

# Video signal switcher for AV amplifiers

## BA7626 / BA7626F

The BA7626 and BA7626F are video signal switches that contain two five-channel analog multiplexers for switching chroma and audio signals, and two wide-band 6dB amplifiers. By simply adding transistor buffers to the outputs, it is possible to construct a record / playback switch for two record / playback VCRs, and three video playback machines (eg. laser desk players). Input switching and VCR record switching can be done independently. The inputs are terminated with 20k $\Omega$  resistors, and are suitable for switching chroma and audio signals.

### ●Applications

AV amplifiers (audio signals and S-pin chroma signals) and video selectors

### ●Features

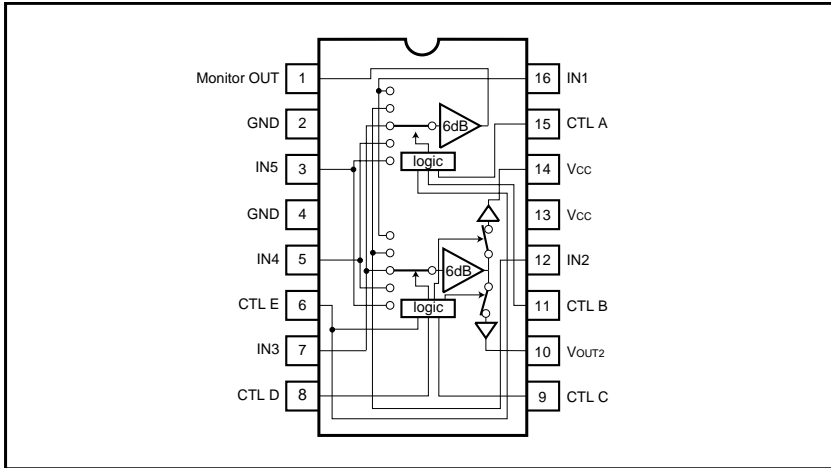
- |                                  |                             |
|----------------------------------|-----------------------------|
| 1) 5-input / 3-output switches.  | 3) Built-in 6dB amplifiers. |
| 2) 20k $\Omega$ input impedance. | 4) 5V supply voltage.       |

### ●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V <sub>cc</sub>	9	V
Power dissipation	P <sub>d</sub>	500*	mW
Operating temperature	T <sub>opr</sub>	- 25 ~ +70	°C
Storage temperature	T <sub>stg</sub>	- 55 ~ +125	°C

\* Reduced by 5.0mW for each increase in Ta of 1°C over 25°C.

●Block diagram



●Truth table

A	B	E	Monitor OUT
L	L	*	IN1
H	L	*	IN2
L	H	*	IN3
H	H	L	IN4
H	H	H	IN5

C	D	E	V <sub>OUT1</sub>
L	L	*	—
H	L	*	IN2
L	H	*	IN3
H	H	L	IN4
H	H	H	IN5

C	D	E	V <sub>OUT2</sub>
L	L	*	IN1
H	L	*	—
L	H	*	IN3
H	H	L	IN4
H	H	H	IN5

Note 1: \* indicates "don't care" (H or L).

●Equivalent input / output circuits (unless otherwise noted,  $T_a=25^\circ\text{C}$  and  $V_{CC} = 5\text{V}$ )

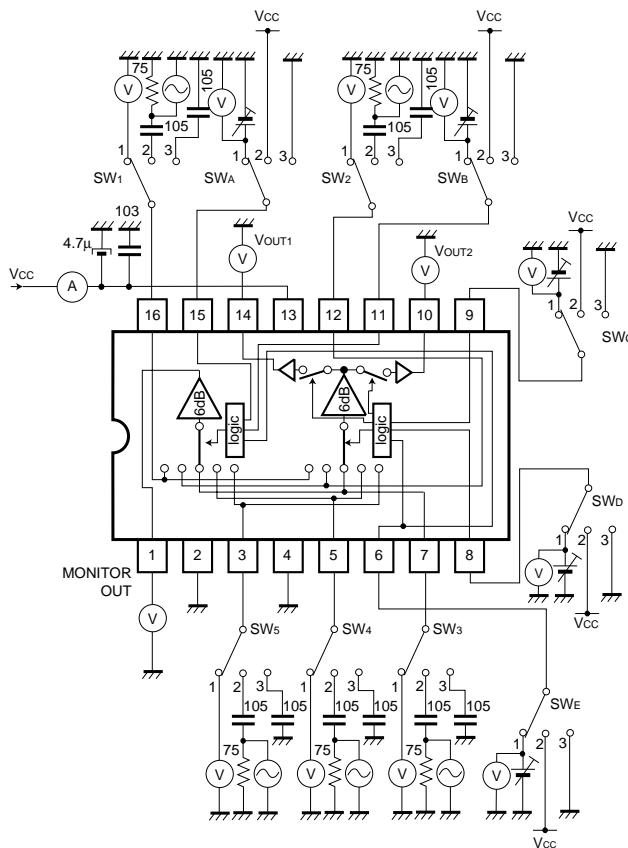
Pin No.	Pin name	Standard voltage (no input signal)	Equivalent input / output circuit
3 5 7 12 16	IN5 IN4 IN3 IN2 IN1	3.6V	
6 8 9 11 15	CTL E CTL D CTL C CTL B CTL A	0.6V	
1	MONOUT	2.0V	
10 14	Vout2 Vout1	2.0V	

●Electrical characteristics (unless otherwise noted, Ta = 25°C and Vcc = 5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Operating voltage	V <sub>cc</sub>	4.5	5.0	5.5	V	—
Supply current	I <sub>cc</sub>	—	15.0	20.0	mA	—
Maximum output level	V <sub>om</sub>	2.3	2.5	—	V <sub>P-P</sub>	f = 1kHz, THD = 0.5%
Voltage gain	G <sub>v</sub>	5.7	6.2	6.7	dB	f = 1MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
Interchannel crosstalk	C <sub>T</sub>	—	-65	-45	dB	f = 4.43MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
Mute level	CTM	—	-35	-25	dB	f = 4.43MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
Frequency characteristic	G <sub>f</sub>	-3	0	3	dB	10MHz / 1MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
Input impedance	Z <sub>IN</sub>	16	20	24	kΩ	—
CTL pin switch level	V <sub>TH</sub>	2.2	—	3.3	V	—

○Not designed for radiation resistance.

●Measurement circuit



## ●Measurement conditions

Parameter	Symbol	Switch settings										Measurement method
		SW <sub>1</sub>	SW <sub>2</sub>	SW <sub>3</sub>	SW <sub>4</sub>	SW <sub>5</sub>	SW <sub>A</sub>	SW <sub>B</sub>	SW <sub>C</sub>	SW <sub>D</sub>	SW <sub>E</sub>	
Current dissipation	I <sub>CC</sub>	3	3	3	3	3	2	2	2	2	2	—
Monitor OUT maximum output level	V <sub>om</sub> 1MON	2	3	3	3	3	3	3	*	*	*	Note 1
	V <sub>om</sub> 2MON	3	2	↓	↓	↓	2	3	↓	↓	↓	
	V <sub>om</sub> 3MON	↓	3	2	↓	↓	3	2	↓	↓	↓	
	V <sub>om</sub> 4MON	↓	↓	3	2	↓	2	2	↓	↓	3	
	V <sub>om</sub> 5MON	↓	↓	↓	3	2	2	2	↓	↓	2	
Voltage gain	G <sub>v</sub> 1MON	2	3	3	3	3	3	3	*	*	*	Note 2
	G <sub>v</sub> 2MON	3	2	↓	↓	↓	2	3	↓	↓	↓	
	G <sub>v</sub> 3MON	↓	3	2	↓	↓	3	2	↓	↓	↓	
	G <sub>v</sub> 4MON	↓	↓	3	2	↓	2	2	↓	↓	3	
	G <sub>v</sub> 5MON	↓	↓	↓	3	2	2	2	↓	↓	2	
Monitor OUT interchannel crosstalk	C <sub>r1</sub> - 2MON	2	3	3	3	3	2	3	*	*	*	Note 3
	C <sub>r1</sub> - 3MON	↓	↓	↓	↓	↓	3	2	↓	↓	↓	
	C <sub>r1</sub> - 4MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	C <sub>r1</sub> - 5MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
	C <sub>r2</sub> - 1MON	3	2	3	3	3	3	3	*	*	*	
	C <sub>r2</sub> - 3MON	↓	↓	↓	↓	↓	3	2	↓	↓	↓	
	C <sub>r2</sub> - 4MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	C <sub>r2</sub> - 5MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
	C <sub>r3</sub> - 1MON	3	3	2	3	3	3	3	*	*	*	
	C <sub>r3</sub> - 2MON	↓	↓	↓	↓	↓	2	3	↓	↓	↓	
	C <sub>r3</sub> - 4MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	C <sub>r3</sub> - 5MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
	C <sub>r4</sub> - 1MON	3	3	3	2	3	3	3	*	*	*	
	C <sub>r4</sub> - 2MON	↓	↓	↓	↓	↓	2	3	↓	↓	↓	
	C <sub>r4</sub> - 3MON	↓	↓	↓	↓	↓	2	2	↓	↓	↓	
	C <sub>r4</sub> - 5MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	C <sub>r5</sub> - 1MON	3	3	3	3	2	3	3	*	*	*	
	C <sub>r5</sub> - 2MON	↓	↓	↓	↓	↓	2	3	↓	↓	↓	
	C <sub>r5</sub> - 3MON	↓	↓	↓	↓	↓	2	2	↓	↓	↓	
	C <sub>r5</sub> - 4MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
Monitor OUT frequency characteristic	G <sub>f</sub> 1MON	2	3	3	3	3	3	3	*	*	*	Note 4
	G <sub>f</sub> 2MON	3	2	↓	↓	↓	2	3	↓	↓	↓	
	G <sub>f</sub> 3MON	↓	3	2	↓	↓	3	2	↓	↓	↓	
	G <sub>f</sub> 4MON	↓	↓	3	2	↓	2	2	↓	↓	3	
	G <sub>f</sub> 5MON	↓	↓	↓	3	2	2	2	↓	↓	2	
V <sub>OUT1</sub> maximum output level	V <sub>om</sub> 2OUT1	3	2	3	3	3	*	*	2	3	*	Note 1
	V <sub>om</sub> 3OUT1	↓	3	2	↓	↓	↓	3	2	2	↓	
	V <sub>om</sub> 4OUT1	↓	↓	3	2	3	↓	↓	2	2	3	
	V <sub>om</sub> 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	

## ●Measurement conditions

Parameter	Symbol	Switch settings										Measurement method
		SW <sub>1</sub>	SW <sub>2</sub>	SW <sub>3</sub>	SW <sub>4</sub>	SW <sub>5</sub>	SW <sub>A</sub>	SW <sub>B</sub>	SW <sub>C</sub>	SW <sub>D</sub>	SW <sub>E</sub>	
V <sub>OUT1</sub> voltage gain	G <sub>V</sub> 2OUT1	3	2	3	3	3	*	*	2	3	*	Note 2
	G <sub>V</sub> 3OUT1	↓	3	2	↓	↓	↓	↓	3	2	↓	
	G <sub>V</sub> 4OUT1	↓	↓	3	2	3	↓	↓	2	2	3	
	G <sub>V</sub> 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	
V <sub>OUT1</sub> interchannel crosstalk	C <sub>T1</sub> - 2OUT1	2	3	3	3	3	*	*	3	3	*	Note 3
	C <sub>T1</sub> - 3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T1</sub> - 4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	C <sub>T1</sub> - 5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T2</sub> - 1OUT1	3	2	3	3	3	*	*	3	3	*	
	C <sub>T2</sub> - 3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T2</sub> - 4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	C <sub>T2</sub> - 5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T3</sub> - 1OUT1	3	3	2	3	3	*	*	3	3	*	
	C <sub>T3</sub> - 2OUT1	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	C <sub>T3</sub> - 4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	C <sub>T3</sub> - 5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T4</sub> - 1OUT1	3	3	3	2	3	*	*	3	3	*	
	C <sub>T4</sub> - 2OUT1	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	C <sub>T4</sub> - 3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T4</sub> - 5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T5</sub> - 1OUT1	3	3	3	3	2	*	*	3	3	*	
	C <sub>T5</sub> - 2OUT1	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	C <sub>T5</sub> - 3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T5</sub> - 4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
V <sub>OUT1</sub> frequency characteristic	G <sub>f</sub> 2OUT1	3	2	3	3	3	*	*	2	3	*	Note 4
	G <sub>f</sub> 3OUT1	↓	3	2	↓	↓	↓	↓	3	2	↓	
	G <sub>f</sub> 4OUT1	↓	↓	3	2	↓	↓	↓	2	2	3	
	G <sub>f</sub> 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	
V <sub>OUT2</sub> maximum output level	V <sub>om</sub> 1OUT2	2	3	3	3	3	*	*	3	3	*	Note 1
	V <sub>om</sub> 3OUT2	3	2	↓	↓	↓	↓	↓	3	2	↓	
	V <sub>om</sub> 4OUT2	↓	3	↓	2	↓	↓	↓	2	2	3	
	V <sub>om</sub> 5OUT2	↓	↓	↓	3	2	↓	↓	2	2	2	
V <sub>OUT2</sub> voltage gain	G <sub>V</sub> 1OUT2	2	3	3	3	3	*	*	3	3	*	Note 2
	G <sub>V</sub> 3OUT2	3	2	↓	↓	↓	↓	↓	3	2	↓	
	G <sub>V</sub> 4OUT2	↓	3	↓	2	↓	↓	↓	2	2	3	
	G <sub>V</sub> 5OUT2	↓	↓	↓	3	2	↓	↓	2	2	2	

Parameter	Symbol	Switch settings										Measurement method
		SW <sub>1</sub>	SW <sub>2</sub>	SW <sub>3</sub>	SW <sub>4</sub>	SW <sub>5</sub>	SW <sub>A</sub>	SW <sub>B</sub>	SW <sub>C</sub>	SW <sub>D</sub>	SW <sub>E</sub>	
V <sub>OUT2</sub> interchannel crosstalk	C <sub>T1</sub> - 2OUT2	2	3	3	3	3	*	*	2	3	*	Note 3
	C <sub>T1</sub> - 3OUT2	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T1</sub> - 4OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	C <sub>T1</sub> - 5OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T2</sub> - 1OUT2	3	2	3	3	3	*	*	3	3	*	
	C <sub>T2</sub> - 3OUT2	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T2</sub> - 4OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	C <sub>T2</sub> - 5OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T3</sub> - 1OUT2	3	3	2	3	3	*	*	3	3	*	
	C <sub>T3</sub> - 2OUT2	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	C <sub>T3</sub> - 4OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	C <sub>T3</sub> - 5OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T4</sub> - 1OUT2	3	3	3	2	3	*	*	3	3	*	
	C <sub>T4</sub> - 2OUT2	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	C <sub>T4</sub> - 3OUT2	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T4</sub> - 5OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	C <sub>T5</sub> - 1OUT2	3	3	3	3	2	*	*	3	3	*	
	C <sub>T5</sub> - 2OUT2	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	C <sub>T5</sub> - 3OUT2	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	C <sub>T5</sub> - 4OUT2	↓	↓	↓	↓	↓	↓	↓	2	2	3	
V <sub>OUT2</sub> frequency characteristic	G <sub>f</sub> 1OUT1	2	3	3	3	3	*	*	3	3	*	Note 4
	G <sub>f</sub> 3OUT1	3	3	2	↓	↓	↓	↓	3	2	↓	
	G <sub>f</sub> 4OUT1	↓	↓	3	2	↓	↓	↓	2	2	3	
	G <sub>f</sub> 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	
Mute level	CTM V <sub>OUT1</sub>	2	3	3	3	3	*	*	3	3	*	Note 5
	CTM V <sub>OUT2</sub>	↓	↓	↓	↓	↓	↓	↓	2	↓	↓	
CTL pin switching level	V <sub>THA</sub>	2	3	3	3	3	1	3	*	*	*	Note 6
	V <sub>THB</sub>	3	↓	2	↓	↓	3	1	↓	↓	↓	
	V <sub>THC</sub>	2	↓	3	↓	↓	*	*	1	3	↓	
	V <sub>THD</sub>	3	↓	2	↓	↓	↓	↓	3	1	↓	
	V <sub>THE</sub>	↓	↓	3	2	↓	2	2	*	*	1	

Note 1: Connect a distortion meter to the output, and input a  $f = 1\text{kHz}$  sine wave. Adjust the input level until the output distortion is 0.5%.

This output voltage at this time is the maximum output level  $V_{om}$  (VP-P).

Note 2: Input a 1VP-P, 1MHz sine wave. The voltage gain (in dB) is given by  $G_v = 20 \log (V_{OUT} / V_{IN})$ .

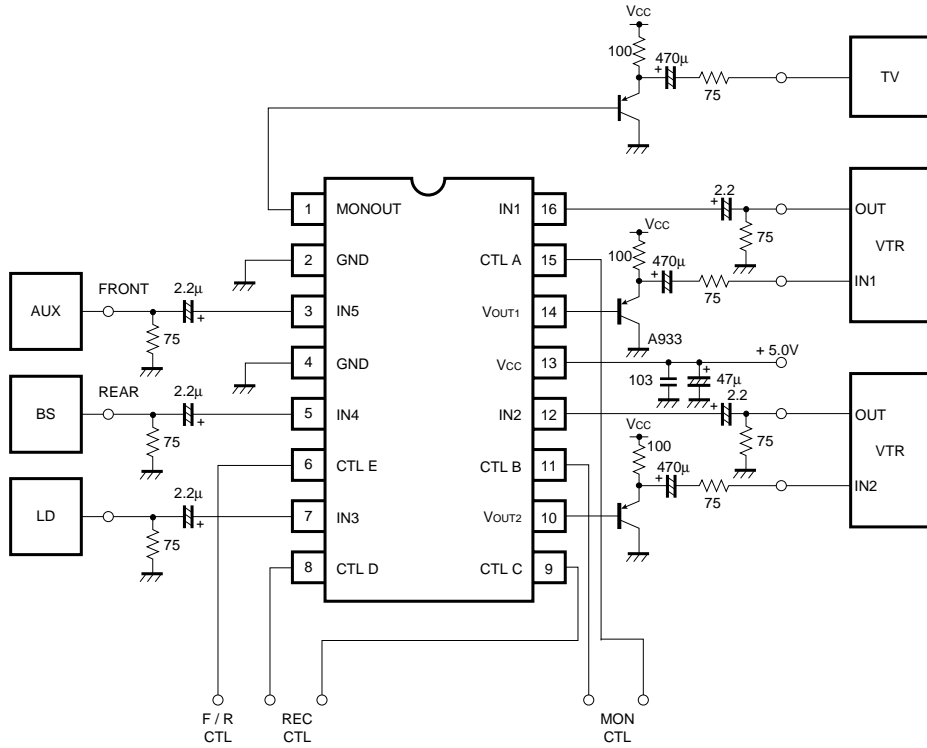
Note 3: Input a 1VP-P, 4.43MHz sine wave. The interchannel crosstalk (in dB) is given by  $C_T = 20 \log (V_{OUT} / V_{IN}) + 6$ .

Note 4: Input 1VP-P, 1MHz and 10MHz sine waves. The frequency characteristic (in dB) is given by  $G_f = 20 \log (V_{OUT}(f = 10\text{MHz}) / V_{OUT}(f = 1\text{MHz}))$ .

Note 5: Input a 1VP-P, 4.43MHz sine wave. The mute level is given by  $CTM = 20 \log (V_{OUT} / V_{IN}) + 6$  (dB)

Note 6: Input a 1VP-P, 1MHz sine wave. Reduce the CTL pin voltage from  $V_{cc}$ . The CTL pin switching level ( $V_{TH}$ ) is the CTL pin voltage at which the  $V_{out}$  level drops below 10mVP-P.

●Application example



●External dimensions (Units: mm)

