

Service Manual

Colour Television NORMAL / WIDE STEREO

CHASSIS : CP-820

MODEL : DTK-28A7Z ** / DTK-28B1Z **
 DTK-28W5Z ** / DTK-28B2Z **
 DTK-28A6Z ** / DTK-28G6Z **
 DTK-2880Z ** / DTK-28G7Z **
 DTK-28G8Z **

■ Specifications

	Normal	Wide
CRT	A66EAK071X44	A66EAK001X44
SYSTEM	PAL/SECAM-B/G,D/K,PAL-I/I',SECAM-L/L' NTSC-3.58/4.43 (Play back)	
Main Voltage	230V AC, 50Hz	
Power Consumption	Stand-by mode : 2.0Watts Normal operating mode : 120 Watts	
Sound Output	10 + 10 Watts, 10% THD at RF 60% mod. (1kHz)	
Speaker	12W 8ohm x 2 EA	
Antenna Impedance	75 ohm unbalanced input (Din Standard)	
Tuning System	Frequency Synthesize(FS) Tuning System	
Tuner	UV1316/A(Philips), DT5-BF18D(Partsnics), EL2782-105-B(Siel), TECC2949PG35W(S/S)	
Number of Program	100 programs	
Aux. Terminal	21 pin EURO-SCART jack (AV input, TV output, RGB input) 21 pin EURO-SCART jack (AV input, S-VHS input) RCA type AV input jack Headphone jack	
Remote Controller	R-22D06 with 2 "AAA" type batteries	
Teletext	TOP(5 Page memory) & FLOF(7 Page memory) - West option : English, German/Dutch/Flemish, French, Italian, Spanish/Portuguese, Swedish/Finnish/Danish, Hungarian, Rumanian, Turkish	
OSD Language	- West : English, German, French, Italian, Spanish, Netherlands, Swedish	

Caution

: In this Manual, some parts can be changed for improving. their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List)in Service Information Center(<http://svc.dwe.co.kr>)

DAEWOO ELECTRONICS Corp.

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

MAY 2003

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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 29-31kv at max beam current. The high voltage must not, under any circumstances, exceed 35kv. (33kv : SAMSUNG CRT)
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 board 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 10mm away from circuit board.
4. Keep wires away from high voltage or high temperature components.
5. This receiver must operate under AC230 volts, 50Hz. NEVER connect to DC supply or any other power or frequency.

■ PRODUCT SAFETY NOTICE

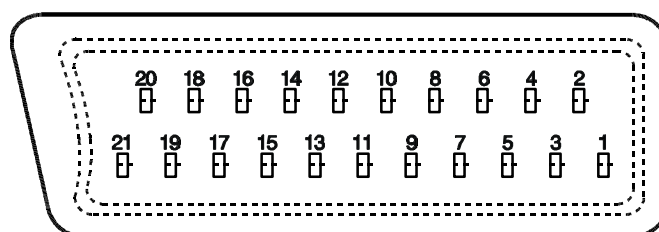
Many electrical and mechanical parts in this have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical compo-

nents having such features are identified designated symbol on the parts list.

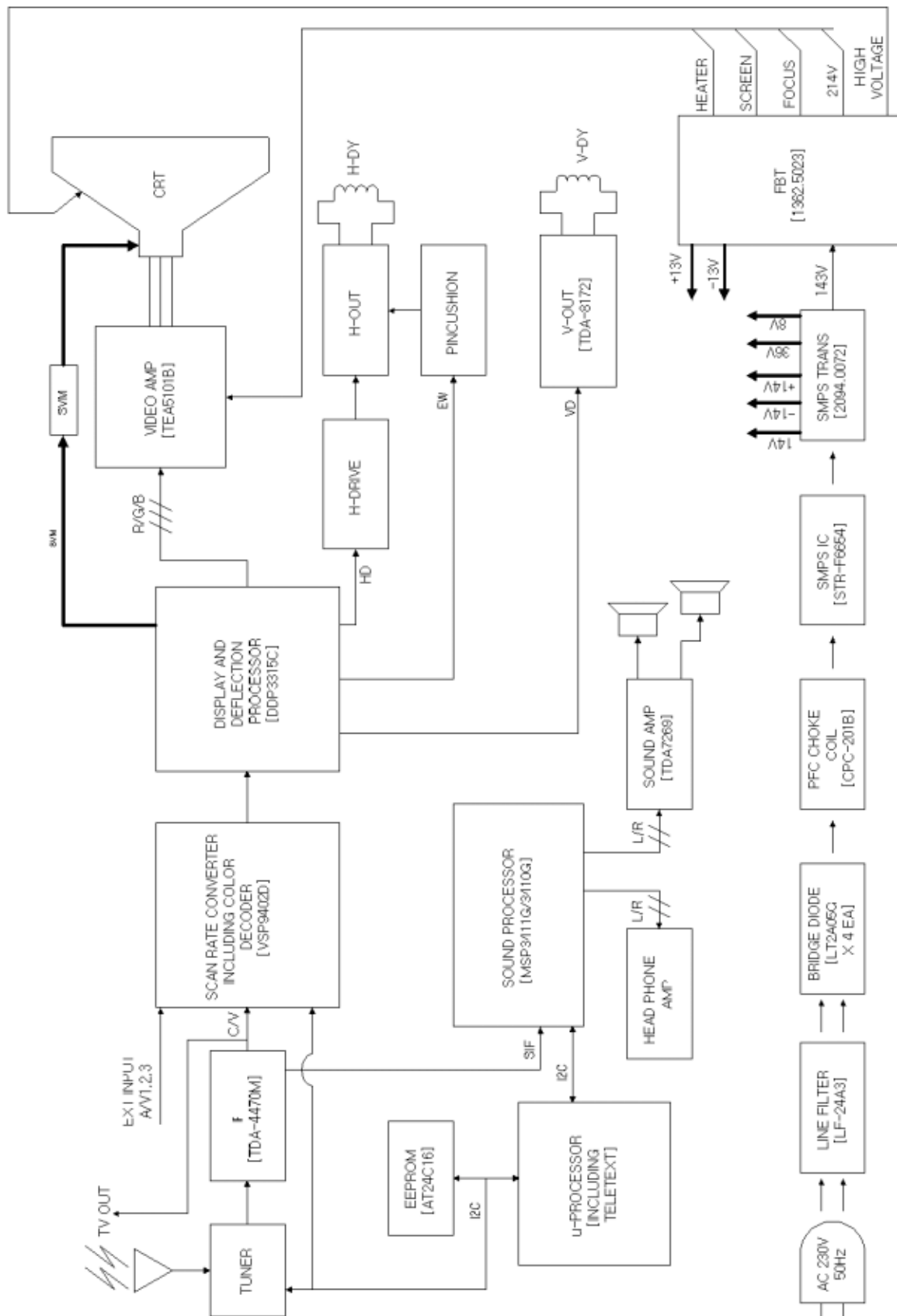
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY Radiation.

SPECIFICATIONS

PIN	Signal Designation	Matching Value
1	Audio Out (linked with 3)	0.5Vrms, Imp < 1 k Ω (RF 60% MOD)
2	Audio In (linked with 6)	0.5Vrms, Imp < 10 k Ω
3	Audio Out (linked with 1)	0.5Vrms, Imp < 1 k Ω (RF 60% MOD)
4	Audio Earth	
5	Blue Earth	
6	Audio in (linked with 2)	0.5Vrms, Imp < 10 k Ω (RF 60% MOD)
7	Blue in	0.7Vpp $\pm$ 2dB, Imp 75 Ω
8	Slow (Function) Switching	TV : 0-2V, PERI : 9.5 - 12V, Imp > 10 k Ω
9	Green Earth	
10	NC	
11	Green In	0.7Vpp $\pm$ 2dB, Imp 75 Ω
12	NC	
13	Red Earth	
14	Rapid(Blanking) Switching Earth	
15	Red In, C In	0.7Vpp $\pm$ 2dB, Imp 75 Ω
16	Rapid(Blanking) switching	Logic 0 : 0 - 0.4V, Logic 1 : 1 - 3V, Imp 75 Ω
17	Video Earth	
18	Rapid Blanking Earth	
19	Video Out	1Vpp $\pm$ 2dB, Imp 75 Ω
20	Video In, Y In	1Vpp $\pm$ 2dB, Imp 75 Ω
21	Common Earth	



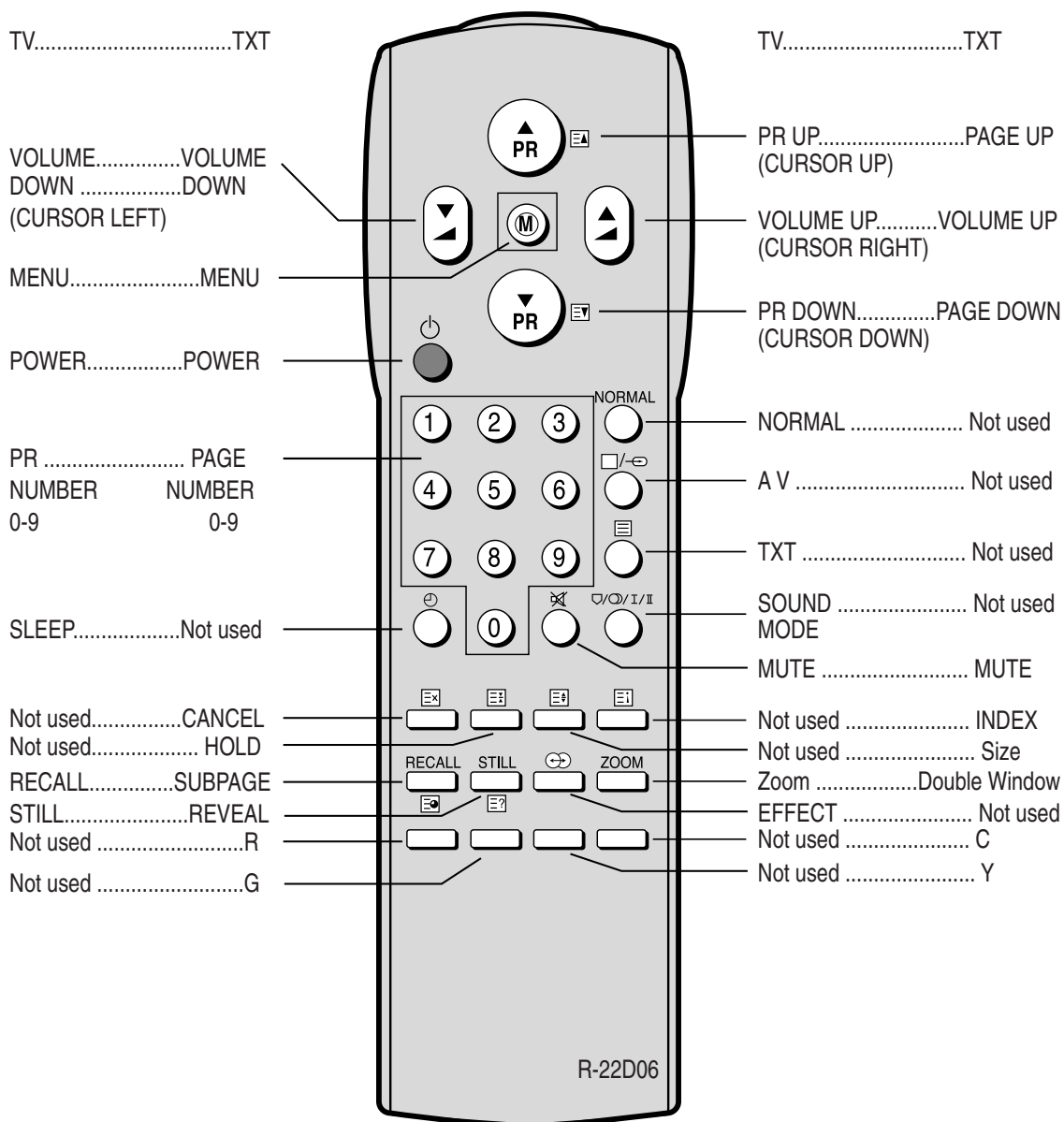
CIRCUIT BLOCK DIAGRAM



ALIGNMENT INSTRUCTIONS

■ User Remocon

1. R-22D06



* How to Enter the "Service Mode" with user remote.

- 1) Set the TV Pr 91
- 2) Sharpness "MIN" control.
- 3) Push the Red, Green, Menu buttons in regular sequence within 5 seconds after setting TV power off.
- 4) You can see the Menu of "service mode" on the screen.
- 5) The PR UP/DOWN buttons on the remote controller are used to move the selection bar up or down the Menus.
- 6) The VOL UP/DOWN buttons on the remote controller are used to adjust levels.
- 7) If you want to exit from "Service Mode" then power the TV off.

SVC	v1	V. Slope	-002	Tuner is	Phi	Osd Contrast	380
		V. Center	887	Flat Option	NO	Osd Bright	000
<u>CP-820</u>		V. Size	091	Svm SVG	020	Text Gain	NO
		S. Curve	035	Svm SVD	001	Tilt Option	NO
		H. Center	-325	Svm SVDEL	013	Transparent	NO
		H. Width	088	Svm SVCOR	012	Vertical angle	000
		EW. Para	-068	Bcl Thres	430	Vertical bow	000
		EW. Cor Top	015	Bcl Tc	250		
		EW. Cor Low	015	Bcl Gain	511		
		EW.Sym	-013	Nor1 Bright	038		
		R. Bias	330	Nor1 Cont	058		
		G. Bias	330	Nor1 Color	038		
		B. Bias	330	Nor1 Sharp	032		
		R. Drive	370	Nor1 Tint	032		
		G. Drive	370	Nor2 Bright	038		
		B. Drive	370	Nor2 Cont	038		
		G2 Adjust	000	Nor2 Color	038		
		Sub bright	000	Nor2 Sharp	032		
		Double TEXT	514	Nor2 Tint	032		
		Wide Option	NO	Dolby3411	NO		

- You can see the SVC Menu by OSD in TV set.

Alignment Instructions for CP-820 Chassis

1 PAGE				
CHASSIS	CP - 820			
MODEL	DTK-28A7ZZF	DTK-28A7ZLF	DTK-28W5ZZF	DTK-28W5ZLF
V. Slope	-002	-002	-002	-002
V. Center	887	887	035	035
V.Size	091	091	111	111
S.Curve	035	035	010	010
H.Center	-325	-325	-316	-316
H.Width	088	088	044	044
EW.Para	-068	-068	-059	-059
EW.Cor Top	015	015	004	004
EW.Cor Low	015	015	004	004
EW. Sym	-013	-013	-013	-013
R Bias	330	330	330	330
G Bias	330	330	330	330
B Bias	330	330	330	330
R Drive	370	370	370	370
G Drive	370	370	370	370
B Drive	370	370	370	370
G2 Adjust	000	000	000	000
Sub Bright	000	000	000	000
Double TEXT	514	514	514	514
Wide Option	NO	NO	YES	YES
2 PAGE				
Tuner Is	Phi	Phi	Phi	Phi
Flat Option	NO	NO	NO	NO
Svm SVG				
Svm SVD				
Svm SVDEL				
Svm SVCOR				
Bcl Thres	430	430	470	470
Bcl Tc	250	250	250	250
Bcl Gain	511	511	511	511
Nor1 Bright	038	038	038	038
Nor1 Cont	058	058	058	058
Nor1 Color	038	038	038	038
Nor1 Sharp	032	032	032	032
Nor1 Tint	032	032	032	032
Nor2 Bright	038	038	038	038
Nor2 Cont	038	038	038	038
Nor2 Color	038	038	038	038
Nor2 Sharp	032	032	032	032
Nor2 Tint	032	032	032	032
Dolby 3411	NO	YES	NO	YES
3 PAGE				
Osd Contrast	380	380	380	380
Osd Bright	000	000	000	000
Text Gain	NO	NO	NO	NO
Tilt Option	NO	NO	NO	NO
Transparent	NO	NO	NO	NO
Vertical angle	000	000	000	000
Vertical bow	000	000	000	000

ALIGNMENT INSTRUCTIONS

■ AFT

Standard B/G, D/K, I and L

- 1) Set a Signal Generator with
 - RF FREQUENCY = 38.9 MHz,
 - RF OUTPUT LEVEL = $80 \pm 5\text{dBuV}$
 - Pattern = Color Bar
 - System = PAL-B/G
- 2) Connect the Signal Generator RF Output to TP2 (Tuner IF Output).
There must be no signal input to the tuner.
- 3) Set the L103 to TP1(I101, #22) with DC Voltage to $2.5\text{V} \pm 0.1\text{V}$

■ RF AGC

- 1) Set a TV Signal Generator(e.g. PM5418)with
 - RF FREQUENCY : 503.25 MHz, CH 25
 - RF OUTPUT LEVEL : ① 60 dBuV(TECC2949PG35W:Samsung/DT5-BF18D:Partsnic)
② 60 dBuV(UV1316/A:Philips/EL2782/105-B-Siel)
 - Pattern = Color Bar(or Philips patten)
- 2) Connect the Signal Generator RF output to Tuner input terminal.
Connect a Oscilloscope probe(or Digital Multi-meter) to P101(Tuner AGC input).
- 3) Set the voltage level to ① $3.0\text{V} \pm 0.1\text{Vdc}$, ② $2.5\text{V} \pm 0.1\text{Vdc}$ by adjusting the RB02 (Variable Resistor).

■ SCREEN (G2)

- 1) Set a Pattern Generator with - RF Frequency : 210.25MHz (10CH)
 - Pattern : RETMA
- 2) Select the "G2" in Menu
- 3) And a Horizontal Line will appear on the screen.
- 4) Adjust the SCREEN VOLUME on FBT barely to see the Horizontal Line.
- 5) Press the PR UP/DOWN keys to finish the SCREEN adjustment.

■ FOCUS

- 1) Apply a RETMA PATTERN signal.
- 2) Adjust the FOCUS VOLUME on FBT to obtain optimal resolution.

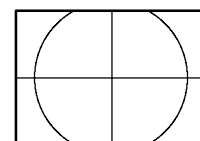
■ GEOMETRY

1. VERTICAL SLOPE (Fixed : Adjust if need be)

- 1) Apply a RETMA PATTERN Signal.
- 2) Set the TV to Normal I mode.
- 3) Adjust the higher semicircle and the lower semicircle to be the same, with the V.Slope by volume Up/Down keys.

2. VERTICAL CENTER

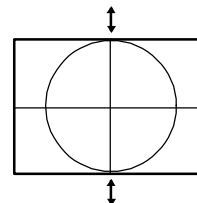
- 1) Apply a RETMA PATTERN Signal.
- 2) Set the TV to Normal I mode.
- 3) Adjust the center of the picture with the V.Center by volume Up/Down keys.



3. VERTICAL SIZE

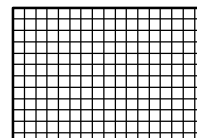
* The VERTICAL CENTER adjustment has to be done in advance.

- 1) Apply a RETMA PATTERN Signal.
- 2) Set the TV to Normal I mode.
- 3) Adjust the VERTICAL SIZE of the picture with the select V.size by volume UP/DOWN keys.



4. VERTICAL S-CORRECTION (Fixed : Adjust if need be)

- 1) Apply a CROSSHATCH PATTERN Signal.
- 2) Adjust the S-CORRECTION to obtain the same distance between horizontal lines with the S.Curve by volume UP/DOWN keys.



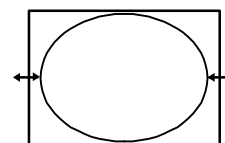
5. HORIZONTAL CENTER

- 1) Apply a RETMA PATTERN Signal.
- 2) Adjust picture centering with the select H.Center by volume UP/DOWN keys.

EW

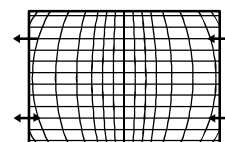
1. WIDTH

- 1) Apply a RETMA PATTERN Signal.
- 2) Adjust the horizontal width to make a perfect circle with the select H.Width by volume UP/DOWN keys.



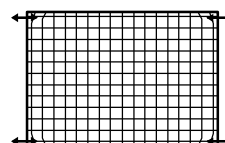
2. PARA

- 1) Apply a CROSSHATCH PATTERN Signal.
- 2) Adjust the vertical line to straight with the select E.W Para by volume UP/DOWN keys.



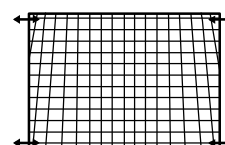
3. CORNER (Fixed : Adjust if need be)

- 1) Apply a CROSSHATCH PATTERN Signal.
- 2) Adjust the vertical line to straight with the select EW.Cor T by volume UP/DOWN keys.



4. SYMMETRY (Fixed : Adjust if need be)

- 1) Apply a CROSSHATCH PATTERN Signal.
- 2) Adjust the symmetrical balance to be suitable with the select EW Sym by volume UP/DOWN keys.



ALIGNMENT INSTRUCTIONS

■ WHITE BALANCE

* The SCREEN alignment must proceed this procedure.

1. Apply a Black & White pattern signal.
2. Call up the Service menu.
3. Set the reference R.
4. Menu Reference LOW (288, 301 : 30Cd/ m^2)
HIGH (288, 301 : 100Cd/ m^2)
5. Adjust G, B Gain with select Menu G,B of BIAS, DRIVE of select Menu so that R, G, B Bars are on the center position of the analog meter. If R Analog meter is not on center, control the Brightness +/- of user Remocon so as R Analog meter to be on the center position.

■ SUB BRIGHT

1. Pattern : Retma
2. Adjust the SUB BRIGHT with the select Sub Bri by volume UP/DOWN keys.
so that only H-Center parts of picture can be seen.

■ DOUBLE TEXT CENTER

1. Pattern : Pattern RED
2. Select Menu
3. Select DT in SVC menu time to see the Double Text Picture.
(Left : RF Picture, Right : Text Picture)
4. Change the Double Text control keys volume UP/DOWN keys so that the left edge of text picture concur with the right edge of RF picture.

■ WIDE MODE

1. Locate the cursor on 'Wide' in SVC Menu.
2. 'Yes' changes the display to 16:9 mode.
3. 'No' change the display to 4:3 mode.

■ TUNER SELECTION

1. DWE : Partsnic Tuner
2. PHI : Philips Tuner
3. SIE : Siel Tuner

■ FLAT MODE

1. Locate the cursor on 'FLAT' in SVC Menu.
2. 'Yes' changes the display to FLAT CRT mode.
3. 'No' change the display to Normal CRT mode.

ALIGNMENT INSTRUCTIONS

■ SVM (Scan Velocity Modulation)

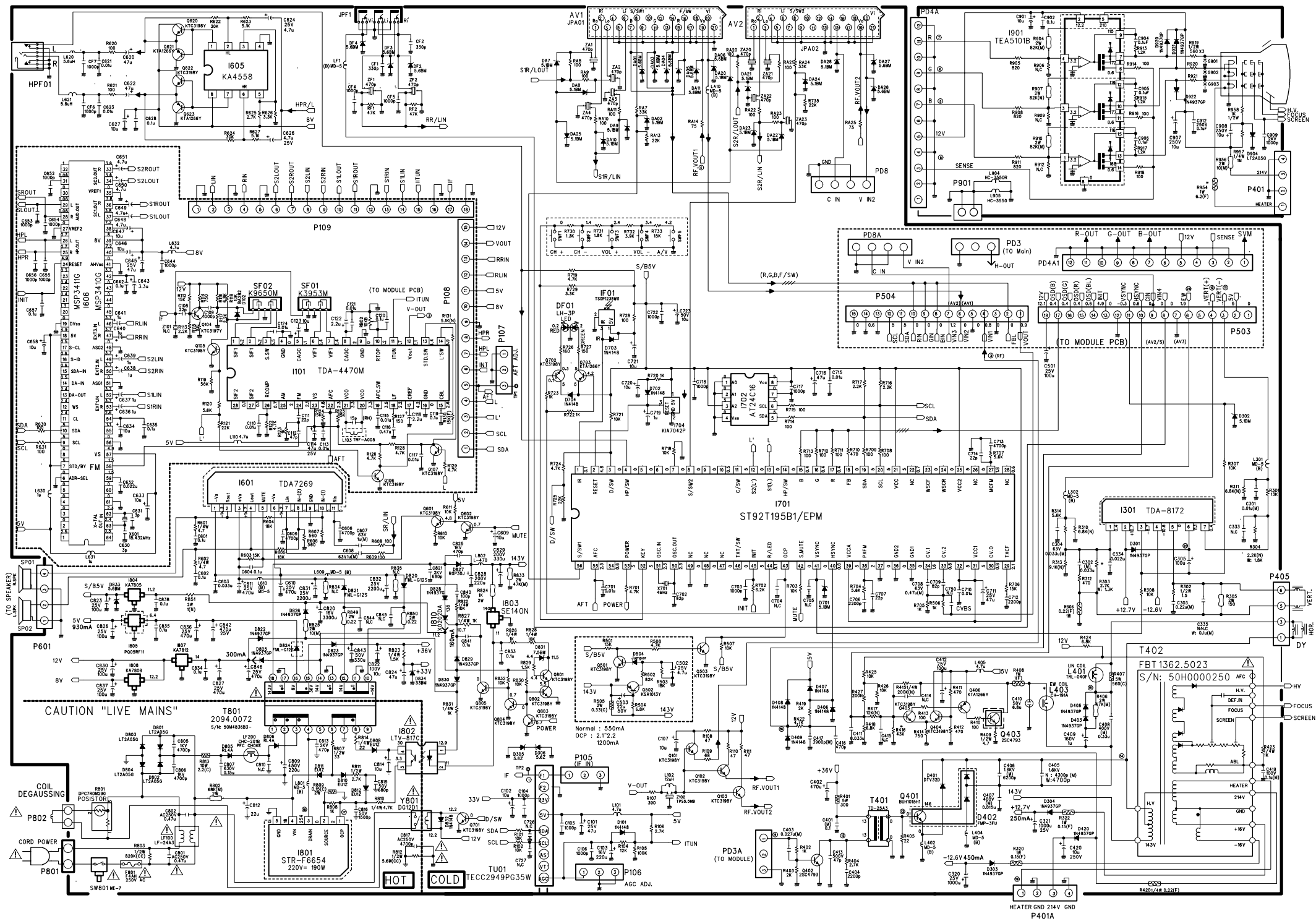
1. SVM SVG : SVM Gain
2. SVM SVD : SVM Differentiator delay (0 = filter off)
3. SVM SVDEL : Delay of SVMOUT in steps of 12.5nS
2. SVM SVCOR : SVM coring value

■ BCL (Beam Current Limit)

1. BCL Thres : BCL threshold current
2. BCL TC : BCL time constant
3. BCL Gain : BCL loop Gain

SCHEMATIC DIAGRAM

CP-820 Schematic Diagram



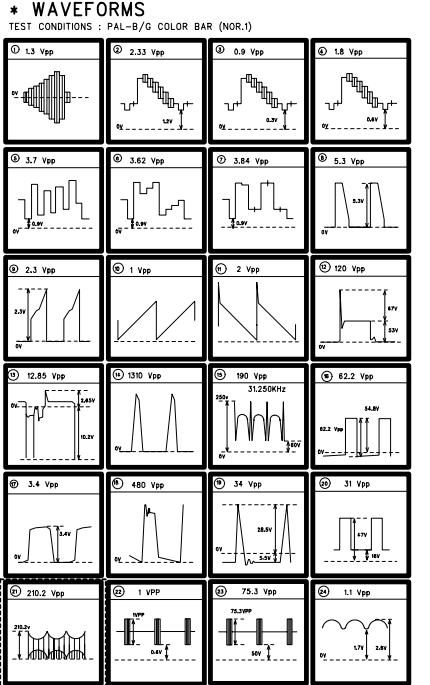
NOTE:
1. RESISTANCE IS SHOWN IN OHM. K=1000, M=1000000
2. UNLESS OTHERWISE NOTED IN SCHEMATIC ALL CAPACITOR VALUES ARE EXPRESSED IN μ F
3. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND USING A COLOR BAR SIGNAL WITH ALL CONTROLS AT NORMAL LINE 230V AC VOLTAGE READINGS SHOWN ARE NORMAL VALUES AND MAY VARY $\pm 20\%$ EXCEPT H.V. 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.

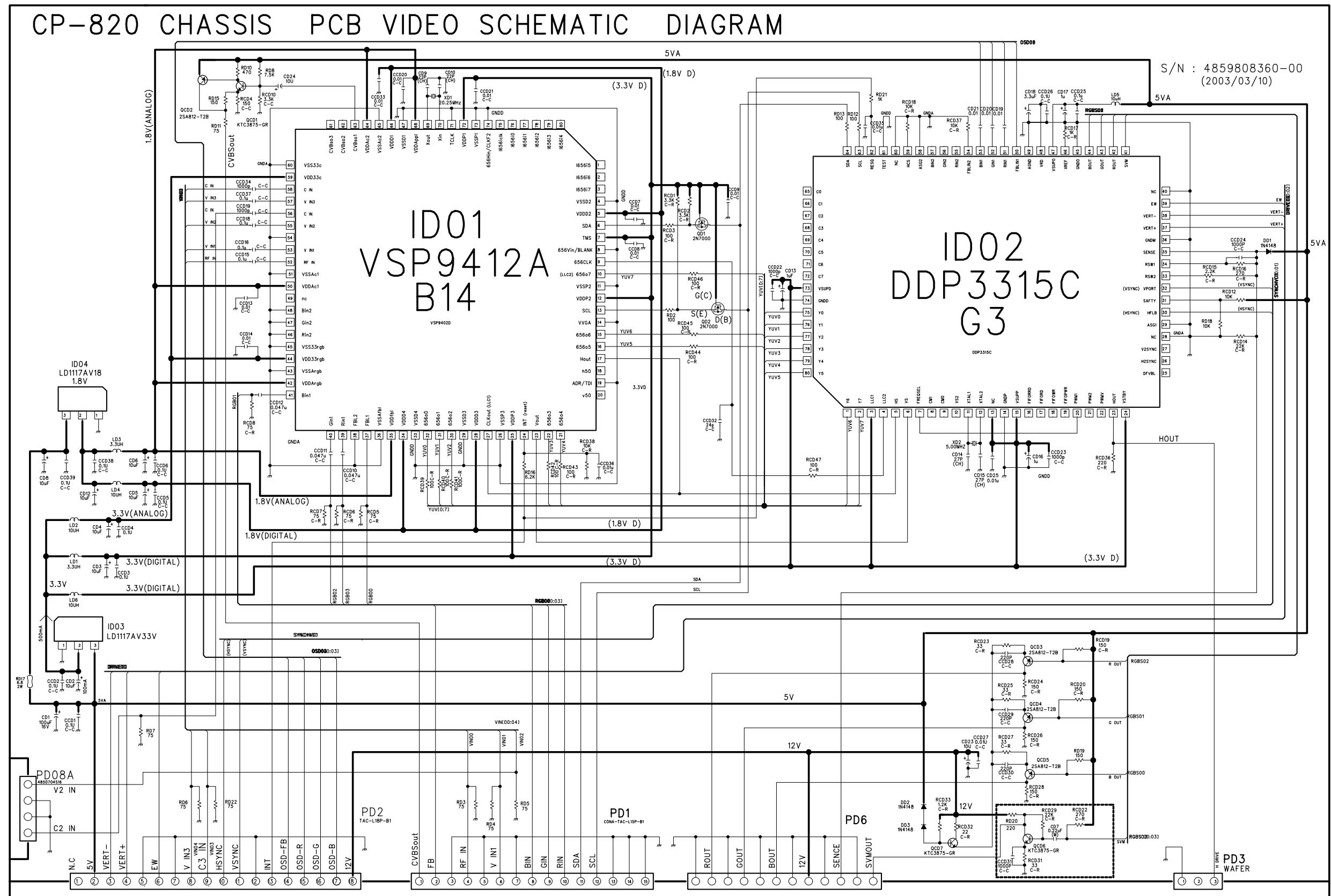
RESISTOR	CAPACITOR	COIL
CARBON FILM	ELECTRO	PLANKING
R IN-DOOR	CERAMIC	CHOKE
CARBON COMP	CERAMIC CH	BEAD
FUSIBLE	ELECTRO NONPOLAR	
CEMENT	MYLAR	
R METAL FILM		

LOC.	NAME	NORMAL DTK-28A7Z**	WIDE DTK-28W5Z**
R303	R METAL FILM	1/4W 2.7K OHM F	1/4W 1.3K OHM F
R304	R METAL FILM	2.2K OHM	1.8K OHM
R305	R METAL FILM	2W 150	
R954	R FUSIBLE	1W 6.2 OHM(F)	
L403	EW CHOKE	CH-191A	
L401	LN COIL	TRL-040 F	
C405	C-MYLAR	1.6KV 4300P	1.6KV 4700P
C406	C-MYLAR	1.6KV 8200P	
C407	C-MYLAR	400V 0.022 μ	
C408	C-MYLAR	400V 0.33 μ	
C411	C CERA SEMI	0.033 μ	
C335	C-MYLAR	DELET	100V 0.1MF

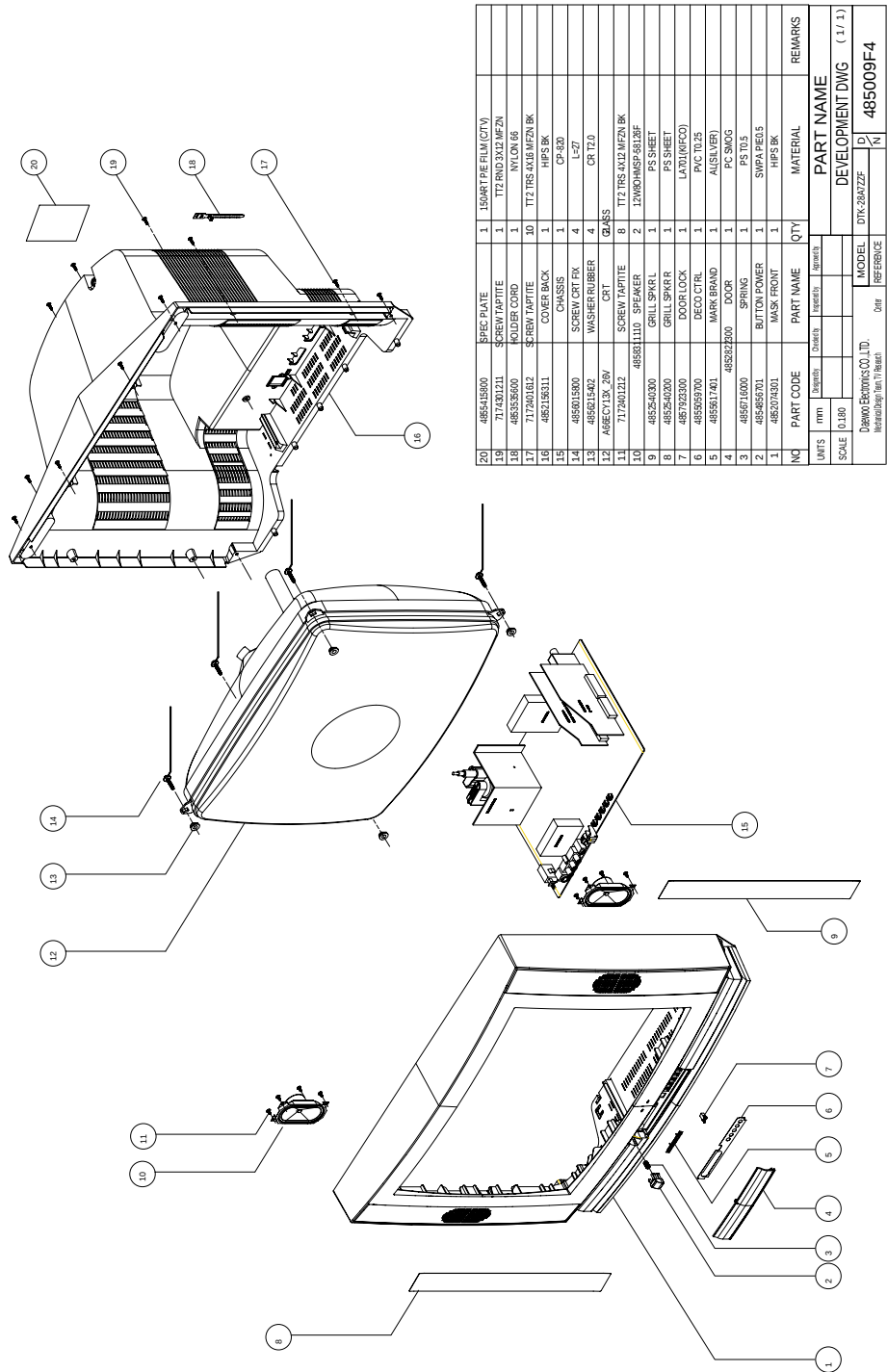


S/N : 4859806293-00
PRODUCT SAFETY NOTE :
THE COMPONENTS MARKED WITH ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET AND SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL OR SPECIFIED ONE IN THE PART LIST. DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

SCHEMATIC DIAGRAM



EXPLODED VIEW



EXPLODED VIEW

REV

LIST OF MODIFICATION

REASON OF MODIFICATION

DATE

NAME

APPR

A

2

15

16

17

18

19

20

21

22

23

23

4858213500

BAG INSTRUCTION

1

L.D.P.E. 10.05x250x400

22

4858215600

BAG P.E.

1

PE 10M 10.5x160x270

21

4858038900

BOX CARTON

1

DM-3

20

4858196500

PAD

1

EPS 28N5

NO	PART CODE	PART NAME	QTY	MATERIAL	REMARKS
19	485415800	SPEC PLATE	1	150ART P/E FILM (C/TV)	
18	9794602700	CLAMP CORD	1	NYLON 66 BLK 5280N	
17	7174300811	SCREW TAPPIITE	1	IT2 RND 3X8 MFZN	
16	7172401612	SCREW TAPPIITE	6	IT2 TRS 4X16 MFZN BK L=27	
15	4856015800	SCREW_CRT_FIX	4	CR T2.0	
14	4856215402	WASHER RUBBER	4	CR T2.0	
13		CRT	1	28" WIDE	
12	7172401212	SCREW TAPPIITE	8	EUROPE CHASSIS	
11	4858311110	SPEAKER	2	IT2 TRS 4X12 MFZNCK	
10	4854934001	MARK BRAND	1	ABS BK	
9	4856617401	DOOR LOCK	1	AL (SILVER)	
8	4855059901	DOOR	1	PVC T028	
7	4857923500	DOOR CTRL	1	LAYDI(K/PCD)	
6	485222601	DOOR	1	PC GY	
5	4854869511	SWITCH	1	SWITCH	
4	4852158911	COVER BACK	1	HIPS GY	
3	4852077111	COVER FRONT	1	HIPS GY	
2		MASK FRONT	1	HIPS GY	
1					

UNITS

mm

Described by

Inspected by

SCALE

0.165

1:1

MODEL

DM-28MZF

REFERENCE

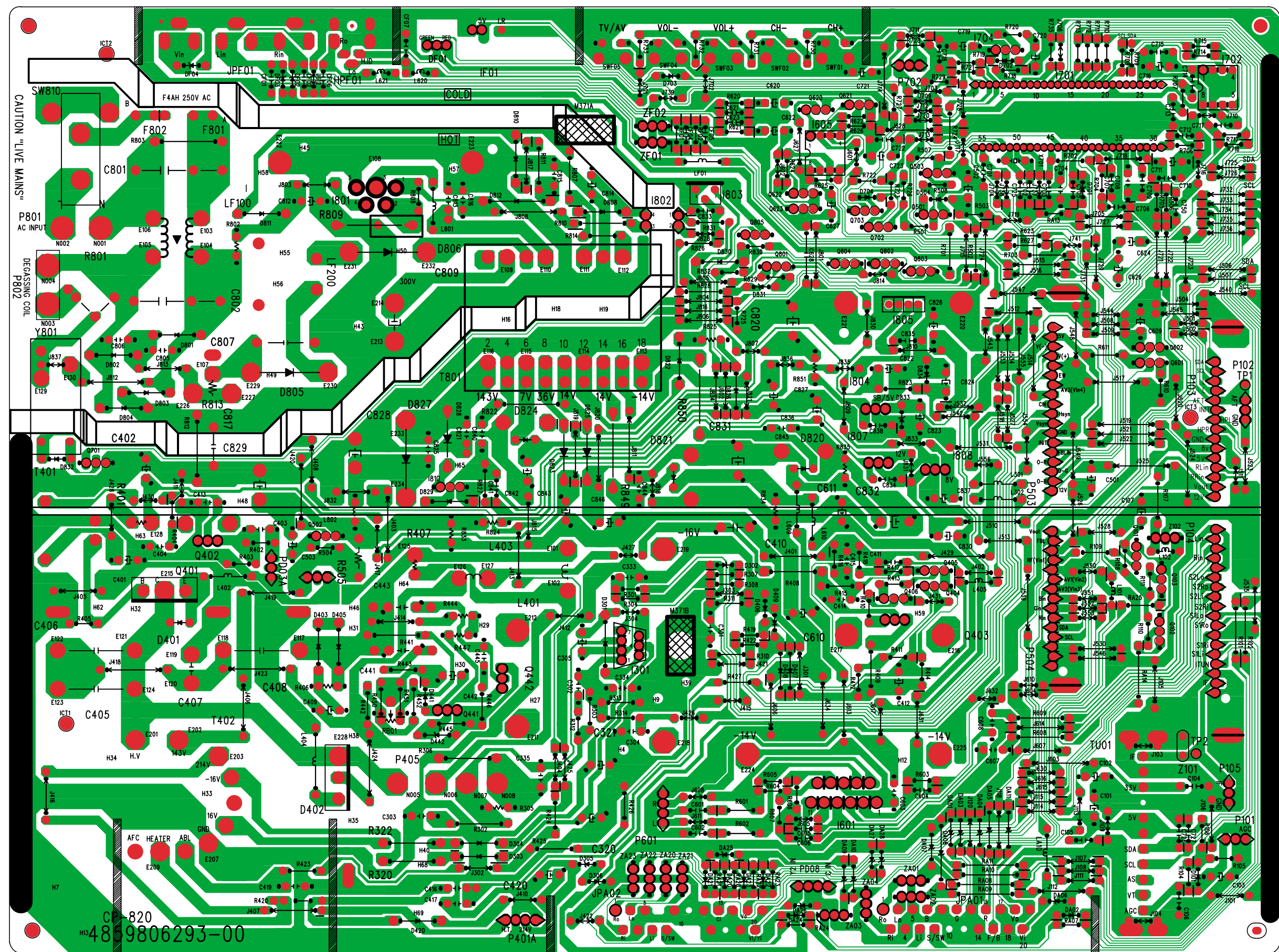
CP-820

REMARKS

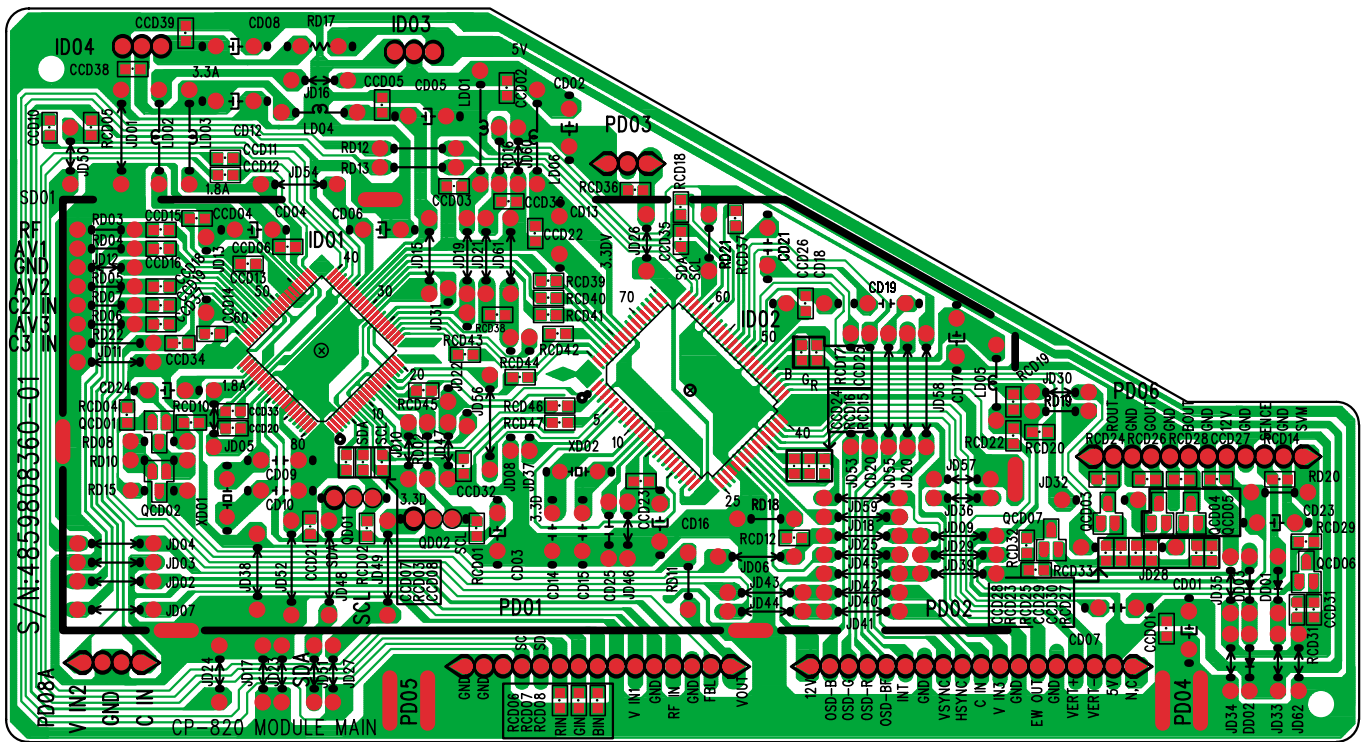
DEVELOPMENT DWG

48500CK4

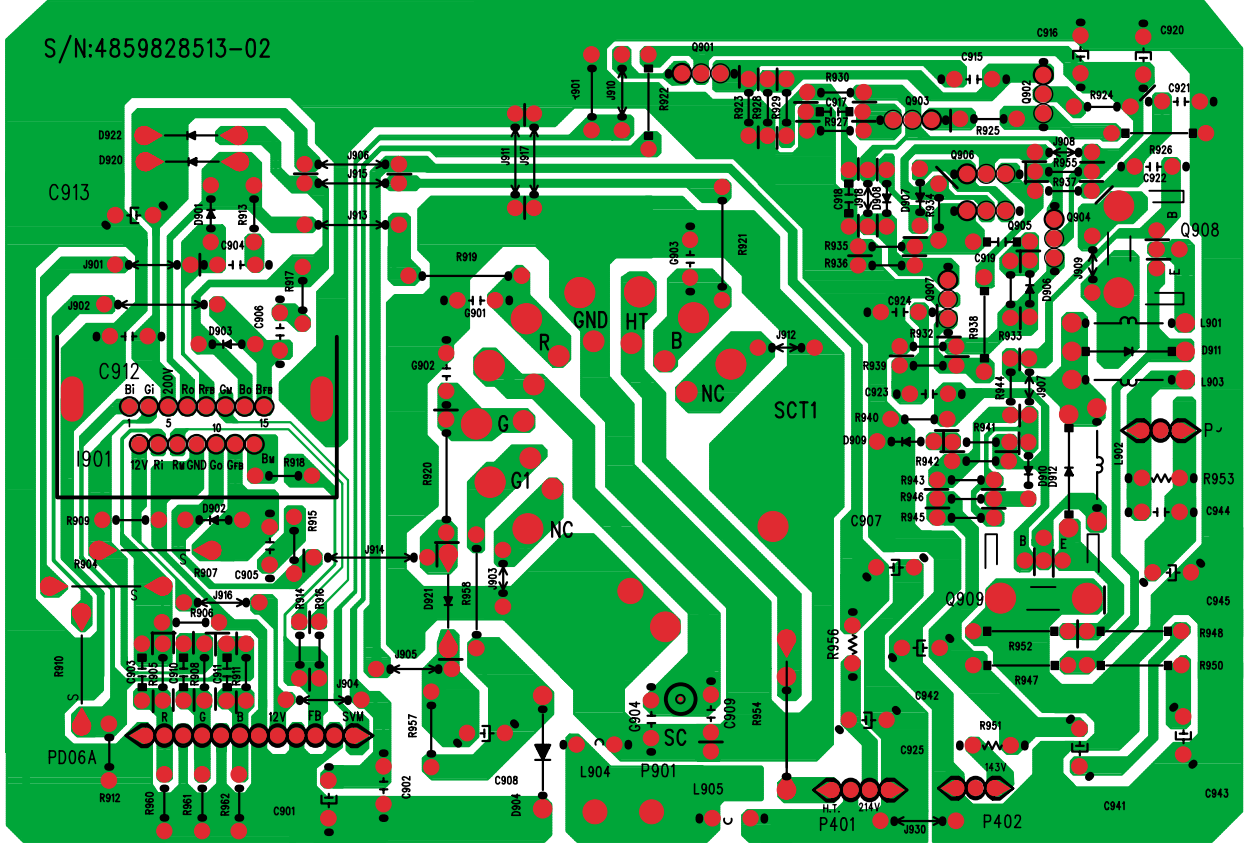
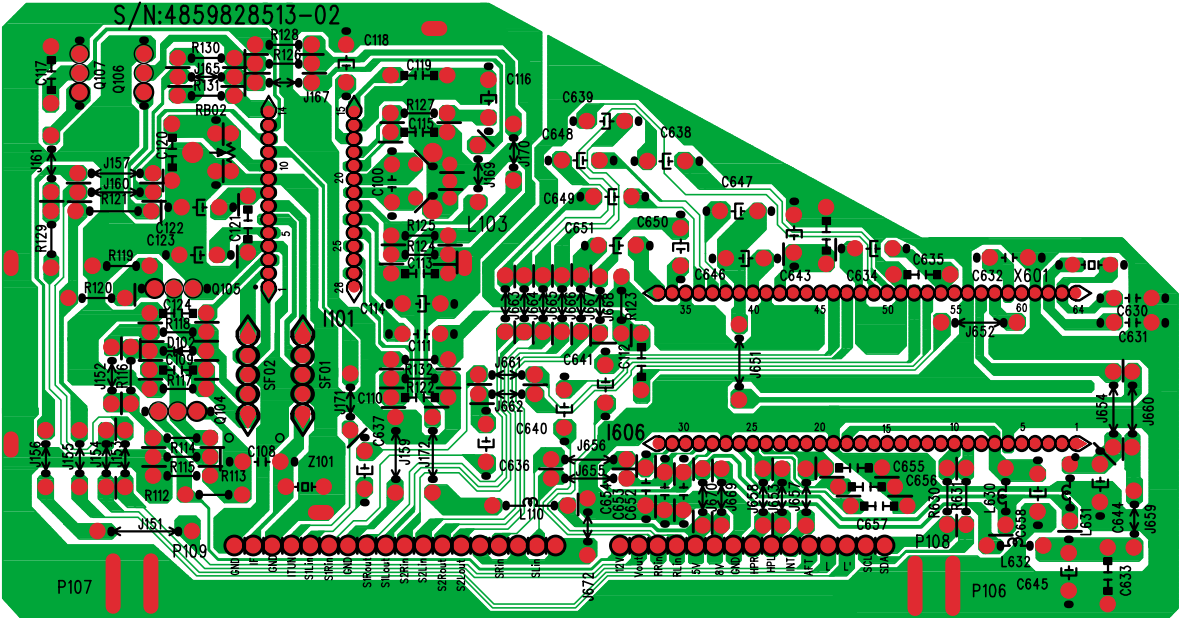
PRINTED CIRCUIT BOARD



PRINTED CIRCUIT BOARD



PRINTED CIRCUIT BOARD



SERVICE PARTS LIST

Caution: In this Service Manual, some parts can be changed for improving, their performance without notice in the parts list. So, If you need the latest parts information, please refer to PPL(Parts Price List) in Service information Center(<http://svc.dwe.co.kr>)

Caution ⑧ is a recommendable part for stock.

△ is safety component, so it must be used the same component.

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
ZZ100	48B3822D06	TRANSMITTER REMOCON	R-22D06 (AAA)	⑧	C907	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP	
ZZ110	PTACPWD664	ACCESSORY AS	DTK-28A7ZZ		C908	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP	
00010	4850Q00810	BATTERY	R6P/LN		C909	CCXB3D102K	C CERA	2KV B 1000PF K (TAPPING)	
00020	48586699K1	MANUAL INSTRUCTION	DTQ-29G1		C925	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP	
M821	4858213801	BAG INSTRUCTION	L.D.P.E T.0.05X250X400		ZZ200	PTU1JBD664	PCB UNION M-10 AS	DTK-28A7ZZ	
ZZ120	PTBCSHD664	COVER BACK AS	DTK-28A7ZZ		P401	485923172S	CONN WAFER	YW025-04 (STICK)	
M211	4852156311	COVER BACK	HIPS BK		R904	RS02Z823JS	R M-OXIDE FILM	2W 82K OHM J SMALL	
M541	4855415800	SPEC PLATE	150ART P/E FILM (C/TV)		R907	RS02Z823JS	R M-OXIDE FILM	2W 82K OHM J SMALL	
M781	4857817611	CLOTH BLACK	FELT 200X20X0.7		R910	RS02Z823JS	R M-OXIDE FILM	2W 82K OHM J SMALL	
ZZ130	PTPKCPD664	PACKING AS	DTK-28A7ZZ		R954	RS01Z629J-	R M-OXIDE FILM	1W 6.2 OHM J (TAPPING)	
10	6520010100	STAPLE PIN	AUTO W65		ZZ200	PTU1JRD664	PCB UNION RADIAL AS	DTK-28A7ZZ	
M681	4856812400	BAND PP AUTO	T1.1XW17mmXL770M		C100	CXRH1H150J	C CERA	RH 50V 15PF J (TAPPING)	
M801	4858055800	BOX CARTON	SW-4		C108	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)	
M811	4858193700	PAD	EPS 28A7		C111	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)	
M822	4858215601	BAG P.E	PE FOAM 10.5x1600x1270		C114	CEXF1E470C	C ELECTRO	25V RUS 47MF (5X11) TP	
ZZ131	58G0000125	COIL DEGAUSSING	DC-2702F	△	C116	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
ZZ132	48519A5510	CRT GROUND NET	2801H-1015-2P		C118	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
ZZ140	PTCACAD664	CABINET AS	DTK-28A7ZZ		C122	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP	
M211A	7172401612	SCREW TAPPTITE	TT2 TRS 4X16 MFZN BK		C123	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
M281	4852822300	DOOR	PC SMOG		C630	CXCH1H309C	C CERA	50V CH 3PF C	
M352	4853535600	HOLDER CORD	NYLON 66		C631	CXCH1H309C	C CERA	50V CH 3PF C	
M391A	7172401612	SCREW TAPPTITE	TT2 TRS 4X16 MFZN BK		C632	CCXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)	
M481	4854856701	BUTTON POWER	HIPS BK		C634	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
M481A	4856716000	SPRING	SWPA PIE0.5		C636	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
M501	4855059700	DECO CTRL	PVC T0.25		C637	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
M561	4855617401	MARK BRAND	AL (SILVER)		C638	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
M681	4856812001	TIE CABLE	NYLON66 DA100		C639	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
M683	4856816300	CLAMP WIRE	NYLON 6 (V0)		C640	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
M791	4857923300	DOOR LOCK	LA701(KIFCO)		C641	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
P405	4850704N07	CONNECTOR	SE100J+172792+USW=500		C643	CEXF1H339V	C ELECTRO	50V RSS 3.3MF (5X11) TP	
SP01A	7172401212	SCREW TAPPTITE	TT2 TRS 4X12 MFZNBK		C644	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
SP02A	7172401212	SCREW TAPPTITE	TT2 TRS 4X12 MFZNBK		C645	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
V901	4859625760	CRT	A66EAK071X54	⑧ △	C646	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
V901A	4856215402	WASHER RUBBER	CR T2.0		C647	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
V901B	4856015800	SCREW CRT FIX	L=27		C648	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
ZZ200	PTFMSJD664	MASK FRONT AS	DTK-28A7ZZ	⑧	C649	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
M201	4852074301	MASK FRONT	HIPS BK		C650	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
M251	4852540200	GRILL SPKR R	PS SHEET		C651	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
M252	4852540300	GRILL SPKR L	PS SHEET		C652	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)	
ZZ201	PTSPPPWD664	SPEAKER AS	DTK-28A7ZZ	⑧	C653	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)	
P601A	4850704S30	CONNECTOR	YH025-04+YRT205+ULW700600		C654	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)	
SP01	4858311110	SPEAKER	12W 8 OHM SP-58126F		C658	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
SP02	4858311110	SPEAKER	12W 8 OHM SP-58126F		C901	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
ZZ202	PTU1MSD664	PCB UNION-1 MANUAL AS	DTK-28A7ZZ		C902	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)	
10	2193102005	SOLDER BAR	SN:PB=63:47 S63S-1320		C904	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)	
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M		C905	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)	
I101	1TDA4470M-	IC IF	TDA4470-M		C906	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)	
I606	1MSP3410V3	IC SOUND PROCESSOR	MSP3410G-PP-B8-V3	⑧	C912	CMXL2E104K	C MYLAR	250V MEU 0.1MF K	
I901	PTB2SW5403	HEAT SINK ASS'Y	1TEA5101B- + 7174300811		G901	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
I901	1TEA5101B-	IC VIDEO AMP	TEA5101B	⑧	G902	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
I901A	4857025403	HEAT SINK	AL050P-H24 T=2		G903	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
I901B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		L904	58C0000116	COIL BEAD	HC-3550R	
L103	58E0000041	COIL AFT	TRF-A005		L905	58C0000116	COIL BEAD	HC-3550R	
P106	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)		Q104	TKTC3197-	TR	KTC3197 (TP)	
P107	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)		Q105	TKTC3198Y-	TR	KTC3198Y	
P108	4859279520	CONN WAFER	TAC-L15P-A3 (ANGLE)		Q106	TKTC3198Y-	TR	KTC3198Y	
P109	4859279820	CONN WAFER	TAC-L18P-A3 (ANGLE)		Q107	TKTC3198Y-	TR	KTC3198Y	
P901	4859238620	CONN WAFER	YPW500-02		R956	RN02B100JS	R METAL FILM	2W 10 OHM J SMALL	
PD06A	4850712N02	CONNECTOR	YH025-12+YBNH250+USW=500		RB02	RV5426103P	R SEMI FIXED	ENV-DJAA03B14 10K OHM B	
SCT1	4859302930	SOCKET CRT	ISHS-09S	△	X601	5XEX18R43E	CRYSTAL QUARTZ	HC-49/U 18.432MHZ 30PPM TP	
SF01	5PK3953M-	FILTER SAW	K3953M		ZZ200	PTU1JAD664	PCB UNION AXIAL AS	DTK-28A7ZZ	
SF02	5PK9650M-	FILTER SAW	K9650M		10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
ZZ200	PTU1JOD664	PCB UNION RHU AS	DTK-28A7ZZ		20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M	

SERVICE PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
A001	4859828513	PCB UNION	165X195(330X246/2) DIB		L110	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
C109	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		L630	5CPZ109M02	COIL PEAKING	1UH M (AXIAL 3.5MM)	
C110	CCZF1H103Z	C CERA	50V F 0.01MF Z		L631	5CPZ109M02	COIL PEAKING	1UH M (AXIAL 3.5MM)	
C112	CZSL1H470J	C CERA	50V SL 47PF J (AXIAL)		L632	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
C113	CCZF1H103Z	C CERA	50V F 0.01MF Z		R112	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
C115	CCZF1H103Z	C CERA	50V F 0.01MF Z		R113	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
C117	CCZF1H103Z	C CERA	50V F 0.01MF Z		R114	RD-AZ751J-	R CARBON FILM	1/6 750 OHM J	
C119	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		R115	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
C120	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		R116	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
C121	CCZF1H103Z	C CERA	50V F 0.01MF Z		R117	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
C124	CCZF1H103Z	C CERA	50V F 0.01MF Z		R118	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
C633	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		R119	RD-AZ563J-	R CARBON FILM	1/6 56K OHM J	
C635	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		R120	RD-AZ562J-	R CARBON FILM	1/6 5.6K OHM J	
C642	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		R121	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
C655	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		R122	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
C656	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		R123	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
C657	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		R124	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
D102	DBA282—	DIODE	BA282		R125	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
D904	DLT2A05G—	DIODE	LT2A05G (TP)		R126	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
D920	D1N4937G—	DIODE	1N4937G (TAPPING)		R127	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
D921	D1N4937G—	DIODE	1N4937G (TAPPING)		R128	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
D922	D1N4937G—	DIODE	1N4937G (TAPPING)		R129	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
J151	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R130	RN-AZ1502F	R METAL FILM	1/6 15K OHM F	
J152	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R131	RN-AZ5101F	R METAL FILM	1/6 5.1K OHM F	
J153	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R630	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J154	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R631	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J155	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R905	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
J156	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R908	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
J157	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R911	RD-AZ821J-	R CARBON FILM	1/6 820 OHM J	
J159	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R913	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
J160	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R914	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J161	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R915	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
J165	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R916	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J167	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R917	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
J169	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R918	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J170	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R919	RD-2Z561J-	R CARBON FILM	1/2 560 OHM J	
J171	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R920	RD-2Z561J-	R CARBON FILM	1/2 560 OHM J	
J172	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R921	RD-2Z561J-	R CARBON FILM	1/2 560 OHM J	
J651	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R957	RD-4Z105J-	R CARBON FILM	1/4 1M OHM J	
J652	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R958	RD-2Z102J-	R CARBON FILM	1/2 1K OHM J	
J653	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		Z2290	PTMPMSD664	PCB MAIN MANUAL AS	DTK-28A7ZZ	
J654	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		10	2193102005	SOLDER BAR	SN:PB-63:47 S63S-1320	
J655	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M	
J656	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		30	2291050616	FLUX SOLDER	JS-64T3	
J657	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		40	2291050301	FLUX SOLVENT	IM-1000	
J658	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C405	CMYH3C432J	C MYLAR	1.6KV BUP 4300PF J	
J659	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C406	CMYH3C622J	C MYLAR	1.6KV BUP 6200PF J	
J660	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C407	CMYE2J153J	C MYLAR	630V PU 0.015MF J	
J661	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C408	CMYE2G334J	C MYLAR	400V PU 0.33MF J	
J662	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C410	CEYD1H689W	C ELECTRO	50V RHD 6.8MF (16X35.5)	
J663	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C801	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVSNDF/SV)+Q/O	△
J664	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C802	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVSNDF/SV)+Q/O	△
J665	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C807	CMYF2J154J	C MYLAR	630V MPP 0.15MF J	
J666	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C809	CEYD2W221D	C ELECTRO	450V FHS 220MF (25X50)	
J667	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C817	CH18FE472M	C CERA AC	AC400V 4700PF M U/C/V	Ⓡ
J668	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C828	CEYE2D221E	C ELECTRO	200V RM 220MF (18X35.5)	
J669	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		C829	CEYE2D331E	C ELECTRO	200V RM 330MF	
J670	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D401	DDTV32D—	DIODE	DTV32D	
J672	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D805	DRL4A015—	DIODE	RL4A-015-308	△
J901	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D806	DRL4A015—	DIODE	RL4A-015-308	△
J902	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D820	DFMLG12S—	DIODE	FML-G12S	
J904	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D821	DFMLG12S—	DIODE	FML-G12S	
J905	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D824	PTP2SW6900	HEAT SINK ASS'Y	DFMLG12S— + 7174300811	
J906	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		00001	DFMLG12S—	DIODE	FML-G12S	Ⓡ
J913	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		0000A	4857026900	HEAT SINK	AL EX	
J914	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
J915	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		D827	DRGP30J—	DIODE	RGP30J	
J916	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		DF01	4858900002	HOLDER LED ASSY	LH-3P	
J930	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		F801	5FSCB4022R	FUSE CERA	SEMKO F4AH 4A 250V MF51	Ⓡ △

SERVICE PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
HPF01	4859102130	JACK EARPHONE	YSC-1537		T801 6A°	50M4936B3-	TRANS SMPS	2094.0072	Ⓡ ⚠
I301	PTC2SW8218	HEAT SINK ASS'Y	1TDA8172— + 7174300811		TU01 6A°	4859722630	TUNER VARACTOR	TECC2949PG35W	Ⓡ
00001	1TDA8172—	IC V-OUT	TD8172	Ⓡ	Y801 °	5SC0101003	SW RELAY	DG12D1-Q(M)-II 1C-1P	⚠
0000A	4857028218	HEAT SINK	AL EX BK		Z102	5PYXT5R5MB	FILTER CERA	XT 5.5MB	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		ZZ200	PTMP30D664	PCB MAIN (RHU) AS	DTK-28A7ZZ	
I601	PTA2SW8224	HEAT SINK ASS'Y	1TDA7269— 7174300811		C320	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP	
00001	1TDA7269—	IC AUDIO	TDA7269	Ⓡ	C321	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP	
0000A	4857028224	HEAT SINK	AL EX		C402	CEXF1H471V	C ELECTRO	50V RSS 470MF (13X20) TP	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		C416	CCXB3D471K	C CERA	2KV B 470PF K (TAPPING)	
I605	1KA4558—	IC AMP	KA4558	Ⓡ	C420	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP	
I701	1S195EPM-	IC MICOM OTP	ST92T195B1/EPM	Ⓡ	C610	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
I702	1AT24C16PC	IC	AT24C16-10PC		C611	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
I801	PTA2SW8200	HEAT SINK ASS'Y	1STRF6654- + 7174301011		C813	CCXB3D471K	C CERA	2KV B 470PF K (TAPPING)	
00001	1STRF6654-	IC SMPS	STR-F6654	Ⓡ ⚠	C820	CEXF1C332V	C ELECTRO	16V RSS 3300MF (16X25) TP	
0000A	4857028200	HEAT SINK	AL EX BK		C821	CBXB3D102K	C CERA SEMI	2KV BL(N) 1000PF K (T)	
0000B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN		C827	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
I802	1KP1010C—	IC PHOTO COUPLER	KP-1010C	⚠	C831	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP	
I803	1DP142—	IC ERROR AMP	DP142	Ⓡ ⚠	C832	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP	
I804	1KA7805—	IC REGULATOR	KA7805	Ⓡ	C836	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
I805	PTA2SW7720	HEAT SINK ASS'Y	1K78R05— + 7174300811		C842	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
00001	1K78R05—	IC REGULATOR	KIA78R05PI		C843	CEXF1H331V	C ELECTRO	50V RSS 330MF (10X20) TP	
0000A	4857027720	HEAT SINK	AL EX		C846	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		ZZ200	PTMPJBD664	PCB MAIN M-10 AS	DTK-28A7ZZ	
I807	1MC7812—	IC REGULATOR	MC7812 12V 1A (KA7812)	Ⓡ	10	2TM18006BE	TAPE MASKING	6.2X500	
I808	1KA7808—	IC REGULATOR	KA7808	Ⓡ	E101	4856310300	EYE LET	BSR T0.2 (R1.6)	
I810	TX0202DA—	THYRISTOR	X0202DA1BA2		E102	4856310300	EYE LET	BSR T0.2 (R1.6)	
IF01	1TS0P1238W	IC PREAMP	TS0P1238W1		E103	4856310300	EYE LET	BSR T0.2 (R1.6)	
JPA01	4859200401	SOCKET RGB	YRS21-R1		E104	4856310300	EYE LET	BSR T0.2 (R1.6)	
JPA02	4859200401	SOCKET RGB	YRS21-R1		E105	4856310300	EYE LET	BSR T0.2 (R1.6)	
JPF01	4859108450	JACK PIN BOARD	YSC03P-4120-14A		E106	4856310300	EYE LET	BSR T0.2 (R1.6)	
L401	58H0000054	COIL H-LINEARITY	TRL-040F		E107	4856310300	EYE LET	BSR T0.2 (R1.6)	
L403	58C0000118	COIL CHOKE	CH-191A		E108	4856310300	EYE LET	BSR T0.2 (R1.6)	
LF100	5PLF24A3—	FILTER LINE	LF-24A3	⚠	E109	4856310300	EYE LET	BSR T0.2 (R1.6)	
LF200	58C0000129	COIL CHOKE PFC	CPC-201B	⚠	E110	4856310300	EYE LET	BSR T0.2 (R1.6)	
M371A	4853747800	RETA PCB	NYLON 66		E111	4856310300	EYE LET	BSR T0.2 (R1.6)	
M371B	4853747800	RETA PCB	NYLON 66		E112	4856310300	EYE LET	BSR T0.2 (R1.6)	
M683	4856812001	TIE CABLE	NYLON66 DA100		E113	4856310300	EYE LET	BSR T0.2 (R1.6)	
P103	4859281020	CONN WAFER	TAC-L15X-A3		E114	4856310300	EYE LET	BSR T0.2 (R1.6)	
P104	4859281320	CONN WAFER	TAC-L18X-A3		E115	4856310300	EYE LET	BSR T0.2 (R1.6)	
P401A	4850704S04	CONNECTOR	YH025-04+YST025+ULW=400		E116	4856310300	EYE LET	BSR T0.2 (R1.6)	
P503	4859281320	CONN WAFER	TAC-L18X-A3		E117	4856310300	EYE LET	BSR T0.2 (R1.6)	
P504	4859281020	CONN WAFER	TAC-L15X-A3		E118	4856310300	EYE LET	BSR T0.2 (R1.6)	
PD03A	4850703S29	CONNECTOR	YH025-03+YST025+USW=300		E119	4856310300	EYE LET	BSR T0.2 (R1.6)	
PW000	4859903110	CORD POWER AS	CW4232+BL102NG+TUBE=2200	⚠	E120	4856310300	EYE LET	BSR T0.2 (R1.6)	
A000	4859903511	CORD POWER	CW4232 H03VH2-F=2250		E121	4856310300	EYE LET	BSR T0.2 (R1.6)	
M207	4853535500	HOLDER AC CORD	NYLON 66		E122	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q401	PTC3SW1600	HEAT SINK ASS'Y	DFMP3FU— + 7174300811		E123	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	DFMP3FU—	DIODE	FMP3FU		E124	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000A	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E125	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000B	TST2310DH1	TR	ST2310DHI		E126	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000C	4857031600	HEAT SINK	AL EX		E127	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000E	7174301211	SCREW TAPPTITE	TT2 RND 3X12 MFZN		E128	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q402	T2SC4793—	TR	2SC4793		E129	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q403	PTB2SW7603	HEAT SINK ASS'Y	T2SC4793— + 7174300811		E130	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	T2SC4793—	TR	2SC4793	Ⓡ ⚠	E201	4856310600	EYE LET	BSR T0.2 (R2.3)	
0000A	4857027603	HEAT SINK	AL EX		E202	4856310600	EYE LET	BSR T0.2 (R2.3)	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E203	4856310600	EYE LET	BSR T0.2 (R2.3)	
0000C	4856815900	CLAMP WIRE	EGI T0.4+PVC COATING		E207	4856310600	EYE LET	BSR T0.2 (R2.3)	
0000D	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E209	4856310600	EYE LET	BSR T0.2 (R2.3)	
R306	RW01Y228F-	R WIRE WOUND	1W 0.22 OHM F		E213	4856310600	EYE LET	BSR T0.2 (R2.3)	
R401	RX05V301J-	R CEMENT	5W 300 OHM J VERTICAL		E214	4856310600	EYE LET	BSR T0.2 (R2.3)	
R407	RX05V561J-	R CEMENT	5W 560 OHM J VERTICAL		E215	4856310600	EYE LET	BSR T0.2 (R2.3)	
R505	RM02Y338J-	R METAL FLAT	2W 0.33 OHM J		E216	4856310600	EYE LET	BSR T0.2 (R2.3)	
R801	DPC7ROM290	POSISTOR	2322 662 96709		E217	4856310600	EYE LET	BSR T0.2 (R2.3)	
R809	RM02Y158J-	R METAL FLAT	2W 0.15 OHM J		E218	4856310600	EYE LET	BSR T0.2 (R2.3)	
R813	RX10T229J-	R CEMENT	10W 2.2 OHM J TRIPOD	Ⓡ ⚠	E219	4856310600	EYE LET	BSR T0.2 (R2.3)	
SW810	5SA40101143	SW POWER PUSH	PS3-22SP (P.C.B)	⚠	E220	4856310600	EYE LET	BSR T0.2 (R2.3)	
T401 6A°	50D25A3—	TRANS DRIVE	TD-25A3	Ⓡ ⚠	E221	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402 6A°	50H0000250	FBT	1362.5023	Ⓡ ⚠	E222	4856310600	EYE LET	BSR T0.2 (R2.3)	

SERVICE PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
E223	4856310600	EYE LET	BSR T0.2 (R2.3)		C806	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
E224	4856310600	EYE LET	BSR T0.2 (R2.3)		C812	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
E225	4856310600	EYE LET	BSR T0.2 (R2.3)		C814	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
E226	4856310600	EYE LET	BSR T0.2 (R2.3)		C815	CCXB1H681K	C CERA	50V B 680PF K (TAPPING)	
E227	4856310600	EYE LET	BSR T0.2 (R2.3)		C816	CCXB1H152K	C CERA	50V B 1500PF K (TAPPING)	
E228	4856310600	EYE LET	BSR T0.2 (R2.3)		C822	CEXF2A100V	C ELECTRO	100V RSS 10MF (6.3X11) TP	
E229	4856310600	EYE LET	BSR T0.2 (R2.3)		C823	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
E230	4856310600	EYE LET	BSR T0.2 (R2.3)		C824	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
E231	4856310600	EYE LET	BSR T0.2 (R2.3)		C825	CCXB3A471K	C CERA	1KV B 470PF K (T)	
E232	4856310600	EYE LET	BSR T0.2 (R2.3)		C826	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
E233	4856310600	EYE LET	BSR T0.2 (R2.3)		C830	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
E234	4856310600	EYE LET	BSR T0.2 (R2.3)		C837	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
N001	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		C840	CCXB1H101K	C CERA	50V B 100PF K (TAPPING)	
N002	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		F801A	4857415001	CLIP FUSE	PFC5000-0702	
N003	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		F801B	4857415001	CLIP FUSE	PFC5000-0702	
N004	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		I704	1K1A7042AP	IC RESET	KIA7042AP	
N005	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		L802	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
N006	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		Q101	TKTC3198Y-	TR	KTC3198Y	
N007	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		Q102	TKTC3198Y-	TR	KTC3198Y	
N008	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)		Q103	TKTC3198Y-	TR	KTC3198Y	
P101	485923162S	CONN WAFER	YW025-03 (STICK)		Q404	TKTC3198Y-	TR	KTC3198Y	
P102	485923162S	CONN WAFER	YW025-03 (STICK)		Q405	TKTC3198Y-	TR	KTC3198Y	
P105	485923162S	CONN WAFER	YW025-03 (STICK)		Q406	TKTA1266Y-	TR	KTA1266Y (TP)	
P601	485923172S	CONN WAFER	YW025-04 (STICK)		Q501	TKTC3198Y-	TR	KTC3198Y	
PD08	485923172S	CONN WAFER	YW025-04 (STICK)		Q502	TKTA1275Y-	TR	KTA1275Y (TP)	
R320	RF01Z158K-	R FUSIBLE	1W 0.15 OHM K (TAPPING)		Q503	TKTC3198Y-	TR	KTC3198Y	
R322	RF01Z158K-	R FUSIBLE	1W 0.15 OHM K (TAPPING)		Q601	TKTC3198Y-	TR	KTC3198Y	
R408	RF01Z109J-	R FUSIBLE	1W 1 OHM J (TAPPING)		Q602	TKTC3198Y-	TR	KTC3198Y	
R849	RF02Z228K-	R FUSIBLE	2W 0.22 OHM K (TAPPING)		Q620	TKTC3198Y-	TR	KTC3198Y	
R850	RF02Z228K-	R FUSIBLE	2W 0.22 OHM K (TAPPING)		Q621	TKTA1266Y-	TR	KTA1266Y (TP)	
ZZ200	PTMPJRD664	PCB MAIN RADIAL AS	DTK-28A7ZZ		Q622	TKTC3198Y-	TR	KTC3198Y	
C101	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP		Q623	TKTA1266Y-	TR	KTA1266Y (TP)	
C102	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		Q701	TKTC3198Y-	TR	KTC3198Y	
C103	CEXF1C221V	C ELECTRO	16V RSS 220MF (8X11.5) TP		Q702	TKTC3198Y-	TR	KTC3198Y	
C107	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		Q703	TKTA1266Y-	TR	KTA1266Y (TP)	
C301	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)		Q801	TKTC3198Y-	TR	KTC3198Y	
C302	CCXF1H333Z	C CERA	50V F 0.033MF Z (TAPPING)		Q802	TKTC3198Y-	TR	KTC3198Y	
C303	CMXM2A224J	C MYLAR	100V 0.22MF J		Q803	TKTC3198Y-	TR	KTC3198Y	
C304	CMXL1J333J	C MYLAR	63V MEU 0.033MF J		Q804	TKTC3198Y-	TR	KTC3198Y	
C305	CEXF1H101V	C ELECTRO	50V RSS 100MF (8X11.5) TP		Q805	TKTC3198Y-	TR	KTC3198Y	
C334	CMXM2A223J	C MYLAR	100V 0.022MF J TP		R305	RN01B151JS	R METAL FILM	1W 150 OHM J SMALL	
C401	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)		R406	RN02B473JS	R METAL FILM	2W 47K OHM J SMALL	
C403	CMXM2A273J	C MYLAR	100V 0.027MF J (TP)		R802	RN02B683JS	R METAL FILM	2W 68K OHM J SMALL	
C404	CCXB1H222K	C CERA	50V B 2200PF K (TAPPING)		R824	RN02B102JS	R METAL FILM	2W 1K OHM J SMALL	
C409	CEXF2C109V	C ELECTRO	160V RSS 1MF (6.3X11) TP		R825	RN02B100JS	R METAL FILM	2W 10 OHM J SMALL	
C412	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP		R833	RN02B473JS	R METAL FILM	2W 47K OHM J SMALL	
C413	CXSL2H470J	C CERA	500V SL 47PF J (TAPPING)		R851	RN02B109JS	R METAL FILM	2W 1 OHM J SMALL	
C417	CMXL2A392J	C MYLAR	100V 3900PF J (TP)		SWF01	5S50101090	SW TACT	THVH472GCA	
C419	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)		SWF02	5S50101090	SW TACT	THVH472GCA	
C501	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP		SWF03	5S50101090	SW TACT	THVH472GCA	
C502	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP		SWF04	5S50101090	SW TACT	THVH472GCA	
C503	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP		SWF05	5S50101090	SW TACT	THVH472GCA	
C603	CCXF1H333Z	C CERA	50V F 0.033MF Z (TAPPING)		X701	5XEX4R000C	CRYSTAL QUARTZ	HC-49/U 4.000MHZ 20PPM TP	
C607	CMXL1J105J	C MYLAR	63V MEU 1MF J		ZA01	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C608	CMXL1J105J	C MYLAR	63V MEU 1MF J		ZA02	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C609	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		ZA03	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C620	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP		ZA04	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C622	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP		ZA20	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C624	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP		ZA21	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C626	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP		ZA22	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C627	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		ZA23	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C708	CMXL1J474J	C MYLAR	63V MEU 0.47MF J		ZF01	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C711	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP		ZF02	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C716	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP		ZZ200	PTMPJAD664	PCB MAIN AXIAL AS	DTK-28A7ZZ	
C719	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
C720	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M	
C721	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		A001	4859806293	PCB MAIN	330X246 D1B	
C723	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		C104	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
C805	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)		C105	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	

SERVICE PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
C106	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		D831	DUZ7R5BM—	DIODE ZENER	UZ-7.5BM	
C411	CCZB1H333K	C CERA	50V B 0.033MF K AXL		D832	D1N4148—	DIODE	1N4148 (TAPPING)	
C601	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		D833	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C602	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		D834	DUZ33B—	DIODE ZENER	UZ-33B	
C604	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		DA01	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C605	CBZR1C472M	C CERA	16V Y5R 4700PF M (AXIAL)		DA02	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C606	CBZR1C472M	C CERA	16V Y5R 4700PF M (AXIAL)		DA03	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C621	CCZF1H103Z	C CERA	50V F 0.01MF Z		DA04	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C623	CCZF1H103Z	C CERA	50V F 0.01MF Z		DA05	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C628	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		DA06	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C701	CCZF1H103Z	C CERA	50V F 0.01MF Z		DA07	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C702	CCZB1H820K	C CERA	50V B 82PF K (AXIAL)		DA08	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C703	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		DA09	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C706	CBZR1C222M	C CERA	16V Y5R 2200PF M (AXIAL)		DA10	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C707	CZSL1H220J	C CERA	50V SL 22PF J (AXIAL)		DA11	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C709	CCZB1H820K	C CERA	50V B 82PF K (AXIAL)		DA20	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C710	CCZF1H103Z	C CERA	50V F 0.01MF Z		DA21	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C712	CBZR1C222M	C CERA	16V Y5R 2200PF M (AXIAL)		DA22	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C713	CBZR1C472M	C CERA	16V Y5R 4700PF M (AXIAL)		DA23	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C714	CZSL1H220J	C CERA	50V SL 22PF J (AXIAL)		DA24	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C715	CCZF1H103Z	C CERA	50V F 0.01MF Z		DA25	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C717	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		DA26	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C718	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		DA27	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C722	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		DA28	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
C833	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		DF02	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C834	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		DF03	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C835	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		DF04	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM	
C838	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J101	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C841	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J103	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CF01	CCZB1H331K	C CERA	50V B 330PF K (AXIAL)		J104	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CF02	CCZB1H331K	C CERA	50V B 330PF K (AXIAL)		J105	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CF04	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J106	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CF05	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J107	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CF06	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J108	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CF07	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J109	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D101	D1N4148—	DIODE	1N4148 (TAPPING)		J111	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D301	D1N4937G—	DIODE	1N4937G (TAPPING)		J112	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D302	DUZ5R1B—	DIODE ZENER	UZ-5.1B		J113	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D303	D1N4937G—	DIODE	1N4937G (TAPPING)		J114	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D304	D1N4937G—	DIODE	1N4937G (TAPPING)		J115	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D305	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM		J118	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D306	DUZ5R6BM—	DIODE ZENER	UZ-5.6BM		J120	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D403	D1N4937G—	DIODE	1N4937G (TAPPING)		J141	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D405	D1N4937G—	DIODE	1N4937G (TAPPING)		J301	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D406	D1N4148—	DIODE	1N4148 (TAPPING)		J302	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D407	D1N4148—	DIODE	1N4148 (TAPPING)		J303	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D408	D1N4148—	DIODE	1N4148 (TAPPING)		J304	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D409	D1N4148—	DIODE	1N4148 (TAPPING)		J401	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D420	D1N4937G—	DIODE	1N4937G (TAPPING)		J402	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D504	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		J403	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D701	DUZ5R1B—	DIODE ZENER	UZ-5.1B		J404	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D702	D1N4148—	DIODE	1N4148 (TAPPING)		J405	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D703	D1N4148—	DIODE	1N4148 (TAPPING)		J406	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D704	D1N4148—	DIODE	1N4148 (TAPPING)		J407	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D801	DLT2A05G—	DIODE	LT2A05G (TP)		J408	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D802	DLT2A05G—	DIODE	LT2A05G (TP)		J410	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D803	DLT2A05G—	DIODE	LT2A05G (TP)		J412	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D804	DLT2A05G—	DIODE	LT2A05G (TP)		J413	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D808	DEU1Z—	DIODE	EU1Z (HIGH SPEED)		J415	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D810	DEU1Z—	DIODE	EU1Z (HIGH SPEED)		J416	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D811	DEU1Z—	DIODE	EU1Z (HIGH SPEED)		J417	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D812	DEU1Z—	DIODE	EU1Z (HIGH SPEED)		J418	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D822	D1N4937G—	DIODE	1N4937G (TAPPING)		J419	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D823	DRGP15J—	DIODE	RG15J		J420	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D825	DRGP15J—	DIODE	RG15J		J421	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D826	D1N4937G—	DIODE	1N4937G (TAPPING)		J422	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D828	D1N4937G—	DIODE	1N4937G (TAPPING)		J423	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D829	D1N4937G—	DIODE	1N4937G (TAPPING)		J424	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D830	D1N4937G—	DIODE	1N4937G (TAPPING)		J425	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

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LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
J833	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R602	RD-4Z479J	R CARBON FILM	1/4 4.7 OHM J	
J834	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R603	RD-AZ153J	R CARBON FILM	1/6 15K OHM J	
J835	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R604	RD-AZ183J	R CARBON FILM	1/6 18K OHM J	
J836	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R605	RD-AZ183J	R CARBON FILM	1/6 18K OHM J	
L101	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)		R606	RD-AZ561J	R CARBON FILM	1/6 560 OHM J	
L102	5CPZ120K02	COIL PEAKING	12UH K (AXIAL 3.5MM)		R607	RD-AZ561J	R CARBON FILM	1/6 560 OHM J	
L301	5MC0000100	COIL BEAD	HC-3550		R608	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
L302	5MC0000100	COIL BEAD	HC-3550		R609	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
L402	5MC0000100	COIL BEAD	HC-3550		R610	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
L404	5MC0000100	COIL BEAD	HC-3550		R611	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
L405	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)		R620	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
L609	5MC0000100	COIL BEAD	HC-3550		R621	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
L610	5MC0000100	COIL BEAD	HC-3550		R622	RD-AZ303J	R CARBON FILM	1/6 30K OHM J	
L620	5CPZ569K02	COIL PEAKING	5.6UH K (AXIAL 3.5MM)		R623	RD-AZ512J	R CARBON FILM	1/6 5.1K OHM J	
L621	5CPZ569K02	COIL PEAKING	5.6UH K (AXIAL 3.5MM)		R624	RD-AZ303J	R CARBON FILM	1/6 30K OHM J	
L801	5MC0000100	COIL BEAD	HC-3550		R625	RD-AZ272J	R CARBON FILM	1/6 2.7K OHM J	
LA10	5MC0000100	COIL BEAD	HC-3550		R626	RD-AZ332J	R CARBON FILM	1/6 3.3K OHM J	
LF01	5MC0000100	COIL BEAD	HC-3550		R627	RD-AZ512J	R CARBON FILM	1/6 5.1K OHM J	
R101	RD-AZ103J	R CARBON FILM	1/6 10K OHM J		R701	RD-AZ472J	R CARBON FILM	1/6 4.7K OHM J	
R102	RD-AZ103J	R CARBON FILM	1/6 10K OHM J		R702	RD-AZ622J	R CARBON FILM	1/6 6.2K OHM J	
R104	RD-AZ123J	R CARBON FILM	1/6 12K OHM J		R703	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
R105	RD-AZ104J	R CARBON FILM	1/6 100K OHM J		R704	RD-AZ562J	R CARBON FILM	1/6 5.6K OHM J	
R106	RD-AZ272J	R CARBON FILM	1/6 2.7K OHM J		R705	RD-AZ102J	R CARBON FILM	1/6 1K OHM J	
R107	RD-AZ391J	R CARBON FILM	1/6 390 OHM J		R706	RD-AZ153J	R CARBON FILM	1/6 15K OHM J	
R108	RD-AZ470J	R CARBON FILM	1/6 47 OHM J		R707	RD-AZ562J	R CARBON FILM	1/6 5.6K OHM J	
R109	RD-AZ680J	R CARBON FILM	1/6 68 OHM J		R708	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R110	RD-AZ470J	R CARBON FILM	1/6 47 OHM J		R709	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R111	RD-AZ470J	R CARBON FILM	1/6 47 OHM J		R710	RD-AZ471J	R CARBON FILM	1/6 47 OHM J	
R301	RD-AZ133J	R CARBON FILM	1/6 13K OHM J		R711	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R302	RD-2Z159J	R CARBON FILM	1/2 1.5 OHM J		R712	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R303	RN-4Z2701F	R METAL FILM	1/4 2.70K OHM F		R713	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R304	RN-AZ2201F	R METAL FILM	1/6 2.2K OHM F		R714	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R307	RN-AZ1002F	R METAL FILM	1/6 10K OHM F		R715	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R308	RN-AZ1002F	R METAL FILM	1/6 10K OHM F		R716	RD-AZ222J	R CARBON FILM	1/6 2.2K OHM J	
R310	RN-AZ6801F	R METAL FILM	1/6 6.8K OHM F		R717	RD-AZ222J	R CARBON FILM	1/6 2.2K OHM J	
R311	RN-AZ6801F	R METAL FILM	1/6 6.8K OHM F		R718	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
R312	RD-AZ471J	R CARBON FILM	1/6 470 OHM J		R719	RD-AZ472J	R CARBON FILM	1/6 4.7K OHM J	
R313	RN-AZ9101F	R METAL FILM	1/6 9.1K OHM F		R720	RD-AZ102J	R CARBON FILM	1/6 1K OHM J	
R314	RD-AZ562J	R CARBON FILM	1/6 5.6K OHM J		R721	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
R402	RD-AZ102J	R CARBON FILM	1/6 1K OHM J		R722	RD-AZ102J	R CARBON FILM	1/6 1K OHM J	
R403	RD-AZ202J	R CARBON FILM	1/6 2K OHM J		R723	RD-AZ102J	R CARBON FILM	1/6 1K OHM J	
R404	RD-AZ272J	R CARBON FILM	1/6 2.7K OHM J		R724	RD-AZ472J	R CARBON FILM	1/6 4.7K OHM J	
R405	RD-AZ220J	R CARBON FILM	1/6 22 OHM J		R725	RD-AZ223J	R CARBON FILM	1/6 22K OHM J	
R409	RD-2Z479J	R CARBON FILM	1/2 4.7 OHM J		R726	RD-AZ161J	R CARBON FILM	1/6 160 OHM J	
R410	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		R727	RD-AZ151J	R CARBON FILM	1/6 150 OHM J	
R411	RD-AZ471J	R CARBON FILM	1/6 470 OHM J		R728	RD-AZ101J	R CARBON FILM	1/6 100 OHM J	
R412	RD-AZ471J	R CARBON FILM	1/6 470 OHM J		R729	RD-AZ332J	R CARBON FILM	1/6 3.3K OHM J	
R413	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		R730	RD-AZ132J	R CARBON FILM	1/6 1.3K OHM J	
R414	RD-AZ751J	R CARBON FILM	1/6 750 OHM J		R731	RD-AZ182J	R CARBON FILM	1/6 1.8K OHM J	
R415	RN-4Z2003F	R METAL FILM	1/4 200K OHM F		R732	RD-AZ392J	R CARBON FILM	1/6 3.9K OHM J	
R416	RN-AZ4302F	R METAL FILM	1/6 43.0K OHM F		R733	RD-AZ153J	R CARBON FILM	1/6 15K OHM J	
R417	RN-AZ1202F	R METAL FILM	1/6 12K OHM F		R735	RD-AZ223J	R CARBON FILM	1/6 22K OHM J	
R418	RN-AZ6801F	R METAL FILM	1/6 6.8K OHM F		R803	RC-2Z824KP	R CARBON COMP	1/2 820K OHM K	
R419	RD-AZ202J	R CARBON FILM	1/6 2K OHM J		R807	RD-2Z330J	R CARBON FILM	1/2 33 OHM J	
R420	RF-4Z228K	R FUSIBLE	1/4 0.22 OHM K		R808	RD-AZ102J	R CARBON FILM	1/6 1K OHM J	
R422	RD-AZ472J	R CARBON FILM	1/6 4.7K OHM J		R810	RD-4Z472J	R CARBON FILM	1/4 4.7K OHM J	
R423	RD-AZ102J	R CARBON FILM	1/4 1K OHM J		R811	RD-2Z272J	R CARBON FILM	1/2 2.7K OHM J	
R424	RD-4Z682J	R CARBON FILM	1/4 6.8K OHM J		R812	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K	
R425	RD-AZ103J	R CARBON FILM	1/6 10K OHM J		R814	RD-4Z220J	R CARBON FILM	1/4 22 OHM J	
R426	RD-AZ103J	R CARBON FILM	1/6 10K OHM J		R822	RD-AZ103J	R CARBON FILM	1/4 10K OHM J	
R427	RD-AZ204J	R CARBON FILM	1/6 200K OHM J		R823	RD-4Z152J	R CARBON FILM	1/4 1.5K OHM J	
R501	RD-AZ153J	R CARBON FILM	1/6 15K OHM J		R826	RD-4Z102J	R CARBON FILM	1/4 1K OHM J	
R502	RD-AZ823J	R CARBON FILM	1/6 82K OHM J		R827	RD-4Z102J	R CARBON FILM	1/4 1K OHM J	
R503	RD-AZ183J	R CARBON FILM	1/6 18K OHM J		R828	RD-4Z472J	R CARBON FILM	1/4 4.7K OHM J	
R504	RD-AZ682J	R CARBON FILM	1/6 6.8K OHM J		R829	RD-AZ152J	R CARBON FILM	1/6 1.5K OHM J	
R506	RD-AZ102J	R CARBON FILM	1/6 1K OHM J		R830	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
R507	RD-AZ103J	R CARBON FILM	1/6 10K OHM J		R831	RD-4Z102J	R CARBON FILM	1/4 1K OHM J	
R508	RD-AZ472J	R CARBON FILM	1/6 4.7K OHM J		R832	RD-AZ103J	R CARBON FILM	1/6 10K OHM J	
R601	RD-4Z479J	R CARBON FILM	1/4 4.7 OHM J		RA07	RD-AZ333J	R CARBON FILM	1/6 33K OHM J	



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RA08	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		QCD03	T2SA812T2B	TR CHIP	2SA812-T2B	
RA09	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		QCD04	T2SA812T2B	TR CHIP	2SA812-T2B	
RA10	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		QCD05	T2SA812T2B	TR CHIP	2SA812-T2B	
RA11	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		QCD06	TKTC3875GB	TR CHIP	KTC3875-GR	
RA13	RD-AZ223J	R CARBON FILM	1/6 22K OHM J		QCD07	TKTC3875GB	TR CHIP	KTC3875-GR	
RA14	RD-AZ750J	R CARBON FILM	1/6 75 OHM J		RCD01	HRFT332JBA	R CHIP	1/10 3.3K OHM J 1608	
RA20	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		RCD02	HRFT332JBA	R CHIP	1/10 3.3K OHM J 1608	
RA21	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		RCD03	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
RA22	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		RCD04	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
RA23	RD-AZ101J	R CARBON FILM	1/6 100 OHM J		RCD05	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
RA24	RD-AZ333J	R CARBON FILM	1/6 33K OHM J		RCD06	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
RA25	RD-AZ750J	R CARBON FILM	1/6 75 OHM J		RCD07	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
RF01	RD-AZ473J	R CARBON FILM	1/6 47K OHM J		RCD08	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
RF02	RD-AZ473J	R CARBON FILM	1/6 47K OHM J		RCD10	HRFT332JBA	R CHIP	1/10 3.3K OHM J 1608	
ZZ400	PTMAMSD664	PCB MAIN MODULE MANUAL AS	DTK-28A7ZZ		RCD12	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
ID03	1LD1117V33	IC REGULATOR	LD117AV33 3.3V 2% TO-220		RCD14	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
ID04	1LD1117V18	IC REGULATOR	LD117AV18 1.8V 2% TO-220		RCD15	HRFT222JBA	R CHIP	1/10 2.2K OHM J 1608	
PD01	4859279520	CONN WAFER	TAC-L15P-A3 (ANGLE)		RCD16	HRFT271JBA	R CHIP	1/10 270 OHM J 1608	
PD02	4859279820	CONN WAFER	TAC-L18P-A3 (ANGLE)		RCD17	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
PD03	4859231620	CONN WAFER	YW025-03		RCD18	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
PD04	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)		RCD19	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
PD05	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)		RCD20	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
PD06	4859235520	CONN WAFER	YW025-12		RCD22	HRFT271JBA	R CHIP	1/10 270 OHM J 1608	
PD08A	4850704S45	CONNECTOR	YH025-04+YST025+USW=150		RCD23	HRFT330JBA	R CHIP	1/10 33 OHM J 1608	
SD01	4857250300	SHIELD CASE	SPTH-C T=0.3		RCD24	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
SD01A	4857250400	SHIELD PLATE	SPTH-C T=0.3		RCD25	HRFT330JBA	R CHIP	1/10 33 OHM J 1608	
XD01	5XE20R250E	CRYSTAL QUARTZ	HC-49/U 20.2500MHZ 30PPM		RCD26	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
ZZ200	PTMAJ2D664	PCB MAIN MODULE CHIP B AS	DTK-28A7ZZ		RCD27	HRFT330JBA	R CHIP	1/10 33 OHM J 1608	
CCD01	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD28	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
CCD02	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD29	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
CCD03	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD31	HRFT330JBA	R CHIP	1/10 33 OHM J 1608	
CCD04	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD32	HRFT220JBA	R CHIP	1/10W 22 OHM J 1608	
CCD05	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD33	HRFT122JBA	R CHIP	1/10 1.2K OHM J 1608	
CCD06	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD36	HRFT221JBA	R CHIP	1/10 220 OHM J 1608	
CCD07	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		RCD37	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
CCD08	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		RCD38	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
CCD10	HCBK473KBA	C CHIP CERA	50V X7R 0.047MF K 1608		RCD39	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD11	HCBK473KBA	C CHIP CERA	50V X7R 0.047MF K 1608		RCD40	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD12	HCBK473KBA	C CHIP CERA	50V X7R 0.047MF K 1608		RCD41	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD13	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		RCD42	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD14	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		RCD43	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD15	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD44	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD16	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD45	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD18	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD46	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD19	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608		RCD47	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
CCD20	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		ZZ200	PTMAJRD664	PCB MAIN MODULE RADIAL AS	DTK-28A7ZZ	
CCD21	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		CD01	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
CCD22	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608		CD02	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD23	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608		CD03	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD24	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608		CD04	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD25	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		CD05	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD26	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		CD06	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD27	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		CD07	CMXM2A224J	C MYLAR	100V 0.22MF J	
CCD28	HQKQ221JBA	C CHIP CERA	50V CH 220PF J 1608		CD08	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD29	HQKQ221JBA	C CHIP CERA	50V CH 220PF J 1608		CD09	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)	
CCD30	HQKQ221JBA	C CHIP CERA	50V CH 220PF J 1608		CD10	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)	
CCD31	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608		CD12	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
CCD32	HQKQ240JBA	C CHIP CERA	50V CH 24PF J 1608		CD13	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CCD33	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		CD14	CXCH1H270J	C CERA	50V CH 27PF J (TAPPING)	
CCD34	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608		CD15	CXCH1H270J	C CERA	50V CH 27PF J (TAPPING)	
CCD35	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		CD16	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CCD36	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608		CD17	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
CCD37	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		CD18	CEXF1H339V	C ELECTRO	50V RSS 3.3MF (5X11) TP	
CCD38	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		CD19	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)	
CCD39	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		CD21	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)	
ID01	1VSP9412AQ	IC CHIP VIDEO	VSP9412A		CD23	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
ID02	1DDP3315CQ	IC CHIP	DDP3315CQ		CD24	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
QCD01	TKTC3875GB	TR CHIP	KTC3875-GR		QD01	TH2N7000—	FET	H2N7000	
QCD02	T2SA812T2B	TR CHIP	2SA812-T2B		QD02	TH2N7000—	FET	H2N7000	

SERVICE PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
RD17	RN02B689JS	R METAL FILM	2W 6.8 OHM J SMALL		JD62	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
XD02	5XEX5R000E	CRYSTAL QUARTZ	HC-49/U 5.000MHZ 30PPM TP		LD01	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
ZZ200	PTMAJAD664	PCB MAIN MODULE AXIAL AS	DTK-28A7ZZ		LD02	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
A001	4859808360	PCB MODULE	246X246 D1B		LD03	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
CD20	CCZF1H103Z	C CERA	50V F 0.01MF Z		LD04	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
CD25	CCZF1H103Z	C CERA	50V F 0.01MF Z		LD05	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
DD01	D1N4148—	DIODE	1N4148 (TAPPING)		LD06	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
DD02	D1N4148—	DIODE	1N4148 (TAPPING)		RD02	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
DD03	D1N4148—	DIODE	1N4148 (TAPPING)		RD03	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD01	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD04	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD02	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD05	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD03	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD06	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD04	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD07	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD05	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD08	RD-AZ752J-	R CARBON FILM	1/6 7.5K OHM J	
JD06	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD10	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
JD07	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD11	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD08	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD12	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
JD09	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD13	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
JD10	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD15	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
JD11	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD16	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	
JD12	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD18	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
JD13	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD19	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
JD15	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD20	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
JD16	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD21	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
JD17	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		RD22	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
JD18	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD19	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD20	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD21	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD22	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD23	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD24	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD25	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD26	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD27	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD28	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD29	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD30	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD31	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD32	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD33	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD34	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD35	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD36	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD37	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD38	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD39	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD40	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD41	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD42	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD43	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD44	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD45	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD46	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD47	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD48	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD49	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD50	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD51	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD52	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD53	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD54	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD55	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD56	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD57	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD58	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD59	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD60	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						
JD61	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING						

APPENDIX

IC DESCRIPTION

5-1. ST92195

(1) General Description

1.1 INTRODUCTION

The ST92195 microcontroller is developed and manufactured by STMicroelectronics using a proprietary n-well HCMOS process. Its performance derives from the use of a flexible 256-register programming model for ultra-fast context switching and real-time event response. The intelligent onchip peripherals offload the ST9 core from I/O and data management processing tasks allowing critical application tasks to get the maximum use off core resources. The ST92195 MCU supports low power consumption and low voltage operation for power-efficient and low-cost embedded systems.

1.1.1 ST9+Core

The advanced Core consists of the Central Processing Unit (CPU), the Register File and the Interrupt controller. The general-purpose registers can be used as accumulator, Index register, or address pointers. Adjacent register pairs make up 16-bit registers for addressing or 16-bit processing. Although the ST9 has an 8-bit ALU, the chip handles 16-bit operations, including arithmetic, loads/stores, and memory/register and memory/memory exchanges. Two basic memory spaces are available : Program Memory and the Register File, Which includes the control and status registers of the on-chip peripherals.

1.1.2 Power Saving Modes

To optimize performance versus power consumption, a range of operating modes can be dynamically selected.

Run Mode. This is the full speed execution mode with CPU and peripherals running at the maximum clock speed delivered by the phase Locked Loop(PLL) of the Clock Control Unit(CCU).

Wait For Interrupt Mode. The Wait For Interrupt(WFI) instruction suspends program execution until an interrupt request is acknowledged. During WFI, the CPU clock is halted while the peripheral and interrupt controller keep running at a frequency programmable via the CCU. In this mode, the power consumption of the device can be reduced by more than 95%(LP WFI).

Wait For Interrupt Mode. The Wait For Interrupt(WFI) instruction, and if the Watchdog is not enable,

the CPU and its peripherals stop operation and the I/O ports enter high impedance mode. A reset is necessary to exit from Halt mode.

1.1.3 I/O Ports

Up to 28 I/O lines are dedicated to digital Input/Output.

These lines are grouped into up to five I/O Ports and can be configured on a bit basis under software control to provide timing, status signals, timer and output, analog inputs, external interrupts and serial or parallel I/O.

1.1.4 TV Peripherals

A set of on-chip peripherals form a complete system for TV set and VCR applications:

- Voltage Synthesis
- VPS/WSS Slicer
- Teletext Slicer
- Teletext Display RAM
- OSD

1.1.5 On Screen Display

The human interface is provided by the On Screen Display module, this can produce up to 26 lines of up to 80 characters from a ROM defined 512 character set. The character resolution is 10x10 dot. Four character sizes are supported. Serial attributes allow the user to select foreground and background. Parallel attributes can be used to select additional foreground and background colors and underline on a character by character basis.

1.1.6 Teletext and Display RAM

The internal 8k Teletext and Display storage RAM can be used to store Teletext pages as well as Display parameters.

1.1.7 Teletext, VPS and WSS Data Slicers

The three on-board data slicers using a single external crystal are used to extract the Teletext, VPS and WSS information from the video signal. Hardware Hamming decoding is provided.

1.1.8 Voltage Synthesis Tuning Control

14-bit Voltage Synthesis using the PWM (Pulse Width Modulation)/BRM (Bit Rate Modulation) technique can be used to generate tuning voltages for TV set applications. The tuning voltage is output on one of two separate output pins.

1.1.9 PWM Output

Control of TV settings is able to be made with up to eight 8-bit PWM outputs, with a frequency maximum of 23,437Hz at 8-bit resolution (INTCLK=12 MHz). Low resolutions with higher frequency operation can be programmed.

1.1.10 Serial Peripheral Interface (SPI)

The SPI bus is used to communicate with external devices via the SPI, or I²C bus communication standards. The SPI uses one or two lines for serial data and a synchronous clock signal.

1.1.11 Standard Timer (STIM)

The Standard Timer includes a programmable 16-bit down counter and an associated 8-bit prescaler with Single and Continuous counting modes.

1.1.12 Analog/Digital Converter (ADC)

In addition there is a 3 channel Analog to Digital Converter with integral sample and hold, fast 5.7us conversion timer and 6-bit guaranteed resolution.

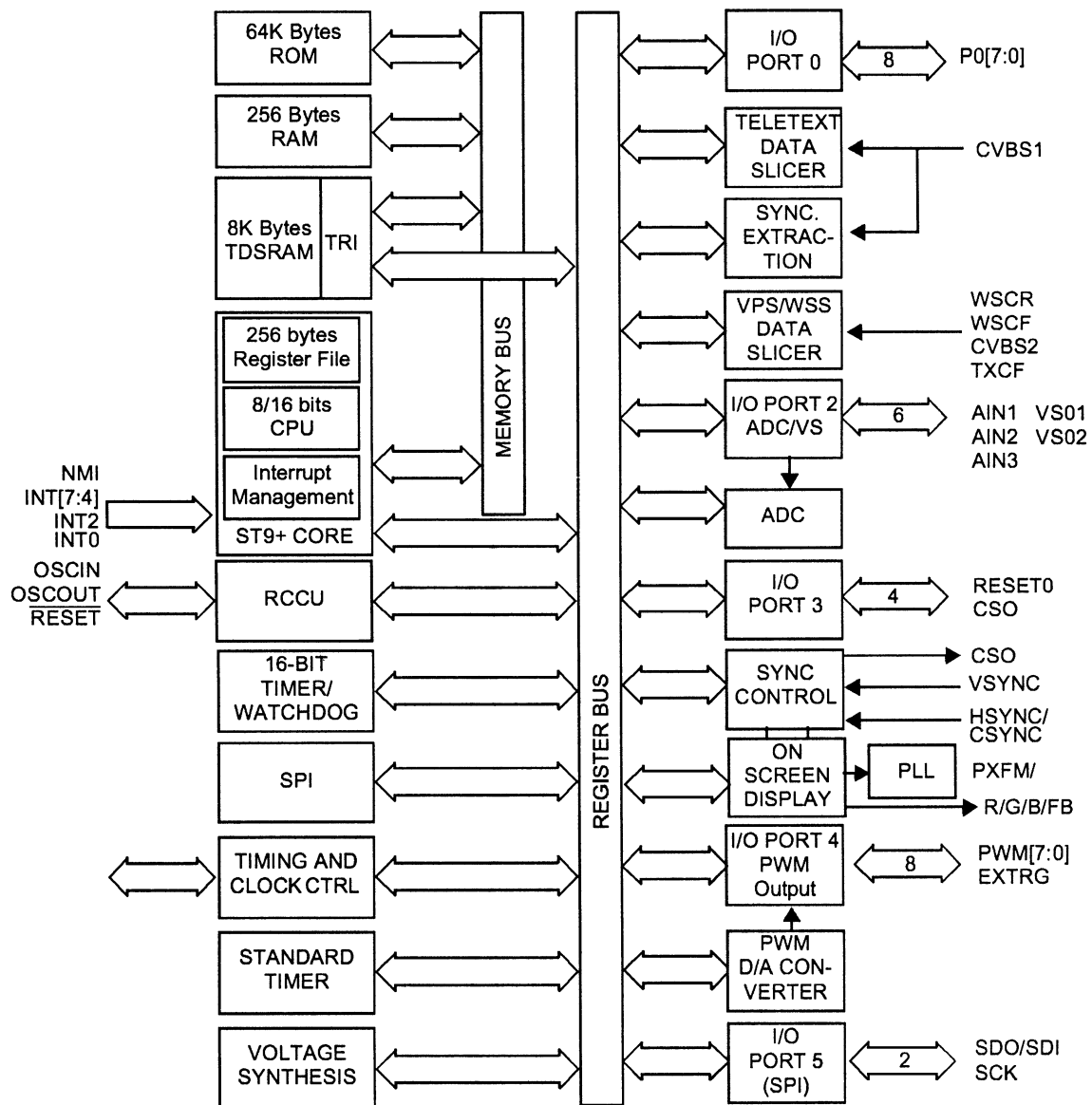
(2) Feature

- Register File based 8/16 bit Core Architecture with
- RUN, WFI, SLOW and HALT modes
- 0°C to 70°C Operating temperature range
- Up to 24 MHz Operation @5V ±10%
- Minimum instruction cycle time : 375ns at 16MHz internal clock
- 64K Bytes ROM
- 256 Bytes RAM of Register file (accumulator or index registers)
- 256 Bytes of on-chip static RAM
- 8K Bytes of TDSRAM (Teletext and Display RAM)
- 56-lead Shrink DIP package
- 28 fully programmable I/O pins
- Serial Peripheral Interface
- Flexible Clock controller for OSD, Data Slicer and Core clocks running from one single low frequency external crystal.
- Enhanced Display Controller with 26 rows of 40/80 characters
 - Serial and Parallel attributes
 - 10x10 dot Matrix, 512 ROM characters, definable by user
 - 4/3 and 16/9 supported

- Rounding, fringe, double width, double height, scrolling, cursor, full background colour, semitransparent mode and reduced intensity colour supported

- Teletext unit, including Data slicer, Acquisition Unit and up to 8K Bytes RAM for Data Storage
- VPS and Wode Screen Signalling slicer
- Integrated Sync Extractor and Sync Controller
- 14-bit Voltage Synthesis for tuning reference voltage
- Up to 6 external interrupts plus 1 non-maskable interrupt
- 8x8-bit programmable PWM outputs with 5V open-drain or push-pull capability
- 16-bit Watchdog timer with 8-bit prescale
- 16-bit standard timer with 8-bit prescaler usable as a Watchdog timer
- 3-channel Analog-to-Digital converter ; 6-bit guaranteed
- Rich instruction set and 14-Addressing modes
- Versatile Development Tools, including Assembler, Linker, C-compiler, Archiver, Source Level Debugger and Hardware Emulators with Real-Time Operating System available from third parties
- Piggyback board available for prototyping

(3) Block Diagram



VR02113A

(4) PIN DESCRIPTION

RESET *Reset* (input, active low). The ST9+ is initialised by the Reset signal. With the deactivation of RESET, program execution begins from the Program memory location pointed to by the vector contained in program memory locations 00h and 01h.

R/G/B *Red/Green/Blue*. Video color analog DAC outputs

FB *Fast Blanking*. Video analog DAC output.

VOD Main power supply voltage(5V 10%, digital)

WSCF, WSCR Analog pins for the VPS/WPP slicer line PLL.

MCFM Analog pin for the display pixel frequency multiplier.

OSCIN, OSCOUT *Oscillator* (input and output).

These pins connect a parallel-resonant crystal(24MHz maximum), or an external source to the on-chip clock oscillator and buffer. OSCIN is the input of the oscillator inverter and internal clock generator; OSCOUT is the output of the oscillator inverter.

VSYN *Vertical Sync*. Vertical video synchronisation input to OSD. Positive or negative polarity.

HYNC/CSYN *Horizontal/Composite sync*. Horizontal or composite video synchronisation input to OSD. Positive or negativity.

PXFM Analog pin for the Display Pixel Frequency Multiplier

AVDD *Analog VDD of PLL*. This pin must be tied to VDD externally to the ST92195.

GND Digital circuit ground.

AGND Analog circuit ground(must be tied externally to digital GND).

CVBS1 Composite video input signal for the Teletext slicer and sync extraction.

CVBS2 Composite video input signal for the VPS/WSS slicer. Pin AC coupled.

AVDD1, AVDD2 Analog power supplies(must be tied externally to AVDD).

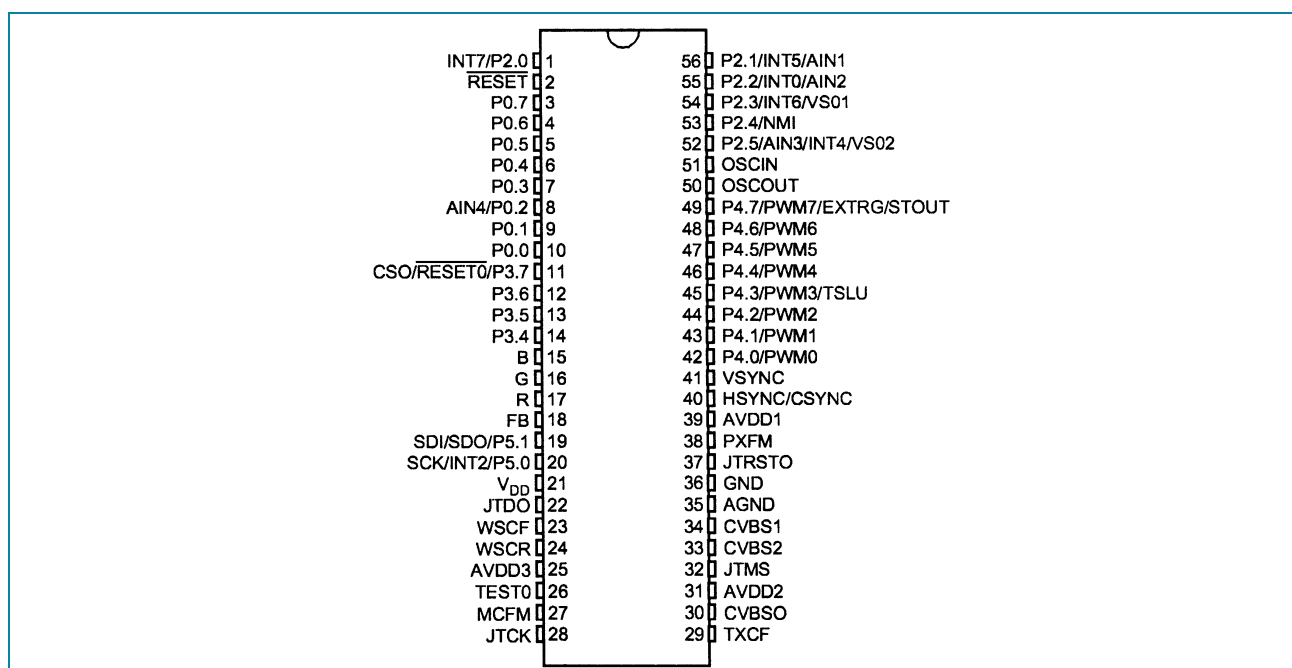
TXCF Analog pin for the VPS/WSS line PLL.

CVBS0, JTDO, JTCK Test pins : leave floating.

JTMS, TEST0 Test pins : must be tied to AVDD2.

JTRST0 Test pin : must be tied to GND.

Figure 2. Pin Description



5.2. VSP 9412A

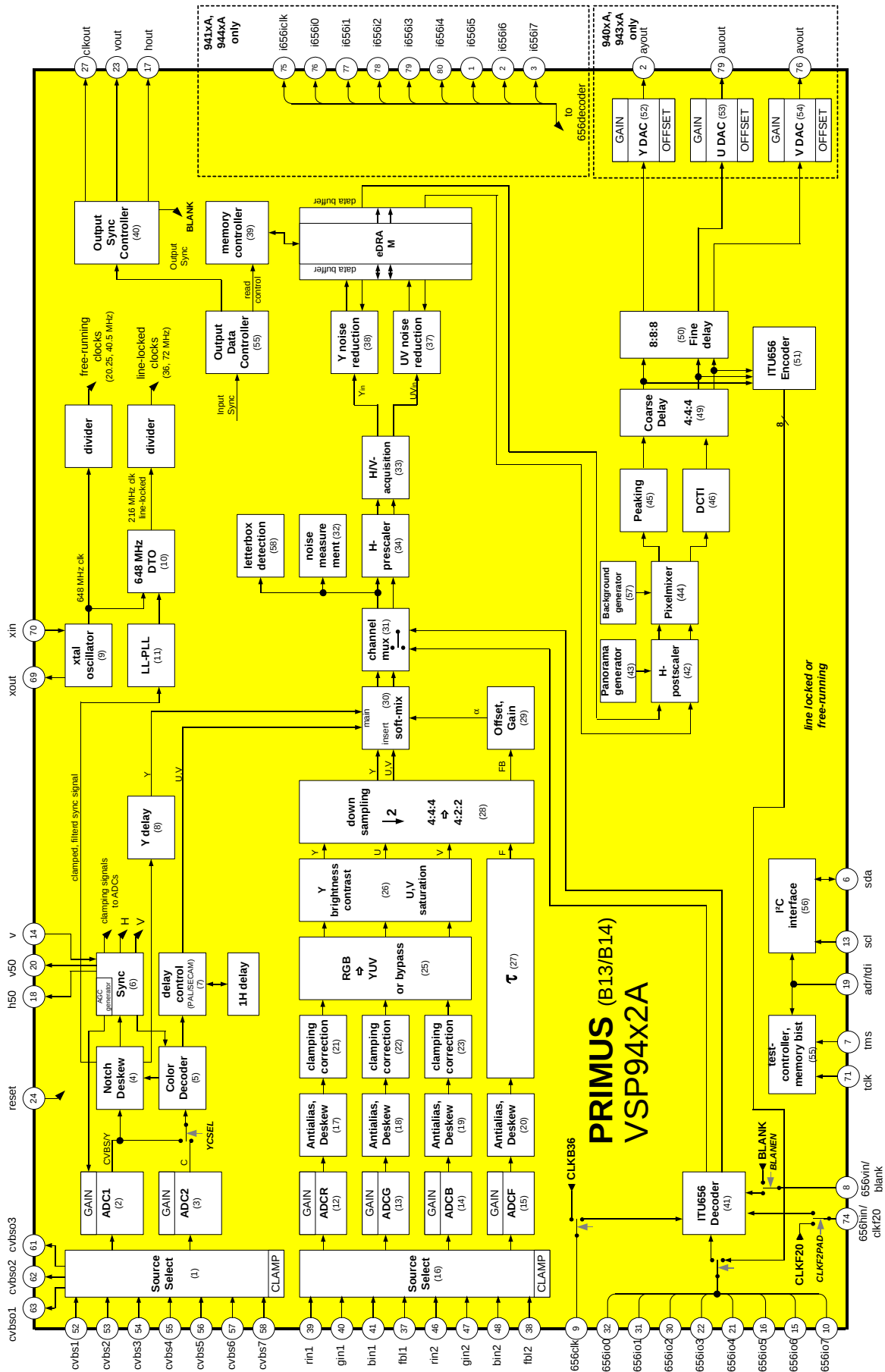
(1) Description

- Integrated Video Matrix switch
 - Up to seven CVBS inputs, up to two Y/C inputs,
 - Three CVBS outputs (Y/C inputs signals are combined to CVBS output format)
 - 9 bit amplitude resolution for CVBS, Y/C A/D converter
 - AGC (Automatic Gain Control)
- Multi-standard color decoder
 - PAL/NTSC/SECAM including all substandards
 - Automatic recognition of chroma standard
 - Only one crystal necessary for all standards
- RGB-FBL or YUV-H-V input
 - 8 bit amplitude resolution for RGB or YUV
 - 8 bit amplitude resolution for FBL or H
- ITU656 support (version dependent, refer to next chapter)
 - ITU656 input/output
 - DS656 output (double-scan '656-like' output)
- Letterbox detection
- Noise reduction
 - Temporal noise reduction
 - Field-based temporal noise reduction for luminance and chrominance
 - Different motion detectors for luminance and chrominance or identical
 - Flexible programming of the temporal noise reduction parameters
 - Automatic measurement of the noise level
- Horizontal scaling of the $1f_H$ signal
 - Split-screen possible with additional PiP or Text processor
- Flexible digital horizontal scaling of the $2f_H$ signal
 - Scaling factors: 3, ..., 0.75 including 16:9 compatibility
 - 5 zone panorama generator
- Embedded memory
 - On-chip memory controller
 - Embedded DRAM core for field memory
 - SRAM for PAL/SECAM delay line
- Data format 4:2:2
- Flexible clock and synchronization concept
 - Horizontal line-locked or free-running mode
 - Vertical locked or free-running mode
- Scan-rate-conversion
 - Simple interlaced modes (100/120 Hz): AABB, AAAA, BBBB (9402A/9412A only)
 - No scan-rate-conversion modes (50/60 Hz): AB,

AA, BB (9432A/9442A only)

- Flexible output sync controller
 - Flexible positioning of the output signal
 - Flexible programming of the output sync raster
 - 'Blank signal' generation
- Signal manipulations
 - Still field
 - Insertion of colored background
 - Windowing
 - Vertical chrominance shift for improved VCR picture quality
- Sharpness improvement
 - Digital color transition improvement (DCTI)
 - Peaking (luminance)
- Three D/A converters
 - 9 bit amplitude resolution for Y, -(R-Y), -(B-Y) output
 - 72 MHz clock frequency
 - Two-fold oversampling for Anti-imaging
 - Simplification of external analog postfiltering
- 1920 active pixel/per line in default configuration
- I²C-bus control (400 kHz)
 - selectable I²C address
- 1.8 V ± 5% and 3.3 V ± 5% supply voltages
- MQFP80B package

(2) Block Diagram



(3) Pin Connections

Pin No.	Pin Name	Type	Connection (If not used)	Short Description
1	VDDDAC _Y	S/I		DAC (Y)
2	AYOUT	O/I		Y output
3	VSSDAC _Y	S/I		DAC (Y)
4	VSSD2	S		Supply voltage for digital (0 V digital)
5	VDDD2	S		Supply voltage for digital (1.8 V digital)
6	SDA	I/O		I ² C-Bus data
7	TMS	I		Testmode select (Connected to vdd33)
8	656VIN/BLANK ¹⁾	I/O	Connect to vss and disable blank	Separate V input for 656 / BLANK output
9	656CLK	I/O	Leave open	Digital input / output clock

APPENDIX

IC DESCRIPTION

Pin No.	Pin Name	Type	Connection (If not used)	Short Description
10	656IO7	I/O	Leave open	Digital input / output (MSB)
11	VSSP2	S		Supply voltage for digital (0 V pad)
12	VDDP2	S		Supply voltage for digital (3.3 V pad)
13	SCL	I		I ² C-Bus clk
14	V ²⁾	I	Connect to vss	Vertical pulse for RGB input
15	656IO6	I/O	Leave open	Digital input / output
16	656IO5	I/O	Leave open	Digital input / output
17	HOUT	O	Leave open	Horizontal output (Single or double scan, dependent on version)
18	H50 ³⁾	O	Leave open	Hout 50 Hz (with skew)
19	ADR / TDI	I		I ² C address / test data in
20	V50 ⁴⁾	O	Leave open	Vout 50 Hz
21	656IO4	I/O	Leave open	Digital input / output
22	656IO3	I/O	Leave open	Digital input / output
23	VOUT	O	Leave open	Vertical output (Single or double scan, dependent on version)
24	RESET	I		Reset input (Reset when low)
25	VDDP3	S		Supply voltage for digital (0 V pad)
26	VSSP3	S		Supply voltage for digital (3.3 V pad)
27	CLKOUT	O	Leave open	Output clock (27 MHz nom.)
28	VDDD3	S		Supply voltage for DRAM (1.8 V digital)
29	VSSD3	S		Supply voltage for digital (0 V digital)
30	656IO2	I/O	Leave open	Digital input / output
31	656IO1	I/O	Leave open	Digital input / output
32	656IO0	I/O	Leave open	Digital input / output (LSB)
33	VSSD4	S		Supply voltage for digital (0 V digital)
34	VDDD4	S		Supply voltage for digital 1.8 V digital
35	VDDAFBL	S		Supply voltage for FBL (1.8 V)
36	VSSAFBL	S		Supply voltage for FBL (0 V)
37	FBL1	I	Connect to vss	Fast Blank input 1 (H1) (Analog input)
38	FBL2	I	Connect to vss	Fast Blank input 2 (H2) (Analog input)

APPENDIX

IC DESCRIPTION

Pin No.	Pin Name	Type	Connection (If not used)	Short Description
39	RIN1	I	Connect to vss	R or V in1 (Analog input)
40	GIN1	I	Connect to vss	G or Y in1 (Analog input)
41	BIN1	I	Connect to vss	B of U in1 (Analog input)
42	VDDARGB	S		Supply voltage for RGB (1.8 V)
43	VSSARGB	S		Supply voltage for RGB (0 V)
44	VDD33RGB	S		Supply voltage RGB (3.3 V)
45	VSS33RGB	S		Supply voltage RGB (0 V)
46	RIN2	I	Connect to vss	R or V in2 (Analog input)
47	GIN2	I	Connect to vss	G or Y in2 (Analog input)
48	BIN2	I	Connect to vss	B of U in2 (Analog input)
49	VSSD5 ⁵⁾	S	Connect to vss	Supply voltage for digital (0 V)
50	VDDAC1	S		Supply voltage CVBS1 (1.8 V)
51	VSSAC1	S		Supply voltage CVBS1 (0 V)
52	CVBS1	I	Connect to vss	CVBS input (Analog input)
53	CVBS2	I	Connect to vss	CVBS input (Analog input)
54	CVBS3	I	Connect to vss	CVBS input (Analog input)
55	CVBS4	I	Connect to vss	CVBS input or Y1 (Analog input)
56	CVBS5	I	Connect to vss	CVBS input or C1 (Analog input)
57	CVBS6	I	Connect to vss	CVBS input or Y2 (Analog input)
58	CVBS7	I	Connect to vss	CVBS input or C2 (Analog input)
59	VDD33C	S		Supply voltage CVBS (3.3 V)
60	VSS33C	S		Supply voltage CVBS (0 V)
61	CVBSO3	O	Leave open	CVBS output 3 (Analog output)
62	CVBSO2	O	Leave open	CVBS output 2 (Analog output)

APPENDIX

IC DESCRIPTION

Pin No.	Pin Name	Type	Connection (If not used)	Short Description
63	CVBSO1	O	Leave open	CVBS output 1 (Analog output)
64	VDDAC2	S		Supply voltage CVBS2 (1.8 V)
65	VSSAC2	S		Supply voltage CVBS2 (0 V)
66	VDDD1	S		Supply voltage for digital (1.8 V digital)
67	VSSD1	S		Supply voltage for digital (0 V digital)
68	VDDAPLL	S		Supply voltage for PLL (1.8 V)
69	XOUT	O		Crystal connection 2
70	XIN	I		Crystal connection 1
71	TCLK	I		Testclock
72	VDDP1	S		Supply voltage for digital (3.3 V pad)
73	VSSP1	S		Supply voltage for digital (0 V pad)
74	656HIN/CLKF20	I/O	Connect to vss and disable clock	Separate H input for 656 / 20.25 clock output
75	VDDDACV	S/I	Leave open	DAC (V) (27 MHz nom.)
76	AVOUT	O/I	Leave open	V output
77	VSSDACV	S/I	Leave open	DAC (V)
78	VDDDACU	S/I		DAC (U)
79	AUOUT	O/I		U output
80	VSSDACU	S/I		DAC (U)

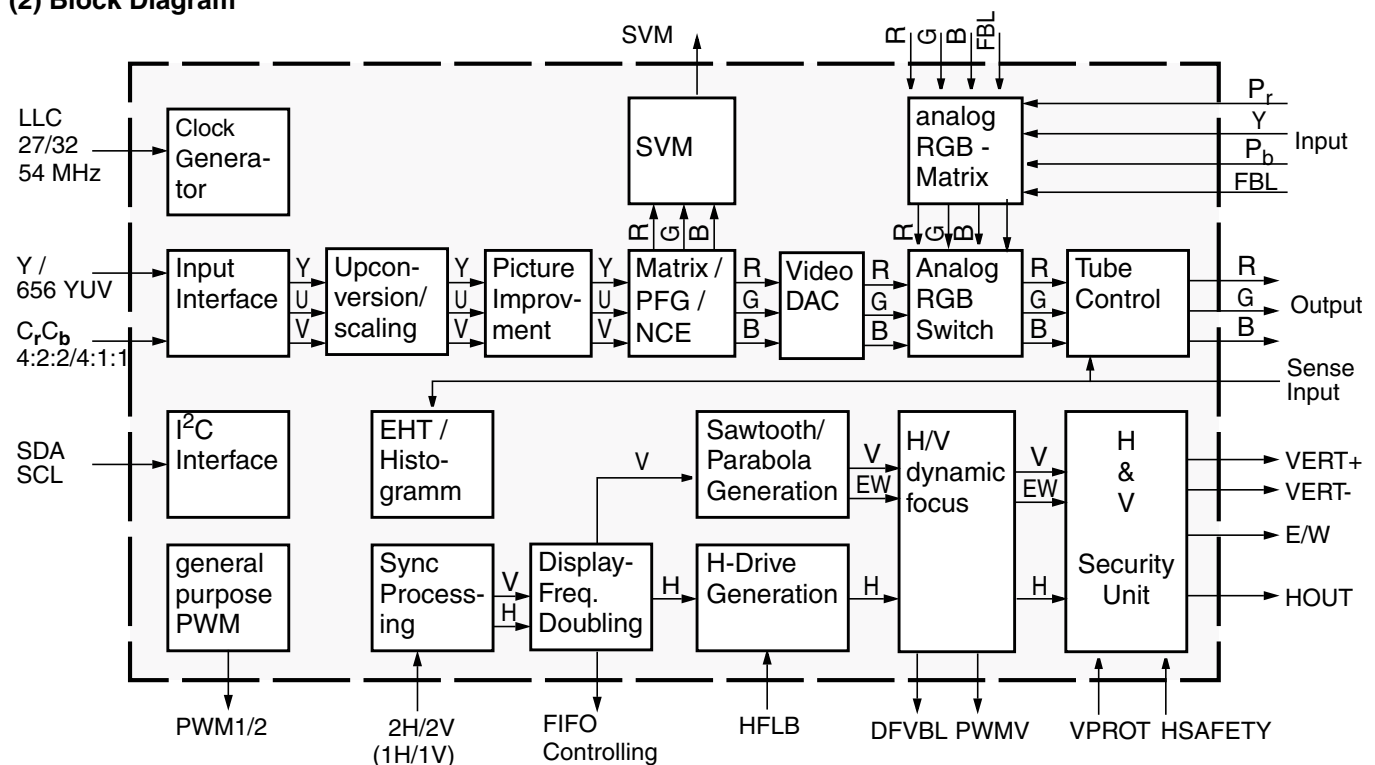
5-3 DDP3315C**(1) General Description****1. Introduction**

The DDP 3315C is a mixed signal single-chip digital display and deflection processor, designed for high-quality back-end applications in double scan and HDTV TV sets with 4:3 or 16:9 picture tubes. Its interfaces qualify the IC to be combined with state of the art digital scan rate converters as well as analog HDTV sources. It contains the entire digital video component and deflection processing and all analog interfaces to display the picture on a CRT.

The main features are:

Video Processing

- linear horizontal scaling (0.25 ... 4), as well as nonlinear horizontal scaling “panoama vision”
- dynamic black level expander
- luma transient improvement (LTI)
- dynamic peaking
- color transient improvement (CTI)
- programmable RGB matrix
- black stretch, blue stretch, gamma correction via programmable NCE on RGB
- two analog double scan inputs with fastblanking (one RGB and one RGB/YC_rC_b/YP_rP_b selectable)

(2) Block Diagram

- average and peak beam current limiter
- automatic picture tube adjustment (cutoff, drive)
- histogram calculation

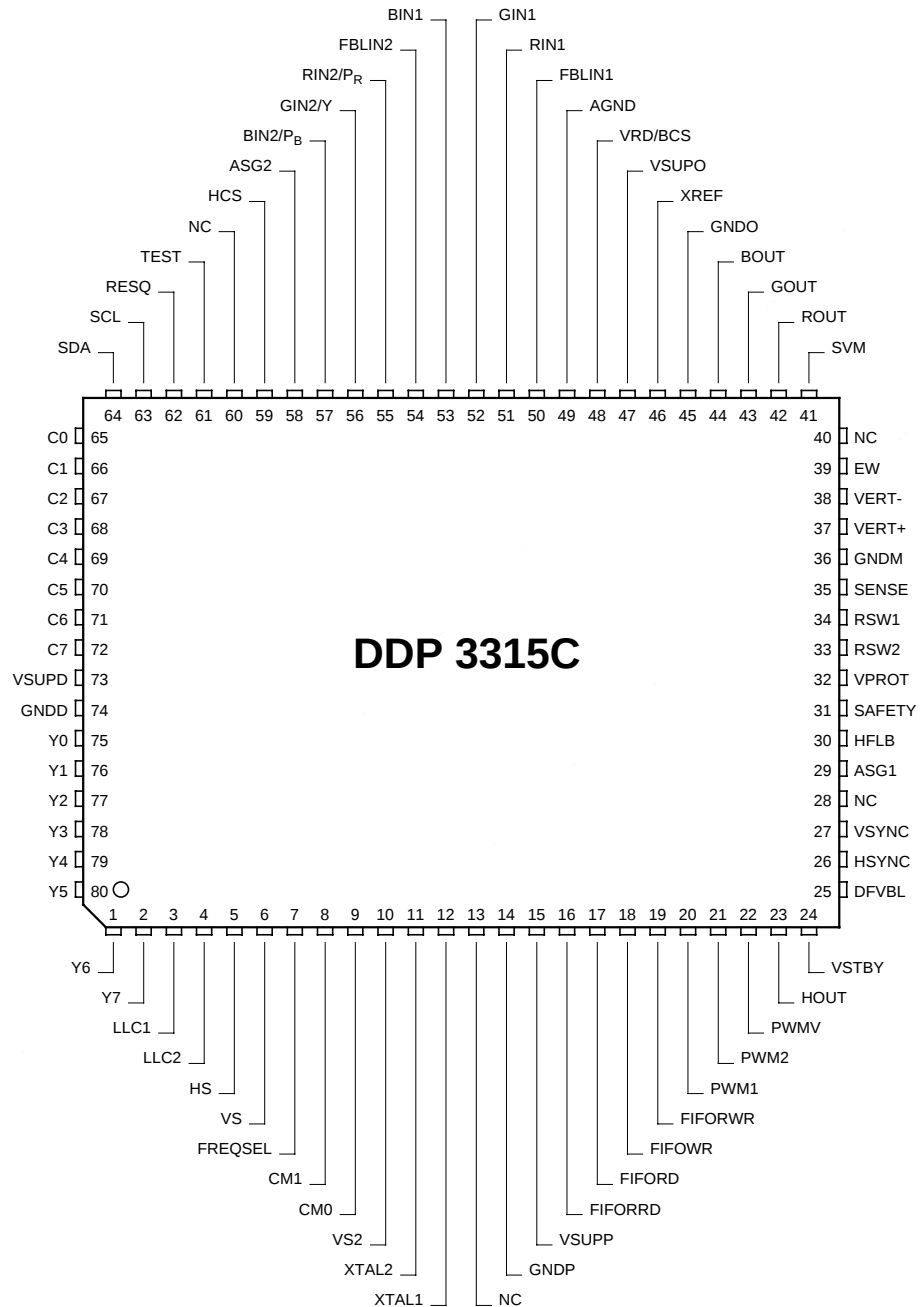
Deflection Processing

- scan velocity modulation output
- digital EHT compensation for vertical / east-west
- soft start/stop of H-drive
- vertical angle and bow correction
- differential vertical outputs
- vertical zoom via deflection
- horizontal and vertical protection circuit
- horizontal frequency for VGA/SVGA/1080i
- black switch off procedure
- supports horizontal and vertical dynamic focus

Miscellaneous

- selectable ITU-R 601 4:1:1 / 4:2:2 YC_b input or double scan ITU-R 656 input at 54MHz LLC
- selectable 27/32/54MHz MHz line-locked clock input
- crystal oscillator for horizontal safety
- picture frame generator
- hardware for simple 50/60 Hz to 100/120 Hz conversion (display frequency doubling)
- 80PQFP package, 5V analog and 3.3V digital supply

(3) Pin Configuration



(4) Pin Circuits

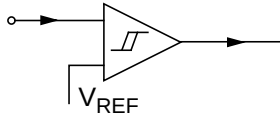


Fig. 4-3: Input pins LLC2, C[7:0], Y[7:0], HS, VS, VS2, HFLB, SAFETY, VPROT, 656EN, CM0, CM1, FREQSEL, RESQ, TEST

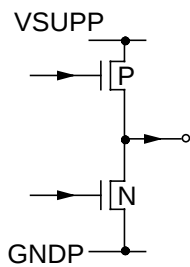


Fig. 4-4: Output pins FIFORRD, FIFORD, FIFOWR, FIFORWR, DFVBL, HSYNC, VSYNC, PWM1, PWM2, PWMV

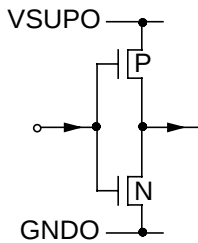


Fig. 4-5: Analog fastblank pins FBLIN1, FBLIN2

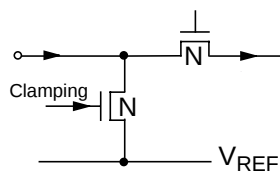


Fig. 4-6: Input pins RIN1, GIN1, BIN1, RIN2/P_R, GIN2/Y, BIN2/P_B

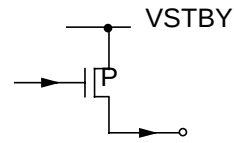


Fig. 4-7: Output pin HOUT

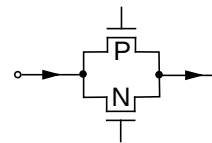


Fig. 4-8: Input pin SENSE

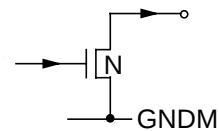


Fig. 4-9: Output pin RSW2

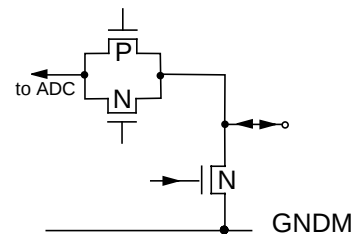
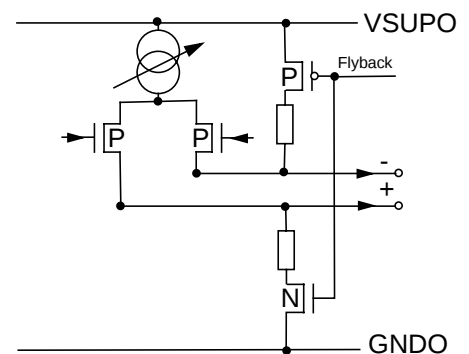


Fig. 4-10: I/O pin RSW1



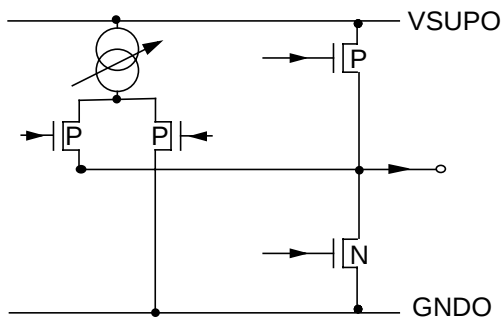


Fig. 4-12: Output pin EW

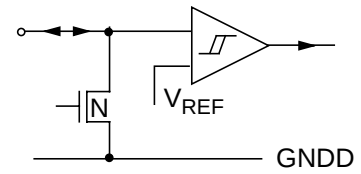


Fig. 4-16: I/O pins SCL, SDA

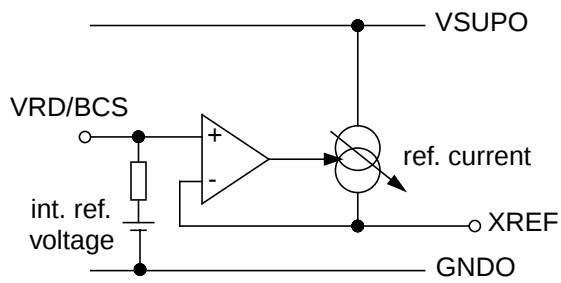


Fig. 4-13: Input pins XREF, VDR/BCS

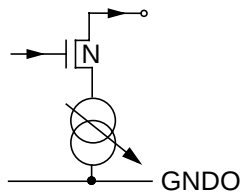


Fig. 4-14: Output pins SVM, ROUT, GOUT, BOUT

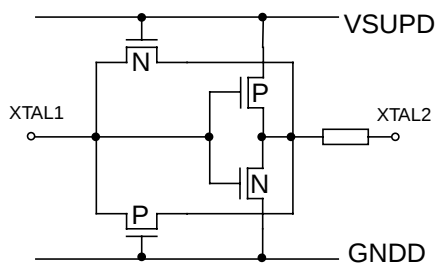


Fig. 4-15: Input pin XTAL1, Output pin XTAL2

IC DESCRIPTION

Together with this pin, it can be used to drive symmetrical deflection amplifiers.

Pin 21 - East/West Parabola Output EW

This pin supplies the parabola signal for the East/West correction. The drive signal is generated with 15-bit precision. The analog voltage is generated by a 4-bit current DAC with external resistor and uses digital noise-shaping.

Pin 22 - DAC Current Reference XREF

External reference resistor for DAC output currents, typical 10 k Ω , to adjust the output current of the D/A converters. (see recommended operation conditions).

This resistor has to be connected to analog ground as closely as possible to the pin.

Pin 23 - Scan Velocity Modulation Output SVM

This output delivers the analog SVM signal. The D/A converters. At zero signal the output current is 50% of the maximum output current.

Pin 24,25,26 - Analog RGB Output ROUT, GOUT, BOUT

These pins are the analog Red/Green/Blue outputs of the back-end. The outputs are current sinks.

Pin 27 - Ground, Analog Back-end GNDO*

This pin has to be connected to the analog supply voltage. No supply current for the digital stages should flow through this line.

Pin 28 - Supply Voltage, Analog Back-end VSUPO*

This pin has to be connected to the analog supply voltage. No supply current for the digital stages should flow through this line.

Pin 29 - DAC Reference Decoupling/Beam Current Safety VRD/BCS

Via this pin, the DAC reference voltage is decoupled by an external capacitor. The DAC output currents depend on this voltage, therefore a pull-down transistor can be used to shut off all beam currents. A decoupling capacitor of 4.7uF in parallel to 100uF (low inductance) is required.

Pin 30, 34 - Fast-Blank Input FBLIN1/2

These pins are used to switch the RGB outputs to the external analog RGB inputs. FBLIN1 switches the RIN1, GIN1 and BIN1 inputs, FBLIN2 switches the RIN2, GIN2 and BIN2 inputs. The active level (Low or High) can be selected by software.

Pin 31, 32, 33 - Analog RGB Input1 RIN1, GIN1, BIN1

These pins are used to insert an external analog RGB signal, e.g. from a SCART connector which can be switched to the analog RGB outputs with the Fast-Blank signal. The analog back-end provides separate brightness and contrast settings for the external analog RGB signals.

Pin 35, 36, 37 - Analog RGB Input2 RIN2, GIN2, BIN2

These pins are used to insert an external analog RGB signal, e.g. from a SCART connector which can be switched to the analog RGB outputs with the Fast-Blank signal. The analog back-end provides separate brightness and contrast settings for the external analog RGB signals.

Pin 38 - Test Input TEST

This pin enables factory test modes. For normal operation it must be connected to ground.

Pin 39 - Reset Input RESQ

A low level on this pin resets the DDP 3310B.

Pin 40 - Adjustable DC Output 1 PWM1

This output delivers a DC voltage with a resolution of 8 bit, adjustable over the I²Cbus. The output is driven by a push-pull stage. The PWM frequency is approx 79.4MHz. For a ripple-free voltage a first order lowpass filter with a corner frequency < 120 Hz should be applied.

Pin 41 - Adjustable DC Output 2 PWM2

See pin 40.

Pin 42 - Half-Contrast Input HCS

Via this input pin the output level of the D/A-converted internal RGB signals can be reduced by 6dB. Inserted external analog RGB signals remain unchanged.

Pin 43...50 - Picture Bus Chroma C0...C7

The Picture Bus Chroma lines carry the multiplexed color component data. For the 4:1:1 input signal (4-bit chroma) the pins C4...C7 are used.

Pin 51 - Supply Voltage, Digital Circuitry **VSUPD***

Pin 52 - Ground, Digital Circuitry **GNDD***
Digital Circuitry Input Reference

Pin 53 - Main Clock Input **LLC2(53)**

This is the input for the line-locked clock signal. The frequency can be 27, 32, or 40.5 MHz.

Pin 54...61 - Picture Bus Luma **Y0...Y7**

The Picture Bus Luma lines carry the digital luminance data.

Pin 62 - Line-Locked Clock Input **LLC1**

This is the reference clock for the single frequency input sync signals required in a FIFO application. The frequency can be 13.5, 16, or 20.25 MHz.

Pin 63 - Sync Signal Input **HS**

This pin gets the horizontal sync information. Either single or double horizontal frequency or VGA horizontal sync signal.

Pin 64 - Sync Signal Input **VS**

This pin gets the vertical sync information. Either single or double vertical frequency or VGA vertical sync signal.

Pin 65, 66 - Crystal Output / Input **XTAL2 / XTAL1**

These pins are connected to an 5-MHz crystal oscillator. The security unit for the HOUT signal uses this clock signal as reference.

Pin 67 - I²C Data Input/Output **SDA**

Via this pin the I²C - bus data are written to or read from the DDP 3310B.

Pin 68 - I²C Clock Input **SCL**

Via this pin, the clock signal for the I²C-bus will be supplied. The signal can be pulled down by an internal transistor.

*** Application Note :**

All ground pins should be connected separately with short and low-resistive lines to a central power supply ground. Accordingly, all supply pins should be connected separately with short and low-resistive lines to the power supply. Decoupling capacitors from VSUPP to GNDD, VSUPD to GNDD, and VSUPO to GNDD are recommended to be placed as closely as possible to the pins.

IC DC VOLTAGE CHARTS

* **Input signal** ----- PAL/CH5 - Video : 8 step colour bar (87% AM)

Audio : 1KHz sinewave (60% FM)

* **User 's control condition** ----- Contrast, Brightness, Colour, Volume Controls-max.

* **Line voltage** ----- AC 230V, 50Hz

* **All the voltage in each point are measured with Multimeter.**

1. TDA 8172 (I301)

Pin No.	1	2	3	4	5	6	7
V(DC)	0.2	+15.8	-13.3	-15.8	0	16.5	0.2

2. MSP 3410D (I606)

Pin No.	1	2	3	4	5	6	7	8	9	10
V(DC)	2.6	0	0	0	0	0	4.9	0	5.0	5.0

Pin No.	11	12	13	14	15	16	17	18	19	20
V(DC)	2.4	2.4	2.4	0.2	0.2	0.2	0.2	4.9	0	0.2

Pin No.	21	22	23	24	25	26	27	28	29	30
V(DC)	0	0	0	4.9	0.1	0.1	0	0.1	0.1	0

Pin No.	31	32	33	34	35	36	37	38	39	40
V(DC)	0.1	0	3.7	3.7	0	3.7	3.7	6.9	8.0	6.9

Pin No.	41	42	43	44	45	46	47	48	49	50
V(DC)	0	3.7	3.7	3.7	0	3.7	3.7	0	3.7	3.7

Pin No.	51	52	53	54	55	56	57	58	59	60
V(DC)	0	3.7	3.7	2.6	3.7	0	5.0	1.5	1.5	0.3

Pin No.	61	62	63	64
V(DC)	0	2.2	2.1	0.3

3. TDA 4470-M (I101)

Pin No.	1	2	3	4	5	6	7	8	9	10
V(DC)	3.1	3.1	3.4	0	1.1	2.4	2.4	2.3	0	0.7

Pin No.	11	12	13	14	15	16	17	18	19	20
V(DC)	2.4	2.2	4.5	3.8	2.6	0	4.2	2.3	3.4	3.3

Pin No.	21	22	23	24	25	26	27	28
V(DC)	3.3	2.8	5.0	2.1	2.1	0.6	0.1	0.1

DAEWOO

DAEWOO ELECTRONICS Corp.

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SEOUL, KOREA

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