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.
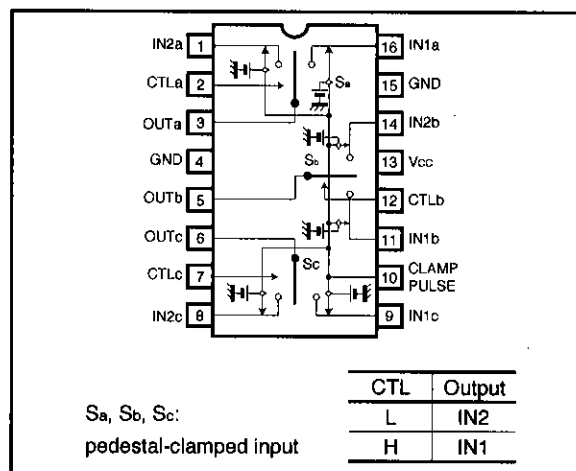
● **Applications**
Video cassette recorders and televisions

● **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.).
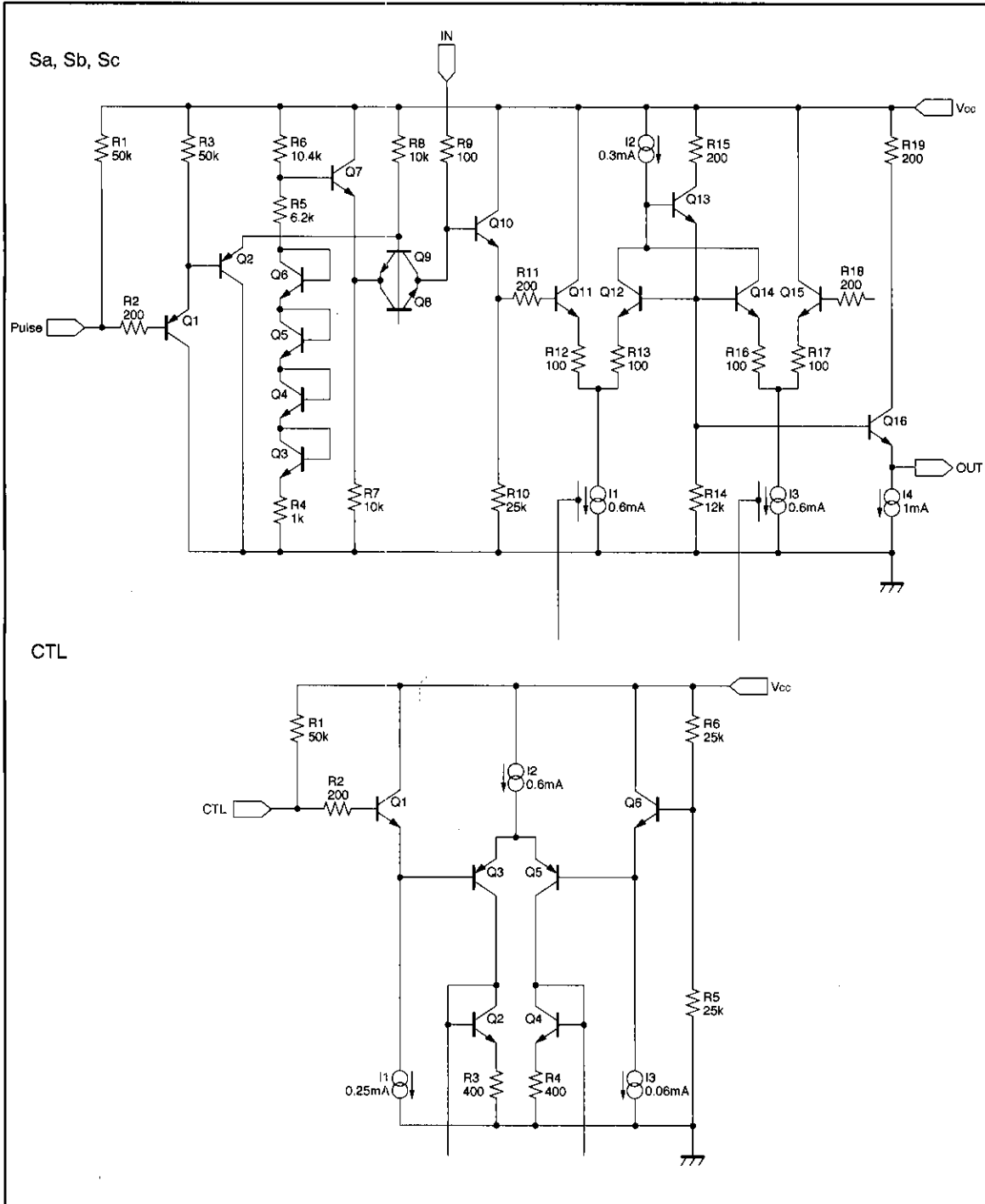7) Fast switching speed (50ns Typ.).

● **Block diagram**

CTL	Output
L	IN2
H	IN1

Sa, Sb, Sc:
pedestal-clamped input

● **Absolute maximum ratings (Ta=25℃)**

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

* 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 specified Ta=25℃ and Vcc=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Operating voltage	Vcc	4.5	5.0	5.5	V	—
Circuit current	Icc	—	15.0	23.0	mA	—
Maximum output level U	VomU	1.40	1.65	—	VP-P	Note 1
Maximum output level D	VomD	0.80	0.95	—	VP-P	Note 2
Voltage gain	Gv	−0.9	0	0.5	dB	f＝1MHz, VIN＝1VP-P
Interchannel crosstalk	CT	—	−65	—	dB	f＝4.43MHz, VIN＝1VP-P
Frequency characteristic	GI	−3	−1	1	dB	10MHz / 1MHz, VIN＝1VP-P
CTL pin switch level	VTH	2.0	2.5	3.0	V	—
Clamp input level	Vcl	0.75	—	2.2	V	—

* Refer to the mesurement 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 data

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 0.1 μF to 1 μF.

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

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

Video signal selection switches
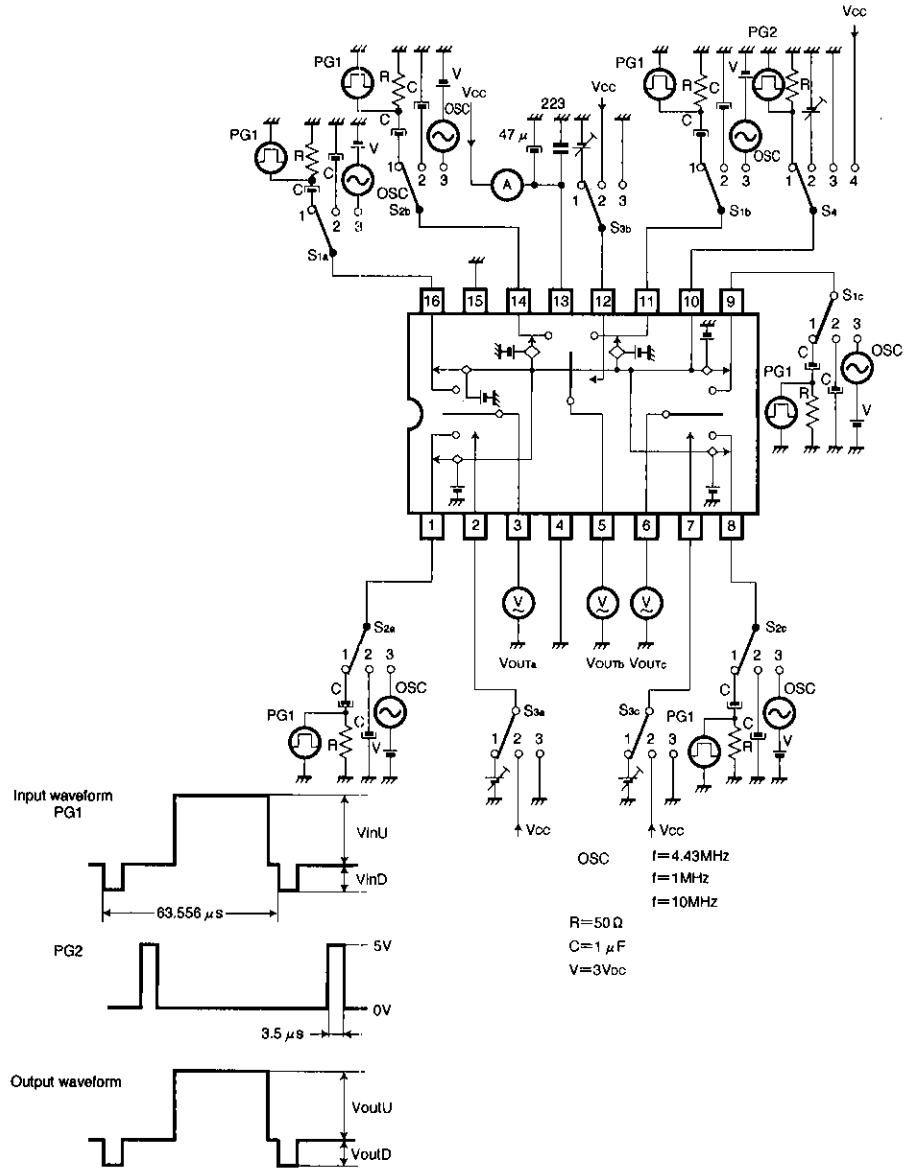
AV switches

●Measurement circuit

| Input waveform PG1 |
| PG2 |
| Output waveform |

VinU
VinD
63.556 μs

PG2   5V
0V
3.5 μs

Output waveform
VoutU
VoutD

OSC   f=4.43MHz
       f=1MHz
       f=10MHz
R=50Ω
C=1μF
V=3Vpc

Fig.1

ROHM

●Measurement conditions

Parameter		Symbol	Switch settings										Measurement method
			S1a	S2a	S3a	S1b	S2b	S3b	S1c	S2c	S3c	S4c	
Current consumption		Icc	2	2	2	2	2	2	2	2	2	4	Ammeter
Maximum output level (U or D)	IN1a	Vom	1	2	2	2	2	2	2	2	2	1	Note 1
	IN2a	Vom	2	1	3	2	2	2	2	2	2	1	
	IN1b	Vom	2	2	2	1	2	2	2	2	2	1	
	IN2b	Vom	2	2	2	2	1	3	2	2	2	1	
	IN1c	Vom	2	2	2	2	2	2	1	2	2	1	
	IN2c	Vom	2	2	2	2	2	2	2	1	3	1	
Voltage gain	IN1a	Gv	3	2	2	2	2	2	2	2	2	3	OSC f=1MHz Vin=1Vp-p Note 2
	IN2a	Gv	2	3	3	2	2	2	2	2	2	3	
	IN1b	Gv	2	2	2	3	2	2	2	2	2	3	
	IN2b	Gv	2	2	2	2	3	3	2	2	2	3	
	IN1c	Gv	2	2	2	2	2	2	3	2	2	3	
	IN2c	Gv	2	2	2	2	2	2	2	3	3	3	
Inter-channel crosstalk	IN1a	Ct	2	3	2	2	2	2	2	2	2	3	OSC f=4.43MHz Vin=1Vp-p Note 3
	IN2a	Ct	3	2	3	2	2	2	2	2	2	3	
	IN1b	Ct	2	2	2	2	3	2	2	2	2	3	
	IN2b	Ct	2	2	2	3	2	3	2	2	2	3	
	IN1c	Ct	2	2	2	2	2	2	2	3	2	3	
	IN2c	Ct	2	2	2	2	2	2	3	2	3	3	
Frequency characteristic	IN1a	Gi	3	2	2	2	2	2	2	2	2	3	OSC f=10MHz f=1MHz Vin=1Vp-p Note 4
	IN2a	Gi	2	3	3	2	2	2	2	2	2	3	
	IN1b	Gi	2	2	2	3	2	2	2	2	2	3	
	IN2b	Gi	2	2	2	2	3	3	2	2	2	3	
	IN1c	Gi	2	2	2	2	2	2	3	2	2	3	
	IN2c	Gi	2	2	2	2	2	2	2	3	3	3	
CTL pin switching level	CTLa	Vth	3	2	1	2	2	2	2	2	2	3	OSC f=1MHz Vin=1Vp-p Note 5
	CTLb	Vth	2	2	2	3	2	1	2	2	2	3	
	CTLc	Vth	2	2	2	2	2	2	3	2	1	3	
Clamp pin	Clanp	Vct	2	2	2	2	2	2	2	2	2	2	Note 6

Note 1: VomU is the value for VOUTU when VOUTU/VINU ≦ −1dB.

　　　　VomD is the value for VOUTD when VOUTD/VIND ≦ −1dB.

Note 2: Gv = 20 log (VOUT/VIN).

Note 3: Ct = 20 log (VOUT/VIN).
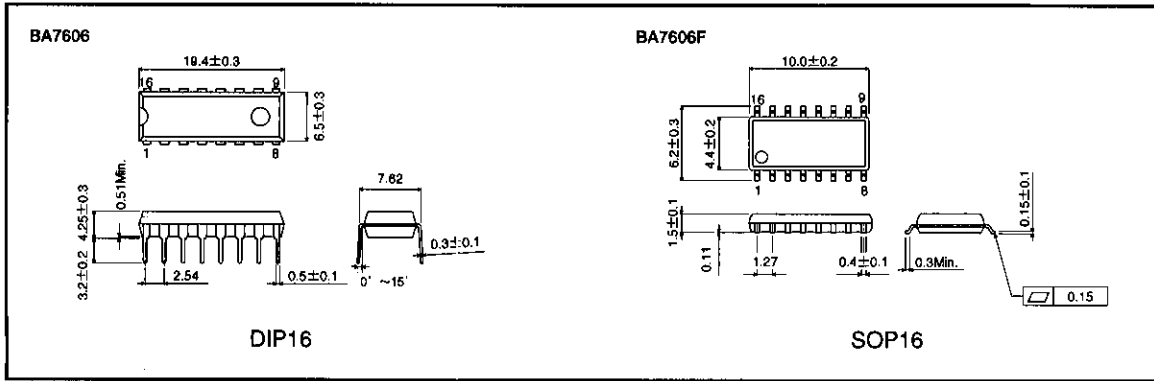
Note 4: Gi = 20 log (VOUT (f = 10MHz)/VIN (f = 1MHz)).

Note 5: Reduce the CTL pin voltage from Vcc. The CTL pin switching level (VTH) is the CTL pin voltage at which the VOUT level drops below 20mVp-p.

Note 6: Clamp pulse voltage at which VOUT falls below 0.4V and clamp pulse voltage at which VOUT falls below 1.4V.

Video signal selection switches

AV switches

●External dimensions (Units: mm)

BA7606

19.4±0.3

6.5±0.3

0.51Min.

4.25±0.3

3.2±0.2

2.54

0.5±0.1

0.3±0.1

0° ~15'

7.62

DIP16

BA7606F

10.0±0.2

6.2±0.3

4.4±0.2

1.5±0.1

0.11

1.27

0.4±0.1

0.3Min.

0.15±0.1

0.15

SOP16

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