

# Service Manual

Colour Television 76 Cm WIDE STEREO

CHASSIS : CP-822F

MODEL : DTA-3220ZZ \*

DTA-3220ZL \*

DTA-32W9ZZ

DTA-32W9ZL

## ■ Specifications

CRT	76ERF042X
SYSTEM	PAL/SECAM-B/G,D/K,PAL-M,SECAM-L/L' NTSC-3.58/4.43 (Play back)
Main Voltage	230V AC, 50Hz
Power Consumption	Stand-by mode : 3.0Watts Normal operating mode : 150 Watts
Sound Output	10 + 10 Watts, 10% THD at RF 60% mod. (1kHz)
Speaker	15W 8ohm x 2 EA Maximum
Antenna Impedance	75 ohm unbalanced input (Din Standard)
Tuning System	Frequency Synthesize(FS) Tuning System
Tuner	UV 1316(A/Philips), DT5-BF18D(Partsnics), TECC2949PG35W(S/S), EL2782-105-B(Siel)
Number of Program	100programs
Aux. Terminal	TV output) RCA type AV input jack Headphone jack
Remote Controller	R-22D06 with 2 "AAA" type batteries TOP(5 Page memory) & FLOF(7 Page memory)
Teletext	- 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>

Nov. 2003 □ □



## ***TABLE OF CONTENTS***

<b>SAFETY INSTRUCTION .....</b>	<b>2</b>
<b>SPECIFICATIONS .....</b>	<b>3</b>
<b>CIRCUIT BLOCK DIAGRAM .....</b>	<b>4</b>
<b>ALIGNMENT INSTRUCTION .....</b>	<b>5</b>
<b>SCHEMATIC DIAGRAM .....</b>	<b>11</b>
<b>EXPLODED VIEW .....</b>	<b>12</b>
<b>PRINTED CIRCUIT BOARD .....</b>	<b>14</b>
<b>SERVICE PARTS LIST .....</b>	<b>17</b>
<b>APPENDIX (" Appendix is provided only by internet [<a href="http://svc.dwe.co.kr">http://svc.dwe.co.kr</a>] ")</b>	
<b>IC DESCRIPTION .....</b>	<b>1</b>
<b>IC DC VOLTAGE CHARTS .....</b>	<b>18</b>

# 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 require 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

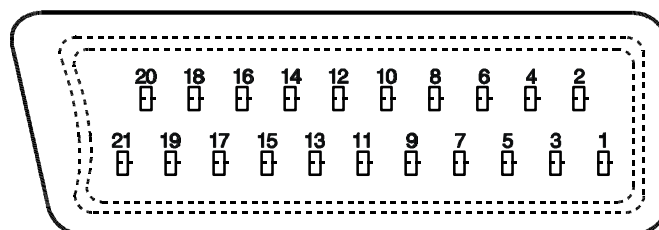
Many electrical and mechanical parts in this have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage,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

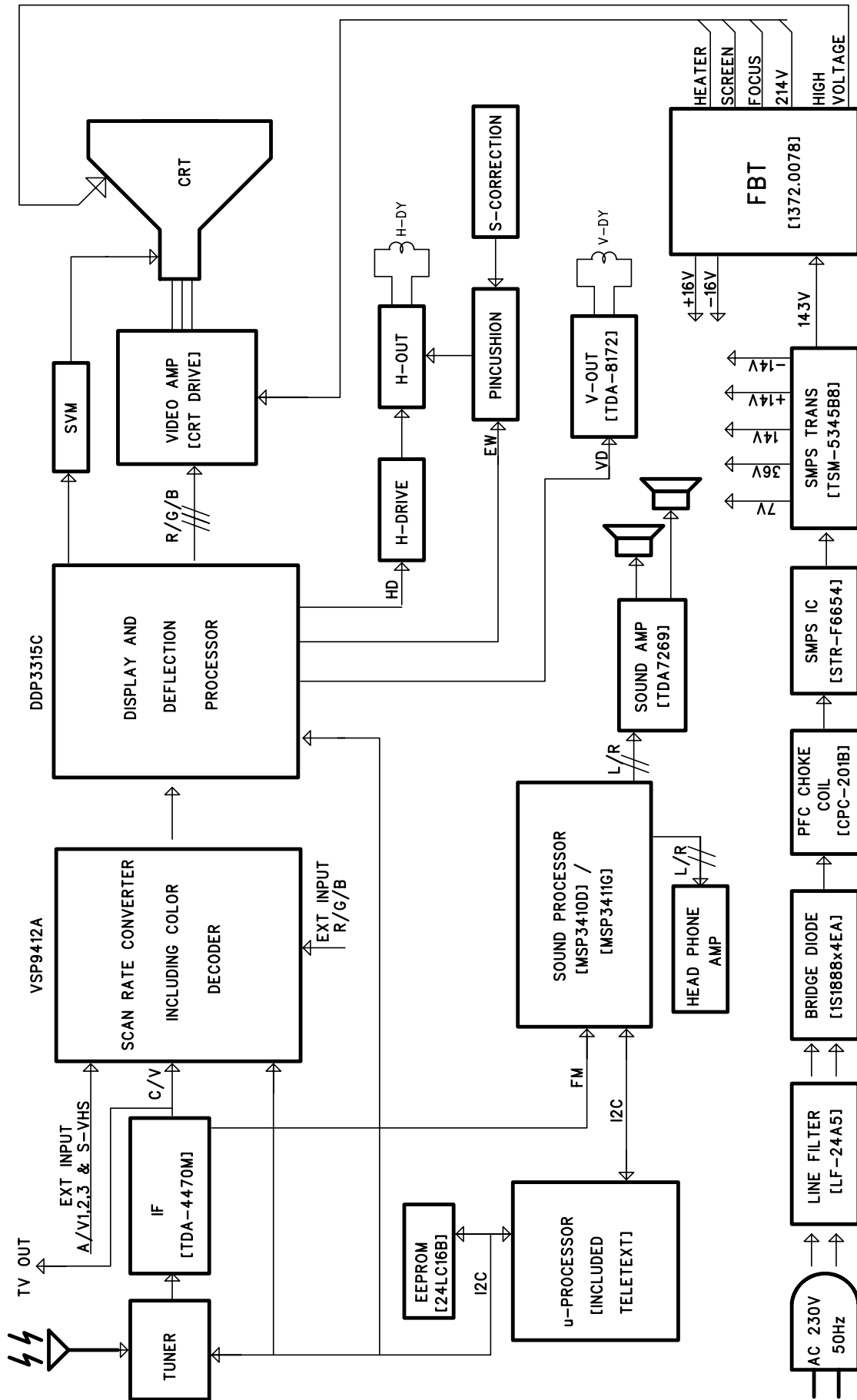
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY Radiation.

# SPECIFICATIONS

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

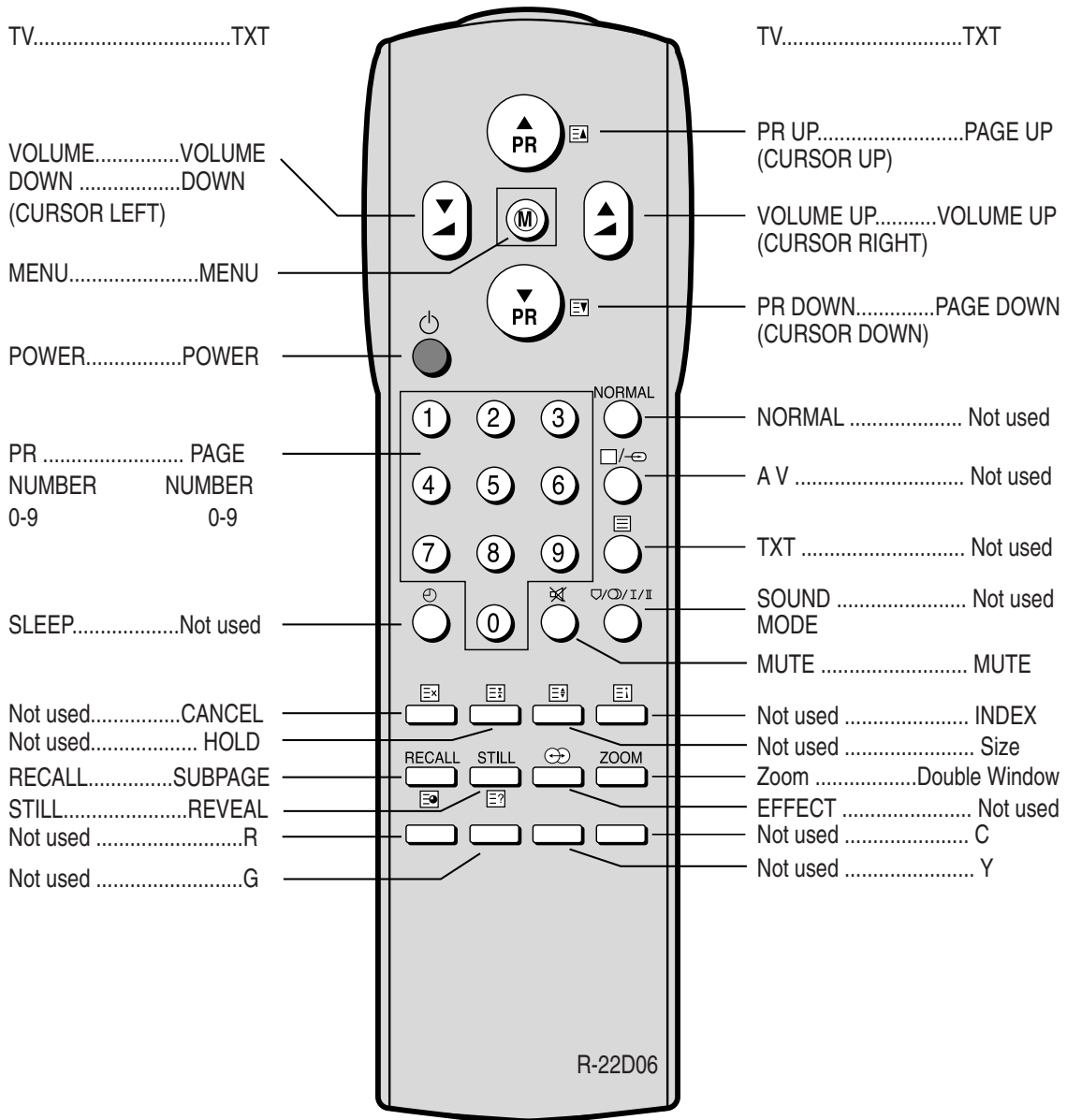


# CIRCUIT BLOCK DIAGRAM



# ALIGNMENT INSTRUCTIONS

## ■ User Remocon 1. R-22D06



## IC MASTER MEMORY CONDITION TABLE FOR CP-822F CHASSIS

<i>CONTROL</i>	<i>MODEL</i>	<i>BASIC</i>	<i>W/VIRTUAL DOLBY</i>
Deflection	V. Slope	-015 (const.)	-015 (const.)
	V. Center	955	955
	V. Size	68	68
	S. Curve	027 (const.)	027 (const.)
	H. Center	-333	-333
	H. Width	40	40
	EW. Para	-040	-040
	EW. Cor Top	012	012
	EW. Cor Low	008	008
EW. Sym	-006	-006	
W/B	R Bias	330 (const.)	330 (const.)
	G Bias	330	330
	B Bias	370	370
	R Drive	400 (const.)	400 (const.)
	G Drive	370	370
	B Drive	370	370
	G2 Adjust	000	000
Sub Bright	006	006	
Opt1.	Double TEXT	-514 (can't see)	-514 (can't see)
	Wide Option	YES	YES
	* Tuner Is	<b>DWE (opt.)</b>	<b>DWE (opt.)</b>
	Flat Option	YES	YES
SVM	Svm SVG	003 (const.)	003 (const.)
	Svm SVD	004 (const.)	004 (const.)
	Svm SVDEL	012 (const.)	012 (const.)
	Svm SVCOR	009 (const.)	009 (const.)
BCL	Bcl Thres	580 (const.)	580 (const.)
	Bcl Tc	250 (const.)	250 (const.)
	Bcl Gain	511 (const.)	511 (const.)
Normal 1	Nor1 Bright	038	038
	Nor1 Cont	058	058
	Nor1 Color	042	042
	Nor1 Sharp	032	032
	Nor1 Tint	032	032
Normal 2	Nor2 Bright	038	038
	Nor2 Cont	038	038
	Nor2 Color	038	038
	Nor2 Sharp	032	032
	Nor2 Tint	032	032
Sound	Dolby 3411	<b>NO</b>	<b>YES</b>
OSD	OSD Contrast	400 (const.)	400 (const.)
	OSD Bright	000 (const.)	000 (const.)
Opt2.	Text Gain	YES	YES
	Tilt Option	YES	YES
	Transparent	NO	NO
	Vertical Angle	-769 (const.)	-769 (const.)
	Vertical Bow	-769 (const.)	-769 (const.)

* Tuner is	
DW	DAEWOO/PARTSNIC/SAMSUNG
PHI	PHILIPS
SIE	SIEL

## 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 =  $80 \pm 5$ 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  $2.5V \pm 0.1V$

### ■ 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  $3.0V \pm 0.1V$ dc, ②  $2.5V \pm 0.1V$ dc 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.

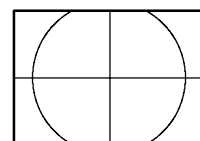
### ■ GEOMETRY

#### 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.

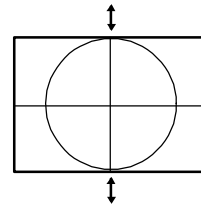




### 3. VERTICAL SIZE

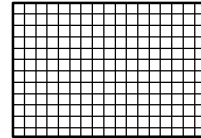
\* The VERTICAL CENTER adjustment has to be done in advance.

- 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.



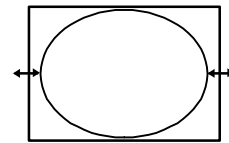
### 5. HORIZONTAL CENTER

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

## ■ EW

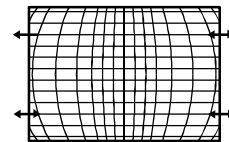
#### 1. WIDTH

- 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.



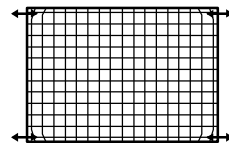
#### 2. PARA

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



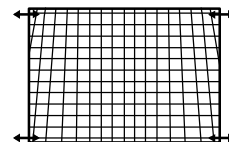
#### 3. CORNER ( Fixed : Adjust if need be )

- 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.



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## ALIGNMENT INSTRUCTIONS

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### ■ WHITE BALANCE

1. RGB Reference R
2. Beam Reference LOW ( 288, 301 : 10Cd/ m<sup>2</sup>)  
HIGH ( 288, 301 : 100Cd/ m<sup>2</sup>)
3. 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 or Samsung 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.

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## ALIGNMENT INSTRUCTIONS

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### ■ SVM (Scan Velocity Modulation)

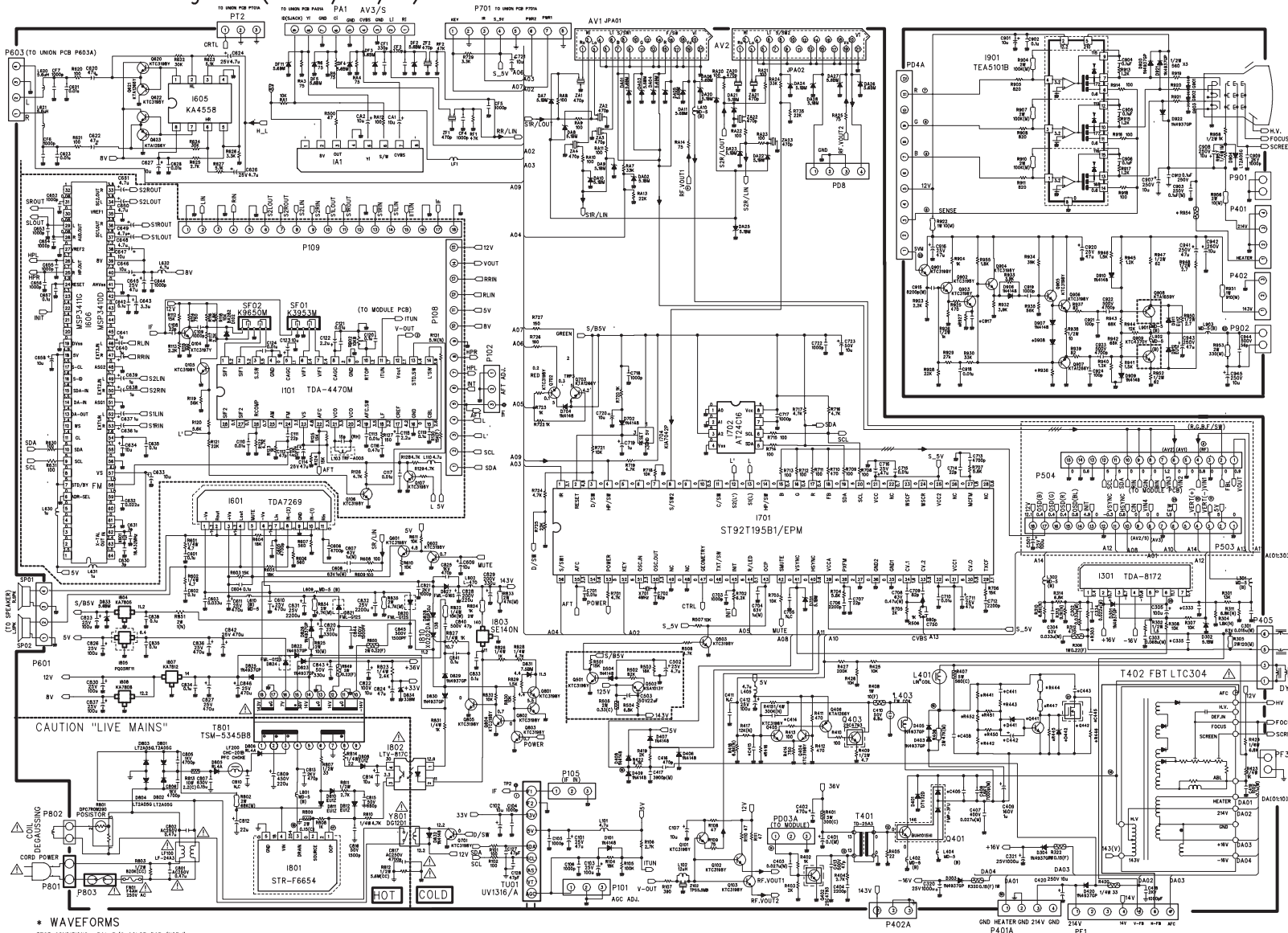
1. SVM SVG : SVM Gain
2. SVM SVD : SVM Differentiator delay (0 = filter off)
3. SVM SVDEL : Delay of SVMOUT in steps of 12.5nS
2. SVM SVCOR : SVM coring value

### ■ BCL (Beam Current Limit)

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

# SCHEMATIC DIAGRAM

Schematic Diagram (2003/06/11)



NOTE:  
 1. RESISTANCE IS SHOWN IN OHM, K=1000, M=1000000  
 2. UNLESS OTHERWISE NOTED IN SCHEMATIC ALL CAPACITOR VALUES ARE EXPRESSED IN UF.  
 3. VOLTAGES READ WITH "VFM" 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 +20% EXCEPT H.V.  
 4. THIS CIRCUIT DIAGRAM IS A STANDARD ONE CIRCUIT PRINTED MAY BE SUBJECT TO CHANGE FOR PRODUCT IMPROVEMENT WITHOUT PRIOR NOTICE.

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

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

RESISTOR		CAPACITOR		COIL	
CARBON FEM	1/4	ELECTRO	1/2	FEARLESS	1/2
W-GLOSS	1/2	CERAMIC	1	SHOCK	1/2 (E)
FLUOROPOLY	1/2	CERAMIC	1	SHOCK	1/2 (E)
FUSIBLE	1/2	ELECTRO NONPOLAR	1	SHOCK	1/2 (E)
OHMITE	1/2	BIPOLAR	1	SHOCK	1/2 (E)
W METAL FILM	1/2				

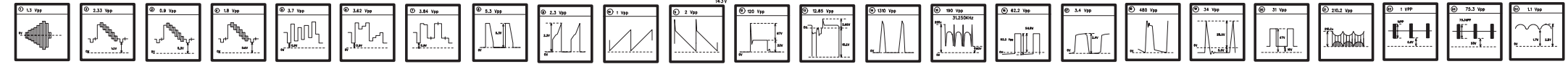
### THE DIFFERENT PARTS (+)

LOC.	DWL-28WZLP/ZFP	DWL-28WZLS/ZZS	DWL-28WZLF/ZZF	DTL-28UZLP/ZFP	DTL-28UZLS/ZZS	DTL-28UZLF/ZZF
CR1	W66EY101H121	A66E2E993X985	W66E2E22X044	A66E2J01H121	A66E2CP93X001	A66E2FO10X44
C333	100V 0.015MF J	100V 0.039MF J	100V 0.058MF J	100V 0.015MF J	100V 0.039MF J	100V 0.015MF J
C335	100V 0.22MF J	100V 0.22MF J	X	100V 0.22MF J	100V 0.22MF J	X
C405	1.6KV BUP 4700PF	1.6KV BUP 4300PF	1.6KV BUP 4300PF	1.6KV BUP 4700PF	1.6KV BUP 4300PF	1.6KV BUP 4300PF
C408	400V PU 0.27MF	400V PU 0.22MF	400V PU 0.22MF	400V PU 0.27MF	400V PU 0.22MF	400V PU 0.22MF
L403	CH-101A	CH-101A	CH-101A	CH-101A	CH-101A	CH-101A
C411	X	50V 0.022MF Z	50V 0.022MF Z	X	50V 0.022MF Z	50V 0.022MF Z
C414	500V 100PF K	X	X	500V 100PF K	X	X
C415	50V 0.022MF Z	X	X	50V 0.022MF Z	X	X
C443	400V 0.12MF (M)	400V 0.15MF (M)	400V 0.15MF (M)	400V 0.12MF (M)	400V 0.15MF (M)	400V 0.15MF (M)
C917	50V B 390PF K	50V B 360PF K	50V B 390PF K	50V B 390PF K	50V B 390PF K	50V B 390PF K
R403	1/4 1.30K OHM (N)	1/4 1.30K OHM (N)	1/4 1.30K OHM (N)	1/4 2.0K OHM (N)	1/4 2.0K OHM (N)	1/4 2.0K OHM (N)
R436	1/6 75.0K OHM (N)	1/6 75.0K OHM (N)	1/6 100.0K OHM (N)	1/6 100.0K OHM (N)	1/6 100.0K OHM (N)	1/6 100.0K OHM (N)
R450	1/4 3.3K OHM (N)	1/4 3.3K OHM (N)	1/4 3.3K OHM (N)	1/4 2.4K OHM (N)	1/4 2.4K OHM (N)	1/4 3.3K OHM (N)
R451	1/4 6.8K OHM (N)	1/4 6.8K OHM (N)	1/4 6.8K OHM (N)	1/4 7.5K OHM (N)	1/4 7.5K OHM (N)	1/4 6.8K OHM (N)
R927	1/6 120 OHM J	1/6 220 OHM J	1/6 120 OHM J	1/6 120 OHM J	1/6 220 OHM J	1/6 120 OHM J
R936	1/6 10K OHM J	X	1/6 10K OHM J	1/6 10K OHM J	X	1/6 10K OHM J
R954	1W 3.6 OHM J	2W 7.5 OHM J	1W 8.2 OHM J	1W 3.6 OHM J	2W 7.5 OHM J	2W 7.5 OHM J
D908	IN4148	JUMPER	IN4148	IN4148	JUMPER	IN4148
SPEAKER	SP-58126F	SP-58126F	SP-58126F	SP-78128F02	SP-78128F02	SP-78128F02
RCD54	1/10 430 OHM J	1/10 560 OHM J	1/10 430 OHM J	1/10 430 OHM J	1/10 560 OHM J	1/10 430 OHM J

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

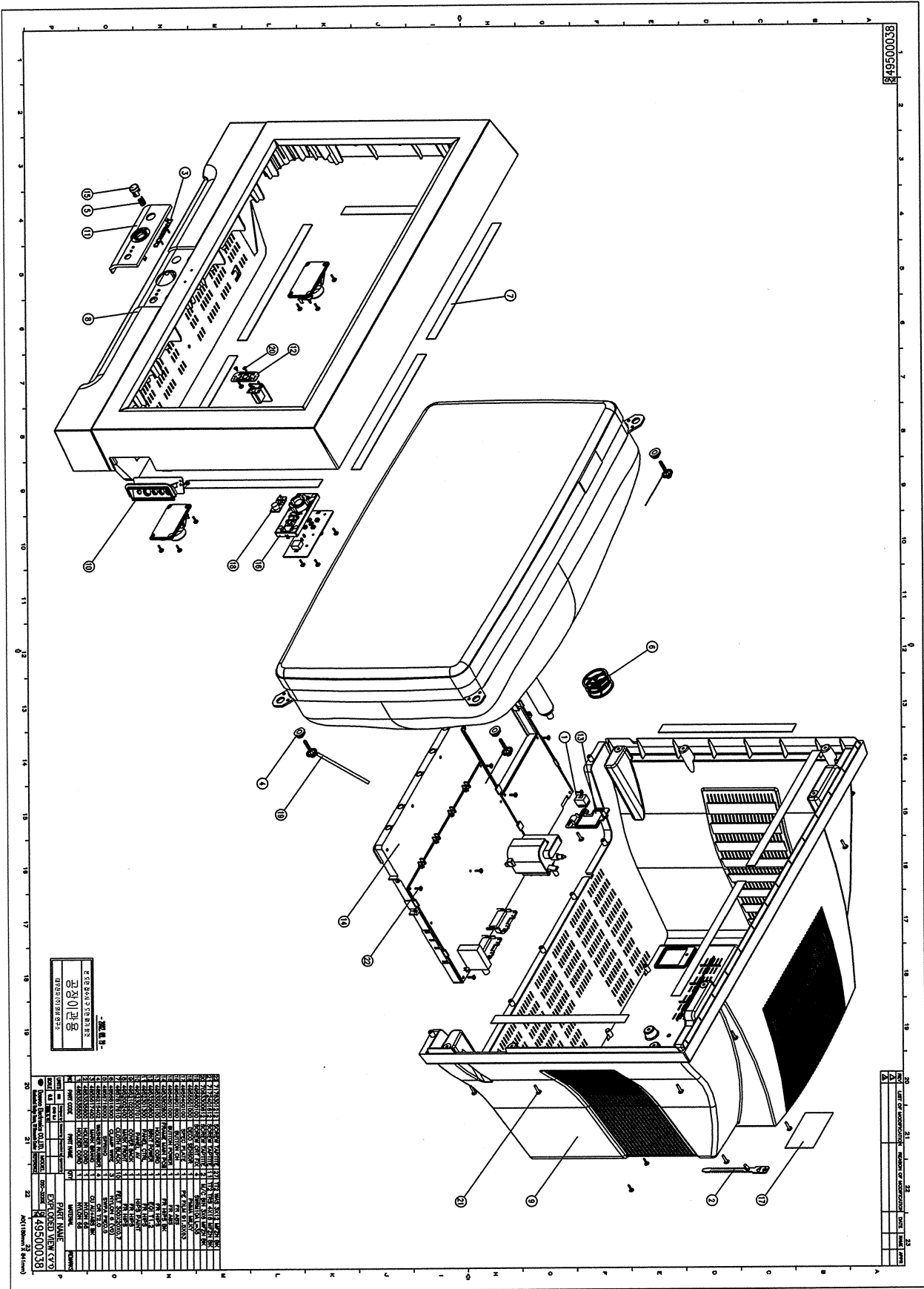
S/N : 4859807393

\* WAVEFORMS  
 TEST CONDITIONS : PAL-B/G COLOR BAR (NOR.)



# EXPLODED VIEW

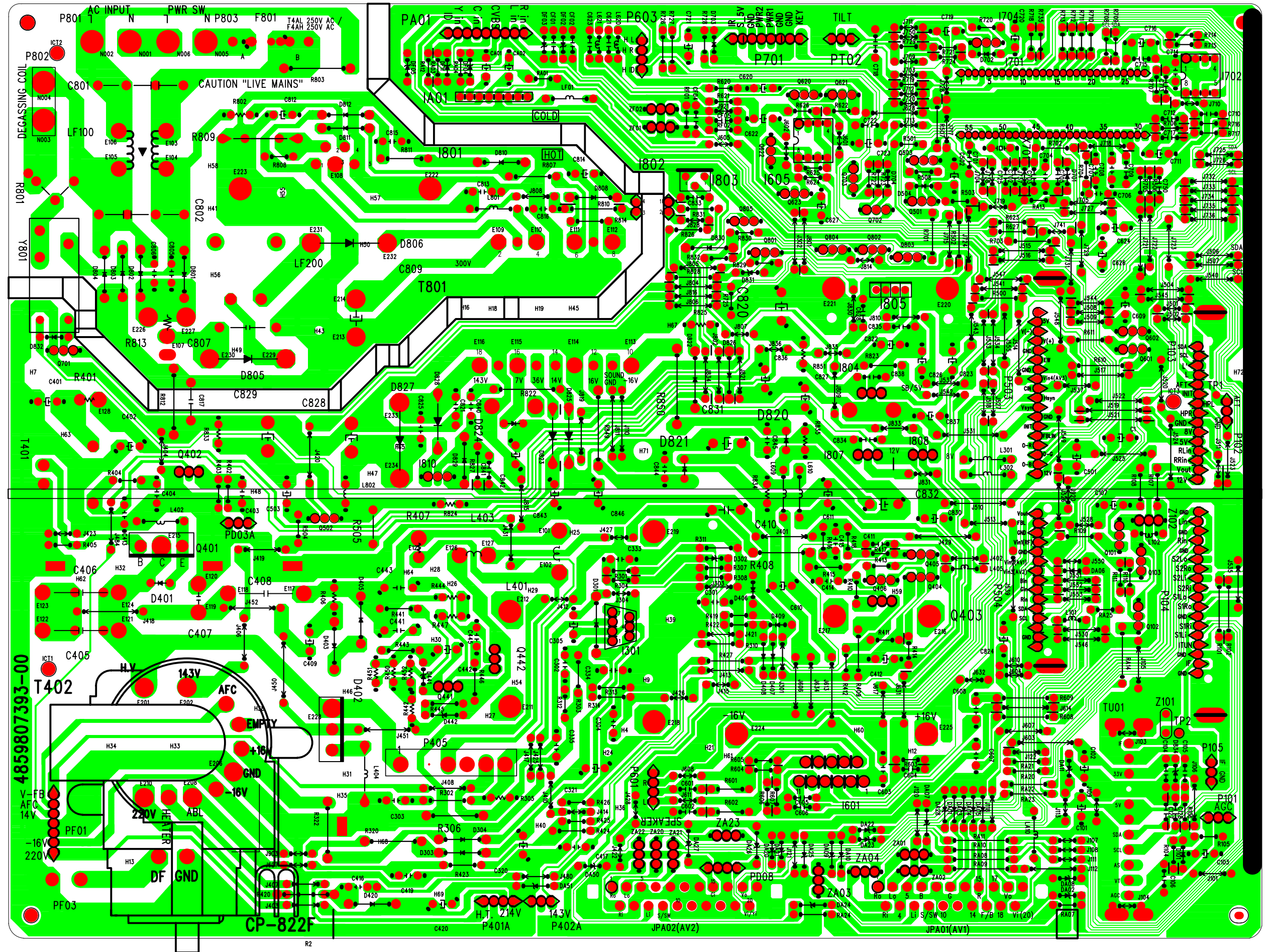
DTA-3220ZZ/DTA-3220ZL







# PRINTED CIRCUIT BOARD

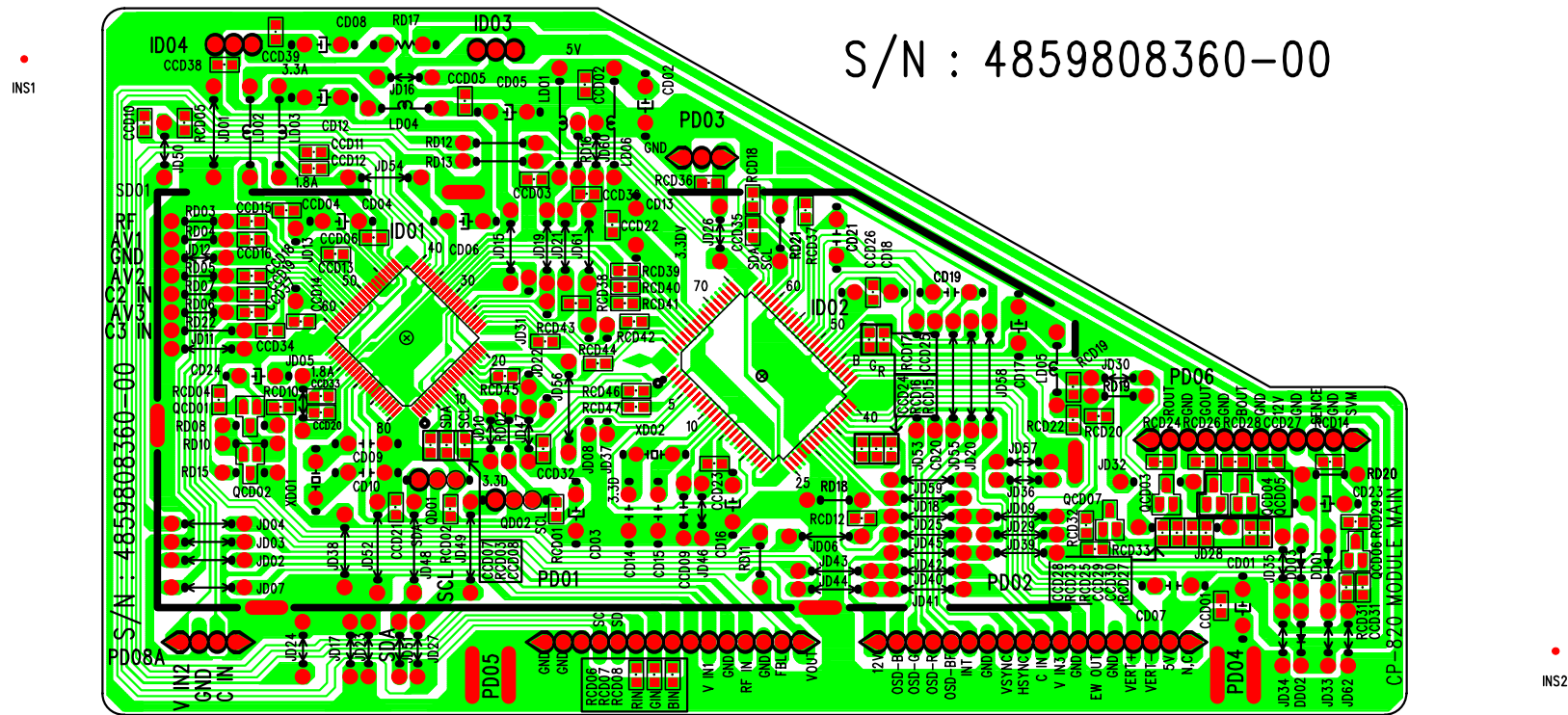








246 X 246

INS3



# Part List

**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(Prats Price List) in Service information Center (<http://svc.dwe.co.kr>)

**Caution**  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)		10	2193102005	SOLDER BAR	SN:PB=63:47 S63S-1320	
ZZ110	PTACPWDS46	ACCESSORY AS	DTL-29U8ZLF		CF11	CMYH3D752J	C MYLAR	2KV BUP 7500PF J	
M821	4858213801	BAG INSTRUCTION	L.D.P.E T0.05X250X400		I101	1TDA4470M-	IC IF	TDA4470-M	
ZZ120	PTBCSHD764	COVER BACK AS	DTA-3220ZZF		I606	1MSP3410V3	IC SOUND PROCESSOR	MSP3410G-PP-B8-V3	
M211	4952102201	COVER BACK	HIPS		I901	PTC2SW5403	HEAT SINK ASS'Y	1STV5109 + 7174300811	
M781	4857817610	CLOTH BLACK	FELT 300X20X0.7		00001	1STV5109	IC VIDEO AMP	STV5109	
ZZ130	PTPKCPD764	PACKING AS	DTA-3220ZZF		0000A	4857025403	HEAT SINK	AL050P-H24 T=2	
10	6520010100	STAPLE PIN	AUTO W65		0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
M881	4856812400	BAND PP AUTO	T1.1XW17mmXL770M		IC01	1KSM9HP -	IC PREAMP	KSM-9HP	
M801	4958002200	BOX CARTON	DW-4		IF01	1MC7812 -	IC REGULATOR	MC7812 12V 1A (KA7812)	
M811	4958102500	PAD	EPS		IF02	1KA4558 -	IC AMP	KA4558	
M821	4958200701	BAG P.E	FOAM T0.5X1880X1380		IT01	1LA6515 -	IC OP AMP	LA6515	
ZZ131	58GD000003	COIL DEGAUSSING	DC-3200(E)		JZ01	4859105240	JACK PHONE	LG1516-0100	
ZZ132	49519A0110	CRT GROUND NET	DSC-3210E		JZ02	4859105340	JACK S-VHS	YKF51-5359	
ZZ140	PTCACAD764	CABINET AS	DTA-3220ZZF		JZ03	4859105450	JACK PIN BOARD	YSC03P-4120-9S	
M201A	4956000100	SCREW CRT FIX	SWRM10A L=35		L103	58E0000041	COIL AFT	TRF-A005	
M201B	4856215401	WASHER RUBBER	CR T1.0		LED1	DSL342MC3	LED	SLR-342MC3	
M201C	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		LED2	DSL342VC3	LED	SLR-342VC3	
M201D	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		LF01	58CD000009	COIL CHOKE	920UH	
M211A	7172401612	SCREW TAPPTITE	TT2 TRS 4X16 MFZN BK		M232	4952300701	PANEL AV	HIPS PAINT	
M211B	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		M232A	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK	
M211C	7172401612	SCREW TAPPTITE	TT2 TRS 4X16 MFZN BK		M321	4953200600	BRKT POWER	EGI T1.2	
M211D	7172401612	SCREW TAPPTITE	TT2 TRS 4X16 MFZN BK		M321A	7063300612	SCREW MACHINE	MIC BIN 3X6 MFZN BK	
M231	4952301301	PANEL CTRL	HIPS PAINT		M491	4954901601	BUTTON CH	ABS PAINT	
M353	4853535600	HOLDER CORD	NYLON 66		M551	4955501000	DECO SENSOR	GPPS	
M481	4954801001	BUTTON POWER	ABS PAINT		M684	4856812001	TIE CABLE	NYLON66 DA100	
M481A	4856716000	SPRING	SWPA PIE0.5		P106	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)	
M491A	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		P107	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)	
M541	4955400100	SPEC PLATE	P.E.FILM 91.5X63		P108	4859279520	CONN WAFER	TAC-L15P-A3 (ANGLE)	
M681	4856812001	TIE CABLE	NYLON66 DA100		P109	4859279820	CONN WAFER	TAC-L18P-A3 (ANGLE)	
M682	4856816300	CLAMP WIRE	NYLON 6 (V0)		P603A	4850704S04	CONNECTOR	YH025-04+YST025+ULW=400	
P405	4850706N14	CONNECTOR	YFSH500-06+YH396V+ULW=600		P701A	4850708S02	CONNECTOR	YH025-08+YST025+ULW=300	
P601A	4850704S30	CONNECTOR	YH025-04+YRT205+ULW700600		P803	4850702S09	CONNECTOR	BL102NG+MXH40058-02=300	
SP01	4858315610	SPEAKER	SP-5090F13		P901	4859238620	CONN WAFER	YPW500-02	
SP01A	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		P902	4850703N24	CONNECTOR	EHR-03+YBNH250-03+ULW=200	
SP02	4858315610	SPEAKER	SP-5090F13		PA01A	4850709N07	CONNECTOR	YH025-09+YBNH250-09+USW=600	
SP02A	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		PD06A	4850712N02	CONNECTOR	YH025-12+YBNH250+USW=500	
V901	4959601270	CPT	W76ERF042X044	 	PF02	4859238620	CONN WAFER	YPW500-02	
ZZ200	PTFMSJD764	MASK FRONT AS	DTA-3220ZZF		PF3	4850702N06	CONNECTOR	YPH500-02+YLT500+ULW=200	
M201	4952002401	MASK FRONT	HIPS PAINT		PT02	4850703S21	CONNECTOR	YH025-03+YBNH250+ULW=600	
M201D	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		Q908	PTF2SW6900	HEAT SINK ASS'Y	TKTA1659AY + 7178301011	
M201E	4857817610	CLOTH BLACK	FELT 300X20X0.7		00001	TKTA1659AY	TR	KTA1659AY	
M561	4855617400	MARK BRAND	CJ AU+ABS BK		0000A	4857026900	HEAT SINK	AL EX	
ZZ202	PTU1MSD764	PCB UNION-1 MANUAL AS	DTA-3220ZZF		0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	

Part List

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
Q909	PT62SW6900	HEAT SINK ASS Y	TKTC4370AY + 7178301011		C639	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
00001	TKTC4370AY	TR	KTC4370AY		C640	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
0000A	4857026900	HEAT SINK	AL EX		C641	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		C643	CEXF1H339V	C ELECTRO	50V RSS 3.3MF (5X11) TP	
QF04	T4636LSRB-	TR	2SC4636LS-RB		C644	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
SCT1	4859303730	SOCKET CRT	ISD-07S		C645	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
SF01	5PK3953M	FILTER SAW	K3953M		C646	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
SF02	5PK9650M	FILTER SAW	K9650M		C647	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
SW801	5S4000003	SW POWER PUSH	SS-160-7-G		C648	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
TFU1	50D28A1 -	TRANS DRIVE	TD-28A1		C649	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
ZZ200	PTU1J0D764	PCB UNION RHU AS	DTA-3220ZZF		C650	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C908	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		C651	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C909	CCXB3D102K	C CERA	2KV B 1000PF K (TAPPING)		C652	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)	
C913	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		C653	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)	
C922	CCXB2H472K	C CERA	500V B 4700PF K (TAPPING)		C654	CCXB1H102K	C CERA	50V B 1000PF K (TAPPING)	
C923	CCXB2H472K	C CERA	500V B 4700PF K (TAPPING)		C658	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C925	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		C901	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C941	CEXF2C470V	C ELECTRO	160V RSS 47MF (13X25) TP		C902	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)	
C942	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		C904	CXSL2H471J	C CERA	500V SL 470PF J (TAPPING)	
C943	CEXF2C470V	C ELECTRO	160V RSS 47MF (13X25) TP		C905	CXSL2H471J	C CERA	500V SL 470PF J (TAPPING)	
C945	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		C906	CXSL2H471J	C CERA	500V SL 470PF J (TAPPING)	
CF02	CMXE2J333J	C MYLAR	630V PU 0.033MF J (TP)		C912	CMXL2E104J	C MYLAR	MEU 250V 0.1MF J	
CF05	CMXE2J333J	C MYLAR	630V PU 0.033MF J (TP)		C915	CMXM2A822J	C MYLAR	100V 8200PF J (TP)	
CF07	CMXE2J333J	C MYLAR	630V PU 0.033MF J (TP)		C916	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
CF10	CMXE2J333J	C MYLAR	630V PU 0.033MF J (TP)		C920	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
ZZ200	PTU1J0D764	PCB UNION M-10 AS	DTA-3220ZZF		C921	CCXB1H101K	C CERA	50V B 100PF K (TAPPING)	
P401	485923172S	CONN WAFER	YW025-04 (STICK)		C924	CCXB1H101K	C CERA	50V B 100PF K (TAPPING)	
P402	485923162S	CONN WAFER	YW025-03 (STICK)		C944	CXSL2H560J	C CERA	500V SL 56PF J (TAPPING)	
PF01	485923202S	CONN WAFER	YW025-07 (STICK)		CF01	CEXF1C221V	C ELECTRO	16V RSS 220MF (8X11.5) TP	
PT01	485923162S	CONN WAFER	YW025-03 (STICK)		CF04	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
R904	RS02Z563J.S	R M-OXIDE FILM	2W 56K OHM J SMALL		CF06	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
R907	RS02Z563J.S	R M-OXIDE FILM	2W 56K OHM J SMALL		CF08	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
R910	RS02Z563J.S	R M-OXIDE FILM	2W 56K OHM J SMALL		CF09	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
R954	RF02Z249J-	R FUSIBLE	2W 2.4 OHM J (TAPPING)		CF12	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
RF19	RF02Z479J-	R FUSIBLE	2W 4.7 OHM J (TAPPING)		CF13	CEXF1C221V	C ELECTRO	16V RSS 220MF (8X11.5) TP	
RF20	RS01Z472J-	R M-OXIDE FILM	1W 4.7K OHM J (TAPPING)		CF14	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
RF21	RS01Z228J-	R M-OXIDE FILM	1W 0.22 OHM J		CT01	CMXL1.4474J	C MYLAR	63V MEU 0.47MF J	
ZZ200	PTU1J0D764	PCB UNION RADIAL AS	DTA-3220ZZF		CT02	CMXL1.4474J	C MYLAR	63V MEU 0.47MF J	
C100	CXRH1H150J	C CERA	RH 50V 15PF J (TAPPING)		CT03	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
C108	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)		CT11	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C111	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)		G901	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
C114	CEXF1E470C	C ELECTRO	25V RUS 47MF (5X11) TP		G902	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
C116	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP		G903	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
C118	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP		G904	4SG0DX0001	SPARK GAP	SSG-102-A1(1.0KV) TAP	
C122	CEXF1H229V	C ELECTRO	50V RSS 2.2MF (5X11) TP		JZ05	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C123	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JZ06	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF	
C630	CXCH1H309C	C CERA	50V CH 3PF C		L904	58C0000116	COIL BEAD	HC-3550R	
C631	CXCH1H309C	C CERA	50V CH 3PF C		Q104	TKTC3197	TR	KTC3197 (TP)	
C632	CXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)		Q105	TKTC3198Y-	TR	KTC3198Y	
C634	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		Q106	TKTC3198Y-	TR	KTC3198Y	
C636	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		Q107	TKTC3198Y-	TR	KTC3198Y	
C637	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		Q901	TKTC3198Y-	TR	KTC3198Y	
C638	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		Q902	TKTC3198Y-	TR	KTC3198Y	

**Part List**

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
Q903	TKTC3198Y-	TR	KTC3198Y		D909	D1N4148 -	DIODE	1N4148 (TAPPING)	
Q904	TKTC3198Y-	TR	KTC3198Y		D910	D1N4148 -	DIODE	1N4148 (TAPPING)	
Q905	TKTC3198Y-	TR	KTC3198Y		D911	DEU1Z -	DIODE	EU1Z (HIGH SPEED)	
Q906	TKTC3198Y-	TR	KTC3198Y		D912	DEU1Z -	DIODE	EU1Z (HIGH SPEED)	
Q907	TKTA1266Y-	TR	KTA1266Y (TP)		D920	D1N4937G	DIODE	1N4937G (TAPPING)	
QF01	TKTA1266Y-	TR	KTA1266Y (TP)		D921	D1N4937G	DIODE	1N4937G (TAPPING)	
QF02	TKTA1266Y-	TR	KTA1266Y (TP)		D922	D1N4937G	DIODE	1N4937G (TAPPING)	
QF03	TKTC3198Y-	TR	KTC3198Y		DF01	D1N4937G	DIODE	1N4937G (TAPPING)	
QT01	TKTC3198Y-	TR	KTC3198Y		DF02	D1N4937G	DIODE	1N4937G (TAPPING)	
R951	RN01B102JS	R METAL FILM	1W 1K OHM J SMALL		DF03	D1N4937G	DIODE	1N4937G (TAPPING)	
R953	RN02B331JS	R METAL FILM	2W 330 OHM J SMALL		DF04	D1N4937G	DIODE	1N4937G (TAPPING)	
R956	RN02B100JS	R METAL FILM	2W 10 OHM J SMALL		DT02	D1N4148 -	DIODE	1N4148 (TAPPING)	
RB02	RV5426103P	R SEMI FIXED	ENV-DJAA03B14 10K OHM B		J151	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RF24	RN02B683JS	R METAL FILM	2W 68K OHM J SMALL		J152	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RF25	RN02B333JS	R METAL FILM	2W 33K OHM J SMALL		J153	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RF26	RN02B683JS	R METAL FILM	2W 68K OHM J SMALL		J154	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
SW701	5S50101Z90	SW TACT	THV502GDA		J155	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
SW702	5S50101Z90	SW TACT	THV502GDA		J156	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
SW703	5S50101Z90	SW TACT	THV502GDA		J157	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
SW704	5S50101Z90	SW TACT	THV502GDA		J159	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
SW705	5S50101Z90	SW TACT	THV502GDA		J160	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
X601	5XEX18R43E	CRYSTAL QUARTZ	HC-49U 18.432MHZ 30PPM TP		J161	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
ZZ200	PTU1JAD764	PCB UNION AXIAL AS	DTA-3220ZZF		J165	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M		J167	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M		J169	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
A001	4859809660	PCB UNION	330X246 D1B		J170	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C109	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J171	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C110	CCZF1H103Z	C CERA	50V F 0.01MF Z		J172	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C112	CZSL1H470J	C CERA	50V SL 47PF J (AXIAL)		J651	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C113	CCZF1H103Z	C CERA	50V F 0.01MF Z		J652	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C115	CCZF1H103Z	C CERA	50V F 0.01MF Z		J653	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C117	CCZF1H103Z	C CERA	50V F 0.01MF Z		J654	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C119	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J655	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C120	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J656	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C121	CCZF1H103Z	C CERA	50V F 0.01MF Z		J657	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C124	CCZF1H103Z	C CERA	50V F 0.01MF Z		J658	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C633	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J659	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C635	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J660	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C642	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J661	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C656	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J662	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C657	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J663	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C917	CCZB1H391K	C CERA	50V B 390PF K (AXIAL)		J664	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C918	CCZF1H103Z	C CERA	50V F 0.01MF Z		J665	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
C919	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		J666	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CC01	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J667	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CT05	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		J668	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CZ01	CCZB1H561K	C CERA	50V B 560PF K		J669	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CZ02	CCZB1H561K	C CERA	50V B 560PF K		J670	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D102	DBA282	DIODE	BA282		J672	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D904	DLT2A05G	DIODE	LT2A05G (TP)		J901	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D906	D1N4148 -	DIODE	1N4148 (TAPPING)		J902	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D907	D1N4148 -	DIODE	1N4148 (TAPPING)		J904	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
D908	D1N4148 -	DIODE	1N4148 (TAPPING)		J906	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
J907	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R909	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
J908	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R911	RD-AZ271J-	R CARBON FILM	1/6 270 OHM J	
J909	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R912	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
J910	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R913	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
J913	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R914	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J914	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R915	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
J915	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R916	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J916	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R917	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
J918	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R918	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
J919	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R919	RC-2Z102K-	R CARBON COMP	1/2 1K OHM K	
J920	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R920	RC-2Z102K-	R CARBON COMP	1/2 1K OHM K	
J930	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R921	RC-2Z102K-	R CARBON COMP	1/2 1K OHM K	
JC01	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R922	RD-2Z100J-	R CARBON FILM	1/2 10 OHM J	
JF01	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R923	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
JF03	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R924	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
JF04	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R925	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
JF05	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R926	RD-2Z471J-	R CARBON FILM	1/2 470 OHM J	
JF06	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R927	RD-AZ121J-	R CARBON FILM	1/6 120 OHM J	
JZ04	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING		R928	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
L110	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)		R929	RD-AZ273J-	R CARBON FILM	1/6 27K OHM J	
L630	5CPZ109M02	COIL PEAKING	1UH M (AXIAL 3.5MM)		R930	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J	
L631	5CPZ109M02	COIL PEAKING	1UH M (AXIAL 3.5MM)		R932	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
L632	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)		R933	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
L901	5MC0000100	COIL BEAD	HC-3550		R934	RD-AZ393J-	R CARBON FILM	1/6 39K OHM J	
L902	5MC0000100	COIL BEAD	HC-3550		R935	RD-AZ563J-	R CARBON FILM	1/6 56K OHM J	
L903	5MC0000100	COIL BEAD	HC-3550		R936	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
LT01	5CPZ569K02	COIL PEAKING	5.6UH K (AXIAL 3.5MM)		R937	RD-AZ820J-	R CARBON FILM	1/6 82 OHM J	
R112	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J		R938	RD-2Z100J-	R CARBON FILM	1/2 10 OHM J	
R113	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J		R939	RD-AZ820J-	R CARBON FILM	1/6 82 OHM J	
R114	RD-AZ751J-	R CARBON FILM	1/6 750 OHM J		R940	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
R115	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		R941	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R116	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J		R942	RD-AZ683J-	R CARBON FILM	1/6 68K OHM J	
R117	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J		R943	RD-AZ683J-	R CARBON FILM	1/6 68K OHM J	
R118	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		R944	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
R119	RD-AZ563J-	R CARBON FILM	1/6 56K OHM J		R945	RD-AZ122J-	R CARBON FILM	1/6 1.2K OHM J	
R120	RD-AZ562J-	R CARBON FILM	1/6 5.6K OHM J		R946	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J	
R121	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J		R947	RD-2Z620J-	R CARBON FILM	1/2 62 OHM J	
R122	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J		R948	RD-2Z279J-	R CARBON FILM	1/2 2.7 OHM J	
R123	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J		R950	RD-2Z279J-	R CARBON FILM	1/2 2.7 OHM J	
R124	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J		R952	RD-2Z620J-	R CARBON FILM	1/2 62 OHM J	
R125	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J		R955	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
R126	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J		R957	RD-4Z105J-	R CARBON FILM	1/4 1M OHM J	
R127	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J		R958	RD-2Z102J-	R CARBON FILM	1/2 1K OHM J	
R128	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J		RC01	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
R129	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J		RC02	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J	
R130	RN-AZ1502F	R METAL FILM	1/6 15K OHM F		RC03	RD-AZ182J-	R CARBON FILM	1/6 1.8K OHM J	
R131	RN-AZ5101F	R METAL FILM	1/6 5.1K OHM F		RC04	RD-AZ132J-	R CARBON FILM	1/6 1.3K OHM J	
R630	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		RF01	RD-4Z431J-	R CARBON FILM	1/4 430 OHM J	
R631	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		RF02	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R901	RD-AZ431J-	R CARBON FILM	1/6 430 OHM J		RF03	RD-4Z332J-	R CARBON FILM	1/4 3.3K OHM J	
R905	RD-AZ271J-	R CARBON FILM	1/6 270 OHM J		RF04	RD-4Z682J-	R CARBON FILM	1/4 6.8K OHM J	
R906	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J		RF05	RD-4Z911J-	R CARBON FILM	1/4 910 OHM J	
R908	RD-AZ271J-	R CARBON FILM	1/6 270 OHM J		RF06	RD-4Z221J-	R CARBON FILM	1/4 220 OHM J	

# Part List

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
RF07	RD-4Z182J-	R CARBON FILM	1/4 1.8K OHM J		D828	D1N4937G	DIODE	1N4937G (TAPPING)	
RF08	RD-4Z123J-	R CARBON FILM	1/4 12K OHM J		F801	5FSCB4022R	FUSE CERA	SEMKO F4AH 4A 250V MF51	Ⓡ ⚠
RF09	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J		I301	PTC2SW8218	HEAT SINK ASSY	1TDA8172 + 7174300811	
RF10	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J		00001	1TDA8172	IC V-OUT	TDA8172	Ⓡ
RF11	RD-4Z911J-	R CARBON FILM	1/4 910 OHM J		0000A	4857028218	HEAT SINK	AL EX BK	
RF12	RD-4Z513J-	R CARBON FILM	1/4 51K OHM J		0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
RF13	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J		I601	PTA2SW8224	HEAT SINK ASSY	1TDA7269 7174300811	
RF14	RD-4Z820J-	R CARBON FILM	1/4 82 OHM J		00001	1TDA7269	IC AUDIO	TDA7269	Ⓡ
RF15	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J		0000A	4857028224	HEAT SINK	AL EX	
RF16	RD-4Z153J-	R CARBON FILM	1/4 15K OHM J		0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
RF17	RD-4Z272J-	R CARBON FILM	1/4 2.7K OHM J		I605	1KA4558 -	IC AMP	KA4558	Ⓡ
RF18	RD-4Z132J-	R CARBON FILM	1/4 1.3K OHM J		I701	1ST195EPM-	IC MICOM OTP	ST92T195B1/EPM	Ⓡ
RF27	RD-4Z221J-	R CARBON FILM	1/4 220 OHM J		I702	1AT24C16PC	IC	AT24C16-10PC	
RT01	RD-2Z100J-	R CARBON FILM	1/2 10 OHM J		I801	PTG2SW8200	HEAT SINK ASSY	1STRF6656- + 7174301011	
RT02	RD-AZ683J-	R CARBON FILM	1/6 68K OHM J		00001	1STRF6656-	IC POWER	STR-F6656	Ⓡ ⚠
RT03	RD-AZ334J-	R CARBON FILM	1/6 330K OHM J		0000A	4857028200	HEAT SINK	AL EX BK	
RT04	RD-AZ392J-	R CARBON FILM	1/6 3.9K OHM J		0000B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN	
RT05	RD-2Z100J-	R CARBON FILM	1/2 10 OHM J		I802	1KP1010C	IC PHOTO COUPLER	KP-1010C	Ⓡ
RT06	RD-AZ683J-	R CARBON FILM	1/6 68K OHM J		I803	1SE140N -	IC AMP	SE140N	Ⓡ ⚠
RT07	RD-AZ563J-	R CARBON FILM	1/6 56K OHM J		I804	PSH2SW6900	HEAT SINK ASS Y	1KA7805 - + 7174301011	
RT08	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		00001	1KA7805 -	IC REGULATOR	KA7805	Ⓡ
RT09	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J		0000A	4857026900	HEAT SINK	AL EX	
RT10	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J		0000B	7174301011	SCREW TAPPTITE	TT2 RND 3X10 MFZN	
RT14	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J		I805	PTA2SW7720	HEAT SINK ASSY	1K78R05 - + 7174300811	
ZZ290	PTMPMSD764	PCB MAIN MANUAL AS	DTA-3220ZZF	Ⓡ	00001	1K78R05 -	IC REGULATOR	KIA78R05API	
10	2193102005	SOLDER BAR	SN-PB=63:47 S63S-1320		0000A	4857027720	HEAT SINK	AL EX	
30	2291050616	FLUX SOLDER	JS-64T3		0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
40	2291050301	FLUX SOLVENT	IM-1000		I807	1MC7812 -	IC REGULATOR	MC7812 12V 1A (KA7812)	Ⓡ
C405	CMYH3C432J	C MYLAR	1.6KV BUP 4300PF J		I808	1KA7808 -	IC REGULATOR	KA7808	Ⓡ
C406	CMYH3C702J	C MYLAR	1.6KV BUP 7000PF J		I810	TX0202DA	THYRISTOR	X0202DA1BA2	
C407	CMYE2J223J	C MYLAR	630V PU 0.022MF J		IA01	1MM1118 -	IC AV SWITCH	MM1118	
C408	CMYE2G184J	C MYLAR	400V PU 0.18MF J		JPA01	4959103680	JACK SCART	DSAM-0266	
C410	CEYD1H689W	C ELECTRO	50V RHD 6.8MF (16X35.5)		JPA02	4959103680	JACK SCART	DSAM-0266	
C441	CMYL2G104J	C MYLAR	400V MEU 0.1MF J		L401	58H0000085	COIL H-LINEARITY	TRL-5R0D	
C443	CMXF2G124J	C MYLAR	400V MPP 0.12MF J		L403	58C0000130	COIL CHOKE	CH-161A	
C801	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVS/NDF/ISV)+Q/O		LF100	5PLF24A3	FILTER LINE	LF-24A3	⚠
C802	CL1UC3474M	C LINE ACROSS	0.47MF 1J(UCVS/NDF/ISV)+Q/O	⚠	LF200	58C0000129	COIL CHOKE PFC	CPC-201B	⚠
C807	CMYF2J154J	C MYLAR	630V MPP 0.15MF J	⚠	M207	4853535500	HOLDER AC CORD	NYLON 66	
C809	CEYN2W221P	C ELECTRO	450V LHS 220MF (30X40)		M351	4953500100	HOLDER CORD	FR HIPS	
C817	CH18FE472M	C CERA AC	AC400V 4700PF M U/C/V	⚠	M351A	7172401612	SCREW TAPPTITE	TT2 TRS 4X16 MFZN BK	
C820	CEYF1E332V	C ELECTRO	25V RSS 3300MF (16X31.5)		M381	4953802800	FRAME MAIN PCB	FR HIPS BK	
C828	CEYE2D221E	C ELECTRO	200V RM 220MF (18X35.5)		M381A	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK	
C829	CEYE2D331E	C ELECTRO	200V RM 330MF		M381B	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK	
D401	DDTV32D -	DIODE	DTV32D		M683	4856812001	TIE CABLE	NYLON66 DA100	
D805	DRL4A015	DIODE	RL4A-015-308	⚠	P103	4859281020	CONN WAFER	TAC-L15X-A3	
D806	DRL4A015	DIODE	RL4A-015-308	⚠	P104	4859281320	CONN WAFER	TAC-L18X-A3	
D820	DFMLG12S	DIODE	FML-G12S		P401A	4850704503	CONNECTOR	YH025-04+YST025+ULW=300	
D821	DFMLG12S	DIODE	FML-G12S		P402A	4850703529	CONNECTOR	YH025-03+YST025+USW=300	
D824	PTP2SW6900	HEAT SINK ASS'Y	DFMLG12S + 7174300811		P405	4859240120	CONN WAFER	YFW500-06	
00001	DFMLG12S	DIODE	FML-G12S	Ⓡ	P503	4859281320	CONN WAFER	TAC-L18X-A3	
0000A	4857028900	HEAT SINK	AL EX		P504	4859281020	CONN WAFER	TAC-L15X-A3	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		P801	4859242220	CONN WAFER	YFW800-02	
D827	DRGP30J -	DIODE	RGP30J DO-201AD 600V 3A		P802	4859242220	CONN WAFER	YFW800-02	

Part List

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P803	4859242220	CONN WAFER	YFW800-02		C842	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
PD03A	4850703S29	CONNECTOR	YH025-03+YST025+USW=300		C843	CEXF1H331V	C ELECTRO	50V RSS 330MF (10X20) TP	
PF01	4850707S02	CONNECTOR	YH025-07+YST025+ULW=400		C846	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
PF03	4859238620	CONN WAFER	YPW500-02		ZZ200	PTMPJBD764	PCB MAIN M-10 AS	DTA-3220ZZF	
PW000	4859903110	CORD POWER AS	KKP-419J-H03VVH2+H0U=2200	△	10	2TM18006BE	TAPE MASKING	6.2X500	
A000	4859903511	CORD POWER	CW4232 H03VVH2-F=2250		E101	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q401	PTD3SW1600	HEAT SINK ASS Y	DFMP3FU - + 7174300811		E102	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	DFMP3FU -	DIODE	FMP3FU		E103	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000A	4857031600	HEAT SINK	AL EX		E104	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E105	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000C	TST2310DH1	TR	ST2310DHI		E106	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000D	7174301211	SCREW TAPPTITE	TT2 RND 3X12 MFZN		E107	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q402	T2SC4793	TR	2SC4793		E108	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q403	PTB2SW7603	HEAT SINK ASS'Y	T2SC4793 + 7174300811		E109	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	T2SC4793	TR	2SC4793		E110	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000A	4857027603	HEAT SINK	AL EX		E111	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E112	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000C	4856815900	CLAMP WIRE	EGI T0.4+PVC COATING		E113	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000D	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E114	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q441	TKTC3209Y-	TR	KTC3209Y		E115	4856310300	EYE LET	BSR T0.2 (R1.6)	
Q442	PTC2SW7603	HEAT SINK ASS'Y	T1RF830 - + 7174300811		E116	4856310300	EYE LET	BSR T0.2 (R1.6)	
00001	T1RF830 -	FET	IRF830		E117	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000A	4857027603	HEAT SINK	AL EX		E118	4856310300	EYE LET	BSR T0.2 (R1.6)	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN		E119	4856310300	EYE LET	BSR T0.2 (R1.6)	
R305	RN02B121J-S	R METAL FILM	2W 120 OHM J SMALL		E120	4856310300	EYE LET	BSR T0.2 (R1.6)	
R306	RW01Y228F-	R WIRE WOUND	1W 0.22 OHM F		E121	4856310300	EYE LET	BSR T0.2 (R1.6)	
R401	RX05V301J-	R CEMENT	5W 300 OHM J VERTICAL		E122	4856310300	EYE LET	BSR T0.2 (R1.6)	
R407	RX05V561J-	R CEMENT	5W 560 OHM J VERTICAL		E123	4856310300	EYE LET	BSR T0.2 (R1.6)	
R424	RD-4Z682J-	R CARBON FILM	1/4 6.8K OHM J		E124	4856310300	EYE LET	BSR T0.2 (R1.6)	
R505	RM02Y338J-	R METAL FLAT	2W 0.33 OHM J		E125	4856310300	EYE LET	BSR T0.2 (R1.6)	
R801	DPCR0M290	POSISTOR	2322 662 96709		E126	4856310300	EYE LET	BSR T0.2 (R1.6)	
R813	RX10T229J-	R CEMENT	10W 2.2 OHM J TRIPOD	Ⓡ △	E127	4856310300	EYE LET	BSR T0.2 (R1.6)	
T401	50D25A3 -	TRANS DRIVE	TD-25A3	Ⓡ △	E128	4856310300	EYE LET	BSR T0.2 (R1.6)	
T402	50H0000258	FBT	BSC29-0125D	Ⓡ △	E201	4856310600	EYE LET	BSR T0.2 (R2.3)	
T402A	7178301212	SCREW TAPPTITE	TT2 WAS 3X12 MFZN BK		E202	4856310600	EYE LET	BSR T0.2 (R2.3)	
T801	50M5345B8-	TRANS SMPS	TSM-5345B8	△	E206	4856310600	EYE LET	BSR T0.2 (R2.3)	
TU01	4859722630	TUNER VARACTOR	TECC2949PG35W		E208	4856310600	EYE LET	BSR T0.2 (R2.3)	
Y801	5SC0101003	SW RELAY	DG12D1-0(M)-II 1C-1P		E210	4856310600	EYE LET	BSR T0.2 (R2.3)	
ZZ200	PTMPJOD764	PCB MAIN (RHU) AS	DTA-3220ZZF		E211	4856310600	EYE LET	BSR T0.2 (R2.3)	
C320	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP		E212	4856310600	EYE LET	BSR T0.2 (R2.3)	
C321	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP		E213	4856310600	EYE LET	BSR T0.2 (R2.3)	
C402	CEXF1H471V	C ELECTRO	50V RSS 470MF (13X20) TP		E214	4856310600	EYE LET	BSR T0.2 (R2.3)	
C416	CXCB3D471K	C CERA	2KV B 470PF K (TAPPING)		E215	4856310600	EYE LET	BSR T0.2 (R2.3)	
C420	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		E216	4856310600	EYE LET	BSR T0.2 (R2.3)	
C442	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP		E217	4856310600	EYE LET	BSR T0.2 (R2.3)	
C610	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP		E218	4856310600	EYE LET	BSR T0.2 (R2.3)	
C611	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP		E219	4856310600	EYE LET	BSR T0.2 (R2.3)	
C813	CXCB3D471K	C CERA	2KV B 470PF K (TAPPING)		E220	4856310600	EYE LET	BSR T0.2 (R2.3)	
C821	CXCB3D102K	C CERA	2KV B 1000PF K (TAPPING)		E221	4856310600	EYE LET	BSR T0.2 (R2.3)	
C827	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP		E222	4856310600	EYE LET	BSR T0.2 (R2.3)	
C831	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP		E223	4856310600	EYE LET	BSR T0.2 (R2.3)	
C832	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP		E224	4856310600	EYE LET	BSR T0.2 (R2.3)	
C836	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP		E225	4856310600	EYE LET	BSR T0.2 (R2.3)	

**Part List**

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
E226	4856310600	EYE LET	BSR T0.2 (R2.3)		C620	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
E227	4856310600	EYE LET	BSR T0.2 (R2.3)		C622	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
E228	4856310600	EYE LET	BSR T0.2 (R2.3)		C624	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
E229	4856310600	EYE LET	BSR T0.2 (R2.3)		C626	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
E230	4856310600	EYE LET	BSR T0.2 (R2.3)		C627	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
E231	4856310600	EYE LET	BSR T0.2 (R2.3)		C704	CMXL1J105J	C MYLAR	63V MEU 1MF J	
E232	4856310600	EYE LET	BSR T0.2 (R2.3)		C706	CCXB1H222K	C CERA	50V B 2200PF K (TAPPING)	
E233	4856310600	EYE LET	BSR T0.2 (R2.3)		C707	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)	
E234	4856310600	EYE LET	BSR T0.2 (R2.3)		C708	CMXL1J474J	C MYLAR	63V MEU 0.47MF J	
P101	485923162S	CONN WAFER	YW025-03 (STICK)		C711	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP	
P102	485923162S	CONN WAFER	YW025-03 (STICK)		C714	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)	
P105	485923162S	CONN WAFER	YW025-03 (STICK)		C716	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP	
P601	485923172S	CONN WAFER	YW025-04 (STICK)		C719	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
P603	485923172S	CONN WAFER	YW025-04 (STICK)		C720	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
P701	485923512S	CONN WAFER	YW025-08 (STICK)		C721	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
PA01	485923522S	CONN WAFER	YW025-09 (STICK)		C723	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
PD08	485923172S	CONN WAFER	YW025-04 (STICK)		C805	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
PT02	485923162S	CONN WAFER	YW025-03 (STICK)		C806	CCXF3A472Z	C CERA	1KV F 4700PF Z (T)	
R320	RF01Z158K-	R FUSIBLE	1W 0.15 OHM K (TAPPING)		C812	CEXF1H220V	C ELECTRO	50V RSS 22MF (5X11) TP	
R322	RF01Z158K-	R FUSIBLE	1W 0.15 OHM K (TAPPING)		C814	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
R408	RF01Z100J-	R FUSIBLE	1W 10 OHM J (TAPPING)		C815	CCXB1H681K	C CERA	50V B 680PF K (TAPPING)	
R809	RS02Z158J-	R M-OXIDE FILM	2W 0.15 OHM J		C816	CCXB1H152K	C CERA	50V B 1500PF K (TAPPING)	
R849	RF02Z228J-	R FUSIBLE	2W 0.22 OHM J (TAPPING)		C822	CEXF2A100V	C ELECTRO	100V RSS 10MF (6.3X11) TP	
R850	RF02Z228J-	R FUSIBLE	2W 0.22 OHM J (TAPPING)		C823	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
Z2200	PTMPJRD764	PCB MAIN RADIAL AS	DTA-3220ZZF		C824	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C101	CEXF1E470V	C ELECTRO	25V RSS 47MF (5X11) TP		C825	CCXB3A471K	C CERA	1KV B 470PF K (T)	
C102	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		C826	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C103	CEXF1E221V	C ELECTRO	25V RSS 220MF (8X11.5) TP		C830	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP	
C107	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		C837	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C301	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)		C840	CXSL2H470J	C CERA	500V SL 47PF J (TAPPING)	
C302	CCXF1H333Z	C CERA	50V F 0.033MF Z (TAPPING)		C844	CCXB2H152K	C CERA	500V B 1500PF K (TAPPING)	
C303	CMXM2A683J	C MYLAR	100V 0.068MF J (TP)		C845	CCXB2H152K	C CERA	500V B 1500PF K (TAPPING)	
C304	CMXL1J333J	C MYLAR	63V MEU 0.033MF J		CA01	CEXF1E100V	C ELECTRO	25V RSS 10MF (5X11) TP	
C305	CEXF1H101V	C ELECTRO	50V RSS 100MF (8X11.5) TP		CA02	CEXF1E100V	C ELECTRO	25V RSS 10MF (5X11) TP	
C334	CMXM2A223J	C MYLAR	100V 0.022MF J TP		F801A	4857415001	CLIP FUSE	PFC5000-0702	
C401	CEXF1H101V	C ELECTRO	50V RSS 100MF (8X11.5) TP		F801B	4857415001	CLIP FUSE	PFC5000-0702	
C403	CMXM2A273J	C MYLAR	100V 0.027MF J (TP)		I704	1K1A7042AP	IC RESET	KIA7042AP	
C404	CCXB1H222K	C CERA	50V B 2200PF K (TAPPING)		L802	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
C409	CEXF2C109V	C ELECTRO	160V RSS 1MF (6.3X11) TP		Q101	TKTC3198Y-	TR	KTC3198Y	
C412	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP		Q102	TKTC3198Y-	TR	KTC3198Y	
C413	CXSL2H470J	C CERA	500V SL 47PF J (TAPPING)		Q103	TKTC3198Y-	TR	KTC3198Y	
C414	CCXB2H101K	C CERA	500V B 100PF K (TAPPING)		Q404	TKTC3198Y-	TR	KTC3198Y	
C415	CCXF1H223Z	C CERA	50V F 0.022MF Z (TAPPING)		Q405	TKTC3198Y-	TR	KTC3198Y	
C417	CMXM2A392J	C MYLAR	100V 3900PF J (TP)		Q406	TKTA1266Y-	TR	KTA1266Y (TP)	
C419	CMXM2A104K	C MYLAR	100V 0.1MF K (TP)		Q501	TKTC3198Y-	TR	KTC3198Y	
C445	CCXB3A102K	C CERA	1KV B 1000PF K (TAPPING)		Q502	TKSA1013Y-	TR	KSA1013Y (TP)	
C501	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP		Q503	TKTC3198Y-	TR	KTC3198Y	
C502	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP		Q601	TKTC3198Y-	TR	KTC3198Y	
C503	CEXF1E101V	C ELECTRO	25V RSS 100MF (6.3X11) TP		Q602	TKTC3198Y-	TR	KTC3198Y	
C603	CCXF1H333Z	C CERA	50V F 0.033MF Z (TAPPING)		Q620	TKTC3198Y-	TR	KTC3198Y	
C607	CMXL1J105J	C MYLAR	63V MEU 1MF J		Q621	TKTA1266Y-	TR	KTA1266Y (TP)	
C608	CMXL1J105J	C MYLAR	63V MEU 1MF J		Q622	TKTC3198Y-	TR	KTC3198Y	
C609	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		Q623	TKTA1266Y-	TR	KTA1266Y (TP)	



Part List

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
Q701	TKTC3198Y-	TR	KTC3198Y		C710	CCZF1H103Z	C CERA	50V F 0.01MF Z	
Q702	TKTC3198Y-	TR	KTC3198Y		C712	CBZR1C222M	C CERA	16V Y5R 2200PF M (AXIAL)	
Q703	TKTA1266Y-	TR	KTA1266Y (TP)		C713	CBZR1C472M	C CERA	16V Y5R 4700PF M (AXIAL)	
Q801	TKTC3198Y-	TR	KTC3198Y		C715	CCZF1H103Z	C CERA	50V F 0.01MF Z	
Q802	TKTC3198Y-	TR	KTC3198Y		C717	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
Q803	TKTC3198Y-	TR	KTC3198Y		C718	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
Q804	TKTC3198Y-	TR	KTC3198Y		C722	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
Q805	TKTC3198Y-	TR	KTC3198Y		C750	CCZB1H681K	C CERA	50V B 680PF K (AXIAL)	
R406	RN02B473JS	R METAL FILM	2W 47K OHM J SMALL		C833	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
R442	RN01B222JS	R METAL FILM	1W 2.2K OHM J SMALL		C834	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
R444	RN02B153JS	R METAL FILM	2W 15K OHM J SMALL		C835	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
R447	RN02B183JS	R METAL FILM	2W 18K OHM J SMALL		C838	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
R450	RN01B242JS	R METAL FILM	1W 2.4K OHM J SMALL		C841	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
R451	RN02B752JS	R METAL FILM	2W 7.5K OHM J SMALL		CF01	CCZB1H331K	C CERA	50V B 330PF K (AXIAL)	
R452	RN01B562JS	R METAL FILM	1W 5.6K OHM J SMALL		CF02	CCZB1H331K	C CERA	50V B 330PF K (AXIAL)	
R802	RN02B683JS	R METAL FILM	2W 68K OHM J SMALL		CF04	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
R824	RN02B102JS	R METAL FILM	2W 1K OHM J SMALL		CF05	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
R825	RN02B100JS	R METAL FILM	2W 10 OHM J SMALL		D101	D1N4148 -	DIODE	1N4148 (TAPPING)	
R833	RN02B473JS	R METAL FILM	2W 47K OHM J SMALL		D301	D1N4937G	DIODE	1N4937G (TAPPING)	
R834	RN02B472JS	R METAL FILM	2W 4.7K OHM J SMALL		D302	DUZ5R1B -	DIODE ZENER	UZ-5.1B	
R835	RN02B472JS	R METAL FILM	2W 4.7K OHM J SMALL		D303	D1N4937G	DIODE	1N4937G (TAPPING)	
R851	RN02B109JS	R METAL FILM	2W 1 OHM J SMALL		D304	D1N4937G	DIODE	1N4937G (TAPPING)	
X701	5XEX4R000C	CRYSTAL QUARTZ	HC-49/U 4.000MHZ 20PPM TP		D403	D1N4937G	DIODE	1N4937G (TAPPING)	
Z102	5PXXT5R5MB	FILTER CERA	XT 5.5MB-TP		D405	D1N4937G	DIODE	1N4937G (TAPPING)	
ZA01	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D406	D1N4148 -	DIODE	1N4148 (TAPPING)	
ZA02	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D407	D1N4148 -	DIODE	1N4148 (TAPPING)	
ZA03	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D408	D1N4148 -	DIODE	1N4148 (TAPPING)	
ZA04	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D409	D1N4148 -	DIODE	1N4148 (TAPPING)	
ZA20	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D420	D1N4937G	DIODE	1N4937G (TAPPING)	
ZA21	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D441	DUZ5R1B -	DIODE ZENER	UZ-5.1B	
ZA22	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D442	DTZX12C -	DIODE ZENER	TZX12C	
ZA23	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D504	D1N4148 -	DIODE	1N4148 (TAPPING)	
ZF01	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D701	DUZ5R1B -	DIODE ZENER	UZ-5.1B	
ZF02	5PXF1B471M	FILTER EMI	CFI 06 B 1H 470PF		D702	D1N4148 -	DIODE	1N4148 (TAPPING)	
ZZ200	PTMPJAD764	PCB MAIN AXIAL AS	DTA-3220ZZF		D703	D1N4148 -	DIODE	1N4148 (TAPPING)	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M		D704	D1N4148 -	DIODE	1N4148 (TAPPING)	
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M		D801	DLT2A05G	DIODE	LT2A05G (TP)	
A001	4859807393	PCB MAIN	330X246 FR-1 1.6T		D802	DLT2A05G	DIODE	LT2A05G (TP)	
C104	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		D803	DLT2A05G	DIODE	LT2A05G (TP)	
C105	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		D804	DLT2A05G	DIODE	LT2A05G (TP)	
C106	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		D808	DEU1Z -	DIODE	EU1Z (HIGH SPEED)	
C601	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		D810	DEU1Z -	DIODE	EU1Z (HIGH SPEED)	
C602	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		D811	DEU1Z -	DIODE	EU1Z (HIGH SPEED)	
C604	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		D812	DEU1Z -	DIODE	EU1Z (HIGH SPEED)	
C605	CBZR1C472M	C CERA	16V Y5R 4700PF M (AXIAL)		D822	D1N4937G	DIODE	1N4937G (TAPPING)	
C606	CBZR1C472M	C CERA	16V Y5R 4700PF M (AXIAL)		D823	DRGP15J -	DIODE	RGP15J DO-204AC 600V 1.5A	
C621	CCZF1H103Z	C CERA	50V F 0.01MF Z		D825	DRGP15J -	DIODE	RGP15J DO-204AC 600V 1.5A	
C623	CCZF1H103Z	C CERA	50V F 0.01MF Z		D826	D1N4937G	DIODE	1N4937G (TAPPING)	
C628	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z		D829	D1N4937G	DIODE	1N4937G (TAPPING)	
C701	CCZF1H103Z	C CERA	50V F 0.01MF Z		D830	D1N4937G	DIODE	1N4937G (TAPPING)	
C702	CCZB1H820K	C CERA	50V B 82PF K (AXIAL)		D831	DUZ7R5BM	DIODE ZENER	UZ-7.5BM	
C703	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)		D832	D1N4148 -	DIODE	1N4148 (TAPPING)	
C709	CCZB1H820K	C CERA	50V B 82PF K (AXIAL)		D834	DUZ33B	DIODE ZENER	UZ-33B	





**Part List**

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
LA10	58C000116	COIL BEAD	HC-3550R		R506	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
LF01	5MC000100	COIL BEAD	HC-3550		R507	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R101	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		R508	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R102	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		R601	RD-4Z479J-	R CARBON FILM	1/4 4.7 OHM J	
R104	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J		R602	RD-4Z479J-	R CARBON FILM	1/4 4.7 OHM J	
R105	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J		R603	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
R106	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J		R604	RD-AZ183J-	R CARBON FILM	1/6 18K OHM J	
R107	RD-AZ391J-	R CARBON FILM	1/6 390 OHM J		R605	RD-AZ183J-	R CARBON FILM	1/6 18K OHM J	
R108	RD-AZ470J-	R CARBON FILM	1/6 47 OHM J		R606	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J	
R109	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J		R607	RD-AZ561J-	R CARBON FILM	1/6 560 OHM J	
R110	RD-AZ470J-	R CARBON FILM	1/6 47 OHM J		R608	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R111	RD-AZ470J-	R CARBON FILM	1/6 47 OHM J		R609	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R301	RD-AZ133J-	R CARBON FILM	1/6 13K OHM J		R610	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R302	RD-2Z159J-	R CARBON FILM	1/2 1.5 OHM J		R611	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R303	RN-4Z2001F	R METAL FILM	1/4 2.0K OHM F		R620	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R304	RN-AZ1801F	R METAL FILM	1/6 1.8K OHM F		R621	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R307	RN-AZ1002F	R METAL FILM	1/6 10K OHM F		R622	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R308	RN-AZ1002F	R METAL FILM	1/6 10K OHM F		R623	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R310	RN-AZ6801F	R METAL FILM	1/6 6.8K OHM F		R624	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R311	RN-AZ6801F	R METAL FILM	1/6 6.8K OHM F		R625	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J	
R312	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J		R626	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
R313	RN-AZ9101F	R METAL FILM	1/6 9.1K OHM F		R627	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R314	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J		R701	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R402	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J		R702	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	
R403	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J		R703	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R404	RD-AZ272J-	R CARBON FILM	1/6 2.7K OHM J		R704	RD-AZ562J-	R CARBON FILM	1/6 5.6K OHM J	
R405	RD-AZ220J-	R CARBON FILM	1/6 22 OHM J		R705	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
R409	RD-2Z479J-	R CARBON FILM	1/2 4.7 OHM J		R706	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J	
R410	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		R707	RD-AZ562J-	R CARBON FILM	1/6 5.6K OHM J	
R411	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J		R708	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R412	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J		R709	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R413	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		R710	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
R414	RD-AZ751J-	R CARBON FILM	1/6 750 OHM J		R711	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R415	RN-4Z3003F	R METAL FILM	1/4 300K OHM F		R712	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R416	RN-AZ1003F	R METAL FILM	1/6 100K OHM F		R713	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R417	RN-AZ1202F	R METAL FILM	1/6 12K OHM F		R714	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R418	RN-AZ6801F	R METAL FILM	1/6 6.8K OHM F		R715	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R419	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J		R716	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
R420	RF-4Z228K-	R FUSIBLE	1/4 0.22 OHM K		R717	RD-AZ222J-	R CARBON FILM	1/6 2.2K OHM J	
R422	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J		R718	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R423	RD-AZ102J-	R CARBON FILM	1/4 1K OHM J		R719	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R425	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		R720	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R426	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		R721	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R427	RD-AZ154J-	R CARBON FILM	1/6 150K OHM J		R722	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R441	RD-AZ104J-	R CARBON FILM	1/4 100K OHM J		R723	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R443	RD-4Z474J-	R CARBON FILM	1/4 470K OHM J		R724	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R445	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J		R725	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R446	RD-AZ101J-	R CARBON FILM	1/4 100 OHM J		R726	RD-AZ161J-	R CARBON FILM	1/6 160 OHM J	
R500	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J		R727	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
R501	RD-AZ153J-	R CARBON FILM	1/6 15K OHM J		R728	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R502	RD-AZ823J-	R CARBON FILM	1/6 82K OHM J		R729	RD-AZ332J-	R CARBON FILM	1/6 3.3K OHM J	
R503	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J		R735	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J	
R504	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J		R803	RC-2Z824KP	R CARBON COMP	1/2 820K OHM K	

Part List

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
R807	RD-2Z330J-	R CARBON FILM	1/2 33 OHM J		CCD06	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
R808	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J		CCD07	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
R810	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J		CCD08	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
R811	RD-2Z272J-	R CARBON FILM	1/2 2.7K OHM J		CCD10	HCBK473KBA	C CHIP CERA	50V X7R 0.047MF K 1608	
R812	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K		CCD11	HCBK473KBA	C CHIP CERA	50V X7R 0.047MF K 1608	
R814	RD-4Z220J-	R CARBON FILM	1/4 22 OHM J		CCD12	HCBK473KBA	C CHIP CERA	50V X7R 0.047MF K 1608	
R822	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J		CCD13	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
R823	RD-4Z242J-	R CARBON FILM	1/4 2.4K OHM J		CCD14	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
R826	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J		CCD15	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
R827	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J		CCD16	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
R828	RD-4Z103J-	R CARBON FILM	1/4 10K OHM J		CCD18	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
R829	RD-AZ152J-	R CARBON FILM	1/6 1.5K OHM J		CCD19	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608	
R830	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		CCD20	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
R831	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J		CCD21	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
R832	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		CCD22	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608	
RA01	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		CCD23	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608	
RA03	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J		CCD24	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608	
RA04	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J		CCD25	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
RA07	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J		CCD26	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
RA08	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD27	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
RA09	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD28	HCQK221JBA	C CHIP CERA	50V CH 220PF J 1608	
RA10	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD29	HCQK221JBA	C CHIP CERA	50V CH 220PF J 1608	
RA11	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD30	HCQK221JBA	C CHIP CERA	50V CH 220PF J 1608	
RA12	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD31	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608	
RA13	RD-AZ223J-	R CARBON FILM	1/6 22K OHM J		CCD32	HCQK240JBA	C CHIP CERA	50V CH 24PF J 1608	
RA14	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J		CCD33	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
RA20	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD34	HCBK102KBA	C CHIP CERA	50V X7R 1000PF K 1608	
RA21	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD35	HCBK103KBA	C CHIP CERA	50V X7R 0.01MF K 1608	
RA22	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD37	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
RA23	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J		CCD38	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
RA24	RD-AZ333J-	R CARBON FILM	1/6 33K OHM J		CCD39	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608	
RA25	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J		ID01	1VSP9412AQ	IC CHIP VIDEO	VSP9412A	
RF01	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		ID02	1DDP3315CQ	IC CHIP	DDP3315CQ	
RF02	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J		QCD01	TKTC3875GB	TR CHIP	KTC3875-GR	
ZZ400	PTMAMSD664	PCB MAIN MODULE MANUAL AS	DTK-28A7ZZ		QCD02	T2SA812T2B	TR CHIP	2SA812-T2B	
ID03	1LD1117V33	IC REGULATOR	LD117AV33 3.3V 2% TO-220		QCD03	T2SA812T2B	TR CHIP	2SA812-T2B	
ID04	1LD1117V18	IC REGULATOR	LD117AV18 1.8V 2% TO-220		QCD04	T2SA812T2B	TR CHIP	2SA812-T2B	
PD01	4859279520	CONN WAFER	TAC-L15P-A3 (ANGLE)		QCD05	T2SA812T2B	TR CHIP	2SA812-T2B	
PD02	4859279820	CONN WAFER	TAC-L18P-A3 (ANGLE)		QCD06	TKTC3875GB	TR CHIP	KTC3875-GR	
PD03	4859231620	CONN WAFER	YW025-03		QCD07	TKTC3875GB	TR CHIP	KTC3875-GR	
PD04	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)		RCD01	HRFT332JBA	R CHIP	1/10 3.3K OHM J 1608	
PD05	4853946000	BRKT JUMPER A	SECC T1.0 (VCR-63DB)		RCD02	HRFT332JBA	R CHIP	1/10 3.3K OHM J 1608	
PD06	4859235520	CONN WAFER	YW025-12		RCD03	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
PD08A	4850704545	CONNECTOR	YH025-04+YST025+USW=150		RCD04	HRFT151JBA	R CHIP	1/10 150 OHM J 1608	
SD01	4857250300	SHIELD CASE	SPTH-C T=0.3		RCD05	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
SD01A	4857250400	SHIELD PLATE	SPTH-C T=0.3		RCD06	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
XD01	5XE20R250E	CRYSTAL QUARTZ	HC-49/U 20.2500MHZ 30PPM		RCD07	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
ZZ200	PTMAJ2D664	PCB MAIN MODULE CHIP B AS	DTK-28A7ZZ		RCD08	HRFT750JBA	R CHIP	1/10 75 OHM J 1608	
CCD01	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD10	HRFT332JBA	R CHIP	1/10 3.3K OHM J 1608	
CCD02	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD12	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
CCD03	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD14	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
CCD04	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD15	HRFT222JBA	R CHIP	1/10 2.2K OHM J 1608	
CCD05	HCBK104KBA	C CHIP CERA	50V X7R 0.1MF K 1608		RCD16	HRFT271JBA	R CHIP	1/10 270 OHM J 1608	

**Part List**

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK	LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
RCD17	HRFT102JBA	R CHIP	1/10 1K OHM J 1608		A001	4859808360	PCB MODULE	246X246 D1B	
RCD18	HRFT103JBA	R CHIP	1/10 10K OHM J 1608		CD20	CCZF1H103Z	C CERA	50V F 0.01MF Z	
RCD19	HRFT151JBA	R CHIP	1/10 150 OHM J 1608		CD25	CCZF1H103Z	C CERA	50V F 0.01MF Z	
RCD20	HRFT151JBA	R CHIP	1/10 150 OHM J 1608		DD01	D1N4148 -	DIODE	1N4148 (TAPPING)	
RCD22	HRFT271JBA	R CHIP	1/10 270 OHM J 1608		DD02	D1N4148 -	DIODE	1N4148 (TAPPING)	
RCD23	HRFT330JBA	R CHIP	1/10 33 OHM J 1608		DD03	D1N4148 -	DIODE	1N4148 (TAPPING)	
RCD24	HRFT201JBA	R CHIP	1/10 200 OHM J 1608		JD01	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD25	HRFT330JBA	R CHIP	1/10 33 OHM J 1608		JD02	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD26	HRFT201JBA	R CHIP	1/10 200 OHM J 1608		JD03	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD27	HRFT330JBA	R CHIP	1/10 33 OHM J 1608		JD04	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD28	HRFT201JBA	R CHIP	1/10 200 OHM J 1608		JD05	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD29	HRFT223JBA	R CHIP	1/10 22K OHM J 1608		JD06	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD31	HRFT330JBA	R CHIP	1/10 33 OHM J 1608		JD07	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD32	HRFT220JBA	R CHIP	1/10W 22 OHM J 1608		JD08	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD33	HRFT222JBA	R CHIP	1/10 2.2K OHM J 1608		JD09	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD36	HRFT221JBA	R CHIP	1/10 220 OHM J 1608		JD10	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD37	HRFT103JBA	R CHIP	1/10 10K OHM J 1608		JD11	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD39	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD12	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD40	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD13	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD41	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD15	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD42	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD16	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD43	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD17	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD44	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD18	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD45	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD19	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD46	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD20	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RCD47	HRFT101JBA	R CHIP	1/10 100 OHM J 1608		JD21	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
ZZ200	PTMAJRD664	PCB MAIN MODULE RADIAL AS	DTK-28A7ZZ		JD22	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD01	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP		JD23	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD02	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD24	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD03	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD25	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD04	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD26	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD05	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD27	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD06	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD28	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD07	CMXM2A224J	C MYLAR	100V 0.22MF J		JD29	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD08	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD30	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD09	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)		JD31	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD10	CXCH1H220J	C CERA	50V CH 22PF J (TAPPING)		JD32	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD12	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD33	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD13	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		JD34	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD14	CXCH1H270J	C CERA	50V CH 27PF J (TAPPING)		JD35	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD15	CXCH1H270J	C CERA	50V CH 27PF J (TAPPING)		JD36	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD16	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		JD37	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD17	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP		JD38	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD18	CEXF1H339V	C ELECTRO	50V RSS 3.3MF (5X11) TP		JD39	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD19	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)		JD40	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD21	CCXF1H103Z	C CERA	50V F 0.01MF Z (TAPPING)		JD41	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD23	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD42	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
CD24	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP		JD43	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
QD01	TH2N7000	FET	H2N7000		JD44	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
QD02	TH2N7000	FET	H2N7000		JD45	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
RD17	RN02B689JS	R METAL FILM	2W 6.8 OHM J SMALL		JD46	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
XD02	5XEX5R000E	CRYSTAL QUARTZ	HC-49/U 5.000MHZ 30PPM TP		JD47	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
ZZ200	PTMAJAD664	PCB MAIN MODULE AXIAL AS	DTK-28A7ZZ		JD48	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	

**Part List**

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
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	
JD62	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
LD01	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
LD02	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
LD03	5CPZ479K02	COIL PEAKING	4.7UH K (AXIAL 3.5MM)	
LD04	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
LD05	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
LD06	5CPZ100K02	COIL PEAKING	10UH K (AXIAL 3.5MM)	
RD02	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
RD03	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
RD04	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
RD05	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
RD06	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
RD07	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
RD08	RD-AZ752J-	R CARBON FILM	1/6 7.5K OHM J	
RD10	RD-AZ471J-	R CARBON FILM	1/6 470 OHM J	
RD11	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	
RD12	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
RD13	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
RD15	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
RD16	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	
RD18	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
RD19	RD-AZ151J-	R CARBON FILM	1/6 150 OHM J	
RD20	RD-AZ221J-	R CARBON FILM	1/6 220 OHM J	
RD21	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
RD22	RD-AZ750J-	R CARBON FILM	1/6 75 OHM J	

# 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 I<sup>2</sup>C 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)

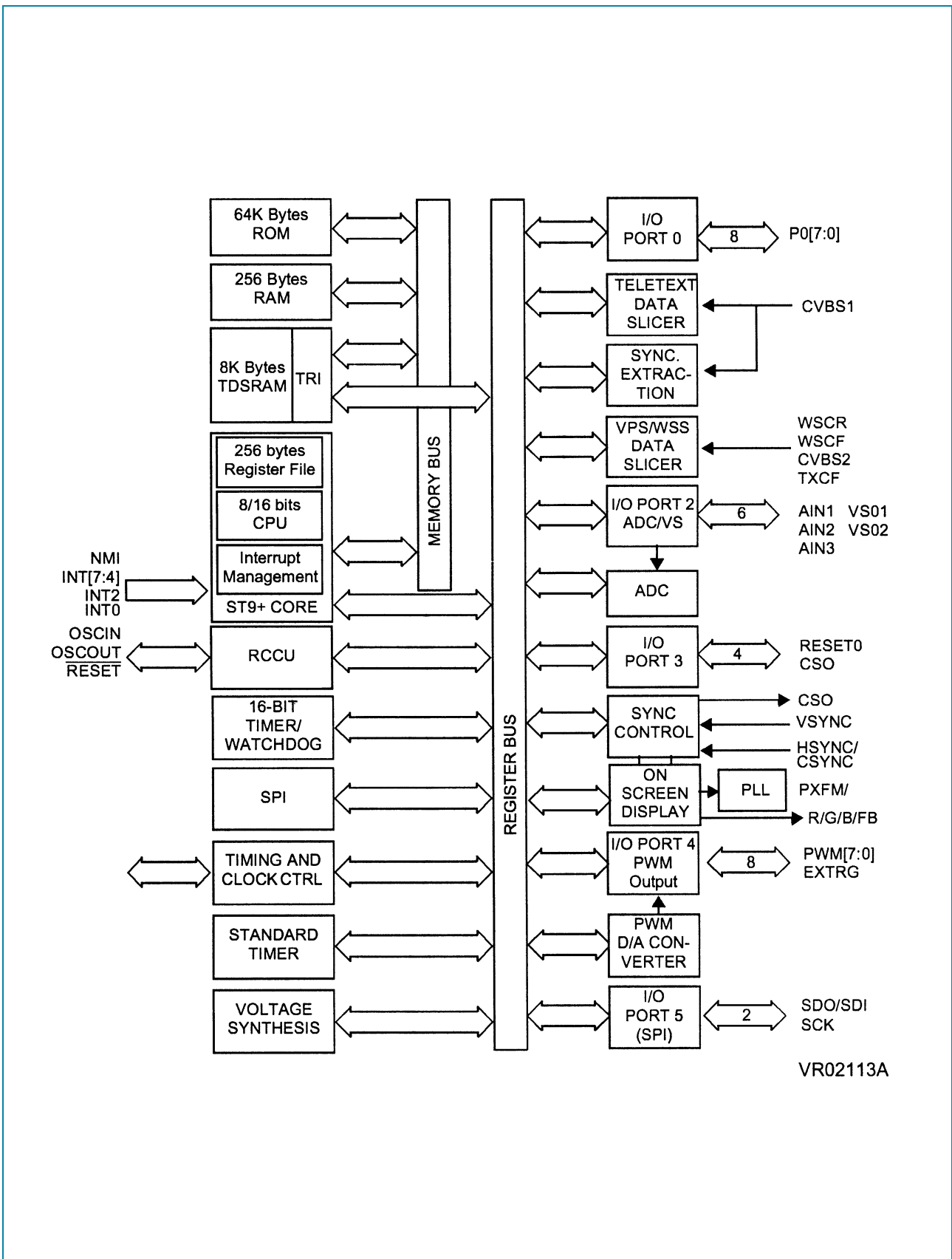
In addition there is a 3 channel Analog to Digital Converter with integral sample and hold, fast 5.7us conversion timer and 6-bit guaranteed resolution.

## (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



IC DESCRIPTION

(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/CSYNC** *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).

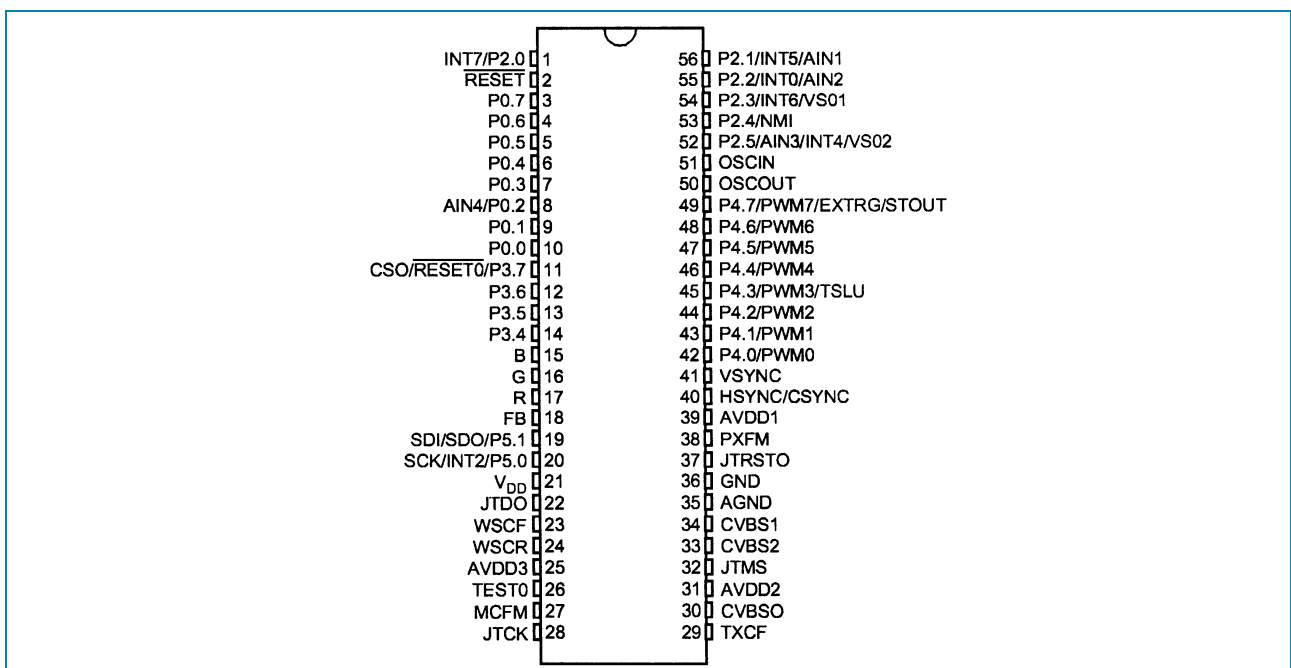
**TXCF** Analog pin for the VPS/WSS line PLL.

**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

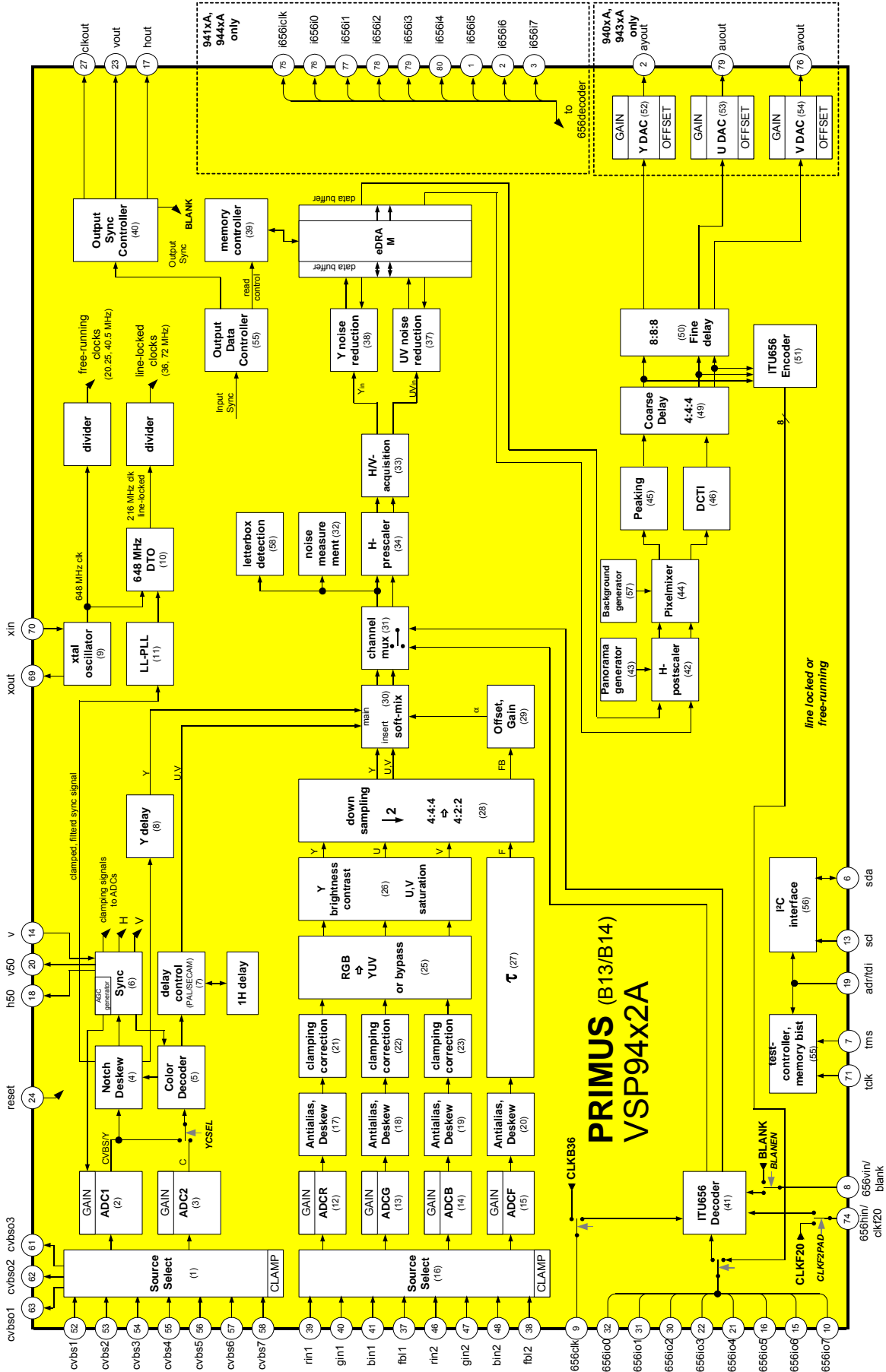


**5.2. VSP 9412A**

(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
  - I<sup>2</sup>C-bus control (400 kHz)
    - selectable I<sup>2</sup>C 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	S/I		DAC (Y)
2	AYOUT	O/I		Y output
3	VSSDAC	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 <sup>2</sup> C-Bus data
7	TMS	I		Testmode select (Connected to vdd33)
8	656VIN/BLANK <sup>1)</sup>	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 <sup>2</sup> C-Bus clk
14	V <sup>2</sup> )	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 <sup>3</sup> )	O	Leave open	Hout 50 Hz (with skew)
19	ADR / TDI	I		I <sup>2</sup> C address / test data in
20	V50 <sup>4</sup> )	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 <sup>5)</sup>	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**

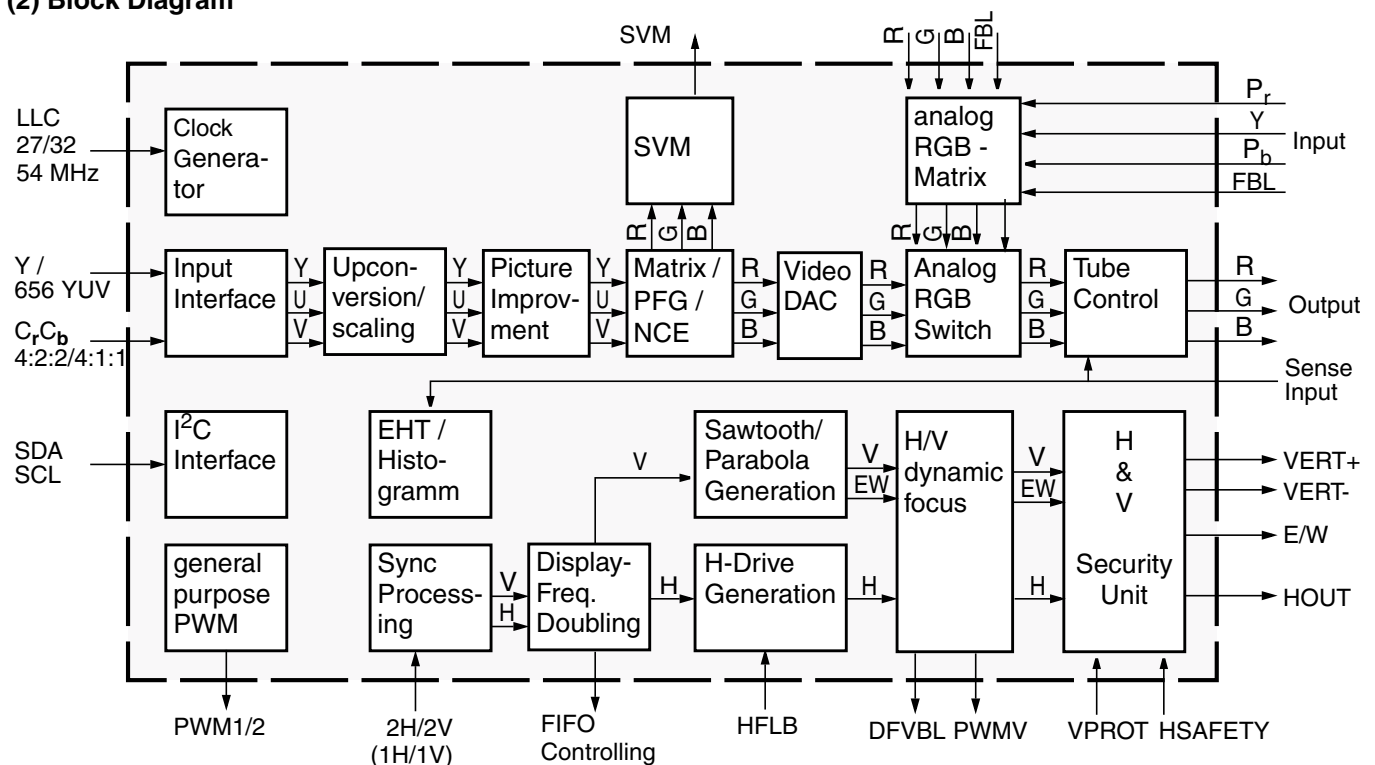
The DDP 3315C is a mixed signal single-chip digital display and deflection processor, designed for high-quality back-end applications in double scan and HDTV TV sets with 4:3 or 16:9 picture tubes. Its interfaces qualified the IC to be combined with state of the art digital scan rate converters as well 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 "panorama 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 fastblinking (one RGB and one RGB/YC<sub>r</sub>C<sub>b</sub>/YP<sub>r</sub>P<sub>b</sub> selectable)

**(2) Block Diagram**



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

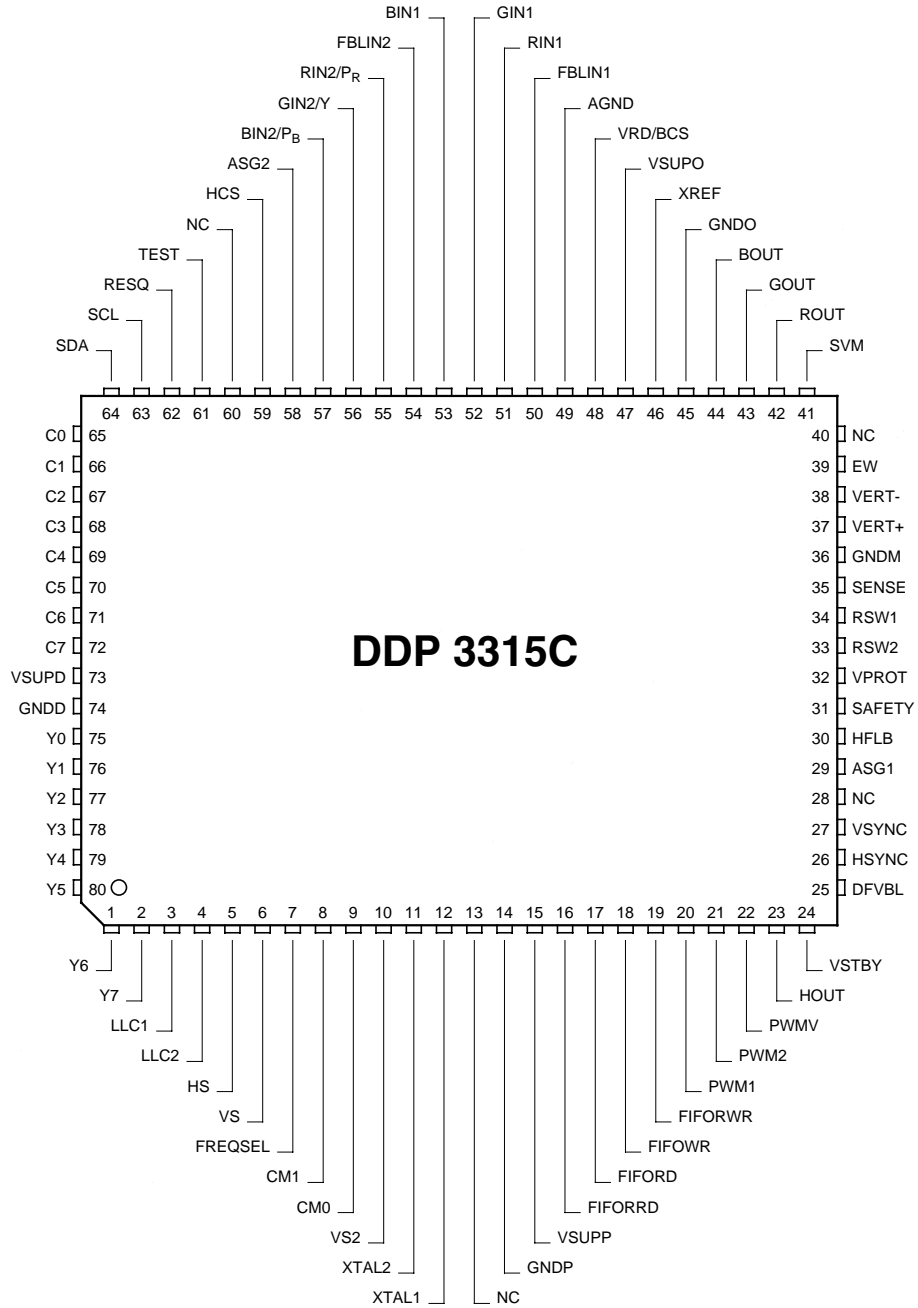
**Deflection Processing**

- 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

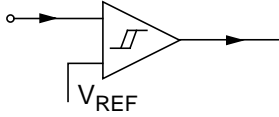
**Miscellaneous**

- selectable ITU-R 601 4:1:1 / 4:2:2 YC<sub>b</sub> 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

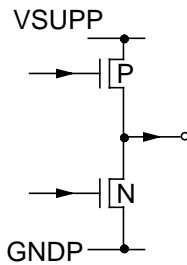
(3) Pin Configuration



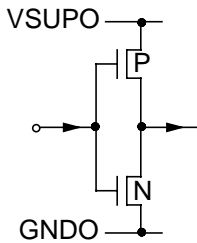
(4) Pin Circuits



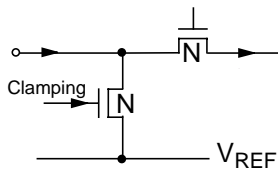
**Fig. 4-3:** Input pins LLC2, C[7:0], Y[7:0], HS, VS, VS2, HFLB, SAFETY, VPROT, 656EN, CM0, CM1, FREQSEL, RESQ, TEST



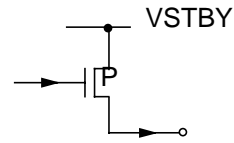
**Fig. 4-4:** Output pins FIFORRD, FIFORD, FIFOWR, FIFORWR, DFVBL, HSYNC, VSYNC, PWM1, PWM2, PWMV



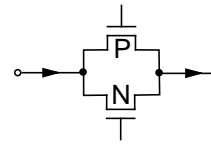
**Fig. 4-5:** Analog fastblank pins FBLIN1, FBLIN2



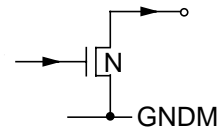
**Fig. 4-6:** Input pins RIN1, GIN1, BIN1, RIN2/P<sub>R</sub>, GIN2/Y, BIN2/P<sub>B</sub>



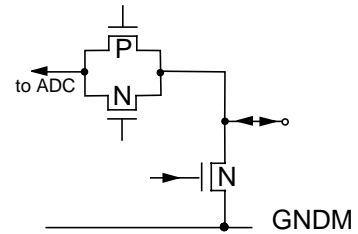
**Fig. 4-7:** Output pin HOUT



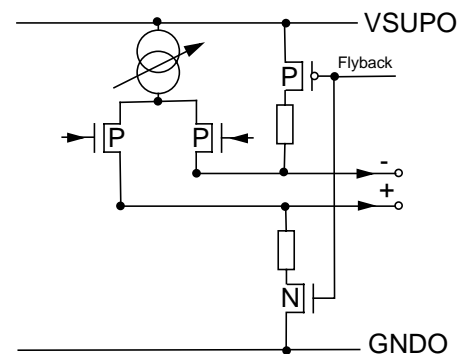
**Fig. 4-8:** Input pin SENSE



**Fig. 4-9:** Output pin RSW2



**Fig. 4-10:** I/O pin RSW1



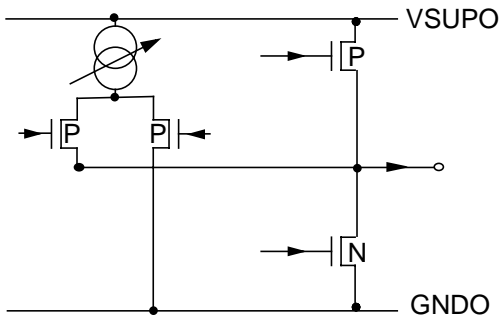


Fig. 4-12: Output pin EW

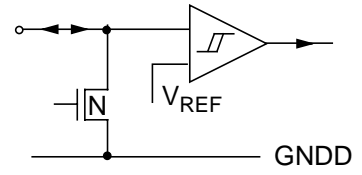


Fig. 4-16: I/O pins SCL, SDA

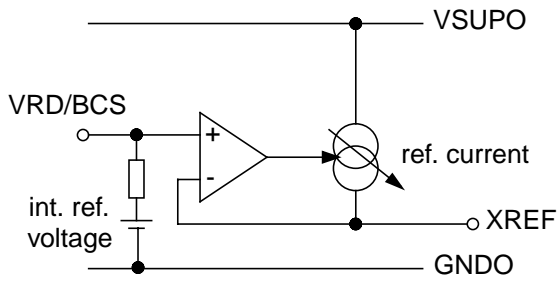


Fig. 4-13: Input pins XREF, VDR/BCS

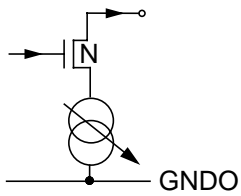


Fig. 4-14: Output pins SVM, ROUT, GOUT, BOUT

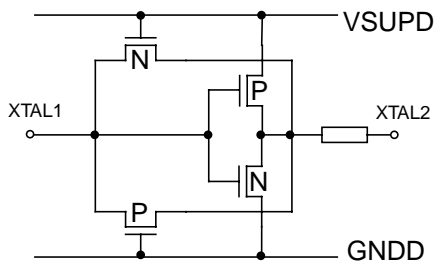


Fig. 4-15: Input pin XTAL1, Output pin XTAL2

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 $\Omega$ , 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 4.7 $\mu$ F in parallel to 100 $\mu$ F (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 I<sup>2</sup>Cbus. 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** - I<sup>2</sup>C Data Input/Output **SDA**

Via this pin the I<sup>2</sup>C - bus data are written to or read from the DDP 3310B.

**Pin 68** - I<sup>2</sup>C Clock Input **SCL**

Via this pin, the clock signal for the I<sup>2</sup>C-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



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