

Dimensions (Unit: mm)

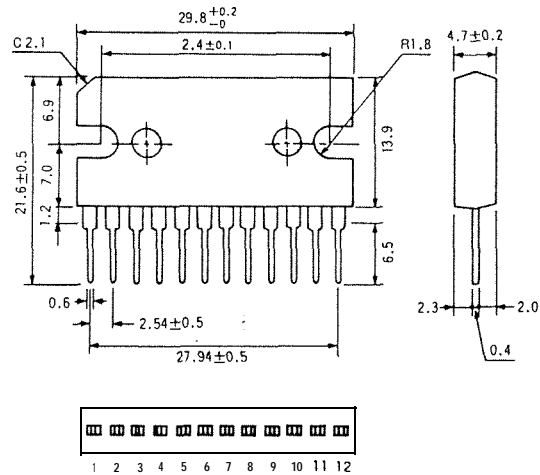


Fig. 1

The BA5406 is a monolithic dual OTL power amplifier containing two sets of high-power AF power amplifiers. The device delivers 5 watts x 2 into 3Ω loads with a 12V supply, or 2.8 watts x 2 into 3Ω loads with a 9V supply. The BA5406 features minimal power-on pop noise and immunity to supply voltage drop. With its minimal RF radiation, the device is ideally suited for use in stereo radio cassette recorders.

**Features**

1. Minimal power-on pop noise.
2. Immunity to supply voltage drop (operates down to  $V_{CC}=4.5V$  typ.).
3. Excellent channel balance.
4. Low distortion (THD=0.3% at PO=0.5W).
5. 12-pin SIP package for mounting ease and saved space on a PC board.
6. Ripple filter input (pin 6) can also be used as a muting control input.
7. Symmetrical pin configuration facilitates art work.
8. Low thermal resistance of the package makes heat-sink design easy.
9. Built-in high-frequency phase compensation capacitor.
10. Minimal RF radiation allows for free system layout.

**Block Diagram**

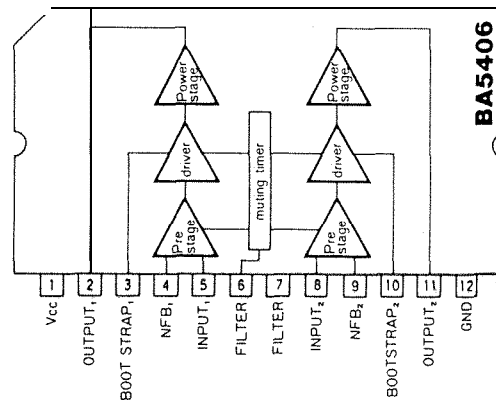


Fig. 2

**Applications**

- Stereo radio cassette recorders
- Desktop stereo systems
- Multiplexed audio subchannels for TV sets

**Internal Equivalent Circuit**

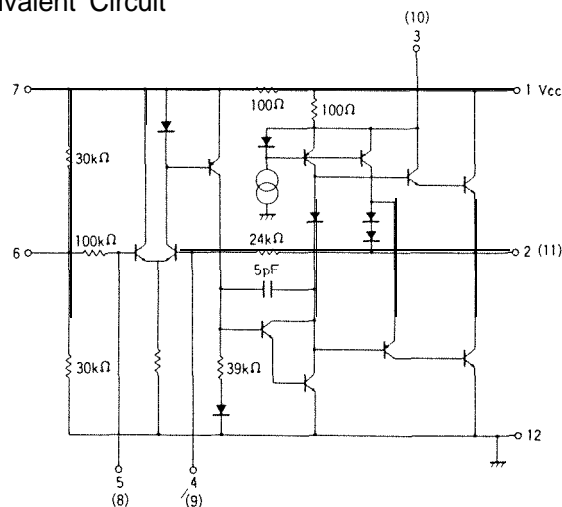


Fig. 3

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	18*	V
Power dissipation	P <sub>d</sub>	20**	W
Operating temperature range	T <sub>opr</sub>	-20~75	°C
Storage temperature range	T <sub>stg</sub>	-30~125	°C
Junction temperature	T <sub>j</sub>	150	°C

\* Under no signal \*\* Back-metal temperature 75°C

## Recommended Operating Conditions

Parameter	Symbol	Min. †	Typ. ‡	Max. ††	Unit
Supply voltage	V <sub>CC</sub>	- 5	12	15	V

## Electrical Characteristics (Ta=25°C, V<sub>CC</sub>=12V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	I <sub>Q</sub>	20	40	70	mA	—
Closed loop voltage gain	G <sub>VC</sub>	43	46	49	dB	f=1kHz, V <sub>IN</sub> =-46dBm
Rated output power	P <sub>OUT1</sub>	4.0	5.0	—	W	f=1kHz, THD=10%, R <sub>L</sub> =3Ω
Rated output power	P <sub>OUT2</sub>	—	4.5	—	W	f=1kHz, THD=10%, R <sub>L</sub> =4Ω
Total harmonic distortion	THD	—	0.3	1.5	%	f=1kHz, P <sub>OUT</sub> =0.5W
Output noise voltage	V <sub>NO</sub>	—	0.6	3.5	mVrms	R <sub>G</sub> =10kΩ
Input impedance	R <sub>IN</sub>	50	100	—	kΩ	f=1kHz

## Electrical Characteristics (Ta=25°C, V<sub>CC</sub>=9V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Quiescent current	I <sub>Q</sub>	15	35	70	mA	—
Closed loop voltage gain	G <sub>VC</sub>	43	46	49	dB	f=1kHz, V <sub>IN</sub> =-46dBm
Rated output power	P <sub>OUT1</sub>	2.2	2.8	—	W	f=1kHz, THD=10%, R <sub>L</sub> =3Ω
Rated output power	P <sub>OUT2</sub>	—	2.3	—	W	f=1kHz, THD=10%, R <sub>L</sub> =4Ω
Total harmonic distortion	THD	—	0.3	1.5	%	f=1kHz, P <sub>OUT</sub> =0.5W
Output noise voltage	V <sub>NO</sub>	—	0.6	3.5	mVrms	R <sub>G</sub> =10kΩ
Input Impedance	R <sub>IN</sub>	50	100	—	kΩ	f=1kHz, V <sub>IN</sub> =5mV

## Test Circuit

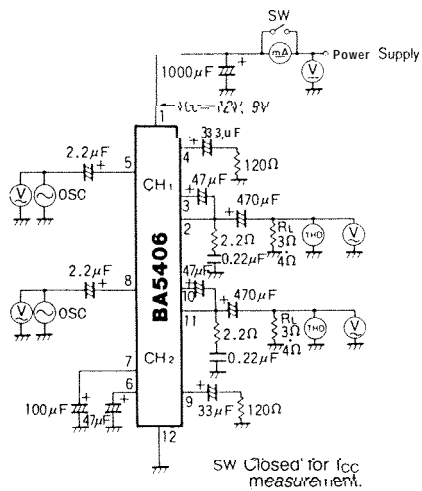


Fig. 4

## Application Example

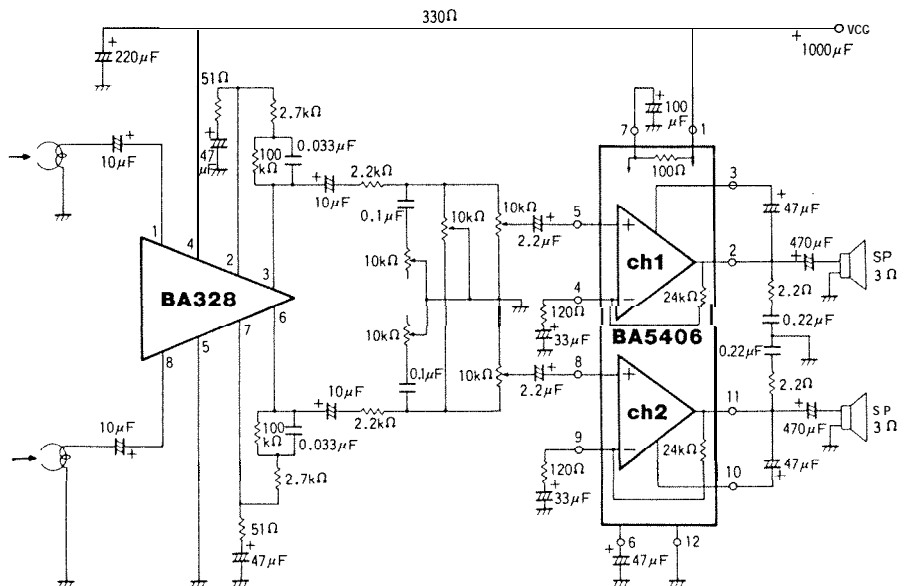


Fig. 5

# Electrical Characteristic Curves

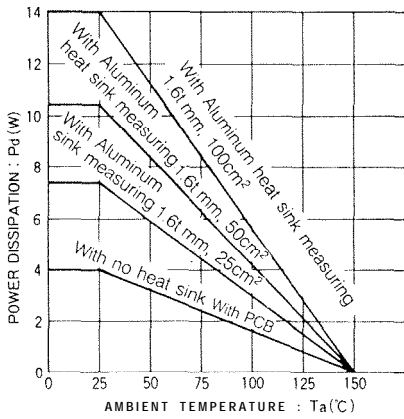


Fig 6 Thermal derating curves

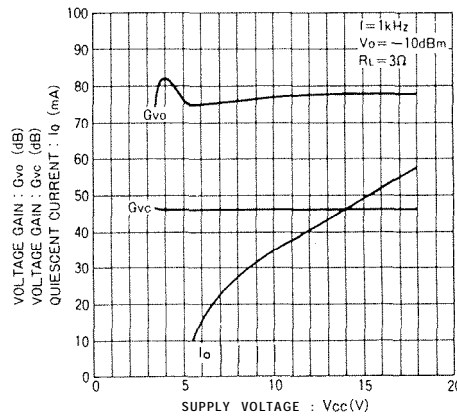


Fig. 7 Voltage gain/quiescent current vs. supply voltage

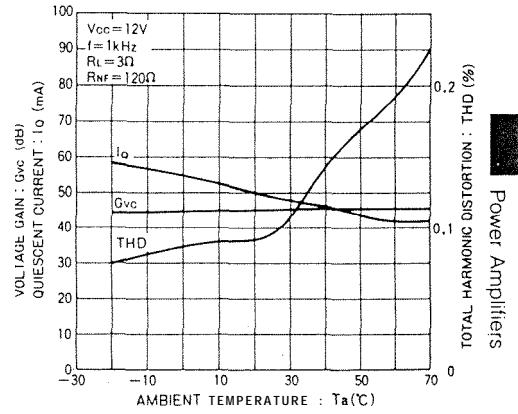


Fig. 8 Total harmonic distortion/voltage gain/quiescent current vs. ambient temperature

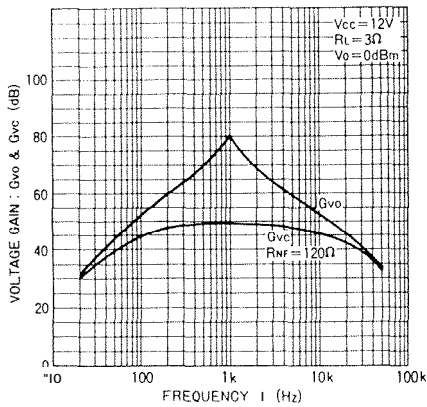


Fig. 9 Voltage gain vs. frequency

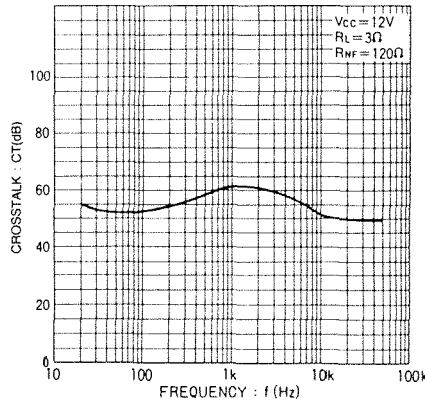


Fig. 10 Crosstalk vs. frequency

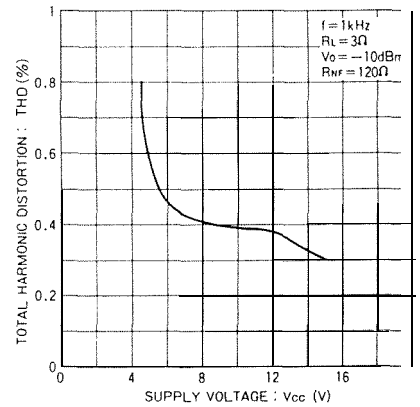


Fig. 11 Total harmonic distortion vs. supply voltage

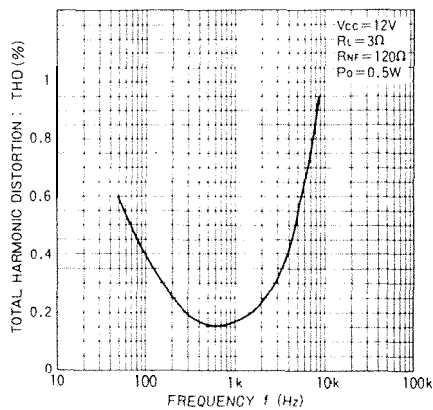


Fig. 12 Total harmonic distortion vs. frequency

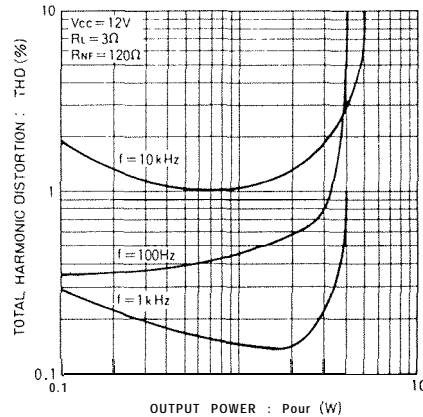


Fig. 13 Total harmonic distortion vs. output power

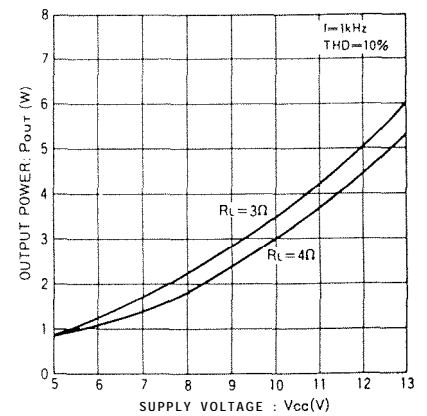


Fig. 14 Output power vs. supply voltage

# Electrical Characteristic Curves

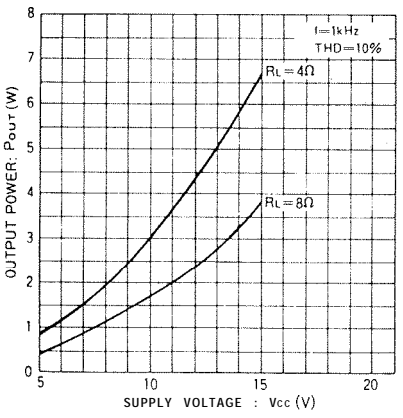


Fig. 15 Output power vs. supply voltage

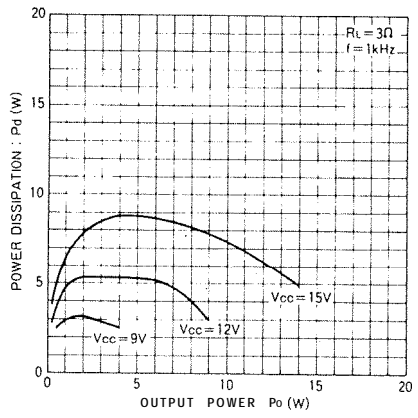


Fig. 16 Power dissipation vs. output power

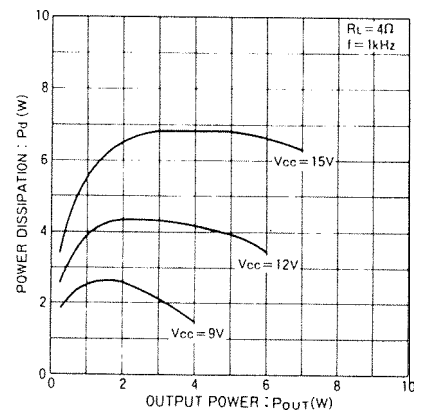


Fig. 17 Power dissipation vs. output power

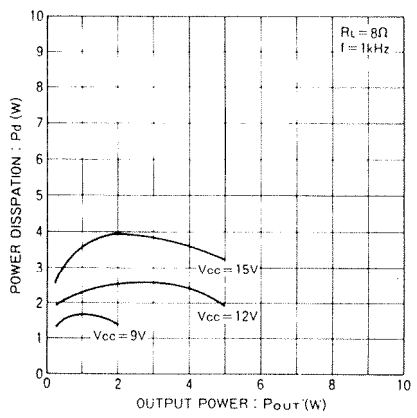


Fig. 18 Power dissipation vs. output power

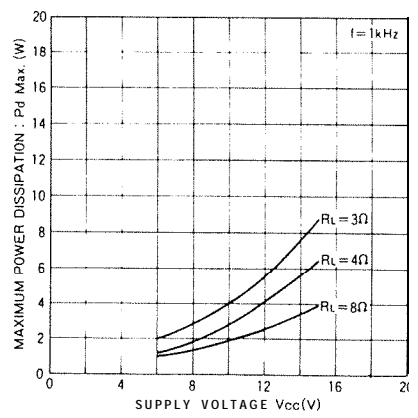


Fig. 19 Maximum power dissipation vs. supply voltage

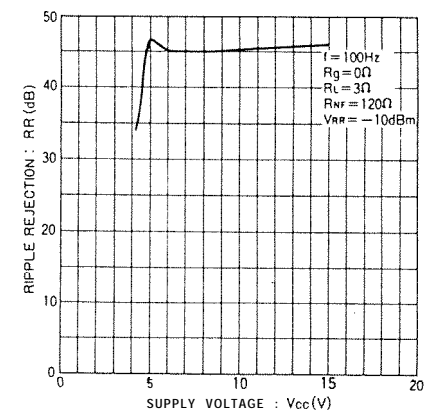


Fig. 20 Ripple rejection vs. supply voltage