DVD Receiver

MX3900D/37 & MX3910D/17/78

MX3950D/37 & MX3960D/17

Service
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Service Manual

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CLASS 1
LASER PRODUCT

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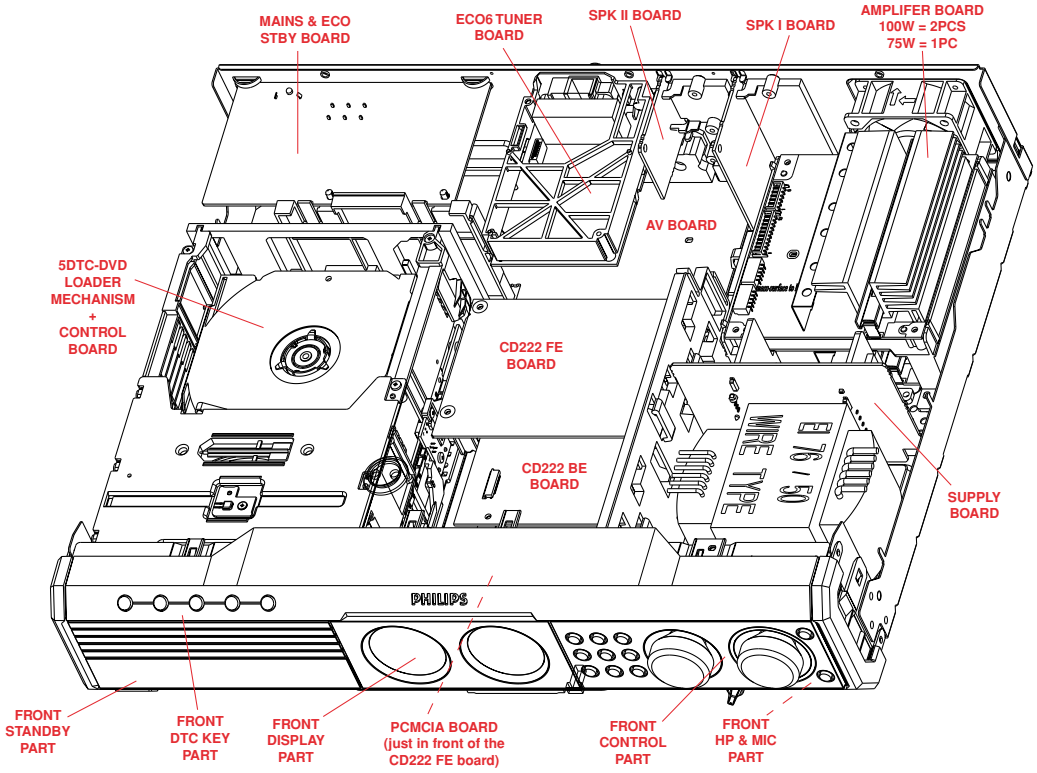
GB 3139 785 30202

Version 1.2

PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATIONS:

Type /Versions: / Features & Board in used:	MX3900D		MX3910D		MX3950D		MX3960D	
	/37		/37	/78	/37		/17	
Karaoke	-		-	-	-		-	
News	-		-	-	-		-	
RDS	-		-	-	-		-	
Pro-Scan	x		x	x	x		x	
PCMCIA	-		-	-	-		-	
Standby - Clock Display	x		x	x	x		x	
ECO Standby - No Display	x		x	x	x		x	
Voltage Selector	-		-	x	-		-	
Digital In / Out	x		x	x	x		x	
Aux Input	x		x	x	x		x	
TV Input	x		x	x	x		x	
Line Output	x		x	x	x		x	
SCART output	-		-	-	-		-	
Pr, Pb & Y Outputs	x		x	x	x		x	
CVBS Output	x		x	x	x		x	
S-Video Output	x		x	x	x		x	
Headphone Socket	x		x	x	x		x	
Tuner board - ECO6 System non-Cenelec	x		x	x	x		x	
Tuner board - ECO6 System Cenelec	-		-	-	-		-	
Amplifier board - 1pc (75W 6-Channel)	x		x	x	x		x	
Amplifier board - 1pc (75W 7-Channel)	-		-	-	-		-	
Amplifier board - 2pc (100W 6-Channel)	-		-	-	-		-	

SPECIFICATIONS

GENERAL:

Mains voltage : 120V for /17/37
110-127V/220-240V switchable for /78
Mains frequency : 50/60Hz
Power consumption : < 0,5W at ECO Standby
< 20W Standby (clock display)
Clock accuracy : < 4 seconds per day
Dimension centre unit : 435 x 100 x 360mm

TUNER:

FM

Tuning range : 87.5-108MHz
Grid : 50kHz
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75Ω coaxial
Sensitivity at 26dB S/N : < 7µV
Selectivity at 600kHz bandwidth : > 25dB
Image rejection : > 25dB
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 530-1700kHz
Grid : 10kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power [1] at 4Ω, 1 kHz, 10% THD
L/R : 2 x 75W RMS
2 x 60W FTC
Center : 72W
Surround L/R : 72W RMS/channel
Sub-woofer : 72W
Frequency response ±3dB : 20Hz-20kHz
Hum (minimum volume) : 200nW
Residue noise (min, volume) : 40nW
Digital Sound Control : Stereo, 3D Sound, Multi modes [2]
Bass & Treble : -3dB to +3dB
Input sensitivity
TV-in : 350mV ± 3dB
Aux-in : 880mV ± 2dB
Output sensitivity
Line out : 600mV ± 2dB at 47kΩ
Subwoofer out [3] : 1.85V ± 2dB at 47kΩ
Headphone (vol. max.) : 660mV ± 2dB at 32Ω
Center out (vol. max.) : 500mV ± 2dB at 47kΩ

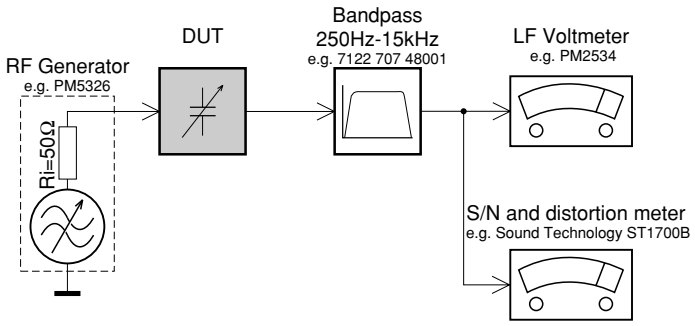
COMPACT DISC/VCD/DVD:

Video Decoding : MPEG-2
Video DAC : 10 Bits
Signal System : PAL / NTSC
Video Format : 4:3 / 16:9
MP3-CD bit rate [4] : 32-256 kbs,variable bitrates
MP3-CD sampling frequencies [4] : 32kHz, 44.1kHz, 48kHz
CBVS out [5]
CVBS level : 1.0 ± 0.1V_{p-p}
Luminance S/N ratio : > 45dB (unweighted)
YUV out [5]
Amplitude : 714mV ± 7mV
S/N ratio : > 50dB (unweighted)
S-Video out [5]
Y level : 1.0 ± 0.1V_{p-p}
Y S/N ratio : > 48dB (unweighted)
C level (burst) : 286mV_{p-p} +1/-4 dB
Digital Out : Coaxial acc IEC61937 / IEC60958
Digital In : Coaxial acc IEC60958

1) with only channel(s) under meausrement loaded, all other channels are unloaded.
2) Frequency response in each setting is software controlled.
3) measured with 55Hz at vol. maximum.
4) Recording format: ISO9660, UDF format is not supported.
5) Output terminals terminated with 75Ω

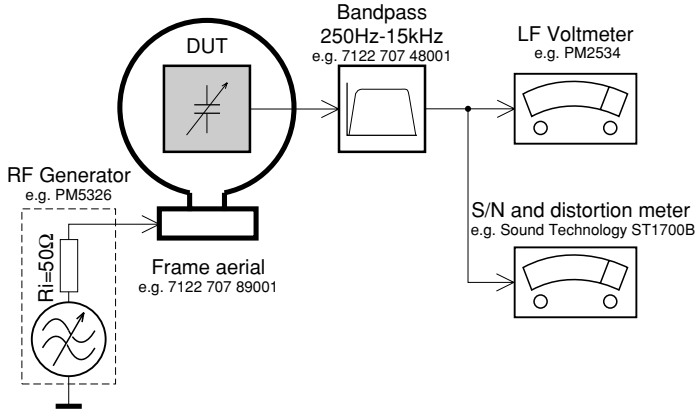
MEASUREMENT SETUP

Tuner FM



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

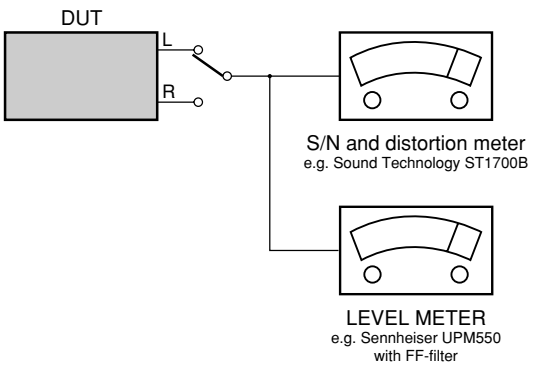
Tuner AM (MW,LW)



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).

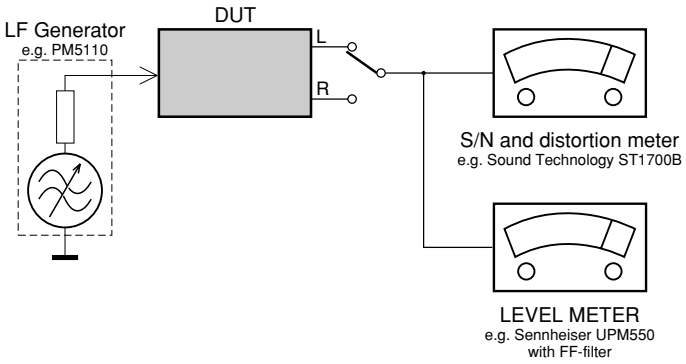
CD

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

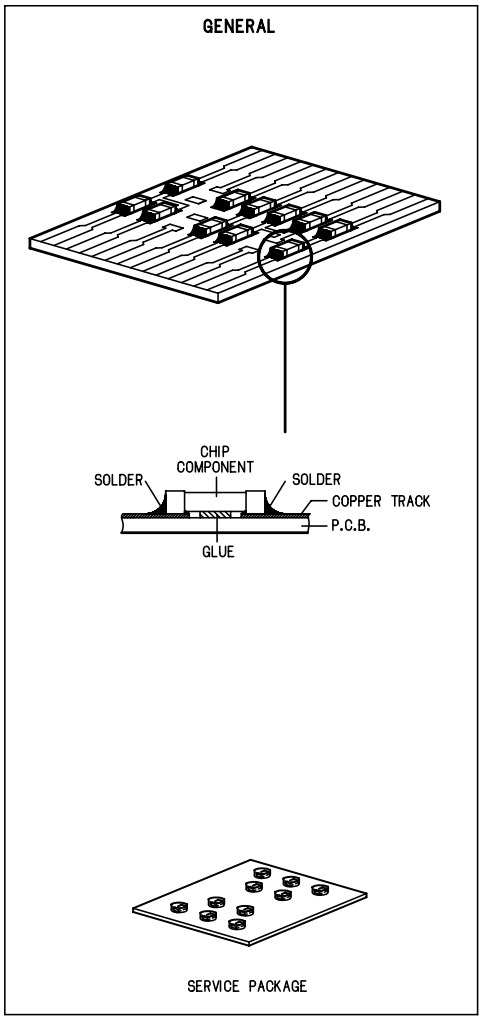
Compact Disc:

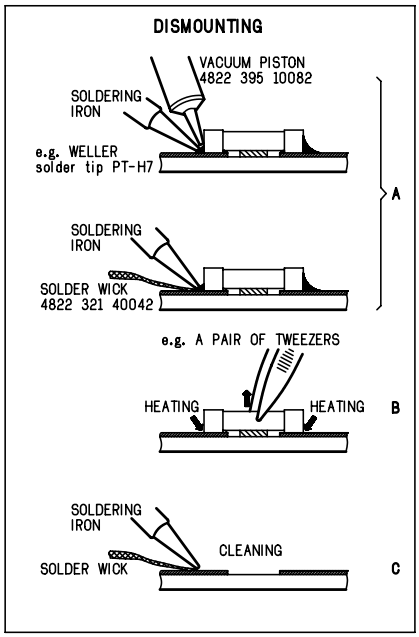
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
SBC444/444A 4822 397 30245
CD-RW Printed Audio Test Disc 7104 099 96611
Dolby Pro-logic Test Disc 4822 395 10216

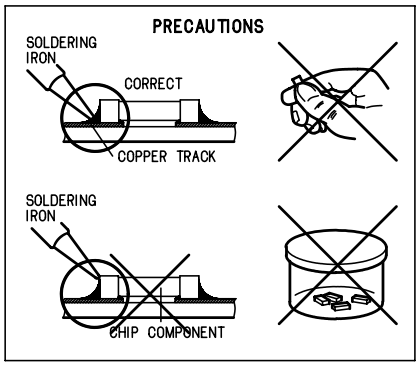
ESD Equipment:

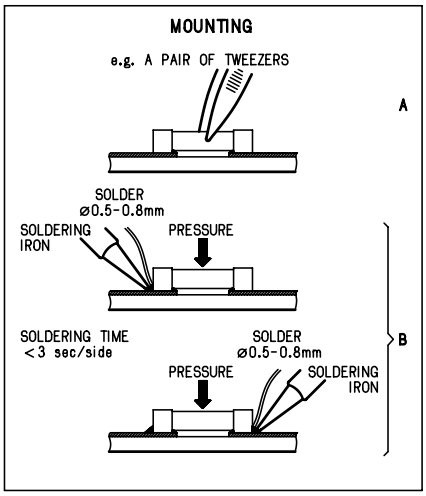
Anti-static table mat - large 1200x650x1.25mm ... 4822 466 10953
Anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connector box (1MΩ) 4822 320 11307
Extension cable
(to connect wristband to conn. box) 4822 320 11305
Connecting cable
(to connect table mat 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

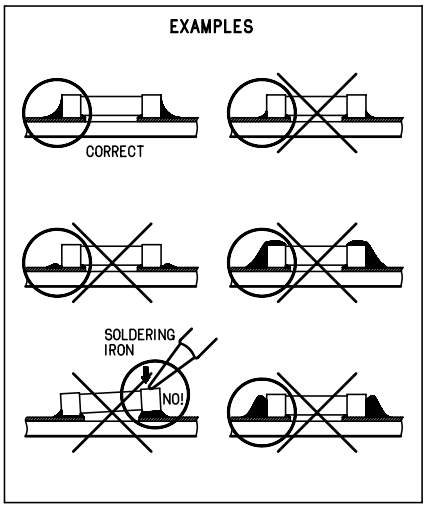
HANDLING CHIP COMPONENTS











ESD

(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.

(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 enfiler 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 elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan 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.

(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.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta 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.

(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 utiliséés les piéces de rechange identiques à celles spécifiées.

(D)

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

(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.

"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."

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

(GB) Warning !

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

(S) Varning !

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

(SF) Varoitus !

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

(DK) Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

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 5 screws A and 8 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.

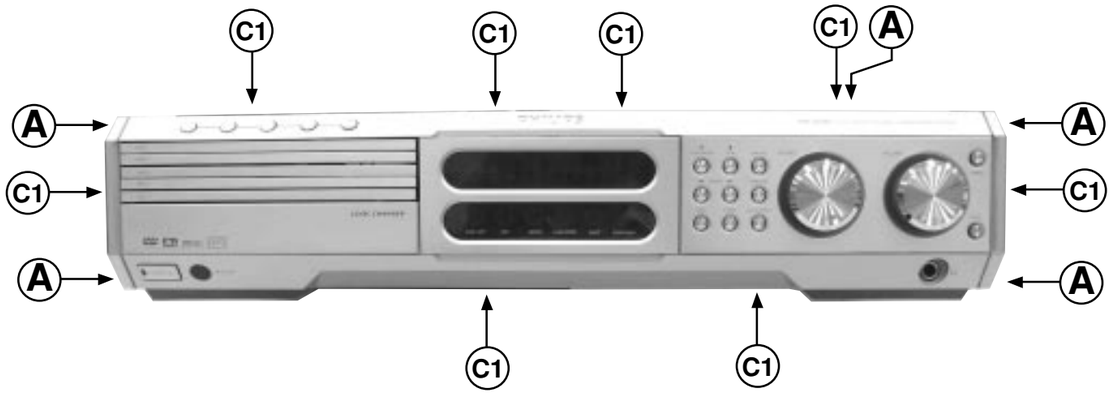


Figure 1

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.

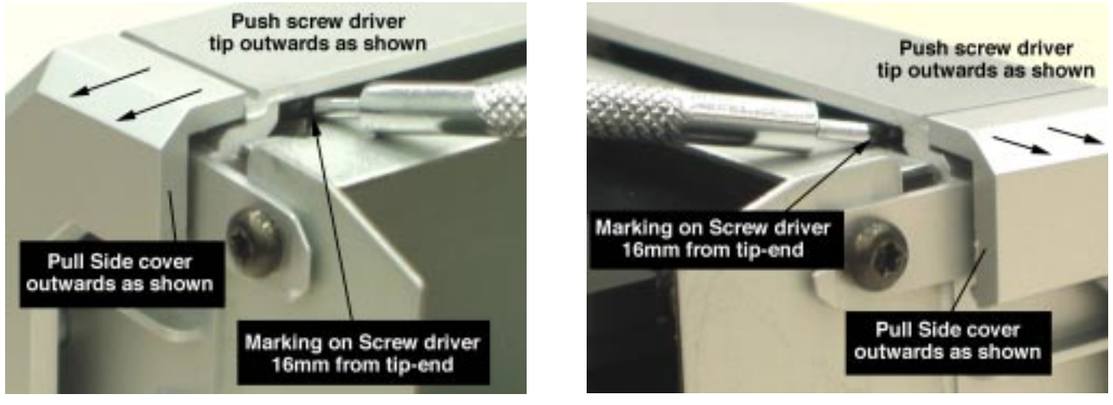


Figure 2

2-1

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 assemby (pos 1101) as pe 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.

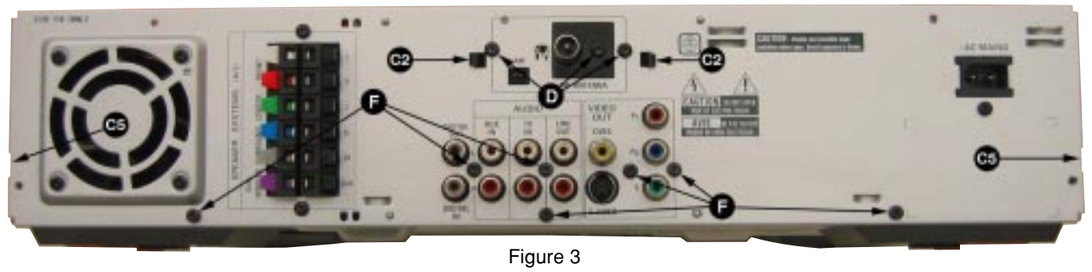


Figure 3

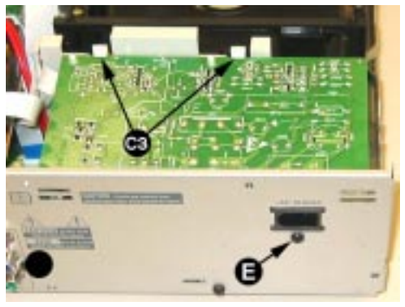


Figure 4

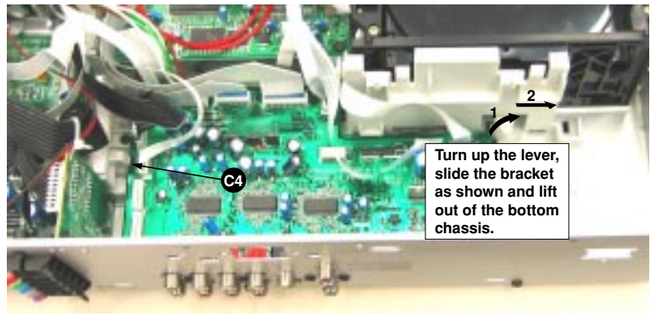


Figure 5

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.

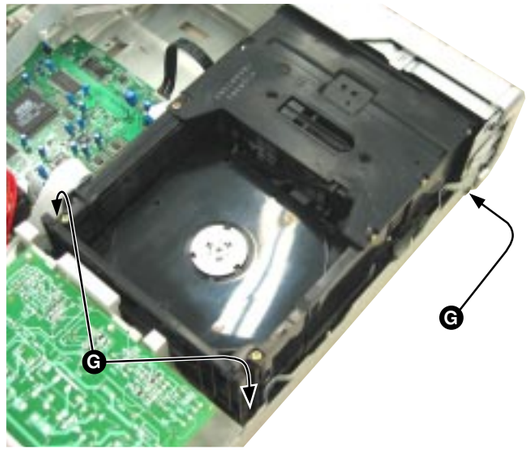


Figure 6

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.

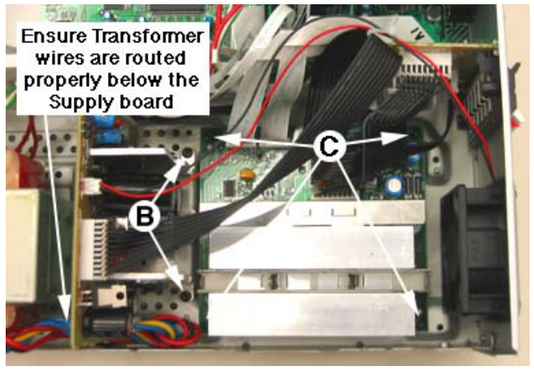
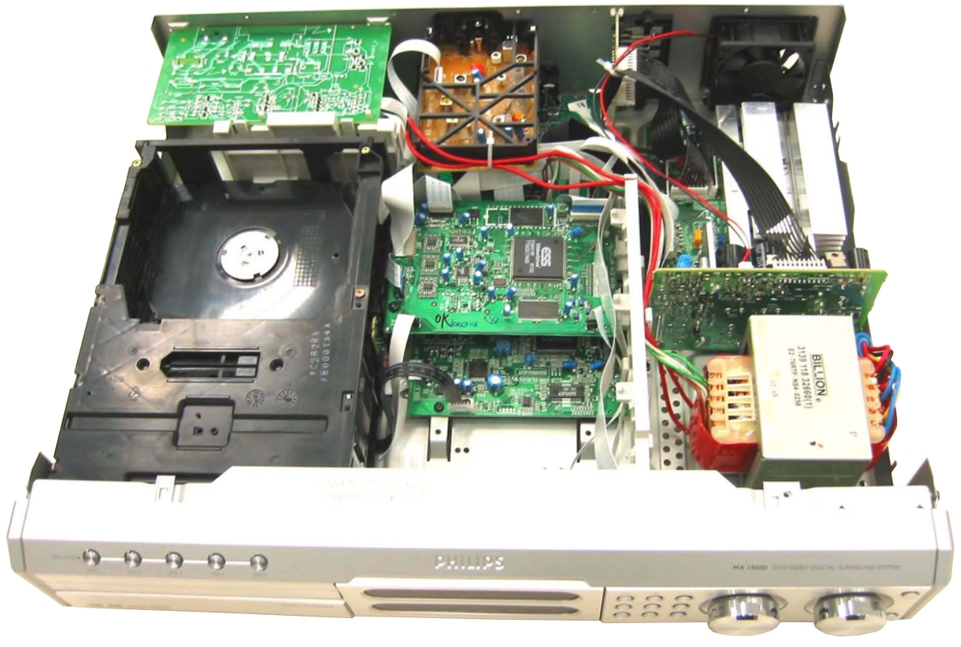


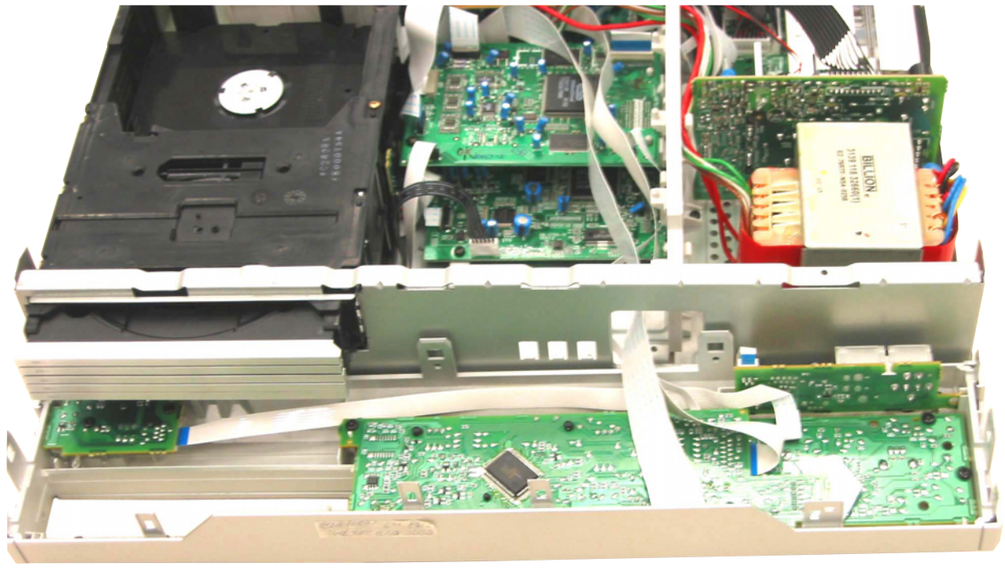
Figure 7

Service positions

Service position A (Top cover removed)

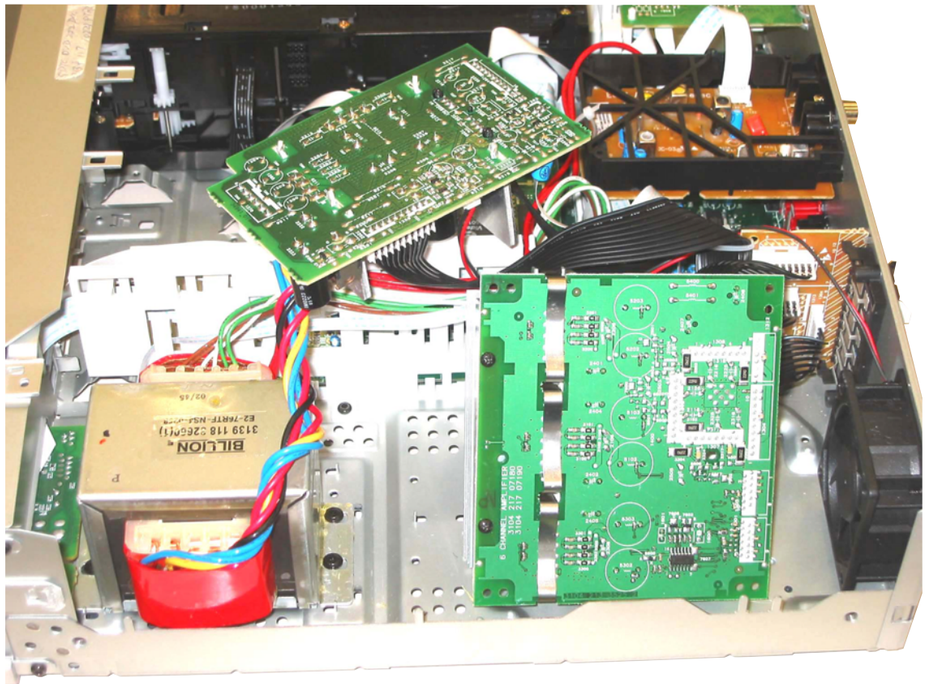


Service position B (Front Panel loosen)



Service positions

Service position C (Supply and Amplifier boards loosen)



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.

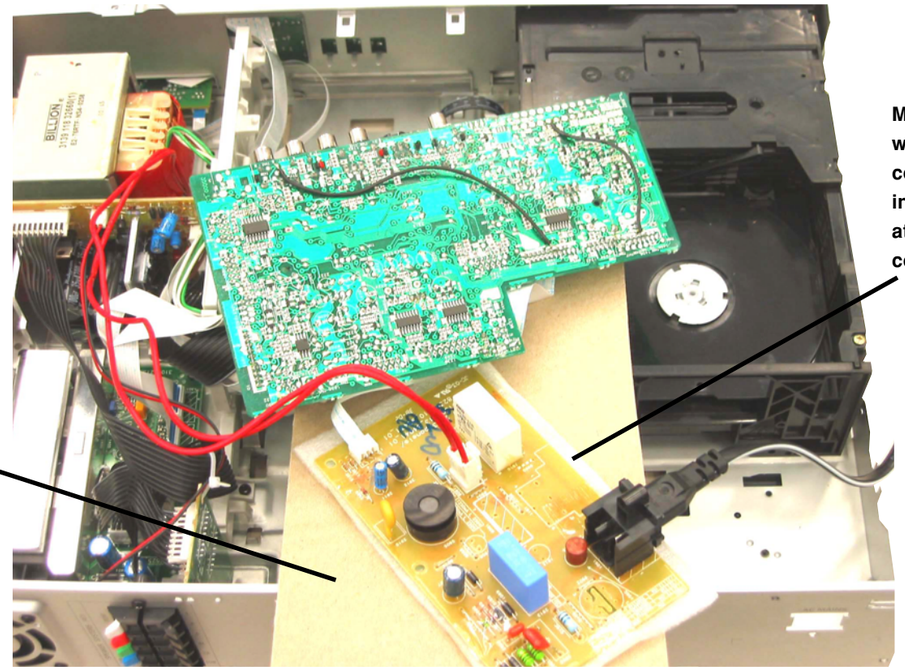
3) Insulation sheet (eg. thick paper or cardboard) should be use during fault-finding to prevent short-circuiting of copper patterns to metallic surroundings.

Note:

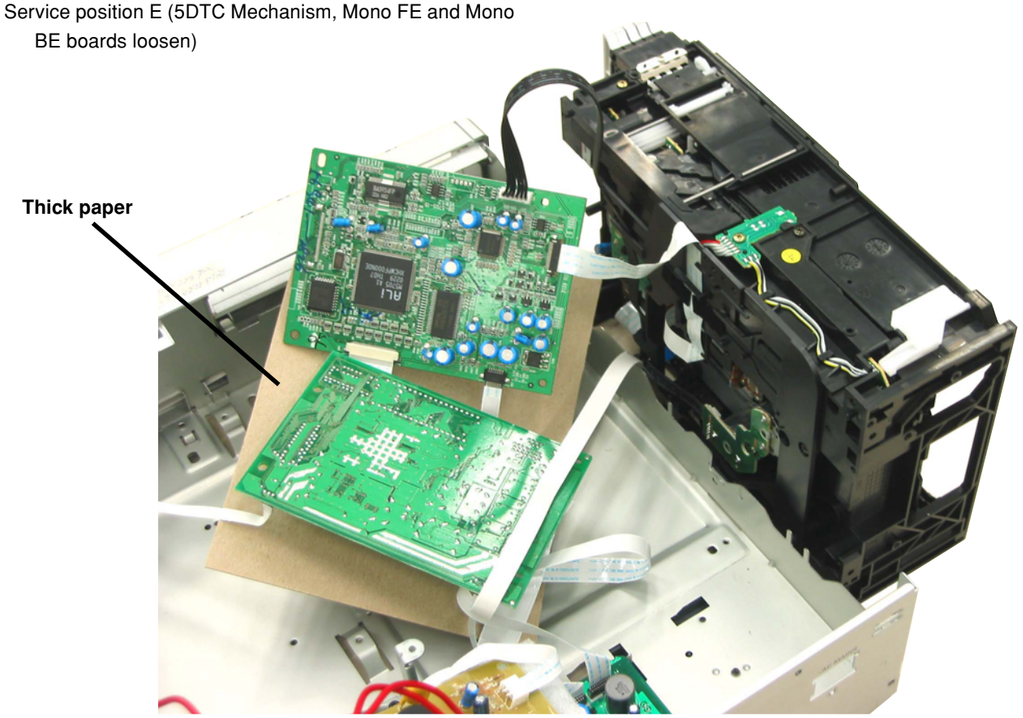
The ground connection between AV board stoko pin 1100 and Amplifier board stoko pin 1320 must be connect ed during Service pos C and D in order to have sound output at the Loudspeakers.

2-3

Service position D (Mains & AV boards loosen)



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



3-1

SERVICE TEST PROGRAM I

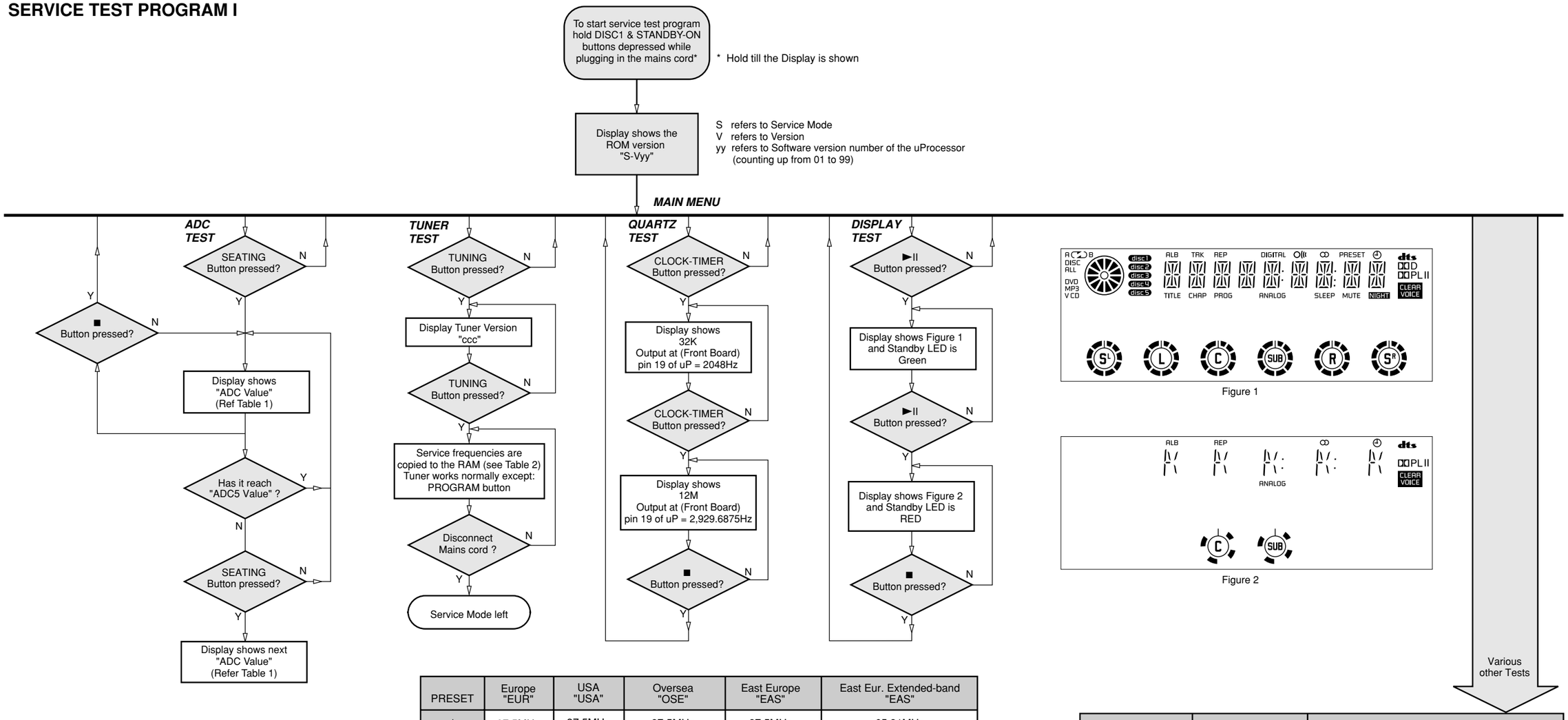


Figure 1

Figure 2

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

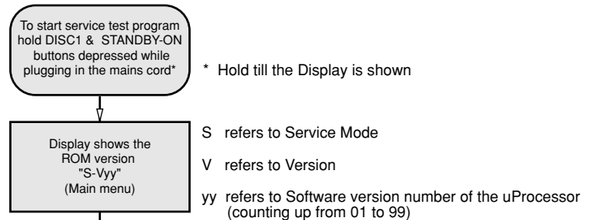
Table 2

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.

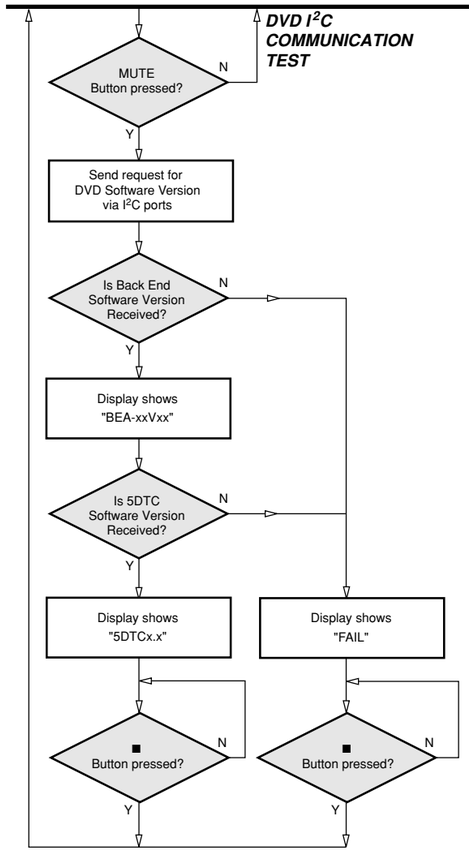
TEST	*Activated with*	*ACTION*
EEPROM TEST	►►I ■ to Exit	Some test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT TEST	I◄◄	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
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	

3-2

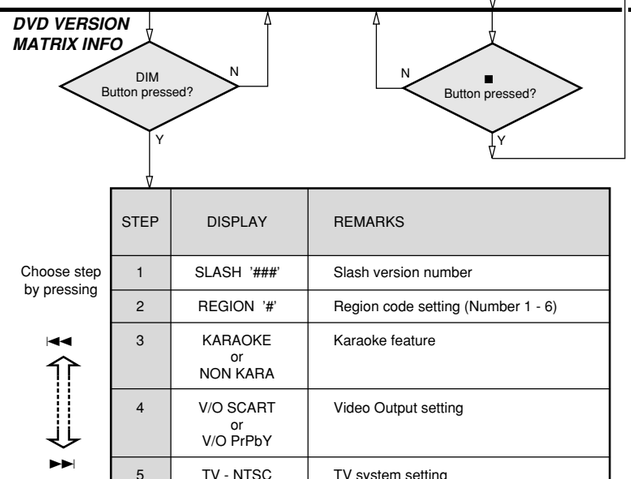
SERVICE TEST PROGRAM II



Note:
1. Remote Control must be in DVD source before start of any DVD Service Test.
2. All buttons on this "DVD SVC" test refers to the buttons on the Remote control.
3. Awaits for the mechanism to initialized before performing DVD test.



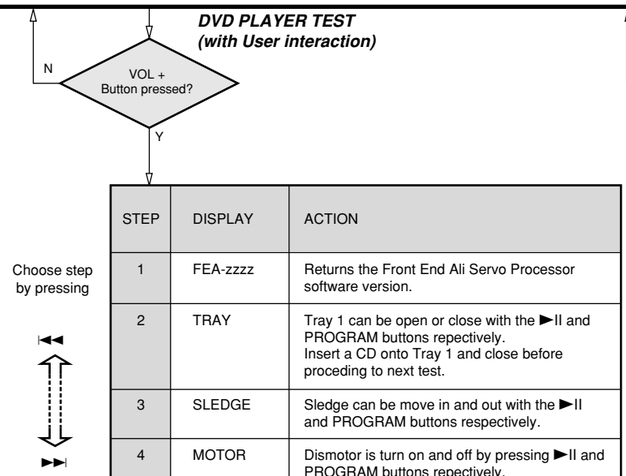
DVD I²C Communication Test is used to test the I²C communication port between the DVD module and the microprocessor of the set.



Choose step by pressing ◄◄ ►►

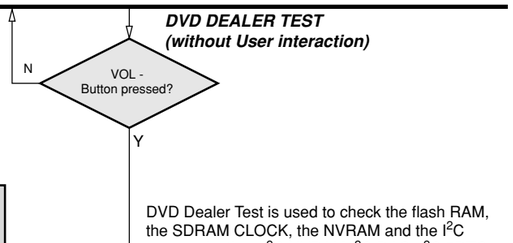
STEP	DISPLAY	REMARKS
1	SLASH 'xxx'	Slash version number
2	REGION 'x'	Region code setting (Number 1 - 6)
3	KARAOKE or NON KARA	Karaoke feature
4	V/O SCART or V/O PrPbY	Video Output setting
5	TV - NTSC or TV - PAL or TV - AUTO	TV system setting
		Press ■ to exit

DVD Version Matrix Info is used to read the version matrix information that are stored/defined in the DVD module software.



Choose step by pressing ◄◄ ►►

STEP	DISPLAY	ACTION
1	FEA-zzzz	Returns the Front End Ali Servo Processor software version.
2	TRAY	Tray 1 can be open or close with the ►II and PROGRAM buttons repectively. Insert a CD onto Tray 1 and close before proceding to next test.
3	SLEDGE	Sledge can be move in and out with the ►II and PROGRAM buttons respectively.
4	MOTOR	Dismotor is turn on and off by pressing ►II and PROGRAM buttons repectively.
5	FOC-RDL FOC FAIL RDL FAIL	DVD Module does a Focus test follow by Radial test if focus is successful. Is displayed when the focus test fail. Is displayed when the radial test fail.
6	GROOVES	In this test the laser spot can jumps to another position. Press ►II to jump to the next postion & PROGRAM to jump to the previous postion.
		Disconnect mains cord to exit the Service Test Program.



DVD Dealer Test is used to check the flash RAM, the SDRAM CLOCK, the NVRAM and the I²C communication (I²C NVRAM I²C DAC, I²C 5DTC and I²C SDPIF IC)

STEP	DISPLAY	ACTION
1	CHECKSUM	Check the correctness of the checksum in the flash. Display will show "PASS" or "FAIL" accordingly.
2	SDRAM CLK	Test the SDRAM clock output. Display "PASS" or "FAIL" accordingly. Pro-Scan: 114MHz +/- 25ppm Non Pro-Scan: 108MHz +/- 25ppm
3	NVRAM	Makes a write followed by a read test to the NVRAM. Display will show "PASS" or "FAIL" accordingly.
4	I²C COMM	Checks I²C bus to NVRAM, DAC, 5DTC and SDPIF IC. Display will show "PASS" or "FAIL" accordingly.
		Disconnect mains cord to exit the Service Test Program.

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 MX3910D/17 : ***<1><1><4> <0><1><0> <0><0> US***
   for MX3910D/78 : ***<4><1><4> <0><1><0> <0><0> LATAM***

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

   for MX3960D/17 : ***<1><1><4> <0><1><0> <0><0> 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

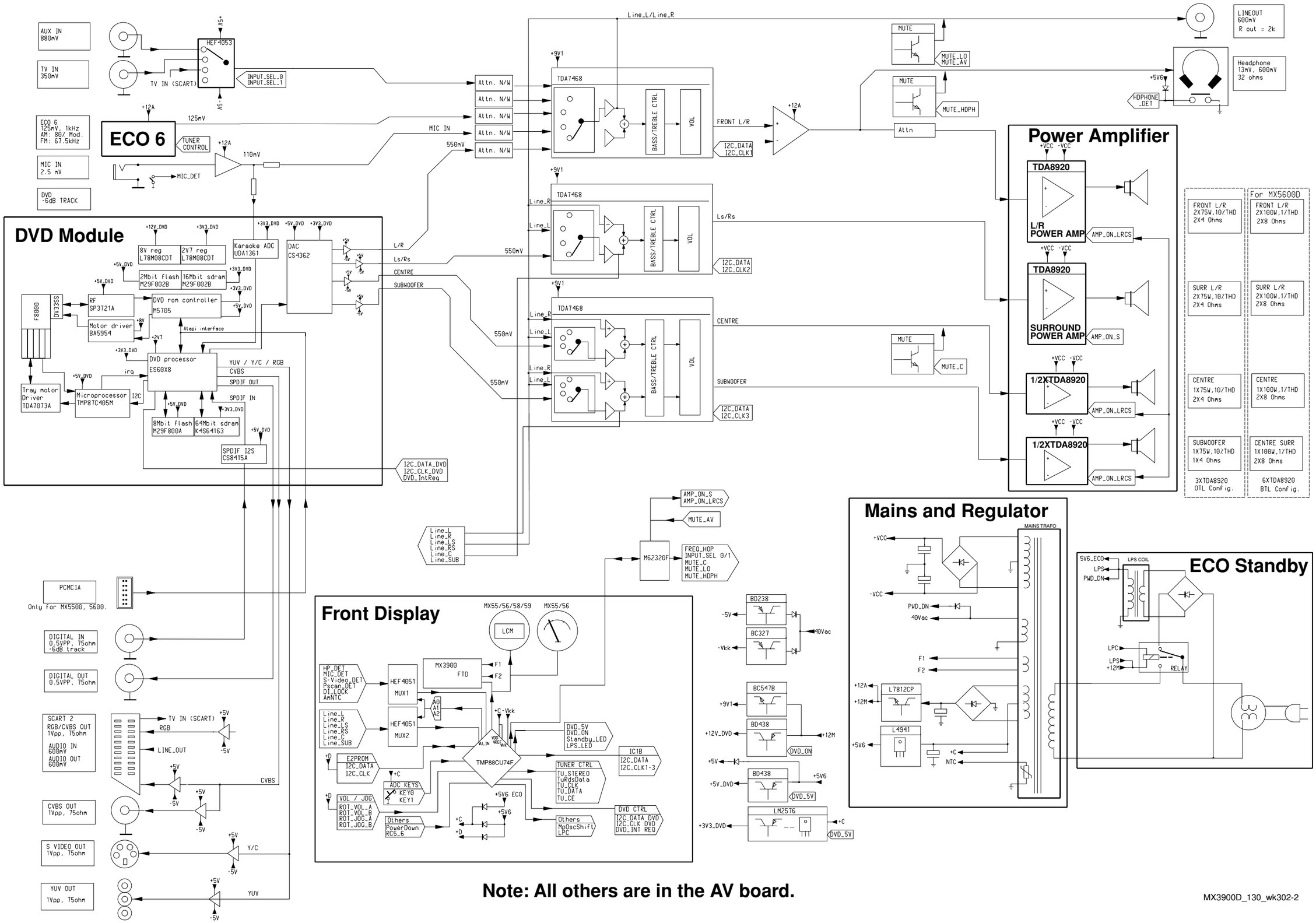
1) Select Disc with the Remote Control
2) Press <SYSTEM MENU>
3) Use the down key move all the way down (4x) to bottom of "Setup Menu".
4) Use the right key move to the sub-menu.
5) Use the down key move down (3x) to "Default" and down one more time to see the software version.
6) The TV screen will shows:
   R1000 BEA3131PV08 R2812 V72
   where 1000 = DVD version matrix (Region, Karaoke Yes/No, Default Video O/P, Default TV system)
   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.

4-1

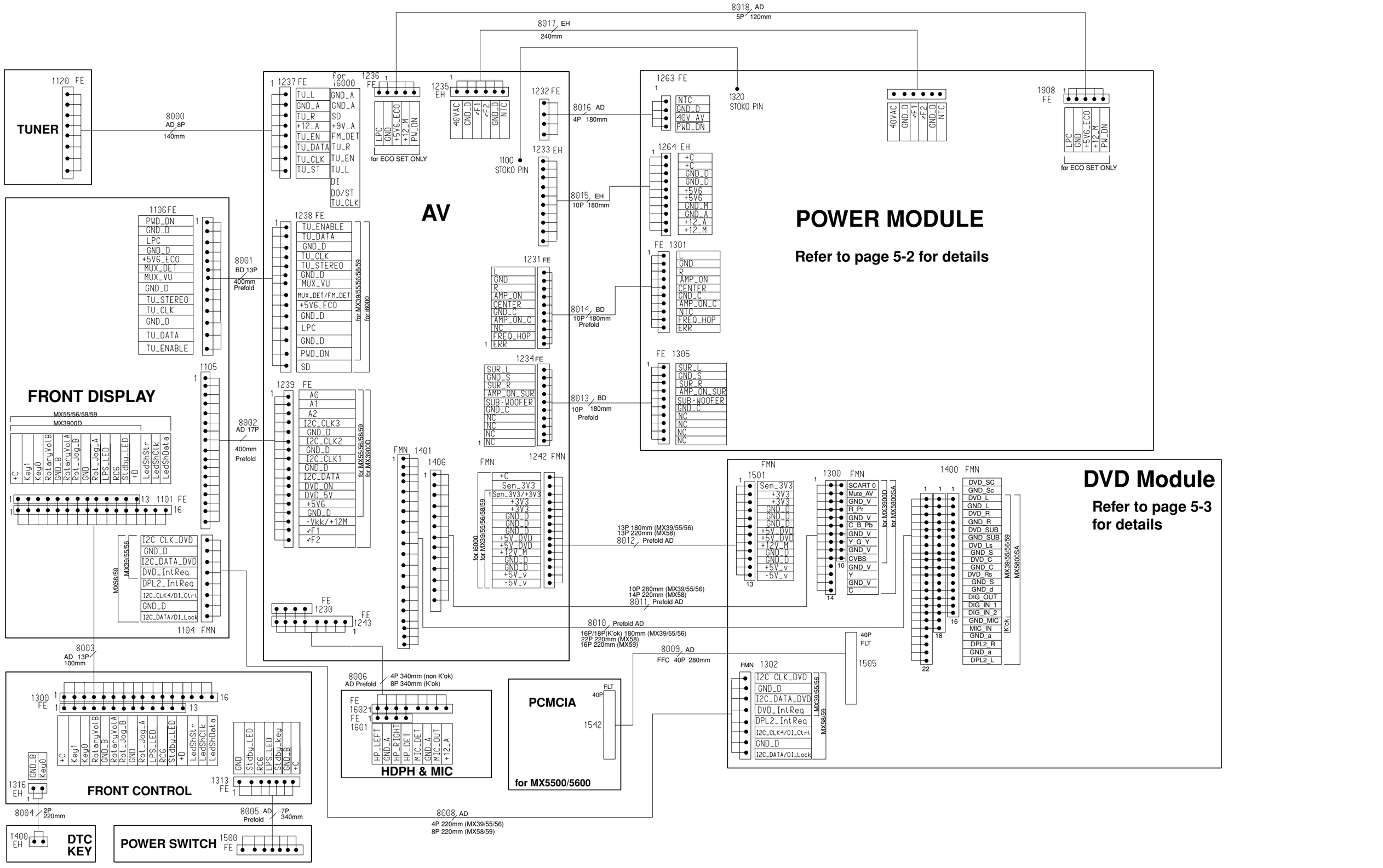
SET BLOCK DIAGRAM



Note: All others are in the AV board.

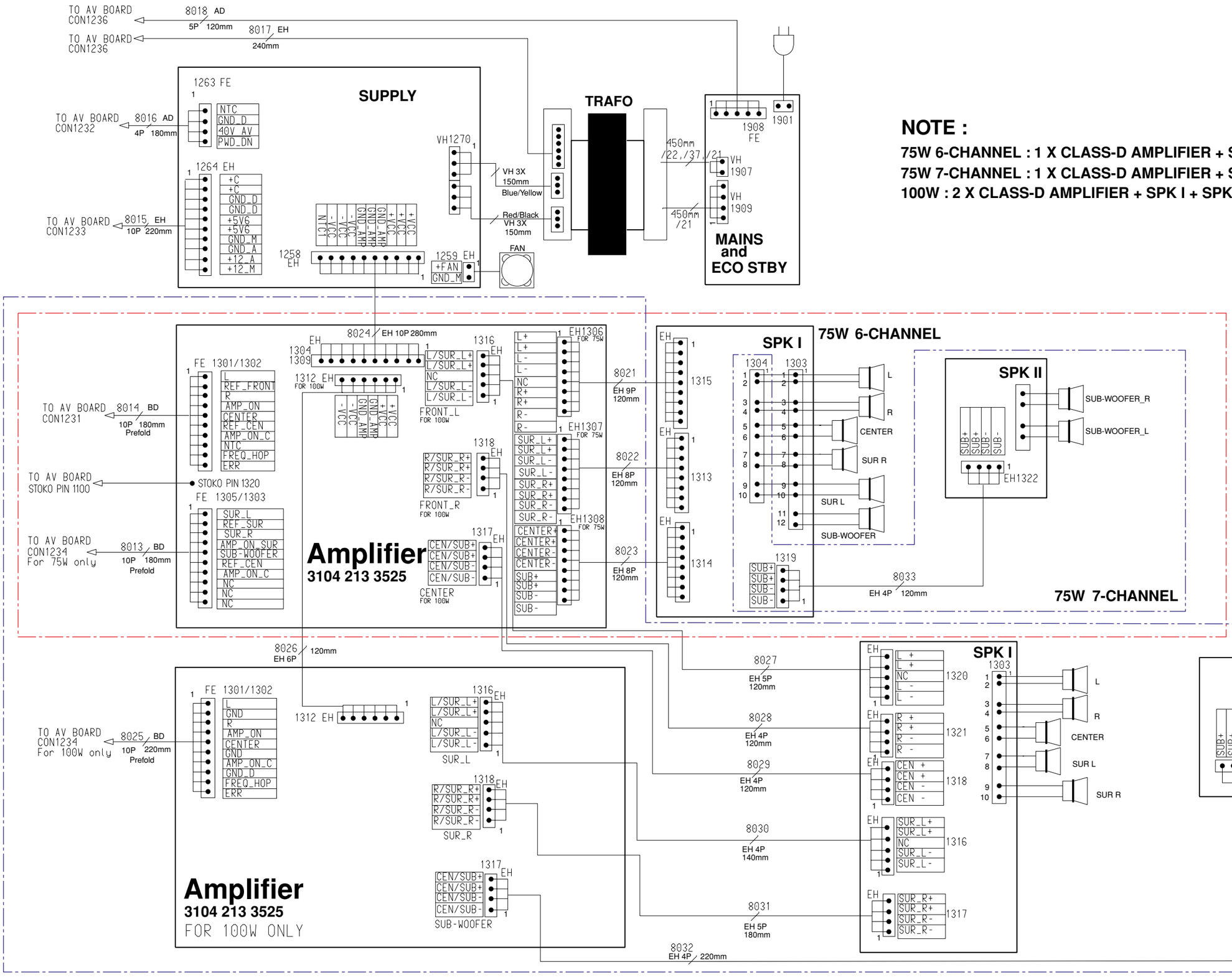
5-1

MAIN WIRING DIAGRAM



5-2

WIRING DIAGRAM - POWER MODULE DETAILS

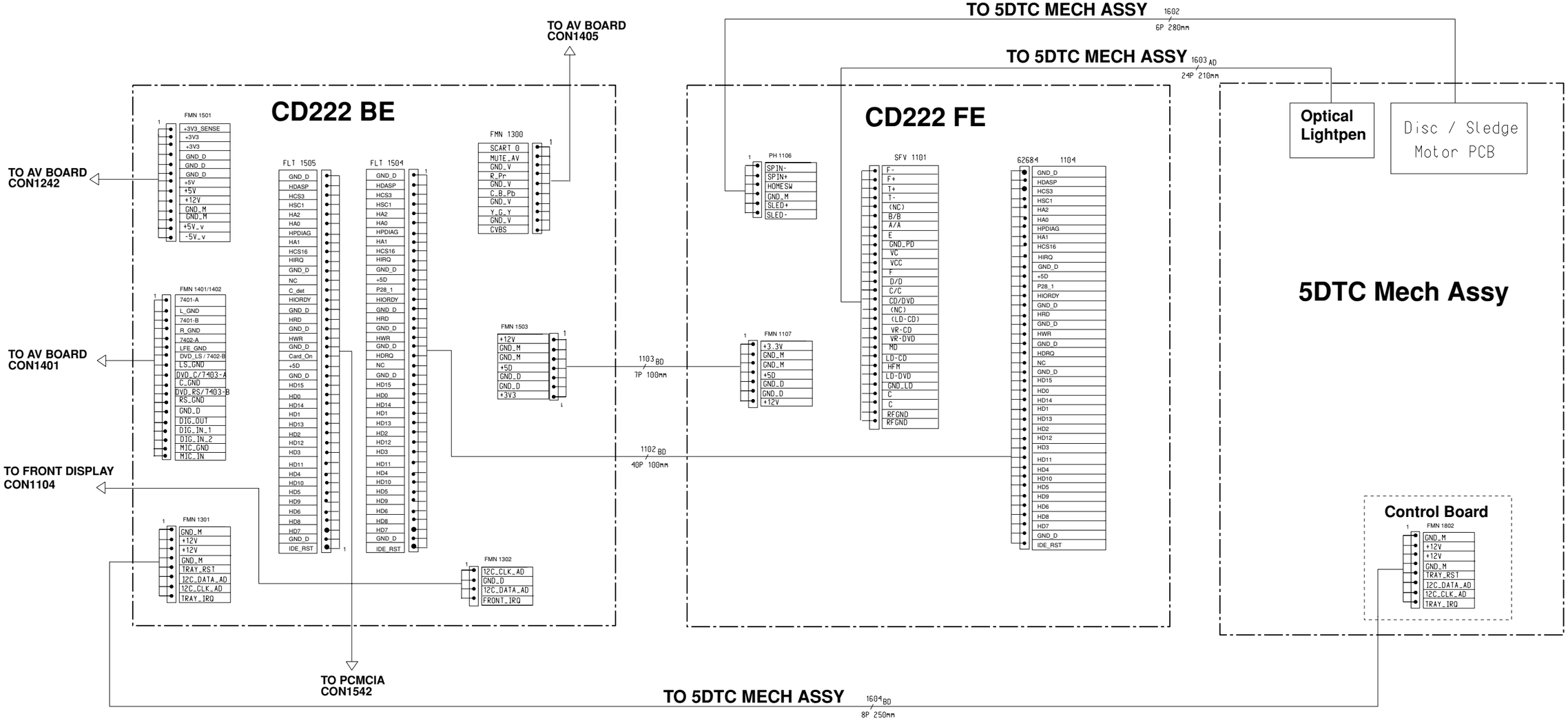


NOTE :

75W 6-CHANNEL : 1 X CLASS-D AMPLIFIER + SPK I
75W 7-CHANNEL : 1 X CLASS-D AMPLIFIER + SPK I + SPK II
100W : 2 X CLASS-D AMPLIFIER + SPK I + SPK II

5-3

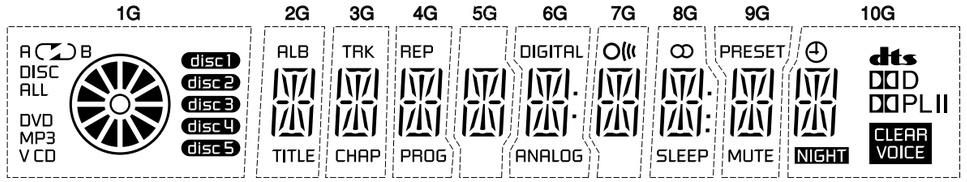
WIRING DIAGRAM - DVD MODULE DETAILS

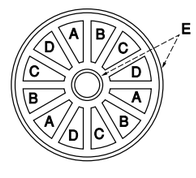


FRONT BOARDS

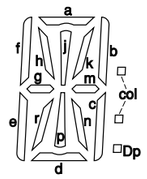
TABLE OF CONTENTS

FTD DISPLAY PIN CONNECTIONS

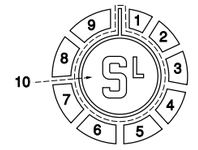




(1G)



(2G - 10G)



(11G - 13G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	
P1	A	a	a	a	a	a	a	a	a	a	SL1	C1	SR1	
P2	↱	h	h	h	h	h	h	h	h	h	SL2	C2	SR2	
P3	↳	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	SL3	C3	SR3	
P4	B	k	k	k	k	k	k	k	k	k	SL4	C4	SR4	
P5	DISC	b	b	b	b	b	b	b	b	b	SL5	C5	SR5	
P6	ALL	f	f	f	f	f	f	f	f	f	SL6	C6	SR6	
P7	DVD	m	m	m	m	m	m	m	m	m	SL7	C7	SR7	
P8	MP3	g	g	g	g	g	g	g	g	g	SL8	C8	SR8	
P9	V	c	c	c	c	c	c	c	c	c	SL9	C9	SR9	
P10	CD	e	e	e	e	e	e	e	e	e	SL10	C10	SR10	
P11	A	r	r	r	r	r	r	r	r	r	L1	SUB1	R1	
P12	B	n	n	n	n	n	n	n	n	n	L2	SUB2	R2	
P13	C	d	d	d	d	d	d	d	d	d	L3	SUB3	R3	
P14	D	ALB	TRK	REP	-	col	◯((	col	PRESET	◷	L4	SUB4	R4	
P15	E	TITLE	CHAP	PROG	-	DIGITAL	-	Dp	MUTE	NIGHT	L5	SUB5	R5	
P16	disc1	-	-	-	-	ANALOG	-	∞	-	dts	L6	SUB6	R6	
P17	disc2	-	-	-	-	-	-	SLEEP	-	DD D	L7	SUB7	R7	
P18	disc3	-	-	-	-	-	-	-	-	DD PL	L8	SUB8	R8	
P19	disc4	-	-	-	-	-	-	-	-	II	L9	SUB9	R9	
P20	disc5	-	-	-	-	-	-	-	-	CLEAR VOICE	L10	SUB10	R10	

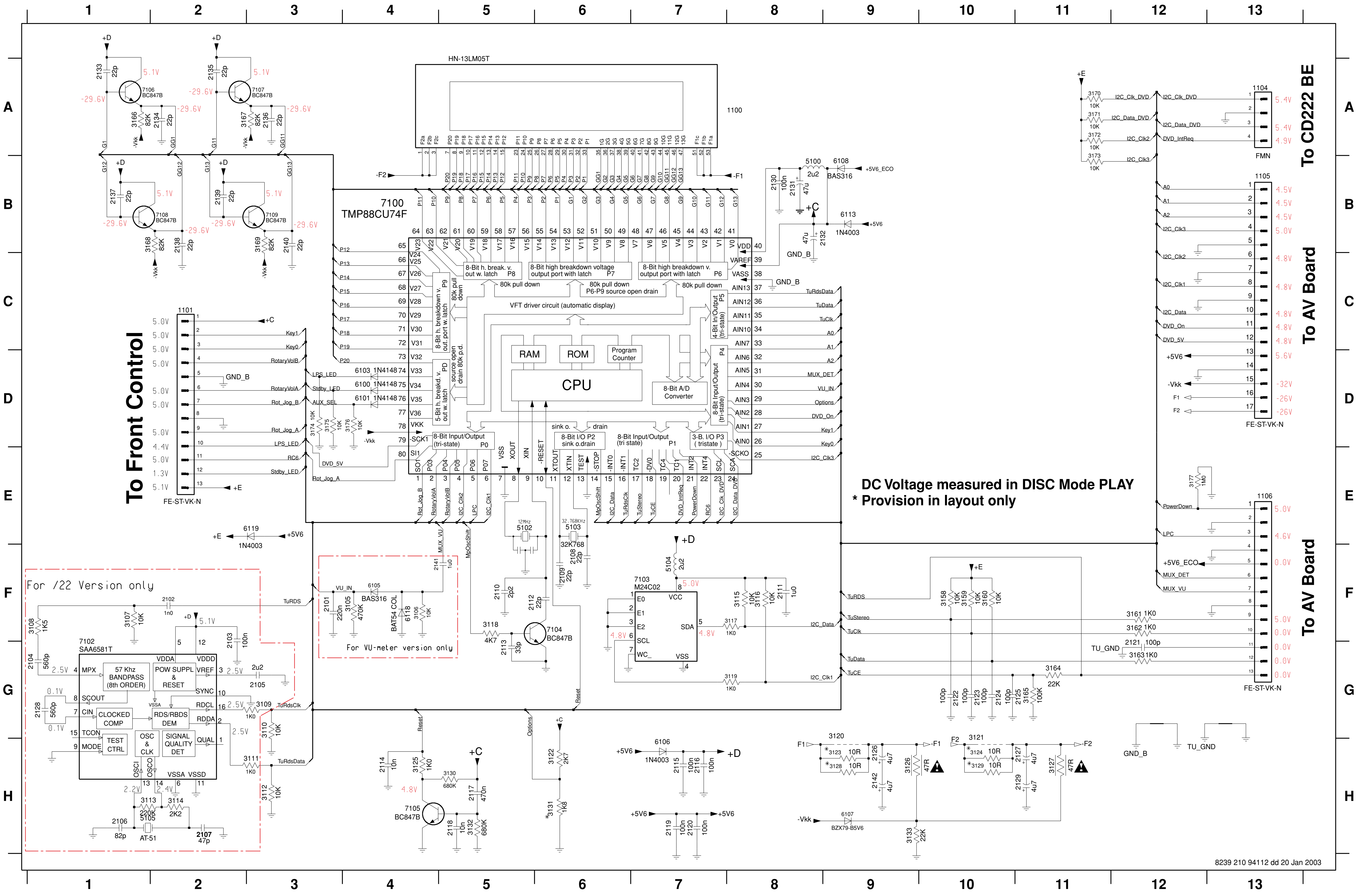
FTD DISPLAY PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
FUNCTION	F2	F2	F2	NP	NP	NX	P20	P19	P18	P17	P16	P15	P14	P13	P12	NX	NX	NX	NX	NX	NX	NX	NX	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NX	1G	2G	3G	4G

FTD DISPLAY PIN NO.	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
FUNCTION	5G	6G	7G	8G	9G	10G	11G	12G	13G	NX	NP	NP	F1	F1	F1

Note: Fn : Filament pin
nG : Grid pin
Pn : Anode pin
NP : No Pin
MX : No extended pin

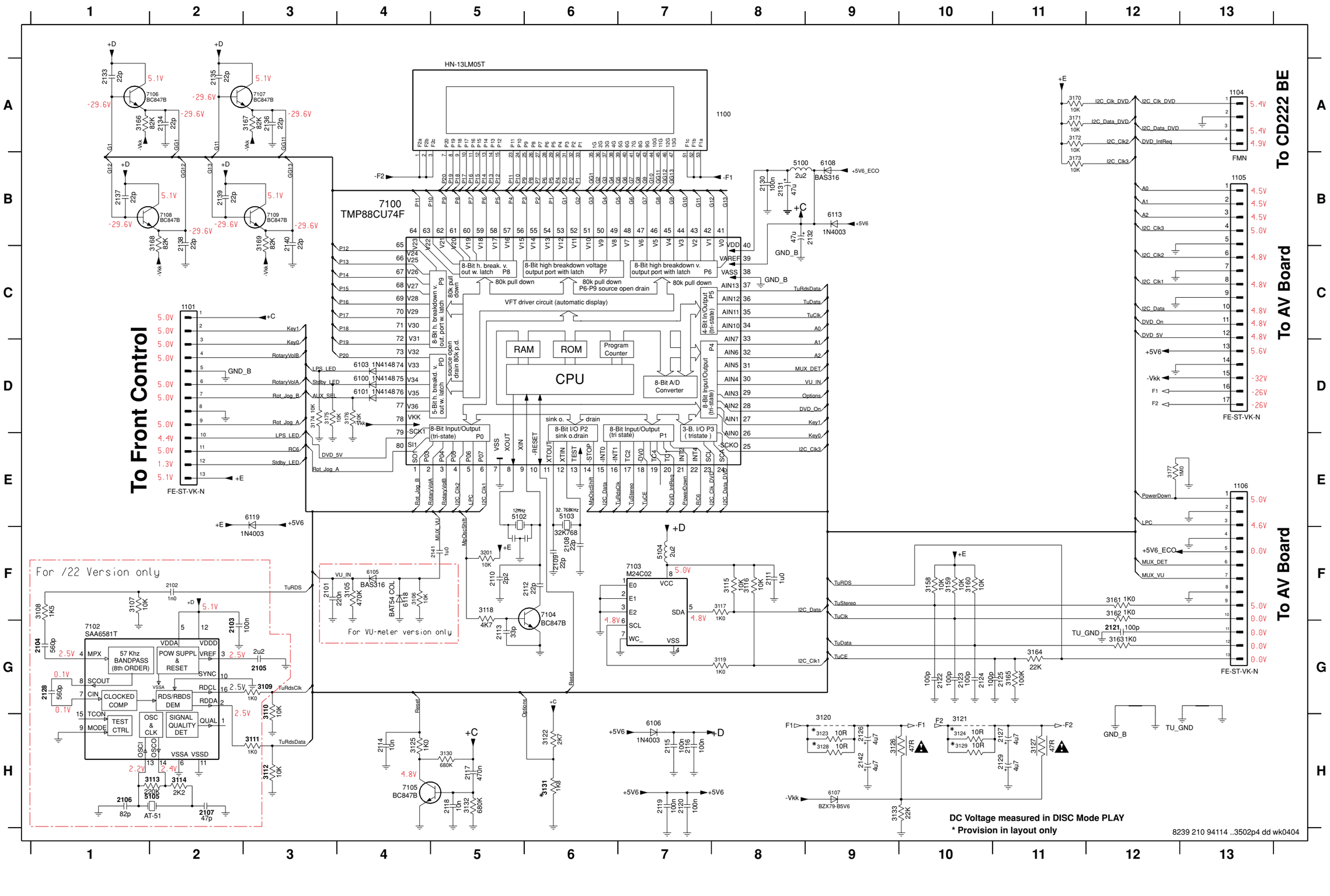
FRONT DISPLAY PART - CIRCUIT DIAGRAM

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 H10	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	



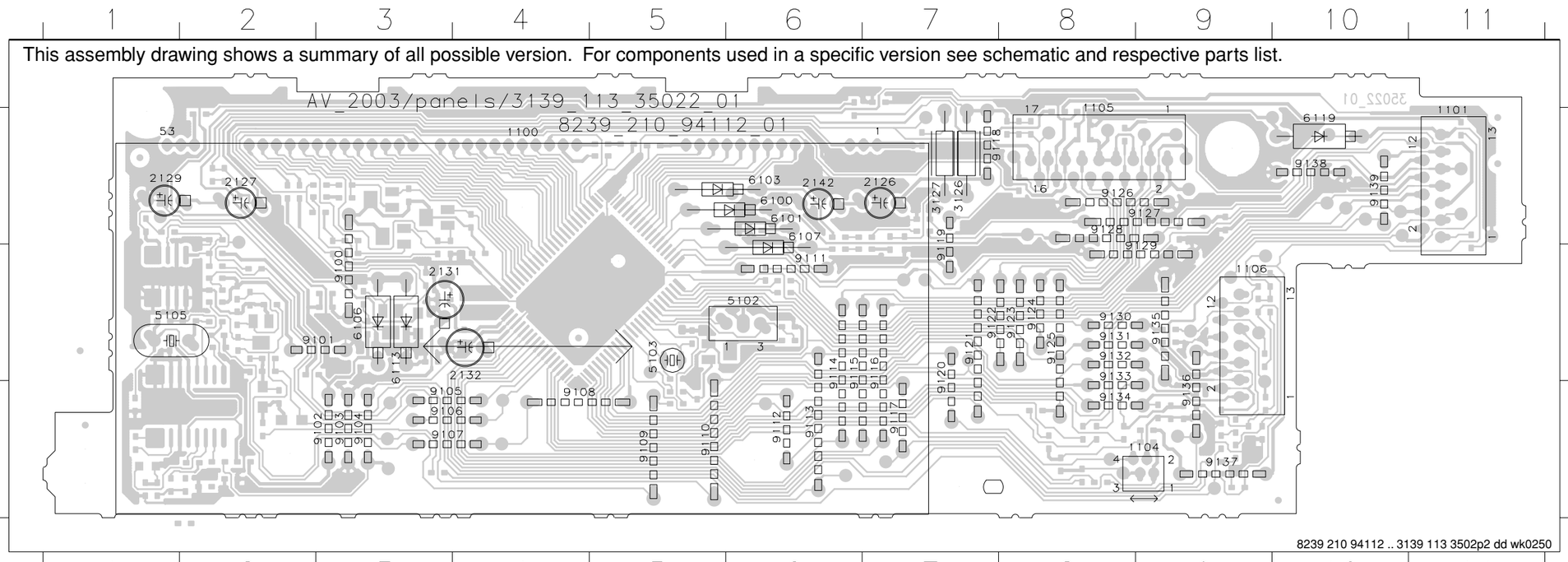
6-2a

FRONT DISPLAY PART - CIRCUIT DIAGRAM (For pt 4 board)

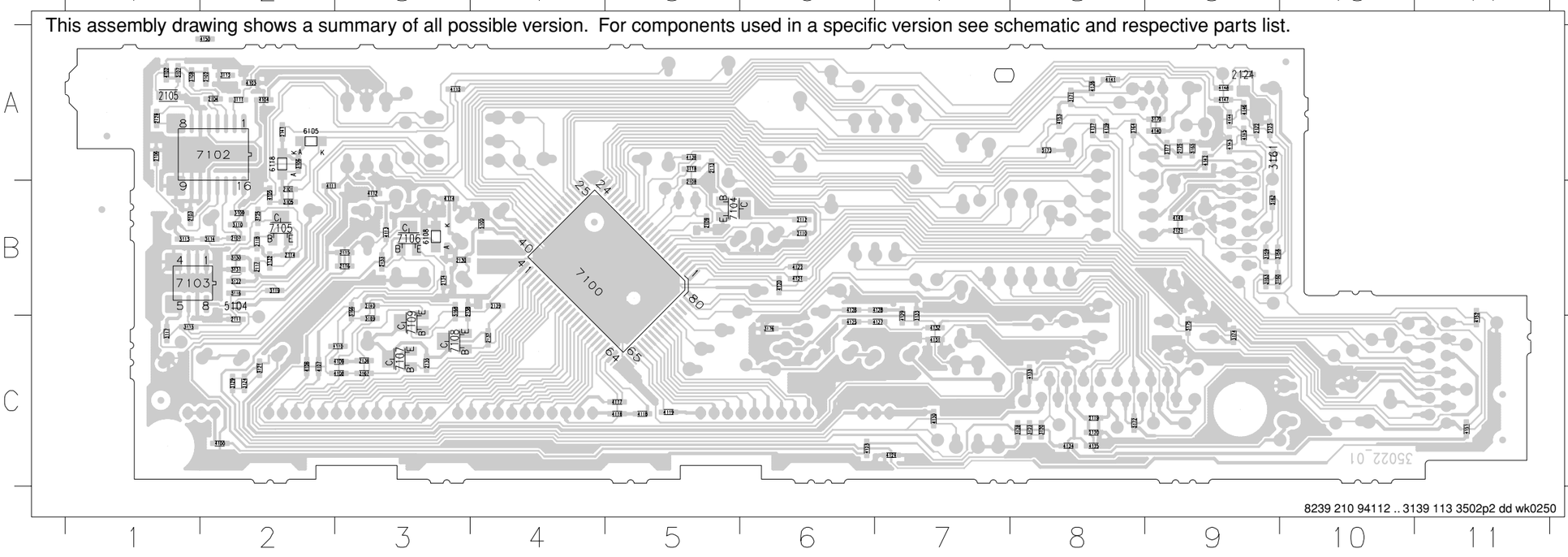


6-3

FRONT DISPLAY PART - COMPONENT & CHIPS LAYOUT



1100 A4
1101 A11
1104 C9
1105 A8
1106 B9
2126 A7
2127 A2
2129 A1
2131 B3
2132 B4
2142 A6
3126 A7
3127 A7
5102 B6
5103 B5
5105 B1
6100 A6
6101 A6
6103 A6
6106 B3
6107 A6
6113 B3
6119 A10
9100 B3
9101 B3
9102 C3
9103 C3
9104 C3
9105 C3
9106 C3
9107 C3
9108 C4
9109 C5
9110 C5
9111 B6
9112 C6
9113 C6
9114 B6
9115 B6
9116 B7
9117 C7
9118 A7
9119 B7
9120 B7
9121 B7
9122 B7
9123 B8
9124 B8
9125 B8
9126 A8
9127 A9
9128 A8
9129 B9
9130 B8
9131 B8
9132 B8
9133 B8
9134 B8
9135 B9
9136 C9
9137 C9
9138 A10
9139 A10

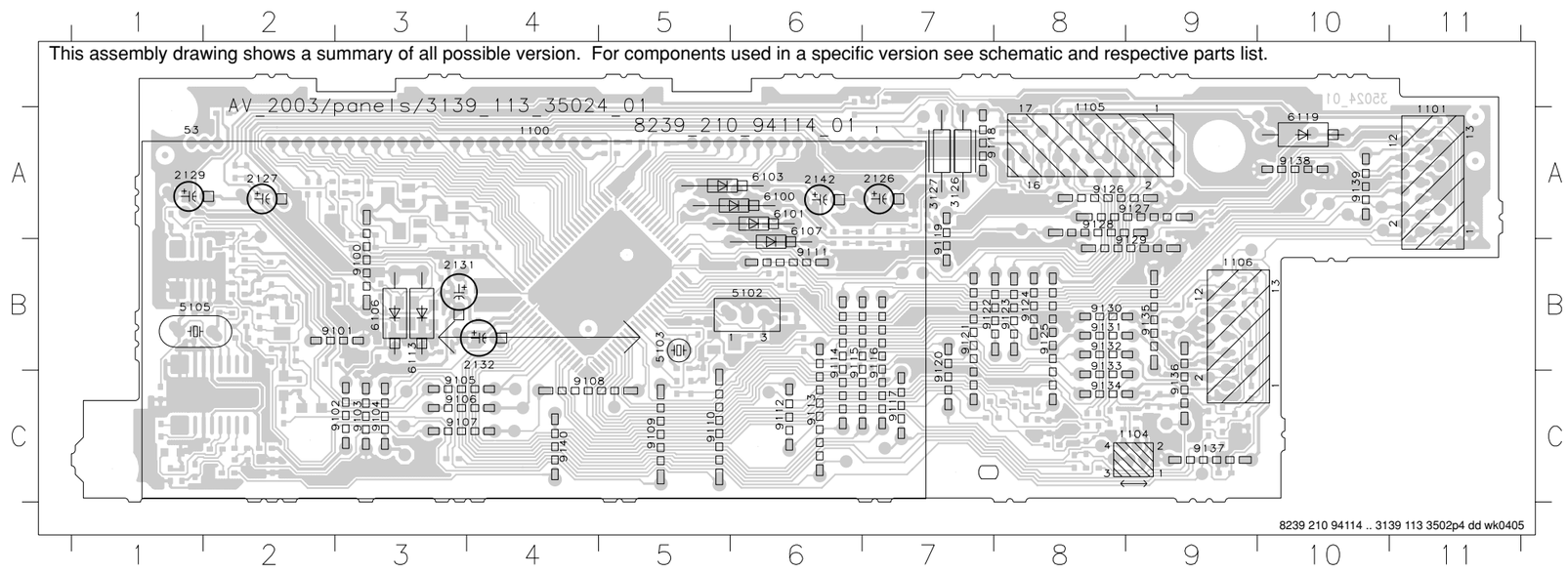


2101 B2
2102 A2
2103 B1
2104 A2
2105 A1
2106 A1
2107 B2
2108 B5
2109 B5
2110 B6
2111 C2
2112 B6
2113 A5
2114 B2
2115 B3
2116 B3
2117 B2
2118 B3
2119 C8
2120 C8
2121 B9
2122 A9
2123 A9
2124 A9
2125 A9
2128 A1
2130 B3
2133 B3
2134 B3
2135 C3
2136 C3
2137 C4
2138 B3
2139 B4
2140 B3
2141 A2
3105 B2
3106 A2
3107 A1
3108 A1
3109 B2
3110 B2
3111 A2
3112 A2
3113 B1
3114 B2
3115 C1
3116 B2
3117 C1
3118 A5
3119 B2
3120 C8
3121 C2
3122 B2
3123 C8
3124 C2
3125 B2
3128 C8
3129 C2
3130 B2
3131 B2
3132 B2
3133 C7
3158 B9
3159 B9
3160 B9
3161 A9
3162 B9
3163 B9
3164 A8
3165 A9
3166 B3
3167 C3
3168 B3
3169 C3
3170 A8
3171 A8
3172 C8
3173 A8
3174 C9
3175 C9
3176 C9
3177 A9
4100 C2
4102 A1
4103 A2
4104 A2
4105 B2
4106 C2
4107 C2
4108 C3
4109 C3
4110 C3
4111 B2
4112 B3
4113 B3
4114 A3
4115 A3
4116 C5
4117 C5
4118 C5
4120 B6
4121 B6
4122 B6
4123 C7
4124 C7
4125 C6
4126 B6
4127 C7
4128 B7
4129 C7
4130 C7
4131 C7
4132 C7
4133 C8
4134 C8
4135 C8
4136 A5
4137 A8
4138 A8
4139 A8
4140 A9
4141 A8
4142 A9
4143 A9
4144 A9
4145 A9
4146 A9
4147 A9
4148 A9
4149 B9
4150 A2
4151 C11
4152 C11
4153 A8
5100 B4
5104 B2
6105 A3
6108 B3
6118 A2
7100 B4
7102 A2
7103 B1
7104 B5
7105 B2
7106 B3
7107 C3
7108 C3
7109 C3

6-3a

FRONT DISPLAY PART - COMPONENT & CHIPS LAYOUT (pt 4 board)

1100 A4
1101 A11
1104 C9
1105 A8
1106 B9
2126 A7
2127 A2
2129 A1
2131 B3
2132 B4
2142 A6
3126 A7
3127 A7
5102 B5
5103 B5
5105 B1
6100 A6
6101 A6
6103 A6
6106 B3
6107 A6
6113 B3
6119 A10
6120 B3
9101 B3
9102 C3
9103 C3
9104 C3
9105 C3
9106 C3
9107 C3
9108 C4
9109 C5
9110 C5
9111 B6
9112 C6
9113 C6
9114 B6
9115 B6
9116 B7
9117 C7
9118 A7
9119 B7
9120 B7
9121 B7
9122 B7
9123 B8
9124 B8
9125 B8
9126 A8
9127 A9
9128 A8
9129 B8
9130 B8
9131 B8
9132 B8
9133 B8
9134 C8
9135 B8
9136 C9
9137 C9
9138 A10
9139 A10
9140 C4



2101 B2
2102 A2
2103 B1
2104 A2
2105 A1
2106 A1
2107 B2
2108 B5
2109 B5
2110 B6
2111 C2
2112 B6
2113 A5
2114 B2
2115 B3
2116 B3
2117 B2
2118 B2
2119 C8
2120 C8
2121 B9
2122 A9
2123 A9
2124 A9
2125 A9
2128 B1
2130 B3
2133 B3
2134 B3
2135 C3
2136 C4
2137 C4
2138 B3
2139 B4
2140 B3
2141 A2
3105 B2
3106 A2
3107 A1
3108 A1
3109 B2
3110 B2
3111 A2
3112 A2
3113 B1
3114 B2
3115 C1
3116 B2
3117 C1
3118 A5
3119 B2
3120 C8
3121 B2
3122 B2
3123 C8
3124 C2
3125 B2
3128 C8
3129 C2
3130 B2
3131 B2
3132 B2
3133 C7
3159 B9
3160 B9
3161 A9
3162 B9
3163 B9
3164 A8
3165 A9
3166 B3
3167 C3
3168 B3
3169 A9
3170 A9
3171 A8
3172 C8
3173 A8
3174 C9
3175 C9
3176 C6
3177 A9
3201 B7
4100 C2
4102 A1
4103 A2
4104 A2
4105 B2
4106 C2
4107 C2
4108 C3
4109 C3
4110 C3
4111 B2
4112 B3
4113 B3
4114 B3
4115 A3
4116 C5
4117 C5
4118 C5
4119 C5
4120 B6
4121 B6
4122 B6
4123 C6
4124 C6
4125 C6
4126 B6
4127 C7
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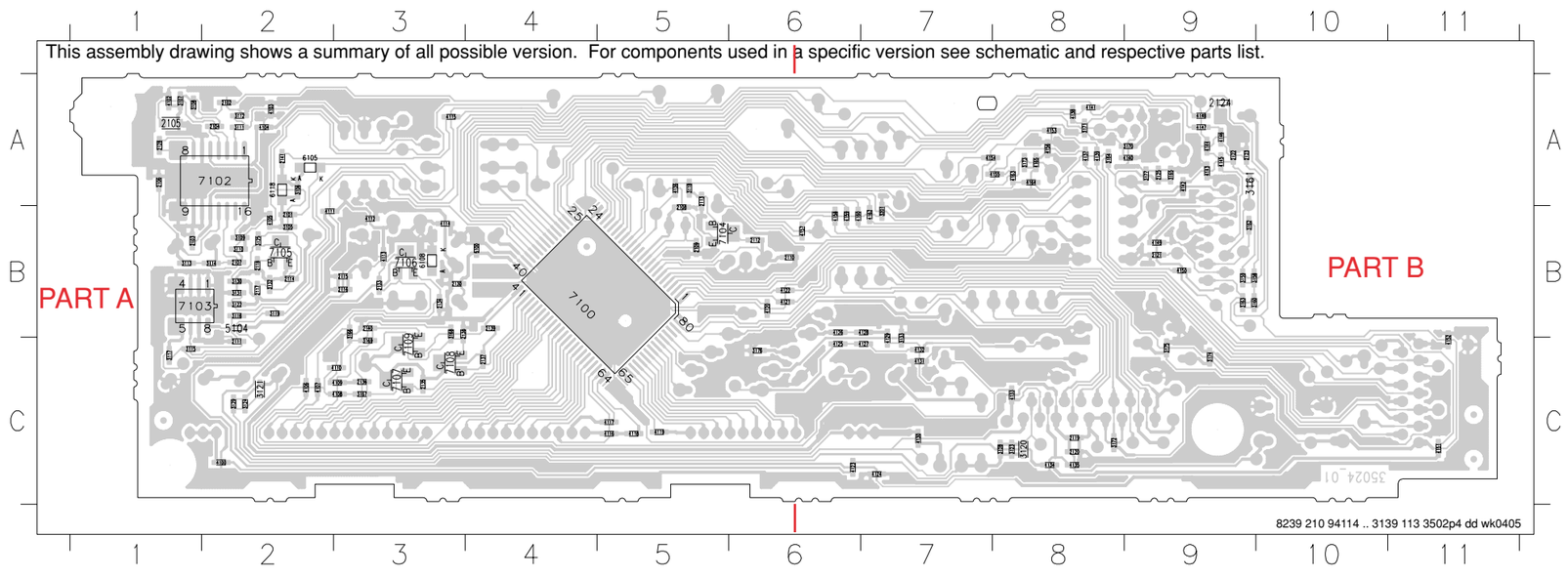
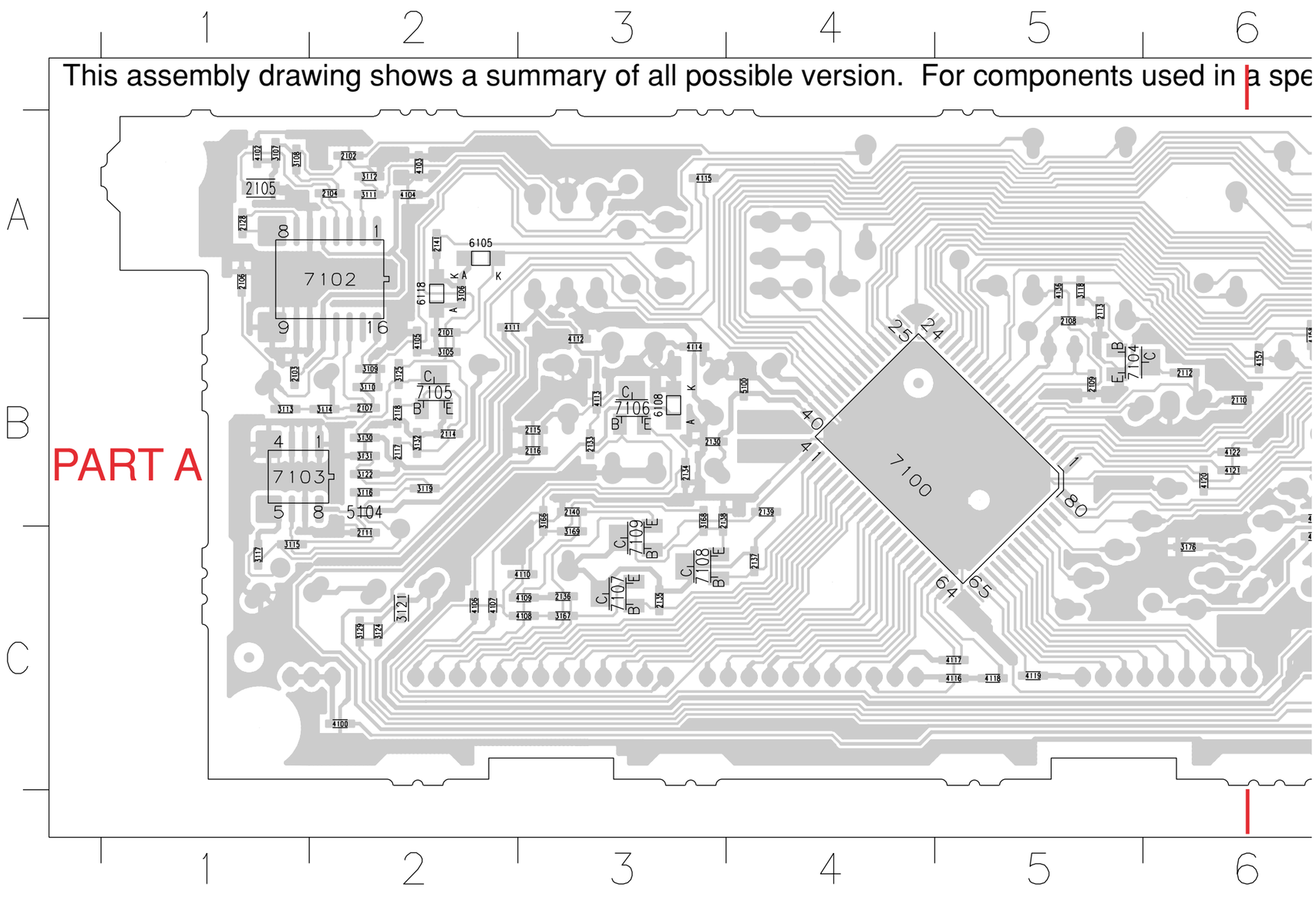
4130 C7
4131 C7
4132 C7
4133 C8
4134 C8
4135 C8
4136 A5
4137 A8
4138 A8
4139 A8
4140 A9
4141 A8
4142 A9
4143 A9
4144 A9
4145 A9
4146 A9
4147 A9
4148 A9
4149 B9
4150 B9
4151 C11
4152 C11
4153 A8
4154 A7
4155 A8
4156 A8
4157 B6
4158 B6
4159 B6
4160 B6
4162 B7
4163 A8
4164 A8
4165 A8
5100 B4
5104 B2
6105 A2
6108 B3
6118 A2
7100 B4
7102 A2
7103 B1
7104 B5
7105 B2
7106 B3
7107 C3
7108 C3
7109 C3



6-3b

FRONT DISPLAY PART - CHIPS LAYOUT (pt 4 board) PART A

2101 B2	2112 B6	2123 A9	2139 B4	3113 B1	3124 C2	3161 A9	3172 C8
2102 A2	2113 A5	2124 A9	2140 B3	3114 B2	3125 B2	3162 B9	3173 A8
2103 B1	2114 B2	2125 A9	2141 A2	3115 C1	3128 C8	3163 B9	3174 C9
2104 A2	2115 B3	2128 A1	3105 B2	3116 B2	3129 C2	3164 A8	3175 C9
2105 A1	2116 B3	2130 B3	3106 A2	3117 C1	3130 B2	3165 A9	3176 C6
2106 A1	2117 B2	2133 B3	3107 A1	3118 A5	3131 B2	3166 B3	3177 A9
2107 B2	2118 B2	2134 B3	3108 A1	3119 B2	3132 B2	3167 C3	3201 B7
2108 B5	2119 C8	2135 C3	3109 B2	3120 C8	3133 C7	3168 B3	4100 C2
2109 B5	2120 C8	2136 C3	3110 B2	3121 C2	3158 B9	3169 C3	4102 A1
2110 B6	2121 B9	2137 C4	3111 A2	3122 B2	3159 B9	3170 A9	4103 A2
2111 C2	2122 A9	2138 B3	3112 A2	3123 C8	3160 B9	3171 A8	4104 A2

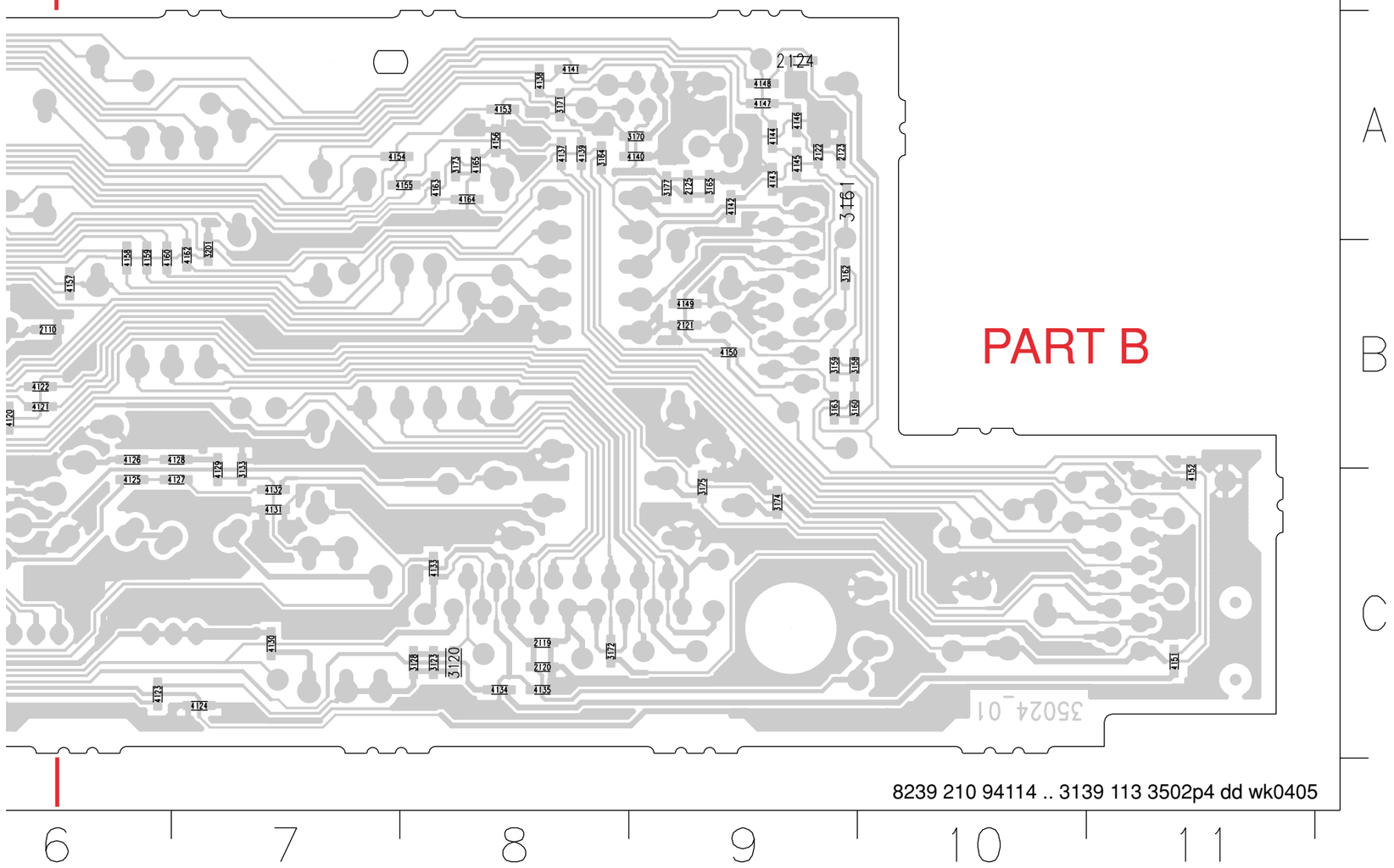


6-3c

FRONT DISPLAY PART - CHIPS LAYOUT (pt 4 board) PART B

72 C8	4105 B2	4116 C5	4127 C7	4138 A8	4149 B9	4160 B6	7102 A2
73 A8	4106 C2	4117 C5	4128 B7	4139 A8	4150 B9	4162 B7	7103 B1
74 C9	4107 C2	4118 C5	4129 C7	4140 A9	4151 C11	4163 A8	7104 B5
75 C9	4108 C3	4119 C5	4130 C7	4141 A8	4152 C11	4164 A8	7105 B2
76 C6	4109 C3	4120 B6	4131 C7	4142 A9	4153 A8	4165 A8	7106 B3
77 A9	4110 C3	4121 B6	4132 C7	4143 A9	4154 A7	5100 B4	7107 C3
01 B7	4111 B2	4122 B6	4133 C8	4144 A9	4155 A8	5104 B2	7108 C3
00 C2	4112 B3	4123 C6	4134 C8	4145 A9	4156 A8	6105 A2	7109 C3
02 A1	4113 B3	4124 C7	4135 C8	4146 A9	4157 B6	6108 B3	
03 A2	4114 B3	4125 C6	4136 A5	4147 A9	4158 B6	6118 A2	
04 A2	4115 A3	4126 B6	4137 A8	4148 A9	4159 B6	7100 B4	

l in a specific version see schematic and respective parts list.

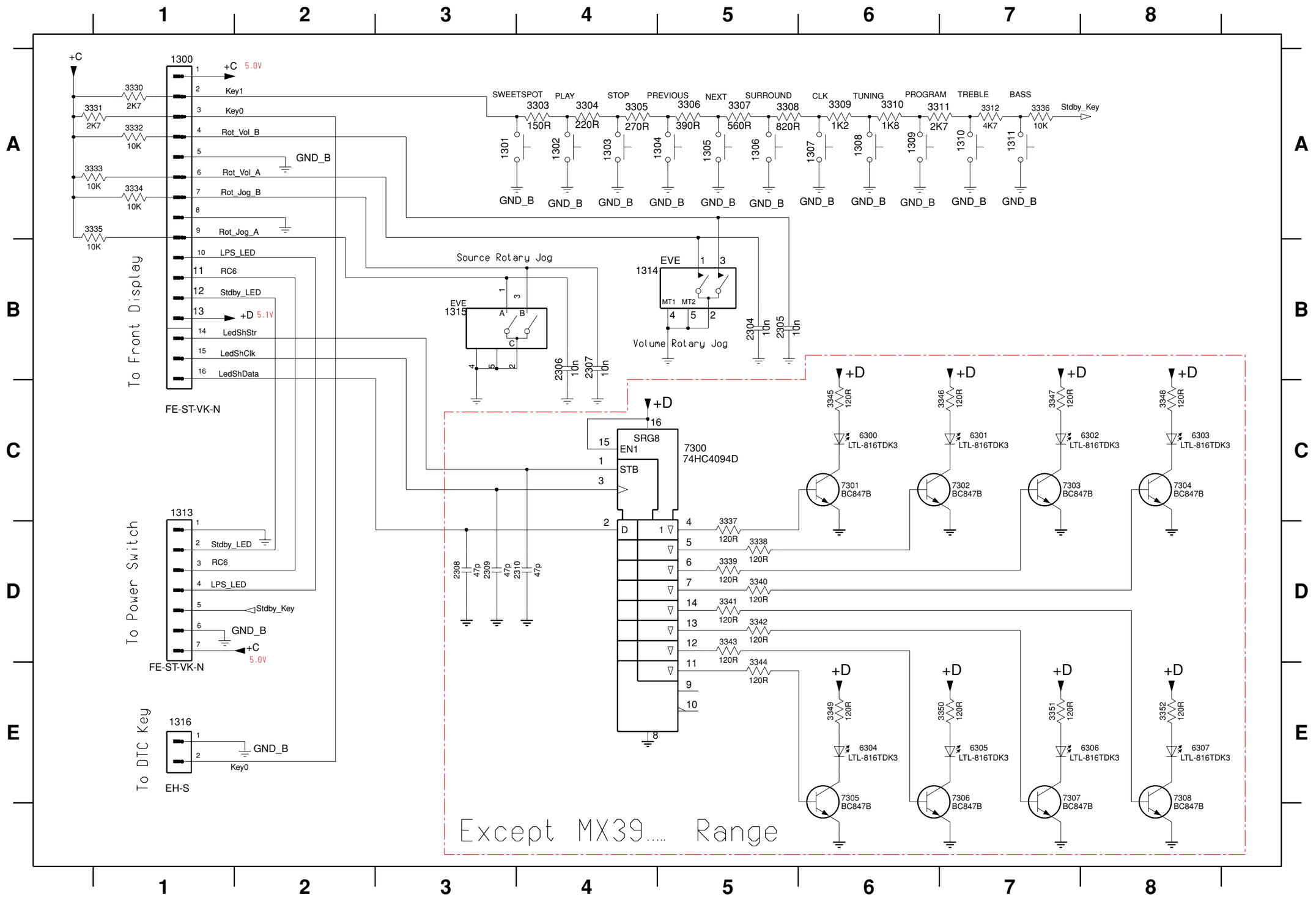


8239 210 94114 .. 3139 113 3502p4 dd wk0405

6-4

FRONT CONTROL PART - CIRCUIT DIAGRAM

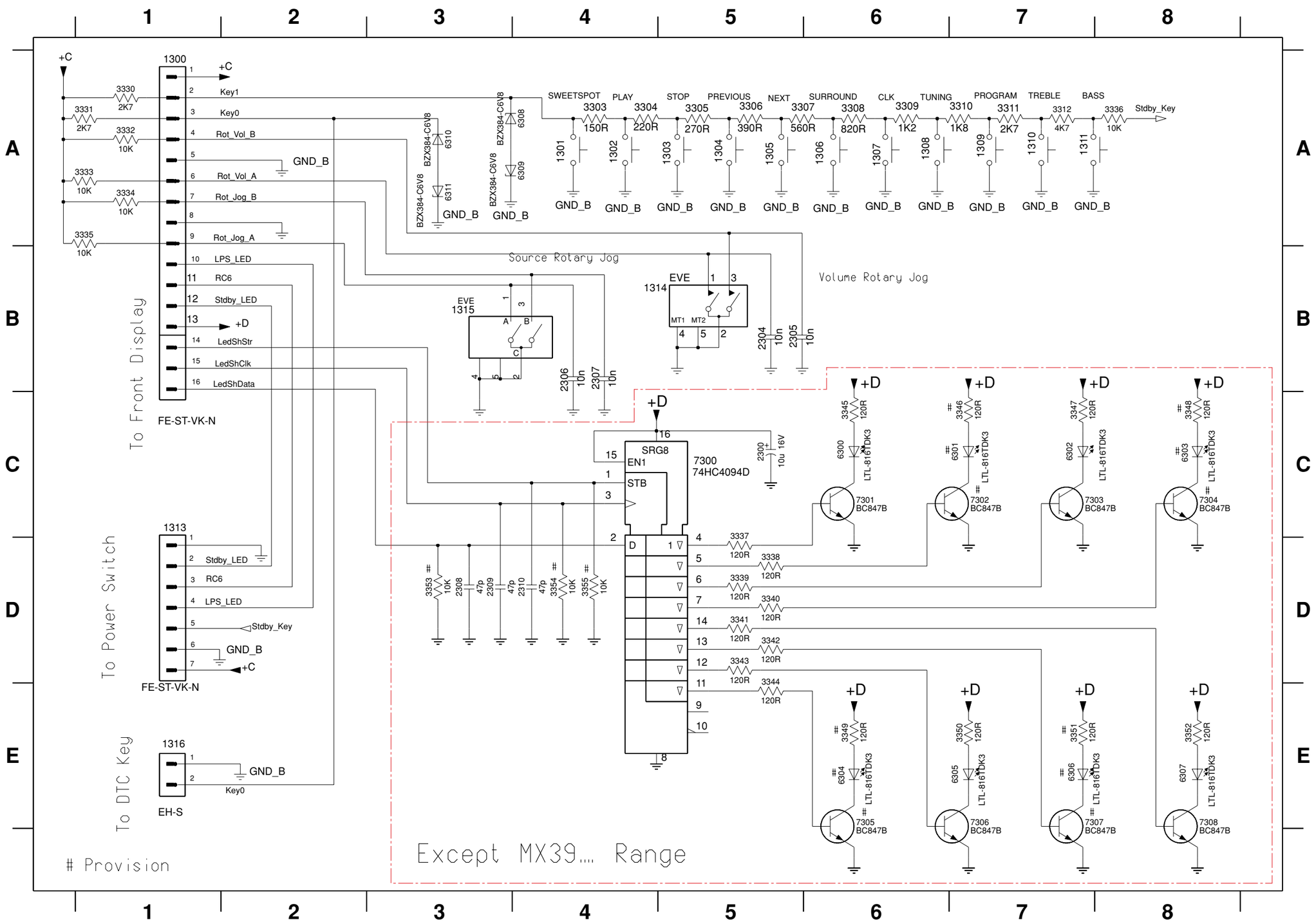
1300 A1	1304 A4	1308 A6	1313 C1	2304 B5	2308 D3	3304 A4	3308 A5	3312 A7	3333 A1	3337 D5	3341 D5	3345 C6	3349 E6	6300 C6	6304 E6	7300 C5	7304 C8	7308 E8	
1301 A3	1305 A5	1309 A6	1314 B4	2305 B5	2309 D3	3305 A4	3309 A6	3330 A1	3334 A1	3338 D5	3342 D5	3346 C7	3350 E7	6301 C7	6305 E7	7301 C6	7305 E6		
1302 A4	1306 A5	1310 A7	1315 B3	2306 B4	2310 D4	3306 A5	3310 A6	3331 A1	3335 A1	3339 D5	3343 D5	3347 C7	3351 E7	6302 C8	6306 E8	7302 C7	7306 E7		
1303 A4	1307 A6	1311 A7	1316 E1	2307 B4	3303 A4	3307 A5	3311 A6	3332 A1	3336 A7	3340 D5	3344 E5	3348 C8	3352 E8	6303 C8	6307 E8	7303 C7	7307 E7		



6-4a

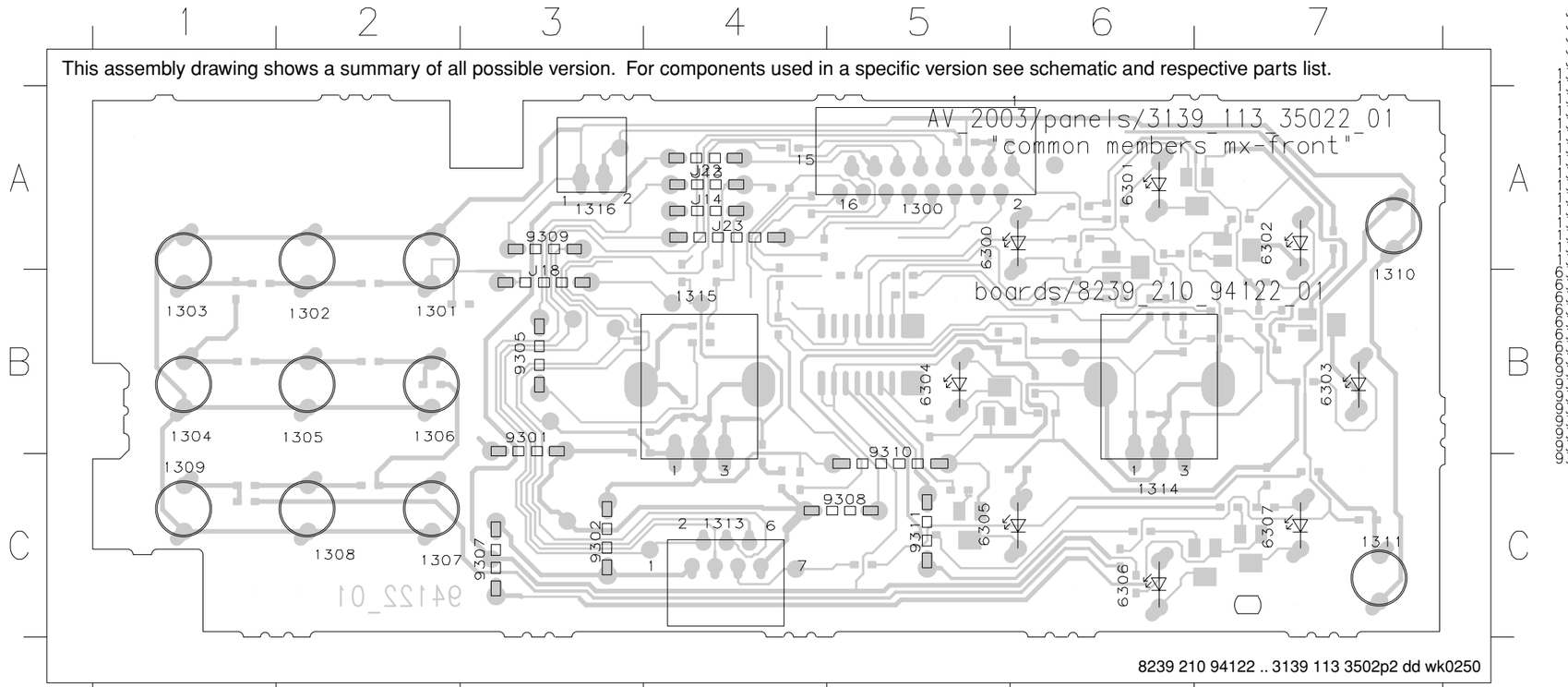
FRONT CONTROL PART - CIRCUIT DIAGRAM (For pt 4 board)

1300 A1	1304 A5	1308 A6	1313 C1	2300 C5	2307 B4	3303 A4	3307 A5	3311 A7	3332 A1	3336 A8	3340 D5	3344 E5	3348 C8	3352 E8	6300 C6	6304 E6	6308 A4	7300 C5	7304 C8	7308 E8
1301 A4	1305 A5	1309 A7	1314 B4	2304 B5	2308 D3	3304 A4	3308 A6	3312 A7	3333 A1	3337 D5	3341 D5	3345 C6	3349 E6	3353 D3	6301 C7	6305 E7	6309 A4	7301 C6	7305 E6	
1302 A4	1306 A6	1310 A7	1315 B3	2305 B5	2309 D3	3305 A5	3309 A6	3330 A1	3334 A1	3338 D5	3342 D5	3346 C7	3350 E7	3354 D4	6302 C7	6306 E7	6310 A3	7302 C7	7306 E7	
1303 A5	1307 A6	1311 A7	1316 E1	2306 B4	2310 D4	3306 A5	3310 A7	3331 A1	3335 A1	3339 D5	3343 D5	3347 C7	3351 E7	3355 D4	6303 C8	6307 E8	6311 A3	7303 C7	7307 E7	

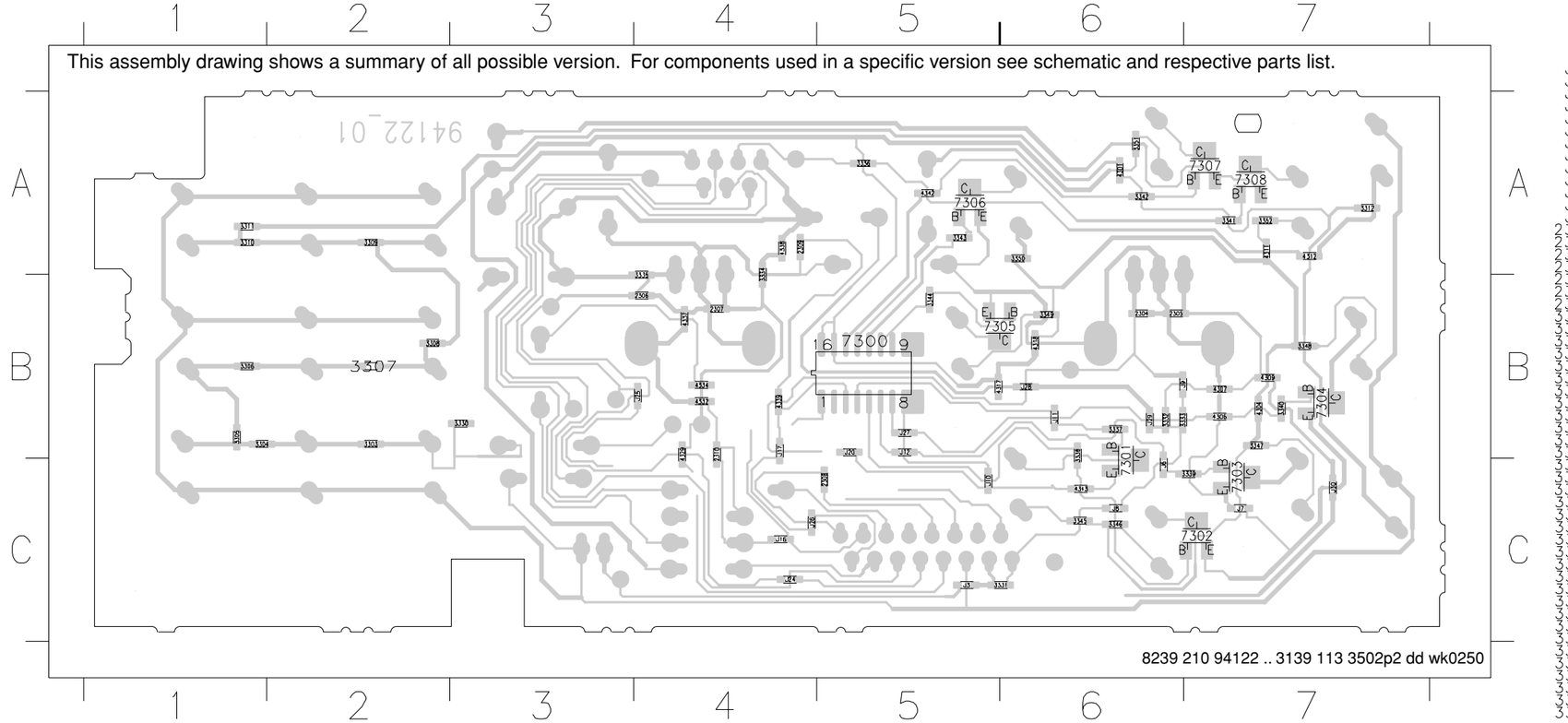


6-5

FRONT CONTROL PART - COMPONENT & CHIPS LAYOUT



J13 A4
J14 A4
J18 B3
J22 A4
J23 A4
1300 A5
1301 B2
1302 B2
1303 B1
1304 B1
1305 B2
1306 B2
1307 C2
1308 C2
1309 C1
1310 B7
1311 C7
1313 C4
1314 C6
1315 B4
1316 A3
6300 A5
6301 A6
6302 A7
6303 B7
6304 B5
6305 C5
6306 C6
6307 C7
9301 B3
9302 C3
9305 B3
9307 C3
9308 C3
9309 A3
9310 B5
9311 C5



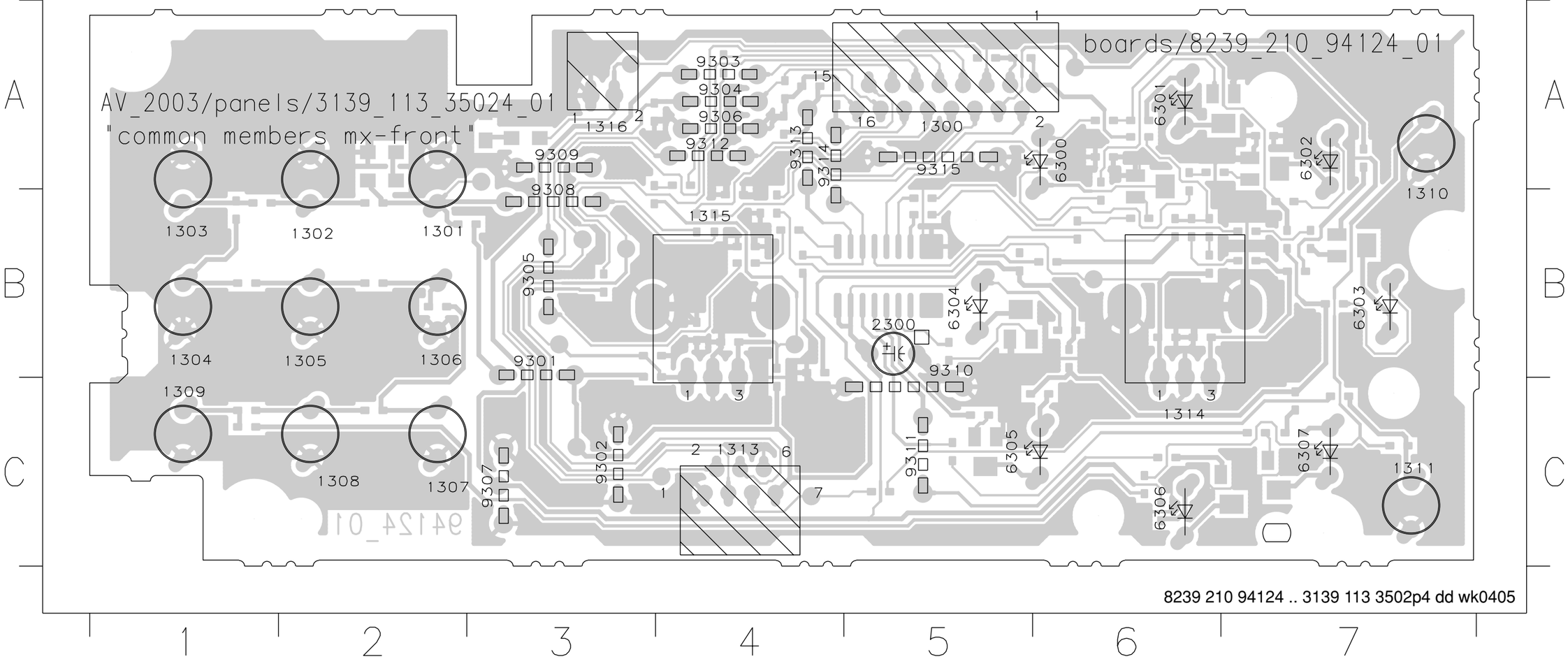
J3 C5
J6 C6
J7 C7
J8 C6
J9 B6
J10 C5
J11 B6
J12 B5
J16 C4
J17 B4
J20 B5
J24 C4
J25 B4
J26 C4
J27 B5
J28 B6
J29 B6
J30 C7
2304 B6
2305 B6
2306 B4
2307 B4
2308 C5
2309 A4
2310 B4
3303 B2
3304 B1
3305 B1
3306 B1
3307 B2
3308 B2
3309 A2
3310 A1
3311 A1
3312 A7
3330 B3
3331 C6
3332 B6
3333 B6
3334 A4
3335 B4
3336 A5
3337 B6
3338 B6
3339 C7
3340 B7
3341 A7
3342 A6
3343 A5
3344 B5
3345 C6
3346 C6
3347 B7
3348 B7
3349 B6
3350 A6
3351 A6
3352 A7
4301 A6
4304 B7
4306 B7
4307 B7
4309 B7
4311 A7
4312 A7
4317 B5
4318 B6
4329 B4
4332 B4
4334 B4
4337 B4
4338 A4
4339 B4
4342 A5
4343 C6
7300 B5
7301 C6
7302 C7
7303 C7
7304 B7
7305 B5
7306 A5
7307 A7
7308 A7

6-5a

FRONT CONTROL PART - COMPONENT LAYOUT (For pt 4 board)

1300 A5	1304 B1	1308 C2	1313 C4	2300 B5	6303 B7	6307 C7	9304 A4	9308 B3	9312 A4
1301 B2	1305 B2	1309 C1	1314 C6	6300 A6	6304 B5	9301 B3	9305 B3	9309 A3	9313 A4
1302 B2	1306 B2	1310 B7	1315 B4	6301 A6	6305 C5	9302 C3	9306 A4	9310 B5	9314 A4
1303 B1	1307 C2	1311 C7	1316 A3	6302 A7	6306 C6	9303 A4	9307 C3	9311 C5	9315 A5

This assembly drawing shows a summary of all possible version. For components used in a specific version see schematic and respective parts list.

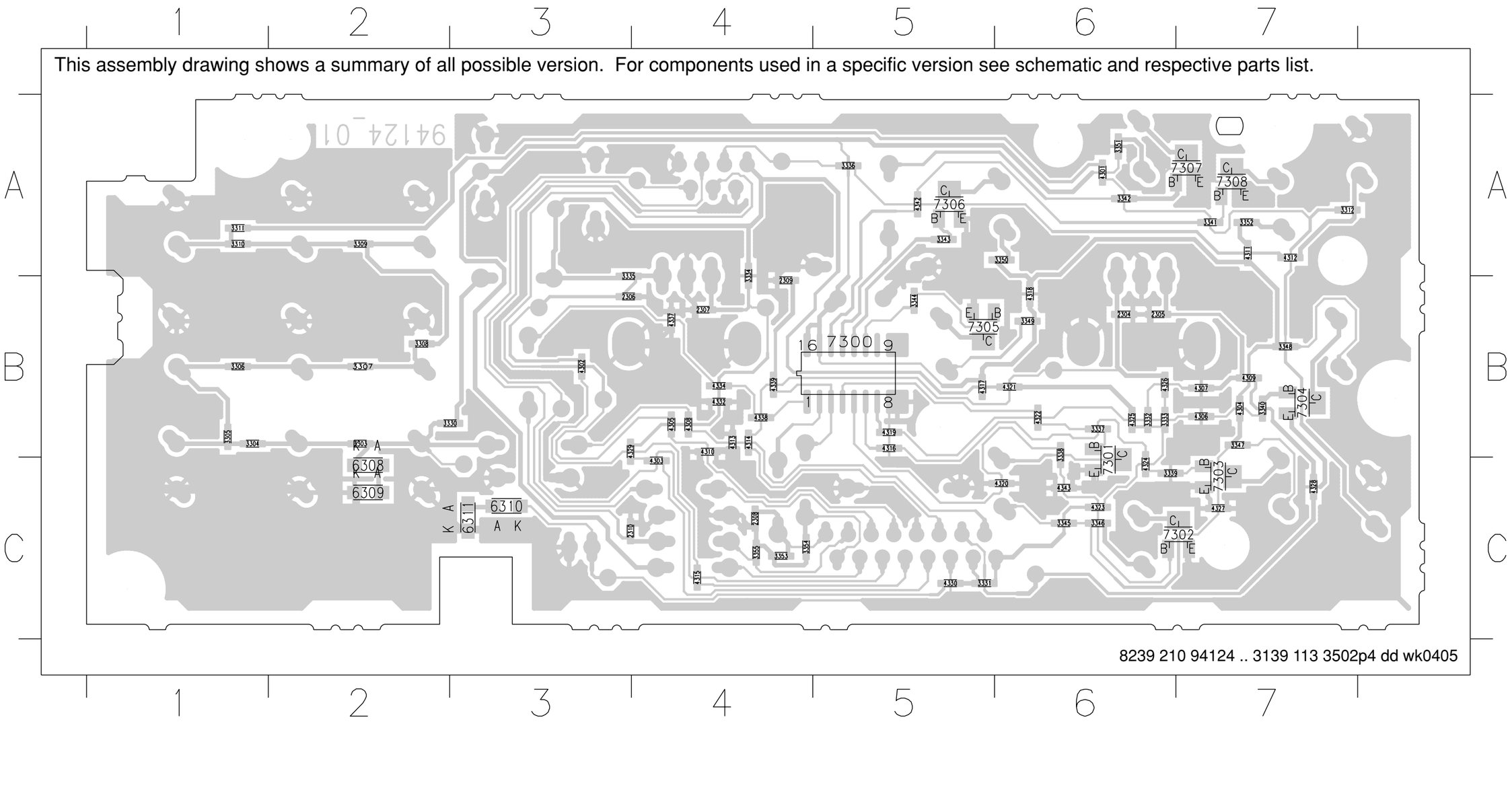


8239 210 94124 .. 3139 113 3502p4 dd wk0405

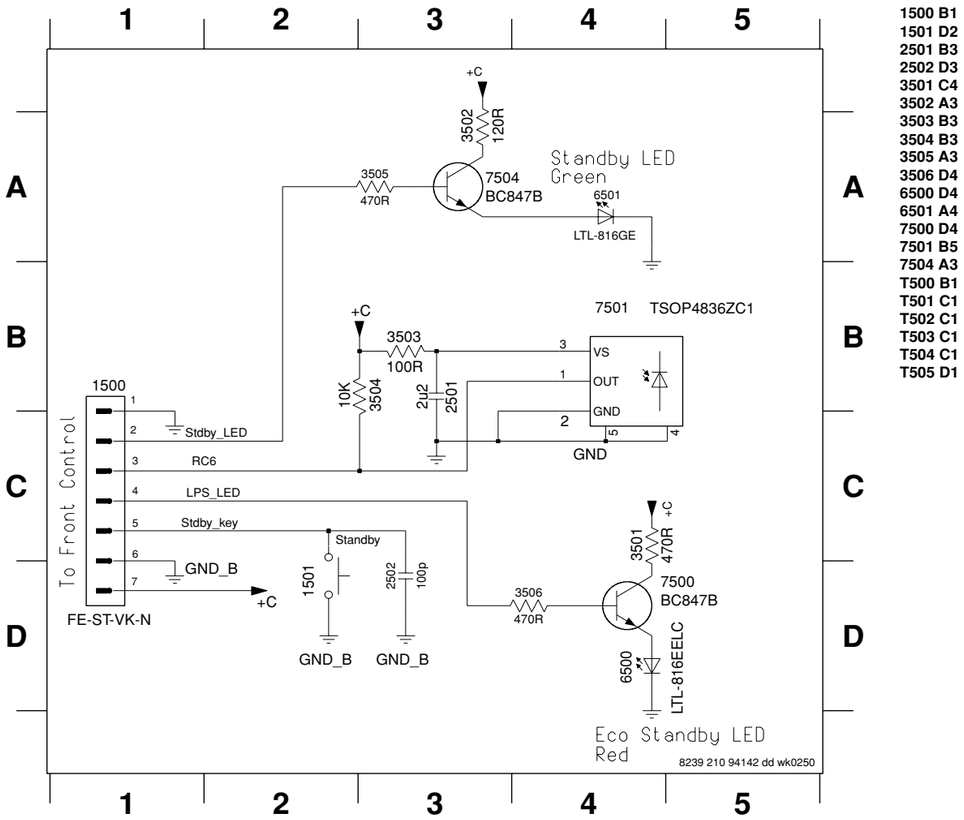
6-5b

FRONT CONTROL PART - CHIPS LAYOUT (For pt 4 board)

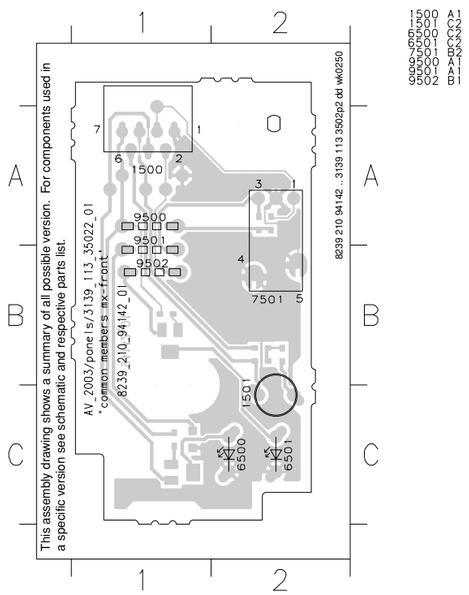
2304 B6	3305 B1	3331 C5	3340 B7	3349 B6	4303 C4	4312 A7	4321 B6	4330 C5	6309 C2	7306 A5
2305 B6	3306 B1	3332 B6	3341 A7	3350 A6	4304 B7	4313 B4	4322 B6	4332 B4	6310 C3	7307 A7
2306 B3	3307 B2	3333 B6	3342 A6	3351 A6	4305 B4	4314 B4	4323 C6	4334 B4	6311 C3	7308 A7
2307 B4	3308 B2	3334 A4	3343 A5	3352 A7	4306 B7	4315 C4	4324 C6	4337 B4	7300 B5	
2308 C4	3309 A2	3335 B3	3344 B5	3353 C4	4307 B7	4316 B5	4325 B6	4338 B4	7301 C6	
2309 B4	3310 A1	3336 A5	3345 C6	3354 C4	4308 B4	4317 B5	4326 B6	4339 B4	7302 C7	
2310 C3	3311 A1	3337 B6	3346 C6	3355 C4	4309 B7	4318 B6	4327 C7	4342 A5	7303 C7	
3303 B2	3312 A7	3338 B6	3347 B7	4301 A6	4310 B4	4319 B5	4328 C7	4343 C6	7304 B7	
3304 B1	3330 B3	3339 C6	3348 B7	4302 B3	4311 A7	4320 C6	4329 B3	6308 C2	7305 B5	

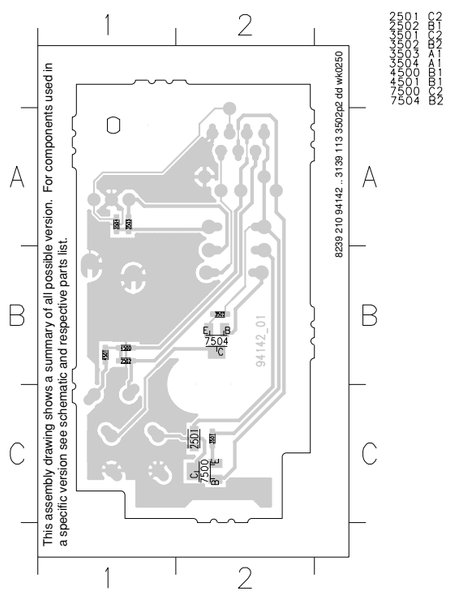


POWER SWITCH PART - CIRCUIT DIAGRAM



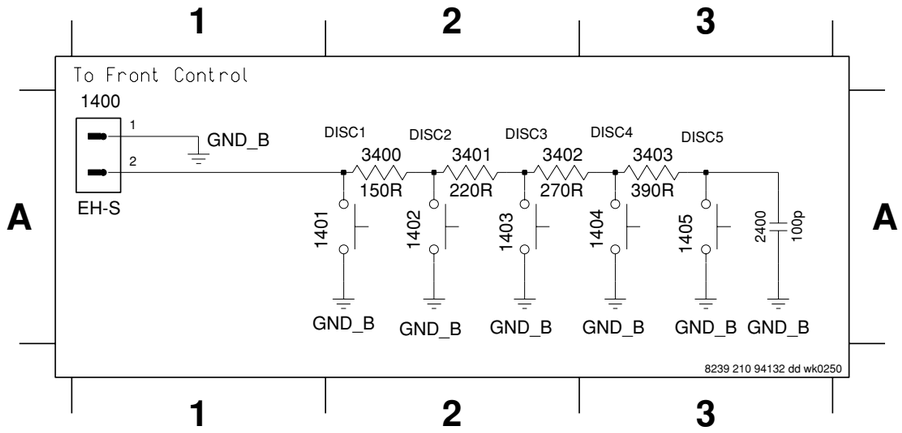
POWER SWITCH PART - COMPONENT & CHIP LAYOUTS



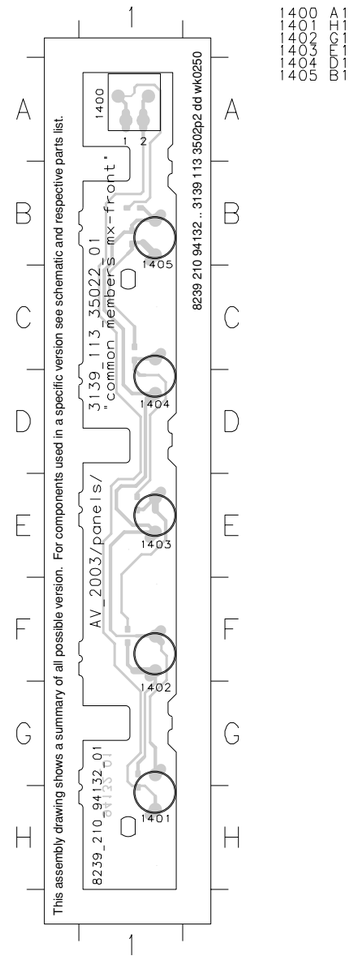


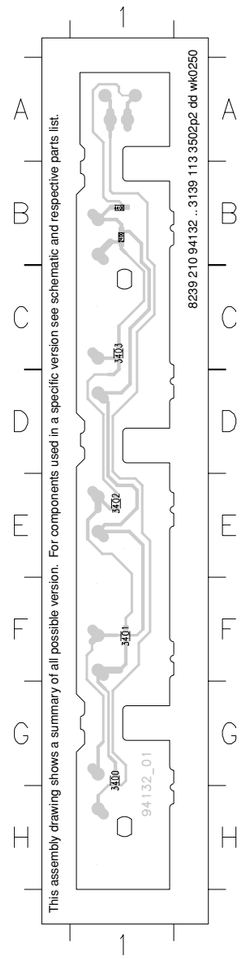
DTC KEY PART - CIRCUIT DIAGRAM

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

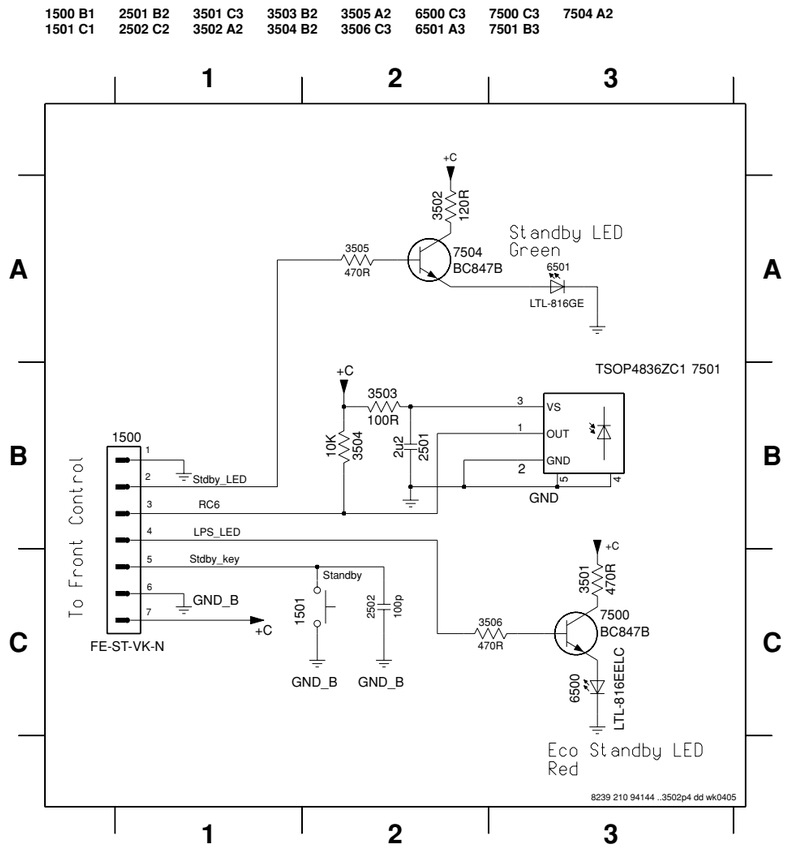


DTC KEY PART - COMPONENT & CHIP LAYOUTS

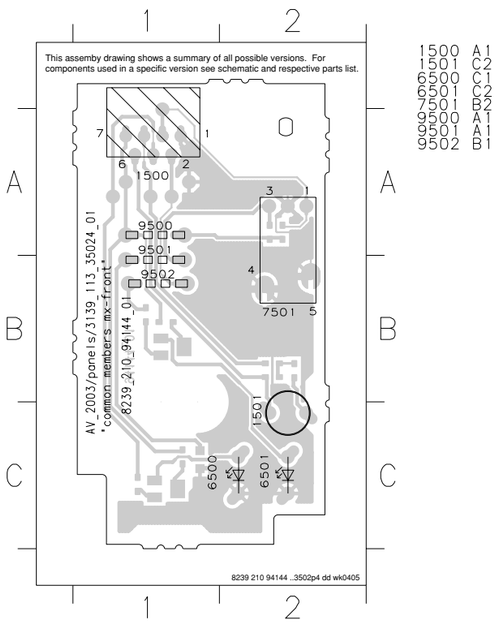




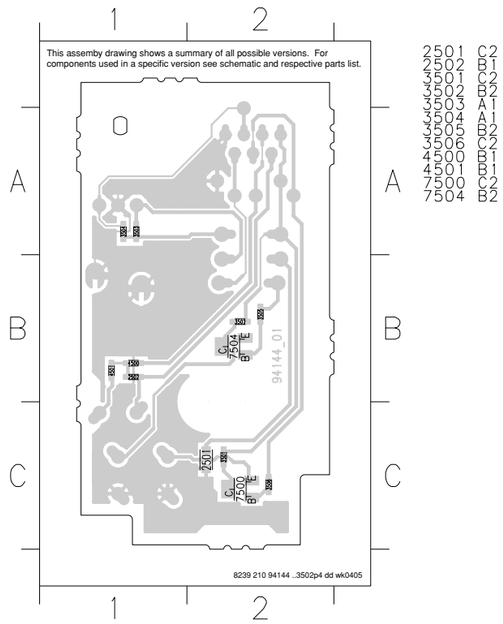
POWER SWITCH PART - CIRCUIT DIAGRAM (For pt 4 board)



POWER SWITCH PART - COMPONENT & CHIP LAYOUTS (pt 4 board)



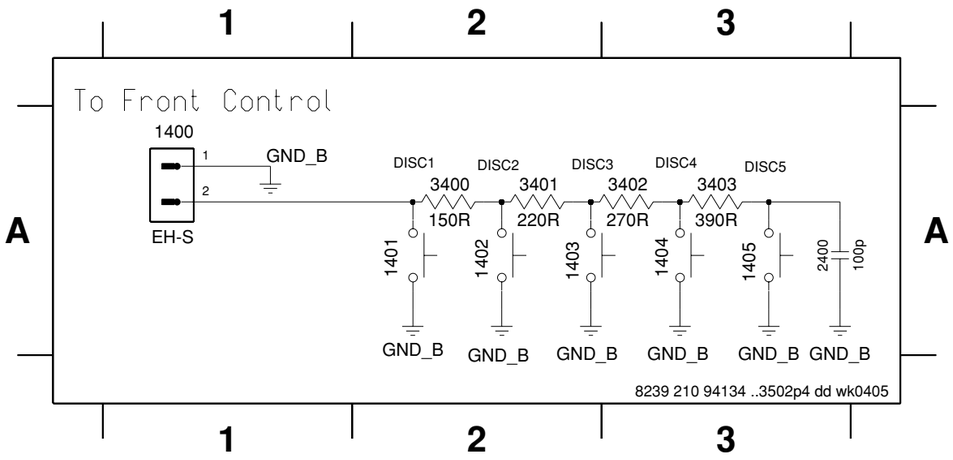
1500 A1
1501 C2
6500 C1
6501 C2
7501 B2
9500 A1
9501 A1
9502 B1



2501 C2
2502 B1
3501 C2
3502 B2
3503 A1
3504 A1
3505 B2
3506 C2
4500 B1
4501 B1
7500 C2
7504 B2

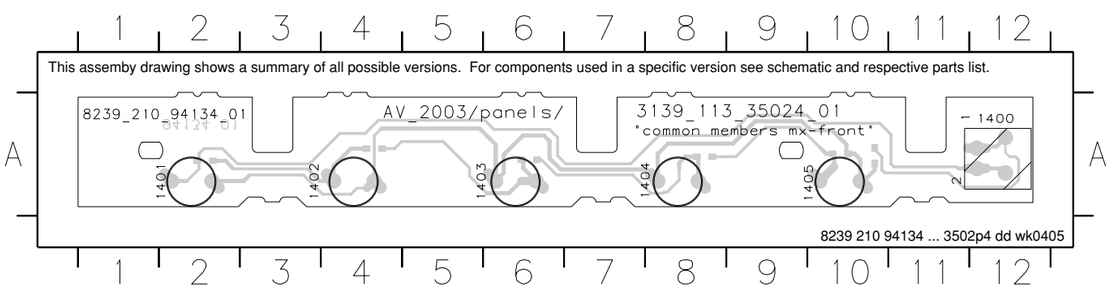
DTC KEY PART - CIRCUIT DIAGRAM (For pt 4 board)

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

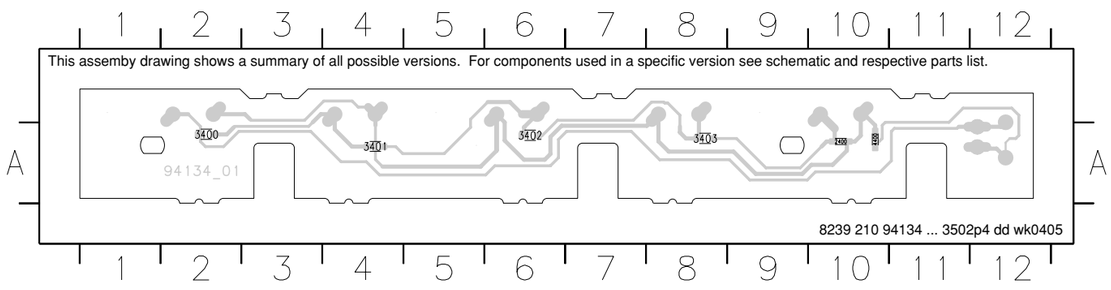


DTC KEY PART - COMPONENT & CHIP LAYOUTS (pt 4 board)

1400 A12 1401 A2 1402 A3 1403 A5 1404 A7 1405 A10

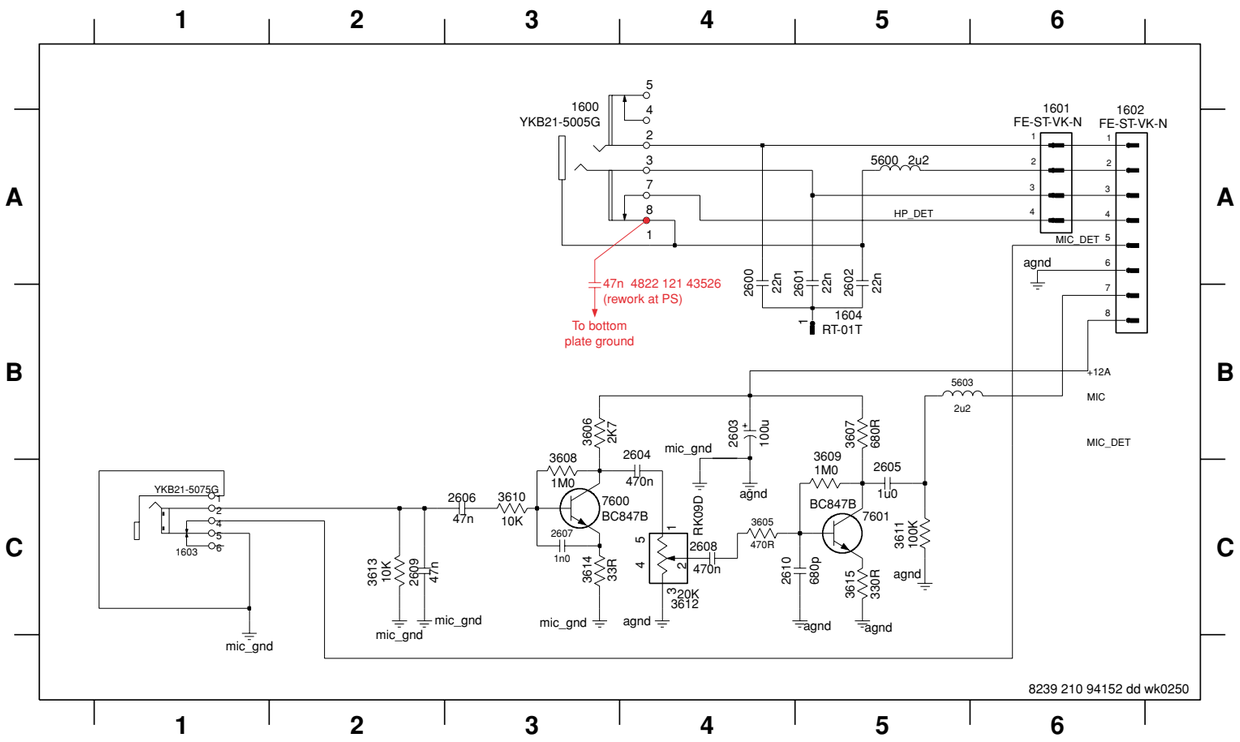


2400 A10 3400 A2 3401 A4 3402 A6 3403 A8 4400 A10

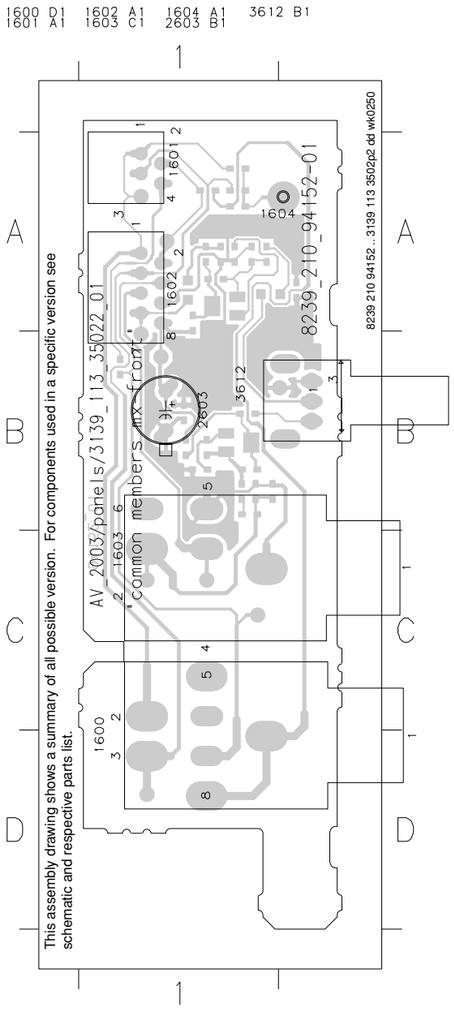


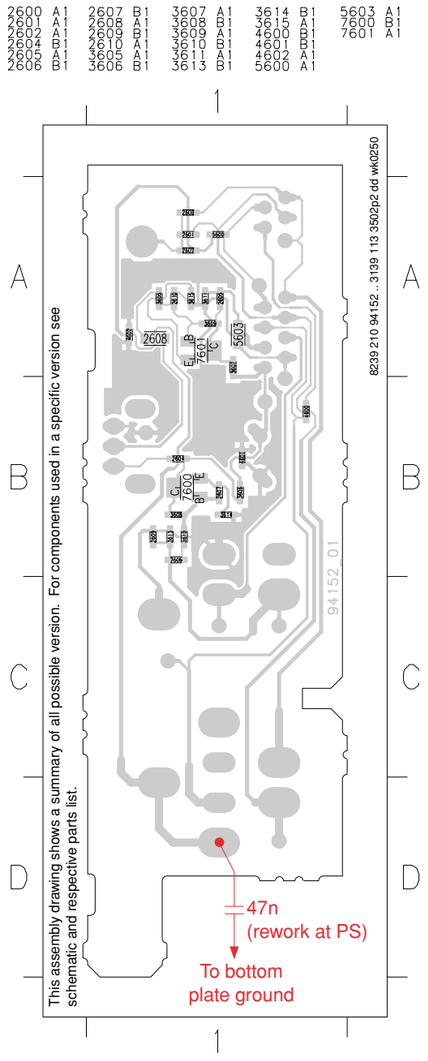
HDPH & MIC PART - CIRCUIT DIAGRAM

1600 A3	1602 A6	1604 B5	2601 A5	2603 B4	2605 C5	2607 C3	2609 C2	3605 C4	3607 B5	3609 C5	3611 C5	3613 C2	3615 C5	5603 B5	7601 C5	
1601 A6	1603 C1	2600 A4	2602 A5	2604 B4	2606 C3	2608 C4	2610 C4	3606 B3	3608 C3	3610 C3	3612 C4	3614 C3	5600 A5	7600 C3		



HDPH & MIC PART - COMPONENT & CHIP LAYOUTS

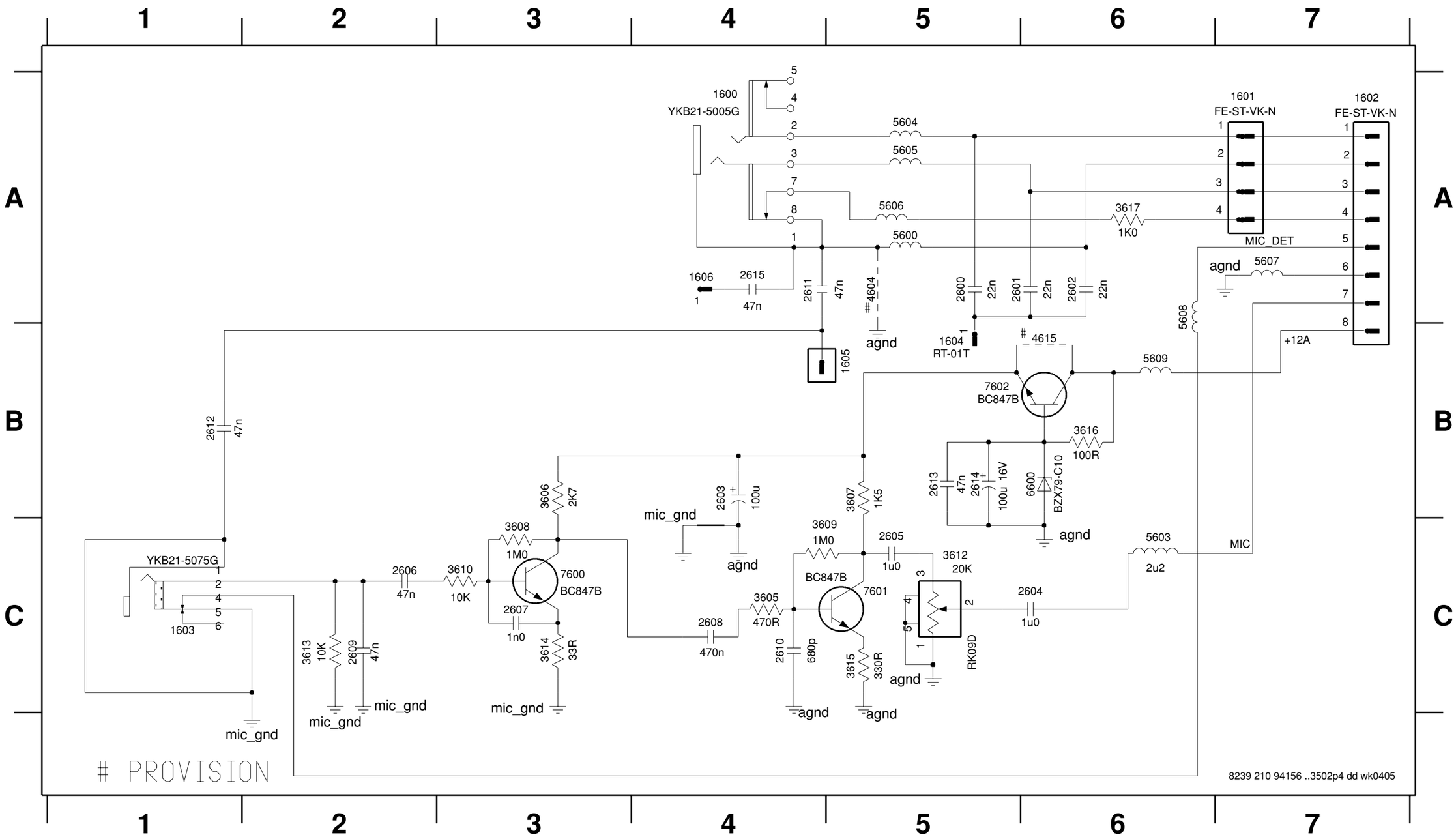


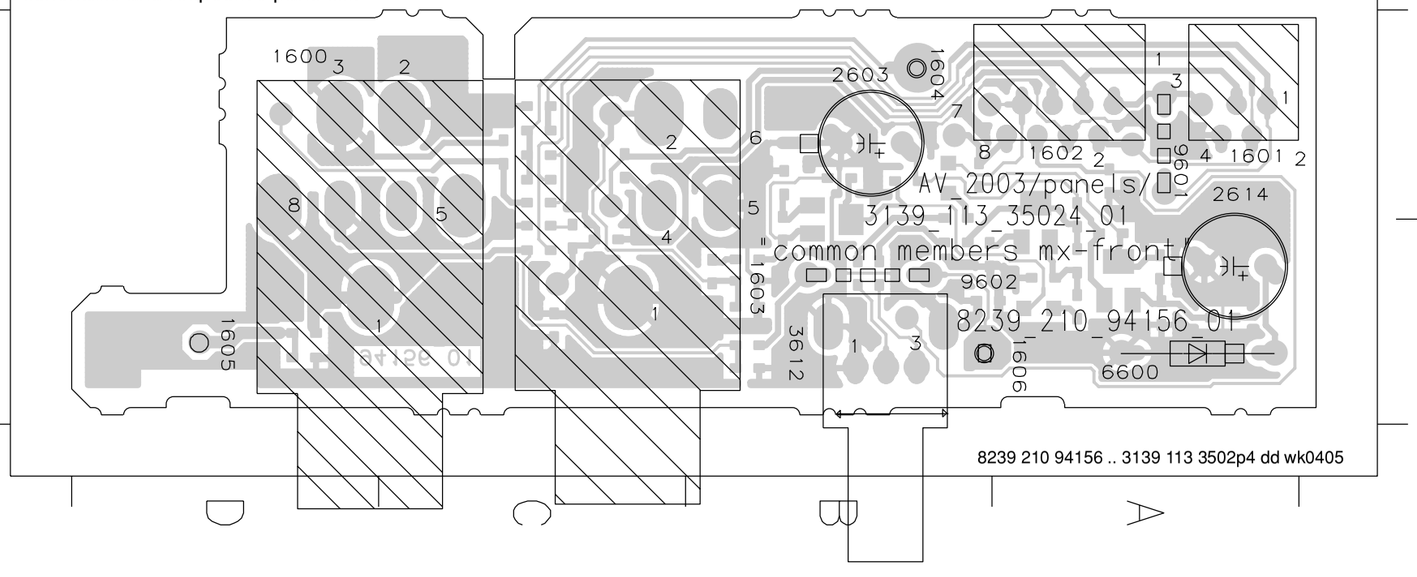


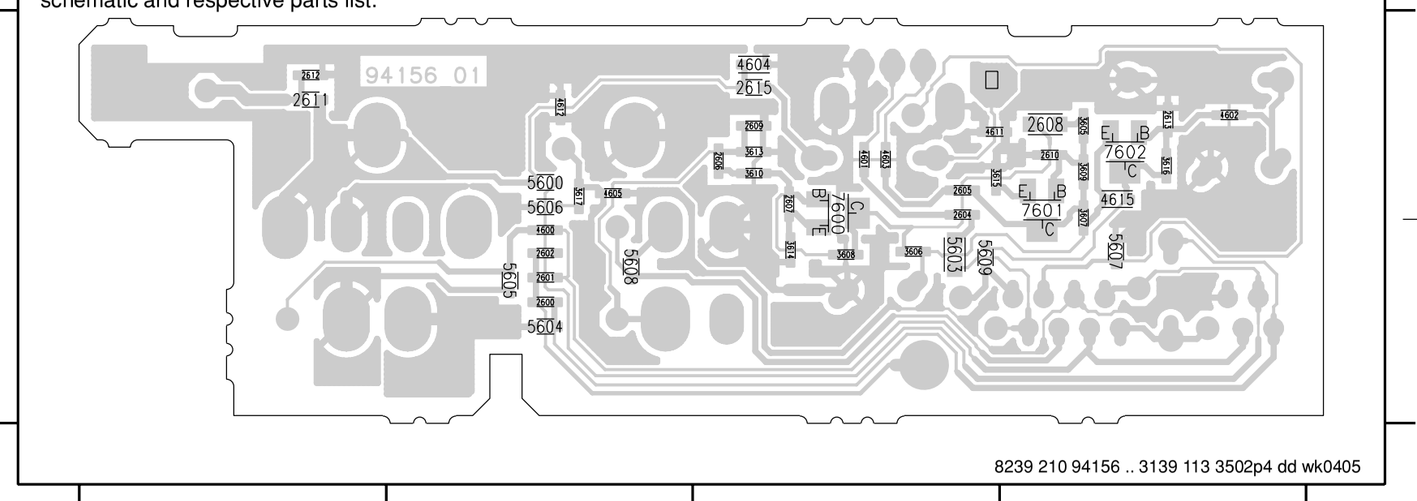
6-7a

HDPH & MIC PART - CIRCUIT DIAGRAM (For pt 4 board)

1600 A4	1603 C1	1606 A4	2602 A6	2605 C5	2608 C4	2611 A4	2614 B5	3606 B3	3609 C4	3613 C2	3616 B6	4615 B6	5604 A5	5607 A7	6600 B6	7602 B5
1601 A7	1604 B5	2600 A5	2603 B4	2606 C2	2609 C2	2612 B1	2615 A4	3607 B5	3610 C3	3614 C3	3617 A6	5600 A5	5605 A5	5608 A6	7600 C3	
1602 A7	1605 B5	2601 A5	2604 C6	2607 C3	2610 C4	2613 B5	3605 C4	3608 C3	3612 C5	3615 C5	4604 A5	5603 C6	5606 A5	5609 B6	7601 C5	







HDPH & MIC PART - COMPONENT & CHIP LAYOUTS (pt 4 board)

1600	D1
1601	A1
1602	A1
1603	B1
1604	B1
1605	D1
1606	A1
2603	B1
2614	A1
3612	B1
6600	A1
9601	A1
9602	B1

2600	C1
2601	C1
2602	C1
2604	B1
2605	B1
2606	B1
2607	B1
2608	A1
2609	B1
2610	A1
2611	D1
2612	D1
2613	A1
2615	B1
3605	A1
3606	B1
3607	A1
3608	B1
3609	A1
3610	B1
3613	B1
3614	B1
3615	B1
3616	A1
3617	C1
4600	C1
4601	B1
4602	A1
4603	B1
4604	B1
4605	C1
4611	B1
4612	C1
4615	A1
5600	C1
5603	B1
5604	C1
5605	C1
5606	C1
5607	A1
5608	C1
5609	B1
7600	B1
7601	A1
7602	A1

6-8

ELECTRICAL PARTS LIST - FRONT BOARDS

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

2101	4822 126 13879	220nF +80/-20% 50V
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
2141	3198 017 41050	1uF 10V
2142	4822 124 22726	4,7uF 20% 35V
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
2611	3198 017 34730	47nF 16V
2615	3198 017 34730	47nF 16V

RESISTORS

3105	4822 051 30474	470k 5% 0,062W
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	0R Jumper 0603
3121	4822 051 30008	0R Jumper 0603
3122	4822 051 30272	2k7 5% 0,062W
3125	4822 051 30102	1k 5% 0,062W
3126	4822 052 10479 ⚠	47R 5% 0,33W
3127	4822 052 10479 ⚠	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
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
3201	4822 051 30103	10k 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
3617	4822 051 30102	1k 5% 0,062W
4100	4822 051 30008	0R Jumper 0603
4102	4822 051 30008	0R Jumper 0603
4103	4822 051 30008	0R Jumper 0603
4104	4822 051 30008	0R Jumper 0603
4105	4822 051 30008	0R Jumper 0603
4106	4822 051 30008	0R Jumper 0603
4107	4822 051 30008	0R Jumper 0603
4108	4822 051 30008	0R Jumper 0603
4109	4822 051 30008	0R Jumper 0603
4110	4822 051 30008	0R Jumper 0603
4111	4822 051 30008	0R Jumper 0603
4112	4822 051 30008	0R Jumper 0603
4113	4822 051 30008	0R Jumper 0603
4114	4822 051 30008	0R Jumper 0603
4115	4822 051 30008	0R Jumper 0603
4116	4822 051 30008	0R Jumper 0603
4117	4822 051 30008	0R Jumper 0603
4118	4822 051 30008	0R Jumper 0603
4119	4822 051 30008	0R Jumper 0603
4120	4822 051 30008	0R Jumper 0603
4121	4822 051 30008	0R Jumper 0603
4122	4822 051 30008	0R Jumper 0603
4123	4822 051 30008	0R Jumper 0603
4124	4822 051 30008	0R Jumper 0603
4125	4822 051 30008	0R Jumper 0603
4126	4822 051 30008	0R Jumper 0603
4127	4822 051 30008	0R Jumper 0603
4128	4822 051 30008	0R Jumper 0603
4129	4822 051 30008	0R Jumper 0603
4130	4822 051 30008	0R Jumper 0603
4131	4822 051 30008	0R Jumper 0603
4132	4822 051 30008	0R Jumper 0603
4133	4822 051 30008	0R Jumper 0603
4134	4822 051 30008	0R Jumper 0603
4135	4822 051 30008	0R Jumper 0603
4136	4822 051 30008	0R Jumper 0603
4137	4822 051 30008	0R Jumper 0603
4138	4822 051 30008	0R Jumper 0603
4139	4822 051 30008	0R Jumper 0603
4140	4822 051 30008	0R Jumper 0603
4141	4822 051 30008	0R Jumper 0603
4142	4822 051 30008	0R Jumper 0603
4143	4822 051 30008	0R Jumper 0603
4144	4822 051 30008	0R Jumper 0603
4145	4822 051 30008	0R Jumper 0603
4146	4822 051 30008	0R Jumper 0603
4147	4822 051 30008	0R Jumper 0603
4148	4822 051 30008	0R Jumper 0603
4149	4822 051 30008	0R Jumper 0603
4150	4822 051 30008	0R Jumper 0603
4151	4822 051 30008	0R Jumper 0603
4152	4822 051 30008	0R Jumper 0603
4153	4822 051 30008	0R Jumper 0603
4154	4822 051 30008	0R Jumper 0603
4155	4822 051 30008	0R Jumper 0603
4156	4822 051 30008	0R Jumper 0603
4157	4822 051 30008	0R Jumper 0603
4158	4822 051 30008	0R Jumper 0603
4159	4822 051 30008	0R Jumper 0603
4160	4822 051 30008	0R Jumper 0603
4162	4822 051 30008	0R Jumper 0603
4165	4822 051 30008	0R Jumper 0603

ELECTRICAL PARTS LIST - FRONT BOARDS

RESISTORS

4301	4822 051 30008	0R Jumper 0603
4302	4822 051 30008	0R Jumper 0603
4303	4822 051 30008	0R Jumper 0603
4304	4822 051 30008	0R Jumper 0603
4305	4822 051 30008	0R Jumper 0603
4306	4822 051 30008	0R Jumper 0603
4307	4822 051 30008	0R Jumper 0603
4308	4822 051 30008	0R Jumper 0603
4309	4822 051 30008	0R Jumper 0603
4310	4822 051 30008	0R Jumper 0603
4311	4822 051 30008	0R Jumper 0603
4312	4822 051 30008	0R Jumper 0603
4313	4822 051 30008	0R Jumper 0603
4314	4822 051 30008	0R Jumper 0603
4315	4822 051 30008	0R Jumper 0603
4316	4822 051 30008	0R Jumper 0603
4317	4822 051 30008	0R Jumper 0603
4318	4822 051 30008	0R Jumper 0603
4319	4822 051 30008	0R Jumper 0603
4320	4822 051 30008	0R Jumper 0603
4321	4822 051 30008	0R Jumper 0603
4323	4822 051 30008	0R Jumper 0603
4324	4822 051 30008	0R Jumper 0603
4325	4822 051 30008	0R Jumper 0603
4326	4822 051 30008	0R Jumper 0603
4327	4822 051 30008	0R Jumper 0603
4328	4822 051 30008	0R Jumper 0603
4329	4822 051 30008	0R Jumper 0603
4330	4822 051 30008	0R Jumper 0603
4332	4822 051 30008	0R Jumper 0603
4334	4822 051 30008	0R Jumper 0603
4337	4822 051 30008	0R Jumper 0603
4338	4822 051 30008	0R Jumper 0603
4339	4822 051 30008	0R Jumper 0603
4342	4822 051 30008	0R Jumper 0603
4343	4822 051 30008	0R Jumper 0603
4400	4822 051 30008	0R Jumper 0603
4500	4822 051 30008	0R Jumper 0603
4501	4822 051 30008	0R Jumper 0603
4600	4822 051 30008	0R Jumper 0603
4601	4822 051 30008	0R Jumper 0603
4602	4822 051 30008	0R Jumper 0603
4605	4822 051 30008	0R Jumper 0603

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	2422 549 44608	Ind Fxd 100MHz 1k
5604	2422 549 44608	Ind Fxd 100MHz 1k
5605	2422 549 44608	Ind Fxd 100MHz 1k
5606	2422 549 44608	Ind Fxd 100MHz 1k

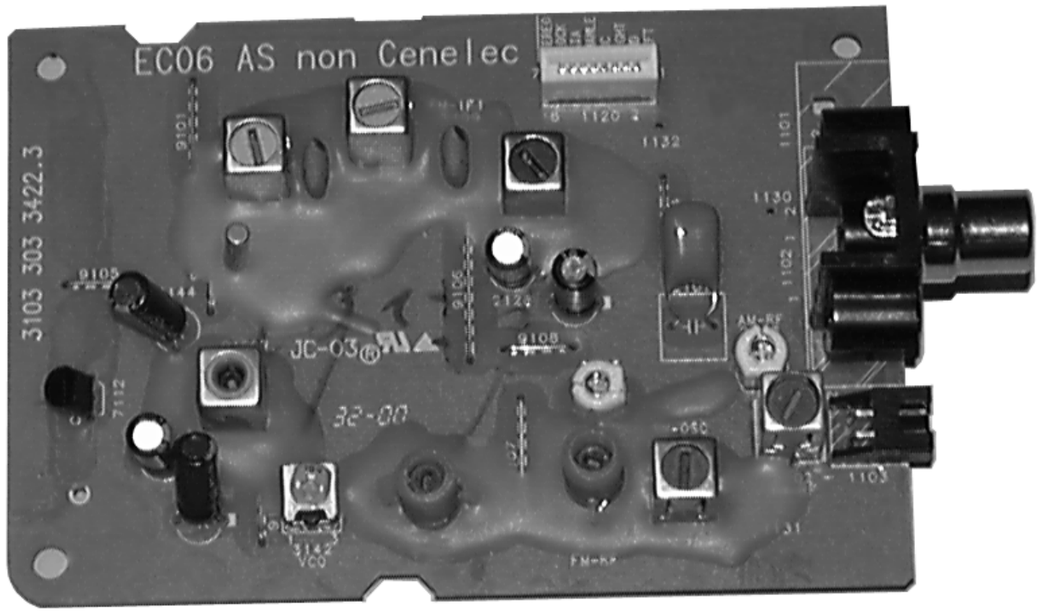
DIODES

6100	4822 130 30621	1N4148
6101	4822 130 30621	1N4148
6103	4822 130 30621	1N4148
6106	4822 130 31878	1N4003G
6105	4822 130 80622	BAT54
6107	4822 130 83206	BZX79-B5V6
6108	4822 130 11397	BAS316
6113	4822 130 31878	1N4003G
6118	4822 130 80622	BAT54
6119	4822 130 31878	1N4003G
6308	4822 130 11416	BZX384-C6V8
6309	4822 130 11416	BZX384-C6V8
6310	4822 130 11416	BZX384-C6V8
6311	4822 130 11416	BZX384-C6V8
6500	9322 179 76676	LTL-816EELC
6501	9322 183 96676	LTL-816GE

TRANSISTORS & INTEGRATED CIRCUITS

7100	3139 110 53491	TMP88CU74F with "3900S53491"
7103	9322 145 26668	M24C02-WMN6
7104	5322 130 60159	BC847B
7105	5322 130 60159	BC847B
7106	5322 130 60159	BC847B
7107	5322 130 60159	BC847B
7108	5322 130 60159	BC847B
7109	5322 130 60159	BC847B
7500	5322 130 60159	BC847B
7501	9322 185 97667	IR RECEIVER TSOP4836ZC1
7504	5322 130 60159	BC847B

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



ECO6 Tuner Board

version: ***SYSTEMS non-CENELEC***

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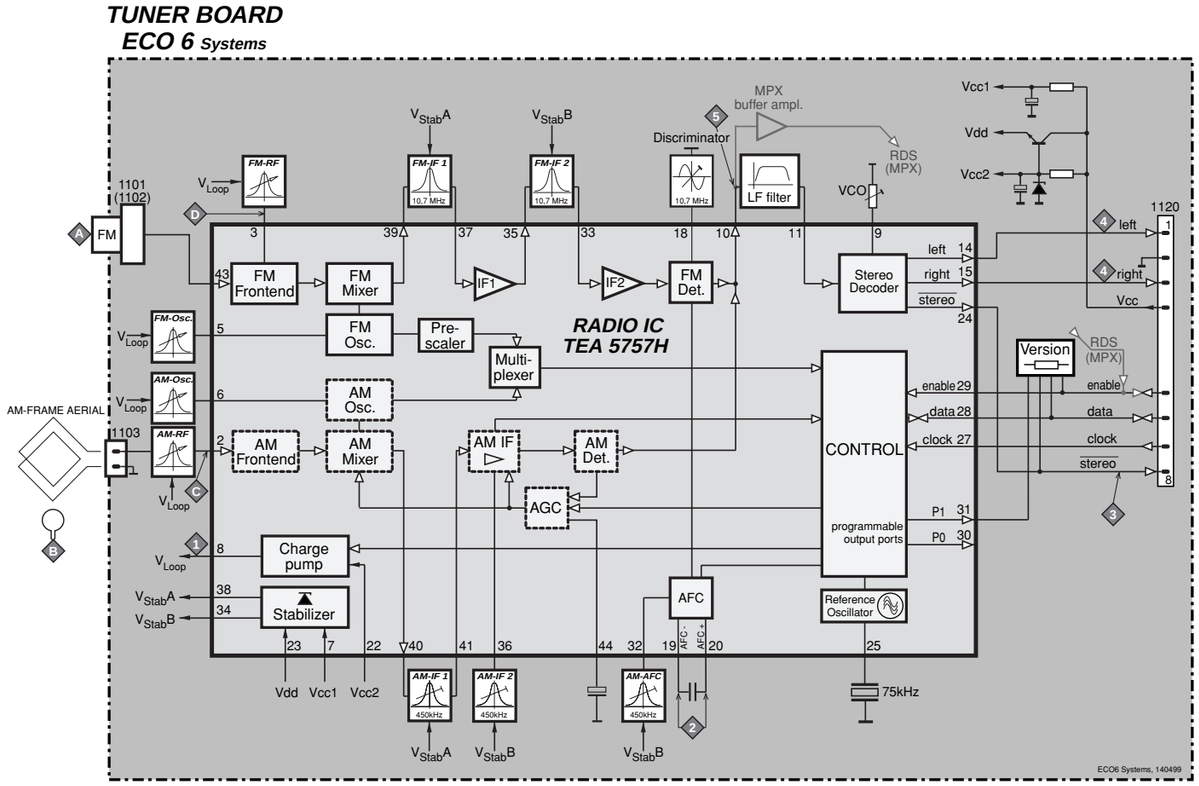
BLOCK DIAGRAM



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TUNER BOARD ECO6 / SYSTEMS NON CENELEC

VERSION PROGRAMMING COMPONENTS

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

X component mounted

VERSION DETECTION

LEGEND

ⓟ...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
EVM
voltages measured while set is tuned to a strong transmitter

Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right

ECO6 Sys-non Cenelec, 000911

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 E4
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 G11
3155 C12
3156 C12
3157 C12
3158 E13
3159 D13
3160 D12
3161 F12
3167 E11
3168 C12
3169 G12
3172 G7
3176 E6
3181 E6
5102 F2
5109 B9
5110 B10
5111 A8
5112 A11
5114 B11
5119 G9
5121 E11
5123 G5
5130 E5
5131 C6
6103 B2
6105-1 F3
6105-2 G5
6106 C3
6107 G13
6120 C13
6130 E5
6131 D5
7101 C8
7102 C6
7103 H7
7111 C13
7112 G12
T102 B2
T103 B2
T105 F2
T106 F2
T109 B6
T110 F5
T111 F4
T112 F7
T113 A8
T114 B10
T115 A8
T116 F10
T117 G13
T118 G11
T120 F13
T121 F13
T122 F13
T123 E13
T124 G14
T125 F14
T126 F13
T127 F13
T128 D7
T140 F11
T141 F10
T142 F10

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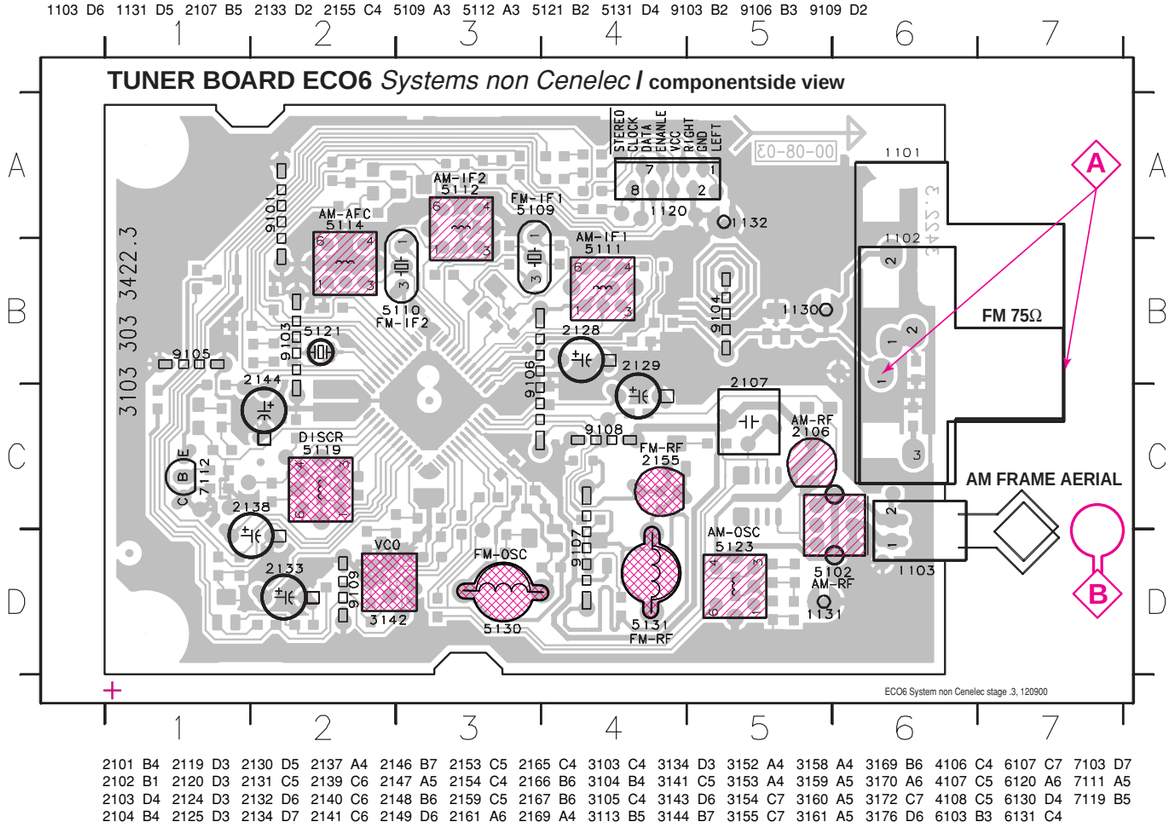
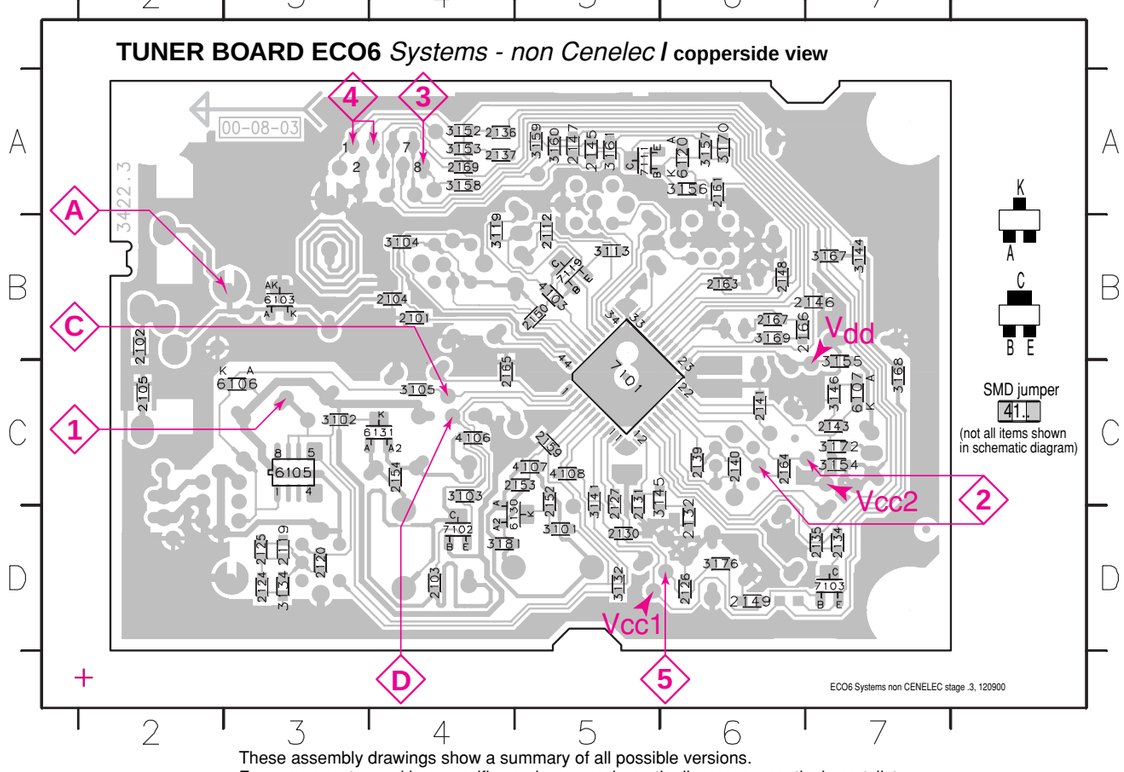
1101 A6 1120 A4 1132 A5 2128 C4 2138 C2 3142 D2 5110 B3 5114 A2 5123 D5 7112 C1 9104 B5 9107 D4
1102 B6 1130 B5 2106 C5 2129 B4 2144 B2 5102 D6 5111 B4 5119 C2 5130 D3 9101 A2 9105 B1 9108 C4
1103 D6 1131 D5 2107 B5 2133 D2 2155 C4 5109 A3 5112 A3 5121 B2 5131 D4 9103 B2 9106 B3 9109 D2



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 2164 C6 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 partslist.

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
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW 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		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	◇D	IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	IC 7101 36 100nF 220R	5111	◇5	max. f_o symmetric
			see remark [2] IC 7101 40 100nF 220R	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

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

Electrical Partslist *ECO6* *SYSTEMS NON-CENELEC*

7A-4

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	RDS only
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	

INTEGRATED CIRCUITS

7101 ©	9351 740 80557	TEA5757H/V1, RADIO IC

POWER MODULE PWR207

(6 x 75W / 7 x 75W)

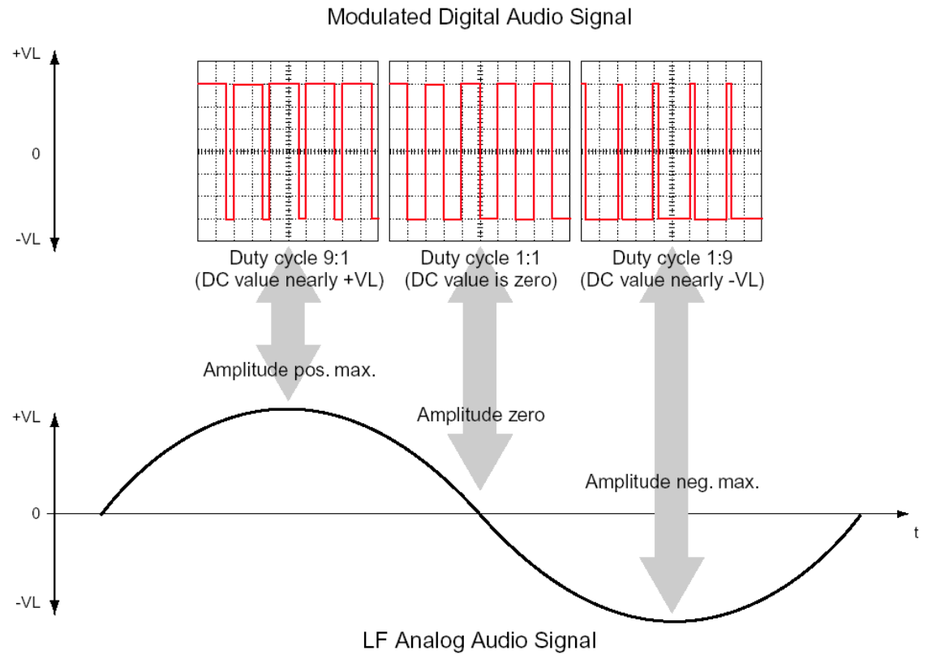
TABLE OF CONTENTS

8-1

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.



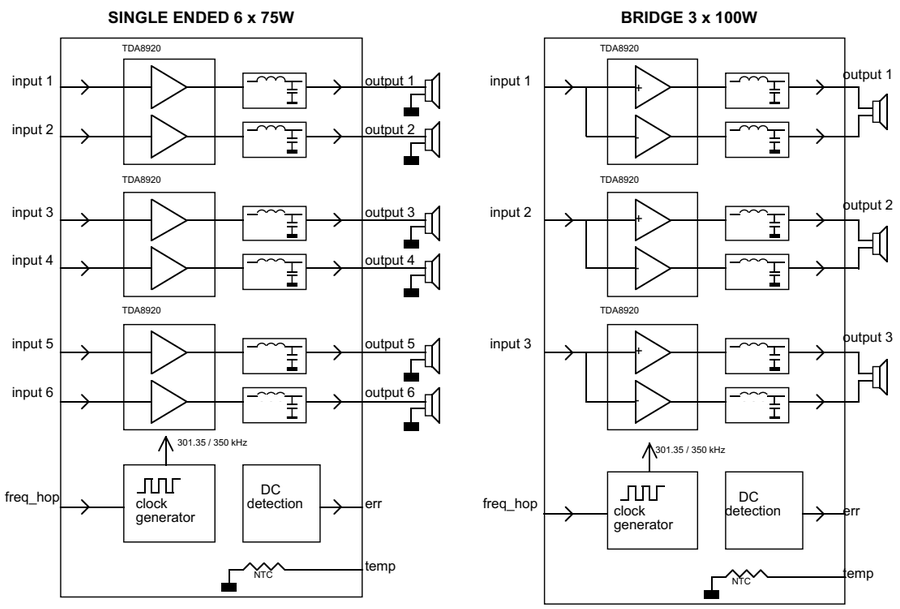
Compared to a conventional power amplifier the benefits of the Class-D amplifier are:

- higher effiency
- 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 ratiation (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

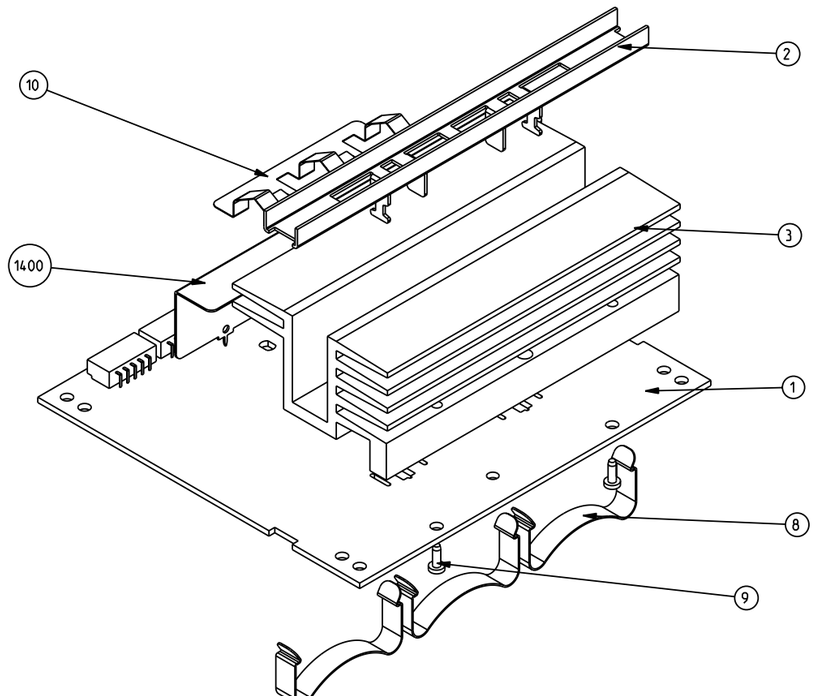
The TDA8920 is a two channel audio power amplifier using class-D technology. The audio input signal is converted into a digital Pulse Width Modulated (PWM) signal via an analog input stage and PWM modulator. It is then fed to the power stage which outputs a high power PWM signal which switches between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

8-2

MECHANICAL EXPLODED VIEW



3104 217 07180 bl110

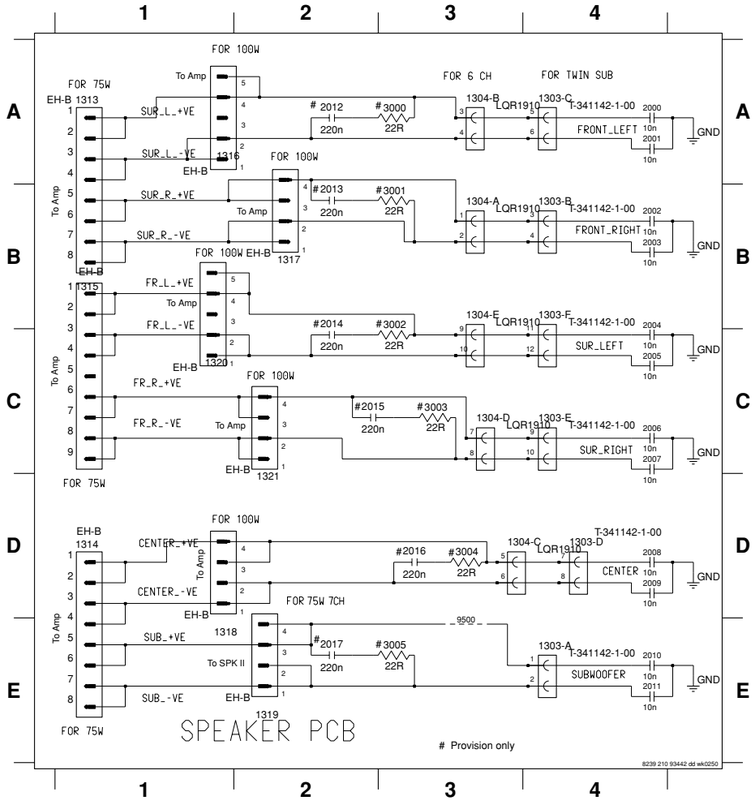
MECHANICAL PARTS LIST & SCREWS

8	3104 211 29861	SPRING 6 CHANNEL
9	-	D2.3 x 8
10	3104 211 29881	EARTH SPRING

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

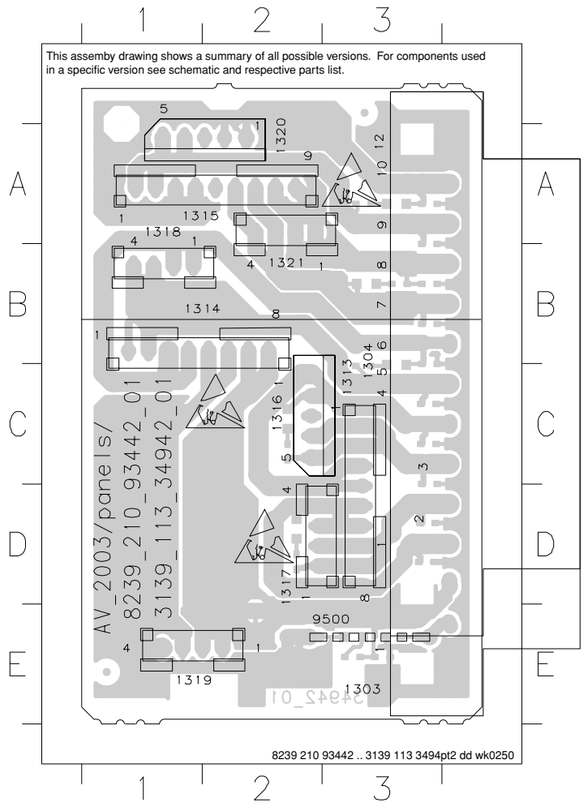
SPEAKER (SPK I) BOARD - CIRCUIT DIAGRAM

1303-A E4	1303-F B4	1304-E B3	1317 B2	2000 A4	2005 C4	2010 E4	2015 C2	3002 B3
1303-B B4	1304-A B3	1313 A1	1318 E2	2001 A4	2006 C4	2011 E4	2016 D3	3003 C3
1303-C A4	1304-B A3	1314 D1	1319 E2	2002 B4	2007 C4	2012 A2	2017 E2	3004 D3
1303-D D4	1304-C D3	1315 B1	1320 C1	2003 B4	2008 D4	2013 B2	3000 A3	3005 E3
1303-E C4	1304-D C3	1316 A2	1321 C2	2004 B4	2009 D4	2014 B2	3001 B3	9500 E3

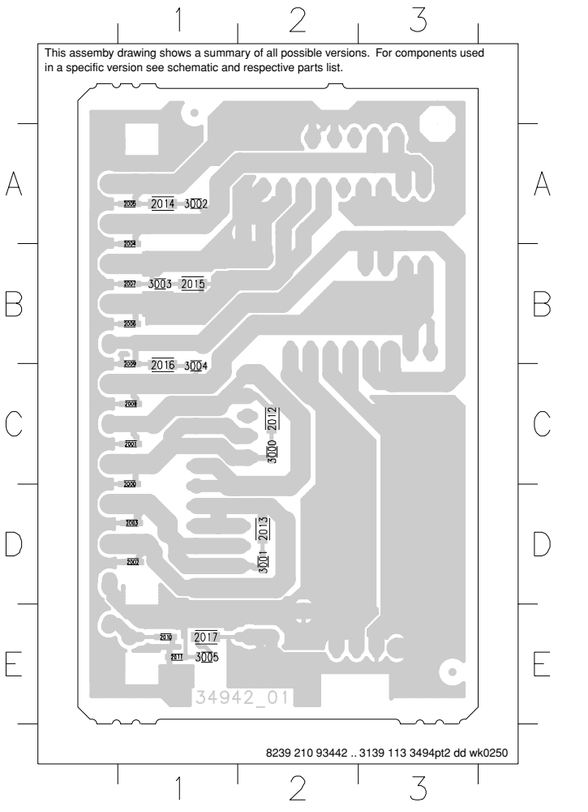


SPEAKER (SPK I) BOARD - COMPONENT & CHIP LAYOUTS

1303 E3
1304 B3
1313 C3
1314 B1
1315 A1
1316 C2
1317 D2
1318 A1
1319 E1
1320 A2
1321 B2
9500 E3

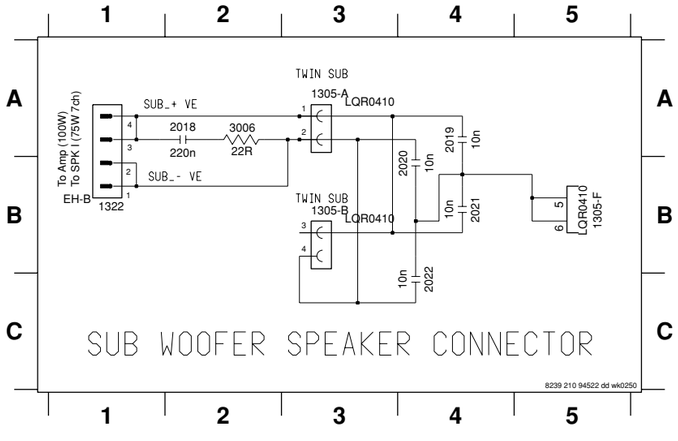


2000 C1
2001 C1
2002 D1
2003 D1
2004 A1
2005 A1
2006 B1
2007 B1
2008 C1
2009 B1
2010 E1
2011 E1
2012 C2
2013 D2
2014 A1
2015 B1
2016 C1
2017 E1
3000 C2
3001 D2
3002 A1
3003 B1
3004 C1
3005 E1



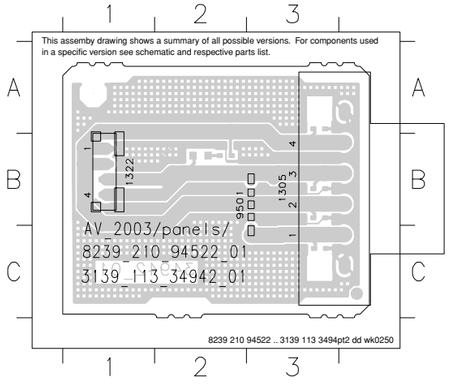
SW-OUT (SPK II) BOARD - CIRCUIT DIAGRAM

1305-A A3	1305-F B5	2018 A2	2020 B4	2022 C4
1305-B B3	1322 B1	2019 A4	2021 B4	3006 A2

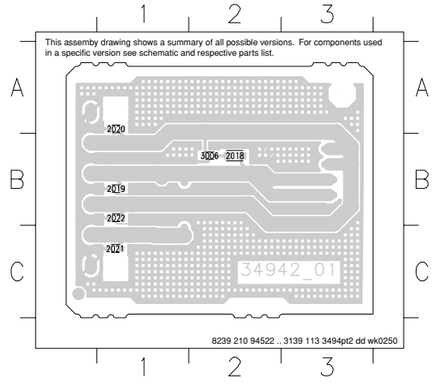


SW-OUT (SPK II) BOARD - COMPONENT & CHIP LAYOUTS

1305 B3
1322 B1
9501 B2

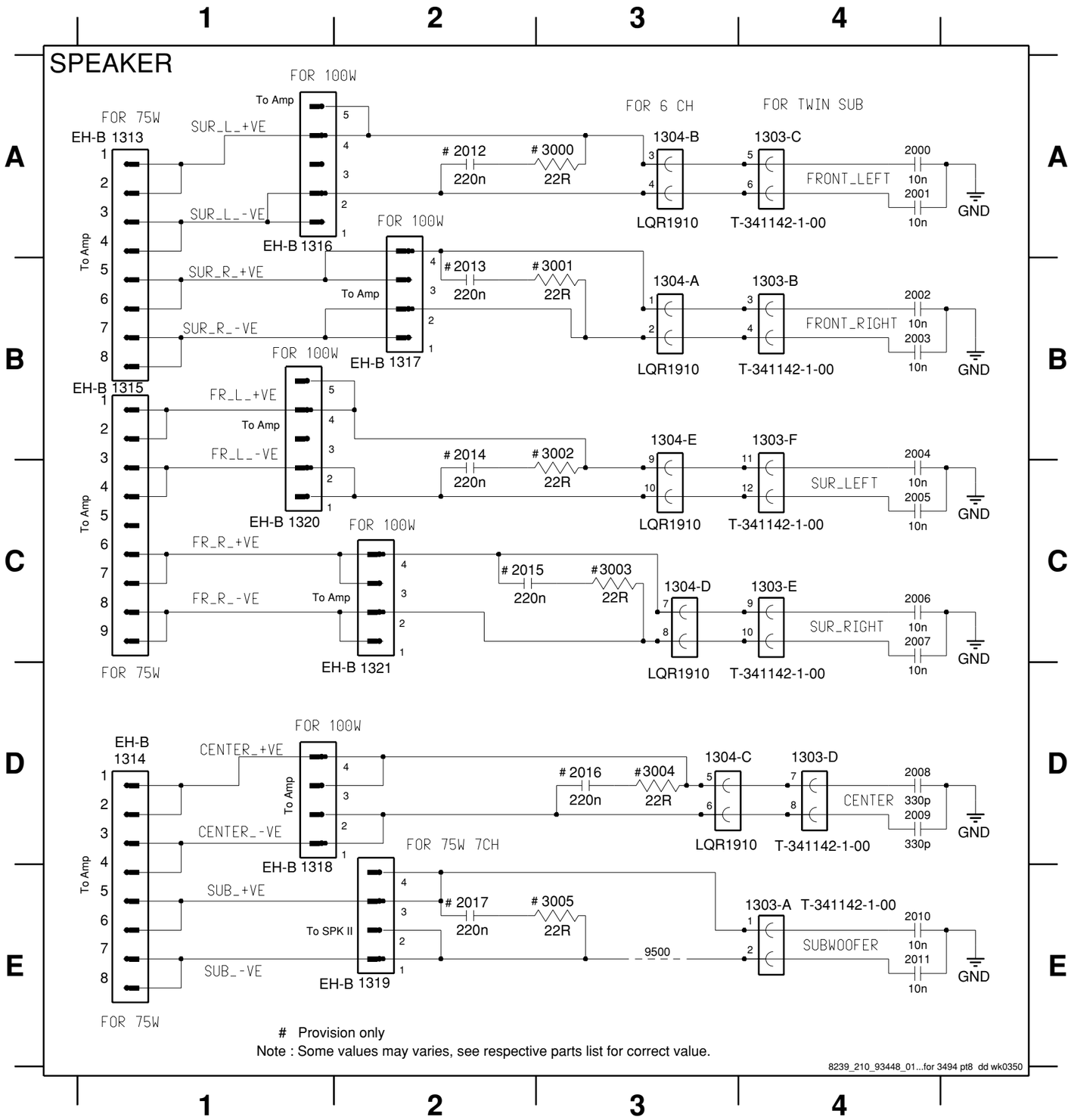


2018 B2
2019 A1
2020 A1
2021 C1
2022 B1
3006 B2



8-3a

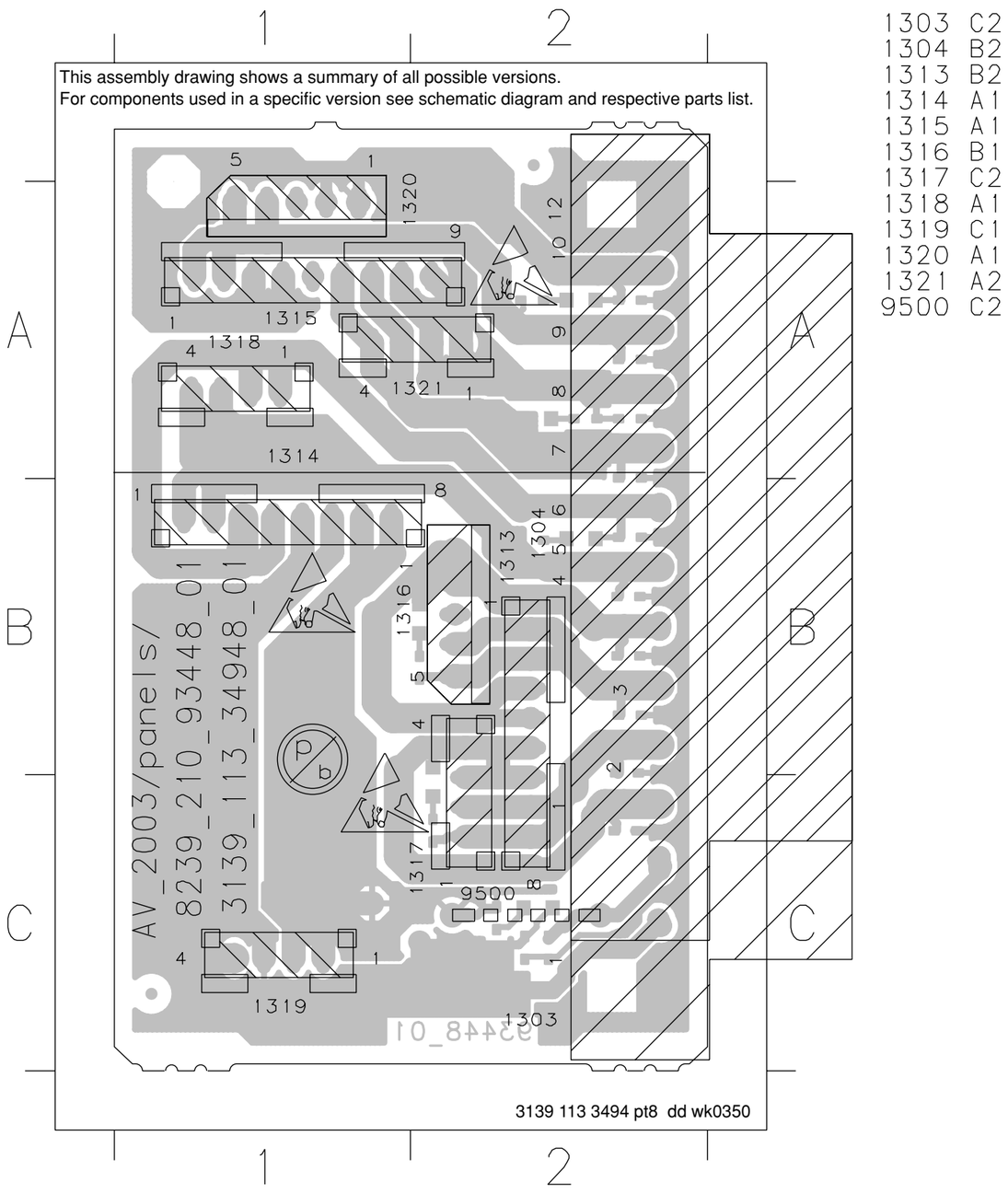
SPEAKER (SPK I) BOARD - CIRCUIT DIAGRAM (For pcb layout ...93448)

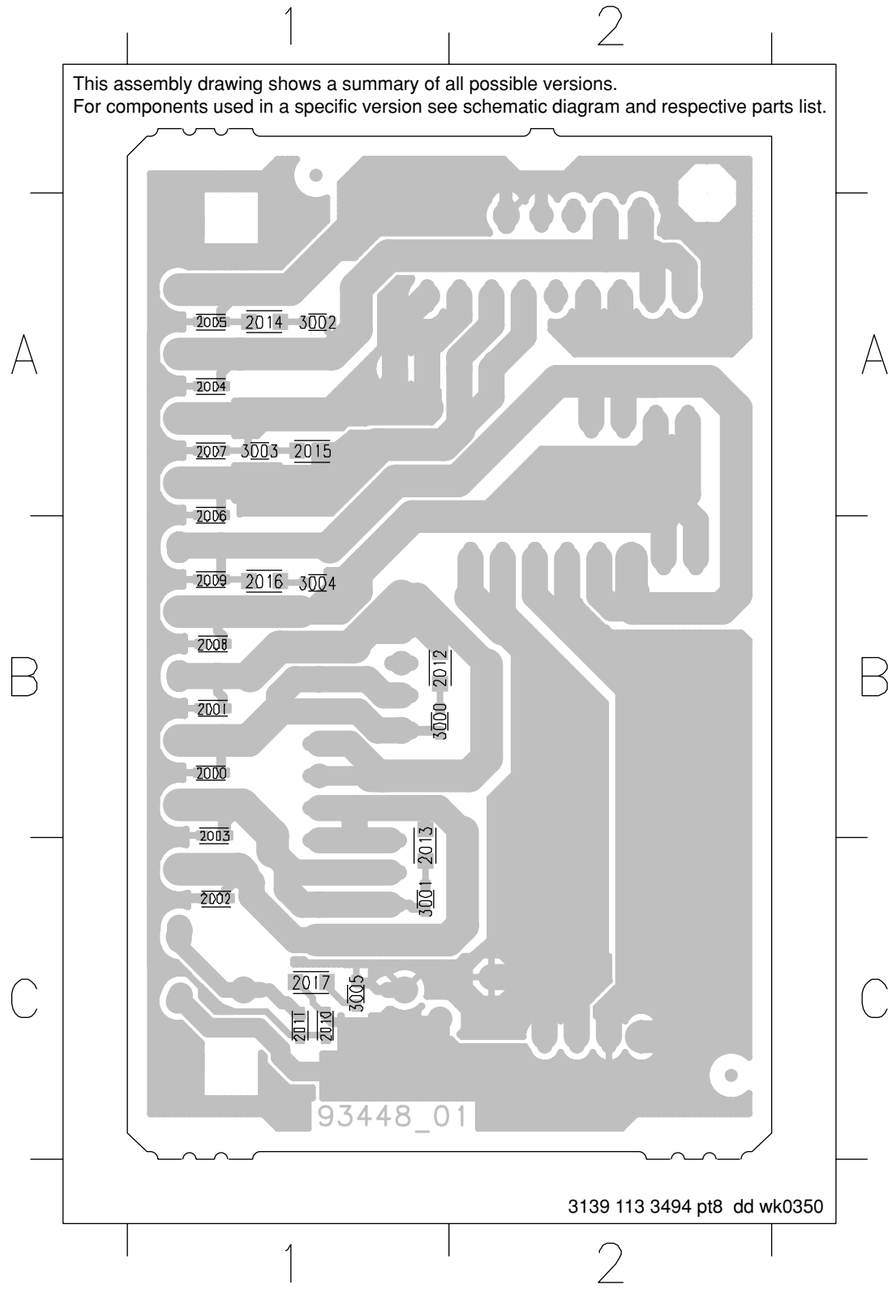


1303-A E4
1303-B B4
1303-C A4
1303-D D4
1303-E C4
1303-F B4
1304-A B3
1304-B A3
1304-C D3
1304-D C3
1304-E B3
1313 A1
1314 D1
1315 B1
1316 A2
1317 B2
1318 E2
1319 E2
1320 C1
1321 C2
2000 A4
2001 A4
2002 B4
2003 B4
2004 B4
2005 C4
2006 C4
2007 C4
2008 D4
2009 D4
2010 E4
2011 E4
2012 A2
2013 B2
2014 B2
2015 C2
2016 D3
2017 E2
3000 A3
3001 B3
3002 B3
3003 C3
3004 D3
3005 E3
9500 E3

8-3b

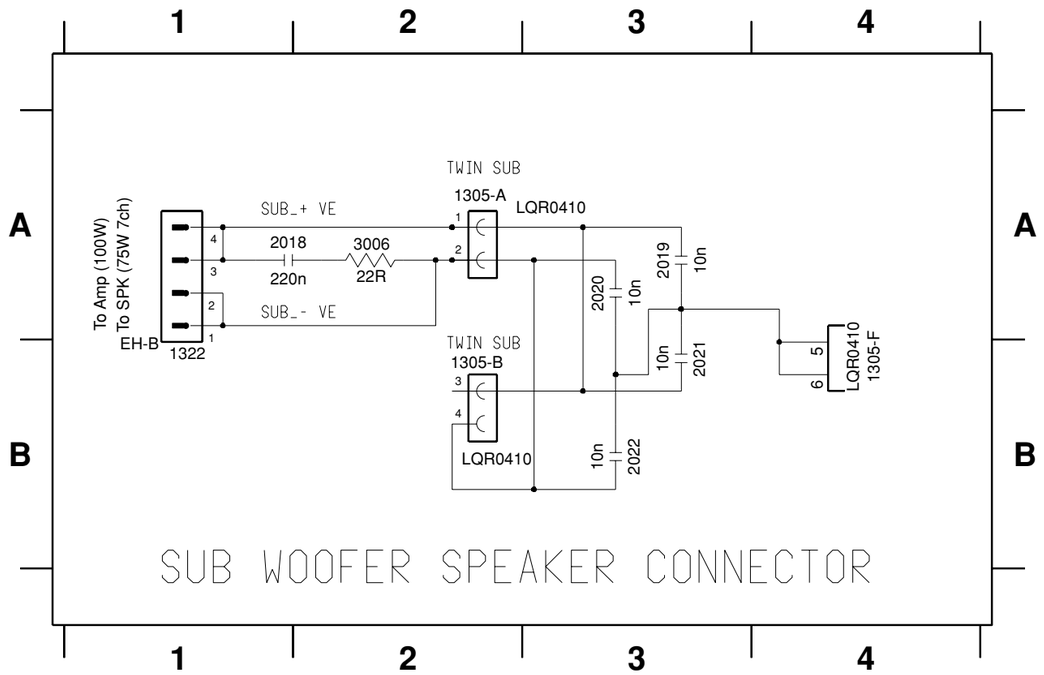
SPEAKER (SPK I) BOARD - COMPONENT & CHIP LAYOUTS (pcb layout ...93448)





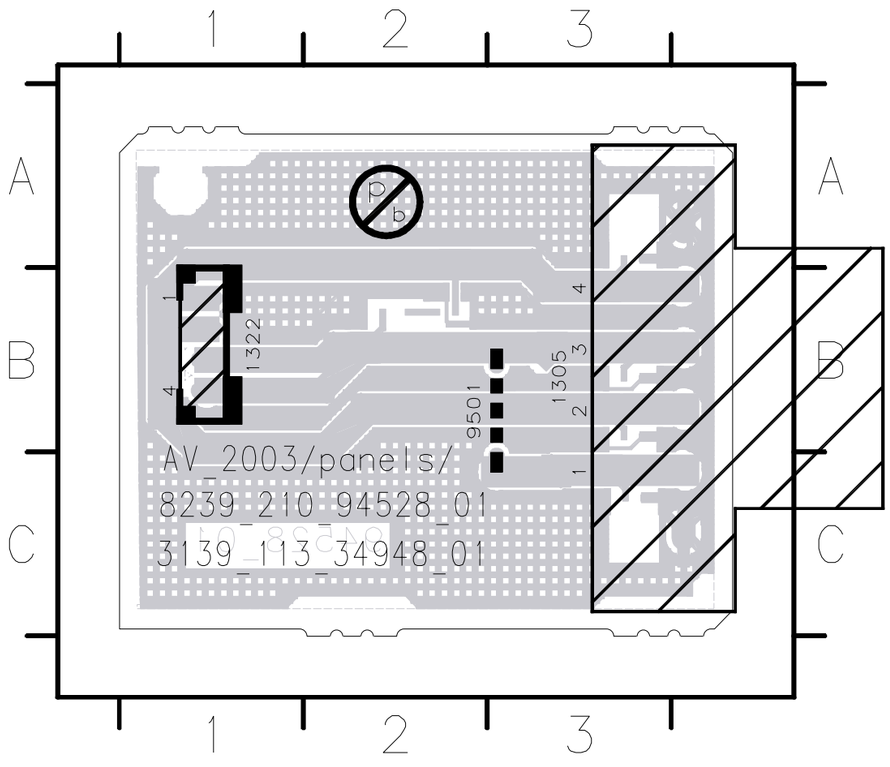
8-3c

SW-OUT (SPK II) BOARD - CIRCUIT DIAGRAM (For pcb layout ... 94528)

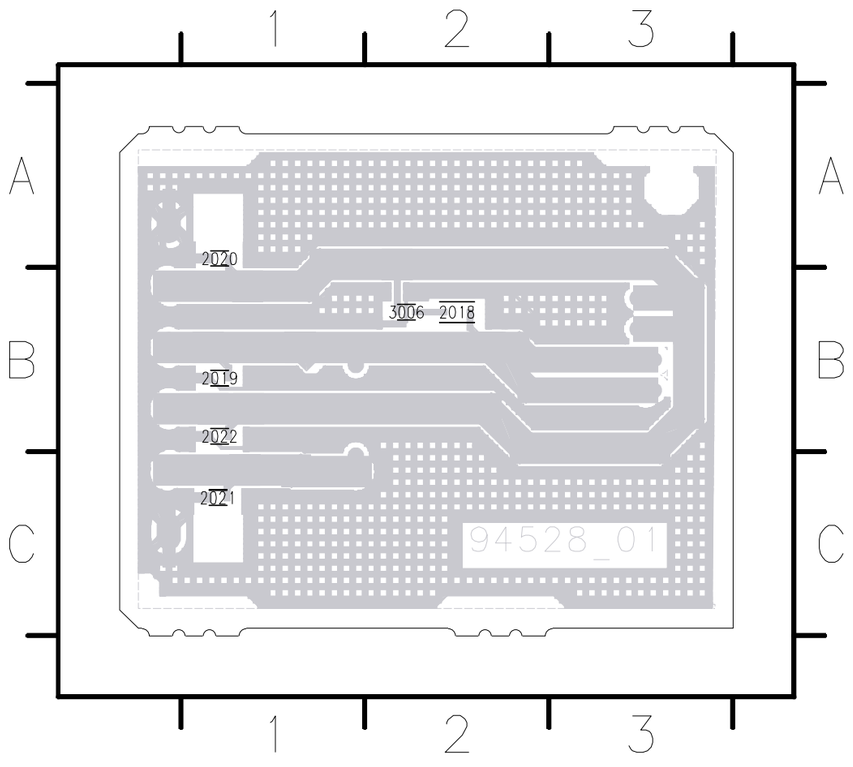


1305-A A2
1305-B B2
1305-F B4
1322 B1
2018 A1
2019 A3
2020 A3
2021 B3
2022 B3
3006 A2

SW-OUT (SPK II) BOARD - COMPONENT & CHIP LAYOUTS (pcb layout... 94528)



1305 B3
1322 B1
9501 B2

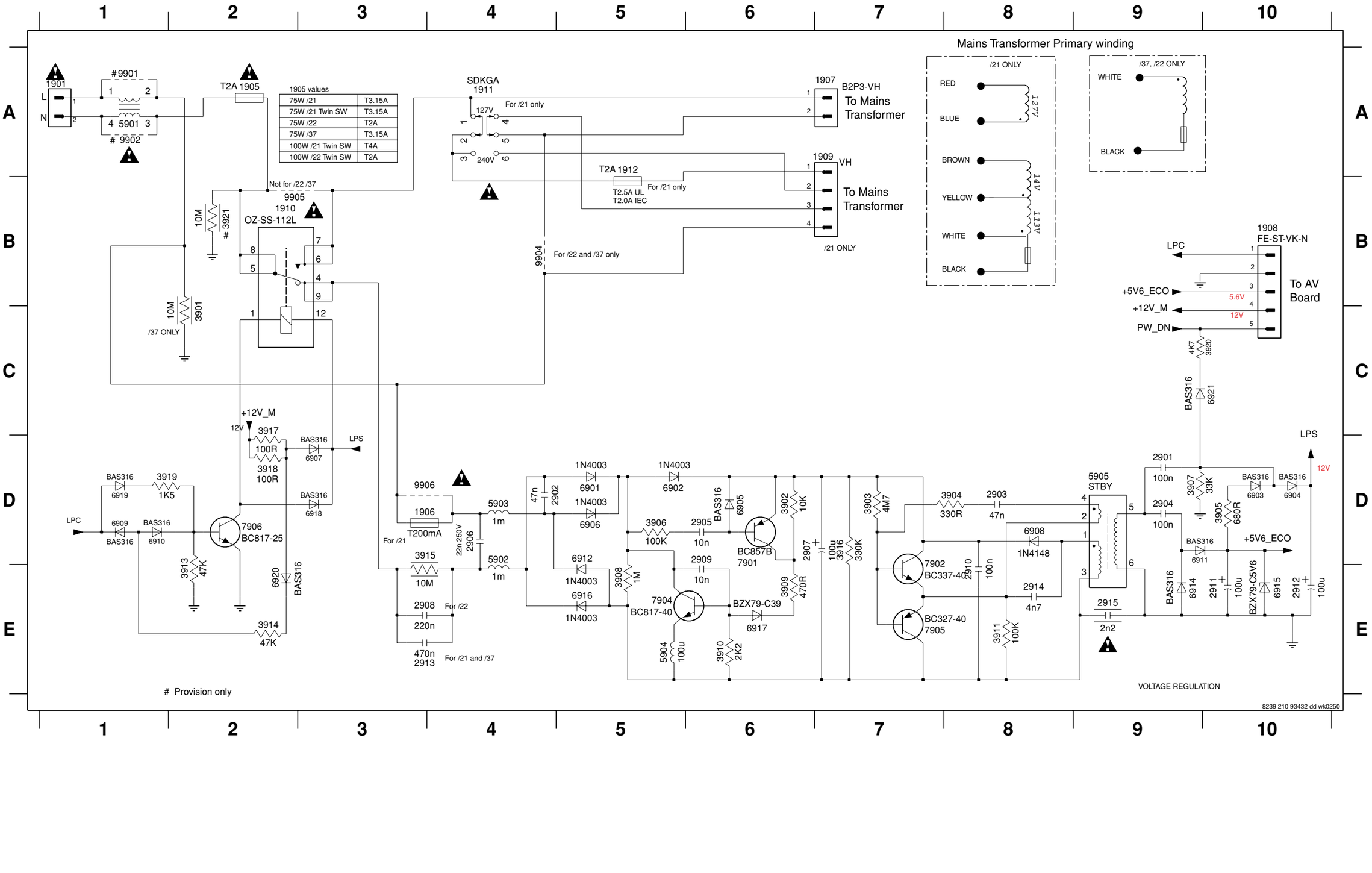


2018 B2
2019 B1
2020 A1
2021 C1
2022 B1
3006 B2

8-4

MAINS & ECO STBY BOARD - CIRCUIT DIAGRAM

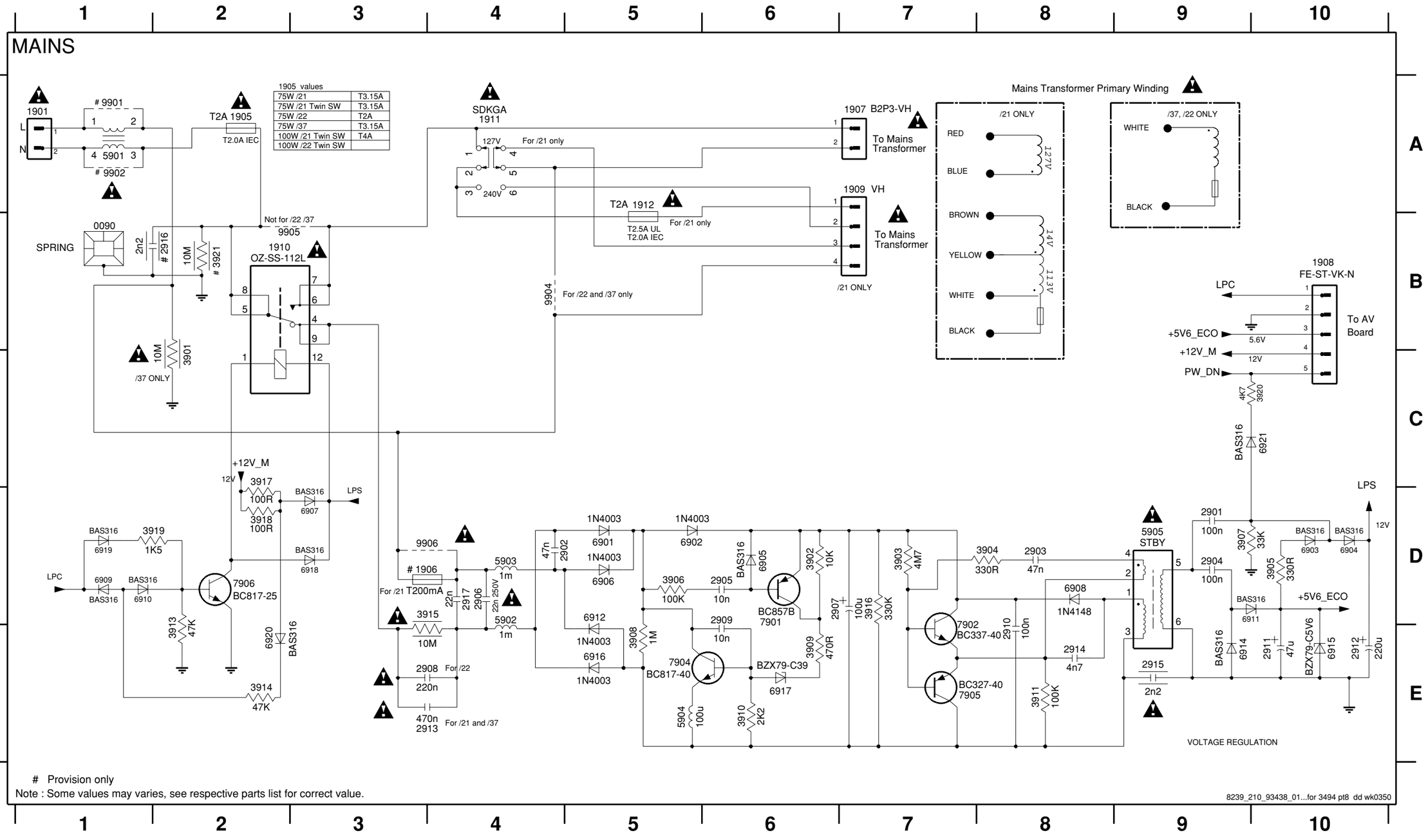
1901 A1	1908 B10	1912 A5	2904 D9	2908 E3	2912 E10	3901 C2	3905 D10	3909 E6	3914 E2	3918 D2	5901 A1	5905 D9	6904 D10	6908 D8	6912 D5	6917 E6	6921 C10	7905 E7	9904 B4
1905 A2	1909 A6	2901 D9	2905 D6	2909 D6	2913 E3	3902 D6	3906 D5	3910 E6	3915 D3	3919 D1	5902 D4	6901 D5	6905 D6	6909 D1	6914 E9	6918 D3	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	



8-4a

MAINS & ECO STBY BOARD - CIRCUIT DIAGRAM (For pcb layout ... 93438)

0090 B1	1907 A7	1911 A4	2903 D8	2907 D6	2911 E10	2915 E9	3902 D6	3906 D5	3910 E6	3915 D4	3919 D2	5902 D4	6901 D5	6905 D6	6909 D1	6914 E9	6918 D3	7901 D6	7906 D2	9905 B2
1901 A1	1908 B10	1912 A5	2904 D9	2908 E3	2912 E10	2916 B2	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
1905 A2	1909 A7	2901 D9	2905 D6	2909 D6	2913 E3	2917 D4	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	
1906 D3	1910 B2	2902 D4	2906 D4	2910 E8	2914 E8	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	

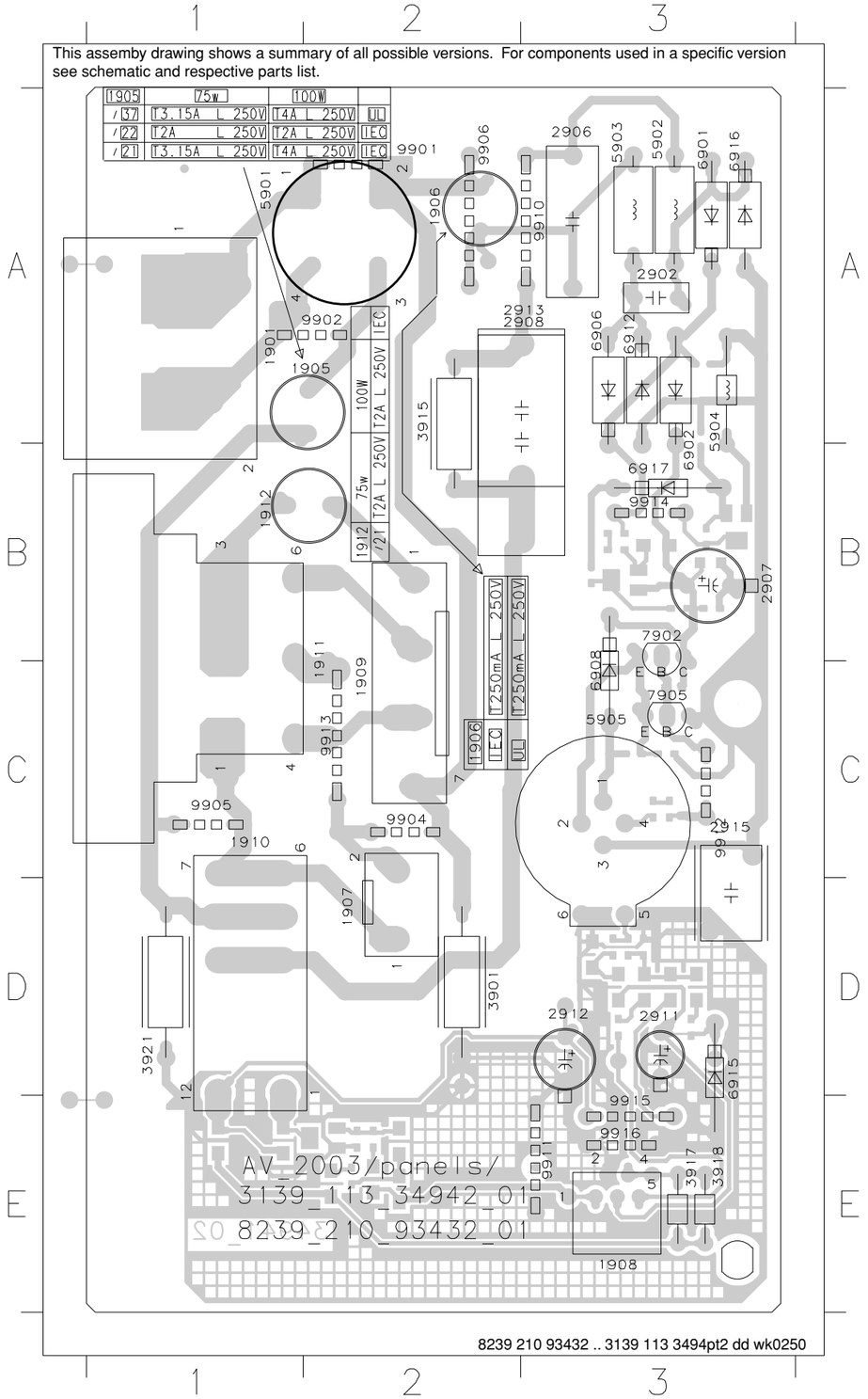


\# Provision only

Note : Some values may varies, see respective parts list for correct value.

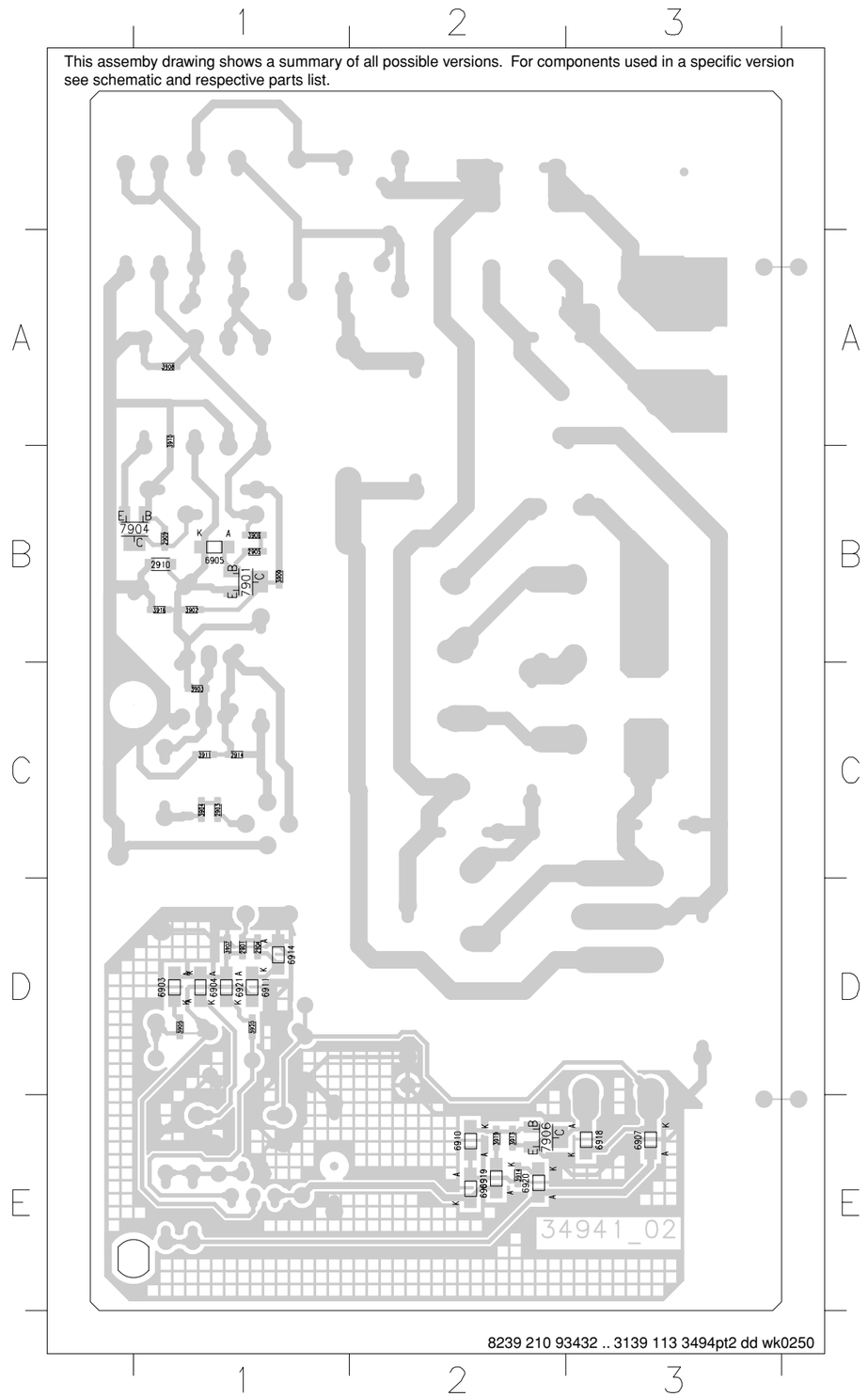
8239_210_93438_01...for 3494 pt8 dd wk0350

MAINS & ECO STBY BOARD - COMPONENT LAYOUT



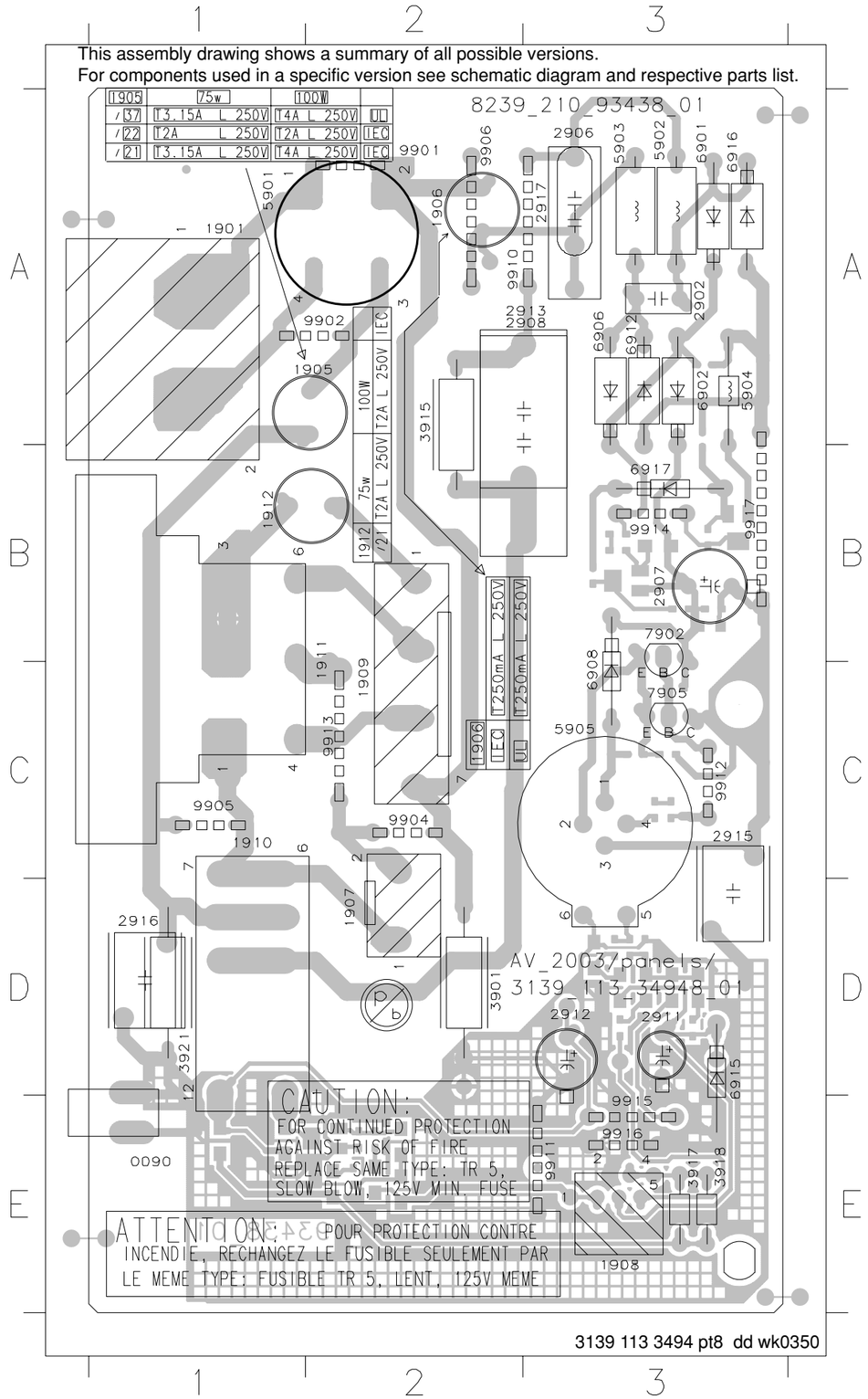
1901 A1
1905 A2
1906 A2
1907 D2
1908 E3
1909 C2
1910 C1
1911 B2
1912 B1
2902 A3
2906 A3
2907 B3
2908 A3
2911 D3
2912 D3
2913 A3
2915 C3
3901 D2
3915 A2
3917 E3
3918 E3
3921 D1
5901 A1
5902 A3
5903 A3
5904 A3
5905 C3
6901 A3
6902 B3
6906 A3
6908 C3
6912 A3
6915 D3
6916 A3
6917 B3
7902 B3
7905 C3
9901 A2
9902 A2
9904 C2
9905 C1
9906 A2
9910 A3
9911 E3
9912 C3
9913 C2
9914 B3
9915 E3
9916 E3

MAINS & ECO STBY BOARD - CHIP LAYOUT



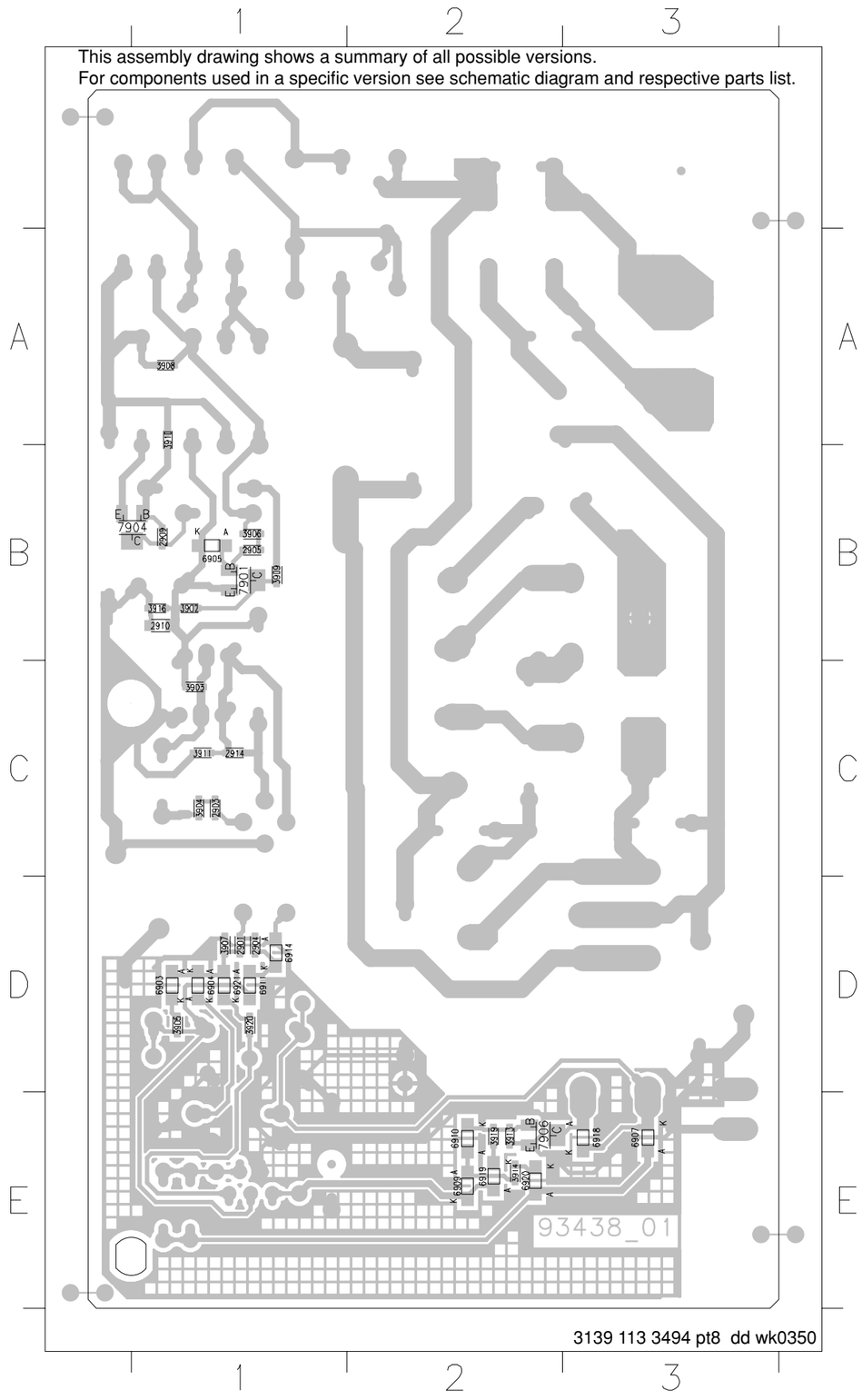
2901 D1
2903 C1
2904 D1
2905 B1
2909 B1
2910 B1
2914 C1
3902 B1
3903 C1
3904 C1
3905 D1
3906 B1
3907 D1
3908 A1
3909 B1
3910 A1
3911 C1
3913 E2
3914 E2
3916 B1
3919 E2
3920 D1
6903 D1
6904 D1
6905 B1
6907 E3
6909 E2
6910 E2
6911 D1
6914 D1
6918 E3
6919 E2
6920 E2
6921 D1
7901 B1
7904 B1
7906 E2

MAINS & ECO STBY BOARD - COMPONENT LAYOUT (pcb layout ... 93438)



0090 E1
1901 A1
1905 A2
1906 A2
1907 D2
1908 E3
1909 C2
1910 C1
1911 B2
1912 B1
2902 A3
2906 A3
2907 B3
2908 A3
2911 D3
2912 D3
2913 A3
2915 C3
2916 D1
2917 A3
3901 D2
3915 A2
3917 E3
3918 E3
3921 D1
5901 A1
5902 A3
5903 A3
5904 A3
5905 C3
6901 A3
6902 A3
6906 A3
6908 C3
6912 A3
6915 D3
6916 A3
6917 B3
7902 B3
7905 C3
9901 A2
9902 A2
9904 C2
9905 C1
9906 A2
9910 A2
9911 E3
9912 C3
9913 C2
9914 B3
9915 E3
9916 E3
9917 B3

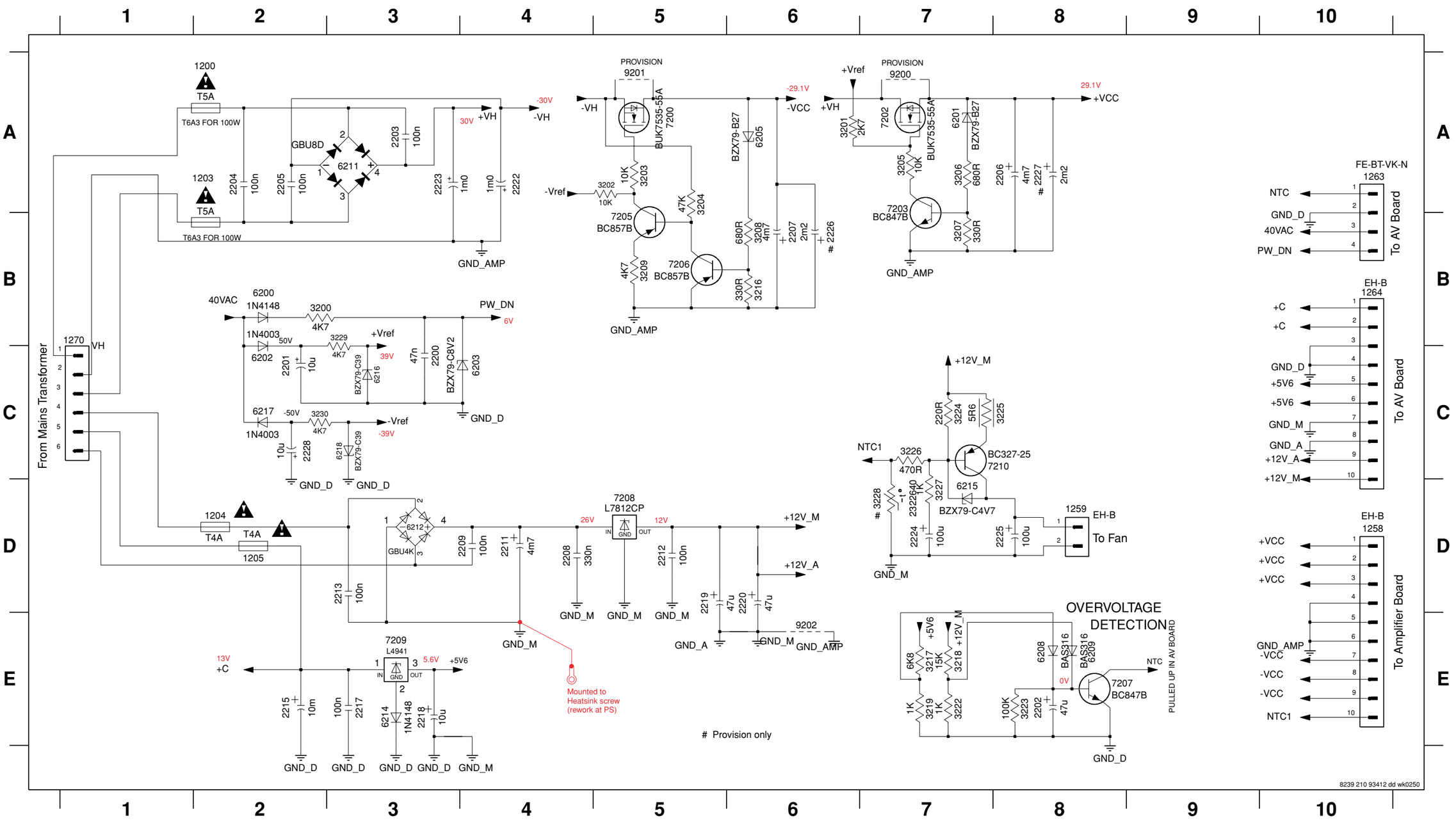
MAINS & ECO STBY BOARD - CHIP LAYOUT (pcb layout ... 93438)



2901 D1
2903 C1
2904 D1
2905 B1
2909 B1
2910 B1
2914 C1
3902 B1
3903 C1
3904 C1
3905 D1
3906 B1
3907 D1
3908 A1
3909 B1
3910 A1
3911 C1
3913 E2
3914 E2
3916 B1
3919 E2
3920 D1
6903 D1
6904 D1
6905 B1
6907 E3
6909 E2
6910 E2
6911 D1
6914 D1
6918 E3
6919 E2
6920 E2
6921 D1
7901 B1
7904 B1
7906 E2

8-6

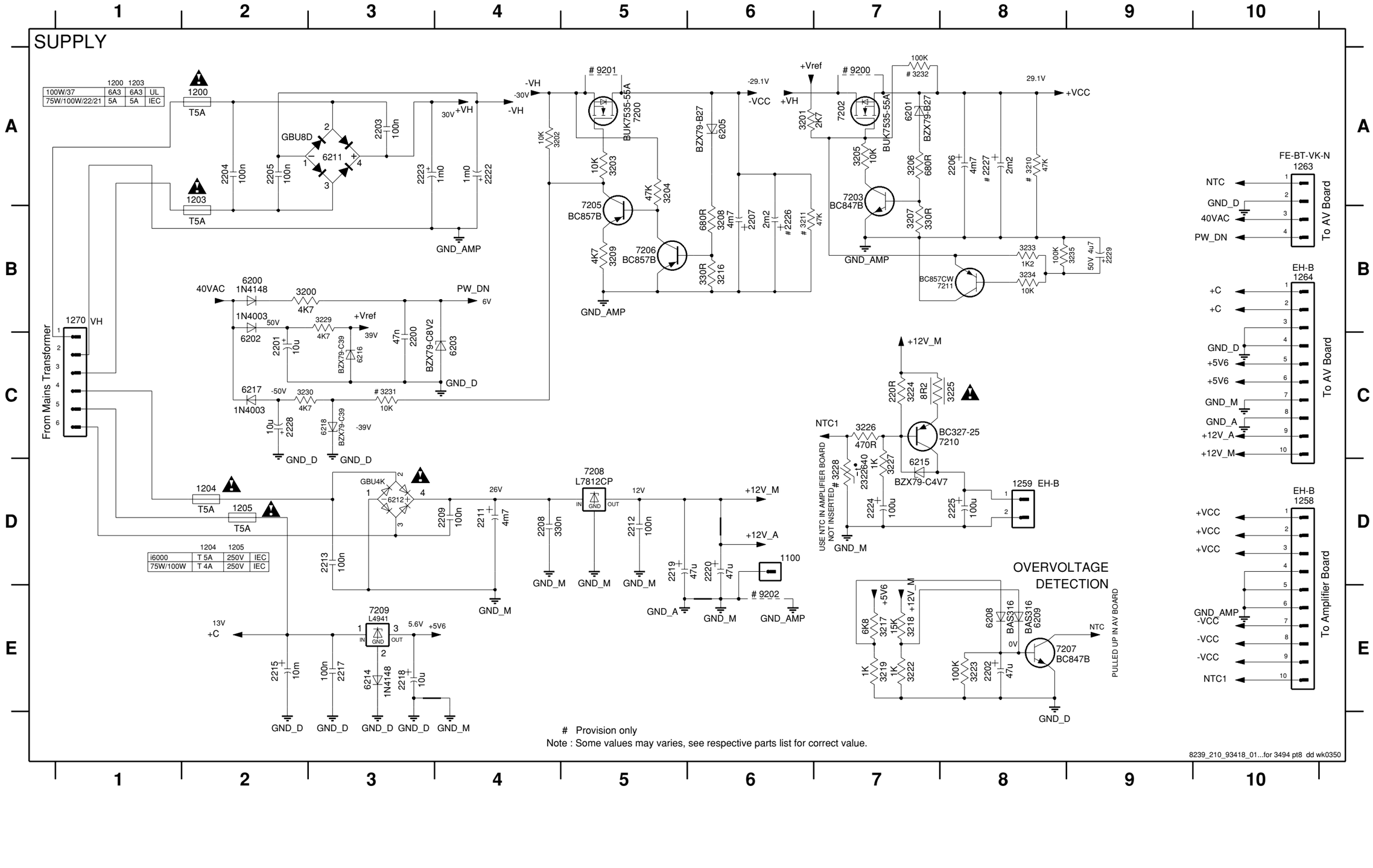
SUPPLY BOARD - CIRCUIT DIAGRAM



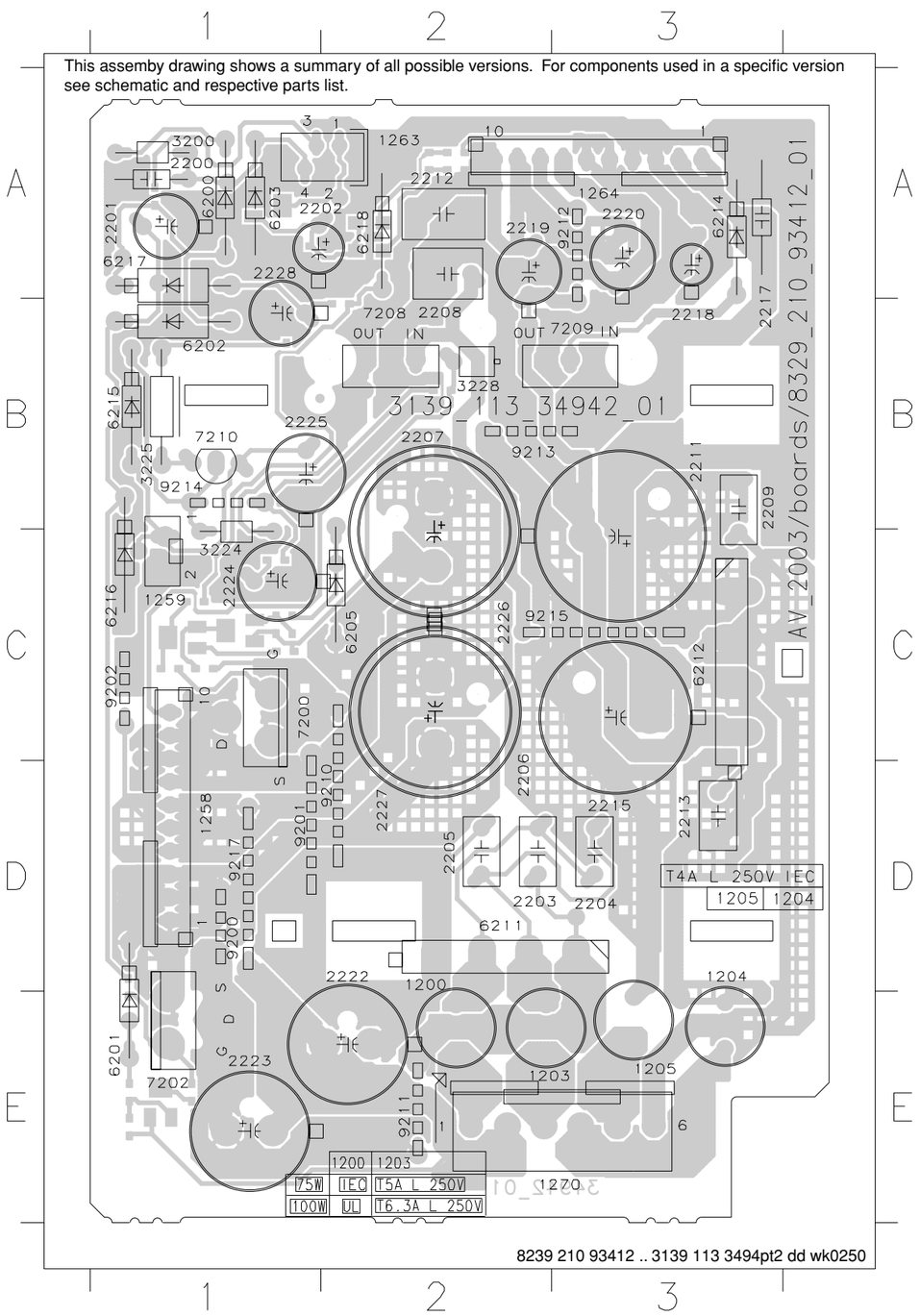
8239 210 93412 dd wk0250

8-6a

SUPPLY BOARD - CIRCUIT DIAGRAM (For pcb layout ... 93418)

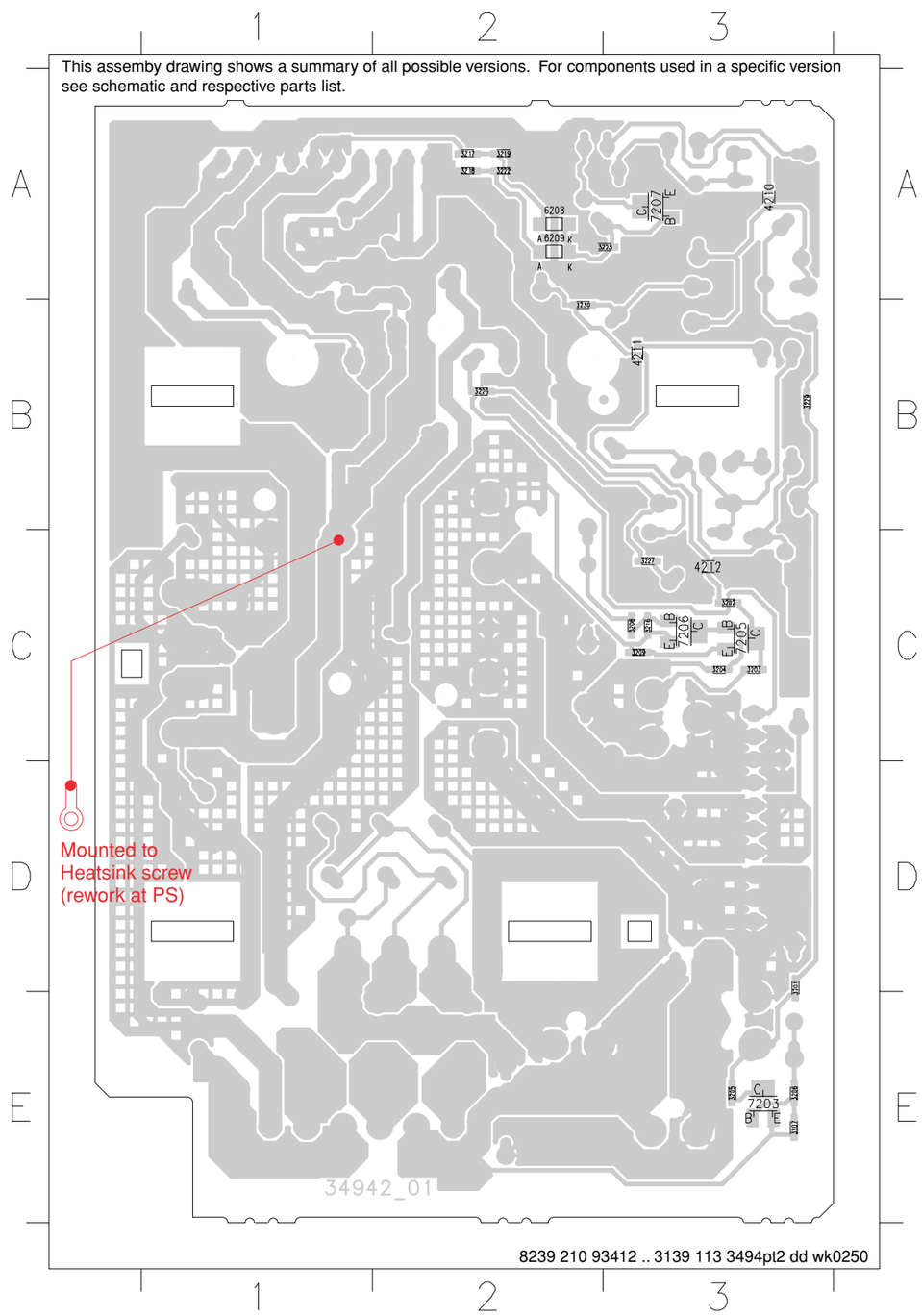


SUPPLY BOARD - COMPONENT LAYOUT



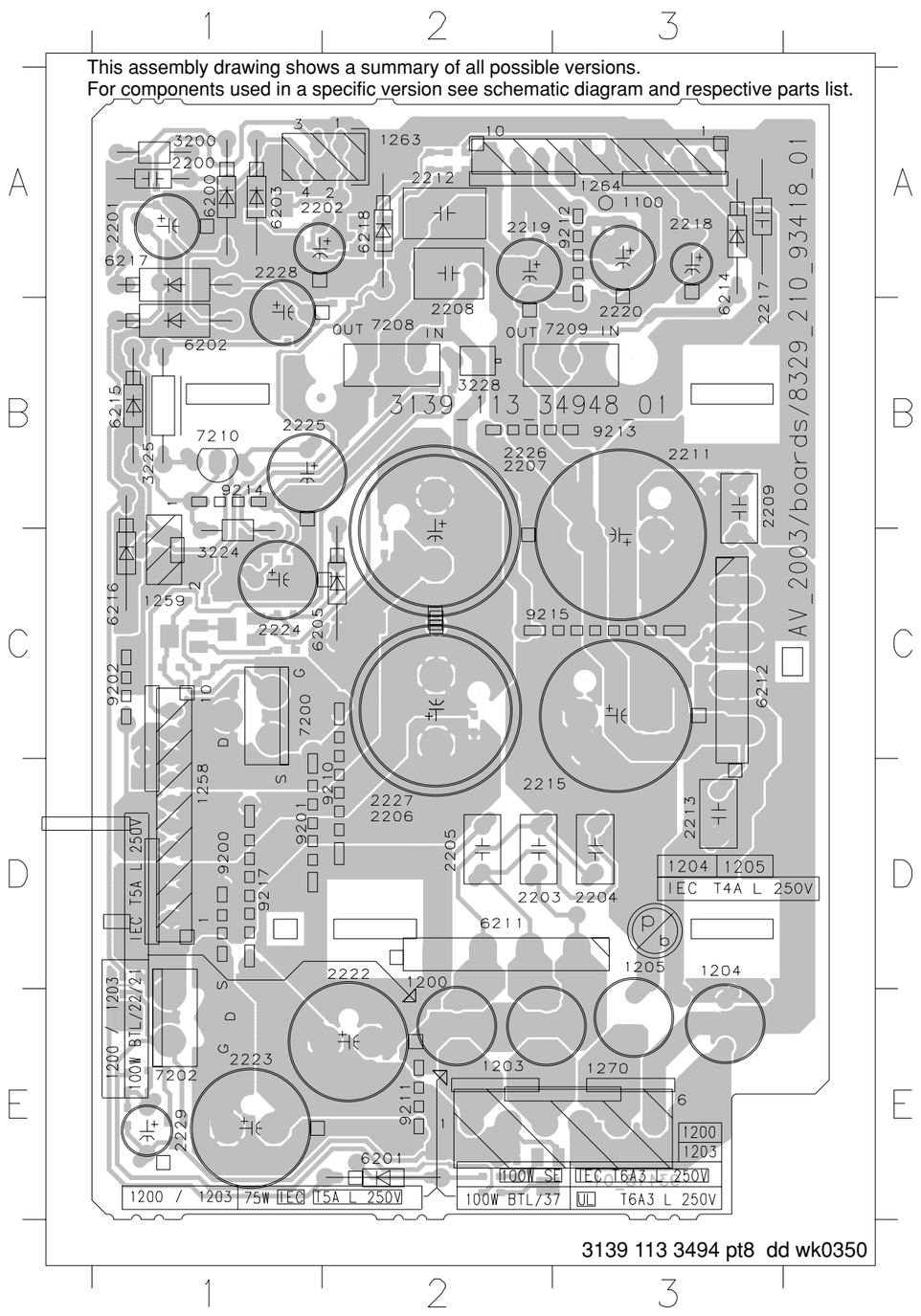
1200 D2
1203 E2
1204 D3
1205 E3
1258 D1
1259 C1
1263 A2
1264 A3
1270 E3
2200 A1
2201 A1
2202 A1
2203 D2
2204 D3
2205 D2
2206 D2
2207 B2
2208 B2
2209 B3
2211 B3
2212 A2
2213 D3
2215 D3
2217 B3
2218 B3
2219 A2
2220 A3
2222 D2
2223 E1
2224 C1
2225 B1
2226 C2
2227 D2
2228 A1
3200 A1
3224 C1
3225 B1
3228 B2
6200 A1
6201 E1
6202 B1
6203 A1
6205 C2
6211 D2
6212 C3
6214 A3
6215 B1
6216 C1
6217 A1
6218 A2
7200 C1
7202 E1
7208 B2
7209 B3
7210 B1
9200 D1
9201 D1
9202 C1
9210 D2
9211 E2
9212 A3
9213 B2
9214 B1
9215 C2
9217 D1

SUPPLY BOARD - CHIP LAYOUT



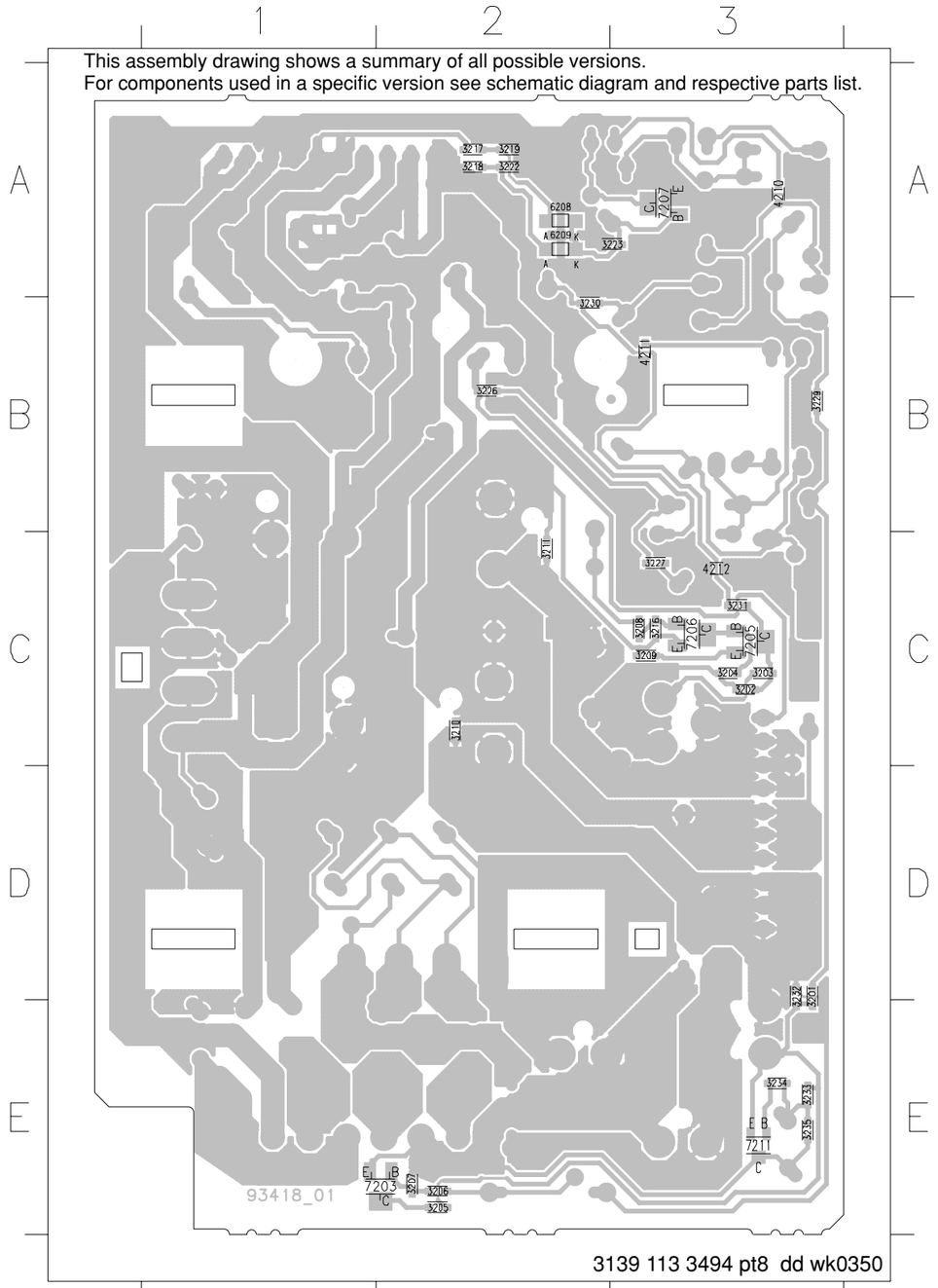
3201 D3
3202 C3
3203 C3
3204 C3
3205 E3
3206 E3
3207 E3
3208 C3
3209 C3
3216 C3
3217 A2
3218 A2
3219 A2
3222 A2
3223 A3
3226 B3
3227 C3
3229 B3
3230 B2
4210 A3
4211 B3
4212 C3
6208 A2
6209 A2
7203 E2
7205 C3
7206 C3
7207 A3

SUPPLY BOARD - COMPONENT LAYOUT (pcb layout ... 93418)



1100 A3
1200 D2
1203 E2
1204 D3
1205 D3
1258 D1
1259 C1
1263 A2
1264 A3
1270 E3
2200 A1
2201 A1
2202 A1
2203 D2
2204 D3
2205 D2
2206 D2
2207 B2
2208 B2
2209 B3
2211 B3
2212 A2
2213 D3
2215 D2
2217 B3
2218 A3
2219 A2
2220 B3
2222 D2
2223 E1
2224 C1
2225 B1
2226 B2
2227 D2
2228 A1
2229 E1
3200 A1
3224 C1
3225 B1
3228 B2
6200 A1
6201 E2
6202 B1
6203 A1
6205 C1
6211 D2
6212 C3
6214 A3
6215 B1
6216 C1
6217 A1
6218 A2
7200 C1
7202 E1
7208 B2
7209 B3
7210 B1
9200 D1
9201 D1
9202 C1
9210 D2
9211 E2
9212 A3
9213 B3
9214 B1
9215 C2
9217 D1

SUPPLY BOARD - CHIP LAYOUT (pcb layout 93418)



3201 D3
3202 C3
3203 C3
3204 C3
3205 E2
3206 E2
3207 E2
3208 C3
3209 C3
3210 C2
3211 C2
3216 C3
3217 A2
3218 A2
3219 A2
3222 A2
3223 A3
3226 B2
3227 C3
3229 B3
3230 B2
3231 C3
3232 D3
3233 E3
3234 E3
3235 E3
4210 A3
4211 B3
4212 C3
6208 A2
6209 A2
7203 E2
7205 C3
7206 C3
7207 A3
7211 E3

8-8

AMPLIFIER BOARD - CLOCK GENERATOR & CONNECTION CIRCUIT

1301: 1 = LEFT (SUBW)
3 = RIGHT (SUR_L)
5 = CENTER (SUR_R)

1302: 1 = LEFT
3 = RIGHT
5 = CENTER

1305 & 1303: 1 = SUBW
3 = SUR_L
5 = SUR_R

To AV Board

To Supply Board

Over-Voltage protection

OPTIONAL

Clock Generator

Power Supply

DC-Detection

△ Not for 75W version
✱ Not for 100W version
Provision only

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

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 I12		
1400 I6	7500 A12		
1600 E9	7501 C12		
1601 G9	7502 D12		
2400 H3	7600-1 F8		
2401 H4	7600-2 F10		
2402 H5	7600-3 F9		
2403 H3	7600-4 G8		
2404 H4	7600-5 F11		
2405 H5	7600-6 G7		
2406 H4	7602 E9		
2407 H4	7607 E11		
2408 B3	7608 F9		
2409 B3	7710 H12		
2410 B3	7716 I12		
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 I10		
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 I10			
3721 I11			
3722 I11			
4400 C5			
5400 G4			
5401 H4			
6500 A10			
6501 A10			
6502 A10			
6503 B10			
6504 B10			

8-8a

AMPLIFIER BOARD - CLOCK GENERATOR & CONNECTION CIRCUIT (For pcb layout ... 34255)

1301: 1 = LEFT (SUR_L)
3 = RIGHT (SUR_R)
5 = CENTER (SUBW)

1302: 1 = LEFT
3 = RIGHT
5 = CENTER

1302 FE-BT-VK-N
1301 FE-ST-VK-NA
To AV Board

INPUT_1 3414 5K6
INPUT_2N 3415 5K6
INPUT_3 3416 5K6
INPUT_4N 3417 5K6
INPUT_5 3418 5K6
INPUT_6N 3419 5K6
INPUT_3 3423 5K6
INPUT_1N 3421 5K6
INPUT_2 3400 5K6
INPUT_3N 3401 5K6
INPUT_4 3402 5K6
MODE_12 3403 5K6
MODE_34 3404 220R
INPUT_3N 4400
INPUT_5N 3405 5K6
INPUT_6 3406 5K6
MODE_34 3407 5K6
MODE_56 3408 220R
3409 220R
TEMP
FREQ_HOP
ERR

2408 1n0, 2409 1n0, 2425 1n0, 2410 1n0, 1n0
2414 1n0, 2413 1n0, 2412 1n0, 2420 1n0, 2411 1n0

1305 & 1303: 1 = SUR_L
3 = SUR_R
5 = SUBW

1303 FE-BT-VK-N
1305 FE-ST-VK-NA
To AV Board

INPUT_5N 3411 5K6
INPUT_5 3424 5K6
INPUT_6N 3425 5K6
INPUT_6 3413 5K6
MODE_56 3412 220R
INPUT_4 3410 5K6
INPUT_4N 3426 5K6

2421 1n0, 2418 1n0, 2416 1n0, 2415 1n0, 2422 1n0, 2417 1n0

Power Supply

To Supply Board
1309, 1304 B10B-EH-A, EH-S
1312 SXXB-EH-A
TEMP
5400 Vdd +28V
5401 Vss -28V
2400 100n, 2404 470u 35V
2401 470u 35, 2402 470u 35
2403 100n, 2407 470u 35V
2404 470u 35, 2405 470u 35
3422 100R
2419 100n
3420 10K T

1320 RT-01T
1400 SCREENCOVER
2423 100n

△ Not for 75W version
✱ Not for 100W version
Provision only

A: 3V
D: 0V
E: 3V

Over-Voltage protection

MODE_12 — 2500 100n
MODE_34 — 2501 100n
MODE_56 — 2502 100n
OPTIONAL

Clock Generator

Vdd
3600 470R
3601 470R
+5,5V
5V
2611 10u
BZX384-C5V6 6600
3604 10K
3607 1K0
FREQ_HOP
2606 1n0
2605 470p
3602 100K
3606 100K
3609 100K
7600-1 74HCU04D
7600-2 74HCU04D
7600-3 74HCU04D
7600-4 74HCU04D
7600-5 74HCU04D
7600-6 74HCU04D
2600 100n
2601 33p
1600 602K7
2602 100p
2603 100p
7602 BC847B
3603 10K
3605 6K8
3608 1M
BC857B 7608
1601 700K
2607 100p
7607 HEF4013BT
SD1 D1 O1 CP1 O1 CD1
SD2 D2 O2 CP2 O2 CD2
2604 100n
CLOCK
2608 100p
3610 22R

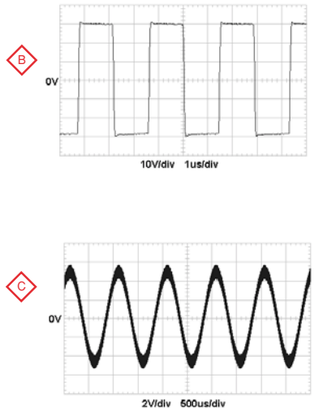
DC-Detection

OUT_1 3700 47K
OUT_2 3701 47K
OUT_3 3709 47K
OUT_4 3712 47K
OUT_5 3716 47K
OUT_6 3718 47K
3721 10K
0V
3703 47K
3713 10K
3722 10K
2700 10u
6713 BAS316
6714 BAS316
6715 BAS316
7710 BC847B
7716 BC857B
ERR

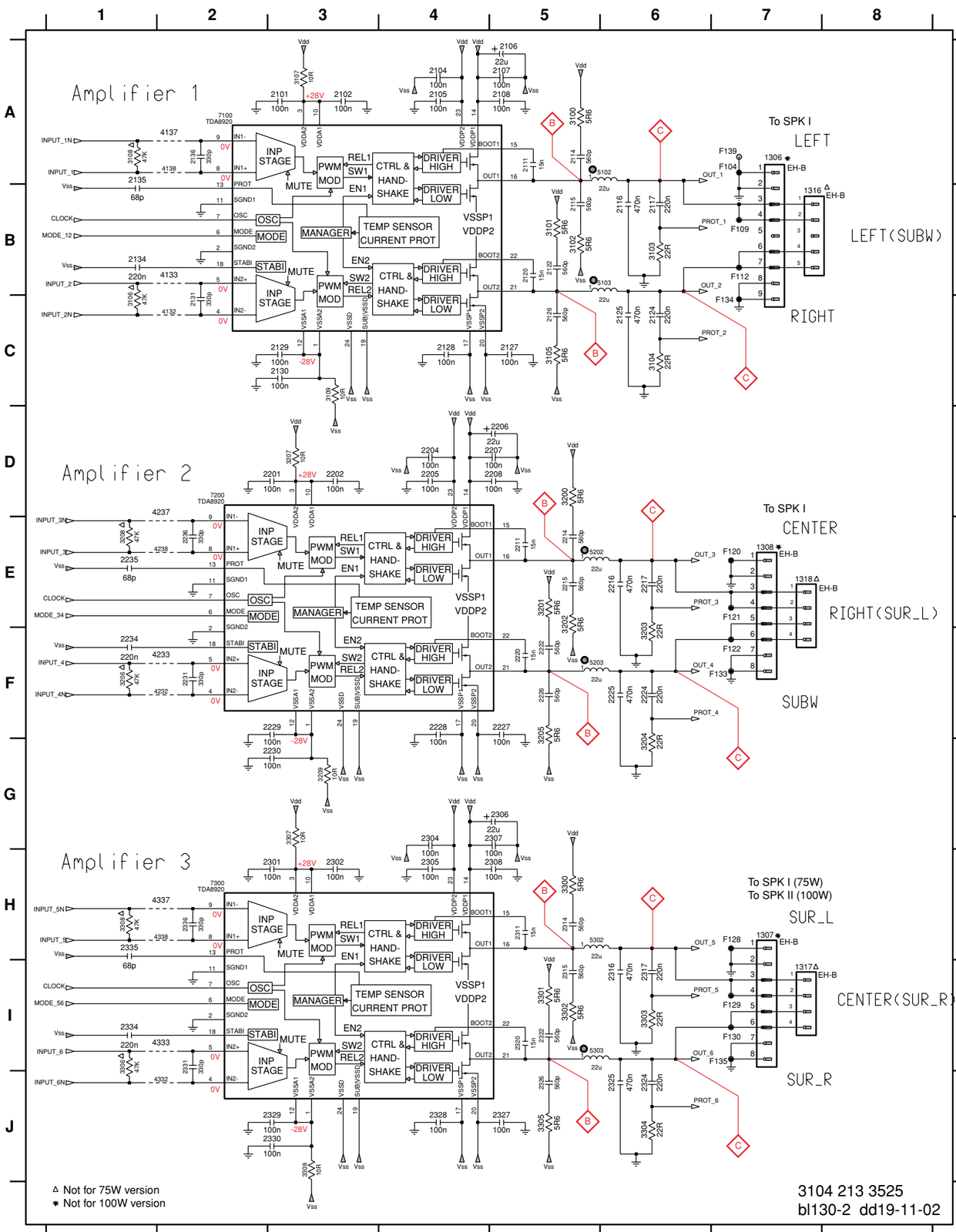
3104 213 3525
bl130-2 dd 29-01-04

1301 B1
1302 B2
1303 E2
1304 G2
1305 E1
1309 G1
1312 G3
1320 I5
1400 I6
1600 E9
1601 G9
2400 H3
2401 H4
2402 H4
2403 H3
2404 H4
2405 H4
2406 H3
2407 H3
2408 B2
2409 B3
2410 B3
2411 D3
2412 D2
2413 D2
2414 D2
2415 F3
2416 F3
2417 F3
2418 F2
2419 I2
2420 D3
2421 F2
2422 F3
2423 I7
2425 B3
2500 A10
2501 B10
2502 C10
2600 G7
2601 E9
2602 E8
2603 E9
2604 E11
2605 E7
2606 F7
2607 G9
2608 F12
2611 F6
2700 I11
3400 B4
3401 B4
3402 B4
3403 B4
3404 C4
3405 C4
3406 C4
3407 C4
3408 C4
3409 C4
3410 E4
3411 E4
3412 E4
3413 E4
3414 A4
3415 A4
3416 A4
3417 A4
3418 A4
3419 B4
3420 I2
3421 B4
3422 I2
3423 B4
3424 E4
3425 E4
3426 E4
3600 E6
3601 E6
3602 E8
3603 E10
3604 F6
3605 F9
3606 F7
3607 F6
3608 F8
3609 F8
3610 F12
3700 H10
3701 H10
3703 H11
3709 H10
3712 H10
3713 H11
3716 H10
3718 I10
3721 I10
3722 I11
4400 C4
5400 G4
5401 H4
6600 F6
6713 H11
6714 H11
6715 I11
7600-1 F7
7600-2 F10
7600-3 F9
7600-4 G7
7600-5 F10
7600-6 G7
7602 E9
7608 F9
7710 H12
7716 I12

AMPLIFIER BOARD - AMPLIFIER CIRCUIT



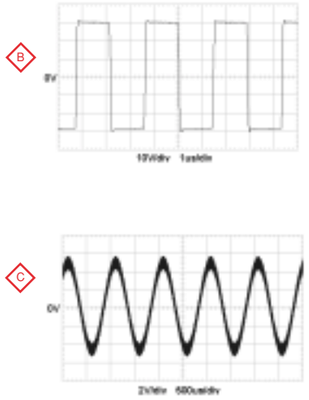
8-9

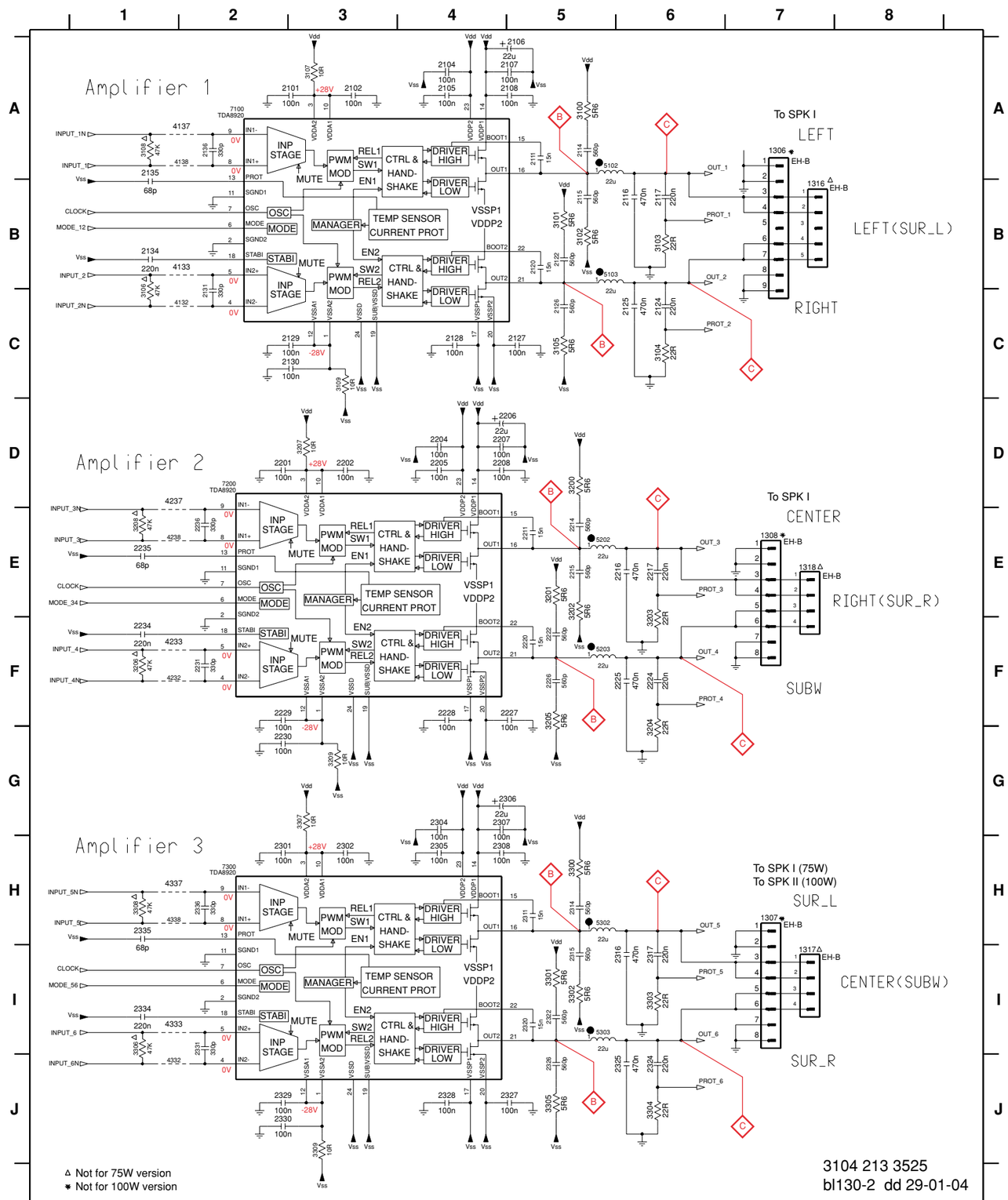


1306 A7 5303 I5
1307 H7 7100 A2
1308 E7 7200 D2
1316 B7 7300 H2
1317 I7 F104 A7
1318 E7 F109 B7
2101 A3 F112 B7
2102 A3 F120 E7
2104 A4 F121 E7
2105 A4 F122 F7
2106 A5 F128 H7
2107 A5 F129 I7
2108 A5 F130 I7
2111 A5 F133 F7
2114 A5 F134 C7
2115 B5 F135 I7
2116 B6 F139 A7
2117 B6
2120 B5
2122 B5
2124 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 I6

8-9a

AMPLIFIER BOARD - AMPLIFIER CIRCUIT (For pcb layout ... 34255)

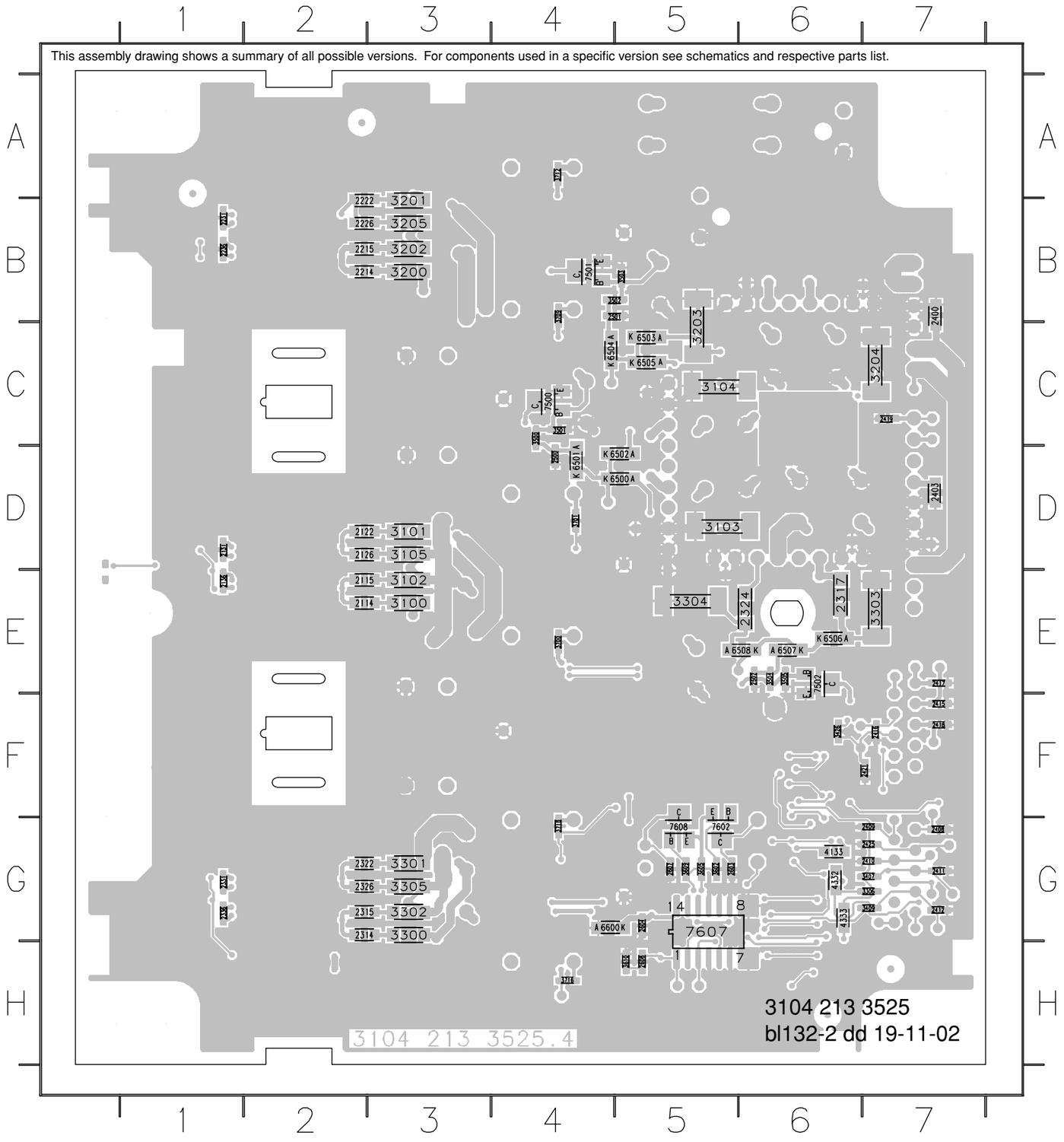




1306 A7 5302 H5
1307 H7 5303 I5
1308 E7
1316 B7
1317 I7
1318 E7
2101 A3
2102 A3
2104 A4
2105 A4
2106 A5
2107 A5
2108 A5
2111 A5
2114 A5
2115 B5
2116 B6
2117 B6
2120 B5
2122 B5
2124 C6
2125 C6
2126 C5
2127 C5
2128 C4
2129 C3
2130 C3
2131 C2
2134 B1
2135 A1
2136 A2
2201 D2
2202 D3
2204 D4
2205 D4
2206 D5
2207 D4
2208 D4
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 F2
2230 G2
2231 F2
2234 F1
2235 E1
2236 E2
2301 H2
2302 H3
2304 G4
2305 H4
2306 G5
2307 G4
2308 H4
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 J2
2330 J2
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 F1
4233 F1
4237 D1
4238 E1
4332 J1
4333 I1
4337 H1
4338 H1
5102 A5
5103 B5
5202 E5
5203 F5

8-10

AMPLIFIER BOARD - CHIP VIEW



3104 213 3525
bl132-2 dd 19-11-02

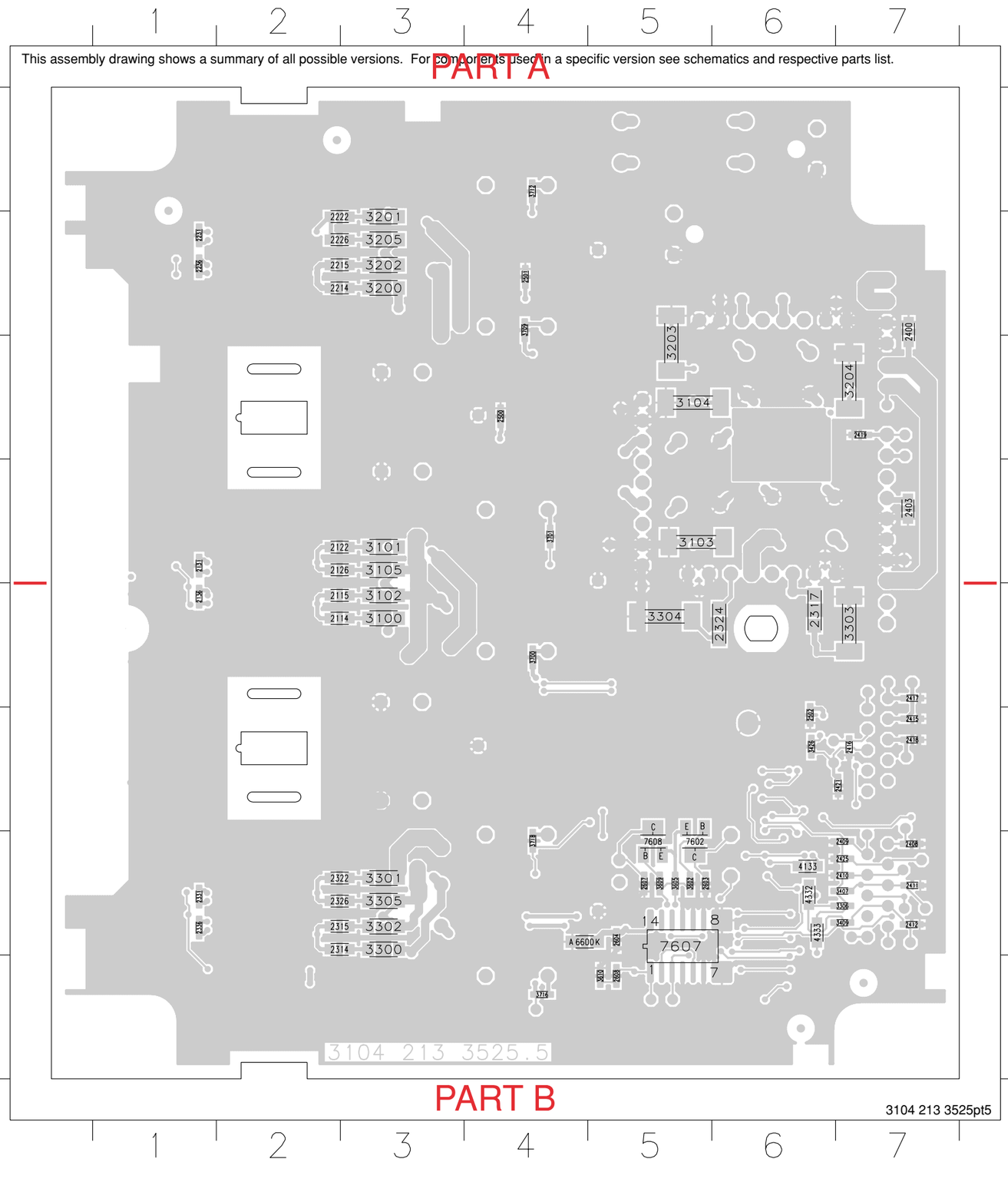
2114	E2	3610	H5
2115	E2	3700	E4
2122	D2	3701	D4
2126	D2	3709	B4
2131	D1	3712	A4
2136	E1	3716	H4
2214	B2	3718	G4
2215	B2	4133	G6
2222	B2	4333	G6
2226	B2	6500	D5
2231	B1	6501	D4
2236	B1	6502	D5
2314	G2	6503	C5
2315	G2	6504	C4
2317	E6	6505	C5
2322	G2	6506	E6
2324	E6	6507	E6
2326	G2	6508	E6
2331	G1	6600	G4
2332	G6	7500	C4
2336	G1	7501	B4
2400	B7	7502	E6
2403	D7	7602	G5
2408	G7	7607	G5
2409	G7	7608	G5
2410	G7		
2411	G7		
2412	G7		
2415	F7		
2416	F7		
2417	E7		
2418	F7		
2419	C7		
2421	F7		
2425	G7		
2500	D4		
2501	B5		
2502	E6		
2603	G5		
2604	G5		
2607	G5		
2608	H5		
3100	E3		
3101	D3		
3102	E3		
3103	D5		
3104	C5		
3105	D3		
3200	B3		
3201	B3		
3202	B3		
3203	C5		
3204	C7		
3205	B3		
3300	G3		
3301	G3		
3302	G3		
3303	E7		
3304	E5		
3305	G3		
3306	G7		
3407	G7		
3409	G7		
3426	F6		
3500	C4		
3501	C4		
3502	B5		
3503	B5		
3504	E6		
3505	E6		
3602	G5		
3605	G5		
3609	G5		

8-10a

AMPLIFIER BOARD - CHIP VIEW (pcb layout ... 35255)

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.

PART A



PART B

3104 213 3525pt5

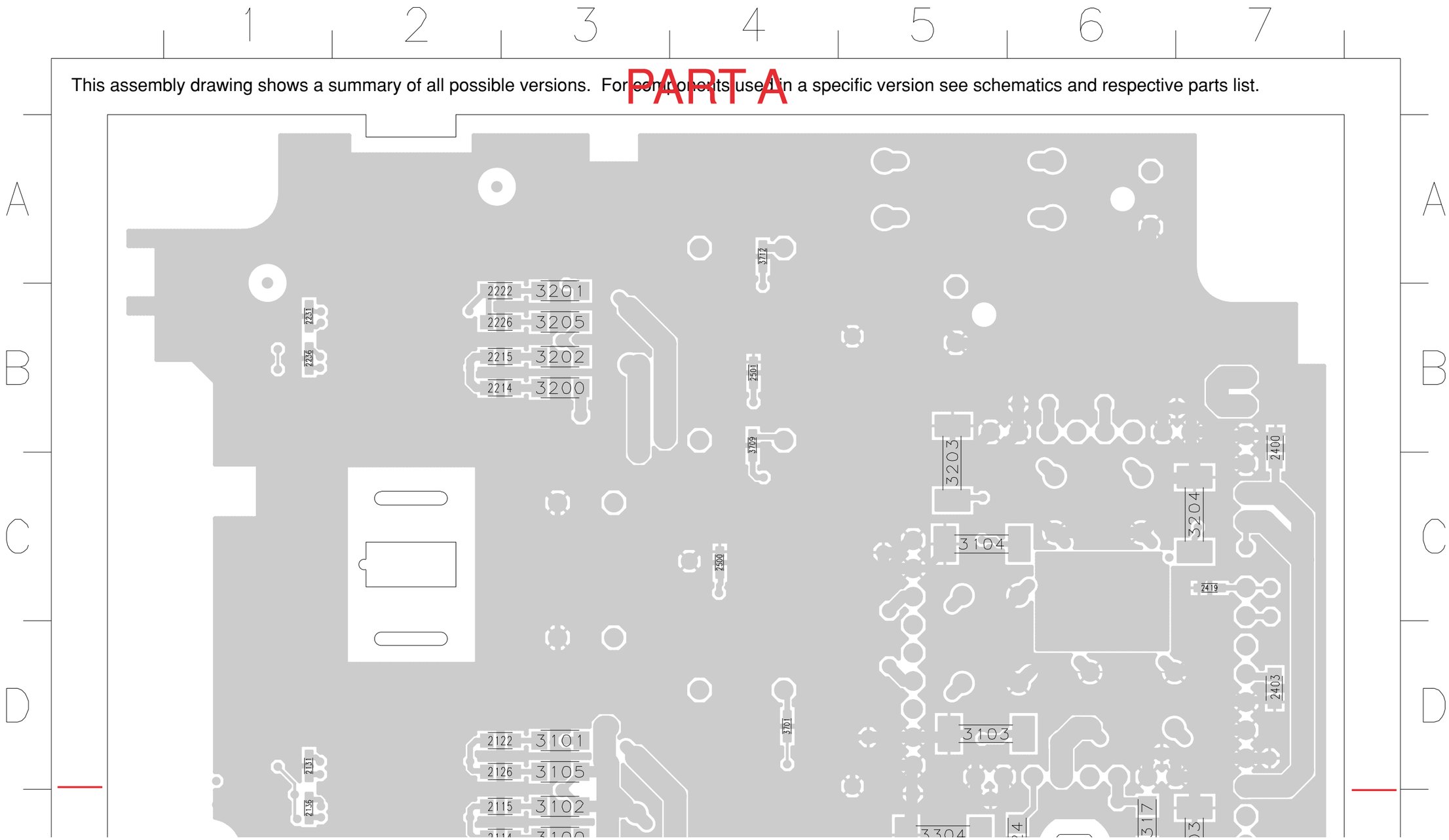
2114	E2	4332	G6
2115	E2	4333	G6
2122	D2	6600	G4
2126	D2	7602	G5
2131	D1	7607	G5
2136	E1	7608	G5
2214	B2	F100	F7
2215	B2	F102	G7
2222	B2	F103	G7
2226	B2	F104	E5
2231	B1	F105	G7
2236	B1	F106	G7
2314	G2	F108	G7
2315	G2	F109	D5
2317	E6	F111	G7
2322	G2	F112	C5
2324	E6	F114	G7
2326	G2	F116	F7
2331	G1	F117	E7
2336	G1	F118	F6
2400	B7	F119	E7
2403	D7	F120	B6
2408	G7	F121	B6
2409	G7	F122	B6
2410	G7	F123	H5
2411	G7	F124	C7
2412	G7	F125	H5
2415	F7	F126	D7
2416	F7	F127	C7
2417	E7	F128	D6
2418	F7	F129	E6
2419	C7	F130	D6
2421	F7	F131	H4
2425	G7	F132	C7
2500	C4	F133	B7
2501	B4	F134	C5
2502	F6	F135	E5
2603	G5	F139	D5
2604	G5	F140	G7
2607	G5	F141	E7
2608	H5	F142	F6
3100	E3	F143	C6
3101	D3		
3102	E3		
3103	D5		
3104	C5		
3105	D3		
3200	B3		
3201	B3		
3202	B3		
3203	C5		
3204	C7		
3205	B3		
3300	G3		
3301	G3		
3302	G3		
3303	E7		
3304	E5		
3305	G3		
3306	G7		
3407	G7		
3409	G7		
3426	F6		
3602	G5		
3605	G5		
3609	G5		
3610	H5		
3700	E4		
3701	D4		
3709	B4		
3712	A4		
3716	H4		
3718	G4		
4133	G6		

8-10b

AMPLIFIER BOARD - CHIP VIEW (pcb layout ... 35255) PART A

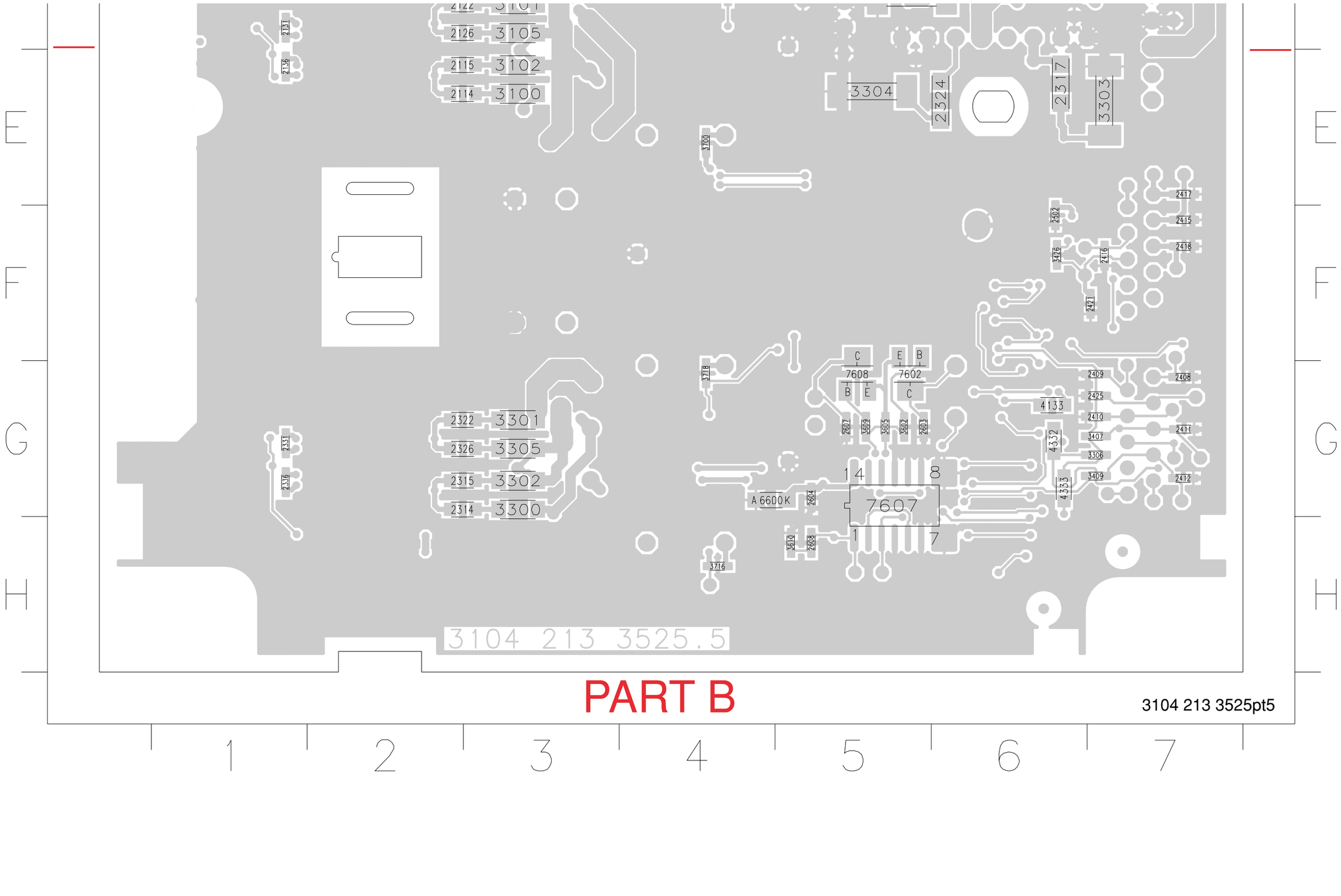
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.

PART A



8-10c

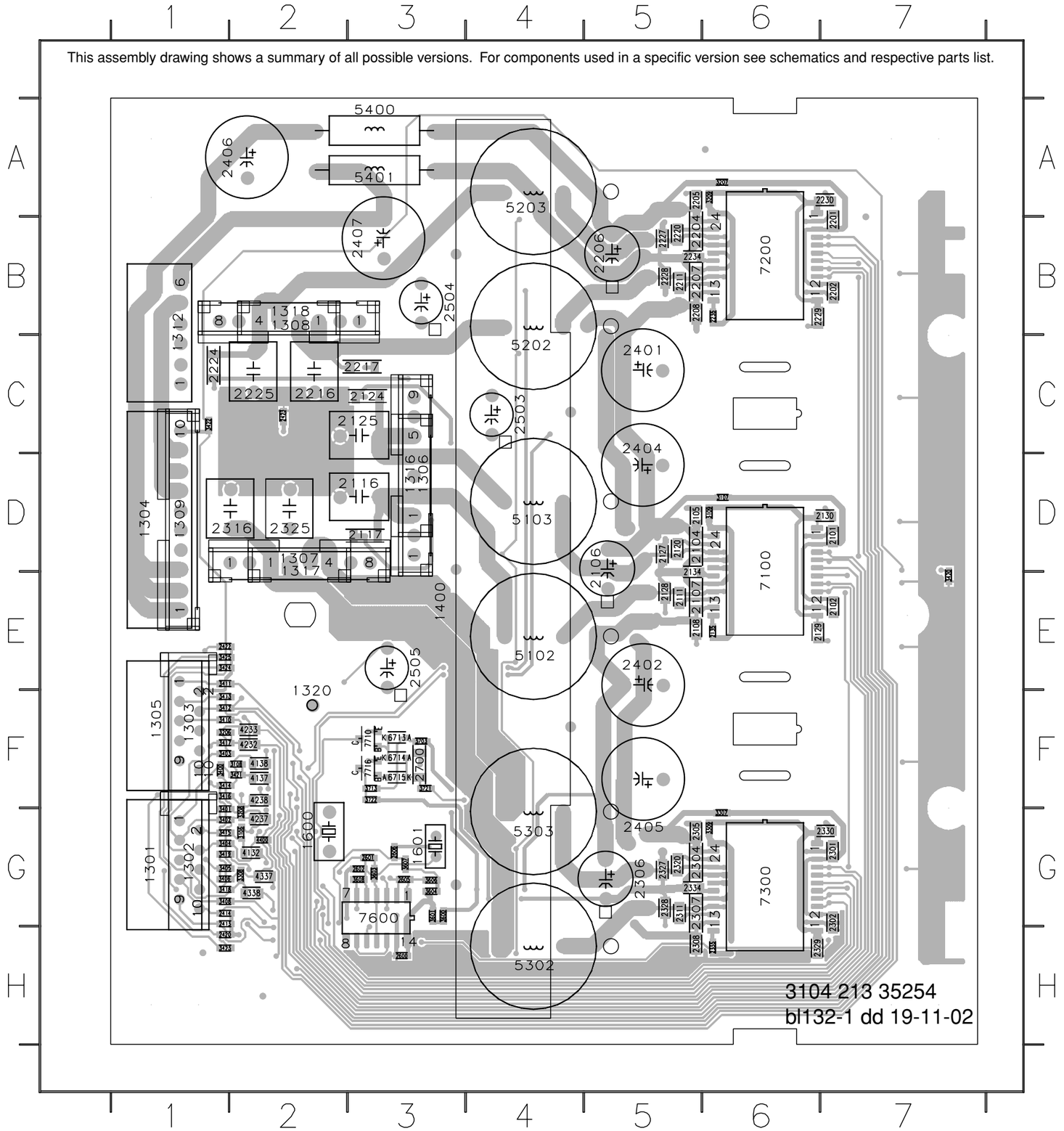
AMPLIFIER BOARD - CHIP VIEW (pcb layout ... 35255) PART B



8-11

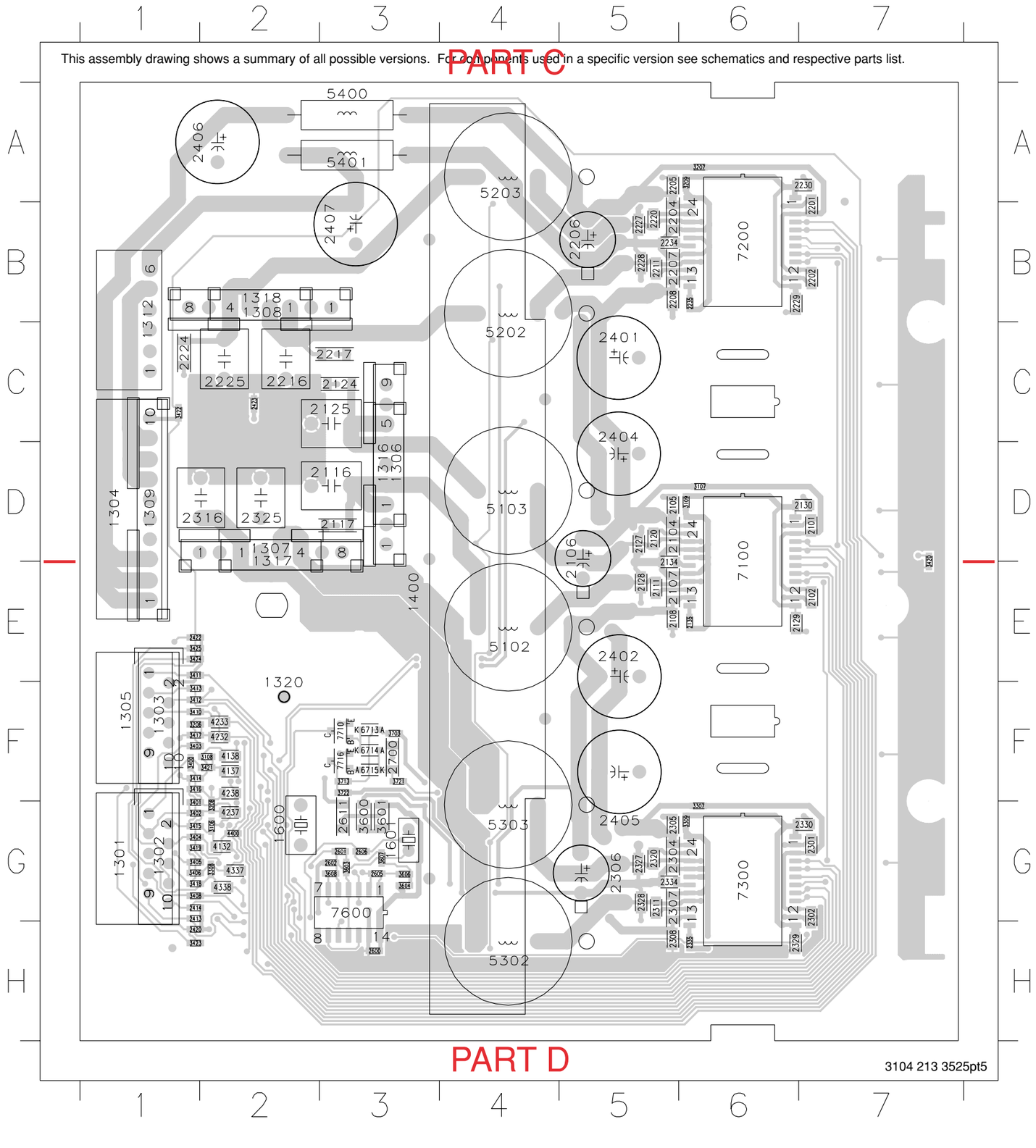
AMPLIFIER BOARD - COMPONENT LAYOUT

1301	G1	2406	A2	5302	H4
1302	G1	2407	B3	5303	G4
1303	F1	2413	G1	5400	A3
1304	D1	2414	G1	5401	A3
1305	F1	2420	H1	6713	F3
1306	D3	2422	E1	6714	F3
1307	D2	2423	C2	6715	F3
1308	B2	2503	C4	7100	D6
1309	D1	2504	B3	7200	B6
1312	B1	2505	E3	7300	G6
1316	D3	2600	H3	7600	G3
1317	D2	2601	G3	7710	F3
1318	B2	2602	G3	7716	F3
1320	F2	2605	G3		
1400	D4	2606	G3		
1600	G2	2700	F3		
1601	G3	3106	G2		
2101	D7	3107	D6		
2102	E7	3108	F2		
2104	D5	3109	D6		
2105	D5	3206	F1		
2106	D5	3207	A6		
2107	E5	3208	G2		
2108	E5	3209	A6		
2111	E5	3307	G6		
2116	D3	3308	G2		
2117	D3	3309	G6		
2120	D5	3400	F1		
2124	C3	3401	G1		
2125	C3	3402	G1		
2127	D5	3403	F1		
2128	E5	3404	G1		
2129	E6	3405	G1		
2130	D7	3406	G1		
2134	E5	3408	G1		
2135	E6	3410	F1		
2201	B7	3411	F1		
2202	B7	3412	F1		
2204	B5	3413	F1		
2205	A5	3414	F1		
2206	B5	3415	G1		
2207	B5	3416	F1		
2208	B5	3417	F1		
2211	B5	3418	G1		
2216	C2	3419	G1		
2217	C3	3420	F7		
2220	B5	3421	F2		
2224	C1	3422	C1		
2225	C2	3423	H1		
2227	B5	3424	F1		
2228	B5	3425	F1		
2229	B6	3600	G3		
2230	A7	3601	G3		
2234	B5	3603	G3		
2235	B6	3604	G3		
2301	G7	3606	G3		
2302	G7	3607	G3		
2304	G5	3608	G3		
2305	G5	3703	F3		
2306	G5	3713	F3		
2307	G5	3721	F3		
2308	H5	3722	F3		
2311	G5	4132	G2		
2316	D2	4137	F2		
2320	G5	4138	F2		
2325	D2	4232	F2		
2327	G5	4233	F2		
2328	G5	4237	G2		
2329	H6	4238	F2		
2330	G7	4337	G2		
2334	G5	4338	G2		
2335	H6	4400	G2		
2401	C5	5102	E4		
2402	E5	5103	D4		
2404	D5	5202	B4		
2405	F5	5203	A4		



8-11a

AMPLIFIER BOARD - COMPONENT LAYOUT (pcb layout ... 35255)



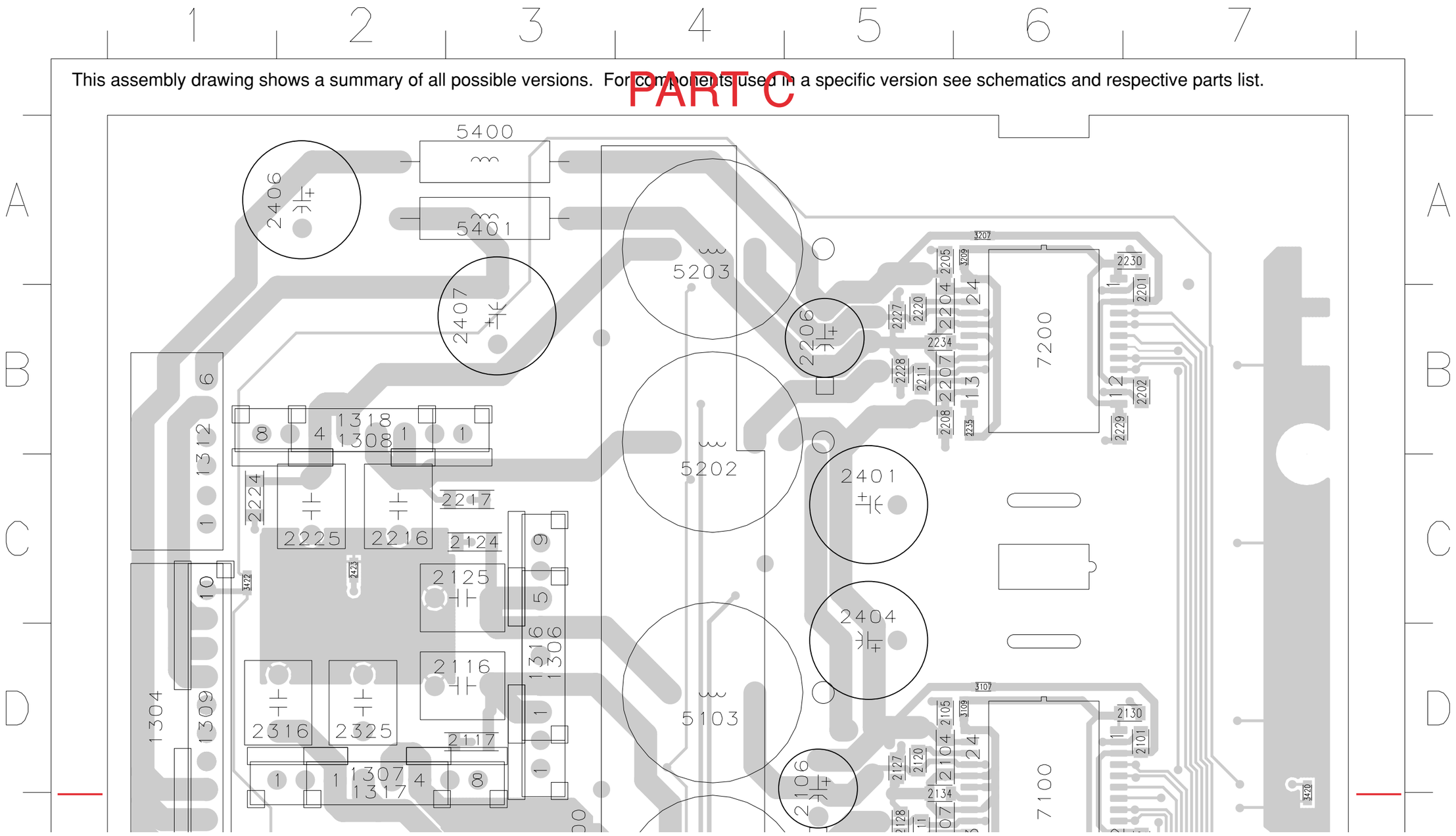
1301	G1	2404	D5	5202	B4
1302	G1	2405	F5	5203	A4
1303	F1	2406	A2	5302	H4
1304	D1	2407	B3	5303	G4
1305	F1	2413	G1	5400	A3
1306	D3	2414	G1	5401	A3
1307	D2	2420	H1	6713	F3
1308	B2	2422	E1	6714	F3
1309	D1	2423	C2	6715	F3
1312	B1	2600	H3	7100	D6
1316	D3	2601	G3	7200	B6
1317	D2	2602	G3	7300	G6
1318	B2	2605	G3	7600	G3
1320	F2	2606	G3	7710	F3
1400	D4	2611	G3	7716	F3
1600	G2	2700	F3		
1601	G3	3106	G2		
2101	D7	3107	D6		
2102	E7	3108	F2		
2104	D5	3109	D6		
2105	D5	3206	F1		
2106	D5	3207	A6		
2107	E5	3208	G2		
2108	E5	3209	A6		
2111	E5	3307	G6		
2116	D3	3308	G2		
2117	D3	3309	G6		
2120	D5	3400	F1		
2124	C3	3401	G1		
2125	C3	3402	G1		
2127	D5	3403	F1		
2128	E5	3404	G1		
2129	E6	3405	G1		
2130	D7	3406	G1		
2134	E5	3408	G1		
2135	E6	3410	F1		
2201	B7	3411	E1		
2202	B7	3412	F1		
2204	B5	3413	F1		
2205	A5	3414	F1		
2206	B5	3415	G1		
2207	B5	3416	F1		
2208	B5	3417	F1		
2211	B5	3418	G1		
2216	C2	3419	G1		
2217	C3	3420	D7		
2220	B5	3421	F2		
2224	C1	3422	C1		
2225	C2	3423	H1		
2227	B5	3424	E1		
2228	B5	3425	E1		
2229	B6	3600	G3		
2230	A7	3601	G3		
2234	B5	3603	G3		
2235	B6	3604	G3		
2301	G7	3606	G3		
2302	G7	3607	G3		
2304	G5	3608	G3		
2305	G5	3703	F3		
2306	G5	3713	F3		
2307	G5	3721	F3		
2308	H5	3722	F3		
2311	G5	4132	G2		
2316	D2	4137	F2		
2320	G5	4138	F2		
2325	D2	4232	F2		
2327	G5	4233	F2		
2328	G5	4237	G2		
2329	H6	4238	F2		
2330	G7	4337	G2		
2334	G5	4338	G2		
2335	H6	4400	G2		
2401	C5	5102	E4		
2402	E5	5103	D4		

8-11b

AMPLIFIER BOARD - COMPONENT LAYOUT (pcb layout ... 35255) PART C

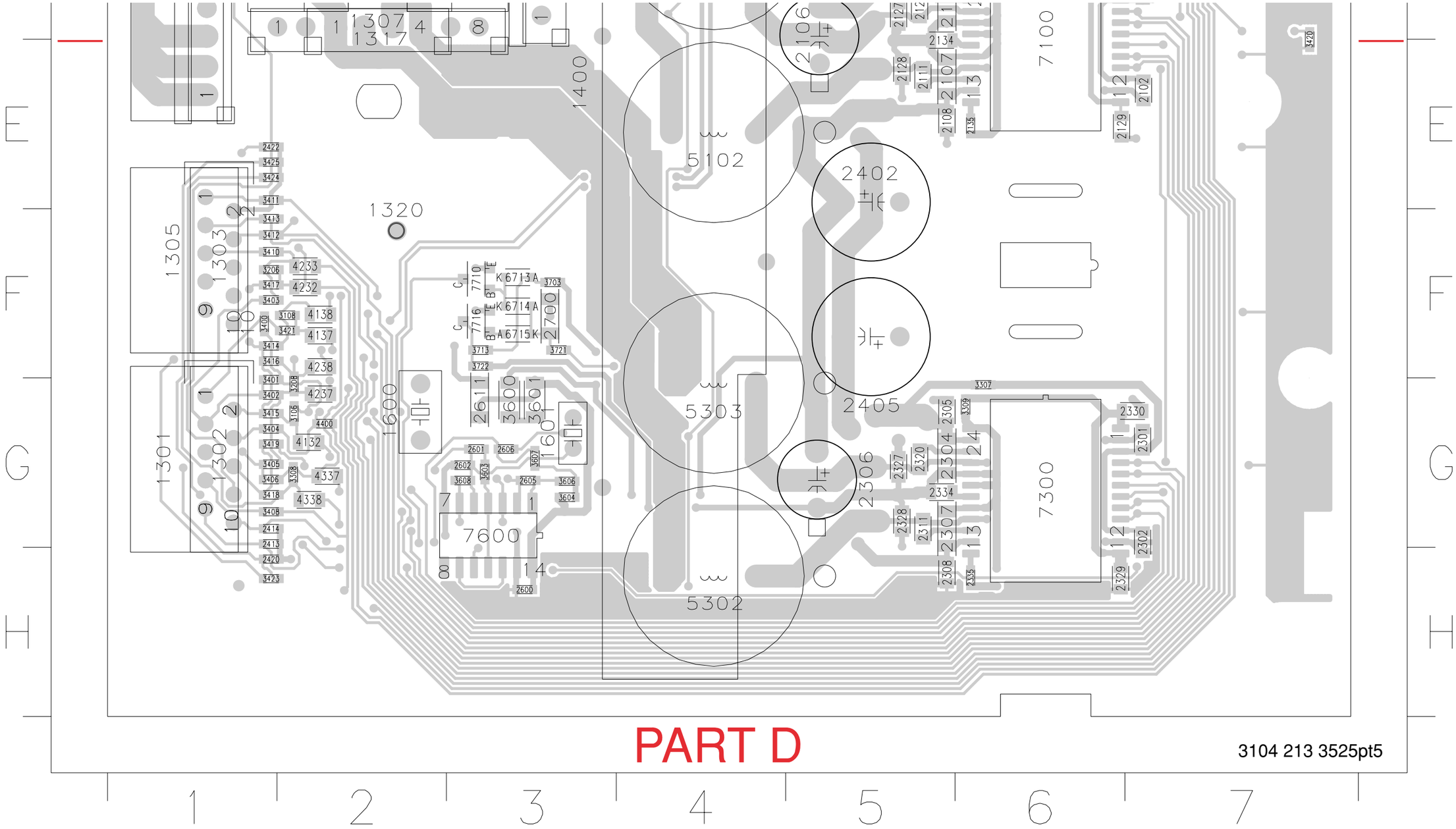
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.

PART C



8-11c

AMPLIFIER BOARD - COMPONENT LAYOUT (pcb layout ... 35255) PART D



PART D

3104 213 3525pt5

8-12

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

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

MISCELLANEOUS

5	4822 492 11735	SPRING, TRANSISTOR	
1200	4822 071 55002 ⚠	FUSE T5A 250V	
1203	4822 071 55002 ⚠	FUSE T5A 250V	
1204	9965 000 07786 ⚠	FUSE T4A 250V	
1205	9965 000 07786 ⚠	FUSE T4A 250V	
1263	4822 267 10733	FLEX CONN. 4PIN VERT.	
1270	2422 025 14044	CONN. 6PIN M3.96 VERT.	
1303	2422 015 19885	LOUDSPEAKER SOCKET 12P	
1901	2422 030 00328 ⚠	CONN. MAINS 7A 125V	/17/37
1901	4822 265 31015 ⚠	CONN. MAINS 2A5 250V	/78
1905	4822 252 51121 ⚠	FUSE T3,15A 250V	/17/37
1905	4822 071 53152 ⚠	FUSE T3,15A 250V	/78
1907	4822 265 20723	CONN. 2PIN M7.92 VERT.	
1908	4822 267 10958	FLEX CONN. 5PIN HORT.	
1909	4822 267 10728	CONN. 4P M7.92 VH	/78
1910	2422 132 07519 ⚠	RELAY 1P 12V 16A	
1911	9965 000 07789 ⚠	VOLTAGE SELECTOR	/78
1912	9965 000 07788 ⚠	FUSE T3,15A 250V	/78

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
2229	4822 124 12032	4,7uF 20% 50V
2901	2238 586 59812	100nF 50V
2902	4822 121 43526	47nF 5% 250V
2903	3198 017 34730	47nF 16V
2904	2238 586 59812	100nF 50V
2905	5322 126 11583	10nF 10% 50V
2906	2222 336 19106	22nF 20% 275V
2907	4822 124 40255	100uF 20% 63V
2909	5322 126 11583	10nF 10% 50V
2910	2238 586 59812	100nF 50V
2911	4822 124 41751	47uF 20% 50V
2912	4822 124 12379	220uF 20% 25V
2913	2222 338 22474 ⚠	470nF 20% 275V
2914	4822 126 13193	4,7nF 10% 63V
2915	2020 554 90173 ⚠	2,2nF 20% 250V
2916	2020 554 90173 ⚠	2,2nF 20% 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 10828 ⚠	8R2 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
3233	4822 117 11817	1k2 5% 0,062W
3234	4822 051 30103	10k 5% 0,062W
3235	4822 051 30103	10k 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 30331	330R 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
3917	4822 116 52175	100R 5% 0,5W
3918	4822 116 52175	100R 5% 0,5W
3919	4822 051 30152	1k5 5% 0,062W
3920	4822 051 30472	4k7 5% 0,062W
4210	4822 051 30008	0R JUMPER 0603
4211	4822 051 30008	0R JUMPER 0603
4212	4822 051 30008	0R JUMPER 0603

COILS & FILTERS

5901	4822 157 11832	MAINS FILTER 400uH
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 & INTEGRATED CIRCUITS

7200	9340 561 95127	BUK7535-55A
7202	9340 561 95127	BUK7535-55A
7203	5322 130 60159	BC847B
7205	4822 130 60373	BC857B
7206	4822 130 60373	BC857B
7207	5322 130 60159	BC847B
7208	4822 209 33575	L7812CP
7209	4822 209 12335	L4941
7210	4822 130 41246	BC327-25
7211	9340 218 60115	BC857CW
7901	4822 130 60373	BC857B
7902	4822 130 40855	BC337-40
7904	4822 130 42615	BC817-40
7905	4822 130 41327	BC327-40
7906	4822 130 42804	BC817-25

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

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ELECTRICAL PARTS LIST - AMPLIFIER BOARD

ELECTRICAL PARTS LIST - AMPLIFIER BOARD

MISCELLANEOUS

0008	3104 211 29861	SPRING 6 CHANNEL
0010	3104 211 29881	EARTH SPRING
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 601 55649	100nF 10% 100V
2120	4822 126 13188	15nF 5% 63V
2122	5322 116 80853	560pF 5% 63V
2124	2222 601 55649	100nF 10% 100V
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 601 55649	100nF 10% 100V
2220	4822 126 13188	15nF 5% 63V
2222	5322 116 80853	560pF 5% 63V
2224	2222 601 55649	100nF 10% 100V
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 601 55649	100nF 10% 100V
2320	4822 126 13188	15nF 5% 63V
2322	5322 116 80853	560pF 5% 63V
2324	2222 601 55649	100nF 10% 100V
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
2422	5322 126 11578	1nF 10% 50V
2423	2238 586 59812	100nF 50V
2425	5322 126 11578	1nF 10% 50V
2500	2238 586 59812	100nF 50V
2501	2238 586 59812	100nF 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
2611	2020 552 96507	10uF +80/-20% 10V
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 10821	820R 5% 0,062W
3601	4822 051 10821	820R 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 126 14583	470nF 16V
4133	4822 126 14583	470nF 16V
4137	4822 126 14583	470nF 16V
4138	4822 126 14583	470nF 16V
4232	4822 126 14583	470nF 16V
4233	4822 126 14583	470nF 16V
4237	4822 126 14583	470nF 16V
4238	4822 126 14583	470nF 16V
4332	4822 126 14583	470nF 16V
4333	4822 126 14583	470nF 16V
4337	4822 126 14583	470nF 16V
4338	4822 126 14583	470nF 16V

COILS & 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

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ELECTRICAL PARTS LIST - AMPLIFIER BOARD

DIODES

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

TRANSISTORS & INTEGRATED CIRCUITS

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.

AV BOARD

TABLE OF CONTENTS

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BRIEF INTRODUCTION OF THE AV BOARD

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 and 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 I²C 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 additon 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 amplifer and pre-amplification for the Front L/R signal to the Amplifier board. The transistors matrix 7200, 7231, 7232, 7233 and 7250 allows the heaphone 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 I²C 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 I²C Expander to provide for additional control lines required.

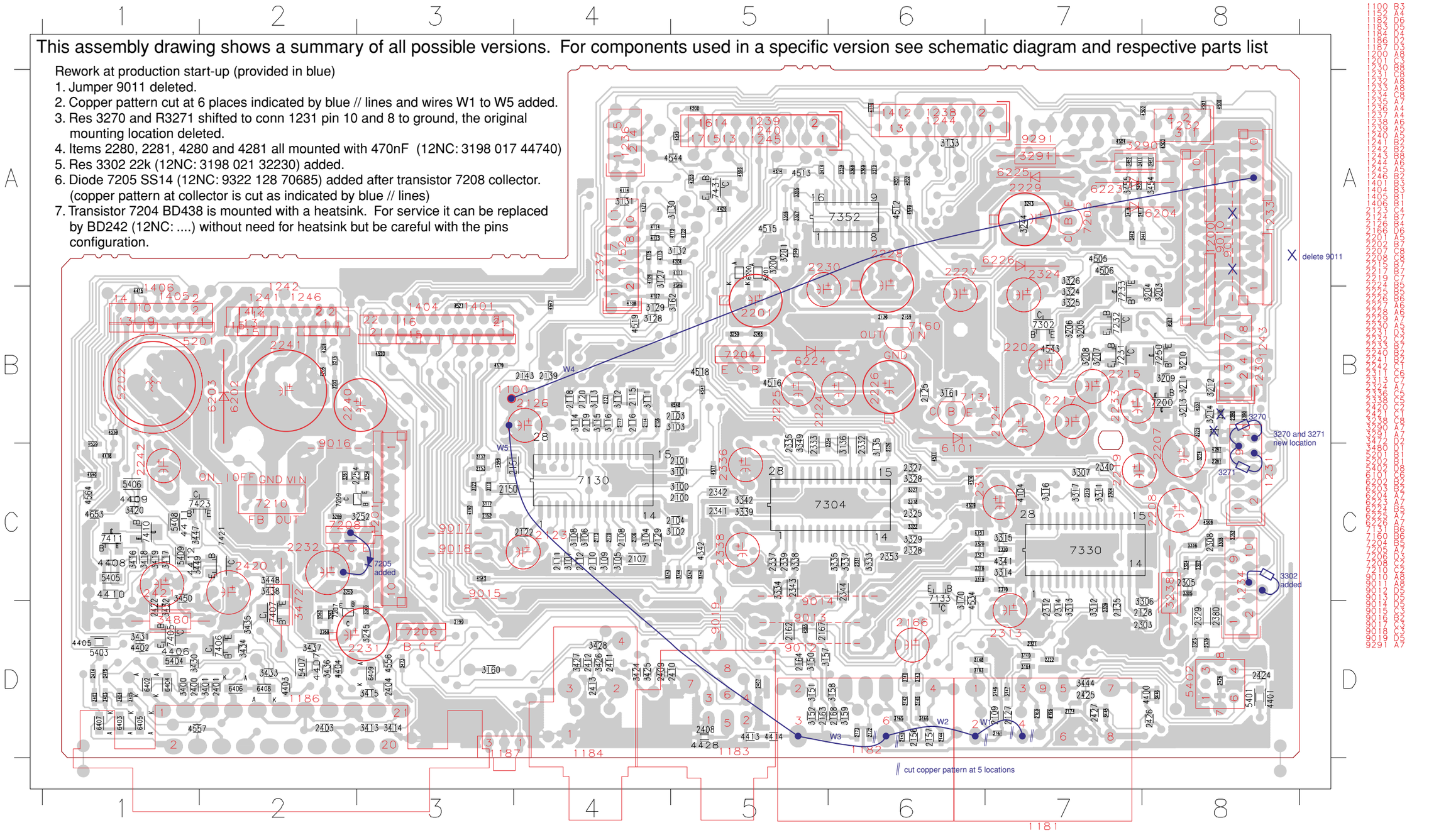
9-2

CHIP & COMPONENT LAYOUTS - CHIP SIDE VIEW

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list

Rework at production start-up (provided in blue)

1. Jumper 9011 deleted.
2. Copper pattern cut at 6 places indicated by blue // lines and wires W1 to W5 added.
3. Res 3270 and R3271 shifted to conn 1231 pin 10 and 8 to ground, the original mounting location deleted.
4. Items 2280, 2281, 4280 and 4281 all mounted with 470nF (12NC: 3198 017 44740)
5. Res 3302 22k (12NC: 3198 021 32230) added.
6. Diode 7205 SS14 (12NC: 9322 128 70685) added after transistor 7208 collector. (copper pattern at collector is cut as indicated by blue // lines)
7. Transistor 7204 BD438 is mounted with a heatsink. For service it can be replaced by BD242 (12NC: ....) without need for heatsink but be careful with the pins configuration.



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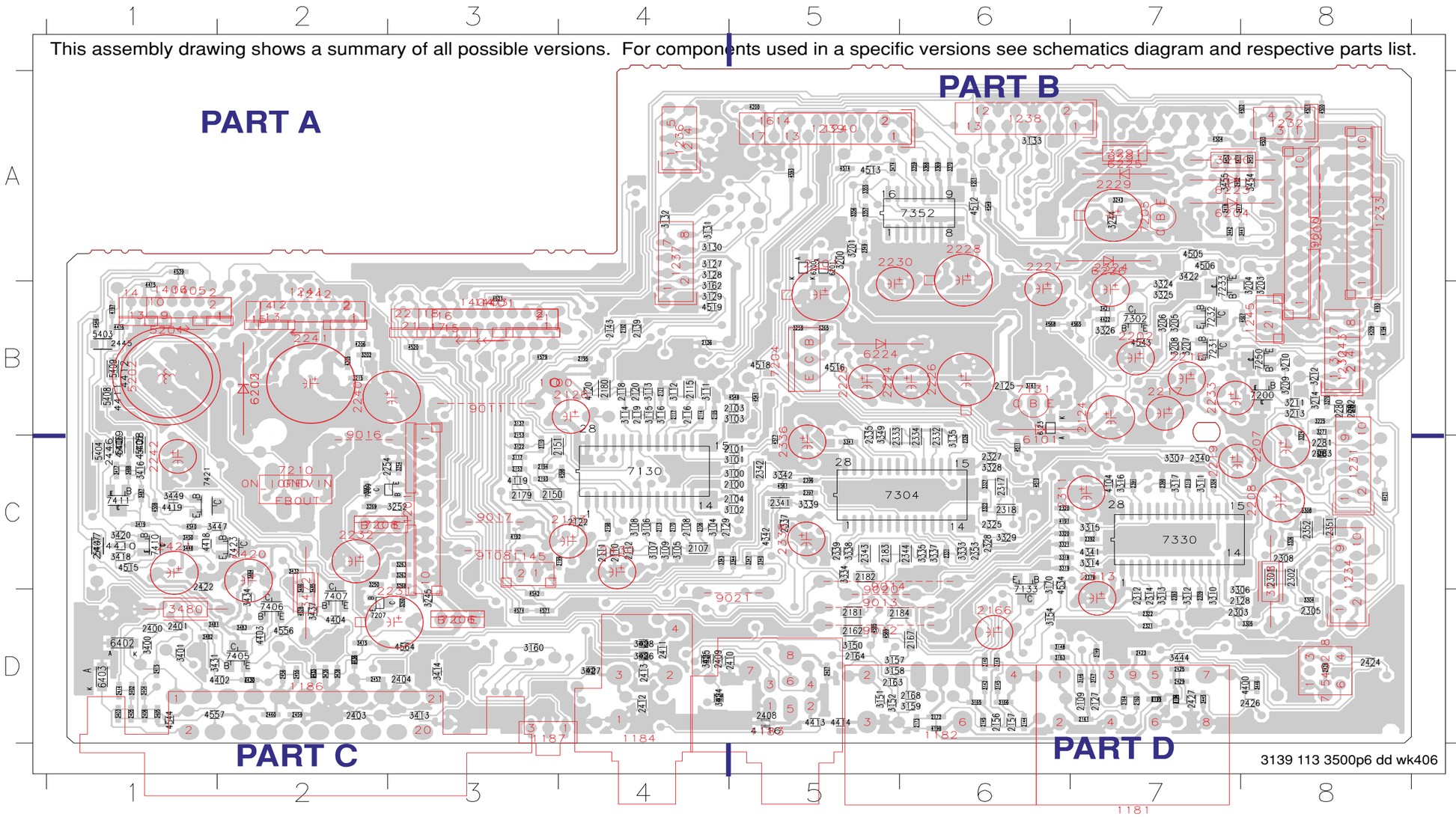
CHIP & COMPONENT LAYOUTS - CHIP SIDE VIEW (pcb layout ... 35006)

2100	C5	2145	D6	2199	C4	2335	B5	2412	D4	3108	C4	3152	D5	3225	B8	3318	C6	3369	A6
2101	C5	2150	C3	2254	C2	2337	C5	2413	D4	3109	C4	3154	D6	3243	A7	3319	C6	3370	A6
2103	B5	2151	C3	2280	B8	2339	C5	2414	D1	3110	C3	3157	D5	3244	A7	3320	C6	3400	D1
2104	C5	2152	C3	2281	C8	2340	C7	2415	D1	3111	B4	3158	D5	3245	D3	3321	C6	3401	D1
2105	B4	2153	B3	2282	B8	2341	C5	2417	A7	3112	B4	3159	D6	3250	C2	3322	C6	3402	D1
2106	C4	2156	D6	2283	C8	2342	C5	2418	A7	3113	B4	3160	D3	3252	C3	3324	B7	3403	D1
2107	C4	2157	D6	2301	C8	2343	C5	2422	C1	3114	B4	3161	B6	3254	C3	3325	B7	3404	D1
2108	C4	2160	D7	2302	C8	2344	C6	2423	D7	3115	B4	3162	B4	3259	B5	3326	B7	3405	D1
2109	D7	2161	D7	2303	D7	2349	A5	2424	D8	3116	B4	3163	D6	3260	D3	3327	C6	3411	A7
2110	C4	2162	D5	2304	C7	2351	C8	2425	D7	3117	C3	3164	D7	3261	C2	3328	C6	3413	D3
2111	C4	2163	D5	2305	D8	2352	C8	2426	D8	3122	C3	3165	D6	3262	C3	3329	C6	3414	D3
2112	C4	2164	D5	2308	C8	2353	C6	2427	D7	3127	A4	3166	D6	3263	C3	3333	C6	3415	D2
2113	C4	2167	D6	2309	D7	2390	C7	2428	D8	3128	A4	3170	C6	3265	B5	3334	C5	3416	C1
2114	B4	2168	D6	2310	C7	2391	C7	2429	D7	3129	B4	3200	A5	3268	C3	3335	C6	3417	C1
2115	B4	2170	C4	2312	D7	2392	C7	2445	B1	3130	A4	3201	A5	3269	C2	3336	C8	3418	C1
2116	B4	2171	D7	2314	D7	2393	D7	2446	C1	3131	A4	3202	B2	3270	B8	3338	C5	3419	C1
2117	B4	2172	D6	2317	C6	2396	C5	2447	C1	3132	A4	3203	B8	3271	B8	3339	C5	3420	C1
2118	B4	2173	D6	2318	C6	2397	C5	2455	D2	3133	A6	3204	B8	3304	D8	3340	C5	3421	B7
2119	B4	2174	D7	2319	C7	2400	D1	2456	D2	3135	C6	3205	B7	3305	D8	3341	C5	3422	A7
2120	B4	2179	C3	2320	C6	2401	D1	2457	D2	3137	B3	3206	B7	3306	D7	3342	C5	3424	D4
2121	B4	2180	B4	2321	D7	2402	A7	2459	D2	3140	D6	3207	B7	3307	C7	3343	C4	3425	D4
2122	C4	2181	D5	2322	D7	2403	D2	2460	D2	3142	D6	3208	B7	3308	C8	3343	C4	3426	D4
2125	B6	2182	C5	2325	C6	2404	D3	3100	C5	3143	D6	3209	B8	3310	D7	3344	C5	3427	D4
2127	D7	2183	C5	2326	C6	2405	D1	3101	C5	3145	D6	3210	B8	3311	C7	3347	C5	3428	D4
2128	D7	2184	D5	2327	C6	2406	D1	3102	C5	3146	D7	3211	B8	3312	D7	3349	B5	3430	D2
2129	C4	2192	B4	2328	C6	2407	D5	3103	B5	3147	D7	3212	B8	3313	D7	3355	A5	3431	D1
2136	B4	2193	C3	2331	C6	2408	D5	3104	C4	3148	D6	3213	B8	3314	C7	3356	A5	3432	C2
2139	B4	2194	C3	2332	C6	2409	D4	3105	C4	3149	D7	3214	B8	3315	C7	3357	A5	3433	D2
2143	B4	2195	B4	2333	C5	2410	D5	3106	C4	3150	D5	3215	B2	3316	C7	3359	A6	3434	D2
2144	D6	2198	C4	2334	C6	2411	D4	3107	C4	3151	D5	3224	C8	3317	C7	3368	A6	3435	D2

3436	D2	4192	C3	4419	C1	4520	B3	5407	C1	1100	B3	6202	B2						
3437	D2	4193	B8	4421	C8	4521	B3	5408	B1	1145	C3	6203	B2						
3438	D2	4194	B8	4422	B7	4528	D2	5409	B1	1182	D6	6204	A7						
3441	A8	4195	D7	4424	D4	4534	C6	6123	B6	1183	D5	6223	A7						
3442	A7	4196	D7	4425	D4	4539	A1	6200	A5	1184	D4	6224	B5						
3444	D7	4197	B1	4426	D4	4540	C1	6201	A5	1186	D2	6225	A7						
3445	D7	4198	D6	4427	D4	4541	B5	6402	D1	1187	D3	6226	A7						
3446	D8	4200	A5	4428	D4	4542	D3	6403	D1	1200	A8	7131	B6						
3447	C1	4201	A6	4430	D2	4543	B7	7130	C4	1201	C3	7204	B5						
3448	C1	4205	B2	4433	D2	4544	D1	7133	C6	1230	B8	7205	A7						
3449	C1	4206	B2	4436	D2	4546	B1	7200	B8	1231	C8	7206	D3						
3450	C1	4209	B8	4500	A8	4548	B5	7207	D2	1232	A8	7208	C2						
3451	A8	4280	B8	4501	A8	4549	A6	7209	C2	1233	A8	7210	C2						
3452	A7	4281	C8	4502	A8	4556	D2	7231	B7	1234	C8	9010	A8						
3454	A8	4341	C7	4503	A8	4557	D1	7232	B7	1236	A4	9011	B3						
3455	A7	4342	C5	4504	A7	4561	C5	7233	B7	1237	A4	9012	D5						
3474	A5	4400	D8	4505	A7	4564	D3	7250	B8	1238	A6	9013	D5						
3481	D1	4402	D2	4506	A7	4565	B7	7302	B7	1239	A5	9014	C5						
3482	D1	4403	D2	4507	B8	4568	B6	7304	C6	1240	A5	9016	B2						
3483	D2	4404	D2	4508	C1	4569	D5	7330	C7	1241	B2	9017	C5						
3484	C2	4408	C1	4510	C6	4571	D3	7352	A6	1242	B2	9020	C4						
3485	C2	4409	C1	4511	C6	4574	D3	7405	D2	1243	B8	9021	D5						
3486	C2	4410	C1	4512	A6	4579	B3	7406	D2	1245	B8	9108	C3						
3487	C1	4411	B1	4513	A5	4585	D5	7407	D2	1401	B3	9291	A7						
3488	C1	4412	B1	4514	A5	4593	A5	7410	C1	1403	B3								
4104	C7	4413	D5	4515	C1	4598	C4	7411	C1	1404	B3								
4116	D5	4414	D5	4516	B5	5403	B1	7421	C1	1405	B1								
4119	C3	4415	B1	4517	C5	5404	C1	7423	B2	1406	B1								
4120	B4	4416	B1	4518	B5	5405	C1			2123	C4								
4191	C6	4418	C1	4519	B4	5406	C1			2124	B7								
										2126	B4								
										2166	D6								
										2201	A5								
										2202	B7								
										2207	C8								
										2208	C8								
										2215	B7								
										2219	C7								
										2224	B5								
										2225	B5								
										2226	B6								
										2227	A6								
										2228	A6								
										2229	A7								
										2230	A5								
										2231	D3								
										2232	C2								
										2233	B7								
										2240	B2								
										2241	B2								
										2242	C1								
										2311	C6								
										2313	C7								
										2324	A7								
										2336	C5								
										2338	C5								
										2420	C2								
										2421	C1								
										2430	C4								
										3238	C8								
										3290	A7								
										3291	A7								
										3472	D2								
										3480	D1								
										5201	B1								
										5202	B1								
										5402	D8								
										6101	C6								

This assembly drawing shows a summary of all possible versions. For components used in a specific versions see schematics diagram and respective parts list.



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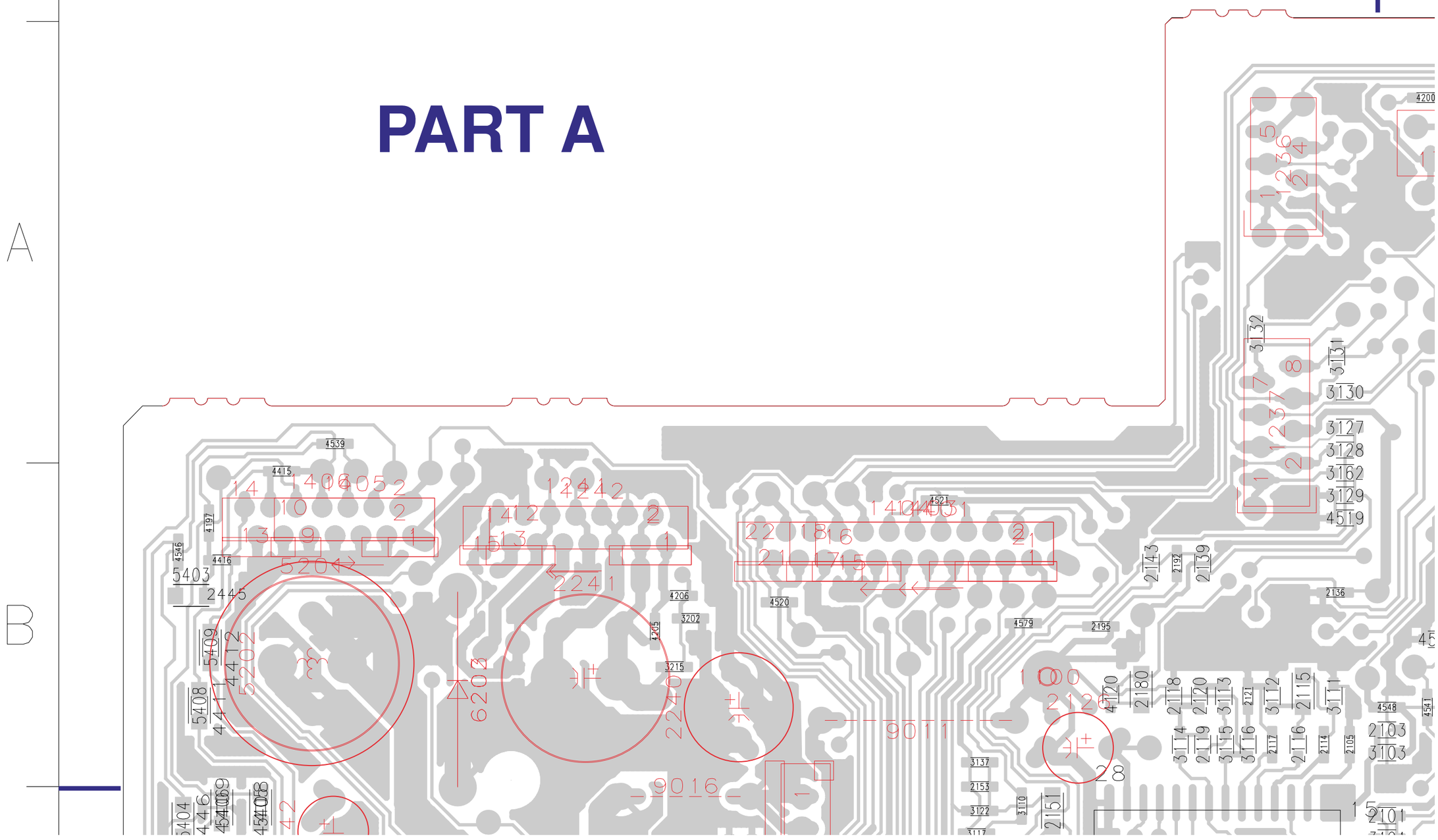
9-2b

CHIP & COMPONENT LAYOUTS - CHIP SIDE VIEW (pcb layout ... 35006) PART A

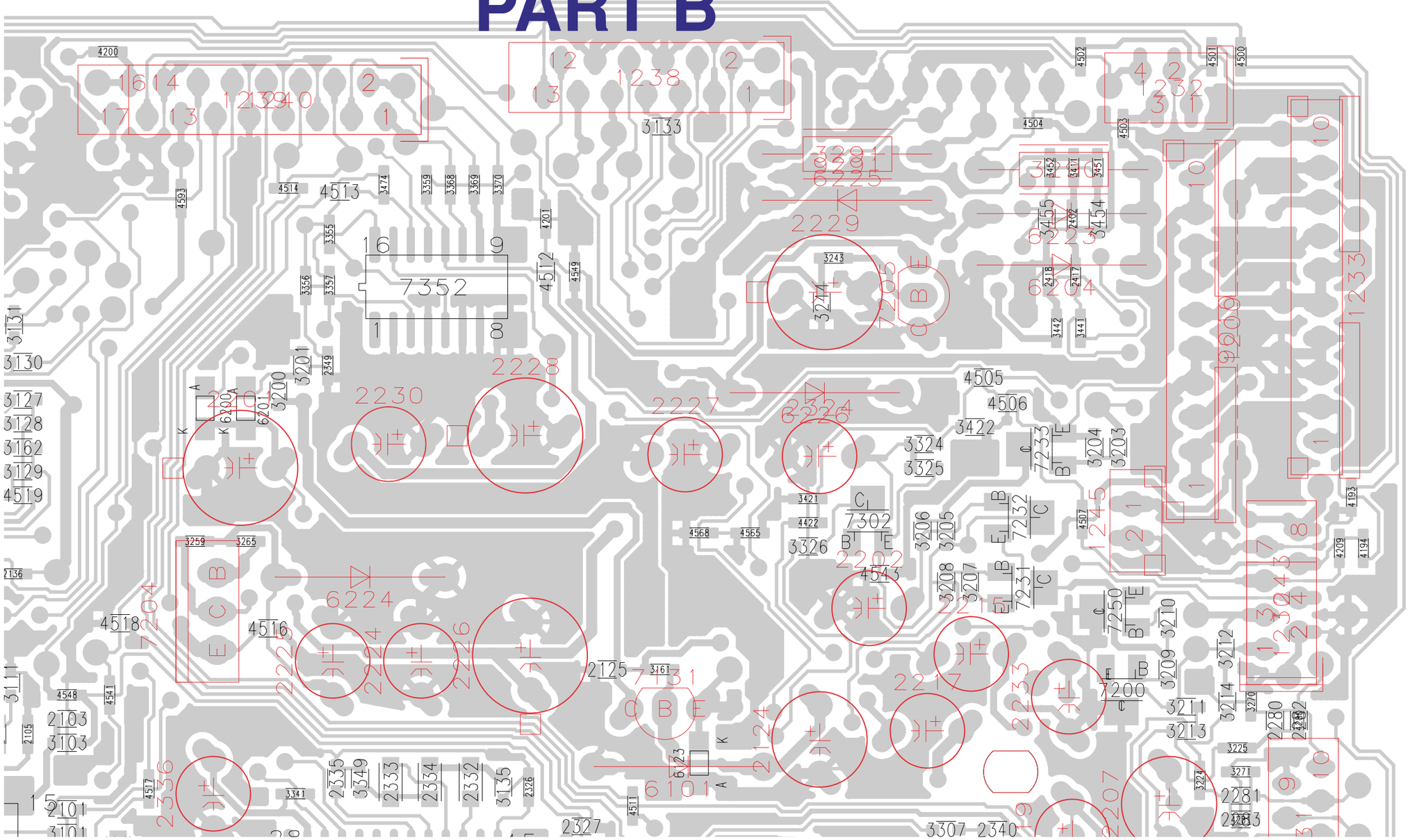
This assembly drawing shows a summary of all possible versions. For components

PART A



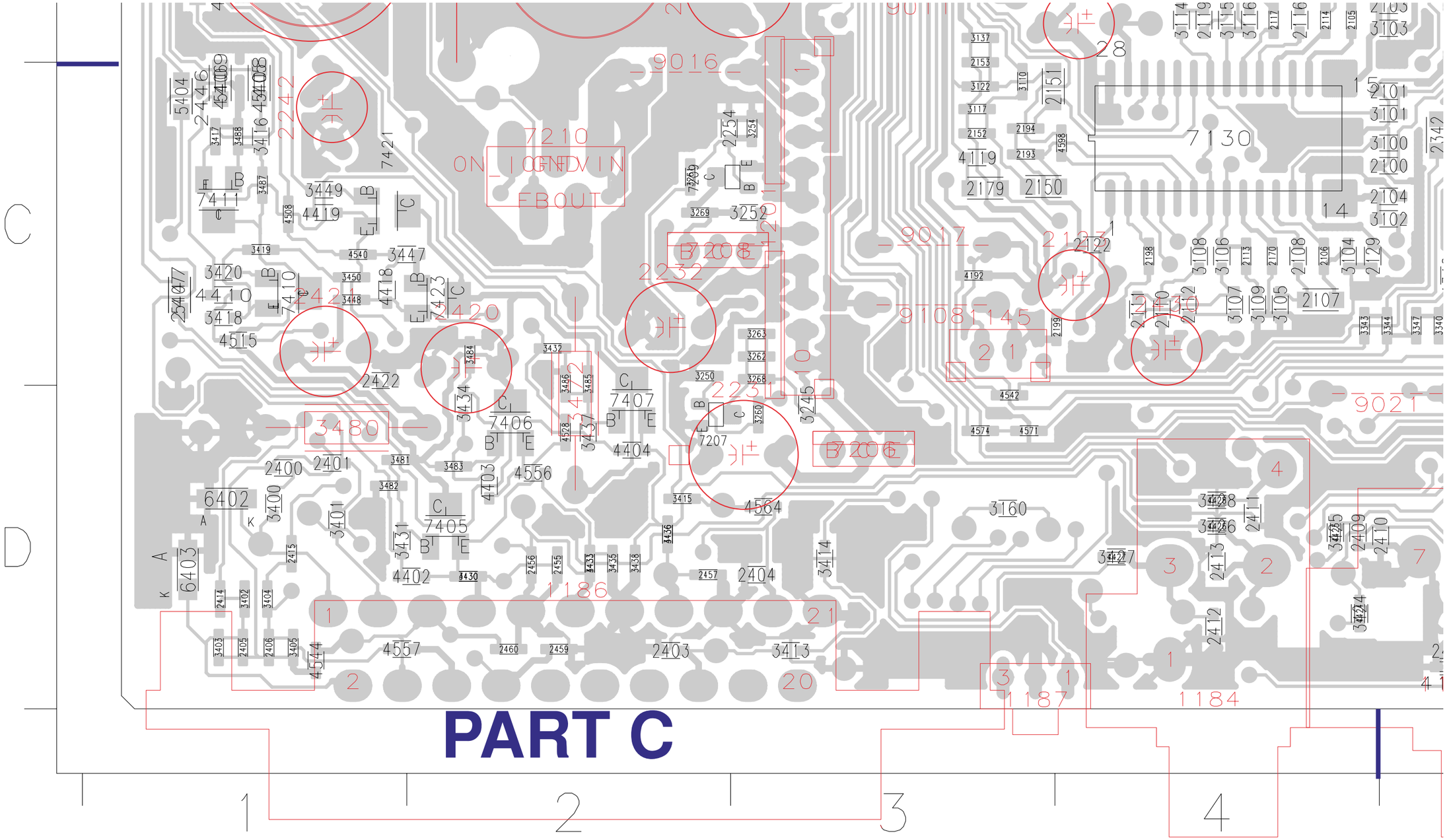
CHIP & COMPONENT LAYOUTS - CHIP SIDE VIEW (pcb layout ... 35006) PART B

onents used in a specific versions see schematics diagram and respective parts list.



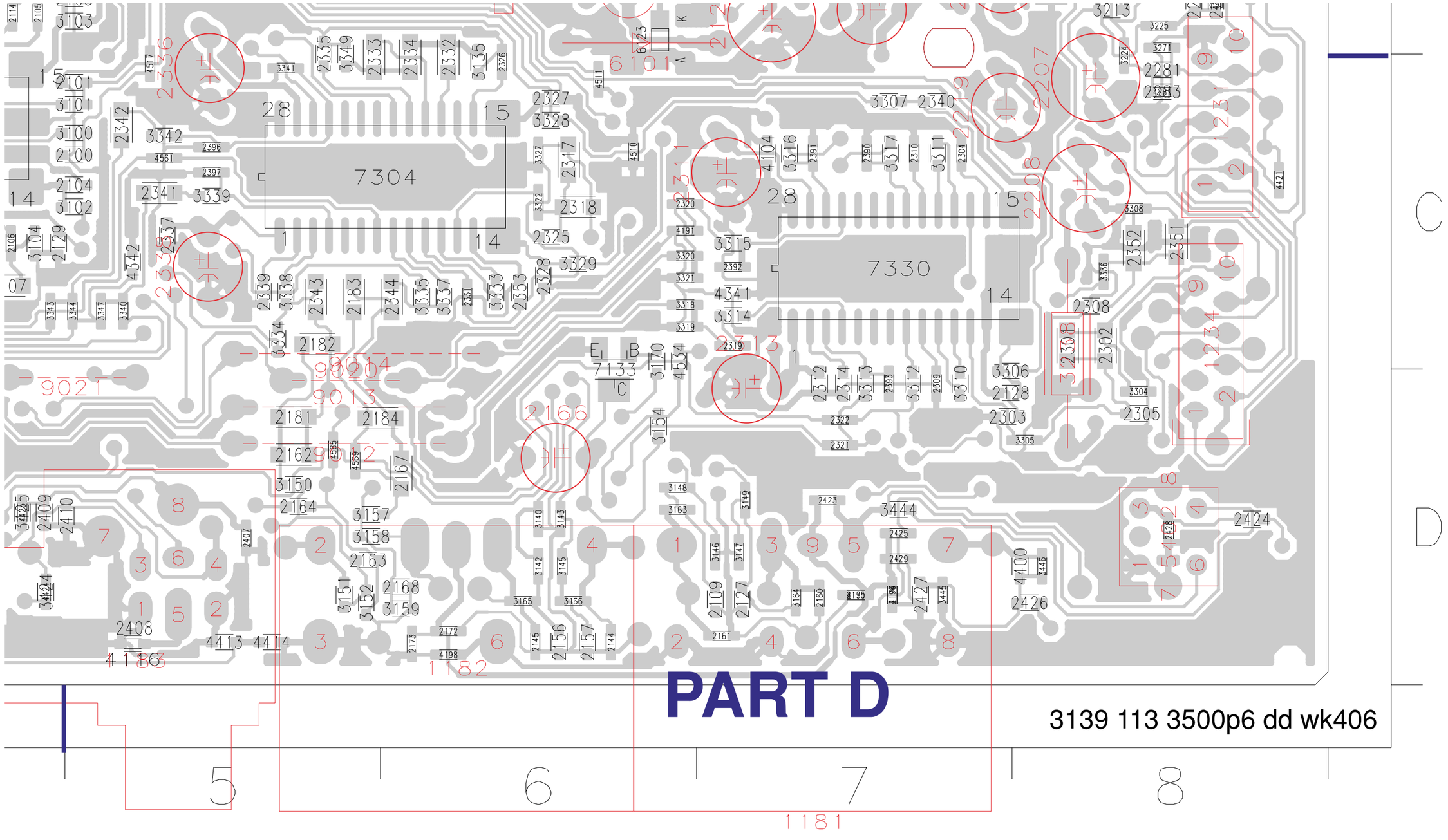
9-2d

CHIP & COMPONENT LAYOUTS - CHIP SIDE VIEW (pcb layout ... 35006) PART C



9-2e

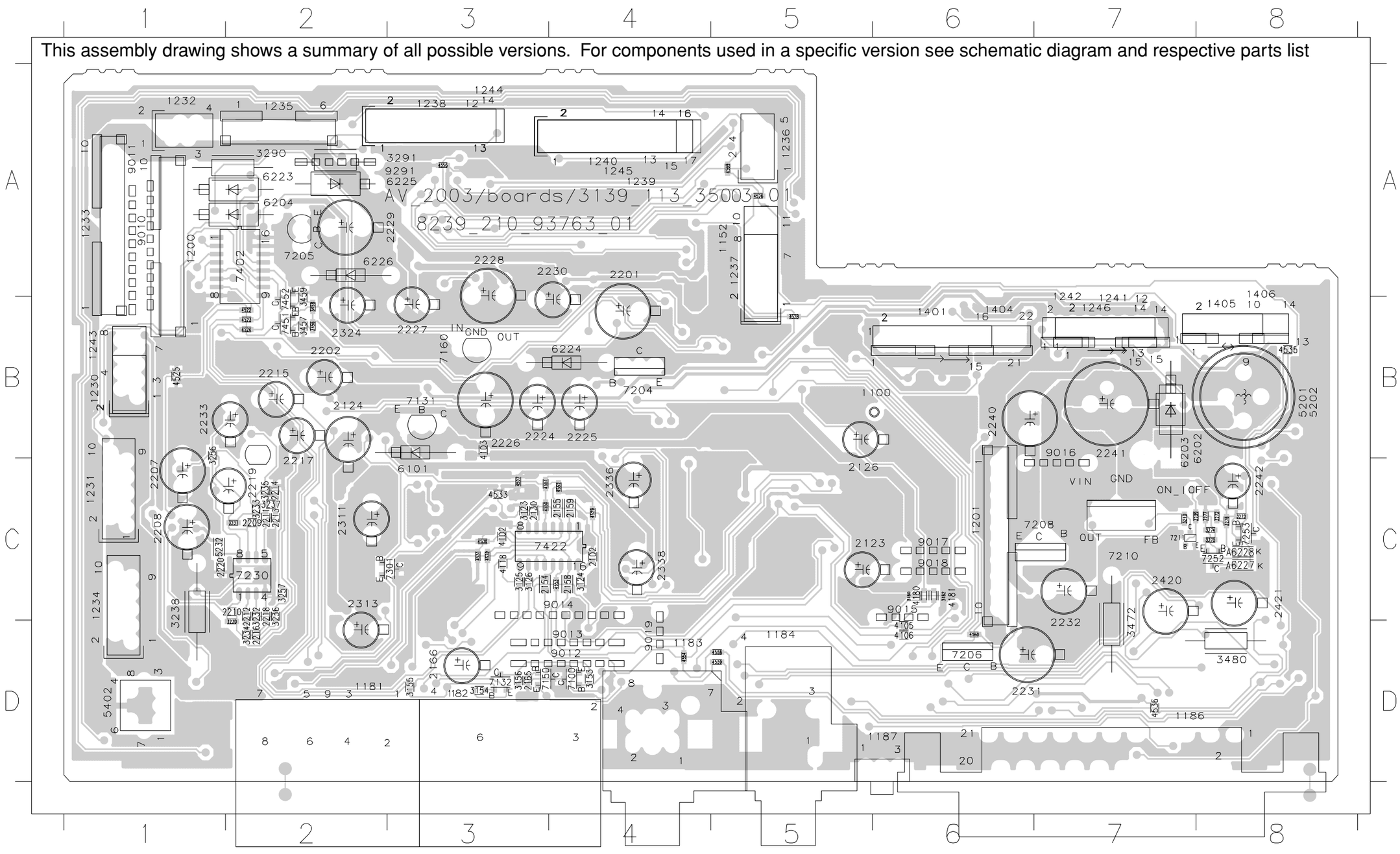
CHIP & COMPONENT LAYOUTS - CHIP SIDE VIEW (pcb layout ... 35006) PART D



9-3

COMPONENT & CHIP LAYOUT - COMPONENT SIDE VIEW

1100 B6 1230 B1 1240 A4 1406 A8 2165 D3 2213 C2 2226 B3 2242 C8 3125 C3 3232 C2 3257 C2 3457 B2 4180 C6 4530 C3 4554 D4 6101 C3 7100 D4 7211 C7 9011 A1
1152 A5 1231 C1 1241 B7 2102 C4 2166 D3 2214 C2 2227 B3 2311 C2 3126 C3 3233 C2 3272 C8 3458 B2 4181 C6 4531 C3 4555 A3 6202 B6 7131 B3 7230 C2 9012 D4
1181 D2 1232 A1 1242 A7 2123 C5 2201 A4 2215 B2 2228 A3 2313 C2 3153 D4 3234 D2 3273 C8 3459 B2 4522 B2 4532 C3 4558 D5 6203 B7 7132 D3 7252 C8 9013 D4
1182 D3 1233 A1 1243 B1 2124 B2 2202 B2 2216 D2 2229 A3 2324 B2 3154 D3 3235 C2 3274 C8 3472 D7 4523 B2 4533 C3 4559 D5 6204 A2 7150 D3 7253 C8 9014 C4
1183 D4 1234 C1 1244 A3 2126 C5 2207 C1 2217 C2 2230 A4 2336 C4 3155 D3 3236 C2 3275 C8 3480 D6 4524 B2 4535 B6 4560 D6 6223 A2 7160 B3 7301 C5 9015 C6
1184 D5 1235 A4 1245 A4 2130 C3 2208 C1 2218 C2 2232 D7 2338 C4 3156 D3 3237 C2 3276 C8 4102 C3 4525 B1 4536 D7 4599 A5 6224 B4 7204 B4 7402 A2 9016 B7
1186 D7 1236 A5 1246 B7 2154 C3 2209 C2 2219 C2 2331 D6 2420 C7 3180 C6 3238 C1 3277 C8 4103 B3 4526 A5 4550 C3 5201 B8 6225 A3 7205 A2 7422 C4 9017 C6
1187 D6 1237 A5 1401 B6 2155 C4 2210 C2 2220 C1 2331 D1 2421 C8 3182 C6 3239 C7 3290 A2 4105 D6 4527 C3 4551 C3 5202 B8 6226 A2 7206 D6 7451 B2 9018 C6
1200 A1 1238 A3 1404 B6 2158 C4 2211 C2 2224 B3 2240 B6 3123 C3 3230 D2 3240 C7 3291 A3 4106 D6 4528 B5 4552 C4 5232 C1 6227 C8 7208 C7 7452 B2 9019 D4
1201 C6 1239 A4 1405 B8 2159 C4 2212 C2 2225 B4 2241 B7 3124 C4 3231 C2 3256 B1 3456 B2 4118 C3 4529 C4 4553 C4 5402 D1 6228 C8 7210 C7 9010 A1 9291 A3



9-3a

COMPONENT & CHIP LAYOUT - COMPONENT SIDE VIEW (pcb layout ... 35006)

1100 B6	1238 A3	2154 C3	2208 C1	2228 A3	2381 D1	3125 C3	3239 C7	3457 B2	4105 D6	4533 C3	4570 B6	6225 A2	7206 D6	9011 B6
1145 C6	1239 A4	2155 C4	2209 C2	2229 A2	2382 D1	3126 C3	3240 C7	3458 B2	4106 D6	4535 C8	4572 B6	6226 A2	7208 C7	9012 D4
1182 D3	1240 A4	2158 C4	2210 C2	2230 A4	2394 C4	3153 D4	3256 B1	3459 B2	4118 C3	4537 C5	4573 B6	6227 C8	7210 C7	9013 D4
1183 D4	1241 B7	2159 C4	2211 C2	2231 D6	2395 C4	3155 D3	3257 C2	3460 C5	4125 D6	4538 D5	4575 C6	6228 C8	7211 C7	9014 C4
1184 D5	1242 B7	2165 D3	2212 C2	2232 C7	2420 C7	3156 D3	3272 C8	3461 C5	4126 D6	4545 D4	4653 D5	6404 D8	7230 C2	9016 B7
1186 D7	1243 B1	2166 D3	2213 C2	2233 B2	2421 C8	3180 D6	3273 C8	3462 C5	4330 D1	4550 C3	5201 B8	6405 D8	7252 C8	9017 C6
1187 D6	1245 B1	2185 D6	2214 C2	2240 B7	2430 C5	3182 D6	3274 C8	3463 D5	4382 D1	4551 C3	5202 B8	6406 D8	7253 C8	9020 D4
1200 A1	1401 B6	2186 D6	2215 B2	2241 B7	2431 D5	3183 D6	3275 C8	3464 D5	4401 A5	4552 C4	5232 C1	6407 D8	7301 C3	9021 D4
1201 C6	1403 B6	2187 C3	2216 D2	2242 C8	2432 D5	3230 D2	3276 C8	3465 D5	4522 D6	4553 C4	5401 A5	6408 D8	7402 A2	9108 C6
1230 B1	1404 B6	2188 C3	2217 B2	2311 C3	2433 D5	3231 C2	3277 C8	3466 D5	4523 B2	4554 D4	5402 D1	6409 D8	7422 C4	9291 A2
1231 C1	1405 B8	2190 C5	2218 C2	2313 C2	2434 D5	3232 C2	3290 A2	3467 D5	4524 B2	4555 A3	6101 C3	7100 D4	7431 C6	
1232 A1	1406 B8	2191 C5	2219 C2	2324 A2	2435 D6	3233 C2	3291 A2	3468 D5	4525 C3	4558 C4	6202 B7	7101 D3	7451 B2	
1233 A1	2102 C4	2196 C5	2220 C1	2329 D1	2436 D5	3234 D2	3302 D1	3472 D7	4527 C3	4559 C4	6203 B7	7131 B3	7452 B2	
1234 C1	2123 C5	2197 C5	2224 B4	2330 D1	2450 B2	3235 C2	3303 D2	3473 A5	4529 C4	4560 D6	6204 A2	7132 D5	7454 C5	
1235 A2	2124 B2	2201 A4	2225 B4	2336 C4	2451 D3	3236 C2	3330 D1	3480 D8	4530 C3	4562 C4	6205 C7	7150 D3	7455 D6	
1236 A5	2126 B5	2202 B2	2226 B3	2338 C4	3123 C3	3237 C2	3412 C6	4102 C3	4531 C3	4563 C4	6223 A2	7204 B4	7456 D5	
1237 A5	2130 C3	2207 C1	2227 A3	2380 D1	3124 C4	3238 C1	3456 B2	4103 B3	4532 C3	4566 B2	6224 B4	7205 A2	9010 A1	

This assembly drawing shows a summary of all possible versions. For components used in a specific versions see schematics diagram and respective parts list.

PART E

PART F

PART G

PART H

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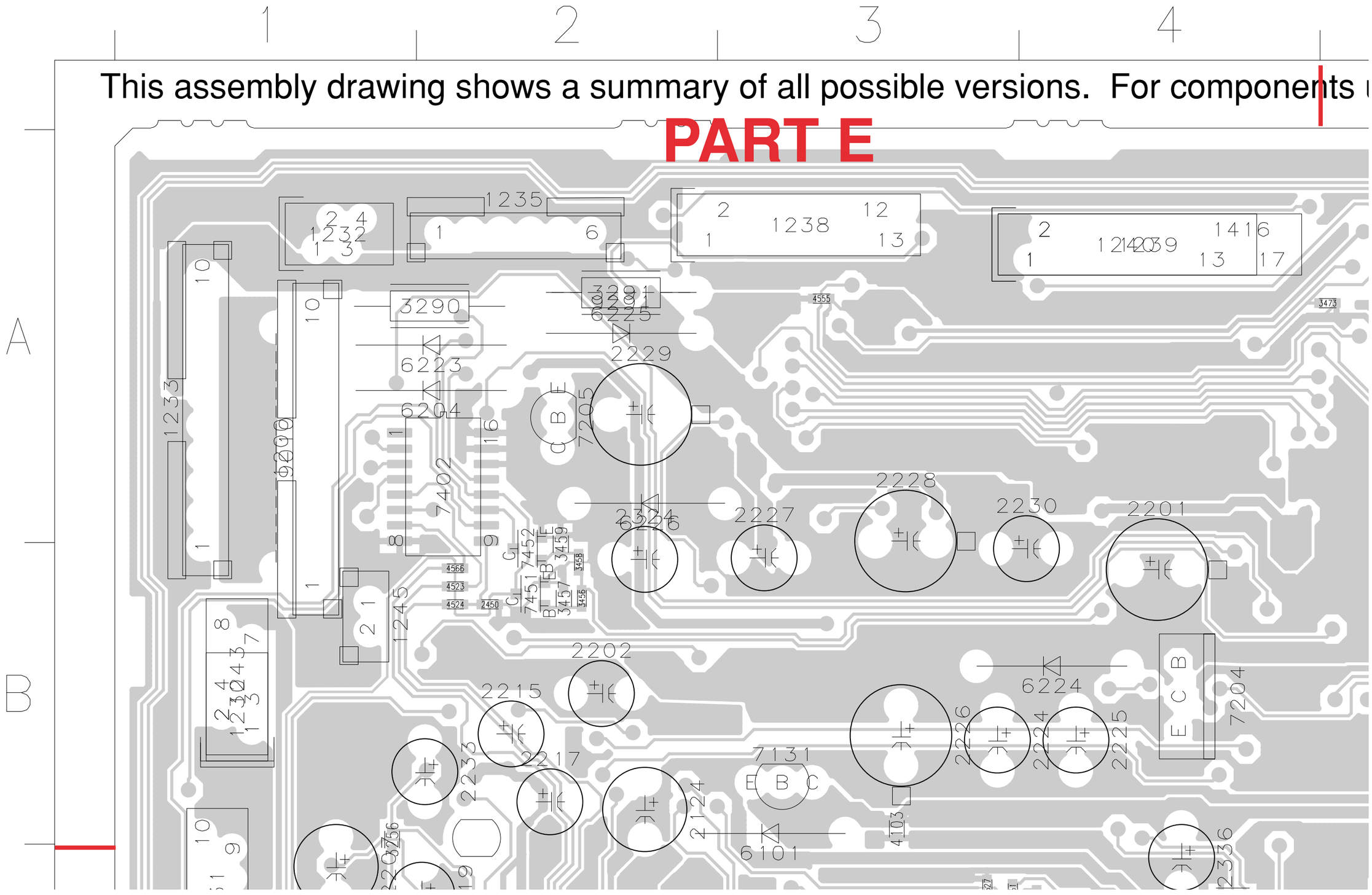
9-3b

COMPONENT & CHIP LAYOUT - COMPONENT SIDE VIEW (pcb layout ... 35006) PART E

This assembly drawing shows a summary of all possible versions. For components

PART E



9-3c

COMPONENT & CHIP LAYOUT - COMPONENT SIDE VIEW (pcb layout ... 35006) PART F

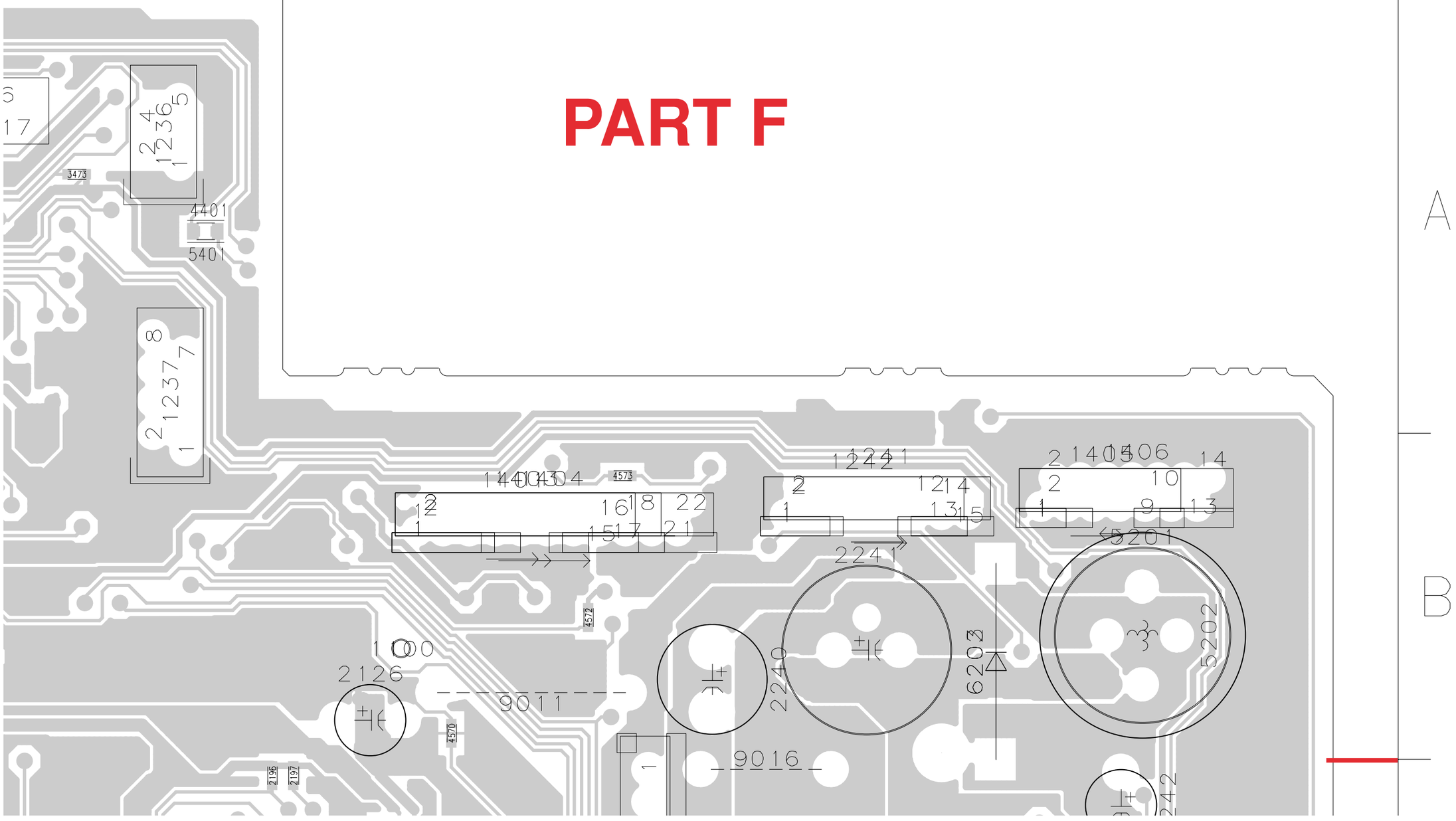
5 6 7 8

onents used in a specific versions see schematics diagram and respective parts list.

PART F

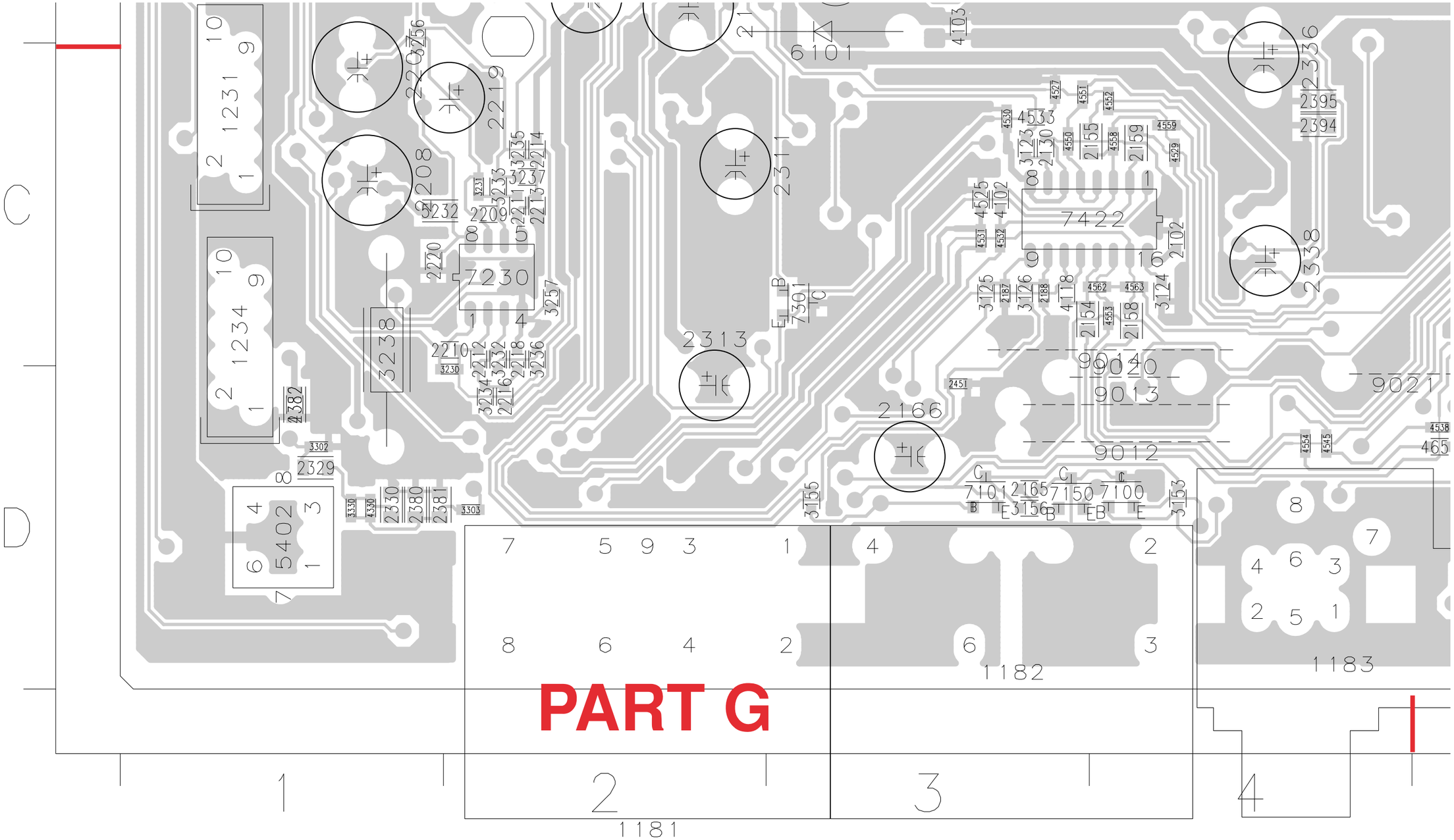
A

B



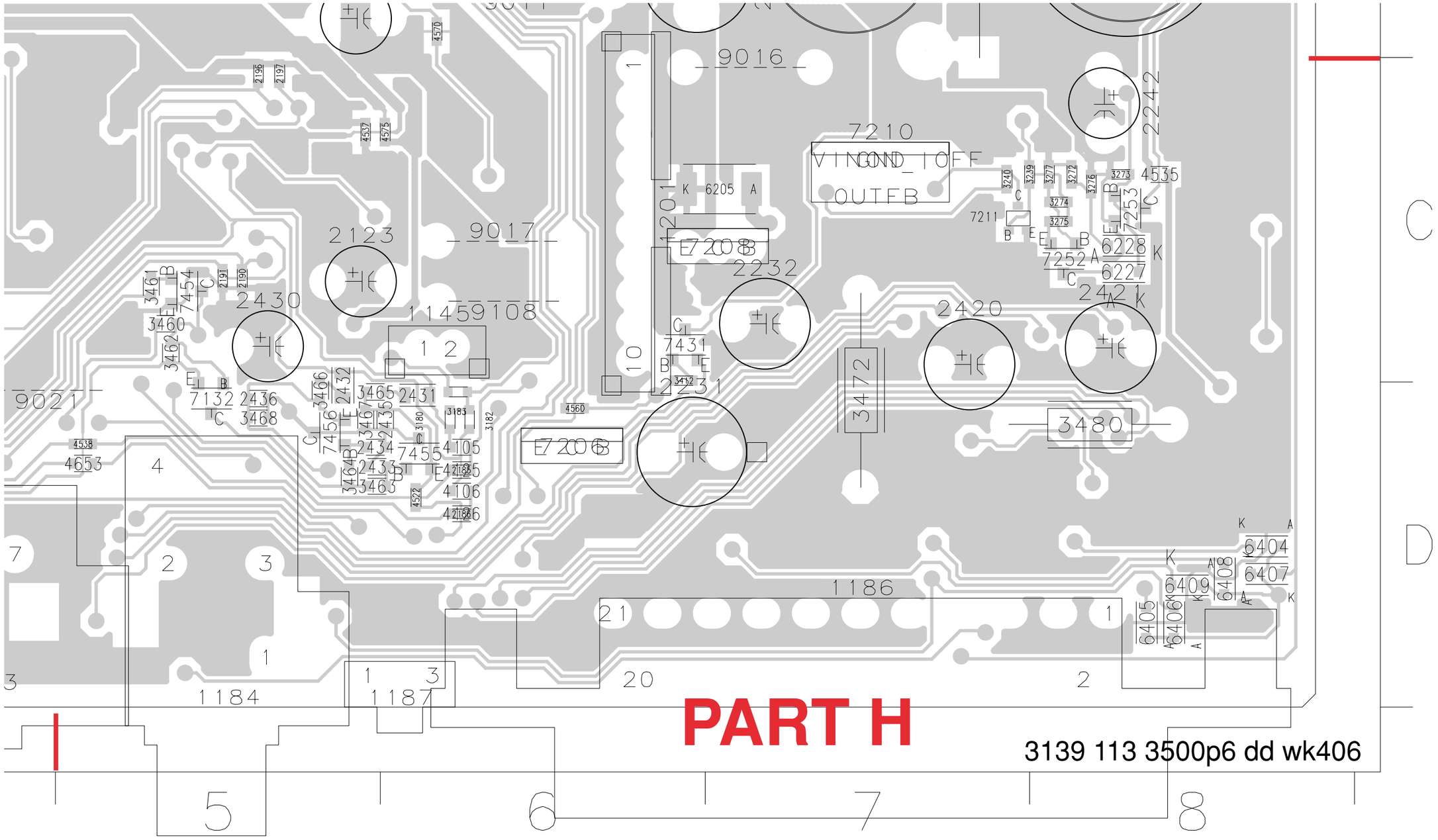
9-3d

COMPONENT & CHIP LAYOUT - COMPONENT SIDE VIEW (pcb layout ... 35006) PART G



9-3e

COMPONENT & CHIP LAYOUT - COMPONENT SIDE VIEW (pcb layout ... 35006) PART H



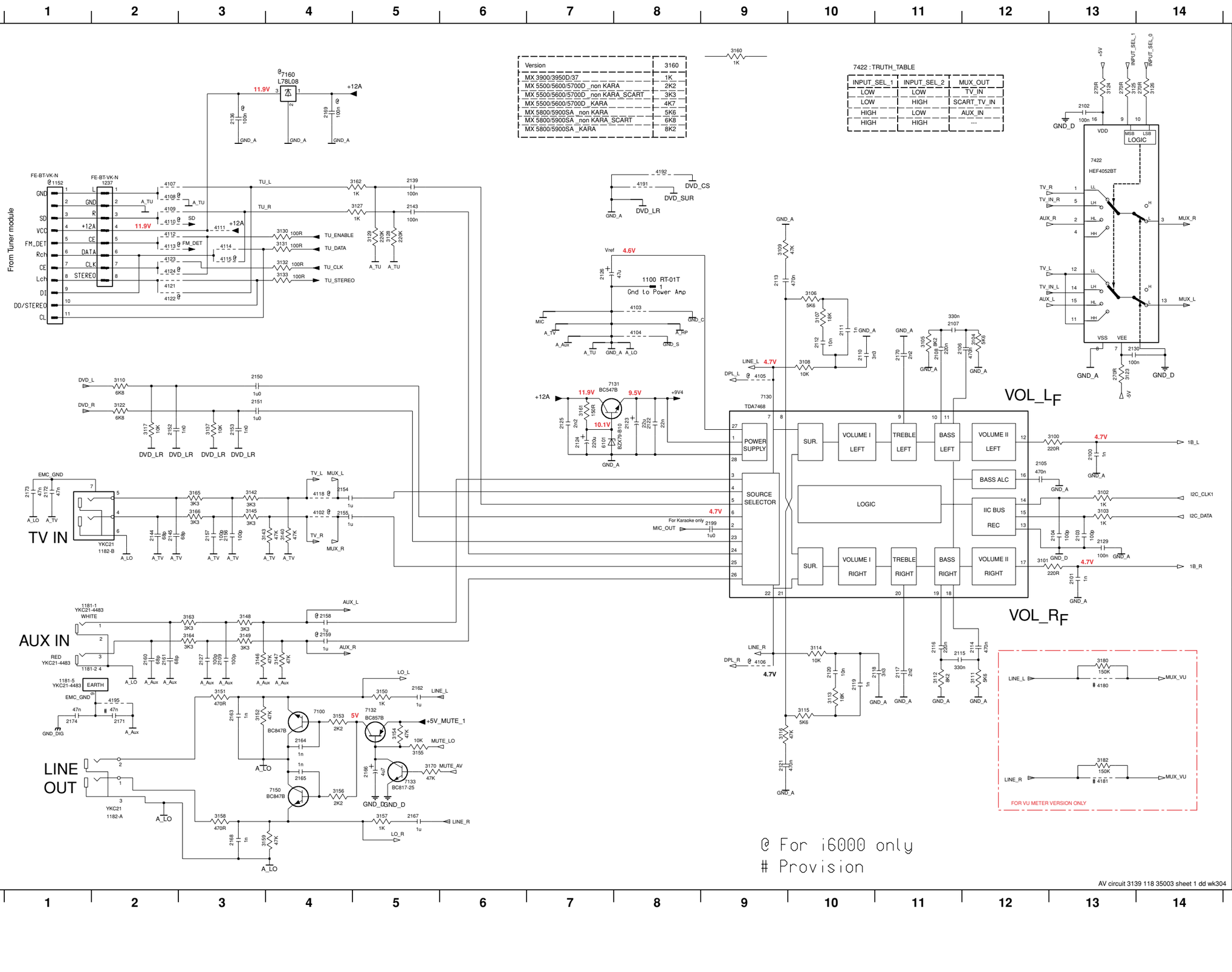
9-4

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	3160 A9
1152 B1	3161 D7
1181-1 G1	3162 B5
1181-2 G1	3163 G3
1181-5 H1	3164 G3
1182-A I2	3165 E3
1182-B F2	3166 F3
1237 B2	3170 I5
2100 E13	3180 G13
2101 F13	3182 I13
2102 A13	4102 F4
2103 F13	4103 C8
2104 F13	4104 D8
2105 E12	4105 D9
2106 D11	4106 G9
2107 C11	4107 B2
2108 D11	4108 B2
2109 G3	4109 B2
2110 D10	4110 B2
2111 D10	4111 B3
2112 D10	4112 B2
2113 C9	4113 C2
2114 G12	4114 C3
2115 G11	4115 C3
2116 G11	4118 E4
2117 G11	4121 C2
2118 G11	4122 C2
2119 H10	4123 C2
2120 G10	4124 C2
2121 I9	4180 H13
2122 E8	4181 I13
2123 E8	4191 B8
2124 E7	4192 B8
2125 E7	4195 H2
2126 C7	6101 E7
2127 G3	7100 H4
2129 F13	7130 D9
2130 D13	7131 D7
2136 A3	7132 H5
2139 B5	7133 I5
2143 B5	7150 I4
2144 F2	7160 A4
2145 F2	7422 B13
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	

9-4a

INPUT, SOURCE SELECT & VOLUME CONTROL L/R CIRCUIT (For pcb layout ... 35006)

For Production identification only

Version	3160
MX 3900/3950D/37	1K
MX 5500D/37	2K2
MX 5600D/37	3K3
MX 5500D/22	4K7
MX 5800/5700D/22	5K6
MX 5500/21/33/35	6K8
MX 5600/5700D/21/33/35	8K2

7422 : TRUTH_TABLE

INPUT_SEL_1	INPUT_SEL_0	MUX_OUT
LOW	LOW	TV_IN
LOW	HIGH	SCART_TV_IN
HIGH	LOW	AUX_IN
HIGH	HIGH	---

TV IN

AUX IN

LINE OUT

From Tuner module

VOL_Left

VOL_Right

VU meter version

@ For i6000 only

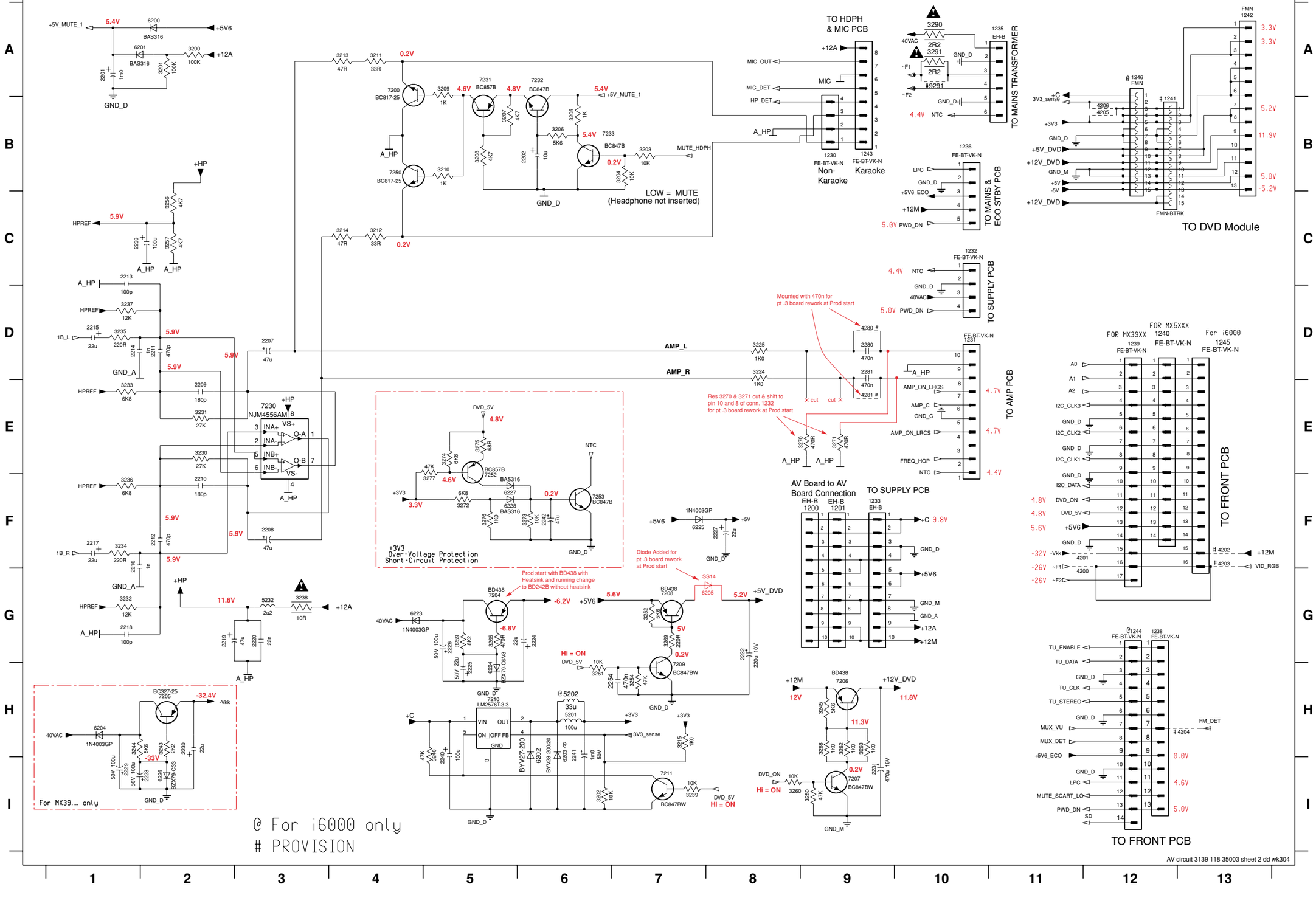
Provision

3139 113 3500p6_04 dd wk0405

1100 C8
1145 C2
1181-1 G1
1181-2 G1
1181-5 H1
1182-A I1
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 G10
2119 H10
2120 G10
2121 I9
2122 E8
2123 E8
2124 F7
2125 E7
2126 C7
2127 G3
2129 F13
2130 D13
2136 B3
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
2170 D11
2171 H2
2172 E1
2173 E1
2174 H1
2179 C9
2180 H9
2181 G5
2182 G5
2183 I5
2184 I5
2185 C14
2186 B14
2187 A14
2188 A14
2190 G6
2191 G7
2192 G7
2193 G7
2194 G7
2195 G8
2196 G8
2197 G8
2198 G9
2199 F8
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
3160 A9
3161 D7
3162 B4
3163 G3
3164 G3
3165 E3
3166 F3
3170 I5
3180 G13
3182 H13
3183 H13
4102 F4
4103 C8
4104 D8
4105 D9
4106 G9
4118 E4
4119 C9
4120 H9
4125 D14
4126 C14
4191 B8
4192 B8
4193 C2
4194 C2
4195 H2
4196 H1
6101 E7
6123 E8
7100 H4
7101 H5
7131 D7
7133 I5
7150 I4
7422 B13

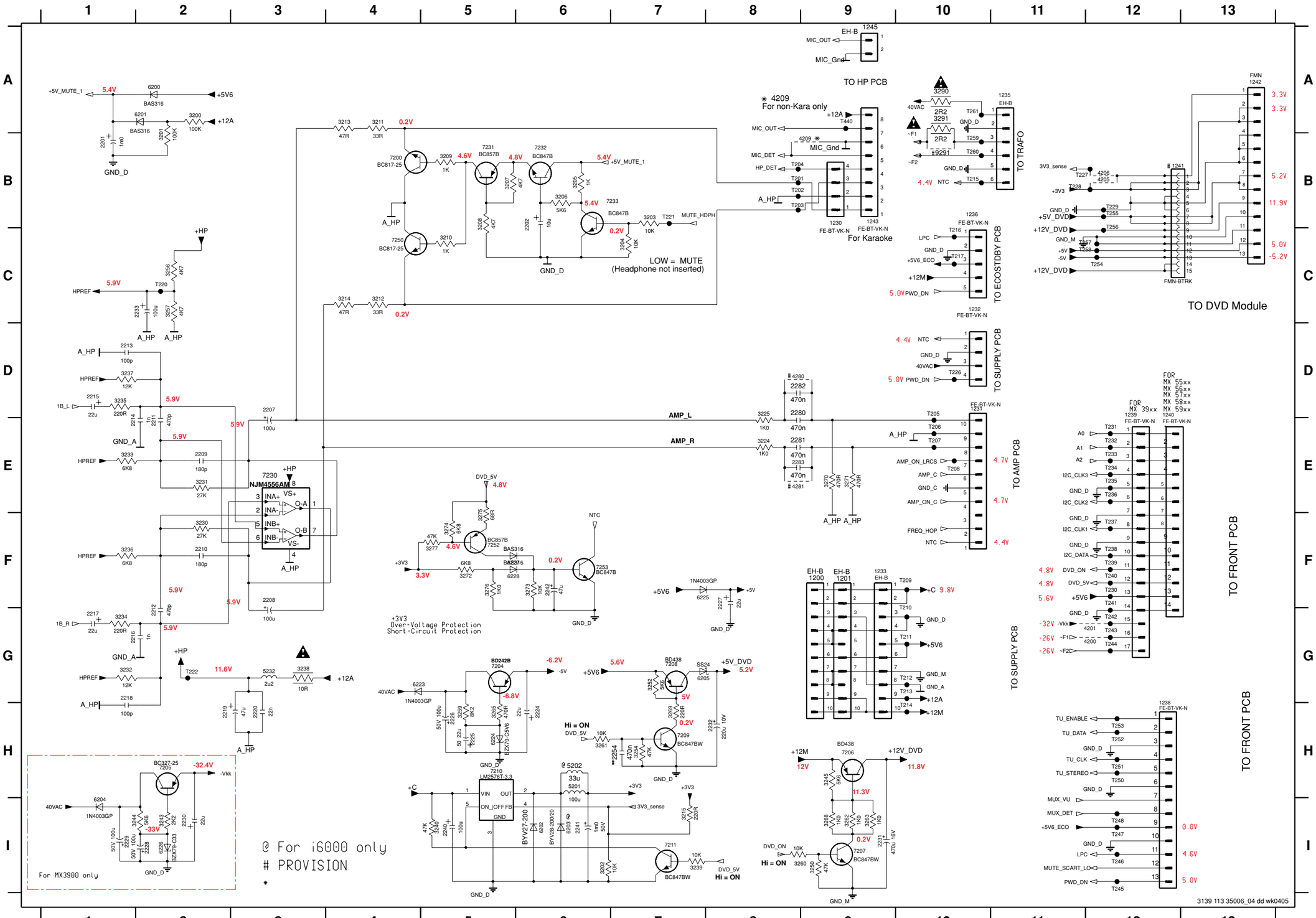
9-5

PRE-AMPLIFIER, SUPPLY & INTERCONNECTION CIRCUIT



9-5a

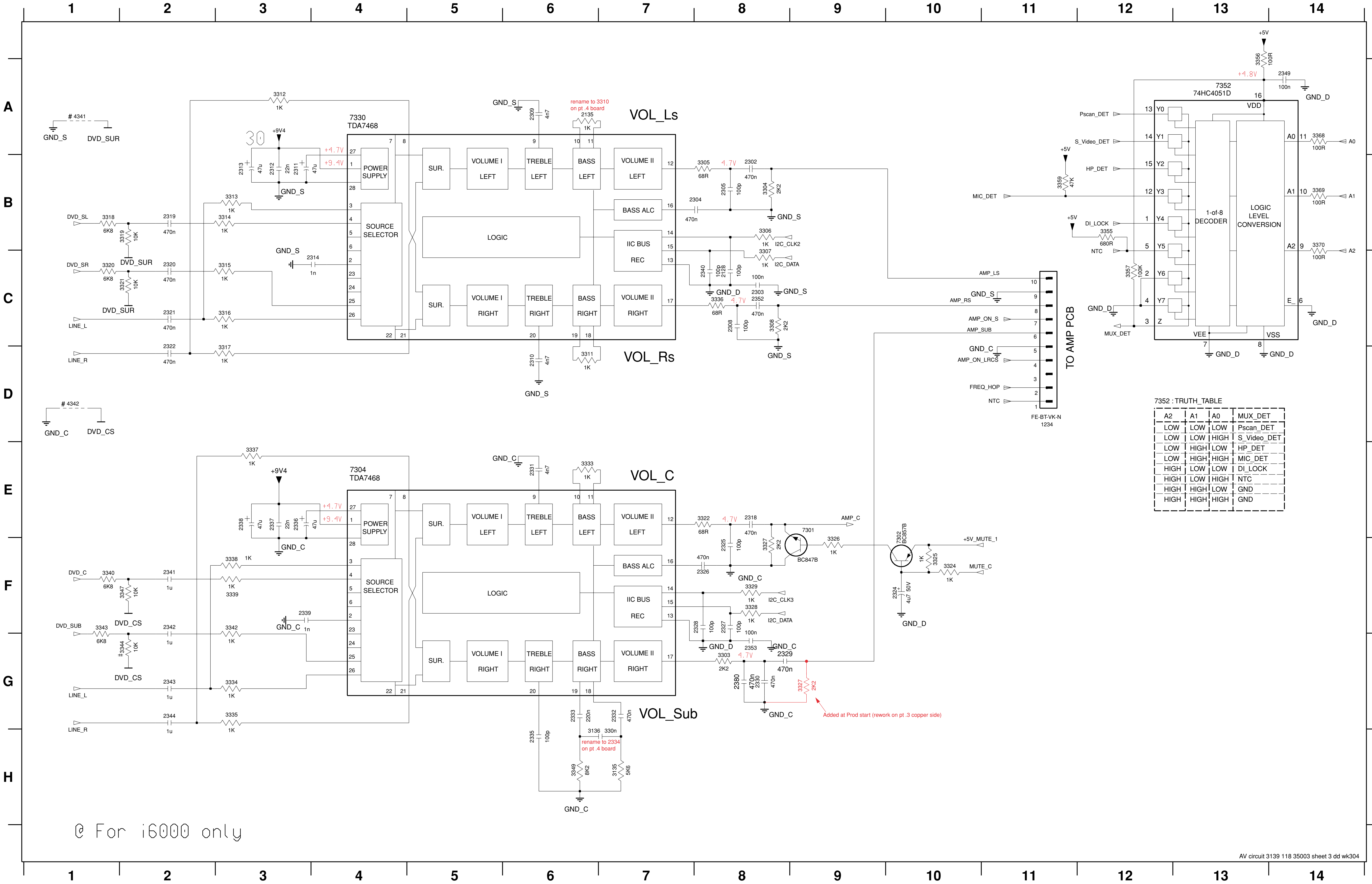
PRE-AMPLIFIER, SUPPLY & INTERCONNECTION CIRCUIT (For pcb layout ... 35006)



1200	F9	5201	H6
1201	F9	5202	H6
1230	B9	5232	G3
1231	D10	6200	A2
1232	C10	6201	A2
1233	F9	6202	I6
1235	A11	6203	I6
1236	B10	6204	I1
1238	H12	6205	G7
1239	D12	6223	G4
1240	D12	6224	H5
1241	B12	6225	F7
1242	A13	6226	I2
1243	B9	6227	F5
1245	A9	6228	F5
2201	B1	7200	B4
2202	B6	7204	G5
2207	D3	7205	H2
2208	F3	7206	H9
2209	E2	7207	I9
2210	F2	7208	G7
2211	E2	7209	H7
2212	G2	7210	H5
2213	D1	7211	I7
2214	E1	7230	E3
2215	D1	7231	B5
2216	G1	7232	B6
2217	G1	7233	B7
2218	G1	7250	C4
2219	H2	7252	F5
2220	H3	7253	F6
2224	H6	9291	B10
2225	H5	T201	B8
2226	H5	T202	B8
2227	F8	T203	B8
2228	I2	T204	B8
2229	I1	T205	D10
2230	I2	T206	E10
2231	I9	T207	E10
2232	H8	T208	E10
2233	C2	T209	F10
2240	I5	T210	G10
2241	I6	T211	G10
2242	F6	T212	G10
2254	H7	T213	G10
2280	D8	T214	H10
2281	E8	T215	B10
2282	D8	T216	C10
2283	E8	T217	C10
3200	A2	T220	C2
3201	B2	T221	B7
3202	I6	T222	G2
3203	B7	T226	D10
3204	C7	T227	B11
3205	B6	T228	B11
3206	B6	T229	B12
3207	B5	T230	F12
3208	B5	T231	E12
3209	B5	T232	E12
3210	C5	T233	E12
3211	A4	T234	E12
3212	C4	T235	E12
3213	A4	T236	E12
3214	C4	T237	F12
3215	I7	T238	F12
3224	E8	T239	F12
3225	D8	T240	F12
3230	F2	T241	F12
3231	E2	T242	G12
3232	G1	T243	G12
3233	E1	T244	G12
3234	G1	T245	I12
3235	D1	T246	I12
3236	F1	T247	I12
3237	D1	T248	I12
3238	G3	T250	H12
3239	I7	T251	H12
3240	I5	T252	H12
3243	I2	T253	H12
3244	I2	T254	C12
3245	H9	T255	B12
3250	I9	T256	C12
3252	G7	T257	C11
3254	H7	T258	C11
3256	C2	T259	B10
3257	C2	T260	B10
3259	H5	T261	A10
3260	I8	T440	A9
3261	H6		
3262	I9		
3263	I9		
3265	H5		
3268	I9		
3269	H7		
3270	E9		
3271	E9		
3272	F5		
3273	F6		
3274	F5		
3275	F5		
3277	F5		
3290	A10		
3291	A10		
4200	G12		
4201	G12		
4205	B12		
4206	B12		
4209	B9		
4280	D8		
4281	E8		

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 F3	3347 F2	3356 A13	3368 A14	4341 A1	7302 F10	7352 A13



A2	A1	A0	MUX_DET
LOW	LOW	LOW	Pscan_DET
LOW	LOW	HIGH	S_Video_DET
LOW	HIGH	LOW	HP_DET
LOW	HIGH	HIGH	MIC_DET
HIGH	LOW	LOW	DI_LOCK
HIGH	LOW	HIGH	NTC
HIGH	HIGH	LOW	GND
HIGH	HIGH	HIGH	GND

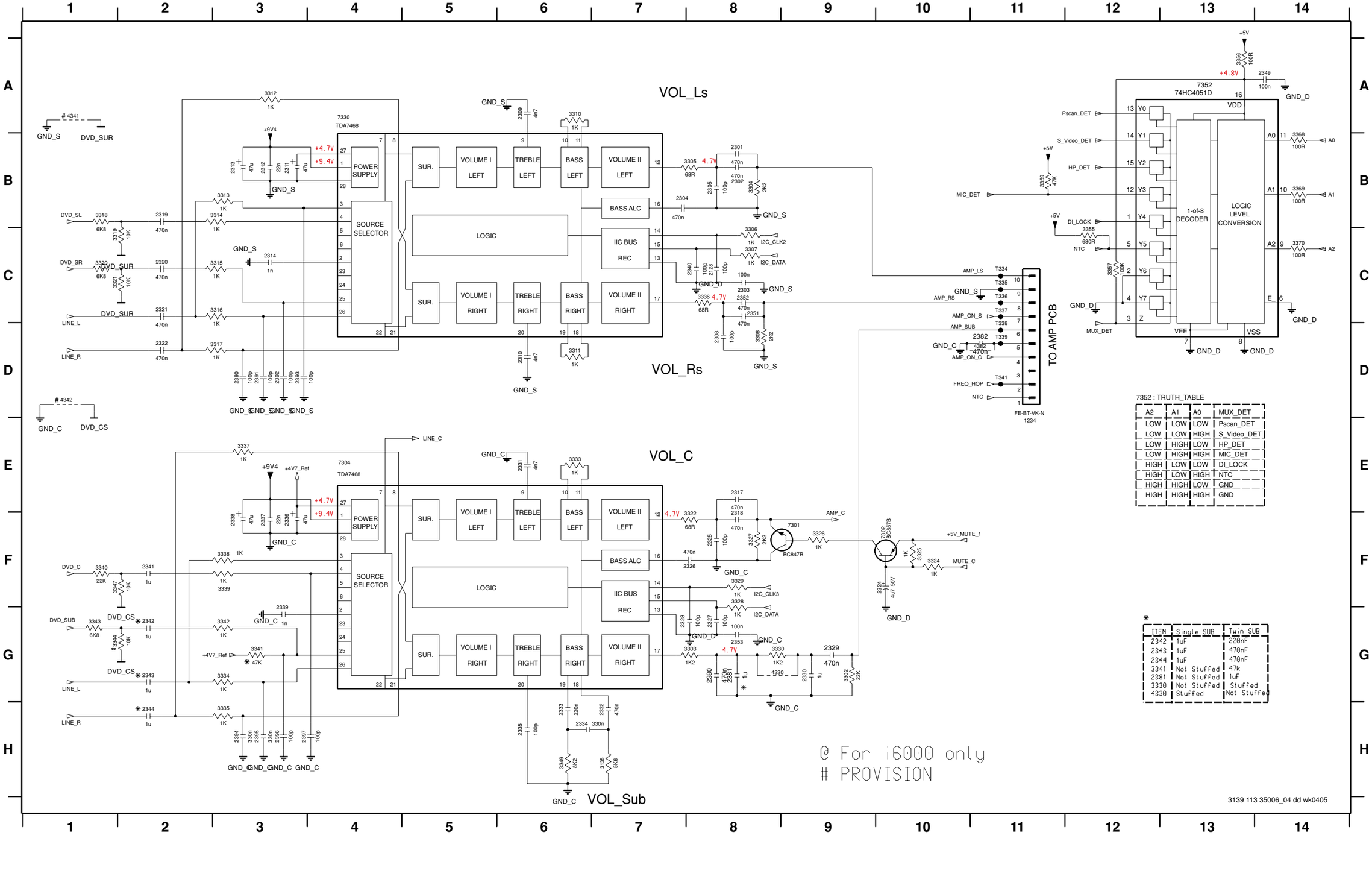
@ For i6000 only

AV circuit 3139 118 35003 sheet 3 dd wk304

9-6a

VOLUME CONTROL SURR., CENTER & SW AND CONTROL MULTIPLEXER CIRCUIT (For pcb layout ... 35006)

1234 E11 2128 C8 2301 B8 2302 B8 2303 C8 2304 B7 2305 B8 2308 D8 2309 A6 2310 D6 2311 B3 2312 B3 2313 B3 2314 C3 2317 E8 2318 F8 2319 B2 2320 C2 2321 C2 2322 D2 2324 F10 2325 F8 2326 F8 2327 G8 2328 G7 2329 G9 2330 G9 2331 E6 2332 H7 2333 H6 2334 H6 2335 H6 2336 F3 2337 F3 2338 F3 2339 G3 2340 C8 2341 F2 2342 G2 2343 G2 2344 H2 2349 A14 2351 C8 2352 C8 2353 G8 2380 G8 2381 G8 2382 D11 2390 D3 2391 D3 2392 D3 2393 D3 2394 H3 2395 H3 2396 H3 2397 H3 3135 H7 3302 G9 3303 G8 3304 B8 3305 B8 3306 C8 3307 C8 3308 D8 3310 A6 3311 D6 3312 A3 3313 B3 3314 B3 3315 C3 3316 C3 3317 D3 3318 B1 3319 C1 3320 C1 3321 C1 3322 F8 3324 F10 3325 F10 3326 F9 3327 F8 3328 F8 3329 F8 3330 G8 3333 E6 3334 G3 3335 H3 3336 C8 3337 E3 3338 F3 3339 F3 3340 F1 3341 G3 3342 G3 3343 G1 3344 G1 3347 F1 3349 H6 3355 C12 3356 A13 3357 C12 3359 B11 3368 B14 3369 B14 3370 C14 4330 G8 4341 A1 4342 D1 4382 D11 7301 F9 7302 F10 7304 C11 7330 C11 7352 C11 7352 D11 T334 C11 T335 C11 T336 C11 T337 C11 T338 D11 T339 D11 T341 D11



7352 : TRUTH_TABLE

A2	A1	A0	MUX_DET
LOW	LOW	LOW	Pscan_DET
LOW	LOW	HIGH	S_Video_DET
LOW	HIGH	LOW	HP_DET
LOW	HIGH	HIGH	MIC_DET
HIGH	LOW	LOW	DI_LOCK
HIGH	LOW	HIGH	NTC
HIGH	HIGH	LOW	GND
HIGH	HIGH	HIGH	GND

*

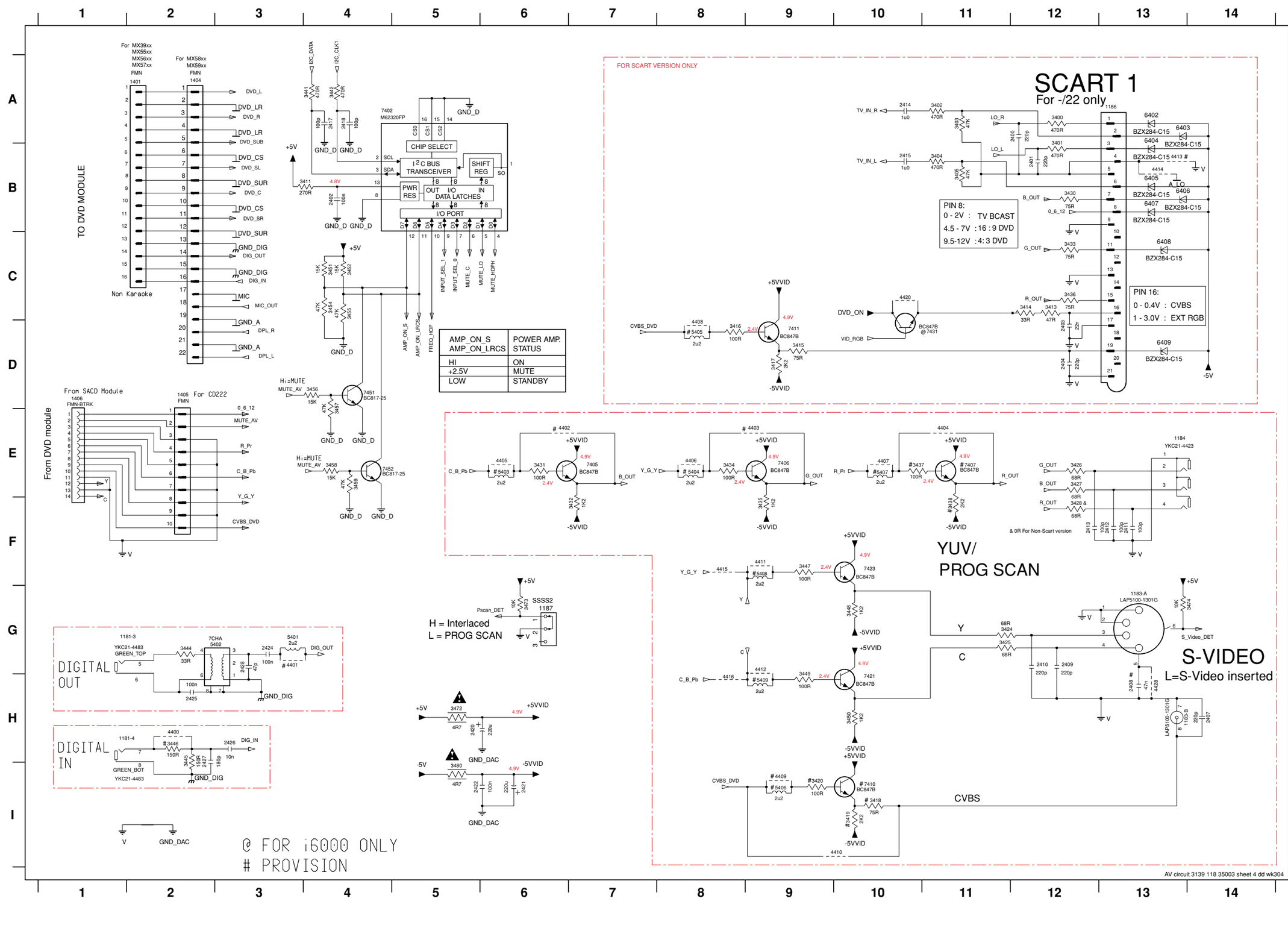
ITEM	Single SUB	Twin SUB
2342	1uF	220nF
2343	1uF	470nF
2344	1uF	470nF
3341	Not Stuffed	47k
2381	Not Stuffed	1uF
3330	Not Stuffed	Stuffed
4330	Stuffed	Not Stuffed

3139 113 35006_04 dd wk0405

9-7

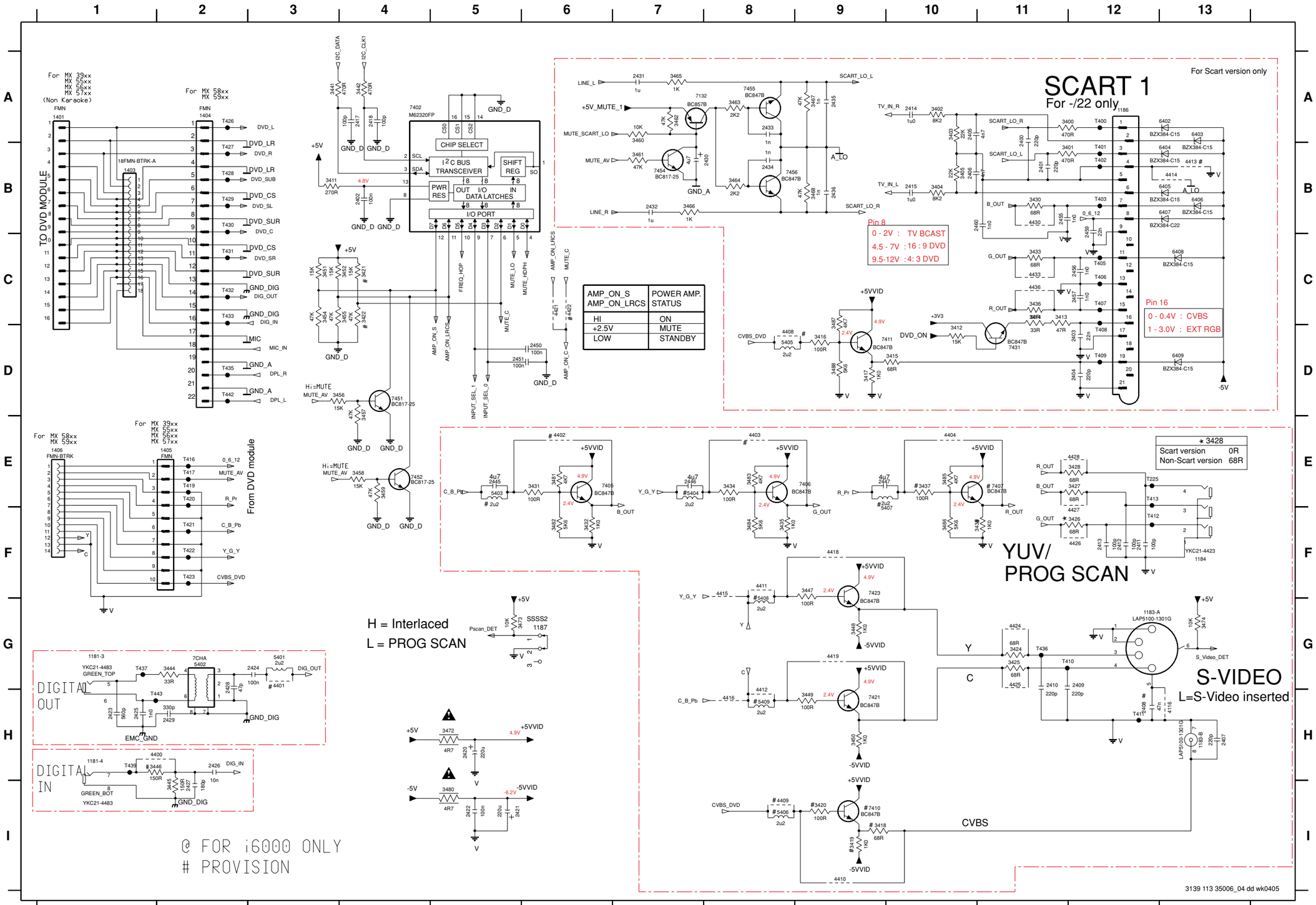
DIGITAL I/O, S-VIDEO, SCART, & I²C EXPANDER CIRCUITS

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 I10	4415 F8	5402 G3	5407 E10	6404 A13	6409 D13	7410 I10	7451 D4
1181-4 H2	1187 G6	2400 A12	2407 H14	2412 F13	2418 A4	2425 H2	3401 B12	3411 B4	3417 D9	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	6405 B13	7402 A4	7411 D9	7452 E4
1183-A G13	1401 A2	2401 B12	2408 H13	2413 F12	2420 H5	2426 H3	3402 A11	3413 C12	3418 I10	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	6406 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	



9-7a

DIGITAL I/O, S-VIDEO, SCART, & I²C EXPANDER CIRCUITS (For pcb layout ... 35006)



1181-3	G1	3472	H5
1181-4	H1	3473	G5
1183-A	G12	3474	G13
1183-B	H13	3480	I5
1184	F13	3481	E6
1186	A12	3482	F6
1187	G6	3483	E8
1401	A1	3484	F8
1403	B1	3485	E10
1404	A2	3486	F10
1405	E2	3487	C9
1406	E1	3488	D9
2400	A11	4116	H13
2401	B11	4400	H1
2402	B4	4401	G3
2403	D12	4402	E6
2404	D12	4403	E8
2405	A10	4404	E10
2406	B10	4408	D8
2407	H13	4409	I8
2408	H12	4410	I9
2409	G12	4411	F8
2410	G11	4412	H8
2411	F12	4413	B13
2412	F12	4414	B13
2413	F12	4415	F9
2414	A10	4416	H8
2415	B10	4418	F9
2417	A4	4419	G9
2418	A4	4421	C6
2420	H5	4422	C6
2421	I5	4424	G11
2422	I5	4425	G11
2423	H1	4426	F12
2424	G3	4427	F12
2425	H1	4428	E12
2426	H2	4430	B11
2427	I2	4433	C11
2428	G2	4436	C11
2429	H2	5401	G3
2430	B8	5402	G2
2431	A7	5403	E5
2432	B7	5404	E7
2433	A8	5405	D8
2434	B8	5406	I8
2435	A9	5407	F10
2436	B9	5408	G8
2445	E5	5409	H8
2446	E7	6402	A13
2447	E9	6403	A13
2450	D6	6404	B13
2451	D5	6405	B13
2455	B11	6406	B13
2456	C12	6407	B13
2457	C12	6408	C13
2459	B12	6409	D13
2460	B11	7132	A8
3400	A11	7402	A4
3401	B11	7405	E6
3402	A10	7406	E9
3403	A10	7407	E11
3404	B10	7410	I9
3405	B10	7411	D9
3412	D10	7421	H9
3413	C11	7423	F9
3414	C11	7431	D11
3415	D10	7451	D4
3416	D9	7452	E4
3417	D9	7454	B7
3418	I9	7455	A8
3419	I9	7456	B8
3420	I9	T225	E12
3421	C4	T400	A12
3422	C4	T401	B12
3424	G11	T402	B12
3425	G11	T403	B12
3426	F12	T405	C12
3427	E12	T406	C12
3428	E12	T407	C12
3430	B11	T408	D12
3431	E6	T409	D12
3432	F6	T410	G11
3433	C11	T411	H12
3434	E8	T412	F12
3435	F8	T413	E12
3436	C11	T416	E2
3437	E10	T417	E2
3438	F11	T419	E2
3441	A3	T420	E2
3442	A4	T421	F2
3444	G2	T422	F2
3445	I2	T423	F2
3446	H1	T426	A2
3447	F9	T427	B2
3448	G9	T428	B2
3449	H9	T429	B2
3450	H9	T430	B2
3451	C3	T431	C2
3452	C4	T432	C2
3454	C3	T433	C2
3455	C4	T435	D2
3456	D3	T436	G11
3457	D4	T437	G1
3458	E4	T439	H1
3459	E4	T442	D2
3460	A7	T443	H1
3461	B7		
3462	A7		
3463	A8		
3464	B8		
3465	A7		
3466	B7		
3467	A9		
3468	B9		

9-8

ELECTRICAL PARTS LIST - AV BOARD

ELECTRICAL PARTS LIST - AV BOARD

MISCELLANEOUS

1181	2422 026 05399	Socket Cinch Dig-out/Aux-in
1182	4822 267 31823	Socket Cinch TV-in/Line-out
1183	2422 033 00468	Socket CVBS/S-Video Out
1184	2422 026 05342	Socket YUV Out
1187	2422 127 00476	Switch Pro-SCAN
1230	4822 267 10733	FFC Socket 4P Vert.
1231	4822 267 10729	FFC Socket 10P Vert.
1232	4822 267 10733	FFC Socket 4P Vert.
1234	4822 267 10729	FFC Socket 10P Vert.
1236	4822 267 10954	FFC Socket 5P Vert.
1237	4822 265 11515	FFC Socket 8P Vert.
1238	4822 267 10738	FFC Socket 13P Vert.
1239	4822 267 10871	FFC Socket 17P Vert.
1242	2422 025 16591	FFC Socket 13P Vert.
1401	2422 025 16525	FFC Socket 16P Vert.
1405	2422 025 16587	FFC Socket 10P Vert.

CAPACITORS

2100	3198 016 31020	1nF 10% 25V
2101	3198 016 31020	1nF 10% 25V
2102	2238 586 59812	100nF 10% 50V
2103	2020 552 94427	100pF 5% 50V
2104	2020 552 94427	100pF 5% 50V
2105	3198 017 44740	470nF 10V
2106	3198 017 44740	470nF 10V
2107	2020 552 96327	330nF 10% 16V
2108	4822 126 13879	220nF +80/-20% 16V
2109	2020 552 94427	100pF 5% 50V
2110	5322 126 11579	3,3nF 10% 63V
2111	3198 016 31020	1nF 10% 25V
2112	5322 126 11583	10nF 10% 50V
2113	3198 017 44740	470nF 10V
2114	3198 017 44740	470nF 10V
2115	2020 552 96327	330nF 10% 16V
2116	4822 126 13879	220nF +80/-20% 16V
2117	4822 126 14238	2,2nF 50V
2118	5322 126 11579	3,3nF 10% 63V
2119	3198 016 31020	1nF 10% 25V
2120	5322 126 11583	10nF 10% 50V
2121	3198 017 44740	470nF 10V
2122	4822 126 14494	22nF 10% 25V
2123	4822 124 81151	22uF 20% 50V
2124	4822 124 40196	220uF 20% 16V
2125	4822 126 14238	2,2nF 50V
2126	4822 124 40433	47uF 20% 25V
2127	2020 552 94427	100pF 5% 50V
2128	2020 552 94427	100pF 5% 50V
2129	2238 586 59812	100nF 10% 50V
2130	2238 586 59812	100nF 10% 50V
2135	Refer to resistor 3310	
2136	2238 586 59812	100nF 10% 50V
2139	2238 586 59812	100nF 10% 50V
2143	2238 586 59812	100nF 10% 50V
2144	4822 126 13956	68pF 5% 63V
2145	4822 126 13956	68pF 5% 63V
2150	4822 126 14043	1uF +80/-20% 16V
2151	4822 126 14043	1uF +80/-20% 16V
2152	3198 016 38210	820pF 10% 25V
2153	3198 016 38210	820pF 10% 25V
2154	4822 126 14043	1uF +80/-20% 16V
2155	4822 126 14043	1uF +80/-20% 16V
2156	2020 552 94427	100pF 5% 50V
2157	2020 552 94427	100pF 5% 50V
2160	4822 126 13956	68pF 5% 63V
2161	4822 126 13956	68pF 5% 63V
2162	4822 126 14491	2,2uF +80/-20% 10V
2163	3198 016 31020	1nF 10% 25V
2164	3198 016 31020	1nF 10% 25V
2165	3198 016 31020	1nF 10% 25V
2166	4822 124 40769	4,7uF 20% 100V
2167	4822 126 14491	2,2uF +80/-20% 10V
2168	3198 016 31020	1nF 10% 25V
2170	4822 126 14238	2,2nF 50V
2172	3198 017 34730	47nF 16V
2173	3198 017 34730	47nF 16V
2187	2238 586 59812	100nF 10% 50V
2188	2238 586 59812	100nF 10% 50V
2190	2020 552 94427	100pF 5% 50V
2191	2020 552 94427	100pF 5% 50V
2192	2020 552 94427	100pF 5% 50V
2193	2020 552 94427	100pF 5% 50V
2194	2020 552 94427	100pF 5% 50V
2195	2020 552 94427	100pF 5% 50V
2196	2020 552 94427	100pF 5% 50V
2197	2020 552 94427	100pF 5% 50V
2198	2020 552 94427	100pF 5% 50V
2201	4822 124 40184	1000uF 20% 10V
2202	4822 124 40248	10uF 20% 63V
2207	4822 124 41751	47uF 20% 50V
2208	4822 124 41751	47uF 20% 50V
2209	4822 126 14508	180pF 5% 50V
2210	4822 126 14508	180pF 5% 50V
2211	4822 126 13881	470pF 5% 50V
2212	4822 126 13881	470pF 5% 50V
2213	2020 552 94427	100pF 5% 50V
2214	3198 016 31020	1nF 10% 25V
2215	4822 124 81151	22uF 20% 50V
2216	3198 016 31020	1nF 10% 25V
2217	4822 124 81151	22uF 20% 50V
2218	2020 552 94427	100pF 5% 50V
2219	4822 124 40433	47uF 20% 25V
2220	4822 126 14494	22nF 10% 25V
2224	4822 124 81151	22uF 20% 50V
2225	4822 124 81151	22uF 20% 50V
2226	4822 124 40255	100uF 20% 63V
2227	4822 124 81151	22uF 20% 50V
2228	4822 124 40255	100uF 20% 63V
2229	4822 124 40255	100uF 20% 63V
2230	4822 124 81151	22uF 20% 50V
2231	4822 124 80791	470uF 20% 16V
2232	4822 124 40196	220uF 20% 16V
2233	4822 124 41584	100uF 20% 10V
2240	2020 012 93583	100uF 20% 25V
2241	3198 026 51020	1000uF 20% 50V
2242	4822 124 40433	47uF 20% 25V
2254	3198 017 44740	470nF 10V
2280	3198 017 44740	470nF 10V
2281	3198 017 44740	470nF 10V
2282	3198 017 44740	470nF 10V
2283	3198 017 44740	470nF 10V
2302	3198 017 44740	470nF 10V
2303	2238 586 59812	100nF 10% 50V
2304	3198 017 44740	470nF 10V
2305	2020 552 94427	100pF 5% 50V
2308	2020 552 94427	100pF 5% 50V
2309	4822 126 13193	4,7nF 10% 63V
2310	4822 126 13193	4,7nF 10% 63V
2311	4822 124 40433	47uF 20% 25V
2312	4822 126 14494	22nF 10% 25V
2313	4822 124 40433	47uF 20% 25V
2314	3198 016 31020	1nF 10% 25V
2318	3198 017 41050	1uF +80/-20% 10V
2319	3198 017 44740	470nF 10V
2320	3198 017 44740	470nF 10V
2321	3198 017 44740	470nF 10V
2322	3198 017 44740	470nF 10V
2324	4822 124 12032	4,7uF 20% 50V
2325	2020 552 94427	100pF 5% 50V
2326	3198 017 44740	470nF 10V
2327	2020 552 94427	100pF 5% 50V
2328	2020 552 94427	100pF 5% 50V
2329	2020 552 96684	470nF 10% 16V
2330	4822 126 14472	1uF 10% 10V
2331	4822 126 13193	4,7nF 10% 63V
2332	2020 552 96684	470nF 10% 25V
2333	2020 552 96326	220nF 10% 16V
2334	2222 780 15656	330nF 10% 16V
2335	2020 552 94427	100pF 5% 50V
2336	4822 124 40433	47uF 20% 25V
2337	4822 126 14494	22nF 10% 25V
2338	4822 124 40433	47uF 20% 25V
2339	3198 016 31020	1nF 10% 25V
2340	2020 552 94427	100pF 5% 50V
2341	4822 126 14043	1uF +80/-20% 16V
2342	4822 126 14043	1uF +80/-20% 16V
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 41050	1uF +80/-20% 10V
2353	2238 586 59812	100nF 10% 50V
2380	2020 552 96684	470nF 10% 25V
2390	2020 552 94427	100pF 5% 50V
2391	2020 552 94427	100pF 5% 50V
2392	2020 552 94427	100pF 5% 50V
2393	2020 552 94427	100pF 5% 50V
2394	2020 552 94427	100pF 5% 50V
2395	2020 552 94427	100pF 5% 50V
2396	2020 552 94427	100pF 5% 50V
2397	2020 552 94427	100pF 5% 50V
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
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
2423	4822 126 14249	560pF 25V
2424	2238 586 59812	100nF 10% 50V
2425	3198 016 31020	1nF 50V
2426	5322 126 11583	10nF 10% 50V
2427	4822 126 14508	180pF 5% 50V
2428	4822 126 11785	47pF 5% 50V
2429	4822 126 14241	330pF 50V
2445	2020 552 96305	4,7uF +80/-20% 10V
2446	2020 552 96305	4,7uF +80/-20% 10V
2450	2238 586 59812	100nF 10% 50V
2451	2238 586 59812	100nF 10% 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

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ELECTRICAL PARTS LIST - AV BOARD

ELECTRICAL PARTS LIST - AV BOARD

RESISTORS

3114	4822 051 30103	10k 5% 0,062W	3204	4822 051 30103	10k 5% 0,062W	3305	4822 051 30689	68R 5% 0,063W	3441	4822 051 30471	470R 5% 0,062W
3115	4822 051 30562	5k6 5% 0,063W	3205	4822 051 30102	1k 5% 0,062W	3306	4822 051 30102	1k 5% 0,062W	3442	4822 051 30471	470R 5% 0,062W
3116	4822 117 12925	47k 1% 0,063W	3206	4822 051 30562	5k6 5% 0,063W	3307	4822 051 30102	1k 5% 0,062W	3444	4822 051 30339	33R 5% 0,062W
3117	4822 051 30103	10k 5% 0,062W	3207	4822 051 30472	4k7 5% 0,062W	3308	4822 051 30222	2k2 5% 0,062W	3445	4822 051 30151	150R 5% 0,062W
3122	4822 051 30682	6k8 5% 0,062W	3208	4822 051 30472	4k7 5% 0,062W	3310	4822 051 30102	1k 5% 0,062W	3447	4822 051 30101	100R 5% 0,062W
3123	4822 051 30271	270R 5% 0,062W	3209	4822 051 30102	1k 5% 0,062W	3311	4822 051 30102	1k 5% 0,062W	3448	4822 117 11817	1k2 1% 0,062W
3124	4822 051 30271	270R 5% 0,062W	3210	4822 051 30102	1k 5% 0,062W	3312	4822 051 30102	1k 5% 0,062W	3449	4822 051 30101	100R 5% 0,062W
3125	4822 051 30271	270R 5% 0,062W	3211	4822 051 30339	33R 5% 0,062W	3313	4822 051 30102	1k 5% 0,062W	3450	4822 117 11817	1k2 1% 0,062W
3126	4822 051 30271	270R 5% 0,062W	3212	4822 051 30339	33R 5% 0,062W	3314	4822 051 30102	1k 5% 0,062W	3451	4822 051 30153	15k 5% 0,062W
3127	4822 051 30102	1k 5% 0,062W	3213	4822 051 30479	47R 5% 0,062W	3315	4822 051 30102	1k 5% 0,062W	3452	4822 051 30153	15k 5% 0,062W
3128	4822 117 12891	220k 1% 0,062W	3214	4822 051 30479	47R 5% 0,062W	3316	4822 051 30102	1k 5% 0,062W	3454	4822 117 12925	47k 1% 0,063W
3129	4822 117 12891	220k 1% 0,062W	3224	4822 051 30102	1k 5% 0,062W	3317	4822 051 30102	1k 5% 0,062W	3455	4822 117 12925	47k 1% 0,063W
3130	4822 051 30101	100R 5% 0,062W	3225	4822 051 30102	1k 5% 0,062W	3318	4822 051 30682	6k8 5% 0,062W	3456	4822 051 30153	15k 5% 0,062W
3131	4822 051 30101	100R 5% 0,062W	3230	4822 051 30273	27k 5% 0,062W	3319	4822 051 30103	10k 5% 0,062W	3457	4822 117 12925	47k 1% 0,063W
3132	4822 051 30101	100R 5% 0,062W	3231	4822 051 30273	27k 5% 0,062W	3320	4822 051 30682	6k8 5% 0,062W	3458	4822 051 30153	15k 5% 0,062W
3133	4822 051 30101	100R 5% 0,062W	3232	4822 051 30123	12k 5% 0,062W	3321	4822 051 30103	10k 5% 0,062W	3459	4822 117 12925	47k 1% 0,063W
3135	4822 051 30562	5k6 5% 0,063W	3233	4822 051 30682	6k8 5% 0,062W	3322	4822 051 30689	68R 5% 0,063W	3472	4822 052 10478 ⚠	4R7 5% 0,33W
3136	Refer to capacitor 2334		3234	4822 051 30221	220R 5% 0,062W	3324	4822 051 30102	1k 5% 0,062W	3473	4822 051 30103	10k 5% 0,062W
3137	4822 051 30103	10k 5% 0,062W	3235	4822 051 30221	220R 5% 0,062W	3325	4822 051 30102	1k 5% 0,062W	3474	4822 051 30103	10k 5% 0,062W
3140	4822 117 12925	47k 1% 0,063W	3236	4822 051 30682	6k8 5% 0,062W	3326	4822 051 30102	1k 5% 0,062W	3480	4822 052 10478 ⚠	4R7 5% 0,33W
3142	4822 051 30332	3k3 5% 0,062W	3237	4822 051 30123	12k 5% 0,062W	3327	4822 051 30222	2k2 5% 0,062W	3481	4822 051 30472	4k7 5% 0,062W
3143	4822 117 12925	47k 1% 0,063W	3238	4822 052 10109 ⚠	10R 5% 0,33W	3328	4822 051 30102	1k 5% 0,062W	3482	4822 051 30562	5k6 5% 0,063W
3145	4822 051 30332	3k3 5% 0,062W	3239	4822 051 30103	10k 5% 0,062W	3329	4822 051 30102	1k 5% 0,062W	3483	4822 051 30472	4k7 5% 0,062W
3146	4822 117 12925	47k 1% 0,063W	3240	4822 117 12925	47k 1% 0,063W	3333	4822 051 30102	1k 5% 0,062W	3484	4822 051 30562	5k6 5% 0,063W
3147	4822 117 12925	47k 1% 0,063W	3243	4822 051 30222	2k2 5% 0,062W	3334	4822 051 30102	1k 5% 0,062W	4103	4822 051 30008	0R Jumper 0603
3148	4822 051 30332	3k3 5% 0,062W	3244	4822 051 30562	5k6 5% 0,063W	3335	4822 051 30102	1k 5% 0,062W	4104	4822 051 30008	0R Jumper 0603
3149	4822 051 30332	3k3 5% 0,062W	3245	4822 051 30562	5k6 5% 0,063W	3336	4822 051 30689	68R 5% 0,063W	4107	4822 051 30008	0R Jumper 0603
3150	4822 051 30102	1k 5% 0,062W	3250	4822 117 12925	47k 1% 0,063W	3337	4822 051 30102	1k 5% 0,062W	4116	4822 051 30008	0R Jumper 0603
3151	4822 051 30471	470R 5% 0,062W	3252	4822 051 30562	5k6 5% 0,063W	3338	4822 051 30102	1k 5% 0,062W	4193	4822 051 30008	0R Jumper 0603
3152	4822 117 12925	47k 1% 0,063W	3254	4822 117 12925	47k 1% 0,063W	3339	4822 051 30102	1k 5% 0,062W	4194	4822 051 30008	0R Jumper 0603
3153	4822 051 30222	2k2 5% 0,062W	3256	4822 051 30472	4k7 5% 0,062W	3340	4822 051 30223	22k 5% 0,062W	4196	4822 051 30008	0R Jumper 0603
3154	4822 117 12925	47k 1% 0,063W	3257	4822 051 30472	4k7 5% 0,062W	3342	4822 051 30102	1k 5% 0,062W	4197	4822 051 30008	0R Jumper 0603
3155	4822 051 30103	10k 5% 0,062W	3259	4822 117 12902	8k2 1% 0,063W	3343	4822 051 30682	6k8 5% 0,062W	4198	4822 051 30008	0R Jumper 0603
3156	4822 051 30222	2k2 5% 0,062W	3260	4822 051 30103	10k 5% 0,062W	3347	4822 051 30103	10k 5% 0,062W	4200	4822 051 30008	0R Jumper 0603
3157	4822 051 30102	1k 5% 0,062W	3261	4822 051 30103	10k 5% 0,062W	3349	4822 117 12902	8k2 1% 0,063W	4201	4822 051 30008	0R Jumper 0603
3158	4822 051 30471	470R 5% 0,062W	3262	4822 051 30102	1k 5% 0,062W	3355	4822 051 30681	680R 5% 0,062W	4205	4822 051 30008	0R Jumper 0603
3159	4822 117 12925	47k 1% 0,063W	3263	4822 051 30102	1k 5% 0,062W	3356	4822 051 30101	100R 5% 0,062W	4206	4822 051 30008	0R Jumper 0603
3160	4822 051 30102	1k 5% 0,062W	3265	4822 051 30471	470R 5% 0,062W	3357	4822 117 13632	100k 1% 0,062W	4209	4822 051 30008	0R Jumper 0603
3161	4822 051 30222	2k2 5% 0,062W	3268	4822 051 30102	1k 5% 0,062W	3359	4822 117 12925	47k 1% 0,063W	4330	4822 051 30008	0R Jumper 0603
3162	4822 051 30102	1k 5% 0,062W	3269	4822 051 30221	220R 5% 0,062W	3368	4822 051 30101	100R 5% 0,062W	4341	4822 051 30008	0R Jumper 0603
3163	4822 051 30332	3k3 5% 0,062W	3270	4822 051 30471	470R 5% 0,062W	3369	4822 051 30101	100R 5% 0,062W	4342	4822 051 30008	0R Jumper 0603
3164	4822 051 30332	3k3 5% 0,062W	3271	4822 051 30471	470R 5% 0,062W	3370	4822 051 30101	100R 5% 0,062W	4382	4822 051 30008	0R Jumper 0603
3165	4822 051 30332	3k3 5% 0,062W	3272	4822 051 30682	6k8 5% 0,062W	3411	4822 051 30271	270R 5% 0,062W	4400	4822 051 30008	0R Jumper 0603
3166	4822 051 30332	3k3 5% 0,062W	3273	4822 051 30103	10k 5% 0,062W	3424	4822 051 30689	68R 5% 0,063W	4404	4822 051 30008	0R Jumper 0603
3170	4822 117 12925	47k 1% 0,063W	3274	4822 051 30682	6k8 5% 0,062W	3425	4822 051 30689	68R 5% 0,063W	4409	4822 051 30008	0R Jumper 0603
3180	4822 051 30103	10k 5% 0,062W	3275	4822 051 30689	68R 5% 0,063W	3426	4822 051 30689	68R 5% 0,063W	4410	4822 051 30008	0R Jumper 0603
3182	4822 051 30103	10k 5% 0,062W	3276	4822 051 30102	1k 5% 0,062W	3427	4822 051 30689	68R 5% 0,063W	4411	4822 051 30008	0R Jumper 0603
3183	4822 051 30103	10k 5% 0,062W	3277	4822 117 12925	47k 1% 0,063W	3431	4822 051 30101	100R 5% 0,062W	4412	4822 051 30008	0R Jumper 0603
3200	4822 117 13632	100k 1% 0,062W	3290	4822 052 10108 ⚠	1R 5% 0,33W	3432	4822 117 11817	1k2 1% 0,062W	4414	4822 051 30008	0R Jumper 0603
3201	4822 117 13632	100k 1% 0,062W	3302	4822 051 30223	22k 5% 0,062W	3434	4822 051 30101	100R 5% 0,062W	4415	4822 051 30008	0R Jumper 0603
3202	4822 051 30103	10k 5% 0,062W	3303	4822 117 11817	1k2 1% 0,062W	3435	4822 117 11817	1k2 1% 0,062W	4416	4822 051 30008	0R Jumper 0603
3203	4822 051 30103	10k 5% 0,062W	3304	4822 051 30222	2k2 5% 0,062W	3438	4822 117 11817	1k2 1% 0,062W	4421	4822 051 30008	0R Jumper 0603

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ELECTRICAL PARTS LIST - AV BOARD

RESISTORS

4428	4822 051 30008	0R Jumper 0603
4500	4822 051 30008	0R Jumper 0603
4501	4822 051 30008	0R Jumper 0603
4502	4822 051 30008	0R Jumper 0603
4503	4822 051 30008	0R Jumper 0603
4504	4822 051 30008	0R Jumper 0603
4505	4822 051 30008	0R Jumper 0603
4506	4822 051 30008	0R Jumper 0603
4507	4822 051 30008	0R Jumper 0603
4508	4822 051 30008	0R Jumper 0603
4510	4822 051 30008	0R Jumper 0603
4511	4822 051 30008	0R Jumper 0603
4512	4822 051 30008	0R Jumper 0603
4513	4822 051 30008	0R Jumper 0603
4514	4822 051 30008	0R Jumper 0603
4515	4822 051 30008	0R Jumper 0603
4516	4822 051 30008	0R Jumper 0603
4517	4822 051 30008	0R Jumper 0603
4518	4822 051 30008	0R Jumper 0603
4519	4822 051 30008	0R Jumper 0603
4520	4822 051 30008	0R Jumper 0603
4521	4822 051 30008	0R Jumper 0603
4522	4822 051 30008	0R Jumper 0603
4523	4822 051 30008	0R Jumper 0603
4524	4822 051 30008	0R Jumper 0603
4525	4822 051 30008	0R Jumper 0603
4527	4822 051 30008	0R Jumper 0603
4528	4822 051 30008	0R Jumper 0603
4529	4822 051 30008	0R Jumper 0603
4530	4822 051 30008	0R Jumper 0603
4531	4822 051 30008	0R Jumper 0603
4532	4822 051 30008	0R Jumper 0603
4533	4822 051 30008	0R Jumper 0603
4534	4822 051 30008	0R Jumper 0603
4535	4822 051 30008	0R Jumper 0603
4537	4822 051 30008	0R Jumper 0603
4538	4822 051 30008	0R Jumper 0603
4539	4822 051 30008	0R Jumper 0603
4540	4822 051 30008	0R Jumper 0603
4541	4822 051 30008	0R Jumper 0603
4542	4822 051 30008	0R Jumper 0603
4543	4822 051 30008	0R Jumper 0603
4544	4822 051 30008	0R Jumper 0603
4545	4822 051 30008	0R Jumper 0603
4546	4822 051 30008	0R Jumper 0603
4548	4822 051 30008	0R Jumper 0603
4549	4822 051 30008	0R Jumper 0603
4550	4822 051 30008	0R Jumper 0603
4551	4822 051 30008	0R Jumper 0603
4552	4822 051 30008	0R Jumper 0603
4553	4822 051 30008	0R Jumper 0603
4554	4822 051 30008	0R Jumper 0603
4555	4822 051 30008	0R Jumper 0603
4556	4822 051 30008	0R Jumper 0603
4557	4822 051 30008	0R Jumper 0603
4558	4822 051 30008	0R Jumper 0603
4559	4822 051 30008	0R Jumper 0603
4560	4822 051 30008	0R Jumper 0603
4561	4822 051 30008	0R Jumper 0603
4562	4822 051 30008	0R Jumper 0603
4563	4822 051 30008	0R Jumper 0603
4564	4822 051 30008	0R Jumper 0603
4565	4822 051 30008	0R Jumper 0603
4566	4822 051 30008	0R Jumper 0603
4570	4822 051 30008	0R Jumper 0603
4571	4822 051 30008	0R Jumper 0603
4572	4822 051 30008	0R Jumper 0603
4573	4822 051 30008	0R Jumper 0603
4574	4822 051 30008	0R Jumper 0603
4575	4822 051 30008	0R Jumper 0603
4579	4822 051 30008	0R Jumper 0603
4585	4822 051 30008	0R Jumper 0603
4593	4822 051 30008	0R Jumper 0603
4598	4822 051 30008	0R Jumper 0603
4653	4822 051 30008	0R 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%
5407	4822 157 10586	Coil 2,2uH 10%

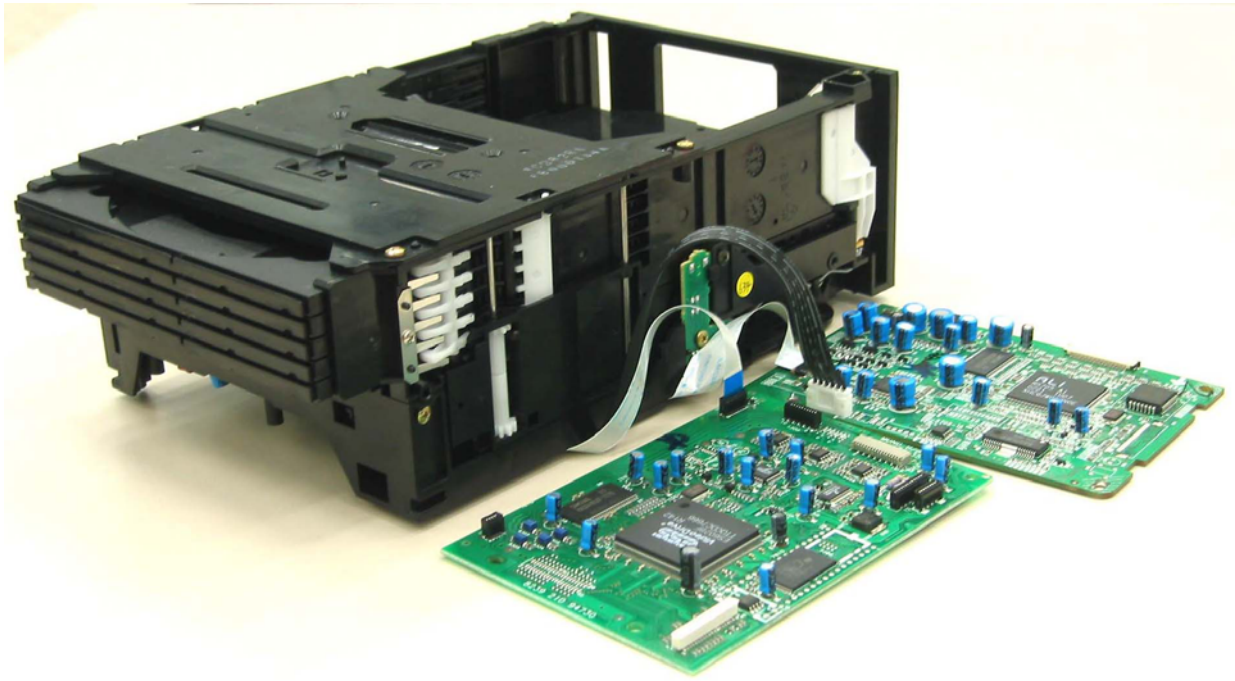
DIODES

6101	9337 12920673	BZX79-C11
6123	9340 548 61115	BZX384-C12
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
7101	4822 130 60373	BC857B
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 only for Prod start up
	9322 196 61687	BD242 running chang over
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

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



5DTC MODULE

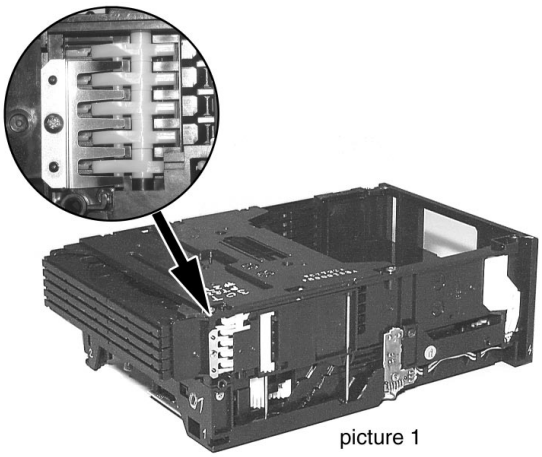
(DVD Version)

TABLE OF CONTENTS

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

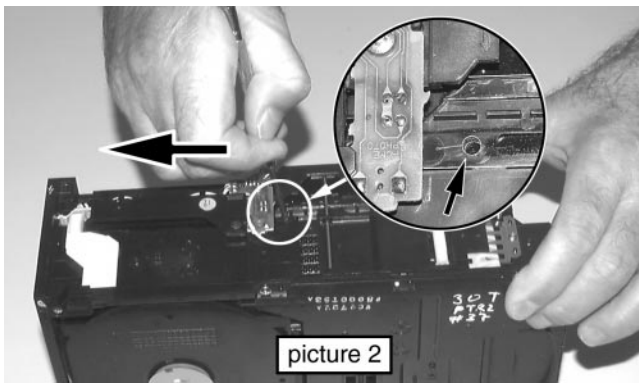
Emergency opening of the trays

The trays of the 5DTC are mechanically locked.

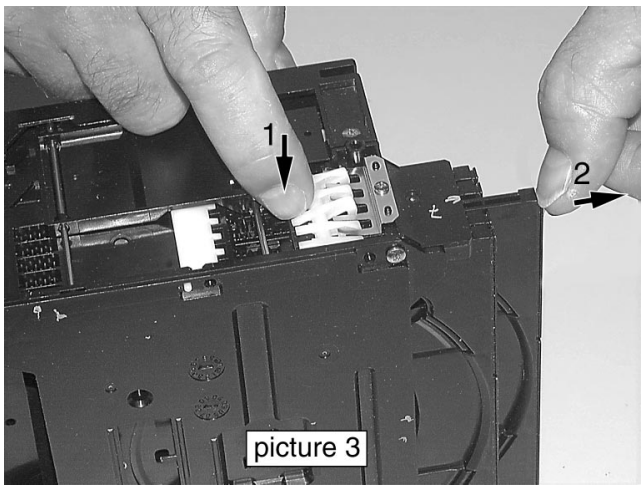


picture 1

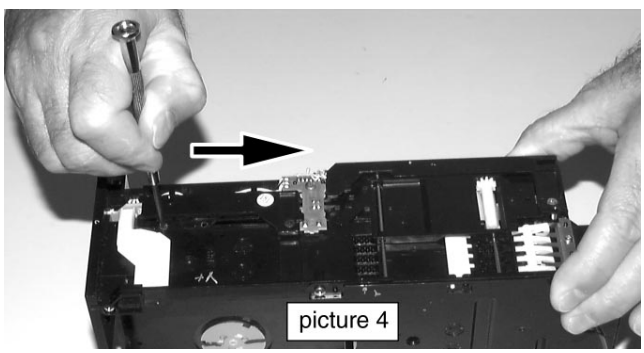
To open tray 1, 2 and 3 move lever (pos 29) backwards (e.g. with a screwdriver - see picture 2) to its endposition.



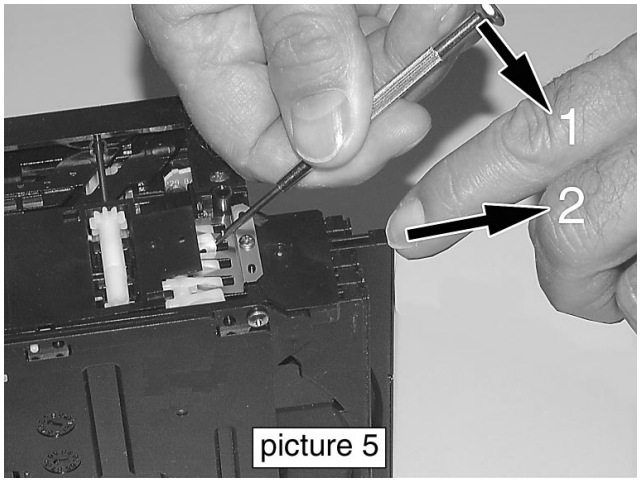
Release the locking mechanism and pull out the tray (see picture 3).



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

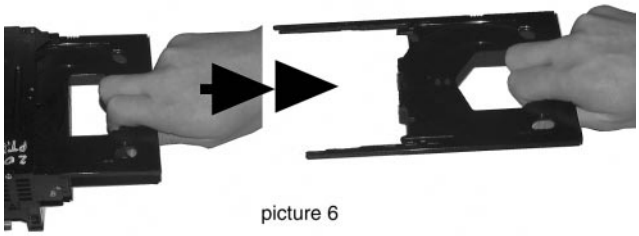


Release snap as shown in picture 5 and pull tray out.



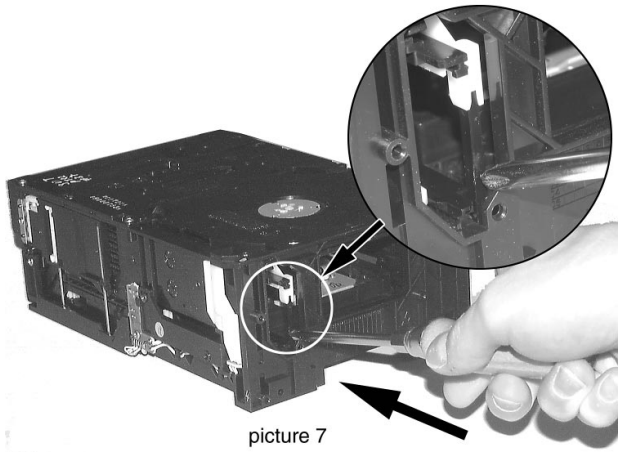
To remove a CD from Play Position perform following steps:

1. Open tray 1 as described before.
2. Tear the tray out with speed (see picture 6). The tray can be inserted aftewards 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).

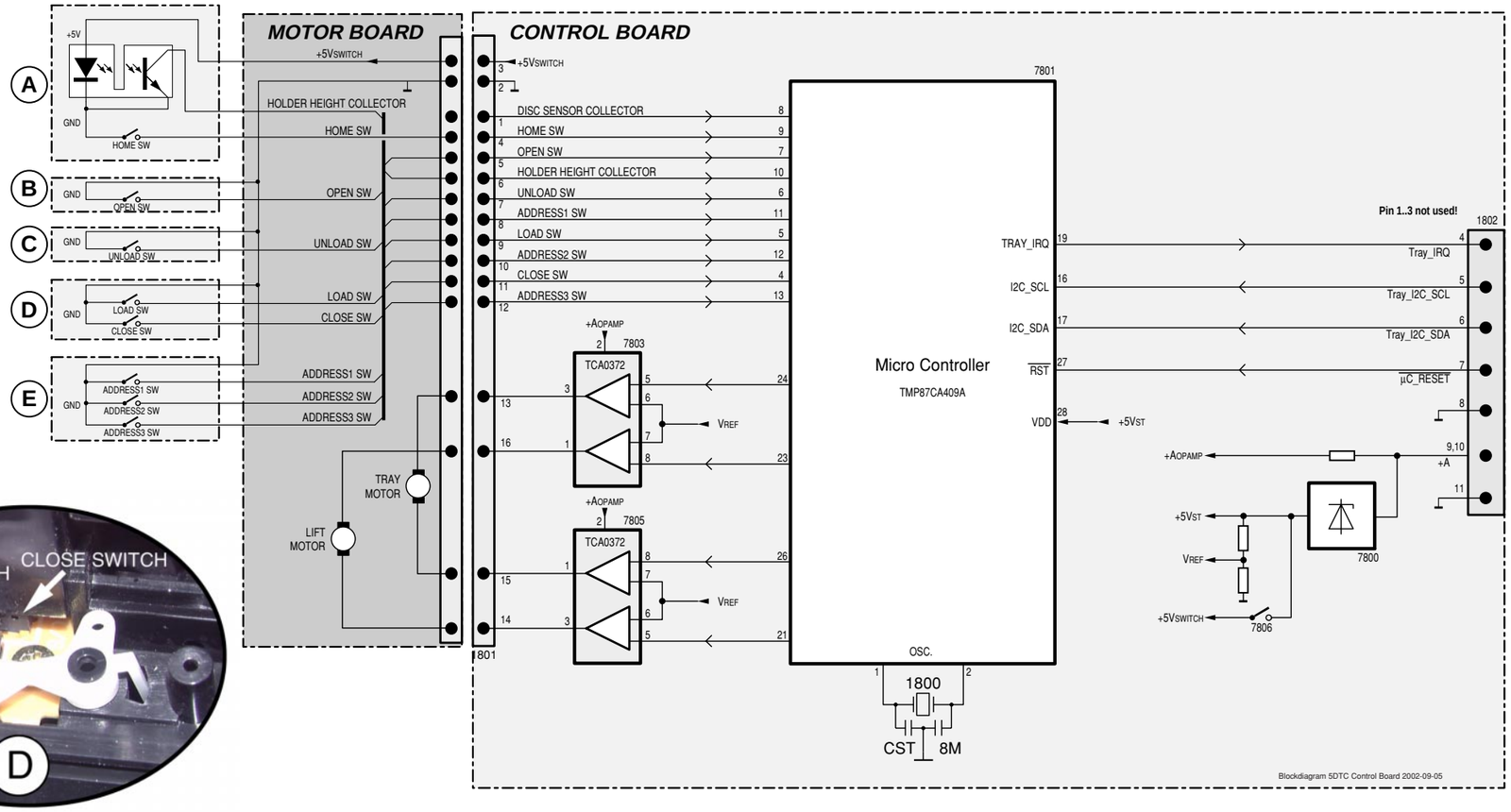


picture 7

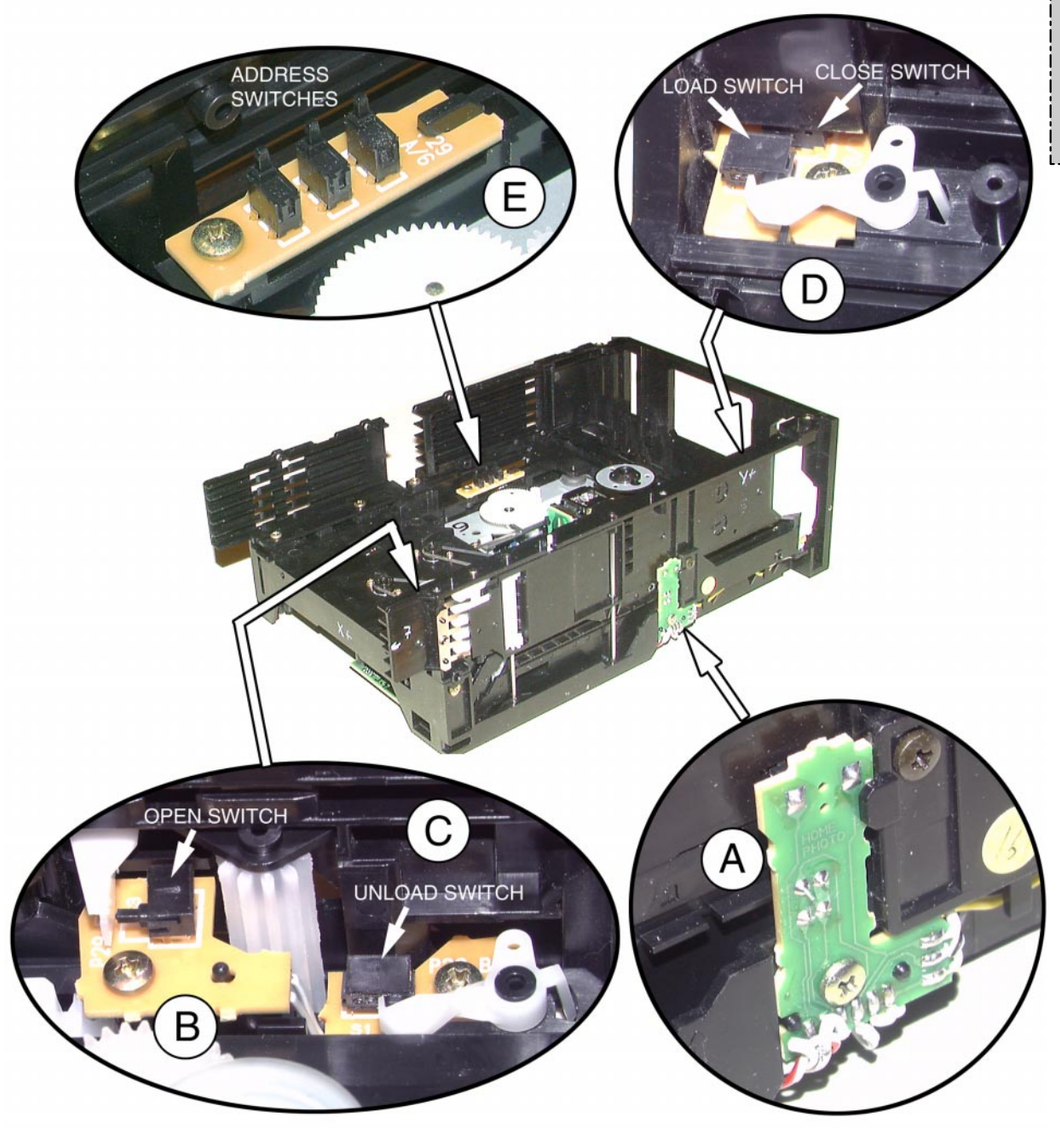
5. Remove CD.

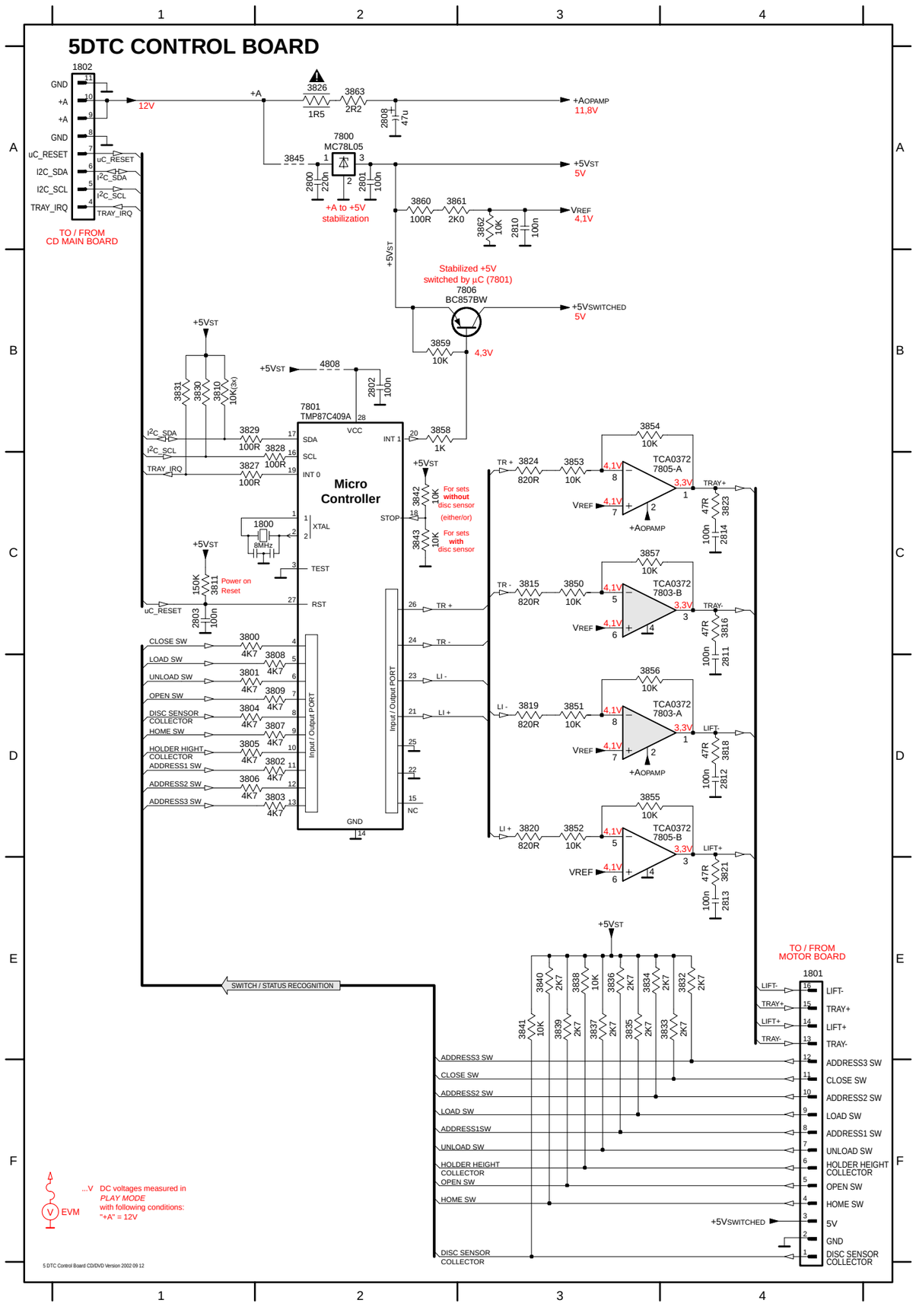
10-3

Blockdiagram



Location of switches



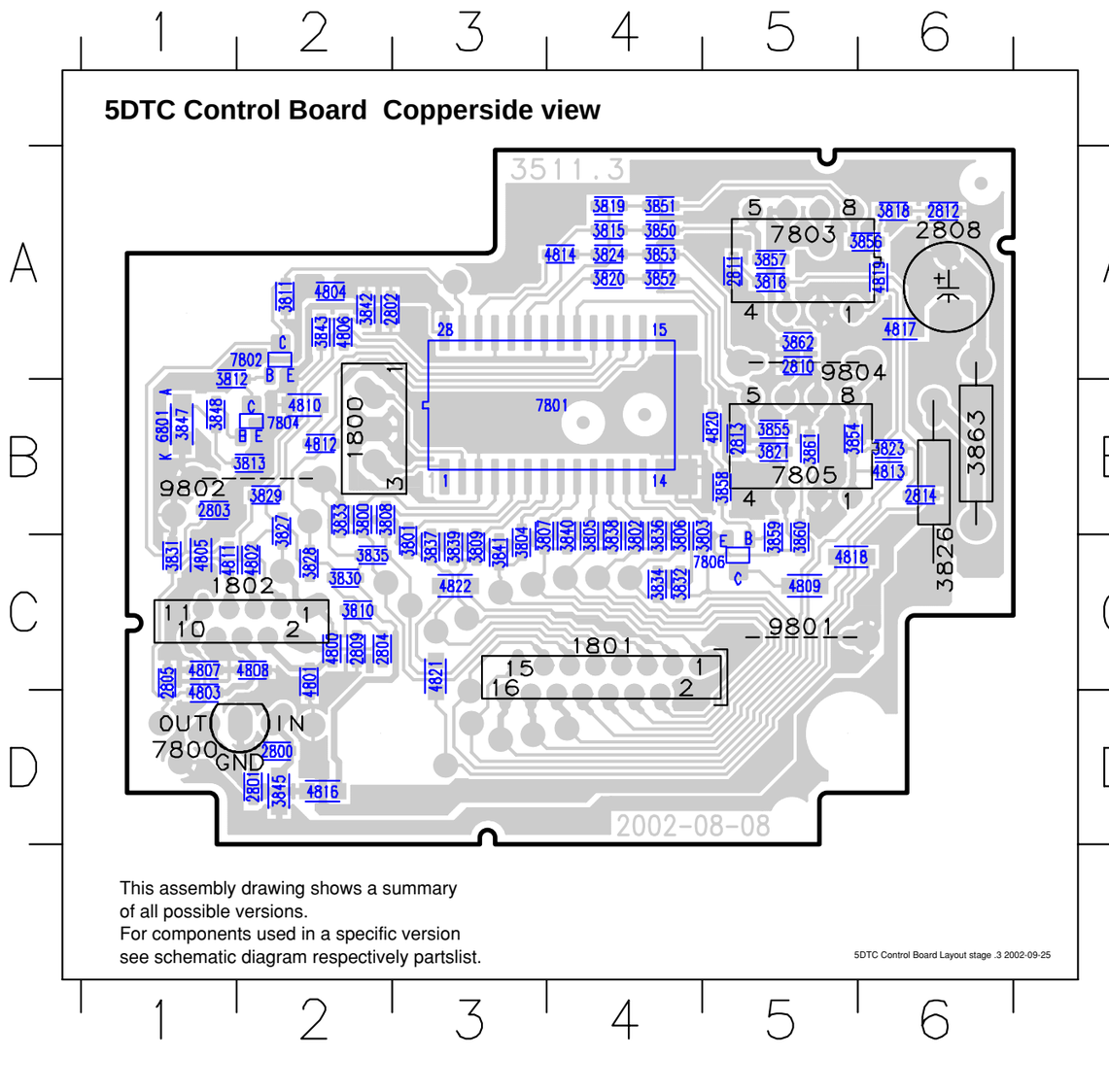


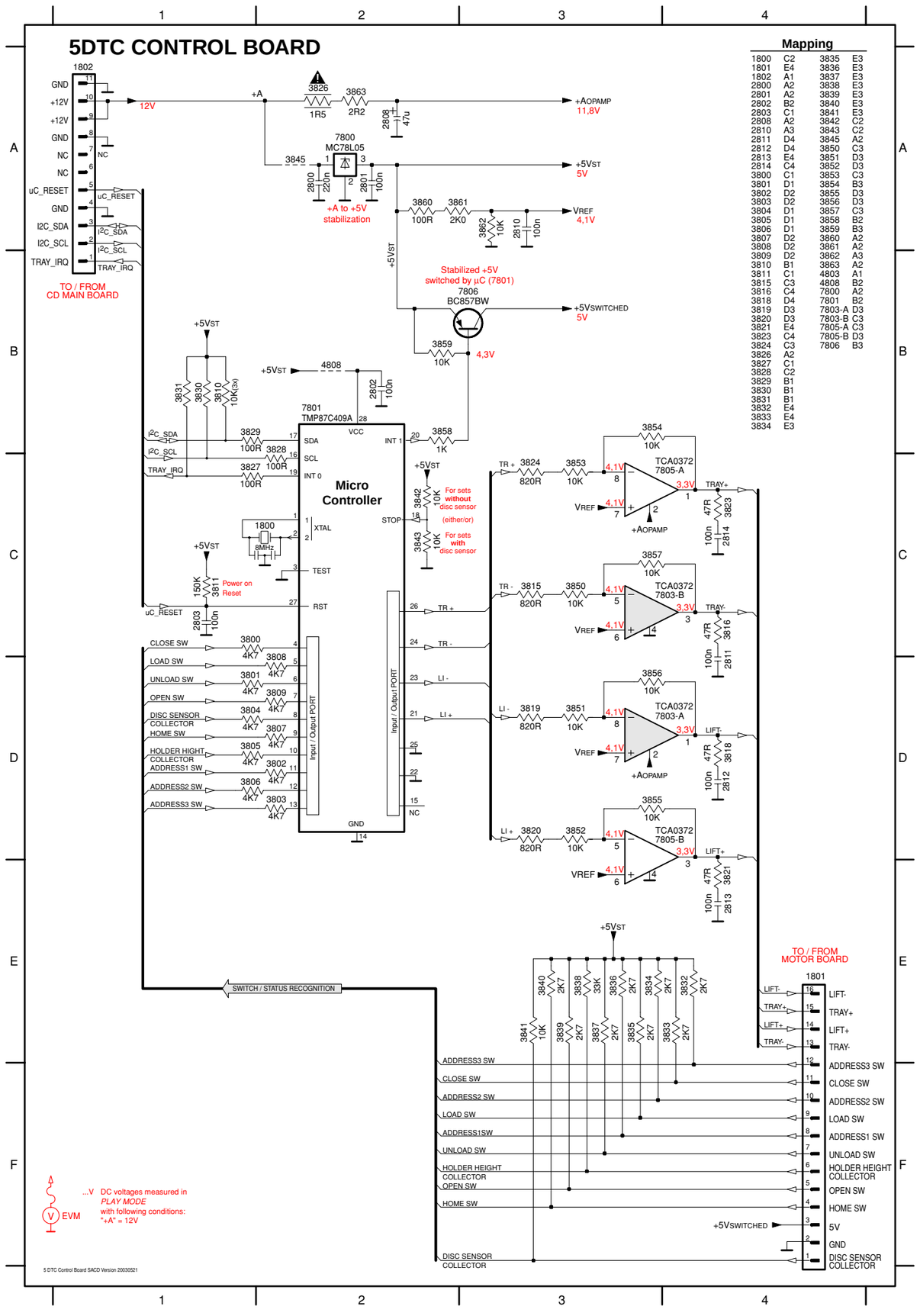
Mapping for Circuit Diagram

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		





Mapping

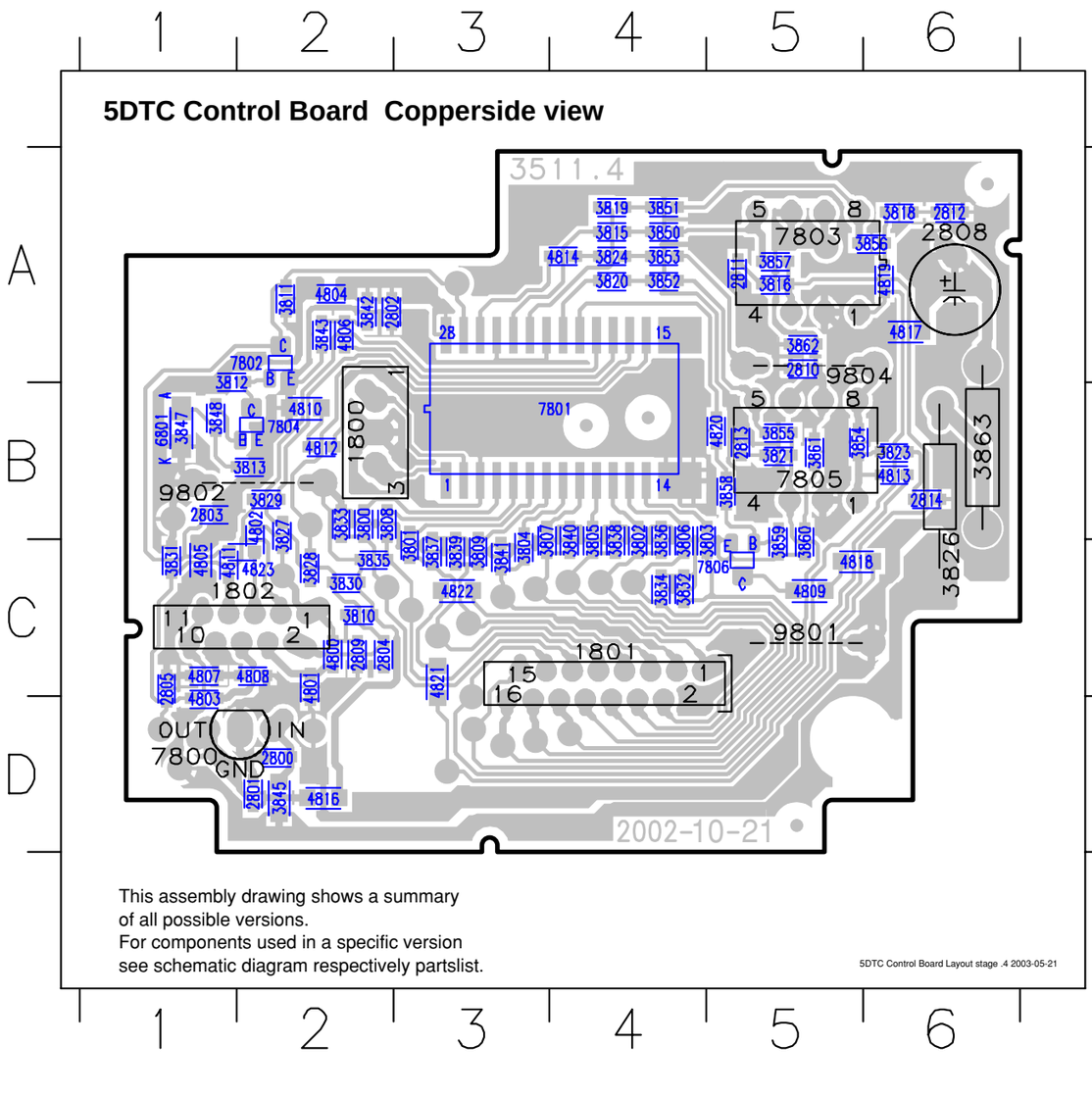
1800	C2	3835	E3														
1801	E4	3836	E3														
1802	A1	3837	E3														
2800	A2	3838	E3														
2801	A2	3839	E3														
2802	B2	3840	E3														
2803	C1	3841	E3														
2808	A2	3842	C2														
2810	A3	3843	C2														
2811	D4	3845	A2														
2812	D4	3850	C3														
2813	E4	3851	D3														
2814	C4	3852	D3														
3800	C1	3853	C3														
3801	D1	3854	B3														
3802	D2	3855	D3														
3803	D2	3856	D3														
3804	D1	3857	C3														
3805	D1	3858	B2														
3806	D1	3859	B3														
3807	D2	3860	A2														
3808	D2	3861	A2														
3809	D2	3862	A3														
3810	B1	3863	A2														
3811	C1	4803	A1														
3815	C3	4808	B2														
3816	C4	7800	A2														
3818	D4	7801	B2														
3819	D3	7803-A	D3														
3820	D3	7803-B	C3														
3821	E4	7805-A	C3														
3823	C4	7805-B	D3														
3824	C3	7806	B3														
3826	A2																
3827	C1																
3828	C2																
3829	B1																
3830	B1																
3831	B1																
3832	E4																
3833	E4																
3834	E3																

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	7802	A2
1801	C4	2811	A5	3807	C3	3820	A4	3833	B2	3845	D2	3858	B5	4805	C1	4817	A6	7803	A5
1802	C2	2812	A6	3808	B2	3821	B5	3834	C4	3847	B1	3859	C5	4806	A2	4818	C5	7804	B2
2800	D2	2813	B5	3809	C3	3823	B6	3835	C2	3848	B1	3860	C5	4807	C1	4819	A6	7806	C5
2801	D2	2814	B6	3810	C2	3824	A4	3836	C4	3850	A4	3861	B5	4808	C2	4820	B5	9801	C5
2802	A2	3800	B2	3811	A2	3826	B6	3837	C3	3851	A4	3862	A5	4809	C5	4821	C3	9802	B2
2803	B1	3801	C3	3812	A1	3827	B2	3838	C4	3852	A4	3863	B6	4810	B2	4822	C3	9804	A5
2804	C2	3802	C4	3813	B2	3828	C2	3839	C3	3853	A4	4800	C2	4811	C1	4823	B1		
2805	C1	3803	C4	3815	A4	3829	B2	3840	C4	3854	B5	4801	C2	4812	B2	6801	B1		
2808	A6	3804	C3	3816	A5	3830	C2	3841	C3	3855	B5	4802	C2	4813	B6	7800	D2		
2809	C2	3805	C4	3818	A6	3831	C1	3842	A2	3856	A6	4803	D1	4814	A4	7801	B4		

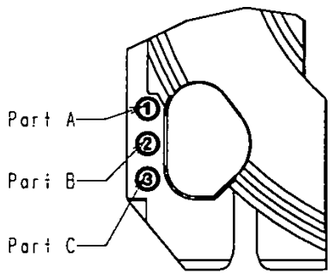


10-5

Exploded view 5DTC mechanic - for orientation only

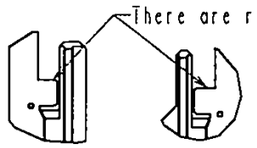
Sketch-1

TRAY(SUB)	③	⑬	⑭	⑮	⑯
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

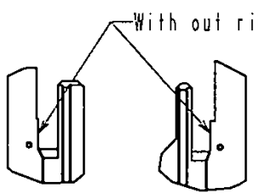


Sketch-2

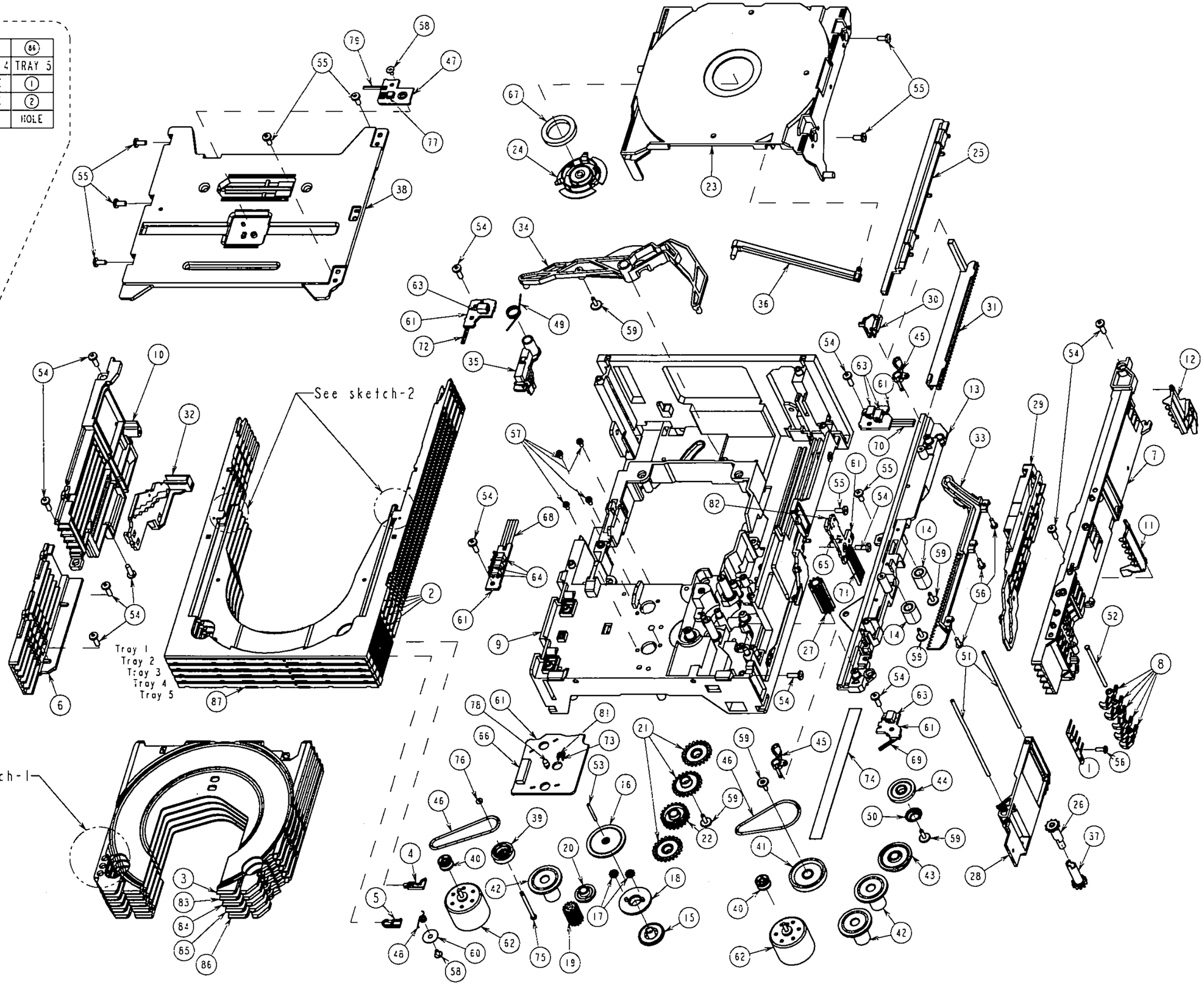
TRAY(MAIN)



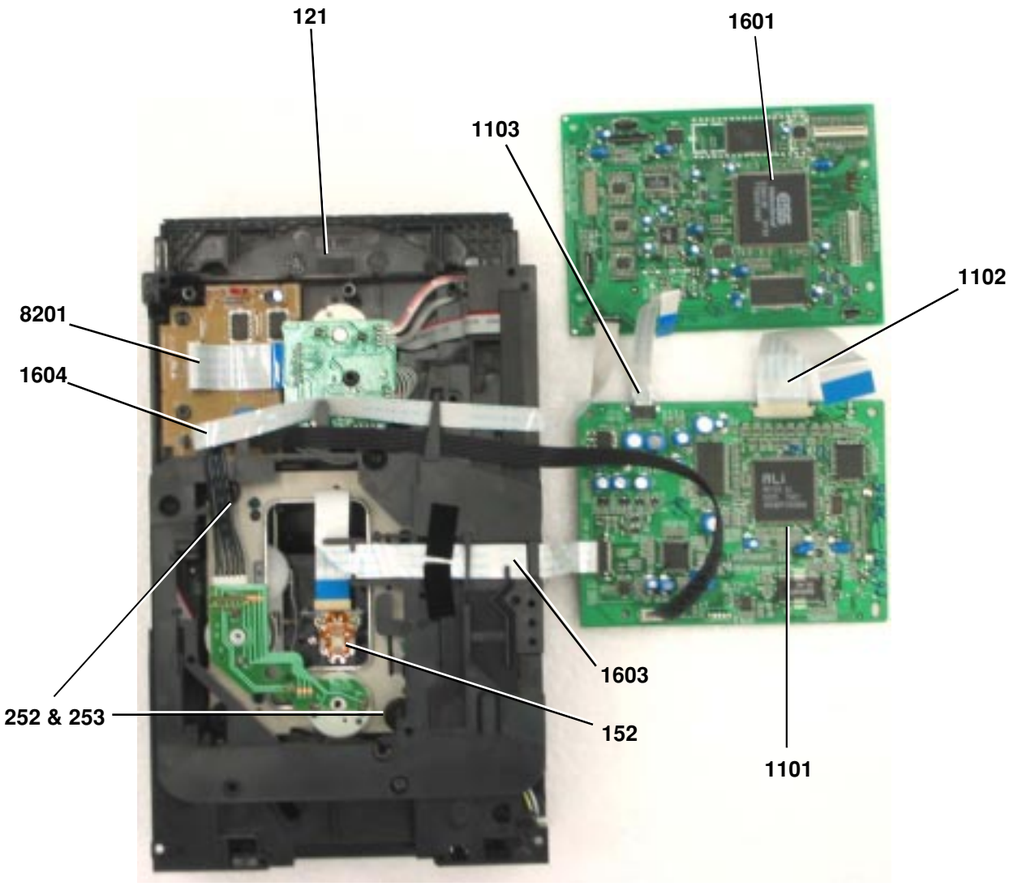
② TRAY 1~4



⑰ TRAY 5



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

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

Notes:

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

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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	2238 586 59812	100nF 10% 50V
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 117 12148	1R5 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 30333	33k 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 20008	0R Jumper 0805
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	0R Jumper 0603
4802	4822 051 30008	0R Jumper 0603
4803	4822 051 30008	0R Jumper 0603
4804	4822 051 30008	0R Jumper 0603
4805	4822 051 20008	0R Jumper 0805
4806	4822 051 30008	0R Jumper 0603
4807	4822 051 30008	0R Jumper 0603
4808	4822 051 30008	0R Jumper 0603
4809	4822 051 20008	0R Jumper 0805
4810	4822 051 20008	0R Jumper 0805
4811	4822 051 30008	0R Jumper 0603
4812	4822 051 30008	0R Jumper 0603
4813	4822 051 30008	0R Jumper 0603
4814	4822 051 30008	0R Jumper 0603
4816	4822 051 20008	0R Jumper 0805
4817	4822 051 20008	0R Jumper 0805
4818	4822 051 20008	0R Jumper 0805
4819	4822 051 30008	0R Jumper 0603
4820	4822 051 30008	0R Jumper 0603
4821	4822 051 20008	0R Jumper 0805
4822	4822 051 20008	0R Jumper 0805

TRANSISTORS & INTEGRATED CIRCUITS

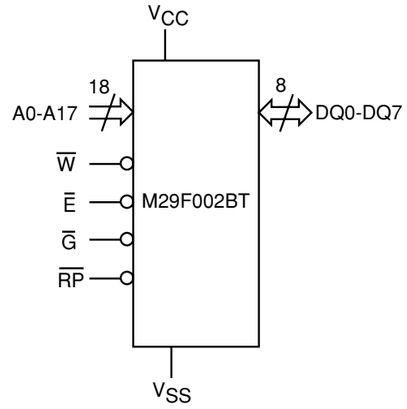
7800	4822 209 72042	MC78L05ACP, Stabilizer
7801	9322 150 41668	TMP87P809M Microcontroller
7803	4822 209 62059	TCA0372DP1, 2-Fold Op-Amp.
7805	4822 209 62059	TCA0372DP1, 2-Fold Op-Amp.
7806	3198 010 42320	BC857BW

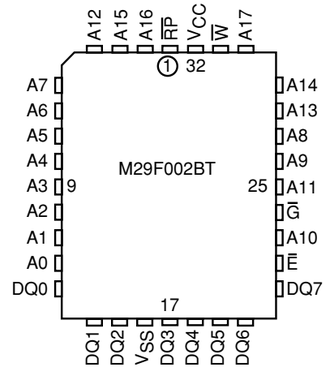
Note: Only the parts mentioned in this list are normal service spare parts.

MONO-FE BOARD

TABLE OF CONTENTS

M29F002BT





Function Description

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

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 quadrule 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

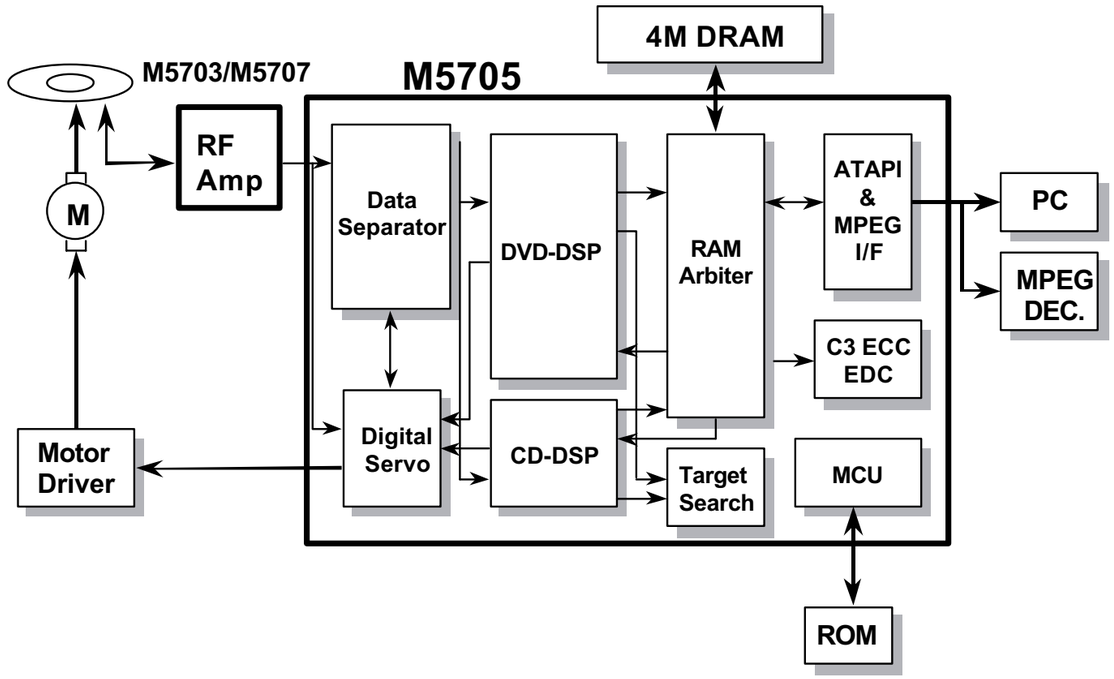
- Supports ATA PIO mode 4 timing
- Supports Multiword DMA mode 2 timing
- Compliant with SFF-8020(ATAPI) 2.5, ATA 3(Overlapping feature), and SFF-8090 (ATAPI for DVD) standard
- High current drivers with slew rate control for direct connecting to the ATA bus and noise immunity.
- Automatic Read Control 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

11-2

M5705 (Ali) Application



11-3

M5705 Pins Descriptions

Pin Name	Pin No.	Type	Description
Servo Data Slicer Interface Pins			
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.
Servo DAC Interface Pins			
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.
Servo Comparator Interface Pins			
XSRFRPLP	17	I / A	High bandwidth low pass filter input for RFRP.
XSTELP	18	I / A	High bandwidth low pass filter input for TE.
Servo ADC Interface Pins			
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.
Servo PLL Interface Pins			
XSPDIREF	166	I / A	Phase detector reference current generator. Connect a resistor between this pin and ground to set reference current.
XSFDIREF	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.
Servo Control Interface Pins			
XSDFCT	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
Microcontroller Interface Pins			
XGPIO[2:0]	48,51,5 2	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	***This pin is now changed to be NC.***
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.
Miscellaneous Pins			
XTPLCK	163	I/O	**PLCK test pin.**
XTSLRF	164	I/O	**SLRF test pin**.
XOSC1	59	I	**Crystal input/ System clock**. The input frequency from outside crystal or oscillator is 33.8688Mhz.
XOSC2	60	O	**Crystal output.**
XCRSTJ	53	I	**Chip Reset**. 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.

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M5705 Pins Descriptions

Pin Name	Pin No.	Type	Description
Host Interface Pins			
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	**1. DMA request**. 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. **2. MPEG acknowledge**. This pin is used as the ACKJ signal when MPEG interface mode is selected.
XHDACKJ	101	I	**1. DMA acknowledge**. This pin is configured as DACKJ, and is used as the DMA acknowledge signal during DMA data transfers. **2. MPEG request**. This pin is used as the REQ signal when MPEG interface mode is selected.
XHCS16J	99	O	**1. 16-bit data select**. This signal indicates that a 16-bit data transfer is active on the host data bus. This pin is open-drain tri-state output. **2. MPEG clock**. This pin is used as the CLOCK signal when MPEG interface mode is selected.
XHRSTJ	50	I	**Host Reset.** The reset of ATA bus
XHINT	100	O	**1. Host interrupt request**. This tri-state pin is the host interrupt request, and is asserted to indicate to the host that the controller needs attention. **2. MPEG begin**. 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 Present signal, 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	**1. I/O channel ready**. 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. **2. MPEG error**. This pin is used as the ERROR signal when MPEG interface mode is selected.
XHA[2:0]	95, 98, 96	I	**Host address lines**. 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	**1. Host data bus**. This bus is used to transfer data and status between the host and the controller. **2. MPEG data bus 7-0**. The HD[7:0] are used as the DATA[7:0] when MPEG interface mode is selected. **3. VCD I/F.** 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

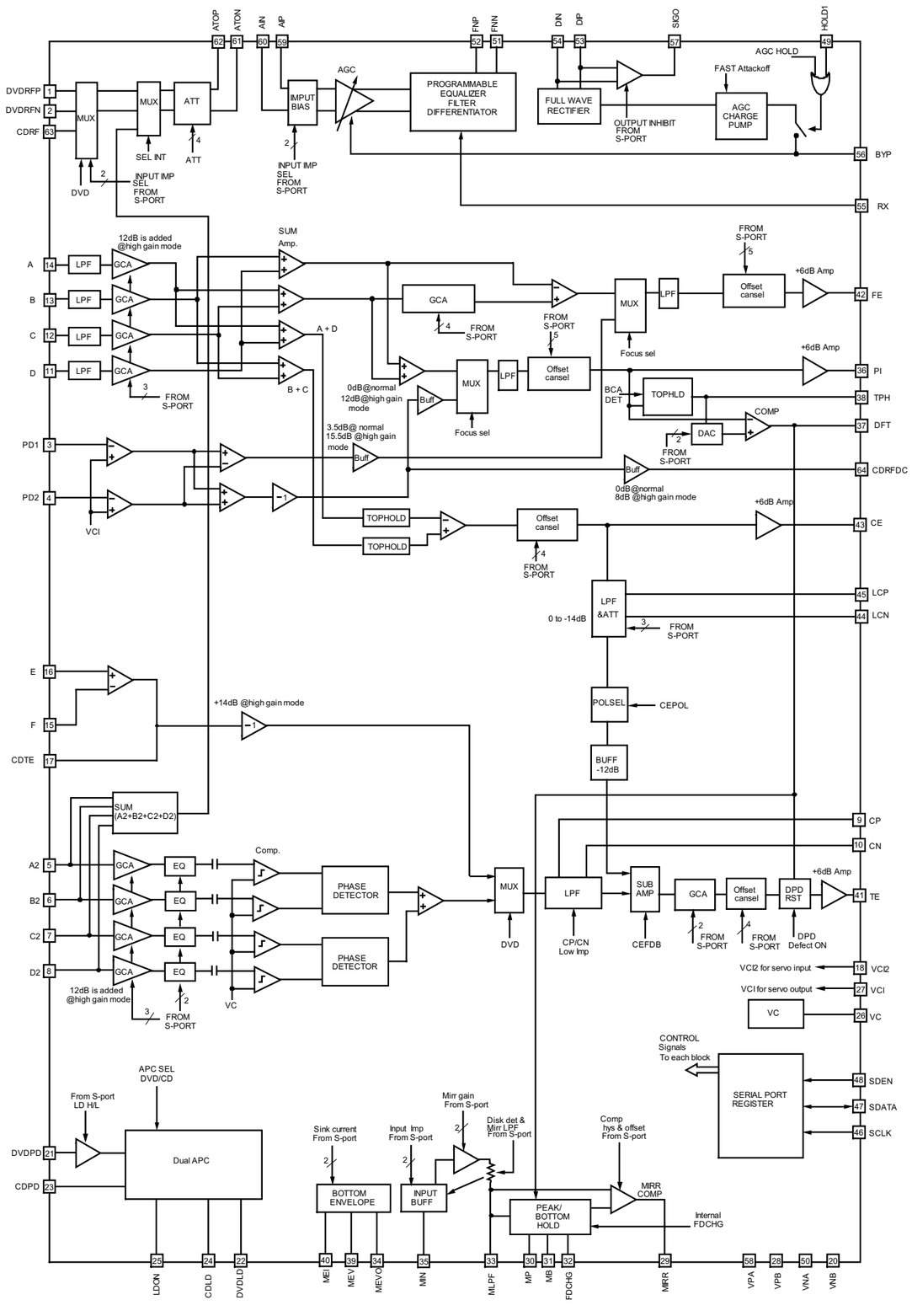
Pin Name	Pin No.	Type	Description
RAM Interface Pins			
XRSDCLK	143	O	This signal is the clock output for SDRAM.
XROEJ	147	O	This signal is used as the memory output enable for external DRAM buffers. After RSTJ is asserted, this signal will be low.
XRWEJ	142	O	This signal is asserted low when a buffer 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	**1. RAM address lines**. These are bits 11-0 for addressing the buffer memory. **2. Hardware setting**. 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
Power Pins		
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.

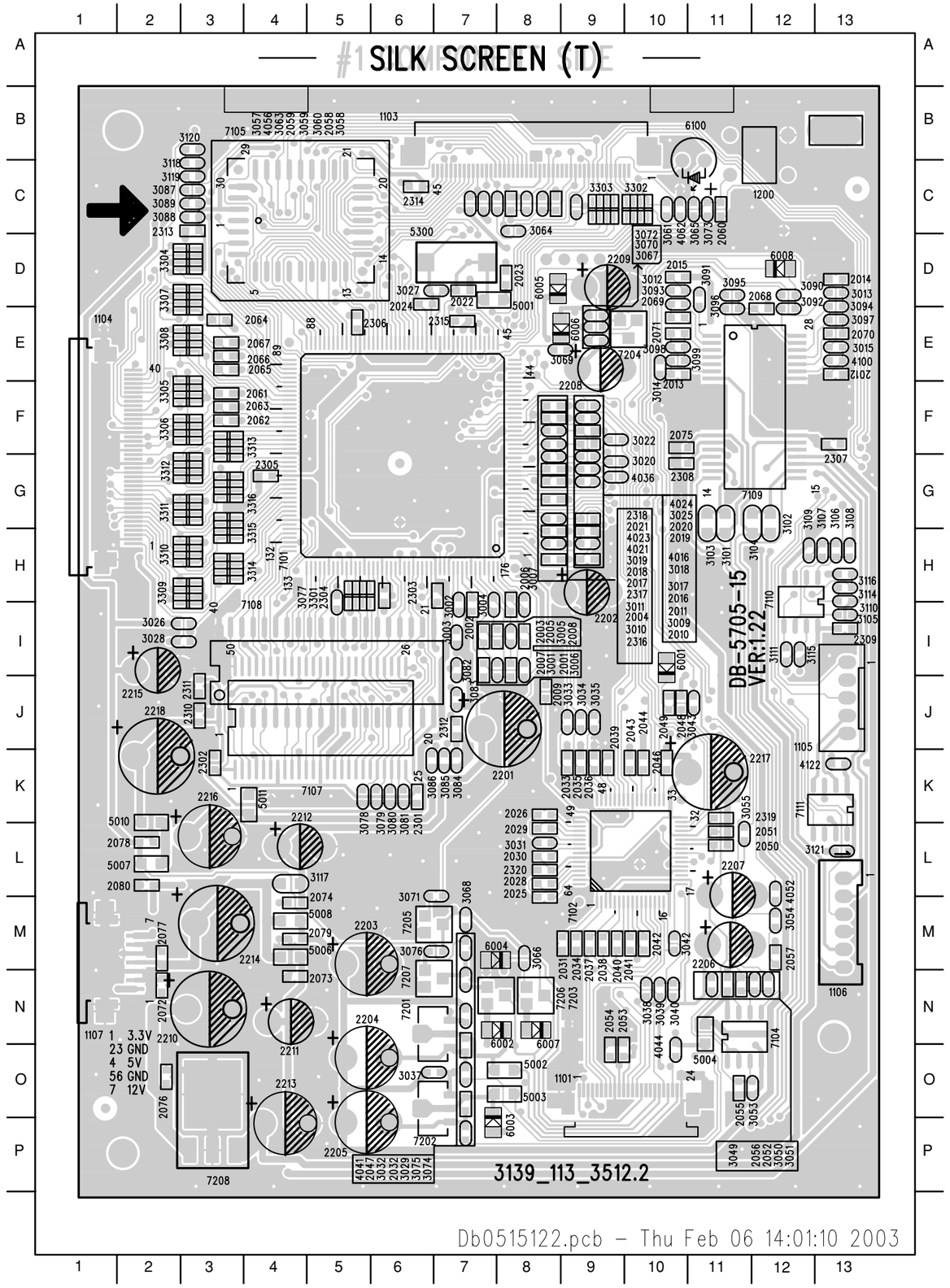
11-5

SP32721A Internal Block Diagram



11-6

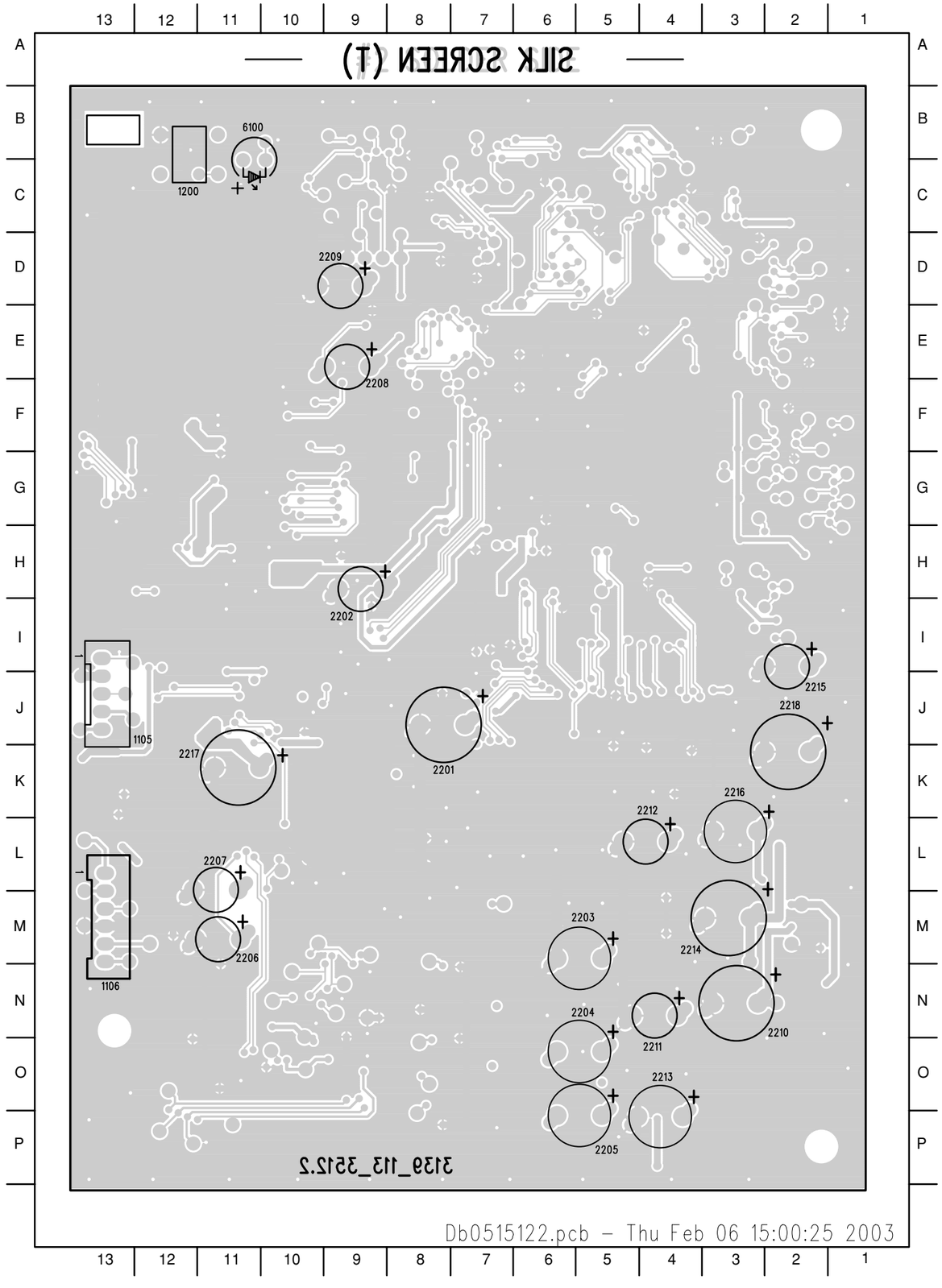
TOP VIEW - SMD & COMPONENT LAYOUT



1101 O9
1102 C9
1103 B8
1104 F2
1105 I13
1106 M13
1107 M2
1200 B11
2001 I8
2002 H7
2003 I7
2004 G8
2005 I8
2006 H8
2007 I7
2008 I8
2009 I8
2010 G9
2011 G9
2012 E12
2013 E10
2014 D12
2015 C10
2016 G9
2017 F8
2018 F8
2019 F9
2020 F9
2021 E8
2022 D7
2023 D8
2024 D7
2025 L8
2026 K8
2028 L8
2029 K8
2030 L8
2031 M8
2032 N7
2033 J9
2034 M9
2035 J9
2036 J9
2037 M9
2038 M9
2039 J9
2040 M9
2041 M9
2042 M10
2043 J9
2044 J10
2046 J10
2047 O7
2048 J10
2049 J10
2050 L11
2051 K11
2052 M11
2053 N9
2054 N9
2055 O11
2056 M11
2057 M12
2058 B8
2059 B8
2060 C11
2061 E4
2062 F4
2063 E4
2064 D4
2065 E4
2066 E4
2067 D4
2068 D11
2069 D10
2070 D12
2071 D10
2072 M3
2073 M5
2074 L5
2075 F10
2076 O3
2077 M3
2078 K2
2079 M5
2080 L2
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
2301 K6
2302 J3
2303 H7
2304 H6
2305 F4
2306 D6
2307 F12
2308 F10
2309 H13
2310 J3
2311 I3
2312 J7
2313 C3
2314 B6
2315 D7
2316 G8
2317 G8
2318 E8
2319 K11
2320 L8
3001 I8
3002 H7
3003 I7
3004 H7
3005 I8
3006 I8
3007 H8
3009 G9
3010 G8
3011 G8
3012 D10
3013 D12
3014 E10
3015 D12
3017 F9
3018 F9
3019 F8
3020 F9
3022 F9
3025 E9
3026 H3
3027 D7
3028 I3
3029 N7
3031 K8
3032 O7
3033 J9
3034 J9
3035 J9
3037 O7
3038 N10
3039 N10
3040 N10
3042 M10
3043 J10
3049 M11
3050 M11
3051 M11
3053 O11
3054 M12
3055 K11
3057 B7
3058 C9
3059 B8
3060 B8
3061 C10
3063 B8
3064 C8
3065 C10
3066 M8
3067 D9
3068 M7
3069 E8
3070 D9
3071 L7
3072 D9
3073 C11
3074 M7
3075 M7
3076 M7
3077 H5
3078 K6
3079 K6
3080 K6
3081 K6
3082 I7
3083 I7
3084 J7
3085 J7
3086 J7
3087 B3
3088 C3
3089 B3
3090 D12
3091 D10
3092 D12
3093 D10
3094 D12
3095 D11
3096 D11
3097 D12
3098 D10
3099 E10
3101 G11
3102 G11
3103 G11
3104 G11
3105 H13
3106 G12
3107 G12
3108 G13
3109 G12
3110 H13
3111 I12
3114 H13
3115 I12
3116 H13
3117 L5
3118 B3
3119 B3
3120 B3
3121 L13
3301 H6
3302 C10
3303 C9
3304 C3
3305 E3
3306 F3
3307 D3
3308 D3
3309 H3
3310 G3
3311 G3
3312 F3
3313 F4
3314 H4
3315 G4
3316 F4
4016 F9
4021 F8
4023 F8
4024 E9
4036 F9
4041 P7
4044 N10
4052 L12
4056 B7
4062 C10
4100 E12
4122 J12
5001 D7
5002 O8
5003 O8
5004 N11
5006 M5
5007 L3
5008 M5
5010 K3
5011 K4
5300 C7
6001 I10
6002 N8
6003 O7
6004 M8
6005 D8
6006 D8
6007 N8
6008 C12
6100 B10
7101 F6
7102 L9
7104 N11
7105 C5
7107 J5
7108 I5
7109 E11
7110 H12
7111 K12
7201 N7
7202 O7
7203 N8
7204 D9
7205 M7
7206 N8
7207 M7
7208 O3

11-7

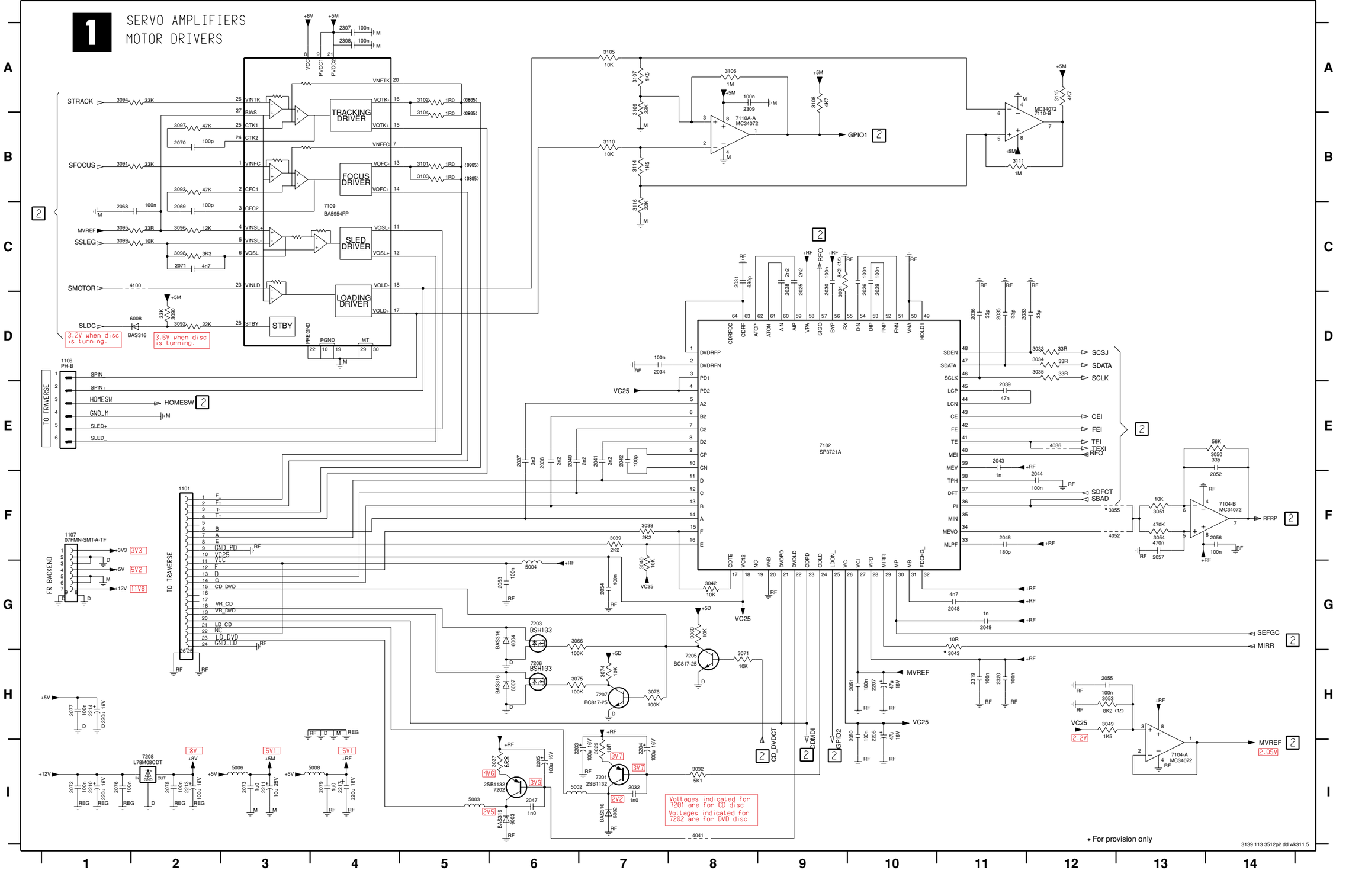
BOTTOM VIEW - COMPONENT LAYOUT



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

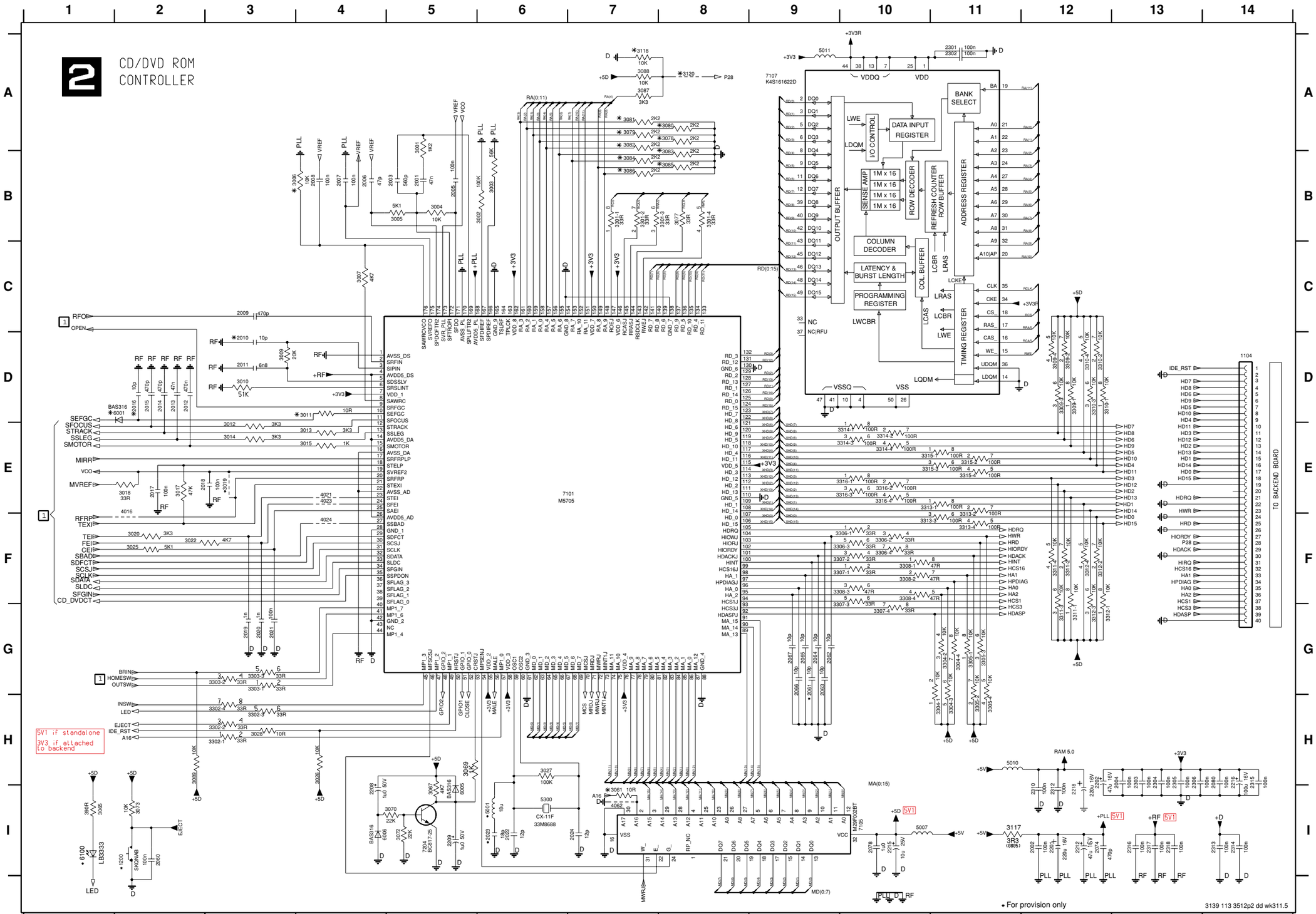
11-8

SERVO AMPLIFIERS & MOTOR DRIVERS CIRCUIT



11-9

CD/DVD ROM CONTROLLER CIRCUIT



1104 D14	3304-1 G11
1200 I2	3304-2 G11
2001 B5	3304-3 G11
2002 I12	3304-4 G11
2003 B5	3305-1 G11
2004 H13	3305-2 H11
2005 B5	3305-3 G11
2006 B4	3305-4 H11
2007 B4	3306-1 F10
2008 B4	3306-2 F10
2009 C3	3306-3 F10
2010 D3	3306-4 F10
2011 D3	3307-1 F10
2012 D2	3307-2 F10
2013 D2	3307-3 G10
2014 D2	3307-4 G10
2015 D2	3308-1 F10
2016 D2	3308-2 F10
2017 E2	3308-3 F10
2018 E2	3308-4 F10
2019 G3	3309-1 D12
2020 G3	3309-2 D12
2021 G3	3309-3 D12
2022 I6	3309-4 D12
2023 I6	3310-1 D12
2024 I7	3310-2 D12
2060 I2	3310-3 D12
2061 G9	3310-4 D12
2062 G9	3311-1 G12
2063 G9	3311-2 F12
2064 G9	3311-3 G12
2065 G9	3311-4 F12
2066 G9	3312-1 G12
2067 G9	3312-2 F12
2074 I12	3312-3 G12
2078 I10	3312-4 F12
2080 H14	3313-1 E10
2201 I12	3313-2 F11
2202 H12	3313-3 F10
2208 I4	3313-4 F11
2209 I5	3314-1 E10
2212 I12	3314-2 E10
2215 I10	3314-3 E10
2216 H14	3314-4 E10
2218 I12	3315-1 E10
2301 A11	3315-2 E11
2302 A11	3315-3 E10
2303 H13	3315-4 E11
2304 H13	3316-1 E10
2305 H13	3316-2 E10
2306 H13	3316-3 E10
2310 I12	3316-4 E10
2312 I12	4016 F2
2313 I14	4021 E4
2314 I14	4023 E4
2315 H14	4024 F4
2316 I13	4062 I7
2317 I13	5001 I6
2318 I13	5007 I10
3001 A5	5010 H11
3002 B6	5011 A9
3003 B6	5300 I6
3004 B5	6001 D2
3005 B5	6005 I5
3006 B4	6006 I4
3007 C4	6100 I1
3009 D3	7101 E7
3010 D3	7105 I10
3011 D4	7204 I5
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	

11-10

ELECTRICAL PARTS LIST - MONO-FE BOARD

ELECTRICAL PARTS LIST - MONO-FE BOARD

MISCELLANEOUS

	3139 118 56941	FE (Front End) PCB Assembly CD222
1101	2422 025 17529	FFC Socket 24P Hort.
1104	2422 025 17371	FFC Socket 40P Hort.
1107	2422 025 16806	FFC Socket 7P Hort.

CAPACITORS

2001	3198 017 34730	47nF 16V
2002	2238 586 59812	100nF 50V
2003	4822 126 14249	560pF 10% 50V
2004	2238 586 59812	100nF 50V
2005	2238 586 59812	100nF 50V
2006	4822 126 11785	47pF 5% 50V
2007	2238 586 59812	100nF 50V
2008	2238 586 59812	100nF 50V
2009	4822 126 13881	470pF 5% 50V
2011	5322 126 11582	6,8nF 10% 63V
2012	3198 017 44740	470nF 10V
2013	3198 017 34730	47nF 16V
2014	4822 126 13881	470pF 5% 50V
2015	4822 126 13881	470pF 5% 50V
2017	2238 586 59812	100nF 50V
2018	2238 586 59812	100nF 50V
2019	3198 016 31020	1nF 25V
2020	3198 016 31020	1nF 25V
2021	2238 586 59812	100nF 50V
2022	4822 126 11663	12pF 50V
2024	4822 126 11663	12pF 50V
2025	4822 126 14238	2,2nF 50V
2026	2238 586 59812	100nF 50V
2028	4822 126 14238	2,2nF 50V
2029	2238 586 59812	100nF 50V
2030	2238 586 59812	100nF 50V
2031	3198 016 36810	680pF 25V
2032	3198 016 31020	1nF 25V
2033	2222 867 15339	33pF 5% 50V
2034	2238 586 59812	100nF 50V
2035	2222 867 15339	33pF 5% 50V
2036	2222 867 15339	33pF 5% 50V
2037	4822 126 14238	2,2nF 50V
2038	4822 126 14238	2,2nF 50V
2039	3198 017 34730	47nF 16V
2040	4822 126 14238	2,2nF 50V
2041	4822 126 14238	2,2nF 50V
2042	2020 552 94427	100pF 5% 50V
2043	3198 016 31020	1nF 25V
2044	2238 586 59812	100nF 50V
2046	4822 126 14508	180pF 5% 50V
2047	3198 016 31020	1nF 25V
2048	4822 126 13193	4,7nF 10% 63V
2049	3198 016 31020	1nF 25V
2050	2238 586 59812	100nF 50V
2051	2238 586 59812	100nF 50V
2052	2222 867 15339	33pF 5% 50V
2053	2238 586 59812	100nF 50V
2054	2238 586 59812	100nF 50V
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
2307	2238 586 59812	100nF 50V
2308	2238 586 59812	100nF 50V
2309	2238 586 59812	100nF 50V
2310	2238 586 59812	100nF 50V
2312	2238 586 59812	100nF 50V
2313	2238 586 59812	100nF 50V
2314	2238 586 59812	100nF 50V
2315	2238 586 59812	100nF 50V
2316	2238 586 59812	100nF 50V
2317	2238 586 59812	100nF 50V
2318	2238 586 59812	100nF 50V
2319	2238 586 59812	100nF 50V
2320	2238 586 59812	100nF 50V

RESISTORS

3001	4822 117 11817	1k2 1% 1/16W
3002	4822 117 13632	100k 1% 0,062W
3003	4822 051 30563	56k 5% 0,062W
3004	4822 051 30103	10k 5% 0,062W
3005	2322 704 65102	5k1 1% 0,062W
3007	4822 051 30472	4k7 5% 0,062W
3009	2322 704 62003	20k 1% 0,062W
3010	2322 704 65103	51k 1% 0,062W
3012	4822 051 30332	3k3 5% 0,062W
3013	4822 051 30332	3k3 5% 0,062W
3014	4822 051 30332	3k3 5% 0,062W
3015	4822 051 30102	1k 5% 0,062W
3017	4822 117 12925	47k 1% 0.063W
3018	4822 051 30339	33R 5% 0,062W
3020	4822 051 30332	3k3 5% 0,062W
3022	4822 051 30472	4k7 5% 0,062W
3025	2322 704 65102	5k1 1% 0,062W
3026	4822 051 30103	10k 5% 0,062W
3027	4822 117 13632	100k 1% 0,062W
3028	4822 051 30109	10R 5% 0,062W
3029	4822 051 30109	10R 5% 0,062W
3031	5322 117 13056	8k2 1% 0,063W
3032	2322 704 65102	5k1 1% 0,062W
3033	4822 051 30339	33R 5% 0,062W
3034	4822 051 30339	33R 5% 0,062W
3035	4822 051 30339	33R 5% 0,062W
3037	2322 702 60688	6R8 5% 0.062W
3038	4822 051 30222	2k2 5% 0,062W
3039	4822 051 30222	2k2 5% 0,062W
3040	4822 051 30103	10k 5% 0,062W
3042	4822 051 30103	10k 5% 0,062W
3049	4822 051 30152	1k5 5% 0,062W
3050	4822 051 30563	56k 5% 0,062W
3051	4822 051 30103	10k 5% 0,062W
3053	5322 117 13056	8k2 1% 0,063W
3054	4822 051 30474	470k 5% 0,062W
3059	4822 051 30339	33R 5% 0,062W
3060	4822 051 30339	33R 5% 0,062W
3065	4822 051 30391	390R 5% 0,062W
3066	4822 117 13632	100k 1% 0,062W
3067	4822 051 30472	4k7 5% 0,062W
3068	4822 051 30103	10k 5% 0,062W
3069	4822 051 30102	1k 5% 0,062W
3070	4822 051 30223	22k 5% 0,062W
3071	4822 051 30103	10k 5% 0,062W
3072	4822 051 30223	22k 5% 0,062W
3073	4822 051 30103	10k 5% 0,062W
3074	4822 051 30103	10k 5% 0,062W
3075	4822 117 13632	100k 1% 0,062W
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

ELECTRICAL PARTS LIST - MONO-FE BOARD

RESISTORS

3311	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
3312	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
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	0R JUMPER 0603
4021	4822 051 30008	0R JUMPER 0603
4023	4822 051 30008	0R JUMPER 0603
4024	4822 051 30008	0R JUMPER 0603
4036	4822 051 30008	0R JUMPER 0603
4041	4822 051 30008	0R JUMPER 0603
4044	4822 051 30008	0R JUMPER 0603
4052	4822 051 30008	0R JUMPER 0603
4056	4822 051 30008	0R JUMPER 0603
4062	4822 051 30008	0R JUMPER 0603
4100	4822 051 30008	0R JUMPER 0603

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

7101	9322 186 11671	M5705
7102	9322 185 60671	SP3721AAA0PM
7104	4822 209 32073	MC34072D
7105	9965 000 19029	M29F002BT-70K1 with SW program
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
7207	4822 130 42804	BC817-25
7208	9322 163 24668	L78M08CDT

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

MONO-BE BOARD

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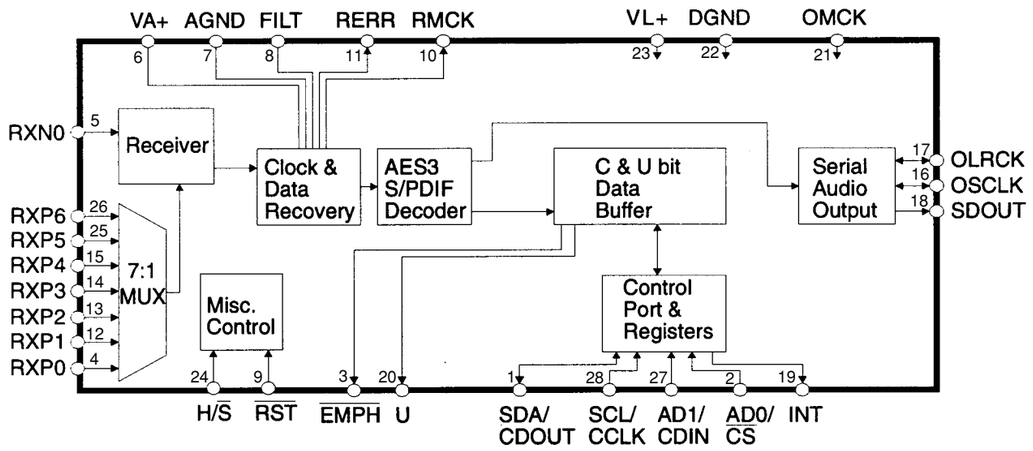
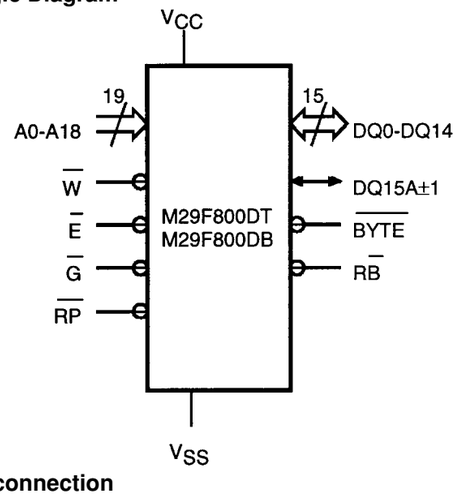


M29F800DT

Logic Diagram



Pins connection

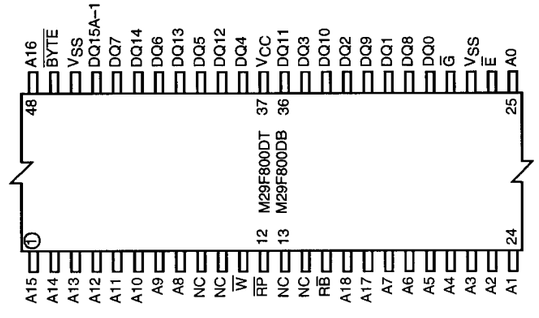


Table 1. Signal Names

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

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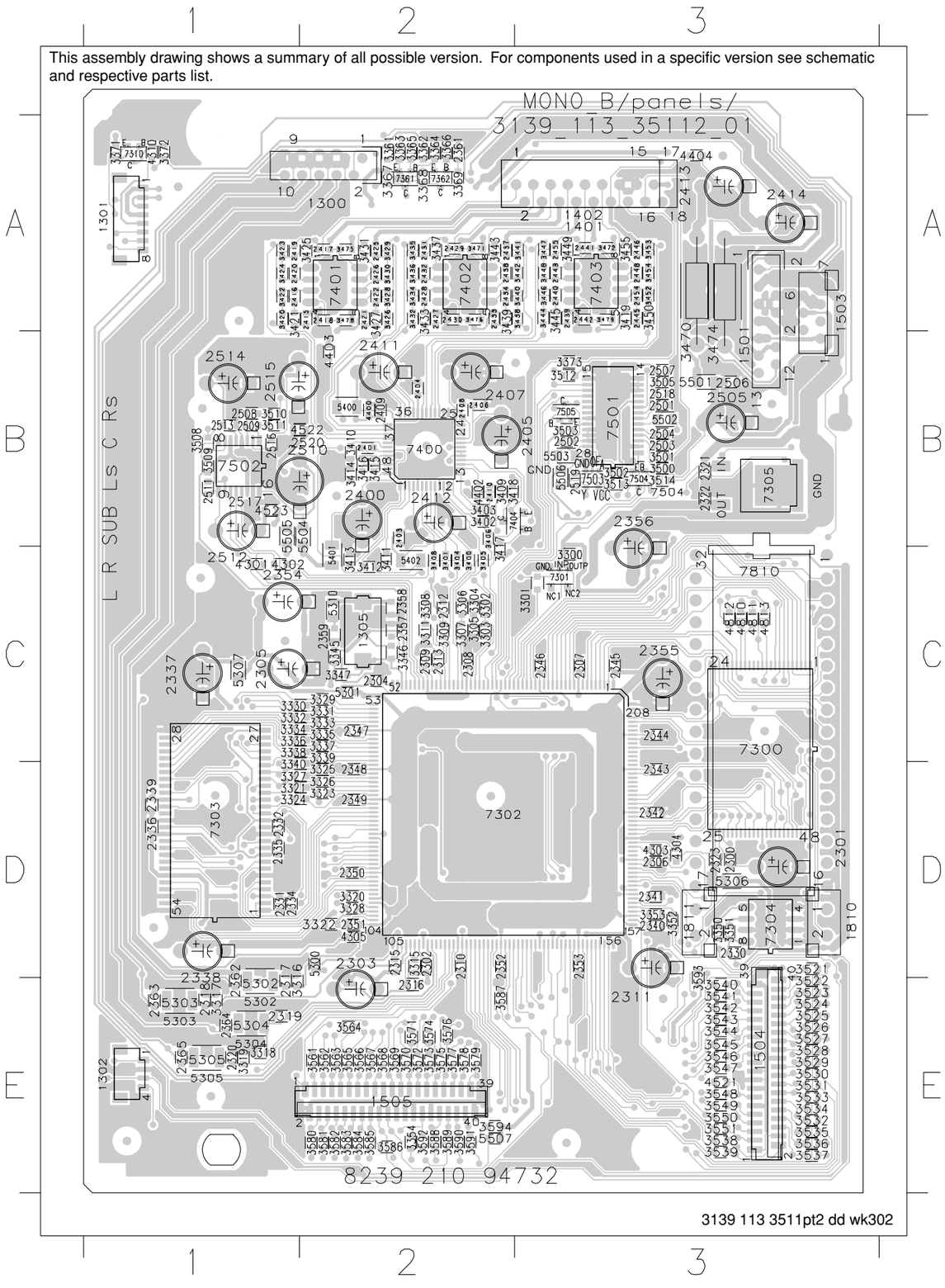
TOP VIEW - SMD & COMPONENT LAYOUT

This assembly drawing shows a summary of all possible version. For components used in a specific version see schematic and respective parts list.



1300	A2	2411	B2	3329	C2	3448	A3	3582	E2
1301	A1	2412	B2	3330	C1	3449	A3	3583	E2
1302	E1	2413	A3	3331	C2	3450	A3	3584	E2
1305	C2	2414	A3	3332	C1	3452	A3	3585	E2
1401	A3	2415	A2	3333	C2	3453	A3	3586	E2
1402	A3	2416	A1	3334	C1	3454	A3	3587	E2
1501	B3	2417	A2	3335	C2	3455	A3	3588	E2
1503	A3	2418	A2	3336	C1	3470	B3	3589	E2
1504	E3	2419	A1	3337	C2	3471	A2	3590	E2
1505	E2	2420	A1	3338	C1	3472	A3	3591	E2
1810	D3	2421	A2	3339	C2	3474	B3	3592	E2
1811	D3	2422	A2	3340	D1	3475	A2	3593	E3
2300	D3	2425	A2	3345	C2	3476	A2	3594	E2
2301	D3	2426	A2	3346	C2	3478	A2	4301	C1
2302	D2	2427	A2	3347	C2	3479	A3	4302	C1
2303	D2	2428	A2	3350	D3	3500	B3	4303	D3
2304	C2	2429	A2	3351	D3	3501	B3	4304	D3
2305	C1	2430	A2	3352	D3	3502	B3	4305	D2
2306	D3	2431	A2	3353	D3	3503	B3	4310	A1
2307	C3	2432	A2	3354	E2	3505	B3	4400	B2
2308	C2	2433	A2	3361	A2	3508	B1	4402	B2
2309	C2	2434	A2	3362	A2	3509	B1	4403	B2
2310	D2	2437	A2	3363	A2	3510	B1	4404	A3
2311	E3	2438	A2	3364	A2	3511	B1	4521	E3
2312	C2	2439	A3	3365	A2	3512	B3	4522	B2
2313	C2	2440	A3	3366	A2	3513	B3	4523	B1
2315	D2	2441	A3	3367	A2	3514	B3	4810	C3
2316	E2	2442	A3	3368	A2	3521	D3	4811	C3
2317	E1	2443	A3	3369	A2	3522	E3	4812	C3
2318	E1	2445	A3	3371	A1	3523	E3	4813	C3
2319	E1	2446	A3	3372	A1	3524	E3	5300	D2
2320	E1	2448	A3	3373	B3	3525	E3	5301	C2
2321	B3	2454	A3	3400	C2	3526	E3	5302	E1
2322	B3	2455	A3	3401	C2	3527	E3	5303	E1
2323	D3	2501	B3	3402	B2	3528	E3	5304	E1
2330	D3	2502	B3	3403	B2	3529	E3	5305	E1
2331	D1	2503	B3	3404	C2	3530	E3	5306	D3
2332	D1	2504	B3	3405	C2	3531	E3	5307	C1
2334	D1	2505	B3	3406	B2	3532	E3	5310	C2
2335	D1	2506	B3	3408	C2	3533	E3	5400	B2
2336	D1	2507	B3	3409	B2	3534	E3	5401	C2
2337	C1	2508	B1	3410	B2	3535	E3	5402	C2
2338	E1	2509	B1	3411	C2	3536	E3	5501	B3
2339	D1	2510	B2	3412	C2	3537	E3	5502	B3
2340	D3	2511	B1	3413	C2	3538	E3	5503	B3
2341	D3	2512	C1	3414	B2	3539	E3	5504	B2
2342	D3	2513	B1	3415	B2	3540	E3	5505	B1
2343	D3	2514	B1	3416	B2	3541	E3	5506	B3
2344	C3	2515	B1	3417	C2	3542	E3	5507	E2
2345	C3	2516	B1	3418	B2	3543	E3	7300	C3
2346	C3	2517	B1	3419	A3	3544	E3	7301	C3
2347	C2	2518	B3	3420	A1	3545	E3	7302	C2
2348	D2	2519	B3	3421	A1	3546	E3	7303	C1
2349	D2	2520	B2	3422	A1	3547	E3	7304	D3
2350	D2	3300	C3	3423	A1	3548	E3	7305	B3
2351	D2	3301	C3	3424	A1	3549	E3	7310	A1
2352	D2	3302	C2	3425	A2	3550	E3	7361	A2
2353	D3	3303	C2	3426	A2	3551	E3	7362	A2
2354	C1	3304	C2	3427	A2	3561	E2	7400	B2
2355	C3	3305	C2	3428	A2	3562	E2	7401	A2
2356	B3	3306	C2	3429	A2	3563	E2	7402	B2
2357	C2	3307	C2	3430	A2	3564	E2	7403	B3
2358	C2	3308	C2	3431	A2	3565	E2	7404	B3
2359	C2	3309	C2	3432	A2	3566	E2	7501	B3
2361	A2	3311	C2	3433	A2	3567	E2	7502	B1
2362	E1	3315	D2	3434	A2	3568	E2	7503	B3
2363	E1	3316	E1	3435	A2	3569	E2	7504	B3
2364	E1	3317	E1	3436	A2	3570	E2	7505	B3
2365	E1	3318	E1	3437	A2	3571	E2	7810	C3
2400	B2	3319	E1	3438	A3	3572	E2		
2401	B2	3320	D2	3439	A2	3573	E2		
2403	B2	3321	D1	3440	A3	3574	E2		
2404	B2	3322	D2	3441	A3	3575	E2		
2405	B3	3323	D2	3442	A3	3576	E2		
2406	B2	3324	D1	3443	A2	3577	E2		
2407	B2	3325	D2	3444	A3	3578	E2		
2408	B2	3326	D2	3445	A3	3579	E2		
2409	B2	3327	D1	3446	A3	3580	E2		
2410	B2	3328	D2	3447	A3	3581	E2		

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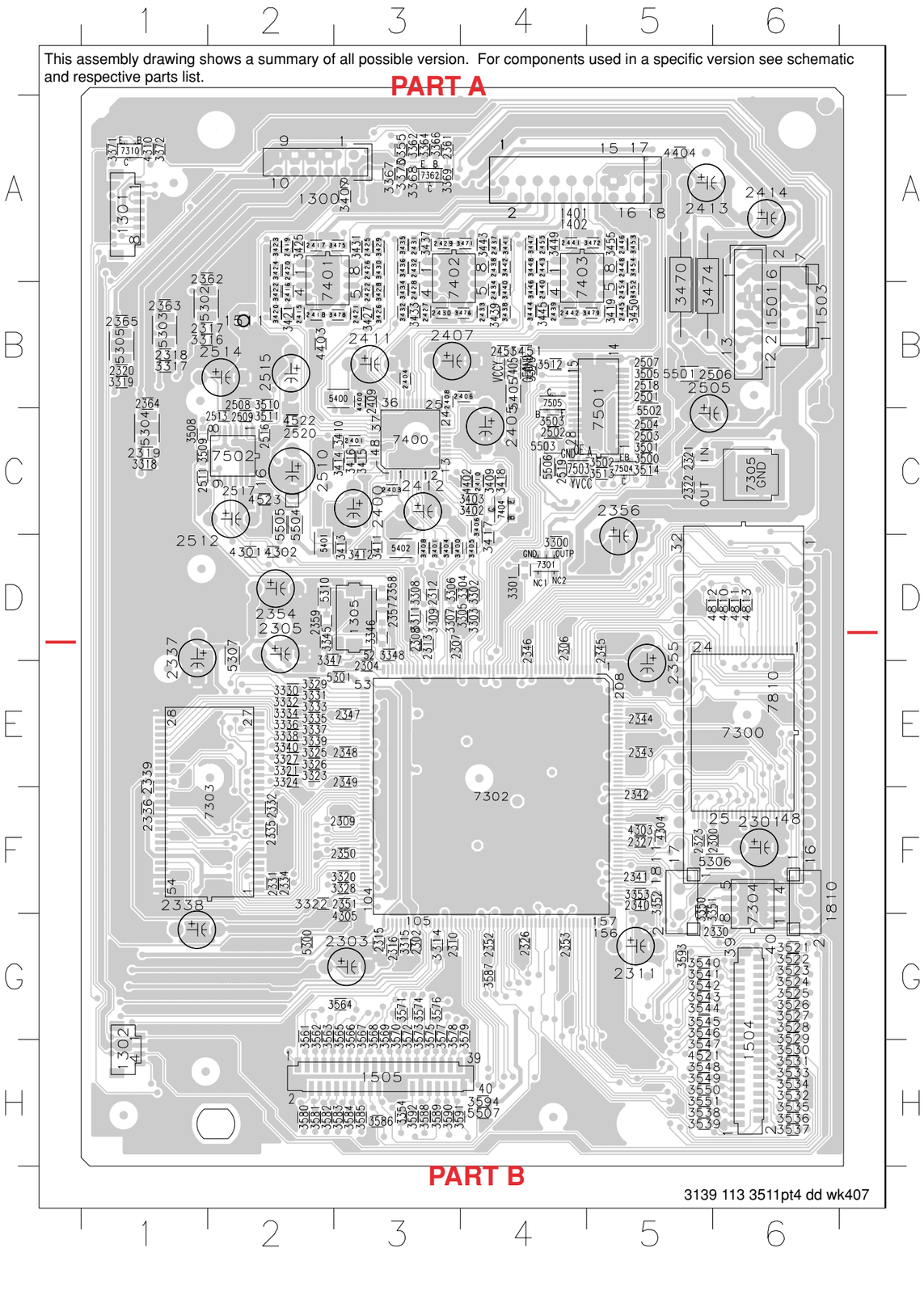
TOP VIEW - SMD & COMPONENT LAYOUT (pc board ... 3511p4)

This assembly drawing shows a summary of all possible version. For components used in a specific version see schematic and respective parts list.

PART A



PART B

3139 113 3511pt4 dd wk407

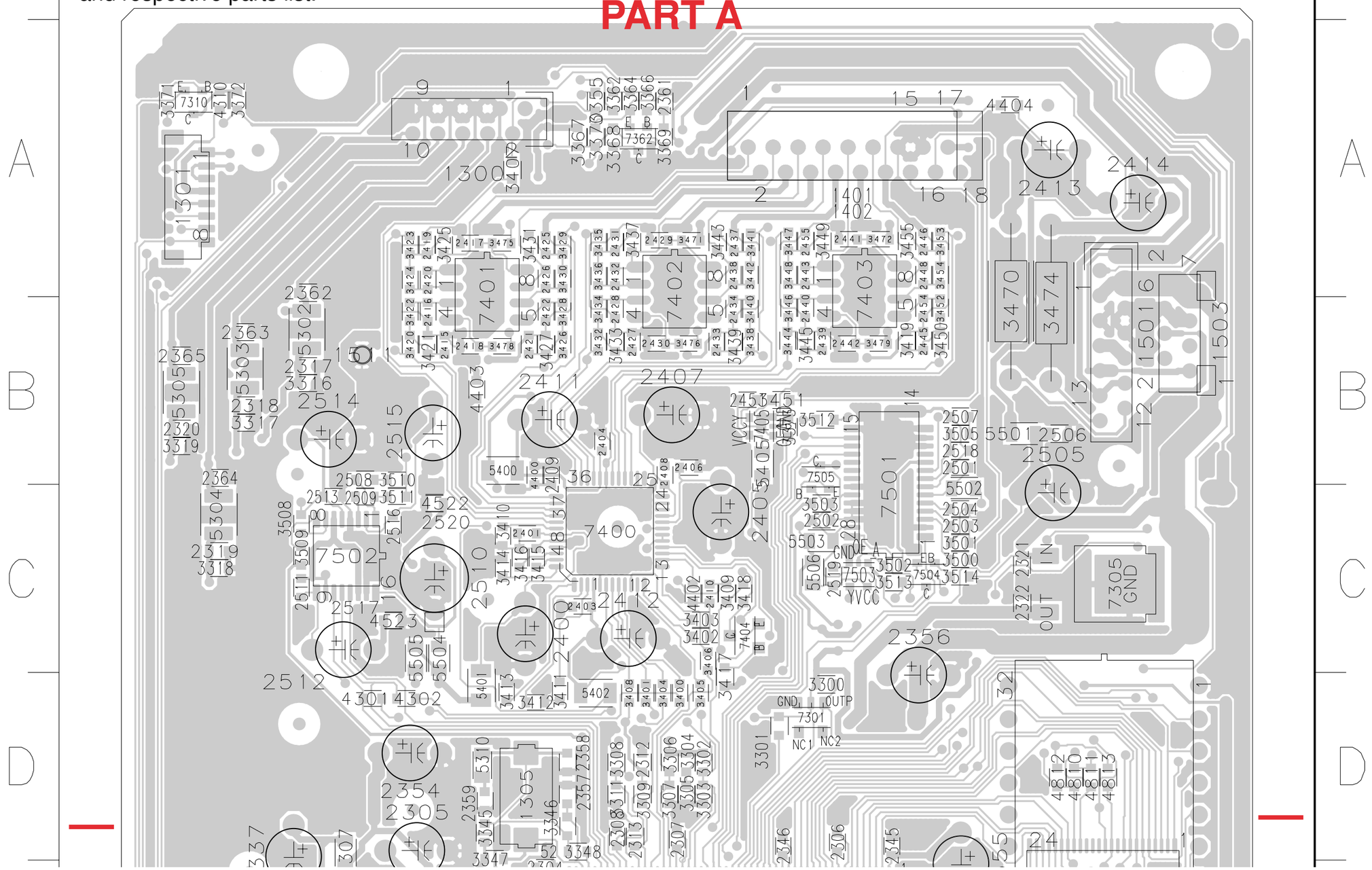
1300	A2	2408	B3	3324	E2	3442	A4	3575	G3		
1301	A1	2409	B3	3325	E2	3443	A4	3576	G3		
1302	H1	2410	C4	3326	E2	3444	B4	3577	G3		
1305	D3	2411	B3	3327	E2	3445	B4	3578	G3		
1401	A4	2412	C3	3328	F3	3446	B4	3579	G4		
1402	A4	2413	A5	3329	E2	3447	A4	3580	H2		
1501	B6	2414	A6	3330	E2	3448	A4	3581	H2		
1503	B6	2415	B2	3331	E2	3449	A4	3582	H2		
1504	H6	2416	B2	3332	E2	3450	B5	3583	H3		
1505	H3	2417	A2	3333	E2	3451	B4	3584	H3		
1511	B2	2418	B2	3334	E2	3452	B5	3585	H3		
1810	F6	2419	A2	3335	E2	3453	A5	3586	H3		
1811	F5	2420	A2	3336	E2	3454	A5	3587	G4		
2300	F5	2421	B3	3337	E2	3455	A5	3588	H3		
2301	F6	2422	B3	3338	E2	3470	B5	3589	H3		
2302	G3	2425	A3	3339	E2	3471	A4	3590	H3		
2303	G3	2426	A3	3340	E2	3472	A5	3591	H3		
2304	E3	2427	B3	3345	D2	3474	B5	3592	H3		
2305	D2	2428	B3	3346	D3	3475	A3	3593	G5		
2306	D4	2429	A3	3347	D2	3476	B4	3594	H4		
2307	D3	2430	B3	3348	D3	3478	B3	4301	D2		
2308	D3	2431	A3	3350	F5	3479	B5	4302	D2		
2309	F3	2432	A3	3351	F5	3500	C5	4303	F5		
2310	G3	2433	B4	3352	F5	3501	C5	4304	F5		
2311	G3	2434	B4	3353	F5	3502	C5	4305	G3		
2312	D3	2437	A4	3354	H3	3503	C4	4310	A1		
2313	D3	2438	A4	3355	A3	3505	B5	4400	B3		
2315	G3	2439	B4	3362	A3	3508	C1	4402	C4		
2316	G3	2440	B4	3364	A3	3509	C1	4403	B2		
2317	B1	2441	A4	3366	A3	3510	B2	4404	A5		
2318	B1	2442	B4	3367	A3	3511	C2	4521	H5		
2319	C1	2443	A4	3368	A3	3512	B4	4522	C2		
2320	B1	2445	B5	3369	A3	3513	C5	4523	C2		
2321	C5	2446	A5	3370	A3	3514	C5	4810	D6		
2322	C5	2448	A5	3371	A1	3521	G6	4811	D6		
2323	F5	2451	B4	3372	A1	3522	G6	4812	D5		
2326	G4	2454	B5	3373	B4	3523	G6	4813	D6		
2327	F5	2455	A4	3400	D3	3524	G6	5300	G2		
2330	G6	2501	B5	3401	D3	3525	G6	5301	E3		
2331	F2	2502	C4	3402	C4	3526	G6	5302	B1		
2332	F2	2503	C5	3403	C4	3527	G6	5303	B1		
2334	F2	2504	C5	3404	D3	3528	G6	5304	C1		
2335	F2	2505	B5	3405	D4	3529	G6	5305	B1		
2336	F1	2506	B6	3406	C4	3530	H6	5306	F6		
2337	D1	2507	B5	3407	A3	3531	H6	5307	D2		
2338	F1	2508	B2	3408	D3	3532	H6	5310	D2		
2339	E1	2509	C2	3409	C4	3533	H6	5400	B3		
2340	F5	2510	C2	3410	C3	3534	H6	5401	D2		
2341	F5	2511	C1	3411	D3	3535	H6	5402	D3		
2342	F5	2512	D1	3412	D3	3536	H6	5405	B4		
2343	E5	2513	C2	3413	D3	3537	H6	5501	B5		
2344	E5	2514	B2	3414	C3	3538	H5	5502	C5		
2345	D5	2515	B2	3415	C3	3539	H5	5503	C4		
2346	D4	2516	C2	3416	C3	3540	G5	5504	C2		
2347	E3	2517	C2	3417	D4	3541	G5	5505	C2		
2348	E3	2518	B5	3418	C4	3542	G5	5506	C4		
2349	E3	2519	C4	3419	B5	3543	G5	5507	H4		
2350	F3	2520	C2	3420	B2	3544	G5	7300	E6		
2351	F3	3300	D4	3421	B2	3545	G5	7301	D4		
2352	G4	3301	D4	3422	B2	3546	G5	7302	F4		
2353	G4	3302	D4	3423	A2	3547	H5	7303	F2		
2354	D2	3303	D4	3424	A2	3548	H5	7304	F6		
2355	E5	3304	D4	3425	A2	3549	H5	7305	C6		
2356	C5	3305	D4	3426	B3	3550	H5	7310	A1		
2357	D3	3306	D3	3427	B3	3551	H5	7362	A3		
2358	D3	3307	D3	3428	B3	3561	G2	7400	C3		
2359	D2	3308	D3	3429	A3	3562	G2	7401	A2		
2361	A3	3309	D3	3430	A3	3563	G2	7402	A3		
2362	A1	3311	D3	3431	A3	3564	G3	7403	A4		
2363	B1	3314	G3	3432	B3	3565	G3	7404	C4		
2364	B1	3315	G3	3433	B3	3566	G3	7405	B4		
2365	B1	3316	B1	3434	B3	3567	G3	7501	C5		
2400	C3	3317	B1	3435	A3	3568	G3	7502	C2		
2401	C3	3318	C1	3436	A3	3569	G3	7503	C4		
2403	C3	3319	B1	3437	A3	3570	G3	7504	C5		
2404	B3	3320	F3	3438	B4	3571	G3	7505	B4		
2405	C4	3321	E2	3439	B4	3572	G3	7810	E6		
2406	B4	3322	F2	3440	B4	3573	G3				
2407	B3	3323	E2	3441	A4	3574	G3				

12-2b

TOP VIEW - SMD & COMPONENT LAYOUT (pc board ... 3511p4) PART A

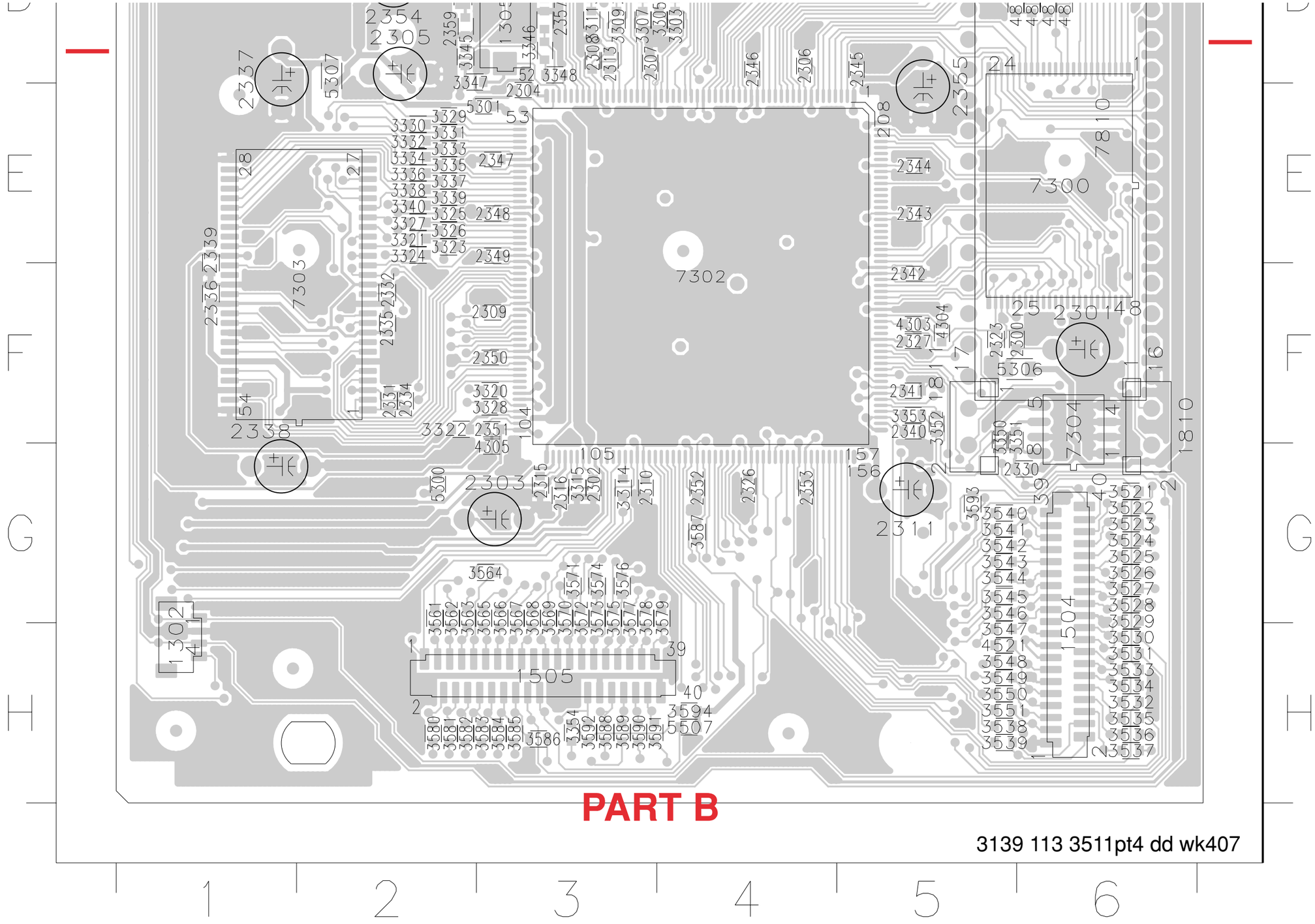
This assembly drawing shows a summary of all possible version. For components used in a specific version see schematic and respective parts list.

PART A



12-2c

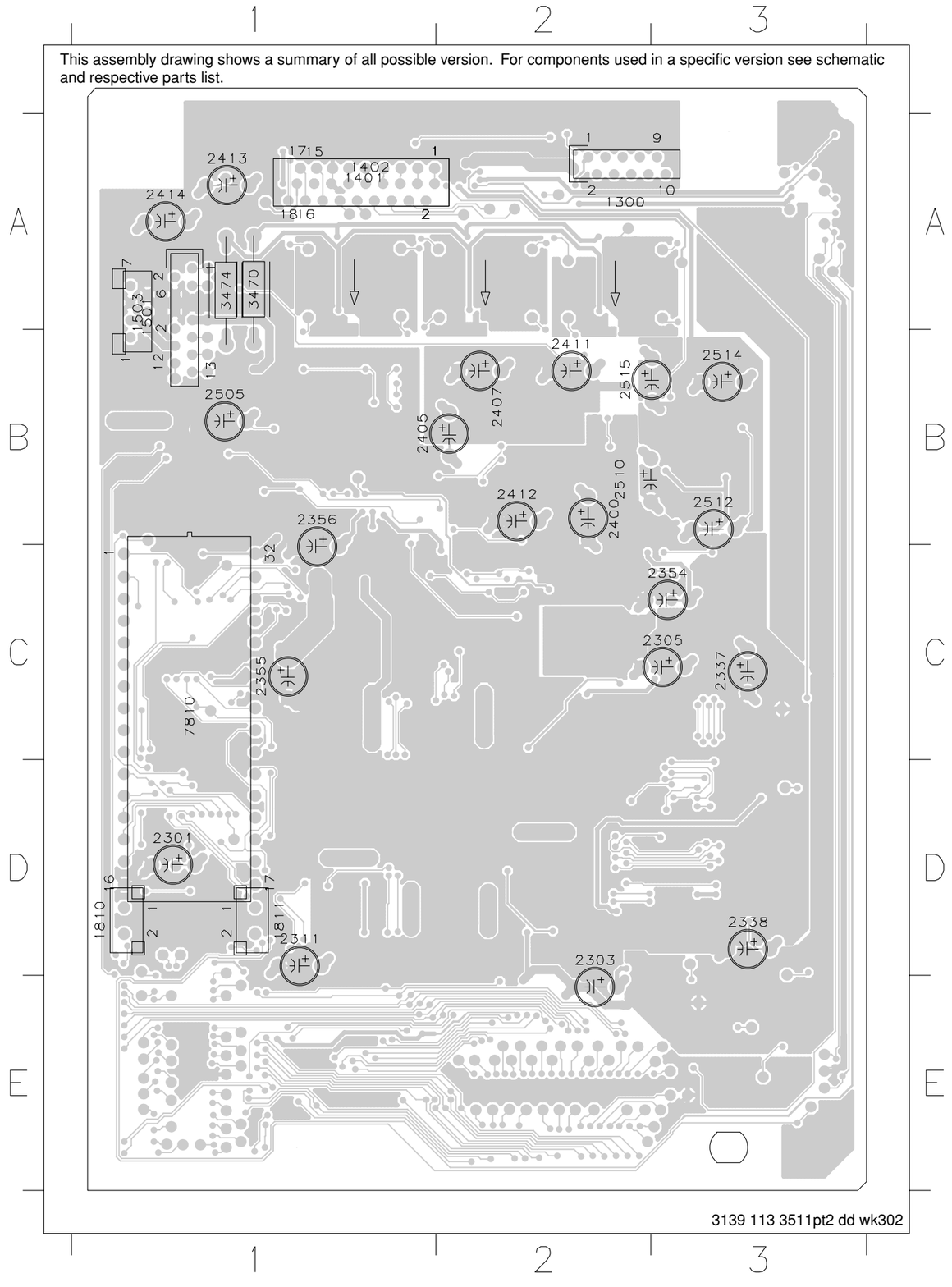
TOP VIEW - SMD & COMPONENT LAYOUT (pc board ... 3511p4) PART B



12-3

BOTTOM VIEW - COMPONENT LAYOUT

This assembly drawing shows a summary of all possible version. For components used in a specific version see schematic and respective parts list.

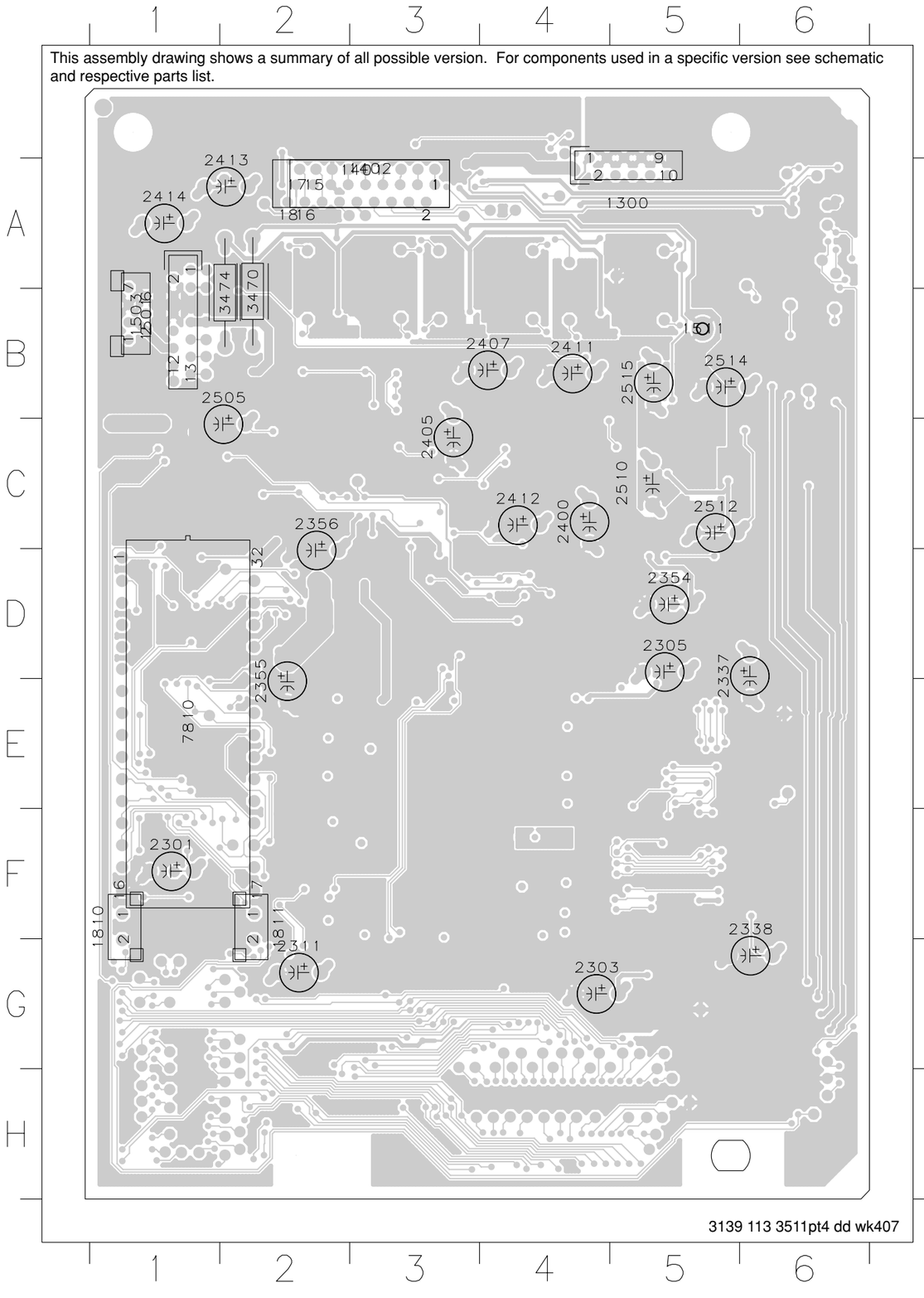


1300	A2
1401	A1
1402	A1
1501	A1
1503	A1
1810	D1
1811	D1
2301	D1
2303	D2
2305	C3
2311	D1
2337	C3
2338	D3
2354	C3
2355	C1
2356	B1
2400	B2
2405	B1
2407	B2
2411	B2
2412	B2
2413	A1
2414	A1
2505	B1
2510	B2
2512	B3
2514	B3
2515	B2
3470	A1
3474	A1
7810	C1

12-3a

BOTTOM VIEW - COMPONENT LAYOUT (pc board ... 3511p4)

This assembly drawing shows a summary of all possible version. For components used in a specific version see schematic and respective parts list.



1300	A5
1401	A3
1402	A3
1501	B1
1503	B1
1511	B5
1810	F1
1811	F2
2301	F1
2303	G4
2305	D5
2311	G2
2337	D5
2338	F6
2354	D5
2355	E2
2356	C2
2400	C4
2405	C3
2407	B4
2411	B4
2412	C4
2413	A2
2414	A1
2505	B2
2510	C5
2512	C5
2514	B5
2515	B5
3470	B2
3474	B2
7810	E1

12-4

CIRCUIT DIAGRAM 1

1300 C14 1301 I10 1302 I14 1305 I9 1810 I1 | 1811 I2 2300 B2 2301 B2 2302 A5 2303 A5 | 2304 B5 2305 B5 2306 A8 2307 A8 2308 A8 | 2309 B8 2310 B8 2311 B8 2312 B9 2313 B9 | 2315 D9 2316 D9 2317 D10 2318 D10 2319 D11 | 2320 D11 2321 A9 2322 A10 2323 E3 2330 I12 | 2331 H11 2332 H11 2334 H11 2335 H11 2336 H11 | 2337 H11 2338 H11 2339 E14 2340 A4 2341 A5 | 2342 A5 2343 A5 2344 A5 2345 A6 2346 A6 | 2347 A6 2348 A7 2349 A7 2350 A7 2351 A7 | 2352 A8 2353 A8 2354 A8 2355 A9 2356 A9 | 2357 I8 2358 I9 2359 I9 2361 C14 2362 D13 | 2363 D13 2364 D12 2365 D12 3300 A4 3301 B5 | 3302 B9 3303 B10 3304 B10 3305 B10 3306 B10 | 3307 B11 3308 B11 3309 B9 3311 B11 3315 D9 | 3316 D10 3317 D10 3318 D10 3319 D11 3320 D9 | 3321 E9 3322 E9 3323 E9 3324 E9 3325 E9 | 3326 E9 3327 E9 3328 E9 3329 E9 3330 E9 | 3331 E9 3332 F9 3333 F9 3334 F9 3335 F9 | 3336 F9 3337 F9 3338 F9 3339 F9 3340 F9 | 3345 H9 3346 H9 3347 I8 3350 I11 3351 I11 | 3352 H9 3353 G9 3354 H9 3361 A13 3362 B13 | 3363 B13 3364 C13 3365 A13 3366 C13 3367 A14 | 3368 B14 3369 B14 3371 I5 3372 I5 3373 C11 | 4301 A12 4302 A12 4303 C4 4304 C4 4305 A11 | 4310 I10 4810 I1 4811 I1 4812 I1 4813 H2 | 5300 A6 5301 A6 5302 D12 5303 D12 5304 D12 | 5305 D12 5306 B2 5307 F11 5310 H9 7300 B2 | 7301 A3 7302 E7 7304 I12 7305 A10 7310 I5 | 7361 A14 7362 C14 7810 F1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1 DVD PROCESSOR

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

7302

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

7305 LF27CDT

7301 NCP301L

7300 M29F800DT

7810 AM29F040B-32

For Scart version only

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

To AV Board

To 5DTC Control

To Front Display

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

12-4a

CIRCUIT DIAGRAM 1 (For pc board ... 3511p4)

1 DVD PROCESSOR

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

For 'PM' version only
6V if upm selected and widescreen mat'l used. 12V otherwise.

ES 6018 (NON P-SCAN)
OR ES 6028 (P-SCAN)

* PROVISION
& KARAOKE ONLY
@ MEDIA SLOT ONLY

LAB USE ONLY ONLY
/ 4M ROM

To 5DTC Control

TO AV BOARD

TO FRONT DISPLAY

1300 C14 5307 G10
1301 I10 5310 I9
1302 J14 7300 C2
1305 I8 7301 B3
1810 J1 7302 F6
1811 J1 7304 I11
2300 B1 7305 A9
2301 C1 7310 J5
2302 B4 7362 C13
2303 B4 7810 G1
2304 B4
2305 B4
2306 A8
2307 B8
2308 B8
2309 B8
2310 B8
2311 B8
2312 B8
2313 B9
2315 D9
2316 D9
2317 D9
2318 D10
2319 D10
2320 D11
2321 A9
2322 A10
2323 E3
2326 B8
2327 B8
2330 I12
2331 H10
2332 I10
2334 H10
2335 I11
2336 H11
2337 I11
2338 H11
2339 F13
2340 A4
2341 A4
2342 A4
2343 A5
2344 A5
2345 A5
2346 A5
2347 A6
2348 A6
2349 A6
2350 A7
2351 A7
2352 A7
2353 A7
2354 A8
2355 A8
2356 A8
2357 I8
2358 I8
2359 I9
2361 C14
2362 D12
2363 D12
2364 D12
2365 D12
3300 B3
3301 B5
3302 B9
3303 B9
3304 B9
3305 B10
3306 B10
3307 B10
3308 B10
3309 C8
3311 B10
3314 D8
3315 D9
3316 D9
3317 D10
3318 D10
3319 D11
3320 E8
3321 E9
3322 F8
3323 E8
3324 E9
3325 E8
3326 E9
3327 E8
3328 F9
3329 F8
3330 F9
3331 F8
3332 F9
3333 F8
3334 F9
3335 F8
3336 F9
3337 F8
3338 G9
3339 G8
3340 G9
3345 I9
3346 I8
3347 I8
3348 I8
3350 I10
3351 I11
3352 H8
3353 H9
3354 H8
3355 I8
3362 B12
3364 C12
3366 B13
3367 B14
3368 B13
3369 B14
3370 B13
3371 J4
3372 J5
3373 D11
4301 A11
4302 B11
4303 C4
4304 C4
4305 B11
4310 J9
4810 J1
4811 J1
4812 J1
4813 I2
5300 B5
5301 B5
5302 D11
5303 D11
5304 E11
5305 E11
5306 B1

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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 I10	3476 I7	4404 H2	7402-A D11	
2403 D4	2409 H5	2415 A9	2421 B9	2429 C11	2437 F9	2443 G11	3400 E2	3406 F2	3413 G2	3419 H9	3425 B10	3431 C10	3437 E10	3443 F10	3449 G10	3470 I4	3478 I7	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 C10	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 }

+5V_D +5V_DAC

7400 CS4382 *NB

VOLUME CONTROL | MIXER | INTERPOL FILTER | DAC | ANAL FILTER

SERIAL PORT

CONTROL PORT/ MODE SELECT

DIRECT STREAM DIGITAL INPUT

MUTE CONTROL

+5VA_A +5VA_B +5VA_C -5VA_A -5VA_B -5VA_C

L_GND R_GND Lfe_GND Ls_GND C_GND Rs_GND GND_BUF

To AV Board

* PROVISION

12-5a

CIRCUIT DIAGRAM 2 (For pc board ... 3511p4)

2 DIGITAL TO ANALOG

DC @ INPUT OF op-amp : 1V5
DC @ OUTPUTS OF op-amp : 0V
Measured wrt L_GND

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

TO AV BOARD

PMK version only
TO AV BOARD

* PROVISION

1401 G13
1402 F14
2400 D2
2401 D3
2403 D4
2404 D5
2405 G6
2406 G7
2407 G7
2408 G7
2409 H5
2410 F3
2411 I2
2412 I2
2413 I4
2414 I6
2415 A9
2416 A10
2417 A11
2418 A11
2419 B9
2420 A11
2421 B9
2422 B10
2425 C9
2426 C11
2427 D9
2428 D10
2429 C11
2430 D11
2431 D9
2432 D11
2433 E9
2434 E10
2437 F9
2438 F11
2439 G9
2440 G10
2441 F11
2442 G11
2443 G11
2445 H9
2446 H9
2448 H11
2451 H13
2454 H10
2455 G9
3400 E2
3401 E2
3402 E2
3403 E2
3404 E2
3405 E2
3406 E2
3407 F7
3408 F2
3409 F2
3410 F2
3411 G2
3412 G2
3413 G2
3414 G2
3415 G2
3416 G2
3417 E2
3418 D3
3419 H9
3420 A9
3421 A9
3422 A10
3423 B9
3424 A10
3425 B10
3426 B9
3427 B9
3428 B10
3429 C9
3430 C10
3431 C10
3432 D9
3433 D9
3434 D10
3435 E9
3436 D10
3437 E10
3438 E9
3439 E9
3440 E10
3441 F9
3442 F10
3443 F10
3444 F9
3445 G9
3446 F10
3447 G9
3448 G10
3449 G10
3450 H9
3451 I13
3452 H10
3453 I9
3454 H10
3455 I10
3470 I3
3471 I4
3472 I4
3474 I6
3475 H4
3476 I7
3478 H7
3479 I7
4400 H5
4402 F2
4403 H2
4404 H2
5400 H2
5401 D2
5402 I2
5405 H13
7400 E3
7401-A A11
7401-B B11
7402-A D11
7402-B E11
7403-A F11
7403-B H11
7404 D2
7405 I13

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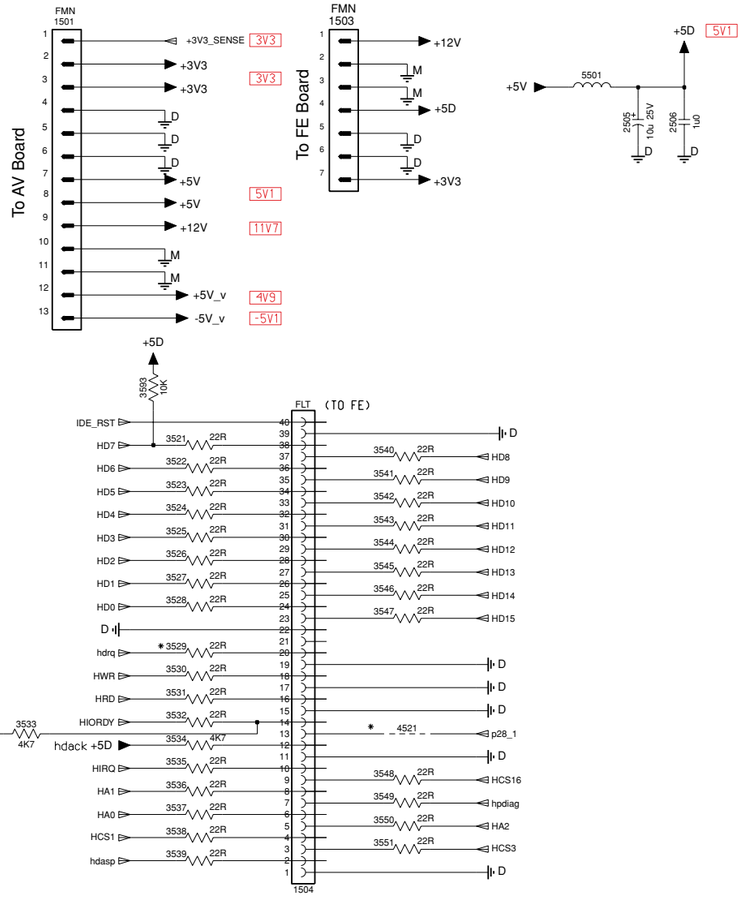
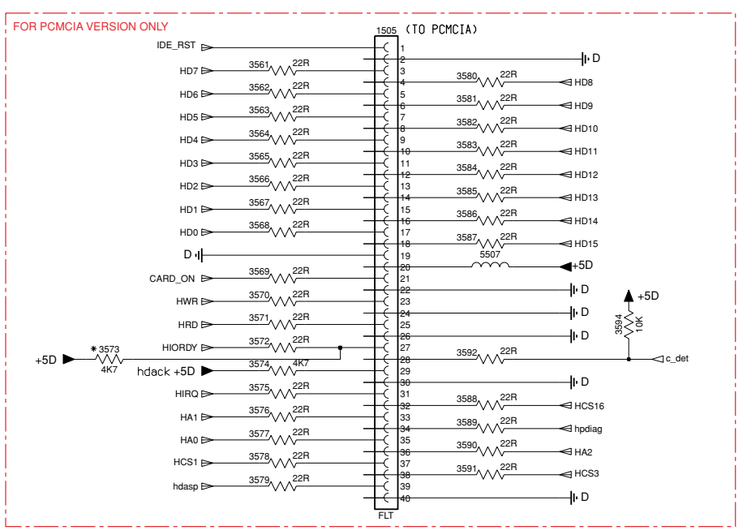
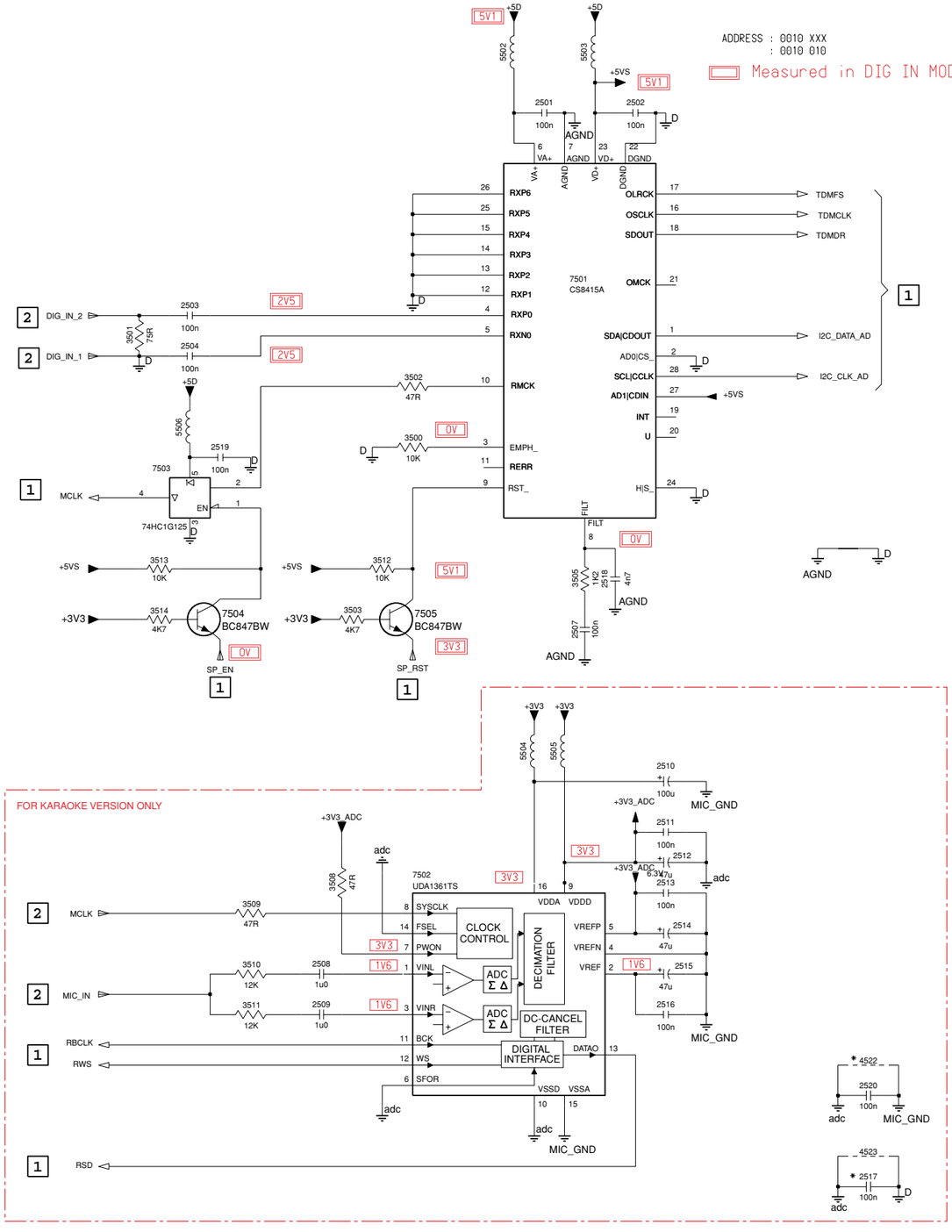
CIRCUIT DIAGRAM 3

SPDIF CONVERTER & ADC





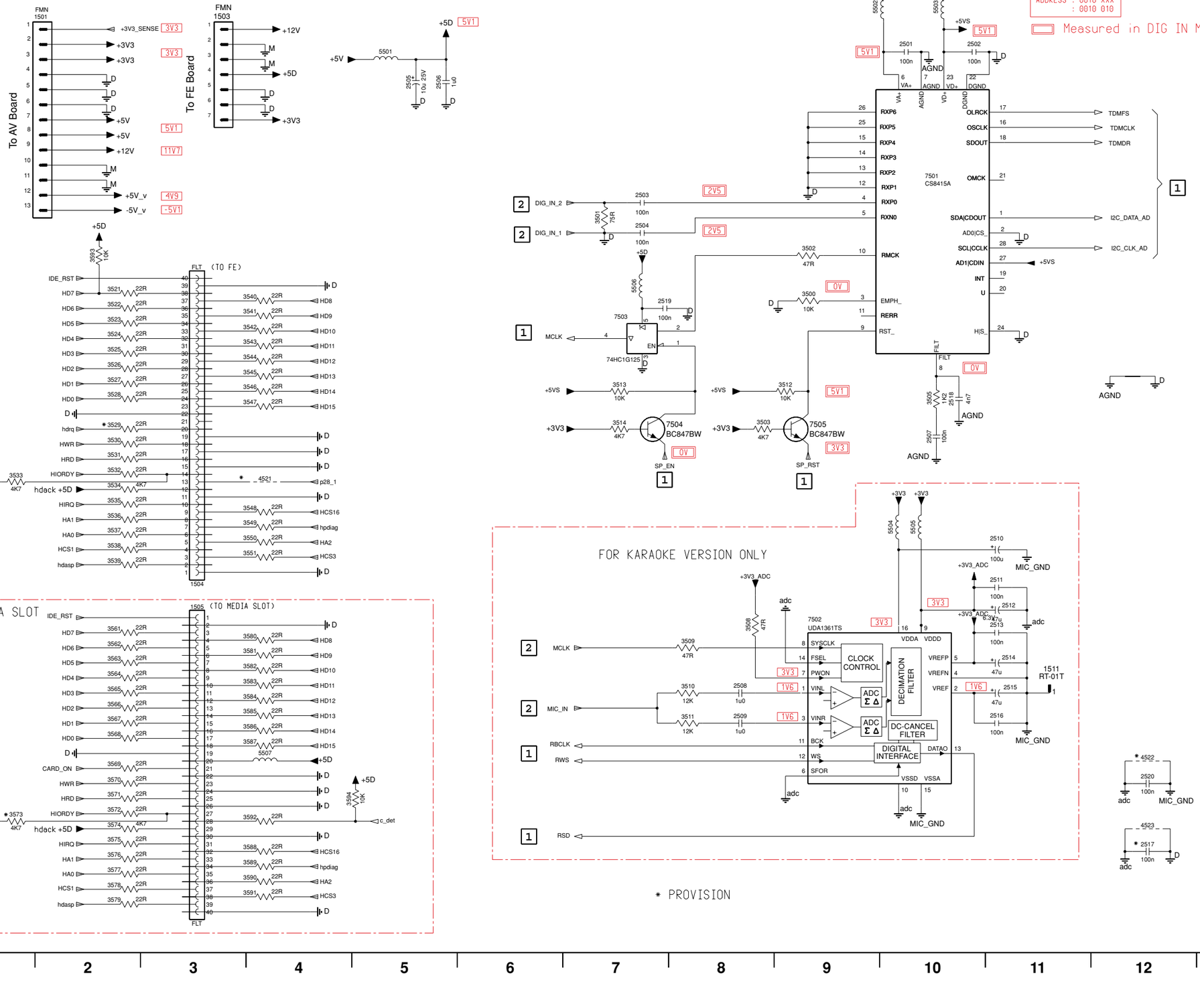


1501 A2
1503 A3
1504 F3
1505 G3
2501 A10
2502 A10
2503 C7
2504 C7
2505 B5
2506 B5
2507 E10
2508 G8
2509 H8
2510 F11
2511 F11
2512 G11
2513 G11
2514 G11
2515 G11
2516 H11
2517 I12
2518 E10
2519 D8
2520 H12
3500 D9
3501 C7
3502 C9
3503 E8
3505 E10
3508 G8
3509 G8
3510 G8
3511 H8
3512 E9
3513 E7
3514 E7
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 I12
5501 A5
5502 A10
5503 A10
5504 F10
5505 F10
5506 D7
5507 H4
7501 C10
7502 G9
7503 D7
7504 E8
7505 E9

12-6a

CIRCUIT DIAGRAM 3 (For pc board ...3511p4)

SPDIF CONVERTER & ADC



12-7

ELECTRICAL PARTS LIST - MONO-BE BOARD

ELECTRICAL PARTS LIST - MONO-BE BOARD

MISCELLANEOUS

	3139 118 56481	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
2301	4822 124 21732	10uF 20% 25V
2302	2238 586 59812	100nF 50V
2303	4822 124 21732	10uF 20% 25V
2304	2238 586 59812	100nF 50V
2305	4822 124 21732	10uF 20% 25V
2306	2238 586 59812	100nF 50V
2307	2238 586 59812	100nF 50V
2308	2238 586 59812	100nF 50V
2309	2238 586 59812	100nF 50V
2310	2238 586 59812	100nF 50V
2311	4822 124 21732	10uF 20% 25V
2312	4822 122 33752	15pF 5% 50V
2313	4822 122 33761	22pF 5% 50V
2315	2238 586 59812	100nF 50V
2316	2238 586 59812	100nF 50V
2317	2020 552 94427	100pF 5% 50V
2318	2020 552 94427	100pF 5% 50V
2319	2020 552 94427	100pF 5% 50V
2320	2020 552 94427	100pF 5% 50V
2321	3198 017 44740	470nF 10V
2322	3198 017 44740	470nF 10V
2326	2238 586 59812	100nF 50V
2327	2238 586 59812	100nF 50V
2330	2238 586 59812	100nF 50V
2331	2238 586 59812	100nF 50V
2332	2238 586 59812	100nF 50V
2334	2238 586 59812	100nF 50V
2335	2238 586 59812	100nF 50V
2336	2238 586 59812	100nF 50V
2337	4822 124 21732	10uF 20% 25V
2338	4822 124 21732	10uF 20% 25V
2339	4822 122 33752	15pF 5% 50V
2340	2238 586 59812	100nF 50V
2341	2238 586 59812	100nF 50V
2342	2238 586 59812	100nF 50V
2343	2238 586 59812	100nF 50V
2344	2238 586 59812	100nF 50V
2345	2238 586 59812	100nF 50V
2346	2238 586 59812	100nF 50V
2347	2238 586 59812	100nF 50V
2348	2238 586 59812	100nF 50V
2349	2238 586 59812	100nF 50V
2350	2238 586 59812	100nF 50V
2351	2238 586 59812	100nF 50V
2352	2238 586 59812	100nF 50V
2353	2238 586 59812	100nF 50V
2354	4822 124 21732	10uF 20% 25V
2355	4822 124 21732	10uF 20% 25V
2356	4822 124 21732	10uF 20% 25V
2357	4822 122 33741	10pF 10% 50V
2358	4822 122 33741	10pF 10% 50V
2362	4822 126 14226	82pF 5% 50V
2363	4822 126 14226	82pF 5% 50V
2364	4822 126 14226	82pF 5% 50V
2365	4822 126 14226	82pF 5% 50V
2400	4822 124 22651	1uF 20% 50V
2401	2238 586 59812	100nF 50V
2403	2238 586 59812	100nF 50V
2404	2238 586 59812	100nF 50V
2405	4822 124 80483	47uF 20% 6,3V
2406	2238 586 59812	100nF 50V
2407	4822 124 22651	1uF 20% 50V
2408	2238 586 59812	100nF 50V
2410	2238 586 59812	100nF 50V
2411	4822 124 80483	47uF 20% 6,3V
2412	4822 124 80483	47uF 20% 6,3V
2413	4822 124 80483	47uF 20% 6,3V
2414	4822 124 80483	47uF 20% 6,3V
2415	4822 126 14249	560pF 10% 50V
2416	2020 552 94427	100pF 5% 50V
2417	2238 586 59812	100nF 50V
2418	2238 586 59812	100nF 50V
2419	4822 126 14249	560pF 10% 50V
2420	2020 552 94427	100pF 5% 50V
2421	4822 126 14249	560pF 10% 50V
2422	2020 552 94427	100pF 5% 50V
2425	4822 126 14249	560pF 10% 50V
2426	2020 552 94427	100pF 5% 50V
2427	4822 126 14249	560pF 10% 50V
2428	2020 552 94427	100pF 5% 50V
2429	2238 586 59812	100nF 50V
2430	2238 586 59812	100nF 50V
2431	4822 126 14249	560pF 10% 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
2446	4822 126 14249	560pF 10% 50V
2448	2020 552 94427	100pF 5% 50V
2451	2238 586 59812	100nF 50V
2454	2020 552 94427	100pF 5% 50V
2455	4822 126 14249	560pF 10% 50V
2501	2238 586 59812	100nF 50V
2502	2238 586 59812	100nF 50V
2503	2238 586 59812	100nF 50V
2504	2238 586 59812	100nF 50V
2505	4822 124 21732	10uF 20% 25V
2506	3198 017 41050	1uF 10V
2507	2238 586 59812	100nF 50V
2518	4822 126 13193	4,7nF 10% 63V
2519	2238 586 59812	100nF 50V

RESISTORS

3300	4822 051 30222	2k2 5% 0,062W
3301	4822 051 30472	4k7 5% 0,062W
3303	4822 051 30472	4k7 5% 0,062W
3305	4822 051 30472	4k7 5% 0,062W
3307	4822 051 30472	4k7 5% 0,062W
3309	4822 051 30339	33R 5% 0,062W
3311	4822 051 30472	4k7 5% 0,062W
3315	4822 051 30271	270R 5% 0,062W
3316	4822 051 30759	75R 5% 0,062W
3317	4822 051 30759	75R 5% 0,062W
3318	4822 051 30759	75R 5% 0,062W
3319	4822 051 30759	75R 5% 0,062W
3320	4822 051 30339	33R 5% 0,062W
3321	4822 051 30339	33R 5% 0,062W
3322	4822 051 30689	68R 5% 0,063W
3323	4822 051 30339	33R 5% 0,062W
3324	4822 051 30339	33R 5% 0,062W
3325	4822 051 30339	33R 5% 0,062W
3326	4822 051 30339	33R 5% 0,062W
3327	4822 051 30339	33R 5% 0,062W
3328	4822 051 30339	33R 5% 0,062W
3329	4822 051 30109	10R 5% 0,062W
3330	4822 051 30109	10R 5% 0,062W
3331	4822 051 30109	10R 5% 0,062W
3332	4822 051 30109	10R 5% 0,062W
3333	4822 051 30109	10R 5% 0,062W
3334	4822 051 30109	10R 5% 0,062W
3335	4822 051 30109	10R 5% 0,062W
3336	4822 051 30109	10R 5% 0,062W
3337	4822 051 30109	10R 5% 0,062W
3338	4822 051 30109	10R 5% 0,062W
3339	4822 051 30109	10R 5% 0,062W
3340	4822 051 30109	10R 5% 0,062W
3346	4822 117 13632	100k 1% 0,062W
3347	4822 051 30689	68R 5% 0,063W
3348	4822 051 30109	10R 5% 0,062W
3350	4822 051 30102	1k 5% 0,062W
3351	4822 051 30102	1k 5% 0,062W
3352	4822 051 30109	10R 5% 0,062W
3353	4822 051 30109	10R 5% 0,062W
3355	4822 051 30479	47R 5% 0,062W
3371	4822 051 30472	4k7 5% 0,062W
3372	4822 051 30103	10k 5% 0,062W
3373	4822 051 30102	1k 5% 0,062W
3400	4822 051 30479	47R 5% 0,062W
3401	4822 051 30479	47R 5% 0,062W
3402	4822 051 30103	10k 5% 0,062W
3403	4822 051 30103	10k 5% 0,062W
3404	4822 051 30479	47R 5% 0,062W
3405	4822 051 30479	47R 5% 0,062W
3406	4822 051 30479	47R 5% 0,062W
3408	4822 051 30479	47R 5% 0,062W
3409	4822 051 30479	47R 5% 0,062W
3410	4822 051 30103	10k 5% 0,062W
3411	4822 051 30103	10k 5% 0,062W
3412	4822 051 30103	10k 5% 0,062W
3413	4822 051 30103	10k 5% 0,062W
3414	4822 051 30103	10k 5% 0,062W
3415	4822 051 30103	10k 5% 0,062W
3416	4822 051 30103	10k 5% 0,062W
3417	4822 051 30472	4k7 5% 0,062W
3418	4822 051 30273	27k 5% 0,062W
3419	4822 051 30153	15k 5% 0,062W
3420	4822 051 30103	10k 5% 0,062W
3421	4822 051 30153	15k 5% 0,062W
3422	4822 051 30123	12k 5% 0,062W
3423	4822 051 30103	10k 5% 0,062W
3424	4822 051 30123	12k 5% 0,062W
3425	4822 051 30153	15k 5% 0,062W
3426	4822 051 30103	10k 5% 0,062W
3427	4822 051 30153	15k 5% 0,062W
3428	4822 051 30123	12k 5% 0,062W
3429	4822 051 30103	10k 5% 0,062W
3430	4822 051 30123	12k 5% 0,062W
3431	4822 051 30153	15k 5% 0,062W
3432	4822 051 30103	10k 5% 0,062W
3433	4822 051 30153	15k 5% 0,062W
3434	4822 051 30123	12k 5% 0,062W
3435	4822 051 30103	10k 5% 0,062W
3436	4822 051 30123	12k 5% 0,062W
3437	4822 051 30153	15k 5% 0,062W
3438	4822 051 30103	10k 5% 0,062W
3439	4822 051 30153	15k 5% 0,062W
3440	4822 051 30123	12k 5% 0,062W
3441	4822 051 30103	10k 5% 0,062W
3442	4822 051 30123	12k 5% 0,062W

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ELECTRICAL PARTS LIST - MONO-BE BOARD

RESISTORS

3443	4822 051 30153		15k 5% 0,062W
3444	4822 051 30103		10k 5% 0,062W
3445	4822 051 30153		15k 5% 0,062W
3446	4822 051 30123		12k 5% 0,062W
3447	4822 051 30103		10k 5% 0,062W
3448	4822 051 30123		12k 5% 0,062W
3449	4822 051 30153		15k 5% 0,062W
3450	4822 051 30103		10k 5% 0,062W
3451	4822 117 12139		22R 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	⚠	4R7 5% 0,33W
3471	4822 051 30109	⚠	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
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		0R JUMPER 0603
4305	4822 051 30008		0R JUMPER 0603
4310	4822 051 30008		0R JUMPER 0603
4400	4822 051 30008		0R JUMPER 0603
4402	4822 051 30008		0R 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%
5405	4822 157 71206	IND FXD 100MHZ 600R
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	9965 000 18638	M29F800DT-70N1 with SW program
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
7405	9352 456 90115	74HC1G125GW
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.

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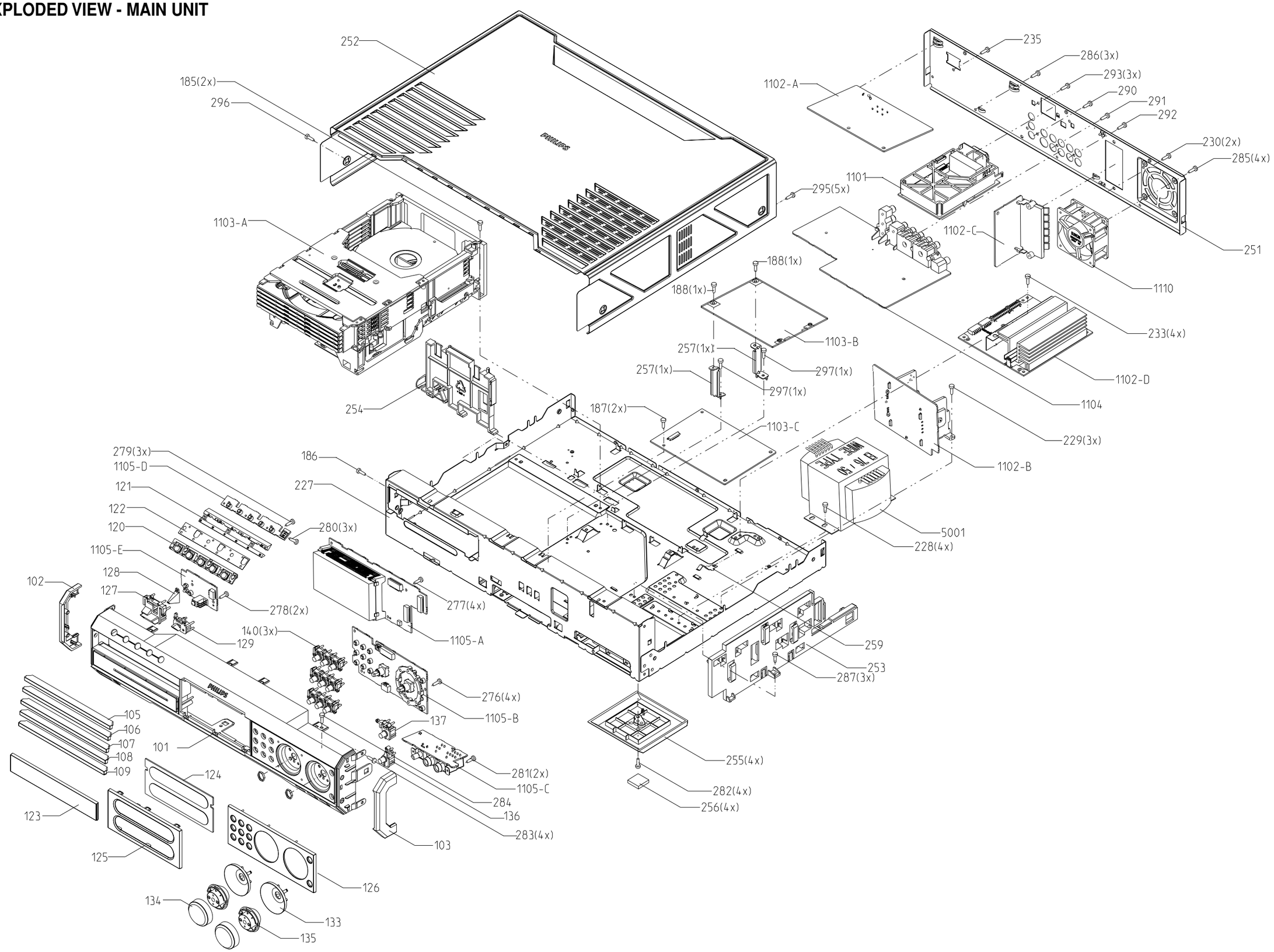
EXPLODED VIEW - MAIN UNIT



MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	3139 118 18791	Cabinet Front Silver	MX3900D
101	3139 257 51651	Cabinet Front	MX3910D
101	3139 257 50461	Cabinet Front Dark Grey	MX3950D
101	3139 257 51641	Cabinet Front	MX3960D
102	3139 118 18801	Cover Cab Side Left Silver	
102	3139 257 50471	Cover Cab Side L Dark Grey	
103	3139 118 18811	Cover Cab Side Right Silver	
103	3139 257 50481	Cover Cab Side R Dark Grey	
105	3139 118 18821	Cover Tray Disc 1 Silver	
105	3139 257 50491	Cover Tray Disc 1 Dark Grey	
106	3139 118 19101	Cover Tray Disc 2 Silver	
106	3139 257 50501	Cover Tray Disc 2 Dark Grey	
107	3139 118 19111	Cover Tray Disc 3 Silver	
107	3139 257 50511	Cover Tray Disc 3 Dark Grey	
108	3139 118 19121	Cover Tray Disc 4 Silver	
108	3139 257 50521	Cover Tray Disc 4 Dark Grey	
109	3139 118 19131	Cover Tray Disc 5 Silver	
109	3139 257 50531	Cover Tray Disc 5 Dark Grey	
120	3139 118 19441	Button Set CD Open/Close Chrome	
122	3139 113 27511	Cutsheet Shield CD Open/Close	
123	3139 118 18831	Panel Left Silver	MX3900D
123	3139 257 51671	Panel Left	MX3910D
123	3139 257 50541	Panel Left Dark Grey	MX3950D
123	3139 257 51661	Panel Left	MX3960D
124	3139 118 18841	Window Display	
125	3139 118 18851	Panel Display Silver	
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 01401	Satellite LS Package CS3950D/17S	
346	3139 119 01391	Subwoofer Box SW3900/17S	

346	3139 119 01411	Subwoofer Box SW3950D/17s	
351	4822 303 50063	FM Antenna	
352	4822 303 50082	AM Loop Antenna	
353	3139 228 61701	Remote Control RC19241001/01	
356	2422 070 98246 ⚠	Mains Cord UL 7A 1,5M	/17/37
356	2422 070 98151 ⚠	Mains Cord Eur 2A5 1,5M	/78
357	3139 128 73011 ⚠	Mains Adaptor	/78
358	4822 263 21206	Cable Video 1,7M Yellow	
361	2422 076 00374	Cable Cinch 1,5M Gn/Bu/Rd	
362	3103 308 92610	Cable Audio 1,5M 2x2 RCA	
370	3139 115 21991	Instruction for Use	MX3900D/MX3950D
1110	3103 308 52950	Fan Assembly KD1206PTS3	
5001	3139 118 32661 ⚠	Mains Transfo. PWR207 6x75W	/17/37
5001	3139 118 32641 ⚠	Mains Transfo. PWR207 6x75W	/78
8000	3139 110 35031	FFC Cable Pin 14cm AD	
8001	3139 111 02001	FFC Cable 13Pin 40cm BD	
8002	3139 111 02041	FFC Cable 17Pin 40cm AD	
8003	3139 111 02271	FFC Cable 13Pin 10cm AD	
8005	3139 111 02051	FFC Cable 7Pin 34cm AD	
8006	3139 110 34860	FFC Cable 4Pin 34cm AD	
8008	3139 111 02021	FFC Cable 4Pin 22cm AD	
8010	3139 111 02601	FFC Cable 16Pin 18cm AD	
8011	3139 111 02591	FFC Cable 10Pin 28cm AD	
8012	3139 111 02581	FFC Cable 13Pin 18cm AD	
8013	3139 111 02571	FFC Cable 10Pin 18cm BD	
8014	3139 111 02571	FFC Cable 10Pin 18cm BD	
8016	3139 110 36140	FFC Cable 4Pin 18cm AD	
8018	3139 111 02231	FFC Cable 5Pin 12cm AD	

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

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SCREW LISTS - MAIN UNIT

Breakdown of Satellite LS Package CS3900D/17S (Applicable for MX3900D & MX3910D only)

9965 000 17040	Front Left Speaker Box
9965 000 17041	Front Right Speaker Box
9965 000 17042	Surround Left Speaker Box
9965 000 17043	Surround Right Speaker Box
9965 000 17044	Center Speaker Box
9965 000 17045	Front Grille Assy (Center Speaker)
9965 000 17046	Philips Logo (Center Speaker)
9965 000 17047	Keyhole Bracket Pack set Silver

Breakdown of Satellite LS Package CS3950D/17S (Applicable for MX3950D & MX3960D only)

9965 000 17050	Front Left Speaker Box
9965 000 17051	Front Right Speaker Box
9965 000 17052	Surround Left Speaker Box
9965 000 17053	Surround Right Speaker Box
9965 000 17054	Center Speaker Box
9965 000 17055	Front Grille Assy (Center Speaker)
9965 000 17046	Philips Logo (Center Speaker)
9965 000 17056	Keyhole Bracket Pack Set Black

Breakdown of SW3900/17S & SW3950/17S (Applicable for all)

9965 000 17048	Front Grille Assy SW3900/17S
9965 000 17049	Front Grille Assy SW3950/17S
9965 000 17046	Philips Logo

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

185	M3 x 6
186	D3 x 10
187	M3 x 6
188	M3 x 6
228	M3 x 6
229	M3 x 6
230	D3 x 10
233	M3 x 6
235	D3 x 10
276	D3 x 10
277	D3 x 10
278	D3 x 10
279	D2 x 8
280	D2 x 8
281	D2 x 8
282	M3 x 6
283	M3 x 6
284	M3 x 6
285	D3 x 10
286	M3 x 6
287	M3 x 6
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

REVISION LIST

Version 1.0

* Initial release

Version 1.1

* Add MX3910D/17 and MX3960D/17 into the Service Manual and some correction.
  Pages modified : Pg Front, 1-2 and 2-1
  Pages corrected : Pg 3-3, 8-2, 11-11, 12-7 and 12-8

* Add new pcb layout & schematics released:
  Front Board: Pg 6-2a, 6-3a,b,c, 6-4a, 6-5a,b, 6-6a and 6-7a,b
  AV Board: Pg 8-3a,b,c, 8-4a., 8-5a, 8-6a, 8-7a, 8-8a, 8-9a, 8-10a,b,c and 8-11a,b,c
  Power Module: Pg 9-2a,b,c,d,e, 9-3a,b,c,d,e, 9-4a, 9-5a, 9-6a and 9-7a
  5DTC Control Board: Pg 10-4a
  Mono-BE Board: Pg 12-2a,b,c, 12-3a, 12-4a, 12-5a and 12-6a

Version 1.2 (2 April 2004)

* Add MX3910D/78