

CONTENTS

1.0 IMPORTANT NOTICE & INTRODUCTION & SAFETY NOTICE.....	1
IMPORTANT NOTICE.....	1
INTRODUCTION.....	1
SAFETY PRECAUTIONS.....	1
CHECK OF HIGH VOLTAGE HOLD DOWN CIRCUIT	2
PRODUCT SAFETY NOTICE	2
2.0 GENERAL MAINTENANCE PROCEDURE	3
3.0 FUNCTION BLOCK DIAGRAM	4
4.0 DESCRIPTION OF CIRCUIT.....	5
5.0 TIMING MODE (CTX PRESETTING TIMING).....	6
6.0 ADJUSTMENT.....	9
6.1 1795PF1 ADJUSTMENT	9
7.0 TROUBLESHOOTING	11
7.1 MAIN TROUBLESHOOTING ROUTINE.....	11
7.2 POWER SUPPLY CIRCUIT TROUBLESHOOTING ROUTINE.....	12
7.3 MICON CIRCUIT TROUBLESHOOTING ROUTINE	14
7.4 VIDEO CIRCUIT TROUBLESHOOTING ROUTINE	17
7.5 DEFLECTION CIRCUIT TROUBLESHOOTING ROUTINE	20
7.5.1 <i>Horizontal Deflection Circuit</i>	20
No Raster.....	20
H-Asynchronous	21
No Horizontal Scan.....	22
Linearity.....	23
Out of phase.....	24
Width Abnormal	24
7.5.2 <i>Vertical Deflection Circuit</i>	25
No vertical scan.....	25
Picture distortion	26
V-Asynchronous.....	27
Vertical position & Size	27
7.5.3 <i>Other</i>	28
Poor focus.....	28
8.0 IC CONFIGURATION	33
9.0 PARTS LIST.....	35
10.0 LAYOUT FOR MAIN COMPONENTS AND ADJUSTED	49
11.0 CIRCUIT DIAGRAM.....	49
12.0 EXPLODED VIEW.....	49

This monitor is provided with a high voltage hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may function correctly.

Service Warning

With minimum Brightness and Contrast the operation high voltage in this display is lower than 27KV.

If any component having influence on the high voltage is replaced, confirm that the high voltage with minimum Brightness and Contrast is lower than 27KV. To measure high voltage use a high impedance high-voltage meter. (SENSITIVE RESEARCH Model: ESH or Equivalent) Connect (-) to chassis earth and (+) to the CRT anode button. (See the following connection diagram Fig. 1).

NOTE:

- 1) Turn power switch off without fail before making the connection to the Anode button.
- 2) Before turn power switch ON, confirm the AC line voltage, set the "Voltage Selector".

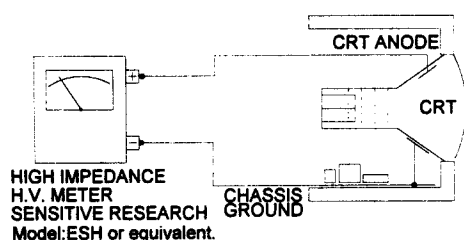


Fig. 1

X-radiation

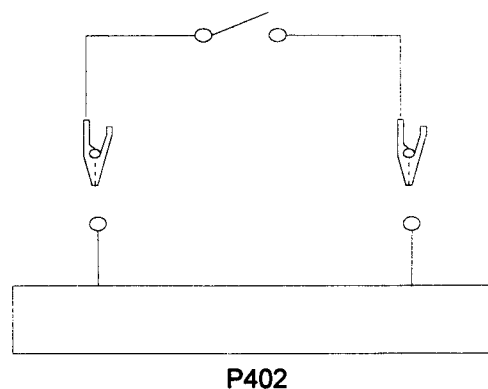
TUBE: The primary source of X-radiation in this monitor is the picture tube. The tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, manufacturer approved type. When troubleshooting and making test measurements in a monitor with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage components. Do not operate the chassis longer than is necessary to locate the cause of

excessive voltage.

CHECK OF HIGH VOLTAGE HOLD DOWN CIRCUIT

Checking of the high voltage hold down circuit operation.

1. Turn the switch of the unit ON.
2. Set Brightness, Contrast controls to max..
3. Short the two pins of P402 as shown in Fig. 2. The picture should disappear immediately.



Main Board Assembly

Fig. 2

- 4.0 Turn the switch of the unit OFF.

PRODUCT SAFETY NOTICE

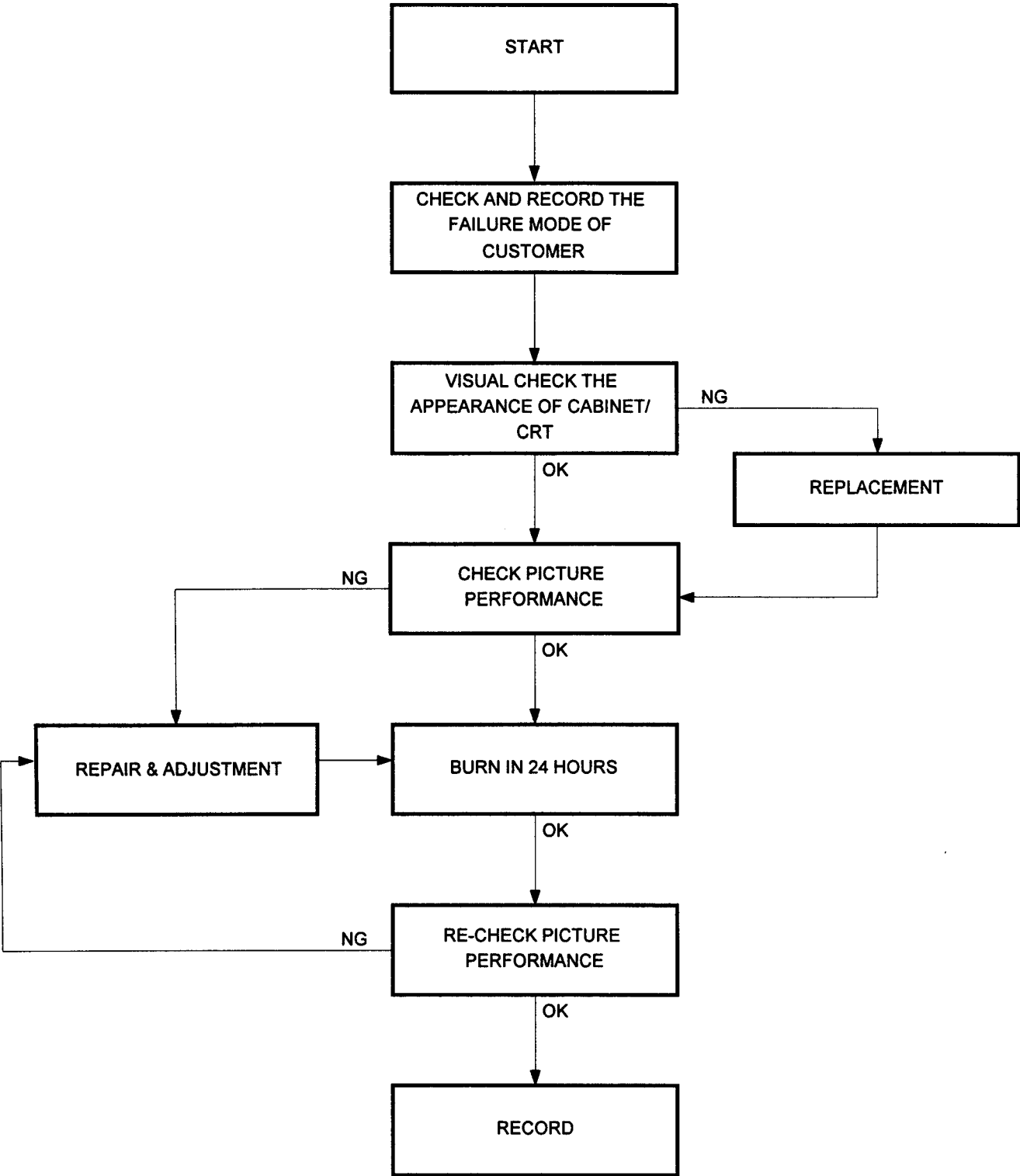
Many electrical and mechanical parts in the color monitor units have special safety related characteristics.

These are often not evident from visual inspection nor can the protection afforded by them 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 Service Manual.

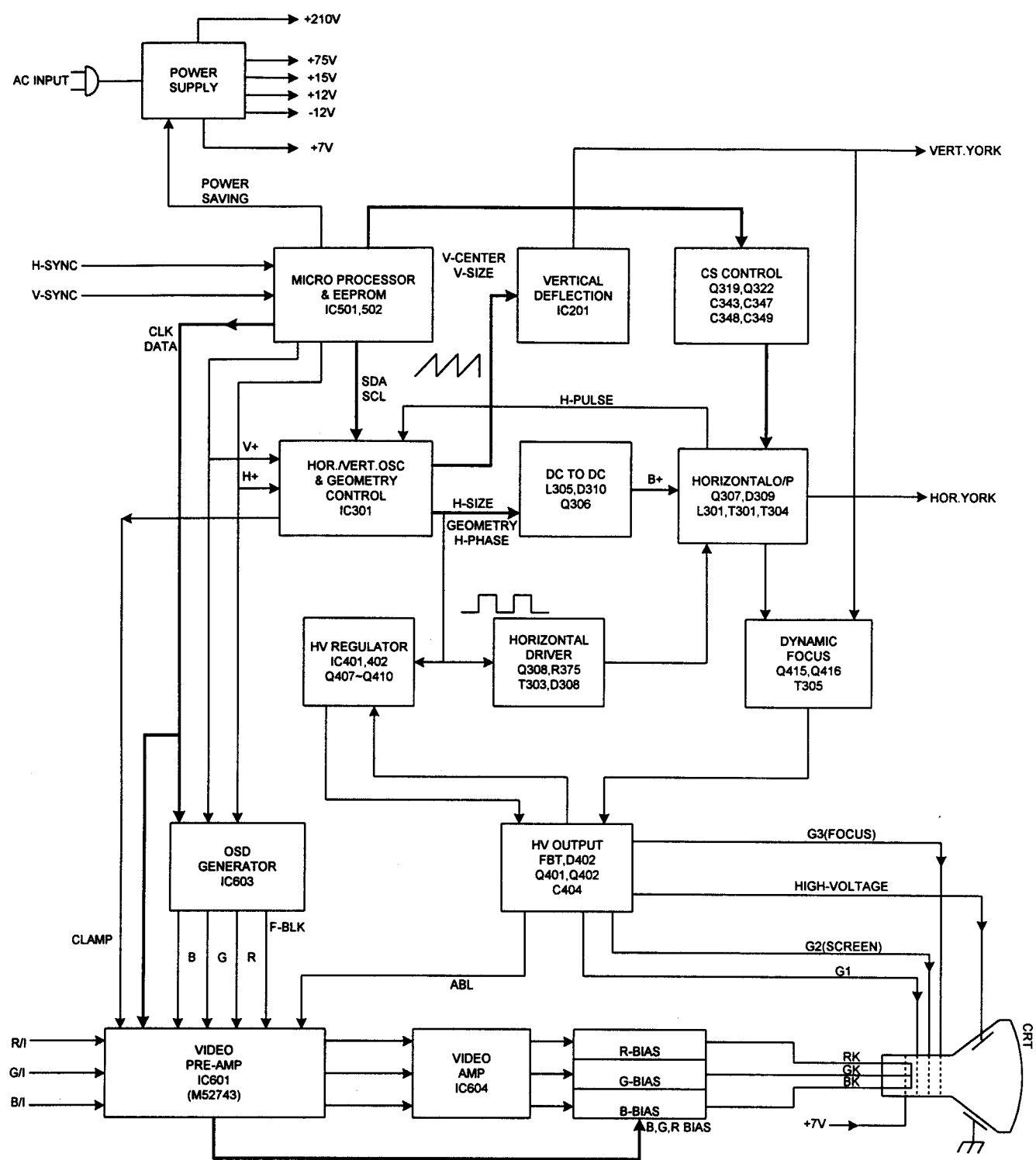
Electrical components having such features are identified by marking with "!" on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the manufacturer recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.

2.0 GENERAL MAINTENANCE PROCEDURE



3.0 FUNCTION BLOCK DIAGRAM



4.0 DESCRIPTION OF CIRCUIT

1. Power supply circuit

The power supply is a serial & universal AC input switching power supply. The start up circuit (Q101) will provide a DC voltage for PWM (Pulse Width Modulation) IC(IC101) when power on. While IC101 works normal, Q101 will be cut off by the DC voltage. The IC101 will Auto-detect output voltage of power supply from Pin2 and correct the duty cycle of Pin6 output pulse to compensate the variation of output voltage.

The output of IC101 Pin6 connected to power MOSEFET to drive the power transformer T101. When power MOSFET is on, the energy stored in the primary winding of T101. Once MOSEFET is off, the energy transfer to the secondary and charges the output capacitor to get the stable DC voltage.

2. Oscillation circuit

The functions H-size, H-phase, V-size, V-center, Side-pin, Parallel....are designed inside into IC301. The Pin2 is X-RAY protect input. When H.V output circuit is abnormal (H.V too high) the X-RAY protect circuit will shut off the horizontal output, H.V. also will be shut down. The Pin6 is B⁺ control driver output. The Pin8 is horizontal square wave output drives horizontal output. The Pin11 is parabolic output. The Pin12,13 are vertical output. The Pin14 & pin15 are V-SYNC & H-SYNC input. The Pin17 is vertical blanking output. The Pin23,24 for vertical oscillator. The Pin28,29 for horizontal oscillator. The Pin30 is soft start.

3. Vertical output circuit

The Pin12 & 13 of IC301 are vertical sync output connected to IC201 (Amplifier), Pin5 of IC201 is vertical amplifier output drives the vertical deflection directly.

4. Horizontal output circuit

The DC-DC is to generate a DC voltage (B⁺) for horizontal output circuit. The CPU(IC501) controls the H. size adjustment function of IC301 via the I²C Bus. The output of IC301 (Pin6) connected to gate of Q306 to make the Q306 switching. When Q306 is ON, the energy stored in L305 and the energy released via D310 when Q306 turned OFF. The B⁺ applied to Horizontal Yoke and supply the power for horizontal deflection. The more the B⁺, will get the bigger horizontal size.

5. Micon circuit

The IC501(CPU) will detect polarity and frequency of input H.V. Sync.. The CPU will determine the mode of input timing (preset or users mode) and load mode data from IC502 (EEPROM). The output of IC501 were connected to other function circuit (ie. H-size, H-phase, V-size, V-center.....). Also, the user can adjust picture from key board and the data will be saved into IC502 automatically. For the O.S.D. mode, when O.S.D. manual is active CPU will inform the O.S.D IC (IC603) to send O.S.D BLK signal to blank the video signal from VGA card, and the O.S.D. IC will send O.S.D. R.G.B. Video signal to show the O.S.D. manual on screen.

6. H.V. regulation circuit

The IC402 is a P.W.M IC, Pin7 is P.W.M output which connected to output transistor Q401 and Q402 via buffer driver Q407,Q409,Q410,Q408. The Q402 is H.V. output switching transistor, Q401 and D402 are damper device provide the path of damper current. IC401 is a feedback amplifier, the feedback voltage from FBT Pin11 connected to IC401 Pin5, and output is from pin1 which connected to IC402 for P.W.M the duty cycle control.

7. Video output circuit

Video circuit consists of video preamplifier IC601 and output cascode amplifier IC604. IC601 is a video processing IC equipped with three DC amplifiers to pre-amplify R.G.B. signals from 0.7V to 4.2V.

The R.G.B. GAIN & BIAS control signal are from IC501 via I²C-bus to DAC IC601. The IC601 control to video gain. The output of IC601 (PIN 24,25,26) are connected to BIAS circuit of each R.G.B. signal's amplification and thus achieve a well balanceable white picture.

The O.S.D. R.G.B. (Pin 4,9,13 of IC601) is the input of O.S.D. Video signal. The IC604 is R.G.B. drive to capable of driving CRT.

5.0 TIMING MODE (CTX presetting Timing)

NAME	720X400-70		640X480-60		640X480-85		640X480-120		800X600-85	
PIXEL CLOCK	28.322 MHZ		25.175 MHZ		36.000 MHZ		54.890 MHZ		56.250 MHZ	
Fh	31.469 KHZ		31.469 KHZ		43.269 KHZ		63.530 KHZ		53.674 KHZ	
Fv	70.087 HZ		59.941 HZ		85.008 HZ		119.868 HZ		85.062 HZ	
INTERLACE MODE	NO		NO		NO		NO		NO	
VIDEO	ANALOG-COLOR		ANALOG COLOR		ANALOG COLOR		ANALOG COLOR		ANALOG COLOR	
XS SYNC ON GREEN	NO		NO		NO		NO		NO	
VIDEO LEVEL	700mv		700mv		700mv		700mv		700mv	
WHITE LEVEL	700mv		700mv		700mv		700mv		700mv	
BLANK LEVEL	0 IRE		0 IRE		0 IRE		0 IRE		0 IRE	
16 BIT HEX DATA	0000		0000		0000		0000		0000	
UNIT OF DATA	PIXEL	Us/ms	PIXEL	us/ms	PIXEL	us/ms	PIXEL	us/ms	PIXEL	us/ms
H TOTAL	900	31.777us	800	31.778us	832	23.111us	864	15.741us	1048	18.631us
H DISPLAY	720	25.422us	640	25.422us	640	17.778us	640	11.660us	800	14.222us
H B-PORCH	54	1.907 us	48	1.907 us	80	2.222 us	95	1.731 us	152	2.702 us
H-S-WIDTH	108	3.813 us	96	3.813 us	56	1.556 us	96	1.749 us	64	1.138 us
H BORDER	0	0.000 us	0	0.000 us	0	0.000 us	0	0.000 us	0	0.000 us
H SIZE	4.000mm		4.000mm		4.000mm		4.000mm		4.000mm	
V TOTAL	449	14.268ms	525	16.683ms	509	11.764ms	530	8.343 ms	631	11.756ms
V DISPLAY	400	12.711ms	480	15.253ms	480	11.093ms	480	7.555 ms	600	11.179ms
V B-PORCH	35	1.112 ms	33	1.049 ms	25	0.578 ms	36	0.567 ms	27	0.503 ms
V S WIDTH	2	0.064 ms	2	0.064 ms	3	0.069 ms	6	0.094 ms	3	0.056 ms
V BORDER	0	0.000 ms	0	0.000 ms	0	0.000 ms	0	0.000 ms	0	0.000 ms
V SIZE	3.000mm		3.000mm		3.000mm		3.000mm		3.000mm	
H S OUTPUT	ON(-)		ON(-)		ON(-)		ON(-)		ON(+)	
V S OUTPUT	ON(+)		ON(-)		ON(-)		ON(-)		ON(+)	
X S OUTPUT	ON(-)		ON(-)		ON(-)		ON(-)		ON(+)	
X S SELECT	H		H		H		H		H	

NAME	MAC II-832		1024X768-85		1152X864-75		800X600-120		1024X768-100	
PIXEL CLOCK	57.284MHZ		94.500 MHZ		108.000 MHZ		81.000 MHZ		110.000 MHZ	
Fh	49.726KHZ		68.677 KHZ		67.500 KHZ		75.985 KHZ		80.468 KHZ	
Fv	74.552HZ		84.996 HZ		75.00 HZ		120.039 KHZ		99.836 HZ	
INTERLACE MODE	NO		NO		NO		NO		NO	
VIDEO	ANALOG-COLOR		ANALOG COLOR		ANALOG-COLOR		ANALOG COLOR		ANALOG COLOR	
XS SYNC ON GREEN	NO		NO		NO		NO		NO	
VIDEO LEVEL	700mv		700mv		700mv		700mv		700mv	
WHITE LEVEL	700mv		700mv		700mv		700mv		700mv	
BLANK LEVEL	0 IRE		0 IRE		0 IRE		0 IRE		0 IRE	
16 BIT HEX DATA	0000		0000		0000		0000		0000	
UNIT OF DATA	PIXEL	Us/ms	PIXEL	us/ms	PIXEL	us/ms	PIXEL	us/ms	PIXEL	us/ms
H TOTAL	1152	20.110us	1376	14.561us	1600	14.815us	1066	13.160us	1367	12.427us
H DISPLAY	832	14.524us	1024	10.836us	1152	10.667us	796	9.827us	1024	9.309us
H B-PORCH	224	3.910us	208	2.201 us	256	2.370 us	158	1.951 us	214	1.945 us
H-S-WIDTH	64	1.117us	96	1.016 us	128	1.185 us	87	1.074 us	118	1.073 us
H BORDER	0	0.000us	0	0.000 us	0	0.000 us	0	0.000 us	0	0.000 us
H SIZE	4.000mm		4.000 mm		4.000 mm		4.000 mm		4.000 mm	
V TOTAL	667	13.413ms	808	11.765ms	900	13.333ms	633	8.331ms	806	10.016ms
V DISPLAY	624	12.549ms	768	11.183ms	864	12.800ms	600	7.896 ms	768	9.544ms
V B-PORCH	39	0.784ms	36	0.524 ms	32	0.474 ms	29	0.382 ms	34	0.423 ms
V S WIDTH	3	0.060ms	3	0.044 ms	3	0.044 ms	3	1.039 ms	3	0.037 ms
V BORDER	0	0.000 ms	0	0.000 ms	0	0.000 ms	0	0.000 ms	0	0.000 ms
V SIZE	3.000 mm		3.000 mm		3.000 mm		3.000 mm		3.000 mm	
H S OUTPUT	OFF-LOW		ON(+)		ON(+)		ON(-)		ON(-)	
V S OUTPUT	OFF-LOW		ON(+)		ON(+)		ON(-)		ON(-)	
X S OUTPUT	ON(-)		ON(+)		ON(+)		ON(-)		ON(-)	
X S SELECT	H+V		H		H+V		H		H	

NAME	1280X1024-75		1280X1024-85					
PIXEL CLOCK	135.000 MHZ		157.500 MHZ					
Fh	79.976 KHZ		91.146 KHZ					
Fv	75.024 HZ		85.24 HZ					
INTERLACE MODE	NO		NO					
VIDEO	ANALOG-COLOR		ANALOG-COLOR					
XS SYNC ON GREEN	NO		NO					
VIDEO LEVEL	700mv		700mv					
WHITE LEVEL	700mv		700mv					
BLANK LEVEL	0 IRE		0 IRE					
16 BIT HEX DATA	0000		0000					
UNIT OF DATA	PIXEL	us/ms	PIXEL	us/ms				
H TOTAL	1688	12.504 us	1728	10.971 us				
H DISPLAY	1280	9.481 us	1280	8.127 us				
H B-PORCH	248	1.837 us	224	1.422 us				
H-S-WIDTH	144	1.067 us	160	1.016 us				
H BORDER	0	0.000 us	0	0.000 us				
H SIZE	4.000mm		4.000mm					
V TOTAL	1066	13.329 ms	1072	11.761ms				
V DISPLAY	1024	12.804 ms	1024	11.235 ms				
V B-PORCH	38	0.475 ms	44	0.483 ms				
V S WIDTH	3	0.038 ms	3	0.033 ms				
V BORDER	0	0.000 ms	0	0.000 ms				
V SIZE	3.000mm		3.000mm					
H S OUTPUT	ON(+)		ON(+)					
V S OUTPUT	ON(+)		ON(+)					
X S OUTPUT	ON(+)		ON(+)					
X S SELECT	H		H					

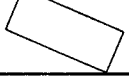
6.0 ADJUSTMENT

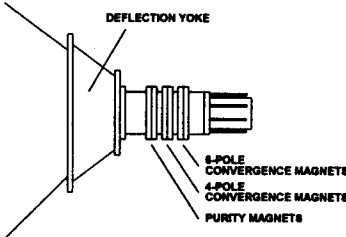
6.1 1795PF1 ADJUSTMENT

REM:PRESET MODE DATA ADJUSTMENT:

- A. Turn off it.
- B. Press the ⊕ and ⊖ at same time which on the external control panel.
- C. Turn on it.

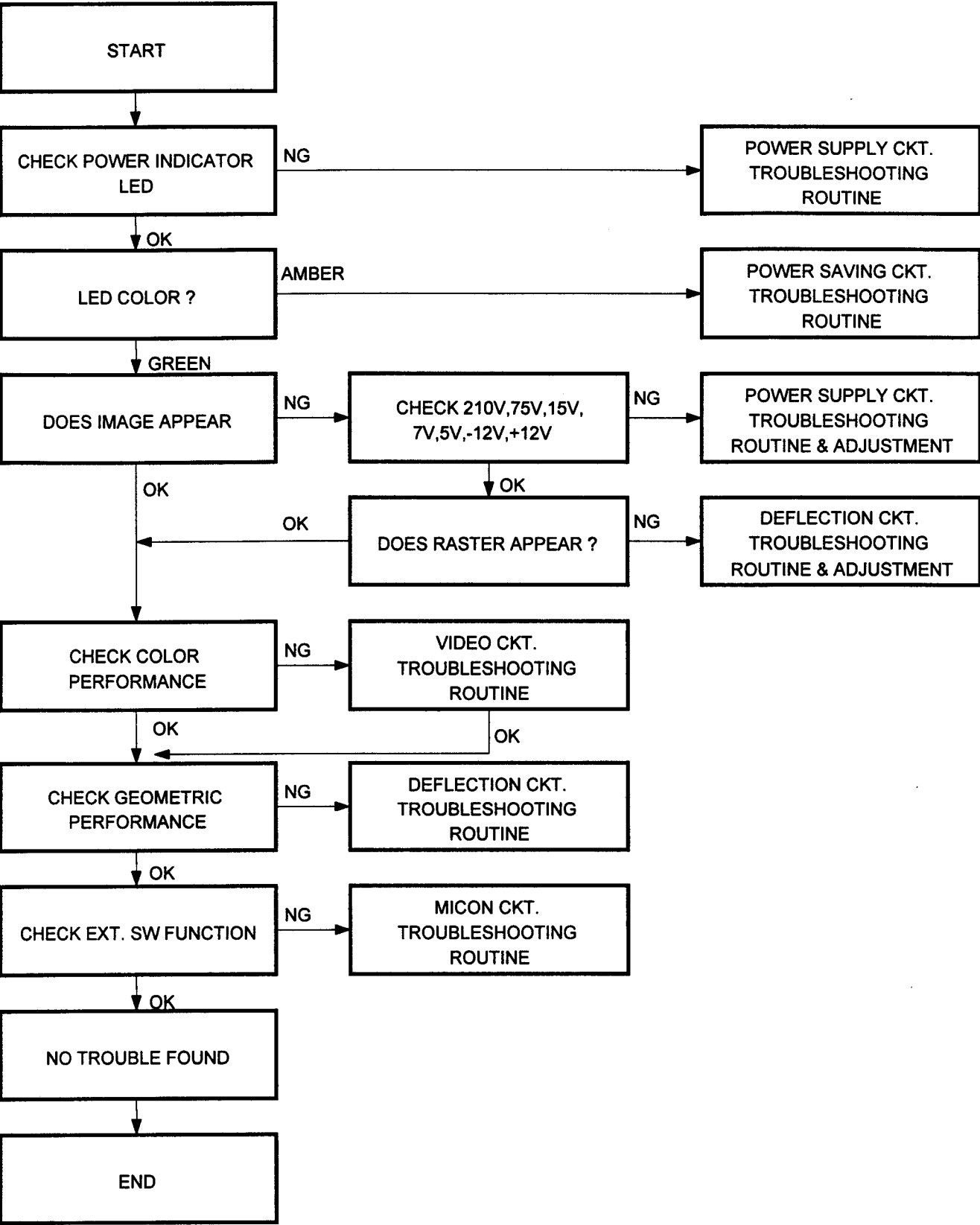
Remark: Before adjusting, monitor must warm up 20 minutes and CRT must be degaussed.

ADJUSTMENT	LOCATION	SPECIFICATION/DESCRIPTION	TIMING & PATTERN
210V	VR101	D117"-=210V±0.5V	VGA-480, X'HATCH
12V	VR102	J104=12V±0.2V	VGA-480, X'HATCH
H.V.	VR402	CRT ANODE=27.0KV±0.5KV	VGA-480, X'HATCH
F R E Q U E N C Y 31.5KHz	VR103	D112"+=31.5K±0.1KHz	VGA-480(31KHz), X'HATCH
V-LINE	OSD. MANUAL	$\frac{Y_{max}-Y_{min}}{Y_{max}+Y_{min}} \leq 7\%$	VGA-480, X'HATCH
V-SIZE	OSD. MANUAL	V-SIZE=232mm±5mm	All of PRESET modes, X'HATCH
H-CENTER	VR302	Set Raster at center.	1024X768 (80.4KHz) X'HATCH
H-WIDTH	OSD. MANUAL	H-WIDTH=310±5mm	All of PRESET modes, X'HATCH
H-PHASE	OSD. MANUAL	$\frac{ R-L }{2} \leq 3mm$	All of PRESET modes, X'HATCH
V-CENTER	OSD. MANUAL	$\frac{ U-D }{2} \leq 3mm$	All of PRESET modes, X'HATCH
CORNER	OSD. CORNER MANUAL	≤ 0.5mm	All of PRESET modes, X'HATCH
	OSD. SIDE-PIN MANUAL	≤ 1.5mm	All of PRESET modes, X'HATCH
	OSD. BALANCE MANUAL	≤ 1.5mm	All of PRESET modes, X'HATCH
	OSD. MANUAL	≤ 2.5mm	All of PRESET modes, X'HATCH
	OSD. MANUAL	≤ 2.0mm	All of PRESET modes, X'HATCH
	OSD. MANUAL	≤ 2mm	All of PRESET modes, X'HATCH
SCREEN	FBT SCREEN VR	The "1" row of color bar pattern is visible when Brightness VR is click.	VGA-480 COLOR BAR
FOCUS	FBT FOCUS VR	Optimum point	1024X768 68.6KHz "m"
WHITE BALANCE PRE ADJ	OSD. CONTRAST	MAX (DAC=100)	VGA-480, MOSAIC
	OSD. BRIGHTNESS	CLICK POINT (DAC=50)	DITTO
	FBT SCREEN VR	RASTER Y≤0.06FL	DITTO
	OSD. R.G.B BIAS	RASTER X=283±10, Y=297±10	DITTO
	OSD. SUBCONT	MOSAIC=40±5FL	DITTO

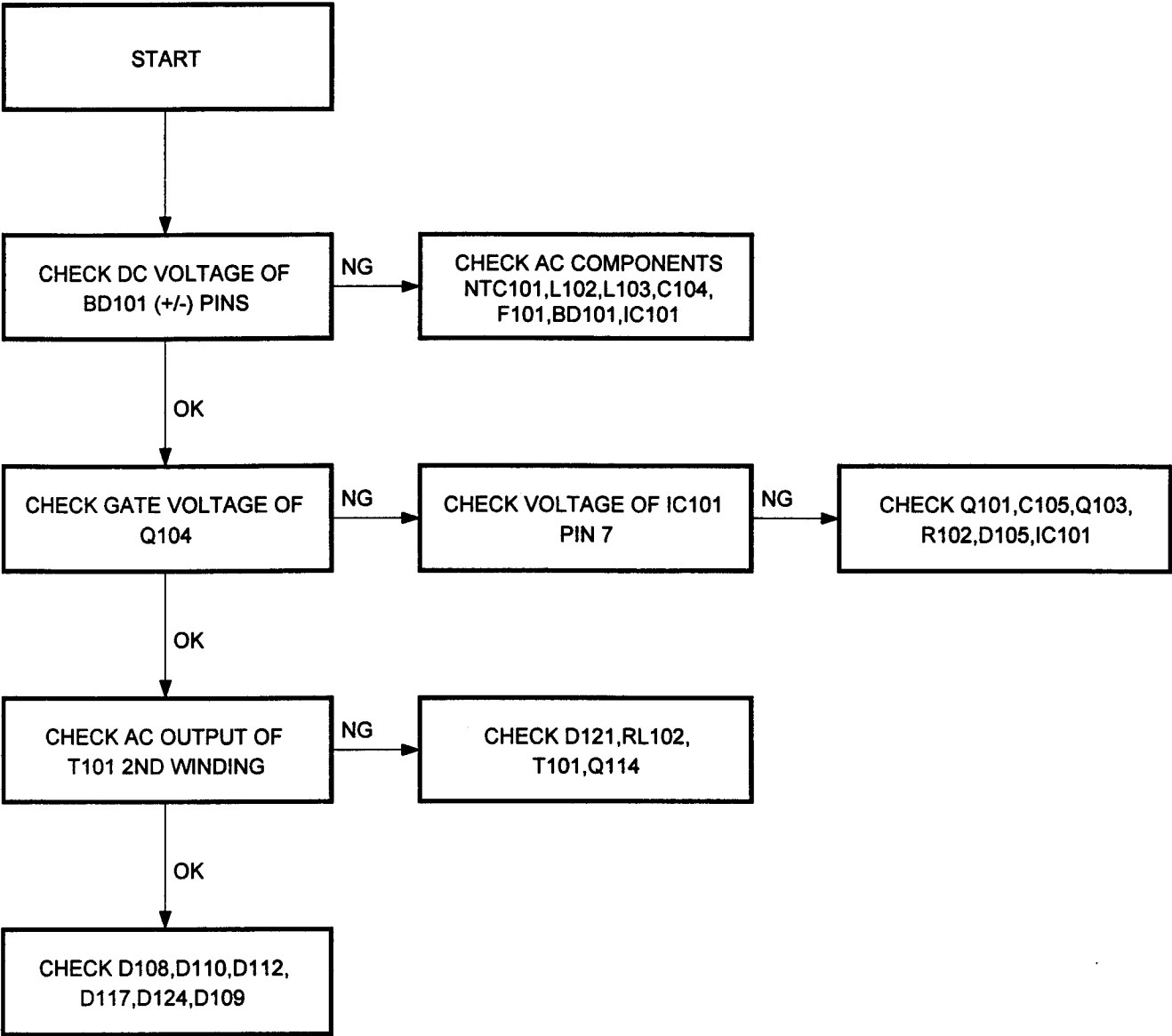
ADJUSTMENT	LOCATION	SPECIFICATION/DESCRIPTION	TIMING & PATTERN																																																																						
WHITE BALANCE ADJ	OSD. R.G.B GAIN	MODE1(9300°K):X=283±10 Y=297±10	VGA-480, FULL WHITE																																																																						
		MODE2(6500°K):X=313±10 Y=329±10																																																																							
		MODE3(5000°K):X=346±10 Y=359±10																																																																							
		MODE4(USER):X=283±10 Y=297±10																																																																							
	OSD. R.G.B BIAS	MODE1(9300°K):X=283±10 Y=297±10 When contrast is in 1~3FL.																																																																							
BRIGHTNESS SETTING	OSD. CONTRAST	MAX (DAC=100)	VGA-480, COLOR BAR																																																																						
	OSD. BRIGHTNESS	CLICK POINT (DAC=50)																																																																							
	FBT SCREEN VR	The "2" row of color bar pattern is just visible.																																																																							
	Brightness																																																																								
	<table><tr><td rowspan="8">reduce ↓</td><td colspan="2">R+B</td><td colspan="2">B+G</td><td colspan="2">R+G</td><td rowspan="8">7 6 5 4 3 2→ Visible 1→ visible obscurely 0</td></tr><tr><td>BRIGHT BLUE</td><td>BRIGHT RED</td><td>BRIGHT PRUPLE</td><td>GREEN</td><td>BLUE + GREEN</td><td>RED + YELLOW</td><td>WHITE</td></tr><tr><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>14</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>13</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>12</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>			reduce ↓	R+B		B+G		R+G		7 6 5 4 3 2→ Visible 1→ visible obscurely 0	BRIGHT BLUE	BRIGHT RED	BRIGHT PRUPLE	GREEN	BLUE + GREEN	RED + YELLOW	WHITE	15							14							13							12							11							10							9							8					
reduce ↓	R+B		B+G		R+G		7 6 5 4 3 2→ Visible 1→ visible obscurely 0																																																																		
	BRIGHT BLUE	BRIGHT RED	BRIGHT PRUPLE		GREEN	BLUE + GREEN		RED + YELLOW	WHITE																																																																
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CONVERGENCE	4 POLE OF PCM	Vertical RED and BLUE lines are converged by varying the angle between the two tabs.	VGA-480 , MAGERTA X'HATCH																																																																						
	4 POLE OF PCM	Horizontal RED and BLUE lines are converged by moving the two tabs at the same time.	VGA-480 , MAGENTA X'HATCH																																																																						
	6 POLE OF PCM	Vertical GREEN and MAGENTA lines are converged by varying the angle between the two tabs.	VGA-480 , X'HATCH																																																																						
	6 POLE OF PCM	Horizontal GREEN and MAGENTA lines are converged by moving the two tabs at the same time.	VGA-480 , X'HATCH																																																																						
																																																																									

7.0 TROUBLESHOOTING

7.1 MAIN TROUBLESHOOTING ROUTINE



7.2 POWER SUPPLY CIRCUIT TROUBLESHOOTING ROUTINE



TEST CONDITIONS: TIMING : 640X480-60Hz (31K)
PATTERN: CROSS HATCH

Unit: Volt

IC	IC101 (3842)								IC103 (PS2561)			
PIN	1	2	3	4	5	6	7	8	1	2	3	4
110V	3.34	2.49	0.13	2.42	GND	4.95	15.52	4.99	5.49	4.41	1.66	15.52
220V	2.93	2.49	0.06	2.40	GND	1.98	15.50	4.98	5.36	5.29	2.16	15.50

IC	IC102 (5002L)			IC104 (TL431)			IC501 (68P61A)	
PIN	O	G	I	A	K	R	22	23
STATUS								
NORMAL	5.01	GND	6.36	4.27	0	2.51	4.95	0.07
SUSPEND	5.01	GND	6.91	4.44	0	2.51	4.93	4.83
OFF	5.01	GND	6.83	4.23	0	2.51	0.07	4.84

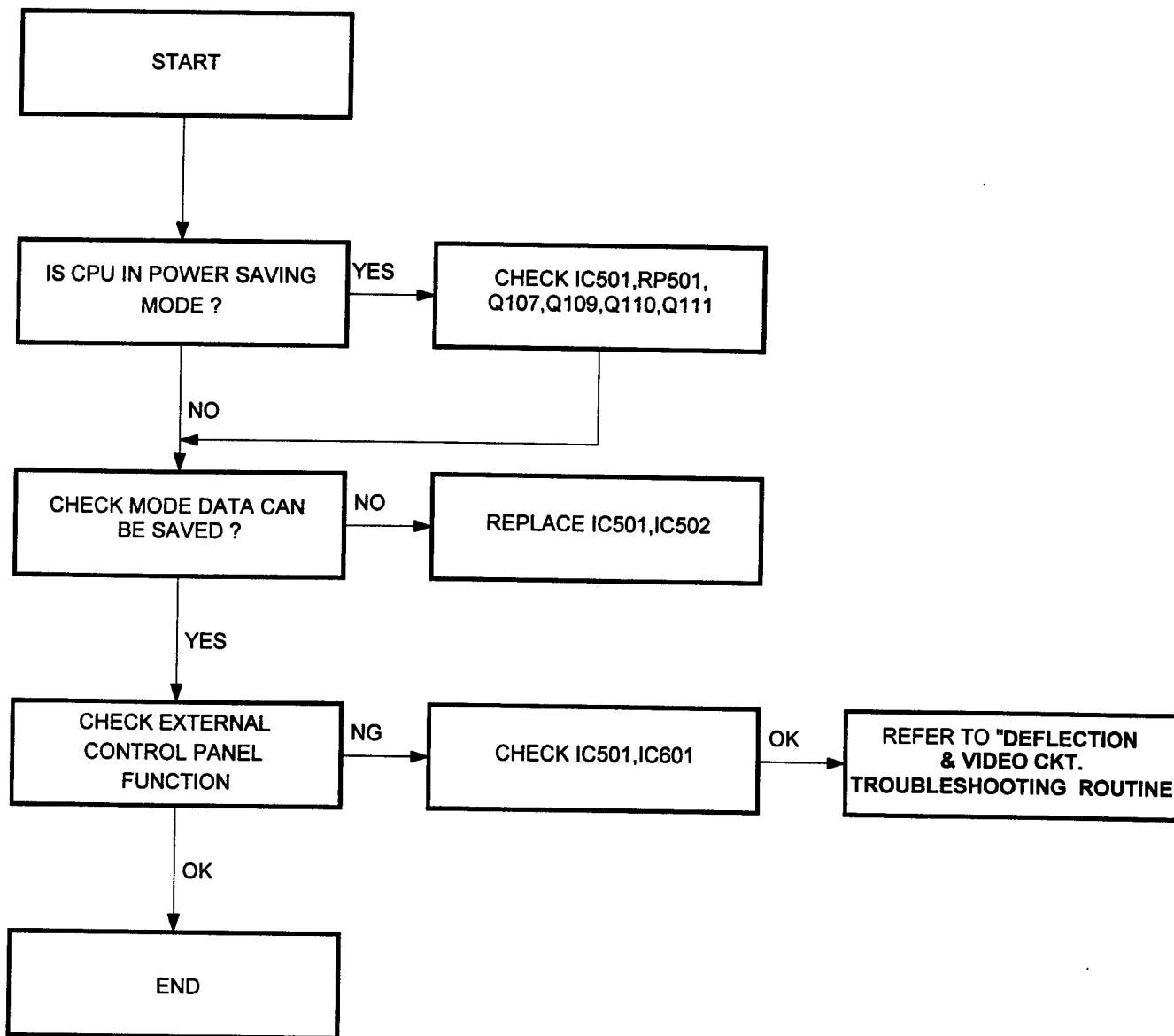
TR	Q101 (BT169)			Q103 (C945)			Q104 (K2648)		
PIN	K	G	A	E	C	B	S	D	G
AC IN									
110V	1.60	0	133.56	0	0	0.72	0.13	133.46	4.28
220V	2.55	0	291.86	0	0	0.70	0.06	291.75	1.40

TR	Q102 (C945)			Q105 (C945)		
PIN	E	C	B	E	C	B
STATUS						
NORMAL	GND	15.36	0.03	GND	0.03	0.73
DEGUASS	GND	0.11	0.83	GND	0.83	0.14

TR	Q107 (2SD882)			Q109 (C945)			Q110 (2SB562)		
PIN	E	C	B	E	C	B	E	C	B
STATUS									
NORMAL	12.05	15.50	12.70	6.26	12.70	6.87	6.61	6.45	5.76
SUSPEND	0.80	1.38	1.34	0.80	1.34	0.46	7.08	6.86	6.20
OFF	0.62	0.50	0.50	0.60	0.50	0.34	7.08	0	7.08

TR	Q111 (C945)			Q114 (C945)			Q116 (A733)			Q117 (C945)		
PIN	E	C	B	E	C	B	E	C	B	E	C	B
STATUS												
NORMAL	GND	0.14	0.75	GND	6.63	0.02	6.62	2.51	6.59	GND	6.58	0
SUSPEND	GND	0.16	0.75	GND	0.13	0.76	7.09	7.06	6.38	GND	0.01	0.67
OFF	GND	7.08	0.03	GND	0.13	0.76	7.08	7.06	6.38	GND	0.01	0.67

7.3 MICON CIRCUIT TROUBLESHOOTING ROUTINE



TEST CONDITIONS: AC LINE IN:110V/60Hz
PATTERN: CROSS HATCH
STATUS : NORMAL

Unit: Volt

IC		IC501 (UMC6861)									
PIN		1	2	3	4	5	6	7	8	9	10
MODE											
640X480-60(31K)		1.53	1.62	1.62	4.99	5.00	GND	2.72	2.47	0.04	4.99
800X600-85(53K)		1.53	1.62	1.62	4.99	5.00	GND	2.72	2.47	0.04	4.99
1024X768-85(68K)		1.53	1.61	1.62	4.99	5.00	GND	2.72	2.47	0.04	4.99
1280X1024-85(91K)		1.53	1.61	1.62	4.99	5.00	GND	2.72	2.47	0.04	4.99

IC		IC501 (UMC6861)									
PIN		11	12	13	14	15	16	17	18	19	20
MODE											
640X480-60(31K)		0.03	5.00	5.00	5.00	5.00	5.00	5.00	0.02	5.00	0.07
800X600-85(53K)		0.03	5.00	5.00	5.00	5.00	5.00	5.00	0.02	5.00	0.07
1024X768-85(68K)		0.03	5.00	5.00	5.00	5.00	5.00	5.00	0.02	5.00	0.06
1280X1024-85(91K)		0.03	5.00	5.00	5.00	5.00	5.00	5.00	0.02	5.00	0.06

IC		IC501 (UMC6861)									
PIN		21	22	23	24	25	26	27	28	29	30
MODE											
640X480-60(31K)		5.00	4.95	0.06	5.00	4.98	3.45	2.43	1.42	0.20	5.00
800X600-50(53K)		5.00	4.95	0.06	5.00	4.98	3.45	2.43	2.28	1.45	5.00
1024X768-85(68K)		5.00	4.95	0.06	5.00	4.98	3.45	2.42	2.28	2.34	5.00
1280X1024-85(91K)		5.00	4.95	0.06	5.00	4.98	3.45	2.42	2.27	3.82	5.00

IC		IC501 (UMC6861)									
PIN		31	32	33	34	35	36	37	38	39	40
MODE											
640X480-60(31K)		5.00	0.03	0.58	0.12	0.12	0.12	0.12	4.94	2.66	3.55
800X600-50(53K)		5.00	0.03	0.32	0.11	4.39	0.10	4.39	4.94	0.34	0.55
1024X768-85(68K)		5.00	0.02	0.37	4.44	4.40	4.40	0.10	4.94	0.37	0.55
1280X1024-85(91K)		5.00	0.02	0.48	4.44	4.40	4.41	4.40	4.94	0.44	0.55

IC		IC502 (AT24C04)							
PIN		1	2	3	4	5	6	7	8
MODE									
640X480-60(31K)		5.00	GND	5.00	GND	0.04	4.99	GND	5.00
800X600-50(53K)		5.00	GND	5.00	GND	0.04	4.99	GND	5.00
1024X768-85(68K)		5.00	GND	5.00	GND	0.04	4.99	GND	5.00
1280X1024-85(91K)		5.00	GND	5.00	GND	0.04	4.99	GND	5.00

TR		Q501 (A733)			Q502 (C945)			Q504 (C945)		
MODE		E	C	B	E	C	B	E	C	B
640X480-60(31K)		5.00	4.99	4.27	3.55	5.00	0.49	GND	0.05	0.77
800X600-50(53K)		5.00	4.99	4.27	0.55	5.00	0.37	GND	0.06	0.77
1024X768-85(68K)		5.00	4.99	4.27	0.55	5.00	0.32	GND	0.05	0.77
1280X1024-85(91K)		5.00	4.99	4.27	0.55	5.00	0.58	GND	0.05	0.77

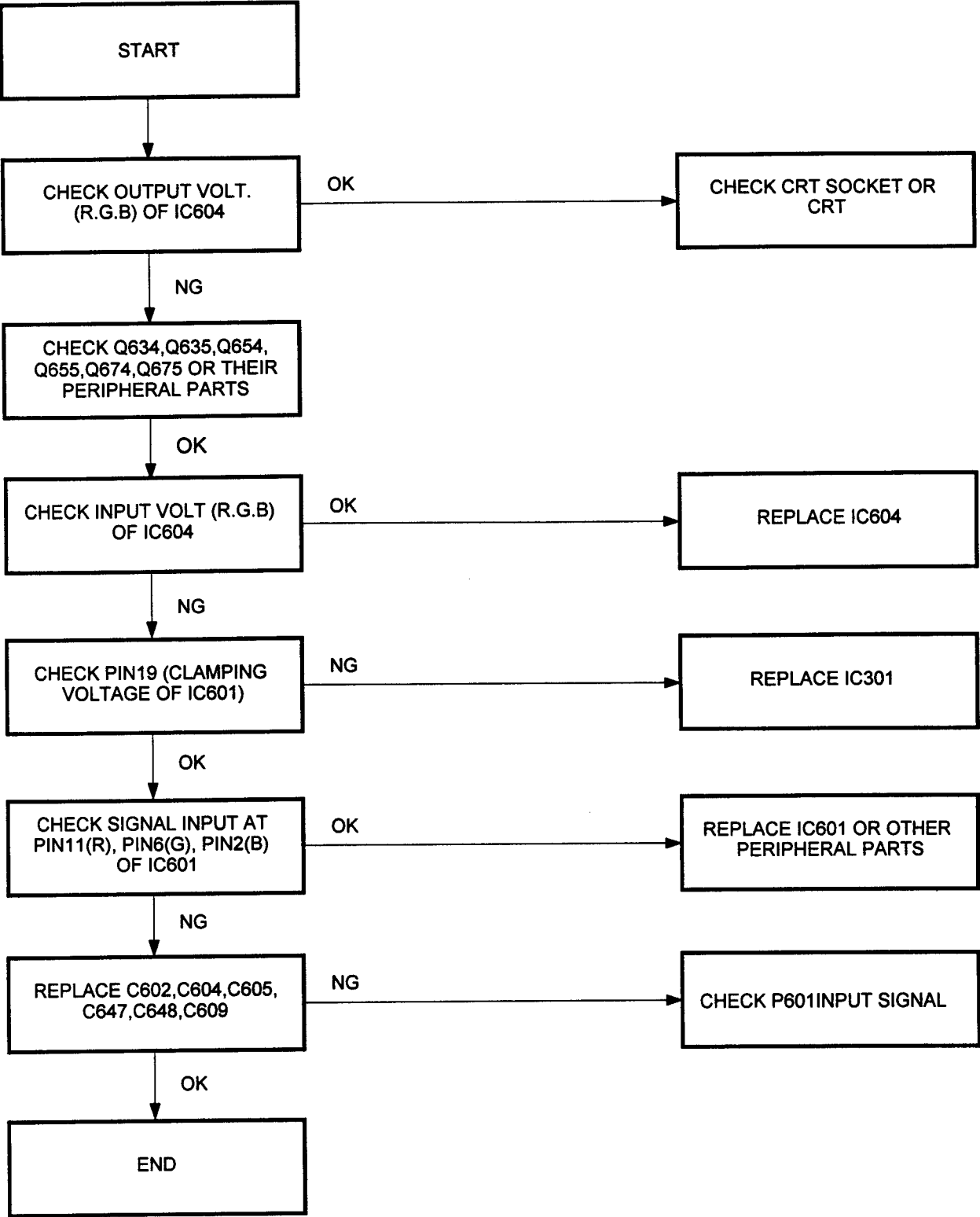
TR		Q505 (C945)			Q506 (JC337)			Q508 (C3400)		
MODE		E	C	B	E	C	B	E	C	B
640X480-60(31K)		GND	0.77	0.01	4.96	15.72	4.36	GND	0.74	0.02
800X600-50(53K)		GND	0.77	0.01	4.97	15.74	4.37	GND	0.74	0.02
1024X768-85(68K)		GND	0.77	0.01	4.97	15.74	4.37	GND	0.74	0.02
1280X1024-85(91K)		GND	0.77	0.01	4.97	15.74	4.37	GND	0.74	0.02

TR		Q509 (C3400)			Q510 (J327)			Q511 (C945)			Q512 (C3400)		
MODE		E	C	B	E	C	B	E	C	B	E	C	B
640X480-60(31K)		GND	0.08	15.72	4.96	GND	4.36	GND	0.08	0.74	GND	5.00	0.09
800X600-50(53K)		GND	0.08	15.74	4.97	GND	4.37	GND	0.08	0.74	GND	5.00	0.09
1024X768-85(68K)		GND	0.08	15.74	4.97	GND	4.37	GND	0.08	0.74	GND	5.00	0.09
1280X1024-85(91K)		GND	0.08	15.74	4.98	GND	4.37	GND	0.08	0.74	GND	5.00	0.09

TR		Q513 (A733)			Q514 (C945)			Q515 (JC337)			Q516 (J327)		
MODE		E	C	B	E	C	B	E	C	B	E	C	B
640X480-60(31K)		5.00	0.11	5.00	GND	4.28	0.42	6.44	15.71	6.78	6.44	GND	6.78
800X600-50(53K)		5.00	0.17	5.00	GND	4.29	0.42	6.44	15.74	6.79	6.44	GND	6.79
1024X768-85(68K)		5.00	0.22	5.00	GND	4.29	0.42	6.44	15.74	6.79	6.44	GND	6.79
1280X1024-85(91K)		5.00	0.30	5.00	GND	4.29	0.41	6.44	15.73	6.79	6.44	GND	6.79

TR		Q517 (C945)			Q518 (JC337)			Q519 (J327)			Q520(C945)		
MODE		E	C	B	E	C	B	E	C	B	E	C	B
640X480-60(31K)		GND	6.61	0.42	6.44	15.72	5.91	6.44	GND	5.91	GND	5.59	0.42
800X600-50(53K)		GND	6.62	0.42	6.44	15.74	5.92	6.44	GND	5.92	GND	5.60	0.42
1024X768-85(68K)		GND	6.62	0.42	6.44	15.74	5.91	6.44	GND	5.91	GND	5.59	0.41
1280X1024-85(91K)		GND	6.62	0.41	6.44	15.74	5.91	6.44	GND	5.91	GND	5.59	0.41

7.4 VIDEO CIRCUIT TROUBLESHOOTING ROUTINE



TEST CONDITIONS: AC LINE IN:110V/60Hz
TIMING: 640X480-60Hz (31K)
PATTERN: a. Cross-hatch b. Full white

Unit: Volt

IC	IC601 (M52743)									
PIN	1	2	3	4	5	6	7	8	9	10
Cross-hatch	0.65	2.48	11.83	0.14	GND	2.48	2.81	11.83	0.14	GND
Full white	0.65	2.94	11.84	0.14	GND	2.93	3.21	11.84	0.14	GND

IC	IC601 (M52743)									
PIN	11	12	13	14	15	16	17	18	19	20
Cross-hatch	2.50	11.83	0.14	GND	2.98	0	4.98	0.34	0.11	4.98
Full white	2.96	11.84	0.14	GND	2.96	0.01	4.98	0.34	0.11	4.99

IC	IC601(M52743)									
PIN	21	22	23	24	25	26	27	28	29	30
Cross-hatch	0.04	GND	3.02	3.44	3.45	3.30	0.26	4.83	2.07	1.92
Full white	0.04	GND	3.01	3.44	3.45	3.31	0.26	4.91	3.68	1.92

IC	IC601 (M52743)					
PIN	31	32	33	34	35	36
Cross-hatch	4.44	2.06	GND	1.83	2.07	11.83
Full white	4.44	3.62	GND	1.62	3.66	11.84

IC	IC602 (24LC21A)							
PIN	1	2	3	4	5	6	7	8
Cross-hatch	0	0	0	GND	0.05~0.42	0.43	3.43	5.01
Full white	0	0	0	GND	0.05~0.35	0.35	3.43	5.01

IC	IC603 (M35045)									
PIN	1	2	3	4	5	6	7	8	9	10
Cross-hatch	4.98	GND	4.97	5.00	4.99	0.06	GND	4.98	4.98	0.04
Full white	4.98	GND	4.97	5.00	4.99	0.06	GND	4.98	4.98	0.04

IC	IC603 (M35045)									
PIN	11	12	13	14	15	16	17	18	19	20
Cross-hatch	GND	0.04	0.06	4.98	0.06	4.98	0.06	0.26	0.05	4.98
Full white	GND	0.04	0.06	4.98	0.06	4.98	0.06	0.26	0.05	4.98

IC	IC604 (LM2437T)								
PIN	1	2	3	4	5	6	7	8	9
Cross-hatch	57.49	57.58	57.29	75.51	GND	1.43	1.42	11.31	1.43
Full white	36.11	36.61	35.61	75.57	GND	2.96	2.91	11.38	2.90

TR	Q601 (A733)			Q602 (C945)			Q603 (A733)		
PIN	E	C	B	E	C	B	E	C	B
Cross-hatch	3.45	3.43	2.76	2.91	0.34	0.04	2.93	2.91	2.34
Full white	3.45	3.43	2.75	2.91	0.34	0.03	2.93	2.91	2.36

TR	Q607 (A733)			Q620 (C945)			Q634 (BF423)		
PIN	E	C	B	E	C	B	E	C	B
Cross-hatch	3.02	GND	5.04	0.40	5.01	0.02	54.47	GND	55.23
Full white	2.46	GND	1.84	0.34	5.01	0.19	53.68	GND	55.40

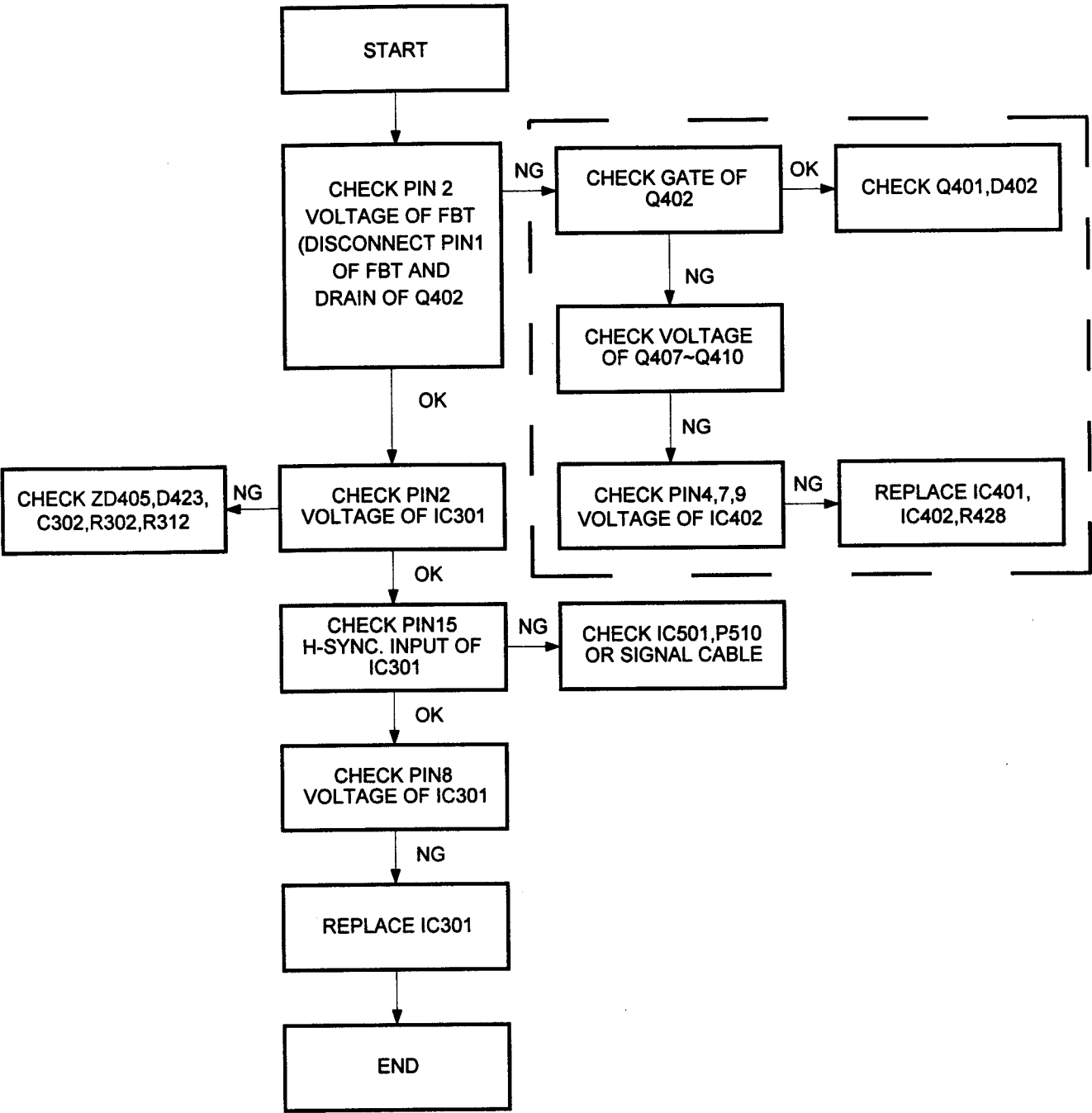
TR	Q635 (BF422)			Q654 (BF423)			Q655 (BF422)		
PIN	E	C	B	E	C	B	E	C	B
Cross-hatch	4.39	50.56	5.00	54.94	GND	55.48	4.39	50.81	5.00
Full white	4.39	50.73	5.00	53.87	GND	55.63	4.39	50.98	5.00

TR	Q674 (BF423)			Q675 (BF422)		
PIN	E	C	B	E	C	B
Cross-hatch	53.10	GND	53.64	4.39	48.52	5.00
Full white	52.11	GND	53.76	4.40	48.64	5.00

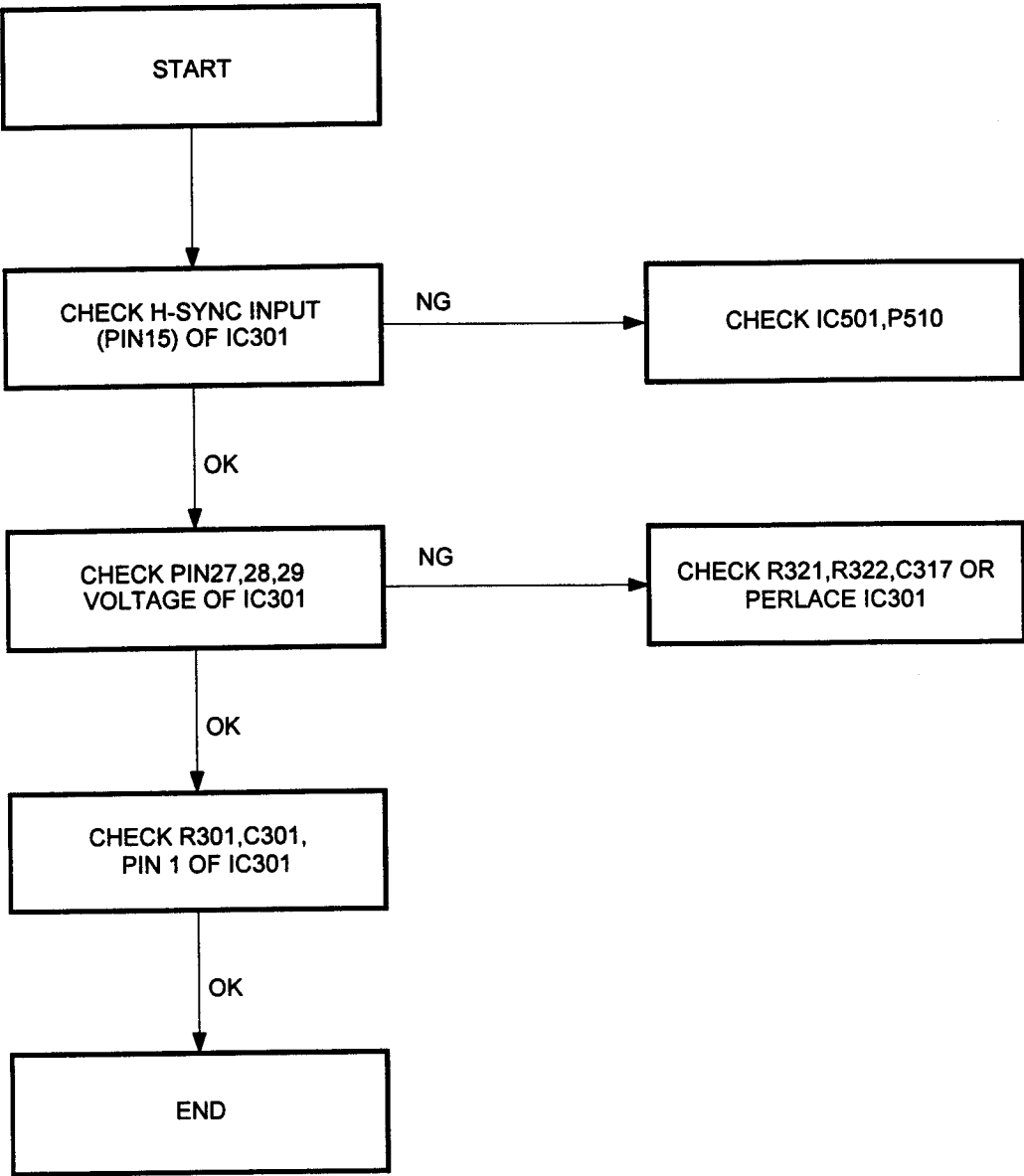
7.5 DEFLECTION CIRCUIT TROUBLESHOOTING ROUTINE

7.5.1 Horizontal Deflection Circuit

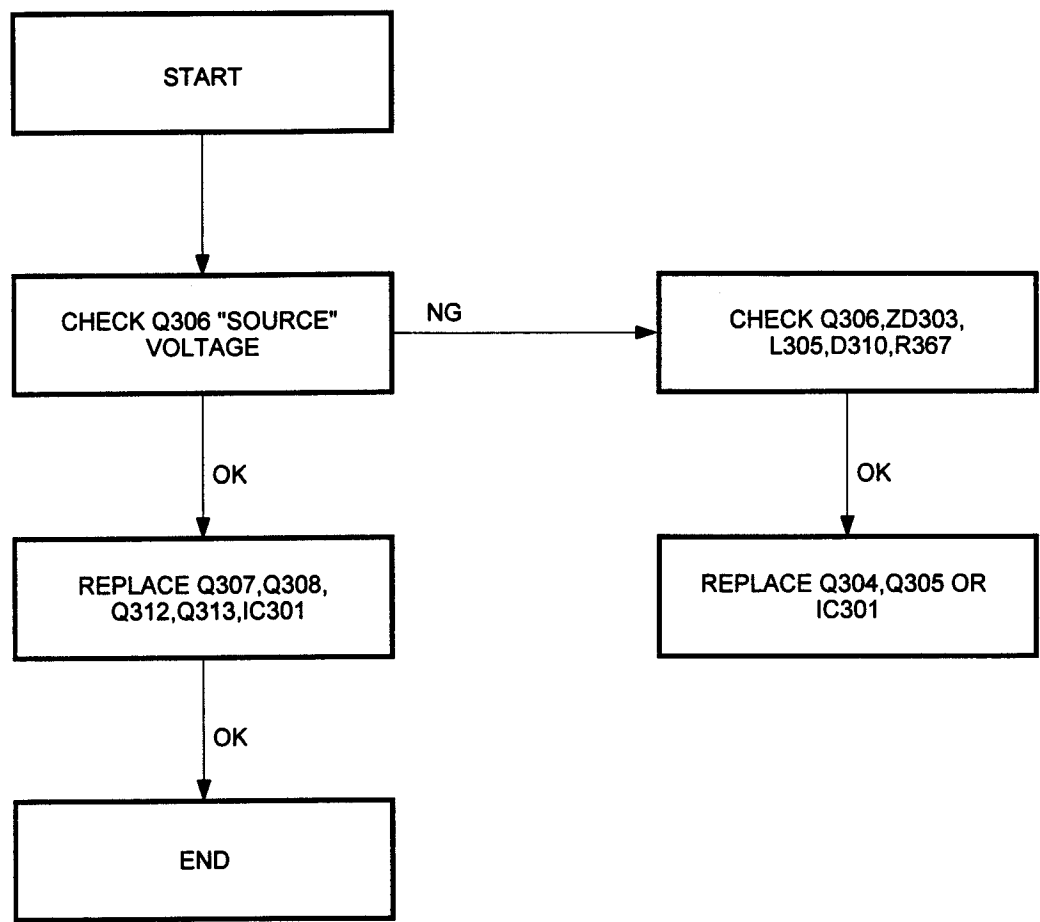
No Raster



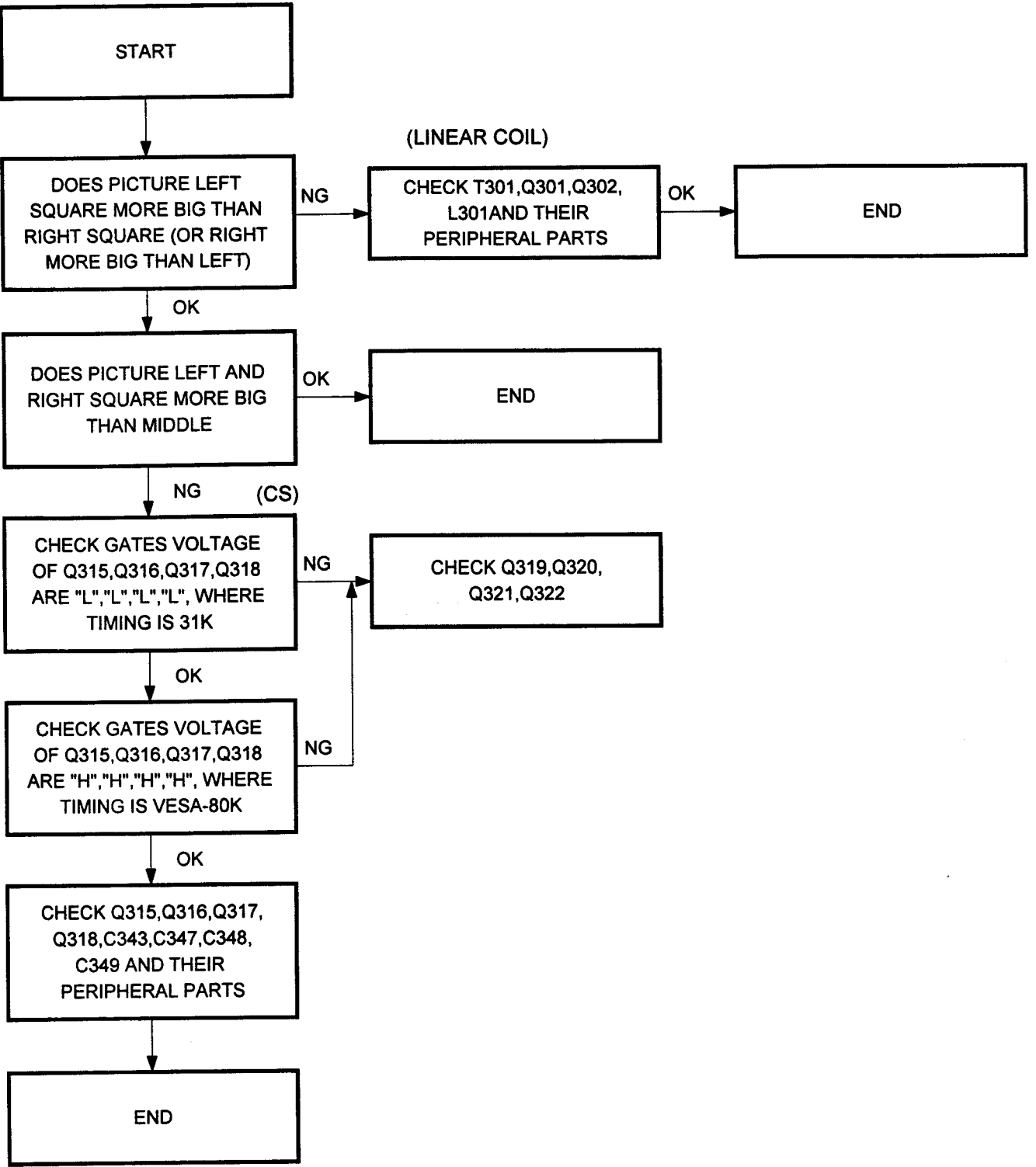
H-Asynchronous



No Horizontal Scan

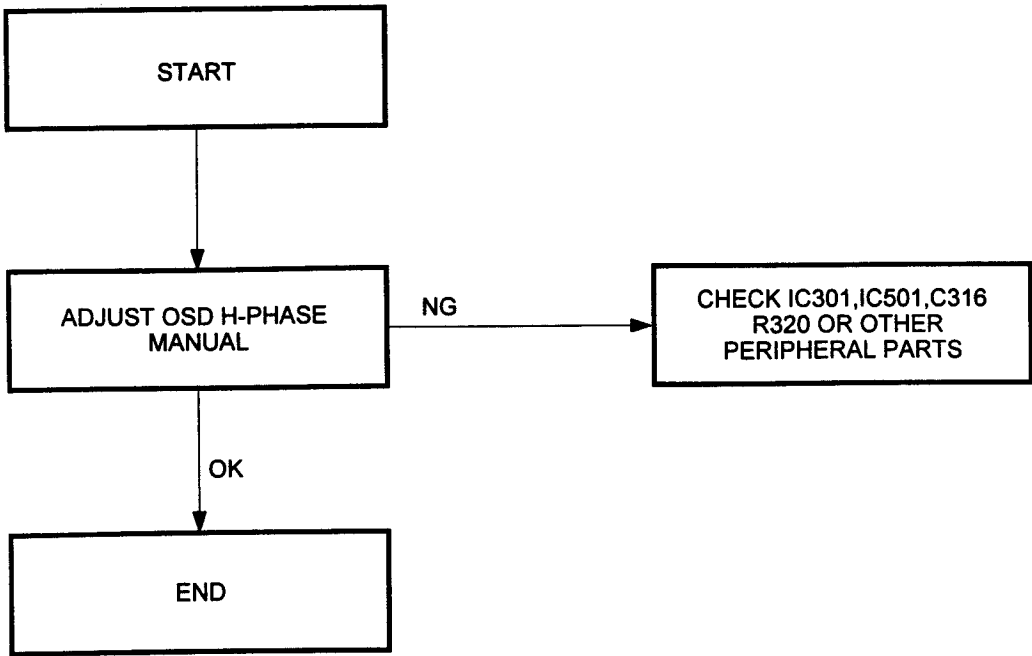


Linearity

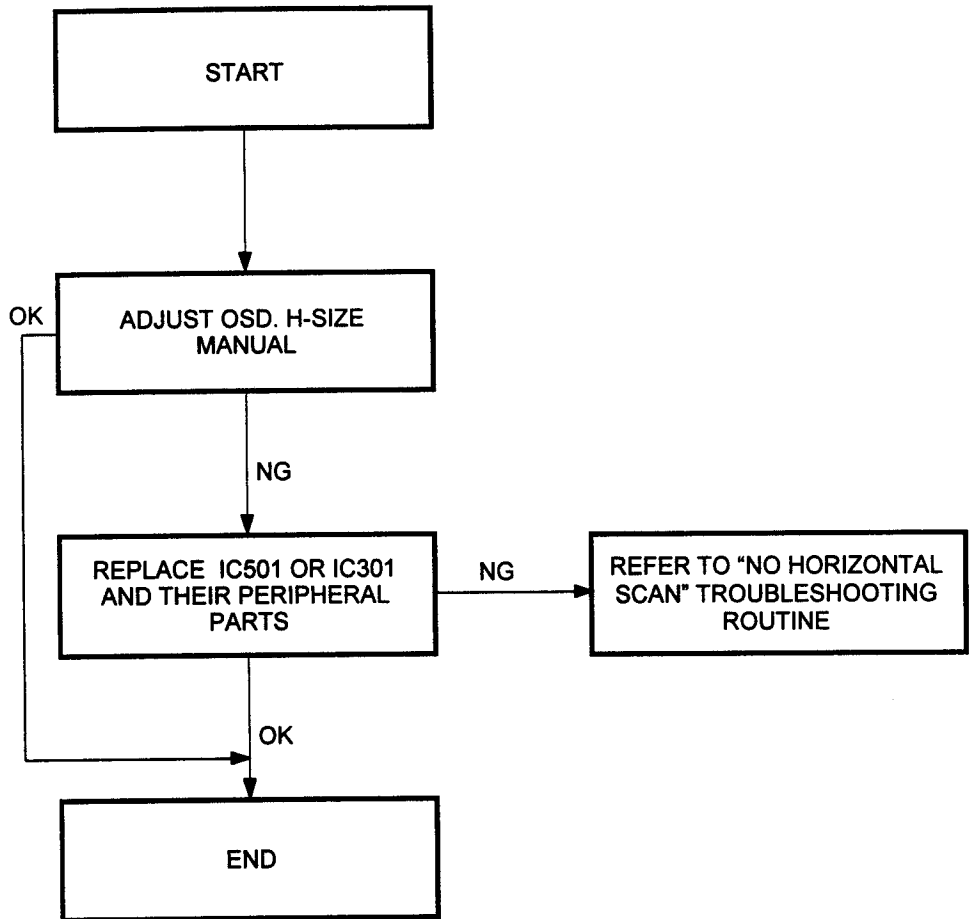


REMARK: 1. "L" means the voltage between gate and source is $\angle 4V$ which can't turn on the MOSFET.
2. "H" means the voltage between gate and source is $\geq 4V$ which can turn on the MOSFET.

Out of phase

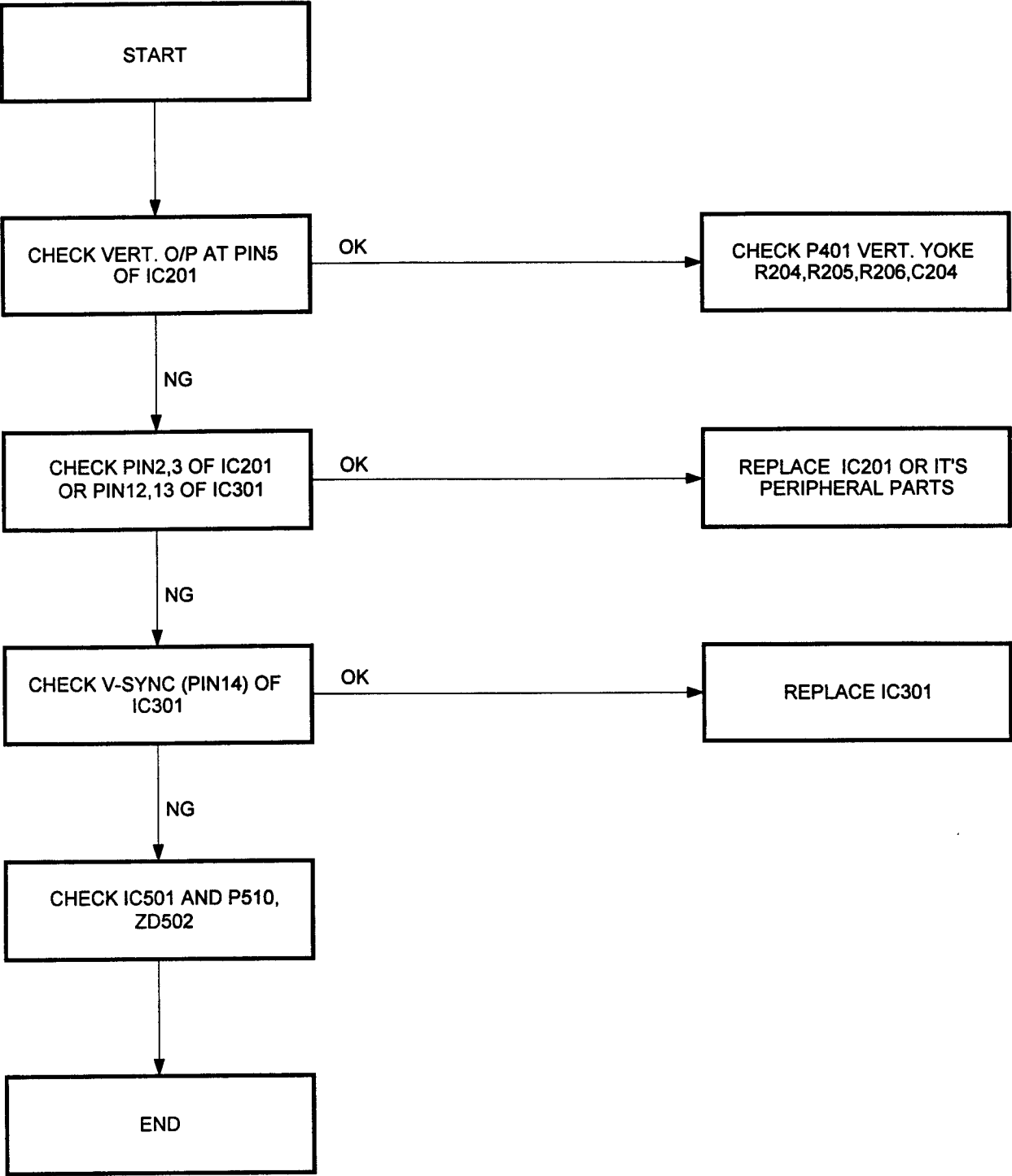


Width Abnormal

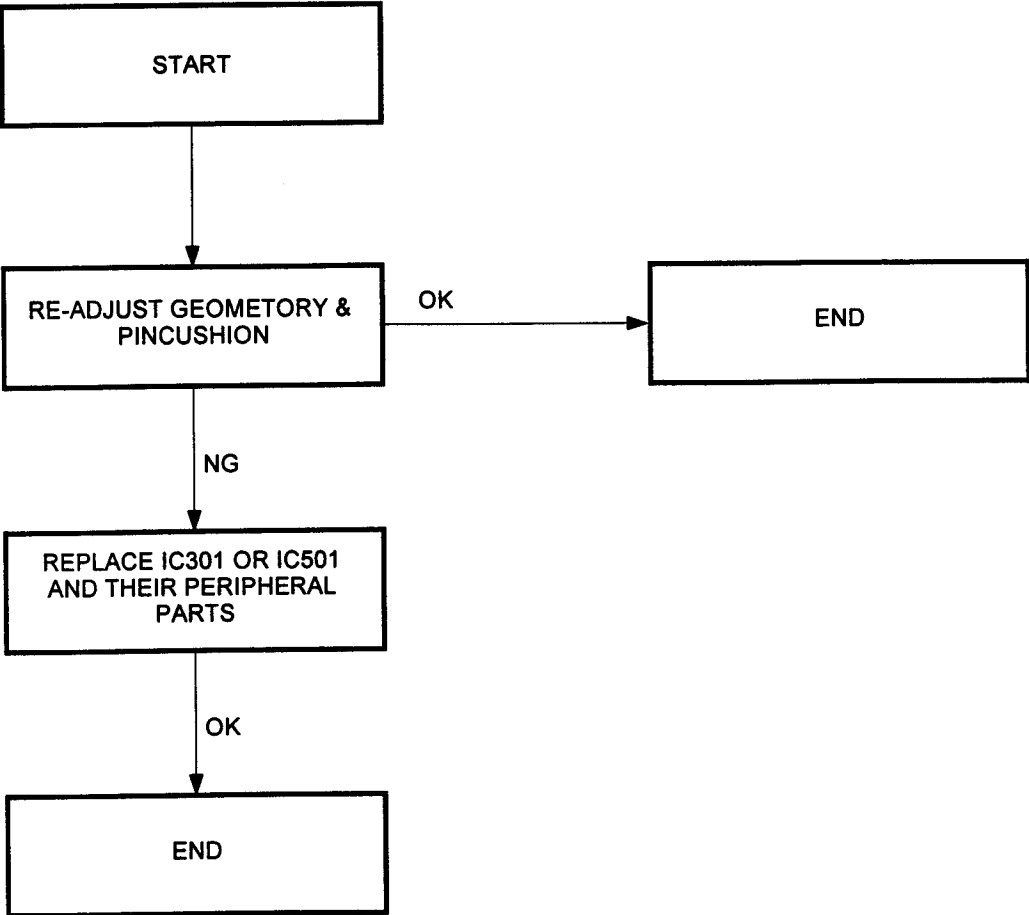


7.5.2 Vertical Deflection Circuit

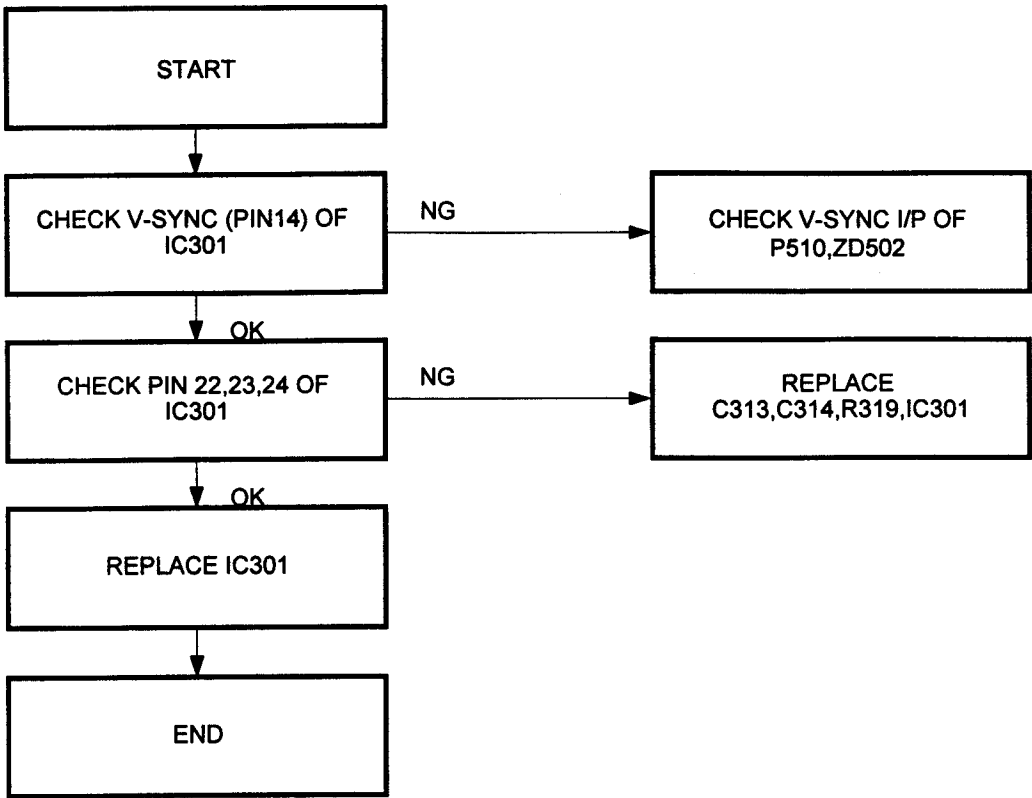
No vertical scan



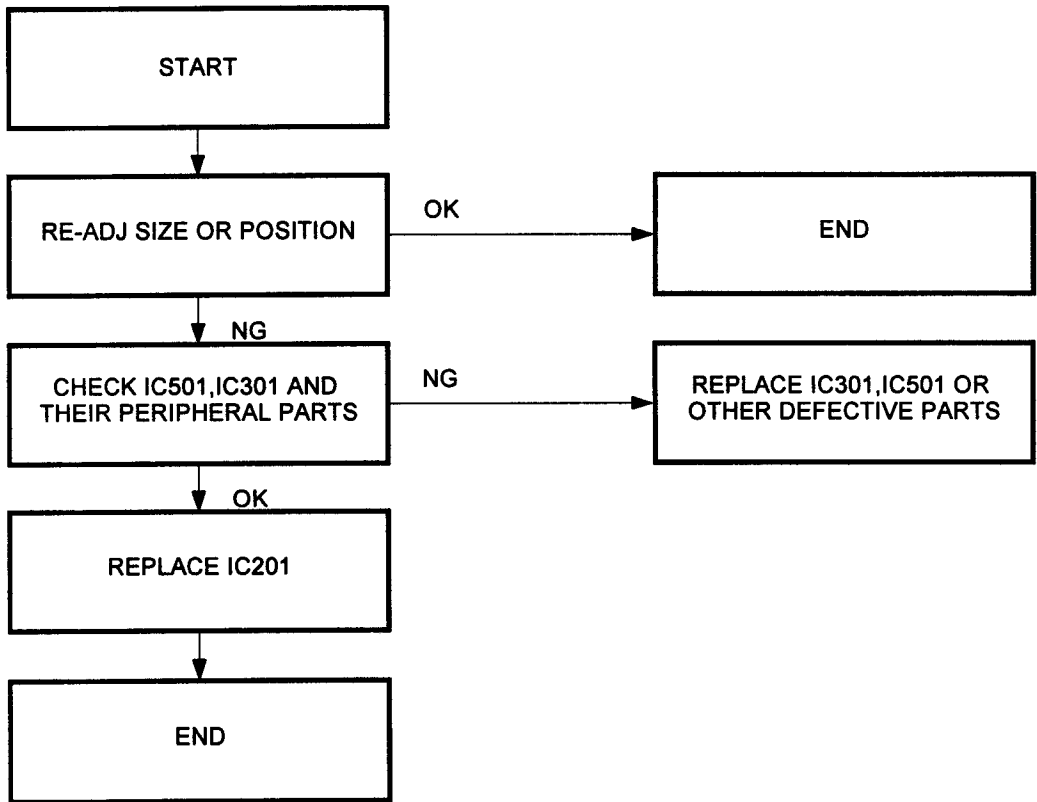
Picture distortion



V-Asynchronous

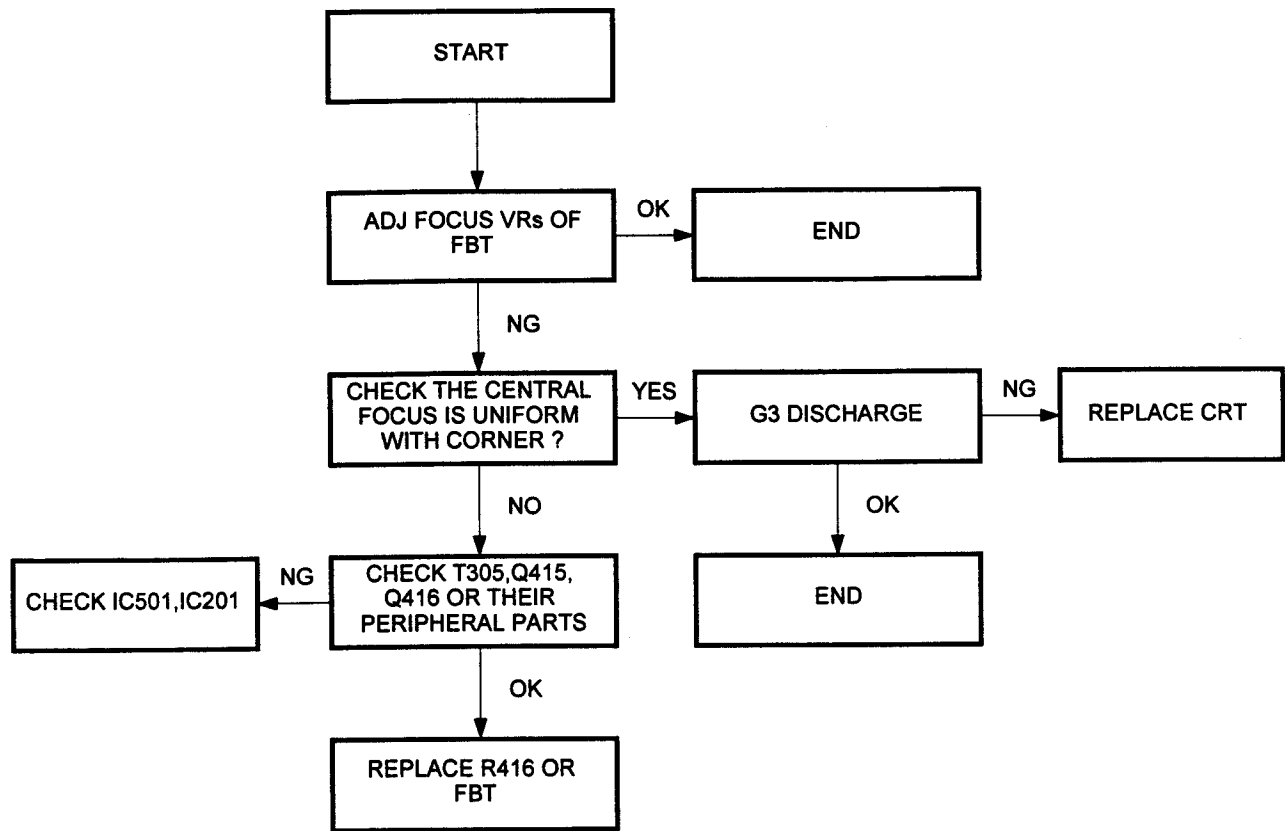


Vertical position & Size



7.5.3 Other

Poor focus



TEST CONDITIONS: AC LINE IN:110V/60Hz
PATTERN: CROSS HATCH
STATUS : NORMAL

Unit: Volt

IC		IC201 (TDA4861)								
PIN		1	2	3	4	5	6	7	8	9
MODE										
640X480-60(31K)		14.90	0.79	0.78	14.51	0.30	-14.40	14.51	48.91	0.18
800X600-50(53K)		14.97	0.78	0.78	14.69	0.20	-14.40	14.69	48.29	0.24
1024X768-85(68K)		14.96	0.78	0.78	14.68	0.23	-14.41	14.68	48.20	0.24
1280X1024-85(91K)		14.97	0.78	0.78	14.69	0.19	-14.41	14.69	48.40	0.23

IC		IC301 (TDA4856)									
PIN	MODE	1	2	3	4	5	6	7	8	9	10
	640X480-60(31K)	-0.19	5.71	3.52	1.36	2.48	9.35	GND	5.61	1.32	11.75
	800X600-50(53K)	0.07	5.67	3.54	1.61	2.47	7.43	GND	5.81	1.32	11.75
	1024X768-85(68K)	0.24	5.66	3.49	1.74	2.47	6.25	GND	5.96	1.32	11.75
	1280X1024-85(91K)	0.50	5.66	3.46	1.95	2.47	4.44	GND	6.17	1.32	11.75

IC		IC301 (TDA4856)									
PIN		11	12	13	14	15	16	17	18	19	20
MODE											
640X480-60(31K)		2.23	0.82	0.82	0.03	0.59	0.67	0.13	5.00	5.00	4.15
800X600-50(53K)		2.19	0.82	0.81	0.03	0.33	0.75	0.14	5.00	5.00	4.16
1024X768-85(68K)		2.31	0.82	0.82	0.03	0.37	0.79	0.14	5.00	5.00	4.16
1280X1024-85(91K)		2.37	0.81	0.81	0.02	0.49	0.86	0.14	5.00	5.00	4.16

IC		IC301 (TDA4856)											
PIN		21	22	23	24	25	26	27	28	29	30	31	32
MODE		21	22	23	24	25	26	27	28	29	30	31	32
640X480-60(31K)		5.04	3.18	3.04	2.68	GND	3.82	2.47	2.57	4.54	5.00	5.02	4.89
800X600-50(53K)		5.05	2.70	3.03	2.68	GND	3.19	1.86	2.58	4.56	5.22	5.02	4.86
1024X768-85(68K)		5.06	2.70	3.03	2.68	GND	2.75	1.42	2.58	4.58	5.38	5.02	4.82
1280X1024-85(91K)		5.06	2.70	3.03	2.68	GND	2.05	0.74	2.58	4.60	5.62	5.02	4.76

IC		IC401 (LM358)							
PIN	MODE	1	2	3	4	5	6	7	8
	640X480-60(31K)	6.98	5.99	6.00	GND	6.00	6.00	6.00	12.00
	800X600-50(53K)	7.87	6.00	6.00	GND	6.00	6.00	6.00	12.00
	1024X768-85(68K)	8.11	6.01	6.00	GND	6.00	6.00	6.00	12.00
	1280X1024-85(91K)	8.33	6.13	5.99	GND	6.00	5.99	5.99	11.99

IC		IC402 (HEF4538))							
PIN		1	2	3	4	5	6	7	8
MODE									
640X480-60(31K)		GND	7.99	12.00	0.19	12.00	9.81	2.17	GND
800X600-50(53K)		GND	8.33	12.00	0.73	12.00	8.34	3.61	GND
1024X768-85(68K)		GND	8.49	12.00	1.09	12.00	7.37	4.57	GND
1280X1024-85(91K)		GND	8.77	11.99	1.62	11.99	5.87	6.04	GND

IC		IC402 (HEF4538))							
PIN		9	10	11	12	13	14	15	16
MODE									
640X480-60(31K)		10.96	1.01	11.67	0.18	12.00	11.14	GND	12.00
800X600-50(53K)		10.22	1.75	11.43	0.73	12.00	10.53	GND	12.00
1024X768-85(68K)		9.72	2.25	11.27	1.09	12.00	10.12	GND	12.00
1280X1024-85(91K)		8.97	2.99	11.04	1.62	11.99	9.50	GND	11.99

TR		Q301 (C945)			Q302 (JC337)			Q304 (C945)		
MODE PIN		E	C	B	E	C	B	E	C	B
640X480-60(31K)		1.17	5.44	1.72	0.53	5.44	1.17	9.03	12.05	9.35
800X600-50(53K)		1.62	4.45	2.19	0.98	4.45	1.62	7.31	12.05	7.43
1024X768-85(68K)		1.97	3.74	2.54	1.30	3.74	1.97	6.26	12.05	6.26
1280X1024-85(91K)		2.42	2.89	3.01	1.71	2.89	2.42	4.65	12.04	4.43

TR		Q305 (A733)			Q306 (2SJ449)			Q307 (2SC5411)		
MODE PIN		E	C	B	S	D	G	E	C	B
640X480-60(31K)		9.03	GND	9.35	208.66	47.68	207.03	GND	45.90	-0.56
800X600-50(53K)		7.31	GND	7.43	208.48	82.96	205.30	GND	80.24	-0.53
1024X768-85(68K)		6.26	GND	6.26	208.46	104.80	204.31	GND	101.79	-0.53
1280X1024-85(91K)		4.65	GND	4.43	208.46	138.23	202.83	GND	135.02	-0.53

TR		Q308 (BSN254)			Q311 (A733)			Q312 (A733)		
MODE PIN		S	D	G	E	C	B	E	C	B
640X480-60(31K)		GND	52.26	4.10	6.76	1.36	6.16	5.65	GND	5.61
800X600-50(53K)		GND	48.47	4.35	6.76	1.61	6.16	5.84	GND	5.81
1024X768-85(68K)		GND	46.21	4.50	6.75	1.74	6.16	5.98	GND	5.95
1280X1024-85(91K)		GND	43.59	4.71	6.75	1.95	6.15	6.19	GND	6.17

TR	Q313 (C945)			Q315 (FS12KMA-4A)			Q316 (FS12KMA-4A)		
PIN	E	C	B	S	D	G	S	D	G
MODE									
640X480-60(31K)	5.65	12.05	5.61	GND	0	12.03	GND	0	12.03
800X600-50(53K)	5.84	12.05	5.81	GND	33.99	0.03	GND	0.14	12.03
1024X768-85(68K)	5.98	12.05	5.95	GND	0.15	12.03	GND	48.47	0.03
1280X1024-85(91K)	6.19	12.05	6.17	GND	59.74	0.03	GND	59.78	0.03

TR	Q317 (FS12KMA-4A)			Q318 (FS12KMA-14A)			Q319 (2SC3400)		
PIN	S	D	G	S	D	G	E	C	B
MODE									
640X480-60(31K)	GND	0	12.04	GND	0	12.04	GND	12.04	0.12
800X600-50(53K)	GND	34.49	0.03	GND	0	12.03	GND	12.03	0.11
1024X768-85(68K)	GND	48.57	0.03	GND	48.03	0.03	GND	0.03	4.43
1280X1024-85(91K)	GND	59.87	0.03	GND	59.27	0.03	GND	0.03	4.43

TR	Q320 (C3400)			Q321 (C3400)			Q322 (C3400)		
PIN	E	C	B	E	C	B	E	C	B
MODE									
640X480-60(31K)	GND	12.04	0.12	GND	12.04	0.12	GND	12.04	0.12
800X600-50(53K)	GND	0.03	4.39	GND	12.03	0.11	GND	0.03	4.39
1024X768-85(68K)	GND	0.03	4.39	GND	0.03	4.40	GND	12.03	0.10
1280X1024-85(91K)	GND	0.03	4.39	GND	0.03	4.40	GND	0.03	4.40

TR	Q401 (2SK2717)			Q402 (SFSJ449)			Q407 (C945)		
PIN	S	D	G	S	D	G	E	C	B
MODE									
640X480-60(31K)	GND	209.87	0.58	209.68	164.76	204.34	1.43	12.01	1.35
800X600-50(53K)	GND	209.80	0.98	209.68	135.80	205.09	2.36	12.00	2.19
1024X768-85(68K)	GND	209.73	1.27	209.67	115.75	205.86	3.01	12.00	2.74
1280X1024-85(91K)	GND	209.65	1.77	209.67	85.92	207.05	3.61	12.00	3.61

TR	Q408 (A733)			Q409 (C945)			Q410 (A733)		
PIN	E	C	B	E	C	B	E	C	B
MODE									
640X480-60(31K)	1.43	GND	1.35	3.56	12.01	3.64	3.56	GND	3.64
800X600-50(53K)	12.00	GND	2.19	5.21	12.00	5.73	5.21	GND	5.73
1024X768-85(68K)	3.01	GND	2.74	6.28	12.00	7.08	6.28	GND	7.08
1280X1024-85(91K)	3.61	GND	3.61	8.08	12.00	9.19	8.08	GND	9.19

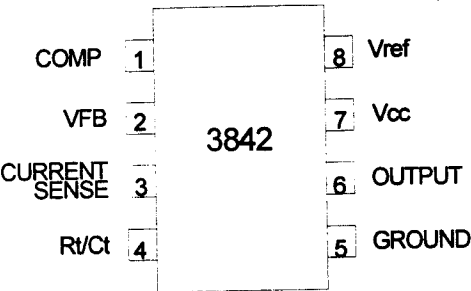
TR	Q411 (C945)			Q412 (BF423)			Q413 (C945)		
PIN	E	C	B	E	C	B	E	C	B
MODE									
640X480-60(31K)	GND	9.37	0.09	1.47	-37.80	0.86	GND	1.47	0.03
800X600-50(53K)	GND	9.30	0.09	1.40	-38.06	0.80	GND	1.40	0.03
1024X768-85(68K)	GND	9.29	0.09	1.39	-38.10	0.79	GND	1.39	0.03
1280X1024-85(91K)	GND	9.29	0.09	1.38	-38.17	0.78	GND	1.38	0.03

TR	Q414 (C945)			Q415 (MPSA44)			Q416 (C945)		
PIN	E	C	B	E	C	B	E	C	B
MODE									
640X480-60(31K)	0.12	1.47	0	1.30	122.09	1.84	0	0.77	0.47
800X600-50(53K)	0.13	1.40	0	1.30	122.00	1.84	0	0.30	0.48
1024X768-85(68K)	0.14	1.39	0	1.29	121.92	1.84	0	0.30	0.48
1280X1024-85(91K)	0.16	1.38	0	1.30	121.92	1.84	0	0.31	0.47

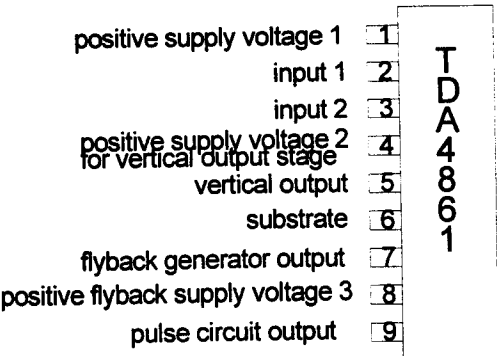
TR	Q417 (A733)			Q418 (C3400)			Q419 (A733)		
PIN	E	C	B	E	C	B	E	C	B
MODE									
640X480-60(31K)	12.06	12.00	11.33	GND	0.01	10.55	6.00	GND	4.90
800X600-50(53K)	12.06	12.00	11.32	GND	0.01	13.02	6.00	GND	4.98
1024X768-85(68K)	12.06	12.00	11.32	GND	0.01	13.89	6.00	GND	5.04
1280X1024-85(91K)	12.06	11.99	11.31	GND	0.01	14.61	5.99	GND	5.13

8.0 IC CONFIGURATION

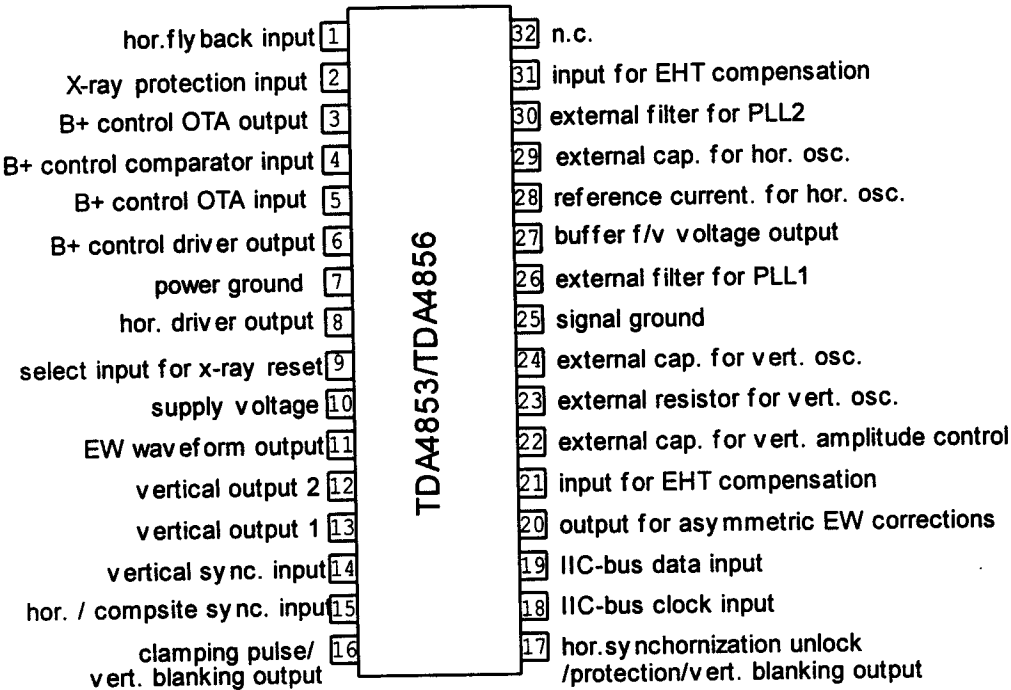
(1) 3842 (IC101)



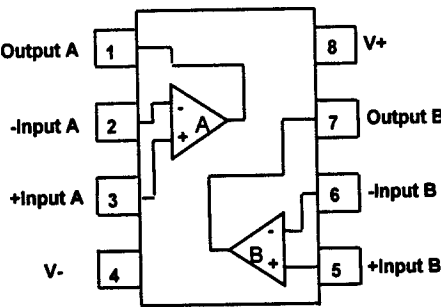
(2) TDA4861 (IC201)



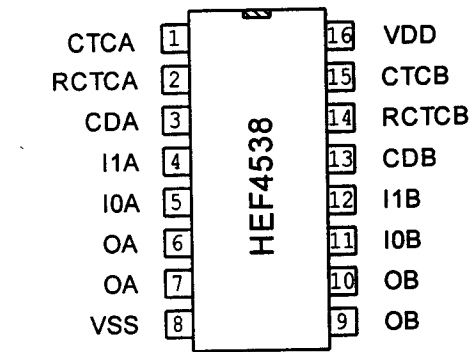
(3) TDA4853/TDA4856 (IC301)



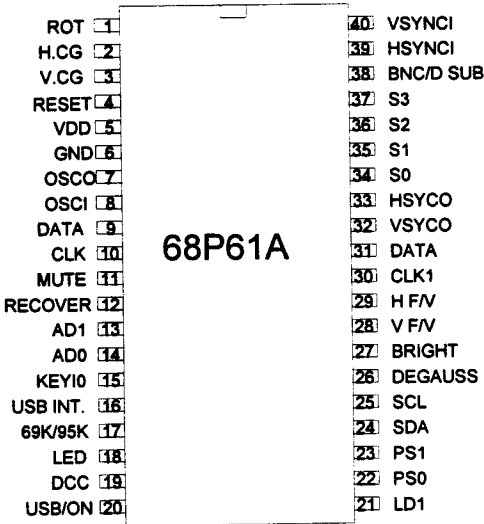
(4) LM358 (IC401)



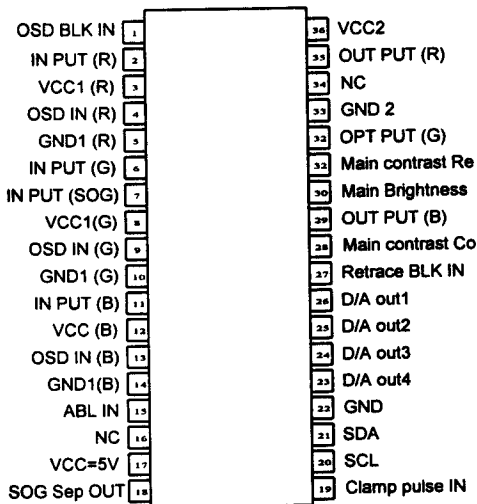
(5) HEF4538 (IC402)



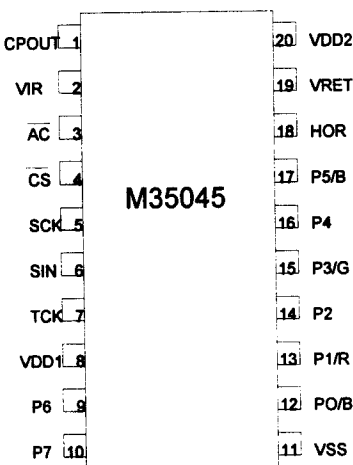
(6) 68P61A (IC501)



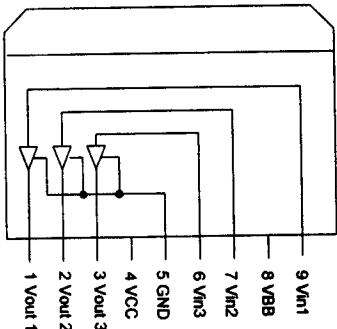
(7) M52743SP (IC601)



(8) M35045 (IC603)



(9) LM2435/LM2437 (IC604)



9.0 PARTS LIST

1795PF1 Parts List

Abbreviations :	Capacitors	EL: Electrolytic Aluminum, TA: Tantalum, CE: Ceramic
		PP: Polypropylene, PEI: Polyster (Inductive),
		PEN: Polyster (Non-Inductive) PPS: Serial Poly Propylene,
		MPE: Polyster Metalized, MPP: Polypropylene Metalized.
	Resistors	CF: Carbon Film, MF: Metal Film, VR: Variable Resistor.
		MOF: Metal Oxide Film, POT: Potentiometer
	Semiconductor	TR: Transistor, DI: Diode, ZD: Zener Diode, IC: IC.
Remark:	●	: 1st priority , Recommended Q'ty = (Location Number x3)
	⊙	: 2nd priority, Recommended Q'ty = (Location Number x2)
	N	: New parts
	!	: Critical Components Affecting X-radiation

Location	Part No	Description	Location	Part No	Description
TRANSISTOR			Q312	14A92-021B	TR PNP 2SA733P/Q
			Q313	14C92-111B	TR NPN 2SC945P/Q
Q101	14T92-011E	TR SCR BT169D	⊙N Q316	14K22-420U	TR MOS FET FS12KMA-4A
Q102	14C92-111B	TR NPN 2SC945P/Q	⊙N Q317	14K22-420U	TR MOS FET FS12KMA-4A
⊙ Q103	14C92-111B	TR NPN 2SC945P/Q	⊙N Q318	14K22-420U	TR MOS FET FS12KMA-4A
Q104	14K3P-070SU	TR MOS FET FS10SM-16A	Q319	14C92-331C	TR NPN 2SC3400
Q105	14C92-111B	TR NPN 2SC945P/Q	Q319	14K22-390Y	TR MOS FET IRFS640A
Q109	14C92-111B	TR NPN 2SC945P/Q	Q319	14K22-420U	TR MOS FET FS12KMA-4A
Q110	14B92-011P	TR PNP 2SB562	Q320	14C92-331C	TR NPN 2SC3400
Q111	14C92-111B	TR NPN 2SC945P/Q	Q321	14C92-331C	TR NPN 2SC3400
Q114	14C92-111B	TR NPN 2SC945P/Q	Q321	14K22-420U	TR MOS FET FS12KMA-4A
Q116	14A92-021B	TR PNP 2SA733P/Q	Q322	14C92-331C	TR NPN 2SC3400
Q117	14C92-111B	TR NPN 2SC945P/Q	Q401	14K22-260U	TR MOS FET FS3KM-18A
Q301	14C92-111B	TR NPN 2SC945P/Q	Q402	14J22-020B	TR MOS FET 2SJ449
Q302	14C92-311E	TR NPN JC337-25	Q407	14C92-111B	TR NPN 2SC945P/Q
Q304	14C92-111B	TR NPN 2SC945P/Q	⊙ Q408	14A92-021B	TR PNP 2SA733P/Q
⊙ Q305	14A92-021B	TR PNP 2SA733P/Q	Q409	14C92-111B	TR NPN 2SC945P/Q
Q306	14J22-020B	TR MOS FET 2SJ449	Q410	14A92-021B	TR PNP 2SA733P/Q
● Q307	14C3P-250A	TR NPN 2SC5411	Q411	14C92-111B	TR NPN 2SC945P/Q
Q308	14K92-041E	TR MOS FET BSN254	Q412	14A92-061E	TR PNP BF423
Q311	14A92-021B	TR PNP 2SA733P/Q	Q413	14C92-111B	TR NPN 2SC945P/Q

Location	Part No	Description	Location	Part No	Description
Q414	14C92-111B	TR NPN 2SC945P/Q	Q675	14C92-011E	TR NPN BF422
Q415	14C92-371N	TR NPN MPSA44	DIODES		
Q416	14C92-111B	TR NPN 2SC945P/Q			
Q417	14A92-021B	TR PNP 2SA733P/Q	D101	15S49T200F	DI HI SW 1A 1000V 75NS (BYV26E)
Q418	14C92-331C	TR NPN 2SC3400	⊗ D103	15S11M001F	DI SW 0.5A 50V (1N4148)
Q419	14A92-021B	TR PNP 2SA733P/Q	⊗ D104	15S11M001F	DI SW 0.5A 50V (1N4148)
Q501	14A92-021B	TR PNP 2SA733P/Q	⊗ D105	15S11M001F	DI SW 0.5A 50V (1N4148)
⊗ Q502	14C92-111B	TR NPN 2SC945P/Q	D106	15S43T401T	DIODE HI SW 2A 200V 50NS (HER203)
Q504	14C92-111B	TR NPN 2SC945P/Q	● D108	15S49TK00F	DI HI SW 2.3A 1000V 75NS (BYM26E)
Q505	14C92-111B	TR NPN 2SC945P/Q	D109	15S47TK00F	DI HI SW 2.3A 600V 30NS (BYM26C)
Q506	14C92-311E	TR NPN JC337-25	D110	15S47TK00F	DI HI SW 2.3A 600V 30NS (BYM26C)
Q508	14C92-331C	TR NPN 2SC3400	⊗ D112	15S43T601T	DI HI SW 3A 200V 50NS (HER303)
Q509	14C92-331C	TR NPN 2SC3400	⊗ D113	15S33T201F	DI MD SW 1A 200VBYD33D
Q510	14A92-151E	TR PNP JC327-25	D114	15B40T2012	DI SCHOTTKY HI SW 1A50V (1N5819)
Q511	14C92-111B	TR NPN 2SC945P/Q	● D117	15S49TK00F	DI HI SW 2.3A 1000V 75NS (BYM26E)
Q512	14C92-331C	TR NPN 2SC3400	D119	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q513	14A92-021B	TR PNP 2SA733P/Q	D120	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q514	14C92-111B	TR NPN 2SC945P/Q	D121	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q515	14C92-311E	TR NPN JC337-25	D122	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q516	14A92-151E	TR PNP JC327-25	D123	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q518	14C92-311E	TR NPN JC337-25	D125	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q519	14A92-151E	TR PNP JC327-25	D126	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q520	14C92-111B	TR NPN 2SC945P/Q	D201	15S62M201F	DI RECTIFIER 1A 100V (1N4002)
Q601	14C92-111B	TR NPN 2SC945P/Q	D202	15S62M201F	DI RECTIFIER 1A 100V (1N4002)
Q607	14A92-021B	TR PNP 2SA733P/Q	D301	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q620	14C92-111B	TR NPN 2SC945P/Q	D302	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q634	14A92-061E	TR PNP BF423	D303	15B40T2012	DI SCHOTTKY HI SW 1A50V (1N5819)
Q635	14C92-011E	TR NPN BF422	D304	15S11M001F	DI SWITCH 0.5A 50V (1N4148)
Q654	14A92-061E	TR PNP BF423	⊗ D306	15S33T201F	DI MD SW 1A 200V(RGP10D/BYD33D)
Q655	14C92-011E	TR NPN BF422	D307	15S33T201F	DI MD SW 1A 200V(RGP10D/BYD33D)
Q674	14A92-061E	TR PNP BF423	D308	15B40T2012	DI SCHOTTKY HI SW 1A50V (1N5819)

Location	Part No	Description	Location	Part No	Description		
	D309	15S3C-901F	DI MD SW 8A 1500V (DD84RC)	D607	15S11M001F	DI SW 0.5A 50V (1N4148)	
⊙	D310	15S47T201F	DI HI SW 1A 600V 30NS (BYV26C)	D608	15S11M001F	DI SW 0.5A 50V (1N4148)	
	D312	15S11M001F	DI SW 0.5A 50V (1N4148)	D626	15S11M001F	DI SW 0.5A 50V (1N4148)	
⊙	D401	15S33T201F	DI MD SW 1A 200V(RGP10D/BYD33D)	D631	15S43M001F	DI HI SW 0.5A 200V (BAV21)	
	D402	15S49D602F	DI HI SW 3A 1000V 75NS (HER308M)	D632	15S43M001F	DI HI SW 0.5A 200V (BAV21)	
	D403	15S11M001F	DI SW 0.5A 50V (1N4148)	D633	15S11M001F	DI SW 0.5A 50V (1N4148)	
	D404	15S62M201F	DI RECTIFIER 1A 100V (1N4002)	D651	15S43M001F	DI HI SW 0.5A 200V (BAV21)	
	D405	15S11M001F	DI SW 0.5A 50V (1N4148)	D652	15S43M001F	DI HI SW 0.5A 200V (BAV21)	
	D406	15S35T201F	DI MD SW 1A 400V(RGP10G/BYD33G)	D653	15S11M001F	DI SW 0.5A 50V (1N4148)	
	D407	15S35T201F	DI MD SW 1A 400V(RGP10G/BYD33G)	D671	15S43M001F	DI HI SW 0.5A 200V (BAV21)	
	D408	15S11M001F	DI SW 0.5A 50V (1N4148)	D672	15S43M001F	DI HI SW 0.5A 200V (BAV21)	
	D409	15S11M001F	DI SW 0.5A 50V (1N4148)	D673	15S11M001F	DI SWITCH 0.5A 50V (1N4148)	
	D410	15S11M001F	DI SW 0.5A 50V (1N4148)	ZENER DIODE			
	D411	15S11M001F	DI SW 0.5A 50V (1N4148)	⊙	ZD101	15Z33M1800H	ZD 18V 5% 0.5W
	D412	15S11M001F	DI SW 0.5A 50V (1N4148)	N	ZD102	15Z33M6290H	ZD 6.2V 5% 0.5W
	D413	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD103	15Z33M1600H	ZD 16-2V 5% 0.5W
	D414	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD104	15Z33M5190H	ZD 5.1V 5% 0.5W
	D415	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD108	15Z33M1200H	ZD 12V 5% 0.5W
	D416	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD201	15Z33M2400H	ZD 24V 5% 0.5W
!	D417	15S33T201F	DI MD SW 1A 200V(RGP10D/BYD33D)		ZD202	15Z33M2400H	ZD 24V 5% 0.5W
	D418	15S33T201F	DI MD SW 1A 200V(RGP10D/BYD33D)		ZD302	15Z33M5690H	ZD 5.6V 5% 0.5W
	D421	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD303	15Z33M1200H	ZD 12V 5% 0.5W
	D422	15S11M001F	DI SW 0.5A 50V (1N4148)	N	ZD401	15Z33M5690H	ZD 5.6V 5% 0.5W
!	D423	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD402	15Z33M1200H	ZD 12V 5% 0.5W
	D425	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD404	15Z33M1200H	ZD 12V 5% 0.5W
	D501	15S11M001F	DI SW 0.5A 50V (1N4148)	!	ZD405	15Z33M5190H	ZD 5.1V 5% 0.5W
	D601	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD501	15Z33M3990H	ZD 3.9V 5% 0.5W
	D602	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD502	15Z33M5190H	ZD 5.1V 5% 0.5W
	D603	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD701	15Z33M5190H	ZD 5.1V 5% 0.5W
	D604	15S11M001F	DI SW 0.5A 50V (1N4148)		ZD702	15Z33M5190H	ZD 5.1V 5% 0.5W
	D605	15S11M001F	DI SW 0.5A 50V (1N4148)				

Location	Part No	Description	Location	Part No	Description
ZD703	15Z33M5190H	ZD 5.1V 5% 0.5W	R134	22215-221M	RES CF 220R 5% 1/8W
ZD704	15Z33M5190H	ZD 5.1V 5% 0.5W	R135	22215-103M	RES CF 10K 5% 1/8W
RESISTORS			R136	22225-103M	RES CF 10K 5% 1/4W
R101	22245-4741	RES CF 470K 5% 1/2W	R139	23A11-182M	RES MF 1K8 1% 1/8W
R102	23755-3034	RES MOF 30K 5% 2W	R140	22215-153M	RES CF 15K 5% 1/8W
R103	23765-303B	RES MOF 30K 5% 3W	R141	22215-472M	RES CF 4K7 5% 1/8W
R105	22245-1091	RES CF 1R 5% 1/2W	R142	22215-103M	RES CF 10K 5% 1/8W
R106	22225-102M	RES CF 1K 5% 1/4W	R143	22245-4741	RES CF 470K 5% 1/2W
R109	22215-473M	RES CF 47K 5% 1/8W	R144	22245-2231	RES CF 22K 5% 1/2W
R110	22215-471M	RES CF 470R 5% 1/8W	R145	23245-3934	RES MOF 39K 5% 1W
R111	22215-103M	RES CF 10K 5% 1/8W	R146	22225-752M	RES CF 7K5 5% 1/4W
R113	23A11S055M	RES MF 988R 1% 1/8W	R147	22215-391M	RES CF 390R 5% 1/8W
R114	22215-123M	RES CF 12K 5% 1/8W	R148	22225-472M	RES CF 4K7 5% 1/4W
R115	22215-103M	RES CF 10K 5% 1/8W	R149	22225-333M	RES CF 33K 5% 1/4W
R117	22215-472M	RES CF 4K7 5% 1/8W	R150	22225-101M	RES CF 100R 5% 1/4W
R118	22215-222M	RES CF 2K2 5% 1/8W	R151	22215-104M	RES CF 100K 5% 1/8W
R119	22215-472M	RES CF 4K7 5% 1/8W	R152	22215-472M	RES CF 4K7 5% 1/8W
R120	22245-6831	RES CF 68K 5% 1/2W	R153	22215-333M	RES CF 33K 5% 1/8W
R121	22215-271M	RES CF 270R 5% 1/8W	R154	23245-5084	RES MOF 0.5R 5% 1W
R122	22225-510M	RES CF 51R 5% 1/4W	R155	22215-472M	RES CF 4K7 5% 1/8W
R123	22215-101M	RES CF 100R 5% 1/8W	R201	22215-242M	RES CF 2K4 5% 1/8W
R124	23745-3931	RES MOF 39K 5% 1W	R202	22225-242M	RES CF 2K4 5% 1/4W
R125	22215-471M	RES CF 470R 5% 1/8W	R203	22225-101M	RES CF 100R 5% 1/4W
R126	23755-2284	RES MOF 0.22R 5% 2W	R204	22215-109M	RES CF 1R 5% 1/8W
R127	22215-472M	RES CF 4K7 5% 1/8W	R205	23245-1514	RES MOF 150R 5% 1W
R128	22215-100M	RES CF 10R 5% 1/8W	R206	23245-1094	RES MOF 1R 5% 1W
R129	22215-681M	RES CF 680R 5% 1/8W	R207	23755-3394	RES MOF 3R3 5% 2W
R131	22215-242M	RES CF 2K4 5% 1/8W	R210	22225-103M	RES CF 10K 5% 1/4W
R132	22215-272M	RES CF 2K7 5% 1/8W	R211	22225-101M	RES CF 100R 5% 1/4W
R133	22215-102M	RES CF 1K 5% 1/8W	R212	23755-2224	RES MOF 2K2 5% 2W
			R301	22215-432M	RES CF 4K3 5% 1/8W

Location	Part No	Description	Location	Part No	Description
R302	22215-153M	RES CF 15K 5% 1/8W	R357	22215-470M	RES CF 47R 5% 1/8W
R303	22215-103M	RES CF 10K 5% 1/8W	R358	23255-2715	RES MOF 270R 5% 2W
R304	22215-683M	RES CF 68K 5% 1/8W	R359	23255-3015	RES MOF 300R 5% 2W
R306	22215-102M	RES CF 1K 5% 1/8W	R360	23245-1034	RES MOF 10K 5% 1W
R308	22215-154M	RES CF 150K 5% 1/8W	R361	23745-1011	RES MOF 100R 5% 1W
R309	23A11S045M	RES MF 6K34 1% 1/8W	R362	22225-332M	RES CF 3K3 5% 1/4W
R310	22225-243M	RES CF 24K 5% 1/4W	R362	54J05-100B	WIRE JUMPER 10MM
R311	22215-222M	RES CF 2K2 5% 1/8W	R363	22245-3301	RES CF 33R 5% 1/2W
R312	23A11S007M	RES MF 5K62 1% 1/8W	R364	22225-430M	RES CF 43R 5% 1/4W
R314	22225-223M	RES CF 22K 5% 1/4W	R365	22225-430M	RES CF 43R 5% 1/4W
R315	22225-101M	RES CF 100R 5% 1/4W	R366	23225-109M	RES MOF 1R 5% 1/4W
R316	22225-101M	RES CF 100R 5% 1/4W	R367	23255-1005	RES MOF 10R 5% 2W
R317	22225-101M	RES CF 100R 5% 1/4W	R368	22215-472M	RES CF 4K7 5% 1/8W
R317	22225-271M	RES CF 270R 5% 1/4W	R369	22215-151M	RES CF 150R 5% 1/8W
R318	22225-101M	RES CF 100R 5% 1/4W	R374	22245-1001	RES CF 10R 5% 1/2W
R319	23A11-223M	RES MF 22K 1% 1/8W	R375	23765-1095	RES MOF 1R 5% 3W
R320	22215-332M	RES CF 3K3 5% 1/8W	R376	22215-103M	RES CF 10K 5% 1/8W
R321	23A11-751M	RES MF 750R 1% 1/8W	R377	22215-100M	RES CF 10R 5% 1/8W
R322	23A11-272M	RES MF 2K7 1% 1/8W	R378	22215-472M	RES CF 4K7 5% 1/8W
R323	22225-101M	RES CF 100R 5% 1/4W	R379	22215-102M	RES CF 1K 5% 1/8W
R327	22215-273M	RES CF 27K 5% 1/8W	R381	22215-751M	RES CF 750R 5% 1/8W
R341	22225-472M	RES CF 4K7 5% 1/4W	R382	22245-2201	RES CF 22R 5% 1/2W
R342	22215-472M	RES CF 4K7 5% 1/8W	R383	22245-2701	RES CF 27R 5% 1/2W
R343	22225-101M	RES CF 100R 5% 1/4W	R384	22245-4701	RES CF 47R 5% 1/2W
R345	22215-472M	RES CF 4K7 5% 1/8W	R401	22225-102M	RES CF 1K 5% 1/4W
R346	22215-472M	RES CF 4K7 5% 1/8W	R402	22225-100M	RES CF 10R 5% 1/4W
R347	22225-101M	RES CF 100R 5% 1/4W	R403	22215-100M	RES CF 10R 5% 1/8W
R348	22225-101M	RES CF 100R 5% 1/4W	R404	22225-101M	RES CF 100R 5% 1/4W
R352	23255-2705	RES MOF 27R 5% 2W	R405	54J05-100B	WIRE JUMPER 10MM
R355	22245-2211	RES CF 220R 5% 1/2W	R406	22225-470M	RES CF 47R 5% 1/4W
R356	22215-100M	RES CF 10R 5% 1/8W	R407	22225-362M	RES CF 3K6 5% 1/4W

Location	Part No	Description	Location	Part No	Description
R407	22225-472M	RES CF 4K7 5% 1/4W	R451	22245-1041	RES CF 100K 5% 1/2W
R408	22225-912M	RES CF 9K1 5% 1/4W	R452	22245-1041	RES CF 100K 5% 1/2W
! R409	22215-471M	RES CF 470R 5% 1/8W	R453	22225-244M	RES CF 240K 5% 1/4W
! R410	23A21S007M	RES MF 80K6 1% 1/4W	R454	22225-244M	RES CF 240K 5% 1/4W
R412	22215-103M	RES CF 10K 5% 1/8W	R455	22215-362M	RES CF 3K6 5% 1/8W
R413	22215-103M	RES CF 10K 5% 1/8W	R456	22225-681M	RES CF 680R 5% 1/4W
R414	22215-154M	RES CF 150K 5% 1/8W	R457	22225-272M	RES CF 2K7 5% 1/4W
R415	22215-183M	RES CF 18K 5% 1/8W	R458	22215-202M	RES CF 2K 5% 1/8W
R416	22245-1021	RES CF 1K 5% 1/2W	R459	22215-301M	RES CF 300R 5% 1/8W
R423	22225-103M	RES CF 10K 5% 1/4W	R463	22215-102M	RES CF 1K 5% 1/8W
R424	22225-223M	RES CF 22K 5% 1/4W	R464	22215-103M	RES CF 10K 5% 1/8W
R425	22215-103M	RES CF 10K 5% 1/8W	R465	22225-103M	RES CF 10K 5% 1/4W
R426	22215-332M	RES CF 3K3 5% 1/8W	R466	22225-471M	RES CF 470R 5% 1/4W
R427	22215-562M	RES CF 5K6 5% 1/8W	! R467	22215-101M	RES CF 100R 5% 1/8W
R428	22225-624M	RES CF 620K 5% 1/4W	R468	22215-562M	RES CF 5K6 5% 1/8W
R429	22215-222M	RES CF 2K2 5% 1/8W	R469	22215-103M	RES CF 10K 5% 1/8W
R430	22225-470M	RES CF 47R 5% 1/4W	R470	22225-223M	RES CF 22K 5% 1/4W
R436	23A21-472M	RES MF 4K7 1% 1/4W	R471	22215-471M	RES CF 470R 5% 1/8W
R437	22215-103M	RES CF 10K 5% 1/8W	! R472	22215-103M	RES CF 10K 5% 1/8W
R438	22215-472M	RES CF 4K7 5% 1/8W	R474	22215-560M	RES CF 56R 5% 1/8W
R439	23A11S110M	RES MF 86K6 1% 1/8W	R475	22215-683M	RES CF 68K 5% 1/8W
R440	22245-2741	RES CF 270K 5% 1/2W	! R476	22225-101M	RES CF 100R 5% 1/4W
R441	23A11-153M	RES MF 15K 1% 1/8W	R501	22215-272M	RES CF 2K7 5% 1/8W
R442	22245-1841	RES CF 180K 5% 1/2W	R502	22215-471M	RES CF 470R 5% 1/8W
R444	22225-222M	RES CF 2K2 5% 1/4W	R503	22215-102M	RES CF 1K 5% 1/8W
R445	22215-223M	RES CF 22K 5% 1/8W	R504	22215-562M	RES CF 5K6 5% 1/8W
R446	22215-333M	RES CF 33K 5% 1/8W	R505	22225-272M	RES CF 2K7 5% 1/4W
R447	22225-101M	RES CF 100R 5% 1/4W	R506	22225-101M	RES CF 100R 5% 1/4W
R448	23A21-203M	RES MF 20K 1% 1/4W	R507	22215-222M	RES CF 2K2 5% 1/8W
R449	22215-223M	RES CF 22K 5% 1/8W	R508	22225-561M	RES CF 560R 5% 1/4W
R450	22225-512M	RES CF 5K1 5% 1/4W	R509	22215-472M	RES CF 4K7 5% 1/8W

Location	Part No	Description	Location	Part No	Description
R510	23A11-592M	RES MF 5K9 1% 1/8W	R550	22215-432M	RES CF 4K3 5% 1/8W
R511	22215-472M	RES CF 4K7 5% 1/8W	R555	22215-102M	RES CF 1K 5% 1/8W
R512	22215-822M	RES CF 8K2 5% 1/8W	R556	23A11S100M	RES MF 5K36 1% 1/8W
R514	22215-102M	RES CF 1K 5% 1/8W	R601	23A11-202M	RES MF 2K 1% 1/8W
R515	22215-103M	RES CF 10K 5% 1/8W	R602	23A11-202M	RES MF 2K 1% 1/8W
R516	22215-102M	RES CF 1K 5% 1/8W	R603	23A11-202M	RES MF 2K 1% 1/8W
R516	22215-102M	RES CF 1K 5% 1/8W	R604	22215-102M	RES CF 1K 5% 1/8W
R517	22215-102M	RES CF 1K 5% 1/8W	R605	22245-1011	RES CF 100R 5% 1/2W
R518	22215-332M	RES CF 3K3 5% 1/8W	R606	22215-220M	RES CF 22R 5% 1/8W
R519	22215-332M	RES CF 3K3 5% 1/8W	R607	22215-332M	RES CF 3K3 5% 1/8W
R520	22215-332M	RES CF 3K3 5% 1/8W	R608	22225-101M	RES CF 100R 5% 1/4W
R522	22225-102M	RES CF 1K 5% 1/4W	R612	22215-220M	RES CF 22R 5% 1/8W
R524	22215-103M	RES CF 10K 5% 1/8W	R613	22215-102M	RES CF 1K 5% 1/8W
R525	22225-221M	RES CF 220R 5% 1/4W	R614	22215-220M	RES CF 22R 5% 1/8W
R526	22245-7511	RES CF 750R 5% 1/2W	R615	22215-623M	RES CF 62K 5% 1/8W
R527	22215-432M	RES CF 4K3 5% 1/8W	R616	22215-822M	RES CF 8K2 5% 1/8W
R528	22215-222M	RES CF 2K2 5% 1/8W	R617	22215-332M	RES CF 3K3 5% 1/8W
R529	22215-472M	RES CF 4K7 5% 1/8W	R619	23A11-363M	RES MF 36K 1% 1/8W
R530	22215-223M	RES CF 22K 5% 1/8W	R620	22245-3331	RES CF 33K 5% 1/2W
R531	22215-683M	RES CF 68K 5% 1/8W	R621	23A11-912M	RES MF 9K1 1% 1/8W
R532	22215-332M	RES CF 3K3 5% 1/8W	R622	22215-242M	RES CF 2K4 5% 1/8W
R536	22215-202M	RES CF 2K 5% 1/8W	R623	22215-101M	RES CF 100R 5% 1/8W
R541	22215-303M	RES CF 30K 5% 1/8W	R624	22215-101M	RES CF 100R 5% 1/8W
R542	22215-822M	RES CF 8K2 5% 1/8W	R625	22215-101M	RES CF 100R 5% 1/8W
R543	22215-472M	RES CF 4K7 5% 1/8W	R626	22215-101M	RES CF 100R 5% 1/8W
R544	22215-303M	RES CF 30K 5% 1/8W	R627	22215-101M	RES CF 100R 5% 1/8W
R545	22215-183M	RES CF 18K 5% 1/8W	R629	22215-102M	RES CF 1K 5% 1/8W
R546	22215-472M	RES CF 4K7 5% 1/8W	R630	22215-222M	RES CF 2K2 5% 1/8W
R547	22225-750M	RES CF 75R 5% 1/4W	R631	22225-224M	RES CF 220K 5% 1/4W
R548	22225-271M	RES CF 270R 5% 1/4W	R632	22225-183M	RES CF 18K 5% 1/4W
R549	22215-102M	RES CF 1K 5% 1/8W	R633	22215-220M	RES CF 22R 5% 1/8W

Location	Part No	Description	Location	Part No	Description
R634	22225-151M	RES CF 150R 5% 1/4W	R673	22215-220M	RES CF 22R 5% 1/8W
R635	22215-271M	RES CF 270R 5% 1/8W	R674	22225-151M	RES CF 150R 5% 1/4W
R637	22245-7501	RES CF 75R 5% 1/2W	R675	22215-102M	RES CF 1K 5% 1/8W
R638	22215-103M	RES CF 10K 5% 1/8W	R676	22215-471M	RES CF 470R 5% 1/8W
R639	22215-243M	RES CF 24K 5% 1/8W	R677	22245-7501	RES CF 75R 5% 1/2W
R641	22215-271M	RES CF 270R 5% 1/8W	R678	22215-103M	RES CF 10K 5% 1/8W
R643	22215-332M	RES CF 3K3 5% 1/8W	R679	22215-243M	RES CF 24K 5% 1/8W
R644	22215-102M	RES CF 1K 5% 1/8W	R680	22215-102M	RES CF 1K 5% 1/8W
R646	22215-102M	RES CF 1K 5% 1/8W	R682	22215-102M	RES CF 1K 5% 1/8W
R647	22215-102M	RES CF 1K 5% 1/8W	R683	22215-332M	RES CF 3K3 5% 1/8W
R648	22215-101M	RES CF 100R 5% 1/8W	R686	22215-102M	RES CF 1K 5% 1/8W
R650	22215-271M	RES CF 270R 5% 1/8W	R687	23A11-753M	RES MF 75K 1% 1/8W
R651	22225-224M	RES CF 220K 5% 1/4W	R689	22225-471M	RES CF 470R 5% 1/4W
R652	22225-183M	RES CF 18K 5% 1/4W	VARIABLE RESISTOR		
R653	22215-220M	RES CF 22R 5% 1/8W	VR101	25B20-103B	RES POT 10KB 0.1W
R654	22225-151M	RES CF 150R 5% 1/4W	VR102	25B20-102B	RES POT 1KB 0.1W
R655	23A11-512M	RES MF 5K1 1% 1/8W	VR103	25B20-502B	RES POT 5KB 0.1W
R656	23A11-512M	RES MF 5K1 1% 1/8W	VR302	25B43-101BH	RES POT 100R 0.5W
R657	22245-7501	RES CF 75R 5% 1/2W	VR401	25AA0-203B	RES POT 20KB 0.1W
R658	22215-103M	RES CF 10K 5% 1/8W	VR402	25AA0-203B	RES POT 20KB 0.1W
R659	22215-243M	RES CF 24K 5% 1/8W	CAPACITOR		
R660	22215-243M	RES CF 24K 5% 1/8W	C101	42A77-474F	CAP SAFETY 0.47U 20% AC250V
R663	22215-332M	RES CF 3K3 5% 1/8W	C102	42D77-2224	CAP SAFETY 2200P 20% AC250V
R665	22225-101M	RES CF 100R 5% 1/4W	C103	42D77-2224	CAP SAFETY 2200P 20% AC250V
R666	22215-472M	RES CF 4K7 5% 1/8W	C104	28CD7-2217	CAP E 220U 20% 400V 105RA PCB
R667	22225-471M	RES CF 470R 5% 1/4W	C105	39487-103R	CAP C 0.01U 20% 500V
R668	22215-101M	RES CF 100R 5% 1/8W	C106	34175-1034	CAP MPE 0.01U 5% 630V
R669	22215-471M	RES CF 470R 5% 1/8W	C108	28A47-4711	CAP E 470U 20% 25V 105 RA
R670	22215-473M	RES CF 47K 5% 1/8W	C109	28H47-101R	CAP E 100U 20% 25V 85 RA
R671	22225-224M	RES CF 220K 5% 1/4W			
R672	22225-183M	RES CF 18K 5% 1/4W			

Location	Part No	Description	Location	Part No	Description
C111	28A47-151R	CAP E 150U 20% 25V 105 RA	C204	346B5-104R	CAP MPE 0.1U 5% 63V
C113	31115-223R	CAP PEI 0.022U 5% 50V	C205	28H97-100R	CAP E 10U 20% 100V 85 RA
C114	39999-104R	CAP C 0.1U +80-20% 50V	C206	28H47-4711	CAP E 470U 20% 25V 85 RA
C116	32115-332R	CAP PEN 3300P 5% 50V	C210	31115-223R	CAP PEI 0.022U 5% 50V
C117	39146-561R	CAP C 560P 10% 50V	C301	38115-100R	CAP C 10P 5% 50V NPO
C118	31115-102R	CAP PEI 1000P 5% 50V	C302	39999-104R	CAP C 0.1U +80-20% 50V
C119	28HB7-1015	CAP E 100U 20% 250V 85 RA	C303	32115-103R	CAP PEN 0.01U 5% 50V
C120	39446-1038	CAP C 0.01U 10% 500V	C304	38115-101R	CAP C 100P 5% 50V NPO
C121	28A97-1011	CAP E 100U 20% 100V 105RA	C305	28H37-470R	CAP E 47U 20% 16V 85 RA
C122	39546-470R	CAP C 47P 10% 1KV Y5P	C307	33112-222R	CAP PPN 2200P 2% 50V
C123	28A47-4711	CAP E 470U 20% 25V 105 RA	C308	28H37-1021	CAP E 1000U 20% 16V 85 RA
C125	28A37-1021	CAP E 1000U 20% 16V 105RA	C309	39999-104R	CAP C 0.1U +80-20% 50V
C126	39546-470R	CAP C 47P 10% 1KV Y5P	C313	346B5-154R	CAP MPE 0.15U 5% 63V
C128	28H27-1021	CAP E 1000U 20% 10V 85 RA	C314	34115-104R	CAP MPE 0.1U 5% 50V
C129	28H27-471R	CAP E 470U 20% 10V 85 RA	C315	28H67-109R	CAP E 1U 20% 50V 85 RA
C130	28H37-470R	CAP E 47U 20% 16V 85 RA	C316	32115-822R	CAP PEN 8200P 5% 50V
C131	28H97-1011	CAP E 100U 20% 100V 85 RA	C317	33112-103R	CAP PPN 0.01U 2% 50V
C132	28H47-4711	CAP E 470U 20% 25V 85 RA	C318	31115-332R	CAP PEI 3300P 5% 50V
C134	42D77-2224	CAP SAFETY 2200P 20% AC250V	C322	38115-101R	CAP C 100P 5% 50V NPO
C135	39999-104R	CAP C 0.1U +80-20% 50V	C323	38115-101R	CAP C 100P 5% 50V NPO
C136	39146-103R	CAP C 0.01U 10% 50V	C327	31115-272R	CAP PEI 2700P 5% 50V
C137	28HB7-4701	CAP E 47U 20% 250V 85 RA	C331	39999-104R	CAP C 0.1U +80-20% 50V
C138	28H47-4711	CAP E 470U 20% 25V 85 RA	C338	28H37-470R	CAP E 47U 20% 16V 85 RA
C139	34145-1044	CAP MPE 0.1U 5% 250V	C339	39446-102R	CAP C 1000P 10% 500V
C142	28H37-331R	CAP E 330U 20% 16V 85 RA	C342	31115-103R	CAP PEI 0.01U 5% 50V
C151	28H37-101R	CAP E 100U 20% 16V 85 RA	C343	35155-6836	CAP MPP 0.068U 5% 400V
C152	28H67-100R	CAP E 10U 20% 50V 85 RA	C344	28J47-479R	CAP E 4U7 20% 25V 105 RA
C153	28H37-101R	CAP E 100U 20% 16V 85 RA	C345	28J47-479R	CAP E 4U7 20% 25V 105 RA
C154	39146-103R	CAP C 0.01U 10% 50V	C346	31115-103R	CAP PEI 0.01U 5% 50V
C201	39187-223R	CAP C 0.022U 20% 50V	C347	35145-3947	CAP MPP 0.39U 5% 250V
C203	28H47-4711	CAP E 470U 20% 25V 85 RA	C348	35155-1547	CAP MPP 0.15U 5% 400V

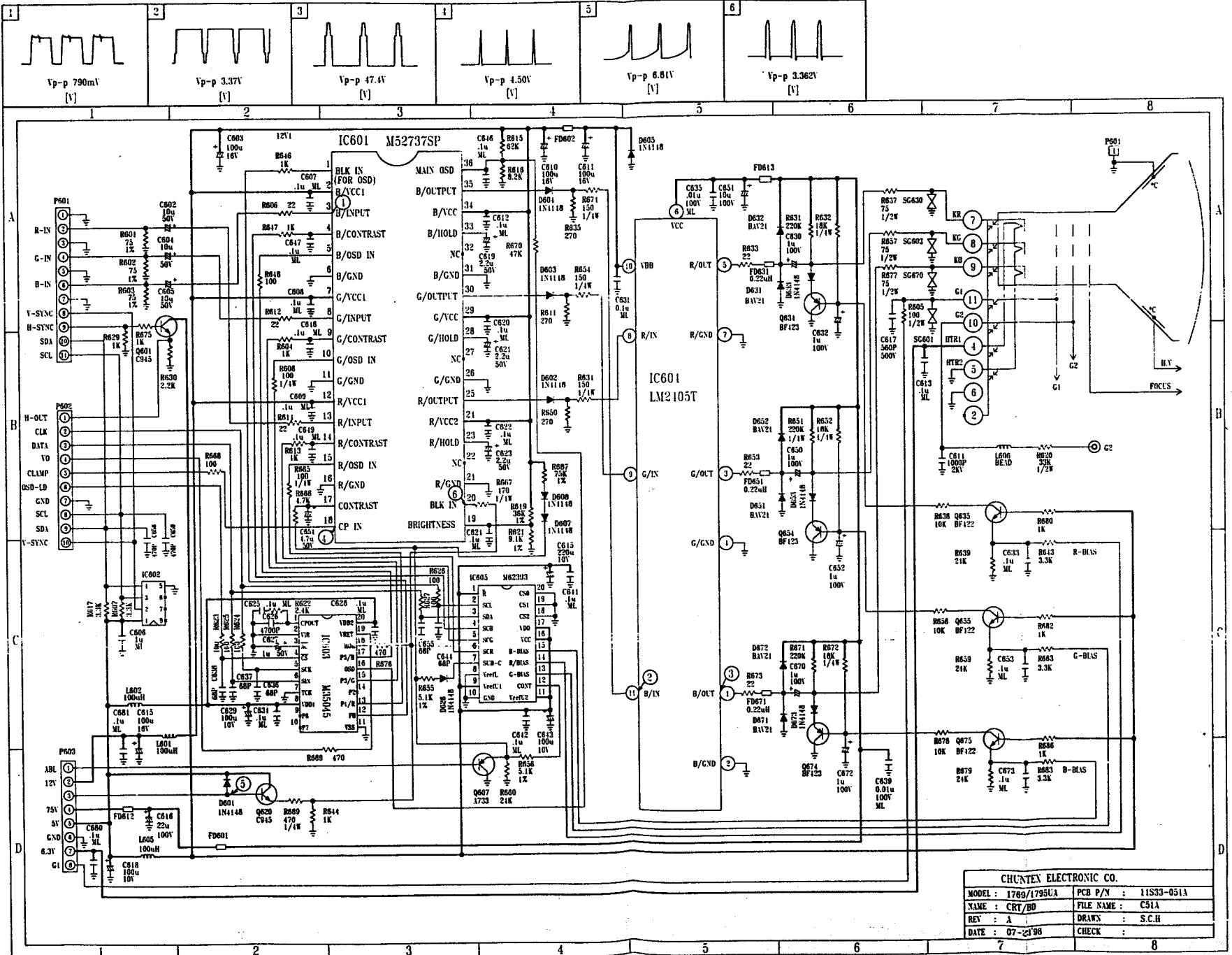
Location	Part No	Description	Location	Part No	Description
C349	35145-1257	CAP MPP 1U2 5% 250V	C423	39999-104R	CAP C 0.1U +80-20% 50V
C352	28H97-479R	CAP E 4U7 20% 100V 85 RA	C424	28H97-109R	CAP E 1U 20% 100V 85 RA
C353	39446-102R	CAP C 1000P 10% 500V	C425	31115-682R	CAP PEI 6800P 5% 50V
C355	375B5H4727M	CAP PPS 4700P 5% 2KV	C428	28H27-101R	CAP E 100U 20% 10V 85 RA
C356	34145-4734	CAP MPE 0.047U 5% 250V	C429	28467-479R	CAP E 4U7 20% 50V NP RA
C357	28HB7-4701	CAP E 47U 20% 250V 85 RA	C430	28467-229R	CAP E 2U2 20% 50V NP 85RA
C358	39487-103R	CAP C 0.01U 20% 500V	C431	28437-100R	CAP E 10U 20% 16V NP 85RA
C361	35155A2046	CAP MPP 0.2U 5% 400V	C432	39146-102R	CAP C 1000P 10% 50V
C362	28HB7-109R	CAP E 1U 20% 250V 85 RA	C433	28H67-479R	CAP E 4U7 20% 50V 85 RA
C363	39546-271R	CAP C 270P 10% 1KV	C434	28H67-220R	CAP E 22U 20% 50V 85 RA
C364	39546-121R	CAP C 120P 10% 1KV	I C437	28H67-229R	CAP E 2U2 20% 50V 85 RA
C365	39446-222R	CAP C 2200P 10% 500V	C439	31115-392R	CAP PEI 3900P 5% 50V
C366	28HB7-339R	CAP E 3U3 20% 250V 85 RA	C442	31115-682R	CAP PEI 6800P 5% 50V
C401	28H67-100R	CAP E 10U 20% 50V 85 RA	C443	39999-104R	CAP C 0.1U +80-20% 50V
C402	34145-4734	CAP MPE 0.047U 5% 250V	C501	39999-104R	CAP C 0.1U +80-20% 50V
C403	39487-103R	CAP C 0.01U 20% 500V	C502	28H37-470R	CAP E 47U 20% 16V 85 RA
C404	375A5H2726M	CAP PPS 2700P 5% 1.6KV	C503	39146-102R	CAP C 1000P 10% 50V
C405	28HB7-1001	CAP E 10U 20% 250V 85 RA	C504	39146-102R	CAP C 1000P 10% 50V
C406	28H67-100R	CAP E 10U 20% 50V 85 RA	C505	38115-330R	CAP C 33P 5% 50V NPO
I C407	28H67-100R	CAP E 10U 20% 50V 85 RA	C506	38115-330R	CAP C 33P 5% 50V NPO
I C408	31115-473R	CAP PEI 0.047U 5% 50V	C507	39999-104R	CAP C 0.1U +80-20% 50V
C409	28H37-220R	CAP E 22U 20% 16V 85 RA	C509	39999-104R	CAP C 0.1U +80-20% 50V
C410	38115-151R	CAP C 150P 5% 50V NPO	C510	31115-103R	CAP PEI 0.01U 5% 50V
C412	38115-101R	CAP C 100P 5% 50V NPO	C516	28H27-221R	CAP E 220U 20% 10V 85 RA
C413	28H37-470R	CAP E 47U 20% 16V 85 RA	C517	28H67-479R	CAP E 4U7 20% 50V 85 RA
C414	28HB7-4701	CAP E 47U 20% 250V 85 RA	C518	28H67-100R	CAP E 10U 20% 50V 85 RA
C415	28H37-470R	CAP E 47U 20% 16V 85 RA	C519	28H67-479R	CAP E 4U7 20% 50V 85 RA
C418	38115-101R	CAP C 100P 5% 50V NPO	C521	28H37-101R	CAP E 100U 20% 16V 85 RA
C419	38115-101R	CAP C 100P 5% 50V NPO	C522	39999-104R	CAP C 0.1U +80-20% 50V
C420	39999-104R	CAP C 0.1U +80-20% 50V	C523	28H37-470R	CAP E 47U 20% 16V 85 RA
C422	39146-102R	CAP C 1000P 10% 50V	C524	28H67-109R	CAP E 1U 20% 50V 85 RA

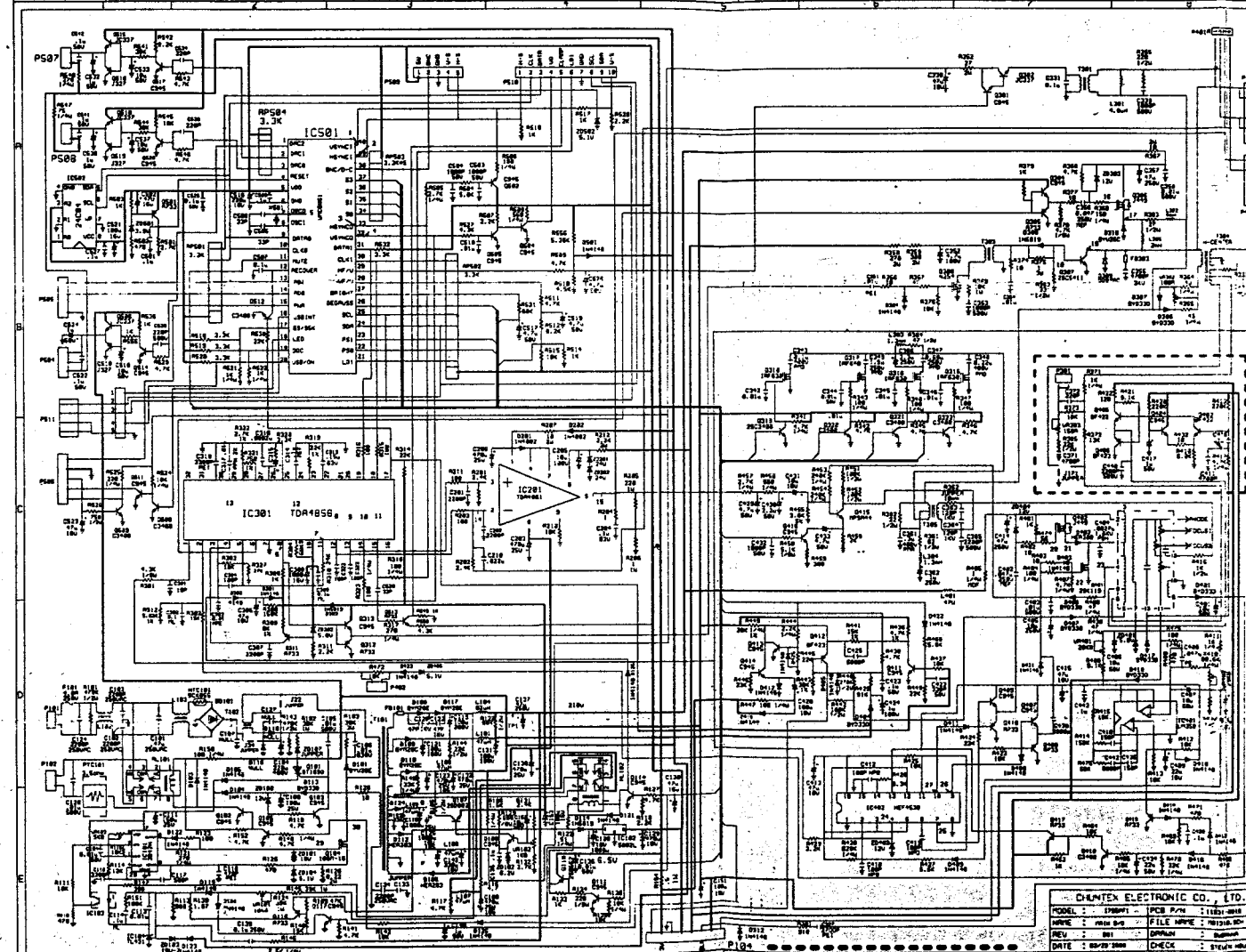
Location	Part No	Description	Location	Part No	Description
C525	39999-104R	CAP C 0.1U +80-20% 50V	C620	39999-104R	CAP C 0.1U +80-20% 50V
C526	28H67-479R	CAP E 4U7 20% 50V 85 RA	C621	28H67-229R	CAP E 2U2 20% 50V 85 RA
C527	39999-104R	CAP C 0.1U +80-20% 50V	C622	39999-104R	CAP C 0.1U +80-20% 50V
C528	38115-390R	CAP C 39P 5% 50V NPO	C623	28H67-229R	CAP E 2U2 20% 50V 85 RA
C530	39446-221R	CAP C 220P 10% 500V	C624	39999-104R	CAP C 0.1U +80-20% 50V
C532	28H67-109R	CAP E 1U 20% 50V 85 RA	C625	39999-104R	CAP C 0.1U +80-20% 50V
C533	28H67-109R	CAP E 1U 20% 50V 85 RA	C626	39146-472R	CAP C 4700P 10% 50V
C534	39446-221R	CAP C 220P 10% 500V	C627	28H67-109R	CAP E 1U 20% 50V 85 RA
C536	28H67-109R	CAP E 1U 20% 50V 85 RA	C628	39999-104R	CAP C 0.1U +80-20% 50V
C537	28H67-100R	CAP E 10U 20% 50V 85 RA	C629	28H27-101R	CAP E 100U 20% 10V 85 RA
C538	39446-221R	CAP C 220P 10% 500V	C630	28H97-109R	CAP E 1U 20% 100V 85 RA
C542	39999-104R	CAP C 0.1U +80-20% 50V	C631	39999-104R	CAP C 0.1U +80-20% 50V
C602	28H67-100R	CAP E 10U 20% 50V 85 RA	C632	28H97-109R	CAP E 1U 20% 100V 85 RA
C603	28H37-101R	CAP E 100U 20% 16V 85 RA	C633	39999-104R	CAP C 0.1U +80-20% 50V
C604	28H67-100R	CAP E 10U 20% 50V 85 RA	C634	39999-104R	CAP C 0.1U +80-20% 50V
C605	28H67-100R	CAP E 10U 20% 50V 85 RA	C635	39E56E103R	CAP ML 0.01U 10% 100V
C606	39999-104R	CAP C 0.1U +80-20% 50V	C636	38196-680R	CAP C 68P 10% 50V
C607	39999-104R	CAP C 0.1U +80-20% 50V	C637	38196-680R	CAP C 68P 10% 50V
C608	39999-104R	CAP C 0.1U +80-20% 50V	C638	38196-680R	CAP C 68P 10% 50V
C609	39999-104R	CAP C 0.1U +80-20% 50V	C639	39E56E103R	CAP ML 0.01U 10% 100V
C610	28H37-101R	CAP E 100U 20% 16V 85 RA	C641	39999-104R	CAP C 0.1U +80-20% 50V
C611	28H37-101R	CAP E 100U 20% 16V 85 RA	C642	39999-104R	CAP C 0.1U +80-20% 50V
C611	28H37-331R	CAP E 330U 20% 16V 85 RA	C643	28H27-101R	CAP E 100U 20% 10V 85 RA
C612	39999-104R	CAP C 0.1U +80-20% 50V	C644	38196-680R	CAP C 68P 10% 50V
C613	39999-104R	CAP C 0.1U +80-20% 50V	C645	28H27-221R	CAP E 220U 20% 10V 85 RA
C614	39646-1028	CAP C 1000P 10% 2KV	C646	39999-104R	CAP C 0.1U +80-20% 50V
C615	28H37-101R	CAP E 100U 20% 16V 85 RA	C647	39999-104R	CAP C 0.1U +80-20% 50V
C616	28H97-220R	CAP E 22U 20% 100V 85 RA	C648	39999-104R	CAP C 0.1U +80-20% 50V
C617	39446-561R	CAP C 560P 10% 500V	C649	39999-104R	CAP C 0.1U +80-20% 50V
C618	28H27-101R	CAP E 100U 20% 10V 85 RA	C650	28H97-109R	CAP E 1U 20% 100V 85 RA
C619	28H67-229R	CAP E 2U2 20% 50V 85 RA	C651	28H97-100R	CAP E 10U 20% 100V 85 RA

Location	Part No	Description	Location	Part No	Description
C652	28H97-109R	CAP E 1U 20% 100V 85 RA	TRANSFORMER		
C653	39999-104R	CAP C 0.1U +80-20% 50V	N	T101	47S00-1070L XFMR SPS EE-42/15
C654	28H67-479R	CAP E 4U7 20% 50V 85 RA		T301	47P10-0100 XFMR PINCUSHING EI-25
C655	38196-680R	CAP C 68P 10% 50V		T303	47D10-0340L XFMR DRIVE EI-22
C658	39146-471R	CAP C 470P 10% 50V		T304	47G00-0020L XFMR CENTER EI-25
C659	39146-471R	CAP C 470P 10% 50V		T305	47J00-0101T XFMR FOCUS EI-22
C670	28H97-109R	CAP E 1U 20% 100V 85 RA		T401	47F13-0911A XFMR FBT W/FOCUS/SCREEN/CR
C672	28H97-109R	CAP E 1U 20% 100V 85 RA			BLOCK W/CORE
C673	39999-104R	CAP C 0.1U +80-20% 50V			
C680	39999-104R	CAP C 0.1U +80-20% 50V			
C681	39999-104R	CAP C 0.1U +80-20% 50V			
COILS			10N		
L001	19D0B-0021	DI LED BICOLOR WHITE-TRANSPA			
L101	45M1K-4704	COIL CHOKE 47U DR 8*10			
L102	47E00-0240	XFMR EMI ET-24			
L103	47E00-0240	XFMR EMI ET-24			
L104	45M1K-8204	COIL CHOKE 82U DR 8*10			
L106	45M1K-4704	COIL CHOKE 47U DR 8*10			
L107	45M1K-4704	COIL CHOKE 47U DR 8*10			
L108	45M1K-4704	COIL CHOKE 47U DR 8*10			
L301	46L00-0930L	COIL LINEAR 5.95uH			
L302	46N00-0640	COIL LINE CHOKE 4mH			
L303	46N00-0600	COIL LINE CHOKE 1.3mH			
L304	46N00-0600	COIL LINE CHOKE 1.3mH			
L305	46N00-0620L	COIL LINE CHOKE 2mH DR 18*22			
L401	45M1K-4704	COIL CHOKE 47U DR 8*10			
L601	45B0K-101T	COIL PEAKING 100U			
L602	45B0K-101T	COIL PEAKING 100U			
L605	45B0K-101T	COIL PEAKING 100U			
L606	46R00-0410	CORE RF W5 RH 3.5*4.5*1.0 TP			

Location	Part No	Description
ITEGRA CRICUITS		
● IC101	17A06-150G	IC LINEAR 8P DEFLECTION3842
N IC102	17A07-171H	IC LINEAR VOTAGE REG. XC62AP5002LH 3P
IC103	17B21-090B	IC PHOTO OPTOCUPLER PS2561-M/TLP721F-GR
IC104	17A07-031H	IC LINEAR VOLTAGE REGULATOR 431 3P
IC201	17A06-330H	IC LINEAR 9P DEFLECTIONTDA4861
●N! IC301	17A06-370H	IC LINEAR 32P DEFLECTION TDA4856
IC401	17A11-040H	IC LINEAR O/P AMP 358 8P
N IC402	16T16-020R	IC TTL HEF4538BP 16P
N IC501	16P40-028F	IC MICRO-PROCESSOR 40P 68P61A OTP 24K
IC502	16M08-009R	IC EEPROM AT24C04 (B)-10PC (BLANK) 8P
IC601	17A04-160V	IC LINEAR 36P VIDEO M52737SP
IC603	16N20-004U	IC CONTROLLER 20P M35045-080SP
IC604	17A04-150K	IC LINEAR 11P VIDEO LM2405T
IC605	17A23-005V	IC LINEAR 20P DIGITAL/ ANALOG M62393
MISCELLANEOUS		
	11S31-091D	PCB MAIN-S 360*247*1.6MM 1795UA
	11S33-051A	PCB CRT-S 120*150*1.6MM1795UA
	11S35-014A	PCB SWITCH-S 180*60*1.6MM 1795UD
	11S39-047A	PCB LED-S 42*34.5*1.6MM1795UA
	11S3D-049A	PCB DISPLAY-S 92*25*1.6MM 1795PF
BD101	15D68-F000	DIODE BRIDGE 4A 800V (KBL406G/PBL406)
FD101	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP
FD102	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP
FD103	46R00-0410	CORE RF W5 RH 3.5*4.5*1.0 TP
FD104	46R00-0410	CORE RF W5 RH 3.5*4.5*1.0 TP
FD303	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP
FD601	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP
FD602	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP

Location	Part No	Description
FD612	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP
FD613	46R00-0010	CORE RF BEAD RHW 3.5*6*1.0 TP
FD631	45B0K-228M	COIL PEAKING 0.22U
FD651	45B0K-228M	COIL PEAKING 0.22U
FD671	45B0K-228M	COIL PEAKING 0.22U
PTC101	26A00-0070	PTCR 14R 20% 2P
RL101	53R001-009S	RELAY COIL DC12V 5A/250V(2-A) SMALL TYPE
RL102	53R001-012A	RELAY COIL DC5V 2A
RP501	16K07-004Z	IC RES ARRAY 10K*6 5% 1/8W (COMMON P1)
RP502	16K11-002Z	IC RES ARRAY 3K3*10 5% 1/8W (COMMON P1)
RP503	16K06-001Z	IC RES ARRAY 3K3*5 5% 1/8W (COMMON P1)
RP504	16K04-002Z	IC RES ARRAY 3K3*3 5% 1/8W (COMMON P1)
SG601	42S00-0060	SPARK GAP 500V
SG603	42S00-0201	SPARK GAP DSP-201M 200V20%
SG630	42S00-0201	SPARK GAP DSP-201M 200V20%
SG670	42S00-0201	SPARK GAP DSP-201M 200V20%
SIGNAL CABLE	7905367300	TIE MINI 18CM (W)
SW001	52P11-0050	SWITCH PRESS W/O LOCK H=9.5MM
SW801	52P11-0050	SWITCH PRESS W/O LOCK H=9.5MM
SW802	52P11-0050	SWITCH PRESS W/O LOCK H=9.5MM
SW803	52P11-0050	SWITCH PRESS W/O LOCK H=9.5MM
SW804	52P11-0050	SWITCH PRESS W/O LOCK H=9.5MM



[illegible]

CHUNTEX ELECTRONIC CO., LTD.	
MODEL : 1780PT	PCB P/N : 11821-0018
NAME : M04 B-0	FILE NAME : M01310.SCH
REV : 001	DRAWN : SUDHAKAR
DATE : 05/22/2008	CHECK : STEVEN HOU

NOTE: 1. RESISTOR WITHOUT SPECIFIED VALUE ARE 1/8W TYPE
2. ALL CAPACITORS WITHOUT SPECIFIED TEMPERATURE VALUE ARE 05 C TYPE
3. CAPACITORS NOT OTHERWISE MARKED ARE 50V TYPE

PS-89 IS ONLY FOR BNC MODEL
REMOVAL