

AN7118/S

Low Voltage Dual 35mW Audio Power Amplifier Circuits (BTL 300mW)

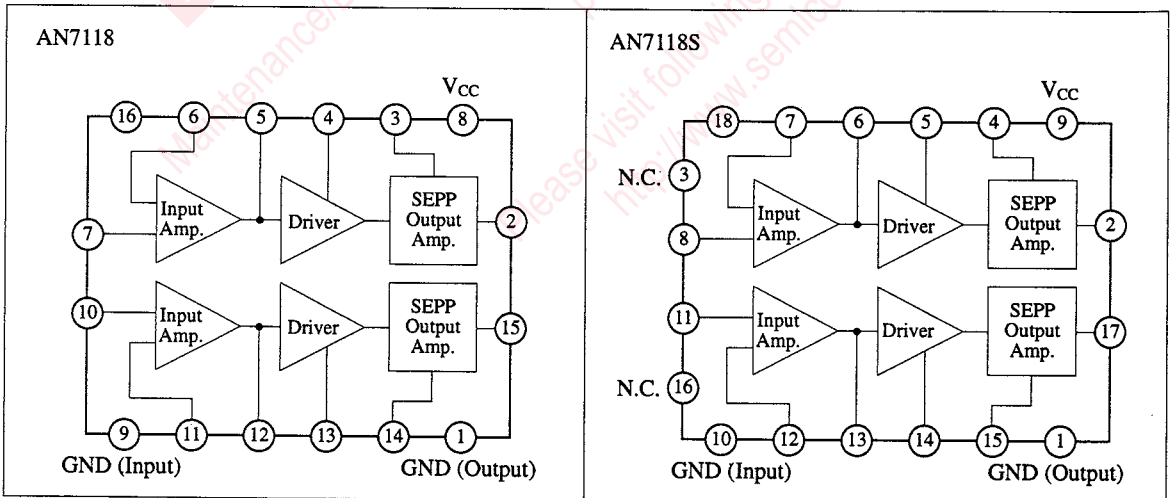
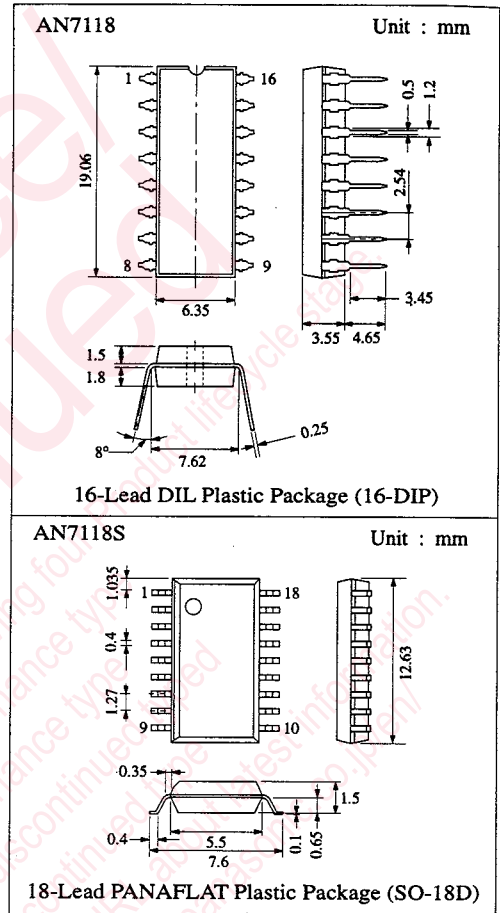
■ Description

The AN7118/S are the monolithic integrated circuits designed for low voltage dual 35mW audio power amplifier (BTL 300mW).

■ Features

- Low supply voltage operation: $V_{CC} = 1.8V \sim 4.5V$
- Reduced voltage operations is possible, making it suitable for the use of dry cells
- Low pop noise during switching ON and OFF of supply voltage
- With BTL connection, high output power is possible (Load 8Ω)
- Dual power operation is possible from a 4Ω load speaker to 32Ω headphones
- Input coupling capacitor is not necessary

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

| Item | Symbol | Rating | Unit |
|-------------------------------|------------------|------------|------|
| Supply Voltage | V _{CC} | 4.5 | V |
| Supply Current | I _{CC} | 1 | A |
| Power Dissipation | AN7118 | 900 | mW |
| | AN7118S | 400 | |
| Operating Ambient Temperature | T _{opr} | -20 ~ +75 | °C |
| Storage Temperature | T _{stg} | -50 ~ +150 | °C |

Operating Supply Voltage Range: V_{CC} = 1.8V ~ 4.5V

■ Electrical Characteristics (V_{CC}=3V, f=1kHz, Ta=25°C)

| Item | Symbol | Test Circuit | Condition | min. | typ. | max. | Unit |
|-------------------|-----------------|--------------|-----------------------|------|------|------|------|
| Quiescent Current | I _{CQ} | 1 | V _{in} = 0mV | | 13 | 18 | mA |

DUAL

| | | | | | | | |
|-----------------------------|------------------|---|--|-----|-----|-----|----|
| Voltage Gain | G _v | 1 | V _{in} = 1.5mV, R _L = 4Ω | 43 | 45 | 47 | dB |
| Output Power 1 | P _{O1} | 1 | THD = 10%, R _L = 4Ω x 2 CH | 110 | 130 | | mW |
| Output Power 2 | P _{O2} | 1 | THD = 10%, R _L = 32Ω x 2 CH | | 35 | | mW |
| Total Harmonic Distortion 1 | THD ₁ | 1 | V _{in} = 1.5mV, R _L = 4Ω x 2 CH | | 0.6 | 1.5 | % |
| Total Harmonic Distortion 2 | THD ₂ | 1 | V _{in} = 1.5mV, R _L = 32Ω x 2 CH | | 0.3 | | % |
| Output Noise | V _{no} | 1 | R _g = 10kΩ, DIN/AUDIO | | 0.3 | 0.8 | mV |
| Input Resistance | R _{in} | 1 | | | 20 | | kΩ |
| Ripple Rejection | RR | 1 | f _r = 200mV, f = 100Hz | | 35 | | dB |

BTL

| | | | | | | | |
|---------------------------|----------------|---|--|--|-----|--|----|
| Output Power | P _O | 2 | THD = 10%, R _L = 8Ω | | 300 | | mW |
| Total Harmonic Distortion | THD | 2 | V _{in} = 2mV, R _L = 8Ω | | 0.6 | | % |

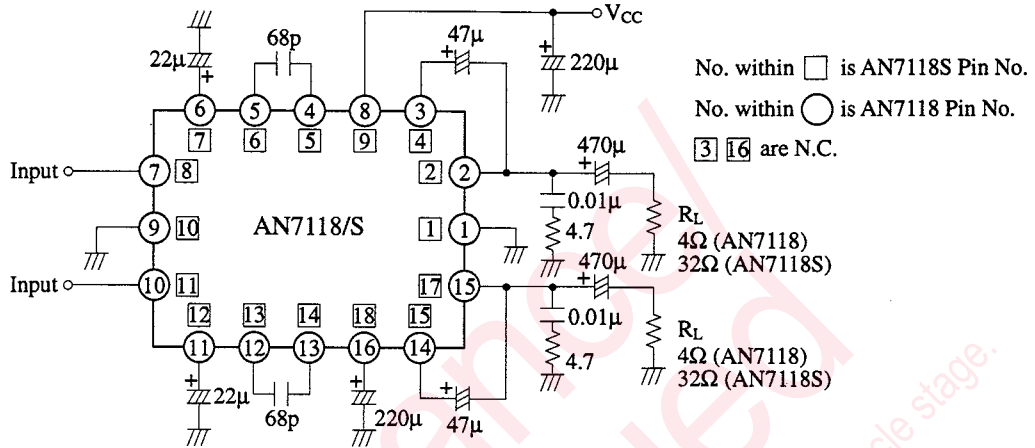
■ Pin (AN7118)

| Pin No. | Pin Name |
|---------|--------------------|
| 1 | GND (Output) |
| 2 | Output Ch.1 |
| 3 | Bootstrap |
| 4 | Phase Compensation |
| 5 | Phase Compensation |
| 6 | N.F.B. |
| 7 | Input Ch.1 |
| 8 | V _{CC} |
| 9 | GND (Input) |
| 10 | Input Ch.2 |
| 11 | N.F.B. |
| 12 | Phase Compensation |
| 13 | Phase Compensation |
| 14 | Bootstrap |
| 15 | Output Ch.2 |
| 16 | Ripple Filter |

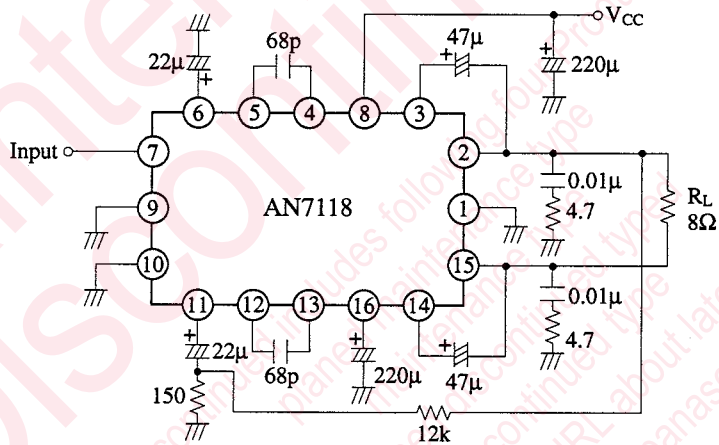
(AN7118S)

| Pin No. | Pin Name |
|---------|--------------------|
| 1 | GND (Output) |
| 2 | Output Ch.1 |
| 3 | N.C. |
| 4 | Bootstrap |
| 5 | Phase Compensation |
| 6 | Phase Compensation |
| 7 | N.F.B. |
| 8 | Input Ch.1 |
| 9 | V _{CC} |
| 10 | GND (Input) |
| 11 | Input Ch.2 |
| 12 | N.F.B. |
| 13 | Phase Compensation |
| 14 | Phase Compensation |
| 15 | Bootstrap |
| 16 | N.C. |
| 17 | Output Ch.2 |
| 18 | Ripple Filter |

Test Circuit 1 (IcQ, Gv, Po1, Po2, THD1, THD2, Vno, Ri, RR)

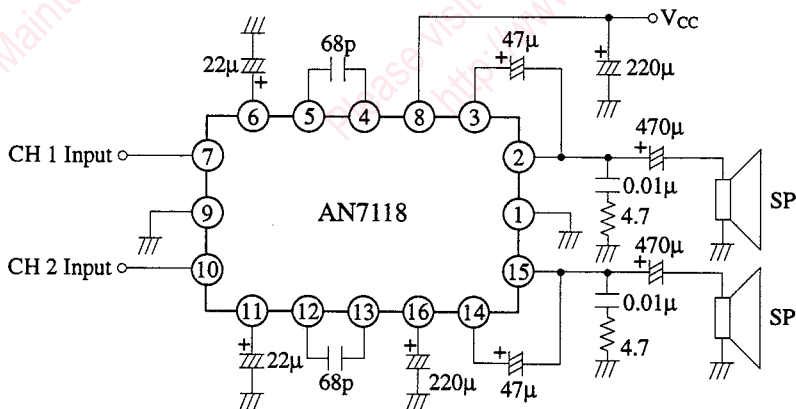


Test Circuit 2 (Po, THD)



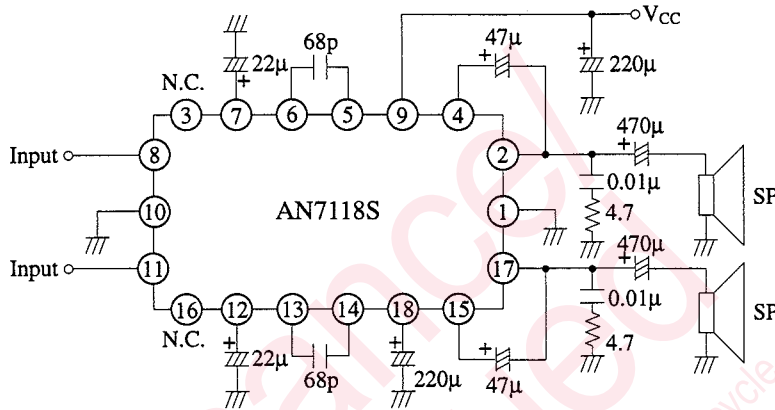
■ Application Circuit

AN7118 Dual Circuit

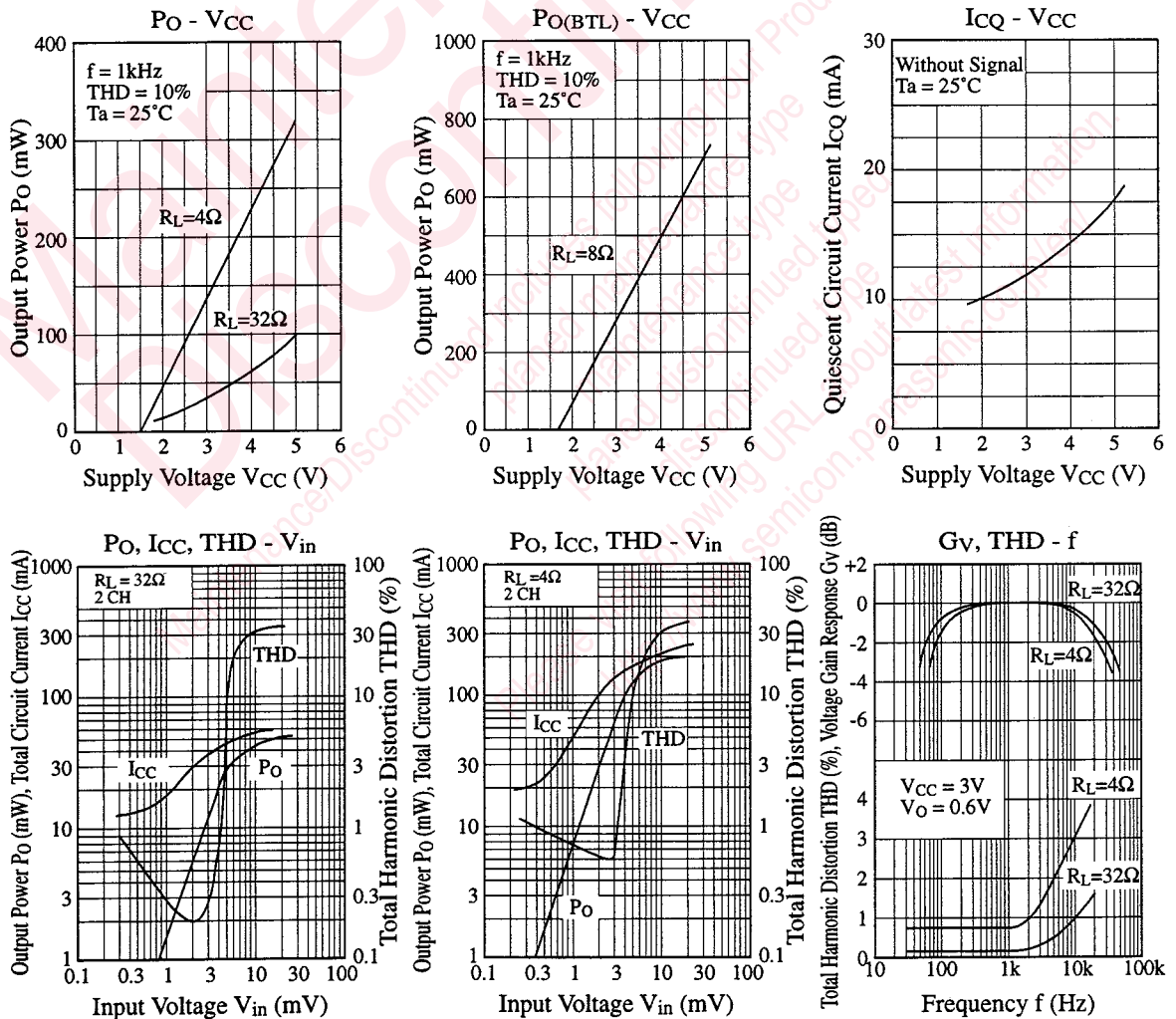


■ Application Circuit (Continue)

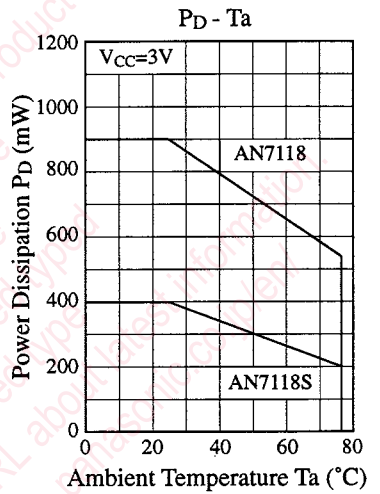
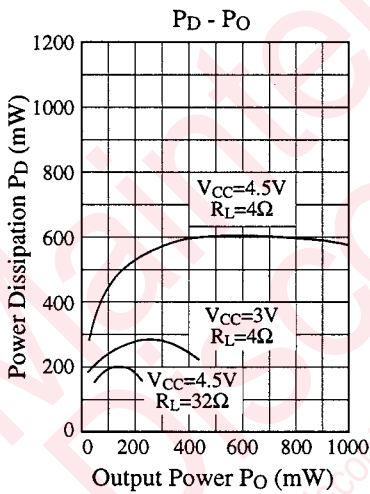
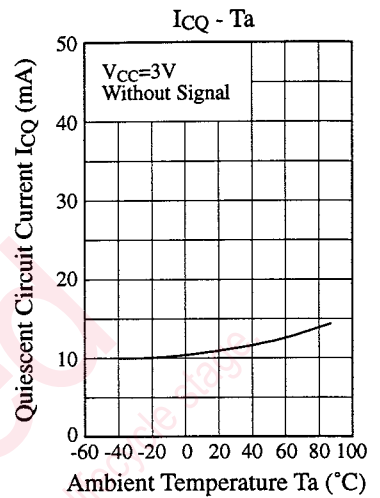
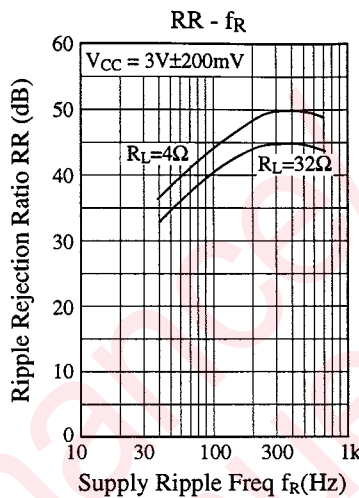
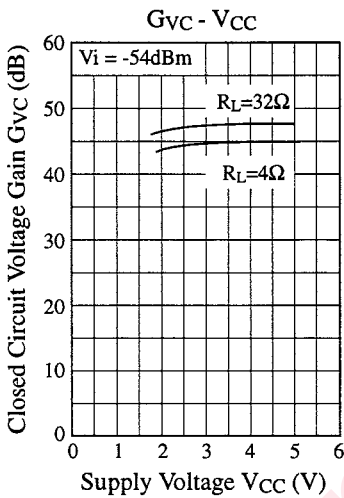
AN7118S Dual Circuit



■ Characteristics Curve



■ Characteristics Curve (Continue)



■ Supplementary Explanation of IC Characteristics

- Not necessary for input coupling capacitor. Input electric potential is about 0 bias, using PNP Tr for input stage.
- One Chip dual amp. (Stereo operation).
- Battery operation at 1.8V~4.5V.
- Good decreased voltage operation suits a long battery operation.
- BTL connection by external circuit. High output (load 8Ω).
- Load impedance can be driven from 4Ω, which makes it possible to use for both speaker and headphone.
- Small shock noise at power ON and OFF.

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