

# Video signal switcher

## BA7606 / BA7606F

The BA7606 and BA7606F are switching ICs developed for use in video cameras. Each contains three two-channel analog multiplexers. They feature a large dynamic range, and wide operating frequency range, and the switches have pedestal clamp inputs which are ideal for switching RGB and video signals.

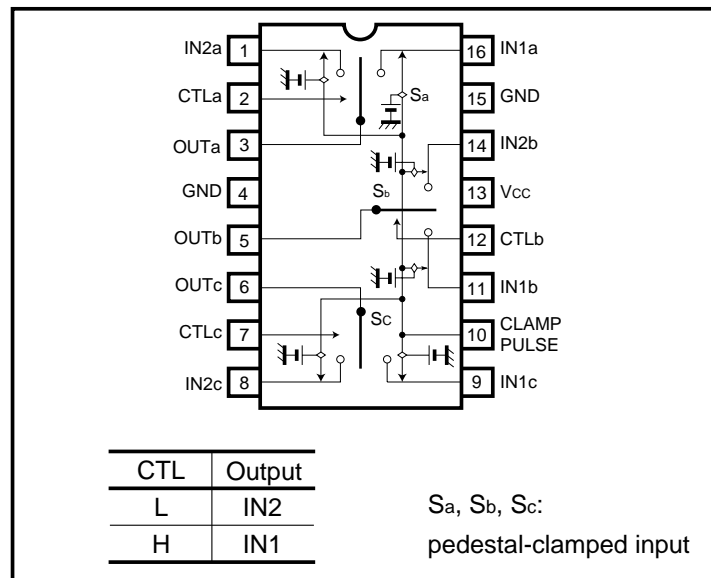
●Applications

Video cassette recorders and televisions

●Features

- 1) Three 2-input / 1-output switches.
- 2) 5V power supply.
- 3) Pedestal clamp inputs
- 4) Low power consumption (62.5mW Typ.).
- 5) Excellent frequency characteristics (10MHz, - 1dB Typ.).
- 6) Wide dynamic range (2.6Vp-p Typ.).
- 7) Fast switching speed (50ns Typ.).

●Block diagram



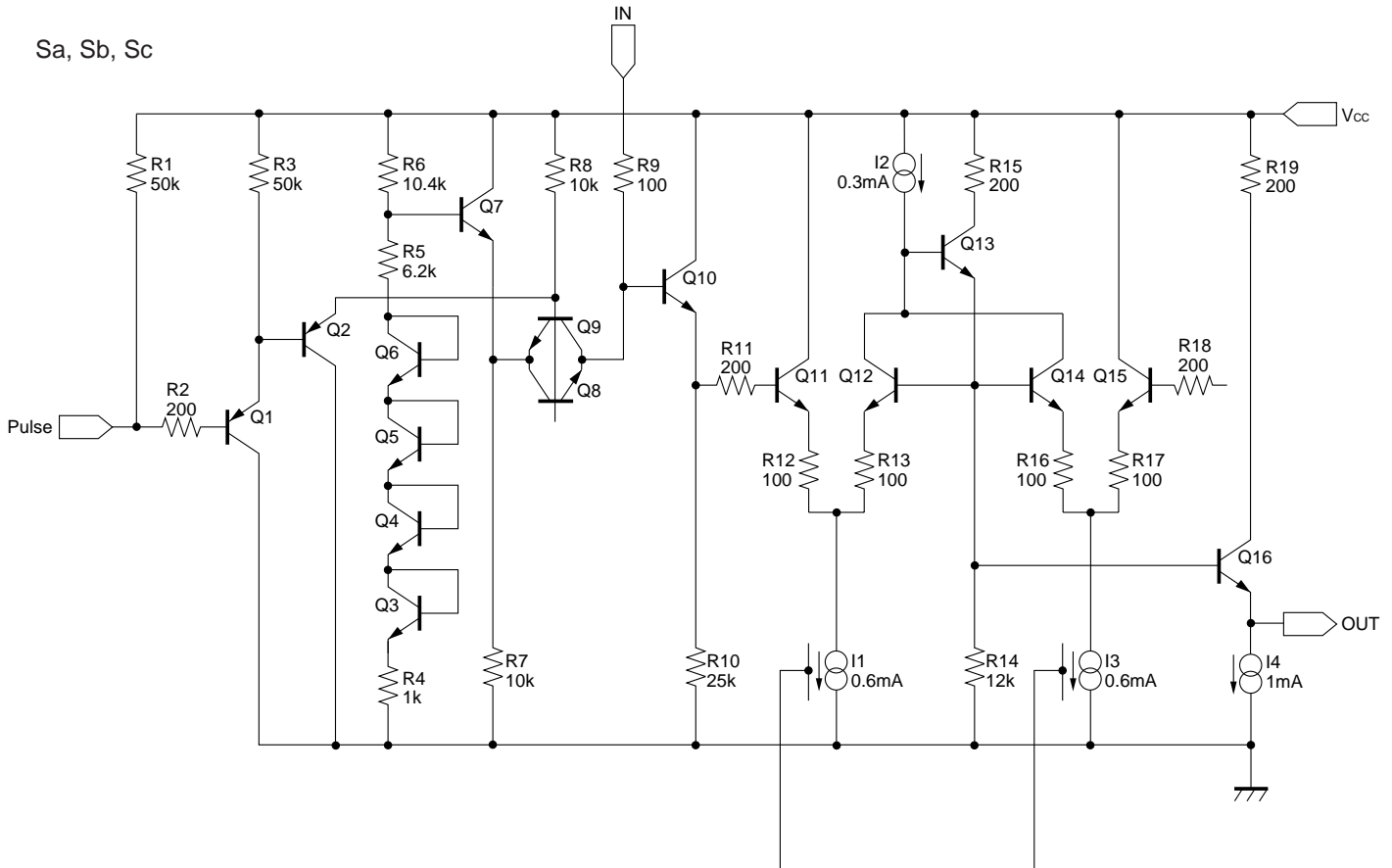
●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	9	V
Power dissipation	Pd	500*	mW
Operating temperature	Topr	- 40 ~ + 85	°C
Storage temperature	Tstg	- 55 ~ + 125	°C

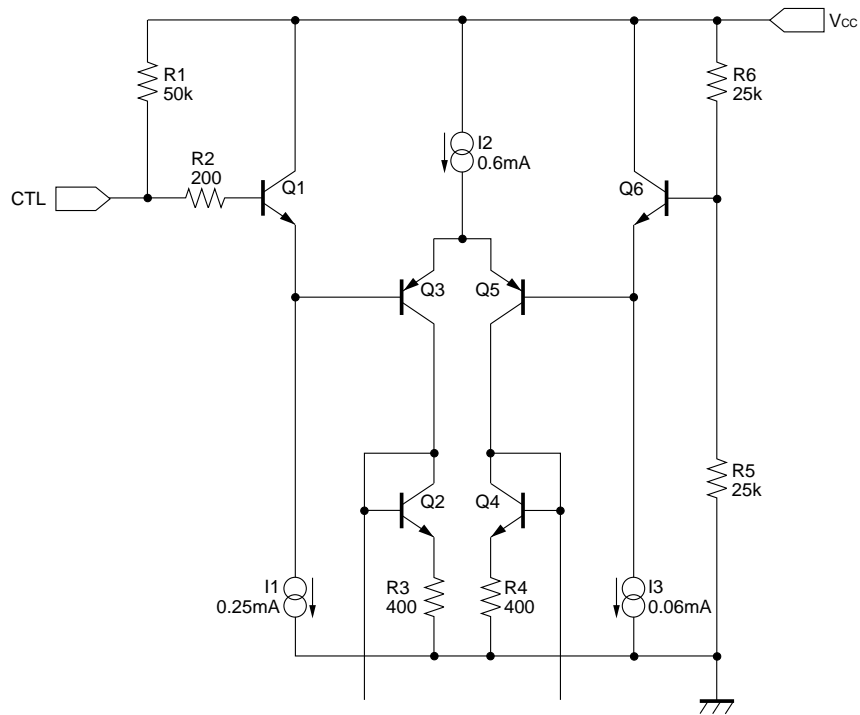
\* Reduced by 5.0mW for each increase in Ta of 1°C over 25°C.

●Equivalent circuits

Sa, Sb, Sc



CTL



## ●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	23.0	mA	—
Maximum output level U	V <sub>omU</sub>	1.40	1.65	—	V <sub>P-P</sub>	Note 1
Maximum output level D	V <sub>omD</sub>	0.80	0.95	—	V <sub>P-P</sub>	Note 2
Voltage gain	G <sub>V</sub>	-0.9	0	0.5	dB	f = 1MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
Interchannel crosstalk	C <sub>T</sub>	—	-65	—	dB	f = 4.43MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
Frequency characteristics	G <sub>f</sub>	-3	-1	1	dB	10MHz / 1MHz, V <sub>IN</sub> = 1V <sub>P-P</sub>
CTL pin switch level	V <sub>TH</sub>	2.0	2.5	3.0	V	—
Clamp input level	V <sub>ct</sub>	0.75	—	2.2	V	—

\* Refer to the measurement circuit given in Fig. 1.

Note 1: Positive-side dynamic range from the clamp level

Note 2: Negative-side dynamic range from the clamp level

## ●Reference date

Pin DC voltages (reference values)

Units: Vdc

Pin No.	DC voltage	Pin No.	DC voltage
1	2.96	9	2.96
2	4.91	10	4.97
3	1.54	11	2.96
4	0	12	4.91
5	1.54	13	5.00
6	1.54	14	2.96
7	4.91	15	0
8	2.96	16	2.96

## Electrical characteristics

Parameter	Min.	Typ.	Max.	Unit
Pedestal clamp level	1.20	1.54	1.95	Vdc
Input impedance (with clamp)	—	1.7M	—	Ω
Output impedance*	—	30	—	Ω

The input coupling capacitor values should be 0.1μF to 1μF.

Use a clamp pulse of at least 1μS (BA7606).

\* The pin 6 output impedance of the BA7606 is 130Ω

● Measurement circuit

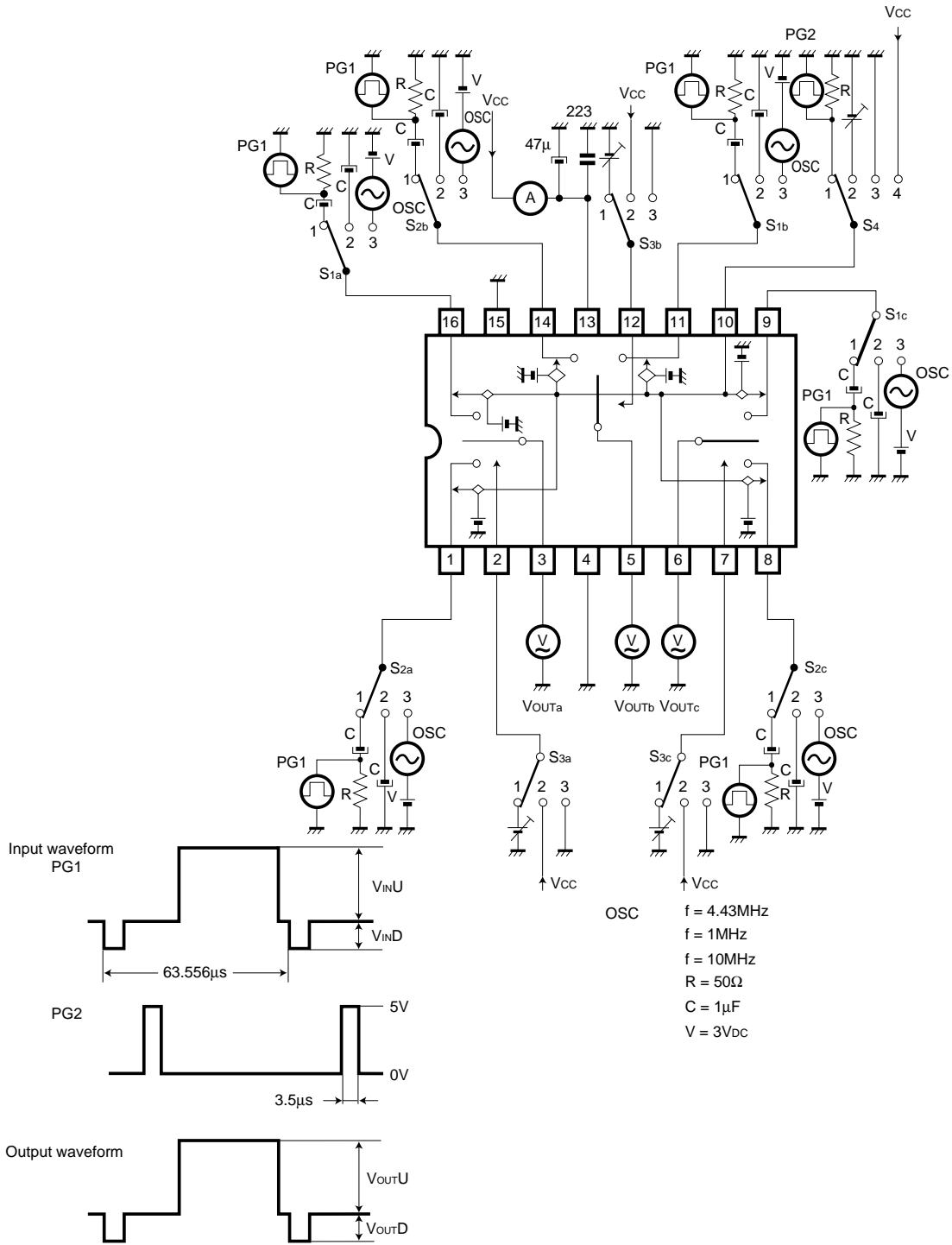


Fig.1

## ● Measurement conditions

Parameter		Symbol	Switch settings										Measurement method
			S <sub>1a</sub>	S <sub>2a</sub>	S <sub>3a</sub>	S <sub>1b</sub>	S <sub>2b</sub>	S <sub>3b</sub>	S <sub>1c</sub>	S <sub>2c</sub>	S <sub>3c</sub>	S <sub>4c</sub>	
Current dissipation		I <sub>cc</sub>	2	2	2	2	2	2	2	2	2	4	Ammeter
Maximum output level (U or D)	IN1a	V <sub>om</sub>	1	2	2	2	2	2	2	2	2	1	Note 1
	IN2a	V <sub>om</sub>	2	1	3	2	2	2	2	2	2	1	
	IN1b	V <sub>om</sub>	2	2	2	1	2	2	2	2	2	1	
	IN2b	V <sub>om</sub>	2	2	2	2	1	3	2	2	2	1	
	IN1c	V <sub>om</sub>	2	2	2	2	2	2	1	2	2	1	
	IN2c	V <sub>om</sub>	2	2	2	2	2	2	2	1	3	1	
Voltage gain	IN1a	G <sub>v</sub>	3	2	2	2	2	2	2	2	2	3	OSC f = 1MHz V <sub>IN</sub> = 1V <sub>P-P</sub>  Note 2
	IN2a	G <sub>v</sub>	2	3	3	2	2	2	2	2	2	3	
	IN1b	G <sub>v</sub>	2	2	2	3	2	2	2	2	2	3	
	IN2b	G <sub>v</sub>	2	2	2	2	3	3	2	2	2	3	
	IN1c	G <sub>v</sub>	2	2	2	2	2	2	3	2	2	3	
	IN2c	G <sub>v</sub>	2	2	2	2	2	2	2	3	3	3	
Inter-channel crosstalk	IN1a	C <sub>T</sub>	2	3	2	2	2	2	2	2	2	3	OSC f = 4.43MHz V <sub>IN</sub> = 1V <sub>P-P</sub>  Note 3
	IN2a	C <sub>T</sub>	3	2	3	2	2	2	2	2	2	3	
	IN1b	C <sub>T</sub>	2	2	2	2	3	2	2	2	2	3	
	IN2b	C <sub>T</sub>	2	2	2	3	2	3	2	2	2	3	
	IN1c	C <sub>T</sub>	2	2	2	2	2	2	2	3	2	3	
	IN2c	C <sub>T</sub>	2	2	2	2	2	2	3	2	3	3	
Frequency characteristic	IN1a	G <sub>f</sub>	3	2	2	2	2	2	2	2	2	3	OSC f = 10MHz f = 1MHz V <sub>IN</sub> = 1V <sub>P-P</sub>  Note 4
	IN2a	G <sub>f</sub>	2	3	3	2	2	2	2	2	2	3	
	IN1b	G <sub>f</sub>	2	2	2	3	2	2	2	2	2	3	
	IN2b	G <sub>f</sub>	2	2	2	2	3	3	2	2	2	3	
	IN1c	G <sub>f</sub>	2	2	2	2	2	2	3	2	2	3	
	IN2c	G <sub>f</sub>	2	2	2	2	2	2	2	3	3	3	
CTL pin switching level	CTLa	V <sub>TH</sub>	3	2	1	2	2	2	2	2	2	3	OSC f = 1MHz V <sub>IN</sub> = 1V <sub>P-P</sub>  Note 5
	CTLb	V <sub>TH</sub>	2	2	2	3	2	1	2	2	2	3	
	CTLc	V <sub>TH</sub>	2	2	2	2	2	2	3	2	1	3	
Clamp pin	Clamp	V <sub>ct</sub>	2	2	2	2	2	2	2	2	2	2	Note 6

Note 1: V<sub>omU</sub> is the value for V<sub>OUTU</sub> when V<sub>OUTU</sub> / V<sub>INU</sub> ≤ -1dB.

V<sub>omD</sub> is the value for V<sub>OUTD</sub> when V<sub>OUTD</sub> / V<sub>IND</sub> ≤ -1dB.

Note 2: G<sub>v</sub> = 20 log (V<sub>OUT</sub> / V<sub>IN</sub>).

Note 3: C<sub>T</sub> = 20 log (V<sub>OUT</sub> / V<sub>IN</sub>).

Note 4: G<sub>f</sub> = 20 log (V<sub>OUT</sub> (f = 10MHz) / V<sub>OUT</sub> (f = 1MHz)).

Note 5: Reduce the CTL pin voltage from V<sub>CC</sub>. The CTL pin switching level (V<sub>TH</sub>) is the CTL pin voltage at which the V<sub>OUT</sub> level drops below 20mV<sub>P-P</sub>.

Note 6: Clamp pulse voltage at which V<sub>OUT</sub> falls below 0.4V and clamp pulse voltage at which V<sub>OUT</sub> falls below 1.4V.

●External dimensions (Units: mm)

