2 1% 1/16W
			5002	4822 117 13632	100k 1% 0,062W
			5003	4822 051 30563	56k 5% 0,062W
			5004	4822 051 30103	10k 5% 0,062W
			5005	2322 704 65102	5k1 1% 0,062W
			5007	4822 051 30472	4k7 5% 0,062W
			5009	2322 704 62003	20k 1% 0,062W
			5010	2322 704 65103	51k 1% 0,062W
			5012	4822 051 30332	3k3 5% 0,062W
			5013	4822 051 30332	3k3 5% 0,062W
			5014	4822 051 30332	3k3 5% 0,062W
			5015	4822 051 30102	1k 5% 0,062W
			5017	4822 117 12925	47k 1% 0,063W
			5018	4822 051 30339	33R 5% 0,062W
			5020	4822 051 30332	3k3 5% 0,062W
			5022	4822 051 30472	4k7 5% 0,062W
			5025	2322 704 65102	5k1 1% 0,062W
			5026	4822 051 30103	10k 5% 0,062W
			5027	4822 117 13632	100k 1% 0,062W
			5028	4822 051 30109	10R 5% 0,062W
			5029	4822 051 30109	10R 5% 0,062W
			5031	5322 117 13056	8k2 1% 0,063W
			5032	2322 704 65102	5k1 1% 0,062W
			5033	4822 051 30339	33R 5% 0,062W
			5034	4822 051 30339	33R 5% 0,062W
			5035	4822 051 30339	33R 5% 0,062W
			5037	2322 702 60688	6R8 5% 0,062W
			5038	4822 051 30222	2k2 5% 0,062W
			5039	4822 051 30222	2k2 5% 0,062W
			5040	4822 051 30103	10k 5% 0,062W
			5042	4822 051 30103	10k 5% 0,062W
			5049	4822 051 30152	1k5 5% 0,062W
			5050	4822 051 30563	56k 5% 0,062W
			5051	4822 051 30103	10k 5% 0,062W
			5053	5322 117 13056	8k2 1% 0,063W
			5054	4822 051 30474	470k 5% 0,062W
			5059	4822 051 30339	33R 5% 0,062W

**ELECTRICAL PARTS LIST - MONO-FE BOARD**

---

**RESISTORS**

---

3311	4822 117 13578	RES NETWORK 4 X 10k 5% 1206	7207	4822 130 42804	BC817-25
3312	4822 117 13578	RES NETWORK 4 X 10k 5% 1206	7208	9322 163 24668	L78M08CDT
3313	3198 031 11010	RST NETWORK 4 X 100R 5% 1206			
3314	3198 031 11010	RST NETWORK 4 X 100R 5% 1206			
3315	3198 031 11010	RST NETWORK 4 X 100R 5% 1206			
3316	3198 031 11010	RST NETWORK 4 X 100R 5% 1206			
4016	4822 051 30008	OR JUMPER 0603			
4021	4822 051 30008	OR JUMPER 0603			
4023	4822 051 30008	OR JUMPER 0603			
4024	4822 051 30008	OR JUMPER 0603			
4036	4822 051 30008	OR JUMPER 0603			
4041	4822 051 30008	OR JUMPER 0603			
4044	4822 051 30008	OR JUMPER 0603			
4052	4822 051 30008	OR JUMPER 0603			
4056	4822 051 30008	OR JUMPER 0603			
4062	4822 051 30008	OR JUMPER 0603			
4100	4822 051 30008	OR JUMPER 0603			

Note: Only the parts mentioned in this list are normal service spare parts.

**COILS & FILTERS**

---

5002	4822 157 71206	IND FXD 100MHZ 600R
5003	4822 157 71206	IND FXD 100MHZ 600R
5004	4822 157 71206	IND FXD 100MHZ 600R
5006	4822 157 71206	IND FXD 100MHZ 600R
5007	4822 157 71206	IND FXD 100MHZ 600R
5008	4822 157 71206	IND FXD 100MHZ 600R
5010	4822 157 71206	IND FXD 100MHZ 600R
5011	4822 157 71206	IND FXD 100MHZ 600R
5300	4822 242 10757	X'TAL RESONATOR 33,868MHZ 20P

**DIODES**

---

6002	4822 130 11397	BAS316
6003	4822 130 11397	BAS316
6004	4822 130 11397	BAS316
6005	4822 130 11397	BAS316
6006	4822 130 11397	BAS316
6007	4822 130 11397	BAS316
6008	4822 130 11397	BAS316

**TRANSISTORS & INTEGRATED CIRCUITS**

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7101	9322 186 11671	M5705
7102	9322 185 60671	SP3721AAA0PM
7104	4822 209 32073	MC34072D
7105	9322 157 49668	M29F002BT-70K1
7107	9322 159 55668	K4S161622D-TC70
7109	9322 187 63668	BA5954FP
7110	4822 209 32073	MC34072D
7201	4822 130 11565	2SB1132
7202	4822 130 11565	2SB1132
7203	9340 547 13215	BSH103
7204	4822 130 42804	BC817-25
7205	4822 130 42804	BC817-25
7206	9340 547 13215	BSH103

CS8415A

# MONO-BE BOARD

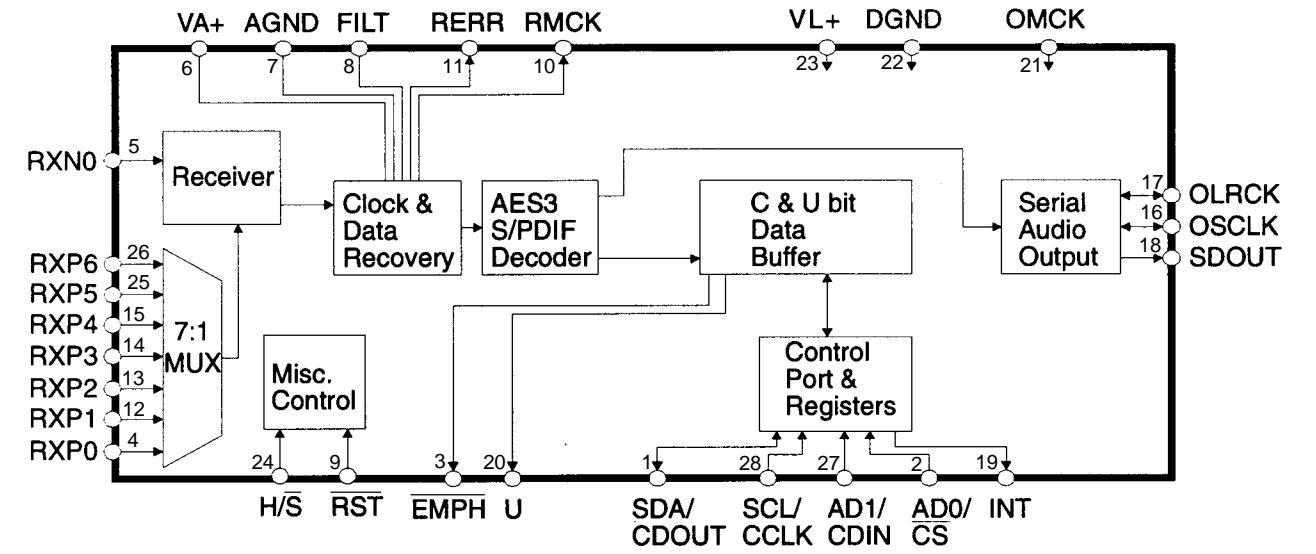
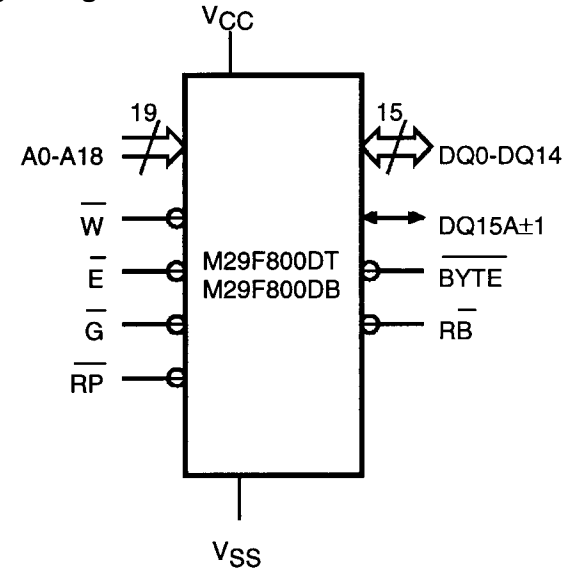


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M29F800DT

Logic Diagram



Pins connection

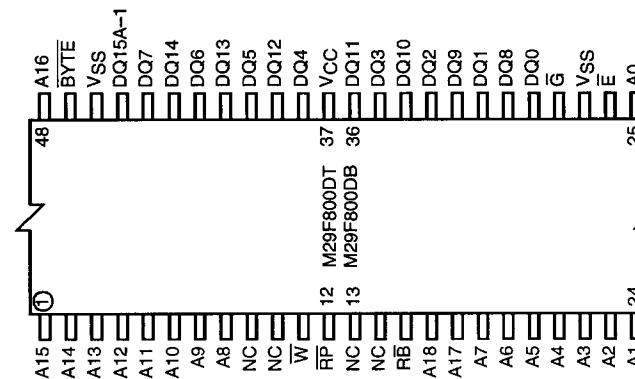


Table 1. Signal Names

A0-A18	Address Inputs
DQ0-DQ7	Data Inputs/Outputs
DQ8-DQ14	Data Inputs/Outputs
DQ15A±1	Data Input/Output or Address Input
$\bar{E}$	Chip Enable
$\bar{G}$	Output Enable
$\bar{W}$	Write Enable
$\bar{RP}$	Reset/Block Temporary Unprotect
$\bar{RB}$	Ready/Busy Output (not available on SO44 package)
BYTE	Byte/Word Organization Select
Vcc	Supply Voltage
Vss	Ground
NC	Not Connected Internally



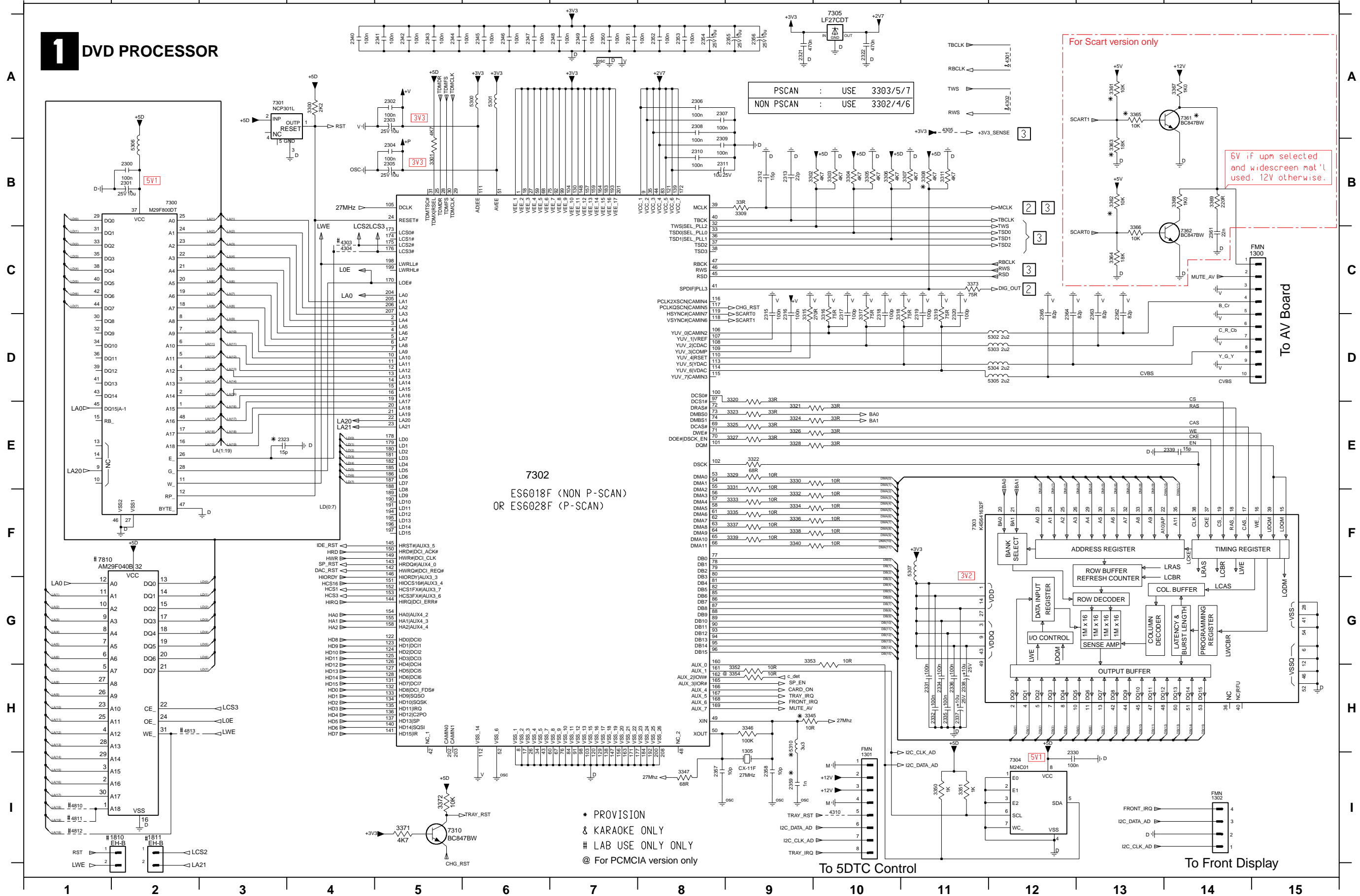




# CIRCUIT DIAGRAM 1

1300 C14	1811 I2	2304 B5	2309 B8	2315 D9	2320 D11	2331 H11	2337 H11	2342 A5	2347 A6	2352 A8	2357 I8	2363 D13	3302 B9	3307 B11	3316 D10	3321 E9	3326 E9	3331 E9	3336 F9	3345 H9	3352 H9	3363 B13	3368 B14	4301 A12	4310 I10	5300 A6	5305 D12	7301 A3	7361 A14
1301 I10	2300 B2	2305 B5	2310 B8	2316 D9	2321 A9	2332 H11	2338 H11	2343 A5	2348 A7	2353 A8	2358 I9	2364 D12	3303 B10	3308 B11	3317 D10	3322 E9	3327 E9	3332 F9	3337 F9	3346 H9	3353 G9	3364 C13	3369 B14	4302 A12	4810 I11	5301 A6	5306 B2	7302 E7	7362 C14
1302 I14	2301 B2	2306 A5	2311 B8	2317 D10	2322 A10	2334 H11	2339 E14	2344 A5	2349 A7	2354 A8	2359 I9	2365 D12	3304 B10	3309 B9	3318 D10	3323 E9	3328 E9	3333 F9	3347 I9	3354 H9	3365 A13	3371 I5	4303 C4	4811 I11	5302 D12	5307 F11	7304 H2	7810 F1	
1305 I9	2302 A5	2307 A8	2312 B9	2318 D10	2323 E3	2335 H11	2340 A4	2345 A6	2350 A7	2355 A9	2361 C14	3300 A4	3305 B10	3311 H11	3319 D11	3324 E9	3329 E9	3334 F9	3339 F9	3350 I11	3361 A13	3366 C13	3372 I5	4304 C4	4812 I11	5303 D12	5310 H9	7305 A10	
1810 I11	2303 A5	2308 A8	2313 B9	2319 D11	2323 H12	2336 H11	2341 A5	2346 A6	2351 A7	2356 A9	2362 D13	3301 B5	3306 B10	3315 D9	3320 D9	3325 E9	3329 E9	3335 F9	3340 F9	3351 I11	3362 B13	3367 A14	3373 C11	4305 A11	4813 H2	5304 D12	7300 B2	7310 I5	

## 1 DVD PROCESSOR



For Scart version only

6V if upm selected and widescreen mat'l used. 12V otherwise.

PSCAN : USE 3303/5/7  
 NON PSCAN : USE 3302/4/6

7302  
 ES6018F (NON P-SCAN)  
 OR ES6028F (P-SCAN)

• PROVISION & KARAOKE ONLY  
 # LAB USE ONLY ONLY  
 @ For PCMCIA version only

# CIRCUIT DIAGRAM 2

1401 G13	2405 G7	2411 I2	2417 A11	2425 C9	2431 D9	2439 G9	2446 H9	3402 E2	3409 F2	3415 G2	3421 A9	3427 B9	3433 D9	3439 E9	3445 G9	3452 H10	3472 I4	4400 H5	5402 I2	7403-B H11
1402 F14	2406 G7	2412 I2	2418 A11	2426 C11	2432 D11	2440 G10	2448 H11	3403 E2	3410 F2	3416 G2	3422 A10	3428 B10	3434 D10	3440 E10	3446 F10	3453 I9	3474 I6	4402 F2	7401-A A11	7404 D2
2400 D2	2407 G7	2413 I4	2419 B9	2427 D9	2433 E9	2441 F11	2454 H10	3404 E2	3411 G2	3417 E2	3423 B9	3429 C9	3435 E9	3441 F9	3447 G9	3454 H10	3475 H4	4403 H2	7401-B B11	
2401 D3	2408 G7	2414 I6	2420 A11	2428 D10	2434 E10	2442 G11	2455 G9	3405 E2	3412 G2	3418 D3	3424 A10	3430 C10	3436 D10	3442 F10	3448 G10	3455 H10	3476 I7	4404 H2	7402-A D11	
2403 D4	2409 H5	2415 A9	2421 B9	2429 C11	2435 F11	2443 G11	3400 E2	3406 F2	3413 G2	3419 H9	3425 B10	3431 C10	3437 E10	3443 F10	3449 G10	3470 I4	3478 H7	5400 H2	7402-B E11	
2404 D5	2410 F3	2416 A10	2422 B10	2430 D11	2438 F11	2445 H9	3401 E2	3408 F2	3414 G2	3420 A9	3426 B9	3432 D9	3438 E9	3444 F9	3450 H9	3471 I4	3479 I7	5401 D2	7403-A F11	

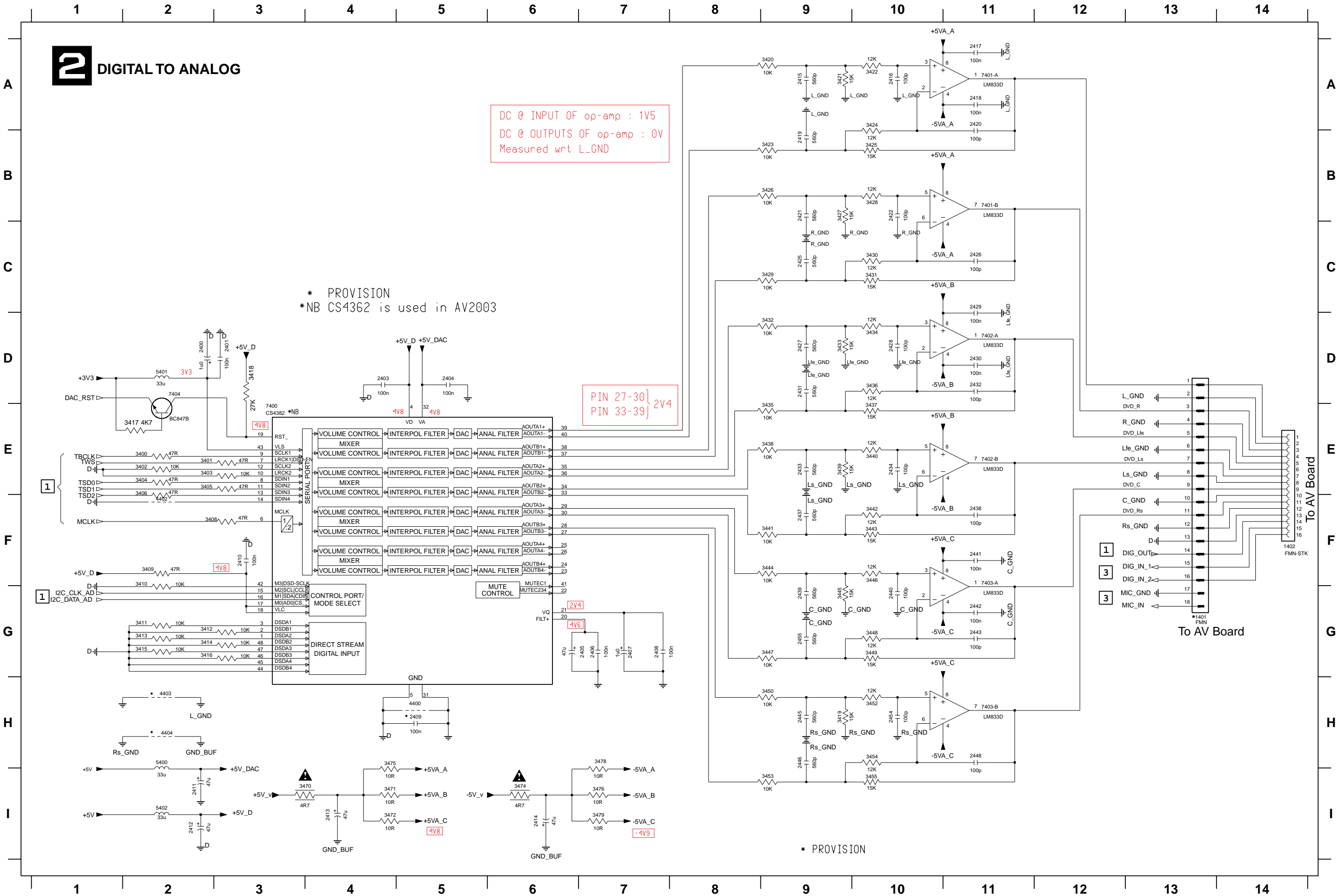
## 2 DIGITAL TO ANALOG

DC @ INPUT OF op-amp : 1V5  
 DC @ OUTPUTS OF op-amp : 0V  
 Measured wrt L\_GND

\* PROVISION  
 \*NB CS4362 is used in AV2003

PIN 27-30 } 2V4  
 PIN 33-39 } 2V4

1 DIG\_OUT  
 3 DIG\_IN\_1  
 3 DIG\_IN\_2  
 3 MIC\_GND  
 3 MIC\_IN

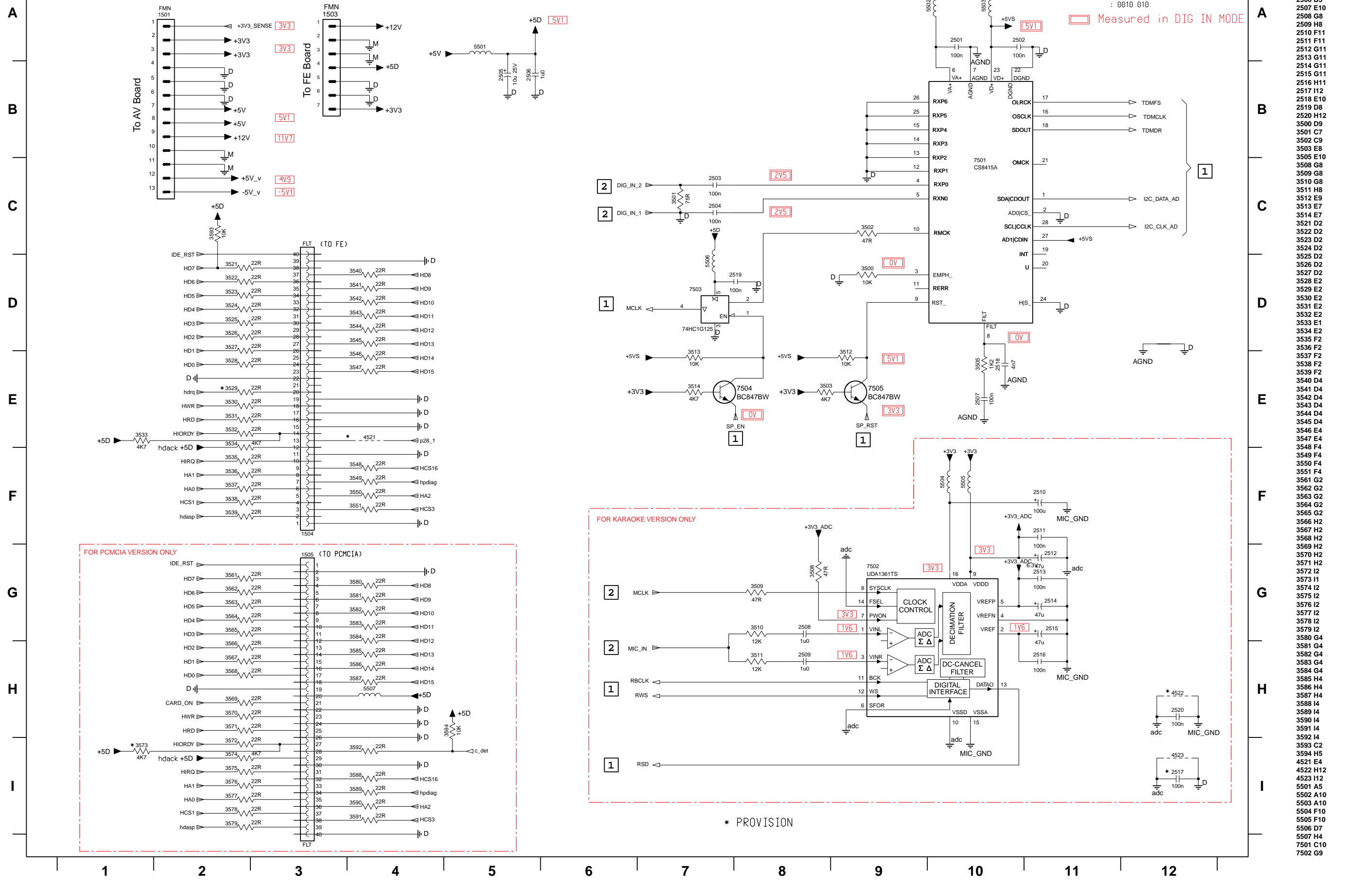


\* PROVISION

# CIRCUIT DIAGRAM 3

## 3

### SPDIF CONVERTER & ADC



- 1501 A2
- 1503 A3
- 1504 F3
- 1505 G3
- 2501 A10
- 2502 A10
- 2503 C7
- 2504 C7
- 2505 B5
- 2506 B5
- 2507 E10
- 2508 G8
- 2509 H8
- 2510 F11
- 2511 F11
- 2512 G11
- 2513 G11
- 2514 G11
- 2515 G11
- 2516 H11
- 2517 I2
- 2518 E10
- 2519 D8
- 2520 H12
- 3500 D9
- 3501 C7
- 3502 C9
- 3503 E8
- 3505 E10
- 3508 G8
- 3509 G8
- 3510 G8
- 3511 H8
- 3512 E9
- 3513 E7
- 3514 E7
- 3521 D2
- 3522 D2
- 3523 D2
- 3524 D2
- 3525 D2
- 3526 D2
- 3527 D2
- 3528 E2
- 3529 E2
- 3530 E2
- 3531 E2
- 3532 E2
- 3533 E1
- 3534 E2
- 3535 F2
- 3536 F2
- 3537 F2
- 3538 F2
- 3539 F2
- 3540 D4
- 3541 D4
- 3542 D4
- 3543 D4
- 3544 D4
- 3545 D4
- 3546 E4
- 3547 E4
- 3548 F4
- 3549 F4
- 3550 F4
- 3551 F4
- 3561 G2
- 3562 G2
- 3563 G2
- 3564 G2
- 3565 G2
- 3566 H2
- 3567 H2
- 3568 H2
- 3569 H2
- 3570 H2
- 3571 H2
- 3572 I2
- 3573 I1
- 3574 I2
- 3575 I2
- 3576 I2
- 3577 I2
- 3578 I2
- 3579 I2
- 3580 G4
- 3581 G4
- 3582 G4
- 3583 G4
- 3584 G4
- 3585 H4
- 3586 H4
- 3587 H4
- 3588 I4
- 3589 I4
- 3590 I4
- 3591 I4
- 3592 I4
- 3593 C2
- 3594 H5
- 4521 E4
- 4522 H12
- 4523 H12
- 5501 A5
- 5502 A10
- 5503 A10
- 5504 F10
- 5505 F10
- 5506 D7
- 5507 H4
- 7501 C10
- 7502 G9

## ELECTRICAL PARTS LIST - MONO-BE BOARD

## MISCELLANEOUS

3139	118 56691	BE (Back End) PCB Assembly CD222
1300	2422 025 16587	FFC Socket 10P Vert.
1301	2422 025 16988	FFC Socket 8P Vert.
1302	2422 025 16792	FFC Socket 4P Vert.
1305	2422 543 01137	X'tal Resonator 27MHz 10p
1402	4822 267 11028	FFC Socket 16P Hort.
1501	2422 025 16591	FFC Socket 13P Vert.
1503	2422 025 17367	FFC Socket 7P Vert.
1504	2422 025 17763	FFC Socket 40P Vert.

## CAPACITORS

2300	2238 586 59812	100nF 50V	2350	2238 586 59812	100nF 50V
2301	4822 124 21732	10uF 20% 25V	2351	2238 586 59812	100nF 50V
2302	2238 586 59812	100nF 50V	2352	2238 586 59812	100nF 50V
2303	4822 124 21732	10uF 20% 25V	2353	2238 586 59812	100nF 50V
2304	2238 586 59812	100nF 50V	2354	4822 124 21732	10uF 20% 25V
2305	4822 124 21732	10uF 20% 25V	2355	4822 124 21732	10uF 20% 25V
2306	2238 586 59812	100nF 50V	2356	4822 124 21732	10uF 20% 25V
2307	2238 586 59812	100nF 50V	2357	4822 122 33741	10pF 10% 50V
2308	2238 586 59812	100nF 50V	2358	4822 122 33741	10pF 10% 50V
2309	2238 586 59812	100nF 50V	2362	4822 126 14226	82pF 5% 50V
2310	2238 586 59812	100nF 50V	2363	4822 126 14226	82pF 5% 50V
2311	4822 124 21732	10uF 20% 25V	2364	4822 126 14226	82pF 5% 50V
2312	4822 122 33752	15pF 5% 50V	2365	4822 126 14226	82pF 5% 50V
2313	4822 122 33761	22pF 5% 50V	2400	4822 124 22651	1uF 20% 50V
2315	2238 586 59812	100nF 50V	2401	2238 586 59812	100nF 50V
2316	2238 586 59812	100nF 50V	2403	2238 586 59812	100nF 50V
2317	2020 552 94427	100pF 5% 50V	2404	2238 586 59812	100nF 50V
2318	2020 552 94427	100pF 5% 50V	2405	4822 124 80483	47uF 20% 6,3V
2319	2020 552 94427	100pF 5% 50V	2406	2238 586 59812	100nF 50V
2320	2020 552 94427	100pF 5% 50V	2407	4822 124 22651	1uF 20% 50V
2321	3198 017 44740	470nF 10V	2408	2238 586 59812	100nF 50V
2322	3198 017 44740	470nF 10V	2410	2238 586 59812	100nF 50V
2330	2238 586 59812	100nF 50V	2411	4822 124 80483	47uF 20% 6,3V
2331	2238 586 59812	100nF 50V	2412	4822 124 80483	47uF 20% 6,3V
2332	2238 586 59812	100nF 50V	2413	4822 124 80483	47uF 20% 6,3V
2333	2238 586 59812	100nF 50V	2414	4822 124 80483	47uF 20% 6,3V
2334	2238 586 59812	100nF 50V	2415	4822 126 14249	560pF 10% 50V
2335	2238 586 59812	100nF 50V	2416	2020 552 94427	100pF 5% 50V
2336	2238 586 59812	100nF 50V	2417	2238 586 59812	100nF 50V
2337	4822 124 21732	10uF 20% 25V	2418	2238 586 59812	100nF 50V
2338	4822 124 21732	10uF 20% 25V	2419	4822 126 14249	560pF 10% 50V
2339	4822 122 33752	15pF 5% 50V	2420	2020 552 94427	100pF 5% 50V
2340	2238 586 59812	100nF 50V	2421	4822 126 14249	560pF 10% 50V
2341	2238 586 59812	100nF 50V	2422	2020 552 94427	100pF 5% 50V
2342	2238 586 59812	100nF 50V	2425	4822 126 14249	560pF 10% 50V
2343	2238 586 59812	100nF 50V	2426	2020 552 94427	100pF 5% 50V
2344	2238 586 59812	100nF 50V	2427	4822 126 14249	560pF 10% 50V
2345	2238 586 59812	100nF 50V	2428	2020 552 94427	100pF 5% 50V
2346	2238 586 59812	100nF 50V	2429	2238 586 59812	100nF 50V
2347	2238 586 59812	100nF 50V	2430	2238 586 59812	100nF 50V
2348	2238 586 59812	100nF 50V	2431	4822 126 14249	560pF 10% 50V
2349	2238 586 59812	100nF 50V	2432	2020 552 94427	100pF 5% 50V
			2433	4822 126 14249	560pF 10% 50V
			2434	2020 552 94427	100pF 5% 50V
			2437	4822 126 14249	560pF 10% 50V
			2438	2020 552 94427	100pF 5% 50V
			2439	4822 126 14249	560pF 10% 50V
			2440	2020 552 94427	100pF 5% 50V
			2441	2238 586 59812	100nF 50V
			2442	2238 586 59812	100nF 50V
			2443	2020 552 94427	100pF 5% 50V
			2445	4822 126 14249	560pF 10% 50V

## ELECTRICAL PARTS LIST - MONO-BE BOARD

2446	4822 126 14249	560pF 10% 50V	3352	4822 051 30109	10R 5% 0,062W
2448	2020 552 94427	100pF 5% 50V	3353	4822 051 30109	10R 5% 0,062W
2454	2020 552 94427	100pF 5% 50V	3371	4822 051 30472	4k7 5% 0,062W
2455	4822 126 14249	560pF 10% 50V	3372	4822 051 30103	10k 5% 0,062W
2501	2238 586 59812	100nF 50V	3400	4822 051 30479	47R 5% 0,062W
2502	2238 586 59812	100nF 50V	3401	4822 051 30479	47R 5% 0,062W
2503	2238 586 59812	100nF 50V	3402	4822 051 30103	10k 5% 0,062W
2504	2238 586 59812	100nF 50V	3403	4822 051 30103	10k 5% 0,062W
2505	4822 124 21732	10uF 20% 25V	3404	4822 051 30479	47R 5% 0,062W
2506	3198 017 41050	1uF 10V	3405	4822 051 30479	47R 5% 0,062W
2507	2238 586 59812	100nF 50V	3406	4822 051 30479	47R 5% 0,062W
2518	4822 126 13193	4,7nF 10% 63V	3408	4822 051 30479	47R 5% 0,062W
2519	2238 586 59812	100nF 50V	3409	4822 051 30479	47R 5% 0,062W

## RESISTORS

3300	4822 051 30222	2k2 5% 0,062W	3411	4822 051 30103	10k 5% 0,062W
3301	4822 051 30472	4k7 5% 0,062W	3412	4822 051 30103	10k 5% 0,062W
3303	4822 051 30472	4k7 5% 0,062W	3413	4822 051 30103	10k 5% 0,062W
3305	4822 051 30472	4k7 5% 0,062W	3414	4822 051 30103	10k 5% 0,062W
3307	4822 051 30472	4k7 5% 0,062W	3415	4822 051 30103	10k 5% 0,062W
3309	4822 051 30339	33R 5% 0,062W	3416	4822 051 30103	10k 5% 0,062W
3311	4822 051 30472	4k7 5% 0,062W	3417	4822 051 30472	4k7 5% 0,062W
3315	4822 051 30271	270R 5% 0,062W	3418	4822 051 30273	27k 5% 0,062W
3316	4822 051 30759	75R 5% 0,062W	3419	4822 051 30153	15k 5% 0,062W
3317	4822 051 30759	75R 5% 0,062W	3420	4822 051 30103	10k 5% 0,062W
3318	4822 051 30759	75R 5% 0,062W	3421	4822 051 30153	15k 5% 0,062W
3319	4822 051 30759	75R 5% 0,062W	3422	4822 051 30123	12k 5% 0,062W
3320	4822 051 30339	33R 5% 0,062W	3423	4822 051 30103	10k 5% 0,062W
3321	4822 051 30339	33R 5% 0,062W	3424	4822 051 30123	12k 5% 0,062W
3322	4822 051 30689	68R 5% 0,063W	3425	4822 051 30153	15k 5% 0,062W
3323	4822 051 30339	33R 5% 0,062W	3426	4822 051 30103	10k 5% 0,062W
3324	4822 051 30339	33R 5% 0,062W	3427	4822 051 30153	15k 5% 0,062W
3325	4822 051 30339	33R 5% 0,062W	3428	4822 051 30123	12k 5% 0,062W
3326	4822 051 30339	33R 5% 0,062W	3429	4822 051 30103	10k 5% 0,062W
3327	4822 051 30339	33R 5% 0,062W	3430	4822 051 30123	12k 5% 0,062W
3328	4822 051 30339	33R 5% 0,062W	3431	4822 051 30153	15k 5% 0,062W
3329	4822 051 30109	10R 5% 0,062W	3432	4822 051 30103	10k 5% 0,062W
3330	4822 051 30109	10R 5% 0,062W	3433	4822 051 30153	15k 5% 0,062W
3331	4822 051 30109	10R 5% 0,062W	3434	4822 051 30123	12k 5% 0,062W
3332	4822 051 30109	10R 5% 0,062W	3435	4822 051 30103	10k 5% 0,062W
3333	4822 051 30109	10R 5% 0,062W	3436	4822 051 30123	12k 5% 0,062W
3334	4822 051 30109	10R 5% 0,062W	3437	4822 051 30153	15k 5% 0,062W
3335	4822 051 30109	10R 5% 0,062W	3438	4822 051 30103	10k 5% 0,062W
3336	4822 051 30109	10R 5% 0,062W	3439	4822 051 30153	15k 5% 0,062W
3337	4822 051 30109	10R 5% 0,062W	3440	4822 051 30123	12k 5% 0,062W
3338	4822 051 30109	10R 5% 0,062W	3441	4822 051 30103	10k 5% 0,062W
3339	4822 051 30109	10R 5% 0,062W	3442	4822 051 30123	12k 5% 0,062W
3340	4822 051 30109	10R 5% 0,062W	3443	4822 051 30153	15k 5% 0,062W
3346	4822 117 13632	100k 1% 0,062W	3444	4822 051 30103	10k 5% 0,062W
3347	4822 051 30689	68R 5% 0,063W	3445	4822 051 30153	15k 5% 0,062W
3350	4822 051 30102	1k 5% 0,062W	3446	4822 051 30123	12k 5% 0,062W
3351	4822 051 30102	1k 5% 0,062W	3447	4822 051 30103	10k 5% 0,062W
			3448	4822 051 30123	12k 5% 0,062W



**ELECTRICAL PARTS LIST - MONO-BE BOARD****RESISTORS**

3449	4822 051 30153	15k 5% 0,062W
3450	4822 051 30103	10k 5% 0,062W
3452	4822 051 30123	12k 5% 0,062W
3453	4822 051 30103	10k 5% 0,062W
3454	4822 051 30123	12k 5% 0,062W
3455	4822 051 30153	15k 5% 0,062W
3470	4822 052 10478 Δ	4R7 5% 0,33W
3471	4822 051 30109 Δ	10R 5% 0,062W
3472	4822 051 30109	10R 5% 0,062W
3474	4822 052 10478	4R7 5% 0,33W
3475	4822 051 30109	10R 5% 0,062W
3476	4822 051 30109	10R 5% 0,062W
3478	4822 051 30109	10R 5% 0,062W
3479	4822 051 30109	10R 5% 0,062W
3500	4822 051 30103	10k 5% 0,062W
3501	4822 051 30759	75R 5% 0,062W
3502	4822 051 30479	47R 5% 0,062W
3503	4822 051 30472	4k7 5% 0,062W
3505	4822 117 11817	1k2 1% 1/16W
3512	4822 051 30103	10k 5% 0,062W
3513	4822 051 30103	10k 5% 0,062W
3514	4822 051 30472	4k7 5% 0,062W
3521	4822 117 12139	22R 5% 0,062W
3522	4822 117 12139	22R 5% 0,062W
3523	4822 117 12139	22R 5% 0,062W
3524	4822 117 12139	22R 5% 0,062W
3525	4822 117 12139	22R 5% 0,062W
3526	4822 117 12139	22R 5% 0,062W
3527	4822 117 12139	22R 5% 0,062W
3528	4822 117 12139	22R 5% 0,062W
3530	4822 117 12139	22R 5% 0,062W
3531	4822 117 12139	22R 5% 0,062W
3532	4822 117 12139	22R 5% 0,062W
3533	4822 051 30472	4k7 5% 0,062W
3534	4822 051 30472	4k7 5% 0,062W
3535	4822 117 12139	22R 5% 0,062W
3536	4822 117 12139	22R 5% 0,062W
3537	4822 117 12139	22R 5% 0,062W
3538	4822 117 12139	22R 5% 0,062W
3539	4822 117 12139	22R 5% 0,062W
3540	4822 117 12139	22R 5% 0,062W
3541	4822 117 12139	22R 5% 0,062W
3542	4822 117 12139	22R 5% 0,062W
3543	4822 117 12139	22R 5% 0,062W
3544	4822 117 12139	22R 5% 0,062W
3545	4822 117 12139	22R 5% 0,062W
3546	4822 117 12139	22R 5% 0,062W
3547	4822 117 12139	22R 5% 0,062W
3548	4822 117 12139	22R 5% 0,062W
3549	4822 117 12139	22R 5% 0,062W
3550	4822 117 12139	22R 5% 0,062W
3551	4822 117 12139	22R 5% 0,062W

3593	4822 051 30103	10k 5% 0,062W
4304	4822 051 30008	OR JUMPER 0603
4305	4822 051 30008	OR JUMPER 0603
4310	4822 051 30008	OR JUMPER 0603
4400	4822 051 30008	OR JUMPER 0603
4402	4822 051 30008	OR JUMPER 0603

**COILS & FILTERS**

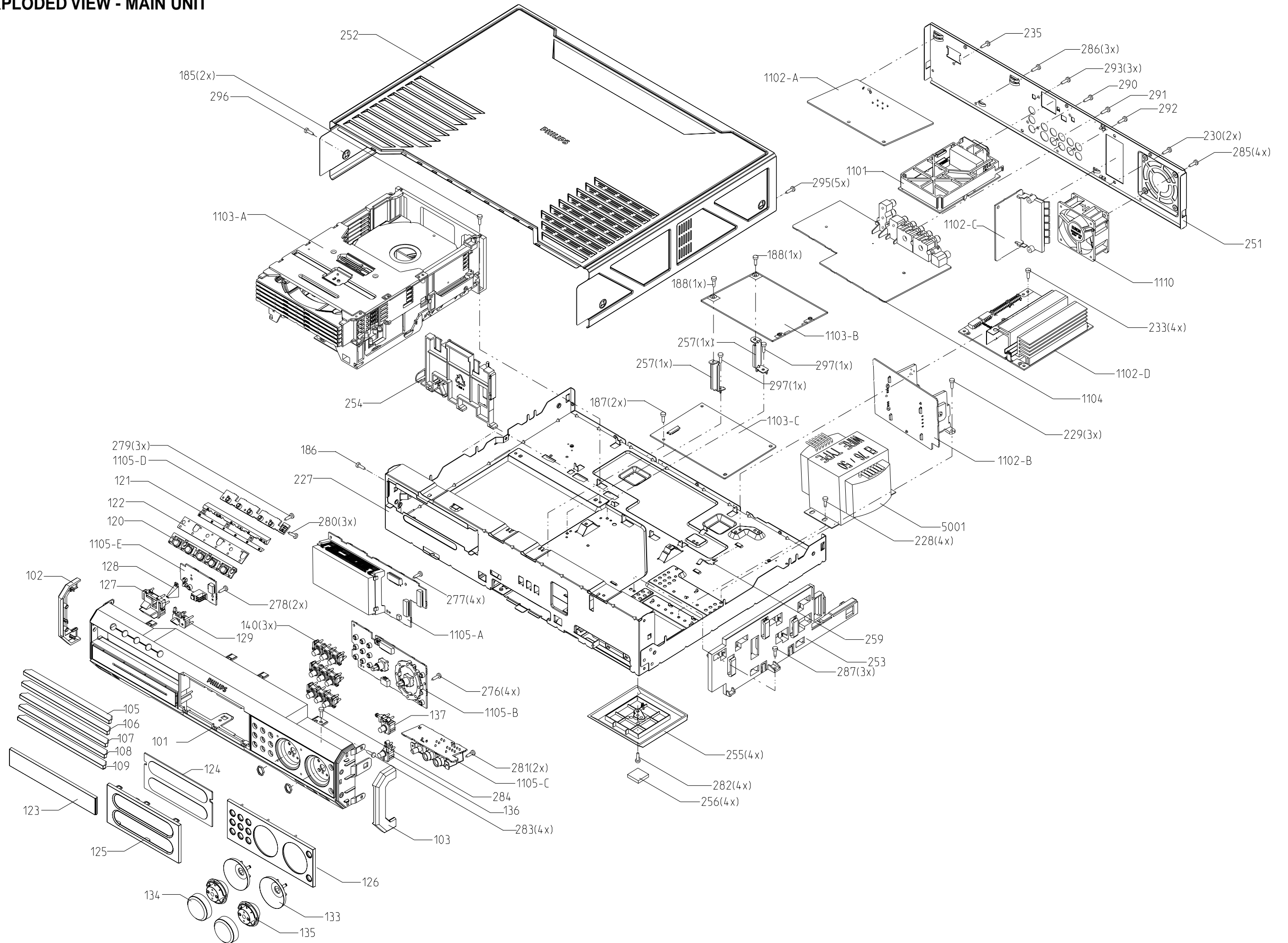
5300	4822 157 11499	IND FXE EMI 100MHZ 60R
5301	4822 157 11499	IND FXE EMI 100MHZ 60R
5302	4822 157 70299	IND FXD 2,2uH 5%
5303	4822 157 70299	IND FXD 2,2uH 5%
5304	4822 157 70299	IND FXD 2,2uH 5%
5305	4822 157 70299	IND FXD 2,2uH 5%
5306	4822 157 71206	IND FXD 100MHZ 600R
5307	4822 157 71206	IND FXD 100MHZ 600R
5400	3198 018 63390	IND FXD 33uH 5%
5401	3198 018 63390	IND FXD 33uH 5%
5402	3198 018 63390	IND FXD 33uH 5%
5501	4822 157 11716	IND FXD 100MHZ 30R
5502	4822 157 11716	IND FXD 100MHZ 30R
5503	4822 157 11716	IND FXD 100MHZ 30R
5506	4822 157 11716	IND FXD 100MHZ 30R

**TRANSISTORS & INTEGRATED CIRCUITS**

7300	9322 191 46668	M29F800DT-70N1
7301	9322 163 27685	NCP301LSN45
7302	9322 185 43671	ES6028F
7303	9322 178 78668	K4S641632F-TC70
7304	9965 000 04931	M24C01-WMN6
7305	9322 178 32668	LF27CDT
7310	3198 010 42310	BC847BW
7400	9322 177 92671	CS4362-KQ
7401	4822 209 30095	LM833D
7402	4822 209 30095	LM833D
7403	4822 209 30095	LM833D
7404	5322 130 60159	BC847B
7501	9322 185 10668	CS8415A-CZ
7503	9352 456 90115	74HC1G125GW
7504	3198 010 42310	BC847BW
7505	3198 010 42310	BC847BW

Note: Only the parts mentioned in this list are normal service spare parts.

# EXPLODED VIEW - MAIN UNIT



**MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT**

101	3139 118 18791	Cabinet Front Silver	353	3139 228 61701	Remote Control RC19241001/01
101	3139 257 50461	Cabinet Front Dark Grey	356	2422 070 98246	△ Mains Cord UL 7A 1,5M
102	3139 118 18801	Cover Cab Side Left Silver	358	4822 263 21206	Cable Video 1,7M Yellow
102	3139 257 50471	Cover Cab Side L Dark Grey	361	2422 076 00374	Cable Cinch 1,5M Gn/Bu/Rd
103	3139 118 18811	Cover Cab Side Right Silver	362	3103 308 92610	Cable Audio 1,5M 2x2 RCA
103	3139 257 50481	Cover Cab Side R Dark Grey	370	3139 115 21991	Instruction for Use MX3900D/37S
105	3139 118 18821	Cover Tray Disc 1 Silver	1110	3103 308 52950	Fan Assembly KD1206PTS3
105	3139 257 50491	Cover Tray Disc 1 Dark Grey	5001	3139 118 32661	△ Mains Transfo. PWR207 6x75W/37
106	3139 118 19101	Cover Tray Disc 2 Silver	8000	3139 110 35031	FFC Cable Pin 14cm AD
106	3139 257 50501	Cover Tray Disc 2 Dark Grey	8001	3139 111 02001	FFC Cable 13Pin 40cm BD
107	3139 118 19111	Cover Tray Disc 3 Silver	8002	3139 111 02041	FFC Cable 17Pin 40cm AD
107	3139 257 50511	Cover Tray Disc 3 Dark Grey	8003	3139 111 02271	FFC Cable 13Pin 10cm AD
108	3139 118 19121	Cover Tray Disc 4 Silver	8005	3139 111 02051	FFC Cable 7Pin 34cm AD
108	3139 257 50521	Cover Tray Disc 4 Dark Grey	8006	3139 110 34860	FFC Cable 4Pin 34cm AD
109	3139 118 19131	Cover Tray Disc 5 Silver	8008	3139 111 02021	FFC Cable 4Pin 22cm AD
109	3139 257 50531	Cover Tray Disc 5 Dark Grey	8010	3139 111 02601	FFC Cable 16Pin 18cm AD
120	3139 118 19441	Button Set CD Open/Close Chrome	8011	3139 111 02591	FFC Cable 10Pin 28cm AD
122	3139 113 27511	Cutsheet Shield CD Open/Close	8012	3139 111 02581	FFC Cable 13Pin 18cm AD
123	3139 118 18831	Panel Left Silver	8013	3139 111 02571	FFC Cable 10Pin 18cm BD
123	3139 257 50541	Panel Left Dark Grey	8014	3139 111 02571	FFC Cable 10Pin 18cm BD
124	3139 118 18841	Window Display	8016	3139 110 36140	FFC Cable 4Pin 18cm AD
125	3139 118 18851	Panel Display Silver	8018	3139 111 02231	FFC Cable 5Pin 12cm AD
125	3139 257 50551	Panel Display Dark Grey			
126	3139 118 18861	Panel Control Silver			
126	3139 257 50561	Panel Control Dark Grey			
127	3139 118 18871	Button Set Power Eco Silver			
127	3139 257 50571	Button Set Power Eco Dark Grey			
128	3139 114 77041	Lightguide Power Eco Stdby			
133	3139 118 18941	Ring Ornamental			
134	3139 118 18931	Cap Knob Rotary Chrome			
135	3139 118 18921	Knob Source/Volume Rotary			
136	3139 118 19461	Button Set Bass Chrome			
137	3139 118 19471	Button Set Treble Chrome			
140	3139 118 19451	Button Set Source Control Chrome			
256	3139 113 27220	Foot Rubber			
259	3139 111 01470	Spring Grounding			
296	3139 110 40691	Screw M5x6 Hex W/Head Chrome			
296	3139 110 40701	Screw M5x6 Hex W/Head Black			
345	3139 119 01381	Satellite LS Package CS3900D/17S			
345	3139 119 00551	Satellite LS Package CS3950D/17S			
346	3139 119 01391	Subwoofer Box SW3900/17S			
346	3139 119 00561	Subwoofer Box SW3950D/17s			
349	3139 119 00821	Loudspeaker Stands MX3950D Black			
351	4822 303 50063	FM Antenna			
352	4822 303 50082	AM Loop Antenna			

Note: Only the parts mentioned in this list are normal service spare parts.

**SCREW LISTS - MAIN UNIT****Breakdown of Satellite LS Package CS3900D/17S**

9965 000 17040	Front Left Speaker Box	185	M3 x 6
9965 000 17041	Front Right Speaker Box	186	D3 x 10
9965 000 17042	Surround Left Speaker Box	187	M3 x 6
9965 000 17043	Surround Right Speaker Box	188	M3 x 6
9965 000 17044	Center Speaker Box	228	M3 x 6
9965 000 17045	Front Grille Assy (Center Speaker)	229	M3 x 6
9965 000 17046	Philips Logo (Center Speaker)	230	D3 x 10
9965 000 17047	Keyhole Bracket Pack set Silver	233	M3 x 6
		235	D3 x 10
		276	D3 x 10

**Breakdown of Satellite LS Package CS3950D/17S**

9965 000 17050	Front Left Speaker Box	277	D3 x 10
9965 000 17051	Front Right Speaker Box	278	D3 x 10
9965 000 17052	Surround Left Speaker Box	279	D2 x 8
9965 000 17053	Surround Right Speaker Box	280	D2 x 8
9965 000 17054	Center Speaker Box	281	D2 x 8
9965 000 17055	Front Grille Assy (Center Speaker)	282	M3 x 6
9965 000 17046	Philips Logo (Center Speaker)	283	M3 x 6
9965 000 17056	Keyhole Bracket Pack Set Black	284	M3 x 6
		285	D3 x 10
		286	M3 x 6

**Breakdown of SW3900/17S & SW3950/17S**

9965 000 17048	Front Grille Assy SW3900/17S		
9965 000 17049	Front Grille Assy SW3950/17S	287	M3 x 6
9965 000 17046	Philips Logo	288	D3 x 10
		290	D3 x 10
		291	D3 x 10
		292	D3 x 10
		293	D3 x 10
		295	M3 x 6
		296	M5 x 6 Hex W/Head
		297	M3 x 6

Note: Only the parts mentioned in this list are normal service spare parts.

**DOCUMENT HISTORY**

**Version 1.0**

- \* Initial release