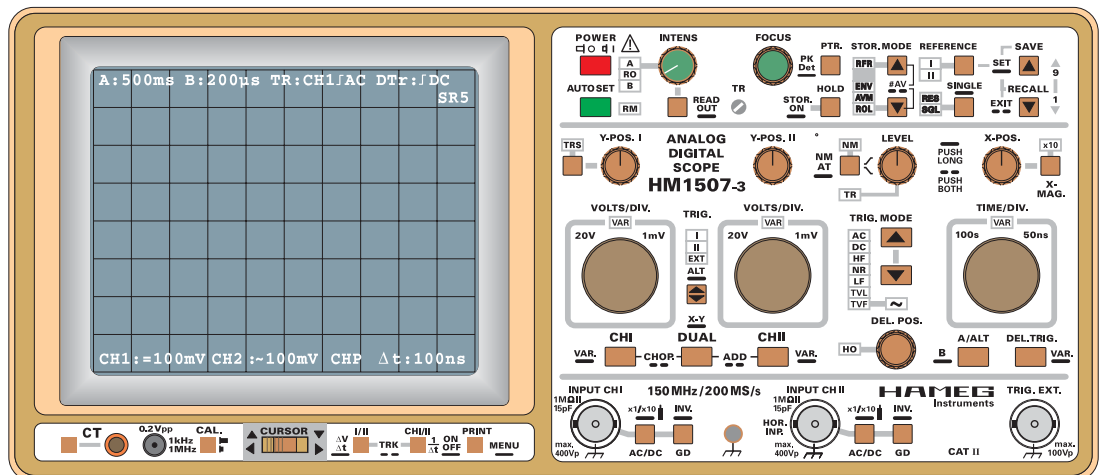


Oscilloscope HM1507-3



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Herstellers
Manufacturer
Fabricant

HAMEG GmbH
Kelsterbacherstraße 15-19
D - 60528 Frankfurt

Bezeichnung / Product name / Designation:

Oszilloskop/Oscilloscope/Oscilloscope

Typ / Type / Type: HM1507-3

mit / with / avec: -

Optionen / Options / Options: HO79-6

mit den folgenden Bestimmungen / with applicable regulations / avec les directives suivantes

EMV Richtlinie 89/336/EWG ergänzt durch 91/263/EWG, 92/31/EWG
EMC Directive 89/336/EEC amended by 91/263/EWG, 92/31/EEC
Directive EMC 89/336/CEE amendée par 91/263/EWG, 92/31/CEE

Niederspannungsrichtlinie 73/23/EWG ergänzt durch 93/68/EWG
Low-Voltage Equipment Directive 73/23/EEC amended by 93/68/EEC
Directive des équipements basse tension 73/23/CEE amendée par 93/68/CEE

KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE

HAMEG®
Instruments

Angewendete harmonisierte Normen / Harmonized standards applied / Normes harmonisées utilisées

Sicherheit / Safety / Sécurité

EN 61010-1: 1993 / IEC (CEI) 1010-1: 1990 A 1: 1992 / VDE 0411: 1994
EN 61010-1/A2: 1995 / IEC 1010-1/A2: 1995 / VDE 0411 Teil 1/A1: 1996-05
Überspannungskategorie / Overvoltage category / Catégorie de surtension: II
Verschmutzungsgrad / Degree of pollution / Degré de pollution: 2

Elektromagnetische Verträglichkeit / Electromagnetic compatibility / Compatibilité électromagnétique

EN 61326-1/A1

Störaussendung / Radiation / Emission: Tabelle / table / tableau 4; Klasse / Class / Classe B.

Störfestigkeit / Immunity / Imunité: Tabelle / table / tableau A1.

EN 61000-3-2/A14

Oberschwingungsströme / Harmonic current emissions / Émissions de courant harmonique: Klasse / Class / Classe D.

EN 61000-3-3

Spannungsschwankungen u. Flicker / Voltage fluctuations and flicker / Fluctuations de tension et du flicker.

Datum /Date /Date

15.01.2001

Unterschrift / Signature / Signatur

E. Baumgartner
Technical Manager
Directeur Technique

General information regarding the CE marking

HAMEG instruments fulfill the regulations of the EMC directive. The conformity test made by HAMEG is based on the actual generic- and product standards. In cases where different limit values are applicable, HAMEG applies the severer standard. For emission the limits for residential, commercial and light industry are applied. Regarding the immunity (susceptibility) the limits for industrial environment have been used.

The measuring- and data lines of the instrument have much influence on emission and immunity and therefore on meeting the acceptance limits. For different applications the lines and/or cables used may be different. For measurement operation the following hints and conditions regarding emission and immunity should be observed:

1. Data cables

For the connection between instruments resp. their interfaces and external devices, (computer, printer etc.) sufficiently screened cables must be used. Without a special instruction in the manual for a reduced cable length, the maximum cable length of a dataline must be less than 3 meters and not be used outside buildings. If an interface has several connectors only one connector must have a connection to a cable.

Basically interconnections must have a double screening. For IEEE-bus purposes the double screened cables HZ72S and HZ72L from HAMEG are suitable.

2. Signal cables

Basically test leads for signal interconnection between test point and instrument should be as short as possible. Without instruction in the manual for a shorter length, signal lines must be less than 3 meters and not be used outside buildings.

Signal lines must be screened (coaxial cable - RG58/U). A proper ground connection is required. In combination with signal generators double screened cables (RG223/U, RG214/U) must be used.

3. Influence on measuring instruments.

Under the presence of strong high frequency electric or magnetic fields, even with careful setup of the measuring equipment an influence of such signals is unavoidable.

This will not cause damage or put the instrument out of operation. Small deviations of the measuring value (reading) exceeding the instruments specifications may result from such conditions in individual cases.

4. RF immunity of oscilloscopes.

4.1 Electromagnetic RF field

The influence of electric and magnetic RF fields may become visible (e.g. RF superimposed), if the field intensity is high. In most cases the coupling into the oscilloscope takes place via the device under test, mains/line supply, test leads, control cables and/or radiation. The device under test as well as the oscilloscope may be effected by such fields.

Although the interior of the oscilloscope is screened by the cabinet, direct radiation can occur via the CRT gap. As the bandwidth of each amplifier stage is higher than the total -3dB bandwidth of the oscilloscope, the influence RF fields of even higher frequencies may be noticeable.

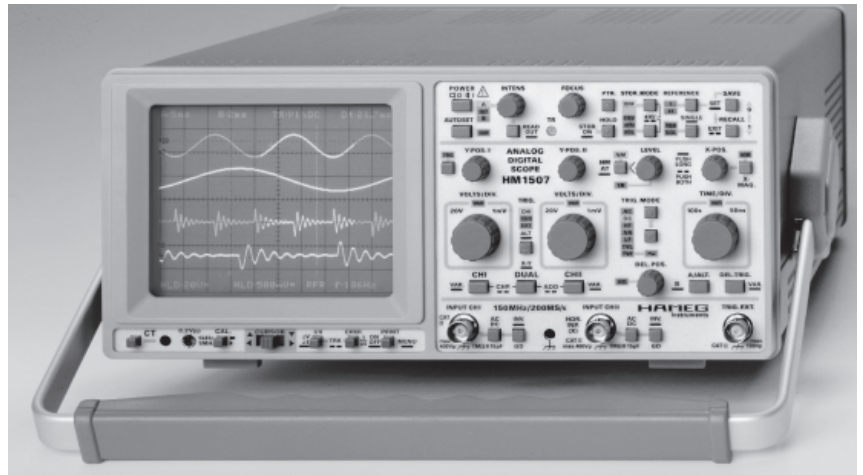
4.2 Electrical fast transients / electrostatic discharge

Electrical fast transient signals (burst) may be coupled into the oscilloscope directly via the mains/line supply, or indirectly via test leads and/or control cables. Due to the high trigger and input sensitivity of the oscilloscopes, such normally high signals may effect the trigger unit and/or may become visible on the CRT, which is unavoidable. These effects can also be caused by direct or indirect electrostatic discharge.

HAMEG GmbH

The 150 MHz Analog-/Digital-Oscilloscope HM1507-3 (200MSa/s)

- Autoset**
- Auto Cursor**
- Readout / Cursor**
- Save / Recall**
- 2 Reference Memories**
- Dual Time Base**
- Component Tester**
- 1kHz/1MHz Calibrator**
- RS232 Interface**



Analog:

- 2 x DC to 150MHz, 2 x 1mV-50V/div
- Time Base A with Trig. DC to 250MHz
- Time Base B with 2ndTrig. to 250MHz
- Trig. DC to 250MHz, TV Sync. Separator
- 1kHz/1MHz Calibrator, CRT with 14kV

Digital:

- Refresh, Single, Roll-, Envelope-, Average-,XY-Mode
- Max. Sampling Rate 200MSa/s, Storage 2x2048x8 bit
- Time Base A: 100s - 50ns/div., B: 20ms - 50ns/div.
- Pre Trigger 25-50-75-100%, Post Trigger 25-50-75%
- Screen Refresh 180/s, Dot Join (linear)

Specifications

Vertical Deflection

Operating modes: Channel I or II separate both Channels (alternated or chopped)

Chopper frequency: approx. 0.5MHz

Sum or Difference: from CH I and CH II

Invert: CH I and CH II

XY-Mode: via channel I (Y) and channel II(X)

Frequency range: DC to 150MHz (-3dB)

Rise time: <2.3ns

Overshoot: ≤1%

Deflection coefficient: 14 calibrated positions from 1mV/div to 20V/div in 1-2-5 sequence, variable 2.5:1 to min. 50V/div.

Accuracy in calibrated positions

1mV/div – 2mV/div: ±5% (DC-10MHz(-3dB))

5mV/div – 20V/div: ±3%

Input impedance: 1MΩ || 15pF

Input coupling: DC-AC-GD (ground)

Input voltage: max. 400V (DC + peak AC)

Delay line: approx. 70ns

Triggering

Automatic (peak to peak): 20Hz-250MHz (≥0.5div.)

Normal with level control: DC-250MHz (≥0.5div.)

Indicator for trigger action: LED

Slope: positive or negative

Sources: Channel I or II, line and external

ALT. Triggering: CH I/CH II (≥ 0.8div.)

Coupling: AC (10 – 250MHz)

DC (0 – 250MHz)

HF (50kHz – 250MHz)

LF (0 – 1.5kHz)

NR (Noise reject) 0 – 50MHz (≥ 0.8div.)

Triggering time base B: normal with level control and slope selection (0 – 250 MHz)

External: ≥0.3V_{pp} (0 – 250MHz)

Active TV Sync. Separator: field & line, + / -

Horizontal Deflection

Analog Time Base:

Accuracy in calibr. position 3%; 1-2-5 sequence

A: 0.5s-50ns/div.

B: 20ms-50ns/div.

Operating modes: A or B, alternate A/B

Variable: 2.5:1 up to 1.25s/div.

X-MAG. x10 (±5%): max. 5ns/div.

Holdoff time: variable to approx. 10:1

Bandwidth X-amplifier: 0 – 3MHz (-3dB)

X-Y phase shift: <3° below 220kHz

Digital Time Base:

Accuracy: 3%; 1-2-5 sequence

A: 100s-0.1µs/div.

Peak detect: 100s – 5µs/div.

B: 20ms-0.1µs/div.

Peak detect: 20ms – 5µs/div.

Operating modes: A or B, alternate A/B

X-MAG. x10 (±5%): 10ns/div.

Bandwidth X-Amplifier: 0 – 20MHz (-3dB)

X-Y phase shift: <3° below 20MHz

Input X-amplifier: via Channel II

Sensitivity: see CH II

Digital Storage

Operating modes: Refresh, Roll, Single, XY

Peak Detect, Average (2 to 512), Envelope

Dot Join function: automatically

Acquisition (real time)

8 bit flash A/D max. 200MSa/s

Peak detect: 5ns

Display refresh rate: max. 180/s

Memory & display: 2k x 8bit per channel

Reference memory: 2 waveforms 2k x 8bit

Saved in: (EEPROM).

Resolution (samples/div.): X 200/div.

Y 25 /div.

XY 25 x 25/div.

Pre-/Post Trigger: 25,50,75,100, -25,-50,-75%

Operation / Control

Manual: front panel switches

Auto Set: signal related automatic parameter selection

Save & Recall: 9 user defined parameter settings

Readout & Cursor (analog/digital)

Display of parameter settings and other functions on the screen. Trigger point indication.

Cursor measurement of ΔU, Δt or 1/Δt (frequency), separate or in tracking mode.

Readout intensity: separately adjustable.

Interface

PC remote control: built in RS232 interface

Option: HO79-6 Multifunction-Interface

IEEE-Bus, RS232, and Centronics

Output formats (HO79-6): PCL, Post Script

HPGL, EPSON

Opto interface HZ70

Component Tester

Test voltage: max. 7V_{rms} (o/c).

Test current: max. 7mA_{rms} (s/c)

Test frequency: approx. 50Hz

One test lead is grounded (Safety Earth)

General Information

CRT: D14-375GY, 8x10cm internal graticule

Acceleration voltage: approx. 14kV

Trace rotation: adjustable on front panel

Calibrator: 0.2V ±1%, ≈ 1kHz/1MHz (tr <4ns)

Line voltage: 100-240V AC ±10%, 50/60Hz

Power consumption: approx. 47 Watt at 50Hz

Min./Max. ambient temperature: 0°C...+40°C

Protective system: Safety class I (IEC1010-1)

Weight: approx. 6.5kg (12.4lbs)

Color: techno-brown

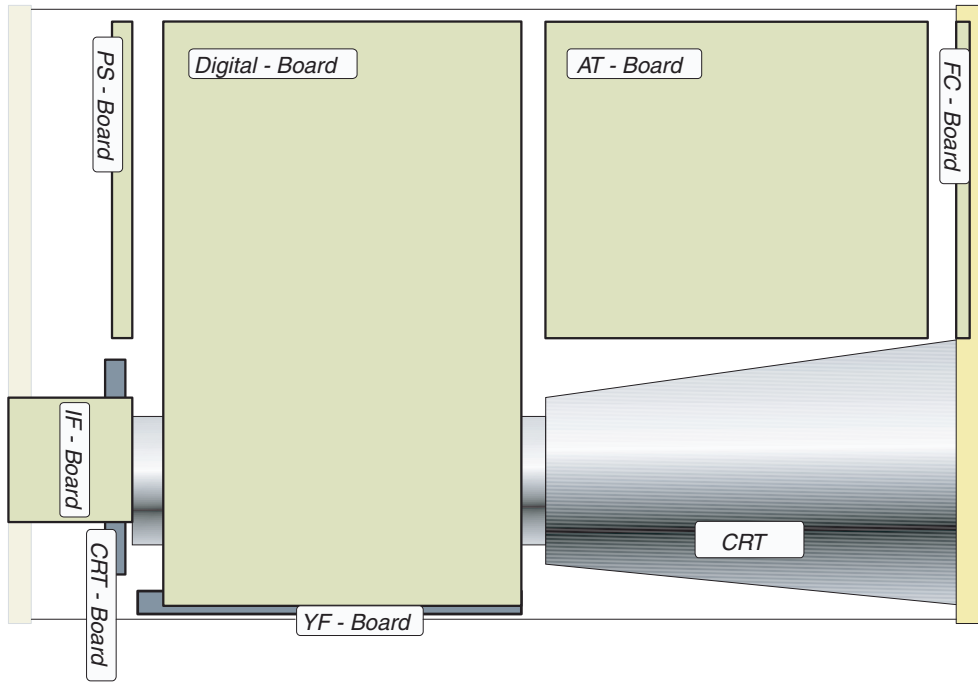
Cabinet: W 285, H 125, D 380 mm

Lockable tilt handle 7/00

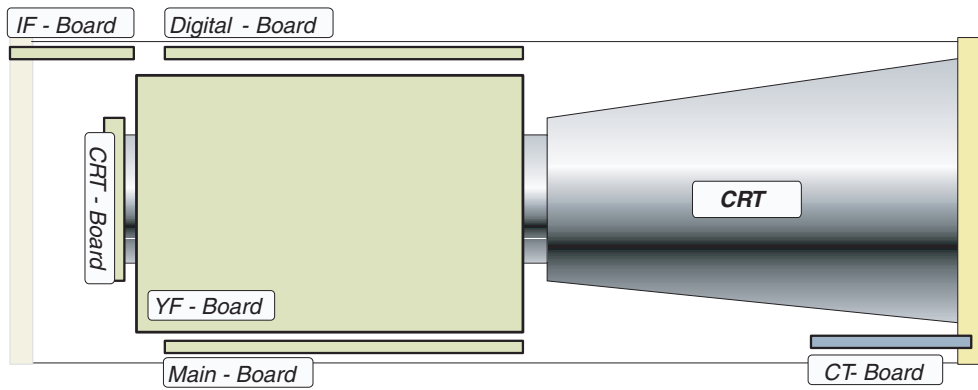
Accessories supplied: Operators Manual and PC software on CD-ROM, 4 Disks, Line Cord, 2 Probes 10:1

Typical board allocation

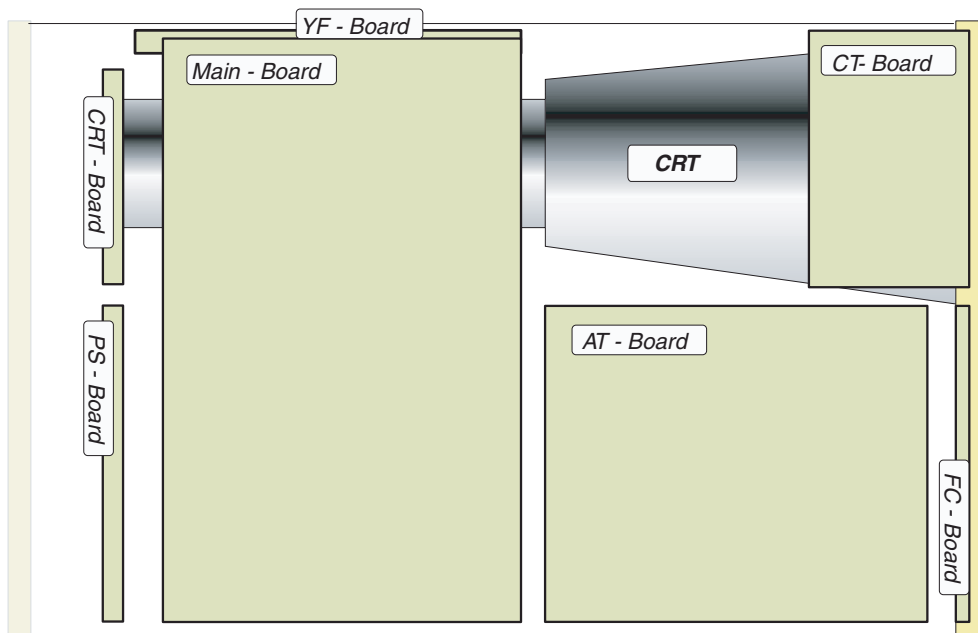
Typical boards allocation (Top view)

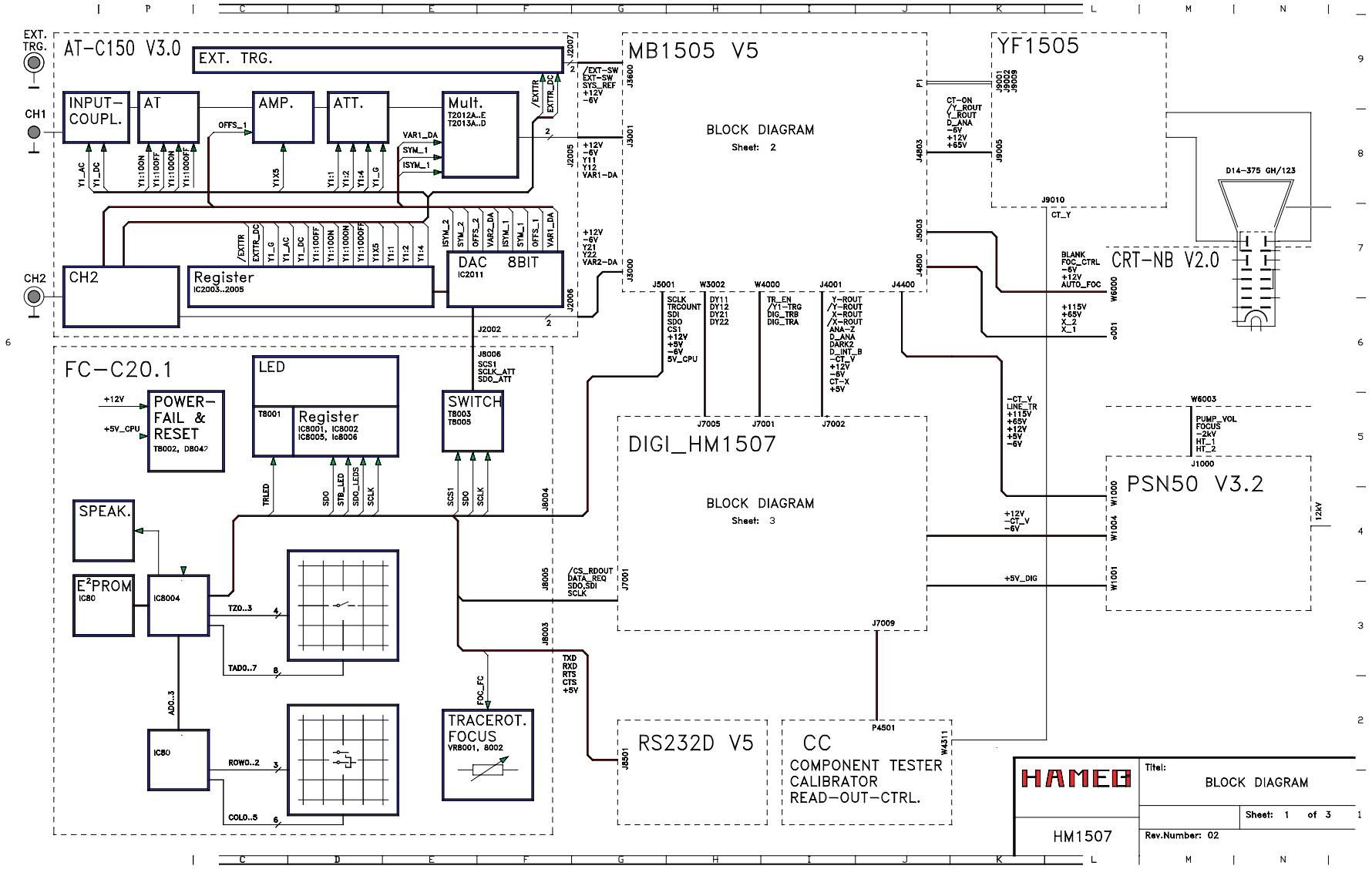


Typical boards allocation (Back side)



Typical boards allocation (Bottom view)

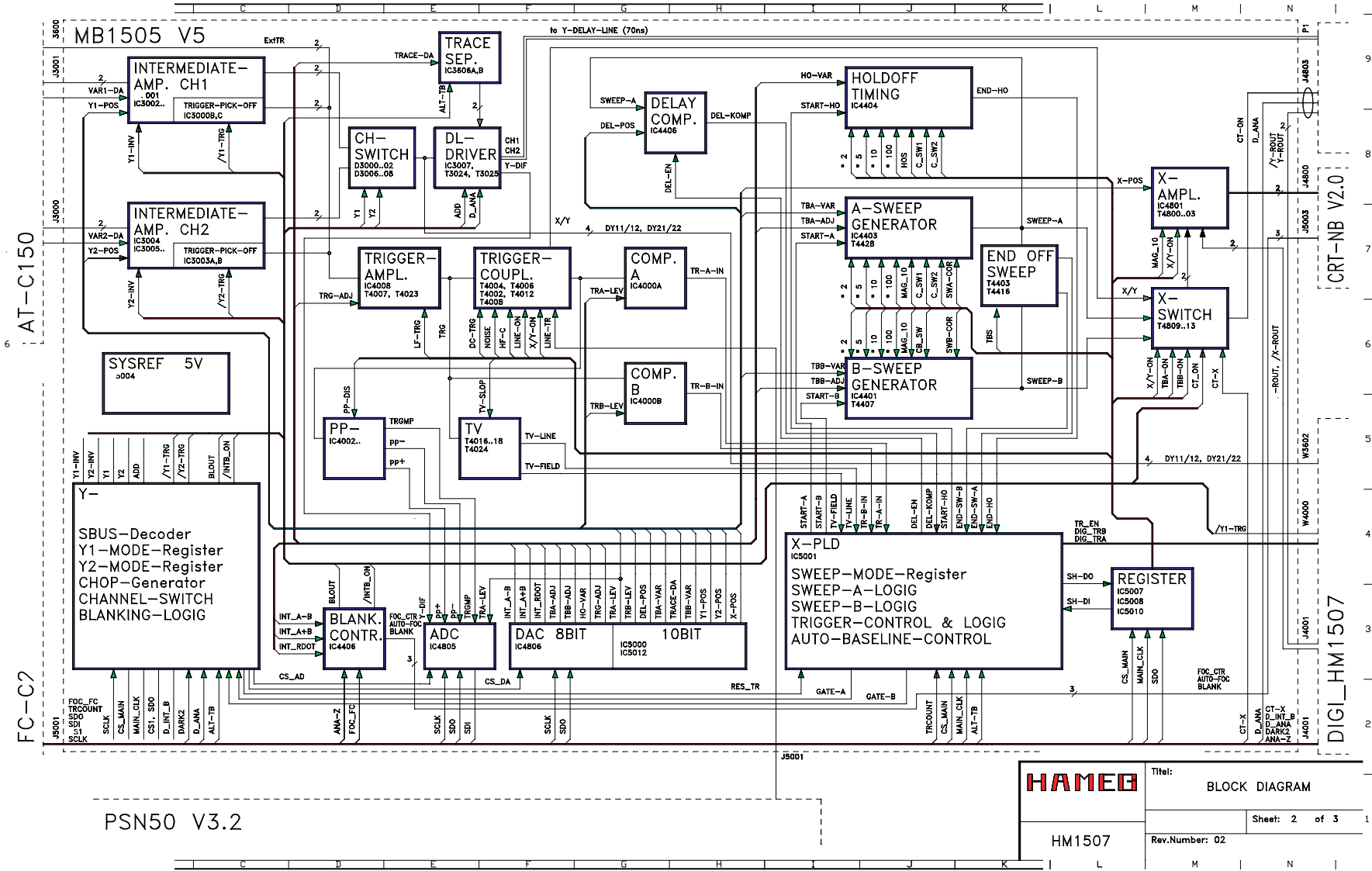




BLOCK DIAGRAM
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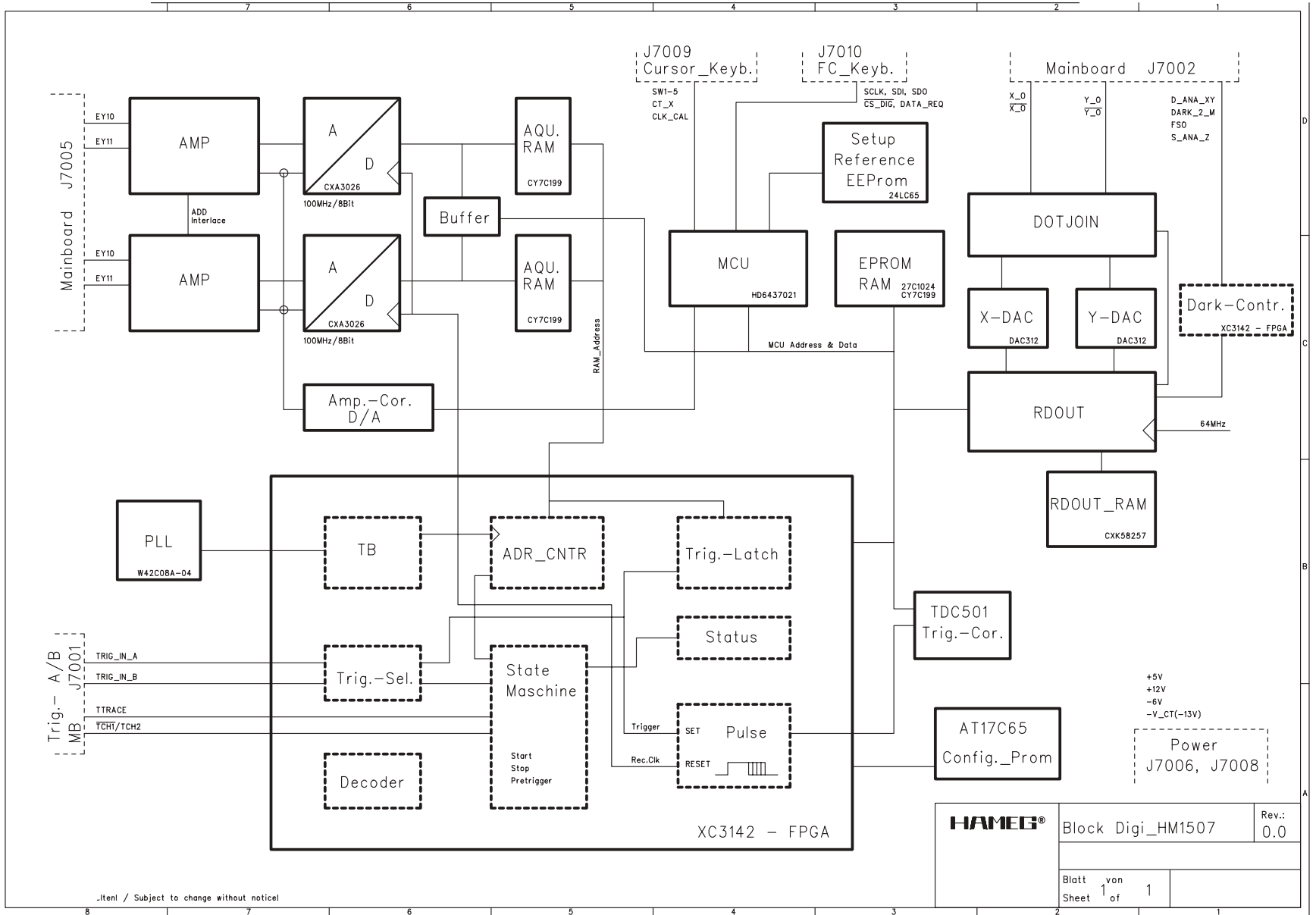
BLOCK DIAGRAM
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	Sheet: 1 of 3	
HM1507	Rev.Number: 02	

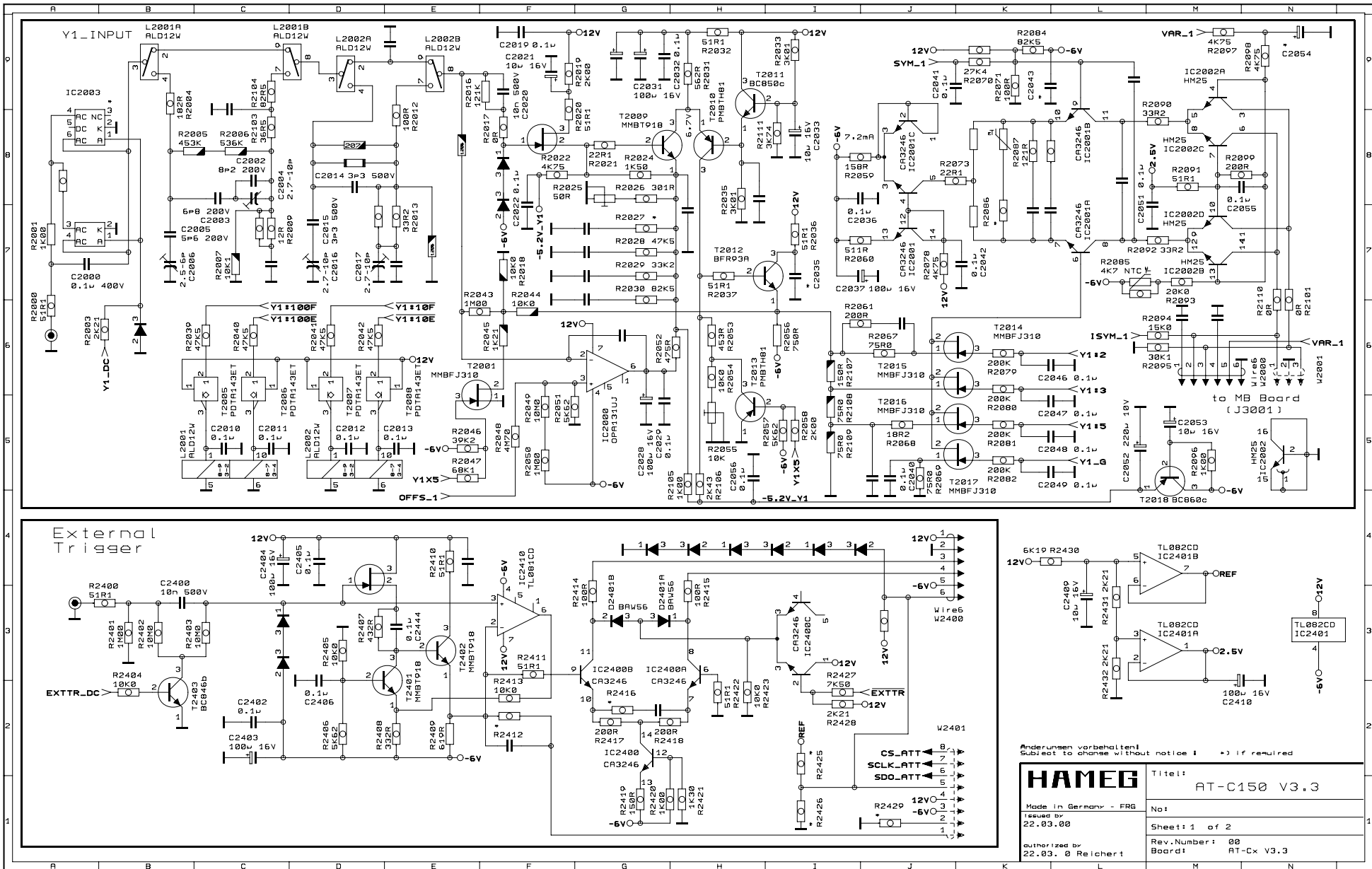


PSN50 V3.2

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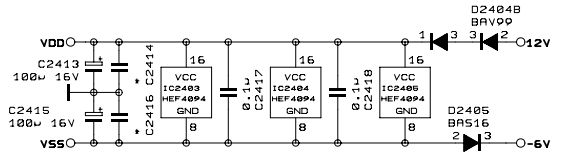
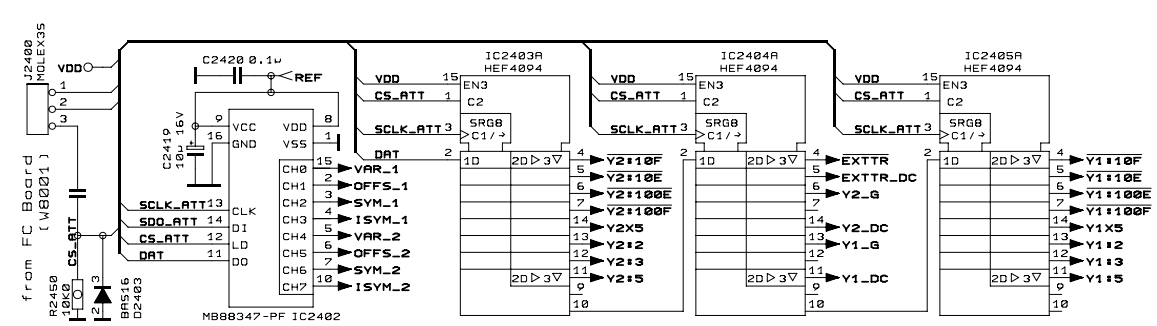
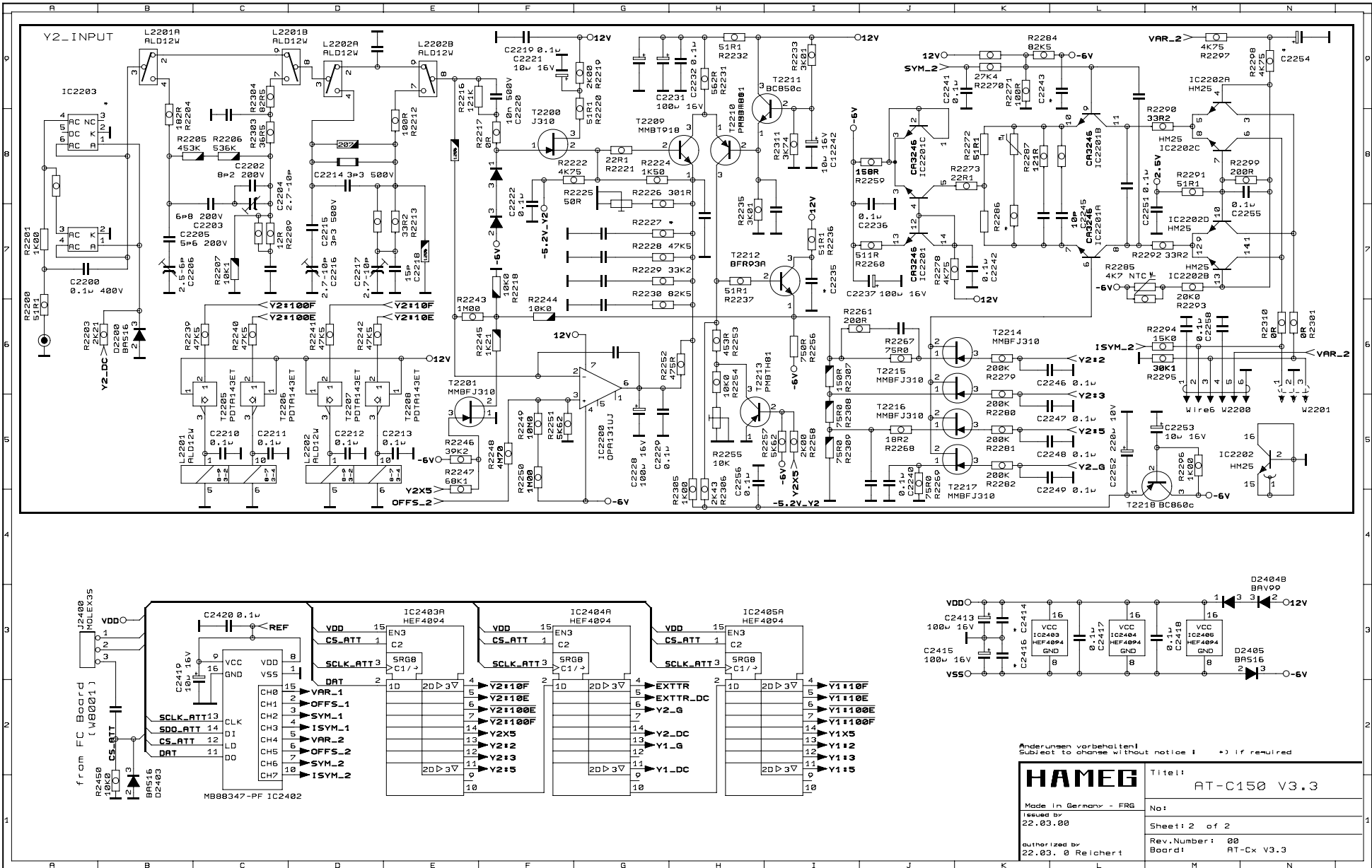


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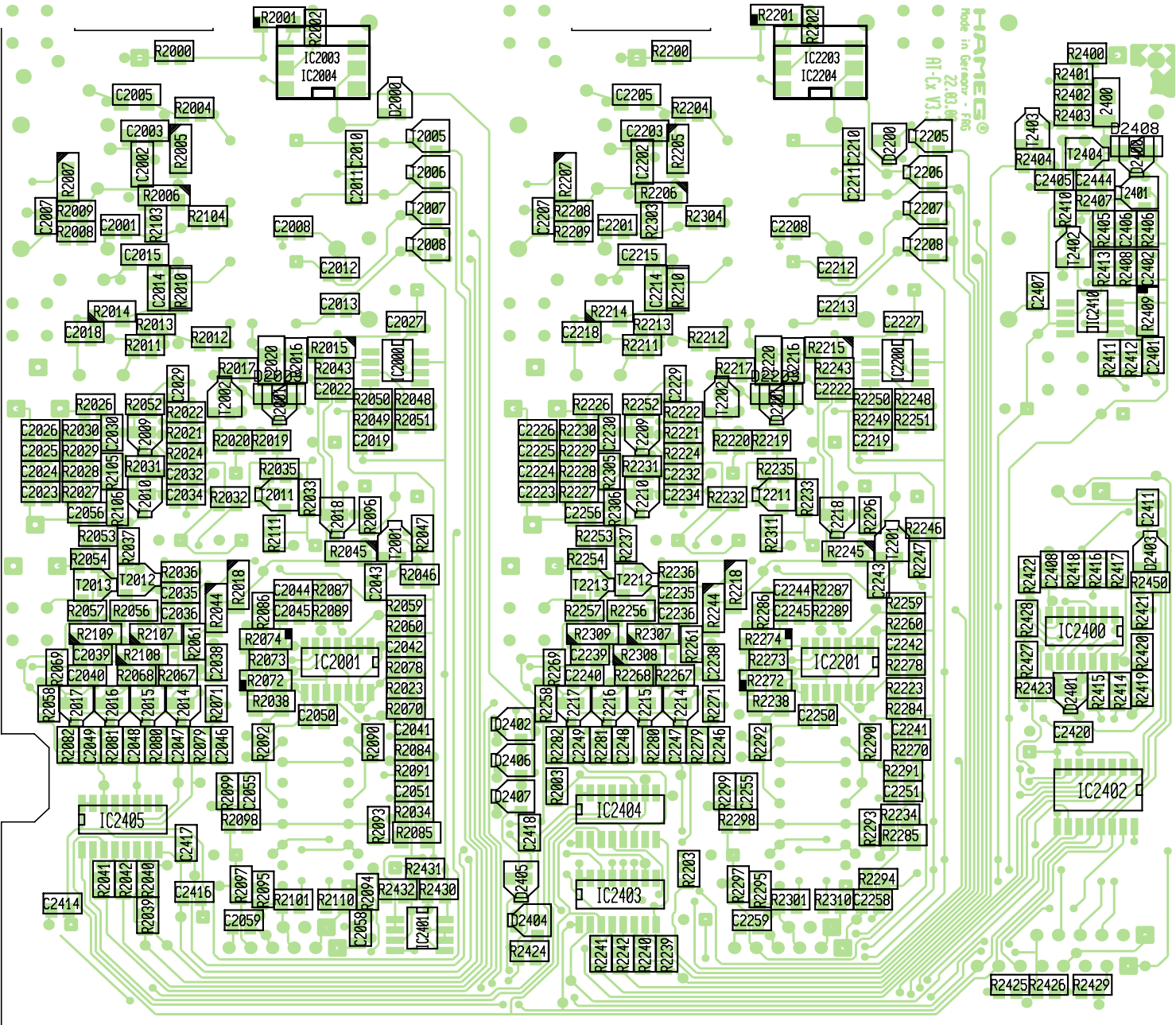
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Subject to change without notice! → If required

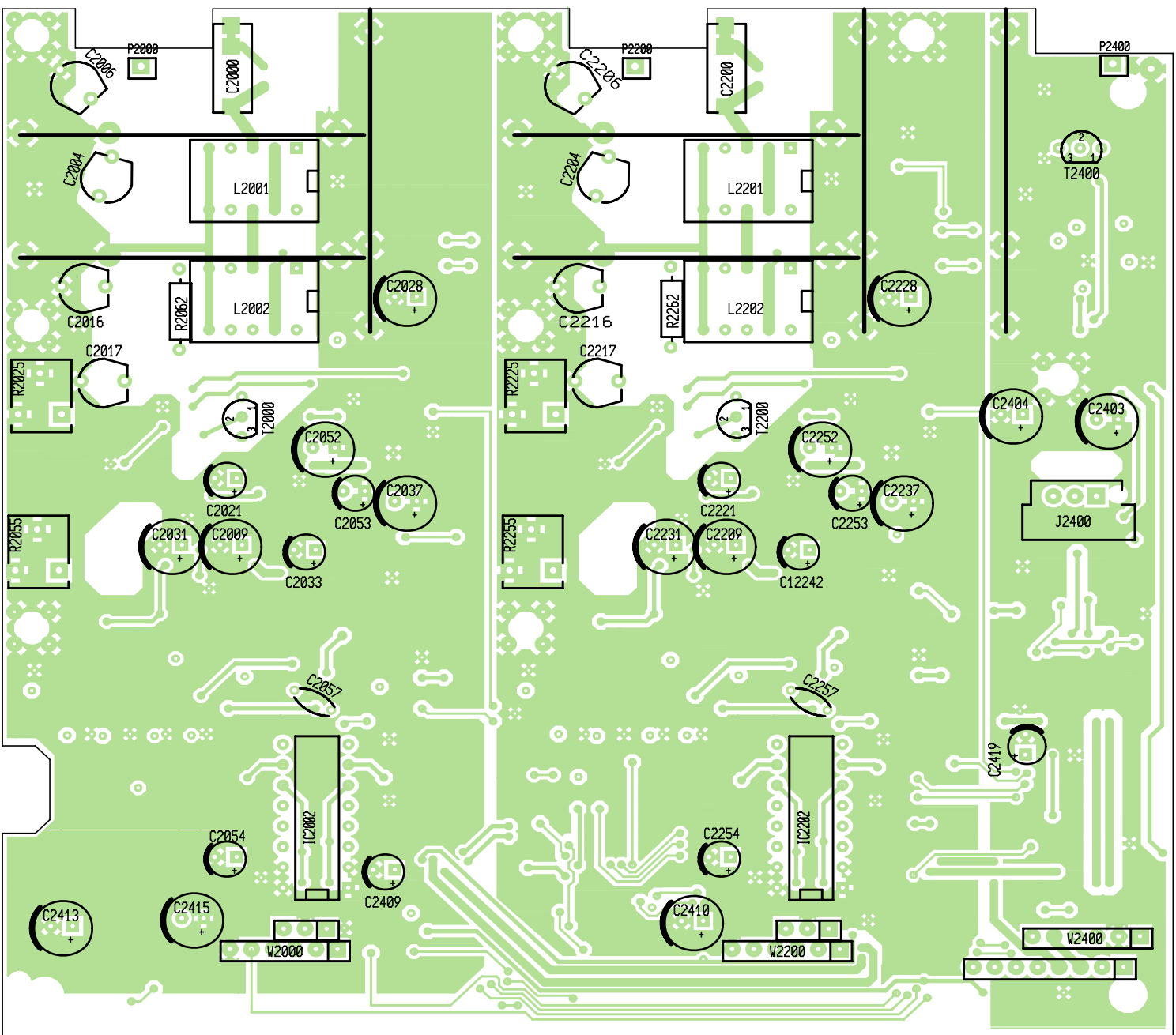
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	Made in Germany - FRG	No:
designed by	22.03.00	Sheet: 1 of 2
authorized by	22.03.0 Reichert	Rev. Number: 00
		Board: AT-Cx V3.3

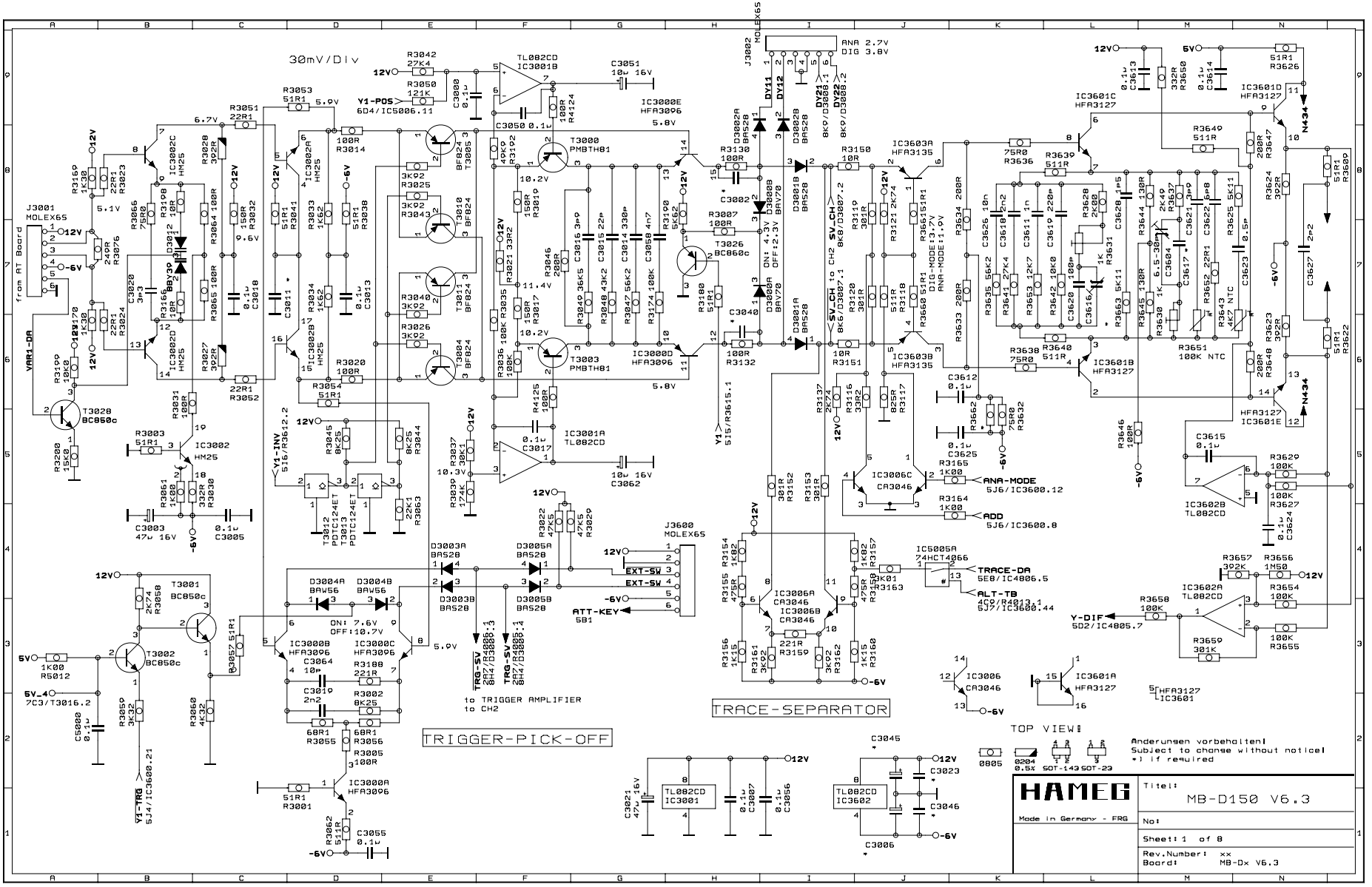


Änderungen vorbehalten! Subject to change without notice! *) If required

HAMEG	Titel:	AT-C150 V3.3	
	Made in Germany - FRG	No:	
	Issued by: 22.03.00	Sheet:	2 of 2
	authorized by: 22.03.00 Reichert	Rev.Number:	00
	Board:	AT-Cx V3.3	





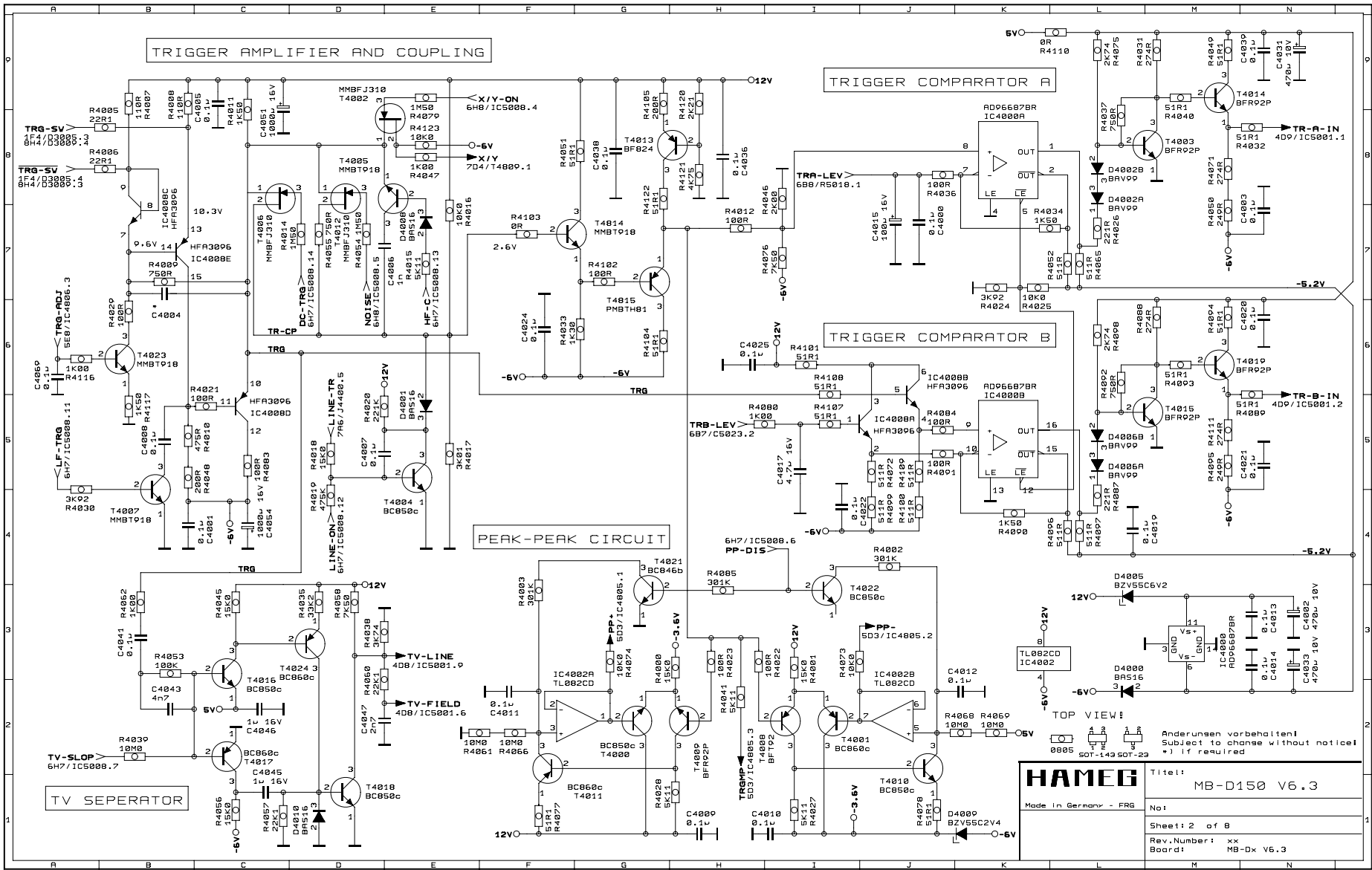


TOP VIEW

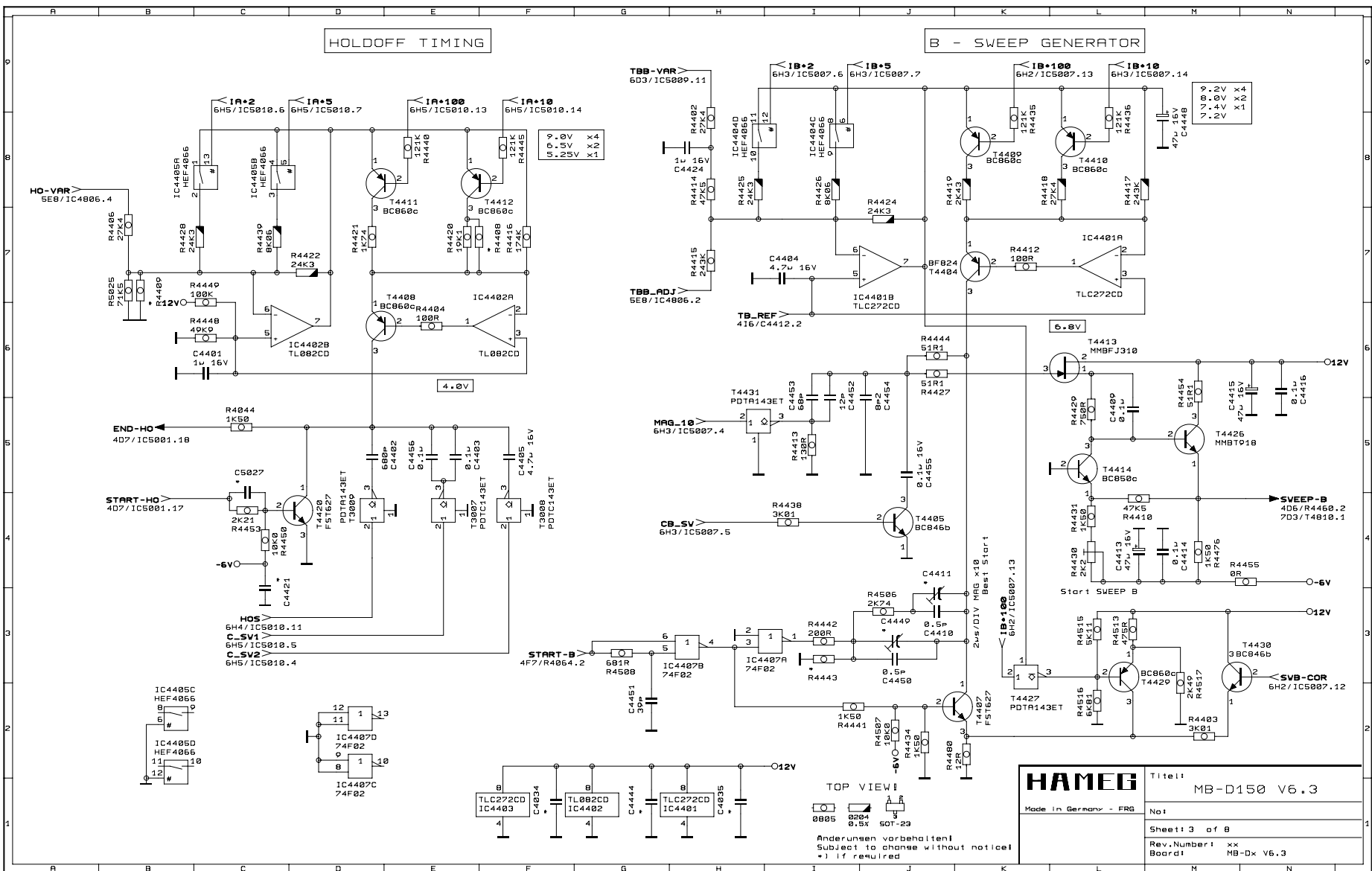
0885 0204 0885
0.5% 0.5% SOT-143 SOT-23

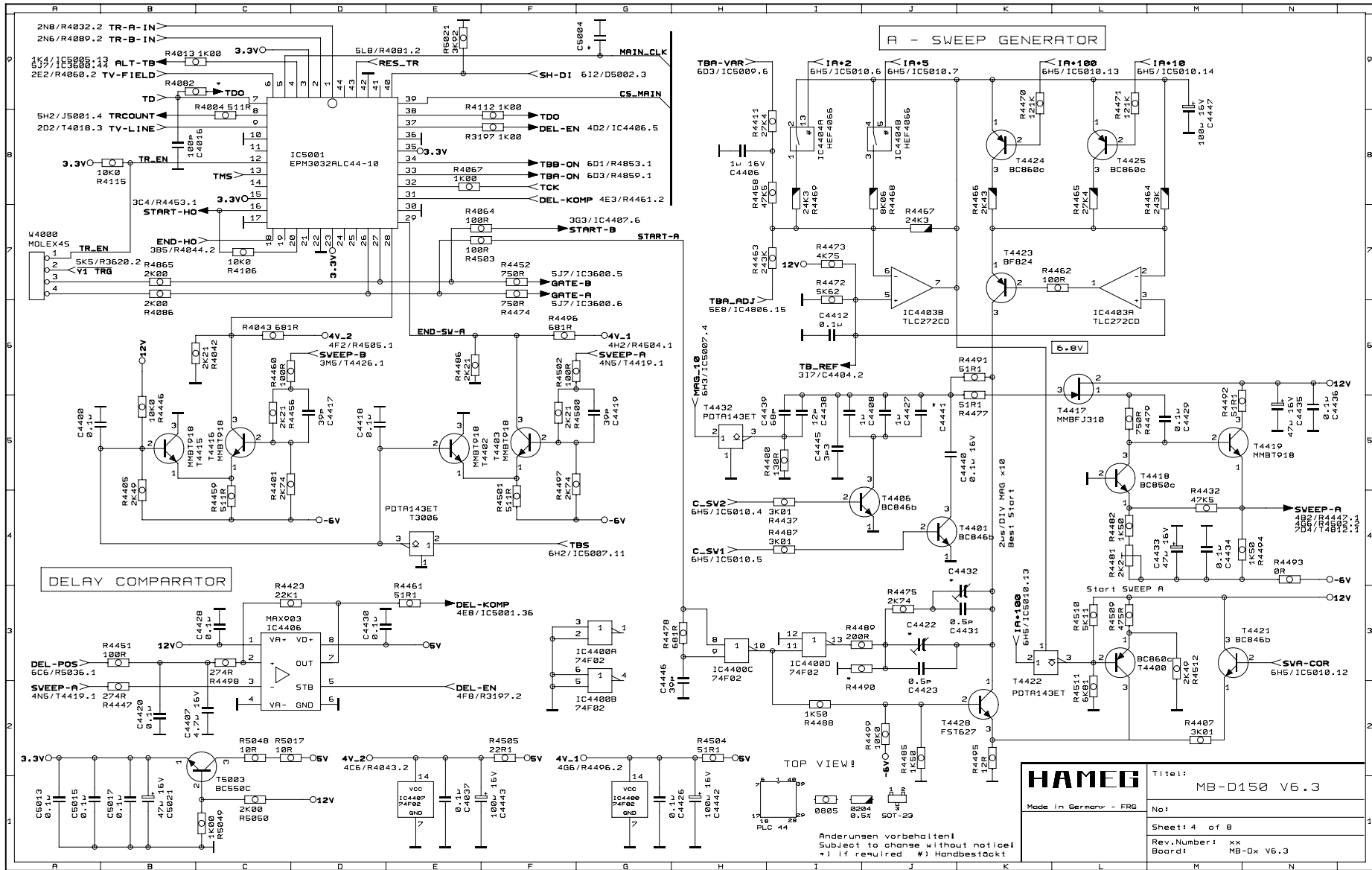
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Made in Germany - FRG No:
Sheet: 1 of 8
Rev. Number: xx
Board: MB-Dx V6.3

Anderungen vorbehalten!
Subject to change without notice!
*) if required

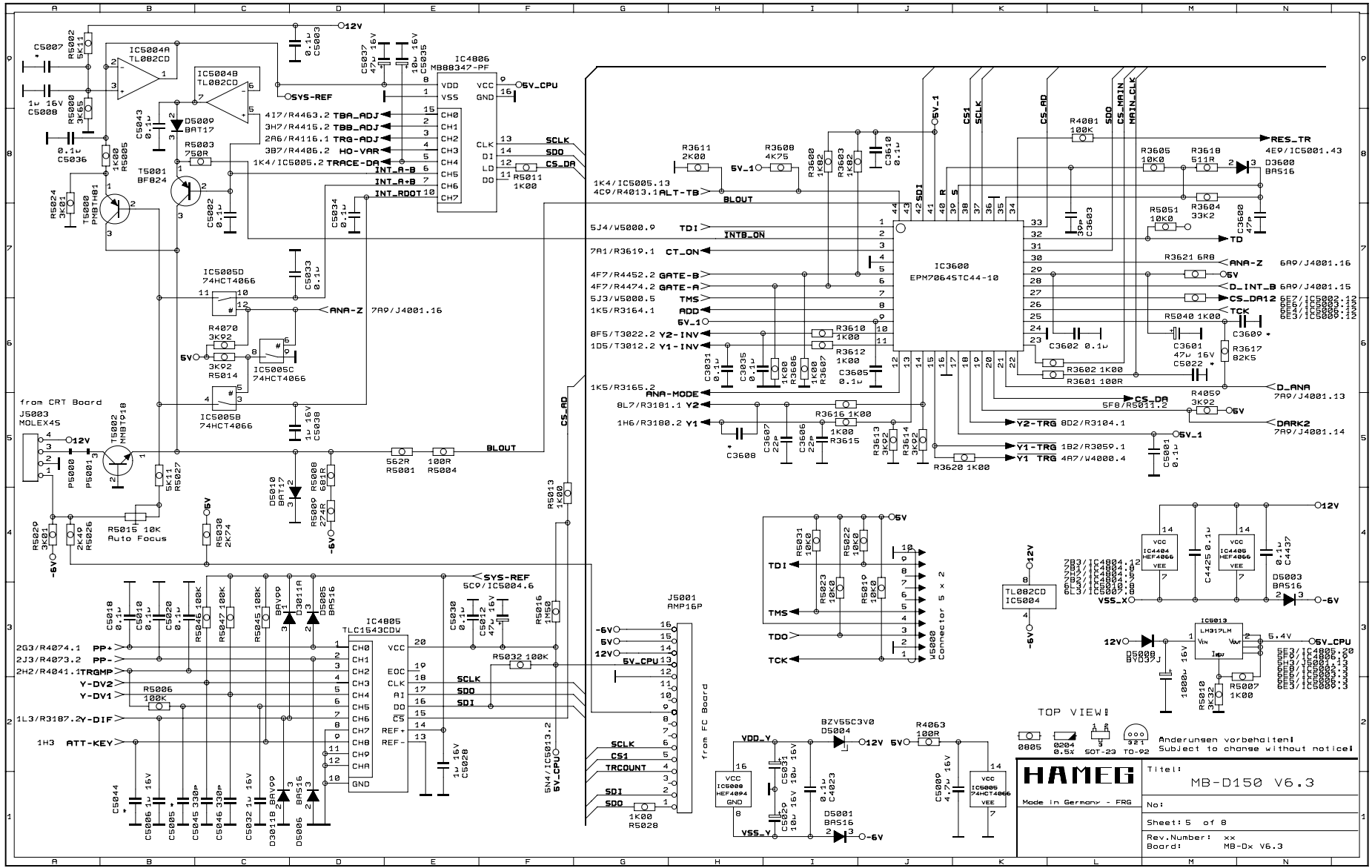


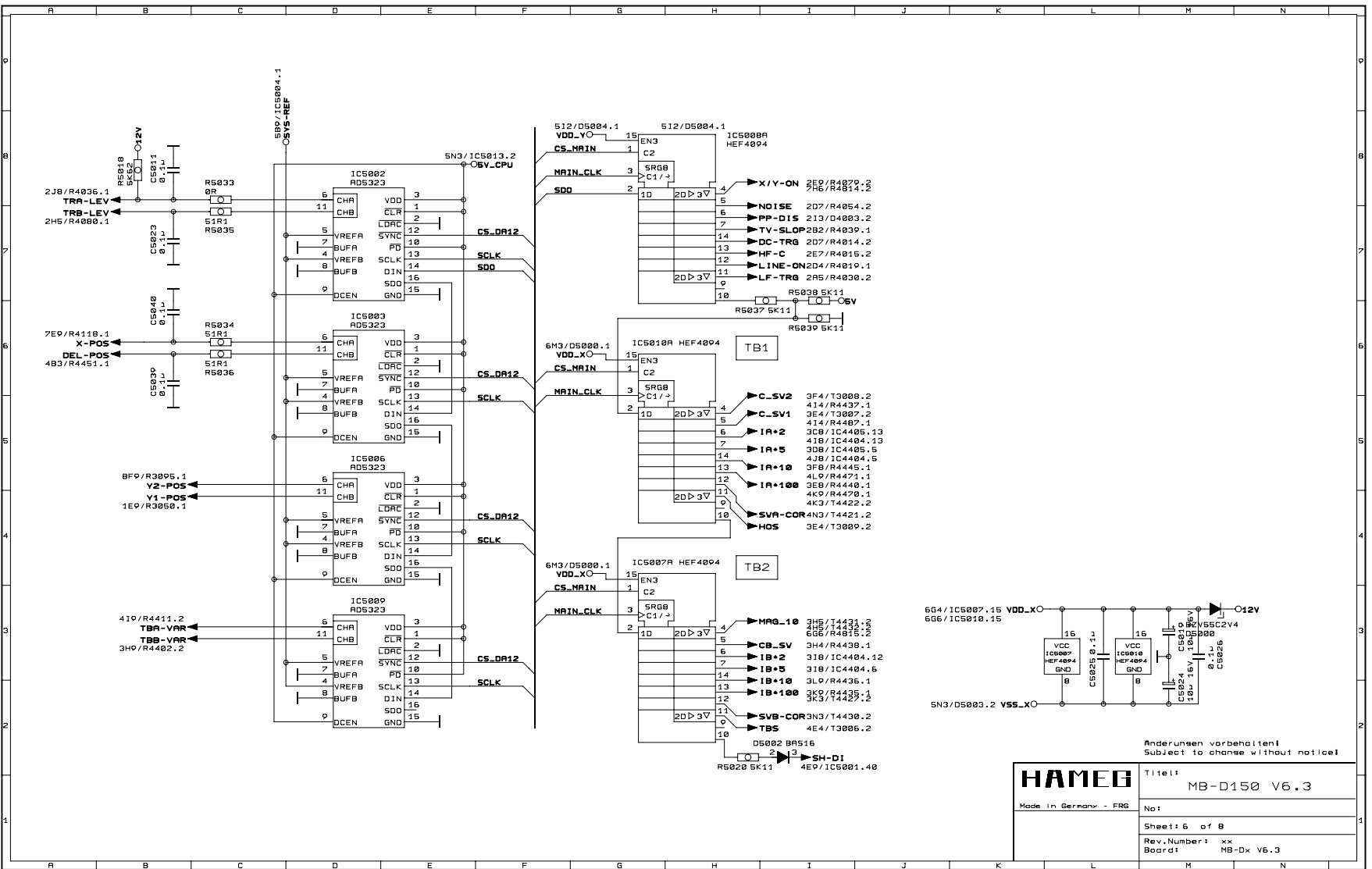
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Not	
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Rev. Number: xx	
Board: MB-Dx V6.3	





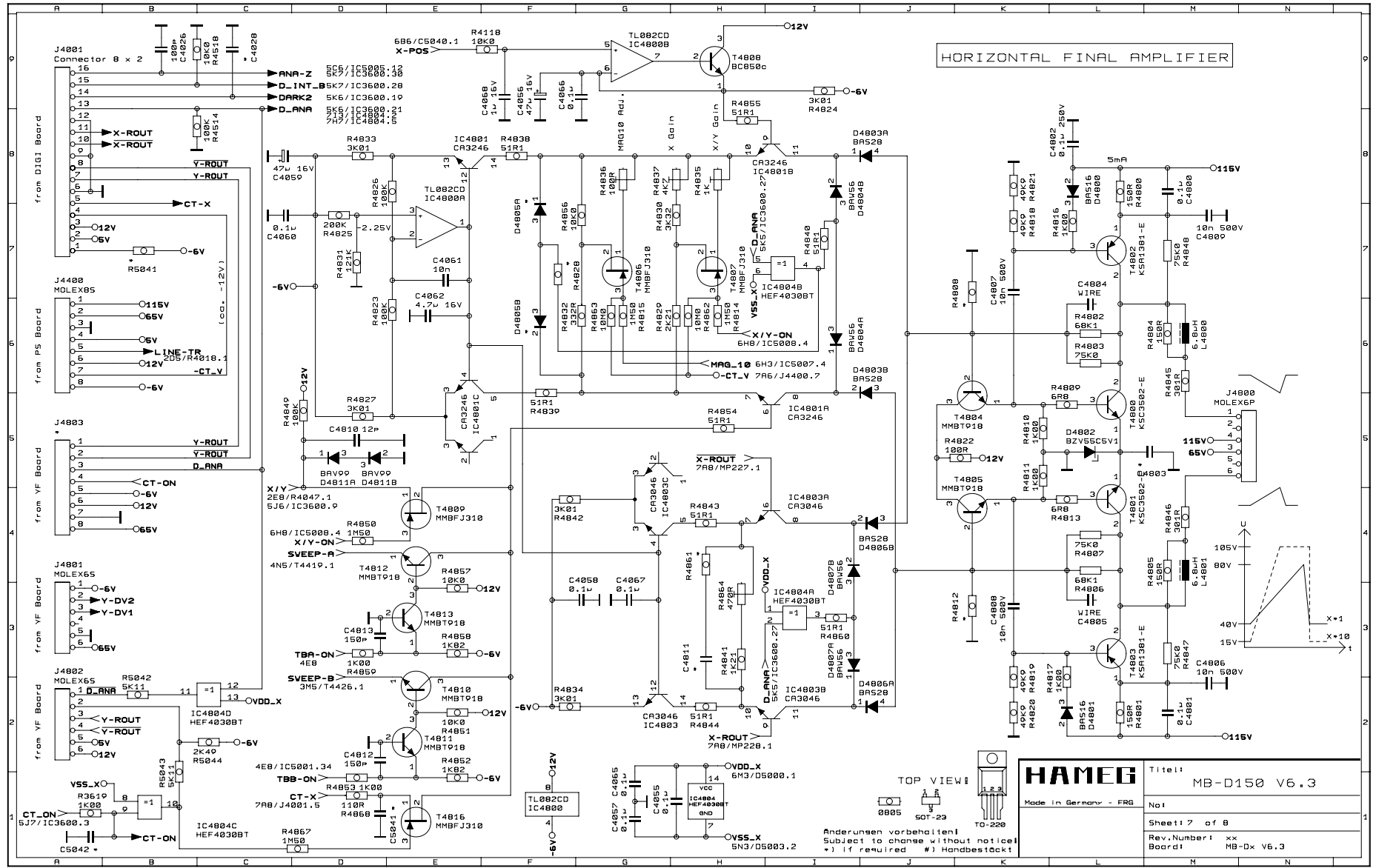
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	Rev. Number: xx Board: HB-Dx V6.3	



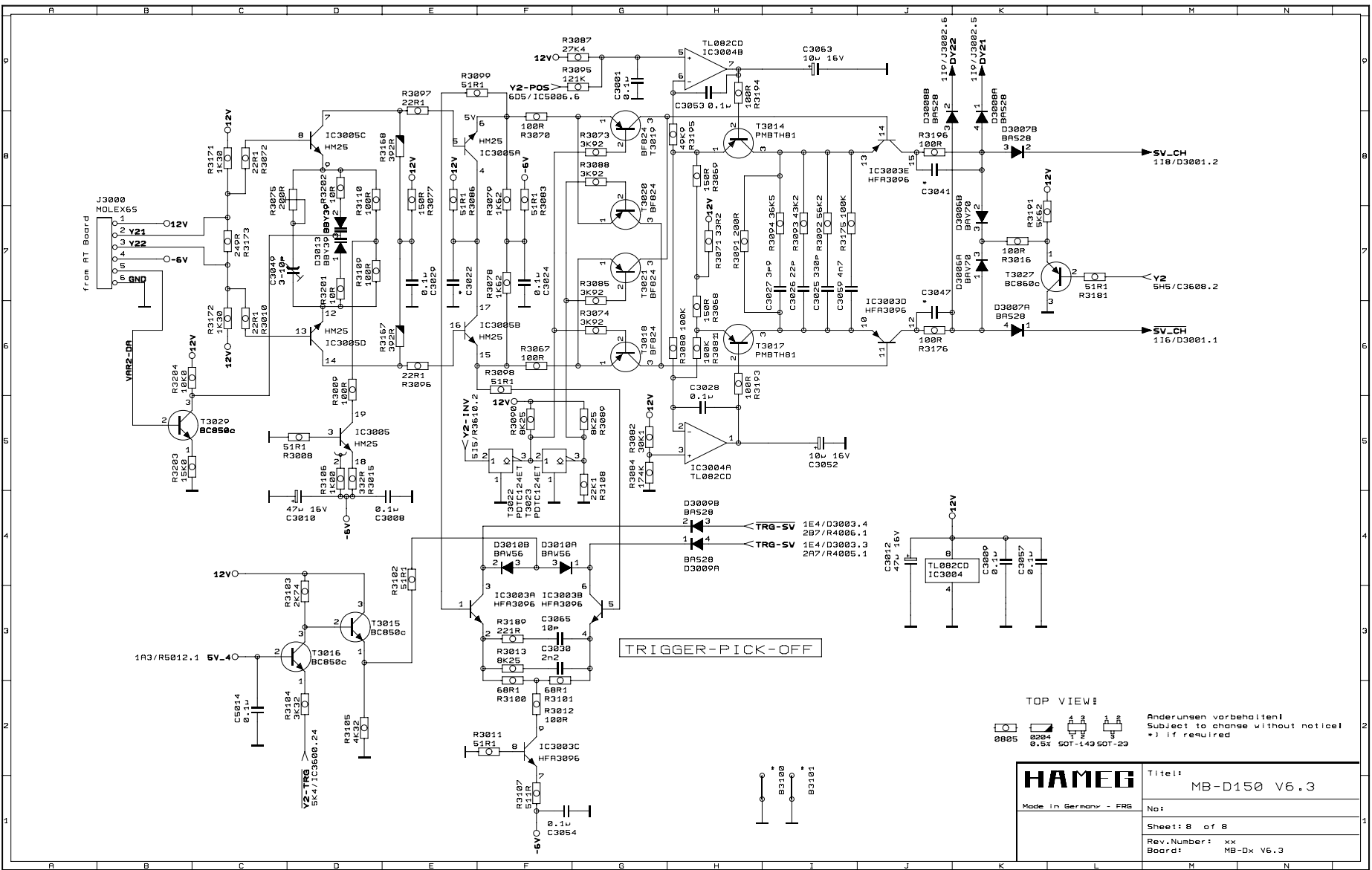


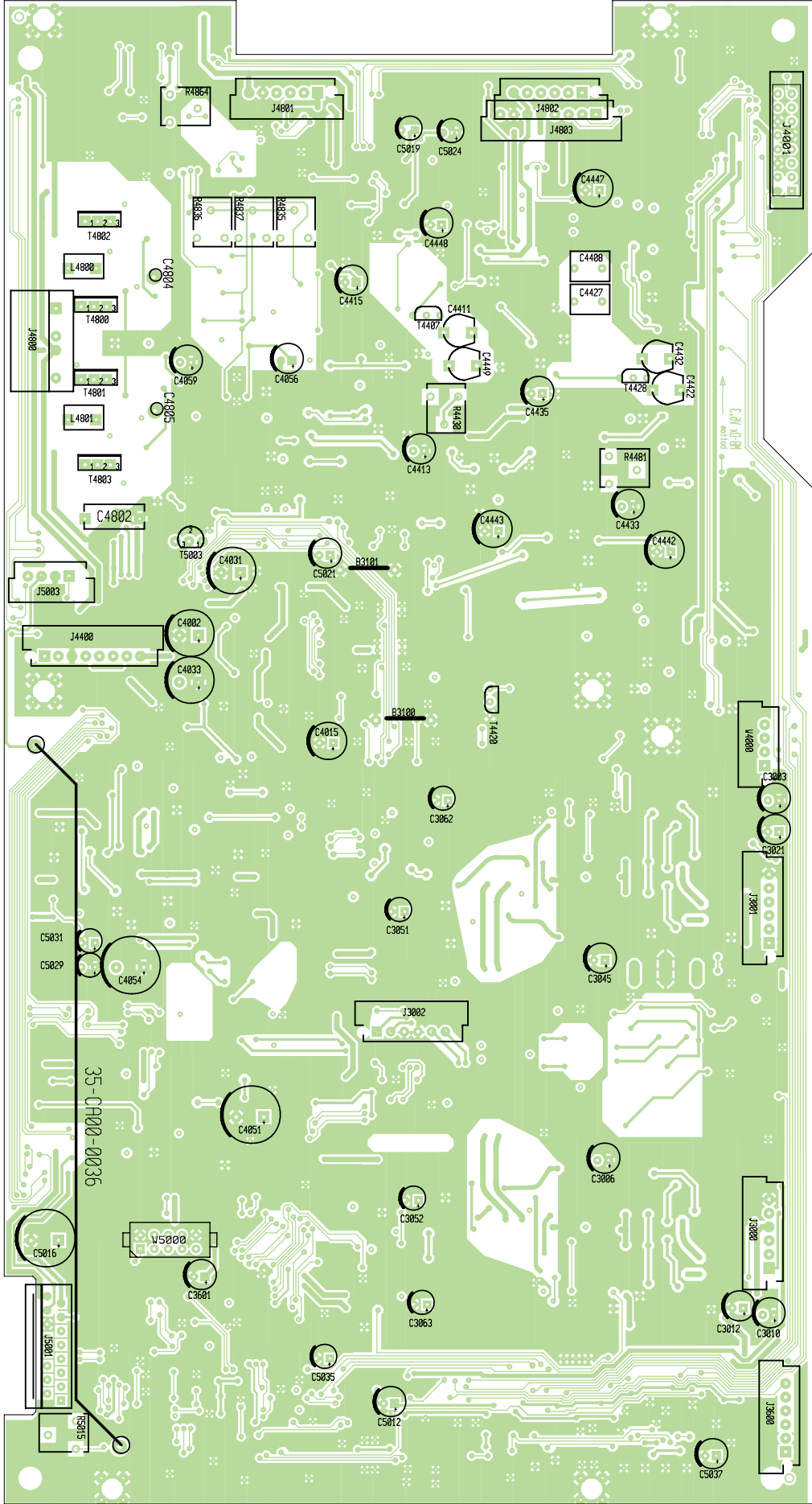
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Subject to change without notice!

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		Rev. Number:	xx
	Board:	MB-Dx V6.3	

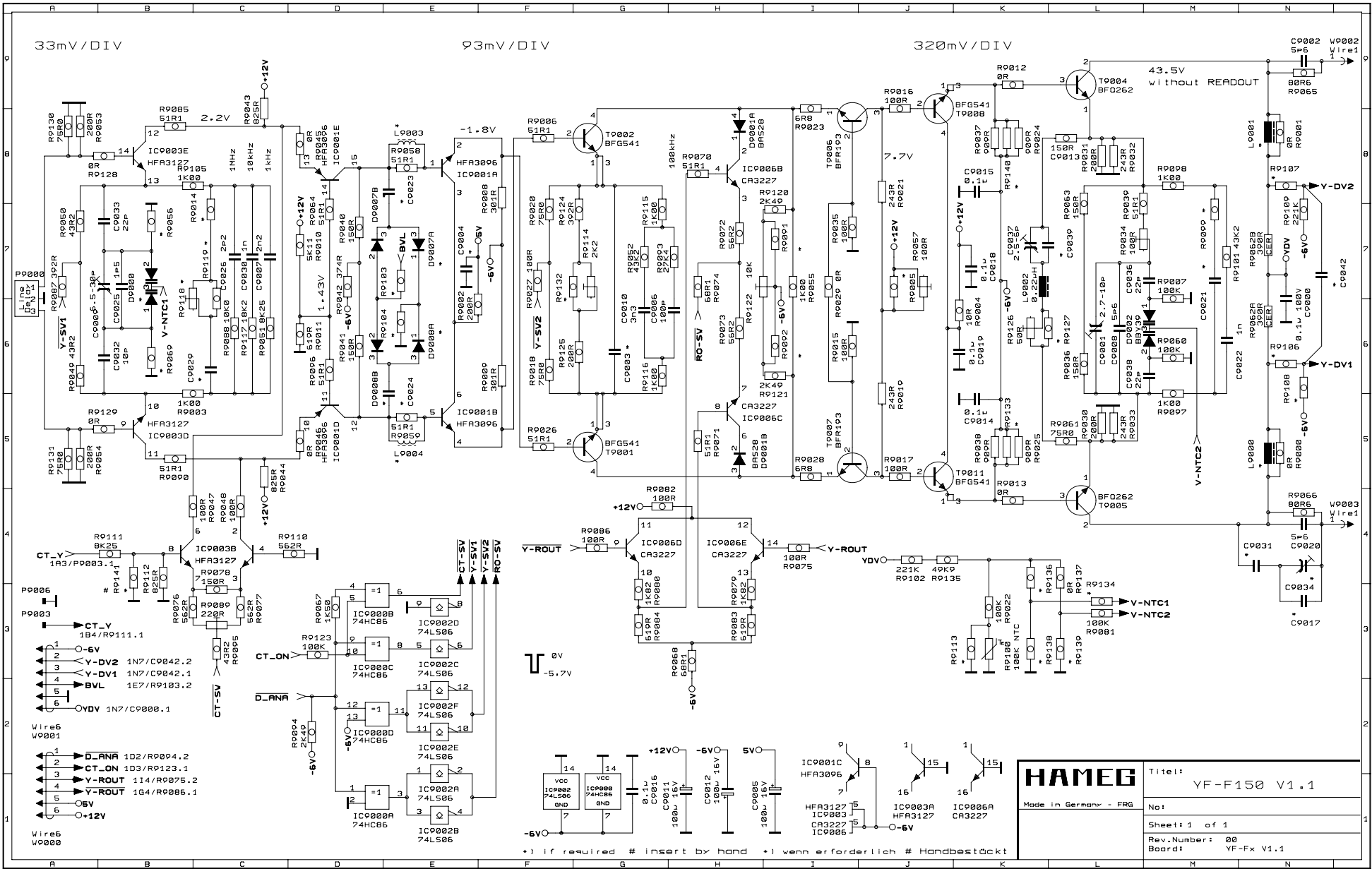


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	Rev. Number:	xx
Board:		MB-Dx V6.3



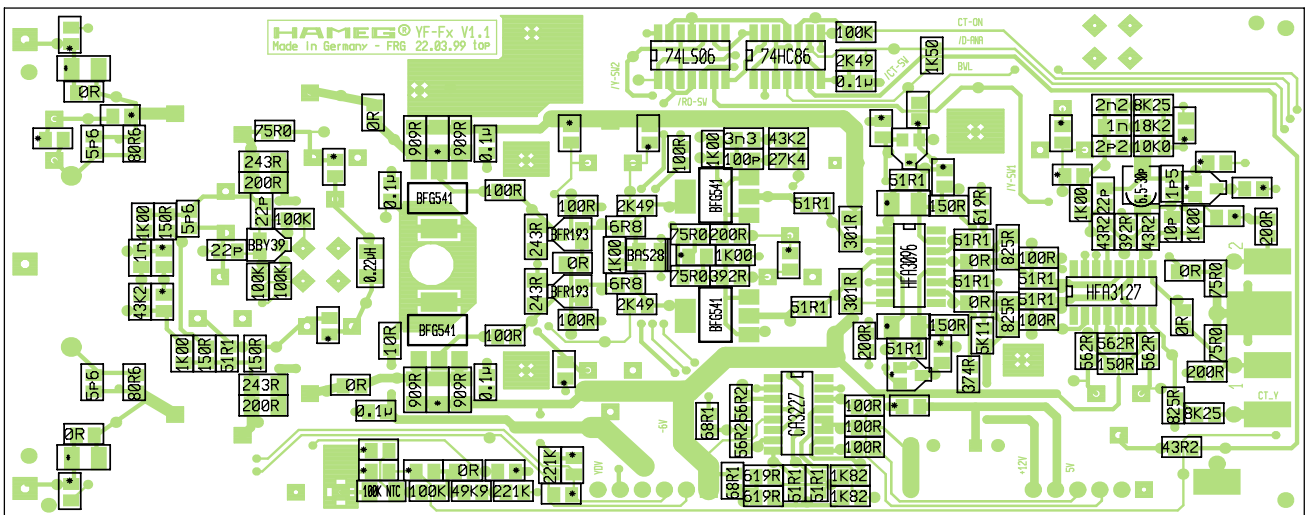
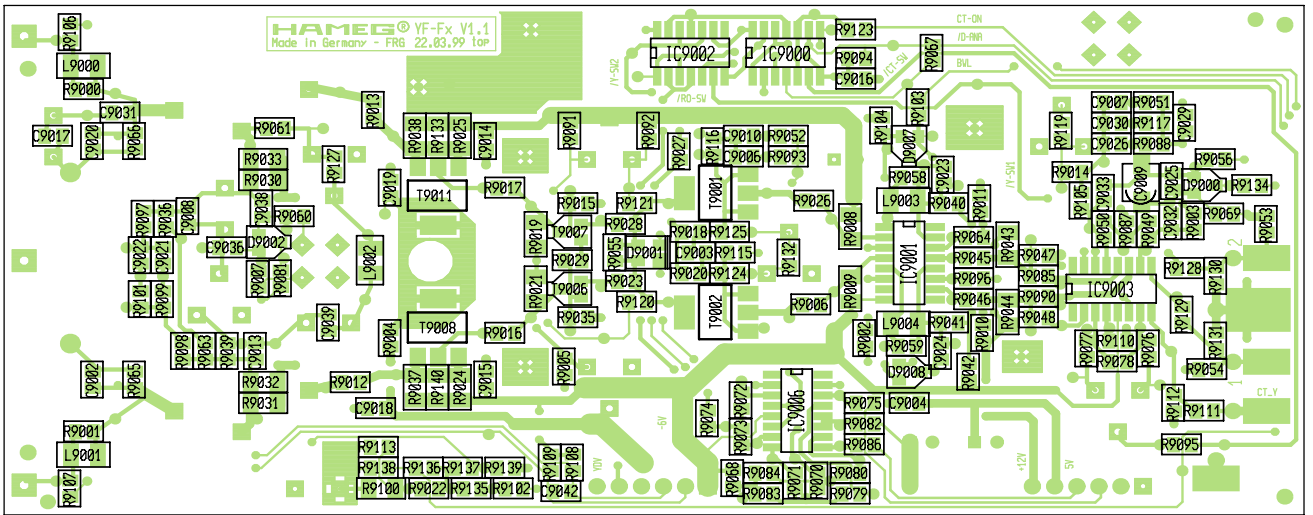


Main - Board Bottom Side

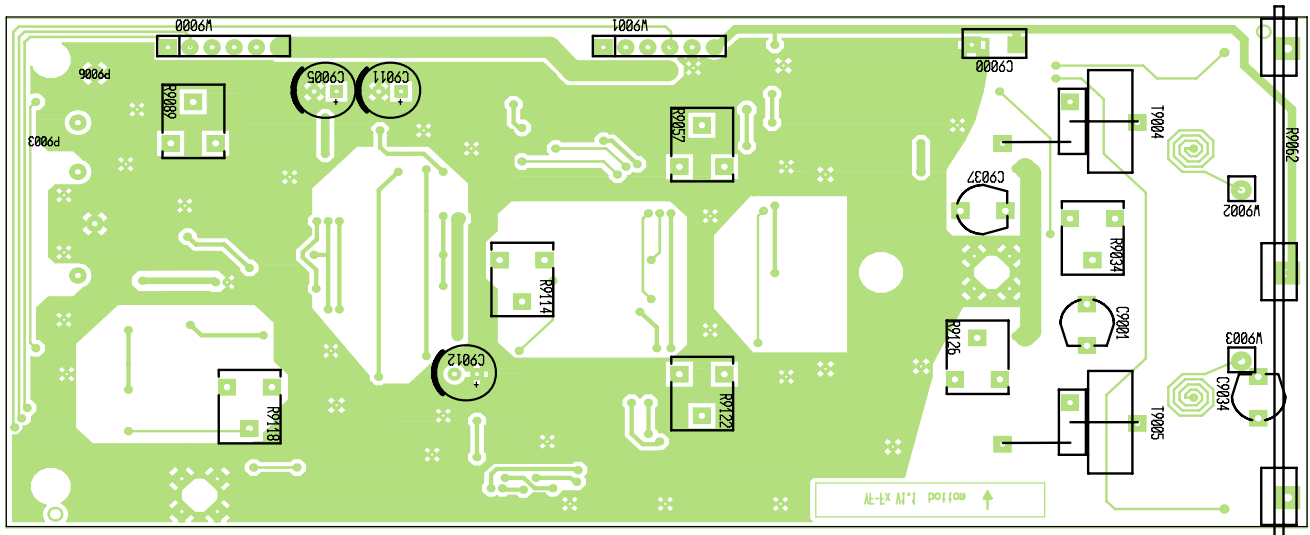
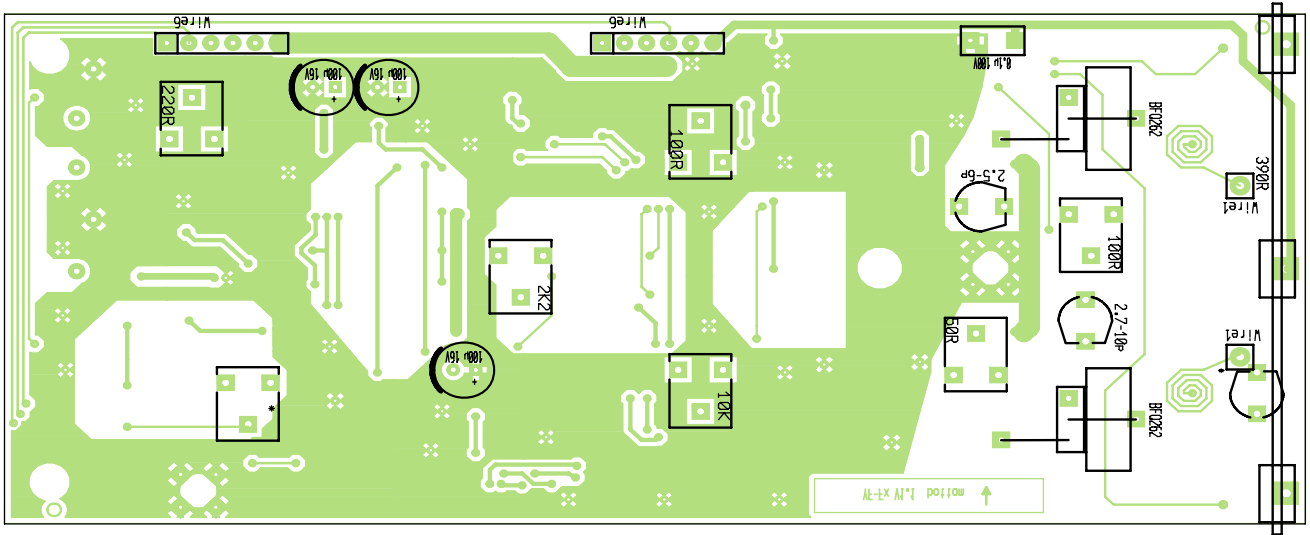


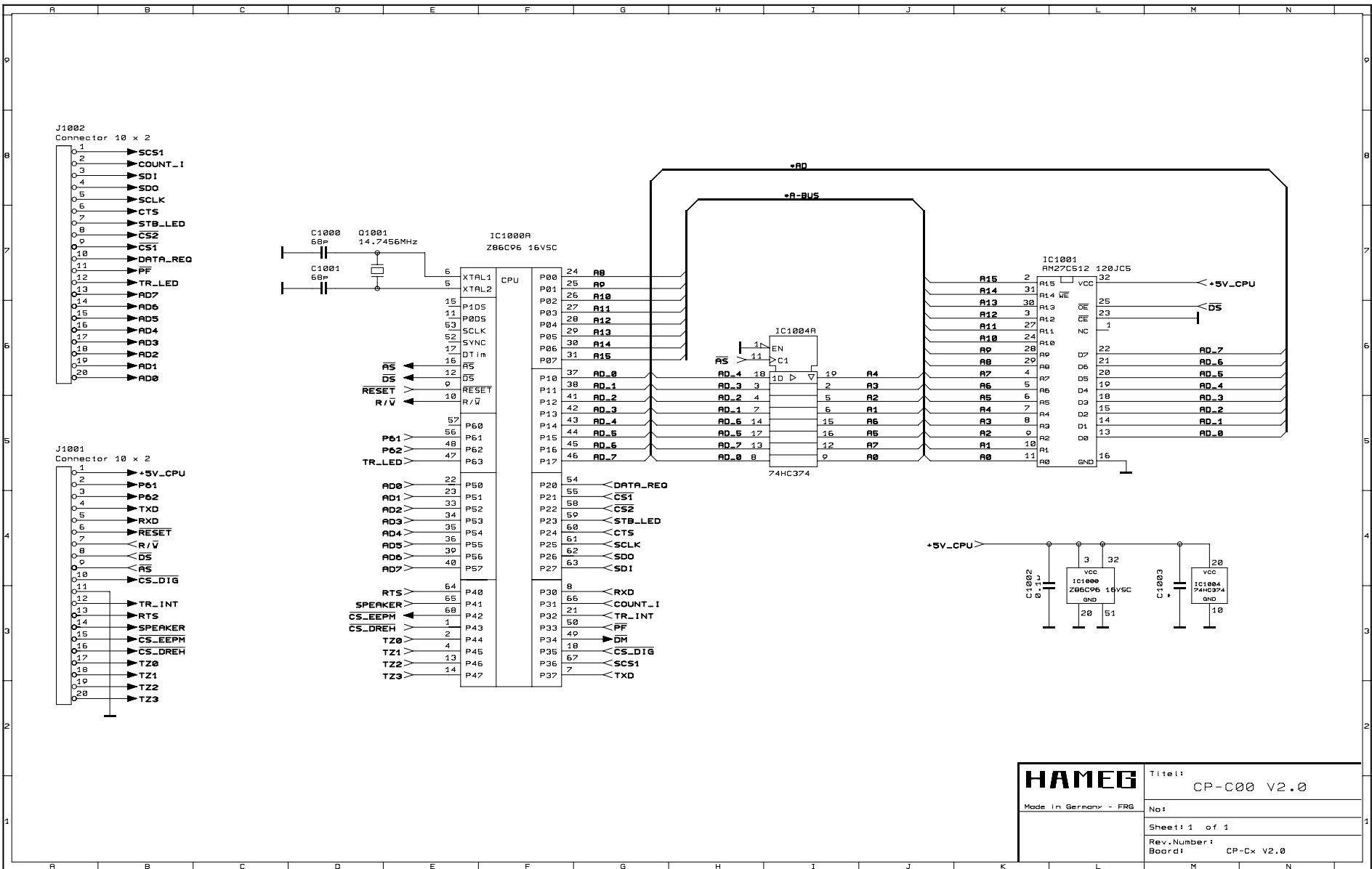
*) If required # insert by hand *) wenn erforderlich # Handbestückt

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	Rev. Number: 00 Board: YF-Fx V1.1	

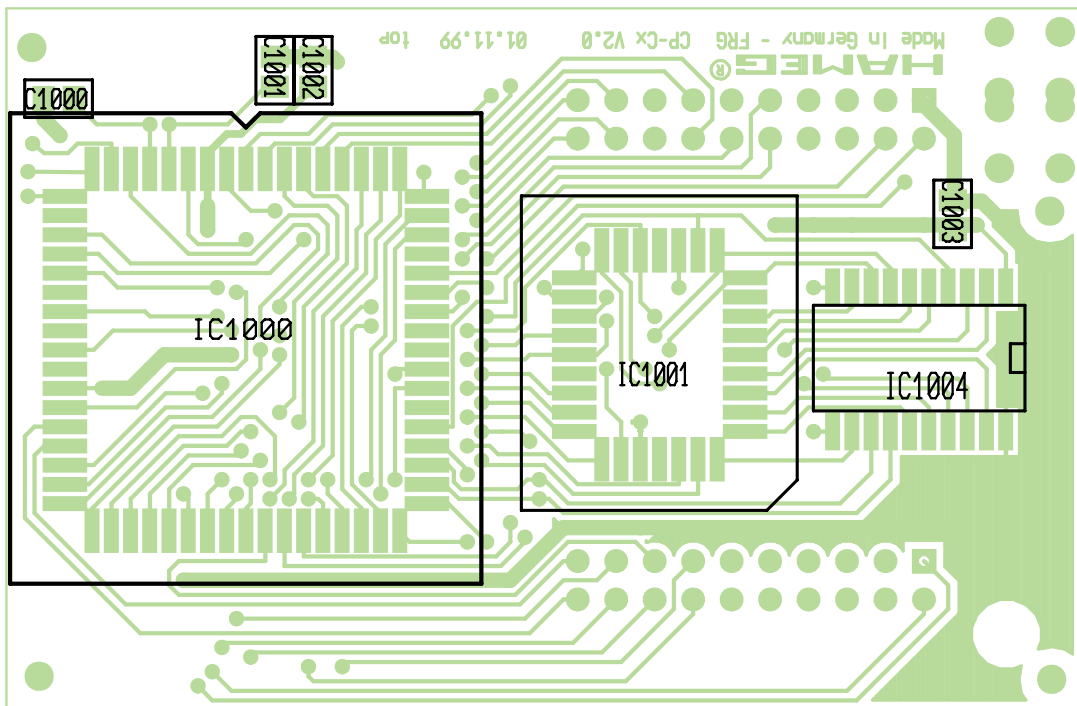
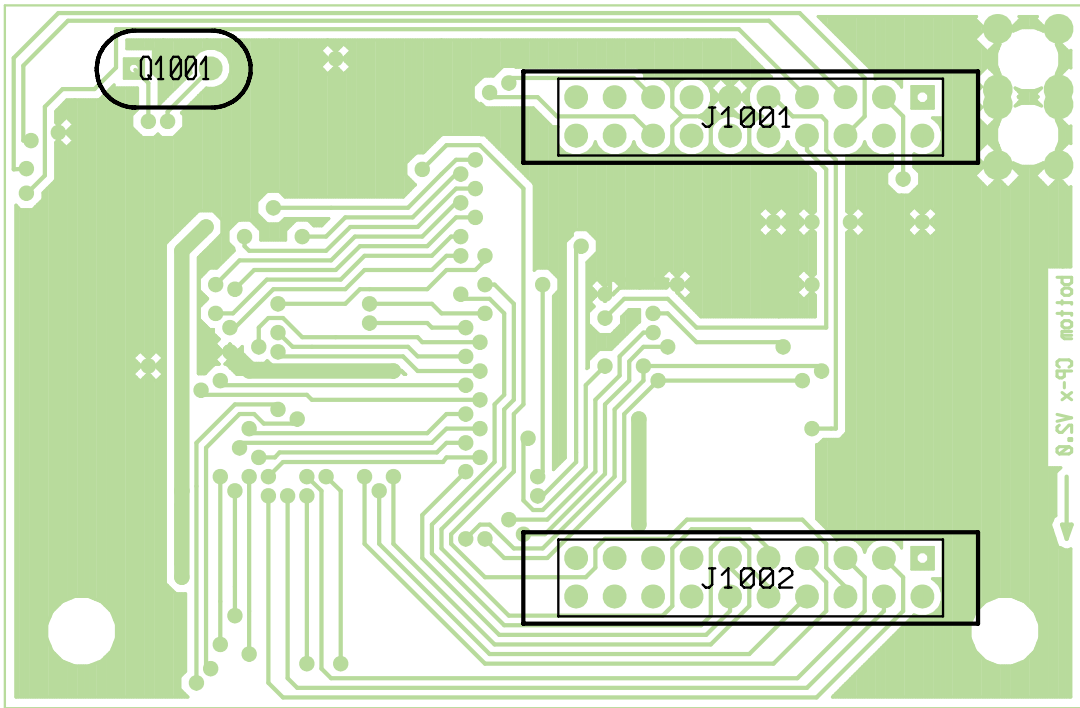


YF - Board Bottom Side

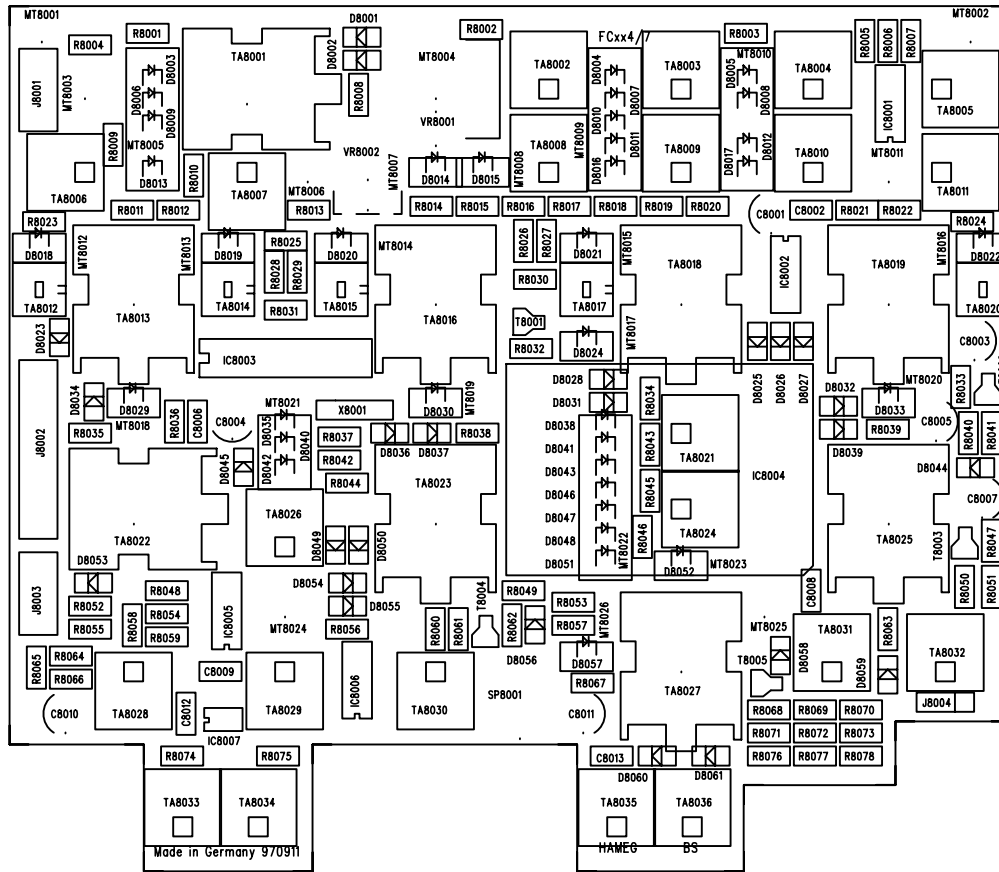


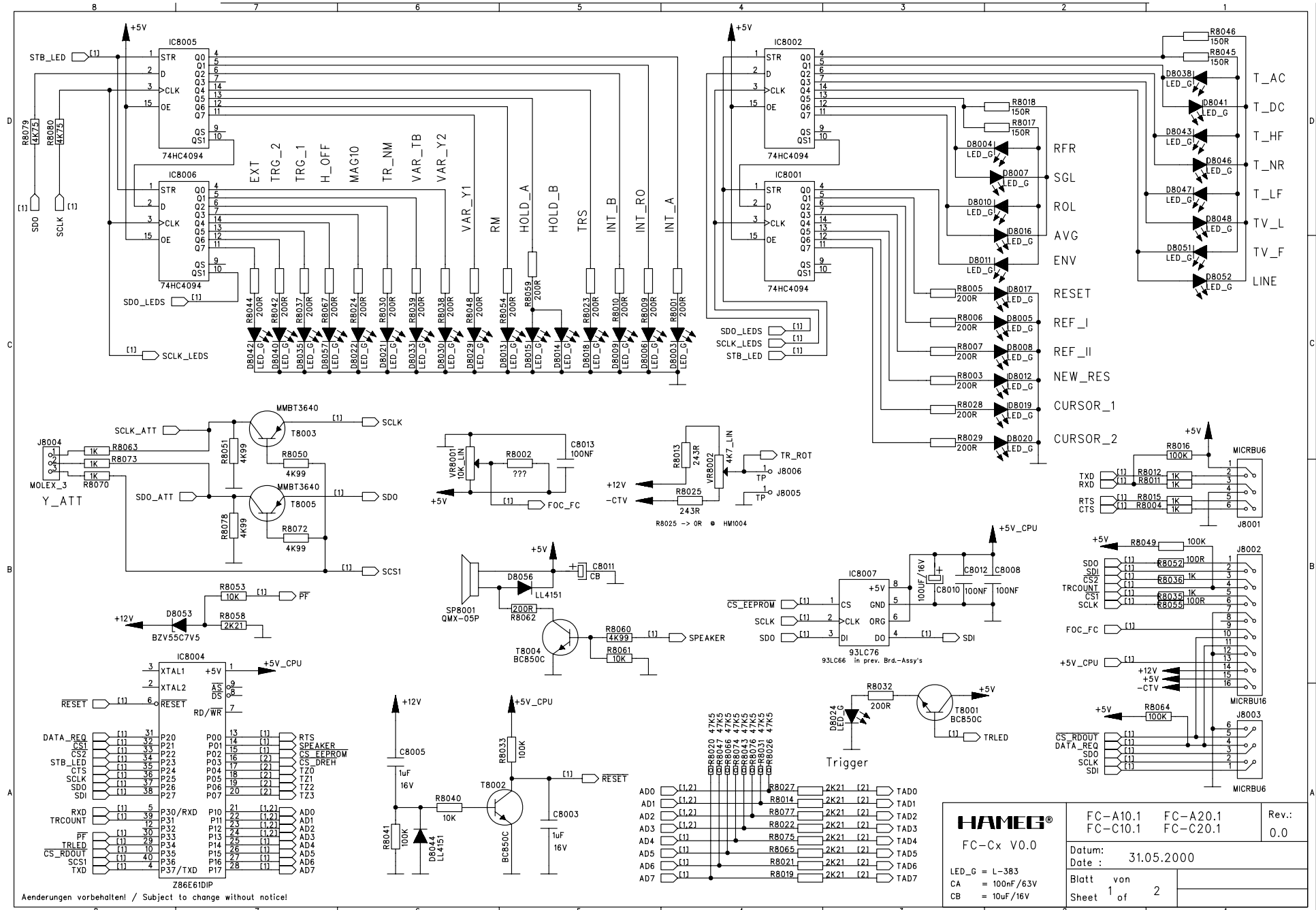


HAMEG Made in Germany - FRG	Title:	CP-C00 V2.0
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	Rev. Number: Board:	CP-Cx V2.0

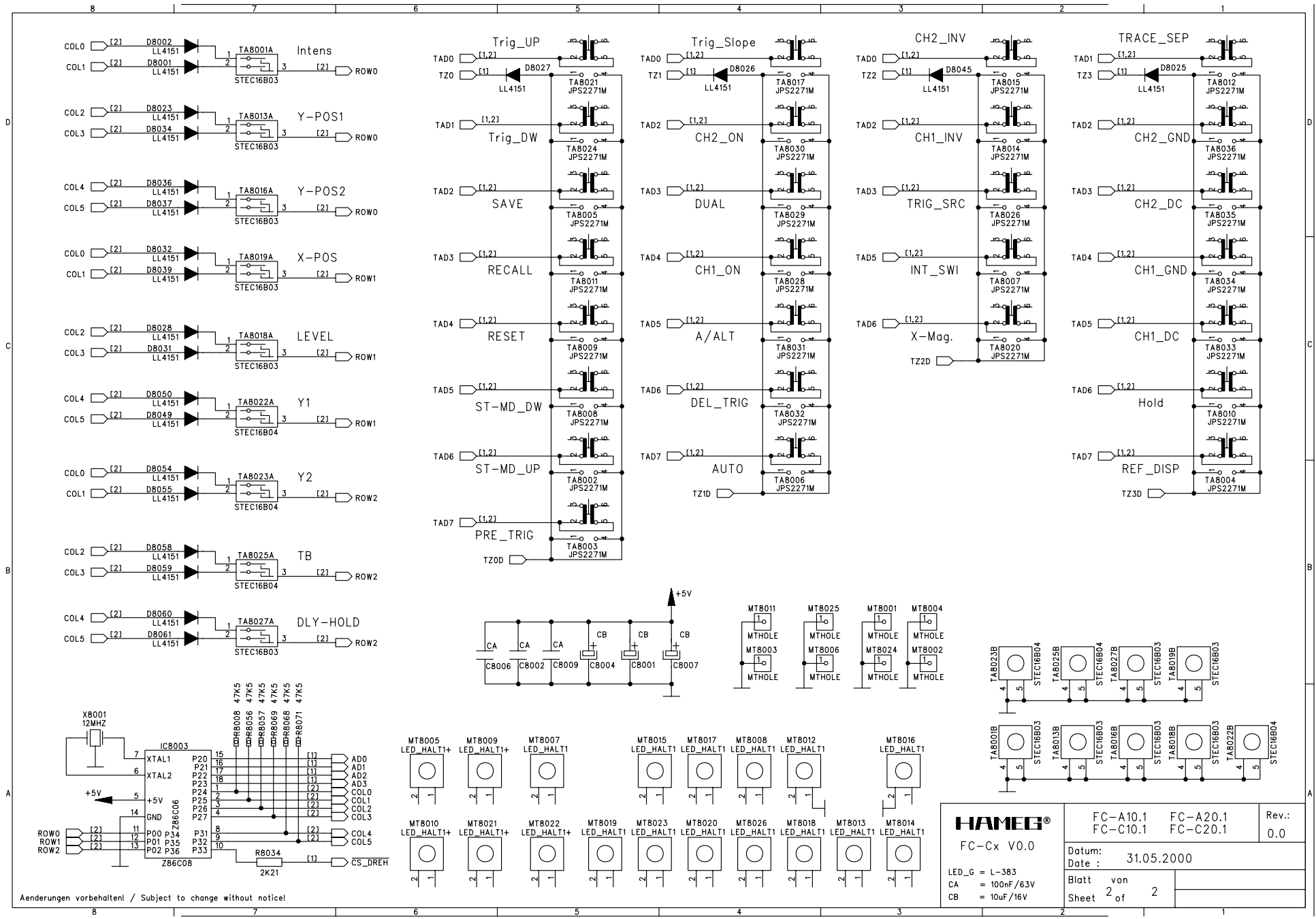


FC - Board Diagramm



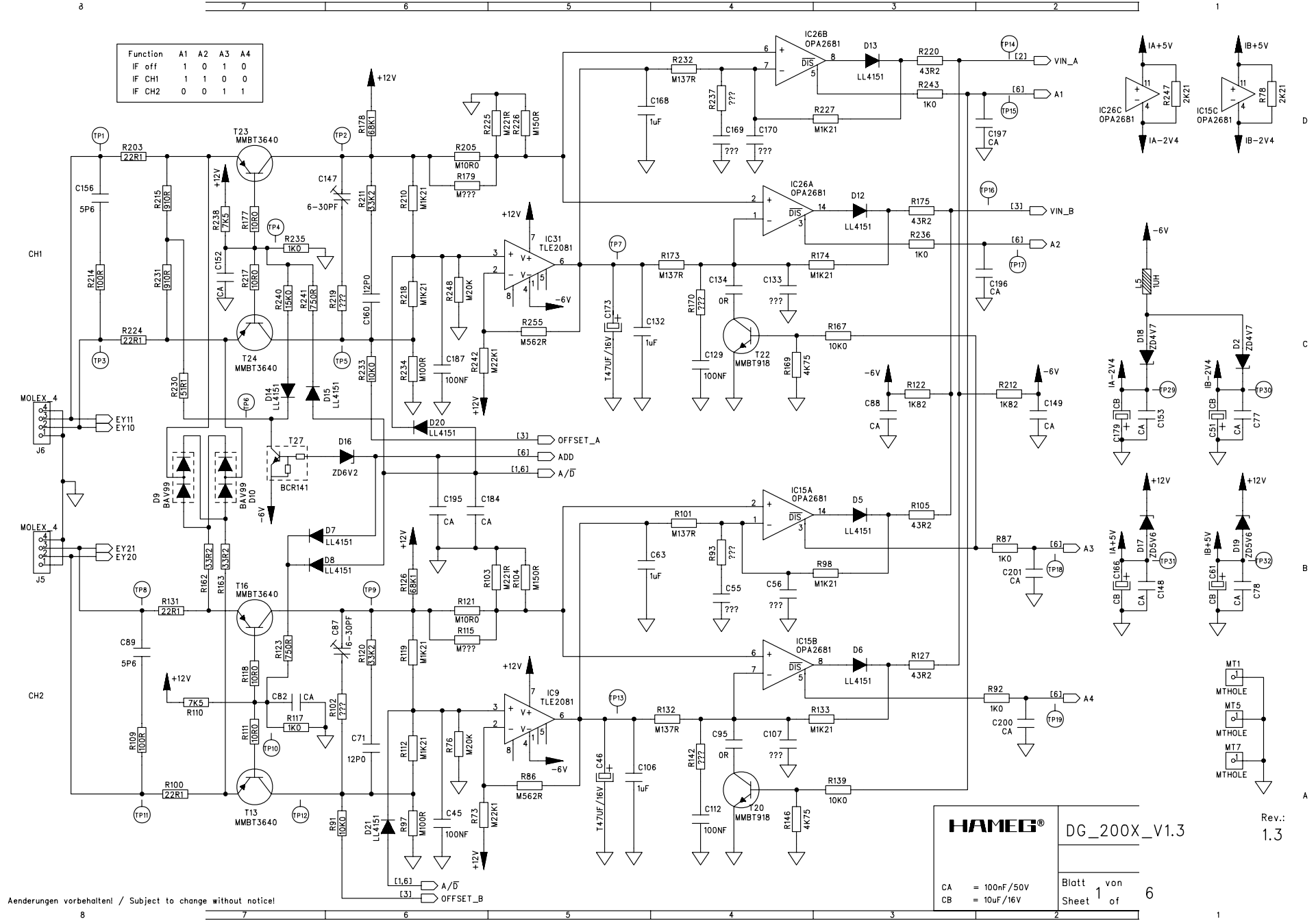


HAMEG® FC-Cx V0.0	FC-A10.1	FC-A20.1	Rev.: 0.0
	FC-C10.1	FC-C20.1	
Datum:	31.05.2000		
Date:	31.05.2000		
Blatt von	1	2	
Sheet of	2		



Aenderungen vorbehalten / Subject to change without notice!

HAMEG® FC-Cx V0.0 LED_G = L-383 CA = 100nF/63V CB = 10uF/16V	FC-A10.1 FC-C10.1	FC-A20.1 FC-C20.1	Rev.: 0.0
	Datum: 31.05.2000 Date: 31.05.2000 Blatt von: 2 Sheet 2 of 2		



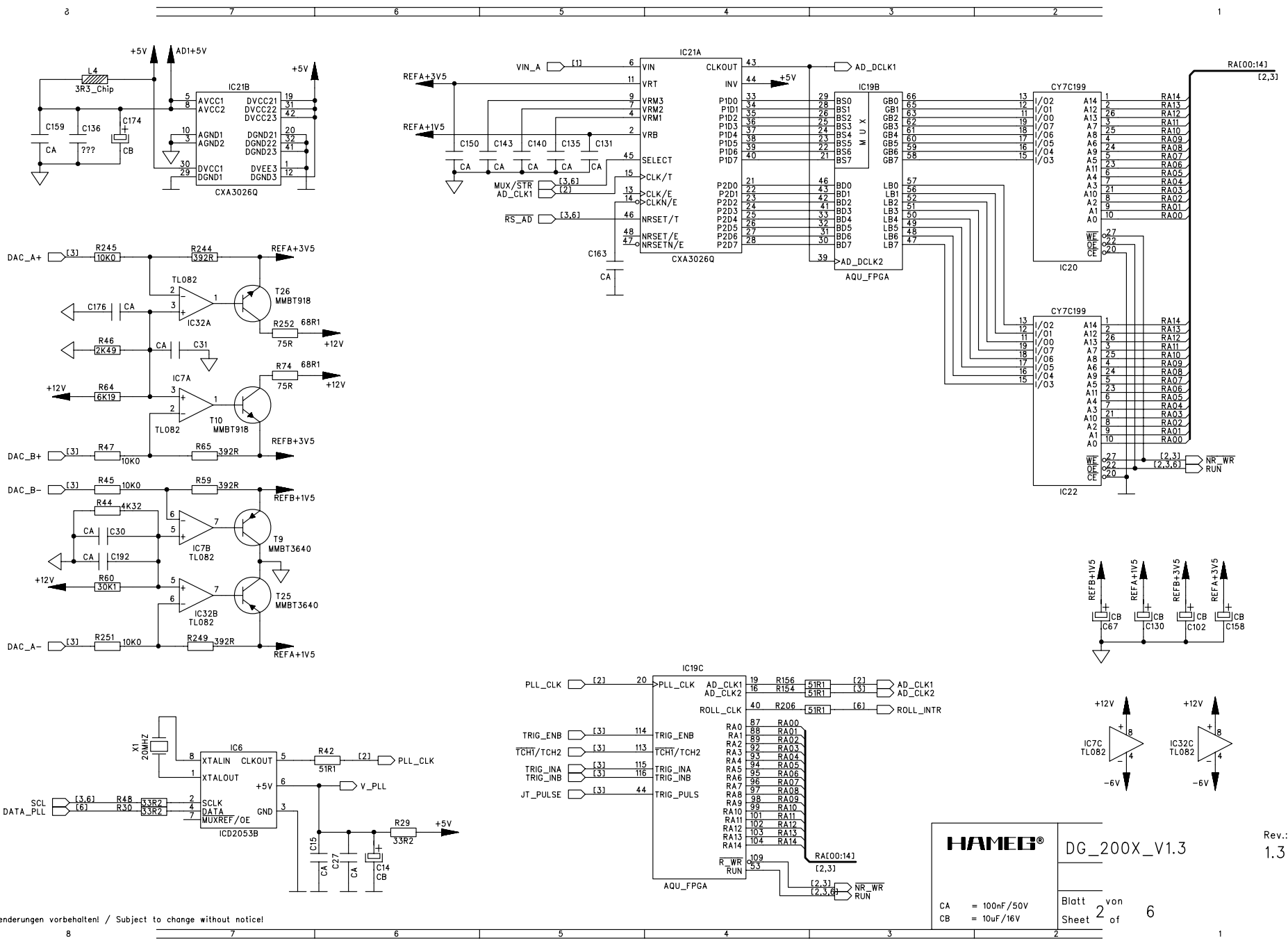
Aenderungen vorbehalten! / Subject to change without notice!

HAMEG® DG_200X_V1.3

CA = 100nF/50V
 CB = 10uF/16V

Blatt 1 von 6
 Sheet 1 of 6

Rev.: 1.3



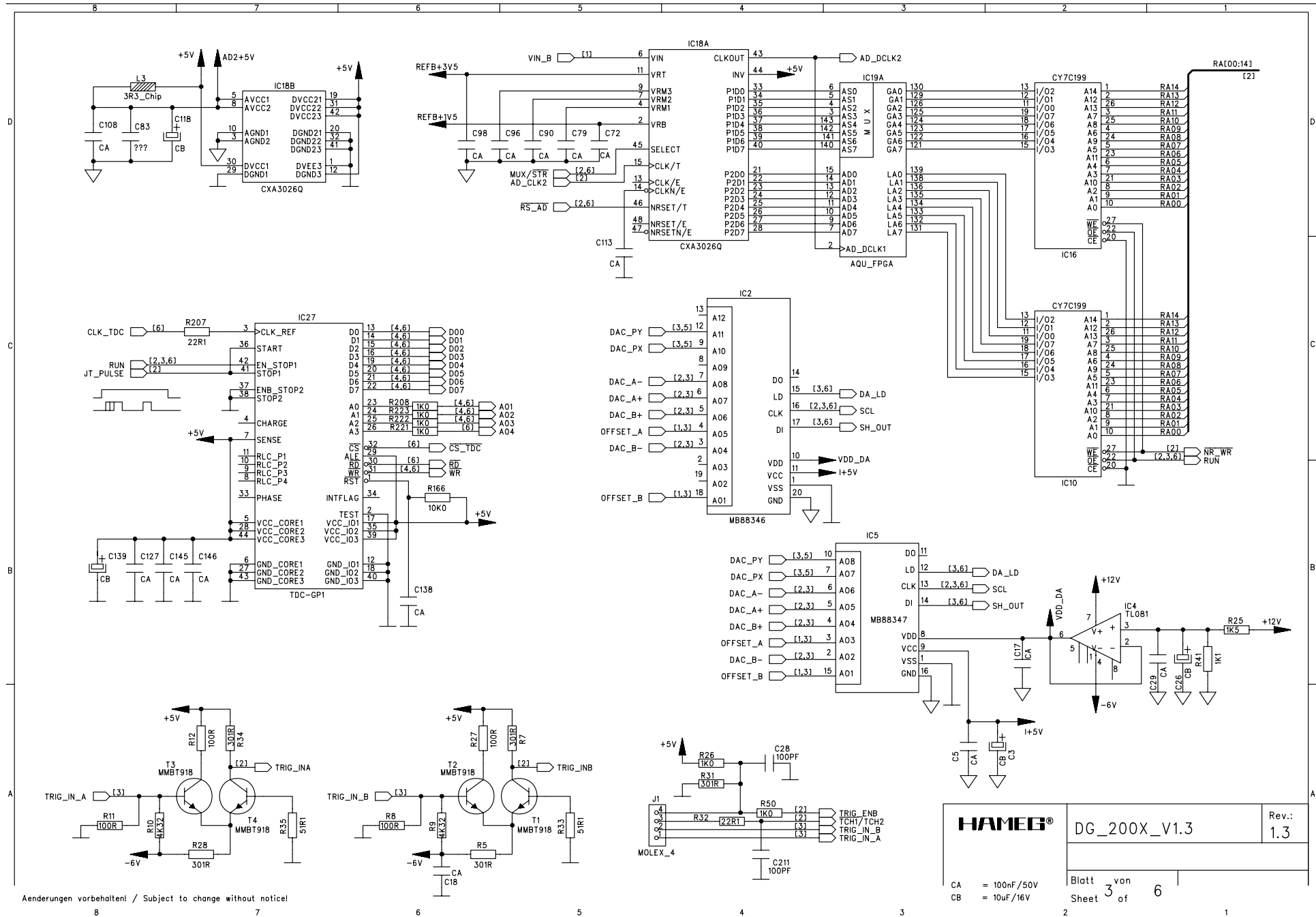
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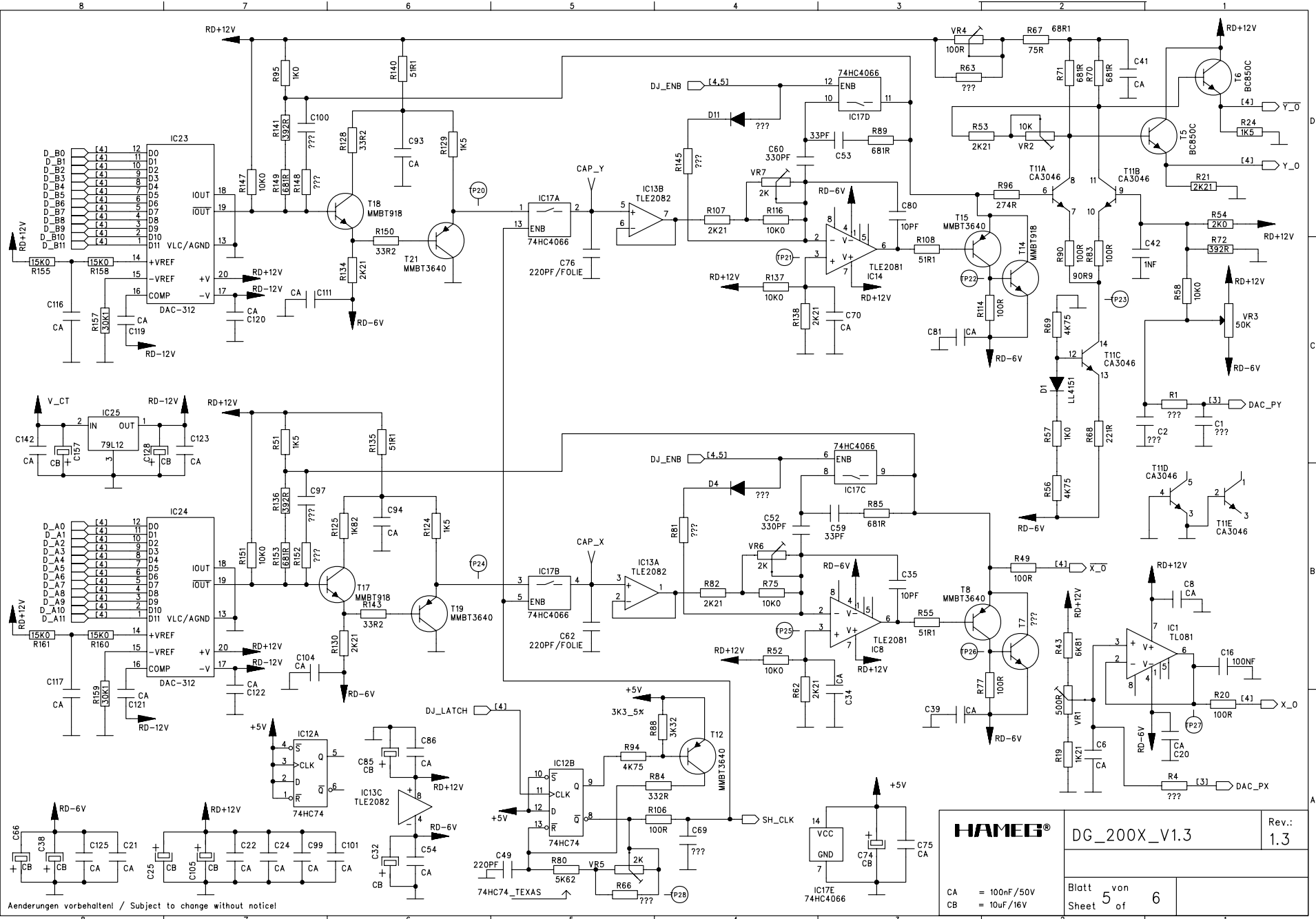
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Sheet 2 of 6

Rev.: 1.3



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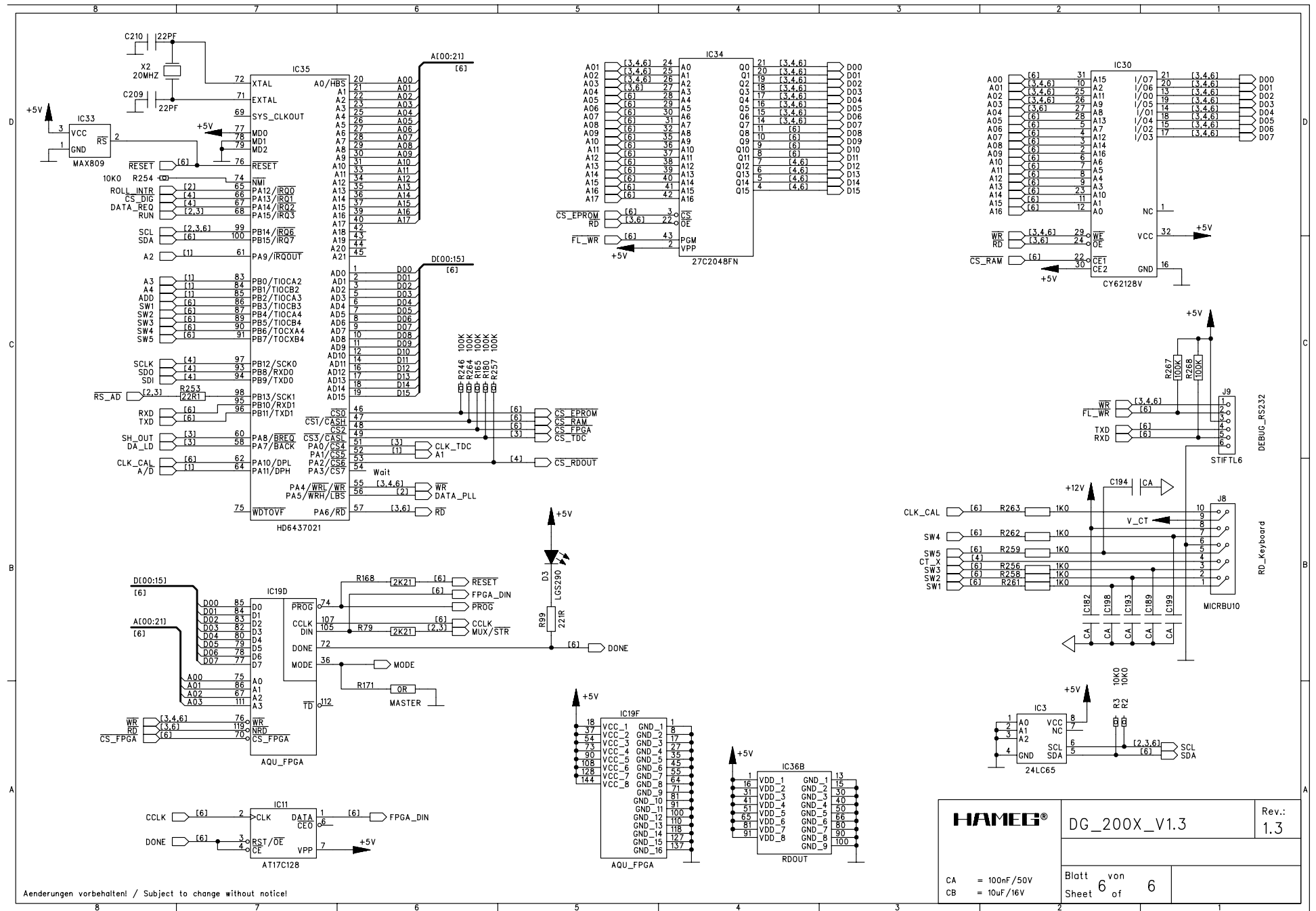
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CA = 100nF/50V	CB = 10uF/16V	Sheet 3 of 6	1



Aenderungen vorbehalten / Subject to change without notice!

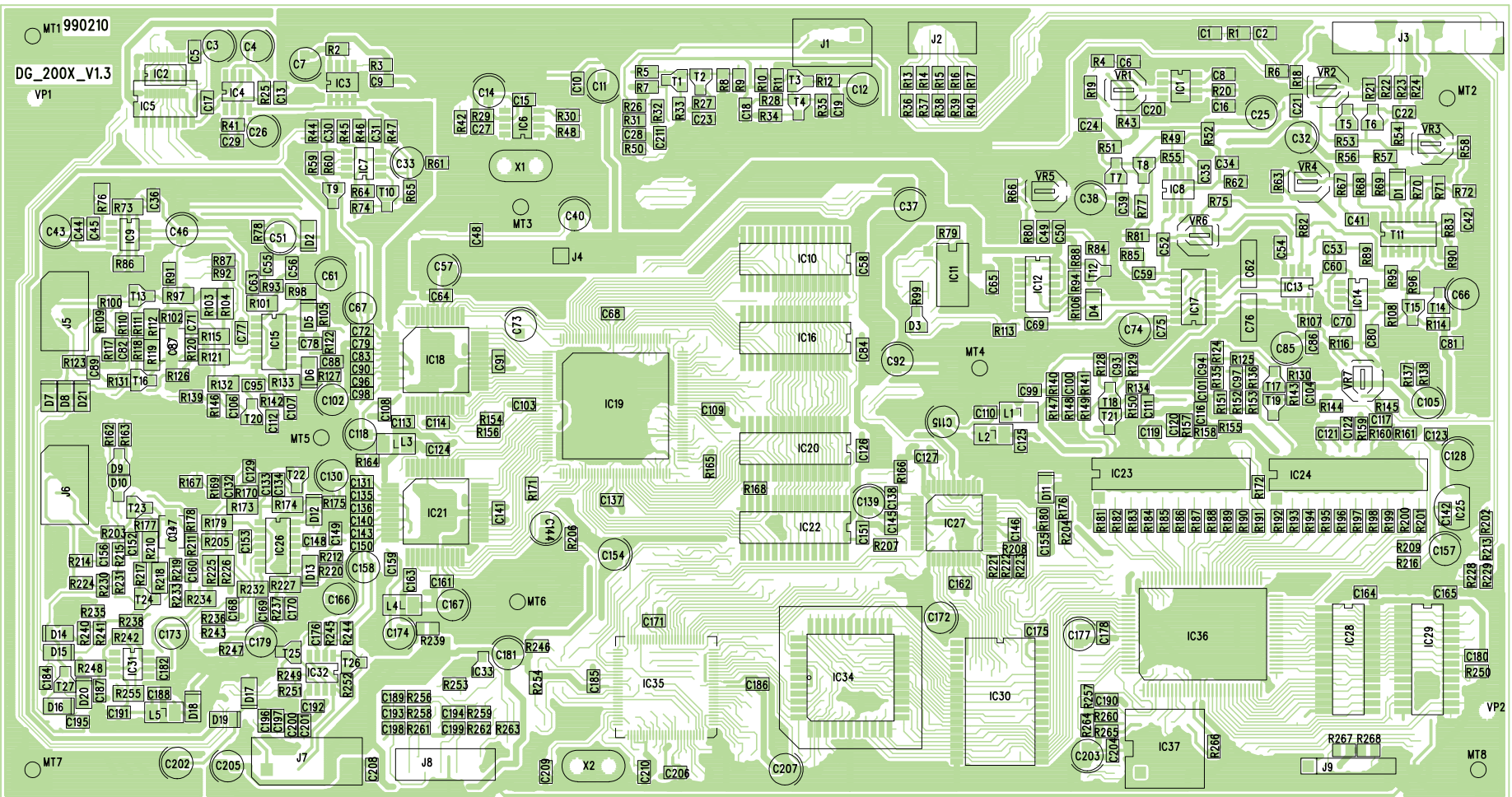
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CA = 100nF/50V CB = 10uF/16V		

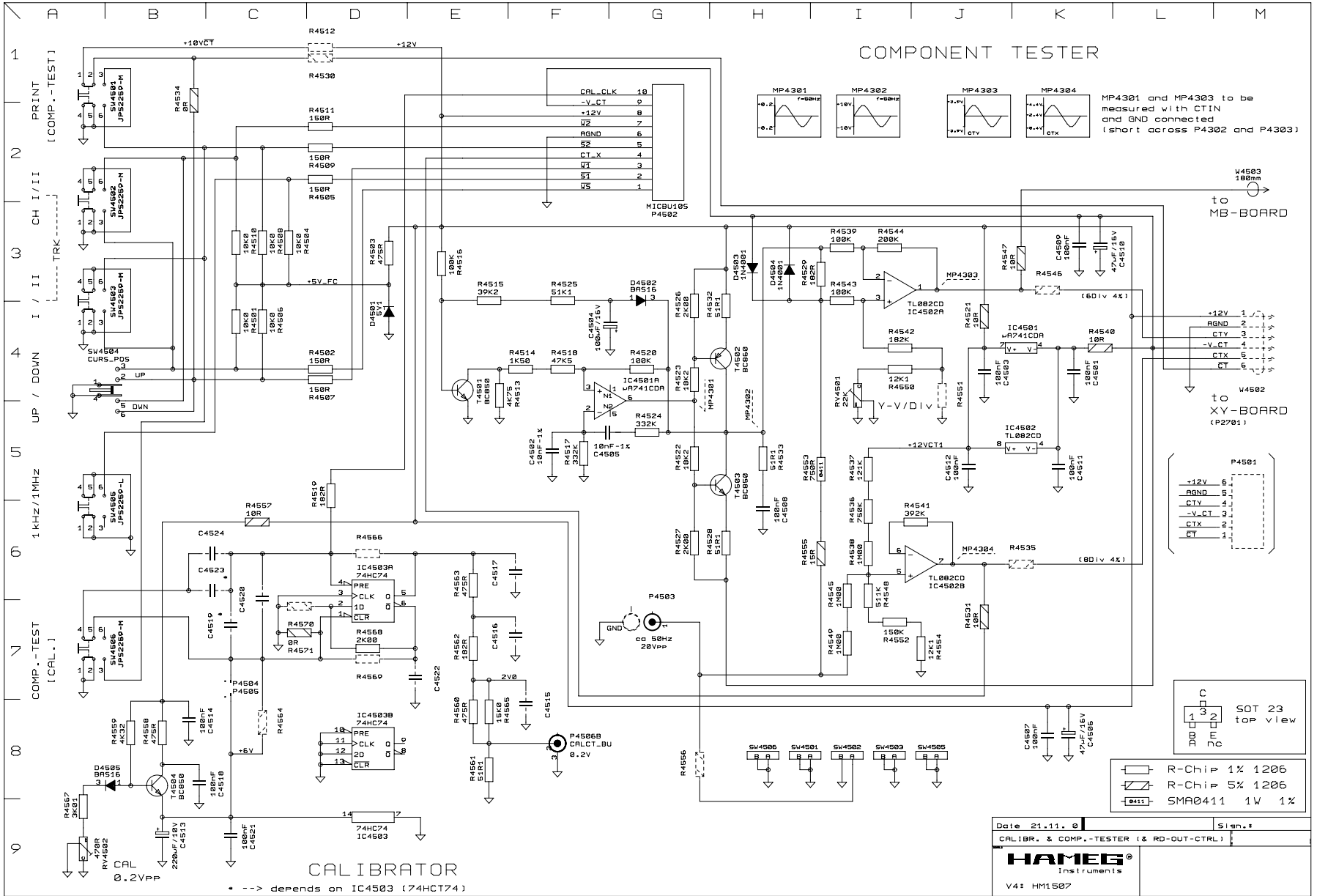
Subject to change without notice

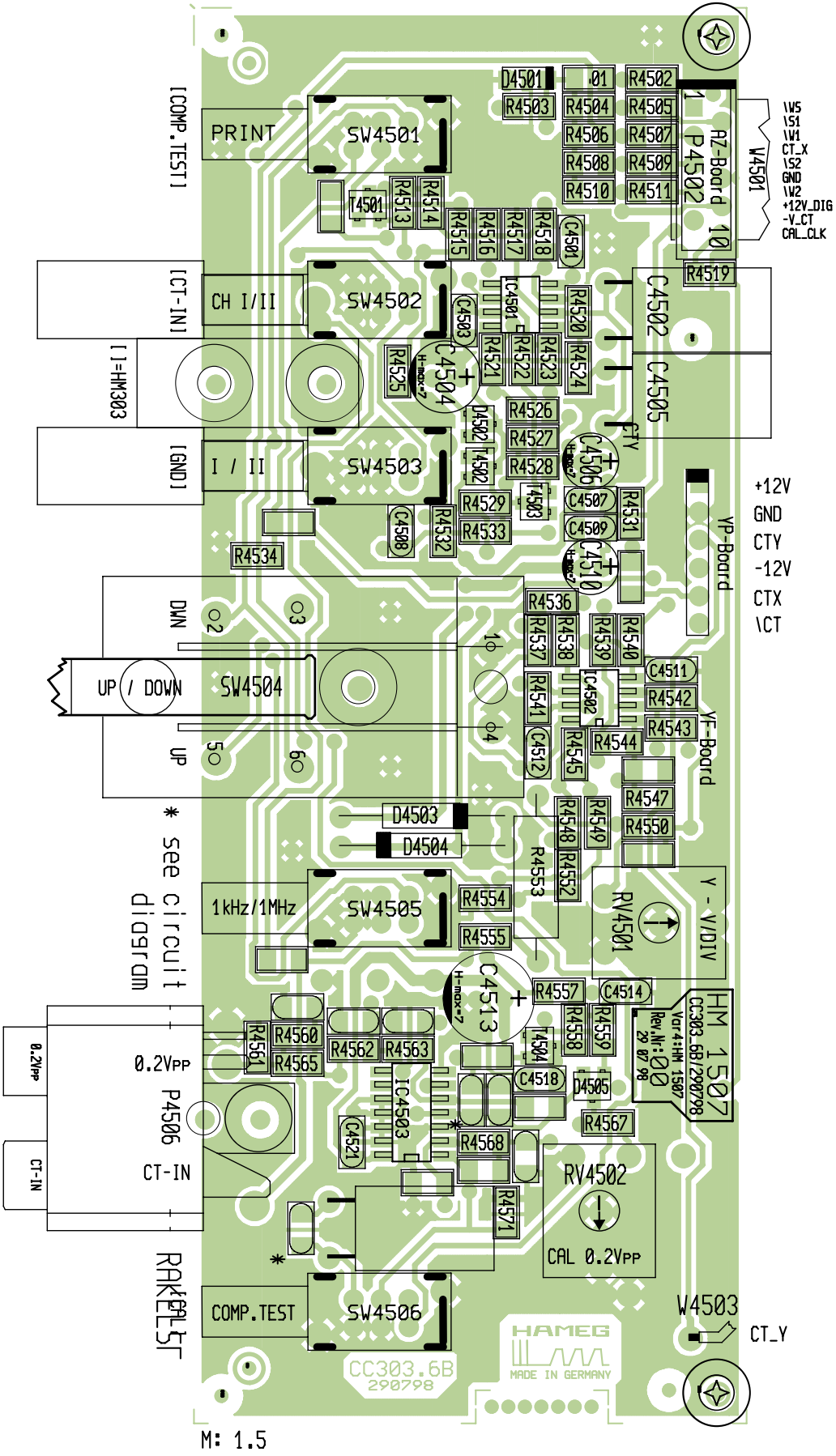


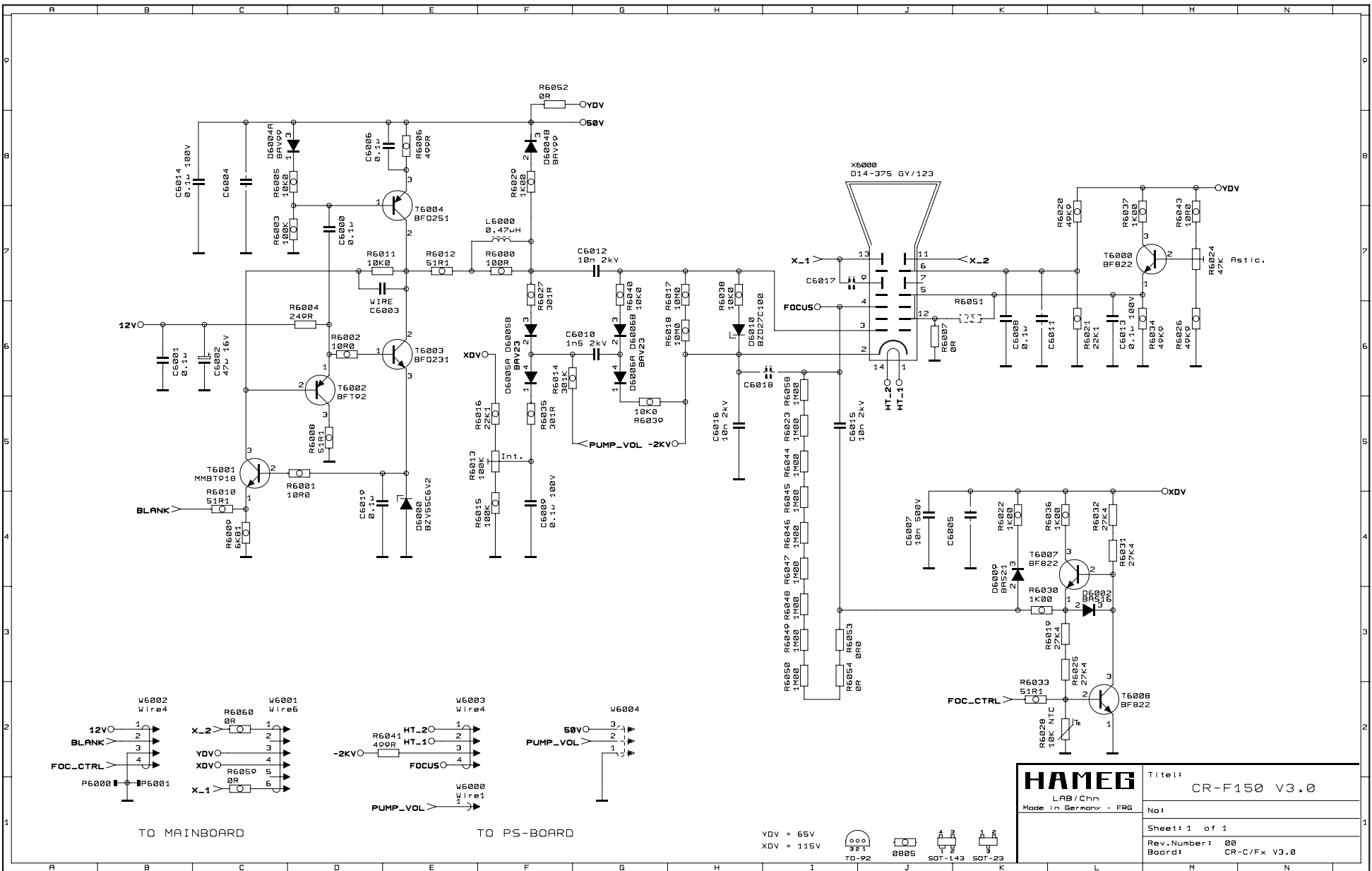
Aenderungen vorbehalten / Subject to change without notice!

HAMEG®		DG_200X_V1.3	Rev.: 1.3
CA = 100nF/50V	CB = 10uF/16V	Blatt 6 von 6	Sheet 6 of 6

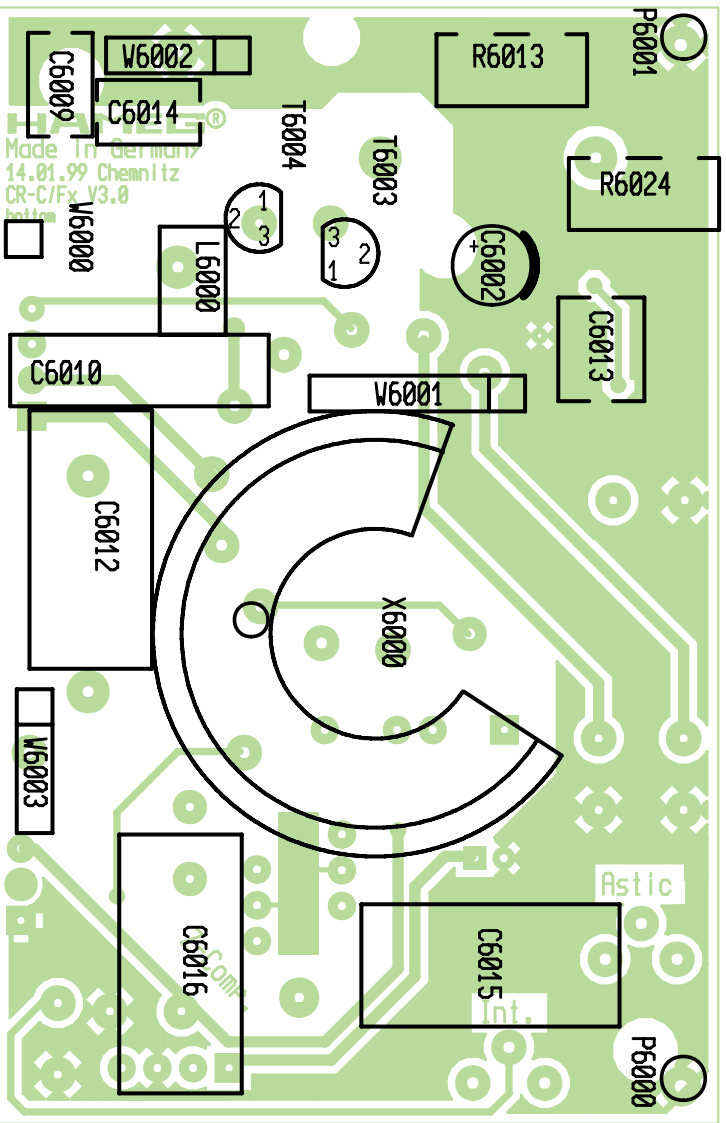
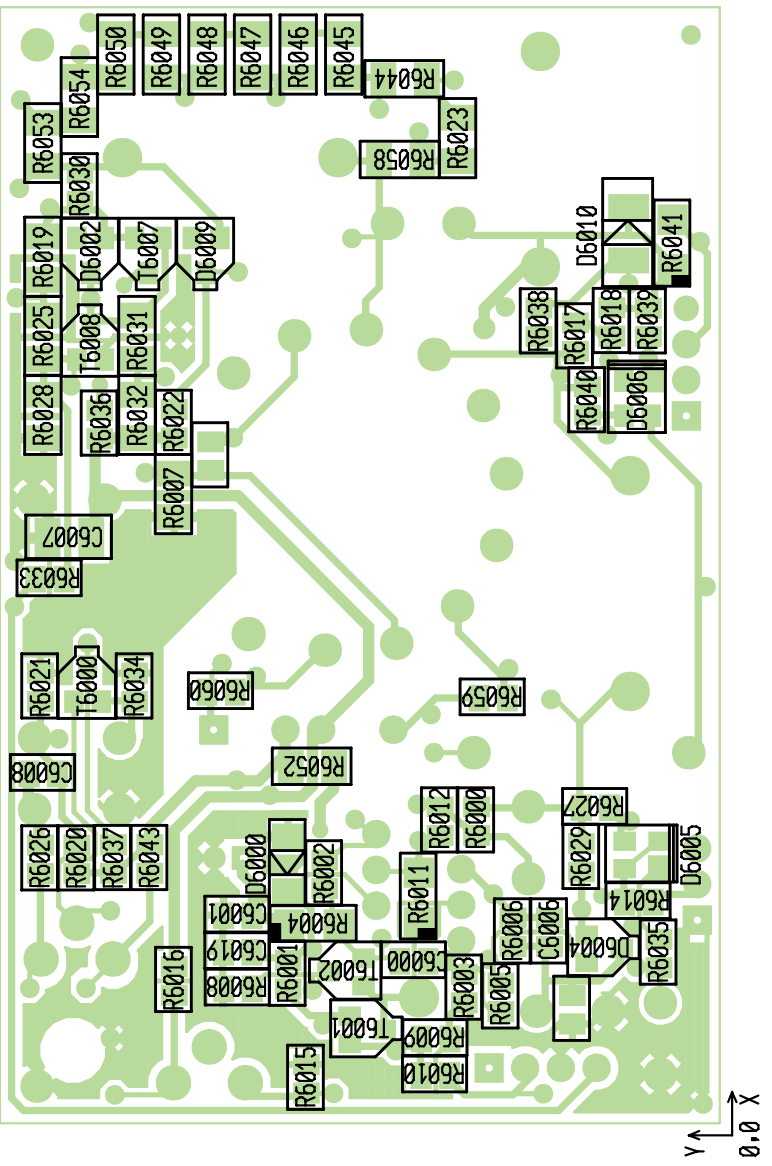


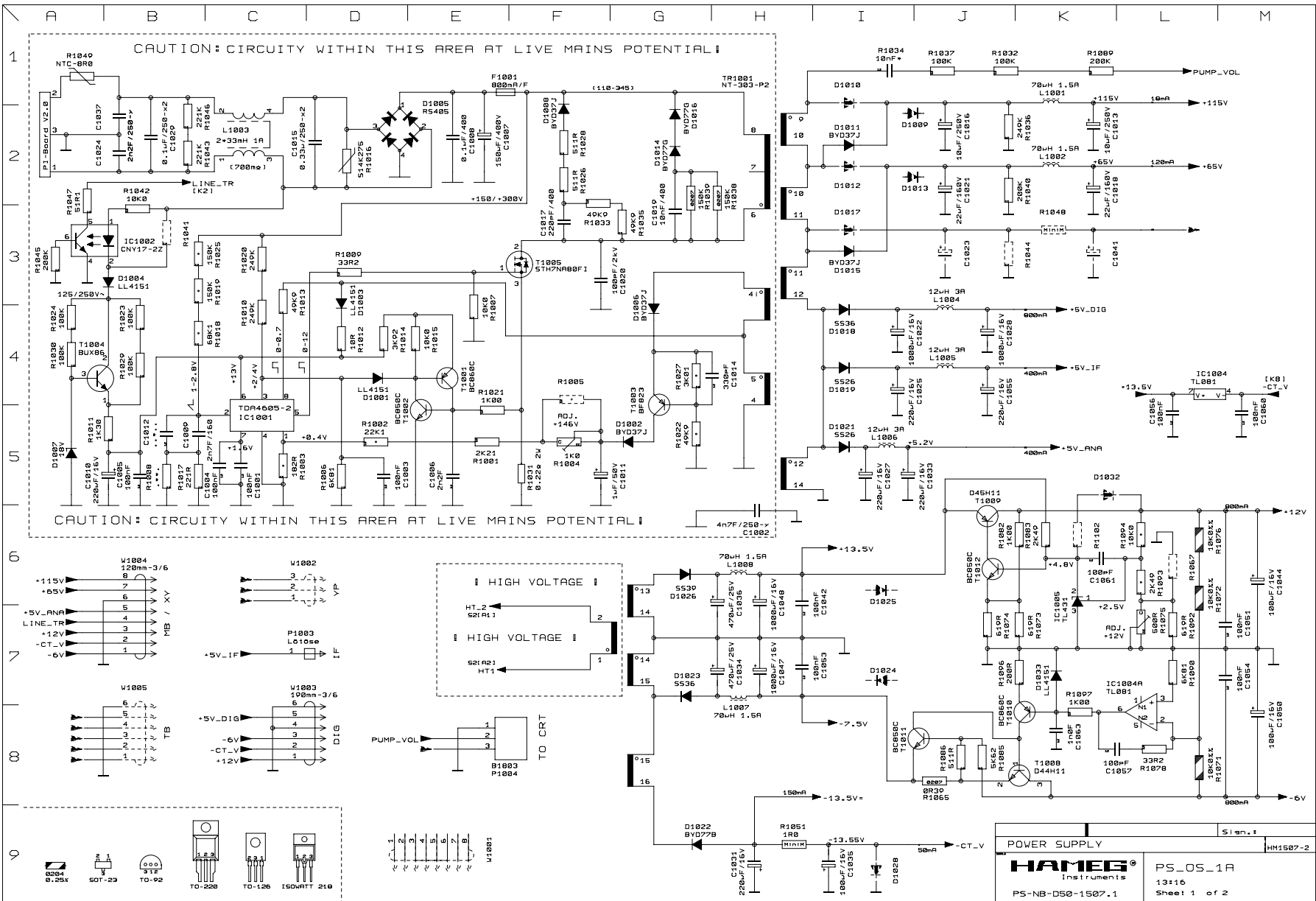


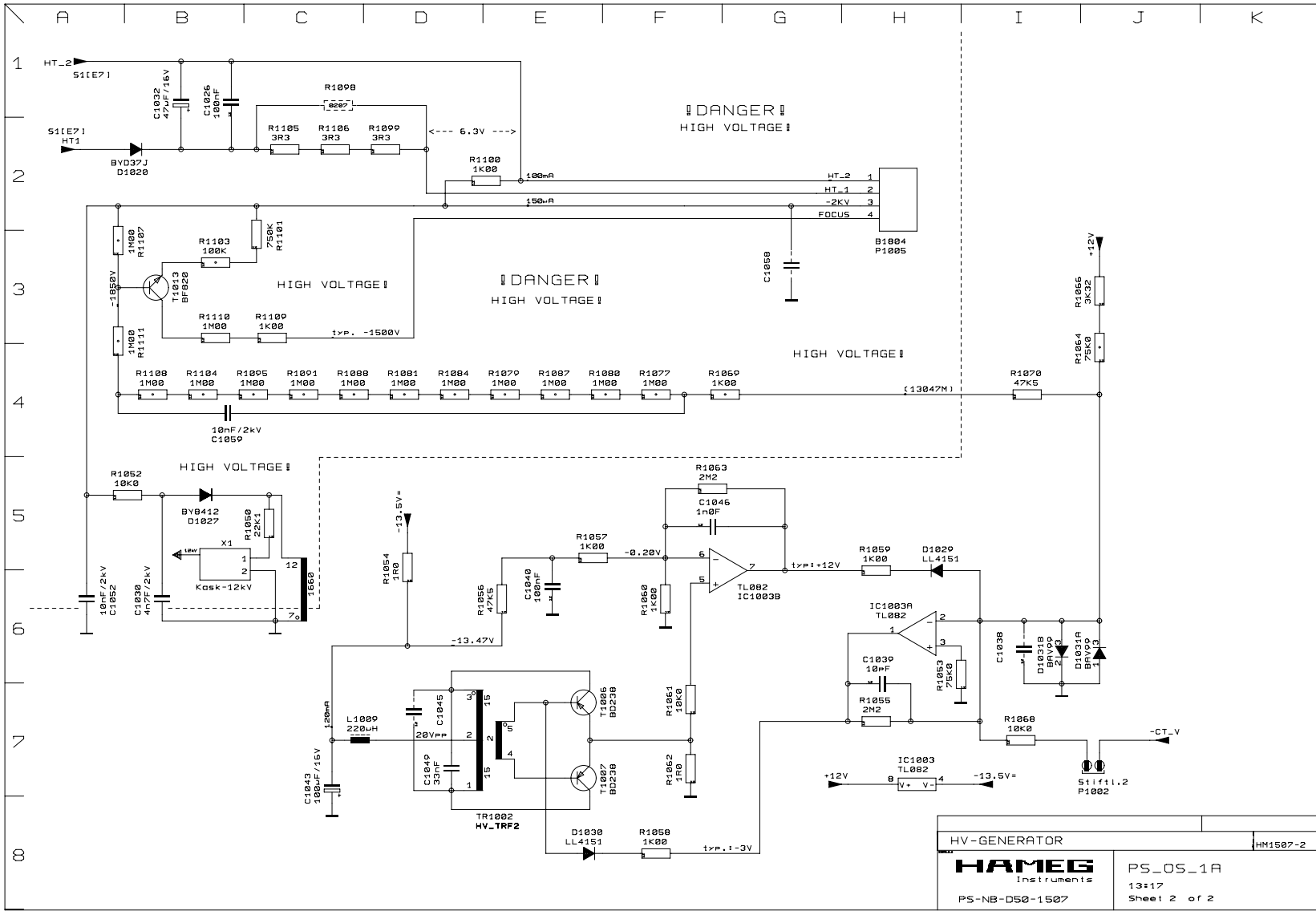


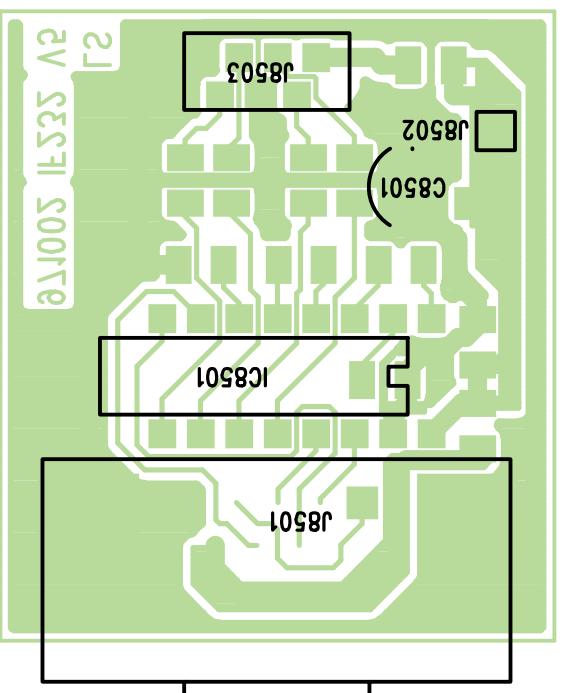
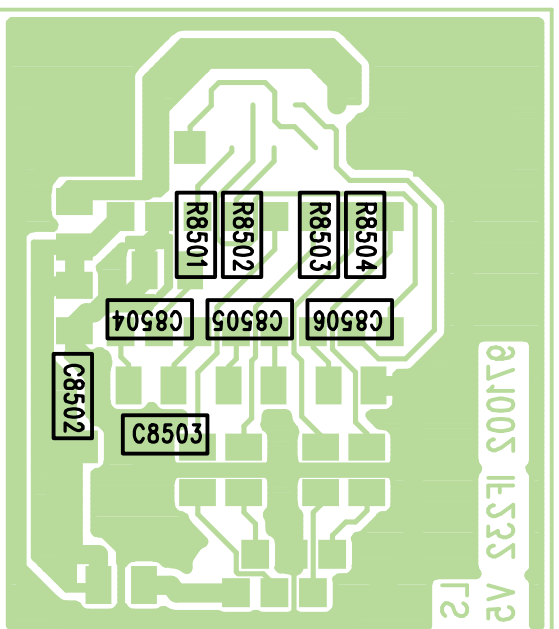


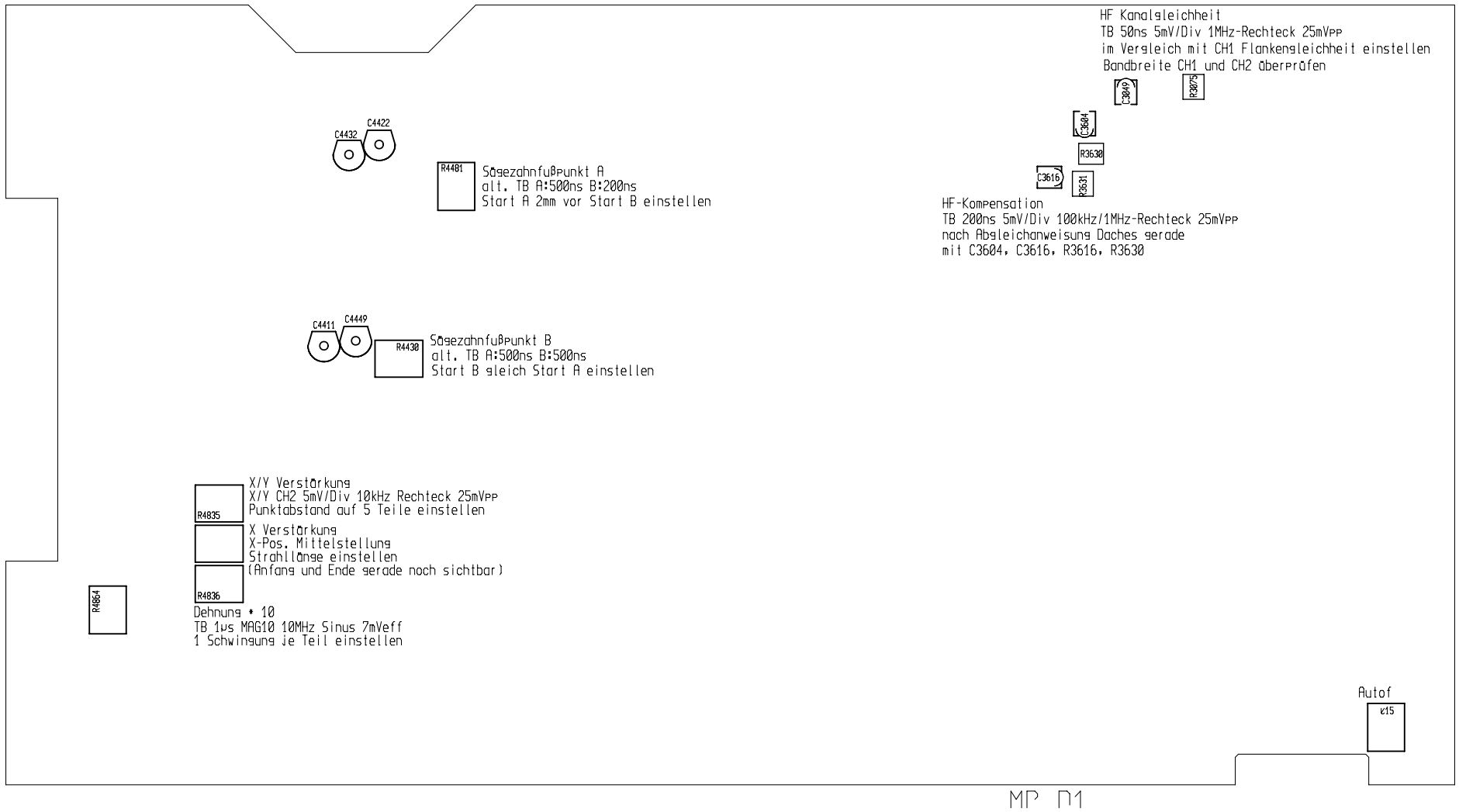
CRT - Board (Top and Bottom Side)











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