

# **TEAC®**

## **SERVICE MANUAL**

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# **EU3242ST**

**16:9 CTV**

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## 1.INTRODUCTION

11AK45 is a 50Hz colour television capable of driving 24" + CRT sizes( beginning from 24" 16:9 up to 33").

The chassis is capable of operation in PAL, SECAM, NTSC (playback) colour standards and multiple transmission standards as B/G, D/K, I/I', and L/L'.

Sound system output is supplying 2x10W (10%THD) for left and right outputs of 8ohm speakers.

TV supports FASTTEXT. It is possible to decode transmissions including high graphical data.

The chassis is equipped with three full EuroScarts, only one of them supports RGB input, one headphone output, one FAV input, one SVHS input (via SCART)

## 2.TUNER

The hardware and software of the TV is suitable for tuners, supplied by different companies, which are selected from the Service Menu. These tuners can be combined VHF, UHF tuners suitable for CCIR systems B/G, H, L, L', I/I', and D/K. The tuning is available through the digitally controlled I<sup>2</sup>C bus (PLL). Below you will find info on one of the Tuners in use.

### General description of UV1316:

The UV1316 tuner belongs to the UV 1300 family of tuners, which are designed to meet a wide range of applications. It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

### Features of UV1316:

1. Member of the UV1300 family small sized UHF/VHF tuners
2. Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
3. Digitally controlled (PLL) tuning via I<sup>2</sup>C-bus
4. Off-air channels, S-cable channels and Hyperband
5. World standardized mechanical dimensions and world standard pinning
6. Compact size
7. Complies to "CENELEC EN55020" and "EN55013"

### Pinning:

1. Gain control voltage (AGC) : 4.0V, Max: 4.5V
2. Tuning voltage
3. I<sup>2</sup>C-bus address select : Max: 5.5V
4. I<sup>2</sup>C-bus serial clock : Min:-0.3V, Max: 5.5V
5. I<sup>2</sup>C-bus serial data : Min:-0.3V, Max: 5.5V
6. Not connected
7. PLL supply voltage : 5.0V, Min: 4.75V, Max: 5.5V
8. ADC input
9. Tuner supply voltage : 33V, Min: 30V, Max: 35V
10. Symmetrical IF output 1
11. Symmetrical IF output 2

## 3.IF PART (TDA9885/86)

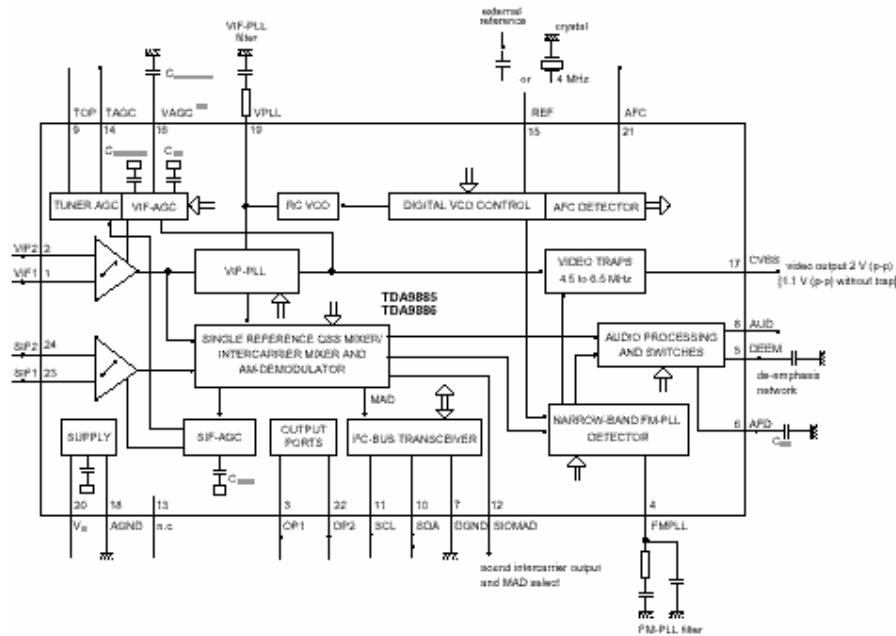
The TDA9885 is an alignment-free single standard (without positive modulation) vision and sound IF signal PLL.

The TDA9886 is an alignment-free multistandard (PAL, SECAM and NTSC) vision and sound IF signal PLL Both devices can be used for TV, VTR, PC and set-top box applications.

The following figure shows the simplified block diagram of the integrated circuit.

The integrated circuit comprises the following functional blocks:

VIF amplifier, Tuner and VIF-AGC, VIF-AGC detector, Frequency Phase-Locked Loop (FPLL) detector, VCO and divider, Digital acquisition help and AFC, Video demodulator and amplifier, Sound carrier trap, SIF amplifier, SIF-AGC detector, Single reference QSS mixer, AM demodulator, FM demodulator and acquisition help, Audio amplifier and mute time constant, I<sup>2</sup>C-bus transceivers and MAD (module address), Internal voltage stabilizer.



(7) Not connected for TDA8855.

#### 4.VIDEO SWITCH TEA6415

In case of three or more external sources are used, the video switch IC TEA6415 is used. The main function of this device is to switch 8 video-input sources on the 6 outputs. Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync. top for CVBS or black level for RGB signals). Each nominal gain between any input and output is 6.5dB. For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5VDC on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external Resistor Bridge). All the switching possibilities are changed through the BUS. Driving 75ohm load needs an external resistor. It is possible to have the same input connected to several outputs.

#### 5.MULTI STANDARD SOUND PROCESSOR

The MSP 34x10G family of single-chip Multi-standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip.

The DBX noise reduction, or alternatively, MICRONAS Noise Reduction (MNR) is performed alignment free. Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

#### 6.SOUND OUTPUT STAGE WITH TDA7269A

The TDA7269A is class AB dual Audio power amplifier assembled in the Multi-watt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

#### 7.BERTICAL OUTPUT STAGE WITH STV9379FA

The IC STV9379FA is the vertical deflection booster circuit. Two supply voltages, +14V and -14V are needed to scan the inputs VERT+ and VERT-, respectively. And a third supply voltage, +60V for the flyback limiting are needed. The vertical deflection coil is connected in series between the output and feedback to the input.

#### 8.VIDEO OUTPUT AMPLIFIER TDA6108

The TDA6108Q includes three video output amplifiers is intended to drive the three cathodes of a colour picture tube.

## 9. POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44608, which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer generates 145V for FBT input, +/-14V for audio amplifier, 5V and 3.3V stand by voltage and 8V, 12V and 5V supplies for other different parts of the chassis.

An optocoupler is used to control the regulation of line voltage and stand-by power consumption. There is a regulation circuit in secondary side. This circuit produces a control voltage according to the changes in 145V DC voltage, via an optocoupler (TCET1102G) to pin3 of the IC.

During the switch on period of the transistor, energy is stored in the transformer. During the switch off period energy is fed to the load via secondary winding. By varying switch-on time of the power transistor, it controls each portion of energy transferred to the second side such that the output voltage remains nearly independent of load variations.

## 10. MICROCONTROLLER SDA55XX

### 10.1. General Features

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package PSDIP52-2, PMQFP64-1
- Romless version package PMQFP100-2, PLCC84-2

### 10.2. External Crystal and Programmable Clock Speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers.
- Normal Mode 33.33 MHz CPU clock, Power Save mode 8.33 MHz

### 10.3. Microcontroller Features

- 8bit 8051 instruction set compatible CPU.
- 33.33-MHz internal clock (max.)
- 0.360 ms (min.) instruction cycle
- Two 16-bit timers
- Watchdog timer
- Capture compare timer for infrared remote control decoding
- Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit)
- UART (rx, tx)

### 10.4. Memory

- Non-multiplexed 8-bit data and 16 ... 20-bit address bus (ROMless Version)
- Memory banking up to 1Mbyte (Romless version)
- Up to 128 Kilobyte on Chip Program ROM
- Eight 16-bit data pointer registers (DPTR)
- 256-bytes on-chip Processor Internal RAM (IRAM)
- 128bytes extended stack memory.
- Display RAM and TXT/VPS/PDC/WSS-Acquisition-Buffer directly accessible via MOVX
- UP to 16KByte on Chip Extended RAM (XRAM) consisting of;
  - 1 Kilobyte on-chip ACQ-buffer-RAM (access via MOVX)
  - 1 Kilobyte on-chip extended-RAM (XRAM, access via MOVX) for user software
  - 3 Kilobyte Display Memory

### 10.5. Display Features

- ROM Character Set Supports all East and West European Languages in single device
- Mosaic Graphic Character Set
- Parallel Display Attributes
- Single/Double Width/Height of Characters
- Variable Flash Rate
- Programmable Screen Size (25 Rows x 33...64 Columns)
- Flexible Character Matrixes (HxV) 12 x 9...16
- Up to 256 Dynamical Redefinable Characters in standard mode; 1024 Dynamical Redefinable Characters in Enhanced Mode
- CLUT with up to 4096 colour combinations

- Up to 16 Colours per DRCS Character
- One out of Eight Colours for Foreground and Background Colours for 1-bit DRCS and ROM Characters
- Shadowing
- Contrast Reduction
- Pixel by Pixel Shiftable Cursor With up to 4 Different Colours
- Support of Progressive Scan and 100 Hz.
- 3 X 4Bits RGB-DACs On-Chip
- Free Programmable Pixel Clock from 10 MHz to 32MHz
- Pixel Clock Independent from CPU Clock
- Multinorm H/V-Display Synchronization in Master or Slave Mode

#### **10.6.Acquisition Features**

- Multi-standard Digital Data Slicer
- Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+)
- Four Different Framing Codes Available
- Data Caption only limited by available Memory
- Programmable VBI-buffer
- Full Channel Data Slicing Supported
- Fully Digital Signal Processing
- Noise Measurement and Controlled Noise Compensation
- Attenuation Measurement and Compensation
- Group Delay Measurement and Compensation
- Exact Decoding of Echo Disturbed Signals

#### **10.7.Ports**

- One 8-bit I/O-port with open drain output and optional I<sup>2</sup>C Bus emulation support (Port0)
- Two 8-bit multifunction I/O-ports (Port1, Port3)
- One 4-bit port working as digital or analogue inputs for the ADC (Port2)
- One 2-bit I/O port with secondary function (P4.2, 4.3, 4.7)
- One 4-bit I/O-port with secondary function (P4.0, 4.1, 4.4) (Not available in P-SDIP 52)

### **11.CLASS AB STEREO HEADPHONE DRIVER TDA1308**

The TDA1308 is an integrated class AB stereo headphone driver contained in a DIP8 plastic package. The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications.

### **12.SAW FILTERS**

K3953M:

**Standard**

B/G, D/K, I, L/L'

**Features**

TV IF filter with Nyquist slopes at 33,90 MHz and 38,90 MHz

Constant group delay

Suitable for CENELEC EN 55020

**Terminals**

Tinned CuFe alloy

**Pin configuration**

1 Input

2 Input - ground

3 Chip carrier - ground

4 Output

5 Output

K3958M:

**Standard**

B/G, D/K, I, L/L'

**Features**

TV IF filter with Nyquist slopes at 33.90 MHz and 38.90 MHz

Constant group delay

Terminal and Pin configuration are the same with K3953M



K9356M:

**Standard**

B/G, D/K, I, L

**Features**

TV IF audio filter with pass band for sound carriers at 32,40 MHz (D/K, L), 32,90 MHz (I) and 33,40 MHz (B/G)

Terminal and Pin configuration are the same with K3953M

K9656M:

**Standard**

B/G, D/K, I, L/L'

**Features**

TV IF audio filter with two channels

Channel 1 (L') with one pass band for sound carriers at 40,40 MHz (L') and 39,75 MHz (L' - NICAM)

Channel 2 (B/G, D/K, L, I) with one pass band for sound carriers between 32,35 MHz and 33,40 MHz

Terminal and Pin configuration are the same with K3953M

## 13.IC DESCRIPTIONS

LM317T

MSP3410G

TEA6415

TDA7269A

24C08

MC44608

TDA9885T

TDA1308T

VDP3130Y

STV9379FA

LM7805/LM7808

SDA55XX

TCET1102G

### 13.1.LM317T

#### 13.1.1.Description

The LM317T is an adjustable 3 terminal positive voltage regulator capable of supplying in excess of 1.5 amps over an output range of 1.25 to 37 volts. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage. Further, it employs internal current limiting, thermal shutdown and safe area compensation, making it essentially blow-out proof. The LM317 serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the LM317 can be used as a precision current regulator.

#### 13.1.2.Features

- Output Current in Excess of 1.5 A
- Output Adjustable between 1.2 V and 37 V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting Constant with Temperature
- Output Transistor Safe-Area Compensation
- Floating Operation for High Voltage Applications
- Available in Surface Mount D<sup>2</sup>PAK, and Standard 3-Lead Transistor Package
- Eliminates Stocking many Fixed Voltages

### 13.2.TDA1308T

#### 13.2.1.General Description

The TDA1308 is an integrated class AB stereo headphone driver contained in an SO8 or a DIP8 plastic package. The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications. It gets its input from two analog audio outputs (DACA\_L and DACA\_R) of MSP 34x0G. The gain of the output is adjustable by the feedback resistor between the inputs and outputs.

#### 13.2.2.Features

- Wide temperature range
- No switch ON/OFF clicks
- Excellent power supply ripple rejection

- Low power consumption
- Short-circuit resistant
- High performance
- high signal-to-noise ratio
- High slew rate
- Low distortion
- Large output voltage swing.

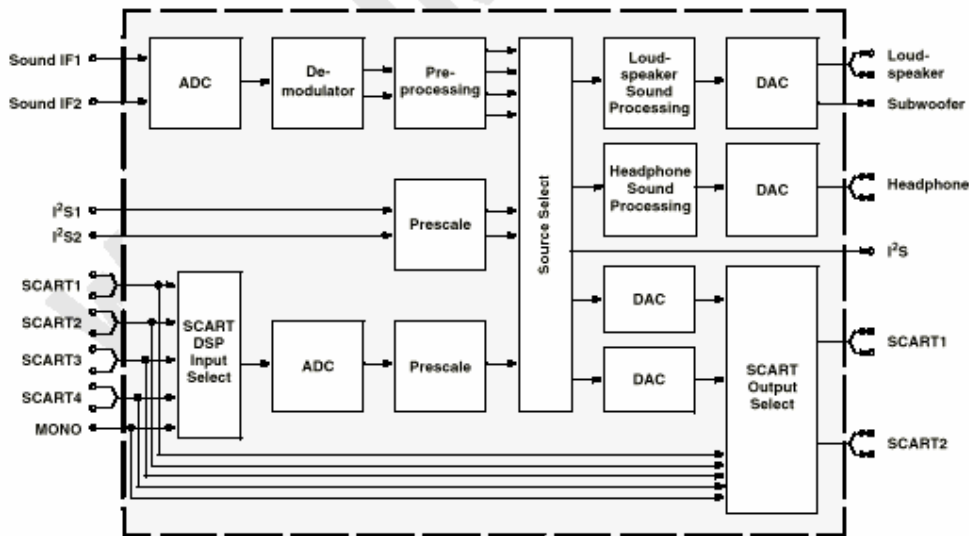
### 13.2.3.Pinning

SYMBOL	PIN	DESCRIPTION
OUTA	1	Output A
INA(neg)	2	Inverting input A
INA(pos)	3	Non-inverting input A
V <sub>SS</sub>	4	Negative supply
INB(pos)	5	Non-inverting input B
INB(neg)	6	Inverting input B
OUTB	7	Output B
V <sub>DD</sub>	8	Positive supply

## 13.3.MSP34X0G (MSP3410G)

### 13.3.1.Description

The MSP 34x0G family of single-chip Multi standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure shows a simplified functional block diagram of the MSP 34x0G.



This new generation of TV sound processing ICs now includes versions for processing the multi channel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively, MICRONAS Noise Reduction (MNR) is performed alignment free. Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard. Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J. The MSP 34x0G has optimum stereo performance without any adjustments.

All MSP 34x0G versions are pin and software downward compatible to the MSP34x0D. The MSP34x0G further simplifies controlling software. Standard selection requires a single I<sup>2</sup>C transmission only.

The MSP 34x0G has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I<sup>2</sup>C interaction is necessary (Automatic Sound Selection).

### 13.3.2.Features

Standard Selection with single I<sup>2</sup>C transmission  
 Automatic Standard Detection of terrestrial TV standards  
 Automatic Sound Selection (mono/stereo/bilingual), new registers MODUS, STATUS  
 Two selectable sound IF (SIF) inputs  
 Automatic Carrier Mute function  
 Interrupt output programmable (indicating status change)  
 Loudspeaker / Headphone channel with volume, balance, bass, treble, loudness  
 AVC: Automatic Volume Correction  
 Subwoofer output with programmable low-pass and complementary high-pass filter  
 5-band graphic equalizer for loudspeaker channel  
 Spatial effect for loudspeaker channel  
 Four Stereo SCART (line) inputs, one Mono input; two Stereo SCART outputs  
 Complete SCART in/out switching matrix  
 Two I<sup>2</sup>S inputs; one I<sup>2</sup>S output  
 Dolby Pro Logic with DPL 351xA coprocessor  
 All analog FM-Stereo A2 and satellite standards; AM-SECAM L standard  
 Simultaneous demodulation of (very) high-deviation FM-Mono and NICAM  
 Adaptive deemphasis for satellite (Wegener-Panda, acc. to ASTRA specification)  
 ASTRA Digital Radio (ADR) together with DRP 3510A  
 All NICAM standards  
 Korean FM-Stereo A2 standard

### 13.3.3.Pin connections

NC = not connected; leave vacant  
 LV = if not used, leave vacant  
 X = obligatory; connect as described in circuit diagram  
 DVSS: if not used, connect to DVSS  
 AHVSS: connect to AHVSS

PLCC 68-pin	Pin No.				Pin Name	Type	Connection (if not used)	Short Description
	PSDIP 64-pin	PSDIP 52-pin	PQFP 80-pin	PLQFP 64-pin				
1	16	14	9	8	ADR_WS	OUT	LV	ADR word strobe
2	-	-	-	-	NC		LV	Not connected
3	15	13	8	7	ADR_DA	OUT	LV	ADR Data Output
4	14	12	7	6	I2S_DA_IN1	IN	LV	I <sup>2</sup> S1 data input
5	13	11	6	5	I2S_DA_OUT	OUT	LV	I <sup>2</sup> S data output
6	12	10	5	4	I2S_WS	IN/OUT	LV	I <sup>2</sup> S word strobe
7	11	9	4	3	I2S_CL	IN/OUT	LV	I <sup>2</sup> S clock
8	10	8	3	2	I2C_DA	IN/OUT	X	I <sup>2</sup> C data
9	9	7	2	1	I2C_CL	IN/OUT	X	I <sup>2</sup> C data
10	8	-	1	64	NC		LV	Not connected
11	7	6	80	63	STANDBYQ	IN	X	Stand-by (low-active)
12	6	5	79	62	ADR_SEL	IN	X	I <sup>2</sup> C bus address select
13	5	4	78	61	D_CTR_I/O_0	IN/OUT	LV	D_CTR_I/O_0
14	4	3	77	60	D_CTR_I/O_1	IN/OUT	LV	D_CTR_I/O_1
15	3	-	76	59	NC		LV	Not connected
16	2	-	75	58	NC		LV	Not connected
17	-	-	-	-	NC		LV	Not connected
18	1	2	74	57	AUD_CL_OUT	OUT	LV	Audio clock output (18.432 MHz)
19	64	1	73	56	TP		LV	Test pin
20	63	52	72	55	XTAL_OUT	OUT	X	Crystal oscillator
21	62	51	71	54	XTAL_IN	IN	X	Crystal oscillator
22	61	50	70	53	TESTEN	IN	X	Test pin
23	60	49	69	52	ANA_IN2+	IN	AVSS via 56 pF/LV	IF input 2 (can be left vacant, only if IF input 1 is also not in use)
24	59	48	68	51	ANA_IN-	IN	AVSS via 56 pF/LV	IF common (can be left vacant, only if IF input 1 is also not in use)
25	58	47	67	50	ANA_IN1+	IN	LV	IF input 2
26	57	46	66	49	AVSUP		X	Analog power supply 5v
-	-	-	65	-	AVSUP		X	Analog power supply 5v

-	-	-	64	-	NC		LV	Not connected
-	-	-	63	-	NC		LV	Not connected
27	56	45	62	48	AVSS		X	Analog ground
-	-	-	61	-	AVSS		X	Analog ground
28	55	44	60	47	MONO_IN	IN	LV	Mono input
-	-	-	59	-	NC		LV	Not connected
29	54	43	58	46	VREFTOP		X	Reference voltage IF A/D converter
30	53	42	57	45	SC1_IN_R	IN	LV	SCART 1 input, right
31	52	41	56	44	SC1_IN_L	IN	LV	SCART 1 input, left
32	51	-	55	43	ASG1		AHVSS	Analog Shield Ground 1
33	50	40	54	42	SC2_IN_R	IN	LV	SCART 2 input, right
34	49	39	53	41	SC2_IN_L	IN	LV	SCART 2 input, left
35	48	-	52	40	ASG2		AHVSS	Analog Shield Ground 2
36	47	38	51	39	SC3_IN_R	IN	LV	SCART 3 input, right
37	46	37	50	38	SC3_IN_L	IN	LV	SCART 3 input, left
38	45	-	49	37	ASG4		AHVSS	Analog Shield Ground 4
39	44	-	48	36	SC4_IN_R	IN	LV	SCART 4 input, right
40	43	-	47	35	SC4_IN_L	IN	LV	SCART 4 input, left
41	-	-	46	-	NC		LV or AHVSS	Not connected
42	42	36	45	34	AGNDC		X	Analog reference voltage
43	41	35	44	33	AHVSS		X	Analog ground
-	-	-	43	-	AHVSS		X	Analog ground
-	-	-	42	-	NC		LV	Not connected
-	-	-	41	-	NC		LV	Not connected
44	40	34	40	32	CAPL_M		X	Volume capacitor MAIN
45	39	33	39	31	AHVSUP		X	Analog power supply 8V
46	38	32	38	30	CAPL_A		X	Volume capacitor AUX
47	37	31	37	29	SC1_OUT_L	OUT	LV	SCART output 1, left
48	36	30	36	28	SC1_OUT_R	OUT	LV	SCART output 1, right
49	35	29	35	27	VREF1		X	Reference ground 1
50	34	28	34	26	SC2_OUT_L	OUT	LV	SCART output 2, left
51	33	27	33	25	SC2_OUT_R	OUT	LV	SCART output 2, right
52	-	-	32	-	NC		LV	Not connected
53	32	-	31	24	NC		LV	Not connected
54	31	26	30	23	DACM_SUB	OUT	LV	Subwoofer output
55	30	-	29	22	NC		LV	Not connected
56	29	25	28	21	DACM_L	OUT	LV	Loudspeaker out, left
57	28	24	27	20	DACM_R	OUT	LV	Loudspeaker out, right
58	27	23	26	19	VREF2		X	Reference ground 2
59	26	22	25	18	DACA_L	OUT	LV	Headphone out, left
60	25	21	24	17	DACA_R	OUT	LV	Headphone out, right
-	-	-	23	-	NC		LV	Not connected
-	-	-	22	-	NC		LV	Not connected
61	24	20	21	16	RESETQ	IN	X	Power-on-reset
62	23	-	20	15	NC		LV	Not connected
63	22	-	19	14	NC		LV	Not connected
64	21	19	18	13	NC		LV	Not connected
65	20	18	17	12	I2S_DA_IN2	IN	LV	I <sup>2</sup> S2-data input
66	19	17	16	11	DVSS		X	Digital ground
-	-	-	15	-	DVSS		X	Digital ground
-	-	-	14	-	DVSS		X	Digital ground
67	18	16	13	10	DVSUP		X	Digital power supply 5V
-	-	-	12	-	DVSUP		X	Digital power supply 5V
-	-	-	11	-	DVSUP		X	Digital power supply 5V
68	17	15	10	9	ADR_CL	OUT	LV	ADR clock

## 13.4.VDP313xY

### 13.4.1.Introduction

The VDP 313xY is a video IC family of high-quality single-chip video processors. Modular design and a sub-micron technology allow the economic integration of features in all classes of TV sets. The VDP 313xY family is based on the VDP 31xxB including YCRCb inputs for DVD component signals.

The VDP 313xY includes complete video, display and deflection processing. All processing is done digitally, the video frontend and video backend are interfacing to the analog world. Most functions of the VDP can be controlled by software via I<sup>2</sup>C-Bus interface

### 13.4.2.Features

#### Video Decoding and Processing

- four CVBS, one S-VHS input, one YC R C B component input
- integrated high-quality A/D converters and associated clamp and AGC circuits
- adaptive 2H comb filter Y/C separator
- multistandard colour decoder PAL/NTSC/SECAM including all substandards
- multistandard sync decoder
- automatic standard recognition
- black-line detector
- linear horizontal scaling (0.25...4), as well as nonlinear horizontal scaling "Panoramavision"
- black-level expander
- dynamic peaking
- soft limiter (gamma correction)
- colour transient improvement

#### RGB Processing and Deflection

- programmable RGB matrix
- two analog RGB / Fastblank inputs
- half-contrast switch
- picture frame generator
- scan velocity modulation output
- high-performance H/V deflection
- separate ADC for tube measurements
- EHT compensation
- angle and bow correction
- one 20.25 MHz crystal, few external components
- I<sup>2</sup>C-Bus Interface
- 64-pin PSDIP package

### 13.4.3.Pin Connections and short descriptions

NC = not connected

LV = if not used, leave vacant

X = obligatory; connect as described in circuit diagram

IN = Input

OUT = Output

SUPPLY = Supply Pin

Pin no PSDIP 64-pin	Pin name	Type	Connection (if not used)	Short description
1	TEST	IN	GNDD	Test Input
2	RESQ	IN	X	Reset Input
3	SCL	IN/OUT	X	I <sup>2</sup> C Bus Clock
4	SDA	IN/OUT	X	I <sup>2</sup> C Bus Data
5	GNDD	SUPPLY	X	Digital Ground
6	HCS	IN	LV	Half Contrast Switch Input
7	FSY	OUT	LV	Front Sync Output
8	CSY	OUT	LV	Composite Sync Output
9	VS	OUT	LV	Vertical Sync Output (=VS Bit of MSY for TPU)
10	INTLC	OUT	LV	Intefrace Control Output
11	VPROT	IN	GNDAB	Vertical Protection Input
12	SAFETY	IN	GNDAB	Safety Input
13	HFLB	IN	HOUT	Horizontal Flyback Input
14	GNDD	SUPPLY	X	Digital Ground
15	VSUPD	SUPPLY	X	Digital Supply Voltage (3.3V)
16	GNDD	SUPPLY	X	Digital Ground
17	VSUPD	SUPPLY	LV	Digital Supply Voltage (3.3V)
18	P0	IN/OUT	LV	Port 1, Bit 0
19	P1	IN/OUT	LV	Port 1, Bit 1
20	P2	IN/OUT	GNDD	Port 1, Bit 2
21	P3	IN/OUT	GNDD	Port 1, Bit 3
22	P4	IN/OUT	GNDD	Port 1, Bit 4
23	P5	IN/OUT	GNDD	Port 1, Bit 5
24	P6	IN/OUT	GNDD	Port 1, Bit 6

25	GNDD	SUPPLY	X	Digital Ground
26	RSW2	OUT	GNDAB	Range Switch 2 for Measurement ADC
27	RSW1	OUT	GNDAB	Range Switch 1 for Measurement ADC
28	SENSE	IN	GNDAB	Sense ADC Input
29	GNDM	SUPPLY	X	Ground, MADC input
30	VERTQ	OUT	LV	Inverted Vertical Sawtooth Output
31	VERT	OUT	LV	Vertical Sawtooth Output
32	E/w	OUT	LV	Vertical Parabola Output
33	XREF	IN	X	Reference Input for RGB DACs
34	SVMOUT	OUT	VSUPAB	Analog Scan Velocity Modulation Output
35	GNDAB	SUPPLY	X	Analog Ground Backend
36	VSUPAB	SUPPLY	X	Analog Supply Voltage (5.0V) Backend
37	ROUT	OUT	VSUPAB	Analog Red Output
38	GOUT	OUT	VSUPAB	Analog Green Output
39	BOUT	OUT	VSUPAB	Analog Blue Output
40	VRD	IN	X	DAC Reference
41	RIN	IN	GNDAB	Analog Red Input
42	GIN	IN	GNDAB	Analog Green Input
43	BIN	IN	GNDAB	Analog Blue Input
44	FBLIN	IN	GNDAB	Fast Blank Input
45	RIN2	IN	GNDAB	Analog Red Input2
46	GIN2	IN	GNDAB	Analog Green Input2
47	BIN2	IN	GNDAB	Analog Blue Input2
48	FBLIN2	IN	GNDAB	Fast Blank Input2
49	CLK20	OUT	LV	20.25 MHz System Clock Output
50	HOUT	OUT	X	Horizontal Drive Output
51	XTAL 1	IN	X	Analog Crystal Input
52	XTAL 2	OUT	X	Analog Crystal Output
53	CIN 2/CRIN		LV	Analog Chroma 2/Component C <sub>R</sub> Input
54	CBIN	IN	LV	Component C <sub>B</sub> Input
55	GNDAF	SUPPLY	X	Analog Ground Frontend
56	SGND	IN	GNDAF	Signal Ground for Analog Input
57	VRT	IN	X	Reference Voltage Top, Video ADC
58	VSUPAF	SUPPLY	X	Analog Supply Voltage (5.0V) Frontend
59	VOUT	OUT	LV	Analog Video Output
60	CIN1	IN	VRT	Analog Chroma 1 Input
61	VIN1	IN	VRT	Analog Video 1 Input
62	VIN2	IN	VRT	Analog Video 2 Input
63	VIN3	IN	VRT	Analog Video 3 Input
64	VIN4	IN	VRT	Analog Video 4 Input

## 13.5.TEA6415C

### 13.5.1.General Description

The main function of the IC is to switch 8 video input sources on 6 outputs. Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of synch. top for CVBS or black level for RGB signals). Each nominal gain between any input and output is 6.5dB. For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5 V<sub>DC</sub> on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS. Driving 75Ω load needs an external transistor. It is possible to have the same input connected to several outputs. The starting configuration upon power on (power supply: 0 to 10V) is undetermined. In this case, 6 words of 16 bits are necessary to determine one configuration. In other case, 1 word of 16 bits is necessary to determine one configuration.

### 13.5.2.Features

- 20MHz Bandwidth
- Cascadable with another TEA6415C (Internal address can be changed by pin 7 voltage)
- 8 Inputs (CVBS, RGB, MAC, CHROMA,...)
- 6 Outputs
- Possibility of MAC or chroma signal for each input by switching-off the clamp with an external resistor bridge
- Bus controlled

- 6.5dB gain between any input and output
- 55dB crosstalk at 5mHz
- Fully ESD protected

### 13.5.3.Pinning

- |            |   |   |
|------------|---|---|
| 1. Input   | : | Max : 2Vpp, Input Current: 1mA, Max : 3mA                       |
| 2. Data    | : | Low level: -0.3V Max: 1.5V,<br>High level : 3.0V Max : Vcc+0.5V |
| 3. Input   | : | Max : 2Vpp, Input Current: 1mA, Max : 3mA                       |
| 4. Clock   | : | Low level: -0.3V Max: 1.5V,<br>High level : 3.0V Max : Vcc+0.5V |
| 5. Input   | : | Max : 2Vpp, Input Current: 1mA, Max : 3mA                       |
| 6. Input   | : | Max : 2Vpp, Input Current: 1mA, Max : 3mA                       |
| 7. Prog    | : |   |
| 8. Input   | : | Max : 2Vpp, Input Current: 1mA, Max: 3mA                        |
| 9. Vcc     | : | 12V   |
| 10. Input  | : | Max : 2Vpp, Input Current: 1mA, Max : 3mA                       |
| 11. Input  | : | Max : 2Vpp, Input Current: 1mA, Max : 3mA                       |
| 12. Ground | : |   |
| 13. Output | : | 5.5Vpp, Min : 4.5Vpp  |
| 14. Output | : | 5.5Vpp, Min : 4.5Vpp  |
| 15. Output | : | 5.5Vpp, Min : 4.5Vpp  |
| 16. Output | : | 5.5Vpp, Min : 4.5Vpp  |
| 17. Output | : | 5.5Vpp, Min : 4.5Vpp  |
| 18. Output | : | 5.5Vpp, Min : 4.5Vpp  |
| 19. Ground | : |   |
| 20. Input  | : | Max : 2Vpp, Input Current : 1mA, Max : 3mA                      |

### 13.6.STV9379FA

#### 13.6.1.Description

Designed for monitors and high performance TVs, the STV9379FA vertical deflection booster can handle flyback voltage up to 90V. Further to this, it is possible to have a flyback voltage, which is more than the double of the supply (Pin 2). This allows to decrease the power consumption, or to decrease the flyback time for a given supply voltage. The STV9379FA operates with supplies up to 42V and provides up to 2.6APP output current to drive the yoke. The STV9379FA is offered in HEPTAWATT package.

#### 13.6.2.Features

Power Amplifier  
 Thermal Protection  
 Output Current Up To 2.6APP  
 Flyback Voltage Up To 90V (on Pin 5)  
 Suitable For DC Coupling Application  
 External Flyback Supply

#### 13.6.3.Pinning

Pin1 : Output Stage Supply  
 Pin2 : Output  
 Pin3 : GND or Negative Supply  
 Pin4 : Flyback Supply  
 Pin5 : Supply Voltage  
 Pin6 : Inverting Input  
 Pin7 : Non-inverting Input

## 13.7.TDA7269A

### 13.7.1.Description

The TDA7269A is class AB dual Audio power amplifier assembled in the Multiwatt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

### 13.7.2.Features

Wide Supply Voltage Range Up To  $\pm 20V$   
Split Supply  
High Output Power  
14 + 14W @THD =10%,  $R_L = 8\Omega$ ,  $V_S = +16V$   
No Pop at Turn-On/Off  
Mute (Pop Free)  
Stand-By Feature (Low  $I_q$ )  
Short Circuit Protection To Gnd  
Thermal Overload Protection

## 13.8.LM7800 (LM7805/LM7808)

### 13.8.1.Description

The L7800 series of three-terminal positive regulators is available in TO-220 TO-220FP TO-3 and D 2 PAK packages and several fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shutdown and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

### 13.8.2.Features

Output Current Up To 1.5 A  
Output Voltages of 5; 5.2; 6; 8; 8.5; 9; 12; 15; 18; 24V  
Thermal Over load protection  
Short Circuit Protection  
Output Transition SOA Protection

## 13.9.AT24C08

### 13.9.1.Description

The AT24C01A/02/04/08/16 provides 1024/2048/4096/8192/16384 bits of serial electrically erasable and programmable read-only memory (EEPROM) organized as 128/256/512/1024/2048 words of 8 bits each. The device is optimized for use in many industrial and commercial applications where low-power and low-voltage operation are essential. The AT24C01A/02/04/08/16 is available in space-saving 8-pin PDIP, (AT24C01A/02/04/08/16), 8-lead TSSOP (AT24C01A/02/04/08/16) and 8-lead JEDEC SOIC (AT24C01A/02/04/08/16) packages and is accessed via a 2-wire serial interface. In addition, the entire family is available in 5.0V (4.5V to 5.5V), 2.7V (2.7V to 5.5V), 2.5V (2.5V to 5.5V) and 1.8V (1.8V to 5.5V) versions.

### 13.9.2.Features

- Low-voltage and Standard-voltage Operation
  - 5.0 (V CC = 4.5V to 5.5V)
  - 2.7 (V CC = 2.7V to 5.5V)
  - 2.5 (V CC = 2.5V to 5.5V)
  - 1.8 (V CC = 1.8V to 5.5V)
- Internally Organized 128 x 8 (1K), 256 x 8 (2K), 512 x 8 (4K), 1024 x 8 (8K) or 2048 x 8 (16K)
- 2-wire Serial Interface
- Schmitt Trigger, Filtered Inputs for Noise Suppression
- Bi-directional Data Transfer Protocol
- 100 kHz (1.8V, 2.5V, 2.7V) and 400 kHz (5V) Compatibility
- Write Protect Pin for Hardware Data Protection



- 8-byte Page (1K, 2K), 16-byte Page (4K, 8K, 16K) Write Modes
- Partial Page Writes are Allowed
- Self-timed Write Cycle (10 ms max)
- High-reliability
  - Endurance: 1 Million Write Cycles
  - Data Retention: 100 Years
- Automotive Grade and Extended Temperature Devices Available
- 8-lead JEDEC SOIC, 8-pin PDIP and 8-lead TSSOP Packages

### 13.9.3.Pin Configurations

Pin name	Function
A0-A2	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

## 13.10.SDA5555

### 13.10.1.General definition

The SDA55XX is a single chip teletext decoder for decoding World System Teletext data as well as Video Programming System (VPS), Program Delivery Control (PDC), and Wide Screen Signalling (WSS) data used for PAL plus transmissions (Line 23). The device also supports Closed caption acquisition and decoding. The device provides an integrated general-purpose, fully 8051-compatible Microcontroller with television specific hardware features. Microcontroller has been enhanced to provide powerful features such as memory banking, data pointers, and additional interrupts etc. The on-chip display unit for displaying Level 1.5 teletext data can also be used for customer defined on screen displays. Internal XRAM consists of up to 16 Kbytes. Device has an internal ROM of up to 128 KBytes. ROMless versions can access up to 1 MByte of external RAM and ROM. The SDA 55XX supports a wide range of standards including PAL, NTSC and contains a digital slicer for VPS, WSS, PDC, TTX and Closed Caption, an accelerating acquisition hardware module, a display generator for Level 1.5 TTX data and powerful On screen Display capabilities based on parallel attributes, and Pixel oriented characters (DRCS).

### 13.10.2.Features

#### General

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package PSDIP52-2, PMQFP64-1
- Romless version package PMQFP100-2, PLCC84-2

#### External Crystal and Programmable Clock Speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers.
- Normal Mode 33.33 MHz CPU clock, Power Save mode 8.33 MHz

#### Microcontroller Features

- 8bit 8051 instruction set compatible CPU.
- 33.33-MHz internal clock (max.)
- 0.360ms (min.) instruction cycle
- Two 16-bit timers
- Watchdog timer
- Capture compare timer for infrared remote control decoding
- Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit)
- UART

## Memory

- Non-multiplexed 8-bit data and 16 ... 20-bit address bus (ROMless Version)
- Memory banking up to 1Mbyte (Romless version)
- Up to 128 Kilobyte on Chip Program ROM
- Eight 16-bit data pointer registers (DPTR)
- 256-bytes on-chip Processor Internal RAM (IRAM)
- 128bytes extended stack memory.
- Display RAM and TXT/VPS/PDC/WSS-Acquisition-Buffer directly accessible via MOVX
- UP to 16KByte on Chip Extended RAM (XRAM) consisting of;
  - 1 Kilobyte on-chip ACQ-buffer-RAM (access via MOVX)
  - 1 Kilobyte on-chip extended-RAM (XRAM, access via MOVX) for user software
  - 3 Kilobyte Display Memory

## Display Features

- ROM Character Set Supports all East and West European Languages in single device
- Mosaic Graphic Character Set
- Parallel Display Attributes
- Single/Double Width/Height of Characters
- Variable Flash Rate
- Programmable Screen Size (25 Rows x 33...64 Columns)
- Flexible Character Matrixes (HxV) 12 x 9...16
- Up to 256 Dynamical Redefinable Characters in standard mode; 1024 Dynamical Redefinable Characters in Enhanced Mode
- CLUT with up to 4096 colour combinations
- Up to 16 Colours per DRCS Character
- One out of Eight Colours for Foreground and Background Colours for 1-bit DRCS and ROM Characters
- Shadowing
- Contrast Reduction
- Pixel by Pixel Shiftable Cursor With up to 4 Different Colours
- Support of Progressive Scan and 100 Hz.
- 3 X 4Bits RGB-DACs On-Chip
- Free Programmable Pixel Clock from 10 MHz to 32MHz
- Pixel Clock Independent from CPU Clock
- Multinorm H/V-Display Synchronization in Master or Slave Mode

## Acquisition Features

- Multistandard Digital Data Slicer
- Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+)
- Four Different Framing Codes Available
- Data Caption only Limited by available Memory
- Programmable VBI-buffer
- Full Channel Data Slicing Supported
- Fully Digital Signal Processing
- Noise Measurement and Controlled Noise Compensation
- Attenuation Measurement and Compensation
- Group Delay Measurement and Compensation
- Exact Decoding of Echo Disturbed Signals

## Ports

- One 8-bit I/O-port with open drain output and optional I<sup>2</sup>C Bus emulation support (Port 0)
- Two 8-bit multifunction I/O-ports (Port 1, Port 3)
- One 4-bit port working as digital or analog inputs for the ADC (Port 2)
- One 2-bit I/O port with secondary functions (P4.2, 4.3, 4.7)
- One 4-bit I/O-port with secondary function (P4.0, 4.1, 4.4) (Not available in P-SDIP 52)

## 13.11.MC44608

### 13.11.1.Description

The MC44608 is a high performance voltage mode controller designed for off-line converters. This high voltage circuit that integrates the start-up current source and the oscillator capacitor, requires few

external components while offering a high flexibility and reliability. The device also features a very high efficiency stand-by management consisting of an effective Pulsed Mode operation. This technique enables the reduction of the stand-by power consumption to approximately 1W while delivering 300mW in a 150W SMPS.

- Integrated Start-Up Current Source
- Lossless Off-Line Start-Up
- Direct Off-Line Operation
- Fast Start-Up

### 13.11.2.General Features

- Flexibility
- Duty Cycle Control
- Under voltage Lockout with Hysteresis
- On Chip Oscillator Switching Frequency 40, or 75kHz
- Secondary Control with Few External Components

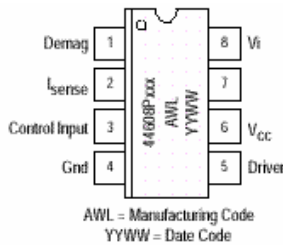
### Protections

- Maximum Duty Cycle Limitation
- Cycle by Cycle Current Limitation
- Demagnetization (Zero Current Detection) Protection
- “Over Vcc Protection” Against Open Loop
- Programmable Low Inertia Over Voltage Protection Against Open Loop
- Internal Thermal Protection

### GreenLine™ Controller

- Pulsed Mode Techniques for a Very High Efficiency Low Power Mode
- Lossless Startup
- Low dV/dT for Low EMI Radiations

### 13.11.3.Pin Connections



### 13.11.4.Pin Function description

Pin	Name	Description
1	Demag	The Demag pin offers 3 different functions: Zero voltage crossing detection (50mV), 24mA current detection and 120mA current detection. The 24mA level is used to detect the secondary reconfiguration status and the 120mA level to detect an Over Voltage status called Quick OVP.
2	ISENSE	The Current Sense pin senses the voltage developed on the series resistor inserted in the source of the power MOSFET. When I sense reaches 1V, the Driver output (pin 5) is disabled. This is known as the Over Current Protection function. A 200mA current source is flowing out of the pin 3 during the start-up phase and during the switching phase in case of the Pulsed Mode of operation. A resistor can be inserted between the sense resistor and the pin 3; thus a programmable peak current detection can be performed during the SMPS stand-by mode.
3	Control Input	A feedback current from the secondary side of the SMPS via the opto-coupler is injected into this pin. A resistor can be connected between this pin and GND to allow the programming of the Burst duty cycle during the Stand-by mode.
4	Ground	This pin is the ground of the primary side of the SMPS.
5	Driver	The current and slew rate capability of this pin are suited to drive Power MOSFETs.
6	VCC	This pin is the positive supply of the IC. The driver output gets disabled when the voltage becomes higher than 15V and the operating range is between 6.6V and 13V. An intermediate voltage level of 10V creates a disabling condition called Latched Off phase.
7		This pin is to provide isolation between the Vi pin 8 and the VCC pin 6.
8	Vi	This pin can be directly connected to a 500V voltage source for start-up function of the IC. During the Start-up phase a 9 mA current source is internally delivered to the VCC pin 6 allowing a rapid charge of the VCC capacitor. As soon as the IC starts-up, this current source is disabled.

## 13.12.TCET1102G

### 13.12.1.Description

The TCET110/ TCET2100/ TCET4100 consists of a phototransistor optically coupled to a gallium arsenide infrared-emitting diode in a 4-lead up to 16-lead plastic dual inline package. The elements are mounted on one lead frame using a **coplanar technique**, providing a fixed distance between input and output for highest safety requirements.

### 13.12.2.Applications

Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation):

For appl. class I – IV at mains voltage  $\leq 300$  V

For appl. class I – III at mains voltage  $\leq 600$  V

According to VDE 0884, table 2, suitable for: **Switch-mode power supplies, line receiver, computer peripheral interface, microprocessor system interface.**

### 13.12.3.Features

#### VDE 0884 related features:

Rated impulse voltage (transient overvoltage)  $V_{IOTM} = 8$  kV peak

Isolation test voltage (partial discharge test voltage)  $V_{pd} = 1.6$  kV

Rated isolation voltage (RMS includes DC)  $V_{IOWM} = 600$  V RMS (848 V peak)

Rated recurring peak voltage (repetitive)  $V_{IORM} = 600$  V RMS

#### General features:

CTR offered in 9 groups

Isolation materials according to UL94-VO

Pollution degree 2 (DIN/VDE 0110 / resp. IEC 664)

Climatic classification 55/100/21 (IEC 68 part 1)

Special construction: Therefore, extra low coupling capacity of typical 0.2pF, high **Common Mode Rejection**

Low temperature coefficient of CTR

G = Leadform 10.16 mm; provides creepage distance > 8 mm, for TCET2100/ TCET4100 optional; suffix letter 'G' is not marked on the optocoupler

Coupling System U

## 13.13.TDA9885T

### 13.13.1.General Description

The TDA9885 is an alignment-free single standard (without positive modulation) vision and sound IF signal PLL.

### 13.13.2.Features

- 5 V supply voltage
- Gain controlled wide-band Vision Intermediate Frequency (VIF) amplifier (AC-coupled)
- Multistandard true synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Gated phase detector for L/L accent standard
- Fully integrated VIF Voltage Controlled Oscillator (VCO), alignment-free; frequencies switchable for all negative and positive modulated standards via I<sup>2</sup>C-bus
- Digital acquisition help, VIF frequencies of 33.4, 33.9, 38.0, 38.9, 45.75 and 58.75 MHz
- 4 MHz reference frequency input [signal from Phase-Locked Loop (PLL) tuning system] or operating as crystal oscillator
- VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for negative modulated signals and as a peak white detector for positive modulated signals
- Precise fully digital Automatic Frequency Control (AFC) detector with 4-bit digital-to-analog converter; AFC bits via I<sup>2</sup>C -bus readable
- TakeOver Point (TOP) adjustable via I<sup>2</sup>C-bus or alternatively with potentiometer
- Fully integrated sound carrier trap for 4.5, 5.5, 6.0 and 6.5 MHz, controlled by FM-PLL oscillator
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode (PLL controlled)

- SIF AGC for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode, switchable via I<sup>2</sup>C-bus
- AM demodulator without extra reference circuit
- Alignment-free selective FM-PLL demodulator with high linearity and low noise
- I<sup>2</sup>C-bus control for all functions
- I<sup>2</sup>C-bus transceiver with pin programmable Module Address (MAD).

### 13.13.3.Pinning

SYMBOL	PIN	DESCRIPTION
VIF1	1	VIF differential input 1
VIF2	2	VIF differential input 2
OP1	3	output 1 (open-collector)
FMPLL	4	FM-PLL for loop filter
DEEM	5	de-emphasis output for capacitor
AFD	6	AF decoupling input for capacitor
DGND	7	digital ground
AUD	8	audio output
TOP	9	tuner AGC TakeOver Point (TOP)
SDA	10	I <sup>2</sup> C-bus data input/output
SCL	11	I <sup>2</sup> C-bus clock input
SIOMA	12	sound intercarrier output and MAD select
n.c.	13	not connected
TAGC	14	tuner AGC output
REF	15	4 MHz crystal or reference input
VAGC	16	VIF-AGC for capacitor; note 1
CVBS	17	video output
AGND	18	analog ground
VPLL	19	VIF-PLL for loop filter
V <sub>p</sub>	20	supply voltage (+5 V)
AFC	21	AFC output
OP2	22	output 2 (open-collector)
SIF1	23	SIF differential input 1
SIF2	24	SIF differential input 2

## 13.14.PI5V330

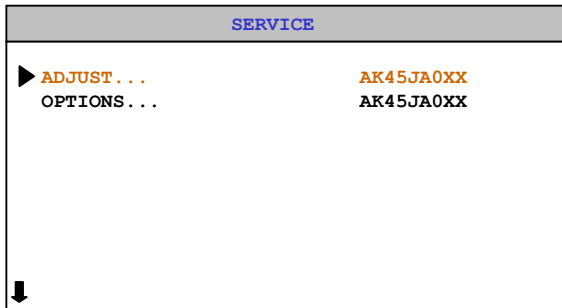
### 13.14.1.General Description

The PI5V330 is well suited for video applications when switching composite or RGB analog. A picture-in-picture application will be described in this brief. The pixel-rate creates video overlays so two or more pictures can be viewed at the same time. An inexpensive NTSC titler can be implemented by superimposing the output of a character generator on a standard composite video background.

## 14.AK45 CHASSIS PRODUCTION SERVICE MODE ADJUSTMENTS

### 14.1.SERVICE MENU

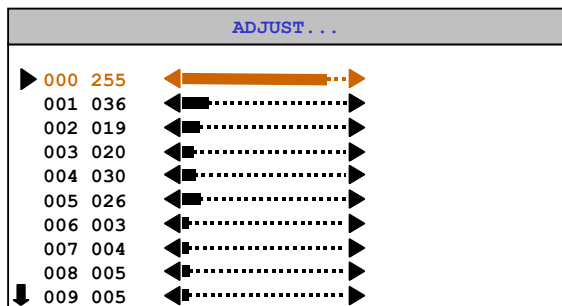
All system, geometry and white balance alignments are performed in production service mode. Before starting the production mode alignments, make sure that all manual adjustments are done correctly. To start production mode alignments enter the MAIN MENU and then press the digits 4, 7, 2 and 5 respectively or press **MUTE** and **INFO** buttons at the same time. The following first menu appears on the screen.



You can select Adjust or Options items by pressing Up/Down buttons. Selected parameter will be highlighted. In order to enter the selected parameter, press Left or Right button. To exit the service menu press MENU button. Entire service menu parameters of AK45 CHASSIS are listed below.

### 14.2.ADJUST MENU

Select the parameter by pressing up/down buttons. Adjust the parameter by pressing Left/Right buttons. In ADJUST menu, changed values are stored automatically.



#### White Point Red, White Point Green, White Point Blue:

Not used.

#### AGC

Apply PAL BG signal, VHF-3 Channel-12 and 60dBµV signal level. Adjust AGC (Automatic Gain Control) item by pressing Left/Right buttons till the voltage at AGC point (pin1 of the tuner) becomes 3.0 volts.

#### If PLL negative

Not used.

#### If PLL positive

Not used.

#### Y-Delay

Enter a PAL B/G colour and black-white bar test pattern via RF. Adjust Y-Delay for PAL till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

**Y-Delay SECAM**

Enter a SECAM B/G colour and black-white bar test pattern via RF. Adjust Y-Delay SECAM till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

**Y-Delay NTSC**

Enter an NTSC colour and black-white bar test pattern via RF. Adjust Y-Delay NTSC till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.

**Y-Delay other**

Not used.

**Vertical Position Offset**

This value is fixed (127)

**Vertical Position Offset**

This value is fixed (127)

**Horizontal Position Offset**

This value is fixed (127)

**Horizontal Position Offset**

This value is fixed (127)

**Vertical Blank Start**

This register will be used only at 4:3 tube for 16:9 mode adjustment. It adjusts the vertical blank start position.

**Vertical Blank Stop**

This register will be used only at 4:3 tube for 16:9 mode adjustment. It adjusts the vertical blank stop position.

**Angle**

Change Angle by pressing Left/Right buttons till the vertical lines of the crosshatch pattern become completely perpendicular to horizontal lines without any angle of vertical deviation. Check and readjust ANGLE item if the adjustment becomes improper after some other geometric adjustments are done.

**Bow**

Change Bow by pressing Left/Right buttons till the vertical lines especially ones close to the left and right sides will of equal and symmetrical bending, i.e. they together will neither be towards left side nor right side. Check and readjust BOW item if the adjustment becomes improper after some other geometric adjustments are done.

**4:3 Horizontal Blank Start**

This register will be used only at 16:9 tube for 4:3 mode adjustment. It adjusts the horizontal blank start position.

**4:3 Horizontal Blank Stop**

This register will be used only at 16:9 tube for 4:3 mode adjustment. It adjusts the horizontal blank stop position.

**EHTV Compensation**

It's used to adjust the EHT compensation vertical gain coefficient.

**EHTTM Compensation**

It's used to adjust the EHT compensation time constant.

**EHTEW Compensation**

It's used to adjust the EHT compensation east/west gain coefficient.

**WDR**

The amplitude of R of RGB output can be adjusted with the drive parameter WDR.

**WDG**

The amplitude of G of RGB output can be adjusted with the drive parameter WDG.

**WDB**

The amplitude of B of RGB output can be adjusted with the drive parameter WDB.

**CR**

The DC offset values of R of RGB output can be adjusted with the cutoff parameter CR.

**CG**

The DC offset values of G of RGB output can be adjusted with the cutoff parameter CG.

**CB**

The DC offset values of B of RGB output can be adjusted with the cutoff parameter CB.

**COR coring level**

The amplitude of the correction signal is adjustable. Small noise amplitudes in the correction signal are suppressed by an adjustable coring circuit.

**REGULAR VERT\_POS (Regular mode Vertical Position)**

Enter a PAL B/G circle test pattern via RF. Change Vertical Position till the test pattern is vertically centered. Horizontal line at the center pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Position item if the adjustment becomes improper after some other geometric adjustments are done.

It's used to adjust the vertical position of regular mode.

**REGULAR VERT\_AMPL (Regular mode Vertical Amplitude)**

It's used to adjust the vertical amplitude of regular mode.

**REGULAR VERT\_SCOR (Regular mode Vertical S-Correction)**

It's used to adjust the vertical s-correction of regular mode.

**REGULAR VERT\_SSYM(Regular mode Vertical S Symmetry)**

It's used to adjust the vertical s-symetry of regular mode.

**REGULAR TRAPEZE (Regular mode Trapeze)**

Change Trapezium by pressing Left/Right buttons till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done.

It's used to adjust the trapeze of regular mode.

**REGULAR CUSHION (Regular mode Cushion)**

It's used to adjust the cushion of regular mode.

**REGULAR HOR\_COR\_SYM (Regular mode Horizontal Corner Symmetry)**

It's used to adjust the horizontal corners symmetry of regular mode.

**REGULAR HOR\_CORNER (Regular mode Horizontal Corner)**

It's used to adjust the horizontal corners of regular mode.

**REGULAR HORZ\_POS (Regular mode Horizontal Position)**

Enter a PAL B/G circle test pattern via RF. Change Horizontal Position until the picture is horizontally centered. Check and readjust Horizontal Position item if the adjustment becomes improper after some other geometric adjustments are done.

It's used to adjust the horizontal position of regular mode.

**REGULAR HORZ\_AMPL (Regular mode Horizontal Amplitude)**

It's used to adjust the horizontal amplitude of regular mode.



**PANORAMIC VERT\_POS (Panoramic mode Vertical Position)**

It's used to adjust the vertical position of panoramic mode.

**PANORAMIC VERT\_AMPL (Panoramic mode Vertical Amplitude)**

It's used to adjust the vertical amplitude of panoramic mode.

**PANORAMIC VERT\_SCOR (Panoramic mode Vertical S-Correction)**

It's used to adjust the vertical s-correction of panoramic mode.

**PANORAMIC VERT\_SSYM (Panoramic mode Vertical S-Symmetry)**

It's used to adjust the vertical s-symmetry of panoramic mode.

**PANORAMIC TRAPEZE (Panoramic mode Trapeze)**

It's used to adjust the trapeze of panoramic mode.

**PANORAMIC CUSHION (Panoramic mode Cushion)**

It's used to adjust the cushion of panoramic mode.

**PANORAMIC HOR\_COR\_SYM (Panoramic mode Horizontal corner symmetry)**

It's used to adjust the horizontal corners symmetry of panoramic mode.

**PANORAMIC HOR\_CORNER (Panoramic mode Horizontal corner)**

It's used to adjust the horizontal corners of panoramic mode.

**PANORAMIC HORZ\_POS (Panoramic mode Horizontal position)**

It's used to adjust the horizontal position of panoramic mode.

**PANORAMIC HORZ\_AMPL (Panoramic mode Horizontal amplitude)**

It's used to adjust the horizontal amplitude of panoramic mode.

**14:9 ZOOM VERT\_POS (14:9 Zoom mode Vertical Position)**

It's used to adjust the vertical position of 14:9 zoom mode.

**14:9 ZOOM VERT\_AMPL (14:9 Zoom mode Vertical Amplitude)**

It's used to adjust the vertical amplitude of 14:9 zoom mode.

**14:9 ZOOM VERT\_SCOR (14:9 Zoom mode Vertical S-Correction)**

It's used to adjust the vertical s-correction of 14:9 zoom mode.

**14:9 ZOOM VERT\_SSYM (14:9 Zoom mode Vertical Symmetry)**

It's used to adjust the vertical s-symmetry of 14:9 zoom mode.

**14:9 ZOOM TRAPEZE (14:9 Zoom mode Trapeze)**

It's used to adjust the trapeze of 14:9 zoom mode.

**14:9 ZOOM CUSHION (14:9 Zoom mode Cushion)**

It's used to adjust the cushion of 14:9 zoom mode.

**14:9 ZOOM HOR\_COR\_SYM (14:9 Zoom mode Corner Symmetry)**

It's used to adjust the horizontal corners symmetry of 14:9 zoom mode.

**14:9 ZOOM HOR\_CORNER (14:9 Zoom mode Horizontal Corner)**

It's used to adjust the horizontal corners of 14:9 zoom mode.

**14:9 ZOOM HORZ\_POS (14:9 Zoom mode Horizontal Position)**

It's used to adjust the horizontal position of 14:9 zoom mode.

**14:9 ZOOM HORZ\_AMPL (14:9 Zoom mode Horizontal Amplitude)**

It's used to adjust the horizontal amplitude of 14:9 zoom mode.

**16:9 ZOOM VERT\_POS (16:9 Zoom mode Vertical Position)**

It's used to adjust the vertical position of 16:9 zoom mode.

**16:9 ZOOM VERT\_AMPL (16:9 Zoom mode Vertical Amplitude)**

It's used to adjust the vertical amplitude of 16:9 zoom mode.

**16:9 ZOOM VERT\_SCOR (16:9 Zoom mode Vertical S-Correction)**

It's used to adjust the vertical s-correction of 16:9 zoom mode.

**16:9 ZOOM VERT\_SSYM (16:9 Zoom mode Vertical S-Symmetry)**

It's used to adjust the vertical s-symmetry of 16:9 zoom mode.

**16:9 ZOOM TRAPEZE (16:9 Zoom mode Trapeze)**

It's used to adjust the trapeze of 16:9 zoom mode.

**16:9 ZOOM CUSHION (16:9 Zoom mode Cushion)**

It's used to adjust the cushion of 16:9 zoom mode.

**16:9 ZOOM HOR\_COR\_SYM (16:9 Zoom mode Horizontal corner symmetry)**

It's used to adjust the horizontal corners symmetry of 16:9 zoom mode.

**16:9 ZOOM HOR\_CORNER (16:9 Zoom mode Horizontal corner)**

It's used to adjust the horizontal corners of 16:9 zoom mode.

**16:9 ZOOM HORZ\_POS (16:9 Zoom mode Horizontal position)**

It's used to adjust the horizontal position of 16:9 zoom mode.

**16:9 ZOOM HORZ\_AMPL (16:9 Zoom mode Horizontal amplitude)**

It's used to adjust the horizontal amplitude of 16:9 zoom mode.

**16:9 ZOOM SUBTITLE VERT\_POS (16:9 Zoom Subtitle mode Vertical position)**

It's used to adjust the vertical position of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE VERT\_AMPL (16:9 Zoom Subtitle mode Vertical amplitude)**

It's used to adjust the vertical amplitude of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE VERT\_SCOR (16:9 Zoom Subtitle mode Vertical S-Correction)**

It's used to adjust the vertical s-correction of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE VERT\_SSYM (16:9 Zoom Subtitle mode Vertical Symmetry)**

It's used to adjust the vertical s-symmetry of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE TRAPEZE (16:9 Zoom Subtitle mode Trapeze)**

It's used to adjust the trapeze of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE CUSHION (16:9 Zoom Subtitle mode Cushion)**

It's used to adjust the cushion of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE HOR\_COR\_SYM (16:9 Zoom Subtitle mode Horizontal Corner Symmetry)**

It's used to adjust the horizontal corners symmetry of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE HOR\_CORNER (16:9 Zoom Subtitle mode Horizontal corner)**

It's used to adjust the horizontal corners of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE HORZ\_POS (16:9 Zoom Subtitle mode Horizontal position)**

It's used to adjust the horizontal position of 16:9 zoom subtitle mode.

**16:9 ZOOM SUBTITLE HORZ\_AMPL (16:9 Zoom Subtitle mode Horizontal amplitude)**

It's used to adjust the horizontal amplitude of 16:9 zoom subtitle mode.

**OSD Position**

It's used to adjust the horizontal position of the OSD.

**BCLTHR**

Beam current threshold

**BCLG**

Beam current loop gain

**ROTATION (TILT)**

This adjustment only works when the TV has rotation option. Change TILT by pressing Left/Right buttons to rotate the complete raster clock-wise and counter clock-wise depending on the CRT. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done.

**LSLSA, LSLSB, LSL2, LSLTA, LSLTB (Luma soft limiter)**

LSLSA: Luma soft limiter slope A (fixed)

LSLSB: Luma soft limiter slope B (fixed)

LSL2: Luma soft limiter absolute limit (fixed)

LSLTA: Luma soft limiter segment A tilt point (fixed)

LSLTB: Luma soft limiter segment A tilt point (fixed)

**REFERENCE WDR RED (NORMAL)**

The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

**REFERENCE WDR GREEN (NORMAL)**

The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

**REFERENCE WDR BLUE (NORMAL)**

The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

**REFERENCE CUTOFF RED**

It's fixed.

**REFERENCE CUTOFF GREEN**

It's fixed.

**REFERENCE CUTOFF BLUE**

It's fixed.

**IBRM**

Internal Brightness, the brightness for measurement can be set to measure at higher cutoff current. The measurement brightness is independent of the drive values. It's used to adjust the maximum brightness level.

**WDRV**

White drive measurement control. It is used to adjust the maximum contrast level.

**ACC\_SAT (COLOUR OFFSET)**

It's used to adjust the max. colour level.

**G2 CUTOFF REFERENCE**

It's fixed.

**G2 WDR REFERENCE**

It's fixed.

**POFS2 (RGB HORIZONTAL SHIFT)**

It's used to adjust the horizontal position of RGB signal.

**REFERENCE WDR RED COOL**

The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

**REFERENCE WDR GREEN COOL**

The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

**REFERENCE WDR BLUE COOL**

The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

**REFERENCE WDR RED WARM**

The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temp of warm mode.

**REFERENCE WDR GREEN WARM**

The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

**REFERENCE WDR BLUE WARM**

The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

**STANDARD MODE BRIGHTNESS**

It's used to adjust the brightness value of standard mode.

**STANDARD MODE COLOUR**

It's used to adjust the colour value of standard mode.

**STANDARD MODE CONTRAST**

It's used to adjust the contrast value of standard mode.

**FULL VERT\_POS (16:9 MODE)**

It's used to adjust the vertical position of 16:9 mode (full mode).

**FULL VERT\_AMPL**

It's used to adjust the vertical amplitude of 16:9 mode (full mode).

**FULL VERT\_SCOR**

It's used to adjust the vertical s-correction of 16:9 mode (full mode).

**FULL VERT\_SSYM**

It's used to adjust the vertical s-symmetry of 16:9 mode (full mode).

**FULL TRAPEZE**

It's used to adjust the trapeze of 16:9 mode (full mode).

**FULL CUSHION**

It's used to adjust the cushion of 16:9 mode (full mode).

**FULL HOR\_COR\_SYM**

It's used to adjust the horizontal corners symmetry of 16:9 mode (full mode).

**FULL HOR\_CORNER**

It's used to adjust the horizontal corners of 16:9 mode (full mode).

**FULL HORZ\_POS**

It's used to adjust the horizontal position of 16:9 mode (full mode).

**FULL HORZ\_AMPL**

It's used to adjust the horizontal amplitude of 16:9 mode (full mode).

**BRIGHT MODE BRIGHTNESS**

It's used to adjust the brightness value of bright mode.

**BRIGHT MODE COLOUR**

It's used to adjust the colour value of bright mode.

**BRIGHT MODE CONTRAST**

It's used to adjust the contrast value of bright mode.

**SOFT MODE BRIGHTNESS**

It's used to adjust the brightness value of soft mode.

**SOFT MODE COLOUR**

It's used to adjust the colour value of soft mode.

**SOFT MODE CONTRAST**

It's used to adjust the contrast value of soft mode.

**PERSONAL MODE FACTORY SETTING BRIGHTNESS**

It's fixed.

**PERSONAL MODE FACTORY SETTING COLOUR**

It's fixed.

**PERSONAL MODE FACTORY SETTING CONTRAST**

It's fixed.

**SCINC FOR PANAROMIC MODE**

scaler1 coefficient, this scaler is compressing the signal.

**SCINC1 FOR PANAROMIC MODE**

scaler2 coefficient, this scaler is expanding the signal.

**VOLUME AFTER APS**

It's used to adjust the volume level after APS.

**VERTICAL SCROLL**

It's used to adjust the step width for scroll function.

**14:9 HORIZONTAL START**

It's used to adjust the horizontal blank start position for 14:9 mode.

**14:9 HORIZONTAL STOP**

It's used to adjust the horizontal blank stop position for 14:9 mode.

**4:3 RGB HORIZONTAL AMPLITUDE**

It's used to adjust the horizontal amplitude in 4:3 mode for RGB signals.

**4:3 RGB CUSHION**

It's used to adjust the cushion in 4:3 mode for RGB signals.

**14:9 RGB HORIZONTAL AMPLITUDE**

It's used to adjust the horizontal amplitude in 14:9 mode for RGB signals.

**14:9 RGB CUSHION**

It's used to adjust the cushion in 14:9 mode for RGB signals.

**PANAROMIC RGB HORIZONTAL AMPLITUDE**

It's used to adjust the horizontal amplitude in panoramic mode for RGB signals.

**16:9 RGB HORIZONTAL AMPLITUDE**

It's used to adjust the horizontal amplitude in 16:9 mode for RGB signals.

**16:9 SUBTITLE RGB HORIZONTAL AMPLITUDE**

It's used to adjust the horizontal amplitude in 16:9 subtitle mode for RGB signals.

**FULL RGB HORIZONTAL AMPLITUDE**

It's used to adjust the horizontal amplitude in full mode for RGB signals.

**TELETEXT HORZ\_POS**

It's used to adjust the horizontal position of teletext signal.

ADJUST	EXPLANATION	2835	2835W
		MULTI	MULTI - PAL I
000	White Point RED	255	255
001	White Point GREEN	126	036
002	Whit Point BLUE	127	019
003	AGC (Automatic Gain Control)	20 It will be adjusted to below 1V of Max. AGC for each TV.	
004	IF-PLL Negative	030	030
005	IF-PLL Positive	026	026
006	Y-Delay	003	002
007	Y-Delay SECAM	004	003
008	Y-Delay NTSC	005	005
009	Y-Delay OTHER	005	005
010	Vertical Position Offset	127	127
011	Vertical Amplitude Offset	127	127
012	Horizontal Position Offset	127	127
013	Horizontal Amplitude Offset	127	127
014	Vertical Blank Start (It will be used only at 4:3 tube for 16:9 mode adjustment)	149	119
015	Vertical Blank Stop (It will be used only at 4:3 tube for 16:9 mode adjustment)	013	034
016	Angle	132	132
017	Bow	126	131
018	4:3 Horz. Blank Start (It will be used only at 16:9 tube for 4:3 mode adjustment)	021	042
019	4:3 Horz. Blank Stop (It will be used only at 16:9 tube for 4:3 mode adjustment)	140	175
020	EHTV compensation	054	066
021	EHTTM compensation	004	001
022	EHTEW compensation	219	160
023	WDR	VIDEO PROCESSOR ADJUSTS ITSELF.	
024	WDG		
025	WDB		
026	CR		
027	CG		
028	CB		
029	COR coring level	015	031
030	REGULAR VERT_POS (Vertical Position)	128	129
031	REGULAR VERT_AMPL (Vertical Amplitude)	081	055
032	REGULAR VERT_SCOR (Vertical S Correction)	131	129
033	REGULAR VERT_SSYM (Vertical S Symmetry)	139	136
034	REGULAR TRAPEZE	125	127
035	REGULAR CUSHION	162	153
036	REGULAR HOR_COR_SYM(Horizontal Corner Symmetry)	137	132
037	REGULAR HOR_CORNER (Horizontal Corner)	094	113
038	REGULAR HORZ_POS (Horizontal Position)	055	052
039	REGULAR HORZ_AMPL (Horizontal Amplitude)	057	030
040	PANORAMIC VERT_POS	-	129
041	PANORAMIC VERT_AMPL	-	050
042	PANORAMIC VERT_SCOR	-	129
043	PANORAMIC VERT_SSYM	-	139
044	PANORAMIC TRAPEZE	-	125
045	PANORAMIC CUSHION	-	156
046	PANORAMIC HOR_COR_SYM	-	141
047	PANORAMIC HOR_CORNER	-	108
048	PANORAMIC HORZ_POS	-	030

049	PANORAMIC HORZ_AMPL	-	013
050	14:9 ZOOM VERT_POS	-	129
051	14:9 ZOOM VERT_AMPL	-	043
052	14:9 ZOOM VERT_SCOR	-	129
053	14:9 ZOOM VERT_SSYM	-	140
054	14:9 ZOOM TRAPEZE	-	125
055	14:9 ZOOM CUSHION	-	159
056	14:9 ZOOM HOR_COR_SYM	-	141
057	14:9 ZOOM HOR_CORNER	-	110
058	14:9 ZOOM HORZ_POS	-	053
059	14:9 ZOOM HORZ_AMPL	-	032
060	16:9 ZOOM VERT_POS	-	129
061	16:9 ZOOM VERT_AMPL	-	035
062	16:9 ZOOM VERT_SCOR	-	129
063	16:9 ZOOM VERT_SSYM	-	148
064	16:9 ZOOM TRAPEZE	-	125
065	16:9 ZOOM CUSHION	-	164
066	16:9 ZOOM HOR_COR_SYM	-	138
067	16:9 ZOOM HOR_CORNER	-	104
068	16:9 ZOOM HORZ_POS	-	036
069	16:9 ZOOM HORZ_AMPL	-	020
070	16:9 ZOOM SUBTITLE VERT_POS	-	137
071	16:9 ZOOM SUBTITLE VERT_AMPL	-	039
072	16:9 ZOOM SUBTITLE VERT_SCOR	-	124
073	16:9 ZOOM SUBTITLE VERT_SSYM	-	146
074	16:9 ZOOM SUBTITLE TRAPEZE	-	119
075	16:9 ZOOM SUBTITLE CUSHION	-	164
076	16:9 ZOOM SUBTITLE HOR_COR_SYM	-	162
077	16:9 ZOOM SUBTITLE HOR_CORNER	-	081
078	16:9 ZOOM SUBTITLE HORZ_POS	-	035
079	16:9 ZOOM SUBTITLE HORZ_AMPL	-	021
080	OSD Position	217	205
081	BCLTHR Beam current threshold	050	060
082	BCLG Beam current loop gain	008	007
083	ROTATION (TILT)	000	000
084	LSLSA Luma soft limiter	000	003
085	LSLSB Luma soft limiter	000	000
086	LSL2 Luma soft limiter	255	255
087	LSLTA Luma soft limiter	000	000
088	LSLTB Luma soft limiter	000	001
089	REFERENCE WDR RED (NORMAL)	088	092
090	REFERENCE WDR GREEN (NORMAL)	074	083
091	REFERENCE WDR BLUE (NORMAL)	075	082
092	REFERENCE CUTOFF RED	065	055
093	REFERENCE CUTOFF GREEN	068	069
094	REFERENCE CUTOFF BLUE	077	069
095	IBRM	200	215
096	WDRV	075	060
097	ACC_SAT (COLOUR OFFSET)	154	130
098	G2_CUTOFF_REFERENCE	200	220
099	G2_WDR_REFERENCE	090	090
100	POFS2 (RGB HORIZONTAL SHIFT)	053	034
101	REFERENCE WDR RED COOL	090	089
102	REFERENCE WDR GREEN COOL	078	082
103	REFERENCE WDR BLUE COOL	093	090
104	REFERENCE WDR RED WARM	096	104
105	REFERENCE WDR GREEN WARM	070	085
106	REFERENCE WDR BLUE WARM	073	080
107	STANDARD MODE BRIGHTNESS	027	043



108	STANDARD MODE COLOUR	050	047
109	STANDARD MODE CONTRAST	022	029
110	FULL VERT_POS (16:9 MODE)	128	129
111	FULL VERT_AMPL	093	055
112	FULL VERT_SCOR	131	129
113	FULL VERT_SSYM	133	136
114	FULL TRAPEZE	127	126
115	FULL CUSHION	148	153
116	FULL HOR_COR_SYM	137	136
117	FULL HOR_CORNER	109	109
118	FULL HORZ_POS	055	035
119	FULL HORZ_AMPL	057	020
120	BRIGHT MODE BRIGHTNESS	027	043
121	BRIGHT MODE COLOUR	050	050
122	BRIGHT MODE CONTRAST	030	032
123	SOFT MODE BRIGHTNESS	027	043
124	SOFT MODE COLOUR	050	058
125	SOFT MODE CONTRAST	017	020
126	PERSONAL MODE FACTORY SETTING BRIGHTNESS	027	043
127	PERSONAL MODE FACTORY SETTING COLOUR	050	050
128	PERSONAL MODE FACTORY SETTING CONTRAST	030	032
129	SCINC FOR PANORAMIC MODE	032	056
130	SCINC1 FOR PANORAMIC MODE	032	125
131	VOLUME AFTER APS		005
132	VERTICAL SCROLL	005	008
133	14:9 HORIZONTAL START (It will be used only at 16:9 tube for 14:9 mode adjustment)	-	031
134	14:9 HORIZONTAL STOP (It will be used only at 16:9 tube for 14:9 mode adjustment)	-	185
135	4:3 RGB HORIZONTAL AMPLITUDE	055	074
136	4:3 RGB CUSHION	163	150
137	14:9 RGB HORIZONTAL AMPLITUDE	-	055
138	14:9 RGB CUSHION	-	158
139	PANAROMIC RGB HORIZONTAL AMPLITUDE	-	031
140	16:9 RGB HORIZONTAL AMPLITUDE	-	027
141	16:9 SUBTITLE RGB HORIZONTAL AMPLITUDE	-	027
142	FULL RGB HORIZONTAL AMPLITUDE	054	027
143	TELETEXT HORIZONTAL POSITION	101	095

### 14.3.OPTIONS MENU

Select the parameter by pressing up/down buttons. Adjust the parameter by pressing Left/Right buttons. . In OPTIONS menu, some of the changed parameters are not stored automatically. To store the adjusted parameters, you should turn off and on TV.

OPTIONS...		
▶	000 02	00000010
	001 00	00000000
	002 22	00100010
	003 08	00001000
	004 00	00000000
	005 10	00010000
	006 00	00000000
	007 56	01010110
	008 39	00111001
↓	009 0F	00001111

#### Option 0. Video Processor Crystal Indication

B7: x = x  
B6: x = x  
B5: x = x  
B4: x = x  
B3: x = x  
B2: x = x  
B1: Xa = note1 (Crystal indication)  
B0: Xb = note1 (Crystal indication)

##### note 1:

Xa,Xb

0,1 : Pal M, Pal N, NTSC M

Pin 34 : 3.58 (1, 2 or 3 crystals)

Pin 35 : No crystal

1,0 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1

Pin 34 : No crystal

Pin 35 : 4.43 (1 crystal)

1,1 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1, Pal M, Pal N, Ntsc M

Pin 34 : 3.58 (1, 2 or 3 crystals)

Pin 35 : 4.43 (1 crystal)

#### Option 1. (0x01) Video Processor Decoder Mode Register

B7: x = x  
B6: x = x  
B5: x = x  
B4: x = x  
B3: x = x  
B2: x = x  
B1: x = x  
B0: x = x

#### Option 2. (0x18) Video Processor Blanking Control

B7: SWF = 1 (Subwoofer item at menu)  
B6: Vsd = 0 (Vertical scan disable)  
B5: x = x

B4: x = x  
 B3: x = x  
 B2: x = x  
 B1: LUMA = 1 Luma Soft Limiter Enabled  
 B0: BB = 1 Blue Background Option

**Option 3. (0x19) Video Processor Cathode Drive Level**

B7: x = x  
 B6: x = x  
 B5: x = x  
 B4: x = x  
 B3: x = x  
 B2: x = x  
 B1: x = x  
 B0: country = note 0

**Note 0:** choice for others country option

1 : BG  
 0 : DK

**Option 4.**

B7: x = x  
 B6: x = x  
 B5: x = x  
 B4: x = x  
 B3: x = x  
 B2: x = x  
 B1: x = x  
 B0: x = x

**Option 5. CTI Available, Mono AVL**

B7: x = x  
 B6: x = x  
 B5: x = x  
 B4: x = x  
 B3: x = x  
 B2: x = x  
 B1: x = x  
 B0: x = x

**Option 6.**

B7: = TEXT LANGUAGE 3  
 B6: = TEXT LANGUAGE 2  
 B5: = TEXT LANGUAGE 1  
 B4: x = x  
 B3: x = x  
 B2: x = x  
 B1: x = x  
 B0: x = x

**Option 7. OPTIONHOTELACTIVE, PLL\_VST, PIP Zoom Mode, PIP Position**

B7: x = x  
 B6: x = x  
 B5: F = note 1  
 B4: x = x  
 B3: x = x  
 B2: PZM = x  
 B1: AV2 = 1 AV2 Output enabled  
 B0: x = x

**note 1:**

F :Frequency Mode

1: = Frequency Menu Item available

0: = Frequency Menu Item not available

**Option 8. IF Frequency**

B7: x = x

B6: x = x

B5: IfI = 0 note 3

B4: IfD = 0 note 4

B3: IfM = note 5

B2: Aps = note 6

B1: Hp = note 7

B0: Hue = note 8

**note 3:**

IfI

1 = IF I 39.5 MHz Great Britain I , Only UHF Tuner

0 = IF I 38.9 MHz Ireland I+, Standard Tuner

**note 4:**

IfD

1 = IF DK 38.0 MHz

0 = IF DK 38.9 MHz

**note 5:**

IfM

1 = IF M,N 45.75 MHz S&N American Models , Tuner UV1336 (Only Pal M/N, Ntsc M)

0 = IF M,N 38.9 MHz Euro M,N Models , Standard Tuner

**Note 6:**

Aps ( Only for PLL )

0 = A.P.S. done

1 = A.P.S. set

**note 7:**

Hp : Headphone available

0 = No headphone

1 = Headphone available

**note 8:**

Hue : Hue Available

0 = No Hue

1 = Hue available

**Option 9. Standard Available**

B7: NM = note 1

B6: PN = note 1

B5: PM = note 1

B4: K1 = note 1

B3: L = note 1

B2: I = note 1

B1: DK = note 1

B0: BG = note 1

**note 1:**

0 = Standard not supported

1 = Standard available

### Option 10. Scart, Combfilter, Teletext, Language

B7: x = x  
B6: RGB = note 2  
B5: FAV =  
B4: AV2S =  
B3: FSVHS = note 3  
B2: BAV = note 4  
B1: Sc2 = note 5  
B0: BSVHS = note 6

#### note 2 :

RGB = RGB Menu Item active/inactive

0 = RGB Menu Item inactive  
1 = RGB Menu Item active

#### note 3:

0 = Front S-VHS not supported  
1 = Front S-VHS available

#### note 4:

0 = Back AV (AV-3) not supported  
1 = Back AV (AV-3) available

#### note 5:

0 = Scart 2 not supported  
1 = Scart 2 available

#### note 6:

0 = Back SVHS not supported  
1 = Back SVHS available

### Option 11. PLL Tuner Control 1 Byte

PLL tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	1	0	0	0	1	1	1	0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

### Option 12. PLL Tuner Control 2 Low Byte

PLL tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	0	0	1
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	0	0	0	0	0	0	1	1

**Option 13. PLL Tuner Control 2 Mid Byte**

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	0	1	0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	1	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

**Option 14. PLL Tuner Control 2 High Byte**

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	1	0	0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

**Option 15. PLL Tuner VHF LOW – VHF HIGH Crossover Low Byte**

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	1	0	0	0	0	0
Philips	UV1316MK2	0	0	0	0	1	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	0	0	1	0	1	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0
Thomson	CTT5020	1	0	1	0	1	0	1	0

(0A hex)

(AA hex)

**Option 16. PLL Tuner VHF LOW – VHF HIGH Crossover High Byte**

PLL tuner VHF LOW - VHF HIGH crossover high byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	1	1	0	0
Philips	UV1316MK2	0	0	0	0	1	1	0	0
Alps	TELE9X062A	0	0	0	0	0	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	1	0	1
Siel	PT060	0	0	0	0	1	1	0	1
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0
Thomson	CTT5020	0	0	0	0	1	0	0	1

(0C hex)

(09 hex)

**Option 17. PLL Tuner VHF HIGH – UHF Crossover Low Byte**

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	0	1	0
Philips	UV1316MK2	1	1	1	0	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	0	0
Samsung	TEXX2949PG28A	1	0	1	0	0	0	1	0
Siel	PT060	1	0	1	0	0	1	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0
Thomson	CTT5020	1	0	1	0	0	0	1	0

(E2 hex)

(A2 hex)

**Option 18. PLL Tuner VHF HIGH – UHF Crossover High Byte**

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	1	1	1	1	0
Philips	UV1316MK2	0	0	0	1	1	1	1	0
Alps	TELE9X062A	0	0	0	0	0	0	0	0
Samsung	TEXX2949PG28A	0	0	0	1	1	1	1	0
Siel	PT060	0	0	0	1	1	1	1	0

(1D hex)

Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	1	1	0	1	1	(1B hex)

**Option 19. PIP PLL Tuner Control 1 Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	1	0	0	0	1	1	1	0	
Alps	TELE9X062A	1	0	0	0	1	1	1	0	
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0	
Siel	PT060	1	0	0	0	1	1	1	0	
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0	
Thomson	CTT5020	1	0	0	0	1	1	1	0	

**Option 20. PIP PLL Tuner Control 2 Low Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	1	0	1	0	0	0	0	1	
Alps	TELE9X062A	0	0	0	0	0	0	0	1	
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1	
Siel	PT060	0	1	1	0	0	0	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0	
Thomson	CTT5020	0	0	0	0	0	0	1	1	

**Option 21. PIP PLL Tuner Control 2 Mid Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	1	0	0	1	0	0	1	0	
Alps	TELE9X062A	0	0	0	0	0	0	1	0	
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0	
Siel	PT060	1	1	0	1	0	0	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0	
Thomson	CTT5020	0	0	0	0	0	1	1	0	

**Option 22. PIP PLL Tuner Control 2 High Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	1	1	0	1	0	0	
Alps	TELE9X062A	0	0	0	0	1	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0	
Siel	PT060	0	0	1	1	0	0	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1	
Thomson	CTT5020	1	0	0	0	0	1	0	1	

**Option 23. PIP PLL Tuner VHF LOW – VHF HIGH Crossover Low Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	0	1	0	1	0	(0A hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0	
Siel	PT060	0	0	0	0	1	0	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	1	0	1	0	(AA hex)

**Option 24. PIP PLL Tuner VHF LOW – VHF HIGH Crossover High Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	0	1	1	0	0	(0C hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	1	0	1	
Siel	PT060	0	0	0	0	1	1	0	1	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	0	1	0	0	1	(09 hex)

**Option 25. PIP PLL Tuner VHF HIGH – UHF Crossover Low Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	1	1	1	0	0	0	1	0	(E2 hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	1	0	1	0	0	0	1	0	
Siel	PT060	1	0	1	0	0	1	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	0	0	1	0	(A2 hex)

**Option 26. PIP PLL Tuner VHF HIGH – UHF Crossover High Byte**

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	1	1	1	1	0	(1D hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	1	1	1	1	0	
Siel	PT060	0	0	0	1	1	1	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	1	1	0	1	1	(1B hex)

**Option 27. Language Available 1**

B7: L7 = DANISH  
 B6: L6 = SWEDISH  
 B5: L5 = ITALIAN  
 B4: L4 = PORTUGUESE  
 B3: L3 = SPANISH  
 B2: L2 = FRENCH  
 B1: L1 = GERMAN  
 B0: L0 = ENGLISH

1: Language available  
 0: Language not available

**Option 28. Language Available 2**

B7: L15 = CROATIAN  
 B6: L14 = POLISH  
 B5: L13 = SLOVAK  
 B4: L12 = CZECH  
 B3: L11 = HUNGARY  
 B2: L10 = GREEK  
 B1: L9 = TURKEY  
 B0: L8 = NORWEGIAN

1: Language available  
 0: Language not available

**Option 29. Language Available 3 and Zoom Mode Available**

B7: ZSP = 16:9 ZOOM SUBTITLE MODE  
 B6: ZSB = 16:9 ZOOM MODE  
 B5: ZCN = 14:9 ZOOM MODE  
 B4: PNM = 1 (Panaromic zoom mode)  
 B3: Tub = note 2  
 B2: Z.Def = note 3  
 B1: PMK = note 1  
 B0:

1: Available  
 0: Not available

**note 1 :**

PMK : Picture mode key  
 0 : Not available picture mode key from RC  
 1 : available picture mode key from RC



**note 2:**

Tub : Tube size

- 0 = 16:9 Tube size
- 1 = 4:3 Tube size

**note 3:**

Z.Def : Zoom Default Mode

- 0 = 16:9 mode default
- 1 = 4:3 mode default

**Option 30. Country**

- B7: C4 = note 1
- B6: C3 = note 1
- B5: C2 = note 1
- B4: C1 = note 1
- B3: C0 = note 1
- B2: x = x
- B1: x = x
- B0: x = x

**note 1:**

C5,C4,C3,C2,C1,C0 = Country

- 0, 0, 0,0,0 = OTHER, Not allowed
- 0, 0, 0,0,1 = D, Germany
- 0, 0, 0,1,0 = A,
- 0, 0, 0,1,1 = CH,
- 0, 0, 1,0,0 = I,
- 0, 0, 1,0,1 = F,
- 0, 0, 1,1,0 = RSM,
- 0, 0, 1,1,1 = B,
- 0, 1, 0,0,0 = DK,
- 0, 1, 0,0,1 = S,
- 0, 1, 0,1,0 = N,
- 0, 1,0,1,1 = FIN,
- 0, 1,1,0,0 = GB,
- 0, 1,1,0,1 = IRL,
- 0, 1,1,1,0 = IS,
- 0, 1,1,1,1 = NL,
- 1, 0,0,0,0 = E,
- 1, 0,0,0,1 = P,
- 1, 0,0,1,0 = PL,
- 1, 0,0,1,1 = CZ,
- 1, 0,1,0,0 = H,
- 1, 0,1,0,1 = HR,
- 1, 0,1,1,0 = GR,
- 1, 0,1,1,1 = TR

**Option 31. Prescaler MSP FM (AVL=OFF)**

	b7 b6 b5 b4 b3 b2 b1 b0
prescaler MSP FM (AVL = OFF)	0 0 0 0 1 0 0 0

	b7 b6 b5 b4 b3 b2 b1 b0
prescaler MSP FM (AVL = OFF)	0 0 0 0 1 0 0 0 (if virtual dolby option is available)

**Option 32. Prescaler MSP NICAM (AVL=OFF)**

	b7 b6 b5 b4 b3 b2 b1 b0
prescaler MSP NICAM (AVL = OFF)	0 0 0 1 1 1 1 1

prescaler MSP NICAM (AVL = OFF)      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 1 1 1 1 1 (if virtual dolby option is available)

**Option 33. Prescaler MSP SCART (AVL=OFF)**

prescaler MSP SCART (AVL = OFF)      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 1 0 0

prescaler MSP SCART (AVL = OFF)      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 1 1 0 0 1 (if virtual dolby option is available)

**Option 34. Prescaler MSP I2S (AVL=OFF)**

prescaler MSP I2S (AVL = OFF)      b7 b6 b5 b4 b3 b2 b1 b0  
(if virtual dolby option is available)      not defined yet

**Option 35. Not used**

- B7: x = note 7
- B6: x = note 6
- B5: x = note 5
- B4: x = note 4
- B3: AV2S = Scart2 SVHS
- B2: Macro = Macrovision
- B1: DP = Dolby Prologic
- B0: VD = Virtual Dolby

**Option 36. Not used**

- B7: x = note 7
- B6: TAT = 1 Tilt and trapez enabled
- B5: SWF = 1 Subwoofer enabled
- B4: VLO = 1 Variable line out
- B3: VBUS = 1 Vestelbus enabled
- B2: x = x
- B1: DVD = 1 DVD enabled
- B0: DVB = 1 DVB enabled

**Option 37. Reserved for USA**

**Option 38. TV Teletext Mode Selection, Child Lock, Equalizer Country**

- B7: VCR = note 7
- B6: C = note 6
- B5: LM = note 5
- B4: EQ = note 4
- B3: x = x
- B2: CL = note 2
- B1: T1 = note 1
- B0: T0 = note 1

**note 1:**

- Teletext selection  
T1, T0:  
0,0 = No TV Text  
0,1 = Simple TV Text ( One page )  
1,1 = Fasttext/Toptext TV Text ( Eight pages)

**note 2 :**

- CL = Child Lock
- 0 = Off
- 1 = On (Active)

**note 3 :**

RGB = RGB Menu Item active/inactive  
0 = RGB Menu Item inactive  
1 = RGB Menu Item active

**note 4 :**

EQ = Equalizer available  
0 = Equalizer not available  
1 = Equalizer available

**note 5 :**

LM = List Mode available  
0 = List Mode not available  
1 = List Mode available

**note 6 :**

C = Country Line available / Aps available or not  
0 = Country Line not available / Aps not available  
1 = Country Line available / Aps available

**note 7 :**

VCR = VCR Menu Item available / not available  
0 = VCR Menu Item not available  
1 = VCR Menu Item available

**Option 39. Personal Preference Equalizer Band 1**

EQUALIZER BAND 1                    b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 40. Personal Preference Equalizer Band 2**

EQUALIZER BAND 2                    b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 41. Personal Preference Equalizer Band 3**

EQUALIZER BAND 3                    b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 42. Personal Preference Equalizer Band 4**

EQUALIZER BAND 4                    b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 43. Personal Preference Equalizer Band 5**

EQUALIZER BAND 5                    b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 44. Sound Effect (Standard; Music; Speech; Jazz; Pp)**

SOUND EFFECT                        b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 45. Volume Offset Left**

VOLUME OFFSET LEFT                b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 46. Volume Offset Right**

VOLUME OFFSET RIGHT               b7 b6 b5 b4 b3 b2 b1 b0  
    0 0 0 0 0 1 1 0

**Option 47. Volume Offset Center**

VOLUME OFFSET CENTER      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 0 1 1 0

**Option 48. Volume Offset Rear**

VOLUME OFFSET REAR      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 0 1 1 0

**Option 49. Surround Delay**

SURROUND DELAY      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 0 0 0 1

**Option 50. FM Prescale**

FM PRESCALE for Stereo      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 1 0 0

FM PRESCALE for Dolby      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 0 0 1

**Note:** if virtual dolby is available, this option is not used.

**Option 51. NICAM Prescale**

NICAM Prescale for Stereo      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 1 0 1 1 0 1

3D Panorama      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 0 1 1

NICAM Prescale for Dolby      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 1 1 0

**Note:** if virtual dolby is available, this option is not used.

**Option 52. Scart Input Prescale**

Scart Input Prescale for Stereo      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 0 0 0

Scart Input Prescale for Dolby      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 1 1 1 1

prescaler MSP Scart (AVL = OFF)      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 1 1 0 0 1 (if virtual dolby option is available)

**Note:** if virtual dolby is available, this option is not used.

**Option 53. I2S Prescale**

I2S Prescale for Stereo      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 0 1 1 0

I2S Prescale for Dolby      b7 b6 b5 b4 b3 b2 b1 b0  
0 0 0 0 0 1 1 0

**Note:** if virtual dolby is available, this option is not used.

**Option 54. Scart Output Prescale**

Scart Output Prescale      b7 b6 b5 b4 b3 b2 b1 b0  
0 1 1 1 1 1 1 1

### Option 55. Speaker Setup

	b7	b6	b5	b4	b3	b2	b1	b0
Speaker Setup (L/R, L/C/R, L/R/S, L/C/R/S)	0	0	0	0	0	0	0	0

### Option 56. Audio Options Available Or Not

Attention: All bits on the Option 56 must be the "0" for MONO TV SETS

B7: nicam	=	note 7
B6: ASD	=	note 6
B5: VRS	=	note 5
B4: CRM	=	note 4
B3: ...	=	x
B2: LBE	=	note 2
B1: Spa	=	note 1
B0: Avl	=	note 0

#### note 7 :

nicam	=	nicam available
0	=	nicam not available
1	=	nicam available

#### note 6 :

ASD	=	Auto Sound Detection available/not available
0	=	Auto Sound Detection not available
1	=	Auto Sound Detection available

#### note 5 :

VRS	=	Virtual Surround
0	=	VRS not available
1	=	VRS available

#### note 4 :

CRM	=	CARRIER MUTE OFF/ON
0	=	Sound carrier mute is ON in the Stereo Sound IC
1	=	Sound carrier mute is OFF in the Stereo Sound IC (i.e. option available)

#### note 2 :

LBE	=	LBE (Dynamic Bass)
0	=	LBE not available
1	=	LBE available

#### note 1 :

Spa	=	Spatial Effect available
0	=	Spatial Effect not available
1	=	Spatial Effect available

#### note 0 :

Avl	=	Automatic volume level available on the Menu
0	=	Automatic volume level not available
1	=	Automatic volume level available

### Option 57. Stereo Threshold

B7: b7	=	note 1	Remark :
B6: b6	=	note 1	
B5: b5	=	note 1	-Threshold for all FM A2 signals to switch from MONO to STEREO.
B4: b4	=	note 1	-For first check after programme change half value is changed (0Ch) 19h/2
B3: b3	=	note 1	-For switching from STEREO back to MONO: 19h/4 *3
B2: b2	=	note 1	
B1: b1	=	note 1	
B0: b0	=	note 1	

**note 1 :**

b7 b6 b5 b4 b3 b2 b1 b0

MSP Stereo/Mono Threshold      0 0 0 1 1 0 0 1

**Option 58. MSP Audio Flags**

- B7: b7 = x
- B6: b6 = x
- B5: b5 = x
- B4: Trs = note 1
- B3: Trb = note 1
- B2: Bbe = note 1
- B1: Spa = note 1
- B0: Avl = note 1

**note 1 :**

Defines whether the feature is toggled ON or OFF in the menu and stored.

- 0 : OFF
- 1 : ON

**Option 59. NICAM Threshold**

b7 b6 b5 b4 b3 b2 b1 b0

MSP NICAM Threshold      0 1 1 0 0 1 0 0

**Option 60. Power Delay Time**

- B7: NZ = x
- B6: HM = x
- B5: L5 = note 3
- B4: L4 = note 3
- B3: L3 = note 3
- B2: L2 = note 3
- B1: L1 = note 3
- B0: L0 = note 3

**note 3:**

L7 L6 L5 L4 L3 L2 L1 L0

Default Value :    x    x    1    1    0    0    0    0

1000 MSEC = 1SN

Number	L7L6L5L4L3L2L1L0	=	Delay		Number	L7L6L5L4L3L2L1L0	=	Delay
0	00000000	=	4 sec		32	00100000	=	12 sec
1	00000001	=	4,25 sec		33	00100001	=	12,25 sec
2	00000010	=	4,5 sec		34	00100010	=	12,5 sec
3	00000011	=	4,75 sec		35	00100011	=	12,75 sec
4	00000100	=	5 Sec		36	00100100	=	13 sec
5	00000101	=	5,25 Sec		37	00100101	=	13,25 sec
6	00000110	=	5,5 Sec		38	00100110	=	13,5 sec
7	00000111	=	5,75 Sec		39	00100111	=	13,75 sec
8	00001000	=	6 sec		40	00101000	=	14 sec
9	00001001	=	6,25 sec		41	00101001	=	14,25 sec
10	00001010	=	6,5 sec		42	00101010	=	14,5 sec
11	00001011	=	6,75 sec		43	00101011	=	14,75 sec
12	00001100	=	7 sec		44	00101100	=	15 sec
13	00001101	=	7,25 sec		45	00101101	=	15,25 sec
14	00001110	=	7,5 sec		46	00101110	=	15,5 sec
15	00001111	=	7,75 sec		47	00101111	=	15,75 sec
16	00010000	=	8 sec		48	00110000	=	16 sec
17	00010001	=	8,25 sec		49	00110001	=	16,25 sec
18	00010010	=	8,5 sec		50	00110010	=	16,5 sec
19	00010011	=	8,75 sec		51	00110011	=	16,75 sec

20	00010100	=	9	sec
21	00010101	=	9,25	sec
22	00010110	=	9,5	sec
23	00010111	=	9,75	sec
24	00011000	=	10	sec
25	00011001	=	10,25	sec
26	00011010	=	10,5	sec
27	00011011	=	10,75	sec
28	00011100	=	12	sec
29	00011101	=	12,25	sec
30	00011110	=	12,5	sec
31	00011111	=	12,75	sec

52	00110100	=	17	sec
53	00110101	=	17,25	sec
54	00110110	=	17,5	sec
55	00110111	=	17,75	sec
56	00111000	=	18	sec
57	00111001	=	18,25	sec
58	00111010	=	18,5	sec
59	00111011	=	18,75	sec
60	00111100	=	19	sec
61	00111101	=	19,25	sec
62	00111110	=	19,5	sec
63	00111111	=	19,75	sec

	76543210
0	00000000
1	00000001
2	00000010
3	00000011
4	00000100
5	00000101
6	00000110
7	00000111
8	00001000
9	00001001
10	00001010
11	00001011
12	00001100
13	00001101
14	00001110
15	00001111
16	00010000
17	00010001
18	00010010
19	00010011
20	00010100
21	00010101
22	00010110
23	00010111
24	00011000
25	00011001
26	00011010
27	00011011
28	00011100
29	00011101
30	00011110
31	00011111

Bit Positions

	76543210
32	00100000
33	00100001
34	00100010
35	00100011
36	00100100
37	00100101
38	00100110
39	00100111
40	00101000
41	00101001
42	00101010
43	00101011
44	00101100
45	00101101
46	00101110
47	00101111
48	00110000
49	00110001
50	00110010
51	00110011
52	00110100
53	00110101
54	00110110
55	00110111
56	00111000
57	00111001
58	00111010
59	00111011
60	00111100
61	00111101
62	00111110
63	00111111

Colour Code



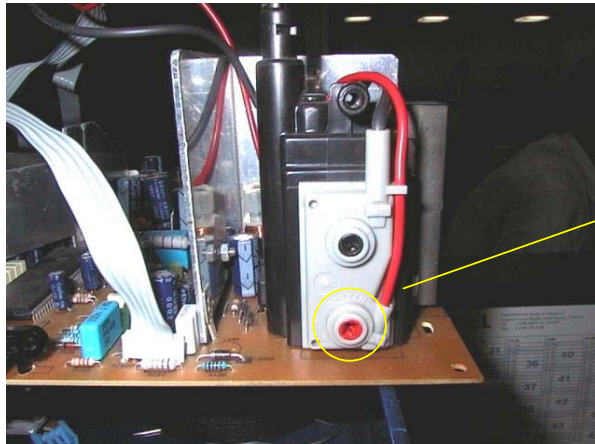
#### 14.4.OPTION TABLE RECOMMENDED VALUES

X listed in the option can be 0 or 1

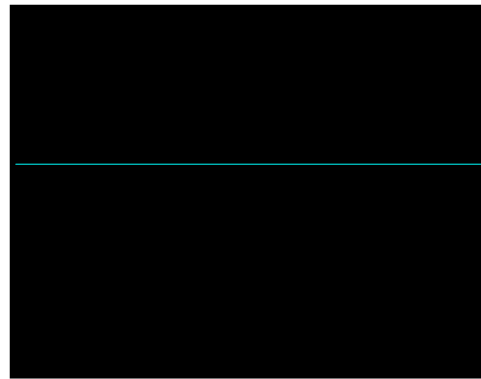
OPTION	2835 MULTI	2835W MULTI	2835W PAL I
000	X2 XXXXXX10	X2 XXXXXX10	X2 XXXXXX10
001	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
002	23 001XXX11	23 001XXX11	23 001XXX11
003	XX XXXXXXXX0	XX XXXXXXXX0	XX XXXXXXXX0
004	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
005	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
006	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
007	XX XX0XXX1X	XX XX0XXX1X	XX XX0XXX1X
008	A1 11000001	01 00000001	01 00000001
009	0B 00001111	0B 00001111	04 00001111
010	X2 XXXXX011	X7 XXXXX111	X7 XXXXX111
011	8E 10001110	8E 10001110	8E 10001110
012	03 00000011	03 00000011	03 00000011
013	06 00000110	06 00000110	06 00000110
014	15 10000101	15 10000101	15 10000101
015	AA 10101010	AA 10101010	AA 10101010
016	09 00001001	09 00001001	09 00001001
017	A2 10100010	A2 10100010	A2 10100010
018	1B 00011011	1B 00011011	1B 00011011
019	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
020	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
021	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
022	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
023	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
024	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
025	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
026	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
027	FF 11111111	FF 11111111	FF 11111111
028	FF 11111111	FF 11111111	FF 11111111
029	FF 11111111	EF 11101111	EF 11101111
030	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
031	0F 00001111	0F 00001111	0F 00001111
032	23 00100011	23 00100011	23 00100011
033	0E 00001110	0E 00001110	0E 00001110
034	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
035	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
036	X4 XXXXX1XX	X4 XXXXX1XX	X4 XXXXX1XX
037	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
038	AF 11001111	AF 11001111	AF 11001111
039	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
040	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
041	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
042	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
043	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
044	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
045	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
046	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
047	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
048	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
049	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
050	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
051	41 01000001	41 01000001	41 01000001
052	1B 00011011	1B 00011011	1B 00011011
053	06 00000110	06 00000110	06 00000110

054	75 01110101	75 01110101	75 01110101
055	00 00000000	00 00000000	00 00000000
056	DE 11011110	DE 11011110	DE 11011110
057	19 00011001	19 00011001	19 00011001
058	00 00000000	00 00000000	00 00000000
059	64 01100100	64 01100100	64 01100100
060	10 00010000	10 00010000	10 00010000

#### 14.5.SCREEN ADJUSTMENT (FBT SCREEN)



SCREEN  
ADJUST  
POT



From the option list change option 2 bit 6 from 0 to 1 for disabling vertical scan. Adjust horizontal line via screen adjust pot. as thin as possible. Then press 0 to leave service menu.

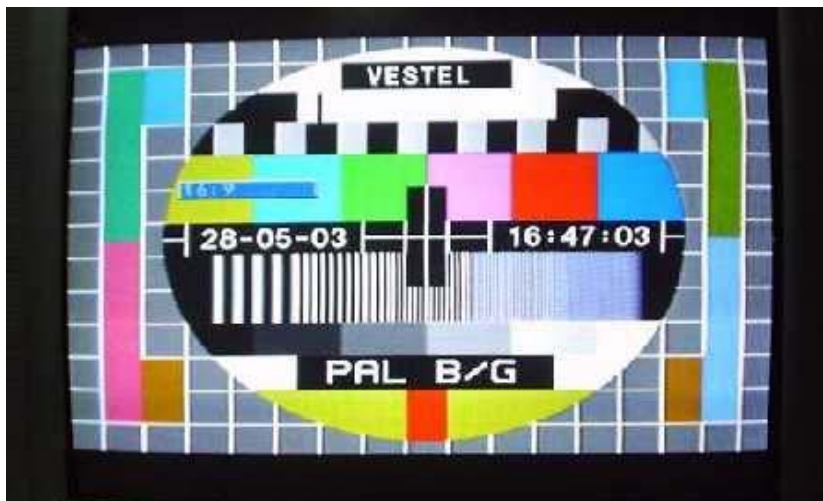
## 14.6.GEOMETRY ADJUSTMENT

### 4:3 FORMATS

#### 4:3 MODE

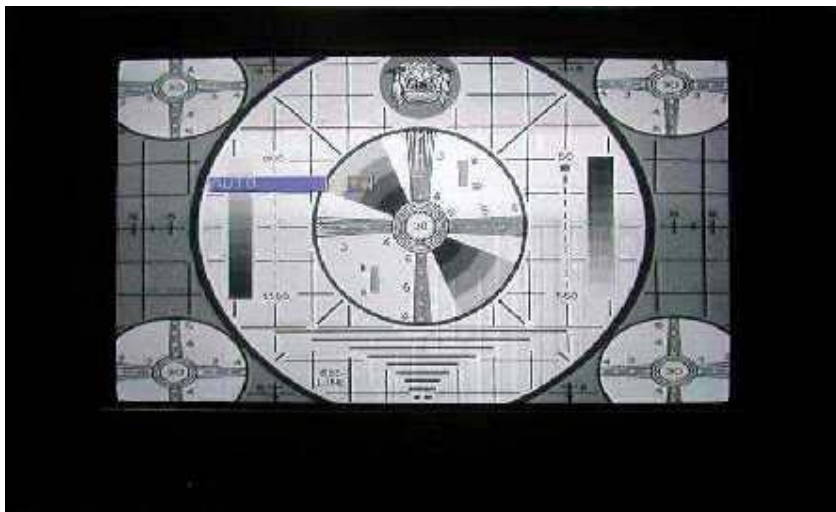


#### 16:9 MODE

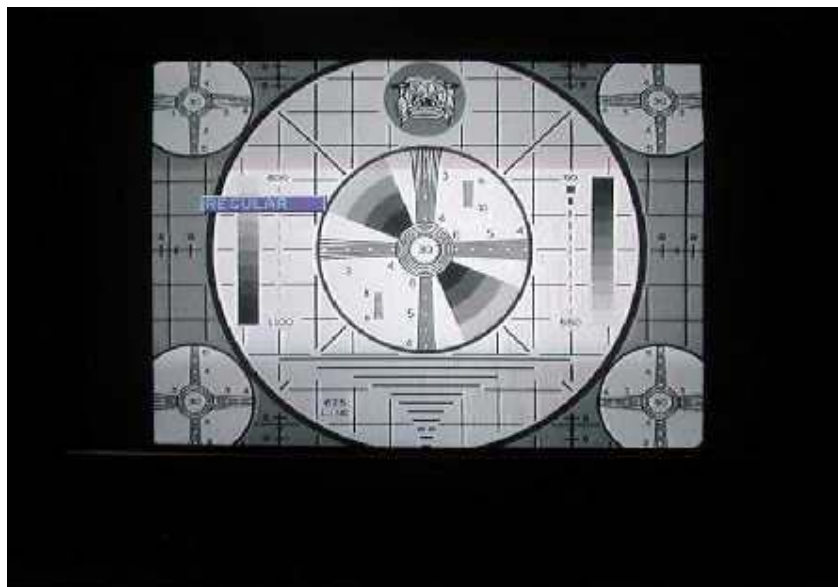


16:9 FORMATS

AUTO MODE



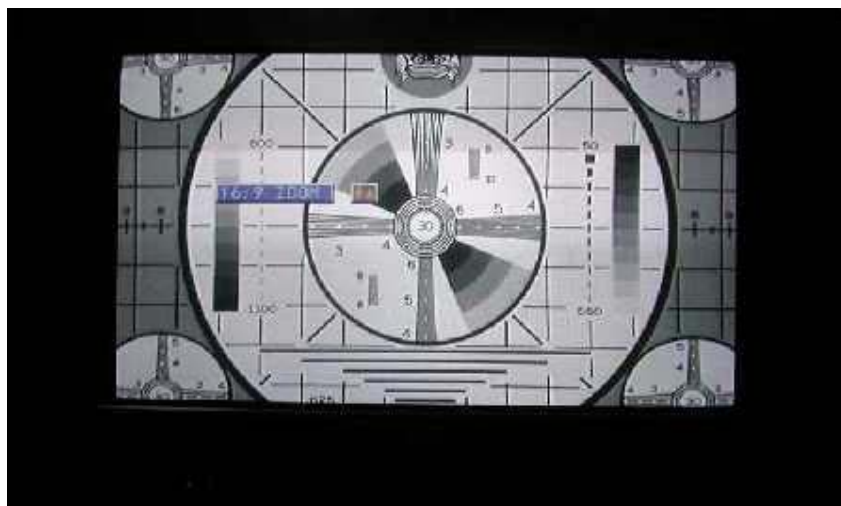
REGULAR MODE



ZOOM 14:9 MODE

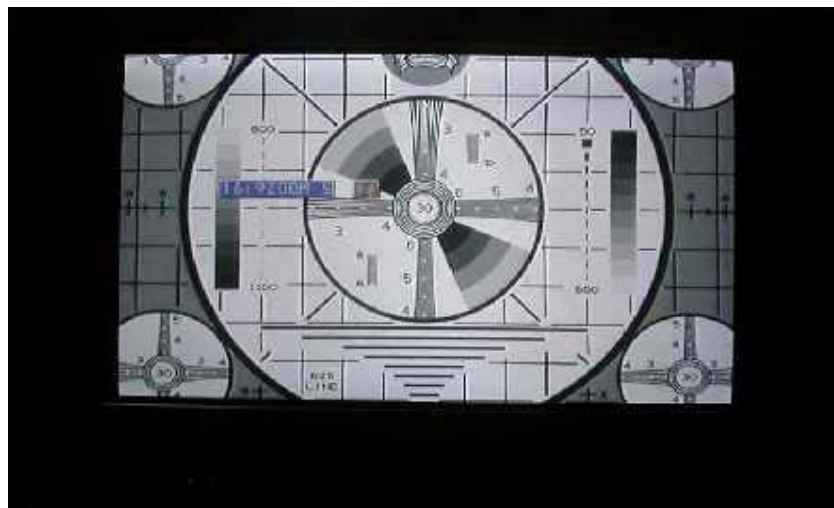


ZOOM 16:9 MODE

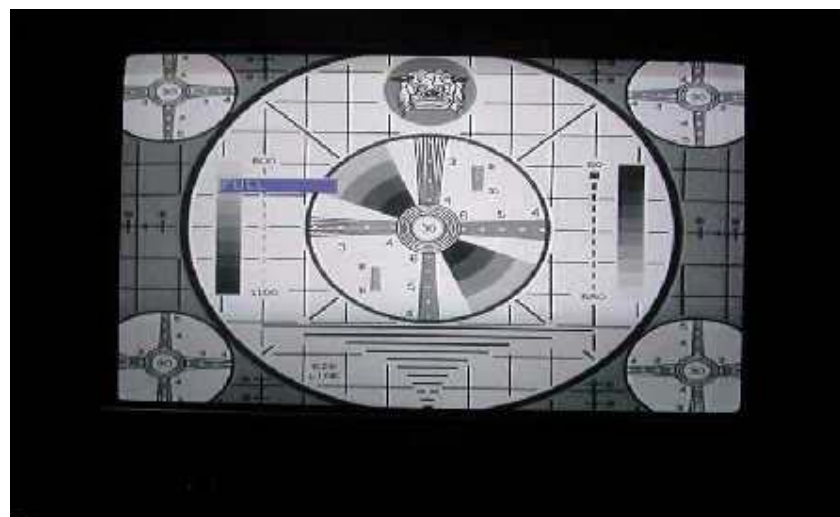
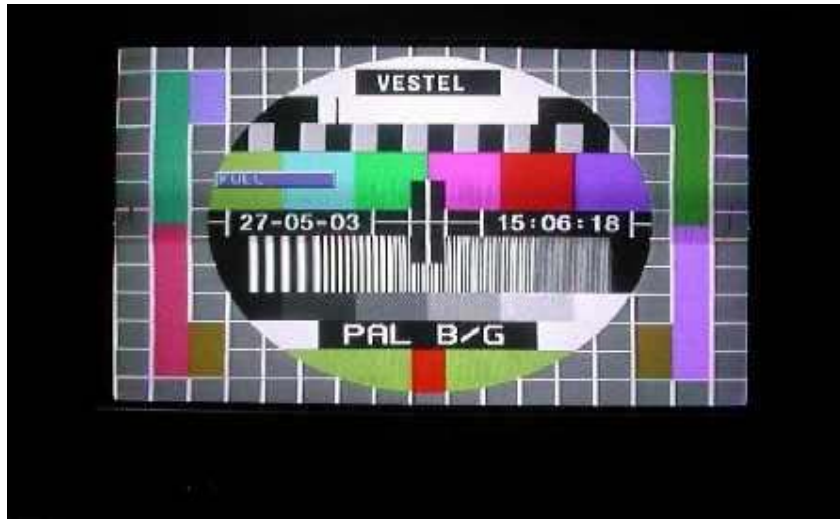




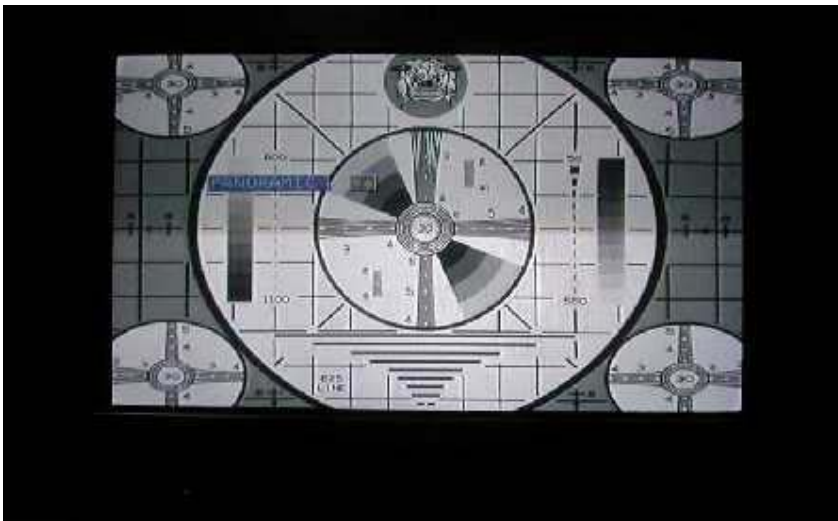
**SUBTITLE ZOOM MODE**



FULL MODE



PANOROMIC MODE





BILL OF MATERIAL LIST						
10023336			3242*TEAC TEAC EU3242ST(AK45)SILVER			
BOM Date : 28/11/2003						
NO	COMPONENT CODE	MATERIAL	POSITION NUMBER			
1	20036465	ON/OFF AS.110°(32-33" )(2.2/AU)(W/MAKARON	.	.	.	.
2	30002174	SWITCH SAFE ON/OFF 4A/64A	.	.	.	.
3	30002368	CNAS 2P/650 AC MAINS W/C	.	.	.	.
4	30014059	POWER CORD 2.2MT W/FILTER AUST.TYPE	.	.	.	.
5	40000127	SWITCH INSULATION DOOR LK101	.	.	.	.
6	40001898	MACARON (12cm.Isý ile daralan)	.	.	.	.
7	20098659	SNOW BOX ASSY 324XW	.	.	.	.
8	20093536	SNOW BOX BOTTOM 324XW	.	.	.	.
9	60000011	EPS	.	.	.	.
10	20093537	SNOW BOX TOP 324XW	.	.	.	.
11	60000011	EPS	.	.	.	.
12	20104876	MD.ASY.LD02-LED BOARD XX42 AK33/37	.	.	.	.
13	30001279	LED RED/GREEN LTL293SJ	D100	.	.	.
14	30001670	PREAMPLIFIER TFMS5360	MD101	.	.	.
15	30002325	CNAS 2P/600 TB FLT W/C UL2468AWG24	PL101	.	.	.
16	30002335	CNAS 3P/600 PREAMP FLT W/C UL2468AWG24	PL102	.	.	.
17	30019080	PCB 11LD02-1	.	.	.	.
18	40010663	LED HOLDER LED-16X3 (LDO2)	D100	.	.	.
19	20106289	BACK C.3241/42/43/44W W/SB (UL)SILVER(P)	.	.	.	.
20	20106288	BACK C.3241/42/43/44W SB(UL)EKO.GRAY(I)	.	.	.	.
21	60000009	FR-HIPS NATR.V-0	.	.	.	.
22	60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	.	.	.	.
23	60000895	PAINT SILVER 022-6485 (SU BAZL)L8341413	.	.	.	.
24	20112886	BUTTON ASSY 2442-2842-2842W-3242W SILVER	.	.	.	.
25	20013808	LENS PRE-AMP (ø8.00x17.70mm) (I)	.	.	.	.
26	60000927	CRYSTAL PS (NATURAL)	.	.	.	.
27	20094358	LENS XX42 (I)	.	.	.	.
28	60000016	POLYCARBONAT GRAY (PC) (SMOK)	.	.	.	.

29	20108361	BUTTON FUNCTL.XX42/42W/43W/44W SILVER/P	.	.	.	.	.
30	20108360	BUTTON FUNCT.XX42/42W/43W/44W EKO.GR(I)#	.	.	.	.	.
31	60000001	ABS (NATURAL)	.	.	.	.	.
32	60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	.	.	.	.	.
33	60000895	PAINT SILVER 022-6485 (SU BAZLI)L8341413	.	.	.	.	.
34	20112878	BUTTON ON/OFF XX42 SILVER(P)	.	.	.	.	.
35	20112877	BUTTON ON/OFF XX42 EKO.GRAY (I)	.	.	.	.	.
36	60000001	ABS (NATURAL)	.	.	.	.	.
37	60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	.	.	.	.	.
38	60000895	PAINT SILVER 022-6485 (SU BAZLI)L8341413	.	.	.	.	.
39	35000013	SPRING ON/OFF SWITCH	.	.	.	.	.
40	20114691	EXP.KIT AK37 324XW V.0	.	.	.	.	.
41	20004520	CABLE HOLDER DX15 (I)	.	.	.	.	.
42	60000991	KIRMA - HDPE	.	.	.	.	.
43	20084045	STRAP TIE (L:118)	.	.	.	.	.
44	60000018	COPOLYMER POLYPROPYLENE	.	.	.	.	.
45	20085269	CABLE HOLDER CRT (I) UL94V- 0	.	.	.	.	.
46	60000855	KIRMA FR-ABS BLUE CRT	.	.	.	.	.
47	40006731	ISOLATION COTTON (9x2500mm)	.	.	.	.	.
48	50006325	CARTON SEPERATOR 665x980x6.5 (8270/71)	.	.	.	.	.
49	70000331	ADHESIVE TAPE 75MM/660M (4125)	.	.	.	.	.
50	20115446	CRT KIT (32"16:9 SFLAT) AK45 WO/UL	.	.	.	.	.
51	30014862	32"16:9DEGCOIL&EARTH CB.SAFE WO/UL SLAT	.	.	.	.	.
52	30016483	CNAS 2P/600 HRZ DIS W/C UL1672AWG24	PL602	.	.	.	.
53	30019083	CNAS 2P/600 SIS W/C+FER UL1007AWG24	PL603	.	.	.	.
54	30020461	CNAS 2P+1 AK45 EMC	PL200	.	.	.	.
55	20132923	MD.ASY.SB103-FAV+HP+TK 3242/43/44 (45)	.	.	.	.	.
62	30000712	RES CF 1/4W 470R J	R103	R106	.	.	.
63	30000801	RES CF 1/4W 7.5K J	R102	R104	.	.	.

64	30001979	FIXED COIL 1UH Q45 M-A	L101	.	.	.	.	.
65	30027516	PCB 11SB103-3	.	.	.	.	.	.
66	30000190	CAP CER 100PF 50V J CH	C101	C103	C104	.	.	.
70	30000471	RES CF 1/4W 10K J	R114	R115	.	.	.	.
71	30000551	RES CF 1/4W 18R J	R112	R113	.	.	.	.
72	30001996	FIXED COIL 22UH Q40 K	L103	L104	.	.	.	.
73	30000290	CAP CER 10NF 50V Z F	C105	C106	.	.	.	.
75	30000526	RES CF 1/4W 1.5K J	R121	.	.	.	.	.
76	30000622	RES CF 1/4W 270R J	R124	.	.	.	.	.
77	30000689	RES CF 1/4W 3.9K J	R116	.	.	.	.	.
78	30000712	RES CF 1/4W 470R J	R123	.	.	.	.	.
79	30000770	RES CF 1/4W 680R J	R122	.	.	.	.	.
82	30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	PL106	.	.	.	.	.
83	30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	PL107	.	.	.	.	.
84	30001891	RCA JACK 1P WHITE 28 FAV	JK102	.	.	.	.	.
85	30001892	RCA JACK 1P RED 28 FAV	JK103	.	.	.	.	.
86	30001893	RCA JACK 1P YELLOW 28 FAV	JK101	.	.	.	.	.
87	30002362	CNAS 830 FAV SHL W/4C+FER	PL106	.	.	.	.	.
89	30001902	JACK HEADPHONE STEREO WO/SW	JK108	.	.	.	.	.
90	30020926	CNAS 3P/900 FLT W/BLK C UL2468AWG24	PL108	.	.	.	.	.
92	30002181	SWITCH TACT(4)	SW101	SW102	SW103	SW104	SW105	
93	30016924	CNAS 6P/650 TB FLT W/C UL2468AWG24	PL109	.	.	.	.	.
94	20141687	FRONT 3242W W/H SILVER (P) (UL)	.	.	.	.	.	.
95	20141922	CRT B.ASSY.TP45B-5-DUAL FOCUS (AK45)	.	.	.	.	.	.
97	20103005	HE.ASY.52-CRT BOARD (AK52/AK45)	IC900	.	.	.	.	.
98	30018768	IC TDA6109	IC900	.	.	.	.	.
99	35000131	HEATSINK 11TP18 RGB	.	.	.	.	.	.
100	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.	.
101	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.	.
102	35000180	SCREW C ZN YSMB M3*6	.	.	.	.	.	.
103	30001856	SOCKET CRT SAFE NAR.NECK DUAL FOCUS	.	.	.	.	.	.
105	20141943	CRT B.ASSY.TP45B-5-SMD COMMON(AK45)	.	.	.	.	.	.
110	20141948	CRT B.ASSY.TP45B-5-PER COMMON(AK45)	.	.	.	.	.	.
111	35000176	EYELET BR 2*3MM	PL904	PL905	PL909	.	.	.

113	30000428	SPARK GAP 300V	SG901	SG902	SG903	SG904	.
114	30000459	RES CF 1/4W 100R J	R901	R902	R903	R912	R914
115	30000466	RES CF 1/4W 1K J	R911	.	.	.	.
116	30000477	RES CF 1/4W 100K J	R905	R906	R909	R930	.
117	30000535	RES CF 1/2W 150K J	R904	.	.	.	.
118	30000583	RES CF 1/4W 220R J	R917	R923	R927	.	.
119	30000788	RES CF 1/4W 6.8M J	R900	.	.	.	.
120	30001284	DIODE 1N4148 0.15A/100V 0.5A	D903	.	.	.	.
121	30001318	DIODE BA159 1A/800V 20A	D902	D904	D905	D907	.
122	30021483	RES CC 1W 2.2K K	R913	.	.	.	.
123	30021532	SPARK GAP 1500V	SG905	.	.	.	.
124	30023197	RES CC 1W 1.5K K	R907	R908	R910	.	.
125	30026990	PCB 11TP45B-5	.	.	.	.	.
126	30000287	CAP CER 10NF 50V K B	C904	.	.	.	.
127	30000352	CAP EL 100UF 16V M	C916	.	.	.	.
128	30000367	CAP EL 1UF 250V M	C932	.	.	.	.
129	30000407	CAP EL 470UF 16V M	C915	.	.	.	.
130	30000438	CAP CER 2.2NF 2KV	C908	.	.	.	.
131	30001427	TR BF422	Q900	.	.	.	.
132	30001452	TR BC327	Q906	.	.	.	.
133	30014346	IC 78L05 TO-92 (100mA)	IC902	.	.	.	.
134	30014346	IC 78L05 TO-92 (100mA)	IC901	.	.	.	.
135	30000294	CAP SMD 100NF 50V K (0805)	C910	C913	C921	.	.
136	30001285	DIODE 1N4148 SMD	D910	.	.	.	.
137	30001285	DIODE 1N4148 SMD	D909	.	.	.	.
138	30001458	TR BC858B SMD	Q901	Q902	Q903	Q904	Q905
139	30012510	RES SMD 1/16W 100R J (0603)	R928	.	.	.	.
140	30012577	CAP SMD 560PF 50V J (0603)	C918	C919	C920	.	.
141	30012577	CAP SMD 560PF 50V J (0603)	C914	.	.	.	.
142	30012603	CAP SMD 100NF 25V K R (0603)	C934	.	.	.	.
143	30012644	RES SMD 1/16W 12K J (0603)	R919	.	.	.	.
144	30012649	RES SMD 1/16W 150R J (0603)	R915	R921	R925	.	.
145	30012667	RES SMD 1/16W 220K J (0603)	R931	.	.	.	.
146	30012698	RES SMD 1/16W 5.6K J (0603)	R920	.	.	.	.
147	30012707	RES SMD 1/16W 680R J (0603)	R932	R933	.	.	.
148	30014128	RES SMD 1/16W 33R J (0603)	R916	R922	R926	.	.
149	30014353	DIODE BAT85	D908	.	.	.	.
151	30000075	CAP MKT 100NF 250V K (DC)	C900	C906	.	.	.
152	30000075	CAP MKT 100NF 250V K (DC)	C931	.	.	.	.
153	30000350	CAP EL 10UF 250V M	C905	.	.	.	.
154	30000359	CAP EL 1000UF 16V M	C909	.	.	.	.
155	30000415	CAP EL 4.7UF 250V M	C902	.	.	.	.
156	30001850	CONN HEADER 6P 2.5MM TOP	PL903	.	.	.	.



		WHT SD					
157	30010039	CONN HEADER 8P 2.5MM TOP WHT	PL902	.	.	.	.
158	30027043	CNAS 6P-4P+1P/600 SIS W/3C+FER UL1007	PL903	.	.	.	.
159	30027546	CNAS 5P/350 SHL+3P/350 SIS RGB W/DC+FER	PL902	.	.	.	.
160	35000135	TEST PIN 1.1MM	PL905	PL909	.	.	.
161	20142164	CHS.ASSY.45-11F7312A3121121511261	.	.	.	.	.
165	30002183	RELAY SAFE MON15 KI-S-212M	RL100	.	.	.	.
167	30001518	IC TDA1308	IC704	.	.	.	.
168	30001836	CONN HEADER 3P 2.5MM TOP BLACK SD	PL711	.	.	.	.
170	30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	PL207	.	.	.	.
171	30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	PL703	.	.	.	.
172	30009834	CABL 1P/60 SIS	B-B	.	.	.	.
174	30010921	DOUBLE-DECK SCART SOCKET	PL204	.	.	.	.
176	30013658	IC MSP3410G SDIP64	IC700	.	.	.	.
178	30009637	TUNER WSP (PLL) 38.9 MK2 - BATCH	TU200	.	.	.	.
180	30019493	IC VDP3133Y	IC200	.	.	.	.
182	20090585	CHASSIS FRAME 288X (AK37) (V.0)	.	.	.	.	.
183	60000009	FR-HIPS NATR.V-0	.	.	.	.	.
184	35005061	SCREW RB C SK ZN YFMB 2.9*9.5	.	.	.	.	.
186	30001619	IC VIDEO SWITCH TEA6415C DIP20	IC201	.	.	.	.
188	30001762	CONN HEADER 2P 2.5MM(9.7MM) TOP	PL503	.	.	.	.
189	30001770	CONN HEADER 3P 2.5MM TOP BD	PL504	.	.	.	.
191	20075415	HE.ASSY.41-LM317 (AK41/45)	IC103	.	.	.	.
192	30001668	IC LM317T	.	.	.	.	.
193	35000142	HEATSINK 15AK14/15 15/TP ORTAK	.	.	.	.	.
194	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.
195	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.
196	35000182	SCREW C ZN YSMB M3*10	.	.	.	.	.
197	20092405	CN.ASY.37-DIODE UF5407+FERRITE BAR 5*8	D121	.	.	.	.
198	30001964	FERRITE BAR 5*8	.	.	.	.	.
199	30007681	DIODE UF5407 3A/800V 150A	.	.	.	.	.
200	20108354	DIODE BRIDGE GBU4M	D101	.	.	.	.

		4A/1000V 150A(FORMLU)					
201	30007758	DIODE BRIDGE GBU4M 4A/1000V 150A	.	.	.	.	.
202	20113525	HE.ASY.45-VERTICAL W/CABLE HOLDER	.	.	.	.	.
203	30007793	IC STV9379FA	IC600	.	.	.	.
204	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.
205	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.
206	35000183	SCREW C ZN YSMB M3*12	.	.	.	.	.
207	35006411	HEATSINK AK45 VERTICAL	.	.	.	.	.
208	40000020	TR HOLDER TR-06A	.	.	.	.	.
209	40000146	INSULATOR SILICON PAD (15*20)	.	.	.	.	.
210	40011922	EDGE SADDLE (CT-16)	.	.	.	.	.
211	20113526	HE.ASY.45-AUDIO W/CABLE HOLDER	.	.	.	.	.
212	30016113	IC AAMP TDA7269A 2*14W MULTIWATT11	IC301	.	.	.	.
213	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.
214	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.
215	35000182	SCREW C ZN YSMB M3*10	.	.	.	.	.
216	35006161	HEATSINK AK38 AUDIO	.	.	.	.	.
217	40011922	EDGE SADDLE (CT-16)	.	.	.	.	.
218	20113527	HE.ASY.45-HORIZONTAL W/CABLE HOLDER	.	.	.	.	.
219	30001429	TR BUK444-200A	Q600	.	.	.	.
220	30001441	TR BU2508AF	Q602	.	.	.	.
221	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.
222	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.
223	35000181	SCREW C ZN YSMB M3*8	.	.	.	.	.
224	35000182	SCREW C ZN YSMB M3*10	.	.	.	.	.
225	35006412	HEATSINK AK45 HORIZONTAL	.	.	.	.	.
226	40011922	EDGE SADDLE (CT-16)	.	.	.	.	.
227	20113528	HE.ASY.45-REGULATOR	.	.	.	.	.
228	30001500	IC LM7808	IC104	.	.	.	.
229	30001622	IC 7805 (1A)	IC101	.	.	.	.
230	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.
231	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.
232	35000182	SCREW C ZN YSMB M3*10	.	.	.	.	.
233	35006081	HEATSINK AK45 REGULATOR	.	.	.	.	.
234	30000075	CAP MKT 100NF 250V K (DC)	C604	.	.	.	.
235	30000076	CAP MKT SAFE 100NF 275V M	C160	.	.	.	.

		AC					
236	30000084	CAP MKT SAFE 150NF 275V M AC P=15	C102	.	.	.	.
237	30000094	CAP MKT SAFE 220NF 275V M AC	C103	.	.	.	.
238	30000161	CAP MKP SAFE 47NF 630V J	C108	.	.	.	.
239	30000348	CAP EL 10UF 160V M	C612	.	.	.	.
240	30000351	CAP EL 10UF 350V M	C601	.	.	.	.
241	30000359	CAP EL 1000UF 16V M	C141	.	.	.	.
242	30000360	CAP EL 1000UF 25V M	C148	C613	C614	.	.
243	30000402	CAP EL 47UF 100V M	C603	.	.	.	.
244	30000406	CAP EL 47UF 250V M (HR) 105°	C125	C605	.	.	.
245	30000409	CAP EL 470UF 25V M	C608	C809	.	.	.
246	30000440	CAP CER SAFE 2.2NF 4KV M	C161	C115	.	.	.
248	30001134	RES MO 2W 2.2R J	R640	.	.	.	.
249	30001224	RES FUSE SAFE 1/2W 0.22R J	R152	.	.	.	.
250	30001270	PTC SAFE 9 OHM	TH100	.	.	.	.
251	30001299	DIODE UF5404 3A/400V 150A	D603	D604	.	.	.
252	30001320	DIODE GUC BY228	D625	.	.	.	.
253	30001668	IC LM317T	IC102	.	.	.	.
254	30001756	XTAL 18.432MHZ	X700	.	.	.	.
255	30001762	CONN HEADER 2P 2.5MM(9.7MM) TOP	PL708	.	.	.	.
256	30001764	CONN HEADER 2P 2.5MM(9.7MM) TOP BLACK	PL709	PL200	.	.	.
257	30001783	CONN HEADER 5P 2.5MM TOP BD	PL500	.	.	.	.
258	30001784	CONN HEADER 6P 2.5MM TOP BD	PL502	.	.	.	.
259	30001792	CONN HEADER 2P 7.5MM TOP WHT	PL100	PL602	.	.	.
260	30001795	CONN HEADER 3P 5/7.5MM TOP WHT	PL101	.	.	.	.
261	30001829	CONN HEADER 2P 2.5MM TOP WHT SD	PL603	.	.	.	.
262	30001850	CONN HEADER 6P 2.5MM TOP WHT SD	PL604	.	.	.	.
263	30002031	FIXED COIL INJECTION 15MH	L601	.	.	.	.
264	30002090	LINE DRIVER NEW TYPE	TR601	.	.	.	.
265	30002851	XTAL 4MHZ L.C=30PF	X200	.	.	.	.
266	30006662	XTAL 6MHZ	X500	.	.	.	.
267	30007681	DIODE UF5407 3A/800V 150A	D611	.	.	.	.
269	30008778	XTAL 20.25MHZ	X201	.	.	.	.
270	30009833	CABL 1P/100 SIS	.	.	.	.	.
271	30009848	CABL 1P/240 SIS	A-A	.	.	.	.
272	30010039	CONN HEADER 8P 2.5MM TOP	PL206	.	.	.	.

		WHT					
274	30011968	IC SMPS MC44608 DIP8	IC106	.	.	.	.
275	30015087	IC SAFE OPTOCOUPLER TCET1102G	IC100	.	.	.	.
276	30018085	CAP VAR SAFE 510V K MFCN14D511	R167	.	.	.	.
277	30018259	CAP EL 4700UF 25V M	C135	C133	C134	.	.
278	30018904	RES MO 5W 4.7k J	R616	.	.	.	.
279	35000135	TEST PIN 1.1MM	PL214	.	.	.	.
280	40006432	MOUNTING BUTTON (MB-10)	.	.	.	.	.
281	70000029	SOLDER (INGOT) 63/37	.	.	.	.	.
282	70000030	SOLDER WIRE CAP 1.00mm 60Sn40Pb	.	.	.	.	.
283	20118131	MB.M.45-SMP170-270VWO/D-D-S(WO/P(29-32-3	.	.	.	.	.
284	20070614	HE.ASY.37-SMPS 170-270V (AK37/45/52)	Q102	.	.	.	.
285	30001386	TR MTP6N60E (PLASTIC)	.	.	.	.	.
286	35000158	NUT C ZN BOTTOM M3	.	.	.	.	.
287	35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	.	.	.	.	.
288	35000181	SCREW C ZN YSMB M3*8	.	.	.	.	.
289	35006413	HEATSINK SMPS AK45	.	.	.	.	.
290	70000074	SILICON (GRES)	.	.	.	.	.
291	30000421	CAP EL 220UF 400V M (FOR 28")	C107	.	.	.	.
292	30007774	NTC 5 OHM	R103	.	.	.	.
293	30018866	LINE FILTER SAFE 2X22MH 10mmX12.5mm	L101	.	.	.	.
294	30019432	TRF SMPS SAFE AK45 110° (170-270V)	TR100	.	.	.	.
296	30001705	FILTER SAW OFWG9353M	Z201	.	.	.	.
297	30015591	FILTER SAW G3967	Z200	.	.	.	.
299	20000848	FUSE ASSY.TK79-A (2.5A)	F100	.	.	.	.
300	30001731	FUSE SAFE 2.5A 250V 5*20MM	.	.	.	.	.
301	35000136	FUSE HOLDER TK79-A (GRAY)	.	.	.	.	.
304	20140108	PR.IC.45-SDA55XX TEAC	.	.	.	.	.
305	30011957	IC SDA55XX FLASH	IC500	.	.	.	.
307	30000092	CAP MKT 220NF 63V J	S219	.	.	.	.
308	30009835	CABL 1P/150 SIS	PL219-PL220	NOT-2	.	.	.
309	30009846	CABL 1P/40 SIS	NOT3	.	.	.	.
311	20147207	CN.ASY.45-F.B.3.5X4.7X0.8+R.F.1/2W0.47R	R603	.	.	.	.
312	30001244	RES FUSE SAFE 1/2W 0.47R J	.	.	.	.	.
313	30006712	FERRITE BEAD 3.5X4.7X0.8	.	.	.	.	.
315	30009366	DIODE UF5402 3A/200V 150A	D118	D119	.	.	.

321	30001329	DIODE 1N4007 1A/1000V 30A	D120	D123	.	.	.	.
328	30000393	CAP EL 3.3UF 50V M	C507	.	.	.	.	
329	30000815	RES CF 1/4W 8.2K J	R326	.	.	.	.	
330	30006770	FIXED COIL 0.22UH	L506	.	.	.	.	
331	30000480	RES SMD 1/10W 100K J (0805)	R327	.	.	.	.	
332	30001457	TR BC848B SMD	Q208	.	.	.	.	
333	30012668	RES SMD 1/16W 220R J (0603)	R282	.	.	.	.	
334	30012684	RES SMD 1/16W 330R J (0603)	R284	.	.	.	.	
335	30012707	RES SMD 1/16W 680R J (0603)	R283	.	.	.	.	
338	30000345	CAP EL 10UF 50V M	C769	.	.	.	.	
339	30000352	CAP EL 100UF 16V M	C776	C782	.	.	.	
340	30000362	CAP EL 1UF 50V M	C784	.	.	.	.	
342	30001971	FERRITE BEAT (805) BLM21A601S	L714	L715	.	.	.	
343	30012581	CAP SMD 1NF 50V K R (0603)	C706	C715	C779	C786	.	
344	30012585	CAP SMD 2.2NF 50V K R (0603)	C775	C785	C795	C796	.	
345	30012641	RES SMD 1/16W 10K J (0603)	R747	R756	.	.	.	
346	30012692	RES SMD 1/16W 4.7K J (0603)	R742	R746	.	.	.	
347	30012709	RES SMD 1/16W 7.5K J (0603)	R749	R754	.	.	.	
348	30016126	CAP SMD 220NF 16V K R (0603)	C763	C767	.	.	.	
349	30016654	CAP SMD 100NF 16V K R (0603)	C765	.	.	.	.	
353	30012581	CAP SMD 1NF 50V K R (0603)	C740	C741	.	.	.	
354	30012657	RES SMD 1/16W 1K J (0603)	R725	R726	.	.	.	
355	30016126	CAP SMD 220NF 16V K R (0603)	C729	C730	.	.	.	
362	30000459	RES CF 1/4W 100R J	R723	.	.	.	.	
363	30000770	RES CF 1/4W 680R J	R288	.	.	.	.	
364	30000792	RES CF 1/4W 75R J	R219	.	.	.	.	
365	30000345	CAP EL 10UF 50V M	C771	C772	.	.	.	
366	30001457	TR BC848B SMD	Q200	.	.	.	.	
367	30001971	FERRITE BEAT (805) BLM21A601S	L216	L217	L212	L220	.	
368	30012510	RES SMD 1/16W 100R J (0603)	R724	.	.	.	.	
369	30012581	CAP SMD 1NF 50V K R (0603)	C290	C302	C746	C747	C750	
.	.	.	C751	.	.	.	.	
370	30012589	CAP SMD 4.7NF 50V K (0603)	C296	C308	.	.	.	
371	30012603	CAP SMD 100NF 25V K R (0603)	C362	.	.	.	.	
372	30012607	CAP SMD 150PF 50V J (0603)	C287	C304	.	.	.	
373	30012650	RES SMD 1/16W 15K J (0603)	R528	.	.	.	.	
374	30012657	RES SMD 1/16W 1K J (0603)	R718	R719	.	.	.	
375	30012707	RES SMD 1/16W 680R J (0603)	R285	.	.	.	.	
376	30012713	RES SMD 1/16W 75R J (0603)	R202	.	.	.	.	
378	30016126	CAP SMD 220NF 16V K R (0603)	C719	C733	.	.	.	
384	30001173	RES MO 1W 0.47R J	R116	.	.	.	.	
390	30012713	RES SMD 1/16W 75R J (0603)	R334	.	.	.	.	

396	30000459	RES CF 1/4W 100R J	R206	R207	.	.	.
397	30000792	RES CF 1/4W 75R J	R317	.	.	.	.
398	30000352	CAP EL 100UF 16V M	C212	.	.	.	.
399	30001457	TR BC848B SMD	Q202	.	.	.	.
400	30001971	FERRITE BEAT (805) BLM21A601S	L227	.	.	.	.
401	30012641	RES SMD 1/16W 10K J (0603)	R222	R238	R237	R316	R220
.	.	.	R308	.	.	.	.
402	30012657	RES SMD 1/16W 1K J (0603)	R318	.	.	.	.
403	30012713	RES SMD 1/16W 75R J (0603)	R215	R200	R236	R205	R310
.	.	.	R201	.	.	.	.
405	30016126	CAP SMD 220NF 16V K R (0603)	C234	C210	C208	C217	C214
.	.	.	C215	C222	C209	.	.
406	30016654	CAP SMD 100NF 16V K R (0603)	C231	.	.	.	.
409	30001288	DIODE BYV27-200 2A/200V 50A	D110	.	.	.	.
410	30001315	DIODE BYD33D 1A/200V 20A	D127	.	.	.	.
411	30000090	CAP MKT 22NF 100V J	C119	.	.	.	.
419	30000452	RES CF 1/4W 10R J	R108	.	.	.	.
420	30000459	RES CF 1/4W 100R J	R266	R567	R568	R265	.
421	30000466	RES CF 1/4W 1K J	R537	R150	R519	R658	R657
.	.	.	R336	R337	R338	.	.
422	30000470	RES CF 1/2W 10K J	R601	.	.	.	.
423	30000471	RES CF 1/4W 10K J	R505	R506	R612	.	.
424	30000481	RES CF 1/4W 1M J	R137	.	.	.	.
425	30000495	RES CF 1/4W 1.2K J	R131	R132	.	.	.
426	30000500	RES CF 1/4W 12K J	R247	.	.	.	.
427	30000580	RES CF 1/4W 22R J	R118	R645	.	.	.
428	30000649	RES CF 1/2W 33R J	R644	.	.	.	.
429	30000655	RES CF 1/4W 330R J	R235	.	.	.	.
430	30000660	RES CF 1/4W 3.3K J	R138	.	.	.	.
431	30000718	RES CF 1/4W 4.7K J	R100	.	.	.	.
432	30000723	RES CF 1/4W 47K J	R818	.	.	.	.
433	30000792	RES CF 1/4W 75R J	R221	R231	.	.	.
434	30000848	RES MF 1/4W 1K F	R652	.	.	.	.
435	30000872	RES MF 1/4W 120K F	R630	.	.	.	.
436	30000880	RES MF 1/4W 130K F	R133	.	.	.	.
437	30000896	RES MF 1/4W 160K G	R101	.	.	.	.
438	30000982	RES MF 1/4W 4.7K J	R105	.	.	.	.
439	30001082	RES MO 1/2W 1K J	R650	.	.	.	.
440	30001100	RES MO 1W 150R J	R608	.	.	.	.
441	30001159	RES MO 1W 0.33R J	R165	.	.	.	.
442	30001228	RES FUSE SAFE 1/2W 2.2R J	R649	.	.	.	.
443	30001244	RES FUSE SAFE 1/2W 0.47R J	R604	.	.	.	.

444	30001257	RES MG SAFE 1/2W 4.7M J	R117	.	.	.	.
445	30001284	DIODE 1N4148 0.15A/100V 0.5A	D627	.	.	.	.
446	30001291	DIODE HER107 1A/800V 30A	D613	.	.	.	.
447	30001315	DIODE BYD33D 1A/200V 20A	D108	.	.	.	.
448	30001318	DIODE BA159 1A/800V 20A	D103	D610	D104	D615	D105
.	.	.	D131	D609	D602	D111	.
449	30001329	DIODE 1N4007 1A/1000V 30A	D100	D130	.	.	.
450	30001344	DIODE ZENER 6.2V 1/2W	D106	.	.	.	.
451	30001377	DIODE ZENER 33V UZT 33B	D601	.	.	.	.
452	30001979	FIXED COIL 1UH Q45 M-A	L206	L207	L263	L264	L717
.	.	.	L265	.	.	.	.
453	30001987	FIXED COIL 4.7UH Q70 K-A	L266	.	.	.	.
454	30001992	FIXED COIL 10UH Q65 K-A	L103	L504	L500	L505	L501
.	.	.	L502	L503	.	.	.
455	30001996	FIXED COIL 22UH Q40 K	L700	L711	L701	L203	L702
.	.	.	L703	J344	.	.	.
456	30003722	DIODE ZENER ZPD15V	D133	.	.	.	.
457	30015222	RES MO 1W 0.75R J	R140	.	.	.	.
458	30025271	PCB 11AK45B5	.	.	.	.	.
459	30000069	CAP MKT 1NF 100V J	C648	.	.	.	.
460	30000074	CAP MKT 100NF 63V J	C632	.	.	.	.
461	30000082	CAP MKT 15NF 63V J	C609	.	.	.	.
462	30000092	CAP MKT 220NF 63V J	C638	C718	C717	C643	.
463	30000107	CAP MKT 47NF 250V J	C219	.	.	.	.
464	30000109	CAP MKT 470NF 63V J	C327	C265	C348	C356	C225
.	.	.	C266	.	.	.	.
465	30000225	CAP CER 220PF 50V J SL	C166	.	.	.	.
466	30000296	CAP CER 100NF 100V Z F	C646	C631	.	.	.
467	30000313	CAP CER 22NF 50V Z F	C172	.	.	.	.
468	30000345	CAP EL 10UF 50V M	C808	.	.	.	.
469	30000345	CAP EL 10UF 50V M	C229	C701	C259	C277	C744
.	.	.	C736	C351	C280	C737	C283
.	.	.	C253	C739	C524	C286	C357
.	.	.	C506	C720	C508	C724	C522
.	.	.	C523	C525	C358	.	.
470	30000352	CAP EL 100UF 16V M	C700	C754	C226	.	.
471	30000362	CAP EL 1UF 50V M	C789	C791	C165	C164	.
472	30000367	CAP EL 1UF 250V M	C137	C619	.	.	.
473	30000371	CAP EL 22UF 50V M	C106	.	.	.	.
474	30000375	CAP EL 220UF 16V M	C145	C152	C154	C155	C530
475	30000376	CAP EL 220UF 25V M	C124	.	.	.	.
476	30000387	CAP EL 33UF 50V M	C142	C252	.	.	.
477	30000393	CAP EL 3.3UF 50V M	C735	C140	.	.	.

478	30000407	CAP EL 470UF 16V M	C708	.	.	.	.
479	30000436	CAP CER 10NF 1KV ZE	C130	.	.	.	.
480	30000444	CAP CER 470PF 1KV KB	C618	.	.	.	.
481	30001384	TR MCR22-6	Q110	.	.	.	.
482	30001428	TR BF423	Q107	.	.	.	.
483	30001435	TR NBJT BC639 1A/100V TO92	Q601	.	.	.	.
484	30001454	TR BC548B	Q103	Q106	.	.	.
485	30001506	IC TL431	IC116	IC601	.	.	.
486	30006940	CAP CER 2.7NF 1KV K B	C113	.	.	.	.
487	30007308	CAP CER 220PF 1KV K (PULSE)	C111	C118	C120	C122	.
488	30007708	CAP CER 1NF 1KV K (PULSE)	C162	.	.	.	.
489	30009208	CAP CER 470PF 1KV K (PULSE)	C114	C636	.	.	.
490	30000480	RES SMD 1/10W 100K J (0805)	R144	R625	R627	.	.
491	30000494	RES SMD 1/10W 120R J (0805)	R162	.	.	.	.
492	30000575	RES SMD 1/10W 2K J	R134	.	.	.	.
493	30000593	RES SMD 1/10W 2.2K J (0805)	R139	R164	R106	R259	R276
494	30001285	DIODE 1N4148 SMD	D622	D125	D204	D623	D200
.	.	.	D112	D624	D129	D702	D617
.	.	.	D114	D132	D134	D212	D612
.	.	.	D706	D628	D629	.	.
495	30001457	TR BC848B SMD	Q108	Q113	Q501	Q109	Q502
.	.	.	Q203	Q114	Q503	Q216	Q504
.	.	.	Q500	Q220	Q201	Q222	Q704
.	.	.	Q223	.	.	.	.
496	30001458	TR BC858B SMD	Q505	Q700	Q218	Q112	Q603
.	.	.	Q605	Q606	Q703	.	.
498	30001968	FERRITE BEAD (0805) BLM21B201S	L719	.	.	.	.
499	30001971	FERRITE BEAT (805) BLM21A601S	L102	L251	L236	L252	L232
.	.	.	L239	L247	L213	L214	L215
.	.	.	L218	.	.	.	.
500	30003720	DIODE ZENER BZT55C5V6 5.6V SMD	D113	.	.	.	.
501	30007761	DIODE ZENER SMD BZT55C3V6	D701	.	.	.	.
502	30012412	DIODE ZENER 2.4V SMD	D506	.	.	.	.
503	30012506	RES SMD 1/16W 1.5K J (0603)	R555	.	.	.	.
504	30012508	RES SMD 1/16W 1.8K J (0603)	R538	R539	R540	.	.
505	30012509	RES SMD 1/16W 100K J (0603)	R653	.	.	.	.
506	30012510	RES SMD 1/16W 100R J (0603)	R208	R705	R209	R503	R713
.	.	.	R504	R714	R704	R299	R350
.	.	.	R351	R241	R703	R600	R428
.	.	.	R429	R430	.	.	.
507	30012559	CAP SMD 10PF 50V D COG	C278	C279	C240	.	.



		(0603)						
508	30012560	CAP SMD 100PF 50V J (0603)	C121	C242	.	.	.	.
509	30012565	CAP SMD 1.8PF 50V J CH (0603)	C742	C743	.	.	.	.
510	30012566	CAP SMD 22PF 50V J (0603)	C170	.	.	.	.	.
511	30012567	CAP SMD 220PF 50V J (0603)	C764	C774	.	.	.	.
512	30012572	CAP SMD 390PF 50V J (0603)	C331	.	.	.	.	.
513	30012573	CAP SMD 47PF 50V J (0603)	C520	C521	C803	.	.	.
514	30012574	CAP SMD 470PF 50V J (0603)	C810	C811	.	.	.	.
515	30012576	CAP SMD 56PF 50V J CH (0603)	C721	C738	C722	.	.	.
516	30012579	CAP SMD 82PF 50V J (0603)	C333	.	.	.	.	.
517	30012581	CAP SMD 1NF 50V K R (0603)	C149	C732	C258	C267	C745	.
.	.	.	C793	C749	C712	C349	C713	.
.	.	.	C794	C728	C359	C360	C353	.
518	30012583	CAP SMD 1.5NF 50V K (0603)	C748	C731	C702	C237	.	.
519	30012584	CAP SMD 1.8NF 50V K R (0603)	C635	.	.	.	.	.
520	30012585	CAP SMD 2.2NF 50V K R (0603)	C282	C260	C284	.	.	.
521	30012586	CAP SMD 22NF 50V K (0603)	C246	C248	.	.	.	.
522	30012588	CAP SMD 33NF 50V K (0603)	C261	C263	.	.	.	.
523	30012589	CAP SMD 4.7NF 50V K (0603)	C288	C289	C292	C300	C637	.
524	30012590	CAP SMD 47NF 50V K (0603)	C268	C273	C781	C783	C171	.
525	30012591	CAP SMD 5.6NF 50V K (0603)	C644	C645	.	.	.	.
526	30012603	CAP SMD 100NF 25V K R (0603)	C146	C126	C127	C633	C630	.
.	.	.	C264	C105	C361	C129	C174	.
.	.	.	C175	C176	C173	.	.	.
527	30012607	CAP SMD 150PF 50V J (0603)	C293	C301	.	.	.	.
528	30012609	CAP SMD 68NF 50V K (0603)	C213	.	.	.	.	.
529	30012610	CAP SMD 10NF 50V J (0603)	C218	C262	C249	C238	C607	.
.	.	.	C235	.	.	.	.	.
530	30012641	RES SMD 1/16W 10K J (0603)	R126	R130	R548	R154	R151	.
.	.	.	R248	R141	R622	R155	R582	.
.	.	.	R623	R156	R270	R269	R119	.
.	.	.	R268	R157	R535	R636	R589	.
.	.	.	R762	R759	R656	R817	R166	.
.	.	.	R349	R230	.	.	.	.
531	30012643	RES SMD 1/16W 120R J (0603)	C202	.	.	.	.	.
532	30012644	RES SMD 1/16W 12K J (0603)	R357	R815	.	.	.	.
533	30012650	RES SMD 1/16W 15K J (0603)	R520	R406	R647	.	.	.
534	30012654	RES SMD 1/16W 180K J (0603)	R646	.	.	.	.	.
535	30012655	RES SMD 1/16W 180R J (0603)	R256	R358	.	.	.	.
536	30012657	RES SMD 1/16W 1K J (0603)	R112	R267	R571	R549	R142	.
.	.	.	R158	R702	R330	R342	R628	.
.	.	.	R254	R233	R149	R161	R110	.
.	.	.	R637	R710	R715	R411	R412	.

537	30012658	RES SMD 1/16W 1M J (0603)	R648	.	.	.	.
538	30012661	RES SMD 1/16W 2.4K J (0603)	R427	.	.	.	.
539	30012662	RES SMD 1/16W 2.7K J (0603)	R513	R518	R541	R210	.
540	30012668	RES SMD 1/16W 220R J (0603)	R512	.	.	.	.
541	30012669	RES SMD 1/16W 22K J (0603)	R765	R766	R359	R400	R260
542	30012673	RES SMD 1/16W 270R J (0603)	R281	.	.	.	.
543	30012674	RES SMD 1/16W 27K J (0603)	R638	R629	R655	.	.
544	30012677	RES SMD 1/16W 3.3K J (0603)	R261	.	.	.	.
545	30012679	RES SMD 1/16W 3.9K J (0603)	R526	R277	R590	R550	R527
.	.	.	R524	R415	R521	R819	.
546	30012685	RES SMD 1/16W 33K J (0603)	R533	.	.	.	.
547	30012692	RES SMD 1/16W 4.7K J (0603)	R127	R153	R554	R129	R516
.	.	.	R522	R343	R404	R624	R626
.	.	.	R211	.	.	.	.
548	30012695	RES SMD 1/16W 470R J (0603)	R553	R700	R701	R607	R416
.	.	.	R417	R418	R419	R420	R421
.	.	.	R422	R423	R424	R426	R425
.	.	.	R793	R794	.	.	.
549	30012696	RES SMD 1/16W 47K J (0603)	R507	R508	R509	R510	R242
.	.	.	R621	R820	.	.	.
550	30012697	RES SMD 1/16W 5.1K J (0603)	R146	.	.	.	.
551	30012698	RES SMD 1/16W 5.6K J (0603)	R352	.	.	.	.
552	30012702	RES SMD 1/16W 560R J (0603)	R274	R760	R763	R234	.
553	30012707	RES SMD 1/16W 680R J (0603)	R286	R289	.	.	.
554	30012708	RES SMD 1/16W 68K J (0603)	R654	.	.	.	.
555	30012711	RES SMD 1/16W 75K J (0603)	R591	.	.	.	.
556	30012712	RES SMD 1/16W 8.2K J (0603)	R523	.	.	.	.
557	30012713	RES SMD 1/16W 75R J (0603)	R203	R239	R278	R279	R280
.	.	.	R232	R204	R413	R414	R409
.	.	.	R272	.	.	.	.
560	30014022	RES SMD 1/16W 47R J (0603)	R122	.	.	.	.
561	30014076	RES SMD 1/16W 4.7R J (0603)	R753	R755	.	.	.
562	30014465	RES SMD 1/16W 2.7K F (603)	R632	.	.	.	.
563	30016126	CAP SMD 220NF 16V K R (0603)	C628	C255	.	.	.
564	30016654	CAP SMD 100NF 16V K R (0603)	C269	C270	C271	C274	C275
.	.	.	C276	C352	.	.	.
565	30016654	CAP SMD 100NF 16V K R (0603)	C147	C516	C716	C227	C734
.	.	.	C527	C150	C517	C350	C233
.	.	.	C509	C537	C156	C518	C510
.	.	.	C707	C519	C511	C138	C157
.	.	.	C725	C514	C515	.	.
566	30020455	RES SMD 1/16W 1.5K F (0603)	R143	R147	.	.	.
567	30020457	RES SMD 1/16W 910R F (0603)	R145	R148	.	.	.

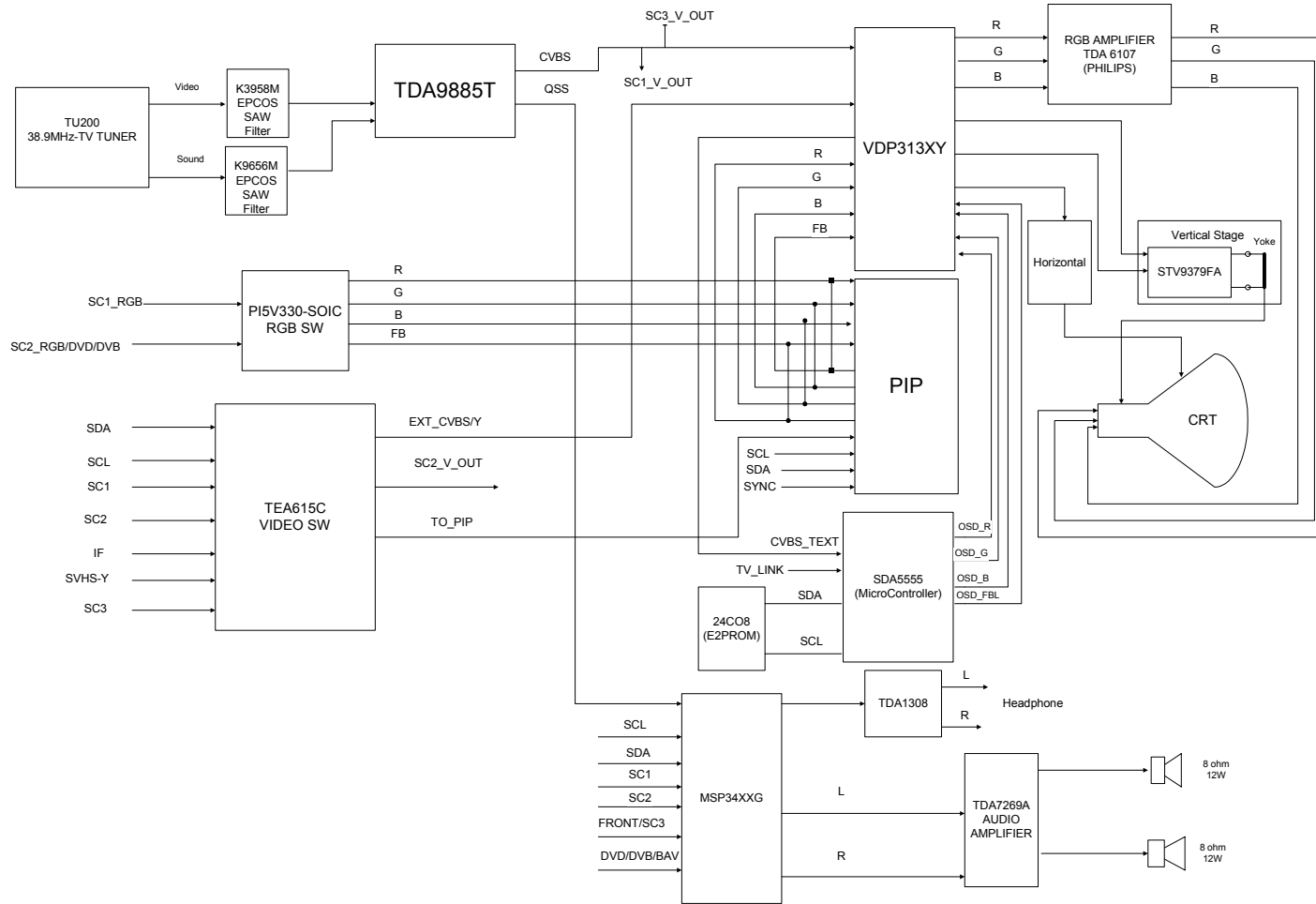
568	30025773	DIODE ZENER SMD BZT55B5V1	D614	D214	D215	D216	.
574	30000452	RES CF 1/4W 10R J	S224	.	.	.	.
575	30012982	RES SMD 1/16W 10R J 0603	S226	S227	S225	.	.
577	30021082	IC TDA9885T/V3-SO24	IC206	.	.	.	.
579	30001457	TR BC848B SMD	Q511	.	.	.	.
580	30001457	TR BC848B SMD	Q508	.	.	.	.
581	30001458	TR BC858B SMD	Q513	.	.	.	.
582	30012510	RES SMD 1/16W 100R J (0603)	R565	R561	.	.	.
583	30012641	RES SMD 1/16W 10K J (0603)	R587	R585	R586	R588	.
584	30012641	RES SMD 1/16W 10K J (0603)	R566	.	.	.	.
585	30012692	RES SMD 1/16W 4.7K J (0603)	R564	.	.	.	.
590	30000880	RES MF 1/4W 130K F	R631	.	.	.	.
591	30000927	RES MF 1/4W 220K J	R605	.	.	.	.
592	30001162	RES MO 1W 390R J	R639	.	.	.	.
593	30001244	RES FUSE SAFE 1/2W 0.47R J	R611	R614	.	.	.
599	30016126	CAP SMD 220NF 16V K R (0603)	C336	.	.	.	.
600	20148989	IC 24C16 V081NE113A01010100412	.	.	.	.	.
601	30009005	IC 24C16	.	.	.	.	.
602	20142163	CRT DIFF.KIT AK45- 32"PHL(SF)DA.LFBT145V	.	.	.	.	.
603	30000134	CAP MKP SAFE 11NF 2000V %3.5	C621	.	.	.	.
604	30000137	CAP MKP 15NF 630V J	C622	.	.	.	.
605	30000161	CAP MKP SAFE 47NF 630V J	C617	.	.	.	.
606	30000172	CAP MKP SAFE 680NF 250V J (P=15)	C624	.	.	.	.
607	30000965	RES MF 1/2W 0.33R J	R641	.	.	.	.
608	30001229	RES FUSE SAFE 1W 2.2R J	R618	.	.	.	.
609	30001234	RES FUSE 2W 33R J	R613	.	.	.	.
611	30002829	FIXED COIL BRIDGE 1.5MH	L603	.	.	.	.
612	30013003	CAP MKP SAFE 1UF 250V J P=15	C623	.	.	.	.
613	30017085	LINEARITY COIL 20UH	L602	.	.	.	.
614	30017518	TRF FBT DOUBLE COMMON FOCUS LAYER (AK33)	TR600	.	.	.	.
615	30023448	CAP MKP 4.3NF 2KV J	C616	.	.	.	.
616	20143432	ARTWORK TEAC EU3242ST(AK45)SILVER	.	.	.	.	.
617	20142179	R/C 1541 TEAC (S) (EKO2GRAY)(I)	.	.	.	.	.
618	20129851	R/C 1541 NOBRAND (S) (EKO2GRAY)(F)	.	.	.	.	.
619	20121852	R/C KIT 1541	.	.	.	.	.
620	20121796	MD.ASY.UK10	.	.	.	.	.
621	20121797	MD.ASY.UK10 (SMD)	.	.	.	.	.

622	30000546	RES SMD 1/10W 1.5R J (0805)	R106	.	.	.	.
623	30002735	IC SAA3010T	IC1	.	.	.	.
624	30012510	RES SMD 1/16W 100R J (0603)	R101	.	.	.	.
625	30012641	RES SMD 1/16W 10K J (0603)	R104	.	.	.	.
626	30012696	RES SMD 1/16W 47K J (0603)	R105	.	.	.	.
627	30012705	RES SMD 1/16W 6.8K J (0603)	R100	.	.	.	.
628	30012986	RES SMD 1/16W 68R J (0603)	R103	.	.	.	.
629	30013001	RES SMD 1/16W 1K F (0603)	R102	.	.	.	.
630	30020343	PCB 11UK10-2	.	.	.	.	.
631	30000395	CAP EL 47UF 6.3V M (4*7MM)	C100	.	.	.	.
632	30001452	TR BC327	Q102	.	.	.	.
633	30002733	LED INFRARED IR333	D100	.	.	.	.
634	30002734	TR BC548C	Q101	.	.	.	.
635	30011443	XTAL REZ 429KHZ (0.9MM)	X100	.	.	.	.
636	35000001	SINGLE BATTERY CONTACT (-)	.	.	.	.	.
637	35005006	SINGLE BATTERY CONTACT (+) TOSHIBA	.	.	.	.	.
638	35005007	DOUBLE BATTERY CONTACT UKV-900 TOSHIBA	.	.	.	.	.
639	40012332	RUBBER PAD (RC 1541)	.	.	.	.	.
640	40011955	BATTERY COVER RC 5010-11 EKO2GRAY(I)	.	.	.	.	.
641	40014912	BOTTOM COVER RC 1541 EKO2GRAY (I)	.	.	.	.	.
642	40014913	TOP CVR.R/C 1541 NOBRAND(S)(EKO2GRAY)	.	.	.	.	.
643	30027396	CNAS SCART TO RCA (YUV) 150CM	.	.	.	.	.
644	50045011	I/B TEAC EU3242ST PLL/AK45/1541/ENG	.	.	.	.	.
645	20143443	F CARTON BOX TEAC EU3242ST(AK45)SILVER	.	.	.	.	.
646	20143444	LBL.BCK.CVR.TEAC EU3242ST "45"	.	.	.	.	.
647	20013018	LBL.BCK.CVR.ASSY (TV) (WO/UL)	.	.	.	.	.
648	50023173	LABEL LOT W/BARCODE (77X256)	.	.	.	.	.
649	70000621	RIBBON 80MM*450MM	.	.	.	.	.
650	20144930	SCR.ASSY.3242W W/SB AK45 (V.0)	.	.	.	.	.
651	20120113	BACK DOOR AK45/52 (I) (V.0)	.	.	.	.	.
652	60000009	FR-HIPS NATR.V-0	.	.	.	.	.
653	60000022	MASTERBATCH (BLACK)	.	.	.	.	.
654	35000211	SCREW S C ZNSY YSMB 2.9*9.5	.	.	.	.	.
655	35000212	SCREW S C ZNSY YSMB 2.9*13	.	.	.	.	.

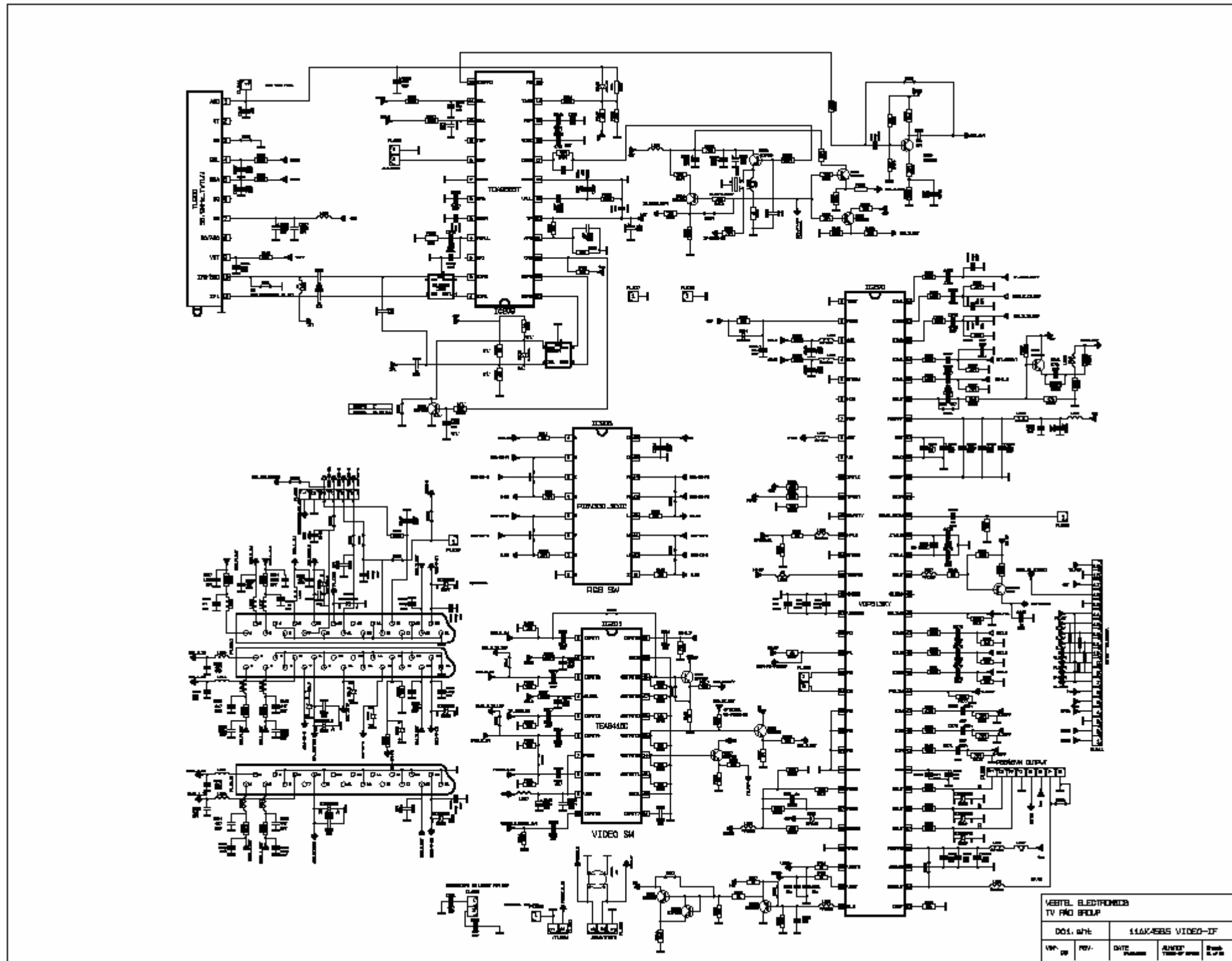
656	35000224	SCREW C SK ZN YFMB 2.9*9.5	.	.	.	.	.
657	35000235	SCREW P C ZN AKBR 7*32	.	.	.	.	.
658	35004572	SCREW P C AgSYF YSB 4x20	.	.	.	.	.
659	40000082	FOOT RUBBER 8410/11	.	.	.	.	.
660	20150138	SPK.A.28"-32"(16:9)/72XX/74XX w/FE(HE)45	.	.	.	.	.
661	20150139	SPK.AS.7289/99 721X/20/70/71(L)AK45 W/HE	.	.	.	.	.
662	30000426	CAP EL 6.8UF 50V M (BPL)	.	.	.	.	.
663	30001947	TWEETER 8R 15W CLOSED	.	.	.	.	.
664	30002238	CABL 2P/200 SPK DIS UL1672AWG24	.	.	.	.	.
665	30012632	CNAS 2P/690 DIS W/C+FER UL2547 AWG24	.	.	.	.	.
666	30028092	SPEAKER 8R 15W 57*160 (improved)	.	.	.	.	.
667	50011720	LABEL HIGH END	.	.	.	.	.
668	20150140	SPK.AS.7289/99 721X/20/70/71(R)AK45 W/HE	.	.	.	.	.
669	30000426	CAP EL 6.8UF 50V M (BPL)	.	.	.	.	.
670	30001947	TWEETER 8R 15W CLOSED	.	.	.	.	.
671	30002238	CABL 2P/200 SPK DIS UL1672AWG24	.	.	.	.	.
672	30012631	CNAS 2P/760 DIS W/BL C+FER UL2547 AWG24	.	.	.	.	.
673	30028092	SPEAKER 8R 15W 57*160 (improved)	.	.	.	.	.
674	50011720	LABEL HIGH END	.	.	.	.	.
675	30011621	32" CPT TUBE SAFE 50HZ SF	.	.	.	.	.
676	40001939	LOGO TEAC(D.C.-SILVER)(BIG)	.	.	.	.	.
677	50042313	PLASTIZOTE BAG (1450mm*1150mm)	.	.	.	.	.
678	50045013	LBL.SCREEN TEAC EU3242ST	.	.	.	.	.

# 16.BLOCK DIAGRAM

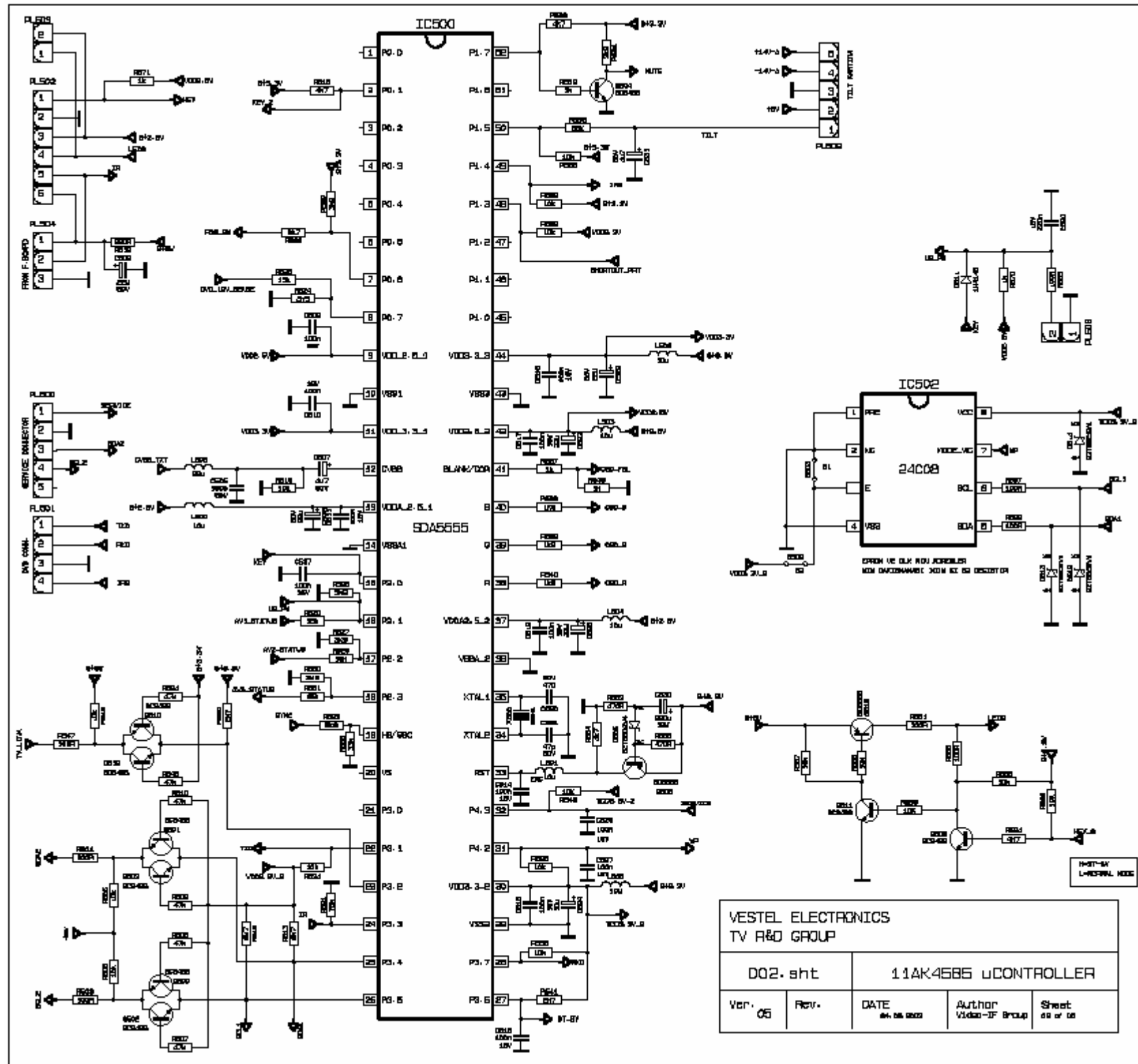
**GENERAL BLOCK DIAGRAM OF CHASSIS 11 AK 45**



17.CIRCUIT DIAGRAMS

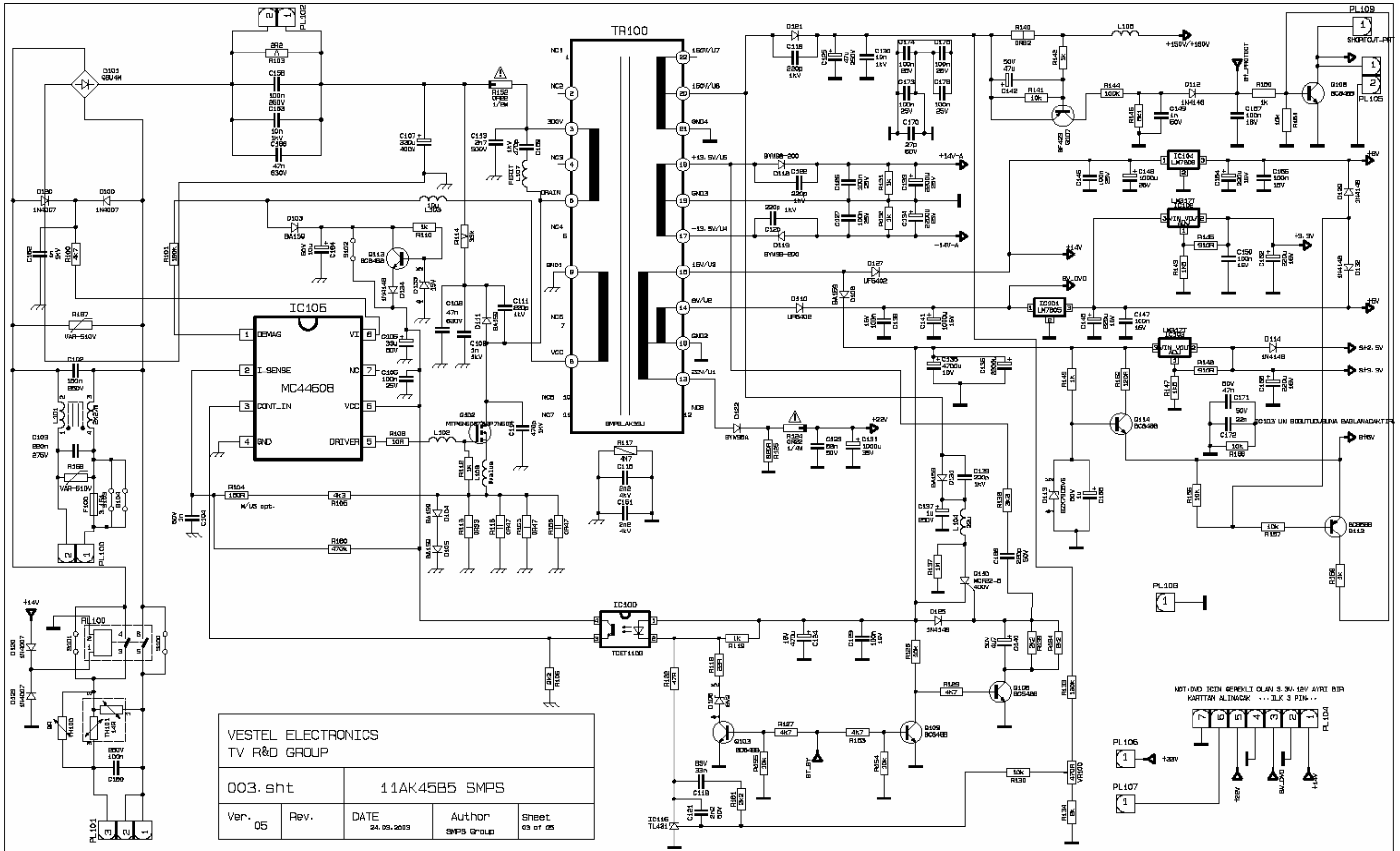


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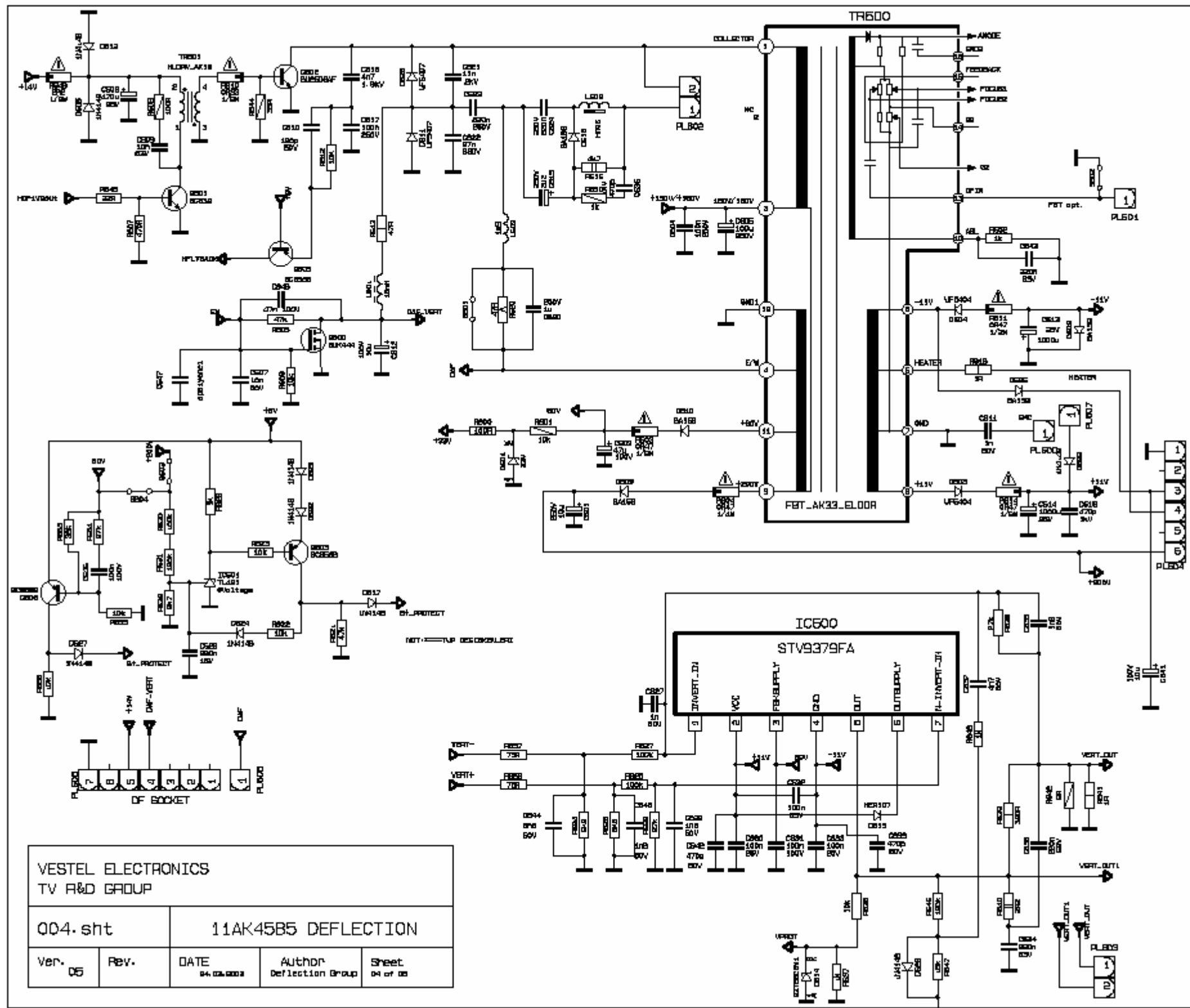


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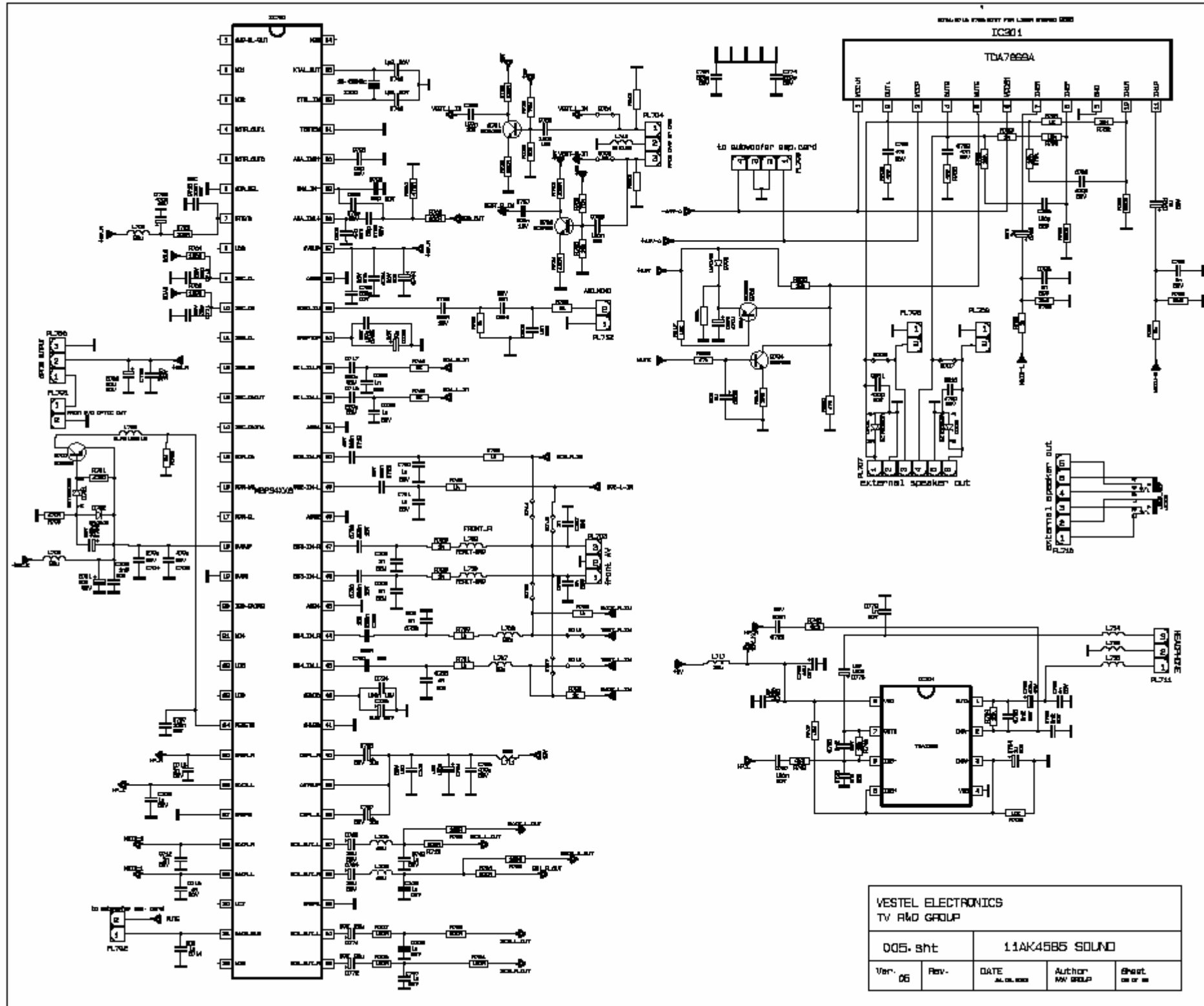




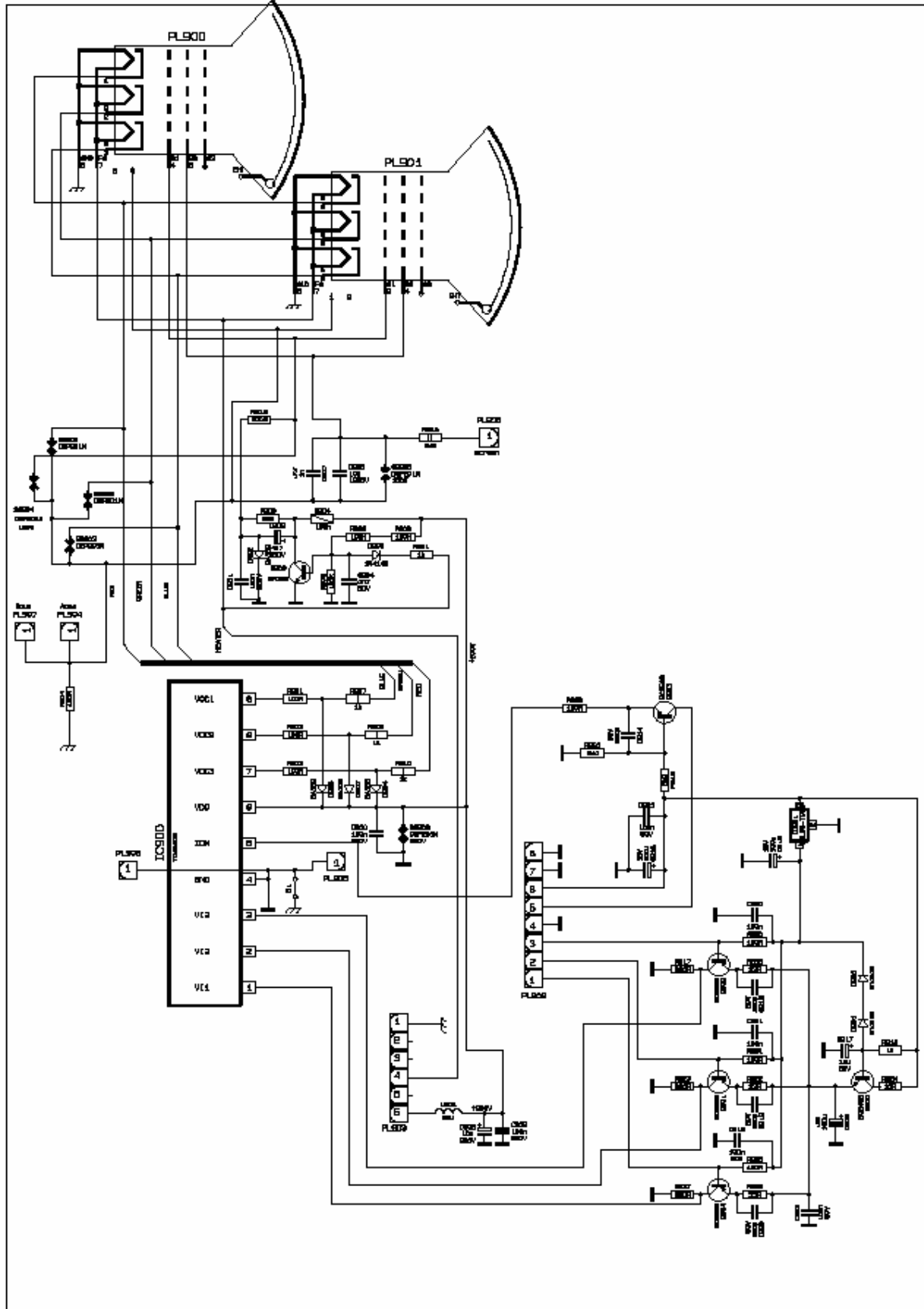
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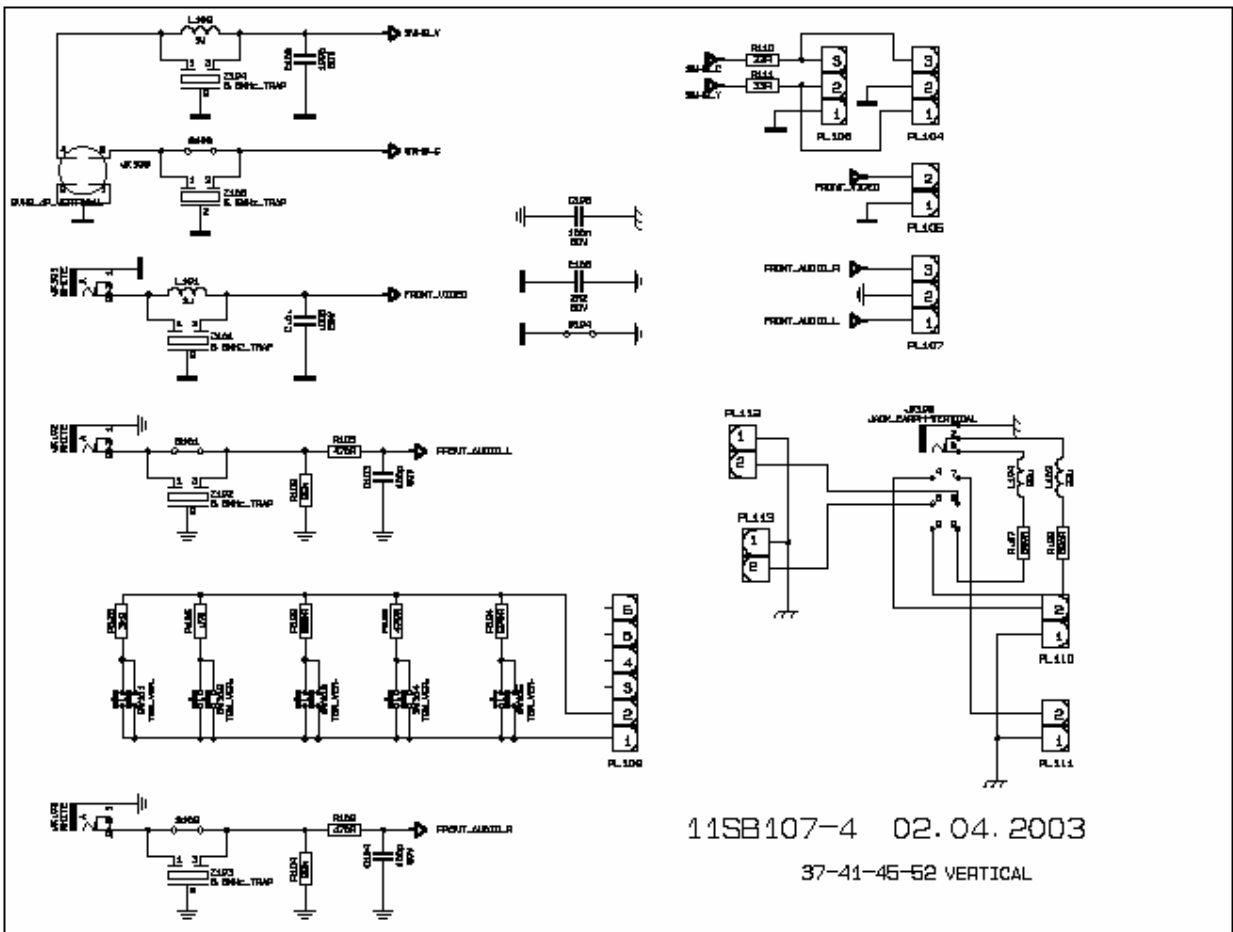
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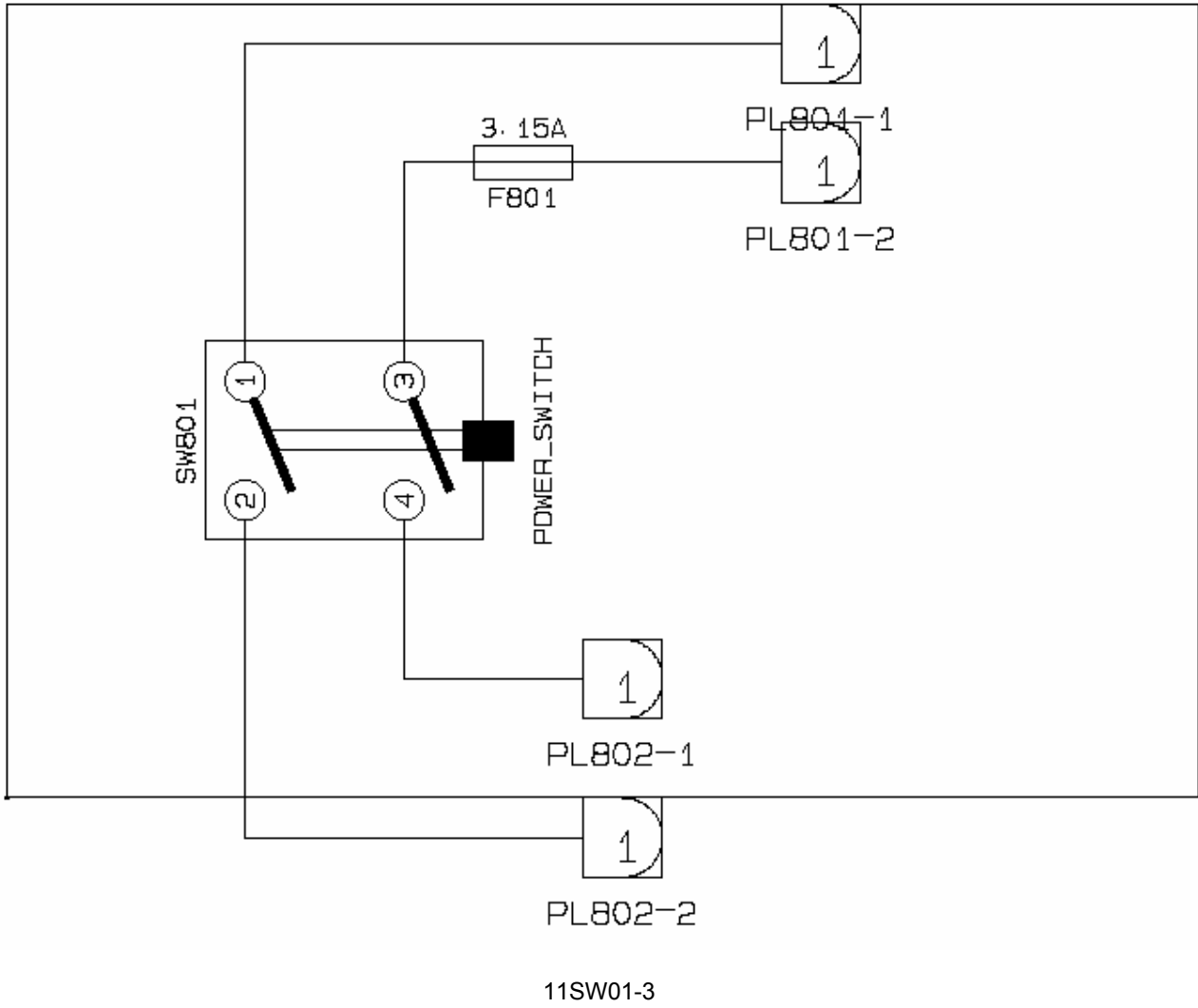
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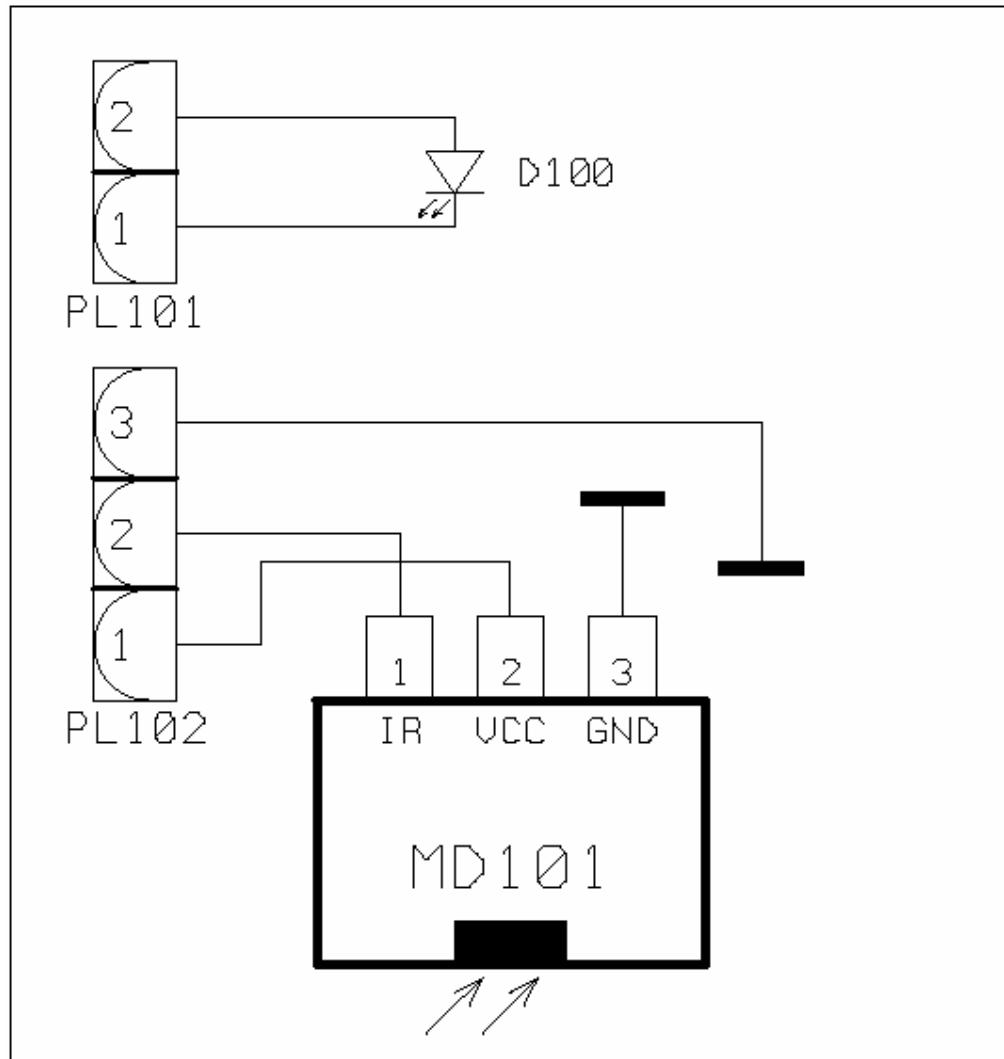


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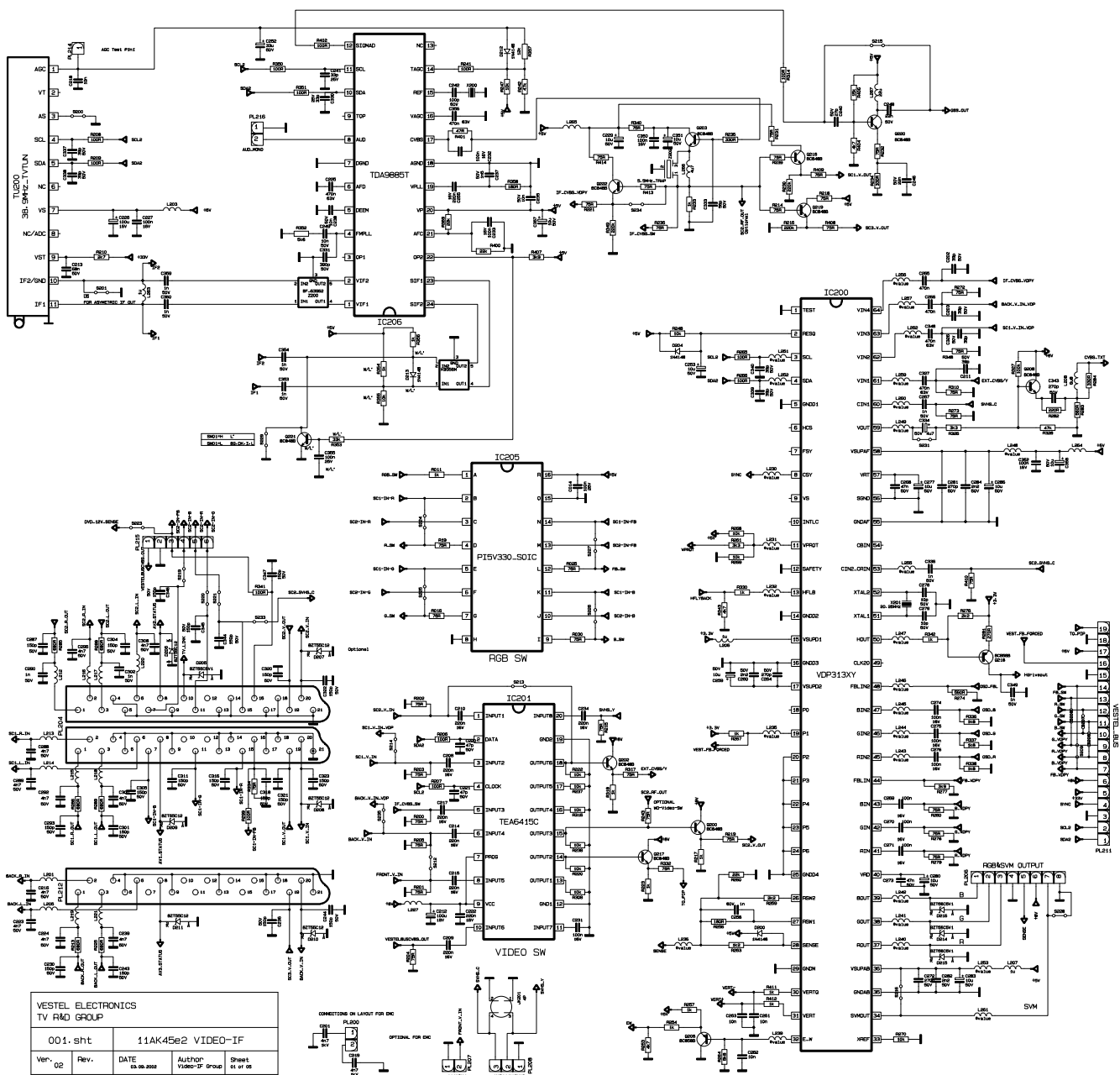
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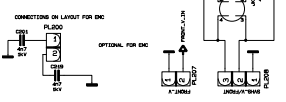


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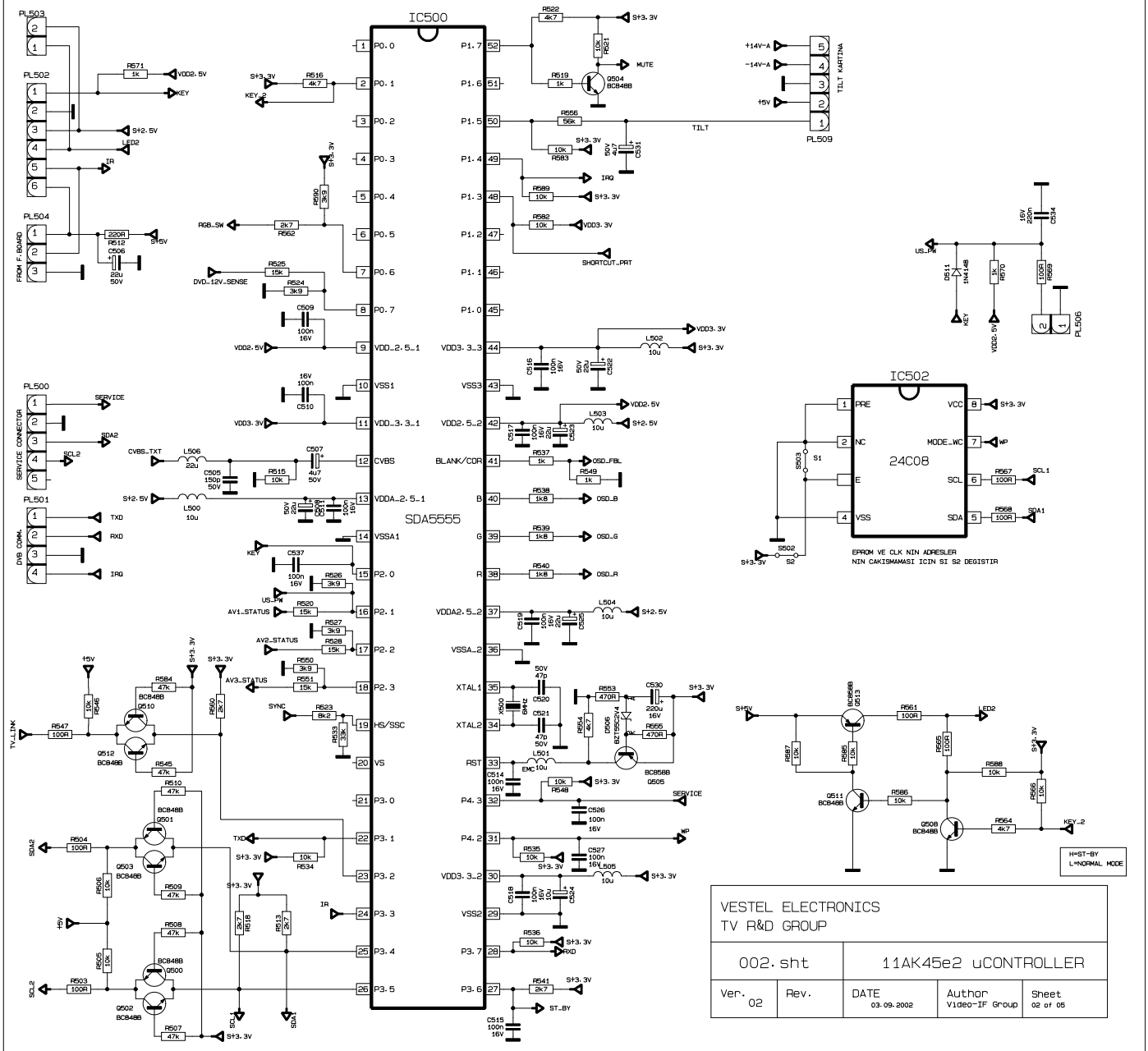
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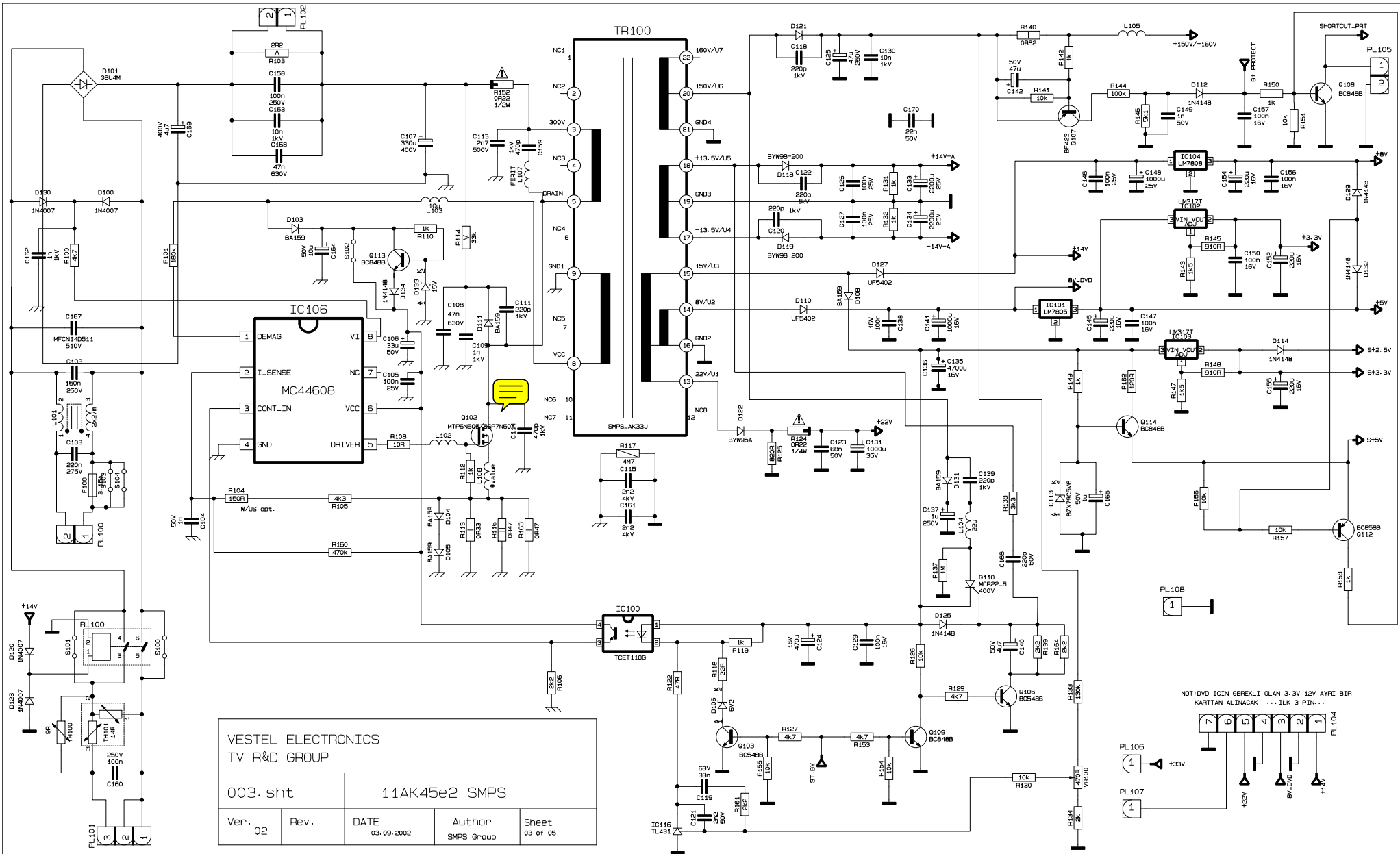


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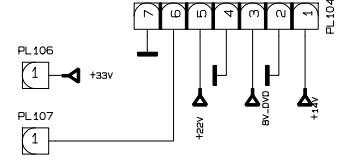




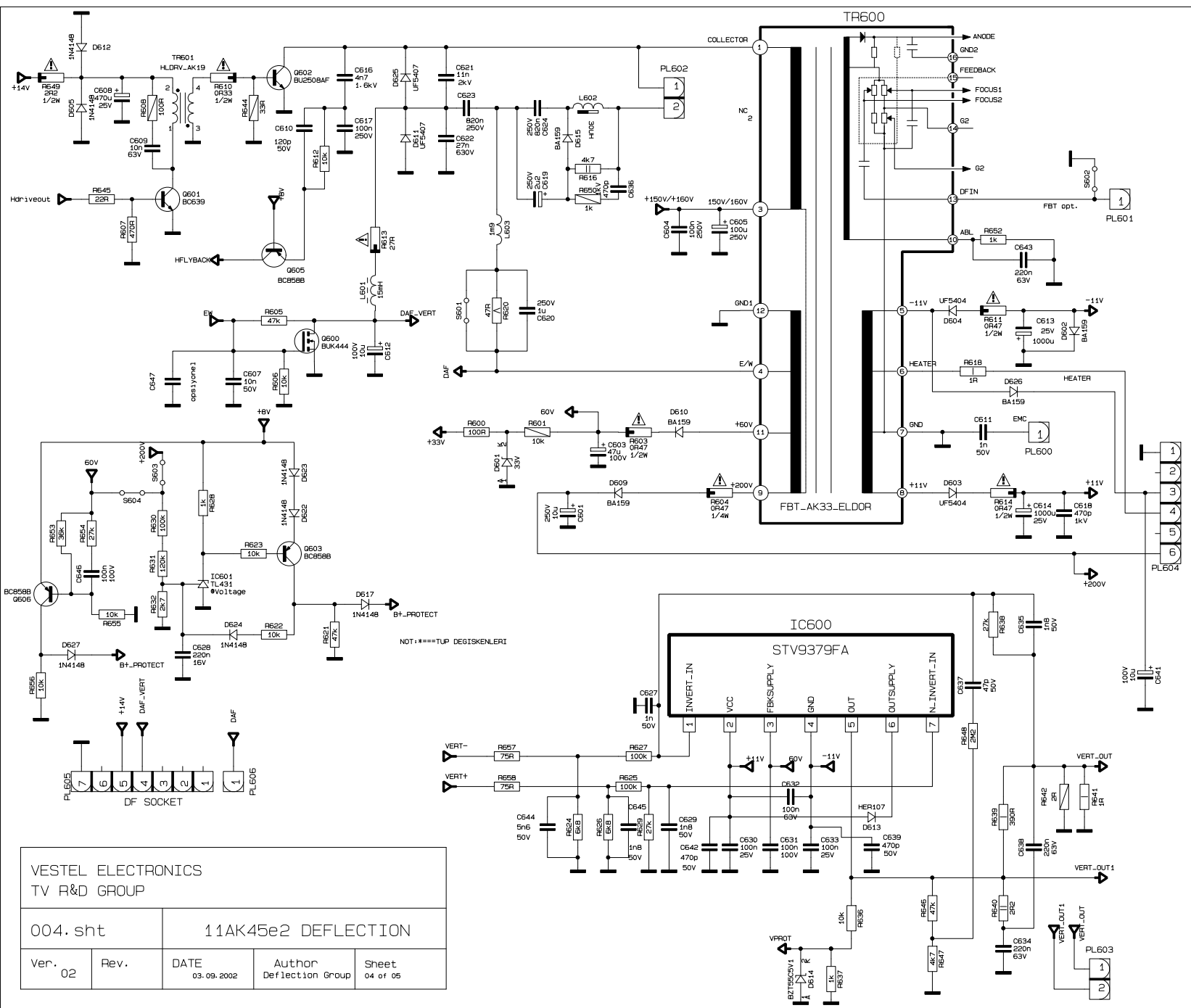
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NOT-DVD ICIN GEREKLI OLAN 3-3V-12V AYRI BIR KARTTAN ALINACAK ... ILK 3 PIN ..



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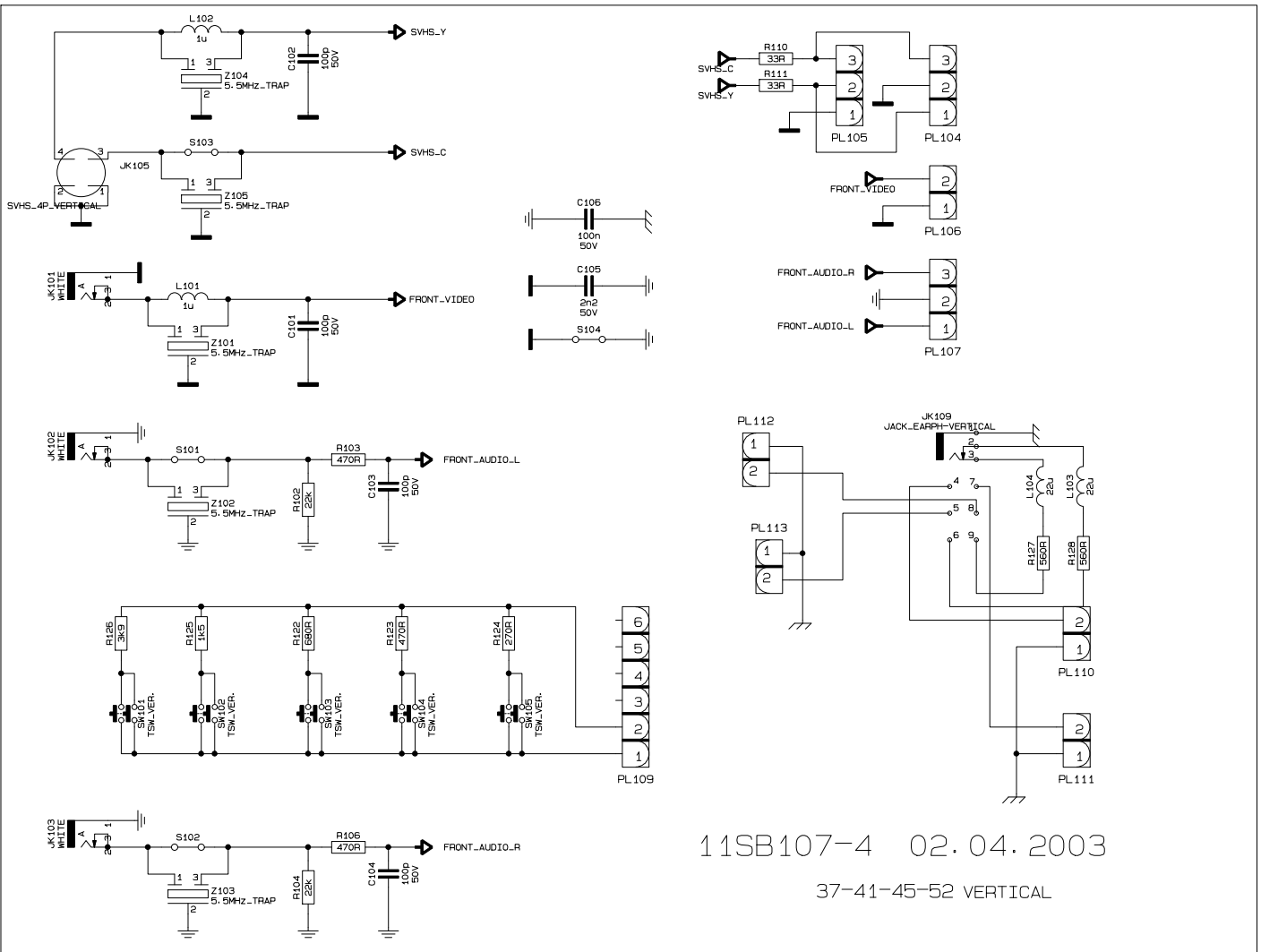


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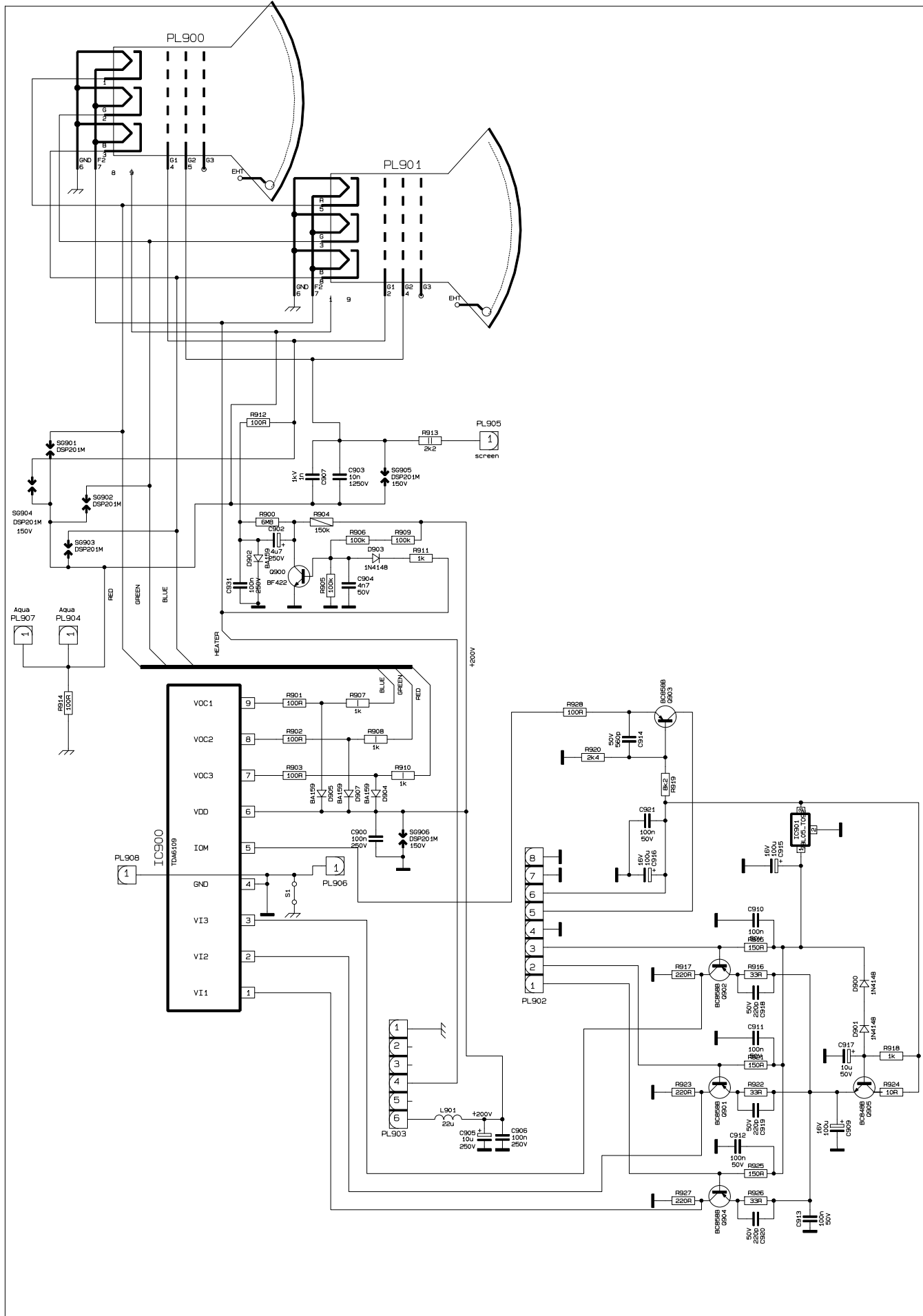
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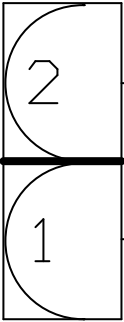
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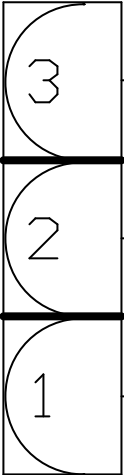
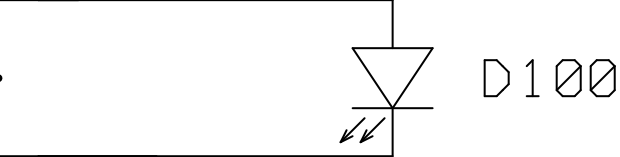
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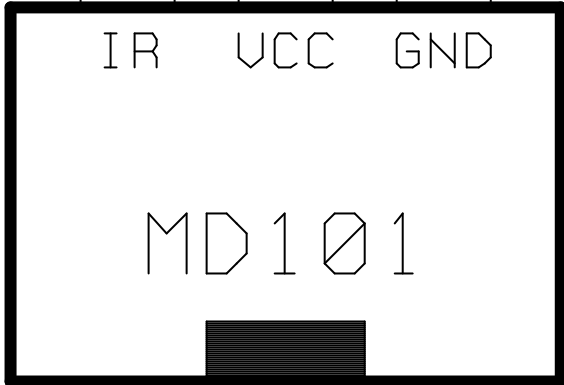
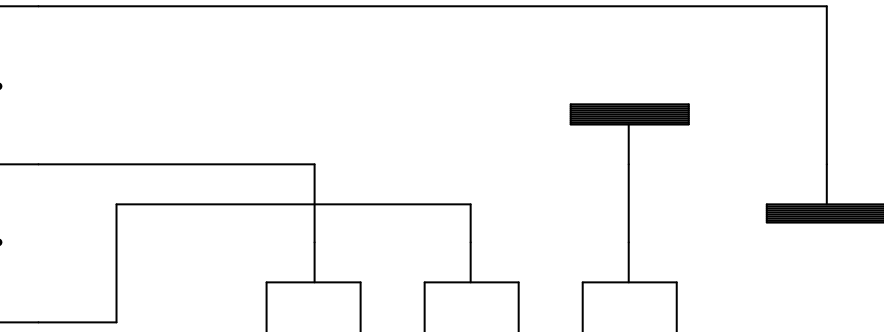




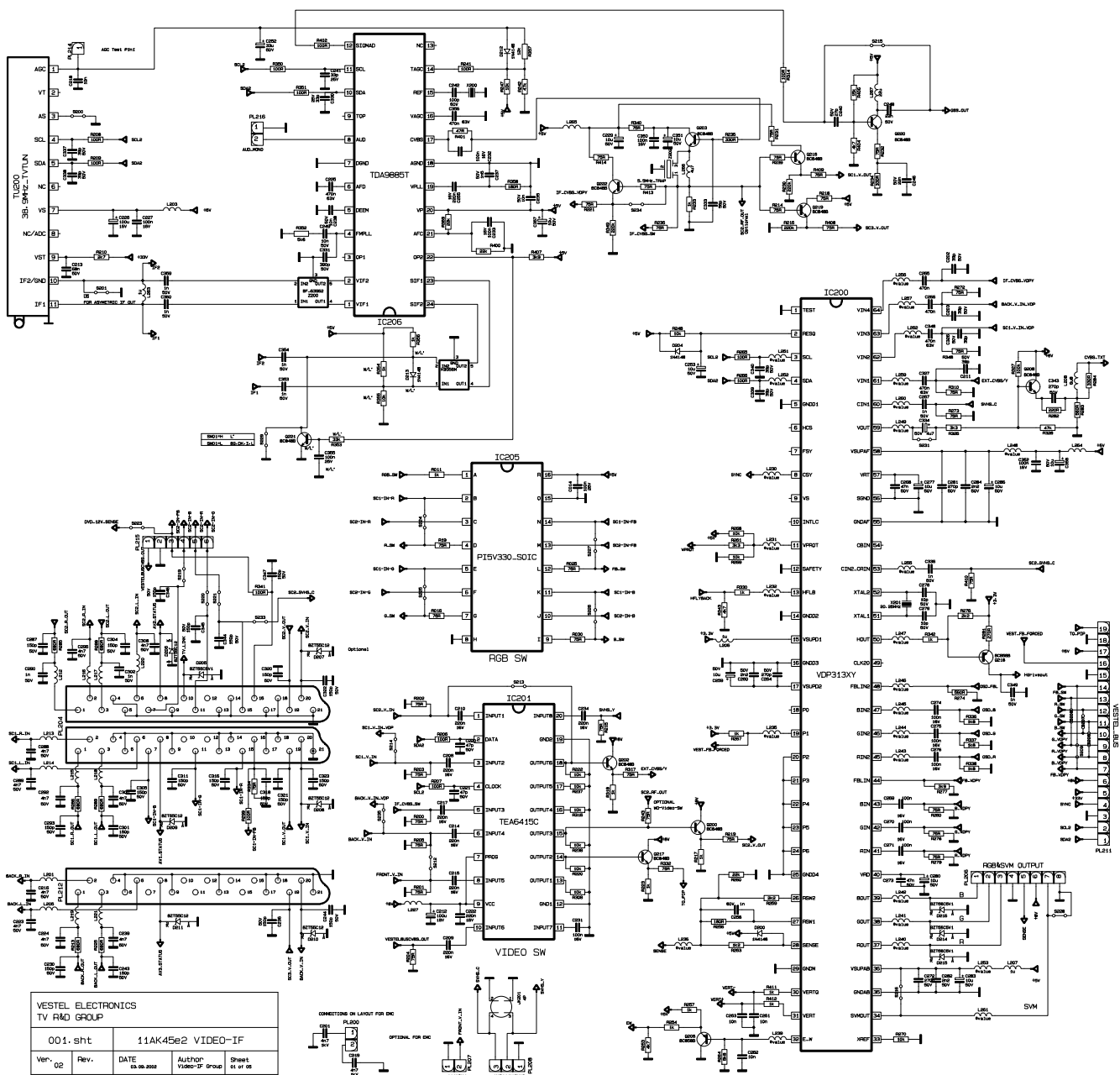
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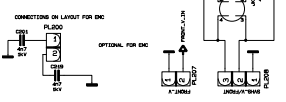
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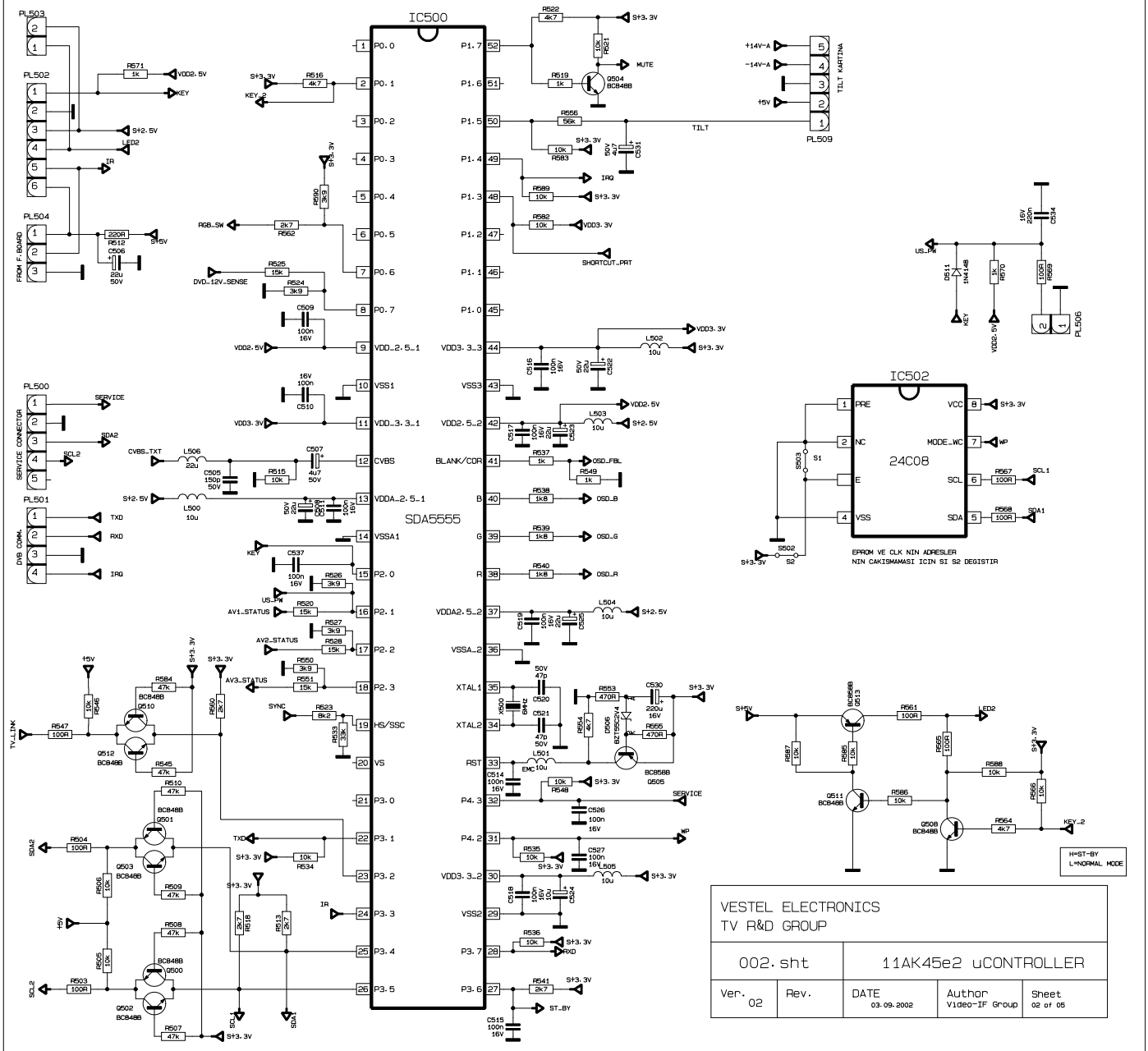
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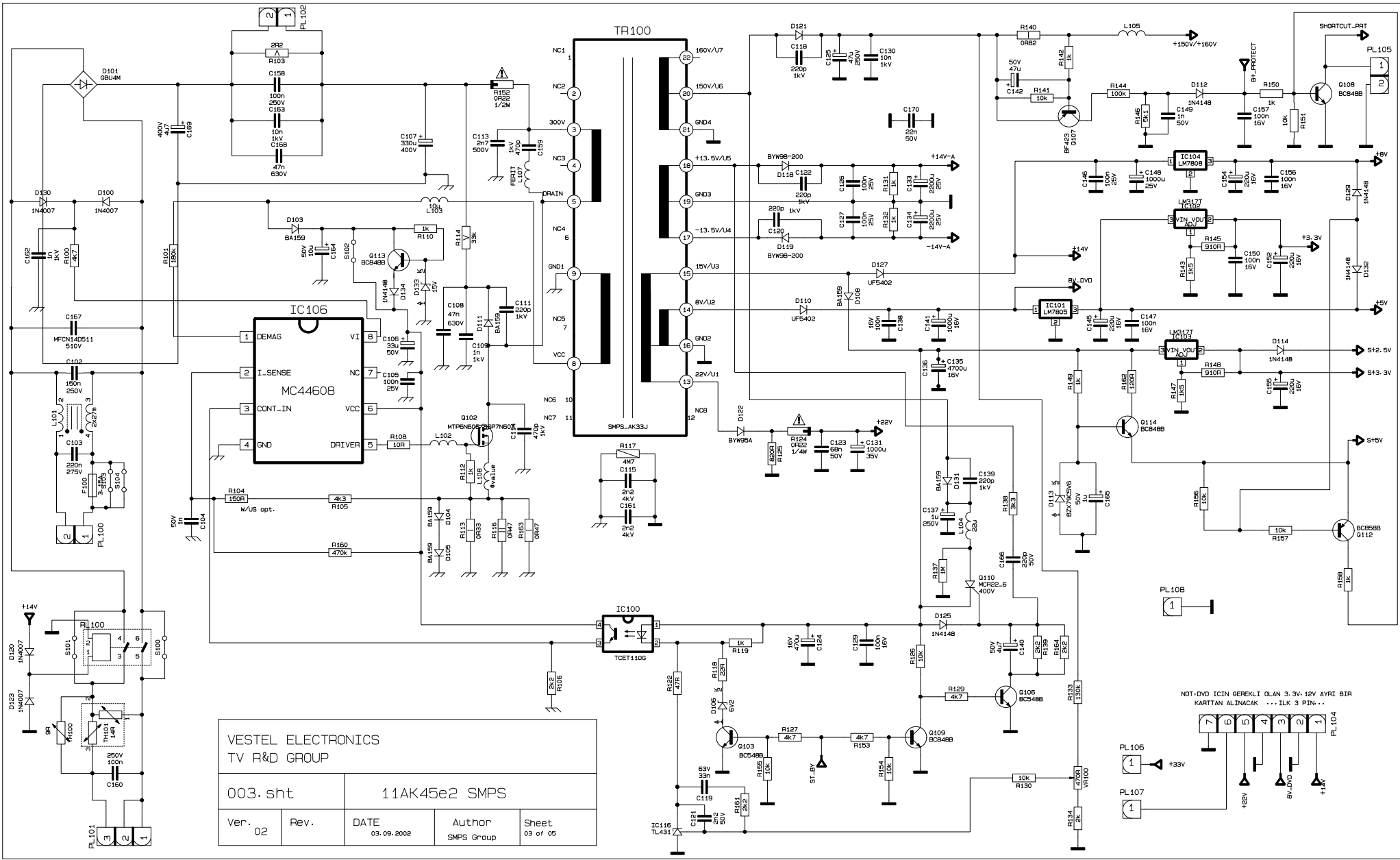


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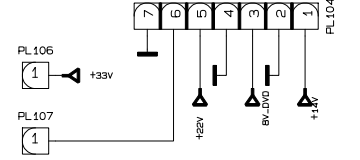


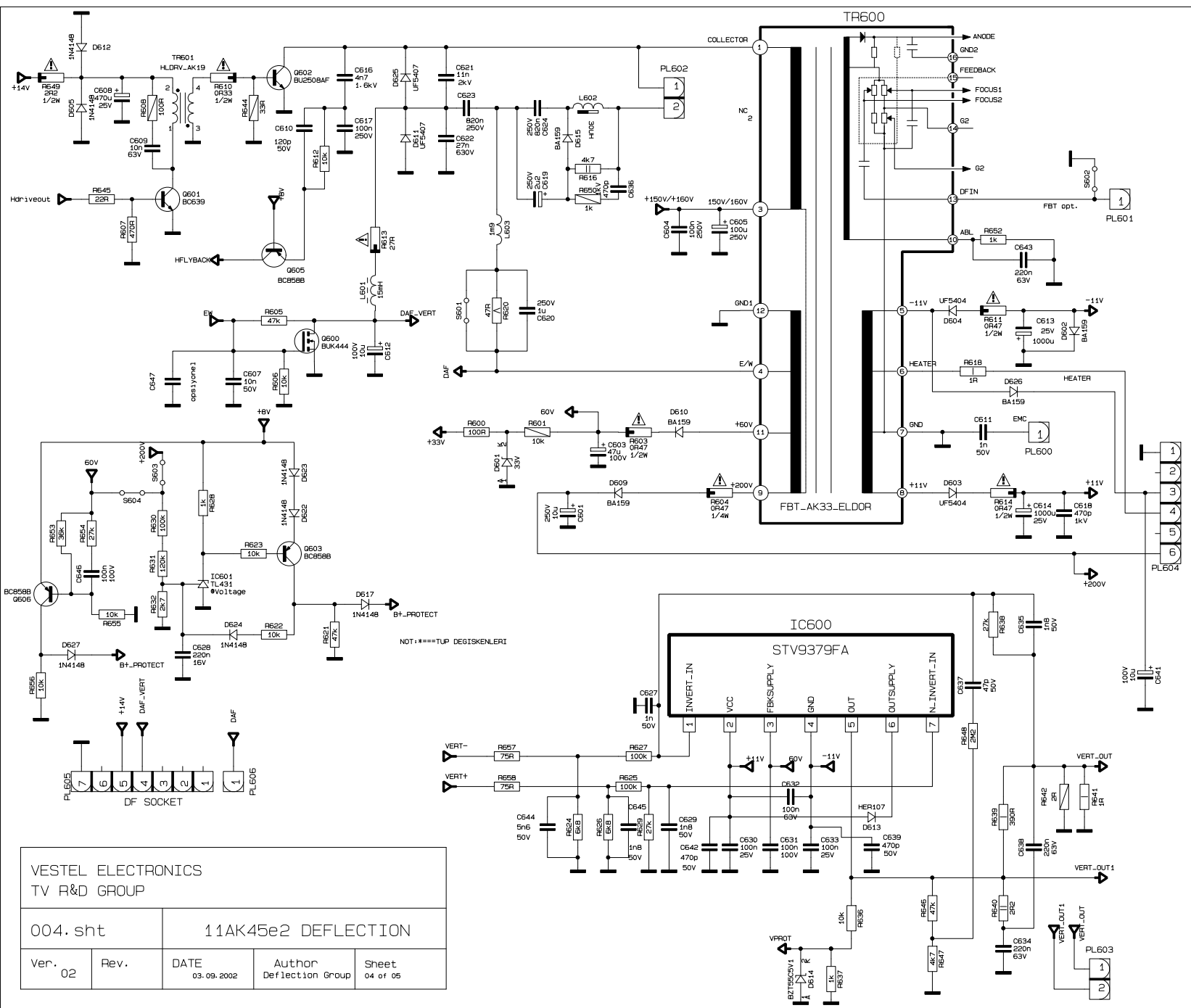


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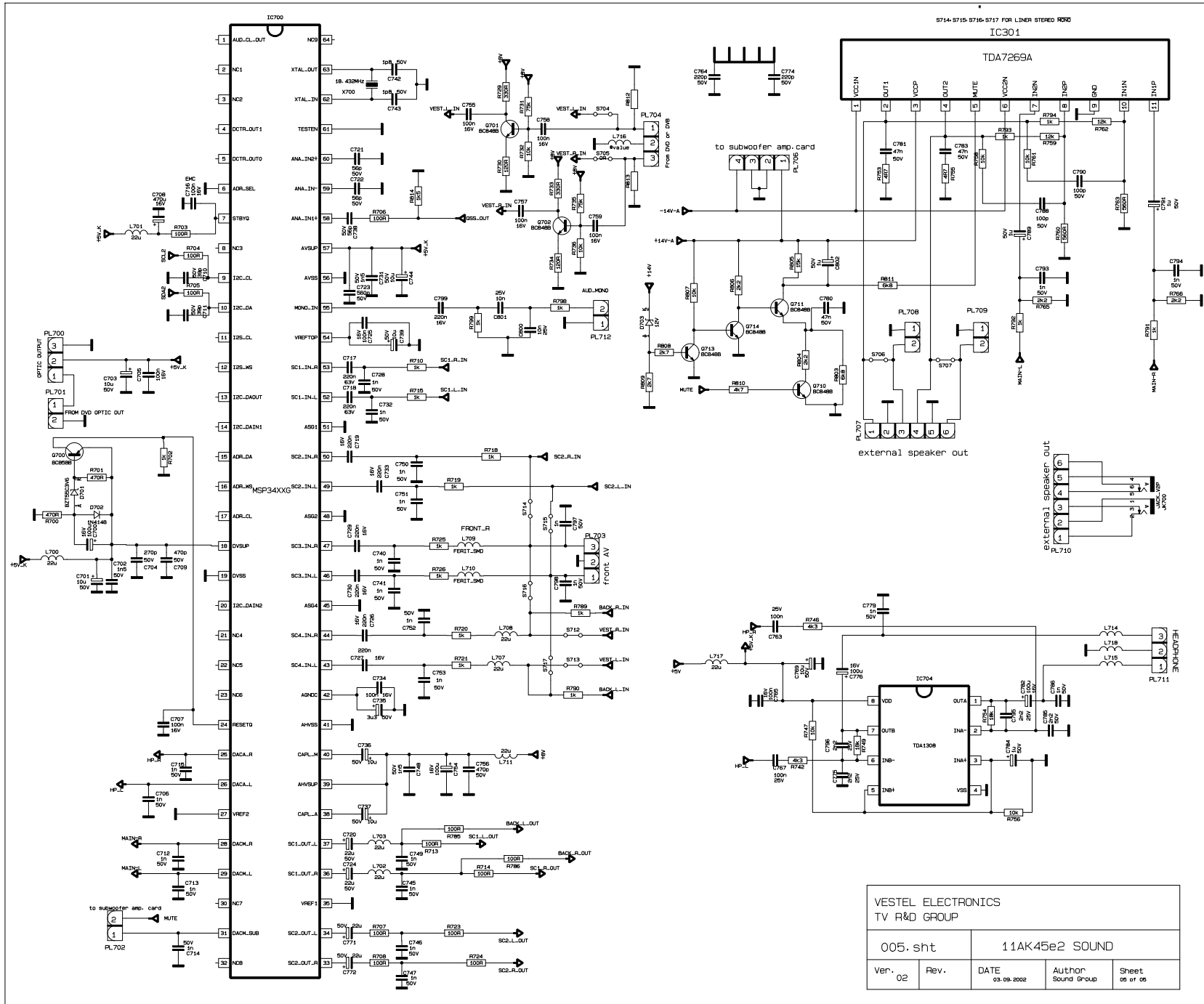




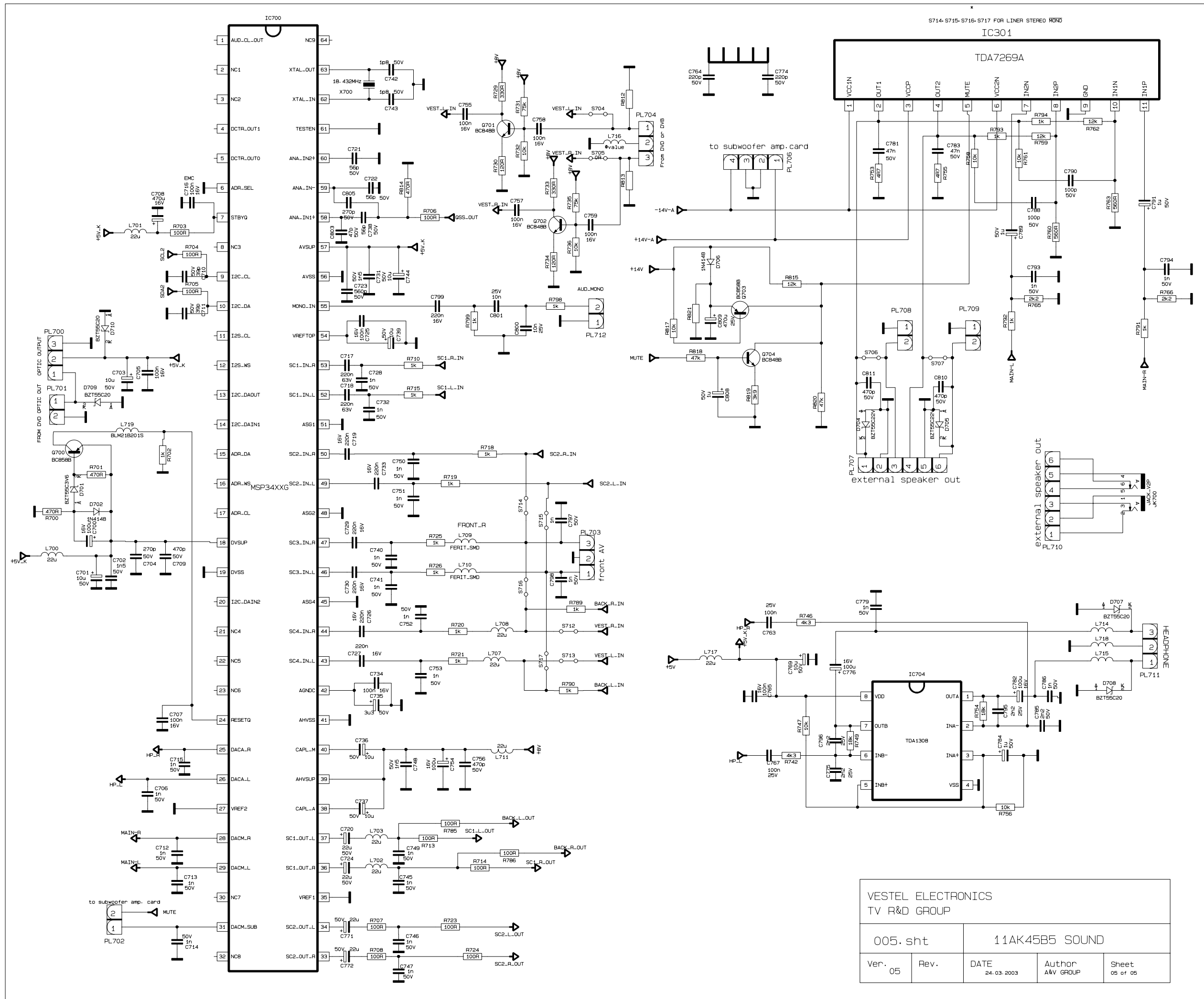
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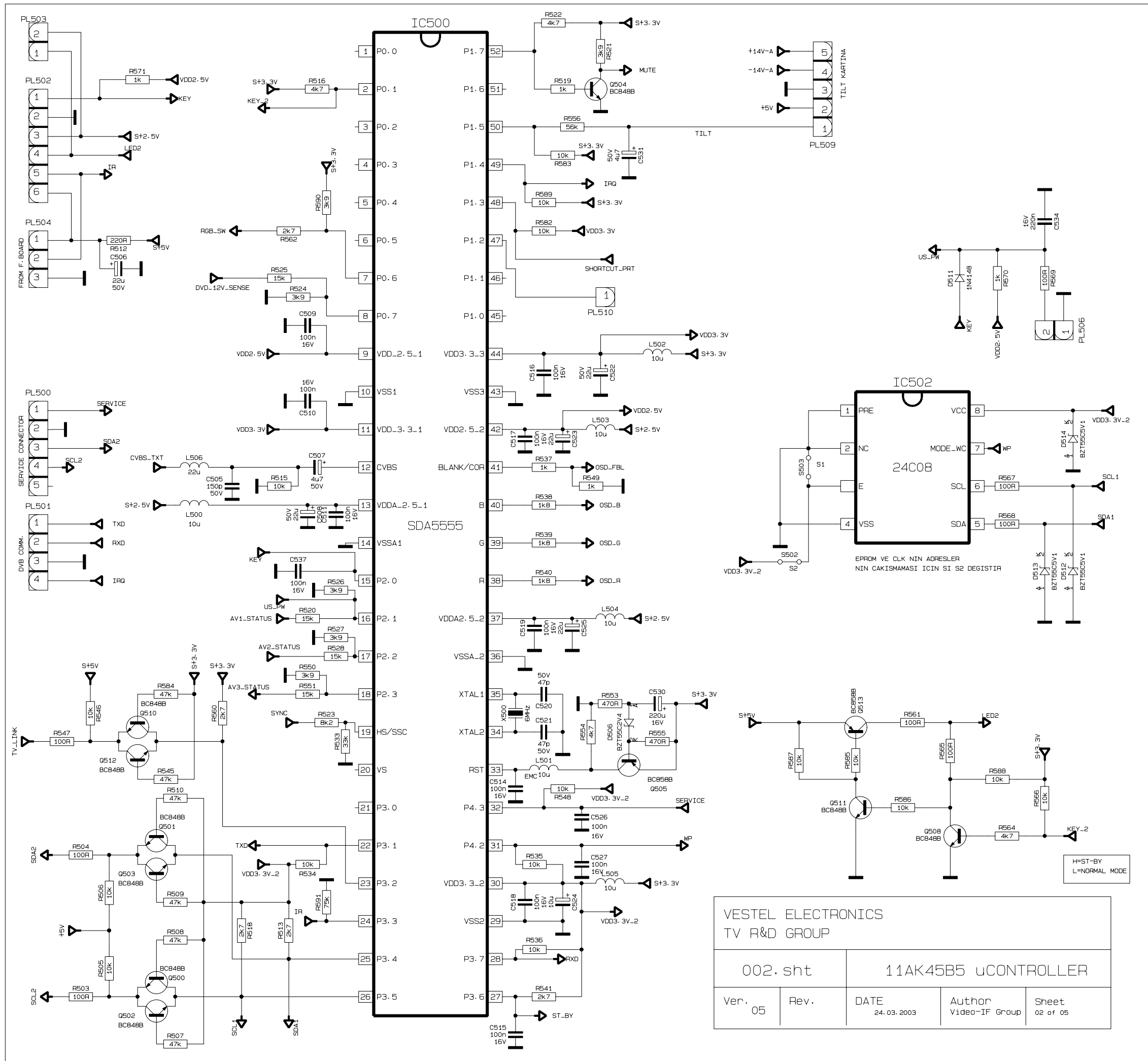
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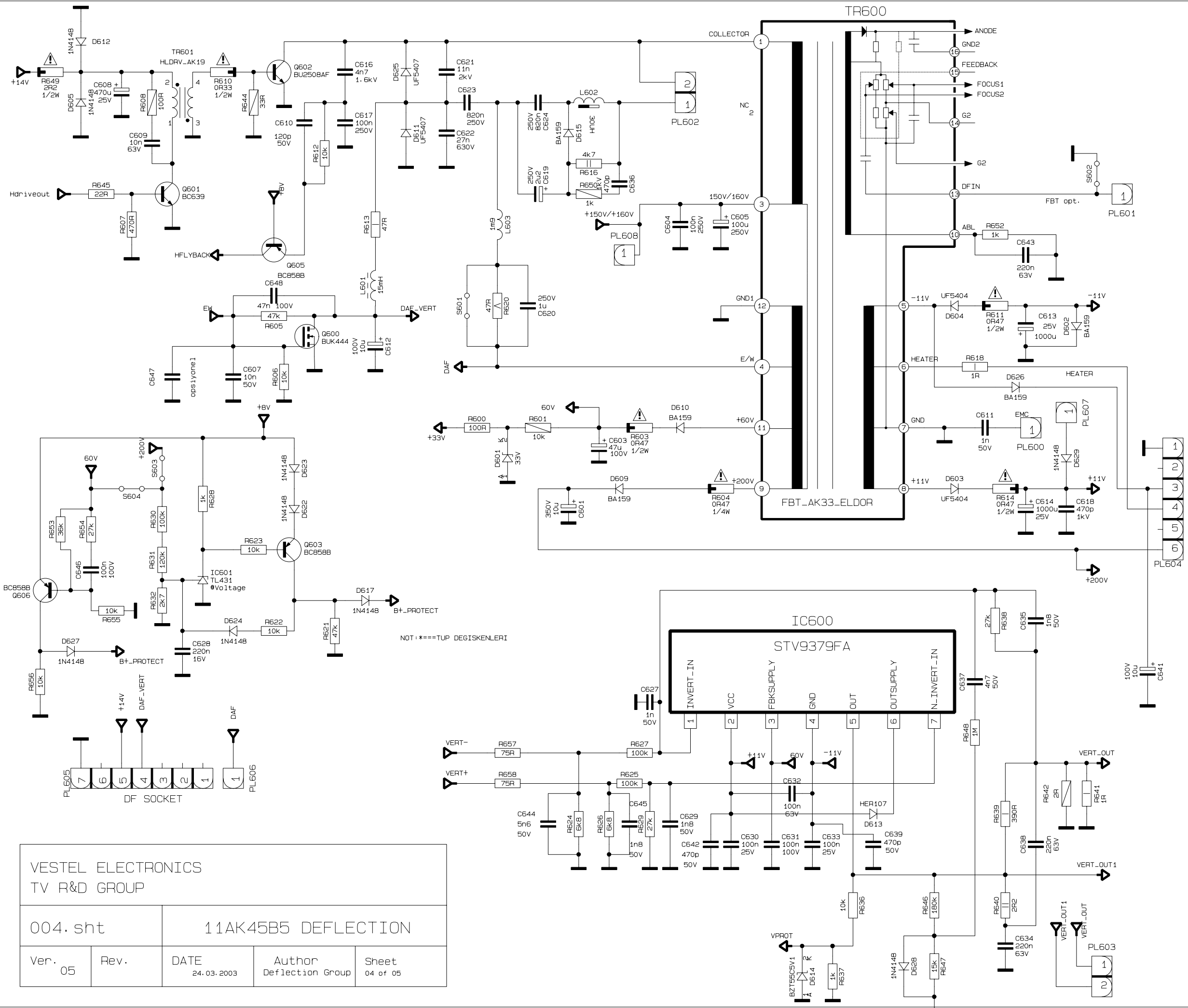


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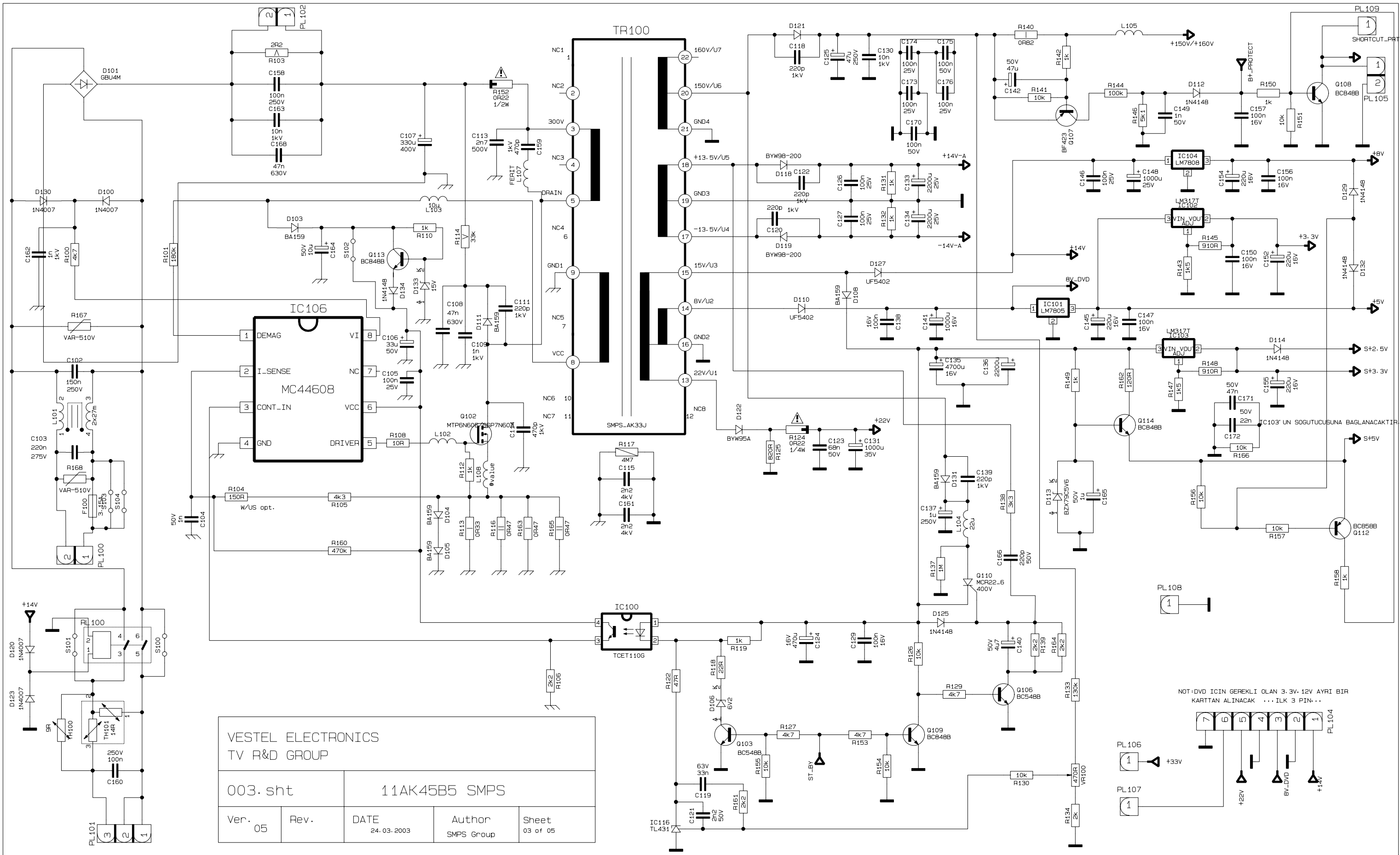


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TV R&D GROUP

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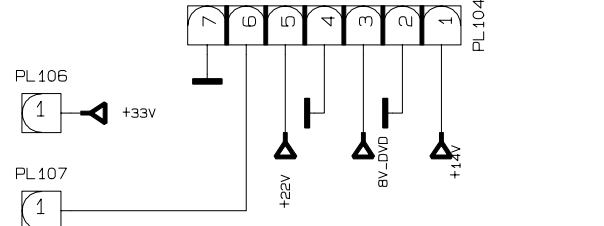
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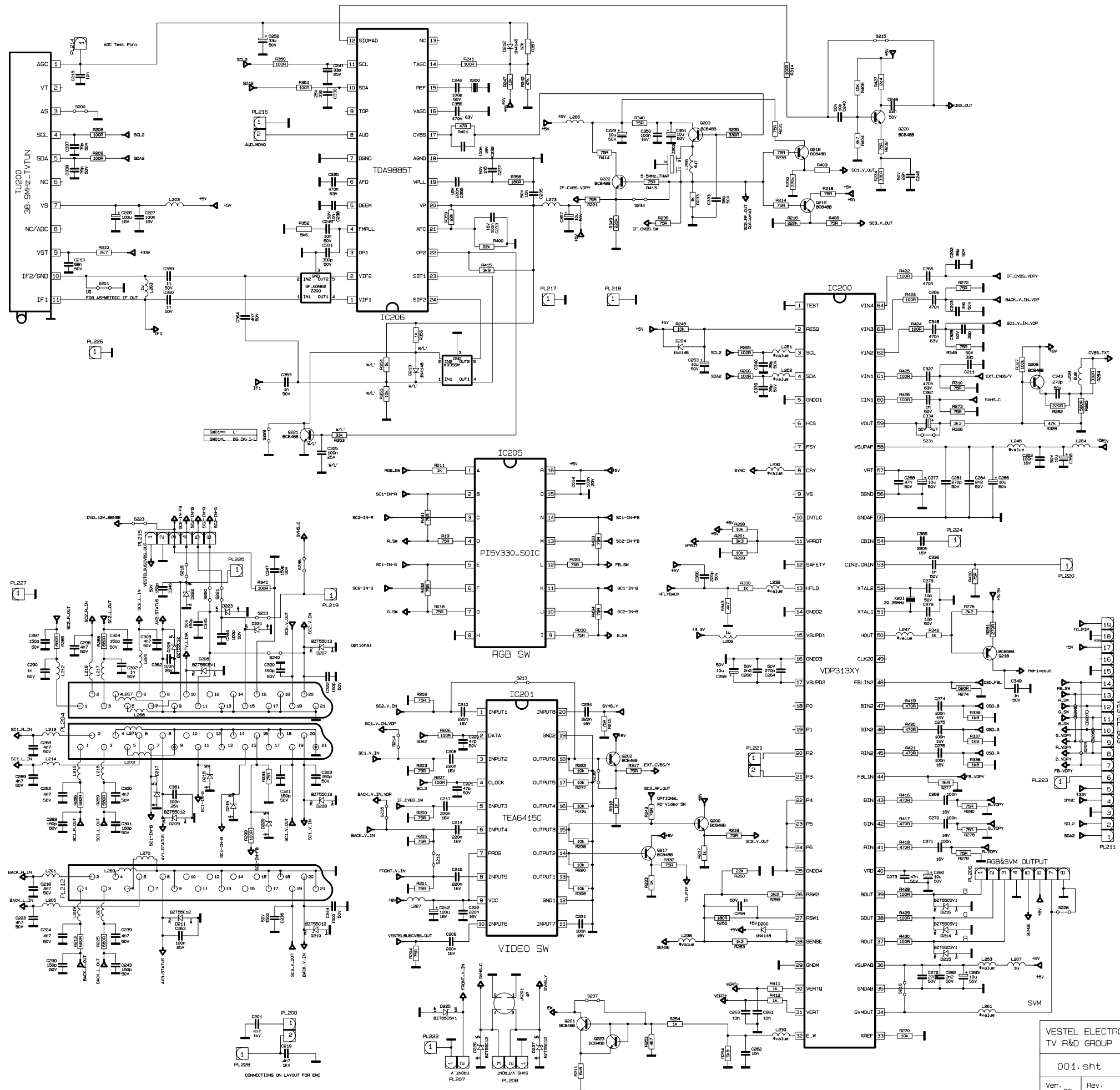


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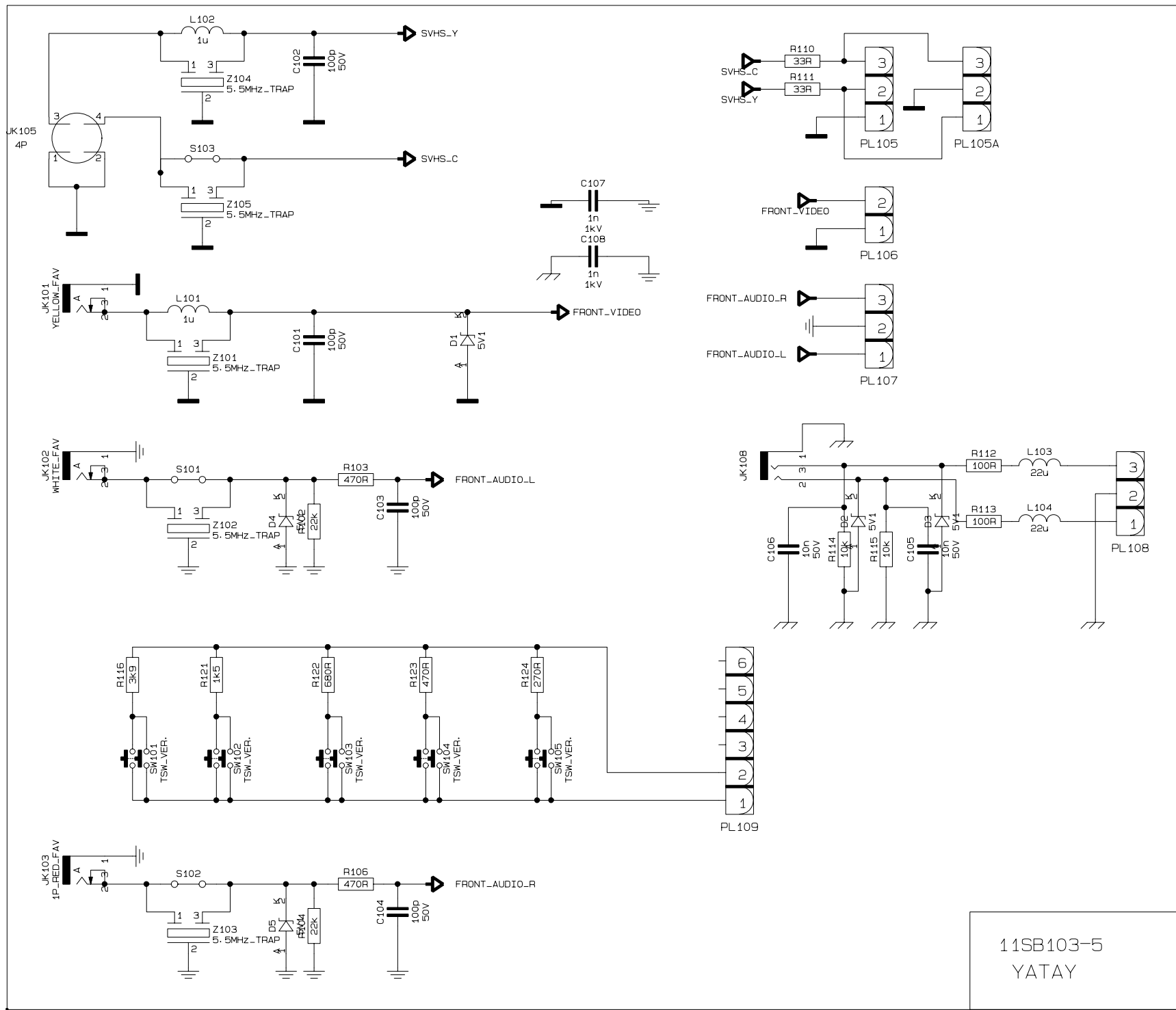






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CONNECTIONS ON LAYOUT FOR EMC



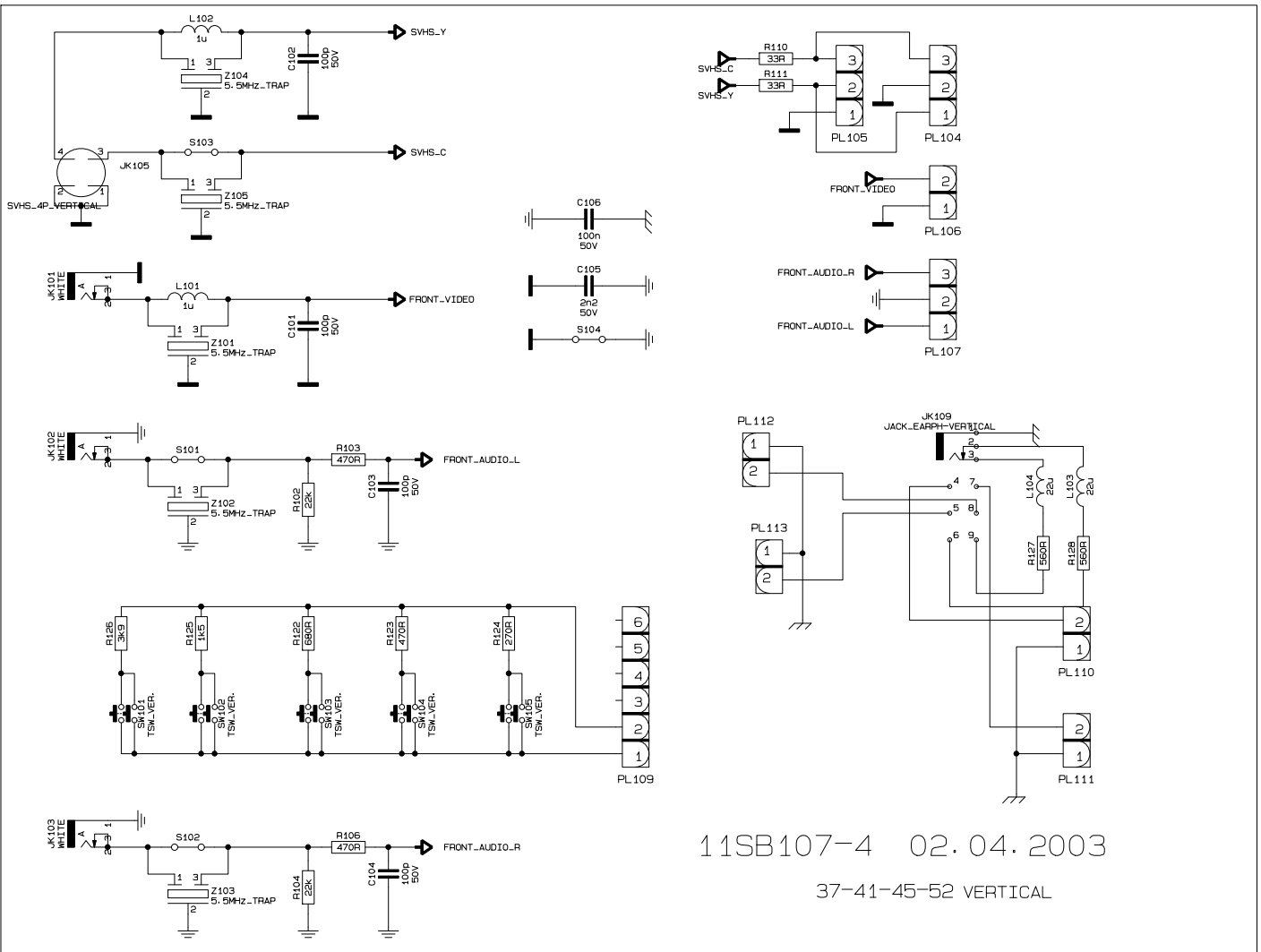
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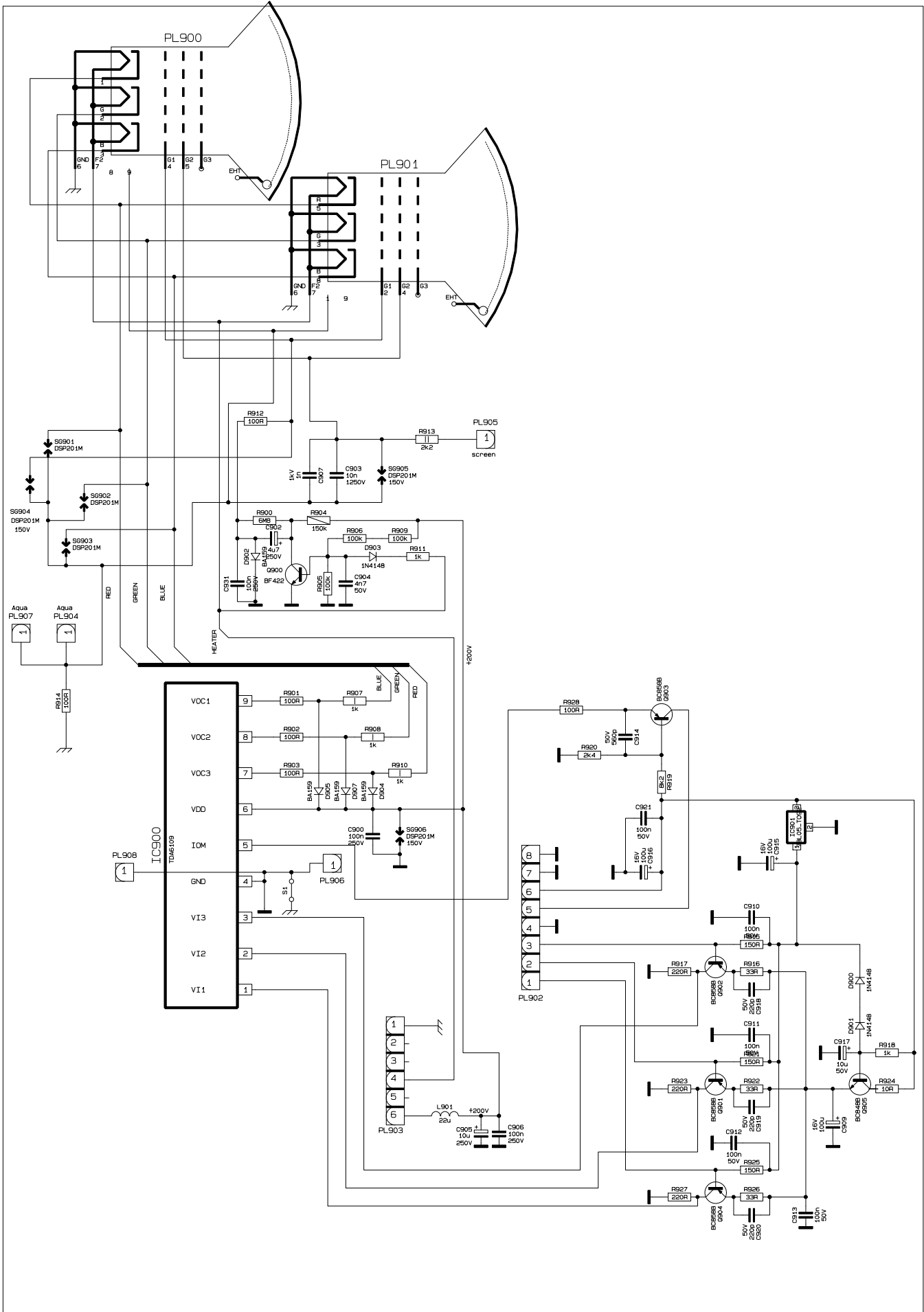
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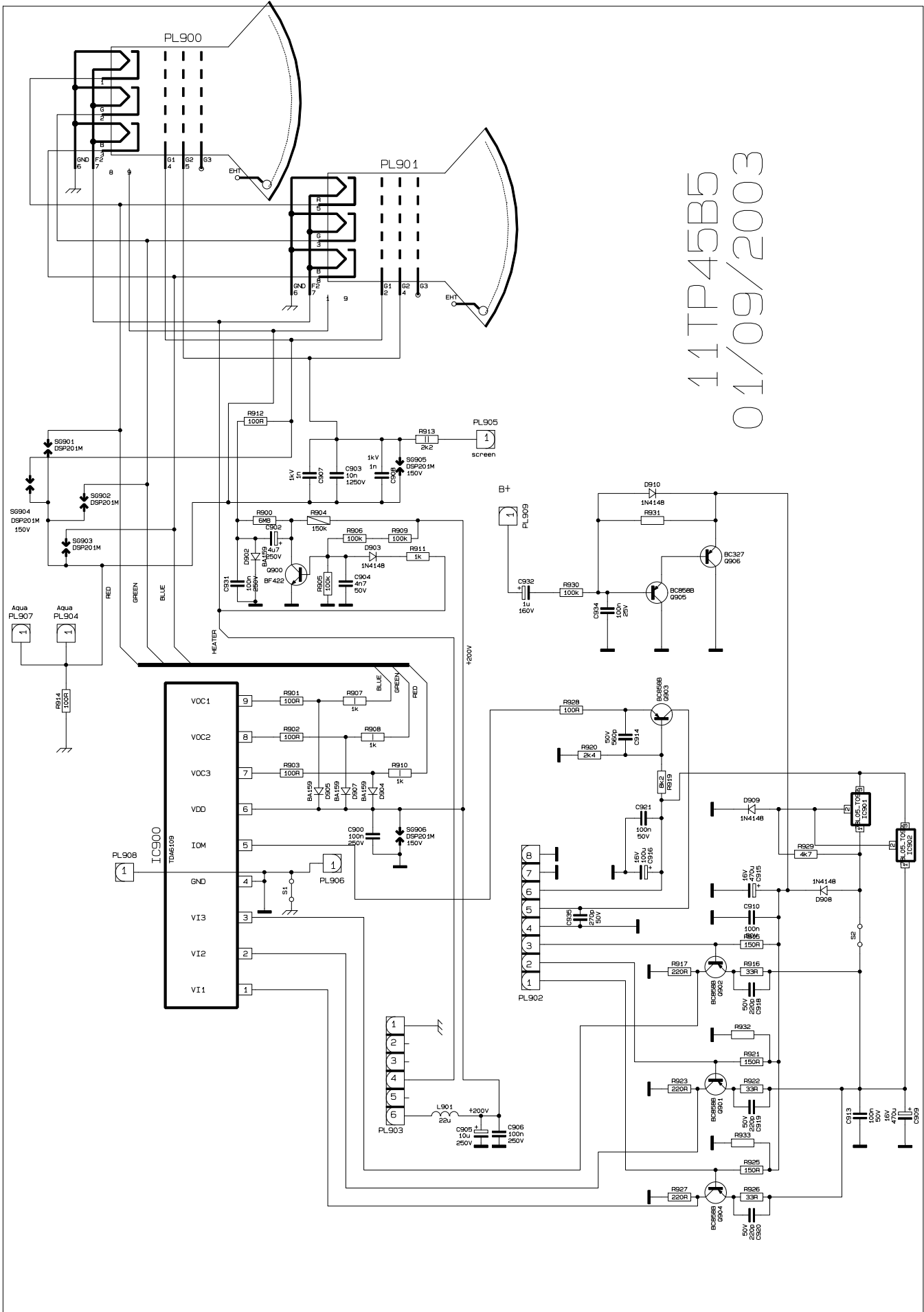
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