

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 ($75\Omega \times 2$).

●Applications

Video cassette recorders, televisions and camcorders

●Features

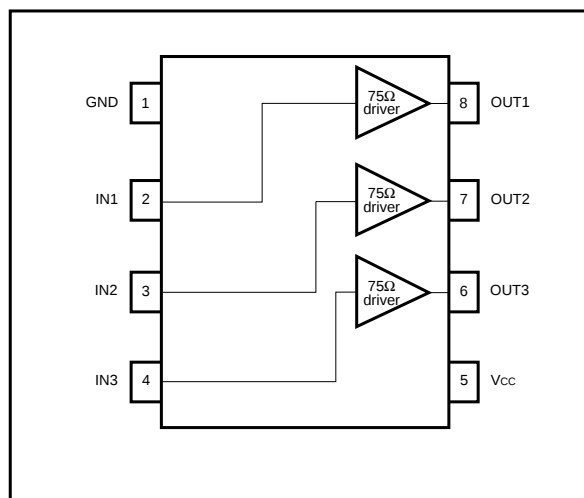
- 1) Can be directly coupled to the previous circuit.
- 2) Each output can drive two loads.

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V _{CC}	8.0	V
Power dissipation	P _d	550*	mW
Operating temperature	T _{opr}	– 25 ~ + 75	°C
Storage temperature	T _{stg}	– 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 Input composite video or component video (RGB) signals. Keep the input signal level in the range 0.5V to 3.8V.
3	IN2	Direct-coupling input Input composite video or component video (RGB) signals. Keep the input signal level in the range 0.5V to 3.8V.
4	IN3	Direct-coupling input Input composite video or component video (RGB) signals. Keep the input signal level in the range 0.5V to 3.8V.
5	V _{CC}	Power supply
6	OUT3	Direct-coupling output 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 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 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, Ta = 25°C and V_{CC} = 5V, and load is two system drive)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Operating voltage	V _{CC}	4.5	5.0	5.5	V	—
Supply current	I _{CC}	—	25.2	37.8	mA	No signal
Maximum output level	V _{om}	2.9	3.4	—	V _{P-P}	f = 1kHz, THD = 1.0%
Voltage gain	G _V	−1.0	−0.5	0	dB	f = 1MHz, V _{IN} = 2.0V _{P-P}
Frequency characteristic	C _f	−3	0	1	dB	10MHz / 1MHz, V _{IN} = 1.0V _{P-P}
Differential gain 75Ω drive 1	DG1	—	0.4	1.0	%	V _{IN} = 2.0V _{P-P} , standard staircase signal
Differential phase 75Ω drive 1	DP1	—	0.4	1.0	deg	V _{IN} = 2.0V _{P-P} , standard staircase signal
Differential gain 75Ω drive 2	DG2	—	0.7	2.0	%	V _{IN} = 2.0V _{P-P} , standard staircase signal
Differential phase 75Ω drive 2	DP2	—	0.7	2.0	deg	V _{IN} = 2.0V _{P-P} , standard staircase signal
Interchannel crosstalk	C _T	—	−60	—	dB	f = 4.43MHz, V _{IN} = 2.0V _{P-P}
Total harmonic distortion	T _{HD}	—	0.1	0.5	%	f = 1kHz, V _{IN} = 1.0V _{P-P}

● 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	f ₁₂	1	3	3	3	×	×	—
	f ₂₂	3	1	3	×	3	×	
	f ₃₂	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 = 1kHz 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} (V_{P-P}).* 2: Input a 2.0V_{P-P}, 1MHz sine wave. The voltage gain is given by G_v = 20 log (V_{OUT} / V_{IN})(dB).* 3: Input a 1.0V_{P-P}, 1kHz sine wave. Connect a distortion meter to the output and measure the total-harmonic distortion.

● Application example

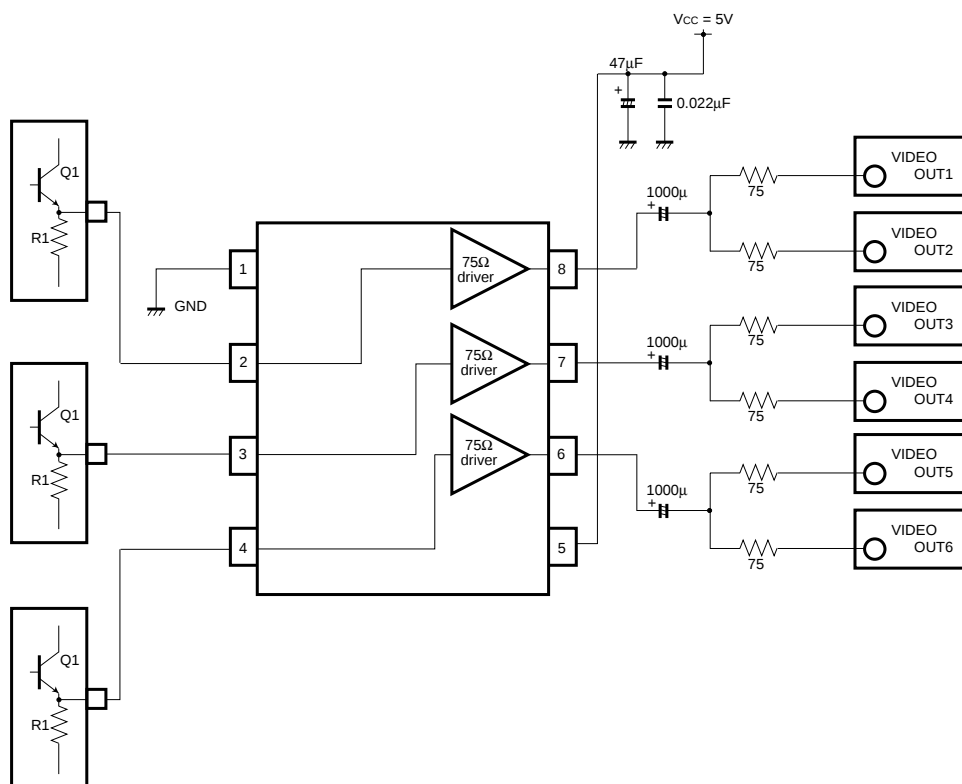


Fig. 2

The Bode plot shows the closed-loop transfer function G_v in dB versus frequency f in Hz. The gain is 0 dB for frequencies below approximately 20 MHz. Above 20 MHz, the gain decreases at a rate of -20 dB/decade, reaching -25 dB at 100 MHz.

The drawing illustrates the mechanical specifications of the SOP8 package. The top view shows a rectangular body with a width of 5.0 ± 0.2 and a total length of 6.2 ± 0.3 . The pin pitch is 1.27 , and the pin width is 0.11 . The side view shows a maximum height of 1.5 ± 0.1 and a body thickness of 0.4 ± 0.1 . A detail view of the lead shows a thickness of 0.15 ± 0.1 and a lead width of 0.15 . Pin numbers 1 through 8 are indicated on the top view.