

M52038ASP

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION

The M52038ASP is a single chip semiconductor integrated circuit that has color TV signal-processing functions. It processes signals of video intermediate frequency, audio intermediate frequency as well as video, color, and deflection signals. Combining it with a tuner and simple output drive circuits, based on discrete transistors, enables low-cost design of PAL color TV sets.

FEATURES

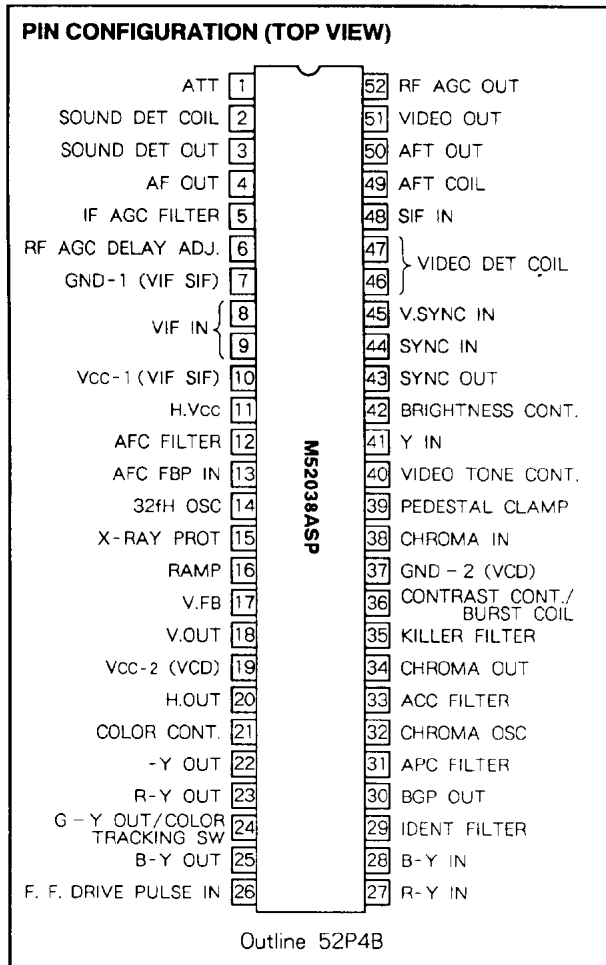
- Provided with all signal-processing functions except tuner and output drive functions. Useful in TV set cost-reduction.
- Input pins are used for differential inputs, using two input pins for each signal. They improve stability and prevent oscillations.
- For horizontal oscillation, the oscillator uses a ceramic resonator to produce reference signal of 32 times the horizontal deflection frequency. The count-down of the reference signal provides horizontal deflection signal. It is unnecessary, therefore, to adjust free-running frequency.
- For vertical oscillation, the count-down of twice the horizontal deflection signal, produced by the horizontal deflection count-down circuit, provides the vertical deflection signal. It eliminates the variable resistor for vertical synchronization. The count-down method has reduced the number of additional parts in the vertical deflection circuit.
- Capable of the AFT defeat, video muting, and audio muting functions.
- Picture quality, contrast, brightness, color saturation, and sound volume are each controlled by direct currents.
- Combining this IC with the SECAM chroma-IC enables a dual system composition.

APPLICATION

PAL color TV sets.

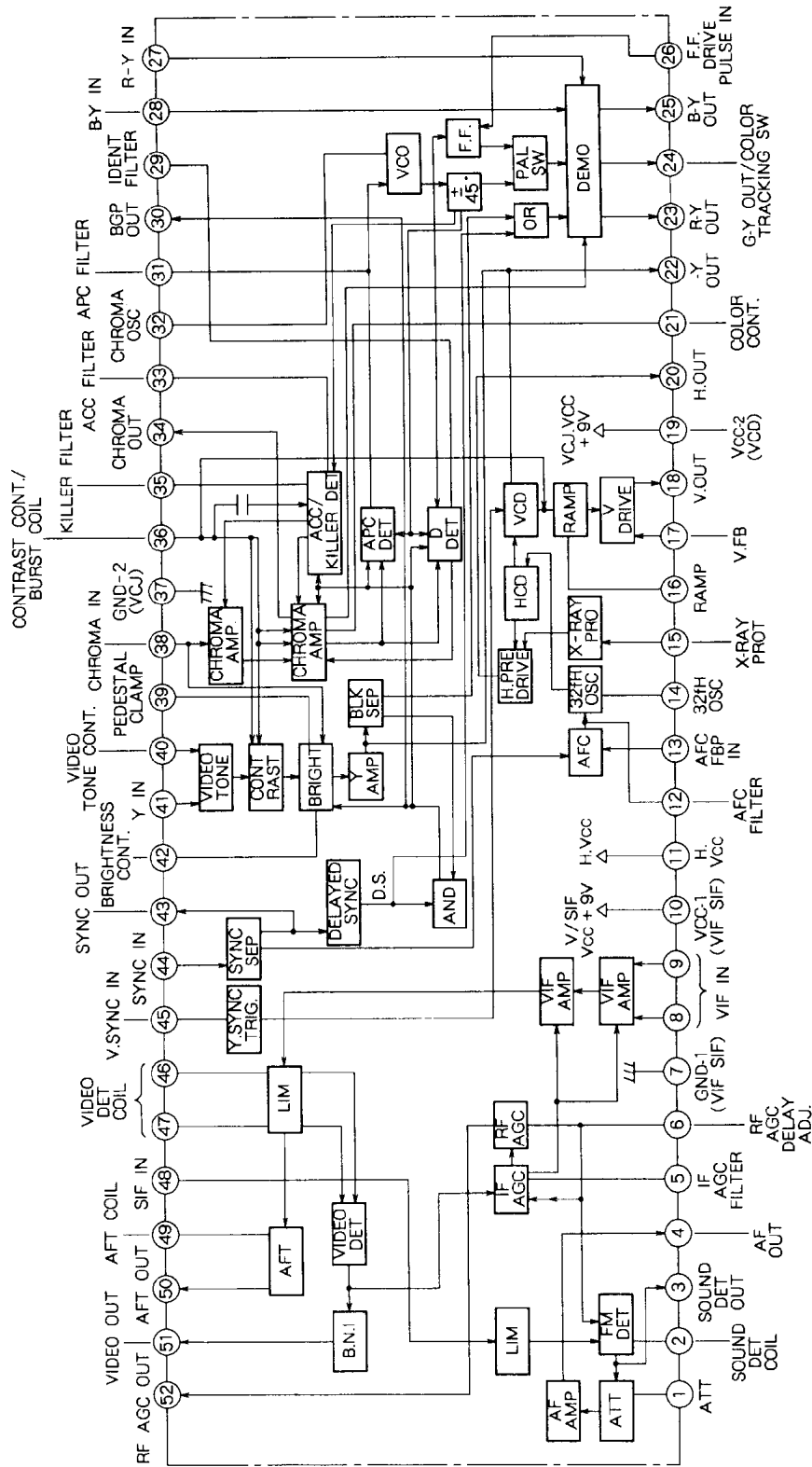
RECOMMENDED OPERATING CONDITION

Supply voltage range	8.5~9.5V(V ₁₀ , V ₁₉)
Rated supply voltage	9.0V(V ₁₀ , V ₁₉)
Supply current range	15~22mA(I ₁₁)
Rated supply current	18mA(I ₁₁)



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BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
V _{cc}	Supply voltage	10.8	V
P _d	Power dissipation	1.4	W
T _{opr}	Operating temperature	-20~65	°C
T _{stg}	Storage temperature	-40~125	°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, unless otherwise noted)

VIF-SIF SECTION

Symbol	Parameter	Test Point	Input ()	Test conditions*														Limits			Unit							
				1	5	6	V _{cc} 10	S 2	S 5	S 6	S 6A	S 10	S 10A	S 47	S 48	S 48A	S 49	S 51	S 52	S 52A		Min.	Typ.	Max.				
I _{cc10}	Circuit current	A10	-	-	-	-	9.0V	-	-	○	-	○	-	-	-	-	-	-	-	-	○	-	27	36	50	mA		
V ₅₁	Video output DC voltage	51	-	-	-	-	9.0V	○	○	○	-	○	-	-	-	-	-	-	-	-	○	○	-	4.55	4.9	5.35	V	
V ₀₅₁	Video output signal voltage	51	A SG1	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	1.7	2.0	2.3	V _{P-P}	
V _{51L}	Sync. tip voltage	51	A SG2	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	2.3	2.6	2.9	V	
V _{in min}	Input sensitivity	51A	A SG3	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	37	45	51	dBμ	
V _{in max}	Maximum allowable input	51A	A SG4	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	103	110		dBμ	
V _{BTH}	Black spot noise inverter	51	A SG2 SG5	Variable	Variable	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	1.7	2.0	2.3	V	
V _{BCL}																								3.3	3.8	4.3	V	
BW	Video frequency characteristics	51	A SG8	-	Variable	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	5.6	8		MHz	
IM	Inter-modulation	51	A SG9	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	32	45		dB	
S/N	Video noise	51A	A SG2	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	○	○	-	50	56		dB	
V ₅₀	AFT output DC voltage	50	-	-	-	-	9.0V	○	○	○	-	○	-	-	-	-	-	-	-	-	-	○	-	3.0	4.0	5.0	V	
V _{50H}	AFT output maximum voltage	50	A SG6	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	-	○	-	8.0	8.7		V	
V _{50L}	AFT output minimum voltage	50	A SG7	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	-	○	-		0.3	1.0	V	
μ AFT	AFT sensitivity	50	A SG5	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	-	○	-	40	60	120	mV/kHz	
V _{50D}	AFT defeat voltage	50	A SG5	-	-	-	9.0V	○	-	○	-	○	-	-	-	-	-	-	-	-	-	○	-	4.35	4.5	4.65	V	
V _{52H}	RF AGC maximum voltage	52	A SG11	-	-	2.5V	9.0V	○	○	-	-	○	-	-	-	-	-	-	-	-	-	○	○	-	7.0	8.0		V
V _{52L}	RF AGC minimum voltage	52	A SG10	-	-	2.5V	9.0V	○	-	-	○	-	-	-	-	-	-	-	-	-	-	○	○	-		0.01	0.3	V
V. S. MUTE1	Sync mute starting voltage	56	-	9.0V	M	Variable	9.0V	-	-	-	○	-	-	-	-	-	-	-	-	-	○	○	-		0.7	1.2	V	
V ₃	AF direct output direct current voltage	3	-	-	-	-	9.0V	-	○	○	-	○	-	-	-	-	-	-	-	-	○	○	-	3.4	3.9	4.5	V	
V _{0AF}	AF direct output signal voltage	3	C SG12	-	-	-	9.0V	-	○	○	-	○	-	-	-	-	-	-	-	-	○	○	-	540	630	720	mV _{rms}	

* : "-" Indicates open.

M52038ASP

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

SYNC. SECTION (Horizontal) (cont.)

Symbol	Parameter	Test Point	Input ()	Test conditions*																Limits			Unit						
				11	11A	15	16A	17	19	S11	S11A	S11B	S12	S12A	S13	S16	S17	S19	S20	S22	S36	S44		S44A	Min.	Typ.	Max.		
V _{20L}	Horizontal output minimum voltage	20	D SG18	9.0V	9.0V	0V	-	9.0V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	0	-		0	0.3	V _{O-P}	
T _H	Horizontal output pulse width	20	D SG18	9.0V	9.0V	0V	-	9.0V	0	-	0	0	0	-	0	0	-	0	0	-	0	0	-	0	0	22	24	26	μs
V _{20H} (6V)	Pin ① = when 6V horizontal output maximum voltage	20	-	6.0V	0V	0V	-	-	0	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	1.2	1.8	2.4	V _{O-P}	
f _H (V _{CC})	Free-run frequency increase/decrease supply voltage	20	-	9V	15V	0V	-	-	-	0	-	0	0	-	-	-	-	-	-	-	-	-	-	-	15.20	15.625	15.95	kHz	
V _{PRO}	Overvoltage detection operating voltage	15	-	9.0V	-	-	-	-	-	0	-	0	0	-	-	-	-	-	-	-	-	-	-	-	0.63	0.73	0.83	V	

* : "-" Indicates open.

SYNC. SECTION (Vertical)

Symbol	Parameter	Test Point	Input ()	Test conditions*																Limits			Unit																										
				11	11A	15	16A	17	19	36	S11	S11A	S11B	S12	S12A	S13	S16	S17	S19	S20	S22	S26		S36	S44	S44A	S44B	S44C	S44D	S44E	S44F	S44G	S44H	S44I	S44J	S44K	S44L	S44M	S44N	S44O	S44P	S44Q	S44R	S44S	S44T	S44U	S44V	S44W	S44X
f _V	Vertical free-run frequency	16	D SG18	9.0V	9.0V	0V	0V	-	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	43.4	44.4	45.4	Hz																					
f _{PV}	Vertical pull-in frequency	16	D SG20 Variable	9.0V	9.0V	0V	0V	-	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	55.6	56.6	57.6	Hz																					
T _V	Vertical output pulse width (50Hz)	16	D SG17	9.0V	9.0V	0V	0V	-	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	494	544	594	μs																					
V _{18H}	Vertical output maximum voltage	18	D SG17	9.0V	9.0V	0V	0V	-	3.7V	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	4.2	5		V _{O-P}																				
V _{18L}	Vertical output minimum voltage	18	D SG17	9.0V	9.0V	0V	0V	-	3.7V	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	0	0.3		V _{O-P}																				
G _{VV}	Vertical open loop gain	17	E SG19	-	-	-	-	-	3.7V	9.0V	-	-	-	-	-	-	-	0	0	-	0	0	-	0	-	16	22	28	dB																				
V _{19 min}	Vertical oscillation starting voltage	16	-	9.0V	9.0V	0V	0V	-	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	0	-	5	6.5		V																				
V _{RAMP}	Ramp peak voltage	16	D SG17	9.0V	9.0V	0V	0V	-	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	4.60	4.90	5.30	V _{O-P}																					
~V _{RAMP}	Ramp peak amplitude	16	D SG17	9.0V	9.0V	0V	0V	-	9.0V	4.5V	0	-	0	0	0	-	0	0	-	0	0	-	0	-	1.20	1.45	1.85	V _{P-P}																					

* : "-" Indicates open.

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VIDEO SECTION

Symbol	Parameter	Test Point	Input ()	Test conditions*																Limits			Unit								
				11A	16A	19A	21A	22A	29A	36A	38A	39A	40A	42A	S19A	S22A	S24A	S27A	S28A	S28A	S35A	S36A		S39A	S42A	S44A	Min.	Typ.	Max.		
Icc19	Circuit current	A19	--	--	9.0 V	--	--	4.5 V	--	2.7 V	--	--	○	○	--	--	○	--	--	--	--	--	--	30	40	50	mA				
Y _{max}	Maximum output	22	F SG21	--	9.0 V	--	--	9.0 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--	5.0	6.2		V _{P-P}					
G _Y	Standard gain	22	F SG22	--	9.0 V	--	--	4.5 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--	11	15	19	dB					
G _{Y min}	Contrast control characteristics	22	F SG22	--	9.0 V	--	--	2.5 V	Variable	--	--	○	○	--	--	--	--	--	--	--	--	--	--	--	--	--	--	dB			
G _{Y max}																													+2	+6	+8.5
V _{BRT-I-norm}	Brightness control characteristics-I	22	D SG18	12 V	9.0 V	--	--	4.5 V	--	9.0 V	--	○	○	--	--	--	--	--	--	--	--	○	--	--	--	--	--	V _{O-P}			
V _{BRT-I-L}																													2.25	2.6	2.95
V _{BRT-I-H}																													3.05	3.4	3.75
V _{BRT-II-norm}	Brightness control characteristics-II	22	D SG18	12 V	9.0 V	--	--	4.5 V	2.4 V	9.0 V	--	○	○	--	--	--	--	--	--	--	--	○	--	--	--	--	--	V _{O-P}			
V _{BRT-II-L}																													1.65	2.0	2.35
V _{BRT-II-H}																													3.85	4.2	4.55
G _P	Peaking value	22	F SG23 SG24	--	9.0 V	--	--	4.5 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--	7.5	11	14.5	dB					
G _{T norm}	Video tone control characteristics	22	F SG24	--	9.0 V	--	--	4.5 V	Variable	4.5 V	--	○	○	--	--	--	--	--	--	--	--	--	--	--	--	--	--	dB			
G _{T min}																													-1.3	-0.5	1.2
G _{T max}																													-21	-15	-11
f _{B (Y)}	Frequency characteristics	22	F SG25	--	9.0 V	--	--	4.5 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--	7	8		MHz					
DG _Y	Differential gain	22	F SG22	--	9.0 V	--	--	4.5 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--		1	6		%				
V ₄₀	Pin 40 voltage	40	--	--	9.0 V	--	--	4.5 V	--	M	--	○	○	--	--	--	--	--	--	--	--	--	4.15	4.45	4.75	V					
V _{BLK V}	Vertical blanking voltage	22	--	12 V	9.0 V	--	--	2.5 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--	7.3	7.7		V _{O-P}					
V _{BLK TV50}	Vertical blanking pulse width	22	--	12 V	9.0 V	--	--	2.5 V	--	Variable	--	--	○	○	--	--	--	--	--	--	--	--	1.31	1.38	1.44	ms					
V _{BLK H}	Horizontal blanking threshold voltage	22 25A	H SG28 0.5 V _{P-P}	--	9.0 V	--	Variable	2.5 V	--	Variable	--	--	○	○	○	○	--	--	--	--	--	--	6.35	6.8		V _{O-P}					
V _{DC REG}	DC regeneration control characteristics	22	F SG17	--	9.0 V	--	--	4.5 V	--	9.0 V	--	○	○	--	--	--	--	--	--	--	--	○	-1.2	-0.2	1.0	V					

* : "--" Indicates open.

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CHROMA SECTION 1

Symbol	Parameter	Test Point	Input ()	Test conditions*																			Limits			Unit					
				11A	16A	19	21	22A	29	36	38	39	40	42	S19	S19A	S22	S24	S27	S27A	S28	S28A	S29	S35	S36		S39	S42	Min.	Typ.	Max.
C _{max}	Chroma maximum output	34	G SG26 0dB	12		9.0	6.5			6.5			9.0		○		○											0.6	1.0	1.5	V _{P-P}
G _c	Chroma maximum gain	34	G SG26 -26dB	12		9.0	6.5			6.5			9.0		○		○											36	40	46	dB
ACC - I	ACC characteristics	34	G SG26 -20dB	12		9.0				4.5			9.0		○		○											-4	+0.6	+3.5	dB
ACC - II			G SG26 +6dB	12		9.0					4.5			9.0		○		○											-2.1	±0	+3
V _{ik}	Killer operation input level	G 21	G SG26 variable	12		9.0				4.5			9.0		○		○											-42	-35	-30	dB
V _{ok}	Killer color residual	34	G SG26 0dB	12		9.0				9.0			9.0		○		○											-	15	35	mV _{P-P}
C _{norm}	Chroma standard output	34	G SG26 0dB	12		9.0				4.5			9.0		○		○											0.11	0.16	0.27	V _{P-P}
C _{s min}	Color control characteristics-I	34	G SG26 0dB	12			2.5			4.5			9.0		○		○											-46	-38	-30	dB
C _{s max}				12		9.0		6.5			4.5		9.0			9.0		○		○										5	8
C _{u min}	Color control characteristics-II	34	G SG26 0dB	12		9.0			2.5			9.0		○		○												-46	-38	-30	dB
C _{u max}				12		9.0		6.5			4.5		9.0			9.0		○		○										4	6.5
f _{PC L}	APC Pull-in range	21	G SG27 0dB	12		9.0			4.5			9.0		○		○												-0.3	-0.6	-	kHz
f _{PC H}				12		9.0		4.5			9.0		9.0			9.0		○		○										+0.3	+0.6
f _{PC}	Total APC range	G	0dB	12		9.0			4.5			9.0		○		○												0.6	1.2	-	kHz
V ₂₃	Demodulation output DC voltage	23A																													V
V ₂₄		24A	-	12		9.0			4.5			9.0		○		○												4.85	5.25	5.65	V
V ₂₅		25A																													

* : "-" Indicates open.

CHROMA SECTION 2

Symbol	Parameter	Test Point	Input ()	Test conditions*																			Limits			Unit						
				11A	16A	19	21	22A	29	36	38	39	40	42	S19	S19A	S22	S24	S27	S27A	S28	S28A	S29	S35	S36		S39	S42	Min.	Typ.	Max.	
V ₂₃₋₂₄	** Demodulation output DC offset voltage	-																										-0.3	0	+0.3	V	
V ₂₄₋₂₅		-																													V	
V ₂₅₋₂₃		-																														V
D _{max-P}	Demodulation output maximum amplitude	25A	G SG26 0dB	12		9.0	6.5			6.5			9.0		○		○	○										3	4.5		V _{P-P}	
D _{B-Y}	B-Y demodulation sensitivity	25A	H SG28 0.2 V _{P-P}	12		9.0				4.5			9.0		○		○	○										2.1	3.4	4.3	V _{P-P}	
$\frac{(R-Y)}{(B-Y)}_P$	Demodulation ratio	23A	H																									0.57	0.66	0.73	-	
$\frac{(G-Y)}{(B-Y)}_P$		25A	H																													-
$\frac{(G-Y)}{(B-Y)}_P$		24A	H																										0.30	0.37	0.45	-

* : "-" Indicates open.

** : Calculation.

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CHROMA SECTION 2 (cont.)

Symbol	Parameter	Test Point	Input ()	Test conditions*																Limits			Unit										
				11A	16A	19	21	22A	29	36	38	39	40	42	S19	S19A	S22	S24	S27	S27A	S28	S28A		S35	S36	S39	S42	Min.	Typ.	Max.			
Δ DHR-Y	Difference of demodulation output on line	23A	H SG28	12V	-	9.0V	2.5V	-	2.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○				35	mV _{P-P}			
Δ DHG-Y		24A	0.2 V _{P-P}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	
CLB-Y	Demodulation output carrier leak	25A	-	12V	-	9.0V	2.5V	-	2.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○				0.2	V _{P-P}			
CLR-Y		23A	-	12V	-	9.0V	2.5V	-	2.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○								
CLG-Y		24A	-	12V	-	9.0V	2.5V	-	2.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○							
V ₂₁	Pin ② voltage	21	G SG26 0dB	12V	-	9.0V	M	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	4.2	4.5	4.8	V				
V _{21K}		21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.1	0.35	V				
DBWR-Y	Demodulation output band width	23	-	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○				0.8	1	MHz		
DBG-Y		24	H SG30	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○								
DBW-Y		25	-	-	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○							
C _{in max}	Chroma input dynamic range	34	G SG26 Variable	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○	1.0	1.4		V _{P-P}				
\angle R-Y-P	Demodulation angle	23A	H SG28	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○			90	deg.				
\angle G-Y-P		25A	0.2 V _{P-P}	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○			240	deg.				
		25A	-	-	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○								

* : "-" Indicates open.

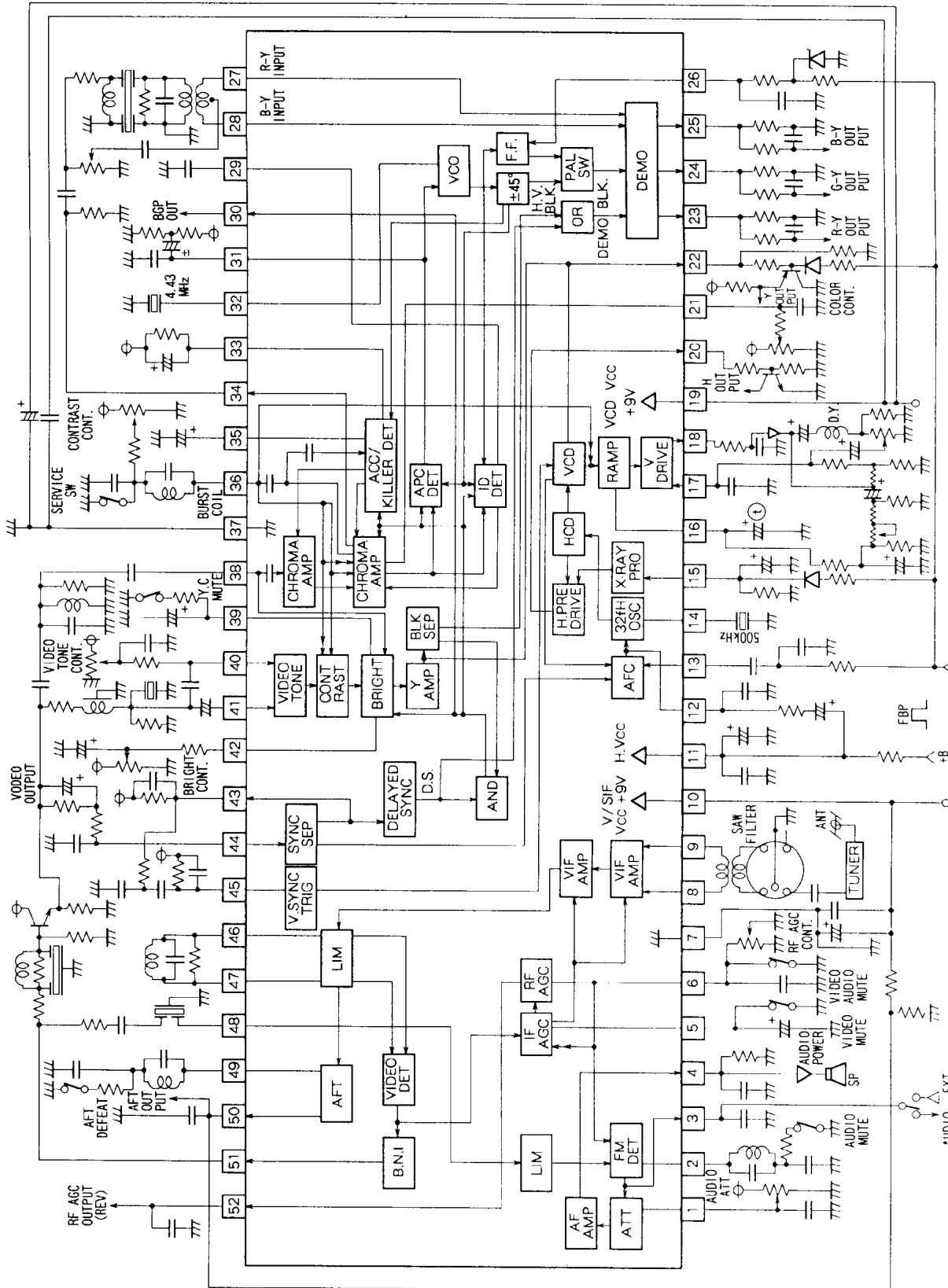
CHROMA SECTION 3

Symbol	Parameter	Test Point	Input ()	Test conditions*																Limits			Unit									
				11A	16A	19	21	22A	29	36	38	39	40	42	S19	S19A	S22	S24	S27	S27A	S28	S28A		S35	S36	S39	S42	Min.	Typ.	Max.		
Δ V _{P-C}	Color tracking characteristics	22	F SG22	12V	-	9.0V	-	4.0V	4.5V	Variable	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○				-6	-2	+2	dB
		25A	G SG26 0dB	12V	-	9.0V	-	4.0V	4.5V	Variable	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○						
SS _Y	Service switch operation color tracking	22	F SG22	12V	-	9.0V	-	4.0V	4.5V	Variable	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○				100	mV _{P-P}		
SS _C		34	G SG26 0dB	12V	0V	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○	○				100	mV _{P-P}	
SS _V		16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				0.3	V _{O-P}		
CTS	Color tracking switch operation	34	G SG26 0dB	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○	3	6	9	dB			
VMS	Video, chroma mute switch operation	22	F SG17	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○	5.6	6.2	6.8	V _{O-P}			
CMS _{R-Y}		23A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
CMS _{G-Y}		24A	G SG26 0dB	12V	-	9.0V	-	4.5V	-	9.0V	-	9.0V	-	○	○	○	○	○	○	○	○	○	○	○	○				100	mV _{P-P}		
CMS _{B-Y}		25A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								

* : "-" Indicates open.

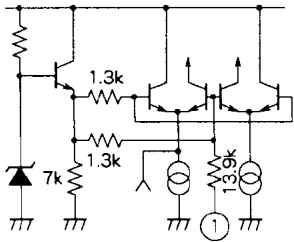
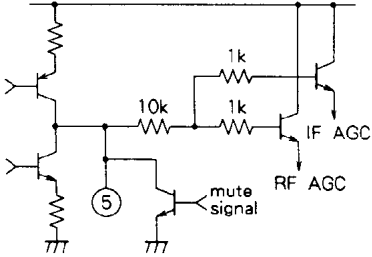
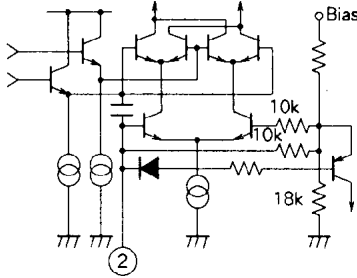
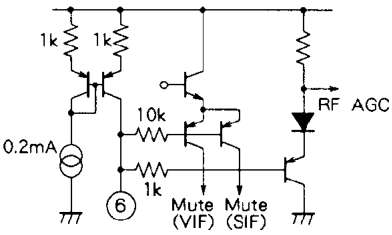
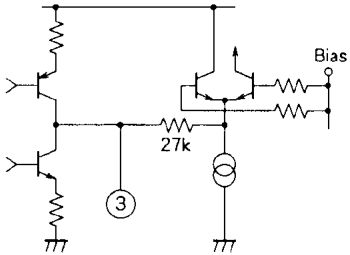
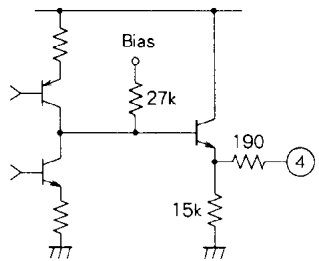
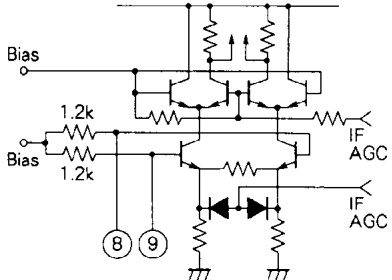
PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

TEST CIRCUIT



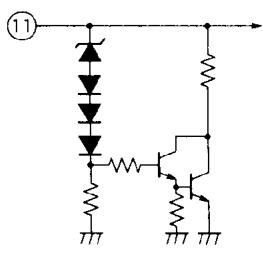
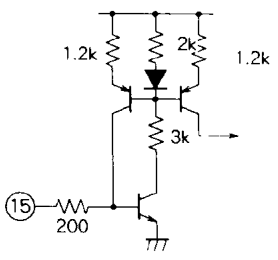
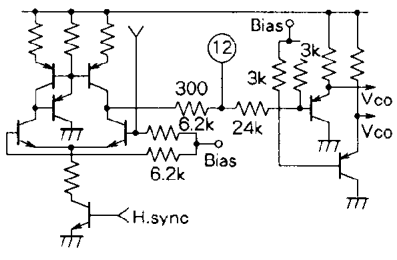
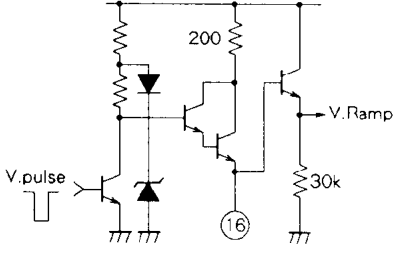
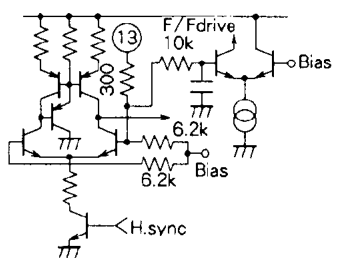
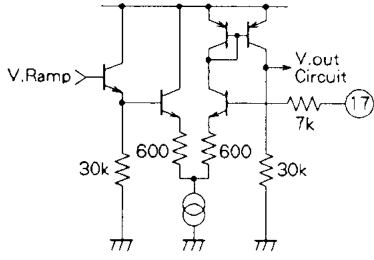
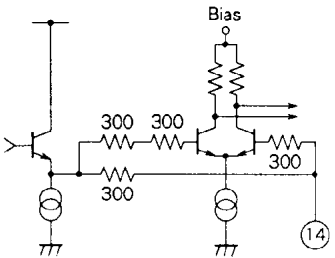
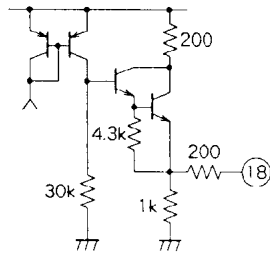
PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION OF PIN

Pin No.	Name	Peripheral circuit of pins	Pin No.	Name	Peripheral circuit of pins
①	ATT		⑤	IF AGC FILTER	
②	SOUND DET COIL		⑥	RF AGC DELAY ADJ.	
③	SOUND DET OUT		⑦	GND-1 (VIF SIF)	-
④	AF OUT		⑧	VIF IN	
			⑨	VIF IN	
⑩	Vcc-1 (VIF SIF)				-

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION OF PIN (cont.)

Pin No.	Name	Peripheral circuit of pins	Pin No.	Name	Peripheral circuit of pins
⑪	H.Vcc		⑮	X-RAY PROT	
⑫	AFC FILTER		⑯	RAMP	
⑬	AFC FBP IN		⑰	V.FB	
⑭	32fH OSC		⑱	V.OUT	
⑲	Vcc-2 (VCD)				

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION OF PIN (cont.)

Pin No.	Name	Peripheral circuit of pins	Pin No.	Name	Peripheral circuit of pins
20	H.OUT		25	B-Y OUT	
21	COLOR CONT.		26	F. F. DRIVE PULSE IN	
22	-Y OUT		27	R-Y IN	
23	R-Y OUT		28	B-Y IN	
24	G-Y OUT/ COLOR TRACKING SW		29	IDENT FILTER	

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION OF PIN (cont.)

Pin No.	Name	Peripheral circuit of pins	Pin No.	Name	Peripheral circuit of pins
30	BGP OUT		34	CHROMA OUT	
31	APC FILTER		35	KILLER FILTER	
32	CHROMA OSC		36	CONTRAST CONT. / BURST COIL	
33	ACC FILTER		37	GND-2 (VCD)	-
			38	CHROMA IN	
			39	PEDESTAL CLAMP	

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION OF PIN (cont.)

Pin No.	Name	Peripheral circuit of pins	Pin No.	Name	Peripheral circuit of pins
40	VIDEO TONE CONT.		44	SYNC IN	
41	Y IN		45	V.SYNC IN	
42	BRIGHTNESS CONT.		46	VIDEO DET COIL	
43	SYNC OUT		47	VIDEO DET COIL	
			48	SIF IN	

PAL SYSTEM SINGLE-CHIP COLOR TV SIGNAL PROCESSOR

DESCRIPTION OF PIN (cont.)

Pin No.	Name	Peripheral circuit of pins
④⑨	AFT COIL	
⑤①	AFT OUT	
⑤①	VIDEO OUT	
⑤②	RF AGC OUT	