12V / 5W dual power amplifier BA5406

The BA5406 is a dual-OTL monolithic power IC with two high-output, low-frequency power amplifiers. With a 12V power supply, it has a rated output of 5W \times 2 into a 3 Ω load, and with a 9V power supply, it has a rated output of 2.8W \times 2 into a 3 Ω load.

The BA5406 has good low-voltage characteristics, and the "pop" sound when power is applied is small. It generates little radio-band noise, and is ideal for use in stereo radio cassette players.

Applications

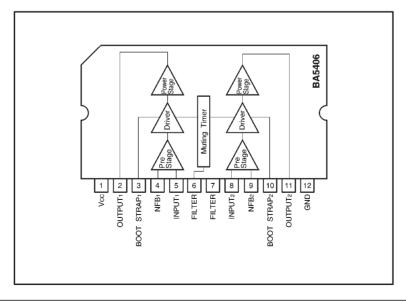
Stereo radio cassette players, stereo component systems, and TVs.

Features

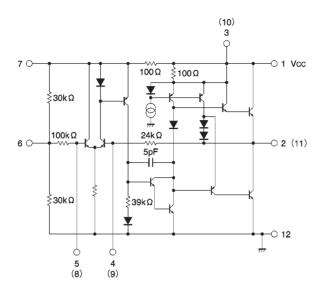
- 1) Small "pop" noise.
- Good low voltage characteristics. Begins operating Vcc = 5V (Typ.).
- 3) Good channel balance.
- 4) Good distortion characteristics (THD = 0.3% when Po = 0.5W).
- Easy-to-mount 12-pin SIP-M package that requires little PCB space.
- The ripple filter pin (pin 6) can be used for muting (by setting it to ground potential).

- Symmetrical pin assignments simplifies PCB artwork.
- 8) Package has low thermal resistance to simplify heatsink design.
- 9) Built-in treble phase compensation capacitors.
- Low radio-band noise generated. Can be freely positioned in the set.

Block diagram



Internal circuit configuration



●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	18* ¹	V
Power dissipation	Pd	20*2	w
Operating temperature	Topr	−20~+75	°C
Storage temperature	Tstg	-30 ∼+125	°C
Junction temperature	Tj	150	°C

^{*1} No signal

●Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit
Power supply voltage	Vcc	5	12	15	٧

●Electrical characteristics (unless otherwise noted, Ta = 25°C and Vcc = 12V)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Quiescent current	lα	20	40	70	mA	V _{IN} =0V _{rms}
Closed loop voltage gain	Gvc	43	46	49	dB	f=1kHz, V _{IN} =-46dBm
Rated output 1	Pout 1	4.0	5.0	_	W	f=1kHz, THD=10%, R _L =3Ω
Rated output 2	Роит 2	3.4	4.2	_	W	f=1kHz, THD=10%, R _L =4Ω
Total harmonic distortion	THD	_	0.3	1.5	%	f=1kHz, Po=0.5W
Output noise voltage	Vno	_	0.6	1.0	mV _{rms}	Rg=10kΩ
Input resistance	Rin	50	100	_	kΩ	f=1kHz, V _{IN} =5mV _{rms}

^{*2} Back metal temperature: 75°C.

Measurement circuit

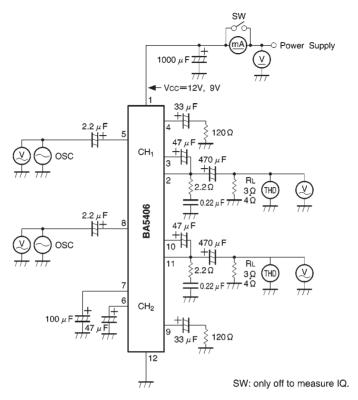


Fig. 1

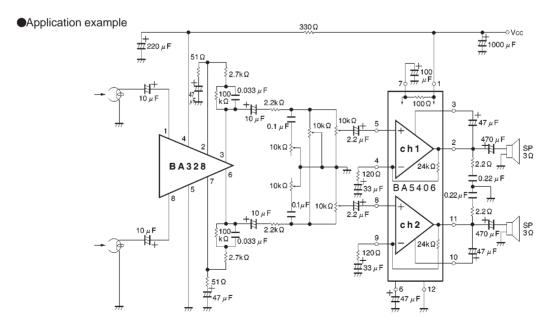


Fig. 2

Electrical characteristics curves

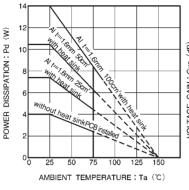


Fig. 3 Thermal derating curve

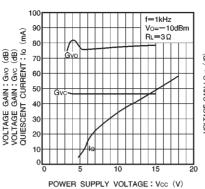


Fig. 4 Quiescent current and voltage gain vs. power supply voltage

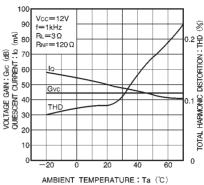


Fig. 5 Distortion, voltage gain and guiescent current vs. frequency

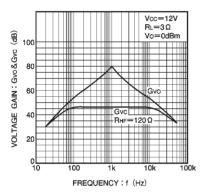


Fig. 6 Voltage gain vs. frequency

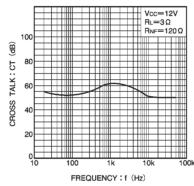


Fig. 7 Crosstalk vs. frequency

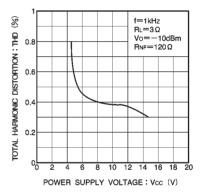


Fig. 8 Distortion vs. power supply voltage

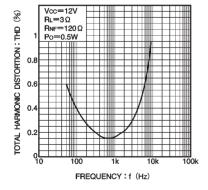


Fig. 9 Distortion vs. frequency

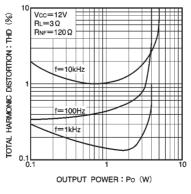


Fig. 10 Distortion vs. Output power

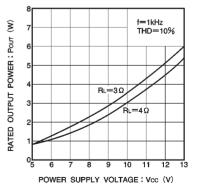


Fig. 11 Output power vs. power supply voltage

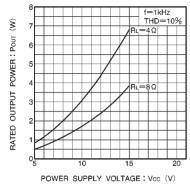


Fig. 12 Output power vs. power supply voltage

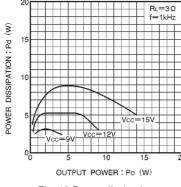


Fig. 13 Power dissipation vs. output power(I)

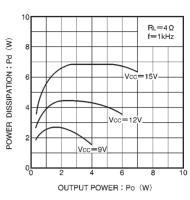


Fig. 14 Power dissipation vs. output power(I)

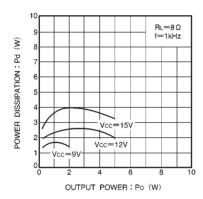


Fig. 15 Power dissipation vs. output power(Ⅲ)

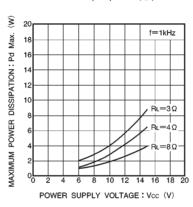


Fig. 16 Maximum power dissipation vs. power supply voltage

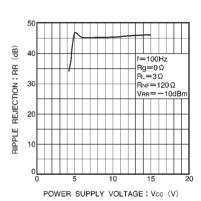


Fig. 17 Ripple rejection ratio vs. power supply voltage

External dimensions (Units: mm)

