

## S-terminal Compatible Video I/O

### Description

The CXA1812Q is an IC developed for processing video I/O signals in VCRs. This IC has a built-in video output circuit designed especially for use with viewfinders (VF), making this IC optimal for use in camcorders. In addition, both the video input system and the viewfinder video output system provide title insertion functions, making it possible to insert characters and graphics into video signals.

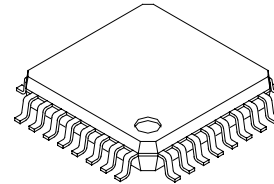
### Features

- Built-in video output circuit for use with viewfinders (title insertion function (white or black character), compatible with SY/C and composite video output)
- Built-in C system EE/PB switch  
EE : Electric-Electric monitor mode
- Title insertion function (white or black character)
- C MUTE function for playback in PAL mode (Outputs C signal used for generating the composite video signal)
- Built-in switch for switching between the two input systems, Y and C
- Built-in 75  $\Omega$  driver for the two input systems, Y and C  
(with power saving function)

### Structure

Bipolar silicon monolithic IC

32 pin QFP (Plastic)



### Absolute Maximum Ratings (Ta=25 °C)

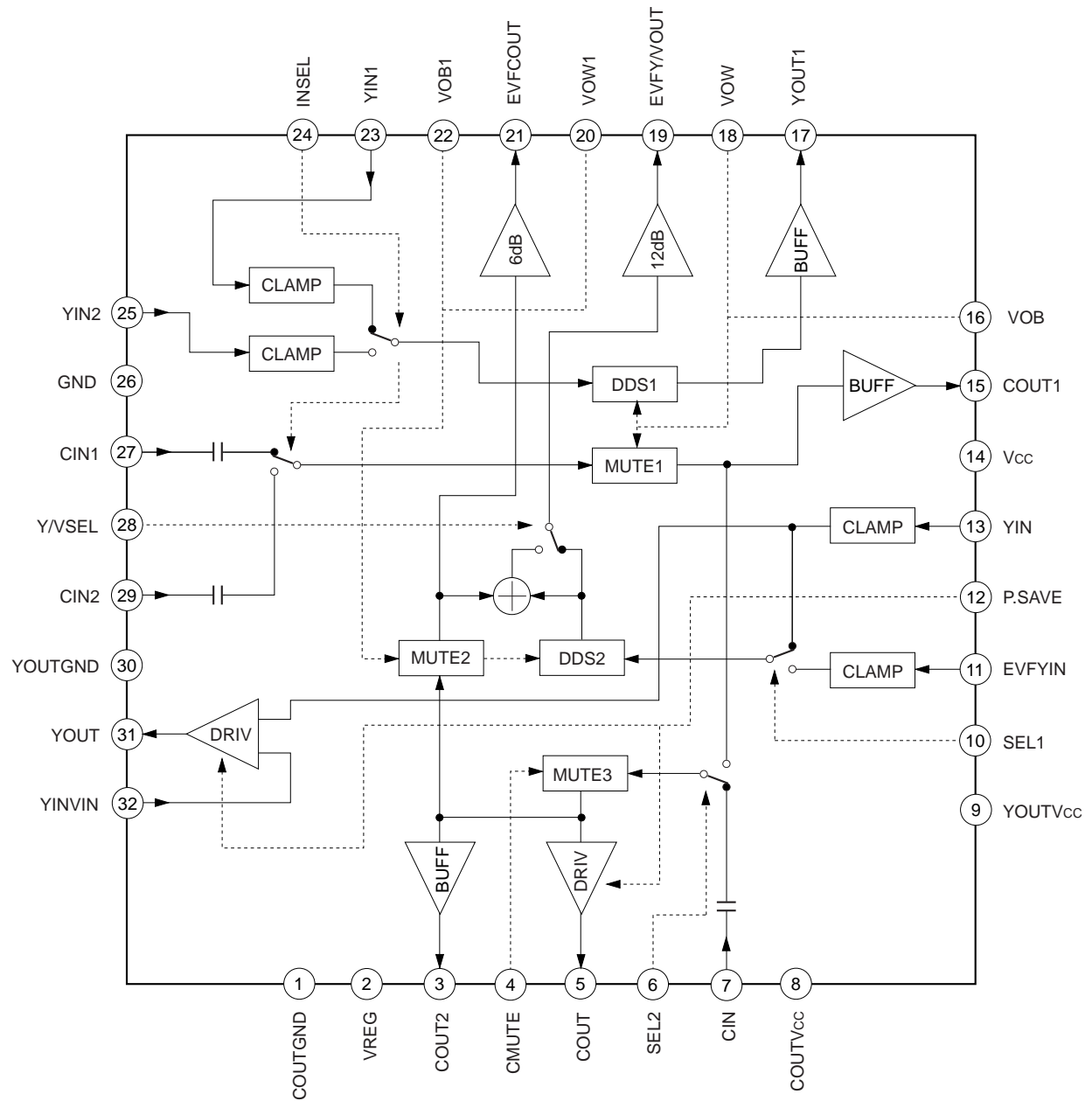
• Supply voltage	V <sub>CC</sub>	7	V
• Operating temperature	T <sub>opr</sub>	-20 to +75	°C
• Storage temperature	T <sub>stg</sub>	-65 to +150	°C
• Allowable power dissipation	P <sub>D</sub>	450	mW

### Operating Conditions

• Supply voltage	V <sub>CC</sub>	4.75	V
• Supply voltage range	V <sub>CC</sub>	4.5 to 5.25	V

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Block Diagram and Pin Configuration



Pin Description

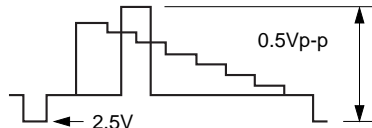
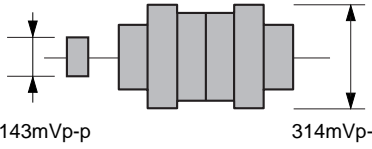
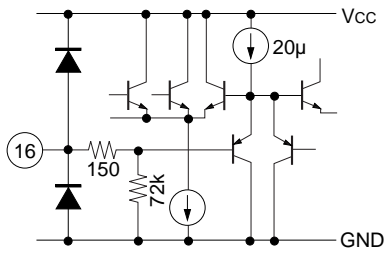
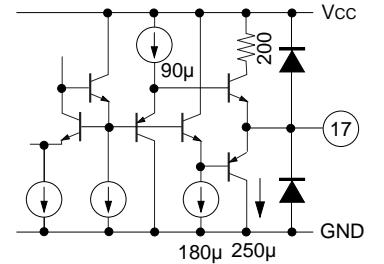
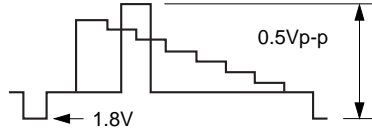
\*Externally applied voltage

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
1	COUTGND	0 V*	—	Chroma 75 Ω driver GND.
2	VREG	4 V	—	4 V internal regular output. Connect a decoupling capacitor. Do not use for external bias.
3	COUT2	2.2 V		Chroma signal output used for generating a composite video signal. 
4	CMUTE	0 V		Control input used for muting both the chroma signals that are input to Pins 27 (CIN1) and 29 (CIN2) and pass through the EE path, as well as the chroma signal that is input from Pin 7 (CIN). Low (0 to 0.8 V) : normal operation High (2 V to Vcc) : mute
5	COUT	2.2 V		Chroma 75 Ω driver output. 
6	SEL2	0 V		Control input used for switching between the signals input to Pins 27 and 29 and the signal input to Pin 7. Low (0 to 0.8 V) : signal at Pin 7 is selected High (2 V to Vcc) : signals at Pins 27 and 29 are selected

\*Externally applied voltage

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
7	CIN	—		<p>Video output chroma signal input. Coupled by means of a capacitor within the IC.</p> <p>Inputting a signal of <math>-0.3\text{ V}</math> or less may lead waveform distortion.</p>
8	COU $V_{cc}$	4.75 V*	—	Chroma 75 $\Omega$ driver power supply.
9	YOUT $V_{cc}$	4.75 V*	—	Y 75 $\Omega$ driver power supply.
10	SEL1	0 V	Same as for Pin 6.	<p>Control input used for switching the signals that are input from Pins 11 (EVFYIN) and 13 (YIN).</p> <p>Low (0 to 0.8 V) : signal at Pin 13 is selected</p> <p>High (2 V to <math>V_{cc}</math>) : signal at Pin 11 is selected</p>
11	EVFYIN	2.5 V (Sync tip)		<p>Y signal input for viewfinder. Coupled by means of a capacitor ; in order to keep clamp error to a minimum, keep the input impedance as low as possible.</p>
12	P. SAVE	0 V		<p>Control input for power saver. When in power saving mode, the Y and C 75 <math>\Omega</math> drivers stop operating. The output of Pin 31 (YOUT) and Pin 5 (COUT) goes to high impedance.</p> <p>Low (0 to 0.8 V) : normal operation</p> <p>High (2 V to <math>V_{cc}</math>) : power saving mode</p>

\*Externally applied voltage

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
13	YIN	2.5 V (Sync tip)	Same as for Pin 11.	<p>Video output Y signal input. Coupled by means of a capacitor; in order to keep clamp error to a minimum, keep the input impedance as low as possible.</p> 
14	Vcc	4.75 V*	—	Power supply other than the 75 Ω driver.
15	COUT1	2.2 V	Same as for Pin 3.	<p>Video input chroma signal output.</p> 
16	VOB	0 V		<p>Control input for black level insertion of the Y signals input to Pins 23 (YIN1) and 25 (YIN2). The chroma signals input from Pins 27 and 29 are also muted simultaneously.</p> <p>Low (0 to 0.8 V) : normal operation High (2 V to Vcc) : insertion mode</p>
17	YOUT1	1.8 V (Sync tip)		<p>Video input Y signal output.</p> 
18	VOW	0 V	Same as for Pin 4.	<p>Control input for white level insertion of the Y signals input to Pins 23 and 25. The chroma signals input from Pins 27 and 29 are also muted simultaneously. This pin takes precedence over the Pin 16 control signal.</p> <p>Low (0 to 0.8V) : normal operation High (2 V to Vcc) : insertion mode</p>

\*Externally applied voltage

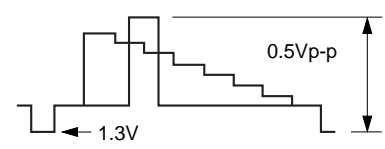
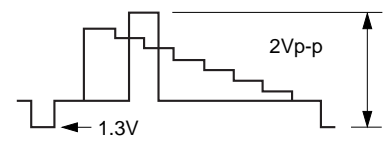
Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
19	EVFY/VOUT	1.8 V (Sync tip)		<p>Y and composite video signal output for the viewfinder. A composite video signal is output when Pin 28 (Y/VSEL) is high.</p>
20	VOW1	0 V	Same as for Pin 4.	<p>Control input for white level insertion of the Y and composite video signals for the viewfinder (output from Pin 19). The chroma signal for the viewfinder output from Pin 21 (EVFCOUT) is also muted simultaneously. This pin takes precedence over the Pin 22 (VOB1) control signal.</p> <p>Low (0 to 0.8 V) : normal operation High (2 V to Vcc) : insertion mode</p>
21	EVFCOUT	2.2 V		<p>Chroma signal output for the viewfinder. When Pin 28 is high, the output amplifier goes into power saving mode and Pin 21 goes to high impedance.</p>
22	VOB1	0 V	Same as for Pin 6.	<p>Control input for black level insertion of the Y and composite video signals for the viewfinder. The chroma signal for the viewfinder is also muted.</p> <p>Low (0 to 0.8 V) : normal operation High (2 V to Vcc) : insertion mode</p>

\*Externally applied voltage

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description								
23 25	YIN1 YIN2	2.5 V (Sync tip)		<p>Video input Y signal inputs. Coupled by means of a capacitor; in order to keep clamp error to a minimum, keep the input impedance as low as possible.</p>								
24	INSEL	0 V		<p>Control input for switching between signals input from Pins 23 and 25 and from Pins 27 and 29.</p> <p>Low (0 to 0.8 V) : signals at Pins 23 and 27 are selected</p> <p>High (2 V to Vcc) : signals at Pins 25 and 29 are selected</p>								
26	GND	0 V*	—	GND other than the 75 Ω driver.								
27 29	CIN1 CIN2	—	Same as for Pin 7.	<p>Video input chroma signal inputs. Coupled by means of a capacitor within the IC.</p> <p>Inputting a signal of <math>-0.3</math> V or less may lead waveform distortion.</p>								
28	Y/VSEL	0 V	Same as for Pin 6.	<p>Control input for switching the output signal format for Pin 19.</p> <table border="0"> <tr> <td>Pin 19 output</td> <td>Pin 21 output</td> </tr> <tr> <td>Low : Y signal</td> <td>Chroma signal</td> </tr> <tr> <td>High : Composite video signal</td> <td>High impedance</td> </tr> <tr> <td>Low (0 to 0.8 V)</td> <td>High (2 V to Vcc)</td> </tr> </table>	Pin 19 output	Pin 21 output	Low : Y signal	Chroma signal	High : Composite video signal	High impedance	Low (0 to 0.8 V)	High (2 V to Vcc)
Pin 19 output	Pin 21 output											
Low : Y signal	Chroma signal											
High : Composite video signal	High impedance											
Low (0 to 0.8 V)	High (2 V to Vcc)											
30	YOUTGND	0 V*	—	Y 75 Ω driver GND.								

\*Externally applied voltage

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
31	YOUT	1.3 V (Sync tip)		Y 75 Ω driver output.
32	YINVIN	1.3 V (Sync tip)		Y 75 Ω driver feedback input.





(Ta=25 °C, Vcc=4.75 V, refer to the electrical characteristics measurement circuit.)

Electrical Characteristics

No.	Item	Symbol	Input pins	Measurement point	Measurement conditions	SW conditions (O → ON)		Bias conditions (Unit : V)								Min.	Typ.	Max.	Unit					
						SW 2	SW 11	SW 13	SW 23	SW 25	Vcc	E4	E6	E10	E12					E16	E18	E20	E22	E24
0	Bias voltage adjustment	VADJ	—	VADJ	Adjust VADJ pin to 2.85 V with RV	O		4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	—	—	—					
1	Current consumption 1	ICC1	—	ICC	No signal												16.0	25.0	35.0	mA				
2	Current consumption 2	ICC2	—	ICC	No signal								2.0				15.0	24.0	34.0	mA				
3	Current consumption PS	ICCP	—	ICC	No signal							2.0					9.5	16.0	22.5	mA				
4	VREG voltage	VREG	—	2	No signal							0.8					3.90	4.05	4.20	V				
Y input																								
5	Gain	G17	23, 25	17	357 mVp-p, 300 kHz G (300 k)		O	4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0	0.5	dB
6	Frequency response	F17	23, 25	17	357 mVp-p, 5 MHz G (5 M)/G (300 k)		O										—0.5	0	0.5	dB				
7	Secondary distortion	HD17	23, 25	17	357 mVp-p, 5 MHz V (10 M)/V (5 M)		O										—54	—	—	dB				
8	VOB1 level	VOB1	23, 25	17	500 mVp-p (Y100 %), difference between input and Sync tip						2.0						160	180	200	mV				
9	VOW1 level	VOW1	23, 25	17	500 mVp-p (Y100 %), difference between input and Sync tip						0.8	2.0					390	410	430	mV				
10	DDS1 cross talk	CTDz17	23, 25	17	357 mVp-p, 5 MHz G (CT)/G (5 M)		O				*2	*2					—74	—	—	dB				
11	Input SW cross talk	CTIn17	23, 25	17	357 mVp-p, 5 MHz G (CT)/G (5 M)		O				0.8	0.8					—63	—	—	dB				
Y output																								
12	Gain	G31	13	31A	357 mVp-p, 300 kHz G (300 k)		O	4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.5	6.0	6.5	dB
13	Frequency response	F31	13	31A	357 mVp-p, 5 MHz G (5 M)/G (300 k)		O										—0.75	—0.25	0.25	dB				
14	Secondary distortion	HD31	13	31A	357 mVp-p, 5 MHz V (10 M)/V (5 M)		O										—54	—	—	dB				
15	Output D range	V31	13	31A	Output amplitude for 679 mVp-p (Y150 %) input												1.20	1.34	—	Vp-p				
EVF Y output																								
16	Gain	G19	11, 13	19	357 mVp-p, 300 kHz G (300 k)		O	4.75	0.8	0.8	*4	0.8	0.8	0.8	0.8	0.8	0.8	*5	5.5	6.0	6.5	6.0	6.5	dB
17	Frequency response	F19	11, 13	19	357 mVp-p, 5 MHz G (5 M)/G (300 k)		O										—0.5	0	0.5	dB				
18	Secondary distortion	HD19	11, 13	19	357 mVp-p, 5 MHz V (10 M)/V (5 M)		O										—51	—	—	dB				
19	VOB2 level	VOB2	11, 13	19	500 mVp-p (Y100 %), difference between input and Sync tip												320	360	400	mV				
20	VOW2 level	VOW2	11, 13	19	500 mVp-p (Y100 %), difference between input and Sync tip												780	820	860	mV				
21	DDS2 cross talk	CTDz19	11, 13	19	357 mVp-p, 5 MHz G (CT)/G (5 M)		O										—57	—	—	dB				
22	Input SW cross talk	CTIn19	11, 13	19	357 mVp-p, 5 MHz G (CT)/G (5 M)		O				*7	*7					—63	—	—	dB				

No.	Item	Symbol	Input pins	Measu- re- ment point	Measurement conditions	SW conditions (O → ON)												Bias conditions (Unit : V)								Min.	Typ.	Max.	Unit		
						SW 2		SW 11		SW 13		SW 23		SW 25		V <sub>CC</sub>	E4	E6	E10	E12	E16	E18	E20	E22	E24					E28	
C input 1																															
23	Gain	G15A	27, 29	15	314 mVp-p, 3.58 MHz G (3.58 M)											4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	*8	0.8	-0.8	-0.3	0.2	dB		
24	Frequency response 1	F115A	27, 29	15	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)																					-0.5	0	0.5	dB		
25	Frequency response 2	F215A	27, 29	15	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)																					-0.5	0	0.5	dB		
26	Frequency response 3	F315A	27, 29	15	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)																					-0.5	0	0.5	dB		
27	Secondary distortion	HD15A	27, 29	15	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)																						-55		dB		
28	MUTE level	M15A	27, 29	15	DC differential when mute is off																						-15	0	15	mV	
29	MUTE cross talk	CTm15A	27, 29	15	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-57		dB	
30	Input SW cross talk	CTin15A	27, 29	15	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-66		dB	
C EE 1																															
31	Gain	G5A	27, 29	5A	314 mVp-p, 3.58 MHz G (3.58 M)											4.75	0.8	2.0	0.8	0.8	0.8	0.8	0.8	*8	0.8	5.2	5.7	6.2	dB		
32	Frequency response 1	F15A	27, 29	5A	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)																					-0.5	0	0.5	dB		
33	Frequency response 2	F25A	27, 29	5A	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)																					-0.5	0	0.5	dB		
34	Frequency response 3	F35A	27, 29	5A	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)																					-0.5	0	0.5	dB		
35	Secondary distortion	HD5A	27, 29	5A	314 mVp-p, 4.43 MHz V(8.86 M)/V (4.43 M)																							-60		dB	
36	MUTE level	M5A	27, 29	5B	DC differential when mute is off																							-60	0	60	mV
37	MUTE cross talk	CTm5A	27, 29	5A	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-57		dB	
38	Input SW cross talk	CTin5A	27, 29	5A	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-66		dB	
39	SEL2 SW cross talk	CTse5A	27, 29	5A	314 mVp-p, 4.43 MHz G(CT)/G (4.43 M)																							-78		dB	
C EE 2																															
40	Gain	G3A	27, 29	3	314 mVp-p, 3.58 MHz G (3.58 M)											4.75	0.8	2.0	0.8	0.8	0.8	0.8	0.8	*8	0.8	-0.8	-0.3	0.2	dB		
41	Frequency response 1	F13A	27, 29	3	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)																					-0.5	0	0.5	dB		
42	Frequency response 2	F23A	27, 29	3	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)																					-0.5	0	0.5	dB		
43	Frequency response 3	F33A	27, 29	3	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)																					-0.5	0	0.5	dB		
44	Secondary distortion	HD3A	27, 29	3	314 mVp-p, 4.43 MHz V(8.86 M)/V (4.43M)																							-53		dB	
45	MUTE level	M3A	27, 29	3	DC differential when mute is off																							-15	0	15	mV
46	MUTE cross talk	CTm3A	27, 29	3	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-57		dB	
47	Input SW cross talk	CTin3A	27, 29	3	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-70		dB	
48	SEL2 SW cross talk	CTse3A	27, 29	3	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																							-60		dB	

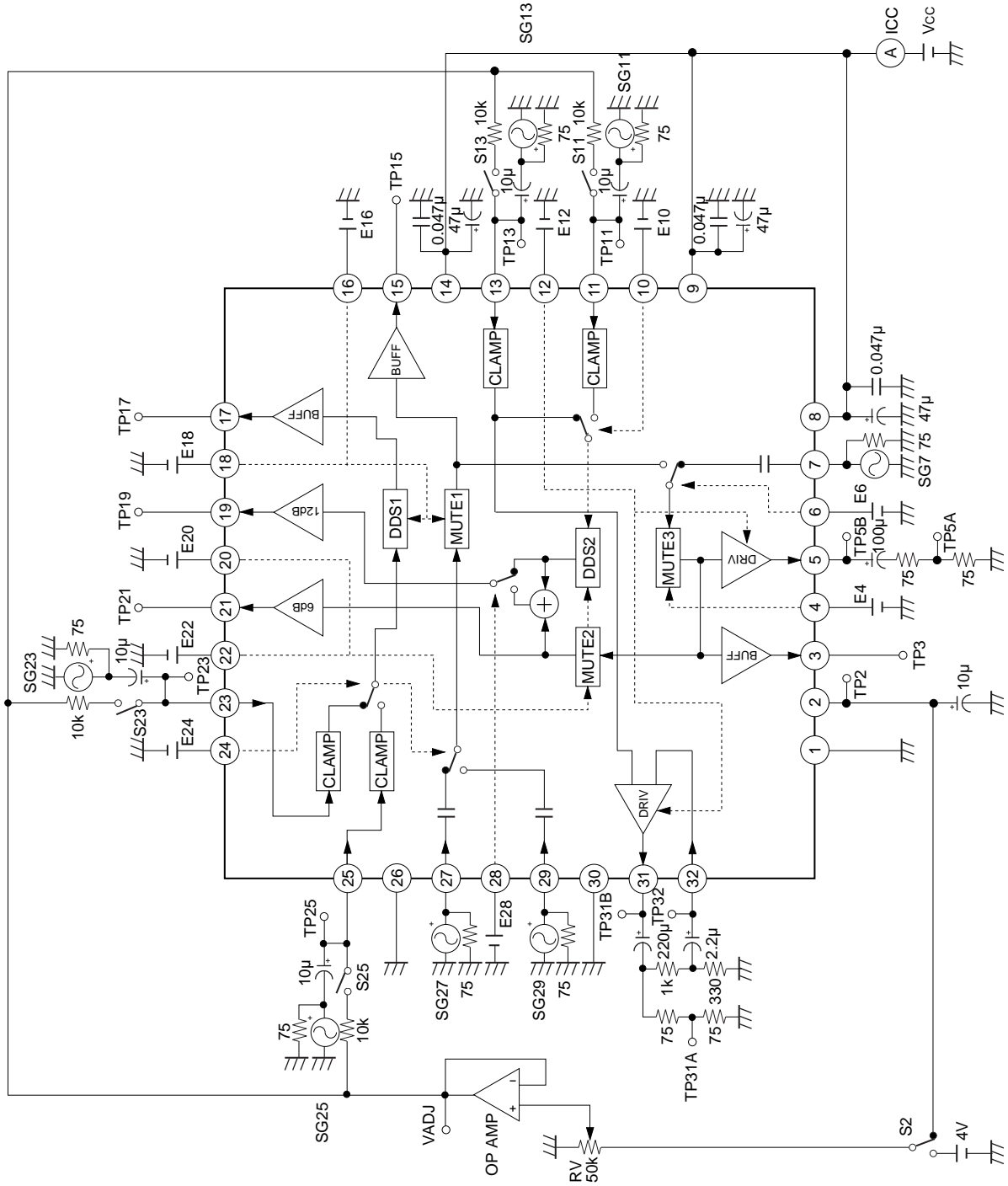
No.	Item	Symbol	Input pins	Measurement point	Measurement conditions	SW conditions (Unit : V)										Min.	Typ.	Max.	Unit													
						Bias conditions (Unit : V)																										
						SW conditions (O → ON)		Vcc		E4		E6		E10						E12		E16		E18		E20		E22		E24		E28
2	11	13	23	25	2	11	13	23	25	2	11	13	23	25	2	11	13	23	25	2	11	13	23	25								
CEEVF 1																																
49	Gain	G21A	27, 29	21	314 mVp-p, 3.58 MHz G (3.58 M)										4.75	0.8	2.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.2	5.7	6.2	dB		
50	Frequency response 1	F121A	27, 29	21	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)																						-0.5	0	0.5	dB		
51	Frequency response 2	F21A	27, 29	21	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)																						-0.5	0	0.5	dB		
52	Frequency response 3	F321A	27, 29	21	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)																						-0.5	0	0.5	dB		
53	Secondary distortion	HD21A	27, 29	21	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)																										dB	
54	MUTE level	M21A	27, 29	21	DC differential when mute is off																										mV	
55	MUTE cross talk	CTm21A	27, 29	21	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
56	Input SW cross talk	CTin21A	27, 29	21	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
57	SEL2 SW cross talk	CTse21A	27, 29	21	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
CEEV 1																																
58	Gain	G19A	27, 29	19	314 mVp-p, 3.58 MHz G (3.58 M)										4.75	0.8	2.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.2	5.7	6.2	dB	
59	Frequency response 1	F119A	27, 29	19	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)																							-0.5	0	0.5	dB	
60	Frequency response 2	F219A	27, 29	19	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)																							-0.5	0	0.5	dB	
61	Frequency response 3	F319A	27, 29	19	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)																							-0.5	0	0.5	dB	
62	Secondary distortion	HD19A	27, 29	19	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)																										dB	
63	MUTE level	M19A	27, 29	19	DC differential when mute is off																										mV	
64	MUTE cross talk	CTm19A	27, 29	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
65	Input SW cross talk	CTin19A	27, 29	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
66	SEL2 SW cross talk	CTse19A	27, 29	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
67	Y/V SW cross talk	CTyv19A	27, 29	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
C output 1																																
68	Gain	G5B	7	5A	314 mVp-p, 3.58 MHz G (3.58 M)										4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.2	5.7	6.2	dB	
69	Frequency response 1	F15B	7	5A	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)																							-0.5	0	0.5	dB	
70	Frequency response 2	F25B	7	5A	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)																							-0.5	0	0.5	dB	
71	Frequency response 3	F35B	7	5A	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)																							-0.5	0	0.5	dB	
72	Secondary distortion	HD5B	7	5A	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)																										dB	
73	MUTE level	M5B	7	5B	DC differential when mute is off																										mV	
74	MUTE cross talk	CTm5B	7	5A	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																										dB	
75	SEL2 SW cross talk	CTse5B	7	5A	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																											dB

No.	Item	Symbol	Input pins	Measurement point	Measurement conditions	SW conditions (O → ON)				Bias conditions (Unit : V)								Typ.	Max.	Unit	
						SW 2	SW 11	SW 13	SW 25	Vcc	E4	E6	E10	E12	E16	E18	E20				E22
C output 2																					
76	Gain	G3B	7	3	314 mVp-p, 3.58 MHz G (3.58 M)					4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-0.3	0.2	dB	
77	Frequency response 1	F13B	7	3	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)													0	0.5	dB	
78	Frequency response 2	F23B	7	3	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)													0	0.5	dB	
79	Frequency response 3	F33B	7	3	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)													0	0.5	dB	
80	Secondary distortion	HD3B	7	3	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)													-53		dB	
81	MUTE level	M3B	7	3	DC differential when mute is off					2.0								0	15	mV	
82	MUTE cross talk	CTM3B	7	3	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-69		dB	
83	SEL2 SW cross talk	CTse3B	7	3	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-77		dB	
C EVF output 1																					
84	Gain	G21B	7	21	314 mVp-p, 3.58 MHz G (3.58 M)					4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.7	6.2	dB	
85	Frequency response 1	F121B	7	21	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)													0	0.5	dB	
86	Frequency response 2	F221B	7	21	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)													0	0.5	dB	
87	Frequency response 3	F321B	7	21	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)													0	0.5	dB	
88	Secondary distortion	HD21B	7	21	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)													-50		dB	
89	MUTE level	M21B	7	21	DC differential when mute is off					*12								0	30	mV	
90	MUTE cross talk	CTM21B	7	21	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-55		dB	
91	SEL2 SW cross talk	CTse21B	7	21	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-60		dB	
C EVF output 2																					
92	Gain	G19B	7	19	314 mVp-p, 3.58 MHz G (3.58 M)					4.75	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.2	5.7	6.2	dB
93	Frequency response 1	F119B	7	19	314 mVp-p, 2.5 MHz G (2.5 M)/G (3.58 M)													0	0.5	dB	
94	Frequency response 2	F219B	7	19	314 mVp-p, 4.43 MHz G (4.43 M)/G (3.58 M)													0	0.5	dB	
95	Frequency response 3	F319B	7	19	314 mVp-p, 5.5 MHz G (5.5 M)/G (3.58 M)													0	0.5	dB	
96	Secondary distortion	HD19B	7	19	314 mVp-p, 4.43 MHz V (8.86 M)/V (4.43 M)													-54		dB	
97	MUTE level	M19B	7	19	DC differential when mute is off					*12								0	30	mV	
98	MUTE cross talk	CTM19B	7	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-63		dB	
99	SEL2 SW cross talk	CTse19B	7	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-67		dB	
100	Y/V SW cross talk	CTyv19B	7	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)													-57		dB	

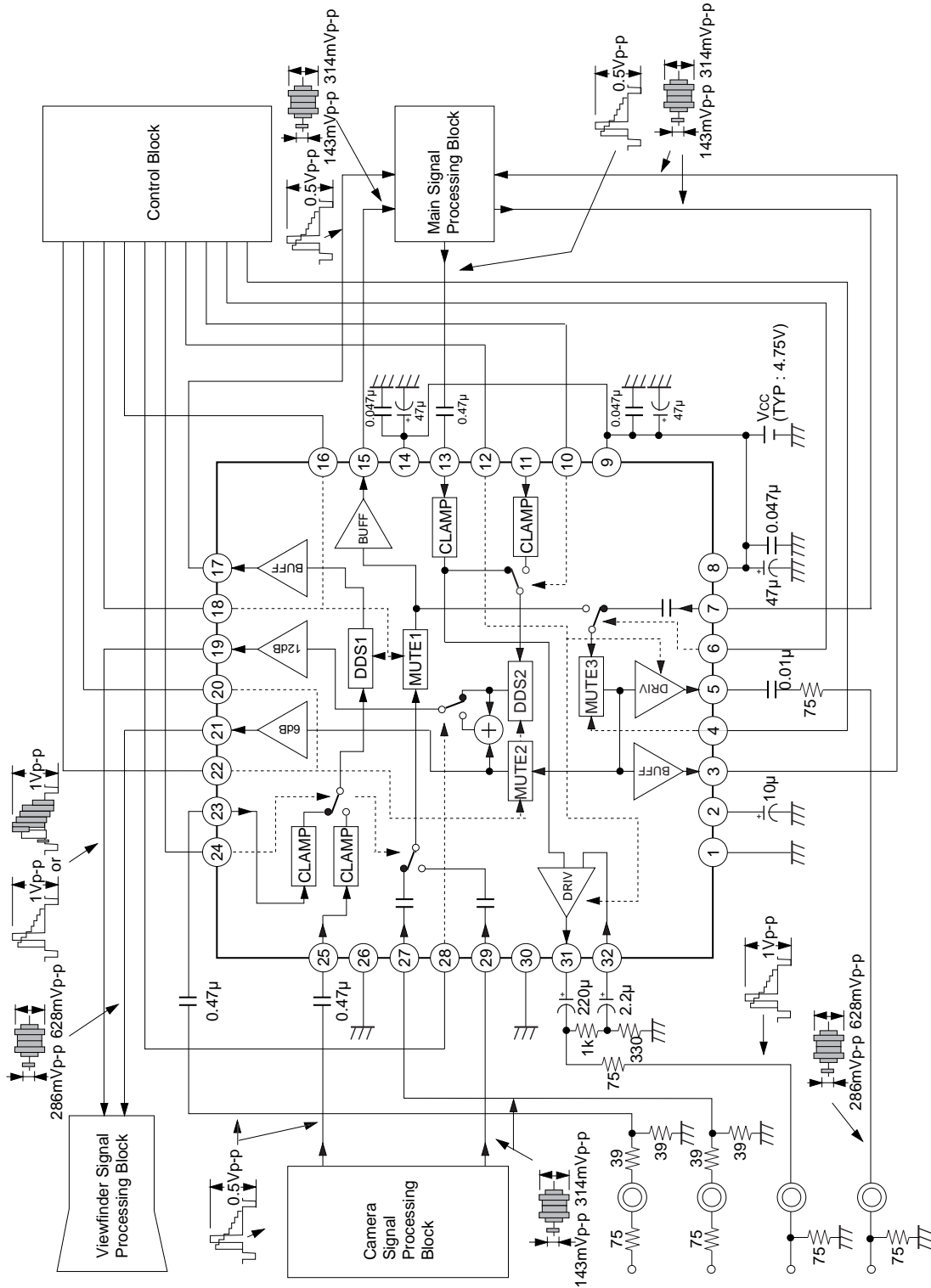
No.	Item	Symbol	Input pins	Measurement point	Measurement conditions	SW conditions (O → ON)		Bias conditions (Unit : V)										Min.	Typ.	Max.	Unit					
						SW 2	SW 11	SW 13	SW 23	SW 25	Vcc	E4	E6	E10	E12	E16	E18					E20	E22	E24	E28	
Cross talk between Y and C (These measurement items are performed with the reference inputs.)																										
101	Y input	CTyc3Y	11, 13 23, 25	3	357 mVp-p, 5 MHz G (CT)/G (4.43 M)	O	O	O	4.75	0.8	2.0	*13	0.8	0.8	0.8	0.8	0.8	0.8	0.8	*14	0.8	-55	dB			
102		CTyc5Y	11, 13 23, 25	5A	357 mVp-p, 5 MHz G (CT)/G (4.43 M)	O	O	O			▶												-54	dB		
103		CTyc15Y	11, 13 23, 25	15	357 mVp-p, 5 MHz G (CT)/G (4.43 M)	O	O	O			0.8													-55	dB	
104		CTyc21Y	11, 13 23, 25	21	357 mVp-p, 5 MHz G (CT)/G (4.43 M)	O	O	O			2.0	▶												-51	dB	
105	C input	CTyc17C	7, 27 29	17	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)							*15	0.8											-60	dB	
106		CTyc19C	7, 27 29	19	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)																				-45	dB
107		CTyc31C	7, 27 29	31A	314 mVp-p, 4.43 MHz G (CT)/G (4.43 M)				▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶	▶		-58	dB

- \*1. 0.8 V for Pin 23 input; 2.0 V for Pin 25 input
- \*2. With E16 and E18=0.8 V or 2.0 V, measure in all combination modes except for E16=E18=0.8 V
- \*3. 2.0 V for Pin 23 input; 0.8 V for Pin 25 input
- \*4. 0.8 V for Pin 13 input; 2.0 V for Pin 11 input
- \*5. 0.8 V for Y/C output; 2.0 V for V output
- \*6. With E20 and E22=0.8 V or 2.0 V, measure in all combination modes except for E20=E22=0.8 V
- \*7. 2.0 V for Pin 13 input; 0.8 V for Pin 11 input
- \*8. 0.8 V for Pin 27 input; 2.0 V for Pin 29 input
- \*9. 2.0 V for Pin 27 input; 0.8 V for Pin 29 input
- \*10. With E4, E16 and E18=0.8 V or 2.0 V, measure in all combination modes except for E4=E16=E18=0.8 V
- \*11. With E4, E16, E18, E20 and E22=0.8 V or 2.0 V, measure in all combination modes except for E4=E16=E18=E20=E22=0.8 V
- \*12. With E4, E20 and E22=0.8 V or 2.0 V, measure in all combination modes except for E4=E20=E22=0.8 V
- \*13. 2.0 V for Pin 11 input; 0.8 V for all others
- \*14. 0.8 V for Pins 25 and 29 input; 2.0 V for all others
- \*15. 0.8 V for Pin 7 input; 2.0 V for all others

Electrical Characteristics Measurement Circuit



Application Circuit

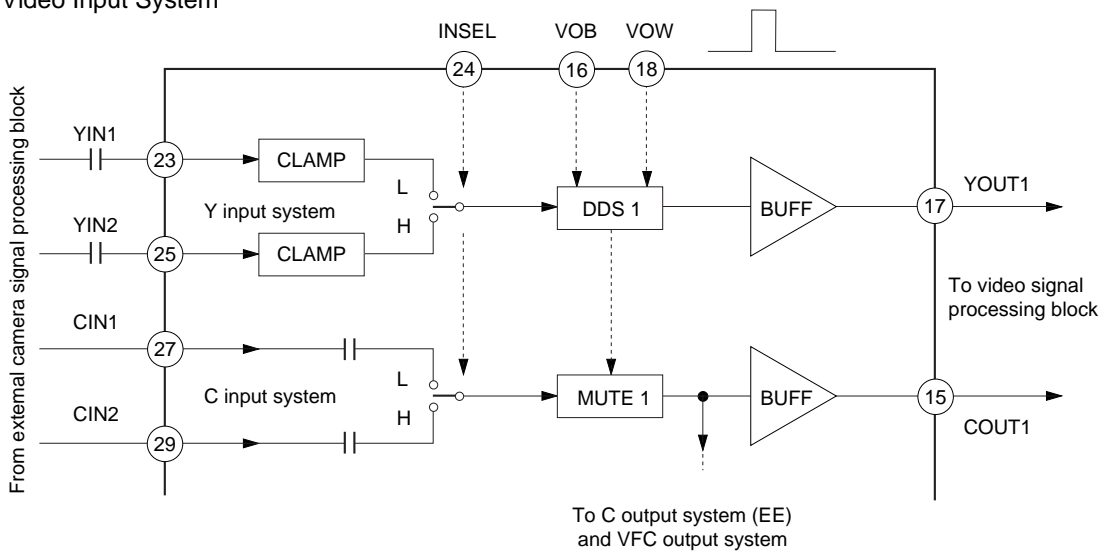


Application circuits shown are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits or for any infringement of third party patent and other right due to same.

**Description of Operation**

(Refer to the Pin Description for details on the standard I/O signal levels and the control logic.)

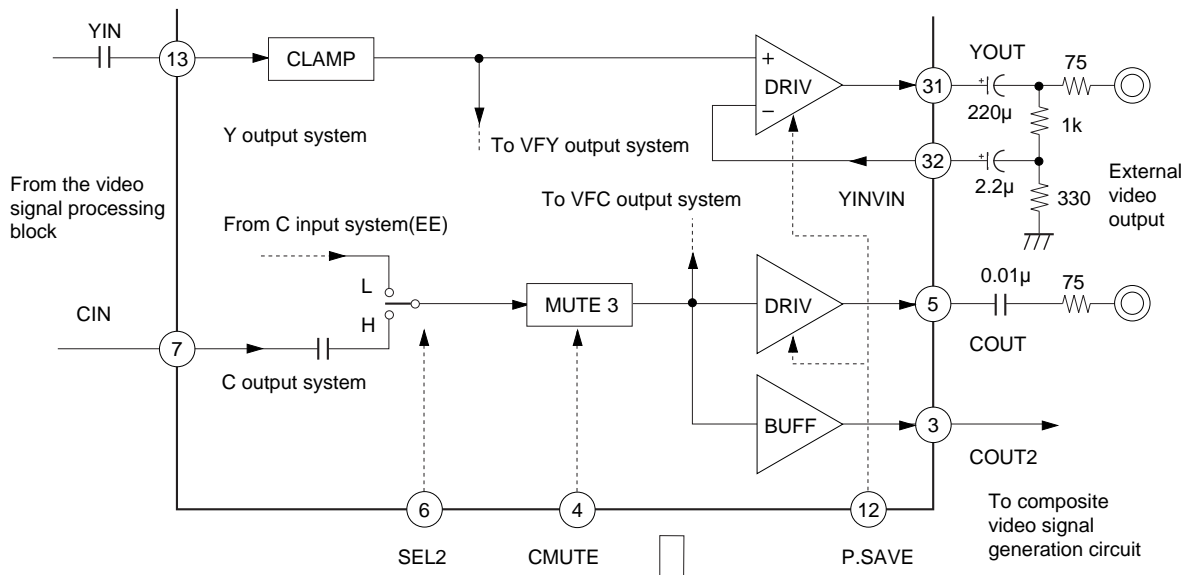
- Video Input System



The Y signals input to Pins 23 (YIN1) and 25 (YIN2) are clamped by the respective sync tips, and one of the signals is selected by the control signal input to Pin 24 (INSEL). Titles are inserted by the control signals input to Pins 16 (VOB) and 18 (VOW), and after passing through the buffer the signal is output from Pin 17 (YOUT1). Regarding the title insertion levels, the white level is approximately 75IRE and the black level is approximately 10IRE. Title insertion is described in detail later.

Just as with the Y signals, one of the C signals input to Pins 27 (CIN1) and 29 (CIN2) is selected by the control signal at Pin 24. The signal is muted to the chroma center level by the control signals at Pins 16 and 18, and after being branched to EE output, the signal passes through the buffer and is output from Pin 15 (COUT1).

- Video Output System



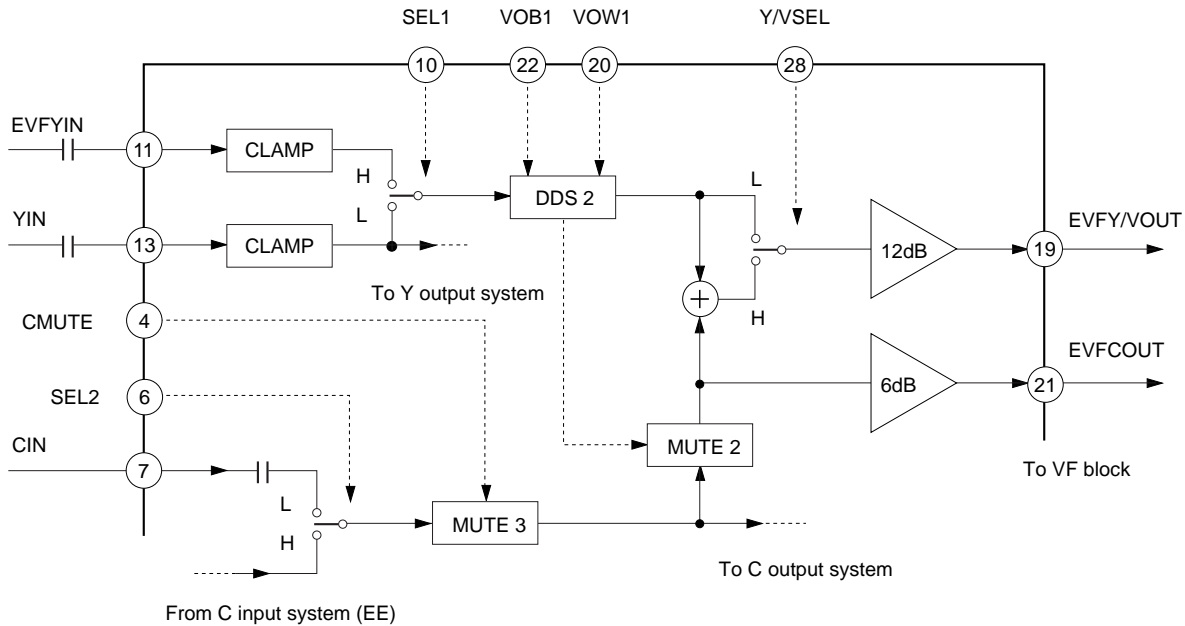


The Y signal input to Pin 13 (YIN) is clamped by the sync tip and is then branched to the Y output system and the VFY output system. The signal sent to the Y output system passes through the 75 Ω driver (gain=12 dB) and is then output from Pin 31 (YOUT).

Either the C signal input from Pin 7 (CIN) or the C signal for EE output that was branched from the C input system is selected by the control signal input to Pin 6 (SEL2). After the signal is muted to the chroma center level by the control signal input to Pin 4 (CMUTE), the signal is branched to the VFC output system and is also passed through the 75 Ω driver (gain=12 dB), after which it is output from Pin 5 (COUT). The signal is also output from Pin 3 (COUT2) for composite video signal generation. The role of Pin 3 is explained in more detail later.

When Pin 12 (P.SAVE) is set high, it is power saving mode. At this time, the Y and C 75 Ω drivers cease functioning and the outputs go to high impedance.

- VF Video Output System



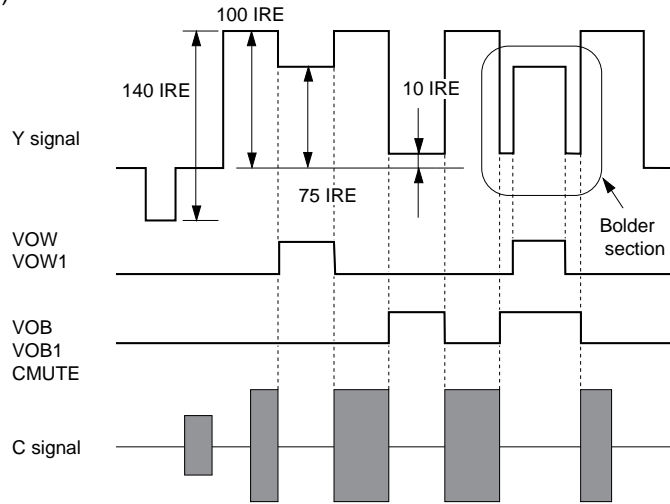
The Y signals input to Pins 13 and 11 (EVFYIN) are clamped by the respective sync tips, and one of the signals is selected by the control signal input to Pin 10 (SEL1). When the video signal required for the viewfinder is different from the signal input to Pin 13, the necessary signal is input from Pin 11. Titles are inserted by the control signals input to Pins 22 (VOB1) and 20 (VOW1). Just as in the video input system, regarding the title insertion levels, the white level is approximately 75IRE and the black level is approximately 10IRE. Either this Y signal or the post-Y/C MIX composite video signal is selected by the control signal input to Pin 28 (Y/VSEL), and then the signal passes through the 12 dB amplifier and is output from Pin 19 (EVFY/VOUT). When Pin 28 is high, the post-Y/C MIX composite video signal is selected. At the same time, the 6 dB amplifier (for C output) stops functioning in order to reduce the amount of current consumption. At this time, the output from Pin 21 (EVFCOUT) goes to high impedance.

The C signal for the viewfinder that was branched from the C output system is muted to the chroma center level by the control signals input to Pins 22 and 20. This signal is input to the Y/C MIX circuit in order to generate the composite video signal for the viewfinder; the signal is also passed through the 6 dB amplifier and is output from Pin 21.

• **Title Insertion Function (Timing Relationships)**

When VOW/VOW1 is high, the Y signal replaces from the pedestal level to an electric potential of 75IRE (white character); when VOB/VOB1 is high, the Y signal replaces from the pedestal level to an electric potential of 10IRE (black character). The C signal replaces to the chroma center electric potential when VOW/VOW1 or VOB/VOB1/CMUTE is high.

Because VOW/VOW1 have precedence, VOW/VOW1 going high results in the insertion of white character even if VOB/VOB1 is high. If the settings are as depicted in the diagram at right, white character can be bordered with black.



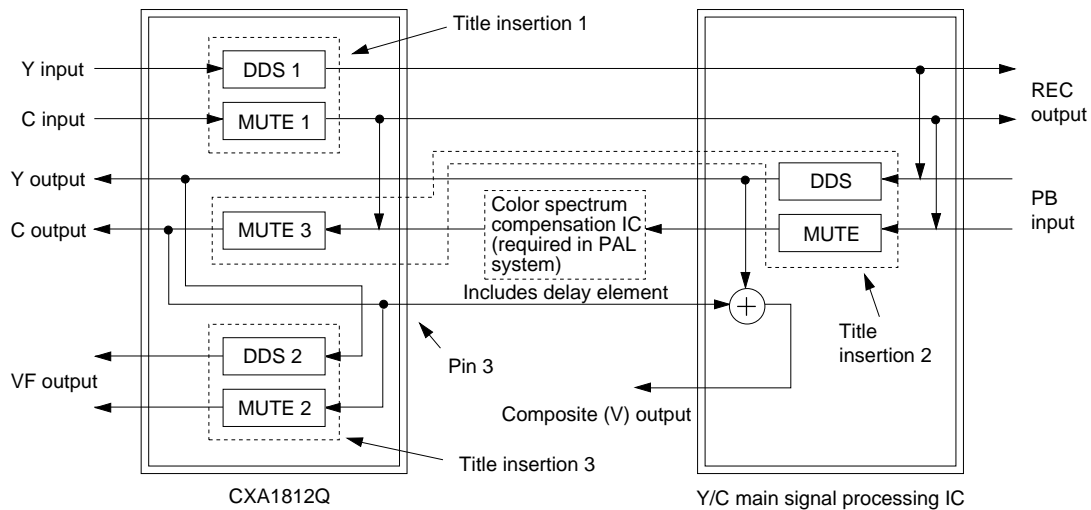
• **Relationship between Signal Flow and the Title Insertion function, and the Role of Pin 3**

Title insertion 2 is performed by a Y/C main signal processing IC. Although no problem arises in NTSC system, in the case of PAL system, because it is necessary to connect a color spectrum compensation IC with a delay element between the Y/C main signal processing IC and the CXA1812Q, if the title is inserted in the Y/C main signal processing IC, a temporal deviation occurs in the title insertion position for Y and C. This problem is resolved by using MUTE 3 in the C system only. In addition, because a C signal processed with MUTE 3 and with no temporal deviation is output from Pin 3, the composite video signal can be obtained by mixing this signal with the Y signal.

<Relationship between the title insertion position and the inserted signal>

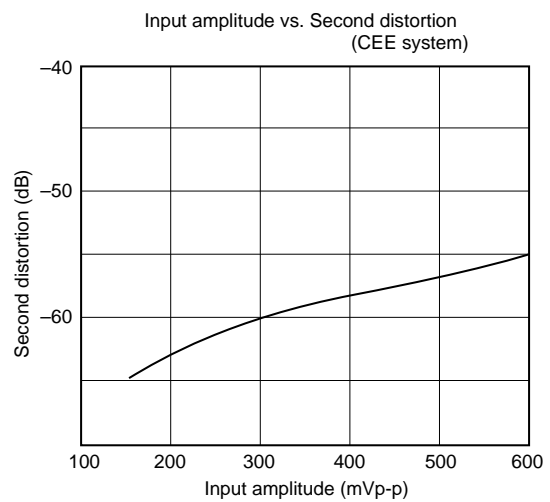
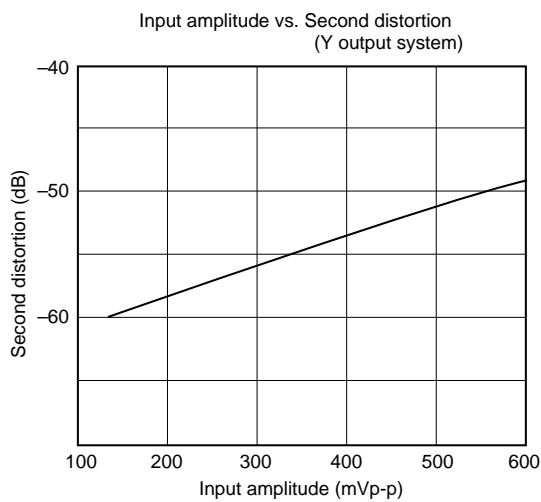
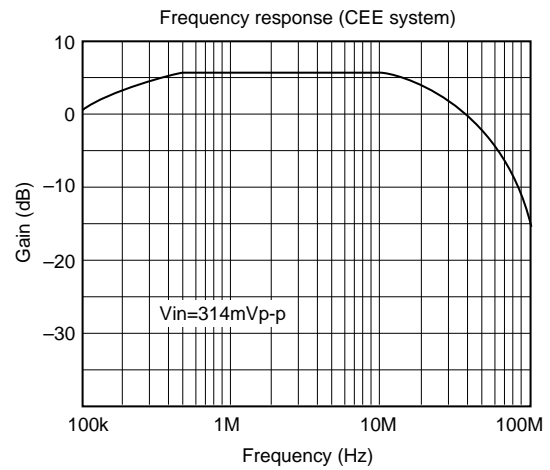
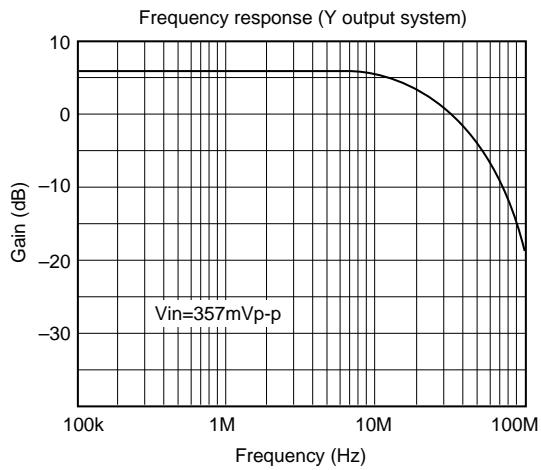
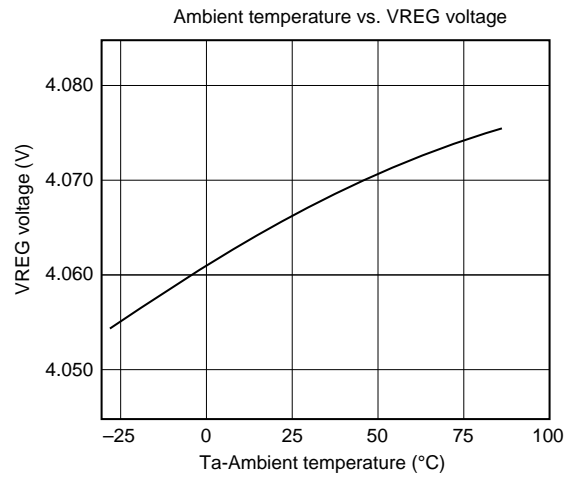
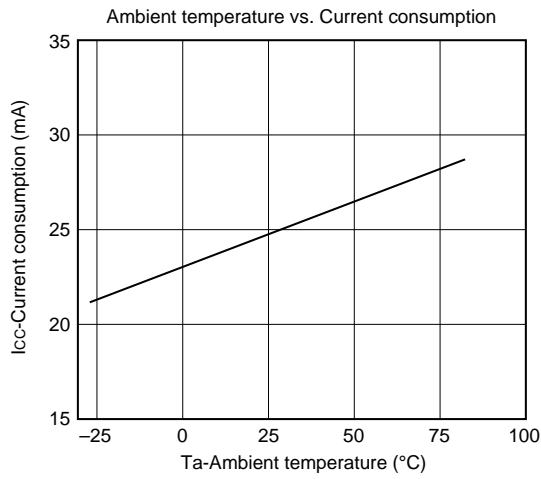
	REC output	Y, C, V output	VF output
Title insertion 1	O	O	O
Title insertion 2	X	O	O
Title insertion 3	X	X	O

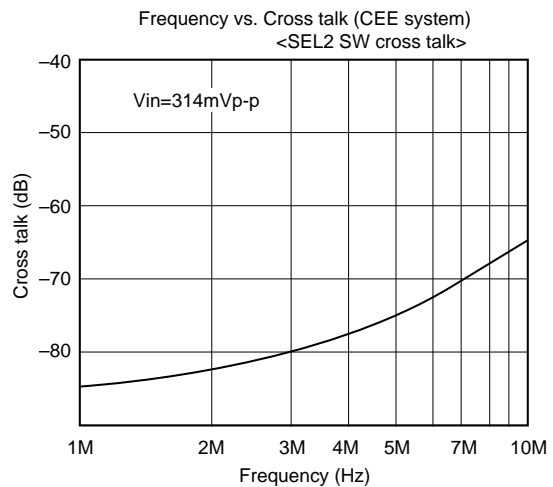
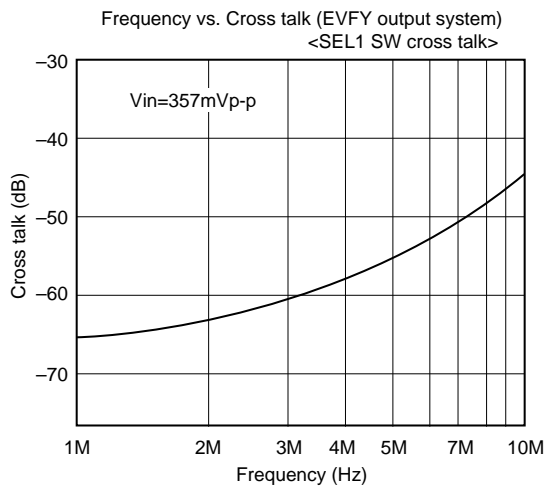
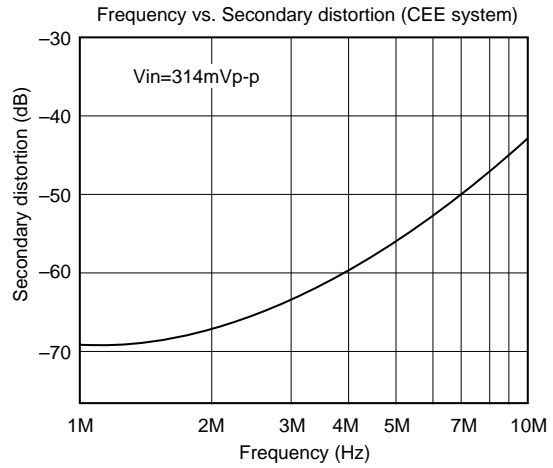
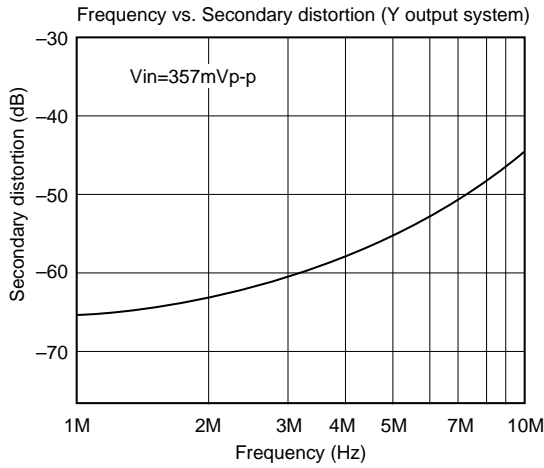
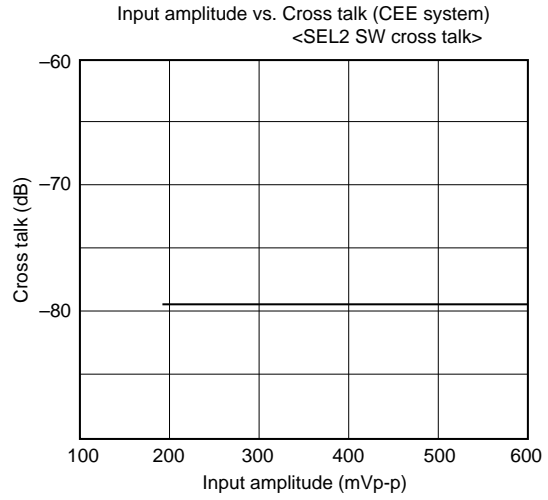
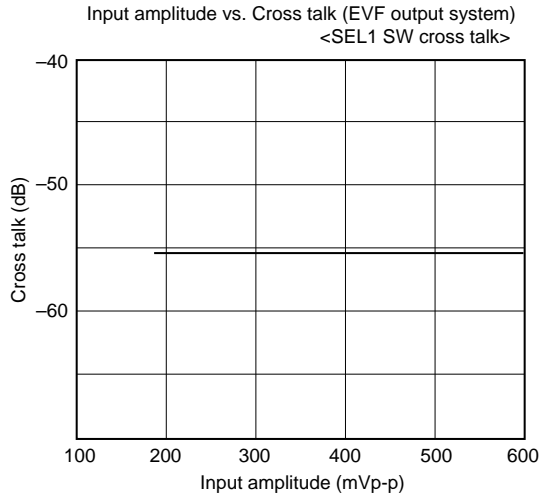
<Positioning of the title insertion function within the overall flow of video signal processing>



**Notes on Operation**

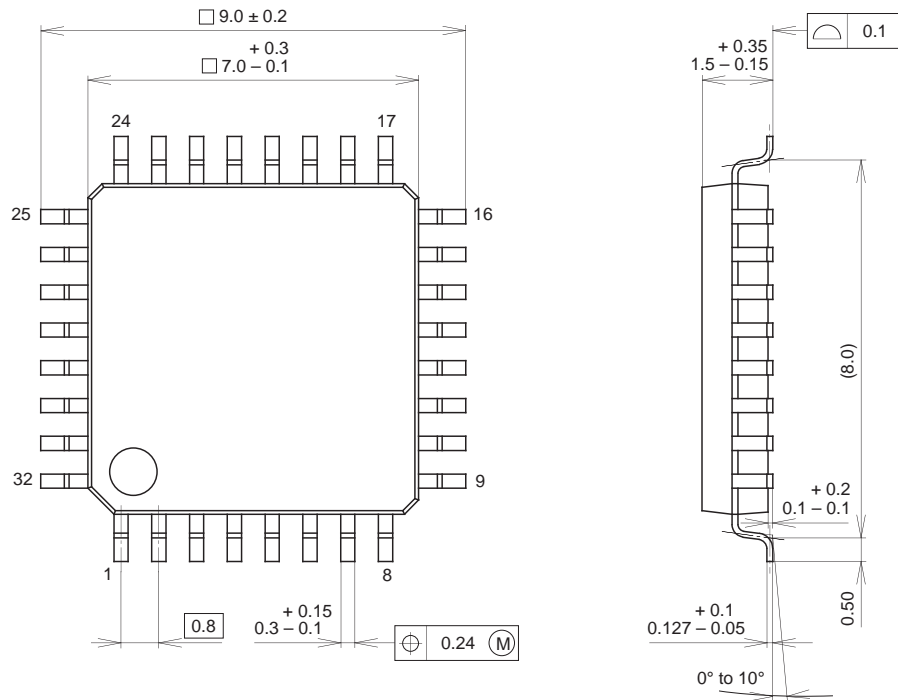
- Cross talk may become severe, depending on the power supply and the ground connections, and on the substrate pattern. The power supply and ground connections should be wired so that impedance is as low as possible, and the signal lines should be located away from other lines.
- The power supply pins should be decoupled as closely as possible to the IC. Because Pin 14 (V<sub>CC</sub>) is the main power supply for this IC, inadequate decoupling can result in a worsening of characteristics such as distortion and cross talk. Pins 8 (COUTV<sub>CC</sub>) and 9 (YOUTV<sub>CC</sub>) are power supplies for the output stage of the 75 Ω drivers, and inadequate decoupling can result in oscillation.
- If more than the necessary capacitance is connected to the output pins (Pins 3, 5, 15, 17, 19, 21, and 31), oscillation may result. Wiring should be kept as short as possible.
- The frequency response of the Y 75 Ω driver can be controlled by external elements.  
The frequency response is raised if capacitance is connected to Pin 32 (YINVIN) versus GND.  
The frequency response is attenuated in the high frequency if capacitance is connected between Pin 31 (YOUT) and Pin 32.
- When Pin 6 (SEL2) is low, Pin 7 (CIN) and Pin 5 (COUT) have an input/output relationship, so that if more than the necessary amount of capacitance is connected between these two pins, a loop may be formed and oscillation may easily result. When designing the board, make sure that there is no parasitic capacitance between Pins 7 and 5.
- Pins 7 (CIN), 27 (CIN1), and 29 (CIN2) are coupled within the IC. If a signal of –0.3 V or less is input, a protective element may cause waveform distortion. When inputting a signal of –0.3 V or less, it is recommended that a suitable DC bias be applied to the input signal.





Package Outline Unit : mm

32PIN QFP (PLASTIC)



SONY CODE	QFP-32P-L01
EIAJ CODE	QFP032-P-0707
JEDEC CODE	_____

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	42 ALLOY
PACKAGE MASS	0.2g