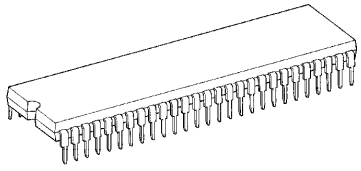
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8851BN, TA8851CN

AUDIO / VIDEO SWITCH IC FOR TV WITH S-TERMINALS

The TA8851BN / CN is an A / V SWITCH IC, which has 7 input channels and 2 output channels. Because the 2 output channels can be switched independently of each other, the TA8851BN / CN allows you to configure a PIP system input switching circuit easily.
The TA8851BN / CN can be interfaced easily to a microcontroller via the I^2C bus.
3 of 7 input channels can be used for Y / C separated input.



SDIP54-P-600-1.78

Weight : 1.0g (Typ.)

FEATURES

Video Stage

- Input
  - Composite video input : 7 channels
  - Y / C input : 3 channels
- Output
  - Composite video output : 2 channels (Main and Sub)
  - Y / C output : 2 channels (Main and Sub)

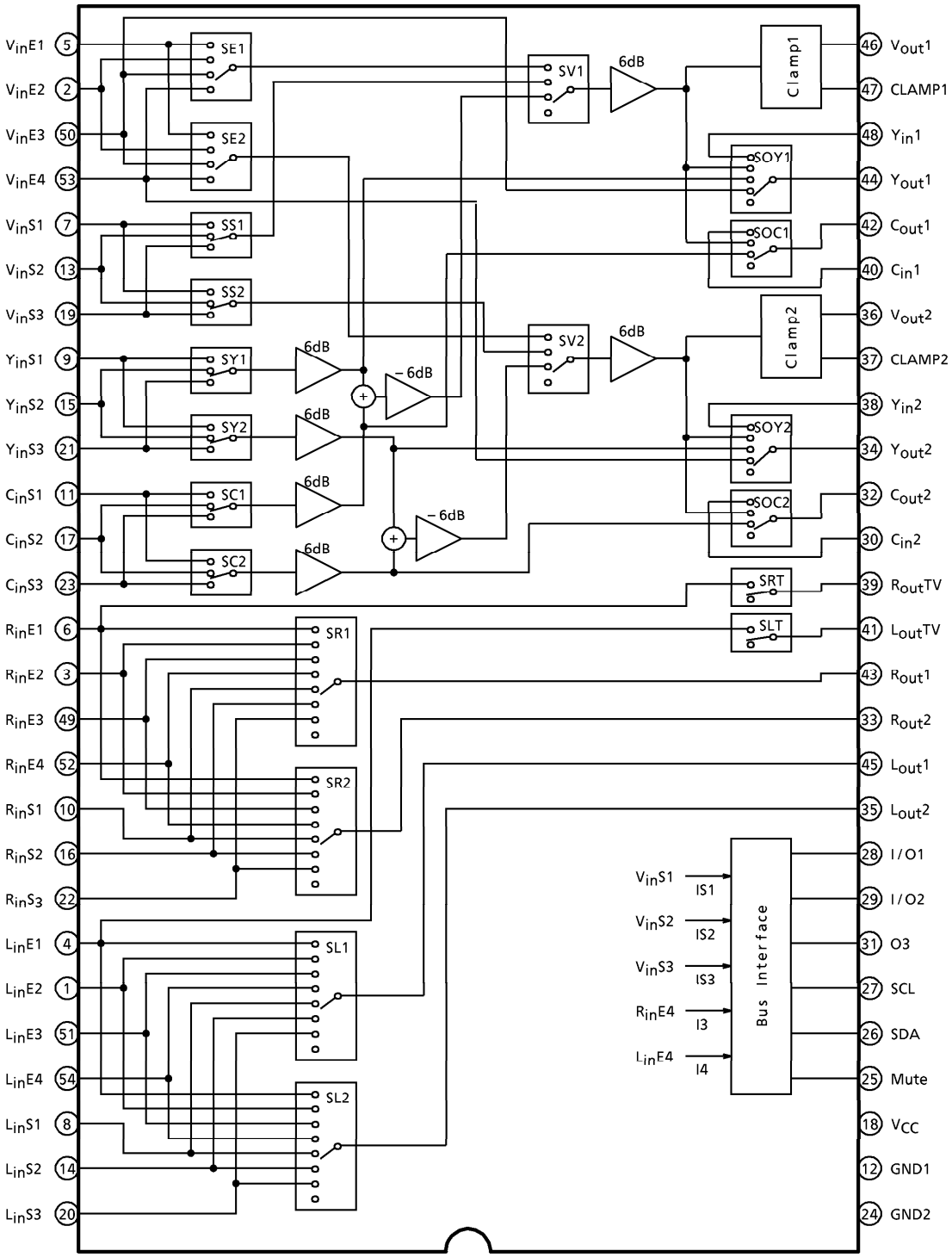
Audio Stage

- Input
  - L / R input : 7 channels
- Output
  - L / R output : 3 channels (2 of 3 depend on video, and the other is selectable from Main or Sub)

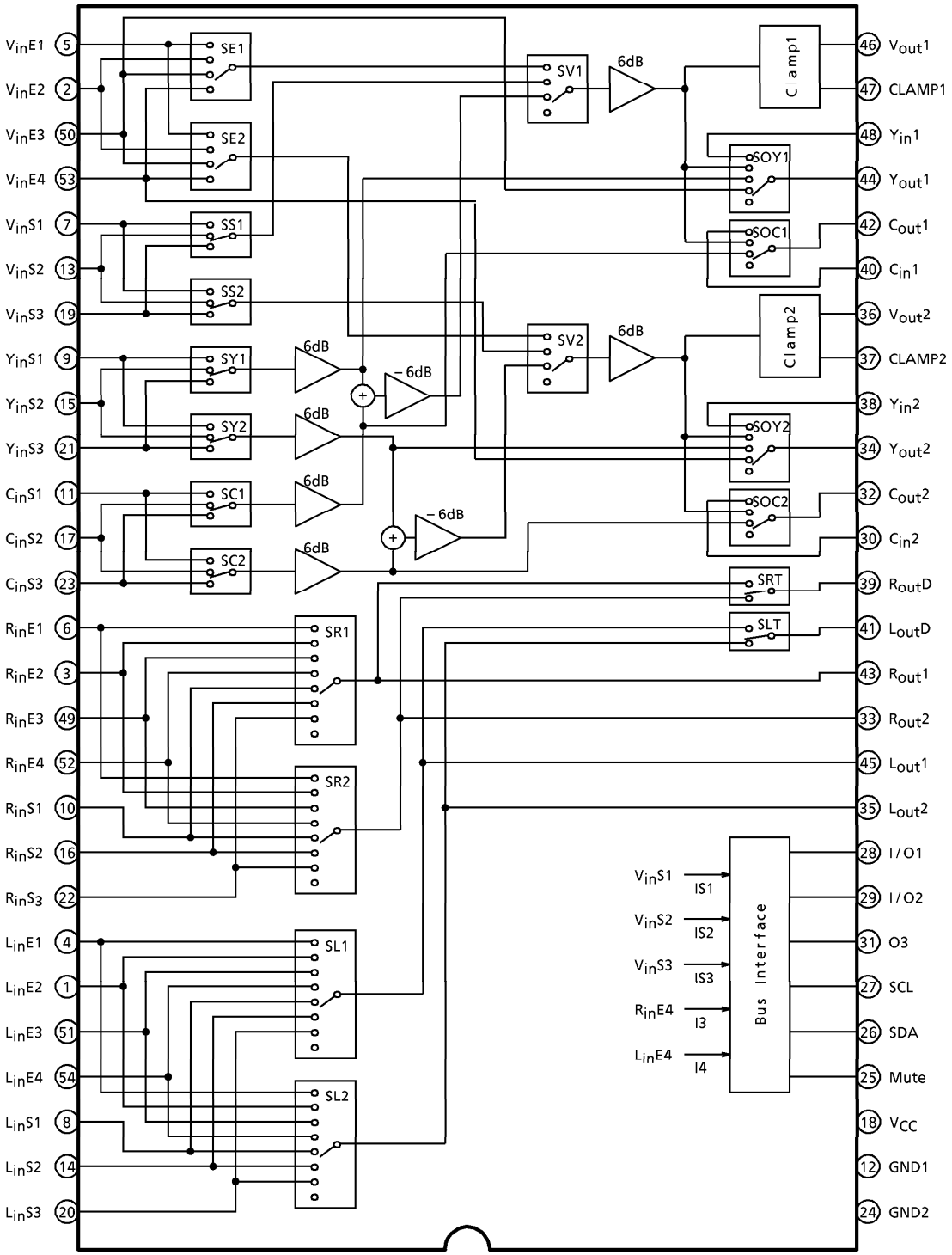
Functions

- I^2C bus interface
- External mute circuit
- DAC output (3 outputs)
- Video clamp circuit
- Mode output
- ADC input (4 inputs)

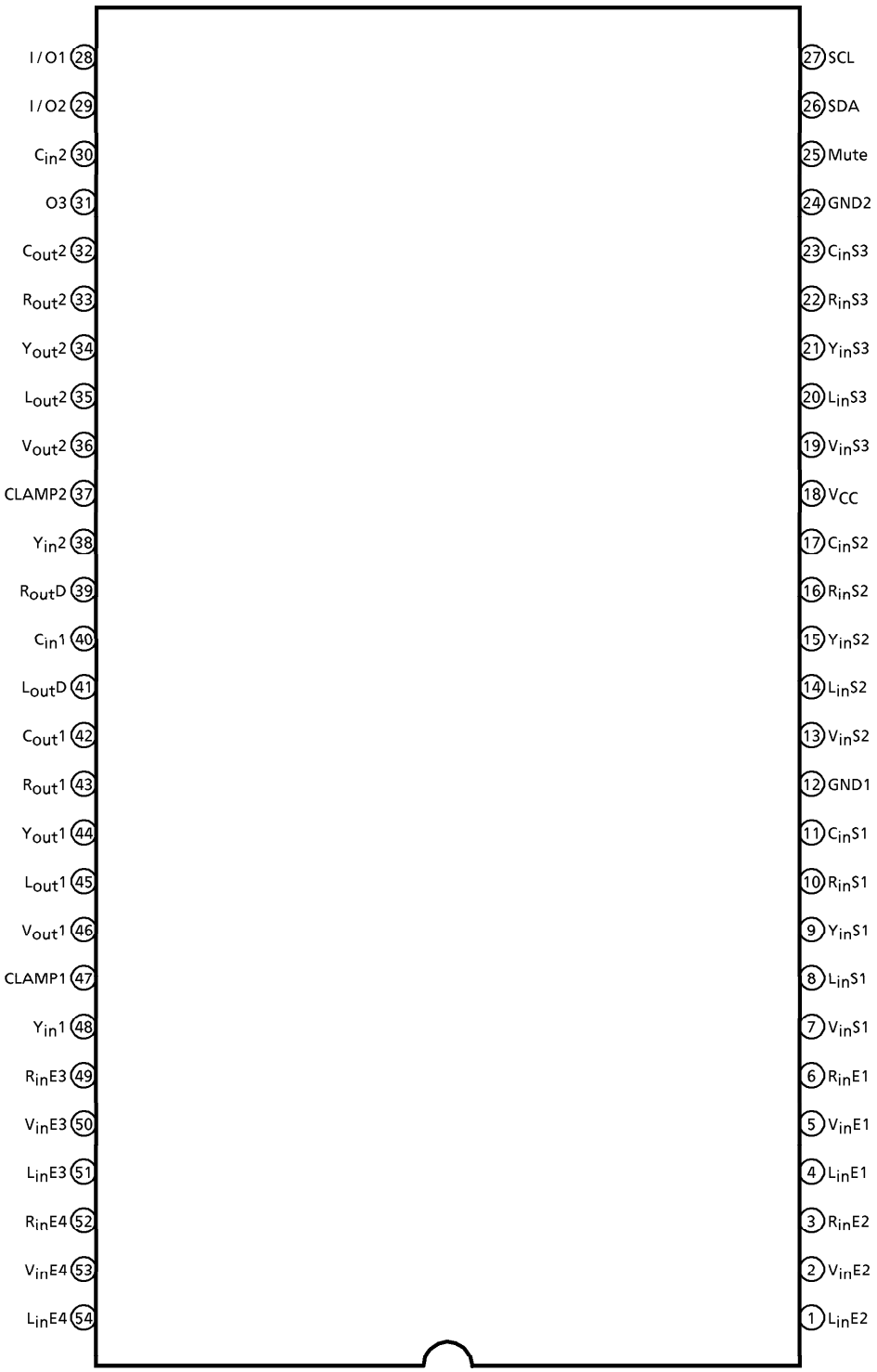
BLOCK DIAGRAM
TA8851BN



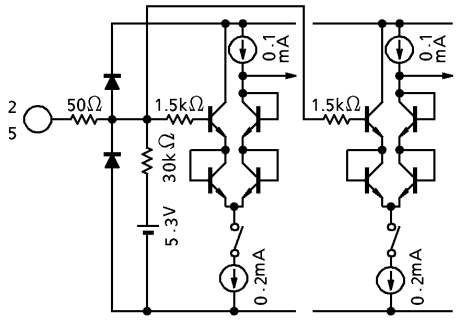
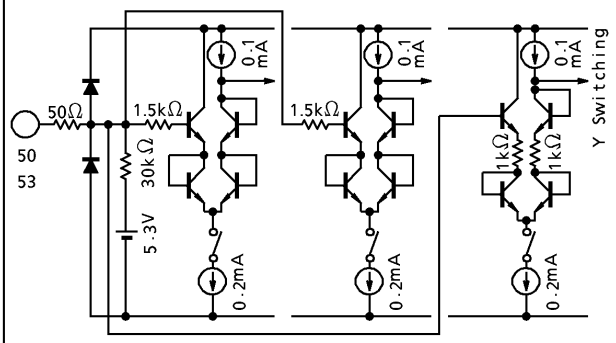
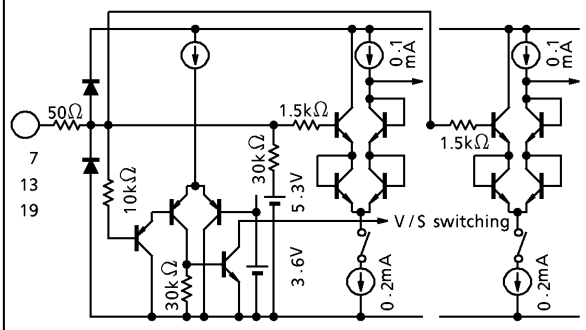
BLOCK DIAGRAM
TA8851CN

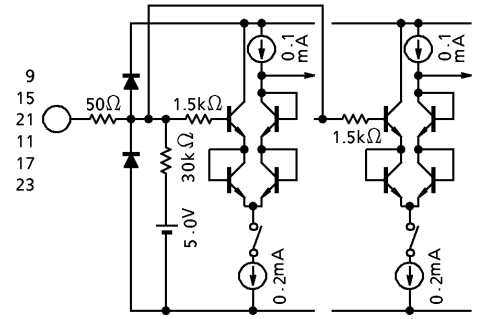
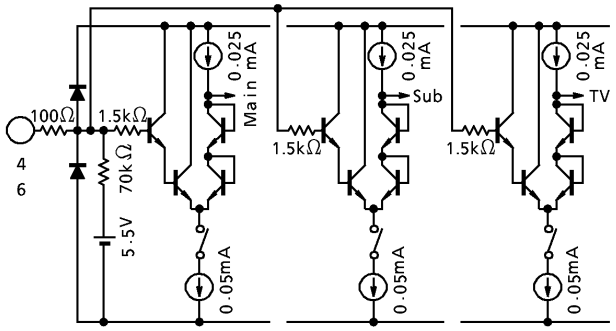
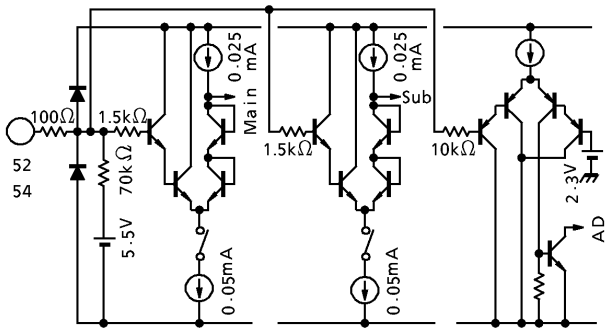
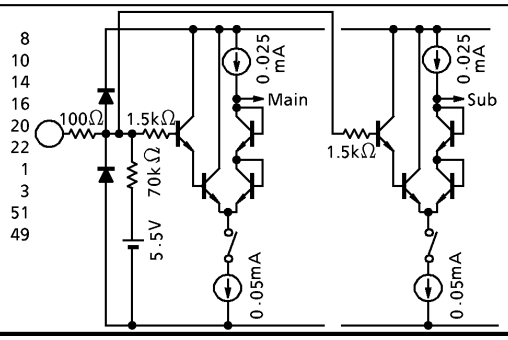


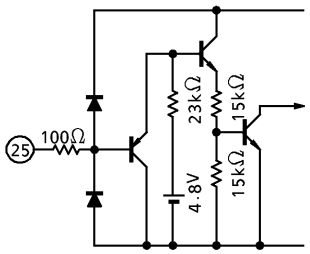
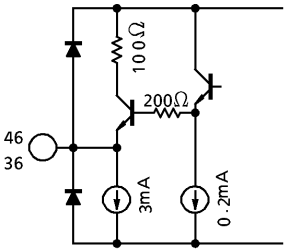
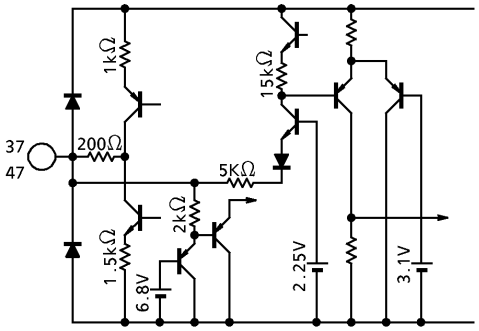
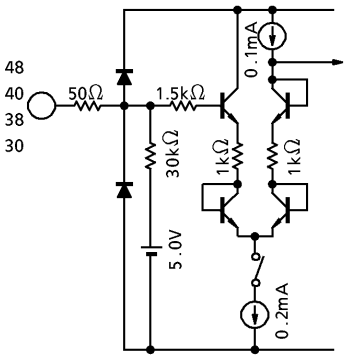
TERMINAL CONNECTION DIAGRAM

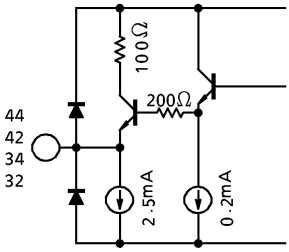
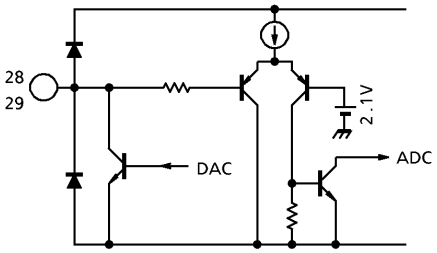
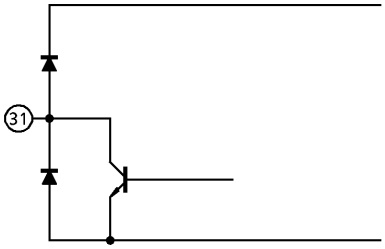
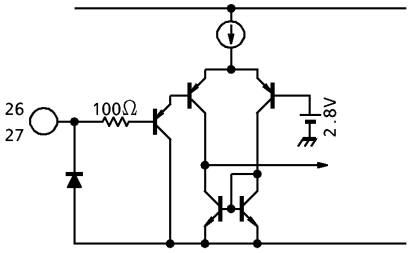
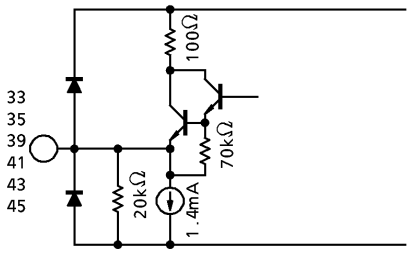


TERMINAL FUNCTION

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
2 : $V_{in}E2$ 5 : $V_{in}E1$	Composite Video Signal Input	These pins are for composite video signal input. The recommendable input level is $1.0V_{p-p}$.	
50 : $V_{in}E3$ 53 : $V_{in}E4$	Composite Video Signal / Y Signal Input	These pins can be used for composite video signal or Y signal input. The recommendable input level is $1.0V_{p-p}$.	
7 : $V_{in}S1$ 13 : $V_{in}S2$ 19 : $V_{in}S3$	Composite Video Signal Input and S-Mode Switch	These pins are for composite video signal input and S mode Switch. By setting DC voltage of one of these pins lower than 2.6V, that channel (S1, S2 or S3) turns to S-mode. And when it is higher than 2.6V, that pin is for composite video input. The recommendable input level is $1.0V_{p-p}$.	

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
9 : $Y_{in}S1$ 15 : $Y_{in}S2$ 21 : $Y_{in}S3$ 11 : $C_{in}S1$ 17 : $C_{in}S2$ 23 : $C_{in}S3$	Y Signal Input / C Signal Input	These pins accept a Y signal from the S-terminal and a C signal as input. The recommended input signal level is $1.0V_{p-p}$ for Y signal and $300mV_{p-p}$ for C signal (burst).	
4 : $L_{in}E1$ 6 : $R_{in}E1$	Audio Input (TV)	These pins accept the sound of the internal TV signal as input. The signal input to this pin is output from the main / sub output after being selected, as well as from the TV audio output terminal. The recommended input signal level is $300mV_{rms}$.	
52 : $R_{in}E4$ 54 : $L_{in}E4$	Audio Input / ADC Input	These pins accept an audio signal as input. They also accept input from a 1bit ADC. In this case, if the voltage on these pins is below 2.3V the ADC outputs I_3 and I_4 become logic is. The recommended input signal level is $300mV_{rms}$.	
8 : $L_{in}S1$ 10 : $R_{in}S1$ 14 : $L_{in}S2$ 16 : $R_{in}S2$ 20 : $L_{in}S3$ 22 : $R_{in}S3$ 1 : $L_{in}E2$ 3 : $R_{in}E2$ 51 : $L_{in}E3$ 49 : $R_{in}E3$	Audio Input	These pins accept an audio signal as input. The recommended input signal level is $300mV_{rms}$.	

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
25 : Mute	Mute	If the voltage on this pin is above 1.5V, all audio outputs (main, sub, and TV) are disabled.	
46 : $V_{out}1$ 36 : $V_{out}2$	Monitor Output	These pins output the selected composite signal. The standard output signal amplitude is $2.0V_{p-p}$. These pins can sink a maximum current of 3.0mA.	
47 : CLAMP1 37 : CLAMP2	Clamp Filter	These pins are a filter terminal for the clamp circuit to maintain the monitor output at a constant DC level. If these pins are tied to GND, the clamp circuit is disabled, so that the DC voltage of the monitor output cannot be clamped to a constant level.	
48 : $Y_{in}1$ 40 : $C_{in}1$ 38 : $Y_{in}2$ 30 : $C_{in}2$	Comb Y/C Input	These pins accept a Y/C separated signal from the comb filter as input. The recommended input signal level is $2.0V_{p-p}$ for Y signal and $600mV_{p-p}$ for C signal (burst).	

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
44 : $Y_{out}1$ 42 : $C_{out}1$ 34 : $Y_{out}2$ 32 : $C_{out}2$	Y / C Output	These pins output the Y and C signals that are fed to the V / C / D circuits. The standard output signal level is 2.0V_{p-p} for Y signal and 600mV_{p-p} for C signal (burst). These pins can sink a maximum current of 2.5mA.	
28 : I / O1 29 : I / O2	I / O	These pins are for input and output to and from the 1bit DAC / ADC of the bus signal. These pins can source a maximum current of 2.0mA.	
31 : O3	O3	This pin is for output of the 1bit DAC of the bus signal. This pin can source a maximum current of 2.0mA.	
26 : SDA 27 : SCL	SCL / SDA	These pins are for input of the I^2C bus.	
33 : $R_{out}2$ 35 : $L_{out}2$ 39 : $R_{out}D$ / $R_{out}TV$ 41 : $L_{out}D$ / $L_{out}TV$ 43 : $R_{out}1$ 45 : $L_{out}1$	Audio Output	These pins output an audio signal. These pins can sink a maximum current of 1.4mA.	

ADDRESS MAP (Slave address 90H, 91H)

MODE	DATA No.	DATA							
Write	Data 1	D_{07}	D_{06}	D_{05}	D_{04}	D_{03}	D_{02}	D_{01}	D_{00}
	TA8851BN	—		DAC Output			Sound Mute		
				(0)	(1)	(1)	(1)	(1)	(1)
	TA8851CN						Dual Sound Output	Sound Mute	
							(1)	(1)	(1)
	Data 2 (main)	D_{17}	D_{16}	D_{15}	D_{14}	D_{13}	D_{12}	D_{11}	D_{10}
						F.VIDEO (0)			
	Data 3 (sub)	D_{27}	D_{26}	D_{25}	D_{24}	D_{23}	D_{22}	D_{21}	D_{20}
		Y/C Output Switching				F.VIDEO	Output Switching		
		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Read	Data 4	D_{37}	D_{36}	D_{35}	D_{34}	D_{33}	D_{32}	D_{31}	D_{30}
		ADC Ident				S Input Ident			P.O.R
		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1)

F.VIDEO : Forced video mode
P.O.R : Power On reset (power : ON (1))
(0) (1) : preset

◎ Write mode
Output switching (main)

MODE			BUS DATA				S INPUT			OUTPUT SIGNAL		
			D_{13}	D_{12}	D_{11}	D_{10}	IS1	IS2	IS3	$V_{out}1$	$R_{out}1$	$L_{out}1$
TV	E1		—	1	1	1	—	—	—	$V_{in}E1$	$R_{in}E1$	$L_{in}E1$
	E2		—	1	1	0	—	—	—	$V_{in}E2$	$R_{in}E2$	$L_{in}E2$
	E3		—	1	0	1	—	—	—	$V_{in}E3$	$R_{in}E3$	$L_{in}E3$
	E4		—	1	0	0	—	—	—	$V_{in}E4$	$R_{in}E4$	$L_{in}E4$
	S1	V	0	0	1	1	0	—	—	$V_{in}S1$	$R_{in}S1$	$L_{in}S1$
		S	1				—			$Y_{in}S1$ + $C_{in}S1$		
			—				1					
	S2	V	0	0	1	0	—	0	—	$V_{in}S2$	$R_{in}S2$	$L_{in}S2$
		S	1					—		$Y_{in}S2$ + $C_{in}S2$		
			—					1				
	S3	V	0	0	0	1	—	—	0	$V_{in}S3$	$R_{in}S3$	$L_{in}S3$
		S	1						—	$Y_{in}S3$ + $C_{in}S3$		
			—						1			
Mute			—	0	0	0	—	—	—	Mute	Mute	Mute

Output switching (sub)

MODE			BUS DATA				S INPUT			OUTPUT SIGNAL		
			D_{23}	D_{22}	D_{21}	D_{20}	IS1	IS2	IS3	$V_{out}2$	$R_{out}2$	$L_{out}2$
TV	E1		—	1	1	1	—	—	—	$V_{in}E1$	$R_{in}E1$	$L_{in}E1$
	E2		—	1	1	0	—	—	—	$V_{in}E2$	$R_{in}E2$	$L_{in}E2$
	E3		—	1	0	1	—	—	—	$V_{in}E3$	$R_{in}E3$	$L_{in}E3$
	E4		—	1	0	0	—	—	—	$V_{in}E4$	$R_{in}E4$	$L_{in}E4$
	S1	V	0	0	1	1	0	—	—	$V_{in}S1$	$R_{in}S1$	$L_{in}S1$
		S	1				—			$Y_{in}S1$ + $C_{in}S1$		
			—				1					
	S2	V	0	0	1	0	—	0	—	$V_{in}S2$	$R_{in}S2$	$L_{in}S2$
		S	1					—		$Y_{in}S2$ + $C_{in}S2$		
			—					1				
	S3	V	0	0	0	1	—	—	0	$V_{in}S3$	$R_{in}S3$	$L_{in}S3$
		S	1						—	$Y_{in}S3$ + $C_{in}S3$		
			—						1			
Mute			—	0	0	0	—	—	—	Mute	Mute	Mute

Output switching (Dual sound output) : This table is only applied for TA8851CN.

MODE		BUS DATA	OUTPUT SIGNAL	
		D_{02}	R_{out} TV	L_{out} TV
TV	Main	1	$R_{out}1$	$L_{out}1$
	Sub	0	$R_{out}2$	$L_{out}2$

Y / C output switching (main)

MODE		BUS DATA				OUTPUT SIGNAL	
		D_{17}	D_{16}	D_{15}	D_{14}	$Y_{out}1$	$C_{out}1$
Y	S-terminal Input	EXCEPT		1	1	$Y_{in}S1$ to $Y_{in}S3$ (*1)	—
	Video Input			1	0	$V_{out}1$	
	Comb1	0	0	0	1	$Y_{in}1$	
	Comb2			0	0	$V_{in}E3$	
C	S-terminal Input	1	1	—	—	—	$C_{in}S1$ to $C_{in}S3$ (*2)
	Video Input	1	0				$V_{out}1$
	Comb	0	1				$C_{in}1$
Mute		0	0	—	—	Mute	Mute

(*1) : SY1 switches between $Y_{in}S1 \sim Y_{in}S3$
(*2) : SC1 switches between $C_{in}S1 \sim C_{in}S3$

Y / C output switching (sub)

MODE		BUS DATA				OUTPUT SIGNAL	
		D_{27}	D_{26}	D_{25}	D_{24}	$Y_{out}2$	$C_{out}2$
Y	S-terminal Input	EXCEPT		1	1	$Y_{in}S1$ to $Y_{in}S3$ (*1)	—
	Video Input			1	0	$V_{out}2$	
	Comb1	0	0	0	1	$Y_{in}2$	
	Comb2			0	0	$V_{in}E4$	
C	S-terminal Input	1	1	—	—	—	$C_{in}S1$ to $C_{in}S3$ (*2)
	Video Input	1	0				$V_{out}2$
	Comb	0	1				$C_{in}2$
Mute		0	0	—	—	Mute	Mute

(*1) : SY2 switches between $Y_{in}S1 \sim Y_{in}S3$
(*2) : SC2 switches between $C_{in}S1 \sim C_{in}S3$

Mute mode

MODE			BUS		PIN 25	VIDEO OUTPUT				SOUND OUTPUT		
						MAIN		SUB		MAIN	SUB	Dual
			BIT	DATA		$V_{out}1$	$Y_{out}1$ $C_{out}1$	$V_{out}2$	$Y_{out}2$ $C_{out}2$	$R_{out}1$ $L_{out}1$	$R_{out}2$ $L_{out}2$	$R_{out}D$ $L_{out}D$
Ext Mute			—	—	High level	—	—	—	—	Mute	Mute	Mute
Bus Line Mute	Sound Mute SW	Main	D_{00}	1	—	—	—	—	—	Mute	—	—
		Sub	D_{01}	1	—	—	—	—	—	—	Mute	—
		TV (*)	D_{02}	1	—	—	—	—	—	—	—	Mute
	Video & Sound Mute SW	Main	D_{10} D_{11} D_{12}	0 0 0	—	Mute	—	—	—	Mute	—	—
		Sub	D_{20} D_{21} D_{22}	0 0 0	—	—	—	Mute	—	—	Mute	—
		Y/C Main	D_{14} D_{15}	0 0	—	—	Mute	—	—	—	—	—
		Y/C Sub	D_{24} D_{25}	0 0	—	—	—	—	Mute	—	—	—

(*) : TV mode is only applied for TA8851BN

DAC output

TERMINAL	BUS		OUTPUT
	BIT	DATA	
I/O1	D_{03}	1	Open
		0	Low level
I/O2	D_{04}	1	Open
		0	Low level
O3	D_{05}	1	Open
		0	Low level

Dual Sound Selection

MODE	BUS		OUTPUT	
	BIT	DATA	$R_{out}D$	$L_{out}D$
MAIN	D_{02}	1	Main Sound	Main Sound
SUB		0	Sub Sound	Sub Sound

◎ Read mode

S-Output ident

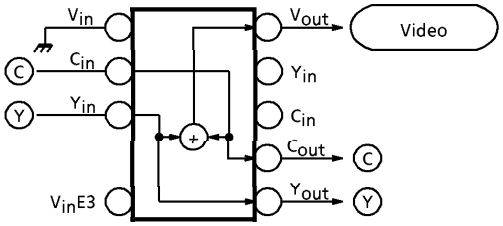
TERMINAL	INPUT	BUS	
		BIT	DATA
$V_{in}S1$	L	D_{31}	1
	H		0
$V_{in}S2$	L	D_{32}	1
	H		0
$V_{in}S3$	L	D_{33}	1
	H		0

ADC ident

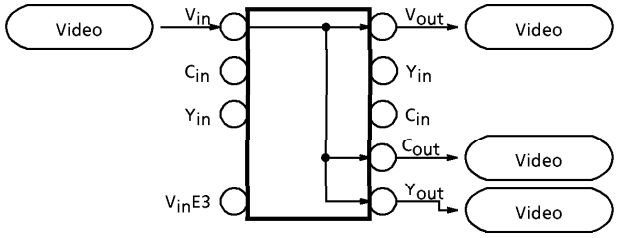
TERMINAL	INPUT	BUS	
		BIT	DATA
I/O1	L	D_{34}	1
	H		0
I/O2	L	D_{35}	1
	H		0
I3	L	D_{36}	1
	H		0
I4	L	D_{37}	1
	H		0

MODE EXPLANATION

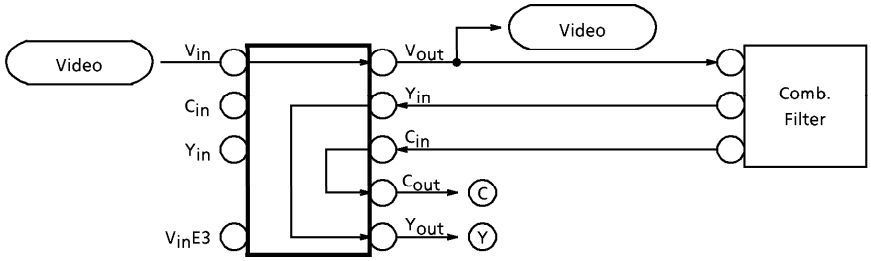
<S-terminal input mode>



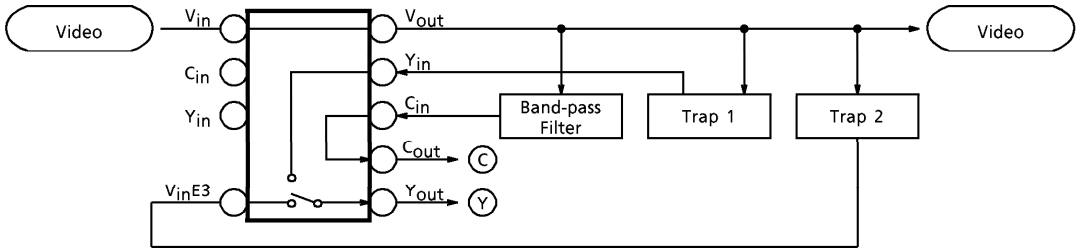
<Video input mode>



<Comb.1 input mode>



<Comb.2 input mode>

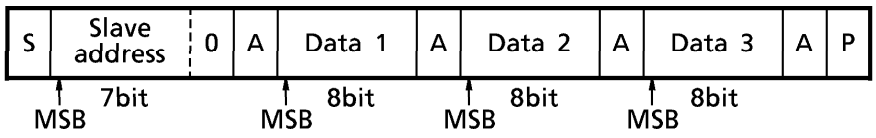


I²C BUS CONTROLLED FORMAT SUMMARY

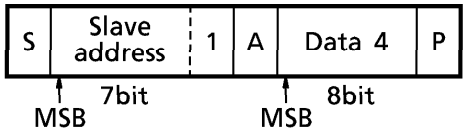
Bus Controlled format of TA8851CN is based on I²C Bus Control format of Philips.

Data transfer format

Write :

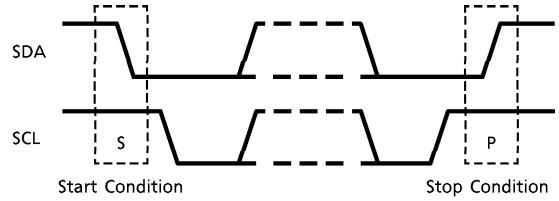


Read :

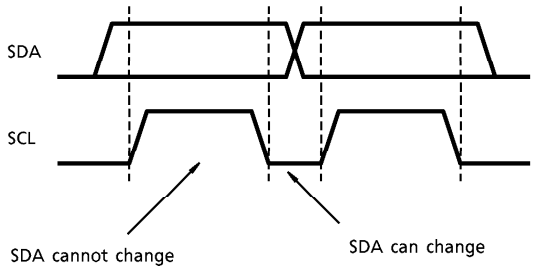


S : Start Condition
P : Stop Condition
A : Acknowledge

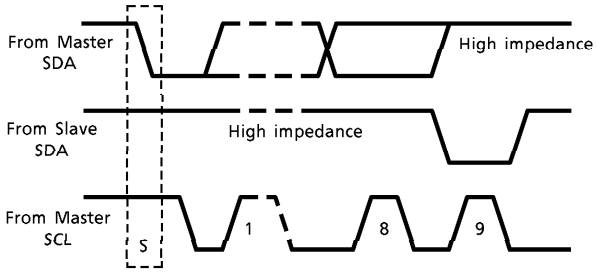
(1) Start condition, stop condition



(2) Bit transfer



(3) Acknowledge



(4) Slave address

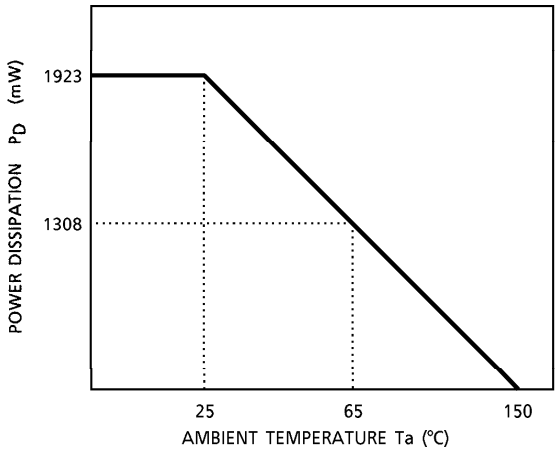
A6	A5	A4	A3	A2	A1	A0	R/$\overline{W}$
1	0	0	1	0	0	0	1/0

Purchase of TOSHIBA I²C components conveys a license under the Philips I²C Patent Rights to use these components in an I²C system, provided that the system conforms to the I²C Standard Specification as defined by Philips.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	13	V
Power Dissipation	$P_D$max	1923 (Note)	mW
Input Signal Voltage	e_{in}	5	V_{p-p}
Operating Temperature	T_{opr}	− 20~65	°C
Storage Temperature	T_{stg}	− 55~150	°C

(Note) When using the device at above Ta = 25°C, decrease the power dissipation by 15.4mW for each increase of 1°C.



RECOMMENDED OPERATING CONDITION

PIN No.	PIN NAME	MIN.	TYP.	MAX.	UNIT
18	V_{CC}	8.1	9.0	9.9	V

ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS

DC voltage characteristics (Unless other wise specified, V_{CC} = 9V, Ta = 25°C)

PIN No.	PIN NAME	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
1	$L_{in}E2$	V_1	1	—	5.0	5.2	5.4	V
2	$V_{in}E2$	V_2		—	5.0	5.2	5.4	
3	$R_{in}E2$	V_3		—	5.0	5.2	5.4	
4	$L_{in}E1$	V_4		—	5.0	5.2	5.4	
5	$V_{in}E1$	V_5		—	5.0	5.2	5.4	
6	$R_{in}E1$	V_6		—	5.0	5.2	5.4	
7	$V_{in}S1$	V_7		—	5.0	5.2	5.4	
8	$L_{in}S1$	V_8		—	5.0	5.2	5.4	
9	$Y_{in}S1$	V_9		—	5.0	5.2	5.4	
10	$R_{in}S1$	V_{10}		—	5.0	5.2	5.4	
11	$C_{in}S1$	V_{11}		—	5.0	5.2	5.4	
13	$V_{in}S2$	V_{13}		—	5.0	5.2	5.4	
14	$L_{in}S2$	V_{14}		—	5.0	5.2	5.4	
15	$Y_{in}S2$	V_{15}		—	5.0	5.2	5.4	
16	$R_{in}S2$	V_{16}		—	5.0	5.2	5.4	
17	$C_{in}S2$	V_{17}		—	5.0	5.2	5.4	
19	$V_{in}S3$	V_{19}		—	5.0	5.2	5.4	
20	$L_{in}S3$	V_{20}		—	5.0	5.2	5.4	
21	$Y_{in}S3$	V_{21}		—	5.0	5.2	5.4	
22	$R_{in}S3$	V_{22}		—	5.0	5.2	5.4	
23	$C_{in}S3$	V_{23}		—	5.0	5.2	5.4	
25	MUTE	V_{25}		—	—	1.5	—	
26	SDA	V_{26}		—	—	4.2	—	
27	SCL	V_{27}		—	—	4.2	—	
28	I / O1	V_{28}		—	8.5	9.0	—	
29	I / O2	V_{29}		—	8.5	9.0	—	
30	$C_{in}2$	V_{30}		—	5.0	5.2	5.4	
31	O3	V_{31}		—	8.5	9.0	—	
32	$C_{out}2$	V_{32}		—	3.4	3.7	4.0	
33	$R_{out}2$	V_{33}		—	3.7	4.0	4.3	
34	$Y_{out}2$	V_{34}		—	3.4	3.7	4.0	
35	$L_{out}2$	V_{35}		—	3.7	4.0	4.3	
36	$V_{out}2$	V_{36}		—	2.3	2.8	3.3	
37	CLAMP2	V_{37}		—	2.7	3.2	3.7	
38	$Y_{in}2$	V_{38}		—	5.0	5.2	5.4	
39	$R_{out}TV$	V_{39}		—	3.7	4.0	4.3	
40	$C_{in}1$	V_{40}		—	5.0	5.2	5.4	
41	$L_{out}TV$	V_{41}		—	3.7	4.0	4.3	
42	$C_{out}1$	V_{42}		—	3.4	3.7	4.0	
43	$R_{out}1$	V_{43}		—	3.7	4.0	4.3	

PIN No.	PIN NAME	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
44	$Y_{out}1$	V_{44}	1	—	3.4	3.7	4.0	V
45	$L_{out}1$	V_{45}		—	3.7	4.0	4.3	
46	$V_{out}1$	V_{46}		—	2.3	2.8	3.3	
47	CLAMP1	V_{47}		—	2.7	3.2	3.7	
48	$Y_{in}1$	V_{48}		—	5.0	5.2	5.4	
49	$R_{in}E3$	V_{49}		—	5.0	5.2	5.4	
50	$V_{in}E3$	V_{50}		—	5.0	5.2	5.4	
51	$L_{in}E3$	V_{51}		—	5.0	5.2	5.4	
52	$R_{in}E4$	V_{52}		—	5.0	5.2	5.4	
53	$V_{in}E4$	V_{53}		—	5.0	5.2	5.4	
54	$L_{in}E4$	V_{54}		—	5.0	5.2	5.4	

DC current characteristics (Unless other wise specified, V_{CC} = 9V, Ta = 25°C)

PIN No.	PIN NAME	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
18	V_{CC}	I_{CC}	1	—	48	60	80	mA

AC CHARACTERISTICS (Unless otherwise specified, V_{CC} = 9V, Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Clamp Current		I_{DIS}	2	Discharge current	11	17	28	μA
		I_{CHR}		charge current	0.50	1.25	1.80	mA
Output Resistance		$R_{M\text{-}AUD}$	2	—	50	100	150	Ω
		$R_{S\text{-}AUD}$		—	65	130	195	
		$R_{T\text{-}AUD}$		—	40	80	120	
		$R_{M\text{-}VID}$		—	25	50	75	
		$R_{S\text{-}VID}$		—	50	100	150	
		$R_{M\text{-}Y/C}$		—	25	50	75	
		$R_{S\text{-}Y/C}$		—	40	80	120	
Input Resistance		Ri_{AUD}	2	—	49	70	100	kΩ
		Ri_{VID}		—	20	30	40	
		$Ri_{Y/C}$		—	20	30	40	
Video Input Dynamic Range	(Main)	$Vd_{VID}1$	2	(Note 1)	1.6	2.1	—	$V_{p\text{-}p}$
	(Sub)	$Vd_{VID}2$			1.6	2.1	—	
	(Clamp off)	$Vd_{VID}3$			2.4	2.8	—	
Y / C Input Dynamic Range	(Main)	$Vd_{Y/C}1$	2	(Note 2)	2.4	2.8	—	$V_{p\text{-}p}$
	(Sub)	$Vd_{Y/C}2$			2.4	2.8	—	
Comb Input Dynamic Range	(Main)	$Vd_{COM}1$			5.1	6.5	—	
	(Sub)	$Vd_{COM}2$			5.1	6.5	—	
S Video Dynamic Range	(Main)	$Vd_{S\text{-}V}1$	2	(Note 3)	1.6	2.1	—	$V_{p\text{-}p}$
	(Sub)	$Vd_{S\text{-}V}2$			1.6	2.1	—	
	(Clamp off)	$Vd_{S\text{-}V}3$			2.4	2.8	—	
Monochrome Mode Dynamic Range	(Main)	$Vd_{B/W}1$	2	(Note 4)	1.6	2.1	—	$V_{p\text{-}p}$
	(Sub)	$Vd_{B/W}2$			1.6	2.1	—	

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Video Gain	(Main)	$G_{VID}1$	2	(Note 5)	5.7	6.2	6.7	dB
	(Sub)	$G_{VID}2$			5.7	6.2	6.7	
	(Clamp Off)	$G_{VID}3$			5.8	6.3	6.8	
Y / C Gain	(Main)	$G_{Y/C}1$	2	(Note 6)	5.9	6.4	6.9	dB
	(Sub)	$G_{Y/C}2$			5.9	6.4	6.9	
Comb Gain	(Main)	$G_{COM}1$			− 0.5	0	0.5	
	(Sub)	$G_{COM}2$			− 0.5	0	0.5	
S Video Gain	(Main)	$G_{S-V}1$	2	(Note 7)	5.7	6.2	6.7	dB
	(Sub)	$G_{S-V}2$			5.7	6.2	6.7	
	(Clamp Off)	$G_{S-V}3$			6.0	6.5	7.0	
B / W Mode Gain	(Main)	$G_{B/W}1$	2	(Note 8)	5.7	6.2	6.7	dB
	(Sub)	$G_{B/W}2$			5.7	6.2	6.7	
Video Switch Crosstalk	(Main)	$C_{VID}1$	2	(Note 9)	50	60	—	dB
	(Sub)	$C_{VID}2$			50	60	—	
	(Clamp Off)	$C_{VID}3$		(Note 12)	50	60	—	
Y Switch Crosstalk	(Main)	C_Y1	2	(Note 10)	50	60	—	dB
	(Sub)	C_Y2			50	60	—	
C Switch Crosstalk	(Main)	C_C1	2	(Note 11)	50	60	—	dB
	(Sub)	C_C2			50	60	—	
Video Mute Attenuation		G_{VM}	2	(Note 13)	50	60	—	dB
Video Frequency Response	(Main)	$f_{VID}1$	2	(Note 14)	9.0	—	—	MHz
	(Sub)	$f_{VID}2$			9.0	—	—	
	(Clamp Off)	$f_{VID}3$			9.0	—	—	
Y / C Frequency Response	(Main)	$f_{Y/C}1$	2	(Note 15)	9.0	—	—	MHz
	(Sub)	$f_{Y/C}2$			9.0	—	—	
Comb Frequency Response	(Main)	$f_{COM}1$			9.0	—	—	
	(Sub)	$f_{COM}2$			9.0	—	—	
S Video Frequency Response	(Main)	$f_{S-V}1$	2	(Note 16)	9.0	—	—	MHz
	(Sub)	$f_{S-V}2$			9.0	—	—	
	(Clamp Off)	$f_{S-V}3$			9.0	—	—	
B / W Mode Frequency Response	(Main)	$f_{B/W}1$	2	(Note 17)	9.0	—	—	MHz
	(Sub)	$f_{B/W}2$			9.0	—	—	
Clamp Level		C_L	2	(Note 18)	—	21	—	%
Audio Dynamic Range		Vd_{AUD}	2	(Note 19)	5.0	6.0	—	V_{p-p}
Audio Gain		G_{AUD}	2	(Note 20)	− 0.5	0	0.5	dB
Audio Frequency Response		f_{AUD}	2	(Note 21)	0.1	3.0	—	MHz
Audio Switch Crosstalk		C_{AUD}	2	(Note 22)	60	70	—	dB
Audio Mute Attenuation		G_{AM}	2	(Note 23)	60	70	—	dB
Audio Select Offset		ΔV_{AUD}	2	(Note 24)	− 30	0	30	mV
S Input Discriminating Voltage		V_{thS}	2	(Note 25)	2.4	2.6	2.8	V
ADC Input Discriminating Voltage		V_{thADC}	2	(Note 26)	1.8	2.3	2.8	V
External Mute-ON Voltage		V_{thMUTE}	2	(Note 27)	1.0	1.5	2.0	V
DAC Output Low Level Voltage		V_{DAC}	2	(Note 28)	0	—	0.5	V

TEST CONDITIONS

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
1-(1)	V Input Dynamic Range (Main)	$V_{in}E2$	S_2-a , others-b / off	****0110	(1) V_1 15kHz, variable-amplitude input. (2) For each, measure the amplitude of V_1 at which the waveform on pin 46 is distorted.
		$V_{in}E1$	S_5-a , others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , others-b / off	****0100	
				DATA 3	
1-(2)	V Input Dynamic Range (Sub)	$V_{in}E2$	S_2-a , others-b / off	****0110	(1) V_1 15kHz, Variable-amplitude input. (2) For each, measure the amplitude of V_1 at which the waveform on pin 36 is distorted.
		$V_{in}E1$	S_5-a , others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, others-b / off	****0010	
		$V_{in}S_3$	S_{19A}-a, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , others-b / off	****0100	
				DATA 2	
1-(3)	V Input Dynamic Range (Clamp Off) (Main)	$V_{in}E2$	S_2-a , S_{47}-on, others-b / off	****0110	(1) V_1 15kHz, Variable-amplitude input, V_3 = 0V. (2) For each, measure the amplitude of V_1 at which the waveform on pin 46 is distorted.
		$V_{in}E1$	S_5-a , S_{47}-on, others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , S_{47}-on, others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, S_{47}-on, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, S_{47}-on, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , S_{47}-on, others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , S_{47}-on, others-b / off	****0100	
				DATA 3	
1-(4)	V Input Dynamic Range (Clamp Off) (Sub)	$V_{in}E2$	S_2-a , S_{37}-on, others-b / off	****0110	(1) V_1 15kHz, variable-amplitude input, V_3 = 0V. (2) For each, measure the amplitude of V_1 at which the waveform on pin 36 is distorted.
		$V_{in}E1$	S_5-a , S_{37}-on, others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , S_{37}-on, others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, S_{37}-on, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, S_{37}-on, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , S_{37}-on, others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , S_{37}-on, others-b / off	****0100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
2-(1)	YC Input Dynamic Range (Main)	$Y_{in}S1$	S_9-a , others-b / off	11111011	Measure the amplitude in the same way using pin 44.
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$Y_{in}1$	S_{48}-a, others-b / off	0101****	
		$V_{in}E3$	S_{50}-a, others-b / off	0100****	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	Measure the amplitude in the same way using pin 42.
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
		$C_{in}1$	S_{40}-a, others-b / off	0101****	
2-(2)	YC Input Dynamic Range (Sub)			DATA 3	Measure the amplitude in the same way using pin 34.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$Y_{in}2$	S_{38}-a, others-b / off	0101****	
		$V_{in}E4$	S_{53}-a, others-b / off	0100****	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	Measure the amplitude in the same way using pin 32.
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
		$C_{in}2$	S_{30}-a, others-b / off	0101****	
3-(1)	S Video Dynamic Range (Main)			DATA 2	Measure the amplitude in the same way using pin 46.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
3-(2)	S Video Dynamic Range (Sub)			DATA 3	Measure the amplitude in the same way using pin 36.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
3-(3)	S Video Dynamic Range (Clamp Off) (Main)	$Y_{in}S1$	S_9-a , S_{47}-on, others-b / off	11111011	Measure the amplitude in the same way using pin 46.
		$Y_{in}S2$	S_{15}-a , S_{47}-on, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a , S_{47}-on, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a , S_{47}-on, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a , S_{47}-on, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a , S_{47}-on, others-b / off	11111001	
				DATA 3	
3-(4)	S Video Dynamic Range (Clamp Off) (Sub)	$Y_{in}S1$	S_9-a , S_{37}-on, others-b / off	11111011	Measure the amplitude in the same way using pin 36.
		$Y_{in}S2$	S_{15}-a , S_{37}-on, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a , S_{37}-on, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a , S_{37}-on, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a , S_{37}-on, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a , S_{37}-on, others-b / off	11111001	
				DATA 2	
4-(1)	B / W Mode Dynamic Range (Main)	$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pins 44 and 42 to find the smaller one.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	
				DATA 3	
4-(2)	B / W Mode Dynamic Range (Sub)	$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pins 34 and 32 to find the smaller one.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
5-(1)	Video Gain (Main)	$V_{in}E2$	S_2-a , others-b / off	****0110	(1) V_1 15kHz, $1V_{p-p}$ input. (2) For each, measure the amplitude on pin 46 to find the gain.
		$V_{in}E1$	S_5-a , others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , others-b / off	****0100	
5-(2)	Video Gain (Sub)			DATA 3	(1) V_1 15kHz, $1V_{p-p}$ input. (2) For each, measure the amplitude on pin 36 to find the gain.
		$V_{in}E2$	S_2-a , others-b / off	****0110	
		$V_{in}E1$	S_5-a , others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , others-b / off	****0100	
5-(3)	Video Gain (Clamp Off) (Main)			DATA 2	(1) V_1 15kHz, $1V_{p-p}$ input. (2) For each, measure the amplitude on pin 46 to find the gain.
		$V_{in}E2$	S_2-a , S_{47}-on, others-b / off	****0110	
		$V_{in}E1$	S_5-a , S_{47}-on, others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , S_{47}-on, others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, S_{47}-on, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, S_{47}-on, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , S_{47}-on, others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , S_{47}-on, others-b / off	****0100	
5-(4)	Video Gain (Clamp Off) (Sub)			DATA 3	(1) V_1 15kHz, $1V_{p-p}$ input. (2) For each, measure the amplitude on pin 36 to find the gain.
		$V_{in}E2$	S_2-a , S_{37}-on, others-b / off	****0110	
		$V_{in}E1$	S_5-a , S_{37}-on, others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , S_{37}-on, others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, S_{37}-on, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, S_{37}-on, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , S_{37}-on, others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , S_{37}-on, others-b / off	****0100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
6-(1)	Y / C Gain (Main)	$Y_{in}S1$	S_9-a , others-b / off	11111011	Measure the amplitude in the same way using pin 44.
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$Y_{in}1$	S_{48}-a, others-b / off	0101****	
		$V_{in}E3$	S_{50}-a, others-b / off	0100****	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	Measure the amplitude in the same way using pin 42.
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
		$C_{in}1$	S_{40}-a, others-b / off	0101****	
6-(2)	Y / C Gain (Sub)			DATA 3	Measure the amplitude in the same way using pin 34.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$Y_{in}2$	S_{38}-a, others-b / off	0101****	
		$V_{in}E4$	S_{53}-a, others-b / off	0100****	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	Measure the amplitude in the same way using pin 32.
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
		$C_{in}2$	S_{30}-a, others-b / off	0101****	
7-(1)	S Video Gain (Main)			DATA 2	Measure the amplitude in the same way using pin 46.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
7-(2)	S Video Gain (Sub)			DATA 3	Measure the amplitude in the same way using pin 36.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
7-(3)	S Video Gain (Clamp Off) (Sub)	$Y_{in}S1$	S_9-a , S_{37}-on, others-b / off	11111011	Measure the amplitude in the same way using pin 36.
		$Y_{in}S2$	S_{15}-a , S_{37}-on, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a , S_{37}-on, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a , S_{37}-on, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a , S_{37}-on, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a , S_{37}-on, others-b / off	11111001	
				DATA 3	
7-(4)	S Video Gain (Clamp Off) (Main)	$Y_{in}S1$	S_9-a , S_{47}-on, others-b / off	11111011	Measure the amplitude in the same way using pin 46.
		$Y_{in}S2$	S_{15}-a , S_{47}-on, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a , S_{47}-on, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a , S_{47}-on, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a , S_{47}-on, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a , S_{47}-on, others-b / off	11111001	
				DATA 2	
8-(1)	B / W Mode Gain (Main)	$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pin 44.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	
		$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pin 42.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 3	
8-(2)	B / W Mode Gain (Sub)	$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pin 34.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	
		$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pin 32.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
9-(1)	V Switch Crosstalk (Main)	$V_{in}E2$	All-b / off except those specified on the left	****0110	(1) V_1 3.58MHz, $1V_{p-p}$ input. (2) While sequentially switching S_2, S_5, S_{7A}, S_9, S_{11}, S_{13A}, S_{15}, S_{17}, S_{19A}, S_{21}, S_{23}, S_{30}, S_{38}, S_{40}, S_{48}, S_{50}, and S_{53} to 'a', measure the maximum level of crosstalk to pin 46 and find its ratio to output in selected mode.
		$V_{in}E1$	All-b / off except those specified on the left	****0111	
		$V_{in}S1$	All-b / off except those specified on the left	****0011	
		$V_{in}S2$	All-b / off except those specified on the left	****0010	
		$V_{in}S3$	All-b / off except those specified on the left	****0001	
		$V_{in}E3$	All-b / off except those specified on the left	****0101	
		$V_{in}E4$	All-b / off except those specified on the left	****0100	
		$Y_{in}S1$, $C_{in}S1$	All-b / off except those specified on the left	****1011	
		$Y_{in}S2$, $C_{in}S2$	All-b / off except those specified on the left	****1010	
		$Y_{in}S3$, $C_{in}S3$	All-b / off except those specified on the left	****1001	
9-(2)	V Switch Crosstalk (Sub)			DATA 3	(1) V_1 3.58MHz, $1V_{p-p}$ input. (2) While sequentially switching S_2, S_5, S_{7A}, S_9, S_{11}, S_{13A}, S_{15}, S_{17}, S_{19A}, S_{21}, S_{23}, S_{30}, S_{38}, S_{40}, S_{48}, S_{50}, and S_{53} to 'a', measure the maximum level of crosstalk to pin 36 and find its ratio to output in selected mode.
		$V_{in}E2$	All-b / off except those specified on the left	****0110	
		$V_{in}E1$	All-b / off except those specified on the left	****0111	
		$V_{in}S1$	All-b / off except those specified on the left	****0011	
		$V_{in}S2$	All-b / off except those specified on the left	****0010	
		$V_{in}S3$	All-b / off except those specified on the left	****0001	
		$V_{in}E3$	All-b / off except those specified on the left	****0101	
		$V_{in}E4$	All-b / off except those specified on the left	****0100	
		YinS1, CinS1	All-b / off except those specified on the left	****1011	
		YinS2, CinS2	All-b / off except those specified on the left	****1010	
		YinS3, CinS3	All-b / off except those specified on the left	****1001	
10-(1)	Y Switch Crosstalk (Main)			DATA 2	Measure the maximum level of crosstalk in the same way using pin 44.
		$Y_{in}S1$	All-b / off except those specified on the left	11111011	
		$Y_{in}S2$	All-b / off except those specified on the left	11111010	
		$Y_{in}S3$	All-b / off except those specified on the left	11111001	
		$Y_{in}1$	All-b / off except those specified on the left	0101****	
		$V_{in}E3$	All-b / off except those specified on the left	0100****	
10-(2)	Y Switch Crosstalk (Sub)			DATA 3	Measure the maximum level of crosstalk in the same way using pin 34.
		$Y_{in}S1$	All-b / off except those specified on the left	11111011	
		$Y_{in}S2$	All-b / off except those specified on the left	11111010	
		$Y_{in}S3$	All-b / off except those specified on the left	11111001	
		$Y_{in}2$	All-b / off except those specified on the left	0101****	
		$V_{in}E3$	All-b / off except those specified on the left	0100****	

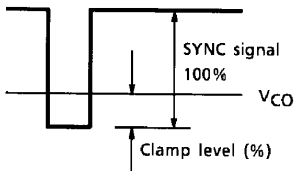
NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
11-(1)	C Switch Crosstalk (Main)	$C_{in}S1$	All-b / off except those specified on the left	11111011	Measure the maximum level of crosstalk in the same way using pin 42.
		$C_{in}S2$	All-b / off except those specified on the left	11111010	
		$C_{in}S3$	All-b / off except those specified on the left	11111001	
		$C_{in}1$	All-b / off except those specified on the left	0101****	
11-(2)	C Switch Crosstalk (Sub)			DATA 3	Measure the maximum level of crosstalk in the same way using pin 32.
		$C_{in}S1$	All-b / off except those specified on the left	11111011	
		$C_{in}S2$	All-b / off except those specified on the left	11111010	
		$C_{in}S3$	All-b / off except those specified on the left	11111001	
		$C_{in}2$	All-b / off except those specified on the left	0101****	
12-(1)	V Switch Crosstalk (Clamp Off) (Main)			DATA 2	(1) S_{47}-ON, V_3 = 0V. (2) Measure the maximum level of crosstalk in the same way using pin 46.
		$V_{in}E2$	All-b / off except those specified on the left	****0110	
		$V_{in}E1$	All-b / off except those specified on the left	****0111	
		$V_{in}S1$	All-b / off except those specified on the left	****0011	
		$V_{in}S2$	All-b / off except those specified on the left	****0010	
		$V_{in}S3$	All-b / off except those specified on the left	****0001	
		$V_{in}E3$	All-b / off except those specified on the left	****0101	
		$V_{in}E4$	All-b / off except those specified on the left	****0100	
		$Y_{in}S1$, $C_{in}S1$	All-b / off except those specified on the left	****1011	
		$Y_{in}S2$, $C_{in}S2$	All-b / off except those specified on the left	****1010	
		$Y_{in}S3$, $C_{in}S3$	All-b / off except those specified on the left	****1001	
12-(2)	V Switch Crosstalk (Clamp Off) (Sub)			DATA 3	(1) S_{37}-ON, V_3 = 0V. (2) Measure the maximum level of crosstalk in the same way using pin 36.
		$V_{in}E2$	All-b / off except those specified on the left	****0110	
		$V_{in}E1$	All-b / off except those specified on the left	****0111	
		$V_{in}S1$	All-b / off except those specified on the left	****0011	
		$V_{in}S2$	All-b / off except those specified on the left	****0010	
		$V_{in}S3$	All-b / off except those specified on the left	****0001	
		$V_{in}E3$	All-b / off except those specified on the left	****0101	
		$V_{in}E4$	All-b / off except those specified on the left	****0100	
		$Y_{in}S1$, $C_{in}S1$	All-b / off except those specified on the left	****1011	
		$Y_{in}S2$, $C_{in}S2$	All-b / off except those specified on the left	****1010	
		$Y_{in}S3$, $C_{in}S3$	All-b / off except those specified on the left	****1001	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
13	Mute Attenuation	$V_{out}1$ Output	All-b / off except those specified on the left	****0000	(1) V_1 3.58MHz, $1V_{p-p}$ input. (2) While sequentially switching S_2, S_5, S_{7A}, S_9, S_{11}, S_{13A}, S_{15}, S_{17}, S_{19A}, S_{21}, S_{23}, S_{30}, S_{38}, S_{40}, S_{48}, S_{50}, and S_{53} to 'a', measure the maximum level of crosstalk to pin 46 and find its ratio to output in selected mode.
		$Y_{out}1$ Output	All-b / off except those specified on the left	00******	Measure the maximum level of crosstalk in the same way using pin 44.
		$C_{out}1$ Output	All-b / off except those specified on the left	00******	Measure the maximum level of crosstalk in the same way using pin 42.
		$V_{out}2$ Output	All-b / off except those specified on the left	DATA 3 ****0000	Measure the maximum level of crosstalk in the same way using pin 36.
		$Y_{out}2$ Output	All-b / off except those specified on the left	00******	Measure the maximum level of crosstalk in the same way using pin 34.
		$C_{out}2$ Output	All-b / off except those specified on the left	00******	Measure the maximum level of crosstalk in the same way using pin 32.
		$V_{out}1$ Output (Clamp Off)	All-b / off except those specified on the left	DATA 2 ****0000	(1) S_{47}-ON, V_3 = 0V (2) Measure the maximum level of crosstalk in the same way using pin 46.
		$V_{out}2$ Output (Clamp Off)	All-b / off except those specified on the left	DATA 3 ****0000	(1) S_{47}-ON, V_3 = 0V (2) Measure the maximum level of crosstalk in the same way using pin 36.

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
14-(1)	Video Frequency Response (Main)	$V_{in}E2$	S_2-a , others-b / off	****0110	(1) V_1 frequency-variable, $1V_{p-p}$ input. (2) For each, measure the output amplitude on pin 46 to find the frequency equivalent to −3dB.
		$V_{in}E1$	S_5-a , others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , others-b / off	****0100	
14-(2)	Video Frequency Response (Sub)			DATA 3	(1) V_1 15kHz, $1V_{p-p}$ input (2) For each, measure the output amplitude on pin 36 to find the frequency equivalent to −3dB.
		$V_{in}E2$	S_2-a , others-b / off	****0110	
		$V_{in}E1$	S_5-a , others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , others-b / off	****0100	
14-(3)	Video Frequency Response (Clamp Off) (Main)			DATA 2	(1) V_1 frequency-variable, $1V_{p-p}$ input, V_3 = 0V. (2) For each, measure the output amplitude on pin 46 to find the frequency equivalent to −3dB.
		$V_{in}E2$	S_2-a , S_{47}-on, others-b / off	****0110	
		$V_{in}E1$	S_5-a , S_{47}-on, others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , S_{47}-on, others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, S_{47}-on, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, S_{47}-on, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , S_{47}-on, others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , S_{47}-on, others-b / off	****0100	
14-(4)	Video Frequency Response (Clamp Off) (Sub)			DATA 3	(1) V_1 frequency-variable, $1V_{p-p}$ input, V_3 = 0V. (2) For each, measure the output amplitude on pin 36 to find the frequency equivalent to −3dB.
		$V_{in}E2$	S_2-a , S_{37}-on, others-b / off	****0110	
		$V_{in}E1$	S_5-a , S_{37}-on, others-b / off	****0111	
		$V_{in}S1$	S_{7A}-a , S_{37}-on, others-b / off	****0011	
		$V_{in}S2$	S_{13A}-a, S_{37}-on, others-b / off	****0010	
		$V_{in}S3$	S_{19A}-a, S_{37}-on, others-b / off	****0001	
		$V_{in}E3$	S_{50}-a , S_{37}-on, others-b / off	****0101	
		$V_{in}E4$	S_{53}-a , S_{37}-on, others-b / off	****0100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
15-(1)	Y / C Frequency Response (Main)	$Y_{in}S1$	S_9-a , others-b / off	11111011	Measure the amplitude in the same way using pin 44.
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$Y_{in}1$	S_{48}-a, others-b / off	0101****	
		$V_{in}E3$	S_{50}-a, others-b / off	0100****	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	Measure the amplitude in the same way using pin 42.
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
		$C_{in}1$	S_{40}-a, others-b / off	0101****	
15-(2)	Y / C Frequency Response (Sub)			DATA 3	Measure the amplitude in the same way using pin 34.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$Y_{in}2$	S_{38}-a, others-b / off	0101****	
		$V_{in}E4$	S_{53}-a, others-b / off	0100****	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	Measure the amplitude in the same way using pin 32.
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
		$C_{in}2$	S_{30}-a, others-b / off	0101****	
16-(1)	S Video Frequency Response (Main)			DATA 2	Measure the amplitude in the same way using pin 46.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	
16-(2)	S Video Frequency Response (Sub)			DATA 3	Measure the amplitude in the same way using pin 36.
		$Y_{in}S1$	S_9-a , others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a, others-b / off	11111001	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
16-(3)	S Video Frequency Response (Clamp Off) (Main)	$Y_{in}S1$	S_{9}-a , S_{47}-on, others-b / off	11111011	Measure the amplitude in the same way using pin 46.
		$Y_{in}S2$	S_{15}-a , S_{47}-on, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a , S_{47}-on, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a , S_{47}-on, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a , S_{47}-on, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a , S_{47}-on, others-b / off	11111001	
16-(4)	S Video Frequency Response (Clamp Off) (Sub)			DATA 3	Measure the amplitude in the same way using pin 36.
		$Y_{in}S1$	S_{9}-a , S_{37}-on, others-b / off	11111011	
		$Y_{in}S2$	S_{15}-a , S_{37}-on, others-b / off	11111010	
		$Y_{in}S3$	S_{21}-a , S_{37}-on, others-b / off	11111001	
		$C_{in}S1$	S_{11}-a , S_{37}-on, others-b / off	11111011	
		$C_{in}S2$	S_{17}-a , S_{37}-on, others-b / off	11111010	
		$C_{in}S3$	S_{23}-a , S_{37}-on, others-b / off	11111001	
17-(1)	B / W Mode Frequency Response (Main)			DATA 2	Measure the amplitude in the same way using pin 44.
		$V_{in}E2$	S_{2}-a , others-b / off	10100110	
		$V_{in}E1$	S_{5}-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	
		$V_{in}E2$	S_{2}-a , others-b / off	10100110	Measure the amplitude in the same way using pin 42.
		$V_{in}E1$	S_{5}-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE: SW MODE	DATA 3	MEASUREMENT METHOD
17-(2)	B / W Mode Frequency Response (Sub)	$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pin 34.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	
		$V_{in}E2$	S_2-a , others-b / off	10100110	Measure the amplitude in the same way using pin 32.
		$V_{in}E1$	S_5-a , others-b / off	10100111	
		$V_{in}S1$	S_{7A}-a , others-b / off	10100011	
		$V_{in}S2$	S_{13A}-a, others-b / off	10100010	
		$V_{in}S3$	S_{19A}-a, others-b / off	10100001	
		$V_{in}E3$	S_{50}-a , others-b / off	10100101	
		$V_{in}E4$	S_{53}-a , others-b / off	10100100	
18	Clamp Level	$V_{out}1$ Output	S_2-a , others-b / off	DATA 2 = ****0110	(1) Measure the voltage V_{CO} on pin 46 during no-signal intervals. (2) Input a V_1 NTSC signal. (3) Observe the waveform on pin 46 and find the V_{CO} level from the sync tip in percentage assuming that the SYNC signal level = 100% 
		$V_{out}2$ Output	S_2-a, others-b / off	DATA 3 = ***0110	Measure the V_{CO} level in the same way using pin 36.

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
19	Audio L Dynamic Range	$L_{in}E2$	S_1-a , others-b / off	****0110	(1) V_2 1kHz, amplitude-variable input. (2) For each, measure the amplitude of V_1 at which the waveform on pin 45 is distorted. (Data 1 D_{00} = 0 : mute off)
		$L_{in}E1$	S_4-a , others-b / off	****0111	
		$L_{in}S1$	S_8-a , others-b / off	****0011	
		$L_{in}S2$	S_{14}-a , others-b / off	****0010	
		$L_{in}S3$	S_{20}-a , others-b / off	****0001	
		$L_{in}E3$	S_{51}-a , others-b / off	****0101	
		$L_{in}E4$	S_{54A}-a, others-b / off	****0100	
				DATA 3	
		$L_{in}E2$	S_1-a , others-b / off	****0110	Measure the amplitude in the same way using pin 35. (Data 1 D_{01} = 0 : mute off)
		$L_{in}E1$	S_4-a , others-b / off	****0111	
		$L_{in}S1$	S_8-a , others-b / off	****0011	
		$L_{in}S2$	S_{14}-a , others-b / off	****0010	
		$L_{in}S3$	S_{20}-a , others-b / off	****0001	
		$L_{in}E3$	S_{51}-a , others-b / off	****0101	
		$L_{in}E4$	S_{54A}-a, others-b / off	****0100	
				DATA 2, 3	
		$L_{in}E1$	S_4-a , others-b / off	********	Measure the amplitude in the same way using pin 41. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
19	Audio R Dynamic Range	$R_{in}E2$	S_3-a , others-b / off	****0110	Measure the amplitude in the same way using pin 43. (Data 1 D_{00} = 0 : mute off)
		$R_{in}E1$	S_6-a , others-b / off	****0111	
		$R_{in}S1$	S_{10}-a , others-b / off	****0011	
		$R_{in}S2$	S_{16}-a , others-b / off	****0010	
		$R_{in}S3$	S_{22}-a , others-b / off	****0001	
		$R_{in}E3$	S_{49}-a , others-b / off	****0101	
		$R_{in}E4$	S_{52A}-a, others-b / off	****0100	
				DATA 3	
		$R_{in}E2$	S_3-a , others-b / off	****0110	Measure the amplitude in the same way using pin 33. (Data 1 D_{01} = 0 : mute off)
		$R_{in}E1$	S_6-a , others-b / off	****0111	
		$R_{in}S1$	S_{10}-a , others-b / off	****0011	
		$R_{in}S2$	S_{16}-a , others-b / off	****0010	
		$R_{in}S3$	S_{22}-a , others-b / off	****0001	
		$R_{in}E3$	S_{49}-a , others-b / off	****0101	
		$R_{in}E4$	S_{52A}-a, others-b / off	****0100	
				DATA 2, 3	
		$R_{in}E1$	S_6-a , others-b / off	********	Measure the amplitude in the same way using pin 39. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
20	Audio L Gain	$L_{in}E2$	S_1-a , others-b / off	****0110	(1) V_2 1kHz, $1V_{p-p}$ input. (2) For each, measure the output amplitude on pin 45 to find the gain. (Data 1 D_{00} = 0 : mute off)
		$L_{in}E1$	S_4-a , others-b / off	****0111	
		$L_{in}S1$	S_8-a , others-b / off	****0011	
		$L_{in}S2$	S_{14}-a , others-b / off	****0010	
		$L_{in}S3$	S_{20}-a , others-b / off	****0001	
		$L_{in}E3$	S_{51}-a , others-b / off	****0101	
		$L_{in}E4$	S_{54A}-a, others-b / off	****0100	
				DATA 3	
		$L_{in}E2$	S_1-a , others-b / off	****0110	Find the gain in the same way using pin 35. (Data 1 D_{01} = 0 : mute off)
		$L_{in}E1$	S_4-a , others-b / off	****0111	
		$L_{in}S1$	S_8-a , others-b / off	****0011	
		$L_{in}S2$	S_{14}-a , others-b / off	****0010	
		$L_{in}S3$	S_{20}-a , others-b / off	****0001	
		$L_{in}E3$	S_{51}-a , others-b / off	****0101	
		$L_{in}E4$	S_{54A}-a, others-b / off	****0100	
				DATA 2, 3	
		$L_{in}E1$	S_4-a , others-b / off	********	Find the gain in the same way using pin 41. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
20	Audio R Gain	$R_{in}E2$	S_3-a , others-b / off	****0110	Find the gain in the same way using pin 43. (Data 1 D_{00} = 0 : mute off)
		$R_{in}E1$	S_6-a , others-b / off	****0111	
		$R_{in}S1$	S_{10}-a , others-b / off	****0011	
		$R_{in}S2$	S_{16}-a , others-b / off	****0010	
		$R_{in}S3$	S_{22}-a , others-b / off	****0001	
		$R_{in}E3$	S_{49}-a , others-b / off	****0101	
		$R_{in}E4$	S_{52A}-a, others-b / off	****0100	
				DATA 3	
		$R_{in}E2$	S_3-a , others-b / off	****0110	Find the gain in the same way using pin 33. (Data 1 D_{01} = 0 : mute off)
		$R_{in}E1$	S_6-a , others-b / off	****0111	
		$R_{in}S1$	S_{10}-a , others-b / off	****0011	
		$R_{in}S2$	S_{16}-a , others-b / off	****0010	
		$R_{in}S3$	S_{22}-a , others-b / off	****0001	
		$R_{in}E3$	S_{49}-a , others-b / off	****0101	
		$R_{in}E4$	S_{52A}-a, others-b / off	****0100	
				DATA 2, 3	
		$R_{in}E1$	S_6-a , others-b / off	********	Find the gain in the same way using pin 39. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
21	Audio L Frequency Response	$L_{in}E2$	S_1-a , others-b / off	****0110	(1) V_2 frequency-variable, $1V_{p-p}$ input. (2) Measure the output amplitude on pin 45 and find the frequency equivalent to −3dB. (Data 1 D_{00} = 0 : mute off)
		$L_{in}E1$	S_4-a , others-b / off	****0111	
		$L_{in}S1$	S_8-a , others-b / off	****0011	
		$L_{in}S2$	S_{14}-a , others-b / off	****0010	
		$L_{in}S3$	S_{20}-a , others-b / off	****0001	
		$L_{in}E3$	S_{51}-a , others-b / off	****0101	
		$L_{in}E4$	S_{54A}-a, others-b / off	****0100	
				DATA 3	
		$L_{in}E2$	S_1-a , others-b / off	****0110	Measure the amplitude in the same way using pin 35. (Data 1 D_{01} = 0 : mute off)
		$L_{in}E1$	S_4-a , others-b / off	****0111	
		$L_{in}S1$	S_8-a , others-b / off	****0011	
		$L_{in}S2$	S_{14}-a , others-b / off	****0010	
		$L_{in}S3$	S_{20}-a , others-b / off	****0001	
		$L_{in}E3$	S_{51}-a , others-b / off	****0101	
		$L_{in}E4$	S_{54A}-a, others-b / off	****0100	
				DATA 2, 3	
		$L_{in}E1$	S_4-a , others-b / off	********	Measure the amplitude in the same way using pin 41. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
21	Audio R Frequency Response	$R_{in}E2$	S_3-a , others-b / off	****0110	Measure the amplitude in the same way using pin 43. (Data 1 D_{00} = 0 : mute off)
		$R_{in}E1$	S_6-a , others-b / off	****0111	
		$R_{in}S1$	S_{10}-a , others-b / off	****0011	
		$R_{in}S2$	S_{16}-a , others-b / off	****0010	
		$R_{in}S3$	S_{22}-a , others-b / off	****0001	
		$R_{in}E3$	S_{49}-a , others-b / off	****0101	
		$R_{in}E4$	S_{52A}-a, others-b / off	****0100	
				DATA 3	
		$R_{in}E2$	S_3-a , others-b / off	****0110	Measure the amplitude in the same way using pin 33. (Data 1 D_{01} = 0 : mute off)
		$R_{in}E1$	S_6-a , others-b / off	****0111	
		$R_{in}S1$	S_{10}-a , others-b / off	****0011	
		$R_{in}S2$	S_{16}-a , others-b / off	****0010	
		$R_{in}S3$	S_{22}-a , others-b / off	****0001	
		$R_{in}E3$	S_{49}-a , others-b / off	****0101	
		$R_{in}E4$	S_{52A}-a, others-b / off	****0100	
				DATA 2, 3	
		$R_{in}E1$	S_4-a , others-b / off	********	Measure the amplitude in the same way using pin 39. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2	
22	L Switch Crosstalk	$L_{in}E2$	All-b / off except those specified on the left	****0110	(1) V_2 1kHz, $1V_{p-p}$ input. (2) While sequentially switching S_1, S_3, S_4, S_6, S_{10}, S_{14}, S_{16}, S_{20}, S_{22}, S_{49}, S_{51}, S_{52A}, and S_{54A} to 'a', measure the maximum level of crosstalk to pin 45 and find its ratio to selected output. (Data 1 D_{00} = 0 : mute off)
		$L_{in}E1$	All-b / off except those specified on the left	****0111	
		$L_{in}S1$	All-b / off except those specified on the left	****0011	
		$L_{in}S2$	All-b / off except those specified on the left	****0010	
		$L_{in}S3$	All-b / off except those specified on the left	****0001	
		$L_{in}E3$	All-b / off except those specified on the left	****0101	
		$L_{in}E4$	All-b / off except those specified on the left	****0100	
				DATA 3	
		$L_{in}E2$	All-b / off except those specified on the left	****0110	Measure the maximum level of crosstalk in the same way using pin 35. (Data 1 D_{01} = 0 : mute off)
		$L_{in}E1$	All-b / off except those specified on the left	****0111	
		$L_{in}S1$	All-b / off except those specified on the left	****0011	
		$L_{in}S2$	All-b / off except those specified on the left	****0010	
		$L_{in}S3$	All-b / off except those specified on the left	****0001	
		$L_{in}E3$	All-b / off except those specified on the left	****0101	
		$L_{in}E4$	All-b / off except those specified on the left	****0100	

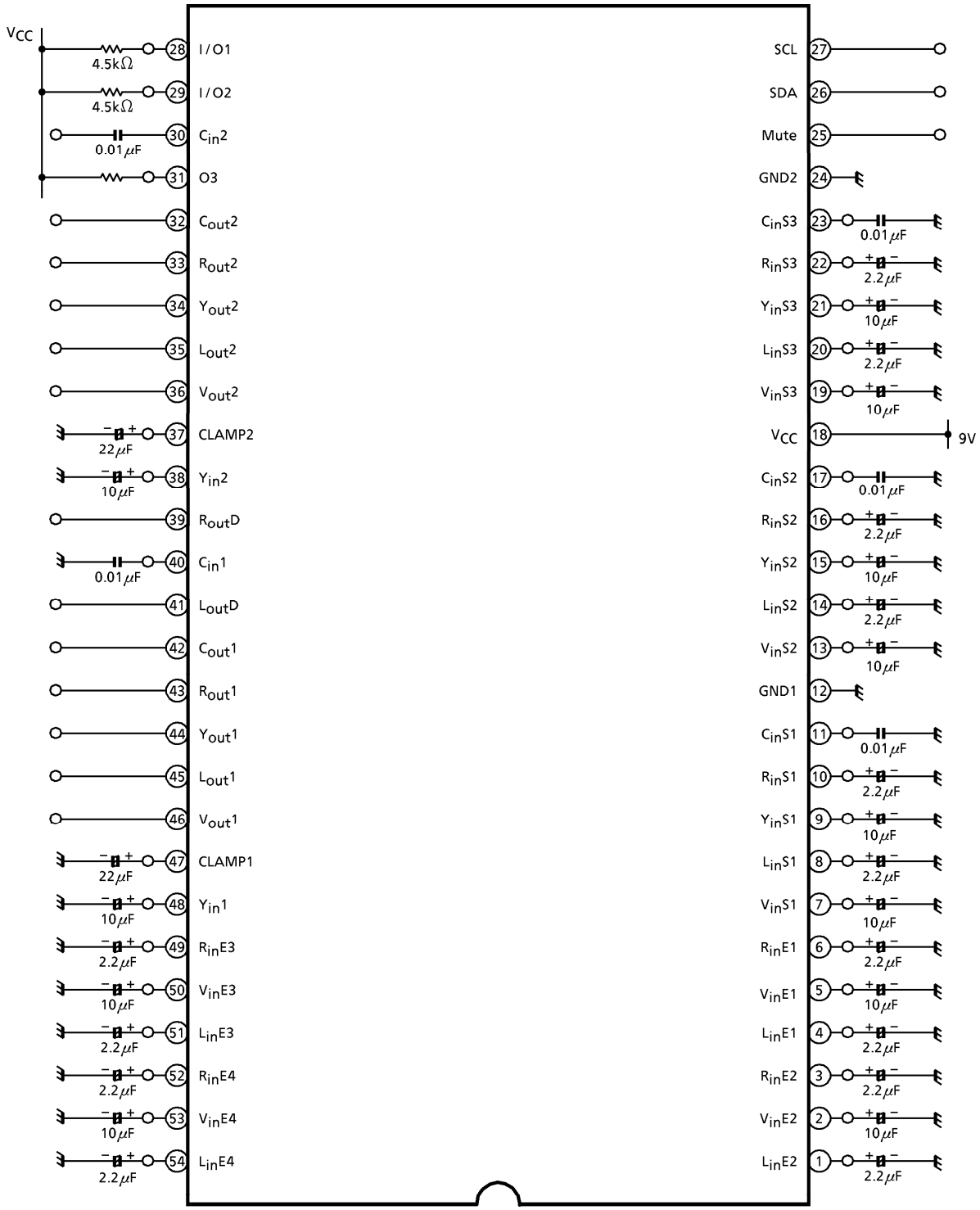
NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE SW MODE	DATA 2	MEASUREMENT METHOD
22	R Switch Crosstalk	$R_{in}E2$	All-b / off except those specified on the left	****0110	Measure the maximum level of crosstalk in the same way using pin 43. (Data 1 D_{00} = 0 : mute off)
		$R_{in}E1$	All-b / off except those specified on the left	****0111	
		$R_{in}S1$	All-b / off except those specified on the left	****0011	
		$R_{in}S2$	All-b / off except those specified on the left	****0010	
		$R_{in}S3$	All-b / off except those specified on the left	****0001	
		$R_{in}E3$	All-b / off except those specified on the left	****0101	
		$R_{in}E4$	All-b / off except those specified on the left	****0100	
				DATA 3	Measure the maximum level of crosstalk in the same way using pin 33. (Data 1 D_{01} = 0 : mute off)
		$R_{in}E2$	All-b / off except those specified on the left	****0110	
		$R_{in}E1$	All-b / off except those specified on the left	****0111	
		$R_{in}S1$	All-b / off except those specified on the left	****0011	
		$R_{in}S2$	All-b / off except those specified on the left	****0010	
		$R_{in}S3$	All-b / off except those specified on the left	****0001	
		$R_{in}E3$	All-b / off except those specified on the left	****0101	
		$R_{in}E4$	All-b / off except those specified on the left	****0100	
	TV-L Crosstalk		All-b / off except those specified on the left	DATA 2, 3 ********	Measure the maximum level of crosstalk in the same way using pin 41. (Data 1 D_{02} = 0 : mute off)
	TV-R Crosstalk		All-b / off except those specified on the left	********	Measure the maximum level of crosstalk in the same way using pin 39. (Data 1 D_{02} = 0 : mute off)

NOTE	ITEM	MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
		SW & VR MODE		MEASUREMENT METHOD
		SW MODE	DATA 2, 3	
23	L Switch Mute Attenuation	All-b / off except those specified on the left	********	(1) V_2 1kHz, $1V_{p-p}$ input. (2) Mute on (data 1 D_{00} = 1) and while sequentially switching S_1, S_3, S_4, S_6, S_8, S_{10}, S_{14}, S_{16}, S_{20}, S_{22}, S_{49}, S_{51}, S_{52A}, and S_{54A} to 'a', measure the maximum level of crosstalk to pin 45 and find its ratio to selected output.
		All-b / off except those specified on the left	********	Measure the maximum level of crosstalk in the same way using pin 35. (Data 1 D_{01} = 1 : mute on)
	R Switch Mute Attenuation	All-b / off except those specified on the left	********	Measure the maximum level of crosstalk in the same way using pin 43. (Data 1 D_{00} = 1 : mute on)
		All-b / off except those specified on the left	********	Measure the maximum level of crosstalk in the same way using pin 33. (Data 1 D_{01} = 1 : mute on)

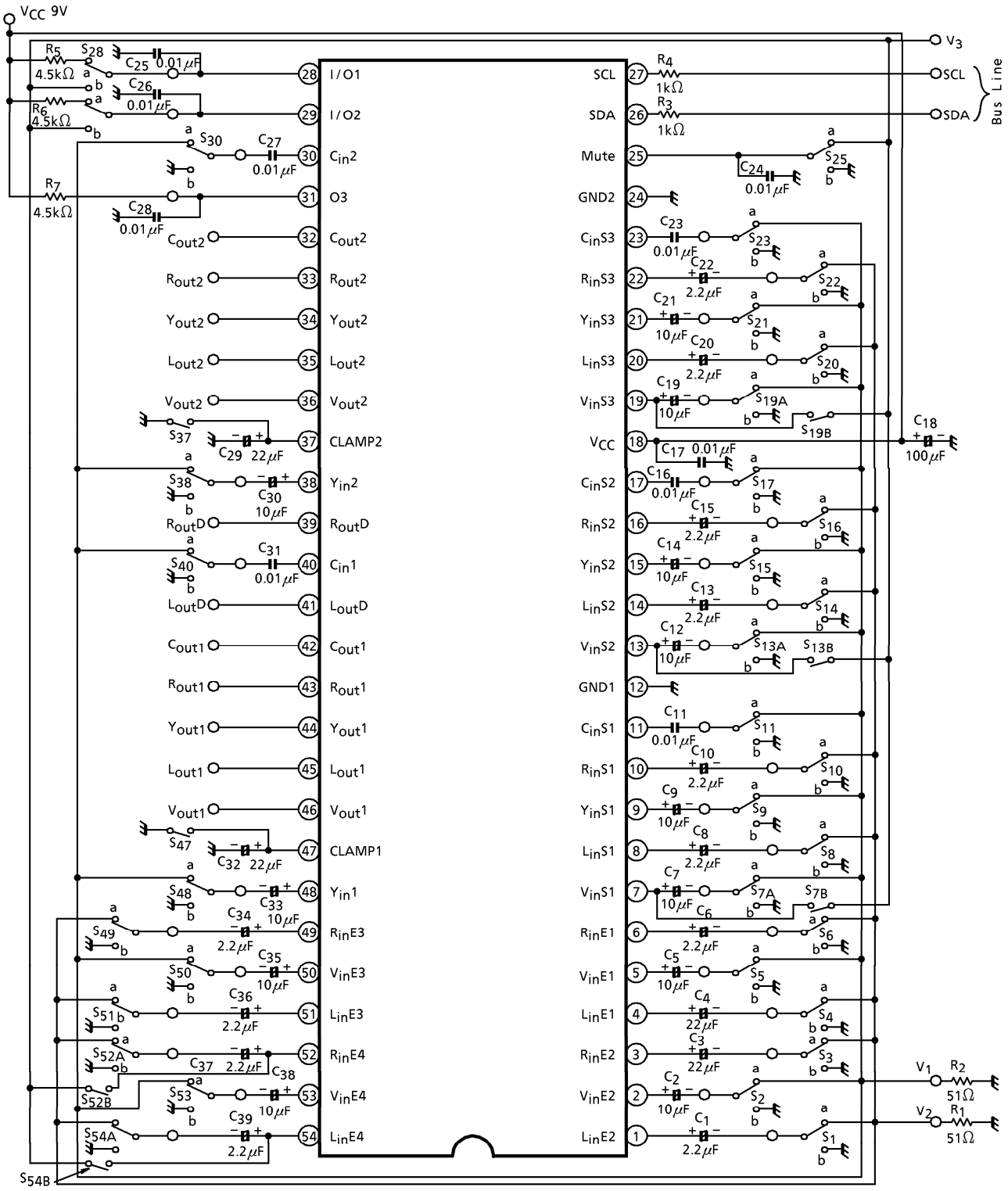
NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C)		
			SW & VR MODE		MEASUREMENT METHOD
			SW MODE	DATA 2, 3	
24	Mode Switching Offset	$L_{in}E2$	All-b / off	****0110	(1) No-signal input. (2) Measure voltage fluctuations to find the maximum value in all input modes of data 2 for pin 45, and in all input modes of data 3 for pin 35.
		$L_{in}E1$	All-b / off	****0111	
		$L_{in}S1$	All-b / off	****0011	
		$L_{in}S2$	All-b / off	****0010	
		$L_{in}S3$	All-b / off	****0001	
		$L_{in}E3$	All-b / off	****0101	
		$L_{in}E4$	All-b / off	****0100	
		$R_{in}E2$	All-b / off	****0110	Find the maximum value in the same way using pin 43 (data 2) and pin 33 (data 3).
		$R_{in}E1$	All-b / off	****0111	
		$R_{in}S1$	All-b / off	****0011	
		$R_{in}S2$	All-b / off	****0010	
		$R_{in}S3$	All-b / off	****0001	
		$R_{in}E3$	All-b / off	****0101	
		$R_{in}E4$	All-b / off	****0100	
		$L_{in}E1$	All-b / off	********	Find the maximum value in the same way using pin 41.
		$R_{in}E1$	All-b / off	********	Find the maximum value in the same way using pin 39.

NOTE	ITEM		MEASURING CONDITIONS (UNLESS OTHERWISE SPECIFIED, V_{CC} = 9V, Ta = 25±3°C) SW & VR MODE: SW MODE	SW & VR MODE: DATA 2, 3	MEASUREMENT METHOD
25	S Input Discriminating Voltage	$V_{in}S1$	S_9-a, S_{7B}-on, others-b / off	****0011	(1) V_1 1kHz, $1V_{p-p}$ input. (2) While gradually lowering the V_3 voltage, find the voltage where the output mode changes to the S mode (i.e., the voltage at which a waveform appears on pin 46). (Data 1 D_{00}, D_{01}, D_{02} = 0 : mute off)
		$V_{in}S2$	S_{15}-a, S_{13B}-on, others-b / off	****0010	
		$V_{in}S3$	S21-a, S_{19B}-on, others-b / off	****0001	
26	I Input Discriminating Voltage	I / O1	S_{28}-a , others-b / off	********	While gradually lowering the V_3 voltage, find the voltage at which the data of B34, B35, B36, and B37 changes from 0 to 1, respectively. (Data 1 D_{03}, D_{04} = 1 : I MODE)
		I / O2	S_{29}-a , others-b / off	********	
		$R_{in}E4$	S_{52B}-on , others-b / off	********	
		$L_{in}E4$	S_{54B}-on , others-b / off	********	
27	External Mute-ON Voltage	Mute	S_4, S_{25}-a, others-b / off	********	While gradually raising the V_3 voltage, find the voltage at which mute is turned on.
28	O Output Low Level Voltage	I / O1	All-b / off	********	Find the voltage on pins 28, 29, and 31 when the data D_{03}, D04, and D_{05} are 0, respectively.
		I / O2	All-b / off	********	
		O3	All-b / off	********	

TEST CIRCUIT 1
DC characteristics

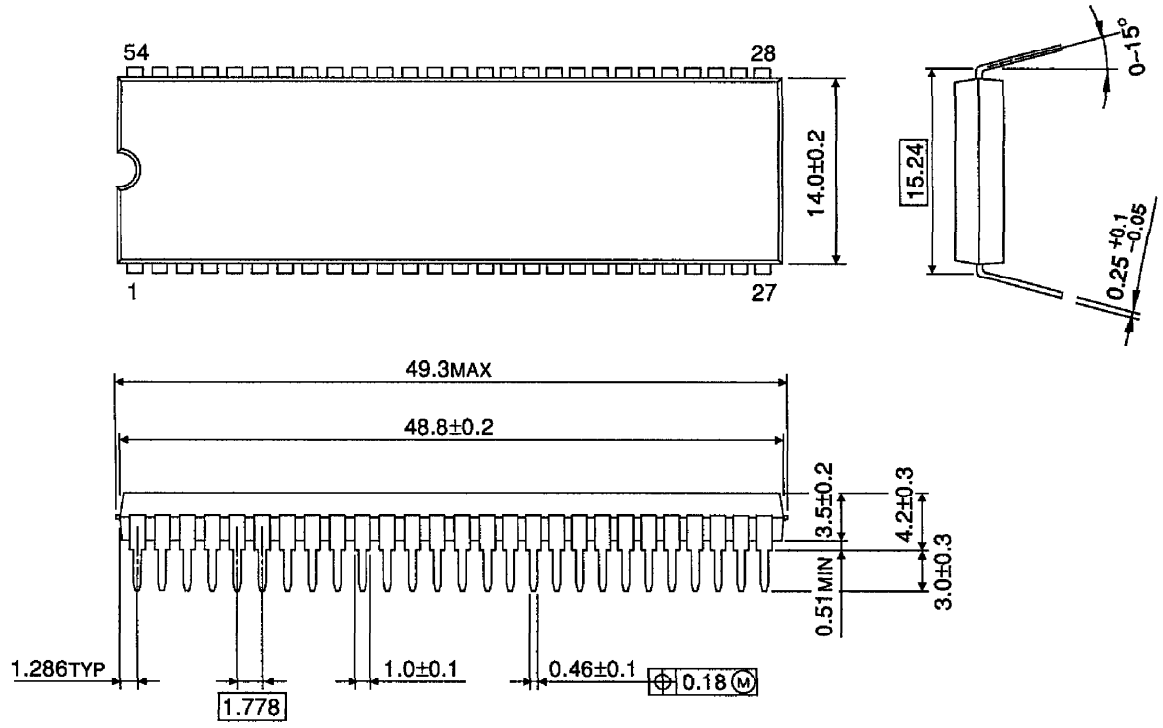


TEST CIRCUIT 2
AC characteristics



PACKAGE DIMENSIONS

SDIP54-P-600-1.78 Unit : mm



Weight : 1.0g (Typ.)