

# 75Ω driver IC with 3 internal circuits

## BA7623F

The BA7623F is a 75Ω driver-IC developed for use in video equipment. Since the input is coming directly with no bias at the base pin, the DC potential for the previous stage can be used for direct DC coupling. Each output can drive two loads (75Ω × 2).

●Applications

Video cassette recorders, televisions and camcorders

●Features

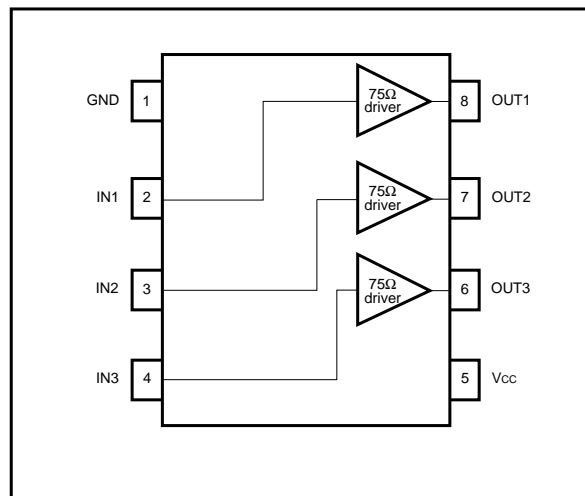
- 1) Can be directly coupled to the previous circuit.
- 2) Each output can drive two loads.

●Absolute maximum ratings (Ta = 25°C)

| Parameter             | Symbol           | Limits       | Unit |
|-----------------------|------------------|--------------|------|
| Power supply voltage  | V <sub>cc</sub>  | 8.0          | V    |
| Power dissipation     | P <sub>d</sub>   | 550*         | mW   |
| Operating temperature | T <sub>opr</sub> | - 25 ~ + 75  | °C   |
| Storage temperature   | T <sub>stg</sub> | - 55 ~ + 125 | °C   |

\* Reduced by 5.5mW for each increase in Ta of 1°C over 25°C.

●Block diagram



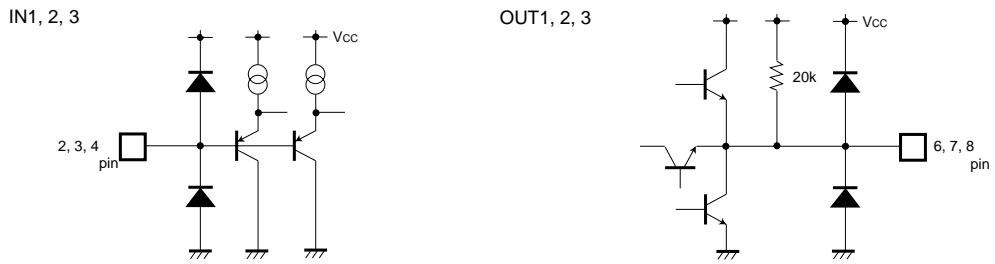
## ●Pin descriptions

| Pin No. | Pin name        | Function  |
|---------|-----------------|---|
| 1       | GND             | Ground connection   |
| 2       | IN1             | Direct-coupling input<br>Input composite video or component video (RGB) signals.<br>Keep the input signal level in the range 0.5V to 3.8V.              |
| 3       | IN2             | Direct-coupling input<br>Input composite video or component video (RGB) signals.<br>Keep the input signal level in the range 0.5V to 3.8V.              |
| 4       | IN3             | Direct-coupling input<br>Input composite video or component video (RGB) signals.<br>Keep the input signal level in the range 0.5V to 3.8V.              |
| 5       | V <sub>cc</sub> | Power supply  |
| 6       | OUT3            | Direct-coupling output<br>Output for the signal input to IN3. When connected to earth a protection circuit operates, and the IC enters power-save mode. |
| 7       | OUT2            | Direct-coupling output<br>Output for the signal input to IN2. When connected to earth a protection circuit operates, and the IC enters power-save mode. |
| 8       | OUT1            | Direct-coupling output<br>Output for the signal input to IN1. When connected to earth a protection circuit operates, and the IC enters power-save mode. |

●Electrical characteristics (unless otherwise noted, T<sub>a</sub> = 25°C and V<sub>CC</sub> = 5V, and load is two system drive)

| 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> | —    | 25.2 | 37.8 | mA               | No signal   |
| Maximum output level           | V <sub>om</sub> | 2.9  | 3.4  | —    | V <sub>P-P</sub> | f = 1kHz, THD = 1.0%  |
| Voltage gain                   | G <sub>v</sub>  | -1.0 | -0.5 | 0    | dB               | f = 1MHz, V <sub>IN</sub> = 2.0V <sub>P-P</sub>                   |
| Frequency characteristic       | C <sub>f</sub>  | -3   | 0    | 1    | dB               | 10MHz / 1MHz, V <sub>IN</sub> = 1.0V <sub>P-P</sub>               |
| Differential gain 75Ω drive 1  | DG1             | —    | 0.4  | 1.0  | %                | V <sub>IN</sub> = 2.0V <sub>P-P</sub> , standard staircase signal |
| Differential phase 75Ω drive 1 | DP1             | —    | 0.4  | 1.0  | deg              | V <sub>IN</sub> = 2.0V <sub>P-P</sub> , standard staircase signal |
| Differential gain 75Ω drive 2  | DG2             | —    | 0.7  | 2.0  | %                | V <sub>IN</sub> = 2.0V <sub>P-P</sub> , standard staircase signal |
| Differential phase 75Ω drive 2 | DP2             | —    | 0.7  | 2.0  | deg              | V <sub>IN</sub> = 2.0V <sub>P-P</sub> , standard staircase signal |
| Interchannel crosstalk         | C <sub>T</sub>  | —    | -60  | —    | dB               | f = 4.43MHz, V <sub>IN</sub> = 2.0V <sub>P-P</sub>                |
| Total harmonic distortion      | T <sub>HD</sub> | —    | 0.1  | 0.5  | %                | f = 1kHz, V <sub>IN</sub> = 1.0V <sub>P-P</sub>                   |

● Input / output circuits



● Measurement circuit

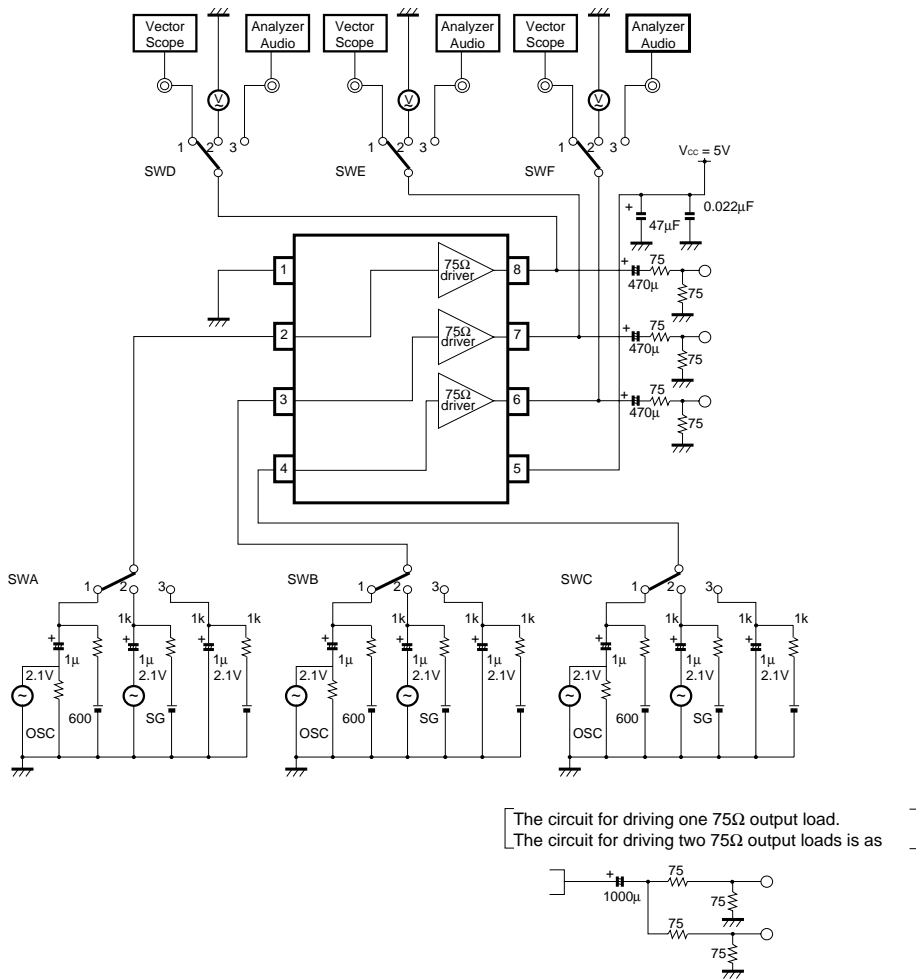


Fig. 1

## ● Measurement conditions

| Parameter                 | Symbol     | IN1 | IN2 | IN3 | OUT1 | OUT2 | OUT3 | Conditions |
|---------------------------|------------|-----|-----|-----|------|------|------|------------|
|                           |            | SWA | SWB | SWC | SWD  | SWE  | SWF  |            |
| Current dissipation       | $I_{cc}$   | 3   | 3   | 3   | ×    | ×    | ×    | —          |
| Maximum output level      | $V_{om12}$ | 1   | 3   | 3   | 3    | ×    | ×    | *1         |
|                           | $V_{om22}$ | 3   | 1   | 3   | ×    | 3    | ×    |            |
|                           | $V_{om32}$ | 3   | 3   | 1   | ×    | ×    | 3    |            |
| Voltage gain              | $G_{v12}$  | 1   | 3   | 3   | 3    | ×    | ×    | *2         |
|                           | $G_{v22}$  | 3   | 1   | 3   | ×    | 3    | ×    |            |
|                           | $G_{v32}$  | 3   | 3   | 1   | ×    | ×    | 3    |            |
| Frequency characteristic  | f12        | 1   | 3   | 3   | 3    | ×    | ×    | —          |
|                           | f22        | 3   | 1   | 3   | ×    | 3    | ×    |            |
|                           | f32        | 3   | 3   | 1   | ×    | ×    | 3    |            |
| Interchannel crosstalk    | $C_{T112}$ | 1   | 3   | 3   | ×    | 3    | ×    | —          |
|                           | $C_{T113}$ | 1   | 3   | 3   | ×    | ×    | 3    |            |
|                           | $C_{T211}$ | 3   | 1   | 3   | 3    | ×    | ×    |            |
|                           | $C_{T213}$ | 3   | 1   | 3   | ×    | ×    | 3    |            |
|                           | $C_{T311}$ | 3   | 3   | 1   | 3    | ×    | ×    |            |
|                           | $C_{T312}$ | 3   | 3   | 1   | ×    | 3    | ×    |            |
| Total-harmonic distortion | $T_{HD12}$ | 1   | 3   | 3   | 3    | ×    | ×    | *3         |
|                           | $T_{HD22}$ | 3   | 1   | 3   | ×    | 3    | ×    |            |
|                           | $T_{HD32}$ | 3   | 3   | 1   | ×    | ×    | 3    |            |
| Differential gain (DG)    | DG1        | 2   | 3   | 3   | 1    | ×    | ×    | —          |
|                           | DG2        | 3   | 2   | 3   | ×    | 1    | ×    |            |
|                           | DG3        | 3   | 3   | 2   | ×    | ×    | 1    |            |
| Differential phase (DP)   | DP1        | 2   | 3   | 3   | 1    | ×    | ×    | —          |
|                           | DP2        | 3   | 2   | 3   | ×    | 1    | ×    |            |
|                           | DP3        | 3   | 3   | 2   | ×    | ×    | 1    |            |

×: Any of switches 1, 2, or 3 possible.

\* 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 1.0%. This output voltage at this time is the maximum output level  $V_{om}$  (VP-P).\* 2: Input a 2.0VP-P, 1MHz sine wave. The voltage gain is given by  $G_v = 20 \log (V_{OUT} / V_{IN})$ (dB).

\* 3: Input a 1.0VP-P, 1kHz sine wave. Connect a distortion meter to the output and measure the total-harmonic distortion.

● Application example

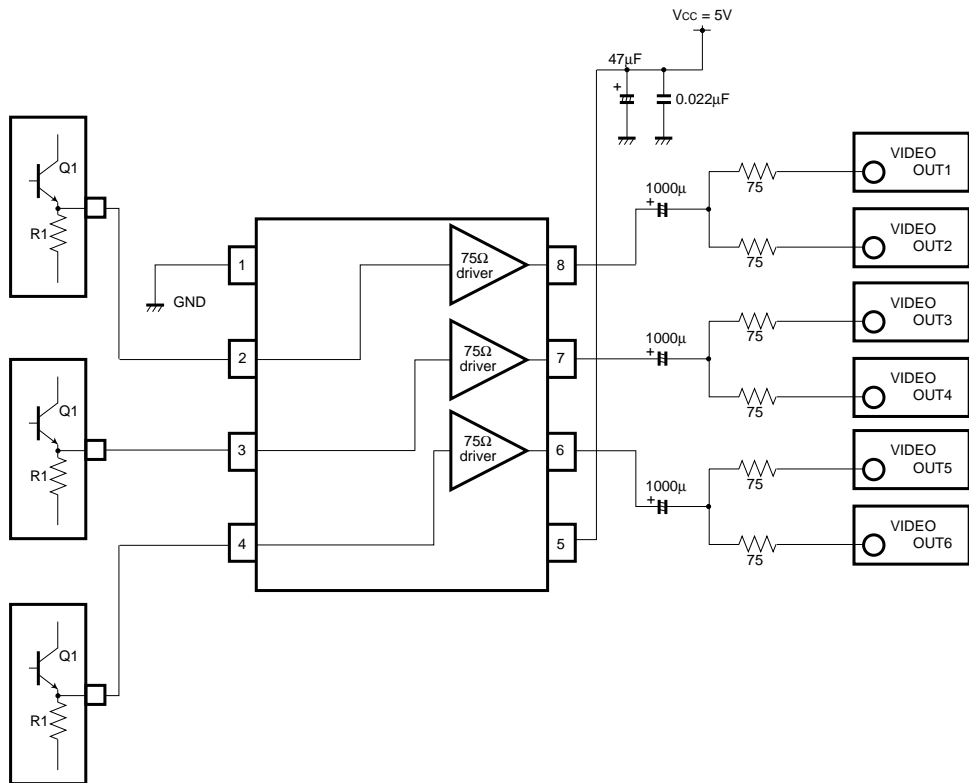


Fig. 2

●Electrical characteristic curves

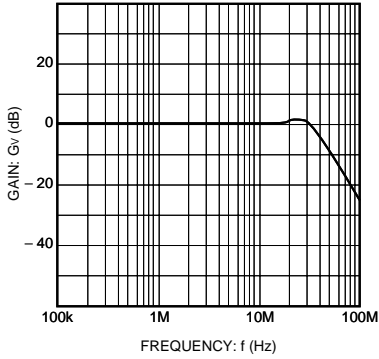


Fig. 3 Frequency characteristic

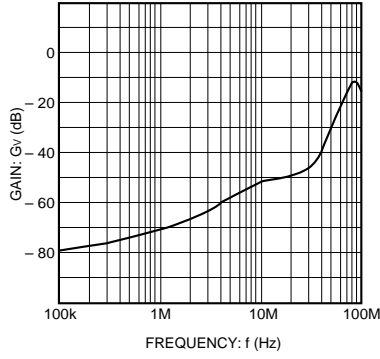


Fig. 4 Crosstalk

●Operation notes

- (1) The input signals are signals such as composite video signals, or component video (RGB) signals.
- (2) When using direct coupling, keep the input signals in the range: 0.5V to 3.8V.

●External dimensions (Units: mm)

