

75Ω driver with Y / C MIX circuit

BA7664FV

The BA7664FV is a 75Ω driver with a 6dB amplifier and a Y / C MIX circuit. The 75Ω driver is capable of driving a load sufficient for two circuits, as well as being equipped with a sag correction function which reduces the capacitance of the output coupling capacitor. The IC comes in the compact 8-pin SSOP-B package. The composite Y signal input pin is sync chip clamped input, while the chrominance input pin is bias input. An internal power-saving circuit is also included which provides an output muting function and output pin shorting protection.

●Applications

Video cameras, electronic cameras and others

●Features

- 1) The compact 8-pin SSOP-B package is used.
- 2) Operates at a low power consumption (60mW Typ.).
- 3) Internal Y / C MIX circuit.
- 4) Internal output muting circuit.
- 5) Internal power-saving circuit.
- 6) Internal output protection circuit.
- 7) Internal sag correction function makes it possible to reduce the capacitance of the output coupling capacitor.
- 8) A load sufficient for two circuits can be driven.

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------|------------------|--------------|------|
| Power supply voltage | V _{cc} | 8 | V |
| Power dissipation | P _d | 350 | mW |
| Operating temperature | T _{opr} | - 25 ~ + 75 | °C |
| Storage temperature | T _{stg} | - 55 ~ + 125 | °C |

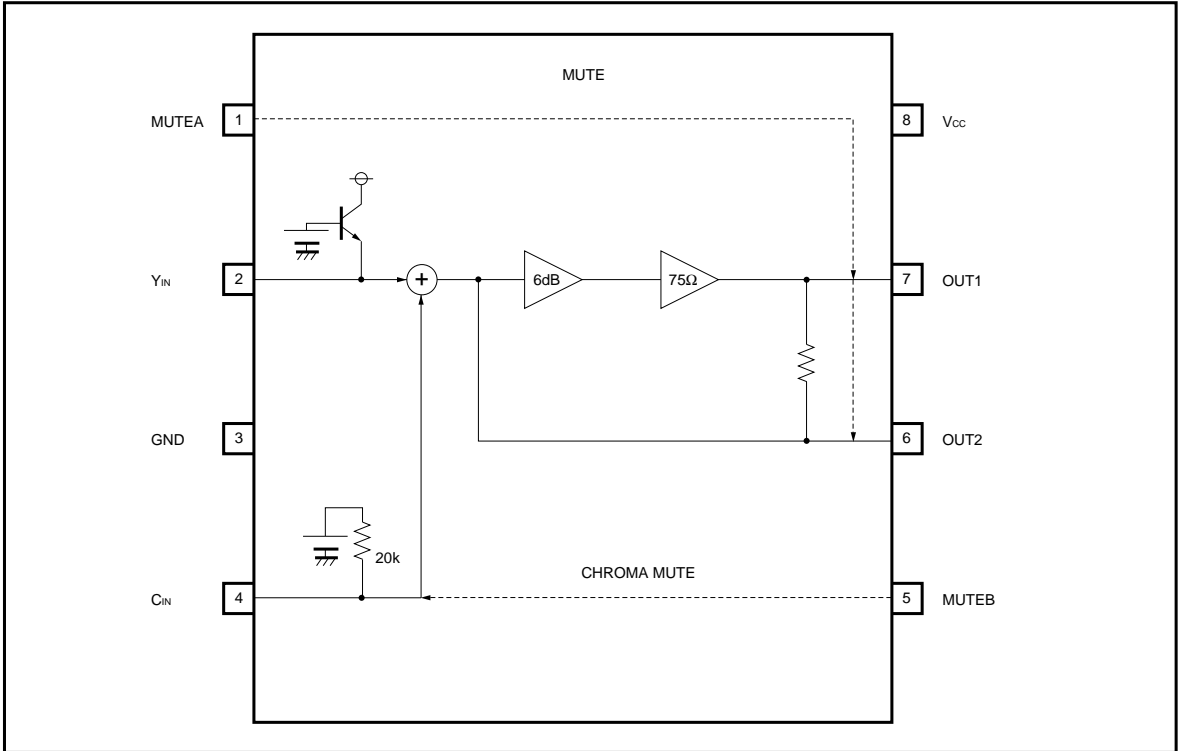
* Reduced by 3.5mW for each increase in Ta of 1°C over 25°C

●Recommended operating conditions (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|--------------------------------|-----------------|------|------|------|------|
| Operating power supply voltage | V _{cc} | 4.5 | 5.0 | 5.5 | V |

*Not designed for radiation resistance.

●Block diagram



●Pin descriptions and input / output circuits

| Pin. No | Pin name | IN | OUT | Reference potential | Equivalent circuit | Pin description |
|---------|--------------------|----|-----|---------------------|--------------------|---|
| 1 5 | MUTEA MUTEB | ○ | — | — | | <p>Muting control</p> <p>If MUTEA (pin 1) is set to HIGH, the output is muted. If MUTEB (pin 8) is set to HIGH, only the chrominance signal is muted. (The Y signal is output without being muted.)</p> |
| 2 | Y _{IN} | ○ | — | 2.0V | | <p>Signal input</p> <p>This is the input pin for composite Y signals, and is sync chip clamped input.</p> |
| 3 | GND | — | — | 0V | | <p>Ground</p> |
| 4 | C _{IN} | ○ | — | 2.0V | | <p>Signal input</p> <p>This is the input pin for chrominance signals, and is bias-type input. The input impedance is 20kΩ.</p> |
| 6 7 | MIXOUT2 MIXOUT1 | — | ○ | 0.9V 0.95V | | <p>Signal output</p> <p>These are the Y / C MIX signal output. Pin 6 is the pin for sag correction. If pin 7 is set to 0.2V or less, the protective circuit is triggered and the power-saving mode is accessed.</p> |
| 8 | V _{CC} | — | — | 5.0V | | <p>Power supply</p> |

●Electrical characteristics (unless otherwise noted, Ta = 25°C, V_{CC} = 5V)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------------------|-------------------|------|------|-----------------|------------------|--|
| Circuit current | I _{CC} | 6.1 | 12.2 | 18.3 | mA | With no signal |
| Max. output level | V _{om} | 2.6 | 3.0 | — | V _{P-P} | f = 1kHz, THD = 1%V _{O2} |
| Voltage gain | G _V | -1.0 | -0.2 | 0.6 | dB | f = 4.43MHz / V _{O1} |
| Frequency characteristic | G _F | -1.5 | -0.5 | 0.5 | dB | f = 7MHz / 1MHz, 1V _{P-P} / V _{O1} |
| Muting attenuation | M _T | — | -60 | — | dB | f = 4.43MHz, 1V _{P-P} / V _{O1} |
| Muting switching high level | V _{THH} | 2.2 | — | V _{CC} | V | — |
| Muting switching low level | V _{THL} | 0 | — | 0.7 | V | — |
| Input impedance | Z _{IN} | 16 | 20 | 24 | kΩ | Chrominance input pin (pin 7) |
| Circuit current when muted | I _{MUTE} | — | 1.3 | 2.6 | mA | MUTEA "H" |

●Guaranteed design parameters (unless otherwise noted, Ta = 25°C, V_{CC} = 5V)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------|--------|------|------|------|------|--|
| Differential gain | DG | — | 1.0 | 2.0 | % | V _{IN} = 1.0V _{P-P} reference staircase signal |
| Differential phase | DP | — | 0.5 | 2.0 | DEG | V _{IN} = 1.0V _{P-P} reference staircase signal |

●Mute switch mode settings

• MUTEA (1pin)

| | |
|---|--------|
| H | MUTE |
| L | NORMAL |

• MUTEB (5pin)

| | |
|---|-------------|
| H | CHROMA MUTE |
| L | NORMAL |

●Measurement circuit

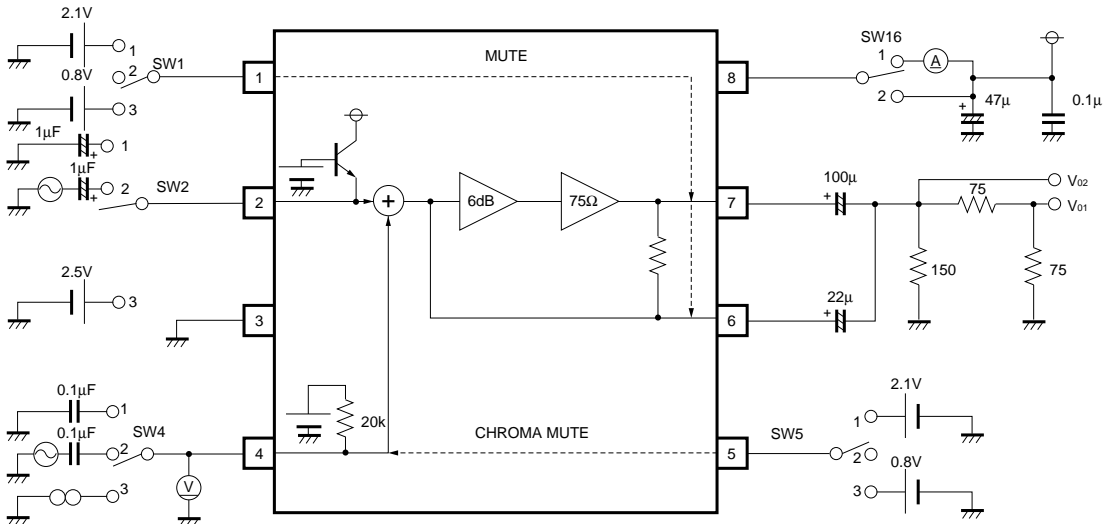


Fig.1

●Measurement conditions

| Parameter | Symbol | SW Conditions | | | | | Measurement method | |
|----------------------------|-------------------|-----------------|---|---|---|---|--------------------|----|
| | | 1 | 2 | 4 | 5 | 8 | | |
| Circuit current | I _{CC} | 2 | 1 | 1 | 2 | 1 | *1 | |
| Max. output level | V _{OM} | 3 | 2 | 1 | 3 | 2 | *2 | |
| Voltage gain | Y→OUT | G _{V1} | 3 | 2 | 1 | 3 | 2 | *3 |
| | C→OUT | G _{V2} | 3 | 3 | 2 | 3 | 2 | *3 |
| Frequency characteristic | G _F | 3 | 1 | 2 | 3 | 2 | *4 | |
| Muting attenuation | M _T | 1 | 2 | 1 | 3 | 2 | *5 | |
| Chroma muting attenuation | M _{TC} | 3 | 3 | 2 | 1 | 2 | *5 | |
| Input impedance | Z _{IN} | 3 | 1 | 3 | 3 | 2 | *6 | |
| Circuit current when muted | I _{MUTE} | 1 | 1 | 1 | 2 | 1 | *7 | |

* The muting switching level is substituted by carrying out the above measurement at H = 2.1V, L = 0.8V.

Measurement method

- *1 Measure the circuit current when no signal is present.
- *2 Apply a sine wave of f = 1kHz to the input, and adjust the input level so that the output distortion is 1%.
At this time, set the output voltage to the maximum output level of V_{OM} [V_{P-P}].
- *3 Measure the output V_O [V_{P-P}] with a sine wave of f = 4.43MHz, 1V_{P-P} applied to the input.
Voltage gain G_V is: $G_V = 20 \text{ Log } (V_O / V_{IN})$ [dB]
- *4 Measure the outputs V_{O7} and V_{O1} [V_{P-P}] each with sine waves of f = 7MHz, 1V_{P-P} and f = 1MHz, 1V_{P-P} applied to the input.
Voltage frequency G_F is: $G_F = 20 \text{ Log } (V_{O7} / V_{O1})$ [dB]
- *5 Measure the output V_O [V_{P-P}] with a sine wave of f = 4.43MHz, 1V_{P-P} applied to the input.
The muting attenuation M_T is: $M_T = 20 \text{ Log } (V_O / V_{IN})$ [dB]
- *6 Measure the input voltage V_{IN_{SO}} [V] and the open voltage of the input V_{IN_O} [V] when 50μA is introduced.
The input impedance Z_{IN} is: $Z_{IN} = [V_{IN_{SO}} - V_{IN_{O}}] / 50 \times 1000$ [kΩ]
- *7 Measure the circuit current when MUTEA (pin 1) is HIGH.

●Application examples

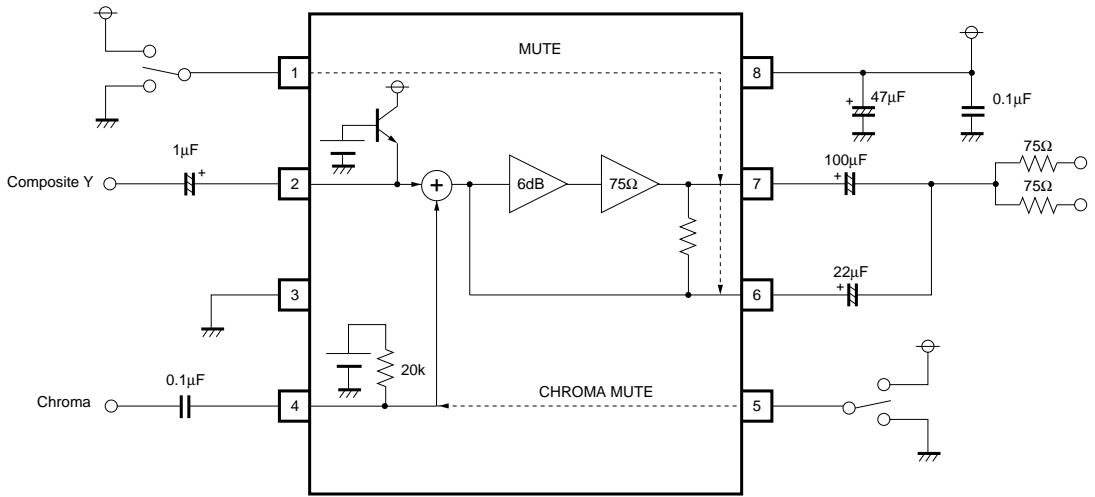


Fig.2

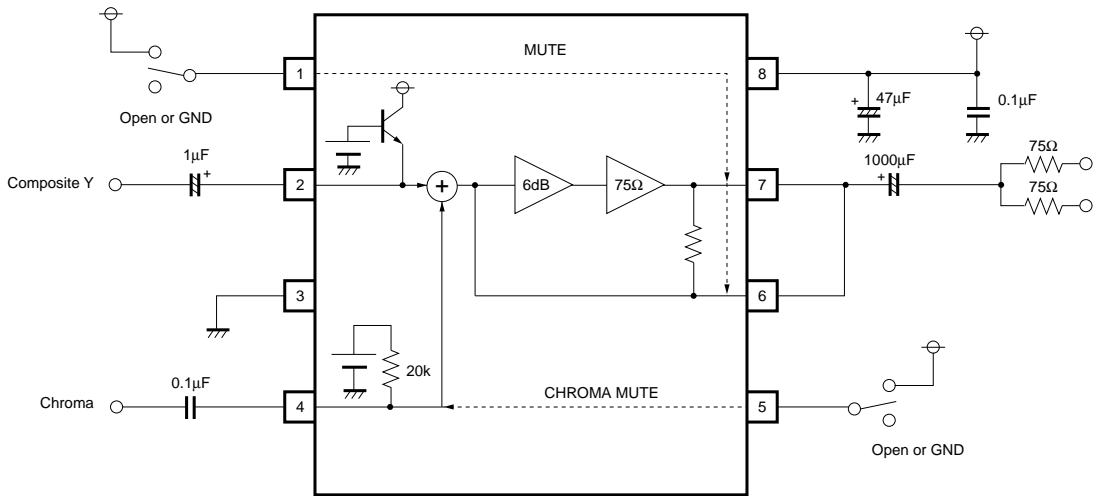


Fig.3

●External dimensions (Units: mm)

