General-purpose dual line amplifier BA3118L

The BA3118L is a dual-channel line amplifier with a flat frequency characteristic. It has been designed for use in radio cassette players and car stereos.

The feedback resistors are all on the chip, which reduces the number of external components required and simplifies PCB design. The gain can be set to one of 10 gain settings from 6dB to 20dB (6dB, 8dB, 10dB, 10.9dB, 12.4dB, 13.4dB, 15.1dB, 16dB, 17.9dB and 20dB), and external fine trimming is possible.

Applications

Car stereos and radio cassette players

Features

- 1) 10 gain settings over the range 6dB to 20dB (max. step 2dB) without external resistors.
- 2) Low distortion.
- 3) Good crosstalk characteristics.
- 4) Low noise.
- 5) Flat frequency characteristic.

- Two channels on one chip allows compact set design.
- Pin 9 is not connected which simplifies the PBC GND design.
- Built-in feedback resistors reduces the number of external components required.
- 9) Low gain variance between the two channels.

● Absolute maximum ratings (Ta = 25°C)

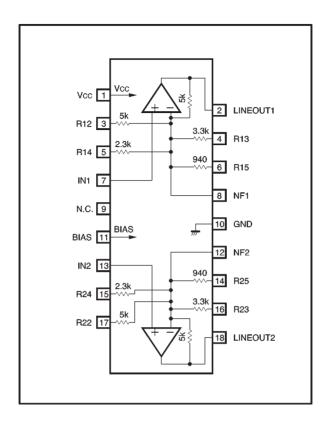
Parameter	Symbol	Limits	Unit	
Power supply voltage	Vcc	18	V	
Power dissipation	Pd	400*1	mW	
Operating temperature	Topr	−25~ +85	ဗ	
Storage temperature	rage temperature Tstg		°	

^{★1} Reduced by 4.0mW for each increase in Ta of 1°C over 25°C.

• Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit
Power supply voltage	Vcc	4	_	16	٧

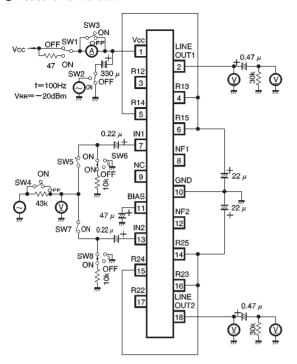
Block diagram



●Electrical characteristics (unless otherwise noted, Ta = 25°C, Vcc = 8.0V, f = 1kHz and Gvc = 20dB)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Quiescent current	lα	_	3.8	5.6	mA	V _{IN} =0V _{rms}
Closed loop voltage gain	Gvc	19	20	21	dB	V _{IN} =−20dBm, DIN AUDIO
Maximum output voltage	Vом	1.1	1.9	_	V _{rms}	THD=1%, BPF400~30kHz
Total harmonic distortion	THD	_	0.017	0.15	%	Vo=0dBm, RL=30kΩ
Input conversion noise voltage	VNIN	_	1.1	2.1	μ Vrms	V_{IN} =0 V_{rms} , R_g =0 Ω , DIN AUDIO
Interchannel crosstalk	СТ	_	-92	-72	dB	Vo=0dBm, RL=30kΩ
Input resistance	Rin	30	45	60	kΩ	V _{IN} =0.1V _{rms}
Ripple rejection ratio	RR	35	44	_	dB	V _{RR} =-20dBm, f _{RR} =100Hz

Measurement circuit

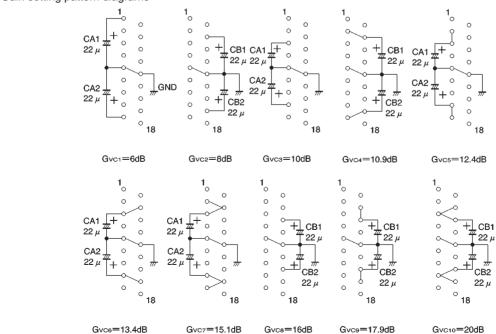


Measurement circuit switch setting table

SW No.	1	2	3	4	5	6	7	8
la	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
Gvc	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
Vом	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
THD	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
V _{NIN}	OFF	OFF	OFF	OFF	OFF	G	OFF	G
CT	OFF	OFF	OFF	OFF	ON/OFF	OFF/ON	OFF/ON	ON/OFF
Rin	OFF	OFF	OFF	ON	ON/OFF	OFF	OFF/ON	OFF
RR	ON	ON	OFF	OFF	OFF	ON	OFF	ON

Fig. 1

Gain setting pattern diagrams



Application example

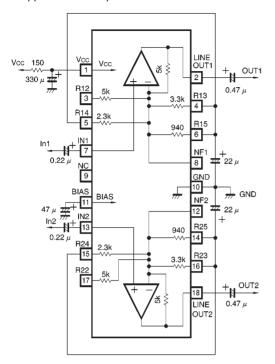


Fig. 2

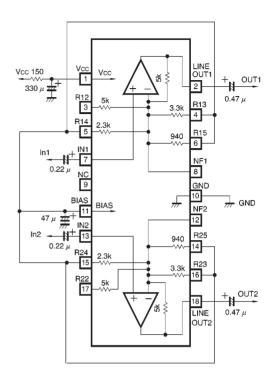


Fig. 3

Electrical characteristics curves

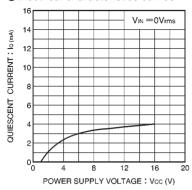


Fig. 4 Quiescent current vs. power supply voltage

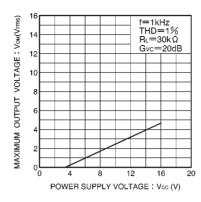


Fig. 5 Maximum output voltage vs. power supply voltage

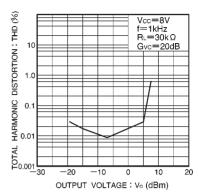


Fig. 6 Total harmonic distortion vs. output voltage

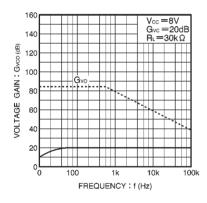


Fig. 7 Voltage gain vs. frequency

External dimensions (Units: mm)

