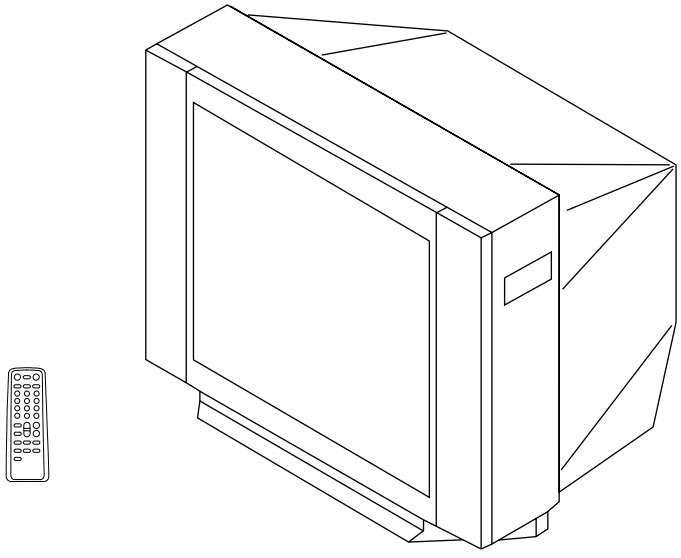
Self Diagnosis
Supported model

SERVICE MANUAL

BG-3S CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-XG29M61	RM-952	Malaysia	SCC-U21H-A
KV-XG29M61	RM-952	Singapore	SCC-U29C-A

MODEL	COMMANDER	DEST.	CHASSIS NO.



MICROFILM

TRINITRON® COLOR TV

SONY®

SECTION 4
CIRCUIT ADJUSTMENTS

4-1. ADJUSTMENTS WITH COMMANDER

Service adjustments are made with the RM-952 that comes with this unit.

a. ENTERING SERVICE MODE

With the unit on standby
↓
[DISPLAY]
↓
[5]
↓
[VOL (+)]
↓
[POWER]

This operation sequence puts the unit into service mode.

b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press [POWER] button on the commander), then press [POWER] button again, hereupon it becomes TV mode.

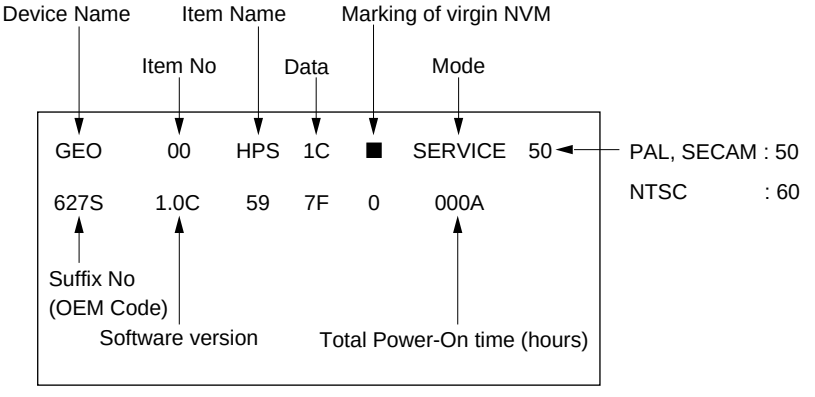
c. METHOD OF WRITE INTO MEMORY

1) Set to Service Mode.
2) Press [1] (UP) and [4] (DOWN), select an item of adjustment.
3) Press [MUTING] button and it will indicate WRITE on the screen.
4) Press [0] button to write into memory.

d. MEMORY WRITE CONFIRMATION METHOD

1) After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
2) Turn the power switch ON and set to Service Mode.
3) Call the adjusted items again to confirm adjustments were made.

The screen display is :



[1], [4]	Select the adjustment item.
↓	
[3], [6]	Raise/lower the data value.
↓	
[MUTING]	Writes.
↓	
[0]	Executes the writing.

[7], [0]	All the data becomes the values in memory.
[8], [0]	All user control goes to the standard state.
[5], [0]	Service data initialization (Be sure not to use usually.)
[2], [0]	Write 50Hz adjustment data to 60Hz, or vice versa.

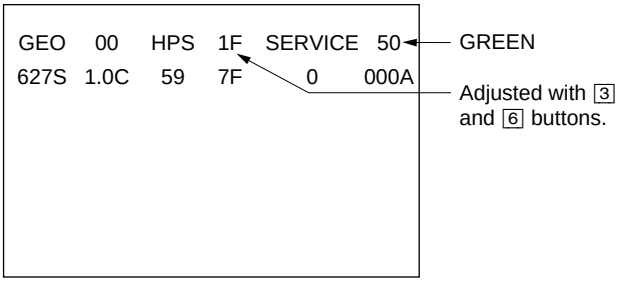
RM-952

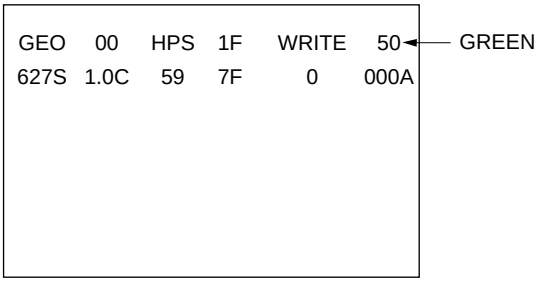
4-2. ADJUSTMENT METHOD

Item Number 00 of device GEO

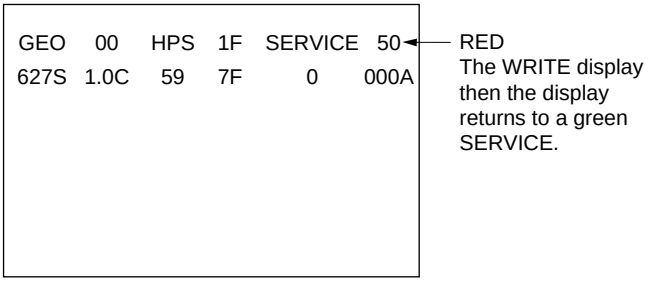
This explanation uses H-Position as an example.

1. Select “GEO 00 HPS” with the [1] and [4] buttons.
2. Raise/lower the data with the [3] and [6] buttons.
3. Select the optimum state. (The standard is 1F for PAL reception.)
4. Write with the [MUTING] button. (The display changes to WRITE.)
5. Execute the writing with the [0] button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)





Written with [MUTING]



Write executed with [0]

Use the same method for all Items. Use [1] and [4] to select the adjustment item, use [3] and [6] to adjust, write with [MUTING], then execute the write with [0].

Note : 1. In [WRITE], the data for all items are written into memory together.

2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

Device Name	Functionality No	Functionality Name	Note	Data Range	Function	Note for Different Data	Register No. (bit)	Slava Address	RAM Address (bit)
GEO	0	HPS	7	3F	H Position	50/60HZ	12 (7-2)	CXA2130S(88H)	99 (7-2)
	1	HSZ	1F	3F	H Size	50/60HZ	11 (7-2)		98 (7-2)
	2	PAP	1F	3F	Pin Amp	50/60HZ	13 (7-2)		9A (7-2)
	3	TLT	7	0F	Trapezium	50/60HZ	15 (7-4)		9C (7-4)
	4	VPS	1F	3F	V Position	50/60HZ	0F (7-2)		96 (7-2)
	5	VSZ	1F	3F	V Size	50/60HZ	0E (7-2)		95 (7-2)
	6	SCO	7	0F	S Correction	50/60HZ	10 (7-4)		97 (7-4)
	7	VLN	7	0F	V Linearity	50/60HZ	10 (3-0)		97 (3-0)
	8	BOW	7	0F	AFC Bow	50/60HZ	16 (7-4)		9D (7-4)
	9	AGL	7	0F	AFC-Angle	50/60HZ	16 (3-0)		9D (3-0)
	0A	UPN	1F	3F	Upper Pin	50/60HZ	14 (7-2)		9B (7-2)
	0B	LPN	2F	3F	Lower Pin	50/60HZ	18 (7-2)		9F (7-2)
	0C	HBL	1	1	H Blanking on/off		18 (1)		6F (1)
	0D	LBL	0F	0F	Left H Blanking	50/60HZ	17 (7-4)		9E (7-4)
	0E	RBL	2	0F	Right H Blanking	50/60HZ	17 (3-0)		9E (3-0)
WHB	0	RDR	1F	3F	R Drive	DYNAMIC/others	09 (7-2)	CXA2130S(88H)	A6 (7-2)
	1	GDR	1F	3F	G Drive	DYNAMIC/others	0A (7-2)		A7 (7-2)
	2	BDR	1F	3F	B Drive	DYNAMIC/others	0B (7-2)		A8 (7-2)
	3	RCT	7	0F	R Cutoff	SECAM/others	07 (3-0)		AA (3-0)
	4	GCT	7	0F	G Cutoff	SECAM/others	08 (7-4)		AB (7-4)
	5	BCT	7	0F	B Cutoff	SECAM/others	08 (3-0)		AB (3-0)
	6	BMN	15	1F	Brightness Minimum Data		06 (7-2)		106
	7	SBR	1F	3F	Sub Brightness Control		06 (7-2)		107
SAJ	0	PMX	33	3F	Picture Maximum Data		03 (7-2)	CXA2130S(88H)	105
	1	SHU	8	0F	Sub Hue Control	TV/Video	05 (7-2)		108
	2	SSH	8	0F	Sub Sharpness Control	TV/Video	07 (7-4)		109
	3	SCL	1F	3F	Sub Color Control	NTSC/others	04 (7-2)		10A
VP	0	EHT	5	0F	EHT Comp	50/60HZ	15 (3-0)	CXA2130S(88H)	9C (3-0)
	1	GMA	2	03	Gamma Correction (seperated in STD mode)	NTSC/others	268 (1-0)		268 (1-0
	2	YDL	6	0F	Y Delay	PAL/SECAM/NTSC	0C (3-0)		26B (3-0)
	3	SST	1	03	SECAM ID Start Position		1B (1-0)		72 (1-0)
	4	SSP	1	03	SECAM ID Stop Position		1B (3-2)		72 (3-2)
	5	SLV	2	03	SECAM ID Level		1C (1-0)		73 (1-0)
	6	SBF	22	3F	SECAM BELL fO		1C (7-2)		73 (7-2)
	7	DYC	1	1	Dynamic Color on/off		0A (1)		61 (1)
	8	ABL	1	1	ABL Mode Switching (except STANDARD mode)		09 (1)		60 (1)
	9	VTH	1	1	ABL Detection Vth Switching		09 (0)		60 (0)
	0A	SFO	1	1	FO Switching for Sharpness	NTSC/others	05 (1)		259 (1)
	0B	DCX	1	1	DC Trans. Ratio Switching		06 (1)		5D (1)
	0C	SHT	1	1	Pre-/Overshoot ratio Switch	NTSC/others	06 (0)		25A (0)

Adjustment Item Table

Device Name	Functionality No	Functionality Name	Note	Data Range	Function	Note for Different Data	Register No. (bit)	Slava Address	RAM Address (bit)
VP	0D	HDW	0	1	H Drive Pulse Width Switch		00 (6)		57 (6)
	0E	AFC	1	03	AFC Gain Control	TV/Video/Text	0F (1-0)		A4 (1-0)
	0F	HOS	7	0F	H Oscillation		0C (7-4)		63 (7-4)
	10	HSS	0	1	Slice Level of H Sync Sep.		0D (1)		64 (1)
	11	VSS	0	1	Slice Level of V Sync Sep.		0D (0)		64 (0)
	12	HMS	1	1	Macro Vision C/m off/on	50/60Hz	0E (0)		95 (0)
	13	YUV	0	1	YUV Switch Control		01 (0)		58 (0)
	14	CDV	1	3	CD mode for Video	Video only	0D (5-4)		266 (5-4)
	15	RON	1	1	R ON	not memorized	01 (3)		58 (3)
	16	GON	1	1	G ON	not memorized	01 (2)		58 (2)
	17	BON	1	1	B ON	not memorized	01 (1)		58 (1)
	18	PON	1	1	P ON	not memorized	00 (7)		57 (7)
	19	BLK	0	1	BLK Off		12 (0)		69 (0)
	1A	VMC	0	1	VM Off		13 (0)		6A (0)
AP	0	BCS	1	3	Bass Center Shift		#4 (3-0)	TDA7315(80H)	25B (1-0)
	1	TCS	1	3	Treble Center Shift		#5 (3-0)		25C (1-0)
	2	TRF	2	3	RF Treble Offset		#5 (3-0)		265 (1-0)
MSP	0	WST	15	FF	W/G Stereo Threshold			MSP3415D(84H)	165
	1	WBT	EA	FF	W/G Bilingual Threshold				166
	2	WLL	5	FF	W/G Monaural Threshold				167
	3	WAC	1	0F	W/G Agreement Count				168
	4	WDL	30	FF	W/G Search Delay				169
	5	NDL	20	FF	NICAM Search Delay				16A
	6	SDL	10	FF	Stereo status Read Delay				16B
	7	AGC	1	1	AGC Switch Auto/Constant		00BB (7)		116 (7)
	8	REL	28	3F	AGC Gain at Constant Mode		00BB (6-1)		116 (6-1)
	9	CRM	0	1	Carrier muting on/off		00BB (9)		115 (9)
	0A	ACO	1	1	Audio Clock out on/off		0083 (5)		11A (5)
	0B	FP	1B	7F	FM Prescale for non-M system		000E (14-8)		221
	0C	FPM	32	7F	FM Prescale for M system		000E (14-8)		222
	0D	FH	36	7F	FM Prescale for HDEV		000E (14-8)		223
	0E	FHM	65	7F	FM Prescale for HDEV and M		000E (14-8)		224
	0F	WGP	2A	7F	W/G Prescale		000E (14-8)		225
	10	NIP	6D	7F	NICAM Prescale		0010 (14-8)		14F
	11	ERR	50	FF	Auto FM switch Threshold		0021 (10-3)		174
	12	VOL	6D	FF	Loud Speaker gain 7000h to 7ff0h		0000 (15-4)		261

Adjustment Item Table

Device Name	Functionality No	Functionality Name	Note	Data Range	Function	Note for Different Data	Register No. (bit)	Slava Address	RAM Address (bit)
SVP	0	SBF	22	3F	SECAM BELL f0		1C (7-2)	CXA2060AS(8AH)	88 (7-2)
	1	HOS	7	0F	H Oscillation		0C (7-4)		83 (7-4)
	2	SHU	8	0F	Sub Hue Control	TV/Video	05 (7-2)		21E
	3	SCL	1F	3F	Sub Color Control	NTSC/others	04 (7-2)		21F
PIP	0	SDL	1	0F	Delay of output SELECT		01 (6-3)	SDA9288X(D6H)	190 (6-3)
	1	PPH	15	FF	H Position of TOP-LEFT Pin P		01/02		1AF
	2	PPV	2E	FF	V Position of TOP-LEFT Pin P		03 (7-0)		1B0
	3	YDL	0	07	Delay of Luminance Input		04 (2-0)		193 (2-0)
	4	HDI	0	0F	H Sync Delay for Inset		06 (3-0)		195 (3-0)
	5	ISC	0	1	Inset Clock Selection		06 (4)		195 (4)
	6	CLP	1	1	Clamp Pulse Selection		06 (5)		195 (5)
	7	CLC	0	1	Clamp Cycle Selection		06 (6)		195 (6)
	8	CON	1	0F	Contrast Adjustment for inset		09 (7-4)		198 (7-4)
	9	PLL	2	03	H Position For A-ch		0D (6-5)		19C (6-5)
	0A	PDV	0	0F	PIP V Pedestal Level		0E (7-4)		19D (7-4)
	0B	PDU	0	0F	PIP U Pedestal Level		0E (3-0)		19D (3-0)
TXT	0	TXH	1	3	Teletext Horizontal Position		10 (1-0)	SAA5261(58H)	257 (1-0)
	1	TXV	0	3	Teletext Vertical Position		10 (6-4)		257 (5-4)
OPM	0	OSH	0A	3F	OSD H Position	Option-Misc	1F1	CXP86461(60H)	17B (7-2)
	1	COM	1	03	Comb Selection				24D (7-6)
	2	APC	1	1	APC Switch				24C (5)
	3	TSY	0	03	TV Sys at Auto TV Sys				24C (4-3)
	4	MUT	0	1	No Signal Mute				24C (0)
	5	AFM	1	1	Auto FM switch				24C (1)
	6	RFB	0	3	C-BPF Control				24D (5-4)
	7	TVO	0	7	Tilt to V-Angle offset				24D (2-0)
	8	DBL	0	1	Disable Blueback Function				24C (2)
OPB	0	OP1	51	FF	Optional Bits 1 (see below)	Option-Bits		CXP86461(60H)	4B
	1	OP2	1	FF	Optional Bits 2 (see below)				4C
	2	OP3	28	FF	Optional Bits 3 (see below)				4D

NOTE

- shaded items are fixed data.
- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory.
  In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

ITEM INFORMATION.

No. OPB0 OP1

Item	XTAL 4.43	XTAL 3.58	SECAM	2nd. Lang	B/G	I	D/K	M
KV-XG29M61 (Malaysia)	1	1	1	1	1	1	1	1
KV-XG29M61 (Singapore)	1	1	1	1	1	1	1	1

No. OPB1 OP2

Item	TOP	NICAM	HDEV	Thai Bil	Dis Fav.	DVD Input	AV Input	
KV-XG29M61 (Malaysia)	0	1	1	0	0	0	1	1
KV-XG29M61 (Singapore)	0	1	1	0	0	0	1	1

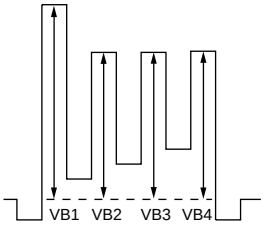
No. OPB2 OP3

Item	PIC Rotate	2199 Curve	Auto PIC	Auto TV sys	US ST	AV Mono	11 KEY	Color SW
KV-XG29M61 (Malaysia)	1	0	1	1	0	0	0	0
KV-XG29M61 (Singapore)	1	0	1	1	0	0	0	0

4-3. PICTURE QUALITY ADJUSTMENTS

SUB COLOR ADJUSTMENT

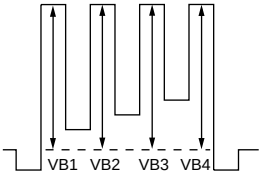
1. Input a PAL color-bar.
2. Set to the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
3. Connect an oscilloscope to pin ① (B OUT) of CN305, A board.
4. Set to Service Mode and select SAJ 3 'SCL' with [1] and [4] of the commander then adjust to VB2=VB3=VB4 with [3] and [6].
5. Press [MUTING] → [0] of the commander to write the data.
6. Adjust SAJ 3 'SCL' as step 2 to 5 when receiving NTSC color-bar.



VB2 = VB3 = VB4

SUB HUE ADJUSTMENT

1. Select Video 1.
2. Input a NTSC color-bar, video into Video 1.
3. Set the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN305, A board.
5. Select SAJ 1 'SHU' with [1] and [4] of the commander by setting to Service Mode and adjust to VB1=VB2=VB3=VB4 with [3] and [6].

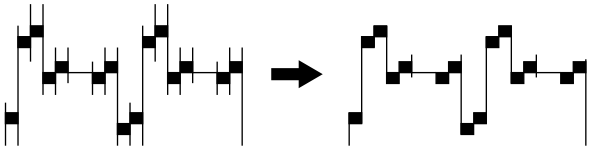


VB1 = VB2 = VB3 = VB4

6. Press [MUTING] → [0] of the commander to write the data.

BELL FILTER ADJUSTMENT

1. Input SECAM color-bar signal.
2. Connect the dual-trace oscilloscope to CN303 pin ⑨ (not mounted).
3. Adjust SERVICE MODE, ITEMS 'SBF' as shown below.



4-4. A BOARD ADJUSTMENT AFTER IC003 (MEMORY) REPLACEMENT

When replacing IC003 (MEMORY), be sure to change IC001 (µ-COM) to the following new IC at the same time.
IC001(µ-CON):
CXP86461-627S

1. Enter to Service Mode.

2. Press commander buttons [5] and [0] (Data Initialize), and [2] and [0] (Data Copy) to initialize the data.

3. Call each item number and check if the respective screen shows the normal picture.
   In cases where items are not well adjusted, rectify the items with fine adjustment.
   Write the data per each item number ([MUTING] +[0]).

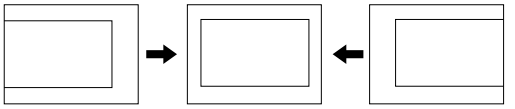
4. Select item numbers "OPB0" (OP1), "OPB1" (OP2) and "OPB2" (OP3) and respectively set the bit per model with command buttons [3] and [6].

5. Press commander buttons [8] and [0] (Test Normal) to return to the data that was set on the shipment from the factory.
   (This will also cancel Service Mode.)

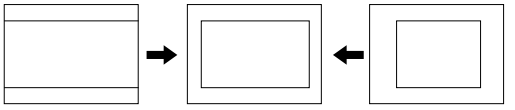
4-5. PICTURE DISTORTION ADJUSTMENT (1)

Item Number 00 – 0B

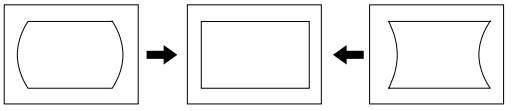
GEO 0 HPS (H POSITION)



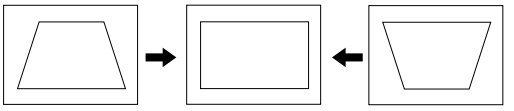
GEO 1 HSZ (H SIZE)



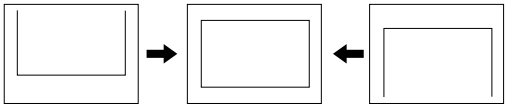
GEO 2 PAP (PIN AMP)



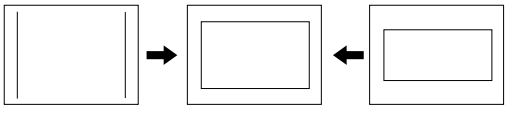
GEO 3 TLT (TRAPEZIUM)



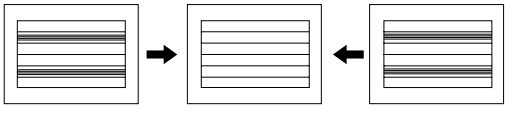
GEO 4 VPS (V POSITION)



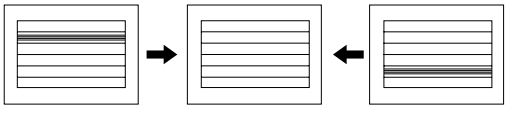
GEO 5 VSZ (V SIZE)



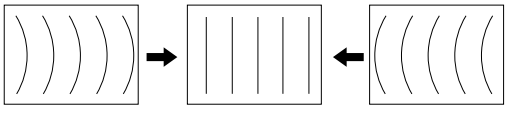
GEO 6 SCO (VERTICAL S-Correction)



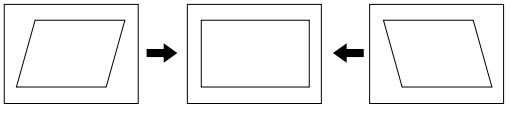
GEO 7 VLN (V LINEARITY)



GEO 8 BOW (AFC.BOW)

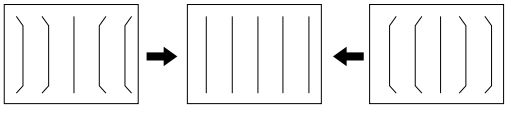


GEO 9 AGL (AFC.ANGLE)



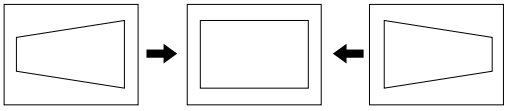
GEO 0A UCP (UPPER CORNER PIN)

GEO 0B LCP (LOWER CORNER PIN)



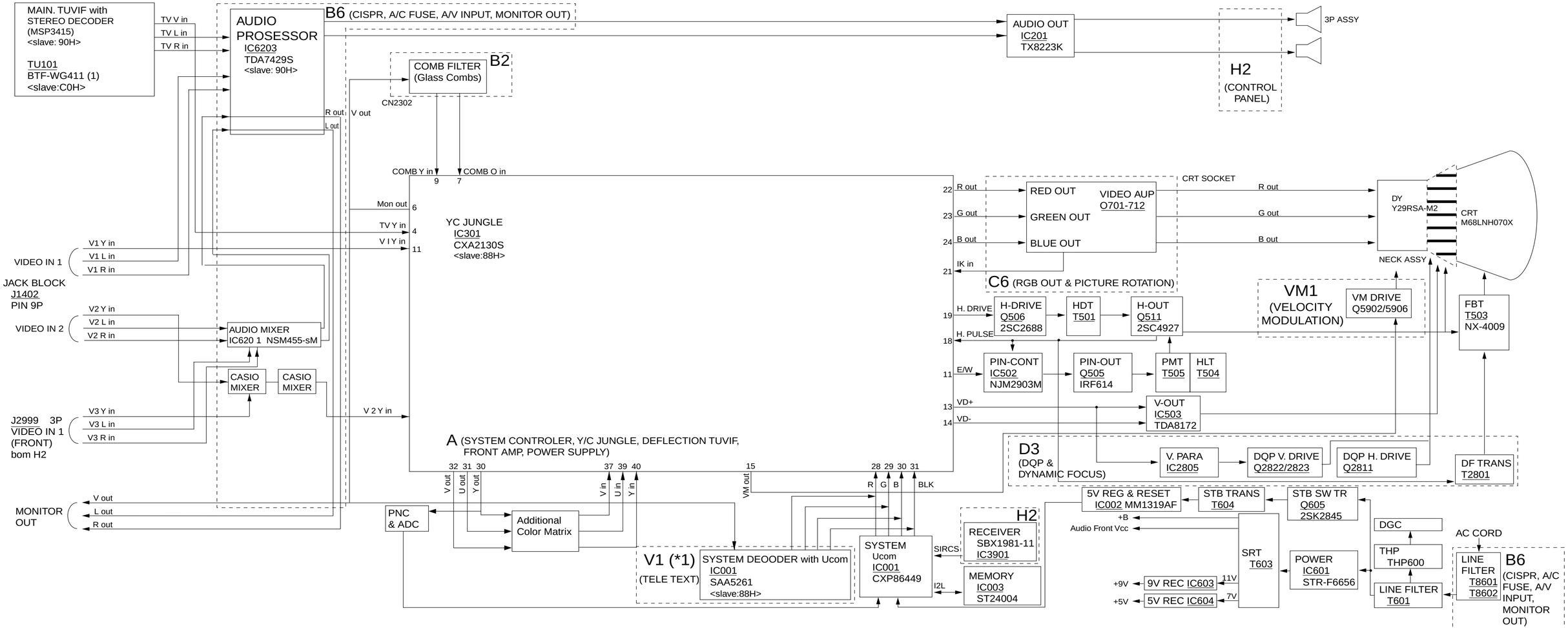
PICTURE DISTORTION ADJUSTMENT (2)

H-TRAPEZOID (Rotate RV1801)



SECTION 5 DIAGRAM

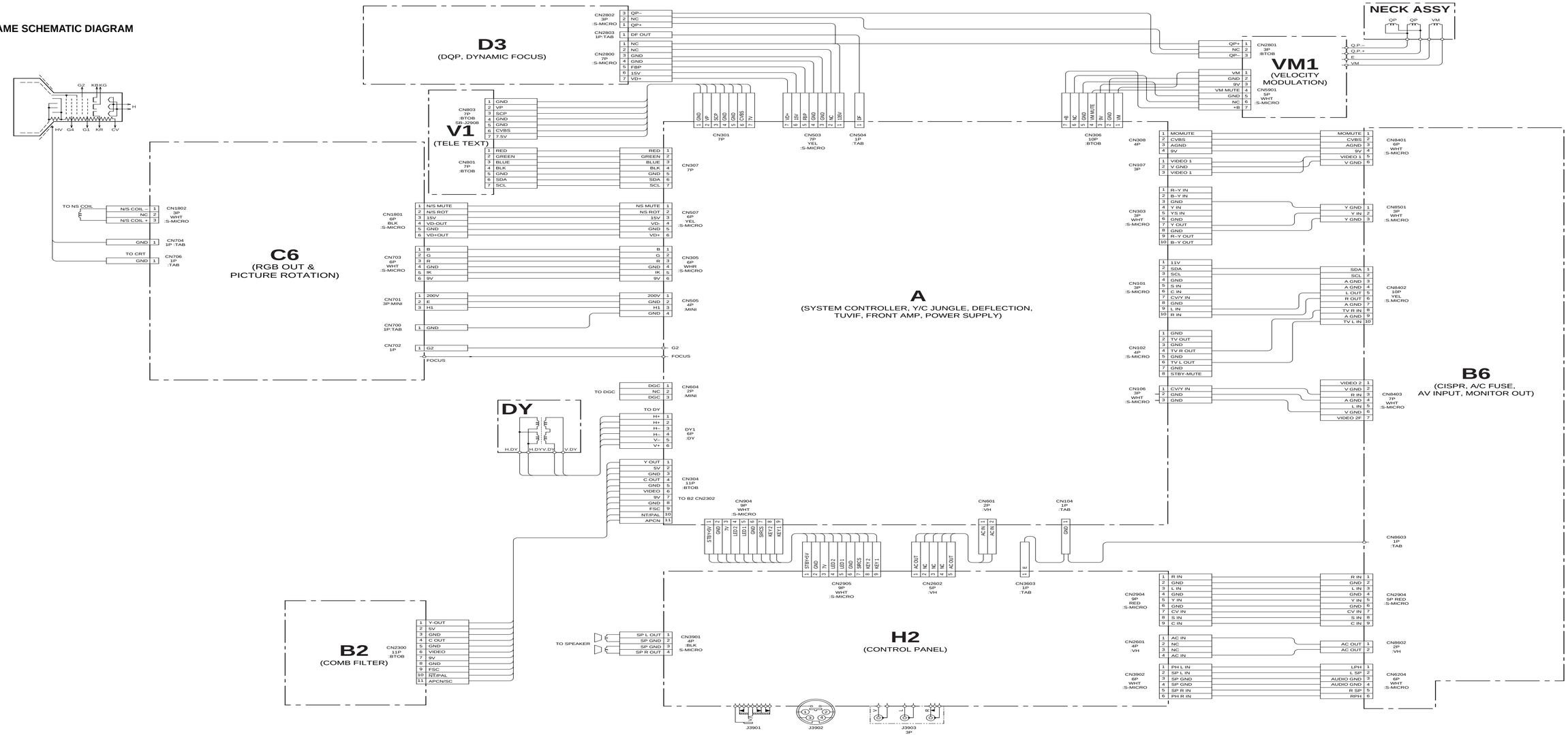
5-1. BLOCK DIAGRAM



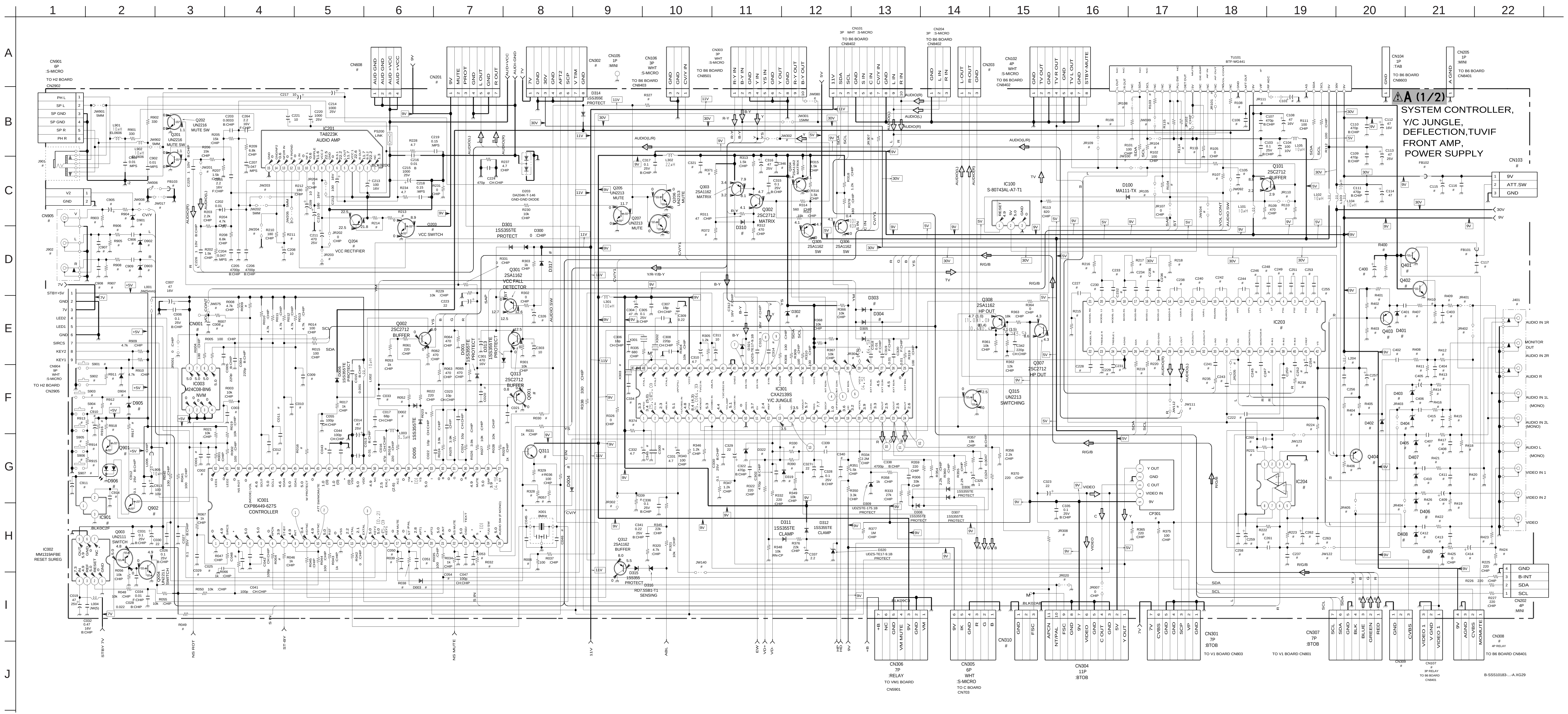
KV-XG29M61
RM-952

KV-XG29M61
RM-952

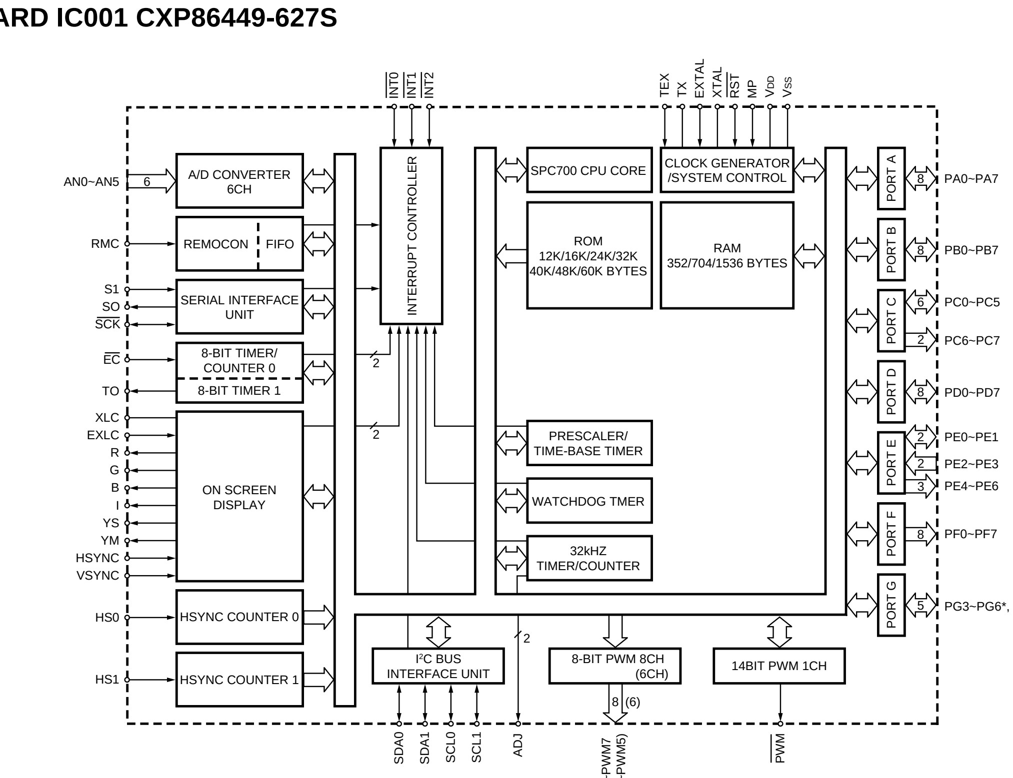
5-2. FRAME SCHEMATIC DIAGRAM



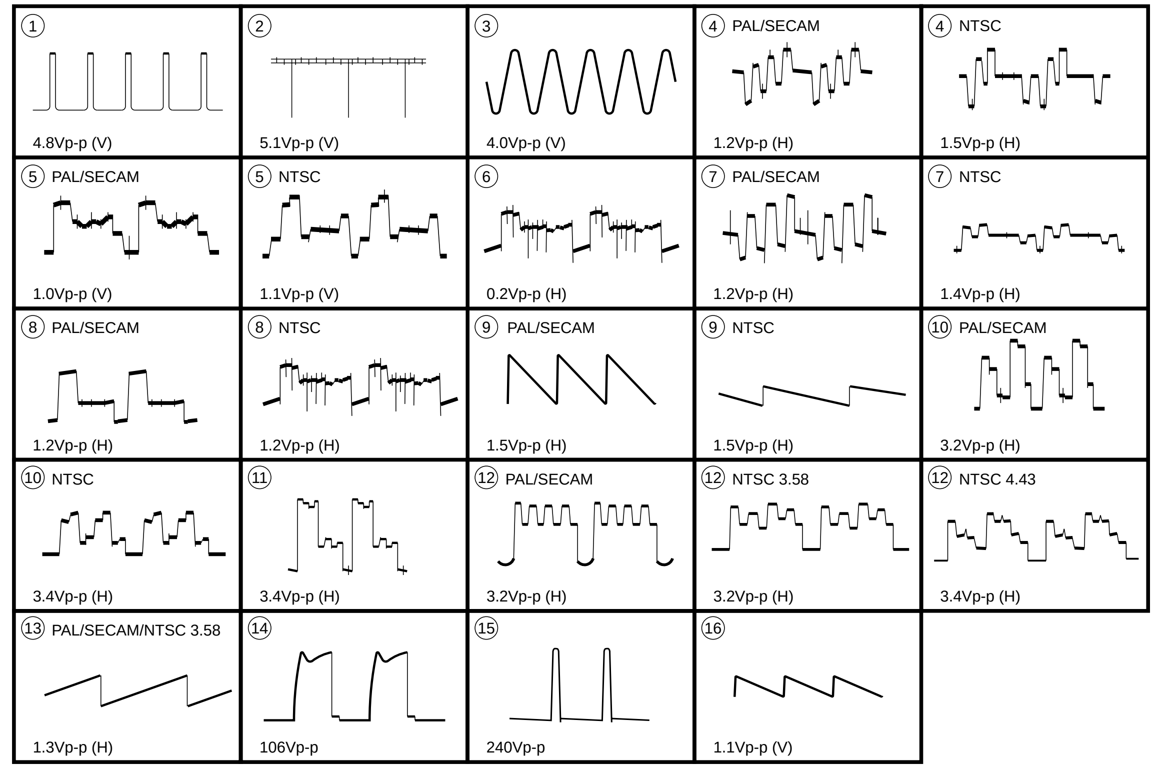
(1) Schematic Diagram of A(1/2) Board

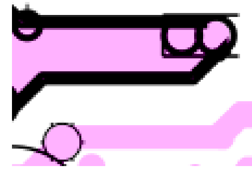


A BOARD IC001 CXP86449-627S



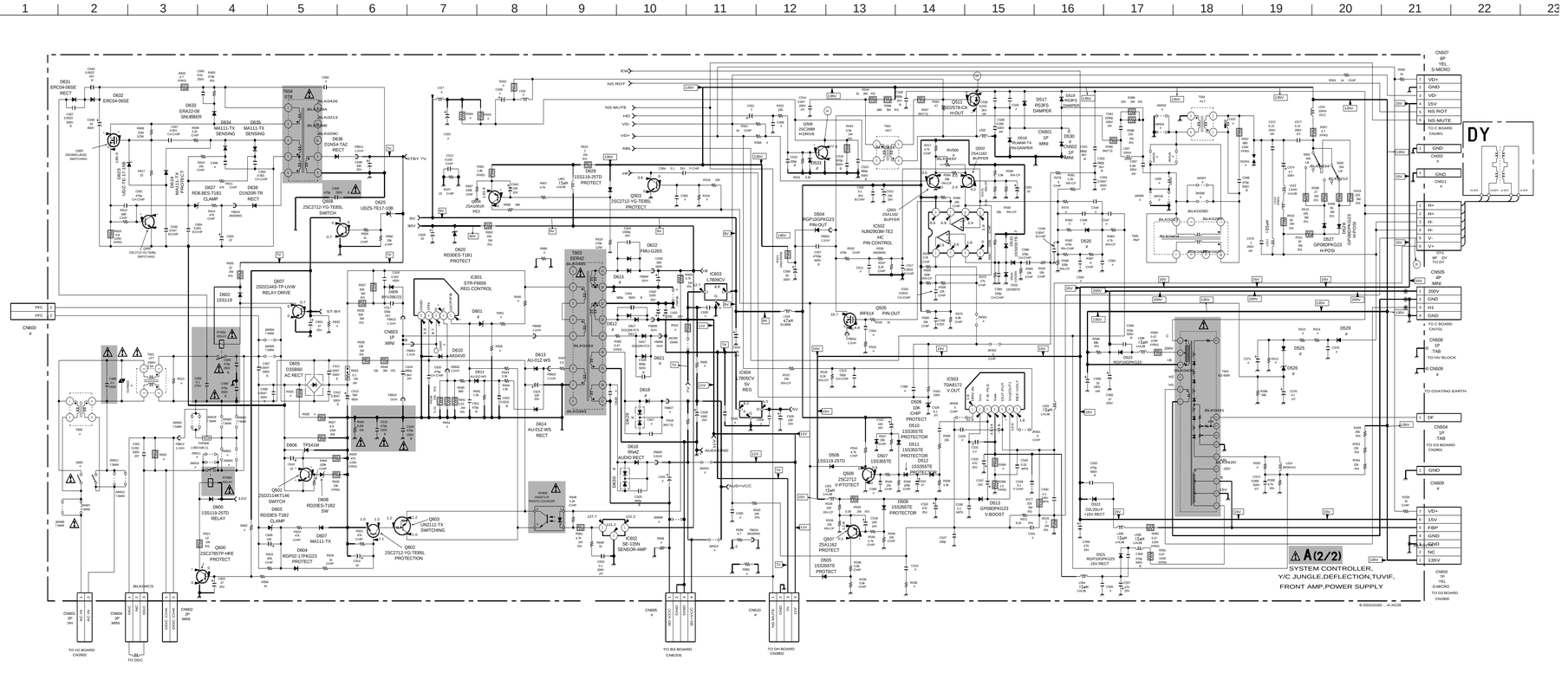
A BOARD WAVEFORMS





NOTE:
The circuit indicated at left contains high voltage of over 600 Vp-p. Please pay attention when inspecting or repairing it to prevent an electric shock.

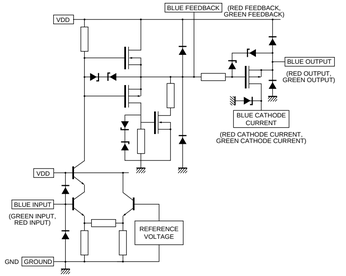
(2) Schematic Diagram of A(2/2) Board



Schematic diagram
A (1/2) board

Schematic diagram
A (2/2) board

C6 BOARD IC701 STV5112

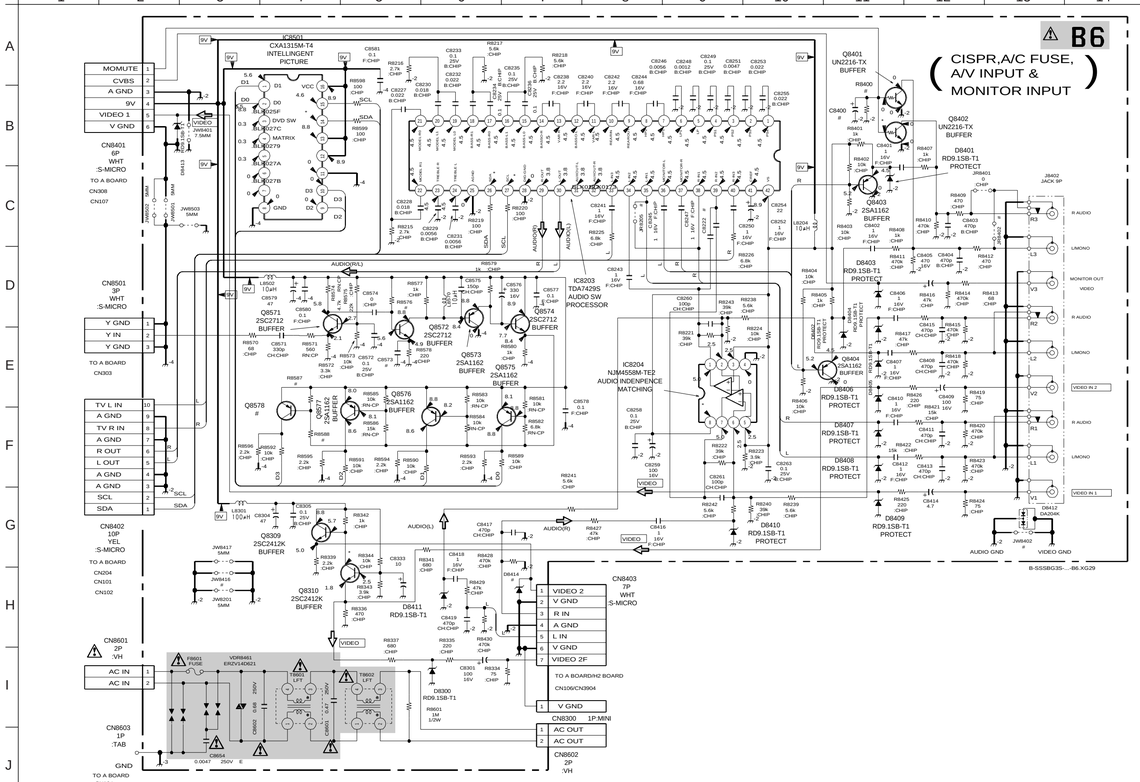


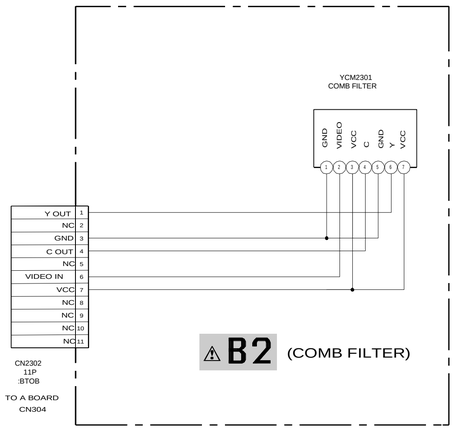
C6 BOARD WAVEFORMS

① NTSC : 15.7Vp-p (H)	① PAL/SECAM : 135V	② NTSC : 13.6Vp-p (H)	② PAL/SECAM : 135Vp-p (H)	③ NTSC : 15.0Vp-p (H)	③ PAL/SECAM : 144Vp-p (H)
④ 23.0Vp-p (H)	⑤ 3.3Vp-p (H)	⑥ 3.3Vp-p (H)	⑦ 3.3Vp-p (H)		

(3) Schematic Diagrams of C6 and VM1 Boards

(4) Schematic Diagrams of B6 and B2 Boards



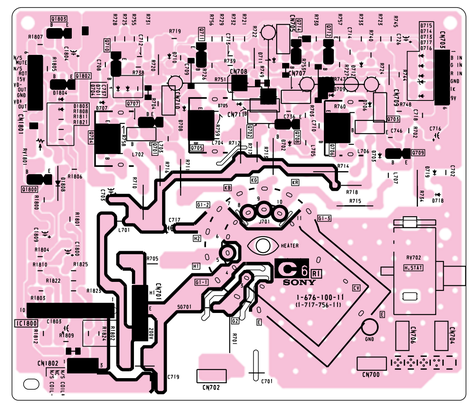


C6 [RGB OUT & PICTURE ROTATION]

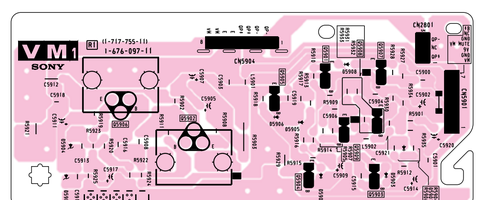
VM1 [VELOCITY MODULATION]

PRINTED WIRING BOARDS

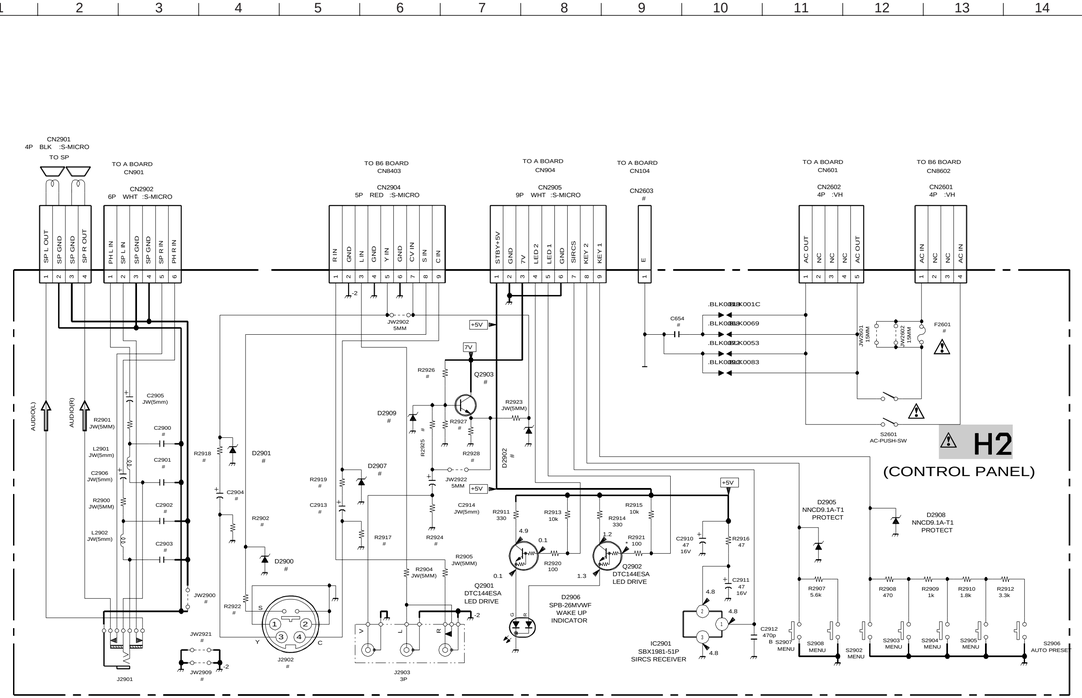
– C6 Board –

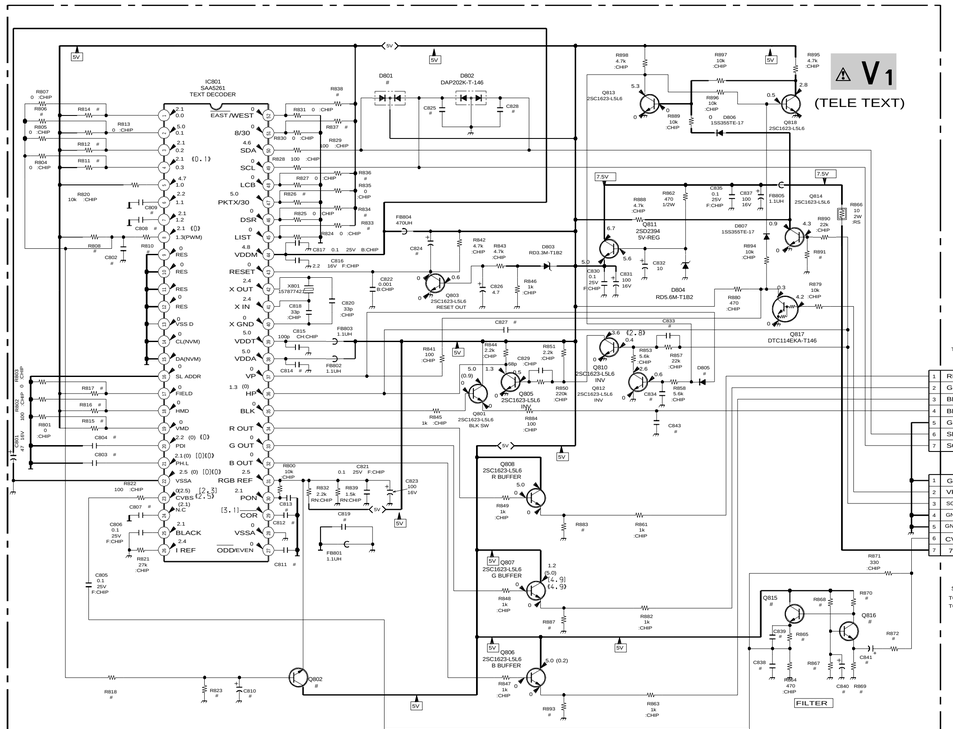


– VM1 Board –



(5) Schematic Diagrams of H2 and V1 Boards





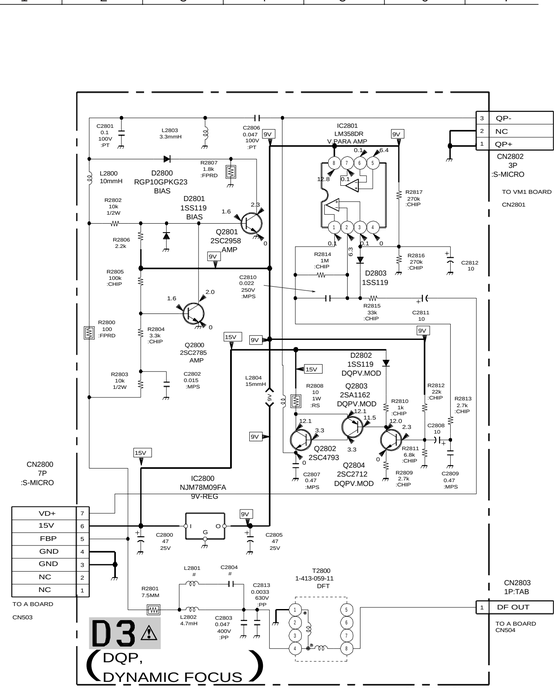
1	RED
2	GREEN
3	BLUE
4	BLK
5	GND
6	SDA
7	SCL

CN801
7P
BTOB
SB-2208
TO A BOARD
TO CN307

1	GND
2	VP
3	SCP
4	GND
5	GND
6	CVBS
7	7.5V

CN803
7P
BTOB
SB-2308
TO A BOARD
TO CN301

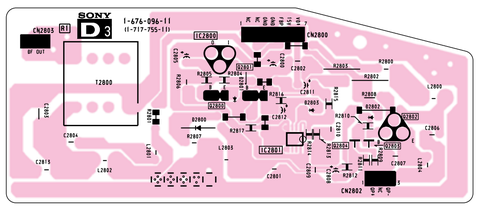
(6) Schematic Diagram of D3 Board



Schematic diagrams
H2 V1 boards

D3 [DQP, DYNAMIC FOCUS]

– D3 Board –

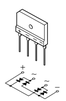


5-5. SEMICONDUCTORS

DIODE

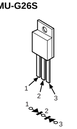
AK04V0
AU-01Z-V1
D2L20U
EL1Z
ERA22-08
GP08D
NNCD9.1A-T1
RD33EB3T
RGP02-17EL-6433

D4SB60L

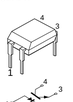


ERC04-06SE
RN4Z
RS3FS
31DQ06-FC5

FMU-G26S



ON3171-R



D1NS4
D1N20R
RD20ES-B2
RD30ESB2
RD39ES-B2
RD6.8ES-B1
RD9.1ES-L2
1SS119-25

DTZ10R
DTZ-TT11-15B
MA111-(K8).S0
RD10S-B
RD7.5SB1-T1
RD9.1S-B
UDZS-TE17-5.1B
UDZS-TE17-9.1B
1SS355TE-17

5P6M

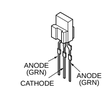
DAP202K

RD3.3M-B2
RD5.6M-B2

RU4AM-T4

LED

SPB-26MVWF



TRANSISTOR

DTC114EK
UN2111
UN2211
UN2213
UN2216
2SA1162-G
2SC1623-L5L6
2SC2712-YG
2SD2114K

DTC144ESA
2SA1175-HFE
2SC2785-HFE

2SA1606-E
2SC4159-E
2SC4793
2SD2394-EF

2SC2458-YGR
2SD2144S-UVW

IRF614

2SK2845-LB102

2SC2611
2SC2688-LK

2SC2551-0

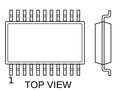
2SC2958

IC

CXA1315M (16PIN)
CXA2139S (48PIN)
CXP86449-627S (64PIN)
SAA5261 (48PIN)
M24C08-BN6 (8PIN)
TDA7429S (15PIN)

Dual In-line Package
Pin 6—98

LM358D (8PIN)
MM1319AFBE (7PIN)
NJM2903M (8PIN)
µPC4558G2 (8PIN)



NJM78M09FA
TA7805S

SBX1981-51P

SE-135N