

# TOSHIBA 28MW7 DB

## General Information

Also Covers  
28MW7DG  
C7SS Chassis

## Matrix

Item See Model Book

Set-up Adjustment ..... 2173DB 6  
Design & Service Mode ..... 2173DB 6

## Safety Precautions

### Service Mode

### Adjusting Items and datas

### X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is (A) kV at zero beam current (minimum brightness) under a (C) V AC power source. The high voltage must not, under any circumstances, exceed (B) kV.

		28"
HIGH VOLTAGE AT ZERO BEAM:	(A)	33.9 kV
MAX HIGH VOLTAGE:	(B)	34.0 kV
AV VOLTAGE	(C)	220-240 V

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.

Item	Adjustment	Preset data	Reference data
RCUT	R CUTOFF (B/W)	40H	←
GCUT	G CUTOFF (B/W)	40H	←
BCUT	B CUTOFF (B/W)	40H	←
GDRV	G DRIVE	40H	←
BDRV	B DRIVE	40H	←
BRTC	SUB BRIGHT CEN	80H	←
COLC	SUB COLOR CEN NTSC	00H	←
TNTC	SUB TINT CEN	48H	←
COLP	SUB COLOR CEN PAL	39H	←
COLS	SUB COLOR CEN SECAM	00H	←
SCNT	SUB CONTRAST	19H	←
HIT	HEIGHT	3AH	32H
HIT	(SUPER LIVE)	42H	3BH
HIT	(CINEMA)	5BH	52H
VLIN	V-LINEARITY	1AH	16H
VLIN	(SUPER LIVE)	19H	14H
VLIN	(CINEMA)	1DH	16H
VSC	V-S CORRECTION	26H	2BH
VPS	V-SHIFT	03H	04H
VCP	V-COMPENSATION	07H	05H
WID	PICTURE WIDTH (SUPER LIVE)	1FH	2BH
WIDE	(CINEMA)	25H	2AH
PARA	E-W PARABOLA	1CH	←
PARA	(SUPER LIVE)	1FH	1EH
PARA	(CINEMA)	2EH	31H
CNR	E-W CORNER	12H	0FH
TRAP	TRAPEZIUM	60H	48H
TRAP	(SUPER LIVE)	60H	48H
TRAP	(CINEMA)	60H	45H
HCP	H-COMPENSATION	05H	02H
VFC	V-F CORRECTION	0FH	←
GMPO	GMPO	34H	42H
GMPO	(SUPER LIVE)	34H	42H
GMPO	(CINEMA)	1BH	3FH

## Recommended Safety Parts

Item	Part No.	Description
A401	23427107	Back Cover
C801	24082927	PF, 0.22μF, ±20%, AC275V (28MW7DB)
C811	24092557	CD, 2200pF, ±20%, AV250V
C813	24092555	CD, 1000pF, ±10%, AC250V
C814	24092555	CD, 1000pF, ±10%, AC250V
C815	24092553	CD, 470pF, ±10%, AC250V
R801	24009954	Metal-Glazed Resistor, 2.2M ohm, 1/2W
R899	24005007	Metal-Glazed Resistor, 8.2M ohm, 1W
L901	23200309	Coil, Degaussing, TSB-2374AR
T461	23236537	Transformer, Flyback, TFB4142AR
T863	23217359	Transformer, Converter, TPW3374AG
Q826	A8643108	Photo Coupler, TLP621(GR-LF)
F470	23144503	Fuse, 1.25A, 250V
F801	23144507	Fuse, 3.15A
F802	23144506	Fuse, 2.5A, 250V
F889	23144458	Fuse, 5.0A
S801	23344395	Switch, Power
V901A	23902891	Socket, CRT, 10P
Z430	23144536	Protector, PRF10005491, 125V, 1A
Z890	23144543	Protector, PRF50005491, 125V, 5A
Z891	23144543	Protector, PRF50005491, 125V, 5A
V901	23312727	Picture Tube, W66ESF002X44

## Adjustments

MODEL NAME : C7SS (PAL-100Hz WIDE) (Reference factory adjustments)

Item	Name	Setting (User control)	Input signal	Measurement point	Adjustment procedure	Adjustment standard
[SCNT]	Sub-contrast	Dynamic mode	Sub-bright signal (PAL-I signal)	Q501#55 (TP501)	① Adjust the amplitude from the pedestal level to the white peak.	28W7DD 28MW7DG 32MW7DG 2.3 ± 0.2 Vp-p 28MW7DB 32MW7DB 2.5 ± 0.2 Vp-p
[BRTC]	Sub-bright center	Dynamic mode	Sub-bright signal	Screen adjustment	① Adjust the number of black collapsed lines in the sub-bright signal. ② This adjustment shall be done after the W/B and [SCNT] adjustments.	4 ± 1.5 lines Screen adjustment
[COLP]	Sub-color center PAL	Dynamic mode	Sub-bright signal (PAL)	Q501#55 (TP501)	① Adjust the B-Y amplitude.	1.4 ± 0.2 Vp-p
[RCUT] [GCUT] [BCUT] Screen VR	R cut-off G cut-off B cut-off	[RCUT] : 40 [GCUT] : 40 [BCUT] : 40		Screen adjustment	① Set each control as shown in the left column. ② Gradually increase the screen VR until either R, G or B line starts to light up slightly. ③ Determine the screen VR adjustment position here. ④ Gradually increase remaining two screen VRs until respective line starts to light up slightly. (Adjust until the screen becomes almost white.) ⑤ Exit from the horizontal straight-line mode. ⑥ Using CA100, repeat this adjustment until correct value is set to both the dark and bright parts.	Bright part (103cd/m <sup>2</sup> ) Dark part (17cd/m <sup>2</sup> ) 8750K-0.002uv 8750K-0.002uv Bright part (CA100)
[GDRV] [BDRV]	G drive B drive	[GDRV] : 40 [BDRV] : 40				

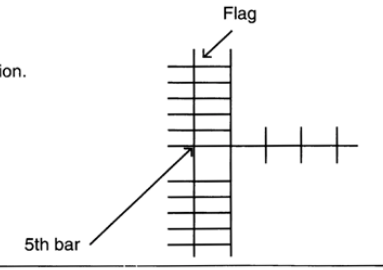
Item	Name	Setting (User control)	Input signal	Measurement point	Adjustment procedure	Adjustment standard
[BELL]	BELL filter		SECAM color bar	QQ01#21 (TPM01)	① Vary the [BELL] until the waveform on the synchroscope becomes flat.	100 ± 10%
[SRY]	SECAM R-Y black level	Dynamic mode	SECAM color bar	Q501#55 (TP501)	① Vary the [SRY] until the level of the B/W signal becomes equal to the H. BLK level.	0 ± 40 mV
[SBY]	SECAM R-Y black level	Dynamic mode	SECAM color bar	Q501#55 (TP501)	① Vary the [SBY] until the level of the B/W signal becomes equal to the H. BLK level.	0 ± 40 mV
[COLS]	Sub-color center SECAM	Dynamic mode	SECAM color bar	Q501#55 (TP501)	① Adjust the R-Y amplitude. (During this adjustment apply the picture mute.)	1.9 ± 0.2 op * (Pedestal to Peak)

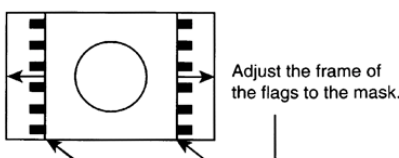
Adjustment parts	Input point / Output point	Adjustment signal	Adjustment conditions and procedures
Vertical synchronizing VR adjustment R4350	DEF UNIT		① Supply +12.0V to the HVCC terminal (P813B#57). ② Using a frequency counter, adjust the VR so that the frequency at the Q420#24 terminal becomes 80.0 +2.0/-1.0Hz. ※ When supplying power, connect the power supply to GND of negative side of C4311.
Horizontal synchronizing VR adjustment. R4450	DEF UNIT		① Supply +12.0V to the HVCC terminal (P813B#57). ② Using a frequency counter, adjust the VR so that the frequency at the Q420#16 terminal becomes 31.36 ±0.15Hz. ※ When supplying power, connect the power supply to GND of negative side of C4311.

## Adjustments Cont'd

Adjustment Item	Adjustment Procedure
Vertical WIDE mode Vertical amplitude [HIT]  Vertical position [GMPO]	PAL WG Phillips pattern, User adjustment standard. Adjust the vertical amplitude so that both upper and lower flags disappear from the screen.  PAL Phillips pattern, User adjustment standard. Adjust the vertical position [GMPO] so that the vertical screen position of the Phillips pattern comes to the center of the screen (see the right sketch).
Super-Live mode Vertical amplitude [HIT]	PAL Phillips pattern, User adjustment standard. Adjust the vertical amplitude by [HIT] so that the top and bottom of the circle of the Phillips pattern touch the CPT mask (see the right sketch).
CINEMA mode Vertical amplitude [HIT]	Phillips pattern, User adjustment standard. Adjust the vertical amplitude by [HIT] so that the points shown in the right bottom sketch touch the CRT mask (see the right sketch).

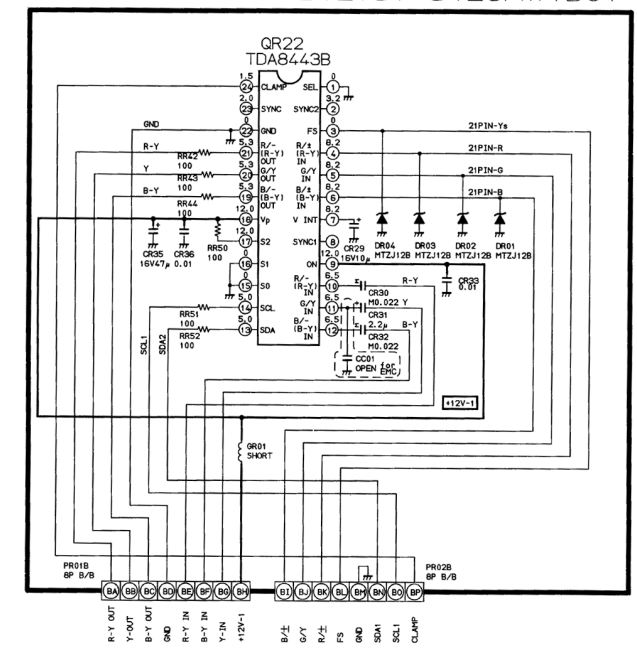
Adjustment Item	Adjustment Procedures
Horizontal WIDE mode (4:3 mode)  Horizontal position (R451) Horizontal amplitude [WIDE] Side DPC [PARA] Trapezoidal distortion [TRAP]	With the PAL, WG Phillips pattern, in the WIDE mode, adjust the horizontal amplitude so that the mask comes to the frames of left and right flags.  With the PAL, WG Phillips pattern, in the WIDE mode, adjust the horizontal position to minimize the side pincushion distortion and trapezoidal distortion. Note) This adjustment shall be done at the same time as the horizontal position adjustment item in the volume adjustment. If the horizontal position cannot be adjusted to the center by the volume, adjust the horizontal amplitude until the flag frame touches the mask.  Confirm the side pincushion distortion in the 4:3 mode. (If necessary, reconfirm it with observing the quality of the side panel in 4:3 mode.)
Super-Live mode Horizontal amplitude Side DPC Trapezoidal distortion	In the WIDE mode with the PAL Phillips pattern :  Adjust the 5th bar in the left and right flags to the mask. Adjust to minimize the side pincushion distortion and trapezoidal distortion.
CINEMA mode Horizontal amplitude Side DPC Trapezoidal distortion	In the CINEMA mode with the PAL Phillips pattern :  Adjust the horizontal amplitude so that mask comes to the frames of the left and right flags. Adjust to minimize the side pincushion distortion and trapezoidal distortion.



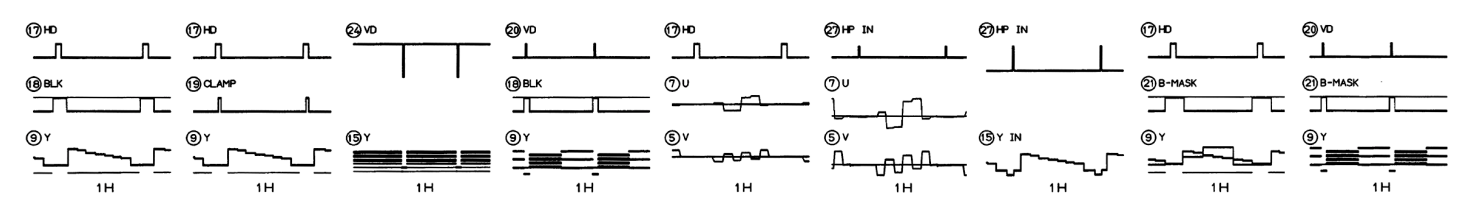
No	Applicable Models	Adjustment Item	Adjustment Procedures
1	32MW7DB 32MW7DG	Focus adjustment (1) HOR. FOCUS	Conditions) PAL, RETMA signal WIDE mode, User adjustment standard Adjustment) With the center of the screen being the best focus, set the focus volume (F1) of the focus pack (Z410) to the fully counterclockwise position.
	32MW7DB 32MW7DG	Focus adjustment (2) VERT. FOCUS	Conditions) PAL, RETMA signal WIDE mode, User adjustment standard Adjustment) With the center of the screen being the best focus, set the focus volume (F2) of the focus pack (Z410) to the fully counterclockwise position.
	28W7DD 28MW7DB 28MW7DG	Focus adjustment	Conditions) PAL, RETMA signal WIDE mode, User adjustment standard Adjustment) With the center of the screen being the best focus, set the focus volume of the flyback transformer (T461) to the fully counterclockwise position.
2	All models	Vertical position adjustment	Conditions) PAL, WG Phillips pattern WIDE mode, User adjustment standard Adjustment) Adjust [GMPO] so that both top and bottom positions touch the mask. (This adjustment shall be done with the CPT facing south or north. If this cannot be done, offset the deviation.)
3	All models	Horizontal position adjustment	Conditions) PAL, WG Phillips pattern WIDE mode, User adjustment standard Adjustment) With the VR (R451), adjust the frame of both left and right flags to the mask. (If necessary, also adjust the horizontal amplitude.)  

## YUV-SW Diagram

U906C YUV-SW PB7213Z-3 (28MW7DB)  
PB7213Y-3 (28MW7DG)

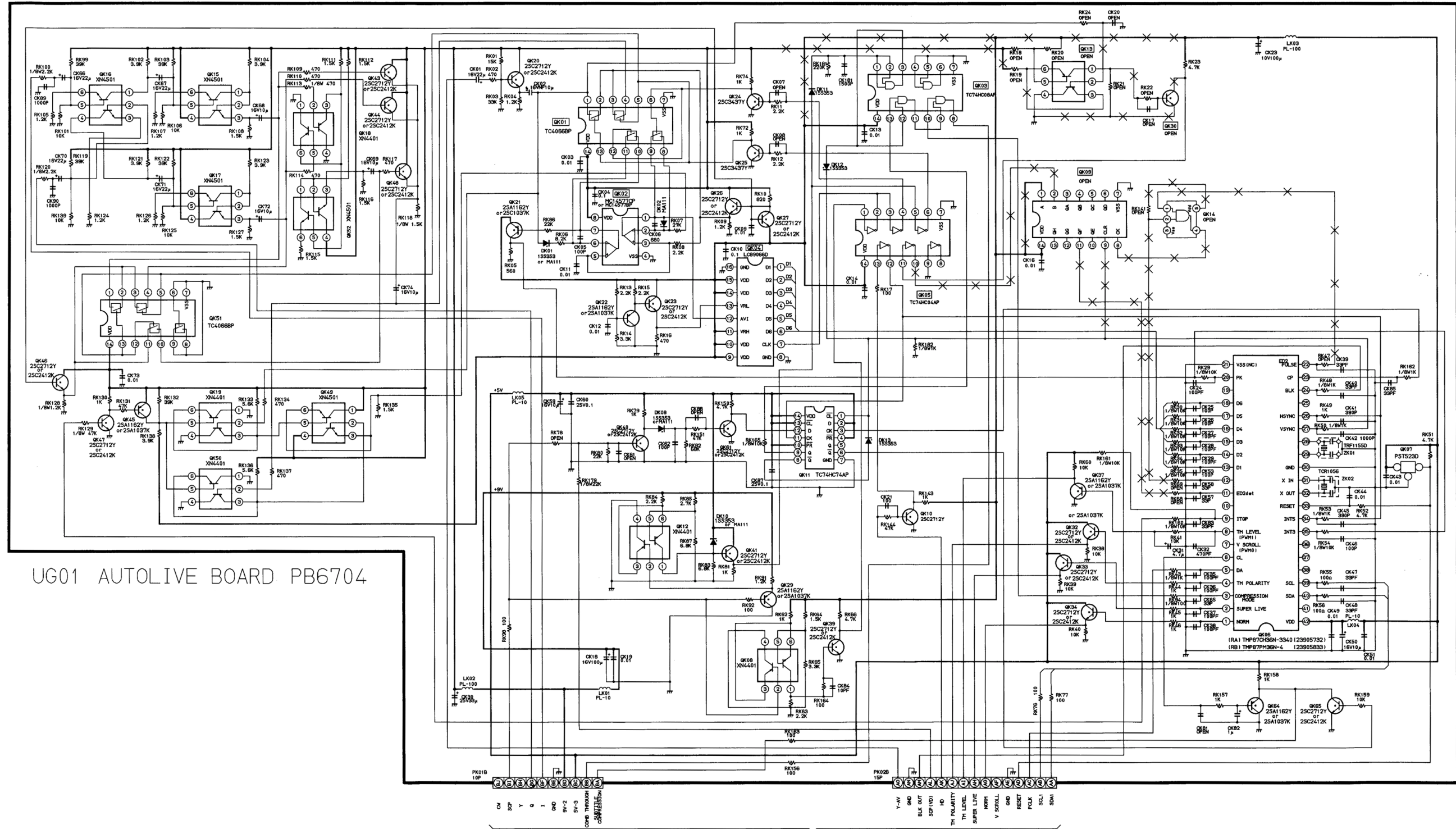


## Waveforms





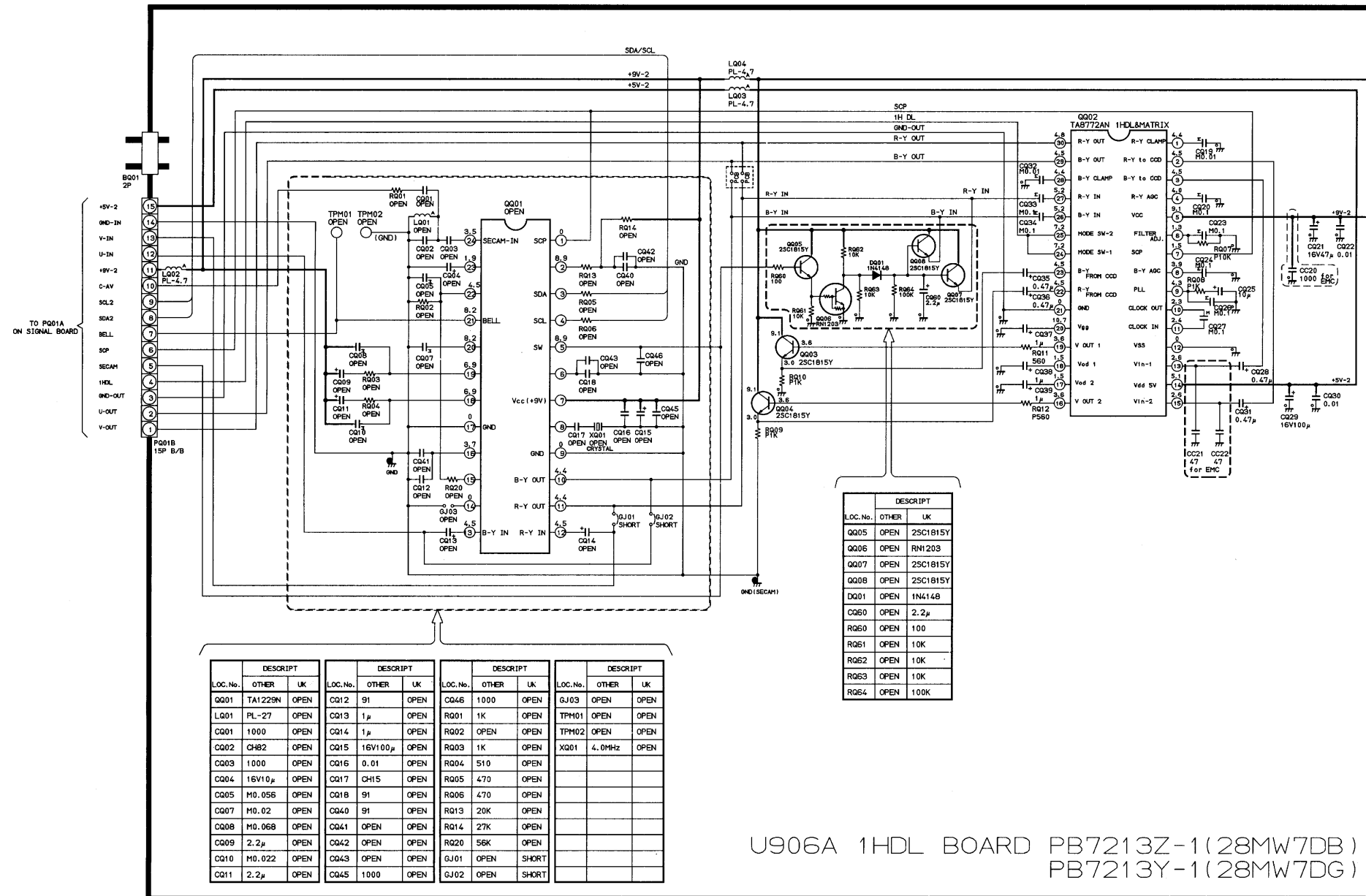
## Autolive Diagram



UG01 AUTOLIVE BOARD PB6704

TO PK01A/PK02A  
AL CIRCUITO SIGNAL

## 1HDL Board Diagram

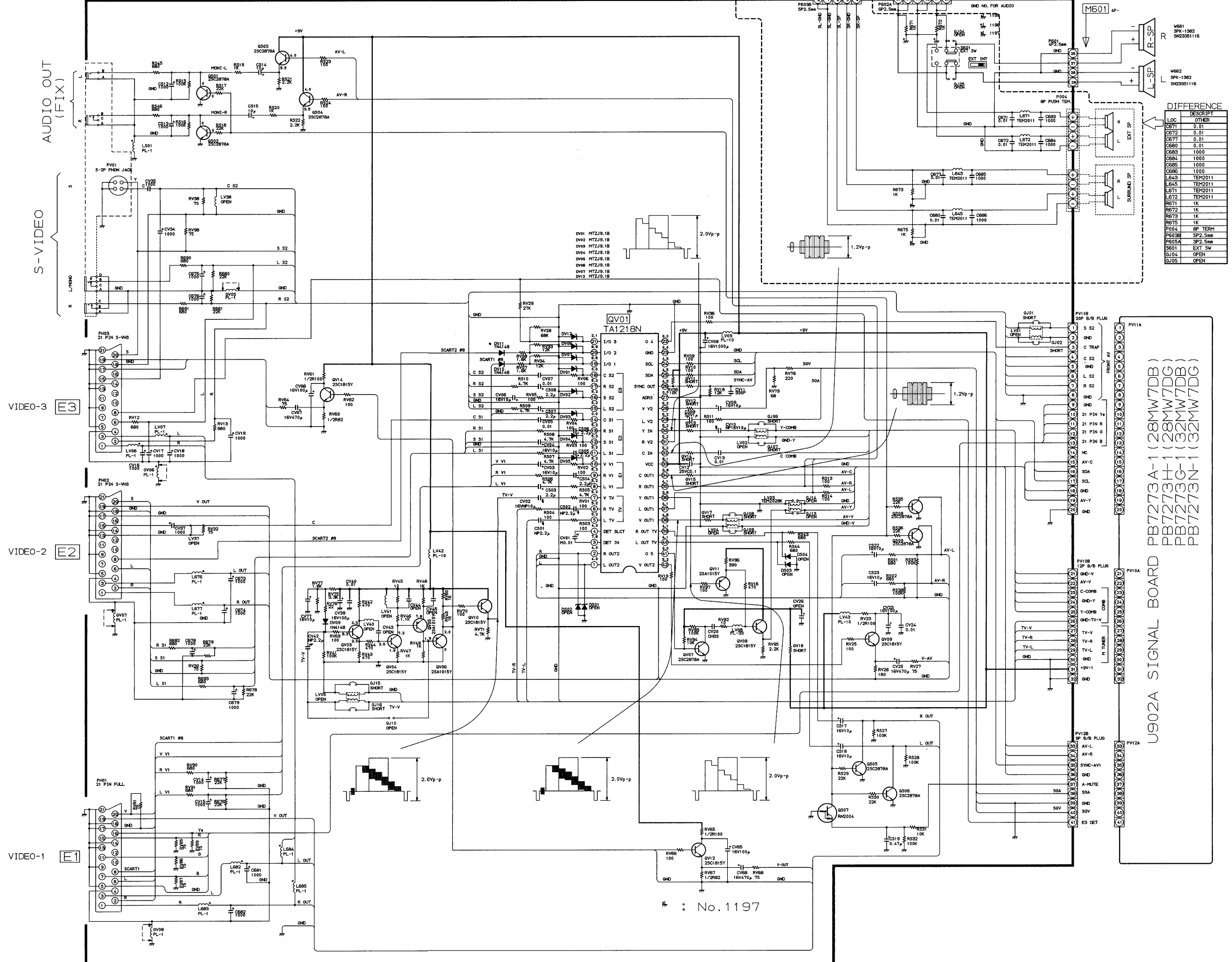


U906A 1HDL BOARD PB7213Z-1(28MW7DB)  
PB7213Y-1(28MW7DG)

# TOSHIBA 28MW7 DB

## Back-T Board Diagram

U905 BACK-T BOARD PB7276X

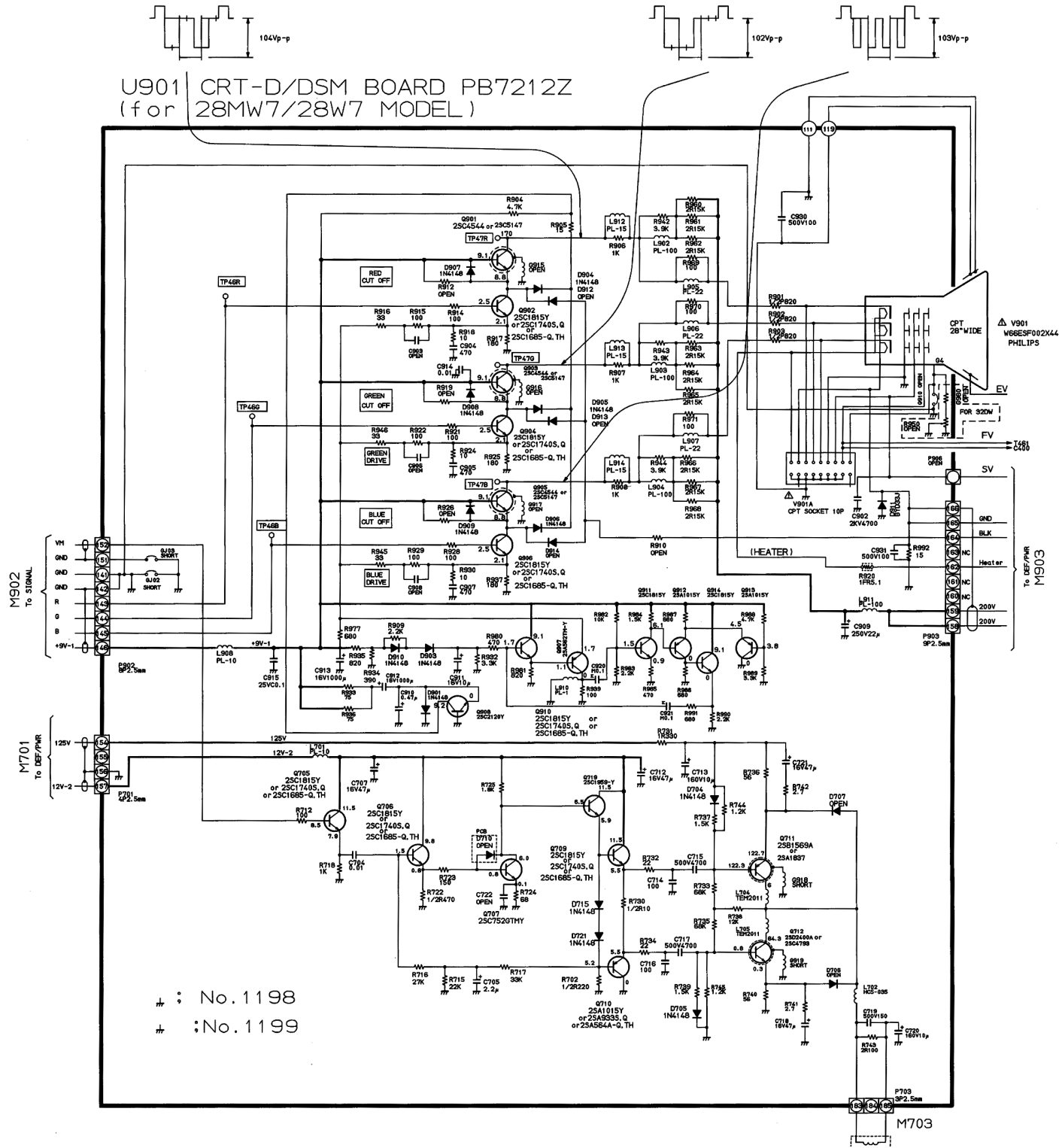


DIFFERENCE

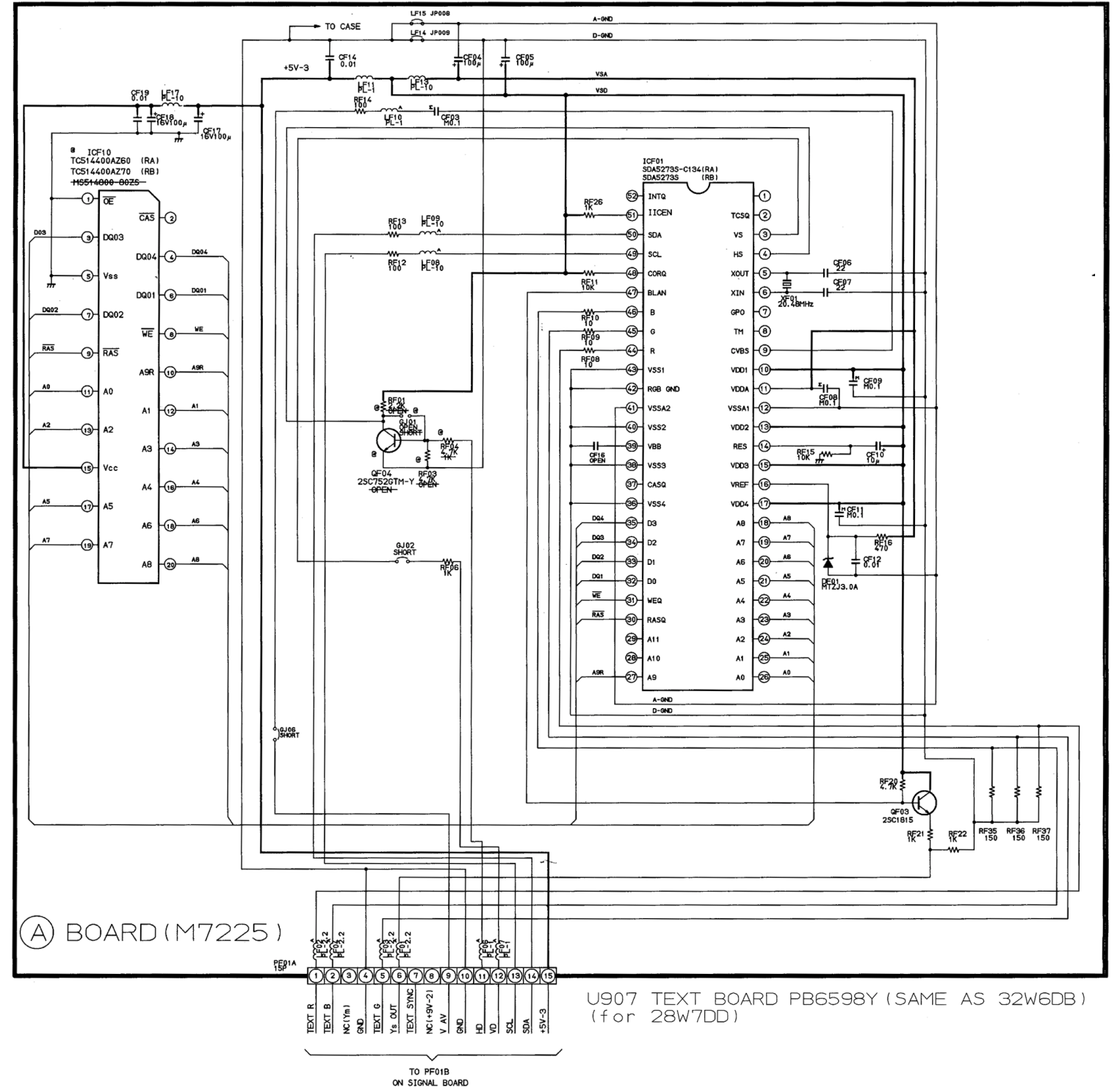
LOC	DESCRIPTION
C871	0.01
C872	0.01
C877	0.01
C880	0.01
C883	1000
C884	1000
C885	1000
C886	1000
L843	TEH2011
L845	TEH2011
L871	TEH2011
L872	TEH2011
R871	1K
R872	1K
R873	1K
R875	1K
P004	6P TERM
P603B	SP2.5mm
P605A	SP2.5mm
S601	EXT SW
GJ04	OPEN
GJ05	OPEN

U902A SIGNAL BOARD  
 PB7273A-1 (28MW7DB)  
 PB7273H-1 (28MW7DG)  
 PB7273G-1 (32MW7DB)  
 PB7273N-1 (32MW7DG)

## CRT Diagram



## Text Diagram



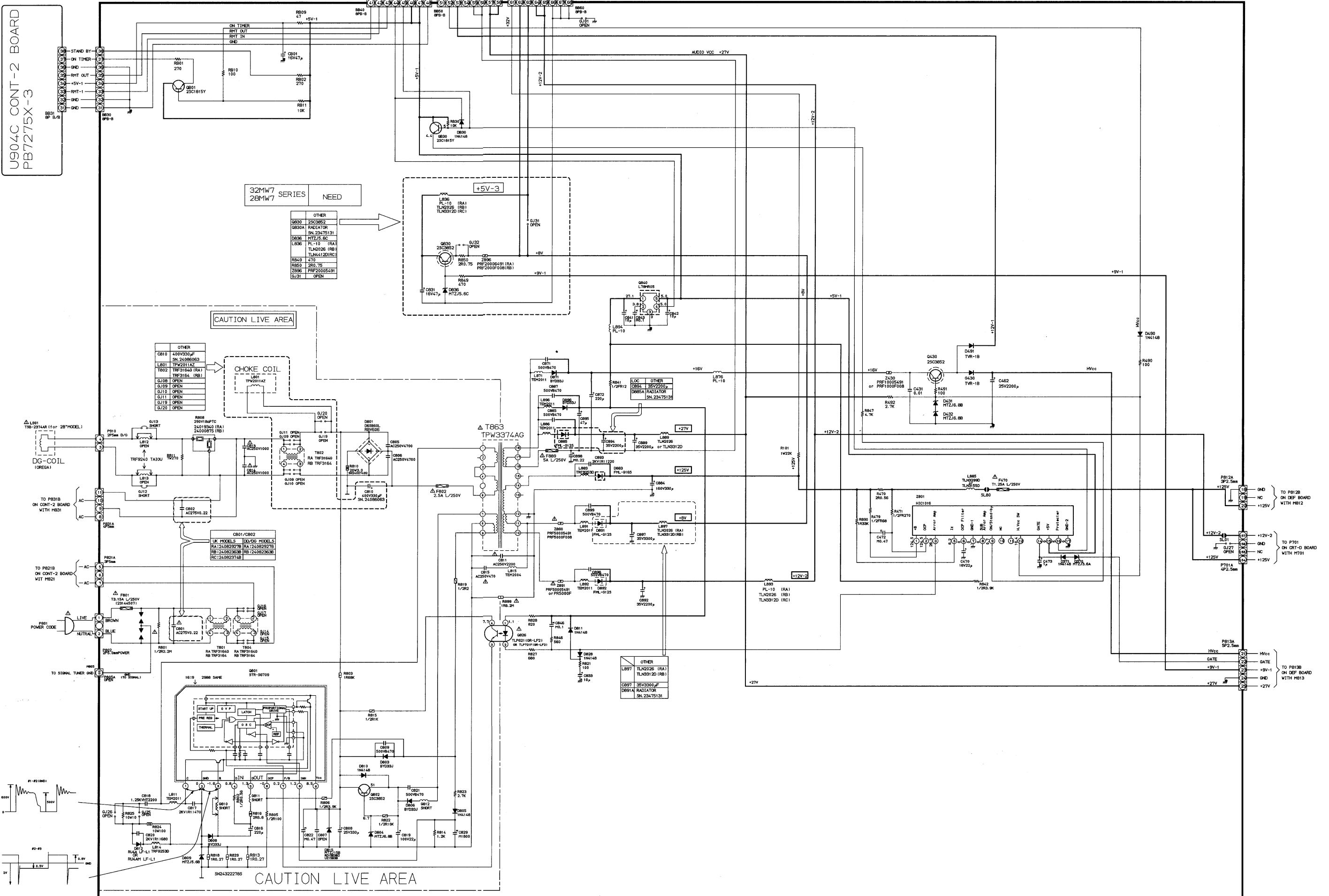




U903 POWER BOARD  
PB7274A (28MW7DB)  
PB7274H (28MW7DG)

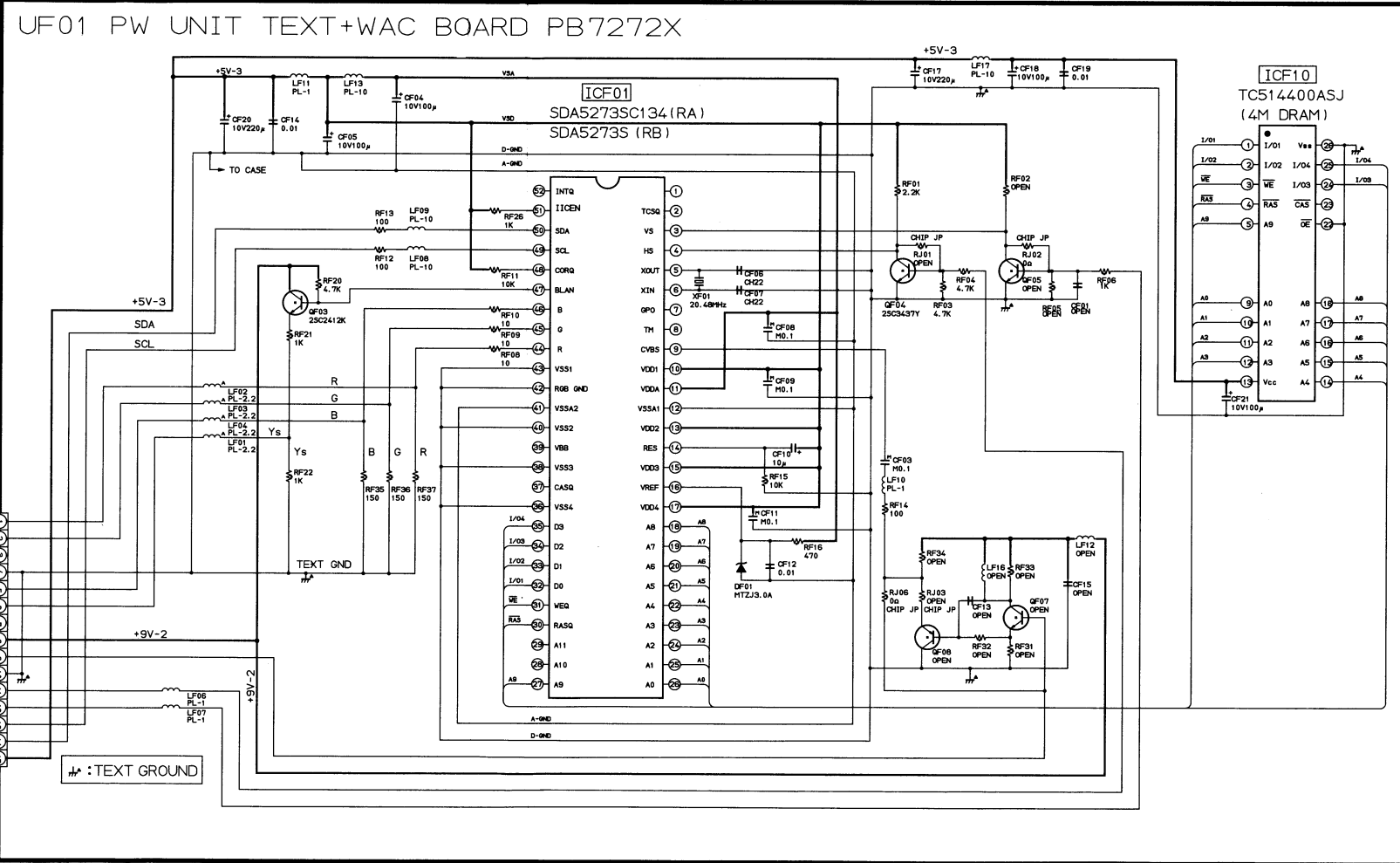
U902A SIGNAL BOARD  
PB7273A-1 (28MW7DB)  
PB7273H-1 (28MW7DG)

U904C CONT-2 BOARD  
PB7275X-3

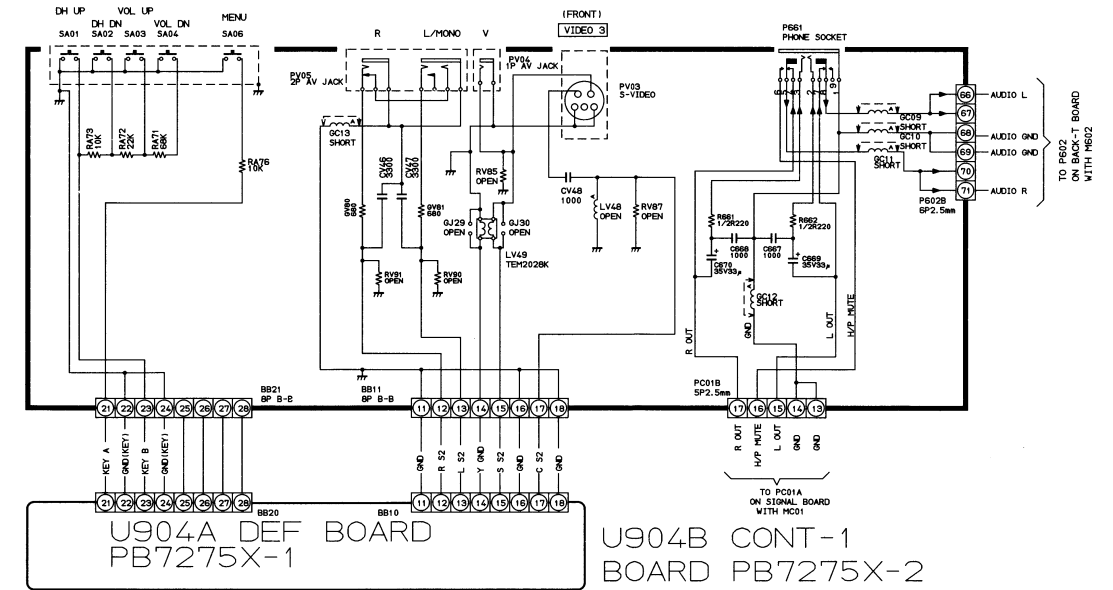




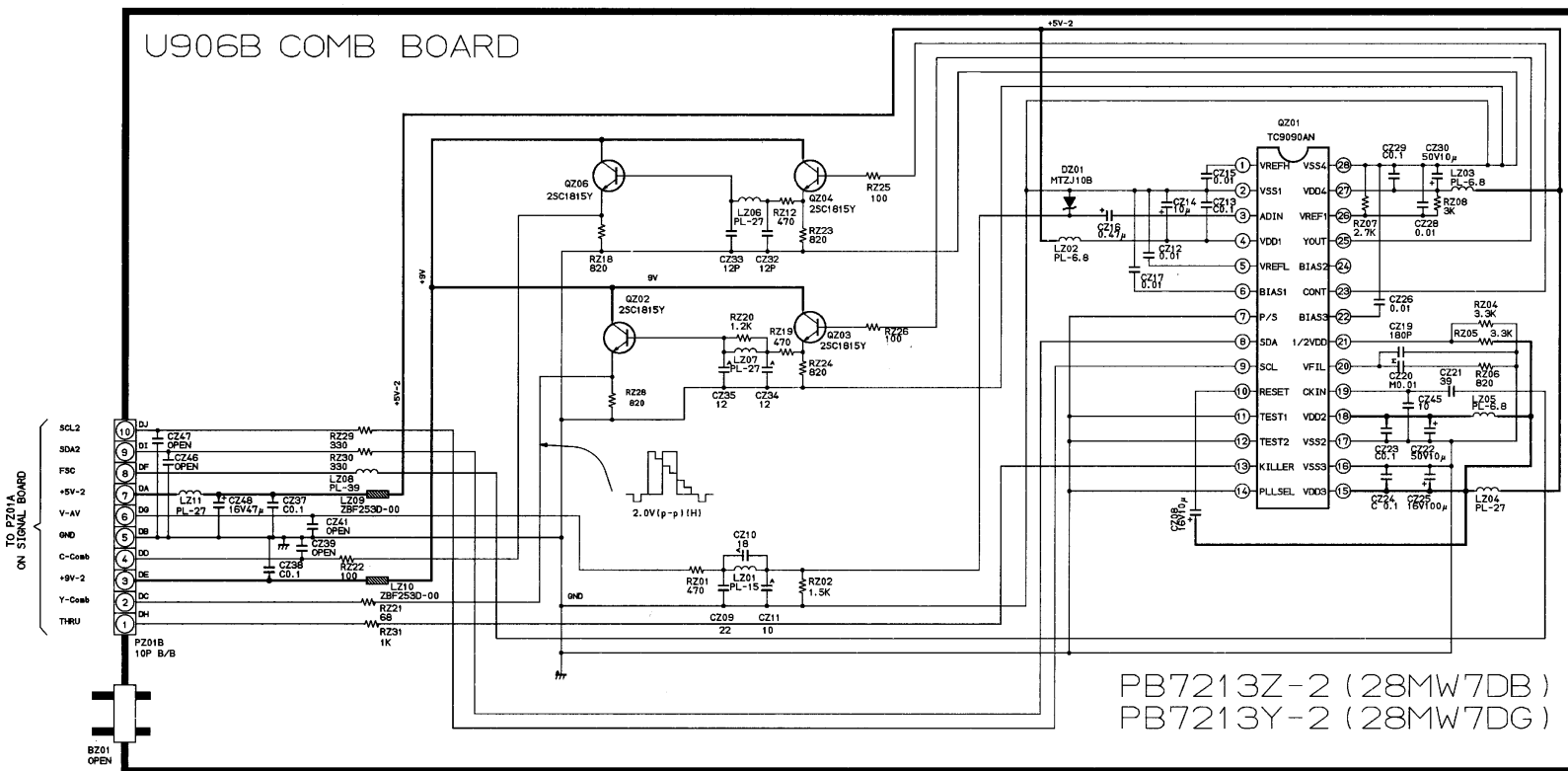
## Text WAC Diagram



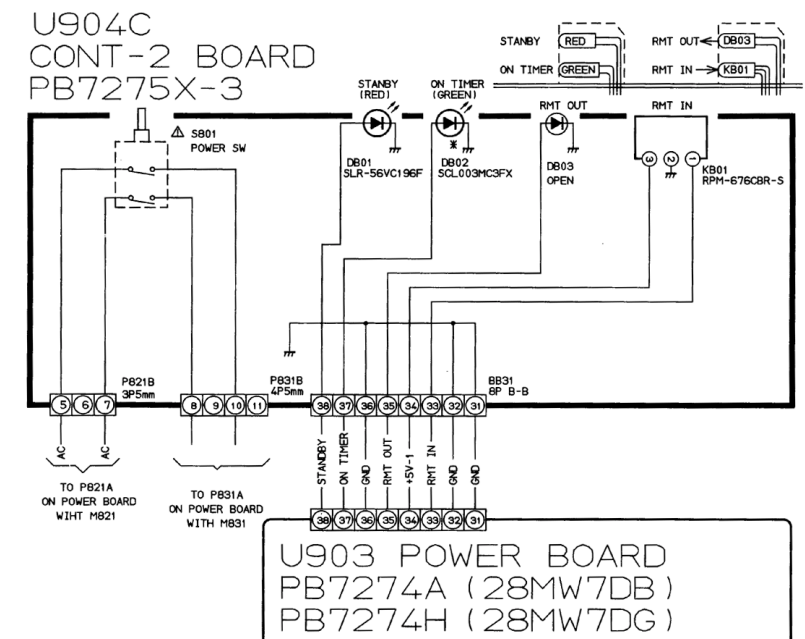
## Cont-1 Board Diagram



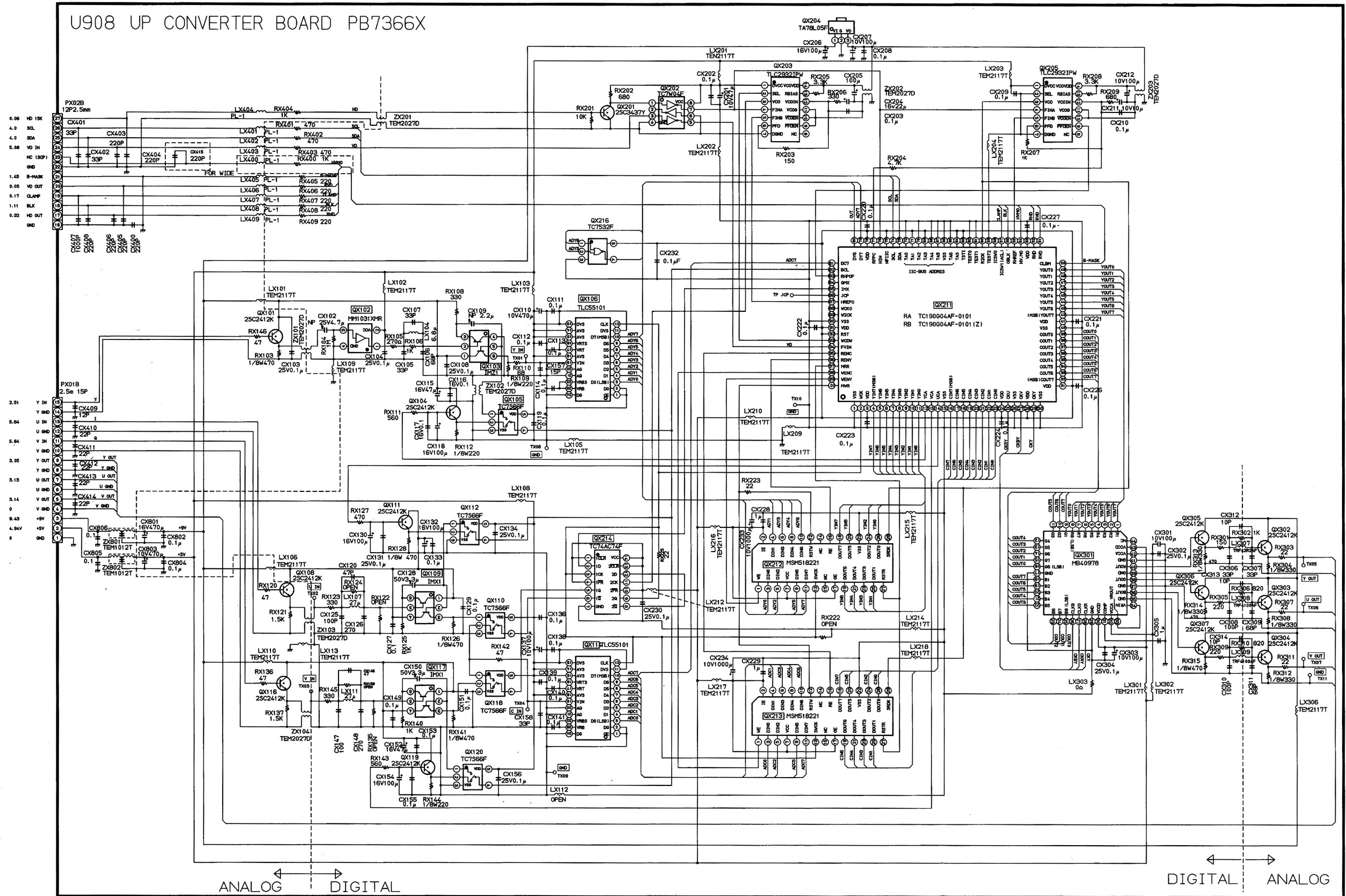
## Comb Board Diagram



## Cont-2 Board Diagram



## Up Converter Diagram

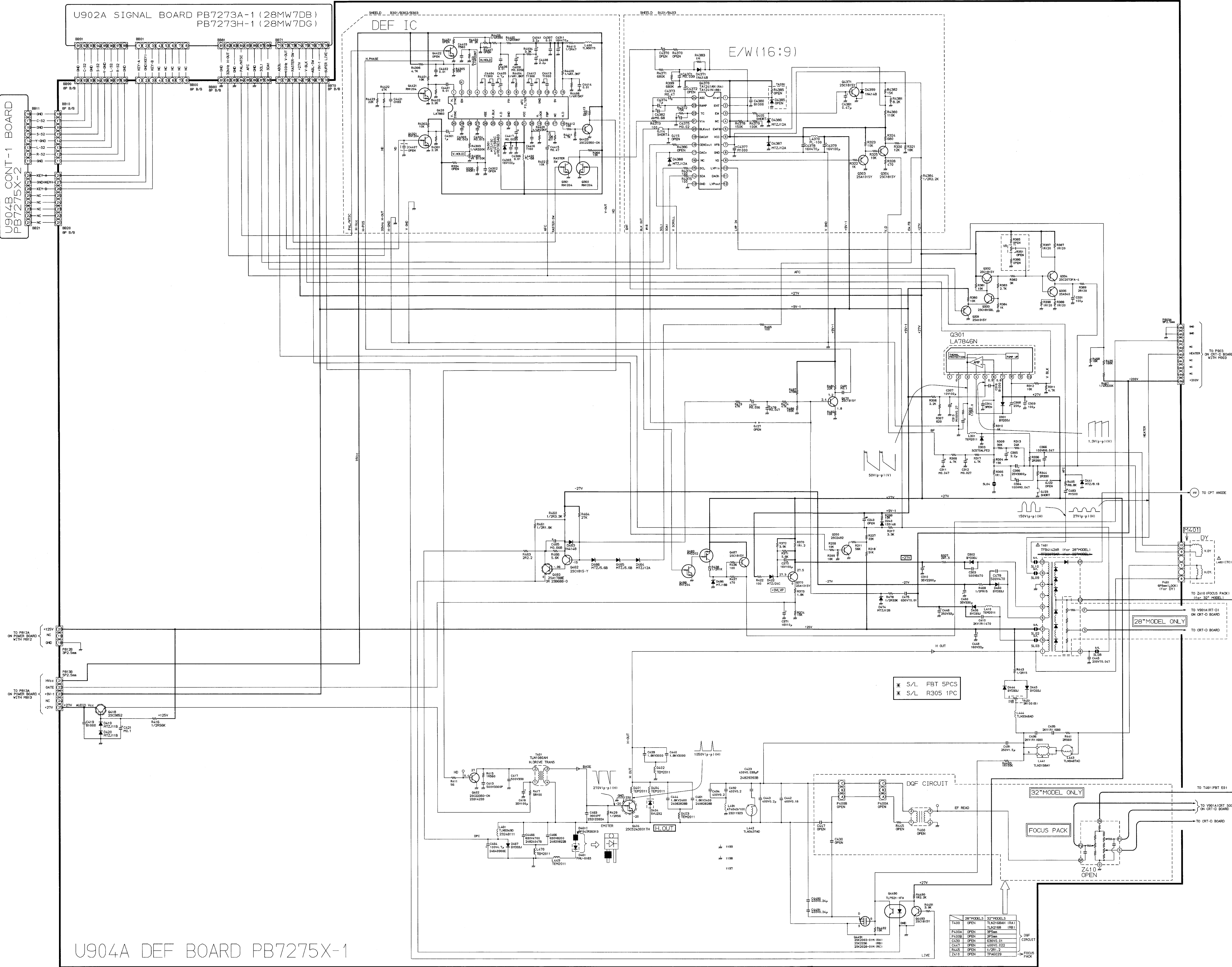


U902A SIGNAL BOARD PB7273A-1 (28M7DB)  
PB7273H-1 (28M7DG)

U904B CONT-1 BOARD  
PB7275X-2

DEF IC

E/W (16:9)



\* S/L FBT 5PCS  
\* S/L R305 1PC

28" MODEL S		32" MODEL S	
T400	OPEN	TL42168AH	(RA1)
F100A	OPEN	TL42168	(RB1)
F100B	OPEN	3P5mm	
C430	OPEN	630V 0.1	
C447	OPEN	450V 0.22	
R445	OPEN	1/2W 1.2	
Z410	OPEN	TP46229	

U904A DEF BOARD PB7275X-1



U902A SIGNAL BOARD  
PB7273A-1 (28MW7DB)  
PB7273H-1 (28MW7DG)

U906B D-COMB UNIT PB7213Z-2

U905A SECAM+HDL UNIT PB7213Z-1

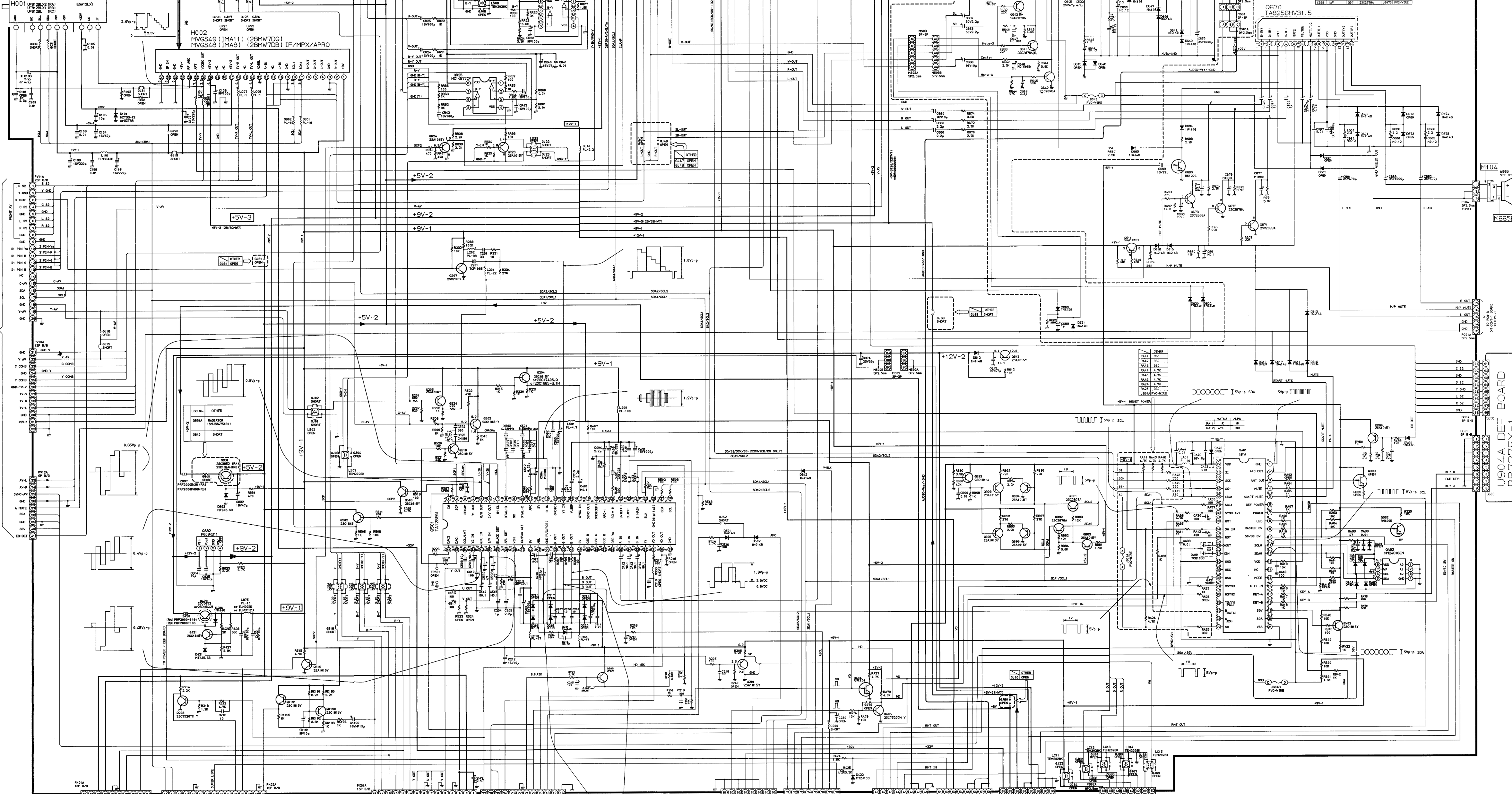
U906C YUV-SW BOARD PB7213Z-3

U102 DOLBY-DIGITAL (AC-3) UNIT PB7325X

U907 TEXT BOARD PB6598Y (SAME AS 32W6DB)

U905 BACK-T PB7276X

	32M7DB	32M7DB	28M7DB	28M7DB
H002	IMAB	IMAB	IMAB	IMAB
H001	IMAB	IMAB	IMAB	IMAB
AC-S/A-PRO	AC-3	AC-3	AC-3	AC-3
OC2D	SHORT	FL-1	SHORT	FL-1
OC2E	SHORT	FL-1	SHORT	FL-1
CI11	OPEN	2.2 $\mu$	OPEN	2.2 $\mu$
CI10	2.2 $\mu$	4.7 $\mu$	2.2 $\mu$	4.7 $\mu$



TO BACK TERMINAL BOARD

1196	1197
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UG01 AUTO LIVE UNIT PB6704

U101(SAME AS 2878DG)  
UP CONVERTER UNIT PB7103X

U904A DEF BOARD PB7275X-1

U903 POWER BOARD PB7274H(28MW7DG)  
PB7274A(28MW7DB)

U904A DEF BOARD PB7275X-1