

# Dual preamplifier with ALC

## BA3311L

The BA3311L is a dual preamplifier with ALC designed for use in stereo radio-cassette recorders. It comes in a compact 12-pin ZIP package and has two record/playback preamplifiers, and an ALC circuit. The preamplifiers are directly coupled to the head and do not require coupling capacitors. This prevents tape head magnetization and "pop" noise generation.

An ALC circuit with large dynamic range can be constructed with addition of just an external detector and time constant circuit.

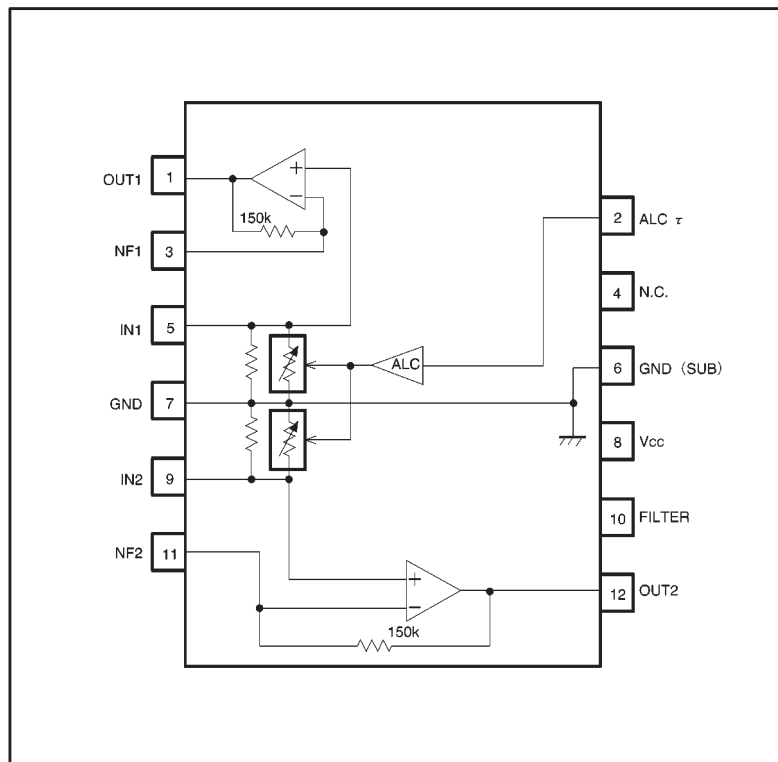
●Applications

Stereo radio cassette players

●Features

- 1) The input block uses a bias circuit that does not require coupling capacitors.
- 2) ALC circuit requires addition of just an external detector and time constant circuit.
- 3) Wide operating power supply voltage range.
- 4) High gain.
- 5) Low noise.

●Block diagram



● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V <sub>CC</sub>	14	V
Power dissipation	P <sub>d</sub>	400*	mW
Operating temperature	T <sub>opr</sub>	-25~+75	°C
Storage temperature	T <sub>stg</sub>	-55~+125	°C

\* Reduced by 4.0mW for each increase in Ta of 1°C over 25°C.

● Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V <sub>CC</sub>	5.0	8.0	12.0	V

● Electrical characteristics (unless otherwise noted, Ta = 25°C, V<sub>CC</sub> = 8V, and f = 1kHz)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	I <sub>Q</sub>	1.5	3.0	6.0	mA	
Open loop voltage gain	G <sub>vo</sub>	70	85	—	dB	V <sub>O</sub> =1V <sub>rms</sub>
Closed loop voltage gain	G <sub>vc</sub>	49	52	55	dB	V <sub>O</sub> =0.3V <sub>rms</sub>
Total harmonic distortion	THD 1	—	0.3	1.0	%	V <sub>O</sub> =0.3V <sub>rms</sub>
Maximum output voltage	V <sub>OM</sub>	1.5	2.0	—	V <sub>rms</sub>	THD=1%
Input conversion noise voltage	V <sub>NIN</sub>	—	1.0	1.8	μV <sub>rms</sub>	R <sub>g</sub> =2.2kΩ, DIN AUDIO 45dB at 1kHz NAB
Input resistance	R <sub>IN</sub>	35	51	71	kΩ	
Channel separation	CS	40	55	—	dB	R <sub>g</sub> =2.2kΩ
ALC range*	ALC	40	53	—	dB	
ALC balance	ALB	—	0	3.0	dB	V <sub>IN</sub> =-45dBV
ALC distortion	THD 2	—	0.3	1.0	%	V <sub>IN</sub> =-45dBV

\* The ALC range is defined in Fig. 3, "Input voltage vs. output voltage".

● Measurement circuit

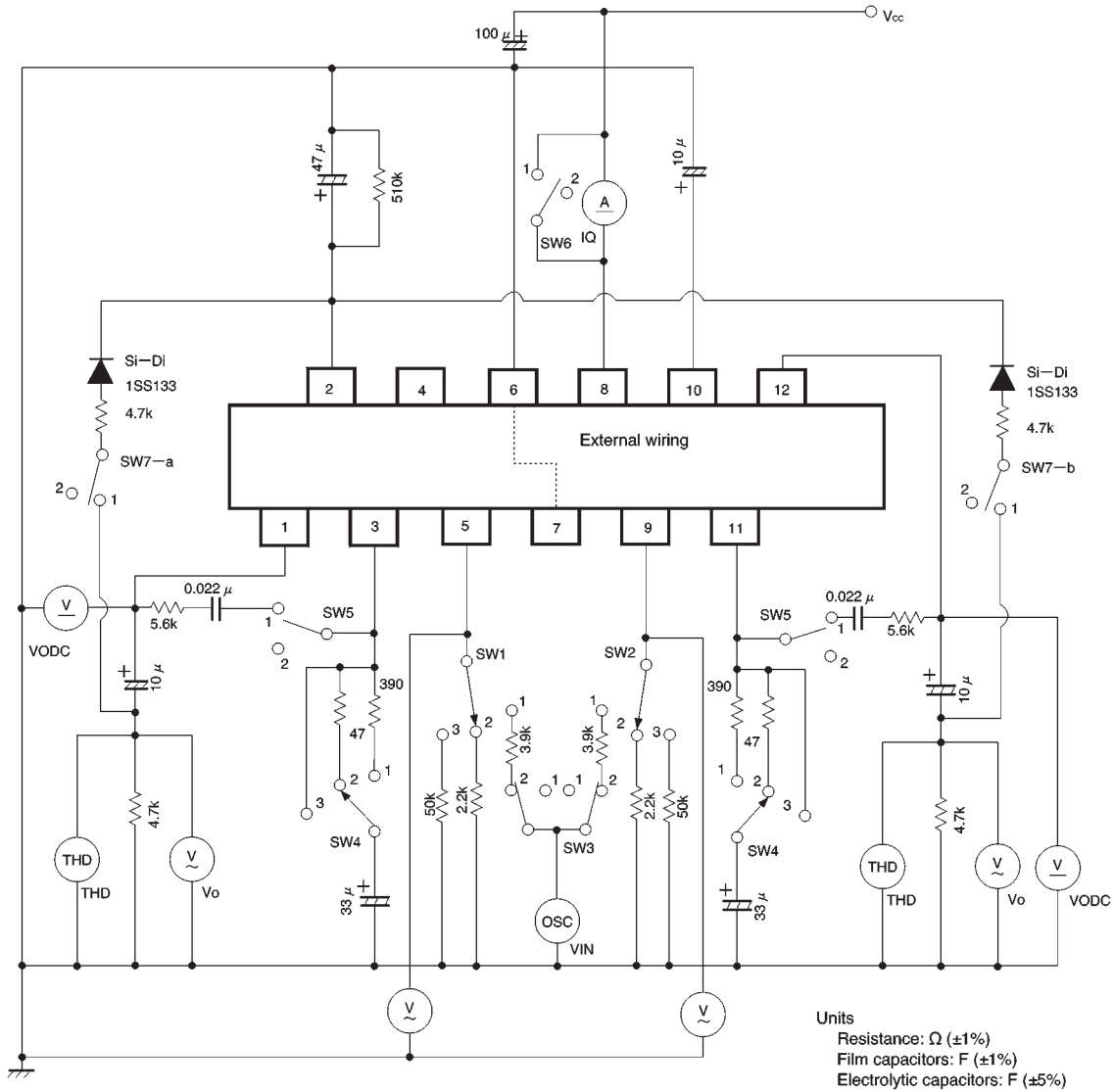


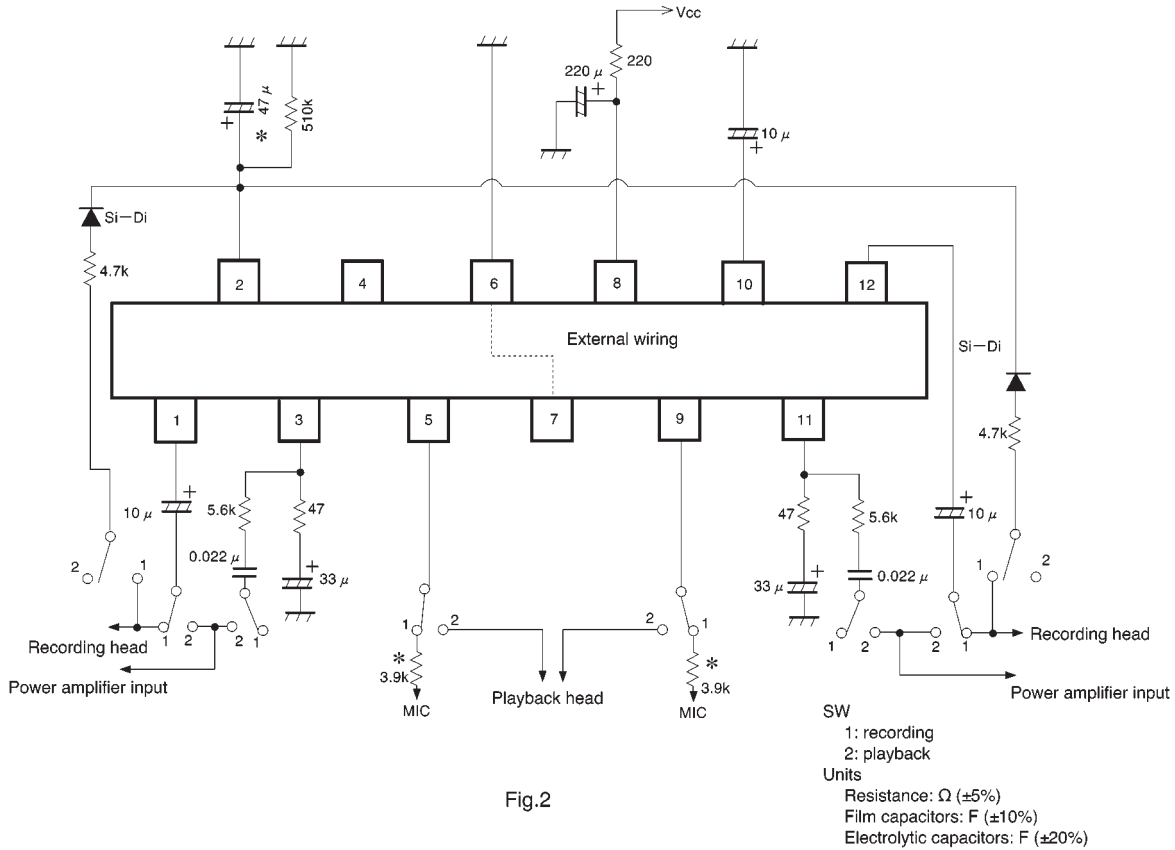
Fig. 1

● Operation notes (the value of the resistor marked with an asterisk in Fig. 2)

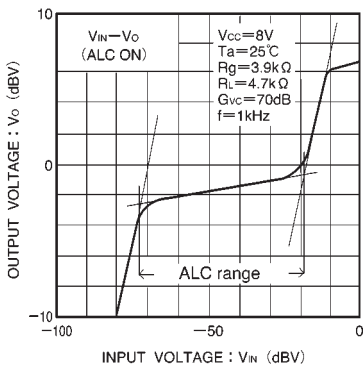
Changing the input resistor  $R_g$ , and the ALC time constant influences the ALC transient characteristics. In particular, if  $R_g$  is less than  $3.9k\Omega$  or the time constant capacitor is less than  $47\mu F$ , the ALC may operate excessively. Do not use smaller values than those recommended for these components.

Units  
Resistance:  $\Omega$  ( $\pm 1\%$ )  
Film capacitors: F ( $\pm 1\%$ )  
Electrolytic capacitors: F ( $\pm 5\%$ )

●Application example



●Electrical characteristics curve



●External dimensions (Units: mm)

