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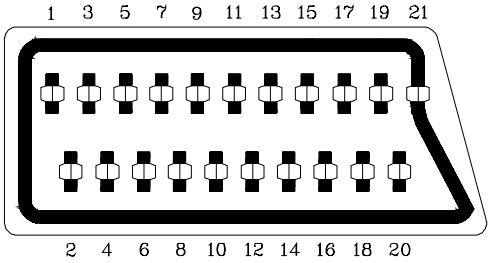
DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCH OFF
The mains supply side of the switch mode power supply transformer is live.
Use an isolating transformer.
The receivers fulfill completely the safety requirements.

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 fusable 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, 110VAC, 60Hz.

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	

1. INTRODUCTION
11AK26 is a 90ø chassis capable of driving 14" tubes at appropriate currents.
The chassis is capable of working in PAL M, PAL N, PAL B/G and NTSC M. The sound system is capable of giving 2.5 watts RMS output into a load of 16 ohms.

2. SMALL SIGNAL PART WITH TDA884X
The TDA8840/8842/8844 combine all small signal functions required for a colour TV receiver, except tuning.
2.1. Vision IF amplifier
The IF-amplifier contains 3 AC-coupled control stages with a total gain control range which is higher than 66dB.
The sensitivity of the circuit is comparable with that of modern IF-IC' s. The video signal is demodulated by means of a PLL carrier regenerator. This circuit contains a frequency detector and a phase detector. The AFC output is obtained by using the VCO control voltage of the PLL and can be read via the I²C-bus. For fast search tuning systems the window of the AFC can be increased with a factor 3. The setting is realised with the AFW bit.
Depending on the type the AGC-detector operates on top-sync level (single standard versions) or on top sync and top white-level (multi standard versions). The demodulation polarity is switched via the I²C-bus. The AGC detector time-constant capacitor is connected externally. This mainly because of the flexibility of the application. The time-constant of the AGC system during positive

modulation is rather long to avoid visible variations of the signal amplitude. To improve the speed of the AGC system a circuit has been included which detects whether the AGC detector is activated every frame period. When during 3 frame periods no action is detected the speed of the system is increased. For signals without peak white information the system switches automatically to a gated black level AGC. Because a black level clamp pulse is required for this way of operation the circuit will only switch to black level AGC in the internal mode.

The circuits contain a video identification circuit which is independent of the synchronisation circuit. Therefore search tuning is possible when the display section of the receiver is used as a monitor. The ident output is supplied to the tuning system via the I²C-bus. The video ident circuit can be made less sensitive by means of the STM bit. This mode can be used during search tuning
to avoid that the tuning system will stop at very weak input signals.

2.2. Video Switches

The circuits have two CVBS inputs (internal and external CVBS) and Y/C input. When the Y/C input is not required the Y input can be used as third CVBS input. The selection of the various sources is made via the I²C-bus. The circuit has one CVBS output.

2.3. Sound Circuit

The sound band pass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of a PLL demodulator. This PLL circuit tunes itself automatically to the incoming carrier signal so that no adjustment is required.

The volume is controlled via the I²C-bus. The deemphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from this pin. The FM demodulator can be muted via the I²C-bus. This function can be used to switch-off the sound during a channel change so that high output peaks are prevented. The TDA8840/8842 contain an automatic volume levelling (AVL) circuit which automatically stabilises the audio output signal to a certain level which can be set by the viewer by means of the volume control. This function prevents big audio output fluctuations due to variations of the modulation depth of the transmitter. The AVL function can be activated via the I²C-bus.

2.4. Synchronisation circuit

The sync seperator is preceded by a controlled amplifier which adjusts the sync pulse amplitude to a fixed level. These pulses are fed to the slicing stage which is operating at 50% of the amplitude. The separated sync pulses are fed to the first phase detector and to the coincidence detector. This coincidence detector is used to detect whether the line oscillator is synchronised and can also be used for transmitter identification. The first PLL has a very high statical steepness so that the phase of the picture is independent of the line frequency.

The horizontal output signal is generated by means of an oscillator which is running at twice the line frequency. Its frequency is divided by 2 to lock the first control loop to the incoming signal. The time-constant of the loop can be forced by the I²C-bus (fast or slow). If required the IC can select the time-constant depending on the noise content of the incoming video signal.

To protect the horizontal output transistor, the horizontal drive is immediately switched off when a power-on-reset is detected. The drive signal is switched-on again when the normal switch-on procedure is followed.

Via the I²C-bus, adjustments can be made of the horizontal and vertical geometry. The vertical sawtooth generator drives the vertical output drive circuit which has a differrential output current. For the EW drive a single ended current output is available.

When the horizontal scan is reduced to display 4 : 3 pictures on a 16 : 9 picture tube an accurate video blanking can be switched on to obtain well defined edges on the screen.

Overvoltage conditions can be detected via the EHT tracking pin.When an overvoltage condition is detected the horizontal output drive signal will be switched-off via the slow stop procedure but it is also possible that the drive is not switched-off and that just a protection indication is given in the I²C-bus output byte. The choice is made via the input bit PRD.

2.5. Chroma and Luminance processing

The circuits contain a chroma bandpass and trap circuit. The filters are realised by means of gyrator circuits and they are automatically calibrated by comparing the tuning frequency with the X-tal frequency of the decoder.

The luminance delay line and the delay for the peaking circuit are also realised by means of gyrator circuits.

The centre frequency of the chroma bandpass filter is switchable via the I²C-bus so that the performance can be optimised for “front-end” signals and external CVBS signals.

During SECAM reception the centre frequency of the chroma trap is reduced to get a better suppression of the SECAM carrier frequencies.

2.6. Colour Decoder

The decoder contains an alignment-free X-tal oscillator, a killer circuit and two colour difference demodulators. The 90° phaseshift for the reference signal is made internally.

The IC contains an automatic colour limiting (ACL) circuit which prevents that oversaturation occurs when signals with a high chroma-to-burst ratio are received. The ACL circuit is designed such that it only reduces the chroma signal and not the burst signal. This has the advantage that the colour sensitivity is not affected by this function.

The base-band delay line is integrated in the PAL/SECAM IC’ s.

The demodulated colour difference signals are internally supplied to the delay line. The matrixed signals are externally available.

The colour difference matrix switches automatically between
PAL/SECAM and NTSC, however, it is also possible to fix the matrix in the PAL standard.

Which colour standard the IC can decode depends on the external X-tals. The X-tal to be connected to pin 34 must have a frequency of 3.5 MHz (NTSC-M, PAL-M or PAL-N) and pin 35 can handle X-tals with a frequency of 4.4 and 3.5 MHz. To prevent calibration problems of the horizontal oscillator the external switching between the 2 X-tals should be carried out when the oscillator is forced to pin 35. For a reliable calibration of the horizontal oscillator it is very important that the X-tal indication bits (XA and XB) are not corrupted. For this reason the X-tal bits can be read in the output bytes so that the software can check the I²C-bus transmission.

2.7. RGB output circuit and black-current stabilisation

The colour-difference signals are matrixed with the luminance signal to obtain the RGB-signals. The TDA 884X device has one linear RGB input. This RGB signal can be controlled on contrast and brightness.

The output signal has an amplitude of about 2 volts black-to-white at nominal input signals and nominal settings of the controls.

To increase the flexibility of the IC it is possible to insert OSD and/or teletext signals directly at the RGB outputs.

This insertion mode is controlled via the insertion input (pin 26 in the S-DIP 56- and pin 38 in the QFP-64 level). This blanking action at the RGB outputs has some delay which must be compansated externally.

To obtain an accurate biasing of the picture tube a “Continuous Cathode Calibration” circuit has been developed.

This function is realised by means of a 2-point black level stabilisation circuit.

When the TV receiver is switched-on, the RGB output signals are blanked and the black current loop will try to set the right picture tube bias levels.Via the AST bit a choice can be made between automatic start-up or a start-up via the m-processor.

3. TUNER

Either a PLL or a VST tuner is used as a tuner.
UV1336 (VHF/UHF) is used as a PLL tuner. For only PAL B/G applications UV 1316 is used as the PLL tuner.

Channel coverage of UV1316:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS RANGE (MHz)	FREQUENCY	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25 **(1)**	S01 to S08	69.25 to 154.25
Mid Band	E5 to E12	175.25 to 224.25	S09 to S38	161.25 to 439.25
High Band	E21 to E69	471.25 to 855.25 **(2)**	S39 to S41	447.25 to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typical	Max.	**Gain**	Min.	Typical	Max.
Low band	: 5dB	9dB	All channels	: 38dB	44dB	52dB
Mid band	: 5dB	9dB	Gain Taper (of-air channels)	: -	-	8dB
High band	: 6dB	9dB				

Channel Coverage UV1336:

BAND	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	2 to D	55.25 to 139.25
Mid Band	E to PP	145.25 to 391.25
High Band	QQ to 69	397.25 to 801.25

Noise is typically 6dB for all channels. **Gain** is minimum 38dB and maximum 50dB for all channels.

4. SOUND OUTPUT STAGE TDA2614

TDA2614 is used as the AF output amplifier for mono applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2.5W (THD=0.5%) can be delivered into an 16 ohm load.

5. VERTICAL OUTPUT STAGE WITH TDA 8356

The TDA 8356 vertical deflection circuit is used in 90° deflection systems with field frequencies from 50 up to 120Hz. With its bridge configuration the deflection output can be DC coupled with few external components.
Only a single supply voltage for the scan and a second supply for the flyback are needed.
The drive voltage is amplified by an amplifier and fed to two amplifiers, one is inverting and the other is a non inverting amplifier. The outputs (pins 7 and 4) are connected to the series connection of the vertical deflection coil and feedback resistor Rsense (R702//R703). The voltage across Rsense is fed via pin 9 to correction amplifier, to obtain a deflection current which is proportional to the drive voltage. The supply voltage for the TDA 8356 is 15VDC at pin 3. The supply voltage generator has a separate supply voltage of 45VDC at pin 6.

6. VIDEO OUTPUT AMPLIFIER TDA6107Q

The TDA6107Q consists of three monolithic video output amplifiers. The amplifier can be seen as an operational amplifier with negative feedback.
The advantage of negative feedback is that the amplifier characteristics do not play an important role up to certain frequencies.
The internal flash diodes protect the amplifiers against flash over in the picture tube.
The only protections required at the cathode outputs are a flash resistor and a sparkgap.
The TDA6107Q has an internal thermal protection circuit which gives a decrease of the slew rate at high temperatures.
Furthermore, the device needs only one power supply voltage (Vdd).
In contrast to previous types of DMOS video amplifiers, all the external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and saves 9 resistors.
Furthermore, the reference voltage is integrated, it saves a resistor divider and a decoupling capacitor. So, the replacement value of the TDA6107Q is very high.
The TDA6107Q is provided with a black current data pin. Since TDA884X is used as drive device, no adjustments are required for gain and black setting, as the TDA884X has I²C white point adjustment and black current set-up.

7. POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44604 which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer produces 150/115V for FBT input, ±14V for audio output IC, S+5V for microcontroller, +15V for vertical output (field scan) and +33V for tuner and some other ICs and transistors.

8. MICROCONTROLLER SDA545X

The device is a control system based on the SDA 545X TV microcontroller. It is designed for a low cost mono TV-SET with analogue picture and sound control. Neverthless the system offers an on screen display (OSD) and IR remote control of all functions.

SDA545X has the following features:

- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD.
- Single LED for IR active, standby and on mode indication.
- 1 Control line to select external source.
- 3 Control lines for TV standard selection.
- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards PAL M/N NTSC M
- Mono sound control by analogue voltage
- System configuration with service mode

9. SERIAL ACCESS CMOS 8K (1024*8) EEPROM ST24C08

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organised as 4 blocks of 256*8 bits.
The memory is compatible with the I²C standard, two wire serial interface which uses a bi-directional data bus and serial clock.
The memory carries a built-in 4 bit, unique device identification code (1010) corresponding to the I²C bus definition.
This is used together with 1 chip enable input (E) so that up to 2*8K devices may be attached to the I²C bus and selected individually.

10. SAW FILTERS

Saw filter type	:	**Model:**
G1965M	:	PAL-SECAM B/G MONO
K2955M	:	PAL-SECAM B/G-D/K MONO, PAL-SECAM B/G-D/K-I', MONO, PAL-SECAM B/G-D/K-L MONO
K2958M	:	PAL-SECAM B/G-D/K (38) MONO
K2962M	:	PAL-SECAM B/G-L/L' MONO
K6259K	:	PAL-SECAM B/G-D/K-I-M/N (EURO) MONO
M1963M	:	PAL M/N MONO, NTSC M MONO, PAL M/N-NTSC M MONO

IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM

- TDA8840/8842/8844
- TUNER (UV1316, UV1336)
- TDA2614
- TDA8356
- TDA6107Q
- MC44604
- SDA545X
- ST24C08

TDA8840/8842:

The TDA884X is I^2C-bus controlled single chip TV processor which is intended to be applied in PAL, NTSC, PAL/NTSC and multi-standard television receivers. These IC' s are nearly pin compatible with the TDA837X TV processors but have a higher degree of integration because the delay line (TDA4665 function) and the SECAM decoder have been integrated. In addition to these functions some additional features have been added like "Continuous Cathode Calibration" (2-point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone control.

Features:

- Vision IF circuit with PLL demodulator
- Alignment-free multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y(CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a noise coring function
- Black stretching of non-standard CVBS or luminance signals
- Integrated chroma band-pass filter with switchable center frequency
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with "Continuous Cathode Calibration" and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a "blue black" option when no video signal is available
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- I^2C-bus control of various functions
- Low dissipation (850 mW)

Functional Differences between 8840 and 8842

IC VERSION (TDA)	8840	8842
Multi-standard IF		X
Automatic Volume Limiting	X	X
PAL Decoder	X	X
SECAM Decoder		X
NTSC Decoder		X
Dynamic Skin Control		
Colour Matrix PAL/NTSC (Japan)		X
Colour Matrix NTSC Japan/USA		
YUV interface		
Base-band delay line	X	X
Vertical zoom	X	X

PINNING	PIN VALUE
1. Sound IF input	: 1mVrms
2. External audio input	: 500mVrms
3. IF demodulator tuned circuit 1	
4. IF demodulator tuned circuit 2	
5. IF-PLL loop filter	: Min:32-Max:60 MHz
6. IF video output	: 4.7V (Negative Modulation), 2V (Positive Modulation)
7. Serial clock input	: Low level max:1.5 V, High level min 3.5V
8. Serial data input/output	: Low level max:1.5 V, High level min 3.5V
9. Bandgap decoupling	
10. Chrominance input (S-VHS)	: 1Vpp, Max:1.4Vpp
11. External CVBS/Y input	: 1Vpp, Max:1.4Vpp
12. Main supply voltage 1	: 8V, Min:7.2V, Max:8.8V
13. Internal CVBS input	: 1Vpp, Max:1.4Vpp
14. Ground 1	
15. Audio output	: 700mVrms, Min:500mVrms, Max:900mVrms
16. SECAM PLL decoupling	
17. External CVBS input	: Vpp, Max:1.4Vpp
18. Black-current input	: Amplitude of “low” reference current : 8mA Amplitude of “high” reference current : 20mA
19. Blue output	: 2Vpp
20. Green output	: 2Vpp
21. Red output	: 2Vpp
22. Beam current limiter input/V-guard input	
23. Red input for insertion	: 0.7Vpp, Max:0.8Vpp
24. Green input for insertion	: 0.7Vpp, Max:0.8Vpp
25. Blue input for insertion	: 0.7Vpp, Max:0.8Vpp
26. RGB insertion input	: Max:0.3V
27. Luminance input	: 1.4Vpp
28. Luminance output	: 1.4Vpp
29. (B-Y) signal output	: 1.05Vpp
30. (R-Y) signal output	: 1.05Vpp
31. (B-Y) signal input	: 1.05Vpp
32. (R-Y) signal input	: 1.05Vpp
33. Subcarrier reference output	: 3.58/4.43 MHz
34. 3.58 MHz crystal connection	
35. 4.43/3.58 MHz crystal connection	
36. Loop filter phase detector	
37. 2nd supply voltage 1	: 8V, Min:7.2V, Max:8.8V
38. CVBS output	: 1Vpp, Max:1.4Vpp
39. Decoupling digital supply	: 1.8V
40. Horizontal output	: Max: 0.3V
41. Flyback input/sandcastle output	: Min:100ma, Max:300mA
42. Phase-2 filter	: 150 ms/ms
43. Phase-1 filter	: ±0.9 kHz, Max: ±1.2 kHz
44. Ground 2	
45. East-west drive output	
46. Vertical drive A output	: 0.95mA
47. Vertical drive B output	: 0.95mA
48. IF input 1	
49. IF input 2	
50. EHT/overvoltage protection input	: Min:1.2V, Max : 2.8V
51. Vertical sawtooth capacitor	: 3Vpp
52. Reference current input	: 3Vpp
53. AGC decoupling capacitor	
54. Tuner AGC output	: Max:9V (Maximum tuner AGC output voltage), 300mV (Output saturation voltage)
55. Audio deemphasis	: 500mVrms
56. Decoupling sound demodulator	

UV1316, UV1336

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 IýC-bus
- Off-air channels, S-cable channels and Hyperband
- World standardized mechanical dimensions and world standard pinning
- Compact size
- Complies to "CENELEC EN55020" and "EN55013"

PINNING	PIN VALUE
1. Gain control voltage (AGC)	: 4.0V, Max:4.5V
2. Tuning voltage	
3. I²C-bus address select	: Max:5.5V
4. I²C-bus serial clock	: Min:-0.3V, Max:5.5V
5. I²C-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	

General description of UV1336:

UV1336 series is developed for reception of channels broadcast in accordance with the M, N standard. The tuning is available through built-in digitally controlled IýC bus (PLL).

Features of UV1336:

- Global standard pinning
- Integrated Mixer-Oscillator&PLL function
- Conforms to CISPR 13, FCC and DOC (Canada) regulations
- Low power consumption
- Both Phono connector and 'F' connector are available

PINNING	PIN VALUE
1. Gain control voltage	: 4.0V, Max:4.5V
2. Tuning voltage	
3. Address select	: Max:5.5V
4. Serial clock	: Min:-0.3V, Max:5.5V
5. Serial data	: Min:-0.3V, Max:5.5V
6. Not connected	
7. Supply voltage	: 5.0V, Min:4.75V, Max:5.5V
8. ADC input (optional)	
9. Tuning supply voltage	: 33V, Min:30V, Max:35V
10. Ground	
11. IF output	

TDA2614:

General Description of TDA2614:

The TDA2614 is a power amplifier in a 9-lead single-in-line (SIL9) plastic medium power package. It has been especially designed for mains fed applications.

Features:

- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Not connected	
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Not connected	
5. Supply voltage (negative)	: -12VDC
6. Output	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting input (Ground)	: 0V
9. Non-inverting input	: 700mVrms, Min : 500mVrms, Max : 900mVrms

TDA8356:

General Description:

The TDA8356 is a power circuit for use in 90ø colour deflection system for field frequencies of 50 to 120 Hz.
The circuit operates as a highly efficient class G system.

Features:

- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short-circuit of the output pins (7 and 4)
  - short-circuit of the output pins to Vp
- Temperature (thermal) protection
- High EMC immunity because of common mode inputs
- A guard signal in zoom mode

PINNING	PIN VALUE
1. Input power-stage (positive); includes Ii(sb) signal bias	: 400mA, Min : 50mA, Max : 500mA
2. Input power-stage (negative); includes Ii(sb) signal bias	: 400mA, Min : 50mA, Max : 500mA
3. Operating supply voltage	: +15VDC
4. Output voltage B	: Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
5. Ground	
6. Input flyback supply voltage	: Min : Vp, Max : 50V
7. Output voltage A	: Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
8. Guard output voltage	: Max:5.5V (Io:100mA)
9. Input feedback voltage	: Max:52V

TDA6107Q:

The TDA6107Q includes three video output amplifiers in a SIL 9 MP (Single In Line 9 pins Medium Power) package SOT111BE, using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour picture tube.
In contrast to previous types of DMOS video amplifiers, all external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and it saves 9 resistors.
To obtain maximum performance, the amplifier should be used with black-current control and mounted on the CRT panel.

Features:

- Bandwith: 4.0 MHz typ at 100Vpp (Measured in appli,cation set-up, with Rfl=1K5 and Cl=Ctube+Cpcb=10pF)
- Slewrate: 950V/ms
- Fixed gain of 50 times
- No external components, only the well known supply decoupling
- Very simple application with a variety of colour decoders
- Black-current measurement output for automatic black current stabilization
- Only one supply voltage needed
- Internal protection against positive appearing CRT flash-over discharges
- Protection against ESD
- Internal reference voltage
- Thermal protection
- Controllable switch-off behaviour
- Very small PCB dimensions
- Very high replacement value

PINNING	PIN VALUE
1. Inverting input 1	: 2Vpp
2. Inverting input 2	: 2Vpp
3. Inverting input 3	: 2Vpp
4. Ground	
5. BSC-output	: Max:7V
6. Supply voltage	: 200VDC
7. Cathode output 3	: 20mA, 100Vpp
8. Cathode output 2	: 20mA, 100Vpp
9. Cathode output 1	: 20mA, 100Vpp

MC44604:

General description:

The MC44604 is an enhanced high performance controller that is specifically designed for off-line and DC-to-DC converter applications. It offers a really safe and reliable power management thanks particularly to its protection features (foldback, overvoltage detection, soft start, accurate demagnetization detection). Its high current totem pole output is also ideally suited for driving a power MOSFET, but can also be used for driving a bipolar transistor in low power converters. In addition to these features, the MC44604 offers an efficient stand-by mode.

Features:

Current Mode Controller

- Operation up to 250 kHz Output Switching Frequency
- Inherent Feed Forward Compensation
- Latching PWM for Cycle-by-Cycle Current Limiting
- Oscillator with Precise Frequency Control

High Flexibility
- Externally Programmable Reference Current
- Secondary or Primary Sensing
- High Current Totem Pole Output
- Undervoltage Lockout with Hysteresis

Safety/Protection Features
- Overvoltage Protection Facility against Open Loop
- Protection against Short Circuit on Oscillator Pin
- Fully Programmable Foldback
- Soft-Start Feature
- Accurate max Duty Cycle Setting
- Demagnetization (Zero Current Detection) Protection
- Internally Trimmed Reference

"Green Controller"
- Low Start-Up and Operating Current
- Patented Stand-by Pulsed Mode for low stand-by losses
- Low dV/dT for Low EMI radiations

PINNING	PIN VALUE
1. Output Supply Voltage (Vcc)	: 12VDC
2. Output Supply Voltage (Vc)	: 12VDC
3. Output voltage	: LOW Level Drop Voltage 1VDC, Max : 1.2VDC (Isink=100mA) 1.4VDC, Max : 2VDC (Isink=500mA) HIGH Level Drop Voltage 1.5VDC, Max : 2VDC (Isource=200mA) 2VDC, Max : 2.7VDC (Isource=500mA)
4. Ground	
5. Foldback input	: 0.9VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
6. Overvoltage protection (OVP)	: 0.78VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
7. Current sense input	: Min:-0.3VDC, Max : Vcc+0.3VDC
8. Demagnetization detection input	: Idemag-ib (source):-4mA Idemag-ib (sink) : 10mA
9. Standby current set	: Ipeak-stby/Iref : 0.40 Min : 0.37 Max : 0.43
10. Oscillator voltage swing	: 2Vpp
11. Soft start/Dmax/Voltage mode	: Idischarge : 5mA, Min : 1.5mA (Vsoft start=1V)
12. Clamp E/A input	: 4.7VDC, Min : 4.5VDC Max : 4.9VDC
13. E/A output	: HIGH State: 6.5VDC, Min : 5.5VDC, Max : 7.5VDC LOW State : 1.0VDC, 1.1VDC
14. E/A input	: 2.5VDC, Min : 2.4VDC, Max : 2.6VDC
15. Stand-by management	: Stand-by On Detection current ratio : Idet/Iref : 0.38, Min : 0.34, Max : 0.42 Stand-by regulation current ratio : Ireg/Iref : 20.5, Min : 18, Max : 23
16. Rref input	: 2.5VDC, Min : 2.4VDC, Max : 2.6VDC

SDA545X:

General description:

The SDA545X is designed for a low cost mono TV-set with analogue picture and sound control. IN SDA545X the following IC' s are used and supported:

Non-volatile memory	: SDA 2526 or SDA2546
PLL	: SDA 3202-3, SDA 3302
IR transmitter	: SDA 2208-3 or SDA 2218
IR preamplifier	: SFH 506-32

Features:

General:
- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD
- Single LED for IR active, standby and on mode indication
- Local control (8 keys)
- IR remote control
- Control of volume, contrast, brightness, and saturation by analogue voltages
- Non-volatile memory for 50 or 100 programs, optimum analogue values and system parameters
- Individual delta volume for each program

- 1 control line to select external source
- 3 control lines for TV standard selection
- Automatic muting if no carrier detected
- Automatic switch-off when carrier disappears for more than 5 minutes
- Software protection against tube flashovers with internal watchdog timer
- Sleep timer
- Parental control
- IF 45.75 MHz or 38.9 MHz selectable

Tuning:
- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards
- 100 programs selectable by directly entering a program number or by up/down function depending on the NVM size
- Channel selection by directly entering a channel number or by up/down function
- Channel search function in two directions

Sound:

- Mono sound control by analogue voltage

Service Mode:

- System configuration with service mode

PINNING	PIN VALUE
1. Crystal selection output 1	: LOW level : 0V HIGH level : 4.2V
2. Volume + switch input	: LOW level : 0V HIGH level : 5V
3. Volume - switch input	: LOW level : 0V HIGH level : 5V
4. Program - switch input	: LOW level : 0V HIGH level : 5V
5. Program + switch input:	: LOW level : 0V HIGH level : 5V
6. LED output	: LOW level : 0V HIGH level : 4.2VDC
7. Filter (sound standard) selection output 1	: LOW level : 0V HIGH level : 4.2V
8. Filter (sound standard) selection output 2	: LOW level : 0V HIGH level : 4.2V
9. Mod-switch selection output	: LOW level : 0V HIGH level : 4.2V
10. Ground	
11. Supply voltage	: +5V
12. 6 MHz crystal connection 1	: 2Vpp
13. 6 MHz crystal connection 2	: 2Vpp
14. L-ACC output	: LOW level : 0V HIGH level : 3.6V
15. RESET output	LOW level : 0V HIGH level : 5V
16. Comb filter PAL/SECAM selection output	: LOW level : 0V HIGH level : 5V
17. Tuning output	: LOW level : 0V HIGH level : 3.4V
18. Audio switch transistor selection 1	: LOW level : 0V HIGH level : 5V
19. Audio switch transistor selection 2	: LOW level : 0V HIGH level : 5V
20. Audio switch transistor selection 3	: LOW level : 0V HIGH level : 5V
21. Audio switch transistor selection 4	: LOW level : 0V HIGH level : 5V
22. Comb filter standard selection 1	: LOW level : 0V HIGH level : 5V
23. Comb filter standard selection 2	: LOW level : 0V HIGH level : 5V
24. Analogue ground	
25. Filter 3	
26. Filter 2	
27. Filter 1	
28. Analogue supply voltage	: 5VDC
29. Reference current input	
30. CVBS input	: 1Vpp
31. Service output	: LOW level : 0V HIGH level : 5V
32. AV2-status input	: LOW level : 0V HIGH level : 5V
33. AV1-status input	: LOW level : 0V HIGH level : 5V
34. AFC output	: 600mVpp
35. Ground	
36. IR-input	: LOW level : 0V HIGH level : 5V
37. Supply voltage	: 5V
38. LC input	: 5Vpp
39. LC output	: 5Vpp
40. Mute output	: LOW level : 0V HIGH level : 4.2V
41. St-by output	: LOW level : 0V / HIGH level : 1.4V
42. Clock signal output	
43. Data output	
44. Local connection	: LOW : 0V / HIGH : 5V
45. SAND input	: 4Vpp
46. ODD/EVEN output	: 1.8V
47. OSD-red output	: LOW level : 0V / HIGH level : 5V
48. OSD-green output	: LOW level : 0V / HIGH level : 5V
49. OSD-blue output	: LOW level : 0V / HIGH level : 5V
50. OSD-blanking output	: LOW level : 0V / HIGH level : 5V
51. COR output	: LOW level : 0V / HIGH level : 5V
52. Crystal selection output 2	: LOW level : 0V / HIGH level : 4.2V

ST24C08:

General description:

The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organized as 4 blocks of 256 * 8 bits.
The memory operates with a power supply value as low as 2.5V. Both Plastic Dual-in-Line and Plastic Small Outline packages are available.

Features:

- Minimum 1 million ERASE/WRITE cycles with over 10 years data retention
- Single supply voltage:4.5 to 5.5V
- Two wire serial interface, fully IýC-bus compatible
- Byte and Multibyte write (up to 8 bytes)
- Page write (up to 16 bytes)
- Byte, random and sequential read modes
- Self timed programming cycle

PINNING		PIN VALUE
1. Write protect enable (Ground)	:	0V
2. Not connected (Ground)	:	0V
3. Chip enable input (Ground)	:	0V
4. Ground	:	0V
5. Serial data address input/output	:	Input LOW voltage : Min : -0.3V, Max : 0.3*Vcc Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
6. Serial clock	:	Input LOW voltage : Min: -0.3V, Max : 0.3*Vcc Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
7. Multibyte/Page write mode	:	Input LOW voltage : Min: -0.3V, Max :0.5V Input HIGH voltage: Min : Vcc-0.5, Max : Vcc+1
8. Supply voltage	:	Min : 2.5V, Max : 5.5V

G1965M:

Features:

- TV IF filter with Nyquist slope and sound shelf at typ. 20.4dB
- High colour carrier level at typ. 1.0dB
- Constant group delay
- Insertion attenuation typ. 15.0dB

PINNING

1. Input
2. Input-ground
3. Chip carrier-ground

AK26 CHASSIS MANUAL ADJUSTMENTS PROCEDURE

In order to enter the service menu, first enter the feature menu and then press the digits 4, 7, 2 and 5 respectively.

For ADJUST settings:

Select **Adjust** using ▽or△ button and press ▷or◁ button to enter it. To select different adjust parameters, use ▽or△ button. To change the selected parameter, use ▷ or ◁ button.

WHITE BALANCE ADJUSTMENT:
The following three parameters are used to make white balance adjustment. To do this, use a Colour Analyser. Using white point RED, white point GREEN and white point BLUE parameters, insert the + sign in the square which is in the middle of the screen.
ADJUST 00 = White Point RED
ADJUST 01 = White Point GREEN
ADJUST 02 = White Point BLUE

AGC ADJUSTMENT:
In order to do AGC adjustment, enter a 60dBmV RF signal level from channel C-12.
Connect a digital voltmeter to pin 1 of the tuner. Change the AGC parameter until you see 3.70VDC on voltmeter display. Check that picture is normal at 90dBmV signal level.
ADJUST 03 = AGC

IF-PLL NEGATIVE ADJUSTMENT (Only with PLL tuner):
Change the IF-PLL Negative parameter to 45 for NTSC M models, and change this parameter to 80 for PAL B/G models.
ADJUST 04 = IF-PLL Negative

4:3 HORIZONTAL SHIFT ADJUSTMENT:
ADJUST 10 = 4 : 3 Horizontal Shift
Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

4:3 VERTICAL SLOPE ADJUSTMENT:
ADJUST 11 = 4 : 3 Vertical Slope
Enter a CROSS-HATCH NTSC M test pattern via RF. Change vertical slope 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 VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 VERTICAL AMPLITUDE ADJUSTMENT:
ADJUST 12 = 4 : 3 Vertical Amplitude
Enter a NTSC M test pattern via RF. Change vertical slope 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 VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 S-CORRECTION ADJUSTMENT:
ADJUST 13 = 4 : 3 S-Correction
Enter a NTSC M circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

4:3 VERTICAL SHIFT ADJUSTMENT:
ADJUST 14 = 4 : 3 Vertical Shift
Enter a NTSC M test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

For OPTION settings:

Select **Option** using ▽or△ button and press ▷or◁ button to enter it. To select different adjust parameters, use ▽or△ button. To change the selected parameter, use ▷ or ◁ button.

OPTION 00
B7B6B5B4B3B2B1B0

B7 = Ina : X **(don' t care)**
B6 = Inb : X **(don' t care)**
B5 = Inc : X **(don' t care)**
B4 = Akb : 0 (**A**uto **K**ine **B**iasing, 1=disable black current stabilisation loop, 0=enable)
B3 = Foa : X (Note 1) **(don' t care)**
B2 = Fob : X (Note 1) **(don' t care)**
B1 = Xa : Note 2
B0 = Xb : Note 2

Note 1:
FOA, FOB bits: Ø1 time constant : These two bits determine the speed of the Ø1-loop. It can be forced to slow and fast or set it in the automatic mode. In auto mode a noise detector circuit can switch to slow time constant, when the signal has too much noise.

FOA	FOB	Ø1-loop mode
0	0	Auto, Ø1-gating in slow mode (Note a)
0	1	Slow, always gating
1	0	Slow/fast depends on noise detector, always gating
1	1	Fast, no gating

Note a:
Not suitable for weak video recorder signals, because of active Ö1-gating in the slow mode. Use **FOA, FOB**=1,1 instead.

Note 2:
Xa, Xb
0,1 : PAL M, Pal N, NTSC M
Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : No crystal
1,0 : PAL B/G, PAL D/K, Pal I/I+, SECAM B/G, SECAM D/K, SECAM L/L', SECAM K1
Pin 34 : No crystal
Pin 35 : 4.43 (1 Crystal)
1,1 : PAL B/G, PAL D/K, Pal I/I+, SECAM B/G, SECAM D/K, SECAM L/L', SECAM K1, PAL M, PAL N, NTSC M
Pin 34 : 3.58 (1, 2 or 3 Crystals)
Pin 35 : 4.43 (1 Crystal)

OPTION 01
B7B6B5B4B3B2B1B0
B7 = Forf : 0 (Note 1)
B6 = Fors : 0 (Note 1)
B5 = DL : X (De-interlace: 0= Interlace, 1= De-interlace) **(don' t care)**
B4 = STB : X (Stand-by) (0= TDA884X in standby mode, 1= IC operational) **(don' t care)**
B3 = Poc : X (Synchronisation mode: 0=Synchronization active, 1=Synchronisation not active) **(don' t care)**
B2 = Cm2 : X (Note2) **(don' t care)**
B1 = Cm1 : X (Note2) **(don' t care)**
B0 = Cm0 : X (Note2) **(don' t care)**

Note1:
Forf, Fors bits: Forced field frequency: This forces the vertical divider in a 60 Hz mode or automatic. In auto mode it can be given a preference for 50 or 60 Hz or to keep the last detected field frequency.

FORF	FORS	Vertical Frequency
0	0	Auto, 60 Hz if not locked
0	1	60 Hz forced (Note b)
1	0	Auto, keep last detected frequency
1	1	Auto, 50 Hz if not locked

Note b: When already locked at 50 Hz, 60 Hz is forced after sync loss.

Note2:
Cm2, Cm1, Cm0 bits: Colour Decoder Mode: With these bits the automatic mode can be selected or the decoder can be forced to one of the standards. Xtal selection bits **XA** and **XB** should not be contradictory to a forced Xtal selection in the colour decoder mode (e.g. force pin 35 while there is only a Xtal on pin 34).

CM2	CM1	CM0	Colour Decoder Mode
0	0	0	Automatic, own intelligence, 2 Xtals
0	0	1	Forced Xtal pin 34, PAL/NTSC
0	1	0	Forced Xtal pin 34, PAL
0	1	1	Forced Xtal pin 34, NTSC
1	0	0	Forced Xtal pin 35, PAL/NTSC (Note c)
1	0	1	Forced Xtal pin 35, PAL
1	1	0	Forced Xtal pin 35, NTSC
1	1	1	Forced Xtal pin 35, SECAM

Note c: In this mode, the colour oscillator is forced to use one Xtal pin, while the decoder can select PAL or NTSC automatically.

OPTION 02
B7B6B5B4B3B2B1B0
B7 = Oso : 0 (Over-scan Switch-Off: 0= Switch-off undefined, 1= Switch-off in vertical overscan)
B6 = Vsd : 0 (Vertical Scan Disable: 0=Active Vertical Scan, 1= Disable Vertical Scan)
B5 = Cb : 0 (Chroma Band pass center frequency: 0= Centre frequency at Fsc (chroma sub-carrier frequency), 1= Center frequency at 1.1*Fsc)
B4 = Bls : 0 (Blue Stretch: 0= Blue Stretch off, 1= Blue Stretch on)
B3 = Bks : 0 (Black Stretch: 0= Black Stretch off, 1= Black Stretch on)
B2 = Ie1 : X (Insertion Enable Fast blanking: 1= enable RGB insertion, 0= disable) **(don' t care)**
B1 = Afw : X (AFC Window around IF center frequency: 0= Nominal window, about 80 kHz wide; 1= Enlarged window, about 240 kHz wide) **(don' t care)**
B0= Bb : 0 (Blue Background: 0= Normal operation, 1= Blue background active)

OPTION 03
B7B6B5B4B3B2B1B0
B7 = Hob: Note1
B6 = Bps: 0 (Bypass chroma delay line: 0 Chroma delay line active, 1= Delay line bypassed)
B5 = Acl: X (Automatic Colour Limiting: 0= ACL not needed for standard burst/chroma transmissions; 1= ACL active, for non standard chroma-to-burst ratio) **(don' t care)**
B4 = Cmb: Note2
B3 = Ast: X (Abs-loop Start-up mode: 0=Automatic mode, RGB drive switches on when ABS loop stable; 1= Switch-on under control of micro controller) **(don' t care)**
B2 = CL2: 1 (Note3)
B1 = CL1: 1 (Note3)
B0 = CL0: 0 (Note3)

Note1:
0 = Pal+ helper output blanking disabled
1 = Pal+ helper output blanking enabled
Note2: Comb Filter
0 = Pin 33 Low, comb filter off
1 = Sub-carrier output pin 33 active, comb filter on
Note3:
CL2,CL1,CL0 bits: Cathode drive level:

CL2	CL1	CL0	Variation Cathode Drive Level
0	0	0	Minimum
0	0	1	+ 14 %
0	1	0	+ 28 %
0	1	1	+ 42 %
1	0	0	+ 57 %
1	0	1	+ 71 %
1	1	0	+ 85 %
1	1	1	+ 100 %

OPTION 04
B7B6B5B4B3B2B1B0
B7 = Ifs: X (If sensitivity: 0= Normal Sensitivity, 1= Maximum gain reduced by 20 dB (reduces the total gain range)) **(don' t care)**
B6 = Mod : X (Modulation standard: 0 = Negative Modulation, 1 = Positive Modulation, AM demodulated sound can be connected to pin 2) **(don' t care)**
B5 = VSW: X (Video Mute Switch : 0= Normal Operation, 1= IF Video signal switched off (pin 6 is forced to ground)) **(don' t care)**
B4 = Sm: X (Sound mute of internal FM demodulator: 0 = Normal Operation, 1 = Sound Muted) **(don' t care)**
B3 = Ds: 0 (Dynamic Skin Control: 1= on, 0= off)
B2 = Dsa: 0 (Dynamic Skin Control Angle: 1= 123 degrees, 0 = 118 degrees)
B1 = Fav: 0 (Fixed Audio Volume: 0= Volume controlled front-end or external audio output at pin 15, 1= Fixed front-end audio output at pin 15)
B0 = Lfa: X (Secam L1 Frequency Adjust: 0= Normal IF Frequency, 1 = IF Frequency shifted for L1 standard (align with IFPL) **(don' t care)**

OPTION 05
B7B6B5B4B3B2B1B0
B7 = Avl: 0 (Automatic Volume Levelling: 1= active, 0= disabled)
B6 = Hbl: X (Wider Horizontal Blanking: 1= blank left+right edges, 0= normal blanking on H-flyback pulse) **(don' t care)**
B5 = Vim: X (Video Ident Mode: 1= Coupled to Source Switch, 0= to IF) **(don' t care)**
B4 = Gai: (Gain of luminance channel: 0= Normal gain of luminance channel (V27 =1Vblack-white) (When CTI is disabled), 1= High Gain for Luminance Input (When CTI is enabled) (V27=0.45Vpp))
B3 = Ncin: X (Vertical Divider Mode: 0=Normal operation of the vertical divider, 1 = Vertical divide switched to large search window) **(don' t care)**)
B2 = Stm: X (Search Tuning Mode: 0= Normal operation, 1= Reduced Sensitivity of coincidence detector) **(don' t care)**
B1 = Vid: X (Video Ident Mode: 1= No influence, 0= IFI contols Ö1- loop) **(don' t care)**
B0 = Lbm: 0 (Long blanking mode: 0= Blanking adapted to standard (50 or 60 Hz), 1= Fixed blanking according 50 Hz standard)

OPTION 06
B7B6B5B4B3B2B1B0
B7 = Hco: X (EHT Tracking mode: 0= EHT tracking only on vertical, 1 = EHT tracking on both vertical and East-West) **(don' t care)**
B6 = EVG: 0 (Enable Vertical Guard: 0= Only vertical guard detection (Output bit NDF), 1= Detection (NDF) and protection by blanking RGBout
B5 = SBL: X (Service Blanking: 0= No service blanking, 1= Service Blanking active) **(don' t care)**
B4 = Prd: X (Over-voltage protection input mode: 0= Only over-voltage detection (output bit XPR), 1= Over- voltage detection (XPR) and inhibit horizontal drive (protection)) **(don' t care)**
B3 = Sys: System: 0 = Only NTSC M System, 1= NTSC M, PAL M, PAL N Systems available
B2 = Rbl: X (RGB Blanking: 0= Normal picture visible, 1= RGBout (pins 21, 20, 19) blanked) **(don' t care)**
B1 = Cor: X (Noise coring: 0= Noise coring off; 1= Noise coring on, reduce peaking function on small transients) **(don' t care)**
B0 = Aen: (Enable APS: 0= APS disabled >> Preset, 1= APS enabled >> No Preset)

OPTION 07
B7B6B5B4B3B2B1B0
B7 = PB: Note1
B6 = CC: Note2
B5 = L1: Note3
B4 = L0: Note3
B3 = CL: Note4
B2 = Comb: Note5
B1 = SVhs: Note6
B0 = AV: Note7
Note1:
PB:This bit enables or disables Program Blanking during program change
0=Blank On
1=Blank Off
Note2:
CC: This bit selects if Closed Caption avilable or not.
0=CC Not available
1=CC Avilable
Note3:
L1, L0 : These bits select menu language:
0, 0 = English
0, 1 = Spanish
1, 0 = French
1, 1 = Portuguese
Note4:
CL : This bit enables or disables Child Lock function.
0= Off
1= On (Active)
Note5:
Comb:This bit selects if Comb Filter is supported or not.
0=Not supported
1=Available
Note6:
SVhs:This bit selects if SVhs input is supported or not.
0=SVhs not supported
1=SVhs available
Note7:
AV:This bit selects if AV input is supported or not.
0=Not supported
1=Available

OPTION 08
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	1	0	0	0	1	1	1	0
SAMSUNG	TECC1040PG26A	1	0	0	0	1	1	1	0
THOMSON	CTT5050	1	0	0	0	1	1	1	0

OPTION 09
B7B6B5B4B3B2B1B0

B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner control 2 low byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	0	0	0	0	1	0	0	1
SAMSUNG	TECC1040PG26A	0	0	0	0	0	0	0	1
THOMSON	CTT5050	0	0	0	0	0	0	1	1

OPTION 10
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner control 2 mid byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	0	0	0	0	1	0	1	0
SAMSUNG	TECC1040PG26A	0	0	0	0	0	0	1	0
THOMSON	CTT5050	0	0	0	0	0	1	1	0

OPTION 11
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner control 2 high byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	0	0	0	0	0	1	0	0
SAMSUNG	TECC1040PG26A	0	0	0	0	1	0	0	0
THOMSON	CTT5050	1	0	0	0	0	1	0	1

OPTION 12
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner VHF LOW - VHF HIGH crossover low byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	1	1	0	0	0	0	0	0
SAMSUNG	TECC1040PG26A	0	0	0	0	0	0	0	0
THOMSON	CTT5050	0	0	0	0	0	0	0	0

OPTION 13
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner VHF LOW - VHF HIGH crossover high byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	0	0	0	0	1	0	1	1
SAMSUNG	TECC1040PG26A	0	0	0	0	0	0	0	0
THOMSON	CTT5050	0	0	0	0	0	0	0	0

OPTION 14
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner VHF HIGH - UHF crossover low byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	1	0	0	0	0	0	0	0
SAMSUNG	TECC1040PG26A	0	0	0	0	0	0	0	0
THOMSON	CTT5050	0	0	0	0	0	0	0	0

OPTION 15
B7B6B5B4B3B2B1B0
B7 = b7: Note1
B6 = b6: Note1
B5 = b5: Note1
B4 = b4: Note1
B3 = b3: Note1
B2 = b2: Note1
B1 = b1: Note1
B0 = b0: Note1

Note1:
PLL Tuner VHF HIGH - UHF crossover low byte

		b7	b6	b5	b4	b3	b2	b1	b0
PHILIPS	UV1336/1316	0	0	0	1	1	0	1	1
SAMSUNG	TECC1040PG26A	0	0	0	0	0	0	0	0
THOMSON	CTT5050	0	0	0	0	0	0	0	0

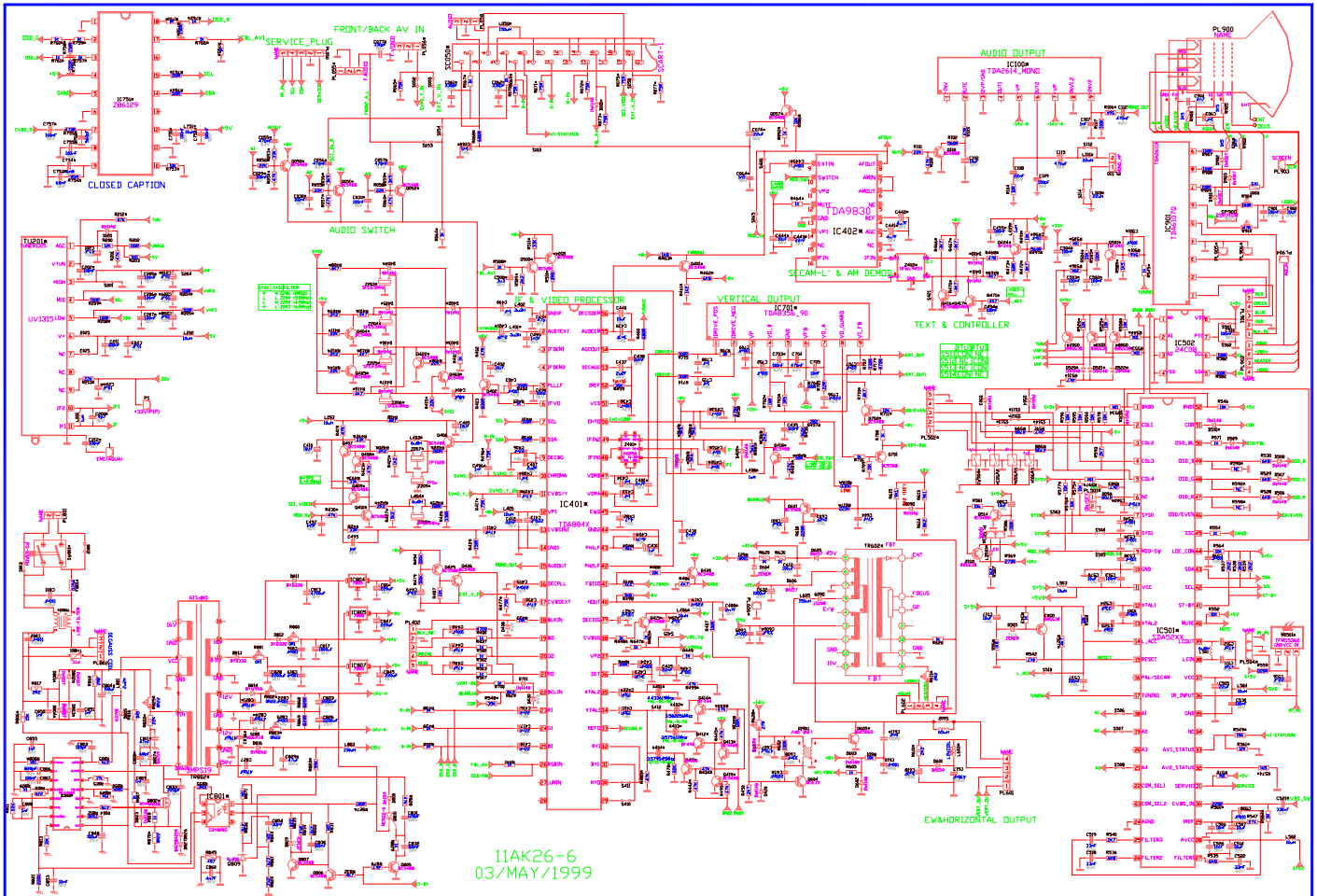
ELECTRONIC COMPONENTS PART LIST

POS.NO	VESCODE	DESCRIPTION
C055	30000109	CAP MKT 470NF 63V J
C056	30000109	CAP MKT 470NF 63V J
C074	30000371	CAP EL 22UF 50V M
C102	30000345	CAP EL 10UF 50V M
C112	30000109	CAP MKT 470NF 63V J
C115	30000410	CAP EL 470UF 50V M
C201	30000400	CAP EL 47UF 50V M
C203	30000353	CAP EL 100UF 25V M
C204	30000345	CAP EL 10UF 50V M
C212	30000295	CAP CER 100NF 50V Z F
C401	30000384	CAP EL 2.2UF 50V M
C402	30000345	CAP EL 10UF 50V M
C403	30000074	CAP MKT 100NF 63V J
C405	30000345	CAP EL 10UF 50V M
C407	30000384	CAP EL 2.2UF 50V M
C410	30000345	CAP EL 10UF 50V M
C411	30000106	CAP MKT 47NF 100V J
C413	30000375	CAP EL 220UF 16V M
C415	30000092	CAP MKT 220NF 63V J
C426	30000353	CAP EL 100UF 25V M
C428	30000345	CAP EL 10UF 50V M
C431	30000362	CAP EL 1UF 50V M
C435	30000074	CAP MKT 100NF 63V J
C436	30000074	CAP MKT 100NF 63V J
C437	30000384	CAP EL 2.2UF 50V M
C440	30000345	CAP EL 10UF 50V M
C449	30000387	CAP EL 33UF 50V M
C482	30000413	CAP EL 4.7UF 50V M
C505	30000400	CAP EL 47UF 50V M
C507	30000345	CAP EL 10UF 50V M
C514	30000345	CAP EL 10UF 50V M
C516	30000371	CAP EL 22UF 50V M
C517	30000345	CAP EL 10UF 50V M
C519	30000099	CAP MKT 33NF 63V J
C521	30000100	CAP MKT 330NF 63V J
C522	30000099	CAP MKT 33NF 63V J
C560	30000109	CAP MKT 470NF 63V J
C570	30000345	CAP EL 10UF 50V M
C580	30000345	CAP EL 10UF 50V M
C601	30000387	CAP EL 33UF 50V M
C604	30000106	CAP MKT 47NF 100V J
C605	30000075	CAP MKT 100NF 250V K (DC)
C606	30000388	CAP EL 33UF 160V M
C607	30000407	CAP EL 470UF 16V M
C608	30000323	CAP CER 33NF 50V K B
C610	30000131	CAP MKP 100NF 250V J
C611	30007100	CAP MKP 10NF 1600V %5
C612	30000356	CAP EL 100UF 63V M
C617	30000156	CAP MKP 430NF 250V J
C618	30000394	CAP EL 3.3UF 160V M
C632	30000360	CAP EL 1000UF 25V M
C702	30000356	CAP EL 100UF 63V M
C703	30000074	CAP MKT 100NF 63V J
C704	30000109	CAP MKT 470NF 63V J
C705	30000071	CAP MKT 10NF 63V J
C706	30000092	CAP MKT 220NF 63V J
C707	30000090	CAP MKT 22NF 100V J
C709	30000074	CAP MKT 100NF 63V J
C800	30000449	CAP CER 68PF 1KV KB
C801	30000085	CAP MKT 150NF 275V M AC
C802	30000085	CAP MKT 150NF 275V M AC
C804	30000418	CAP EL 100UF 400V M
C806	30000342	CAP CER 820PF 50V K B
C807	30000074	CAP MKT 100NF 63V J
C808	30000283	CAP CER 1NF 50V K B
C811	30000161	CAP MKP 47NF 630V J
C813	30000411	CAP EL 4700UF 16V M
C814	30000375	CAP EL 220UF 16V M
C816	30000295	CAP CER 100NF 50V Z F
C817	30000359	CAP EL 1000UF 16V M
C819	30000295	CAP CER 100NF 50V Z F
C822	30000295	CAP CER 100NF 50V Z F
C823	30000383	CAP EL 2200UF 25V M
C825	30000295	CAP CER 100NF 50V Z F
C826	30000383	CAP EL 2200UF 25V M
C827	30000433	CAP CER 1NF 1KV M B
C828	30000359	CAP EL 1000UF 16V M
C829	30000404	CAP EL 47UF 160V M (HR)
C830	30000295	CAP CER 100NF 50V Z F
C831	30000198	CAP CER 120PF 500V J SL
C832	30000295	CAP CER 100NF 50V Z F
C833	30000444	CAP CER 470PF 1KV KB
C845	30000375	CAP EL 220UF 16V M
C847	30000375	CAP EL 220UF 16V M
C848	30000353	CAP EL 100UF 25V M
C850	30000433	CAP CER 1NF 1KV M B
C851	30000433	CAP CER 1NF 1KV M B
C853	30000290	CAP CER 10NF 50V Z F
C854	30000099	CAP MKT 33NF 63V J
C860	30000439	CAP CER 2.2NF 4KV M (UL)
C901	30000075	CAP MKT 100NF 250V K (DC)
C902	30000350	CAP EL 10UF 250V M
C903	30000434	CAP CER 1NF 2KV K B
C904	30000319	CAP CER 2.7NF 500V K B
D201	30001284	DIODE 1N4148
D408	30001347	DIODE ZENER 8.2V
D420	30001284	DIODE 1N4148
D430	30001344	DIODE ZENER 6.2V 1/2W
D505	30001369	DIODE ZENER 3.6V ZPD
D506	30001284	DIODE 1N4148
D507	30001284	DIODE 1N4148
D508	30001284	DIODE 1N4148
D509	30001284	DIODE 1N4148
D510	30001284	DIODE 1N4148
D531	30001284	DIODE 1N4148
D601	30001318	DIODE BA159
D602	30001284	DIODE 1N4148
D603	30001284	DIODE 1N4148
D604	30001377	DIODE ZENER 33V UZT 33B
D605	30001317	DIODE BA157
D606	30001317	DIODE BA157
D607	30001284	DIODE 1N4148
D608	30001284	DIODE 1N4148
D609	30001317	DIODE BA157
D701	30001284	DIODE 1N4148
D801	30001305	DIODE BYM56E
D802	30001305	DIODE BYM56E
D803	30001305	DIODE BYM56E
D804	30001305	DIODE BYM56E
D805	30001318	DIODE BA159
D807	30001318	DIODE BA159
D811	30001315	DIODE BYD33D
D812	30001315	DIODE BYD33D
D813	30001315	DIODE BYD33D
D814	30001307	DIODE BYW95A
D815	30001307	DIODE BYW95A
D816	30001301	DIODE BYM26D
D818	30001318	DIODE BA159
D819	30001349	DIODE ZENER 11V
D823	30001284	DIODE 1N4148
D826	30001318	DIODE BA159
D827	30001318	DIODE BA159

ELECTRONIC COMPONENTS PART LIST

POS.NO	VESCODE	DESCRIPTION
D901	30001329	DIODE 1N4007
D902	30001329	DIODE 1N4007
D903	30001329	DIODE 1N4007
F801	20000849	FUSE ASSY.TK79-A (3.15A)
F801	35000138	FUSE HOLDER TK79A (BLACK)
IC100	30001524	IC TDA2614
IC401	30001575	IC TDA8842/N2
IC501	30006718	IC SDA545X OTP
IC502	30001610	IC ST24C08
IC701	30001561	IC TDA8356
IC751	30001476	IC Z86129
IC801	30007069	IC TCDT1102G
IC802	30001499	IC MC44604P
IC804	30001622	IC 7805 (1A)
IC805	30001492	IC LM7808
IC807	30001622	IC 7805 (1A)
IC901	30001550	IC TDA6107Q/N1C
JK102	30001884	RCA JACK 1P YELLOW
JK103	30001882	RCA JACK 1P WHITE
JK104	30001877	JACK BAV W/STOPPER
L201	30001979	FIXED COIL 1UH Q45 M-A
L202	30001992	FIXED COIL 10UH Q65 K
L203	30001992	FIXED COIL 10UH Q65 K
L401	30001986	FIXED COIL 3.3UH Q65 K
L402	30001986	FIXED COIL 3.3UH Q65 K
L404	30001990	FIXED COIL 6.8UH Q75 K
L405	30001992	FIXED COIL 10UH Q65 K
L406	30001992	FIXED COIL 10UH Q65 K
L501	30001990	FIXED COIL 6.8UH Q75 K
L502	30001992	FIXED COIL 10UH Q65 K
L503	30001992	FIXED COIL 10UH Q65 K
L601	30001999	FIXED COIL 40UH (LOSS COIL)
L603	30002149	LINEARITY COIL 50UH (06-06A)
L605	30002011	COIL CHOKE 150UH 0.82 A RAD
L751	30001992	FIXED COIL 10UH Q65 K
L801	30001984	FIXED COIL 2.2UH Q55 M-AX
L803	30002011	COIL CHOKE 150UH 0.82 A RAD
LD501	30001279	LED RED/GREEN LTL293SJ
MD501	30001670	PREAMPLIFIER TFMS5360
PL050	30001783	CONN.MALE 5P (2005)
PL055	30001836	CONN MALE 3P TOP BLACK
PL056	30001838	CONN MALE 3P TOP YELLOW
PL058	30001837	CONN MALE 3P TOP BLUE
PL100	30001762	CONN.MALE 2P (2052) GRAY
PL102	30001843	CONN MALE 3P SIDE YELLOW
PL103	30001841	CONN MALE 3P SIDE BLACK
PL402	20003510	CABLE ASSY.19-5/45 FC RGB
PL501	30001764	CONN.MALE (2052) BLACK
PL601	30001827	HRZ VRT CONN.(4P)
PL602	20003507	CABLE ASSY.19-4/45 FC (FL) UL
PL801	30001792	CONN.MALE 2P MOLEX
PL802	30001795	CONN.MALE 3P (DEG)
PL900	30001858	SOCKET CRT IRICO
PL901	20003510	CABLE ASSY.19-5/45 FC RGB
PL902	20003507	CABLE ASSY.19-4/45 FC (FL) UL
PL903	35000135	TEST PIN 1.1MM
Q057	30001454	TR BC548B
Q100	30001454	TR BC548B
Q401	30001454	TR BC548B
Q402	30001454	TR BC548B
Q406	30001454	TR BC548B
Q407	30001454	TR BC548B
Q409	30001454	TR BC548B
Q411	30001430	TR BF494
Q412	30001430	TR BF494
Q413	30001454	TR BC548B
Q414	30001430	TR BF494
Q415	30001454	TR BC548B

POS.NO	VESCODE	DESCRIPTION
Q419	30001454	TR BC548B
Q420	30001454	TR BC548B
Q425	30001455	TR BC558B
Q426	30001454	TR BC548B
Q500	30001454	TR BC548B
Q503	30001455	TR BC558B
Q504	30001455	TR BC558B
Q512	30001455	TR BC558B
Q514	30001454	TR BC548B
Q601	30001455	TR BC558B
Q604	30001435	TR BC639
Q605	30001440	TR 2506DF
Q701	30001455	TR BC558B
Q702	30001454	TR BC548B
Q802	30001386	TR MTP6N60E
Q805	30001454	TR BC548B
Q806	30001454	TR BC548B
Q807	30001454	TR BC548B
Q809	30001506	IC TL431
Q810	30001384	TR MCR22-6
R610	30001125	RES MO 2W 2.2K J
R611	30001227	RES FUSE 1W 0.22R J
R620	30001082	RES MO 1/2W 1K J
R628	30001231	RES FUSE 27R 1/4W J
R630	30001082	RES MO 1/2W 1K J
R703	30000910	RES MF 1/2W 1.8R G
R704	30001210	RES FUSE 1/4W 100R J
R806	30007431	RES MO 5W 10K J
R817	30001260	RES WW 5W 2.2R J RAD.
R822	30001129	RES MO 22K 3W J
R823	30001037	RES MF 1/4W 99K F
R824	30000925	RES MF 1/4W 2.2K F
R845	30001257	RES MG 1/2W 4.7M J
R870	30001131	RES MO 1W 0.22R J
R904	30001210	RES FUSE 1/4W 100R J
R914	30001242	RES FUSE 1/4W 47R J
SW502	30002178	SWITCH TACT SKHHLU
SW503	30002178	SWITCH TACT SKHHLU
SW504	30002178	SWITCH TACT SKHHLU
SW801	30002175	SWITCH ON/OFF 2.5A/100A
TH801	30001270	PTC 9 OHM
TR601	30002090	LINE DRIVER NEW TYPE
TR602	30002050	TRF FBT COMMON FOCUS 90° UL
TR801	30002103	LINE FILTER 2*32MH (AK19)
TR802	30002084	TRF SMPS AK19 90° (90-270V)
TU201	30001932	TUNER WSP (PLL) 45.75 NTSC
X402	30001746	XTAL 3.582056 MHZ
X403	30001744	XTAL 3.575611 MHZ
X404	30001745	XTAL 3.579545
X501	30006662	XTAL 6MHZ
Z205	30001712	FILTER SER SFSH 4.5MCB
Z208	30001723	FILTER SER TRAP TPS 4.5 MHZ
Z401	30001680	FILTER SAW M1962M
	20004208	BRACKET LED (8*17.5) 5X10
	30002299	CABLE 4/45 FC (FL) WO/SOC UL
	30002301	CABLE 5/45FC (RGB AK19) WO/SO
	40000098	CABLE HOLDER 2.5*4P
	40000099	CABLE HOLDER 2.5*5P
	30001732	FUSE 3.15A 250V 5*20
	20000849	FUSE ASSY.TK79-A (3.15A)
	35000131	HEATSINK 11TP18 RGB
	35000114	HEATSINK 19-CRT BOARD
	35000115	HEATSINK 19-E/W
	35000110	HEATSINK 20-HORIZANTAL
	35000113	HEATSINK 20-REGULATOR
	35000111	HEATSINK 20-VERTICAL
	35000466	HEATSINK SMPS AK20S


FRONT/BACK AV IN
SERVICE_PLUG
CLOSED CAPTION
AUDIO SWITCH
AUDIO OUTPUT
IC100
TDA2614_MONO
TDA9830
IC402
SECAM-L' & AM DEMOD
IF & VIDEO PROCESSOR
IC401
TDA4884
VERTICAL OUTPUT
IC701
TDA4855_SD
TEXT & CONTROLLER
IC501
TR6024 FBT
FBT
E/W&HORIZONTAL OUTPUT
11AK26-6
03/MAY/1999

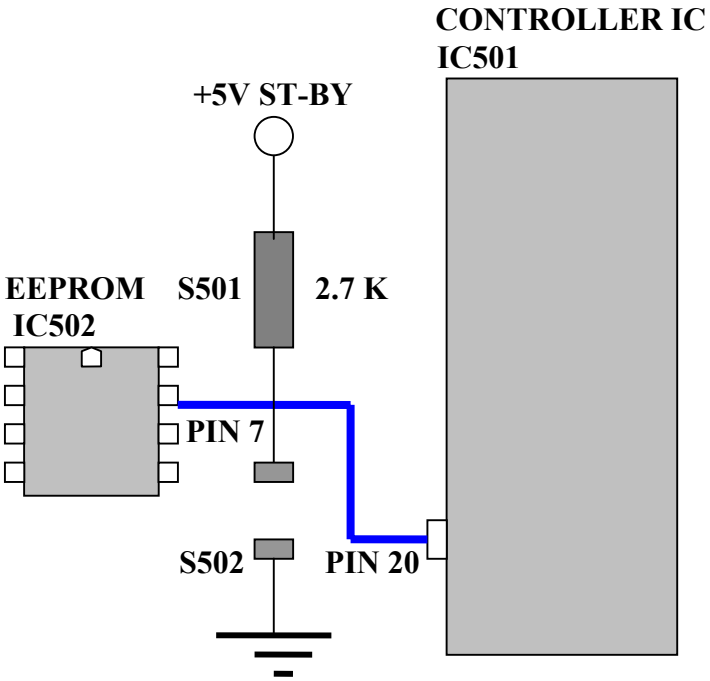
VESTEL ELEKTRONİK A.Ş.	CHANGE BULLETIN (TCN)	**CHANGE NO**: 69 **REF NO :** UMB 1370

AFFECTED MODELS: ALL AMERICAN NTSC MODELS WITH 11AK26 CHASSIS.

NOTE 1: The cable (6 cm.) must be connected between the Pin 20 of IC501 and Pin 7 of IC502 under the PCB.

START DATE : 20.12.1999

REASONS OF CHANGE: WRITE PROTECTION CONTROL OF IC502 (EEPROM).



OUT

NO	PCB CODE	VESTEL CODE	COMPONENT NAME	POSITION NUMBER	QUANTITY
1	11AK26	30001734	JUMPER SMD 0805	S502	1

IN

NO	PCB CODE	VESTEL CODE	COMPONENT NAME	POSITION NUMBER	QUANTITY
1	11AK26	30000631	RES SMD 1/10W 2K7 J 0805	S501	1
2	11AK26	30009834	CABLE BLUE 0.6MM	NOTE 1	1

APPLICATION ENGINEER	APPLICATION ENGINEERING CHIEF	APPLICATION ENGINEERING MANAGER
-	YILDIRAY BAŞKURT	CELAL ÖZKUL

NOTES



This Service Manual are Manufacturer intellectual propriety. The design and the way the documents are selected, placed and related in this data base are the author's intellectual propriety

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