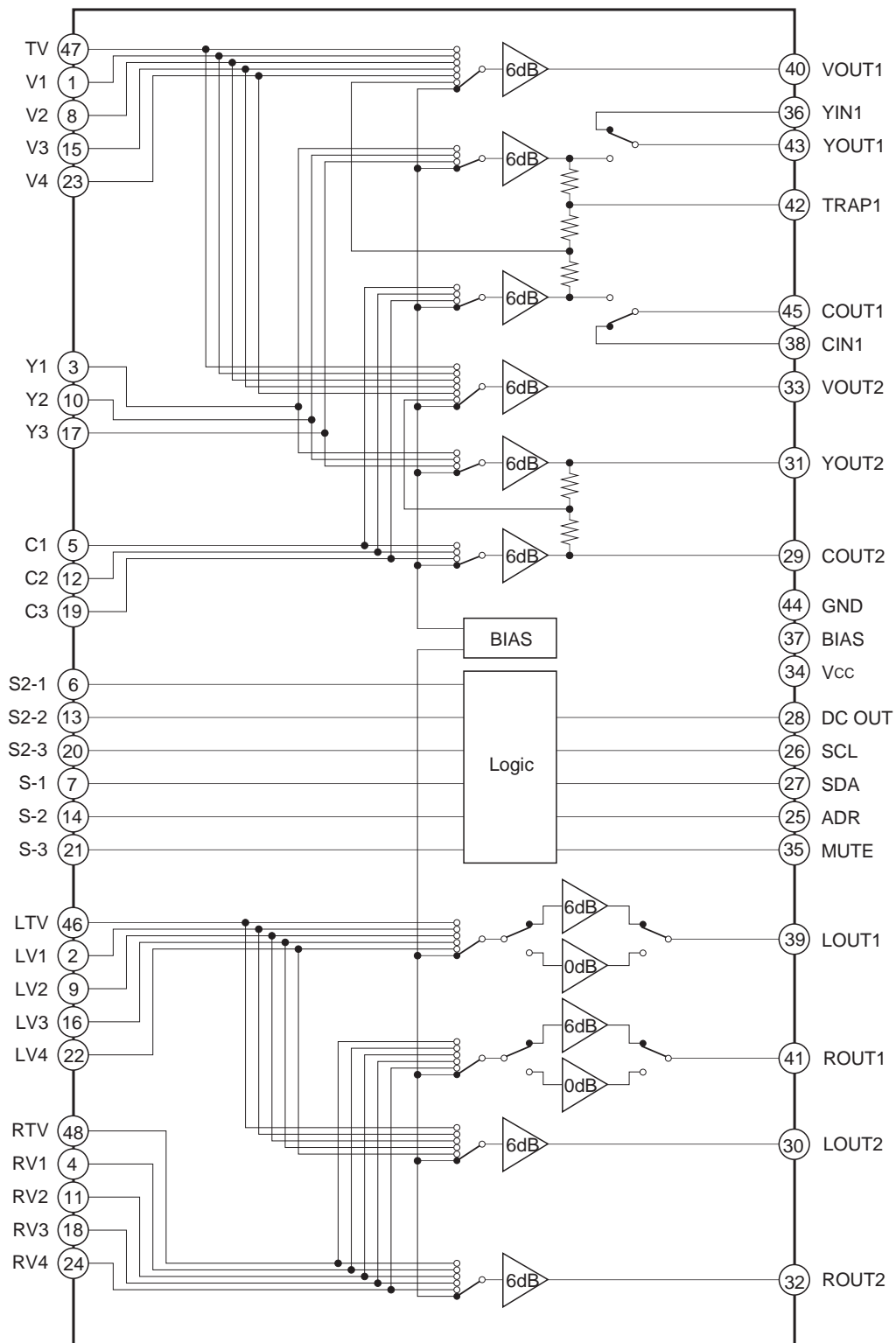


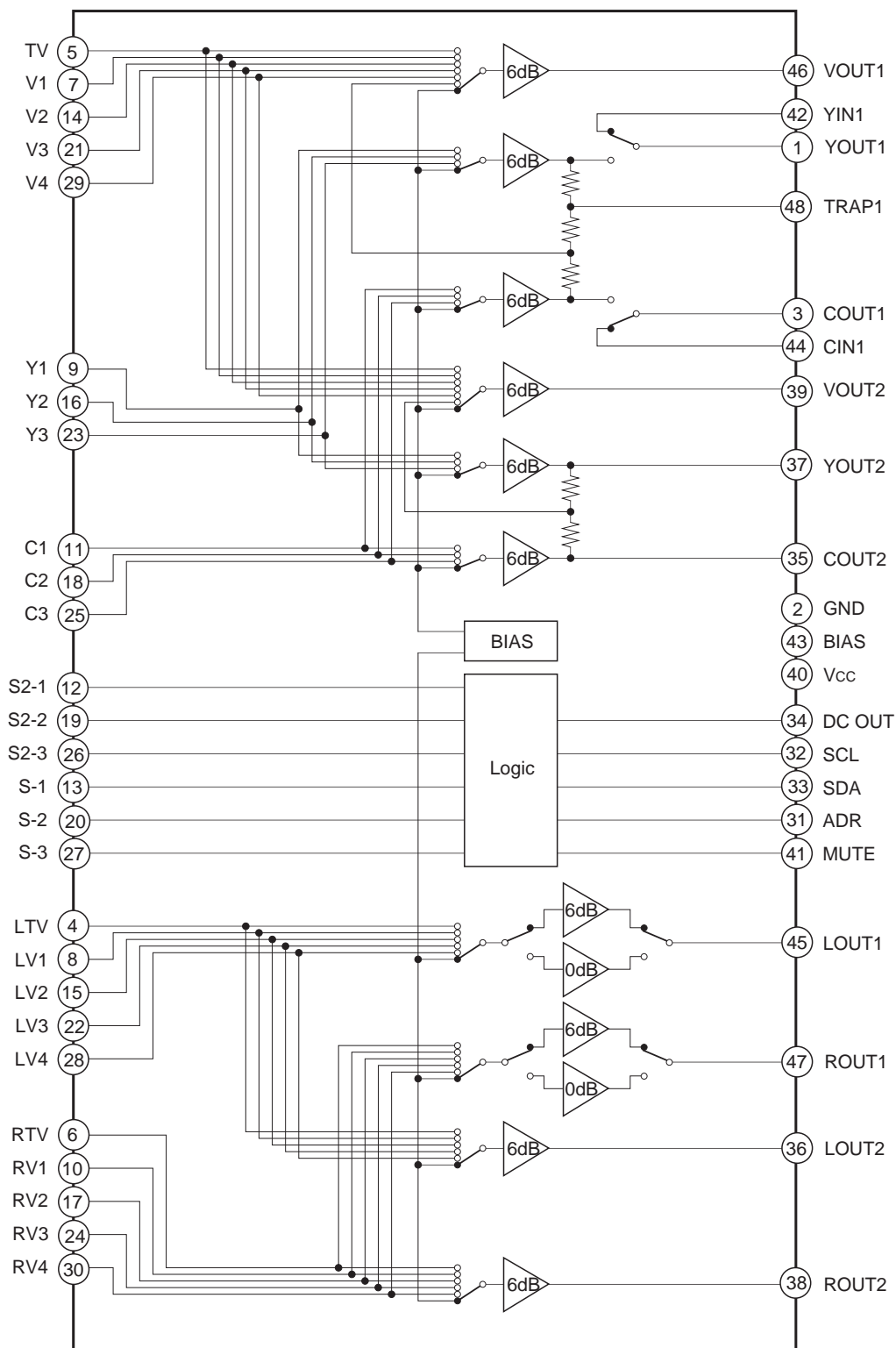
Block Diagram

CXA2089Q



Audio system is attenuated by 6dB for 6kΩ resistor input, and a total gain is 0dB (LOUT1 and ROUT1 can be changed to -6dB).

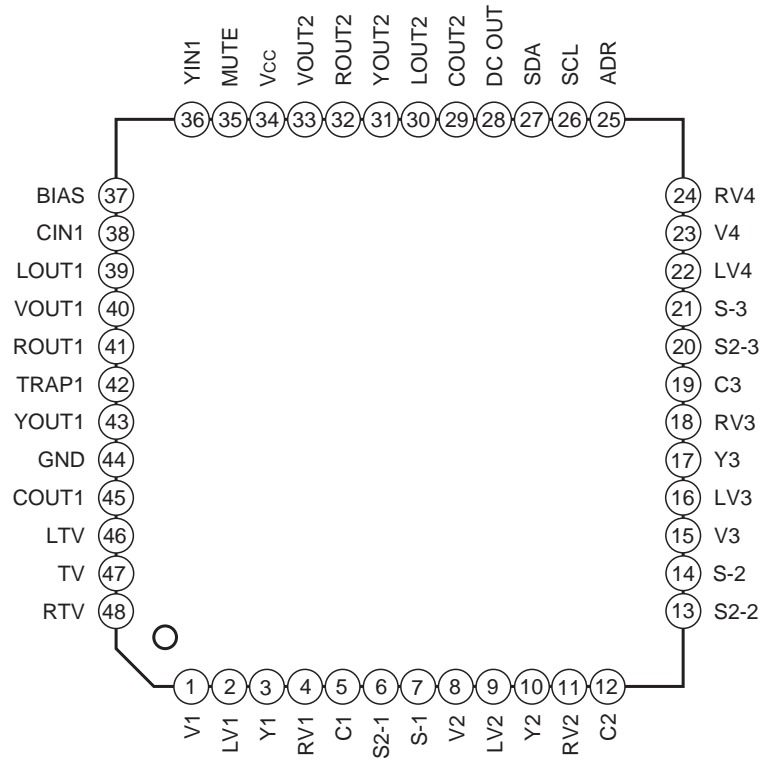
CXA2089S



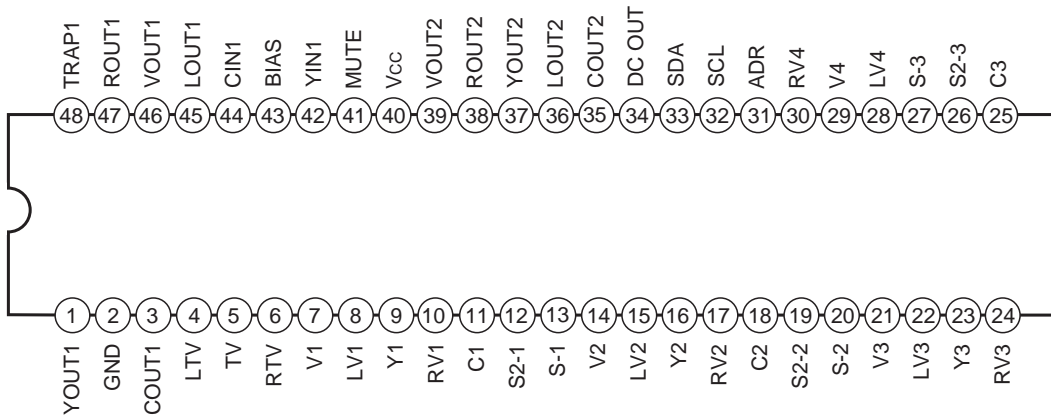
Audio system is attenuated by 6dB for 6kΩ resistor input, and a total gain is 0dB (LOU1 and ROUT1 can be changed to -6dB).

Pin Configuration

CXA2089Q



CXA2089S



Pin Description

Pin numbers in brackets are for the CXA2089S.

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
47 (5) 1 (7) 8 (14) 15 (21) 23 (29)	TV V1 V2 V3 V4	4.0V		Video signal inputs. Input composite video signals.
3 (9) 10 (16) 17 (23) 36 (42)	Y1 Y2 Y3 YIN1	4.0V		Y/C separation signal inputs. Input luminance signals. The YIN1 pin inputs the signal obtained by Y/C separating the VOUT1 pin output.
5 (11) 12 (18) 19 (25) 38 (44)	C1 C2 C3 CIN1	4.5V		Y/C separation signal inputs. Input chrominance signals. The CIN1 pin inputs the signal obtained by Y/C separating the VOUT1 pin output.
46 (4) 2 (8) 9 (15) 16 (22) 22 (28) 48 (6) 4 (10) 11 (17) 18 (24) 24 (30)	LTV LV1 LV2 LV3 LV4 RTV RV1 RV2 RV3 RV4	4.5V		Audio signal inputs.
40 (46) 33 (39)	VOUT1 VOUT2	3.9V		Video signal outputs. Output composite video signals.

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description
43 (1)	YOUT1	3.3V		Video signal outputs. Output luminance signals.
31 (37)	YOUT2	3.5V		
45 (3) 29 (35)	COUT1 COUT2	4.5V		Video signal outputs. Output chrominance signals.
39 (45) 30 (36) 41 (47) 32 (38)	LOUT1 LOUT2 ROUT1 ROUT2	4.5V		Audio signal outputs. $Z_o = 50\Omega$ (within $DC \pm 2mA$)
6 (12) 13 (19) 20 (26)	S2-1 S2-2 S2-3	—		Detects the S2-compatible DC superimposed onto the C signal. 4:3 video signal at 1.3V or less 4:3 letter-box signal at 1.3V or more to 2.5V or less 16:9 picture squeezed signal at 2.5V or more These pins are pulled down to GND by a 100k Ω resistor, so the 4:3 video signals are selected when open.
7 (13) 14 (20) 21 (27)	S-1 S-2 S-3	—		Composite video/S selector. The detection results are written to the status register. S signal at 3.5V or less Composite video signal at 3.5V or more These pins are pulled up to 5V by a 100k Ω resistor, so the composite video signals are selected when open.
25 (31)	ADR	—		Selects the slave address for the I ² C bus. 90H at 1.5V or less 92H at 2.5V or more 90H when open

Pin No.	Symbol	Pin voltage	Equivalent circuit	Description										
26 (32)	SCL	—		<p>I²C bus signal input</p> <p>$V_{ILmax} = 1.5V$</p> <p>$V_{IHmin} = 3.0V$</p>										
27 (33)	SDA	—		<p>I²C bus signal input</p> <p>$V_{ILmax} = 1.5V$</p> <p>$V_{IHmin} = 3.0V$</p> <p>$V_{OLmax} = 0.4V$</p>										
28 (34)	DC OUT	—		<p>Outputs the S2-compatible DC superimposed onto the COUT2 output. The DC is superimposed by connecting this pin to the COUT2 output via a capacitor.</p> <p>Control is performed by the I²C bus.</p> <p>When 0V is output, Q1 is ON and the impedance is 5kΩ.</p> <p>S2 protocol output DC impedance of $10 \pm 3k\Omega$ is realized by attaching external resistance of 4.7kΩ.</p> <table border="1"> <thead> <tr> <th>DC OUT (bus)</th> <th>Output DC</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>4.5V</td> </tr> <tr> <td>1</td> <td>0V</td> </tr> <tr> <td>2</td> <td>1.9V</td> </tr> <tr> <td>3</td> <td>4.5V</td> </tr> </tbody> </table>	DC OUT (bus)	Output DC	0	4.5V	1	0V	2	1.9V	3	4.5V
DC OUT (bus)	Output DC													
0	4.5V													
1	0V													
2	1.9V													
3	4.5V													
42 (48)	TRAP1	3.8V		<p>Connects trap circuit for subcarrier.</p>										
35 (41)	MUTE	—		<p>Audio signal output mute.</p> <p>Mute OFF at 1.5V or less</p> <p>Mute ON at 2.5V or more</p> <p>Mute OFF when open</p>										
37 (43)	BIAS	4.5V		<p>Internal reference bias ($V_{cc}/2$).</p> <p>Connects to GND via a capacitor.</p>										

Electrical Characteristics

(Ta = 25°C, Vcc = 9V)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current consumption	Icc	No signal, no load	30	45	62	mA

Video system (Measurement circuit; Fig. 1)

Gain	GVv	f = 100kHz, 0.3Vp-p input	5.9	6.4	6.9	dB
Frequency response characteristics	FBWv1	f = 100kHz, input frequency where output amplitude is -3dB with 0.3Vp-p output serving as 0dB	15	20	—	MHz
Frequency response characteristics (Y/C mix)	FBWv2		10	15	—	MHz
Input dynamic range	Ddv	f = 100kHz, maximum with distortion < 1.0%	1.4	—	—	Vp-p
Cross talk	Vctv	f = 4.43MHz, 1Vp-p input	—	—	-50	dB

Audio system (Measurement circuits; Fig. 2 to Fig. 5)

Gain	GVA	f = 1kHz, 1Vp-p input, 5.7kΩ resistor inserted to input	-1	0	1	dB
Frequency response characteristics	FBWA	f = 1kHz, input frequency where output amplitude is -3dB with 1Vp-p output serving as 0dB	50	—	—	kHz
Total harmonic distortion	THD	f=1kHz, 2.2Vp-p input, where 400Hz HPF + 80kHz LPF are inserted	—	0.03	0.05	%
Input dynamic range	DdA	f=1kHz, maximum with distortion < 0.3%	2.8	3.0	—	Vrms
Cross talk	VctA	f=1kHz, 1Vp-p input	—	-90	-80	dB
Ripple rejection ratio	VctA	f=100Hz, 0.3Vp-p applied to Vcc	—	-55	-40	dB
Output DC offset	Voff	Offset voltage between input and output	-30	—	30	mV
Residual noise	VNA	When 400Hz HPF+ 30kHz LPF are inserted	0	20	30	μVrms
S/N ratio	S/N	f=1kHz, 1Vrms input When 400Hz HPF + 30kHz LPF are inserted		-100	-90	dB