

050-200267

**TOSHIBA**

SERVICE MANUAL

# COLOUR TELEVISION

**32WH37G**

**AK41 Chassis**

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## DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCH OFF

The mains supply side of the switch mode power supply transformer is live.

Use an isolating transformer.

The receivers fulfill completely the safety requirements.

### Safety precautions:

Servicing of this TV should only be carried out by a qualified person.

- Components marked with the warning symbol on the circuit diagram are critical for safety and must only be replaced with an identical component.

- Power resistor and fusible resistors must be mounted in an identical manner to the original component.

- When servicing this TV, check that the EHT does not exceed 26kV.

### TV Set switched off:

Make short-circuit between HV-CRT clip and CRT ground layer.

Short C804 (150mF) before changing IC802 or other components in primary side of SMPS.

### Measurements:

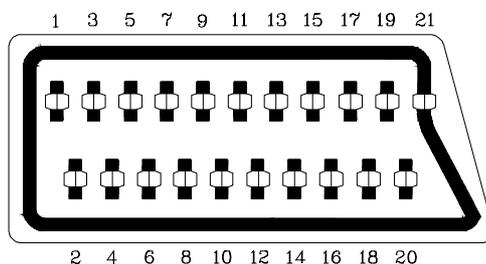
Voltage readings and oscilloscope traces are measured under following conditions.

Antenna signal 60dB from colourbar generator. (100% white, 75% colour saturation)

Brightness, contrast, colour set for a normal picture.

Mains supply, 220VAC, 50Hz.

## PERI-TV SOCKET



### SCART 1 (SC050)

1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K
4	Ground AF	
5	Ground Blue	
6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC / 10K
9	Ground Green	
10	-	
11	Green input	0.7Vpp / 75ohm
12	-	
13	Ground Red	
14	Ground Blanking	
15	Red input	0.7Vpp / 75ohm
16	Blanking input	0-0.4VDC, 1-3VDC / 75ohm
17	Ground CVS output	
18	Ground CVS input	
19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm
21	Ground	

### SCART 2 (SC051)

1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K
4	Ground AF	
5	Ground Blue	
6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC / 10K
9	Ground Green	
10	-	
11	-	
12	-	
13	Ground Red	
14	Ground Blanking	
15	-	
16	-	
17	Ground CVS output	
18	Ground CVS input	
19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm
21	Ground	

## INTRODUCTION

11Ak41 is a 100Hz flicker free colour television capable of driving 28"4:3/16:9, 33"4:3 and 29"4:3 real flat picture tubes.

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 12W (10%THD) for left, right and center outputs of 8ohm speakers, and 2 x 7W for surround outputs of 2 x 4ohm speakers, connected in series.

TV supports the level 1.5 teletext standard. It is possible to decode transmissions including high graphical data.

The chassis is equipped with one full EuroScart, ONE OTHER SCART for AV input/output, one front-AV input, one back-AV output, one headphone output, one SVHS input (via SCART and SVHS connector), one VGA input, two external speaker outputs (left and right), one centre speaker output, and one surround speaker output for two speakers in series.

## SWITCH-MODE POWER SUPPLY (TDA16846)

A SMPS transformer controlled by the IC TDA16846, which is designed for driving, controlling, and protecting switching transistor, provides the DC voltages required at various parts of the chassis. SMPS generates the necessary 3.3V and 2.5V supplies for the micro-controller, 130V supply for the FBT, +/-16V supply for the audio amplifier, which are active in stand-by and 8V, 12V and 5V supplies for other different parts of the chassis.

When the TV is switched on, a reference voltage is provided to TDA16846 and the start-up operation occurs, then TV enters into the stand-by position.

Two optocouplers are used to control the regulation of line voltage and stand-by power consumption. There are two regulation circuits, one in primary side and one in secondary side. The primary regulation circuit provides a control voltage to pin3 of the IC. Secondary regulation circuit produces a control voltage according to the changes in 130V DC voltage, via an optocoupler (SFH617A) to pin4 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. At the same time, the supply voltages 12V, 8V, 5V are stabilised by the series regulators.

### Features:

- Line Current Consumption with PFC
- Continuous Frequency Reduction with Decreasing Load
- Stable and Adjustable Stand-by Frequency
- Very Low Start-up Current
- Soft-Start for Quiet Start-up
- Adjustable and Voltage Dependent Ringing Suppression Time
- Synchronization and Fixed Frequency Facility
- Over- and Under-voltage Lockout
- Switch Off at Mains Under-voltage
- Mains Voltage Dependent Fold Back Point Correction
- Low Power Consumption
- Free usable Fault Comparators

### Pinning:

1. OTC Off Time Circuit
2. PCS Primary Current Simulation
3. RZI Regulation and Zero Crossing Input
4. SRC Soft-Start and Regulation Capacitor
5. OCI Opto Coupler Input
6. FC2 Fault Comparator 2
7. SYN Synchronization Input
8. N. C. Not Connected
9. REF Reference Voltage and Current
10. FC1 Fault Comparator 1
11. PVC Primary Voltage Check
12. GND Ground
13. OUT Output
14. VCC Supply Voltage

## IF PART (TDA4470/72)

The TDA44XX is an integrated bipolar circuit for multistandard video/sound IF (VIF/SIF) signal processing in TV/VCR and multimedia applications. The circuit processes all TV video IF signals with negative modulation (e.g., B/G standard), positive modulation (e.g., L standard) and the AM, FM/NICAM sound IF signals. Active carrier generation by FPLL (frequency phase-locked loop) is the principle for true synchronous demodulation. VCO circuit is operating on picture carrier frequency, the VCO frequency is switchable for L'-mode. AFC without external reference circuit is alignment-free and polarity of the AFC curve is switchable. VIF-AGC for negative modulated signals operates on peak sync detection principle and for positive modulation on peak white / black level detection principle. Tuner AGC is adjustable with determining take over point. It has alignment-free quasi-parallel sound (QPS) mixer for FM/NICAM sound IF signals. Intercarrier output sound is gain controlled (necessary for digital sound processing). AM-demodulator is completely alignment-free with gain controlled AF output. Operation of the AM demodulator and QPS mixer (for NICAM-L stereo sound is parallel. TDA4472 is used for negative modulation and TDA4470 is used for both negative and positive modulation.

## Features:

- 5V supply voltage; low power consumption
- Active carrier generation by FPLL principle (frequency-phase-locked-loop) for true synchronous demodulation
- Very linear video demodulation, good pulse response and excellent intermodulation figures
- VCO circuit is operating on picture carrier frequency, the VCO frequency is switchable for the L' mode
- Alignment-free AFC without external reference circuit, polarity of the AFC curve is switchable
- VIF-AGC for negative modulated signals (peak sync detection) and for positive modulation (peak white/black level detector).
- Tuner AGC with adjustable take over point
- Alignment-free quasi parallel sound (QPS) mixer for FM/NICAM sound IF signals
- Intercarrier output signal is gain controlled (necessary for digital sound processing)
- Complete alignment-free AM demodulator with gain controlled AF output
- Separate SIF-AGC with average detection
- Two independent SIF inputs
- Parallel operation of the AM demodulator and QPS mixer (for NICAM-L stereo sound)
- Package and relevant pinning is compatible with the single standard version TDA 4472; simplifies the design of an universal IF module

## Pinning:

- |                                  |                          |  |
|----------------------------------|--------------------------|--|
| 1. Input sensitivity, RMS value  | : 80mVrms                |  |
| 2. Input sensitivity, RMS value  | : 80mVrms                |  |
| 3. SIF Input selector switch     | : 2.0 V                  |  |
| 4. Ground                        |                          |  |
| 5. IF gain control range         | : 65dB                   |  |
| 6. Input sensitivity, RMS value  | : 80mVrms                |  |
| 7. Input sensitivity, RMS value  | : 80mVrms                |  |
| 8. IF gain control range         | : 65dB                   |  |
| 9. Ground                        |                          |  |
| 10. Available tuner-AGC current  | : 2mA                    |  |
| 11. Available tuner-AGC current  | : Min : 0.3V Max : 13.5V |  |
| 12. Video output                 | : Min : 1.8V Max : 2.2V  |  |
| 13. Standard switch              | : Min : 0V Max : 0.8V    |  |
| 14. L' switch                    | : Min : 0V Max : 3.0V    |  |
| 15. IF gain control range        | : 65dB                   |  |
| 16. Ground                       |                          |  |
| 17. Internal reference voltage   |                          |  |
| 18. FPLL and VCO                 | : Min : 1mA Max : 4mA    |  |
| 19. AFC switch                   | : Min : 0V Max : 0.8V    |  |
| 20. FPLL and VCO                 | : Min : 1mA Max : 4mA    |  |
| 21. FPLL and VCO                 | : Min : 1mA Max : 4mA    |  |
| 22. AFC output                   | : 0.7 mA/kHz             |  |
| 23. DC supply                    | : Min : 4.5V Max : 9.0V  |  |
| 24. DC output voltage            | : 2V                     |  |
| 25. AF output-AM                 | : 2.2V                   |  |
| 26. FPLL and VCO                 | : Min : 1mA Max : 4mA    |  |
| 27. Input sensitivity, RMS value | : 80mVrms                |  |
| 28. Input sensitivity, RMS value | : 80mVrms                |  |

## 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:

- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally controlled (PLL) tuning via I<sup>2</sup>C-bus
- Off-air channels, S-cable channels and Hyperband
- World standardised mechanical dimensions and world standard pinning
- Compact size
- 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

## SAW FILTERS

**K9453:** Two channels switchable sound IF saw filter of BG, DK, I, L systems for input channel 2 and of L' system for input channel 1.

**K3953:** Two channel switchable video IF saw filter of BG, DK, I, L systems for input channel 2 and of L' system for input channel 1.

**J3950:** Video IF saw filter for I system

## DIGITAL TV SOUND PROCESSING

### MSP3410D

The MSP3410D is an I<sup>2</sup>C controlled single-chip multistandard sound processor for applications in analog and digital TV sets. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out is performed in a single-chip covering all European TV-standards. It is designed to simultaneously perform digital demodulation and decoding of NICAM-coded TV stereo sound, as well as demodulation of FM-mono TV sound and two FM systems according to the German or Korean terrestrial specs. It is also possible to do AM-demodulation according to the SECAM system. There is AGC for analog inputs: 0.14 - 3Vpp. All demodulation and filtering is performed on chip and is individually programmable. All digital NICAM standards (B/G, L, and I) are realised. Only one crystal clock (18.432Mhz) is necessary. External capacitors at each crystal pin to ground are required. They are necessary for tuning the open-loop frequency of the internal PLL and for stabilising the frequency in closed-loop operation. The higher the capacitors, the lower the clock frequency result. The nominal free running frequency should match the centre of the tolerance range between 18.433 and 18.431Mhz as closely as possible. By means of standardised I<sup>2</sup>S interface, additional feature processors (DPL35xx, Dolby Prologic processor for this chassis) can be connected to the IC.

I<sup>2</sup>S bus interface consists of five pins:

- I<sup>2</sup>S\_DA\_IN1...2 for input four channels (two channels per line) per sampling cycle (32Khz).
- I<sup>2</sup>DA\_OUT, for output, two channels per sampling cycle (32KHz).
- I<sup>2</sup>S\_CL, for timing of the transmission of I<sup>2</sup>S serial data, 1.024Mhz.
- I<sup>2</sup>S\_WS, for the word strobe line defining the left and right sample.

## Features:

- 5-band graphic equalizer (as in MSP3400C)
- Enhanced spatial affect (pseudo stereo / base-width enlargement as in MSP3400C)
- Headphone channel with balance, bass treble, loudness
- Balance for loudspeaker and headphone channels in dB units (optional)
- Additional pair of D/A converters for SCART2 out
- Improved over-sampling filters (as in MSP 3400C)
- Additional SCART input
- Full SCART in/out matrix without restrictions
- SCART volume in dB units (optional)
- Additional I<sup>2</sup>S input (as in MSP 3400C)
- New FM-identification (as in MSP 3400C)
- Demodulator short programming
- Auto-detection for terrestrial TV-sound standards
- Precise bit-error rate indication
- Automatic switch from NICAM to FM/AM or vice versa
- Improved NICAM synchronisation algorithm
- Improved carrier mute algorithm
- Improved AM-demodulation
- ADR together with DRP 3510A
- Dolby Pro Logic together with DPL 35xx A
- Reduction of necessary controlling
- Less external components
- Significant reduction of radiation

**Pinning:**

- |  |   |
|--|---|
| 1. ADR wordstrobe                                | 35. Analog Shield Ground 1                                      |
| 2. Not connected                                 | 36. Scart input 3 in right                                      |
| 3. ADR data output                               | 37. Scart input 3 in left                                       |
| 4. I <sup>2</sup> S 1 data input                 | 38. Analog Shield Ground 4                                      |
| 5. I <sup>2</sup> S data output                  | 39. Scart input 4 in, right                                     |
| 6. I <sup>2</sup> S wordstrobe                   | 40. Scart input 4 in, left                                      |
| 7. I <sup>2</sup> S clock                        | 41. Not connected   |
| 8. I <sup>2</sup> S data                         | 42. Analog reference voltage high voltage part                  |
| 9. I <sup>2</sup> S clock                        | 43. Analog ground   |
| 10. Not connected                                | 44. Volume capacitor MAIN                                       |
| 11. Standby (low-active)                         | 45. Analog power supply 8.0V                                    |
| 12. I <sup>2</sup> C Bus address select          | 46. Volume capacitor AUX  |
| 13. Digital control output 0                     | 47. Scart output 1, left  |
| 14. Digital control output 1                     | 48. Scart output 1, right                                       |
| 15. Not connected                                | 49. Reference ground 1 high voltage part                        |
| 16. Not connected                                | 50. Scart output 2, left  |
| 17. Not connected                                | 51. Scart output 2, right                                       |
| 18. Audio clock output                           | 52. Analog Shield Ground 3                                      |
| 19. Not connected                                | 53. Not connected   |
| 20. Crystal oscillator                           | 54. Not connected   |
| 21. Crystal oscillator                           | 55. Not connected   |
| 22. Test Pin                                     | 56. Analog output MAIN, left                                    |
| 23. IF input 2 (if ANA_IN1+is used only, connect | 57. Analog output MAIN, right to AVSS with 50 pF capacitor) 58. |
| 24. IF common                                    | 58. Reference ground 2 high voltage part                        |
| 25. IF input 1                                   | 59. Analog output AUX, left                                     |
| 26. Analog power supply +5V                      | 60. Analog output AUX, right                                    |
| 27. Analog ground                                | 61. Power-on-reset  |
| 28. Mono input                                   | 62. Not connected   |
| 29. Reference voltage IF A/D converter           | 63. Not connected   |
| 30. Scart input 1 in, right                      | 64. Not connected   |
| 31. Scart input 1 in, left                       | 65. I <sup>2</sup> S2-data input                                |
| 32. Analog Shield Ground 2                       | 66. Digital ground  |
| 33. Scart input 2 in, right                      | 67. Digital power supply +5V                                    |
| 34. Scart input 2 in, left                       | 68. ADR clock   |

**DOLBY PRO LOGIC PROCESSOR IC****DPL3519A**

The IC DPL3519A processor family is designed to decode Dolby encoded surround sound. The IC integrate the complete Dolby Surround Pro Logic decoding on chip without any necessary external circuitry. It designed as a coprocessor of the MSP34xx family.

It gets digitised sound from the audio processor IC MSP3410D for both C (centre) and S (surround) channels, and for both L (left) and R (right) channels. The analog L and R outputs are supplied by MSP3410D, while the analog S and C outputs are supplied by the DPL33519A.

Two I<sup>2</sup>S busses obtain synchronisation between the MSP and DPL :

I<sup>2</sup>S\_CL; for timing of the transmission of I<sup>2</sup>S serial data 1.024Mhz and I<sup>2</sup>S\_WS; The word strobe line defining the left and right sample at 32Khz. The IC is also I<sup>2</sup>C bus controlled to select the sound feature (Stereo, 3D-Phonic and Dolby Pro Logic).

**Pinning:**

- |   |                              |
|---|------------------------------|
| 1. Not connected                        | 16. Not connected            |
| 2. Not connected                        | 17. Not connected            |
| 3. Not connected                        | 18. Audio clock output       |
| 4. I <sup>2</sup> S1 data input         | 19. Digital control input    |
| 5. I <sup>2</sup> S1 data output        | 20. Crystal oscillator       |
| 6. I <sup>2</sup> S wordstrobe          | 21. Crystal oscillator       |
| 7. I <sup>2</sup> S clock               | 22. Test pin                 |
| 8. I <sup>2</sup> C data                | 23. Not connected            |
| 9. I <sup>2</sup> C clock               | 24. Not connected            |
| 10. Not connected                       | 25. Not connected            |
| 11. Standby (low-active)                | 26. Analog power supply +5 V |
| 12. I <sup>2</sup> C-Bus address select | 27. Analog ground            |
| 13. Digital control IO 0                | 28. Mono input               |
| 14. Digital control IO 1                | 29. Reference voltage        |
| 15. Not connected                       | 30. Scart input 1 in, right  |

- |  |  |
|--|--|
| 31. Scart input 1 in, left                     | 50. Scart output 2, left                 |
| 32. Analog Shield Ground 1                     | 51. Scart output 2, right                |
| 33. Scart input 2 in, right                    | 52. Analog Shield Ground 3               |
| 34. Scart input 2 in, left                     | 53. Not connected                        |
| 35. Analog Shield Ground 2                     | 54. Not connected                        |
| 36. Scart input 3 in, right                    | 55. Not connected                        |
| 37. Scart input 3 in, left                     | 56. Analog output Channel 1, left        |
| 38. Analog Shield Ground 4                     | 57. Analog output Channel 1, right       |
| 39. Not connected                              | 58. Reference ground 2 high voltage part |
| 40. Not connected                              | 59. Analog output Channel 2, left        |
| 41. Not connected                              | 60. Analog output Channel 2, right       |
| 42. Analog reference voltage high voltage part | 61. Power-on-reset                       |
| 43. Analog ground                              | 62. Not connected                        |
| 44. Volume capacitor Channel1                  | 63. Not connected                        |
| 45. Analog power supply 8.0 V                  | 64. I2S2-data output                     |
| 46. Volume capacitor Channel 2                 | 65. I2S2-data input                      |
| 47. Scart output 1, left                       | 66. Digital ground                       |
| 48. Scart output 1, right                      | 67. Digital power supply +5 V            |
| 49. Reference ground 1 high voltage part       | 68. Not connected                        |

## HEADPHONE OUTPUT

### TDA1308

The TDA1308 is an integrated class AB stereo headphone driver. It gets its input from two analog audio outputs (DACA\_L and DACA\_R) of MSP3410D. The gain of the output is adjustable by the feedback resistor between the inputs and outputs.

#### 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

#### Pinning:

- |                             |                              |
|-----------------------------|------------------------------|
| 1. Output A (Voltage swing) | : Min : 0.75V, Max : 4.25V   |
| 2. Inverting input A        | : Vo(clip) : Min : 1400mVrms |
| 3. Non-inverting input A    | : 2.5V                       |
| 4. Ground                   |                              |
| 5. Non-inverting input B    | : 2.5V                       |
| 6. Inverting input B        | : Vo(clip) : Min : 1400mVrms |
| 7. Output B (Voltage swing) | : Min : 0.75V, Max : 4.25V   |
| 8. Positive supply          | : 5V, Min : 3.0V, Max : 7.0V |

## AUDIO OUTPUT

### TDA7265

The TDA7265 is a 25W+25W stereo sound amplifier with mute/stand-by facility. STPA control signal coming from microcontroller (when it is at high level) activates the mute function. IC is muted when mute port is at low level. Two stereo audio signals coming from audio module is injected to the inputs of the IC and a power of 12W<sub>rms</sub> (10%) is obtained. An external pop-noise circuitry pulls AF inputs of the IC in order to eliminate pop noise when TV is turned on or off via mains supply connection. It is possible to adjust the gain of the amplifiers by feedback external resistors.

#### Features:

- Wide supply voltage range (up to 50V ABS Max.)
- Split supply
- High output power: 25+25 W @ TDA = 10%, RL = 8ohm, VS = ±20V
- No pop at turn-on / off
- Mute (pop free)
- Stand-By feature (low IQ)
- Few external components
- Thermal overload protection
- Adjustable gain via an external resistor

**Pinning:**

1. Output (1)
2. +Vs
3. Output (2)
4. Mute / St-By
5. -Vs
6. Input (2)
7. Ground
8. Input (1)

**VIDEO INPUT AND OUTPUT SOURCE SWITCHING****TEA6415C**

Video switching is performed by the I2C controlled IC TEA6415C with a gain of 0dB. Inputs to the video switch are IF\_CVBS, three SCART video signals, front-AV video signal, SVHS luma signal, and one of SC1\_R or SVHS\_C. Outputs of the video switch are three SCART video signals (SC1\_OUT\_V and SC3\_OUT\_V are the same), one video output for the PIP module, Chroma signal (C), and luma (Y) or CVBS signal.

**Features:**

- 20 MHz 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

**Pinning:**

- |            |   |            |     |                     |        |          |          |     |
|------------|---|------------|-----|---------------------|--------|----------|----------|-----|
| 1. Input   | : | Max        | :   | 2Vpp, Input Current | :      | 1mA, Max | :        | 3mA |
| 2. Data    | : | Low level  | :   | -0.3V               | Max    | :        | 1.5V,    |     |
|            |   | 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,    |     |
|            |   | 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 |

**VIDEO OUTPUT AMPLIFIER STAGE****TDA6111Q**

The TDA6111Q is a video output amplifier with 16Mhz bandwidth. It has a high slew rate. Automatic black-current stabilisation is possible by black-current measurement output. It has two cathode outputs: one for DC currents and one for transient currents. A feedback output is separated from the cathode outputs. An internal protection exists against positive appearing cathode-ray-tube flashover discharges with ESD protection.

**Features:**

- High bandwidth and slew rate
- Black-current measurement output for Automatic Black-current Stabilisation (ABS)
- Two cathode outputs; one for DC currents, and one for transient currents
- A feedback output separated from the cathode outputs
- Internal protection against positive appearing cathode-ray Tube (CRT) flashover discharges
- ESD protection
- Simple application with a variety of colour decoders
- Differential input with a designed maximum common mode input capacitance of 3pF, a maximum differential mode input capacitance of 0.5 pF and a differential input voltage temperature drift of 50 uV/K
- Defined switch-off behaviour.

**Pinning:**

1. Non-inverting voltage input
2. Supply voltage LOW
3. Inverting voltage input
4. Ground, substrate
5. Black current measurement output
6. Supply voltage HIGH
7. Cathode transient voltage output
8. Cathode CD voltage output
9. Feedback voltage output

**VERTICAL OUTPUT STAGE****TDA9379FA**

The IC TDA9379FA is the vertical deflection booster circuit. Two supply voltages, +12V and –12V are needed to scan the inputs VERT+ and VERT-, respectively. And a third supply voltage, +45V for the flyback limiting are needed. The vertical deflection coil is connected in series between the output and feedback to the input.

**Features:**

- Power Amplifier
- Thermal Protection
- Output Current up to 2.6App
- Flyback Voltage up to 90V
- External Flyback Supply

**Pinning:**

1. Inverting Input
2. Supply Voltage
3. Flyback Supply
4. GND or Negative Supply
5. Output
6. Output Stage Supply
7. Non-inverting Input

**TVTEXT CONTROLLER****(SDA5550M)**

The SDA5550M 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 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 17 Kbytes. AK41 has the version without internal ROM. This device can support external memory up to 1Mbyte ROM and RAM. TVTEXT Controller contains a data slicer for VPS, WSS, PDC and TXT, an acceleration acquisition hardware module, a display generator for Level 1.5 TXT and powerful On screen Display capabilities based on parallel attributes, and pixel oriented characters (DRCS). The 8 bit Microcontroller operates at 360nsec cycle time (min). Controller with dedicated hardware does most of the internal TXT acquisition processing, transfer data to/from external memory interface and receives/transmits data via I<sup>2</sup>C-firmware user interface. SDA5550M is realized in 0.25 micron technology with 2.5V supply voltage and 3.3V I/O compatible.

The IC produces the following input or output control signals; AGC\_CON, MODE\_SW, L / L', PIP\_MODS, PIP\_SEL, ON/OFF (stand-by), SC1..3\_IN\_AV (pin 8 information from 3 SCARTs), AFC, MUTE (to mute audio output IC), I2CEN.

**Features:****■ General**

- Feature selection via special function register
- Simultaneous reception of TXT, VPS, PDC and WSS (Line 23)
- Supply Voltage 2.5 and 3.3V
- P-MQFP100 Package

**■ Microcontroller**

- Single external 6Mhz crystal, all necessary clocks are generated internally
- CPU speed selectable via special function registers
- Normal mode 33.33 MHz CPU clock, Power Save mode 8.33MHz
- 8 bit 8051 instruction set compatible CPU
- 360 ns minimum instruction cycle

- Two 16 bit timers, Watchdog timer
- PWM unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit), UART
- I<sup>2</sup>C interface

#### ■ Memory

- Non-multiplexed 8-bit data and 16 (up to 20) bit address bus
- Memory banking up to 1Mbyte
- Eight 16 bit data pointer registers (DPTR)
- 256 bytes on-chip internal RAM
- 128 bytes extended stack memory
- 16 Kbytes Extended RAM for Display Memory

#### ■ Display

- ROM character set supports all East/West European Languages
- Parallel display attributes
- Single/Double Width/Height of characters
- Variable flash rate
- Programmable screen size
- Up to 16 colours per DRCS character
- Shadowing
- Support of Progressive Scan and 100Hz
- Contrast Reduction

#### ■ Ports

- One 8 bit I/O port with open drain output and optional I<sup>2</sup>C Bus emulation support (Port 1)
- Two 8 bit multifunction I/O ports (Port1, Port3)
- One 4 bit port operating as digital or analog inputs for 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 functions (P4.0, 4.1, 4.4)

## SERIAL ACCESS 32K EEPROM (24LC32-W)

It is the 32Kbit electrically erasable programmable memory. The memory is compatible with the I2C standard, two wire serial interface, which uses a bi-directional data bus and serial clock.

#### Features:

- Single supply with 3.3V (operation down to 2.5V)
- Compatible with I2C extended addressing
- 2-wire I2C serial interface supports 100kHz protocol
- Self-timed ERASE and WRITE cycles
- Power on/off data protection circuitry
- Hardware write protect
- 1,000,000 Erase/Write cycles guaranteed
- 32-byte page or byte writes modes available
- Schmidt trigger filtered inputs for noise suppression
- Output slope control to eliminate ground bounce
- 2 ms typical write cycle time, byte or page
- Electrostatic discharge protection > 4000V
- Data retention > 200 years
- 8-pin PDIP and SOIC packages

#### Pinning:

1. E0 User Configurable Chip Select
2. E1 User Configurable Chip Select
3. E2 User Configurable Chip Select
4. Vss Ground
5. SDA Serial Address/Data I/O
6. SCL Serial Clock
7. WC Write Protect Input
8. Vcc +2.5V to 6.0V Power Supply

## EPROM (M27W401)

The M27W401 is a low voltage 4Mbit EPROM (UV erasable). It is ideally suited for micro processor systems requiring large data or program storage and is organised as 522,288 by 8 bits. The M27W401 operates in the read mode with a supply voltage as low as 2.7V at -40 to 85°C temperature range.

### Features:

- Organisation 512K x 8
- Single 3.3V power supply
- Operationally Compatible with Existing Megabit EPROMs
- Industry Standard 32-pin Dual-in-line Package
- All inputs/Outputs Fully TTL Compatible
- 8-Bit Output for Use in Microprocessor-Based Systems
- Power Saving CMOS Technology
- 3-State Output Buffers
- 400 mV Minimum DC Noise Immunity with Standard TTL Loads
- Latch up immunity of 250mA on all input and output pins
- No pull-up resistors required
- Low power dissipation

## 100Hz FEATURE BOX

### VPC3215, CIP3250, SDA9400, DDP3310

The feature box consists of four I<sup>2</sup>C controlled ICs:

Video Processor	VPC3215
Component Interface Processor	CIP3250
Digital Image Processor	SDA9400
Digital Deflection Processor	DDP3310

The input supplies to the feature box are +12V, +5V. The ICs do also need a supply of 3.3V, which is regulated by IC4 LM314.

Besides the composite video in normal operation and luma/chroma inputs in the SVHS applications, there are also R-G-B-FB inputs from the PIP module.

OSD R-G-B-FB inputs from the Megatext IC or from the controller in the case of TV-text option. While the 50Hz sync signals for PIP are supplied by the VPC3215, the 100Hz sync signals for OSD are supplied by the DDP3310.

Control signals for HV stage such as VertQ, Vert, HDrive, EW (East-West) and SVM (Scan Velocity Modulation) are produced by this module. VProt and HProt input signals are used for protection. There are also a flyback sample signal from HV stage and the sense signal from the CRT board.

The feature box also supports the VGA mode.

### VPC32X5 (Video Processor)

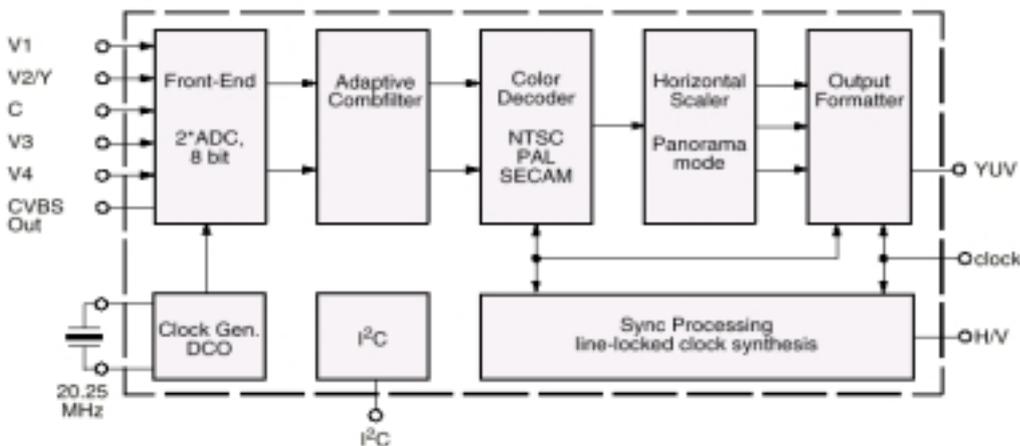


Figure 1

As seen in figure 1 all the processings in VPC are digital. This IC has four composite, one SVHS input, and one composite output which is used for teletext. In AK28 the main video input is Vin2, which is also used for luma input in SVHS applications.

After switching the inputs the signals are converted to digital via two 8 bit ADCs. And these digital data are processed to produce the 4:2:2 formatted digital YUV signals. The main features are, multi-standard color decoding including all sub-standards, multi-standard sync processing, adaptive 4H comb filter, linear horizontal scaling, as well as nonlinear horizontal scaling (panorama vision.) It provides 50Hz vertical and 15625Hz horizontal sync signals for the PIP module.

## Features:

- all-digital video processing
- high-performance adaptive 4H comb filter Y/C separator with adjustable vertical peaking
- multi-standard color decoder PAL/NTSC/SECAM including all substandards
- 4 composite, 1 S-VHS input, 1 composite output
- integrated high-quality A/D converters and associated clamp and AGC circuits
- multi-standard sync processing
- linear horizontal scaling (0.25 ... 4), as well as non-linear horizontal scaling 'panorama vision'
- PAL+ preprocessing (VPC 3215)
- line-locked clock, data and sync output (VPC 3215)
- display/deflection control (VPC 3205)
- submicron CMOS technology
- I<sup>2</sup>C-Bus Interface
- one 20.25 MHz crystal, few external components
- 68-pin PLCC package

## Pinning:

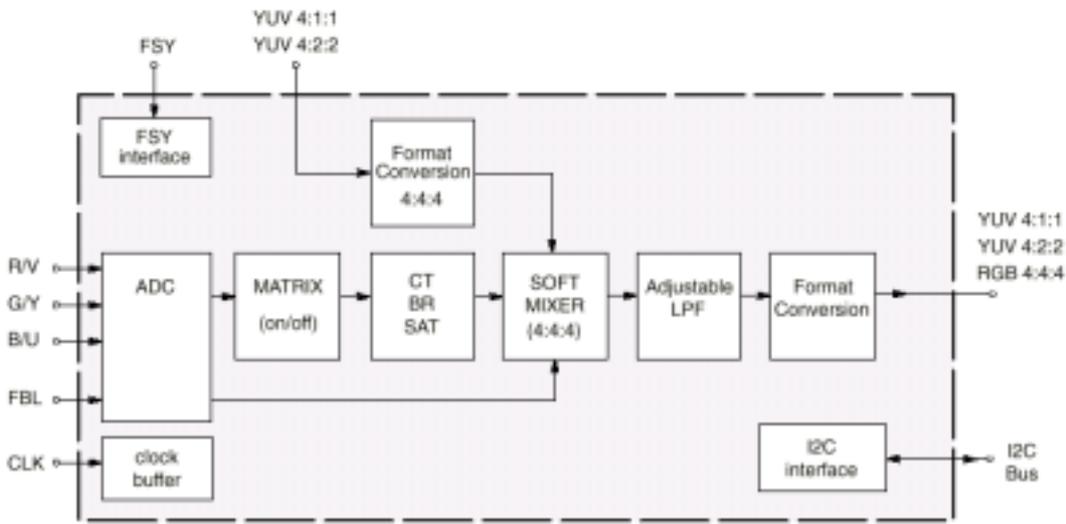
1	Ground	35.	Ground
2	Ground	36.	Supply Voltage
3	5 MHz Clock Out	38...47.	Picture Bus Chroma
4	Standby Supply Volt	48...50.	Picture Bus Priority
5	Analog Crystal Out	51.	Ground
6	Analog Crystal In	52.	VGA Input
7	Ground	53.	Front-End/ Back-End Data
9	Ground	54.	Reset Input, Active Low
10	Interlace Out	55.	I <sup>2</sup> C Bus Data
12	Vertical Sync Pulse	56.	I <sup>2</sup> C Bus Clock
13	Front Sync Pulse	57.	Test Pin, connect to GND
14	Main Sync/Horz Sync Pulse	58.	Video 4 Analog Input
15	Helper Line Output	59.	Ground
16.	Horz Clamp Pulse	60.	Video 3 Analog Input
17.	Active Video Out	61.	Video 2 Analog Input
18.	Double Output Clock	62.	Video 1 Analog Input
19.	Output Clock	63.	Chroma/ Video 4 Analog Input
20...29.	Picture Bus Luma	64.	Analog Video Output
26.	Ground	65.	Analog Shield GND F
27.	Not Connected	66.	Supply Voltage, Analog Front-End
30.	Main Clock Output 20.25 MHz	67.	Signal Ground for Analog Input
31.	Supply Volt	68.	Reference Voltage Top, Analog
34.	Ground		

## CIP3250:

The IC is used to interface the analog input, which is output from the PIP module (SCART RGB or PIP RGB). As can be seen from the block diagram, there is a CT-BR-SAT block, which is used for luma contrast, brightness, hue, and color saturation correction. The soft mixer is controlled by the fast blank signal.

## Features:

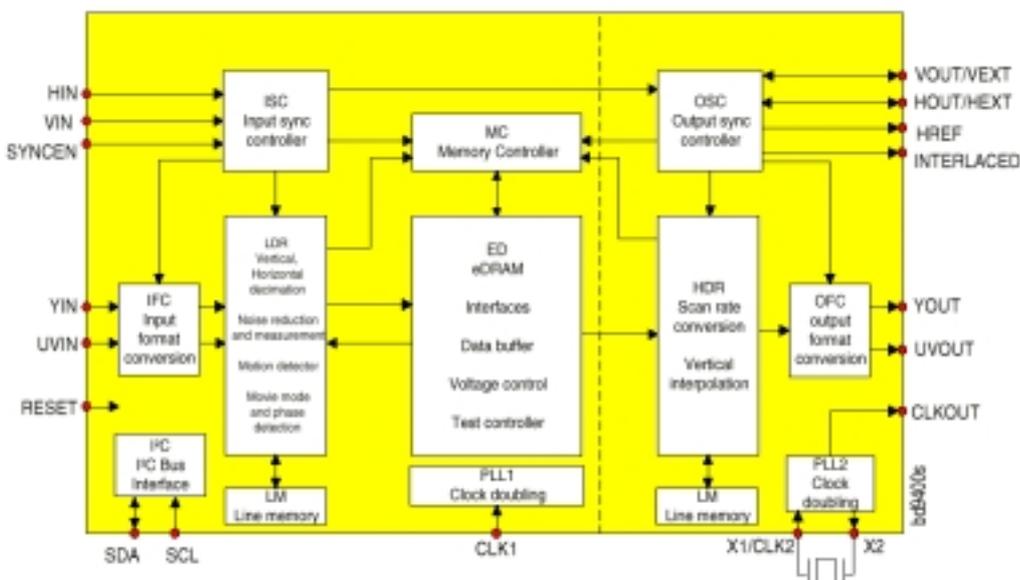
- analog input for RGB or YUV and Fast Blank
- triple 8 bit analog to digital converters for RGB/YUV with internal programmable clamping
- single 6 bit analog to digital converter for Fast Blank signal
- digital matrix RGB % YUV (Y, B-Y, R-Y)
- luma contrast and brightness correction for signals from analog input
- color saturation and hue correction for signals from analog input
- digital input for DIGIT 2000 or DIGIT 3000 formats
- digital interpolation to 4:4:4 format
- high quality soft mixer controlled by Fast Blank signal
- programmable delays to match digital YUVin and ana-log RGB/YUV
- variable low pass filters for YUV output
- digital output in DIGIT 2000 and DIGIT 3000 formats, as well as RGB 4:4:4
- I<sup>2</sup>C bus interface
- clock frequency 13.5... 20.25 MHz



**Pinning:**

- |   |                                    |
|---|------------------------------------|
| 1. Standby connect to ground            | 54. Main Clock Input               |
| 2...9. Blue Output                      | 55. Reset Input                    |
| 10...17. Green/Luma Output              | 56. In Test Mode connect to ground |
| 18. Pad Ground                          | 57. Analog Supply Voltage +5 V     |
| 19. Pad Supply Voltage +5 V/+3.3 V      | 58. Analog Ground                  |
| 20...27. Red/Chroma Output              | 59. Reference External Capacitor   |
| 28. Active Video Output                 | 60. Substrate connect to ground    |
| 29. Active Video Input                  | 61. Fast Blank Input               |
| 30. Front Sync Input                    | 62. Ground Fast Blank              |
| 31. I <sup>2</sup> C Clock Input/Output | 63. Blue/U Input                   |
| 32. I <sup>2</sup> C Data Input/Output  | 64. Ground Blue/U                  |
| 33...35. Picture Bus Priority           | 65. Green/Luma Input               |
| 36...43. Chroma Input                   | 66. Ground Green/Luma              |
| 44...51. Luma Input                     | 67. Red/V Input                    |
| 52. Digital Ground                      | 68. Ground Red/V                   |
| 53. Digital Supply Voltage +5 V         |                                    |

**SDA9400:**



SDA9400 converts the scan rate from 50/60 Hz to 100/120 Hz

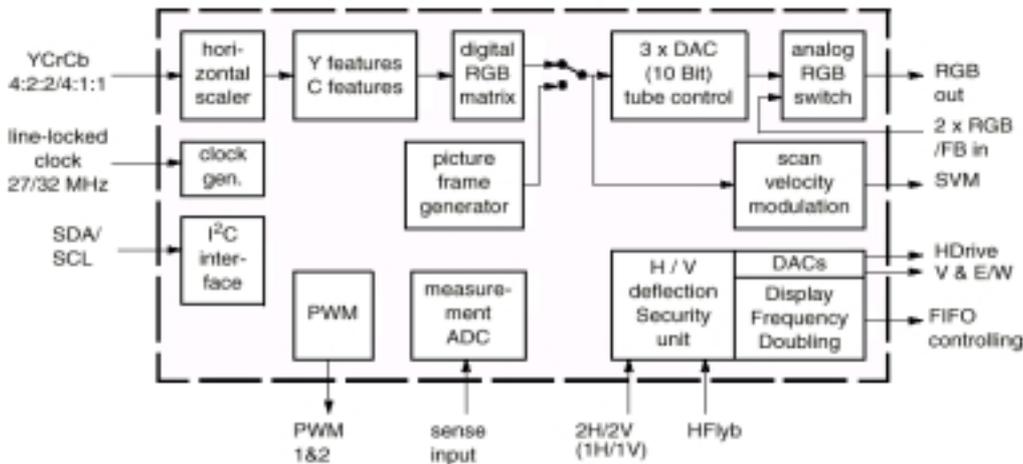
**Features:**

- **Two input data formats**
  - 4:2:2 luminance and chrominance parallel (2 x 8 wires)
  - ITU-R 656 data format (8 wires)
- **Two different representations of input chrominance data**
  - 2's complement code
  - Positive dual code
- **Flexible input sync controller**
- **Flexible compression of the input signal**
  - Digital vertical compression of the input signal (1.0, 1.25, 1.5, 1.75, 2.0, 3.0, 4.0)
  - Digital horizontal compression of the input signal (1.0, 2.0, 4.0)
- **Noise reduction**
  - Motion adaptive spatial and temporal noise reduction (3D-NR)
  - Temporal noise reduction for luminance frame based or field based
  - Temporal noise reduction for chrominance field based
  - Separate motion detectors for luminance and chrominance
  - Flexible programming of the temporal noise reduction parameters
  - Automatic measurement of the noise level (5 bit value, readable by I<sup>2</sup>C bus)
- **3-D motion detection**
  - High performance motion detector for scan rate conversion
  - Global motion detection flag (readable by I<sup>2</sup>C bus)
  - Movie mode and phase detector (readable by I<sup>2</sup>C bus)
- **TV mode detection by counting line numbers (PAL, NTSC, readable by I<sup>2</sup>C bus)**
- **Embedded memory**
  - 5 Mbit embedded DRAM core for field memories
  - 192 kbit embedded DRAM core for line memories
- **Flexible clock and synchronization concept**
  - Decoupling of the input and output clock system possible
- **Scan rate conversion**
  - Motion adaptive 100/120 Hz interlaced scan conversion
  - Motion adaptive 50/60 Hz progressive scan conversion
  - Simple static interlaced and progressive conversion modes for 100/120 Hz interlaced or 50/60 Hz progressive scan conversion : e.g. ABAB, AABB, AA\*B\*B, AAAA, BBBB, AB, AA\*
  - Simple progressive scan conversion with joint lines:
    - 50 Hz -> 60, 70, 75 Hz progressive
    - 60 Hz -> 70, 75 Hz progressive
  - Large area and line flicker reduction
- **Flexible digital vertical expansion of the output signal (1.0, ... [1/32] ... , 2.0)**
- **Flexible output sync controller**
  - Flexible positioning of the output signal
  - Flexible programming of the output sync raster
  - External synchronization by backend IC possible  
(e.g. split screen for one TV channel with joint lines and one PC VGA channel)
- **Signal manipulations**
  - Insertion of coloured background
  - Vertical and/or horizontal windowing with four different speed factors
  - Flash generation (for supervising applications, motion flag readable by I<sup>2</sup>C bus)
  - Still frame or field
  - Support of split screen applications
  - Multiple picture display - Tuner scan (4 and 16 times for 4:3, 12 times for 16:9 tubes)
  - Support of multi picture display with PIP or front-end processor with integrated scaler  
(e.g. 9 times display of PIP pictures, picture tracking, random pictures, still-in-moving picture, moving-in-still picture)
- **I<sup>2</sup>C-bus control (400 kHz)**
- **3.3 V ± 5% supply voltage**

## Pinning:

2,8,24,42,55	Supply volt ( VSS=0V )	54.	System clock 1
9,25,41,56	Supply volt ( VDD=3.3V )	17,...,10	Data output UV
36,52,58	Supply volt ( VSS=0V )	7,...,3;1;64;63	Data output Y
35,51,53,57,59	Supply volt ( VDD=3.3V )	62	Horz active video out
43,...,50	Data input Y	61	V-Sync out / Ext V-Sync
31,...,34;37,...,40	Data input UV	60	H-Sync out / Ext H-Sync
30	System reset.	18	Interlace signal vert deflection
23	H-Sync input	28	Crystal conn / System clock 2
22	V-Sync input	27	Crystal connection
29	Sync enable input	26	Clock output
21	I2C-Bus data line	19	Test input
20	I2C-Bus clock line		

## DDP3310:



It is the display and deflection processor. All the horizontal and vertical stages are driven by this IC. The last controls such as contrast, brightness and saturation of the actual video signal, OSD and VGA are accomplished by the blocks in DDP. Tube measurement and SVM controls are also managed by this IC.

## Features:

### Video processing

- linear horizontal scaling (0.25 ... 4)
- non-linear horizontal scaling “panoramavision”
- dynamic peaking
- soft limiter (gamma correction)
- color transient improvement
- programmable RGB matrix
- picture frame generator
- two analog RGB/Fast-Blank inputs

### Deflection processing

- scan velocity modulation output
- high-performance H/V deflection
- EHT compensation for vertical / East/West
- soft start/stop of H-Drive
- vertical angle and bow
- differential vertical output
- vertical zoom via deflection
- horizontal and vertical protection circuit
- adjustable horizontal frequency for VGA/SVGA display

### Miscellaneous

- selectable 4:1:1/ 4:2:2 YC r C b input
- selectable 27/ 32-MHz line-locked clock input
- crystal oscillator for horizontal protection
- automatic picture tube adjustment (cutoff, white-drive)
- single 5-V power supply

- hardware for simple 50/60-Hz to 100/ 120-Hz con-version (display frequency doubling)
- two I<sup>2</sup>C-controlled PWM outputs
- beam current limiter

#### **Pinning:**

- |                                    |   |
|------------------------------------|---|
| 1. Supply Voltage                  | 28. Sup Volt, Analog Back-end                 |
| 2. Gnd, Output Pin Driver          | 29. VRD/BCS DAC Ref, Beam Current Safety      |
| 3. Additional VSYNC input          | 30. Fast-Blank1 Input                         |
| 4. Read counter Reset              | 31. Analog Red1 Input                         |
| 5. FIFO Read Enable                | 32. Analog Green1 Input                       |
| 6. FIFO Write Enable               | 33. Analog Blue1 Input                        |
| 7. FIFO Write counter Reset        | 34. Fast-Blank2 Input                         |
| 8. Horz. Drive Output              | 35. Analog Red2 Input                         |
| 9. Horz. Flyback Input             | 36. Analog Green2 Input                       |
| 10. Safety Input                   | 37. Analog Blue2 Input                        |
| 11. Vertical Protection Input      | 38. Test Pin                                  |
| 12. Select of H-Drv Freq. Range    | 39. Reset Input, active low                   |
| 13. Clock Sel 40.5 or 27/32MHz     | 40. PWM out                                   |
| 14. Clock select 27/32 MHz         | 41. PWM out                                   |
| 15. Range Switch2, Measure ADC     | 42. Half-Contrast                             |
| 16. Range Switch1, Measure ADC     | 43...50. Picture Bus Chroma                   |
| 17. Sense ADC Input                | 51. Supply Volt, Digital Circuitry            |
| 18. Ground, MADC Input             | 52. Ground, Digital Circuitry                 |
| 19. Differential Vert Sawtooth Out | 53. Sys. Clock Input(27/32/40.5MHz)           |
| 20. Differential Vert Sawtooth Out | 54...61. Y0 Picture Bus Luma                  |
| 21. E/W Output                     | 62. Single LLC Input(13.5/16MHz)              |
| 22. Reference Input for RGB DACs   | 63. Horizontal Sync Input                     |
| 23. Scan Velocity Modulation       | 64. Vertical Sync Input                       |
| 24. Analog Output Red              | 65. Analog Crystal Out (5-MHz Security Clock) |
| 25. Analog Output Green            | 66. Analog Crystal In (5-MHz Security Clock)  |
| 26. Analog Output Blue             | 67. I <sup>2</sup> C-Bus Data                 |
| 27. Ground, Analog Back-end        | 68. I <sup>2</sup> C-Bus Clock                |

# AK41 CHASSIS MANUAL ADJUSTMENTS PROCEDURE

## A) PRELIMINARY

Before starting with the alignment procedure, make sure that all the potentiometers on the chassis and also screen and focus pots are in the medium position.

## B) SYSTEM VOLTAGE ADJUSTMENT

- Inputs*
- AC power (220V 50 Hz).
  - PAL B/G test pattern via RF  
(PAL I test pattern for PAL I TV's, SECAM D/K pattern, SECAM L/L'K' TV's).
- Outputs*
- Digital voltmeter to anode of D110.
- Display*
- System voltage
- Action*
- Apply power. Check that The stand-by led lights.
  - Select TV mode and tune to the applied test pattern via local test keyboard.  
Chassis should start normally.
  - Adjust all analogue controls (volume, bass, treble, brightness, contrast, colour) to minimum settings.
  - Adjust VR127 according to the following different types of CRT's

### SYSTEM VOLTAGE

135V±0.5V

135V±0.5V

135V±0.5V

135V±0.5V

### TYPE OF CRT

PHILIPS A66EAK552X54

PHILIPS A66EAK071X54

VIDEOCOLOR A66ECY13X12

PHILIPS W66ESF002X44

## C) AFC ADJUSTMENT

- Inputs*
- AC power.
  - 38.9 MHz test pattern for PAL B/G, PAL-SECAM B/G or 39.5 MHz test pattern for PAL I model  
(90dBmV) to Z403 SAW filter input terminals 1 and 2.
- Outputs*
- Digital Voltmeter to AFC point (pin22 of IC401)
- Display*
- AFC Voltage.
- Action*
- Adjust VL401 for 2.5±0.1 Volts. TV should automatically tune to a station when search tuning is activated.

## D) FOCUS ADJUSTMENT

- Inputs*
- AC power
  - PAL B/G test pattern via RF input.
- Outputs*
- Picture tube drive.
- Display*
- Picture
- Action*
- Select TV mode and tune to the signal.
  - Adjust focus potentiometer (the upper pot on the rear side of the FBT transformer) for optimum focusing drive.

## E) SCREEN ADJUSTMENT

- Inputs*
- AC power
  - PAL B/G Colour Bar test pattern via RF
- Outputs*
- 1/100 Oscilloscope probe to RGB cathodes on CRT baseboard.  
**NOTE: Ground pin of probe will be connected to 1st pin (GND) of the CRT socket.**
- Display*
- RGB ratio
- Action*
- Select PAL B/G Colour Bar pattern using the local test keyboard and the user remote control unit.
  - Adjust all control functions (brightness, colour and contrast) to minimum settings.
  - Measure the most sensitive cathode
  - Adjust the screen potentiometer (lower pot on the rear side of FBT transformer) until cathode voltage becomes 150V.

## F) IF ADJUSTMENT FOR L' MODE

- Inputs*
- AC power.
  - 38.9 MHz test pattern for PAL B/G, PAL-SECAM B/G or 39.5 MHz test pattern for PAL I model.  
(90dBmV) to Z403 SAW filter input terminals 1 and 2.
- Outputs*
- Digital Voltmeter to AFC point. (pin22 of IC401)
  - Digital Voltmeter to AFC\_L point. (pin14 of IC401)
- Display*
- AFC Voltage.
- Action*
- Firstly adjust VL401 for 2.5 ± 0.1 Volts. TV should automatically tune to a station.  
when search tuning is activated.
  - Adjust VR401 for 2.5±0.1 Volts at the AFC\_L point.

# AK41 CHASSIS PRODUCTION MODE ADJUSTMENTS PROCEDURE

## A) PRELIMINARY

All system, geometry and white balance alignments are performed in production service mode. Before starting the production mode alignments, make sure that all manual alignments are done correctly. To start production mode alignments enter the MAIN MENU and enter the code **1675** by pressing digit keys. Production mode items will appear on the screen. Production mode groups will be displayed with different colours of headlines, so in order to access a production alignment group press the colour key of the related group on the remote control transmitter. After selecting one of the production service mode groups, you can access its items by pressing the cursor-up and/or cursor-down keys. You can change the value of an item by pressing cursor-left and/or cursor-right keys on the remote control transmitter.

In order to switch between other group of items press the colour key of this groups headline.

To store the settings press OK key. In order to leave this menu press MENU key.

## B) HORIZONTAL AND VERTICAL GEOMETRY ALIGNMENTS

- Switch the program to crosshatch test pattern.
- Press RED key to access this group of item.
- Select the items by pressing cursor-up and/or cursor-down keys.
- Adjust the item by pressing cursor-left and/or cursor-right after selecting that item.
- Store the settings by pressing OK key.
- Switch to another item group by pressing the colour keys of the related coloured headline of that group.
- Exit production mode by pressing the MENU key on the remote transmitter..

### 1) V-SHIFT

- Press cursor-left and/or cursor-right buttons till the test pattern is vertically centred, i.e. horizontal line at the centre of the test pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust V-SHIFT item if the adjustment becomes improper after some other geometric adjustments are done

### 2) V-SIZE

- Press cursor-left and/or cursor-right buttons till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear. Check and readjust V-SIZE item if the adjustment becomes improper after some other geometric adjustments are done.

### 3) H-SHIFT

- Adjust H-SHIFT item by pressing cursor-left and/or cursor-right buttons till test pattern is horizontally in equal distance both to right and left sides of the picture tube. Check and readjust H-SHIFT item if the adjustment becomes improper after some other geometric adjustments are done.

### 4) H-SIZE

- Adjust H-WIDTH item by pressing cursor-left and/or cursor-right buttons till no under-scan condition will happen, i.e. no white bars on the left and right side of the test pattern will be visible nor the picture will be so wide. Check and readjust H-WIDTH item if the adjustment becomes improper after some other geometric adjustments are done.

### 5) S-COR

- Press cursor-left and/or cursor-right buttons till the size of squares on both the upper and lower part of test pattern become equal to the squares laying on the vertical centre of the test pattern. Check and readjust S-COR item if the adjustment becomes improper after some other geometric adjustments are done.

### 6) LINRT

- Press cursor-left and/or cursor-right buttons till all the size of squares of the test pattern become in equal size from the top of the screen to its bottom of the whole screen. Check and readjust LINRT item if the adjustment becomes improper after some other geometric adjustments (especially after than S-COR adjustment are done).

### 7) ANGLE

- Press cursor-left and/or cursor-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.

### 8) BOW

- Press cursor-left and/or cursor-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.

### 9) TRPEZ

- Press cursor-left and/or cursor-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.

### 10) PARAB

- Press cursor-left and/or cursor-right buttons till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube without any bending to left or to right side of the screen.. Check and readjust PARAB item if the adjustment becomes improper after some other geometric adjustments are done.

### 11) U. COR

- Press cursor-left and/or cursor-right buttons till vertical lines at the upper corners of the picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust U. COR item if the adjustment becomes improper after some other geometric adjustments are done.

### 12) L. COR

- Press cursor-left and/or cursor-right buttons till vertical lines at the lower corners of the picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust L. COR item if the adjustment becomes improper after some other geometric adjustments are done.

## C) VIDEO ALIGNMENTS

- Switch the program to crosshatch test pattern for geometric adjustments.
- Switch the program to colour bar test pattern for video adjustments.
- Press GREEN key to access this group of item.
- Select the items by pressing cursor-up and/or cursor-down keys.
- Adjust the item by pressing cursor-left and/or cursor-right after selecting that item.
- Store the settings by pressing OK key.
- Switch to another item group by pressing the colour keys of the related coloured headline of that group.
- Exit production mode by pressing the MENU key on the remote transmitter..

### 1) RGn, GGn, BGn: WHITE BALANCE ADJUSTMENT

- Apply WHITE test pattern via RF.

Adjust all analogue functions to medium level and set GGn, RGn, BGn at value 80, if needed.

Use Colour analyser and monitor the colour temperature (X, Y) on colour analyser.

Select RGn and BGn by cursor-up and/or cursor-down buttons and change the values by cursor-left and/or cursor-right buttons till the following values are read:

X=285±10

Y=293±10 on the colour analyser.

### 2) RRf, GRf, BRf

Set the values of these items as 62 (constant).

### 3) YDF

Apply COLOUR BAR test pattern.

Select YDF item cursor-up and/or cursor-down buttons.

Adjust YDF by pressing cursor-left and/or cursor-right buttons till the colour transients on the colour bar pattern becomes as sharper and possible as colours between transients do not mix with each other. Check and readjust YDF item if the adjustment becomes improper after YDV adjustment is done.

### 4) AGC

Apply PAL BG signal, VHF-3 Channel-12 and 60dBmV RF signal level.

Adjust AGC item till voltage at the AGC point (pin1 of the tuner) becomes 3.0 volts.

### 5) TLAN

This item and its settings will be defined later.

### 6) APS

This value of this item toggles between ON and OFF while pressing the cursor-left and cursor-right after this item is selected by cursor-up and/or cursor-down buttons.

In order to activate APS installation procedure whenever TV is turned select ON for the very first time.

In order to start TV without APS installation procedure select OFF.

### 7) T\_T

This item is used for the Tuner Selection.

SAM, THO, SIE, ALP, MK2 and MK3 are for Samsung, Thomson, Siemens, Alps and Philips MP2/MP3, respectively.

### 8) T\_P

This item is used for the Tuner Selection.

SAM, THO, TEM, and MK2 are for Samsung, Thomson, Temic, and Philips, respectively.

### 9) EXT3

This item is toggles between ON and OFF and is used to enable and disable EXT3, respectively.

### 10) CLT

This item is used to set the Menu colors. 5 choices are possible.

## D) SERVICE ALIGNMENTS

**IMPORTANT:** There will no adjustments in this service mode during production mode alignments.

- Press BLUE key on the remote transmitter when Production mode is active.
- Press the colour key of the related item group's headline colour
- Press cursor-up and/or cursor-down to select the item of the group
- Press cursor-left and/or cursor-right to alter the value of the item.
- Press OK to store the values of items and MENU to exit the service alignments mode.

### 1) ADJUSTMENTS GROUP

Press RED key on the remote transmitter in order to access this group of items.

- PIP CNTRST , level of the PIP picture
- PIP YDelay , luma delay of the PIP picture
- PIP Frame , color selection of the PIP frame. (edges of the PIP)
- EHTHP , EHT compensation coefficient for horizontal phase
- EHTH TC , EHT time constant for horizontal phase compensation
- EHTH , EHT compensation coefficient for horizontal amplitude
- EHTV , EHT compensation coefficient for vertical amplitude
- EHTV TC , time constant for control of vertical and horizontal amplitude EHT compensation. (0 means off.)
- OSD LEVEL , contrast level of the OSD
- INIT NVM , to initiate the NVM

### 2) OPTIONS GROUP

- Press BLUE key on the remote transmitter in order to access this group of items.

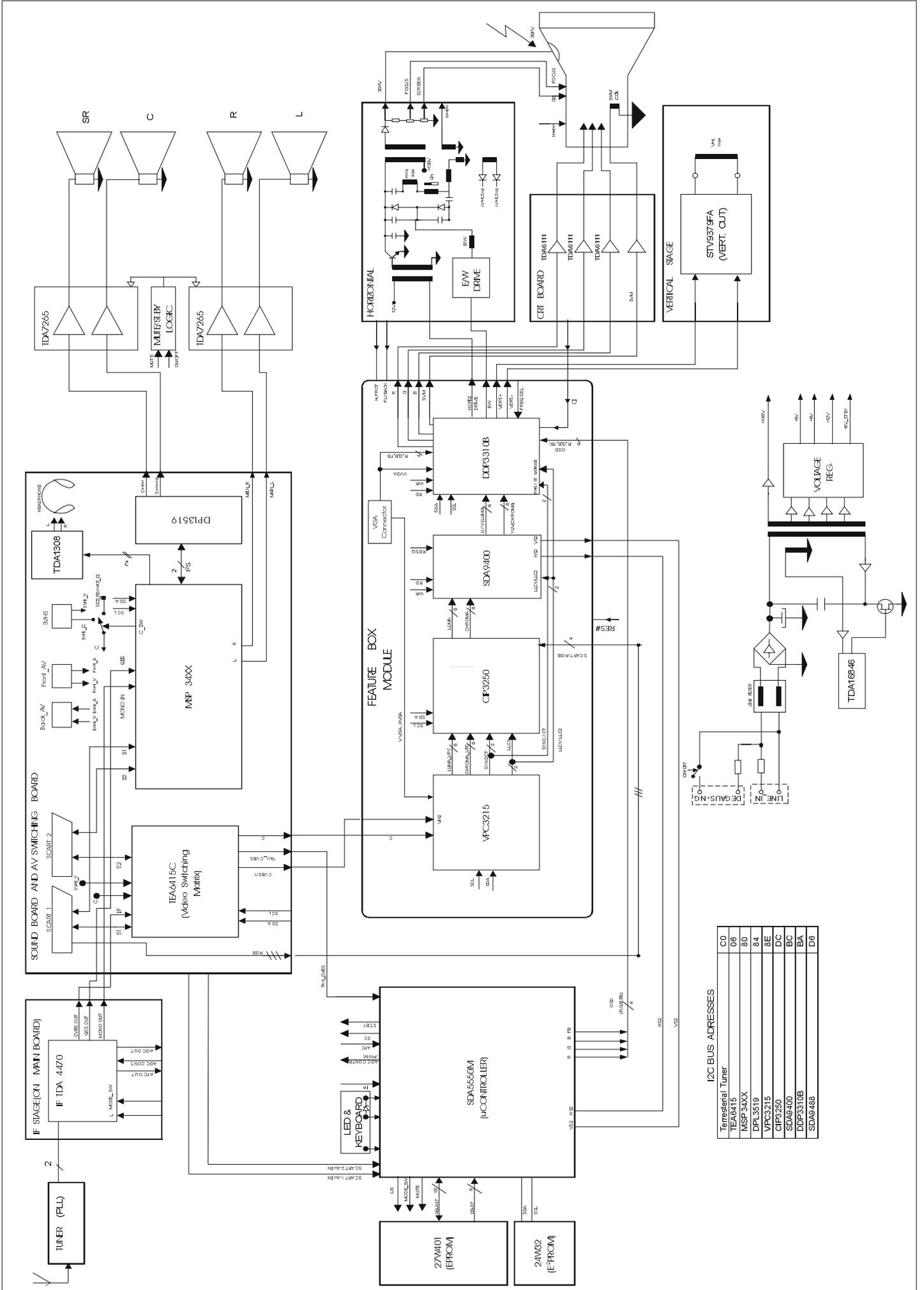
- 0. HPHONE , on / off
- 1. CRT , 4:3 / 16:9
- 2. S-VHS , on / off
- 3. f(IF) , always set to 38.9
- 4. Türk. , turkish menu on/off
- 5. VGA , on / off
- 6. FRONT , FrontAV on/off

### 3) SYSTEM GROUP

- Press YELLOW key on the remote transmitter in order to access this group of items.

- 0. PAL B/G , on / off
- 1. PAL D/K , on / off
- 2. PAL I , on / off
- 3. SECAM B/G , on / off
- 4. SECAM D/K , on / off
- 5. SECAM L/L' , on / off
- 6. AUST. , on / off

# GENERAL BLOCK DIAGRAM OF CHASSIS AK41



I2C BUS ADDRESSES

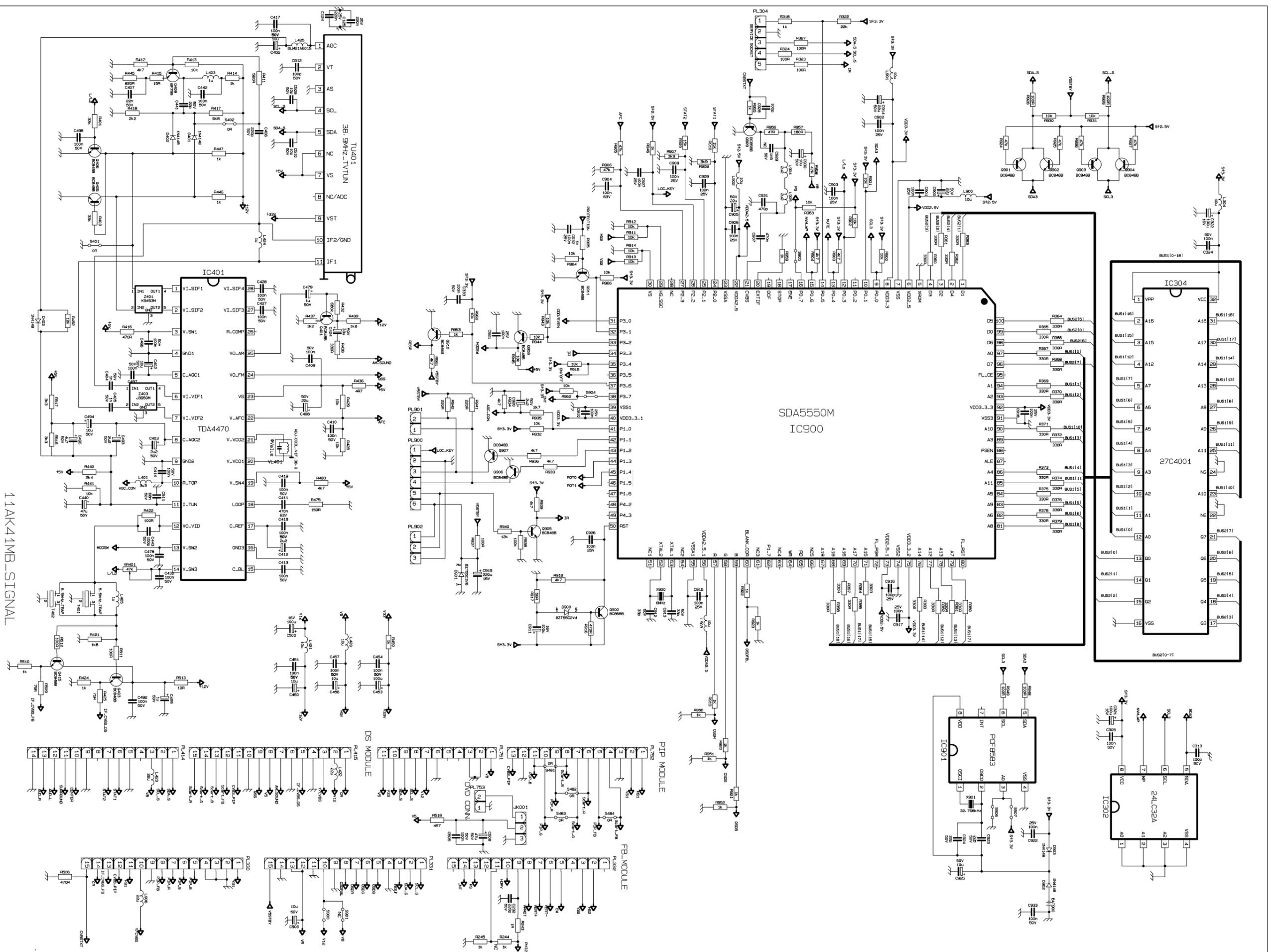
Terrestrial Tuner	CO
TDA9415	06
MSP 34XX	80
DP13519	84
VPC3215	8E
CIP3250	DC
SDA9400	BC
DDP3310B	BA
SDA9488	D6

# Schematics

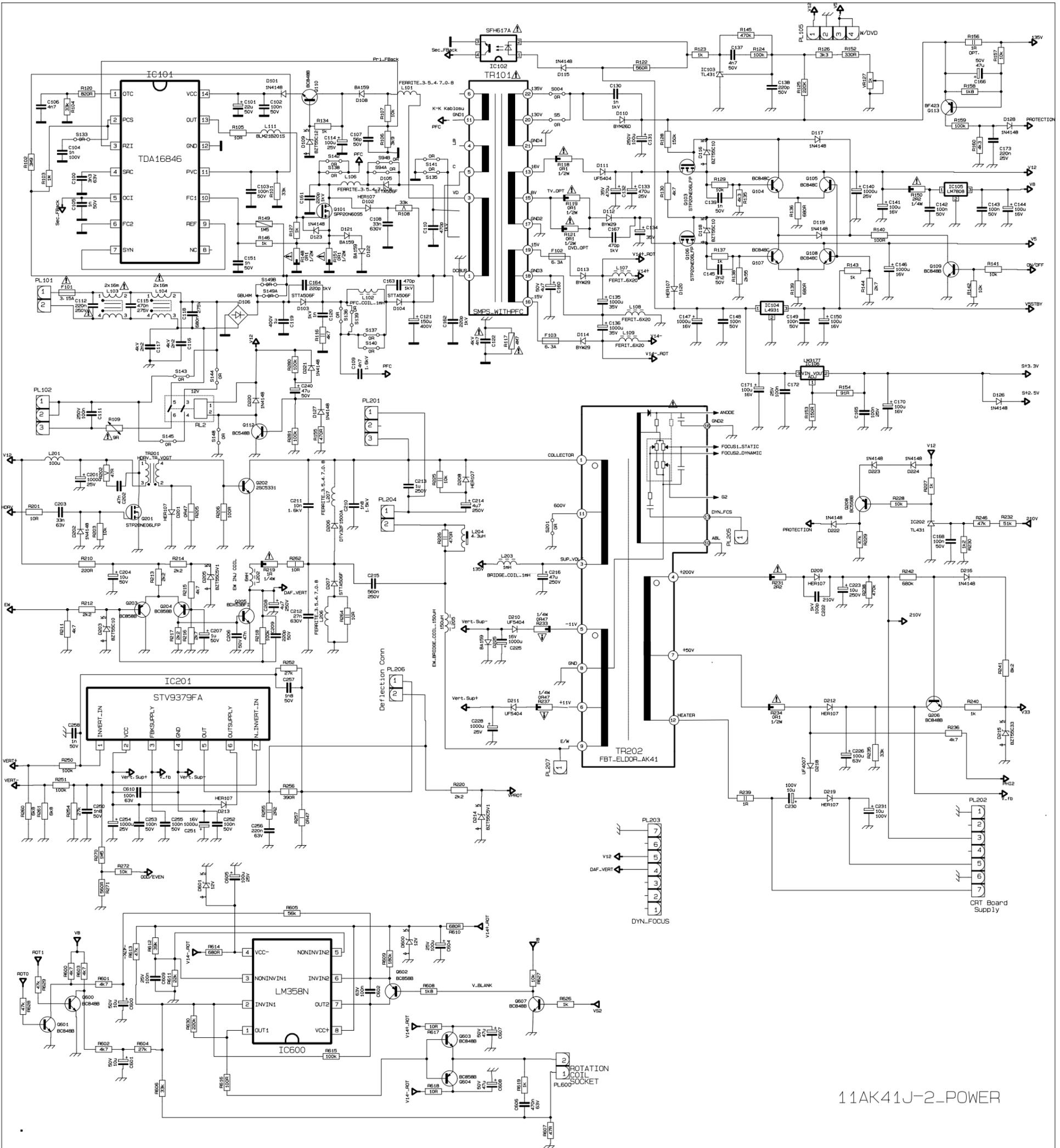
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**11AK41**

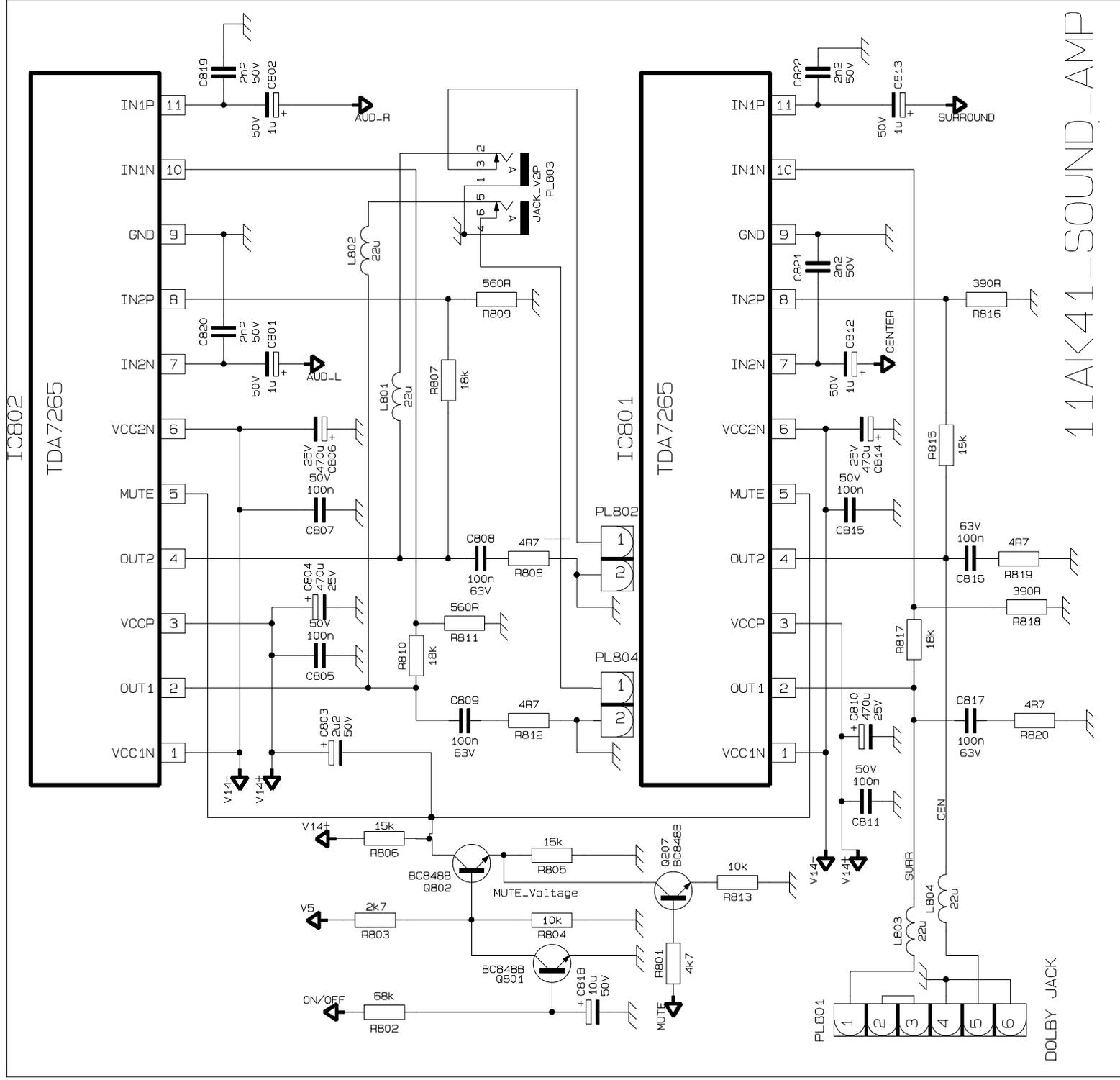
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11AK4MB\_SIGNAL



11AK41J-2-POWER

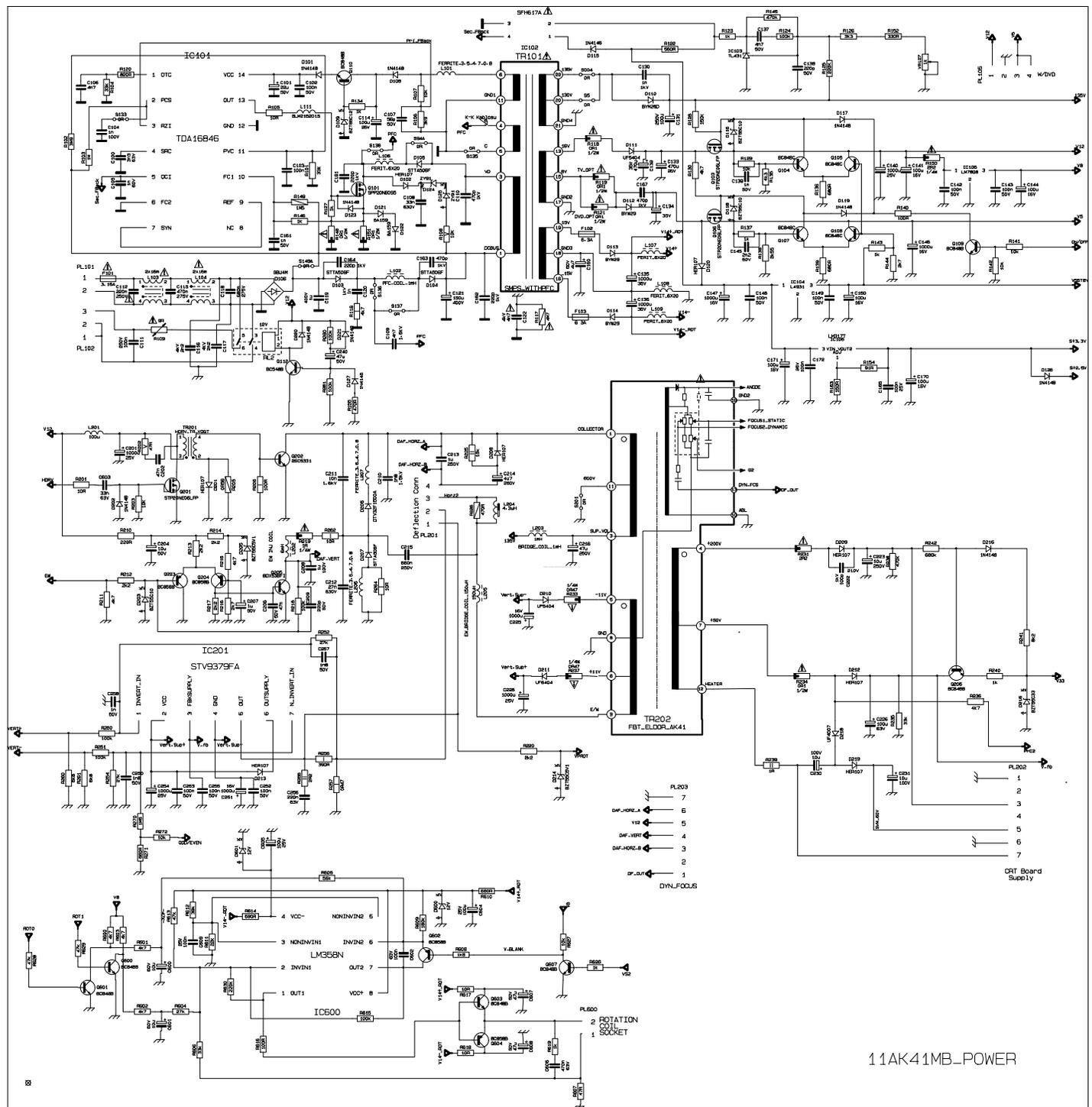


11AK41-SOUND-AMP

DOLBY JACK

**11AK41-2**

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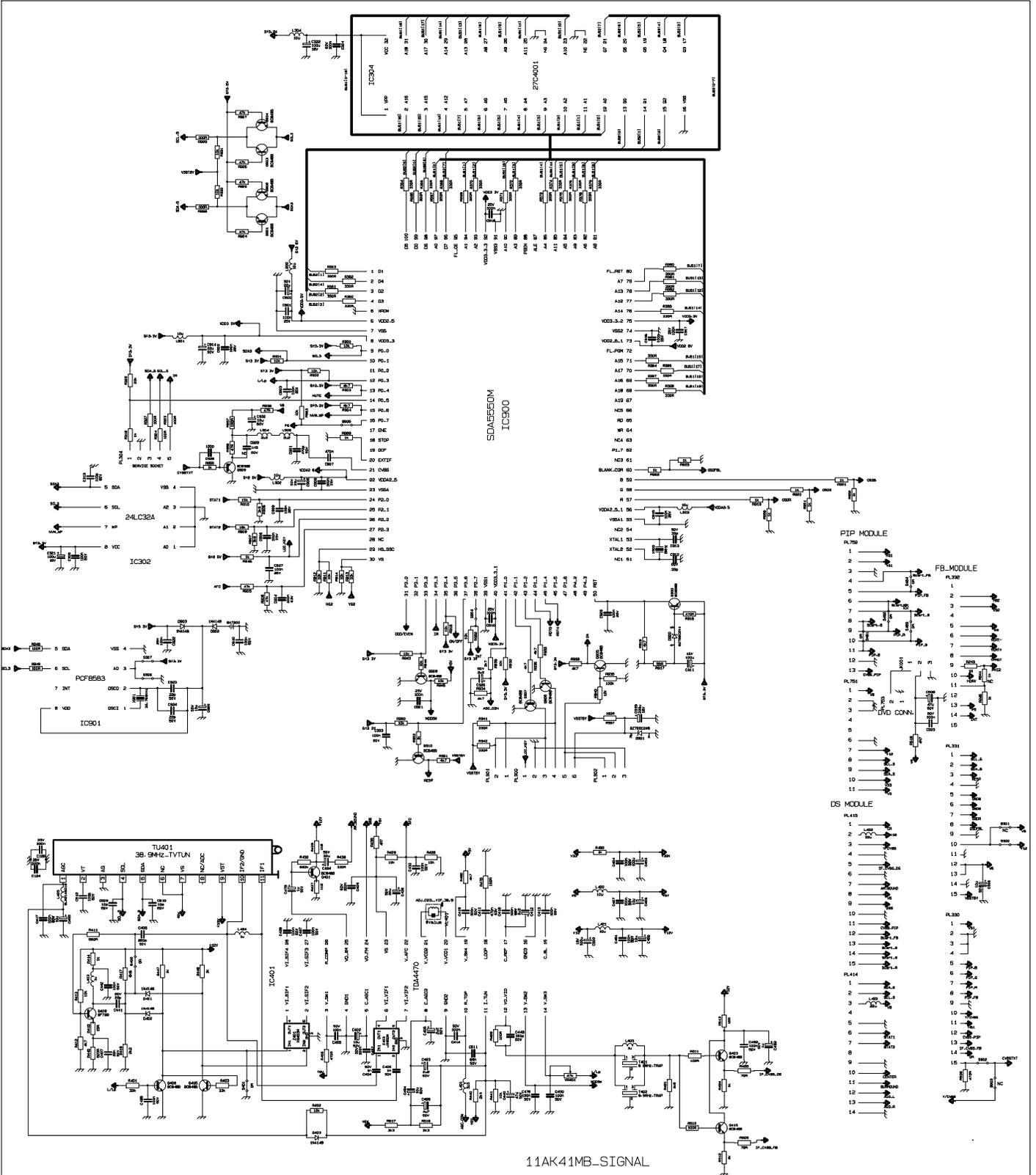
11AK41MB\_POWER

- PL203
- 7
- 6
- 5
- 4
- 3
- 2
- 1

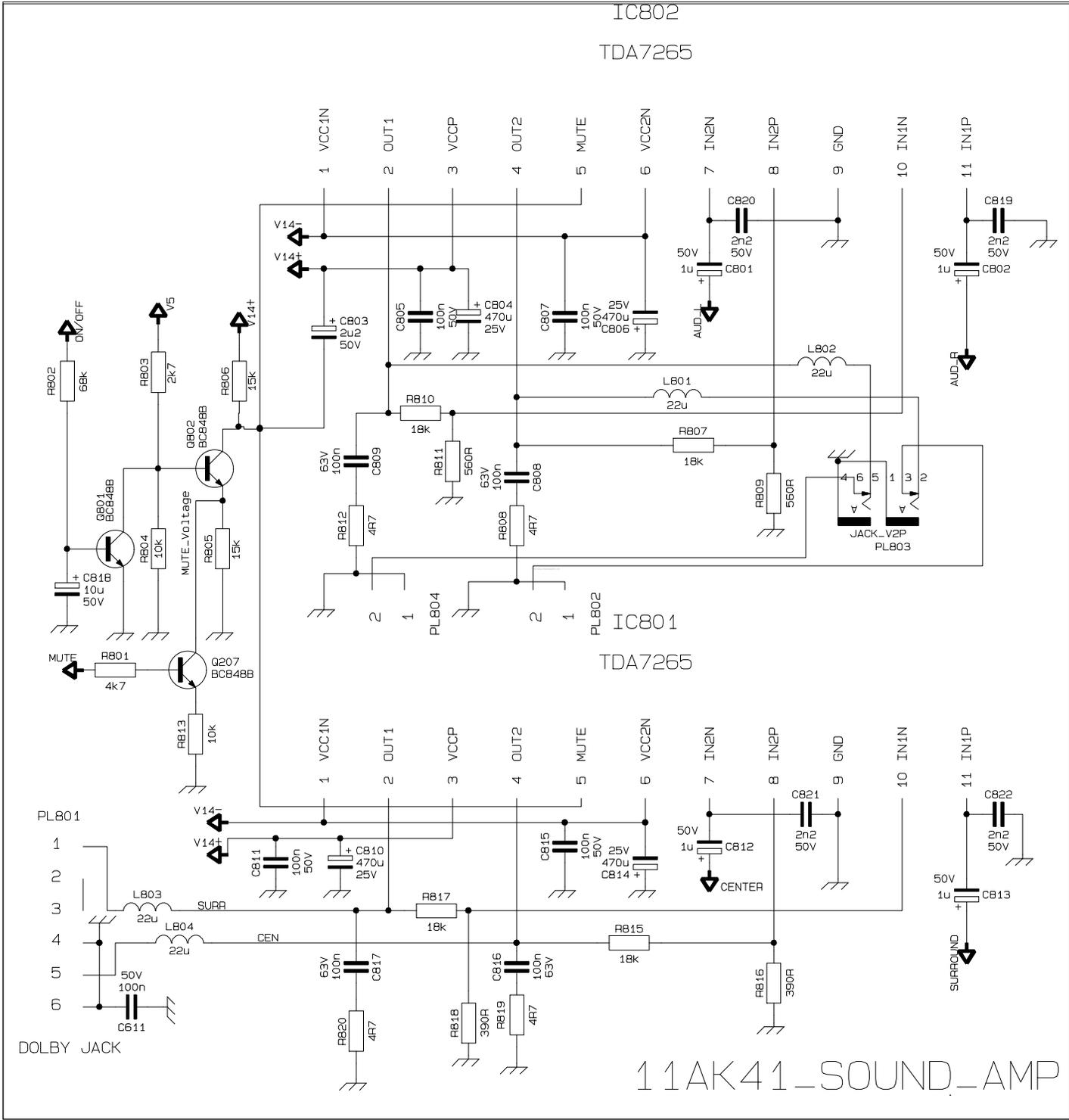
ORT Board Supply

- PL200
- 2
- 1

ROTATION  
SECRET



11AK41MB-SIGNAL



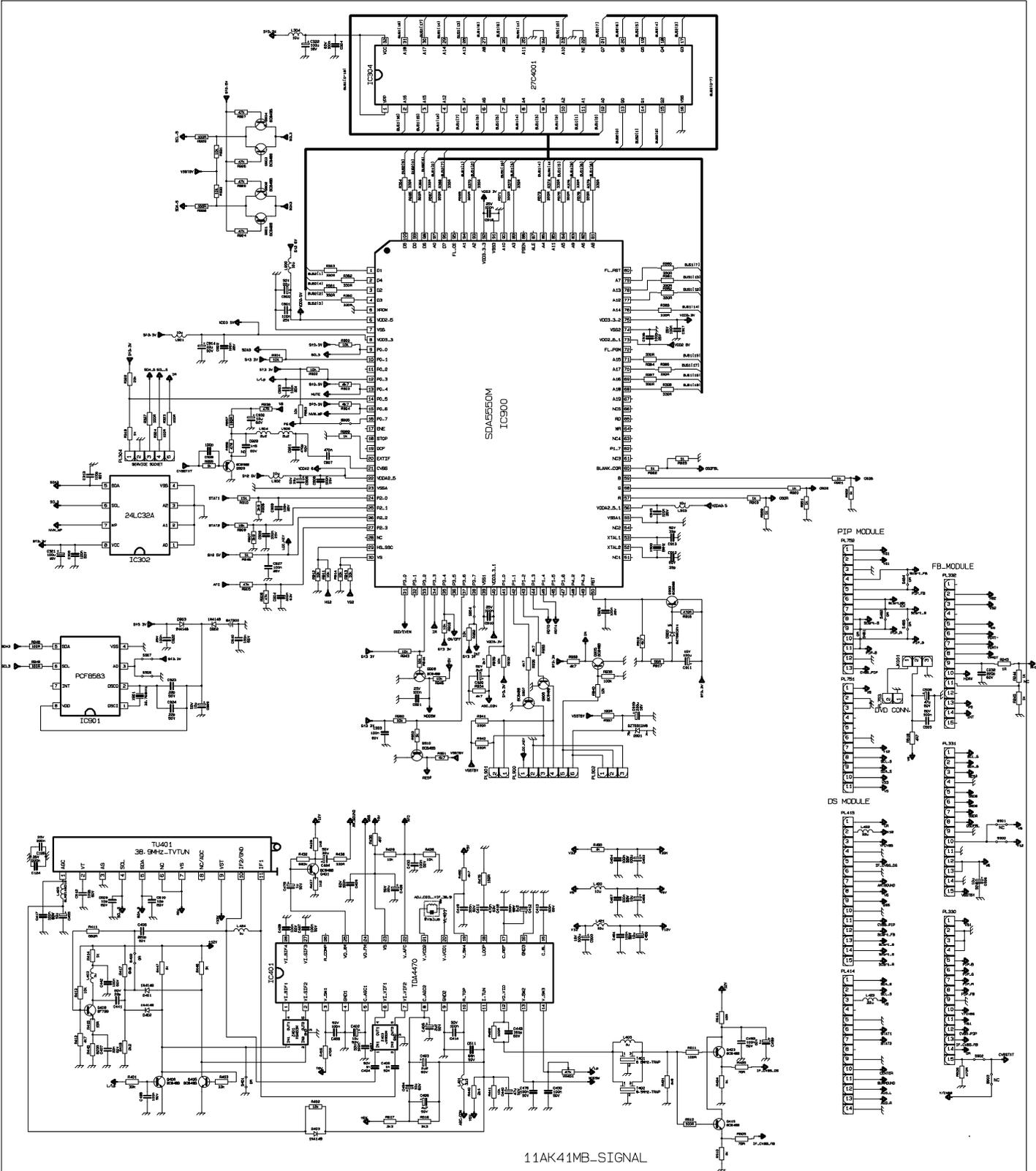
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**11AK41-3**

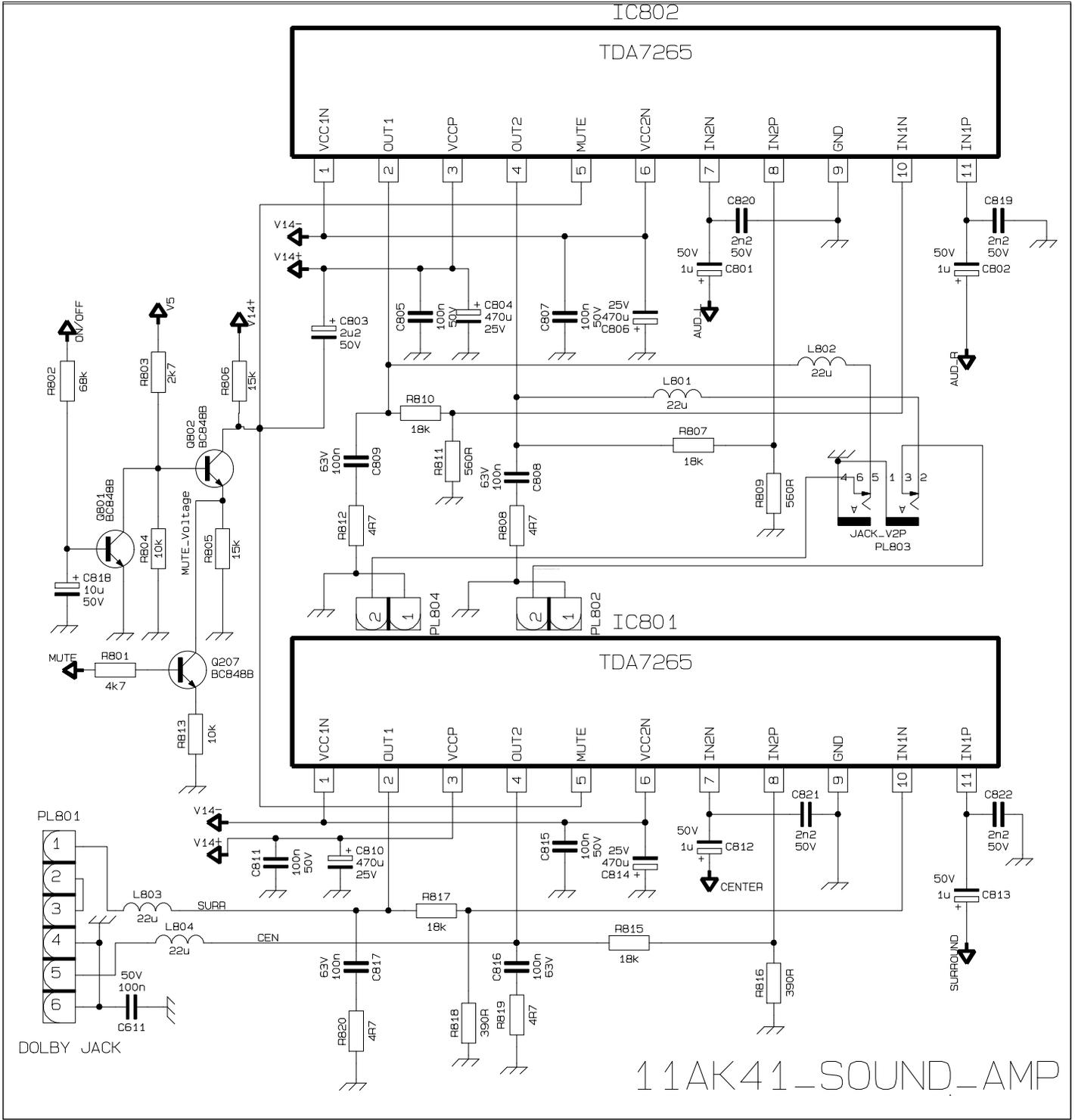
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11AK41MB-SIGNAL



11AK41-SOUND-AMP

**11AK41-J3**

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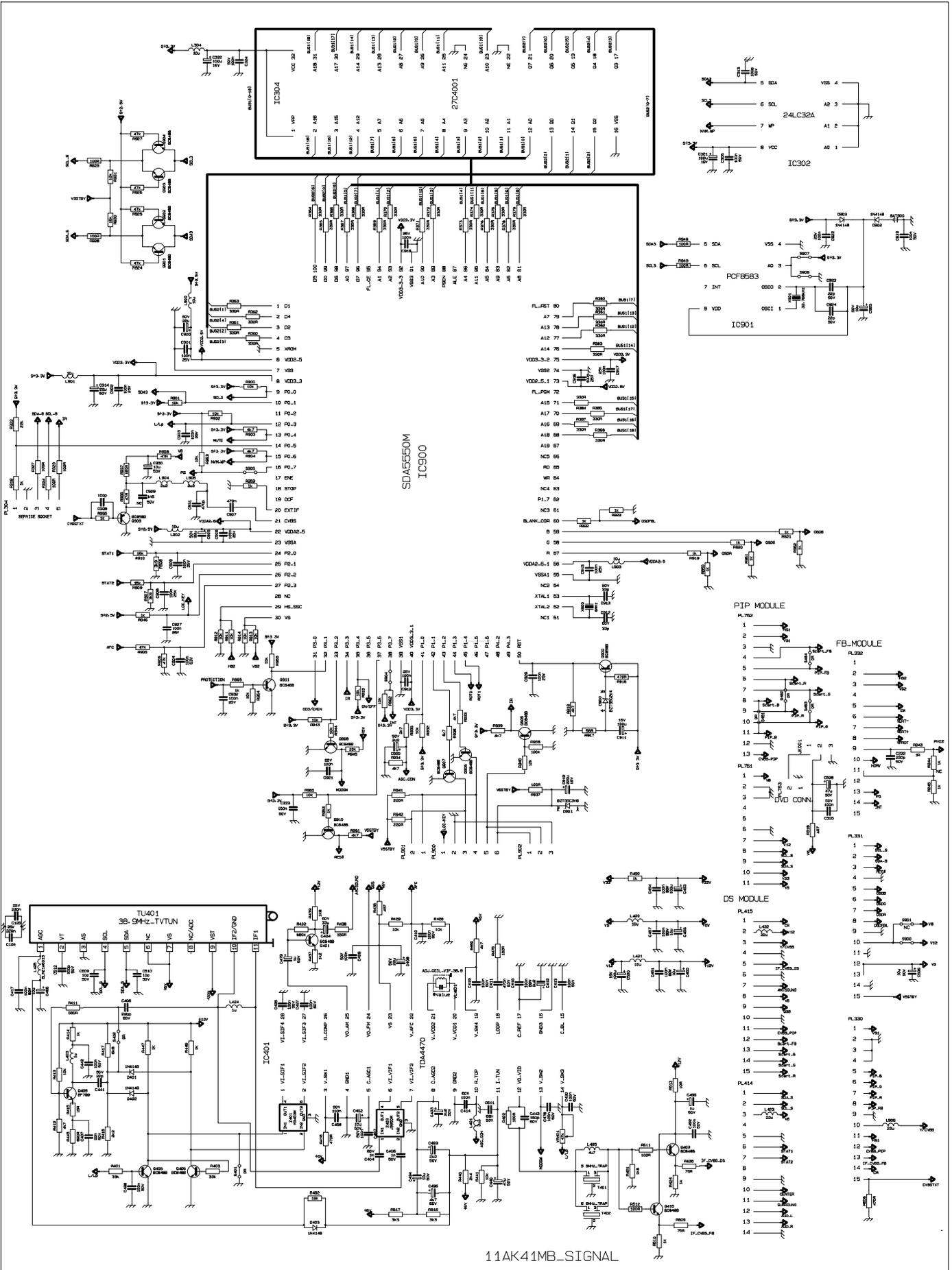
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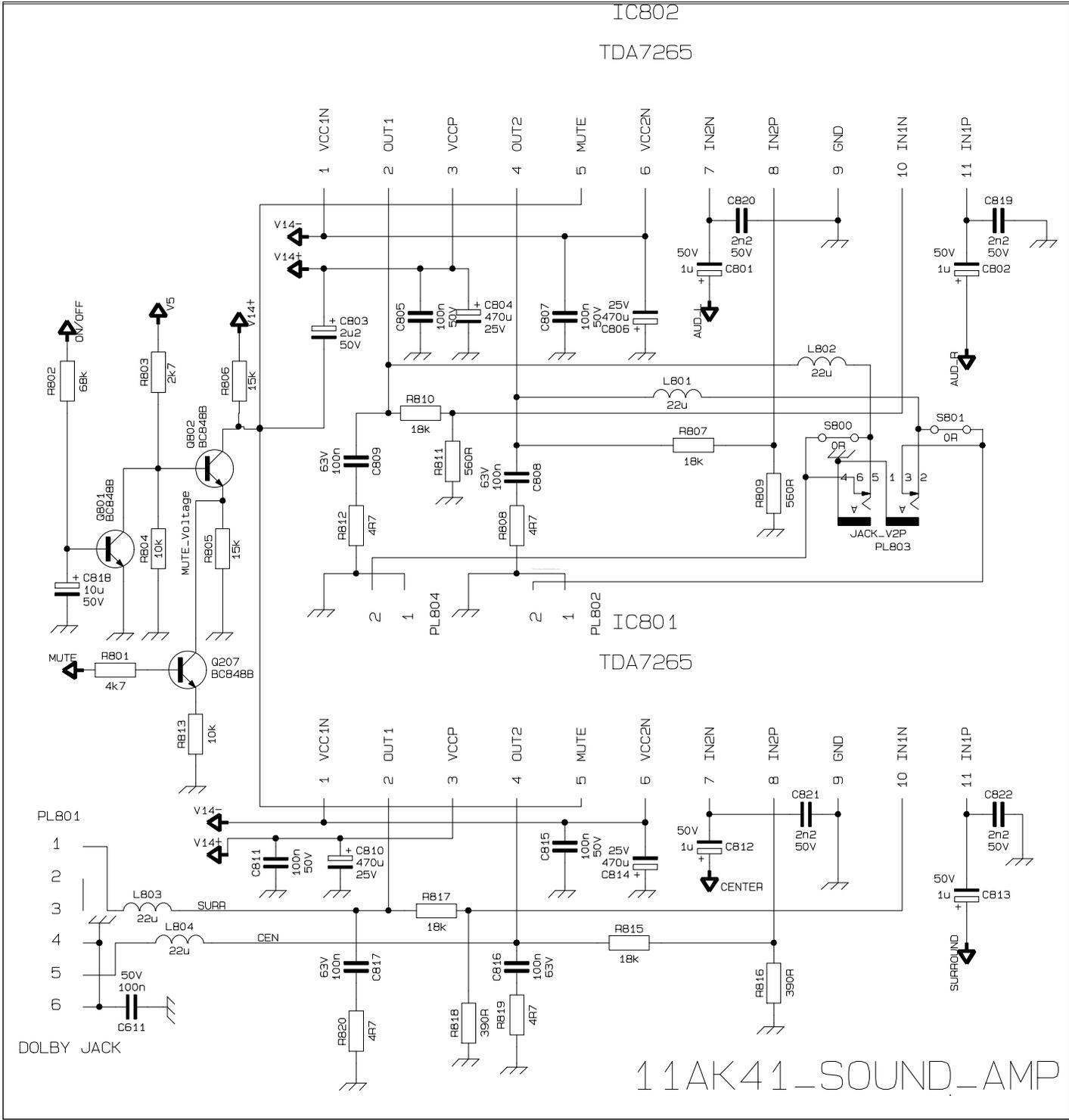
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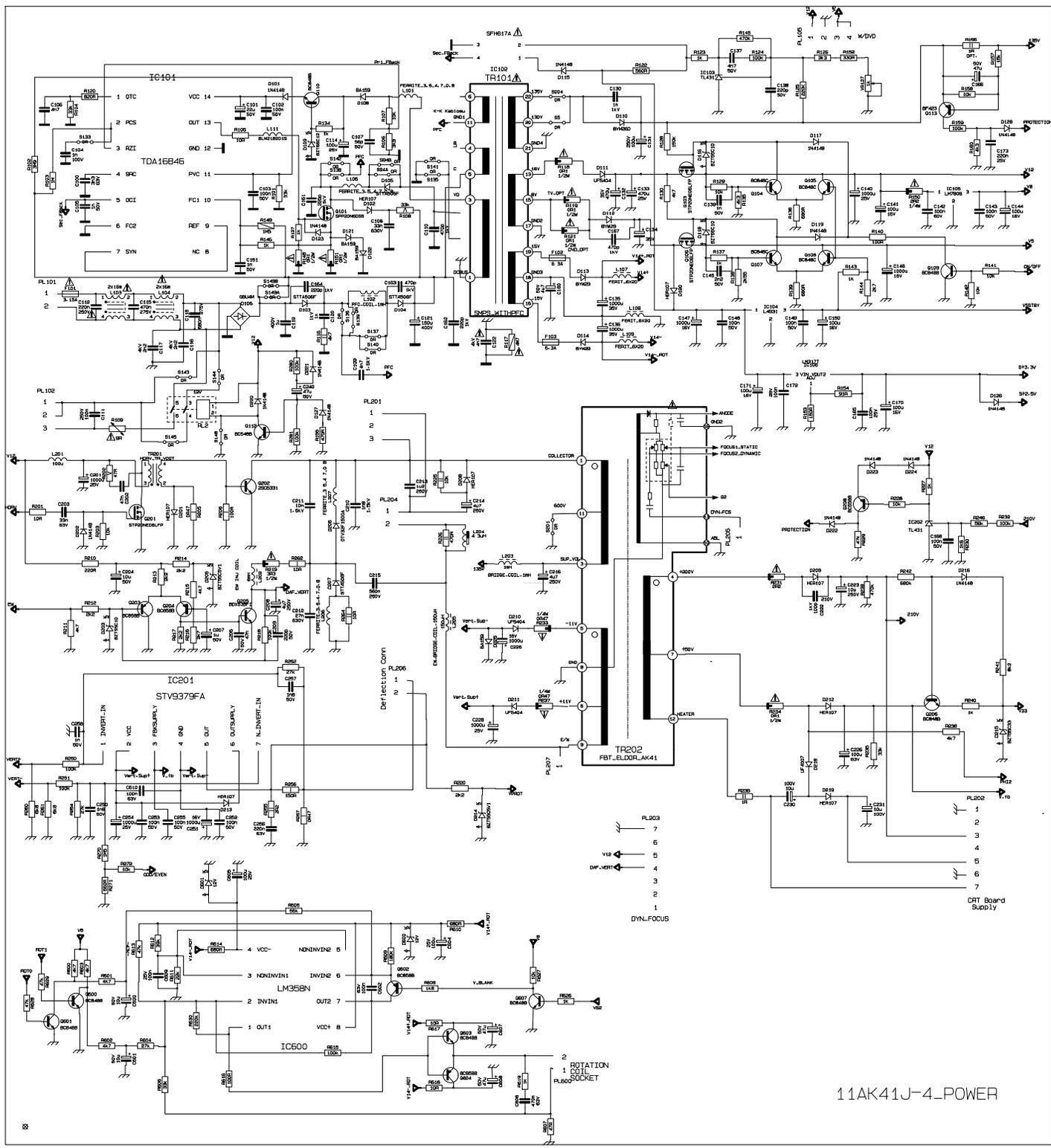
11AK41MB\_SIGNAL



11AK41-SOUND-AMP

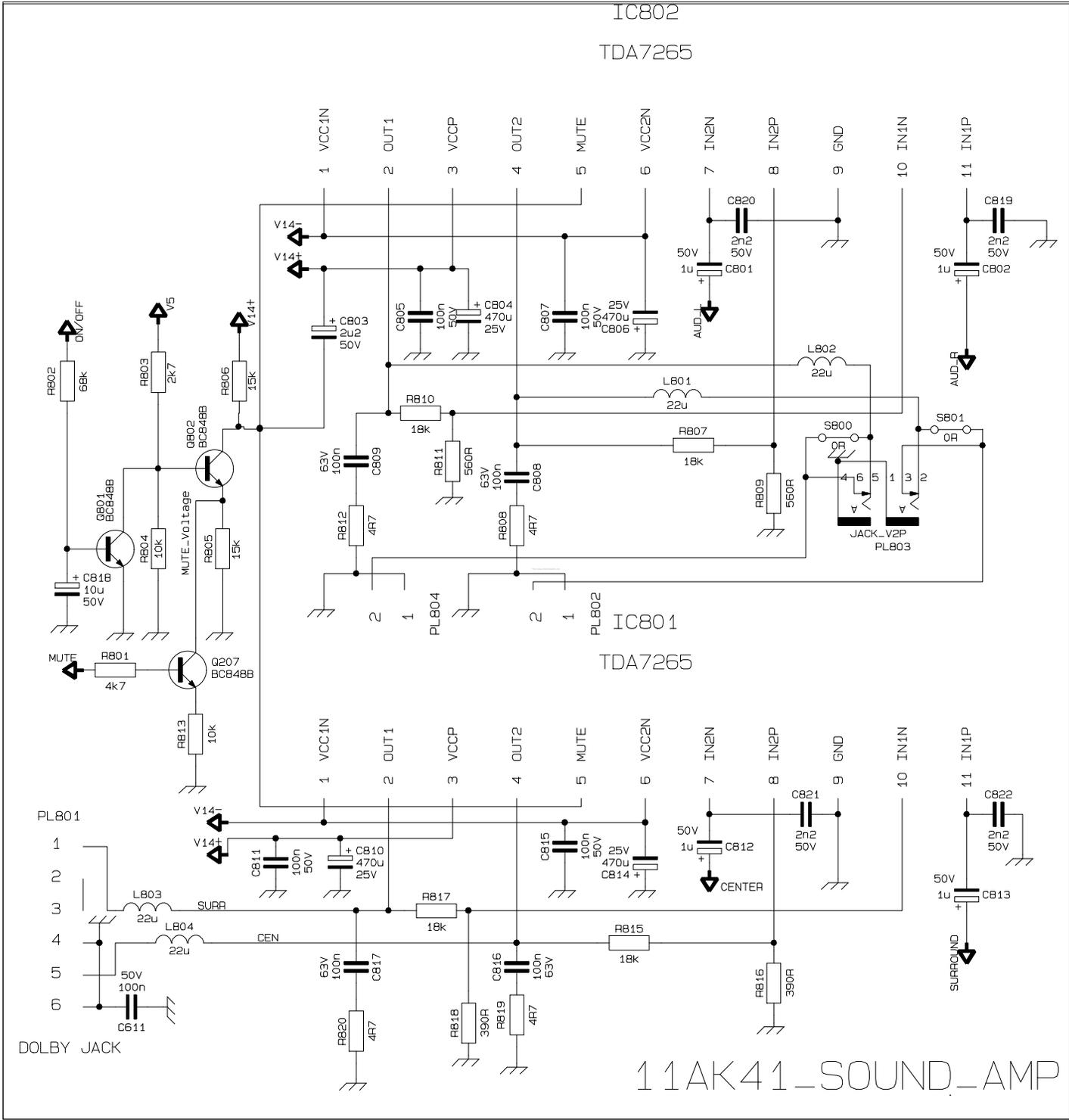
**11AK41-J4**

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11AK41J-4-POWER

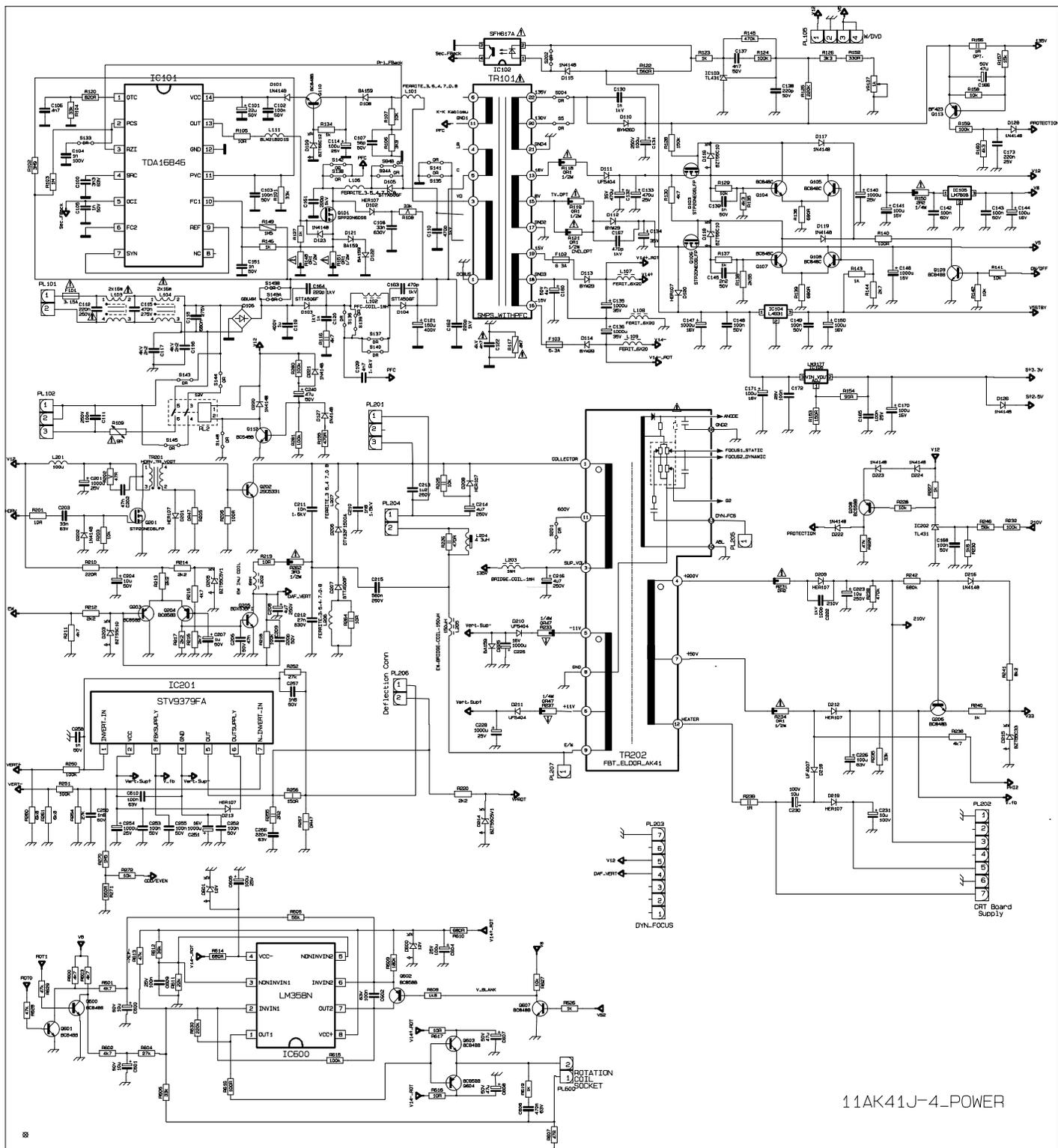




11AK41-SOUND-AMP

**11AK41-J5**

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11AK41J-4-POWER

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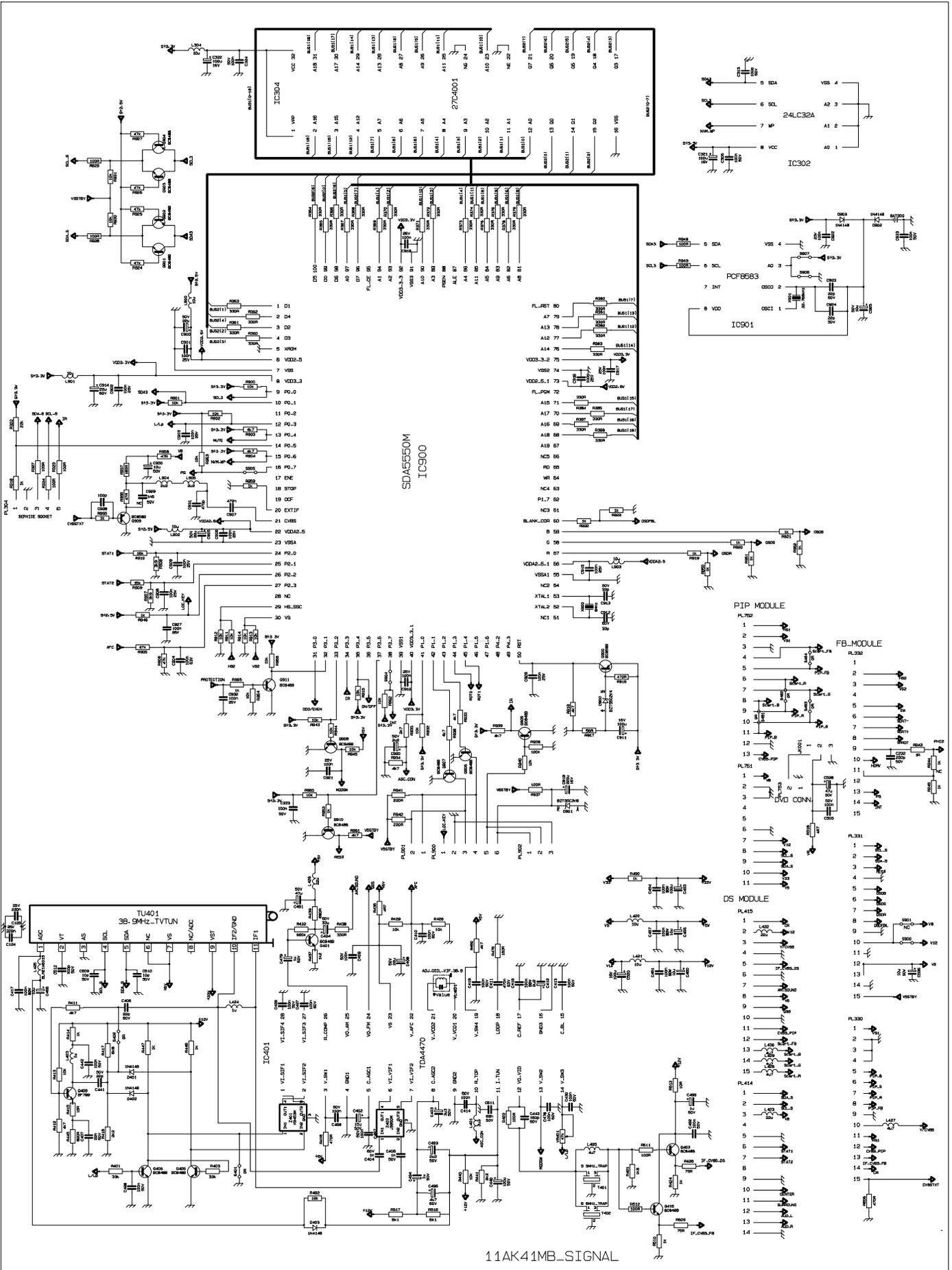
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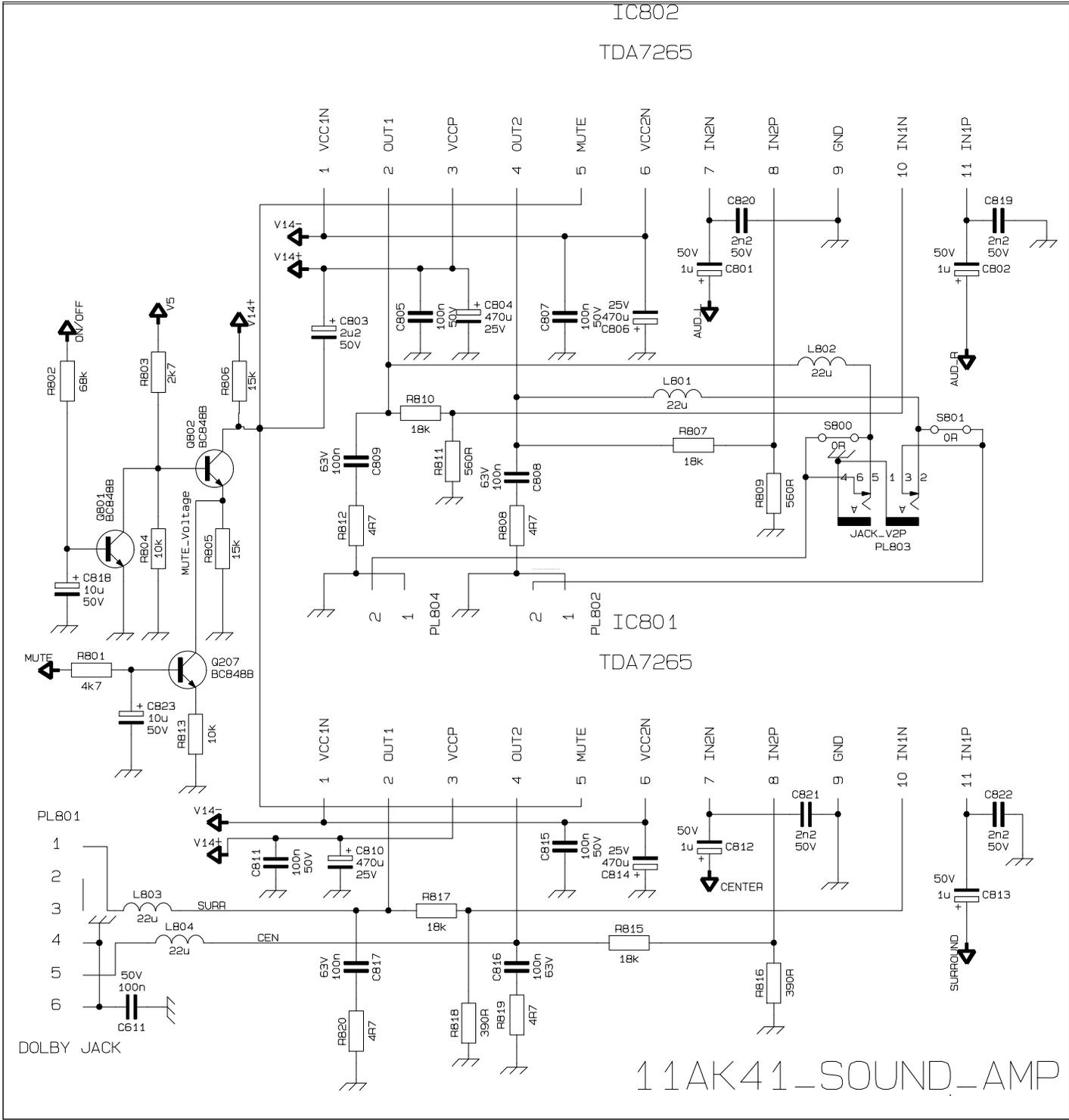
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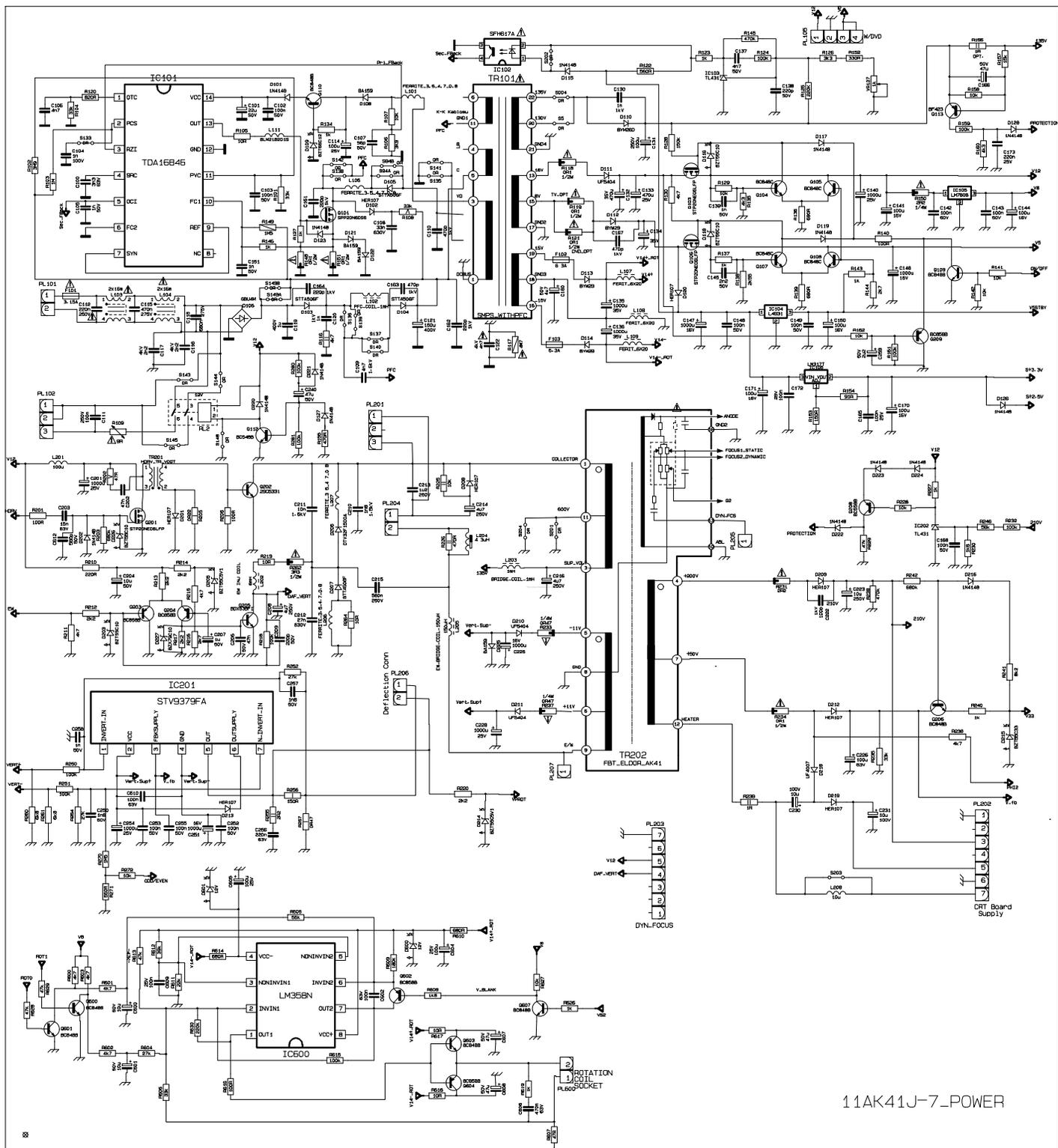




11AK41\_SOUND\_AMP

**11AK41-J7**

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11AK41J-7\_POWER

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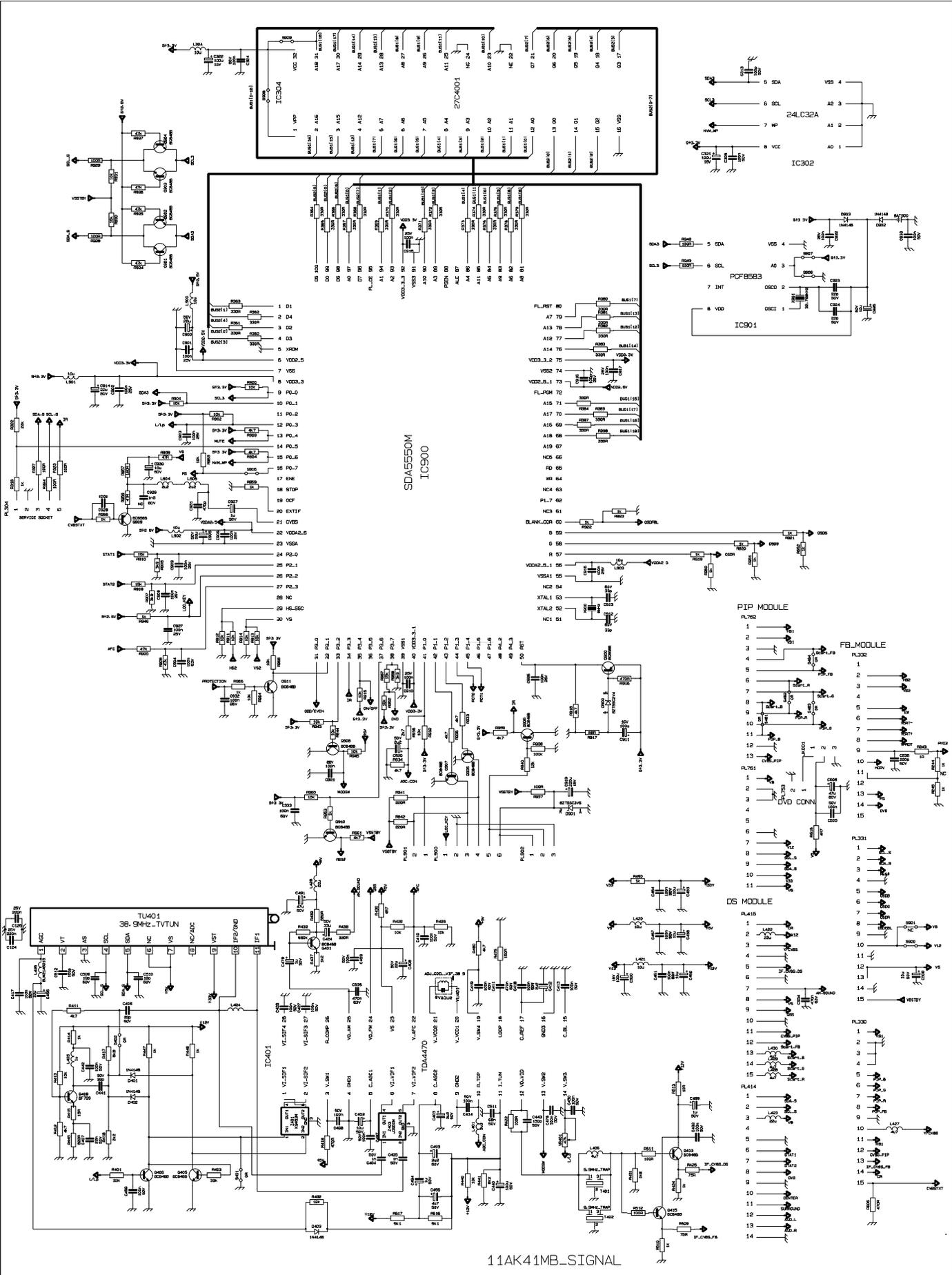
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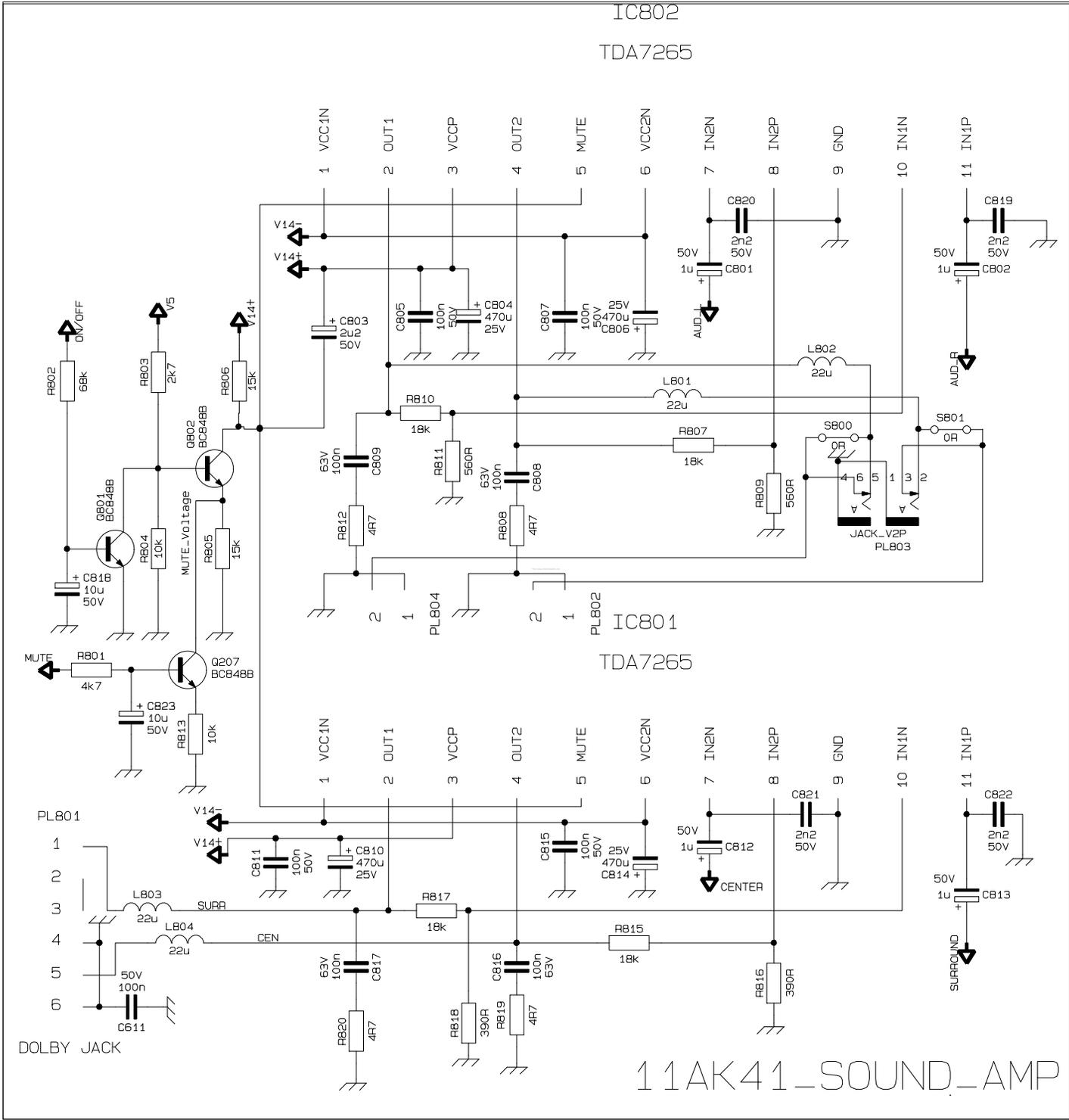
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1 1AK41-SOUND-AMP

# Parts List

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BILL OF MATERIAL LIST

10016277

3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER					
1	V20062642	SPK.AS.8270/71-3250/51 (AK28)WO/WYCOM	PC	1,000	.	.	.	.	.	.
2	V20062640	SPK.AS.8270/71-3250/51 (AK28) L	PC	1,000	.	.	.	.	.	.
3	V30000426	CAP EL 6.8UF 50V M (BPL)	PC	1,000	.	.	.	.	.	.
4	V30001946	SPEAKER 8R 15W 57*160	PC	1,000	.	.	.	.	.	.
5	V30001947	TWEETER 8R 15W CLOSED	PC	1,000	.	.	.	.	.	.
6	V30002238	CABL 2P/200 SPK DIS UL1672AWG24	PC	1,000	.	.	.	.	.	.
7	V30014528	CNAS 2P/100 SIS W/BLC UL1007 AWG24	PC	1,000	.	.	.	.	.	.
8	V50011720	LABEL HIGH END	PC	1,000	.	.	.	.	.	.
9	V20062641	SPK.AS.8270/71-3250/51 (AK28) R	PC	1,000	.	.	.	.	.	.
10	V30000426	CAP EL 6.8UF 50V M (BPL)	PC	1,000	.	.	.	.	.	.
11	V30001946	SPEAKER 8R 15W 57*160	PC	1,000	.	.	.	.	.	.
12	V30001947	TWEETER 8R 15W CLOSED	PC	1,000	.	.	.	.	.	.
13	V30002238	CABL 2P/200 SPK DIS UL1672AWG24	PC	1,000	.	.	.	.	.	.
14	V30002349	CNAS 2P/900 SPK DIS W/C UL2547 AWG24	PC	1,000	.	.	.	.	.	.
15	V50011720	LABEL HIGH END	PC	1,000	.	.	.	.	.	.
16	V20093219	CRT KIT (32*16:9 SFLAT) AK41J WO/UL	PC	1,000	.	.	.	.	.	.
17	V30014862	32* 16:9 DEG COIL&EARTH CB. WO/UL SLAT	PC	1,000	.	.	.	.	.	.
18	V30016421	CNAS 2P/600 VRT SIS W/C UL1007AWG24	PC	1,000	.	.	.	.	.	.
19	V30016483	CNAS 2P/600 HRZ DIS W/C UL1672AWG24	PC	1,000	.	.	.	.	.	.
20	V20097687	ON/OFF SW ASSY.FTZ(TOSHIBA)28*16:9-32-33	PC	1,000	.	.	.	.	.	.
21	V30002174	SWITCH ON/OFF 4A/64A	PC	1,000	.	.	.	.	.	.
22	V30002368	CNAS 2P/650 AC MAINS W/C	PC	1,000	.	.	.	.	.	.
23	V30016513	POWER CORD 2.2MT JVC (W/FILTER)	PC	1,000	.	.	.	.	.	.
24	V40000127	SWITCH INSULATION DOOR LK101	PC	1,000	.	.	.	.	.	.
25	V40001898	MACARON (12cm.Isy ile daralan)	PC	1,000	.	.	.	.	.	.
26	V20098659	SNOW BOX ASSY 324XW	PC	1,000	.	.	.	.	.	.
27	V20093536	SNOW BOX BOTTOM 324XW	PC	1,000	.	.	.	.	.	.
28	V60000011	EPS	KG	0,564	.	.	.	.	.	.
29	V20093537	SNOW BOX TOP 324XW	PC	1,000	.	.	.	.	.	.
30	V60000011	EPS	KG	0,564	.	.	.	.	.	.
31	V20102528	MD.ASY.TK127-XX41-41W 5SW WO/DVD AK37-41	PC	1,000	.	.	.	.	.	.
33	V30002181	SWITCH TACT	PC	5,000	SW1	SW2	SW3	SW4	SW5	
34	V30002302	CNAS 6P/450 TB FLT W/C UL2468AWG24	PC	1,000	PL1					
35	V30019674	LED RED ORANGE 5MM ULTRA BRIGHT	PC	2,000	LD1	LD2				
36	V40000084	BRACKET & PREAMPLIFIER	PC	1,000	IC1					
41	V30000526	RES CF 1/4W 1.5K J	PC	1,000	R2					
42	V30000622	RES CF 1/4W 270R J	PC	1,000	R5					
43	V30000689	RES CF 1/4W 3.9K J	PC	1,000	R1					
44	V30000712	RES CF 1/4W 470R J	PC	1,000	R4					
45	V30000718	RES CF 1/4W 4.7K J	PC	1,000	R6					
46	V30000770	RES CF 1/4W 680R J	PC	1,000	R3					
48	V30022893	PCB 11TK127-6	PC	1,000						
49	V30000371	CAP EL 22UF 50V M	PC	1,000	C1					
50	V30001455	TR BC558B	PC	1,000	Q1					
51	V20106208	BUTTON AS.2841-2841W-3241W-2441W(SILVER)	PC	1,000						
52	V20094341	LENS LED XX41 (I) MILKY	PC	1,000						
53	V60000008	HIPS (NATURAL)	G	0,014						
54	V60000927	CRYSTAL PS (NATURAL)	G	7,000						
55	V20094352	LENS PRE-AMP XX41 (I)	PC	1,000						
56	V60000927	CRYSTAL PS (NATURAL)	G	0,002						
57	V20106209	BUTTON ON/OFF XX41 SILVER(P)	PC	1,000						
58	V20106210	BUTTON ON/OFF XX41 EKO.GRAY(I)	PC	1,000						
59	V60000001	ABS (NATURAL)	KG	0,005						
60	V60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	G	0,026						
61	V60000895	PAINT SILVER 022-6485 (SU BAZLI)L8341413	KG	0,002						
62	V20106211	BUTTON FUNCTION XX41 SILVER(P)	PC	1,000						
63	V20106222	BUTTON FUNCTION XX41 EKO.GRAY(I)	PC	1,000						
64	V60000001	ABS (NATURAL)	KG	0,020						
65	V60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	G	0,101						
66	V60000895	PAINT SILVER 022-6485 (SU BAZLI)L8341413	KG	0,001						
67	V20108360	BUTTON FUNCT.XX42/42W/43W/44W EKO.GR(I)#	PC	1,000						
68	V60000001	ABS (NATURAL)	KG	0,018						
69	V60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	G	0,090						
70	V35000013	SPRING ON/OFF SWITCH	PC	1,000						
71	V20106289	BACK C.3241/42/43/44W W/SB (UL)SILVER(P)	PC	1,000						
72	V20106288	BACK C.3241/42/43/44W SB(UL)EKO.GRAY(I)	PC	1,000						
73	V60000009	FR-HIPS NATR.V-0	KG	4,786						
74	V60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	G	24,050						
75	V60000895	PAINT SILVER 022-6485 (SU BAZLI)L8341413	KG	0,125						
76	V20106290	SCR.A.3241W W/SB/BAV AK41(V0)(GRAY)	PC	1,000						
77	V20098439	BACK DOOR AK28 EKO.GRAY (I) V.0	PC	1,000						
78	V60000009	FR-HIPS NATR.V-0	KG	0,058						
79	V60001195	MASTERBATCH EKO.GRAY GR 3216 SE1	G	0,580						
80	V35000211	SCREW S C ZNSY YSMB 2.9*9.5	PC	4,000						
81	V35000214	SCREW S C ZNSY YSMB 3.5*19	PC	2,000						
82	V35000224	SCREW C SK ZN YFMB 2.9*9.5	PC	17,000						
83	V35000235	SCREW P C ZN AKBR 7*32	PC	4,000						
84	V35004572	SCREW P C AgSYF YSB 4x20	PC	8,000						
85	V40000082	FOOT RUBBER 8410/11	PC	4,000						
86	V20107903	CHS.ASSY.41J-5351411182126N	PC	1,000						
88	V20055386	MD.ASY.FB28-FEATURE BOX 28 (FB28-1)	PC	1,000						
90	V20055388	MD.SMD.FB28-FEATURE BOX 28 (FB28-1)	PC	1,000						
94	V30001986	FIXED COIL 3.3UH Q65 K	PC	3,000	L004	L005	L007			
95	V30001992	FIXED COIL 10UH Q65 K-A	PC	3,000	L001	L002	L003			
96	V30015627	PCB 11FB28-3	PC	1,000						
97	V30000109	CAP MKT 470NF 63V J	PC	4,000	C035	C078	C079	C25		
98	V30000345	CAP EL 10UF 50V M	PC	19,000	C102	C021	C022	C024	C026	
.	.	.	.	.	C027	C028	C036	C037	C074	
.	.	.	.	.	C075	C076	C077	C080	C081	
.	.	.	.	.	C082	C098	C099	C108		
99	V30000371	CAP EL 22UF 50V M	PC	2,000	C039	C041				
100	V30000392	CAP EL 0.33UF 50V M	PC	4,000	C101	C040	C042	C043		
101	V30000393	CAP EL 3.3UF 50V M	PC	1,000	C100					
102	V30001454	TR BC548B	PC	11,000	Q001	Q002	Q004	Q005	Q007	
.	.	.	.	.	Q008	Q010	Q011	Q013	Q014	

BILL OF MATERIAL LIST

10016277

3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER				
					Q015				
103	V30001455	TR BC558B	PC	4,000	Q003	Q006	Q009	Q012	
104	V30001986	FIXED COIL 3.3UH Q65 K	PC	3,000	L008	L009	L010		
105	V30001996	FIXED COIL 22UH Q40 K	PC	1,000	L006				
106	V30000186	CAP SMD 10PF 50V D COG 0805	PC	6,000	C084	C110	C111	C107	C005
					C006				
107	V30000228	CAP SMD 27PF 50V J CH (0805)	PC	2,000	C054	C055			
108	V30000232	CAP SMD 270PF 50V J (0805)	PC	12,000	C007	C010	C013	C016	C048
					C051				
					C056				
					C085				
					C088				
					C095				
109	V30000242	CAP SMD 330PF 50V J 0805	PC	4,000	C029	C031	C033	C113	
110	V30000265	CAP SMD 560PF 50V J (0805)	PC	12,000	C008	C011	C014	C017	C049
					C052				
					C057				
					C073				
					C087				
					C090				
					C093				
					C096				
111	V30000284	CAP SMD 1NF 50V K R (0805)	PC	3,000	C059	C104	C112		
112	V30000289	CAP SMD 10NF 50V K R (0805)	PC	11,000	C038	C060	C063	C064	C065
					C066				
					C067				
					C069				
					C070				
					C071				
					C103				
113	V30000294	CAP SMD 100NF 50V K (0805)	PC	12,000	C002	C020	C045	C046	C047
					C061				
					C062				
					C068				
					C083				
					C105				
					C106				
114	V30000309	CAP SMD 2.2NF 50V K R 0805	PC	15,000	C001	C004	C009	C012	C015
					C018				
					C019				
					C050				
					C053				
					C058				
					C072				
					C086				
					C091				
					C092				
					C097				
115	V30000334	CAP SMD 47NF 50V K (0805)	PC	1,000	C003				
116	V30000464	RES SMD 1/10W 100R J	PC	13,000	R002	R079	R085	R091	R155
					R156				
					R157				
					R158				
					R159				
					R161				
					R162				
					R163				
					R164				
117	V30000469	RES SMD 1/10W 1K J 0805	PC	6,000	R120	R007	R034	R084	R090
					R096				
118	V30000475	RES SMD 1/10W 10K J 0805	PC	7,000	R100	R105	R107	R108	R117
					R119				
119	V30000524	RES SMD 1/10W 150R J (0805)	PC	1,000	R032				
120	V30000534	RES SMD 1/10W 15K J (0805)	PC	3,000	R110	R111	R149		
121	V30000588	RES SMD 1/10W 220R J 0805	PC	5,000	R006	R083	R089	R095	R122
122	V30000593	RES SMD 1/10W 2.2K J (0805)	PC	2,000	R101	R112			
123	V30000597	RES SMD 1/10W 22K J	PC	2,000	R050	R098			
124	V30000626	RES SMD 1/10W 270R J	PC	1,000	R099				
125	V30000653	RES SMD 1/10W 33R J	PC	1,000	R005				
126	V30000659	RES SMD 1/10W 330R J (0805)	PC	32,000	R125	R126	R127	R128	R129
					R130				
					R131				
					R132				
					R133				
					R134				
					R135				
					R136				
					R137				
					R138				
					R141				
					R142				
					R143				
					R144				
					R145				
					R008				
					R009				
					R010				
					R011				
					R012				
					R013				
					R014				
					R015				
					R016				
					R017				
					R018				
					R021				
127	V30000664	RES SMD 1/10W 3.3K J (0805)	PC	1,000	R106				
128	V30000688	RES SMD 1/10W 390R J (0805)	PC	4,000	R003	R080	R086	R092	
129	V30000721	RES SMD 1/10W 4.7K J	PC	4,000	R074	R075	R076	R165	
130	V30000797	RES SMD 1/10W 75R J (0805)	PC	21,000	R024	R026	R028	R030	R047
					R053				
					R054				
					R055				
					R056				
					R057				
					R058				
					R059				
					R082				
					R088				
					R094				
					R150				
					R151				
					R152				
					R153				
					R154				
					R140				
					R031				
131	V30000833	RES SMD 1/10W 91R J	PC	1,000	R031				
132	V30001284	DIODE 1N4148 0.15A/100V 0.5A	PC	3,000	D001	D002	D003		
134	V30006462	RES SMD 1/10W 22R J 0805	PC	6,000	R121	R004	R048	R081	R087
					R093				
135	V30007668	IC SDA9400	PC	1,000	IC003				
136	V30007739	IC LM317T D2PAK	PC	1,000	IC004				
137	V30010348	IC CIP3250A	PC	1,000	IC002				
138	V30010349	IC DDP3310	PC	1,000	IC005				
139	V30010350	IC VPC3211	PC	1,000	IC001				
140	V30010560	CAP SMD 220NF 25V K R (0805)	PC	3,000	C030	C032	C034		
142	V30001813	CONN HOUSING 15P 2.5MM SIDE WHT	PC	3,000	PL001	PL002	PL003		
143	V30001962	FERRITE AK18 VIDEO	PC	9,000	Z1	Z10	Z14	Z18	Z24
					Z25				
					Z26				
					Z37				
					Z38				
144	V30007745	CONN HEADER 10P 2.54MM SIDE WHT DR	PC	1,000	PL004				
145	V30008778	XTAL 20.25MHZ	PC	1,000	X001				
146	V30008782	XTAL 5MHZ	PC	1,000	X002				
147	V35001857	SHIELD SOLDER SIDE (FEATURE BOX-11AK28)	PC	1,000					
148	V35003011	SHIELD COVER (FEATURE BOX AK28)	PC	1,000					
149	V35003321	SHIELD COMPONENT SIDE-1(F-BOX AK28)	PC	1,000					
150	V20082412	MD.ASY.ST41J-FAV+HP+BAV+VD	PC	1,000					
153	V30001207	RES FUSE 1/4W 10R J	PC	1,000	R535				
154	V30001619	IC VIDEO SWITCH TEA6415C DIP20	PC	1,000	IC502				
155	V30001756	XTAL 18.432MHZ	PC	1,000	X501				
156	V30001811	CONN HOUSING 14P 2.5MM SIDE WHT	PC	1,000	PL504				
157	V30001813	CONN HOUSING 15P 2.5MM SIDE WHT	PC	1,000	PL503				
158	V30001866	SOCKET SCART (R) VER BLACK	PC	1,000	PL501				
159	V30001867	SOCKET SCART (R) VER BLUE	PC	1,000	PL506				
161	V30001518	IC TDA1308	PC	1,000	IC503				
162	V30001842	CONN HEADER 3P 2.5MM SIDE BLUE SD	PC	1,000	PL508				
164	V30001833	CONN HEADER 2P 2.5MM SIDE BLUE SD	PC	1,000	PL507				
165	V30001844	CONN HEADER 3P 2.5MM SIDE GREEN SD	PC	1,000	PL502				
167	V30001880	JACK RCA 3P (BACK AV) 180°	PC	1,000	JK501				
169	V30009354	IC MSP3411 SDIP64	PC	1,000	IC501				
171	V20077175	MD.SMD.ST41-COMMON	PC	1,000					
176	V30000452	RES CF 1/4W 10R J	PC	2,000	R539	R552			
177	V30000459	RES CF 1/4W 100R J	PC	4,000	R503	R504	R532	R533	
178	V30000466	RES CF 1/4W 1K J	PC	1,000	R513				
179	V30000583	RES CF 1/4W 220R J	PC	1,000	R582				
180	V30000712	RES CF 1/4W 470R J	PC	1,000	R546				
181	V30000792	RES CF 1/4W 75R J	PC	4,000	R563	R556	R557	R558	
182	V30001231	RES FUSE 1/4W 27R J	PC	1,000	R613				

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3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER				
183	V30001284	DIODE 1N4148 0.15A/100V 0.5A	PC	1,000	D502				
184	V30001349	DIODE ZENER 11V	PC	1,000	IC504				
185	V30001369	DIODE ZENER 3.6V ZPD	PC	1,000	D501				
186	V30001996	FIXED COIL 22UH Q40 K	PC	11,000	L501	L502	L517	L507	L508
					L509	L510	L513	L514	L515
					L516				
187	V30017302	PCB 11ST41-4	PC	1,000					
188	V30000074	CAP MKT 100NF 63V J	PC	5,000	C560	C566	C567	C569	C576
189	V30000092	CAP MKT 220NF 63V J	PC	6,000	C582	C585	C586	C587	C592
					C620				
190	V30000109	CAP MKT 470NF 63V J	PC	6,000	C522	C523	C524	C525	C527
					C528				
191	V30000345	CAP EL 10UF 50V M	PC	3,000	C531	C532	C533		
192	V30000352	CAP EL 100UF 16V M	PC	2,000	C504	C556			
193	V30000371	CAP EL 22UF 50V M	PC	6,000	C516	C521	C623	C624	C645
					C646				
194	V30000393	CAP EL 3.3UF 50V M	PC	1,000	C530				
195	V30000407	CAP EL 470UF 16V M	PC	4,000	C501	C505	C551	C552	
196	V30000204	CAP SMD 150PF 50V J 0805	PC	5,000	C553	C554	C583	C584	C612
197	V30000216	CAP SMD 1.8PF 50V J CH (0805)	PC	2,000	C536	C537			
198	V30000232	CAP SMD 270PF 50V J (0805)	PC	1,000	C635				
199	V30000237	CAP SMD 33PF 50V J (0805)	PC	5,000	C631	C632	C633	C634	C637
200	V30000247	CAP SMD 39PF 50V J (0805)	PC	2,000	C561	C562			
201	V30000252	CAP SMD 47PF 50V J (0805)	PC	2,000	C509	C510			
202	V30000256	CAP SMD 470PF 50V J (0805)	PC	1,000	C636				
203	V30000263	CAP SMD 56PF 50V J CH (0805)	PC	1,000	C542				
204	V30000265	CAP SMD 560PF 50V J (0805)	PC	1,000	C526				
205	V30000284	CAP SMD 1NF 50V K R (0805)	PC	1,000	C615				
206	V30000284	CAP SMD 1NF 50V K R (0805)	PC	12,000	C507	C508	C534	C535	C538
					C539	C540	C541	C545	C546
					C547	C548			
207	V30000289	CAP SMD 10NF 50V K R (0805)	PC	1,000	C638				
208	V30000294	CAP SMD 100NF 50V K (0805)	PC	16,000	C502	C517	C529	C543	C544
					C618	C616	C617	C619	C614
					C630	C563	C643	C644	C549
					C550				
209	V30000332	CAP SMD 4.7NF 50V K (0805)	PC	10,000	C511	C512	C513	C514	C557
					C558	C564	C565	C590	C591
210	V30000457	RES SMD 1/10W 10R J 0805	PC	6,000	R538	R540	R559	R595	R589
					R591				
211	V30000464	RES SMD 1/10W 100R J	PC	12,000	R505	R508	R509	R510	R511
					R592	R615	R616	R617	R618
					R619	R620			
212	V30000469	RES SMD 1/10W 1K J 0805	PC	10,000	R512	R516	R517	R519	R520
					R590	R593	R587	R594	R588
213	V30000475	RES SMD 1/10W 10K J 0805	PC	9,000	R501	R502	R561	R542	R545
					R547	R549	R597	R600	
214	V30000480	RES SMD 1/10W 100K J (0805)	PC	2,000	R577	R578			
215	V30000503	RES SMD 1/10W 12K J (0805)	PC	2,000	R583	R585			
216	V30000588	RES SMD 1/10W 220R J 0805	PC	2,000	R580	R581			
217	V30000626	RES SMD 1/10W 270R J	PC	1,000	R507				
218	V30000636	RES SMD 1/10W 27K J 0805	PC	2,000	R584	R586			
219	V30000717	RES SMD 1/10W 470R J (0805)	PC	5,000	R541	R544	R548	R560	R596
220	V30000721	RES SMD 1/10W 4.7K J	PC	7,000	R506	R543	R550	R551	R553
					R562	R598			
221	V30000797	RES SMD 1/10W 75R J (0805)	PC	8,000	R524	R525	R536	R555	R576
					R579	R599	R529		
222	V30001285	DIODE 1N4148 SMD	PC	2,000	D504	D505			
223	V30001457	TR BC848B SMD	PC	10,000	Q506	Q507	Q508	Q509	Q510
					Q511	Q513	Q512	Q514	Q515
224	V30001458	TR BC858B SMD	PC	1,000	Q501				
226	V30010964	FERRITE BEAD(805) BLM21A601RPT	PC	2,000	L536	L537			
227	V30013413	FERRITE BEAD ACB2012H-300	PC	13,000	L535	L520	L521	L522	L523
					L524	L525	L526	L527	L538
					L539	L540	L541		
228	V20077209	MD.SMD.ST41-HEADPHONE	PC	1,000					
232	V30000718	RES CF 1/4W 4.7K J	PC	2,000	R527	R531			
233	V30001996	FIXED COIL 22UH Q40 K	PC	2,000	L518	L519			
234	V30000074	CAP MKT 100NF 63V J	PC	1,000	C571				
235	V30000100	CAP MKT 330NF 63V J	PC	2,000	C555	C559			
236	V30000352	CAP EL 100UF 16V M	PC	2,000	C574	C578			
237	V30000362	CAP EL 1UF 50V M	PC	1,000	C579				
238	V30000407	CAP EL 470UF 16V M	PC	1,000	C570				
239	V30000284	CAP SMD 1NF 50V K R (0805)	PC	4,000	C503	C506	C581	C575	
240	V30000309	CAP SMD 2.2NF 50V K R 0805	PC	2,000	C573	C580			
241	V30000332	CAP SMD 4.7NF 50V K (0805)	PC	2,000	C642	C639			
242	V30000475	RES SMD 1/10W 10K J 0805	PC	2,000	R530	R554			
243	V30000727	RES SMD 1/10W 47K J (0805)	PC	2,000	R534	R537			
244	V30013413	FERRITE BEAD ACB2012H-300	PC	2,000	L528	L529			
245	V20077224	MD.SMD.ST41-FAV	PC	1,000					
246	V30000332	CAP SMD 4.7NF 50V K (0805)	PC	2,000	C640	C641			
247	V30013413	FERRITE BEAD ACB2012H-300	PC	2,000	L533	L534			
248	V20077226	MD.SMD.ST41-BACK AV	PC	1,000					
249	V30013413	FERRITE BEAD ACB2012H-300	PC	3,000	L530	L531	L532		
250	V20082384	MD.SMD.ST41-W/JVC	PC	1,000					
255	V30000797	RES SMD 1/10W 75R J (0805)	PC	1,000	R614				
257	V20090584	CHASSIS FRAME 288X (AK33)(V.0)	PC	1,000					
258	V60000009	FR-HIPS NATR.V-0	KG	0.350					
259	V35005061	SCREW RB C SK ZN YFMB 2.9*9.5	PC	1,000					
262	V20079177	HE.ASY.41-SOUND WO/DOLBY	PC	1,000					
263	V30007794	IC AAMP TDA7265 2*25W MULTIWATT11	PC	1,000	IC802				
264	V35000158	NUT C ZN BOTTOM M3	PC	1,000					
265	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	1,000					
266	V35000182	SCREW C ZN YSMB M3*10	PC	1,000					
267	V35004441	HEATSINK AUDIO (AK41)	PC	1,000					

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3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER
268	V70000074	SILICON (GRES)	KG	0,001	.
269	V40006901	SPACER SUPPORT (TCBS-29)	PC	1,000	.
271	V20030940	HE.ASY.28-REG WO/DVD (28-41)	PC	1,000	.
272	V30001302	DIODE BYW29-200 8A/200V 80A	PC	3,000	D112 D114
273	V30007802	TR STP20N06LFP	PC	2,000	Q103 Q106
274	V35000158	NUT C ZN BOTTOM M3	PC	5,000	.
275	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	5,000	.
276	V35000182	SCREW C ZN YSMB M3*10	PC	5,000	.
277	V35002240	HEATSINK REGULATOR (AK28)	PC	1,000	.
279	V30009637	TUNER WSP (PLL) 38.9 MK2 - BATCH	PC	1,000	TU401
281	V20000849	FUSE ASSY.TK79-A (3.15A)	PC	1,000	F101
282	V30001732	FUSE 3.15A 250V 5*20	PC	1,000	.
283	V35000138	FUSE HOLDER TK79A (BLACK)	PC	1,000	.
284	V20043480	HE.ASY.28-8V (28-41)	PC	1,000	.
285	V30001500	IC LM7808	PC	1,000	IC105
286	V35000142	HEATSINK 15AK14/15 15/TP ORTAK	PC	1,000	.
287	V35000158	NUT C ZN BOTTOM M3	PC	1,000	.
288	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	1,000	.
289	V35000182	SCREW C ZN YSMB M3*10	PC	1,000	.
290	V20075415	HE.ASSY.41-LM317 (AK41/45)	PC	1,000	IC106
291	V30001668	IC LM317T	PC	1,000	.
292	V35000142	HEATSINK 15AK14/15 15/TP ORTAK	PC	1,000	.
293	V35000158	NUT C ZN BOTTOM M3	PC	1,000	.
294	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	1,000	.
295	V35000182	SCREW C ZN YSMB M3*10	PC	1,000	.
296	V20082099	HE.ASY.41J-HOR	PC	1,000	.
297	V30007678	DIODE GUC DTV32F1500A 6A/1500V 100A	PC	1,000	D206
298	V30007768	DIODE STTA506F 5A/600V 55A	PC	1,000	D207
299	V30007799	TR BDX53BF1	PC	1,000	Q205
300	V30016686	TR 2SC5302	PC	1,000	Q202
301	V35000015	SPRING TR.HOLDER (BIG)	PC	1,000	.
302	V35000158	NUT C ZN BOTTOM M3	PC	3,000	.
303	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	3,000	.
304	V35000181	SCREW C ZN YSMB M3*8	PC	1,000	.
305	V35000182	SCREW C ZN YSMB M3*10	PC	2,000	.
306	V35004571	HEATSINK HORIZANTEL AK41	PC	1,000	.
307	V30000094	CAP MKT 220NF 275V M AC	PC	1,000	C112
308	V30000131	CAP MKP 100NF 250V J	PC	1,000	C111
309	V30000287	CAP CER 10NF 50V K B	PC	1,000	CXX3
310	V30000351	CAP EL 10UF 350V M	PC	1,000	C223
311	V30000356	CAP EL 100UF 63V M	PC	1,000	C226
312	V30000359	CAP EL 1000UF 16V M	PC	4,000	C146 C225 C251 C147
313	V30000360	CAP EL 1000UF 25V M	PC	3,000	C140 C228 C254
314	V30000406	CAP EL 47UF 250V M (HR) 105°	PC	1,000	C216
315	V30000409	CAP EL 470UF 25V M	PC	3,000	C133 C804 C806
316	V30000415	CAP EL 4.7UF 250V M	PC	1,000	C208
317	V30001041	RES ADJ 1/6W 1K M VER	PC	1,000	VR127
318	V30001077	RES MO 2W 10R J	PC	1,000	R264
319	V30001089	RES MO 2W 1R J	PC	1,000	R156
320	V30001134	RES MO 2W 2.2R J	PC	1,000	R255
321	V30001168	RES MO 2W 470RJ	PC	1,000	R226
322	V30001229	RES FUSE 1W 2.2R J	PC	1,000	R231
323	V30001265	NTC MONITOR 10R/3A SCK-103	PC	1,000	J412
324	V30001299	DIODE UF5404 3A/400V 150A	PC	3,000	D111 D210 D211
325	V30001762	CONN HEADER 2P 2.5MM(9.7MM) TOP	PC	1,000	PL802
326	V30001764	CONN HEADER 2P 2.5MM(9.7MM) TOP BLACK	PC	1,000	PL804
327	V30001784	CONN HEADER 6P 2.5MM TOP BD	PC	1,000	PL900
328	V30001792	CONN HEADER 2P 7.5MM TOP WHT	PC	1,000	PL204
329	V30001792	CONN HEADER 2P 7.5MM TOP WHT	PC	1,000	PL101
330	V30001795	CONN HEADER 3P 5/7.5MM TOP WHT	PC	1,000	PL102
331	V30001810	CONN HEADER 14P 2.5MM TOP WHT	PC	1,000	PL414
332	V30001812	CONN HEADER 15P 2.5MM TOP WHT	PC	4,000	PL330 PL331 PL332 PL415
333	V30001829	CONN HEADER 2P 2.5MM TOP WHT SD	PC	1,000	PL206
334	V30001851	CONN HEADER 7P 2.5MM TOP WHT	PC	1,000	PL202
335	V30001853	SOCKET IC 32P	PC	1,000	IC304
336	V30001960	FERIT BAR 6*20MM AK16	PC	3,000	L107 L108 L109
338	V30002183	RELAY MON15 KI-S-212M	PC	1,000	RL2
340	V30006662	XTAL 6MHZ	PC	1,000	X900
341	V30006712	FERRITE BEAD 3.5X4.7X0.8	PC	1,000	L106
342	V30006743	TRF. HORIZONTAL DRIVER 15AK17-17"	PC	1,000	TR201
343	V30006744	LINE FILTER 16MH 15AK17-17"	PC	1,000	L103
344	V30006909	CAP EL 100UF M 250V	PC	1,000	C131
345	V30007442	IC TDA16846 (4646)	PC	1,000	IC101
346	V30007444	IC L4931CV50	PC	1,000	IC104
347	V30007748	CAP EL 1000UF 35V M	PC	2,000	C135 C136
348	V30007750	CAP EL 470UF 35V (H/R 1150MA)	PC	2,000	C132 C134
349	V30007755	CAP MKT 680NF 275V M AC X2	PC	1,000	C118
350	V30007757	COIL INJECTION EW 6MH AK28	PC	1,000	L202
351	V30007758	DIODE BRIDGE GBU4M 4A/1000V 150A	PC	1,000	D106
352	V30007770	FILTER COIL 1MH AK28	PC	1,000	L203
353	V30007771	FIXED COIL 100UH	PC	1,000	L201
354	V30007802	TR STP20N06LFP	PC	1,000	Q201
355	V30007858	CAP MKT 470NF 275V M AC (P=22.5MM)	PC	1,000	C115
356	V30009036	RES FUSE 1/2W 0.1R J	PC	1,000	R234
357	V30009036	RES FUSE 1/2W 0.1R J	PC	2,000	R118 R119
358	V30009037	FUSE 6.3A 250V 5mm	PC	2,000	F102 F103
359	V30009832	CABL 1P/130 SIS	PC	1,000	CAB001
360	V30012619	CNAS 10P/500 RGB SHL W/DC UL1533AWG24	PC	1,000	PL004
361	V30013690	CAP EL 220UF 450V M 105°	PC	1,000	C121
362	V30015087	IC OPTOCOUPLER TCET1102G	PC	1,000	IC102
363	V30016591	CNAS 5P-7/500 AK41 SIS W/DC UL1007AWG24	PC	1,000	PL202
364	V35000224	SCREW C SK ZN YFMB 2.9*9.5	PC	1,000	.
365	V35001859	SHIELD CONTROLLER (MAIN BOARD-11AK28)	PC	1,000	.
366	V35002631	SHIELD IF (MAIN BOARD-11AK28)	PC	1,000	.
367	V35005061	SCREW RB C SK ZN YFMB 2.9*9.5	PC	3,000	.

BILL OF MATERIAL LIST

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3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER				
368	V40006431	SPACER SUPPORT (SCC-10A)	PC	1,000	.	.	.	.	.
369	V40006432	MOUNTING BUTTON (MB-10)	PC	2,000	.	.	.	.	.
370	V40006903	HOLD PLUG COVER (BH-10)	PC	1,000	.	.	.	.	.
371	V40008183	SPACER SUPPORT (SCC-10C)	PC	1,000	.	.	.	.	.
372	V70000029	SOLDER (INGOT) 63/37	KG	0,019	.	.	.	.	.
373	V70000030	SOLDER WIRE CAP 1.00mm 60Sn40Pb	G	1,200	.	.	.	.	.
375	V20063054	CN.ASY.28-DIODE BYM26D+FERIT+HEATSINK	PC	1,000	D110	.	.	.	.
376	V30001301	DIODE BYM26D 2.3A/800V 45-150A	PC	1,000	.	.	.	.	.
377	V30001964	FERRITE BAR 5*8	PC	1,000	.	.	.	.	.
378	V35003543	HEATSINK DIODE (1)	PC	2,000	.	.	.	.	.
379	V20082157	HE.ASY.41J-SMPS W/PFC	PC	1,000	.	.	.	.	.
380	V30007768	DIODE STTA506F 5A/600V 55A	PC	3,000	D103	D104	D105	.	.
381	V30007801	TR SPP20N60S5	PC	1,000	Q101	.	.	.	.
382	V35000158	NUT C ZN BOTTOM M3	PC	4,000	.	.	.	.	.
383	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	4,000	.	.	.	.	.
384	V35000182	SCREW C ZN YSMB M3*10	PC	3,000	.	.	.	.	.
385	V35000183	SCREW C ZN YSMB M3*12	PC	1,000	.	.	.	.	.
386	V35004184	HEATSINK SMPS AK28-7	PC	1,000	Q101	.	.	.	.
387	V40000020	TR HOLDER TR-06A	PC	1,000	.	.	.	.	.
388	V40000146	INSULATOR SILICON PAD (15*20)	PC	1,000	.	.	.	.	.
389	V30000123	CAP PP 33NF 630V K	PC	1,000	C108	.	.	.	.
390	V30001171	RES MO 2W 4.7K J	PC	1,000	R116	.	.	.	.
391	V30006744	LINE FILTER 16MH 15AK17-17"	PC	1,000	L104	.	.	.	.
392	V30007753	CAP MKP 1NF 1KV	PC	1,000	C120	.	.	.	.
393	V30007754	CAP MKP 1UF 400V	PC	1,000	C119	.	.	.	.
394	V30007775	COIL PFC 1MH 1KHZ 2A	PC	1,000	L102	.	.	.	.
396	V30014023	RES FUSE 1/2W 0.1R J VISHAY	PC	2,000	R148	R151	.	.	.
397	V30016819	TRF SMPS AK41 W/PFC (J)	PC	1,000	TR101	.	.	.	.
398	V30023449	CAP MKP 4.7NF 2KV J	PC	1,000	C109	.	.	.	.
401	V30001494	IC TDA4470B	PC	1,000	IC401	.	.	.	.
402	V30001692	FILTER SAW OFWK3953M	PC	1,000	Z403	.	.	.	.
403	V30001706	FILTER SAW OFWK9453	PC	1,000	Z401	.	.	.	.
404	V30001726	FILTER SER TRAP TPS 6.5MHZ	PC	1,000	T402	.	.	.	.
405	V30001979	FIXED COIL 1UH Q45 M-A	PC	1,000	LXX1	.	.	.	.
406	V30002036	ADJ COIL VIF 38.9MHZ C=12PF	PC	1,000	VL401	.	.	.	.
407	V30009195	CONN HEADER 1P TOP BLACK	PC	1,000	CXXX	.	.	.	.
409	V20043482	HE.ASY.28-VER 28"-29"-32" (28-41)	PC	1,000	.	.	.	.	.
410	V30007793	IC STV9379FA	PC	1,000	IC201	.	.	.	.
411	V35000158	NUT C ZN BOTTOM M3	PC	1,000	.	.	.	.	.
412	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	1,000	.	.	.	.	.
413	V35000183	SCREW C ZN YSMB M3*12	PC	1,000	.	.	.	.	.
414	V35002239	HEATSINK VERTICAL (AK28)	PC	1,000	.	.	.	.	.
415	V40000020	TR HOLDER TR-06A	PC	1,000	.	.	.	.	.
416	V40000146	INSULATOR SILICON PAD (15*20)	PC	1,000	.	.	.	.	.
417	V30000447	CAP CER 4.7NF 4KV M E	PC	1,000	C122	.	.	.	.
418	V30001086	RES MO 2W 10K J	PC	1,000	R225	.	.	.	.
419	V30001270	PTC 9 OHM	PC	1,000	R109	.	.	.	.
420	V30007728	CABLE 1P R2.6 50 W/CLIPS	PC	1,000	KXX1	.	.	.	.
421	V20117602	PR.IC.41-AK41J A(32"SF)	PC	1,000	.	.	.	.	.
422	V20118227	PR.IC.41-AK41J A030	PC	1,000	.	.	.	.	.
423	V30016491	IC 27W401	PC	1,000	IC304	.	.	.	.
426	V30000717	RES SMD 1/10W 470R J (0805)	PC	2,000	R809	R811	.	.	.
428	V30007021	RES SMD 1/10W 1K F (0805)	PC	1,000	R137	.	.	.	.
429	V30007786	RES SMD 1/10W 2.55K F (0805)	PC	1,000	R138	.	.	.	.
436	V30001291	DIODE HER107 1A/800V 30A	PC	1,000	D102	.	.	.	.
437	V30009208	CAP CER 470PF 1KV K (PULSE)	PC	3,000	C110	C163	C167	.	.
438	V30000469	RES SMD 1/10W 1K J 0805	PC	1,000	R122	.	.	.	.
439	V30000575	RES SMD 1/10W 2K J	PC	1,000	S133	.	.	.	.
440	V30000664	RES SMD 1/10W 3.3K J (0805)	PC	1,000	R106	.	.	.	.
448	V30000082	CAP MKT 15NF 63V J	PC	1,000	C100	.	.	.	.
449	V30000224	CAP SMD 220PF 50V J (0805)	PC	1,000	C209	.	.	.	.
450	V30000315	CAP SMD 220NF 25V Z (0805)	PC	1,000	C206	.	.	.	.
451	V30000325	CAP SMD 33NF 50V K (0805)	PC	1,000	C137	.	.	.	.
452	V30000506	RES SMD 1/10W 120K J	PC	1,000	R218	.	.	.	.
453	V30000732	RES SMD 1/10W 470K J	PC	1,000	R145	.	.	.	.
454	V30007021	RES SMD 1/10W 1K F (0805)	PC	1,000	R120	.	.	.	.
461	V30000503	RES SMD 1/10W 12K J (0805)	PC	1,000	R492	.	.	.	.
462	V30000751	RES SMD 1/10W 5.6K J 0805	PC	1,000	R441	.	.	.	.
463	V30012692	RES SMD 1/16W 4.7K J (0603)	PC	1,000	R934	.	.	.	.
465	V30000464	RES SMD 1/10W 100R J	PC	1,000	R942	.	.	.	.
473	V30000452	RES CF 1/4W 10R J	PC	1,000	R105	.	.	.	.
474	V30000459	RES CF 1/4W 100R J	PC	3,000	R140	R323	R937	.	.
475	V30000466	RES CF 1/4W 1K J	PC	4,000	R490	R245	R959	R953	.
476	V30000471	RES CF 1/4W 10K J	PC	6,000	R912	R915	R945	R914	R943
					R960	.	.	.	.
477	V30000477	RES CF 1/4W 100K J	PC	2,000	R250	R251	.	.	.
478	V30000500	RES CF 1/4W 12K J	PC	1,000	R940	.	.	.	.
479	V30000531	RES CF 1/4W 15K J	PC	3,000	R806	R909	R910	.	.
480	V30000536	RES CF 1/4W 150K J	PC	1,000	R128	.	.	.	.
481	V30000541	RES CF 1/4W 1.5M J	PC	1,000	R270	.	.	.	.
482	V30000564	RES CF 1/4W 18K J	PC	1,000	R810	.	.	.	.
483	V30000583	RES CF 1/4W 220R J	PC	1,000	R210	.	.	.	.
484	V30000590	RES CF 1/4W 2.2K J	PC	1,000	R220	.	.	.	.
485	V30000594	RES CF 1/4W 22K J	PC	1,000	R322	.	.	.	.
486	V30000628	RES CF 1/4W 2.7K J	PC	1,000	R803	.	.	.	.
487	V30000712	RES CF 1/4W 470R J	PC	1,000	R155	.	.	.	.
488	V30000718	RES CF 1/4W 4.7K J	PC	9,000	R236	R801	R480	R802	R903
					R933	R904	R936	R961	.
489	V30000729	RES CF 1/4W 470K J	PC	1,000	R238	.	.	.	.
490	V30000734	RES CF 1/4W 4.7R J	PC	4,000	R812	R808	R819	R820	.
491	V30000744	RES CF 1/4W 560R J	PC	1,000	R271	.	.	.	.
492	V30000784	RES CF 1/4W 680K J	PC	1,000	R242	.	.	.	.
493	V30000855	RES MF 1/4W 1M F	PC	1,000	R103	.	.	.	.
494	V30000902	RES MF 1/4W 1.8K F	PC	1,000	R230	.	.	.	.
495	V30000927	RES MF 1/4W 220K J	PC	1,000	R125	.	.	.	.

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3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER				
496	V30001027	RES MF 1/4W 82K J	PC	1,000	R246	.	.	.	.
497	V30001257	RES MG 1/2W 4.7M J	PC	1,000	R117	.	.	.	.
498	V30001284	DIODE 1N4148 0.15A/100V 0.5A	PC	7,000	D119	D220	D126	D221	D127
					D222	D128	.	.	.
499	V30001291	DIODE HER107 1A/800V 30A	PC	8,000	D120	D201	D208	D209	D212
					D213	D218	D219	.	.
500	V30001318	DIODE BA159 1A/800V 20A	PC	4,000	D121	D122	D225	D108	.
501	V30001979	FIXED COIL 1UH Q45 M-A	PC	1,000	L403	.	.	.	.
502	V30001986	FIXED COIL 3.3UH Q65 K	PC	1,000	L401	.	.	.	.
503	V30001987	FIXED COIL 4.7UH Q70 K-A	PC	5,000	L904	L427	L428	L429	L430
504	V30001992	FIXED COIL 10UH Q65 K-A	PC	6,000	L304	L421	L903	L902	L901
					L900	.	.	.	.
506	V30001996	FIXED COIL 22UH Q40 K	PC	1,000	L420	.	.	.	.
507	V30006712	FERRITE BEAD 3.5X4.7X0.8	PC	3,000	L101	L206	L207	.	.
508	V30007204	RES MF 1/2W 1.5M F	PC	1,000	R149	.	.	.	.
509	V30007782	RES MF 1/4W 3.9M F	PC	1,000	R102	.	.	.	.
510	V30007783	RES FUSE 1/4W 2.2R J	PC	1,000	R150	.	.	.	.
512	V30018481	PCB 11AK41J-7	PC	1,000	.	.	.	.	.
513	V30000074	CAP MKT 100NF 63V J	PC	4,000	C808	C809	C904	C610	.
514	V30000106	CAP MKT 47NF 100V J	PC	1,000	C202	.	.	.	.
515	V30000109	CAP MKT 470NF 63V J	PC	1,000	C411	.	.	.	.
516	V30000345	CAP EL 10UF 50V M	PC	6,000	C204	C402	C450	C506	C930
					C823	.	.	.	.
517	V30000352	CAP EL 100UF 16V M	PC	10,000	C141	C144	C150	C321	C322
					C500	C911	C171	C170	C456
518	V30000353	CAP EL 100UF 25V M	PC	1,000	C114	.	.	.	.
519	V30000354	CAP EL 100UF 35V M	PC	1,000	C240	.	.	.	.
520	V30000355	CAP EL 100UF 50V M	PC	2,000	C453	C166	.	.	.
521	V30000362	CAP EL 1UF 50V M	PC	5,000	C207	C801	C802	C499	C803
522	V30000371	CAP EL 22UF 50V M	PC	5,000	C101	C408	C900	C914	C905
523	V30000375	CAP EL 220UF 16V M	PC	1,000	C919	.	.	.	.
524	V30000384	CAP EL 2.2UF 50V M	PC	2,000	C412	C920	.	.	.
525	V30000431	CAP CER 100PF 1KV M	PC	1,000	C222	.	.	.	.
526	V30001428	TR BF423	PC	1,000	Q113	.	.	.	.
527	V30001454	TR BC548B	PC	1,000	Q112	.	.	.	.
528	V30001455	TR BC558B	PC	1,000	Q208	.	.	.	.
529	V30001506	IC TL431	PC	2,000	IC103	IC202	.	.	.
530	V30007081	CAP EL 4.7UF 50V M (NPL)	PC	1,000	C160	.	.	.	.
531	V30007308	CAP CER 220PF 1KV K (PULSE)	PC	2,000	C161	C162	.	.	.
532	V30007708	CAP CER 1NF 1KV K (PULSE)	PC	1,000	C130	.	.	.	.
533	V30012323	CAP MKT 1NF 100V J WIMA FK12	PC	1,000	C104	.	.	.	.
534	V30000186	CAP SMD 10PF 50V D COG 0805	PC	2,000	C509	C510	.	.	.
535	V30000189	CAP SMD 100PF 50V J (0805)	PC	1,000	C313	.	.	.	.
536	V30000220	CAP SMD 22PF 50V J (0805)	PC	1,000	C441	.	.	.	.
537	V30000263	CAP SMD 56PF 50V J CH (0805)	PC	1,000	C107	.	.	.	.
538	V30000289	CAP SMD 10NF 50V K R (0805)	PC	1,000	C252	.	.	.	.
539	V30000294	CAP SMD 100NF 50V K (0805)	PC	34,000	C102	C142	C143	C148	C149
					C253	C255	C305	C324	C333
					C454	C409	C410	C413	C414
					C442	C468	C478	C805	C417
					C418	C419	C427	C428	C807
					C457	C451	C492	C497	C498
					C505	C103	C933	C168	.
540	V30000304	CAP SMD 1.8NF 50V K R (0805)	PC	2,000	C257	C250	.	.	.
541	V30000309	CAP SMD 2.2NF 50V K R 0805	PC	3,000	C145	C821	C822	.	.
542	V30000315	CAP SMD 220NF 25V Z (0805)	PC	3,000	C124	C125	C173	.	.
543	V30000332	CAP SMD 4.7NF 50V K (0805)	PC	1,000	C106	.	.	.	.
544	V30000341	CAP SMD 68NF 50V K (0805)	PC	1,000	C511	.	.	.	.
545	V30000457	RES SMD 1/10W 10R J 0805	PC	1,000	R513	.	.	.	.
546	V30000464	RES SMD 1/10W 100R J	PC	4,000	R324	R327	R511	R512	.
547	V30000469	RES SMD 1/10W 1K J 0805	PC	8,000	R123	R318	R414	R146	R127
					R240	R134	R227	.	.
548	V30000475	RES SMD 1/10W 10K J 0805	PC	9,000	R142	R413	R428	R429	R804
					R141	R272	R228	R158	.
549	V30000480	RES SMD 1/10W 100K J (0805)	PC	3,000	R124	R281	R159	.	.
550	V30000517	RES SMD 1/10W 15R J 0805	PC	1,000	R415	.	.	.	.
551	V30000524	RES SMD 1/10W 150R J (0805)	PC	1,000	R475	.	.	.	.
552	V30000534	RES SMD 1/10W 15K J (0805)	PC	1,000	R157	.	.	.	.
553	V30000563	RES SMD 1/10W 1.8K J (0805)	PC	1,000	R421	.	.	.	.
554	V30000567	RES SMD 1/10W 18K J 0805	PC	1,000	R807	.	.	.	.
555	V30000588	RES SMD 1/10W 220R J 0805	PC	1,000	R941	.	.	.	.
556	V30000593	RES SMD 1/10W 2.2K J (0805)	PC	4,000	R212	R213	R214	R217	.
557	V30000631	RES SMD 1/10W 2.7K J 0805	PC	1,000	R216	.	.	.	.
558	V30000636	RES SMD 1/10W 27K J 0805	PC	2,000	R254	R805	.	.	.
559	V30000659	RES SMD 1/10W 330R J (0805)	PC	28,000	R360	R361	R362	R363	R364
					R365	R366	R367	R368	R369
					R370	R371	R372	R373	R374
					R375	R376	R378	R379	R380
					R381	R382	R383	R384	R385
					R397	R398	R152	.	.
560	V30000664	RES SMD 1/10W 3.3K J (0805)	PC	1,000	R126	.	.	.	.
561	V30000668	RES SMD 1/10W 33K J 0805	PC	3,000	R235	R104	R101	.	.
562	V30000692	RES SMD 1/10W 3.9K J 0805	PC	1,000	R968	.	.	.	.
563	V30000717	RES SMD 1/10W 470R J (0805)	PC	1,000	R416	.	.	.	.
564	V30000721	RES SMD 1/10W 4.7K J	PC	3,000	R130	R215	R211	.	.
565	V30000727	RES SMD 1/10W 47K J (0805)	PC	2,000	R229	R280	.	.	.
566	V30000735	RES SMD 1/10W 4.7R J (0805)	PC	1,000	R518	.	.	.	.
567	V30000774	RES SMD 1/10W 680R J (0805)	PC	2,000	R136	R139	.	.	.
568	V30000778	RES SMD 1/10W 6.8K J 0805	PC	2,000	R260	R261	.	.	.
569	V30000797	RES SMD 1/10W 75R J (0805)	PC	2,000	R425	R509	.	.	.
570	V30000814	RES SMD 1/10W 820R J	PC	1,000	R445	.	.	.	.
571	V30000818	RES SMD 1/10W 8.2K J (0805)	PC	2,000	R241	R813	.	.	.
572	V30001285	DIODE 1N4148 SMD	PC	9,000	D115	D117	D202	D216	D403
					D123	D101	D223	D224	.
573	V30001373	DIODE ZENER ZPD 10V	PC	1,000	D227	.	.	.	.

BILL OF MATERIAL LIST

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3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER				
574	V30001457	TR BC848B SMD	PC	18,000	Q109	Q206	Q403	Q802	Q801
					Q207	Q110	Q415	Q901	Q902
					Q903	Q904	Q908	Q905	Q906
					Q907	Q911	Q910		
575	V30001458	TR BC858B SMD	PC	4,000	Q203	Q204	Q900	Q909	
577	V30001971	FERRITE BEAT (805) BLM21A601S	PC	1,000	L425				
578	V30006923	RES SMD 1/10W 4.3K J	PC	1,000	R160				
579	V30007019	RES SMD 1/10W 10K F (0805)	PC	2,000	R107	R129			
580	V30007021	RES SMD 1/10W 1K F (0805)	PC	3,000	R143	R424	R510		
581	V30007760	DIODE ZENER SMD BZT55C10	PC	4,000	D116	D118	D203	D226	
582	V30007762	DIODE ZENER SMD BZT55C33	PC	1,000	D215				
583	V30007763	DIODE ZENER SMD BZT55C5V1	PC	2,000	D205	D214			
584	V30007788	RES SMD 1/10W 2.7K F (0805)	PC	1,000	R144				
585	V30007789	RES SMD 1/10W 27K F (0805)	PC	1,000	R252				
586	V30007790	RES SMD 1/10W 4.3K F (0805)	PC	1,000	R135				
587	V30007798	TR BC848C SMD	PC	4,000	Q104	Q105	Q107	Q108	
588	V30007800	TR BF799	PC	1,000	Q408				
589	V30009699	DIODE ZENER SMD BZT55C12	PC	1,000	D109				
590	V30012412	DIODE ZENER 2.4V SMD	PC	1,000	D900				
591	V30012509	RES SMD 1/16W 100K J (0603)	PC	1,000	R938				
592	V30012510	RES SMD 1/16W 100R J (0603)	PC	3,000	R928	R929	R956		
593	V30012569	CAP SMD 33PF 50V J (0603)	PC	2,000	C912	C913			
594	V30012581	CAP SMD 1NF 50V K R (0603)	PC	7,000	C139	C404	C405	C105	C151
					C819	C820			
595	V30012641	RES SMD 1/16W 10K J (0603)	PC	11,000	R900	R901	R902	R930	R931
					R932	R944	R911	R913	R964
					R966				
596	V30012649	RES SMD 1/16W 150R J (0603)	PC	1,000	R153				
597	V30012650	RES SMD 1/16W 15K J (0603)	PC	1,000	R967				
598	V30012657	RES SMD 1/16W 1K J (0603)	PC	11,000	R919	R920	R921	R922	R923
					R946	R955	R965	R950	R951
					R952				
599	V30012662	RES SMD 1/16W 2.7K J (0603)	PC	1,000	R935				
600	V30012679	RES SMD 1/16W 3.9K J (0603)	PC	2,000	R907	R908			
601	V30012692	RES SMD 1/16W 4.7K J (0603)	PC	2,000	R918	R939			
602	V30012695	RES SMD 1/16W 470R J (0603)	PC	2,000	R916	R506			
603	V30012696	RES SMD 1/16W 47K J (0603)	PC	5,000	R906	R924	R925	R926	R927
604	V30012984	RES SMD 1/16W 91R J (0603)	PC	1,000	R154				
606	V30012987	RES SMD 1/16W 56R J (0603)	PC	1,000	R917				
607	V30013571	IC SDA5550	PC	1,000	IC900				
608	V30014022	RES SMD 1/16W 47R J (0603)	PC	1,000	R958				
609	V30016654	CAP SMD 100NF 16V K R (0603)	PC	17,000	C165	C901	C902	C903	C906
					C908	C909	C910	C915	C916
					C917	C918	C921	C172	C927
					C926	C932			
610	V70000067	GLUE SMD PANASONIC	G	0,071					
615	V30000560	RES CF 1/4W 1.8K J	PC	1,000	R439				
616	V30000655	RES CF 1/4W 330R J	PC	1,000	R438				
617	V30000665	RES CF 1/4W 33K J	PC	1,000	R401				
618	V30000779	RES CF 1/4W 68K J	PC	1,000	R905				
619	V30001987	FIXED COIL 4.7UH Q70 K-A	PC	1,000	L405				
621	V30000071	CAP MKT 10NF 63V J	PC	2,000	C934	C935			
622	V30000250	CAP CER 390PF 50V J CH	PC	1,000	C931				
623	V30000355	CAP EL 100UF 50V M	PC	1,000	C440				
624	V30000362	CAP EL 1UF 50V M	PC	3,000	C479	C494	C907		
625	V30000387	CAP EL 33UF 50V M	PC	1,000	C424				
626	V30000393	CAP EL 3.3UF 50V M	PC	1,000	C403				
627	V30000400	CAP EL 47UF 50V M	PC	1,000	C491				
628	V30000413	CAP EL 4.7UF 50V M	PC	1,000	C496				
629	V30001724	FILTER SER TRAP TPS 5.5MHZ	PC	1,000	T401				
630	V30000220	CAP SMD 22PF 50V J (0805)	PC	1,000	C406				
631	V30000224	CAP SMD 220PF 50V J (0805)	PC	1,000	C443				
632	V30000294	CAP SMD 100NF 50V K (0805)	PC	1,000	C430				
633	V30000469	RES SMD 1/10W 1K J 0805	PC	2,000	R446	R447			
634	V30000588	RES SMD 1/10W 220R J 0805	PC	1,000	R422				
635	V30000593	RES SMD 1/10W 2.2K J (0805)	PC	1,000	R418				
636	V30000664	RES SMD 1/10W 3.3K J (0805)	PC	1,000	R411				
637	V30000668	RES SMD 1/10W 33K J 0805	PC	1,000	R403				
638	V30000721	RES SMD 1/10W 4.7K J	PC	1,000	R437				
639	V30000751	RES SMD 1/10W 5.6K J 0805	PC	1,000	R412				
640	V30000778	RES SMD 1/10W 6.8K J 0805	PC	1,000	R417				
641	V30000787	RES SMD 1/10W 680K J	PC	1,000	R432				
642	V30001285	DIODE 1N4148 SMD	PC	2,000	D401	D402			
643	V30001457	TR BC848B SMD	PC	3,000	Q405	Q406	Q401		
645	V30007026	RES SMD 1/10W 5.1K J(0805)	PC	2,000	R516	R517			
646	V30012581	CAP SMD 1NF 50V K R (0603)	PC	1,000	C407				
647	V30012668	RES SMD 1/16W 220R J (0603)	PC	1,000	R957				
648	V20107902	IC 24C32 084T51121422	PC	1,000					
649	V30015382	IC 24C32 3V	PC	1,000	IC302				
650	V20107911	CRT DIFF.KIT AK41-32"VCL(16:9)DAR.LA135V	PC	1,000					
651	V30000090	CAP MKT 22NF 100V J	PC	1,000	C203				
652	V30000092	CAP MKT 220NF 63V J	PC	1,000	C256				
653	V30000124	CAP MKP 620NF 250V %5	PC	1,000	C215				
654	V30000134	CAP MKP 11NF 2000V %3.5	PC	1,000	C211				
655	V30000137	CAP MKP 15NF 630V J	PC	1,000	C212				
656	V30000140	CAP MKP 1.8NF 2KV %3.5	PC	1,000	C210				
657	V30000190	CAP CER 100PF 50V J CH	PC	1,000	C232				
658	V30000283	CAP CER 1NF 50V K B	PC	1,000	CXX2				
659	V30000387	CAP EL 33UF 50V M	PC	1,000	C201				
660	V30000415	CAP EL 4.7UF 250V M	PC	1,000	C214				
661	V30000692	RES SMD 1/10W 3.9K J 0805	PC	1,000	R203				
662	V30001036	RES MF 1/4W 95K F	PC	1,000	R232				
663	V30001080	RES MO 2W 100R J	PC	1,000	R206				
664	V30001131	RES MO 1W 0.22R J	PC	1,000	R205				
665	V30001162	RES MO 1W 390R J	PC	1,000	R256				

BILL OF MATERIAL LIST

10016277

3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER
666	V30001237	RES FUSE 1/2W 3.3R J	PC	1,000	R262
667	V30001244	RES FUSE 1/2W 0.47R J	PC	2,000	R233 R237
668	V30001253	RES FUSE 1W 0.56R J	PC	1,000	R239
670	V30012271	LINEARTY COIL 4.3UH VOGT	PC	1,000	L204
671	V30013003	CAP MKP 1UF 250V J P=15	PC	1,000	C213
672	V30015222	RES MO 1W 0.75R J	PC	1,000	R257
673	V30017521	TRF FBT SINGLE COMMON FOCUS LAYER (AK41)	PC	1,000	TR202
674	V30018581	RES MO 2W 150R J	PC	1,000	R202
675	V30019483	COIL BRIDGE 300UH 32KHZ AK52	PC	1,000	L205
676	V40006432	MOUNTING BUTTON (MB-10)	PC	2,000	
677	V20107951	MD.ASY.SB103-FAV+HP XX41/W (AK41)	PC	1,000	
680	V30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	PC	1,000	PL106
681	V30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	PC	1,000	PL107
682	V30001891	RCA JACK 1P WHITE 28 FAV	PC	1,000	JK102
683	V30001892	RCA JACK 1P RED 28 FAV	PC	1,000	JK103
684	V30001893	RCA JACK 1P YELLOW 28 FAV	PC	1,000	JK101
686	V30001902	JACK HEADPHONE STEREO WO/SW	PC	1,000	JK108
687	V30013231	CNAS 3P/900 FLT W/C UL2468AWG24	PC	1,000	PL108
689	V30002362	CNAS 830 FAV SHL W/4C+FER	PC	1,000	PL106, PL107
696	V30000594	RES CF 1/4W 22K J	PC	2,000	R102 R104
697	V30000712	RES CF 1/4W 470R J	PC	2,000	R103 R106
698	V30001979	FIXED COIL 1UH Q45 M-A	PC	1,000	L101
699	V30019363	PCB 11SB103-2	PC	1,000	
700	V30000190	CAP CER 100PF 50V J CH	PC	3,000	C101 C103 C104
704	V30000460	RES CF 1/4W 100R G	PC	2,000	R112 R113
705	V30000471	RES CF 1/4W 10K J	PC	2,000	R114 R115
706	V30001996	FIXED COIL 22UH Q40 K	PC	2,000	L103 L104
707	V30000290	CAP CER 10NF 50V Z F	PC	2,000	C105 C106
708	V20110652	ARTWORK TOSH.TOSHIBA 32WH37G(AK41)SILVER	PC	1,000	
709	V20100980	R/C 2143 TOSHIBA CT-841(SILVER/P)(GRAY/S	PC	1,000	
710	V20096229	R/C 2143 NOBRAND SILVER (F)	PC	1,000	
711	V20094768	R/C KIT 2143 TOSHIBA	PC	1,000	
712	V20094767	MD.ASY.UK05	PC	1,000	
713	V20094766	UKV.B.ASSY.UK05 (SMD)	PC	1,000	
714	V30000489	RES SMD 1/10W 1R J (0805)	PC	1,000	R102
715	V30012509	RES SMD 1/16W 100K J (0603)	PC	1,000	R103
716	V30012510	RES SMD 1/16W 100R J (0603)	PC	1,000	R100
717	V30012578	CAP SMD 68PF 50V J (0603)	PC	2,000	C101 C102
718	V30016654	CAP SMD 100NF 16V K R (0603)	PC	2,000	C103 C104
719	V30018063	IC HT48RA0A OTP	PC	1,000	IC101
720	V30018712	PCB 11UK05-2	PC	1,000	
721	V30000352	CAP EL 100UF 16V M	PC	1,000	C100
722	V30001453	TR BC337	PC	1,000	Q100
723	V30002733	LED INFRARED IR333	PC	1,000	D100
724	V30002852	XTAL REZ 455KHZ	PC	1,000	X100
725	V35002401	BATTERY CONT.SINGLE (-) RC2040	PC	1,000	
726	V35005008	BATTERY CONT.SINGLE (+) RC2040 TOSHIBA	PC	1,000	
727	V35000228	SCREW SK C ZNSY YSMB 2.9*9.5	PC	1,000	
728	V35005007	DOUBLE BATTERY CONTACT UKV-900 TOSHIBA	PC	1,000	
729	V40005467	LENS RC2040(I)	PC	1,000	
730	V40010082	RUBBER PAD TRP41 (RC 2143) TOSHIBA	PC	1,000	
731	V40012344	SPONGE (BATTERY DOOR) (15x31x5mm)	PC	1,000	
732	V40005299	BATTERY COVER RC2040 SILVER(P)	PC	1,000	
733	V40009346	BOTTOM CVR R/C 21/2240 SILVER(P)	PC	1,000	
734	V40010357	TOP CVR R/C 2143 NOBRAND (S) SILVER(P)	PC	1,000	
735	V30002391	BATTERY AAA UM4 1.5V GREEN	PC	2,000	
736	V50031553	I/B TOSHIBA 32WH37G P/5550/2143/GESIFP	PC	1,000	
737	V20110654	LBL.BCK.CVR.TOSHIBA TOSHIBA 32WH37G "41"	PC	1,000	
738	V20013018	LBL.BCK.CVR.ASSY (TV) (WO/UL)	PC	1,000	
739	V50023173	LABEL LOT W/BARCODE (77X256)	PC	1,050	
740	V70000621	RIBBON 80MM*450MM	PC	1,030	
741	V20110655	LBL.CART.BOX TOSHIBA 32WH37G(ÇYFT KATLI)	PC	1,000	
742	V50023532	LABEL LOT TOSHIBA ÇYFT KATLI	PC	1,050	
743	V70000621	RIBBON 80MM*450MM	PC	1,050	
744	V20114691	EXP.KIT AK37 324XW V.0	PC	1,000	
745	V20004520	CABLE HOLDER DX15 (I)	PC	1,000	
746	V60000991	KIRMA - HDPE	KG	0,003	
747	V20084045	STRAP TIE (L:118)	PC	1,000	
748	V60000018	COPOLYMER POLYPROPYLENE	KG	0,001	
749	V20085269	CABLE HOLDER CRT (I) UL94V-0	PC	2,000	
750	V60000855	KIRMA FR-ABS BLUE CRT	KG	0,002	
751	V40006731	ISOLATION COTTON (9x25000mm)	M	2,000	
752	V50006325	CARTON SEPERATOR 665x980x6.5 (8270/71)	PC	2,000	
753	V70000331	ADHESIVE TAPE 75MM/660M (4125)	M	2,592	
754	V20116298	CRT B.ASSY.TP41J-28"32"33"W/BSVM(DARFON	PC	1,000	
756	V20079543	CRT B.ASSY.TP41J-COMMON (SMD)	PC	1,000	
761	V20079548	CRT B.ASSY.TP41J-COMMON (PER)	PC	1,000	
762	V35000176	EYELET BR 2*3MM	PC	2,000	PL905 PL906
764	V30000428	SPARK GAP 300V	PC	5,000	SP901 SP903 SP904 SP905 SP906
765	V30000466	RES CF 1/4W 1K J	PC	1,000	R929
766	V30000471	RES CF 1/4W 10K J	PC	1,000	R932
767	V30000477	RES CF 1/4W 100K J	PC	3,000	R922 R923 R924
768	V30000535	RES CF 1/2W 150K J	PC	1,000	R920
769	V30000788	RES CF 1/4W 6.8M J	PC	1,000	R918
770	V30001284	DIODE 1N4148 0.15A/100V 0.5A	PC	1,000	D907
771	V30001291	DIODE HER107 1A/800V 30A	PC	1,000	D908
772	V30001318	DIODE BA159 1A/800V 20A	PC	1,000	D902
773	V30001347	DIODE ZENER 8.2V	PC	1,000	SP902
774	V30001353	DIODE ZENER 18V	PC	1,000	D909
775	V30001992	FIXED COIL 10UH Q65 K-A	PC	2,000	J909 L906
777	V30001997	FIXED COIL 33UH Q60 J	PC	1,000	L904
778	V30006712	FERRITE BEAD 3.5X4.7X0.8	PC	1,000	J907
779	V30020924	PCB 11TP41J-3	PC	1,000	
780	V30000202	CAP CER 15PF 50V J CH	PC	1,000	C901
781	V30000295	CAP CER 100NF 50V Z F	PC	1,000	C941

BILL OF MATERIAL LIST

10016277

3241 TOSHIBA TOSHIBA 32WH37G(AK41)SILVER

NO	PART NUMBER	DESCRIPTION	UNIT	QTY	POSITION NUMBER					
782	V30000330	CAP CER 4.7NF 50V K B	PC	1,000	C916	.	.	.	.	.
783	V30000352	CAP EL 100UF 16V M	PC	1,000	C919	.	.	.	.	.
784	V30000433	CAP CER 1NF 1KV M B	PC	1,000	C938	.	.	.	.	.
785	V30000436	CAP CER 10NF 1KV ZE	PC	1,000	C942	.	.	.	.	.
786	V30001427	TR BF422	PC	1,000	Q901	.	.	.	.	.
787	V30001455	TR BC558B	PC	1,000	Q902	.	.	.	.	.
788	V30000209	CAP SMD 18PF 50V J (0805)	PC	1,000	C905	.	.	.	.	.
789	V30000220	CAP SMD 22PF 50V J (0805)	PC	1,000	C909	.	.	.	.	.
790	V30000265	CAP SMD 560PF 50V J (0805)	PC	4,000	C904	C908	C912	C931	.	.
791	V30000294	CAP SMD 100NF 50V K (0805)	PC	7,000	C902	C906	C910	C920	C934	.
					C935	C949	.	.	.	.
792	V30000469	RES SMD 1/10W 1K J 0805	PC	1,000	R926	.	.	.	.	.
793	V30000499	RES SMD 1/10W 1.2K J (0805)	PC	6,000	R901	R903	R906	R908	R911	.
					R913	.	.	.	.	.
794	V30000524	RES SMD 1/10W 150R J (0805)	PC	3,000	R904	R909	R914	.	.	.
795	V30000593	RES SMD 1/10W 2.2K J (0805)	PC	1,000	R931	.	.	.	.	.
796	V30007788	RES SMD 1/10W 2.7K F (0805)	PC	1,000	R925	.	.	.	.	.
798	V20000989	HE.ASY.TP18-RGB	PC	3,000	IC901	IC903	IC902	.	.	.
799	V30001551	IC TDA6111Q	PC	1,000	.	.	.	.	.	.
800	V35000131	HEATSINK 11TP18 RGB	PC	1,000	.	.	.	.	.	.
801	V35000158	NUT C ZN BOTTOM M3	PC	1,000	.	.	.	.	.	.
802	V35000165	KNURL WASHER C ZNSY 3*6*04 (M3)	PC	1,000	.	.	.	.	.	.
803	V35000189	SCREW C NI YSMB M3*6	PC	1,000	.	.	.	.	.	.
804	V30000072	CAP MKT 10NF 1250V J	PC	1,000	C914	.	.	.	.	.
805	V30000075	CAP MKT 100NF 250V K (DC)	PC	5,000	C903	C907	C911	C922	C936	.
806	V30000406	CAP EL 47UF 250V M (HR) 105°	PC	1,000	C923	.	.	.	.	.
807	V30000415	CAP EL 4.7UF 250V M	PC	1,000	C915	.	.	.	.	.
808	V30001084	RES MO 1W 1K J	PC	3,000	R905	R910	R915	.	.	.
809	V30001125	RES MO 2W 2.2K J	PC	1,000	R916	.	.	.	.	.
810	V30001170	RES MO 1W 4.7K J	PC	1,000	R917	.	.	.	.	.
811	V30001211	RES FUSE 1W 1K J	PC	1,000	R944	.	.	.	.	.
812	V30001249	RES FUSE 1W 4.7R J	PC	1,000	R927	.	.	.	.	.
813	V30001851	CONN HEADER 7P 2.5MM TOP WHT	PC	1,000	PL902	.	.	.	.	.
814	V30001855	SOCKET CRT NARROWNECK W/GND	PC	1,000	PL904	.	.	.	.	.
816	V30002876	CNAS 1P/250 EMC DIS W/TER	PC	1,000	.	.	.	.	.	.
817	V30012894	CONN HEADER 10P 2.54MM TOP WHT	PC	1,000	PL901	.	.	.	.	.
818	V30017132	RES MF 1W 51K F	PC	3,000	R902	R907	R912	.	.	.
819	V35000135	TEST PIN 1.1MM	PC	1,000	PL905	.	.	.	.	.
820	V35000512	NUT C ZN M4	PC	1,000	.	.	.	.	.	.
821	V30011622	32*SF 100HZ CPT TUBE	PC	1,000	.	.	.	.	.	.
822	V40012621	LOGO TOSHIBA (W/P-SILVER BR/H.ST)(GRAY)	PC	1,000	.	.	.	.	.	.
823	V50000007	PLASTIZOTE (1400*1000)	PC	2,000	.	.	.	.	.	.
824	V50000040	LABEL SCREEN 100HZ (GÖZ)	PC	1,000	.	.	.	.	.	.
825	V50027594	LABEL EHT/29.8KV BEAM/1700UA (GER)	PC	1,000	.	.	.	.	.	.
826	V50029320	LABEL SCR.100HZ FASTEXT(AK41-AK52)(2SC)	PC	1,000	.	.	.	.	.	.

# **Cabinet Exploded View**

N/A

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