

# Service Manual

## Color Television

### CHASSIS : CP-185

Model : DTA-14C4TFF

DTA-20C4TF

DTA-14V1TF

DTA-21C6TFF



14 V1



14/20 C4



21 C6

#### ■ SPECIFICATIONS

Version	TF	TK	TU	TA
TV standard	PAL B/G	PAL-SECAM B/G-D/K	PAL II	PAL B/G-SECAM L/L
Sound system	mono			
Power consumption	14":39W; 20":42W; 21":45W.			
Sound Output Power	2.5W (at 60% mod, 10% THD)			
Speaker	3W 8 ohm			
Teletext system	10 pages memory FASTEXT (FLOF or TOP) version with teletext only			
Aerial input	75 ohm unbalanced			
Channel coverage	off-air channels, S-cable channels and hyperband			
Tuning system	frequency synthesiser tuning system			
Visual screen size	14": 34 cm 20": 48 cm 21": 51 cm			
Channel indication	On Screen Display			
Program Selection	100 programmes			
Aux. terminal	EURO-SCART : Audio / Video in and Out, R/G/B in, Slow and Fast switching, SVHS in. Audio-Video jack on front of cabinet in common connection with EURO-SCART. Headphone jack (3.5mm) on front of cabinet			
Remote Control Unit	R - 40A01			

**DAEWOO ELECTRONICS CO., LTD.**

[http : //svc.dwe.co.kr](http://svc.dwe.co.kr)

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DAEWOO

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# SAFETY INSTRUCTION

**WARNING :** Only competent service personnel may carry out work involving the testing or repair of this equipment

## ■ X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not exceed the specified limit. The nominal value of the high voltage of this receiver is 22-23 kV (14") or 24-26 kV (20" - 21") at max beam current. The high voltage must not, under any circumstances, exceed 27.5 kV (14", 20"), 29KV (21"). Each time a receiver requires servicing, the high voltage should be checked. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY Radiation in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.

## ■ SAFETY PRECAUTION

1. Potentials of high voltage are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
  - 1) Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
  - 2) Discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the Replacement Parts List.
3. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor body 10 mm away from the circuit board.
4. Keep wires away from high voltage or high temperature components.
5. This receiver must operate under AC 230 volts, 50 Hz. NEVER connect to a DC supply of any other voltage or frequency.

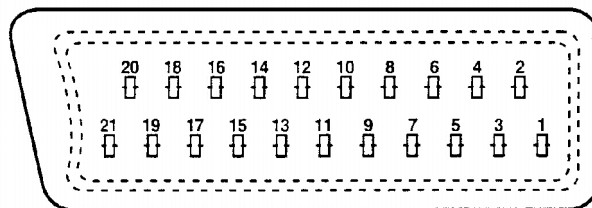
## ■ PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this equipment have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are identified by designated symbol on the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitutes replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY Radiation.

# SPECIFICATIONS

## Pin EURO-SCART :

Pin	Signal Description	Matching value
1	Audio Output Right	0.5 Vrms, Impedance < 1 kW, ( RF 54% Mod )
2	Audio Input Right	0.5 Vrms, Impedance > 10 kW
3	Audio Output Left	0.5 Vrms, Impedance < 1 kW, ( RF 54% Mod )
4	Audio Earth	
5	Blue Earth	
6	Audio Input Left	0.5 Vrms, Impedance > 10 kW
7	Blue Input	0.7 Vpp $\pm$ 0.1V, Impedance 75W
8	Slow Switching	TV : 0 to 2V, AV : 4.5 to 12V , Impedance > 10 kW
9	Green Earth	
10	N.C.	
11	Green Input	0.7 Vpp $\pm$ 0.1V, Impedance 75W
12	N.C.	
13	Red Earth	
14	Blanking Earth	
15	Red Input Chroma Input	0.7 Vpp $\pm$ 0.1V, Impedance 75W $\pm$ 3dB for a luminance signal of 1 Vpp
16	Fast Switching	0 to 0.4V : Logic "0", 1 to 3V : Logic "1", Impedance 75W
17	Video Out Earth	
18	Video In Earth	
19	Video Output	1 Vpp $\pm$ 3dB, Impedance 75W
20	Video Input	1 Vpp $\pm$ 3dB, Impedance 75W
21	Common Earth	



## SPECIFICATIONS

### Channel table

#### FREQUENCY TABLE CP185

CH	EUROPE CCIR	FRANCE	GB(IRE-LAND)	EAST OIRT
C01	46.25	-	45.75	49.75
C02	48.25	55.75 (L')	53.75	59.25
C03	55.25	60.5 (L)	61.75	77.25
C04	62.25	63.75 (L')	175.25	85.25
C05	175.25	176.00	183.25	93.25
C06	182.25	184.00	191.25	175.25
C07	189.25	192.00	199.25	183.25
C08	196.25	200.00	207.25	191.25
C09	203.25	208.00	215.25	199.25
C10	210.25	216.00	223.25	207.25
C11	217.25	189.25 (LUX)	231.25	215.25
C12	224.25	69.25 (L')	239.25	223.25
C13	53.75	76.25 (L')	247.25	-
C14	-	83.25 (L')	49.75	-
C15	82.25	90.25	57.75	-
C16	-	97.25	65.75	-
C17	183.75	-	77.75	-
C18	192.25	-	85.75	-
C19	201.25	-	-	-
C20	-	-	-	-
C21	471.25	471.25	471.25	471.25
C22	479.25	479.25	479.25	479.25
C23	487.25	487.25	487.25	487.25
C24	495.25	495.25	495.25	495.25
C25	503.25	503.25	503.25	503.25
C26	511.25	511.25	511.25	511.25
C27	519.25	519.25	519.25	519.25
C28	527.25	527.25	527.25	527.25
C29	535.25	535.25	535.25	535.25
C30	543.25	543.25	543.25	543.25
C31	551.25	551.25	551.25	551.25
C32	559.25	559.25	559.25	559.25
C33	567.25	567.25	567.25	567.25
C34	575.25	575.25	575.25	575.25
C35	583.25	583.25	583.25	583.25
C36	591.25	591.25	591.25	591.25
C37	599.25	599.25	599.25	599.25
C38	607.25	607.25	607.25	607.25
C39	615.25	615.25	615.25	615.25

CH	EUROPE CCIR	FRANCE	GB(IRE-LAND)	EAST OIRT
C40	623.25	623.25	623.25	623.25
C41	631.25	631.25	631.25	631.25
C42	639.25	639.25	639.25	639.25
C43	647.25	647.25	647.25	647.25
C44	655.25	655.25	655.25	655.25
C45	663.25	663.25	663.25	663.25
C46	671.25	671.25	671.25	671.25
C47	679.25	679.25	679.25	679.25
C48	687.25	687.25	687.25	687.25
C49	695.25	695.25	695.25	695.25
C50	703.25	703.25	703.25	703.25
C51	711.25	711.25	711.25	711.25
C52	719.25	719.25	719.25	719.25
C53	727.25	727.25	727.25	727.25
C54	735.25	735.25	735.25	735.25
C55	743.25	743.25	743.25	743.25
C56	751.25	751.25	751.25	751.25
C57	759.25	759.25	759.25	759.25
C58	767.25	767.25	767.25	767.25
C59	775.25	775.25	775.25	775.25
C60	783.25	783.25	783.25	783.25
C61	791.25	791.25	791.25	791.25
C62	799.25	799.25	799.25	799.25
C63	807.25	807.25	807.25	807.25
C64	815.25	815.25	815.25	815.25
C65	823.25	823.25	823.25	823.25
C66	831.25	831.25	831.25	831.25
C67	839.25	839.25	839.25	839.25
C68	847.25	847.25	847.25	847.25
C69	855.25	855.25	855.25	855.25
C70	863.25	863.25	863.25	863.25
C71	69.25	-	-	-
C72	76.25	-	-	-
C73	83.25	-	-	-
C74	90.25	-	-	-
C75	97.25	-	-	-
C76	59.25	-	-	-
C77	93.25	-	-	-
S01	105.25	104.75	103.25	105.25

CH	EUROP E CCIR	FRANCE	GB(IRE- LAND)	EAST OIRT
S02	112.25	116.75	111.25	112.25
S03	119.25	128.75	119.25	119.25
S04	126.25	140.75	127.25	126.25
S05	133.25	152.75	135.25	133.25
S06	140.25	164.75	143.25	140.25
S07	147.25	176.75	151.25	147.25
S08	154.25	188.75	159.25	154.25
S09	161.25	200.75	167.25	161.25
S10	168.25	212.75	-	168.25
S11	231.25	224.75	-	231.25
S12	238.25	236.75	-	238.25
S13	245.25	248.75	255.25	245.25
S14	252.25	260.75	263.25	252.25
S15	259.25	272.75	271.25	259.25
S16	266.25	284.75	279.25	266.25
S17	273.25	296.75	287.25	273.25
S18	280.25	136.00	295.25	280.25
S19	287.25	160.00	303.25	287.25
S20	294.25	-	-	294.25
S21	303.25	303.25	-	303.25

CH	EUROP E CCIR	FRANCE	GB(IRE- LAND)	EAST OIRT
S22	311.25	311.25	311.25	311.25
S23	319.25	319.25	319.25	319.25
S24	327.25	327.25	327.25	327.25
S25	335.25	335.25	335.25	335.25
S26	343.25	343.25	343.25	343.25
S27	351.25	351.25	351.25	351.25
S28	359.25	359.25	359.25	359.25
S29	367.25	367.25	367.25	367.25
S30	375.25	375.25	375.25	375.25
S31	383.25	383.25	383.25	383.25
S32	391.25	391.25	391.25	391.25
S33	399.25	399.25	399.25	399.25
S34	407.25	407.25	407.25	407.25
S35	415.25	415.25	415.25	415.25
S36	423.25	423.25	423.25	423.25
S37	431.25	431.25	431.25	431.25
S38	439.25	439.25	439.25	439.25
S39	447.25	447.25	447.25	447.25
S40	455.25	455.25	455.25	455.25
S41	463.25	463.25	463.25	463.25

## SPECIFICATIONS

### ATSS sorting method

The TV set sweeps all the TV bands from beginning of VHF to the end of UHF. The TV controlling software for each program checks if a VPS CNI code is transmitted. If no VPS CNI code is found, the system checks if a CNI code is transmitted in the teletext lines ( Packet 8/30 format 1 ). If such a code ( VPS or teletext ) is found and if this code is in the ATSS list, the program is automatically named.

The programs found are then sorted into 4 groups :

**Group I :** Contains all the programs from the selected country and named by the TV controlling software. Within this group the sorting order is fixed by the ATSS list.

**Group II :** Contains all the programs with a strong signal strength which are not listed in group I.

**Group III :** Contains all the programs with a weak signal strength which are not listed in group I.

**Group IV :** If two or more programs with the same code are found, only the strongest (or if they have the same level the one with the lowest frequency) is listed in group I, II or III. The others are listed in group IV.

Note : If two programs with the same name but a different code are found these two programs are listed in group I, II or III (e.g. Regional program SW3 in Germany).

The sorting order within group II, III, and IV is based on the channel frequency. The program with the lowest frequency is allocated the first rank in its group, and so forth until the last program of the group which has the highest frequency.

Program number	Group	Skip
1	Group I	
2		
...		
n		
n+1	Group II	
...		
m		
m+1	Group III	
...		
p		
p+1	Group IV	
...		
q		
q+1		
...	not used	4
99		
0		

Program number	Group	Skip
1	Group II	
...		
m		
m+1	Group III	
...		
p		
p+1	Group IV	
...		
q		
q+1	not used	4
...		
99		
0		

Special case : **Country selection = Others**

#### Note

For TV versions without teletext, and if the controlling software is unable to catch the station name, Group I will remain empty.

**Special case : France**

If France is selected the TV controlling software firstly sweeps all the TV bands with France system selected (positive video modulation) and secondly with Europe system selected (negative video modulation).

**Special case : Switzerland**

If Switzerland is selected the TV controlling software firstly sweeps all the TV bands with Europe system selected (negative video modulation) and secondly with France system selected (positive video modulation).

**Special case : GB**

Note for satellite receiver users : Before starting ATSS turn On your satellite receiver and tune "SKY NEWS ".

If GB is selected the TV controlling software seeks for programs only in UHF ( C21 to C70 ). The sorting order is :

- 1 - BBC1
- 2 - BBC2
- 3 - ITV
- 4 - CH4
- 5 - CH5
- 6 - NEWS

If two or more "identical "programs ( same name but different code e.g. BBC1 and BBC1 Scotland ) are found the following programs in the list will be shifted up. ( 1 - BBC1, 2 - BBC1, 3 - BBC2, 4 - ITV, 5 - CH4, 6 - CH5, 7 - NEWS, ..)

If one of the program above is not found, the associated program number remains empty ( freq.=467.25 MHz - Skip selected - no name – system = GB).

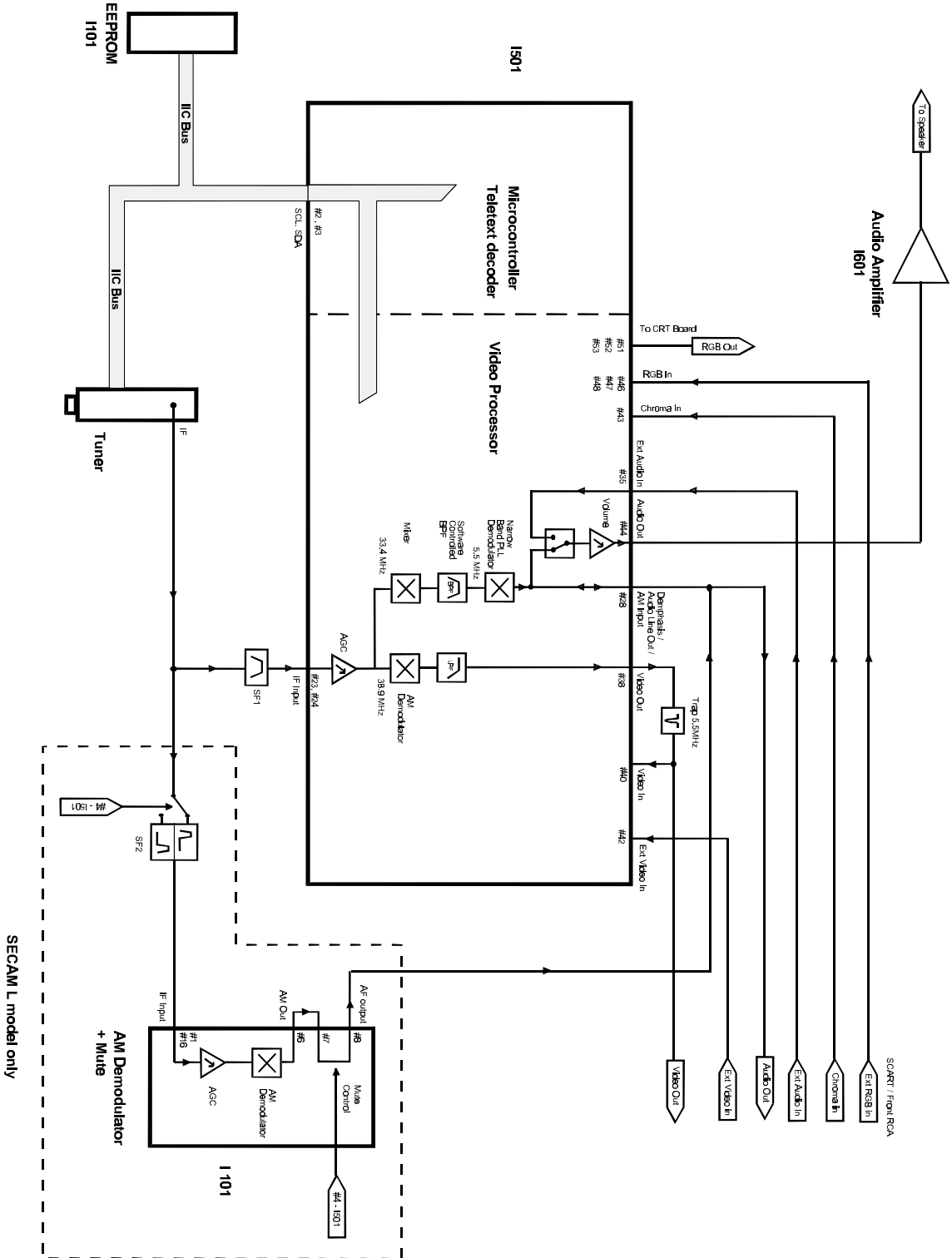
example A : 1 - BBC1, 2 - BBC2, 3 - ITV, 4 - -----, 5 - CH5, 6 - NEWS, ...

example B ( if 2 BBC1 found ) : 1 - BBC1, 2 - BBC1, 3 - BBC2, 4 - ITV, 5 - -----, 6 - CH5, 7 - NEWS, ...

Version	TF	TK	TU	TA
ATSS countries	Germany, Belgium, Spain, Italy, Austria, Denmark, Finland, Netherlands, Norway, Sweden, Others	Germany, Belgium, Spain, Italy, Austria, Denmark, Finland, Netherlands, Norway, Sweden, Poland, Hungary, Czech Rep, Others	GB, Ireland, Others	France, Switzerland, Germany, Belgium, Spain, Italy, Austria, Denmark, Finland, Netherlands, Norway, Sweden, Others



# CIRCUIT BLOCK DIAGRAM



# ALIGNMENT INSTRUCTIONS

## Microcontroller configuration : Service mode

To switch the TV set into service mode please see instruction below.

- 1 - Select pr. number 91
- 2 - Adjust sharpness to minimum and exit all menu.
- 3 - Quickly press the key sequence : **RED - GREEN - menu**

To exit SERVICE menu press **menu** key or **Std By** key.

In Service Mode press "**OK**" to stop the microcontroller i.e. the I2C bus is free and the set can be controlled by external equipment. Press "**OK**" again to allow the microcontroller to control the set again

## Microcontroller configuration :

Tuner Option

Option	Tuner maker
DW	DAEWOO / SAMSUNG
PH1	PHILIPS ( Video processor AGC )
PH2	PHILIPS (tuner internal AGC )

System Option

Option	System
TF	PAL – B/G
TK	PAL – SECAM B/G-D/K
TU	PAL I/I
TA	PAL – SECAM B/G-L/L'

## TV set Alignment

### 1 - G2 alignment

- Set TV in NORMAL I mode
- TV in AV mode without video signal ? Black screen.
- TV preset with WP Red, WP Green and WP Blue equal to 32.
- TV preset with Black R, Black G equal to 8.
- Adjust screen volume ( on FBT ) such that the highest cathode cut-off voltage measured on CRT board, is  $V_{cut-off} \pm 5V$ .

Screen size	Vcut-off
14"	115 V
20" & 21"	125 V

### 2 - White balance

- Select a dark picture and adjust Black G and Black R to the desired colour temperature.
- Select a bright picture and adjust WP Red, WP Green, WP Blue to the desired colour temperature.

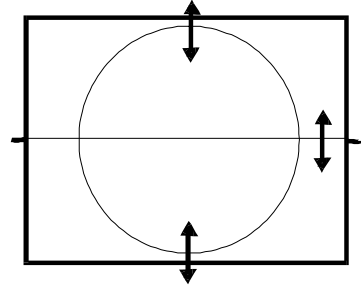
## ALIGNMENT INSTRUCTIONS

### 3 - Focus

- Adjust the Focus volume ( on FBT ) to have the best resolution on screen.

### 4 - Vertical geometry

- Adjust the Vertical Amplitude, Shift, S-Correction and Slope to compensate for vertical distortion



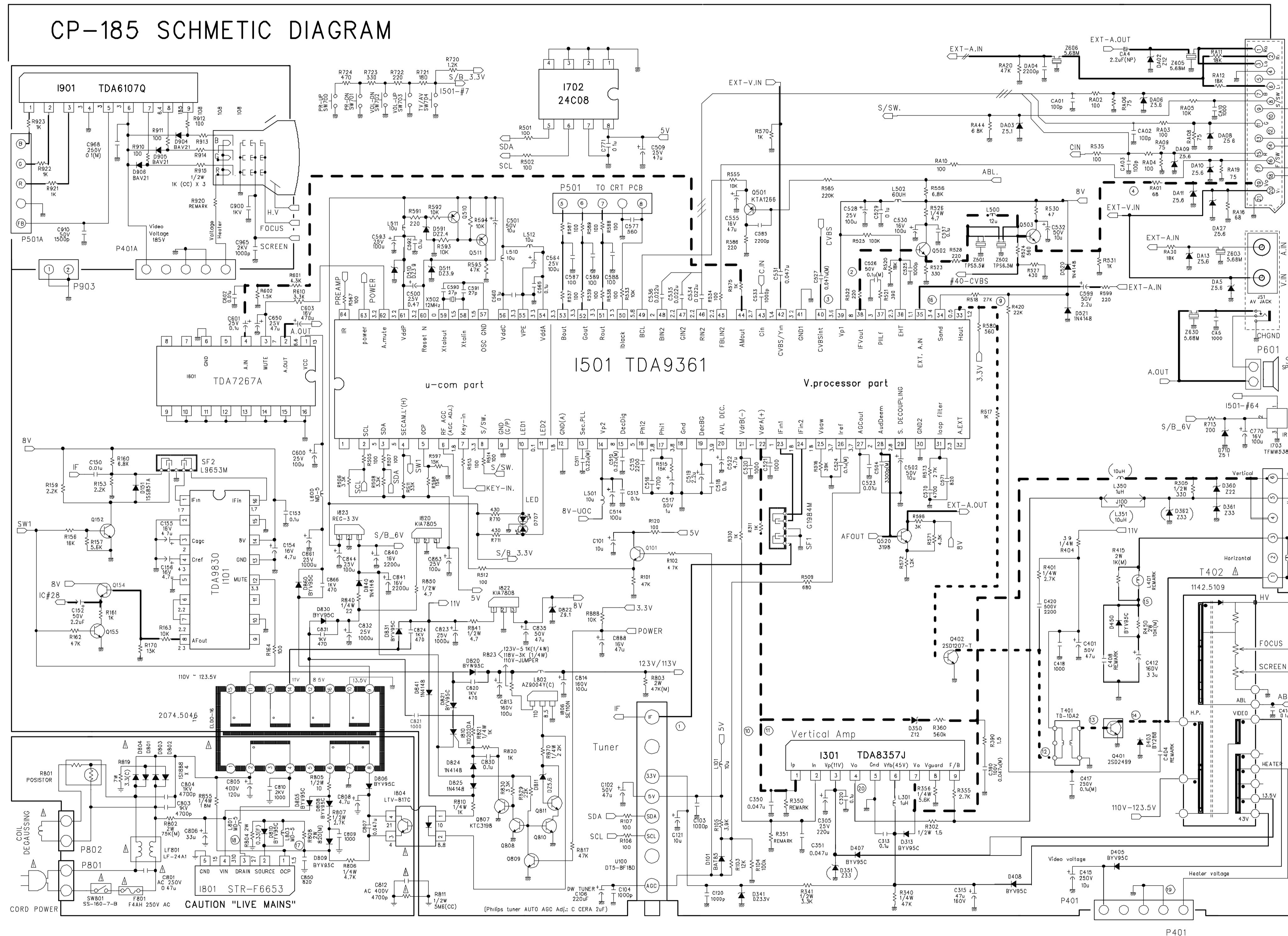
### 5 - Horizontal picture centering

- Adjust H Shift to have the picture in the center of the screen.

### 7 - AGC

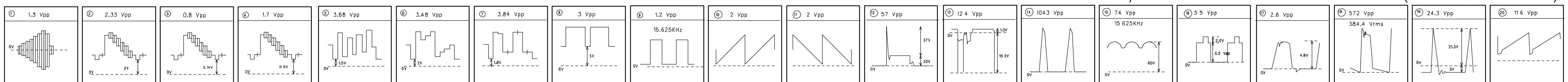
- Adjust the antenna signal level to  $70 \text{ dB}\mu\text{V} \pm 2$  for Daewoo tuner ( $63 \text{ dB}\mu\text{V} \pm 1$  for Philips tuner).
- Set RF AGC to 0.
- Increase RF AGC level and stop when the level on pin 6 of I501 goes below 2.5 Vdc

# CP-185 SCHMETIC DIAGRAM



## \* WAVEFORMS

TEST CONDITIONS : PAL-B/G COLOR BAR (NOR.1)



## NOTE:

1. RESISTANCE IS SHOWN IN OHM. K=1000, M=1000000
2. UNLESS OTHERWISE NOTED IN SCHEMATIC ALL CAPACITOR VALUES ARE EXPRESSED IN  $\mu$ F
3. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND USING A COLOR BAR SIGNAL WITH ALL CONTROLS AT NORMAL LINE 230V AC VOLTAGE READINGS SHOWN ARE NORMAL VALUES AND MAY VARY  $\pm 20\%$  EXCEPT H.V
4. THIS CIRCUIT DIAGRAM IS A STANDARD ONE CIRCUIT PRINTED MAY BE SUBJECT TO CHANGE FOR PRODUCT IMPROVEMENT WITHOUT PRIOR NOTICE

## WARNING:

BEFORE SERVICING THE CHASSIS, READ "X-RAY RADIATION", "SAFETY PRECAUTION", AND "PRODUCT SAFETY NOTICE" IN SERVICE MANUAL

## CAUTION TO SERVICE TECHNICIANS:

BEFORE RETURNING THE RECEIVER TO CUSTOMER, LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.

## THE DIFFERENT PARTS FOR CRT

LOC	21 INCH PHILIPS	21 INCH 1/P(DARK)	21 INCH 1/P	20 INCH 1/P	20 INCH D05A	14 INCH PHILIPS	14 INCH D05A
V901	A51CAL105X01	A51EF583X01	A51V815X09	A48EAX33X01	A46LL180X02	A34EAC0506	A34JLL180X02
SC11	PC5628-03C				PC5633A		
C404	1.6KV 8200pF	1.6KV 7500pF	1.6KV 7500pF	1.6KV 7500pF	1.6KV 8200pF	1.6KV 7500pF	
C408	200V 0.36 (M)	200V 0.27 (M)	200V 0.36 (M)	200V 0.36 (M)	200V 0.47 (M)	200V 0.3 (M)	
L401	L102	L76	TR1341G	L76		L102	L102
R550	2K(1K)	1.5K (1K)	1.5K (1K)	1.5K (1K)			
R551	2K(1K)	1.5K (1K)	1.5K (1K)	1.5K (1K)			
R556	1/8W 6.8K	1/8W 6.2K	1/8W 6.8K	1/8W 6.8K	1/8W 6.2K	1/8W 8.2K	1/8W 8.2K
R523	3K	JUMPER	3.3K	JUMPER	3K	JUMPER	3.3K
R920	1W 2 JA (F)	1W 0.47 JA (F)	1W 1 JA (F)	1W 0.18 (F)	1W 2 JA (F)	1W 0.18 (2A)	1W 1.2 JA (F)

## THE DIFFERENT PARTS FOR SYSTEM

LOC.	NAME	TA	TF	TK	TU
SF01	SAW FILTER	G1984M	G1984M	K2960M	J1981M
SF02	SAW FILTER	L9653M	X	X	X
PW01	POWER CORD AS	CW4232	CW4232	KK419C	CW3222
Z501	GERAL FILTER	1P55.5MB	1P55.5MB	1P55.5MB	1P55.0MB
Z502	GERAL FILTER				
C801	C LINE ACROSS	AC 250V 0.47u	AC 250V 0.47u	AC 250V 0.1u	AC 250V 0.47u
I101	IC SIF	TD1983D	X	X	X
R153	R.C-FILM	2.2K	X	X	X
R156	R.C-FILM	10K	X	X	X
R157	R.C-FILM	5.6K	X	X	X
R159	R.C-FILM	2.2K	X	X	X
R160	R.C-FILM	6.8K	X	X	X
R161	R.C-FILM	1K	X	X	X
R162	R.C-FILM	4.7K	X	X	X
R163	R.C-FILM	10K	X	X	X
R164	R.C-FILM	100	X	X	X
D152	TR	KTC319B	X	X	X
D154	TR	KTC319B	X	X	X
D155	TR	KTC319B	X	X	X
D151	DIODE	1S5851A	X	X	X
C158	C. CERAM	0.01u	X	X	X
C152	C. ELECTRO	50V 2.2uF	X	X	X
C153	C. CERAM	0.1u	X	X	X
C154	C. ELECTRO	16V 4.7u	X	X	X
C155	C. ELECTRO	16V 4.7u	X	X	X
C156	C. ELECTRO	16V 4.7u	X	X	X

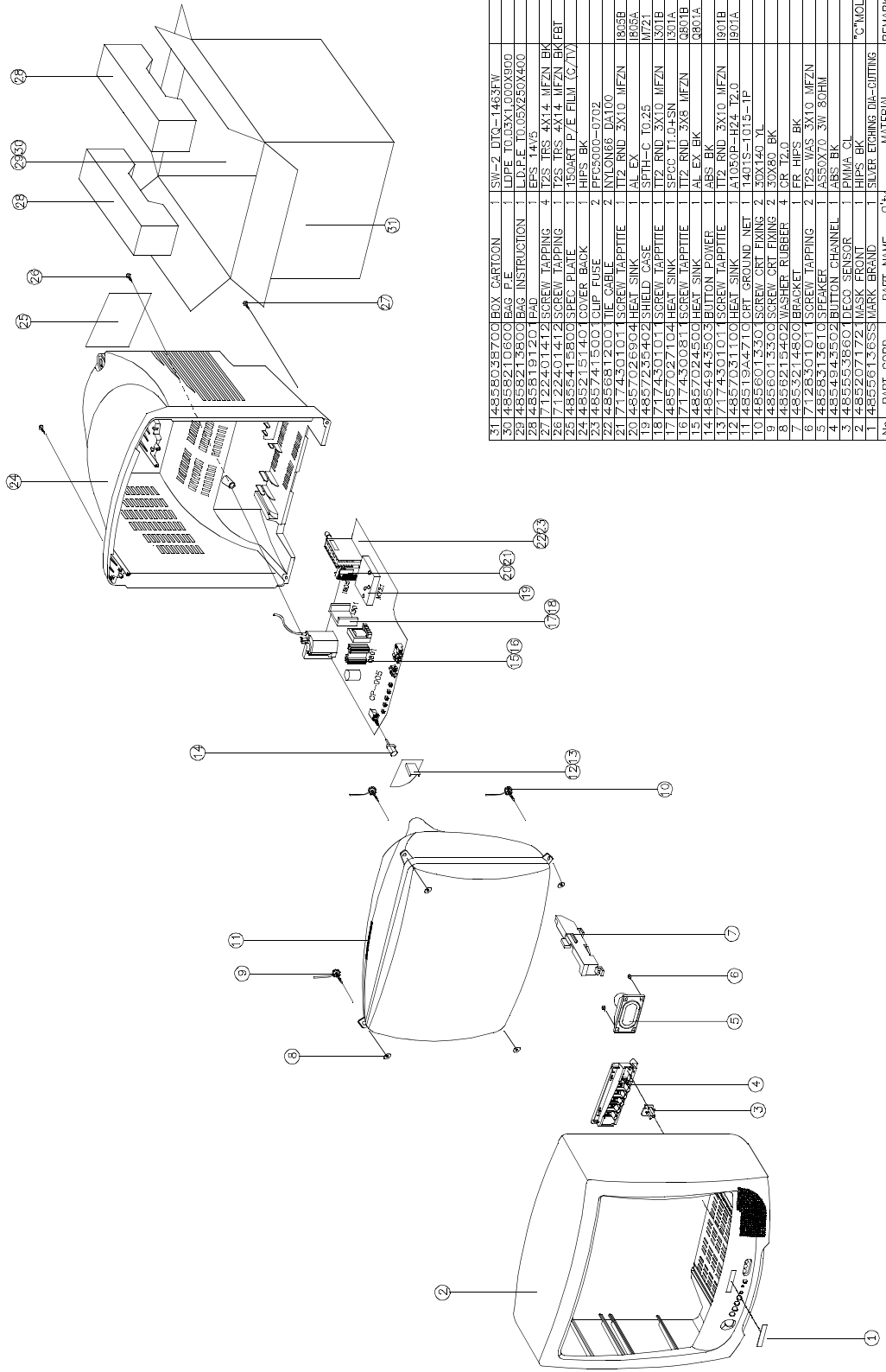
## PRODUCT SAFETY NOTE :

THE COMPONENTS MARKED WITH ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET AND SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL OR SPECIFIED ONE IN THE PART LIST. DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

S/N: 4858904593-00 (JUNE, 2000)

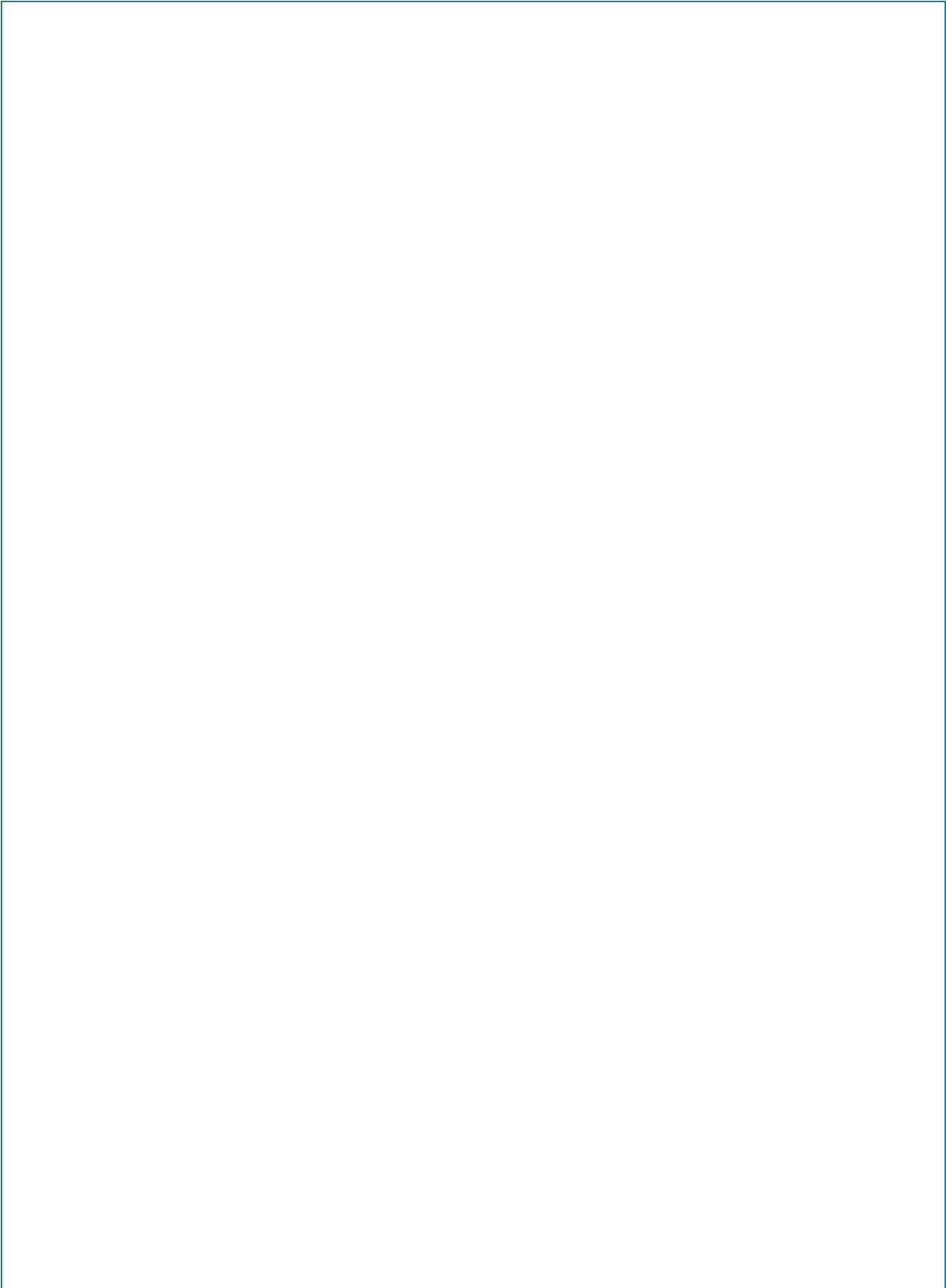
----- AUDIO  
 ..... VIDEO

# Mechanical Exploded View





NO	PART NAME	QTY	MATERIAL	REMARKS
31	4858058700 BOX CARDBOARD	1	SW-2 DJR-1463FW	
30	4858210600 BAG P.E	1	LPPE TO.03X1.000X900	
29	4858210600 BAG INSTRUCTION	1	L.D.P.E TO.05X250X400	
28	4858191200 HEAD	1	EPS 14x5	
27	4858210140 COVER BACK	1	ABS BK / E FLIM (G717)	
26	4857415000 CLIP FUSE	2	PPS000-0702	
25	4858112000 TIE CABLE	2	NYLON66 DA100	
24	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	805B
23	4857255402 SHIELD CASE	1	AL EX	805A
22	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	M721
21	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807B
20	4857025904 HEAT SINK	1	TT2 RND 3X8 MFZN	807A
19	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
18	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
17	4857025904 HEAT SINK	1	TT2 RND 3X8 MFZN	807A
16	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
15	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
14	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
13	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
12	4857025904 HEAT SINK	1	TT2 RND 3X10 MFZN	807A
11	48519A4710 CRT GROUND NET	1	1401S-1015-1P	
10	4858013500 SCREW CRT FIXING	2	30X140 VL	
9	4858013500 SCREW CRT FIXING	2	30X80 BK	
8	4858210140 WASHER RUBBER	4	CR T2.0	
7	4858210140 BRACKET	1	FR HPS BK	
6	4858210140 SCREW TAPPING	2	T2S WAS 3X10 MFZN	
5	4858310610 SPEAKER	1	A550X70 3W 8OHM	
4	4858455020 BUTTON CHANNEL	1	ABS BK	
3	4858210140 DEC. SENSOR	1	PRIMA CL	
2	4858210140 DEC. SENSOR	1	PRIMA CL	
1	4858210140 MARK BRAND	1	SILVER ENCHING PA-CUTTING	C*MOLD

# PRINTED CIRCUIT BOARD





# SERVICE PARTS LIST

Caution  IS RECOMMENDABLE PART FOR STOCK.  
 IS SAFETY COMPONENT, SO IT MUST BE USED THE SAME COMPONENT.

LOC.	PART CODE	PART NAME	PART DESCRIPTION
ZZ110	PTACPWA21C6F	ACCESSORY AS	DTA-21C6TFF
00100	4850Q00910	BATTERY	ROCKET AAA R03/NN
10000	48586A1617A	MANUAL	ALL
M821	4858213800	BAG POLY	L.D.P.E.T0.5X250X40 MILK
ZZ100 	48B3740A01	TRANSMITTER REMOCON	R-40A01
ZZ120	PTBCSHD616	COVER BACK AS	DTP-21C6TFP
M211	4852151601	COVER BACK	"HIPS BK 21V1, V4, C6 "
M541	4855415800	S/PLATE	150ART P/E FILM (C/TV)
M542	4855800022	LABEL SERIAL	ART 90 70X19
ZZ130	PTPKCPA21C6F	PACKING AS	DTA-21C6TFF
10	6520010200	STAPLE PIN	#3417 ALL
20	6520010200	STAPLE PIN	#3417 ALL
M801	GPBBW3V1112	BOX	"DTA-21C6, V4, V1 (NEW) "
M811	4858190700	PAD	EPS 21C6
M821	4858211801	BAG P.E.	PE FILM T0.05X1300X1000
ZZ140	PTCACA21C6FP	CABINET AS	DTA-21C6TFP
M191	4854943202	BUTTON CONTROL	21C6
M201A	4856013300	SCREW CRT FIXING AS	L-80
M201B	4856215402	WASHER RUBBER	20"
M201C	4856013302	SCREW CRT FIXING AS	L-190
M211A	7172401412	SCREW TAPPING	TT2 TRS 4X14 MFZN BK
M211D	7172401412	SCREW TAPPING	TT2 TRS 4X14 MFZN BK
M481	4854943203	BUTTON POWER	21C6
M551	4855538000	DECO SENSOR	21C6
M561	485562140101	MARK BRAND	DAEWOO 14/20/21C4/C6
M681	4856812001	TIE CABLE	NYLON66 DA100
P402A	4850706057	CONN AS	ODY-2109
PWC1	4859906210	CORD POWER	FTZ (LOMAX NEW TYPE)
SP01A	7178301011	SCREW TAPPING	TT2 WAS 3X10 MFZN
V901  	4859621760C	"CRT (THOMSON 21") "	A51EBV13X081 (WITH CONN)
ZZ131 	58G0000147	COIL DEGAUSSING	DC-21SF
ZZ132	48519A5310	CRT GROUND AS	2101S-1015-1P
ZZ200	PTFMSJD616	MASK FRONT AS	DTP-21C6TFP
M201	4852071401	MASK FRONT	HIPS BK 21C6
ZZ210	PTSPPPWA615	SPEAKER AS	DTP-14C4TFD
P601A	4850703S50	CONN AS	YH025-03+3509-200
SP01 	4858314010	SPEAKER	SP-5070F01 3W 8 OHM
ZZ290	PTMPMSA21C6FP	PCB MAIN MANUAL AS	DTA-21C6TFP
10	2193100801	SOLDER BAR	SN-PB-63:37 3PI(NO FLUX)
40	2291050314	FLUX SOLVENT	IM-1000
20	2193011101	SOLDER WIRE	RS 60-1.2 1.6A
30	2291050617P	FLUX SOLDER	CF-329D
50	2291140501	WAX COVER	60G/PC
60	2291051001	FLUX KILLER	KFT-7
C315	CEXF2C470C	C ELECTRO	160V RUS 47MF (13X25) TP
C404	CMYH3C752J	C MYLAR	1.6KV 7500PF J (BUP)
C408	CMYE2D274J	C MYLAR	200V 0.27MF J (PL)
C415	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP
C603	CEXF1C471V	C ELECTRO	16V RSS 470MF (10X12.5)TP
C801 	CL1JB3474K	C LINE ACROSS	AC250V 0.47MF U/C/SNDF/SV
C805 	CEYN2G101P	C ELECTRO	400V LHS 100MF
C810	CCXB3D102K	C CERA	2KV B 1000 PF K (TAPPING)
C812  	CH1AFA472M	C CERA AC	4KV 4700PF M KX DE1610

LOC.	PART CODE	PART NAME	PART DESCRIPTION
C813	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP
C814	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP
C823	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP
C832	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP
C840	CEXF1C222V	C ELECTRO	16V RSS 2200MF(13X25)TP
C841	CEXF1C222V	C ELECTRO	16V RSS 2200MF(13X25)TP
C861	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP
C965	CCXB3D102K	C CERA	2KV B 1000 PF K (TAPPING)
D403	DBY228----	DIODE	BY228
D707	DSML1216W-	LED	SML1216W
D820	DBYW76----	DIODE	BYW76
F801 	5FSCB4022R	FUSE CERA	SEMKO F4AH 4A 250V MF51
G900	4SG0D00103	SPARK GAP	S-23 900V-1.5KV
I301 	1TDA8357J-	IC VERTICAL	TDA8357J
I301A	4857025405	HEAT SINK	A1050P-H24 (CP-185)
I301B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN
I501 	1DW3613DE1	IC MAIN	TDA9361N1/3-DE1
I601 	1TDA7267A-	IC AMP	TDA7267A
I702	1AT24C08PC	IC MEMORY	AT24C08-10PC
I703	1KRT30----	IC PREAMP	KRT30
I801 	1STRF6653-	IC SMPS	STR-F6653
I801A	4857024618	HEAT SINK	AL EX (I801A)
I801B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN
I804 	1LTV817C--	IC PHOTO COUPLER	LTV-817C
I806	1SE110N--	IC	SE110N
I810	TX0202DA--	THYRISTOR	X0202DA
I820	1KA7805--	IC REGULATOR	KA7805
I822	1KA7808--	IC REGULATOR	KA7808
I823	1LE33CZ--	IC REGULATOR	LE33CZ
I901	1TDA6107Q-	IC VIDEO	TDA6107Q
I901A	4857031100	HEAT SINK	A1050P-H24 T2.0
I901B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN
JPA1	4859200401	SOCKET RGB	SR-21A1 (ANGLE TYPE)
JS1	4859109950	JACK PIN BOARD	PH-JB-9710A
L401	58H0000040	COIL H-LINEARITY	TRL-341G
L802	58C9430599	COIL CHOKE	AZ-9004Y(94MH)
LF801	5PLF24A1--	FILTER LINE	LF-24A1
M351	4853533600	HOLDER LED	P.P BK
M791	4857913305	RUBBER CUSHION	FR RUBBER SPONGE
P401	4850705N18	CONNECTOR	BIC-05T-25T+ULW=400
P402	4859240120	CONN WAFER	YFW500-06
P501	4850705N14	CONNECTOR	BIC-05T-25T+ULW=500
P601	4859231620	CONN WAFER	YW025-03
P801	4859287320	CONN WAFER	MKS2822 (LOMAX NEW TYPE)
P802	4859242220	CONN WAFER	YFW800-02
Q401 	T2SD2499--	TR	2SD2499
R305	RS02Y331JS	R M-OXIDE FILM	2W 330 OHM J SMALL
R415	RS02Y102JS	R M-OXIDE FILM	2W 1K OHM J SMALL
R450	RS02Y103JS	R M-OXIDE FILM	2W 10K OHM J SMALL
R801	DPC7R0M290	POSISTOR	96709 (PHILIPS)
R802	RS02Y753JS	R M-OXIDE FILM	2W 75K OHM J SMALL
R803	RS02Y473JS	R M-OXIDE FILM	2W 47K OHM J SMALL
R804	RF02Y338K-	R FUSIBLE	2W 0.33 OHM K
R808	RS02Y821JS	R M-OXIDE FILM	2W 820 OHM J SMALL
R819	RX07C339JF	R CEMENT	7W 3.3 OHM J 15MM 4P

## SERVICE PARTS LIST

LOC.	PART CODE	PART NAME	PART DESCRIPTION
R920	RF01Y109JA	R FUSIBLE	1W 1 OHM J A CURVE
SCT1 	4859303530	SOCKET CRT	PCS629-03C
SF1	5PG1984M--	FILTER SAW	G1984M
SW801 	5S40101146	SW POWER PUSH	SS-160-7-B
T401 	50D10A2--	TRANS DRIVE	TD-10A2
T402  	50H0000211	FBT	1142.5109
T801 	50M3535A1-	TRANS SMPS	*2074.5046
U100 	4859720730	TUNER VARACTOR	UV1316/A
X502	5XE12R000E	CRYSTAL QUARTZ	HC-49U 12.00000MHZ 30PPM
Z501	5PYXT5R5MB	FILTER CERA	XT5.5MB
ZZ200	PTMPJRA21C6FP	PCB MAIN RADIAL AS	DTA-21C6TFP
C101	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP
C102	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3*11) TP
C106	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP
C120	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)
C121	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP
C305	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP
C313	CMXM2A104J	C MYLAR	100V 0.1MF J TP
C320	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C390	CMXM2A473J	C MYLAR	100V 0.047MF J TP
C401	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3*11) TP
C412	CEXF2C339V	C ELECTRO	160V RSS 3.3MF (8X16) TP
C414	CMXM2A104J	C MYLAR	100V 0.1MF J TP
C417	CMXL2E104K	C MYLAR	250V 0.1MF K MEU TP
C418	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)
C420	CCXB2H222K	C CERA	500V B 2200PF K (TAPPING)
C500	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP
C501	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP
C502	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP
C504	CMXM2A332J	C MYLAR	100V 3300PF J TP
C509	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP
C511	CMXB1H224J	C MYLAR	50V EU 0.22MF J(TP)
C512	CMXB1H224J	C MYLAR	50V EU 0.22MF J(TP)
C513	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C514	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C517	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP
C519	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP
C522	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5*11) TP
C524	CMXM2A104J	C MYLAR	100V 0.1MF J TP
C525	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)
C526	CMXM2A104J	C MYLAR	100V 0.1MF J TP
C527	CMXM2A473J	C MYLAR	100V 0.047MF J TP
C528	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C530	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP
C532	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP
C533	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)
C537	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C555	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP
C560	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C564	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C565	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C570	CCXB1H472K	C CERA	50V B 4700PF K (TAPPING)
C571	CCXB1H821K	C CERA	50V B 820PF K (TAPPING)
C585	CCXB1H222K	C CERA	50V B 2200PF K (TAPPING)
C590	CXCH1H270J	C CERA	50V CH 27PF J (TAPPING)

LOC.	PART CODE	PART NAME	PART DESCRIPTION
C591	CXCH1H270J	C CERA	50V CH 27PF J (TAPPING)
C592	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)
C593	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C599	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP
C600	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C601	CEXF1H108V	C ELECTRO	50V RSS 0.1MF (5X11) TP
C602	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)
C650	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP
C770	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP
C803	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)
C804	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)
C806	CEXF1H330V	C ELECTRO	50V RSS 33MF (6.3X11) TP
C807	CCXF1H473Z	C CERA	50V F 0.047MF Z (TAPPING)
C808	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5*11) TP
C820	CCXB3A471K	C CERA	1KV B 470PF K (T)
C821	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)
C824	CCXB3A471K	C CERA	1KV B 470PF K (T)
C831	CCXB3A471K	C CERA	1KV B 470PF K (T)
C835	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3*11) TP
C844	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C863	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP
C866	CCXB3A471K	C CERA	1KV B 470PF K (T)
C888	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP
C910	CCXB1H561K	C CERA	50V B 560PF K (TAPPING)
C968	CMXL2E104K	C MYLAR	250V 0.1MF K MEU TP
CA04	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP
CA05	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)
F801A	4857415001	CLIP FUSE	PF5000-0702
F801B	4857415001	CLIP FUSE	PF5000-0702
Q101	T2SC5343Y-	TR	2SC5343Y
Q402	T2SD1207T-	TR	2SD1207-T (TAPPING)
Q501	TSTA933Y--	TR	STA933-Y
Q502	T2SC5343Y-	TR	2SC5343Y
Q503	T2SC5343Y-	TR	2SC5343Y
Q510	TSTA933Y--	TR	STA933-Y
Q511	TSTA933Y--	TR	STA933-Y
Q520	T2SC5343Y-	TR	2SC5343Y
Q807	T2SC5343Y-	TR	2SC5343Y
Q808	T2SC5343Y-	TR	2SC5343Y
Q809	T2SC5343Y-	TR	2SC5343Y
Q810	T2SC5343Y-	TR	2SC5343Y
Q811	T2SC5343Y-	TR	2SC5343Y
SW700	5S50101090	SW TACT	SKHV17910A
SW701	5S50101090	SW TACT	SKHV17910A
SW702	5S50101090	SW TACT	SKHV17910A
SW703	5S50101090	SW TACT	SKHV17910A
SW704	5S50101090	SW TACT	SKHV17910A
Z603	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF
Z605	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF
Z606	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF
Z630	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF
ZZ200	PTMPJAA21C6FP	PCB MAIN AXIAL AS	DTA-21C6TFP
10	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M
20	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M
A001	4859804593	PCB MAIN	T1.6X246X246 CP-185



## SERVICE PARTS LIST

LOC.	PART CODE	PART NAME	PART DESCRIPTION
C103	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)
C104	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)
C350	CCZF1H473Z	C CERA	50V F 0.047MF Z AXIAL
C351	CCZF1H473Z	C CERA	50V F 0.047MF Z AXIAL
C515	CBZR1C222M	C CERA	Y5R 16V 2200PF M AXIAL
C516	CBZR1C472M	C CERA	Y5R 16V 4700PF M AXIAL
C518	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)
C520	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)
C521	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)
C523	CCZF1H103Z	C CERA	50V F 0.01MF Z
C529	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)
C531	CCZF1H473Z	C CERA	50V F 0.047MF Z AXIAL
C534	CCZF1H223Z	C CERA	50V F 0.022MF Z
C535	CCZF1H223Z	C CERA	50V F 0.022MF Z
C536	CCZF1H223Z	C CERA	50V F 0.022MF Z
C577	CCZB1H561K	C CERA	50V B 560PF K (AXIAL)
C587	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)
C588	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)
C589	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)
C771	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)
C809	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)
C830	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z (AXIAL)
C850	CCZB1H821K	C CERA	50V B 820PF K (AXIAL)
CA01	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)
CA02	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)
CA03	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)
CA10	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)
D101	DBAT85----	DIODE	BAT85 (TAPPING)
D313	DBYW36----	DIODE	BYW36 (TAPPING)
D341	DUZ33B----	DIODE ZENER	UZ-33B
D350	DTZX12C---	DIODE ZENER	TXZ12C (TAPPING)
D360	DTZX22C---	DIODE ZENER	TXZ22C (TAPPING)
D361	DUZ33B----	DIODE ZENER	UZ-33B
D405	DBYW36----	DIODE	BYW36 (TAPPING)
D407	DBYW36----	DIODE	BYW36 (TAPPING)
D408	DBYW36----	DIODE	BYW36 (TAPPING)
D450	DBYW36----	DIODE	BYW36 (TAPPING)
D510	DTZX3V9B--	DIODE ZENER	TXZ3V9B
D511	DTZX3V9B--	DIODE ZENER	TXZ3V9B
D520	D1N4148--	DIODE	1N4148 (TAPPING)
D521	D1N4148--	DIODE	1N4148 (TAPPING)
D591	DTZX2V4A--	DIODE ZENER	TXZ2V4A
D710	DTZX5V1B--	DIODE ZENER	TXZ5V1B (TAPPING)
D801	DBYT51J--	DIODE	BYT51J (TAPPING)
D802	DBYT51J--	DIODE	BYT51J (TAPPING)
D803	DBYT51J--	DIODE	BYT51J (TAPPING)
D804	DBYT51J--	DIODE	BYT51J (TAPPING)
D805	DBYW36----	DIODE	BYW36 (TAPPING)
D806	DBYW36----	DIODE	BYW36 (TAPPING)
D808	DBYW36----	DIODE	BYW36 (TAPPING)
D809	DBYW36----	DIODE	BYW36 (TAPPING)
D810	DBYW36----	DIODE	BYW36 (TAPPING)
D811	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
D821	DBYW36----	DIODE	BYW36 (TAPPING)
D822	DTZX9V1B--	DIODE ZENER	TXZ9V1B (TAPPING)

LOC.	PART CODE	PART NAME	PART DESCRIPTION
D824	D1N4148--	DIODE	1N4148 (TAPPING)
D825	D1N4148--	DIODE	1N4148 (TAPPING)
D830	DBYW36----	DIODE	BYW36 (TAPPING)
D831	DBYW36----	DIODE	BYW36 (TAPPING)
D840	D1N4148--	DIODE	1N4148 (TAPPING)
D841	D1N4148--	DIODE	1N4148 (TAPPING)
D860	DBYW36----	DIODE	BYW36 (TAPPING)
D904	DBAV21----	DIODE	BAV21 (TAPPING)
D905	DBAV21----	DIODE	BAV21 (TAPPING)
D906	DBAV21----	DIODE	BAV21 (TAPPING)
DA02	DTZX12C---	DIODE ZENER	TXZ12C (TAPPING)
DA03	DTZX5V1B--	DIODE ZENER	TXZ5V1B (TAPPING)
DA04	CBZR1C222M	C CERA	Y5R 16V 2200PF M AXIAL
DA05	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
DA06	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
DA08	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
DA09	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
DA10	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
DA11	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
DA27	DTZX5V6B--	DIODE ZENER	TXZ5V6B (TAPPING)
J001	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J002	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J003	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J004	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J005	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J006	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J007	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J008	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J009	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J012	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J013	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J014	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J015	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J016	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J017	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J018	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J019	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J020	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J021	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J022	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J023	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J024	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J025	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J026	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J027	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J028	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J029	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J031	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J032	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J033	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J034	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J035	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J036	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J037	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J038	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING

## SERVICE PARTS LIST

LOC.	PART CODE	PART NAME	PART DESCRIPTION
J040	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J041	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J043	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J044	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
J050	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
L101	5CPZ100K02	COIL PEAKING	10UH 3.5MM K (LAL02TB)
L301	5CPZ109M04	COIL PEAKING	1UH 10.5MM M (LAL04TB)
L350	5CPZ109M04	COIL PEAKING	1UH 10.5MM M (LAL04TB)
L351	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING
L500	5CPZ120K02	COIL PEAKING	12UH 3.5MM K (LAL02TB)
L501	5CPZ100K02	COIL PEAKING	10UH 3.5MM K (LAL02TB)
L502	5CPZ100K02	COIL PEAKING	10UH 3.5MM K (LAL02TB)
L510	5CPZ100K02	COIL PEAKING	10UH 3.5MM K (LAL02TB)
L511	5CPZ100K02	COIL PEAKING	10UH 3.5MM K (LAL02TB)
L512	5CPZ100K02	COIL PEAKING	10UH 3.5MM K (LAL02TB)
L600	5MC0000100	COIL BEAD	MD-5 (HC-3550)
L801	5MC0000100	COIL BEAD	MD-5 (HC-3550)
L803	5MC0000100	COIL BEAD	MD-5 (HC-3550)
R101	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J
R102	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J
R103	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J
R104	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J
R105	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J
R106	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R107	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R120	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R170	RD-AZ133J-	R CARBON FILM	1/6 13K OHM J
R302	RD-2Z159J-	R CARBON FILM	1/2 1.5 OHM J
R310	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R311	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R340	RD-4Z473J-	R CARBON FILM	1/4 47K OHM J
R341	RD-4Z242J-	R CARBON FILM	1/4 2.4K OHM J
R350	RN-4Z1501F	R METAL FILM	1/4 1.5K OHM F
R351	RN-4Z1501F	R METAL FILM	1/4 1.5K OHM F
R355	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J
R356	RD-4Z562J-	R CARBON FILM	1/4 5.6K OHM J
R360	RD-4Z564J-	R CARBON FILM	1/4 560K OHM J
R390	RD-4Z159J-	R CARBON FILM	1/4 1.5 OHM J
R401	RD-4Z272J-	R CARBON FILM	1/4 2.7K OHM J
R404	RD-4Z399J-	R CARBON FILM	1/4 3.9 OHM J
R420	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J
R501	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R502	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R505	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R506	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R507	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R508	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R509	RD-AZ681J-	R CARBON FILM	1/6 680 OHM J
R511	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J
R512	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R513	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R514	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R515	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J
R516	RD-AZ393J-	R CARBON FILM	1/6 39K OHM J
R517	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J

LOC.	PART CODE	PART NAME	PART DESCRIPTION
R518	RD-AZ273J-	R CARBON FILM	1/6 27K OHM J
R520	RD-AZ183J-	R CARBON FILM	1/6 18K OHM J
R521	RD-AZ391J-	R CARBON FILM	1/6 390 OHM J
R522	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R523	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J
R524	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J
R525	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J
R526	RD-4Z479J-	R CARBON FILM	1/4 4.7 OHM J
R527	RD-AZ431J-	R CARBON FILM	1/6 430 OHM J
R528	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R530	RD-AZ470J-	R CARBON FILM	1/6 47 OHM J
R531	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R533	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R534	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R535	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R537	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R538	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R539	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R555	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R556	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J
R567	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R570	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J
R571	RD-AZ432J-	R CARBON FILM	1/6 4.3K OHM J
R572	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J
R573	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J
R575	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J
R580	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J
R585	RD-AZ224J-	R CARBON FILM	1/6 220K OHM J
R586	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R587	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R588	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R589	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R591	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R592	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R593	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R594	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R595	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J
R596	RD-AZ302J-	R CARBON FILM	1/6 3K OHM J
R597	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J
R598	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J
R599	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R601	RD-4Z432J-	R CARBON FILM	1/4 4.3K OHM J
R602	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R610	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R710	RD-AZ431J-	R CARBON FILM	1/6 430 OHM J
R711	RD-AZ431J-	R CARBON FILM	1/6 430 OHM J
R713	RD-AZ201J-	R CARBON FILM	1/6 200 OHM J
R720	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J
R721	RD-AZ181J-	R CARBON FILM	1/6 180 OHM J
R722	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J
R723	RD-AZ331J-	R CARBON FILM	1/6 330 OHM J
R724	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J
R805	RD-2Z100J-	R CARBON FILM	1/2 10 OHM J
R806	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J
R807	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J

## SERVICE PARTS LIST

LOC.	PART CODE	PART NAME	PART DESCRIPTION
R810	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J
R811 	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K
R817	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J
R820	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R821	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J
R823	RD-4Z512J-	R CARBON FILM	1/4 5.1K OHM J
R829	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J
R830	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J
R840	RD-4Z220J-	R CARBON FILM	1/4 22 OHM J
R841	RD-2Z479J-	R CARBON FILM	1/2 4.7 OHM J
R850	RD-2Z479J-	R CARBON FILM	1/2 4.7 OHM J
R855	RD-4Z185J-	R CARBON FILM	1/4 1.8M OHM J
R870	RD-4Z222J-	R CARBON FILM	1/4 2.2K OHM J
R888	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
R910	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R911	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R912	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
R913	RC-2Z102K-	R CARBON COMP	1/2 1K OHM K
R914	RC-2Z102K-	R CARBON COMP	1/2 1K OHM K
R915	RC-2Z102K-	R CARBON COMP	1/2 1K OHM K

LOC.	PART CODE	PART NAME	PART DESCRIPTION
R921	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R922	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
R923	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J
RA01	RD-AZ680J-	R CARBON FILM	1/6 68 OHM J
RA02	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
RA03	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
RA04	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
RA05	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J
RA06	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J
RA08	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J
RA09	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J
RA10	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J
RA11	RD-AZ183J-	R CARBON FILM	1/6 18K OHM J
RA12	RD-AZ183J-	R CARBON FILM	1/6 18K OHM J
RA16	RD-AZ680J-	R CARBON FILM	1/6 68 OHM J
RA19	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J
RA20	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J
RA30	RD-AZ183J-	R CARBON FILM	1/6 18K OHM J
RA44	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J

## SERVICE PAARTS LIST

### THE DIFFERENT PARTS FOR SYSTEM CP-185

OC	A E	TA	T	T	TU
SF01	SAW FILTER	G1984M	G1984M	K2960M	J1981M
SF02	SAW FILTER	L9653M	X	X	X
PWC1	POWER CORD AS	CW4232	CW4232	KKP419C	CW3222
Z501	CERA FILTER	TP5.5MB	TP5.5MB	TP5.5MB	TPS6.0MB
Z502	CERA FILTER	TP6.5MB	X	X	X
C801	C LINE ACROSS	AC 250V 0.47	AC 250V 0.47	AC 250V 0.47	AC 250V 0.47
I101	IC IF	TDA9830	X	X	X
R153	R.C.-FILM	2.2K	X	X	X
R156	R.C.-FILM	16K	X	X	X
R157	R.C.-FILM	5.6K	X	X	X
R159	R.C.-FILM	2.2K	X	X	X
R160	R.C.-FILM	6.8K	X	X	X
R161	R.C.-FILM	1K	X	X	X
R162	R.C.-FILM	47K	X	X	X
R163	R.C.-FILM	10K	X	X	X
R164	R.C.-FILM	100	X	X	X
Q152	TR	KTC3198	X	X	X
Q154	TR	KTC3198	X	X	X
Q155	TR	KTC3198	X	X	X
D151	DIODE	1SS85UA	X	X	X
C150	C.CERA	0.01	X	X	X
C152	C. ELECTRO	50V 2.2F	X	X	X
C153	C.CERA	0.1	X	X	X
C154	C. ELECTRO	16V 4.7	X	X	X
C155	C. ELECTRO	16V 4.7	X	X	X
C156	C. ELECTRO	16V 4.7	X	X	X

THE DIFERENT PARTS FOR CRT

LOC.	"21"" PHILIPS"	"21"" T/P (DARK)"	"21"" T/P"	"20"" T/P"	"20"" DOSA"	"14"" PHILIPS" 14"" CHUNGHWA "	"14"" DOSA"	"14"" EKRRANAS"
V901	A51EAL155X01	A51EVB13X09	A48EAX33X01	A48JLL90X02	A34EAC01X06	A34JLL90X02	A34JLL90X02	A33LPE02X01
	4859607660	4859621760C	4859611260N	4859629260	A34AGT14X71	4859608640	4859608640	
SCT1	PCS629-03C	PCS629-03C	PCS629-03C	PCS633A	PCS633A	PCS634A	PCS634A	PCS629-03C
	4859303530	4859303530	4859303530	4859303430	4859303430	4859303430	4859303430	4859303530
C404	1.6KV 8200pF	1.6KV 7500pF	1.6KV 7500pF	1.6KV 8200pF	1.6KV 7500pF	1.6KV 7500pF	1.6KV 7500pF	1.6KV 7500pF
	CMYT3C822J	CMYT3C752J	CMYT3C752J	CMYT3C822J	CMYT3C752J	CMYT3C752J	CMYT3C752J	CMYT3C752J
C408	200V 0.36 (M)	200V 0.36 (M)	200V 0.36 (M)	200V 0.36 (M)	200V 0.47 (M)	200V 0.3 (M)	200V 0.3 (M)	200V 0.36 (M)
	CMYT2D364J	CMYT2D274J	CMYT2D364J	CMYT2D364J	CMYT2D474J	CMYT2D304J	CMYT2D304J	CMYT2D364J
L401	L102	L76	L76	L76	L102	L102	L102	L102
	58H0000016	58H0000020	58H0000020	58H0000020	58H0000016	58H0000016	58H0000016	58H0000016
R350	2K (1%)	2K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)
	RN-4Z2001F	RN-4Z2001F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F
R351	2K (1%)	2K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)	1.5K (1%)
	RN-4Z2001F	RN-4Z2001F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F	RN-4Z1501F
R556	1/6W 6.8K	1/6W 6.2K	1/6W 7.5K	1/6W 7.5K	1/6W 8.2K	1/6W 8.2K	1/6W 8.2K	1/6W 8.2K
	RD-AZ682J-	RD-AZ682J-	RD-AZ752J-	RD-AZ752J-	RD-AZ822J-	RD-AZ822J-	RD-AZ822J-	RD-AZ822J-
R823	3K	JUMPER	JUMPER	3K	JUMPER	JUMPER	3.3K	JUMPER
	RD-4Z302J-	85801065GY	85801065GY	RD-4Z302J-	85801065GY	RD-4Z512J-	RD-4Z512J-	85801065GY
R920	1W 2 JA (F)	1W 0.47 JA (F)	1W 1 JA (F)	1W 2 JA (F)	1W 2 JA (F)	1W 1.2 JA (F)	1W 1.2 JA (F)	1W 0.18 JA (F)
	RF01Y200JA	RF01Y478JA	RF01Y100JA	RF01Y200JA	RF01Y188JA	RF01Y129JA	RF01Y129JA	RF01Y188JA

**DAEWOO**

**DAEWOO ELECTRONICS CO., LTD**

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# APPENDIX

## FUNCTIONAL DESCRIPTION

### FUNCTIONAL DESCRIPTION OF VIDEO PROCESSOR Vision IF amplifier

The vision IF amplifier can demodulate signals with positive and negative modulation. The PLL demodulator is completely alignment-free.

The VCO of the PLL circuit is internal and the frequency is fixed to the required value by using the clock frequency of the  $\mu$ -Controller/Teletext decoder as a reference. The setting of the various frequencies is made by the controlling software in subaddress 27H (33.9 MHz for system L' and 38.9 MHz for all other systems). Because of the internal VCO, the IF circuit has a high immunity to EMC interference.

#### 1. IF demodulator and audio amplifier

The FM demodulator is realised as a narrow band PLL with external loop filter, which provides the necessary selectivity without using an extra band pass filter. To obtain good selectivity a linear phase detector and a constant input signal amplitude are required. For this reason the intercarrier signal is internally supplied to the demodulator via a gain controlled amplifier and AGC circuit. The nominal frequency of the demodulator is set via a gain controlled amplifier and AGC circuit. The nominal frequency of the demodulator is tuned to the required frequency (5.5 / 6.0 / 6.5 MHz) by means of a calibration circuit which uses the clock frequency of the microcontroller as a reference. Selection of the required frequency is done by the controlling software.

#### Video switches

The video switch has one input for an external CVBS or Y/C signal. The selected CVBS signal can be supplied to pin 38, the IF video output. The selection between both signals is realised by the controlling software in subaddress 22H.

The video ident circuit is connected to the selected signal. This ident circuit is independent of the synchronisation.

#### Synchronisation circuit

The IC contains separator circuits for the horizontal and vertical sync pulses and a data-slicing circuit which extracts the digital teletext data from the analogue signal.

The horizontal drive signal is obtained from an internal VCO which is running at a frequency of 25 MHz. This oscillator is stabilised to this frequency by using a 12 MHz signal coming from the reference oscillator of the  $\mu$ -Controller/Teletext decoder.

The horizontal drive is switched on and off via the soft start/stop procedure. This function is realised by means of variation of the TON of the horizontal drive pulses.

The vertical synchronisation is realised by means of a divider circuit. The vertical ramp generator needs an external resistor and capacitor. For the vertical drive a differential output current is available. The outputs are DC coupled to the vertical output stage.

The following geometry parameters can be adjusted:

- Horizontal shift
- Vertical amplitude
- Vertical slope
- S-correction
- Vertical shift

### Chroma and luminance processing

The chroma band-pass and trap circuits (including the SECAM cloche filter) are realised by means of gyrators and are tuned to the right frequency by comparing the tuning frequency with the reference frequency of the colour decoder. The luminance delay line and the delay cells for the peaking circuit are also realised with gyrators. The circuit contains a black stretcher function which corrects the black level for incoming signals which have a difference between the black level and the blanking level.

### Colour decoder

The ICs can decode PAL, NTSC and SECAM signals. The PAL/NTSC decoder does not need external reference crystals but has an internal clock generator which is stabilised to the required frequency by using the 12 MHz clock signal from the reference oscillator of the  $\mu$ -Controller/Teletext decoder.

The Automatic Colour Limiting (ACL) circuit (switchable via the ACL bit in subaddress 20H) prevents oversaturation occurring 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.

### SOFTWARE CONTROL

The CPU communicates with the peripheral functions using Special function Registers (SFRS) which are addressed as RAM locations. The registers for the Teletext decoder appear as normal SFRs in the  $\mu$ -Controller memory map and are written to these functions by using a serial bus. This bus is controlled by dedicated hardware which uses a simple handshake system for software synchronisation.

For compatibility reasons and possible re-use of software blocks, the TV processor is controlled by I2C bus. The TV processor control registers cannot be read. Only the status registers can be read ( Read address 8A ).

The SECAM decoder contains an auto-calibrating PLL demodulator which has two references, via the divided 12 MHz reference frequency (obtained from the  $\mu$ -Controller) which is used to tune the PLL to the desired free-running frequency and the bandgap reference to obtain the correct absolute value of the output signal. The VCO of the PLL is calibrated during each vertical blanking period, when the IC is in search or SECAM mode.

The base-band delay line (TDA 4665 function) is integrated. This delay line is also active during NTSC reception, to obtain a good suppression of cross colour effects. The demodulated colour difference signals are internally supplied to the delay line.



## RGB output circuit and black-current stabilisation

In the RGB control circuit the signal is controlled on contrast, brightness and saturation. The ICs have a linear input for external RGB signals. The signals for OSD and text are internally supplied to the control circuit. The output signal has an amplitude of about 2 Volts black-to-white at nominal input signals and nominal settings of the various controls.

To obtain an accurate biasing of the picture tube the 'Continuous Cathode Calibration' system has been included in these ICs. A black level off set can be made with respect to the level which is generated by the black current stabilisation system. In this way different colour temperatures can be obtained for the bright and the dark part of the picture.

The black current stabilisation system checks the output level of the 3 channels and indicates whether the black level of the highest output is in a certain window or below or above this window. This indication is read from the status byte 01 and is used for automatic adjustment of the Vg2 voltage during the production of the TV receiver.

During switch-off of the TV receiver a fixed beam current is generated by the black current control circuit. This current ensures that the picture tube capacitance is discharged. During the switch-off period the vertical deflection is placed in an overscan position so that the discharge is not visible on the screen.

## 2. IF

The TDA9361/TDA9381 has an alignment free IF PLL demodulator. The fully integrated oscillator is automatically calibrated, using the 12 MHz crystal as a frequency reference. The IF frequency is simply set in TV-Processor by I2C bus.

The AFC information is available via I2C bus from the TV-Processor status bytes. The controlling software uses this information for tuner frequency tracking ( automatic following ). The AFC window is typically 125Khz wide. The minimum frequency step of the tuner is 62.5 kHz.

This AFC function is disabled when a program is tuned using the direct frequency entry or after fine tuning adjustment. Therefore it is recommended to tune a channel with the TV search function ( manual or ATSS ) or by using the direct channel entry to enable the Automatic Frequency Control.

SAW filters

	TF	TK	TU	TA
SF01	G1984M	K2960M	J1981M	G1984M
SF02	-	-	-	L9653M

Ref.	Standard	Features
G1984M	B/G	<ul style="list-style-type: none"> <li>- IF filter for Inter-carrier Applications</li> <li>- TV IF filter with Nyquist slope and sound shelf.</li> <li>- High colour carrier level</li> <li>- Reduced group delay pre-distortion as compared with standard B/G, half</li> </ul>
K2960M	B/G - D/K	<ul style="list-style-type: none"> <li>- IF filter for Inter-carrier Applications</li> <li>- TV IF filter with Nyquist slope and sound shelf.</li> </ul>
J1981M	I	<ul style="list-style-type: none"> <li>- IF filter for Inter-carrier Applications</li> <li>- TV IF filter with Nyquist slope and sound shelf.</li> <li>- High colour carrier level</li> <li>- Constant group delay</li> </ul>
L9653M	L / L'	<ul style="list-style-type: none"> <li>- Switchable sound filter</li> </ul>

**FUNCTIONAL DESCRIPTION**

For SECAM L and L' the TDA9361/TDA9381 is switched to positive modulation via I2C bus. SECAM L' transmission only occur in VHF band I and have their picture and sound carrier interchanged, compared to SECAM L and PAL B/G channels. For SECAM L' the picture carrier is situated at 33.9 MHz and the AM sound carrier at 40.40 MHz. The IF PLL reference is tuned from 38.9 to 33.9 MHz, this is done via I2C Bus and the SIF filter is switched from channel 2 to channel 1; this is done by pin 4 of TDA 9361.

The tuner AGC time constant is slower for positive than for negative modulation, because the TDA9361 reduces its AGC current. To make the AGC time constant even slower an extra series resistor R103 is added. To prevent IF overload when jumping from a very strong transmitter to a weak transmitter a diode D101 has been added

\*\*\*\*\*  
 The SAW filter ( SF1 ) has a double Nyquist slope at 38.9 MHz and 33.9 MHz needed for this multistandard application. The disadvantage of this choice is that a 5.5 MHz trap filter ( Z501 ) is needed to suppress the residual sound carrier in the video for B/G signals.  
 \*\*\*\*\*

**3. Source switching**

**Video :**

The TDA9361/TDA9381 has only one external video input. The SCART video in pin (#20) is connected to the front RCA video input.

The controlling software via I2C bus selects the signal source :

- Video signal from tuner ( Pin 40 ).
- External video.
- External SVHS from SCART.

The sound source switching is done in the video processor part and in the AM demodulator by the  $\mu$ -Controller via I2C bus.

The video processor pin 28 has multiple functions and provides in this application

- Deemphasis time constant
- Audio monitor output
- External AM input
- Deemphasis time constant : The time constant is given by the capacitor C504, needed to obtain the 54 $\mu$ s time constant for standard PAL signal.
- Audio monitor output : the nominal output signal is 500 mVrms, for all standards. The signal is also internally connected through to the audio switch. This signal is not controlled by the volume setting and can be used for SCART audio output.

The signal is buffered to avoid influencing the deemphasis time constant and to adjust the output level.

- External AM input : By software the deemphasis pin can be converted into an input pin. External AM signal for SECAM L/L' is directly connected to this pin. In this configuration the FM sound is internally muted, DC level remains at 3Vdc.

An external sound signal of 500mVrms is applied to pin 35 via a coupling capacitor. The input impedance of this pin is 25K $\Omega$  typical. Switching between internal FM, external AM or external audio from SCART is controlled internally by software.

Fast R, G, B insertion : The external R, G, B insertion needs a fast switching and cannot be controlled by the software ( instruction cycle of  $1\mu$  sec ). The fast switching pin 16 of SCART is directly connected to the TV processor pin 45 ( Fast blanking input ). The display is synchronised with the selected video source, i.e. to get stable R, G, B signal insertion they must be synchronised with the selected video source.

#### 4. $\mu$ -Controller I/O pin configuration and function

The I/O pins of the  $\mu$ -Controller can be configured in many ways. All port functions can be individually programmed by the controlling software.

Each I/O port pin can be individually programmed in these configurations :

##### Open drain

In this mode, the port can function as input and output. It requires an external pull-up resistor. The maximum allowable supply voltage for this pull up resistor is +5V.

So in this mode it is possible to interface a 5 Volt environment like I2C while the  $\mu$ -Controller has a 3.3 Volt supply.

##### Push-Pull

The push pull mode can be used for output only. Both sinking and sourcing is active, which leads to steep slopes. The levels are 0 and V<sub>ddp</sub>, the supply voltage 3.3Volts.

##### High impedance

This mode can be used for input only operation of the port.

##### Special port for LED

Pin 10 and 11 have the same functionality as the general I/O pins but in addition, their current source and sink capacity is 8 mA instead of 4 mA. These pins are used for driving LED's via a series current limiting resistor.

#### $\mu$ -Controller I/O pin configuration and function table

pin	name	configuration		description
		Stand by	TV ON	
1	n.u.	High impedance	High impedance	not used
2	SCL	Open Drain	Open Drain	Serial clock line
3	SDA	Open Drain	Open Drain	Serial data line
4	SECAM L'	High impedance	Push Pull / High impedance	SIF filter switching + AM/FM switching
5	OCP	High impedance	High impedance	Over Current Protection ( Switch the set OFF if the voltage on this pin is <2.3V )
6	RF AGC in	High impedance	High impedance	Used during ATSS to measure RF signal level.
7	Key in	High impedance	High impedance	Local keyboard input
8	S/SW	High impedance	High impedance	external video switch
10	Red LED	High impedance	Open Drain	
11	Green LED	Open Drain	High impedance	
62	Audio mute	Push Pull	High impedance	

**5. SECAM L/L' sound switching circuit.**

The microcontroller pin 4 is a three levels output. The voltage and configuration of this port is described below :

Sound mode	Port configuration	Voltage
FM	Push Pull	Internally shorted to ground
AM L	Push Pull	Pull up to 3.3V
AM L'	High Impedance	Fixed by R511, R156, R157

In FM mode the microcontroller is internally grounded to pin 4. The TDA9830 output is muted

**6. Sound amplification**

The device TDA7267A is a mono audio amplifier in powerDIP package specially designed for TV application. Thanks to the fully complementary output configuration the device delivers a rail to rail voltage swing without need of bootstrap capacitors. No external heat sink is needed as the Cu ground plane of the PCB is used as heat dissipation.

**7. Vertical deflection**

The vertical driver circuit is a bridge configuration. The deflection coil is connected between the output amplifiers, which are driven in phase opposition. The differential input circuit is voltage driven. The input circuit is especially intended for direct connection to driver circuits which deliver symmetrical current signals, but is also suitable for asymmetrical currents. The output current of these devices is converted to voltages at the input pins via resistors R350 and R351. The differential input voltage is compared with the output current through the deflection coils measured as voltage across R302, which provides internal feedback information. The voltage across R302 is proportional to the output current.

Flyback voltage

The flyback voltage is determined by an additional supply voltage  $V_{fb}$ . The principle of operation with two supply voltages (class G) makes it possible to fix the supply voltage  $V_p$  optimum for the scan voltage and the second supply voltage  $V_{fb}$  optimum for the flyback voltage. Using this method, very high efficiency is achieved. The supply voltage  $V_{fb}$  is almost totally available as flyback voltage across the coil, this being possible due to the absence of a coupling capacitor.

Protection

The output circuit has protection circuits for :

- Too high die temperature
- overvoltage of output stage A

Guard circuit

The guard signal is not used by the TDA9361/ TDA9381 to blank the screen in case of a fault condition.

Damping resistor

For HF loop stability a damping resistor (R305) is connected across the deflection coil.

## 8. Power supply (STR F6653)

### 8-1. STR-F6653 general description

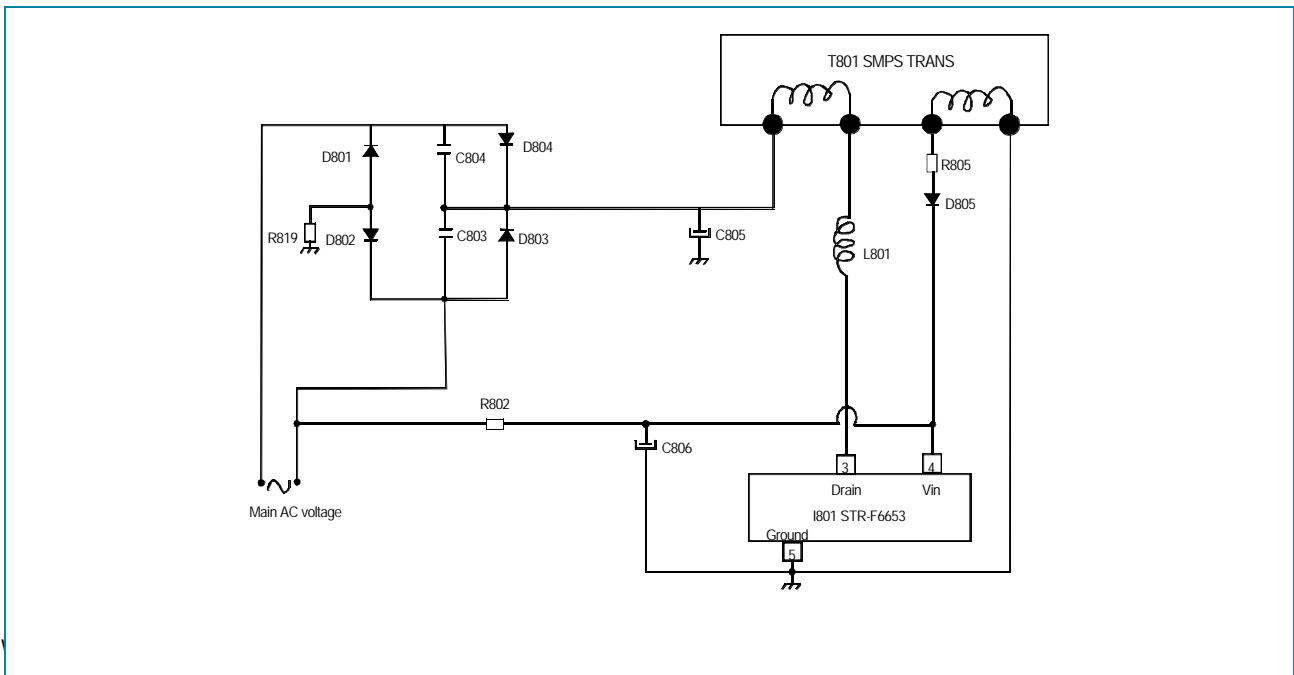
The STR-F6653 is an hybrid IC with a build-in MOSFET and control IC, designed for flyback converter type switch mode power supply applications.

### 8-2. Power supply primary part operations

An oscillator generates pulse signals which turn on and off a MOSFET transistor.

#### 8-2-1. Start-up circuit: $V_{IN}$

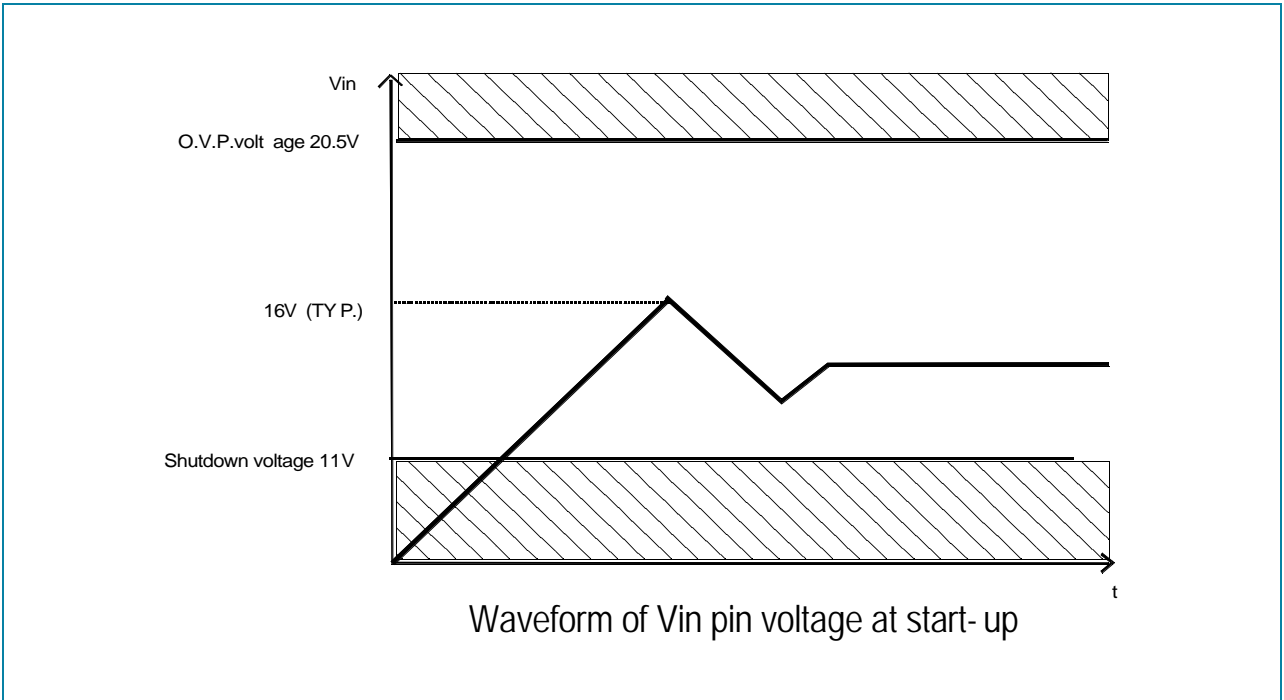
The start-up circuit is used to start and stop the operation of the control IC, by detecting a voltage appearing at the  $V_{IN}$  pin (pin 4).



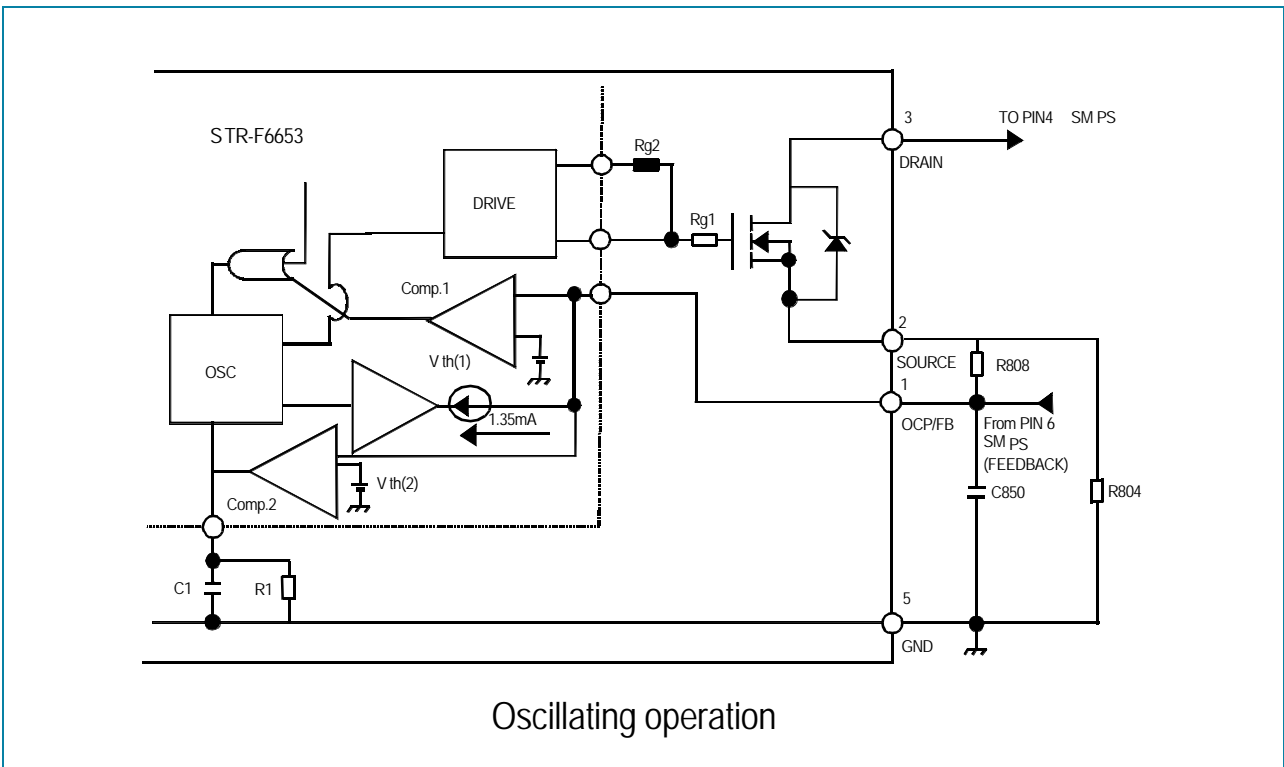
As soon as  $V_{IN}$  reaches 16V, the STR-F6653 control circuit starts operating. Then,  $V_{IN}$  is obtained by smoothing the winding voltage which appears between pin 6 and pin 7 of the SMPS transformer.

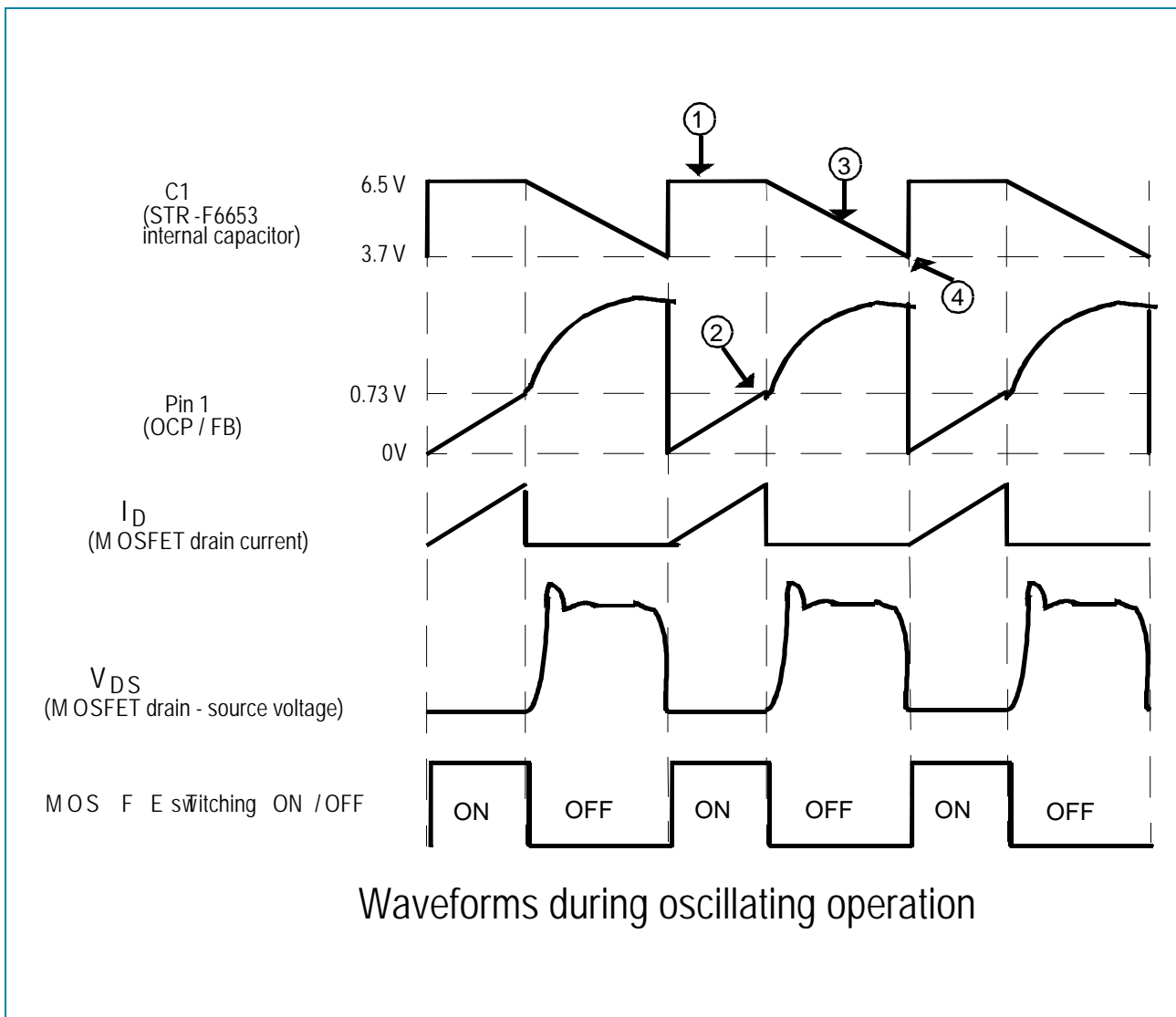
As this winding voltage does not increase to the set voltage immediately after the control circuit starts operating,  $V_{IN}$  starts dropping. However, as this winding voltage reaches the set value before  $V_{IN}$  voltage drops to the shutdown voltage (at 11V), the control circuit continues operating (see below,  $V_{IN}$  voltage at start-up). Resistor R805 prevents variations of voltage at the  $V_{IN}$  pin, as some regulation of the SMPS transformer occurs due to secondary side output current

$V_{IN}$  must be set higher than the shutdown voltage ( $V_{IN}(\text{off}) = 11V_{\text{max}}$ ) and lower than the O.V.P. (overvoltage protection) operating voltage ( $V_{OVP} = 20.5V_{\text{min}}$ ).



8-2-1. STR-F6653 oscillating operation





- When the MOSFET is ON, the STR-F6653 internal capacitor C1 is charged at the constant voltage 6.5V. At the same time, the voltage at pin 1 (OCP / FB) increases with the same waveform as the MOSFET drain current.
- When the pin 1 voltage reaches the threshold voltage  $V_{TH1} = 0.73V$ , the STR-F6653 internal comparator 1 starts operating. The STR-F6653 internal oscillator is inverted and the MOSFET turns OFF.
- When the MOSFET turns OFF, charging of STR-F6653 internal capacitor C1 is released and C1 starts discharging by the STR-F6653 internal resistance R1. So, C1 voltage starts falling in accordance to the gradient regulated by the constant discharging time of C1 and R1. So, this means that the fixed time determined by C1 and R1 is the OFF-time of the MOSFET.
- When C1 voltage falls to around 3.7V, the STR-F6653 internal oscillator is reversed again and the MOSFET turns ON. C1 is quickly charged to around 6.5V

The MOSFET continues to oscillate by repeating the above procedure.

8-2-3. STR-F6653 protection circuits

overcurrent protection function (OCP)

Overcurrent protection is performed pulse by pulse detecting at STR-F6653 pin 1 (OCP) the peak of the MOSFET drain current in every pulse.

latch circuit

This circuit sustains an output low from the STR-F6653 internal oscillator and stops operation of the power supply when over-voltage protection (OVP) and thermal shutdown (TSD) circuit are in operation

thermal shutdown circuit (TSD)

This circuit triggers the latch circuit when the frame temperature of STR-F6653 IC exceeds 140 °C

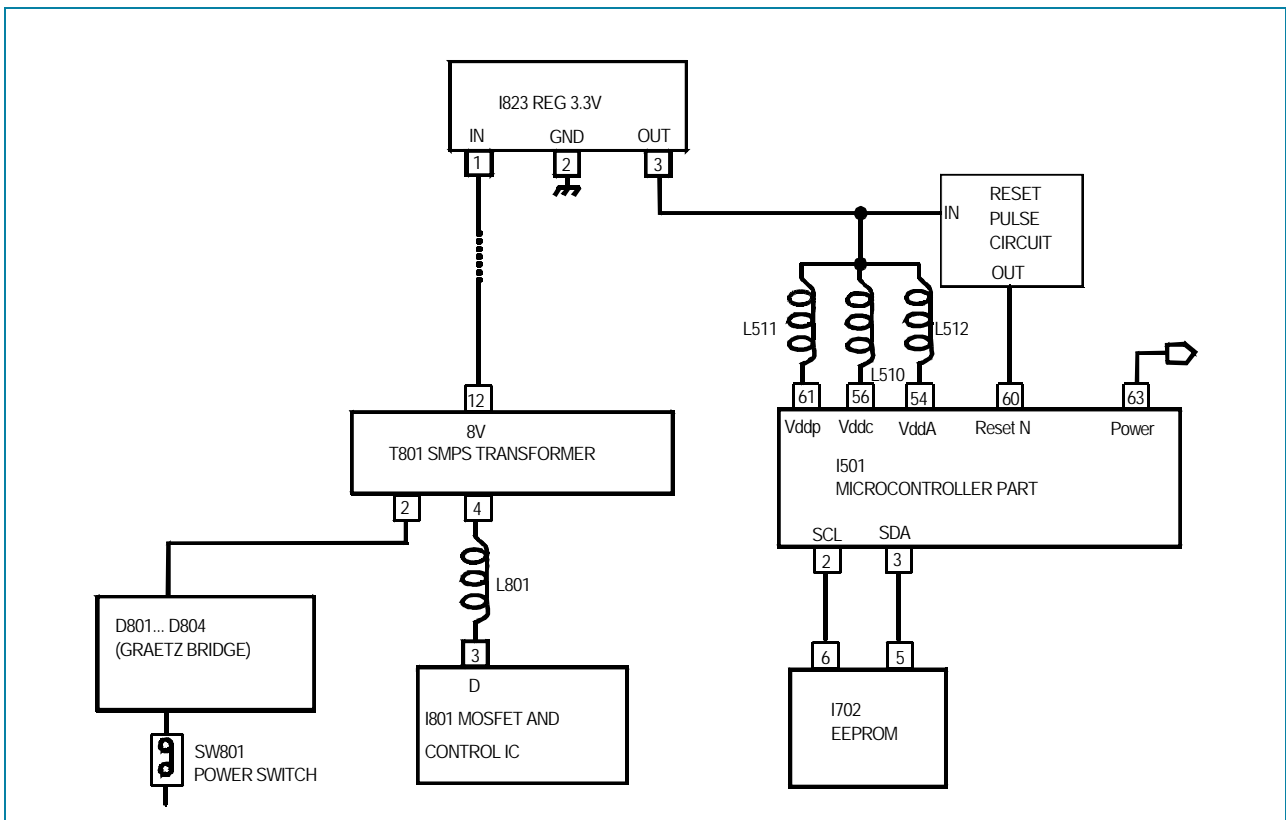
overvoltage protection circuit (OVP)

This circuit triggers the latch circuit when the  $V_{in}$  voltage exceeds 22V (typ.)

9. TV start-up, TV normal run and stand by mode operations

9-1. TV start-up operations

9-1-1. Schematic diagram for start-up operations

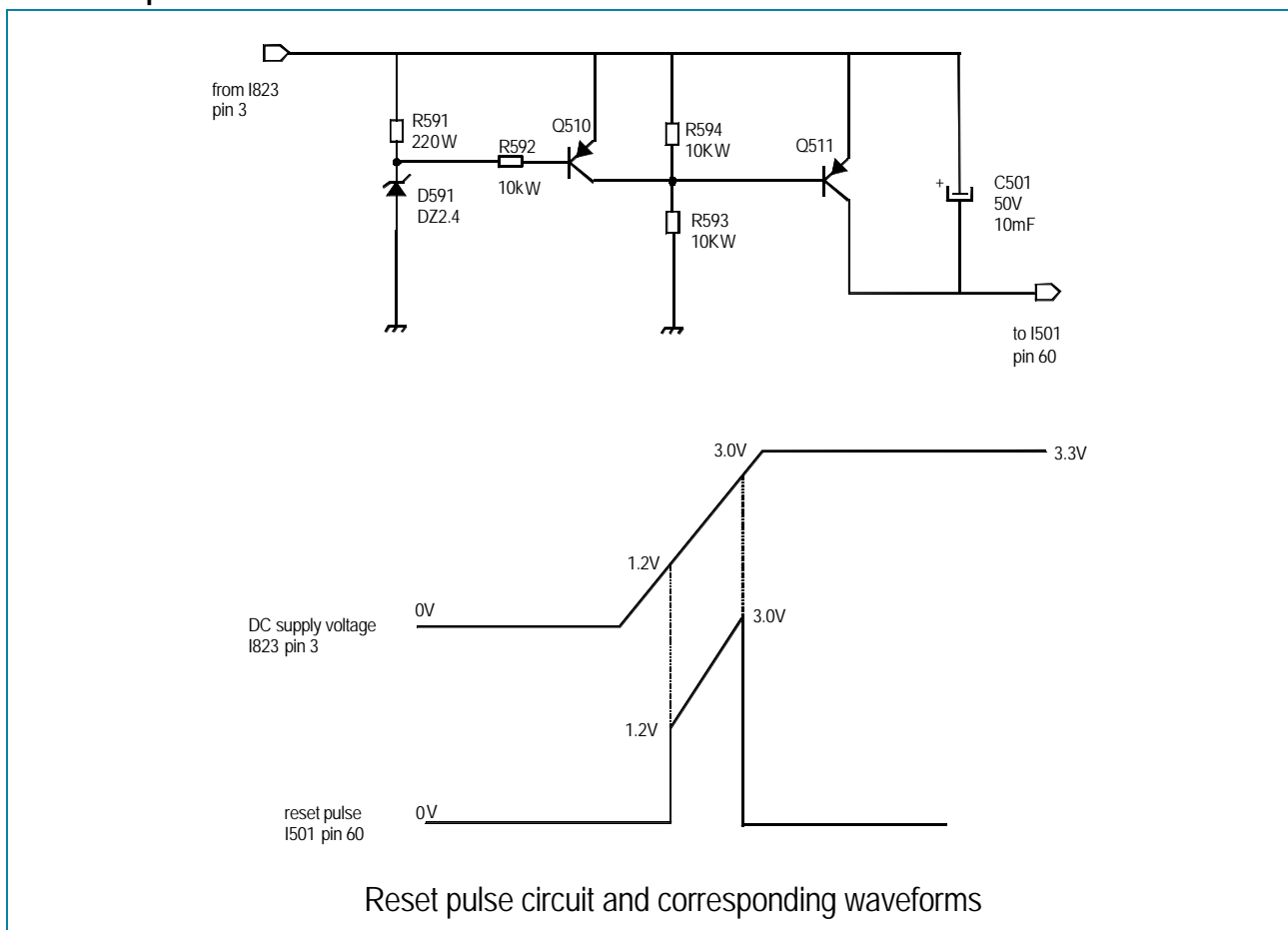




**9-1-2. TV start-up and microcontroller initialisation**

- When SW801 power switch is pushed, main AC voltage is applied to T801 transformer (after rectification by D801...D804 diodes). Then, T801 SMPS transformer starts operating and supplies DC voltage to I823 (3.3V regulator).
- This regulator provides 3.3V DC voltage to I501 microcontroller power supply pins (pins 54, 56, 61) and to the reset pulse circuit which provides reset pulse to I501 microcontroller reset pin (pin 60).
- Then, the microcontroller starts its initialisation. Its power pin (pin 63) is set to high which allows delivery of power supply voltages (110/123V, 8V, 5V...). At this step, all IC's start working but no picture appears on screen: I501 IC doesn't provide horizontal drive voltage.
- Then, the microcontroller consults I702 EEPROM via I2C bus to know the last TV set mode (normal run mode or stand-by mode ) before switching off.
- . If the TV set was on normal run mode before switching off, the microcontroller delivers horizontal drive voltage at pin 33 and picture appears on screen.
- . If the TV set was on stand-by mode before switching off, the microcontroller switches TV set to stand-by mode, decreasing power pin voltage (pin 63). This matter will be explained in paragraph 2.2.

**9-1-3 Reset pulse circuit:**



**9-1-4. Reset pulse circuit operations description**

- When DC supply voltage from I823 regulator starts rising (from 0V to 1.2V), no current flows through D591 zener diode. So, Q510 is in off mode.

Also  $V_{be\ Q511} = V_{cc}/2 - V_{cc} = -V_{cc}/2 > -0.6V$ . So, Q511 is in off mode.

Then, no voltage reaches I501 pin 60.

- When this voltage reaches 1.2 V, Q510 stays in off mode

but  $V_{be\ Q511} = -0.6V$ . So, Q511 is switched on and starts driving DC supply voltage to I501 pin 60.

- When the DC supply voltage reaches  $(2.4V + 0.6V) = 3.0V$ , Q510 starts conducting but as the Q511 base-emitter voltage is the same as the collector-emitter voltage of the saturated Q510, Q511 switches off and no voltage reaches I501 pin 60.

- If the DC supply voltage decreases below 3 V, Q510 switches off immediately. Q511 starts conducting, pulling I501 pin 60 high. At the same time, it discharges the reset capacitor C501. Discharging this capacitor is necessary to guarantee a defined reset pulse duration.

**9-2. TV normal run and stand-by mode operations**

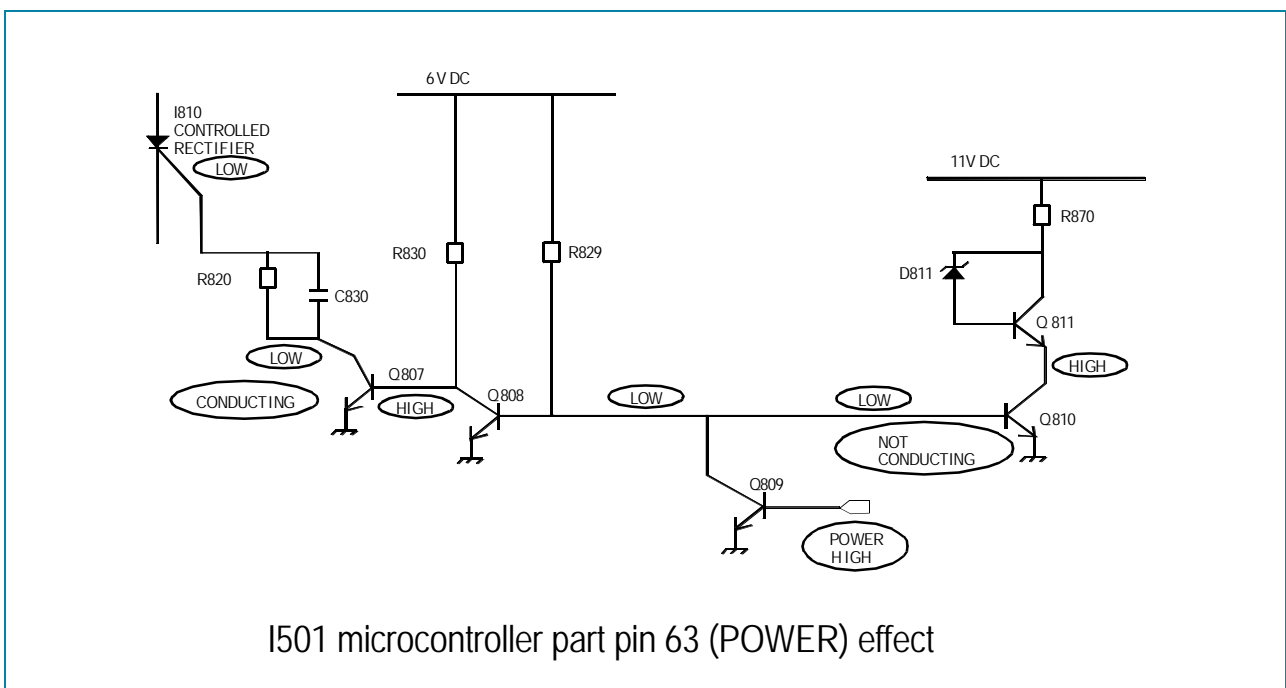
Depending on remote control commands, I501 microcontroller part pin 63 (power) is set to:

- high for normal run mode
- low for stand-by mode

**9-2-1. TV on normal run mode**

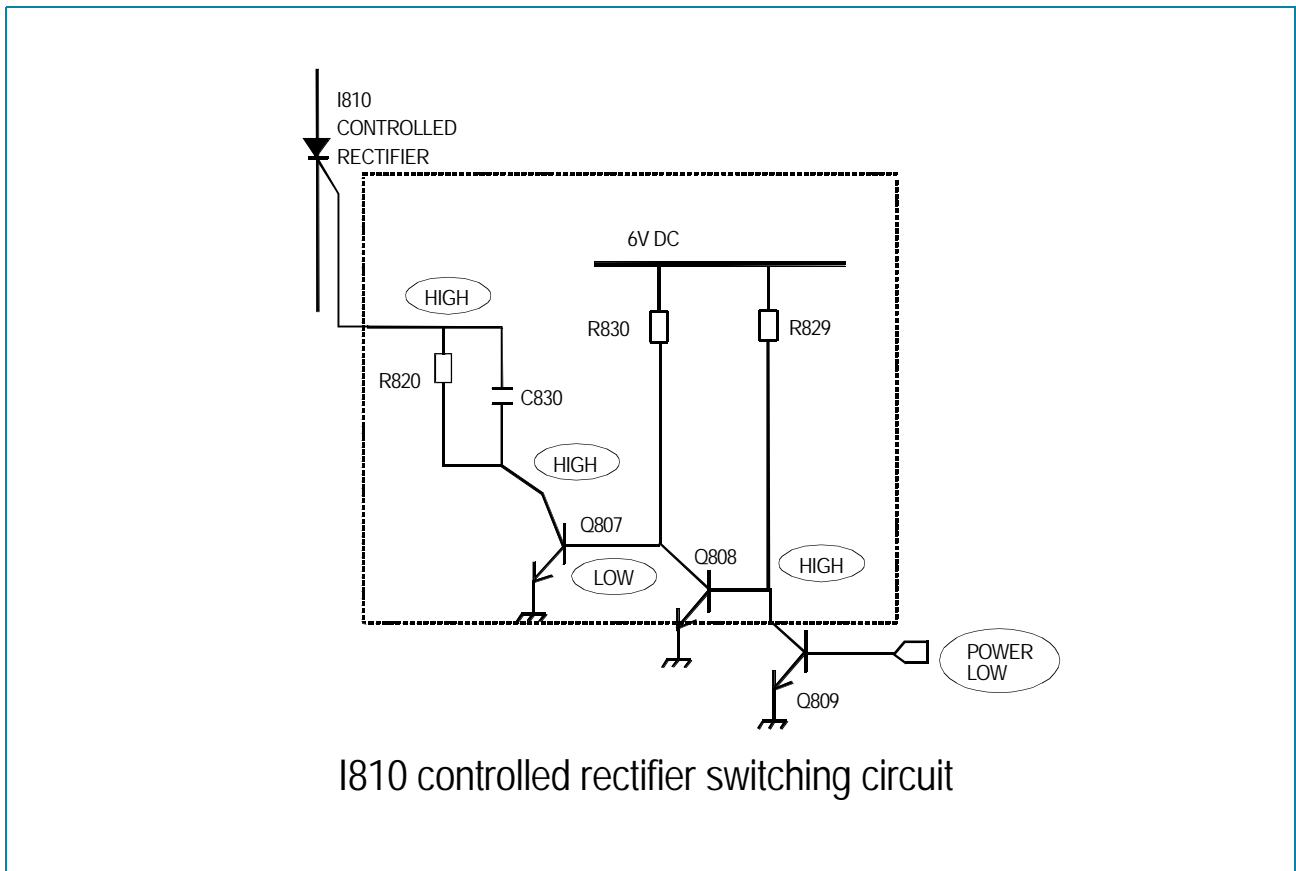
**9-2-1-1. I501 microcontroller part pin 63 (power) effect**

I501 microcontroller part pin 63 (power) is connected to the following circuit:









### 9-2-2-2. TV set stand-by mode operations

- In stand-by mode, I501 microcontroller pin 63 (power) is set to low.
- So, Q809 collector is set to high.
- Then, I810 controlled rectifier gate pin is set to high and I810 is conducting.
- So, current flows from pin 16 SMPS transformer to the ground via I804 optocoupler and Q810 and Q811 transistors (which are conducting).
- In these conditions, I801 delivers pulses on light mode and T801 produces voltages with reduced power.
- As I810 is conducting, current flows also from pin 16 SMPS transformer to I823 (3.3V regulator) for I501  $\mu$ com, IR receiver and front mask buttons supply voltage (then, remote control or front mask buttons can be activated to leave stand-by mode).

# IC DESCRIPTION

1. **TDA9361 : TV signal processor - Teletext decoder with embedded m-Controller.**  
**TDA9381 : TV signal processor - with embedded m-Controller.**

## TV-signal Processor

- Multi-standard vision IF circuit with alignment-free PLL demodulator
- Internal (switchable) time-constant for the IF-AGC circuit
- Mono intercarrier with a selective FM-PLL demodulator which can be switched to the different FM sound frequencies (5.5 / 6.0 / 6.5 MHz)
- Source selection between 'Internal' CVBS and external CVBS or Y/C signals
- Integrated chrominance trap circuit
- Integrated luminance delay line with adjustable delay time
- Asymmetrical 'delay line type' peaking in the luminance channel
- Black stretching for non-standard luminance signals
- Integrated chroma band-pass filter with switchable centre frequency
- Only one reference (12 MHz) crystal required for the  $\mu$ -Controller, Teletext and the colour decoder
- PAL / NTSC or multistandard colour decoder with automatic search system
- Internal base-band delay line
- RGB control circuit with 'Continuous Cathode Calibration', white point and black level off set adjustment so that the colour temperature of the dark and the bright parts of the screen can be chosen independently.
- Linear RGB or YUV input with fast blanking for external RGB/YUV sources. The Text/OSD signals are internally supplied from the  $\mu$ -Controller/Teletext decoder
- Contrast reduction possibility during mixed-mode of OSD and Text signals
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- Horizontal and vertical geometry processing

## m-Controller

- 80C51  $\mu$ -controller core standard instruction set and timing
- 1 $\mu$ s machine cycle
- 64Kx8-bit programmed ROM
- 3 - 12Kx8-bit Auxiliary RAM (shared with Display and Acquisition)
- Interrupt controller for individual enable/disable with two level priority
- Two 16-bit Timer/Counter registers
- watchdog timer
- Auxiliary RAM page pointer
- 16-bit Data pointer
- IDLE and Power Down (PD) mode
- 8-bit A/D converter
- 4 pins which can be programmed as general I/O pin or ADC input.

## Data Capture

- Text memory 10 pages
- Inventory of transmitted Teletext pages stored in the Transmitted Page Table (TPT) and Subtitle Page Table (SPT)
- Data Capture for 525/625 line WST, VPS (PDC system A) and Wide Screen Signalling (WSS) bit decoding Automatic selection between 525 WST/625 WST
- Automatic selection between 625 WST/VPS on line 16 of VBI
- Real-time capture and decoding for WST Teletext in Hardware, to enable optimised  $\mu$ -processor throughput
- Automatic detection of FASTEXT transmission
- Real-time packet 26 engine in Hardware for processing accented, G2 and G3 characters
- Signal quality detector for video and WST/VPS data types
- Comprehensive teletext language coverage
- Full Field and Vertical Blanking Interval (VBI) data capture of WST data

## Display

- Teletext and Enhanced OSD modes
- Features of lever 1.5 WST.
- Serial and Parallel Display Attributes
- Single/Double/Quadruple Width and Height for characters
- Scrolling of display region
- Variable flash rate controlled by software
- Enhanced display features including overlining, underlining and italics
- Soft colours using CLUT with 4096 colour palette
- Globally selectable scan lines per row (9/10/13/16) and character matrix [12x10, 12x13, 12x16 (VxH)]
- Fringing (Shadow) selectable from N-S-E-W direction
- Fringe colour selectable
- Meshing of defined area
- Contrast reduction of defined area
- Cursor
- Special Graphics Characters with two planes, allowing four colours per character
- 32 software redefinable On-Screen display characters
- 4 WST Character sets (GO/G2) in single device (e.g. Latin, Cyrillic, Greek, Arabic)
- G1 Mosaic graphics, Limited G3 Line drawing characters
- WST Character sets and Closed Caption Character set in single device

## Data Capture

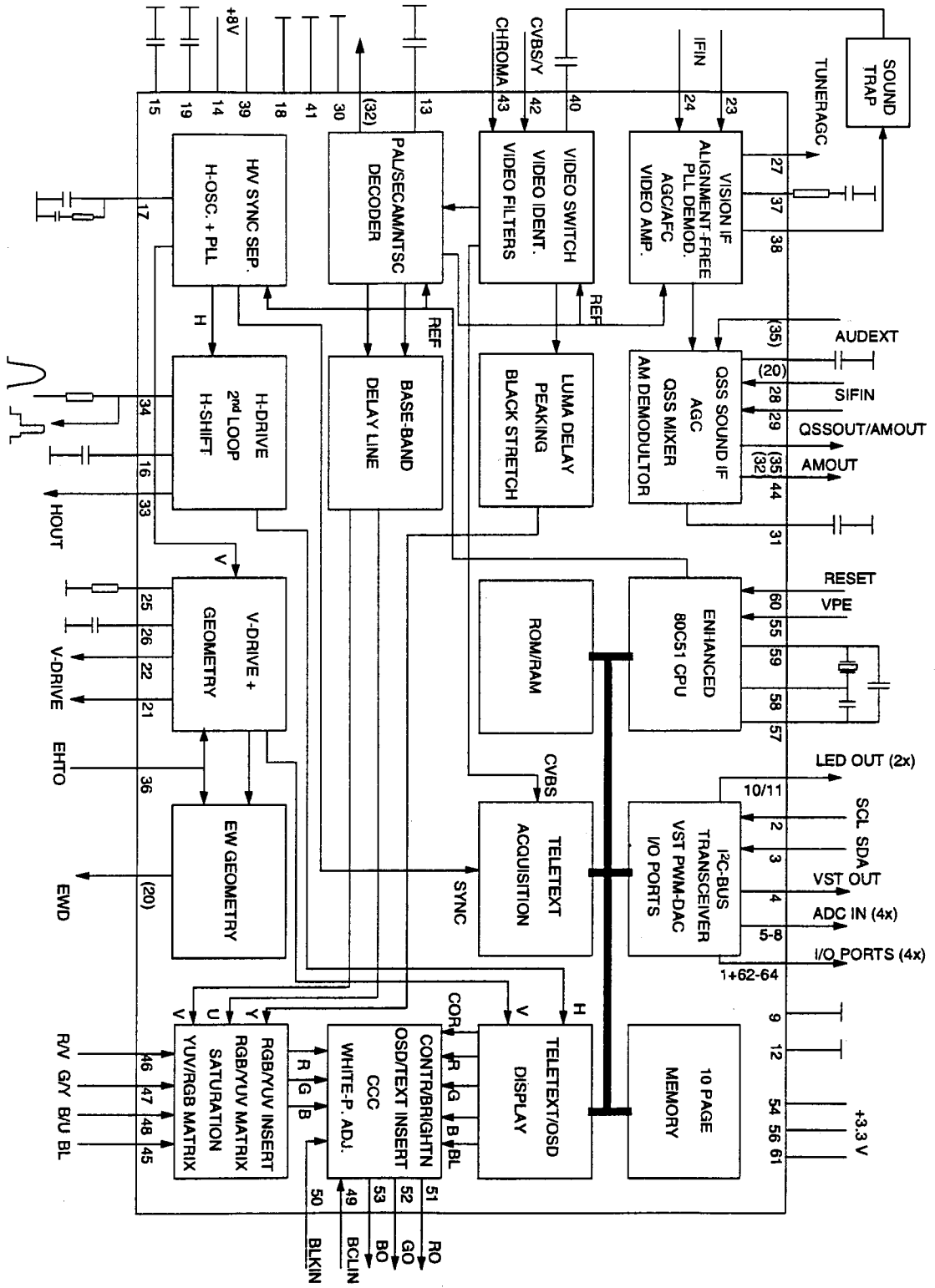
The Data Capture section takes in the analogue Composite Video and Blanking Signal (CVBS), and from this extracts the required data, which is then decoded and stored in memory.

The extraction of the data is performed in the digital domain. The first stage is to convert the analogue CVBS signal into a digital form. This is done using an ADC sampling at 12MHz. The data and clock recovery is then performed by a Multi-Rate Video Input Processor (MuVIP). From the recovered data and clock the following data types are extracted WST Teletext (625/525), Closed Caption, VPS, WSS. The extracted data is stored in either memory (DRAM) via the Memory Interface or in SFR locations.

## Data Capture Features

- Video Signal Quality detector
- Data Capture for 625 line WST
- Data Capture for 525 line WST
- Data Capture for US Closed Caption
- Data Capture for VPS data (PDC system A)
- Data Capture for Wide Screen Signalling (WSS) bit decoding
- Automatic selection between 525 WST/625WST
- Automatic selection between 625WST/VPS on line 16 of VBI
- Real-time capture and decoding for WST Teletext in Hardware, to enable optimised microprocessor throughput
- 10 pages stored On-Chip
- Inventory of transmitted Teletext pages stored in the Transmitted Page Table (TPT) and Subtitle Page Table (SPT)
- Automatic detection of FASTEXT transmission
- Real-time packet 26 engine in Hardware for processing accented, G2 and G3 characters
- Signal quality detector for WST/VPS data types
- Comprehensive Teletext language coverage
- Full Field and Vertical Blanking Interval (VBI) data capture of WST data





## APPENDIX

### IC DESCRIPTION

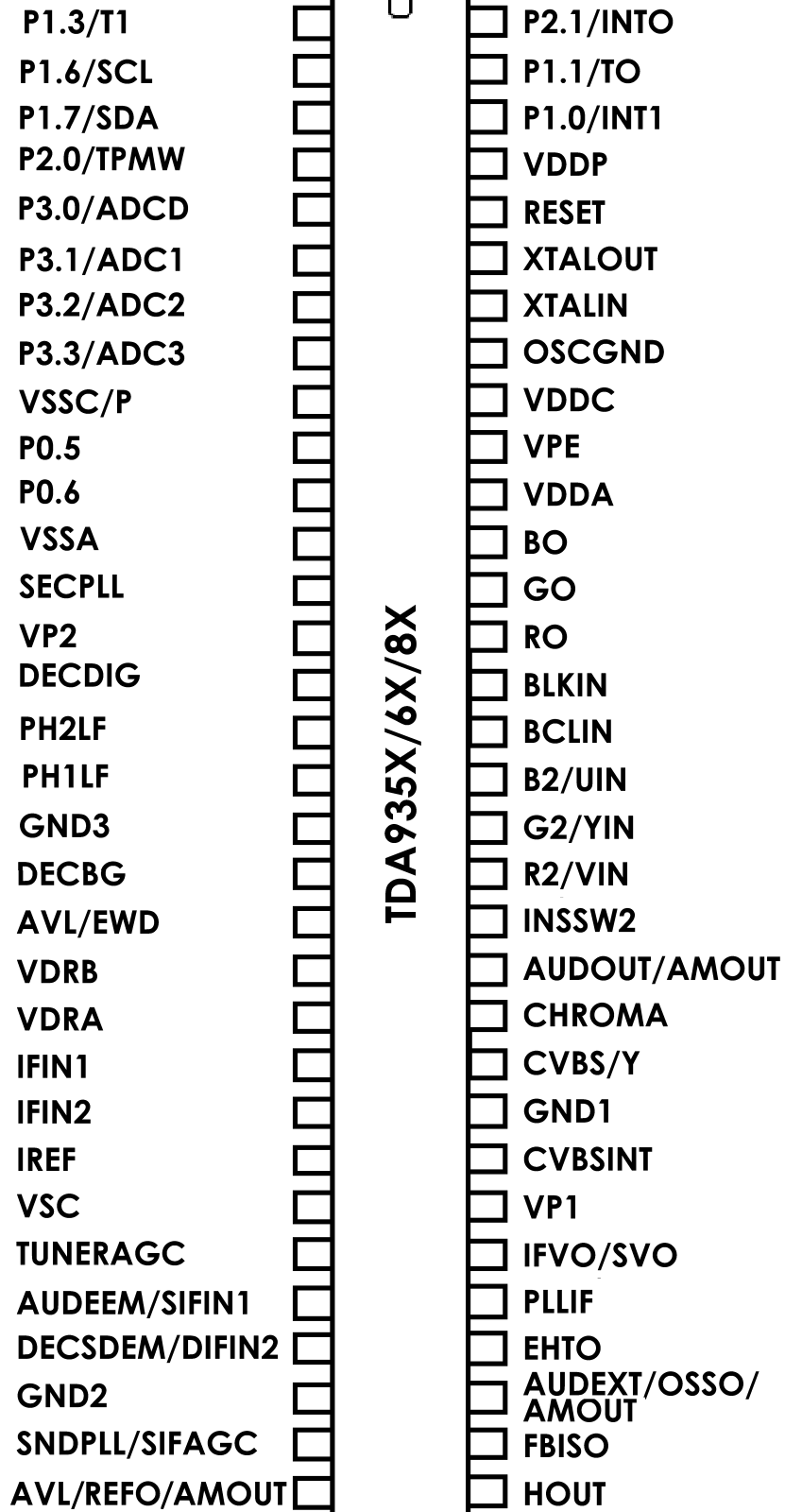
#### IC marking and version

Chassis	IC marking ( line 3 )	OSD languages	Text
CP 185	DW9361/N1/3-DE1 ( note : x is the software version )	English, French, German, Italian, Spanish, Dutch, Danish, Finnish, Norwegian, Swedish, Greek, Hungarian,	English, German, Swedish/Finnish/Hungarian, Italian, French, Portuguese/Spanish, Turkish, Greek
		Polish, Czech, Rumanian	Polish, German, Estonian, Italian, French, Serbian/Croatian/Slovenian, Czech/Slovak, Rumanian
		Russian	Polish, German, Estonian, Russian/Bulgarian, Serbian/Croatian/Slovenian, Czech/Slovak, Rumanian
CP 185	DW9381/N1/3-DE1 ( note : x is the software version )	English, French, German, Italian, Spanish, Dutch, Danish, Finnish, Norwegian, Swedish, Polish, Russian, Hungarian, Czech, Rumanian, Greek	No teletext

#### PINNING

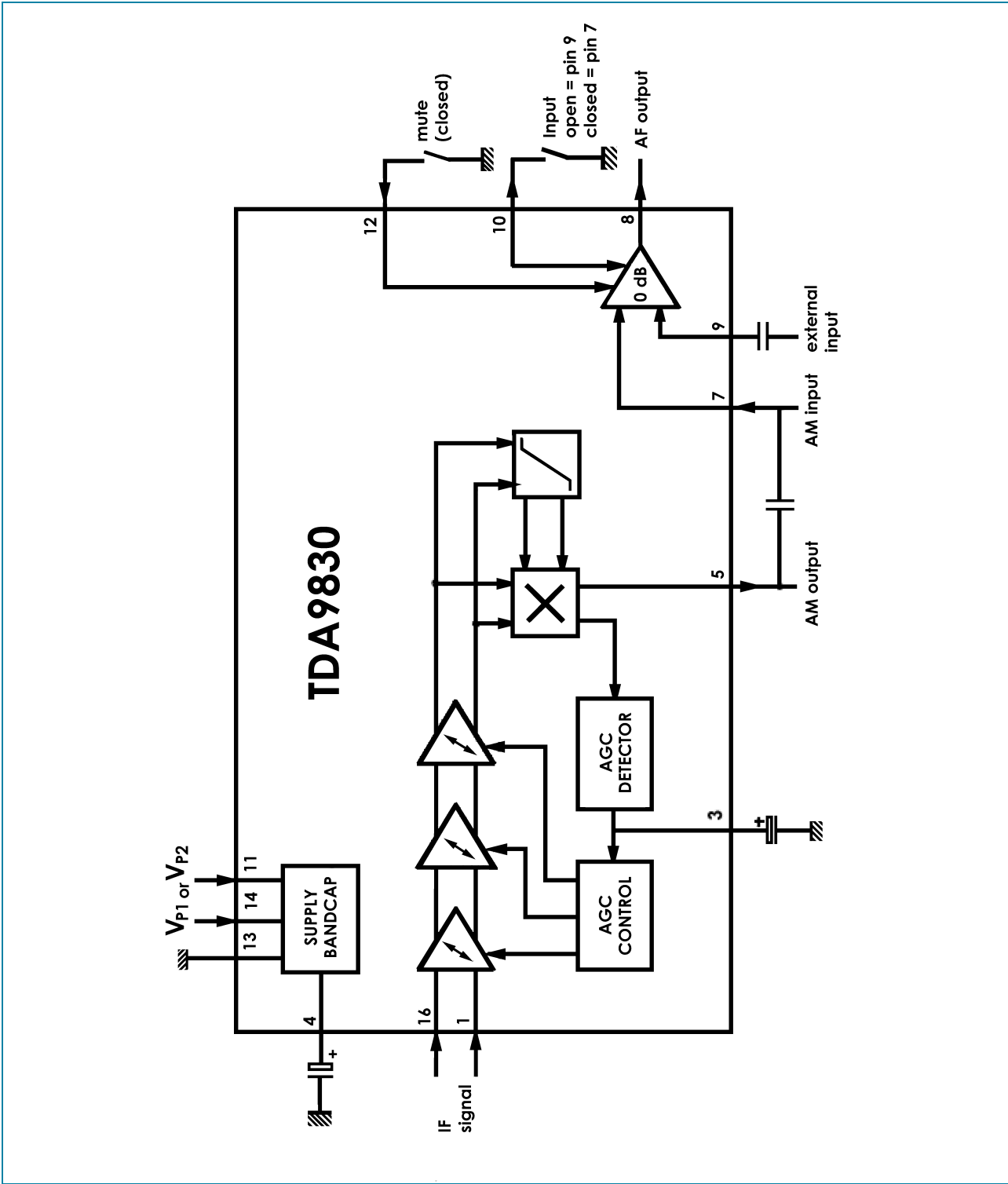
SYMBOL	PIN	DESCRIPTION
n.u.	1	Port 1.3 Not used.
SCL	2	I2C bus clock line
SDA	3	I2C Data line
SECAM L' out	4	Port 2.0 : FM sound : PushPull Low AM SECAM L' : PushPull High AM SECAM L : High Impedance
OCP	5	Port 3.0 : Over Current Protection
RF AGC in	6	ADC 1 : For program sorting in ATSS (High Impedance)
Key-in	7	ADC 2 : local key input ( High impedance )
S/SW	8	ADC 3 : Scart Slow switching input
VssC/P	9	digital ground for $\mu$ -controller core and peripheral
LED 1	10	port 0.5 ( 8mA current sinking capability )
LED 2	11	port 0.6 ( 8mA current sinking capability )
VSSA	12	analog ground of teletext decoder and digital ground of TV processor
SEC PLL	13	SECAM PLL decoupling
VP2	14	2nd supply voltage TV-processor
DECDIG	15	decoupling digital supply of TV-processor
PH2LF	16	phase-2 filter
PH1LF	17	phase-1 filter
GND3	18	ground 3 for TV-processor
DECBG	19	bandgap decoupling
AVL	20	n.u.
VDRB	21	vertical drive B output
VDRA	22	vertical drive A output

IFIN1	23	IF input 1
IFIN2	24	IF input 2
IREF	25	Reference current input
VSC	26	vertical sawtooth capacitor
TUNERAGC	27	tuner AGC output
AUDEEM	28	audio deemphasis
DECSDEM	29	decoupling sound demodulator
GND2	30	ground 2 for TV processor
SNDPLL	31	narrow band PLL filter
SNDIF	32	n.u.
HOUT	33	horizontal output
FBISO	34	flyback input / sandcastle output
AUDEXT	35	external audio input
EHT0	36	EHT/Overvoltage protection
PLLIF	37	IF PLL loop filter
IFVO	38	IF video output
VP1	39	main supply voltage TV-processor
CVBSINT	40	internal CVBS input
GND1	41	ground 1 for TV-processor
CVBS/Y	42	external CVBS/Y input
CHROMA	43	chrominance input (SVHS)
AUDOUT	44	audio out
INSSW2	45	2nd RGB insertion input
R2IN	46	2nd R input
G2IN	47	2nd G input
B2IN	48	2nd B input
BCLIN	49	beam current limiter input
BLKIN	50	black current input
R0	51	RED Output
G0	52	GREEN Output
B0	53	BLUE Output
VDDA	54	analog supply of Teletext decoder and digital supply of TV-Processor (3.3V)
VPE	55	OTP programming supply
VDDC	56	digital supply to core (3.3V)
OSCGND	57	oscillator ground supply
XTALIN	58	crystal oscillator input
XTALOUT	59	crystal oscillator output
RESET	60	reset
VDDP	61	digital supply to periphery (3.3V)
Audio Mute	62	Port 1.0 : Audio mute output (PushPull )
Power	63	Port 1.1 : Power output (PushPull )
IR in	64	Interrupt input 0 : R/C Infrared input



2. TDA9830 TV sound AM-Demodulator and audio source switch

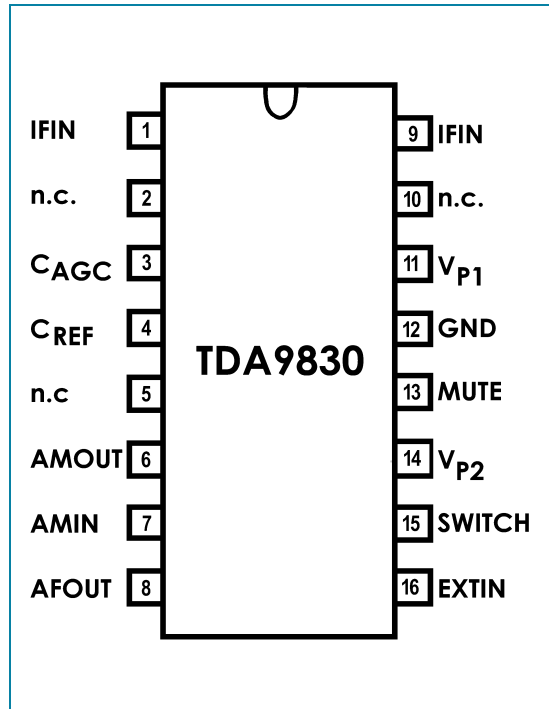
The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L and L' standard. The IC provides an audio source selector and also mute switch.



Block Diagram : TDA9830

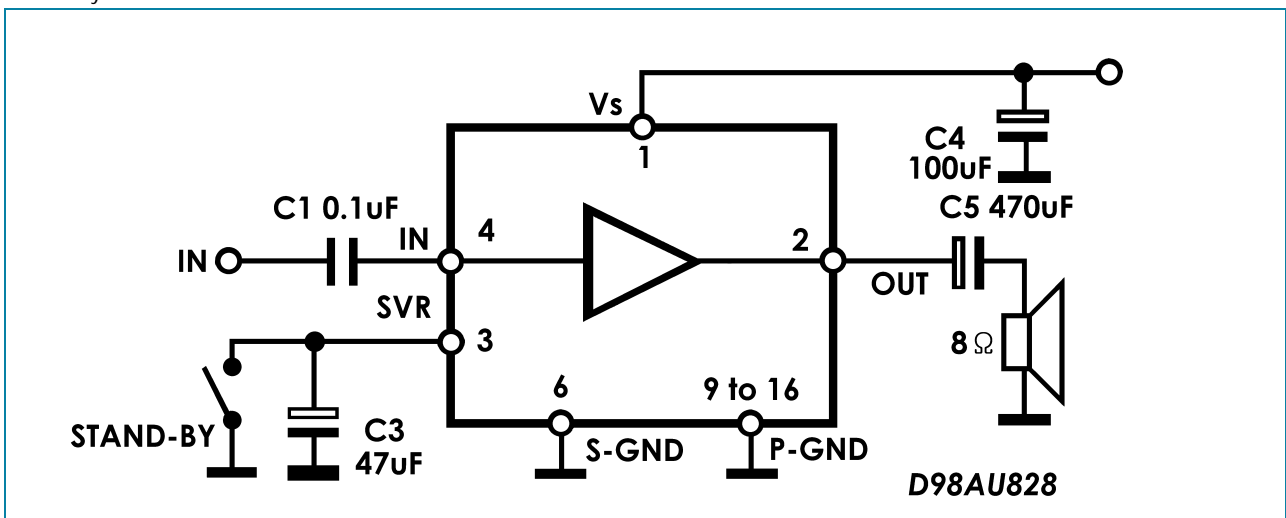
Pinning

Symbol	Pin	Description
IFIN	1	Sound IF differential input signal
n.c.	2	Not connected
C <sub>AGC</sub>	3	AGC capacitor
C <sub>REF</sub>	4	REF voltage filtering capacitor
n.c.	5	Not connected
AMOUT	6	AM demodulator output
AMIN	7	Input signal from audio switch
AFOUT	8	Output signal from audio switch
EXTIN	9	Input signal (from external) to audio switch
SWITCH	10	Switch input select control
V <sub>P2</sub>	11	Supply voltage +12V (alternative)
MUTE	12	Mute control
GND	13	Ground (0V)
V <sub>P1</sub>	14	Supply voltage +5V to +8V
n.c.	15	Not connected
IFIN	16	Sound IF differential input signal



3. TDA7267A - 3W Mono amplifier

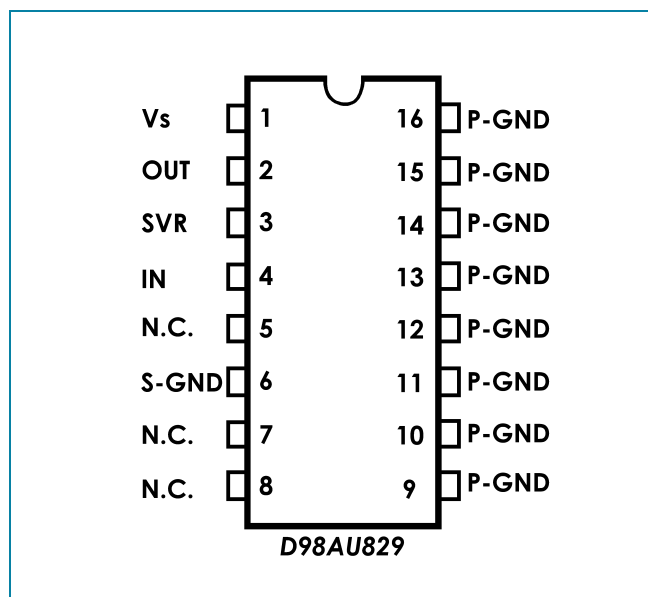
- Can deliver 3W THD 10% 14.5V/8Ω
- Internal fixed gain 32dB
- No feedback capacitor
- No boucherot cell
- Thermal protection
- AC short circuit protection
- SVR capacitor for better ripple rejection
- Low turn ON/OFF pop
- Stand-by mode



Block Diagram

## Pinning

Symbol	Pin	Description
Vcc	1	Supply voltage
OUT	2	Audio output
SVR	3	Supply Voltage Rejection
IN	4	Audio input
n.c.	5	Not Connected
S-GND	6	Signal ground
n.c.	7	Not Connected
n.c.	8	Not Connected
P-GND	9	P Ground
P-GND	10	P Ground
P-GND	11	P Ground
P-GND	12	P Ground
P-GND	13	P Ground
P-GND	14	P Ground
P-GND	15	P Ground
P-GND	16	P Ground



## 4. TDA8357J Vertical Amplifier

The TDA8357J is a power circuit for use in 90° TV systems for field frequencies of 25 to 200Hz and 16/9 picture tubes. The circuit provides a DC driven vertical deflection output circuit, operating as a highly efficient class G system. Due to the full bridge output circuit the deflection coils can be DC coupled.

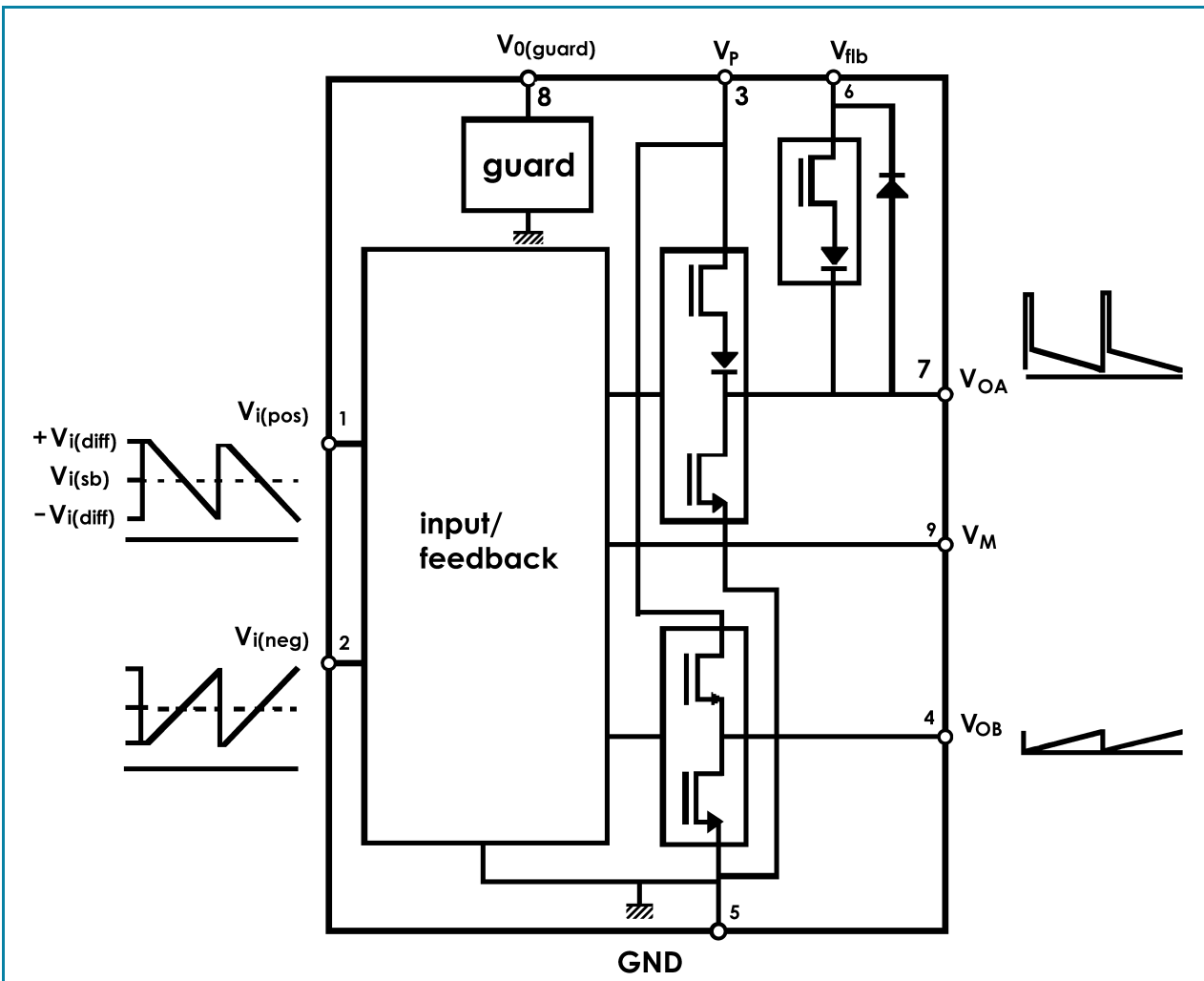
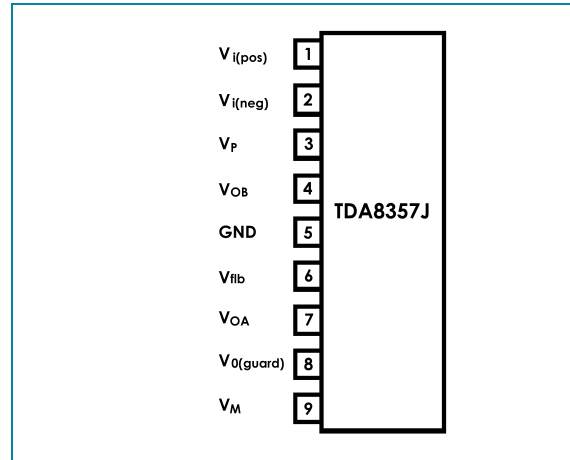
The IC is constructed in a Low Voltage DMOS process that combines Bipolar, CMOS and DMOS devices. MOS transistors are used in the output stage because of the absence of second breakdown.

Features :

- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Short rise and fall time of the vertical flyback switch
- Guard circuit
- Temperature (thermal) protection
- High EMC because of common mode inputs

Pinning

Pin	Symbol	Description
1	$V_{i(pos)}$	input voltage (positive)
2	$V_{i(neg)}$	input voltage (negative)
3	$V_P$	supply voltage
4	$V_{OB}$	output voltage B
5	GND	ground
6	$V_{flb}$	flyback supply voltage
7	$V_{OA}$	output voltage A
8	$V_{O(guard)}$	guard output voltage
9	$V_M$	input measuring resistor







IC DESCRIPTION

**6. 24C08 8 Kbit EEPROM**

features :

- 8 Kbit serial I2C bus EEPROM
- Single supply voltage : 4.5 V to 5.5 V
- 1 Million Erase/Write cycles (minimum)
- 40 year data retention (minimum)

**Pin description**

Pin No.	Name	Description
1, 2, 3	E0, E1, E2	Device address
5	SDA	Serial Data/Address Input/Output
6	SCL	Serial clock
7	WC	Write control
8	Vcc	Supply voltage
4	Vss	Ground

The memory device is compatible with the I2C memory standard. This is a two wire serial interface that uses a bi-directional data bus and serial clock. The memory carries a built-in 4-bit unique device type identifier code (1010) in accordance with the I2C bus definition.

**Serial Clock (SCL)**

The SCL input is used to strobe all data in and out of the memory.

**Serial Data (SDA)**

The SDA pin is bi-directional, and is used to transfer data in or out of the memory

**7. STR - F6653**

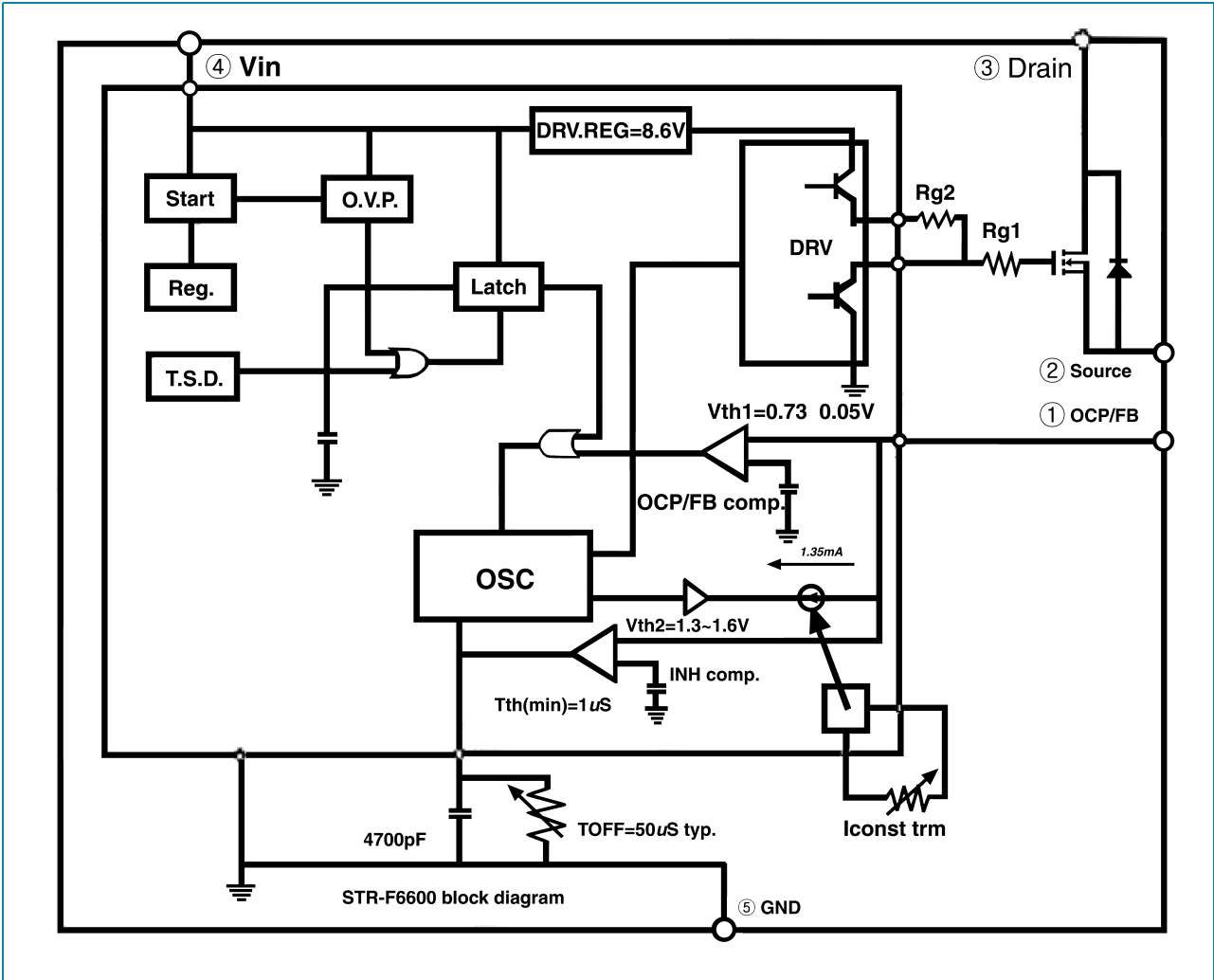
**7-1. general description**

The STR-F6653 is an hybrid IC with a build-in MOSFET and control IC, designed for flyback converter type switch mode power supply applications.

**7-2. features**

- Small SIP fully isolated moulded 5 pins package
- Many protection functions :
  - Pulse-by-pulse overcurrent protection (OCP)
  - Overvoltage protection with latch mode (OVP)
  - Thermal protection with latch mode (TSD)

7-3. Block diagram



7-4. pin description

PIN	NAME	SYMBOL	DESCRIPTION
1	Overcurrent feedback	O.C. P/E.B.	Input of over current detection signal and feedback signal
2	Source	S	Mosfet source
3	Drain	D	Mosfet drain
4	Supply	V <sub>IN</sub>	Input of power supply for control circuit
5	Ground	GND	Ground

## APPENDIX

### IC DESCRIPTION

#### 7-5. Control part - electrical characteristics

DESCRIPTION	IC PINS NUMBER	SYMBOL	RATING			UNIT
			MIN.	TYPE	MAX	
Operation start voltage	4-5	$V_{IN}$ (on)	14.4	16	17.6	V
Operation stop voltage	4-5	$V_{IN}$ (off)	9	10	111	V
Circuit current in operation	4-5	$I_{IN}$ (on)	-	-	30	mA
Quiescent current in non-operation	4-5	$I_{IN}$ (off)	-	-	100	$\mu$ A
Maximum off time	-	$T_{OFF}$ (max)	45	-	55	$\mu$ SEC
Minimum time for input of quasi resonant signals	1-5	$T_{TH}$ (2)	-	-	1.0	$\mu$ SEC
Minimum off time	-	$T_{OFF}$ (min)	-	-	1.5	$\mu$ SEC
O.C.P./F.B. terminal threshold voltage 1	1-5	$V_{TH}$ (1)	0.68	0.73	0.78	V
O.C.P./F.B. terminal threshold voltage 2	1-5	$V_{TH}$ (2)	1.3	1.45	1.6	V
O.C.P./F.B. terminal extraction current	1-2	$I_{OCP/FB}$	1.2	1.35	1.5	mA
OVP operation voltage	4-5	$V_{IN}$ (OVP)	20.5	22.5	24.5	V
Latch circuit sustaining voltage	4-5	$I_{IN}$ (H)	-	-	400	$\mu$ A
Latch circuit release voltage	4-5	$V_{IN}$ (Loff)	6.6	-	8.4	V
Thermal shutdown operating temperature	-	$T_j$ (TSD)	140	-	-	$^{\circ}$ C

#### 7-6. MOSFET electrical characteristics

DESCRIPTION	IC PINS NUMBER	SYMBOL	RATING			UNIT
			MIN.	TYPE	MAX	
Drain-to-source break down voltage	3-2	$V_{DSS}$	650	-	-	V
Drain leakage current	3-2	$I_{DSS}$	-	-	300	$\mu$ A
On-resistance	3-2	$R_{DS}$ (on)	-	-	1.95	W
Switching time	3-2	$t_f$	-	-	250	noec
Thermal resistance	-	$O_{CH-F}$	-	-	0.95	$^{\circ}$ C/W