

Dimensions (mm)

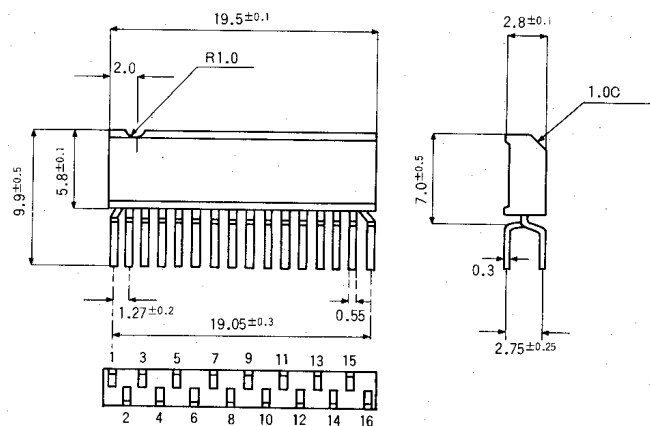


Fig. 1

The BA3402 is a monolithic integrated circuit consisting of a preamplifier developed for use in car stereo auto-reverse tape decks. An internal electronic switch is used to perform forward/reverse head switching, thus increasing reliability and simplifying wiring as well as enhancing assembly efficiency when compared with previously used mechanical-type switching arrangements. Its compact zig-zag package also contributes to space-saving designs. The circuit design has eliminated the requirement for an input coupling capacitor, thus not only reducing the number of externally connected components, but eliminating the magnetization of the head upon application of power.

Features

1. Low noise ($V_{NIN} = 1.2\mu V$).
2. High open-loop gain ($G_{VO} = 85dB$)
3. The use of a high-reliability electronic switch enables left/right channel head switching with a single external switch.
4. The use of a virtual ground in the input circuit eliminates the need for an input coupling capacitor.
5. A built-in bias circuit reduces the number of external components required.
6. Low pop noise upon head switching
7. High drive capability emitter-follower output circuit
8. Pin arrangement simplifies PC board design.
9. Compact zig-zag package enables high-density mounting.

Block Diagram

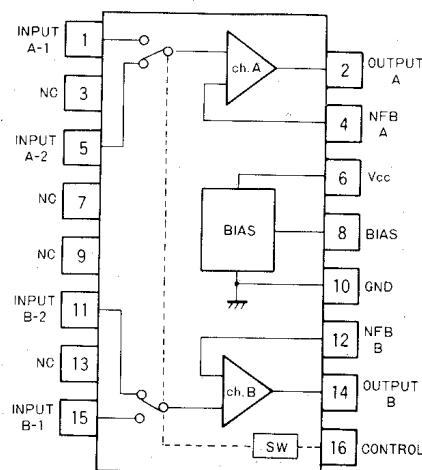


Fig. 2

Circuit Diagram

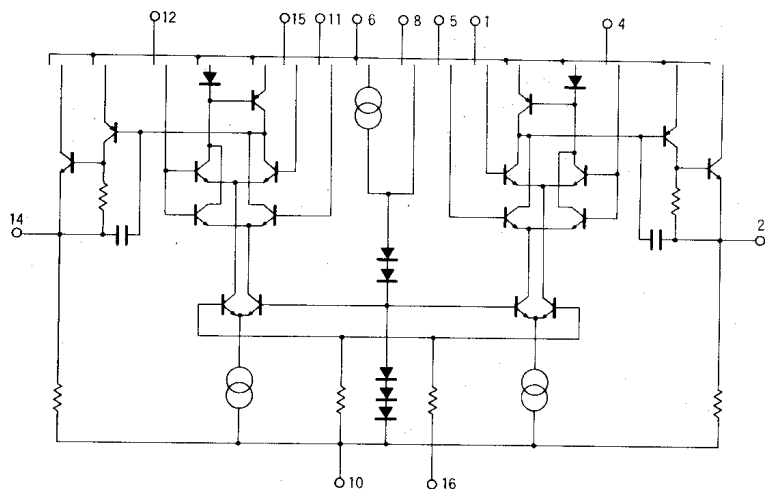


Fig. 3

Applications

1. Car stereos
2. Playback auto-reverse decks

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	14	V
Power dissipation	P_d	340*	mW
Operating temperature	T_{opr}	-25~+75	$^\circ\text{C}$
Storage temperature	T_{stg}	-55~+125	$^\circ\text{C}$

* Derating is done at 3.4mW/ $^\circ\text{C}$ for operation above $T_a=25^\circ\text{C}$.

Electrical Characteristics (Unless otherwise noted, $T_a = 25^\circ\text{C}$, $V_{CC} = 8\text{V}$)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions	Test circuit
Supply current	I_{CC}	—	4	5.5	mA	$V_{IN} = 0\text{V}$, pin 16 open	Fig. 4
Open-loop voltage gain	G_{VO}	70	85	—	dB	$V_{OUT} = 0.3\text{V}$, $f = 1\text{kHz}$	Fig. 4
Input-referred noise voltage	V_{NIN}	—	1.2	2.0	μV_{rms}	$R_g = 2.2\text{k}\Omega$, BPF (30Hz~20kHz)	Fig. 4
Maximum output voltage	V_{om}	1.5	2.0	—	V	THD = 1%, $f = 1\text{kHz}$	Fig. 4
Crosstalk between Ch A and Ch B	CT_{AB}	37	50	—	dB	$R_g = 2.2\text{k}\Omega$, $f = 1\text{kHz}$	Fig. 4
Crosstalk between Ch 1 and Ch 2	$CT_{1:2}$	57	65	—	dB	$R_g = 2.2\text{k}\Omega$, $f = 1\text{kHz}$	Fig. 4
Input bias current	I_B	—	150	500	nA	$V_{IN} = 0\text{V}$	Fig. 4
Total harmonic distortion	THD	—	0.1	0.3	%	$V_O = 0.3\text{V}$	Fig. 4

Test Circuit

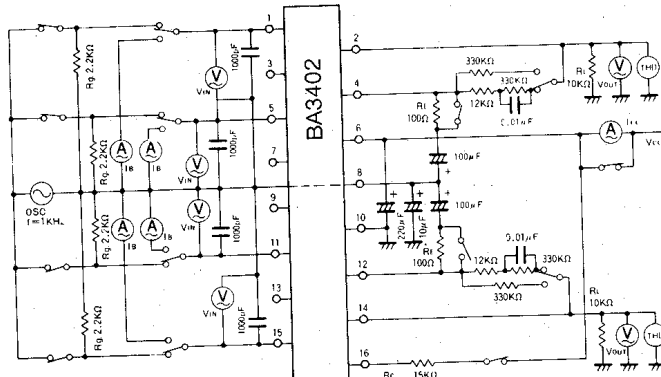
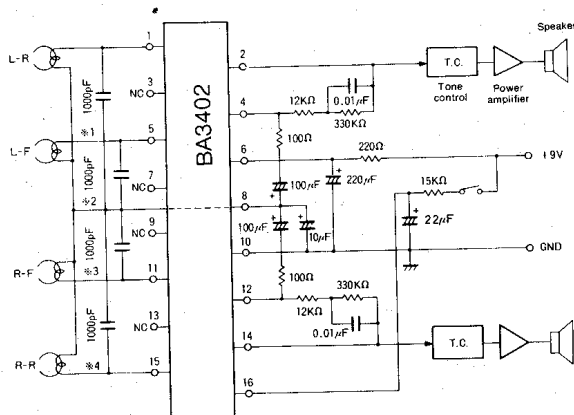


Fig. 4

Application Example



*1~4: High-quality dielectric capacitor to prevent oscillations

Fig. 5